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Operating Instructions and Parts List For:



PB10 Series BATTERY POWERED HYDRAULIC PUMP

PUMPS WITH BLADDER SIZE 1.1L (0.29 GAL) MODEL "B"

PB102-0	PB102A-3	PB102R-1	PB104-X
PB102-1	PB102A-X	PB102R-2	PB104R-1
PB102-2	PB102P-0	PB102R-3	PB104-0-ARC
PB102-3	PB102P-1	PB102R-X	PB102-CP
PB102-X	PB102P-2	PB104-0	PB102-CP-1
PB102A-0	PB102P-3	PB104-1	PB102-CP-2
PB102A-1	PB102P-X	PB104-2	PB102-CP-3
PB102A-2	PB102R-0	PB104-3	

PUMPS WITH BLADDER SIZE 4.7L (1.25 GAL) "XL" VARIANTS MODEL "A"

PB102XL-X	PB102XLP-2	PB102XLA-0	PB104XL-3
PB102XL-0	PB102XLP-3	PB102XLA-1	PB102XL-CP-X
PB102XL-1	PB102XLR-X	PB102XLA-2	PB102XL-CP-0
PB102XL-2	PB102XLR-0	PB102XLA-3	PB102XL-CP-1
PB102XL-3	PB102XLR-1	PB104XL-X	PB102XL-CP-2
PB102XLP-X	PB102XLR-2	PB104XL-0	PB102XL-CP-3
PB102XLP-0	PB102XLR-3	PB104XL-1	
PB102XLP-1	PB102XLA-X	PB104XL-2	

(Note: PB10X units ending in "-1" are not CE/UKCA certified.)

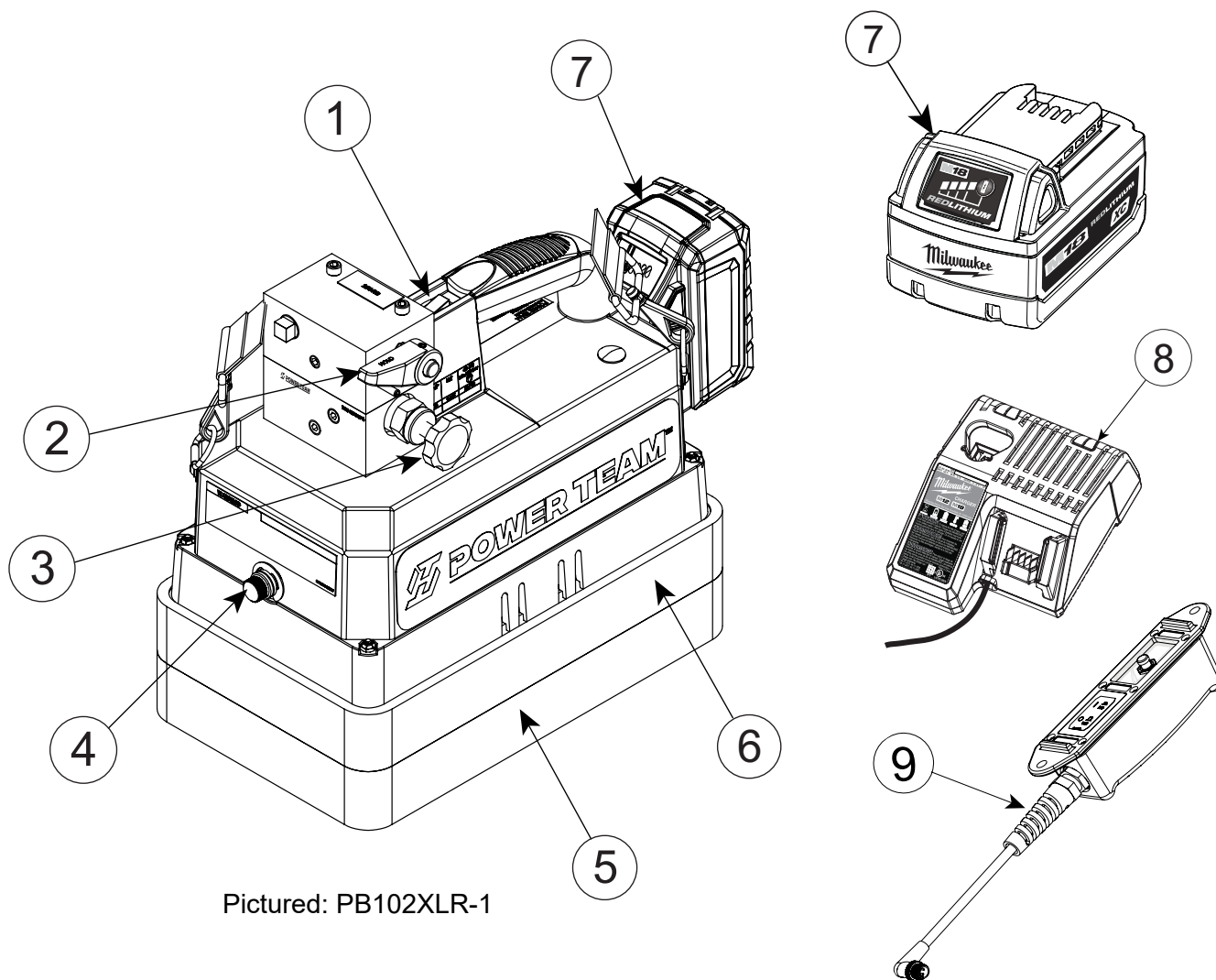
TABLE OF CONTENTS

DESCRIPTION	2
SAFETY SYMBOLS AND DEFINITIONS	5
SAFETY PRECAUTIONS	5
SET-UP INSTRUCTIONS	9
1. Before First Use	9
2. Checking Hydraulic Fluid and Filling the Bladder	9
3. Hydraulic Connections	10
4. 18VDC Battery and Charger	11
5. Hand Pendant Connection	13
6. Bleeding Air from the System	14
OPERATION	15
1. Priming the Pump	15
2. Pump Motor Operation	15
3. Lifting or Lowering a Load With a Hydraulic Cylinder	16
4. Adjusting the Pressure Regulating Valve	16
DIRECTIONAL CONTROL VALVE OPTIONS	17
1. 2-Way Manifold	17
2. 2-Position, 2-Way Manual Valve	18
3. 3-Position, 4-Way Manual Valve	19
GENERAL MAINTENANCE	21
1. System Evaluation	21
2. Inspection	21
3. Periodic Cleaning	21
4. Hydraulic Fluid Level	21
5. Draining and Flushing the Bladder	22
6. Adding Hydraulic Fluid to the Bladder	22
7. Hose Connections	22
8. Storage	22
TROUBLESHOOTING GUIDE	23
HYDRAULIC SCHEMATIC	26
ELECTRIC SCHEMATIC	27
PARTS LIST	28
EC DECLARATION OF CONFORMITY	47
UKCA DECLARATION OF CONFORMITY	49

DESCRIPTION

The PB10 Series hydraulic pump delivers hydraulic fluid under pressure through the use of an electric motor and 18VDC Li-ION battery as a power source.

The pump is available with two bladder sizes: one with a capacity of 1.1 liters (0.29 gallons) and the larger PB10 (XL) Series bladder, which has a capacity of 4.7 liters (1.25 gallons.)



- | | |
|---------------------------------------|----------------------------------|
| 1. Start Button/Rocker Switch | 5. Bottom Tray |
| 2. Valve Control Lever | 6. Tray Spacer (For XL variants) |
| 3. Pressure Regulator Adjustment Knob | 7. Battery Pack |
| 4. Oil Bladder Fill Port | 8. Charger |
| | 9. Hand Pendant Control |

Fig. 1. Components of Pump Unit

Notes:

- **Carefully inspect the pump upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.**
- **The images used throughout this manual are for illustrative purposes ONLY. They are intended to enhance the understanding of the content and provide visual examples. The images may not necessarily represent the exact product or situation being described. Please refer to the accompanying text for accurate information and instructions.**

Description Continued

PUMP SPECIFICATIONS (For bladder size 1.1 L (0.29 Gal) model "B")					
Pump Cat. No.		Max. Operating Pressure	Features	Kw	dB(A) Idle / 700 Bar
PB102-0 PB102-1 PB102-2	PB102-3 PB102-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump	.144	65/72
PB102P-0 PB102P-1 PB102P-2	PB102P-3 PB102P-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump and Hand Pendant	.144	65/72
PB102R-0 PB102R-1 PB102R-2	PB102R-3 PB102R-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump and Pressure Regulator	.144	65/72
PB102A-0 PB102A-1 PB102A-2	PB102A-3 PB102A-X	10,000 PSI 700 Bar	2-Way Auto Dump	.144	65/72
PB102-CP PB102-CP-1	PB102-CP-2 PB102-CP-3	10,000 PSI 700 Bar	2-Way Dump w/ Pop Off RV	.144	65/72
PB104-0 PB104-1 PB104-2	PB104-3 PB104-X PB104-0-ARC**	10,000 PSI 700 Bar	4-Way	.144	65/72
PB104R-1		10,000 PSI 700 Bar	4-Way and Pressure Regulator	.144	65/72

PUMP SPECIFICATIONS (For bladder size 4.7 L (1.25 Gal) "XL" variants model "A")					
Pump Cat. No.		Max. Operating Pressure	Features	Kw	dB(A) Idle/700Bar
PB102XL-0 PB102XL-1 PB102XL-2	PB102XL-3 PB102XL-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump	.144	65/72
PB102XLP-0 PB102XLP-1 PB102XLP-2	PB102XLP-3 PB102XLP-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump and Hand Pendant	.144	65/72
PB102XLR-0 PB102XLR-1 PB102XLR-2	PB102XLR-3 PB102XLR-X	10,000 PSI 700 Bar	2-Way Hold/Auto Dump and Pressure Regulator	.144	65/72
PB102XLA-0 PB102XLA-1 PB102XLA-2	PB102XLA-3 PB102XLA-X	10,000 PSI 700 Bar	2-Way Auto Dump	.144	65/72
PB102XL-CP-0 PB102XL-CP-1 PB102XL-CP-2	PB102XL-CP-3 PB102XL-CP-X	10,000 PSI 700 Bar	2-Way Dump w/ Pop Off RV	.144	65/72
PB104XL-0 PB104XL-1 PB104XL-2	PB104XL-3 PB104XL-X	10,000 PSI 700 Bar	4-Way	.144	65/72

- Notes**
- Models ending with (-0) do not include a battery charger.
 - Models ending with (-1) include a battery and a 110-120V battery charger.
 - Models ending with (-2 and -3) include a battery and a 220-240V battery charger.
 - Models ending with (-X) do not include battery and charger; pump only.
 - Model PB104-0-ARC do not include battery and charger; pump only.

Description Continued

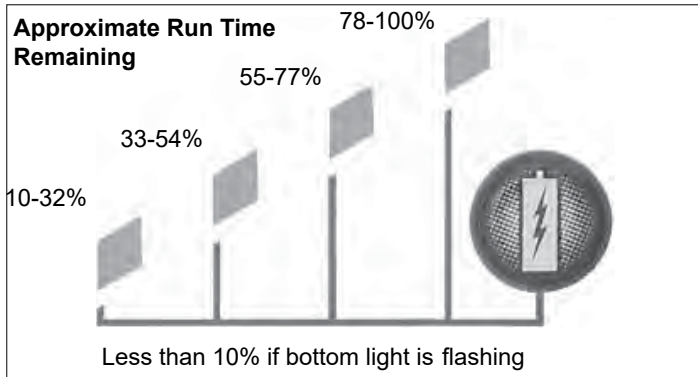
BATTERY AND CHARGER SPECIFICATIONS

(Excerpt from Milwaukee Tool operator's manuals)

Charger Cat. No.	AC Input Volts	AC Input Amps	DC Output Volts	DC Output Amps	Battery Cat. No.	DC Volts
2009646	110-120	2.1	12 or 18V	3	3000973	18
2009647	220-240	1.15	12 or 18V	3		
2010141	220-240	1.15	12 or 18V	3		

SYMBOLOLOGY

	Volts Direct Current
	Volts Alternating Current
	Double Insulated
	Hertz



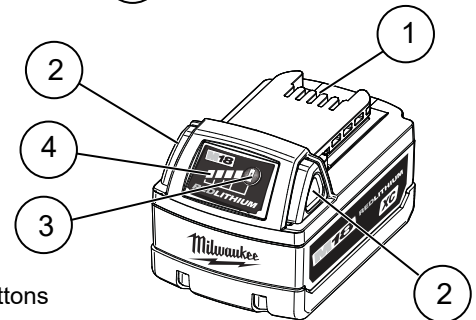
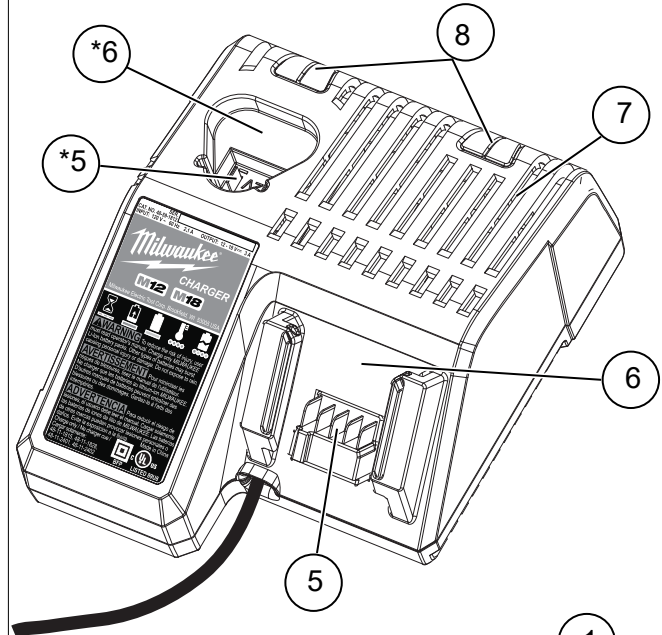
IMPORTANT: For information regarding care, use, recycling, or warranty of batteries and/or chargers, contact Milwaukee Electric Tool Corporation or see original manufacturers operating manual.



* Items only on multi voltage charger models

** When charging M12 & M18 packs simultaneously

FUNCTIONAL DESCRIPTION



1. Contacts
2. Release buttons
3. Fuel Gauge button
4. Fuel Gauge
5. Electrical contacts
6. Bay
7. Vents
8. Light indicators:



Continuous red: Charging



Continuous Green: Charging is complete



Fast flashing red: Battery is too hot/cold - Charging will begin when battery reaches correct charging temperature



** Slow flashing red: Battery charge is pending - Charging will begin when first pack is fully charged.



Flashing red/green: Damaged or faulty battery pack

SAFETY SYMBOLS AND DEFINITIONS

Safety symbols are used to identify any action or lack of action that can cause personal injury. Your reading and understanding of these safety symbols is very important.

 **DANGER**: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

IMPORTANT: Important is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

SAFETY PRECAUTIONS

 **WARNING**: To help prevent personal injury,

General Safety



- The following procedures must be performed by qualified, trained personnel who are familiar with this equipment. Operators must read and understand all safety precautions and operating instructions included with the device. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.

- These components are designed for general use in normal environments. These components are not specifically designed for lifting and moving people, agri-food machinery, certain types of mobile machinery or special work environments such as: explosive, flammable, or corrosive. Only the user can decide the suitability of this machinery in these conditions or extreme environments. Power Team will supply information necessary to help make these decisions. Consult your nearest Power Team facility.



- Safety glasses must be worn at all times by the operator and anyone within sight of the unit. Additional personal protection equipment may include: face shield, goggles, gloves, apron, hard hat, safety shoes, and hearing protection.

- Always wear eye protection whenever operating hydraulic equipment



- Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.

- Hydraulic equipment must be assembled correctly and then checked for proper function before use. Use hydraulic components of the same hydraulic pressure ratings. An appropriate hydraulic pressure gauge is recommended to monitor pressure.



- Never place your hands or other body parts near a hydraulic fluid leak. Never use your hands or other body parts to check for a possible leak. High pressure fluid can be injected under your skin causing serious injury and/or infection.

Safety Precautions Continued



- High pressure fluid is present throughout a hydraulic system. Always use caution when operating, repairing, or maintaining this equipment. Before beginning any work on any hydraulic system component, stop the equipment, disconnect from its power source, and relieve all pressure in all parts of the system. Do not tamper with the internal hydraulic relief valve settings.
- Avoid exposing hydraulic equipment (especially hoses) to extreme high or low temperatures. Damage to equipment or failure may result and cause loss of control or injury to the operator.
- The owner of this tool must ensure that safety-related decals are installed, maintained, and replaced if they become hard to read.
- Exercise caution to avoid the risk of fire.
- Do not drop any hydraulic system components. Damage to the equipment and/or injury may result.
- Avoid slipping or falling by cleaning up any oil spills.
- Avoid back injury by always lifting equipment carefully.
- Always wear hearing protection as required. Refer to the sound level (dB[A]) chart.

Battery Powered Pump



- Any electrical work must be done and tested by a qualified electrician per local directives and standards.
- Remove the battery from the pump and relieve pressure before doing any maintenance or repair.
- If wiring is exposed, replace or repair it immediately.
- Do not attempt to increase the power capacity by replacing a fuse with another fuse of higher value. Overheating of the power supply and the possibility of a fire will result.
- Electric pumps should never be exposed to rain or water which could cause personal electrical hazard.
- Avoid conditions which can cause damage to the power supply such as abrasion, crushing, sharp cutting edges, or corrosive environment. Damage to the power supply can cause an electrical hazard.
- Do not exceed the hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities can result in personal injury.
- Before replenishing the fluid level, retract the system to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure created when the tools are retracted.
- Do not change motors without consulting the pump manufacturer's Technical Services Department.

Safety Precautions Continued

Battery and Battery Charger

WARNING



- Ensure rechargeable battery contacts cannot be shorted by metal objects, such as screws, instruments or nails. A short circuit between the battery contacts can cause burns or fire.
- To reduce the risk of fire, personal injury, and product damage due to a short circuit, never immerse your tool, battery pack or charger in fluid or allow a fluid to flow inside them. Corrosive or conductive fluids, such as seawater, certain industrial chemicals, and bleach or bleach containing products, etc., can cause a short circuit.
- Do not burn the charger or rechargeable batteries. Rechargeable batteries may explode and flare up.



- As a result of improper use, liquid can leak from the battery. Avoid contact with this liquid. If battery liquid leaks and contact occurs, flush with water and seek medical help.

- Store battery and battery charger in a cool, dry place. Keep these items in a secured area, away from children and pets. Unplug battery charger when cleaning or not in use.



- Do not allow children to use or play with the battery pack or battery charger; local regulations may restrict the age of the operator.

- Do not discard batteries into domestic waste disposal. Any damaged or disposed electric or electronic devices must be delivered to appropriate collection centers.



- For indoor usage only. Do not use the charger outside or expose it to wet or damp circumstances when charging the battery. Water entering the charger increases the chance of an electric shock.

CAUTION

- If the battery is stored without being charged, natural drainage will cause the power to be reduced. The battery should be completely re-charged if not in use.
- Only use the battery and charger that is supplied by manufacturer. Using a different battery or different charger may cause an explosion.
- If the supply cord to the battery charger is damaged, contact an Authorized Service Dealer to replace it.
- Do not use a battery pack or charger that is damaged or modified. Damaged or modified batteries may show unpredictable behavior resulting in fire explosion or risk of injury.
- Allow battery to cool completely before charging.
- Do not disassemble or attempt to repair the battery or battery charger.

Safety Precautions Continued

Hydraulic Hoses and Fluid Transmission Lines

- Avoid straight line tubing connections in short runs. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes. See fig. 2. "Hose and Tubing Connections" under section "Hydraulic Connections".
- Eliminate stress in the tube lines. Long tubing runs should be supported by brackets or clips. Tubes through bulkheads must have bulkhead fittings. This makes easy removal possible and helps support the tubing.
- Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.



- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.



- Do not subject the hose to potential hazards such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not allow the hose to kink, twist, curl, crush, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury. Never repair with tape.
- Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Hose deterioration due to corrosive materials can result in personal injury. Consult the manufacturer before painting a hose. Never paint a coupler.

Hydraulic Fluids

- Properly dispose of all fluids, components and assemblies at the end of their useful life according to the applicable local waste-treatment and environmental regulations.
- Hydraulic fluid should be compatible with all hydraulic components.

Transport



- Do not lift or drag the hydraulic pump by any pendant, hose or coupler. To safely transport, always use the carrying handle, roll cage or suitable lifting aid, along with assistance and proper lifting techniques.

Note: The guide cannot cover every hazard or situation so always do the job with **SAFETY FIRST**.

SET-UP INSTRUCTIONS

1. Before First Use

- Begin by visually checking the pump unit, battery pack, charger and connectors (hydraulic hoses) to confirm the integrity of all components and that there are no visible signs of damage.
- Make sure that all components such as hoses, couplers, and cylinders are rated for the maximum operating pressure provided by the pump unit 700 bar (10,000 PSI).

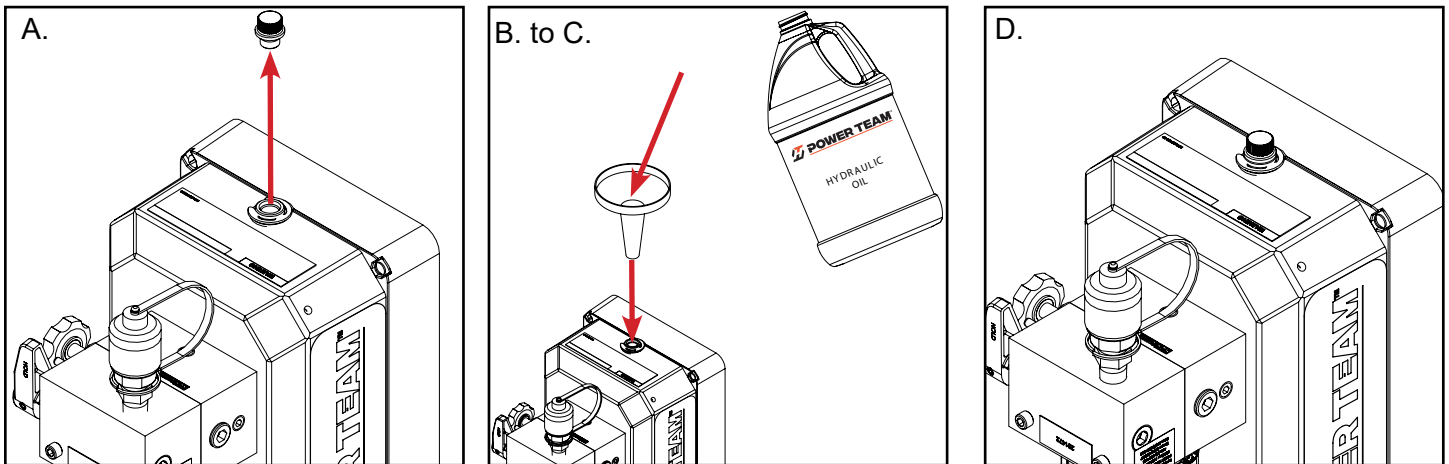
IMPORTANT: It is recommended to use power team valves and genuine accessories that supports fluid supply system for the pump unit.

2. Checking Hydraulic Fluid and Filling the Bladder

Note: Most pumps with a bladder are shipped with hydraulic fluid in the bladder. If hydraulic fluid is needed, use only approved Power Team hydraulic fluid.

- A. Remove the filler cap. (If there is no oil visible, continue to step B)
- B. Insert a clean funnel with a filter or strainer.
- C. Fill the bladder completely with hydraulic fluid.
- D. After adding oil, securely close the reservoir cap or cover to prevent any leaks or spills. Verify the breather-hole is open, if applicable.
- E. Clean up any oil spillage to avoid causing a safety and/or environmental hazard.

IMPORTANT: Tighten filler cap ONLY 1/2 - 1 turn (MAX) after O-ring contacts sealing surfaces. Overtightening can cause pump damage on bladder equipped pumps.



Set-Up Instructions Continued

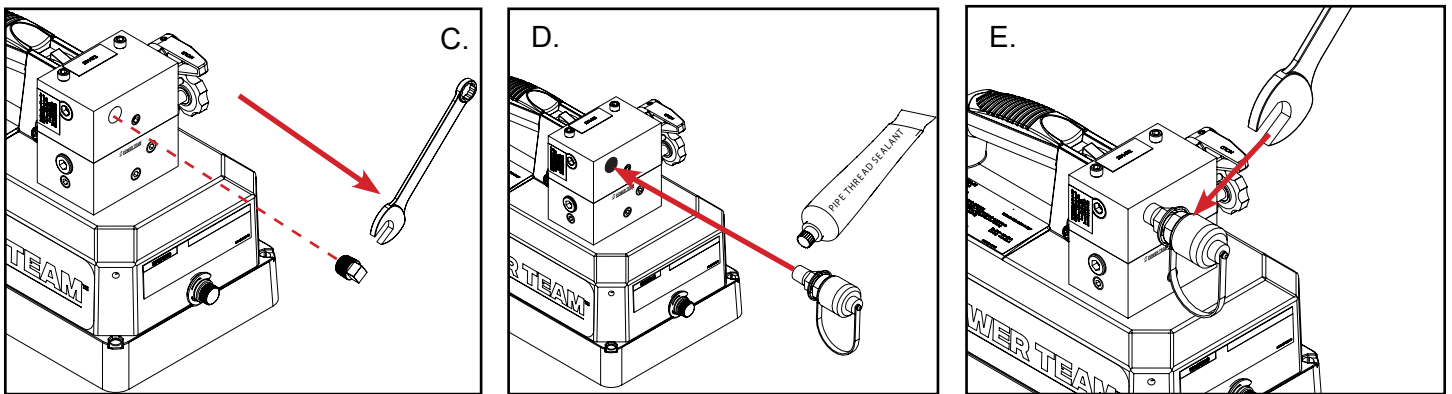
3. Hydraulic Connections

- Clean areas around fluid ports, all hose ends, couplers, or union ends. Inspect all threads and fittings for signs of wear or damage before use, and replace as needed.
- Identify the inlet (return) and outlet (pressure) ports on the hydraulic pump for connecting the hoses to the cylinders or tools in use.
- Remove plugs and/or thread protectors/dust covers from hydraulic ports if applicable.
- Use an approved, high-grade pipe thread sealant to seal all hydraulic connections and connect fittings and/or hose assemblies to the pump and the tools.
- Tighten securely and leak-free but do not overtighten.
- Once all connections are made, visually inspect the connections and fittings for any signs of leakage. If any leaks are detected, tighten the fittings further or replace any damaged components.

CAUTION : To prevent personal injury from leaking hydraulic fluid, seal all hydraulic connections with a high-quality, non-hardening, pipe thread sealant.



IMPORTANT: Sealant tape or non-hardening sealer tape can be used to seal hydraulic connections if only one layer of tape is used. Apply tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Loose pieces of sealant could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.



Hydraulic lines and fittings can act as restrictors as the tool retracts. The restricting or slowing of the fluid flow causes back pressure that slows the tool's return. Return speed also varies because of the application, condition of the tool, inside diameter of the hose or fitting, length of the hose, and the temperature and viscosity of the hydraulic fluid.

Tubes and Hoses should be routed in such a way that they can easily be serviced or removed as well as provide the least resistance to fluid flow. See below for recommended routing configurations.

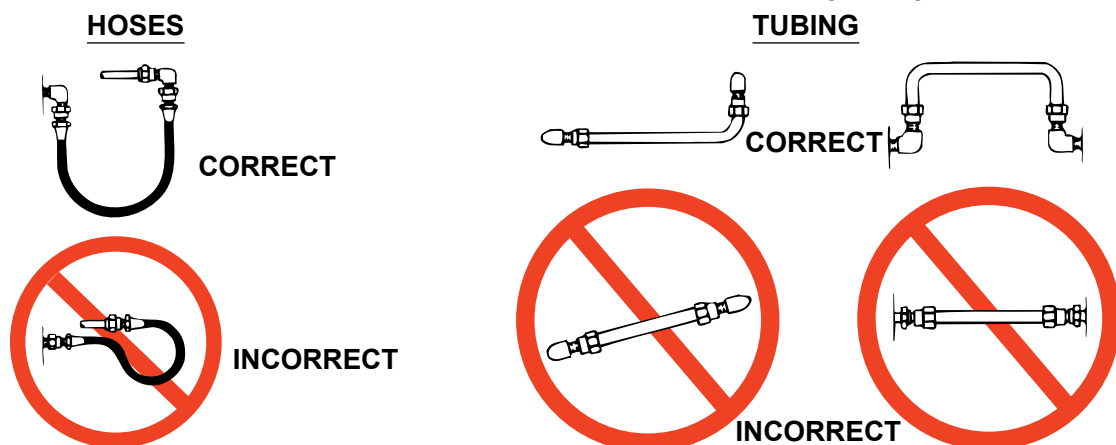


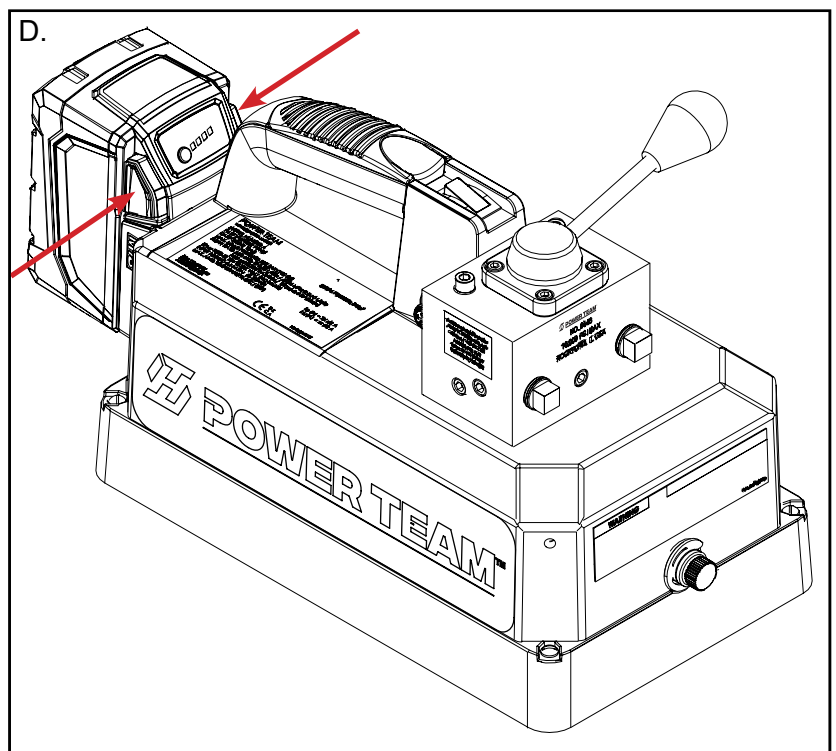
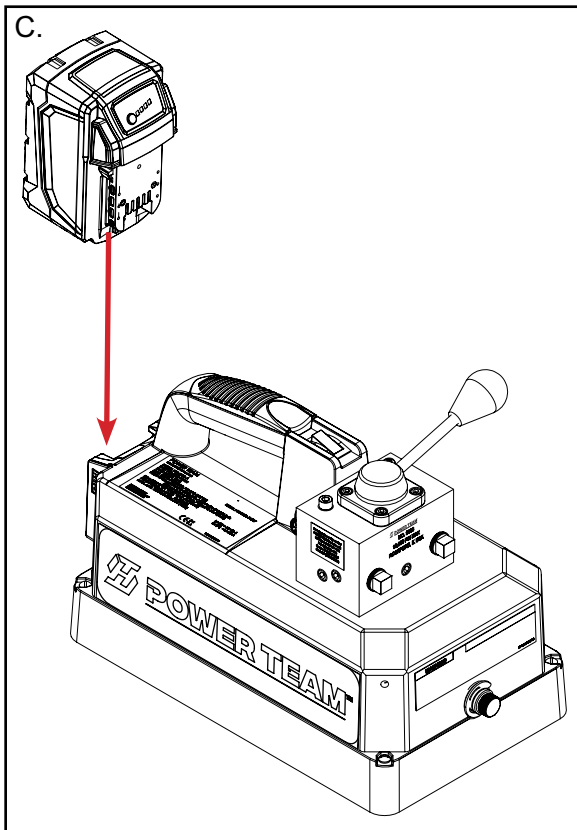
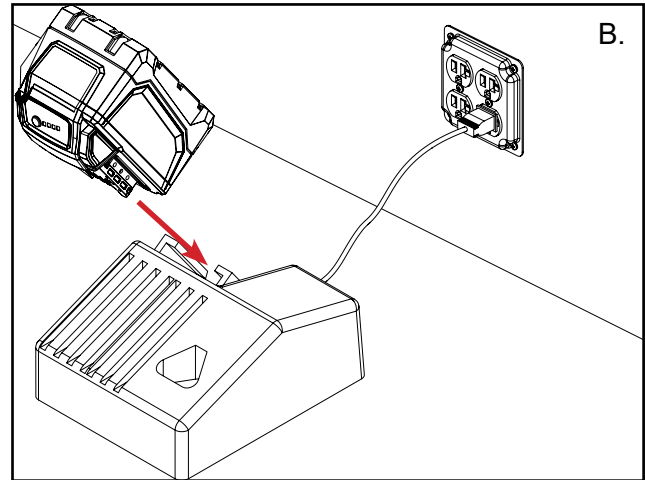
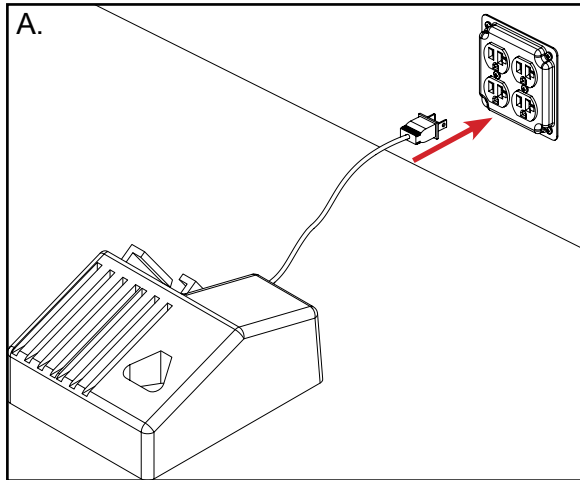
Fig. 2. Hose and Tubing Connections

Set-Up Instructions Continued

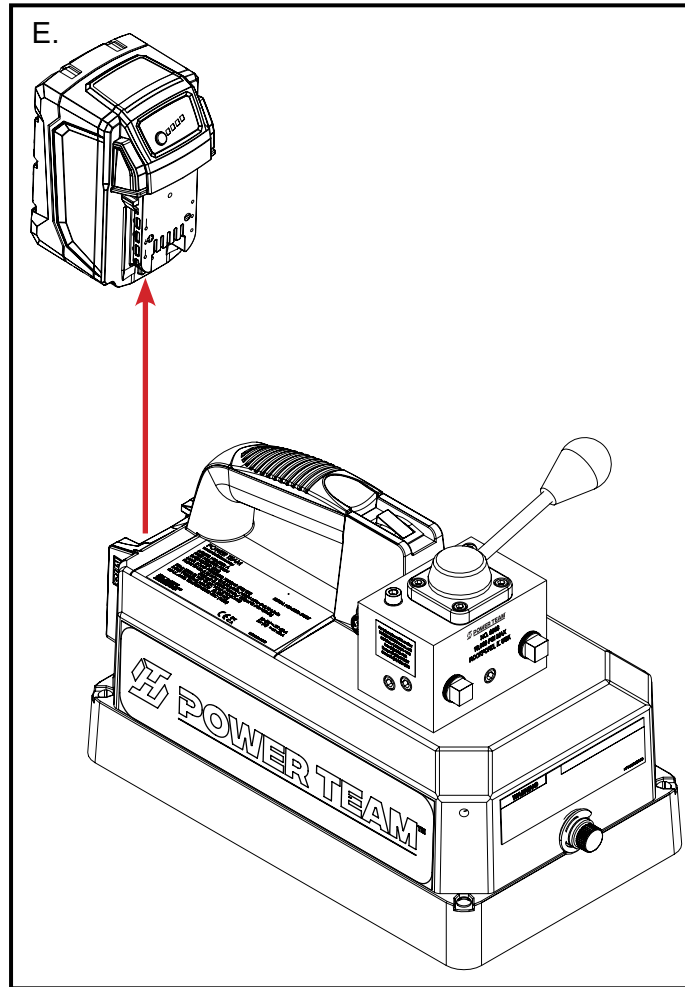
4. 18VDC Battery and Charger

Note: New batteries must be charged before first use. Approx. 60 minutes of charging = 100% battery fuel.

- A. Ensure battery charger is plugged in.
- B. Slide battery pack into charger as shown and allow battery to charge.
- C. Once battery is adequately charged it can be installed on pump unit as shown.
- D. To remove the battery from the pump unit press the release buttons on the sides of the battery.
- E. Slide the battery out of the pump unit as shown.



Set-Up Instructions Continued



⚠ WARNING : Remove the battery pack from the pump unit when it is not in use. Leaving the battery installed for an extended period of time can lead to complete drainage, which may cause battery failure and damage the equipment.

Set-Up Instructions Continued

5. Hand Pendant Connection

Note: Attaching a hand pendant can sometimes be a more effective way of controlling the pump unit by allowing the user to operate the unit with a remote switch. The hand pendant has an 11 ft. cable and overrides the built in start button.

- Notice the alignment pins in the cable fitting at the end of the pendant cable. Refer to figure 3.
- Notice the alignment grooves in the fitting on the pump unit and insert the pendant cable as shown.
- Secure the connection by threading (rotating clockwise) the cable fitting into the pump unit fitting.
- To activate the pump unit, press and hold the start button, release the start button and the pump unit will stop running.

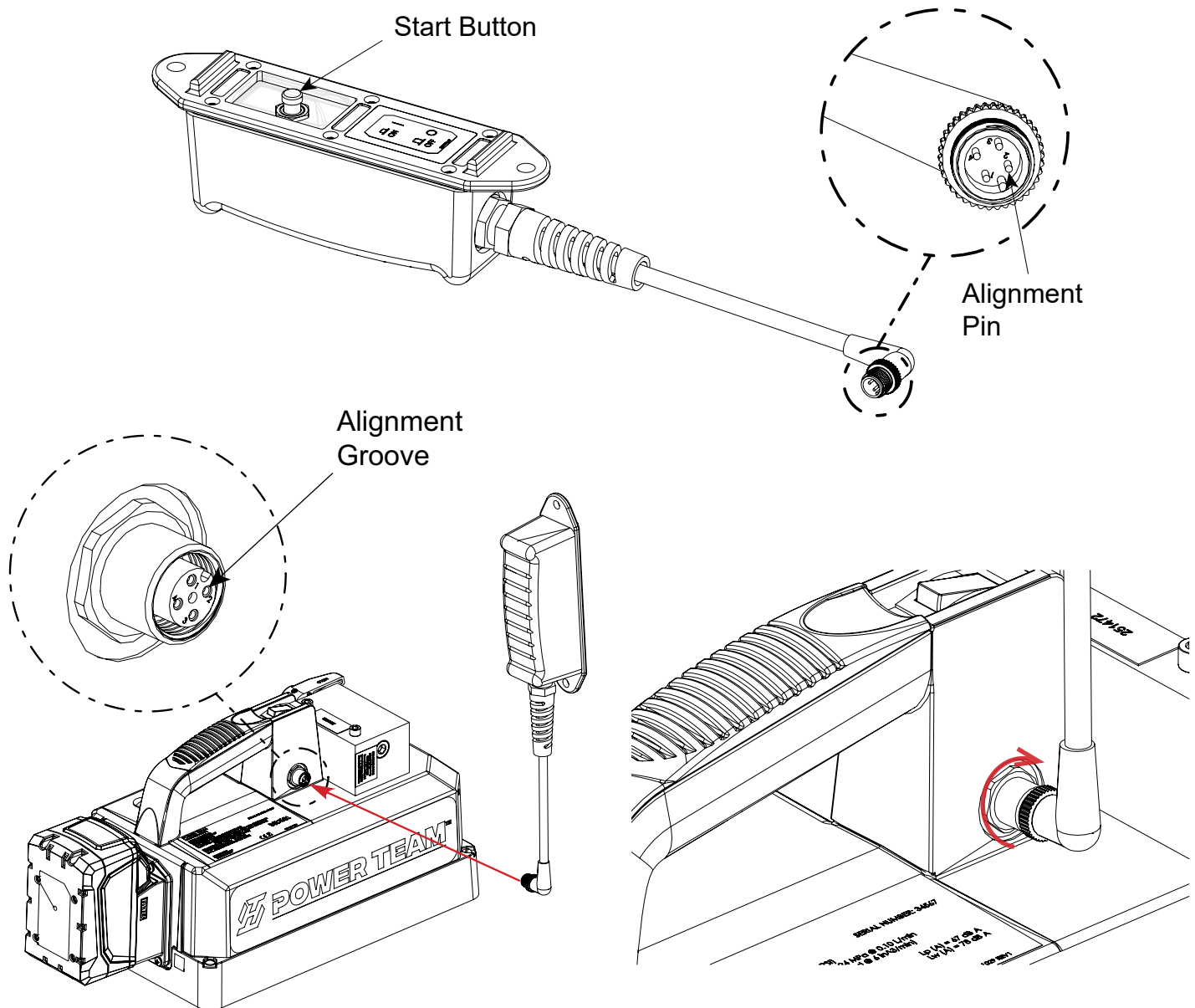


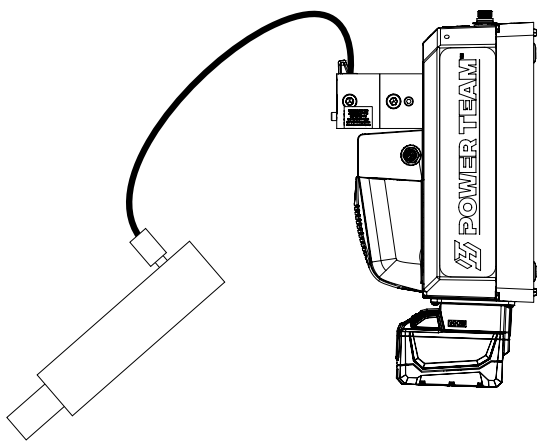
Fig. 3. Hand Pendant Connection

Set-Up Instructions Continued

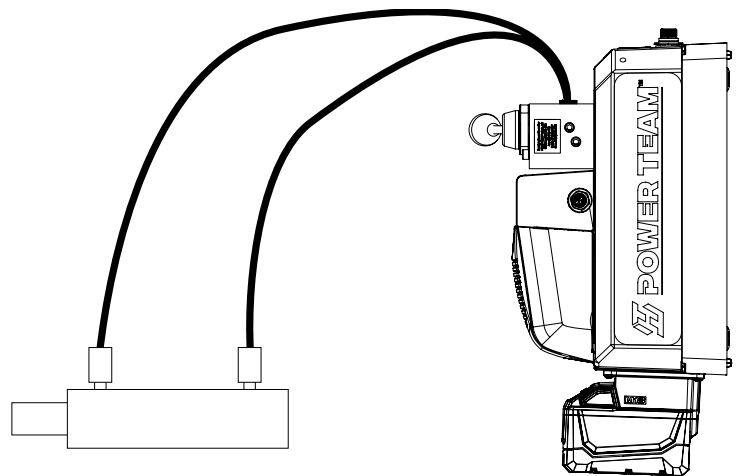
6. Bleeding Air from the System

- After all connections are made, the hydraulic system must be bled of any trapped air. Refer to the diagrams below.
- With no load on the system and the pump vented and positioned higher than the accessory tooling, cycle the system several times.
- To vent the Bladder, be sure the pump is positioned upright as shown below and slowly unscrew the bladder plug. Check the bladder for possible low fluid level and fill to proper level with approved, Power Team hydraulic fluid as necessary. Refer to section “Checking Hydraulic Fluid and Filling The Bladder” section under Set-up Instructions.

IMPORTANT: Some spring return cylinders, or rams have a cavity in the rod which forms an air pocket. This type of cylinder or ram should be bled when positioned upside down or lying on its side with the port facing upward.



System with a single acting cylinder



System with a double-acting cylinder

Fig. 4. Air Bleeding Process

OPERATION

1. Priming the Pump

When operating the pump for the first time:

- A. Valve and hose connections must be tight, and the bladder must be filled to the proper fluid level. Refer to sections “Hydraulic Connections” and “Checking Hydraulic Fluid and Filling the Bladder” under Set-up Instructions.
- B. Set valve to the neutral or return position and jog the pump on and off several times by pressing the start button and allowing the pump to idle for 1 to 3 minutes.
- C. Set valve to proper position / port to Advance and retract the accessory tooling (e.g. cylinder, torque wrench, spreader, etc.) to its full travel. Do this several times to eliminate air from the system and build pressure. Refer to section “Bleeding Air from the System” for more details.
- D. With the accessory tooling retracted completely, check the fluid level in the bladder and add fluid if necessary. Refer to section “Checking Hydraulic Fluid and Filling The Bladder” under Set-up Instructions.
- E. The pump is now ready to be put into regular operation.

2. Pump Motor Operation

- A. Before start-up check all hydraulic fittings and connections to be sure they are tight and leak free.
- B. Check the hydraulic oil level. If needed, add more oil.
- C. Install a fully charged battery on the pump.
- D. Place control valve lever in the neutral or return position. Refer to section "Directional Control Valve Options" for specific functions for each directional valve.
- E. The pump can be activated using the hand pendant control or the rocker switch located on the pump unit.

Note: Attaching a hand pendant can sometimes be a more effective way of controlling the pump unit by allowing the user to operate the unit with a remote switch. The hand pendant has an 11 ft. cable and overrides the built in start button.

- **By Hand Pendant:** Hold down the start button to turn on the pump, release the button to stop the pump unit from running (Refer to figure 3).
- **By Rocker Switch:** The default position is OFF. Press and hold the rocker switch to the ON position to start the pump, and release it to stop the pump from running. (Refer to figure 5).

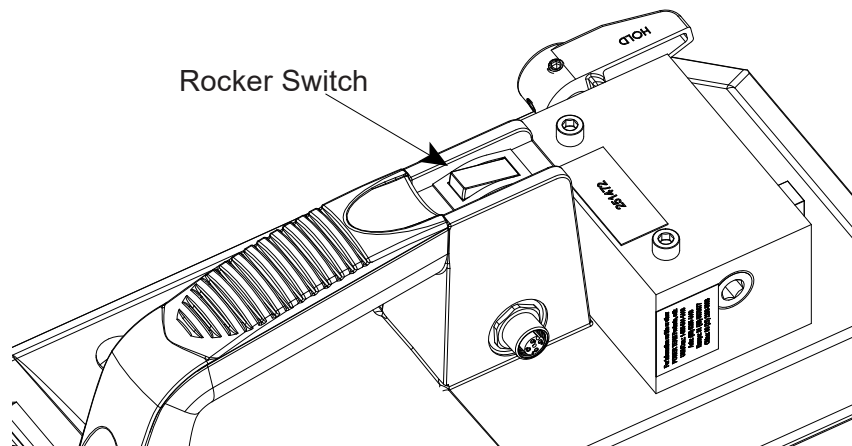


Fig. 5. Pump Operation by Rocker Switch

Operation Continued

3. Lifting or Lowering a Load With a Hydraulic Cylinder

- A. The load must be under operator control at all times and other personnel must be clear of the load.
- B. The use of blocking and cribbing is recommended to help prevent a falling load as shown in figure 6.
- C. The use of a load lowering or metering valve is recommended in addition to the correct directional control valve to help prevent a falling load as shown in figure 7.

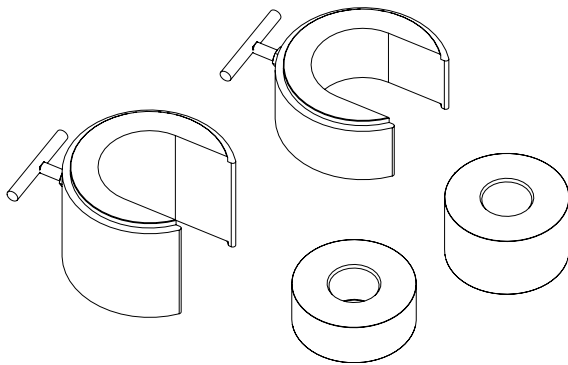


Fig. 6. Cribbing Blocks

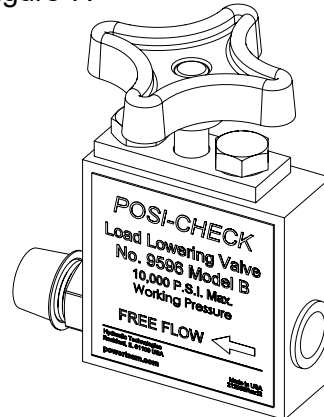


Fig. 7. Load Lowering Valve

4. Adjusting the Pressure Regulating Valve (Only for pumps with pressure regulator 350623.)

The pressure regulating valve can be adjusted to bypass fluid at a given setting while the pump continues to run. (Refer to figure 8).

Note: For easy adjustment of the pressure regulating valve, always adjust the pressure by increasing to the desired pressure setting.

- A. Loosen the locknut on the pressure regulating valve, and back the adjusting screw or knob out a few turns by turning it in a counterclockwise (CCW) direction. This will decrease the setting to a lower than desired pressure.
- B. The pump must be completely connected electrically and hydraulically. Start the pump and build pressure.
- C. Slowly turn the adjusting screw or knob in a clockwise (CW) direction. This gradually increases the pressure setting. When the desired pressure is reached, cycle the pump again to verify correct pressure setting. Once set, lock the adjusting screw in position by tightening the locknut. Shut off the pump.

IMPORTANT: The pressure range is from 1,000 to 10,000 PSI (70 to 700 BAR) depending on the pump model.

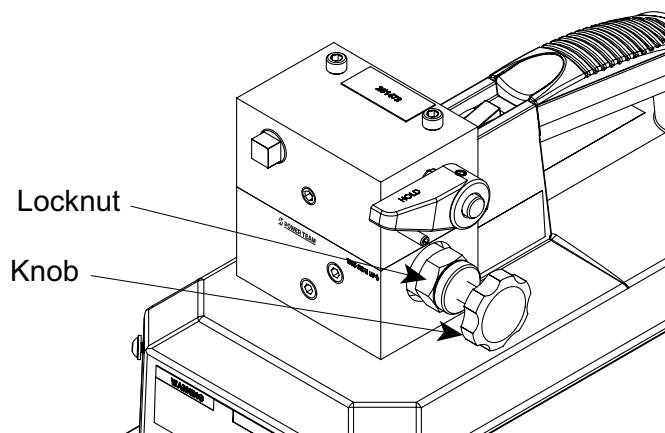


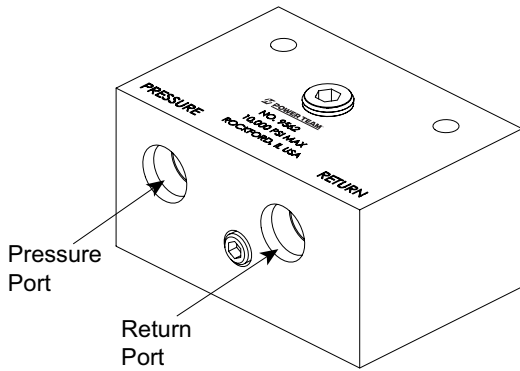
Fig. 8. Pressure Regulating Valve

DIRECTIONAL CONTROL VALVE OPTIONS

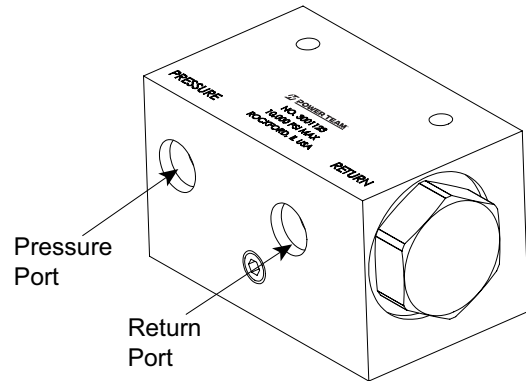
1. 2-Way Manifold

Used with single-acting cylinders or remote mounted valves. (Refer to figure 9).

- A. Activate the pump unit by pressing the start button on the hand pendant to advance the cylinder/ accessory tooling.
- B. When the cylinder or tool has advanced to the desired position, the pump start button can be released and the cylinder/tool will retract.



9562 - 2 Way Manifold



3001123 - 2 Way Manifold Assembly

Example of remote mounted valve:

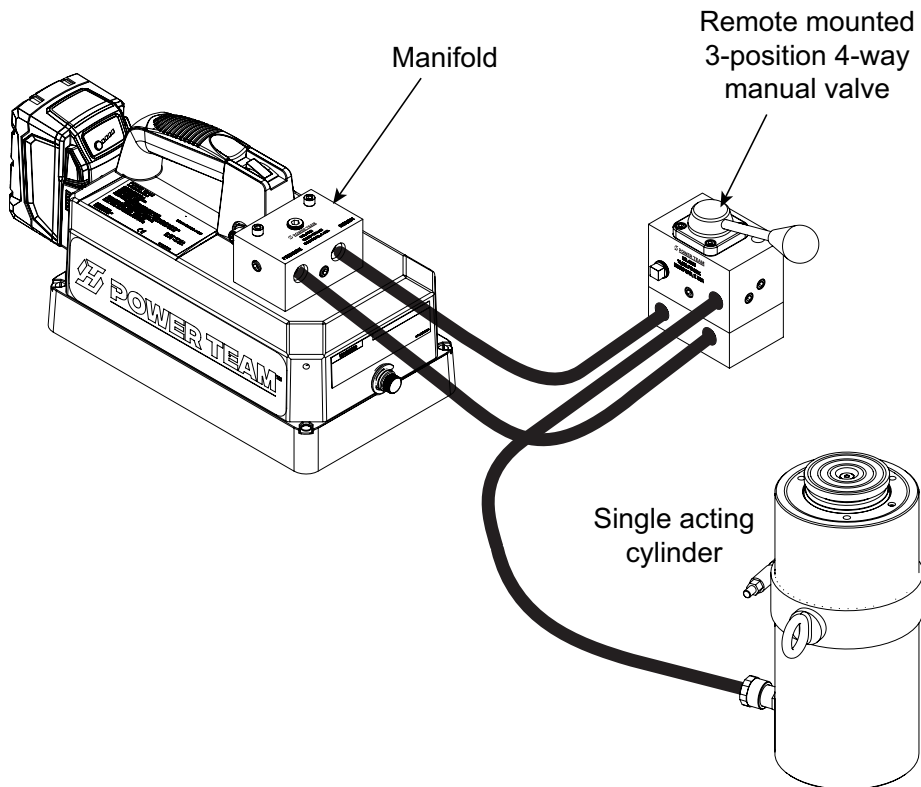


Fig. 9. Two-Way Manifold Valve

CAUTION : To prevent sudden, uncontrolled descent of a load as it is being lowered, use Load Lowering Valve (No. 9596) or Counter Balance Valve (No. 9720) in conjunction with the 4-way manual valve in your application.

Directional Control Valve Options Continued

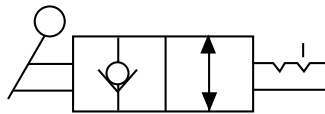
2. 2-Position, 2-Way Manual Valve (9561)

Used with single-acting cylinders only.

Note: Some valves return fluid to the reservoir or bladder when the pump is not running or when the valve control lever is shifted. The correct valve must be used per application, especially when lifting a load.

WARNING : Valve (No. 9561) works the same as a manifold if the pump is operated with the valve in the RETURN position. In this position, the cylinder will advance when the pump is running and retract when the pump is not running.

DANGER : Never use valve (No. 9561) in the RETURN position when lifting a load!



9561

- To HOLD pressure, turn the valve control handle counterclockwise (CCW), (Refer to figure 10).
- Activate the pump unit to advance the cylinder/accessory tooling.
- When the cylinder or tool has advanced to the desired position the pump start button can be released and the cylinder will HOLD pressure.
- To retract the cylinder, turn the valve control handle clockwise (CW) slowly, (Refer to figure 10).

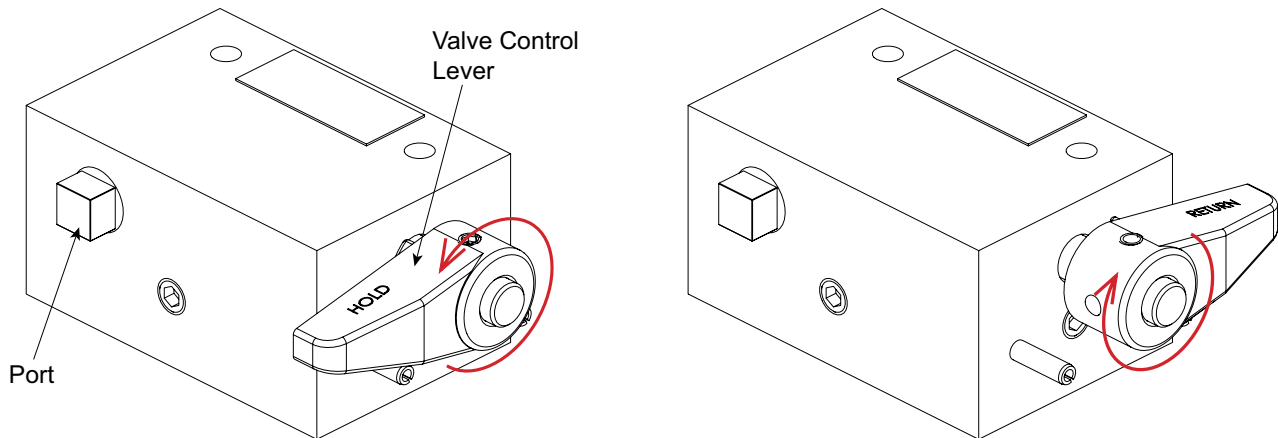


Fig. 10. 2P,2W Manual Valve (CCW and CW)

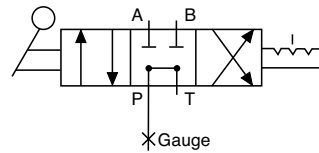
Directional Control Valve Options Continued

3. 3-Position, 4-Way Manual Valve (9563)

Used with single-acting and double-acting cylinders (Refer to figures 12 and 13).

Note: This valve is a low torque design for use with double-acting or single-acting cylinder(s).

- If this valve is to be used as a 3-way with single-acting cylinder(s), one port must remain plugged (use steel plug). (See figure 12).



9563
(non posi-check)

- Position the valve control lever in the HOLD position (Refer to figure 11).
- Activate the pump unit.
- Advance the cylinder by shifting the valve control lever to the ADVANCE (Port A) position.
- When the cylinder has advanced to the desired position, turn the pump unit OFF, or shift the valve to the HOLD position.

Note: Non “posi-check” valves will momentarily lose pressure when shifting to HOLD position.

- Retract the cylinder by shifting the valve control lever to the RETRACT (Port B) position.
- Activate the pump unit if using double-acting cylinders.

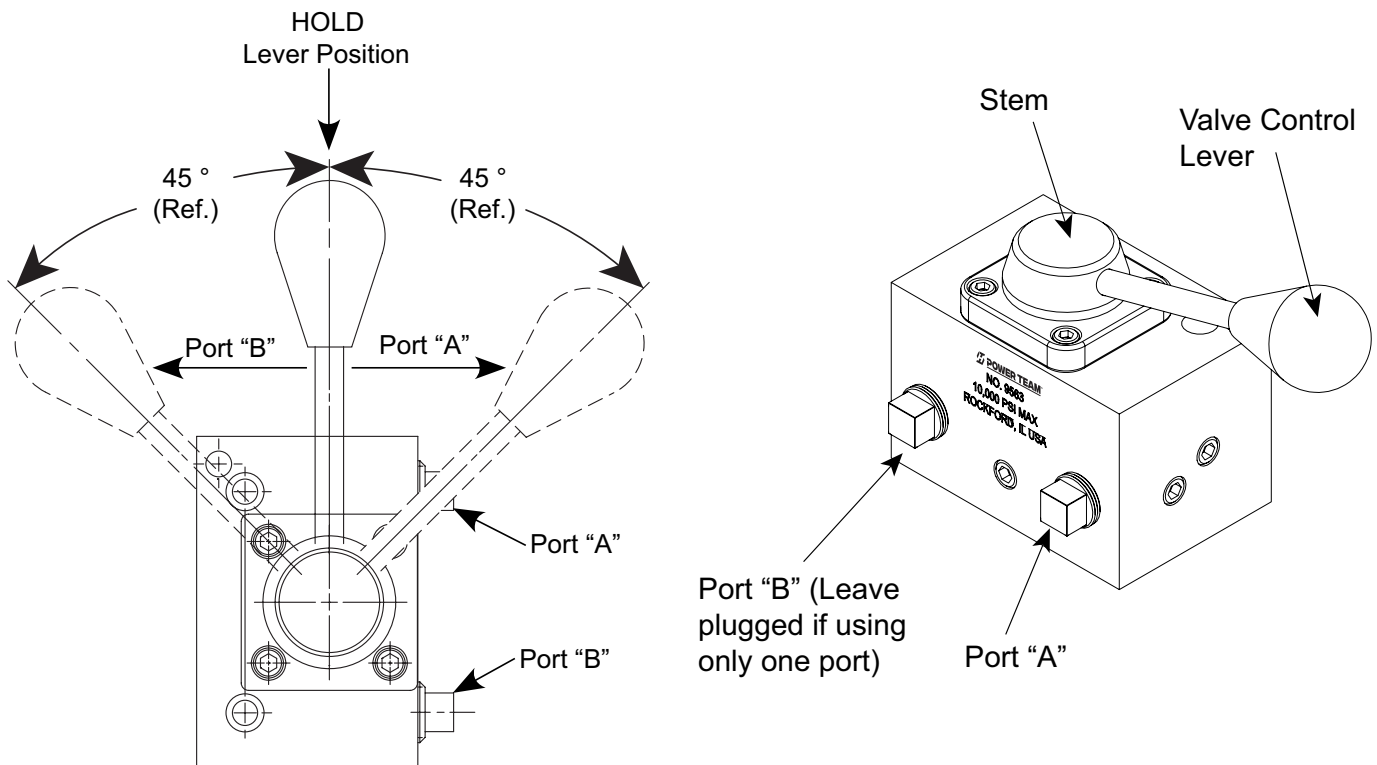


Fig. 11. 3 Position, 4 Way Manual Valve

Directional Control Valve Options Continued

Examples of typical work holding applications

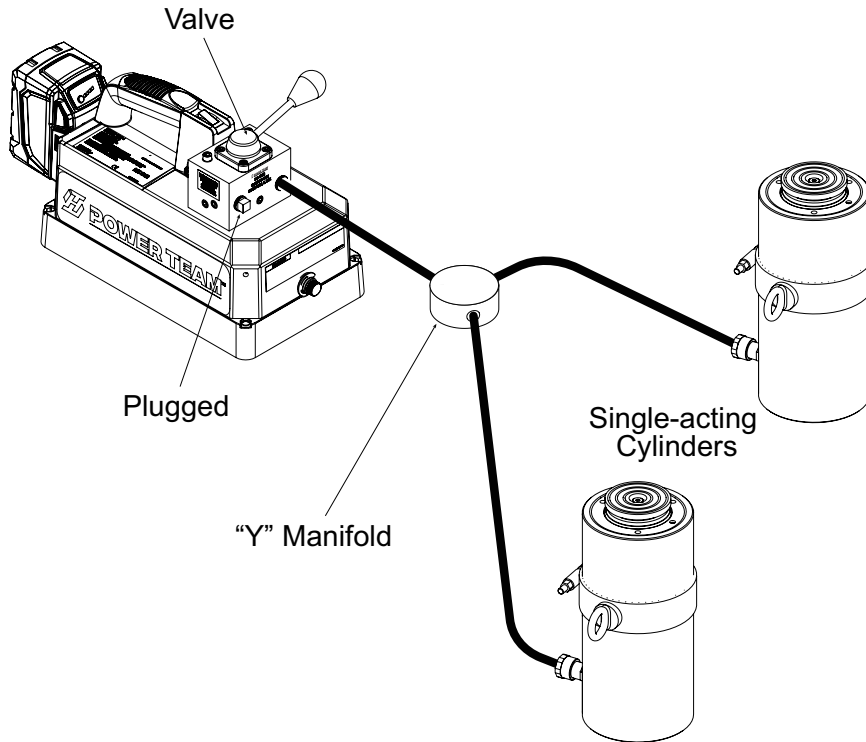


Fig. 12. Single-Acting Cylinder(S) in the Circuit Controlled by a Pump-Mounted Valve

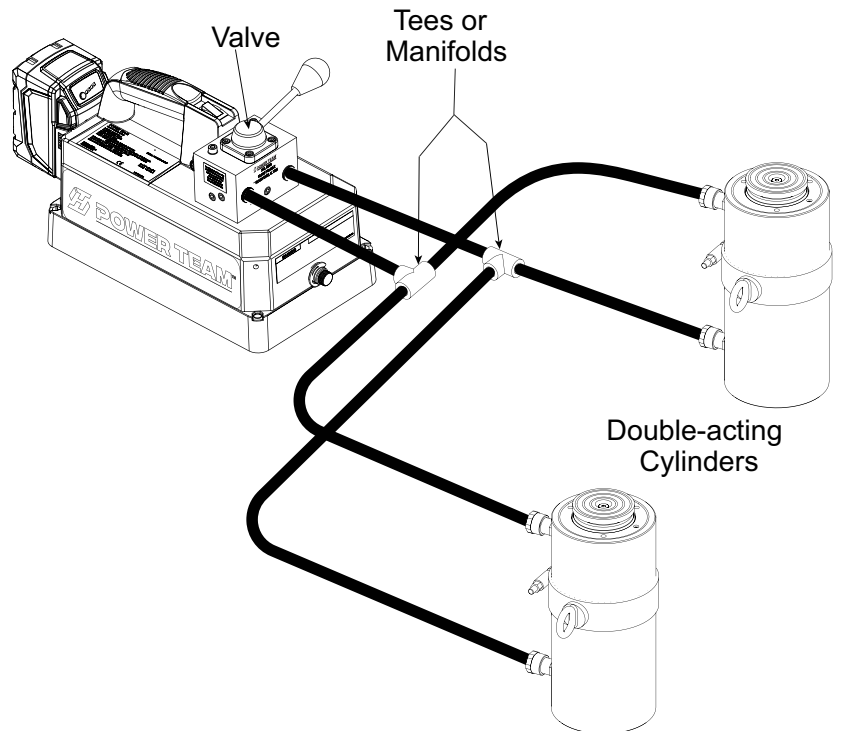


Fig. 13. Double-Acting Cylinder(S) in the Circuit Controlled by a Pump-Mounted Valve

Other valves are available.
Consult your dealer, catalog or valve
operating instructions for details of operation.

GENERAL MAINTENANCE

⚠ WARNING : To prevent personal injury,



- Remove battery pack from the pump before performing maintenance or repair procedures.
- Repairs and maintenance are to be performed in a dust-free area by a qualified technician.
- The frequency of fluid changes will depend upon the general working conditions, severity of use, and overall cleanliness and care given the pump.
- Three hundred hours of use under general shop conditions is considered a standard change interval. Drain, clean, and refill the reservoir only with approved Power Team hydraulic fluid.

1. System Evaluation

The components of your hydraulic system — pump, hoses, battery unit and couplings — all must be:

- Rated for the same maximum operating pressure
- Correctly connected
- Compatible with the hydraulic fluid used
- Battery and Battery charger both should be compatible

A system that does not meet these requirements can fail, possibly resulting in serious injury. If you are in doubt about the components of your hydraulic system, contact Power Team Technical Support.

2. Inspection

Keep a dated and signed inspection record of the equipment. Before each use, the operator or other designated personnel should visually inspect for the following conditions:

- Excessive wear, bending, damage, or insufficient thread engagement
- Leaking hydraulic fluid or battery leakage
- Loose fasteners, pipe plugs or fittings
- Bent or damaged couplers or port threads

3. Periodic cleaning

IMPORTANT: Never use a high pressure washer to clean hydraulic components!

CAUTION: Contamination of the hydraulic fluid could cause the valve to malfunction.

Establish a routine to keep the hydraulic system as free from debris as possible.

- Seal unused couplers with protective covers.
- Keep hose connections free of debris.
- Keep the breather-hole in the filler cap clean and unobstructed.
- Use only Power Team hydraulic fluid. Replace hydraulic fluid as recommended, or sooner if the fluid becomes contaminated. Never exceed 300 hours of use between fluid changes.

4. Hydraulic Fluid Level

- A. Check the fluid level in the bladder after each 10 hours of use. The fluid level should be at the fill line when all cylinders or tools are retracted.
- B. Drain, flush, and refill the bladder with an approved Power Team hydraulic fluid after 300 hours of use. The frequency of fluid changes depends upon general working conditions, severity of use, the overall cleanliness and care given to the pump. Fluid should be changed more frequently when the system is used in outdoors or in a dirty environment.

General Maintenance Continued

5. Draining and Flushing the Bladder

IMPORTANT: Clean the area around the filler hole to prevent contamination of the hydraulic fluid.

- A. Remove the filler plug and drain hydraulic fluid completely.
- B. Fill bladder half full with clean hydraulic fluid. Flush bladder with clean fluid and drain.

IMPORTANT: Never use solvents to clean the bladder! Never disassemble the bladder from the pump!

- C. Fill the bladder completely full with clean approved Power Team hydraulic fluid.

6. Adding Hydraulic Fluid to the Bladder

- A. Disconnect the battery pack from the pump unit.
- B. Make sure that all hydraulic actuators that may still be connected to the pump are in their fully retracted position.
- C. Clean the entire area around the filler cap.
- D. Remove the filler cap, and install a clean funnel with a filter.
- E. Fill the bladder completely full with approved Power Team hydraulic fluid.
- F. Install the filler cap. Verify the breather-hole is open, if applicable.

IMPORTANT: Tighten filler cap ONLY 1/2 - 1 turn (MAX) after O-ring contacts sealing surfaces. Over-tightening can cause pump damage on bladder equipped pumps.

7. Hose Connections

CAUTION : To prevent personal injury from leaking hydraulic fluid, seal all hydraulic connections with a high-quality, non-hardening, pipe thread sealant.



IMPORTANT : Pipe thread sealant tape can be used to seal hydraulic connections if only one layer of tape is used. Apply tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Loose pieces of tape could travel through the system and obstruct the flow of fluid or cause interference of precision-fit parts.

8. Storage

Store the unit in a dry, well-protected area where it will not be exposed to corrosive vapors, debris, or other harmful elements. If a unit has been stored for an extended period of time, it must be thoroughly inspected before it is used.

TROUBLESHOOTING GUIDE

⚠ WARNING

- To help prevent personal injury, any repair work or troubleshooting must be done by qualified personnel familiar with this equipment.
- Remove battery pack before performing maintenance or repair procedures.
- Use the proper gauges and equipment when troubleshooting.
- It is best to check for system leaks by using a hand pump and applying pressure to the suspect area. Watch for leaking fluid and follow it back to its source. Never use your hand or other body parts to check for a possible leak.
- Use a nonflammable contact cleaner to clean the electrical contacts on the battery and tool.

PROBLEM	CAUSE	SOLUTION
<p>Electric motor does not run</p> <div style="border: 1px solid black; background-color: #FFA500; padding: 2px; margin: 5px 0;">⚠ WARNING</div> <p>To help prevent personal injury, disconnect power supply before removing cover. Any electrical work should be performed by a qualified electrician.</p>	<ol style="list-style-type: none"> 1. No voltage supply. 2. Pump switch is off. 3. Overheated motor has caused over current protection to disengage. 4. Battery failure. 5. Pump or battery contacts damaged. 6. Battery not inserted properly. 7. Broken lead wire or defective internal wiring. 8. Hand pendant controls damaged. 	<ol style="list-style-type: none"> 1. Check battery capacity. (Ensure battery is charged) 2. Turn on the pump switch 3. Wait for motor to cool before restarting. 4. Charge the battery. Replace battery if it is damaged and cannot be charged. 5. Reform contacts 6. Remove and reinsert battery 7. Contact a power team authorized hydraulic service center. 8. Test the rocker switch on the pump unit. If the pump functions correctly, repair or replace the pendant as necessary.
<p>Electric motor will not shut off</p>	<ol style="list-style-type: none"> 1. Defective motor controls. 	<ol style="list-style-type: none"> 1. Disconnect from power supply and contact a power team authorized hydraulic service center.
<p>Electric motor stalls, surges, overheats or will not start under a load</p>	<ol style="list-style-type: none"> 1. Low voltage 	<ol style="list-style-type: none"> 1. Check the voltage rating and battery capacity.
<p>Electric overload protector keeps tripping</p>	<ol style="list-style-type: none"> 1. Excessive load. 2. Damaged wires or components. 	<ol style="list-style-type: none"> 1. Allow to cool then restart. 2. Return to service center.

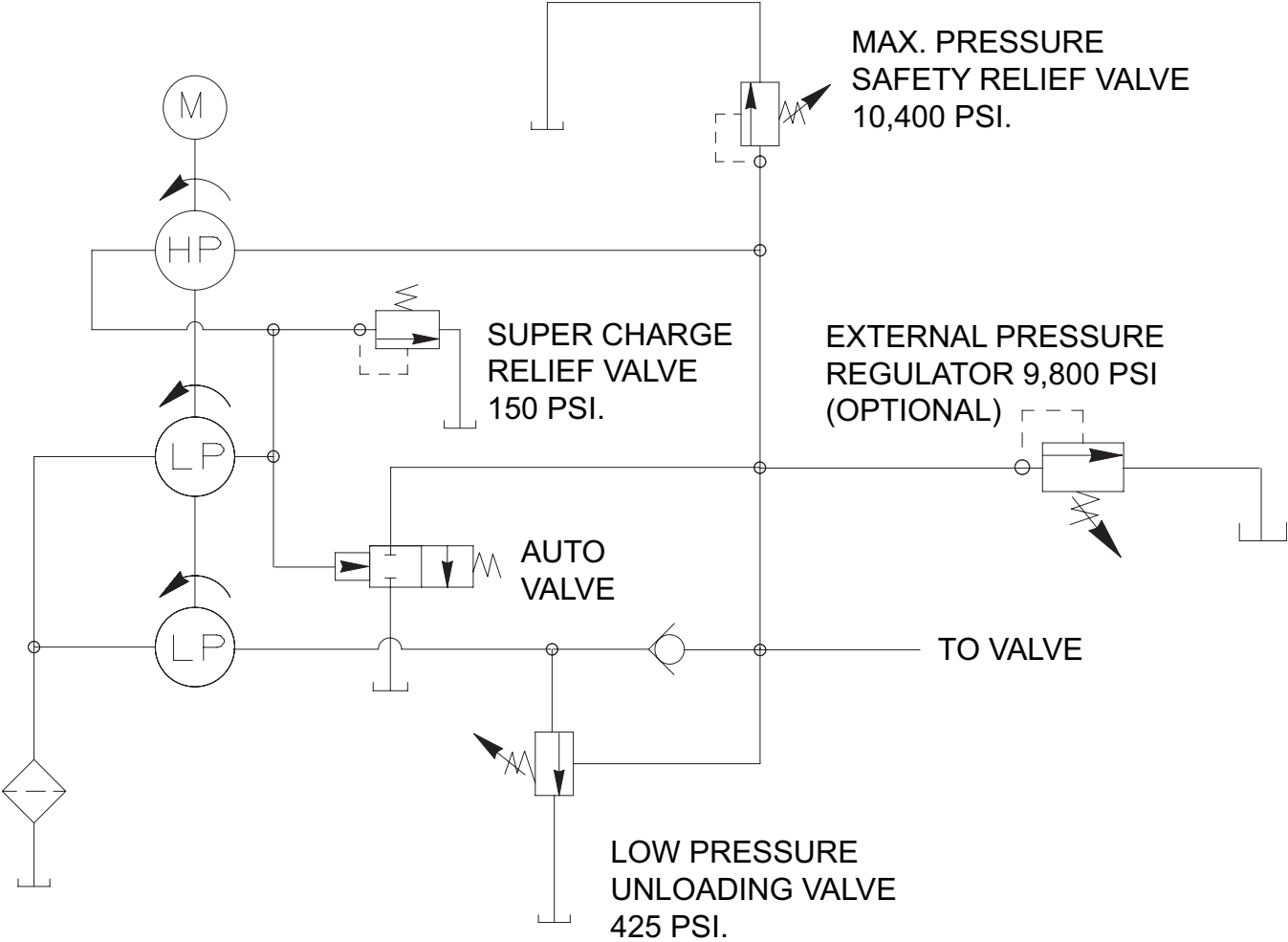
Trouble Shooting Guide Continued

PROBLEM	CAUSE	SOLUTION
Pump is not delivering fluid or delivers only enough fluid to advance cylinder(s) partially or erratically.	1. Fluid level too low.	1. Check the fluid level and fill it to the desired level. Refer to the section titled "Filling the Pump Bladder."
	2. Quick disconnect couplings are not completely coupled.	2. Check quick-disconnect couplings to cylinders to ensure that they are completely coupled. Occasionally couplers have to be replaced because the ball check does not stay open due to wear.
	3. Air in system.	3. Refer to the section titled "Bleeding Air from the System".
	4. Cold fluid or fluid too viscous.	4. Hydraulic fluid is of a higher viscosity than necessary. Change to a lighter fluid.
	5. Bladder capacity is too small for the size of cylinder(s) used.	5. Use smaller cylinder(s).
Pump builds pressure but cannot maintain pressure.	1. External leaks.	1. Seal leaking pipe fittings with pipe sealant. Replace leaking pipes or hoses.
	2. Internal or external leakage on hydraulic cylinder.	2. Remove the cylinder from pump. If the pump builds and maintains full pressure, the cylinder is defective. Contact a PowerTeam authorized hydraulic service center..
	3. Leaking control valve or check valve	3. Contact a PowerTeam authorized hydraulic service center.
Cylinder(s) will not retract or extend.	1. Quick disconnect couplings are not completely coupled. <div style="background-color: red; color: white; padding: 2px; display: inline-block;">⚠ DANGER</div> A Double acting cylinder or ram must have <i>both</i> hoses and all couplers securely connected to both ports. If one of the two ports is restricted or becomes disconnected, pressure will build and the cylinder, hose or coupler can burst, possibly causing serious injury or death.	1. Check quick disconnect coupling to cylinders to ensure that they are completely coupled. Occasionally couplers have to be replaced because the ball check does not stay open due to wear.
	2. Broken return spring in spring return cylinder or seals blown in double-acting cylinder.	2. Contact a PowerTeam authorized hydraulic service center.

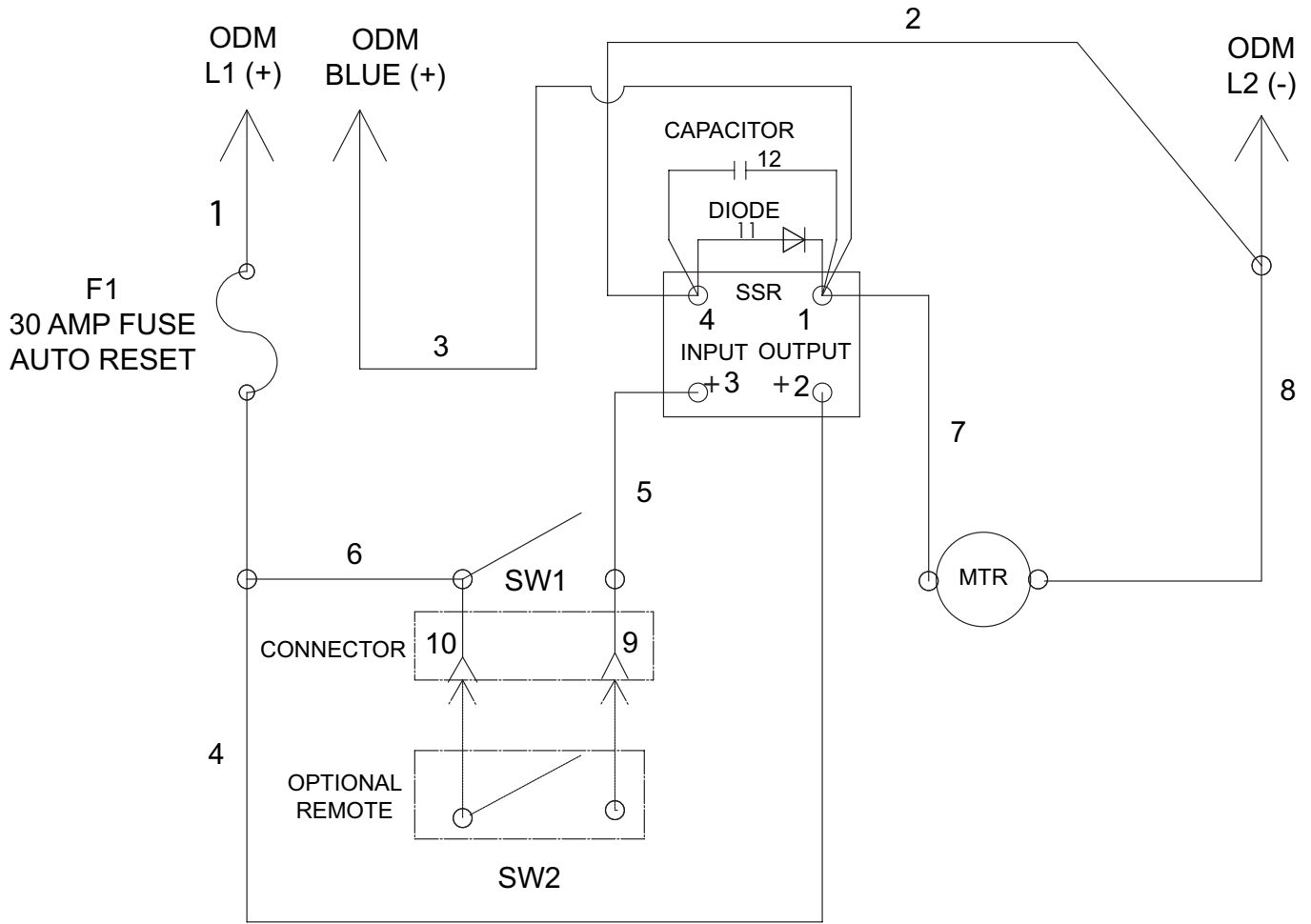
Trouble Shooting Guide Continued

PROBLEM	CAUSE	SOLUTION
Pump will not build full pressure.	1. Faulty pressure gauge.	1. Calibrate gauge.
	2. Check for external leakage.	2. Seal faulty fittings with sealant. Replace leaking pipes or hoses.
	3. Improperly adjusted external pressure regulator setting.	3. Refer to section "Adjusting the Pressure Regulator Valve" under "Operation" section.
	4. Internal or external leakage on hydraulic cylinder.	4. Remove the cylinder from the pump. If the pump builds full pressure, the cylinder is defective. Contact a Power Team Authorized Hydraulic Service Center.
	5. Inadequate power supply.	5. Refer to "Pump Operation" section.
	6. Leaking control valve or defective pump.	6. Contact a Power Team Authorized Hydraulic Service Center.
Pump delivers excess oil pressure.	1. Faulty pressure gauge.	1. Calibrate gauge.
	2. Relief valve not properly set.	2. Contact a PowerTeam authorized hydraulic service center.
Remote hand pendant not working properly	1. Defective electrical supply.	1. Check electrical connections properly.
	2. Defective circuit board.	2. Contact a PowerTeam authorized hydraulic service center.
	3. Remote control connection wire cable is disconnected.	3. Check and connect wire cable connections properly.

HYDRAULIC SCHEMATIC

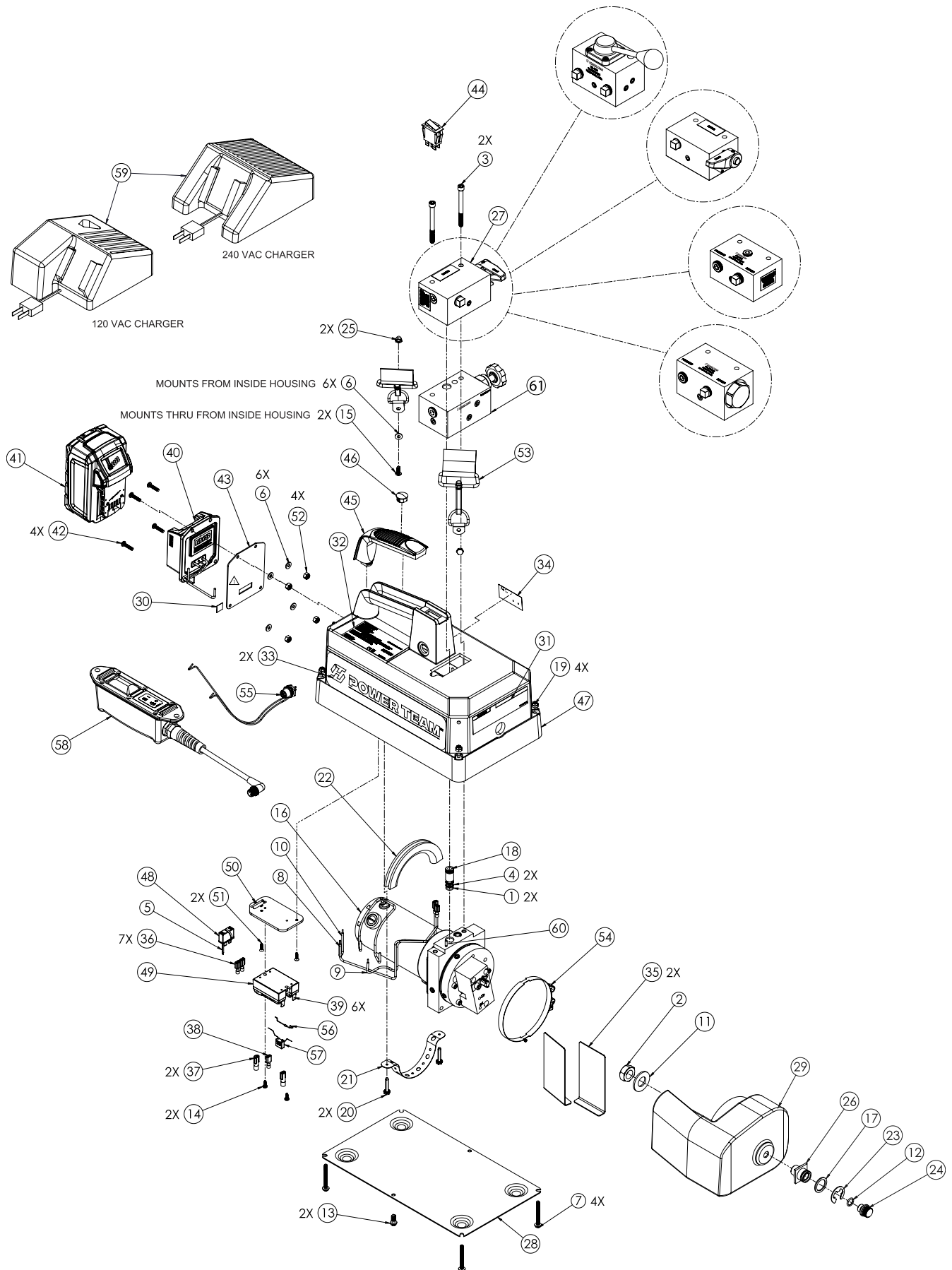


ELECTRICAL SCHEMATIC



PARTS LIST

Pumps with bladder size 1.1L (0.29 Gal) MODEL "B"



Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
1	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70 (Included with valve 420558 and 350623)	2
2	HDT10394	NUT, JAM, 5/8-18 UNF	1
3	HDT10855	SCREW, SCKT HD CAP-1/4-20 x 2.75 (Torque to 160/180 in. Lbs.)	2
	251077	SCREW, SHC 1/4-20 X 4.75 (Used on PB102R and PB104R)	2
	251078	SCREW, SHC 1/4-20 X 3.25 (Used on PB102-CP)	2
4	HDT11863	WASHER, BACKUP 0.500 x0.375 (-012) (Included with valve 420558 and 350623)	2
5	HDT12313	TIE, CABLE - 3-7/8" LG.	1
6	HDT12355	WASHER, PLAIN 0.19 x 0.44 x 0.051 STEL	6
7	HDT12515	SCREW, RND 10-24 X 1.75, (Model "A" only)	4
	2010740	SCREW, #10-24 UNC x 1.75 HEX WH SLOTTED (Model "B" only)	4
8	HDT12747	WIRE, 14GA XXIN RED	1
9	HDT12747	WIRE, 14GA XXIN RED	1
10	HDT12747	WIRE, 14GA XXIN RED	1
11	HDT13324	WASHER, PLAIN 0.66 x 1.31 x 0.10 STEL	1
12	HDT13755	ORING, -905 0.414X0.072X0.558IN, NBR 90	1
13	HDT14456	SCREW, HEX WSH #10-24 X 0.50 TAPPING	2
14	HDT15468	SCREW, #6-32UNC 0.375 IN PNH-ST ZN	2
15	HDT16811	SCREW, #10-32 X 0.50 BHCS	2
16	65187-18	PUMP SUBASSY, ELECTRIC 18VDC	1
17	201373	WASHER, RETAINER 1.000 x0.750	1
18	202505	BUSHING (Included with valve 420558 and 350623)	1
19	207405	LOCKNUT, HEX: #10-24 FLEXIBLE LOCKING	4
20	211060	SCREW, HEX. WASHER HD.TAPPING - #9-15 x 1 PLASTITE	2
21	251039	STRAP, MOTOR MOUNTING	1
22	251041	CHANNEL, RUBBER	1
23	251043	RING, RETAIN EXT 0.62 X .050	1
24	251280	PLUG, O RING BOSS: 1/2-20 UNF	1
25	252871	NUT, HEX ACORN CAP #10-32 (Torque to 30/40 in. Lbs.)	2
26	350583	ADAPTER, FILLER	1
27	350622	VALVE, MANUAL, 2 POSITION, 2 -WAY (Order No.9561, Refer form# 101327) (Used on PB102, PB102P, PB102R)	1
	420558	VALVE, MANUAL (3-POSITION, 4-WAY) (Order No.9563, Refer form# 101326) (Used on PB104 and PB104-0-ARC)	1
	350720	MANIFOLD ASSEMBLY (Order No.9562, Refer form# 101344) (Used on PB102A)	1
	3001123	MANIFOLD ASSEMBLY (Contact service center for more information) (Used on PB102-CP)	1

Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
28	420607	PLATE, BASE	1
29	420643	BLADDER	1
30	1000413	LABEL, WEEE (WHEELIE BIN)	1
31	1001026	DECAL, PLAS SAFE INST US RECT 4.90IN	1
32	1001029	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102P)	1
	1001030	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102R)	1
	1001031	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102A)	1
	1001054	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102)	1
	1001055	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB104)	1
	1001143	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102-CP)	1
	1001203	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102-X)	1
	1001204	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102P-X)	1
	1001205	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102R-X)	1
	1001206	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB102A-X)	1
	1001207	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB104-X)	1
	1001326	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB104-0-ARC)	1
	1001335	DECAL, PLAS CERT CE US RECT 4.25IN (Used on PB104R)	1
33	1001053	DECAL, PLAS LOGO PTEM US RECT 10.7IN	2
34	1001058	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102P)	1
	1001036	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102R)	1
	1001037	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102A)	1
	1001057	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102)	1
	1001038	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB104)	1
	1001144	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102-CP)	1
	1001208	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102-X)	1
	1001209	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102P-X)	1
	1001210	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102R-X)	1
	1001211	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB102A-X)	1
	1001212	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB104-X)	1
	1001038	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB104-0-ARC)	1
	1001336	DECAL, PLAS CERT CE US RECT 1.73IN (Used on PB104R)	1
35	2001397	SPACER, BLADDER	2
36	2001467	TERMINAL, QUICK DISCON FEM 16-14 AWG	7
37	2001486	TERMINAL, QUICK DISCON FEM 12-10 AWG	2
38	2007914	TERMINAL, QUICK DISCONNECT - FEM 18-22AWG	1
39	2008866	TERMINAL, ADAPTOR, SLOT TO .25 SPADE	6
40	2009627	M18 ODM ADAPTOR - HD V1030	1
41	2009628	BATTERY, 9.0 Ah, Li-ION TYPE (Model "A" only)	1
		BATTERY, 8.0 Ah, Li-ION TYPE (Model "B" only)	1
42	2009629	SCREW, #8-32UNC 0.75 IN PNH 2 ST BOX (Torque to 25/30 In. Lbs.)	4

Parts List Continued

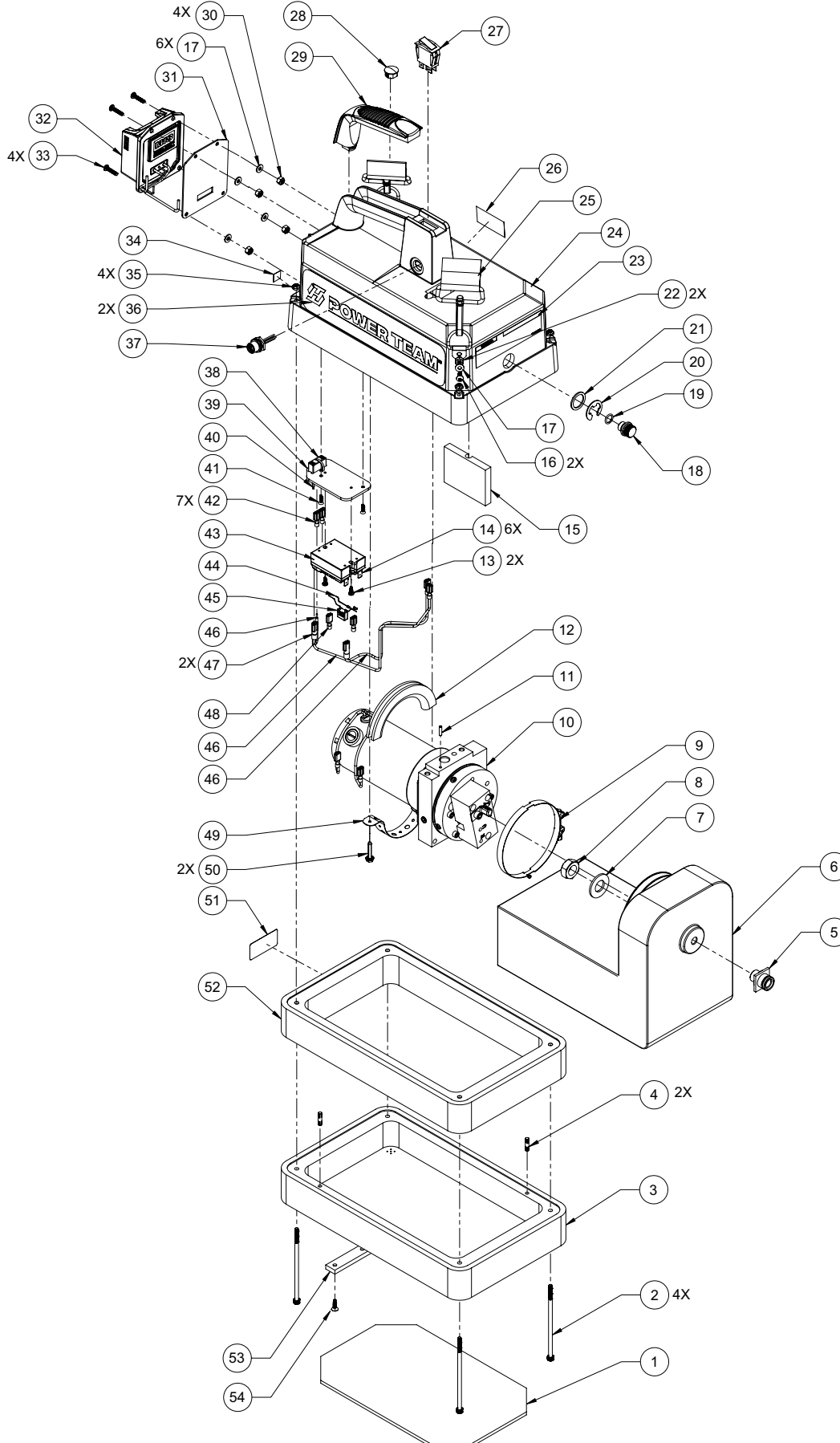
ITEM	PART NO.	DESCRIPTION	QTY.
43	2009630	GASKET, 3.80INx2.60x0.06xPU 70	1
44	2009631	SWITCH, ROCKER OFF - (ON) MOMENTARY	1
45	2009632	HANDLE - RUBBER, RETAINER PLUG, THIN BODY	1
46	2009633	PLUG, CAP 0.625IN D-FLATS NYLON6-6	1
47	2009634	HOUSING, HYD. PUMP RND MTR, MACH	1
48	2009635	FUSE, AUTO RESET 30AMP DUAL 1/4" FASTON	1
49	2009636	RELAY, SSR OPR 1-60VDC, CTRL4-32VDC, 40A	1
50	2009637	PLATE, RECT ADPTX0.1INX2.0X4.0 AL	1
51	2009638	SCREW, #6-32UNC 0.5 IN CSK 4 ST ZN	2
52	2009640	NUT, 8-32UNFx0.75IN LCK ST ZN	4
53	2009649	ASSY, HARNESS, STRAP, CLIP, MOUNT	1
54	2009650	CLAMP, HOSE 3.70-4.13 SCREW DRIVE (Model "A" only)	1
	350305	CLAMP, HOSE 3-7/8 - 4 7/16 WORM DRIVE (Model "B" only)	1
55	2009652	CONNECTOR, 4 PIN 18GA FEM NIBR	1
56	2009656	DIODE, SUPPRESSION 600V, 1N4005	1
57	2010059	CAPACITOR, 0.068 MICRO FARAD CLASS X2	1
58	3000989	REMOTE PUMP HAND SWITCH ASSEMBLY (Included with PB102P)	1
59	2009646	CHARGER, LI-ION BATTERY 120VAC (Used with PB10XX-1 Models)	1
	2009647	CHARGER, LI-ION BATTERY 240VAC (Used with PB10XX-2 Models)	1
	2010141	CHARGER, LI-ION BATTERY 240VAC (Used with PB10XX-3 Models)	1
60	F6-1020-37	ROLL PIN .125 DIA X .375 LG (Used on PB104R and PB104-0-ARC)	1
61	350623	BODY, VALVE (PRESSURE REGULATOR) (Order No.9560, Refer form# 101328) (Used on PB102R, PB104-0-ARC and PB104R)	1

Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
1	3001514	ASSEMBLY, BASE - PB10XL	1
2	HDT11863	WASHER, BACKUP 0.500 x0.375 (-012) (Included with all pump models, except pumps those equipped with the 4-Way, 3-Position valve 420558.)	2
3	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70 (Included with all pump models, except pumps those equipped with the 4-Way, 3-Position valve 420558.)	2
4	251077	SCREW, SHC 1/4-20 X 4.75 (Torque to 160/180 In. Lbs.) (Used on PB102XLR)	2
	HDT10855	SCREW, SHC 1/4-20 X 2.75 (Torque to 160/180 In. Lbs.) (Used on PB102XL, PB102XLP, PB102XLA and PB104XL)	2
	251078	SCREW, SHC 1/4-20 X 3.25 (Torque to 160/180 In. Lbs.) (Used on PB102XL-CP)	2
5	350622	VALVE, MANUAL, 2 POSITION, 2 WAY (Order No.9561, Refer form# 101327) (Used on PB102XL, PB102XLP and PB102XLR)	1
	350720	MANIFOLD (Order No.9562, Refer form# 101344) (Used on PB102XLA)	1
	420558	VALVE, MANUAL, 3 POSITION 4 WAY (Order No.9563, Refer form# 101326) (Use on PB104XL)	1
	3001123	VALVE, MANIFOLD ASSEMBLY (Contact service center for more information) (Used on PB102XL-CP)	1
6	202505	BUSHING (Included with all pump models, except pumps those equipped with the 4-Way, 3-Position valve 420558.)	1
7	350623	REGULATOR, PRESSURE (Order No.9560, Refer form# 101328) (Used on PB102XLR)	1
8	2009628	BATTERY, 8.0 Ah, LI-ION TYPE	1
9	2009646	CHARGER, LI-ION BATTERY 120VAC (For pump models ending with "-1")	1
	2009647	CHARGER, LI-ION BATTERY 240VAC (For pump models ending with "-2")	1
	2010141	CHARGER PB10, LI-ION BATTERY 240VAC UK (For pump models ending with "-3")	1
10	1001562	DECAL, PLAS CERT CE US RECT 4.25IN	1
	1001568	DECAL, PLAS CERT US RECT 4.25IN (For pump models ending with "-1")	1
11	3000989	REMOTE PUMP HAND SWITCH ASSEMBLY (11') (Used on PB102XLP)	1

Parts List Continued

Pump Base Assembly (3001514) for "XL" variants



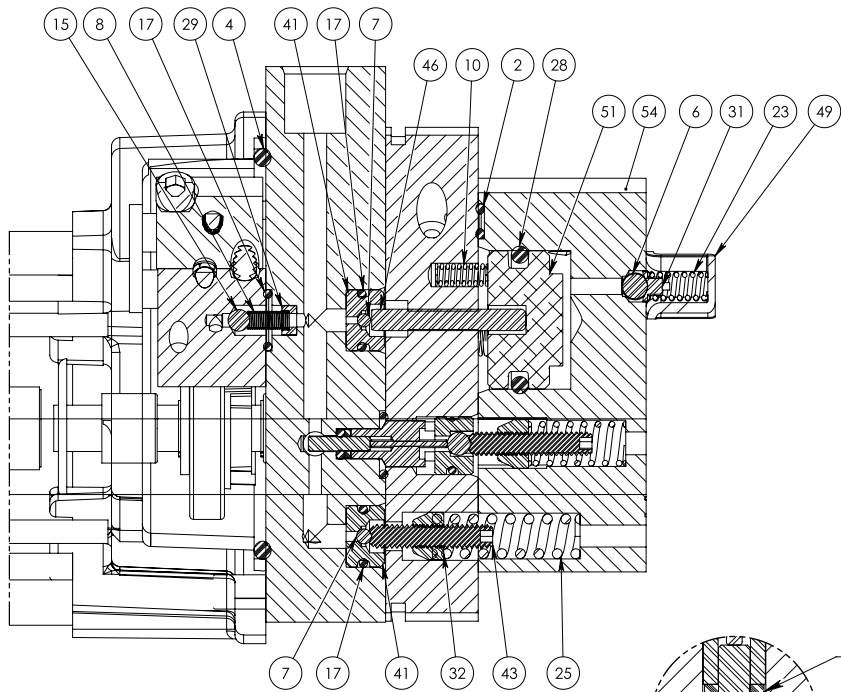
Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
1	420427	PAD, RUBBER	1
2	2011271	SCREW, SHC 10-24 X 4.50	4
3	2011180	TRAY, BOTTOM - PB10	1
4	2011273	PIN, DOWEL BARBED TYPE 0.19 X .75	2
5	350583	ADAPTER, FILLER	1
6	2011236	BLADDER, 1.25 GALLON	1
7	HDT13324	WASHER, PLAIN 0.66 x 1.31 x 0.10 STEL	1
8	HDT10394	NUT, JAM, 5/8-18 UNF	1
9	350305	CLAMP, HOSE 3 7/8-4 7/16 WORM DRIVE	1
10	65187-18	PUMP SUBASSY, ELECTRONIC 18VDC	1
11	252067	PIN, SPRING .13 X .56	1
12	251041	CHANNEL, RUBBER	1
13	HDT15468	SCREW, #6-32UNC 0.375 IN PNH ST ZN	2
14	2008866	TERMINAL, ADAPTOR, SLOT OT .25 SPADE	6
15	2010907	FOAM, OPEN CELL - 10 PPI	1
16	HDT16811	SCREW, #10-32 X 0.50 BHCS	2
17	HDT12355	WASHER, PLAIN 0.19 x 0.44 x 0.051 STEL	6
18	251280	PLUG, O RING BOSS: 1/2-20 UNF	1
19	HDT13755	ORING, -905 0.414X0.072X0.558IN, NBR 90	1
20	251043	RING, RETAIN EXT 0.62 X .050	1
21	201373	WASHER, RETAINER 1.000 x0.750	1
22	2011187	LOCK NUT, HEX ACORN CAP #10-32	2
23	1001026	DECAL, PLAS SAFE INST US RECT 4.90IN	1
24	2009634	HOUSING, HYD. PUMP RND MTR, MACH	1
25	2009649	ASSY, HARNESS, STRAP, CLIP, MOUNT	1
26	1001563	DECAL, PLAS CERT CE US RECT 1.73IN	1
27	2009631	SWITCH, ROCKER OFF - (ON) MOMENTARY	1
28	2009633	PLUG,CAP 0.625IN D-FLATS NYLON6-6	1
29	2009632	HANDLE -RUBBER, RETAINER PLUG, THIN BODY	1
30	2009640	NUT, 8-32UNFx0.75IN LCK ST ZN	4
31	2009630	GASKET, 3.80INx2.60x0.06xPU 70	1
32	2009627	M18 ODM Adaptor - HD v1030	1
33	2009629	SCREW, #8-32UNC 0.75 IN PNH 2 ST BOX (Torque to 25/30 In. Lbs.)	4
34	1000413	LABEL, WEEE (WHEELIE BIN)	1
35	207405	LOCKNUT, HEX. (FLEXIBLE LOCKING)	4
36	1001053	DECAL, PLAS LOGO PTEM US RECT 10.7IN	2

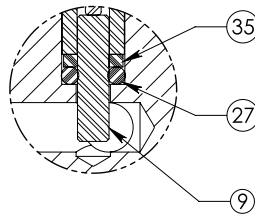
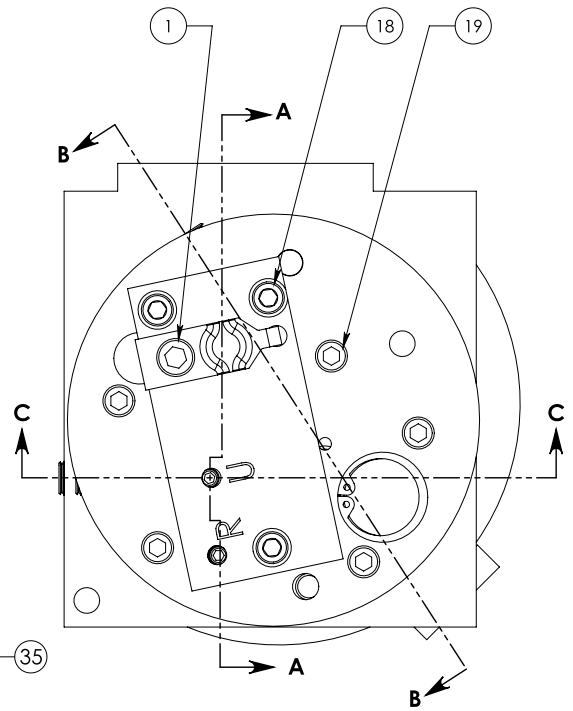
Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
37	2009652	CONNECTOR, 4 PIN 18GA FEM NIBR	1
38	2009635	FUSE, AUTO RESET 30A DUAL 1/4" FASTON	1
39	2009637	PLATE, RECT ADPTX0.1INX2.0X4.0 AL	1
40	HDT12313	TIE, CABLE - 3-7/8" LONG	1
41	2009638	SCREW, #6-32UNC 0.5 IN CSK 4 ST ZN	2
42	2001467	TERMINAL, QUICK DISCON FEM 16-14 AWG	7
43	2009636	RELAY, SSR OPR1-60VDC, CTRL4-32VDC, 40A	1
44	2009656	DIODE, SUPPRESSION 600V, 1N4005	1
45	2010059	CAPACITOR, 0.068 MICRO FARAD CLASS X2	1
46	HDT12747	WIRE, 14AWG - RED	1
47	2001486	TERMINAL, QUICK DISCON FEM 12-10 AWG	2
48	2007914	TERMINAL, QUICK DISCON - FEM 18-22 AWG	1
49	251039	STRAP, MOTOR MOUNTING	1
50	211060	SCREW, SELF TAPPING #9-15 X 1.00	2
51	1001535	DECAL, WARNING BATTERY USAGE	1
52	2011243	TRAY, SPACER - PB10	1
53	2011386	SPACER, CONDUCTIVE - PB1XXX	1
54	2011387	SCREW, FLAT #6-20 PHILLIPS ZP SELF DRILL	2

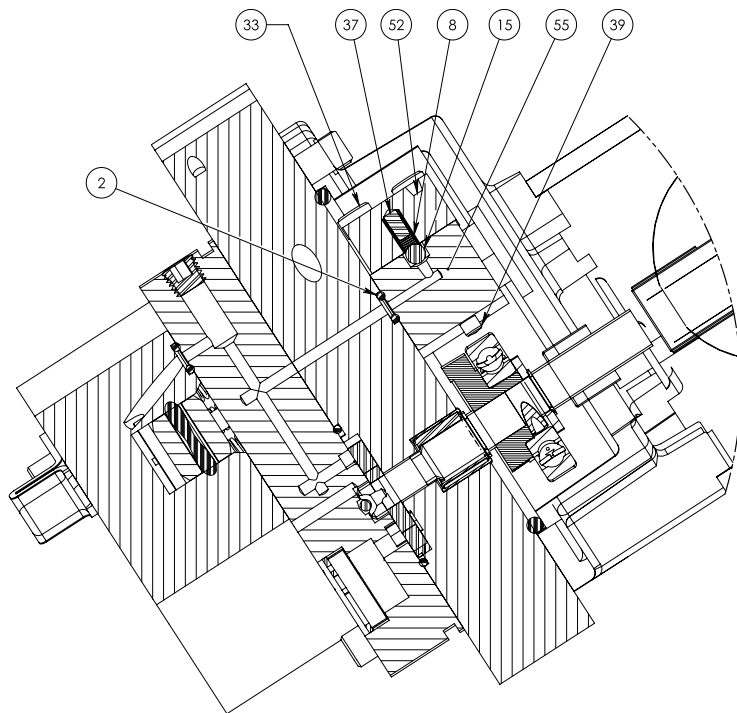
Electric Pump Sub-Assembly (65187-18)



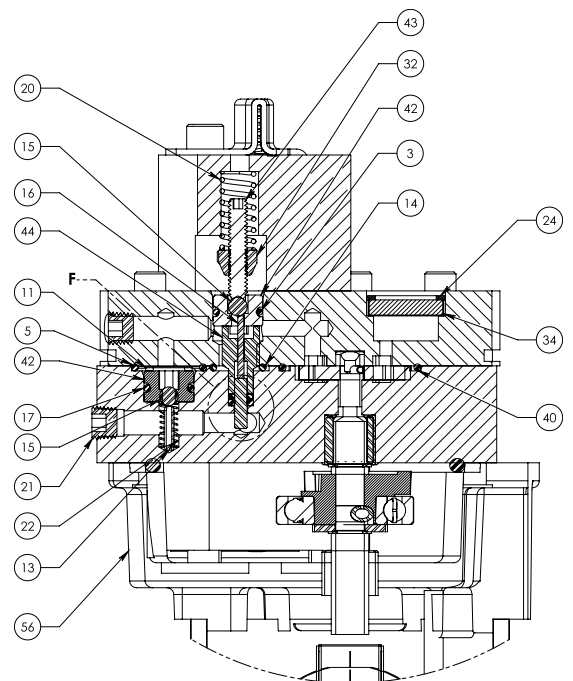
SECTION A-A



DETAIL F

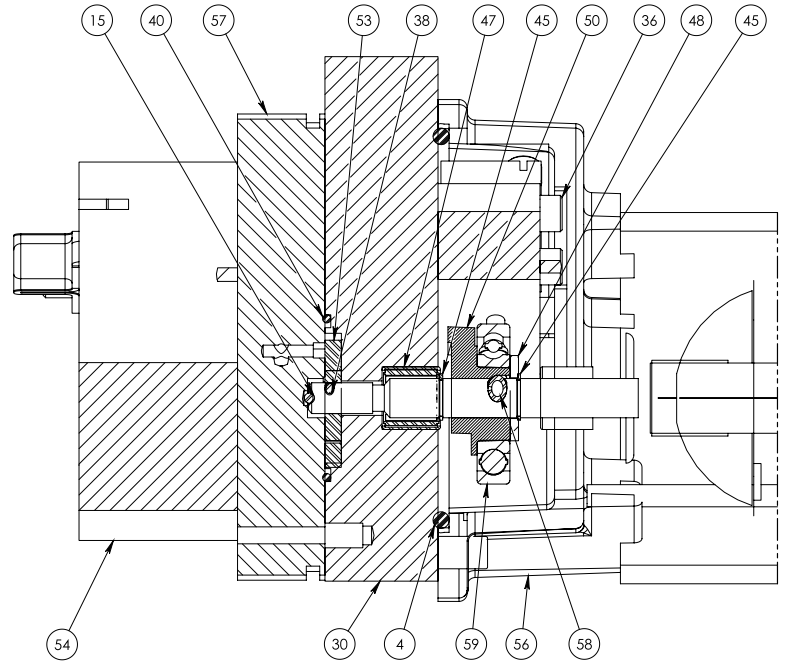
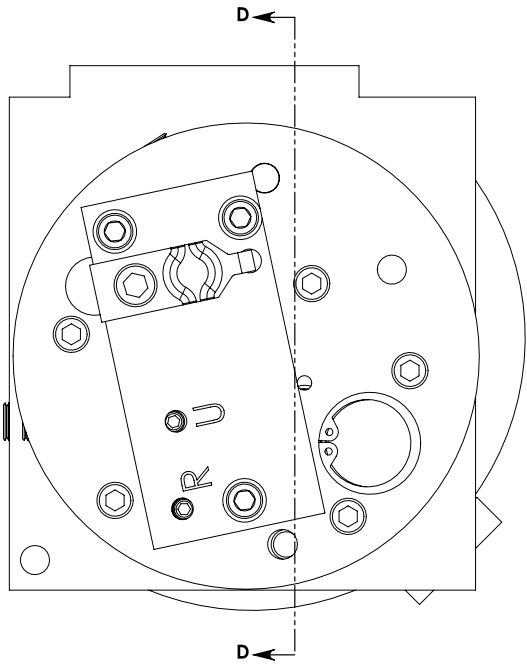


SECTION B-B

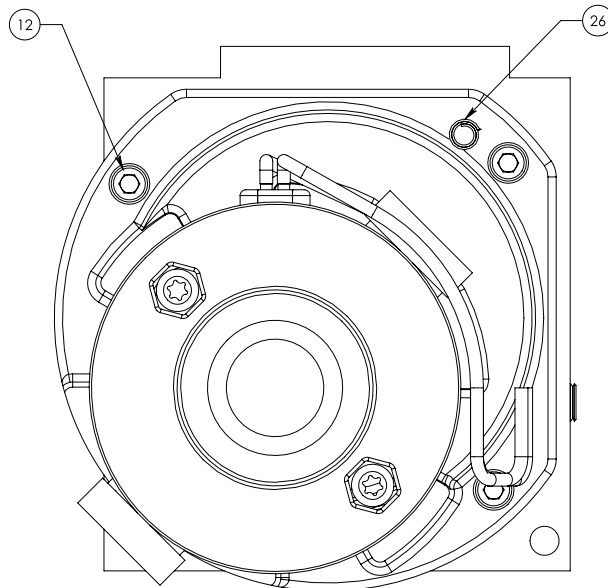


SECTION C-C

Parts List Continued



SECTION D-D



MOTOR END VIEW

Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
1	HDT10002	SCREW, 1/4-20UNC X 0.375IN SHC G8 ST BOX (Torque to 80/100 in. Lbs.)	1
2	HDT10265	ORING (-008) 0.176 x 0.07 x 0.316IN NBR70	2
3	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70	1
4	HDT10297	O-RING (-236) 3.234ID X 0.139 NITRILE 70	1
5	HDT10302	O-RING (-016) 0.614ID X 0.070 NITRILE 70	1
6	HDT10374	BALL, 7/32" DIA STEEL	1
7	HDT10418	BALL, 1/8" DIA STEEL	2
8	HDT10445	SPRING COM OD.166IDX.XXXR.580L.751MW	2
9	HDT10796	PIN, DOWEL .13 X .50	1
10	HDT11024	SPRING COM OD.248IDX.XXXR16.5L.655MW	3
11	11031	WASHER, PLAIN 0.31 x 0.47 x 0.03 COPR	1
12	HDT11434	SCREW, SOCKET HD CAP - #10-24 X 0.50 (Torque to 60/80 In.lbs.)	3
13	HDT11512	PIN, SPRING .094 X .437	1
14	HDT12098	O-RING (-013) 0.426ID x 0.070 NITRILE 70	1
15	HDT12223	BALL, 3/16" DIA STEEL	5
16	HDT13937	PIN, DOWEL .06 X .63	1
17	HDT13943	O-RING (-012) 0.364ID X 0.070 URETHAN 92	4
18	HDT14423	SCREW, SHC 10-24 X 2.00 (Torque to 60/80 In. lbs.)	3
19	HDT14426	SCREW, SHC 10-24 X 1.00 (Torque to 60/80 In. lbs.)	5
20	HDT14484	SPRING COM OD.370IDX.XXXR31L1.030MW	1
21	HDT15130	FITTING, PLUG 1/16 PTF FLUSH	3
22	HDT15141	SPRING COM OD.186IDX.XXXR4L.656MW	1
23	HDT15691	SPRING COM OD.246IDX.XXXR57L.645MW	1
24	HDT16686	RING, RETAINING - INTERNAL	1
25	HDT16724	SPRING COM OD.370IDX.XXXR371L1.250MW	1
26	HDT17567	PIN, SPRING COILED .25 X .75	2
27	HDT17797	O-RING (-006) 0.114ID x 0.070 URETHAN 92	1
28	19029	ORING, -213 0.921X0.139X1.199IIN, FKM75	1
29	24549	GUIDE, BALL	1
30	64346	BODY, PUMP	1
31	200796	ADAPTER, BALL & SPRING	1
32	207405	LOCKNUT, HEX: #10-24 FLEXIBLE LOCKING	2
33	211054	SCREW, SHC 10-24 X 0.63 (Torque to 60/80 In. lbs.)	3
34	214578	FILTER	1
35	214992	WASHER, BKUP 0.235X0.125X0.05 PTFE	1
36	250491	SCREW, SHC 10-24 X 1.250 (Torque to 60/80 In. lbs.)	4
37	251040	PIN, DOWEL .13 X .25	1
38	251061	PIN, DOWEL .06 X .38	1
39	251062	PISTON 5/32 DIA.	1
40	251063	O-RING, -027 1.301x0.07x1.441IN, NBR 70	1
41	251064	SEAT, REPLACEABLE	2

Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
42	251065	SEAT, REPLACEABLE	2
43	251067	SCREW, SET #10-24 X 1.00 PLAIN CUP	2
44	251068	GUIDE - UNLOADING PIN	1
45	251069	RING, RETAIN EXT 0.34 X .025	2
46	251083	PIN, DOWEL .19 X 1.25	1
47	251129	BEARING, NEEDLE - .375 x .562 x .500	1
48	252169	WASHER, SPECIAL 0.390 x0.750	1
49	350577	RETAINING, SPRING	1
50	350606	ECCENTRIC	1
51	350619	PISTON, AUTOMATIC VALVE	1
52	350620	BODY, HIGH PRESSURE CAP	1
53	420615	SET, GEROTOR	1
54	420616	BODY, AUTO. VALVE	1
55	420617	BODY, HIGH PRESSURE PISTON	1
56	421297-18-G	MOTOR, E 0.19HP 18V 2T 3.19 7000RPM	1
57	2009663	PLATE, PUMP END (for pump subassy built before Dec. 2021)	1
	64347	PLATE, END	1
58	2009972	PIN, ROLL 0.156x0.555IN ST BOX	1
59	HDT15695	BEARING, SPH ROL 1.375IN × 0.625 × 0.281	1

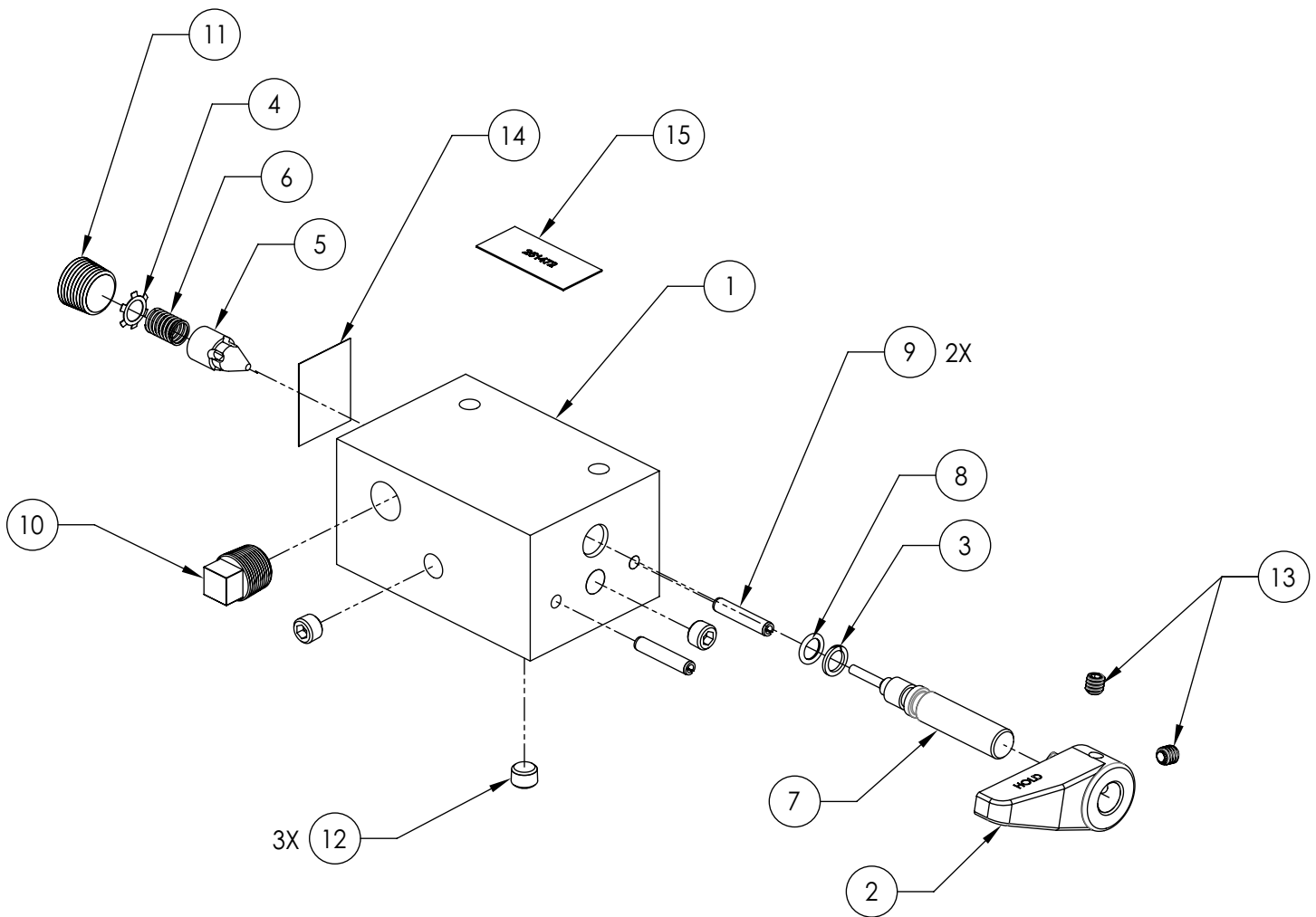
Refer to any operating instructions included with this product for detailed information about operation, testing, disassembly, reassembly, and preventive maintenance.

Items found in this parts list have been carefully tested and selected. **Therefore: Use only genuine Power Team replacement parts!**

Additional questions can be directed to our Technical Services Department.

Parts List Continued

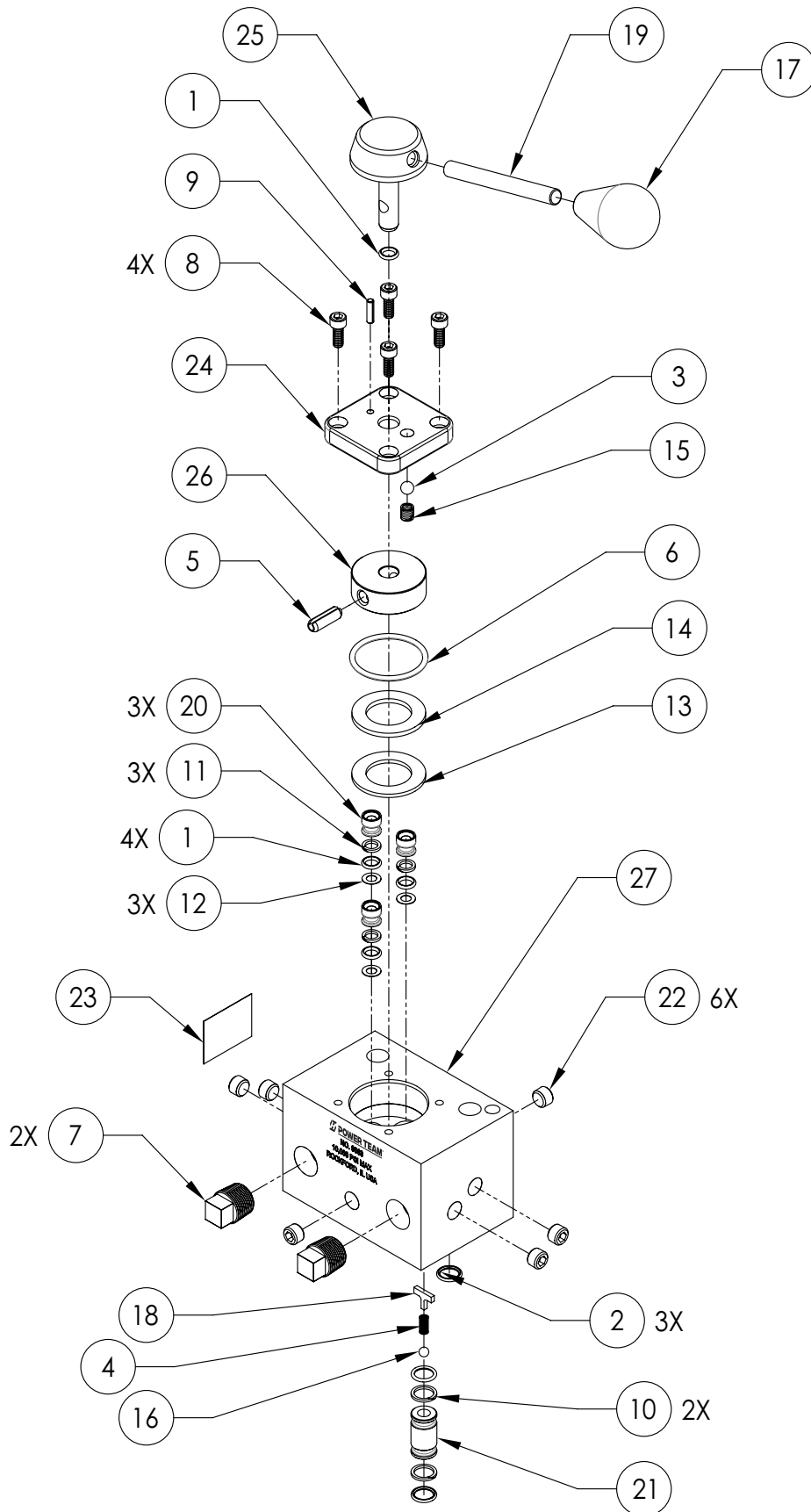
Manual Valve 2-Way, 2-Position (350622)



ITEM	PART NO.	DESCRIPTION	QTY.
1	58351	BODY, VALVE	1
2	213109	HANDLE, RELEASE VALVE	1
3	HDT15085	WASHER, BACKUP 0.438 x0.312 (-011)	1
4	HDT11088	RING, RETAIN INT 0.31 X .010	1
5	HDT20771	POPPET	1
6	HDT10425	SPRING COM ODX.XXXIDX.XXXR7.6L.780MW	1
7	350626	SCREW, REL VLV 3/8-16 X 2.88	1
8	HDT10267	ORING(-011) 0.301 x 0.07 x 0.441IN NBR70	1
9	HDT11418	PIN, ROLL .19 X 1.00	2
10	HDT11127	FITTING, PLUG 3/8 NPTF W/SEALANT	1
11	HDT10909	FITTING, PLUG - 3/8 NPTF M FLUSH	1
12	251279	FITTING, PLUG 1/8 PTF	3
13	HDT10556	SCREW, SET 1/4-20 X 0.25 KNURLED CUP (Torque to 30/50 in. Lbs.)	2
14	251512	DECAL, TELEPHONE INFORMATION	1
15	251472	DECAL, WARNING VALVE	1

Parts List Continued

Manual Valve 4-Way, 3-Position (420558)

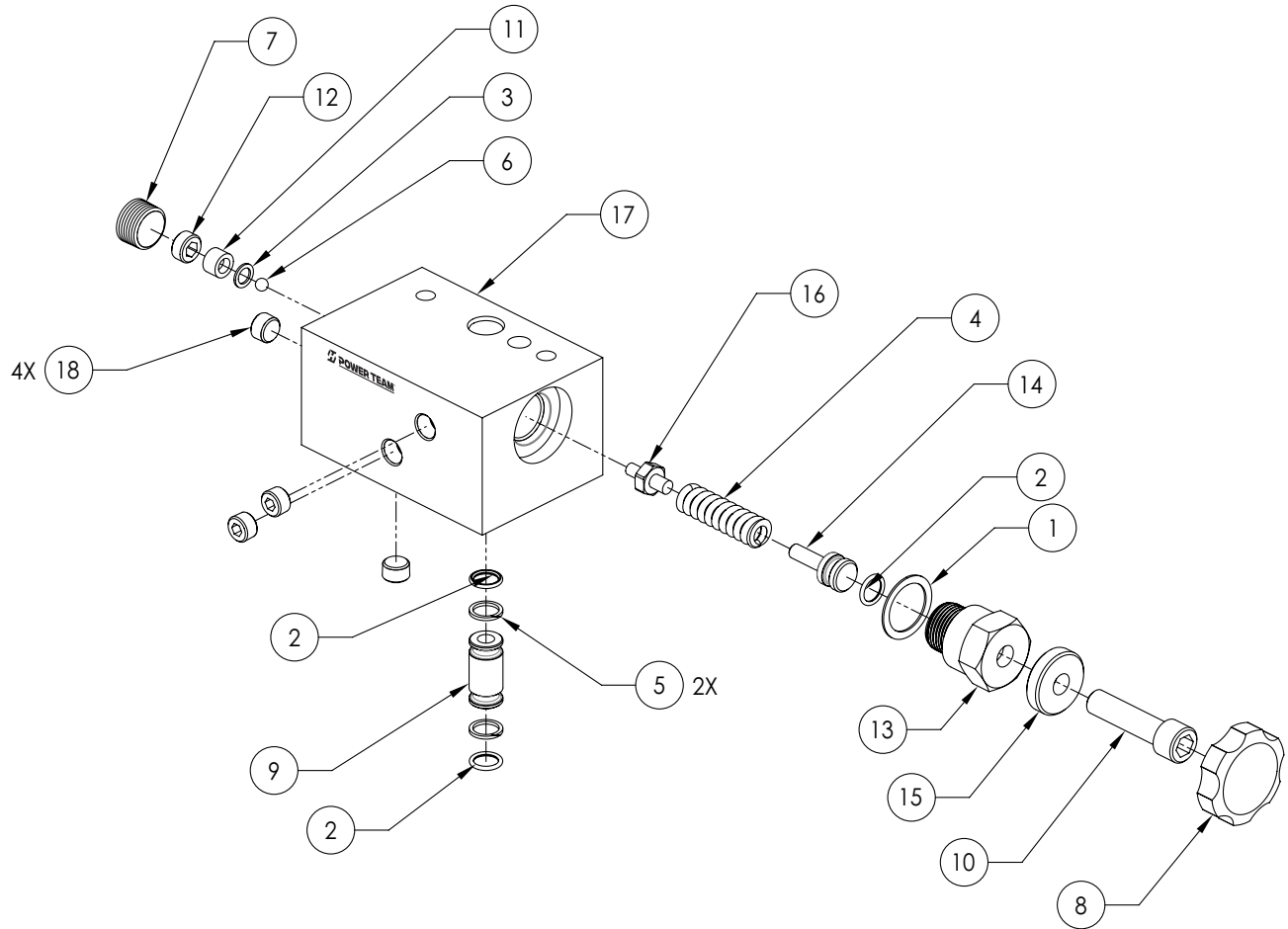


Parts List Continued

ITEM	PART NO.	DESCRIPTION	QTY.
1	HDT10266	O-RING (-010) 0.239IDX0.070 NITRILE 70	4
2	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70	3
3	HDT10375	BALL, 1/4" DIA STEEL	1
4	HDT10445	SPRING COM OD.166IDX.XXXR.580L.751MW	1
5	HDT10716	PIN, ROLL .25 X .75	1
6	HDT10930	O-RING (-125) 1.299ID X 0.103 NITRILE 70	1
7	HDT11127	FITTING, PLUG 3/8 NPTF W/SEALANT	2
8	HDT11434	SCREW, SOCKET HD CAP - #10-24 X 0.50 (Torque to 60/80 in.Lbs.)	4
9	HDT11587	PIN, ROLL .13 X .50	1
10	HDT11863	WASHER, BACKUP 0.500 x0.375 (-012)	2
11	HDT12184	WASHER, BACKUP 0.375 x0.250 (-010)	3
12	HDT12187	WASHER, SPRING 0.370 x0.200	3
13	HDT12188	BEARING, NEEDLE - .875 x 1.42 x .078	1
14	HDT12189	WASHER, THRUST 1.420 x0.880	1
15	HDT12195	SPRING COM OD.260IDX.XXXR24L.520MW	1
16	HDT12223	BALL, 3/16" DIA STEEL	1
17	HDT12821	KNOB, OVAL	1
18	209795	STOP, OUTLET BALL	1
19	24564	STUD	1
20	24570	SHEAR SEAL	3
21	251128	BUSHING, OUTLET CHECK	1
22	251279	FITTING, PLUG 1/8 PTF	6
23	251512	DECAL, TELEPHONE INFORMATION	1
24	25821BK2	COVER, VALVE - MACHINED	1
25	32070	STEM	1
26	32071	ROTOR	1
27	64374	BODY, VALVE	1

Parts List Continued

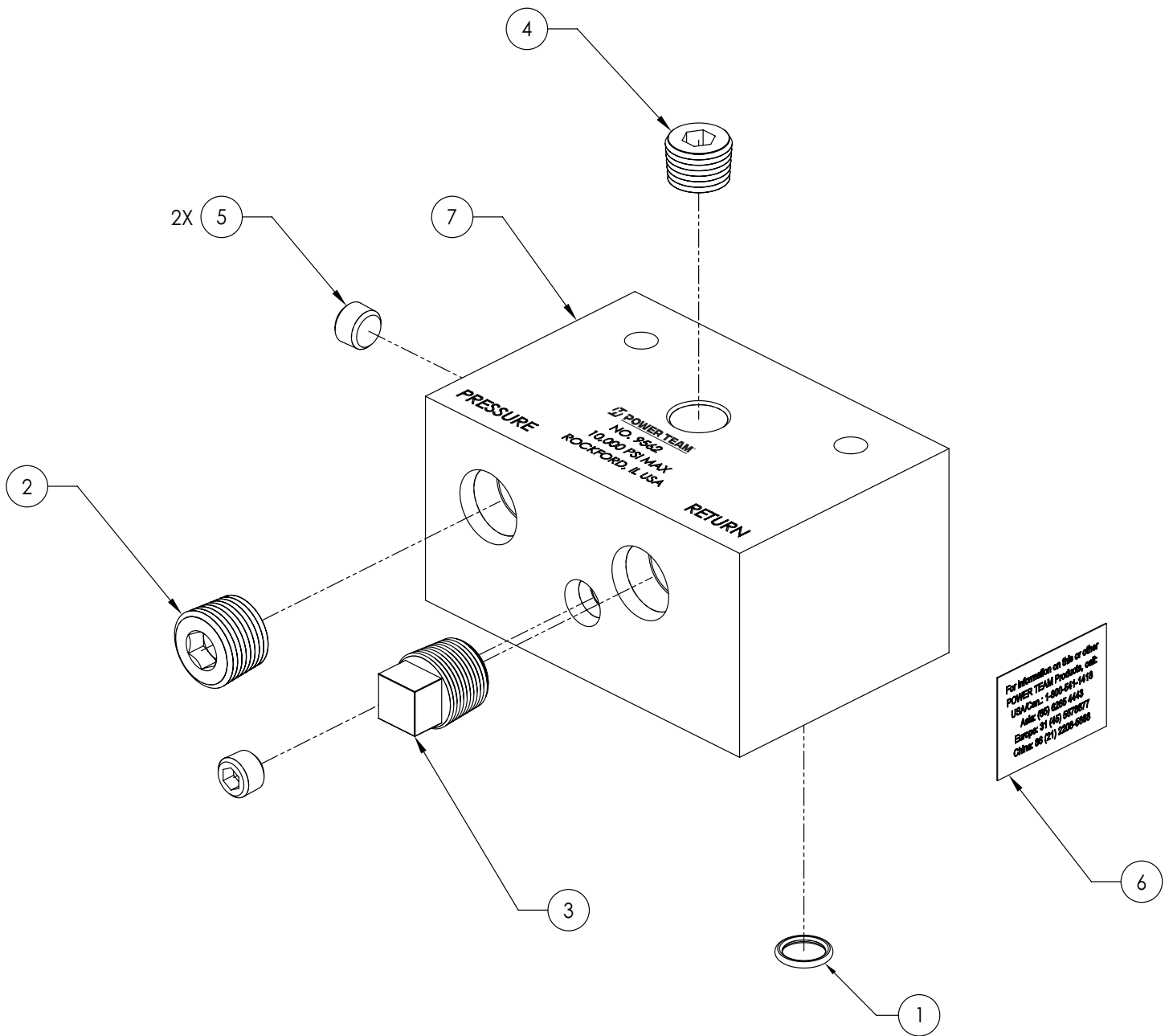
Body, Valve pressure Regulator (350623)



ITEM	PART NO.	DESCRIPTION	QTY.
1	HDT10263	WASHER, PLAIN - SPECIAL	1
2	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70	3
3	HDT10442	WASHER, PLAIN 0.25X0.37X0.03 COPR	1
4	HDT10495	SPRING COM OD.473IDX.XXXR410L1.687CS	1
5	HDT11863	WASHER, BACKUP 0.500 x0.375 (-012)	2
6	HDT12223	BALL, 3/16" DIA STEEL	1
7	HDT16232	PLUG, HEX FEMALE DRIVE - DRYSEAL	1
8	19564	KNOB, THUMB SCREW	1
9	202505	BUSHING	1
10	208148	SCREW, SHC - 3/8-24 x 1.5	1
11	209787	SEAT, REPLACEABLE	1
12	209797	SCREW, HOL LCK 7/16-20 X 0.25 (Torque to 180/200 In. lbs.)	1
13	21305	CAP, VALVE	1
14	21306	GUIDE, SPRING	1
15	215683	NUT, 3/8-24 REGULATOR LOCK	1
16	350625	GUIDE, BALL	1
17	58350	BODY, VALVE PRESSURE REGULATOR	1
18	T1-1019-01	PLUG, 1/8-27 NPT FLUSH PLUMBING (Torque to 120 In. lbs.)	4

Parts List Continued

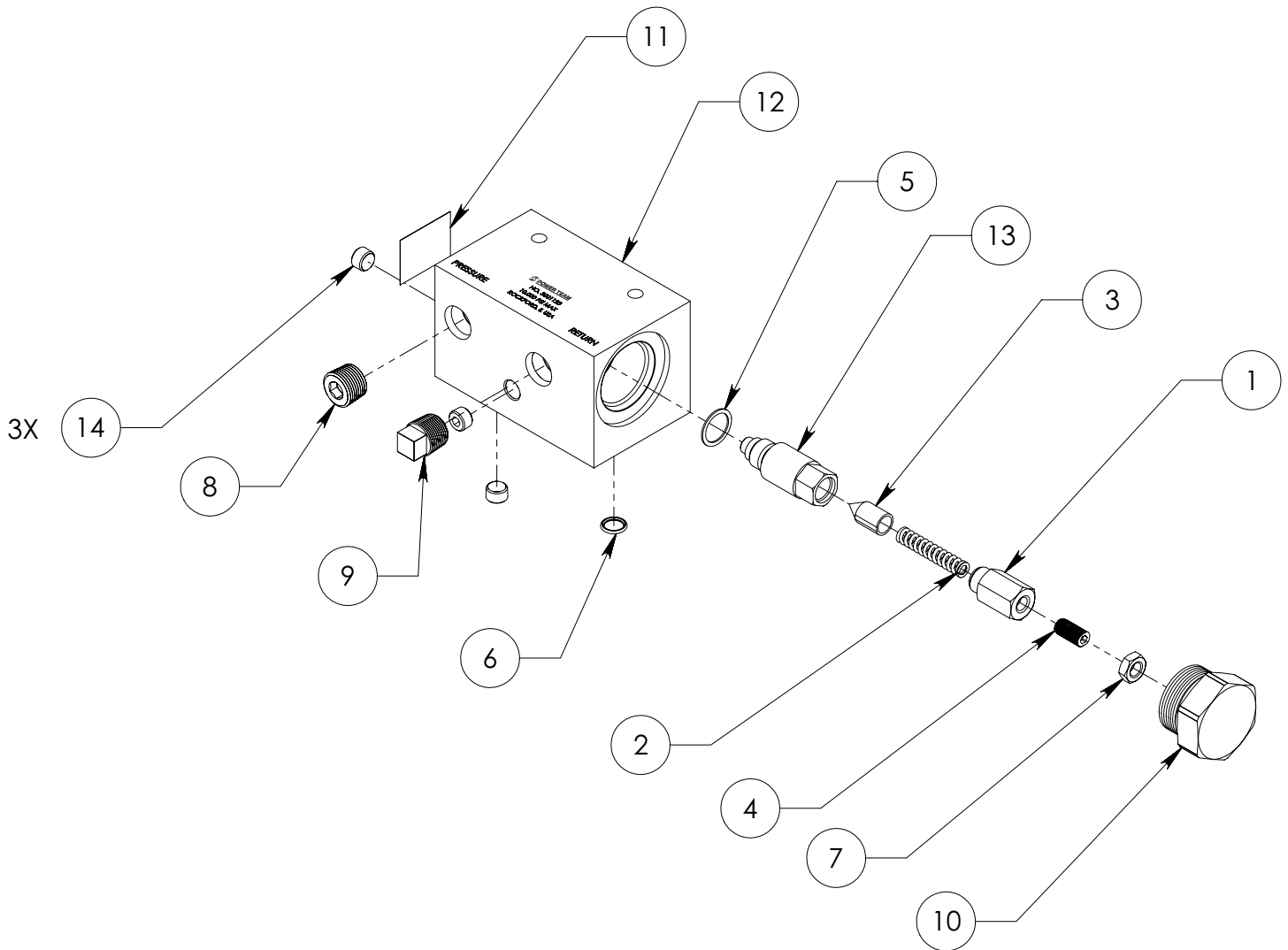
Manifold Assembly (350720)



ITEM	PART NO.	DESCRIPTION	QTY.
1	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70	1
2	HDT10909	FITTING, PLUG - 3/8 NPTF M FLUSH	1
3	HDT11127	FITTING, PLUG 3/8 NPTF W/SEALANT	1
4	HDT14972	FITTING, PLUG - 1/4 PTF FLUSH	1
5	251279	FITTING, PLUG 1/8 PTF	2
6	251512	DECAL, TELEPHONE INFORMATION	1
7	58349	BODY, MANIFOLD	1

Parts List Continued

Valve Manifold Assembly (3001123)



ITEM	PART NO.	DESCRIPTION	QTY.
1	3-0651	CAP, VALVE	1
2	3-0653	SPRING COM OD.335IDX.XXXR520L1.675MW	1
3	3-0654	PLUNGER, VALVE	1
4	5-2891	SCREW, 5/16-24 X 0.63 SET CUP	1
5	10261	WASHER, PLAIN 0.60 x 0.75 x 0.03 COPR	1
6	HDT10268	O-RING (-012) 0.364ID x 0.070 NITRILE 70	1
7	HDT10384	NUT, HEX JAM 5/16-24	1
8	HDT10909	FITTING, PLUG - 3/8 NPTF M FLUSH	1
9	HDT11127	FITTING, PLUG 3/8 NPTF W/SEALANT	1
10	207908	FITTING, PLUG 1-5/16-12 ORB	1
11	251512	DECAL, TELEPHONE INFORMATION	1
12	2010235	BODY, MANIFOLD	1
13	2010291	BODY, VALVE (Torque to 40/50 ft. lbs.)	1
14	T1-1019-01	PLUG, 1/8-27 NPT FLUSH PLUMBING (Torque to 180/200 In. lbs.)	3

EC DECLARATION OF CONFORMITY

We declare under our sole responsibility that our electric pump models, defined under the following series or specific part number as:

PB102, PB102P, PB102R, PB102A, PB102-CP, PB102-0, PB102P-0, PB102R-0, PB102A-0, PB102-2, PB102P-2, PB102R-2, PB102A-2, PB102-CP-2, PB102-3, PB102P-3, PB102R-3, PB102A-3, PB102-CP-3, PB104, PB104-0, PB104-2, PB104-3, PB104L, PB102-X, PB102A-X, PB102P-X, PB102R-X, PB104-X, PB104R, PB104-0-ARC

to which this declaration relates are in conformity with the following:

2006/42 EC - Per the provisions of the Machinery Safety Directive	
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment and risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems and their components
2014/30 EU - Per the provisions of the EMC Directive	
EN_61000-4-2	Electromagnetic Discharge Immunity test
EN_61000-4-3+A2	Radiated, Radio Frequency, Electromagnetic Field Immunity test
EN_61000-4-4	Electrical Fast Transient / Burst Immunity test
EN_61000-4-5	Surge immunity test
EN_61000-4-6	Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
EN_61000-4-11	Voltage Dip and Interrupt test
EN 55011	Industrial, Scientific and Medical (ISM) Radio Frequency Equipment-Electromagnetic Disturbance Characteristics-Limits and Methods of Measurement
2006/66/EC - Per the provisions of the Battery Directive	
IEC 61960	Secondary Lithium Cells and Batteries for Portable Applications
2000/14 EC - Per the provisions of the Noise Emission in the Environment by Equipment for Use Outdoors Directive	
EN_3200L0014	Noise emission in the environment for use outdoors
ISO 3744	Sound Power Level Measurements measured sound power level on an equipment representative for this type: 68 dB(A) guaranteed sound power level for this equipment: 74 dB(A) or less
2011/65/EU - Per the provisions of the RoHS Directive	
	Restriction of the use of certain hazardous substances in electrical and electronic equipment

Hydraulic Technologies USA LLC
5885 11th Street
Rockford,
IL 61109-3699
United States of America

We hereby declare that the equipment specified hereon, conforms to the above quoted European Community Directive(s) and Standard(s) as per the currently valid revision.

Hydraulic Technologies is certified and registered to ISO 9001: 2015.

Hydraulic Technologies
Netherlands B.V.
Albert Thijsstraat 12
NL-6471 WX
Eygelshoven
The Netherlands

The Netherlands,



Neil Hughes, Operations Lead EMEA



EC DECLARATION OF CONFORMITY

We declare under our sole responsibility that our electric pump models, defined under the following series or specific part number as:

PB102XL-X, PB102XL-0, PB102XL-1, PB102XL-2, PB102XL-3, PB102XLP-X, PB102XLP-0, PB102XLP-1, PB102XLP-2, PB102XLP-3, PB102XLR-X, PB102XLR-0, PB102XLR-1, PB102XLR-2, PB102XLR-3, PB102XLA-X, PB102XLA-0, PB102XLA-1, PB102XLA-2, PB102XLA-3, PB104XL-X, PB104XL-0, PB104XL-1, PB104XL-2, PB104XL-3, PB102XL-CP-X, PB102XL-CP-0, PB102XL-CP-1, PB102XL-CP-2 and PB102XL-CP-3.

to which this declaration relates are in conformity with the following:

2006/42 EC - Per the provisions of the Machinery Safety Directive	
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment and risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems and their components
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EN_61000-4-2	Electromagnetic Discharge Immunity test
EN_61000-4-3+A2	Radiated, Radio Frequency, Electromagnetic Field Immunity test
EN_61000-4-4	Electrical Fast Transient / Burst Immunity test
EN_61000-4-5	Surge immunity test
EN_61000-4-6	Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
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EN 55011	Industrial, Scientific and Medical (ISM) Radio Frequency Equipment-Electromagnetic Disturbance Characteristics-Limits and Methods of Measurement
2006/66/EC - Per the provisions of the Battery Directive	
IEC 61960	Secondary Lithium Cells and Batteries for Portable Applications
2000/14 EC - Per the provisions of the Noise Emission in the Environment by Equipment for Use Outdoors Directive	
EN_3200L0014	Noise emission in the environment for use outdoors
ISO 3744	Sound Power Level Measurements measured sound power level on an equipment representative for this type: 68 dB(A) guaranteed sound power level for this equipment: 74 dB(A) or less
2011/65/EU - Per the provisions of the RoHS Directive	
	Restriction of the use of certain hazardous substances in electrical and electronic equipment

Hydraulic Technologies USA LLC

5885 11th Street
Rockford,
IL 61109-3699
United States of America

We hereby declare that the equipment specified hereon, conforms to the above quoted European Community Directive(s) and Standard(s) as per the currently valid revision.

Hydraulic Technologies is certified and registered to ISO 9001: 2015.

Hydraulic Technologies

Netherlands B.V.

Albert Thijsstraat 12
NL-6471 WX
Eygelshoven
The Netherlands

The Netherlands,



Neil Hughes, Operations Lead EMEA



UKCA DECLARATION OF CONFORMITY

We declare under our sole responsibility that our electric pump models, defined under the following series or specific part number as:

PB102, PB102P, PB102R, PB102A, PB102-CP, PB102-0, PB102P-0, PB102R-0, PB102A-0, PB102-2, PB102P-2, PB102R-2, PB102A-2, PB102-CP-2, PB102-3, PB102P-3, PB102R-3, PB102A-3, PB102-CP-3, PB104, PB104-0, PB104-2, PB104-3, PB104L, PB102-X, PB102A-X, PB102P-X, PB102R-X, PB104-X, PB104R, PB104-0-ARC

to which this declaration relates are in conformity with the following:

The Supply of Machinery (Safety) Regulations 2008 No. 1597 and amendments	
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment and risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems and their components
The Electromagnetic Compatibility Regulations 2016 No. 1091	
EN_61000-4-2	Electromagnetic Discharge Immunity test
EN_61000-4-3	Radiated, Radio Frequency, Electromagnetic Field Immunity test
EN_61000-4-4	Electrical Fast Transient / Burst Immunity test
EN_61000-4-5	Surge immunity test
EN_61000-4-6	Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
EN_61000-4-11	Voltage Dip and Interrupt test
EN 55011	Industrial, Scientific and Medical (ISM) Radio Frequency Equipment-Electromagnetic Disturbance Characteristics-Limits and Methods of Measurement
The Batteries and Accumulators Regulations 2008 No. 2164 & 2012 No. 1139	
IEC 61960	Secondary Lithium Cells and Batteries for Portable Applications
The Noise Emissions in the Environment by Equipment for use Outdoors Regulation 2001 No. 1701	
EN_3200L0014	Noise emission in the environment for use outdoors
ISO 3744	Sound Power Level Measurements measured sound power level on an equipment representative for this type: 68 dB(A) guaranteed sound power level for this equipment: 74 dB(A) or less
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 No. 3032	
	Restriction of the use of certain hazardous substances in electrical and electronic equipment

Hydraulic Technologies USA LLC
5885 11th Street
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We hereby declare that the equipment specified hereon, conforms to the above quoted UK Legislation and international Standard(s) as per the currently valid revision.

Hydraulic Technologies is certified and registered to ISO 9001: 2015.

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Albert Thijsstraat 12
NL-6471 WX
Eygelshoven
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Neil Hughes, Operations Lead EMEA



UKCA DECLARATION OF CONFORMITY

We declare under our sole responsibility that our electric pump models, defined under the following series or specific part number as:

PB102XL-X, PB102XL-0, PB102XL-1, PB102XL-2, PB102XL-3, PB102XLP-X, PB102XLP-0, PB102XLP-1, PB102XLP-2, PB102XLP-3, PB102XLR-X, PB102XLR-0, PB102XLR-1, PB102XLR-2, PB102XLR-3, PB102XLA-X, PB102XLA-0, PB102XLA-1, PB102XLA-2, PB102XLA-3, PB104XL-X, PB104XL-0, PB104XL-1, PB104XL-2, PB104XL-3, PB102XL-CP-X, PB102XL-CP-0, PB102XL-CP-1, PB102XL-CP-2 and PB102XL-CP-3.

to which this declaration relates are in conformity with the following:

The Supply of Machinery (Safety) Regulations 2008 No. 1597 and amendments	
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment and risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems and their components
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EN_61000-4-5	Surge immunity test
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