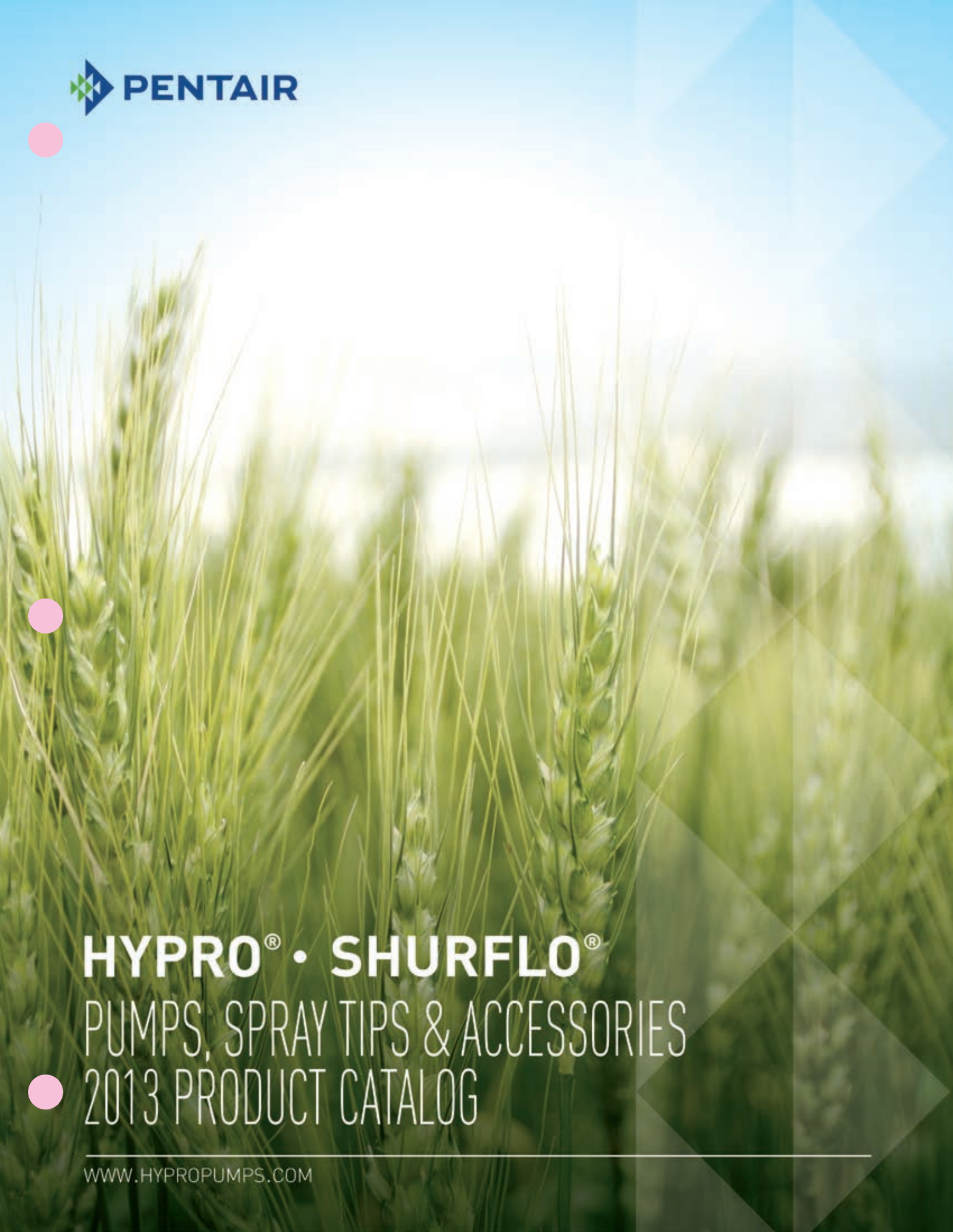

PENTAIR
HYPRO® · SHURFLO®
PUMPS, SPRAY TIPS & ACCESSORIES
2013 PRODUCT CATALOG
WWW.HYPROPUMPS.COM

New Products

9307 Series With ForceField™ Technology Page 45

Hypro's newly designed 9307 Series Centrifugal Pumps with ForceField seal Technology, a 2013 AE50 Award Winner, will protect against today's harshest chemical and application environments. ForceField Technology automatically adjusts seal chamber pressure to the right levels to ensure seal life. By eliminating dry run as well as chemical and fertilizer bonding failures, the ForceField Technology prevents costly in-season downtime. Hypro backs this pump with an industry-first one-year warranty on pump, motor, and seals.

3376 Series Cleanload™ Page 194-195

The new and improved Cleanload™ features three eductor sizes to match your application needs : turf/diaphragm pump, on-board sprayer, or transfer pump applications. It also includes a new and improved sidewall rinse for premium cleaning and meltdown of flowable powders. The polypropylene eductors are also available separately.

2130 Series Versa-Twin™ Plunger Pumps Page 118

Hypro's new 2130 Series Versa-Twin™ Plunger Pumps are available in standard models up to 4.0 GPM & 300 PSI. It features an industry-first integrated automatic-demand pressure switch option. Working on demand increases the pump and spray system life. It reduces the power input required and end-user installation charges by allowing for overnight charging versus continuous charging through a custom, high-amp vehicle alternator and heavy gage wire system.

Hydraulic-Driven Turbo Stream® Page 116

Compact and self-contained, the Turbo Stream® produces high energy firefighting power with ease and precision. Now available with a hydraulic motor, precise high pressure foam solution delivers rapid knockdown. The Turbo Stream installs easily on combines, ATV/RTV utility apparatuses, pickup trucks, and nurse trailers, and is ideal for applications such as brush, prairie/wildland, crop, and equipment fires.

Push-to-Connect Nozzle Bodies & Fastcaps Page 187

Push-to-Connect nozzle bodies and Fastcaps are commonly used in starter fertilizer applications. Nozzle bodies are available with push-to-connect by push-to-connect or push-to-connect by bayonet for use with either 1/4" or 3/8" OD linear low-density polyethylene tubing. Utilize the push-to-connect caps with a flow regulating disc for precision metering at the nozzle.

Express™ Nozzle Body End Cap Page 182

The award-winning Express™ nozzle body end cap enables standard nozzle bodies to have much quicker reaction times in response to GPS boom shut-off control signals, turning off spray quickly and decisively on overlaps, end rows, and boundary areas. This is achieved by eliminating the air that gets trapped in conventional boom designs. When the boom is completely filled with liquid, the nozzle body's diaphragm check valve (DCV) activation time is greatly improved, by as much as 85%.

SprayIT App Page 227

Hypro continues to make spray tip selection simple by releasing a new mobile app that takes your application information and provides a customized list of spray tip recommendations. Simply enter your tip spacing, speed, application rate, solution density and droplet size requirements and the SprayIT mobile app does the rest. The Hypro SprayIT app is available for Apple and Android mobile devices and supports both US and Metric units. The app is available in multiple languages including English, Spanish, Portuguese, French and German.

Table of Contents

Pumps & Engines

Because the pump is literally the “heart of the liquid system” on equipment, careful consideration must be made in selecting the right pump. Seldom is there only one pump that will do the job. To make a wise choice, you will need to know about pump types, how the pump is to be driven, and the flow and pressure requirements for your specific spraying system and application.

To ensure you can closely match the pump to your needs, Hypro manufactures six different types of pumps: centrifugal, transfer, roller, diaphragm, piston and plunger pumps.

Selecting the Right Pump

"Positive displacement" vs. "Non-positive displacement"

Hypro's long line of pumps can be divided into two general categories: "positive displacement" and "non-positive displacement." Roller, diaphragm and piston pumps are positive displacement. That is, the flow from the pump is directly proportional to the pump speed. This positive flow is why all positive displacement pump hook-ups must include a relief valve and bypass line between the pump outlet and the nozzle shut-off valve.

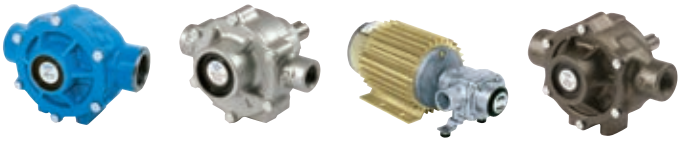
Centrifugal and turbine pumps are non-positive displacement. In these pumps, a rotating impeller creates a centrifugal force that feeds the liquid through the system instead of capturing and discharging a fixed volume "per stroke" as rollers, pistons or diaphragms would do. Therefore, if the outlet is closed, the impeller simply continues to rotate harmlessly. That is why special relief valves are not required in centrifugal pump systems.

Centrifugal and Transfer Pumps (non-positive displacement)

In centrifugal pumps, spray solution enters through the center of a rotating impeller that's driven at speeds up to 6000 RPM. Spray solution is forced to the outer edge of the housing; this centrifugal force is what delivers the liquid to the nozzle. Traditionally thought of as low to medium pressure pumps, Hypro's centrifugal pumps can deliver from 0-190 psi and flow rates up to 440 gpm. Because centrifugals have minimum surfaces to wear and no valves, they are very durable, easy to maintain and well suited for pumping abrasive and corrosive materials.

Because centrifugal pumps operate at higher speeds, the PTO speed must be increased through a speedup gear drive, belt/pulley drive, gas engine drive, or a high-speed hydraulic motor. (Hypro has models specifically designed for each of these applications.)

The broad, versatile line includes models with rugged housings of cast iron, polypropylene and stainless steel that stand up to the wide variety of agricultural chemicals.

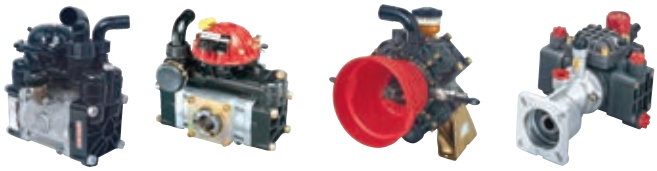


Roller Pumps (positive displacement)

Hypro roller pumps are the number one all-around choice by farmers throughout the world. The rollers (from 4 to 8, depending on the model) revolve inside the pump housing to force the spray solution through the outlet to the nozzle. Roller pumps have a low initial cost and are extremely versatile. They operate efficiently at PTO speeds of 540 and 1000 rpm and have a wide pressure range of up to 300 psi and flow rates of 2 to 62 gpm. Roller pumps are self-priming and easily adapt to PTO or gas engine drives. Specific seal, roller and casting materials can be selected for compatibility with certain herbicides, pesticides, fungicides and fertilizers.

Piston Pumps (positive displacement)

Piston pumps are not unlike an engine. That is, they have a shaft, pistons and "intake" and "exhaust" valves. On the down-stroke, the inlet valve opens, filling the chamber with solution. On the up-stroke, the outlet valve opens, and the piston forces the solution to the nozzle. Piston pumps deliver relatively low flow rate (up to 10 gpm) at high pressure (up to 1000 psi). The replaceable piston cups can be of leather, fabric or Buna-N rubber, depending on the type of solution to be sprayed. They can be driven by 540 rpm PTO, gas engine or electric motor. Their low volume/high pressure capability permits use in general spraying as well as task-oriented applications such as spraying fence rows and ditches, and hydrostatic testing.



Diaphragm Pumps (positive displacement)

Because of their design, diaphragm pumps provide excellent handling of abrasive and corrosive materials. The pumping cylinders (from 2 to 6) are separated from the piston chambers (Hypro's are oil-filled) by a synthetic diaphragm. This keeps the spray solution from contacting and corroding the internal pump components.

Diaphragm pumps are compact, self-priming and produce medium-to-high pressures (275 to 725 psi) with flow rates of 3.5 to 65.7 gpm. Driven by 540 rpm PTO, gas engine, DC or hydraulic motor, diaphragm pumps are used for a variety of agricultural, horticultural and pest control spraying applications.

Selecting the Right Pump

How Much Pressure Do You Need?

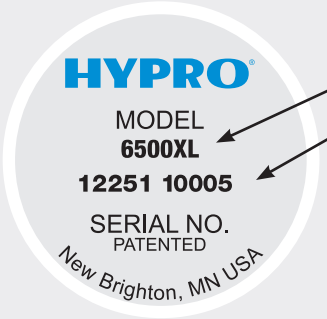
PSI	Flow GPM	Pump Style
1000 +	0-8	PLUNGER
300-1000	0-5	PISTON/PLUNGER
	0-60	DIAPHRAGM
0-300	0-5	SHURFLO
	0-60	ROLLER
	0-1500	CENTRIFUGAL

How Much FLOW Do You Need?

Flow GPM	PSI	Pump Style
0-5	0-300	SHURFLO
	300-1000	PISTON/PLUNGER
0-8	1000 +	PLUNGER
0-60	0-300	ROLLER
	300-1000	DIAPHRAGM
0-1500	0-300	CENTRIFUGAL

Hypro Pumps Identification Coding

Hypro uses serialized labeling to enable users to precisely identify the pump when ordering parts or requesting warranty service. Following is an example.



First line: **Model Number**

Second line: **Serial Number**

First & second digit: **year (12=2012)**

Third through fifth digits: **consecutive day of the year the pump was manufactured.**

Sixth digit: **shift the pump was built on.**

Seventh through tenth digits: **consecutive pump number built on the shift.**

Selecting the Right Pump

Pump Drives

How a pump is to be driven is often a primary consideration in selecting the proper type of pump. If the power source has already been determined, the following chart may be of further help in selecting the type of Hypro pump that is best suited to your needs.

You can use these pump types:

If your power source is:		Roller	Centrifugal and Transfer	Diaphragm	Piston
540 rpm PTO	direct coupled:	✔		✔	✔
	through gear drive:		✔		
	through belt/pulley:		✔		
1000 rpm PTO	direct coupled:	✔			
	through gear drive:		✔		
	through belt/pulley:		✔		
Hydraulic Motor		✔	✔	✔	
12 Volt DC Motor		✔	✔	✔	✔
Gas Engine	direct coupled:	✔	✔		
	through gear reduction:	✔		✔	✔
	through belt/pulley:	✔	✔	✔	✔
Electric Motor	direct coupled:	✔	✔		
	through belt/pulley:	✔	✔	✔	✔

Pump shaft rotation

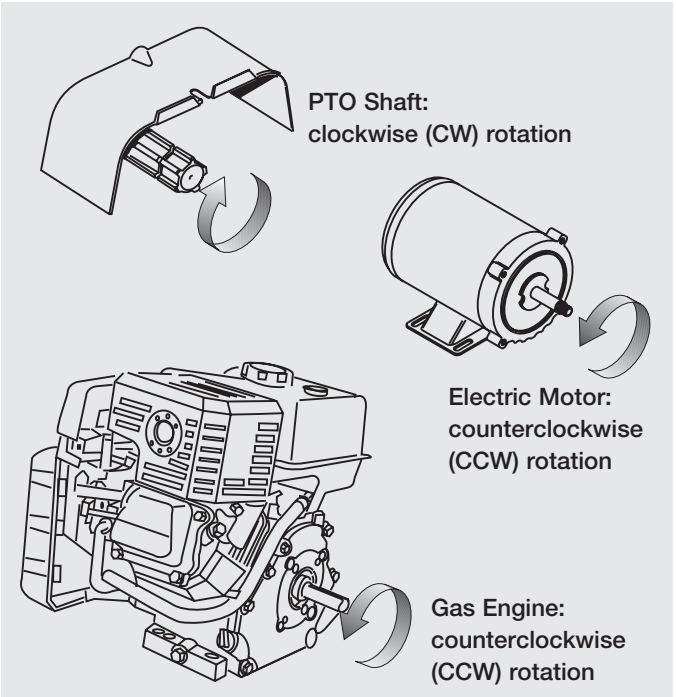
With many pumps, you need to specify which direction the shaft rotates… either clockwise (CW) or counterclockwise (CCW). Hypro's rules on shaft rotation are as follows:

Rule #1 "Eyes on the end"

Always view the rotation when you are facing the end of the drive shaft. If it turns clockwise, it is a clockwise shaft. Always use this rule for determining rotation of the pump shaft and for the power source shaft (PTO, for example). Once you have determined the rotation of the power source shaft, remember Hypro rule #2:

Rule #2 "Opposites attract"

A clockwise (CW) rotating PTO shaft will require a counterclockwise (CCW) rotating pump shaft, and vice versa. All shaft rotation references in this catalog are based on these two rules.



Determining Pump Flow and Pressure Requirements

Every pumping task has an optimum volume and pressure requirement. Determining that optimum (and selecting the pump that delivers it) is key to an efficient and economical spraying system operation.

Pressure requirements for agricultural pumps are dependent on both the material to be applied and application targets. Soil-applied herbicides generally require a relatively low pressure pump rating of 30-60 psi with foliar-applied herbicides at the top end of that range and slightly higher. Insecticides and fungicides require higher pressure ratings of 100 to 500 psi. Pressure must be sufficient, in the case of heavy foliage field crops and orchard crops, to penetrate the leaf cover. In the case of orchard crops, pressure must also be sufficient to carry material up and over as well as into the canopy.

A number of factors must be considered to properly determine the total flow you will need from your pump. They include:

- Type of spray operation (broadcast, banding, low-level, etc.)
- The chemical's application rate, ground speed, boom width, hose length, tank agitation, etc.

The spray task is the first consideration in determining flow rate and pressure needs. The following formulas and calculations may help.

Calculating agitation requirements

The pump must produce enough flow for both the application rate and tank agitation requirements. Too little agitation will not keep the solution in proper suspension and too much agitation may cause foaming. Here are rule of thumb formulas for calculating how much additional pump flow you will need
for agitation.

Liquids:

Tank volume (gallons) x .05 = total agitation in gpm

Wettable Powders and Flowables:

Tank volume (gallons) x .125 = total agitation in gpm

EXAMPLE: *If you will be spraying a wettable powder from a 100-gallon tank, proper agitation will require 12.5 gpm additional flow from the pump.*

Reducing agitation flow requirements

Agitation flow requirements can be reduced by using jet agitation in the tank. Jet agitators use a venturi design to multiply agitation output. Depending on the jet agitator model and pressure, one gallon per minute input can provide two to ten gallons per minute agitation output. If your sprayer is equipped with a jet agitator, consult the operator's manual or documentation to find the output to input ratio and adjust your flow required for agitation accordingly.

For example: If you calculate a requirement of 63 gpm of agitation and your jet agitator requires 3 to 1 output to input ratio, your pump would only need ⅓ of 63 gpm, or 21 gpm.

$$\text{Agitation Flow with Jet Agitation} = \text{required gpm} \times \frac{\text{input}}{\text{output}}$$

Factor in an "Excess Flow" Requirement

It is wise to have some excess flow capacity so you will not end up with an undersized pump because actual operation conditions may cause changes in spray system performance (such as normal pump wear, operating at less than rated speeds, etc.). Hypro recommends you add an additional 20% to your calculated total pump flow requirement to compensate for these variables. Plumbing systems have a number of restrictions that will result in a pressure drop from the pump to the actual spray point. These must be taken into account and minimized.

Determining Pump Flow and Pressure Requirements

Calculating pump flow for broadcast boom sprayers

Chemical application is measured in gallons per acre (gpa), whereas pump flow is stated in gallons per minute (gpm). To calculate the pump flow gpm required by a broadcast boom sprayer, multiply the gpa application rate (from the chemical label, usually 10-20 gpa) by the sprayer ground speed (5-10 mph). Multiply the sum by the boom width on your sprayer (in feet). Then, divide that number by 495. As a formula, it is written like this:

$$\text{Flow required for boom (gpm)} = \frac{\text{gpa x mph x boom width (ft.)}}{495}$$

The result will be the pump flow required to deliver the proper application rate at the boom's nozzles. Then calculate your total pump flow requirement (broadcast):

Flow required for boom:		_____ gpm
Flow required for agitation:	+	_____ gpm
Sub-total	=	_____ gpm
Excess flow requirement:	x	1.20
TOTAL PUMP FLOW NEEDED:	=	_____ gpm

Calculating pump flow for banding sprayers

First, multiply the band width (in inches) by the number of rows to determine the total width (w). Then, multiply the application rate (gpa from the chemical label) by the ground speed (mph). Multiply that result by the total width (w) calculated earlier, then divide the result by 5940. Here's how the formula appears:

$$\text{Flow required for nozzles (gpm)} = \frac{\text{gpa x mph x w}}{5940}$$

For total pump flow requirement (banding), calculate:

Flow required for boom:		_____ gpm
Flow required for agitation:	+	_____ gpm
Sub-total	=	_____ gpm
Excess flow requirement:	x	1.20
TOTAL PUMP FLOW NEEDED:	=	_____ gpm

Calculating pump flow for hand gun spraying

For low-level spraying with a hand gun, such as for lawn and turf care, professional applicators typically "walk" the lawn at about 1,000 sq. ft. per minute. That means the "gpm" rate of the hand gun will generally be the same as "gallons per 1,000 sq. ft." To determine your total pump flow requirement:

Flow required for gun/nozzle:		_____ gallons per 1,000 ft^2 (same as gpm)
Flow required for agitation:	+	_____ gpm
Sub-total	=	1.20 gpm
Excess flow requirement:	x	_____
TOTAL PUMP FLOW NEEDED:	=	_____ gpm

Use this same method for calculating the pump flow requirement for high pressure spraying, such as trees. Even though the application "rate" is usually a visual saturation of the tree, the known gpm factor will be the hand gun nozzle output, which is the rate you use for the calculation.

Determining Pump Flow and Pressure Requirements

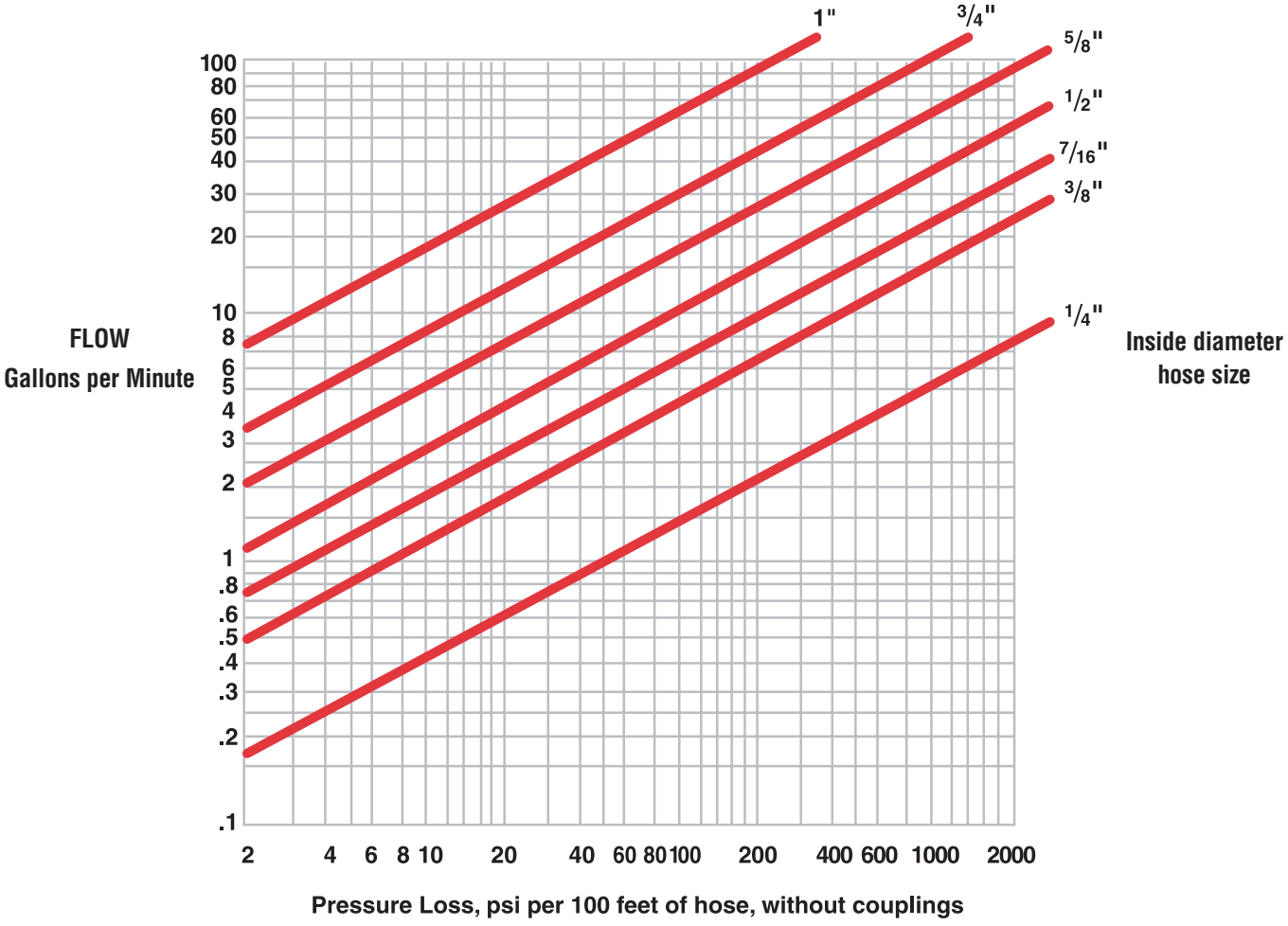
Calculating pump pressure for hand gun spraying

For most hand gun chemical spraying, 40 psi at the nozzle is typical. To properly select a pump that can deliver the right nozzle pressure, you must consider the normal "pressure drop" that occurs within the length of hose. The amount of pressure drop through the hose depends on hose length, hose diameter and flow rate. For example, as the accompanying chart shows, 300' of ½" hose spraying at 6 gpm, will have a pressure drop of approximately 120 psi. That means you need a pump delivering at least 160 psi in order to ensure 40 psi at the nozzle.

Desired pressure at gun nozzle:		_____psi
Hose pressure loss:	+	_____psi
TOTAL PUMP PRESSURE NEEDED:	=	_____psi

NOTE: When determining the total pump pressure requirement for high tree spraying, you must also consider the spray height (or reach) you need to attain. Generally, pumps of up to 700 psi are used for this purpose.

Pressure Loss at Various Rates of Flow of Water Through Hose*
at temperature of 68° Fahrenheit (20°C.)
*¼-inch to 1-inch inside diameter



Hand-held Spray Gun Performance

Various Pressures and Nozzle Sizes

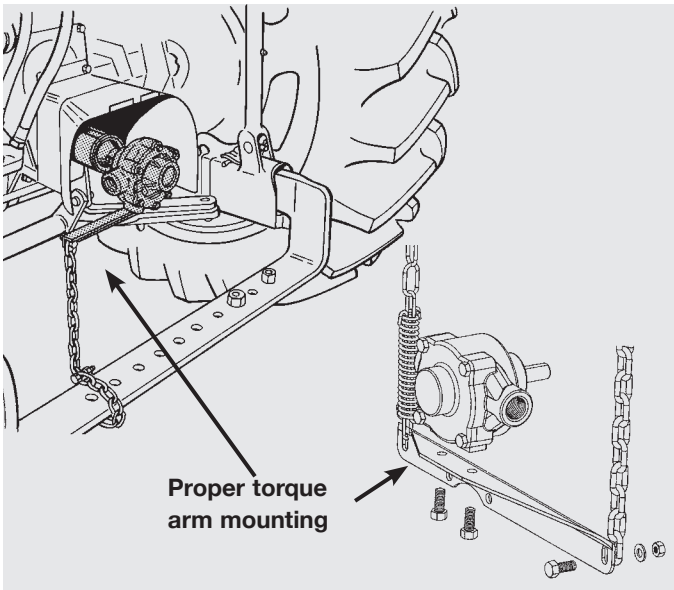
When selecting system components for hand gun spraying, factors such as flow rate, vertical "throw", nozzle size, spray pattern and pressure must be considered. The following chart provides data for capacity (gpm) and maximum vertical throw in feet (ft.) at a variety of pressures and nozzle sizes, as well as for "cone" or "straight" spray patterns.

Performance Chart for Models 3381-0010, 3381-0011 and 3381-0013 Spray Guns

Hypro Model #	Orifice Diameter In MM	Equiv. Nozzle #	Pressure In PSI** Performance	200 PSI Setting		350 PSI Setting		500 PSI Setting		600 PSI Setting		650 PSI Setting		700 PSI Setting		850 PSI Setting	
				Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight
3385-1500	2.3	14	capacity in gpm max throw (ft)*	1.14 9.2	1.26 21.5	1.48 10.3	1.7 25.2	1.8 11.2	2 28	1.9 12.1	2.2 31.8	2 12.1	2.3 32	2.1 12.3	2.4 32.3	2.2 13.1	2.5 34.3
3385-2300	2.3	14	capacity in gpm max throw (ft)*	2.1 11.4	2.7 29	2.7 12.9	3.7 33.9	3.4 14.8	4.5 37.9	3.8 16.6	4.9 41.5	3.8 17	5 41.7	3.9 17.7	5.1 42	4.2 19	5.8 45.7
3385-3000	3	23	capacity in gpm max throw (ft)*	2.9 11.7	4.6 29.2	3.7 12.9	6.3 33.9	4.8 13.8	7.5 36.2	5.2 15.6	8.4 40.8	5.3 16	8.5 40.7	5.4 16.2	8.6 42	6 17	9.6 44.1
3385-3500	3.5	29	capacity in gpm max throw (ft)*	5.8 13.6	6 36.2	7.9 19	8.2 41.2	9.6 22.6	9.9 45.3	10.7 25.5	11.1 50	11 25.5	11.3 51	11.2 27	11.6 51.5	12.4 28.8	12.8 54
3385-4000	4	40	capacity in gpm max throw (ft)*	7 15.1	7.3 37.7	9.6 20.6	9.9 42.8	11.6 24.3	12 47	12.9 27.2	13.5 53	13.2 27.2	13.8 54	13.6 28.5	14.1 55	15 29	15.6 59
3385-4500	4.5	54	capacity in gpm max throw (ft)*	8.2 18.1	8.9 39.2	11.1 22.2	12 44.3	13.4 26	14.5 50.1	15 30.6	16.3 54	15.4 30.6	16.6 56	15.7 31	17 57	17.4 31.5	18.9 62
3385-5000	5	67	capacity in gpm max throw (ft)*	9.8 19.6	10.2 40.7	13.3 23.8	13.8 47	16 27.5	16.7 53.3	18 32.3	18.7 59	18.4 32.3	19.1 61	18.9 32.8	19.5 62	20.8 32.8	21.6 67
3385-5500	5.5	79	capacity in gpm max throw (ft)*	10.7 19.6	11.5 42.2	14.4 23.8	15.6 50.7	17.4 29	18.8 57	19.6 34	21 63	20 34	21.5 64	20.4 34.5	22 65	22.6 34.5	24.4 70
3385-6000	6	91	capacity in gpm max throw (ft)*	11.5 21.1	12.6 43.7	15.6 25.3	17.1 54	18.8 30.7	20.6 60	21 35.6	23.2 66	21.5 35.6	23.7 67	22 36	24.2 68	24.4 36	26. 9 74
3385-7000	7	117	capacity in gpm max throw (ft)*	11.5 21.1	13.5 46.8	15.6 25.3	18.4 57	18.8 30.7	22.2 63	21 37.4	25 70	21.5 37.4	25.4 71	22 38	26 72	24.4 38	29 77

* Figures shown are guidelines for vertical throw.
** Pressures based on relief valve settings at straight throw.

Recommended Pump Placement

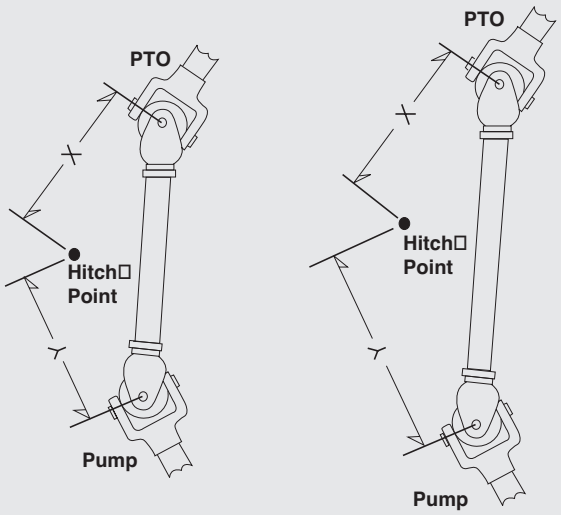


PTO DIRECT-MOUNT

Location of PTO-driven pumps and pump drive units may have a significant effect on pump life. Mounting the pump directly to the PTO is always a good choice. Even though installation is relatively easy, use caution to ensure the shaft does not get bent or damaged. Always use a quality, properly secured coupler and provide adequate support for the pump itself in order to withstand the extreme bouncing and vibration the system must endure. PTO mounting shields should always be used for maximum safety and protection.

TUMBLE ROD MOUNTING

If direct PTO mounting is not convenient or desired, then mount the pump in a convenient position on the pull-behind sprayer and connect it to the tractor PTO with a “tumble rod” power shaft. Exercise caution when using this approach to ensure: (1) the tumble rod is level; (2) the hitch pin is the center-point; and (3) turn angles greater than 45° can be avoided. Failure to follow these three points may cause “power shocks” within the pump and drive units and increase wear on seals, gears, and, in the case of diaphragm pumps, the diaphragms themselves.



Correct Equidistant Tumble Rod Installation
X and Y are equal, which maintains equal u-joint angles and prevents fluctuations.

Incorrect Tumble Rod Installation
X and Y are not equal, creating unequal u-joint angles which can result in RPM fluctuations and increased wear on the u-joints and pump.

The best tumble rod installation occurs when the distance from the PTO U-joint to the hitch is equal to the distance from the hitch to the pump U-joint. For 540 RPM PTO shafts, the distance from the hitch pin to the pump shaft should be 14 inches. For 1000 RPM 1⅜" PTO shafts, the distance is 16 inches. For 1000 RPM 1¾" PTO shafts, the distance is 20 inches. Instances where equal distances are not possible, a “constant velocity” shaft should be used.

Power shocks occur when the PTO shaft knuckle and the universal joint at the pump end of the tumble rod turn faster on the inside of the turning angle than on the outside. To prevent these vibrations, the angle of the tumble rod to the tractor PTO shaft and the angle of the tumble rod at the pump shaft should be as close to equal as possible. This will cancel out the fluctuations.

Sprayer Calibration

Improperly calibrated sprayers threaten the wallet and the environment. A few minutes spent calibrating a sprayer can ensure expensive inputs go where they are supposed to and at their recommended rate. Proper calibration exposes under-pressured systems and worn tips that can sabotage a spray program and its budget. Follow these steps to calibrate your sprayer safely and effectively.

1. The first step in any calibration effort is to check tractor speed. Mark off lengths of 100 and 200 ft. for measuring tractor speeds of 5 mph and 10 mph, respectively. Fill the sprayer tank half full of water, select the engine throttle setting and gear that you expect to use when spraying, and then record the seconds required to drive the length of each course twice at their respective settings. Average the results of each set, and use the following equation to determine ground speed.

$$\text{Speed} = \frac{\text{Distance (ft.)} \times 60}{\text{Time (sec.)} \times 88}$$

Repeat the test as needed until the correct speed is identified. Mark that setting on the tachometer or speedometer for infield reference.

2. Record the nozzle spacing, nozzle type, ground speed and product label application rate. Check to ensure all nozzles are of a uniform type.

3. Multiply the application rate (gpa) by the speed (mph) and the width of the spray pattern (w)*. Divide this amount by 5940 (a constant) to determine the gallons per minute (gpm) produced by each nozzle.

$$\text{Flow required per nozzle (gpm)} = \frac{\text{gpa} \times \text{mph} \times \text{w}}{5940}$$

4. To set correct pressure, operate the water filled sprayer in place to check for leaks and stoppages. Stop the sprayer, and replace one tip on the boom with an identical new tip and strainer. Check the tip product information sheet for recommended delivery rate and pressure that matches the gpm level calculated in Step 3.

Engage the sprayer and adjust for recommended pressure. Collect the volume of spray produced from the new nozzle tip over a one minute period. Measure the water, and fine tune the pressure setting until the calculated delivery rate is reached.

5. Repeat the collection procedure with several tips on each boom section. If variations in flow in excess of 10% are produced from more than one tip, replace all old tips and screens.

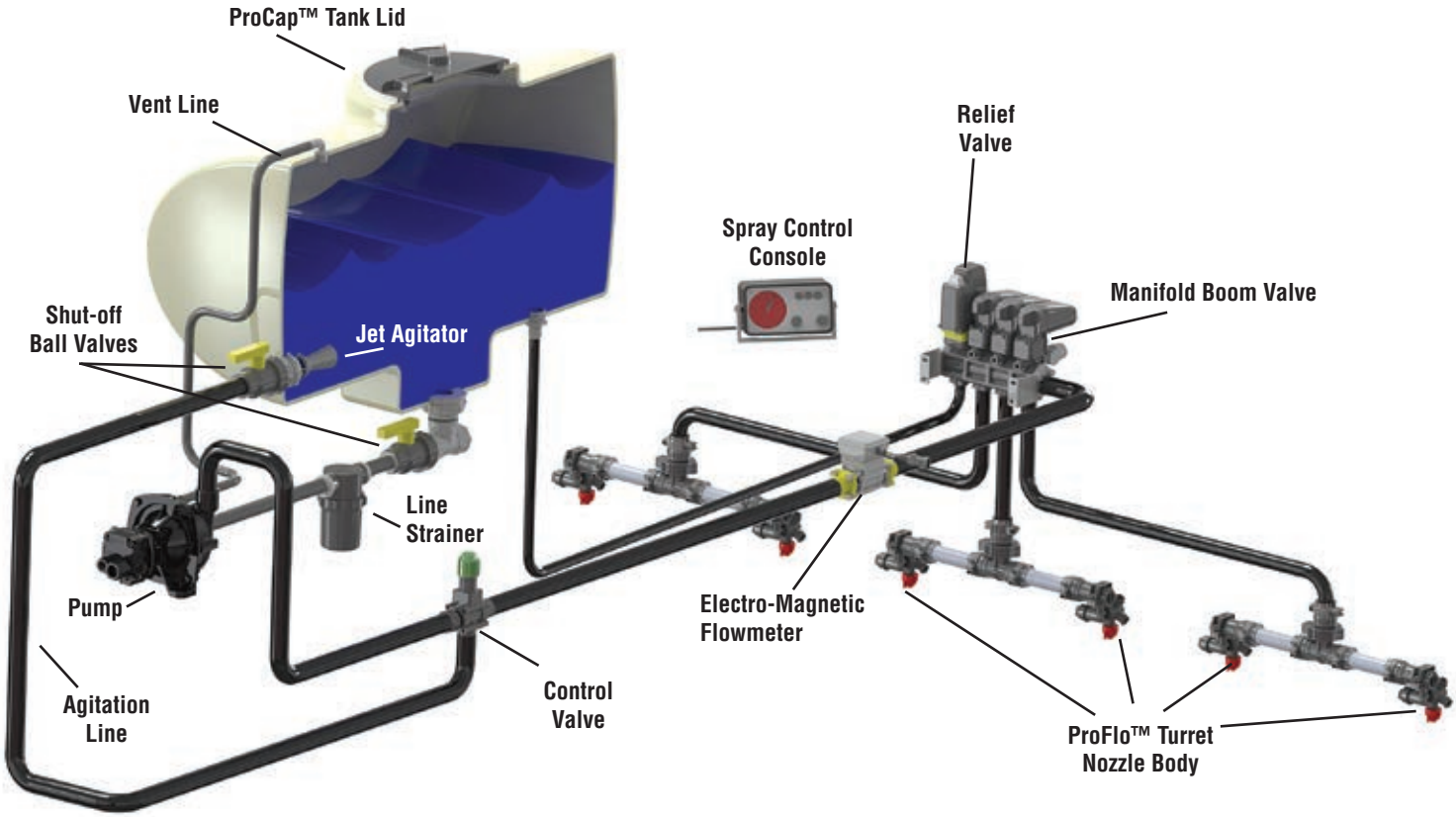
*If calibrating a sprayer for broadcast application, use nozzle spacing for spray pattern width. If calibrating for banding, use only actual spray pattern in inches (12 bands of 10" each on 30" rows equals spray pattern width of 120" on a 30' boom).

Directed applications with multiple nozzles require that the row or band in inches be divided by the number of nozzles directed at the row to calculate width.

$$\text{Width of Spray Pattern in Directed Applications} = \frac{\text{band width}}{\text{\# of nozzles per band}}$$

System Hook-Ups

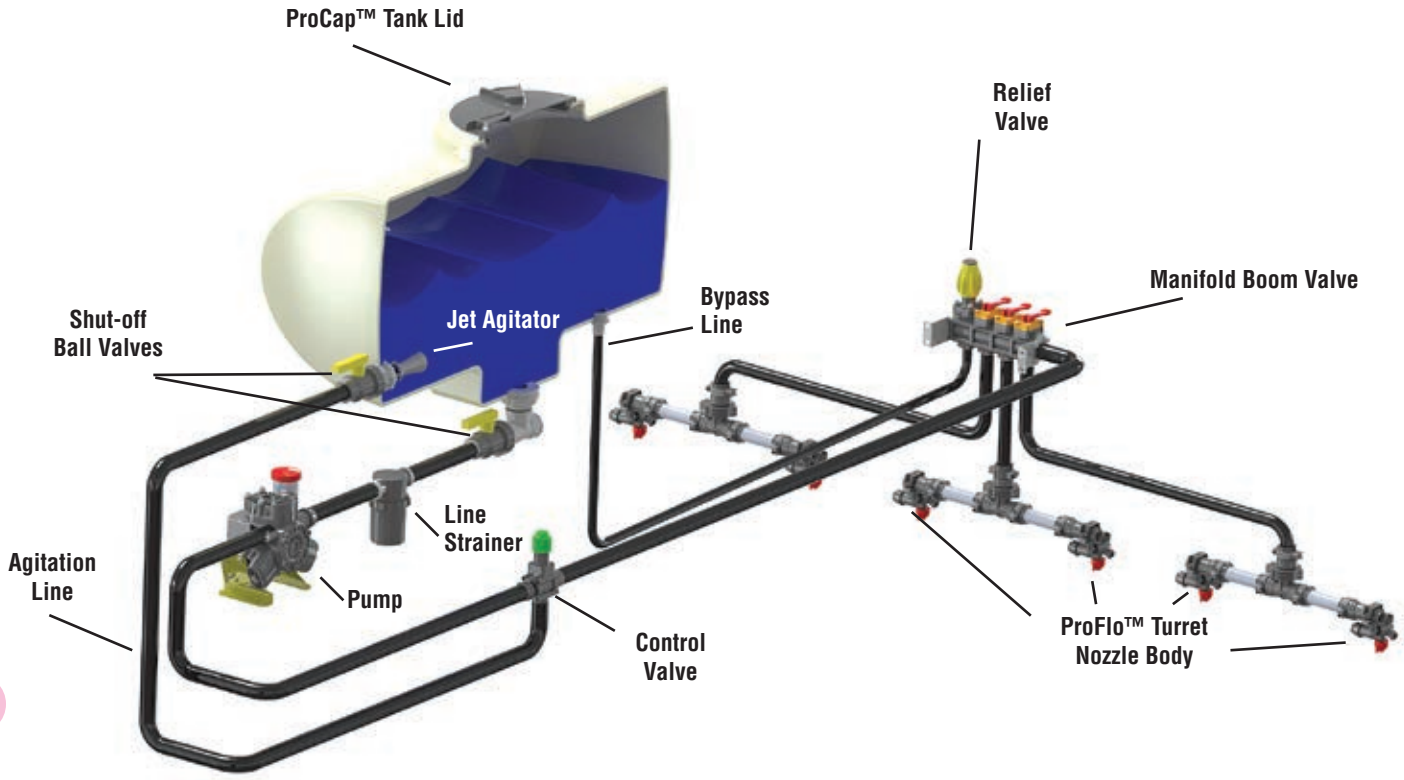
Centrifugal Pumps



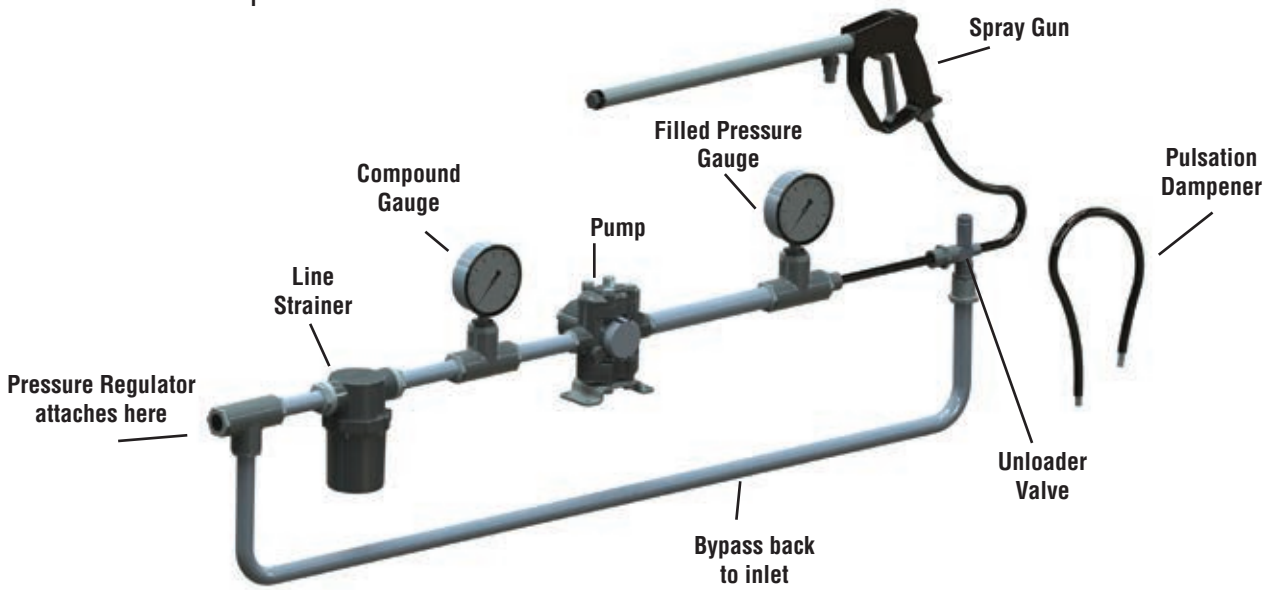
Hypro carries all parts labeled above. Please contact your local Hypro dealer by using the "Where to Buy" function on our website at www.hypropumps.com, or call 1-800-424-9776 for more information.

System Hook-Ups

Roller, Diaphragm Pumps



Small Twin® Piston Pumps



Hypro carries all parts labeled above. Please contact your local Hypro dealer by using the "Where to Buy" function on our website at www.hypropumps.com, or call 1-800-424-9776 for more information.

Centrifugal Pumps

For today's machinery and tomorrow's demands, Hypro centrifugal pumps lead the industry! Pump capabilities range up to 440 gpm and 190 psi. With the largest selection of models, Hypro allows you to match the right pump to your equipment and task. Use Hypro centrifugal pumps for chemical spraying and transfer applications.

The broad, versatile line includes models with rugged housings of cast iron, stainless steel and polypropylene that stand up to strong chemical attack. Stainless steel pumps are ideal for use with Roundup® or other acid applications. Polypropylene pumps are lightweight and provide excellent resistance to corrosive chemicals. Choose from gear, pedestal, flange, DC clutch, hydraulic motor and belt drives, as well as models that are closed-coupled to gasoline engines.

All of the Hypro centrifugal pumps share these quality features:

- Compatible with corrosive, abrasive and general use chemicals
- Models with high volume (440 gpm), high pressure (190 psi) capabilities
- Nylon, polypropylene, or GTX impellers on most models
- Hydraulically-driven models feature high-efficiency, cast-iron hydraulic motor
- Hydraulic motor equipped with proprietary double-lip Teflon seals
- Life Guard® silicon carbide mechanical seals standard on all stainless steel pumps and available in select cast iron and polypropylene models (See page 53 for details.)
- Viton mechanical seals standard on cast iron and polypropylene models
- Standard shafts are stainless steel
- Stainless steel wear ring for extended life on cast iron models
- Hydraulically-driven pumps are max performance tested using proprietary software

Gear Driven, Cast Iron

Series 9000C-O

- Planetary oil-bath gear drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Weight: 44 lbs./20 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output	Locking Collar and Mounting Clip
9006C-O	117	78	600	1 ⅜" 6 spline 540 rpm female	x
9008C-O	110	75	1000	1 ⅜" 21 spline 1000 rpm female	x
9016C-O	117	78	600	1" Solid Shaft	
9018C-O	110	75	1000	1" Solid Shaft	
9028C-O	110	75	1000	1 ¾" 20 spline 1000 rpm female	x
90029	110	75	1000	38mm 8 spline 1000 rpm female	x
3430-0334	Seal and o-ring repair kit				
3430-0591	Life Guard® silicon carbide seal kit				

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9006C-O-B)

9006C-O, 9016C-O — **U.S. Units**

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
500	97	86	71	47		
540	106	96	87	70	47	
600	117	113	104	96	82	63

9008C-O, 9018C-O, 9028C-O, 90029 — **U.S. Units**

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
800	82	70	53			
900	96	88	76	60	24	
1000	110	102	96	86	70	46

9006C-O, 9016C-O — **Metric Units**

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
500	367	326	269	178		
540	401	363	329	265	178	
600	443	428	394	363	310	238

9008C-O, 9018C-O, 9028C-O, 90029 — **Metric Units**

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
800	310	265	201			
900	363	333	288	227	91	
1000	416	386	363	326	265	174

Gear Driven, Cast Iron, Self-Priming

Series 9000C-O-SP

- Planetary oil-bath gear drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Weight: 62 lbs./28.2 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output	Locking Collar and Mounting Clip
9006C-O-SP	119	77	600	1 ⅜" 6 spline 540 rpm	x
9016C-O-SP	119	77	600	1" solid shaft	
9028C-O-SP	117	69	1000	1 ¾" 20 spline 1000 rpm	x
3430-0334	Seal and o-ring repair kit				
3430-0591	Life Guard® silicon carbide seal kit				
3430-0480SP	Self priming chamber kit				

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9006C-O-SP-B)

9006C-O-SP, 9016C-O-SP — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
500	101	95	77	51	12		
540	111	109	94	74	47	11	
600	119	118	112	97	79	54	23

9028C-O-SP — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
800	91	81	57	19		
940	105	101	84	60	25	
1000	117	114	104	87	65	33

9006C-O-SP, 9016C-O-SP — **Metric Units**

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
500	382	360	291	193	45		
540	420	413	356	280	178	42	
600	450	447	424	367	299	204	87

9028C-O-SP — **Metric Units**

RPM	LPM at .07 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
800	344	307	216	72		
940	397	382	318	227	95	
1000	443	432	394	329	246	125

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Gear-Driven, Polypropylene

Series 9000P-O

- Planetary oil-bath gear drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Polypropylene
- Impeller: Polypropylene
- Pump shaft rotation: CCW*
- Weight: 37 lbs./16.8 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output	Locking Collar Kit
9006P-O	97	83	600	1 ⅜" 6 spline 540 rpm female	x
9008P-O	94	67	1000	1 ⅜" 21 spline 1000 rpm female	x
9016P-O	97	83	600	1" solid shaft	
9018P-O	94	67	1000	1" solid shaft	
3430-0333	Seal and o-ring repair kit				
3430-0590	Life Guard® silicon carbide seal kit				

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9006P-O-B)

9006P-O, 9016P-O — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
450	73	63	52	34			
500	81	77	67	55	37		
550	88	85	78	68	56	36	
600	97	97	93	85	76	66	52

9008P-O, 9018P-O — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
800	70	64	53	34		
900	83	79	70	58	42	
1000	96	92	86	78	67	52

9006P-O, 9016P-O — **Metric Units**

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
450	276	239	196	129			
500	307	291	255	208	142		
550	333	323	295	257	210	137	
600	367	367	354	323	288	249	198

9008P-O, 9018P-O — **Metric Units**

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
800	314	243	200	128		
900	363	299	265	220	161	
1000	327	348	327	296	254	198

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Gear-Driven, Cast Iron

Series 9047C

- Parallel oil-bath gear drive
- Max. fluid temperature: 140º F/60º C
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Life Guard® silicon carbide seal standard for increased life and dry-run protection
- Life Guard® seals are the industry standard on OEM equipment
- Available in NPT and BSP self-priming versions

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output	Port Sizes
9047C	213	180	540	1-3/8" 540 RPM Male	2" NPT inlet x 1-1/2" NPT outlet
9047C-SP	195	170	540	1-3/8" 540 RPM Male	2" NPT inlet x 2" NPT outlet
9047C-BSP	195	170	540	1-3/8" 540 RPM Male	2" BSP inlet x 2" BSP outlet
3430-0779	Seal & O-ring repair kit				

9047C — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI	GPM at 150 PSI	GPM at 160 PSI	GPM at 170 PSI	GPM at 180 PSI
450	189	189	188	188	186	184	176	168	140	119	66	-	-	-	-	-	-
500	199	199	199	198	197	196	195	194	193	186	172	145	106	-	-	-	-
540	213	211	211	210	209	209	208	207	206	205	201	195	192	174	148	116	66

9047C — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 8.9 BAR	LPM at 9.7 BAR	LPM at 10.3 BAR	LPM at 11.0 BAR	LPM at 11.7 BAR	LPM at 12.4 BAR
450	715	715	712	710	705	695	665	635	530	450	250	-	-	-	-	-	-
500	755	755	755	750	745	742	740	735	730	705	650	550	400	-	-	-	-
540	805	800	800	795	790	790	789	785	778	775	760	740	725	660	560	440	250

9047C-SP, 9047C-BSP — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI	GPM at 150 PSI	GPM at 160 PSI
450	174	173	169	166	157	140	119	92	61	26	-	-	-	-	-
500	185	182	180	178	174	172	164	153	132	119	95	69	20	-	-
540	195	194	194	193	190	186	184	181	174	162	148	127	99	79	53

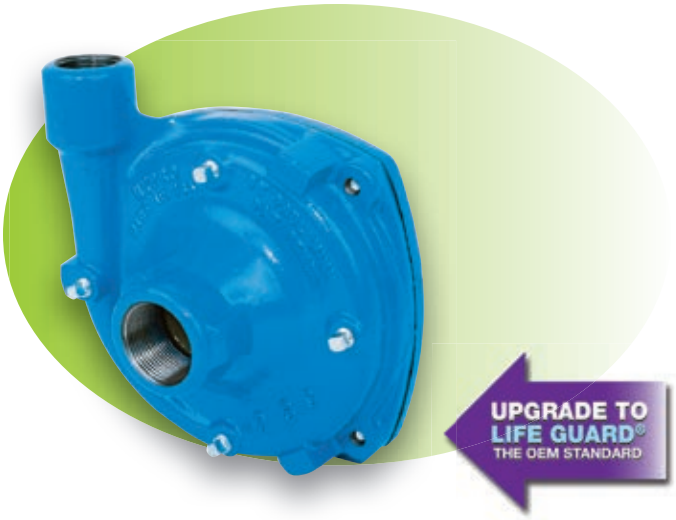
9047C-SP, 9047C-BSP — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 8.9 BAR	LPM at 9.7 BAR	LPM at 10.3 BAR	LPM at 11.0 BAR
450	660	655	640	630	595	530	450	350	230	100	-	-	-	-	-
500	700	690	680	675	660	650	620	580	500	450	360	260	75	-	-
540	740	735	735	730	720	705	695	685	660	615	560	480	375	300	200

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron & Stainless Steel

Series 9202C and 9202S



EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount, direct drive
- Port sizes: 1¼" NPT inlet, 1" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon (cast iron standard); polypropylene (stainless standard)
- Pump shaft rotation: CCW* (9202S-R is CW)
- Weight: 18 lbs./8.2 kg
- Pump seals: Viton/ceramic standard (Life Guard® silicon carbide (B) and Buna-N ceramic available); Life Guard® silicon carbide standard in stainless steel pumps
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9202C	103	170	6000	⅝" solid shaft
9202S	103	170	6000	⅝" stainless steel shaft
9202S-R	103	170	6000	⅝" stainless steel shaft
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9202C-B)

9202C, 9202S, 9202S-R — U.S. Units

	10 PSI		20 PSI		40 PSI		60 PSI		80 PSI		100 PSI		120 PSI		140 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	50	1.3	46	1.2												
3600	67	3.7	66	3.7	62	3.5	34	2.6								
4200	75	5.7	75	5.7	75	5.7	66	5.3	44	4.2						
5000	88	9.3	88	9.3	88	9.3	88	9.3	77	8.6	60	7.5	24	6.4		
6000	103	15.6	103	15.6	103	15.6	103	15.6	103	15.6	100	15.5	91	14.8	75	14

9202C, 9202S, 9202S-R — Metric Units

	0.7 BAR		1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR		8.3 BAR		9.7 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	189	1.3	174	1.2												
3600	254	3.7	250	3.7	235	3.5	129	2.6								
4200	284	5.7	284	5.7	284	5.7	250	5.3	167	4.2						
5000	333	9.3	333	9.3	333	9.3	333	9.3	291	8.6	227	7.5	91	6.4		
6000	390	15.6	390	15.6	390	15.6	390	15.6	390	15.6	379	15.5	344	14.8	284	14

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron & Stainless Steel

Series 9203C and 9203S

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount, direct drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- 220 x 200 Universal flange available (U)
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon (cast iron standard); polypropylene (stainless standard); GTX available
- Pump shaft rotation: CCW* (9203C-R is CW)
- Weight: 19 lbs./8.6 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Stainless steel models now available with universal flanges

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9203C †	140	170	6000	⅝" solid shaft
9203C-R (CW)	140	170	6000	⅝" solid shaft
9203S †	140	170	6000	⅝" stainless steel shaft
9203S-R (CW)	140	170	6000	⅝" stainless steel shaft
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

† Universal Flange (220 x 200) - Add Suffix "U" (i.e.: 9203C-U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9203C-B)

9203C, 9203S, 9203C-R, 9203S-R — U.S. Units

	10 PSI		20 PSI		40 PSI		60 PSI		80 PSI		100 PSI		120 PSI		140 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	80	1.9	65	1.8												
3600	105	5.3	105	5.3	92	5.0	50	3.7								
4200	122	8.2	120	7.9	115	7.7	98	7.1	56	5.3						
5000	140	12.6	140	12.6	138	12.6	130	12.2	118	11.6	88	9.9	45	7.2		
5500	140	14.9	140	14.9	138	14.9	135	15.2	130	15.2	118	14.4	90	12.5	60	9.8
6000	140	17.1	140	17.1	140	17.5	140	18.0	135	18.2	132	18	125	18.2	103	16.3

9203C, 9203S, 9203C-R, 9203S-R — Metric Units

	0.7 BAR		1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR		8.3 BAR		9.7 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	303	1.9	246	1.8												
3600	397	5.3	397	5.3	348	5.0	189	3.7								
4200	462	8.2	454	7.9	435	7.7	371	7.1	212	5.3						
5000	530	12.6	530	12.6	522	12.6	492	12.2	447	11.6	333	9.9	170	7.2		
5500	530	14.9	530	14.9	522	14.9	511	15.2	492	15.2	447	14.4	341	12.5	227	9.8
6000	530	17.1	530	17.1	530	17.5	530	18.0	511	18.2	500	18	473	18.2	409	16.3

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron & Stainless Steel, Self-Priming

Series 9203C-SP and 9203S-SP

EXTEND PUMP LIFE WITH
STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount, direct drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet (9203C-SP, 9203S-SP)
- Port sizes: 2" NPT inlet, 2" NPT outlet (9203C-R-SP)
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon (cast iron standard); polypropylene (stainless steel); GTX available
- Pump shaft rotation: CCW* (9203C-R-SP is CW)
- Weight: 38 lbs./17.3 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9203C-SP	120	157	6000	⅝" solid shaft
9203C-R-SP (CW)	140	155	6000	⅝" solid shaft
9203S-SP	120	157	6000	⅝" stainless steel shaft
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			
3430-0480SP	Self priming chamber kit			
3430-0482SP	Self priming chamber kit for reverse rotation ONLY			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9203C-SP-B)

9203C-R-SP — U.S. Units

	20 PSI		40 PSI		60 PSI		80 PSI		100 PSI		120 PSI		140 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3600	80	3.8	43	2.9										
4200	102	6.1	76	5.4	38	4								
5000	127	10.5	109	9.8	86	8.7	55	7.2	18	5.4				
5500	135	13.5	125	13.1	110	12.3	83	10.9	57	9.3	21	6.9		
6000	138	15.7	132	15.7	122	15.1	111	14.1	93	13.2	67	12.2	32	9.5

9203C-R-SP — Metric Units

RPM	LPM at 1.4 BAR	HP	LPM at 2.8 BAR	HP	LPM at 4.1 BAR	HP	LPM at 5.5 BAR	HP	LPM at 6.9 BAR	HP	LPM at 8.3 BAR	HP	LPM at 9.7 BAR	HP
3600	303	3.8	163	2.9										
4200	386	6.1	288	5.4	144	4								
5000	481	10.5	413	9.8	326	8.7	208	7.2	68	5.4				
5500	511	13.5	473	13.1	416	12.3	314	10.9	216	9.3	79	6.9		
6000	522	15.7	500	15.7	462	15.1	420	14.1	352	13.2	254	12.2	121	9.5

9203C-SP, 9203S-SP — U.S. Units

	20 PSI		40 PSI		60 PSI		80 PSI		100 PSI		120PSI		140 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3600	101	4.2	60	3.4										
4200	118	6.7	97	6.1	54	4.7								
5000	120	10.1	119	10.3	110	10.1	78	8.7	25	5.8				
5500	120	12.1	119	12.7	116	13.2	110	12.8	79	11.0	29	7.6		
6000	120	14.3	119	15.0	116	15.7	114	16.0	110	16.0	82	14.0	40	10.6

9203C-SP, 9203S-SP — Metric Units

RPM	LPM at 1.4 BAR	HP	LPM at 2.8 BAR	HP	LPM at 4.1 BAR	HP	LPM at 5.5 BAR	HP	LPM at 6.9 BAR	HP	LPM at 8.3 BAR	HP	LPM at 9.7 BAR	HP
3600	382	4.2	227	3.4										
4200	447	6.7	367	6.1	204	4.7								
5000	458	10.1	450	10.3	416	10.1	295	8.7	95	5.8				
5500	458	12.1	450	12.7	439	13.2	416	12.8	299	11.0	110	7.6		
6000	458	14.3	450	15.0	439	15.7	432	16.0	416	16.0	310	14.0	157	10.6

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron

Series 9205C

- Pedestal mount, direct drive
- Port sizes: 2" NPT inlet, 1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Weight: 47 lbs./21.4 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9205C	180	196	4200	⅞" solid keyed shaft
3430-0537	Seal and o-ring repair kit			
3430-0646	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9205C-B)

9205C **U.S. Units**

	20 PSI		40 PSI		60 PSI		80 PSI		100 PSI		120 PSI		140 PSI		160 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3000	165	11.4	164	11.7	154	11.6	104	9.5								
3400	175	14.8	175	15.5	173	16.3	168	16.3	127	14.2	43	8.7				
3800	180	18.2	180	18.8	180	19.8	178	21.1	173	21.8	156	20.7	112	17.5		
4200	180	21.9	180	22.0	180	24.0	180	25.3	180	26.9	177	27.9	173	28.1	157	26.4

9205C **Metric Units**

	1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR		8.3 BAR		9.7 BAR		11.0 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
3000	625	11.4	621	11.7	583	11.6	394	9.5								
3400	662	14.8	662	15.5	655	16.3	636	16.3	481	14.2	163	8.7				
3800	681	18.2	681	18.8	681	19.8	674	21.1	655	21.8	591	20.7	424	17.5		
4200	681	21.9	681	22.0	681	24.0	681	25.3	681	26.9	670	27.9	655	28.1	594	26.4

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron, Self-Priming

Series 9205C-SP

- Pedestal mount, direct drive
- Port sizes: 2" NPT inlet, 2" NPT outlet (9205C-SP)
  2" BSP inlet, 2" BSP outlet (9205C-BSP)
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Weight: 48 lbs./21.8 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9205C-SP	160	145	3800	⅞" solid keyed shaft
9205C-BSP	160	145	3800	⅞" solid keyed shaft
3430-0537	Seal and o-ring repair kit			
3430-0646	Life Guard® silicon carbide seal kit			
3430-0481SP	Self priming chamber kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9205C-SP-B)

9205C-SP, 9205C-BSP — U.S. Units

RPM	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI	GPM at 150 PSI
3400	155	154	153	150	131	110	84	35				
3600	158	157	156	155	153	137	114	88	58			
3800	160	159	158	157	156	155	142	123	102	74	28	
4000	194	193	190	186	184	181	174	162	148	127	99	79

9205C-SP, 9205C-BSP — Metric Units

RPM	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 8.9 BAR	LPM at 9.7 BAR	LPM at 10.3 BAR
3400	587	583	579	568	496	416	318	132				
3600	598	594	591	587	579	518	432	333	220			
3800	606	602	598	594	591	587	538	466	383	280	106	
4000	735	730	720	705	695	685	660	615	560	480	375	300

Pedestal Mount, Cast Iron & Stainless Steel

Series 9206C and 9206S

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount, direct drive
- Port sizes: 2" NPT inlet, 1½" NPT outlet
- 220 x 220 (U) and 300 x 220 (-3U models) universal flange available
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon (standard in cast iron); polypropylene (standard in stainless steel); GTX available
- Pump shaft rotation: CCW*
- Weight: 23 lbs./10.5 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9206C*	225	80	4200	⅝" solid shaft
9206S	225	80	4200	⅝" stainless steel shaft
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

*Universal Flange (220 x 220) - Add Suffix "U" (i.e.: 9206C-U)
Universal Flange (300 x 220) - Add Suffix "3U" (i.e.: 9206C-3U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9206C-B)

9206C, 9206S, 9206C-U, 9206S-3U — U.S. Units

	10 PSI		20 PSI		30 PSI		40 PSI		50 PSI		60 PSI		70 PSI		80 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	171	2.3	114	2.0												
3600	225	7.0	225	7.1	225	7.5	196	7.3	143	6.1						
4200	225	9.2	225	9.4	225	10.7	225	11.0	225	11.3	202	10.9	158	9.5	80	6.4

9206C, 9206S, 9206C-U, 9206S-3U — Metric Units

	0.7 BAR		1.4 BAR		2.1 BAR		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	647	2.3	432	2.0												
3600	852	7.0	852	7.1	852	7.5	742	7.3	541	6.1						
4200	852	9.2	852	9.4	852	10.7	852	11.0	852	11.3	765	10.9	598	9.5	303	6.4

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron, Self-Priming

Series 9208

- 5” SAE-flanged inlet x 4” SAE-flanged outlet
- 316 stainless steel impeller for superior corrosion resistance
- 9308 versions include a two-piece shaft design with a 416 stainless steel wet end and hardened 8620 drive end for extended life
- 9208 version includes a solid 416 stainless steel shaft for corrosion resistance
- The 9208 shaft diameter is 1.63” (41.3 mm) to allow direct coupling to electric motors
- Life Guard® silicon carbide seal for premium abrasion resistance and dry run protection
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9208C	1400	85	3000	1-⅝" solid keyed Stainless Steel shaft
3430-0604	Life Guard® silicon carbide seal kit			

9208C **U.S. Units**

RPM	20 PSI		40 PSI		60 PSI	
	GPM	HP	GPM	HP	GPM	HP
1750	607	10.8				
2500	1071	32.3	852	31.0	474	24.4
2750	1052	38.5	1027	42.0	788	38.2

9208C **Metric Units**

RPM	1.4 BAR		2.8 BAR		4.1 BAR	
	LPM	HP	LPM	HP	LPM	HP
1750	2298	10.8				
2500	4054	32.3	3225	31.0	1794	24.4
2750	3982	38.5	3888	42.0	2983	38.2

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Polypropylene

Series 9203P-S and 9500P-S

- Pedestal mount
- For belt and pulley drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Polypropylene
- Impeller: Polypropylene
- Pump shaft rotation: CCW* (9203P-S), CW* (9500P-S)
- Weight: 14 lbs./6.4 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9203P-S	100	82	4200	⅞" solid keyed stainless steel shaft
9500P-S	100	82	4200	⅞" solid keyed stainless steel shaft
3430-0333	Seal and o-ring repair kit			
3430-0590	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9203P-S-B)

9203P-S, 9500P-S — U.S. Units

	10 PSI		20 PSI		30 PSI		40 PSI		50 PSI		60 PSI		70 PSI		80 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	55	1.5	49	1.4	32	1.1										
3600	89	4.4	87	4.3	81	4.1	71	3.9	58	3.6	37	3.1				
4200	100	6.7	100	6.6	97	6.5	90	6.3	82	6.0	71	5.7	60	5.2	39	4.4

9203P-S, 9500P-S — Metric Units

	0.7 BAR		1.4 BAR		2.1 BAR		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	208	1.5	185	1.4	121	1.1										
3600	337	4.4	329	4.3	307	4.1	269	3.9	220	3.6	140	3.1				
4200	379	6.7	379	6.6	367	6.5	341	6.3	310	6.0	269	5.7	227	5.2	148	4.4

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount with 12-volt Clutch, Polypropylene

Series 9253P-C and 9553P-C

- Pedestal mount with DC clutch drive
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Polypropylene
- Impeller: Polypropylene
- Pump shaft rotation: CCW* (9553P-C is CW)
- Weight: 19 lbs./8.6 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment
- Clutch: 12 volt with 5½" diameter A-section pulley

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Rotation
9253P-C	100	82	4200	CCW
9553P-C	100	82	4200	CW
3430-0333	Seal and o-ring repair kit			
3430-0590	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9253P-C-B)

9253P-C, 9553P-C — U.S. Units

	10 PSI		20 PSI		30 PSI		40 PSI		50 PSI		60 PSI		70 PSI		80 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	55	1.5	49	1.4	32	1.1										
3600	89	4.4	87	4.3	81	4.1	71	3.9	58	3.6	37	3.1				
4200	100	6.7	100	6.6	97	6.5	90	6.3	82	6.0	71	5.7	60	5.2	39	4.4

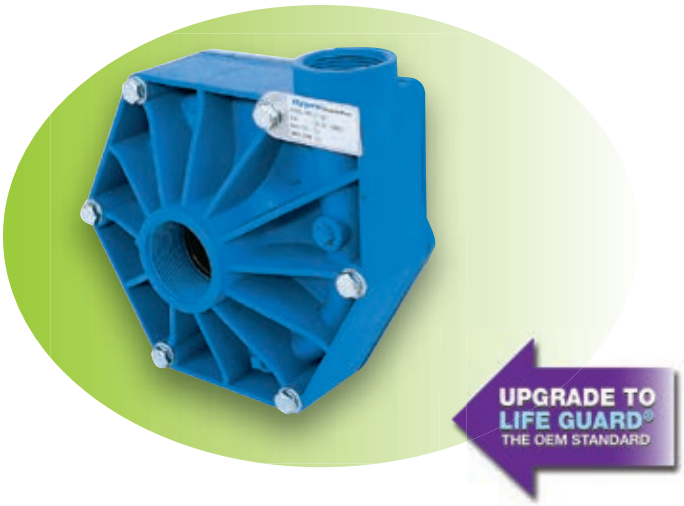
9253P-C, 9553P-C — Metric Units

	0.7 BAR		1.4 BAR		2.1 BAR		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	208	1.5	185	1.4	121	1.1										
3600	337	4.4	329	4.3	307	4.1	269	3.9	220	3.6	140	3.1				
4200	379	6.7	379	6.6	367	6.5	341	6.3	310	6.0	269	5.7	227	5.2	148	4.4

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Flange Mount, Polypropylene

Series 9513P



- Mounts CW rotation* — Direct mount to gasoline engines
- Shaft: ¾" hollow, 416 stainless steel
- Port size: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Polypropylene
- Impeller: Polypropylene
- Flange bolt pattern for 5 hp gas engine
- Weight: 19 lbs./8.6 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output
9513P	91	65	3600	¾" hollow keyed stainless steel shaft for direct coupling to 5hp engine
3430-0333	Seal and o-ring repair kit			
3430-0590	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9513P-B)

9513P — Based on 5.5 HP HONDA Engine **U.S. Units**

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
92	91	88	81	70	58	42

9513P — Based on 5.5 HP HONDA Engine **Metric Units**

LPM at 0.0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
348	344	333	307	265	220	159

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Clutch-Driven, Cast Iron & Stainless Steel

Series 9262C-C and 9262S-C

- Pedestal mount with DC clutch drive
- Shaft: ⅝" solid
- Port sizes: 1¼" NPT inlet, 1" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Available in cast iron and 316 stainless steel for extended pump life
- Impeller: Nylon (standard in cast iron); polypropylene (standard in stainless steel); GTX available
- Pump shaft rotation: CCW* (CW for -CR models)
- Weight: 23 lbs./10.5 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Amp draw: 45 watts at 12 volts

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Rotation
9262C-C	88	114	5000	CCW
9262C-CR	88	114	5000	CW
9262S-C	145	114	5000	CCW
9262S-CR	145	114	5000	CW
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9262C-CB)

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9262C-C, 9262C-CR — U.S. Units

	10 PSI		20 PSI		40 PSI		60 PSI		80 PSI		100 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	50	1.3	46	1.2								
3600	67	3.7	66	3.7	62	3.5	25	2.8				
4200	75	5.7	75	5.7	75	5.7	66	5.3	40	4.6		
5000	88	9.3	88	9.3	88	9.3	88	9.3	77	8.6	60	7.5

9262C-C, 9262C-CR — Metric Units

	0.7 BAR		1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	189	1.3	174	1.2								
3600	254	3.7	250	3.7	235	3.5	95	2.8				
4200	284	5.7	284	5.7	284	5.7	250	5.3	151	4.6		
5000	333	9.3	333	9.3	333	9.3	333	9.3	291	8.6	227	7.5

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

9262S-C, 9262S-CR — U.S. Units

	10 PSI		20 PSI		40 PSI		60 PSI		80 PSI		100 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	73	1.4	55	1.2								
3600	112	4.5	109	4.5	86	4.0	25	2.8				
4200	128	7.1	127	7.1	116	6.8	92	6.1	40	4.6		
5000	145	11.8	145	11.8	143	11.7	133	11.3	115	10.4	86	9.1

9262S-C, 9262S-CR — Metric Units

	0.7 BAR		1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	276	1.4	208	1.2								
3600	424	4.5	413	4.5	326	4.0	95	2.8				
4200	484	7.1	481	7.1	439	6.8	348	6.1	151	4.6		
5000	549	11.8	549	11.8	541	11.7	503	11.3	435	10.4	326	9.1

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Pedestal Mount, Cast Iron & Stainless Steel, Self-Priming, Clutch-Driven

Series 9263C-SP and 9263S-SP

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount with DC clutch drive
- Max fluid temperature: 140° F/60° C
- Impeller: Nylon (standard in cast iron); polypropylene (standard in stainless steel); GTX available
- Pump seals: Cast Iron models - Viton/ceramic standard;
  Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models - Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Amp draw: 45 watts at 12 volts
- 5" diameter A-section pulley

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Rotation	Port Sizes
9263C-CR-SP	127	110	5000	CW	2" NPT inlet x 2" NPT outlet
9263C-CR-SP-B	127	110	5000	CW	2" NPT inlet x 2" NPT outlet
9263C-C-SP	120	110	5000	CCW	1-½" NPT inlet x 1-¼" NPT outlet
9263S-C-SP	120	110	5000	CCW	1-½" NPT inlet x 1-¼" NPT outlet
3430-0332	Seal and o-ring repair kit				
3430-0589	Life Guard® silicon carbide seal kit				

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9263-CR-SP-B)

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9263C-CR-SP, 9263C-CR-SP-B — **U.S. Units**

RPM	20 PSI		30 PSI		40 PSI		50 PSI		60 PSI		70 PSI		80 PSI		90 PSI		100 PSI	
	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3600	80	3.8	64	3.4	43	2.9	17	2.6										
4200	102	6.1	90	5.8	76	5.4	59	4.7	38	4.0	16	3.7						
5000	127	10.5	119	10.2	109	9.8	99	9.3	86	8.7	70	7.9	55	7.2	37	6.2	18	5.4

9263C-CR-SP, 9263C-CR-SP-B — **Metric Units**

RPM	1.4 BAR		2.1 BAR		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR		6.2 BAR		6.9 BAR	
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
3600	303	3.8	242	3.4	163	2.9	64	2.6										
4200	386	6.1	341	5.8	288	5.4	223	4.7	144	4.0	61	3.7						
5000	481	10.5	450	10.2	413	9.8	375	9.3	326	8.7	265	7.9	208	7.2	140	6.2	68	5.4

9263C-C-SP, 9263S-C-SP — **U.S. Units**

RPM	20 PSI		30 PSI		40 PSI		50 PSI		60 PSI		70 PSI		80 PSI		90 PSI		100 PSI	
	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3600	101	4.2	84	3.9	60	3.4	25	2.6										
4200	118	6.7	112	6.7	97	6.1	79	5.5	54	4.7	23	4.0						
5000	120	10.1	120	10.3	119	10.3	117	10.2	110	10.1	96	9.6	78	8.7	52	7.2	25	5.8

9263C-C-SP, 9263S-C-SP — **Metric Units**

RPM	1.4 BAR		2.1 BAR		2.8 BAR		3.4 BAR		4.1 BAR		4.8 BAR		5.5 BAR		6.2 BAR		6.9 BAR	
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
3600	382	4.2	318	3.9	227	3.4	95	2.6										
4200	447	6.7	424	6.7	367	6.1	299	5.5	204	4.7	87	4.0						
5000	454	10.1	454	10.3	450	10.3	443	10.2	416	10.1	363	9.6	295	8.7	197	7.2	95	5.8

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Clutch-Driven, Cast Iron & Stainless Steel

Series 9263C-C and 9263S-C

- Available in cast iron and 316 stainless steel for extended pump life
- Pedestal mount with DC clutch drive
- Shaft: ⅝" solid
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- 220 x 200 universal flange available (U)
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon (standard in cast iron); polypropylene (standard in stainless steel); GTX available
- Pump shaft rotation: CCW* (CW for - CR models)
- Weight: 23 lbs./10.5 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Amp draw: 45 watts at 12 volts
- Stainless steel models now available with universal flanges

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Rotation
9263C-C †	140	114	5000	CCW
9263C-CR	140	114	5000	CW
9263S-C †	140	114	5000	CCW
9263S-CR	140	114	5000	CW
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

† Universal Flange (220 x 200) - Add Suffix "U" (i.e.: 9263C-C-U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9263C-CB)

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9263C-C, 9263S-C, 9263C-CR, 9263S-CR, 9263C-C-U, 9263S-C-U — U.S. Units

	10 PSI		20 PSI		40 PSI		60 PSI		80 PSI		100 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
2400	80	1.9	65	1.8								
3600	105	5.3	105	5.3	92	5.0	50	3.7				
4200	122	8.2	120	7.9	115	7.7	98	7.1	56	5.3		
5000	140	12.6	140	12.6	138	12.6	130	12.2	118	11.6	88	9.9

9263C-C, 9263S-C, 9263C-CR, 9263S-CR, 9263C-C-U, 9263S-C-U — Metric Units

	0.7 BAR		1.4 BAR		2.8 BAR		4.1 BAR		5.5 BAR		6.9 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
2400	303	1.9	246	1.8								
3600	397	5.3	397	5.3	348	5.0	189	3.7				
4200	462	8.2	454	7.9	435	7.7	371	7.1	212	5.3		
5000	530	12.6	530	12.6	522	12.6	492	12.2	447	11.6	333	9.9

Hydraulically-Driven, Cast Iron & Stainless Steel

Series 9302C and 9302S

- Available in cast iron and 316 stainless steel for extended pump life
- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 1¼" NPT inlet, 1" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Impeller: Cast Iron models – Nylon; Stainless Steel models – Polypropylene
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet-HM Series
- Hydraulic ports on GM1 Series: ⅞" 14 UNF #10 SAE
- Weight: 26 lbs./11.8 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available
- Max. motor psi: 3000

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9302CT-GM1	63	105	3 GPM	Open/Closed
9302C-HM1C	72	150	13 GPM	Open/Closed
9302C-HM2C	65	96	6 GPM	Open/Closed
9302C-HM4C	72	120	7 GPM	Open/Closed
9302ST-GM1	63	105	3 GPM	Open/Closed
9302S-HM1C	72	150	13 GPM	Open/Closed
9302S-HM2C	65	96	6 GPM	Open/Closed
9302S-HM4C	72	120	7 GPM	Open/Closed
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9302CT-GM1-B)

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9302CT-GM1, 9302ST-GM1 — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI
2.0	63	61	44	23						
2.5	63	63	58	45	28	7				
3.0	63	63	63	63	62	54	44	30	17	7

9302CT-GM1, 9302ST-GM1 — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.5 BAR	LPM at 4.2 BAR	LPM at 4.9 BAR	LPM at 5.6 BAR	LPM at 6.3 BAR	LPM at 7.0 BAR
7.6	237	232	167	85						
9.5	237	237	218	170	104	26				
11.4	237	237	237	237	233	203	165	114	64	26

9302C-HM1C, 9302S-HM1C — U.S. Units

Hyd. Flow GPM	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI
11	72	72	71	65	56	45	29				
12	72	72	72	72	70	63	53	40			
13	72	72	72	72	72	71	68	63	56	48	35

9302C-HM1C, 9302S-HM1C — Metric Units

Hyd. Flow LPM	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR	LPM at 9.7 BAR
41.6	273	273	269	246	212	170	110				
45.4	273	273	273	273	265	238	201	151			
49.2	273	273	273	273	273	269	257	238	212	182	132

9302C-HM2C, 9302S-HM2C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
4	54	49	42	34	19				
5	59	57	50	42	34	25	11		
6	64	63	60	52	44	36	27	18	9

9302C-HM2C, 9302S-HM2C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
15.1	204	185	159	129	72				
18.9	223	216	189	159	129	95	42		
22.7	244	238	227	197	167	136	102	68	34

9302C-HM4C, 9302S-HM4C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
6	65	63	59	51	41	29	12				
7	72	72	71	67	60	51	42	31	17		
8	72	72	72	72	70	64	57	50	42	32	16

9302C-HM4C, 9302S-HM4C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
22.7	246	238	223	193	155	110	45				
26.5	273	273	269	254	227	193	159	117	64		
30.3	273	273	273	273	265	242	216	189	159	121	61

Hydraulically-Driven, Cast Iron & Stainless Steel

Series 9303C and 9303S

- Available in cast iron and 316 stainless steel for extended pump life
- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- 220 x 200 universal flange available (U)
- Max. fluid temperature: 140°F/60°C
- Impeller: Cast Iron models – Nylon; (GTX available) Stainless Steel models – Polypropylene
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Weight: 26 lbs./11.8 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available
- Max. motor psi: 3000
- Stainless steel models now available with universal flanges

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9303C-HM1C	114	130	13 GPM	Open/Closed
9303C-HM2C	97	95	6 GPM	Open/Closed
9303C-HM3C	125	98	24 GPM	Open/Closed
9303C-HM4C	115	93	7 GPM	Open/Closed
9303C-HM5C	147	145	16 GPM	Open/Closed
9303S-HM1C	114	130	13 GPM	Open/Closed
9303S-HM2C	97	95	6 GPM	Open/Closed
9303S-HM3C	125	98	24 GPM	Open/Closed
9303S-HM4C	115	93	7 GPM	Open/Closed
9303S-HM5C	147	145	16 GPM	Open/Closed
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

Universal Flange (220 x 200) - Add suffix "U" (i.e.: 9303C-HM3C-U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9303C-HM1C-B)

EXTEND PUMP LIFE WITH STAINLESS STEEL

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- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9303C-HM1C, 9303S-HM1C — U.S. Units

Hyd. Flow GPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI
11	104	101	96	90	82	71	60	47	31		
12	110	109	107	105	101	92	81	67	53	36	9
13	112	111	109	107	104	102	96	85	76	63	33

9303C-HM1C, 9303S-HM1C — Metric Units

Hyd. Flow LPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR
41.6	394	382	363	341	310	269	227	178	117		
45.4	416	413	405	397	382	348	307	254	201	136	34
49.2	424	420	413	405	394	386	363	322	288	238	125

9303C-HM2C, 9303S-HM2C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
4	70	60	45	25					
5	83	74	65	50	37	22	4		
6	94	86	80	72	62	50	37	22	7

9303C-HM2C, 9303S-HM2C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
15.1	265	227	170	95					
18.9	314	280	246	189	140	83	15		
22.7	356	326	303	273	235	189	140	83	26

9303C-HM3C, 9303S-HM3C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
15	100	92	83	69	47				
18	116	114	108	100	90	76	55	33	
20	125	123	120	114	107	96	85	71	50

9303C-HM3C, 9303S-HM3C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
56.8	379	348	314	261	178				
68.1	439	432	409	379	341	288	208	125	
75.7	473	466	454	432	405	363	322	269	189

9303C-HM4C, 9303S-HM4C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
5	84	76	66	52	34				
6	97	92	86	78	67	50	25		
7	110	104	98	91	82	69	55	38	14

9303C-HM4C, 9303S-HM4C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
18.9	318	288	250	197	129				
22.7	367	348	326	295	254	189	95		
26.5	416	394	371	344	310	261	208	144	53

9303C-HM5C, 9303S-HM5C — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI
13	113	105	97	86	73	59	44				
14	128	123	116	108	98	88	74	61	44		
15	135	132	126	119	110	100	89	77	66	50	20
16	145	142	137	132	126	117	107	95	83	70	55

9303C-HM5C, 9303S-HM5C — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR
49.2	428	397	367	326	276	223	167				
53.0	485	466	439	409	371	333	280	231	167		
56.8	511	500	477	450	416	379	337	291	250	189	76
60.6	549	538	519	500	477	443	405	360	314	265	208

Hydraulically-Driven, Cast Iron & Stainless Steel, Self-Priming

Series 9303C-SP and 9303S-SP

- Available in cast iron and 316 stainless steel for extended pump life
- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Impeller: Cast Iron models – Nylon; (GTX available) Stainless Steel models – Polypropylene
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Max. motor psi: 3000
- Weight: 38 lbs./17.3 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9303C-HM1C-SP	122	130	13 GPM	Open/Closed
9303C-HM2C-SP	104	80	6 GPM	Open/Closed
9303C-HM3C-SP	120	95	24 GPM	Open/Closed
9303C-HM4C-SP	99	97	7 GPM	Open/Closed
9303C-HM5C-SP	140	140	16 GPM	Open/Closed
9303S-HM1C-SP	114	130	13 GPM	Open/Closed
9303S-HM2C-SP	97	95	6 GPM	Open/Closed
9303S-HM3C-SP	125	98	20 GPM	Open/Closed
9303S-HM4C-SP	115	93	7 GPM	Open/Closed
9303S-HM5C-SP	147	145	16 GPM	Open/Closed
3430-0589	Life Guard® silicon carbide seal kit			
3430-0480SP	Self priming chamber kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9303C-HM1C-SP-B)

EXTEND PUMP LIFE WITH STAINLESS STEEL

- Fact: Chemical corrosion, pump cavitation, and abrasive wear are key factors in pump life
- 316 Stainless Steel pumps provide superior chemical corrosion resistance, while maintaining material strength to prolong the life against abrasive wear
- 316 Stainless Steel resists cavitation pitting of pumps, extending the wear life
- Drop in replacements for cast iron pumps

9303C-HM1C-SP, 9303S-HM1C-SP — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
11	119	111	102	89	75	58	42	25			
12	122	120	113	104	94	81	69	55	39	24	
13	122	121	119	111	102	90	78	65	52	39	26

9303C-HM1C-SP, 9303S-HM1C-SP — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
41.6	450	420	386	337	284	220	159	95			
45.4	462	454	428	394	356	307	261	208	148	91	
49.2	462	458	450	420	386	341	295	246	197	148	98

9303C-HM2C-SP, 9303S-HM2C-SP — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
4	57	43	26				
5	80	67	53	39	23		
6	98	88	78	67	55	42	29

9303C-HM2C-SP, 9303S-HM2C-SP — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
15.1	216	163	98				
18.9	303	254	201	148	87		
22.7	371	333	295	254	208	159	110

9303C-HM3C-SP, 9303S-HM3C-SP — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI
15	104	90	74	55	23			
18	119	113	102	87	69	46		
20	120	119	114	106	91	74	55	33

9303C-HM3C-SP, 9303S-HM3C-SP — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR
56.8	394	341	280	208	87			
68.1	450	428	386	329	261	174		
75.7	454	450	432	401	344	280	208	125

9303C-HM4C-SP, 9303S-HM4C-SP — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI
5	72	60	46	30	15			
6	87	79	66	52	38	27	13	
7	95	91	84	71	58	42	30	16

9303C-HM4C-SP, 9303S-HM4C-SP — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR
18.9	273	227	174	114	57			
22.7	329	299	250	197	144	102	49	
26.5	360	344	318	269	220	159	114	61

9303C-HM5C-SP, 9303S-HM5C-SP — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
13	114	111	102	89	75	58	42	25			
14	118	117	113	104	94	81	69	55	39	24	
15	122	121	119	111	102	90	78	65	52	39	26

9303C-HM5C-SP, 9303S-HM5C-SP — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
49.2	432	420	386	337	284	220	159	95			
53.0	447	443	428	394	356	307	261	208	148	91	
56.8	462	458	450	420	386	341	295	246	197	148	98

Hydraulically-Driven, Polypropylene

Series 9303P

- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Polypropylene
- Impeller: Polypropylene
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Weight: 21 lbs./9.5 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available
- Max. motor psi: 3000

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9303P-HM1C	110	130	13 GPM	Open/Closed
9303P-HM2C	82	95	6 GPM	Open/Closed
9303P-HM3C	110	93	24 GPM	Open/Closed
9303P-HM4C	82	84	7 GPM	Open/Closed
9303P-HM5C	113	120	16 GPM	Open/Closed
3430-0445	Seal and o-ring repair kit			
3430-0593	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9303P-HM1C-B)

9303P-HM1C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI
11	93	90	86	80	74	67	59	49	36	18		
12	102	99	95	91	87	81	74	66	55	39	19	
13	109	106	103	99	94	88	82	74	65	54	42	28

9303P-HM1C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR
41.6	352	341	326	303	280	254	223	185	136	68		
45.4	386	375	360	344	329	307	280	250	208	148	72	
49.2	413	401	390	375	356	333	310	280	246	204	159	106

9303P-HM2C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
5	65	56	46	38	20				
6	74	72	64	56	48	38	21		
7	80	75	70	62	57	48	40	28	9

9303P-HM2C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
18.9	246	212	174	144	76				
22.7	280	273	242	212	182	144	79		
26.5	303	284	265	235	216	182	151	106	34

9303P-HM3C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
15	85	80	70	60	44				
18	100	97	92	84	76	63	48		
20	109	108	104	99	90	82	71	60	39

9303P-HM3C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
56.8	322	303	265	227	167				
68.1	379	367	348	318	288	238	182		
75.7	413	409	394	375	341	310	269	227	148

9303P-HM4C — U.S. Units

Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI
5	60	52	41	26				
6	70	66	58	48	37	21		
7	80	76	70	63	55	45	32	15

9303P-HM4C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR
18.9	227	197	155	98				
22.7	265	250	220	182	140	79		
26.5	303	288	265	238	208	170	121	57

9303P-HM5C — U.S. Units

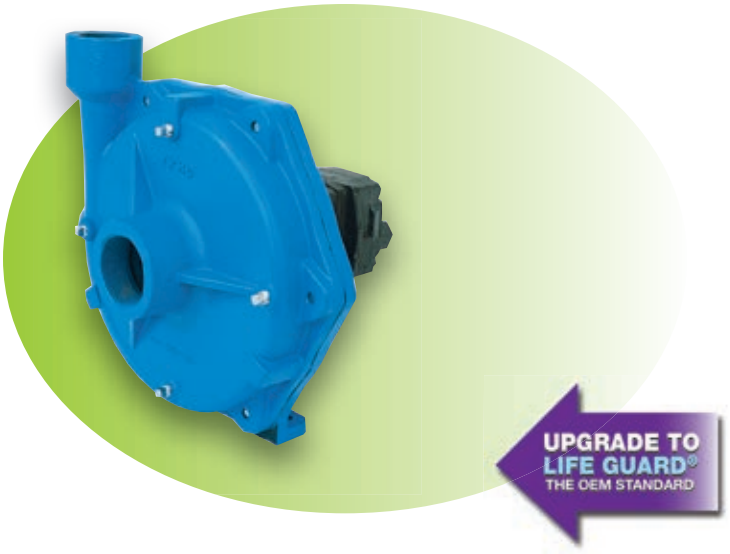
Hyd. Flow GPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
12	94	92	86	78	68	58	44	15			
13	100	98	94	88	79	70	60	48	25		
14	108	107	104	100	94	86	77	68	57	42	
15	113	112	110	106	100	93	86	78	68	56	40

9303P-HM5C — Metric Units

Hyd. Flow LPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
45.4	356	348	326	295	257	220	167	57			
49.2	379	371	356	333	299	265	227	182	95		
53.0	409	405	394	379	356	326	291	257	216	159	
56.8	428	424	416	401	379	352	326	295	257	212	151

Hydraulically-Driven, Cast Iron

Series 9305C



- Available in cast iron
- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 2" NPT inlet, 1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Max. motor psi: 3000
- Weight: 48 lbs./21.8 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9305C-HM3C	182	156	19	Open/Closed
3430-0500	Seal and o-ring repair kit			
3430-0601	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9305C-HM3C-B)

9305C-HM3C **U.S. Units**

Hyd. Flow GPM	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI
17	173	164	148	127	97	70	44	14		
18	177	175	168	154	135	109	87	62	34	
19	180	179	177	167	151	134	115	95	72	44

9305C-HM3C **Metric Units**

Hyd. Flow LPM	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR	LPM at 9.7 BAR
64.4	655	621	560	481	367	265	167	53		
68.1	670	662	636	583	511	413	329	235	129	
71.9	685	678	670	632	572	507	435	360	273	167

Hydraulically-Driven, Cast Iron, Self-Priming

Series 9305C-SP and 9305C-BSP

- Available in cast iron
- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 2" NPT inlet, 2" NPT outlet (Model 9305C-HM3C-SP), 2" BSP inlet, 2" BSP outlet (Model 9305C-HM3C-BSP)
- Max. fluid temperature: 140°F/60°C
- Impeller: Nylon
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Max. motor psi: 3000
- Weight: 59 lbs./26.8 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9305C-HM3C-SP	178	154	19	Open/Closed
9305C-HM3C-BSP	178	154	19	Open/Closed
3430-0601	Life Guard® silicon carbide seal kit			
3430-0481SP	Self priming chamber kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9305C-HM3C-B-SP)

9305C-HM3C-SP, 9305C-HM3C-BSP — U.S. Units

Hyd. Flow GPM	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI
17	159	143	123	104	84	60	40	19		
18	165	157	140	124	107	90	70	50	32	13
19	172	170	161	146	124	106	87	65	46	27

9305C-HM3C-SP, 9305C-HM3C-BSP — Metric Units

Hyd. Flow LPM	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR	LPM at 9.7 BAR
64.4	602	541	466	394	318	227	151	72		
68.1	625	594	530	469	405	341	265	189	121	49
71.9	651	644	609	553	469	401	329	246	174	102

Hydraulically-Driven, Cast Iron & Stainless Steel

Series 9306C and 9306S

- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 2" NPT inlet, 1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Available in cast iron and 316 stainless steel for extended pump life
- Impeller: Nylon (cast iron models); polypropylene (stainless steel models); (GTX available)
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Max. motor psi: 3000
- Weight: 33 lbs./15 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available
- 220 x 220 (U) Universal flange available (Cast Iron models only)

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9306C-HM1C*	207	130	13	Open/Closed
9306C-HM3C*	214	135	24	Open/Closed
9306C-HM5C*	212	140	17	Open/Closed
9306S-HM1C	207	130	13	Open/Closed
9306S-HM3C	214	135	24	Open/Closed
9306S-HM5C	212	140	17	Open/Closed
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

*Universal Flange (220 x 220) - Add Suffix "U" (i.e.: 9306C-HM3C-U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9306C-HM3C-B)

EXTEND PUMP LIFE WITH STAINLESS STEEL

9306C-HM1C, 9306S-HM1C, 9306C-HM1C-U, 9306S-HM1C-U — **U.S. Units**

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI
11	207	207	186	155	122	90	37			
12	207	207	207	199	167	134	100	60		
13	207	207	207	207	196	170	143	115	85	44

9306C-HM1C, 9306S-HM1C, 9306C-HM1C-U, 9306S-HM1C-U — **Metric Units**

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR
41.6	784	784	704	587	462	341	140			
45.4	784	784	784	753	632	507	379	227		
49.2	784	784	784	784	742	644	541	435	322	167

9306C-HM3C, 9306S-HM3C, 9306C-HM3C-U, 9306S-HM3C-U — **U.S. Units**

Hyd. Flow GPM	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI
18	175	123	55							
20	214	203	167	123	75					
22	214	214	214	210	190	160	118	62		
24	214	214	214	214	214	210	190	165	128	60

9306C-HM3C, 9306S-HM3C, 9306C-HM3C-U, 9306S-HM3C-U — **Metric Units**

Hyd. Flow LPM	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR
68.1	662	466	208							
75.7	810	768	632	466	284					
83.3	810	810	810	795	719	606	447	235		
90.8	810	810	810	810	810	795	719	625	485	227

9306C-HM5C, 9306S-HM5C, 9306C-HM5C-U, 9306S-HM5C-U — **U.S. Units**

Hyd. Flow GPM	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI
15	212	212	212	187	150	114	65	19		
16	212	212	212	212	189	158	125	87	42	
17	212	212	212	212	212	189	162	133	102	58

9306C-HM5C, 9306S-HM5C, 9306C-HM5C-U, 9306S-HM5C-U — **Metric Units**

Hyd. Flow LPM	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR
56.8	803	803	803	708	568	432	246	72		
60.6	803	803	803	803	715	598	473	329	159	
64.4	803	803	803	803	803	715	613	503	386	220

Hydraulically-Driven, Cast Iron & Stainless Steel Flanged

Series 9306C and 9306S

- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port Sizes: 300 x 220 (3U) Universal flange
- Max. fluid temperature: 140°F/60°C
- Available in cast iron and 316 stainless steel for extended pump life
- Impeller: Nylon (cast iron models); polypropylene (stainless steel models); (GTX available)
- Motor: internal gear gerotor
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet
- Max. motor psi: 3000
- Weight: 33 lbs./15 kg
- Pump seals: Cast Iron models – Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available; Stainless Steel models – Life Guard® silicon carbide
- Life Guard® seals are the industry standard on OEM equipment
- Hydraulic motor seal: double-lip Teflon and case drain available

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9306C-HM1C-3U	285	130	13	Open/Closed
9306C-HM3C-3U	322	130	24	Open/Closed
9306C-HM5C-3U	285	140	17	Open/Closed
9306S-HM1C-3U	285	130	13	Open/Closed
9306S-HM3C-3U	322	130	24	Open/Closed
9306S-HM5C-3U	285	140	17	Open/Closed
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9306C-HM1C-B3U)

9306C-HM1C-3U, 9306S-HM1C-3U — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI
11	255	225	190	155	122	88	44	5		
12	271	242	211	179	149	119	88	53	19	
13	283	258	226	199	171	144	115	85	53	24

9306C-HM1C-3U, 9306S-HM1C-3U — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR
41.6	965	852	719	587	462	333	167	19		
45.4	1026	916	799	678	564	450	333	201	72	
49.2	1071	977	856	753	647	545	435	322	201	91

9306C-HM3C-3U, 9306S-HM3C-3U — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 60 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 1 20 PSI
18	285	256	213	165	90					
20	308	297	268	233	192	139	49			
22	312	312	308	288	255	219	176	127	16	
24	322	322	320	316	298	265	231	196	154	101

9306C-HM3C-3U, 9306S-HM3C-3U — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR
68.1	1079	969	806	624	341					
75.7	1166	1124	1014	882	727	526	185			
83.3	1181	1181	1166	1090	965	829	666	481	61	
90.8	1219	1219	1211	1196	1128	1003	874	742	583	382

9306C-HM5C-3U, 9306S-HM5C-3U — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI
15	285	269	242	212	182	149	112	68	19		
16	308	291	269	242	212	179	149	115	81	42	
17	312	312	297	270	242	214	187	154	122	82	44

9306C-HM5C-3U, 9306S-HM5C-3U — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 8.9 BAR
56.8	1079	1018	916	802	689	564	424	257	72		
60.6	1166	1101	1018	916	802	677	564	435	307	159	
64.4	1181	1181	1124	1022	916	810	708	583	462	310	167

Hydraulically-Driven, Cast Iron

Series 9307C

- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Port sizes: 3" NPT inlet, 2" NPT outlet
- 300 x 220 universal flange available (U)
- Max. fluid temperature: 140°F/60°C
- Impeller: stainless steel
- Motor: internal gear
- Hydraulic ports: -10 SAE inlet and -12 SAE outlet
- Max. motor psi: 3000
- Weight: 86 lbs./39 kg
- Pump seals: Life Guard® silicon carbide standard
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9307C-GM10	370	135	20	Open/Closed
9307C-GM12	370	135	23	Open/Closed
3430-0604	Life Guard® silicon carbide seal kit			

*Universal Flange (300 x 220) - Add Suffix "U" (i.e.: 9307C-GM10-U)

9307C-GM10, 9307C-GM10-U — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
16	282	253	219	168	73				
17	318	288	258	222	174	95			
18	346	318	291	258	222	166	90		
19	361	361	338	311	281	250	201	137	
20	370	370	351	328	301	275	241	184	106

9307C-GM10, 9307C-GM10-U — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
60.6	1067	958	829	636	276				
64.4	1204	1090	977	840	659	360			
68.1	1310	1204	1101	977	840	628	341		
71.9	1366	1366	1279	1177	1064	946	761	519	
75.7	1400	1400	1329	1241	1139	1041	912	696	401

9307C-GM12, 9307C-GM12-U — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
16	222	180	115						
17	246	212	166	92					
18	274	245	209	157	58				
19	302	272	242	203	150				
20	326	298	271	240	196	142			
21	345	324	297	269	238	194	140		
22		345	322	297	270	236	193	138	
23		370	344	323	299	273	235	194	137

9307C-GM12, 9307C-GM12-U — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
60.6	840	681	435						
64.4	931	802	628	348					
68.1	1037	927	791	594	220				
71.9	1143	1030	916	768	568				
75.7	1234	1128	1026	908	742	537			
79.5	1306	1226	1124	1018	901	734	530		
83.3		1306	1219	1124	1022	893	731	522	
87.1		1400	1302	1223	1132	1033	889	734	519

Hydraulically-Driven, Cast Iron with ForceField™ Technology

NEW

Series 9307C

- NEW ForceField™ seal technology to protect your pump against today's harshest application environments:
  - Eliminates dry run
  - Eliminates chemical and fertilizer bonding failures
  - Prevents costly in-season downtime
  - Maintenance-free operation
  - Self-regulating chamber designed to provide pressure when needed and safe serviceability when it is not needed
  - Direct drop-in for current 9307 designs
- Components designed for today's high volume liquid fertilizer application on large capacity sprayers:
  - Hydraulic motor includes a case drain for maximum motor life
  - 316 stainless steel impeller
  - Two-piece shaft design includes 416 stainless steel wet end and 8260 hardened steel drive end
  - Bearings designed to handle continuous high volume pump loading
- Capable of flows over 370 GPM (1400 LPM) at 40 PSI (2.8 BAR)
- 300 universal flange inlet x 220 universal flange outlet
- One-year warranty that includes pump, motor and seals

Order Information

Model Number	Max GPM	Max PSI	Max Hyd. GPM	Hydraulic Selection System
9307CWS-GM12	370	135	23	Open/Closed

9307CWS-GM12: Performance in water — U.S. Units

Hyd. Flow GPM	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
16	222	180	115						
17	246	212	166	92					
18	274	245	209	157	58				
19	302	272	242	203	150				
20	326	298	271	240	196	142			
21	345	324	297	269	238	194	140		
22	345	345	322	297	270	236	193	138	
23	370	370	344	323	299	273	235	194	137

9307CWS-GM12: Performance in water — Metric Units

Hyd. Flow LPM	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
60.6	840	681	435						
64.4	931	802	628	348					
68.1	1037	927	791	594	220				
71.9	1143	1030	916	768	568				
75.7	1234	1128	1026	908	742	537			
79.5	1306	1226	1124	1018	901	734	530		
83.3	1306	1306	1219	1124	1022	893	731	522	
87.1	1400	1400	1302	1223	1132	1033	889	734	519

9307CWS-GM12: Performance in 28% liquid fertilizer — U.S. Units

Hyd. Flow GPM	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI	GPM at 120 PSI	GPM at 130 PSI	GPM at 140 PSI
16	228	204	159	100							
17	234	219	190	147	49						
18	247	247	223	194	146	49					
19	255	255	239	221	191	151	55				
20	260	260	252	240	220	191	150	63			
21	260	260	254	248	237	224	196	159	87		
22	260	260	254	248	240	230	214	194	159	101	
23	260	260	254	249	249	242	237	227	211	174	133

9307CWS-GM12: Performance in 28% liquid fertilizer — Metric Units

Hyd. Flow LPM	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR	LPM at 8.3 BAR	LPM at 9.0 BAR	LPM at 9.7 BAR
60.6	863	772	602	379	-						
64.4	886	829	719	556	185						
68.1	935	935	844	734	553	185					
71.9	965	965	905	836	723	572	208				
75.7	984	984	954	908	833	723	568	238			
79.5	984	984	961	939	897	848	742	602	329		
83.3	984	984	961	939	908	871	810	734	602	382	
87.1	984	984	961	942	942	916	897	859	799	659	503

Hydraulically-Driven, Cast Iron

Series 9308C

- 5” SAE-flanged inlet x 4” SAE-flanged outlet
- 316 stainless steel impeller for superior corrosion resistance
- 9308 versions include a two-piece shaft design with a 416 stainless steel wet end and hardened 8620 drive end for extended life
- 9208 version includes a solid 416 stainless steel shaft for corrosion resistance
- The 9208 shaft diameter is 1.63” (41.3 mm) to allow direct coupling to electric motors
- Life Guard® silicon carbide seal for premium abrasion resistance and dry-run protection
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max Hyd GPM	Hydraulic Selection System
9308C-PM15	900	58	16	Open/Closed
9308C-GM25	1078	72	18	Open/Closed
3430-0604	Life Guard® silicon carbide seal kit			

9308C-PM15 **U.S. Units**

Hyd. Flow	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI
8	430				
12	656	656	416		
16	900	900	900	778	607

9308C-PM15 **Metric Units**

Hyd. Flow	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.5 BAR
8	1628				
12	2483	2483	1575		
16	3407	3407	3407	2945	2298

9308C-GM25 **U.S. Units**

Hyd. Flow	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
17	520					
23	828	828	667	296		
28	1078	1078	965	845	667	380

9308C-GM25 **Metric Units**

Hyd. Flow	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.5 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
17	1968					
23	3134	3134	2525	1120		
28	4081	4081	3653	3199	2525	1438

Belt-Driven, Cast Iron, Self-Priming

Series 9400C-SP

- Drive: 12-groove belt
- Spring-loaded belt tensioner
- Stainless steel wear ring
- Stainless steel pump shaft, standard
- Port sizes: 1½" NPT inlet, 1¼" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump shaft rotation: CCW*
- Weight: 57 lbs./25.9 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output
9403C-540-SP	120	99	600	1 ⅜" female, 6 spline shaft
9403C-540Q-SP	120	99	600	1 ⅜" 6 spline quick coupler
9403C-540S-SP	120	99	600	1" solid shaft
9403C-1000-SP	120	99	1000	1 ⅜" female, 21-spline shaft
9403C-1000L-SP	120	99	1000	1 ¾" female, 20-spline shaft
3430-0332	Seal kit standard			
3430-0589	Life Guard® silicon carbide seal kit			
3430-0480SP	Self priming chamber kit			

Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9403C-540-SP-B)

9403C-540-SP — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
500	114	113	101	83	60	27			
540	120	119	116	102	85	62	32		
600	120	120	120	119	110	97	78	54	24

9403C-540-SP — **Metric Units**

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
500	432	428	382	314	227	102			
540	454	450	439	386	322	235	121		
600	454	454	454	450	416	367	295	204	91

9403C-1000-SP — **U.S. Units**

RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
800	111	109	94	74	47	21			
900	120	119	116	102	85	62	32		
1000	120	120	120	119	110	97	78	54	24

9403C-1000-SP — **Metric Units**

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
800	420	413	356	280	178	79			
900	454	450	439	386	322	235	121		
1000	454	454	454	450	416	367	295	204	91

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Belt-Driven, Cast Iron, Polypropylene & Stainless Steel

Series 9400 Belt Drive

- Available in cast iron, polypropylene and 316 stainless steel for extended pump life
- Drive: 12-groove belt
- Spring-loaded belt tensioner
- Stainless steel wear ring
- Stainless steel pump shaft, standard
- Port sizes: 9402 models – 1¼" NPT inlet, 1" NPT outlet; 9403 models – 1½" NPT inlet, 1¼" NPT outlet
- 220 x 200 universal flange available (U)
- Max. fluid temperature: 140°F/60°C
- Impeller: Cast Iron models – Nylon; Poly & Stainless Steel models – Polypropylene
- Pump shaft rotation: CCW*
- Weight: 40-45 lbs./18.2-20.5 kg
- Pump seals: Viton/ceramic standard; Life Guard® silicon carbide (B) and Buna-N ceramic available
- Life Guard® seals are the industry standard on OEM equipment

EXTEND PUMP LIFE WITH STAINLESS STEEL

Order Information

Model Number	Max GPM	Max PSI	Max RPM	PTO Output
9402C-540	76	95	600	1-⅜" female, 6-spline shaft
9402C-540Q	76	95	600	1-⅜" 6-spline quick coupler
9402C-540S	76	95	600	1" solid shaft
9402C-1000	76	95	1000	1-⅜" female, 21-spline shaft
9402C-1000L	76	95	1000	1-¾" female, 20-spline shaft
9402C-1000S	76	95	1000	1" solid shaft
9403C-540†	140	104	600	1-⅜" female, 6-spline shaft
9403C-540Q†	140	104	600	1-⅜" 6-spline quick coupler
9403C-540S†	140	104	600	1" solid shaft
9403C-1000†	140	104	1000	1-⅜" female, 21-spline shaft
9403C-1000L†	140	104	1000	1-¾" female, 20-spline shaft
9403C-1000-MTZ	164	113	1000	38mm female, 8-spline shaft
9403C-1000S†	140	104	1000	1" solid shaft
9403P-540	91	83	600	1-⅜" female, 6-spline shaft
9403P-540Q	91	83	600	1-⅜" 6-spline quick coupler
9403P-540S	91	83	600	1" solid shaft
9403P-1000	86	83	1000	1-⅜" female, 21-spline shaft
9403P-1000L	86	83	1000	1-¾" female, 20-spline shaft
9403P-1000S	86	83	1000	1" solid shaft
9403S-540	140	104	540	1-⅜" female, 6-spline shaft
9403S-540Q	140	104	540	1-⅜"" 6-spline quick coupler
9403S-540S	140	104	540	1" solid shaft
9403S-1000	140	104	1000	1-⅜" female, 21-spline shaft
9403S-1000L	140	104	1000	1-¾" female, 20-spline shaft
9403S-1000S	140	104	1000	1" solid shaft
3430-0332	Seal and o-ring repair kit			
3430-0476	Seal, o-ring, belt and gasket repair kit for 540 rpm drives			
3430-0477	Seal, o-ring, belt and gasket repair kit for 1000 rpm drives			
3430-0589	Life Guard® silicon carbide seal kit			
3430-0333	Seal and o-ring repair kit (polypropylene)			
3430-0478	Seal, o-ring, belt and gasket repair kit for 540 rpm drives (polypropylene)			
3430-0479	Seal, o-ring, belt and gasket repair kit for 1000 rpm drives (polypropylene)			
3430-0590	Life Guard® silicon carbide seal kit (polypropylene)			

†Universal Flange (220 x 200) - Add Suffix "U" (i.e.: 9403C-1000S-U)
Life Guard® silicon carbide seal - Add suffix "B" (i.e.: 9402C-540-B)

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end. Continued on next page.

9402C-540 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI
450	61	58	50	36				
500	67	66	62	56	42			
540	71	71	70	65	58	44		
600	76	76	76	75	73	66	56	42

9402C-540 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR
450	231	220	189	136				
500	254	250	235	212	159			
540	269	269	265	246	220	167		
600	288	288	288	284	276	250	212	159

9402C-1000 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI
800	68	67	64	57	41				
900	74	74	73	71	64	54	41		
1000	76	76	76	76	76	72	65	56	43

9402C-1000 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.8 BAR	LPM at 6.9 BAR
800	257	254	242	216	155				
900	280	280	276	269	242	204	155		
1000	288	288	288	288	288	273	246	212	163

9403P-540 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI
450	68	60	46	20			
500	74	70	60	48	22		
540	82	78	70	60	46		
600	91	88	79	72	64	58	38

9403P-540 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR
450	257	227	174	76			
500	280	265	227	182	83		
540	310	295	265	227	174		
600	344	333	299	273	242	220	144

9403P-1000 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI
800	73	66	58	42			
900	82	78	70	60	46		
1000	86	86	79	72	64	58	38

9403P-1000 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR
800	276	250	220	159			
900	310	295	265	227	174		
1000	326	326	299	273	242	220	144

9403C-540, 9403S-540 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI
450	107	99	86	50					
500	121	116	106	93	76	42			
540	129	127	120	111	98	80	50		
600	140	138	135	130	121	112	94	73	40

9403C-540, 9403S-540 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR
450	405	375	326	189					
500	458	439	401	352	288	159			
540	488	481	454	420	371	303	189		
600	530	522	511	492	458	424	356	276	151

9403C-1000, 9403S-1000 — U.S. Units

RPM	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI
800	115	106	96	80	56				
900	129	127	120	111	98	80	50		
1000	140	139	137	133	128	119	100	76	46

9403C-1000, 9403S-1000 — Metric Units

RPM	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR
800	435	401	363	303	212				
900	488	481	454	420	371	303	189		
1000	530	526	519	503	485	450	379	288	174

9403C-1000-MTZ — U.S. Units

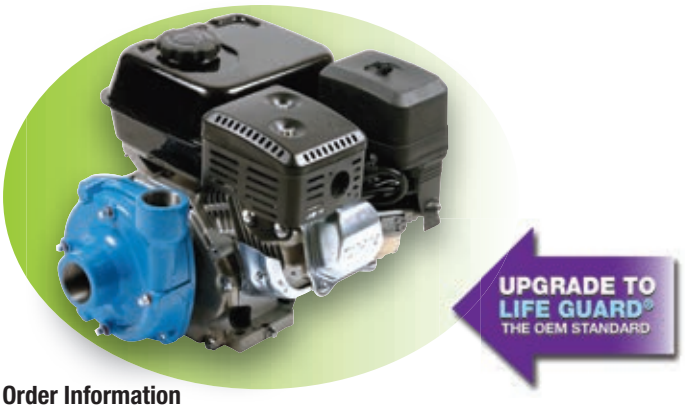
RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
800	136	132	123	112	98	70	45				
900	150	149	145	135	125	115	97	72	35		
1000	163	162	160	155	150	140	130	115	95	75	45

9403C-1000-MTZ — Metric Units

RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
800	515	500	466	424	371	265	170				
900	568	564	549	511	473	435	367	273	132		
1000	617	613	606	587	568	530	492	435	360	284	170

Gas Engine-Driven PowerPro™, Cast Iron

Models 1521C-65, 1521C-65M



- PowerPro™ Engine
- Closed coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Weight: 65 lbs./29.4kg
- Pump seals: Viton/ceramic standard; Buna-N/ ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1521C-65	110	80	1-½" x 1-¼"	PowerPro™ 6.5 hp
1521C-65M	Same as 1521C-65 without mounting base			
1538*	1-½" x 1-¼" centrifugal pump. DOES NOT include Engine.			
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

* Must use threaded shaft engine.

1521C-65, 1521C-65M — 6.5 HP PowerPro **U.S. Units**

GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
110	106	96	88	80	60	30

1521C-65, 1521C-65M — 6.5 HP PowerPro **Metric Units**

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
416	401	363	333	303	227	114

Gas Engine-Driven PowerPro™, Cast Iron

Models 1552C-130, 1552C-130E

- PowerPro™ Engine
- Closed coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Weight: 110 lbs./50kg
- Pump seals: Viton/ceramic standard

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1552C-130	170	150	2" x 1-½"	PowerPro 13 hp
1552C-130E	170	150	2" x 1-½"	PowerPro 13 hp w/ electric start
1551*	2" x 1-½" centrifugal pump kit. DOES NOT include engine.			
3430-0464	Seal and o-ring repair kit			

* Must use threaded shaft engine.

1552C-130, 1552C-130E — 13 HP PowerPro **U.S. Units**

GPM at 20 PSI	GPM at 40 PSI	GPM at 60 PSI	GPM at 80 PSI	GPM at 100 PSI	GPM at 120 PSI	GPM at 140 PSI
170	166	148	120	92	65	35

1552C-130, 1552C-130E — 13 HP PowerPro **Metric Units**

LPM at 1.4 BAR	LPM at 2.8 BAR	LPM at 4.1 BAR	LPM at 5.5 BAR	LPM at 6.9 BAR	LPM at 8.3 BAR	LPM at 9.7 BAR
644	628	560	454	348	246	132

Gas Engine-Driven PowerPro™, Cast Iron, Self-Priming

Models 1522C-65SP

- PowerPro™ Engine
- Closed coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump seals: Viton/ceramic standard; Buna-N/ ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment
- Fill Port 3/4" NPT

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1522C-65SP	130	65	2" x 2"	PowerPro 6.5 hp
1538-SP*	2" x 2" centrifugal pump kit. DOES NOT include engine.			
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

* Must use threaded-shaft engine.

1522C-65SP — 6.5 HP PowerPro **U.S. Units**

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 65 PSI
130	121	108	93	85	76	56	34	0

1522C-65SP — 6.5 HP PowerPro **Metric Units**

LPM at 0 BAR	LPM at 0.7. BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.5 BAR
492	458	409	352	322	288	212	129	0

Gas Engine-Driven PowerPro™, Cast Iron, Self-Priming

130ESP

- PowerPro™ Engine
- Closed coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Impeller: Nylon
- Pump seals: Viton/ceramic standard
- Fill Port 1" NPT

Model Number	Max GPM	Max PSI	Port Size	Engine Mfg. & HP
1552C-130SP	163	147	2" x 2"	PowerPro 13 hp
1552C-130ESP	163	147	2" x 2"	PowerPro 13 hp w/ electric start
1551-SP*	2" x 2" centrifugal pump kit. DOES NOT include engine.			
1551-BSP*	2" x 2" centrifugal pump kit. (BSP threads) DOES NOT include engine.			
3430-0464	Seal and o-ring repair kit			

* Must use threaded-shaft engine.

1552C-130SP, 1552C-130ESP — 13 HP PowerPro **U.S. Units**

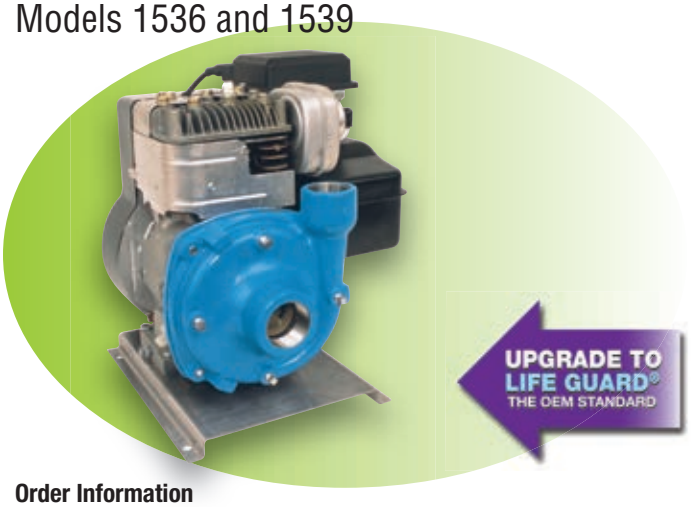
GPM at 0 PSI	GPM at 20 PSI	GPM at 40 PSI	GPM at 60 PSI	GPM at 80 PSI	GPM at 100 PSI	GPM at 120 PSI	GPM at 140 PSI	GPM at 147 PSI
163	161	148	122	100	75	51	27	0

1552C-130SP, 1552C-130ESP — 13 HP PowerPro **Metric Units**

LPM at 0 BAR	LPM at 1.4 BAR	LPM at 12.8 BAR	LPM at 4.1 BAR	LPM at 5.5 BAR	LPM at 6.9 BAR	LPM at 8.3 BAR	LPM at 9.7 BAR	LPM at 10.1 BAR
617	609	560	462	379	284	193	102	0

Gas Engine-Driven, Cast Iron

Models 1536 and 1539



- Briggs & Stratton engine
- Close-coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Weight: 53 lbs./24.1 kg
- Impeller: Nylon
- Pump seals: Viton/ceramic standard; Buna-N/ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfg. & HP
1536	110	75	1 ½" x 1 ¼"	Briggs & Stratton 5.5 hp
1539	Same as model 1536 without mounting base			
1538*	1 ½" x 1 ¼" centrifugal pump kit. DOES NOT include engine.			
3430-0332	Seal and o-ring repair kit			
3430-0589	Life Guard® silicon carbide seal kit			

* Must use threaded shaft engine.

1536, 1539 — 5.5 HP Briggs & Stratton **U.S. Units**

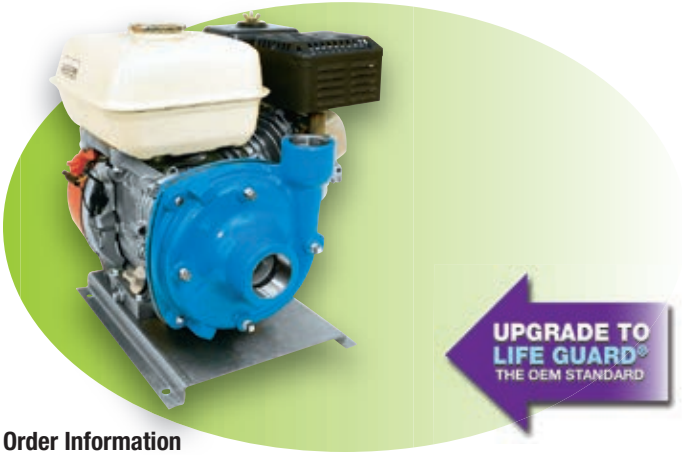
GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
110	106	96	87	73	50

1536, 1539 — 5.5 HP Briggs & Stratton **Metric Units**

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
416	401	363	329	276	189

Gas Engine-Driven, Cast Iron

Models 1537 and 1540



- Honda engine
- Close-coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Weight: 53 lbs./24.1 kg
- Impeller: Nylon
- Pump seals: Viton/ceramic standard; Buna-N/ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfg. & HP
1537	110	80	1 ½" x 1 ¼"	Honda 5.5 hp
1540	Same as model 1537 without mounting base			
1538*	1 ½" x 1 ¼" centrifugal pump kit. DOES NOT include engine.			
3430-0332	Seal and o-ring repair kit			
3420-0589	Life Guard® silicon carbide seal kit			

* Must use threaded shaft engine.

1537, 1540 — 5.5 HP HONDA **U.S. Units**

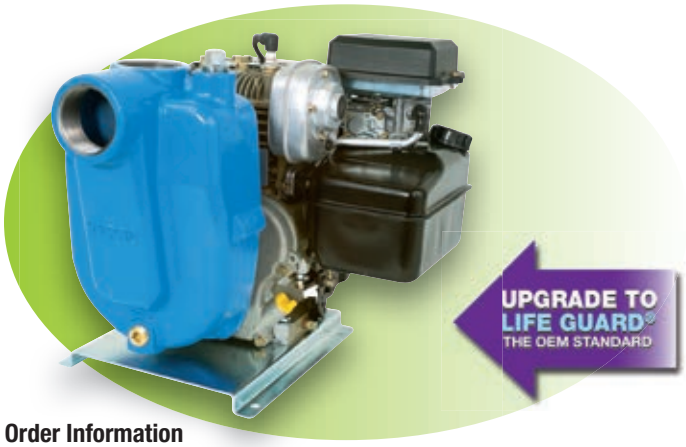
GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI
110	106	96	88	80	60	30

1537, 1540 — 5.5 HP HONDA **Metric Units**

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
416	401	363	333	303	227	114

Gas Engine-Driven, Cast Iron, Self-Priming

Models 1536-SP and 1539-SP



- Briggs & Stratton engine
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Weight: 72 lbs./32.7 kg
- Impeller: Nylon
- Pump seals: Viton/ceramic standard; Buna-N/ ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment
- Fill Port 3/4" NPT

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1536-SP	100	65	2" x 2"	Briggs & Stratton 5.5 hp
1539-SP	Same as model 1536-SP without mounting base			
1538-SP*	2" x 2" centrifugal pump kit. DOES NOT include engine.			
3430-0332	Seal kit standard			
3430-0482SP	Self-primer conversion kit			
3430-0589	Life Guard® silicon carbide seal kit			

* Must use threaded shaft engine.

1536-SP, 1539-SP — 5.5 HP Briggs & Stratton **U.S. Units**

GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
92	81	67	55	40	15

1536-SP, 1539-SP — 5.5 HP Briggs & Stratton **Metric Units**

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
348	307	254	208	151	57

Gas Engine-Driven, Cast Iron, Self-Priming

Models 1537-SP and 1540-SP

- Honda engine
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Weight: 78 lbs./35 kg
- Impeller: Nylon
- Pump seals: Viton/ceramic standard; Buna-N/ ceramic and Life Guard® silicon carbide available
- Life Guard® seals are the industry standard on OEM equipment
- Fill Port 3/4" NPT

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1537-SP	106	75	2" x 2"	Honda 5.5 hp
1540-SP	Same as model 1537-SP without mounting base			
1538-SP*	2" x 2" centrifugal pump kit. DOES NOT include engine.			
3430-0332	Seal kit standard			
3430-0482SP	Self-primer conversion kit			
3430-0589	Life Guard® silicon carbide seal kit			

* Must use threaded shaft engine.

1537-SP, 1540-SP — 5.5 HP HONDA **U.S. Units**

GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
98	87	73	60	44	21

1537-SP, 1540-SP — 5.5 HP HONDA **Metric Units**

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
371	329	276	227	167	79

Gas Engine-Driven, Cast Iron

Series 1550

- Honda engine
- Close-coupled, gas engine-driven
- Max. fluid temperature: 140°F/60°C
- Housing: cast iron
- Weight: 105 lbs./47.7 kg;
  SP and BSP: 125 lbs./56.8 kg
- Pump seals: Viton/ceramic
- Impeller: Nylon

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP	Self Priming
1550	150	140	2" x 1 ½"	Honda 9 hp	No
1550-SP	155	135	2" x 2"	Honda 9 hp	Yes
1550-BSP†	155	135	2" x 2"	Honda 9 hp	Yes
1551*	2" x 1 ½"centrifugal pump kit. DOES NOT include engine.				
1551-SP*	2" x 2" centrifugal pump kit. DOES NOT include engine.				
3430-0464	Seal, o-ring, and gasket repair kit				

* Must use threaded shaft engine.
† BSP Threads

1550 — 9.0 HP HONDA — U.S. Units

GPM at 20 PSI	GPM at 40 PSI	GPM at 60 PSI	GPM at 80 PSI	GPM at 100 PSI	GPM at 120 PSI	GPM at 140 PSI
145	130	107	87	69	45	16

1550-SP, 1550-BSP — 9.0 HP HONDA — U.S. Units

GPM at 10 PSI	GPM at 20 PSI	GPM at 40 PSI	GPM at 60 PSI	GPM at 80 PSI	GPM at 100 PSI	GPM at 120 PSI
145	141	118	93	71	49	28

1550 — 9.0 HP HONDA — Metric Units

LPM at 1.4 BAR	LPM at 2.8 BAR	LPM at 4.1 BAR	LPM at 5.5 BAR	LPM at 6.9 BAR	LPM at 8.3 BAR	LPM at 9.7 BAR
549	492	405	329	261	170	61

1550-SP, 1550-BSP— 9.0 HP HONDA — Metric Units

LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR
549	534	447	352	269	185	106

Life Guard® Silicon Carbide Pump Seals

Specially designed to prolong seal life

The drawing to the right represents a cross sectional view of a Life Guard® Premium Silicon Carbide Seal (top) and a standard seal (bottom). There are three key differences shown in the drawing: material, mating rings and balance.

Material:

The Life Guard® seal utilizes silicon carbide (SiC) for its seal surfaces (primary ring and mating ring). This is more abrasion resistant than the carbon graphite and ceramic used in standard seals. SiC also runs cooler if the pump is run dry, improving the life of the seal.

Mating Rings:

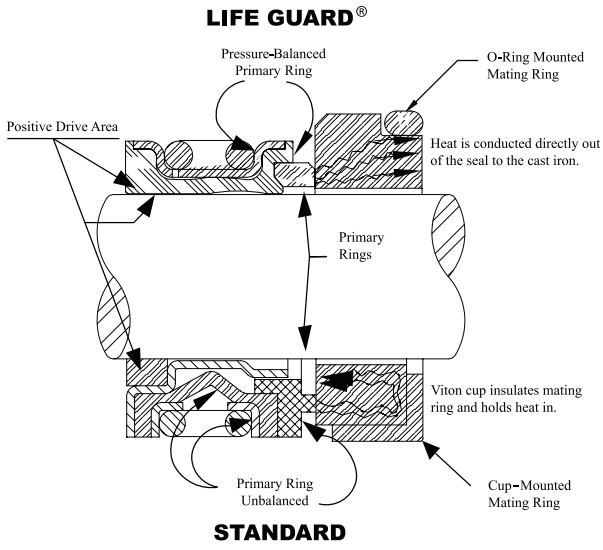
The O-ring style of the Life Guard® seal mating ring allows heat to dissipate into the pump casting. This keeps the seal at a lower temperature and dramatically improves the chances of the seal to survive a dry-run episode.

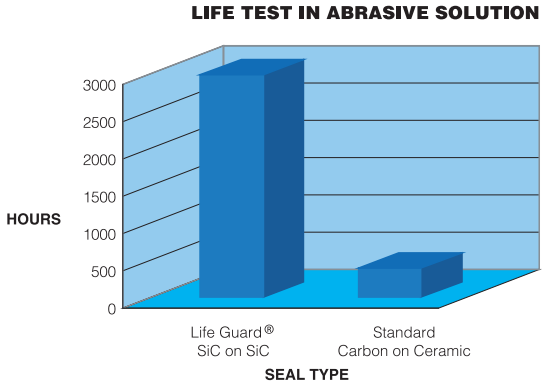
Balance:

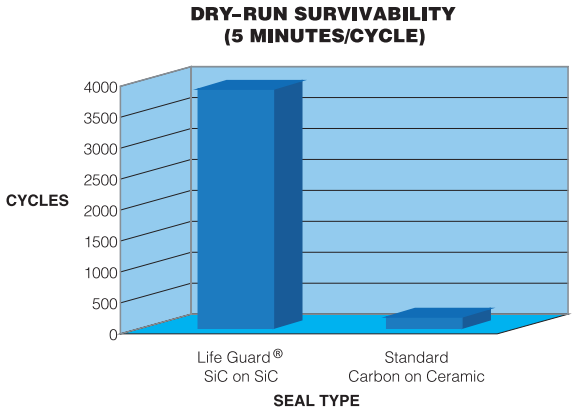
The bellows and primary ring of the Life Guard® seal are pressure balanced. This results in cooler operation at higher pressures.

Life Guard® silicon carbide seals are available in the following models: Pedestal mount, Flange mount, Clutch-driven, Hydraulically-driven, Belt-driven, and Gas Engine-driven.

Side by Side Comparison







Life Guard® Silicon Carbide Seal Kits

Part Number	Pump Series/Model #	Size	Description	Estimated Weight Ea.
3430-0589	9200, 9300 and 9400 Cast and Stainless	5/8	Mechanical seal and o-ring	4 oz.
3430-0593	9303P	5/8	Mechanical seal, o-ring, gasket and washer for under acorn nut	4 oz.
3430-0601	9305C and 9305C-SP	5/8	Mechanical seal and o-ring	4 oz.
3430-0590	All Poly Models	3/4	Mechanical seal, o-ring, gasket and washer for under acorn nut	4 oz.
3430-0604	9307 Series	1 3/8	Mechanical seal, o-ring and gasket	4 oz
3430-0646	9205 Models	3/4	Mechanical seal and o-ring	4 oz.
3430-0591	9000C-O and 9000C-O-SP	3/4	Mechanical seal and o-ring	4 oz.

Self-Priming Adaptor (SPA)

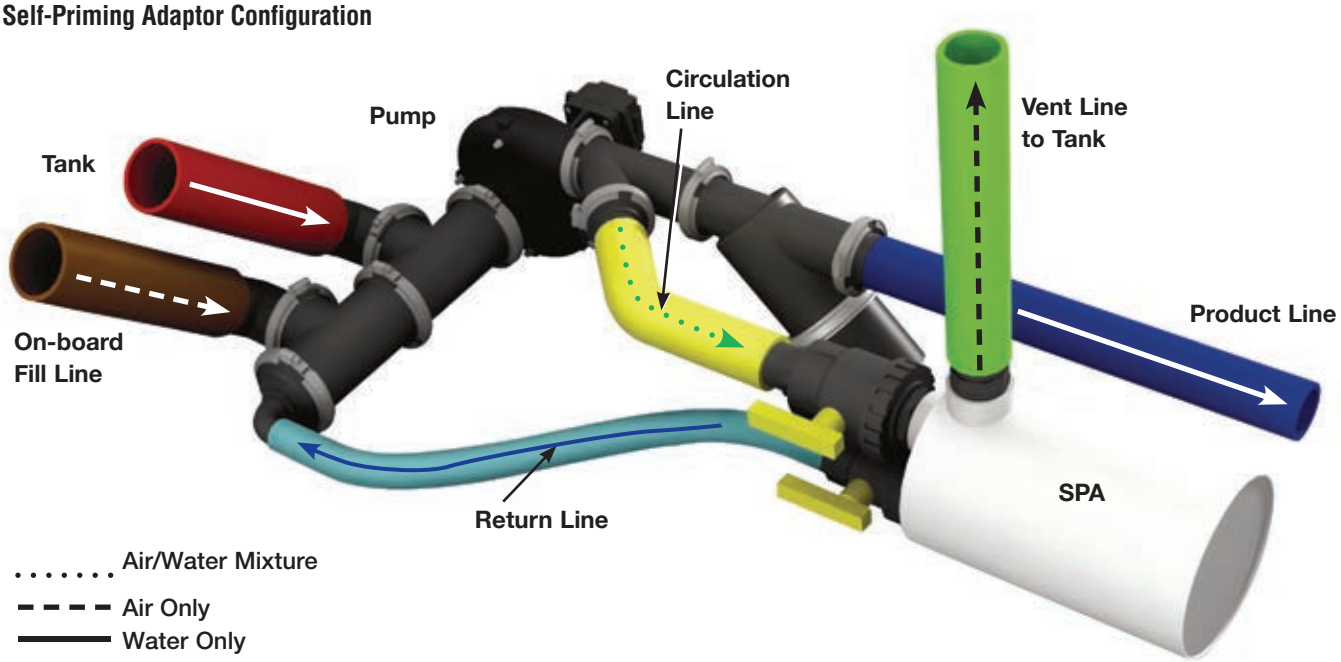
Provides Fast Self-Priming for Closed Impeller Centrifugal Pumps

- Creates self-priming capability for all standard centrifugal pump models
- Increases priming efficiency over open impeller transfer pumps and self-priming centrifugal pumps
- Allows the use of a single, high efficiency pump for both tank filling and spraying
- Constructed out of 304 stainless steel for corrosion resistance
- Protects the pump's mechanical seal from dry-run during priming operations for on-board loading
- Guards against unexpected dry-run conditions during spraying application, if system were to function automatically
- Allows centrifugal pumps to be mounted in tight-fitting configurations while maintaining priming and flow performance capabilities
- SPA can be mounted in nearby remote location up to 10 feet (3 meters) from pump

Order Information

Model Number	
1530-0024S	2" NPT Self-Priming Adaptor
1530-0028S	2" NPT High Volume Self-Priming Adaptor
3430-0700	Mounting Kit

Self-Priming Adaptor Configuration



How the Self-Priming Adaptor Works

To facilitate pump priming, liquid is circulated through the pump and eye of the impeller. The attached Self-Priming Adaptor (SPA) stores an initial amount of liquid for the priming operation. The SPA, when activated with two ball valves, separates the air from the liquid being circulated and releases it back to the atmosphere through the vent line. Only liquid returns back to the pump inlet, thereby eliminating the inlet suction line of air. Once the pump is primed, pump pressure and flow increases. Flow is directed to the tank. The operator then closes the two ball valves, shutting off the circulation path between the pump and SPA.

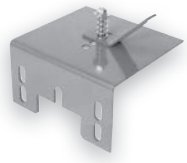
Centrifugal Pump Accessories

12 Volt Clutch

Part Number	Shaft Size	Pulley Type	Max. HP	Max. RPM	Max. AMPS @ 12V	Pump Model	Estimated Weight Each
2526-0011	⅞"	5.25"-A	30	5000	4.85	9203P, 9253P-C, 9500P-S, 9205C, 9205C-SP	8 lbs.
3430-0592	⅝"	5.00" Double Groove-A	30	5000	3.75	9202C, 9203C, 9204C, 9203C-R, 9262C-C, 9263C-C, 9263C-CR, 9203C-SP, 9262S-C, 9263S-C, 9263S-CR, 9263C-C-SP, 9263C-CR-SP	9 lbs.

Vent Line Kit

Part Number	Description	Estimated Weight Each
3430-0456	Vent line kit with 25' long, ¼" ID vinyl hose, ⅛" NPT x ¼" HB 90° nylon elbow fitting, ⅛" NPT x ¼" HB straight polypropylene fitting, plastic hose clamp and plastic cable tie. Works with all Hypro centrifugals.	14 oz.
3430-0797	Push-to-connect vent line kit with 25' long, ¼" polyethylene tubing, 1/8" MNPT x ¼" push-to-connect straight, 1/8" MNPT x ¼" push-to-connect 90º elbow, and plastic cable ties. Works with all Hypro centrifugal pumps.	14 oz.



PTO Mounting Clips

Part Number	Pump Series	Estimated Weight Each
1520-0034	9000P-O and 9000C-O (not for 9040 Series)	4 lbs.

Hydraulic Test Kit

Part Number	Description	Estimated Weight Each
3430-0650	Hydraulic test kit with pressure and tank fixtures with flow meter and pressure gauges. Works with all Hypro HM series motors.	20 lbs.

Centrifugal Pump Repair Tools

Part Number	Pump Series	Description
3010-0061	9000	Main bearing suppport tool
3010-0064	9000, 9200, 9300	Support bar/sleeve extractor
3010-0066	9200, 9300	Wire brush
3010-0067	9200, 9300	Wire brush holder
3010-0084	9000, 9200, 9300	Internal/external retaining ring pliers
3010-0167	9000, 9300	Internal/external retaining ring pliers
3010-0168	9000, 9200, 9300	Tool box
3020-0008	9300	Allen wrench; 1/4" hex
3020-0009	9200, 9300	Allen wrench; 1/16" hex
3430-0650	9300	Hydraulic test kit

Transfer Pumps

Hypro self-priming centrifugal transfer pumps handle big, high capacity, liquid transfer jobs with ease. The line of pumps offer flow rates from 150 gpm up to 440 gpm to make short work of jobs such as filling nurse tanks, watering seedbeds, and transferring liquids.

The durable and powerful line includes polypropylene, aluminum and cast iron models. Use them for transferring water, liquid fertilizers, and other chemicals compatible with pump materials. Polypropylene is a lightweight option that provides excellent resistance to corrosive chemicals. Aluminum is an economical choice for water transfer. Cast Iron is most suitable for rugged applications.

Hypro transfer pumps share these features:

- Low oil sensor prevents engine seizing when oil level is too low (gas engine models)
- Easily handles high capacity liquid transfer jobs up to 440 gpm
- Self-priming capabilities
- Cast iron impellers (in cast iron models) and Nylon impellers, constructed for improved strength, can handle solid particles in suspension up to ⅜" diameter

Transfer Pump - 3 in. Polypropylene

Series 1543P, 9243P & 9343P

Achieve the highest performance available in a 3" poly transfer pump (up to 484 GPM) with the highest efficiency and horsepower on the market. Ideal for nurse tank transfer and other closed system applications. The polypropylene housing and EPDM elastomers protect the pump from most chemicals and corrosive environments.

- Gas engine mount, pedestal mount or hydraulic drive options available
- Gas engine-driven versions powered by field proven 13 HP Hypro PowerPro™ engine or Honda GX390
- Housing: 3" X 3" Polypropylene
- Pump Seals: EPDM Mechancial
- Suction lift: 25 ft./7.62m
- Poly impeller with stainless steel insert

9243P-SP — **U.S. Units**

	Feet	0	12	23	35	46	58	69	81	92	104	116
	PSI	0	5	10	15	20	25	30	35	40	45	50
2900	GPM	380	358	342	312	275	224	160	50	-	-	-
RPM	HP	7.1	6.8	6.5	6.3	6.0	5.6	5.0	4.2	-	-	-
3200	GPM	424	405	384	359	331	297	251	193	103	0	-
RPM	HP	9.1	8.9	8.7	8.5	8.3	8.0	7.5	7.0	6.2	5.3	-
3500	GPM	460	445	425	404	379	353	321	280	227	159	70
RPM	HP	12.2	11.8	11.4	11.1	10.9	10.6	10.2	9.8	9.2	8.5	7.5

1543P-130SP, 1543P-130ESP, 1543P-390EHSP — **U.S. Units**

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 58 PSI
440	400	338	269	184	68	0

9243P-SP — **Metric Units**

	m	5.1	10.2	12.8	15.3	17.9	20.4	23.0	25.5	28.1	30.6	33.2	35.7
	BAR	0.50	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50
2900	LPM	1325	1193	1097	980	830	637	376	46	-	-	-	-
RPM	kW	5.0	4.7	4.6	4.4	4.1	3.8	3.4	2.9	-	-	-	-
3200	LPM	1497	1378	1301	1215	1118	996	853	660	403	154	-	-
RPM	kW	6.6	6.4	6.3	6.1	6.0	5.7	5.5	5.2	4.7	4.3	-	-
3500	LPM	1650	1537	1471	1403	1328	1242	1139	1016	866	685	467	208
RPM	kW	8.7	8.3	8.2	8.0	7.9	7.7	7.5	7.2	6.9	6.5	6.0	5.5

1543P-130SP, 1543P-130ESP, 1543P-390EHSP — **Metric Units**

LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.0 BAR
1666	1514	1279	1018	697	257	0

Hydraulic Drive — **US Units**

9343P-GM6-SP	Feet	0	12	23	35	46	58	69	81	92	104	116	127
PERFORMANCE	PSI	0	5	10	15	20	25	30	35	40	45	50	55
8 gal/min	GPM	342	316	284	240	176	67	-	-	-	-	-	-
9 gal/min	GPM	378	355	327	294	252	194	103	-	-	-	-	-
10 gal/min	GPM	414	394	371	345	314	276	227	155	52	-	-	-
11 gal/min	GPM	450	433	414	392	368	340	307	265	210	128	28	-

Hydraulic Drive — **Metric Units**

9343P-GM6-SP	m	5.1	10.2	12.8	15.3	17.9	20.4	23.0	25.5	28.1	30.6	33.2	35.7
PERFORMANCE	BAR	0.50	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50
30 l/min	LPM	1110	885	730	495	145	-165	-	-	-	-	-	-
35 l/min	LPM	1335	1180	1085	970	825	630	345	35	-	-	-	-
40 l/min	LPM	1545	1425	1355	1270	1185	1080	960	805	600	325	45	-

Hydraulic Drive — **US Units**

9343P-GM10-SP	Feet	0	12	23	35	46	58	69	81	92	104	116	127
PERFORMANCE	PSI	0	5	10	15	20	25	30	35	40	45	50	55
12 gal/min	GPM	364	340	310	274	227	157	46	-	-	-	-	-
13 gal/min	GPM	391	368	342	312	275	227	158	55	-	-	-	-
14 gal/min	GPM	415	395	373	348	318	282	236	170	74	-	-	-
15 gal/min	GPM	445	426	406	383	357	327	292	247	187	102	7	-
16 gal/min	GPM	484	466	446	425	401	374	344	309	266	211	139	47

Hydraulic Drive — **Metric Units**

9343P-GM10-SP	m	5.1	10.2	12.8	15.3	17.9	20.4	23.0	25.5	28.1	30.6	33.2	35.7
PERFORMANCE	BAR	0.50	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50
45 l/min	LPM	1225	1045	925	775	560	250	-43	-	-	-	-	-
50 l/min	LPM	1390	1240	1150	1045	920	760	540	255	-24	-	-	-
55 l/min	LPM	1535	1405	1335	1255	1165	1060	935	780	575	310	35	-
60 l/min	LPM	1730	1610	1540	1470	1390	1305	1215	1105	985	840	665	445

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfg. & HP
1543P-130SP	440	54	3" x 3"	PowerPro 13 HP
1543P-130ESP	440	54	3" x 3"	PowerPro 13 HP w/ elec. start
1543P-390EHSP	440	54	3" x 3"	Honda® GX390 w/ elec. start
9243P-SP	460	54	3" x 3"	Pedestal
9343P-GM6-SP	450	52	3" x 3"	Hydraulic
9343P-GM6Y-SP*	450	52	3" x 3"	Hydraulic
9343P-GM10-SP	484	58	3" x 3"	Hydraulic
9343P-GM10Y-SP*	484	58	3" x 3"	Hydraulic
3430-0692	Pump head kit with EPDM seal			
3430-0757	EDPM seal kit			
3410-0042	Cam lock kit			

* Y= case drain motor

Gas Engine-Driven Transfer Pumps – 2 in. & 3 in. Cast Iron

Series 1530

1532C-6SP with PowerPro™ Engine

- Housing: cast iron
- Pump seals: fluoroelastomer (viton)
- Suction lift: 20 ft.
- Flapper valve: EPDM

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1532C-6SP	170	42	2" x 2"	PowerPro 6.5 hp
1533C-9SP	330	60	3" x 3"	PowerPro 9 hp
1533C-13SP	330	60	3" x 3"	PowerPro 13 hp
1533C-13ESP	330	60	3" x 3"	PowerPro 13 hp w/ electric start
3430-0673CSP	170	42	Pump head kit for 2" self-priming cast iron transfer pump	
3430-0674CSP	330	60	Pump head kit for 3" self-priming cast iron transfer pump	

1532C-6SP – 6.5HP **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 42 PSI
170	155	140	123	106	87	65	42	14	0

1532C-6SP – 6.5HP **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 2.9 BAR
644	587	530	466	401	329	246	159	53	0

1533C-9SP – 9HP, 1533C-13SP – 13HP, 1533C-13ESP – 13 HP **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 66 PSI
330	325	321	315	296	273	248	221	192	161	129	48	0

1533C-9SP – 9HP, 1533C-13SP – 13HP, 1533C-13ESP – 13 HP **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.6 BAR
1249	1230	1215	1192	1120	1033	938	836	726	609	488	181	0

Pedestal-Mount Transfer Pumps – 2 in. & 3 in. Cast Iron

3430-0674CSP **9232C-SP**

Order Information

Model Number	Max GPM	Max PSI	Description
9232C-SP	170	42	2" x 2" self priming pedestal-mount cast iron transfer pump
9233C-SP	330	60	3" x 3" self priming pedestal-mount cast iron transfer pump
3430-0673CSP	170	42	Pump head kit for 2" self-priming cast iron transfer pump
3430-0674CSP	330	60	Pump head kit for 3" self-priming cast iron transfer pump
3430-0675	Replacement pedestal for 2" self-priming cast iron transfer pump		
3430-0676	Replacement pedestal for 3" self-priming cast iron transfer pump		

9232C-SP, 3430-0673CSP **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 42 PSI
170	155	140	123	106	87	65	42	14	0

9232C-SP, 3430-0673CSP **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 2.9 BAR
644	587	530	466	401	329	246	159	53	0

9233C-SP, 3430-0674CSP **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 66 PSI
330	325	321	315	296	273	248	221	192	161	129	48	0

9233C-SP, 3430-0674CSP **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.6 BAR
1249	1230	1215	1192	1120	1033	938	836	726	609	488	181	0

Hydraulically-Driven Transfer Pumps – 2 in. Cast Iron

9332C-HM_C-SP

Order Information

Model Number	Max GPM	Max PSI	Hyd. Flow
9332C-HM1C-SP	170	60	13 gpm
9332C-HM5C-SP	170	60	16 gpm

9332C-HM1C-SP — **U.S. Units**

Hyd. Flow GPM	GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
8	150	138	124	88	53	0		
9	160	150	140	113	79	48	0	
10	170	163	155	135	108	77	42	0

9332C-HM1C-SP — **Metric Units**

Hyd. Flow LPM	LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
30	568	522	469	333	201	0		
34	606	567	530	428	229	182	0	
38	643	617	587	511	409	291	159	0

9332C-HM5C-SP — **U.S. Units**

Hyd. Flow GPM	GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
10	150	138	123	90	55	0		
11	160	150	140	113	79	48	0	
12	170	163	155	135	108	77	42	0

9332C-HM5C-SP — **Metric Units**

Hyd. Flow LPM	LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
38	568	522	466	341	208	0		
42	606	568	530	428	299	182	0	
45	644	617	587	511	409	291	158	0

Electric Motor Mount Transfer Pumps – 2 in. & 3 in. Cast Iron

Order Information

Model Number	Max GPM	Max PSI	Port Size	NEMA Frame
9732C-SPX*	170	42	2" x 2"	182/184TC
9733C-SPX*	330	60	3" x 3"	215TC

* Electric Motor not included

9732C-SPX — **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI
170	151	133	113	94	74	52	25	0

9732C-SPX — **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR
644	572	503	428	356	280	197	95	0

9733C-SPX — **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI	GPM at 55 PSI	GPM at 60 PSI	GPM at 61 PSI
330	325	320	310	290	265	230	195	163	133	95	50	11	0

9733C-SPX — **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR	LPM at 3.8 BAR	LPM at 4.1 BAR	LPM at 4.2 BAR
1249	1230	1211	1173	1098	1003	871	738	617	503	360	190	42	0

Transfer Pump - 2 in. Polypropylene

Series 1542P & 9342P

1542P-65SPM 6.5 HP with frame

9342P-HM_C-5SP
Hydraulic drive

- Hydraulic or close-coupled, gas engine driven
- Housing: Polypropylene
- Pump Seals: EPDM Mechanical
- Suction lift: 25 ft./7.62 m
- Available with or without frame

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1542P-65ESP	200	58	2" x 2"	PowerPro™ 6.5 hp w/ elec. start
1542P-160HSP	200	58	2" x 2"	Honda GX160
1542P-200HSP	200	58	2" x 2"	Honda GX200
1542P-55SP	150	58	2" x 2"	PowerPro™ 6.5 hp
1542P-65SP	200	58	2" x 2"	PowerPro™ 6.5 hp
1542P-65SPM	200	58	2" x 2"	PowerPro™ 6.5 hp with frame
3410-0041	Cam lock kit			
3430-0690	Pump head kit for 1542P-55SP with EPDM seal			
3430-0691	Pump head kit for 1542P-65SP with EPDM seal			
3430-0635	EPDM seal kit			
3430-0659	Viton seal kit			

1542P-55SP — 6.5 HP PowerPro™ U.S. Units

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 58 PSI
150	147	131	108	80	48	0

1542P-55SP — 6.5 HP PowerPro™ Metric Units

LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.0 BAR
568	556	496	409	303	182	0

1542P-65SP — 6.5 HP PowerPro™, 1542P-200HSP Honda U.S. Units

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 58 PSI
200	182	162	136	106	65	0

1542P-65SP — 6.5 HP PowerPro™, 1542P-200HSP Honda Metric Units

LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.0 BAR
757	689	613	515	401	246	0

1542P-65ESP — 6.5 HP PowerPro™ U.S. Units

GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 58 PSI
200	182	162	136	106	65	0

1542P-65ESP — 6.5 HP PowerPro™ Metric Units

LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.0 BAR
757	689	613	515	401	246	0

Order Information

Model Number	Max GPM	Max PSI	Port Size	Motor Capacity
9342P-HM1C-5SP	200	58	2" x 2"	10 gpm
9342P-HM5C-5SP	206	60	2" x 2"	11 gpm
3430-0635	EPDM seal kit			

9342P-HM1C-5SP U.S. Units

Hyd. Flow GPM	GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 58 PSI
8	165	145	122	95	57		
9	185	166	144	119	86	0	
10	200	184	164	141	114	80	0

9342P-HM1C-5SP Metric Units

Hyd. Flow LPM	LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.0 BAR
30.3	625	549	463	358	215		
34.1	700	630	547	449	325	0	
37.9	757	695	620	534	433	301	0

9342P-HM5C-5SP U.S. Units

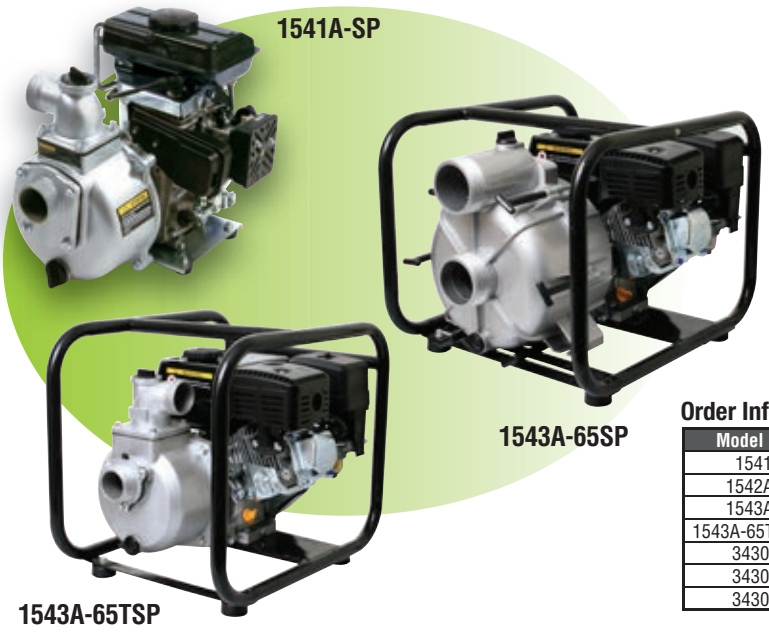
Hyd. Flow GPM	GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI
9	175	154	123	84	0		
10	192	174	149	118	76	0	
11	206	189	169	145	117	79	0

9342P-HM5C-5SP Metric Units

Hyd. Flow LPM	LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR
34.1	662	582	467	316	0		
37.9	727	658	562	446	288	0	
41.6	780	717	639	550	442	299	0

Transfer Pumps – 2 in. & 3 in. Aluminum

Series 1540A



- PowerPro™ Gas engine driven
- Housing: Aluminum
- Pump seals: EPDM Mechanical
- Suction lift:
  - 13 ft./4m (1541A)
  - 23 ft./7.01m (1542A & 1543A)
- Trash pumps will handle 1-1/8" solids
- Transfer pumps will handle 3/8" solids
- Framed: 1542A &1543A versions only

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1541A-SP	40	28	2" x 2" BSP	PowerPro™ 2.5 hp
1542A-65SP	147	50	2" x 2" NPT	PowerPro™ 6.5 hp
1543A-65SP	259	50	3" x 3" NPT	PowerPro™ 6.5 hp
1543A-65TSP (Trash)	272	50	3" x 3" NPT	PowerPro™ 6.5 hp
3430-0791	3" Trash Kit (NPT ports, SAE 3/4" keyed shaft mount)			
3430-0792	2" Transfer Kit (NPT ports, SAE 3/4" keyed shaft mount)			
3430-0793	3" Transfer Kit (NPT ports, SAE 3/4" keyed shaft mount)			

1541A-SP – 2.5 HP PowerPro™ — U.S. Units

GPM at 0 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 28 PSI
40	28	21	14	7	0

1541A-SP – 2.5 HP PowerPro™ — Metric Units

LPM at 0 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 1.9 BAR
151.4	106.0	79.5	53.0	26.5	0

1542A-65SP – 6.5 HP PowerPro™ — U.S. Units

GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI
147	144	136.6	124.7	110.2	94.1	78.3	57.1	19.2	0

1542A-65SP – 6.5 HP PowerPro™ — Metric Units

LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR
556.5	545.1	517.1	472	417.2	356.2	296.4	216.1	72.7	0

1543A-65SP – 6.5 HP PowerPro™ — U.S. Units

GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI
259	251.6	233.7	213.6	190.9	162.2	135.8	99.3	56.1	8.7

1543A-65SP – 6.5 HP PowerPro™ — Metric Units

LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR
980.4	952.4	884.6	808.6	722.6	614	514.1	375.9	212.4	32.9

1543A-65TSP – 6.5 HP PowerPro™ — U.S. Units

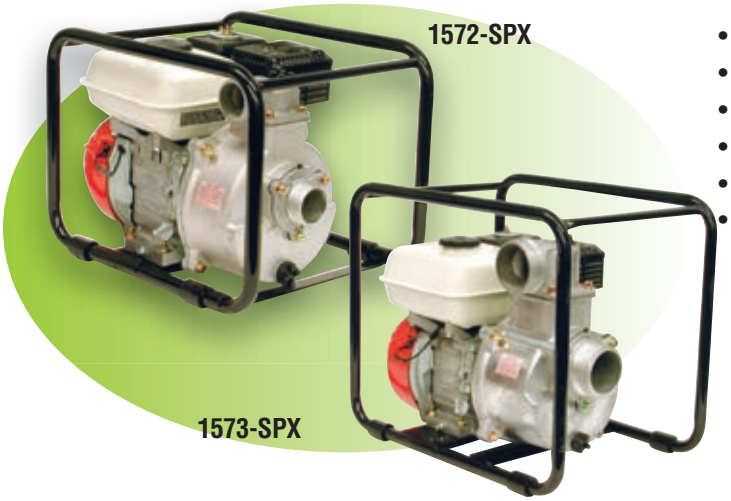
GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI
272	269.8	241	207.6	179.3	140.4	98.1	50.7	5.4	0

1543A-65TSP – 6.5 HP PowerPro™ — Metric Units

LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR
1029.6	1021.3	912.3	785.8	678.7	531.5	371.3	191.9	20.4	0

Transfer Pumps – 2 in. & 3 in. Aluminum

Series 1570



- Honda engine
- Close-coupled, gas engine driven
- Housing: Aluminum
- Pump seals: Buna-N/ceramic
- Inlet valve: Buna-N
- Suction lift: 28 ft./8.53m

Order Information

Model Number	Max GPM	Max PSI	Port Size	Engine Mfgr. & HP
1572-SPX	145	50	2" x 2"	Honda 4 hp
1573-SPX	280	50	3" x 3"	Honda 5.5 hp

1572-SPX — 4.0 HP Honda — **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI
145	141	133	125	114	102	87	70	51	24	0

1572-SPX — 4.0 HP Honda — **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR
549	534	503	473	432	386	329	265	193	91	

1573-SPX — 5.5 HP Honda — **U.S. Units**

GPM at 0 PSI	GPM at 5 PSI	GPM at 10 PSI	GPM at 15 PSI	GPM at 20 PSI	GPM at 25 PSI	GPM at 30 PSI	GPM at 35 PSI	GPM at 40 PSI	GPM at 45 PSI	GPM at 50 PSI
280	268	255	233	211	181	149	115	77	46	0

1573-SPX — 5.5 HP Honda — **Metric Units**

LPM at 0.0 BAR	LPM at 0.3 BAR	LPM at 0.7 BAR	LPM at 1.0 BAR	LPM at 1.4 BAR	LPM at 1.7 BAR	LPM at 2.1 BAR	LPM at 2.4 BAR	LPM at 2.8 BAR	LPM at 3.1 BAR	LPM at 3.4 BAR
1060	1014	965	882	799	685	564	435	291	174	

Transfer Pump Accessories

Transfer Pump Cam Lock Kit

Hypro cam lock kits easily add heavy-duty male cam lock connections to the NPT ports of 2" and 3" polypropylene pumps.

- Includes one male cam lock adapter for pump inlet
- Includes one heavy-duty 90° elbow and one male cam lock adapter for the pump outlet
- Prepares transfer pumps for the most common means of quick coupling a hose
- Interchangeable with other cam lock fittings made to MIL-C-27487 specifications

Order Information

Size	Model Number
2"	3410-0041
3"	3410-0042

Roller Pumps

Hypro roller pumps are the most popular pumps worldwide for agricultural tasks. These low-cost, highly-versatile pumps are used for spraying and transferring a variety of fluids including insecticides, herbicides, fungicides, emulsives, aromatic solvents, liquid fertilizers and many other non-abrasive liquids. All pumps are available in three materials: Cast Iron, Ni-Resist or Silver Series XL®. On average, the Silver Series XL® pumps last up to 10 times longer* than the competition (see page 66 for further details).

These pumps contain rollers that revolve inside the pump housing to force the spray solution through the outlet to the nozzle. Hypro roller pumps are easily adaptable to PTO, gas engine or electric motor drives. The pumps operate efficiently at PTO speeds of 540 and 1000 rpm. Pressure ranges are up to 300 psi (20.7 bar) with flow rates of 2 to 62 gpm (7.6 to 235 lpm).

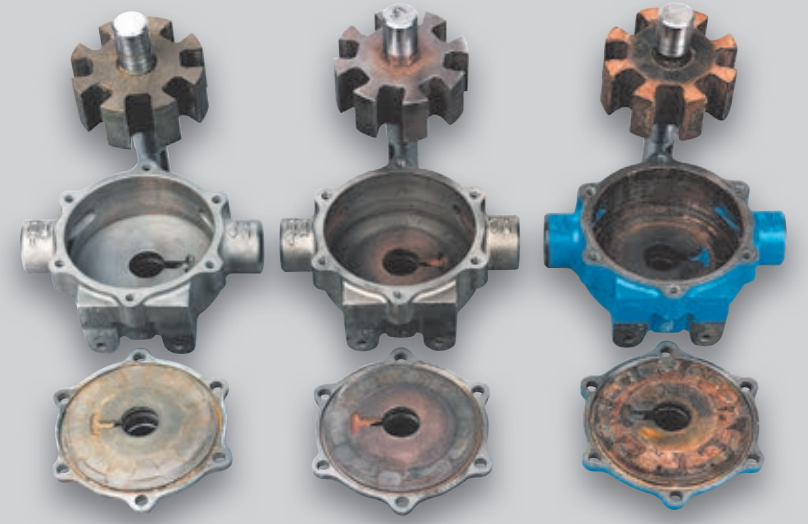
* Based on independent laboratory tests.

Hypro roller pump quality features:

- Housing available in Cast Iron, Ni-Resist or Silver Series XL®
  - Ni-Resist is a high nickel content alloy for better corrosion resistance
  - Silver Series XL® has a custom alloy that provides the best corrosion resistance and is Ready for use with Roundup®
- Self-priming operation; roller pumps should NOT be run dry
- Adaptable to PTOs or gas engines
- Standard seals are Viton or Buna-N

Roller Pump Comparisons

Get up to 10 times longer pump life with Hypro Silver Series XL® Roller pumps!



Silver Series XL® | Ni-Resist | Cast Iron

These three pumps were photographed after being tested with a 30:1 mix of water and Roundup® herbicide.

The Ni-Resist and Cast Iron indicate damage from pitting and corrosion, but the Silver Series XL® is in like-new condition after more than 1000 hours of use.

IMPROVEMENTS WITH HYPRO ROLLER PUMPS

Floating PTFE coated rotors

- Floating rotor design and black PTFE coating on metal rotors increases performance and extends pump life
- Standard production in 4001, 4101, 6500, & 7560 Silver Series XL and Ni-Resist pumps
- Available at no additional charge

Floating Design, PTFE Coating

Clear Coat Finish

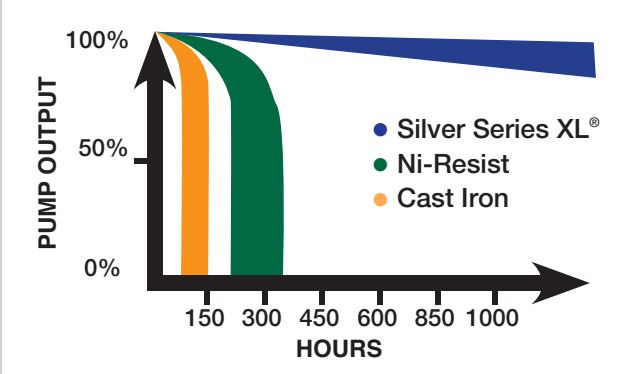
- Offers increased protection from chemical attack and from the elements
- Included on all Ni-Resist roller pumps
- Available at no additional charge

Ni-Resist Pumps

Herbicide users:

Get up to 10 times longer pump life!

- Cast Iron pumps lasted to 140 hours before failure.
- Ni-Resist pumps lasted to 332 hours before failure.
- Silver Series XL® pumps ran over 1000 hours and still met new pump specs!



Pump Recommendations for Applications

WHICH ROLLER PUMP, ROLLERS AND SEALS SHOULD YOU USE?

Material options for rollers and seals are listed in the order of recommendations for usage. These recommendations are only a general guide. For suggestions on specific chemicals or applications, call Hypro's Technical/Applications Department at (800) 445-8360.

APPLICATION	SPECIFIC CHEMICALS	SUGGESTED PUMP, ROLLERS AND SEALS
WEED CONTROL CHEMICALS	Emulsions, soluble powders, sodium arsenate.	Use a Silver Series XL®, Ni-Resist, or Cast Iron pump, Super Rollers and Viton seals **NOTE:** For weed control chemicals containing glyphosate (such as Roundup®) or other acidics, use only a Silver Series pump with Super or poly rollers and Viton seals. Teflon (T2) rollers may be used up to 100 psi.
INSECT CONTROL	Emulsions not containing aromatic solvents.	
BRUSH CONTROL	Heavy-duty sprays using diesel oil for carrier.	Use a Silver Series XL®, Ni-Resist or Cast Iron pump with Super Rollers. Use Viton seals.
PEST CONTROL CHEMICALS, FUMIGANTS, ETC.	This category or use includes mosquito sprays, termite control liquids, nematocides, soil and grain fumigants where any of the following chemicals with aromatic solvents are present: Pentachlorophenol, xylene, xylol, benzene, high sulphur fuel or diesel oil. Fumigants containing: ethylene dichloride, ethylene dibromide, carbon tetrachloride, perchlorethylene, trighlorethylene, methyl bromide, and other aromatic solvents.	
LIQUID FERTILIZERS	Up to 32% nitrogen content, or others if the liquid is atmospheric pressure and the temperature is handled.	Use a Silver Series XL® or Ni-Resist pump with poly rollers and Buna-N seals.
POWDERED FERTILIZERS	Fertilizers dissolved in water (greenhouse plant food).	Use a Silver Series XL®, Ni-Resist or Cast Iron pump; Super or poly rollers; and Buna-N or Viton seals.
PUMPING	Large quantities of plain water.	
SPRAYING	Wettable powder sprays.	
MATERIAL HANDLING	Heavy abrasive powders in suspension.	
ACIDS	Mild sulfuric acid for spraying. Mild muriatic acid, inhibited muriatic, etc.	Use a Silver Series XL® pump, poly or Teflon rollers and Viton seals. **NOTE:** Limit pressure to 100 psi when using Teflon rollers.

Cast Iron, Ni-Resist or Silver Series XL®

Series 4001 4-Roller

Pressure in PSI and BAR	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP
	@1100 RPM		@1400 RPM		@1800 RPM	
0 PSI	5.5	.06	7.1	.10	9.1	.14
0 BAR	20.8	.06	26.9	.10	34.4	.14
25 PSI	4.9	.14	6.4	.20	8.5	.30
1.7 BAR	18.5	.14	24.2	.20	32.2	.30
50 PSI	4.4	.24	5.9	.32	8.0	.46
3.4 BAR	16.6	.24	22.3	.32	30.3	.46
75 PSI	4.1	.34	5.6	.44	7.6	.62
5.2 BAR	15.5	.34	21.2	.44	28.7	.62
100 PSI	3.8	.41	5.3	.56	7.3	.78
6.9 BAR	14.4	.41	20.1	.56	27.6	.78
125 PSI	3.5	.50	5.0	.68	7.0	.95
8.6 BAR	13.2	.50	18.9	.68	26.5	.95
150 PSI	3.3	.62	4.8	.78	6.7	1.1
10.3 BAR	12.5	.62	18.2	.78	25.4	1.1

- Port size: ¾" NPT
- Max. fluid temperature: 140°F/60°C
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Pump shaft rotation: CW (CCW available)*
- Weight: 5 lbs./2.3 kg
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Available shaft adapters: See page 75
- Special torque arm and base kit is available for gas engines
- Rotor: Cast Iron, Ni-Resist or Silvercast
- Standard rotation directly couples to gasoline engines

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
4001C	9.1	150	1800	5⁄8" solid shaft
4001C-H	9.1	150	1800	1⁄2" hollow shaft
4001N	9.1	150	1800	5⁄8" solid shaft
4001N-H	9.1	150	1800	1⁄2" hollow shaft
4001XL	9.1	150	1800	5⁄8" solid shaft
4001XL-H	9.1	150	1800	1⁄2" hollow shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 4001C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 4001C-T3).
Reverse rotation* - Add Suffix "R" - (i.e.: 4001C-R).

Cast Iron, Ni-Resist or Silver Series XL®

Series 4101 4-Roller

- Port size: ¾" NPT
- Max. fluid temperature: 140°F/60°C
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Pump shaft rotation: CW (CCW available)*
- Weight: 5 lbs./2.27 kg
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Available shaft adapters: See page 75
- Special torque arm and base kit is available for gas engines
- Rotor: Cast Iron, Ni-Resist or Silvercast
- Standard rotation directly couples to gasoline engines

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
4101C	7.2	150	2600	5⁄8" solid shaft
4101C-H	7.2	150	2600	1⁄2" hollow shaft
4101N	7.2	150	2600	5⁄8" solid shaft
4101N-H	7.2	150	2600	1⁄2" hollow shaft
4101XL	7.2	150	2600	5⁄8" solid shaft
4101XL-H	7.2	150	2600	1⁄2" hollow shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 4101C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 4101C-T3).
Reverse rotation* -Add Suffix "R" - (i.e.: 4101C-R).

* CCW (counterclockwise) and CW (clockwise) are determined when looking at the shaft end.

Ni-Resist or Silver Series XL®

Series 4001 and 4101 12 volt DC 4-Roller

Note: All models come in either Ni-Resist or Silver Series XL housings.

- Weight: 16-18 lbs./7.3-8.2 kg
- Super Rollers and Viton seals standard
- Locking collar and torque arm come in each package
- Rotor: Ni-Resist (N) or Silvercast (XL)

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
4001N-EH	10.4	30	1900	½" Hollow Shaft
4001N-E2H	9.9	50	1600	½" Hollow Shaft
4001XL-EH	10.4	30	1900	½" Hollow Shaft
4001XL-E2H	9.9	50	1600	½" Hollow Shaft
4101N-EH	7.5	50	1900	½" Hollow Shaft
4101N-E2H	5.9	90	1600	½" Hollow Shaft
4101XL-EH	7.5	50	1900	½" Hollow Shaft
4101XL-E2H	5.9	90	1600	½" Hollow Shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 4001N-EHT2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 4001N-EHT3).

Series 4101-EH and 4101-E2H

	Model 4101N-EH & 4101XL-EH			Model 4101N-E2H & 4101XL-E2H		
Volts	PSI	AMPS	GPM	PSI	AMPS	GPM
12.0 (Battery) Engine Off	0	10.0	6.3	0	—	—
	5	11.3	6.0	10	8.4	5.3
	10	12.5	5.8	20	11.8	4.8
	15	13.7	5.6	30	13.7	4.65
	20	15.1	5.4	40	16.4	4.4
	25	16.7	5.2	50	19.6	4.05
	30	18.6	5.0	60	22.8	3.65
	35	20.3	4.8	70	25.8	3.20
	40	22.3	4.6	80	28.9	3.00
	45	24.1	4.4	90	31.5	2.75
	50	25.7	4.2	100	34.2	2.60
13.5 (Alternator) Engine Running	0	10.4	7.5	0	—	—
	5	11.7	7.0	10	9.1	5.9
	10	13.0	6.6	20	11.2	5.6
	15	14.2	6.4	30	13.9	5.25
	20	15.8	6.2	40	16.9	5.0
	25	17.4	6.0	50	19.5	4.7
	30	19.6	5.8	60	22.7	4.35
	35	20.9	5.6	70	25.7	4.0
	40	22.5	5.4	80	29.2	3.6
	45	24.3	5.2	90	31.9	3.4
	50	26.1	5.0	100	34.8	3.2

	Model 4101N-EH & 4101XL-EH			Model 4101N-E2H & 4101XL-E2H		
Volts	BAR	AMPS	LPM	BAR	AMPS	LPM
12.0 (Battery) Engine Off	0	10.0	23.8	0	—	—
	.3	11.3	22.7	.7	8.4	20.0
	.7	12.5	22.0	1.4	11.8	18.2
	1.0	13.7	21.2	2.1	13.7	17.6
	1.4	15.1	20.4	2.8	16.4	16.7
	1.7	16.7	19.7	3.4	19.6	15.3
	2.1	18.6	18.9	4.1	22.8	13.8
	2.4	20.3	18.2	4.8	25.8	12.1
	2.8	22.3	17.4	5.5	28.9	11.4
	3.1	24.1	16.7	6.2	31.5	10.4
	3.4	25.7	15.9	6.9	34.2	9.84
13.5 (Alternator) Engine Running	0	10.4	28.4	0	—	—
	.3	11.7	26.5	.7	9.1	22.3
	.7	13.0	25.0	1.4	11.2	21.2
	1.0	14.2	24.2	2.1	13.9	19.9
	1.4	15.8	23.5	2.8	16.9	18.9
	1.7	17.4	22.7	3.4	19.5	17.8
	2.1	19.6	22.0	4.1	22.7	16.5
	2.4	20.9	21.2	4.8	25.7	15.1
	2.8	22.5	20.4	5.5	29.2	13.6
	3.1	24.3	19.7	6.2	31.9	12.9
	3.4	26.1	18.9	6.9	34.8	12.1

Series 4001-EH and 4001-E2H

	Model 4001N-EH & 4001XL-EH			Model 4001N-E2H & 4001XL-E2H		
Volts	PSI	AMPS	GPM	PSI	AMPS	GPM
12.0 (Battery) Engine Off	0	12.6	9.0	10	13.9	8.4
	5	14.1	8.3	20	18.0	7.9
	10	15.2	8.1	30	22.2	7.2
	15	17.3	7.8	35	25.0	6.9
	20	19.7	7.2	40	27.0	6.5
	25	22.1	6.7	50	31.6	5.9
	30	24.8	6.2	60	36.2	5.4
13.5 (Alternator) Engine Running	0	13.4	10.4	10	14.4	9.9
	5	14.8	9.9	20	18.3	9.1
	10	16.2	9.4	30	22.3	8.5
	15	18.2	8.9	35	24.5	8.3
	20	20.5	8.5	40	27.0	8.0
	25	22.5	8.2	50	31.0	7.3
	30	24.9	7.7	60	36.1	6.8

	Model 4001N-EH & 4001XL-EH			Model 4001N-E2H & 4001XL-E2H		
Volts	BAR	AMPS	LPM	BAR	AMPS	LPM
12.0 (Battery) Engine Off	0	12.6	34.1	.7	13.9	31.8
	.3	14.1	31.4	1.4	18.0	29.9
	.7	15.2	30.7	2.1	22.2	27.3
	1.0	17.3	29.5	2.4	25.0	26.1
	1.4	19.7	27.3	2.8	27.0	24.6
	1.7	22.1	25.4	3.5	31.6	22.3
	2.1	24.8	23.5	4.1	36.2	20.4
13.5 (Alternator) Engine Running	0	13.4	39.4	.7	14.4	37.5
	.3	14.8	37.5	1.4	18.3	34.4
	.7	16.2	35.6	2.1	22.3	32.2
	1.0	18.2	33.7	2.4	24.5	31.4
	1.4	20.5	32.2	2.8	27.0	30.3
	1.7	22.5	31.0	3.5	31.0	27.6
	2.1	24.9	29.1	4.1	36.1	25.7

Cast Iron, Ni-Resist or Silver Series XL®

Series 6500 6-Roller

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP
	@540 RPM		@1000 RPM		@1200 RPM	
0 PSI	9.7	.08	18.2	.20	21.8	.30
0 BAR	36.7	.08	68.9	.20	82.5	.30
50 PSI	8.0	.38	16.5	.71	20.1	.90
3.4 BAR	30.3	.38	62.4	.71	76.1	.90
100 PSI	7.2	.68	15.4	1.26	19.1	1.51
6.9 BAR	27.3	.68	58.3	1.26	72.3	1.51
150 PSI	6.6	.97	14.7	1.80	18.2	2.14
10.3 BAR	25	.97	55.6	1.80	68.9	2.14
200 PSI	5.6	1.29	14.0	2.34	17.3	2.84
13.8 BAR	21.2	1.29	53	2.34	65.5	2.84
250 PSI	4.9	1.65	13.4	2.91	16.5	3.48
17.2 BAR	18.5	1.65	50.7	2.91	62.4	3.48
300 PSI	4.3	1.91	12.7	3.47	15.7	4.17
20.7 BAR	16.3	1.91	48.1	3.47	59.4	4.17

- Port size: ¾" NPT
- 1" hose barb inlet fitting for 1000 rpm operation
- Max. fluid temperature: 140°F/60°C
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Pump shaft rotation: CCW (CW available)*
- Weight: 9 lbs./4.1 kg
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Available PTO adapters: See page 75
- Recommended PTO torque arm kit 3430-0540
- Rotor: Cast Iron, Ni-Resist or Silvercast

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
6500C	21.8	300	1200	⅝" solid shaft
6500N	21.8	300	1200	⅝" solid shaft
6500XL	21.8	300	1200	⅝" solid shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 6500C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 6500C-T3) .
Reverse rotation*- Add Suffix "R" - (i.e.: 6500C-R).

Cast Iron, Ni-Resist or Silver Series XL®

Series 7560 8-Roller

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP
	@540 RPM		@800 RPM		@1000 RPM	
0 PSI	12	.33	18.3	.89	22.5	1.56
0 BAR	45.4	.33	69.3	.89	85.2	1.56
50 PSI	11.1	.74	17.5	1.26	22	1.78
3.4 BAR	42	.74	66.2	1.26	83.3	1.78
100 PSI	10.3	1.25	16.9	1.95	21.3	2.53
6.9 BAR	39	1.25	64	1.95	80.6	2.53
150 PSI	9.5	1.77	16.1	2.65	20.6	3.5
10.3 BAR	36	1.77	60.9	2.65	78	3.5
200 PSI	8.6	2.26	15.5	3.4	20	4.2
13.8 BAR	32.5	2.26	58.7	3.4	75.7	4.2
250 PSI	7.0	2.78	14.5	4.2	18.9	5.3
17.2 BAR	29.5	2.78	54.9	4.2	71.5	5.3
300 PSI	7.1	3.3	18.9	5.3	18.0	6.1
20.7 BAR	26.9	3.3	51.9	5.3	68.1	6.1

* CCW (counterclockwise) and CW (clockwise) are determined when looking at the shaft end.

- Max. fluid temperature: 140°F/60°C
- Port sizes: ¾" NPT
- 1" hose barb inlet fitting for 1000 rpm operation
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Shaft rotation: CCW (CW available)*
- Weight: 13 lbs./5.89 kg
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Available PTO adapters: See page 75
- Recommended PTO torque arm kit 3430-0540
- Rotor: Cast Iron, Ni-Resist or Silvercast

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
7560C	22.5	300	1000	15/16" solid shaft
7560N	22.5	300	1000	15/16" solid shaft
7560XL	22.5	300	1000	15/16" solid shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 7560C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 7560C-T3).
Reverse rotation*- Add Suffix "R" - (i.e.: 7560C-R).

Hydraulically-Driven Cast Iron, Ni-Resist or Silver Series XL®

Series 7560-GM30, 7560-GM15 8-Roller

- Hydraulic motor drive (for open center, closed center and load-sensing systems)
- Max. fluid temperature: 140°F/60°C
- Pump port size: ¾" NPT
- 1" hose barb inlet fitting for 1000 rpm operation
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Rotor: Cast Iron, Ni-Resist or Silvercast
- Motor port size: -10 SAE (⅞"- 14" UNF)

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Motor Capacity
7560C-GM30	NC	300	1000	6 gpm hydraulic flow max
7560N-GM30	20.8	300	1000	6 gpm hydraulic flow max
7560XL-GM30	20.8	300	1000	6 gpm hydraulic flow max
7560C-GM15	20.1	300	1000	12 gpm hydraulic flow max
7560N-GM15	20.1	300	1000	12 gpm hydraulic flow max
7560XL-GM15	20.1	300	1000	12 gpm hydraulic flow max

Teflon rollers - Add Suffix "T2" - (i.e.: 7560C-GM30-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 7560C-GM30-T3).

7560C,N,XL-GM15 — U.S. Units

Hyd.GPM	GPM at									
	0 PSI	25 PSI	50 PSI	75 PSI	100 PSI	125 PSI	150 PSI	200 PSI	250 PSI	300 PSI
3	10.6	9.4	8.5	7.7	7.1	6.5	5.8	4.8	3.2	1.6
4	14.1	13.1	12.0	11.3	10.6	10.0	9.3	8.3	6.9	5.2
5	17.4	16.6	15.7	15.0	14.4	13.5	13.2	11.8	10.3	8.7
6	20.8	20.1	19.4	18.6	17.9	17.1	16.5	14.9	13.3	11.8

7560C,N,XL-GM15 — Metric Units

Hyd.LPM	LPM at									
	0 Bar	1.7 Bar	3.5 Bar	5.2 Bar	6.9 Bar	8.6 Bar	10.3 Bar	13.8 Bar	17.2 Bar	20.7 Bar
11.4	40.1	35.6	32.2	29.1	26.9	24.6	22.0	18.2	12.1	6.1
15.1	53.4	49.6	45.4	42.8	40.1	37.9	35.2	31.4	26.1	19.7
18.9	65.9	62.8	59.4	56.8	54.5	51.1	50.0	44.7	39.0	32.9
22.7	78.7	76.1	73.4	70.4	67.8	64.7	62.5	56.4	50.3	44.7

7560C,N,XL-GM30 — U.S. Units

Hyd. GPM	GPM at									
	0 PSI	25 PSI	50 PSI	77 PSI	100 PSI	125 PSI	150 PSI	200 PSI	250 PSI	300 PSI
5	9.0	8.5	7.8	7.3	6.7	6.1	5.5	4.4	3.3	2.2
6	10.5	10.0	9.5	8.9	8.4	7.8	7.3	6.2	5.2	4.1
7	11.9	11.5	11.0	10.4	9.9	9.4	8.9	7.8	6.8	5.7
8	13.7	13.1	12.5	12.0	11.5	10.9	10.4	9.4	8.4	7.3
9	15.2	14.6	14.1	13.6	13.1	12.6	12.1	11.1	10.0	9.1
10	16.9	16.5	15.9	15.4	14.9	14.3	13.9	12.9	11.9	11.0
11	18.6	18.2	17.6	17.1	16.6	16.1	15.6	14.7	13.8	12.9
12	20.1	19.6	19.1	18.6	18.1	17.6	17.1	16.3	15.3	14.5

7560C,N,XL-GM30 — Metric Units

Hyd. LPM	LPM at										
	0 BAR	2 BAR	4 BAR	6 BAR	8 BAR	10 BAR	12 BAR	14 BAR	16 BAR	18 BAR	20 BAR
20	35.8	33.2	30.5	28.1	25.6	23.4	20.9	18.5	15.8	12.6	10.0
25	42.8	39.5	36.8	34.0	31.8	29.2	26.2	23.7	21.6	18.9	16.4
30	51.8	49.0	45.8	43.0	40.3	37.9	35.3	33.3	31.1	28.9	26.2
35	58.1	55.8	52.7	50.1	47.7	45.5	43.1	40.9	38.8	36.3	33.5
40	67.6	64.8	62.4	60.0	57.7	55.8	53.4	51.3	48.8	46.6	44.1
45	75.3	72.7	70.4	68.1	66.0	63.8	61.8	59.8	57.8	55.7	53.3

Cast Iron, Ni-Resist or Silver Series XL®

Series 7700 7-Roller

- Max. fluid temperature: 140°F/60°C
- Port size: ¾" NPT
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Weight: 14 lbs./6.36 kg
- Pump shaft rotation: CCW (CW available)*
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Available PTO adapters: See page 75
- Recommended PTO torque arm kit 3430-0540
- Rotor: Cast Iron, Ni-Resist or Silvercast

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP
	@540 RPM		@600 RPM		@800 RPM	
0 PSI	14.2	.23	15.3	.28	22.1	.37
0 BAR	53.7	.23	57.9	.28	83.6	.37
50 PSI	12.9	.56	14.0	.62	20.7	.86
3.4 BAR	48.8	.56	53	.62	78.3	.86
100 PSI	11.9	1.10	13.0	1.20	19.5	1.66
6.9 BAR	45	1.10	49.2	1.20	73.8	1.66
150 PSI	11.2	1.64	12.3	1.80	18.6	2.40
10.3 BAR	42.4	1.64	46.6	1.80	70.4	2.40
200 PSI	10.3	2.22	11.6	2.44	17.8	3.26
13.8 BAR	39	2.22	43.9	2.44	67.4	3.26

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
7700C	22.1	200	800	15/16" solid shaft
7700N	22.1	200	800	15/16" solid shaft
7700XL	22.1	200	800	15/16" solid shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 7700C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 7700C-T3).
Reverse rotation* - Add Suffix "R" - (i.e.: 7700C-R).

Cast Iron, Ni-Resist or Silver Series XL®

Series 1700 5-Roller

- Max. fluid temperature: 140°F/60°C
- Port size: 1" NPT
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Pump shaft rotation: CCW (CW available)*
- Weight: 19 lbs./8.6 kg
- Rollers: Super Rollers standard [Poly (T3) and Teflon (T2) available]
- Shaft Seals: Viton standard
- Available PTO adapters (forged steel recommended): See page 75
- Recommended PTO torque arm kit 3430-0540
- Rotor: Cast Iron, Ni-Resist or Silvercast

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP
	@540 RPM		@600 RPM		@1000 RPM	
0 PSI	25.0	2.7	28.0	.34	45.0	1.42
0 BAR	94.6	2.7	106	.34	170	1.42
50 PSI	21.0	1.18	24.5	1.39	43.0	3.0
3.4 BAR	79.5	1.18	92.7	1.39	163	3.0
100 PSI	19.0	2.13	22.0	2.36	41.0	4.67
6.9 BAR	71.9	2.13	83.3	2.36	155	4.67
150 PSI	17.0	2.89	20.0	3.34	39.0	6.07
10.3 BAR	64.3	2.89	75.7	3.34	148	6.07
200 PSI	15.0	3.85	18.0	4.39	——	——
13.8 BAR	56.8	3.85	681	4.39	——	——

* CCW (counterclockwise) and CW (clockwise) are determined when looking at the shaft end.

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
1700C	45	200	1000	15/16" solid shaft
1700N	45	200	1000	15/16" solid shaft
1700XL	45	200	1000	15/16" solid shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 1700C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 1700C-T3).
Reverse rotation*- Add Suffix "R" - (i.e.: 1700C-R).

Cast Iron, Ni-Resist or Silver Series XL®

Series 1502 6-Roller

- Max. fluid temperature: 140°F/60°C
- Port size: 11/2" NPT
- Housing: Cast Iron (C), Ni-Resist (N) or Silvercast (XL)
- Pump shaft rotation: CCW (CW available)*
- Weight: 30 lbs./13.6 kg
- Rollers: Super rollers standard [Poly (T3) and Teflon (T2) available]
- Shaft Seals: Buna-N standard on Cast Iron and Ni-Resist [Viton (Q) available]; Viton standard on Silver Series XL®
- Available PTO adapters (forged steel recommended): See page 75
- Recommended PTO Torque Arm Kit 3430-0540
- Rotor: Cast Iron, Ni-Resist or Silvercast

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP
	@540 RPM		@600 RPM		@1000 RPM	
0 PSI	33.1	.51	36.8	.66	62.1	2.02
0 BAR	125	.51	139	.66	235	2.02
25 PSI	29.7	1.02	33.6	1.15	58.5	3.04
1.7 BAR	112	1.02	127	1.15	221	3.04
50 PSI	27.8	1.45	31.7	1.68	56.9	3.69
3.4 BAR	105	1.45	120	1.68	215	3.69
100 PSI	24.3	2.46	28.3	2.78	53.9	5.31
6.9 BAR	92	2.46	107	2.78	204	5.31
150 PSI	21.0	3.54	25.0	3.95	50.9	7.12
10.3 BAR	79.5	3.54	94.6	3.95	193	7.12

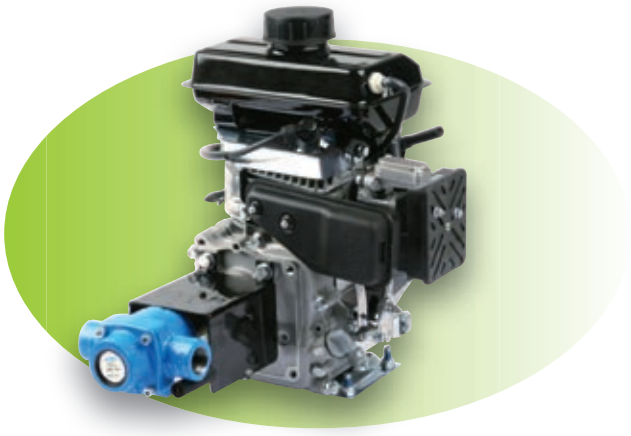
Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
1502C	62	200	1000	15/16" solid shaft
1502N	62	200	1000	15/16" solid shaft
1502XL	62	200	1000	15/16" solid shaft

Teflon rollers - Add Suffix "T2" - (i.e.: 1502C-T2).
Polypropylene rollers - Add Suffix "T3" - (i.e.: 1502C-T3).
Reverse rotation* - Add Suffix "R" - (i.e.: 1502C-R).

Cast Iron or Silver Series XL®, Gas Engine Driven

Models: 4101C-25, 4101XL-25



- 2.5 HP PowerPro™ Engine
- Port size: 3/4" NPT
- Housing: Cast Iron (C) or Silvercast (XL)
- Pump shaft rotation: CW
- Weight: 29 lbs./13.1 kg
- Rollers: Super rollers standard [Poly (T3) and Teflon (T2)]
- Shaft Seals: Viton standard
- Rotor: Cast Iron (C) or Silvercast (XL)

Pressure in PSI and BAR	GPM
BAR	LPM
0 PSI	8.9
0 BAR	34
50 PSI	8.6
3.4 BAR	33
100 PSI	8.3
6.9 BAR	31
150 PSI	8.0
10.3 BAR	30

Order Information

Model Number	Max GPM	Max PSI	Engine Mfgr. & HP
4101C-25	8.9	100	PowerPro™ 2.5 hp
4101XL-25	8.9	150	PowerPro™ 2.5 hp

* CCW (counterclockwise) and CW (clockwise) are determined when looking at the shaft end.

Roller Pump Kits and Accessories

Roller Pump Accessory Selection Guide

Description	Series 1500	Series 1700	Series 6500	Series 7560	Series 7700	Series 4000	Series 5200
540 rpm 1⅜" Die Cast PTO Adapter	1320-0033	1320-0033	1320-0022	1320-0033	1320-0033	———	1320-0059
540 rpm 1⅜" Die Cast Quick Coupler	1321-0007	1321-0007	1321-0006	1321-0007	1321-0007	———	———
540 rpm 1⅜" Forged Steel PTO Adapter	1320-0076	1320-0076	1320-0077	1320-0076	1320-0076	———	1320-0081
1000 rpm 1⅜" Die Cast PTO Adapter	1320-0038	1320-0038	1320-0053	1320-0038	———	———	———
1000 rpm 1⅜" Die Cast Quick Coupler	1321-0009	1321-0009	1321-0008	1321-0009	———	———	———
1000 rpm 1⅜" Forged Steel PTO Adapter	1320-0078	1320-0078	1320-0079	1320-0078	———	1320-0079	———
1000 rpm 1¾" Forged Steel PTO Adapter	1320-0080	1320-0080	———	1320-0080	———	———	———
Multi-Speed 1⅜" Die Cast Quick Coupler	1321-0013	1321-0013	1321-0012	1321-0013	1321-0013	1321-0012	———
540 rpm 1⅜" Forged Steel Quick Coupler	1323-0072	1323-0072	1323-0074	1323-0072	1323-0072	———	———
1000 rpm 1⅜" Forged Steel Quick Coupler	1323-0073	1323-0073	1323-0075	1323-0073	———	———	———
Multi-Speed 1⅜" Forged Steel Quick Coupler	1323-0076	1323-0076	1323-0077	1323-0076	1323-0076	1323-0077	———
Steel Shaft Adapter ¾" x ⅝	———	———	1320-0015	———	———	1320-0015	———
Steel Shaft Adapter ⅝" x ⅝	———	———	1320-0016	———	———	1320-0016	———
Die Cast Coupler ¾" x 1⁵⁄₁₆	1320-0054	1320-0054	———	1320-0054	1320-0054	———	———
Repair Kits	3430-0387 3430-0386	3430-0437	3430-0380	3430-0381	3430-0384	3430-0390	———
Torque Arm Kit	———	3430-0540	3430-0540	3430-0540	3430-0540	———	———
Base Kits	3420-0004	3420-0010	3420-0023	3420-0003	3420-0010	3420-0024* 3420-0025**	———
Locking Collar Kit	———	———	———	———	———	———	———
Hydraulic Flange Kit	———	———	———	3430-0636	———	———	———

* For electric motor drive 3½" shaft centerline (4001, 4101).
** For gas engine drive 4⁹⁄₁₆" shaft centerline (4101 only).

Roller and Rotor Repair Kits

Kit Number	Pump Series	Description	Estimated Weight Ea.
3430-0387	1502C and 1502N	Roller kit includes: 6 Super Rollers, 1 o-ring gasket, and 2 Buna-N seals	1 lb. 7 oz.
3430-0386	1502XL	Roller kit includes: 6 Super Rollers, 1 o-ring gasket, and 2 Viton® seals	1 lb. 8 oz.
3430-0437	1700	Roller kit includes: 5 Super Rollers, 1 o-ring gasket, and 2 Viton® seals	1 lb. 5 oz.
3430-0380	6500	Roller kit includes: 6 Super Rollers, 1 o-ring gasket, and 2 Viton® seals	8 oz.
3430-0381	7560/7700	Roller kit includes: 8 Super Rollers, 1 o-ring gasket, and 2 Viton® seals	12 oz.
3430-0390	4001/4101	Roller kit includes: 4 Super Rollers, 1 o-ring gasket, and 2 Viton® seals	3 oz.

Base Kits

Kit Number	Pump Series	Description	Estimated Weight Ea.
3420-0025	4101	Base kit for mounting to gas engine, 4⁹⁄₁₆" shaft centerline. Base kit includes: 1 Base, 2 Bolts and 2 Lock washers	12 oz.
3420-0024	4001/4101	Base kit for mounting to an electric motor, 3½" shaft centerline. Base kit includes: 1 Base, 2 Bolts and 2 Lock washers	7 oz.
3420-0023	6500	Base kit includes: 1 Base, 2 Bolts and 2 Lock washers	12 oz.
3420-0003	7560	Base kit includes: 1 Base, 3 Bolts and 3 Lock washers	1 lb. 10 oz.
3420-0010	7700/1700	Base kit includes: 1 Base and 4 Bolts	14 oz.
3420-0004	1500	Base kit includes: 1 Base and 4 Bolts	6 lbs.

Roller Pump Repair Tools and Tool Kits

Kit Number	Pump Series	Description
3011-0006	6500	Tool Kit
3011-0021	4001/4101	Tool Kit
3010-0001†	1700, 6500, 7560, 7700	Support fixture
3010-0002†	1700, 6500, 7560, 7700	Support fixture
3010-0003†	4001/4101, 6500	Bearing and seal assembly tool
3010-0004†	4001/4101, 6500	Bearing disassembly tool
3010-0005	1500, 1700, 7560, 7700	Bearing and seal assembly tool
3010-0006	1500, 1700, 7560, 7700	Bearing disassembly tool
3010-0010*†	4001/4101, 6500	Bearing support tool
3010-0014*†	4001/4101, 6500	Bearing race support tool
3010-0020	1500, 1700, 7560, 7700	Bearing support tool
3010-0066*†	1500, 1700, 4001/4101, 6500, 7560, 7700	Wire brush
3010-0067*†	1500, 1700, 4001/4101, 6500, 7560, 7700	Wire brush holder
3010-0068*†	1500, 1700, 4001/4101, 6500, 7560, 7700	Tool Box
3020-0009*†	1500, 1700, 4001/4101, 6500, 7560, 7700	Allen wrench; 1/16" hex

* Included in 3011-0006 - Tool kit for 6500 series roller pumps.
† Included in 3011-0021 - Tool kit for 4001/4101 series roller pumps.

Roller Pump Kits & Accessories

PTO and Shaft Adapters (Female to Female)

Part Number	PTO (I.D.)	Pump End (I.D.)	Material	RPM	Pump Model
1320-0015	3/4"	5/8"	steel	*	4000, 6500
1320-0016	5/8"	5/8"	steel	*	4000, 6500
1320-0022	13/8" (6 spline)	5/8"	die cast	540	6500
1320-0033	13/8" (6 spline)	15/16"	die cast	540	1500, 1700, 7560, 7700
1320-0038	13/8" (21 spline)	15/16"	die cast	1000	1500, 1700, 7560
1320-0053	13/8" (21 spline)	5/8"	die cast	1000	4000, 6500
1320-0054	3/4"	15/16"	die cast	*	1500, 1700, 7560, 7700
1320-0059	13/8" (6 spline)	1"	die cast	540	5200
1320-0076	13/8" (6 spline)	15/16"	forged steel	540	1500, 1700, 7560, 7700
1320-0077	13/8" (6 spline)	5/8	forged steel	540	6500
1320-0078	13/8" (21 spline)	15/16"	forged steel	1000	1500, 1700, 7560
1320-0079	13/8" (21 spline)	5/8"	forged steel	1000	4000, 6500
1320-0080	13/4" (20 spline)	15/16"	forged steel	1000	1500, 1700, 7560
1320-0081	13/8" (6 spline)	1"	forged steel	540	5200

* Refer to recommended pump rpm.

Quick Couplers (Female to Female)

Part Number	PTO (I.D.)	Pump End (I.D.)	Material	RPM	Pump Model
1321-0006	13/8" (6 spline)	5/8"	die cast	540	6500
1321-0007	13/8" (6 spline)	15/16"	die cast	540	1500, 1700, 7560, 7700
1321-0008	13/8" (21 spline)	5/8"	die cast	1000	4000, 6500
1321-0009	13/8" (21 spline)	15/16"	die cast	1000	1500, 1700, 7560
1321-0012	13/8" (multi-speed)	5/8"	die cast	540/1000	4000, 6500
1321-0013	13/8" (multi-speed)	15/16"	die cast	540/1000	1500, 1700, 7560, 7700
1323-0072	13/8" (6 spline)	15/16	forged steel	540	1500,1700, 7560, 7700
1323-0073	13/8" (21 spline)	15/16"	forged steel	1000	1500, 1700, 7560
1323-0074	13/8" (6 spline)	5/8"	forged steel	540	6500
1323-0075	13/8" (21 spline)	5/8"	forged steel	1000	4000, 6500
1323-0076	13/8" (multi-speed)	15/16"	forged steel	540/1000	1500, 1700, 7560, 7700
1323-0077	13/8" (multi-speed)	5/8"	forged steel	540/1000	4000, 6500

Other Pump Accessories

Ordering Instructions:
To order one 1/2" x 3/4" Series 2738 coupling, specify the following:
Note: It is not necessary to order in complete sets, parts can be ordered individually.

Quantity	Part Number	Description
1	2738-1001	1/2" coupling end
1	2738-1003	3/4" coupling end
1	2728-1001	Center disc

Series	Part Number	Description	Estimated Weight Each
2738 (2.0 hp limit)*	2738-1001	1/2" coupling end, with 1/8" keyway	6 oz.
	2738-1002	5/8" coupling end, with 3/16" keyway	6 oz.
	2738-1003	3/4" coupling end, with 3/16" keyway	6 oz.
	2738-1004	7/8" coupling end, with 3/16" keyway	6 oz.
Replaces L-075	2728-1001	Center disc	1 oz.
2739 (5.0 hp limit)*	2739-1001	5/8" coupling end, with 3/16" keyway	11 oz.
	2739-1002	3/4" coupling end, with 3/16" keyway	11 oz.
	2739-1003	7/8" coupling end, with 3/16" keyway	11 oz.
	2739-1004	15/16" coupling end, with 1/4" keyway	11 oz.
	2739-1005	1" coupling end, with 1/4" keyway	11 oz.
	2739-1006	1 1/8" coupling end, with 1/4" keyway	11 oz.
	2739-1009	24 mm coupling end, with 8mm keyway	11 oz.
	2729-1001	Center disc	1 oz.
Replaces L-095	2729-1005	Heavy-duty center disc, urethane material	1 oz.
2741 (10.5 hp limit)*	2741-1001	3/4" coupling end, with 3/16" keyway	1 lb. 5 oz.
	2741-1004	15/16" coupling end, with 1/4" keyway	1 lb. 5 oz.
	2741-1002	1" coupling end, with 1/4" keyway	1 lb. 5 oz.
	2741-1005	1 1/4" coupling end, with 1/4" keyway	1 lb. 5 oz.
	2741-1007	1 3/8" coupling end, with 5/16" keyway	1 lb. 5 oz.
	2741-1003	1 1/8" coupling end, with 1/4" keyway	1 lb. 5 oz.
	2729-1002	Center disc	1 oz.
Replaces L-100	2729-1006	heavy-duty center disc, urethane material	1 oz.
2740 (18.0 hp limit)*	2740-1001	3/4" coupling end, with 3/16" keyway	3 lbs. 11 oz.
	2740-1002	1" coupling end, with 1/4" keyway	3 lbs. 8 oz.
	2740-1005	1 3/8" coupling end, with 5/16" keyway	3 lbs.
	2740-1007	1 1/8" coupling end, with 1/4" keyway	2 lbs. 15 oz.
Replaces L-110	2729-1003	Center disc	3 oz.

* HP limit is electric motor hp at 1725 rpm for driving a steady uniform load. For an uneven load, stop-start and moderate shock loads, divide hp by a 1.5 service factor.

Relief Valves

Part Number	Ports-NPT Inlet (M) Oultet (F)	Max. PSI	Body Material	Valve Material	Estimated Weight Each
3300-0002	½" M x ½" F	200	cast bronze	stainless steel ball	10 oz.
3300-0001	¾" M x ¾" F	400	cast bronze	stainless steel ball	1 lb. 1 oz.
3301-0001	¾" M x ¾" F	400	cast bronze	flat neoprene	1 lb. 2 oz.
3300-0093	¾" M x ¾" F	300	cast bronze	stainless steel ball	1 lb. 2 oz.
3300-0094	1" M x ¾" F	150	cast bronze	stainless steel ball	1 lb. 4 oz.
3316-0002	1¼"	200	cast iron	stainless steel cone	2 lbs. 14 oz.
3300-0015	¾" M - ¾" F	150	nylon	nylon	6 oz.
3300-0016	¾" M - ¾" F	250	nylon	nylon	6 oz.
3300-0098	¾" M - ¾" F	400	nylon	nylon	6 oz.

Torque Arm Kit (pump not included)

Part Number	Material	RPM	For Pump Series	Estimated Weight Ea.
3430-0540	steel	540/1000	1502, 1700, 6500, 7560, and 7700	2 lbs. 4 oz.

Diaphragm Pumps

Diaphragm pumps are the most complete line of pumps available for spraying and pumping of herbicides, pesticides, liquid fertilizers and hard-to-handle fluids! Hypro offers a wide range of flows and pressures for slurries and suspensions. Pressures for row crop to treetop spraying applications range up to 725 psi (50 bar) with flow rates from 3.5 to 65.7 gpm (13.2 to 248.1 lpm). Low-cost maintenance and almost wear-free operation result from Hypro's oil-bath design, premium quality, synthetic diaphragms for longer life, self-priming operation and visual, oil-level sight glass.

These models can handle fluids up to 140°F (60°C) and can be run dry. Hypro diaphragm pumps can be driven by 540 rpm PTOs, 3 to 25 hp gasoline engines, electric or hydraulic motors.

All of the Hypro diaphragm pumps share these quality features:

- Oil-bath design and premium quality synthetic diaphragms provide longer life and greater reliability
- Self-priming operation
- Easily adaptable to PTO, hydraulic, electric motors or gas engine drives
- Wide spectrum of flows and pressures
- Corrosive, abrasive and general use chemical compatibility
- Visual oil-level sight glass
- Maximum fluid temperature: 140°F (60°C)
- Can be run dry

Poly Diaphragm Pump Series

Model 9910-DP423

- Glass-filled polypropylene construction of head, manifold and control components for the maximum in chemical resistance
- Flow rate up to 11.0 gpm and pressure up to 290 psi
- 3 cylinder design eliminates the need for pulsation dampening devices and lengthens the life of the entire pumping system
- Kynar™ and 300 series stainless steel valve design for higher flow and better corrosion resistance
- Unique piston design for longer diaphragm life due to improved hydraulic support behind diaphragms
- Optimized GS25 control unit specially designed for better control of DP423 outputs and pressures
- Lightweight gear reducer with multiple fins cast into casing for added strength and excellent heat dissipation
- Strong gear reducers rated up to 6.5 hp (gas engine) with ball and needle bearing support
- 3/4” gearbox for gas engine
- Oil sight glass for visual oil inspection minimizes problems with crankcase
- The external inlet and outlet manifold design vs. an internal manifold design allows for easy valve replacement and lower cost repairs
- Diaphragms: Desmopan® standard, Viton® and Buna available

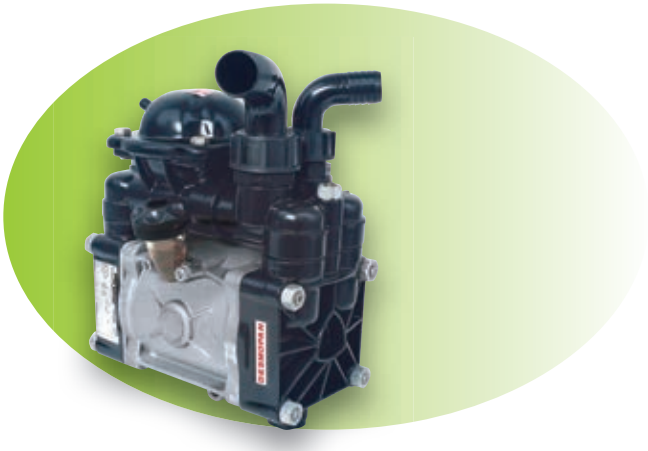
Order Information

Model Number	Description
9910-DP423	Poly Diaphragm Pump
9910-DP423GRGI	Poly Diaphragm Pump with Gearbox and Control Unit
9910-GS25	Control Unit

Pressure in PSI and BAR	GPM LPM @350 RPM	HP HP @350 RPM	GPM LPM @400 RPM	HP HP @400 RPM	GPM LPM @450 RPM	HP HP @450 RPM	GPM LPM @500 RPM	HP HP @500 RPM	GPM LPM @550 RPM	HP HP @550 RPM
0 PSI	7.5	0.18	8.5	0.20	9.4	0.29	10.5	0.35	11.5	0.42
0 BAR	28.3	0.18	32.2	0.20	35.6	0.29	39.5	0.35	43.3	0.42
72 PSI	7.3	0.46	8.3	0.53	9.2	0.61	10.2	0.68	11.0	0.77
5 BAR	27.4	0.46	31.2	0.53	34.6	0.61	38.5	0.68	41.5	0.77
145 PSI	7.2	0.77	8.2	0.87	9.1	0.98	10.1	1.11	11.0	1.21
10 BAR	27.3	0.77	31.1	0.87	34.5	0.98	38.2	1.11	41.4	1.21
217 PSI	7.0	1.06	8.1	1.21	9.1	1.37	10.0	1.51	10.8	1.68
15 BAR	26.5	1.06	30.5	1.21	34.5	1.37	37.7	1.51	40.7	1.68
290 PSI	6.9	1.33	7.8	1.53	9.1	1.74	9.8	1.93	10.6	2.14
20 BAR	26.0	1.33	29.5	1.53	34.2	1.74	37.0	1.93	40.1	2.14

Low Pressure, 2 Diaphragm

Model 9910-D70 and D70GR



- Max. fluid temperature: 140°F/60°C
- Port sizes: 1¼" inlet, 1" outlet, hose barb
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Weight: 22 lbs./10 kg (D70); 31 lbs./14 kg (D70GR)
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92. Recommended control unit: 3300-0087 or 3300-0088, see page 94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	13.6	0.33	15.1	0.40	16.9	0.48	18.4	0.58	19.6	0.80
0 BAR	51.2	0.33	57.1	0.40	63.7	0.48	69.4	0.58	74.1	0.80
72 PSI	11.2	0.73	12.7	0.79	14.1	0.91	15.6	1.01	17.0	1.09
5 BAR	42.3	0.73	47.9	0.79	53.2	0.91	58.8	1.01	64.3	1.09
145 PSI	11.0	1.20	12.4	1.39	13.9	1.63	15.2	1.66	16.6	1.91
10 BAR	41.4	1.20	46.9	1.39	52.6	1.63	57.3	1.66	62.7	1.91
217 PSI	10.7	1.71	12.3	2.10	13.8	2.19	15.1	2.36	16.3	2.63
15 BAR	40.4	1.71	46.3	2.10	52.2	2.19	57.1	2.36	61.6	2.63
290 PSI	10.6	2.18	12.1	2.46	13.7	2.77	15.0	3.12	16.1	3.39
20 BAR	40.0	2.18	45.7	2.46	51.8	2.77	56.7	3.12	60.6	3.39

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9910-D70	19.6	290	550	Select shaft kit for desired drive
9910-D70GR	19.6	290	3600	¾" hollow shaft w/ gear reduction for 5 hp gas engine

Low Pressure, 3 Diaphragm

Model 9910-D115 and D115GR34

- Max. fluid temperature: 140°F/60°C
- Port sizes: 1½" inlet, 1" outlet, hose barb
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Weight: 35 lbs./15.9 kg (D115); 44 lbs. /20 kg (D115GR34)
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 3300-0087 or 3300-0088, see page 94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP	GPM LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	18.9	0.33	21.4	0.40	23.9	0.45	26.4	0.69	28.6	0.91
0 BAR	71.5	0.33	80.9	0.40	90.1	0.45	99.7	0.69	107.9	0.91
72 PSI	18.6	1.13	20.7	1.18	23.4	1.40	25.5	1.62	27.9	1.83
5 BAR	70.0	1.13	78.2	1.18	88.5	1.40	96.1	1.62	105.3	1.83
145 PSI	18.3	1.89	20.5	2.13	23.2	2.47	25.3	2.82	27.7	2.99
10 BAR	69.0	1.89	77.4	2.13	87.5	2.47	95.6	2.82	104.4	2.99
217 PSI	18.2	2.72	20.4	3.11	23.1	3.51	25.1	3.88	27.6	4.33
15 BAR	68.6	2.72	77.0	3.11	87.0	3.51	94.7	3.88	104.0	4.33
290 PSI	18.0	3.45	20.3	3.98	22.9	4.54	25.0	5.09	27.5	5.51
20 BAR	68.0	3.45	76.7	3.98	86.2	4.54	94.2	5.09	103.8	5.51

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9910-D115	28.6	290	550	Select shaft kit for desired drive
9910-D115GR34	28.6	290	3600	¾" hollow shaft w/ gear reduction for 5 hp gas engine

Low Pressure, 3 Diaphragm

Model 9910-D135

- Max. fluid temperature: 140°F/60°C
- Port sizes: 1½" inlet, 1" outlet, hose barb
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Weight: 38 lbs./17.2 kg
- Pump shaft rotation: CW and CCW

Recommended control unit: 3300-0087 or 3300-0088, see page 94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM LPM @350 RPM	HP HP @350 RPM	GPM LPM @400 RPM	HP HP @400 RPM	GPM LPM @450 RPM	HP HP @450 RPM	GPM LPM @500 RPM	HP HP @500 RPM	GPM LPM @550 RPM	HP HP @550 RPM
0 PSI	22.6	0.51	25.8	0.69	28.8	0.92	31.5	1.22	33.9	1.45
0 BAR	85.4	0.51	97.3	0.69	108.8	0.92	118.8	1.22	128.0	1.45
72 PSI	22.2	1.31	25.3	1.64	28.3	1.84	31.2	2.09	33.3	2.44
5 BAR	83.8	1.31	95.6	1.64	106.7	1.84	117.6	2.09	125.8	2.44
145 PSI	22.1	2.29	25.2	2.65	28.2	2.97	31.1	3.45	33.2	3.88
10 BAR	83.4	2.29	95.2	2.65	106.3	2.97	117.2	3.45	125.3	3.88
217 PSI	22.0	3.21	25.1	3.80	28.0	4.31	30.8	4.80	33.1	5.32
15 BAR	83.0	3.21	94.6	3.80	105.7	4.31	116.3	4.80	124.9	5.32
290 PSI	21.7	4.23	24.8	4.88	27.9	5.45	30.7	6.21	33.0	6.84
20 BAR	81.9	4.23	93.4	4.88	105.3	5.45	115.7	6.21	124.6	6.84

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9910-D135	33.9	290	550	1-⅜"- 6 splined male shaft

Low Pressure, 4 Diaphragm

Model 9910-D160

- Max. fluid temperature: 140°F/60°C
- Port sizes: 2" inlet, 1½" outlet, hose barb
- Diaphragms: 4, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Weight: 66 lbs./30 kg
- Pump shaft rotation: CW and CCW

For hydraulic drive adaption, see page 92.
Recommended control unit: 3300-0087 or 3300-0088, see page 94.

Low Pressure, 6 Diaphragm

Model 9910-D250

- Max. fluid temperature: 140°F/60°C
- Port sizes: 2" inlet, 1½" outlet, hose barb
- Diaphragms: 6, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Mounting base: included
- Weight: 92 lbs./41.7 kg
- Pump shaft rotation: CW and CCW

For hydraulic drive adaption, see page 92.
Recommended control unit: 3300-0082, see page 94.

All HP requirements listed in the table above are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	42.7	0.71	48.3	0.90	54.3	1.22	59.8	1.60	65.7	2.01
0 BAR	161.2	0.71	182.5	0.90	204.8	1.22	225.7	1.60	248.1	2.01
72 PSI	41.4	2.33	47.2	2.73	52.7	3.10	58.1	3.45	63.3	3.88
5 BAR	156.1	2.33	178.2	2.73	198.9	3.10	219.4	3.45	239.0	3.88
145 PSI	40.1	4.09	45.9	4.73	52.1	5.27	56.6	6.02	61.3	6.45
10 BAR	151.4	4.09	173.1	4.73	196.4	5.27	213.8	6.02	231.2	6.45
217 PSI	39.3	5.70	45.1	6.58	50.7	7.45	55.5	8.32	60.2	9.22
15 BAR	148.5	5.70	170.0	6.58	191.5	7.45	209.5	8.32	227.1	9.22
290 PSI	38.8	7.52	44.5	8.45	50.1	9.66	54.8	10.89	59.2	11.54
20 BAR	146.4	7.52	167.9	8.45	189.0	9.66	206.9	10.89	223.4	11.54

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
9910-D250	65.7	290	550	1-⅜"- 6 splined male shaft

Note: Buna-N Seal add Suffix "B" (i.e.: 9910-D250-B)

Medium Pressure, 2 Diaphragm

Model 9910-D252, D252GRGI, D252GRGI58 and D252GRGIAP

- Max. fluid temperature: 140°F/60°C
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 14 lbs./6.4 kg (GRGI models); 12 lbs./5.4 kg (D252)

Recommended control unit: 9910-KIT1990, see page 93.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@450 RPM		@500 RPM		@550 RPM		@600 RPM		@650 RPM	
0 PSI	4.8	0.15	5.4	0.19	5.9	0.23	6.1	0.25	6.5	0.27
0 BAR	18.0	0.15	20.5	0.19	22.4	0.23	23.1	0.25	24.6	0.27
72 PSI	4.1	0.33	4.6	0.37	5.0	0.42	5.5	0.45	5.9	0.46
5 BAR	15.3	0.33	17.3	0.37	18.7	0.42	20.8	0.45	22.2	0.46
145 PSI	4.0	0.49	4.4	0.57	4.8	0.64	5.3	0.65	5.6	0.72
10 BAR	14.9	0.49	16.6	0.57	18.1	0.64	19.8	0.65	21.3	0.72
217 PSI	3.9	0.66	4.3	0.76	4.7	0.82	5.2	0.89	5.5	0.97
15 BAR	14.7	0.66	16.4	0.76	17.9	0.82	19.6	0.89	20.9	0.97
290 PSI	3.8	0.84	4.2	0.94	4.6	1.02	5.1	1.12	5.4	1.21
20 BAR	14.5	0.84	16.0	0.94	17.4	1.02	19.4	1.12	20.5	1.21

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-D252	6.5	290	650	3⁄4" HB inlet, 1⁄2" HB outlet	3⁄4" solid keyed shaft
9910-D252GRGI	6.5	290	3600	3⁄4" HB inlet, 3⁄8" HB outlet	3⁄4" hollow shaft
9910-D252GRGI58	5.5	290	3600	3⁄4" HB inlet, 3⁄8" HB outlet	5⁄8" hollow shaft
9910-D252GRGIAP	6.5	290	3600	3⁄4" HB inlet, 3⁄8" HB outlet	3⁄4" hollow input shaft with 5⁄8" output shaft

Medium Pressure, 2 Diaphragm

Model 9910-D30, D30AP-A, D30GRGI and D30-B-GRGI

- Max. fluid temperature: 140°F/60°C
- Shaft: flanged for shaft kit (D30); flanged w/ ¾" shaft ext. (D30AP-A); ¾" hollow shaft for gas engine mount (D30GRGI)
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated
- Weight: 23 lbs./10.4 kg (D30); 33 lbs./15.0 kg (D30GRGI and D30-B-GRGI); 24 lbs./10.9 kg (D30AP-A)
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-GS40GI, see page 93.

All HP requirements listed in the table are electrical.
For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	6.1	0.13	6.9	0.16	7.8	0.19	8.7	0.24	9.6	0.28
0 BAR	23.0	0.13	26.1	0.16	29.5	0.19	32.8	0.24	36.2	0.28
145 PSI	5.7	0.55	6.6	0.66	7.2	0.76	8.1	0.85	9.3	0.90
10 BAR	21.4	0.55	24.9	0.66	27.3	0.76	30.6	0.85	34.9	0.90
290 PSI	5.6	1.00	6.3	1.14	7.1	1.29	7.8	1.47	8.8	1.64
20 BAR	21.0	1.00	23.7	1.14	26.7	1.29	29.5	1.47	33.4	1.64
465 PSI	5.5	1.46	5.9	1.67	6.9	1.89	7.7	2.06	8.6	2.27
30 BAR	20.6	1.46	22.4	1.67	26.0	1.89	29.0	2.06	32.5	2.27
580 PSI	5.2	1.90	5.8	2.11	6.8	2.41	7.5	2.71	8.3	2.94
40 BAR	19.5	1.90	22.1	2.11	25.8	2.41	28.2	2.71	31.4	2.94

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size
9910-D30	9.6	580	550	1" HB inlet, ½" HB outlet
9910-D30AP-A	Same pump as 9910-D30 with ¾" solid thru shaft			
9910-D30GRGI	9.6	580	3600	Assembled with gearbox 9910-KIT1640 and control 9910-GS40GI for mounting on 5 hp gas engine
9910-D30-B-GRGI	Same pump as 9910-D30GRGI with Buna-N diaphragms			

Medium Pressure, 3 Diaphragm

Model 9910-D403 and D403GRGI

- Max. fluid temperature: 140°F/60°C
- Shaft: flanged for kit attachment (D403); ¾" hollow shaft for gas engine mount (D403GRGI)
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 23 lbs./10.4 kg (D403); 32 lbs./14.5 kg (D403GRGI)

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-GR40, see page 93.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	6.3	0.22	7.3	0.33	8.0	0.41	8.9	0.54	9.9	0.61
0 BAR	23.9	0.22	27.6	0.33	30.3	0.41	33.6	0.54	37.5	0.61
145 PSI	6.2	0.73	7.1	0.91	7.9	1.07	8.8	1.12	9.8	1.21
10 BAR	23.2	0.73	26.7	0.91	29.9	1.07	33.4	1.12	37.1	1.21
290 PSI	6.1	1.21	7.0	1.41	7.8	1.63	8.7	1.82	9.7	2.03
20 BAR	23.0	1.21	26.4	1.41	29.5	1.63	32.8	1.82	36.7	2.03
465 PSI	6.0	1.80	6.8	2.02	7.7	2.34	8.6	2.61	9.6	2.84
30 BAR	22.7	1.80	25.8	2.02	29.2	2.34	32.3	2.61	36.4	2.84
580 PSI	5.9	2.36	6.7	2.65	7.6	2.91	8.4	3.30	9.5	3.62
40 BAR	22.3	2.36	25.5	2.65	28.9	2.91	31.7	3.30	35.9	3.62

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Drive and Control Unit
9910-D403	9.9	580	550	1" HB inlet, ½" HB outlet
9910-D403GRGI	9.9	580	3600	Assembled with gearbox 9910-KIT1640 and control 9910-GR40 for mounting on 5-6 hp gas engines

Medium Pressure, 2 Diaphragm

Model 9910-D50, D50AP-A and D50-B

- Max. fluid temperature: 140°F/60°C
- Shaft: flanged for shaft kit (D50); flange w/1" shaft ext. (D50AP-A)
- Diaphragms: 2, full-hydraulic, Desmopan® standard, Buna available (D50-B has Buna diaphragms)
- Housing components for liquid handling: epoxy coated
- Weight: 35 lbs./15.9 kg
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-GS40GI, see page 93.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

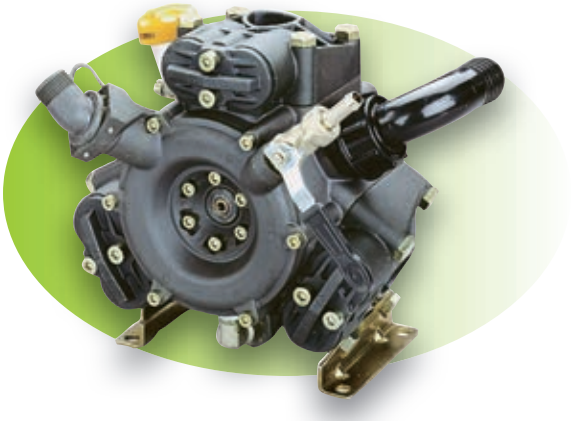
Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	9.7	0.36	11.9	0.49	12.3	0.64	13.2	0.77	14.8	0.94
0 BAR	36.8	0.36	45.0	0.49	46.6	0.64	49.9	0.77	55.8	0.94
145 PSI	9.3	1.08	11.5	1.25	11.9	1.49	12.9	1.59	14.6	1.76
10 BAR	35.1	1.08	43.3	1.25	44.9	1.49	48.6	1.59	55.1	1.76
290 PSI	9.1	1.85	11.0	2.09	11.7	2.40	12.6	2.72	14.5	2.97
20 BAR	34.4	1.85	41.5	2.09	44.1	2.40	47.4	2.72	54.9	2.97
465 PSI	8.8	2.61	10.8	3.00	11.6	3.41	12.0	3.80	14.4	4.03
30 BAR	33.2	2.61	40.6	3.00	43.6	3.41	45.3	3.80	54.4	4.03
580 PSI	8.6	3.44	10.3	3.77	11.4	4.38	11.9	4.92	14.1	5.17
40 BAR	32.5	3.44	38.9	3.77	42.9	4.38	44.7	4.92	53.3	5.17

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size
9910-D50	14.8	580	550	1-¼" HB inlet, ½" HB outlet
9910-D50-B	Same pump as 9910-D50 w/Buna-N diaphragms			
9910-D50AP-A	Same pump as 9910-D50 w/solid 1" thru shaft			

Medium Pressure, 3 Diaphragm

Model 9910-D503, D503GRGI and D503GRGI34



- Max. fluid temperature: 140°F/60°C
- Shaft: flanged adapter (D503); 1" hollow shaft for gas engine mount (D503GRGI)
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 28 lbs./12.7 kg
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-RM40, see page 93.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

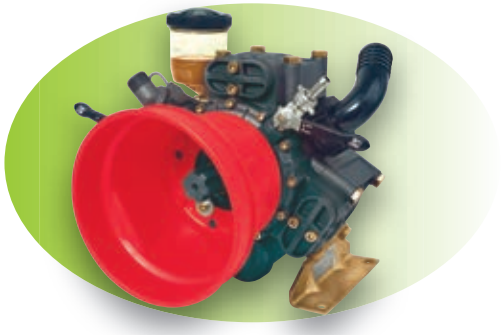
Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	9.4	0.52	12.1	0.86	12.6	0.91	13.4	1.09	14.3	1.32
0 BAR	35.4	0.52	45.5	0.86	47.6	0.91	50.5	1.09	54.1	1.32
145 PSI	9.0	1.24	11.6	1.68	11.9	1.72	13.2	1.85	14.1	2.09
10 BAR	34.1	1.24	44.0	1.68	44.9	1.72	49.7	1.85	53.3	2.09
290 PSI	8.9	2.05	11.4	2.67	11.7	2.74	12.8	3.01	13.8	3.30
20 BAR	33.6	2.05	43.2	2.67	44.1	2.74	48.4	3.01	51.9	3.30
465 PSI	8.7	2.78	11.3	3.72	11.6	3.90	12.6	4.14	13.6	4.41
30 BAR	33.0	2.78	42.5	3.72	43.6	3.90	47.4	4.14	51.4	4.41
580 PSI	8.5	3.56	11.0	4.67	11.4	4.83	12.2	5.37	13.4	5.49
40 BAR	32.2	3.56	41.7	4.67	42.9	4.83	46.0	5.37	50.5	5.49

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Drive and Control Unit
9910-D503	14.3	580	550	–
9910-D503GRGI	14.3	580	3600	Assembled with gearbox 9910-KIT1642 and control 9910-RM40 for mounting on 8 hp gas engine
9910-D503GRGI34	14.3	290	3600	Assembled with gearbox 9910-KIT1640 and control 9910-RM40 for mounting on 5-6.5 hp gas engines

High Pressure, 3 Diaphragm

Model 9910-D813 and D813GRGI



- Max. fluid temperature: 140°F/60°C
- Shaft: Flanged adapter and 1⅜"- 6 splined male shaft ext. (D813); 1" hollow shaft for gas engine mount (D813GRGI)
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 50 lbs./22.7 kg (D813); 66 lbs./30 kg (D813GRGI)
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-VDR50 or 9910-GS50GI, see page 93-94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	14.7	0.41	17.0	0.64	18.2	0.74	19.8	0.93	20.8	1.12
0 BAR	55.6	0.41	64.3	0.64	68.7	0.74	74.7	0.93	78.6	1.12
217 PSI	13.9	2.23	16.1	2.51	17.8	2.93	19.5	3.40	19.9	3.61
15 BAR	52.3	2.23	60.8	2.51	67.1	2.93	73.7	3.40	75.0	3.61
435 PSI	13.6	4.06	15.6	4.65	17.4	5.26	19.1	5.80	19.7	6.23
30 BAR	51.2	4.06	58.7	4.65	65.5	5.26	71.9	5.80	74.3	6.23
580 PSI	13.5	5.22	15.3	6.03	17.2	6.81	18.4	7.51	19.2	8.01
40 BAR	50.8	5.22	57.7	6.03	64.8	6.81	69.4	7.51	72.6	8.01
725 PSI	13.4	6.30	15.0	7.31	16.9	8.33	17.9	9.23	19.0	9.82
50 BAR	50.4	6.30	56.5	7.31	63.9	8.33	67.5	9.23	71.8	9.82

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-D813	20.8	725	550	1-¼" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male shaft extension
9910-D813GRGI	20.8	725	3600	Assembled with gearbox 9910-KIT1642 and control 9910-VDR50 for mounting on 13 hp gas engine	

High Pressure, 4 Diaphragm

Model 9910-D1064 and D1064GRGI

- Max. fluid temperature: 140°F/60°C
- Shaft: Flanged adapter and 1⅜"- 6 splined male shaft ext. (D1064); 1" hollow shaft for gas engine mount (D1064GRGI)
- Diaphragms: 4, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 54 lbs./24.5 kg (D1064); 76 lbs./34.5 kg (D1064GRGI)
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-VDR50 or 9910-GS50GI, see page 93-94.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	19.6	0.75	22.4	1.04	25.2	1.33	27.1	1.59	28.7	1.90
0 BAR	74.0	0.75	84.6	1.04	95.1	1.33	102.4	1.59	108.5	1.90
217 PSI	18.8	2.95	21.6	3.41	24.5	3.92	26.8	4.33	28.5	4.71
15 BAR	70.8	2.95	81.6	3.41	92.3	3.92	101.1	4.33	107.6	4.71
435 PSI	18.4	5.40	21.1	6.20	23.9	7.01	26.2	7.77	28.3	8.28
30 BAR	69.4	5.40	79.5	6.20	90.3	7.01	98.8	7.77	106.7	8.28
580 PSI	18.2	7.01	21.0	8.05	23.7	9.12	26.0	10.06	28.0	10.79
40 BAR	68.8	7.01	79.2	8.05	89.3	9.12	98.1	10.06	105.8	10.79
725 PSI	18.0	8.65	20.8	9.88	23.3	11.18	25.9	12.38	27.8	13.13
50 BAR	67.9	8.65	78.4	9.88	87.9	11.18	97.6	12.38	104.7	13.13

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-D1064	28.7	725	550	1-¼" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male shaft extension
9910-D1064GRGI	28.7	725	3600	Assembled with gearbox 9910-KIT1642 and control 9910-VDR50 for mounting on 18 hp gas engine	

High Pressure, 5 Diaphragm

Model 9910-D1265

- Max. fluid temperature: 140°F/60°C
- Shaft: flanged adapter and 1⅜"- 6 splined male shaft ext.
- Diaphragms: 5, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included
- Weight: 67 lbs./30.4 kg
- Pump shaft rotation: CW and CCW

For shaft kits and other drive options, see pages 91-92.
Recommended control unit: 9910-VDR50 or 9910-GS50GI, see page 93-94.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

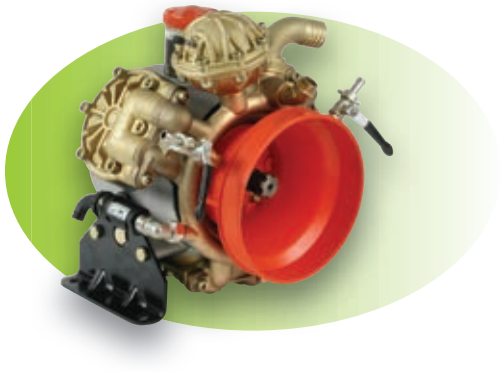
Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	23.9	1.23	26.9	1.62	29.8	2.10	32.0	2.62	33.4	2.95
0 BAR	90.0	1.23	101.6	1.62	112.6	2.10	120.8	2.62	126.1	2.95
217 PSI	22.8	3.80	26.1	4.44	29.2	5.14	31.7	5.50	33.1	5.81
15 BAR	86.0	3.80	98.3	4.44	110.3	5.14	119.6	5.50	124.9	5.81
435 PSI	22.5	6.91	25.6	7.93	28.8	9.06	31.5	9.64	32.8	10.03
30 BAR	84.8	6.91	96.7	7.93	108.5	9.06	118.9	9.64	123.9	10.03
580 PSI	22.3	9.03	25.4	10.30	28.5	11.61	31.2	12.33	32.7	12.60
40 BAR	84.3	9.03	95.7	10.30	107.5	11.61	117.7	12.33	123.4	12.60
725 PSI	22.2	11.12	25.1	12.61	28.3	14.44	30.9	15.31	31.5	15.41
50 BAR	83.7	11.12	94.8	12.61	106.8	14.44	116.4	15.31	118.7	15.41

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-D1265	33.4	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male shaft extension

High Pressure, 3 Diaphragm

Model 9910-DBS110 and DBA110



- Max fluid temp: 140°F/60°C
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling:
  - DBS – external bronze manifolds and brass heads
  - DBA – external manifolds and heads in anodized aluminum
- Weight: 114 lbs./51.7 kg (DBS110); 88 lbs./40 kg (DBA110)
- Pump shaft rotation: CW and CCW

Recommended control unit: 9910-BMH50 or 9910-GH50, see page 94.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

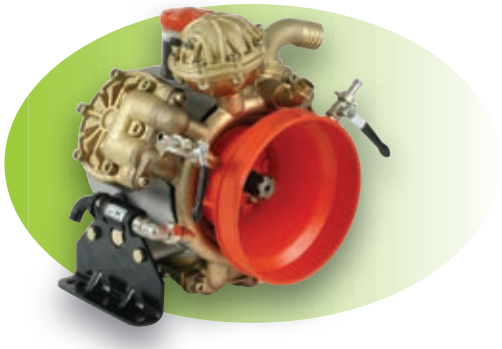
Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	19.2	0.53	21.9	0.60	24.6	0.78	27.3	0.89	30.0	1.12
0 BAR	72.6	0.53	82.8	0.60	93.0	0.78	103.2	0.89	113.1	1.12
217 PSI	18.7	2.91	21.5	3.18	24.2	3.74	27.1	4.02	29.3	4.50
15 BAR	70.7	2.91	81.2	3.18	91.4	3.74	102.1	4.02	110.6	4.50
435 PSI	18.5	5.19	21.2	5.91	24.0	6.51	26.9	7.51	29.0	8.29
30 BAR	69.9	5.19	79.9	5.91	90.7	6.51	101.4	7.51	109.4	8.29
580 PSI	18.4	6.87	20.9	7.66	23.7	8.69	26.4	9.67	28.7	10.71
40 BAR	69.5	6.87	78.9	7.66	89.3	8.69	99.8	9.67	108.2	10.71
725 PSI	18.2	8.43	20.8	9.60	23.5	10.73	25.9	11.90	28.6	13.11
50 BAR	68.7	8.43	78.5	9.60	88.5	10.73	97.7	11.90	108.0	13.11

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-DBS110	30.0	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft
9910-DBA110	30.0	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft

High Pressure, 3 Diaphragm

Model 9910-DBS140 and DBA140



- Max fluid temp: 140°F/60°C
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling:
  - DBS – external bronze manifolds and brass heads
  - DBA – external manifolds and heads in anodized aluminum
- Weight: 114 lbs./51.7 kg (DBS140); 88 lbs./40 kg (DBA140)
- Pump shaft rotation: CW and CCW

Recommended control unit: 9910-BMH50 or 9910-GH50, see page 94.

All HP requirements listed in the table below are electrical.
For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	25.1	0.82	28.5	1.11	31.5	1.50	34.8	2.02	37.8	2.58
0 BAR	94.6	0.82	107.5	1.11	119.0	1.50	131.5	2.02	142.6	2.58
217 PSI	24.1	3.47	27.5	4.01	30.7	4.51	33.2	5.01	37.3	5.61
15 BAR	91.1	3.47	103.8	4.01	115.9	4.51	125.3	5.01	140.9	5.61
435 PSI	23.8	6.53	27.2	7.69	30.2	8.39	32.6	9.28	36.7	10.34
30 BAR	89.9	6.53	102.8	7.69	114.1	8.39	123.1	9.28	138.7	10.34
580 PSI	23.6	8.53	26.8	9.73	29.8	10.82	32.2	12.02	36.5	13.33
40 BAR	89.1	8.53	101.0	9.73	112.6	10.82	121.5	12.02	137.6	13.33
725 PSI	23.3	10.47	26.5	11.88	29.7	13.28	31.9	14.67	36.3	16.28
50 BAR	88.1	10.47	100.0	11.88	112.2	13.28	120.4	14.67	137.0	16.28

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-DBS140	37.8	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft
9910-DBA140	37.8	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft

High Pressure, 4 Diaphragm

Model 9910-DBS160 and DBA160

- Max fluid temp: 140°F/60°C
- Diaphragms: 4, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling:
  - DBS – external bronze manifolds and brass heads
  - DBA – external manifolds and heads in anodized aluminum
- Weight: 143 lbs./64.9 kg (DBS160); 112 lbs./50.9 kg (DBA160)
- Pump shaft rotation: CW and CCW

Recommended control unit: 9910-BMH50 or 9910-GH50, see page 94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	25.5	1.12	29.3	1.52	32.6	1.83	36.1	2.23	39.6	2.62
0 BAR	96.3	1.12	110.4	1.52	122.9	1.83	136.3	2.23	149.4	2.62
217 PSI	24.9	3.72	28.7	4.39	32.1	4.83	35.7	5.27	39.1	5.91
15 BAR	94.1	3.72	108.4	4.39	121.3	4.83	134.8	5.27	147.5	5.91
435 PSI	24.6	6.90	28.3	8.01	31.9	8.89	35.3	9.80	38.5	10.75
30 BAR	93.0	6.90	106.6	8.01	120.5	8.89	133.4	9.80	145.3	10.75
580 PSI	24.5	8.88	28.1	10.22	31.5	11.49	35.0	12.77	38.4	14.12
40 BAR	92.4	8.88	106.1	10.22	118.9	11.49	132.2	12.77	144.9	14.12
725 PSI	24.2	10.91	27.9	12.46	31.3	14.01	34.8	15.64	38.2	17.28
50 BAR	91.4	10.91	105.3	12.46	118.2	14.01	131.5	15.64	144.2	17.28

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-DBS160	39.6	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft
9910-DBA160	39.6	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft

High Pressure, 4 Diaphragm

Model 9910-DBS200 and DBA200

- Max fluid temp: 140°F/60°C
- Diaphragms: 4, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling:
  - DBS – external bronze manifolds and brass heads
  - DBA – external manifolds and heads in anodized aluminum
- Weight: 143 lbs./64.9 kg (DBS200); 112 lbs./50.9 kg (DBA200)
- Pump shaft rotation: CW and CCW

Recommended control unit: 9910-GH50, see page 94.

All HP requirements listed in the table below are electrical. For approximate gasoline equivalent, multiply by 1.3.

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@350 RPM		@400 RPM		@450 RPM		@500 RPM		@550 RPM	
0 PSI	33.0	1.44	37.3	1.92	41.6	2.74	45.9	3.03	49.7	3.67
0 BAR	124.5	1.44	140.7	1.92	156.9	2.74	173.1	3.03	187.6	3.67
217 PSI	32.0	4.68	36.7	5.38	41.0	6.13	45.3	6.91	49.1	7.64
15 BAR	120.8	4.68	138.5	5.38	154.8	6.13	170.8	6.91	185.4	7.64
435 PSI	31.4	8.79	36.1	10.24	40.4	11.44	44.8	12.71	48.7	13.92
30 BAR	118.4	8.79	136.2	10.24	152.6	11.44	169.0	12.71	183.9	13.92
580 PSI	31.3	11.35	35.8	13.01	40.0	14.69	44.6	16.45	48.3	17.98
40 BAR	118.2	11.35	135.0	13.01	151.1	14.69	168.3	16.45	182.5	17.98
725 PSI	31.1	14.01	35.3	15.96	39.9	18.12	44.4	20.21	48.2	22.21
50 BAR	117.2	14.01	133.1	15.96	150.5	18.12	167.5	20.21	182.1	22.21

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Port Size	Shaft Output
9910-DBS200	49.7	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft
9910-DBA200	49.7	725	550	1-½" HB inlet, ¾" NPT outlet	1-⅜"- 6 splined male double-ended shaft

Gas Engine-Driven, Medium Pressure, 2 Diaphragm

Models: D252GRGI-25, D252GRGI-65, 1534

- Closed-coupled, gas engine driven
- Max. fluid temperature: 140°F/60°C
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included

Pressure in PSI and BAR	GPM
BAR	LPM
0 PSI	5.9
0 BAR	22.3
50 PSI	5.3
3.4 BAR	20.0
100 PSI	5.2
6.9 BAR	19.5
150 PSI	5.1
10.3 BAR	19.3
200 PSI	5.0
13.6 BAR	18.9
250 PSI	4.9
17.0 BAR	18.5
290 PSI	4.9
20 BAR	18.5

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Control Unit and Gearbox	Engine Mfgr. and hp
D252GRGI-25	5.5	290	3600	9910-KIT1990	PowerPro™ 2.5 hp
D252GRGI-65	5.9	290	2800	9910-KIT1990	PowerPro™ 6.5 hp
1534	5.9	290	2800	9910-KIT1990	Briggs and Stratton 3.5 hp

Gas Engine-Driven, Medium Pressure, 2 Diaphragm

Model: D30HRGI-65, D30HRGI-65E, D30GRGI-65, 1535, D30HRGI

- Closed-coupled, gas engine driven
- Max. fluid temperature: 140°F/60°C
- Diaphragms: 2, semi-hydraulic, Desmopan® standard, Buna available
- Housing components for liquid handling: epoxy-coated

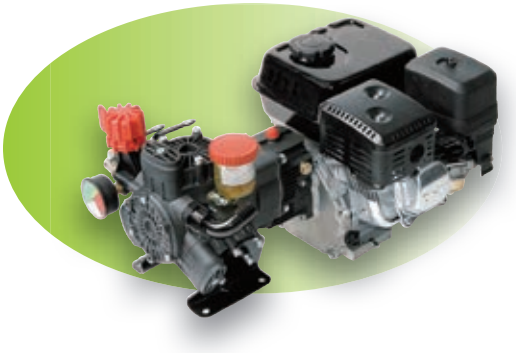
Pressure in PSI and BAR	D30HRGI-65,65E	D30GRGI-65,1535
	GPM	GPM
	LPM	LPM
	@550 RPM	@550 RPM
0 PSI	9.6	9.3
0 BAR	36	35
290 PSI	8.8	9.3
20 BAR	33	34
435 PSI	8.6	8.7
30 BAR	33	33
580 PSI	8.3	8.2
40 BAR	31	31

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Control Unit and Gearbox	Engine Mfgr. and hp
D30HRGI-65	9.6	580	3600	GS40GI and 8000-0056	PowerPro™ 6.5 HP
D30HRGI-65E	9.6	580	3600	GS40GI and 8000-0056	PowerPro™ 6.5 HP w/ electric start
D30GRGI-65	9.3	580	3600	GS40GI and KIT1640 (gearbox)	PowerPro™ 6.5 hp
1535	9.3	580	3600	GS40GI and KIT1640 (gearbox)	Industrial Plus Briggs & Stratton 6.5 hp
D30HRGI	Less engine				

Gas Engine-Driven, Medium Pressure, 3 Diaphragm

Model: D403HRGI-65, D403HRGI-65E, D403GRGI-65, D403HRGI



- Closed-coupled, gas engine driven
- Max. fluid temperature: 140°F/60°C
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available
- Housing: anodized aluminum
- Mounting base: included

Pressure in PSI and BAR	D403HRGI-65,65E GPM LPM @550 RPM	D403GRGI-65 GPM LPM @550 RPM
0 PSI	9.9	10.6
0 BAR	38	40
290 PSI	9.7	9.8
20 BAR	37	37
435 PSI	9.6	9.7
30 BAR	36	37
580 PSI	9.5	9.5
40 BAR	36	36

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Control Unit and Gearbox	Engine Mfgr. and hp
D403HRGI-65	9.9	580	3600	GR40 and 8000-0056	PowerPro™ 6.5 HP
D403HRGI-65E	9.9	580	3600	GR40 and 8000-0056	PowerPro™ 6.5 HP w/ electric start
D403GRGI-65	10.6	580	3600	GR40 and KIT1640 (gearbox)	PowerPro™ 6.5 hp
D403HRGI	Less engine				

Gas Engine-Driven, Heavy-Duty Medium Pressure, 3 Diaphragm

Model: D503HRGI-65, D503HRGI

- Hypro® quality diaphragm pumps powered by field-proven PowerPro™ EPA certified engines
- Oil-bath design and premium quality synthetic diaphragms provides longer life and greater reliability
- Oil-bath design also allows pump to be run dry
- Self-priming operation
- Corrosive, abrasive and general use chemical compatibility
- Visual oil-level sight glass
- Supported with a one-year Hypro® warranty on both pump and PowerPro™ engine
- Diaphragms: 3, semi-hydraulic, Desmopan® standard, Buna available

Pressure in PSI and BAR	D503HRGI-65,65E GPM LPM @550 RPM
0 PSI	14.3
0 BAR	54
145 PSI	14.1
10 BAR	53
290 PSI	13.8
20 BAR	52

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Control Unit & Gearbox	Engine Mfgr. & HP
D503HRGI-65	14.3	290	3600	RM40 and 8000-0056	PowerPro™ 6.5 HP
D503HRGI-65E	14.3	290	3600	RM40 and 8000-0056	PowerPro™ 6.5 HP w/ electric start
D503HRGI	Less engine				

Diaphragm Kits and Applications

Hypro Pump Oil

Part Number	Description	Weight
2160-0038	1 quart of specially-formulated pump oil	2 lbs.
2160-0047	1 gallon of specially-formulated pump oil	9 lbs.
2160-0048	2 ½ gallons of specially-formulated pump oil	22 lbs.

All Hypro Plunger Pumps are shipped with oil. To optimize pump life, Hypro recommends an oil change after 40 hours of break-in operation and every three months or 500 hour intervals thereafter. Use only Hypro oil.

1⅜"-6 Spline Female PTO Shaft Kits

Kit Number	Description	Weight
9910-KIT1704	For Model 9910-D50, D30, D303 and D403 pumps	7 lbs./3.2 kg
9910-KIT1708	For Model 9910-D70 and D115 pumps	5.25 lbs./2.4 kg
9910-KIT2204	For Model 9910-D503, D813, D1064 and D1265 pumps	7 lbs./3.2 kg

Kit includes a female PTO coupler and retaining clamp, torque arm and mounting bracket, chains and necessary hardware.

1⅜"-6 Spline Male PTO Shaft Kits

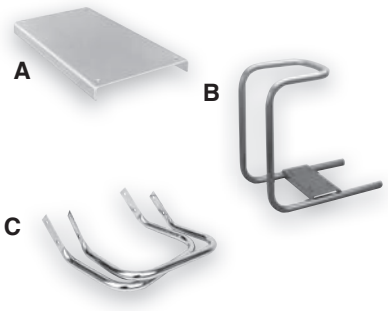
Kit Number	Description	Weight
9910-KIT1702	For Model 9910-D30 pump	3 lbs./1.4 kg
9910-KIT1706	For Model 9910-D50 pump	4.25 lbs./1.9 kg
*9910-KIT1710	For Model 9910-D70 and D115 pumps	5.5 lbs./2.5 kg
9910-KIT2200	For Model 9910-D503, D303 and D403 pumps	4.25 lbs./1.9 kg
9910-KIT2201	For Model 9910-D813, D1064 and D1265 pumps	4.25 lbs./1.9 kg

*Kit includes a male PTO shaft adapter, mounting bracket and necessary hardware.

1" Solid Shaft Kits

Kit Number	Description	Weight
9910-KIT1703	For Model 9910-D30 pump	2.5 lbs./1.1 kg
9910-KIT1707	For Model 9910-D50 pump	3.75 lbs./1.7 kg
*9910-KIT1711	For Model 9910-D70 and D115 pumps	5 lbs./2.3 kg
9910-KIT2202	For Model 9910-D503, D303 and D403 pumps	3.75 lbs./1.7 kg
9910-KIT2203	For Model 9910-D813, D1064 and D1265 pumps	3.75 lbs./1.7 kg

*Kit includes a male PTO shaft adapter, mounting bracket and necessary hardware.



Base Plates and Carrying Handles

Part Number	Description	Ref.	Estimated Weight Ea.
1510-0005	8" x 15" with 12 gauge	A	6 lbs.
1510-0002	9½" x 18" with 10 gauge	A	8 lbs.
1510-0001	12" x 21" with 7 gauge	A	16 lbs.
1510-0016	14" x 26" with 7 gauge	A	21 lbs.
1510-0075	9½" x 4½" with 14 gauge (for 3 and 5 hp Briggs or Honda and 56 frame electric)	B	11 lbs.
2801-0001	Two handles, mounting bolts and nuts for #1510-0016 base	C	3 lbs. 4 oz.
2801-0002	Two handles, mounting bolts and nuts for #1510-0001 base	C	3 lbs. 3 oz.

Diaphragm Pump Repair Kits

For Pump Model	Diaphragm Kit (Desmopan)	Diaphragm Kit (Buna-N)	Valve Kit	O-ring Kit
9910-D70	9910-KIT1720	————	9910-KIT2364	9910-KIT2365
9910-D115 and D135	9910-KIT1721	————	9910-KIT2370	9910-KIT2026
9910-D160	9910-KIT1730	————	9910-KIT2374	9910-KIT1908
9910-D250	9910-KIT1722	————	9910-KIT2114	9910-KIT1904
9910-D12GRGI	9910-KIT1882	————	9910-KIT1992	
9910-D503	9910-KIT1881	————	9910-KIT1987	9910-KIT1984
9910-D252 (all versions)	9910-KIT1723	————	9910-KIT2408	9910-KIT2409
9910-D30 (all versions)	9910-KIT1724	9910-KIT2110	9910-KIT1917	9910-KIT1916
9910-D50	9910-KIT1725	9910-KIT2111	9910-KIT1920	9910-KIT1919
9910-DBS110, DBS140, DBA110 and DBA140	————	9910-KIT2444	9910-KIT2445	9910-KIT2446
9910-DBS160, DBS200, DBA160 and DBA200	————	9910-KIT2456	9910-KIT2374	9910-KIT2457
9910-D303	9910-KIT2423	————	9910-KIT2388	9910-KIT2389
9910-D403	9910-KIT2423	————	9910-KIT2388	9910-KIT2389
9910-D813	9910-KIT2479	————	9910-KIT1963	9910-KIT2376
9910-D1064	9910-KIT2480	————	9910-KIT1964	9910-KIT2378
9910-D1265	9910-KIT2100	————	9910-KIT2024	9910-KIT2347
9910-D1554	9910-KIT1734	————	9910-KIT1965	9910-KIT1972
9910-D1516	9910-KIT2113	————	9910-KIT2053	9910-KIT2349

Pump and Gear Reduction Kits

Model 9910-KIT1640

- For Pump Models 9910-D30, D303 and D403
- 6:1 gear box
- For standard 5.5 hp gas engine with ¾" shaft
- Weight: 6.5 lbs./2.9 kg
- Can be used with 9910-D50, D503 and D813, providing that pumps are operated at lower pressures that do not exceed 5 hp gas engine compatibility.

Model 9910-KIT1642

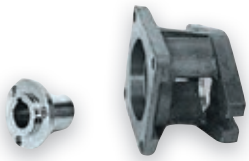
- For Pump Models 9910-D50, D503, D813, D1064 and D1265
- 6:1 gear box
- For standard 8-18 hp gas engine with 1" shaft
- Weight: 8.5 lbs./3.9 kg

Model 8000-0056

- For Pump Models 9910-D30, D403, D50, and D503
- New and improved bolt-through pinion gear to help prevent keyway fretting and seizing
- Engine mounting flange designed for ease of assembly with standard tools
- Robust 6:1 gear design for increases longevity
- Increased oil capacity
- Made for use on gas engines with 3/4” shaft
- Available pre-assembled on HRGI models

Flange Kits

Model 9910-HYD5312

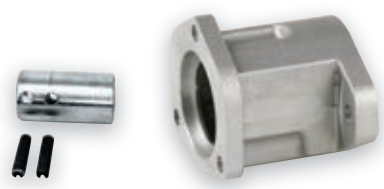


- Hydraulic motor mounting flange kit
- Fits Diaphragm Pump Models 9910-D30, D50, D303, D403, D503, D813, D1064 and D1265
- Includes: one flange with SAE “A" 2 bolt, one 1" hollow shaft and two bolts
- Weight: 5.5 lbs./2.5 kg

Model 9910-HYD1570

- Hydraulic motor mounting flange kit
- Fits Diaphragm Pump Models 9910-D160 and D250
- Includes: one flange with SAE “A" 2 bolt, one coupling and hardware for mounting
- Weight: 2.5 lbs./1.1 kg

Model 9910-HYD2495



- Hydraulic motor mounting flange kit
- Fits Diaphragm Pump Models 9910-D70, D115
- Includes: one flange with SAE “A" 2 bolt, one coupling, two pins, spacer and hardware for mounting
- Weight: 5.5 lbs./2.5 kg

Diaphragm Control Units

Model 9910-KIT1990

- Control unit for mounting on Pump Model 9910-D252
- Includes: one adjustable relief valve, one pressure/bypass selector
- ⅝" HB bypass port and ⅜" HB outlet
- Max. flow: 6 gpm/22.7 lpm
- Max. pressure: 290 psi/20.0 bar
- Weight: 1 lb./0.5 kg

Model 9910-GS40GI

- Control unit for mounting on Pump Models 9910-D30 and D50
- Includes: pressure gauge, one adjustable high pressure relief valve, one complete bypass lever, two ½" HB outlets with individual shut-offs, and ¾" hose barb bypass
- Max. flow: 21 gpm/79.5 lpm
- Max. pressure: 580 psi/40.0 bar
- Weight: 3.5 lbs./1.6 kg
- Remote mounting kit: 9910-KIT1741
- Remote mounting kit weight: 1 lb./0.5 kg

Model 9910-GR40

- Control unit for Pump Models 9910-D303 and D403
- Includes: pressure gauge, adjustable high pressure relief valve, complete bypass lever, 2½" pressure gauge, two ½" hose barb outlets with individual shut-offs, and ⅝" hose barb bypass
- Max. flow: 11 gpm/41.6 lpm
- Max. pressure: 580 psi/40.0 bar
- Weight: 2 lbs./0.9 kg
- Remote mounting kit: 9910-KIT1741
- Remote mounting kit weight: 1 lb./0.5 kg

Model 9910-RM40

- Remote control unit for mounting on Pump Model 9910-D503
- Includes: pressure gauge, one adjustable high pressure relief valve, one complete bypass knob, two ½" HB outlets with individual shut-offs, and 1" hose barb bypass
- Max. flow: 24 gpm/90.8 lpm
- Max. pressure: 580 psi/40.0 bar
- Weight: 3.5 lbs./1.6 kg
- Remote mounting kit: 9910-KIT1897
  - Includes: mounting bracket, bolts, and hose barb
- Remote mounting kit weight: 2 lbs./0.9 kg

Model 9910-GS50GI

- Remote control unit for Pump Models 9910-D813, D1064, D1265 and D1516
- Includes: pressure gauge, one adjustable high pressure relief valve, one complete bypass lever, three ½" HB outlets with individual shut-offs, and 1" hose barb bypass
- Max. flow: 48 gpm/181.7 lpm
- Max. pressure: 725 psi/50.0 bar
- Weight: 8.5 lbs./3.6 kg
- Remote mounting kit: 9910-KIT1742
  - Includes: mounting bracket, bolts, and hose barb
- Remote mounting kit weight: 1 lb./0.5 kg

Model 9910-GS25

- Control unit for DP423
- Includes: pressure gauge, adjustable high pressure relief valve, ½" HB outlet with ball valve shutoff, bypass lever, ¾" HB bypass, and 1" HB inlet
- Max. flow: 11 gpm/42 lpm
- Max. pressure: 290 psi/20 Bar
- Weight: 2 lbs./0.9 kg

Diaphragm Control Units

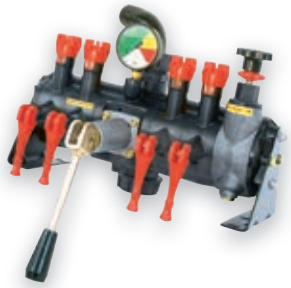
Model 9910-VDR50

- Control unit for mounting on Pump Models 9910-D813, D1064 and D1265
- Includes: pressure gauge, one adjustable high pressure relief valve, one complete bypass lever, two ½" HB outlets with individual shut-offs, and 1" hose barb bypass
- Max. flow: 35 gpm/132.5 lpm
- Max. pressure: 725 psi/50.0 bar
- For additional ball valve, order Part Number 9910-130491
- Weight: 3.5 lbs./1.6 kg

Model 3300-0087, 0088

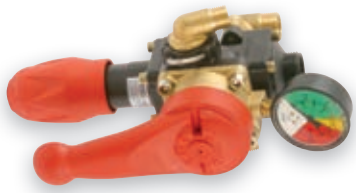
- Remote control unit for Pump Models 9910-D70, D115, D135 and D160
- Includes: one built-in relief valve, one 1" HB inlet, three ¾", ½" and ⅜" HB outlets with individual shut-offs
- Model-0088 includes a main bypass lever
- Max. flow: 42.5 gpm/160.9 lpm
- Max. pressure: 290 psi/20.0 bar
- Weight: 7 lbs./3.2 kg (Model 3300-0087); 7.75 lbs./3.5 kg (Model 3300-0088)

Model 3300-0082



- Remote control unit for Pump Model 9910-D250
- Includes: pressure gauge, one built-in adjustable relief valve, one main shut-off and complete bypass lever, four ¾" HB outlets with individual shut-offs, and 1½" hose barb bypass
- Max. flow: 66 gpm/249.8 lpm
- Max. pressure: 290 psi/20.0 bar
- Weight: 18 lbs./8.2 kg

Model 9910-BMH50



- Control unit for Pump Models 9910-DBS110, 9910-DBA110, DBS140, DBA140, DBS160, DBA160, DBS200 and DBA200
- Includes: directional control unit with working pressure regulating valve, single lever for partial or total closure and discharge and glycerine-bath pressure gauge with colored dial
- Max flow: 41 gpm/155.2 lpm
- Max. pressure: 725 psi/50.0 bar
- Weight: 6.6 lbs./3.0 kg

Model 9910-GH50

- Control unit for Pump Models 9910-DBS110, 9910-DBA110, DBS140, DBA140, DBS160, DBA160, DBS200 and DBA200
- Includes: working pressure regulating valve, bypass control lever and glycerine-bath pressure gauge with colored dial
- Max. flow: 52.8 gpm/200 lpm
- Max. pressure: 725 psi/50.0 bar
- Weight: 8.25 lbs./3.7 kg

SHURFLO® Pumps

SHURFLO offers a complete line of pumps and accessories to meet the needs of homeowners, hobbyists, green industry professionals and commercial growers alike.

From our high pressure spray pumps to our economical lawn and garden pumps, you'll find feature-packed products, with the latest innovations and same dependability, that have made SHURflo the OEMs first choice.

5059 Series SHURFLO® Diaphragm Pump

5 GPM Automatic-Demand Pumps 12 VDC

- Delivers 5 GPM [20.1 L/min] free flow - 3.8 GPM at 40 PSI [14.4 L/min at 2.75 bar] with current draw of 13 amps
- Field-proven pump head design
- Driven by a 12-volt, continuous-duty, sealed motor
- Self-priming capabilities, up to 8 feet [2.4 m]
- Santoprene® diaphragm for chemical resistance and maximum life
- Viton® valves provide maximum chemical resistance
- Built-in pressure switch, set at 60 PSI [4.14 bar], protects the pump in the event of dead-heading
- Available in the same footprint as other SHURflo pumps, allowing users to upgrade to a higher performance on existing installations

Order Information

Part #	Max GPM	Max PSI	Port Size	Max Draw
5059-1311-D011	5.3	60	1/2" NPSM*	17.0
5059-1310-D011	5.3	60	1/2" NPTF	17.0

* 1/2" -14 American National Standard Straight Pipe Thread
** For retail box: change "-D011" to "-D012"

Model	PSI	GPM	BAR	L/min	Amps
5059 Series	0	5.3	0	20.1	6.5
	10	4.7	.69	17.8	9.0
	20	4.3	1.38	16.3	11.8
	30	4.1	2.07	15.5	12.4
	40	3.8	2.75	14.4	14.0
	50	3.6	3.45	13.6	15.4
	60	3.4	4.14	12.9	17.0

SHURflo's new field-proven 5 GPM [20.1 L/min] pump delivers 3.8 GPM at 40 PSI [14.4 L/min at 2.75 bar] with current draw of 13 amps. This pump is designed with a Santoprene® diaphragm for chemical resistance and maximum life, as well as Viton® valves for maximum chemical resistance. Also included is a built-in pressure switch, set at 60 PSI [4.14 bar], which protects the pump in the event of dead-heading. The pump is available in the same footprint as other SHURflo pumps, allowing users to upgrade to a higher performance on existing installations.

8000 Series SHURFLO® Diaphragm Pumps

Automatic-Demand Pumps 12 VDC

- Self-priming up to 8 vertical feet [2.4m]
- Chemical-resistant materials
- Designed for heavy-duty spraying and fluid transfer applications
- Can run dry without damage
- Built-in check valve

The 8000 Series diaphragm pump is SHURflo's most widely used agriculture pump. Viton® valve material assures maximum chemical resistance. The unique conical valve design delivers high flow rates at maximum discharge pressures, making the 8000 Series the pump of choice for sprayers used on the farm or around the yard. These 12 VDC pumps deliver up to 1.8 GPM [6.8 L/min] providing maximum performance in a wide range of applications.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8000-343-236	**All Viton® Pump:** Viton® valves, Viton® diaphragm, 60 PSI demand switch	1.2	60	⅜" NPT-Female	5.8
8000-541-236*	**Lawn and Garden Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch	1.0	60	⅜" NPT-Female	3.8
8000-542-136	**Low Flow Standard Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch	1.2	60	½" MSPT-Male	6.0
8000-543-136	**Standard Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch	1.8	60	½" MSPT-Male	7.3
8000-543-236*	**Standard Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch	1.8	50	⅜" NPT-Female	6.4
8000-543-238	**High Pressure Pump:** Viton® valves, Santoprene® diaphragm, 100 PSI demand switch	1.8	100	⅜" NPT-Female	8.7
8000-543-138	**High Pressure Pump:** Viton® valves, Santoprene® diaphragm, 100 PSI demand switch	1.8	100	½" MSPT-Male	8.7
8000-543-936*	**Standard Pump w/Wire Harness:** Viton® valves, Santoprene® diaphragm, prewired with two wire molded connectors, 60 PSI demand switch	1.8	50	⅜" NPT-Female	6.4
8000-643-236	**Transfer Pump:** Buna valves, Geolast® diaphragm, 60 PSI demand switch	1.8	60	⅜" NPT-Female	6.8
8030-813-239	**High Pressure Pump:** Viton® valves, Santoprene® diaphragm, 150 PSI demand switch	1.6	150	⅜" NPT-Female	12.0

* Packaged in quantities of 6. For single packs, replace "8000-" with "8009."

Model	PSI	BAR	GPM	L/min	Amps
8000-343-236	20	1.4	0.93	3.5	3.9
	40	2.8	0.84	3.2	4.9
	50	3.4	0.80	3.0	5.3
	60	4.1	0.76	2.9	5.8
8000-541-236	20	1.4	0.79	3.0	2.3
	30	2.1	0.75	2.8	2.8
	40	2.8	0.70	2.6	3.2
	60	4.1	0.62	2.3	3.8
8000-542-136	20	1.4	1.11	4.2	4.1
	40	2.8	0.98	3.7	5.1
	50	3.4	0.93	3.5	5.6
	60	4.1	0.90	3.4	6.0
8000-543-136	20	1.4	1.26	4.7	5.0
	40	2.8	1.14	4.3	6.2
	50	3.4	1.08	4.1	6.8
	60	4.1	1.02	3.9	7.3
8000-543-236	30	1.4	1.47	5.5	5.7
	40	2.8	1.41	5.3	5.8
	50	3.4	1.36	5.1	6.4
8000-543-238	20	1.4	1.45	5.5	4.2
	40	2.8	1.31	5.0	5.5
	60	4.1	1.22	4.6	6.5
	100	6.9	0.96	3.6	8.7
8000-543-138	20	1.4	1.45	5.5	4.2
	40	2.8	1.31	5.0	5.5
	60	4.1	1.22	4.6	6.5
	100	6.9	0.96	3.6	8.7
8000-543-936	30	1.4	1.47	5.5	5.7
	40	2.8	1.41	5.3	5.8
	50	3.4	1.36	5.1	6.4
8000-643-236	20	1.4	1.44	5.4	4.1
	40	2.8	1.33	5.0	5.4
	50	3.4	1.27	4.8	6.1
	60	4.1	1.22	4.6	6.8
8030-813-239	20	1.4	1.55	5.9	5.5
	30	2.1	1.49	5.6	6.2
	40	2.8	1.43	5.4	6.8
	80	5.4	1.20	4.5	9.1
	100	6.9	1.10	4.2	10.1
	150	9.5	0.83	3.1	12.0

8000 Series SHURFLO® Diaphragm Pumps

Bypass Pumps 12 VDC

8000-543-250

- Self-priming up to 8 vertical feet [2.4m]
- Chemical-resistant materials
- Internal bypass
- Can run dry without damage

8000 Series internal bypass pumps are ideal for applications where an automatic demand switch is not desired. Pumps with bypass will continue to run without damage once the bypass pressure is reached. They incorporate a triple chamber design with Viton® elastomers to withstand the toughest applications. Perfect for spot sprayers, foam markers and transfer applications where smooth, consistent flow is needed.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8000-543-250*	**Standard Bypass Pump:** Viton® valves, Santoprene® diaphragm, 45 PSI internal bypass	1.8	50	⅜" NPT-Female	5.5
8000-543-210	**Standard Bypass Pump:** Viton® valves, Santoprene® diaphragm, 35 PSI internal bypass	1.3	40	⅜" NPT-Female	5.5
8000-543-220	**Standard Bypass Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI internal bypass	1.5	60	⅜" NPT-Female	7.1
8006-543-250	**Bypass Pump with Reversed Pumphead:** Viton® valves, Santoprene® diaphragm, 45 PSI internal bypass	1.4	50	⅜" NPT-Female	5.5

* Packaged in quantities of 6. For single packs, replace "8000-" with "8009."

Model	PSI	BAR	GPM	L/min	Amps
8000-543-250	20	1.4	1.30	4.9	4.0
	30	2.1	1.11	4.2	4.7
	40	2.8	0.69	2.6	5.2
	50	4.1	0.18	0.7	5.5
8000-543-210	10	0.7	1.28	4.8	3.8
	20	1.4	1.19	4.5	4.4
	30	2.1	1.07	4.0	5.0
	40	2.8	0.05	0.19	5.5
8000-543-220	10	0.7	1.52	5.7	3.8
	20	1.4	1.45	5.5	4.5
	30	2.1	1.39	5.3	5.2
	60	4.1	1.12	4.2	7.1
8006-543-250	10	0.7	1.40	5.3	3.4
	20	1.4	1.30	4.9	4.0
	40	2.8	0.69	2.6	5.2
	50	4.1	0.18	0.7	5.5

8000 Series SHURFLO® Diaphragm Pump

No Control Pump 12 VDC

8000-543-290

- Self-priming up to 8 vertical feet [2.4m]
- Chemical-resistant materials
- ¼" adapter for external bypass hook-up
- Can run dry without damage

Designed to accommodate applications that have external pressure valves plumbed into the system.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8000-543-290	**Front Adapter Pump:** Viton® valves, Santoprene® diaphragm, ¼" FNPT adapter mounted on switch ports	1.8	100	⅜" NPT-Female	8.8

Model	PSI	BAR	GPM	L/min	Amps
8000-543-290	20	1.4	1.26	4.7	5.0
	40	2.8	1.14	4.3	6.2
	60	4.1	1.02	3.9	7.3
	80	5.5	0.93	3.5	8.0
	100	6.9	0.84	3.2	8.8

8000 and 8020 Series SHURFLO® Diaphragm Pumps

Bypass and Automatic-Demand Pumps 115 VAC

- Self-priming up to 8 vertical feet [2.4m]
- Built-in check valve
- Chemical-resistant materials
- Corded pump optional
- Can run dry without damage

These SHURflo 8000 and 8020 Series demand pumps provide the same reliability as the 12 VDC version, except in a 115 VAC capacity. They are ideal in agricultural applications that require high pressure with flow rates up to 1.6 GPM [6.1 L/min] and low amp draw. They can be mounted in any position, are compact, and are designed for easy maintenance.

Order Information - Bypass 115 VAC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8000-533-250	**Bypass Pump:** Viton® valves, Santoprene® diaphragm, 45 PSI Internal Bypass	1.4	50	⅜" NPT-Female	0.54
8020-503-250	**Bypass Pump with Power Cord:** Viton® valves, Santoprene® diaphragm, 45 PSI Internal Bypass	1.5	40	⅜" NPT-Female	0.56

Bypass 115 VAC

Model	PSI	BAR	GPM	L/min	Amps
8000-533-250	10	0.7	1.36	5.1	0.34
	30	2.1	1.05	4.0	0.46
	40	2.8	0.65	2.5	0.51
	50	3.4	0.19	0.7	0.54
8020-503-250	10	0.7	1.40	5.3	0.37
	20	1.4	1.30	4.9	0.44
	30	2.1	1.10	4.2	0.50
	40	2.8	0.80	3.0	0.56

Order Information - Demand 115 VAC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8000-533-236	**Standard Demand Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch	1.4	60	⅜" NPT-Female	0.64
8000-513-236	**Standard Demand Pump:** Viton® valves, Santoprene® diaphragm, 60 PSI demand switch with 6 ft power cord	1.5	60	⅜" NPT-Female	0.57
8020-833-238	**High Pressure Pump with 6 ft. Power Cord:** Viton® valves, Santoprene® diaphragm, 100 PSI demand switch	1.6	100	⅜" NPT-Female	0.95
8030-863-239	**High Pressure Pump:** Viton® valves, Santoprene® diaphragm, 150 PSI demand switch	1.5	150	⅜" NPT-Female	1

Demand 115 VAC

Model	PSI	BAR	GPM	L/min	Amps
8000-533-236	20	1.4	1.15	4.3	0.46
	40	2.8	0.97	3.7	0.55
	50	3.4	0.91	3.4	0.60
	60	4.1	0.85	3.2	0.64
8000-513-236	20	1.4	1.15	4.8	0.40
	40	2.8	0.96	4.1	0.49
	50	3.4	0.90	3.6	0.54
	60	4.1	0.84	3.5	0.57
8020-833-238	20	1.4	1.32	5.0	0.45
	40	2.8	1.14	4.3	0.58
	60	4.1	1.07	4.0	0.70
	100	6.9	0.91	3.4	0.95
8030-863-239	20	1.4	1.24	4.7	0.45
	60	4.1	1.04	3.9	0.66
	120	8.3	0.77	2.9	0.92
	150	9.7	0.63	2.4	1.00

8007 Series SHURFLO® Diaphragm Pumps

Bypass and Automatic-Demand 12 VDC with Electrical Package

8007-543-850
(Front and Back Shown)

- Self-priming up to 8 vertical feet [2.4m]
- Chemical-resistant materials
- Internal bypass option
- Can run dry without damage
- Built-in on/off switch included
- 2 pin connector on power leads
- Available with or without integral fuse
- Rocker switch protected from the elements by a clear boot

These models include an aesthetically-pleasing molded assembly, housing a rocker-type manual switch with international on/off switch symbols. Wiring is neatly routed into the molded assembly through form fitting entries and strain relieved inside the housing. Fused versions come with an automotive-type fuse housed under a snug fitting cap marked “fuse.” Non-fused versions have a raised section.

Order Information -Bypass 12VDC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8007-543-850	**Bypass Pump w/Electrical Package:** Viton® valves, Santoprene® diaphragm, 45 PSI bypass, Manual on/off switch 2 pin connector and fuse	1.8	50	⅜" NPT-Female	5.5
8007-593-850	**Bypass Pump w/Electrical Package:** Viton® valves, Santoprene® diaphragm, 45 PSI bypass, Manual on/off switch 2 pin connector	1.8	50	⅜" NPT-Female	5.5

Bypass 12VDC

Model	PSI	BAR	GPM	L/min	Amps
8007-543-850	10	0.7	1.40	5.3	3.4
	20	1.4	1.30	4.9	4.0
	30	2.1	1.11	4.2	4.7
	40	2.8	0.69	2.6	5.2
	50	3.4	0.18	0.7	5.5
8007-593-850	10	0.7	1.40	5.3	3.4
	20	1.4	1.30	4.9	4.0
	30	2.1	1.11	4.2	4.7
	40	2.8	0.69	2.6	5.2
	50	3.4	0.18	0.7	5.5

Order Information -Demand 12VDC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
8007-591-236	**Demand Pump w/Electrical Package:** Viton® valves, Santoprene® diaphragm, 60 PSI Demand Switch, Manual on/off switch 2 pin connector (8007-543-836 includes fuse)	1.0	50	⅜" NPT-Female	3.7
8007-593-836		1.8	50	⅜" NPT-Female	6.4
8007-543-836		1.8	50	⅜" NPT-Female	6.4

Demand 12VDC

Model	PSI	BAR	GPM	L/min	Amps
8007-591-236	30	2.1	0.74	2.8	2.9
	40	2.8	0.69	2.6	3.2
	50	3.4	0.65	2.5	3.7
8007-593-836	30	2.1	1.47	5.5	5.3
	40	2.8	1.41	5.3	5.8
	50	3.4	1.36	5.1	6.4
8007-543-836	30	2.1	1.47	5.5	5.3
	40	2.8	1.41	5.3	5.8
	50	3.4	1.36	5.1	6.4

2087 Series SHURFLO® Diaphragm Pumps

Automatic-Demand Pump 12 VDC with Electrical Package

2087-593-135
(Front and Back Shown)

- Self-priming up to 12 vertical feet [3.7m]
- Chemical-resistant materials
- Can run dry without damage
- Rocker switch protected from the elements by a clear boot
- Built-in on/off switch included
- 2 pin connector on power lead

These models include an aesthetically-pleasing molded assembly, housing a rocker-type manual switch with international on/off switch symbols. Wiring is neatly routed into the molded assembly through form fitted entries and strain relieved inside the housing.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
2087-593-135 †	**Standard Demand Pump:** Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	3	50	½" MSPT* Male	8

* ½" - 14 National American Straight Pipe Thread
† Packaged in quantities of 6. For single pack, replace "135" with "435."

Model	PSI	BAR	GPM	L/min	Amps
2087-593-135	10	0.7	2.80	10.6	5.3
	20	1.4	2.69	10.2	5.5
	30	2.1	2.36	8.9	6.7
	40	2.8	2.05	7.8	7.7
	50	3.4	1.42	5.4	8.0

2088 Series SHURFLO® Diaphragm Pumps

Automatic-Demand Pumps 12 VDC

2088-343-135

- Self-priming up to 12 vertical feet [3.7m]
- Chemical-resistant materials
- Can run dry without damage
- Automatic demand
- Built-in check valve (varies by model) prevents back flow of fluid into the solution tank
- Continuous duty motor on fin-cooled version

SHURflo 2088 Series diaphragm pumps deliver reliable performance in high flow, moderate pressure applications. They are used in a variety of spot spraying, multi-tip spraying and fertilizer drip applications that require flows of up to 3.6 GPM [13.6 L/min]. They are available in a variety of chemical-resistant materials.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
2088-313-145	**Standard Pump:** with fin cooled motor Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	3.6	40	½" MSPT* Male	9.5
2088-443-144	**Standard Pump:** Santoprene® valves, Santoprene® diaphragm, 45 PSI demand switch	3.5	45	½" MSPT* Male	9.1
2088-343-135†	**Standard Pump:** Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	3	40	½" MSPT* Male	7.7

* ½" - 14 National American Straight Pipe Thread
† Packaged in quantities of 6. For single pack, replace "135" with "435."

Model	PSI	BAR	GPM	L/min	Amps
2088-313-145	10	0.7	3.09	11.7	6.4
	20	1.4	2.82	10.7	7.6
	30	2.1	2.49	9.4	8.7
	40	2.8	2.15	8.1	9.5
2088-443-144	10	0.7	2.83	10.7	5.8
	20	1.4	2.56	9.7	7.0
	30	2.1	2.31	8.7	8.0
	40	2.8	2.02	7.6	9.1
2088-343-135	10	0.7	2.80	10.6	5.3
	20	1.4	2.69	10.2	5.5
	30	2.1	2.36	8.9	6.7
	40	2.8	2.05	7.8	7.7

2088 Series SHURFLO® Diaphragm Pumps

No Control Pumps 12 VDC

- Self-priming up to 12 vertical feet [3.7m]
- Chemical-resistant materials
- Can run dry without damage
- Built-in check valve (may vary by models) prevents back flow of fluid through the pump

SHURflo 2088 Series diaphragm pumps deliver reliable performance in high flow, moderate pressure applications. They are used in a variety of spraying and transferring applications that require flows of up to 3.3 GPM [12.5 L/min]. They are available in a variety of chemical-resistant materials. They can be mounted in any position and are designed for easy maintenance.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
2088-343-170	**Front Adapter Pump with Electrical Package:** Viton® valves, Santoprene® diaphragm, ¼" FPT adapter mounted on switch port, built-in on/off power switch, fuse holder pre-wired w/2-wire molded connector, no demand switch	3.3	50	½" MSPT* Male	9.1
2088-343-500	**Front Adapter Pump:** Viton® valves, Santoprene® diaphragm, ¼" FPT adapter mounted on switch port, no demand switch	3.3	50	½" MSPT* Male	10.1

* ½" - 14 National American Straight Pipe Thread

Model	PSI	BAR	GPM	L/min	Amps
2088-343-170	10	0.7	3.00	11.3	5.0
	30	2.1	2.38	9.0	7.5
	40	2.8	2.14	8.1	8.3
	50	3.4	1.86	7.0	9.1
2088-343-500	10	0.7	2.79	10.6	5.8
	30	2.1	2.26	8.6	8.3
	40	2.8	1.99	7.5	9.3
	50	3.4	1.69	6.4	10.1

2088 Series SHURFLO® Diaphragm Pumps

Automatic-Demand Pumps 115 VAC

- Self-priming up to 12 vertical feet [3.7m]
- Chemical-resistant materials
- Can run dry without damage
- Automatic demand
- Built-in check valve (may vary by model) prevents back flow of fluid into the solution tank

These SHURflo 2088 Series pumps offer the same reliability as the 12 VDC version except in 115 VAC capacity. They are used in a variety of spot spraying, mini-bulk transfer and fertilizer applications that require flows of up to 3.2 GPM [12.1 L/min]. They are available in a variety of chemical-resistant materials.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
2088-394-144	**Standard Pump with 6' power cord:** Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	3	40	½" MSPT* Male	0.7
2088-394-154	**Standard Pump:** Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	3.2	40	½" MSPT* Male	0.98

* ½" - 14 National American Straight Pipe Thread

Model	PSI	BAR	GPM	L/min	Amps
2088-394-144	10	0.7	2.40	9.1	.55
	20	1.4	2.20	8.3	.60
	30	2.1	1.90	7.2	.65
	40	2.8	1.60	6.0	.70
2088-394-154	10	0.7	2.71	10.2	.65
	20	1.4	2.41	9.1	.77
	30	2.1	2.10	8.0	.89
	40	2.8	1.84	7.0	.98

166 Series SHURFLO® Diaphragm Pumps

Air-Driven Pumps

- 2 chamber dual diaphragm
- Positive displacement
- On-demand operation
- Chemical-resistant polypropylene body
- 30 to 60 PSI [2.1-4.1 bar]

The SHURflo 166 air-operated demand pumps employ a dual diaphragm design, with a patented fast action switching mechanism allowing for consistent flow and pressure. They are built for the toughest pumping applications and are available in a variety of elastomers that allow them to be compatible with most caustic or acidic fluids. Ideal for chemical transfer, liquid fertilizer injection and agricultural spraying.

Order Information

Part #	Description	Max GPM	Max PSI
166-200-36	Viton® valves and diaphragm	0.6	30-60
166-200-46	Buna valves and diaphragm	0.6	30-60
166-200-56	EPDM valves and diaphragm	0.6	30-60
166-200-57	Santoprene® valves and diaphragm	0.6	30-60

Power Twin SHURFLO® Pump

Demand Pumps 12 VDC

- Up to 6.25 GPM [23.7 L/min]
- Thermally-protected motor with heat sink
- Self-priming
- Quiet, balanced operation
- Long-life pressure switch
- Intake/Discharge manifold optional

Take all the performance and features of the time-tested 2088 series, double it, and the result is the high-flow Power Twin. Delivers an open flow of 6.25 GPM [23.7 L/min] at a mere 8.7 amps. At 40 PSI [2.8 bar], it delivers 3.5 GPM [13.2 L/min] and draws only 17.2 amps. One of the most efficient high-flow self-priming pumps available today, the Power Twin is excellent for transferring, light-duty spraying, and use as a 1:1 proportioning pump.

Order Information

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
4111-035	Viton® valves, Santoprene® diaphragm, 45 PSI demand switch, manifold with ⅝" barb ports	6.25	40	½" MPT	17.2
4211-035	Viton® valves, Santoprene® diaphragm, 45 PSI demand switch	6.25	40	½" MPT	17.2
94-389-00	Manifold Kit ⅝" barb (2) per pump				
94-389-01	Manifold Kit ¾" barb (2) per pump				

Model	PSI	BAR	GPM	L/min	Amps
4111-035	0	0	6.25	23.5	8.7
	10	0.7	5.7	21.6	12.2
	20	1.4	5.0	19.0	14.5
	30	2.1	4.3	16.2	16.1
	40	2.8	3.5	13.2	17.2
4211-035	0	0	6.25	23.5	8.7
	10	0.7	5.7	21.6	12.2
	20	1.4	5.0	19.0	14.5
	30	2.1	4.3	16.2	16.1
	40	2.8	3.5	13.2	17.2

9300 Series SHURFLO® Submersible Pump

24 VDC

902-100 Controller Features:

* Operates on 24 VDC
* Increases daily water output up to 30%
* System starts pumping earlier in the morning
* System stops pumping later in the evening
* Protects pump from low or high volume conditions
* Terminals for float switch

Boost your DC solar pump's performance by up to 30%. Controller optimizes your solar water pumping system by translating the current and voltage available from your photovoltaic panels, into a combination that is better matched to that needed by the pump. With the optional float switch installed, the controller will automatically stop pumping when the reservoir is full.

Order Information

Part #	Description	Max GPM	Max Draw
9325-043-101	EPDM valves, Santoprene® diaphragm	1.8	4.1

Model	Description	Max. Array Input Voltage		Min. Startup Voltage		Shutdown Voltage	Max. Output Current
		12V	24V	12V	24V		
902-100 (LCB-GO)	9300 DC Pump Controller	45 V	N/A	25 V	N/A	28 V	5 Amps
902-200 (LCB-G)	9300 DC Pump Controller	45 V	N/A	25 V	12.5 V	28 V	7 Amps

- Fits wells 4 inches [10.2 cm] in diameter and larger
- Accepts a variety of jacketed cables from your power source
- Runs dry without damage
- Corrosion-proof housing with stainless steel fasteners
- Long-life, 24 VDC operation
- Quick disconnect for easy installation and service

The SHURflo 9300 series pump offers a solution to your remote water pumping needs. It's rugged, durable and built to last. This pump delivers a steady 1.0 GPM [3.8 L/min] operating at 100 PSI [6.9 bar] maximum at 230 feet [70.1m]. It incorporates a unique, waterblocked cable connector that is impervious to water leakage and condensation problems preventing waterwicking. Great for applications in livestock watering, irrigation, ponds, islands, remote homes and cabins.

902-200 Controller Features:

Includes all 902-100 features plus:

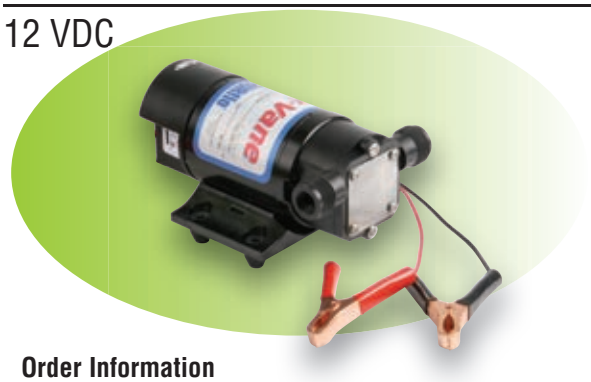
* Switch selectable for 12 VDC or 24 VDC operation
* Pump On / Off switch
* Watertight enclosure and cable inlets
* Includes water level monitor mode with probes and cable

The versatile 902-200 has all the features of the 902-100 and more. This controller is switch selectable for 12 VDC or 24 VDC operation and includes a manual on/off switch for easy pump maintenance. The controller comes with high / low water level sensors so the pump will not run when the well water is too low. Weather-proof enclosure.

Model	Vertical Lift				Solar Array	Current
	Feet	Meters	GPH	LPH	Watts	Amps
9325-043-101	20	6.1	117	443	58	1.5
	60	18.3	109	413	78	2.1
	100	30.5	103	390	99	2.6
	140	42.7	99	375	115	3.1
	180	54.9	93	352	135	3.6
	230	70.1	82	310	155	4.1

3000 Series SHURFLO® Flexible Impeller Pumps

12 VDC



Order Information

Part #	Max GPM	Max PSI	Max Draw
3000-350	2.5	10	7.4

Model	PSI	BAR	Dischg. Ft of Head	GPM	L/min	Amps
3000-350	0	0.0	0.0	3.8	14.4	6.5
	5	0.3	11.5	3.4	12.9	7.1
	10	0.7	23.0	2.5	9.5	7.4

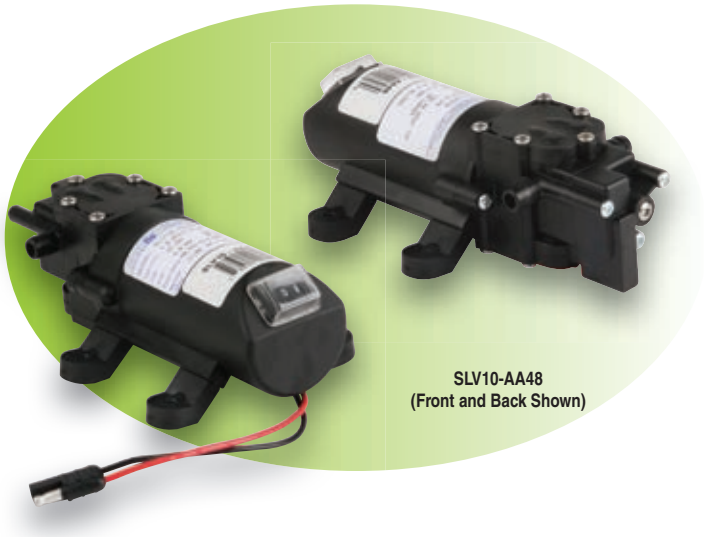
- Self-priming to 7.5 feet [2.3m] vertical
- Maximum head of 28 feet [8.5m] (12 PSI [.83 bar])
- Liquid temps from 40° F to 185° F [4.4°C to 85°C]
- Thermal overload protection
- Stainless steel shaft
- BUNA-N impeller and lip seal
- Built-in reverse switch and 8 foot [2.4m] cable with battery clips

The 3000 Series is suitable for a variety of uses from pumping water to changing oil in cars, trucks and farm equipment. Pumps incorporate thermal overload protection.

Not intended for use with flammable liquids or in flammable environments.

SLV Series SHURFLO® Diaphragm Pump

Demand Pumps



SLV10-AA48
(Front and Back Shown)

- Automatic demand; 25 PSI [1.72 bar] on/40 PSI [2.8 bar]
- Self-priming up to 2.5 vertical feet [.76 m]
- Long-life pressure switch
- Thermally-protected ball bearing motor with splash-proof housing
- Internal fan radiates heat; external heat sink not required
- Integral on/off switch optional

The SHURflo SLV is ideal for low volume, intermittent-duty applications requiring a compact pump with low power consumption. Unique design has no metals in the fluid path for maximum chemical resistance. Pump features include automatic demand operation and elastomers that handle a wide variety of chemicals. Perfect for low volume spraying and transfer. Cost effective yet with high performance and reliability; the SLV offers tremendous value.

Order Information - Automatic Demand Pumps 12 VDC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
SLV10-AA40	Viton® valves, Santoprene® diaphragm, 40 PSI demand switch, Integral on/off switch included	1	30	⅜" Barb	2.5
SLV10-AA41	Viton® valves, Santoprene® diaphragm, 40 PSI demand switch	1	30	⅜" Barb	2.5
SLV10-AA48*	Viton® valves, Santoprene® diaphragm, 40 PSI demand switch, Manual switch and 2 pin connector 12VDC	1	30	⅜" Barb	2.5

* Packaged in quantities of 6, for single pack, add suffix "AB" (i.e.: SLV10-AA48-AB).

Automatic Demand Pumps 12 VDC

Model	PSI	BAR	GPM	L/min	Amps
SLV10-AA40	3	0.2	0.90	3.4	1.8
	10	0.7	0.73	2.8	2.1
	20	1.4	0.62	2.3	2.3
	30	2.1	0.49	1.9	2.5
SLV10-AA41	3	0.2	0.90	3.4	1.8
	10	0.7	0.73	2.8	2.1
	20	1.4	0.62	2.3	2.3
	30	2.1	0.49	1.9	2.5
SLV10-AA48	3	0.2	0.90	3.4	1.8
	10	0.7	0.73	2.8	2.1
	20	1.4	0.62	2.3	2.3
	30	2.1	0.49	1.9	2.5

Order Information - Automatic Demand Pump 24 VDC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
SLV10-AB41	Viton® valves, Santoprene® diaphragm, 40 PSI demand switch	1	30	⅜" Barb	1.23

Automatic Demand Pump 24 VDC

Model	PSI	BAR	GPM	L/min	Amps
SLV10-AB41	3	0.2	0.90	3.4	0.89
	10	0.7	0.73	2.8	1.00
	20	1.4	0.62	2.3	1.15
	30	2.1	0.49	1.9	1.23

Order Information - No Control Transfer Pump 12 VDC

Part #	Description	Max GPM	Max PSI	Port Size	Max Draw
SLV10-HA01	Viton® valves, Geolast® diaphragm, No demand switch	1	30	⅜" Barb	2.5

No Control Transfer Pump 12 VDC

Model	PSI	BAR	GPM	L/min	Amps
SLV10-HA01	3	0.2	0.90	3.4	1.8
	10	0.7	0.73	2.8	2.1
	20	1.4	0.62	2.3	2.3
	30	2.1	0.49	1.9	2.5

SHURFLO® Accessories

Drill Pump

- Self-priming to 8 feet [2.4m] vertical
- Pumps liquids 40° F to 120° F [4.4° C to 48.8° C]
- BUNA impeller and seals
- ¼" [6.35 mm] shaft fits standard drills

Attaches to any standard ¼" [6.35 mm] drill motor. Ideal for pumping water from appliances, aquariums, water beds, sinks, toilets or drums. Includes a ¼" [6.35 mm] oil probe that easily allows the transfer of oil from cars, trucks, lawn and garden equipment. Not intended for use with flammable liquids or in flammable environments.

Order Information

Part #	Max GPH	Port Size	Shaft Size	L/hr
3010-000	200	¾" (M) GHT	¼"	757

Oil Change System

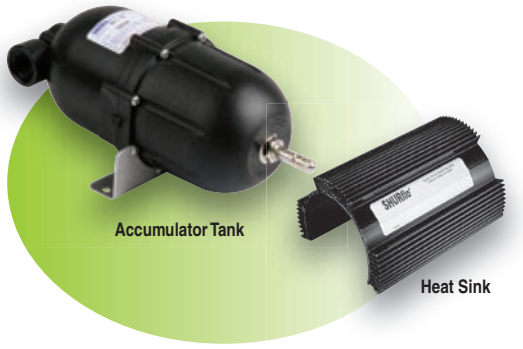
- Complete with necessary tubing and oil storage container
- Built-in reversible switch and 8 foot cable with battery clips
- Thermal overload protection

Makes a messy job clean and easy. Simply install the oil probe in the engine oil dipstick tube, attach the battery clips, and flip the switch. Oil is safely removed and stored in the easy to carry container. Oil should be heated to 140°F for maximum pump efficiency.

Order Information

Model	Description
8050-305-426	Oil Change System

Accumulator Tank, Heat Sink



Order Information

Model	Description
181-101	Accumulator Tank: 24 oz. total capacity (liquid and air), pre-pressurized to 20 PSI [1.4 bar], (0 to 100 PSI [6.9 bar] range of adjustment), Santoprene® bladder, mounting bracket. ½" (F) NPT Female ports, NSF approved.
34-007	5" [12.7 cm] Heat Sink to assist cooling in Continuous-duty applications
34-006	3" [7.6 cm] Heat Sink to assist cooling in Continuous-duty applications

Bowl-Style Strainers

Order Information

Model	Description
255-223	50 Mesh screen, ½" Barb Inlet x ½ NPSM Female Outlet
255-313	50 Mesh screen, ½" NPSM Male Inlet x ½ NPSM Female Outlet, EPDM O-ring
255-323	50 Mesh screen, ½" Barb Inlet x ½ NPSM Female Outlet, EPDM O-ring
255-646	50 Mesh screen, ⅜" x ⅜" MNPT Poly/Nylon, Viton® O-ring
255-457	50 Mesh screen, ⅜" x ⅜" MNPT Poly/Nylon, Buna O-ring
255-568	50 Mesh screen, ⅜" x ⅜" MNPT Poly/Nylon, EPDM O-ring
255-613	50 Mesh screen, ½" NPSM Male Inlet x ½ NPSM Female Outlet, Viton® O-ring
255-623	50 Mesh screen, ½" Barb Inlet x ½ NPSM Female Outlet, Viton® O-ring
255-413	50 Mesh screen, ½" NPSM Male Inlet x ½ NPSM Female Outlet, Buna O-ring
255-423	50 Mesh screen, ½" Barb Inlet x ½ NPSM Female Outlet, Buna O-ring

SHURFLO® Fittings

Barb Tee

Part #	Description
8-126-00	½" [12mm] Barb Tee - Polypro

Barb Tee X Pipe

Part #	Description
8-010	⅜" [10mm] MNPT-Male x ½" Barb Tee - Nylon

Swivel Hex Wingnut Straight

Part #	Description
234-2916	½" [12mm] NPT-Female x ⅜" [10 mm] Barb - Polypro
234-2926	½" [12mm] NPT-Female x ½" [12 mm] Barb - Polypro
234-2936	½" [12mm] NPT-Female x ⅝" [16 mm] Barb - Polypro
234-2946	½" [12mm] NPT-Female x ¾" [19 mm] Barb - Polypro

Swivel Hexnut Elbow

Part #	Description
234-3926	½" [12mm] NPT-Female x ½" [12 mm] Barb Swivel Hexnut Elbow - Polypro
8-035 *	½" [12mm] NPT-Female x ½" [12 mm] NPT Male Swivel Hexnut Elbow Adaptor - Nylon
234-3916	½" [12mm] NPT-Female x ⅜" [10 mm] Barb Swivel Hexnut Elbow - Polypro
234-3946	½" [12mm] NPT-Female x ⅜"" [10 mm] Barb Swivel - Polypro
234-3936	½" [12mm] NPT-Female x ½" [12 mm] Barb Swivel - Polypro

*Fitting available only in nylon – CHECK COMPATIBILITY.

Barbed X Pipe Straight

Part #	Description
8-005-01	⅜" [10mm] NPT-Male x ⅜" [10 mm] Barb - Polypro
8-007-01	⅜" [10mm] NPT-Male x ½" [12 mm] Barb - Polypro
8-021-01	½" [12mm] NPT-Male x ½" [12 mm] Barb - Polypro

Barbed X Pipe Elbow

Part #	Description
8-006-01	⅜" [10mm] NPT-Male x ⅜" [10 mm] Barb
8-008-01	⅜" [10mm] NPT-Male x ½" [12 mm] Barb

Adapters

8-145-00

8-150-01

8-205-00

Part #	Description
8-145-00	⅜" [10mm] NPT-Male x ½" [12 mm] NPT-Male - Polypro
8-150-01*	½" [12mm] NPT-Female x ¾" [19 mm] GHT (M) - Nylon
8-205-00	½" [12mm] NPT-Female x ½" [12 mm] NPT-Male - Aceryl

*Fitting available only in nylon – CHECK COMPATIBILITY.

SHURFLO® AG Runner™

The SHURflo AG Runner™ Transfer Pump System is designed to safely and accurately transfer bulk chemicals to the point of use.

Features include:
- Industry leading pump
- Portable
- Can be used with a variety of bulk containers
- Built for rugged service with a heavy-duty welded frame
- Simple and accurate flow indicator

Order Information

Part#	Flow Meter Type	Description
SF-1100-PTS	Pump-mounted (FM-1100)	Chemical Transfer Pump with 12 VDC motor, 20 ft. cable, alligator clips and in-line fuse (Part # SF-1100 - EPDM valves or SF-1105 - Viton valves), electronic flow meter, 1-in. NPT x 12 ft. EPDM discharge hose with ball valve/spout, and 1-in. NPT x 12 ft. EPDM inlet hose with 1-in. elbow/ball valve/fitting assembly with locking cam arms
SF-1100-PTSi	Inline (FM-1100i)	
SF-1100-PTSi-00	No Flow Meter	
SF-1105-PTS	Pump-mounted (FM-1100)	
SF-1105-PTSi	Inline (FM-1100i)	

See Mini-Bulk Pump (pg. 109) for performance information.

SHURFLO® Mini-Bulk Chemical Transfer System

SHURflo Mini-Bulk Chemical Transfer Pumps and Systems are designed specifically for chemical company tanks where the pump is integral to the tank. The SF-1100-REC system is mounted to any tank with a 9-inch, threaded opening. This system allows the pump to recirculate the suspended chemical components prior to transferring to the point of use.

Order Information

Part#	Description
SF-1100-REC-DT	Chemical Transfer Pump with 12 VDC motor, 20 ft. cable, alligator clips & in-line fuse (Part # SF-1100 - EPDM valves or SF-1105 - Viton valves), in-line electronic flow meter (Part # FM-1100i), 1-in. NPT x 12 ft. EPDM discharge hose with ball valve/spout, 3-way valve, tubing and fittings to allow tank recirculation, and 28" dip tube.
SF-1105-REC-DT	

See Mini-Bulk Pump (pg. 109) for performance information.

SHURFLO® Mini-Bulk Pumps

The SF-1100 Series Bulk Chemical Pumps are the industry leader. They are designed for efficiency and power to handle highly viscous fluids. Servicing the SF-1100 series pump is a rare event, but if needed, it can be serviced quickly and easily with only a few hand tools.

- Specialized EPDM elastics or Viton option
- 12 volt DC or 110 volt AC motor option
- 20 foot cord with alligator clips and in-line fuse (DC only)
- Weather protected on/off switch
- Internal bypass to protect the pump at shut-off
- 2" MNPT inlet, 1" FNPT outlet
- Capable of priming up to 12 feet

Order Information

Part#	Valves	Motor
SF-1100	EPDM	12 VDC
SF-1100-110V	EPDM	110 VAC
SF-1105	Viton®	12 VDC

Model	PSI	BAR	GPM	L/min	Amps
SF-1100 and SF-1105	0	0.0	10.7	40	9.3
	5	0.3	10.1	38	10.3
	10	0.7	8.7	33	12.3
	15	1.0	7.6	29	13.9

SHURFLO® Mini-Bulk Flow Meters

The FM-1100 Series Electronic Flow Meter is designed for accurate and easy measuring of transferred chemicals. The FM-1100 Series Flow Meter is an integral component for a complete bulk chemical transfer system.

- Max. flow of 20 gpm (.5% after calibration)
- Accurate nutating disk design
- Large LCD display makes meter reading easy from a distance
- Simple calibration steps and control button layout
- Long-life lithium battery
- Easy-to-service electronics and batteries
- Available in pump-mounted and hose-end configurations

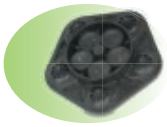
Order Information

Part#	Description
FM-1100	Pump-mounted meter kit- 1" MNPT inlet & outlet
FM-1100i	Inline meter kit -1" FNPT inlet & outlet

SHURFLO® Mini-Bulk Kits, Parts, & Accessories

Part# 94-718-00

Part# 94-719-00



Part# 94-720-00 & 94-720-05

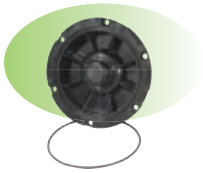
Part# 94-721-00

Mini-Bulk Pump Kits for SF-1100 Series

Part Number	Description
94-718-00	Motor assembly kit used in any SF-1100 series pumps. Kit includes a 12 VDC motor with integrated pump lower housing, built-in on-off switch, 20 foot cable, alligator clips and in-line fuse (Support bracket part # 84-1038-08)
94-719-00	Santoprene® diaphragm/lower housing/drive assembly - ready for installation
94-720-00	EPDM valve housing kits include a complete fully-assembled valve housing with o-ring seal* - ready for installation
94-720-05	Viton® valve housing kits include a complete fully-assembled valve housing with o-ring seal* - ready for installation
94-721-00	Polypropylene upper housing - includes o-ring seal* and pump head screws

** Manufacturer recommends replacing the O-ring seal whenever the pump has been dismantled.*

Part# 94-732-00



Part# 94-733-00

Part# 94-734-00

Part# 94-735-00

Part# 94-736-00

Mini-Bulk Flow Meter Kits for FM-1100 Series

Part Number	Description
94-732-00	Flow meter electronics kit includes the front cover assembly and the electronic display with o-ring and batteries. Kit fits both pump-mounted and in-line meters (O-ring part # 5-040-154)
94-733-00	Flow meter housing seal cover kit includes the seal cover, o-ring and screws. Kit fits both pump-mounted and in-line meters. (O-ring part # 5-040-154)
94-734-00	Nutating chamber assembly, including o-ring seal. Kit fits both pump-mounted and in-line meters
94-735-00	90° meter housing with o-ring seal for pump-mounted flow meter. (O-ring part # 5-043-240)
94-736-00	Meter housing with o-ring seal for in-line flow meter. (O-ring part # 5-043-240)

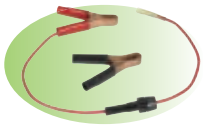
Part# 3320-0064

Part# 8-727-00

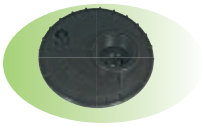
Part# 94-712-00

Part# 94-716-00

Part# 94-717-00



Part# 94-723-00



Part# 94-724-00

Part# 94-725-00

Part# 94-737-00

Part# 94-738-00

Other Mini-Bulk Parts & Accessories

Part Number	Description
3320-0064	Anti-flow back valve for EPA compliance
8-727-00	2 inch FNPT by 1 Inch FNPT polypropylene reducer coupling
94-712-00	2 inch male NPT by 2 inch female NPT street elbow fitting
94-716-00	1 inch NPT ball valve with spout
94-717-00	1 inch NPT x 12 foot EPDM discharge hose kit
94-723-00	Set of red and black alligator clips, including fuse holder
94-724-00	Replacement recirculation lid (Gasket part # 7-155-00)
94-725-00	Replacement recirculation cap
94-737-00	Recirculation system return hose kit - includes return hose and two hose clamps
94-738-00	Elbow, valve and coupling assembly - includes a 1 inch street elbow, 1 inch ball valve, and 1 inch bayonet tank coupling

Piston & Plunger Pumps

Hypro's Twin® piston pumps are used in a variety of spraying, pressure cleaning and hydrostatic testing applications. These heavy-duty pumps are ideal for fluid handling of water and non-abrasive or general use chemicals. All pumps are constructed from cast iron materials. They feature stainless steel valves and ball bearing, leather or fabric-reinforced Buna-N or straight Buna-N cups.

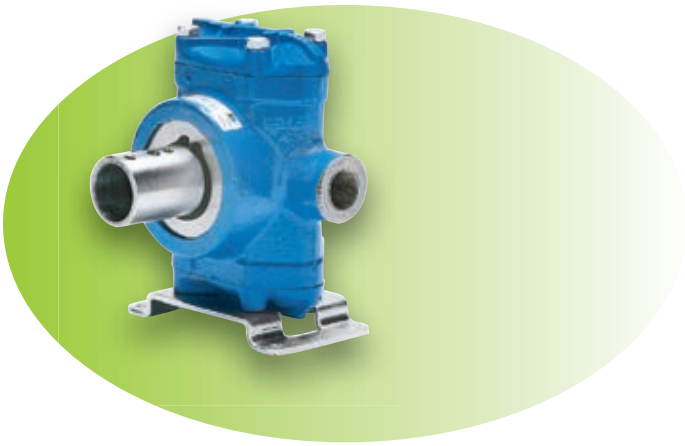
You can choose from a variety of drive systems to include: belt and pulley, 540 rpm PTO, gasoline engine or electric motor. These pumps are available in a variety of flow and pressure ranges up to a maximum of 10 gpm/37.9 lpm and 1000 psi/68.9 bar with maximum fluid temperatures of 140°F/60°C (piston pumps) and 180°F/82°C (plunger pumps).

All of the Hypro piston pumps share these quality features:

- Non-abrasive and general use chemical compatibility
- Compact, lightweight and easy to install
- Replaceable leather cups for insecticides, herbicides and aromatic solvents
- Replaceable Buna-N and fabric-reinforced Buna-N cups for water, soap and detergent solutions
- Bi-rotational
- Self-priming operation

Big Twin®

Models 5206C and 5206C-H



- Port sizes: ¾" inlet, ¾" outlet
- Max. fluid temperature: 140°F/60°C
- Weight: 18 lbs./8.2 kg
- Pump shaft rotation: bi-rotational
- Cups: Leather standard [fabric-reinforced (F) and Buna-N (R) available]
- Recommended to be used with Pulsation Dampener 3375-0017-2

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@400 RPM		@500 RPM		@540 RPM		@600 RPM		@700 RPM		@800 RPM	
25 PSI	3.9	.26	4.9	.29	5.4	.31	6.0	.34	7.0	.40	8.0	.46
1.7 BAR	14.8	.26	18.5	.29	20.4	.31	22.7	.34	26.5	.40	30.3	.46
100 PSI	3.9	.40	5.0	.46	5.4	.50	6.0	.56	7.0	.65	7.9	.74
6.9 BAR	14.8	.40	189	.46	20.4	.50	22.7	.56	26.5	.65	29.9	.74
200 PSI	4.0	.66	5.0	.75	5.4	.81	6.0	.90	6.9	1.1	7.8	1.2
13.8 BAR	15.1	.66	18.9	.75	20.4	.81	22.7	.90	26.1	1.1	29.5	1.2
300 PSI	3.9	.89	5.0	1.1	5.3	1.2	5.9	1.3	6.9	1.5	7.7	1.7
20.9 BAR	14.8	.89	18.9	1.1	20.1	1.2	22.3	1.3	26.1	1.5	29.1	1.7
400 PSI	3.9	1.1	4.9	1.4	5.3	1.5	5.9	1.6	6.9	1.9	7.7	2.2
27.6 BAR	14.8	1.1	18.5	1.4	20.1	1.5	22.3	1.6	26.1	1.9	29.1	2.2

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
5206C	8	400	800	1" solid shaft w/base
5206C-H	8	400	800	1-⅜" hollow shaft w/base
3430-0037	Leather cup kit			

Fabric Cups - Add Suffix "F" - (ie.: 5206C-F).
Buna-N Cups - Add Suffix "R" - (ie.: 5206C-R).

Big Twin®

Models 5210C and 5210C-H

- Port sizes: ¾" inlet, ¾" outlet
- Max. fluid temperature: 140°F/60°C
- Weight: 18 lbs./8.2 kg
- Pump shaft rotation: bi-rotational
- Cups: Leather standard [fabric-reinforced (F) and Buna-N (R) available]
- Recommended to be used with Pulsation Dampener 3375-0015-2

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@400 RPM		@500 RPM		@540 RPM		@600 RPM	
25 PSI	7.3	.39	8.9	.57	9.4	.66	10.0	.73
1.7 BAR	27.6	.39	33.7	.57	35.6	.66	37.9	.73
100 PSI	7.3	.69	8.9	.87	9.4	.94	9.9	1.10
6.9 BAR	27.6	.69	33.7	.87	35.6	.94	37.5	1.10
200 PSI	7.2	1.2	8.8	1.5	9.3	1.6	9.9	1.7
13.8 BAR	27.2	1.2	33.3	1.5	35.2	1.6	37.5	1.7
300 PSI	7.2	1.7	8.8	2.0	9.3	2.2	9.8	2.3
20.7 BAR	27.2	1.7	33.3	2.0	35.2	2.2	37.1	2.3
400 PSI	7.2	2.1	8.7	2.6	9.2	2.7	9.8	3.0
27.6 BAR	27.2	2.1	32.9	2.6	34.8	2.7	37.1	3.0

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
5210C	10	400	600	1" solid shaft w/base
5210C-H	10	400	600	1-⅜" hollow shaft w/base
3430-0037	Leather cup kit			

Fabric Cups - Add Suffix "F" - (ie.: 5210C-F).
Buna-N Cups - Add Suffix "R" - (ie.: 5210C-R).

Small Twin®

Series 5315, 5320, 5325 and 5330

- Port sizes: ½" inlet, ½" outlet
- Max. fluid temperature: 140°F/60°C
- Weight: 10 lbs./4.5 kg
- Pump shaft rotation: bi-rotational
- Cups: Leather (-X) standard for 5300 Series [Buna-N (-RX), Teflon (-CX) available]
- Models require a pulsation dampener (such as a 3375-0012 pulse hose) on the discharge side
- Injector head available 3396-0014

Model	5315		5320		5325		5330	
Pressure in PSI and BAR	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP
	@1725 RPM		@1725 RPM		@1725 RPM		@1725 RPM	
50 PSI	1.56	.12	2.22	.21	2.56	.25	3.02	.37
3.4 BAR	5.9	.12	8.4	.21	9.7	.25	11.4	.37
100 PSI	1.52	.15	2.18	.28	2.54	.37	3.01	.49
6.9 BAR	5.8	.15	8.3	.28	9.6	.37	11.4	.49
200 PSI	1.50	.28	2.16	.43	2.52	.52	3.00	.74
13.8 BAR	5.7	.28	8.2	.43	9.3	.52	11.4	.74
300 PSI	1.47	.35	2.12	.57	2.50	.68	2.98	.92
20.7 BAR	5.6	.35	8.0	.57	9.5	.68	11.3	.92
400 PSI	1.45	.43	2.11	.71	2.10	.82	2.96	1.11
27.6 BAR	5.5	.43	8.0	.71	7.9	.82	11.2	1.11
500 PSI	1.44	.56	2.10	.83	2.44	.96	2.94	1.23
34.5 BAR	5.5	.56	7.9	.83	9.9	.96	11.1	1.23

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
5315C-X	1.5	500	1800	⅝" OD solid shaft
5320C-X	2.2	500	1800	⅝" OD solid shaft
5325C-X	2.5	500	1800	⅝" OD solid shaft
5330C-X	3	500	1800	⅝" OD solid shaft
5315C-HX	1.5	500	1800	⅝" ID hollow shaft
5320C-HX	2.2	500	1800	⅝" ID hollow shaft
5325C-HX	2.5	500	1800	⅝" ID hollow shaft
5330C-HX	3	500	1800	⅝" ID hollow shaft

Buna-N - add suffix "R" - (i.e :5320C-RX)
Teflon - add suffix "C" - (i.e :5320C-CX)

Small Twin®

Models 5324C and 5324C-H

- Port sizes: ½" inlet, ½" outlet
- Max. fluid temperature: 140°F/60°C
- Weight: 11 lbs./5 kg
- Pump shaft rotation: bi-rotational
- Cups: Buna-N standard
- Model 5324 requires a pulsation dampener (such as a 3375-0012 pulse hose) on the discharge side
- Injector head available 3396-0006

Pressure in PSI and BAR	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP	GPM LPM	HP HP
	@600 RPM		@900 RPM		@1200 RPM		@1450 RPM		@1725 RPM	
100 PSI	.96	.12	1.51	.19	2.00	.28	2.42	.34	2.90	.40
6.9 BAR	3.6	.12	5.7	.19	7.6	.28	9.2	.34	11.0	.40
200 PSI	.94	.19	1.49	.30	1.98	.41	2.40	.50	2.89	.59
13.8 BAR	3.6	.19	5.6	.30	7.5	.41	9.1	.50	10.9	.59
300 PSI	.94	.26	1.48	.41	1.97	.55	2.38	.67	2.87	.80
20.7 BAR	3.6	.26	5.6	.41	7.5	.55	9.0	.67	10.9	.80
400 PSI	.95	.33	1.47	.50	1.96	.67	2.37	.83	2.85	1.00
27.6 BAR	3.6	.33	5.6	.50	7.4	.67	9.0	.83	10.8	1.00
500 PSI	.94	.39	1.47	.60	1.96	.81	2.36	.97	2.83	1.19
34.5 BAR	3.6	.39	5.6	.60	7.4	.81	8.9	.97	10.7	1.19
600 PSI	.93	.45	1.46	.69	1.95	.93	2.35	1.13	2.81	1.38
41.4 BAR	3.5	.45	5.5	.69	7.4	.93	8.9	1.13	10.6	1.38
700 PSI	.93	.52	1.46	.78	1.94	1.06	2.33	1.27	2.80	1.54
48.3 BAR	3.5	.52	5.5	.78	7.3	1.06	8.8	1.27	10.6	1.54
800 PSI	.93	.58	1.45	.87	1.93	1.16	2.32	1.42	2.79	1.69
55.2 BAR	3.5	.58	5.5	.87	7.3	1.16	8.8	1.42	10.6	1.69

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
5324C	2.9	800	1800	⅝" OD solid shaft
5324C-H	2.9	800	1800	⅝" ID hollow shaft

Small Twin®

Models 5321C, 5322C, 5321C-H and 5322C-H

- Port sizes: ½" inlet, ½" outlet
- Max. fluid temperature: 180°F/82°C
- Weight: 11 lbs./5 kg
- Pump shaft rotation: bi-rotational
- Injector head available 3396-0006
- Models 5321 and 5322 require a pulsation dampener (such as a 3375-0012 pulse hose) on the discharge side

Pressure in PSI and BAR	GPM	HP	GPM	HP	GPM	HP	GPM	HP
	LPM	HP	LPM	HP	LPM	HP	LPM	HP
	@900 RPM		@1200 RPM		@1450 RPM		@1725 RPM	
100 PSI	1.1	0.2	1.5	.3	1.8	.4	2.2	.4
6.9 BAR	4.2	0.2	5.7	.3	6.8	.4	8.3	.4
300 PSI	1.1	.4	1.5	.5	1.8	.6	2.1	.7
20.7 BAR	4.2	.4	5.7	.5	6.8	.6	7.9	.7
500 PSI	1.1	.5	1.5	.6	1.8	.7	2.1	.8
34.5 BAR	4.2	.5	5.7	.6	6.8	.7	7.9	.8
700 PSI	1.1	.6	1.5	.8	1.8	.9	2.1	1.1
48.3 BAR	4.2	.6	5.7	.8	6.8	.9	7.9	1.1
1000 PSI	1.1	.8	1.4	1.0	1.8	1.2	2.1	1.4
69.0 BAR	4.2	.8	5.3	1.0	6.8	1.2	7.9	**1.4**

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output	Plunger Material
5321C	2.2	1000	1800	⅝" OD solid shaft	Stainless Steel
5322C	2.2	1000	1800	⅝" OD solid shaft	Ceramic
5321C-H	2.2	1000	1800	⅝" ID hollow shaft	Stainless Steel
5322C-H	2.2	1000	1800	⅝" ID hollow shaft	Ceramic

Small Twin®

Model 53702

- Port sizes: ½" inlet, ½" outlet
- Max. fluid temperature: 180°F/82°C
- Weight: 11 lbs./5 kg
- Pump shaft rotation: bi-rotational
- Plungers: polished ceramic
- Model 53702 requires a pulsation dampener (such as a 3375-0012 pulse hose) on the discharge side
- Inlet requirements: pressure feed 20-100 psi

Pressure in PSI and BAR	GPM	HP
	LPM	HP
	@3450 RPM	
100 PSI	2.3	.4
6.9 BAR	8.7	.4
300 PSI	2.2	.7
20.7 BAR	8.3	.7
500 PSI	2.1	.9
34.5 BAR	8.0	.9
700 PSI	2.1	1.2
48.3 BAR	8.0	1.2
1000 PSI	2.0	1.5
69 BAR	7.6	1.5

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
53702	2.2	1000	3450	⅝" ID hollow shaft

Small Twin®

Model 53703

- Max. fluid temperature: 180°F/82°C
- Port sizes: ½" inlet, ½" outlet
- Weight: 11 lbs./5 kg
- Pump shaft rotation: bi-rotational
- Plungers: polished ceramic
- Model 53703 requires a pulsation dampener (such as a 3375-0012 pulse hose) on the discharge side
- Inlet requirements: pressure feed 20-100 psi

Pressure in PSI and BAR	GPM	HP
	LPM	HP
	@3100 RPM	
100 PSI	2.3	0.4
6.9 BAR	8.7	0.4
300 PSI	2.2	.7
20.7 BAR	8.3	.7
500 PSI	2.1	.9
34.5 BAR	7.9	.9
700 PSI	2.1	1.2
48.3 BAR	7.9	1.2
1000 PSI	2.0	1.5
69.0 BAR	7.6	1.5

Order Information

Model Number	Max GPM	Max PSI	Max RPM	Shaft Output
53703	2.3	1000	3100	⅝" ID hollow shaft

Requires a Special Order Gas Engine With ⅝" Shaft

Turbo Stream®

Ultra-High Pressure Foam System

- Designed for quick response to brush fires, prairie/ wildland fires, crop fires or equipment fires
- Install on combines, ATV/RTV utility apparatus, pick-up trucks, nurse trailers and sprayers
- Lightweight, portable and easy to install
- Hypro triplex plunger pump provides dependability and high pressure performance
- Ideal for use with all Class A foam concentrate applications
- Adjustable control provides unmatched accuracy over the widest range of flow
- Dual-action spray gun delivers foam solution over 45 feet (13 meters)
- Thermal relief valve prevents overheating during extended idle
- Adjustable foam percentage selector from 0.3% to 3.0%
- Decreases water usage by more than 40%, and reduces environmental damage
- Incorporates a patented foam concentrate direct injector system, providing better accuracy over the use of inaccurate suction side eductors

Order Information

Model Number	Max GPM (L/min)	Max PSI (Bar)	Engine Mfg. & HP
1508B-130EFS	8 (30)	1400 (96)	PowerPro™ 13HP w/ electric start
1508B-390EFS	8 (30)	1400 (96)	Honda GX390 w/ electric start
1808B-GM10FS	8 (30)	1400 (96)	Hydraulic Motor

Hydraulically-Driven Pressure Washers

Offering 3-4 gpm Cleaning Power

- Anodized, die-cast aluminum crankcase
- Heavy-duty, corrosion-resistant brass manifold
- One-piece, forged-bronze connecting rods
- Stainless steel valves
- Hardened, stainless steel piston guides
- Solid ceramic plungers
- High pressure and low pressure packings of high-quality buna textile
- Heavy-duty, ball bearing supported crankshaft
- Sight glass and oil-level dipstick
- Hydraulic ports: ½" NPT inlet, ¾" NPT outlet

The hydraulically-driven pressure washers are ideally suited for remote and explosion-proof environments where electricity cannot be used. These models are equipped with a hydraulic motor-driven, triplex plunger pump; and include an unloader, gauge, and quick disconnect. Some models include a chemical injector, 50' pressure wash hose, trigger gun and insulated wand with adjustable Hi-Lo and Variable-Angle cleaning nozzle. Certain models are also equipped with a chemical injector.

Order Information

Model Number	Max GPM (LPM)	Max PSI (BAR)	Hydraulic Motor Requirements GPM (LPM)	Hydraulic Motor Requirements PSI (BAR)	Description	Weight LBS (KG)
1802C*	3 (11.4)	1000 (68.9)	5 (18.9)	1300 (89.6)	Forged Brass Head Triplex Pumps with hydraulic motor, adjustable unloader, gauge, 1/2" NPT input, 3/8" quick disconnect output	38 (17.2)
1803C	3 (11.4)	1000 (68.9)	5 (18.9)	1300 (89.6)		28 (12.7)
1804C*	3 (11.4)	1500 (103.4)	8 (30.3)	1900 (131)	Forged Brass Head Triplex Pumps with hydraulic motor, chemical injector, adjustable unloader, gauge, 3/4" GH input, 3/8" quick disconnect output	41 (18.6)
1805C	3 (11.4)	1500 (103.4)	8 (30.3)	1900 (131)		26 (11.8)
1806C*	3 (11.4)	2000 (137.9)	11 (41.6)	1300 (89.6)		41 (18.6)
1807C	3 (11.4)	2000 (137.9)	11 (41.6)	1300 (89.6)		26 (11.8)
1824C*	4 (15.1)	1500 (103.4)	8.5 (32.2)	2000 (137.9)		49 (22.2)
1825C	4 (15.1)	1500 (103.4)	8.5 (32.2)	2000 (137.9)		33 (14.9)
1826C*	4 (15.1)	2000 (137.9)	8.5 (32.2)	2000 (137.9)		49 (22.2)
1827C	4 (15.1)	2000 (137.9)	8.5 (32.2)	2000 (137.9)		33 (14.9)

* Includes 50 ft hose and gun assembly

Specialty Pumps

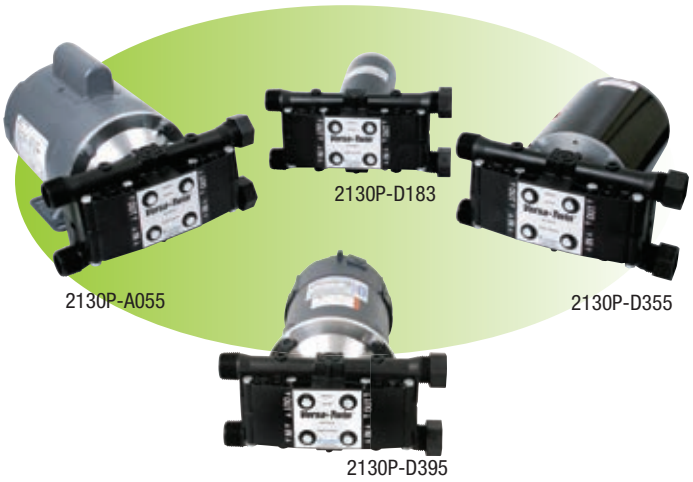
Hypro Specialty pumps are used in a variety of applications. These models can handle fluids up to 140ºF (60ºC) and are constructed with materials that offer long life in their recommended applications.

Hypro's Versa-Twin series of pumps are ideal for transferring a variety of fluids in applications such as carpet cleaning, pest control and turf spraying. Their PBT polyester pump bodies and heads provide excellent chemical resistance, and the lightweight construction is ideal for mobile applications.

Hypro Noryl series pumps are specifically designed for bulk transfer of fertilizer and agricultural chemicals. The pumps have centrifugal force impellers for quiet, efficient pumping action. The 9940-9700NRL centrifugals feature Noryl housings, which provide a wide range of corrosion resistance.

The economical Aqua-Tiger centrifugal pumps are suitable for general pumping applications where a flooded intake is provided. Typical applications include live-well filling and circulation, and any other applications that do not require a self-priming pump.

Versa-Twin™ 2130 Series Plunger Pumps



- Molded from Noryl GTX for chemical resistance against fertilizers, insecticides, chlorides, acids, and bleach
- Robust motor, ceramic plunger, and crank drive provide market-leading long life without servicing
- 4-point 1" NPT flynut-ready connections allow for greater flexibility in plumbing, easy installation and servicing, draining and maintenance
- 1" ports allow for single-sided inlet plumbing
- Available in standard models up to 4.0 GPM (15.1 L/min) & 300 PSI (20.7 BAR)

Order Information

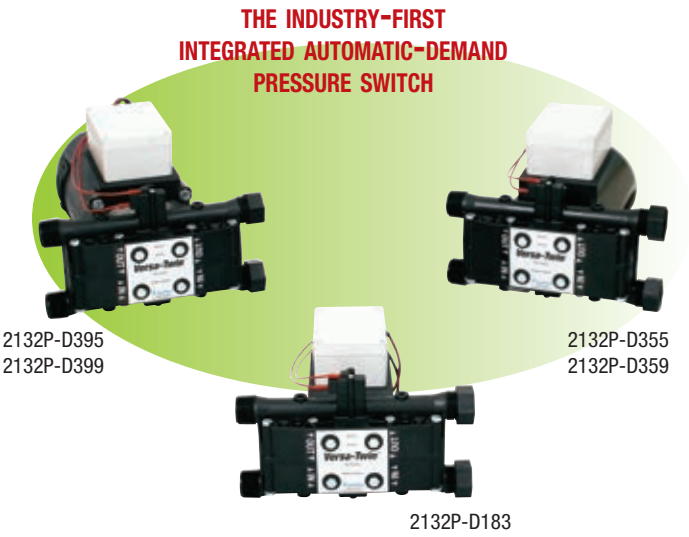
Model Number	Max GPM (L/min)	Max PSI (BAR)	Max RPM	Motor Type	Ports
2130P-D183	2.5 (9.5)	150 (10.3)	2200	¼ HP 12V DC Motor, 20 amps	1" MNPT
2130P-D355	2.8 (10.6)	300 (20.7)	2000	½ HP 12V DC Motor, 35 amps	
2130P-D359	3.9 (14.8)	200 (13.8)	2000	½ HP 12V DC Motor, 35 amps	
2130P-D395	2.9 (11.0)	300 (20.7)	2000	½ HP 12V DC Motor, 56C, 39 amps	
2130P-D399	4.0 (15.1)	200 (13.8)	2000	½ HP 12V DC Motor, 56C, 39 amps	
2130P-A055	2.4 (9.1)	300 (20.7)	1750	½ HP 115-208/230V AC Motor, 1 PH 50/60 Hz	
2130P-A079	3.9 (14.8)	300 (20.7)	1750	¾ HP 115-208/230V AC Motor, 1 PH 50/60 Hz	
2130PX	Replacement pump head				

Performance

Model Number	0 PSI / 0 BAR		50 PSI / 3.5 BAR		100 PSI / 6.9 BAR		150 PSI / 10.3 BAR		200 PSI / 13.8 BAR		250 PSI / 17.2 BAR		300 PSI/ 20.7 BAR	
	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS
2130P-D183 [1]	2.5	5.2	2.2	9.8	2.0	14.6 *	1.8	19.3 *	-	-	-	-	-	-
	9.5		8.3		7.6		6.8							
2130P-D355 [1]	2.8	9.1	2.5	13.4	2.4	18.9	2.3	23.5	2.2	27.5 *	2.1	30.9 *	2.0	34.8 *
	10.6		9.5		9.1		8.7		8.3		7.9		7.6	
2130P-D359 [1]	3.9	11.6	3.2	17.2	3.1	21.5 *	3.0	26.2 *	2.8	31.8 *	-	-	-	-
	14.8		12.1		11.7		11.4		10.6					
2130P-D395 [1]	2.9	8.3	2.5	13.0	2.4	19.0	2.3	23.5	2.2	27.2	2.1	30.7	2.0	33.9
	11.0		9.5		9.1		8.7		8.3		7.9		7.6	
2130P-D399 [1]	4.0	11.0	3.5	17.2	3.3	24.0	3.1	29.3	3.0	34.2	-	-	-	-
	15.1		13.2		12.5		11.7		11.4					
2130P-A055 [2]	2.4	6.5	2.2	6.6	2.1	6.7	2.1	6.8	2.0	7.0	1.9	7.2	1.9	7.3
	9.1		8.3		7.9		7.9		7.6		7.2		7.2	
2130P-A079 [2]	3.9	8.9	3.4	9.0	3.3	9.1	3.2	9.5	3.1	9.8	3.0	10.1	2.9	10.6
	14.8		12.9		12.5		12.1		11.7		11.4		11.0	

* indicates intermittent duty only [1] Tested at 13.5 VDC [2] Tested at 110 VAC

Versa-Twin™ 2130 Series Plunger Pumps with Pressure Switch



- Integrated pressure switch designed for the pump to work as a demand pump
- Extends the life of the pump when the duty cycle is less than 100%, for example, a 50% duty cycle extends the life of the system two times and a 25% duty cycle extends the life four times
- Reduces end-user installation charges by allowing a system to be set up for overnight charging versus continuous charging through a custom, high-amp vehicle alternator and heavy-gage wiring system

Order Information

Model Number	Max GPM (L/min)	Max PSI (BAR)	Max RPM	Motor Type	Pressure Switch	Ports
2132P-D183	2.5 (9.5)	150 (10.3)	2200	¼ HP 12V DC Motor, 20 amps	150-250 PSI (10.3-17.2 BAR)	1" MNPT
2132P-D355	2.8 (10.6)	250 (17.2)	2000	½ HP 12V DC Motor, 35 amps	150-250 PSI (10.3-17.2 BAR)	
2132P-D359	3.9 (14.8)	200 (13.8)	2000	½ HP 12V DC Motor, 35 amps	150-250 PSI (10.3-17.2 BAR)	
2132P-D395	2.9 (11.0)	250 (17.2)	2000	½ HP 12V DC Motor, 39 amps	150-250 PSI (10.3-17.2 BAR)	
2132P-D399	4.0 (15.1)	200 (13.8)	2000	½ HP 12V DC Motor, 39 amps	150-250 PSI (10.3-17.2 BAR)	
2133P-D355	2.8 (10.6)	300 (20.7)	2000	½ HP 12V DC Motor, 35 amps	250-350 PSI (17.2-24.1 BAR)	
2133P-D395	2.9 (11.0)	300 (20.7)	2000	½ HP 12V DC Motor, 56C, 39 amps	250-350 PSI (17.2-24.1 BAR)	
2132PX	Replacement pump head & switch				150-250 PSI (10.3-17.2 BAR)	
2133PX	Replacement pump head & switch				250-350 PSI (17.2-24.1 BAR)	

Performance

Model Number	0 PSI / 0 BAR		50 PSI / 3.5 BAR		100 PSI / 6.9 BAR		150 PSI / 10.3 BAR		200 PSI / 13.8 BAR		250 PSI / 17.2 BAR		300 PSI/ 20.7 BAR	
	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS	GPM L / min	AMPS
2132P-D183 [1]	2.5	5.2	2.2	9.8	2.0	14.6 *	1.8	19.3 *	-	-	-	-	-	-
	9.5		8.3		7.6		6.8							
2132P-D355 [1]	2.8	9.1	2.5	13.4	2.4	18.9	2.3	23.5	2.2	27.5 *	2.1	30.9 *	2.0	34.8 *
2133P-D355 [1]	10.6		9.5		9.1		8.7		8.3		7.9		7.6	
2133P-D359 [1]	3.9	11.6	3.2	17.2	3.1	21.5	3.0	26.2 *	2.8	31.8 *	-	-	-	-
	14.8		12.1		11.7		11.4		10.6					
2132P-D395 [1]	2.9	8.3	2.5	13.0	2.4	19.0	2.3	23.5	2.2	27.2	2.1	30.7	2.0	33.9
2133P-D395 [1]	11.0		9.5		9.1		8.7		8.3		7.9		7.6	
2133P-D399 [1]	4.0	11.0	3.5	17.2	3.3	24.0	3.1	29.3	3.0	34.2	-	-	-	-
	15.1		13.2		12.5		11.7		11.4					

Versa-Twin™ 2150 Series Diaphragm Pumps

Model Number	Max GPM	Max PSI	Max RPM	Motor Type	Ports
2150P-D35DC	7	100	1800	½ HP 12V DC Motor, 35 amps	3/4" MNPT
2150P-D39DC	8.3	100	1800	½ HP 12V DC Motor, 56C, 39 amps	
2150P-D05AC	6.7	100	1750	110 VAC, 60Hz AC Motor	
2120P-D05EU	6.7	100	1750	208-230 VAC, 50Hz Motor	
2120P-D55GE	7	100	1875	5.5 hp PowerPro gas engine	
2150PX	Replacement pump head				
3430-0633	Diaphragm repair kit				
3430-0634	Diaphragm valve kit				

Model	GPM / LPM	AMPS	GPM / LPM	AMPS	GPM / LPM	AMPS	GPM / LPM	AMPS	GPM / LPM	AMPS	GPM / LPM	AMPS
	0 PSI/0 BAR		20 PSI/1.4 BAR		40 PSI/2.8 BAR		60 PSI/4.1 BAR		80 PSI/5.5 BAR		100 PSI/6.9 BAR	
2150P-D35DC[1]	7.0 / 26.5	12.9	6.6 / 25.0	17.2	6.0 / 22.7	22.3	5.6 / 21.2	26.8*	5.2 / 19.7	31.2*	5.0 / 18.9	35.3*
2150P-D39DC[1]	8.3 / 31.4	15.7	7.6 / 28.8	19.7	6.7 / 25.4	23.8	6.1 / 23.1	27.8	5.7 / 21.6	31.9	5.3 / 20.1	35.9
2150P-D05AC[2]	6.7 / 25.4	7.6	6.4 / 24.2	7.7	6.0 / 22.7	7.8	5.7 / 21.6	7.9	5.3 / 20.1	8.0	5.0 / 18.9	8.2

* indicates intermittent duty only [1] Tested at 13.5 VDC [2] Tested at 110 VAC

Versa-Twin Accessories

Hosebarb Fly Nut Fittings

O-ring Groove x Hose Barb	Fitting Part Number	Fly nut Part Number	O-ring Part Number
1" x 1" straight	FNS-100100	3B100	1721-0010
1" x ¾" straight	FNS-10034		
1" x ½" straight	FNS-10012		
1" x 1" elbow	FNE-100100		
1" x ¾" elbow	FNE-10034		

NPT Fly Nut Fittings

Fly Nut connection X NPT			
O-ring Groove x NPT	Fitting Part Number	Fly nut Part Number	O-ring Part Number
1" x ¾" MNPT *	2404-0427	3B100	1721-0010
1" x ½" MNPT	2404-0419		

* compatible with other fly-nut fittings in catalog

Fly Nut Cap

Description	Part Number
1" NPT with gasket	FNCAP-100N
Replacement gasket	01WSHR13

Unloader Valve

Part Number	Operating PSI	Use With	Material
3390-0062D	200-600	35 & 39 amp DC, and all AC motors	Brass, Buna-N Cup

Pulse Hose

Part Number	Max PSI	Description
3375-0025*	1500	9 ft Pulse Hose, 3/8" (M)NPT w/ one plugged end

*Used with all pressure switch models when using rigid pipe, rigid or semi-rigid hose (working pressure greater than 600 psi) or any hose less than 150 ft.

Relief Valve

Part Number	Ports (Inlet x Outlet)	Operating PSI	Material	Use With
3300-0001	¾" MNPT x ¾" FNPT	400	Bronze	35 & 39 amp DC, and all AC motors
3300-0002	½" MNPT x ½" FNPT	200	Bronze	18 amp DC motors
3300-0015	¾" MNPT x ¾" FNPT	150	Nylon	18 amp DC motors
3300-0016	¾" MNPT x ¾" FNPT	250	Nylon	35 & 39 amp DC, and all AC motors
3300-0098	¾" MNPT x ¾" FNPT	400	Nylon	18 amp DC motors
3301-0001	¾" MNPT x ¾" FNPT	400	Bronze	35 & 39 amp DC, and all AC motors

Noryl

Model 9940-9750NRL, 9940-9751NRL, 9940-9753NRL

FEATURES

(Model 9940-9750NRL)

- Noryl, pedestal mount, direct drive
- Port sizes: 1½" NPT inlet
  1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Noryl (chemical-resistant, coated, cast iron bearing housing)
- Impeller: Noryl
- Pump shaft rotation: CW*
- Weight: 12 lbs./5.4 kg
- Shaft seals: Viton/ceramic with polypropylene case

FEATURES

(Model 9940-9751NRL)

- Noryl, close-coupled, AC motor-driven, centrifugal pump
- Port sizes: 1½" NPT inlet
  1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Noryl
- Impeller: Noryl
- Motor: ¾ hp, 115/208-230V AC
- Weight: 34 lbs./15.4 kg
- Shaft seals: Viton/ceramic with polypropylene case

FEATURES

(Model 9940-9753NRL)

- Noryl, close-coupled, AC motor-driven, centrifugal pump
- Port sizes: 1½" NPT inlet,
  1½" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: Noryl
- Impeller: Noryl
- Motor: 1½ hp, 115/208-230V AC
- Weight: 39 lbs./17.7 kg
- Shaft seals: Viton/ceramic with polypropylene case

Order Information

Model Number	Max GPM	Max PSI	Max RPM
9940-9750NRL	140	39	3600
9940-9751NRL	47	30	3450
9940-9753NRL	91	35	3450

9940-9750NRL — **U.S. Units**

	10 PSI		15 PSI		20 PSI		25 PSI		30 PSI		35 PSI	
RPM	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
3000	103	1.5	90	1.4	72	1.4	38	1.0				
3450	126	2.4	114	2.4	101	2.2	86	2.2	64	1.9	14	1.4
3600	132	2.7	121	2.6	110	2.5	97	2.5	80	2.3	52	2.0

9940-9750NRL — **Metric Units**

	0.7 BAR		1.0 BAR		1.4 BAR		1.7 BAR		2.1 BAR		2.4 BAR	
RPM	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP	LPM	HP
3000	390	1.5	341	1.4	273	1.4	144	1.0				
3450	477	2.4	432	2.4	382	2.2	326	2.2	242	1.9	53	1.4
3600	500	2.7	458	2.6	416	2.5	367	2.5	303	2.3	197	2.0

9940-9751NRL, 9940-9753NRL — **U.S. Units**

	5 PSI		10 PSI		15 PSI		20 PSI		25 PSI		30 PSI	
MODEL	GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS
9751	44	7.9	39	8.0	32	8.3	25	8.5	15	8.5	2	8.4
9753	88	14.1	82	14.0	74	14.0	66	14.4	55	14.4	37	13.6

9940-9751NRL, 9940-9753NRL — **Metric Units**

	0.3 BAR		0.7 BAR		1.0 BAR		1.4 BAR		1.7 BAR		2.1 BAR	
MODEL	LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS
9751	167	7.9	148	8.0	121	8.3	95	8.5	57	8.5	8	8.4
9753	333	14.1	310	14.0	280	14.0	250	14.4	208	14.4	140	13.6

*CCW (counterclockwise) CW (clockwise) are determined when looking at the shaft end.

Hydraulic-Driven Gear Pump

Model 8304B-HM5C

This positive-displacement pump is ideal for de-icing/anti-icing (pre-wet). Combining the pump and motor as a single unit eliminates the need for shaft alignment or Love-Joy® coupling. The unit's compact size allows it to be used in a wide variety of locations and makes it especially attractive for quick, easy retrofit installations.

Pump

- Optional pressure relief valve safeguards against pressure buildup
- Industry-proven gear pump design, minimal moving parts for longevity
- Brass material not corroded by salt solutions

Motor

- State-of-the-art internal gear gerotor motor maximum service for any application
- Bypass adjustment allows fine tuning of flow control
- 1/2" NPT ports with anti-reverse check safeguards against change in flow direction

Hydraulic Flow (GPM)	GPM at 0 PSI	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI
3.0	6.9	6.5	6.1	5.7	5.3	4.9	4.5	4.1	3.7	3.3	2.9
3.5	8.1	7.7	7.3	6.9	6.6	6.2	5.8	5.4	5.0	4.6	4.2
4.0	9.2	8.9	8.5	8.1	7.8	7.4	7.0	6.7	6.2	5.9	5.5
4.5	10.4	10.1	9.7	9.3	9.0	8.6	8.2	7.9	7.5	7.1	6.8

This data was generated using water as the pumping media. Performance will vary with different viscosity fluids.
Hydraulic pressures vary from 200 to 850 PSI for the performance chart above.
*** Product is to be run above 2.0 GPM hydraulic flow.**

Aqua-Tiger

Model 9700B and 9700S

- 12-volt DC motor drive
- Port sizes: ¾" NPT inlet, ¾" NPT outlet
- Max. fluid temperature: 140°F/60°C
- Housing: bronze or stainless steel
- Impeller: bronze (9700B) or stainless steel (9700S)
- Weight: 6 lbs./2.7 kg
- Seal: lip-type Viton (9700B); mechanical (9700S)

Order Information

Model Number	Max GPM	Max PSI	Max Draw
9700B	19	7	11 Amps
9700S	19	7	11 Amps

9700B, 9700S – 13.5 VDC (Alternator Engine Running) U.S. Units

2 PSI		3 PSI		4 PSI		5 PSI		6 PSI		7 PSI	
GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS	GPM	AMPS
16.9	5.3	14.0	5.0	12.5	4.9	10	4.9	6.5	4.1	2.7	3.7

9700B, 9700S – 13.5 VDC (Alternator Engine Running) Metric Units

0.14 BAR		0.21 BAR		0.28 BAR		0.34 BAR		0.41 BAR		0.48 BAR	
LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS	LPM	AMPS
62	5.3	53	5.0	47	4.9	38	4.9	25	4.1	10	3.7

Pump Cutaways

Hypro Cutaway Policy
Due to the increase in demand of Hypro cutaways for effective sales promotions, Hypro is offering pump cutaways on a purchase or loan basis. To purchase a cutaway, follow the normal procedure for ordering a pump.

If you would like to borrow a cutaway, order your cutaway and then return it to Hypro (with Return Materials Authorization – RMA – number) before 60 days from your date of receipt. When Hypro receives the cutaway, full credit will be issued.

If you would like a pump or accessory that is not listed on this page, please call the Hypro factory at 800-424-9776.

Roller Pump Cutaways

Model Number	Description	Estimated Weight Ea.
CA6500C	Standard 6-roller cast iron pump	8 lbs.
CA6500N	Standard 6-roller Ni-resist pump	8 lbs.
CA6500XL	Standard 6-roller Silver Series XL pump	8 lbs.
CA7560C	Standard 8-roller cast iron pump	13 lbs.
CA7560N	Standard 8-roller Ni-resist pump	13 lbs.
CA7560XL	Standard 8-roller Silver Series XL pump	13 lbs.

Centrifugal Pump Cutaways

Model Number	Description	Estimated Weight Ea.
CA9006C-O	Standard 540 rpm gear drive cast iron pump	44 lbs.
CA9006P-O	Standard gear drive polypropylene pump	37 lbs.
CA9202C	Standard pedestal mount cast iron pump	18 lbs.
CA9203P-S	Standard pedestal mount polypropylene pump	14 lbs.
CA9303C-HM4C	Standard hydraulic motor cast iron pump	22 lbs.
CA9303P-HM4C	Standard hydraulic motor polypropylene pump	15 lbs.

Diaphragm Pump Cutaways

Model Number	Description	Estimated Weight Ea.
CA9910-D30	Standard 2 diaphragm pump	23 lbs.
CA9910-D30GRGI	Standard 2 diaphragm pump with GS40GI control unit	33 lbs.
CA9910-D70	Standard 2 diaphragm pump	25 lbs.
CA9910-D115	Standard 3 diaphragm pump	35 lbs.
CA9910-KIT1640	Gear Reduction Kit	6 lbs. 8oz.

Piston/Plunger Pump Cutaways

Model Number	Description	Estimated Weight Ea.
CA5210C	Standard 5200 series cast iron piston pump	18 lbs.
CA5320C-HRX	Standard 5300 series cast iron piston pump	10 lbs.
CA5321C-H	Standard 5321 series cast iron plunger pump	11 lbs.
CA5324C	Standard 5324 series cast iron piston pump	11 lbs.

PowerPro™ Gasoline Engines

High Quality, Field-Proven Engine

6.5 HP

2.5 HP

13 HP Electric Start

- Available in multiple horsepower options to suit a diverse range of agricultural, industrial, and lawn & garden applications
- Electric-start option available for quick start-up
- Dual-element air filter provides highest degree of filtering
- Cast iron cylinder sleeve for commercial use
- Overhead valve for cleaner operation on most models; flat head on 2.5 HP
- Equipped with a robust low-oil sensor to prevent engine damage
- Choose between CARB/EPA certified or EPA only certified engines
- Engines can be configured to various Hypro pump models or purchased individually
- Supported with a one-year warranty from Hypro; repair parts available for easy servicing

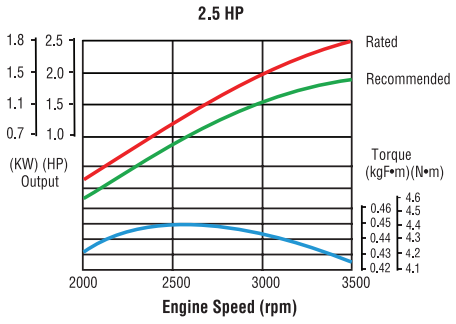
PowerPro Gasoline Engines, Recoil Start

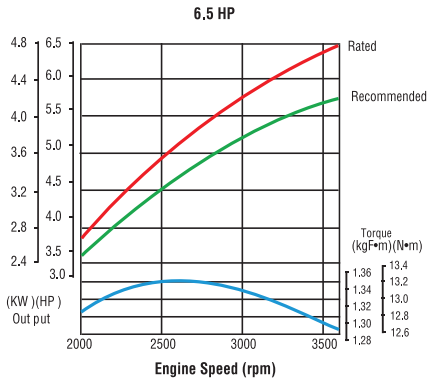
CARB & EPA Part Number	HP	Shaft Size
2549-0043	2.5	⅝" Keyed
–	2.5	½" with Flat
2541-0045	6.5	¾" Keyed
2541-0046	6.5	⅝" Threaded
2541-0048	13	1" Keyed
2541-0050	13	1" Threaded

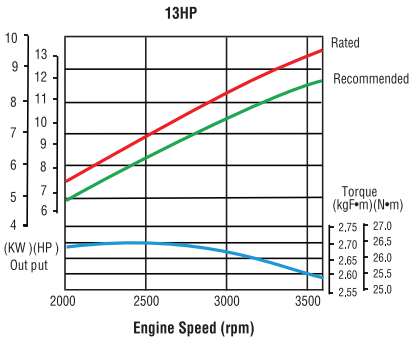
PowerPro Gasoline Engines, Electric Start

CARB & EPA Part Number	HP	Shaft Size
2541-0053	6.5	¾" Keyed
2541-0054*	6.5	2:1 reduced ¾" Shaft
2541-0055	6.5	⅝" Threaded
2541-0049	13	1" Keyed
2541-0051	13	1" Threaded

* Special order only, 100 pc. Minimum Order







Spray Tips

Spray tips are often the smallest and most overlooked piece of equipment on a machine. However, they have the greatest effect on the accuracy and efficiency of each application.

Hypro offers spray tips for a variety of pressure ranges, flow rates and spray patterns to fit any spray process. Spray tips are available in materials including: ceramic, polyacetal, PVDF, stainless steel and brass.

Selecting the Right Spray Tip

Visit sprayit.hypropumps.com for Hypro's online tip calculator.

To be effective, a pesticide must be applied properly. To select the correct spray tip for the job, first fully read the pesticide label and look for information on tip type, application rate, spray quality, and environmental restrictions. Then…

a) Check which type of spraying technique you will be using – broadcast or banding.

b) Check your sprayer speed.

c) Select the application rate from the pesticide label.

d) Determine the flow rate (GPM) needed for the spray tip, or use the application rate (GPA) chart for the desired tip.

e) Select the pattern type.

f) Select tip size and pressure that provides the desired flow rate and application rate.

g) Check the spray quality tables to be sure the spray tip and pressure create the droplet spectrum you require.

A – Spraying Technique:

Broadcast spraying is when the entire field is to be treated. The width that each tip sprays, adjusted for spray overlap, is the distance between tips on the spray boom.

Band spraying is when planted rows or unplanted gaps are treated. The width that each tip sprays is the width of the treated band. Refer to page 174.

B – Sprayer Speed:

Forward speed of the spraying machine should be measured accurately. Radar or ultrasound speed sensors should be calibrated after installation or servicing. Wheel-driven speedometers should be calibrated whenever the driving surface changes, such as after cultivation. Speed can be determined if it is known how long it takes to drive a measured distance: Refer to page 172.

$$\text{speed in MPH} = \frac{\text{distance (feet)} \times 60}{\text{time (seconds)} \times 88}$$

Improved vehicle design means that speeds up to 20 MPH are now possible. Higher speeds (10-20 MPH) improve work rates and timeliness; lower speeds (5-10 MPH) give improved canopy penetration and make spray drift control simpler.

C – Application Rate:

Read the pesticide label closely to determine an appropriate spray application rate. If a range of acceptable application rates is listed, choose a rate that best matches your situation.

Selecting the Right Spray Tip

D – Flow Rate:

Determine the exact flow required from each tip by calculating: Refer to page 172.

$$GPM = \frac{GPA \times MPH \times \text{tip spacing (inches)}}{5{,}940}$$

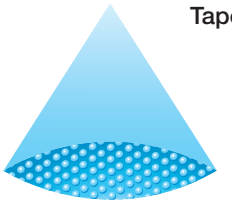
Or you can read the application tables throughout this guide.

E – Spray Pattern Type:

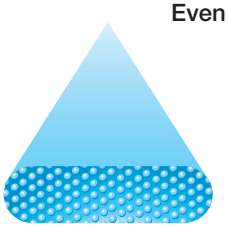
Flat Fan pattern

Available as a tapered spray for boom applications or an even spray for single tip applications. They have an elliptical orifice, which produces a narrow oval pattern. Tapered spray tips produce a triangular spray pattern where more of the spray is deposited immediately under the tip. By overlapping tapered sprays, an even distribution across the entire boom can be obtained.

Tapered

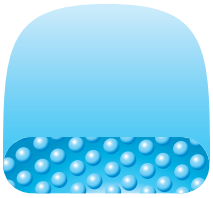


Even



Deflect pattern

Also known as anvil or flood tips, deflect tips produce a wide-angled flat pattern when operated at low pressures (10-40 PSI). The tips generally produce a coarse, even spray.

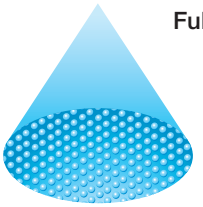


Anvil/Flood

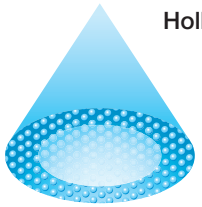
Cone pattern

These spray tips produce either a soild circular (full cone tips) or a hollow circular footprint (hollow cone tips). Full cones are ideal for spot spraying, whereas hollow cones are used on air-assisted sprayers and directed sprays.mend a fine,

Full



Hollow



F – Tip Size and Pressure:

Use the flow rate tables provided throughout this guide to select the tip and pressure that provides the flow needed for the appllication.

Selecting the Right Spray Tip

G – Spray Quality:

An important performance characteristic of a spray tip is both the size and the variation of droplets or spray quality that it produces.

ASABE S572.1 Droplet Size Classification

The American Society of Agricultural and Biological Engineers (ASABE) developed the ASABE S572.1 standard to measure and interpret spray quality from tips.

Spray Quality*	Size of Droplets	VMD Range (Microns**)	Color Code	Retention on Difficult to Wet Leaves	Used for	Drift Potential
Extremely Fine	Small	<60	Purple	Excellent	Exceptions	High
Very Fine		61-105	Red	Excellent	Exceptions	
Fine		106-235	Orange	Very Good	Good Cover	
Medium		236-340	Yellow	Good	Most Products	
Coarse		341-403	Blue	Moderate	Systemic Herbicides	
Very Coarse		404-502	Green	Poor	Soil Herbicides	
Extremely Coarse		503-665	White	Very Poor	Liquid Fertilizer	
Ultra Coarse	Large	>665	Black	Very Poor	Liquid Fertilizer	Low

*Always read the pesticide label to determine which spray quality is required.
** Estimated from sample reference graph in ASABE/ANSI/ASAE Standard S572.1.

The ASABE S572.1 standard uses eight droplet classification categories, six of which are common for agriculture and horticulture:

Very Fine, **Fine**, **Medium**, **Coarse**, **Very Coarse** and **Extremely Coarse**.

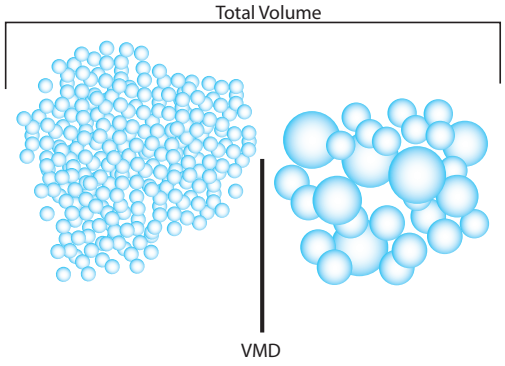
Most agrochemical applications recommend a fine, medium, or coarse spray.

Fine sprays provide enhanced retention for directed spraying on the target including:
- Foliar-acting weed control
- Contact-acting fungicides and insecticides

Medium sprays are the most widely used spray type.
- Used by default by most applicators when spray quality is not defined by the label.
- Systemic-acting fungicides, insecticides and herbicides.

Coarse sprays are used with systemic, residual, and soil-applied herbicides.

A. Understanding Droplet VMD



VMD is the droplet size at which 50% of the spray volume is in droplets larger than the VMD and 50% of the volume is in droplets smaller than the VMD (adapted from Matthews 1992).

B. Understanding Micron Size

Degree of Atomization	Droplet Size (Microns)	Relative Size Related to Common Objects
Fog	Up to 25	Point of a Needle (25 Microns)
Fine Mist	20-100	Human Hair (100 Microns)
Fine Drizzle	100-250	Sewing Thread (150 Microns)
Heavy Drizzle	250-500	Toothbrush Bristle (300 Microns)
Light Rain	500-800	Staple (550 Microns)
Heavy Rain	800-1000	Paper Clip (850 Microns)
Thunderstorm Rain	1000-4000	#2 Pencil Lead (2000 Microns)

Droplet sizes are usually expressed in microns (micrometers). One micron equals one thousandth of a millimeter. Other than the effects of the specific material being sprayed, the four major factors effecting droplet size are: tip style, capacity, spraying pressure and spray pattern type. Lower spraying pressures provide larger droplet sizes, while higher spraying pressures yield smaller droplet sizes. The smallest droplet sizes are achieved by air atomizing tips. Generally speaking, the largest spray droplets are produced by wide-angle, flat hydraulic spray tips. In the hydraulic spray tip series, the smallest droplet sizes are produced by hollow-cone spray tips.

Spray Tip Selection Guide

The following chart has been designed to simplify selection of the correct spray tip type for the agrochemical to be applied. It is based on having good conditions for spraying and should be used in conjunction with the agrochemical manufacturer's label. Increased carrier rates may allow for coarser sprays to reduce risk of drift. Always follow the agrochemical label exactly.

Manufacturer's recommended droplet size

Herbicides				Fungicides		Insecticides		Liquid Fertilizer
Soil Incorporated	Pre-Emerge	Post-Emerge Contact	Post-Emerge Systemic	Contact	Systemic	Contact	Systemic	
XC	VC	C	VC	M	C	M	C	XC
VC	C	M	C	F	M	F	M	VC
C	M	F	M	VF	F	VF	F	C

Hypro Spray Tip Selection Guide

Section	Code	Spray Tip	Orifice Material	Pressure Range	Nominal Spray Angle	Pattern	Foliar Contact	Foliar Systemic	Soil Applied	Draft Control	XF	VF	F	M	C	VC	XC	UC
Broadcast	ULD	Ultra Lo-Drift™	Polyacetal	15 to 115	120	Tapered Fan	Good†	Excellent	Excellent	Excellent								
	ATW	Air-Injected Twin Fan	Ceramic	40 to 100	110	Twin Tapered Fan	Good†	Excellent	–	Excellent								
	AVI	Air-Injected Anti-Drift	Ceramic	30 to 100	80,110	Tapered Fan	–	Excellent	Excellent	Excellent								
	GAT	GuardianAIR™ Twin	Polyacetal	30 to 115	110	Twin Tapered Fan	Excellent	Excellent	–	Very Good								
	GA	GuardianAIR™	Polyacetal	15 to 115	110	Tapered Fan	Excellent	Excellent	Very Good	Very Good								
	GRD	Guardian™	Polyacetal	15 to 115	120	Tapered Fan	Excellent	Excellent	Very Good	Good								
	LD	Lo-Drift™	Polyacetal	15 to 70	80,110	Tapered Fan	Very Good	Excellent	Very Good	Good								
	ADI	Drift Reduction	Ceramic	30 to 70	110	Tapered Fan	Excellent	Excellent	Very Good	Good								
	VP	Variable Pressure Fan	Polyacetal	15 to 70	80,110	Tapered Fan	Very Good	Good	Good	–								
	AXI	Wide Range Fan	Ceramic	20 to 70	80,110	Tapered Fan	Very Good	Good	Good	–								
	TR	Total Range™	Stainless Steel	15 to 70	80,110	Tapered Fan	Very Good	Good	Good	–								
	F	FanTip™ Standard Fan	Polyacetal	30 to 60	80,110	Tapered Fan	Good	Good	Good	–								
	ACID F	FanTip™ Standard Fan	PVDF		110	Tapered Fan	Good	Good	–	–								
	ACID LD	Lo-Drift™	PVDF		110	Tapered Fan	Very Good	Excellent	Very Good	Good								
Wide	HF	Hi-Flow™	Polyacetal	20 to 80	140	Wide-angle Tapered Fan	–	Excellent*	Excellent	Excellent								
	DT	DeflecTip™	Polyacetal	15 to 60	80 to 145	Wide-angle Flood	–	Good	Very Good	Good								
	APM	Wide-Angle Flood	Ceramic	10 to 60	80 to 160	Wide-angle Flood	–	Good	Very Good	Good								
Stream	ESI	Six Stream	Ceramic	15 to 60	0	6-stream	–	–	Excellent	Excellent							S	
	CM	Straight Stream	PVDF	15 to 150	0	Stream	–	–	Very Good	Very Good							S	
	DC	Flow-Regulating Disc	Polyacetal	10 to 150	0	Stream	–	–	Very Good	Very Good							S	
	AMT	Flow-Regulating Disc	Ceramic	10 to 725	0	Stream	–	–	Very Good	Very Good							S	
Banding & Directed	DC/CR	SwirlTip™ Disc/Core	Polyacetal	10 to 150	45 to 110	Hollow Cone	Very Good	Good	–	–								
	DCC/CRC	Disc and Core	Ceramic	10 to 300	13 to 93	Hollow Cone	Very Good	Good	–	–								
	HCX	HollowTip™ Hollow Cone	Polyacetal	40 to 150	80	Hollow Cone	Very Good	Good	–	–								
	ATR	Hollow Cone	Ceramic	40 to 350	80	Hollow Cone	Very Good	Good	–	–								
	HCA	Hollow Cone	Ceramic	40 to 350	80	Hollow Cone	Very Good	Good	–	–								
	TVI	Hollow Cone	Ceramic	70 to 360	80	Hollow Cone	Good*	Excellent	–	Excellent								
	AVI	FanTip™	Ceramic	40 to 350	80	Tapered Fan	Good	Excellent	–	Excellent								
	AXI	FanTip™	Ceramic	40 to 350	80	Tapered Fan	Very Good	Good	–	–								
	FCX	Full Cone	Polyacetal	15 to 150	80	Full Cone	Good	Very Good	–	–								
	DCC/CRC	Disc and Core	Ceramic	10 to 300	14 to 70	Full Cone	Good	Very Good	–	–								
	E	Fan Tip™ Even Flat	Polyacetal	30 to 60	80	Even Fan	Very Good	Very Good	Very Good	–								
	OC	Off-Center Flat	Brass	30 to 60	80	Off-center Tapered Fan	Good	Good	Good	–								
	OCI	Off-Center Ceramic	Ceramic	30 to 60	80	Off-center Tapered Fan	Good	Good	Good	–								
	AVI-OC	Air-Injected Off-Center	Ceramic	40 to 100	80	Off-center Tapered Fan	Good	Excellent	Excellent	Excellent								
Special	XT	Boom X Tender™	Polyacetal or Stainless Steel	30 to 60	105	Ultra-wide Boomless Fan	–	Very Good	Very Good	Very Good								
	MISTING	F, HAF, PF, AFD, AF	Polyacetal	40 to 150	65 to 110	Fan or Hollow Cone												
	TC	TwinCap™	Polyacetal or PVDF	---	---	Double Tip Holder												

S These nozzles produce streams to minimize atomization.
* at high volume † at high pressure

Color Code	Classification
XF	Extremely Fine
VF	Very Fine
F	Fine
M	Medium
C	Coarse
VC	Very Coarse
XC	Extremely Coarse
UC	Ultra Coarse

Wear and Chemical Compatibility

Ceramic – Highly resistant to abrasive and corrosive chemistry and provides superior wear resistance in abrasive applications and high pressures. Albuz® tip orifices are made of pink inserted ceramic, reinforced by special oxides, and specially designed by Saint-Gobain for spraying applications.

Polyacetal – Provides good resistance to most chemicals and superior wear resistance to most agricultural chemistry. Susceptible to strong mineral acids and a few organic solvents. Resistance to most alkalis is excellent. Organic solvents usually cause slight swelling without any other harmful effect.*

Polyvinylidene Fluoride (PVDF) – Should be used with acid-based agricultural defoliation chemistry. Good resistance to wear.* Resists many reagents and high temperatures (up to 300˚F). Susceptible to high temperatures above water boiling (210˚F) in combination with concentrated sulfuric and nitric acids. Preferred in industrial spraying applications.

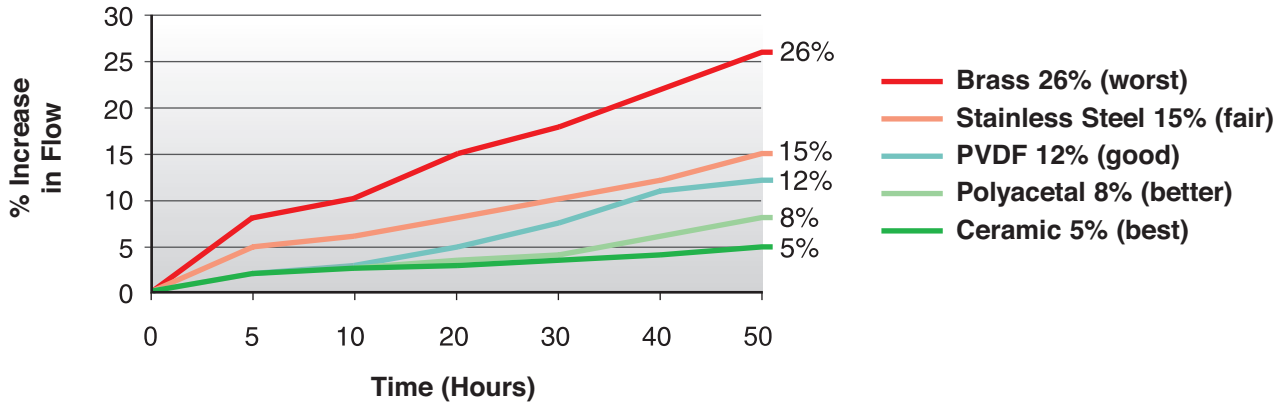
Stainless Steel – Good resistance to chemicals and provides average wear resistance.

Brass – Average resistance to most chemistry and poor wear resistance. Susceptible to corrosion, especially with fertilizers.

Hypro's Technical/Application Department is available to answer chemical compatibility issues and assist in choosing the correct spray tip for your application. Call 1-800-445-8360.

* A list of resistant reagents, acids and alkaline is available from the Hypro Technical/Application Department.

Comparative Accelerated Wear Test



Source: SGS UK LTD. Saint-Gobain AC France
Test Medium: 2.5% Kaolin in water
Test Pressure: 40 psi

Broadcast Spray Tips

When a product needs to be applied to an entire field or area of a field, a broadcast tip should be used to ensure good spray uniformity. The best broadcast tips use a tapered fan pattern that is designed to overlap with the spray patterns of tips next to it. The result is a uniform application of spray across the treated area.

- Hypro manufactures many different product families of broadcast tips.
- Each family of tips is designed to deliver a droplet size that is beneficial in certain situations.
- Different materials of construction may be available, such as economical long-wearing polyacetal and longest-wearing ceramic orifice inserts.
- Broadcast spraying is when the entire field is treated. The width that each tip sprays, adjusted for overlap, is equivalent to the distance between tips on the spray boom.
- The spray charts in this section are set for 20-inch spacing between tips. If you use different tip spacing, consult the Technical Information section for help.

Flat Fan Spray Tips – Ultra Lo-Drift™ 120°

The ULD – Ultra Lo-Drift is the ideal spray tip for use where drift reduction is paramount. The tip produces large air-filled droplets, which cut drift dramatically compared with a standard fan and conventional low-drift spray tips. Ideal for use with pre-emergence and broad spectrum products.

- Creates air-filled droplets which significantly reduce spray drift
- Wide spray angle (120°) enables boom height to be lowered to further decrease drift
- Small, compact size reduces the chances of accidental breakage
- FastCap® complete includes tip, cap, gasket and integrated strainers

Tip Size	Droplet Size 120°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000 ft² 20 inch nozzle spacing 2	3	4	5
015	UC	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	UC	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	XC	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	VC	40	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	VC	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	C	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	C	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	C	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	M	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	115	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
02	UC	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	UC	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	XC	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	VC	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	C	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	C	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
	M	115	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
025	UC	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	XC	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VC	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	C	40	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	C	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	C	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	M	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	M	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	M	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	115	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
03	UC	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	XC	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	XC	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	C	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	C	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	C	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	M	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	M	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
	M	115	0.51	37.9	30.3	25.2	18.9	15.1	12.6	10.1	7.6	1.74	1.16	0.87	0.70
04	UC	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	UC	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	UC	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	UC	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	XC	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	XC	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	XC	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	VC	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	VC	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	C	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
	C	115	0.68	50.5	40.4	33.7	25.2	20.2	16.8	13.5	10.1	2.32	1.55	1.16	0.93
05	UC	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	UC	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	UC	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	XC	40	0.50	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	XC	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	XC	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	VC	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	VC	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	VC	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	C	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	C	115	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
06	UC	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	UC	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	UC	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	XC	40	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	XC	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	VC	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	C	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	C	80	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
	C	90	0.90	66.8	53.5	44.6	33.4	26.7	22.3	17.8	13.4	3.07	2.05	1.53	1.23
	C	100	0.95	70.5	56.4	47.0	35.3	28.2	23.5	18.8	14.1	3.24	2.16	1.62	1.30
	M	115	1.02	75.7	60.6	50.5	37.9	30.3	25.2	20.2	15.1	3.48	2.32	1.74	1.39
08	UC	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	UC	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	XC	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	VC	40	0.80	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	VC	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	C	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	C	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	C	80	1.13	83.9	67.1	55.9	42.0	33.6	28.0	22.4	16.8	3.85	2.57	1.93	1.54
	M	90	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	M	100	1.26	93.6	74.8	62.4	46.8	37.4	31.2	24.9	18.7	4.30	2.86	2.15	1.72
	M	115	1.36	101	80.8	67.3	50.5	40.4	33.7	26.9	20.2	4.64	3.09	2.32	1.86

Features	
Common Use	Weeds
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Polyacetal
Spray Angle	120°
Pressure Range	15-115 PSI
Configuration	Tips, FastCap Complete

Application Selection Guide	
Foliar Contact	Good at high pressure
Foliar Systemic	Excellent
Soil Applied	Excellent
Drift Control	Excellent

Part Numbers	
Tips 120°	**FastCap 120°**
ULD120-015	FC-ULD120-015
ULD120-02	FC-ULD120-02
ULD120-025	FC-ULD120-025
ULD120-03	FC-ULD120-03
ULD120-04	FC-ULD120-04
ULD120-05	FC-ULD120-05
ULD120-06	FC-ULD120-06
ULD120-08	FC-ULD120-08

Replacement Strainers	
TS02-100	100 mesh strainer for 015-03
TS02-50	50 mesh strainer for 04-08

Replacement MiniClean™ Strainers	
30Q3623	blue for size 015-04
30Q3624	red for size 05-06

Replacement Cap Gasket
22W11MF64

Packaged Part Numbers

25 Tips per bag: Add prefix "25BG-"
(Ex. 25BG-ULD120-015)

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-ULD120-015)

6 FastCaps per pack: Add prefix "6PK-"
(Ex. 6PK-FCULD120015)

Flat Fan Spray Tips – Ceramic AVI 80° & 110°

The Albuz® AVI draws air into the tip and mixes it with the spray to create very coarse droplets that minimize spray drift. The air-filled droplets have a larger footprint on the leaf than similar non-air droplets and hold to the leaf for better control. Durable Albuz® ceramic orifice create the longest wearing spray tip of its kind.

- Excellent drift reduction with large air-filled droplets
- Large passages resist plugging
- Wear-resistant Albuz® ceramic orifice
- 80º fan models ideal for use in directed spray applications
  (See page 161 for more information)
- FastCap® includes tip, cap and gasket

Tip Size	Droplet Size 110º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 ft² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	2	3	4	5
01	VC	30	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	VC	**40**	**0.10**	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	VC	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	VC	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	C	70	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	C	80	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	C	90	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	C	100	0.16	11.9	9.5	7.9	5.9	4.8	4.0	3.2	2.4	0.55	0.36	0.27	0.22
015	VC	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	VC	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	VC	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	VC	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VC	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	VC	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	C	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	C	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
02	VC	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	VC	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	VC	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	VC	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	VC	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	VC	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	VC	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	C	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
025	XC	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	VC	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	VC	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	VC	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	VC	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	VC	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	VC	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	VC	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
03	XC	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	XC	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	XC	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	VC	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	VC	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	VC	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	VC	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	VC	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
04	XC	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	XC	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	XC	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	VC	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	VC	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	VC	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	VC	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	VC	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
05	XC	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	XC	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	XC	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	XC	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	VC	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	VC	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	VC	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	VC	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
06	XC	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	XC	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	XC	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	XC	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	VC	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	VC	80	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
	VC	90	0.90	66.8	53.5	44.6	33.4	26.7	22.3	17.8	13.4	3.07	2.05	1.53	1.23
	VC	100	0.95	70.5	56.4	47.0	35.3	28.2	23.5	18.8	14.1	3.24	2.16	1.62	1.30
08	XC	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	XC	**40**	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	XC	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	XC	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	XC	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	XC	80	1.13	83.9	67.1	55.9	42.0	33.6	28.0	22.4	16.8	3.85	2.57	1.93	1.54
	XC	90	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	XC	100	1.26	93.6	74.8	62.4	46.8	37.4	31.2	24.9	18.7	4.30	2.86	2.15	1.72
10	XC	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	XC	**40**	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	XC	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	XC	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	XC	70	1.32	98.0	78.4	65.3	49.0	39.2	32.7	26.1	19.6	4.50	3.00	2.25	1.80
	XC	80	1.41	105	83.8	69.8	52.3	41.9	34.9	27.9	20.9	4.81	3.21	2.40	1.92
	XC	90	1.50	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	XC	100	1.58	117	93.9	78.2	58.7	46.9	39.1	31.3	23.5	5.39	3.59	2.69	2.16

Features	
Common Use	Weeds
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Ceramic
Spray Angle	80º & 110º
Pressure Range	30-100 PSI
Configuration	Tips, FastCap Complete

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	Excellent
Soil Applied	Excellent
Drift Control	Excellent

Part Numbers
Tips 80º
AVI-8001
AVI-80015
AVI-8002
AVI-80025
AVI-8003
AVI-8004

Tips 110º	FastCaps 110º
AVI-11001	FC-AVI-11001
AVI-110015	FC-AVI-110015
AVI-11002	FC-AVI-11002
AVI-110025	FC-AVI-110025
AVI-11003	FC-AVI-11003
AVI-11004	FC-AVI-11004
AVI-11005	FC-AVI-11005
AVI-11006	FC-AVI-11006
AVI-11008	FC-AVI-11008
AVI-11010	FC-AVI-11010

Replacement Cap Gasket
22W11MF64

Flat Fan Spray Tips – GuardianAIR Twin™ 110°

GuardianAIR Twin™ spray tips are the best choice for high coverage applications where on-target spray delivery is important. They are ideal for low crops with complex canopies, such as vegetables, where thorough coverage of the target and protection of the surroundings are of high importance.

- High-coverage forward and rear facing fans help penetrate complex canopies
- Engineered to provide better coverage with more drops per gallon compared to other air-induced sprays
- Easy-to-install, patent-pending locking ring and o-ring seal design
- FastCap® complete includes tip, cap, gasket and integrated strainers

Tip Size	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 R² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	2	3	4	5
02	C	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	40	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	M	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	F	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
	F	115	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
025	VC	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	C	40	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	M	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	M	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	M	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	M	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	115	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
03	VC	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	C	40	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	M	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	M	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	M	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
	M	115	0.51	37.9	30.3	25.2	18.9	15.1	12.6	10.1	7.6	1.74	1.16	0.87	0.70
04	C	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	40	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	M	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	M	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
	M	115	0.68	50.5	40.4	33.7	25.2	20.2	16.8	13.5	10.1	2.32	1.55	1.16	0.93
05	VC	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	C	40	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	M	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	M	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	M	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	M	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	M	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	M	115	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
06	VC	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	C	40	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	M	80	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
	M	90	0.90	66.8	53.5	44.6	33.4	26.7	22.3	17.8	13.4	3.07	2.05	1.53	1.23
	M	100	0.95	70.5	56.4	47.0	35.3	28.2	23.5	18.8	14.1	3.24	2.16	1.62	1.30
	M	115	1.02	75.7	60.6	50.5	37.9	30.3	25.2	20.2	15.1	3.48	2.32	1.74	1.39
08	VC	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	VC	40	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	C	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	C	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	M	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	M	80	1.13	83.9	67.1	55.9	42.0	33.6	28.0	22.4	16.8	3.85	2.57	1.93	1.54
	M	90	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	M	100	1.26	93.6	74.8	62.4	46.8	37.4	31.2	24.9	18.7	4.30	2.86	2.15	1.72
	M	115	1.36	101	80.8	67.3	50.5	40.4	33.7	26.9	20.2	4.64	3.09	2.32	1.86

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Polyacetal
Spray Angle	110°
Pressure Range	30-115 PSI
Configuration	FastCap® Complete

Application Selection Guide	
Foliar Contact	Excellent
Foliar Systemic	Excellent
Soil Applied	–
Drift Control	Very Good

Part Numbers
FastCaps 110°
GAT110-02
GAT110-025
GAT110-03
GAT110-04
GAT110-05
GAT110-06
GAT110-08

Replacement Tip Strainer	
TS02-50	50 mesh strainer for all sizes

Replacement Cap Gasket
65-BS205

Twin Flat Fan Spray Tip – Ceramic AVI Twin 110º

The Albuz® AVI Twin (ATW) brings drift control and coverage together. Using proven AVI technology, the AVI Twin draws air into the tip, mixing it with the spray to create a twin spray of drift resistant air-filled droplets. Drift is greatly reduced, spraying the canopy with dual trajectories to improve coverage.

- Coverage-enhancing twin patterns from a single tip
- Drift-reducing AVI venturi technology
- 60-degrees of separation between fans
- Pressures from 40 to 100 PSI
- Wear-resistant Albuz® ceramic orifices

Tip Size	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 FT² 20 inch nozzle spacing			
			4	5	6	8	10	12	15	20	2	3	4	5
01	**40**	**0.10**	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	70	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	80	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	90	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	100	0.16	11.9	9.5	7.9	5.9	4.8	4.0	3.2	2.4	0.55	0.36	0.27	0.22
015	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
02	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
025	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
03	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
04	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
05	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Ceramic
Spray Angle	110º
Pressure Range	40-100 PSI
Configuration	Tips

Application Selection Guide	
Foliar Contact	Good at high pressure
Foliar Systemic	Excellent
Soil Applied	–
Drift Control	Excellent

Part Numbers	
Tips 110º	Caps (25 Pack)
ATW-11001	CAP01-01
ATW-110015	CAP01-015
ATW-11002	CAP01-02
ATW-110025	CAP01-025
ATW-11003	CAP01-03
ATW-11004	CAP01-04
ATW-11005	CAP01-05

Flat Fan Spray Tips – GuardianAIR™ 110°

The Hypro® GuardianAIR™ spray tip is the first and only tip to feature technology developed by Hypro for the Syngenta® Amistar™ spray tip. A unique rearward spray incline provides more uniform coverage with 10 gpm spray rates. Higher flow tips used at faster speeds have a greater spray incline.

- Air-induced sprays reduce drift while increasing droplet deposition and retention on foliage
- Provides better coverage with more drops per gallon compared to other common air-induced spray tips
- Speed-optimized spray incline allows more uniform coverage
- Specifically engineered nozzle to maintain droplet spectrum regardless of orifice size
- FastCap® includes tip, cap and gasket

Tip Size	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000 ft² 20 inch nozzle spacing 2	3	4	5
015	UC	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	UC	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	XC	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	C	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	C	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	M	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	M	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	115	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
02	UC	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	XC	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	VC	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	M	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
	M	115	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
025	UC	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	XC	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VC	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	C	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	M	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	M	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	M	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	M	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	115	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
03	UC	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	UC	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	XC	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	VC	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	C	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	C	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	C	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	M	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
	M	115	0.51	37.9	30.3	25.2	18.9	15.1	12.6	10.1	7.6	1.74	1.16	0.87	0.70
035	UC	15	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	UC	20	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	XC	30	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	VC	**40**	**0.35**	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	50	0.39	29.0	23.2	19.3	14.5	11.6	9.7	7.7	5.8	1.33	0.89	0.66	0.53
	C	60	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	C	70	0.46	34.2	27.3	22.8	17.1	13.7	11.4	9.1	6.8	1.57	1.05	0.78	0.63
	M	80	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	90	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	M	100	0.55	40.8	32.7	27.2	20.4	16.3	13.6	10.9	8.2	1.88	1.25	0.94	0.75
	M	115	0.59	43.8	35.0	29.2	21.9	17.5	14.6	11.7	8.8	2.01	1.34	1.01	0.80
04	UC	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	XC	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	VC	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	C	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	M	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	M	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
	M	115	0.68	50.5	40.4	33.7	25.2	20.2	16.8	13.5	10.1	2.32	1.55	1.16	0.93
05	UC	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	XC	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	XC	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	C	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	C	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	C	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	C	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	M	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	M	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	M	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	M	115	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Polyacetal
Spray Angle	110°
Pressure Range	15-115 PSI
Configuration	Tips, FastCap

Application Selection Guide	
Foliar Contact	Excellent
Foliar Systemic	Excellent
Soil Applied	Very Good
Drift Control	Very Good

Part Numbers	
Tips 110°	FastCaps 110°
GA110-015	FC-GA110-015
GA110-02	FC-GA110-02
GA110-025	FC-GA110-025
GA110-03	FC-GA110-03
GA110-035	FC-GA110-035
GA110-04	FC-GA110-04
GA110-05	FC-GA110-05

Replacement Cap Gasket
22W11MF64

Packaged Part Numbers

6 FastCaps per pack: Add prefix "6PK-" (Ex. 6PK-FCGA110015)

Flat Fan Spray Tips – Guardian™ 120°

Guardian spray tips are ideal for insecticide and fungicide applications. The Guardian's unique 20° inclined spray pattern allows users to aim the spray rearward for general spraying, forward for vertical targets, or alternate nozzles to create a twin spray.

- Delivers a more consistent droplet and spray pattern
- The pattern is inclined 20° to enhance application versatility
- A bold arrow indicates incline direction for easy installation
- FastCap® complete includes tip, cap, gasket and integrated strainers

Tip Size	Droplet Size 120°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000 ft² 20 inch nozzle spacing 2	3	4	5
01	C	15	0.06	4.5	3.6	3.0	2.2	1.8	1.5	1.2	0.9	0.20	0.14	0.10	0.08
	C	20	0.07	5.2	4.2	3.5	2.6	2.1	1.7	1.4	1.0	0.24	0.16	0.12	0.10
	C	30	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	M	**40**	**0.10**	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	M	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	M	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	M	70	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	M	80	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	M	90	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	M	100	0.16	11.9	9.5	7.9	5.9	4.8	4.0	3.2	2.4	0.55	0.36	0.27	0.22
	M	115	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
015	C	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	C	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	C	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	M	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	M	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	M	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	M	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	115	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
02	VC	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	C	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	C	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	C	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	C	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	M	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
	M	115	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
025	VC	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	C	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	C	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	C	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	C	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	M	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	M	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	M	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	115	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
03	VC	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	C	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	C	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	C	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	C	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	C	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	M	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	M	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
	M	115	0.51	37.9	30.3	25.2	18.9	15.1	12.6	10.1	7.6	1.74	1.16	0.87	0.70
04	VC	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	C	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	C	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	C	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	C	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	M	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	M	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
	M	115	0.68	50.5	40.4	33.7	25.2	20.2	16.8	13.5	10.1	2.32	1.55	1.16	0.93
05	VC	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	C	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	C	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	C	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	C	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	M	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
	M	80	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	M	90	0.75	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	2.56	1.71	1.28	1.02
	M	100	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	M	115	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
06	XC	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	VC	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	C	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	C	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	C	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	C	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
	M	80	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
	M	90	0.90	66.8	53.5	44.6	33.4	26.7	22.3	17.8	13.4	3.07	2.05	1.53	1.23
	M	100	0.95	70.5	56.4	47.0	35.3	28.2	23.5	18.8	14.1	3.24	2.16	1.62	1.30
	M	115	1.02	75.7	60.6	50.5	37.9	30.3	25.2	20.2	15.1	3.48	2.32	1.74	1.39
08	XC	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	XC	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	VC	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	C	**40**	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	C	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	C	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	M	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	M	80	1.13	83.9	67.1	55.9	42.0	33.6	28.0	22.4	16.8	3.85	2.57	1.93	1.54
	M	90	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	M	100	1.26	93.6	74.8	62.4	46.8	37.4	31.2	24.9	18.7	4.30	2.86	2.15	1.72
	M	115	1.36	101	80.8	67.3	50.5	40.4	33.7	26.9	20.2	4.64	3.09	2.32	1.86

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Pre-Orifice
Material	Polyacetal
Spray Angle	120°
Pressure Range	15-115 PSI
Configuration	FastCap® Complete

Application Selection Guide	
Foliar Contact	Excellent
Foliar Systemic	Excellent
Soil Applied	Very Good
Drift Control	Good

Part Numbers

FastCaps® 120°
GRD120-01
GRD120-015
GRD120-02
GRD120-025
GRD120-03
GRD120-04
GRD120-05
GRD120-06
GRD120-08

Replacement Tip Strainer	
TS02-100	100 mesh strainer for size 015-03
TS02-50	50 mesh strainer for size 04-08

Replacement Cap Gasket
22W11MF64

Packaged Part Numbers

6 Tips per pack: Add prefix "6PK-"
(Ex. 6PK-GRD120-015)

Flat Fan Spray Tips – Lo-Drift™ 80° & 110°

The Lo-Drift™ is the original drift-reducing tip. The special two-part construction includes a pre-orifice, which reduces the number of drift prone droplets.

- Significantly reduces spray drift, widening the operational window
- Balanced droplet size for effective, on-target spray
- Available in acid-resistant PVDF (See page 149)

Tip Size	Droplet Size 80°	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000 Ft² 20 inch nozzle spacing 2	3	4	5
015	C	C	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	M	M	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	M	M	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	M	M	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	F	F	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	F	F	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
02	C	C	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	M	M	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	M	M	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	F	F	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
025	-	C	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	-	C	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	-	M	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	-	M	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	-	F	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	-	F	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	-	F	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
03	VC	VC	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	C	C	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	M	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	M	M	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	F	F	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	VC	VC	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	C	C	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	M	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
05	VC	VC	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	C	C	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	C	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	M	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	M	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	F	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	F	F	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
06	XC	XC	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	VC	VC	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	C	C	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	M	M	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	M	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
08	XC	XC	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	VC	VC	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	C	C	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	C	C	**40**	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	M	M	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	M	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	M	M	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Pre-Orifice
Material	Polyacetal
Spray Angle	80° & 110°
Pressure Range	15-70 PSI
Configuration	Tips, FastCap

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Excellent
Soil Applied	Very Good
Drift Control	Good

Part Numbers	
Tips 80°	**Caps (25 Packs)**
LD80-015	CAP00-015
LD80-02	CAP00-02
LD80-03	CAP00-03
LD80-04	CAP00-04
LD80-05	CAP00-05
LD80-06	CAP00-06
LD80-08	CAP00-08
Tips 110°	**Caps (25 Packs)**
LD110-015	CAP00-015
LD110-02	CAP00-02
LD110-025	CAP00-025
LD110-03	CAP00-03
LD110-04	CAP00-04
LD110-05	CAP00-05
LD110-06	CAP00-06
LD110-08	CAP00-08

Packaged Part Numbers

6 Tips per pack: Add prefix "6PK-"
(Ex. 6PK-LD015F110)

4 Twin Caps per pack: Add prefix "4PK-"
(Ex. 4PK-TC2LD015)

Flat Fan Spray Tips – Ceramic ADI 110°

The Albuz® ADI anti-drift spray tip provides a versatile balance of drift reduction and target coverage. The proven pre-orifice design creates droplets that are well suited for a wide range of spray applications. The ceramic orifice resists wear better than other materials and will provide acre after acre of service.

- Droplet size balances drift reduction and target coverage
- Simple and effective pre-orifice design
- Versatile and long-lasting tip

Tip Size	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 Ft² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	2	3	4	5
01	M	30	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	M	**40**	**0.10**	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	F	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	F	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	F	70	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
015	M	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	M	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	M	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	M	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
02	M	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	M	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
03	C	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	M	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	M	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	VC	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	C	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	C	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72

Features	
Common Use	Plant Health
Pattern	Tapered Flat Fan
Technology	Air Eduction
Material	Ceramic
Spray Angle	110°
Pressure Range	30-70 PSI
Configuration	Tips

Application Selection Guide	
Foliar Contact	Excellent
Foliar Systemic	Excellent
Soil Applied	Very Good
Drift Control	Good

Part Numbers	
Tips 110°	Caps (25 Pack)
ADI-11001	CAP00-01
ADI-110015	CAP00-015
ADI-11002	CAP00-02
ADI-11003	CAP00-03
ADI-11004	CAP00-04

Flat Fan Spray Tips – Variable Pressure 80° & 110°

Variable Pressure tips maintain a consistent spray angle over a wide pressure range down to 15 PSI and are available in 80° and 110° versions.

- Adjustable droplet size according to pressure
- Maintains good spray distribution and makes larger droplets at low pressures
- FastCap® includes tip, cap and gasket
- Excellent tip for a wide variety of herbicide and insecticide applications

Tip Size	Droplet Size 80°	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000FT² 20 inch nozzle spacing			
					4	5	6	8	10	12	15	20	2	3	4	5
015	M	M	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	M	F	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	F	F	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	F	F	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	F	F	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	F	F	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
02	M	M	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	M	F	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	F	F	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	F	F	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
025	-	M	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	-	M	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	-	F	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	-	F	**40**	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	-	F	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	-	F	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	-	F	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
03	M	M	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	M	M	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	F	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	F	F	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	F	F	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	F	F	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	C	M	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	M	M	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	F	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	F	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	F	F	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	F	F	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
05	C	M	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	C	M	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	M	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	F	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	F	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	M	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	F	F	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
06	C	C	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	C	M	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	C	M	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	C	M	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	F	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	F	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	F	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
08	-	C	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	-	C	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	-	M	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	-	M	**40**	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	-	M	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	-	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	-	M	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
10	-	VC	15	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	-	C	20	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	-	C	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	-	M	**40**	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	-	M	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	-	M	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	-	M	70	1.32	98.0	78.4	65.3	49.0	39.2	32.7	26.1	19.6	4.50	3.00	2.25	1.80
15	-	VC	15	0.92	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	3.14	2.09	1.57	1.25
	-	VC	20	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	-	VC	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	-	C	**40**	**1.50**	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	-	C	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	-	M	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
	-	M	70	1.98	147	118	98.0	73.5	58.8	49.0	39.2	29.4	6.75	4.50	3.38	2.70

Features	
Common Use	General
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	Polyacetal
Spray Angle	80° & 110°
Pressure Range	15-70 PSI
Configuration	Tips, FastCap

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers	
Tips 80°	**FastCaps 80°**
VP80-015	FC-VP80-015
VP80-02	FC-VP80-02
VP80-03	FC-VP80-03
VP80-04	FC-VP80-04
VP80-05	FC-VP80-05
VP80-06	FC-VP80-06
Tips 110°	**FastCaps 110°**
VP110-015	FC-VP110-015
VP110-02	FC-VP110-02
VP110-025	FC-VP110-025
VP110-03	FC-VP110-03
VP110-04	FC-VP110-04
VP110-05	FC-VP110-05
VP110-06	FC-VP110-06
VP110-08	FC-VP110-08
VP110-10	FC-VP110-10
VP110-15	FC-VP110-15
Replacement Cap Gasket	
22W11MF64	

Packaged Part Numbers

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-VP110-015) (4PK-VP80-015)

6 FastCaps per pack: Add prefix "6PK-"
(Ex. 6PK-FCVP11003) (Ex. 6PK-FCVP8003)

Flat Fan Spray Tips – Total Range™ 80° & 110°

The TR (Total Range) tip series consists of a metal insert that is held in a plastic carrier. The tips are able to maintain a constant spray angle over a wide pressure range down to 15 PSI.

- Adjustable droplet size according to pressure
- Insert is precision-machined stainless steel and carrier is molded in tough and durable polyacetal
- Maintains good spray distribution and makes larger droplets at low pressures
- FastCap® includes tip, cap and gasket
- Excellent tip for insecticide and fungicide applications

Tip Size	Droplet Size 80°	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000 ft² 20 inch nozzle spacing 2	3	4	5
01	M	F	15	0.06	4.5	3.6	3.0	2.2	1.8	1.5	1.2	0.9	0.20	0.14	0.10	0.08
	F	F	20	0.07	5.2	4.2	3.5	2.6	2.1	1.7	1.4	1.0	0.24	0.16	0.12	0.10
	F	F	30	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	VF	VF	**40**	**0.10**	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	VF	VF	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	VF	VF	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	VF	VF	70	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
015	M	M	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	F	F	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	F	F	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	F	F	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	F	F	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	VF	F	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VF	VF	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
02	M	M	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	M	M	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	F	F	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	VF	F	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
03	C	M	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	M	M	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	F	F	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	F	F	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	F	F	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	C	C	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	C	M	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	F	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	F	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	F	F	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	F	F	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
05	C	C	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	C	C	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	M	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	F	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	F	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	M	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	F	F	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
06	C	C	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	C	C	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	C	C	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	M	M	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	F	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08
08	VC	C	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	C	C	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	C	C	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	C	M	**40**	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	C	M	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	M	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	M	M	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
10	VC	VC	15	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	VC	VC	20	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	VC	C	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	C	M	**40**	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	C	M	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	C	M	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	M	M	70	1.32	98.0	78.4	65.3	49.0	39.2	32.7	26.1	19.6	4.50	3.00	2.25	1.80
15	XC	VC	15	0.92	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	3.14	2.09	1.57	1.25
	VC	VC	20	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	VC	VC	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	C	C	**40**	**1.50**	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	C	C	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	C	M	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
	C	M	70	1.98	147	118	98.0	73.5	58.8	49.0	39.2	29.4	6.75	4.50	3.38	2.70

Features	
Common Use	General
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	Stainless Steel
Spray Angle	80° & 110°
Pressure Range	15-70 PSI
Configuration	Tips, FastCap

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers	
Tips 80°	**FastCaps 80°**
TR80-01	FC-TR80-01
TR80-015	FC-TR80-015
TR80-02	FC-TR80-02
TR80-03	FC-TR80-03
TR80-04	FC-TR80-04
TR80-05	FC-TR80-05
TR80-06	FC-TR80-06
TR80-08	FC-TR80-08
TR80-10	FC-TR80-10
TR80-15	FC-TR80-15
Tips 110°	**FastCaps 110°**
TR110-01	FC-TR110-01
TR110-015	FC-TR110-015
TR110-02	FC-TR110-02
TR110-03	FC-TR110-03
TR110-04	FC-TR110-04
TR110-05	FC-TR110-05
TR110-06	FC-TR110-06
TR110-08	FC-TR110-08
TR110-10	FC-TR110-10
TR110-15	FC-TR110-15
Replacement Cap Gasket	
22W11MF64	

Packaged Part Numbers

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-TR110-015)

6 FastCaps per pack: Add prefix "6PK-"
(Ex. 6PK-FCTR11003)

Flat Fan Spray Tips – Ceramic AXI 80° & 110°

The Albuz® AXI wide pressure range ceramic spray tips are suited for creating numerous fine to medium droplets. The ceramic orifice of the AXI will provide long service life even when spraying abrasive chemicals.

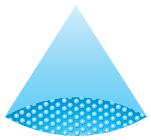
- Adjustable droplet size according to pressure
- Maintains good spray distribution and makes larger droplets at low pressures
- FastCap® includes tip, cap and gasket
- 80° fan models ideal for use in directed spray applications (See page 161 for more information)

Tip Size	Droplet Size 80°	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 Ft² 20 inch nozzle spacing			
					4	5	6	8	10	12	15	20	2	3	4	5
015	F	F	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	F	F	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	F	F	**40**	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	F	F	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VF	VF	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
02	M	F	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	F	F	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	**40**	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	F	F	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
03	M	M	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	M	**40**	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	F	F	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	F	F	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	M	M	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	M	**40**	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	F	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	F	F	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
05	M	M	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	M	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	M	**40**	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	M	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	M	M	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	M	M	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
06	M	M	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	M	M	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	M	M	**40**	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	M	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08

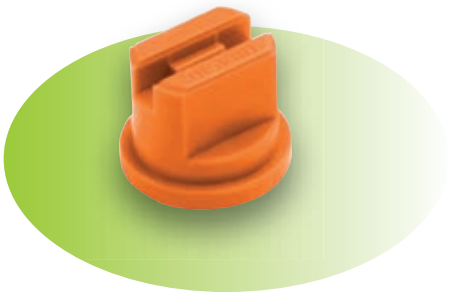
Features	
Common Use	General
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	Ceramic
Spray Angle	80° & 110°
Pressure Range	20-70 PSI
Configuration	Tips, FastCap

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers	
Tips 80°	**FastCaps 80°**
AXI-80015	FC-AXI-80015
AXI-8002	FC-AXI-8002
AXI-8003	FC-AXI-8003
AXI-8004	FC-AXI-8004
AXI-8005	FC-AXI-8005
AXI-8006	FC-AXI-8006
Tips 110°	**FastCaps 110°**
AXI-110015	FC-AXI-110015
AXI-11002	FC-AXI-11002
AXI-110025	–
AXI-11003	FC-AXI-11003
AXI-11004	FC-AXI-11004
AXI-11005	FC-AXI-11005
AXI-11006	FC-AXI-11006
Replacement Cap Gasket	
22W11MF64	



Flat Fan Spray Tips – FanTip™ 80° & 110°



The FanTip is a general spray tip that produces a mixed droplet spectrum over the 30-60 PSI operational pressure range. It is good for broadcast applications.

- Economical option for general spraying
- Simple one-piece design
- Polyacetal construction for superior product life compared to stainless steel or brass (see page 130 for more information)
- Available in acid-resistant PVDF (see page 148)

Tip Size	Droplet Size 80°	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 ft² 20 inch nozzle spacing			
					4	5	6	8	10	12	15	20	2	3	4	5
0067	VF	-	30	0.058	4.3	3.4	2.9	2.2	1.7	1.4	1.1	0.9	0.20	0.13	0.10	0.08
	VF	-	40	0.067	5.0	4.0	3.3	2.5	2.0	1.7	1.3	1.0	0.23	0.15	0.11	0.09
	VF	-	50	0.075	5.6	4.5	3.7	2.8	2.2	1.9	1.5	1.1	0.26	0.17	0.13	0.10
	VF	-	60	0.082	6.1	4.9	4.1	3.0	2.4	2.0	1.6	1.2	0.28	0.19	0.14	0.11
01	F	F	30	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	F	F	40	0.10	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.34	0.23	0.17	0.14
	F	F	50	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	F	VF	60	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
015	M	F	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	F	F	40	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	F	F	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
02	M	F	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	F	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
03	C	F	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	F	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	F	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	C	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	F	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	F	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	F	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
05	C	M	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	F	40	0.50	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	F	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	M	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
06	C	M	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	C	M	40	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	F	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	F	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
08	C	M	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	C	M	40	0.80	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	C	M	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	C	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
10	VC	M	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	C	M	40	1.00	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	C	M	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	C	M	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
15	VC	C	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	VC	C	40	1.50	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	C	M	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	C	M	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
20	VC	C	30	1.73	128	103	85.6	64.2	51.4	42.8	34.3	25.7	5.90	3.93	2.95	2.36
	VC	C	40	2.00	149	119	99.0	74.3	59.4	49.5	39.6	29.7	6.82	4.55	3.41	2.73
	VC	C	50	2.24	166	133	111	83.2	66.5	55.4	44.4	33.3	7.64	5.09	3.82	3.06
	VC	C	60	2.45	182	146	121	91.0	72.8	60.6	48.5	36.4	8.35	5.57	4.18	3.34

Features	
Common Use	General
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	Polyacetal
Spray Angle	80° & 110°
Pressure Range	30-60 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers		
Tips 80°	Tips 110°	Caps (25 Pack)
F80-0067	-	CAP00-20
F80-01	F110-01	CAP00-01
F80-015	F110-015	CAP00-015
F80-02	F110-02	CAP00-02
F80-03	F110-03	CAP00-03
F80-04	F110-04	CAP00-04
F80-05	F110-05	CAP00-05
F80-06	F110-06	CAP00-06
F80-08	F110-08	CAP00-08
F80-10	F110-10	CAP00-10
F80-15	F110-15	CAP00-15
F80-20	F110-20	CAP00-20

Packaged Part Numbers

25 Tips per bag: Add prefix "25BG-"
(Ex. 25BG-F80-015)

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-F80-015)

6 Tips per pack: Add prefix "6PK-"
(Ex. 6PK-F80-015)

Hypro has been offering **Value Beyond the Pump** *through the products, support and marketing efforts it provides each year. We will continue to strive to bring value to our customers and end-users through new and innovative ways.*

Broadcast Wide-Angle Spray Tips

Broadcast fertilizers and broadcast turf products are often applied using tips with very wide spray patterns. A wide spray pattern will overlap with adjacent spray patterns to improve spray uniformity. They also allow lower boom heights beneficial for less drift, less conspicuous turf spraying, and for use on tillage implements.

- Wide spray angles provide more overlap to ensure spray uniformity.
- Tips in this category have traditionally used lower spray pressures to reduce drift.
- Deflection pattern tips are available in economical long-wearing polyacetal and longest-wearing ceramic.
- Broadcast spraying is when the entire field is treated. The width that each tip sprays, adjusted for overlap, is equivalent to the distance between tips on the spray boom.
- Very wide pattern tips may be able to cover up to 60 inches, although narrow spacing of 40, 20, or even 15 inches is suitable. Consult the Technical Information section for additional help.

Wide-Angle Flat Fan Spray Tip – Hi-Flow™ 140°

The Hypro Hi-Flow tip is the best way to outfit a sprayer to achieve wide-angle coverage plus drift control. The 140° pattern ensures unmatched uniformity across the spray boom and allows lower spray heights to reduce the risk of drift during sensitive applications.

- Straight-through design to reduce clogging and drift
- Incredibly uniform application across the boom
- Lower spray heights and pre-orifice technology reduce drift
- Fits directly on standard nozzle bodies
- FastCap® includes tip, cap and gasket.

Tip Size	Droplet Size 140°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 ft² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	2	3	4	5
08	XC	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	XC	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	XC	40	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	XC	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	XC	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	XC	70	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	XC	80	1.13	83.9	67.1	55.9	42.0	33.6	28.0	22.4	16.8	3.85	2.57	1.93	1.54
10	XC	20	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	XC	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	XC	40	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	XC	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	XC	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	XC	70	1.32	98.0	78.4	65.3	49.0	39.2	32.7	26.1	19.6	4.50	3.00	2.25	1.80
	XC	80	1.41	105	83.8	69.8	52.3	41.9	34.9	27.9	20.9	4.81	3.21	2.40	1.92
15	XC	20	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	XC	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	XC	40	**1.50**	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	XC	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	XC	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
	XC	70	1.98	147	118	98.0	73.5	58.8	49.0	39.2	29.4	6.75	4.50	3.38	2.70
	XC	80	2.12	157	126	105	78.7	63.0	52.5	42.0	31.5	7.23	4.82	3.61	2.89
20	XC	20	1.41	105	83.8	69.8	52.3	41.9	34.9	27.9	20.9	4.81	3.21	2.40	1.92
	XC	30	1.73	128	103	85.6	64.2	51.4	42.8	34.3	25.7	5.90	3.93	2.95	2.36
	XC	40	**2.00**	149	119	99.0	74.3	59.4	49.5	39.6	29.7	6.82	4.55	3.41	2.73
	XC	50	2.24	166	133	111	83.2	66.5	55.4	44.4	33.3	7.64	5.09	3.82	3.06
	XC	60	2.45	182	146	121	91.0	72.8	60.6	48.5	36.4	8.35	5.57	4.18	3.34
	XC	70	2.65	197	157	131	98.4	78.7	65.6	52.5	39.4	9.04	6.02	4.52	3.61
	XC	80	2.83	210	168	140	105	84.1	70.0	56.0	42.0	9.65	6.43	4.83	3.86
30	XC	20	2.12	157	126	105	78.7	63.0	52.5	42.0	31.5	7.23	4.82	3.61	2.89
	XC	30	2.60	193	154	129	96.5	77.2	64.4	51.5	38.6	8.87	5.91	4.43	3.55
	XC	40	**3.00**	223	178	149	111	89.1	74.3	59.4	44.6	10.2	6.82	5.12	4.09
	XC	50	3.35	249	199	166	124	99.5	82.9	66.3	49.7	11.4	7.62	5.71	4.57
	XC	60	3.67	272	218	182	136	109	90.8	72.7	54.5	12.5	8.34	6.26	5.01
	XC	70	3.97	295	236	197	147	118	98.3	78.6	59.0	13.5	9.03	6.77	5.42
	XC	80	4.24	315	252	210	157	126	105	84.0	63.0	14.5	9.64	7.23	5.78
40	XC	20	2.83	210	168	140	105	84.1	70.0	56.0	42.0	9.65	6.43	4.83	3.86
	XC	30	3.46	257	206	171	128	103	85.6	68.5	51.4	11.8	7.87	5.90	4.72
	XC	40	**4.00**	297	238	198	149	119	99.0	79.2	59.4	13.6	9.09	6.82	5.46
	XC	50	4.47	332	266	221	166	133	111	88.5	66.4	15.2	10.2	7.62	6.10
	XC	60	4.90	364	291	243	182	146	121	97.0	72.8	16.7	11.1	8.35	6.68
	XC	70	5.29	393	314	262	196	157	131	105	78.6	18.0	12.0	9.02	7.22
	XC	80	5.66	420	336	280	210	168	140	112	84.1	19.3	12.9	9.65	7.72
50	XC	20	3.54	263	210	175	131	105	87.6	70.1	52.6	12.1	8.05	6.04	4.83
	XC	30	4.33	322	257	214	161	129	107	85.7	64.3	14.8	9.84	7.38	5.91
	XC	40	**5.00**	371	297	248	186	149	124	99.0	74.3	17.1	11.4	8.53	6.82
	XC	50	5.59	415	332	277	208	166	138	111	83.0	19.1	12.7	9.53	7.62
	XC	60	6.12	454	364	303	227	182	151	121	90.9	20.9	13.9	10.4	8.35
	XC	70	6.61	491	393	327	245	196	164	131	98.2	22.5	15.0	11.3	9.02
	XC	80	7.07	525	420	350	262	210	175	140	105	24.1	16.1	12.1	9.64
60	XC	20	4.24	315	252	210	157	126	105	84.0	63.0	14.5	9.64	7.23	5.78
	XC	30	5.20	386	309	257	193	154	129	103	77.2	17.7	11.8	8.87	7.09
	XC	40	**6.00**	446	356	297	223	178	149	119	89.1	20.5	13.6	10.2	8.18
	XC	50	6.71	498	399	332	249	199	166	133	99.6	22.9	15.3	11.4	9.15
	XC	60	7.35	546	437	364	273	218	182	146	109	25.1	16.7	12.5	10.0
	XC	70	7.94	590	472	393	295	236	197	157	118	27.1	18.1	13.5	10.8
	XC	80	8.49	630	504	420	315	252	210	168	126	29.0	19.3	14.5	11.6

Features	
Common Use	Fertilizer
Pattern	Tapered Flat Fan
Technology	Pre-Orifice
Material	Polyacetal
Spray Angle	140°
Pressure Range	20-80 PSI
Configuration	FastCap

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	Excellent at High Volume
Soil Applied	Excellent
Drift Control	Excellent

Part Numbers
FastCaps 140°
HF140-08
HF140-10
HF140-15
HF140-20
HF140-30
HF140-40
HF140-50
HF140-60

Replacement Cap Gasket
65-BS205

Packaged Part Numbers

6 Tips per pack: Add prefix "6PK-"
(Ex. 6PK-HF140-15)

Part Number	Description
9950-0001	Floater Adapter Kit for Hi-Flow Nozzles (3/4" Cam Lock to Bayonet)

Flood Spray Tips – DeflecTip™ 80°- 160°

The DeflecTip™ wide-angle flood fan tip creates a wide pattern at very low pressures while creating mainly medium and coarse droplets. It is well suited for mounting on machinery where a wide angle or a low spray height is desired and on sprayers using very low pressures, including manual sprayers.

- Sprays at very low pressures
- Medium to coarse spray is suited for a variety of applications
- Larger sizes are suitable for liquid fertilizer applications
- Large circular orifice reduces the chances of blocking

Tip Size	Droplet Size	Spray Angle	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000ft² 20 inch nozzle spacing 2	3	4	5
0.5	C	80	10	0.050	1.9	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.17	0.11	0.09	0.07
	M		20	0.071	2.6	2.1	1.8	1.3	1.1	0.9	0.7	0.5	0.24	0.16	0.12	0.10
	F		30	0.087	3.2	2.6	2.2	1.6	1.3	1.1	0.9	0.6	0.30	0.20	0.15	0.12
	F		40	0.10	3.7	3.0	2.5	1.9	1.5	1.2	1.0	0.7	0.34	0.23	0.17	0.14
	F		50	0.11	4.1	3.3	2.7	2.0	1.6	1.4	1.1	0.8	0.38	0.25	0.19	0.15
	F		60	0.12	4.5	3.6	3.0	2.2	1.8	1.5	1.2	0.9	0.41	0.27	0.20	0.16
0.75	C	95	10	0.075	2.8	2.2	1.9	1.4	1.1	0.9	0.7	0.6	0.26	0.17	0.13	0.10
	M		20	0.11	4.1	3.3	2.7	2.0	1.6	1.4	1.1	0.8	0.38	0.25	0.19	0.15
	M		30	0.13	4.8	3.9	3.2	2.4	1.9	1.6	1.3	1.0	0.44	0.30	0.22	0.18
	F		40	0.15	5.6	4.5	3.7	2.8	2.2	1.9	1.5	1.1	0.51	0.34	0.26	0.20
	F		50	0.17	6.3	5.0	4.2	3.2	2.5	2.1	1.7	1.3	0.58	0.39	0.29	0.23
	F		60	0.18	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.61	0.41	0.31	0.25
1.0	C	105	10	0.10	3.7	3.0	2.5	1.9	1.5	1.2	1.0	0.7	0.34	0.23	0.17	0.14
	M		20	0.14	5.2	4.2	3.5	2.6	2.1	1.7	1.4	1.0	0.48	0.32	0.24	0.19
	F		30	0.17	6.3	5.0	4.2	3.2	2.5	2.1	1.7	1.3	0.58	0.39	0.29	0.23
	F		40	0.20	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.68	0.45	0.34	0.27
	F		50	0.22	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.75	0.50	0.38	0.30
	F		60	0.24	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.82	0.55	0.41	0.33
1.5	VC	105	10	0.15	5.6	4.5	3.7	2.8	2.2	1.9	1.5	1.1	0.51	0.34	0.26	0.20
	M		20	0.21	7.8	6.2	5.2	3.9	3.1	2.6	2.1	1.6	0.72	0.48	0.36	0.29
	M		30	0.26	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.89	0.59	0.44	0.35
	F		40	0.30	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	1.02	0.68	0.51	0.41
	F		50	0.34	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	1.16	0.77	0.58	0.46
	F		60	0.37	13.7	11.0	9.2	6.9	5.5	4.6	3.7	2.7	1.26	0.84	0.63	0.50
2.0	M	105	10	0.20	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.68	0.45	0.34	0.27
	M		20	0.28	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.95	0.64	0.48	0.38
	M		30	0.35	13.0	10.4	8.7	6.5	5.2	4.3	3.5	2.6	1.19	0.80	0.60	0.48
	F		40	0.40	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	1.36	0.91	0.68	0.55
	F		50	0.45	16.7	13.4	11.1	8.4	6.7	5.6	4.5	3.3	1.53	1.02	0.77	0.61
	F		60	0.49	18.2	14.6	12.1	9.1	7.3	6.1	4.9	3.6	1.67	1.11	0.84	0.67
2.5	M	110	10	0.25	9.3	7.4	6.2	4.6	3.7	3.1	2.5	1.9	0.85	0.57	0.43	0.34
	M		20	0.35	13.0	10.4	8.7	6.5	5.2	4.3	3.5	2.6	1.19	0.80	0.60	0.48
	M		30	0.43	16.0	12.8	10.6	8.0	6.4	5.3	4.3	3.2	1.47	0.98	0.73	0.59
	F		40	0.50	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	1.71	1.14	0.85	0.68
	F		50	0.56	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	1.91	1.27	0.95	0.76
	F		60	0.61	22.6	18.1	15.1	11.3	9.1	7.5	6.0	4.5	2.08	1.39	1.04	0.83
3.0	M	110	10	0.30	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	1.02	0.68	0.51	0.41
	M		20	0.42	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	1.43	0.95	0.72	0.57
	M		30	0.52	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	1.77	1.18	0.89	0.71
	M		40	0.60	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	2.05	1.36	1.02	0.82
	F		50	0.67	24.9	19.9	16.6	12.4	9.9	8.3	6.6	5.0	2.28	1.52	1.14	0.91
	F		60	0.73	27.1	21.7	18.1	13.6	10.8	9.0	7.2	5.4	2.49	1.66	1.24	1.00
4.0	M	120	10	0.40	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	1.36	0.91	0.68	0.55
	M		20	0.57	21.2	16.9	14.1	10.6	8.5	7.1	5.6	4.2	1.94	1.30	0.97	0.78
	M		30	0.69	25.6	20.5	17.1	12.8	10.2	8.5	6.8	5.1	2.35	1.57	1.18	0.94
	M		40	0.80	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	2.73	1.82	1.36	1.09
	M		50	0.89	33.0	26.4	22.0	16.5	13.2	11.0	8.8	6.6	3.03	2.02	1.52	1.21
	F		60	0.98	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	3.34	2.23	1.67	1.34
5.0	M	125	10	0.50	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	1.71	1.14	0.85	0.68
	M		20	0.71	26.4	21.1	17.6	13.2	10.5	8.8	7.0	5.3	2.42	1.61	1.21	0.97
	M		30	0.87	32.3	25.8	21.5	16.1	12.9	10.8	8.6	6.5	2.97	1.98	1.48	1.19
	M		40	1.00	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	3.41	2.27	1.71	1.36
	F		50	1.12	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	3.82	2.55	1.91	1.53
	F		60	1.22	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	4.16	2.77	2.08	1.66
7.5	C	145	10	0.75	27.8	22.3	18.6	13.9	11.1	9.3	7.4	5.6	2.56	1.71	1.28	1.02
	M		20	1.06	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	3.61	2.41	1.81	1.45
	M		30	1.30	48.3	38.6	32.2	24.1	19.3	16.1	12.9	9.7	4.43	2.96	2.22	1.77
	M		40	1.50	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	5.12	3.41	2.56	2.05
	M		50	1.68	62.4	49.9	41.6	31.2	24.9	20.8	16.6	12.5	5.73	3.82	2.86	2.29
	F		60	1.84	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	6.27	4.18	3.14	2.51
10	C	160	10	1.00	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	3.41	2.27	1.71	1.36
	M		20	1.41	52.3	41.9	34.9	26.2	20.9	17.4	14.0	10.5	4.81	3.21	2.40	1.92
	M		30	1.73	64.2	51.4	42.8	32.1	25.7	21.4	17.1	12.8	5.90	3.93	2.95	2.36
	M		40	2.00	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	6.82	4.55	3.41	2.73
	M		50	2.24	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	7.64	5.09	3.82	3.06
	M		60	2.45	91.0	72.8	60.6	45.5	36.4	30.3	24.3	18.2	8.35	5.57	4.18	3.34
15	C	145	10	1.50	55.7	44.6	37.1	27.8	22.3	18.6	14.9	11.1	5.12	3.41	2.56	2.05
	C		20	2.12	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	7.23	4.82	3.61	2.89
	C		30	2.60	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	8.87	5.91	4.43	3.55
	C		40	3.00	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	10.2	6.82	5.12	4.09
	C		50	3.35	124	99.5	82.9	62.2	49.7	41.5	33.2	24.9	11.4	7.62	5.71	4.57
	M		60	3.67	136	109	90.8	68.1	54.5	45.4	36.3	27.2	12.5	8.34	6.26	5.01
20	VC	140	10	2.00	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	6.82	4.55	3.41	2.73
	C		20	2.83	105	84.1	70.0	52.5	42.0	35.0	28.0	21.0	9.65	6.43	4.83	3.86
	C		30	3.46	128	103	85.6	64.2	51.4	42.8	34.3	25.7	11.8	7.87	5.90	4.72
	C		40	4.00	149	119	99.0	74.3	59.4	49.5	39.6	29.7	13.6	9.09	6.82	5.46
	C		50	4.47	166	133	111	83.0	66.4	55.3	44.3	33.2	15.2	10.2	7.62	6.10
	C		60	4.90	182	146	121	91.0	72.8	60.6	48.5	36.4	16.7	11.1	8.35	6.68

Features	
Common Use	Weeds & Fertilizer
Pattern	Flood
Technology	Deflection
Material	Polyacetal
Spray Angle	80°-160°
Pressure Range	10-60 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	Good
Soil Applied	Very Good
Drift Control	Good

Part Numbers	
Tips	Caps (25 Pack)
30DT0.5	CAP30-20
30DT0.75	CAP30-20
30DT1.0	CAP30-20
30DT1.5	CAP30-20
30DT2.0	CAP30-20
30DT2.5	CAP30-20
30DT3.0	CAP30-20
30DT4.0	CAP30-20
30DT5.0	CAP30-20
30DT7.5	CAP30-20
30DT10	CAP30-20
30DT15	CAP30-20
30DT20	CAP30-20

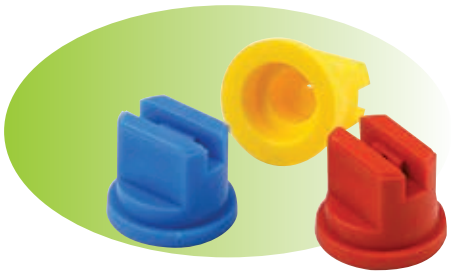
Packaged Part Numbers

25 Tips per bag: Add prefix "25BG-"
(Ex. 25BG-30DT4.0)

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-DT1.0)

6 Tips per pack: Add prefix "6PK-"
(Ex. 6PK-DT1.0)

Flat Fan Spray Tips – Acid-Resistant FanTip™ 110°



The FanTip is a general spray tip that produces a mixed droplet spectrum over the 30-60 PSI operational pressure range. It is good for broadcast applications of acidic spray, such as defoliants.

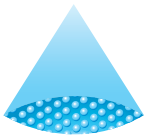
- Acid-resistant material construction
- Economical option for general spraying
- Simple one-piece design

Tip Size	Droplet Size 110°	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000FT² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	4	5	6	7
02	F	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	F	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	F	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
03	F	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	F	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	F	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	F	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	F	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	F	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
05	M	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	F	40	0.50	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	F	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
06	M	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	M	40	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	F	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	F	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
08	M	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	M	40	0.80	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	M	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
10	M	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	M	40	1.00	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	M	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	M	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
15	C	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	C	40	1.50	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	M	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	M	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51

Features	
Common Use	Acid Defoliants
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	PVDF
Spray Angle	110°
Pressure Range	30-60 PSI
Configuration	Tips

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Good
Soil Applied	–
Drift Control	–

Part Numbers
Tips 110°
90-02F110
90-03F110
90-04F110
90-05F110
90-06F110
90-08F110
90-10F110
90-15F110



Flat Fan Spray Tips – Acid-Resistant Lo-Drift™ 110º

The Lo-Drift is the original drift-reducing tip. The special two-part construction includes a pre-orifice, which reduces the number of drift prone droplets and makes it ideal for broadcast application of acidic defoliants.

- Acid-resistant material construction
- Significantly reduces spray drift, widening the operational window
- Balanced droplet size for effective, on-target spray

Tip Size	Droplet Size 110º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000ft² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	4	5	6	7
03	VC	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	C	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	M	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	F	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
04	VC	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	C	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	M	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
05	VC	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	C	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	C	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	M	40	0.50	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	M	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	F	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	F	70	0.66	49.0	39.2	32.7	24.5	19.6	16.3	13.1	9.8	2.25	1.50	1.13	0.90
06	XC	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	VC	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	C	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	M	40	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	M	70	0.79	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	2.69	1.80	1.35	1.08

Features	
Common Use	Acid Defoliants
Pattern	Tapered Flat Fan
Technology	Pre-Orifice
Material	PVDF
Spray Angle	110º
Pressure Range	15-70 PSI
Configuration	Tips

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Excellent
Soil Applied	Very Good
Drift Control	Good

Part Numbers
Tips 110º
90LD03F110
90LD04F110
90LD05F110
90LD06F110

Flood Spray Tips – Ceramic APM 80°– 160°

The Albuz® APM wide-angle flood fan tip creates a wide pattern at very low pressures while creating mainly medium and coarse droplets. It is well suited for mounting on machinery where a wide angle or a low spray height is desired and on sprayers using very low pressures, including manual sprayers. The ceramic orifice and deflector make the APM the longest-wearing flood tip.

- Sprays at very low pressures
- Medium to coarse spray is suited for a variety of applications
- Large round orifice resists plugging
- Wear-resistant Albuz® ceramic orifice and deflector

Tip Size	Droplet Size	Spray Angle	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000FT² 20 inch nozzle spacing			
					4	5	6	8	10	12	15	20	2	3	4	5
0.12	M	80	10	0.12	4.5	3.6	3.0	2.2	1.8	1.5	1.2	0.9	0.41	0.27	0.20	0.16
	M		20	0.17	6.3	5.0	4.2	3.2	2.5	2.1	1.7	1.3	0.58	0.39	0.29	0.23
	M		30	0.21	7.8	6.2	5.2	3.9	3.1	2.6	2.1	1.6	0.72	0.48	0.36	0.29
	M		40	0.24	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.82	0.55	0.41	0.33
	M		50	0.27	10.0	8.0	6.7	5.0	4.0	3.3	2.7	2.0	0.92	0.61	0.46	0.37
	M		60	0.29	10.8	8.6	7.2	5.4	4.3	3.6	2.9	2.2	0.99	0.66	0.49	0.40
0.2	M	110	10	0.20	7.4	5.9	5.0	3.7	3.0	2.5	2.0	1.5	0.68	0.45	0.34	0.27
	M		20	0.28	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.95	0.64	0.48	0.38
	M		30	0.35	13.0	10.4	8.7	6.5	5.2	4.3	3.5	2.6	1.19	0.80	0.60	0.48
	M		40	0.40	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	1.36	0.91	0.68	0.55
	M		50	0.45	16.7	13.4	11.1	8.4	6.7	5.6	4.5	3.3	1.53	1.02	0.77	0.61
	M		60	0.49	18.2	14.6	12.1	9.1	7.3	6.1	4.9	3.6	1.67	1.11	0.84	0.67
0.3	C	125	10	0.30	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	1.02	0.68	0.51	0.41
	C		20	0.42	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	1.43	0.95	0.72	0.57
	M		30	0.52	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	1.77	1.18	0.89	0.71
	M		40	0.60	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	2.05	1.36	1.02	0.82
	M		50	0.67	24.9	19.9	16.6	12.4	9.9	8.3	6.6	5.0	2.28	1.52	1.14	0.91
	M		60	0.73	27.1	21.7	18.1	13.6	10.8	9.0	7.2	5.4	2.49	1.66	1.24	1.00
0.4	C	135	10	0.40	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	1.36	0.91	0.68	0.55
	C		20	0.57	21.2	16.9	14.1	10.6	8.5	7.1	5.6	4.2	1.94	1.30	0.97	0.78
	M		30	0.69	25.6	20.5	17.1	12.8	10.2	8.5	6.8	5.1	2.35	1.57	1.18	0.94
	M		40	0.80	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	2.73	1.82	1.36	1.09
	M		50	0.89	33.0	26.4	22.0	16.5	13.2	11.0	8.8	6.6	3.03	2.02	1.52	1.21
	M		60	0.98	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	3.34	2.23	1.67	1.34
0.5	C	140	10	0.50	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	1.71	1.14	0.85	0.68
	C		20	0.71	26.4	21.1	17.6	13.2	10.5	8.8	7.0	5.3	2.42	1.61	1.21	0.97
	C		30	0.87	32.3	25.8	21.5	16.1	12.9	10.8	8.6	6.5	2.97	1.98	1.48	1.19
	M		40	1.00	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	3.41	2.27	1.71	1.36
	M		50	1.12	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	3.82	2.55	1.91	1.53
	M		60	1.22	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	4.16	2.77	2.08	1.66
0.7	VC	160	10	0.70	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	2.39	1.59	1.19	0.95
	C		20	0.99	36.8	29.4	24.5	18.4	14.7	12.3	9.8	7.4	3.38	2.25	1.69	1.35
	C		30	1.21	44.9	35.9	29.9	22.5	18.0	15.0	12.0	9.0	4.13	2.75	2.06	1.65
	C		40	1.40	52.0	41.6	34.7	26.0	20.8	17.3	13.9	10.4	4.77	3.18	2.39	1.91
	C		50	1.57	58.3	46.6	38.9	29.1	23.3	19.4	15.5	11.7	5.35	3.57	2.68	2.14
	C		60	1.71	63.5	50.8	42.3	31.7	25.4	21.2	16.9	12.7	5.83	3.89	2.92	2.33
0.91	VC	160	10	0.91	33.8	27.0	22.5	16.9	13.5	11.3	9.0	6.8	3.10	2.07	1.55	1.24
	C		20	1.29	47.9	38.3	31.9	23.9	19.2	16.0	12.8	9.6	4.40	2.93	2.20	1.76
	C		30	1.58	58.7	46.9	39.1	29.3	23.5	19.6	15.6	11.7	5.39	3.59	2.69	2.16
	C		40	1.82	67.6	54.1	45.0	33.8	27.0	22.5	18.0	13.5	6.21	4.14	3.10	2.48
	C		50	2.03	75.4	60.3	50.2	37.7	30.1	25.1	20.1	15.1	6.92	4.61	3.46	2.77
	C		60	2.23	82.8	66.2	55.2	41.4	33.1	27.6	22.1	16.6	7.60	5.07	3.80	3.04

Features	
Common Use	Weeds & Fertilizer
Pattern	Flood
Technology	Deflection
Material	Ceramic
Spray Angle	80° - 160°
Pressure Range	10-60 PSI
Configuration	Tips

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	Good
Soil Applied	Very Good
Drift Control	Good

Part Numbers	
Tips	Caps (25 Pack)
APM-YELLOW	CAP04-20
APM-ORANGE	CAP04-20
APM-RED	CAP04-20
APM-GREEN	CAP04-20
APM-LIGHTBLUE	CAP04-20
APM-GRAY	CAP04-20
APM-BLACK	CAP04-20

Streaming Spray Tips

When applying soil fertilizers, it is advisable to minimize the amount of spray that deposits on the crop and crop residues - dead plant matter - on the soil surface.

- Live plant foliage can be injured by the fertilizer formulations and can die or be browned by fertilizer sprays.
- Streams minimize the number of fertilizer droplets and therefore minimize leaf scorch.
- Single streams are good for applying fertilizer through heavy crop residues and for fields that will be tilled.
- Multiple streams are good for applying fertilizers to crops like wheat, where more uniform applications, and subsequently less striping, are desired.
- Although stream pattern tips do not actually cover every plant or square inch of field, the application is usually considered to be a broadcast application because plants in unsprayed gaps also benefit from the fertilizer.
- When calculating application rates, the width that each tip sprays is considered to be the distance between tips on the spray boom.

Stream Spray Tips – Ceramic ESI Six Stream

The ESI six stream tip is ideal for applying fertilizer into soil seeded crops. It creates six individual streams that distribute the fertilizer on the soil while getting less on the crop. The Albuz® ceramic metering orifice and unique low pressure distribution chamber keep the streams stable to reduce atomization and prevent leaf burn and scorching. Spacing and spray height is similar to 110° broadcast tips.

- Six streams distribute fertilizer more evenly than one single stream
- Reduced atomization limits leaf burn and scorching
- Wear-resistant Albuz® ceramic orifice
- FastCap® includes tip, cap and gasket

Tip Size	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000$^{ft^2}$ 20 inch nozzle spacing			
			4	5	6	8	10	12	15	20	2	3	4	5
015	15	0.09	6.7	5.3	4.5	3.3	2.7	2.2	1.8	1.3	0.31	0.20	0.15	0.12
	20	0.11	8.2	6.5	5.4	4.1	3.3	2.7	2.2	1.6	0.38	0.25	0.19	0.15
	30	0.13	9.7	7.7	6.4	4.8	3.9	3.2	2.6	1.9	0.44	0.30	0.22	0.18
	40	**0.15**	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
02	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	40	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
025	15	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	20	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	30	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	40	**0.25**	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
03	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	40	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	40	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
05	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	40	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
06	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	40	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
08	15	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	20	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	40	**0.80**	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
10	15	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	20	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	40	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
15	15	0.92	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	3.14	2.09	1.57	1.25
	20	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	40	**1.50**	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
20	15	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	20	1.41	105	83.8	69.8	52.3	41.9	34.9	27.9	20.9	4.81	3.21	2.40	1.92
	30	1.73	128	103	85.6	64.2	51.4	42.8	34.3	25.7	5.90	3.93	2.95	2.36
	40	**2.00**	149	119	99.0	74.3	59.4	49.5	39.6	29.7	6.82	4.55	3.41	2.73
	50	2.24	166	133	111	83.2	66.5	55.4	44.4	33.3	7.64	5.09	3.82	3.06
	60	2.45	182	146	121	91.0	72.8	60.6	48.5	36.4	8.35	5.57	4.18	3.34

Features	
Common Use	Fertilizer
Pattern	Streams
Technology	Pre-Orifice
Material	Ceramic
Spray Angle	110° Equivalent
Pressure Range	15-60 PSI
Configuration	Tip, FastCap

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	–
Soil Applied	Excellent
Drift Control	Excellent

Part Numbers	
Tips 110°	FastCaps 110°
ESI-110015	FC-ESI-110015
ESI-11002	FC-ESI-11002
ESI-110025	FC-ESI-110025
ESI-11003	FC-ESI-11003
ESI-11004	FC-ESI-11004
ESI-11005	FC-ESI-11005
ESI-11006	FC-ESI-11006
–	FC-ESI-11008
–	FC-ESI-11010
–	FC-ESI-11015
–	FC-ESI-11020P

Replacement Cap Gasket	
22W11MF64	Flat seal (sizes 015-06)
65-BS205	O-ring (sizes 08-15)

Stream Spray Tips - Fanjet™ 0º

The 0-degree Fanjet regulates flow, then produces a straight stream pattern. Precision-molded in polyvinylidene fluoride (PVDF) for excellent resistance to acids and many agricultural chemicals.

- 0-degree nozzles provide a single jet of spray for streaming or injecting liquid fertilizer
- Precision-molded using chemically-resistant PVDF material
- Superior resistance to orifice wear compared to brass or stainless steel

Tip Size	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000ft² 20 inch nozzle spacing			
			4	5	6	8	10	12	15	20	2	3	4	5
02	15	0.12	8.9	7.1	5.9	4.5	3.6	3.0	2.4	1.8	0.41	0.27	0.20	0.16
	20	0.14	10.4	8.3	6.9	5.2	4.2	3.5	2.8	2.1	0.48	0.32	0.24	0.19
	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	40	**0.20**	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
03	15	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	20	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	40	**0.30**	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	15	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	20	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	40	**0.40**	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
05	15	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	30	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	40	**0.50**	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	50	0.56	41.6	33.3	27.7	20.8	16.6	13.9	11.1	8.3	1.91	1.27	0.95	0.76
	60	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
06	15	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	20	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	40	**0.60**	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
07	15	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	20	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	30	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	40	**0.70**	52.0	41.6	34.7	26.0	20.8	17.3	13.9	10.4	2.39	1.59	1.19	0.95
	50	0.78	57.9	46.3	38.6	29.0	23.2	19.3	15.4	11.6	2.66	1.77	1.33	1.06
	60	0.86	63.9	51.1	42.6	31.9	25.5	21.3	17.0	12.8	2.93	1.96	1.47	1.17
10	15	0.61	45.3	36.2	30.2	22.6	18.1	15.1	12.1	9.1	2.08	1.39	1.04	0.83
	20	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	30	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	40	**1.00**	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	50	1.12	83.2	66.5	55.4	41.6	33.3	27.7	22.2	16.6	3.82	2.55	1.91	1.53
	60	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
15	15	0.92	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	3.14	2.09	1.57	1.25
	20	1.06	78.7	63.0	52.5	39.4	31.5	26.2	21.0	15.7	3.61	2.41	1.81	1.45
	30	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	40	**1.50**	111	89.1	74.3	55.7	44.6	37.1	29.7	22.3	5.12	3.41	2.56	2.05
	50	1.68	125	99.8	83.2	62.4	49.9	41.6	33.3	24.9	5.73	3.82	2.86	2.29
	60	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
20	15	1.22	90.6	72.5	60.4	45.3	36.2	30.2	24.2	18.1	4.16	2.77	2.08	1.66
	20	1.41	105	83.8	69.8	52.3	41.9	34.9	27.9	20.9	4.81	3.21	2.40	1.92
	30	1.73	128	103	85.6	64.2	51.4	42.8	34.3	25.7	5.90	3.93	2.95	2.36
	40	**2.00**	149	119	99.0	74.3	59.4	49.5	39.6	29.7	6.82	4.55	3.41	2.73
	50	2.24	166	133	111	83.2	66.5	55.4	44.4	33.3	7.64	5.09	3.82	3.06
	60	2.45	182	146	121	91.0	72.8	60.6	48.5	36.4	8.35	5.57	4.18	3.34
30	15	1.84	137	109	91.1	68.3	54.6	45.5	36.4	27.3	6.27	4.18	3.14	2.51
	20	2.12	157	126	105	78.7	63.0	52.5	42.0	31.5	7.23	4.82	3.61	2.89
	30	2.60	193	154	129	96.5	77.2	64.4	51.5	38.6	8.87	5.91	4.43	3.55
	40	**3.00**	223	178	149	111	89.1	74.3	59.4	44.6	10.2	6.82	5.12	4.09
	50	3.35	249	199	166	124	99.5	82.9	66.3	49.7	11.4	7.62	5.71	4.57
	60	3.67	272	218	182	136	109	90.8	72.7	54.5	12.5	8.34	6.26	5.01

Features	
Common Use	Fertilizer
Pattern	Stream
Technology	Round Orifice
Material	PVDF
Spray Angle	0º
Pressure Range	15-60 PSI
Configuration	1/4" MNPT

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	–
Soil Applied	Very Good
Drift Control	Very Good

Part Numbers
Tips 0º
90A2CM02E00
90A2CM03E00
90A2CM04E00
90A2CM05E00
90A2CM06E00
90A2CM07E00
90A2CM10E00
90A2CM15E00
90A2CM20E00
90A2CM30E00

Flow Regulating Discs – DC & Ceramic AMT 0º

DC – Flow Regulating Disc

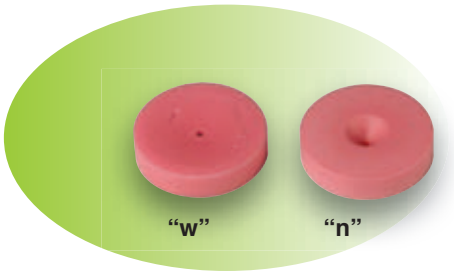
The Hypro® DC regulates flow and produces a straight stream pattern. Precision-molded in polyacetal.

Disc	US Gallon/Min PSI										
	10	15	20	25	30	35	40	60	80	100	150
30-DC-00	0	0	0	0	0	0	0	0	0	0	0
30-DC010	0.008	0.010	0.011	0.013	0.014	0.015	0.016	0.020	0.023	0.025	0.031
30-DC018	0.030	0.037	0.042	0.047	0.052	0.056	0.060	0.073	0.085	0.095	0.116
30-DC023	0.038	0.047	0.054	0.060	0.066	0.071	0.076	0.093	0.107	0.120	0.147
30-DC-01	0.057	0.070	0.081	0.090	0.099	0.107	0.114	0.140	0.161	0.180	0.221
30-DC-015	0.078	0.096	0.110	0.123	0.135	0.146	0.156	0.191	0.221	0.247	0.302
30-DC-02	0.105	0.129	0.148	0.166	0.182	0.196	0.210	0.257	0.297	0.332	0.407
30-DC-03	0.133	0.163	0.188	0.210	0.230	0.249	0.266	0.326	0.376	0.421	0.515
30-DC-035	0.175	0.214	0.247	0.277	0.303	0.327	0.350	0.429	0.495	0.553	0.678
30-DC-04	0.242	0.296	0.342	0.383	0.419	0.453	0.484	0.593	0.684	0.765	0.937
30-DC-05	0.392	0.480	0.554	0.620	0.679	0.733	0.784	0.960	1.11	1.24	1.52
30-DC-06	0.570	0.698	0.806	0.901	0.987	1.07	1.14	1.40	1.61	1.80	2.21
30-DC-07	0.760	0.931	1.07	1.20	1.32	1.42	1.52	1.86	2.15	2.40	2.94
30-DC-08	0.960	1.18	1.36	1.52	1.66	1.80	1.92	2.35	2.72	3.04	3.72
30-DC-10	1.55	1.90	2.19	2.45	2.68	2.90	3.10	3.80	4.38	4.90	6.00
30-DC-12	2.20	2.69	3.11	3.48	3.81	4.12	4.40	5.39	6.22	6.96	8.52

Features	
Common Use	Fertilizer
Pattern	Stream
Technology	Round Orifice
Material	Polyacetal
Spray Angle	0º
Pressure Range	10-150 PSI
Configuration	Disc

Application Selection Guide	
Foliar Contact	–
Foliar Systemiic	–
Soil Applied	Very Good
Drift Control	Very Good

Part Numbers
Tips
30-DC-00
30-DC010
30-DC018
30-DC023
30-DC-01
30-DC-015
30-DC-02
30-DC-03
30-DC-035
30-DC-04
30-DC-05
30-DC-06
30-DC-07
30-DC-08
30-DC-10
30-DC-12



AMT – Ceramic Flow Regulating Disc

The Albuz® ceramic disc regulates flow and produces a straight stream pattern. Precision-molded in ceramic. Turning the disc over provides a different flow.

Disc	US Gallon/Min PSI													
	10	15	20	25	30	35	40	60	80	100	150	200	300	725
AMT-15007 (n)	0.063	0.077	0.088	0.099	0.108	0.117	0.125	0.153	0.177	0.198	0.242	0.280	0.342	0.532
AMT-15007 (w)	0.064	0.078	0.091	0.101	0.111	0.120	0.128	0.157	0.181	0.202	0.248	0.286	0.351	0.545
AMT-15008 (n)	0.066	0.080	0.093	0.104	0.113	0.123	0.131	0.160	0.185	0.207	0.254	0.293	0.359	0.558
AMT-15008 (w)	0.083	0.101	0.117	0.130	0.143	0.154	0.165	0.202	0.233	0.261	0.320	0.369	0.452	0.702
AMT-15010 (n)	0.099	0.121	0.140	0.157	0.171	0.185	0.198	0.242	0.280	0.313	0.383	0.443	0.542	0.843
AMT-15010 (w)	0.139	0.170	0.197	0.220	0.241	0.260	0.278	0.340	0.393	0.440	0.538	0.622	0.761	1.18
AMT-15012 (n)	0.144	0.176	0.203	0.227	0.249	0.268	0.287	0.352	0.406	0.454	0.556	0.642	0.786	1.22
AMT-15012 (w)	0.174	0.213	0.246	0.275	0.301	0.326	0.348	0.426	0.492	0.550	0.674	0.778	0.953	1.48
AMT-15015 (n)	0.217	0.265	0.306	0.342	0.375	0.405	0.433	0.530	0.612	0.685	0.839	0.968	1.19	1.84
AMT-15015 (w)	0.287	0.351	0.405	0.453	0.496	0.536	0.573	0.702	0.810	0.906	1.11	1.28	1.57	2.44
AMT-15018 (n)	0.302	0.370	0.427	0.478	0.523	0.565	0.604	0.740	0.854	0.955	1.17	1.35	1.65	2.57
AMT-15020 (n)	0.375	0.459	0.530	0.593	0.650	0.702	0.750	0.919	1.06	1.19	1.45	1.68	2.05	3.19
AMT-15018 (w)	0.388	0.475	0.548	0.613	0.671	0.725	0.775	0.949	1.10	1.23	1.50	1.73	2.12	3.30
AMT-15020 (w)	0.472	0.577	0.667	0.746	0.817	0.882	0.943	1.15	1.33	1.49	1.83	2.11	2.58	4.01
AMT-15023 (n)	0.485	0.594	0.686	0.767	0.840	0.907	0.970	1.19	1.37	1.53	1.88	2.17	2.66	4.13
AMT-15023 (w)	0.605	0.741	0.856	0.957	1.05	1.13	1.21	1.48	1.71	1.91	2.34	2.71	3.31	5.15

Part Numbers
Tips
AMT-15007
AMT-15008
AMT-15010
AMT-15012
AMT-15015
AMT-15018
AMT-15020
AMT-15023

Features	
Common Use	Fertilizer
Pattern	Stream
Technology	Round Orifice
Material	Ceramic
Spray Angle	0º
Pressure Range	10-725 PSI
Configuration	Disc

Application Selection Guide	
Foliar Contact	–
Foliar Systemiic	–
Soil Applied	Very Good
Drift Control	Very Good

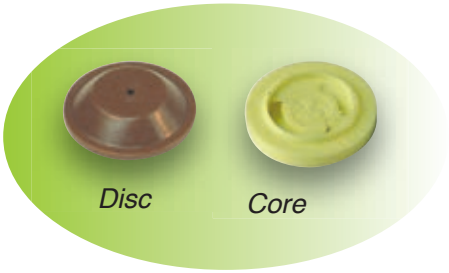
w - Numbers can be read on face of disc when installed in cap
n - Numbers on disc cannot be read when installed in cap
Photos above show the disc exit side.

Banding and Directed Spray Tips

Band spraying is when strips are treated, either on the planted rows or between them on the unplanted gaps. The width that each tip sprays is the width of the treated band divided by the number of tips spraying into that band.

- Even pattern tips are designed to uniformly apply spray across the width of the band. This means the edges of the pattern are not designed to overlap with any neighboring pattern.
- Directed spraying is when one or more tips are aimed specifically at a treatment zone on a plant. These can vary from two tips over a single row of edible beans to 20 or more tips on an air-blast sprayer in an apple orchard.
- Air-induced nozzles are capable of providing more on-target deposition and less drift.
- Tip selection, spray method, and sprayer adjustment can be used in an integrated approach to minimize the 'big three wastes' of drift, blow-through and misdirected sprays.
- Consult the Technical Information section for details on tip spacing and application rate calculations.

Hollow Cone Spray Tips – SwirlTip™ Disc & Cores 25º-110º



The Hypro® SwirlTip™ disc and core hollow-cone spray tips produce finely atomized droplets in a hollow-cone pattern.

Disc	Core	Spray Angle at 40 PSI	Color Disc/Core	US Gallon/Min PSI 10	20	30	40	60	80	100	150
30-DC-01	30-CR-13	50	Gray/Red	-	-	0.06	0.07	0.08	0.09	0.10	0.13
30-DC-015	30-CR-13	55	Black/Red	-	-	0.06	0.07	0.09	0.10	0.11	0.14
30-DC-02	30-CR-13	65	Brown/Red	-	0.06	0.07	0.08	0.10	0.12	0.13	0.16
30-DC-03	30-CR-13	70	Orange/Red	-	0.06	0.08	0.09	0.11	0.12	0.14	0.17
30-DC-04	30-CR-13	80	Red/Red	0.06	0.08	0.10	0.12	0.14	0.17	0.19	0.23
30-DC-01	30-CR-23	45	Gray/LightBlue	-	-	0.06	0.07	0.09	0.10	0.11	0.14
30-DC-015	30-CR-23	50	Black/LightBlue	-	-	0.07	0.09	0.10	0.12	0.13	0.16
30-DC-02	30-CR-23	70	Brown/LightBlue	-	0.08	0.09	0.11	0.13	0.15	0.17	0.21
30-DC-03	30-CR-23	70	Orange/LightBlue	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.22
30-DC-04	30-CR-23	80	Red/LightBlue	0.08	0.11	0.13	0.15	0.19	0.22	0.24	0.30
30-DC-05	30-CR-23	90	Blue/LightBlue	0.09	0.13	0.16	0.18	0.22	0.25	0.28	0.35
30-DC-06	30-CR-23	90	Yellow/LightBlue	0.10	0.15	0.18	0.21	0.25	0.29	0.33	0.40
30-DC-01	30-CR-25	25	Gray/Yellow	-	-	0.09	0.10	0.12	0.14	0.16	0.19
30-DC-015	30-CR-25	40	Black/Yellow	-	-	0.11	0.13	0.16	0.19	0.21	0.26
30-DC-02	30-CR-25	50	Brown/Yellow	-	0.11	0.13	0.16	0.19	0.22	0.25	0.30
30-DC-03	30-CR-25	60	Orange/Yellow	0.09	0.13	0.16	0.19	0.23	0.27	0.30	0.36
30-DC-04	30-CR-25	75	Red/Yellow	0.14	0.19	0.24	0.28	0.34	0.39	0.43	0.53
30-DC-05	30-CR-25	80	Blue/Yellow	0.18	0.25	0.30	0.35	0.43	0.49	0.55	0.68
30-DC-06	30-CR-25	85	Yellow/Yellow	0.23	0.32	0.39	0.45	0.55	0.64	0.71	0.87
30-DC-07	30-CR-25	90	Green/Yellow	0.25	0.35	0.43	0.50	0.61	0.71	0.79	0.97
30-DC -08	30-CR-25	95	White/Yellow	0.30	0.42	0.52	0.60	0.73	0.85	0.95	1.16
30-DC-10	30-CR-25	100	LimeGreen/Yellow	0.38	0.53	0.65	0.75	0.92	1.06	1.19	1.45
30-DC-12	30-CR-25	110	RoyalBlue/Yellow	0.46	0.65	0.80	0.93	1.13	1.31	1.46	1.79
30-DC-01	30-CR-45	25	Gray/Green	-	-	-	0.12	0.15	0.17	0.19	0.23
30-DC-015	30-CR-45	35	Black/Green	-	-	0.14	0.16	0.20	0.23	0.25	0.31
30-DC-02	30-CR-45	45	Brown/Green	-	0.14	0.17	0.20	0.24	0.28	0.32	0.39
30-DC-03	30-CR-45	55	Orange/Green	-	0.16	0.20	0.23	0.28	0.32	0.36	0.44
30-DC-04	30-CR-45	70	Red/Green	0.18	0.25	0.30	0.35	0.43	0.49	0.55	0.68
30-DC-05	30-CR-45	75	Blue/Green	0.23	0.32	0.39	0.45	0.55	0.64	0.71	0.87
30-DC-06	30-CR-45	80	Yellow/Green	0.29	0.41	0.50	0.58	0.70	0.81	0.91	1.11
30-DC-07	30-CR-45	85	Green/Green	0.34	0.48	0.58	0.68	0.83	0.95	1.07	1.31
30-DC-08	30-CR-45	90	White/Green	0.41	0.58	0.71	0.83	1.01	1.17	1.30	1.60
30-DC-10	30-CR-45	95	LimeGreen/Green	0.55	0.78	0.95	1.10	1.35	1.56	1.74	2.13
30-DC-12	30-CR-45	100	RoyalBlue/Green	0.67	0.95	1.16	1.34	1.64	1.90	2.12	2.60

DC/CR Disc Core

	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	125 PSI	150 PSI
30-DC-01/30-CR-23	F	F	VF	VF	VF	VF	VF	VF	VF
30-DC-015/30-CR-23	F	F	VF	VF	VF	VF	VF	VF	VF
30-DC-02/30-CR-23	F	F	F	VF	VF	VF	VF	VF	VF
30-DC-03/30-CR-23	F	F	F	F	VF	VF	VF	VF	VF
30-DC-04/30-CR-23	F	F	F	F	F	F	VF	VF	VF
30-DC-05/30-CR-23	F	F	F	F	F	F	F	VF	VF
30-DC-06/30-CR-23	M	F	F	F	F	F	F	F	VF
30-DC-01/30-CR-25	F	F	F	VF	VF	VF	VF	VF	VF
30-DC-015/30-CR-25	F	F	F	F	VF	VF	VF	VF	VF
30-DC-02/30-CR-25	F	F	F	F	VF	VF	VF	VF	VF
30-DC-03/30-CR-25	F	F	F	F	F	VF	VF	VF	VF
30-DC-04/30-CR-25	M	F	F	F	F	F	VF	VF	VF
30-DC-05/30-CR-25	M	M	M	F	F	F	F	VF	VF
30-DC-06/30-CR-25	M	M	M	M	M	M	F	F	F
30-DC-07/30-CR-25	M	M	M	M	M	M	M	F	F
30-DC-08/30-CR-25	C	C	C	C	M	M	M	M	M
30-DC-10/30-CR-25	C	C	C	C	C	M	M	M	M
30-DC-01/30-CR-45	F	F	F	VF	VF	VF	VF	VF	VF
30-DC-015/30-CR-45	M	F	F	F	VF	VF	VF	VF	VF
30-DC-02/30-CR-45	M	M	F	F	F	VF	VF	VF	VF
30-DC-03/30-CR-45	M	M	M	F	F	F	VF	VF	VF
30-DC-04/30-CR-45	M	M	M	M	F	F	F	VF	VF
30-DC-05/30-CR-45	M	M	M	M	M	F	F	F	VF
30-DC-06/30-CR-45	C	M	M	M	M	M	M	F	F
30-DC-07/30-CR-45	C	C	M	M	M	M	M	M	F
30-DC-08/30-CR-45	C	C	C	M	M	M	M	M	M

Features	
Common Use	Plant Health
Pattern	Hollow Cone
Technology	Swirl
Material	Polyacetal
Spray Angle	25º - 110º
Pressure Range	10-150 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemiic	Good
Soil Applied	–
Drift Control	–

Part Numbers	
Discs	Cores
30-DC-01	30-CR-13
30-DC-015	30-CR-23
30-DC-02	30-CR-25
30-DC-03	30-CR-45
30-DC-04	–
30-DC-05	–
30-DC-06	–
30-DC-07	–
30-DC-08	–
30-DC-10	–
30-DC-12	–

Hollow Cone Spray Tips – Ceramic Discs & Cores 13º - 93º

Albuz® ceramic discs and cores are the longest lasting disc-core tips, making them ideal for abrasive agricultural and horticultural sprays. DCC/CRC tips will outlast stainless steel disc-core tips by up to 10 times and perform superbly at high pressures, common on many air-blast and directed sprayers.

DISC	Hollow Cone CORE	Flow Rate GPM at Pressure, PSI										Spray Angle Degrees Pressure, PSI		
		10	20	30	40	60	80	100	150	200	300	20	40	80
DCC-01	CRC-13	-	-	0.059	0.066	0.078	0.088	0.097	0.115	0.128	0.152	-	51	62
DCC-02	CRC-13	-	0.064	0.075	0.08	0.10	0.11	0.12	0.14	0.16	0.18	49	67	72
DCC-03	CRC-13	-	0.071	0.08	0.09	0.11	0.12	0.13	0.16	0.18	0.20	53	70	75
DCC-04	CRC-13	0.07	0.09	0.11	0.12	0.14	0.16	0.17	0.20	0.23	0.27	69	79	83
DCC-01	CRC-23	-	-	0.064	0.072	0.080	0.096	0.107	0.124	0.139	0.164	-	47	58
DCC-02	CRC-23	-	0.078	0.092	0.10	0.13	0.14	0.16	0.19	0.21	0.25	51	63	70
DCC-03	CRC-23	0.065	0.087	0.10	0.12	0.14	0.16	0.18	0.21	0.24	0.28	58	69	75
DCC-04	CRC-23	0.082	0.113	0.14	0.15	0.19	0.21	0.23	0.28	0.32	0.38	68	82	87
DCC-05	CRC-23	0.095	0.13	0.16	0.18	0.22	0.25	0.28	0.34	0.38	0.46	79	89	94
DCC-06	CRC-23	0.112	0.15	0.19	0.21	0.26	0.29	0.32	0.39	0.45	0.54	84	93	98
DCC-01	CRC-25	-	-	0.088	0.101	0.122	0.138	0.156	0.185	0.210	0.255	-	27	43
DCC-02	CRC-25	-	0.12	0.14	0.16	0.19	0.22	0.25	0.29	0.34	0.41	39	51	58
DCC-03	CRC-25	0.10	0.14	0.17	0.19	0.23	0.26	0.29	0.35	0.40	0.48	52	61	67
DCC-04	CRC-25	0.15	0.21	0.25	0.29	0.35	0.40	0.45	0.54	0.62	0.75	67	74	80
DCC-05	CRC-25	0.18	0.25	0.30	0.35	0.42	0.48	0.54	0.65	0.75	0.90	73	79	84
DCC-06	CRC-25	0.23	0.32	0.39	0.44	0.54	0.62	0.70	0.85	0.97	1.19	79	85	89
DCC-07	CRC-25	0.26	0.37	0.45	0.52	0.63	0.73	0.81	0.98	1.18	1.37	85	91	93
DCC-01	CRC-45	-	-	-	0.125	0.148	0.170	0.190	0.225	0.257	0.310	-	22	34
DCC-02	CRC-45	-	0.14	0.18	0.20	0.25	0.28	0.32	0.38	0.44	0.53	32	46	55
DCC-03	CRC-45	-	0.17	0.20	0.23	0.28	0.33	0.36	0.44	0.51	0.62	40	53	60
DCC-04	CRC-45	0.18	0.25	0.31	0.36	0.43	0.50	0.56	0.68	0.78	0.95	62	69	72
DCC-05	CRC-45	0.23	0.32	0.39	0.45	0.55	0.64	0.71	0.86	0.99	1.22	67	73	76
DCC-06	CRC-45	0.29	0.41	0.50	0.58	0.72	0.83	0.93	1.15	1.33	1.64	73	79	81
DCC-07	CRC-45	0.33	0.48	0.59	0.68	0.84	0.97	1.11	0.14	1.57	1.94	81	86	87
DCC-01	CRC-46	-	-	-	0.145	0.178	0.205	0.23	0.28	0.32	0.39	-	13	15
DCC-02	CRC-46	-	-	0.24	0.27	0.33	0.37	0.42	0.50	0.57	0.68	-	18	21
DCC-03	CRC-46	-	0.23	0.28	0.32	0.39	0.45	0.51	0.61	0.70	0.86	14	20	24
DCC-04	CRC-46	0.28	0.39	0.48	0.56	0.68	0.78	0.88	1.07	1.23	1.52	23	29	33
DCC-05	CRC-46	0.38	0.54	0.66	0.77	0.94	1.10	1.25	1.50	1.73	2.13	33	39	42
DCC-06	CRC-46	0.55	0.78	0.95	1.10	1.35	1.58	1.73	2.16	2.50	3.06	42	48	50
DCC-07	CRC-46	-	0.98	1.22	1.39	1.72	1.97	2.22	2.73	3.15	3.85	48	53	56

Features	
Common Use	Plant Heath
Pattern	Hollow Cone
Technology	Swirl
Material	Ceramic
Spray Angle	13º-93º
Pressure Range	10-300 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemiic	Good
Soil Applied	–
Drift Control	–

Part Numbers		
Discs	Cores	Caps (25 Pack)
DCC-01	CRC-13	CAP05-20
DCC-02	CRC-23	CAP05-20
DCC-03	CRC-45	CAP05-20
DCC-04	CRC-46	CAP05-20
DCC-05	–	CAP05-20
DCC-06	–	CAP05-20
DCC-07	–	CAP05-20

Hollow Cone Spray Tips – HCX 80º

The Hypro® Hollow-Cone spray tips are excellent for fungicide and insecticide application. The HCX produce finely atomized droplets in a hollow-cone, 80-degree pattern. Precision-molded in polyacetal.

Spray Tip	Flow Rate, GPM at Pressure, PSI											
	40	50	60	70	80	90	100	110	120	130	140	150
30HCX2	0.030	0.034	0.037	0.040	0.042	0.045	0.047	0.050	0.052	0.054	0.056	0.058
30HCX3	0.050	0.056	0.061	0.066	0.071	0.075	0.079	0.083	0.087	0.090	0.094	0.097
30HCX4	0.070	0.078	0.086	0.093	0.099	0.105	0.111	0.116	0.121	0.126	0.131	0.136
30HCX6	0.102	0.114	0.125	0.135	0.144	0.153	0.161	0.169	0.177	0.184	0.191	0.198
30HCX8	0.133	0.149	0.163	0.176	0.188	0.200	0.210	0.221	0.230	0.240	0.249	0.258
30HCX9	0.148	0.165	0.181	0.196	0.209	0.222	0.234	0.245	0.256	0.267	0.277	0.287
30HCX10	0.164	0.183	0.201	0.217	0.232	0.246	0.259	0.272	0.284	0.296	0.307	0.318
30HCX12	0.203	0.227	0.249	0.269	0.287	0.305	0.321	0.337	0.352	0.366	0.380	0.393
30HCX18	0.300	0.335	0.367	0.397	0.424	0.450	0.474	0.497	0.520	0.541	0.561	0.581

HCX 80° - Hollow Cone

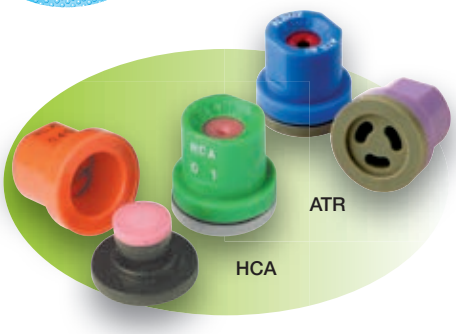
	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	125 PSI	150 PSI
30HCX2	VF	VF	VF	VF	VF	VF	VF	VF	VF
30HCX3	VF	VF	VF	VF	VF	VF	VF	VF	VF
30HCX4	F	F	VF	VF	VF	VF	VF	VF	VF
30HCX6	F	F	VF	VF	VF	VF	VF	VF	VF
30HCX8	F	F	F	VF	VF	VF	VF	VF	VF
30HCX9	F	F	F	F	F	VF	VF	VF	VF
30HCX10	F	F	F	F	F	F	VF	VF	VF
30HCX12	F	F	F	F	F	F	F	VF	VF
30HCX18	F	F	F	F	F	F	F	F	VF

Features	
Common Use	Plant Health
Pattern	Hollow Cone
Technology	Swirl
Material	Polyacetal
Spray Angle	80º
Pressure Range	40-150 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemiic	Good
Soil Applied	–
Drift Control	–

Part Numbers	
Tips 80º	Caps (25 Pack)
30HCX2	CAP04-20
30HCX3	CAP04-20
30HCX4	CAP04-20
30HCX6	CAP04-20
30HCX8	CAP04-20
30HCX9	CAP04-20
30HCX10	CAP04-20
30HCX12	CAP04-20
30HCX18	CAP04-20

Hollow Cone Tips – Ceramic ATR & HCA 80º



Hollow-Cone Tip (ATR)

The Albuz® hollow-cone ceramic spray tips produce finely atomized droplets in a hollow-cone, 80-degree pattern. Easily separated, two-piece construction for simple cleaning.

Hollow-Cone Tip (HCA)

The Albuz® hollow-cone, extra-long life ceramic spray tips produce finely atomized droplets in a hollow-cone, 80-degree pattern. Easily separated, two-piece construction for simple cleaning.

Spray Tip	Flow Rate, GPM at Pressure, PSI												
	40	50	60	70	80	90	100	120	150	200	250	300	350
ATR-WHITE	0.053	0.060	0.065	0.070	0.075	0.079	0.083	0.091	0.101	0.116	0.129	0.141	0.152
ATR-LILAC	0.071	0.079	0.087	0.093	0.099	0.105	0.111	0.121	0.134	0.154	0.171	0.187	0.201
ATR-BROWN	0.095	0.106	0.116	0.125	0.133	0.141	0.148	0.161	0.180	0.206	0.230	0.250	0.270
ATR-YELLOW	0.144	0.161	0.176	0.189	0.202	0.214	0.226	0.247	0.275	0.317	0.354	0.387	0.417
ATR-ORANGE	0.196	0.218	0.239	0.257	0.274	0.290	0.306	0.334	0.372	0.428	0.477	0.521	0.561
ATR-RED	0.275	0.306	0.333	0.359	0.382	0.404	0.425	0.463	0.515	0.591	0.657	0.716	0.771
ATR-GRAY	0.299	0.333	0.362	0.390	0.415	0.439	0.461	0.502	0.558	0.638	0.709	0.773	0.831
ATR-GREEN	0.356	0.395	0.430	0.463	0.493	0.521	0.547	0.596	0.662	0.758	0.842	0.918	0.987
ATR-BLACK	0.399	0.443	0.483	0.520	0.554	0.585	0.615	0.671	0.745	0.854	0.949	1.034	1.113
ATR-BLUE	0.488	0.542	0.591	0.636	0.678	0.716	0.753	0.821	0.913	1.046	1.163	1.268	1.364

Spray Tip	Flow Rate, GPM at Pressure, PSI												
	40	50	60	70	80	90	100	120	150	200	250	300	350
HCA-01	0.067	0.075	0.082	0.088	0.094	0.100	0.105	0.115	0.129	0.149	0.167	0.183	0.197
HCA-015	0.100	0.112	0.122	0.132	0.141	0.150	0.158	0.173	0.194	0.224	0.250	0.274	0.296
HCA-02	0.133	0.149	0.163	0.176	0.189	0.200	0.211	0.231	0.258	0.298	0.333	0.365	0.394
HCA-025	0.167	0.186	0.204	0.220	0.236	0.250	0.264	0.289	0.323	0.373	0.417	0.456	0.493
HCA-03	0.200	0.224	0.245	0.265	0.283	0.300	0.316	0.346	0.387	0.447	0.500	0.548	0.592
HCA-045	0.300	0.335	0.367	0.397	0.424	0.450	0.474	0.520	0.581	0.671	0.750	0.822	0.887

Standard pack available
4-pack available add prefix "4Pk-"

ATR 80° - Hollow Cone

	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	125 PSI	150 PSI	350 PSI
ATR-White	VF	VF	VF	VF	VF	VF	VF	VF	VF	VF
ATR-Lilac	VF	VF	VF	VF	VF	VF	VF	VF	VF	VF
ATR-Brown	VF	VF	VF	VF	VF	VF	VF	VF	VF	VF
ATR-Yellow	F	F	VF	VF	VF	VF	VF	VF	VF	VF
ATR-Orange	F	F	F	F	VF	VF	VF	VF	VF	VF
ATR-Red	F	F	F	F	F	F	VF	VF	VF	VF
ATR-Green	M	M	F	F	F	F	F	F	VF	VF
ATR-Blue	M	M	M	M	F	F	F	F	F	F

HCA 80º- Hollow Cone

	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	125 PSI	150 PSI	350 PSI
HCA-01	VF	VF	VF	VF	VF	VF	VF	VF	VF	VF
HCA-015	VF	VF	VF	VF	VF	VF	VF	VF	VF	VF
HCA-02	F	F	VF	VF	VF	VF	VF	VF	VF	VF
HCA-025	F	F	F	VF	VF	VF	VF	VF	VF	VF
HCA-03	F	F	F	F	F	VF	VF	VF	VF	VF
HCA-045	M	F	F	F	F	F	F	VF	VF	VF

Features	
Common Use	Plant Health
Pattern	Hollow Cone
Technology	Swirl
Material	Ceramic
Spray Angle	80º
Pressure Range	40-350 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemiic	Good
Soil Applied	–
Drift Control	–

Part Numbers		
ATR 80°	HCA 80°	Caps (25 Pack)
ATR-WHITE	HCA-01	CAP05-20
ATR-LILAC	HCA-015	CAP05-20
ATR-BROWN	HCA-02	CAP05-20
ATR-YELLOW	HCA-025	CAP05-20
ATR-ORANGE	HCA-03	CAP05-20
ATR-RED	HCA-045	CAP05-20
ATR-GRAY	-	CAP05-20
ATR-GREEN	-	CAP05-20
ATR-BLACK	-	CAP05-20
ATR-BLUE	-	CAP05-20

Packaged Part Numbers

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-HCA-01)

4 Tips per pack: Add prefix "4PK-"
(Ex. 4PK-ATR-WHITE)

Hollow Cone Tips – Ceramic TVI 80º

The Albuz® TVI drastically reduces the potential for spray drift in broadcast, directed, and air-blast applications. The air-induced hollow-cone pattern stays on target, saving chemical and reducing environmental impact.

- All ceramic orifice creates extremely long life
- Air-filled droplets control drift and reduce chemical waste

Spray Tip	Flow Rate, GPM at Pressure, PSI															
	70	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360
TVI-80005	0.066	0.071	0.079	0.087	0.094	0.100	0.106	0.112	0.117	0.122	0.127	0.132	0.137	0.141	0.146	0.150
TVI-800075	0.099	0.106	0.119	0.130	0.140	0.150	0.159	0.168	0.176	0.184	0.191	0.198	0.205	0.212	0.219	0.225
TVI-80015	0.198	0.212	0.237	0.260	0.281	0.300	0.318	0.335	0.352	0.367	0.382	0.397	0.411	0.424	0.437	0.450
TVI-8002	0.265	0.283	0.316	0.346	0.374	0.400	0.424	0.447	0.469	0.490	0.510	0.529	0.548	0.566	0.583	0.600
TVI-80025	0.331	0.354	0.395	0.433	0.468	0.500	0.530	0.559	0.586	0.612	0.637	0.661	0.685	0.707	0.729	0.750
TVI-8003	0.397	0.424	0.474	0.520	0.561	0.600	0.636	0.671	0.704	0.735	0.765	0.794	0.822	0.849	0.875	0.900

TVI 80° - Hollow Cone

	70 PSI	150 PSI	200 PSI
TVI-80015	XC	C	C
TVI-8002	XC	XC	C
TVI-80025	XC	XC	C

Features	
Common Use	Plant Health
Pattern	Hollow Cone
Technology	Air Induction
Material	Ceramic
Spray Angle	80º
Pressure Range	70-360 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good at High Pressure
Foliar Systemiic	Excellent
Soil Applied	–
Drift Control	Excellent

Part Numbers	
Tips 80º	Caps (25 Pack)
TVI-80005	CAP05-20
TVI-800075	CAP05-20
TVI-80015	CAP05-20
TVI-8002	CAP05-20
TVI-80025	CAP05-20
TVI-8003	CAP05-20

Flat Fan Spray Tips – Ceramic AVI & AXI 80º

AVI – 80º Air-Inducing Venturi Fan Spray Tip

The AVI 80º air-inducing fan pattern spray tip is ideal for use in directed spray applications and on air-blast sprayers. Research shows AVI spray tips can be used to deliver more spray on target with less loss to airborne drift and to the ground than conventional applications.

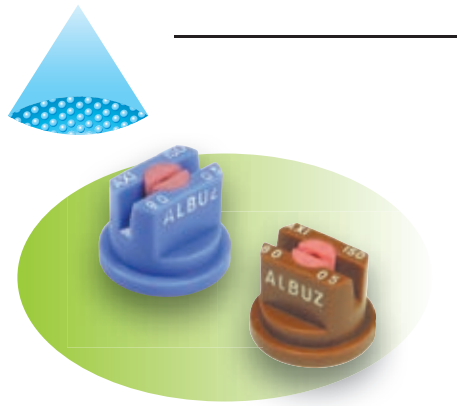
- Ceramic orifice for extra long life and accuracy
- Venturi design delivers more spray on-target
- Color coded for simple selection
- 110º fan model ideal for broadcast spraying (See page 135 for more info.)

Spray Tip	Flow Rate, GPM at Pressure, PSI												
	40	50	60	70	80	90	100	120	150	200	250	300	350
01	0.100	0.112	0.122	0.132	0.141	0.150	0.158	0.173	0.194	0.224	0.250	0.274	0.296
015	0.150	0.168	0.184	0.198	0.212	0.225	0.237	0.260	0.290	0.335	0.375	0.411	0.444
02	0.200	0.224	0.245	0.265	0.283	0.300	0.316	0.346	0.387	0.447	0.500	0.548	0.592
025	0.250	0.280	0.306	0.331	0.354	0.375	0.395	0.433	0.484	0.559	0.625	0.685	0.740
03	0.300	0.335	0.367	0.397	0.424	0.450	0.474	0.520	0.581	0.671	0.750	0.822	0.887
04	0.400	0.447	0.490	0.529	0.566	0.600	0.632	0.693	0.775	0.894	1.000	1.095	1.183

Features	
Common Use	Plant Health (Air Blast)
Pattern	Tapered Flat Fan
Technology	Air Induction
Material	Ceramic
Spray Angle	80º
Pressure Range	40-350 PSI
Configuration	Tip

Part Numbers	
Tips 80º	Caps (25 Pack)
AVI-8001	CAP01-01
AVI-80015	CAP01-015
AVI-8002	CAP01-02
AVI-80025	CAP01-025
AVI-8003	CAP01-03
AVI-8004	CAP01-04

Application Selection Guide	
Foliar Contact	Good
Foliar Systemiic	Excellent
Soil Applied	–
Drift Control	Excellent



AXI – 80º Fan Spray Tip

The AXI 80º extended range fan pattern tip can be used for directed applications of a variety of chemistries and products. They are well suited to applications where smaller droplets are favored. They are equipped with a ceramic orifice to provide long-lasting performance.

- Ceramic orifice for extra long life
- Simple, reliable design
- Color coded for simple selection
- FastCap® includes tip, cap and gasket
- 110º fan model ideal for broadcast spraying (See page 142 for more info.)

Spray Tip	Flow Rate, GPM at Pressure, PSI												
	40	50	60	70	80	90	100	120	150	200	250	300	350
01	0.100	0.112	0.122	0.132	0.141	0.150	0.158	0.173	0.194	0.224	0.250	0.274	0.296
015	0.150	0.168	0.184	0.198	0.212	0.225	0.237	0.260	0.290	0.335	0.375	0.411	0.444
02	0.200	0.224	0.245	0.265	0.283	0.300	0.316	0.346	0.387	0.447	0.500	0.548	0.592
025	0.250	0.280	0.306	0.331	0.354	0.375	0.395	0.433	0.484	0.559	0.625	0.685	0.740
03	0.300	0.335	0.367	0.397	0.424	0.450	0.474	0.520	0.581	0.671	0.750	0.822	0.887
04	0.400	0.447	0.490	0.529	0.566	0.600	0.632	0.693	0.775	0.894	1.000	1.095	1.183
05	0.500	0.559	0.612	0.661	0.707	0.750	0.791	0.866	0.968	1.118	1.250	1.369	1.479
06	0.600	0.671	0.735	0.794	0.849	0.900	0.949	1.039	1.162	1.342	1.500	1.643	1.775

Features	
Common Use	Plant Health (Air Blast)
Pattern	Tapered Flat Fan
Technology	Elliptical Orifice
Material	Ceramic
Spray Angle	80º
Pressure Range	40-350 PSI
Configuration	Tip, Fast Cap

Part Numbers	
Tips 80º	FastCaps 80º
AXI-80015	FC-AXI-80015
AXI-8002	FC-AXI-8002
AXI-8003	FC-AXI-8003
AXI-8004	FC-AXI-8004
AXI-8005	FC-AXI-8005
AXI-8006	FC-AXI-8006

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemiic	Good
Soil Applied	–
Drift Control	–

Full Cone Directed Spray Tips – FCX 80°

The FCX full-cone spray tip is especially suited for Plant Growth Regulator applications like tobacco sucker control, and in hand-held spot sprayers.

- Full cone pattern to give comprehensive coverage
- 80° spray angle makes the product easy to direct for spot applications

Tip Size	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000 ft² 20 inch nozzle spacing			
			4	5	6	8	10	12	15	20	2	3	4	5
02	15	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	20	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	30	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	40	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	50	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	60	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	70	0.43	31.9	25.5	21.3	16.0	12.8	10.6	8.5	6.4	1.47	0.98	0.73	0.59
	80	0.46	34.2	27.3	22.8	17.1	13.7	11.4	9.1	6.8	1.57	1.05	0.78	0.63
	100	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	125	0.58	43.1	34.5	28.7	21.5	17.2	14.4	11.5	8.6	1.98	1.32	0.99	0.79
	150	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86
03	15	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	20	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	30	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	40	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	50	0.55	40.8	32.7	27.2	20.4	16.3	13.6	10.9	8.2	1.88	1.25	0.94	0.75
	60	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	70	0.65	48.3	38.6	32.2	24.1	19.3	16.1	12.9	9.7	2.22	1.48	1.11	0.89
	80	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	100	0.77	57.2	45.7	38.1	28.6	22.9	19.1	15.2	11.4	2.63	1.75	1.31	1.05
	125	0.87	64.6	51.7	43.1	32.3	25.8	21.5	17.2	12.9	2.97	1.98	1.48	1.19
	150	0.95	70.5	56.4	47.0	35.3	28.2	23.5	18.8	14.1	3.24	2.16	1.62	1.30
04	15	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	20	0.46	34.2	27.3	22.8	17.1	13.7	11.4	9.1	6.8	1.57	1.05	0.78	0.63
	30	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	40	0.65	48.3	38.6	32.2	24.1	19.3	16.1	12.9	9.7	2.22	1.48	1.11	0.89
	50	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
	60	0.80	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	70	0.86	63.9	51.1	42.6	31.9	25.5	21.3	17.0	12.8	2.93	1.96	1.47	1.17
	80	0.92	68.3	54.6	45.5	34.2	27.3	22.8	18.2	13.7	3.14	2.09	1.57	1.25
	100	1.03	76.5	61.2	51.0	38.2	30.6	25.5	20.4	15.3	3.51	2.34	1.76	1.40
	125	1.15	85.4	68.3	56.9	42.7	34.2	28.5	22.8	17.1	3.92	2.61	1.96	1.57
	150	1.26	93.6	74.8	62.4	46.8	37.4	31.2	24.9	18.7	4.30	2.86	2.15	1.72
05	15	0.50	37.1	29.7	24.8	18.6	14.9	12.4	9.9	7.4	1.71	1.14	0.85	0.68
	20	0.58	43.1	34.5	28.7	21.5	17.2	14.4	11.5	8.6	1.98	1.32	0.99	0.79
	30	0.71	52.7	42.2	35.1	26.4	21.1	17.6	14.1	10.5	2.42	1.61	1.21	0.97
	40	0.82	60.9	48.7	40.6	30.4	24.4	20.3	16.2	12.2	2.80	1.86	1.40	1.12
	50	0.91	67.6	54.1	45.0	33.8	27.0	22.5	18.0	13.5	3.10	2.07	1.55	1.24
	60	1.00	74.3	59.4	49.5	37.1	29.7	24.8	19.8	14.9	3.41	2.27	1.71	1.36
	70	1.08	80.2	64.2	53.5	40.1	32.1	26.7	21.4	16.0	3.68	2.46	1.84	1.47
	80	1.15	85.4	68.3	56.9	42.7	34.2	28.5	22.8	17.1	3.92	2.61	1.96	1.57
	100	1.29	95.8	76.6	63.9	47.9	38.3	31.9	25.5	19.2	4.40	2.93	2.20	1.76
	125	1.44	107	85.5	71.3	53.5	42.8	35.6	28.5	21.4	4.91	3.27	2.46	1.96
	150	1.58	117	93.9	78.2	58.7	46.9	39.1	31.3	23.5	5.39	3.59	2.69	2.16
06	15	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	20	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	30	0.85	63.1	50.5	42.1	31.6	25.2	21.0	16.8	12.6	2.90	1.93	1.45	1.16
	40	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
	50	1.10	81.7	65.3	54.5	40.8	32.7	27.2	21.8	16.3	3.75	2.50	1.88	1.50
	60	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	70	1.30	96.5	77.2	64.4	48.3	38.6	32.2	25.7	19.3	4.43	2.96	2.22	1.77
	80	1.39	103	82.6	68.8	51.6	41.3	34.4	27.5	20.6	4.74	3.16	2.37	1.90
	100	1.55	115	92.1	76.7	57.5	46.0	38.4	30.7	23.0	5.29	3.52	2.64	2.11
	125	1.73	128	103	85.6	64.2	51.4	42.8	34.3	25.7	5.90	3.93	2.95	2.36
	150	1.90	141	113	94.1	70.5	56.4	47.0	37.6	28.2	6.48	4.32	3.24	2.59

Features	
Common Use	Plant Health
Pattern	Full Cone
Technology	Swirl
Material	Polyacetal
Spray Angle	80°
Pressure Range	15-150 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Very Good
Soil Applied	–
Drift Control	–

Part Numbers	
Tips 80°	Caps (25 Pack)
30FCX02	CAP04-02
30FCX03	CAP04-03
30FCX04	CAP04-04
30FCX05	CAP04-05
30FCX06	CAP04-06

Full Cone Spray Tips – Ceramic Discs & Cores 14º - 71º

Albuz® Ceramic discs and cores are the longest lasting disc-core tips, making them ideal for abrasive agricultural and horticultural sprays. DCC/CRC tips will outlast stainless steel disc-core tips by up to 10 times and perform superbly at high pressures common on many air-blast and directed sprayers.

DISC	Full Cone CORE	Flow Rate GPM at Pressure, PSI										Spray Angle Degrees Pressure, PSI		
		10	20	30	40	60	80	100	150	200	300	20	40	80
DCC-01	CRC-31	0.08	0.11	0.13	0.15	0.18	0.20	0.23	0.27	0.31	0.37	49	47	43
DCC-02	CRC-31	0.12	0.16	0.19	0.22	0.26	0.30	0.33	0.40	0.45	0.55	62	63	61
DCC-03	CRC-31	0.13	0.18	0.21	0.24	0.29	0.33	0.37	0.44	0.50	0.6	63	65	63
DCC-01	CRC-35	0.08	0.11	0.13	0.14	0.17	0.2	0.22	0.26	0.29	0.35	19	23	26
DCC-02	CRC-35	0.14	0.18	0.24	0.25	0.3	0.34	0.37	0.45	0.51	0.60	40	44	47
DCC-03	CRC-35	0.16	0.22	0.26	0.30	0.36	0.41	0.45	0.55	0.62	0.74	45	50	52
DCC-04	CRC-35	0.27	0.37	0.44	0.50	0.60	0.70	0.79	0.93	1.10	1.30	68	70	71
DCC-05	CRC-35	0.34	0.48	0.58	0.66	0.8	0.92	1.00	1.20	1.40	1.70	67	69	71
DCC-02	CRC-56	-	-	0.21	0.25	0.3	0.35	0.39	0.47	5.50	0.67	-	14	17
DCC-03	CRC-56	-	-	0.29	0.34	0.41	0.48	0.53	0.65	7.50	0.92	-	20	23
DCC-04	CRC-56	-	0.39	0.48	0.55	0.67	0.78	0.87	1.10	1.20	1.50	20	26	29
DCC-05	CRC-56	0.38	0.54	0.66	0.76	0.93	1.10	1.20	1.50	1.70	2.10	26	32	34
DCC-06	CRC-56	0.55	0.78	0.95	1.10	1.40	1.60	1.70	2.10	2.50	3.00	34	39	41
DCC-07	CRC-56	0.76	1.10	1.30	1.50	1.90	2.20	2.40	2.90	3.40	4.20	45	52	54

Features	
Common Use	Plant Health
Pattern	Full Cone
Technology	Swirl
Material	Ceramic
Spray Angle	14º-71º
Pressure Range	10-300 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemiic	Very Good
Soil Applied	–
Drift Control	–

Part Numbers		
Discs	Cores	Caps (25 Pack)
DCC-01	CRC-31	CAP05-20
DCC-02	CRC-35	CAP05-20
DCC-03	CRC-56	CAP05-20
DCC-04	–	CAP05-20
DCC-05	–	CAP05-20
DCC-06	–	CAP05-20
DCC-07	–	CAP05-20

Flat Fan Spray Tips – Even & Off-Center 80º

E – FanTip Even Flat Fan Polyacetal Tip

The Hypro® Even Flat Fan spray tip is an excellent choice for banding and directed post applications. Its even spray pattern should be used when treating bands.

Tip Size	Droplet Size 80º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 10 inch band MPH				Gallons per Acre 12 inch band MPH				Gallons per Acre 15 inch band MPH			
				4	5	6	7	4	5	6	7	4	5	6	7
01	F	30	0.09	13.4	10.7	8.9	7.6	11.1	8.9	7.4	6.4	8.9	7.1	5.9	5.1
	F	40	0.10	14.9	11.9	9.9	8.5	12.4	9.9	8.3	7.1	9.9	7.9	6.6	5.7
	F	50	0.11	16.3	13.1	10.9	9.3	13.6	10.9	9.1	7.8	10.9	8.7	7.3	6.2
	F	60	0.12	17.8	14.3	11.9	10.2	14.9	11.9	9.9	8.5	11.9	9.5	7.9	6.8
015	M	30	0.13	19.3	15.4	12.9	11.0	16.1	12.9	10.7	9.2	12.9	10.3	8.6	7.4
	F	40	0.15	22.3	17.8	14.9	12.7	18.6	14.9	12.4	10.6	14.9	11.9	9.9	8.5
	F	50	0.17	25.2	20.2	16.8	14.4	21.0	16.8	14.0	12.0	16.8	13.5	11.2	9.6
	F	60	0.18	26.7	21.4	17.8	15.3	22.3	17.8	14.9	12.7	17.8	14.3	11.9	10.2
02	M	30	0.17	25.2	20.2	16.8	14.4	21.0	16.8	14.0	12.0	16.8	13.5	11.2	9.6
	F	40	0.20	29.7	23.8	19.8	17.0	24.8	19.8	16.5	14.1	19.8	15.8	13.2	11.3
	F	50	0.22	32.7	26.1	21.8	18.7	27.2	21.8	18.2	15.6	21.8	17.4	14.5	12.4
	F	60	0.24	35.6	28.5	23.8	20.4	29.7	23.8	19.8	17.0	23.8	19.0	15.8	13.6
03	C	30	0.26	38.6	30.9	25.7	22.1	32.2	25.7	21.5	18.4	25.7	20.6	17.2	14.7
	M	40	0.30	44.6	35.6	29.7	25.5	37.1	29.7	24.8	21.2	29.7	23.8	19.8	17.0
	M	50	0.34	50.5	40.4	33.7	28.9	42.1	33.7	28.1	24.0	33.7	26.9	22.4	19.2
	F	60	0.37	54.9	44.0	36.6	31.4	45.8	36.6	30.5	26.2	36.6	29.3	24.4	20.9
04	C	30	0.35	52.0	41.6	34.7	29.7	43.3	34.7	28.9	24.8	34.7	27.7	23.1	19.8
	M	40	0.40	59.4	47.5	39.6	33.9	49.5	39.6	33.0	28.3	39.6	31.7	26.4	22.6
	M	50	0.45	66.8	53.5	44.6	38.2	55.7	44.6	37.1	31.8	44.6	35.6	29.7	25.5
	M	60	0.49	72.8	58.2	48.5	41.6	60.6	48.5	40.4	34.7	48.5	38.8	32.3	27.7
05	C	30	0.43	63.9	51.1	42.6	36.5	53.2	42.6	35.5	30.4	42.6	34.1	28.4	24.3
	M	40	0.50	74.3	59.4	49.5	42.4	61.9	49.5	41.3	35.4	49.5	39.6	33.0	28.3
	M	50	0.56	83.2	66.5	55.4	47.5	69.3	55.4	46.2	39.6	55.4	44.4	37.0	31.7
	M	60	0.61	90.6	72.5	60.4	51.8	75.5	60.4	50.3	43.1	60.4	48.3	40.3	34.5
06	C	30	0.52	77.2	61.8	51.5	44.1	64.4	51.5	42.9	36.8	51.5	41.2	34.3	29.4
	C	40	0.60	89.1	71.3	59.4	50.9	74.3	59.4	49.5	42.4	59.4	47.5	39.6	33.9
	M	50	0.67	99.5	79.6	66.3	56.9	82.9	66.3	55.3	47.4	66.3	53.1	44.2	37.9
	M	60	0.73	108	86.7	72.3	61.9	90.3	72.3	60.2	51.6	72.3	57.8	48.2	41.3
08	VC	30	0.69	102	82.0	68.3	58.6	85.4	68.3	56.9	48.8	68.3	54.6	45.5	39.0
	C	40	0.80	119	95.0	79.2	67.9	99.0	79.2	66.0	56.6	79.2	63.4	52.8	45.3
	C	50	0.89	132	106	88.1	75.5	110	88.1	73.4	62.9	88.1	70.5	58.7	50.3
	C	60	0.98	146	116	97.0	83.2	121	97.0	80.9	69.3	97.0	77.6	64.7	55.4

Features	
Common Use	Weeds
Pattern	Even Flat Fan
Technology	Elliptical Orifice
Material	Polyacetal
Spray Angle	80º
Pressure Range	30-60 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Very Good
Foliar Systemic	Very Good
Soil Applied	Very Good
Drift Control	–

Part Numbers	
Tips 80º	Caps (25 Pack)
E80-01	CAP00-01
E80-015	CAP00-015
E80-02	CAP00-02
E80-03	CAP00-03
E80-04	CAP00-04
E80-05	CAP00-05
E80-06	CAP00-06
E80-08	CAP00-08

Packaged Part Numbers		
25 Tips per bag: Add prefix "25BG-" (Ex. 25BG-E80-02	4 Tips per pack: Add prefix "4PK-" (Ex. 4PK-E80-015)	6 FastCaps per pack: Add prefix "6PK-" (Ex. 6PK-015E80)

OC – Off-Center Flat Fan Brass Tip

The Hypro® OC flat fan off-center brass spray tip is an economical tip for spraying around obstacles or defining the edge of a spray swath.

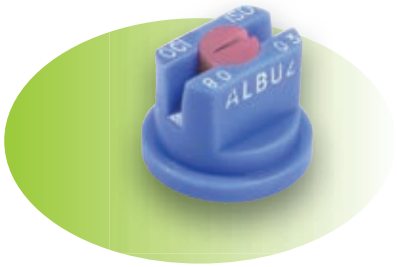
Tip Size	Droplet Size 80º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH								GAL/1000FT² 20 inch nozzle spacing			
				4	5	6	8	10	12	15	20	2	3	4	5
02	M	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
03	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	F	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	C	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
06	C	30	0.52	38.6	30.9	25.7	19.3	15.4	12.9	10.3	7.7	1.77	1.18	0.89	0.71
	C	40	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	M	50	0.67	49.7	39.8	33.2	24.9	19.9	16.6	13.3	9.9	2.28	1.52	1.14	0.91
	M	60	0.73	54.2	43.4	36.1	27.1	21.7	18.1	14.5	10.8	2.49	1.66	1.24	1.00
08	C	30	0.69	51.2	41.0	34.2	25.6	20.5	17.1	13.7	10.2	2.35	1.57	1.18	0.94
	C	40	0.80	59.4	47.5	39.6	29.7	23.8	19.8	15.8	11.9	2.73	1.82	1.36	1.09
	C	50	0.89	66.1	52.9	44.1	33.0	26.4	22.0	17.6	13.2	3.03	2.02	1.52	1.21
	M	60	0.98	72.8	58.2	48.5	36.4	29.1	24.3	19.4	14.6	3.34	2.23	1.67	1.34
12	C	30	1.04	77.2	61.8	51.5	38.6	30.9	25.7	20.6	15.4	3.55	2.36	1.77	1.42
	C	40	1.20	89.1	71.3	59.4	44.6	35.6	29.7	23.8	17.8	4.09	2.73	2.05	1.64
	C	50	1.34	99.5	79.6	66.3	49.7	39.8	33.2	26.5	19.9	4.57	3.05	2.28	1.83
	C	60	1.47	109	87.3	72.8	54.6	43.7	36.4	29.1	21.8	5.01	3.34	2.51	2.01
16	VC	30	1.39	103	82.6	68.8	51.6	41.3	34.4	27.5	20.6	4.74	3.16	2.37	1.90
	C	40	1.60	119	95.0	79.2	59.4	47.5	39.6	31.7	23.8	5.46	3.64	2.73	2.18
	C	50	1.79	133	106	88.6	66.5	53.2	44.3	35.4	26.6	6.10	4.07	3.05	2.44
	C	60	1.96	146	116	97.0	72.8	58.2	48.5	38.8	29.1	6.68	4.46	3.34	2.67

Features	
Common Use	Unspecialized
Pattern	Off-Center Fan
Technology	Elliptical Orifice
Material	Brass
Spray Angle	80º
Pressure Range	30-60 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers	
Tips 80º	Caps (25 Pack)
280C02	CAP00-20
280C03	CAP00-20
280C04	CAP00-20
280C06	CAP00-20
280C08	CAP00-20
280C12	CAP00-20
280C16	CAP00-20

Flat Fan Spray Tips – Ceramic Off-Center 80º



OCI – Off-Center Flat Fan Ceramic Tip

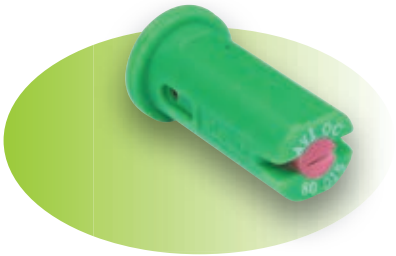
The Albuz® OCI off-center flat fan ceramic spray tip provides excellent wear life for spraying around obstacles or defining the edge of a spraying swath.

Tip Size	Droplet Size 80º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000ft² 20 inch nozzle spacing 2	3	4	5
02	M	30	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	M	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	M	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	F	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
03	M	30	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	M	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	M	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	M	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
04	M	30	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	M	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	M	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	M	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67

Features	
Common Use	Unspecialized
Pattern	Off-Centered Fan
Technology	Elliptical Orifice
Material	Ceramic
Spray Angle	80º
Pressure Range	30-60 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Good
Soil Applied	Good
Drift Control	–

Part Numbers	
Tips 80º	Caps (25 Pack)
OCI-8002	CAP00-02
OCI-8003	CAP00-03
OCI-8004	CAP00-04



AVI-OC Air-Inducing Venturi Off-Center Flat Fan Ceramic Tip

The Albuz® AVI-OC air-inducing Venturi off-center ceramic spray tip with air suction provides large, air-filled droplets that burst on impact with target.

Tip Size	Droplet Size 80º	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20 inch nozzle spacing MPH 4	5	6	8	10	12	15	20	GAL/1000ft² 20 inch nozzle spacing 2	3	4	5
015	VC	40	0.15	11.1	8.9	7.4	5.6	4.5	3.7	3.0	2.2	0.51	0.34	0.26	0.20
	VC	50	0.17	12.6	10.1	8.4	6.3	5.0	4.2	3.4	2.5	0.58	0.39	0.29	0.23
	VC	60	0.18	13.4	10.7	8.9	6.7	5.3	4.5	3.6	2.7	0.61	0.41	0.31	0.25
	VC	70	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	VC	80	0.21	15.6	12.5	10.4	7.8	6.2	5.2	4.2	3.1	0.72	0.48	0.36	0.29
	C	90	0.23	17.1	13.7	11.4	8.5	6.8	5.7	4.6	3.4	0.78	0.52	0.39	0.31
	C	100	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
02	XC	40	0.20	14.9	11.9	9.9	7.4	5.9	5.0	4.0	3.0	0.68	0.45	0.34	0.27
	VC	50	0.22	16.3	13.1	10.9	8.2	6.5	5.4	4.4	3.3	0.75	0.50	0.38	0.30
	VC	60	0.24	17.8	14.3	11.9	8.9	7.1	5.9	4.8	3.6	0.82	0.55	0.41	0.33
	VC	70	0.26	19.3	15.4	12.9	9.7	7.7	6.4	5.1	3.9	0.89	0.59	0.44	0.35
	VC	80	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	VC	90	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	VC	100	0.32	23.8	19.0	15.8	11.9	9.5	7.9	6.3	4.8	1.09	0.73	0.55	0.44
025	XC	40	0.25	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34
	XC	50	0.28	20.8	16.6	13.9	10.4	8.3	6.9	5.5	4.2	0.95	0.64	0.48	0.38
	VC	60	0.31	23.0	18.4	15.3	11.5	9.2	7.7	6.1	4.6	1.06	0.70	0.53	0.42
	VC	70	0.33	24.5	19.6	16.3	12.3	9.8	8.2	6.5	4.9	1.13	0.75	0.56	0.45
	VC	80	0.35	26.0	20.8	17.3	13.0	10.4	8.7	6.9	5.2	1.19	0.80	0.60	0.48
	VC	90	0.38	28.2	22.6	18.8	14.1	11.3	9.4	7.5	5.6	1.30	0.86	0.65	0.52
	VC	100	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
03	XC	40	0.30	22.3	17.8	14.9	11.1	8.9	7.4	5.9	4.5	1.02	0.68	0.51	0.41
	XC	50	0.34	25.2	20.2	16.8	12.6	10.1	8.4	6.7	5.0	1.16	0.77	0.58	0.46
	XC	60	0.37	27.5	22.0	18.3	13.7	11.0	9.2	7.3	5.5	1.26	0.84	0.63	0.50
	VC	70	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	VC	80	0.42	31.2	24.9	20.8	15.6	12.5	10.4	8.3	6.2	1.43	0.95	0.72	0.57
	VC	90	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	VC	100	0.47	34.9	27.9	23.3	17.4	14.0	11.6	9.3	7.0	1.60	1.07	0.80	0.64
04	XC	40	0.40	29.7	23.8	19.8	14.9	11.9	9.9	7.9	5.9	1.36	0.91	0.68	0.55
	XC	50	0.45	33.4	26.7	22.3	16.7	13.4	11.1	8.9	6.7	1.53	1.02	0.77	0.61
	XC	60	0.49	36.4	29.1	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.11	0.84	0.67
	XC	70	0.53	39.4	31.5	26.2	19.7	15.7	13.1	10.5	7.9	1.81	1.20	0.90	0.72
	VC	80	0.57	42.3	33.9	28.2	21.2	16.9	14.1	11.3	8.5	1.94	1.30	0.97	0.78
	VC	90	0.60	44.6	35.6	29.7	22.3	17.8	14.9	11.9	8.9	2.05	1.36	1.02	0.82
	VC	100	0.63	46.8	37.4	31.2	23.4	18.7	15.6	12.5	9.4	2.15	1.43	1.07	0.86

Features	
Common Use	Weeds
Pattern	Off-Center Fan
Technology	Air Eduction
Material	Ceramic
Spray Angle	80º
Pressure Range	40-100 PSI
Configuration	Tip

Application Selection Guide	
Foliar Contact	Good
Foliar Systemic	Excellent
Soil Applied	Excellent
Drift Control	Excellent

Part Numbers	
Tips 80º	Caps (25 Pack)
AVI-OC-80015	CAP01-015
AVI-OC-8002	CAP01-02
AVI-OC-80025	CAP01-025
AVI-OC-8003	CAP01-03
AVI-OC-8004	CAP01-04

Specialty Spray Tips

Specialty applications are diverse. Hypro has a broad range of products that are used to fill several of these niche applications. In addition to these, a full line of Hypro agricultural and industrial spray products are used in a variety of applications.

- Boomless spraying uses very wide fan pattern tips to cover swaths. These are especially useful in field edges, parks, pastures, forestry, rangeland, aquatic plant management, and rights-of-way.
- Twin pattern sprays are useful for specialty crops and high value crops requiring the best management techniques.
- Acid-resistant tips are especially designed to handle the rigors of agricultural defoliants, particularly those cotton defoliants that require spray components be made from special materials of construction.
- Misting nozzles produce a high percentage of droplets smaller than 50 microns making the sprays suitable for humidification and evaporative cooling.
- They are chemically resistant to also allow use with pesticides, disinfectants, and odor control agents as well as dust suppression.

Boomless Flat Fan Nozzles – Boom X Tender®

The XT introduces boomless spray technology, enabling spray to be targeted into places that conventional booms and other tips cannot reach. XT delivers a uniform spray pattern over a distance of up to 20 feet. Ideal for weed control in forests and pastureland.

- Ideal for applications where a conventional boom cannot be used due to obstacles
- Common uses include orchard, vineyard, forestry, pasture, turf and golf course spraying, as well as maintaining rights-of-way and fence rows
- Excellent low-drift option while extending spray reach
- Large droplet size reduces spray drift and promotes spray penetration
- Maintains a consistent spray swath over a pressure range of 30-60 PSI
- Standard models with precision-molded polyacetal tip and threaded stainless steel body provide excellent durability and low maintenance

Tip Size	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre at swath shown MPH								GAL/1000Ft²				Swath (Ft) at 40 PSI 48 in high
			4	5	6	8	10	12	15	20	2	3	4	5	
10 (1/4')	30	0.9	9.3	7.4	6.2	4.6	3.7	3.1	2.5	1.9	0.43	0.28	0.21	0.17	12
	40	1.0	10.3	8.3	6.9	5.2	4.1	3.4	2.8	2.1	0.47	0.32	0.24	0.19	
	50	1.1	11.3	9.1	7.6	5.7	4.5	3.8	3.0	2.3	0.52	0.35	0.26	0.21	
	60	1.2	12.4	9.9	8.3	6.2	5.0	4.1	3.3	2.5	0.57	0.38	0.28	0.23	
20 (1/4')	30	1.7	12.4	9.9	8.3	6.2	5.0	4.1	3.3	2.5	0.57	0.38	0.28	0.23	17
	40	2.0	14.6	11.6	9.7	7.3	5.8	4.9	3.9	2.9	0.67	0.45	0.33	0.27	
	50	2.2	16.0	12.8	10.7	8.0	6.4	5.3	4.3	3.2	0.74	0.49	0.37	0.29	
	60	2.4	17.5	14.0	11.6	8.7	7.0	5.8	4.7	3.5	0.80	0.53	0.40	0.32	
24 (1/4')	30	2.1	14.4	11.6	9.6	7.2	5.8	4.8	3.9	2.9	0.66	0.44	0.33	0.27	18
	40	2.4	16.5	13.2	11.0	8.3	6.6	5.5	4.4	3.3	0.76	0.51	0.38	0.30	
	50	2.7	18.6	14.9	12.4	9.3	7.4	6.2	5.0	3.7	0.85	0.57	0.43	0.34	
	60	2.9	19.9	16.0	13.3	10.0	8.0	6.6	5.3	4.0	0.92	0.61	0.46	0.37	
43 (3/8")	30	3.7	25.4	20.4	17.0	12.7	10.2	8.5	6.8	5.1	1.17	0.78	0.58	0.47	18
	40	4.3	29.6	23.7	19.7	14.8	11.8	9.9	7.9	5.9	1.36	0.90	0.68	0.54	
	50	4.8	33.0	26.4	22.0	16.5	13.2	11.0	8.8	6.6	1.52	1.01	0.76	0.61	
	60	5.3	36.4	29.2	24.3	18.2	14.6	12.1	9.7	7.3	1.67	1.12	0.84	0.67	
80 (1/2")	30	6.9	50.2	40.2	33.5	25.1	20.1	16.7	13.4	10.0	2.31	1.54	1.15	0.92	17
	40	8.0	58.2	46.6	38.8	29.1	23.3	19.4	15.5	11.6	2.67	1.78	1.34	1.07	
	50	8.9	64.8	51.8	43.2	32.4	25.9	21.6	17.3	13.0	2.97	1.98	1.49	1.19	
	60	9.8	71.3	57.1	47.6	35.7	28.5	23.8	19.0	14.3	3.28	2.18	1.64	1.31	
167 (3/4")	30	14.5	99.7	79.8	66.5	49.8	39.9	33.2	26.6	19.9	4.58	3.05	2.29	1.83	18
	40	16.7	115	91.9	76.5	57.4	45.9	38.3	30.6	23.0	5.27	3.51	2.64	2.11	
	50	18.7	129	103	85.7	64.3	51.4	42.9	34.3	25.7	5.90	3.94	2.95	2.36	
	60	20.5	141	113	94.0	70.5	56.4	47.0	37.6	28.2	6.47	4.31	3.24	2.59	
215 (3/4")	30	18.6	115	92.1	76.7	57.5	46.0	38.4	30.7	23.0	5.28	3.52	2.64	2.11	20
	40	21.5	133	106	88.7	66.5	53.2	44.3	35.5	26.6	6.11	4.07	3.05	2.44	
	50	24.0	149	119	99.0	74.3	59.4	49.5	39.6	29.7	6.82	4.55	3.41	2.73	
	60	26.3	163	130	108	81.4	65.1	54.2	43.4	32.5	7.47	4.98	3.74	2.99	

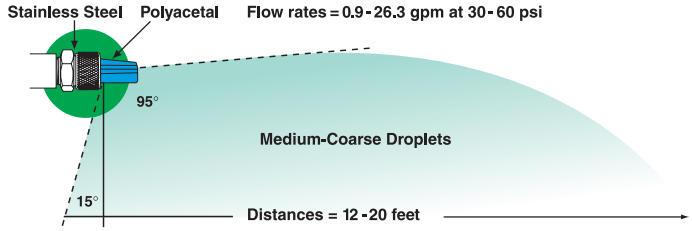
Features	
Common Use	Weeds
Pattern	Boomless Fan
Technology	Pre-Orifice
Material	Stainless or Polyacetal
Spray Angle	105°
Pressure Range	30-60 PSI
Configuration	MNPT & FastCap

Application Selection Guide	
Foliar Contact	–
Foliar Systemic	Very Good
Soil Applied	Very Good
Drift Control	Very Good

Part Numbers	
MNPT	FastCaps
XT010	-
XT020	FC-XT020
XT024	FC-XT024
XT043	FC-XT043
XT080	-
XT167	-
XT215	-
Parts Kits for MNPT version	
XT010-GIOKIT	
XT020-GIOKIT	
XT024-GIOKIT	
XT043-GIOKIT	
XT080-GIOKIT	
XT167-GIOKIT	
XT215-GIOKIT	
Replacement FastCap Seal	
22W11MF64	

Model	Description
9950-0033	Boom X Tender® Tee/Swivel Kit for use with 1/4" NPT or Fastcap Boom X Tender Nozzles

Standard Pattern



Misting Nozzles – F, HAF, PF, AFD, AF

The Hypro range of misting nozzles produce a high percentage of droplets smaller than 50 microns making the sprays suitable for humidification and evaporative cooling. They are chemically resistant to also allow use with pesticides, disinfectants, and odor control agents as well as dust suppression.

- A variety of connection options match most applications
- Corrosion-resistant construction
- Strainers are included on many models to extend service life
- Anti-drip checks are standard in PF and AFD models

F-Flat Fan flanged tips

Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number Nozzle Only
		40	60	75	100	150	
White	65	2.89	3.54	3.96	4.57	5.60	F65-005
Olive Green	80	4.00	4.90	5.48	6.32	7.75	F80-0067

HAF-Hollow Cone flanged tips

Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number Nozzle Only
		40	60	75	100	150	
Light Gray	80	0.73	0.89	1.00	1.15	1.41	30HAF00780
White	110	1.00	1.22	1.37	1.58	1.94	30HAF01110
Cream	65	1.00	1.22	1.37	1.58	1.94	30HAF01-65
Mint Green	80	1.43	1.75	1.96	2.26	2.77	30HAF01480
White	70	1.51	1.85	2.07	2.39	2.92	30HAF01570

PF-Flat Fan 3/8" push-fit anti-drip nozzle

Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number with Cup Strainer
		40	60	75	100	150	
White	80	1.91	2.34	2.62	3.02	3.70	30PFCM002F80
Black	80	1.91	2.34	2.62	3.02	3.70	30PFCM002F80BL
White	80	2.89	3.54	3.96	4.57	5.60	30PFCM005F80
Black	80	2.89	3.54	3.96	4.57	5.60	30PFCM005F80BL

PF-Hollow Cone 3/8" push-fit anti-drip nozzle

Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number with Cup Strainer
		40	60	75	100	150	
White	80	0.91	1.11	1.25	1.44	1.76	30PFAF008-80
Black	80	0.91	1.11	1.25	1.44	1.76	30PFAF008-80BL
White	105	1.27	1.56	1.74	2.01	2.46	30PFAF013-105
Black	105	1.27	1.56	1.74	2.01	2.46	30PFAF013-105BL

AFD-Hollow Cone 1/8"MNPT anti-drip nozzle

Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number Nozzle Only	Part Number with Cup Strainer
		40	60	75	100	150		
Gray	80	0.72	0.88	0.99	1.14	1.39	301AFD0.7-80	CS301AFD0.7-80
Cream	105	1.20	1.47	1.64	1.90	2.32	301AFD1.2-105	CS301AFD1.2-105
Blue	100	1.68	2.06	2.30	2.66	3.25	301AFD1.6-100	-

AF-Hollow Cone 1/8" MNPT nozzle

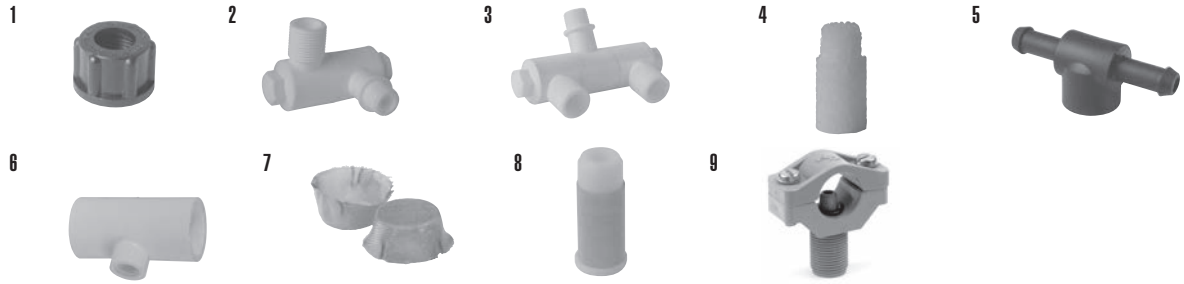
Color	Spray Angle	US gal/hr @ pressure (PSI)					Part Number Nozzle Only	Part Number with SS Cup Strainer	Part Number with SS Post Strainer	Part Number with Plastic Filter
		40	60	75	100	150				
White	65	0.48	0.59	0.66	0.76	0.93	301AF0.4-65	CS301AF0.4-65	301AFUSA0.5	PP301AF0.4-65
Gray	80	0.72	0.88	0.99	1.14	1.39	301AF0.7-80	CS301AF0.7-80	301AFUSA1.0	PP301AF0.7-80
White	80	0.72	0.88	0.99	1.14	1.39	301AF0.7-80W	CS301MNF-W	301MNF-W	PP301AF0.7-80W
Cream	105	1.20	1.47	1.64	1.90	2.32	301AF1.2-105C	CS301AF1.2-105C	301AFUSA2.0	PP301AF1.2-105C
Blue	100	1.68	2.06	2.30	2.66	3.25	301AF1.6-100	CS301AF1.6-100	301AFUSA3.0	PP301AF1.6-100
Yellow	70	5.00	6.12	6.85	7.91	9.68	301AF5.0-70	-	-	-

Strainer parts on page 169

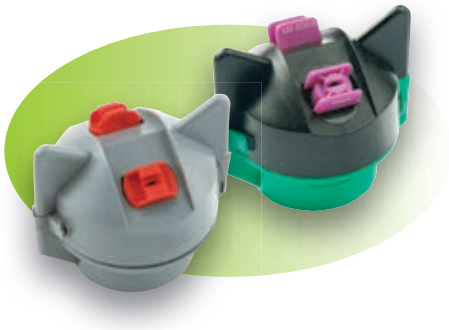
Features	
Common Use	Cooling & Humidification
Pattern	Fan or Hollow Cone
Technology	Elliptical Orifice or Swirl
Material	Polyacetal
Spray Angle	65-110°
Pressure Range	40-150 PSI
Configuration	Tips, Push-fit, or MNPT

Misting Nozzle Accessories

Reference Number	Part Number	Description
1	251032WH	3/8" BSP Retaining Nut White Polypropylene
1	251032GY	3/8" BSP Retaining Nut Gray Polypropylene
1	251032BL	3/8" BSP Retaining Nut Black Polypropylene
2	27302492	3⁄8" BSP x 1⁄4" MNPT Nylon Single Swivel Adapter Incorporating Shut-off
3	27302489	Double Swivel Adapter Incorporating Shut-off
3	27302489BL	Double Swivel Adapter Incorporating Shut-off-Black
4	32195Q3269	Push-in Porous Plastic 250 Mesh Post Filter
5	141418	Barbed Tee 1⁄8" FNPT x 1⁄4" Barbs Black
5	383813	Barbed Tee 1⁄8" FNPT x 3⁄8" Barbs Black
6	1212S18	Push-in Tee 1⁄2" SLIP x 1⁄2" SLIP x 1⁄8" (F)
7	32100200	Cup Strainer 200 Mesh (Fits Rear of Threaded Misting Tips)
8	32PIFA250	Push-in 200 Mesh Post Strainer
9	27101612	3⁄8" BSP x 1⁄2" Wet Boom Body
9	27101634	3⁄8" BSP x 3⁄4" Wet Boom Body



Spray Tip Cap – TwinCap™ TC2-ULD & TC2-LD



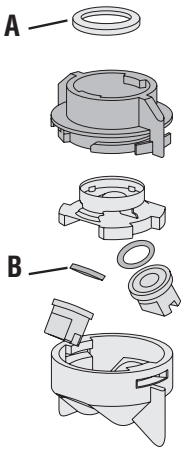
The Hypro TwinCap™ is a simple, compact way of accommodating two spray tips back to back. This design allows you to apply the volume per acre you want, at the speed you want, without compromising spray quality.

- Improve control of plant diseases, insects, and difficult weeds
- Twin 30° angles improve canopy penetration
- Combined forward and backward angles enhance coverage on stems and leaves
- Holds any two standard dimension tips, including Hypro ULD, LD, ADI, VP, TR, AXI, Flat, and Even tips
- User can select tips for the most effective spray
- Available in standard Polyacetal or in Gray PVDF for acid sprays

Part Numbers	
TwinCaps, less tips	
152607TC	Standard cap for agrochemicals
15Q2530TC	Gray Acid-resistant cap for defoliants
Standard TwinCap with Tips Included	
with ULD 120º	**with LD 110º**
TC2-ULD120-015	TC2-LD110-015
TC2-ULD120-02	TC2-LD110-02
TC2-ULD120-025	TC2-LD110-025
TC2-ULD120-03	TC2-LD110-03
TC2-ULD120-04	TC2-LD110-04
Replacement Seals	
22W11MF64	Standard cap seal (A)
22W11MF64V	Viton cap seal for Acid (A)
65MN011X1.3	Standard tip o-ring seal (B)
65VBS0113-13	Viton tip o-ring seal for Acid (B)

6PK-152607TC - six pack
4PK-TC2-ULD120-015 - four pack

Tips and TwinCap
Parts Breakdown



Spray Tip Caps, Adapters

Hypro caps provide trouble-free spray tip installation and sealing on Hypro ProFlo nozzle bodies and several other common makes.

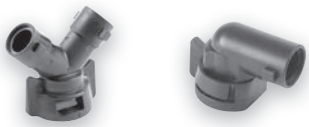
- Color-coded to ISO standards for nozzle flow to simplify tip selection and identification in the field
- Available in configurations optimized to fit a variety of spray tip geometries
- Caps for fan pattern tips automatically align tips for enhanced spray uniformity

	ISO Standard Fan	Deflect Tip No-offset	European Fan (Thick body)	Standard Round (Non-aligning)	Albuz® Round (Thick flange)	Shut-off	Threaded	
Fits:	ULD, GA, LD, VP, TR, OC, F, E, AXI, ADI, OCI	DT, PoliJet	AVI, AVI-TWIN, ESI, APG, APE	HCX, FCX DC/CR, HAF, APM flanged hose barbs	Ceramic Disc, ATR, HCA, TVI	Blank	1/4"FNPT	Std. Pack
Black	CAP00-20	CAP30-20	CAP01-20	CAP04-20	CAP05-20	CAP09-20	CAP10-20	25
Orange	CAP00-01	-	CAP01-01	CAP04-01	CAP05-01	-	-	25
Green	CAP00-015	-	CAP01-015	CAP04-015	CAP05-015	-	-	25
Yellow	CAP00-02	-	CAP01-02	CAP04-02	CAP05-02	-	-	25
Lilac	CAP00-025	-	CAP01-025	CAP04-025	CAP05-025	-	-	25
Blue	CAP00-03	-	CAP01-03	CAP04-03	CAP05-03	-	-	25
Dark Red	CAP00-035	-	-	-	-	-	-	25
Red	CAP00-04	-	CAP01-04	CAP04-04	CAP05-04	-	-	25
Brown	CAP00-05	-	CAP01-05	CAP04-05	CAP05-05	-	-	25
Gray	CAP00-06	-	CAP01-06	CAP04-06	CAP05-06	-	-	25
White	CAP00-08	-	CAP01-08	CAP04-08	CAP05-08	-	-	25
Light Blue	CAP00-10	-	CAP01-10	CAP04-10	-	-	-	25
Lime Green	CAP00-15	-	CAP01-15	CAP04-15	-	-	-	25
Included EPDM seal	22W11MF64	22W11MF64	22W11MF64	22W11MF64	22W11MF64	-	22W11MF64	-
Included Nitrile seal	-	-	-	-	-	65-BS205	-	-
Separate Viton seal	22W11MF64V	22W11MF64V	22W11MF64V	22W11MF64V	22W11MF64V	65-VBS205	22W11MF64V	-

Push-to-Connect Spray Caps

Part #	Description
4200N-0060	1/4" Push-to-Connect Outlet
4200N-0061	3/8" Push-to-Connect Outlet

Elbow and Double Adapters for Spray Tip Cap



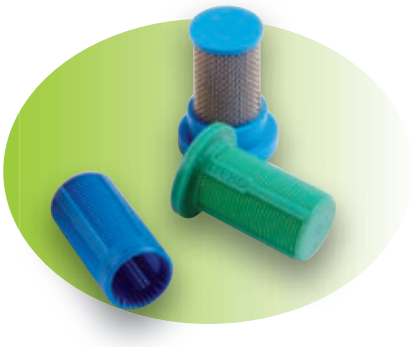
Part #	Description
4200N-0017	45 Double w/ Gasket
4200N-0018	90 Elbow w/ Gasket
2270-0136	Cap Filler Disk

Hardi and Jacto Adapters

Part #	Adapters For	Description
9950-0024	Hardi*	10 pack of adapters for converting nozzle body to accept Hypro cap
9950-0027	Jacto**	

* Hardi is a registered trademark of Hardi International A/S.
** Jacto is a registered trademark of Jacto Inc.

Tip Strainers



- High quality components and manufacturing ensure reliable spraying in any situation
- Ball check models feature stainless steel screens and springs, nitrile balls, polyacetal structure
- Premium polypropylene tip strainers feature precise straining with more flow
- MiniClean™ strainers snap on the back of Ultra Lo-Drift® tips for reliable, on-target spraying
- International standard colors denote mesh size

General Strainer Recommendations		
Tip Flow Rate at 40 PSI	**Strainer Mesh**	**Example Fan Tip Size**
Less than 0.10	200	005-0067
0.10-0.39	100	01-035
0.40-0.79	50	04-06
0.80-2.00	25	08-20





	Premium Polypropylene Flow Tip Strainer		Premium Flow Polypropylene Guardian™ & GuardianAir Twin Tip Strainer		Slotted Nylon Tip Strainer	Stainless Steel Tip Strainer with Check			MiniClean™ Polypropylene ULD Tip Strainer	
Part Number	TS01-50	TS01-100	TS02-50	TS02-100	TS03-25	32100530	32100550	32100510	30Q3624**	30Q3623*
ISO Color	Blue	Green	Blue	Green	Black	Red	Blue	Green	Red	Blue
Mesh	50	100	50	100	25	30	50	100	25	50

Packaged Part Numbers
4 Tips per pack: Add prefix "4PK-" (Ex. 4PK-TS01-50)
* For ULD sizes 015-04
** For ULD sizes 05-06

Spray Tip Calibration & Training Tools

Pump included

Reference Number	Description	Part Number
1	34 oz. Calibration Jug	9950-0022
1	100 oz. Calibration Jug	9950-0023
2	Spray Tip Calibration pressure gauge	9950-0031
3	Water Sensitive paper (50 pack) 76x26mm (instructions included)	9950-0028
4	Hypro Spray Center Demonstration Table with 115 VAC pump	HY-SPRAY-TABLE
4	Hypro Spray Center Demonstration Table with 23 0VAC pump	HY-SPRAY-TABLE-01

Broadcast and Turf Application Chart -20" Spacing

Spray Tip	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 20-inch Nozzle Spacing MPH 4	5	6	7	8	10	12	14	16	18	20	GAL/1000 Ft² 20-inch Nozzle Spacing MPH 2	3	4	5
01	15	0.06	4.5	3.6	3.0	2.5	2.2	1.8	1.5	1.3	1.1	1.0	0.9	0.20	0.14	0.10	0.08
	30	0.09	6.7	5.3	4.5	3.8	3.3	2.7	2.2	1.9	1.7	1.5	1.3	0.31	0.20	0.15	0.12
	40	**0.10**	7.4	5.9	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7	1.5	0.34	0.23	0.17	0.14
	60	0.12	8.9	7.1	5.9	5.1	4.5	3.6	3.0	2.5	2.2	2.0	1.8	0.41	0.27	0.20	0.16
	80	0.14	10.4	8.3	6.9	5.9	5.2	4.2	3.5	3.0	2.6	2.3	2.1	0.48	0.32	0.24	0.19
	100	0.16	11.9	9.5	7.9	6.8	5.9	4.8	4.0	3.4	3.0	2.6	2.4	0.55	0.36	0.27	0.22
	115	0.17	12.6	10.1	8.4	7.2	6.3	5.0	4.2	3.6	3.2	2.8	2.5	0.58	0.39	0.29	0.23
015	15	0.09	6.7	5.3	4.5	3.8	3.3	2.7	2.2	1.9	1.7	1.5	1.3	0.31	0.20	0.15	0.12
	30	0.13	9.7	7.7	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1	1.9	0.44	0.30	0.22	0.18
	40	**0.15**	11.1	8.9	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5	2.2	0.51	0.34	0.26	0.20
	60	0.18	13.4	10.7	8.9	7.6	6.7	5.3	4.5	3.8	3.3	3.0	2.7	0.61	0.41	0.31	0.25
	80	0.21	15.6	12.5	10.4	8.9	7.8	6.2	5.2	4.5	3.9	3.5	3.1	0.72	0.48	0.36	0.29
	100	0.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9	5.1	4.5	4.0	3.6	0.82	0.55	0.41	0.33
	115	0.25	18.6	14.9	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1	3.7	0.85	0.57	0.43	0.34
02	15	0.12	8.9	7.1	5.9	5.1	4.5	3.6	3.0	2.5	2.2	2.0	1.8	0.41	0.27	0.20	0.16
	30	0.17	12.6	10.1	8.4	7.2	6.3	5.0	4.2	3.6	3.2	2.8	2.5	0.58	0.39	0.29	0.23
	40	**0.20**	14.9	11.9	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3	3.0	0.68	0.45	0.34	0.27
	60	0.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9	5.1	4.5	4.0	3.6	0.82	0.55	0.41	0.33
	80	0.28	20.8	16.6	13.9	11.9	10.4	8.3	6.9	5.9	5.2	4.6	4.2	0.95	0.64	0.48	0.38
	100	0.32	23.8	19.0	15.8	13.6	11.9	9.5	7.9	6.8	5.9	5.3	4.8	1.09	0.73	0.55	0.44
	115	0.34	25.2	20.2	16.8	14.4	12.6	10.1	8.4	7.2	6.3	5.6	5.0	1.16	0.77	0.58	0.46
025	15	0.15	11.1	8.9	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5	2.2	0.51	0.34	0.26	0.20
	30	0.22	16.3	13.1	10.9	9.3	8.2	6.5	5.4	4.7	4.1	3.6	3.3	0.75	0.50	0.38	0.30
	40	**0.25**	18.6	14.9	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1	3.7	0.85	0.57	0.43	0.34
	60	0.31	23.0	18.4	15.3	13.2	11.5	9.2	7.7	6.6	5.8	5.1	4.6	1.06	0.70	0.53	0.42
	80	0.35	26.0	20.8	17.3	14.9	13.0	10.4	8.7	7.4	6.5	5.8	5.2	1.19	0.80	0.60	0.48
	100	0.40	29.7	23.8	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6	5.9	1.36	0.91	0.68	0.55
	115	0.42	31.2	24.9	20.8	17.8	15.6	12.5	10.4	8.9	7.8	6.9	6.2	1.43	0.95	0.72	0.57
03	15	0.18	13.4	10.7	8.9	7.6	6.7	5.3	4.5	3.8	3.3	3.0	2.7	0.61	0.41	0.31	0.25
	30	0.26	19.3	15.4	12.9	11.0	9.7	7.7	6.4	5.5	4.8	4.3	3.9	0.89	0.59	0.44	0.35
	40	**0.30**	22.3	17.8	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0	4.5	1.02	0.68	0.51	0.41
	60	0.37	27.5	22.0	18.3	15.7	13.7	11.0	9.2	7.8	6.9	6.1	5.5	1.26	0.84	0.63	0.50
	80	0.42	31.2	24.9	20.8	17.8	15.6	12.5	10.4	8.9	7.8	6.9	6.2	1.43	0.95	0.72	0.57
	100	0.47	34.9	27.9	23.3	19.9	17.4	14.0	11.6	10.0	8.7	7.8	7.0	1.60	1.07	0.80	0.64
	115	0.51	37.9	30.3	25.2	21.6	18.9	15.1	12.6	10.8	9.5	8.4	7.6	1.74	1.16	0.87	0.70
035	15	0.21	15.6	12.5	10.4	8.9	7.8	6.2	5.2	4.5	3.9	3.5	3.1	0.72	0.48	0.36	0.29
	30	0.30	22.3	17.8	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0	4.5	1.02	0.68	0.51	0.41
	40	**0.35**	26.0	20.8	17.3	14.9	13.0	10.4	8.7	7.4	6.5	5.8	5.2	1.19	0.80	0.60	0.48
	60	0.43	31.9	25.5	21.3	18.2	16.0	12.8	10.6	9.1	8.0	7.1	6.4	1.47	0.98	0.73	0.59
	80	0.49	36.4	29.1	24.3	20.8	18.2	14.6	12.1	10.4	9.1	8.1	7.3	1.67	1.11	0.84	0.67
	100	0.55	40.8	32.7	27.2	23.3	20.4	16.3	13.6	11.7	10.2	9.1	8.2	1.88	1.25	0.94	0.75
	115	0.59	43.8	35.0	29.2	25.0	21.9	17.5	14.6	12.5	11.0	9.7	8.8	2.01	1.34	1.01	0.80
04	15	0.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9	5.1	4.5	4.0	3.6	0.82	0.55	0.41	0.33
	30	0.35	26.0	20.8	17.3	14.9	13.0	10.4	8.7	7.4	6.5	5.8	5.2	1.19	0.80	0.60	0.48
	40	**0.40**	29.7	23.8	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6	5.9	1.36	0.91	0.68	0.55
	60	0.49	36.4	29.1	24.3	20.8	18.2	14.6	12.1	10.4	9.1	8.1	7.3	1.67	1.11	0.84	0.67
	80	0.57	42.3	33.9	28.2	24.2	21.2	16.9	14.1	12.1	10.6	9.4	8.5	1.94	1.30	0.97	0.78
	100	0.63	46.8	37.4	31.2	26.7	23.4	18.7	15.6	13.4	11.7	10.4	9.4	2.15	1.43	1.07	0.86
	115	0.68	50.5	40.4	33.7	28.9	25.2	20.2	16.8	14.4	12.6	11.2	10.1	2.32	1.55	1.16	0.93
05	15	0.31	23.0	18.4	15.3	13.2	11.5	9.2	7.7	6.6	5.8	5.1	4.6	1.06	0.70	0.53	0.42
	30	0.43	31.9	25.5	21.3	18.2	16.0	12.8	10.6	9.1	8.0	7.1	6.4	1.47	0.98	0.73	0.59
	40	**0.50**	37.1	29.7	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3	7.4	1.71	1.14	0.85	0.68
	60	0.61	45.3	36.2	30.2	25.9	22.6	18.1	15.1	12.9	11.3	10.1	9.1	2.08	1.39	1.04	0.83
	80	0.71	52.7	42.2	35.1	30.1	26.4	21.1	17.6	15.1	13.2	11.7	10.5	2.42	1.61	1.21	0.97
	100	0.79	58.7	46.9	39.1	33.5	29.3	23.5	19.6	16.8	14.7	13.0	11.7	2.69	1.80	1.35	1.08
	115	0.85	63.1	50.5	42.1	36.1	31.6	25.2	21.0	18.0	15.8	14.0	12.6	2.90	1.93	1.45	1.16
06	15	0.37	27.5	22.0	18.3	15.7	13.7	11.0	9.2	7.8	6.9	6.1	5.5	1.26	0.84	0.63	0.50
	30	0.52	38.6	30.9	25.7	22.1	19.3	15.4	12.9	11.0	9.7	8.6	7.7	1.77	1.18	0.89	0.71
	40	**0.60**	44.6	35.6	29.7	25.5	22.3	17.8	14.9	12.7	11.1	9.9	8.9	2.05	1.36	1.02	0.82
	60	0.73	54.2	43.4	36.1	31.0	27.1	21.7	18.1	15.5	13.6	12.0	10.8	2.49	1.66	1.24	1.00
	80	0.85	63.1	50.5	42.1	36.1	31.6	25.2	21.0	18.0	15.8	14.0	12.6	2.90	1.93	1.45	1.16
	100	0.95	70.5	56.4	47.0	40.3	35.3	28.2	23.5	20.2	17.6	15.7	14.1	3.24	2.16	1.62	1.30
	115	1.02	75.7	60.6	50.5	43.3	37.9	30.3	25.2	21.6	18.9	16.8	15.1	3.48	2.32	1.74	1.39
08	15	0.49	36.4	29.1	24.3	20.8	18.2	14.6	12.1	10.4	9.1	8.1	7.3	1.67	1.11	0.84	0.67
	30	0.69	51.2	41.0	34.2	29.3	25.6	20.5	17.1	14.6	12.8	11.4	10.2	2.35	1.57	1.18	0.94
	40	**0.80**	59.4	47.5	39.6	33.9	29.7	23.8	19.8	17.0	14.9	13.2	11.9	2.73	1.82	1.36	1.09
	60	0.98	72.8	58.2	48.5	41.6	36.4	29.1	24.3	20.8	18.2	16.2	14.6	3.34	2.23	1.67	1.34
	80	1.13	83.9	67.1	55.9	47.9	42.0	33.6	28.0	24.0	21.0	18.6	16.8	3.85	2.57	1.93	1.54
	100	1.26	93.6	74.8	62.4	53.5	46.8	37.4	31.2	26.7	23.4	20.8	18.7	4.30	2.86	2.15	1.72
	115	1.36	101.0	80.8	67.3	57.7	50.5	40.4	33.7	28.9	25.2	22.4	20.2	4.64	3.09	2.32	1.86
10	15	0.61	45.3	36.2	30.2	25.9	22.6	18.1	15.1	12.9	11.3	10.1	9.1	2.08	1.39	1.04	0.83
	30	0.87	64.6	51.7	43.1	36.9	32.3	25.8	21.5	18.5	16.1	14.4	12.9	2.97	1.98	1.48	1.19
	40	**1.00**	74.3	59.4	49.5	42.4	37.1	29.7	24.8	21.2	18.6	16.5	14.9	3.41	2.27	1.71	1.36
	60	1.22	90.6	72.5	60.4	51.8	45.3	36.2	30.2	25.9	22.6	20.1	18.1	4.16	2.77	2.08	1.66
	80	1.41	104.7	83.8	69.8	59.8	52.3	41.9	34.9	29.9	26.2	23.3	20.9	4.81	3.21	2.40	1.92
	100	1.58	117.3	93.9	78.2	67.0	58.7	46.9	39.1	33.5	29.3	26.1	23.5	5.39	3.59	2.69	2.16
	115	1.70	126.2	101.0	84.2	72.1	63.1	50.5	42.1	36.1	31.6	28.1	25.2	5.80	3.86	2.90	2.32
15	15	0.92	68.3	54.6	45.5	39.0	34.2	27.3	22.8	19.5	17.1	15.2	13.7	3.14	2.09	1.57	1.25
	30	1.30	96.5	77.2	64.4	55.2	48.3	38.6	32.2	27.6	24.1	21.5	19.3	4.43	2.96	2.22	1.77
	40	**1.50**	111.4	89.1	74.3	63.6	55.7	44.6	37.1	31.8	27.8	24.8	22.3	5.12	3.41	2.56	2.05
	60	1.84	136.6	109.3	91.1	78.1	68.3	54.6	45.5	39.0	34.2	30.4	27.3	6.27	4.18	3.14	2.51
	80	2.12	157.4	125.9	104.9	89.9	78.7	63.0	52.5	45.0	39.4	35.0	31.5	7.23	4.82	3.61	2.89
	100	2.37	176.0	140.8	117.3	100.6	88.0	70.4	58.7	50.3	44.0	39.1	35.2	8.08	5.39	4.04	3.23
	115	2.54	188.6	150.9	125.7	107.8	94.3	75.4	62.9	53.9	47.1	41.9	37.7	8.66	5.77	4.33	3.46

Broadcast and Turf Application Chart-15" Spacing

Spray Tip	Pressure (PSI)	Flow Rate (GPM)	Gallons per Acre 15-inch Nozzle Spacing MPH 4	5	6	7	8	10	12	14	16	18	20	GAL/1000 Ft² 15-inch Nozzle Spacing MPH 2	3	4	5
01	15	0.06	6.1	4.8	4.0	3.5	3.0	2.4	2.0	1.7	1.5	1.3	1.2	0.28	0.19	0.14	0.11
	30	0.09	8.6	6.9	5.7	4.9	4.3	3.4	2.9	2.4	2.1	1.9	1.7	0.39	0.26	0.20	0.16
	40	**0.10**	9.9	7.9	6.6	5.7	5.0	4.0	3.3	2.8	2.5	2.2	2.0	0.45	0.30	0.23	0.18
	60	0.12	12.1	9.7	8.1	6.9	6.1	4.8	4.0	3.5	3.0	2.7	2.4	0.56	0.37	0.28	0.22
	80	0.14	14.0	11.2	9.3	8.0	7.0	5.6	4.7	4.0	3.5	3.1	2.8	0.64	0.43	0.32	0.26
	100	0.16	15.7	12.5	10.4	8.9	7.8	6.3	5.2	4.5	3.9	3.5	3.1	0.72	0.48	0.36	0.29
	115	0.17	16.8	13.4	11.2	9.6	8.4	6.7	5.6	4.8	4.2	3.7	3.4	0.77	0.51	0.39	0.31
015	15	0.09	9.1	7.3	6.1	5.2	4.5	3.6	3.0	2.6	2.3	2.0	1.8	0.42	0.28	0.21	0.17
	30	0.13	12.9	10.3	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9	2.6	0.59	0.39	0.30	0.24
	40	**0.15**	14.9	11.9	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3	3.0	0.68	0.45	0.34	0.27
	60	0.18	18.2	14.5	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0	3.6	0.84	0.56	0.42	0.33
	80	0.21	21.0	16.8	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7	4.2	0.96	0.64	0.48	0.39
	100	0.24	23.5	18.8	15.7	13.4	11.7	9.4	7.8	6.7	5.9	5.2	4.7	1.08	0.72	0.54	0.43
	115	0.25	25.2	20.1	16.8	14.4	12.6	10.1	8.4	7.2	6.3	5.6	5.0	1.16	0.77	0.58	0.46
02	15	0.12	12.1	9.7	8.1	6.9	6.1	4.8	4.0	3.5	3.0	2.7	2.4	0.56	0.37	0.28	0.22
	30	0.17	17.1	13.7	11.4	9.8	8.6	6.9	5.7	4.9	4.3	3.8	3.4	0.79	0.53	0.39	0.32
	40	**0.20**	19.8	15.8	13.2	11.3	9.9	7.9	6.6	5.7	5.0	4.4	4.0	0.91	0.61	0.45	0.36
	60	0.24	24.2	19.4	16.2	13.9	12.1	9.7	8.1	6.9	6.1	5.4	4.8	1.11	0.74	0.56	0.45
	80	0.28	28.0	22.4	18.7	16.0	14.0	11.2	9.3	8.0	7.0	6.2	5.6	1.29	0.86	0.64	0.51
	100	0.32	31.3	25.1	20.9	17.9	15.7	12.5	10.4	8.9	7.8	7.0	6.3	1.44	0.96	0.72	0.58
	115	0.34	33.6	26.9	22.4	19.2	16.8	13.4	11.2	9.6	8.4	7.5	6.7	1.54	1.03	0.77	0.62
025	15	0.15	15.2	12.1	10.1	8.7	7.6	6.1	5.1	4.3	3.8	3.4	3.0	0.70	0.46	0.35	0.28
	30	0.22	21.4	17.1	14.3	12.2	10.7	8.6	7.1	6.1	5.4	4.8	4.3	0.98	0.66	0.49	0.39
	40	**0.25**	24.8	19.8	16.5	14.1	12.4	9.9	8.3	7.1	6.2	5.5	5.0	1.14	0.76	0.57	0.45
	60	0.31	30.3	24.2	20.2	17.3	15.2	12.1	10.1	8.7	7.6	6.7	6.1	1.39	0.93	0.70	0.56
	80	0.35	35.0	28.0	23.3	20.0	17.5	14.0	11.7	10.0	8.8	7.8	7.0	1.61	1.07	0.80	0.64
	100	0.40	39.1	31.3	26.1	22.4	19.6	15.7	13.0	11.2	9.8	8.7	7.8	1.80	1.20	0.90	0.72
	115	0.42	42.0	33.6	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3	8.4	1.93	1.28	0.96	0.77
03	15	0.18	18.2	14.5	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0	3.6	0.84	0.56	0.42	0.33
	30	0.26	25.7	20.6	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7	5.1	1.18	0.79	0.59	0.47
	40	**0.30**	29.7	23.8	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6	5.9	1.36	0.91	0.68	0.55
	60	0.37	36.4	29.1	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1	7.3	1.67	1.11	0.84	0.67
	80	0.42	42.0	33.6	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3	8.4	1.93	1.29	0.96	0.77
	100	0.47	47.0	37.6	31.3	26.8	23.5	18.8	15.7	13.4	11.7	10.4	9.4	2.16	1.44	1.08	0.86
	115	0.51	50.4	40.3	33.6	28.8	25.2	20.1	16.8	14.4	12.6	11.2	10.1	2.31	1.54	1.16	0.93
035	15	0.21	21.2	17.0	14.1	12.1	10.6	8.5	7.1	6.1	5.3	4.7	4.2	0.97	0.65	0.49	0.39
	30	0.30	30.0	24.0	20.0	17.1	15.0	12.0	10.0	8.6	7.5	6.7	6.0	1.38	0.92	0.69	0.55
	40	**0.35**	34.6	27.7	23.1	19.8	17.3	13.9	11.6	9.9	8.7	7.7	6.9	1.59	1.06	0.80	0.64
	60	0.43	42.4	33.9	28.3	24.2	21.2	17.0	14.1	12.1	10.6	9.4	8.5	1.95	1.30	0.97	0.78
	80	0.49	49.0	39.2	32.7	28.0	24.5	19.6	16.3	14.0	12.3	10.9	9.8	2.25	1.50	1.13	0.90
	100	0.55	54.8	43.8	36.5	31.3	27.4	21.9	18.3	15.7	13.7	12.2	11.0	2.52	1.68	1.26	1.01
	115	0.59	58.8	47.0	39.2	33.6	29.4	23.5	19.6	16.8	14.7	13.1	11.8	2.70	1.80	1.35	1.08
04	15	0.24	24.2	19.4	16.2	13.9	12.1	9.7	8.1	6.9	6.1	5.4	4.8	1.11	0.74	0.56	0.45
	30	0.35	34.3	27.4	22.9	19.6	17.1	13.7	11.4	9.8	8.6	7.6	6.9	1.58	1.05	0.79	0.63
	40	**0.40**	39.6	31.7	26.4	22.6	19.8	15.8	13.2	11.3	9.9	8.8	7.9	1.82	1.21	0.91	0.73
	60	0.49	48.5	38.8	32.3	27.7	24.2	19.4	16.2	13.9	12.1	10.8	9.7	2.23	1.48	1.11	0.89
	80	0.57	56.0	44.8	37.3	32.0	28.0	22.4	18.7	16.0	14.0	12.4	11.2	2.57	1.71	1.29	1.03
	100	0.63	62.6	50.1	41.7	35.8	31.3	25.1	20.9	17.9	15.7	13.9	12.5	2.88	1.92	1.44	1.15
	115	0.68	67.1	53.7	44.8	38.4	33.6	26.9	22.4	19.2	16.8	14.9	13.4	3.08	2.06	1.54	1.23
05	15	0.31	30.3	24.2	20.2	17.3	15.2	12.1	10.1	8.7	7.6	6.7	6.1	1.39	0.93	0.70	0.56
	30	0.43	42.9	34.3	28.6	24.5	21.4	17.1	14.3	12.2	10.7	9.5	8.6	1.97	1.31	0.98	0.79
	40	**0.50**	49.5	39.6	33.0	28.3	24.8	19.8	16.5	14.1	12.4	11.0	9.9	2.27	1.52	1.14	0.91
	60	0.61	60.6	48.5	40.4	34.6	30.3	24.2	20.2	17.3	15.2	13.5	12.1	2.78	1.86	1.39	1.11
	80	0.71	70.0	56.0	46.7	40.0	35.0	28.0	23.3	20.0	17.5	15.6	14.0	3.21	2.14	1.61	1.29
	100	0.79	78.3	62.6	52.2	44.7	39.1	31.3	26.1	22.4	19.6	17.4	15.7	3.59	2.40	1.80	1.44
	115	0.85	83.9	67.1	56.0	48.0	42.0	33.6	28.0	24.0	21.0	18.7	16.8	3.85	2.57	1.93	1.54
06	15	0.37	36.4	29.1	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1	7.3	1.67	1.11	0.84	0.67
	30	0.52	51.4	41.2	34.3	29.4	25.7	20.6	17.1	14.7	12.9	11.4	10.3	2.36	1.58	1.18	0.95
	40	**0.60**	59.4	47.5	39.6	33.9	29.7	23.8	19.8	17.0	14.9	13.2	11.9	2.73	1.82	1.36	1.09
	60	0.73	72.7	58.2	48.5	41.6	36.4	29.1	24.2	20.8	18.2	16.2	14.5	3.34	2.23	1.67	1.34
	80	0.85	84.0	67.2	56.0	48.0	42.0	33.6	28.0	24.0	21.0	18.7	16.8	3.86	2.57	1.93	1.54
	100	0.95	93.9	75.1	62.6	53.7	47.0	37.6	31.3	26.8	23.5	20.9	18.8	4.31	2.88	2.16	1.73
	115	1.02	100.7	80.6	67.1	57.6	50.4	40.3	33.6	28.8	25.2	22.4	20.1	4.63	3.08	2.31	1.85
08	15	0.49	48.5	38.8	32.3	27.7	24.2	19.4	16.2	13.9	12.1	10.8	9.7	2.23	1.48	1.11	0.89
	30	0.69	68.6	54.9	45.7	39.2	34.3	27.4	22.9	19.6	17.1	15.2	13.7	3.15	2.10	1.58	1.26
	40	**0.80**	79.2	63.4	52.8	45.3	39.6	31.7	26.4	22.6	19.8	17.6	15.8	3.64	2.42	1.82	1.45
	60	0.98	97.0	77.6	64.7	55.4	48.5	38.8	32.3	27.7	24.2	21.6	19.4	4.45	2.97	2.23	1.78
	80	1.13	112.0	89.6	74.7	64.0	56.0	44.8	37.3	32.0	28.0	24.9	22.4	5.14	3.43	2.57	2.06
	100	1.26	125.2	100.2	83.5	71.6	62.6	50.1	41.7	35.8	31.3	27.8	25.1	5.75	3.83	2.88	2.30
	115	1.36	134.3	107.4	89.5	76.7	67.1	53.7	44.8	38.4	33.6	29.8	26.9	6.17	4.11	3.08	2.47
10	15	0.61	60.6	48.5	40.4	34.6	30.3	24.2	20.2	17.3	15.2	13.5	12.1	2.78	1.86	1.39	1.11
	30	0.87	85.7	68.6	57.2	49.0	42.9	34.3	28.6	24.5	21.4	19.1	17.1	3.94	2.63	1.97	1.58
	40	**1.00**	99.0	79.2	66.0	56.6	49.5	39.6	33.0	28.3	24.8	22.0	19.8	4.55	3.03	2.27	1.82
	60	1.22	121.2	97.0	80.8	69.3	60.6	48.5	40.4	34.6	30.3	26.9	24.2	5.57	3.71	2.78	2.23
	80	1.41	140.0	112.0	93.3	80.0	70.0	56.0	46.7	40.0	35.0	31.1	28.0	6.43	4.29	3.21	2.57
	100	1.58	156.5	125.2	104.4	89.4	78.3	62.6	52.2	44.7	39.1	34.8	31.3	7.19	4.79	3.59	2.88
	115	1.70	167.9	134.3	111.9	95.9	83.9	67.1	56.0	48.0	42.0	37.3	33.6	7.71	5.14	3.85	3.08
15	15	0.92	90.9	72.7	60.6	52.0	45.5	36.4	30.3	26.0	22.7	20.2	18.2	4.18	2.78	2.09	1.67
	30	1.30	128.6	102.9	85.7	73.5	64.3	51.4	42.9	36.7	32.2	28.6	25.7	5.91	3.94	2.95	2.36
	40	**1.50**	148.5	118.8	99.0	84.9	74.2	59.4	49.5	42.4	37.1	33.0	29.7	6.82	4.55	3.41	2.73
	60	1.84	181.9	145.5	121.2	103.9	90.9	72.7	60.6	52.0	45.5	40.4	36.4	8.35	5.57	4.18	3.34
	80	2.12	210.0	168.0	140.0	120.0	105.0	84.0	70.0	60.0	52.5	46.7	42.0	9.64	6.43	4.82	3.86
	100	2.37	234.8	187.8	156.5	134.2	117.4	93.9	78.3	67.1	58.7	52.2	47.0	10.78	7.19	5.39	4.31
	115	2.54	251.8	201.4	167.9	143.9	125.9	100.7	83.9	71.9	62.9	56.0	50.4	11.56	7.71	5.78	4.63

*Tips used on 30" spacing will provide half the GPA shown in this table.

Broadcast Application Chart-50cm Spacing

Spray Tip	Pressure (BAR)	Flow Rate (L/min)	L/ha 50cm Nozzle Spacing km/H									
			6	8	10	12	14	16	18	20	25	30
01	1	0.23	46	35	28	23	20	17	15	14	11	9
	2	0.33	66	50	40	33	28	25	22	20	16	13
	3	**0.40**	80	60	48	40	34	30	27	24	19	16
	4	0.46	92	69	55	46	39	35	31	28	22	18
	5	0.52	104	78	62	52	45	39	35	31	25	21
	6	0.57	114	86	68	57	49	43	38	34	27	23
	7	0.61	122	92	73	61	52	46	41	37	29	24
	8	0.65	130	98	78	65	56	49	43	39	31	26
015	1	0.35	70	53	42	35	30	26	23	21	17	14
	2	0.49	98	74	59	49	42	37	33	29	24	20
	3	**0.60**	120	90	72	60	51	45	40	36	29	24
	4	0.69	138	104	83	69	59	52	46	41	33	28
	5	0.77	154	116	92	77	66	58	51	46	37	31
	6	0.85	170	128	102	85	73	64	57	51	41	34
	7	0.92	184	138	110	92	79	69	61	55	44	37
	8	0.98	196	147	118	98	84	74	65	59	47	39
02	1	0.46	92	69	55	46	39	35	31	28	22	18
	2	0.65	130	98	78	65	56	49	43	39	31	26
	3	**0.80**	160	120	96	80	69	60	53	48	38	32
	4	0.92	184	138	110	92	79	69	61	55	44	37
	5	1.03	206	155	124	103	88	77	69	62	49	41
	6	1.13	226	170	136	113	97	85	75	68	54	45
	7	1.22	244	183	146	122	105	92	81	73	59	49
	8	1.31	262	197	157	131	112	98	87	79	63	52
025	1	0.58	116	87	70	58	50	44	39	35	28	23
	2	0.82	164	123	98	82	70	62	55	49	39	33
	3	**1.00**	200	150	120	100	86	75	67	60	48	40
	4	1.15	230	173	138	115	99	86	77	69	55	46
	5	1.29	258	194	155	129	111	97	86	77	62	52
	6	1.41	282	212	169	141	121	106	94	85	68	56
	7	1.53	306	230	184	153	131	115	102	92	73	61
	8	1.63	326	245	196	163	140	122	109	98	78	65
03	1	0.69	138	104	83	69	59	52	46	41	33	28
	2	0.98	196	147	118	98	84	74	65	59	47	39
	3	**1.20**	240	180	144	120	103	90	80	72	58	48
	4	1.39	278	209	167	139	119	104	93	83	67	56
	5	1.55	310	233	186	155	133	116	103	93	74	62
	6	1.70	340	255	204	170	146	128	113	102	82	68
	7	1.83	366	275	220	183	157	137	122	110	88	73
	8	1.96	392	294	235	196	168	147	131	118	94	78
035	1	0.81	162	122	97	81	69	61	54	49	39	32
	2	1.14	228	171	137	114	98	86	76	68	55	46
	3	**1.40**	280	210	168	140	120	105	93	84	67	56
	4	1.62	324	243	194	162	139	122	108	97	78	65
	5	1.81	362	272	217	181	155	136	121	109	87	72
	6	1.98	396	297	238	198	170	149	132	119	95	79
	7	2.14	428	321	257	214	183	161	143	128	103	86
	8	2.29	458	344	275	229	196	172	153	137	110	92
04	1	0.92	184	138	110	92	79	69	61	55	44	37
	2	1.31	262	197	157	131	112	98	87	79	63	52
	3	**1.60**	320	240	192	160	137	120	107	96	77	64
	4	1.85	370	278	222	185	159	139	123	111	89	74
	5	2.07	414	311	248	207	177	155	138	124	99	83
	6	2.26	452	339	271	226	194	170	151	136	108	90
	7	2.44	488	366	293	244	209	183	163	146	117	98
	8	2.61	522	392	313	261	224	196	174	157	125	104
05	1	1.15	230	173	138	115	99	86	77	69	55	46
	2	1.63	326	245	196	163	140	122	109	98	78	65
	3	**2.00**	400	300	240	200	171	150	133	120	96	80
	4	2.31	462	347	277	231	198	173	154	139	111	92
	5	2.58	516	387	310	258	221	194	172	155	124	103
	6	2.83	566	425	340	283	243	212	189	170	136	113
	7	3.06	612	459	367	306	262	230	204	184	147	122
	8	3.27	654	491	392	327	280	245	218	196	157	131
06	1	1.39	278	209	167	139	119	104	93	83	67	56
	2	1.96	392	294	235	196	168	147	131	118	94	78
	3	**2.40**	480	360	288	240	206	180	160	144	115	96
	4	2.77	554	416	332	277	237	208	185	166	133	111
	5	3.10	620	465	372	310	266	233	207	186	149	124
	6	3.39	678	509	407	339	291	254	226	203	163	136
	7	3.67	734	551	440	367	315	275	245	220	176	147
	8	3.92	784	588	470	392	336	294	261	235	188	157
08	1	1.85	370	278	222	185	159	139	123	111	89	74
	2	2.61	522	392	313	261	224	196	174	157	125	104
	3	**3.20**	640	480	384	320	274	240	213	192	154	128
	4	3.70	740	555	444	370	317	278	247	222	178	148
	5	4.13	826	620	496	413	354	310	275	248	198	165
	6	4.53	906	680	544	453	388	340	302	272	217	181
	7	4.89	978	734	587	489	419	367	326	293	235	196
	8	5.23	1046	785	628	523	448	392	349	314	251	209
10	1	2.31	462	347	277	231	198	173	154	139	111	92
	2	3.27	654	491	392	327	280	245	218	196	157	131
	3	**4.00**	800	600	480	400	343	300	267	240	192	160
	4	4.62	924	693	554	462	396	347	308	277	222	185
	5	5.16	1032	774	619	516	442	387	344	310	248	206
	6	**5.66**	**1132**	**849**	**679**	**566**	**485**	**425**	**377**	**340**	**272**	**226**
	7	6.11	1222	917	733	611	524	458	407	367	293	244
	8	6.53	1306	980	784	653	560	490	435	392	313	261

Rates for Tip sizes 15, 20, 30, 40, 50 and 60 are available: contact Tech Services at 800-445-8360.

Spray Tip Maintenance and Information Guide

Worn, damaged or plugged tips are costly to the environment and your bottom line. As tips wear out, their orifices become enlarged, resulting in over application and uneven application of chemicals. Just 10% increase in flow from worn tips represent a loss of $2,000 to $10,000 on a twice-sprayed 1,000 acre farm (at $10-$50/acre chemical cost). And when the potential environmental and crop damage is considered, the real cost is almost immeasurable. The good news is, monitoring and maintaining tip performance is one of the easiest ways to help keep a sprayer operating accurately and efficiently.

1. As a rule, replace tips worn (10% or more) or damaged at the beginning of each spraying season.
2. Only use the tip type that is recommended for your particular spraying application.
3. Calibrate your sprayer regularly to compensate for normal tip wear.
4. Monitor spray performance to catch worn, damaged, or plugged tips.

Hypro spray tips are precision-engineered components that should be regularly maintained to ensure that they give trouble-free service. To clear blocked tips, soak in water and clean with a brush and airline. For stubborn deposits, soak in warm water and detergent, agitating occasionally. Never blow through a tip or poke with wires or pins – damage to the orifice will alter flow rate, spray angle, and spray distribution.

Factors Affecting Spray Tip Performance Summary

The information in the chart below applies to most spray applications. However, because there are so many different types and sizes of spray tips, the effects may vary in a specific application. Hypro is glad to assist you with any specific application questions.

Increase In	Operating Pressure	Specific Gravity	Viscosity	Fluid Temperature	Surface Tension
Capacity (Flow Rate)	Increases	Decreases	•	• •	No Effect
Spray Angle	Increases then Decreases	Negligible	Decreases	Increases	Decreases
Droplet Size	Decreases	Negligible	Increases	Decreases	Increases
Pattern Quality	Improves	Negligible	Deteriorates	Improves	Negligible
Wear	Increases	Negligible	Decreases	Increases	—
Impact	Increases	Decreases	Decreases	Increases	Negligible
Velocity	Increases	Decreases	Decreases	Increases	Negligible

• Full cone and hollow cone increases, flat fan spray decreases
• • Depends on fluid being sprayed and spray tip used

Spraying Solutions other than Water

Liquids that are more dense than water will flow through a spray tip more slowly than water. Solutions that are less dense than water will flow through a spray tip more quickly than water. Unless otherwise indicated, the performance tables in the spray tip section of this catalog show flow and application rates for water-based sprays. To use those tables when selecting tips to apply non-water sprays you must calculate an intermediate "look-up" application rate. To do this you will multiply your actual desired application rate by a conversion factor and then use the resulting "look-up" figure to select a tip from the water-based performance tables. The conversion factors listed on this page are based on typical values for common fertilizer solutions. For other spray solutions, you can calculate the conversion factor by taking the square root of the solution's specific gravity.

For easier tip selection using water and non-water sprays, use the SprayIT calculator online at: http://SprayIT.hypropumps.com.

U.S. Units

Density (lb/us gal)	Material	Specific Gravity	Conversion Factor
7.00		0.84	0.92
8.00		0.96	0.98
8.34	water	1.00	1.00
9.00		1.08	1.04
10.00		1.20	1.10
10.30	4-10-10	1.24	1.11
10.65	28-0-0	1.28	1.13
11.00		1.32	1.15
11.05	32-0-0	1.32	1.15
11.20	7-21-7	1.34	1.16
11.65	10-34-0	1.40	1.18
12.00		1.44	1.20

Example:

Your desired application rate of 28% Nitrogen fertilizer (28-0-0) is 30 US GPA.

Multiply 30 GPA by Conversion Factor 1.13 to find the converted look-up application rate of 33.9 GPA.

Select a spray tip that will apply 33.9 GPA of water-based spray. A spray tip that will apply 33.9 GPA of water will apply 30 GPA of 28-0-0 fertilizer solution.

Metric

Density (kg/L)	Material	Conversion Factor
0.80		0.89
0.90		0.95
1.00	water	1.00
1.10		1.05
1.20		1.10
1.24	4-10-10	1.11
1.28	28-0-0	1.13
1.30		1.14
1.32	32-0-0	1.15
1.34	7-21-7	1.16
1.40	10-34-0	1.18
1.50		1.22

Example:

Your desired application rate of 28% Nitrogen fertilizer (28-0-0) is 300 L/ha.

Multiply 300 L/ha X Conversion Factor 1.13 to find the converted look-up application rate of 339 L/ha.

Select a spray tip that will apply 339 L/ha of water-based spray. A spray tip that will apply 339 L/ha of water will apply 300 L/ha of 28-0-0 fertilizer solution.

Spacing, Height, & Conversion Tables

Suggested Minimum Broadcast Spray Heights (Flat Fan Spray Tips)

Spray Angle		15" (40 cm) Spacing	20" (50 cm) Spacing	30" (75 cm) Spacing	40" (100 cm) Spacing**
80 Degree (TR)	Standard	13"-14"	17"-19"	26"-28"	NR*
	Metric	33-36 cm	43-48 cm	66-71 cm	NR*
110 Degree (TR)	Standard	10"-11"	15"-18"	20"-22"	NR*
	Metric	25-28 cm	38-46 cm	51-56 cm	NR*
120 Degree (ULD)	Standard	8"-10"	12"-15"	16"-20"	24"-30"
	Metric	20-25 cm	30-38 cm	41-52 cm	61-76 cm
140 Degree (HF)	Standard	5"-7"	7"-9"	10"-14"	14"-18"
	Metric	13-18 cm	18-23 cm	25-35 cm	35-45 cm

* Not Recommended
** 40" tip spacing is prone to off-target trespass under certain conditions that affect drift.

Optimum Broadcast Spray Heights (Flat Fan Spray Tips)

Spray Angle		15" (40 cm) Spacing	20" (50 cm) Spacing	30" (75 cm) Spacing	40" (100 cm) Spacing**
80 Degree (TR)	Standard	22"	30"	43"	NR*
	Metric	56 cm	76 cm	109 cm	NR*
110 Degree (TR)	Standard	15"	20"	30"	NR*
	Metric	38 cm	51 cm	76 cm	NR*
120 Degree (ULD)	Standard	15"	20"	30"	40"
	Metric	38 cm	51 cm	76 cm	102 cm
140 Degree (HF)	Standard	10"	12"	16"	22"
	Metric	25 cm	30 cm	40 cm	55 cm

Tip Spacing

If your tip spacing differs from the spacing used in spray tip application rate tables, multiply the tabulated GPA by the conversion factor to find your actual application rate.

Example: If your tip spacing is actually 36-inches (90cm), your application rate will be 0.56 times what is shown in tables for tips spaced 20-inches (50cm).

To calculate a conversion factor for spacing not listed below, use the following formula:

$$\text{Standard Conversion Factor} = \frac{\text{Tip Spacing in Table (inches)}}{\text{Your Tip Spacing (inches)}}$$

$$\text{Metric Conversion Factor} = \frac{\text{Tip Spacing in Table (cm)}}{\text{Your Tip Spacing (cm)}}$$

Standard U.S.

Your Spacing	Conversion from Charts		
	20 in	30 in	40 in
8 in	2.50	3.75	5.00
10 in	2.00	3.00	4.00
12 in	1.67	2.50	3.33
14 in	1.43	2.14	2.86
15 in	1.33	2.00	2.67
16 in	1.25	1.88	2.50
18 in	1.11	1.67	2.22
20 in	1.00	1.50	2.00
22 in	0.91	1.36	1.82
24 in	0.83	1.25	1.67
26 in	0.77	1.15	1.54
28 in	0.71	1.07	1.43
30 in	0.67	1.00	1.33
32 in	0.63	0.94	1.25
34 in	0.59	0.88	1.18
36 in	0.56	0.83	1.11
38 in	0.53	0.79	1.05
40 in	0.50	0.75	1.00
42 in	0.48	0.71	0.95
44 in	0.45	0.68	0.91
48 in	0.42	0.63	0.83

Metric

Your Spacing	Conversion from Charts		
	50 cm	75 cm	100 cm
10 cm	5.00	7.50	10.00
15 cm	3.33	5.00	6.67
20 cm	2.50	3.75	5.00
25 cm	2.00	3.00	4.00
30 cm	1.67	2.50	3.33
33 cm	1.52	2.27	3.03
40 cm	1.25	1.88	2.50
45 cm	1.11	1.67	2.22
50 cm	1.00	1.50	2.00
55 cm	0.91	1.36	1.82
60 cm	0.83	1.25	1.67
65 cm	0.77	1.15	1.54
70 cm	0.71	1.07	1.43
75 cm	0.67	1.00	1.33
80 cm	0.63	0.94	1.25
85 cm	0.59	0.88	1.18
90 cm	0.56	0.83	1.11
95 cm	0.53	0.79	1.05
100 cm	0.50	0.75	1.00
110 cm	0.45	0.68	0.91
120 cm	0.42	0.63	0.83

Measuring Traveling Speed

Standard U.S.

$$\text{Speed (MPH)} = \frac{\text{Distance (ft) x 60}}{\text{Time (Seconds) x 88}}$$

Time Required in SECONDS (min:sec) to travel a distance of:

Speed in MPH	100 feet	200 feet	300 feet
0.5	136 (2:16)	273 (4:33)	409 (6:49)
1	68 (1:18)	136 (2:16)	205 (3:25)
1.5	45	91	136 (2:16)
2	34	68	102 (1:42)
2.5	27	55	82 (1:22)
3	23	45	68 (1:08)
3.5	19	39	58
4	17	34	51
4.5	15	30	45
5	14	27	41
5.5	12	25	37
6	-	23	34
6.5	-	21	31
7	-	19	29
7.5	-	18	27
8	-	17	26
8.5	-	16	24
9	-	15	23
9.5	-	12	22
10	-	14	21

Metric

$$\text{Speed (kmph)} = \frac{\text{Distance (m) x 3.6}}{\text{Time (Seconds)}}$$

Time Required in SECONDS (min:sec) to travel a distance of:

Speed Km/h	50 m	75 m	100 m
1	180	270	360
2	90	135	180
3	60	90	120
4	45	68	90
5	36	54	72
6	30	45	60
7	26	39	51
8	23	34	45
9	20	30	40
10	-	27	36
11	-	25	33
12	-	23	30
13	-	21	28
14	-	-	26
15	-	-	24
16	-	-	23
17	-	-	21
18	-	-	20
19	-	-	19
20	-	-	18

Broadcast Application Formulas

Standard U.S.

Application Formulas – Standard U.S.
GPM – Gallons per minute
GPA – Gallons per acre
GAL/1000FT^2 – Gallons per 1000 square feet
MPH – Miles per hour
W - Tip spacing (inches) for broadcast spraying
- Spray width (inches) for single-tip band spraying or boomless spraying
- Row spacing (inches) divided by the number of tips per row for directed spraying

$$\text{GPM (per spray tip)} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5{,}940}$$

$$\text{GPM (per spray tip)} = \frac{\text{GAL/1000FT}^2 \times \text{MPH} \times \text{W}}{136}$$

$$\text{GPA} = \frac{5{,}940 \times \text{GPM (per spray tip)}}{\text{MPH} \times \text{W}}$$

$$\text{GAL/1000FT}^2 = \frac{136 \times \text{GPM (per spray tip)}}{\text{MPH} \times \text{W}}$$

Metric

Application Formulas – Metric
LPM – Litres per minute
L/ha – Litres per hectare
Kmph – Kilometres per hour
W - Tip spacing (m) for broadcast spraying
- Spray width (m) for single-tip band spraying or boomless spraying
- Row spacing (m) divided by the number of tips per row for directed spraying

$$\text{LPM} = \frac{\text{L/ha} \times \text{Kmph} \times \text{W}}{600}$$

$$\text{L/ha} = \frac{600 \times \text{LPM}}{\text{Kmph} \times \text{W}}$$

Band Spraying

Standard U.S.

$$\text{Volume of Chemical Solution Required in Gallons} = \frac{\text{Band Width (inches)}}{[\text{Band Width (inches)} + \text{Spacing between Bands (inches)}]} \times \text{Label Rate of Carrier (GPA)} \times \text{Field Area (Acres)}$$

Height Requirement – Band Spraying

Band Width	Height over Target 80°	Height over Target 110°
8"	5"	3"
10"	6"	4"
12"	7"	4"
15"	9"	5"
18"	11"	6"
20"	12"	7"
30"	18"	11"

To find GPA in the band, use the following equation:

$$\text{Band GPA} = \frac{5940 \times \text{GPM} \times N}{\text{MPH} \times W}$$

GPM needed per Tip:

$$\text{GPM} = \frac{\text{GPA} \times \text{MPH} \times W}{5940 \times N}$$

GPA = Gallons per acre
GPM = Gallons per minute
MPH = Speed in miles per hour
W = Band width in inches
N = Number of tips spraying each band

Metric

$$\text{Volume of Chemical Solution Required in Litres} = \frac{\text{Band Width (m)}}{[\text{Band Width (m)} + \text{Spacing between Bands (m)}]} \times \text{Label Rate of Carrier (L/ha)} \times \text{Field Area (ha)}$$

Height Requirement – Band Spraying

Band Width	Height over Target 80°	Height over Target 110°
20 cm	12 cm	7 cm
25 cm	15 cm	9 cm
30 cm	18 cm	11 cm
40 cm	24 cm	14 cm
45 cm	27 cm	16 cm
50 cm	30 cm	18 cm
75 cm	45 cm	26 cm

To find the L/ha in the band, use the following equation:

$$\text{Band L/ha} = \frac{600 \times \text{LPM} \times N}{\text{Kmph} \times W}$$

LPM needed per Tip:

$$\text{LPM} = \frac{\text{L/ha} \times \text{Kmph} \times W}{600 \times N}$$

L/ha = Litres per hectare
LPM = Litres per minute
Kmph = Speed in kilometres per hour
W = Band width in metres
N = Number of tips spraying each band

Band Spraying and Conversion Factors (US Standard and Metric)

Treated Area Per Field For Banding Applications **Standard U.S.**

Row Spacing in Inches	Band Width						
	7"	8"	10"	12"	15"	20"	24"
20"	0.350	0.400	0.500	0.600	0.75	1.000	
22"	0.318	0.363	0.454	0.545	0.681	0.909	
30"	0.233	0.266	0.333	0.400	0.500	0.666	0.800
36"	0.194	0.222	0.278	0.333	0.416	0.555	0.666
40"	0.175	0.200	0.250	0.300	0.375	0.500	0.600
48"	0.145	0.166	0.208	0.250	0.321	0.417	0.500

Treated Area Per Field For Banding Applications **Metric**

Row Spacing in cm	Band Width						
	18 cm	20 cm	25 cm	30 cm	38 cm	50 cm	60 cm
50 cm	0.360	0.400	0.500	0.600	0.760	1.000	
60 cm	0.300	0.333	0.417	0.500	0.633	0.833	1.000
75 cm	0.240	0.267	0.333	0.400	0.507	0.667	0.800
90 cm	0.200	0.222	0.278	0.333	0.422	0.556	0.667
100 cm	0.180	0.200	0.250	0.300	0.380	0.500	0.600
120 cm	0.150	0.167	0.208	0.250	0.317	0.417	0.500

	Multiply Known	By	To Obtain
Area	Acres	43,560	square feet
	Acres	43.56	1000FT^2 blocks
	Acres	0.4047	Hectares
	Hectares	2.471	Acres
Length	Inches	25.4	Millimeters (mm)
	Inches	2.54	Centimeters (cm)
	Inches	0.0254	Meters (m)
	Feet	0.3048	Meters (m)
	Miles	1.609	Kilometres (km)
Volume	U.S. Gallons	128	Fluid Ounces
	U.S. Gallons	8	Pints
	U.S. Gallons	3.785	Liters
	Liters	0.2641	U.S. Gallons
	U.S. Gallons	0.833	Imperial Gallons
	Imperial Gallons	1.201	U.S. Gallons
Flow Rate	U.S. Gallons/hour (GPH)	3.785	Liters/hour (L/h)
	U.S. Gallons/minute (GPM)	3.785	Liters/minute (L/min)
Application Rate	U.S. Gallons Per Acre (GPA)	9.353	Liters/Hector (L/ha)
	Liter Per Hectare (L/ha)	0.1069	U.S. Gallons Per Acre (GPA)
Pressure	Pounds/In^2 (PSI)	0.06895	Bar
	Bar	14.5	Pounds/In^2 (PSI)
	Pounds/In^2 (PSI)	6.895	Kilopascals (kPA)
	Kilopascals (kPA)	0.145	Pounds/In^2 (PSI)
Speed	Miles Per Hour (MPH)	1.609	Kilometres/Hour (km/h)
	Kilometres/Hour (km/h)	0.62137	Miles Per Hour (MPH)

ProFlo™ Nozzle Bodies

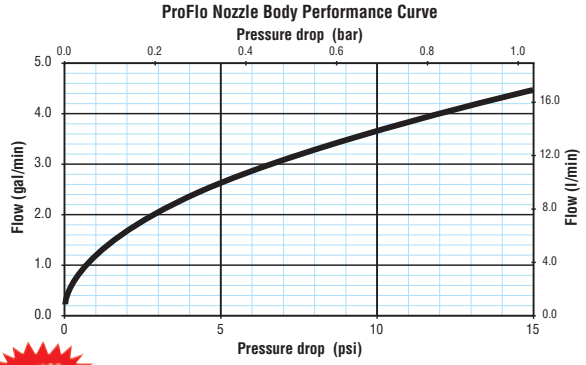
Nozzle Bodies with the Highest Flow Rates in the Industry

FEATURES

- Three turret styles for an easy change of spray tips: single, 3-way, and 5-way
- Provides lowest pressure drop at any given flow in the industry
- 2.6 gpm (9.84 LPM) with a 5 psi (.345 BAR) pressure drop
- Available in wet or dry boom versions
- Positive shutoff between each spray position
- Custom logos available upon request (minimum quantities apply)

BENEFITS

- Designed to deliver the highest flow rates across the spraying pressure range
- Unique DCV (diaphragm check valve) design reduces restrictions in the flow path, enabling 2.6 gpm with a 5 psi pressure drop through the nozzle
- Supports faster field speeds with the same coverage and supports direct fertilizer application through the nozzle body DCV flow path
- Turret-indexing design provides improved consistency and reliability throughout the life of the nozzle body – eliminating free spinning and seizing problems seen on competitive nozzle bodies
- Automatic spray alignment using flat fan spray tips
- Compact design makes mounting easier with less potential interference with the spray boom structure
- ProFlo nozzle bodies come standard with an 8 psi (.55 bar) diaphragm check valve. 4 psi, 12 psi, 20 psi, and 25 psi checks are available as options.



Express™ Nozzle Body End Caps

NEW

Conventional boom designs trap air in the boom causing a delay from the close signal to when spray actually stops. Hypro's Express nozzle body end caps include a passive feature that eliminates the trapped air by allowing the air to escape through the nozzle body. When the boom is completely filled with liquid, the nozzle body's diaphragm check valve (DCV) activation time is greatly improved, by as much as 85%. The Express nozzle body end cap supports today's practice of Precision Agriculture by enabling standard nozzle bodies to have much quicker reaction times in response to GPS boom shut-off control signals, turning off spray quickly and decisively on overlaps, end rows, and boundary areas.

The Express nozzle body end caps also create a much cleaner look by terminating the pipe at the last nozzle body, while reducing pipe material by as much as 10%. Using nozzle body end caps will contribute to better boom hygiene by eliminating the 'dead-end' termination of pipe that allows chemical residue to build up and air to accumulate. The additional option of a removable end plug allows easy access for boom cleanout to flush debris from boom pipe.

See page 186 for order information

ProStop™ and Scorpio Nozzle Body Valves

Fast and Positive Spray Activation

PROSTOP

- Rapidly and accurately start and stop nozzle flow
- Compatible with convenient push-connect air fittings and tube
- Connect one air circuit per boom section
- Air pressure activates spray, spring closure provides positive shut-off for transport and storage
- Durable and chemically-resistant polypropylene, PVDF, and EPDM components
- A 40 psi (3 bar) pneumatic signal controls a maximum spray pressure of 150 psi (10 bar)
- See page 186 for order information

SCORPIO

- Control spray activation directly on Hypro ProFlo™ nozzle bodies
- Near-instantaneous on/off control eliminates misapplication and waste
- Eliminates the need for centralized valve banks, allowing on/off control at the nozzle body
- Extremely low power consumption lets Scorpio work in smaller electrical systems
- Innovative built-in control circuit provides fail safe, normally-closed function
- Industry leading flow capability support modern high-productivity application rates and speeds
- See page 186 for order information

ProFlo™

ProFlo™ Nozzle Bodies

3 and 5-Way Nozzle Bodies for Wet Boom (no tab for boom clamp)

Seal Option/ Housing Reference	Turret Options	(to clamp on) Pipe Size				
		½"	¾"	1"	20mm	25mm
EPDM/Red	3	4223N-B322	4223N-B323	4223N-B324	4223N-B327	4223N-B328
	5	4223N-B522	4223N-B523	4223N-B524	4223N-B527	4223N-B528
Viton/Green	3	4223N-B322V	4223N-B323V	4223N-B324V	4223N-B327V	4223N-B328V
	5	4223N-B522V	4223N-B523V	4223N-B524V	4223N-B527V	4223N-B528V

Sold in Quantities of 100
For Individual Bags, Add Suffix -00 (i.e.: 4223N-B322-00)

Single Drop Nozzle Body for Wet Boom

Seal Option/ Housing Reference	(to clamp on) Pipe Size				
	½"	¾"	1"	20mm	25mm
EPDM/Red	4221N-B122	4221N-B123	4221N-B124	4221N-B127	4221N-B128
Viton/Green	4221N-B122V	4221N-B123V	4221N-B124V	4221N-B127V	4221N-B128V

¼" FNPT Outlet- Substitute B with F (i.e.: 4221N-F122)
Sold in Quantities of 100
For Individual Bags, Add Suffix -00 (i.e.: 4221N-B122-00)

3 & 5-way Nozzle Bodies with Tab for Boom Clamp

Seal Option/ Housing Reference	Turret Options	(to clamp on) Pipe Size				
		½"	¾"	1"	20mm	25mm
EPDM/Red	3	4243N-B322	4243N-B323	4243N-B324	4243N-B327	4243N-B328
	5	4243N-B522	4243N-B523	4243N-B524	4243N-B527	4243N-B528
Viton/Green	3	4243N-B322V	4243N-B323V	4243N-B324V	4243N-B327V	4243N-B328V
	5	4243N-B522V	4243N-B523V	4243N-B524V	4243N-B527V	4243N-B528V

Sold in Quantities of 100
For Individual Bags, Add Suffix -00 (i.e.: 4243N-B322-00)

3 & 5-way Nozzle Bodies with Tab for Boom Clamp and Hose Barb for Dry Boom

Seal Option/ Housing Reference	Turret Options	¾" Single Ended HB	¾" Double Ended HB	1" Single Ended HB	1" Double Ended HB
EPDM/Red	3	4263N-B323S	4263N-B323D	4263N-B324S	4263N-B324D
	5	4263N-B523S	4263N-B523D	4263N-B524S	4263N-B524D
Viton/Green	3	4263N-B323SV	4263N-B323DV	4263N-B324SV	4263N-B324DV
	5	4263N-B523SV	4263N-B523DV	4263N-B524SV	4263N-B524DV

Sold in Quantities of 100
For Individual Bags, Add Suffix -00 (i.e.: 4263N-B323S-00)

Dry Boom Adapters for Multi-Turret

Part Number	Type	Clamp Size	Hose Barb
4200-0111N	Single	½" Pipe	½"
4200-0112N	Single	¾" Pipe	¾"
4200-0113N	Single	¾" Pipe	1"
4200-0114N	Single	1" Pipe	¾"
4200-0115N	Single	1" Pipe	1"
4200-0211N	Double	½" Pipe	½"
4200-0212N	Double	¾" Pipe	¾"
4200-0213N	Double	¾" Pipe	1"
4200-0214N	Double	1" Pipe	¾"
4200-0215N	Double	1" Pipe	1"

Hose Barb Triple Nozzle Bodies-with DCV

Seal Options/ Housing Reference	Single hose barb P/N	Double hose barb P/N	Triple hose barb P/N	Hose ID
EPDM/Red	–	–	4242N-B300	¼"
	4242N-B322S	4242N-B322D	4242N-B322T	½"
	4242N-B323S	4242N-B323D	4242N-B323T	¾"

Hose Barb Dry Boom Nozzle Bodies-with DCV

Seal Options/ Housing Reference	Single hose barb P/N	Double hose barb P/N	Triple hose barb P/N	Hose ID
EPDM/Red	4241N-B121S	4241N-B121D	4241N-B121T	⅜"
	4241N-B122S	4241N-B122D	4241N-B122T	½"
	4241N-B123S	4241N-B123D	4241N-B123T	¾"

Add Prefix ''BG-" for 1 part per retail bag

Nozzle Bodies

Hose Barb Dry Boom Nozzle Bodies-with Top-Mounted DCV

Seal Options/ Housing Reference	Single hose barb P/N	Double hose barb P/N	Hose ID
EPDM/Red	4240N-B121S	4240N-B121D	3/8"
	4240N-B122S	4240N-B122D	1/2"
	4240N-B123S	4240N-B123D	3/4"

Add Prefix "BG-" for 1 part per retail bag

Threaded Single Nozzle Bodies-with DCV

Seal Options/ Housing Reference	1/4" MNPT x 1/4" FNPT			1/4" MNPT x Bayonet		11/16" UNF x Bayonet
	4 PSI	8 PSI	25 PSI	4 PSI	8 PSI	8 PSI
EPDM/Red	4240N-F110	4240N-F120	4240N-F150	4240N-B010	4240N-B020	4241N-B120U
Viton/Green	4240N-F110V	4240N-F120V	4240N-F150V	4240N-B010V	4240N-B020V	-

Hose Barb Dry Boom Nozzle Bodies-No DCV

Single hose barb P/N	Double hose barb P/N	Triple hose barb P/N	Hose ID
4231N-B101S	4231N-B101D	4231N-B101T	3/8"
4231N-B102S	4231N-B102D	4231N-B102T	1/2"
4231N-B103S	4231N-B103D	4231N-B103T	3/4"

Wet Boom Single Nozzle Bodies-No DCV

Single hose barb P/N	Hose ID
4201N-B102	1/2" clamp
4201N-B103	3/4" clamp
4201N-B104	1" clamp

Add Prefix "BG-" for 1 part per retail bag

Replacement Nozzle Body Stem Seals

Part Number	Description/Material
1723-0142	10 mm Wet Boom Stem Seal-EPDM
1721-0220	10 mm Wet Boom Stem Seal-Viton

Replacement Seal/O-ring Kit ProFlo Body

Part Number	Description/Material
3430-0754	Contains all internal seals/EPDM
3430-0754V	Contains all internal seals/Viton

Screw, Nut & Stem O-ring Kit

Part Number	Description/Material
3430-0755	Contains replacement screw, nut and stem o-ring/EPDM
3430-0755V	Contains replacement screw, nut and stem o-ring/Viton

Nozzle Body Accessories

Express™ Nozzle Body End Cap

Part Number (Carton Qty: 100)	Part Number (1 per Bag)	Description	Nozzle Body Type
7433-3316	BG-7433-3316	1" Express™ fitting with nozzle body end cap allows trapped air to escape through the nozzle body and includes removable plug for boom cleanout.	Standard Flow
7433-3314	BG-7433-3314		Hign Fllow

See page 182 for details

Express™ Nozzle Body End Cap Retrofit Kit

Part Number	Description	Cutting Jig Material	Nozzle Body Type
3410-0039	Kit includes machinist-quality drill bit, drilling and cutting jig for 1" pipe, Emery cloth, and instructions to retrofit conventional wet boom spray pipe for Express nozzle body end caps.	Polypropylene	Standard Flow
3410-0044		Aluminum	Standard Flow
3410-0043		Aluminum	High Flow

Express™ Wet Boom Fittings

Part Number (Carton Qty: 50)	Part Number (1 per Bag)	Description	Ref #
7433-2502	BG-7433-2502	Express Fitting X 1" Universal Flange Straight	1
7433-2503	BG-7433-2503	2 Express Fitting X 1" Universal Flange Tee	2
7433-2608	BG-7433-2608	Express Fitting X 1" Hose Barb Straight	3
7433-2610	BG-7433-2610	Express Fitting X 1" Hose Barb Elbow	4
7433-2613	BG-7433-2613	Express Fitting X 1" Male Cam Lock Straight	5
	UFG0100E	1" EPDM Universal Flange Gasket provides high quality sealing for flanged fittings	6

For high quality sealing to flange fitting, use Hypro's Universal Flange Gasket.

Air-actuated On/Off Nozzle Control Valve

Part Number	Description
PS3/4F-PN	ProStop™ valve assembly

See page 183 for details

12 VDC Electric Solenoid Valve

Part Number	Description
2525-0035	Scorpio™ Solenoid Valve

See page 183 for details

Replacement Check Valve (DCV) includes Flynut, Housing and Spring

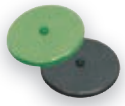
Housing Reference	Spring Pressure (PSI)/Plunger Reference Color				
	4 PSI/Orange	8 PSI/Black	12 PSI/Yellow	20 PSI/Gray	25 PSI/Blue
Red	4200-0010	4200-0020	4200-0030	4200-0040	4200-0050
Green	4200-0010V	4200-0020V	4200-0030V	4200-0040V	4200-0050V

Red housing indicates for use with EPDM Seals. Green housing indicates for use with Viton Seals.
Note: Diaphragms are sold separately.

Positive Shut-off

Part Number	Description
4200-0025	8 PSI DCV with positive shut-off

Replacement Diaphragm Seal Options for check valves



Option	Part Number	Color Reference
EPDM	4200-0004E	Black
Viton	4200-0004V	Green

Nozzle Body Accessories

Push-to-Connect Nozzle Bodies & Caps

Push-to-Connect (PTC) Cap Part Numbers			
Type	Size	25 Std. Pack	1 Per Bag
Caps	1/4"	4200-0060	BG-4200-0060
	3/8"	4200-0061	BG-4200-0061

Includes gasket

Push-to-Connect (PTC) Nozzle Body Part Numbers					
Type	DCV	4 PSI		8PSI	
	Size	25 Std. Pack	1 Per Bag	25 Std. Pack	1 Per Bag
PTC to Bayonet	1/4"	4247N-B119	BG-4247N-B119	4247N-B129	BG-4247N-B129
	3/8"	4247N-B111	BG-4247N-B111	4247N-B121	BG-4247N-B121
PTC to PTC	1/4"	4247N-C119	BG-4247N-C119	4247N-C129	BG-4247N-C129
	3/8"	4247N-C111	BG-4247N-C111	4247N-C121	BG-4247N-C121

Wet Boom Blanks

Part Number	Material	Description
400059	Nylon	3/4" Pipe
400069	Nylon	1" Pipe
400059P*	Polypropylene	3/4" Pipe
400069P*	Polypropylene	1" Pipe

*Comes standard with Viton o-ring.

Series 404 Swivel and Threaded-Swivel Nozzle Bodies

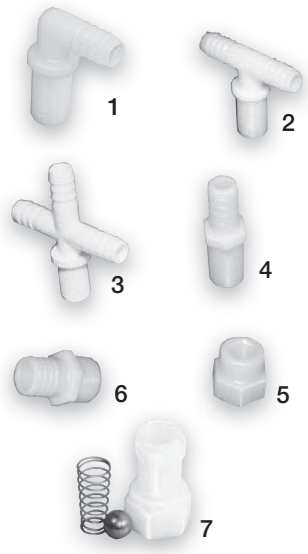
Part Number	Description
4200N-0020	Single Swivel 1/4" FNPT X Quick Attach
4200N-0021	Double Swivel 1/4" FNPT X 2 Quick Attach
4200N-0023	Single 1/4" FNPT X 11/16" - 16UN(M)
4200N-0024	Double 1/4" FNPT X 11/16" - 16UN(M)
4200N-0025	Red Retaining Cap 11/16" - 16UN(F)
4200N-0026	Black Retaining Cap 11/16" - 16UN(F)

Ball Nozzle Holders

Part Number	Ball Thread	Attach Method
40867BN	1/4" FNPT	Handlock Clamp 1" pipe
40868BN	1/4" FNPT	Handlock Clamp 1-1/4" pipe
4081B0N	1/4" FNPT	Threaded 1/4" MNPT

Nozzle Body Accessories

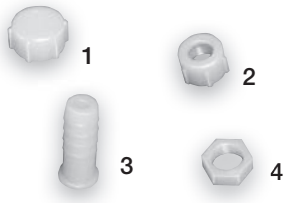
11/16" UN Nozzle Bodies



Reference Number	Standard Pack	Description	Nylon Part Number	Poly Part Number
1	25	11/16" - 16UN(M) X 1/4" HB Elbows	NTL14	3NTL14
1	25	11/16" - 16UN(M) X 3/8" HB Elbows	NTL38	3NTL38
1	25	11/16" - 16UN(M) X 1/2" HB Elbows	NTL12	3NTL12
1	25	11/16" - 16UN(M) X 5/8" HB Elbows	NTL58	3NTL58
1	25	11/16" - 16UN(M) X 3/4" HB Elbows	NTL34	3NTL34
2	25	11/16" - 16UN(M) X 3/8" HB Tees	NTT38	3NTT38
2	25	11/16" - 16UN(M) X 1/2" HB Tees	NTT12	3NTT12
2	25	11/16" - 16UN(M) X 5/8" HB Tees	NTT58	3NTT58
2	25	11/16" - 16UN(M) X 3/4" HB Tees	NTT34	3NTT34
3	25	11/16" - 16UN(M) X 3/8" HB Crosses	T38C	3T38C
3	25	11/16" - 16UN(M) X 1/2" HB Crosses	T12C	3T12C
3	25	11/16" - 16UN(M) X 3/4" HB Crosses	T34C	3T34C
4	25	11/16" - 16UN(M) X 3/8" HB Nozzle Shanks Straight	38D	338D
4	25	11/16" - 16UN(M) X 1/2" HB Nozzle Shanks Straight	3812D	33812D
5	25	11/16" - 16UN(F) X 1/4" FNPT Female Spray Tip Adapter	NF1614	3NF1614
6	25	11/16" - 16UN(M) X 1/4" MNPT Nipples	NB1614	3NB1614
6	25	11/16" - 16UN(M) X 1/2" MNPT Nipples	NB1612	3NB1612
7	25	3/8" FNPT X 11/16" - 16UN(M) Ball Check Valve for nozzle fittings (10 PSI)	NBC10	————

Includes B12/3B12 nut.
Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

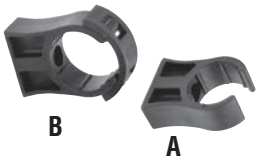
Nozzle Body Cap and Nut



Reference Number	Standard Pack	Description	Nylon Part Number	Poly Part Number
1	25	11/16" - 16UN(F) Nozzle blank cap	3942*	33942*
2	25	11/16" - 16UN(F) Nozzle cap for tip/barb	8027*	38027*
3	25	1/4" HB for 8027/38027 cap	K8414	3K8414
3	25	3/8" HB for 8027/38027 cap	K8438	3K8438
3	25	1/2" HB for 8027/38027 cap	K8412	3K8412
4	25	11/16" - 16UN jamb nut	B12*	3B12*

*Fits all nozzle fittings with 11/16" male straight thread.

Cobra Clip™ Boom Pipe Mounts



Part Number	Ref.	Description
0113434307	A	¾" or 25mm nominal boom pipe mount
0113434308	B	1" or 32mm nominal boom pipe mount w/ keep strap
01134343010	B	1-½" or 40mm nominal boom pipe mount w/ keep strap

Hose Drops

Part Number	Length	Description Outlet, Inlet
430001	15"	1/4" NPT, 11/16" - 16UN(M)
430002	24"	1/4" NPT, 11/16" - 16UN(M)
430201	15"	1/4" NPT, Quick Attach Fitting
430202	24"	1/4" NPT, Quick Attach Fitting
430201V	15"	1/4" NPT, Quick Attach Fitting with Viton
430202V	24"	1/4" NPT, Quick Attach Fitting with Viton

Black Polypropylene Boom Pipe (Undrilled) - Schedule 80 - 20' Sections

Part Number	Nominal Pipe Size	Pipe Length	Wall Thickness	Wall Tolerance	Outside Diameter	Max. Operating Pressure @ 73º F
8034-F-00PP	¾"	20'	0.154	+0.020	1.050	270
801-F-00PP	1"	20'	0.179	+0.021	1.315	250
80112-F-00PP	1½"	20'	0.220	+0.021	1.905	200

Nozzle Body Accessories & Foam Marker

Quick Fitting Adapters

Reference #	Part #	Description	Packaging
-	4200-0015N	¼" BSP x Quick Attach	None
1	4200-0016N	¼" MNPT x Quick Attach	None
2	4200N-0017	45° Double Elbow w/Gasket	10/ Bag, Priced Individually
3	4200N-0018	90° Elbow x Quick Attach	10/ Bag, Priced Individually
4	4200-0019	¼" FNPT x Quick Attach	None
5	9950-0024	Hardi* Adapter	10/ Bag, Priced Per Bag
6	9950-0027	Jacto** Adapter	10/ Bag, Priced Per Bag
-	BG-400275N	¼" FNPT x Quick Attach	1/Bag

* Hardi is a registered trademark of Hardi International A/S
** Jacto is a registered trademark of Jacto, Inc.

Vari-Spacing Clamps

Part Number	Material	Piping/Tubing O.D.
413003*	Steel	3⁄4" Round Pipe (1.050")
413004*	Steel	1" Round Pipe (1.315")
413005*	Steel	1-1⁄4" Round Pipe (1.660")
413013	Steel	3⁄4" Square Tubing
413014	Steel	1" Square Tubing
413015	Steel	1-1⁄4" Square Tubing
413016	Steel	1-1⁄2" Square Tubing
413018	304 Stainless Steel	1-1⁄2" Square Tubing

* By pipe, dimensions refer to I.D. (inner diameter).

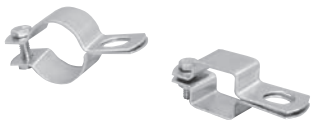
Add Prefix ''BG-" for 1 part per retail bag

ProFlo™ Dry Boom Clamps with Slot for Easy Assembly- Boxes of 100

Part Number	Material	Piping/Tubing O.D.
1520-1075	zinc plated steel	3/4" square tubing
1520-1100	zinc plated steel	1" square tubing
1520-1125	zinc plated steel	1-1/4"" square tubing
1520-1150	zinc plated steel	1-1/2" square tubing
1520-1075SS	304 stainless steel	3/4" square tubing
1520-1100SS	304 stainless steel	1" square tubing
1520-1125SS	304 stainless steel	1-1/4"" square tubing
1520-1150SS	304 stainless steel	1-1/2" square tubing

Add Prefix ''BG-" for 1 part per retail bag

Steel Boom Clamps for use with 11/16" Nozzle Bodies



Part Number	Description
BC34R*	3⁄4" Round Pipe
BC100R*	1" Round Pipe
BC100	1" Square
BC114	1-1⁄4" Square

* Dimensions refer to I.D. (inner diameter).

Foam Marker

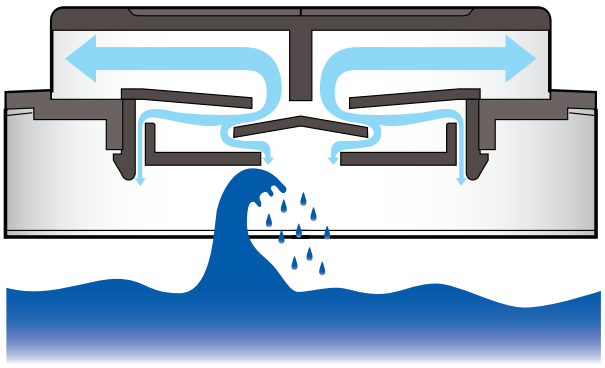
Part Number	Description
520004	Foam Marker System

- Save money and increase efficiency by avoiding costly misses and overlaps while spraying
- Covers up to 500 acres with only a 5-gallon tank
- No pre-mixing required - foam is made in the drop assembly at the end of the boom
- Fits any crop sprayer, turf sprayer or seeding machine (extra hose required for booms longer than 60 feet – part # 520000-751)
- Electro-pneumatically operated, requiring a 12-volt DC 6 Amp power supply
- 108' dual liquid/air hose with thermoformed polystyrene covering for UV protection

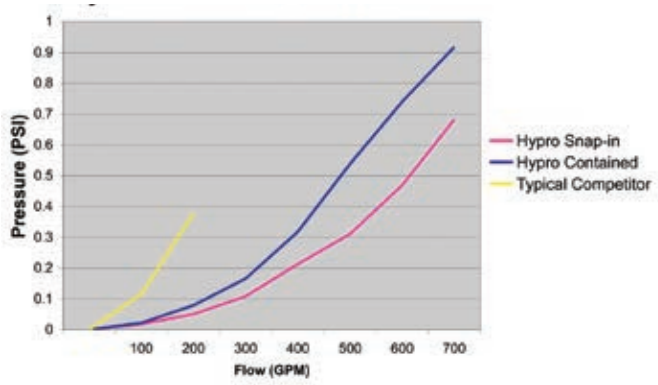
ProCap™ Tank Lids

The Hypro® ProCap™ series of tank lids feature a rugged design that is easy to use and provides a safe and secure cover for a variety of tanks. All lids are made from sturdy polypropylene material to withstand harsh chemicals and ultraviolet rays.

Labyrinth Breather



Labyrinth Breather Fill Rate Performances



As depicted in the graph above, the Hypro Labyrinth Breather consistently performs at a higher fill rate and lower pressure than the typical competitor.

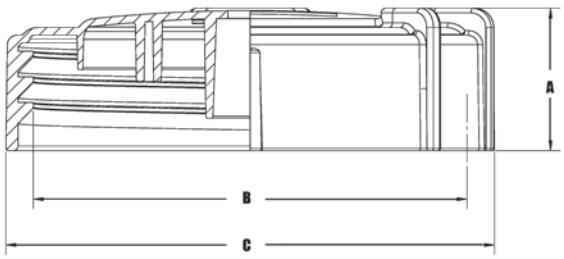
Increased Labyrinth Breather capacity supports higher tank filling rates

Female-Threaded Lids with Gasket

- Easily replaces an old or lost lid
- Available as a solid lid or with a spring breather
- Universal thread has larger diameter to fit any tank thread

Breather Type	Thread Type	Lid Size 6"
None	Universal	TL06-0003
Spring	Universal	TL06-0004

Female-Threaded Tank Lid Dimensions



Part Number	A IN(MM)	B IN(MM)	C IN(MM)
TL06-0003	1.85(47)	5.66(144)	6.35(161)
TL06-0004	1.85(47)	5.66(144)	6.35(161)

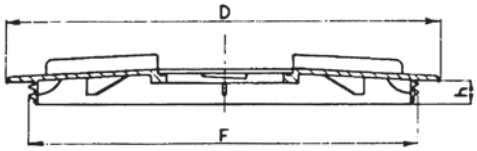
ProCap™ Tank Lids

Male-Threaded Tank Lids and Ring Assemblies

- Available as a solid lid or with a labyrinth breather

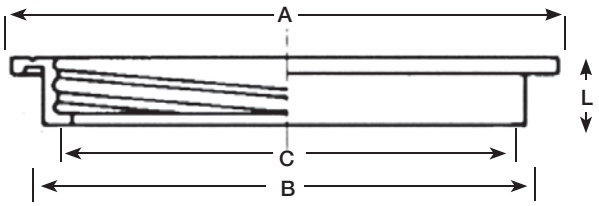
Breather Type	6"	8"	12"	16"	22"
Solid Lid/Ring	3522100-1	3522120-1	3522140-1	3522160-1	352180-1
Labyrinth Lid/Ring	–	3522221-1	3522040-1	3522060-1	352080-1
Solid Lid	3522100	3522120	3522140	3522160	352180
Lid with Labyrinth	3522000	3522221	3522040	3522060	352080
Ring - Standard	350401	3502420	3502440	3502460	350480
Ring with C Gasket	–	TLP-0046	350640	350660	350680
Sealing Gasket Between Tank & Ring	–	350420-020	350440-020	350460-020	350480-020
Wiper Gasket Between Lid & Ring	352000-020	3522120-020	3522140-020	3522160-020	–
C Gasket	–	350620-020	350640-020	TLP-0050	350680-020

Male-Threaded Tank Lid Dimensions



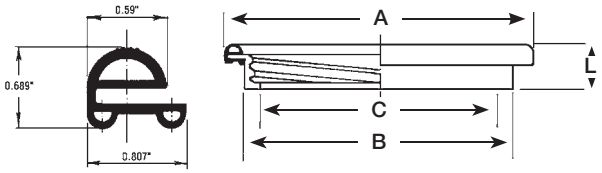
Lid Size	D IN/MM	F IN/MM	H IN/MM
6"	5.5/140	4.3/110	-
8"	9.8/250	8.3/210	1.2/31
12"	14.0/355	12.3/313	1.2/31
16"	17.9/454	16.1/410	1.0/25
22"	24.4/620	22.3/567	1.2/30

Standard Ring Dimensions



Lid Size	A IN/MM	B IN/MM	C IN/MM	L IN/MM
6"	6.3/159	4.9/125	4.4/112	0.7/17
8"	10.0/255	8.5/215	7.6/192	1.5/38
12"	14.2/360	12.6/320	11.4/290	1.5/38
16"	18.2/462	16.3/415	15.0/382	1.4/35
22"	24.4/620	22.6/575	21.3/540	1.6/41

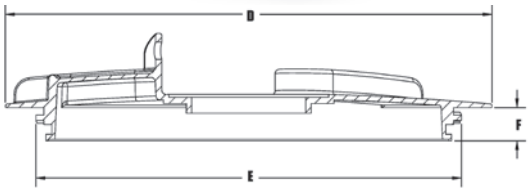
Ring with "C" Gasket Dimensions

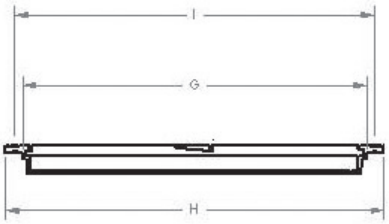


Lid Size	A IN/MM	B IN/MM	C IN/MM	L IN/MM
8"	10.0/255	8.5/215	7.6/192	1.5/38
12"	14.0/355	12.6/320	11.4/290	1.5/38
16"	18.1/460	16.3/415	15.0/382	1.4/35
22"	24.4/620	22.6/575	21.3/540	1.6/41

Tank Lids and Ring Assemblies with DuraLok™ Technology

- Easily mounted on a flat surface, the ProCap™ tank lids are available as a solid lid, with a labyrinth breather, or a bullet breather
- ProCap™ lid and ring assembly features DuraLok™ technology, a unique twist and lock closing system
- DuraLok™ gasket sold separately. See chart on page 192.





G = Inside diameter for leak content
H = Outside diameter
I = Screw hole diameter

Breather Type	8"	12"	16"
Solid Lid/Ring	TL08-0001	TL12-0001	TL16-0001
Labyrinth Lid/Ring	TL08-0002	TL12-0002	TL16-0002
Bullet Breather Lid/Ring	TL08-0003	TL12-0003	TL16-0003
Solid Lid	TL08-0011	TL12-0011	TL16-0011
Labyrinth Lid Only	TL08-0012	TL12-0012	TL16-0012
Bullet Breather Lid	TL08-0013	TL12-0013	TL16-0013
Ring Only	TL08-0014	TL12-0014	TL16-0014

DuraLok Lid Dimensions

Lid Size	D IN(MM)	E IN(MM)	F IN(MM)
8"	10(254)	8.3(210)	.96(24)
16"	18.1(460)	16.2(411)	.96(24)

DuraLok Ring Dimensions

Lid Size	I IN	G IN	H IN
8"	9.2	8.25	10.1
16"	17.4	16.3	18.3

Tank Lids

180° Hinged Tank Lids with DuraLok™ Technology

- Easily mounted on a flat surface, the ProCap™ tank lids are available with a labyrinth breather or a bullet breather
- ProCap™ hinged tank lids feature DuraLok™ technology, a unique twist and lock closing system
- Lids come standard with a locking hasp for added security
- The 180° hinged design allows the lid to open completely for easy tank access
- EPDM lid gasket is included

Breather Type	Lid Size	
	12"	16"
Labyrinth	TL12-0006	TL16-0006
Bullet	TL12-0007	TL16-0007

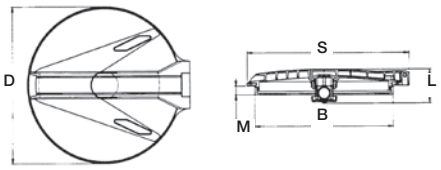
Arag Hinged Tank Lids

Part Number	Size	Description
356040	12"	Hinged Lid/Ring with Bullet Breather
356041	12"	Hinged Lid/Ring with Bullet Breather and Locking Lid
356240	12"	Hinged Lid/Ring with Labyrinth Breather
356241	12"	Hinged Lid/Ring with Labyrinth Breather and Locking Lid
356060	16"	Hinged Lid/Ring with Bullet Breather
356061	16"	Hinged Lid/Ring with Bullet Breather and Locking Lid
356260	16"	Hinged Lid/Ring with Labyrinth Breather
356261	16"	Hinged Lid/Ring with Labyrinth Breather

Gaskets for Hinged Tank Lids

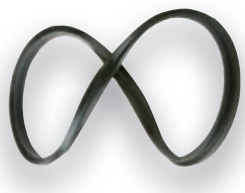
Part Number	Description
356640-020NB	12" Wiper Gasket between Lid and Ring
356660-020NB	16" Wiper Gasket between Lid and Ring

Arag Hinged Dimensions



Lid Size	D-IN	B-IN	L-IN	M-IN	S-IN
12"	14.45	12.60	3.98	1.04	15.35
16"	18.19	16.34	3.98	1.04	19.13

Gaskets



Lid Size	Gasket
8"	TLP-0007
12"	TLP-0018
16"	TLP-0023

Basket Filters

Part Number	Size	Basket Height (mm)	Mesh/Cam Lock Type
9950-08050	8"	50 (2.0")	18
9950-08120	8"	120 (4.7")	18
9950-08240	8"	240 (9.4")	18
9950-12060	12"	60 (2.4")	18
9950-12240	12"	240 (9.4")	18
9950-16180	16"	180 (7.1")	18
9950-16280	16"	280 (11.0")	18
9950-16320	16"	320 (12.6")	18

Tank Accessories

ProClean™ High Performance Tank and Container Wash Nozzles

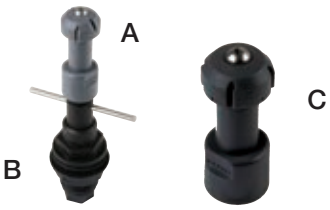
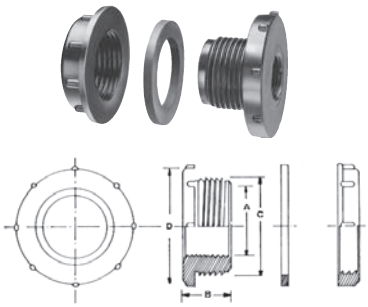


Photo Reference	Part Number	Description
A & B	PC1/2F-36075-PV	ProClean™ container wash nozzle and valve
A	PC1/2F-36075	ProClean™ container wash nozzle
B	PV1/2F1/2M-MA	ProClean™ push valve assembly
C	PC1/2F-235120	ProClean™ tank wash nozzle

Bulkhead Fitting



Part Number	A	B	C	D	Material	Gasket Part Number	Gasket Material
WBH12	1⁄2" NPT	1-3/16"	1-5/8"	2-3/4"	Polypropylene	WBH12/34GAS	Santoprene
WBH34	3⁄4" NPT	1-3/16"	1-5/8"	2-3/4"	Polypropylene	WBH12/34GAS	Santoprene
WBH100	1" NPT	1-7/8"	2-1/16"	2-7/8"	Polypropylene	WBH100GAS	Santoprene
WBH114	1-1⁄4" NPT	1-7/16"	2-1/2"	3-3/8"	Polypropylene	WBH114/112GAS	Santoprene
WBH112	1-1⁄2" NPT	1-7/16"	2-1/2"	3-3/8"	Polypropylene	WBH114/112GAS	Santoprene
WBH200	2" NPT	1-5/8"	3-1/8"	4-1/4"	Polypropylene	WBH200GAS	Santoprene
WBH300	3" NPT	1-3/4"	4-1/4"	5-1/2"	Polypropylene	-	-
WBH400	4" NPT	4-3/16"	5-1/2"	7"	Polypropylene	-	-

Add Prefix ''BG-" for 1 part per retail bag

Jet Agitators

Part Number	Ref. Number	Thread	Max. Input: Output Ration	Material
3371-0019	1	3⁄4" NPT (M) x 3⁄4" NPT (M)	3.9	Polypropylene
3371	2	1⁄2" NPT (F) in, 3⁄4" NPT (M) out	3.4	Polypropylene
3371-0028	3	3⁄4" NPT (M) (high volume)	5.1	Polypropylene
3R12	4	1⁄2" NPT (M) Tee	—	Polypropylene

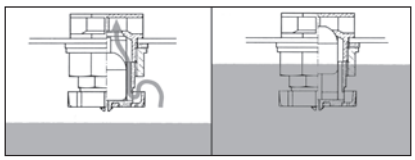
Labyrinth Air Valve

Part Number	Description
504203-HYP	Polypropylene Labyrinth Air Valve with 1" male connection
G40004	Gasket for installation in tank

Floating Ball Vent Valve

Part Number	Description
504210*	Polypropylene Floating Ball Vent Valve
500615-060	Optional Spring for no-spill applications

*2.35" tank hole dimension required for installation.



Cleanload™ Chemical Eductor

For Safe Loading of Chemicals into Spray Tanks

- The Cleanload is a self-contained eduction system which allows the operator to mix liquid and dry chemicals safely and quickly
- All crop protection chemistry is mixed at ground level, ensuring the safety of both the operator and the environment
- Equipped with tank rinse, designed to completely wash the Cleanload hopper
- ProClean™ bottle rinse (see page 194 for more information) allows operator to triple rinse chemical containers on-site
- Optional suction lance allows the operator to educt bulk liquid and dry chemicals (wettable powders, dry flowables and water-dispersible granules) from large containers without secondary handling
- See page 195 for performance information on all Cleanload models and Eductors

Order Information

Part Number	Tank Size	Eductor	Flow	Tank Rinse Style	Inlet/Outlet Connection Size	Bottle Rinse Assy	ISO Outlet Screen	Suction Lance
3376-0870	7 Gallon	Turf/Diaphragm Poly - (08mm) High Pressure/Low Flow	Right Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3376-0871	7 Gallon	Turf/Diaphragm Poly - (08mm) High Pressure/Low Flow	Left Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3376-1170	7 Gallon	On-Board Sprayer Poly - (11mm) High Pressure/High Flow	Right Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3376-1171	7 Gallon	On-Board Sprayer Poly - (11mm) High Pressure/High Flow	Left Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3376-1670	7 Gallon	Transfer Pump Poly - (16mm) Low Pressure/High Flow	Right Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3376-1671	7 Gallon	Transfer Pump Poly - (16mm) Low Pressure/High Flow	Left Hand	Premium Sidewall Rinse System	220 Universal Flange	Yes	Yes	Optional Accessory
3375P-05T4	4.5 Gallon	316 Stainless Steel	Right Hand	Tee Rinse System	1-1/4" x 1-1/2" Flynut Ready	No	Optional Accessory	No
3375P-05T5	5.5 Gallon	316 Stainless Steel	Right Hand	Lid Rinse System	1-1/4" x 1-1/2" Flynut Ready	Yes	Optional Accessory	Optional Accessory
3375P-05T7	7 Gallon	316 Stainless Steel	Right Hand	Lid Rinse System	1-1/4" x 1-1/2" Flynut Ready	Yes	Optional Accessory	Optional Accessory
3375P-05T7-K*	7 Gallon	316 Stainless Steel	Right Hand	Lid Rinse System	1-1/4" x 1-1/2" Flynut Ready	Yes	Optional Accessory	Optional Accessory

* Semi-assembled kit for reduced shipping. Carton quantity: 5

Accessories

Part Number	Description	Models
3430-0823	Suction Lance snaps into tank outlet for remote loading of bulk chemical containers	All 3376 Models
3430-0594	Suction Lance snaps into tank outlet for remote loading of bulk chemical containers	All 3375 Models (except 3375P-05T4)
3430-0596	Base kit quickly bolts onto Cleanload frame for floor mounting	All 3375 Models
1530-0040	Low flow kit adapt the stainless steel eductor for pump flows as low as 14 GPM (55 L/min)	All 3375 Models
3350-0148	Tank outlet screen prevent large debris from entering the eductor venturi	All 3375 Models

Cleanload™ Poly or Stainless Steel Eductor

Poly Eductor:

- Market leading eduction rates designed for real world applications
- Optimizes system plumbing costs with an integrated ½" push-to-connect port for tank rinse
- One-piece polypropylene educator assembly with mounting bosses and 220 Universal Flange ports
- Choose from three nozzle sizes along with right or left-hand push-to-connect orientation to fit your specific application
- Rinse port shown in right-hand configuration. Left-hand configuration is 180° from shown.

316 Stainless Steel Eductor:

- Inlet and outlet ports are flynut-ready, offering a wrench-free connection of hoses for easy installation and servicing
- Dual-ported to accommodate rinse port for either left-hand or right-hand flow orientation

Order Information

Part Number	Application	Nozzle	Rinse Port Orientation	Description
3371-0036	Turf & Diaphragm: High Pressure/Low Flow	8mm	Right Hand	Includes three 220 Universal Flange Gaskets and a 1/2" Push-to-Connect plug
3371-0036R			Right Hand	Eductor Only
3371-0037R			Left Hand	Eductor Only
3371-0038	On-Board Sprayer: High Pressure/High Flow	11mm	Right Hand	Includes three 220 Universal Flange Gaskets and a 1/2" Push-to-Connect plug
3371-0038R			Right Hand	Eductor Only
3371-0039R			Left Hand	Eductor Only
3371-0040	Transfer Pump: Low Pressure/High Flow	16mm	Right Hand	Includes three 220 Universal Flange Gaskets and a 1/2" Push-to-Connect plug
3371-0040R			Right Hand	Eductor Only
3371-0041R			Right Hand	Eductor Only
3371-0034S	On-Board Sprayer: High Pressure/High Flow	12mm	Dual Ported	316 Stainless Steel Eductor

Performance for all Cleanload Models and Eductors:

Eductor Material:		Poly																		Stainless Steel					
Application:		Turf / Diaphragm Pump: High Pressure - Low Flow						On-Board Sprayer Pump: High Pressure - High Flow						Transfer Pump: Low Pressure - High Flow						On-Board Sprayer Pump: High Pressure - High Flow					
Cleanload Part #:		3376-0870 & 3376-0871						3376-1170 & 3376-1171						3376-1670 & 3376-1671						3375 Models					
Eductor Part #:		3371-0036, -0036R & -0037R						3371-0038, -0038R & -0039R						3371-0040, -0040R & -0041R						3371-0034S					
Inlet Pressure		Req. Flow		Eduction Rate		Max Outlet Press		Req. Flow		Eduction Rate		Max Outlet Press		Req. Flow		Eduction Rate		Max Outlet Press		Req. Flow		Eduction Rate		Max Outlet Press	
PSI	BAR	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM	GPM	LPM	PSI	LPM	GPM	LPM	GPM	LPM	PSI	LPM	GPM	LPM	GPM	LPM	PSI	LPM
10	0.7	-	-	-	-	-	-	-	-	-	-	-	-	46.0	174	24.6	93	5.9	0.4	-	-	-	-	-	-
20	1.4	-	-	-	-	-	-	26.9	102	35.0	133	6.1	0.4	61.4	233	47.8	181	11.5	0.8	29.5	112	16.5	62	4.9	0.3
30	2.1	16.1	61	31.5	119	5.2	0.4	33.5	127	52.2	198	9.2	0.6	73.5	278	61.2	231	16.9	1.2	35.2	133	26.0	98	7.0	0.5
40	2.8	19.1	72	47.0	178	6.6	0.5	38.0	144	64.4	244	12.3	0.8	82.9	314	67.2	254	22.4	1.5	40.4	153	32.9	125	9.0	0.6
50	3.4	21.4	81	54.5	206	8.1	0.6	41.3	157	72.6	275	15.3	1.1	90.3	342	68.3	258	27.8	1.9	45.3	171	39.1	148	11.0	0.8
60	4.1	23.3	88	61.5	233	9.7	0.7	44.4	168	77.7	294	18.2	1.3	96.2	364	66.8	253	33.1	2.3	49.8	189	45.9	174	13.3	0.9
70	4.8	24.9	94	68.0	258	11.2	0.8	47.5	180	80.5	305	21.1	1.5	101.3	384	65.1	247	38.4	2.6	53.8	204	52.4	198	15.5	1.1
80	5.5	26.4	100	74.1	280	12.7	0.9	50.9	193	82.1	311	23.9	1.6	-	-	-	-	-	-	57.5	218	58.0	220	17.8	1.2
90	6.2	28.0	106	79.7	302	14.2	1.0	53.9	204	83.3	315	26.6	1.8	-	-	-	-	-	-	60.7	230	62.0	235	20.0	1.4
100	6.9	29.7	112	84.8	321	15.8	1.1	56.6	214	85.0	322	29.3	2.0	-	-	-	-	-	-	63.6	241	65.0	246	22.3	1.5

Polypropylene Line Strainers

80 PSI@70˚F

		Replacement Parts for Polypropylene Line Strainers				
Part Number	NPT Threads	Cap	Bowl	Screen	Mesh	Gasket
3350-0085A	¼" I.D. (F)	3351-0035	3351-0036	3800-0048	20 s.s.	1700-0090 EPDM
3350-0079A	&	3351-0035	3351-0036	3800-0046	50 s.s.	1700-0090 EPDM
3350-0082A	½" O.D. (M)	3351-0035	3351-0036	3800-0047	80 s.s.	1700-0090 EPDM
3350-0056A		3351-0037	3351-0039	3800-0029	20 s.s.	1700-0091 EPDM
3350-0046A	½"	3351-0037	3351-0039	3800-0025	50 s.s.	1700-0091 EPDM
3350-0043A		3351-0037	3351-0039	3800-0026	80 on 20 s.s	1700-0091 EPDM
3350-0040A		3351-0038	3351-0039	3800-0029	20 s.s.	1700-0091 EPDM
3350-0034A	¾"	3351-0038	3351-0039	3800-0025	50 s.s.	1700-0091 EPDM
3350-0035A		3351-0038	3351-0039	3800-0026	80 on 20 s.s	1700-0091 EPDM
3350-0057A		3351-0040	3351-0043	3800-0040	20 s.s.	1700-0092 EPDM
3350-0058A	1"	3351-0040	3351-0043	3800-0041	50 s.s.	1700-0092 EPDM
3350-0059A		3351-0040	3351-0043	3800-0042	80 on 20 s.s	1700-0092 EPDM
3350-0071A		3351-0041	3351-0043	3800-0043	20 s.s.	1700-0092 EPDM
3350-0072A	1¼"	3351-0041	3351-0043	3800-0044	50 s.s.	1700-0092 EPDM
3350-0073A		3351-0041	3351-0043	3800-0045	80 on 20 s.s	1700-0092 EPDM
3350-0112A		3351-0042	3351-0043	3800-0065	20 s.s.	1700-0092 EPDM
3350-0113A	1½"	3351-0042	3351-0043	3800-0066	50 s.s.	1700-0092 EPDM
3350-0114A		3351-0042	3351-0043	3800-0067	80 on 20 s.s.	1700-0092 EPDM

All ½", ¾", 1¼" and 1½" have internal (NPT) female ports, polypropylene cap and bowl.

Polypropylene Line Strainers

200 PSI@70˚F

NPT Part Number	BSP Part Number	Max. PSI	Threads	Previous Color	Screen Size/ Ref. Color	New ISO Color	Screen
3350-0142N	3350-0142B			White	32 Mesh/White	Red	3800-0086
3350-0143N	3350-0143B	290	½"	Blue	50 Mesh/Blue	Blue	3800-0087
3350-0144N	3350-0144B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0088
3350-0145N	3350-0145B			Red	100 Mesh/Red	Green	3800-0089
3350-0146N	3350-0146B			White	32 Mesh/White	Red	3800-0086
3350-0147N	3350-0147B	290	¾"	Blue	50 Mesh/Blue	Blue	3800-0087
3350-0148N	3350-0148B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0088
3350-0149N	3350-0149B			Red	100 Mesh/Red	Green	3800-0089
3350-0150N	3350-0150B			White	32 Mesh/White	Red	3800-0090
3350-0151N	3350-0151B	290	1"	Blue	50 Mesh/Blue	Blue	3800-0091
3350-0152N	3350-0152B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0092
3350-0153N	3350-0153B			Red	100 Mesh/Red	Green	3800-0093
3350-0162N**	3350-0162B			White	32 Mesh/White	Red	3800-0090
3350-0163N**	3350-0163B	290	1"	Blue	50 Mesh/Blue	Blue	3800-0091
3350-0164N**	3350-0164B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0092
3350-0165N**	3350-0165B			Red	100 Mesh/Red	Green	3800-0093
3350-0154N	3350-0154B			White	32 Mesh/White	Red	3800-0094
3350-0155N	3350-0155B	250	1¼"	Blue	50 Mesh/Blue	Blue	3800-0095
3350-0156N	3350-0156B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0096
3350-0157N	3350-0157B			Red	100 Mesh/Red	Green	3800-0097
3350-0166N**	3350-0166B			White	32 Mesh/White	Red	3800-0094
3350-0167N**	3350-0167B	250	1¼"	Blue	50 Mesh/Blue	Blue	3800-0095
3350-0168N**	3350-0168B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0096
3350-0169N**	3350-0169B			Red	100 Mesh/Red	Green	3800-0097
3350-0158N	3350-0158B			White	32 Mesh/White	Red	3800-0094
3350-0159N	3350-0159B	250	1½"	Blue	50 Mesh/Blue	Blue	3800-0095
3350-0160N	3350-0160B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0096
3350-0161N	3350-0161B			Red	100 Mesh/Red	Green	3800-0097
3350-0170N**	3350-0170B			White	32 Mesh/White	Red	3800-0094
3350-0171N**	3350-0171B	250	1½"	Blue	50 Mesh/Blue	Blue	3800-0095
3350-0172N**	3350-0172B		FNPT	Gray	80 Mesh/Gray	Yellow	3800-0096
3350-0173N**	3350-0173B			Red	100 Mesh/Red	Green	3800-0097

**Self-cleaning model.

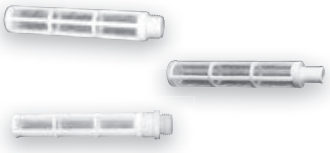
Nylon Line Strainers

150 PSI@70˚F
100 PSI@125˚F
140˚F max.

		Replacement Parts for Nylon Line Strainers				
Part Number	NPT Threads	Cap	Bowl	Screen	Mesh	Gasket
3350-0085		3351-0022		3800-0048	20 s.s.	1700-0064 Buna-N
3350-0085F	¼	3351-0022		3800-0048	20 s.s.	1700-0065 Viton
3350-0079	I.D. (F)	3351-0022	3351-0020	3800-0046	50 s.s.	1700-0064 Buna-N
3350-0079F	&	3351-0022	(Clear)	3800-0046	50 s.s.	1700-0065 Viton
3350-0082	½	3351-0022		3800-0047	80 s.s.	1700-0064 Buna-N
3350-0082F	O.D. (M)	3351-0022		3800-0047	80 s.s.	1700-0065 Viton
3350-0056		3351-0007		3800-0029	20 s.s.	1700-0044 Buna-N
3350-0131		3351-0007	3351-0005	3800-0029	20 s.s.	1700-0045 Viton
3350-0046		3351-0007	(White) or	3800-0025	50 s.s.	1700-0044 Buna-N
3350-0042	½"	3351-0007	3351-0015*	3800-0025	50 s.s.	1700-0045 Viton
3350-0043	(F)	3351-0007	(Clear)	3800-0026	80 on 20 s.s.	1700-0044 Buna-N
3350-0068		3351-0007		3800-0026	80 on 20 s.s.	1700-0045 Viton
3350-0040		3351-0006		3800-0029	20 s.s.	1700-0044 Buna-N
3350-0132		3351-0006	3351-0005	3800-0029	20 s.s.	1700-0045 Viton
3350-0034		3351-0006	(White) or	3800-0025	50 s.s.	1700-0044 Buna-N
3350-0044	¾"	3351-0006	3351-0015*	3800-0025	50 s.s.	1700-0045 Viton
3350-0035	(F)	3351-0006	(Clear)	3800-0026	80 on 20 s.s.	1700-0044 Buna-N
3350-0045		3351-0006		3800-0026	80 on 20 s.s.	1700-0045 Viton
3350-0057		3351-0014		3800-0040	20 s.s.	1700-0057 Buna-N
3350-0060		3351-0014	3351-0013	3800-0040	20 s.s.	1700-0058 Viton
3350-0058	1"	3351-0014	(White) or	3800-0041	50 s.s.	1700-0057 Buna-N
3350-0061	(F)	3351-0014	3351-0024*	3800-0041	50 s.s.	1700-0058 Viton
3350-0059		3351-0014	(Clear)	3800-0042	80 on 20 s.s.	1700-0057 Buna-N
3350-0062		3351-0014		3800-0042	80 on 20 s.s.	1700-0058 Viton
3350-0071		3351-0016		3800-0043	20 s.s.	1700-0057 Buna-N
3350-0074		3351-0016	3351-0013	3800-0043	20 s.s.	1700-0058 Viton
3350-0072	1¼	3351-0016	(White) or	3800-0044	50 s.s.	1700-0057 Buna-N
3350-0075	(F)	3351-0016	3351-0024*	3800-0044	50 s.s.	1700-0058 Viton
3350-0073		3351-0016	(Clear)	3800-0045	80 on 20 s.s.	1700-0057 Buna-N
3350-0076		3351-0016		3800-0045	80 on 20 s.s.	1700-0058 Viton
3350-0112		3351-0026		3800-0065	20 s.s.	1700-0057 Buna-N
3350-0115		3351-0026	3351-0013	3800-0065	20 s.s.	1700-0058 Viton
3350-0113	1½	3351-0026	(White) or	3800-0066	50 s.s.	1700-0057 Buna-N
3350-0116	(F)	3351-0026	3351-0024*	3800-0066	50 s.s.	1700-0058 Viton
3350-0114		3351-0026	(Clear)	3800-0067	80 on 20 s.s.	1700-0057 Buna-N
3350-0117		3351-0026		3800-0067	80 on 20 s.s.	1700-0058 Viton

* Clear Polyimide Bowl - Add Suffix "P" - (ie.: 3350-0057P) - ½", ¾", 1", 1¼" and 1½".
½", ¾",1",1¼" and 1½" have internal (NPT) Female Ports, Type 6 nylon cap bowl.

Nylon Suction Strainers



Part Number	Thread	Screen	Estimated Weight Ea.
3350-0069	3⁄4" NPT (M)	50-mesh nylon	4 oz.
3350-0032	3⁄4" hose barb (all nylon)	50-mesh nylon	4 oz.
3350-0077	garden hose (M)	50-mesh nylon	4 oz.

Adjustable Pattern Spray Guns

3381-0016

- Adjustable pattern spray gun
- 15" barrel
- 3mm nozzle
- ⅜" MNPT inlet
- Sized for spot spraying

Order Information

Part Number	Max PSI	Max GPM
3381-0016	120	1

3381-0021

- Adjustable pattern spray gun
- 21" barrel
- 3mm nozzle
- ⅜" and ½" hose barb
- Sized for spot spraying

Order Information

Part Number	Max PSI	Max GPM
3381-0021	60	1

3381-0036

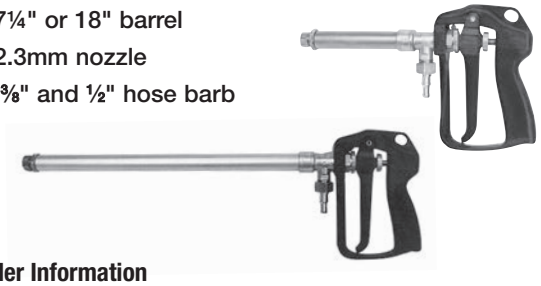
- Adjustable pattern spray gun
- 19" barrel
- 3mm nozzle
- ⅜" hose barb

Order Information

Part Number	Max PSI	Max GPM
3381-0036	120	2.5

3381-0043 & 3381-0043L

- Adjustable pattern spray gun
- 7¼" or 18" barrel
- 2.3mm nozzle
- ⅜" and ½" hose barb



Order Information

Part Number	Barrel Length	Max PSI	Max GPM
3381-0043	7¼"	600	4.5
3381-0043L	18"	600	4.5
9920-261703-69	Replacement Barrel for 3381-0043		
9920-35.1703.67	Replacement Barrel for 3381-0043L		
3430-0768	Replacement nozzle kit		

Spray Gun Nozzles for 3381-0043 and 3381-0043L Guns

Part no.	Orifice	Performance	45 PSI		100 PSI		150 PSI		200 PSI		300 PSI		450 PSI		600 PSI	
			Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight
AMT-15010	1.0mm	GPM	0.24	0.24	0.35	0.37	0.40	0.45	0.53	0.60	0.57	0.60	0.70	0.75	0.83	0.90
replaces		spray angle	30°	-	30°	-	40°	-	40°	-	40°	-	40°	-	38°	-
9920-61.1802.45		throw, ft	3.2	8.2	4.9	13.0	6.5	18.0	6.5	18.5	6.5	19.5	7.2	21.0	8.2	23.0
AMT-15012	1.2mm	GPM	0.35	0.38	0.55	0.55	0.60	0.65	0.80	0.93	0.88	0.90	1.10	1.20	1.30	1.40
replaces		spray angle	32°	-	35°	-	42°	-	42°	-	42°	-	40°	-	40°	-
9920-61.1802.46		throw, ft	3.9	9.8	5.5	14.5	7.2	20.0	7.2	21.0	7.2	22.0	8.2	23.5	8.2	25.5
AMT-15015	1.5mm	GPM	0.40	0.50	0.62	0.80	0.73	0.93	0.95	1.25	1.00	1.30	1.30	1.70	1.50	1.95
replaces		spray angle	32°	-	35°	-	45°	-	45°	-	42°	-	42°	-	42°	-
9920-61.1802.47		throw, ft	3.9	11.5	6.5	14.5	8.2	23.0	8.2	24.0	8.2	24.5	8.2	26.0	10.0	28.0
AMT-15018	1.8mm	GPM	0.50	0.75	0.73	1.20	0.85	1.35	1.15	1.75	1.20	1.90	1.60	2.30	1.75	2.80
replaces		spray angle	40°	-	42°	-	50°	-	45°	-	50°	-	48°	-	48°	-
9920-61.1802.48		throw, ft	4.9	13.0	6.5	16.5	8.2	26.0	8.2	27.0	8.2	28.0	9.8	31.0	10.0	33.0
AMT-15020	2.0mm	GPM	0.73	1.10	1.05	1.60	1.30	1.90	1.50	2.40	1.60	2.50	1.90	3.00	2.20	3.50
replaces		spray angle	40°	-	42°	-	55°	-	55°	-	55°	-	53°	-	50°	-
9920-61.1802.55		throw, ft	4.9	14.5	6.5	19.5	8.2	29.5	8.2	30.5	8.2	31.0	9.8	34.0	10.0	36.0
AMT-15023	2.3mm	GPM	0.90	1.40	1.30	1.90	1.50	2.30	2.00	3.20	2.10	3.30	2.70	4.10	3.10	4.80
replaces		spray angle	40°	-	42°	-	55°	-	55°	-	55°	-	53°	-	51°	-
9920-61.1802.68		throw, ft	4.9	16.5	6.5	24.5	10.0	32.0	10.0	35.0	10.0	36.0	9.8	38.0	10.5	39.0
9920-35.1802.56	4.0mm	GPM					1.9	3.4			4.6	8.0	5.5	9.5	6.3	11.0
		throw, ft					10	36			10	38	10	40	12	40

Adjustable Pattern Spray Guns

3381-0010 and 3381-0011

- Adjustable pattern spray gun
- 17" or 21" barrel
- 3mm or 4mm nozzle
- ½" MNPT inlet

Order Information

Part Number	Barrel Length	Nozzle	Max PSI	Max GPM
3381-0010	17"	3mm	1200	25
3381-0011	21"	4mm	1200	30
9920-KIT10/11	Repair Kit			
9920-248	Swivel Kit			

3381-0013

- Adjustable pattern spray gun
- 7" barrel
- 3mm nozzle
- ½" MNPT inlet

Order Information

Part Number	Max PSI	Max GPM
3381-0013	700	19
9920-248	Swivel Kit	

Tree Spraying Guide Hypro Diaphragm Pump Gas Engine Applications

Spray Height	Pump/Engine Model	Engine	Shaft	Spray Gun	Nozzle
30-35 ft.	9910-D252GRGI58 (w/o engine) 9910-D252GRGI (w/o engine) D252GRGI-25 (w/2.5 hp PowerPro™) D252GRGI-55 (w/5.5 hp PowerPro™) 6 GPM; 290 PSI	Min. 2.5 hp SAE j609a flange mount	5/8" 3/4" 5/8" 3/4"	3381-0010 or 3381-0013	3385-3000
35-40 ft.	9910-D30GRGI (w/o engine) D30GRGI-65 (w/6.5 hp PowerPro™) D30HRGI-65 (w/6.5 hp PowerPro™) D30HRGI-65E (w/6.5 hp PowerPro™) 9.5 GPM; 580 PSI	Min. 5.0 hp SAE j609a flange mount	3/4" 3/4" 3/4" 3/4"	3381-0010 or 3381-0013	3385-3000
45-50 ft.	9910-D50 (w/o engine, controller or gearbox) 14 gpm; 580 psi	Min 8.0 hp SAE j609a flange mount	1"	3381-0011	3385-4000
45-50 ft.	9910-D503GRGI (w/o engine) 15 gpm; 580 psi	Min 8.0 hp SAE j609a flange mount	1"	3381-0011	3385-4000
50-57 ft.	9910-D813GRGI (w/o engine) 21 gpm; 725 psi	Min 14.0 hp SAE j609a flange mount	1"	3381-0011	3385-4500
60-68 ft.	9910-D1064GRGI (w/o engine) 28 gpm; 725 psi	Min 18.0 hp SAE j609a flange mount	1"	3381-0011	3385-6000

All GRGI pump models come complete with gear reduction and control valve.

Performance Chart for Models 3381-0010, 3381-0011 and 3381-0013 Spray Guns

Hypro Model #	Orifice Diameter In MM	Pressure In PSI** Performance	200 PSI Setting		350 PSI Setting		500 PSI Setting		600 PSI Setting		650 PSI Setting		700 PSI Setting		850 PSI Setting	
			Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight
3385-1500	1.5	capacity in gpm max throw (ft)*	1.14 9.2	1.26 21.5	1.48 10.3	1.7 25.2	1.8 11.2	2 28	1.9 12.1	2.2 31.8	2 12.1	2.3 32	2.1 12.3	2.4 32.3	2.2 13.1	2.5 34.3
3385-2300	2.3	capacity in gpm max throw (ft)*	2.1 11.4	2.7 29	2.7 12.9	3.7 33.9	3.4 14.8	4.5 37.9	3.8 16.6	4.9 41.5	3.8 17	5 41.7	3.9 17.7	5.1 42	4.2 19	5.8 45.7
3385-3000	3	capacity in gpm max throw (ft)*	2.9 11.7	4.6 29.2	3.7 12.9	6.3 33.9	4.8 13.8	7.5 36.2	5.2 15.6	8.4 40.8	5.3 16	8.5 40.7	5.4 16.2	8.6 42	6 17	9.6 44.1
3385-3500	3.5	capacity in gpm max throw (ft)*	5.8 13.6	6 36.2	7.9 19	8.2 41.2	9.6 22.6	9.9 45.3	10.7 25.5	11.1 50	11 25.5	11.3 51	11.2 27	11.6 51.5	12.4 28.8	12.8 54
3385-4000	4	capacity in gpm max throw (ft)*	7 15.1	7.3 37.7	9.6 20.6	9.9 42.8	11.6 24.3	12 47	12.9 27.2	13.5 53	13.2 27.2	13.8 54	13.6 28.5	14.1 55	15 29	15.6 59
3385-4500	4.5	capacity in gpm max throw (ft)*	8.2 18.1	8.9 39.2	11.1 22.2	12 44.3	13.4 26	14.5 50.1	15 30.6	16.3 54	15.4 30.6	16.6 56	15.7 31	17 57	17.4 31.5	18.9 62
3385-5000	5	capacity in gpm max throw (ft)*	9.8 19.6	10.2 40.7	13.3 23.8	13.8 47	16 27.5	16.7 53.3	18 32.3	18.7 59	18.4 32.3	19.1 61	18.9 32.8	19.5 62	20.8 32.8	21.6 67
3385-5500	5.5	capacity in gpm max throw (ft)*	10.7 19.6	11.5 42.2	14.4 23.8	15.6 50.7	17.4 29	18.8 57	19.6 34	21 63	20 34	21.5 64	20.4 34.5	22 65	22.6 34.5	24.4 70
3385-6000	6	capacity in gpm max throw (ft)*	11.5 21.1	12.6 43.7	15.6 25.3	17.1 54	18.8 30.7	20.6 60	21 35.6	23.2 66	21.5 35.6	23.7 67	22 36	24.2 68	24.4 36	26. 9 74
3385-7000	7	capacity in gpm max throw (ft)*	11.5 21.1	13.5 46.8	15.6 25.3	18.4 57	18.8 30.7	22.2 63	21 37.4	25 70	21.5 37.4	25.4 71	22 38	26 72	24.4 38	29 77

* Figures shown are guidelines for vertical throw.
** Pressures based on relief valve settings at straight throw.

Adjustable Pattern Spray Guns

Top Gun

Part Number	Max.PSI	Max. GPM	Nozzle Size	Nozzle Number	Connection	Estimated Weight Ea.
002201-3430	850	35.0	3.0 mm	003430	1⁄2" HB	3 lbs. 8 oz.
002201-3440	850	35.0	4.0 mm	003440	1⁄2" HB	3 lbs. 8 oz.
002201-3460	850	35.0	6.0 mm	003460	1⁄2" HB	3 lbs. 8 oz.
002201-3470	850	35.0	7.0 mm	003470	1⁄2" HB	3 lbs. 8 oz.

Hose barb and nut kit (sold separately): ⅜" - 006320; ½" - 006330.

Long range high pressure spray gun

- Brass body
- Stainless steel pipe
- Handle and nozzle protection in high-resistance polymer
- Ergonomic handgrip
- Quick-release trigger lock
- Swivel inlet port
- Adjustable spray pattern from hollow cone to solid stream

Pressures (PSI)

		200 PSI		350 PSI		500 PSI		600 PSI		720 PSI	
		Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight	Cone	Straight
3	Flow gpm	3.8	5.2	5.6	6.8	6.6	8.5	7	9.2	7.3	10
	Max. throw ft.	12	36	13	37	15	41	16	44	21	46
4	Flow gpm	6	8.2	7.3	12.7	8.6	13.2	10.2	14.5	11.4	15.9
	Max. throw ft.	14	42	15	44	16	49	19	52	23	57
6	Flow gpm	9	16	11.5	22.2	14	25.8	15.5	26.7	16.2	27.5
	Max. throw ft.	19	59	21	62	25	66	26	68	31	72
7	Flow gpm	10.5	17.5	13.8	25.7	16.8	30.6	18.2	33.2	20.3	34.3
	Max. throw ft.	21	60	23	67	26	72	27	77	31	82

Econo Gun

Part Number	Max.PSI	Max.GPM	Connection
506532V	150	40.0	1⁄2" HB
506530V	150	40.0	3⁄4" HB
506531V	150	40.0	1" HB

Measurement Components

Orion Flowmeters

New digital technology converts fluid ion flow into gpm, virtually making mechanical flowmeters obsolete. These precise flowmeters work by utilizing sensors to relay pulse signals and converting them into gpm readings. The Visual-Flow flowmeter, with touch pad, displays instant gpm reading for quantity of fluid filled.

- No mechanical moving parts
- Advanced technology at an affordable price
- Performance independent from fluid density and viscosity
- Low sensitivity to turbulence
- Wide variety of flows for use in diverse applications
- High precision, typical error is 0.5%
- Pulse output is 0-12 volts, max. consumption of 300 mA (milliamps)
- Accuracy and precision saves chemical throughout the life of the system
- Working pressure up to 580 psi
- Integrates with existing rate controllers
- AMP® Super Seal™ connection

Visual-Flow Flowmeter With Male Thread Adapters

Part Number	Flow (GPM)	Size	Max PSI
4621BA01313	0.13 -2.6	3/4"	290
4621BA11313	0.3 - 5	3/4"	290
4621BA41414	2.6 - 53	1"	290
4622BA51616	5 - 106	1-1/2"	290
4622BA61717	8 - 158	2"	290

Orion Flowmeter With Male Thread Adapters

Part Number	Flow (GPM)	Size	Max PSI
4621AA11313	.3 - 5	¾"	290
4621AA31414	1.4 - 26	1"	290
4621AA41414	2.6 - 53	1"	290
4621AA41515	2.6 - 53	1-¼"	290
4622AA51616	5 - 106	1-½"	290
4622AA61717	8 - 158	2"	290

Orion Flowmeter Only

Part Number	Flow (GPM)	Max PSI	Adapter Series
4621AA10000	0.3 - 5	580	463
4621AA20000	0.6 - 13	580	463
4621AA30000	1.3 - 26	580	463
4621AA40000	2.6 - 53	580	463
4622AA40000	2.6 - 53	580	473
4622AA50000	5 - 106	580	473

Bolt Kit, V1M258-FM, includes stainless steel bolts, washers and lock nuts.

Adapter Cables

Part Number	Reference #	Description
AE2650	①	Orion to Raven® (Conxall®)
AE2651	②	Orion to TeeJet® (Deutsch®)
AE2652	③	Orion to John Deere (Packard®)
AE2654	④	Orion to MidTech (Packard Weather Pack®)
4622BA50000-100	*	4 pin, 10' extension cable (Visual-Flow)*
4622BA50000-200	*	4 pin cable w/pump stop unit (Visual-Flow)*
4621AA10000-100	*	3 pin, 10' extension cable (Orion)*

*Not shown.

ARAG® Sprayer Control Valves

Electric Proportional Spray Control Valves

Part Number	Series	Max. GPM*	Max. PSI*	Labyrinth Color	Open to Close	Outlet Size
463020	463	12	580	Yellow	14 seconds	¾" HB
463020S	463	12	580	Gray	7 seconds	¾" HB
463024	463	12	580	Yellow	14 seconds	¾" HB
473020	473	31	290	Yellow	14 seconds	1¼" HB
473020S	473	31	290	Gray	7 seconds	1¼" HB

* Max GPM per valve section.

Electric 3-Wire Boom Section Valve

Part Number	Series	Max. GPM*	Max. PSI*	Labyrinth Color	Open to Close	Outlet Size
463001ST	463	12	290	Blue	0.6 seconds	¾" HB
463011ST**	463	12	290	Blue	0.6 seconds	¾" HB
4630112ST	463	12	290	Blue	0.6 seconds	¾" HB
473001T	473	31	290	Blue	0.6 seconds	1" HB
473011T**	473	31	290	Blue	0.6 seconds	1" HB

* Max GPM per valve section. **Include metered bypass port. Valve shown with metered bypass port.

Manual Proportional Spray Control Valves

Part Number	Series	Max.GPM*	Max.PSI*	Outlet Size
473070	473	31	580	1¼" HB

* Max GPM per valve section.

Manual Pressure Regulating Valves

Part Number	Series	Max.GPM*	Max.PSI*	Outlet Size
463080N	463	12	290	¾" HB

* Max GPM per valve section.

Manual Boom Section Valves

Part Number	Series	Max.GPM*	Max.PSI*	Metered Bypass	Outlet Size
463051	463	12	290	No	¾" HB
463061	463	12	290	Yes	¾" HB

* Max GPM per valve section.

Series 461 - Economic Manual Valve Assemblies

Part Number	Valves*	Max.GPM*	Max.PSI*	Inlet Size	Outlet Size	Regulator
461031-1	3	12	290	1" HB	½" HB	No
461031-2	3	12	290	1" HB	¾" HB	No
461031-3	3	12	290	½" HB	½" HB	No
461031-4	3	12	290	1" HB	½" HB	Yes
461021-1	2	12	290	1" HB	½" HB	No
9950-0030	3	12	290	**	**	Yes

* Includes flynut inlet and hose barb outlets in sizes indicated.
** Supplied with 3/4" elbow HB, 3/4" straight HB and 1/2" straight HB inlets and 3/4" FNPT, 3/4" HB, 1/2" HB and 3/8" HB outlets.

HYPRO® Sprayer Control Valves

Electric Proportional Spray Control Valves

Part Number	Max. GPM	Max. PSI	Open to Close	Outlet Size
3470-0104	26	580	7 seconds	Outlet port sold separately (See below)

Electric 3-Wire Boom Section Valves

Part Number	Max. GPM	Max. PSI	Open to Close	Outlet Size
3470-0106	12	290	0.2 seconds	Outlet port sold separately (See below)
3470-0101	12	290	0.2 seconds	Outlet port sold separately (See below)

Manual Proportional Spray Control Valves

Part Number	Max.GPM	Max.PSI	Outlet Size
3470-0103	26	580	3/4" HB

Manual Pressure Regulating Valves

Part Number	Max.GPM	Max.PSI	Outlet Size
3470-0102	26	290	Outlet port sold separately (See below)

Manual Boom Section Valves

Part Number	Max.GPM	Max.PSI	Outlet Size
3470-0107	12	290	Outlet port sold separately (See below)

Outlet Ports for Valves

Part Number	Max. GPM	Max. PSI	Outlet Size
3470-0206	12	290	3/8" HB
3470-0201	12	290	1/2" HB
3470-0202	12	290	3/4" HB
3470-0204	12	290	1" HB
3470-0203	12	290	3/4" FNPT
3470-0207	12	290	1/2" HB-90° Elbow

HYPRO® Sprayer Control Valves

Replacement Clips & O-rings

Part Number	Description
3470-0208	Replacement O-ring
3470-0209	Replacement clip

Valve Inlet Male Adapters

Part Number	Description
3470-0401	3/4" FNPT
3470-0402	1" FNPT

Valve Outlet Female Adapters

Part Number	Description
3470-0301	3/4" FNPT
3470-0302	1" FNPT

Other Valve Adapters

Part Number	Description
3470-0403	Male End Cap
3470-0303	Female End Cap

Bolts, Kits and Mounting Brackets

Part Number	Description
3470-0601	1 Section stainless steel
3470-0605	2 Section stainless steel
3470-0603	3 Section stainless steel
3470-0602	4 Section stainless steel
3470-0604	5 Section stainless steel

HYPRO® Sprayer Control Valves

Metered Bypass Manifolds

Part Number	Description
3470-0500	3 Section

Metered Bypass Parts

Part Number	Description
3470-0900	Cap
3470-0901	Clip

Flanged Line Strainer

Part Number	Description
3470-0800	Self Cleaning, 50 Mesh

Replacement Screens for Flanged Line Strainer

Part Number	Description
3470-0801	50 Mesh

Cables

Part Number	Description
3470-0700	2 wire- 4' cable w/ gasket and screw
3470-0708	3 wire- 4' cable w/ gasket and screw
3470-0702	Din connector w/ gasket and screw

Gauge Isolators

Part Number	Description
3470-0205	Universal Isolator Kit

Ball Valves

- Fiberglass-reinforced polypropylene body for strength and chemical resistance
- Teflon seats for smooth operation and proper sealing characteristics
- EPDM O-rings to handle most fertilizers and chemicals
- Max. operating pressure for sizes up to 1¼" – 232 PSI. For 1½" and 2" – 145 PSI.

Single Union Ball Valves - 2 Way

NPT Part #	BSP Part #	Size	Mounting Inserts	Max PSI
9951-2050N	9951-2050B	½"	None	232
9951-2075N	9951-2075B	¾"	None	232
9951-2100N	9951-2100B	1"	None	232
9951-2125N	9951-2125B	1 ¼"	8 mm	145
9951-2150N	9951-2150B	1 ½"	8 mm	145
9951-2200N	9951-2200B	2"	8 mm	145

Single Union Ball Valves - 3 Way

NPT Part #	BSP Part #	Size	Mounting Inserts	Max PSI
9951-3050N	9951-3050B	½"	None	232
9951-3075N	9951-3075B	¾"	None	232
9951-3100N	9951-3100B	1"	None	232
9951-3125N	9951-3125B	1 ¼"	8 mm	145
9951-3150N	9951-3150B	1 ½"	8 mm	145
9951-3200N	9951-3200B	2"	8 mm	145

Check Valves

Part Number	MGHT (inlet) x MGHT	Description	Max. PSI
3320-0065	½ X ½"	Polypropylene	3

Shut-Off Valves

Part Number	MGHT (inlet) x MGHT	Description
3305-0112	½ X ½"	Polypropylene

Garden Hose Shut-Off Valve

Part Number	FGHT (inlet) x MGHT	Type	Description	Max. PSI
LA5	¾" X ¾"	1-Way	Cycolac body and ball with Buna-N seals suitable for outdoor use	75
LA24	¾" X (2) ¾"	2-Way		75

Polypropylene Ball Valve

Part Number	Size	Max. PSI*	Material	O-ring Material
15-14	¼" X ¼"	25	Polypropylene	EPDM

*Max psi for liquids compatible with polypropylene and EPDM.

Ball Valves

Series 90 – Plated Brass Ball Valve

Part Number	Size	Handle Type	Max. PSI.	Max. Temp
90FFB18	⅛" FNPT X ⅛" FNPT	Butterfly	300	212° F
90FFB14	¼" FNPT X ¼" FNPT	Butterfly	300	212° F
90FMB14	¼" FNPT X ¼" MNPT	Butterfly	300	212° F
90FFB38	⅜" FNPT X ⅜" FNPT	Butterfly	300	212° F
90FMB38	⅜" FNPT X ⅜" MNPT	Butterfly	300	212° F
90FFB12	½" FNPT X ½" FNPT	Butterfly	300	212° F
90FMB12	½" FNPT X ½" MNPT	Butterfly	300	212° F
90FFL18	⅛" FNPT X ⅛" FNPT	Lever	300	212° F
90FFL14	¼" FNPT X ¼" FNPT	Lever	300	212° F
90FML14	¼" FNPT X ¼" MNPT	Lever	300	212° F
90FFL38	⅜" FNPT X ⅜" FNPT	Lever	300	212° F
90FML38	⅜" FNPT X ⅜" MNPT	Lever	300	212° F
90FFL12	½" FNPT X ½" FNPT	Lever	300	212° F
90FML12	½" FNPT X ½" MNPT	Lever	300	212° F
90-HBF	Replacement nylon butterfly handle			
RI167	Replacement nylon lever handle			

Full Port Brass and 316 Stainless Steel Ball Valves

Part Number	Material	Size	Max. PSI	Max. Temp.
171N-14	Brass	¼" FNPT	600	320° F
171N-38	Brass	⅜" FNPT	600	320° F
171N-12	Brass	½" FNPT	600	320° F
171N-34	Brass	¾" FNPT	600	320° F
171N-100	Brass	1" FNPT	600	320° F
171N-114	Brass	1¼" FNPT	600	320° F
171N-112	Brass	1½" FNPT	600	320° F
171N-200	Brass	2" FNPT	600	320° F
78-14	316 Stainless Steel	¼" FNPT	1000	320° F
78-38	316 Stainless Steel	⅜" FNPT	1000	320° F
78-12	316 Stainless Steel	½" FNPT	1000	320° F
78-34	316 Stainless Steel	¾" FNPT	1000	320° F
78-100	316 Stainless Steel	1" FNPT	1000	320° F
78-114	316 Stainless Steel	1¼" FNPT	1000	320° F
78-112	316 Stainless Steel	1½" FNPT	1000	320° F
78-200	316 Stainless Steel	2" FNPT	1000	320° F
78-300	316 Stainless Steel	3" FNPT	1000	320° F

10-32 threaded mounting holes.
Teflon seals and o-rings.

Gauges

Dual-Scale Glycerin-Filled 2½" Gauges (Stainless Steel Case)

This series is designed for use with air, gas, oil, and water or any medium not corrosive to brass or bronze. Liquid-filled gauges are recommended for reducing shock waves caused by pressure or vibration fluctuations.

- Movement: Brass
- Bourdon Tube: Phosphor bronze
- Pointer: Black-enameled aluminum
- Dial: White background
- Window: Acrylic
- Liquid Fill: 99.5% pure virgin Glycerin
- Connection: ¼" NPT Brass connection
- Accuracy: ASME/ANSI B40.1 Grade B (3-2-3%)

Order Information

Part Number	Pressure Reading Range	Face Size	Stem Size	Estimated Weight Ea.
2640-0009	0-60 psi/4 BAR	2½"	¼" NPT (M)	7.5 oz.
2640-0010	0-100 psi/7 BAR			
2640-0011	0-200 psi/14 BAR			
2640-0007	0-300 psi/21 BAR			
2640-0008	0-600 psi/42 BAR			
2640-0001	0-1000 psi/70 BAR			
2640-0002	0-1500 psi/105 BAR			
2640-0003	0-2000 psi/140 BAR			
2640-0004	0-3000 psi/210 BAR			
2640-0005	0-5000 psi/350 BAR			
2640-0014	0-10000 psi/700 BAR			

Gauges

SG Series Dry 1½", 2", 2½" and 4" Gauges

PSI only Plastic case

- Movement: Brass
- Bourdon Tube: C Shaped in copper alloy up to 600 psi and Helical in phosphor bronze over 600 psi
- Pointer: Black-enameled aluminum
- Dial: White aluminum
- Window: Acrylic
- Connection: ⅛" NPT male standard on 1½" size
  ¼" NPT standard on 2", 2½", & 4" sizes
- Accuracy: ASME/ANSI B40.1 Grade B (3-2-3%)

This series is designed for use with air, gas, oil, and water or any medium not corrosive to brass or bronze.

Order Information

Part Number	PSI Range	Dial Size	Stem Size
SG601.58C SG1001.58C SG1601.58C SG2001.58C	0-60 0-100 0-160 0-200	1½"	⅛" CBM
SG602C SG1002C SG1602C SG2002C SG3002C	0-60 0-100 0-160 0-200 0-300	2"	¼" CBM
SG152 SG302 SG602 SG1002 SG1602 SG2002 SG3002	0-15 0-30 0-60 0-100 0-160 0-200 0-300	2"	¼" LM
SG15 SG30 SG60 SG100 SG160 SG200 SG300 SG400 SG600 SG1000 SG2000 SG3000 SG5000	0-15 0-30 0-60 0-100 0-160 0-200 0-300 0-400 0-600 0-1000 0-2000 0-3000 0-5000	2½"	¼" LM
SG604 SG1004 SG2004	0-60 0-100 0-200	4"	¼" LM

GG Series Glycerin-Filled 2½" and 4" Gauges

PSI only
304 Stainless Steel Case

- Movement: Brass
- Bourdon Tube: Phosphor bronze
- Pointer: Black-enameled aluminum
- Dial: White background
- Window: Acrylic
- Liquid Fill: 99.5% pure virgin Glycerin
- Connection: ¼" NPT Brass connection
- Accuracy: ASME/ANSI B40.1 Grade B (3-2-3%)

This series is designed for use with air, gas, oil, and water or any medium not corrosive to brass or bronze. Liquid-filled gauges are recommended for reducing shock waves caused by pressure or vibration fluctuations.

Order Information

Part Number	PSI Range	Dial Size	Stem Size
WGG60C WGG100C WGG160C WGG200C WGG300C WGG400C WGG600C WGG1000C WGG1500C WGG2000C WGG3000C WGG5000C WGG6000C	0-60 0-100 0-160 0-200 0-300 0-400 0-600 0-1000 0-1500 0-2000 0-3000 0-5000 0-6000	2½"	¼" CBM & U-clamp
GG30 GG60 GG100 GG160 GG200 GG300 GG400 GG600 GG1000 GG1500 GG2000 GG3000 GG4000 GG5000 GG6000	0-30 0-60 0-100 0-160 0-200 0-300 0-400 0-600 0-1000 0-1500 0-2000 0-3000 0-4000 0-5000 0-6000	2½"	¼" LM
GG10000 GG15000	0-10000 0-15000	2½"	¼" LM
VGG30 VGG3030 VGG3060 VGG30160	VAC / 30 Hg 0-30 psi / 30 Hg 0-60 psi / 30 Hg 0-160 psi / 30 Hg	2½"	¼" LM
GG604 GG1004	0-60 0-100	4"	¼" LM
VGG30604	0-60 psi / 30 Hg	4"	¼" LM

Gauges

ASG Series Dry 2½" and 4" Gauges for Ammonia

2½" and 4" Gauges
Single Scale - PSI only
Enameled steel case

This series is designed especially for use with ammonia.

- Movement: Stainless Steel tube
- Pointer: Black-enameled aluminum
- Dial: White background
- Window: Polycarbonate
- Connection: ¼" NPT Standard
- Accuracy: ASME/ANSI B40.1 Grade B (3-2-3 %)

Order Information

Part Number	PSI Range	Dial Size	Stem Size
ASG60	0-60	2½"	¼" LM
ASG160	0-160	2½"	¼" LM
ASG400	0-400	2½"	¼" LM
ASG604	0-60	4"	¼" LM
ASG1604	0-160	4"	¼" LM
ASG4004	0-400	4"	¼" LM

Replacement lens AF available.

WGGSS Series Glycerin-Filled 2½" Gauges

PSI only

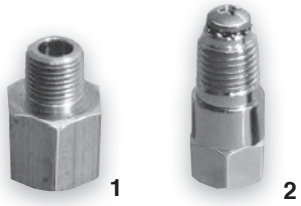
- Movement: Stainless Steel
- Bourdon Tube: 316 Stainless Steel
- Pointer: Black-enameled aluminum
- Dial: White background
- Window: Polycarbonate
- Liquid Fill: 99.5% pure virgin Glycerin
- Connection: ¼" NPT Stainless Steel connection
  2½" gauges
- Accuracy: 2½" - ASME/ANSI B40.1 Grade A (2-1-2 %)

Order Information

Part Number	PSI Range	Dial Size	Stem Size
WGGSS100C WGGSS400C	0-100 0-400	2½"	¼" CBM
WGGSS60 WGGSS100 WGGSS160 WGGSS400 WGGSS600 WGGSS1000 WGGSS3000 WGGSS5000	0-60 0-100 0-160 0-400 0-600 0-1000 0-3000 0-5000	2½"	¼" LM

This series is designed for use with air, gas, oil, and water or any medium not corrosive to stainless steel. Liquid-filled gauges are recommended for reducing shock waves caused by pressure or vibration fluctuations.

Accessories



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Order Information

Reference Number	Part Number	Description
1	MF1814B	Reducing Coupler ¼" FNPT x ⅛" MNPT
2	B301AB	¼" Gauge Dampener

Hose Barb with Fly Nut & O-ring

Straight Hose Barb with Fly Nut and O-ring

Part Number	O-Ring Groove x Hose Barb-BPS Threads
FNAS-1212	½" x ½"
FNAS-3412	¾" x ½"
FNAS-3458	¾" x ⅝"
FNAS-3434	¾" x ¾"
FNAS-10012	1" x ½"
FNAS-10034	1" x ¾"
FNAS-100100	1" x 1"
FNAS-114100	1 ¼" x 1"
FNAS-114114	1 ¼" x 1 ¼"
FNAS-112100	1 ½ x 1"
FNAS-112114	1 ½" x 1 ¼"
FNAS-112112	1 ½" x 1 ½"
FNAS-200200	2" x 2"

Elbow Hose Barb with Fly Nut and O-Ring

Part Number	O-Ring Groove x Hose Barb-BPS Threads
FNAE-3412	¾" x ½"
FNAE-3458	¾" x ⅝"
FNAE-3434	¾" x ¾"
FNAE-10034	1" x ¾"
FNAE-100100	1" x 1"
FNAE-114100	1 ¼" x 1"
FNAE-114114	1 ¼" x 1 ¼"
FNAE-112100	1 ½" x 1"
FNAE-112114	1 ½" x 1 ¼"
FNAE-112112	1 ½" x 1 ½"
FNAE-200200	2" x 2"

All assemblies include same size fly nut and o-ring.

Blanking CAPS

Part Number	CAP-BPS Threads
2102020	½"
2102030	¾"
FNCAP-100	1"

Fittings - Cam Locks

Stainless Steel and Polypropylene Cam Lock Couplings

A

A. Male Adapter / Female Thread

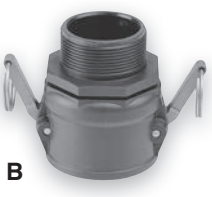
Stainless Steel	Coupling Size	Thread Size	NPT Poly	BSP Poly
A-750SS	¾"	¾"	9950-075NA	9950-075BA
A-100SS	1"	1"	9950-100NA	9950-100BA
-	1¼"	1¼"	9950-125NA	9950-125BA
A-150SS	1½"	1½"	9950-150NA	9950-150BA
A-200SS	2"	2"	9950-200NA	9950-200BA
A-300SS	3"	3"	9950-300NA	9950-300BA

A

B

B. Female Coupler / Male Thread

Stainless Steel	Coupling Size	Thread Size	NPT Poly	BSP Poly
B-750SS	¾"	¾"	9950-075NB	9950-075BB
B-100SS	1"	1"	9950-100NB	9950-100BB
-	1¼"	1¼"	9950-125NB	9950-125BB
B-150SS	1½"	1½"	9950-150NB	9950-150BB
B-200SS	2"	2"	9950-200NB	9950-200BB
B-300SS	3"	3"	9950-300NB	9950-300BB

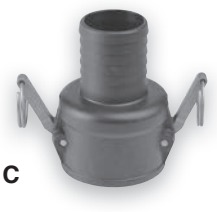


B

C

C. Female Coupler / Hose Fitting

Stainless Steel	Coupling Size	Barb Size	Poly
C-750SS	¾"	¾"	9950-075C
C-100SS	1"	1"	9950-100C
-	1¼"	1¼"	9950-125C
C-150SS	1½"	1½"	9950-150C
C-200SS	2"	2"	9950-200C
C-300SS	3"	3"	9950-300C



C

Fittings - Cam Locks

Stainless Steel and Polypropylene Cam Lock Couplings


D

D. Female Coupler / Female Thread

Stainless Steel	Coupling Size	Thread Size	Poly	BSP Poly
-	¾"	½"	18103D2N	———
D-750SS	¾"	¾"	9950-075ND	9950-075BD
D-100SS	1"	1"	9950-100ND	9950-100BD
-	1¼"	1¼"	9950-125ND	9950-125BD
D-150SS	1½"	1½"	9950-150ND	9950-150BD
D-200SS	2"	2"	9950-200ND	9950-200BD
D-300SS	3"	3"	9950-300ND	9950-300BD


D


E

E. Male Adapter / Hose Fitting

Stainless Steel	Coupling Size	Hose Size	Poly
-	¾"	½"	18103E2
E-750SS	¾"	¾"	9950-075E
E-100SS	1"	1"	9950-100E
-	1¼"	1¼"	9950-125E
E-150SS	1½"	1½"	9950-150E
E-200SS	2"	2"	9950-200E
E-300SS	3"	3"	9950-300E


E


F

F. Male Adapter / Male Thread

Stainless Steel	Coupling Size	Thread Size	Poly	BSP Poly
-	¾"	½"	18103F2N	———
F-750SS	¾"	¾"	9950-075NF	9950-075BF
F-100SS	1"	1"	9950-100NF	9950-100BF
-	1¼"	1¼"	9950-125NF	9950-125BF
F-150SS	1½"	1½"	9950-150NF	9950-150BF
F-200SS	2"	2"	9950-200NF	9950-200BF
F-300SS	3"	3"	9950-300NF	9950-300BF


F


G

G. Plug

Stainless Steel	Coupling Size	Poly
DP-750SS	¾"	9950-075G
DP-100SS	1"	9950-100G
-	1¼"	9950-125G
DP-150SS	1½"	9950-150G
DP-200SS	2"	9950-200G
DP-300SS	3"	9950-300G


G


H

H. Cap

Stainless Steel	Coupling Size	Poly
DC-750SS	¾"	9950-075H
DC-100SS	1"	9950-100H
-	1¼"	9950-125H
DC-150SS	1½"	9950-150H
DC-200SS	2"	9950-200H
DC-300SS	3"	9950-300H

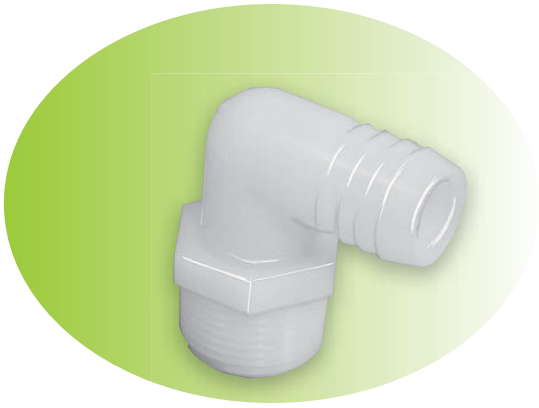

H

Cam Lock Replacement Gasket

Size	EPDM Part Number	Viton® Part Number
¾"	18103B-050	18123B-050
1¼"	18105B-050	18125B-050
1½"	18106B-050	18126B-050
2"	18107B-050	18127B-050
3"	18109B-050	18129B-050

Hypro® Nylon and Polypropylene Fittings

Supplemental Technical Information on Nylon and Polypropylene Fittings



Hypro Nylon Fittings are generally acceptable for use at working pressures up to 150 PSI at ambient temperatures. At very low pressures, temperatures can approach 175ºF with no degradation in the performance of the nylon fitting. Nylon has resistance to a range of chemicals including most agricultural chemicals, ammonium compounds, detergents, diesel fuel, ethanol, gasoline, hexane, magnesium sulfate, most sodium compounds, tricholrethylene, and zinc sulfate. Nylon fittings should not be used with acidic fertilizers, bromine, chlorine, fluorine, hydrochloric acid, iodine, nitric acid, phosphoric acid, sulfuric acid, or xylene.

Recommended	Not Recommended
For physical or structural strength	Acid-based fertilizers/defoliants
For broad temperature range	Xylene-based chemicals
With PTFE tape	Prolonged sunlight/UV exposure

Hypro Polypropylene Fittings are generally acceptable for use at working pressures up to 150 PSI at ambient temperatures. As with all thermoplastics, an increase in working temperature is accompanied by a decrease in acceptable operating pressure. At 140ºF, the working pressure limit is 90 PSI. Polypropylene has resistance to a range of chemicals including most agricultural chemicals, acidic fertilizers, ammonium compounds, calcium carbonate, ethanol, hydrochloric acid, magnesium sulfate, oxalic acid, propionic acid, phosphoric acid and most sodium compounds. Polypropylene fittings should not be used with aromatic hydrocarbons, carbon tetrachloride, gasoline, hexane, kerosene, nitric acid, sodium hypochlorite, toluene trichloroethylene, and xylene.

Recommended	Not Recommended
Hand tight, plus 1 turn	Impact wrench, other over tightening
For normal ag growing season conditions	For temperature extremes
For acid resistance	With PTFE tape
For Sunlight/UV resistance	For toluene or xylene-based compounds
For cosmetic appearance	

Fittings - Plastic

Male Pipe Thread By Hose Barb

Std Pack	MPT X HB	Nylon	Poly
25	1/8" X 3/16"	A18316	3A18316
25	1/8" X 1/4"	A1814	3A1814
25	1/8" X 5/16"	A18516	–
25	1/8" X 3/8"	A1838	3A1838
25	1/4" X 3/16"	A14316	–
25	1/4" X 1/4"	A14	3A14
25	1/4" X 5/16"	A14516	–
25	1/4" X 3/8"	A1438	3A1438
25	1/4" X 1/2"	A1412	3A1412
25	3/8" X 1/4"	A3814	3A3814
25	3/8" X 5/16"	A38516	3A38516
25	3/8" X 3/8"	A38	3A38
25	3/8" X 1/2"	A3812	3A3812
25	3/8" X 5/8"	A3858	3A3858
25	1/2" X 3/16"	A12316	–
25	1/2" X 1/4"	A1214	3A1214
25	1/2" X 3/8"	A1238	3A1238
25	1/2" X 1/2"	A12	3A12
25	1/2" X 5/8"	A1258	3A1258
25	1/2" X 3/4"	A1234	3A1234
25	1/2" X 1"	A12100	–
25	3/4" X 1/4"	A3414	3A3414
25	3/4" X 3/8"	A3438	3A3438
25	3/4" X 1/2"	A3412	3A3412
25	3/4" X 5/8"	A3458	3A3458
25	3/4" X 3/4"	A34	3A34
25	3/4" X 1"	A34100	3A34100
25	1" X 3/4"	A10034	3A10034
25	1" X 1"	A100	3A100
25	1" X 1 1/4"	A100114	3A100114
1	1 1/4" X 3/4"	A11434	3A11434
1	1 1/4" X 1"	A114100	3A114100
1	1 1/4" X 1 1/4"	A114	3A114
1	1 1/4" X 1 1/2"	A114112	3A114112
1	1 1/2" X 1 1/4"	A112114	3A112114
1	1 1/2" X 1 1/2"	A112	3A112
1	2" X 2"	A200	3A200

Add Prefix "BG-" for 1 part per retail bag

Female Pipe Thread By Hose Barb

Std Pack	FPT X HB	Nylon	Poly
25	1/4" X 1/4"	AF14	3AF14
25	1/4" X 3/8"	AF1438	3AF1438
25	3/8" X 1/4"	AF3814	3AF3814
25	3/8" X 3/8"	AF38	3AF38
25	3/8" X 1/2"	AF3812	3AF3812
25	1/2" X 1/4"	AF1214	3AF1214
25	1/2" X 3/8"	AF1238	3AF1238
25	1/2" X 1/2"	AF12	3AF12
25	1/2" X 5/8"	AF1258	3AF1258
25	1/2" X 3/4"	AF1234	3AF1234
25	3/4" X 3/8"	AF3438	3AF3438
25	3/4" X 1/2"	AF3412	3AF3412
25	3/4" X 5/8"	–	3AF3458
25	3/4" X 3/4"	AF34	3AF34

Elbows: Male Pipe Thread By Hose Barb

Std Pack	MPT X HB	Nylon	Poly
25	1/8" X 3/16"	EL18316	–
25	1/8" X 1/4"	EL1814	3EL1814
25	1/8" X 5/16"	EL18516	–
25	1/8" X 3/8"	EL1838	3EL1838
25	1/4" X 3/16"	–	3EL14316
25	1/4" X 1/4"	EL14	3EL14
25	1/4" X 5/16"	EL14516	–
25	1/4" X 3/8"	EL1438	3EL1438
25	1/4" X 1/2"	EL1412	3EL1412
25	1/4" X 5/8"	EL1458	–
25	3/8" X 1/4"	EL3814	3EL3814
25	3/8" X 5/16"	EL38516	–
25	3/8" X 3/8"	EL38	3EL38
25	3/8" X 1/2"	EL3812	3EL3812
25	3/8" X 5/8"	EL3858	3EL3858
25	1/2" X 1/4"	EL1214	3EL1214
25	1/2" X 3/8"	EL1238	3EL1238
25	1/2" X 1/2"	EL12	3EL12
25	1/2" X 5/8"	EL1258	3EL1258
25	1/2" X 3/4"	EL1234	3EL1234
25	1/2" X 1"	EL12100	–
25	3/4" X 1/4"	EL3414	3EL3414
25	3/4" X 3/8"	EL3438	3EL3438
25	3/4" X 1/2"	EL3412	3EL3412
25	3/4" X 5/8"	EL3458	3EL3458
25	3/4" X 3/4"	EL34	3EL34
25	3/4" X 1"	EL34100	3EL34100
25	1" X 1/2"	EL10012	3EL10012
25	1" X 3/4"	EL10034	3EL10034
25	1" X 1"	EL100	3EL100
1	1 1/4" X 3/4	EL11434	3EL11434
1	1 1/4" X 1"	EL114100	3EL114100
1	1 1/4" X 1 1/4"	EL114	3EL114
1	1 1/4" X 1 1/2"	EL114112	3EL114112
1	1 1/2 X 1 1/2"	EL112	3EL112
1	2" X 2"	EL200	3EL200

Add Prefix "'BG-" for 1 part per retail bag

Elbows: Female Pipe Thread By Hose Barb

Std Pack	FPT X HB	Nylon	Poly
25	1/4" X 3/16"	–	3EL14316F
25	1/4" X 1/4"	EL14F	3EL14F
25	1/4" X 3/8"	EL1438F	3EL1438F
25	3/8" X 1/4"	EL3814F	3EL3814F
25	3/8" X 3/8"	EL38F	3EL38F
25	3/8" X 1/2"	EL3812F	3EL3812F
25	1/2" X 5/8"	EL1258F	3EL1258F
25	1/2" X 3/4"	EL1234F	3EL1234F
25	3/4" X 1/2"	EL3412F	3EL3412F
25	3/4" X 5/8"	EL3458F	3EL3458F
25	3/4" X 3/4"	EL34F	3EL34F

Street Elbows: Female Pipe Thread By Male Pipe Thread

Std Pack	FPT X MPT	Nylon	Poly
25	1/4" X 1/4"	SE14	3SE14
25	3/8" X 3/8"	SE38	—
25	1/2" X 1/2"	SE12	3SE12
25	3/4" X 3/4"	SE34	3SE34
10	1" X 1"	SE100	3SE100
1	1 1/4" X 1 1/4"	SE114	3SE114
1	1 1/2" X 1 1/2"	SE112	3SE112
1	2" X 2"	SE200	3SE200

Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Street Elbows – 45°

Std Pack	MPT X FPT	Nylon	Poly
25	¾" X ¾"	SE3445	3SE3445
10	¼" X ¼"	SE1445	–

Elbows: Female Pipe Thread – 90°

Std Pack	FPT X FPT	Nylon	Poly
25	½" X ½"	LL12	3LL12
10	¾" X ¾"	LL34	3LL34
1	1" X 1"	LL100	3LL100
1	1¼" X 1¼"	LL114	3LL114
1	1½" X 1½"	LL112	3LL112
1	2" X 2"	LL200	3LL200

Add Prefix "BG-" for 1 part per retail bag

Tees: Female Pipe Thread

Std Pack	FPT X FPT X FPT	Nylon	Poly
25	¼"	TT14	3TT14
10	½"	TT12	3TT12
10	¾"	TT34	3TT34
1	1"	TT100	3TT100
1	1¼"	TT114	3TT114
1	1½"	TT112	3TT112
1	2"	TT200	3TT200

Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Tees: Female Pipe Thread with ¼" Gauge Port

Add Prefix "BG-" for 1 part per retail bag

Reducer Bushings

Std Pack	MPT X FPT	Nylon	Poly
25	¼" X ⅛"	—	3RB1418
25	⅜" X ⅛"	RB3818	3RB3818
25	⅜" X ¼"	RB3814	3RB3814
25	½" X ⅛"	RB1218	3RB1218
25	½" X ¼"	RB1214	3RB1214
25	½" X ⅜"	RB1238	3RB1238
25	¾" X ⅛"	RB3418	3RB3418
25	¾" X ¼"	RB3414	3RB3414
25	¾" X ⅜"	RB3438	3RB3438
25	¾" X ½"	RB3412	3RB3412
25	1" X ½"	RB10012	3RB10012
25	1" X ¾"	RB10034	3RB10034
1	1¼" X ¾"	RB11434	3RB11434
1	1¼" X 1"	RB114100	3RB114100
1	1½" X ¾"	RB11234	3RB11234
1	1½" X 1"	RB112100	3RB112100
1	1½" X 1¼"	RB112114	3RB112114
1	2" X ¾"	RB20034	3RB20034
1	2" X 1"	RB200100	3RB200100
1	2" X 1¼"	RB200114	3RB200114
1	2" X 1½"	RB200112	3RB200112
1	3" X 2"	RB300200	3RB300200

Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Nipples: Male Pipe Thread By Male Pipe Thread

Std Pack	MPT X MPT	Nylon	Poly
25	⅛" X ⅛"	M18	3M18
25	¼" X ¼"	M14	3M14
25	⅜" X ⅜"	M38	3M38
25	½" X ½"	M12	3M12
25	¾" X ¾"	M34	3M34
25	1" X 1"	M100	3M100
1	1¼" X 1¼"	M114	3M114
1	1½" X 1½"	M112	3M112
1	2" X 2"	M200	3M200
25	¼" X ⅛"	M1418	3M1418
25	⅜" X ⅛"	M3818	3M3818
25	⅜" X ¼"	M3814	3M3814
25	½" X ⅛"	M1218	–
25	½" X ¼"	M1214	3M1214
25	½" X ⅜"	M1238	3M1238
25	¾" X ⅜"	M3438	3M3438
25	¾" X ½"	M3412	3M3412

Add Prefix "BG-" for 1 part per retail bag

Female Coupler

Std Pack	FPT X FPT	Nylon	Poly
25	½" X ½"	FC12	3FC12
25	¾" X ¾"	FC34	3FC34
25	1" X 1"	FC100	3FC100
1	1¼" X 1¼"	FC114	3FC114
1	1½" X 1½"	FC112	3FC112
1	2" X 2"	FC200	3FC200

Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Hex Plug with Male Pipe Thread

Std Pack	MPT	Nylon	Poly
25	⅛"	F18	3F18
25	¼"	F14	3F14
25	⅜"	F38	3F38
25	½"	F12	3F12
25	¾"	F34	3F34
25	1"	F100	3F100
1	1¼"	F114	3F114
1	1½"	F112	3F112
1	2"	F200	3F200

Add Prefix "BG-" for 1 part per retail bag

Hose Barb Fittings

Std Pack	HB X HB	Nylon	Poly
25	¼" X ¼"	EL14HB	3EL14HB
25	⅜" X ¼"	EL3814HB	3EL3814HB
25	⅜" X ⅜"	EL38HB	3EL38HB
25	½" X ¼"	EL1214HB	3EL1214HB
25	½" X ¾"	EL1238HB	3EL1238HB
25	½" X ½"	EL12HB	3EL12HB
25	⅝" X ⅝"	EL58HB	3EL58HB
25	¾" X ⅝"	EL3458HB	3EL3458HB
25	¾" X ¾"	EL34HB	3EL34HB
25	1" X 1"	EL100HB	–
1	1¼" X 1¼"	EL114HB	3EL114HB
1	1½" X 1½"	EL112HB	3EL112HB
1	2" X 2"	EL200HB	3EL200HB

Add Prefix "BG-" for 1 part per retail bag

Hose Mender

Std Pack	HB X HB	Nylon	Poly
25	1/8" X 1/8"	HM18*	–
25	1/4" X 3/16"	HM14316*	–
25	1/4" X 1/4"	SHM14	3SHM14
25	1/4"	HM14*	3HM14*
25	5/16"	HM516*	3HM516*
25	3/8" X 1/4"	HM3814*	3HM3814*
25	3/8" X 3/8"	SHM38	3SHM38
25	1/2" X 1/4"	HM1214*	3HM1214*
25	1/2" X 3/8"	SHM1238	3SHM1238
25	1/2" X 3/8"	HM1238*	3HM1238*
25	1/2" X 1/2"	SHM12	3SHM12
25	1/2" X 5/8"	SHM1258	3SHM1258
25	5/8" X 3/8"	HM5838*	3HM5838*
25	5/8" X 5/8"	SHM58	3SHM58
25	5/8" X 5/8"	HM58*	—
25	3/4" X 3/4"	SHM34	3SHM34
25	1" X 1"	SHM100	3SHM100
1	1 1/4" X 1 1/4"	SHM114	3SHM114
1	1 1/2" X 1 1/2"	SHM112	3SHM112
1	2" X 2"	SHM200	3SHM200

*No center stop as pictured.
Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Tees: Hose Barbs

Std Pack	HB X HB (1 x 2 & 3)	Nylon	Poly
25	1/8" X 1/8"	T18	–
25	1/4" X 1/4"	T14	3T14
25	1/4" X 3/8"	T1438	3T1438
25	3/8" X 3/8"	T38	3T38
25	3/8" X 1/2"	T3812	3T3812
25	3/8" X 5/8"	T3858	–
25	1/2" X 3/8"	T1238	3T1238
25	1/2" X 1/2"	T12	3T12
25	5/8" X 5/8"	T58	3T58
25	3/4" X 1/2"	T3412	3T3412
25	3/4" X 3/4"	T34	3T34
25	1" X 1"	T100	3T100
1	1 1/4" X 1 1/4"	T114	3T114
1	1 1/2" X 1 1/2"	T112	3T112
1	2" X 2"	T200	3T200

Add Prefix "BG-" for 1 part per retail bag
Add Prefix "5BG-" for 5 parts per retail bag

Tees: Male Pipe Thread By Hose Barbs

Std Pack	MPT X HB (1 x 2 & 3)	Nylon	Poly
25	1/8" X 1/4"	T1814T	–
25	1/4" X 1/4"	T14T	3T14T
25	1/4" X 3/8"	T1438T	3T1438T
25	1/4" X 1/2"	T1412T	–
25	3/8" X 1/4"	T3814T	–
25	3/8" X 3/8"	T38T	3T38T
25	3/8" X 1/2"	T3812T	3T3812T
25	1/2" X 3/8"	T1238T	3T1238T
25	1/2" X 1/2"	T12T	3T12T
25	1/2" X 5/8"	T1258T	–
25	1/2" X 3/4"	T1234T	3T1234T
25	3/4" X 3/8"	–	3T3438T
25	3/4" X 1/2"	T3412T	3T3412T
25	3/4" X 5/8"	–	3T3458T
25	3/4" X 3/4"	T34T	3T34T
25	3/4" X 1"	T34100T	–

Tees: Hose Barb By Female Pipe Thread

Std Pack	FPT X HB (1 x 2 & 3)	Nylon	Poly
25	¾" X ¾"	T34F	3T34F

Male Garden Hose Thread By Hose Barb

Std Pack	MGHT X HB	Nylon	Poly
25	¾" X ¼"	D3414	–
25	¾" X ⅜"	D3438	3D3438
25	¾" X ½"	D3412	3D3412
25	¾" X ⅝"	D3458	3D3458
25	¾" X ¾"	D34	3D34
25	¾" X 1"	D34100	–

Add Prefix "BG-" for 1 part per retail bag

Elbows: Male Garden Hose Thread By Hose Barb

Std Pack	MGHT X HB	Nylon	Poly
25	¾" X ¼"	ELD3414	3ELD3414
25	¾" X ⅜"	ELD3438	3ELD3438
25	¾" X ½"	ELD3412	3ELD3412
25	¾" X ⅝"	ELD3458	–
25	¾" X ¾"	ELD34	3ELD34

Adapters: Male Garden Hose Thread By Male Pipe Thread

Std Pack	MGHT X MPT	Nylon	Poly
25	¾" X ⅜"	E3438	3E3438
25	¾" X ½"	E3412	3E3412
25	¾" X ¾"	E34	3E34

Adapter Couplings: Female Garden Hose Thread By Female Pipe Thread

Std Pack	FGHT X FPT	Nylon	Poly
25	¾" X ½"	J3412	3J3412

Adapters: Female Garden Hose Thread By Male Pipe Thread

Std Pack	FGHT X MPT	Nylon	Poly
25	¾" X ¾"	H34	3H34

Adapters: Male Garden Hose Thread By Female Pipe Thread

Std Pack	MGHT X FPT	Nylon	Poly
25	¾" X ½"	G3412	3G3412
25	¾" X ¼"	G3414	3G3414
25	¾" X ¾"	G34	3G34

Adapters: Female Garden Hose Thread By Male Garden Hose Thread

Std Pack	FGHT X MGHT	Nylon	Poly
25	¾" X ¾"	I34	3I34

Female Garden Hose Cap Knurled

Std Pack	FGHT	Nylon	Poly
25	¾"	N34	3N34

Female Pipe Thread By Hose Barb Fitting

Std Pack	FPT X HB	Nylon	Poly
25	½" X ½"	Q12	3Q12
50	¼" X ¼"	Q14	3Q14

Female Pipe Straight Swivel Nut–Hex

Std Pack	FPS	Nylon	Poly
25	¾"	B35	3B35
25	1"	B100	3B100

Female Garden Hose Swivel Nut–Knurled

Std Pack	FGHT	Nylon	Poly
25	¾"	B34	3B34

Flat Seat Hose Barb

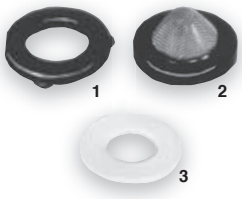
Std Pack	HB	Nylon	Poly
25	¼"	C14	3C14
25	⅜"	C38	3C38
25	½"	C12	3C12
25	⅝"	C58	3C58
25	¾"	C34	3C34
25	1"	C100	3C100

Add Prefix "BG-" for 1 part per retail bag

Female Thread Swivel Hex Nut, Barb Insert with Ball Seat

Std Pack	Size	Nylon
BARB ONLY		
50	¼" HB	NC14
50	⅜" HB	NC38
50	½" HB	NC12
NUT ONLY		
50	¼"	NC14N
50	⅜"	NC38N
50	½"	NC12N
50	½" with ¼" HB	NC1214

Washers

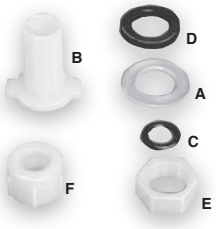


Reference #	Std Pack	OD X ID	Description	Part Number
1	100	1" X ¾"	Black Vinyl	W406V
2	100	1" X ⅝"	S.S. Filter 50/60 Mesh	W160M
3	100	1" X ½"	Natural Polypropylene	W405P

Rope Wick Parts Unassembled

Std Pack	Description	Nylon	Poly
25	¾" MGHT X ¾" MPT (A)	E34	3E34
25	¾" FGHT Nut with ½" hole (B)	B3412	3B3412
25	¾" MGHT X ½" MPT (C)	E3412	3E3412

Rope Wick Parts Unassembled



Reference Letter	Std Pack	Description	Nylon	Poly
A	100	Nylon Washer	RW1116A	3RW1116A
B	50	Main Body	RW1116B	–
C	100	O-ring Black EPDM	RW1116C	RW1116C
D	100	Grommet Black EPDM	RW1116D	RW1116D
E	25	11/16" - 16 UN (Lock) Nut	B12	3B12
F	25	11/16" - 16 UN Swivel Nut	8027	38027

Hose-Saver Straight Assembly – Nylon

MPT X HB	Part Number	Cap Part Number
¾" X ¾"	626320N	626012
¾" X 1"	626325N	626014
1" X ¾"	626420N	626012
1" X 1"	626425N	626014
1¼" X 1"	626525N	626014
1¼" X 1¼"	626532N	626014
1½" X 1¼"	626632N	626014
1½" X 1½"	626638N	626016
1½" X 2"	626651N	–
2" X 2"	626751N	–

Hose-Saver Elbow Assembly – Nylon

MPT X HB	Part Number	Cap Part Number
¾" X ¾"	627320N	626012
¾" X 1"	627325N	626014
1" X ¾"	627420N	626012
1" X 1"	627425N	626014
1" X 1¼"	627432N	626014
1¼" X 1"	627525N	626014
1¼" X 1¼"	627532N	626014
1½" X 1¼"	627632N	626014
1½" X 1½"	627638N	626016
1½" X 2"	627651N	–
2" X 2"	627751N	–

Fittings - Stainless Steel

Male Pipe Thread By Hose Barb

MPT x HB	316 Stainless Steel
¼" X ¼"	9A14
¼" X ⅜"	9A1438
¼" X ½"	9A1412
½" X ½"	9A12
¾" X ¾"	9A34
1" X 1"	9A100
1¼" X 1¼"	9A114
1½" X 1½"	9A112
2" X 2"	9A200
3" X 3"	9A300

Coupling: Female Pipe Thread

FPT X FPT	304 Stainless Steel
¼" X ¼"	7FC14
½" X ½"	7FC12
¾" X ¾"	7FC34
1" X 1"	7FC100
1½" X 1½"	7FC112
2" X 2"	7FC200
3" X 3"	7FC300

Elbow: Female Pipe Thread – 90°

FPT X FPT	304 Stainless Steel
¼" X ¼"	7LL14
½" X ½"	7LL12
¾" X ¾"	7LL34
1" X 1"	7LL100
1½" X 1½"	7LL112
1¼" X 1¼"	7LL114
2" X 2"	7LL200
3" X 3"	7LL300

Reducer Bushing

MPT X FPT	304 Stainless Steel
¼" X ⅜"	7RB1418
⅜" X ¼"	7RB3814
½" X ¼"	7RB1214
½" X ⅜"	7RB1238
¾" X ¼"	7RB3414
¾" X ½"	7RB3412
1" X ½"	7RB10012
1" X ¾"	7RB10034
2" X 1½"	7RB200112

Street Elbow: Female Pipe Thread By Male Pipe Thread

MPT X FPT	304 Stainless Steel
¼" X ¼"	7SE14
⅜" X ⅜"	7SE38
½" X ½"	7SE12
¾" X ¾"	7SE34
1" X 1"	7SE100
1½" X 1½"	7SE112
1¼" X 1¼"	7SE114
2" X 2"	7SE200
3" X 3"	7SE300

Tee: Female Pipe Thread

FPT X FPT X FPT	304 Stainless Steel
¼"	7TT14
½"	7TT12
¾"	7TT34
1"	7TT100
1¼"	7TT114
1½"	7TT112
2"	7TT200
3"	7TT300

Nipple

MPT X Length	304 Stainless Steel
¼" X 1½"	714112
¼" X 3"	714300
¼" X 4"	714400
¼" X 6"	714600
¼ X 12"	7141200
⅜" X 1"	738100
⅜" X 1½"	738112
½" X 1⅛"	712118
½" X 1½"	712112
½" X 2"	712200
¾" X 1⅜"	734138
¾" X 4"	734400
1" X 1½"	7100112
1" X 4"	7100400
1¼" X 1⅝"	7114158
1½" X 1¾"	7112134
2" X 2"	7200200
2" X 2½"	7200212
2" X 4"	7200400
2" X 6"	7200600
2" X 3"	7200300
2" X 3½"	7200312
2" X 5"	7200500

Hex Plugs

7F18	⅛"
7F14	¼"
7F38	⅜"
7F12	½"
7F34	¾"
7F100	1"
7F200	2"

Fittings - Steel

Male Pipe Thread By Hose Barb

MPT X HB	Steel
⅛" X ¼"	A1814S
⅛" X ⅜"	A1838S
¼" X ¼"	A14S
¼" X ⅜"	A1438S
¼" X ½"	A1412S
⅜" X ¼"	A3814S
⅜" X ⅜"	A38S
⅜" X ½"	A3812S
½" X ¼"	A1214S
½" X ⅜"	A1238S
½" X ½"	A12S
½" X ⅝"	A1258S
½" X ¾"	A1234S
¾" X ⅜"	A3438S
¾" X ½"	A3412S
¾" X ⅝"	A3458S
¾" X ¾"	A34S
¾" X 1"	A34100S
1" X 1"	A100S

Add Prefix "BG-" for 1 part per retail bag

King Nipple

MPT X HB	Plated Steel
¾"	AA34P
1" X ¾"	AA10034P
1"	AA100P
1¼"	AA114P
1½"	AA112P
2"	AA200P

Add Prefix "BG-" for 1 part per retail bag

Female Pipe Straight Swivel Nut – Hex

FPS	Steel
¾"	B35S

NOTE: For use with steel flat hose barbs ¼" to ¾".

Flat Seat Hose Barb

HB	Steel
½"	C12S
¾"	C34S

Fittings - Brass

Male Pipe Thread By Hose Barb

MPT X HB	Brass
⅛" X ¼"	A1814B
⅛" X ⅜"	A1838B
¼" X ¼"	A14B
¼" X ⅜"	A1438B
¼" X ½"	A1412B
⅜" X ¼"	A3814B
⅜" X ⅜"	A38B
⅜" X ½"	A3812B
½" X ¼"	A1214B
½" X ⅜"	A1238B
½" X ½"	A12B
½" X ⅝"	A1258B
½" X ¾"	A1234B
¾" X ⅜"	A3438B
¾" X ½"	A3412B
¾" X ⅝"	A3458B
¾" X ¾"	A34B
¾" X 1"	A34100B
1" X 1"	A100B

Female Pipe Thread By Hose Barb

FPT X HB	Brass
¼" X ⅜"	AF1438B

Street Elbows: Female Pipe Thread By Male Pipe Thread

MPT X FPT	Brass
¼" X ¼"	SE14B
⅜" X ⅜"	SE38B
½" X ½"	SE12B

Hose Mender

HB	Brass
¼" X ¼"	SHM14B
⅜" X ⅜"	SHM38B
½" X ½"	SHM12B
⅝" X ⅝"	SHM58B
¾" X ¾"	SHM34B

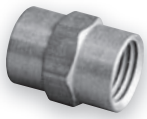
Flat Seat Hose Barb

HB	Brass
⅜"	C38B
½"	C12B
⅝"	C58B
¾"	C34B

Swivel Nut – Hex Female Garden Hose Thread

FGHT	Brass
¾"	B33B

Couplings: Female Pipe Thread



FPT X FPT	Brass
¼" X ¼"	FC14B
½" X ½"	FC12B

Male Garden Hose Thread By Hose Barb

MGHT X HB	Brass
¾" X ⅜"	D3438B
¾" X ½"	D3412B
¾" X ⅝"	D3458B
¾" X ¾"	D34B

Swivel Adapter

MPT	Brass
⅜"	SA38B
½"	SA12B

Adapters: Male Garden Hose Thread By Male Pipe Thread

MGHT X MPT	Brass
¾" X ½"	E3412B
¾" X ¾"	E34B

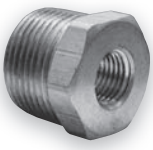
Elbows: Female Pipe Thread – 90°

FPT X FPT	Brass
¼" X ¼"	LL14B

Hex Plug with Male Pipe Thread

MPT	Brass
¼"	F14B
⅜"	F38B
½"	F12B

Reducer Bushings



MPT X FPT	Brass
¼" X ⅛"	RB1418B
½" X ¼"	RB1214B
½" X ⅜"	RB1238B
¾" X ½"	RB3412B

Female Garden Hose Swivel Nut – Knurled

FGHT	Brass
¾"	B34B

NOTE: For use with flat seat hose barbs ¼" to ¾".

Cable Ties & Clamps

Cable Ties

Standard Pack	Length	Part Number White Nylon	Part Number Black UV Nylon
100	4”	NS4	3NS4
100	6⅛”	NS7	3NS7
100	7½”	NS8	3NS8
100	11½”	NS12	3NS12
100	17¾”	NS17	3NS17
100	21¾”	NS21	3NS21
100	28⅜”	NS28	3NS28
100	37¼”	NS32	3NS32

Hose Clamps

NOTE: 10 per box – order in box multiples

Part Number	Fits Hose Min	Fits Hose Max	Normal Hose Size*
5/16” Band			
4JM	7/32”	5/8”	1/4”
6JM	5/16”	7/8”	3/8”
8JM	7/16”	1”	1/2”
10JM	1/2”	1 1/16”	5/8”
12JM	9/16”	1 1/4”	3/4”
16JM	11/16”	1 1/2”	1”
1/2” Band			
6J	3/8”	7/8”	3/8”
8J	7/16”	1”	1/2”
10J	9/16”	1 1/16”	5/8”
12J	9/16”	1 1/4”	3/4”
16J	11/16”	1 1/2”	1”
20J	3/4”	1 3/4”	1 1/4”
24J	1 1/16”	2”	1 1/2”
28J	1 5/16”	2 1/4”	1 3/4”
32J	1 9/16”	2 1/2”	2”
36J	1 13/16”	2 3/4”	2 1/4”
40J	2 1/16”	3”	2 1/2”
44J	2 5/16”	3 1/4”	2 3/4”
48J	2 9/16”	3 1/2”	3”
52J	2 13/16”	3 3/4”	3 1/4”
56J	3 1/16”	4”	3 1/2”
64J	2 1/2”	4 1/2”	4”
104J	5”	7”	6 1/2”

* Hose sizes are based on inside I.D.

Universal Flanged Gaskets

Part #	Size	Gasket Type
UFG0100E	1"	EPDM
UFG0150E	1.5"	EPDM
UFG0200E	2"	EPDM
UFG0300E	3"	EPDM

- The gasket wraparound feature provides positive alignment of the adjoining fittings and allows visual inspection to be conducted during assembly
- Provides sealing areas between fitting faces and outside diameter of flanged surfaces which increases the maximum pressure the joint can manage without leaks
- Flow can be increased by as much as 16% as the new universal flanged gasket reduces protrusion into the joint

Sealant

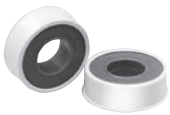
Rector Seal

Part Number	Type	Container
28651	21 Black Jack	1/2 Pint Can
28541	21 Black Jack	1 Pint Can

Liquid Teflon Sealant

Part Number	Size	Container
LT2	2 oz.	Tube
LT4	4 oz.	Can
LT8	8 oz.	Can

Teflon Tape



Part Number	Size	Container
1252	½"	520"

Value Beyond the Pump

Hypro opened its doors in 1947 in Minneapolis, Minnesota USA by bringing the first nylon roller pump to the market. Now, more than 60 years later, after adding multiple pump lines, spray tips and spraying components to the product mix, Hypro continues to lead the industry by bringing innovative products to the agricultural, turf, pest control and high pressure markets. Hypro is committed to serving these markets throughout the world with quality products, superior service and innovative solutions.

Products

The product breadth that Hypro offers is unmatched by any others in the market. It is the one-stop shop for all spraying products – from pump to tip and everything in between. Hypro also continues to expand its product breadth by introducing new products to the market each year.

One-Stop Shop

In December 1999, Hypro acquired Hypro-EU (formerly Lurmark Limited), the leading United Kingdom spray nozzle manufacturer, as well as Precision Fitting and Valve, a United States distributor of spraying components. These acquisitions have allowed Hypro to become a complete wet-end supplier for the agricultural, pressure cleaning and industrial markets.

New Product Development

Hypro continuously strives to develop innovative products for existing and new markets. The information gained through customers and end-users, coupled with an experienced team of engineers, allows Hypro to bring new products to the market that suit the needs of the users.

Support

Hypro provides support throughout the purchasing process and beyond. From sales and customer service representatives who assist in the selection and purchasing of the products, to technical representatives who provide maintenance and service, Hypro has the support you need to keep spraying.

Local Sales Representatives

Hypro has a team of knowledgeable sales representatives located throughout the world to help answer questions and deliver the appropriate solution for an application.

Customer Service Representatives

There are several customer service representatives available to answer every day questions on products, receive and enter purchase orders and track shipments to ensure all customer needs are met.

Technical Support

Have a technical question or need some help with a specific application? Call 800-445-8360 to connect to the technical support area. With over 100 years of combined knowledge, they can assist with any technical or application-related question.

Service and Warranty

Service and warranty are two key elements that separate Hypro from many others in the marketplace. The extensive product expertise in this department plays a large part in making it a genuine pleasure to do business with Hypro.

Marketing

Hypro continues to support its customers through marketing efforts, such as producing product literature, providing retail packaging and point-of-purchase materials, advertising in trade publications, exhibiting at trade shows and publishing product and market information on the website.

The "Make the Connection" campaign consists of advertisements, Point-of-Purchase displays, trade show display, giveaways, signage, and much more.

Trade Shows

Hypro exhibits at over 30 trade shows throughout the world and across industries. It is at these trade shows that Hypro is able to meet with end-users and provide hands-on demonstrations of our newest products.

Packaging and Point-of-Purchase

Retail-friendly packaging is available on many Hypro products to provide a clean, cohesive look while supplying valuable information to end-users. Point-of-purchase materials, such as banners, spray tip selectors, brochures and holders are also available.

Advertising

Hypro supports its customer base with an extensive advertising campaign targeted at applicators in the industry. It is these efforts that bring increased exposure to Hypro products and more customers coming through the door asking for Hypro by name.

Literature

Hypro has numerous collateral pieces available to help educate and inform customers and end-users. These materials are offered at no charge and are available electronically at www.hypropumps.com on the reference page.

Spray Mobile Tip Application

Now you can access Hypro's SprayIT spray tip selection guide on your Apple or Android mobile device! The SprayIT app helps you quickly determine the correct spray tip for your application. Simply select your speed, tip spacing, application rate and droplet size and a list of spray tips that match your requirements is returned. The app is available in English, Spanish, French, Portuguese, German and Russian, with US and Metric units supported.

Website

Hypro's website is constantly being updated with the latest product information and tools to help make product selection, find Hypro distributors, and service your pump as easy as possible. Visit www.hypropumps.com to check out some of the newest additions:

- SprayIT Calculator: This calculator provides a quick and easy way to find the right spray tip for your application. Users simply select the desired spraying application type,input their application information, and the calculator does the rest.
- Where-to-Buy: Now it is easy to locate the nearest Hypro distributor twenty-four hours a day, seven days a week. Visitors supply their product of interest and enter a zip code to receive a listing of nearby Hypro distributors and fleet stores.
- Service Videos: Chris, a Hypro service technician, provides hands-on training for servicing a variety of Hypro pumps. The videos, located under the Tools section of the website, explain everything you need to know, including the tools required, disassembly and reassembly of the pump, looking for signs of wear, and tips for properly maintaining your pump.

Hypro has been offering ***Value Beyond the Pump*** through the products, support and marketing efforts it provides each year. We will continue to strive to bring value to our customers and end-users through new and different ways.

Hypro is confident you will discover ***Value Beyond the Pump.***

Limited Warranty on HYPRO/SHURFLO Agricultural Pumps & Accessories

Hypro/SHURflo (hereafter, "Hypro") agricultural products are warranted to be free of defects in material and workmanship under normal use for the time periods listed below, with proof of purchase.

- Pumps: one (1) year from the date of manufacture, or one (1) year of use. This limited warranty will not exceed two (2) years, in any event.
- Accessories: ninety (90) days of use.

This limited warranty will not apply to products that were improperly installed, misapplied, damaged, altered, or incompatible with fluids or components not manufactured by Hypro. All warranty considerations are governed by Hypro's written return policy.

Hypro's obligation under this limited warranty policy is limited to the repair or replacement of the product. All returns will be tested per Hypro's factory criteria. Products found not defective (under the terms of this limited warranty) are subject to charges paid by the returnee for the testing and packaging of "tested good" non-warranty returns.

No credit or labor allowances will be given for products returned as defective. Warranty replacement will be shipped on a freight allowed basis. Hypro reserves the right to choose the method of transportation.

This limited warranty is in lieu of all other warranties, expressed or implied, and no other person is authorized to give any other warranty or assume obligation or liability on Hypro's behalf. Hypro shall not be liable for any labor, damage or other expense, nor shall Hypro be liable for any indirect, incidental or consequential damages of any kind incurred by the reason of the use or sale of any defective product. This limited warranty covers agricultural products distributed within the United States of America. Other world market areas should consult with the actual distributor for any deviation from this document.

Return Procedures
All products must be flushed of any chemical (ref. OSHA section 1910.1200 (d) (e) (f) (g) (h)) and hazardous chemicals must be labeled/tagged before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data Sheet from the returnee for any pump/product it deems necessary. Hypro reserves the right to "disposition as scrap" products returned which contain unknown fluids. Hypro reserves the right to charge the returnee for any and all costs incurred for chemical testing, and proper disposal of components containing unknown fluids. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown fluids.

Be prepared to give Hypro full details of the problem, including the model number, date of purchase, and from whom you purchased your product. Hypro may request additional information, and may require a sketch to illustrate the problem.

Contact Hypro Service Department at 800-468-3428 to receive a Return Merchandise Authorization number (RMA#). Returns are to be shipped with the RMA number clearly marked on the outside of the package. Hypro shall not be liable for freight damage incurred during shipping. Please package all returns carefully. All products returned for warranty work should be sent shipping charges prepaid to:

HYPRO / PENTAIR
Attention: Service Department
375 Fifth Avenue NW
New Brighton, MN 55112

For technical or application assistance, call the Hypro Technical/Application number: 800-445-8360, or send an email to: technical@hypropumps.com. To obtain service or warranty assistance, call the Hypro Service and Warranty number: 800-468-3428; or send a fax to the Hypro Service and Warranty FAX: 651-766-6618.

*Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous material being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.

Terms and Conditions of Sale

LEGAL EFFECT:

The following terms and conditions are a part of this order. Additional or different terms of Buyer's purchase order or other form of acceptance or any other form of Buyer are rejected in advance and shall not become a part of the Order. Seller's quotation is an offer to sell under the terms and conditions stated herein. All offers to purchase by Buyer or orders or contracts of sale resulting from such Quotations are subject to final acceptance in writing by an Authorized Representative of the Seller.

Seller's rights and remedies under this Quotation and the Order are in addition to, not in substitution of, all other rights and remedies available to Seller under any applicable provision of law, regulation or court decision. Seller may suspend its performance of the Order if Buyer defaults in the performance of its duties under the Order or under any other agreement between the Buyer and Seller.

No employee, agent, dealer, or distributor of Seller has any authority to change or enlarge the terms of this Quotation or the Order. No change shall be valid unless it is in writing and signed by an authorized Officer of Seller. In the event that any provision of these terms and conditions is deemed to be invalid or unenforceable, the parties agree that such invalidity or unenforceability shall not invalidate or render unenforceable the remainder of these terms and conditions, and the remaining terms and conditions shall continue in full force and effect. Unless otherwise mutually agreed, the terms of any Order resulting from this Quotation shall be interpreted and enforced in accordance with the laws applicable at the Seller's Home Office or primary U. S. management location.

ASSIGNMENT:

No assignment or transfer of interests of any part of this contract shall be valid without the expressed written consent of both parties.

CANCELLATION:

Buyer cannot cancel or alter the Order without the Seller's written consent. If Seller grants such consent, Buyer will reimburse Seller for all of Seller's losses and expenses caused by such cancellation or alteration, including without limitation all of Seller's additional costs caused by changes in design or specifications, or by product revisions, and all consequential damages incurred by Seller as a result of such cancellation or alteration. If Buyer cancels the Order, Buyer shall pay Seller (i) a minimum cancellation charge of 25 percent of the purchase price; and (ii) any damages and expenses described in this paragraph that exceed 25 percent of the purchase price.

PRICES:

Unless otherwise mutually agreed in writing, prices quoted by the Seller shall be firm for a period of 30 days after quotation.

TERMS OF PAYMENT:

Unless otherwise mutually agreed, the terms of payment shall be 100% net 30 days after shipment, paid from the Seller's invoices, contingent on approval by the Seller's Credit Manager. These terms apply to partial and complete shipments. Monies held beyond these terms may be subject to interest at the maximum legal rate, and may result in lien proceedings or the termination of ProFlo warranties and suspension of services.

If, in Sellers judgment, Buyer's financial condition at the time the product is ready for shipment does not warrant the extension of credit to Buyer, Seller may require full payment, in cash, prior to making shipment. If Seller does not receive full cash payment within fifteen (15) days after it notifies Buyer that such payment is required and that the product is ready for shipment, Seller may cancel the Order as to any unshipped item. In that event, Buyer will pay Seller the cancellation charges, damages and expenses, as described under CANCELLATION.

TAXES:

Seller's quoted prices do not include any present and future sales, use, occupation, license, excise, and other taxes, permits, tariffs, duties, or fees with respect to the sale, delivery or use of the product. Seller is required by law to collect all applicable sales and use taxes unless an appropriate exemption certificate is provided by the Buyer.

Terms and Conditions of Sale

SHIPMENT:

Except as otherwise mutually agreed, shipment will be ExWorks., Seller's point of shipment. Buyer will pay all transportation charges. Seller's quoted prices are based on shipment immediately upon readiness, with no delays or storage. Work which has been suspended or stored for the Buyer's convenience may be billed in place, and applicable storage charges shall accrue.

Buyer agrees to inspect all deliveries immediately. Any claim for shortages or damage must be made in writing within five (5) days after Buyer receives a shipment, and if not made, shall be deemed waived. Seller is not responsible for loss or damage in transit after having received an "In Good Order" receipt from the carrier. Buyer will make all claims for loss or damage in transit against the carrier.

TITLE AND LIEN RIGHTS:

If Buyer defaults in its obligations under the Order before the price (including any notes given therefore) of the product has been fully paid in cash, Seller may take any and all actions permitted by law to protect its interests including, where permissible, repossession of such product. Seller agrees to indemnify Buyer from liens filed by Seller's workforce or subcomponent vendors.

DESIGN RIGHTS:

Seller sells and transfers ownership of the agreed product and services only; not the design rights, development data, patents, tooling, patterns, methods or copyrights. All such rights in data are expressly reserved.

WARRANTY:

See individual Owner's Manual for specific policy.

THIS WARRANTY IS THE SOLE WARRANTY OF SELLER AND SELLER HEREBY EXPRESSLY DISCLAIMS AND BUYER WAIVES ALL OTHER WARRANTIES EXPRESSED, IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole obligation under this warranty shall be, at its option, to repair or replace any product (or its component parts) which has a defect covered by this warranty, or to refund the purchase price of such product or part. Under the terms of this warranty, Seller shall not be liable for (a) consequential, collateral, special or liquidated losses or damages; (b) product conditions caused by normal wear and tear, abnormal conditions of use, accident, neglect, or misuse of said product; (c) damage caused by abrasive materials, chemicals, scale deposits, corrosion, lightning, improper voltage, mishandling, or other similar conditions; (d) any labor costs or charges incurred in repairing or replacing defective product or parts, including the cost of reinstalling parts that are repaired or replaced by Seller; or (e) any expense of shipment of product or repaired or replacement parts. The above warranty shall not apply to any product which may be separately covered by any alternate or special warranties.

LIABILITY LIMITATIONS:

Under no circumstances shall the Seller have any liability under the Order or otherwise for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, regardless of the cause of such damages or losses. In any event, Seller's aggregate total liability under the Order or otherwise shall not exceed the contract price.

Seller makes products that work very well when installed correctly under appropriate conditions. Seller is not responsible for Buyer's, or anyone else's, negligence or improper application, installation or modification of/to product

FORCE MAJEURE:

Seller shall in no event be liable for delays in delivery of the product or other failures to perform caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control.

ACCEPTANCE:

These terms and conditions shall constitute the entire agreement, and all other terms and conditions of any origin are excluded. Unless otherwise advised by the Buyer within ten days after Seller's acknowledgment of an order, Seller will proceed with processing of such order with the understanding that the Buyer is in full agreement with all provisions stated herein.

PENTAIR

FAX ORDER FORM

If you have any questions, please call 800-424-9776.

TOLL FREE FAX NUMBER

800-323-6496

Your Customer Number: _____

Bill To: _____

_____

_____

_____

Ship To: _____

_____

_____

_____

Phone: _____

Fax No.: _____

Purchase Order Number: _____

Requested Ship Date: _____

Shipping Method: _____

Contact: _____

E-mail: _____

Comments: _____

_____

_____

_____

_____

	Part Number	Customer Part Number	Description	Qty	Price	Extension
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
					Total	

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