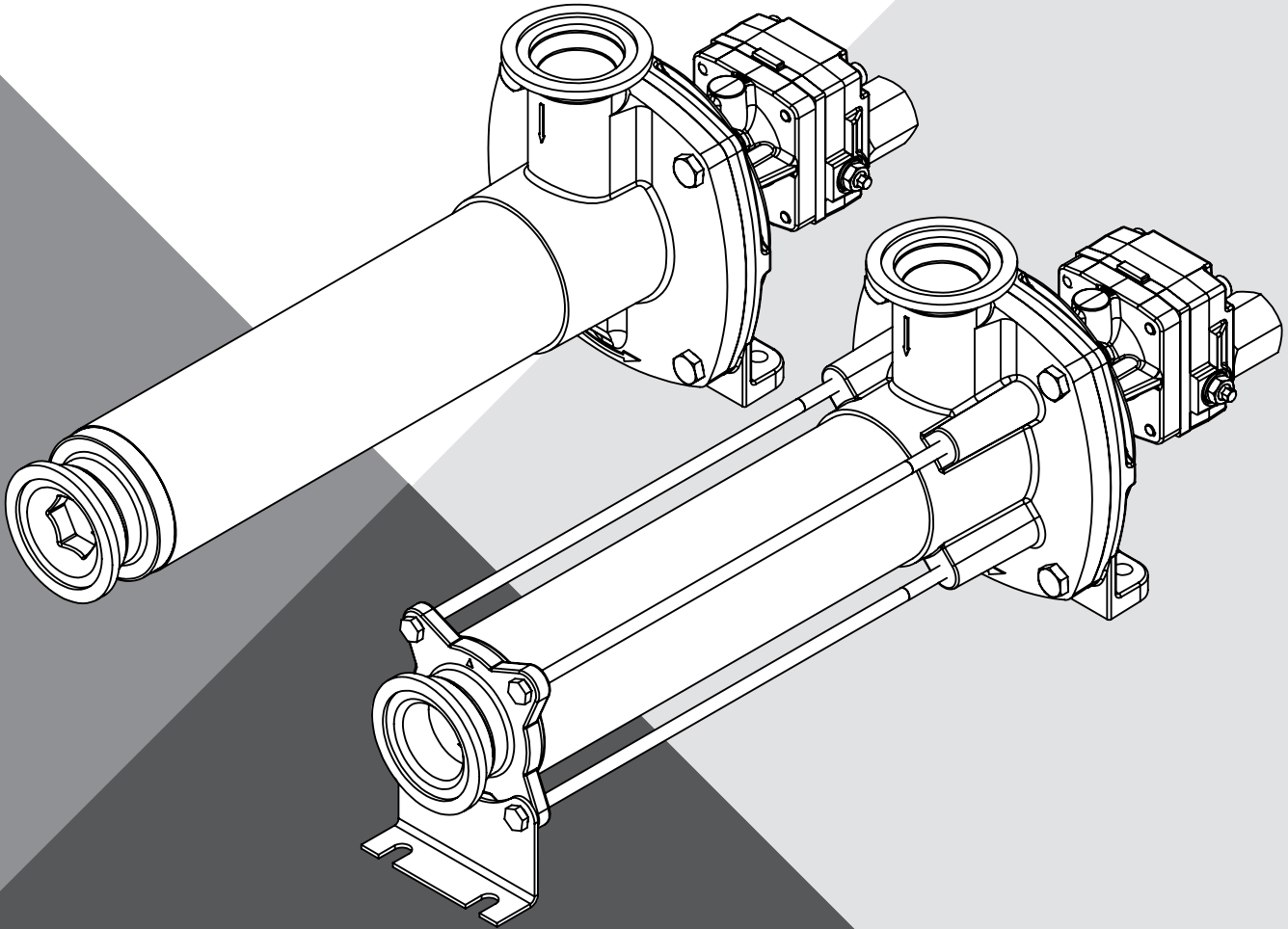




HYDRAULICALLY DRIVEN COBALT PUMPS

93HPS SERIES

L-1578 (08-15-2023)



INSTALLATION AND OPERATIONS MANUAL

pentair.com

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NOTES

EU LANGUAGES

DO NOT attempt to install or operate your pump before reading the manual. Original copies of the manual for Hypro pumps are provided in English. To find a copy in your native language, go to www.hypro.pentair.com.

Vor dem Ablesen des Handbuchs versuchen Sie NICHT, Ihre Pumpe zu installieren. Originale des Handbuchs für Hypro-Pumpen werden auf Englisch zur Verfügung gestellt. Zu eine Kopie in Ihrer Muttersprache finden, zu www.hypropumps.com zu gehen (German).

N'essayez pas d'installer votre pompe avant de lire le manuel. Des exemplaires originaux du manuel pour des pompes de Hypro sont fournis en anglais. Pour trouver une copie dans votre langue maternelle pour aller à www.hypro.pentair.com (French).

NON tentare di installare la vostra pompa prima di leggere il manuale. Esempio originale del manuale per Hypro pompa sono in inglese. Per trovare una copia nella vostra lingua andare a www.hypropumps.com (Italian).

Не пытайтесь установить ваш насос до чтения руководства. Оригинальные копии этого руководства для насосы Hypro на английском языке. Найти копию на ваш родной язык перейти к www.hypropumps.com (Russian).

NO intente instalar su bomba antes de leer el manual. Copias originales del manual para Hypro se provee de bombas en inglés. Para encontrar una copia en tu idioma nativo ir a www.hypropumps.com (Spanish).

NIE próbować instalować pompy przed jej odczytaniem instrukcji. Oryginalne kopie instrukcji obsługi pomp Hypro są dostarczane w języku angielskim. Aby uzyskać kopię w twoim ojczystym języku przejdź do www.hypropumps.com (Polish).

Takmaya çalışmayın okumadan önce pompanın manuel. Orijinal kopyalarını Hypro pompaları için İngilizce olarak sunulmuştur. Bir kopyasını bulmak için yerel dil git www.hypropumps.com (Turkish).


Nao tente instalar a bomba antes de ler o manual. As copias originais dos manuais para Hypro bombas são fornecidos em Inglês. Para encontrar uma copia em sua língua nativa ir para www.hypropumps.com (Portuguese).


VERGEET NIET uw pomp voor het lezen van het handboek. Exemplaren van de handleiding voor Hypro pompen zijn beschikbaar in het Engels. Op zoek naar een exemplaar in uw eigen taal ga naar www.hypropumps.com (Dutch).


SAFETY INSTRUCTIONS


IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS: This manual contains important instructions that should be followed during installation, operation, and maintenance of the product. Always refer to the equipment owner's manual for safety information relevant to that product.

 This is the safety alert symbol. When you see this symbol on your product or in this manual, look for one of the following signal words and be alert to the potential for personal injury!





 **DANGER** warns about hazards that will cause serious personal injury, death or major property damage if ignored.









 **WARNING** warns about hazards that can cause serious personal injury, death or major property damage if ignored.

 **CAUTION** indicates a hazard which, if not avoided, could result in minor or moderate injury.


The word **NOTE** indicates special instructions that are important but not related to hazards.

GENERAL SAFETY

- ◆  Carefully read and follow all safety instructions in this manual and on product.
- ◆  Keep safety labels in good condition. Replace missing or damaged safety labels.
- ◆  When running centrifugal pumps, it is essential that operators use hearing protection as the sound levels can reach levels of 80 decibels.
- ◆  When handling pumps, wear steel-toed shoes and protective gloves in order to protect the feet in the event the pump is dropped and protect the hands from any sharp surfaces on the pump or chemicals. If the pump is being repaired while the pump is in service, eye protection should also be worn.

- ◆  Only authorized operators having the knowledge and skill necessary to safely use a pump, or any equipment the pump is connected to, may run the pump.
- ◆  When spraying manually, it is recommended that chemical-resistant face masks and clothing be worn to prevent any chemicals from coming into contact with the skin or being inhaled.
- ◆  When spraying manually, always spray upwind of yourself as long as the sprayed chemical will not drift into the vicinity of other people.
- ◆  When installing, adjusting or removing a pump, ensure that there are no objects which can fall on the installer and that all attached machinery is turned off.
- ◆  Never operate a pump outside while there is a chance of getting struck by lightning.
- ◆  Never leave electrical wires or plumbing components where they can be a tripping hazard or become entangled in a moving component. Ideally, electrical cables, hoses, pipes and fittings should be routed overhead. In the event electrical wiring must be routed over the ground, operators are required to use rubber ramps if they cross a gangway.
- ◆  Pumps should not be used if the ambient light is below 200lux.
- ◆  **Only use approved chemicals in your pump. For a complete list of approved chemicals, see the "Fluid Pumping Applications" section. Failure to follow this warning will void your warranty and could lead to property damage, serious injury or death.**

CALIFORNIA PROPOSITION 65 WARNING

 **WARNING** This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

INTRODUCTION

DESCRIPTION

Hypro centrifugal pumps are designed for creating and boosting pressure in fluid circuits. The pump operates by taking in fluid from the inlet ports after which it is slung by the impeller and expelled through the outlet port. Construction features include housings, impellers and seals which come in a variety of materials in order to be resistant to a range of chemicals. Standard models of centrifugal pumps rotate counterclockwise when looking at the front of the pump.

INTENDED USES

These pumps are intended for creating or boosting dynamic pressure in approved fluids. Hypro centrifugal pumps should never be used to pump liquids above 140°F (60°C), or below 34°F (1°C). For pumps equipped with hydraulic motors, the pump should not be run if the hydraulic oil temperature exceeds 160°F (71°C). Any uses outside of those specified in this manual are considered misuses and are prohibited. Contact Pentair technical service with any questions regarding specific acceptable uses.

PURPOSE OF MANUAL

Pentair has provided this manual to provide instructions and requirements that must be met when installing, operating, and maintaining the pump(s) identified on the cover.

If the product is sold, the seller must pass this manual onto the new owner.

MISUSES

Hypro centrifugal pumps are designed to operate effectively within the speed, pressure, and environmental ranges specified in this manual. Operating a pump outside of these ranges will void the warranty and could cause damage to property, serious personal injury, or death. You must observe the following safety guidelines:

- ◆ **DO NOT** pump non-approved liquids.
- ◆ **DO NOT** pump water or other liquids intended for human consumption.
- ◆ **DO NOT** run the pump faster than the maximum recommended speed.
- ◆ **DO NOT** run the pump or hydraulic motor higher than the maximum recommended pressure.
- ◆ **DO NOT** run pumps when the liquid has exceeded the maximum or minimum temperature limit.
- ◆ **DO NOT** use pumps in explosive environments.
- ◆ **DO NOT** attach a pipe, hose or fittings to the pump that is not rated for the maximum pressure of the pump (outlet) or vacuum of the pump (inlet).
- ◆ **DO NOT** run a pump in reverse of its intended rotation.
- ◆ **DO NOT** run the pump dry.
- ◆ **DO NOT** use discharge stack of pump as a step.
- ◆ **DO NOT** operate self-priming pump without both mounting flanges rigidly secured to a sturdy base.

TECHNICAL DATA

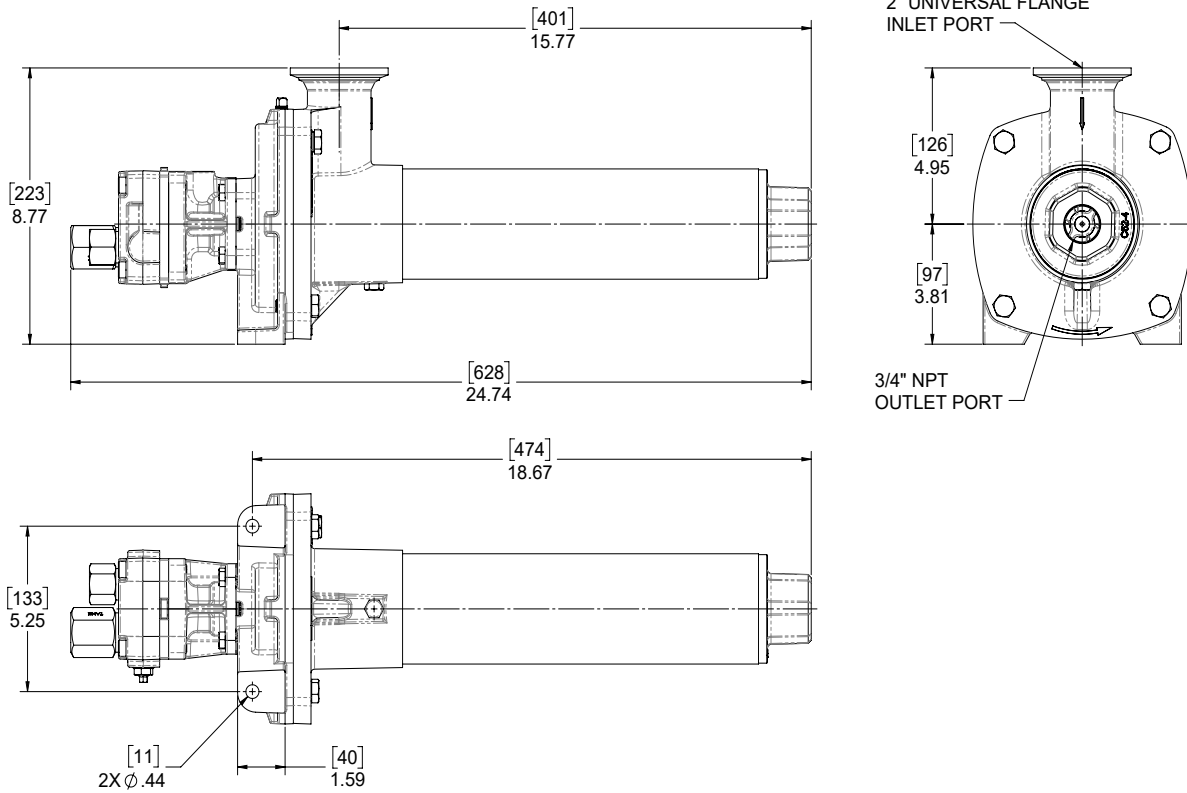
PUMP IDENTIFICATION

Pentair uses serialized labeling to enable users to precisely identify the pump's manufacturing date.

Serial Number:

- ◆ First and second digits: year (22 = 2022).
- ◆ Third through fifth digits: consecutive day of the year the pump was manufactured.
- ◆ Sixth through tenth digits: unique pump serial number.

MODEL 93HPS114-M05 TECHNICAL DATA



MODEL 93HPS114-M05 SPECIFICATIONS

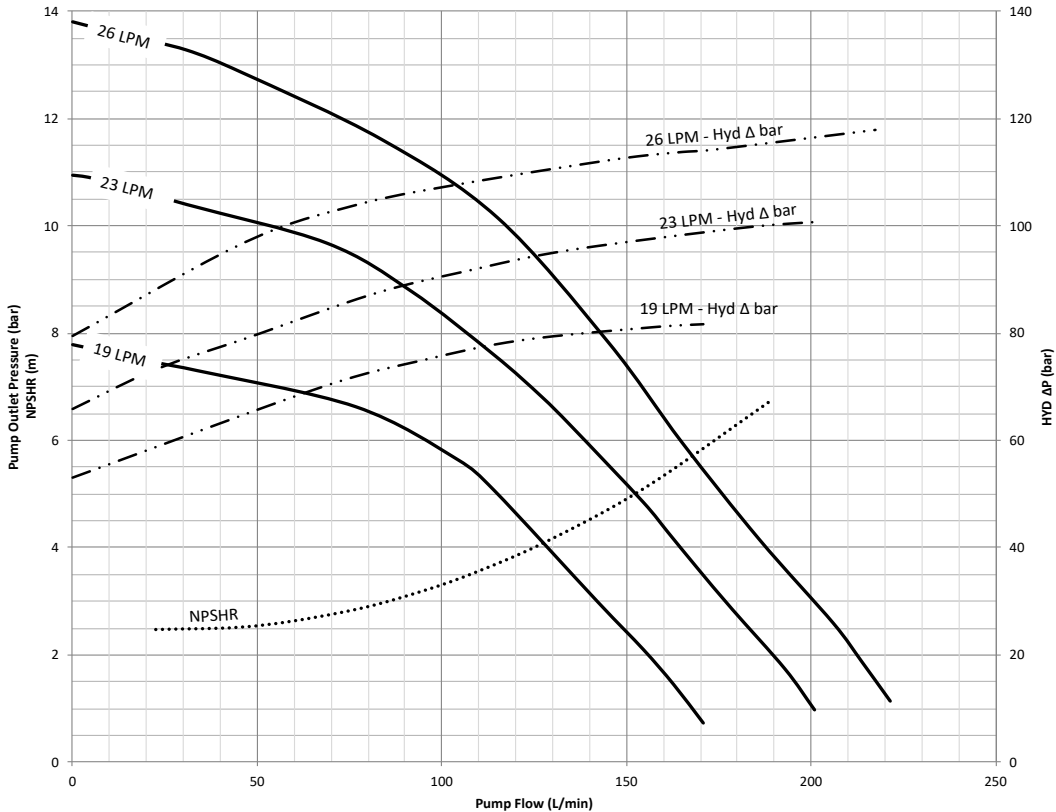
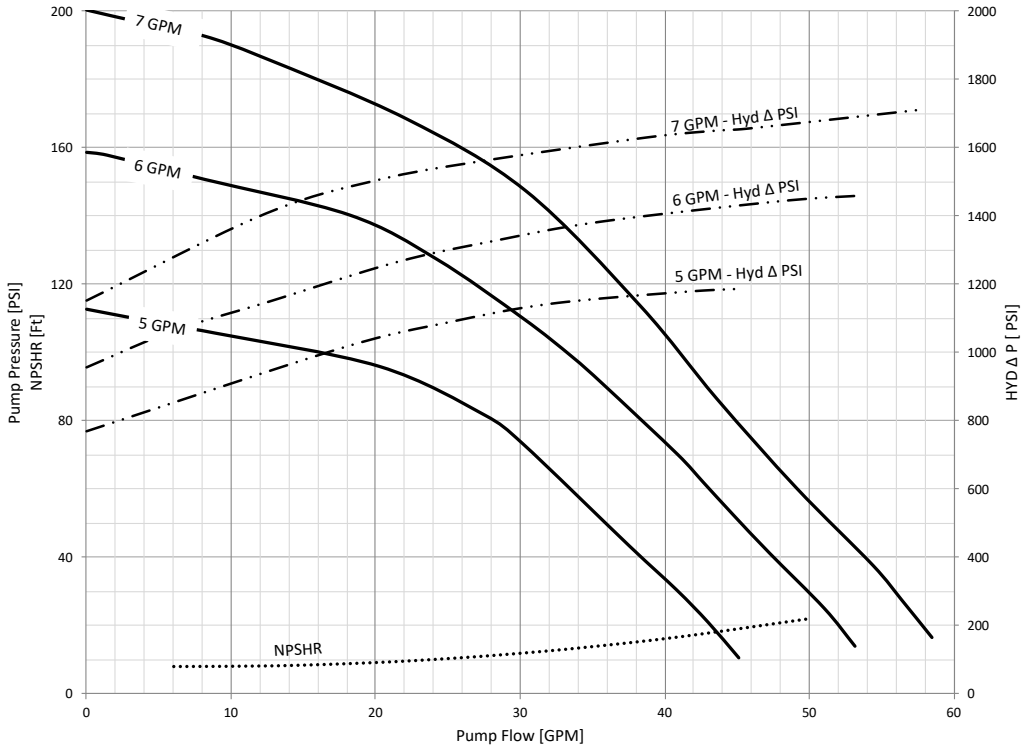
| PUMP | HYDRAULIC MOTOR INLET MAX PSI (BAR) | HYDRAULIC MOTOR OUTLET MAX PSI [BAR] | MAX. FLOW RATE GPM: (LPM) | MAX. PRESSURE PSI: (BAR) |
|--------------|-------------------------------------|--------------------------------------|---------------------------|--------------------------|
| 93HPS114-M05 | 2500 (172) | 100 (6.9) | 58 (220) | 200 (13.7) |

| MAX RPM: | MAX. HYD FLOW GPM (LPM) | PORTS: | HYDRAULICS PORTS: | DRY WEIGHT: | MOUNTING BOLTS: |
|----------|-------------------------|-----------------------|-------------------|------------------|-----------------|
| 5000 | 7 (26) | 2x2" Universal Flange | SAE-8, SAE-10 | 43 lbs (19.5 kg) | M10 or 3/8" |

TECHNICAL DATA

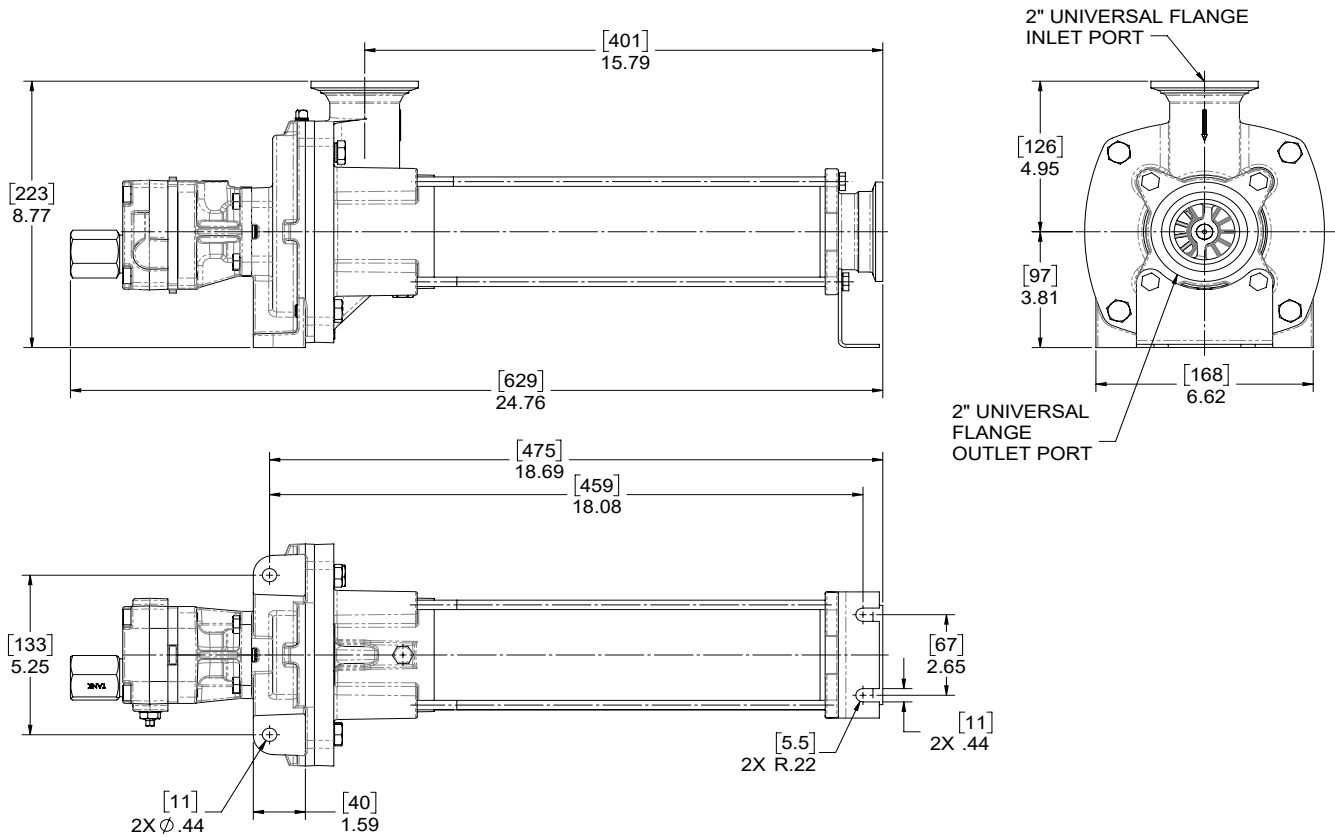
MODEL 93HPS114-M05 PERFORMANCE DATA

All specifications and performance data are based on water as a carrier fluid.



TECHNICAL DATA

MODEL 93HPS114-M05-SP PUMP TECHNICAL DATA



93HPS114-M05-SP: All performance data is based on water as a carrier fluid.

MODEL 93HPS114-M05-SP SPECIFICATIONS

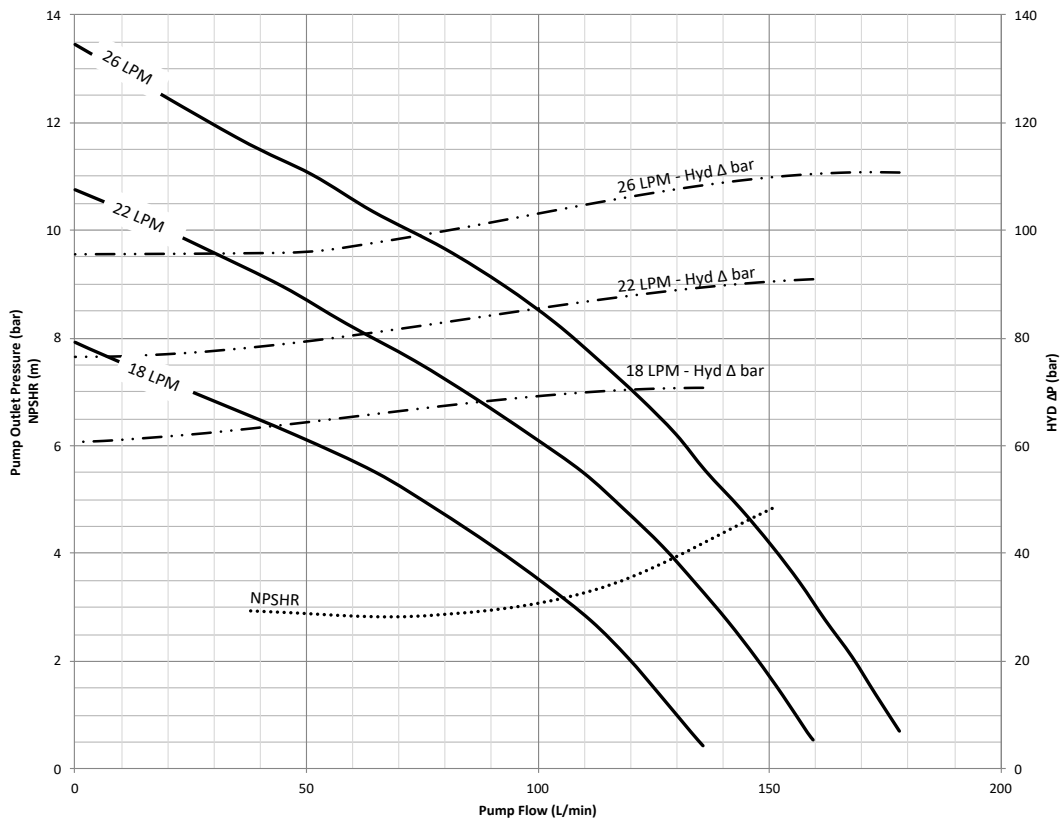
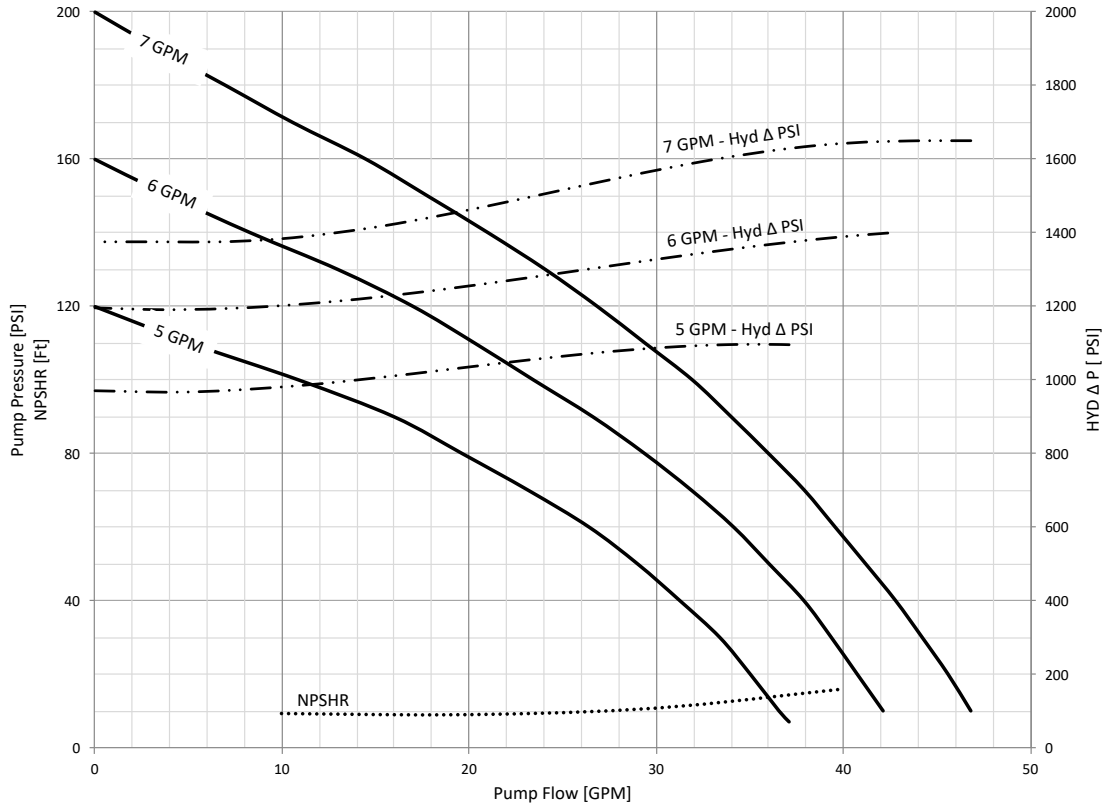
| PUMP | HYDRAULIC MOTOR INLET MAX PSI (BAR) | HYDRAULIC MOTOR OUTLET MAX PSI [BAR] | MAX. FLOW RATE GPM (LPM) | MAX. PRESSURE PSI (BAR) |
|-----------------|-------------------------------------|--------------------------------------|--------------------------|-------------------------|
| 93HPS114-M05-SP | 2500 PSI (172 bar) | 100 (6.9) | 47 (178) | 225 (16) |

| MAX RPM: | MAX. HYD FLOW GPM (LPM) | PORTS | HYDRAULICS PORTS | DRY WEIGHT | MOUNTING BOLTS |
|----------|-------------------------|-----------------------|------------------|------------------|----------------|
| 5000 | 7 (26) | 2x2" Universal Flange | SAE-8, SAE-10 | 43 lbs (19.5 kg) | M10 or 3/8" |

TECHNICAL DATA

PERFORMANCE DATA - MODEL 93HPS114-M05-SP

All specifications and performance data are based on water as a carrier fluid.



TECHNICAL DATA

FLUID PUMPING APPLICATIONS

| APPLICATION | PUMP MATERIALS COMPATIBILITY | |
|--------------------------------------|------------------------------|-----------------|
| | IMPELLER | PUMP HOUSING |
| | PPE BLEND | STAINLESS STEEL |
| Weed Control Chemicals | X | X |
| Insect Control | X | X |
| Brush Control | X | X |
| Pest Control Chemicals and Fumigants | X | X |
| Liquid Fertilizers | X | X |
| Powdered Fertilizers | X | X |
| Fluid Transfer | X | X |
| Acids | - | - |

Flammable liquids, sewage, and clean water should never be pumped through a Hypro pump. Hypro pumps are not designed to be used as clean water pumps as defined in 10CFR Parts 429 and 431.

LIFTING, TRANSPORT, AND INTERMEDIATE STORAGE TOOLS

Hypro 93HPS Series centrifugal pumps and mounting assemblies are designed with metric fasteners.

PACKAGING DESCRIPTIONS AND UNPACKING INSTRUCTIONS

- ◆ Hypro centrifugal pumps are shipped in cardboard boxes or returnable bulk packs for safe transporting.
- ◆ When pumps are shipped in large quantities, they may be put on a pallet to allow for easy storage, lifting and handling.
- ◆ Before lifting any pump or pallet, determine the weight of the item by looking at the attached packing slips to establish what lifting equipment should be used.
- ◆ Before installing the pump, determine if all the components are present and undamaged. If the pump is missing components, contact customer service immediately.
- ◆ Once the pump is unpacked, dispose of the packaging in a manner compliant with local and national regulations.

LIFTING INSTRUCTIONS

- ◆ Before attempting to lift a Hypro pump, ensure that the surrounding working area is free of hazards which could cause injury or damage to property.
- ◆ During lifting operations, any personnel not involved in the lift should not enter the working area.
- ◆ If lifting hooks, rope or chains are being used for a lift, they must be free of damage and be rated to carry 150% of the weight of the load to be lifted.
- ◆ **⚠** Always wear steel-toed shoes and cut-resistant gloves when attempting to lift.
- ◆ When lifting and carrying, always keep the pump close to your body (See Figure 1).
- ◆ When starting the lift, bend your knees and keep your back straight (See Figure 1). Tightening the stomach muscles will help keep your back straight.
- ◆ During the lift, use your legs to do the work. Never use your back, and make sure your legs are at least shoulder-width apart (See Figure 1).

TRANSPORT

- ◆ All Hypro pumps are capable of being transported by air, sea, rail or motor vehicle. When the pump is shipped, ensure that the pump is moved in accordance with local and national laws and is properly secured to prevent unwanted movement which could cause damage to person or property. Prior to shipping, all fluids should be removed from the pump.

STORAGE

- ◆ New pumps in their boxes can be stored several years as long as the port plugs are not removed. Once the plugs have been removed, if the pump is not to be used for an extended period of time (i.e. more than 30 days), the pump must be winterized as described in the Cleaning section of this manual.

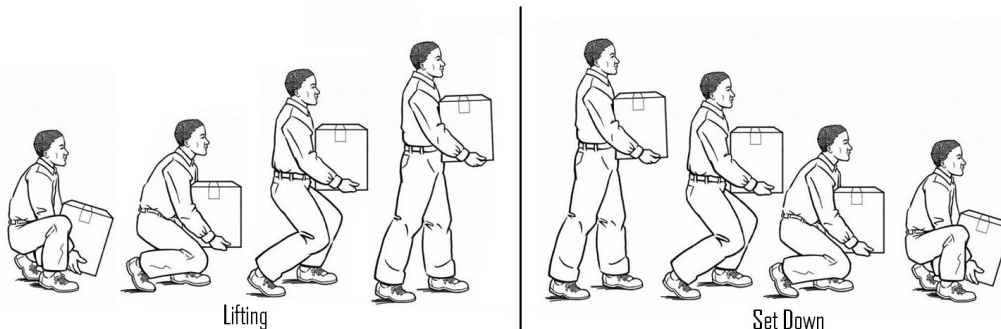









Figure 1- Lifting Instruction




INSTALLATION

INSTALLATION

This pump comes completely assembled.


Before attempting to install your Hypro centrifugal pump, it is imperative to read and understand the following:

- ◆  Installation of a Hypro pump should only be performed by a technician having the knowledge and skills necessary to install the pump without the risk of property damage or injury.
- ◆  Pumping systems must be installed in accordance with Pentair installation instructions. Failure to do so will void your warranty and could cause damage to property, serious personal injury, or death.
- ◆  Electrical power cables and pump hoses must be routed where there is no risk of personnel tripping, walking into, or falling because they have been routed in areas where personnel are expected to move. Electrical power cables and pump hoses should be routed according to local and national standards.
- ◆  Installers must provide hydraulic components that are capable of withstanding maximum source pressure.
- ◆  The working pressure must be controlled by a pressure relief valve that is adjusted to operate at a maximum pressure of the hydraulic motor.
- ◆  If a rigid plumbing system is to be used on a Hypro centrifugal pump, the system must be properly aligned with the inlet and outlet ports.
- ◆  The working pressure in the hydraulics system must be controlled by a pressure relief valve that is adjusted to operate at 10% over the maximum system pressure.


- ◆  When installing, adjusting or removing a Hypro centrifugal pump, ensure that there are no objects which can fall on the installer and make certain that all machinery to which the pump is to be attached is turned off.
- ◆  Pumps must be installed in a location where they are accessible for any necessary maintenance.
- ◆  When hydraulic power is used, the system should contain a quick disconnect coupling that can be disconnected to isolate the pump.

STANDARD MOUNTING

In order to prevent injury or damage to property, all Hypro pumps should be properly mounted to a solid base where there is no danger of the pump falling or breaking loose. All Hypro pumps come with mounting holes which allow bolts to be put into the pump so it can be secured to a sturdy base.

 **Self-priming models must have both the main mounting flange AND the discharge mounting bracket securely and rigidly mounted to a sturdy base.**

When mounting your Hypro centrifugal pump, be sure to use bolts and nuts which are compatible with any chemicals that may come into contact with them as well as choosing the correct grade of bolt based on the pump weight and any expected loads. Pump should be mounted with support for discharge end. Pumps should be mounted as close to the liquid source as possible. Non self-priming pumps must be mounted below the liquid level to function properly.

 Self priming pumps must be installed with an upward oriented elbow or vertical rise of hose that will allow fluid to be retained in the pump cavity. Without fluid in the cavity, the pump may not self prime and damage to internal components can occur if the pump is run completely dry.

INSTALLATION

PUMP PLUMBING

- ◆ To achieve maximum pump performance, pump inlet and outlet lines should be at least the same size as their respective port, and should have as few restrictions as possible. Pump plumbing must be capable of withstanding the maximum suction and pressure generated by the pump. Pump suction line must also be free of air leaks. Use good quality suction hose that will not be collapsed by suction.

- ◆ For best priming results, the recommended orientation for the outlet port is horizontal, while the inlet port should be orientated straight up. Avoid any dips or bends in the suction line plumbing that could trap air.

On self-priming models, an arrow on the discharge flange should be oriented upward for best priming results. An elbow on the discharge plumbing oriented upward is needed to retain enough fluid for the pump to continue to re-prime.

- ◆ NPSHR (Net Positive Suction Head Required) represents the minimum pressure required at the suction port of the pump to prevent cavitation. Cavitation occurs when this pressure falls below the vapor pressure of the fluid being pumped. Cavitation results in reduced pump performance, damage to internal components, excessive vibration, and reduced pump life.
- ◆ NPSHR curves are provided for each pump model in the Pump Performance section of this manual. The values are provided in feet.

- ◆ To determine the NPSHa (Net Positive Suction Head Available), use the following formula:

$$NPSHa = \frac{2.31}{SG} \cdot (0.49p_a - p_{vp}) + \frac{p_{sg} \cdot 2.31}{SG}$$

Where: SG = Specific gravity of liquid (water = 1.0)

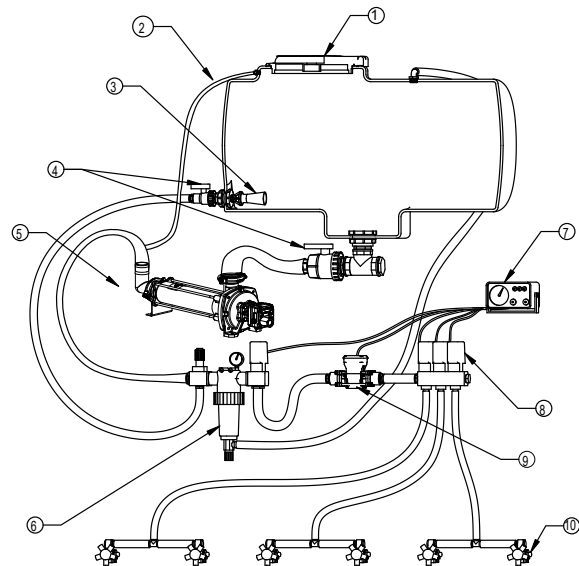
p^a = Barometric pressure (inches of mercury)

p^{vp} = vapor pressure of liquid in psi absolute

p^{sg} = gauge pressure (PSI) at pump suction.

- ◆ To achieve optimal NPSHa, the pump inlet plumbing should be at least the same diameter as the inlet port of the pump. The inlet plumbing must also have as few restrictions (elbows, tees, valves, or other transitions) as possible. The pump inlet should also be below the fluid level in the tank. The NPSHa must be greater than the NPSHR for the pump to prevent cavitation.

| REF. NO. | DESCRIPTION |
|----------|--------------------------------|
| 1 | Tank Lid |
| 2 | Vent Line |
| 3 | Jet Agitator |
| 4 | Shut-off Ball Valves |
| 5 | Centrifugal Pump |
| 6 | Spray Control Console |
| 7 | Centrifugal Pump Control |
| 8 | Manifold Boom Valve |
| 9 | Electromagnetic Flow Meter |
| 10 | Compact Jet Turret Nozzle Body |





INSTALLATION

HYDRAULIC INSTALLATION


Prior to installation, refer to the tractor or sprayer manual and determine what type of hydraulic system is being used. The three types of systems include:

- ◆ Open center systems.
- ◆ Closed center (pressure-compensated) systems.
- ◆ Closed center load sensing (flow and pressure-compensated) systems.

The hydraulic motor must be correctly configured and sized for the hydraulic system:

- ◆ Open center systems:
 - Excess oil from the hydraulic pump must be bypassed around the motor. Built in bypass option in motor end plate, or separate bypass valve installed in the line feeding the motor inlet.
 - Use a motor which is closest to the maximum hydraulic flow that the machine can provide..
- ◆ Closed center (pressure-compensated) systems:
 - Metering orifices needed for optimal performance (see metering orifice section below).
 - Use the smallest motor possible.
- ◆ Closed center load sensing (flow and pressure-compensated) systems.
 - No special requirement for bypass or metering orifices.
- ◆  When installing hydraulic motor into the tractor or sprayer's hydraulic system, make sure that no dirt or liquid gets into the hydraulic motor. **Keep all hydraulic connections clean.**
- ◆ Ensure return line is connected to low pressure return port on the tractor recommended for hydraulic motors, the ports are identified on the motor casting. Hydraulic supply lines should be at least the same size as the hydraulic motor port or larger.
- ◆ Standard models come equipped with a check valve port adaptor on the motor outlet, that should not be removed.
- ◆ Standard ports are -8SAE (pressure) and -10SAE (tank).
- ◆  **Hooking up motor in the wrong direction will damage the hydraulic seal.**
- ◆ Hydraulic back pressure in the return line must be less than 100 psi [6.9 bar] continuous and 300PSI [20.7bar] intermittent to prevent reduced seal life. Pressures under 50 psi [3.4 bar] are ideal.
- ◆ The motor case drain, available on "Y" series pumps, is recommended to minimize the pressure acting on the hydraulic motor oil seal, and extend the life of the oil seal.

The case drain line must be connected directly to the hydraulic reservoir with no restrictions, and the case drain port on the motor must always be oriented upward. Ideally, the case drain pressure should be kept as close to zero as possible and no higher than 25psi [1.7 bar].

- ◆  **The case drain port on hydraulic motors must NEVER be plugged.**

Metering Orifices (M04 and M05 motors only):

Depending on the hydraulic system, metering orifices are available for purchase, that are installed into a motor inlet (pressure) adaptor port. These orifices are used to obtain the optimal pressure differential across the motor. If the hydraulic system on your sprayer is a closed center, pressure compensated system, these orifices allow the hydraulic system to operate in the proper range of hydraulic pressure (typically 1800 to 2100 psi). This prevents heat generation that could reduce the life of the motor, and other hydraulic system components.

- ◆ **DO NOT** use metering orifices if the system is a load-sensing (flow-compensated) closed center system, or if it is an open center system with a maximum flow of 8 gpm [30.3 lpm] for M04 or 10 gpm [37.9 lpm] for M05.
- ◆ Correct orifice size is determined by system performance. Start by installing the smallest orifice in the adapter connected to the pressure port. Once the orifice is installed, test system performance and if system performance is low, install the next largest orifice. Continue this process until pump performance reaches the desired level, or no orifices are installed in the adaptor.
 1. Ensure hydraulic system is off.
 2. Remove the pressure port adaptor from the motor using a 1-1/16" [27mm] wrench. Make sure the o-ring is on the metering orifice before installing into port adaptor.
 3. The orifice is removed or installed in the port adaptor by tapping either in or out of the adaptor.
 - To remove, tap the orifice out from the small end of the adaptor.
 - To install, tap the orifice in from the large end of the adaptor. The orifice is seated when a snap sound is heard.

NOTE: For M04 and M05 motors, the pressure differential across the motor should never exceed 2500 PSI [172 BAR].

CONTROL SYSTEMS

All pump systems with electric or hydraulic power sources are required to have a control system which meets all local and national standards.

COMMISSIONING, START-UP, OPERATION, AND SHUTDOWN

START-UP, OPERATION, SHUTDOWN

Before attempting to start your pump, the following must be understood and followed to ensure safe operation.

BEFORE STARTING THE PUMP

- ◆ Ensure all unnecessary personnel are clear of the area.
- ◆ **Both standard and self priming pumps must have fluid in the pump cavity at startup.**
- ◆ For initial setup and test of your system, it is recommended to start with clean water instead of chemicals, and confirm the system and plumbing connections are leak free.
- ◆ Ensure that there is fluid in the source tank or supply line. Do not run dry.
- ◆ Check line strainer for debris or clogs. Remove any found.
- ◆ Check all plumbing connections to make sure they are tight.
- ◆ Check power source and connections.
- ◆ Check that all valves and regulators are set to the desired setting and are functioning properly.
- ◆ Ensure all hoses are properly positioned and are not damaged in any way.

PRIMING THE PUMP

To help prime the pump, keep the inlet or suction line as short as possible with a minimum of bends, elbows, and kinks. Make sure all connections are tight and do not leak air. The pump must have the inlet line and pump flooded with liquid before starting the pump.

For initial use of the self-priming Cobalt pump, first fill the pump cavity with fluid manually. After the initial manual fill, the pump will self-prime.

On pumps with Wet Seal Technology, dry run cannot exceed 15 minutes in one single event, or there is a risk of damage to the pump.

STARTING, OPERATION, AND SHUTDOWN THE HYDRAULIC PUMP

OPEN CENTER SYSTEMS - ALL MODELS

Adjusting Centrifugal Pump Output

ATTENTION M08, M10, and M16 motors have bypass screw fully closed from the factory. M04 and M05 motors have bypass screw set at 1-1/2 turns from fully closed from the factory.

1. Open the bypass adjustment screw 2-1/2 turns from fully closed and secure it in place with the bypass jam nut.
2. Start the tractor. Leave the directional valve in the neutral position and allow hydraulic oil to circulate for approximately 10 to 15 minutes or until adequately warmed.
3. Prime the centrifugal pump with all valves open. (See Priming the Pump.)
4. Refer to sprayer manufacturer's manual to set spraying pressure and flow. To change the flow or pressure generated by the pump, turn the bypass screw on the hydraulic motor. Be sure to secure the bypass jam nut after any adjustment.
5. To shutdown, return directional valve to neutral and allow the pump to come to a gradual stop.



When bypassing hydraulic oil, a large amount of heat can be generated which will damage the tractor's hydraulic system. Be sure to monitor the oil temp when bypassing hydraulic oil.

CLOSED CENTER (PRESSURE-COMPENSATED) - M04 AND M05 MODELS ONLY

Adjusting Centrifugal Pump Output

1. Open the bypass adjusting screw in the hydraulic motor three (3) turns and secure it in place with the bypass jam nut.
2. Start the tractor and allow hydraulic oil to circulate for approximately 10 to 15 minutes or until adequately warmed
3. Close and lock down the bypass adjusting screw in the hydraulic motor.
4. Prime the centrifugal pump with all valves open. (See Priming the Pump.)
5. Refer to sprayer manufacturer's manual to set spraying pressure and flow. To change the flow or pressure generated by the pump, slowly adjust tractor's flow control valve.
6. To shutdown, the pump move the selector for the tractor spool valve to the float position and allow the pump to come to a gradual stop.




If the pump is not brought to a gradual stop, the sudden change in hydraulic pressure and pump RPM could cause damage to the pump's drive system.

COMMISSIONING, START-UP, OPERATION, AND SHUTDOWN / MAINTENANCE AND SERVICE

CLOSED CENTER (LOAD-SENSING) SYSTEMS

Adjusting Centrifugal Pump Output:

1. Close and lock down the bypass adjusting screw, if equipped, in the hydraulic motor.
2. Set the tractor hydraulic flow control valve for minimum hydraulic oil flow to the remote outlet (Tortoise position).
3. Start the tractor and allow the hydraulic oil to circulate for approximately 10 to 15 minutes or until adequately warmed.
4. Prime the centrifugal pump with all valves open. (See Priming the Pump.)
5. Refer to sprayer manufacturer's manual to set spraying pressure and flow. To change the flow or pressure generated by the pump, slowly adjust tractor's flow control valve.
6. To shutdown the pump, move the selector for the tractor spool valve to the float position and allow the pump to come to a gradual stop.

 If the pump is not brought to a gradual stop, the sudden change in hydraulic pressure and pump RPM could cause damage to the pump's drive system.

CHAMBER FLUID MAINTENANCE




The chamber fluid should be replaced every 1000 hours of usage. The fluid in the chamber should be purple. If it is cloudy or takes on the color of the pumping medium before 1000 hours, the chamber fluid should be changed sooner.

It is critical to use only Hypro chamber fluid for replacement.

1. To replace the chamber fluid, remove the pump from the mounting platform.
2. Remove the 1/8" NPTF port plug on the wet seal chamber and drain all the fluid from the chamber.
3. Replace the chamber fluid with new Hypro 93HPS wet seal Fluid (2160-0138).
4. Pour 12.5 fl oz. into the wet seal chamber. The chamber should not be filled to the top.
5. Re-install the 1/8" NPTF plug in the port.

MAINTENANCE AND SERVICE

PRIOR TO SERVICE

- ◆ All maintenance should be done when machinery is stationary and has been isolated from its energy sources. It is dangerous to perform maintenance while machinery is still connected to its power source. Machinery should be isolated from its electrical, hydraulic or gas engine power source.
- ◆  Be sure to release all pressure from the system before performing any sort of maintenance on these pumps.
- ◆  **DO NOT** perform service or maintenance to the pump, or attached components, until the pump unit is below 109°F(43°C).
- ◆ The lubrication of this pump unit has been done at the factory prior to shipping.
- ◆  When handling Hypro pumps, one should wear steel-toed shoes and protective gloves in order to protect the feet in the event the pump is dropped and protect the hands from any sharp surfaces on the pump or chemicals. If the pump is being repaired while the pump is in service, eye protection should also be worn.
- ◆ Any hazardous liquids should be disposed of in a manner which complies with local and national regulations. Never dump fluids onto the ground.

DISPOSAL

When disposing of a Hypro pump, be sure to remove all fluids from the pump before scrapping. These fluids should be disposed of in a manner which complies with local and national regulations. Never dump fluids onto the ground. Once the pump is free of all fluids, it may be scrapped in accordance with local and national laws.

CLEANING

Your pump will last longer and give best performance when properly taken care of. Proper pump care depends on the liquid being pumped and when the pump will be used again. After each use, flush pump with a neutralizing solution for the liquid just pumped. Follow with a clean water rinse. This is especially important for corrosive chemicals.

It is good practice to clean the pump after each use to prevent deposits from forming and damaging the pump. For infrequent use and before long periods of storage, drain pump thoroughly. Open any drain plugs, remove suction hose from liquid, and blow pump dry with air. An antifreeze/rust inhibitor should be injected into the pump before both ports are plugged and the pump is stored. Plug all ports to keep out air until pump is used again.

MAINTENANCE AND SERVICE

MAINTENANCE, ROUTINE SERVICING, AND INSPECTION

PREVENTATIVE MAINTENANCE CHECKLIST

| CHECK | DAILY | WEEKLY | ANNUALLY (<1000 MACHINE HRS) |
|---------------|-------|--------|------------------------------|
| Clean Filters | X | | |
| Water Leaks | X | | |
| Plumbing | | X | |
| Chamber Fluid | | | X |

- ◆ Each system's maintenance cycle will be exclusive. If system performance decreases, check immediately.
- ◆ Duty cycle, temperature, quality, type of fluid being pumped, and inlet feed conditions all affect the life and service interval of the pump.
- ◆ Before attempting to service your pump, be sure that it is disconnected from all energy sources.

PUMP STACK REPLACEMENT - STANDARD THREADED DISCHARGE

1. Remove pump from service and secure to a stable work bench.
2. Using a 1-1/4" hex head bit, turn the discharge CLOCKWISE (left hand threads) to remove. A rubber strap wrench may be used to help keep the pump housing shell from rotating while removing the discharge.
3. Remove the pump stack assembly by using a pliers or similar tool to pull the stack out of the shell. Be sure to hold the pump shaft on the exposed hex area to avoid damaging the area of the shaft that rotates in the discharge bearing. A back and forth motion may be needed to loosen the stack from the shell. Be careful not to damage the edges of the shell.
4. Inspect the O-ring located on the discharge and replace if damaged.
5. Assemble the pump by completing steps 1-3 in reverse order.
6. Torque the discharge to 80-100 ft-lbs.
7. Make sure all components, especially the bottom suction plate, is installed.

PUMP STACK REPLACEMENT - BOLTED DISCHARGE, SELF PRIMING MODELS

1. Remove pump from service and secure to a stable work bench.
2. Using a 13mm socket, remove the 4 tie rod bolts.
3. Remove the pump stack assembly by using a pliers or similar tool to pull the stack out of the shell. Be sure to hold the pump shaft on the exposed hex area to avoid damaging the area of the shaft that rotates in the discharge bearing. A back and forth motion may be needed to loosen the stack from the shell. Be careful not to damage the edges of the shell.

4. Inspect the O-ring located on the discharge and replace if damaged.
5. To re-assemble the pump, it is best to have the pump laying on its hydraulic motor with the motor shaft oriented upward.
6. Remove the inner stack components from the shell and install into position on the pump inlet flange. Make sure all components of the stack are in place, especially the bottom suction plate. Make sure the pump shaft is engaged with the coupling on the motor shaft.
7. Remove the top priming stage diffuser. Install it onto the pump discharge flange by aligning the 4 ribs with the corresponding notches on the discharge flange fitting. It should stick to the discharge flange - if not apply some light grease to hold it in place during installation.
8. Carefully align the bottom priming stage diffuser so that the half moon rib is at the 12:00 and 6:00 position to the top of the pump as it will be mounted on the sprayer.
9. Install the metal shell over the pump stack.
10. Carefully align the pump discharge flange and top priming stage diffuser with the arrow oriented upward as the pump would be mounted on the sprayer. Install this into the shell and onto the pump stack. It should pop into position with a small gap (about 1/8-3/16" between the discharge flange and the top of the shell. If not, it may have been slightly misaligned - if this happens, remove both parts and repeat step 10.
11. Apply medium strength thread locker to the 4 tie rod bolts and snug the bolts until the heads just start to touch the top of the discharge flange in the correct orientation for how the pump will be mounted to the sprayer.
Tighten evenly, a small amount at a time in a star pattern, and gradually bring the torque up to 66 in-lbs. Uneven torque may cause the pump to bind.
12. Check to make sure there is an even gap between the shell and the discharge flange after it is fully torqued down.

ASSEMBLY TIPS

- ◆ Ensure the new pump stack is fully inserted into the drive transmission shaft.
- ◆ Apply a thin coating of grease or soapy water solution to the discharge O-ring to ease installation into the shell.
- ◆ A thin coat of anti-seize may be applied to the threads of both the shell and discharge to make assembly and future disassembly easier.
- ◆ For self-priming pumps, it helps to turn the pump shaft so that an impeller blade lines up with the half moon of the priming stage, making alignment easier.

TROUBLESHOOTING

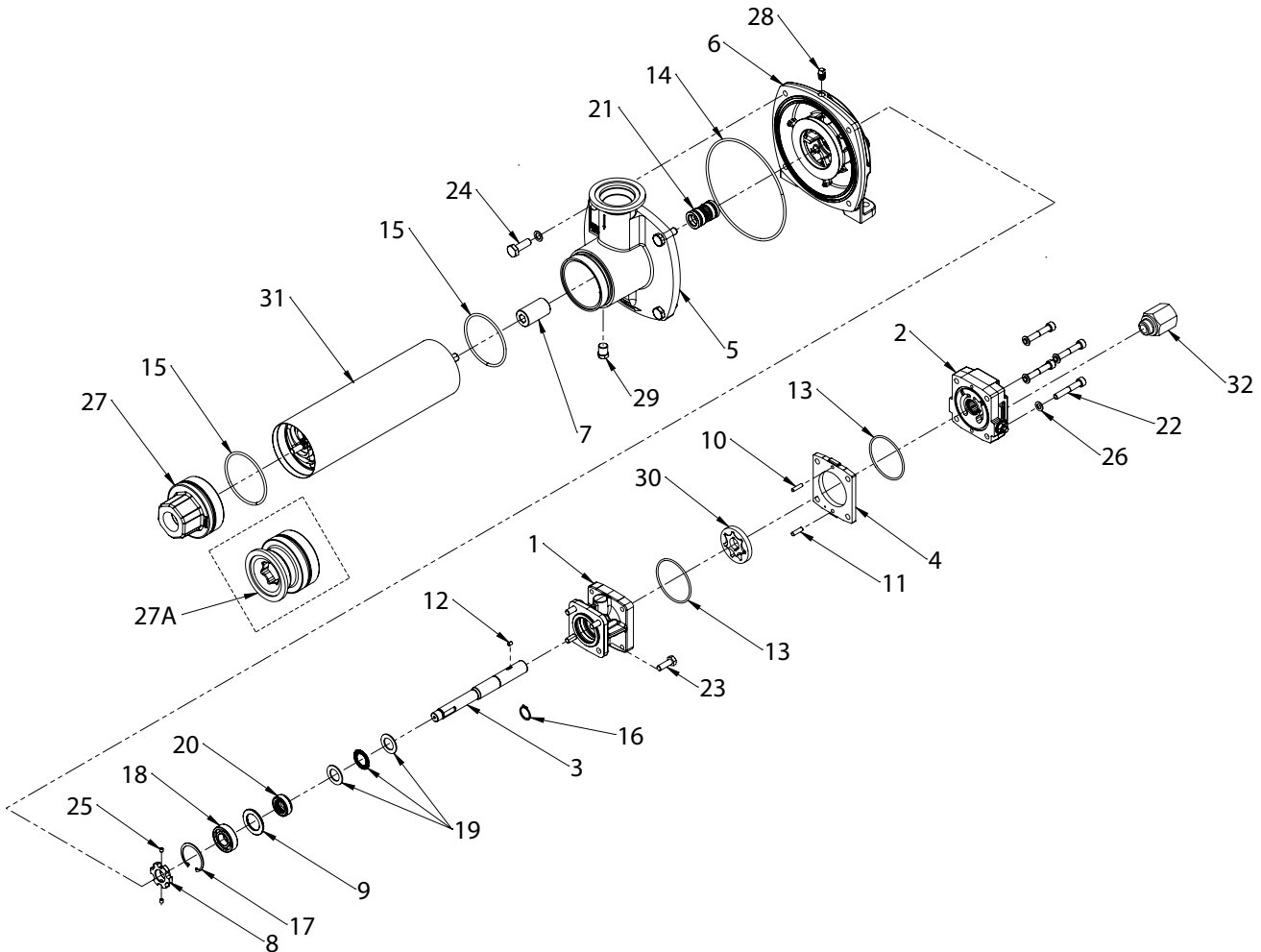
If the proper Hydraulic Pump Unit has been selected according to Pentair recommendations, and the unit has been correctly plumbed into the hydraulic system, operation should be quite satisfactory. If spraying performance is unsatisfactory or hydraulic system heat is excessive, check the following troubleshooting guide for possible problems and solutions.

| SYMPTOM | POSSIBLE CAUSE(S) | CORRECTIVE ACTION |
|-------------------------------|--|---|
| Pump does not prime. | Inlet is not flooded. | Ensure tank level is above pump inlet. |
| | Leak in suction line. | Check hose and fittings for leaks and correct. |
| | Obstruction in suction line. | Inspect hose for obstructions and remove. |
| | Suction hose stuck to tank. | Cut a notch or "V" in end of suction hose. |
| | Clogged strainer. | Check strainer and clean regularly. |
| | Insufficient fluid in the pump prior to operation. | Pump must be filled with liquid for self priming models to facilitate priming. Pump outlet should be fitted with an elbow fitting oriented upward to retain fluid for re-prime. |
| | Self-priming pump incorrect mounting orientation. | Correct pump orientation. Inlet should be pointed upward and arrow on discharge flange should be pointed upward. |
| Low discharge. | Pump not primed. | Ensure inlet is fully flooded to prime. If you are able to, vent the outlet line to allow the inlet to flood. |
| | Leak in suction line. | Check hose and fittings for leaks and correct. |
| | Blocked suction line. | Inspect suction line and strainer, and repair as necessary. |
| | Impeller plugged. | Inspect and clear obstruction. |
| | Undersized inlet line or collapsed hose. | Suction line should be the same diameter as inlet port of pump or larger. |
| | Hydraulic bypass needs adjustment. | See Installation instructions. |
| | Pump worn. | Repair Pump. |
| Pump will not turn. | Hydraulic hoses hooked up incorrectly. | See Installation instructions. |
| | Motor seized - contamination. | Repair or replace hydraulic motor. |
| | Priming stage impeller locked up or clogged. | Repair pump and inspect for damage. Make sure tie rod bolts are tightened evenly in a X pattern. |
| Hydraulic system overheating. | Hydraulic bypass needs adjustment. | See Installation. |
| | Insufficient hydraulic hose size. | See Installation. |

REPAIR PARTS

MODELS 93HPS114-M05, 93HPS114-M05Y

The following drawings show the pumps and their replacement parts. Only genuine replacement parts should be used. Failure to follow this warning can result in damage to property, serious injury or death. If the pump malfunctions or is defective, it should be sent back to Pentair for service.



- ◆ Pump Repair Kit No. 3430-0953 Contains: O-rings (Ref. 14 & 15), Mechanical Seal (Ref. 21), Seal installation Tool (3010-0455) and Seal Chamber Fluid (2160-0138).
- ◆ Pump Repair Kit No. 3430-0954 Contains: Same as 3430-0953, except Seal Installation Tool is not included.
- ◆ Hydraulic Parts Kit No. 3430-0952 Contains: Bearing (Ref. 18), Motor Lip Seal (Ref. 20) and O-rings (Ref. 13).
- ◆ Hydraulic Motor Part Nos. 2500-0505C (M05Y), 2500-0506C (M05)
- ◆ Replacement Chamber Fluid # 2160-0138 Contains: 23 oz of chamber fluid, pre-mixed.
- ◆ Pump Stack Assembly Kit Nos. P325-1704N (Stack & Shell).

NOTE: When ordering parts, give quantity, part number, description, and complete model number. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

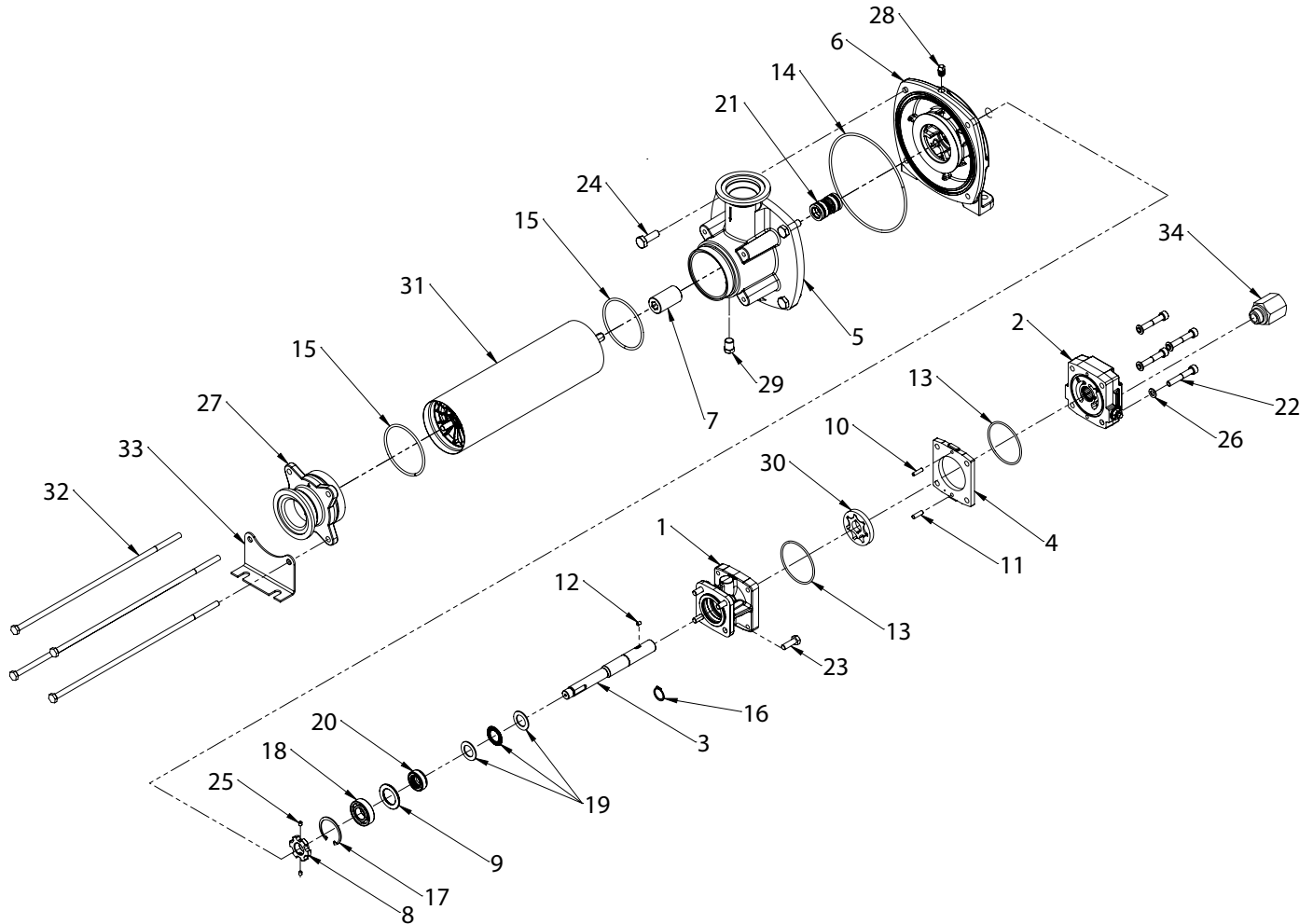
REPAIR PARTS

MODELS 93HPS114-M05, 93HPS114-M05Y

| ITEM NUMBER | PART NUMBER | DESCRIPTION | QTY. |
|-------------|------------------------------------|------------------------|------|
| 1 | Motor Body Assy (No CD) | 0150-2514C | 1 |
| 1 | Motor Body Assy (CD) | 0150-2522C | 1 |
| 2 | End Plate Sub-Assy RR (-8 -10) | 0255-2500C2 | 1 |
| 2 | End Plate Sub-Assy RR (Block) | 0255-2500C4 | 1 |
| 3 | Motor Shaft | 0542-2500 | 1 |
| 4 | Gerotor Housing Coated | 0720-2602 | 1 |
| 5 | Flange Inlet Machined | 0750-1584S | 1 |
| 6 | Mounting Flange Speed Sensor Mount | 0752-9310C4 | 1 |
| 6 | Mounting Flange | 0752-9310C3 | 1 |
| 7 | Shaft Adapter | 1312-0030 | 1 |
| 8 | Tone Wheel | 1410-0137 | 1 |
| 9 | Spacer | 1410-0145 | 1 |
| 10 | Dowel Pin | 1600-0086 | 1 |
| 11 | Dowel Pin | 1600-0097 | 1 |
| 12 | Key | 1610-0032 | 1 |
| 13 | O-Ring | 3430-0952 | 2 |
| 14 | O-Ring | 3430-0953 or 3430-0954 | 1 |
| 15 | O-Ring | 3430-0953 or 3430-0954 | 2 |
| 16 | Retaining Ring | 1810-0011 | 1 |
| 17 | Retaining Ring | 1820-0039 | 1 |
| 18 | Ball Bearing | 3430-0952 | 1 |
| 19 | Thrust Bearing Kit | 2029-0014 | 1 |
| 20 | Hydraulic Lip Seal | 3430-0952 | 1 |
| 21 | Mechanical Seal | 3430-0953 or 3430-0954 | 1 |
| 22 | Socket Head Cap Screw | 2210-0207 | 4 |
| 23 | Hex Head Bolt | 2210-0209 | 4 |
| 24 | Hex Head Bolt | 2210-0230 | 4 |
| 25 | Set Screw | 2230-0051 | 2 |
| 26 | Flat Washer | 2270-0039 | 4 |
| 27 | Discharge Assy (3/4" NPT) | C152-4 | 1 |
| 27A | Discharge Assy (2" Uni. Flange) | 2404-0447S | 1 |
| 28 | Square Head Pipe Plug | 2406-0016 | 1 |
| 29 | Pipe Plug | 2406-0039 | 1 |
| 30 | Gerotor | 3900-0025 | 1 |
| 31 | Pump Stack Assy (SP) | P325-1704N | 1 |
| 32 | Check Valve Assy - Tank Port | 3320-0052A | 1 |
| N/A | Seal Chamber Fluid (not shown). | 2160-0138 | 1 |

REPAIR PARTS

MODEL 93HPS114-M05-SP



- ◆ Pump Repair Kit No. 3430-0953 Contains: O-rings (Ref. 14 & 15), Mechanical Seal (Ref. 21), Seal installation Tool (3010-0455) and Seal Chamber Fluid (2160-0138).
- ◆ Pump Repair Kit No. 3430-0954 Contains: Same as 3430-0953, except Seal Installation Tool is not included.
- ◆ Hydraulic Parts Kit No. 3430-0952 Contains: Bearing (Ref. 18), Motor Lip Seal (Ref. 20) and O-rings (Ref. 13).

NOTE: When ordering parts, give quantity, part number, description, and complete model number. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

- ◆ Hydraulic Motor Part Nos. 2500-0506C (M05), 2500-0505C (M05Y).
- ◆ Replacement Chamber Fluid # 2160-0138 Contains: 23 oz of chamber fluid, pre-mixed. Pump requires 12.5 oz.
- ◆ Pump Stack Assembly Kit Nos. P325-1705N (Stack & Shell).

REPAIR PARTS

MODEL 93HPS114-M05-SP

| ITEM NUMBER | PART NUMBER | DESCRIPTION | QTY. |
|-------------|------------------------------------|------------------------|------|
| 1 | Motor Body Assy (No CD) | 0150-2514C | 1 |
| 1 | Motor Body Assy (CD) | 0150-2522C | 1 |
| 2 | End Plate Sub-Assy | 0255-2500C2 | 1 |
| 3 | Motor Shaft | 0542-2500 | 1 |
| 4 | Gerotor Housing Coated | 0720-2602 | 1 |
| 5 | Flange Inlet Machined | 0750-1586S | 1 |
| 6 | Mounting Flange Speed Sensor Mount | 0752-9310C4 | 1 |
| 6 | Mounting Flange | 0752-9310C3 | 1 |
| 7 | Shaft Adapter | 1312-0030 | 1 |
| 8 | Tone Wheel | 1410-0137 | 1 |
| 9 | Spacer | 1410-0145 | 1 |
| 10 | Dowel Pin | 1600-0086 | 1 |
| 11 | Dowel Pin | 1600-0097 | 1 |
| 12 | Key | 1610-0032 | 1 |
| 13 | O-Ring | 3430-0952 | 2 |
| 14 | O-Ring | 3430-0953 or 3430-0954 | 1 |
| 15 | O-Ring | 3430-0953 or 3430-0954 | 2 |
| 16 | Retaining Ring | 1810-0011 | 1 |
| 17 | Retaining Ring | 1820-0039 | 1 |
| 18 | Ball Bearing | 3430-0952 | 1 |
| 19 | Thrust Bearing Kit | 2029-0014 | 1 |
| 20 | Hydraulic Lip Seal | 3430-0952 | 1 |
| 21 | Mechanical Seal | 3430-0953 or 3430-0954 | 1 |
| 22 | Socket Head Cap Screw | 2210-0207 | 4 |
| 23 | Hex Head Bolt | 2210-0233 | 4 |
| 24 | Hex Head Bolt | 2210-0230 | 4 |
| 25 | Set Screw | 2230-0051 | 2 |
| 26 | Flat Washer | 2270-0039 | 4 |
| 27 | Discharge Assy | 2404-0480S | 1 |
| 28 | Square Head Pipe Plug | 2406-0016 | 1 |
| 29 | Pipe Plug | 2406-0039 | 1 |
| 30 | Gerotor | 3900-0025 | 1 |
| 31 | Pump Stack Assy (SP) | P325-1705N | 1 |
| 32 | Hex Head Bolt | 2210-0238 | 4 |
| 33 | Discharge Bracket | 1520-0146 | 1 |
| 34 | Check Valve Assy - Tank Port | 3320-0052A | 1 |
| N/A | Seal Chamber Fluid (not shown). | 2160-0138 | 1 |

EC DECLARATION OF INCORPORATION

EC Declaration of Incorporation

Manufacturers Name: Pentair Flow Technologies, LLC
Manufacturers' Address: 375 Fifth Avenue NW,
New Brighton, MN 55112, USA

Declare that the partially complete machinery described below conforms to applicable health and safety requirements of Emission Directive 2010/26/EU and of Parts 1 of Annex I of Machinery Directive 2006/42/EC. This partly completed machinery must not be put into service until the equipment into which it is to be incorporated has been declared in conformity with the provisions of these directives. Confidential technical documentation has been compiled as described in Annex VII Part B of Machinery Directive 2006/42/EC and is available to European national authorities on written request. If a request is received, documentation will be transmitted either electronically or by post. Clauses 1.1.4, 1.1.7, 1.1.8 Section 1.2, Clauses 1.3.5, 1.3.6, 1.3.7, 1.3.8.1, 1.3.8.2, 1.3.9, 1.4.1, 1.4.2.1, 1.4.2.2, 1.4.2.3, 1.4.3, 1.5.2, 1.5.7, 1.5.12, 1.5.14, 1.5.16, 1.6.2, 1.7.1.1, 1.7.1.2, 1.7.2, and 1.7.4.2 are clauses of Machinery Directive 2006/42/EC that have not been met, but could be applicable and must be addressed during installation by a third party.

Description: PENTAIR Pump

Type: Roller Pumps
Series Numbers: 1502, 1700, 4001, 4101, 6500, 7560, 7700

Type: Centrifugal Pumps
Series Numbers: 1442P, 1539, 1540, 1542P, 1543P, 1550, 90XX, 9202, 9203, 9205, 9206, 9208, 9262, 9263, 9253, 9302, 9303, 9305, 9306, 9307, 9308, 9313, 9314, 9316, 9342P, 9343P, 9742P, 15HPS, 93HPS

Type: Cleanload Assembly
Series Numbers: 3376, 3378

Type: Piston/Plunger Pumps
Series Numbers: 5315C, 5320C, 5321C, 5322C, 5324C, 5325C, 5330C, 53702, 53703

The following standards have either been referred to or been complied with in part or in full as relevant:

| | | |
|-------------------------|--------------------|---|
| ENISO 12100 | Machinery Safety - | General principles for design - Risk assessment and risk reduction |
| EN809-1998 + A1 2009 | Machinery Safety - | Pumps and pump units for liquids - Common safety requirements |
| EN ISO 13732-1 | Machinery Safety - | Ergonomics of the thermal environment |
| EN ISO 3744:2010 | Acoustics - | Determination of sound power levels and sound energy levels of noise sources using sound pressure |
| EN ISO 11202/A1 1997 | Machinery Safety - | Noise emitted by machinery and equipment |
| EN 12162:2001+A1:2009 | Machinery Safety - | Liquid pumps - Safety requirements-Procedure for hydrostatic testing |
| EN ISO 4254-6:2009 | Machinery Safety - | Sprayers and liquid fertilizer distributors |
| EN 60204-1:2006/A1:2009 | Machinery Safety - | Electrical Equipment of Machines |

Name Position.....

Signature Date.....

Place of Signing.....

EC REP
QNET BV
Hommerterweg 286
6436 AM Amstenrade
The Netherlands

Rev 12/22/18

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.

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 the appropriate Hypro Service Department 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:

US/Canada
HYPRO / PENTAIR
Attention: Service Department
375 Fifth Avenue NW
New Brighton, MN 55112
Service: 800-468-3428
Fax: 651-766-6618
Technical: 800-445-8360
hypro.technical@pentair.com

Europe
HYPRO EU Ltd.
Station Road
Longstanton
Cambridge CB24 3DS UK
Service/Technical:
+44 1954 260097
Fax: +44 1954 260245
euagorders@pentair.com

South America & Central America
Pentair Water do Brasil LTDA
Av. Marginal Norte da Via
Anhanguera, 53.700
Jundiaí/SP - Brasil
CEP 13206-245
Tel: (11) 3378-5400
vendas.pwdb@pentair.com

All Other Regions
HYPRO / PENTAIR
Attention: Service Department
375 Fifth Avenue NW
New Brighton, MN 55112
Service: 800-468-3428
Fax: 651-766-6618
Technical: 800-445-8360
hypro.technical@pentair.com

*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.



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Fx: 800.323.6496

pentair.com

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