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ELECTRIC MONARCH PUMP

Installation & Operation Manual

To Be Filled In By Installer

Pump Model #: _____

Pump Serial #: _____

Hoist Model #: _____

In Service Date: _____

Dealer: _____

Address: _____

City, State, ZIP: _____

Dealer Phone Number: _____

Use this manual only if installing or operating a Monarch electric pump on a TBEI or Rugby hoist. This manual should be kept in the glove compartment of the truck, or if installed on trailer, the glove compartment of the truck pulling the trailer or any weatherproof compartment on the trailer for reference when needed.

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Warnings

WARNING: Installing or operating this hoist without first understanding the proper installation and operation procedures can lead to serious injury or death. **Always** read and understand fully all installation and operation manuals before installing or operating this equipment.

WARNING: Welding, oxy-fuel cutting, or grinding sparks can cause fuel to ignite which in turn can lead to injury or death. **Always** take adequate steps to avoid ignition of fuel from fuel tanks when welding, grinding, or oxy-fuel cutting during equipment installation.

WARNING: Heat from the truck's exhaust system can cause hydraulic component failure and may lead to a fire which could cause injury or death. **Always** install equipment in locations where heat from the exhaust system will not damage any hydraulic component.

WARNING: Being under a raised body can result in serious injury or death should the body inadvertently descend. **Never** position yourself or allow others to position themselves under a **loaded** body. **Always** prop the **unloaded** body up using the body prop or body props supplied. **Remember** body props are to be used only on an **unloaded** body.

WARNING: Malfunctioning equipment can cause property damage, injury or death. **Always** have faulty equipment repaired before continuing its use. If required, consult the manufacturer.

WARNING: Overloading of a truck can cause truck component damage or an accident which may cause injury or death. **Never** exceed the gross vehicle weight (GVW) or the gross axle weight (GAW) rating of your vehicle or trailer.

WARNING: The inadvertent shorting of the truck's electrical supply can cause a fire or equipment damage that could lead to injury or death. **Always** disconnect the vehicle battery prior to installing, servicing or repairing the pump.

WARNING: Connecting the hoist to a hydraulic system with more pressure (psi) or flow (gpm) than is recommended by the hoist manufacturer can cause the hoist to fail during the dumping of a load. This could lead to damage, serious injury, or death. **Be sure** you have the correct pressure and flow. Consult the manufacturer if you do not know the recommended pressure and flow.

WARNING: Adjusting the hydraulic pressure to more than the recommended setting may cause the hoist to fail during the dumping of a load. This could cause damage,

serious injury, or death. **Never** adjust the pressure on your own. Consult the manufacturer if the hydraulic pressure is in question. Have only a qualified person set the hydraulic pressure. **Never** adjust the pressure to more than the recommended amount.

WARNING: Fluid under pressure can pierce the skin and enter bloodstream, causing serious injury or death. **Always** wear eye protection and protective clothing when working around hydraulic systems.

WARNING: Damage to brake lines during equipment installation, or installing bolts or equipment in such a way that the line will rub and become damaged can lead to brake failure which can cause an accident and can lead to severe injury or death. **Always** take adequate steps to prevent brake line damage during installation and isolate brake lines from installed equipment.

WARNING: Never install a cable on a truck while the body is raised without first blocking, bracing, or propping the body up to prevent the body from inadvertently falling when the control valve lever is moved. A falling body will result in serious injury or death if the control valve lever is moved while someone is under the non-supported body.

WARNING: Do not raise or drive a raised body against a power line. Bring body in contact with a power line or power source will result in serious injury or death by electrocution.

WARNING: Do not raise or drive a raised body against another object. Doing so could result in equipment damage or property damage, bodily injury or death.

WARNING: Do not dump while on uneven ground or if vehicle is in an uneven position from side to side. Dumping unevenly can cause vehicle to overturn and cause equipment or property damage, personal injury, or death.

WARNING: Stay clear of dump body when dumping. Moving vehicle parts or the moving load could cause injury or death.

WARNING: Check load making sure that rocks or any other object will not spill out of vehicle while transporting load. Falling objects can cause equipment damage or property damage, bodily injury or death.

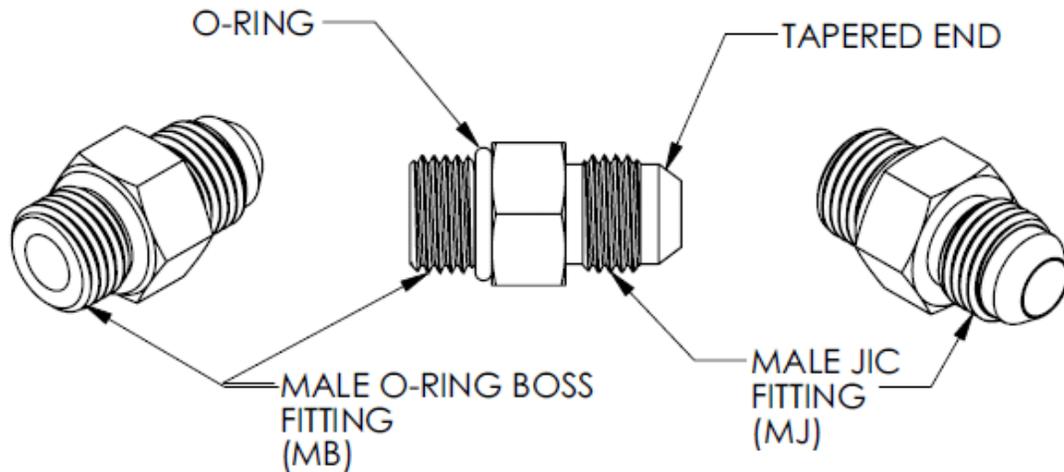
WARNING: Make sure all doors are closed and latched before moving vehicle. Swinging doors or falling objects can cause equipment or property damage, bodily injury or death.

Descriptions

NOTE: This manual contains descriptions of hydraulic fittings. In describing these fittings, special designations are used. These designations and their meanings are as follows:

SPECIAL DESIGNATION	MEANING
MB	MALE O-RING BOSS
FB	FEMALE O-RING BOSS
MJ	MALE JIC
FJ	FEMALE JIC
FJX	FEMALE JIC SWIVEL
FJX90	FEMALE JIC SWIVEL ELBOW
MP	MALE PIPE THREAD (NPT)

FITTING DESIGNATION	THREAD SIZE
4MB 4FB 4MJ 4FJ	7/16"-20
6MB 6FB 6MJ 6FJ	9/16"-18
8MB 8FB 8MJ 8FJ	3/4"-16
4MP	1/4" NPT
12MP	3/4" NPT



The type of fittings that are included will vary, depending on the model of the hoist being installed. Refer to Figure 1a thru 1f, depending on the type of hoist and pump model that is being installed.

For all of the units, a restricted fitting is supplied. This fitting reduces the speed at which the hoist closes, to prevent damage to the truck or trailer frame. This fitting must be installed in the base end of the hoist cylinder.

NOTE: All connections rely on O-ring or flare/face sealing methods. Therefore, no thread sealant or tape of any kind is required to seal the joints.

The following charts are included to aid in the identification of hoses. Please note that several different lengths of hoses are available for each type.

HOSE "A"
1/4" 6FJX-4FJX90

PART NUMBER	LENGTH	STANDARD SUPPLY (Base end of cylinder)
1654546 (008238)	5'	LR-3510
1654547 (008239)	6'	
1654548 (008240)	8'	
1654576 (008332)	9'	

HOSE “B”
1/4” 6FJX-6FJX

PART NUMBER	LENGTH	STANDARD SUPPLY (Base end of cylinder)	STANDARD RETURN (Rod end of cylinder)
1654514 (008172)	4'	HR-520	
1654515 (008173)	5'	LR-416/165/25, HR-540/550	LR-3510, HR-520
1654516 (008174)	6'		LR-416/165/25
1654518 (008176)	8'		HR-540/550
1654564 (008320)	9'		
1654575 (008331)	10'		

HOSE “C”
3/8” 6FJX-6FJX

PART NUMBER	LENGTH	STANDARD SUPPLY (Base end of cylinder)	STANDARD RETURN (Rod end of cylinder)
1654520 (008178)	4'		
1654521 (008179)	5'	LR-26/623/28	
1654522 (008180)	6'		
1654523 (008181)	7'		LR-26/623/28
1654524 (008182)	8'		
1654569 (008325)	9'		
1654574 (008330)	10'		

This manual contains information necessary for the proper installation and operation of an electric power unit. This manual applies only to a Monarch unit supplied from TBEI or Rugby. If you have a different power unit, refer to that manufacturer’s directions. With proper installation, use, and regular maintenance, this power unit will give many years of trouble free service.

Installation

POWER UNIT ATTACHMENT:

The power unit should be mounted in a protected area near the hoist. For longevity of the unit and related components, do not mount near exhaust system components or in the path of road splash from the vehicle's tires.

NOTE: Mount the unit horizontally so that the reservoir is level for full use of the reservoir capacity.

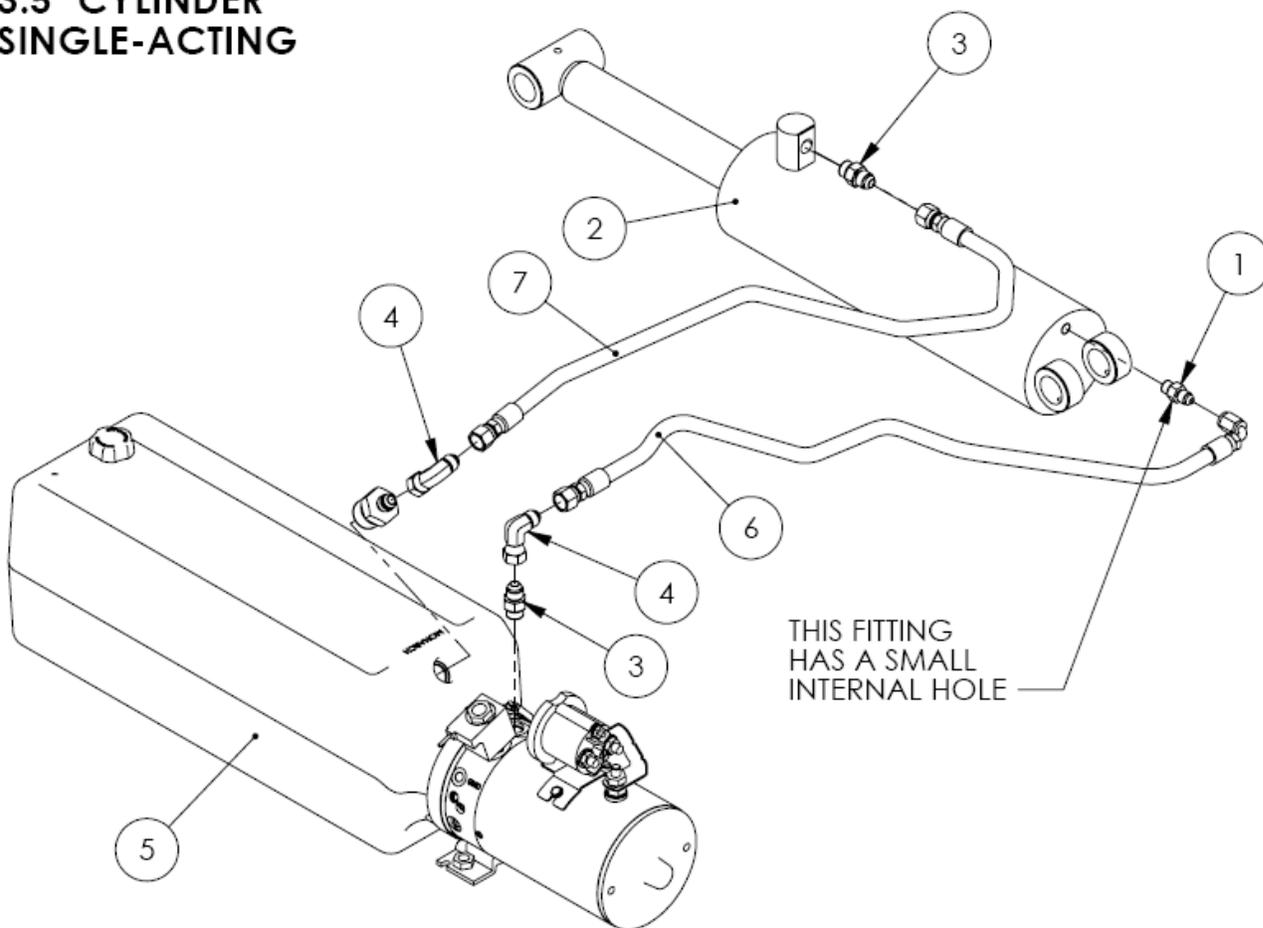
WARNING: Check for potential clearance issues with vehicle brake lines, air lines, wire harnesses, etc. before determining the power units location. Avoid damage to lines or installing components that could rub against lines and cause system failures. Such failures could lead to property damage, serious injury or death.

Securely attach the pump to the frame using two 3/8"-16 x 1" flange bolts in the front, and one 3/8"-16 x 1" flange bolt at the back of the tank. Tighten to 33 ft/lbs torque.

HOSE CONNECTIONS:

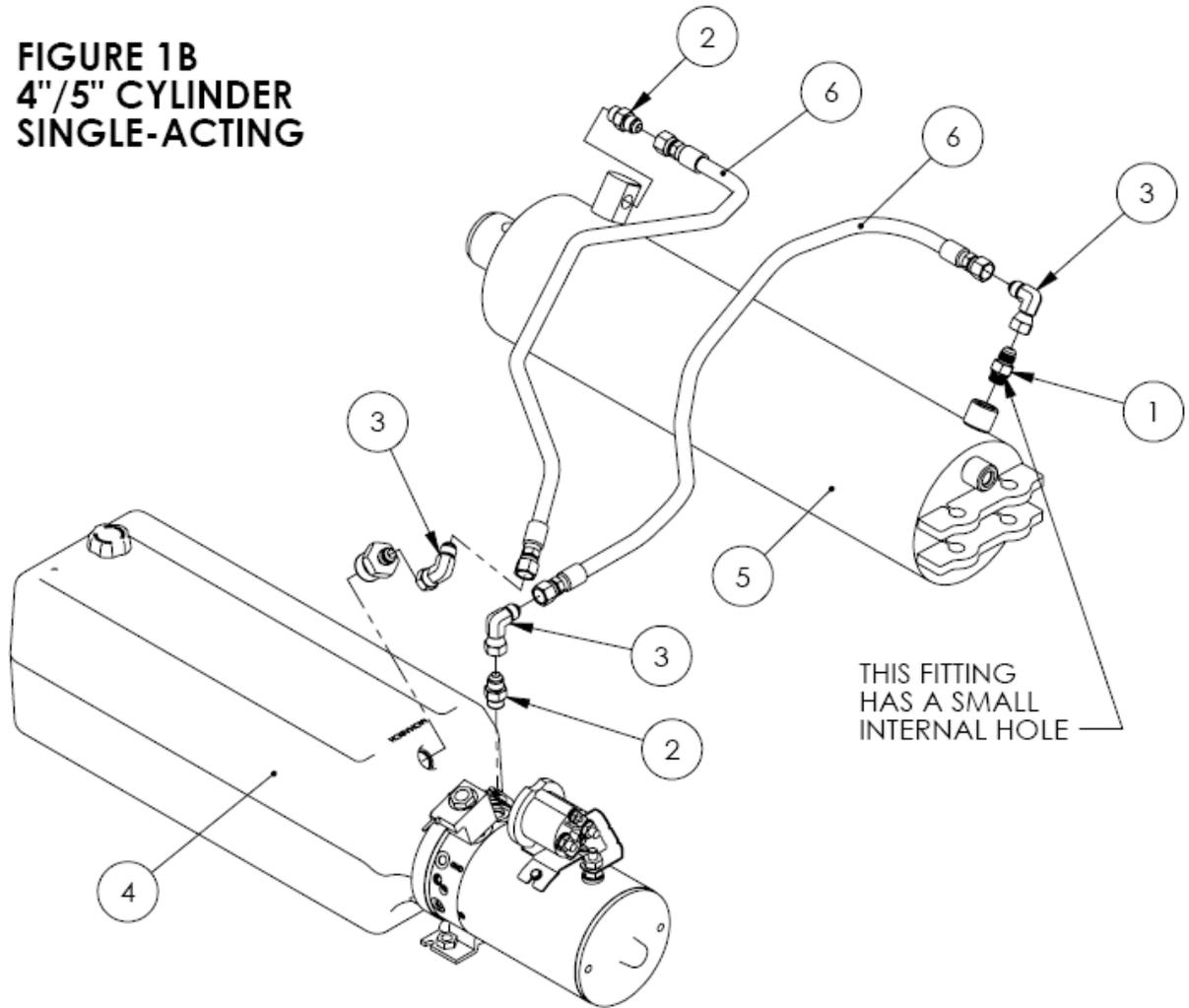
Install all fittings and hoses. Tighten all of the connections, except the connection between the base end port and the hose. Leave the connection between the base end port and the hose loose at this time.

FIGURE 1A
3.5" CYLINDER
SINGLE-ACTING



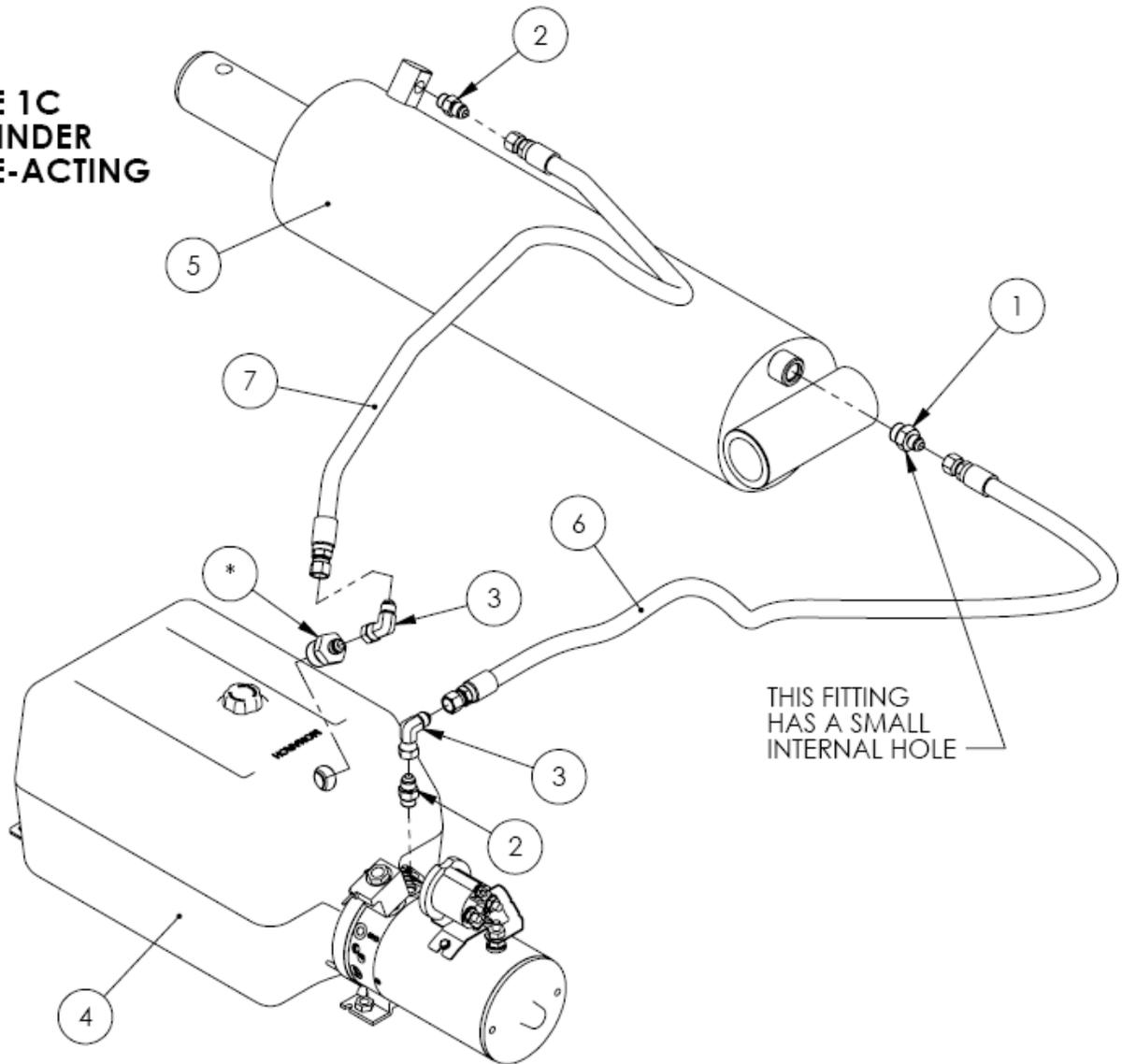
ITEM	PART #	DESCRIPTION	QTY
1	1654511	ADAPTER, RESTRICTED, 4MB-4MJ	1
2	1621263	CYLINDER, 3.5X10	1
3	1667897	ADAPTER, 6MB-6MJ	2
4	1667414	ADAPTER, 6MJ-6FJX90	2
5	1200096 1656775 1656771	DC POWER UNIT, ES	1
6	HOSE "A"	HOSE, 1/4", 6FJX-4FJX90, SAE 100R17	1
7	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE100R17	1

**FIGURE 1B
4"/5" CYLINDER
SINGLE-ACTING**



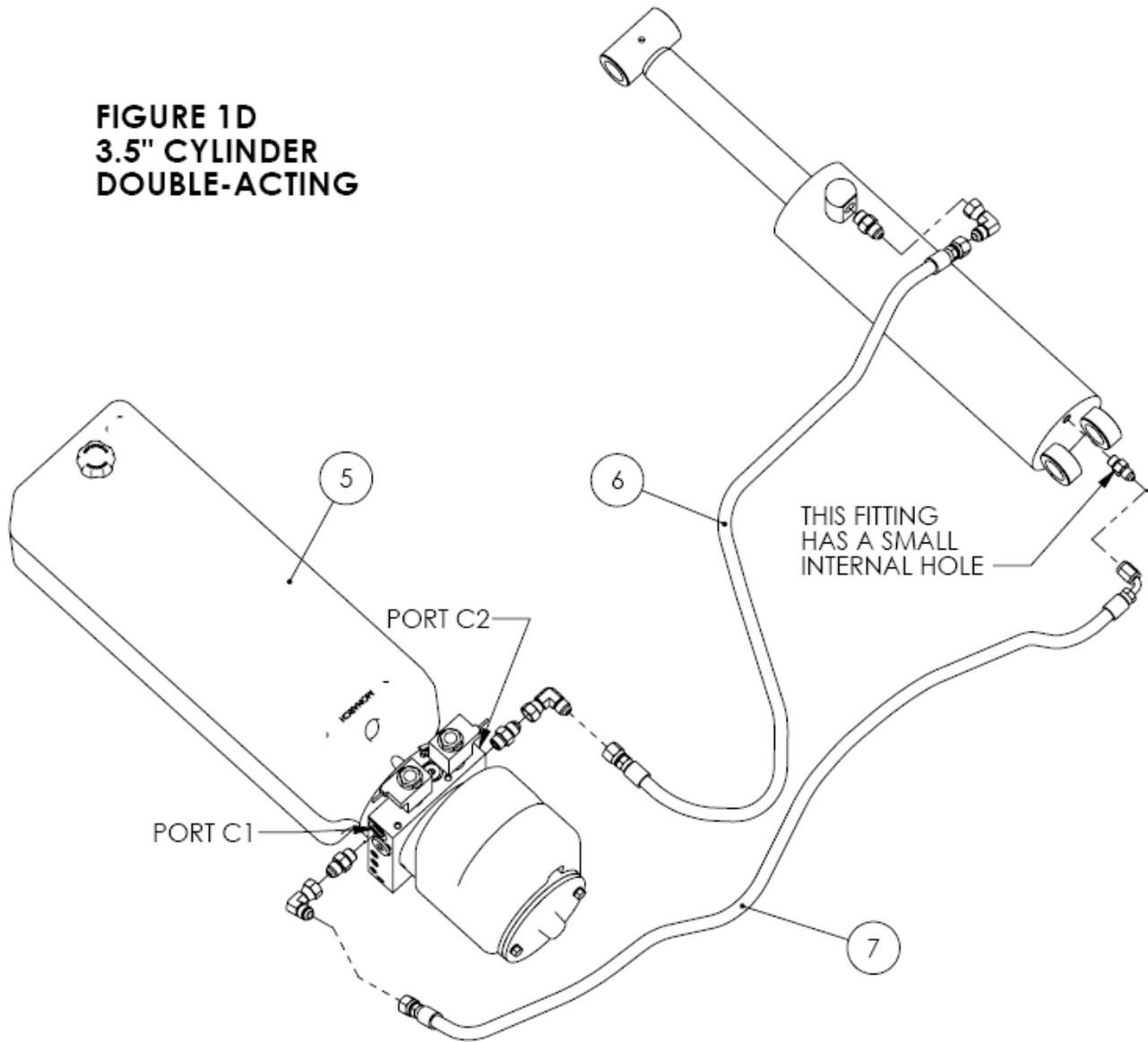
ITEM	PART #	DESCRIPTION	QTY
1	1452619	ADAPTER, RESTRICTED, 6MB-6MJ	1
2	1667897	ADAPTER, 6MB-6MJ	2
3	1667414	ADAPTER, 6MJ-6FJX90	3
4	1200096 1656771 1656775	DC POWER UNIT, ES	1
5	1621265 1621474	CYLINDER, 4 OR 5 X 16	1
6	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE 100R17	1
7	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE100R17	1

**FIGURE 1C
6" CYLINDER
SINGLE-ACTING**



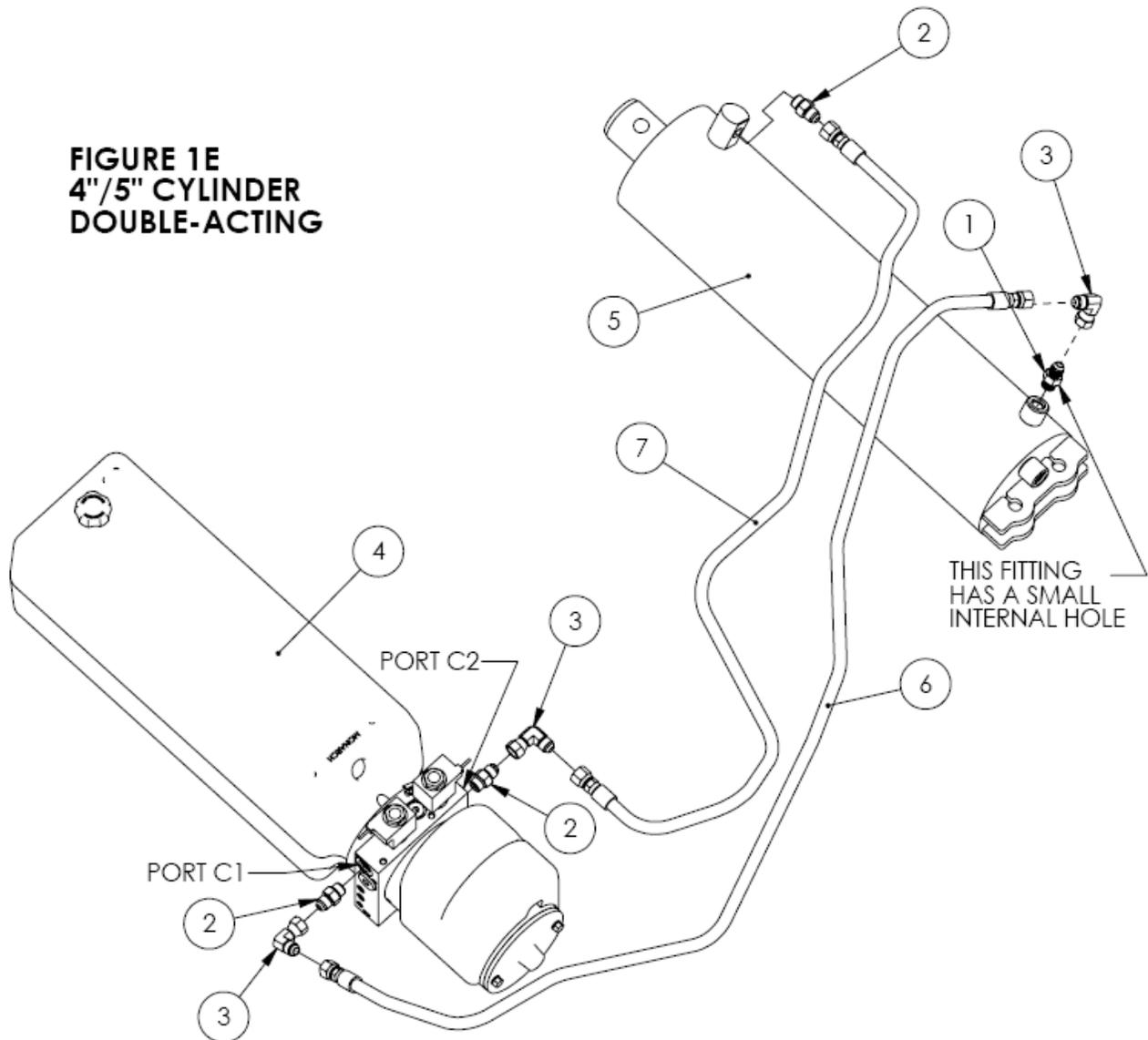
ITEM	PART #	DESCRIPTION	QTY.
1	1491402	ADAPTER, RESTRICTED, 8MB-6MJ	1
2	1667897	ADAPTER, 6MB-6MJ	2
3	1667414	ADAPTER, 6MJ-6FJX90	2
4	1200096 1656771 1656775	DC POWER UNIT, ES	1
5	1621266	CYLINDER, 6 X 19	1
6	HOSE "C"	HOSE, 3/8", 6FJX-6FJX, SAE 100R17	1
7	HOSE "C"	HOSE, 3/8", 6FJX-6FJX, SAE 100R17	1

**FIGURE 1D
3.5" CYLINDER
DOUBLE-ACTING**



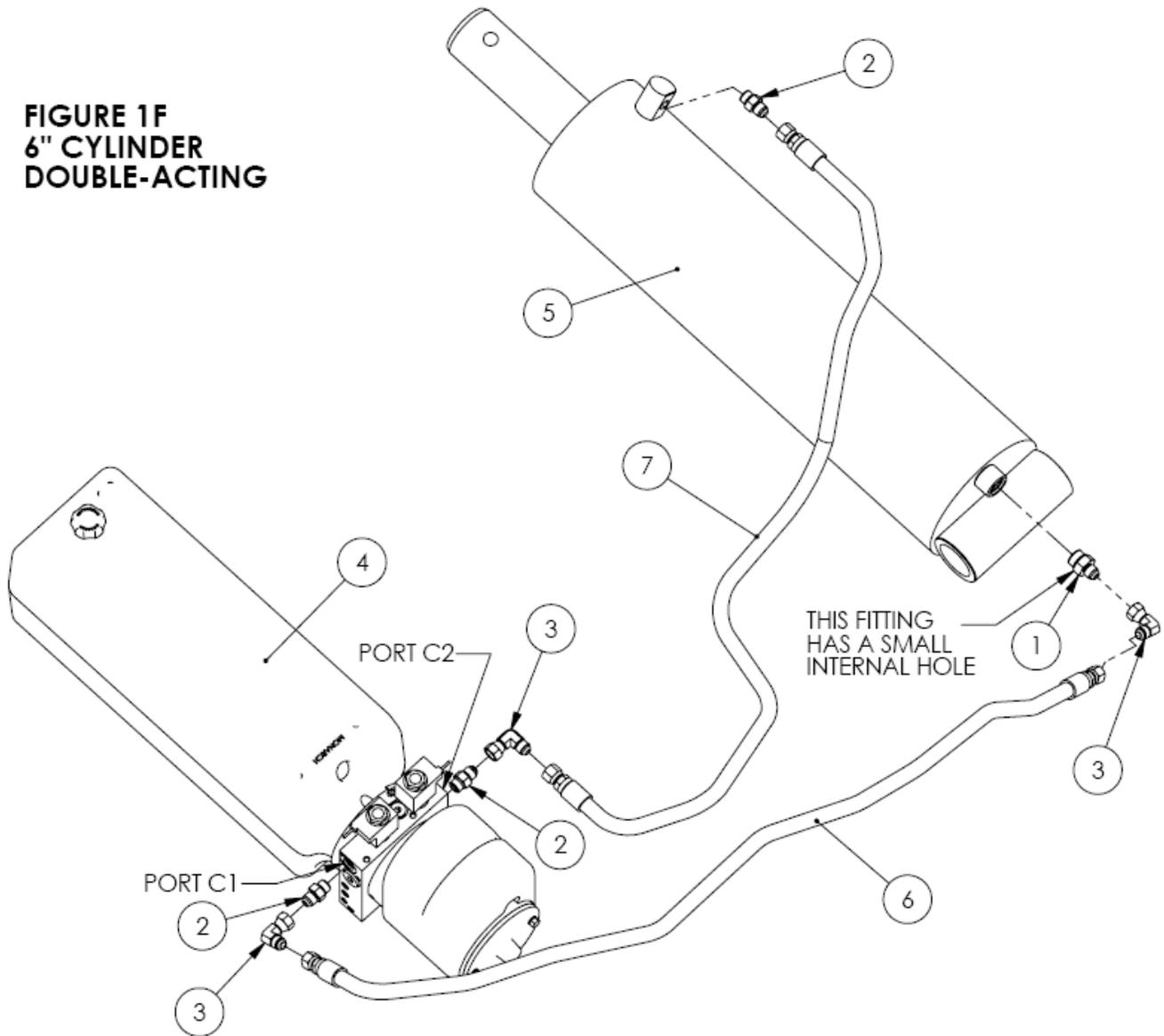
ITEM	PART #	DESCRIPTION	QTY
1	1654511	ADAPTER, RESTRICTED, 4MB-4MJ	1
2	1621263	CYLINDER, 3.5X10	1
3	1667897	ADAPTER, 6MB-6MJ	3
4	1667414	ADAPTER, 6MJ-6FJX90	3
5	1200097 1656769	DC POWER UNIT, ED	1
6	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE100R17	1
7	HOSE "A"	HOSE, 1/4", 6FJX-4FJX90, SAE 100R17	1

FIGURE 1E
4"/5" CYLINDER
DOUBLE-ACTING



ITEM	PART #	DESCRIPTION	QTY
1	1452619	ADAPTER, RESTRICTED, 6MB-6MJ	1
2	1667897	ADAPTER, 6MB-6MJ	3
3	1667414	ADAPTER, 6MJ-6FJX90	3
4	1200097 1656769	DC POWER UNIT, ED	1
5	1621265 1621474	CYLINDER, 4 OR 5 X 16	1
6	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE100R17	1
7	HOSE "B"	HOSE, 1/4", 6FJX-6FJX, SAE100R17	1

**FIGURE 1F
6" CYLINDER
DOUBLE-ACTING**



ITEM	PART #	DESCRIPTION	QTY
1	1491402	ADAPTER, RESTRICTED, 8MB-6MJ	1
2	1667897	ADAPTER, 6MB-6MJ	3
3	1667414	ADAPTER, 6MJ-6FJX90	3
4	1200097 1656769	DC POWER UNIT, ED	1
5	1621266	CYLINDER, 6"	1
6	HOSE "C"	HOSE, 3/8", 6FJX-6FJX, SAE100R17	1
7	HOSE "C"	HOSE, 3/8", 6FJX-6FJX, SAE100R17	1

ELECTRICAL:

1. Route a copper American Wire Gage (AWG) #0 cable from the battery to the power unit. Connect one end to the negative battery terminal. Connect the other end to the power unit's aluminum valve block with a 5/16"-18 x 3/4" hex cap screw as shown in Figure 3.

CAUTION: The high current demands of the power unit require a direct connection between the negative post of the battery and the power unit. Never rely on the vehicle's ground circuit, which could lead to property damage or reduced hoist lifting capacity during peak loads.

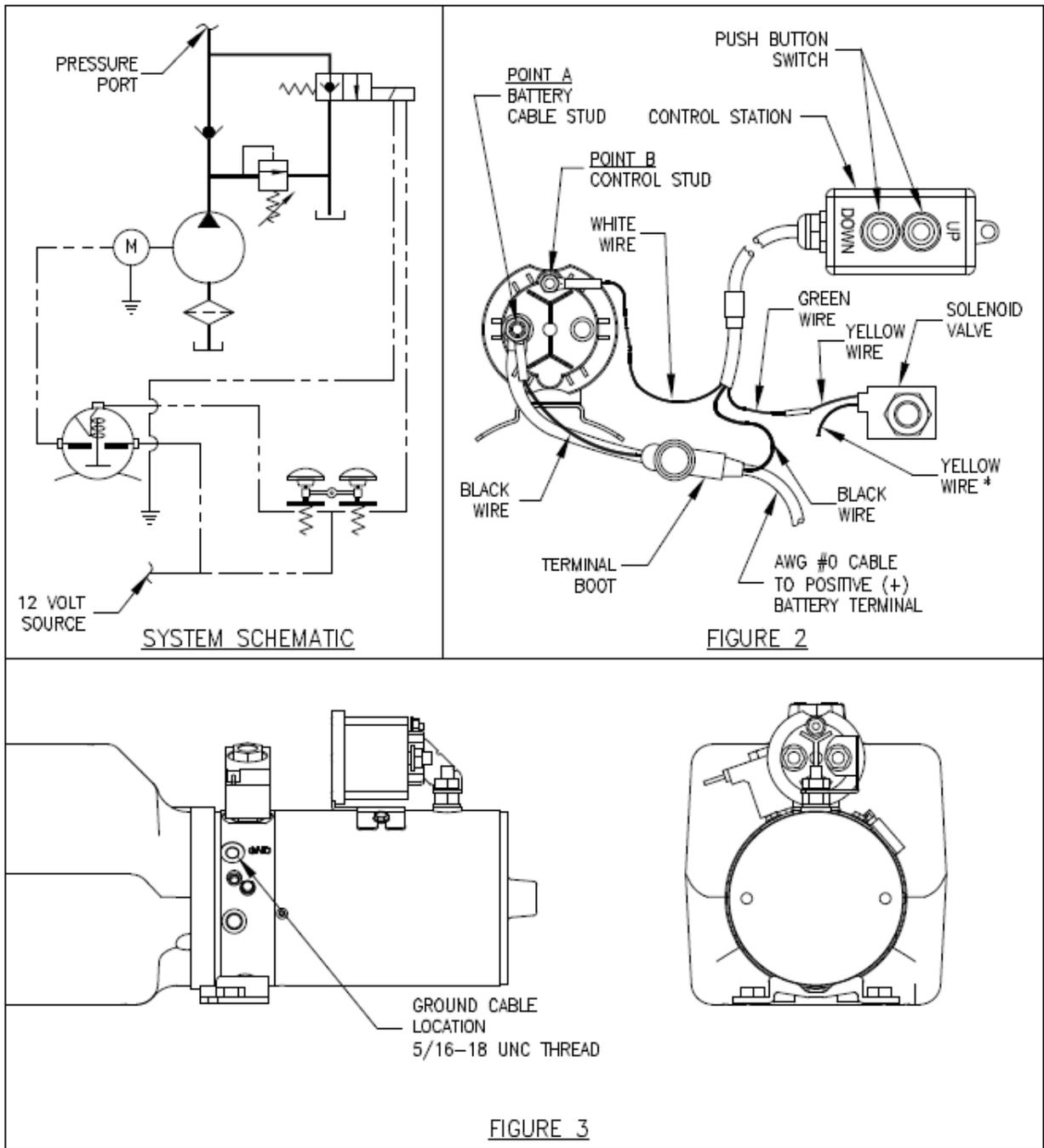
NOTE: Avoid routing locations where power cables may rub against any sharp edges of the vehicle, get pinched or be exposed to excessive heat. Install approved sheathing over each cable in critical areas.

2. Route a copper AWG #0 cable from the battery to the power unit - do not connect the cable to the positive battery terminal until Step 2 of the Fill and Prime section. Install the provided 250 amp inline fuse no further than 12 inches from the battery. At the power unit, insert the supplied rubber terminal boot over the end of the cable and the black wire as shown in Figure 2. Fasten the cable end and black wire to "Point A" on the solenoid start switch. Tighten to 35 in/lbs torque. Snap rubber terminal boot over stud to complete connection. Make sure all connections on solenoid start switch are secure.

WARNING: Never tighten battery cable stud, marked "Point A", to more than 35 in/lbs torque and never tighten control stud, marked "Point B", to more than 15 in/lbs torque. Exceeding the torque rating for either stud can cause unit to malfunction, which could lead to property damage, serious injury or death.

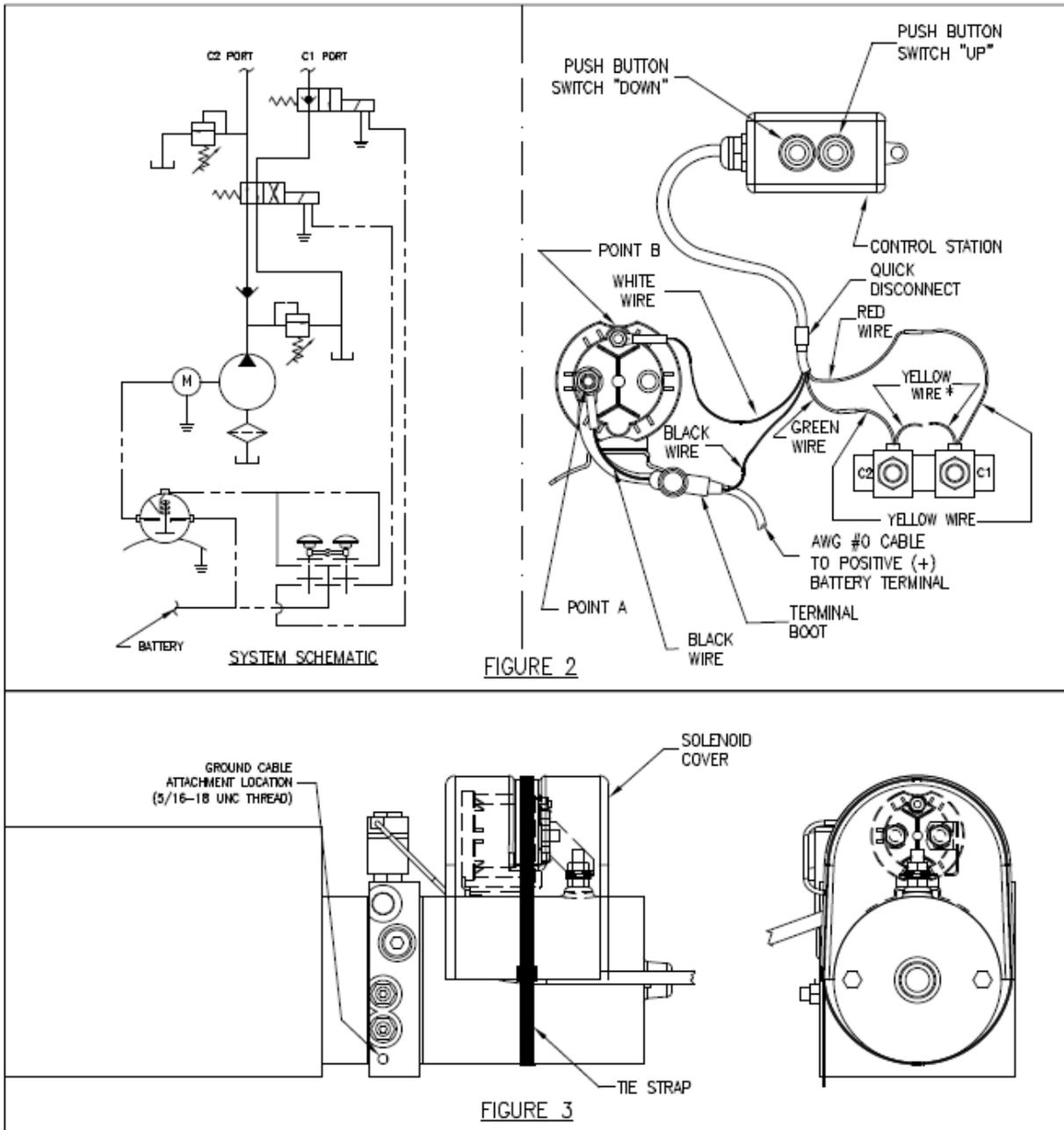
3. (Double-Acting or Single-Acting if equipped) Place the solenoid cover over the solenoid and secure in place with the tie strap provided.
4. The hoist should only be used with the operator in a safe location. Locate the hoist control station in a safe location.

FIGURES 2a & 3a
SINGLE-ACTING SCHEMATICS



**If 2 wire coil – ground wire.*

FIGURE 2b & 3b
DOUBLE-ACTING SCHEMATICS



**If 2 wire coil – ground wire.*

FILL & PRIME:

1. Fill the reservoir with automatic transmission fluid (ATF), such as Dexron® II Type A.
2. Secure the unit's power cable to the positive battery terminal to complete the electrical installation and allow operation of the unit.
3. Place a drip pan or other suitable container below loose hose fitting at base end of cylinder.
4. Press "UP" pushbutton on control station to begin priming the unit. Once oil begins flowing steadily from loose fitting, release pushbutton and tighten fitting.
5. Operate unit several times starting with short cylinder strokes and increasing length with each successive stroke.
6. Recheck oil level often and add as necessary to keep pump from picking up air.
7. After hoist has been fully raised and lowered repeatedly to purge air from cylinder, lower hoist and check oil level in reservoir. With the hoist down, the reservoir should be full within 1.5" of the top. **DO NOT OVERFILL!**
8. Install filler/breather cap in reservoir fill hole.

Operation Instructions

WARNING: Being under or near a raised body can result in injury or death should the body unexpectedly descend or tip. Hoist must be activated with operator in control at a safe location. No one must be allowed to enter the area under a raised body while the hoist is in operation.

WARNING: Being under a raised body can result in serious injury or death should the body unexpectedly descend. **Never** position yourself or allow other to position themselves under a **loaded** body. **Always** prop the **unloaded** body up using the body prop or body props supplied. **Remember** body props are to be used only on an **unloaded** body. When two props are provided, both props must be used.

DANGER:

1. Stay out from under body when hoist is operating.
2. During dumping operations, no one must be allowed to stand in or move through the area where the body and hoist operate or into an area where an upset load might fall.
3. Controls must be in a safe location and operator must remain at controls during dumping operation. Controls must be located in a location where it is not possible to be under body during dumping operation.
4. **Never** leave body raised or partly raised while the truck or trailer is unattended or while performing maintenance or service under body, unless body is braced to prevent accidental lowering.
5. **Do not** attempt to raise a loaded body when the truck or trailer is on un-level ground.
6. Never jerk or shock a raised body to loosen a stuck load.

WARNING: Freeing a stuck load during dumping, with the body raised, by jerking or shocking the trailer, may cause damage to the truck or trailer, serious injury or death. **Never** drive forward or rearward and stop quickly with the load up or otherwise shock the load. If a load is stuck in the body, lower the body, then free the load.

WARNING: Attempting to dump a load on un-level ground may cause the truck or trailer to over turn, and can result in damage, serious injury or death. **Always** dump the load on ground that is level front to rear as well as level side to side.

WARNING: Overloading a hoist can cause component damage or an accident which may cause injury or death. **Never** exceed the hoist's rated lift capacity.

WARNING: Damaged or malfunctioning equipment may cause injury or death. Repair or replace any damaged or malfunctioning equipment before continuing its use.

NOTE: Always use clean automatic transmission fluid (ATF) in the power unit. Do not mix types. Check oil level monthly and add as needed (see Fill & Prime instructions) to prevent unit from pumping air. Change fluid annually to remove condensation and entrapped debris.

Check the following monthly to ensure proper operation:

1. Wiring, electrical connectors, power cables (positive and ground), valves, and coils for any corrosion, rust or loose bolts. Electrical components must be kept free of corrosion and rust in order to function properly.
2. Hoses/fittings for any cracks, leaks or any other exterior damage. Tighten all fittings as needed.
3. Plastic reservoir for leaks or other damage.
4. Vent cap for any dirt or debris.

SINGLE ACTING:

Raise the hoist by pressing and holding the “UP” pushbutton on the control station. This activates the power unit and directs oil to the base end of the hoist cylinder. Releasing the pushbutton will stop raising the hoist and will hold its position.

NOTE: The power unit is equipped with a factory-set hydraulic relief valve that will bypass at 3200 PSI when the hoist reaches a fully raised position or whenever the load being lifted exceeds the hoist capacity. Care should be taken not to let the pump bypass for long periods of time, as this will put stress on the whole hydraulic and electrical system. To stop the pump from bypassing, release the “UP” button on the control station.

Lower the hoist by pressing and holding the “DOWN” pushbutton on the control station. This activates the solenoid valve and directs oil from the cylinder back to the power unit’s reservoir. Releasing the pushbutton will stop lowering the hoist and it will hold its position.

DOUBLE ACTING:

Raise the hoist by pressing and holding the “UP” pushbutton on the control station. This activates the power unit and directs oil to the base end of the hoist cylinder. Releasing the pushbutton will stop raising the hoist and it will hold its position.

NOTE: The power unit is equipped with a factory-set hydraulic relief valve that will bypass at 3200 PSI when the hoist reaches a fully raised position or whenever the load being lifted exceeds the hoist capacity. Care should be taken not to let the pump bypass for long periods of time, as this will put stress on the whole hydraulic and electrical system. To stop the pump from bypassing, release the “UP” button on the control station.

Lower the hoist by pressing and holding the “DOWN” pushbutton on the control station. This will activate the pump and start the hoist down. Releasing the pushbutton will stop lowering the hoist and it will hold its position.

NOTE: When the hoist reaches its “DOWN” limit, the pump will bypass. Care should be taken not to let the pump bypass for long periods of time, as this will put stress on the whole hydraulic and electrical system. To stop the pump from bypassing, release the “DOWN” button on the control station.