



Operation and Maintenance Manual

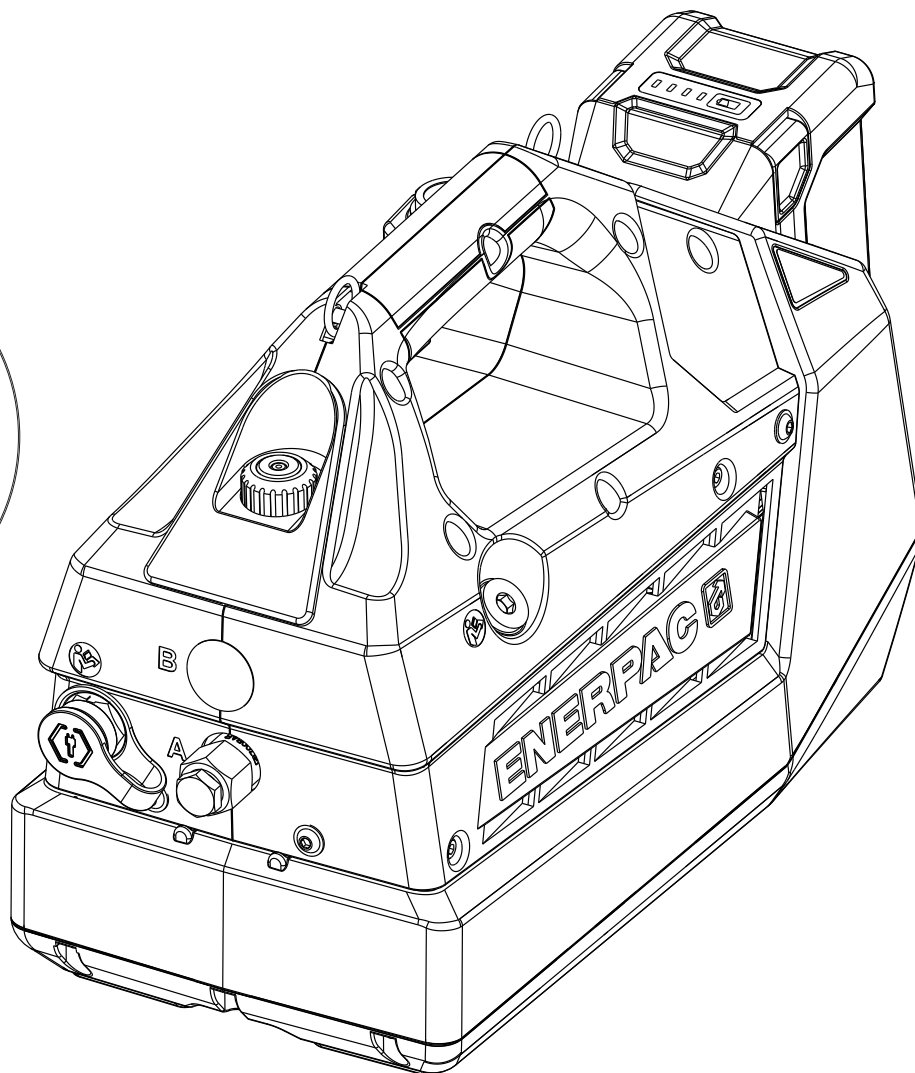
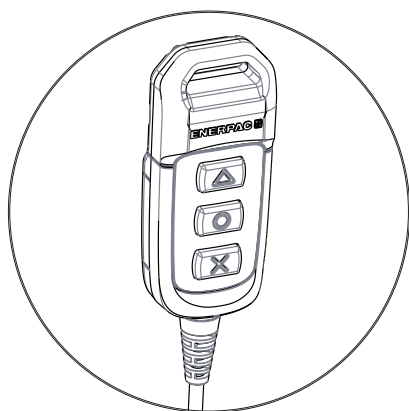
XC2 Series Cordless Hydraulic Pumps - Dump & Hold Models XC2302S and XC2304S

Document Number: L4588

Document Revision: I

Issue Date: August 2026

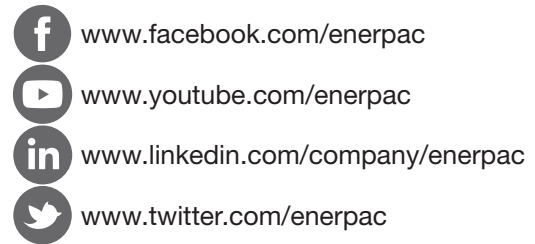
Language: English EN



To reduce the risk of injury, user must read and understand this document before use.

ABOUT US

Enerpac is a global market leader in high pressure hydraulic tools, controlled force products, portable machining, on-site services and solutions for precise positioning of heavy loads. As a leading innovator with over a 100-year legacy, Enerpac has helped move and maintain some of the largest structures on earth. When safety and precision matters, elite professionals in industries such as aerospace, infrastructure, manufacturing, mining, oil & gas and power generation rely on Enerpac for quality tools, services and solutions. For additional information, visit www.enerpac.com.

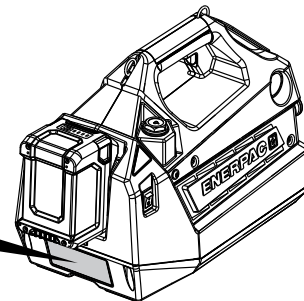
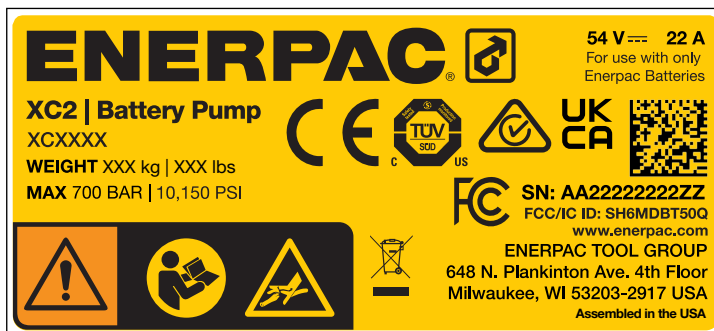


WARRANTY

Refer to the Enerpac Global Warranty document for terms and conditions of the product warranty. Such warranty information can be found at www.enerpac.com.

NAMEPLATE

Refer to the pump nameplate for the product model number, serial number and other applicable information.



Note: A typical XC2 Series nameplate is shown above. Nameplate data will vary depending on pump model and configuration.

AVAILABLE LANGUAGES

An electronic copy of this document is available online in multiple languages:

- [EN] English - For other languages, visit www.enerpac.com.
- [CS] Čeština - Další jazyky naleznete na adrese www.enerpac.com.
- [DE] Deutsch - Weitere Sprachen finden Sie unter www.enerpac.com.
- [ES] Español - Para otros idiomas visite www.enerpac.com.
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1.0 SAFETY

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and / or damage to other property. Enerpac cannot be responsible for any damage or injury from unsafe use, lack of maintenance, or incorrect operation. Do not remove warning labels, tags, or decals. In the event that any questions or concerns arise, contact Enerpac or a local Enerpac distributor for clarification.

Save these instructions for future use.

Appropriate training in the safe use of high pressure, high force hydraulic tools is required prior to the operation of the pump. If training is needed, contact your local Enerpac distributor or authorized service center for information about a Enerpac hydraulic safety training course.

This manual follows a system of safety alert symbols, signals, words, and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.



The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are WARNING, CAUTION and NOTICE.

WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages related to property damage). Please note that the Safety Alert Symbol will not be used with the signal word.

1.1 Hydraulic Safety Precautions



Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

1.1.1 General Hydraulic Safety Precautions

- Do not remove, modify or disable the pump's user adjustable pressure relief valve.
- Never set the pressure relief valve to a higher pressure than the maximum rated working pressure of the pump.

- Never remove, modify, disable or readjust the pump's internal safety relief valve.
- Do not handle pressurized hydraulic hoses. Escaping oil under pressure can penetrate the skin. If oil is injected under the skin, see a doctor immediately.
- Do not pressurize uncoupled hydraulic couplers.
- Do not exceed the pump's maximum pressure rating of 10,150 psi [700 bar]. Overloading may cause equipment failure and possible personal injury.
- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. All hoses, fittings and couplers used with the pump must be rated at 10,150 psi [700 bar] minimum.
- Install pressure gauge(s) in the system to monitor operating pressure. It is your window to see what is happening in the system.
- Wear personal protective equipment (P.P.E.) when operating hydraulic equipment.
- Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- Immediately replace worn or damaged parts with genuine Enerpac parts. Enerpac parts are designed to fit properly and to withstand high loads. Non-Enerpac parts may break or cause the pump to malfunction. Personal injury and property damage may also occur.

CAUTION

Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Do not use or repair damaged hydraulic hoses. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose, leading to premature hose failure.
- Do not drop heavy objects on hydraulic hoses. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.
- Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or strap.
- Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings.
- Protect all hydraulic equipment from weld spatter.

NOTICE Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact an Enerpac authorized service center in your area.

1.1.2 Lifting Safety Precautions

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Do not allow persons to be under a hydraulically supported load. Always support the load with stands, blocking or other suitable supports before allowing persons to enter the work area below the load.
- Stay clear of cylinders and tools while they are being pressurized or in operation. To avoid personal injury, keep hands and feet away from pinch point areas.
- Never use a cylinder or tool with uncoupled couplers. If the cylinder or tool becomes extremely overloaded, components can fail catastrophically.
- Use only rigid pieces to hold loads. Carefully select steel or wood blocks that are capable of supporting the load.
- Never use a hydraulic cylinder or tool as a shim or spacer in any application.
- Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.
- Avoid situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall.
- Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading may cause equipment failure and possible personal injury.
- Be sure setup is stable before lifting load. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

1.2 Battery Operated Pump Safety Precautions

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Do not use a battery operated pump in an explosive atmosphere, such as in the presence of flammable liquids, gases, or dust. Sparks and electrical arcing could ignite combustible vapors or airborne dust.
- Do not expose the pump to rain, water spray or wet conditions. Water entering the pump will increase the risk of electric shock and may damage the motor and other components. The pump can be used outdoors, but should be brought inside in the event of rain or other moisture.
- To avoid accidental pump startup via the remote pendant buttons, ensure that the pump power switch is in the OFF (○) position before moving or transporting the pump.
- Ensure that the pump power switch is in the OFF (○) position before performing inspections, maintenance procedures, repairs or cleaning the pump. As an alternative, remove the battery from the pump.
- Battery power will remain connected to some electrical components inside the pump even when the pump power switch is in the OFF (○) position. For this reason, always remove the battery from the pump before opening the pump housing for any reason. All servicing must be performed only by qualified personnel with appropriate training and expertise, following standard shop safety precautions.
- Use insulated tools and wear electrician's gloves if it is necessary to troubleshoot the pump or observe operation with the pump housing removed (qualified personnel only).
- Do not use the pump if the pendant controls do not turn the motor on and off. Any pendant-operated power tool that cannot be switched on and off with its pendant controls is dangerous and must be repaired before being used.
- Use the Enerpac XC2 Series pump only with the specified Enerpac 54 volt Li-Ion battery. Use of any other battery may create a risk of injury and fire.
- When battery is not in use, keep it away from other metal objects like paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- The battery cells may develop a small leak under extreme usage or temperature conditions. Avoid contact with battery liquid. Liquid ejected from the battery may cause irritation or burns. Refer to Section 1.3 for battery first aid instructions
- If battery case is broken or damaged and/or if leakage occurs, do not reinstall the battery on the pump. Replace with a new battery.
- Recharge the battery only with the specified Enerpac battery charger. A charger that is suitable for one type of battery may create a risk of fire when used with another battery.
- Separate manuals are provided with the battery and battery charger and are also available online at www.enerpac.com. Read and understand all information contained in these manuals. Observe and comply with all communicated safety precautions when using the battery or charger.
- Remove the battery from the pump before storing the pump.
- The battery and battery charger have no serviceable parts. Do not attempt to disassemble or repair these items.

1.3 Battery First Aid Instructions

- If battery liquid comes in contact with skin, wash immediately with soap and water, then neutralize with lemon juice or vinegar.
- If battery liquid gets in your eyes, flush with clean water for a minimum of 10 minutes, then seek immediate medical attention.
- If battery liquid is swallowed, seek immediate medical attention.

1.4 Symbols

Various pictorial symbols are affixed to the pump or molded directly into the pump housing or components. Additional pictorial symbols are located on the battery and battery charger nameplates.

In some instances, these symbols may advise the user of potentially hazardous situations. Other symbols may be informational only. Understand the meaning of each symbol before using the pump.

Selected symbols are shown in the following chart:

Symbol	Definition
	Risk of electric shock. High voltage.
	Device shall not be exposed to high heat, fire/flame, or any heat source.
	Read instruction manual. Save instructions for future use.
	Do not expose device to rain, water or moisture.
	Do not dispose of device in trash.

1.5 Labels

Make sure all labels and decals are legible and securely affixed to the pump. If worn or missing, obtain replacements from Enerpac.

1.6 State of California Proposition 65 Warning (pump)

⚠ WARNING The pump uses hydraulic oil as the fluid medium. Hydraulic oils contain ethylbenzene, which may cause cancer and reproductive harm. Hydraulic oils need to be handled carefully, so that contact is avoided.

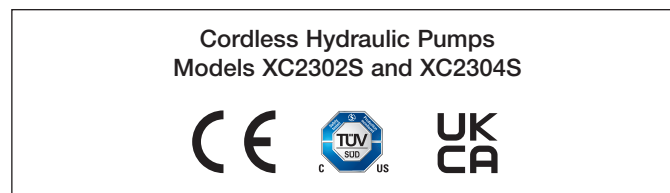
A warning decal is affixed to the pump, informing the operator of these risks. For additional information, go to www.P65Warnings.ca.gov.

1.7 State of California Proposition 65 Warning (battery)

⚠ WARNING The battery used with the pump can expose you to chemicals including cobalt lithium manganese nickel oxide and carbon black, which are known to the State of California to cause cancer and reproductive harm. For additional information go to www.P65Warnings.ca.gov.

2.0 COMPLIANCE

2.1 Compliance Statements



Enerpac declares that the model XC2302S and XC2304S cordless hydraulic pumps have been tested and conform to applicable standards and are approved to carry the CE, TÜV and UKCA certification marks.

NOTICE For all pumps, a copy of the product EU Declaration of Conformity is enclosed with each shipment. A copy of the UK Self Declaration of Conformity is also enclosed.

2.2 Electromagnetic Compatibility (EMC)

The model XC2302S and XC2304S cordless hydraulic pumps have been tested and certified to conform to CE-EMC, FCC, and Japanese EMC emission and immunity standards.

NOTICE The pump may stop running and become unresponsive if electromagnetic interference (EMI) between 80 MHz and 400 MHz is present. The recommended action is to remove the source of the interference. If this is not possible, repositioning the pump may restore functionality.

2.3 Battery Safety Certifications

Refer to the separate battery manual for additional certifications pertaining to the Li-Ion battery used with the pump.

2.4 IP Rating

The model XC2302S and XC2304S cordless hydraulic pumps carry an IP20 ingress protection rating:

- The pump is resistant to dust or objects that are over 12.5 mm [0.49 inch] in size.
- The pump has no protection against liquid entry, such as rain or water-spray.
- The pump can be used outdoors, but should be brought inside in the event of rain or other moisture.

3.0 PRODUCT DATA

3.1 Specifications

Pump Models	Control Valve	For Use With Cylinder or Tool Type:	Hydraulic Connection	Operating Temp Range*		Motor Rating		Motor Speed	Sound Pressure**
				°F	°C	hp	kW	RPM	dBA
XC2302S XC2304S	Electric Solenoid Operated, 3-way, 2-position	Single-acting	3/8" NPTF	+14 to +122	-10 to +50	0.94	0.70	14,000-18,000	83

*At 85% relative humidity. **Typical. Sound level will vary depending on pump speed and load.

3.2 Pressure and Flow

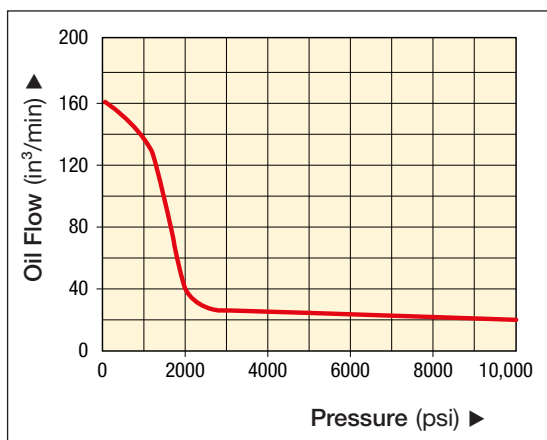
Pump Models	Maximum Hydraulic Operating Pressure*		Flow Rate (also see Section 3.3)						Relief Valve Adjustment Range	
	psi	bar	At No Load		At 2000 psi [138 bar]		At 10,150 psi [700 bar]			
			in ³ /min	l/min	in ³ /min	l/min	in ³ /min	l/min	psi	bar
XC2302S XC2304S	10,150	700	160	2.6	50	0.82	20	0.33	1,000 - 10,150	69 - 700

*Maximum system pressure is limited to approximately 10,700 -11,100 psi [738 - 765 bar] by an internal safety relief valve.

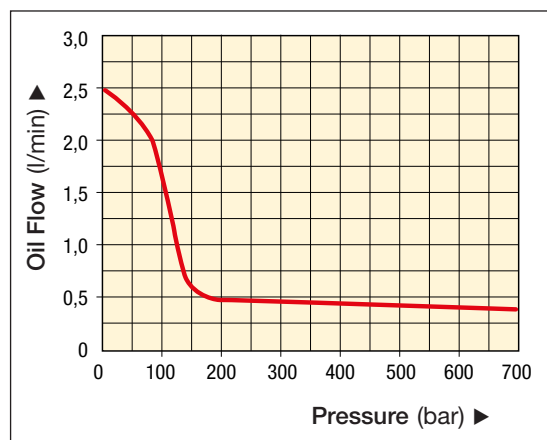
*Maximum system pressure is limited to approximately 10,700 -11,100 psi [738 - 765 bar] by an internal safety relief valve.

3.3 Performance Graphs

MODELS XC2302S & XC2304S (IMPERIAL)



MODELS XC2302S & XC2304S (METRIC)



Note: Graphs show typical pump pressure/flow curves.

3.4 Reservoir Capacities and Pump Weights

Pump Model Number	Pump Weight *		Reservoir Usable Oil Capacity		Hydraulic Oil
	lb	kg	in ³	l	
XC2302S	28.3	12.8	120	2.0	Enerpac HF
XC2304S	31.8	14.4	240	4.0	

*Approximate weight of pump with oil in reservoir, and with battery installed. Weight of battery is approximately 3.5 lb [1.6 kg].

3.5 Battery and Battery Charger

Pump Model Number	Item	Region/Country	Enerpac Model No.
XC2302S and XC2304S	Battery, 54V, Enerpac Lithium-Ion, 4.0 Ah, 216 Wh	(all)	EBH544
	Charger (includes AC power cord for selected region or country)	North America 115V	EC1F541B
		Europe 230V	EC1F542E
		Australia 230V	EC1F542A
	Charger AC power cord for Japan (order separately if needed)	Japan 100V	ECC541N
	Charger AC power cord for UK (order separately if needed)	United Kingdom 240V	ECC542U

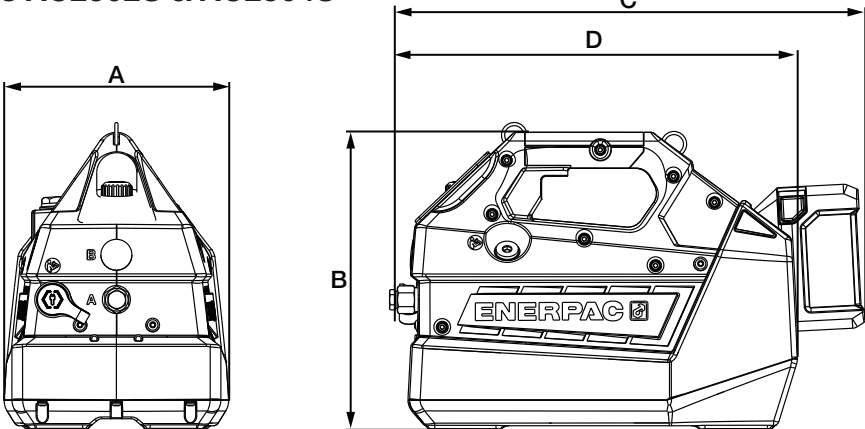
Note: Battery and charger may be included with pump or may need to be purchased separately (varies depending on how pump was ordered). Charger power input is 100-240 VAC, 50-60 cycles, auto voltage sensing. Charger AC power cord (detachable) will vary depending on region/country and voltage. Refer to Figure 26 of this manual and also to the separate battery and charger manuals for additional information.

3.6 Selected Pump Accessories (optional equipment)

Pump Model Numbers	Item	Enerpac Model No.
XC2302S and XC2304S	Corded Remote Pendant, 20 ft [6 m]	CC132
	Pendant Extension Cord, 10 ft [3 m]	CC010
	Shoulder Strap, XC2 Series Pumps	SSTRP55

Note: Refer to Enerpac website or catalog for a complete description of available pump accessories.

3.7 External Dimensions

Item	Dimension		
	inch	mm	
A	8.8	224	Models XC2302S & XC2304S 
B	11.7	297	
C	18.4	467	
D	15.7	399	

Note: Dimensions are the same for both pump models. Dimensions shown are for reference only and may vary slightly from pump to pump.

4.0 FEATURES AND COMPONENTS

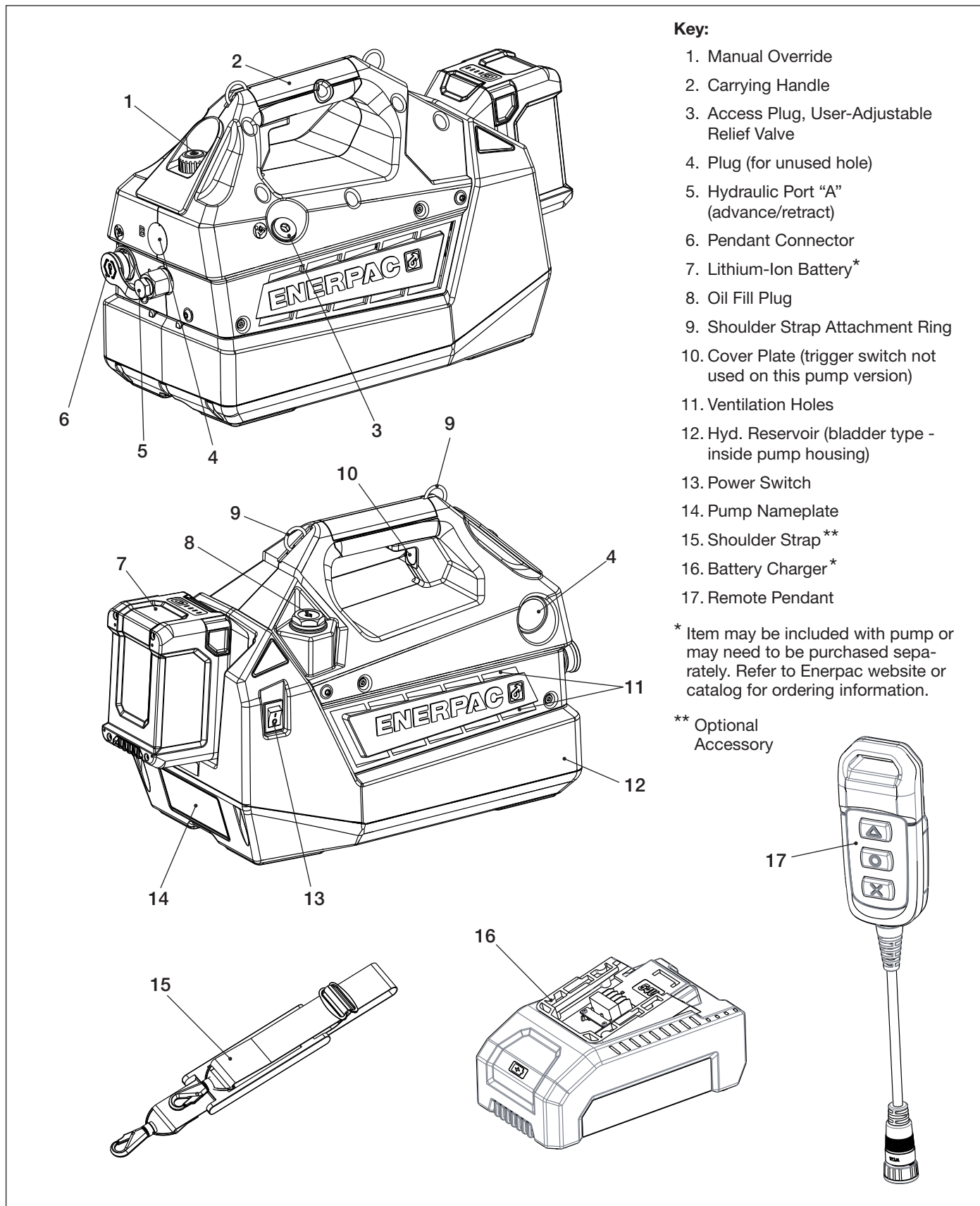


Figure 1: Features & Components, Models XC2302S and XC2304S

5.0 DESCRIPTION

The Enerpac XC2 Series cordless pumps combine the performance of a powered pump with the portability of a hand operated pump.

Designed for use with single-acting hydraulic cylinders and tools, models XC2302S and XC2304S feature a high-performance, brushless DC electric motor, two-stage hydraulic pump element and a solenoid operated 3-way, 2-position control valve.

An integral bladder type oil reservoir allows pump operation in any position and helps prevent contamination. Model XC2302S features a two liter [120 in³] oil reservoir. Model XC2304S contains a four liter [240 in³] oil reservoir, for use with larger and/or multiple cylinders or tools.

Power is supplied by a rechargeable 54 V, 4 Ah Lithium-Ion battery. The Lithium-Ion battery is capable of providing extended run times, even under demanding conditions.

A corded remote pendant operates the pump motor and solenoid valve for added convenience.

An integrated carrying handle and removable shoulder strap (optional accessory) allow for easy portability.

INSTALLATION & SETUP

5.1 Receiving Instructions

Visually inspect all components for shipping damage. Shipping damage is not covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

The pump can be ordered either with or without batteries and a compatible AC-powered battery charger. These items will be included in the shipment if ordered.

5.2 Hydraulic Connections

The pump contains an electric solenoid operated 3-way, 2-position control valve. It is designed for use only with single-acting hydraulic cylinders and tools.

NOTICE Installation of a pressure gauge (user-supplied) in the hydraulic line is strongly recommended. All hoses couplers, fittings and other hydraulic components used with the pump must be rated to at least 10,150 psi [700 bar].

NOTICE As hoses, fittings and other components are assembled, apply 1-1/2 wraps of PTFE thread sealing tape to all threaded NPT or NPTF fittings, leaving the first complete thread free of tape as shown in Figure 2. Use care to prevent pieces of tape from entering the hydraulic system.

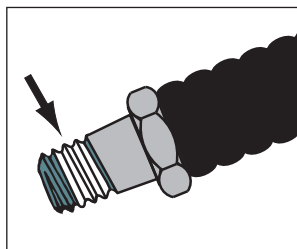


Figure 2: Sealing Tape

Make hydraulic connections as described in the following steps. Refer to Figure 4 for an example of a typical single-acting system setup.

1. Be sure that any residual hydraulic pressure inside the pump is fully relieved:
 - If battery is not installed: Firmly depress and release the manual override button several times to relieve pressure. Refer to instructions in Section 7.9.
 - If battery is installed: Be sure that battery is charged and that pump power switch is ON (I). Relieve pressure by pressing and holding one of the pendant dump buttons. Refer to Section 7.4 for detailed pendant operating instructions.
2. To prevent the pump from starting while hydraulic connections are being made, be sure that the pump power switch is OFF (O). Or, remove the battery from the pump (if installed).

NOTICE Refer to Figure 3 during steps 3 through 5. Only port “A” is present on pump models XC2302S and XC2304S. A plastic plug covers the unused port “B” opening.

3. Use a 15/16" wrench to hold the port “A” fitting in place. Then, using an 11/16" wrench, remove the shipping plug.

NOTICE Port “A” has 3/8" NPTF threads. When making threaded connections in steps 4 and 5, tighten hose fitting or coupler so it is finger tight. Then, tighten it an additional 2 full turns. During tightening, use a 15/16" wrench to hold the port fitting in place.

4. If used in your system, install a hydraulic coupler (user-supplied) in port “A” of the pump.
5. Connect one end of the hydraulic hose to port “A” of the pump or to the coupler installed in port “A”. Connect the other end of the hose to the pressure port of the single-acting cylinder or tool.

NOTICE Threaded connections for items such as fittings, gauges, etc. must be securely tightened and leak-free. If using hydraulic couplers, make sure that all couplers are fully engaged.

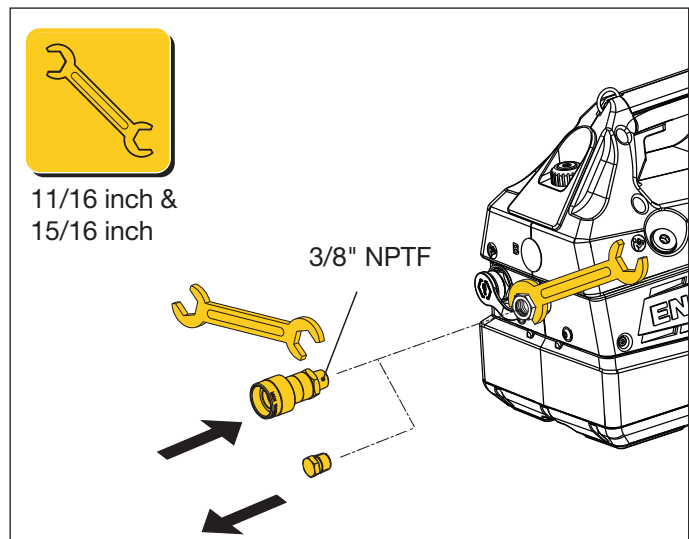


Figure 3: Hydraulic Connection to Pump

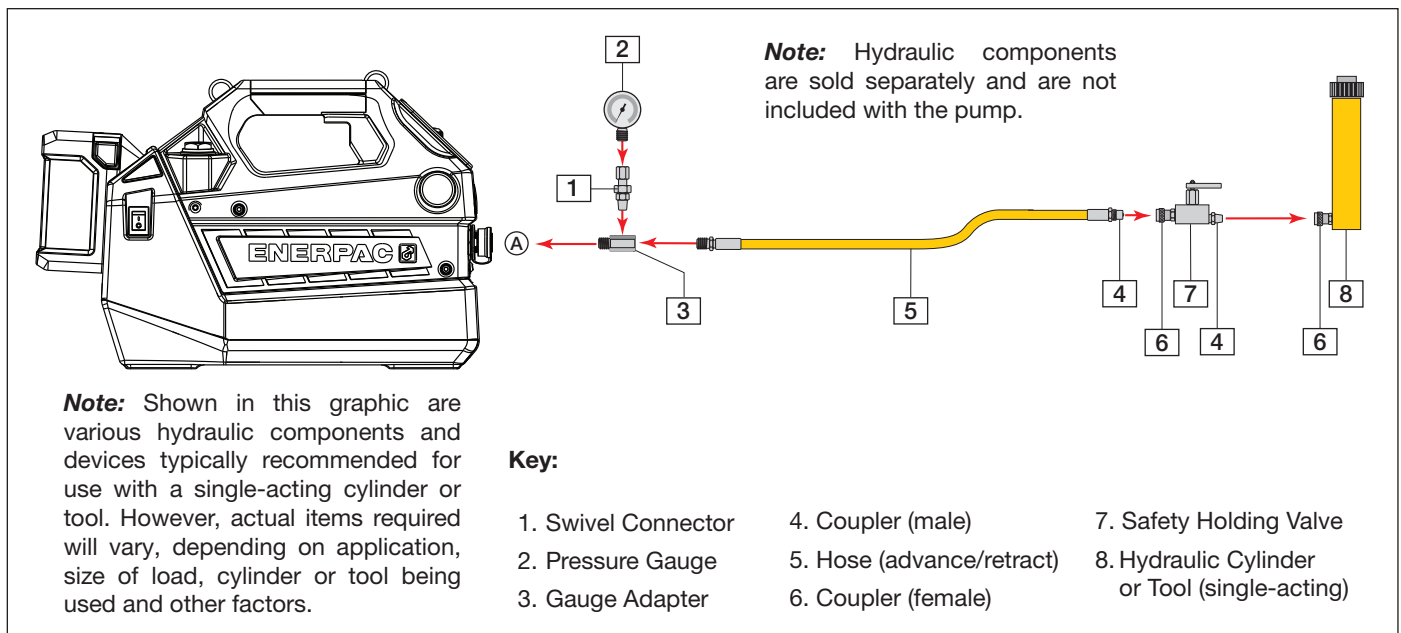


Figure 4: Single-Acting Hydraulic Circuit and Components (typical)

5.3 Connecting the Remote Pendant

1. Remove the dust cap from the connector at the front of the pump and connect the pendant cable. See Figure 5.
2. Hand tighten the threaded collar to secure the pendant cable to the connector.

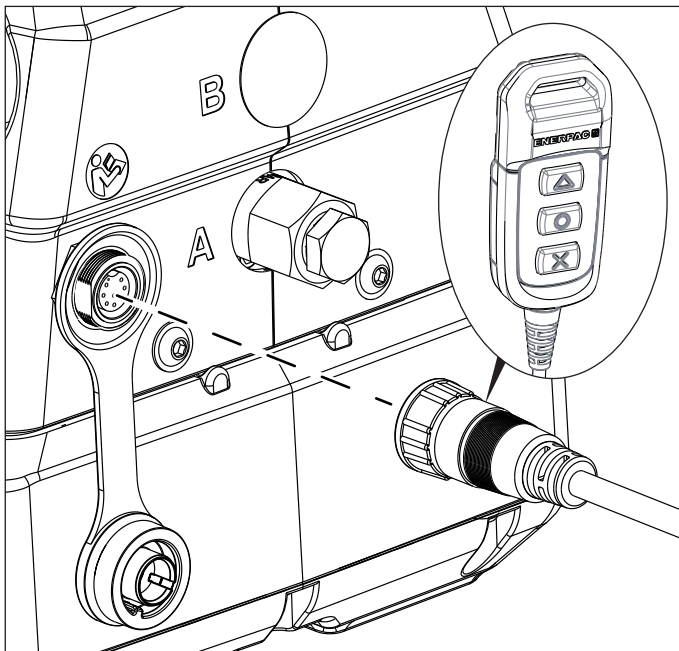


Figure 5: Remote Pendant Connection

6.0 BATTERY

NOTICE Press battery charge indicator button to determine charge level before using or charging battery for the first time.

NOTICE New batteries should be fully charged before use. Battery and charger must be purchased separately if not included in the shipment with the pump. Refer to Section 3.5 of this manual for battery and charger model numbers.

NOTICE Refer to the separate battery and charger manuals for complete battery use and care information and charging instructions.

6.1 Charge Level Indicator

A small panel containing a charge indicator button and four charge indicator lights is located on the battery housing. Press the button to display the battery charge level. The lights will remain on for 3 seconds and then turn off automatically. See Figure 6.

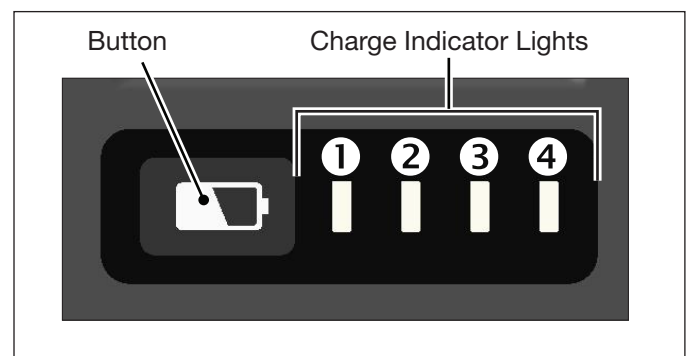


Figure 6: Battery Charge Level Indicator

Refer to the following table to determine the level of charge:

When battery charge indicator button is pressed:		Percent Charge: (approximate)
Lights 1-4 on		Above 75%
Lights 1-3 on		51 - 75%
Lights 1-2 on		26 - 50%
Light 1 on		10 - 25%
Light 1 flashing red		Remaining Charge < 5%

One or more of the indicator lights should glow white when the charge indicator button is pressed. If the #1 indicator light flashes red when the button is pressed, the battery charge is very low. If none of the lights illuminate when the button is pressed, the battery is fully discharged.

NOTICE Run time between battery charges is mostly dependent on the pressure required for the application. The higher the required pressure setting, the shorter the runtime will be. To increase runtime, whenever possible use a cylinder or tool capable of operation below 8,000 psi [552 bar].

6.2 Low Voltage Shutoff

The pump will stop running (or will be prevented from starting) if battery voltage drops below a pre-determined low limit.

The pump may slow down or operate sluggishly before shutoff occurs, providing a signal that the battery is approaching full discharge.

NOTICE It is recommended that the battery be removed from the pump and placed in the charger before it becomes fully discharged. Full discharge cycles may cause permanent damage to the battery cells.

NOTICE If the battery becomes fully discharged while the pump is in use, it should be placed in the charger within 12 hours and kept in the charger until fully charged. This will help prevent battery damage and premature battery failure.

6.3 Overcurrent and Overtemperature Protection

The battery will shut-off automatically in the event that battery current draw becomes excessive or if the battery's internal temperature rises above acceptable limits.

Both faults are self-resetting. Normal battery operation will resume when the excessive current draw condition is eliminated or after the battery has cooled down.

In order to reset these faults, it may sometimes be necessary to cycle the pump power switch off and on, or to remove and reinstall the battery.

6.4 Cold Weather Operation

If the battery's internal temperature drops to below approximately -13°F [-25°C], battery shutdown will occur and the pump will be prevented from starting.

If the pump will not start and the ambient temperature is very cold, remove the battery from the pump and take it to a room temperature location. Allow time for the battery to warm-up and be sure it is fully charged. Then, re-install the battery and try starting the pump again.

6.5 Battery Installation and Removal

- **To install battery on pump:** Slide the battery down onto the battery interface at the rear of the pump. Make sure it latches securely into place. See Figure 7.
- **To remove battery from pump:** Press and hold the release buttons located on each side of the battery. Then, slide the battery upward and remove it from the pump. See Figure 8.

NOTICE To ensure compatibility and proper operation, use only the specified Enerpac 54V Lithium-Ion battery with the pump. Refer to Section 3.5 for battery specifications and model number.

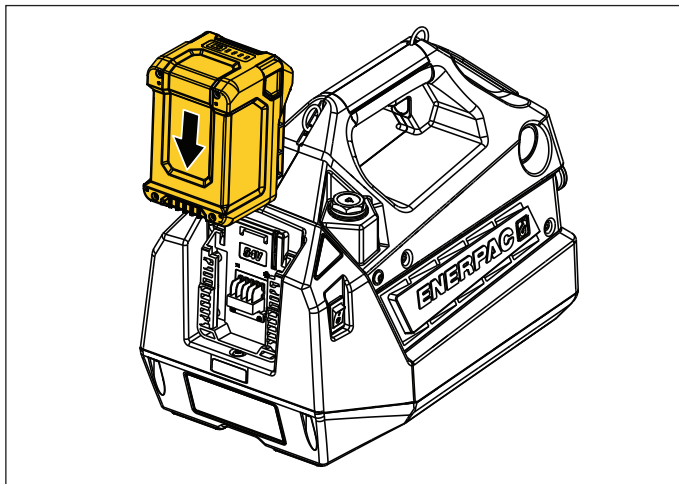


Figure 7: Battery - Install

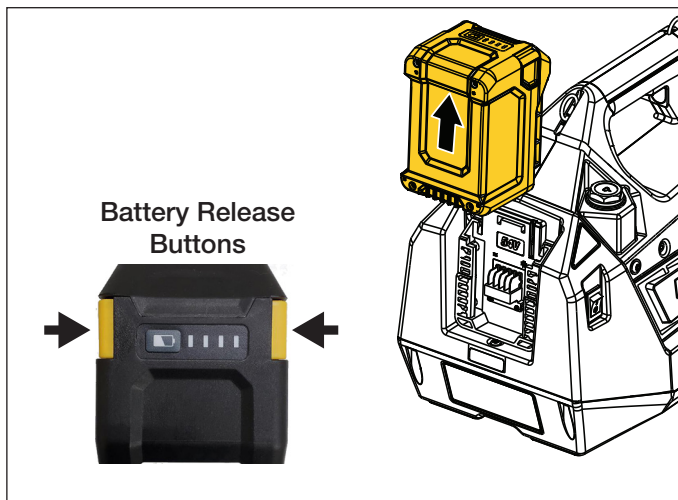


Figure 8: Battery - Remove

7.0 OPERATION

7.1 Power Switch

The pump is equipped with a two-position rocker style power switch. It is located near the battery, on the right-hand side of the pump housing. Refer to Figure 9.

Depressing the top half of the power switch (I) connects battery power to the pump motor control circuit. Depressing the bottom half of the power switch (O) disconnects battery power to the motor control circuit.

The power switch must be in the ON (I) position to allow pump operation. The pendant buttons are non-functional when the power switch is in the OFF (O) position.

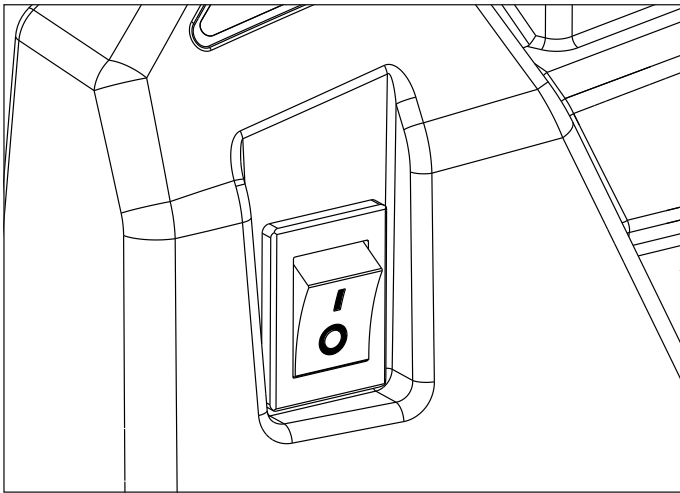


Figure 9: Power Switch

The power switch can remain in the ON (I) position when the pump is temporarily idle, but in regular use.

However, always turn the power switch OFF (O) in any of the following conditions:

- If an emergency occurs and the pump must be stopped immediately.
- Before moving or transporting the pump.
- During sustained periods of non-use (overnight, etc.) while the battery remains installed on the pump.
- When performing routine inspection and maintenance procedures while the battery is installed.

NOTICE The pump motor control circuits will consume a small amount of battery power when the pump is idle and the power switch is in the ON (I) position. To prolong the battery charge, it is recommended that the power switch be turned off overnight and during other long periods of inactivity.

7.2 Before Start-up

1. Connect the hydraulic hose. Check all hydraulic fittings and connections to be sure they are tight and leak free. Refer to instructions in Section 5.2.
2. Check the hydraulic oil level. Add oil if necessary. Refer to sections 8.1, 8.2 and 8.3 for procedures.

3. Connect the remote pendant to the connector on the front of the pump housing. Refer to instructions in Section 5.3.
4. If ordered with the pump: Attach the shoulder strap (optional accessory) to the ring at each end of the pump carrying handle.
5. Install a fully charged battery on the pump. Refer to Section 6.5 for additional information.

NOTICE Press battery charge indicator button to determine charge level before using or charging battery for the first time.

NOTICE New batteries should be fully charged before use. Refer to Section 6.1. Also refer to the separate manuals for the battery and battery charger for additional information.

6. Before operating the pump under load, perform the air removal procedure to purge any trapped air from the system. Refer to Section 7.7.
7. Pump relief valve is factory set to approximately 10,150 psi [700 bar]. If a lower setting is desired, readjust the relief valve pressure as described in Section 8.5.

7.3 Operating Precautions

WARNING Never allow any personnel to be under an object that is being supported only by the pump hydraulics. Death or serious personal injury could result if hydraulic pressure is relieved or if leakage occurs and the load drops on persons below.

WARNING Failure to observe the following precautions and instructions could allow load to drop on persons working in the area. Death or serious personal injury could result.

- Keep persons away from area under load during lifting, lowering and whenever system pressure is relieved.
- To prevent the load from dropping, always immediately support it with jack stands or other mechanical blocking devices of adequate rated capacity after lifting is completed. The pump control valve does NOT contain a safety locking valve.
- Be certain that stands or blocking are fully in place before pressing the pendant  or  button. The load will drop immediately if it is not mechanically supported and either dump button is pressed.
- Although the pump hydraulics will temporarily hold the load, be aware that the load can drift downward or drop suddenly at any time if it is not mechanically supported.

7.4 Remote Pendant Operation

The pump motor and electric solenoid valve are operated by a corded remote pendant. See Figure 10.

Before using the pendant, be sure the pump power switch is in the ON (I) position and that a charged battery is installed on the pump.

7.4.1 Pendant Jog Button

- Press and hold the JOG button  to start the motor and advance the cylinder or tool.
- Release the JOG button  to stop the motor and hold the load at the desired position.

7.4.2 Pendant Dump Buttons

- Press and hold the DUMP button  or  to retract the cylinder or tool, or to relieve system pressure.
- At any time before the cylinder or tool is fully retracted, release the DUMP button  or  to stop retraction and hold the load at the desired position.

NOTICE The DUMP buttons  and  function in an identical manner. Either button can be used to retract the device or to relieve pressure. The DUMP buttons energize and open the solenoid valve but DO NOT start the motor.

7.4.3 Additional Information

- Battery power is required for the DUMP buttons  and  to function. If hydraulic pressure cannot be relieved, verify that the pump power switch is in the ON (I) position. Check the battery charge level and install a fully charged battery if needed.
- Press the pendant buttons one-at-a-time. Pressing any two pendant buttons simultaneously will initiate a fault condition. Refer to Section 7.5 and Section 7.6 for additional information.
- Hydraulic flow is blocked when the solenoid valve is de-energized. However, the pump is not designed to hydraulically hold or support the load while persons are working in the area. After lifting is completed, the load must be mechanically supported (refer to warning statement and related information in Section 7.3).

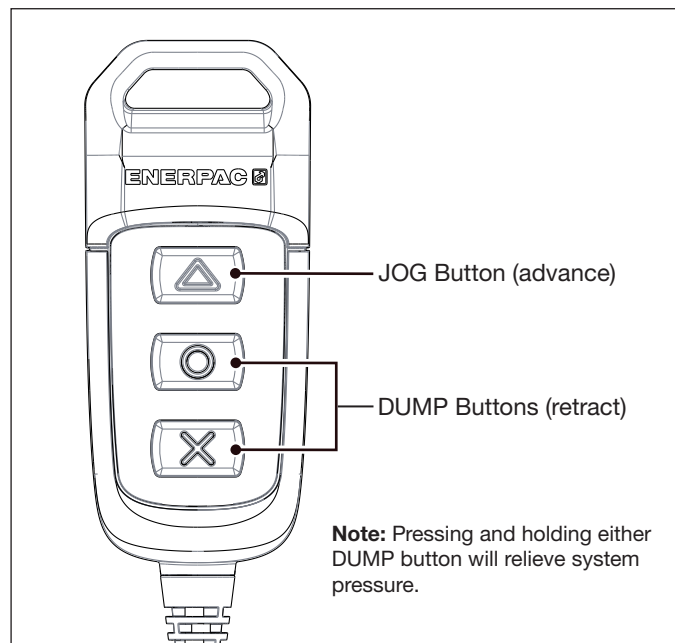


Figure 10: Remote Pendant

7.5 Fault Conditions

If a fault condition is initiated while the pump motor is running, the motor will stop immediately. In addition, when a fault condition is active, the motor will not restart when the pendant JOG button  is pressed. And the valve solenoid will not energize to relieve pressure when the pendant DUMP button  or  is pressed.

Any of the following occurrences will initiate a fault condition:

- Pressing any two pendant buttons at the same time.
- If battery voltage falls below a pre-determined limit.
- Excessive pump internal temperatures.
- Damaged pump components and/or abnormal conditions sensed by the pump electronic control system.

7.6 If Motor Fails To Start (Fault Reset)

If the battery is charged, and the pump motor fails to start when the pendant JOG button  is pressed:

1. Turn off the pump power switch (O).
2. Wait for 3 to 5 seconds. Then, turn on the pump power switch (I) to reset the fault.
3. If the fault has been successfully reset and the battery is adequately charged, normal pump operation should resume.

NOTICE If the motor still fails to start, take the pump to an Enerpac authorized service center for inspection and diagnosis.

7.7 Air Removal

When hydraulic connections are made to a new pump, air will be trapped inside the hoses and other components. This trapped air can cause erratic operation of cylinders or tools.

To ensure smooth, safe operation, remove the pump oil fill plug and run the cylinder or tool through several complete advance-retract cycles. Do this under no load and with the pump positioned higher than the cylinder or tool.

When the cylinder or tool advances and retracts smoothly without hesitation, it is an indication that air has been successfully vented from the system. Fully retract the cylinder and re-install the oil fill plug after procedure is completed.

7.8 Disconnecting Hydraulic Hose

Relieve hydraulic pressure and disconnect the hydraulic hose from the pump as described in the following steps:

1. Fully retract the cylinder or tool. Be sure that the load is completely removed.
2. With the power switch in the ON (I) position, press and hold the DUMP button  or  to relieve any residual hydraulic pressure in the system.

NOTICE If battery is fully discharged, or if the dump function is not working, relieve trapped pressure manually. Refer to procedure in Section 7.9.

3. If a pressure gauge has been installed, verify that the gauge indicates zero (0) psi/bar. Verify that hose is not stiff and that there are no other indications of possible trapped hydraulic pressure.
4. Turn off the pump power switch (O).
5. Disconnect hose from the pump "A" port.
6. To prevent dirt entry and contamination, install a dust cap or plug (as required) in the pump "A" port connection.

7.9 Manual Override Button

The manual override button allows hydraulic pressure to be relieved manually in the event of full battery discharge, solenoid coil failure or other related problem.

WARNING Cylinder or tool will retract immediately when manual override button is pressed. To prevent death or serious personal injury, be certain that no persons are working under the load before pressing the manual override button.

To manually relieve hydraulic pressure, insert a small screwdriver or Allen wrench into the recessed center area of the valve as shown in Figure 11. Push firmly on the manual override button until spring tension is felt and pressure is relieved. Approximately 11/32" [9 mm] of travel will be required. To prevent damage use hand force only.

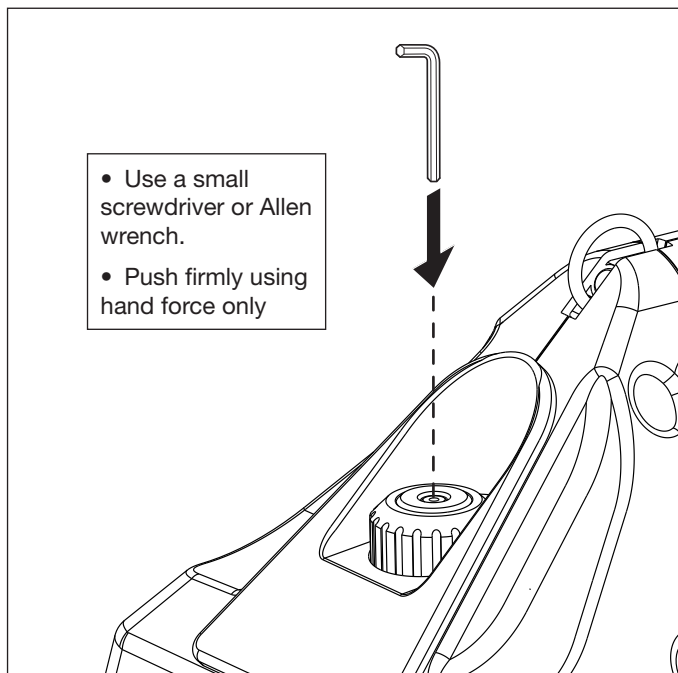


Figure 11: Manual Override Button (pressure relief)

It may be necessary to press and release the manual override button several times to fully relieve hydraulic pressure. The button may remain slightly depressed after use and might not return to the full upward position until the solenoid is electrically actuated. This is normal.

NOTICE The manual override button is intended for emergency use only. If the pump will not operate electrically via the pendant controls when the battery is fully charged, take the pump to an Enerpac authorized service center for diagnosis and repair.

7.10 Transporting the Pump

Before moving or transporting the pump, turn off the pump power switch (O) or remove the battery to prevent accidental pump startup via the remote pendant buttons.

Always move or transport the pump using only the built-in carrying handle or the shoulder strap (optional accessory).

NOTICE Never attempt to transport or reposition the pump by lifting or dragging it by the hydraulic hose. Damage to the pump and/or hose may result.

8.0 MAINTENANCE

8.1 Check Oil Level

1. Be sure the hydraulic cylinder or tool is fully retracted and that the load is completely removed.
2. With the power switch in the ON (I) position, press and hold the DUMP button (⊙) or (⊗) to relieve any residual hydraulic pressure in the system.
3. Turn off the pump power switch (O).
4. Be sure the pump is on a level surface.
5. Remove the oil fill plug from the fill opening. Use a 27 mm wrench. See Figure 12.

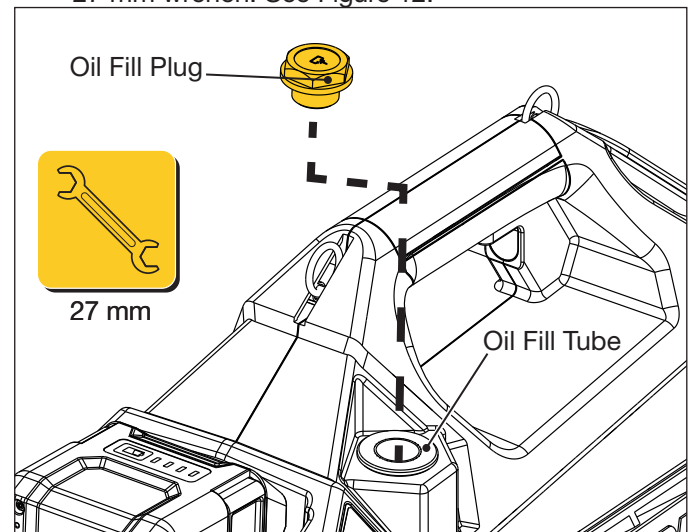


Figure 12: Oil Fill Location

6. Check the oil level. Reservoir is FULL when oil level is near the top of the oil fill tube.
7. If oil level is low, add oil as described in Section 8.3. Refer to Section 8.2 for oil requirements.

NOTICE An O-ring fits inside a groove on the underside of the oil fill plug. Check for this O-ring and reinstall it if it has dropped out of the groove. If the O-ring is missing or damaged, replace the oil fill plug. A new O-ring will be included with the replacement oil fill plug.

8. Reinstall the oil fill plug after checking oil level. Tighten the plug until it is hand-tight. Do not overtighten.

8.2 Hydraulic Oil Requirements

Use only Enerpac HF hydraulic oil when adding additional oil or when performing an oil change. Enerpac HF hydraulic oil is available from Enerpac distributors and Enerpac authorized service centers.

NOTICE Use only Enerpac HF hydraulic oil. Use of other oils may result in damage to pump components. Such damage is not covered under the Enerpac product warranty.

8.3 Adding Oil

CAUTION Be certain that cylinder or tool is fully retracted before adding any oil to the reservoir. If an oil-filled cylinder or tool is retracted after additional oil has been added to the reservoir, the reservoir could become overfilled and burst. Oil leakage and possible personal injury could occur.

NOTICE

- Always turn off the pump power switch (O) before removing the oil fill plug and adding oil. This will prevent accidental pump start-up.
- Use only Enerpac HF hydraulic oil. Refer to Section 8.2. Use only new oil poured from a clean container.
- To avoid spillage and to allow proper venting, always use a funnel of the proper size when adding oil. Spillage and under filling will occur if a funnel is not used.

Add oil as described in the following steps:

1. Be sure that the hydraulic cylinder or tool is fully retracted and that the load is completely removed.
2. With the power switch in the ON (I) position, press and hold the DUMP button  or  to relieve any residual hydraulic pressure in the system.
3. Place the pump on a level work surface. Be sure the pump power switch is in the OFF (O) position.
4. Remove the oil fill plug from the fill opening. Use a 27 mm wrench. See Figure 12.
5. Place a funnel (maximum 3/4" [19 mm] stem outer diameter & at least 1-3/16" [30 mm] long) through the fill opening and insert it into the oil fill tube. See Figure 13.

NOTICE Pour oil slowly to avoid spillage. If oil begins to overflow from the fill opening, stop pouring immediately.

6. SLOWLY add Enerpac HF oil while watching the oil level in the funnel stem. To avoid spillage, stop pouring immediately when oil reaches the top of the fill opening or begins flowing around the outside of the funnel stem.

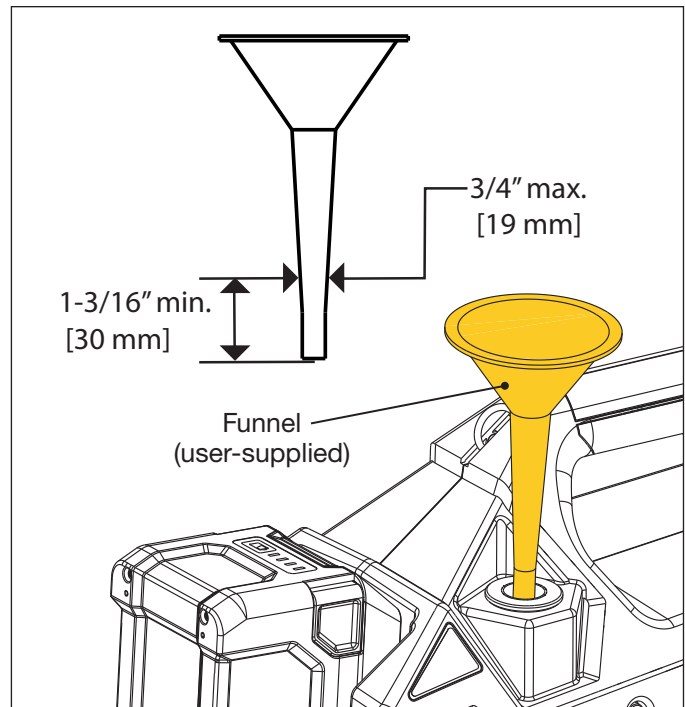


Figure 13: Adding Oil Using Funnel

7. Remove funnel from the fill opening. Wipe off and/or remove any spilled oil.

NOTICE Dispose of spilled oil in accordance with all applicable laws and regulations.

NOTICE An O-ring fits inside a groove on the underside of the oil fill plug. Check for this O-ring and reinstall it if it has dropped out of the groove. If the O-ring is missing or damaged, replace the oil fill plug. A new O-ring will be included with the replacement oil fill plug.

8. Reinstall the oil fill plug. Tighten the plug until it is hand-tight. Do not overtighten.

8.4 Oil Change

Check oil for contamination by comparing the color of the oil in the reservoir fill tube to new unused Enerpac HF oil. Unused Enerpac HF oil is a crisp blue color.

As a general rule, completely drain and refill the pump's bladder type reservoir every 250 hours of operation, or more frequently if used in dirty environments. Refer to the following procedure:

1. Be sure that the hydraulic cylinder or tool is fully retracted and that the load is completely removed.
2. Relieve any residual hydraulic pressure and disconnect the hydraulic hose from the pump "A" port. Refer to instructions in Section 7.8 of this manual.
3. Place the pump on a level work surface. Be sure the pump power switch is in the OFF (O) position.
4. Attach an open-ended hose to the pump "A" port. Place the open end of the hose in a suitable pan or container that is large enough to collect all the used oil. See Figure 14.

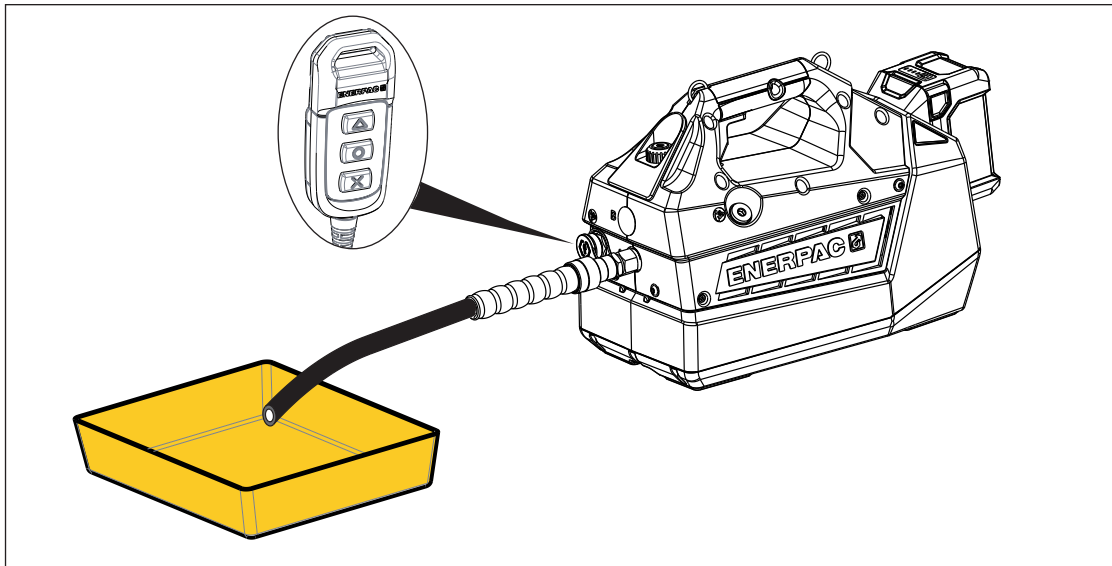


Figure 14: Draining the Hydraulic Reservoir

NOTICE Model XC2302S has a two liter [120 in³] reservoir capacity. Model XC2304S has a four liter [240 in³] reservoir capacity. Be sure that pan or container is large enough to hold all the used oil.

5. If removed, reinstall the oil fill plug in the pump oil fill port. This plug must remain installed in steps 6-8.
6. Turn on the pump power switch (I).
7. Press and hold the JOG button  to start the motor and begin draining the reservoir. Continue running the motor until oil stops flowing from the open-ended hose. Then, release the JOG button  to stop the motor. See Figure 14.

NOTICE Dispose of used oil in accordance with all applicable laws and regulations.

8. Turn off the pump power switch (O).
9. Remove the oil fill plug and fill the reservoir with new Enerpac oil. Refer to Section 8.2 for hydraulic oil requirements and Section 8.3 for detailed oil fill instructions.

NOTICE The actual amount of oil required to fill a completely empty reservoir may be slightly more than the pump's rated usable oil capacity (Refer to Section 3.4 of this manual).

10. Disconnect the open-ended hose from the pump "A" port. Reconnect the hydraulic hose from the cylinder or tool.
11. Run the pump and cycle the cylinder or tool several times to bleed any trapped air from the system. Refer to Section 7.7 for additional information.
12. Recheck oil level after cycling the cylinder or tool. With the cylinder or tool fully retracted, verify that oil level has not dropped. Add additional oil if level is low.

8.5 Relief Valve Pressure Adjustment

The pump contains a user-adjustable hydraulic pressure relief valve that is factory set before shipment to approximately 10,150 psi [700 bar]. Check the setting and readjust it if necessary as described in the following steps. See Figure 15.

1. Be sure that the cylinder or tool is fully retracted and that the load is completely removed.
2. Relieve any residual hydraulic pressure and disconnect the hydraulic hose from the pump "A" port. Refer to instructions in Section 7.8 of this manual.
3. Turn off the pump power switch (O).
4. Connect a 0-15,000 psi [0-1000 bar] pressure gauge (user-supplied) to the pump "A" port.
5. Turn on the pump power switch (I).
6. Press and hold the JOG button  to start the motor. While the motor is running, check the gauge reading to verify the relief valve pressure setting.
 - If the pressure setting shown on the gauge is correct for your application and does not exceed the maximum rated pressure of the cylinder or tool to be used, skip step 7 and go to step 8.
 - If the pressure setting shown on the gauge is not correct for your application and/or exceeds the maximum rated pressure of the cylinder or tool to be used, readjust the setting as described in step 7.

WARNING Be certain that the pressure setting does not exceed the maximum rated pressure of the cylinder (or tool) to be used, or of any other components in the system (hoses, fittings, etc.). Failure to observe this precaution may result in failure of cylinder or tool and related components. Death or serious personal injury could occur.

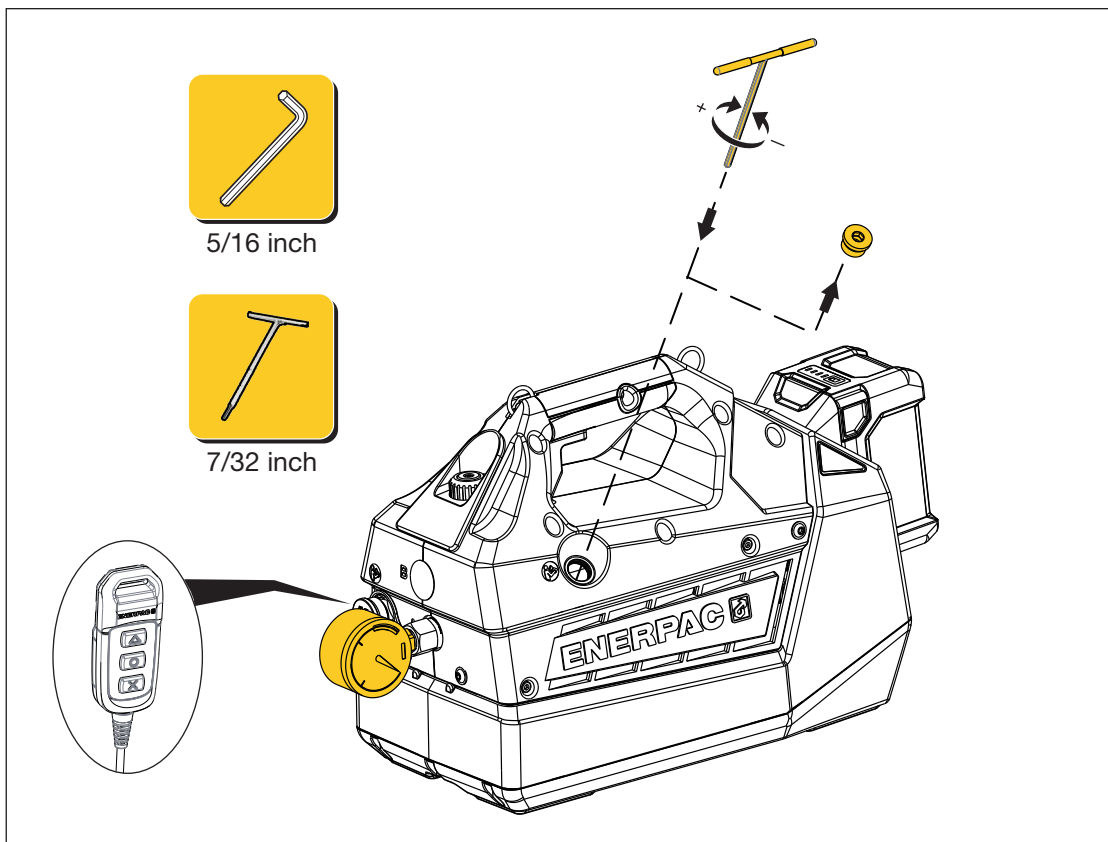


Figure 15: Relief Valve Pressure Adjustment

NOTICE Maximum system pressure is limited to approximately 10,700-11,100 psi [738 - 765 bar] by an internal safety relief valve.

7. If needed, adjust the relief valve pressure setting as described in the following steps:
 - a. Using a 5/16" Allen wrench, remove the access plug from the side of the pump.
 - b. Place a long 7/32" Allen wrench through the opening until it engages with the socket head of the pressure adjustment screw.
 - c. With the power switch in the ON (I) position, press and hold the DUMP button  or  to relieve hydraulic pressure in the pump. Verify that the pressure gauge indicates zero (0) psi/bar.
 - d. Only if pressure setting is to be decreased: Using the Allen wrench, turn the pressure adjustment screw about two turns counter-clockwise.

NOTICE To help ensure an accurate final pressure setting, always start from a lower setting and gradually increase the pressure to the final setting.

- e. Press and hold the JOG button  to start the motor.
- f. With the motor running, slowly turn the Allen wrench clockwise to increase the pressure setting to the desired setting. Observe the pressure gauge to determine when this setting has been reached.

g. After adjusting the pressure setting, release the JOG button  to stop the motor. Then, press and hold the DUMP button  or  to relieve hydraulic pressure in the pump. Verify that the pressure gauge indicates zero (0) psi/bar.

h. Press and hold the JOG button  again and re-check the pressure gauge reading.

NOTICE If pressure is too high or too low, stop the pump and repeat steps 7c through 7h. Note that it will first be necessary to relieve pump pressure as described in step 7c before repeating the remaining steps.

8. After verifying that the desired pressure setting has been achieved, remove the Allen wrench and reinstall the access plug.
9. With the power switch in the ON (I) position, press and hold the DUMP button  or  to relieve hydraulic pressure in the pump. Verify that the pressure gauge indicates zero (0) psi/bar.
10. Turn off the pump power switch (O).
11. Disconnect pressure gauge from the pump "A" port.
12. Reconnect the hydraulic hose to the pump "A" port.

9.0 CLEANING

- Before beginning any cleaning procedures, always turn off the pump power switch (O) or remove the battery. Be sure that hydraulic pressure is completely relieved (0 psi/bar).
- Motor cooling vents are located on both sides of the pump housing, around each ENERPAC logo. To help ensure unrestricted airflow, remove any dust or dirt from these vents. Use a suitable soft brush.

⚠ WARNING To avoid a shock hazard, do not insert any objects inside the vents. Do not spray water or cleaners inside the vents.

- Wipe the pump exterior with a dry, soft cloth. Avoid using strong detergents or cleaners.
- Refer to the battery manual for battery cleaning instructions.

10.0 STORAGE

Store the pump as described in the following procedure:

1. Be sure that hydraulic pressure is completely relieved (0 psi/bar).
2. Turn off the pump power switch (O).
3. Remove the battery from the pump.
4. Store the pump and battery in a clean, dry and secured location, away from unauthorized users. Avoid storing in extreme heat or cold.

NOTICE After removing battery from storage, press charge indicator button to determine battery charge level. Do this before using or charging battery.

NOTICE Refer to the separate manuals for the battery and battery charger for additional storage information pertaining to those items.

11.0 SAFE DISPOSAL PROCEDURE

When the pump has reached the end of its useful life, dispose of it as described in the following steps:

1. Drain all hydraulic oil from the pump hydraulic reservoir as described in Section 8.4 of this manual. Dispose of used oil in accordance with all applicable laws and regulations.
2. Remove battery from pump. Dispose of battery in accordance with instructions contained in the Enerpac battery and charger manual.
3. Take the pump to an approved industrial recycling facility for disposal

12.0 FIRMWARE UPDATES

When issued, product firmware updates will be made available via the Enerpac Connect App. Specific firmware updating instructions for your product model will be provided in the app.



The Enerpac Connect App is available for download on the Apple App Store and on Google Play.



Google Play and the Google Play logo are trademarks of Google LLC. App Store is a trademark of Apple Inc., registered in the U.S. and other countries and regions.

13.0 TROUBLESHOOTING

Only qualified technicians should service the pump or system components. For repair service, contact your Enerpac authorized service center.

The troubleshooting guide (see next page) is intended to be used only as an aid in determining if a problem exists. A system failure may or may not be the result of a pump malfunction. To determine the cause of the problem, the complete system must be included in any diagnostic procedure.

⚠ WARNING Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Never tighten or loosen hydraulic fittings while the pump hydraulic system or connected components are pressurized. Escaping oil under pressure can penetrate the skin, causing serious personal injury.
- Keep hands, fingers and other body parts clear of pinch points and moving parts when observing operation during troubleshooting.
- To prevent accidental start-up of pump during servicing, always remove battery from pump before performing any repair procedures.

Troubleshooting Guide		
Problem	Possible Cause	Action
1. Pump will not start.	a. Battery not installed.	Install battery.
	b. Pump power switch is in the OFF (O) position.	Turn on the pump power switch (I).
	c. Battery discharged.	Press the battery charge indicator button to determine battery charge level. Place battery in charger if charge level is low. Replace battery if it is damaged and cannot be charged.
	d. Electrical contacts dirty or corroded.	Clean the pump electrical contacts. ⚠ WARNING To avoid sparks or possible electric shock, DO NOT clean contacts on battery.
	e. Battery overtemperature or undertemperature condition.	Battery will shut-down and prevent pump from starting if its internal temperature becomes too high or too low. If this condition is suspected, remove the battery from the pump and take it to a room temperature location. Allow time for the battery to return to normal operating temperatures before reinstalling it on the pump.
	f. Fault Condition. • Button Fault • Other Fault Condition	Cycle power switch off and on to reset fault condition. Or, remove and reinstall battery.
	g. Pendant controls or cable damaged.	Try operating the pump using a different compatible pendant. If pump starts and operates normally, repair or replace the pendant.
	h. Motor and/or electronic control board damaged.	Contact Enerpac Authorized Service Center.
	i. Pump jammed due to obstruction. Possible internal damage to pump.	Contact Enerpac Authorized Service Center.

(continued on next page)

Troubleshooting Guide (continued)		
Problem	Possible Cause	Action
2. Low fluid output.	a. Pump needs priming.	To prime the pump, be sure that the pump reservoir is filled with oil. Then, run the pump motor with the manual override button pushed-in while gently rocking the pump from side-to-side.
	b. Bypass valve malfunction.	Contact Enerpac Authorized Service Center.
	c. Oil intake screen clogged with debris.	Contact Enerpac Authorized Service Center.
	d. Control valve internal leakage, wear and/or damage.	Contact Enerpac Authorized Service Center.
	e. Pump element internal leakage, wear and/or damage.	Contact Enerpac Authorized Service Center.
3. Cylinder will not advance or retract.	a. Hydraulic coupler(s) not fully engaged.	Check hydraulic couplers for full engagement. A partially engaged hydraulic coupler may reduce or block hydraulic flow.
	b. Low oil level.	Add oil until reservoir is completely full.
	c. Pump needs priming.	To prime the pump, be sure that the pump reservoir is filled with oil. Then, run the pump motor with the manual override button pushed-in while gently rocking the pump from side-to-side.
	d. Solenoid coil will not energize to open valve.	Replace solenoid coil. Contact Enerpac authorized service center.
	e. Oil intake screen clogged with debris.	Contact Enerpac Authorized Service Center.
4. Cylinder advances and retracts erratically.	a. Air in the system.	Advance and retract the cylinder until operation is smooth. Refer to procedure in Section 7.7.
	b. External hydraulic leak.	Tighten connections. Replace damaged components.
	c. Control valve internal leakage, wear and/or damage.	Contact Enerpac Authorized Service Center.

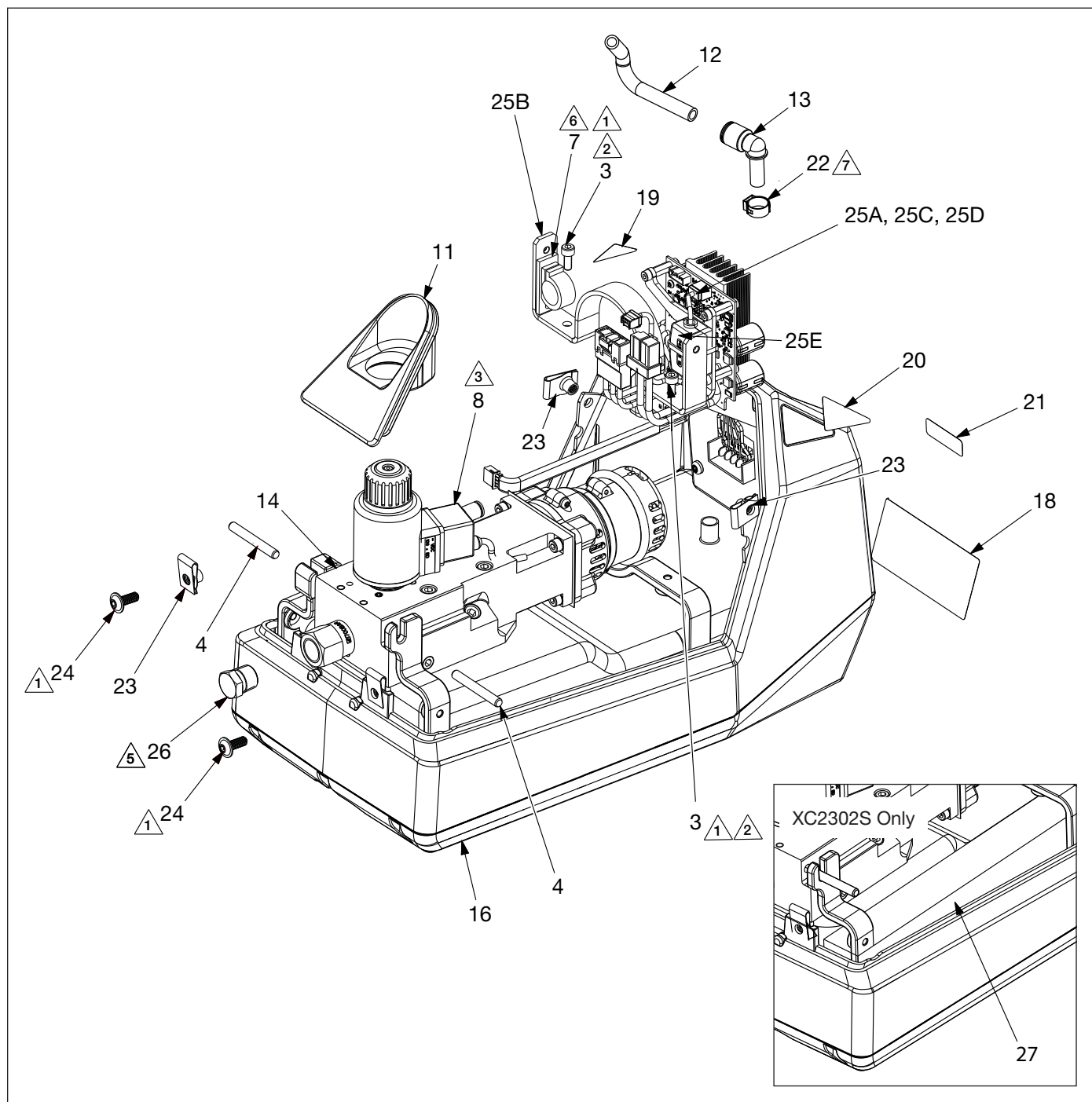
(continued on next page)

Troubleshooting Guide (continued)		
Problem	Possible Cause	Action
4. Cylinder advances and retracts erratically (continued)	d. Pump element internal leakage, wear and/or damage.	Contact Enerpac Authorized Service Center.
5. Pump slows down and stops.	Battery discharged.	Charge battery. Replace battery if it is damaged and cannot be charged.
6. Pump stops during prolonged or heavy operation.	Excessive current draw or overtemperature condition.	Immediately release the pendant JOG button  . Allow time for pump to cool before restarting.
7. Pump stops during normal operation (even when battery is sufficiently charged).	a. Electromagnetic interference (EMI).	Electromagnetic interference (EMI) from other devices may cause pump to stop running and become unresponsive. When an EMI related shutdown occurs, the pump electronics will automatically reset and must finish cycling before the pump can be restarted. If pump stops after being restarted, check for and remove source of electromagnetic interference. If this is not possible, try repositioning or relocating the pump. Refer to Section 2.2 of this manual for additional information.
	b. Mechanical or electrical component failure.	Contact Enerpac Authorized Service Center.
8. Pump does not build pressure.	User-adjustable relief valve set too low.	Adjust relief valve pressure. Refer to procedure in Section 8.5.
9. Noisy pump operation.	a. Pump element piston sticking.	Contact Enerpac Authorized Service Center.
	b. Motor or gear damaged.	Contact Enerpac Authorized Service Center.
10. Pump does not hold load when motor is stopped.	a. Internal check valve leakage or malfunction.	Contact Enerpac Authorized Service Center.
	b. Control valve leakage or malfunction.	Contact Enerpac Authorized Service Center.
	c. Air trapped in the system.	Refer to procedure in Section 7.7.

14.0 REPAIR PARTS SECTION

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Figure 16: Main Assembly



Notes:

- ① Torque to 18-26 in-lbs [2-3 Nm].
- ② Secure with Loctite 243 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- ③ Torque to 8-24 oz-in [0.06 - 0.17 Nm].
- ⑤ Torque to 120-144 in-lbs [13.6 - 16.3 Nm].
- ⑥ Secure motor and battery wires with cable ties.
- ⑦ Crimp tight.

Parts List for Figure 16

Item	Description		Qty	Part Number	
				Model XC2302S	Model XC2304S
3	◆	Screw, SHCS Hex, M5	2	CBZ517028-1A	CBZ517028-1A
4	❖	Pin, 6 mm x 45 mm Lg	2	DD3417059	DD3417059
7	□	Cable Tie, Screw Mount	1	DD7326217	DD7326217
8		Cable Assembly, 3/2 Sol Valve	1	DD7336960SR	DD7336960SR
11	◆	Grommet	1	DD7968808	DD7968808
12	▲▼†	Tube, 0.38 OD x 5.5 LG Flexible	1	DF1303268	DF1303268
13	▲▼†	Fitting, Elbow 90 Tube to Barb	1	DF1302097	DF1302097
14		Power Unit & Reservoir Assembly	1	(See Figure 20)	(See Figure 20)
16		Pump Base Assembly	1	(See Figure 19)	(See Figure 19)
18		Decal, Prod Specification Nameplate	1	DD8791026SR	DD8792026SR
19	○	Decal, 54V Right	1	DD8925026	DD8925026
20	○	Decal, 54V Left	1	DD8924026	DD8924026
21	○	Decal, California Prop 65	1	DD9065026	DD9065026
22	▲▼†	Clamp, Pinch	1	DD9124299	DD9124299
23	○	Nut, Clip On M6	4	DD9397021	DD9397021
24	◆	Screw, Flange Button Head M6	2	DD9398048	DD9398048
25A		Motor Driver, 24-63 VDC	1	DD8815380SR	DD8815380SR
25B	□	Bracket, Motor Clamp	1	DD8248111	DD8248111
25C	□	Standoff, 6 mm Hex	3	DD9404054	DD9404054
25D	□	SHCS, Hex, M4	6	CBE413028-1A	CBE413028-1A
25E		Ferrite Core	1	DM1535380SR	DM1535380SR
26		Plug	1	R515245-2	R515245-2
27		Insert, Foam	2	DD9045225	- - -

▲ Items included in 2L Bladder Kit, XC2B2LK.

▼ Items included in 4L Bladder Kit, XC2B4LK.

○ Items included in Lower Shroud Kit, XC2LSK.

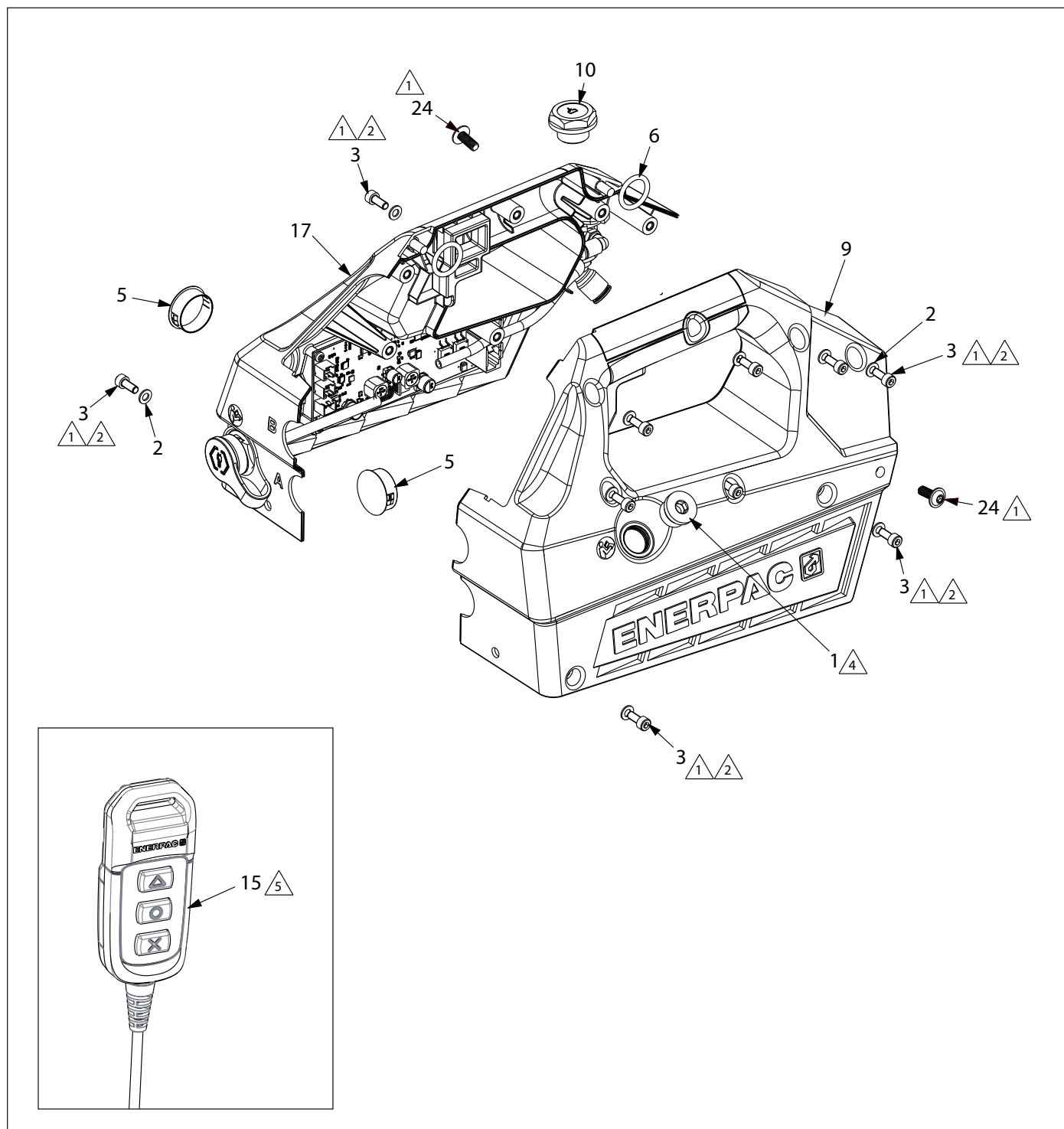
◆ Items included in Upper Shroud Kit, XC2USK.

❖ Items included in Eccentric Housing Service Kit, XC2ECK.

□ Items included in Motor Driver Mounting Kit, XC2MDMK.

† Items included in Oil Fill Tube Kit, XC2TK.

Figure 17: Shroud Halves & Pendant



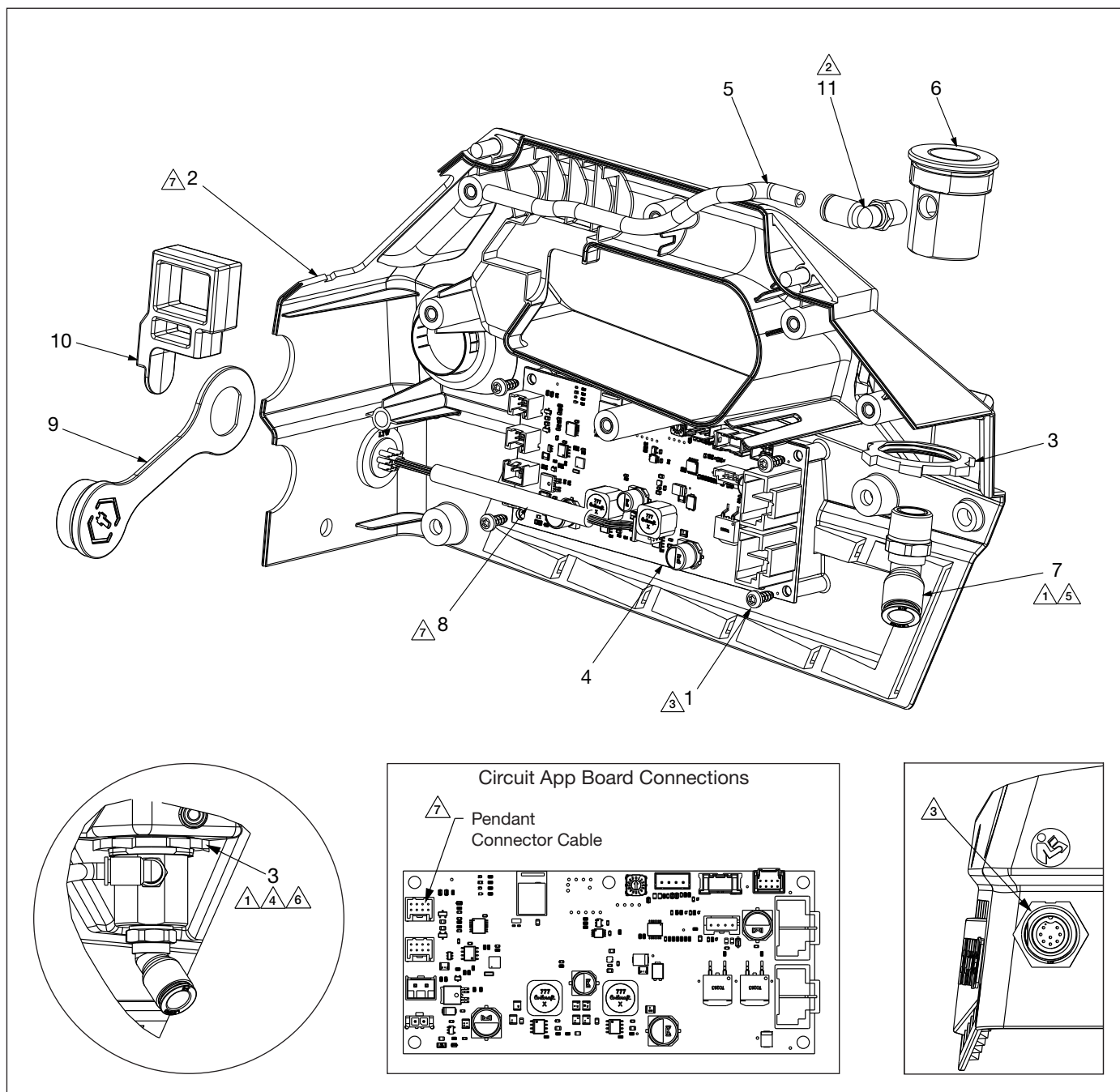
Notes:

- ① Torque to 18-26 in-lbs [2-3 Nm].
- ② Secure with Loctite 243 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- ④ Torque to 25-30 in-lbs [2.8-3.4 Nm].
- ⑤ Item 15 is supplied with all XC2300 Series pumps as standard equipment.

Parts List for Figure 17

Item	Description	Qty	Part Number	
			Model XC2302S	Model XC2304S
1	◆ Plug, Soc Hd St Thread 0.750-16	1	B1006006	B1006006
2	◆ Washer, Flat	10	CAE1050108-1A	CAE1050108-1A
3	◆ Screw, SHCS Hex, M5	10	CBZ517028-1A	CBZ517028-1A
5	◆ Plug, Dome, 28 mm	2	DD4112009	DD4112009
6	Ring, Round	2	DD4769667	DD4769667
9	◆ Shroud, Left-Hand	1	DD7920424	DD7920424
10	☆ Plug, Oil Fill	1	DD7927006	DD7927006
15	⌘ Corded Remote Pendant, 10 ft [3 m]	1	CC131	CC131
17	Right-Hand Shroud Components	1	(See Figure 18)	(See Figure 18)
24	◆ Screw, Flange Button Head M6	2	DD9398048	DD9398048
◆ Items included in Upper Shroud Kit, XC2USK.				
☆ Items included in Oil Fill Service Kit, XC2VFK.				
⌘ • Pendant with 10 ft [3 m] cord is supplied with pump. • Pendant with 20 ft [6 m] cord is available as an optional accessory (See Figure 27).				

Figure 18: Right-Hand Shroud Components



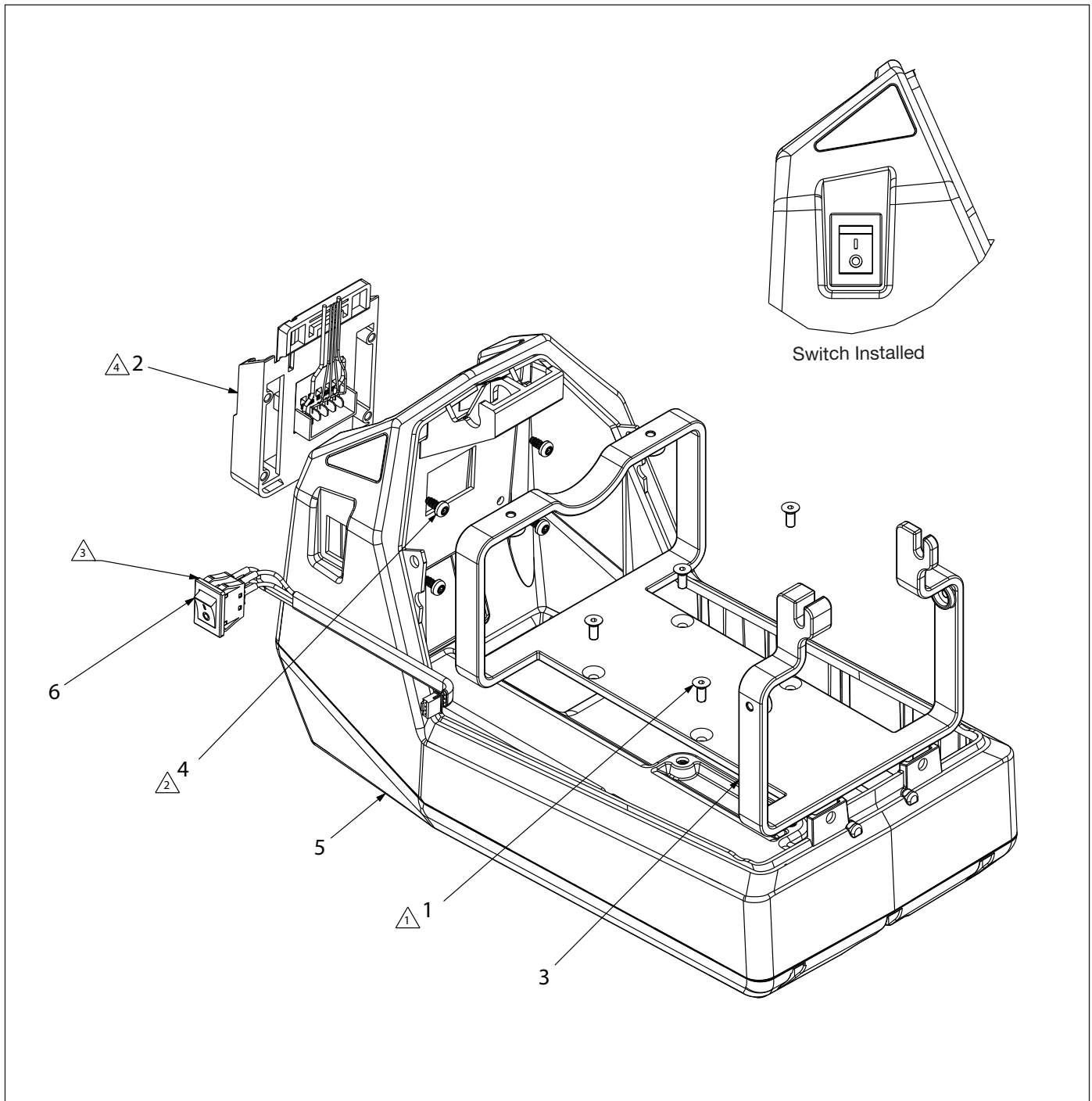
Notes:

- ① Torque to 120-144 in-lb [13.6 - 16.3 Nm].
- ② Torque to 60-80 in-lb [6.8 - 9.0 Nm].
- ③ Torque to 8-10 in-lb [0.9 - 1.1 Nm].
- ④ Secure with Loctite 271 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- ⑤ Apply PTFE tape.
- ⑥ Orient with tabs bent down away from shell.
- ⑦ Connect to pendant connector on circuit app board.

Parts List for Figure 18

Item		Description	Qty	Part Number
1	✱	Screw, M4 x 10 Thrd FRM	5	DD3883028
2	◆	Shroud, Right-Hand	1	DD7921424
3	☆	Retainer, XC2 Oil Fill	1	DD7926160
4	✱	Circuit App Board	1	DD7929827
5	†	Tube, Oil Vent	1	DD7962268
6	☆	Threaded Insert, Oil Fill	1	DD7966225
7	† ☆	Fitting, Elbow 45, Tube	1	DD8426097
8		Cord, Pendant Connector	1	DD8667960SR
9		Dust Cap, C1 Pendant Connector	1	DD8729020SR
10		Cover, Trigger Hole	1	DD9486098SR
11	† ☆	Fitting-M 90	1	F100097-52
◆ Items included in Upper Shroud Kit, XC2USK.				
† Items included in Oil Fill Tube Kit, XC2TK.				
☆ Items included in Oil Fill Service Kit, XC2VFK.				
✱ Items included in PCB Service Kit, XC2ACK.				

Figure 19: Pump Base Assembly



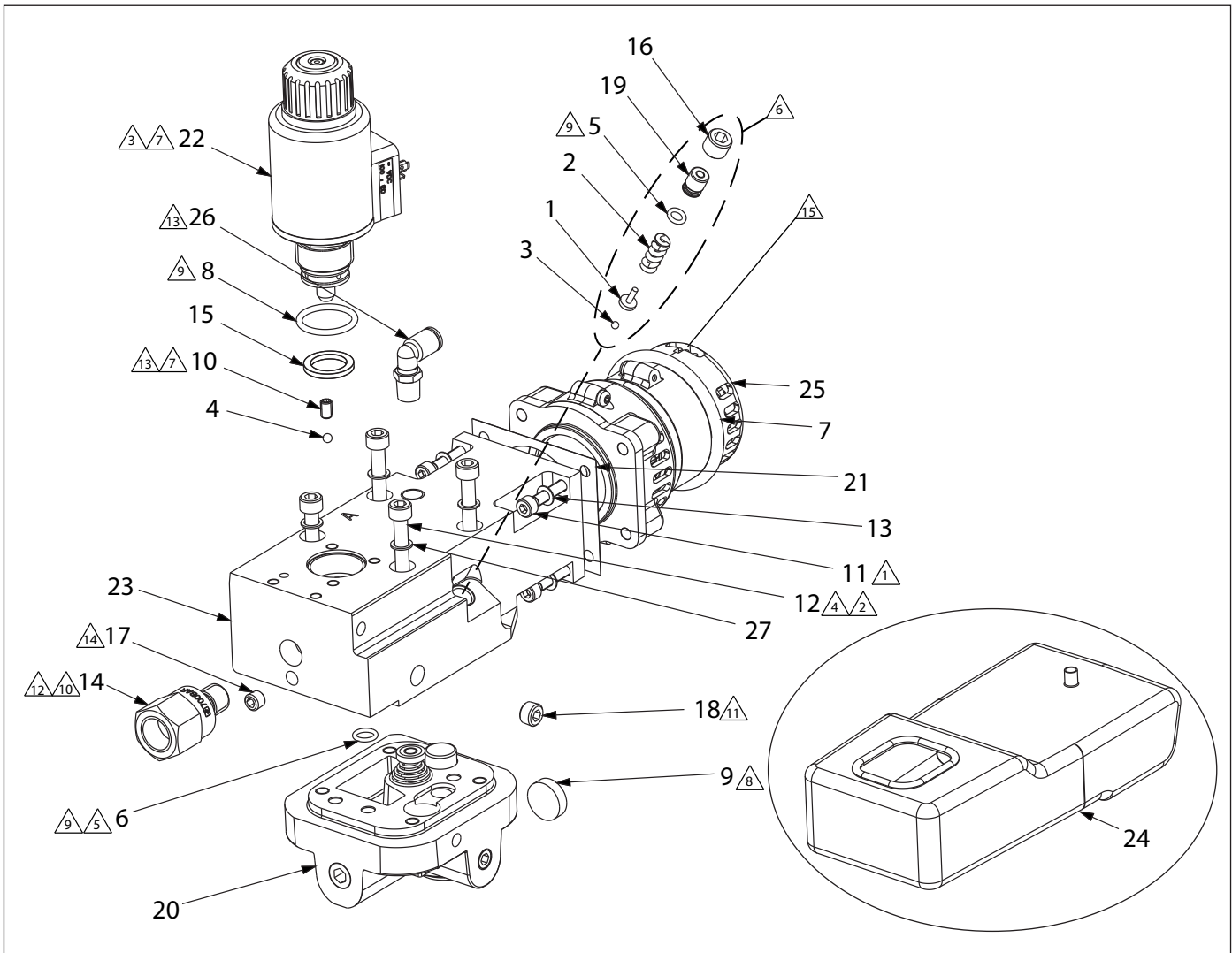
Notes:

- ① Torque to 18-26 in-lb [2.0 - 3.0 Nm].
- ② Torque to 10-12 in-lb [1.13 - 1.36 Nm].
- ③ Pull wires for switch through hole in housing.
- ④ Pull wires through hole in housing.

Parts List for Figure 19

Item		Description	Qty	Part Number
1	○	Screw, Flat Hd M5	4	CBA517028-1B
2	■	Plate, Battery Interface w/Cable	1	DD7953101
3		Bracket, Motor, XC2	1	DD8251111
4	■ ○	Screw, M5 x 10, Thread Forming,Torx	4	DD8781028
5	○	Base, XC2 Pump	1	DD8836005
6		Switch, Rocker DPST 30 VDC 10A	1	DD8866372SR
■ Items included in 54V Battery Guide Kit, XC2BGK.				
○ Items included in Lower Shroud Kit, XC2LSK.				

Figure 20: Power Unit & Reservoir Assembly



Notes:

- 1 Torque to 45-60 in-lbs [5.1 - 6.8 Nm].
- 2 Torque to 12-15 ft-lbs [16.3 - 20.3 Nm].
- 3 Torque to 90-95 ft-lbs [122.0 - 128.8 Nm].
- 4 Secure with Loctite 2760 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- 5 Install on eccentric housing (item 23).
- 6 Install these parts after pump element (item 20) is installed.
- 7 Secure with Loctite 243 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- 8 Attach magnet (item 9) to pump element (item 20) prior to assembling bladder (item 24).
- 9 Lubricate seals before assembly.
- 10 Apply PTFE tape.
- 11 Torque to 16-19 ft-lbs [22 - 26 Nm].
- 12 Torque to 32-39 ft-lbs [43 - 53 Nm].
- 13 Torque to 60-80 in-lbs [6.8 - 9.0 Nm].
- 14 Torque to 120-144 in-lbs [13.6 - 16.3 Nm].
- 15 Orient motor so that wires exit in position shown.

Parts List for Figure 20

Item	Description		Qty	Part Number	
				Model XC2302S	Model XC2304S
1	▣	Ball Cap	1	A8038570	A8038570
2	▣	Spring, Compression	1	A8126110	A8126110
3	▣	Ball, 0.125, Stl	1	B1003016	B1003016
4	❖	Ball, 0.156, Stl	1	B1004016	B1004016
5	★■	O-Ring, Round, 0.219, 0.344, 0.063	1	B1004503	B1004503
6	★▲▼❖	O-Ring, Round, 0.313, 0.438, 0.063	1	B1011803	B1011803
7	⊗	O-Ring, Round, 2.000, 2.375, 0.188	1	B1032503	B1032503
8	★⊗	O-Ring, Round, 0.875, 1.063, 0.094	1	B1118903	B1118903
9		Magnet	1	C187018	C187018
10	❖	Screw, Flat, HS M5 x 0.8 x 8	1	CCA513028-5A	CCA513028-5A
11	❖⊗	Screw, SHCS, M5 x 25	4	CCA523028-1A	CCA523028-1A
12	❖▲▼	Screw, SHCS, M6 x 55	1	CCA635028-1A	CCA635028-1A
13	❖⊗	Washer, Lock M5	1	CCE1050108-6A	CCE1050108-6A
14		Adaptor	1	CF927038	CF927038
15	★⊗	Gasket	1	CL344167	CL344167
16	▣	Set Screw, Cup Point Nylock	1	DC10131048	DC10131048
17	❖	PTF - SAE Flush Plug 0.062	1	DC6792245	DC6792245
18	❖	PTF - SAE Flush Plug 0.125	1	DC6793245	DC6793245
19	▣	Plug	1	DC7234009	DC7234009
20		Pump Element	1	(See Figure 24)	(See Figure 24)
21	⊗	Gasket	1	DD6917037	DD6917037
22		Control Valve Assembly, Solenoid Operated	1	(See Figure 21)	(See Figure 21)
23		Eccentric Shaft & Housing Subassy	1	(See Figure 22)	(See Figure 22)
24	▲	Bladder, 2L	1	DD8266025	- - -
	▼	Bladder, 4L	1	- - -	DD8184025
25	⊗	Motor, Sub Assembly	1	DD8826900	DD8826900
26		Fitting- M 90	1	F100097-52	F100097-52
27	★▲▼❖	Gasket	4	S3037	S3037

▲ Items included in XC2 2L Bladder Kit, XC2B2LK.

▼ Items included in XC2 4L Bladder Kit, XC2B4LK.

★ Items included in Pump Seal Kit, XC4SK.

▣ Items included in Service Kit, XA1UARVK.

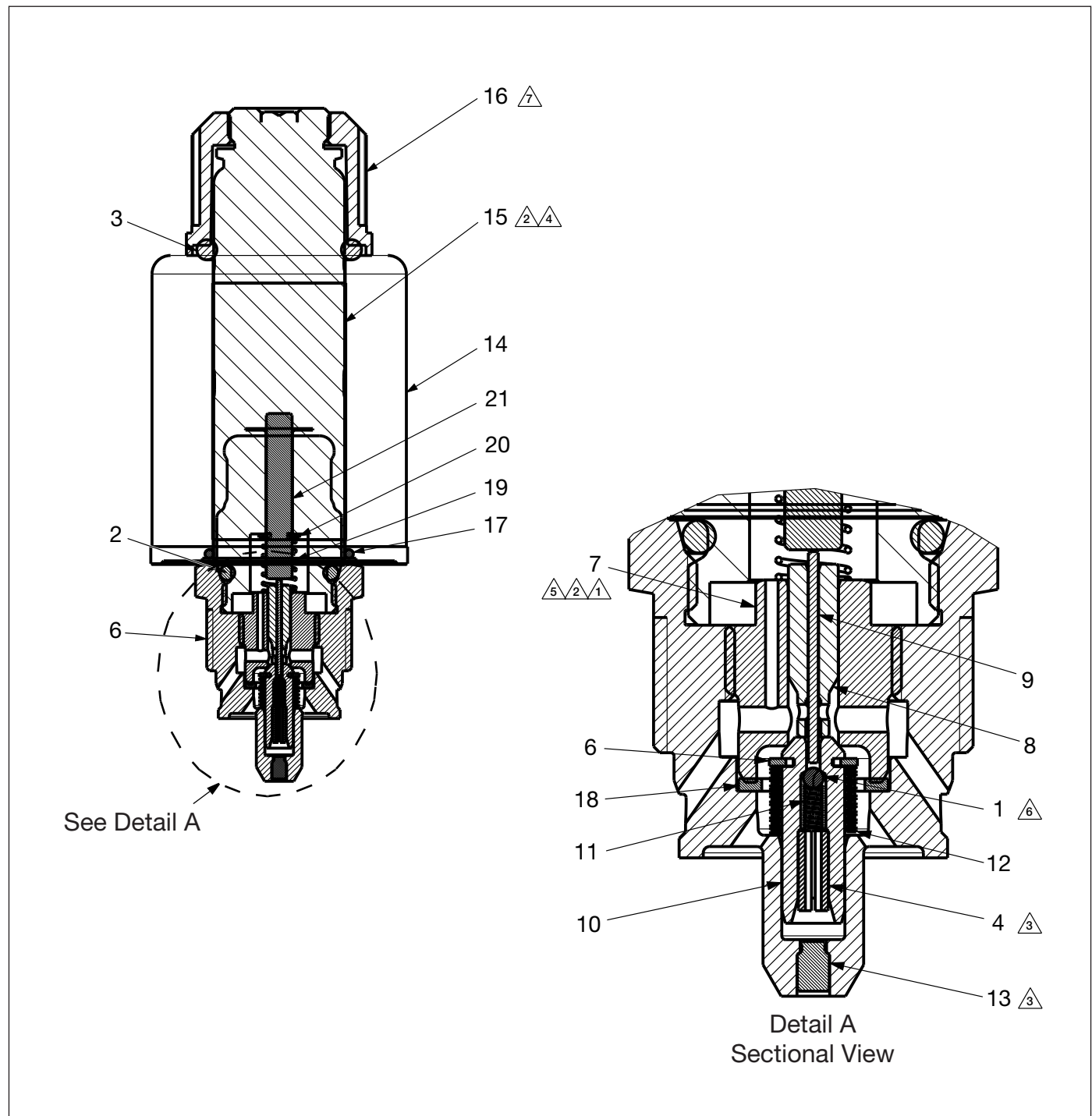
■ Items included in 54V Battery Guide Kit, XC2BGK.

❖ Items included in Eccentric Housing Service Kit, XC2ECK.

⊗ Items included in 54V Brushless Motor Service Kit, XC2EMK.

★⊗ Items included as part of EP Valve, Solenoid, 3/2 Replacement Kit, EP3SVK.

Figure 21: Control Valve Assembly, 3-Way, 2-Position, Solenoid-Operated



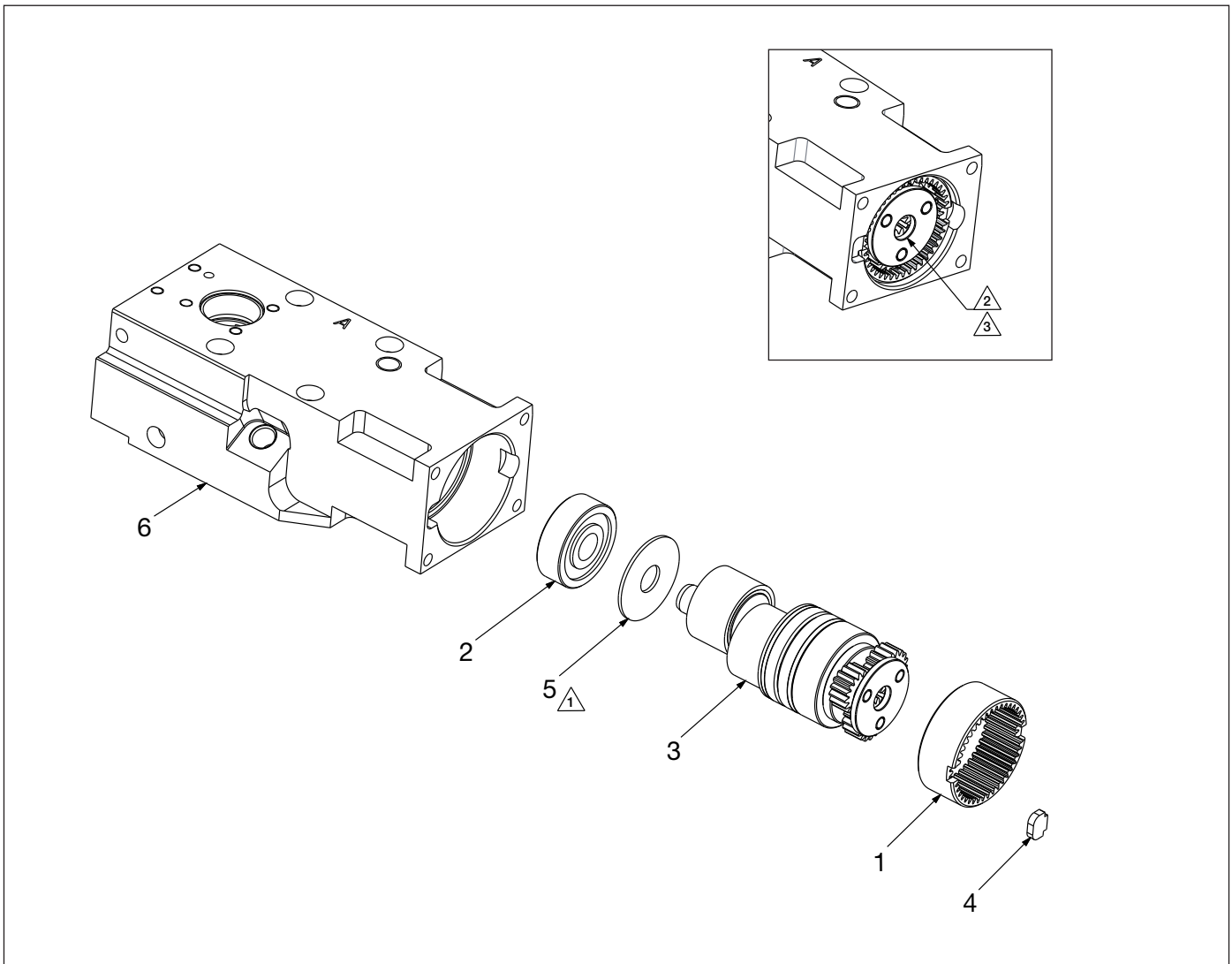
Notes:

- ① Torque to 13-16 ft-lbs [17.6 - 21.7 Nm].
- ② Secure with Loctite 243 thread locking compound.
Refer to manufacturer's technical data sheet for application instructions.
- ③ Press fit, 125-175 psi [8.6 - 12.0 bar] on a 10 ton press.
- ④ Torque to 10-12 ft-lbs [13.6 - 16.2 Nm].
- ⑤ Coin 125-175 psi [8.6 - 12.0 bar] on a 10 ton press with 1/4" ball (Enerpac part no. B1007016).
- ⑥ Coin 50-75 [3.4 - 5.2 bar] psi on a 10 ton press.
- ⑦ Hand tighten item.

Parts List for Figure 21

Item		Description	Qty	Part Number
1	★	Ball, 0.063, Steel	1	B1001016
2	+★	O-Ring, Round, 0.625, 0.813, 0.094	1	B1012503
3	+★	O-Ring, Round, 0.875, 1.125, 0.125	1	B1017503
4	★	Spring Pin, 0.094, 0.250, Stl, Plain	1	B1032057
5	★	Retaining Ring, SAP	1	DC7754359
6	★	Valve Body	1	DD7071190
7	★	Valve Seat	1	DD7072290
8	★	Rod Guide	1	DD7073013
9	★	Push Rod	1	DD7074107
10	★	Poppet	1	DD7075440
11	★	Spring, Compression 0.063 x 0.188	1	DD7076110
12	★	Spring, Compression Wave, 0.270 x 0.295	1	DD7077110
13	★	Orifice, 2.5m mm Screened 8000 Lohms	1	DD7078828
14	+★	Coil Assembly, 38W, 24VDC	1	DD7096720A
15	+★	Spool Assembly	1	DD7096720B
16	+★	Retainer Nut	1	DD7096720C
17	+★	O-Ring, 23mm ID, 1.5 mm	1	DD7096720D
18	★	Gasket, Copper 11.9 x 8.2 x 1.0	1	DD7351167
19	★	Spring, Compression 6.0 mm x 12.5 mm	1	DD7364110
20	★	Retaining Ring E-Type, 0.156 x 0.025	1	DD7365649
21	★	Pin, Solenoid Valve	1	DD7366061
★ Items included as part of EP Valve, Solenoid, 3/2 Replacement Kit, EP3SVK.				
+ Items included as part of EP Solenoid Assy, 3/2 Solenoid Valve, DD7096720SR.				

Figure 22: Eccentric Shaft & Housing Subassembly



Notes:

- ① Position grey coated side of bushing (item 5) toward eccentric (item 3).
- ② Spin test after assembly (1 full eccentric rotation).
- ③ Use a pick to align the gears with the ring gear.

Parts List for Figure 22

Item	Description		Qty	Part Number
1	❖	Ring Gear	1	DC7089228
2	❖	Bearing	1	DC7096155
3	❖	Assembly, Eccentric Shaft	1	(See Figure 23)
4	❖ ⚙	Key, Ring Gear	1	DC7452251
5	❖	Bushing	1	DC7464108
6	❖	Eccentric Housing	1	DD8425001
❖ Items included in Eccentric Housing Service Kit, XC2ECK.				
⚙ Items included in 54V Brushless Motor Service Kit, XC2EMK.				

Figure 23: Eccentric Shaft Assembly

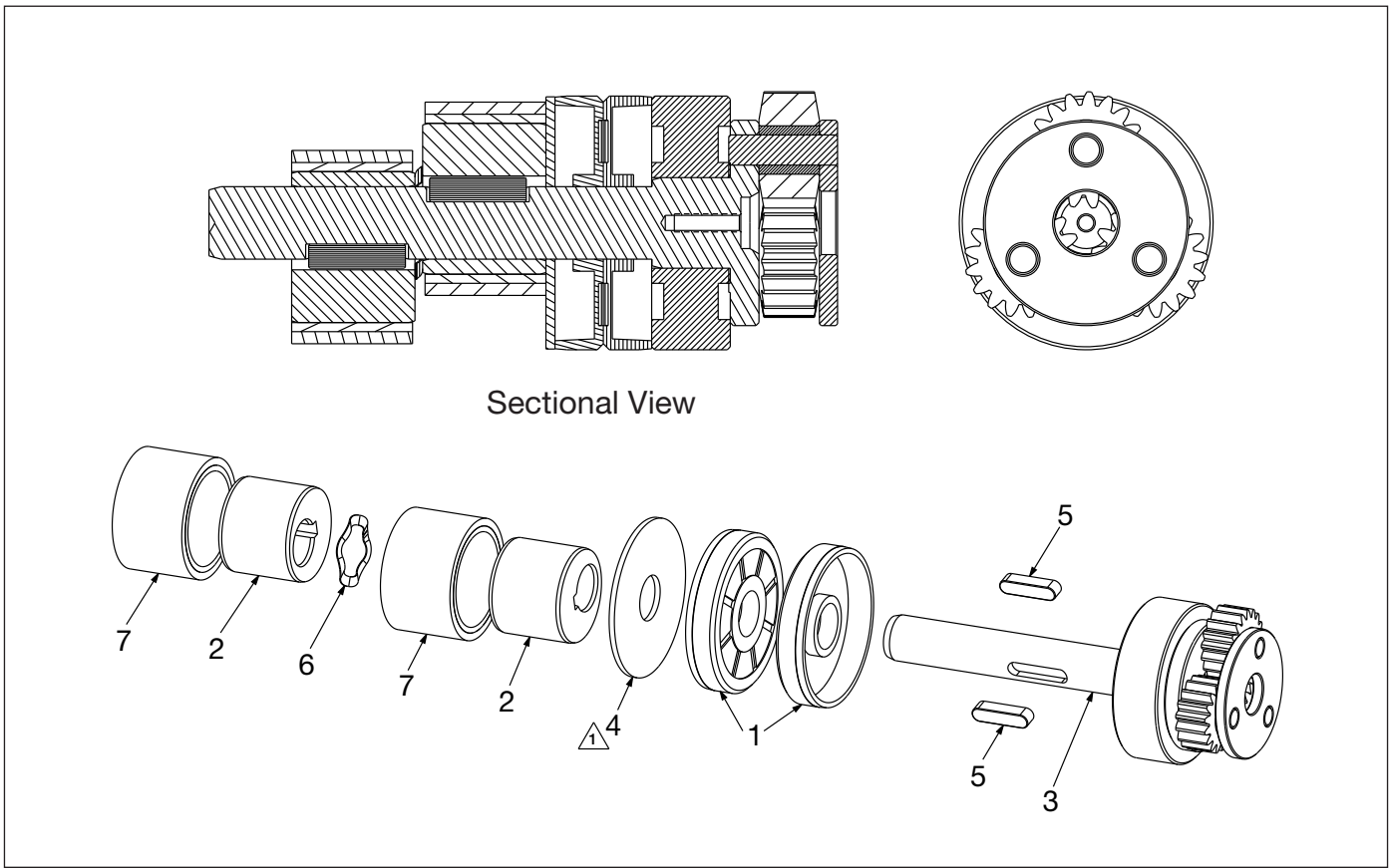
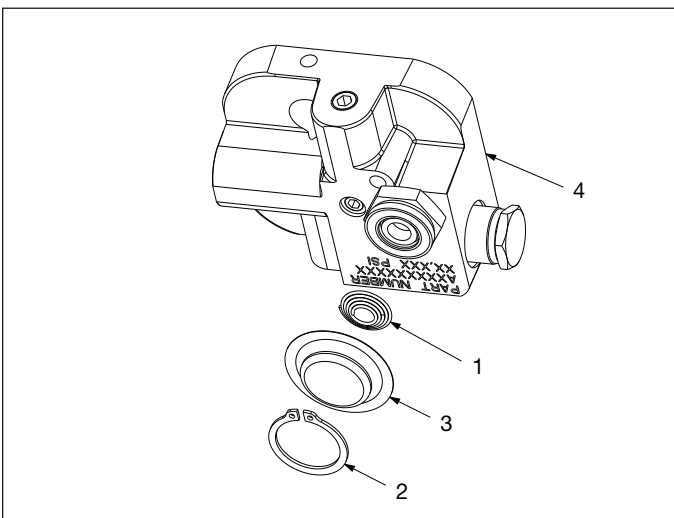


Figure 24: Pump Element



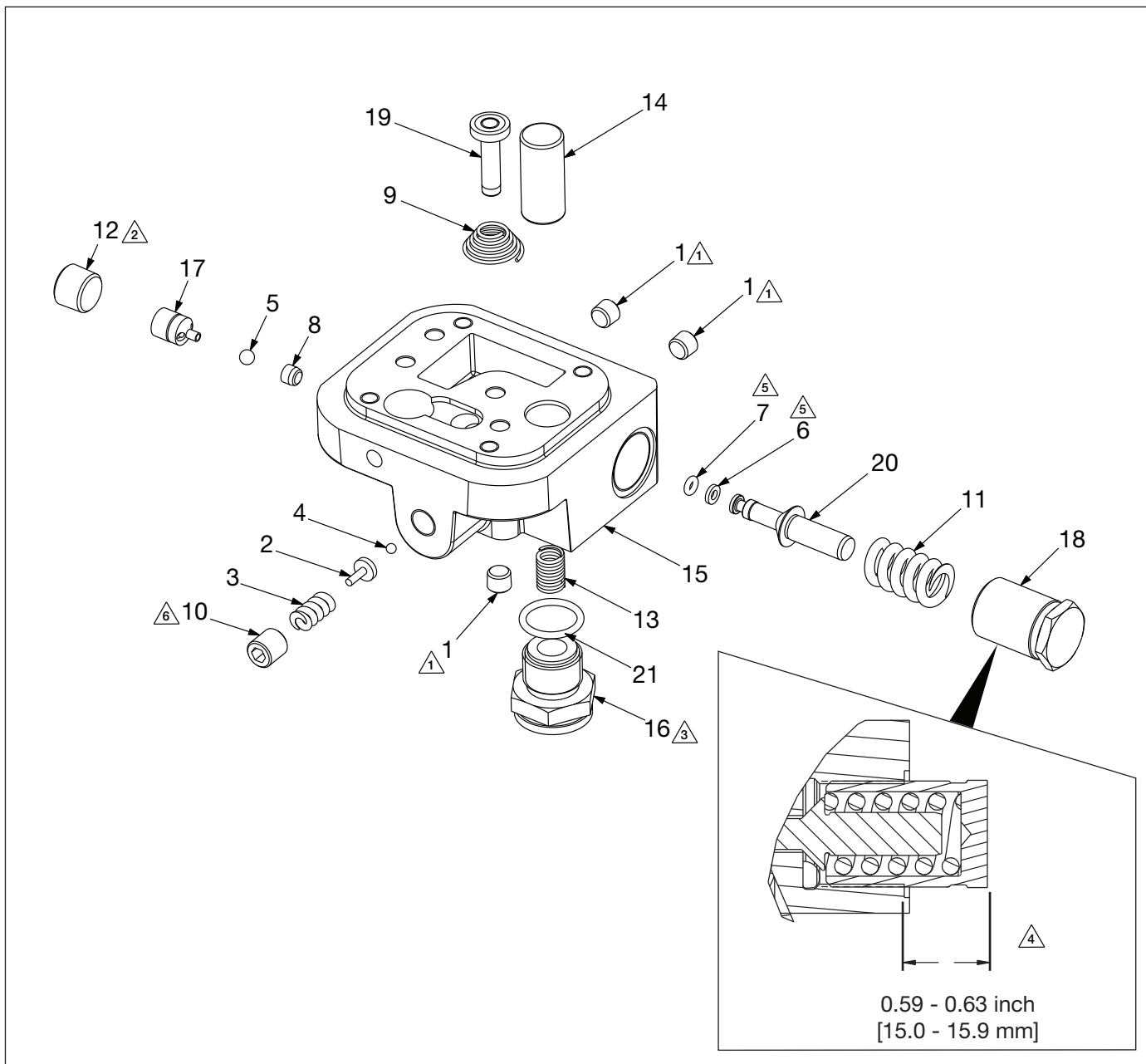
Parts List for Figure 23

Item		Description	Qty	Part Number
1	❖	Lip Seal	2	DC7090476
2	❖	Eccentric, 4mm	2	DC7117537
3	❖	Subassembly, Eccentric Shaft	1	DC7870950
4	❖	Washer, Thrust	1	DC7186108
5	❖	Key	2	DC7191251
6	❖	Spring, Wave	1	DC7750410
7	❖	Subassembly, Cam	2	DC7755950
❖ Items included in Eccentric Housing Service Kit, XC2ECK.				

Parts List for Figure 24

Item		Description	Qty	Part Number
1	◆	Spring, Conical	1	BSS5509D
2	◆	Retaining Ring, External, 25 mm Stl	1	CCA1025044-1A
3	◆	Screen	1	DC7152018
4	◆	Pump Element Components	1	(See Figure 25)
◆ Items included in XVARI Pump Element Kit, XA1PEK.				

Figure 25: Pump Element Components



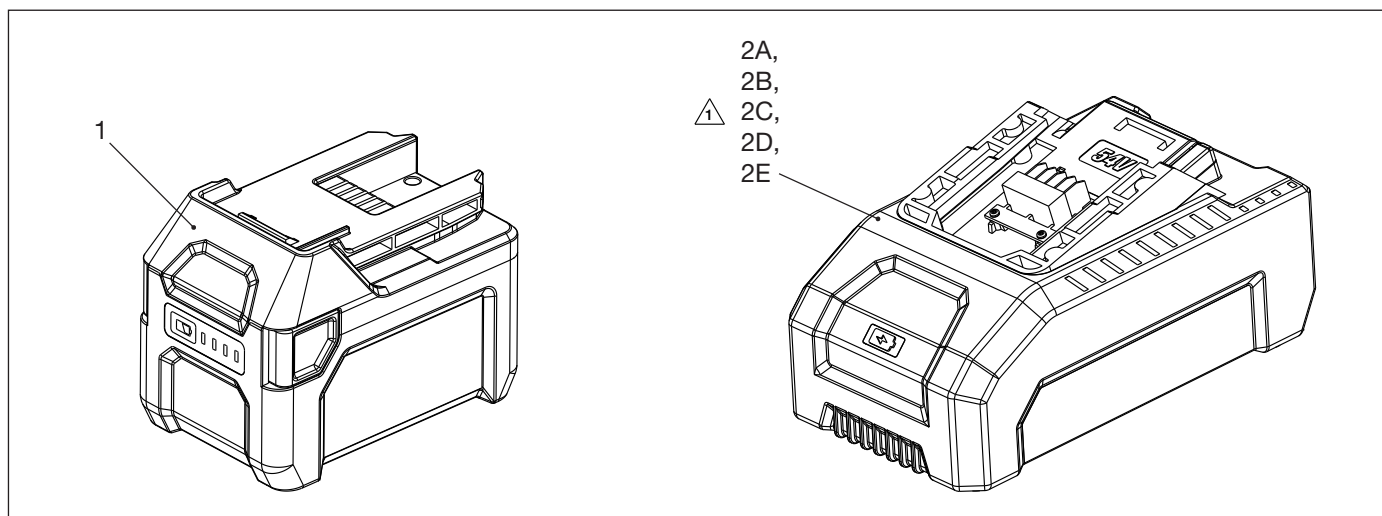
Notes:

- ① Torque to 9.6-11.8 ft-lb [13 - 16 Nm].
- ② Torque to 44.3-52.3 ft-lb [60 - 71 Nm].
- ③ Torque to 18.5-22.1 ft-lb [25 - 30 Nm].
- ④ Adjust length of bypass end cap (item 18) to between 0.59-0.63 inch [15.0 - 15.9 mm] from spot face.
- ⑤ Lubricate seals before assembly.
- ⑥ Relief valve to be set at 10,700-11,100 psi [738 - 765 bar]

Parts List for Figure 25

Item		Description	Qty	Part Number
1	◆	Plug, Flush, Hex 27.0 Stl Teflon	3	A1006245
2	◆	Ball Cap	1	A8038570
3	◆	Spring, Compression	1	A8126110
4	◆	Ball, 0.125 Stl	1	B1003016
5	◆	Ball 0.188 Stl	1	B1005016
6	★★	Back Up Ring, Split	1	B1006564
7	★★	O-Ring, Round, 0.125, 0.250, 0.063	1	B1006803
8	◆	Seat, Piston, Lower	1	BSS5358D
9	◆	Spring, Conical	1	BSS5509D
10	◆	Set Screw, Hollow Socket	1	DC1185048
11	◆	Spring, Bypass	1	DC394110
12	◆	PTF - SAE Flush Plug, 0.250	1	DC6794245
13	◆	Spring, Large Piston SAP	1	DC7026110
14	◆	Piston, 14 mm Dia, Lg	1	DC7027051
15	◆	Pump Body	1	DC7201190
16	◆	Plug Assembly, Inlet Check Valve	1	DC7453950
17	◆	Subassembly, Outlet Check Valve	1	DC7904900
18	◆	End Cap, Bypass	1	DC9208020
19	◆	Piston Assembly, MPE	1	DC9244920
20	◆	Piston, Bypass	1	DC9292051
21	★★	O-Ring (included with item 16)	1	B1908503
◆ Items included in XVARI Pump Element Kit, XA1PEK.				
★ Items included in Pump Seal Kit, XC4SK.				

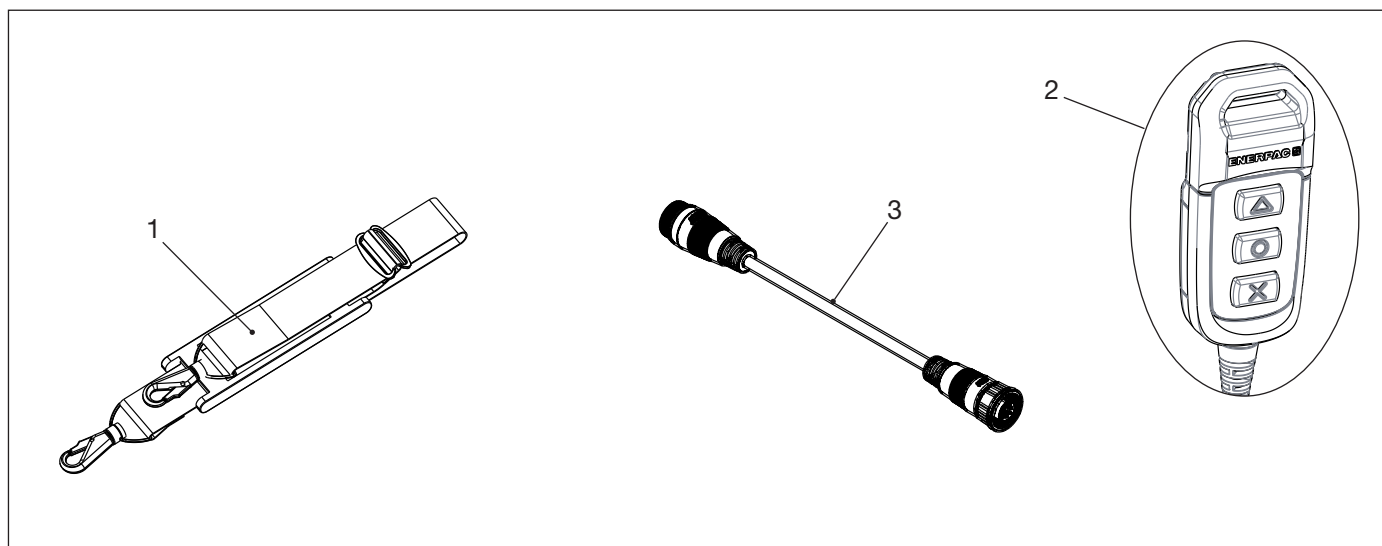
Figure 26: Battery and Battery Charger



Notes:

- Charger must be purchased separately if not included in the shipment with the battery or tool. Unit is auto-voltage sensing, 100-240 VAC, 50/60 Hz.
- North America, Europe and Australia: Charger and power cord includes one Enerpac EC1F54 battery charger and the AC power cord for use in the selected region. Charger not sold without power cord.
- Japan and United Kingdom: Order charger and power cord EC1F542A, EC1F541B or EC1F542E plus the power cord applicable for your region/country. Replace the power cord included with the charger with the power cord that was ordered separately (ECC541N or ECC542U).

Figure 27: Selected Accessories



Parts List for Figure 26

Item	Description		Qty	Part Number
1		Battery, 54V, Lithium-Ion, 4.0 Ah, 216 Wh	1	EBH544
2A		Battery Charger & Power Cord, Australia - 230V	1	EC1F542A
2B		Battery Charger & Power Cord, North America - 115V	1	EC1F541B
2C		Battery Charger & Power Cord, European Union - 230V	1	EC1F542E
2D		Power Cord, Japan - 100V	1	ECC541N
2E		Power Cord, United Kingdom - 240V	1	ECC542U

Parts List for Figure 27

Item	Description		Qty	Part Number
1		Shoulder Strap, XC2 Series Pumps	1	SSTRP55
2		Corded Remote Pendant, 20 ft [6 m]	1	CC132
3		Pendant Extension Cord, 10 ft [3 m]	1	CC010

Figure 28: Hydraulic Schematic

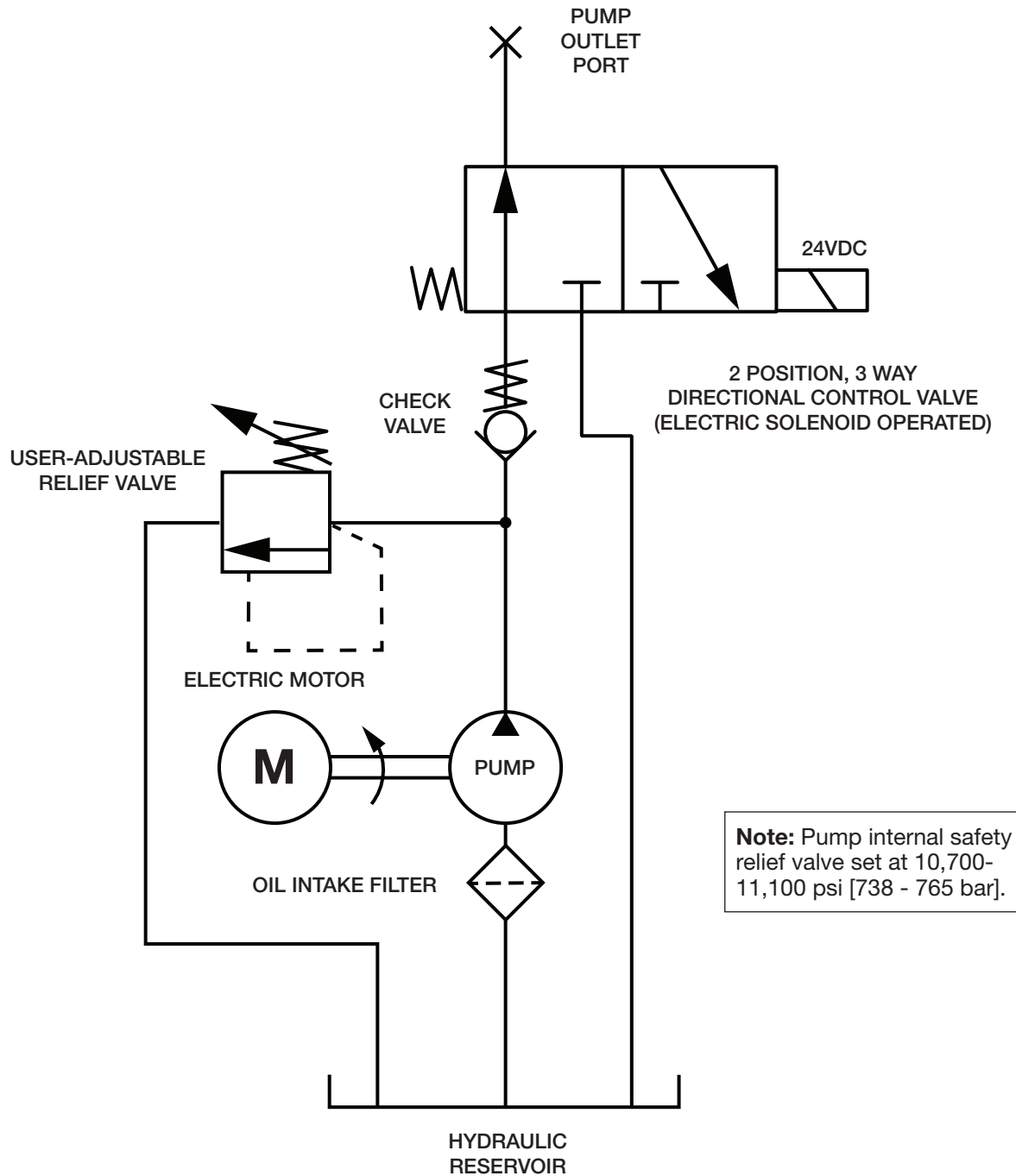
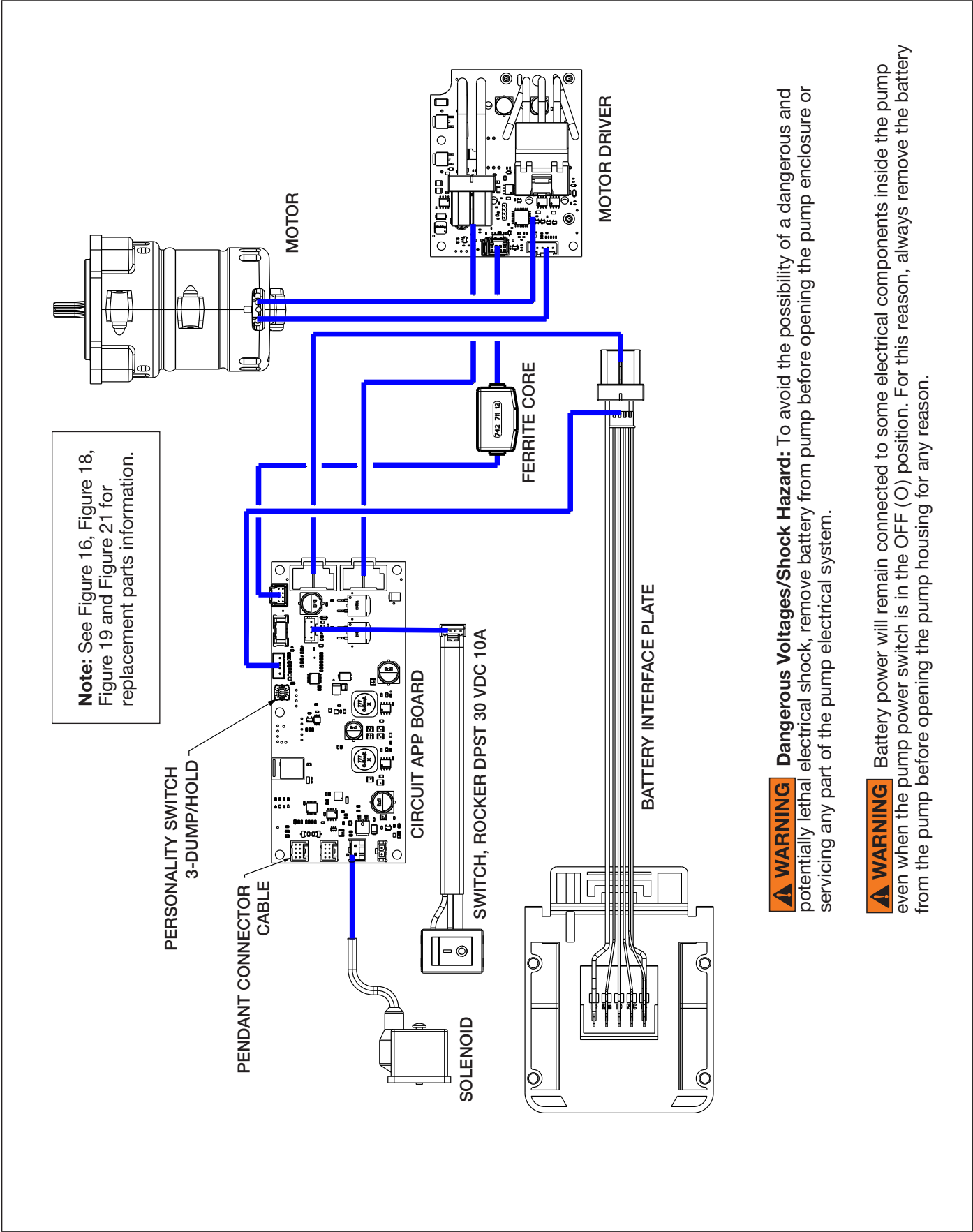


Figure 29: Electrical Schematic



⚠ WARNING Dangerous Voltages/Shock Hazard: To avoid the possibility of a dangerous and potentially lethal electrical shock, remove battery from pump before opening the pump enclosure or servicing any part of the pump electrical system.

⚠ WARNING Battery power will remain connected to some electrical components inside the pump even when the pump power switch is in the OFF (O) position. For this reason, always remove the battery from the pump before opening the pump housing for any reason.

NOTES

[illegible]

NOTES

[illegible]

