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CRYSTEEL'S POWER TAILGATE



*THIS MANUAL MUST BE INCLUDED WITH THE VEHICLE
AFTER COMPLETING THE INSTALLATION.*

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DATE PURCHASED _____

BODY SERIAL NUMBER _____

CYLINDER SERIAL NUMBER _____

CYLINDER SERIAL NUMBER _____

DEALER _____

ADDRESS _____

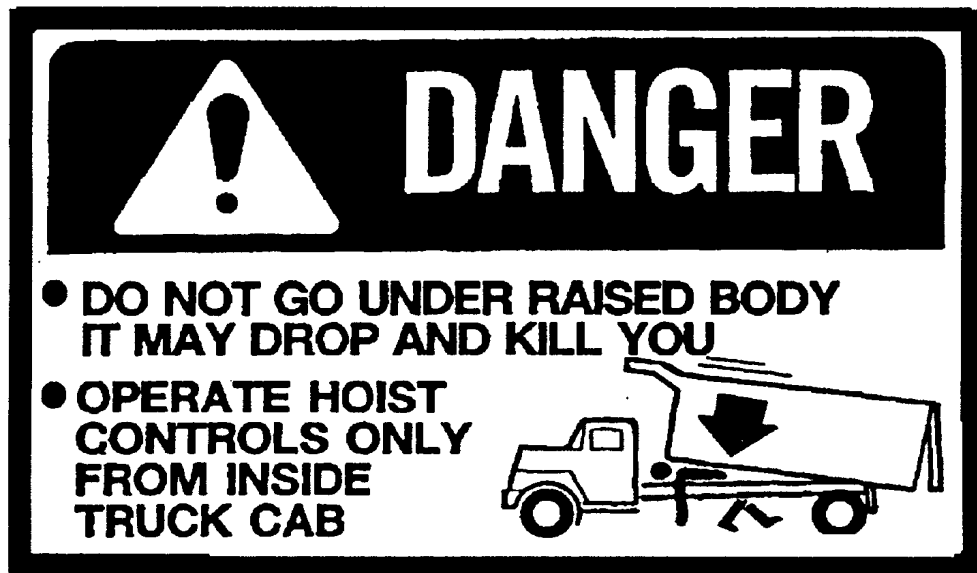
PHONE _____

FOREWORD

Crysteel's Power Tailgate can be used to raise the tailgate high and out of the way for dumping large objects without damaging the tailgate. It is also designed to allow the tailgate to be used as a standard tailgate for spreading. Crysteel's Power Tailgate can be equipped with either air or hydraulic cylinders.

This manual contains the information needed for the proper installation and operation of the Power Tailgate valve and control.

When ordering parts, be sure to give the serial numbers of the cylinders. The serial number of the cylinder is stamped on the barrel of the cylinder near the base for hydraulic cylinders, on a name plate on air cylinders and on the lift assembly. For future reference, copy these numbers NOW in the space provided above. Order parts by number and description as given in the parts listing in this manual.



KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE

OPERATION AND USE

1. Operate switches from cab.
2. To raise the tailgate, first operate the tailgate release.
3. For air operation, move the toggle switch to the raise position. To lower the tailgate, move toggle switch to the lower position.
4. For hydraulic operation, move the toggle switch to the raise position and hold until the tailgate is fully raised. To hold the tailgate in the raised position, release the toggle switch. To lower the tailgate, move toggle switch to the lower position and hold until the tailgate is fully lowered.
5. After the tailgate has been lowered, close the tailgate latches.

SOME DO'S AND DON'TS FOR SAFE AND LONG SERVICE

1. ALWAYS carefully block up the tailgate before working under it.
2. Do not “race” the engine when operating the Power Tailgate.
3. Check all bolts and fittings regularly. Keep them tight.
4. Keep clear of the rear of the body when activating the hydraulic tailgate for dumping.

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


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INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

It is a good idea to look through these installation instructions before beginning to mount the hoist and hydraulic system.

When welding, protect the truck's electrical, air and brake systems by disconnecting, removing or covering. Tighten all nuts and bolts to a consistent level. Use the following table for torque values.

Size	Grade 2 Torque	Grade 5 Torque	Grade 8 Torque
			
1/4-20	3-4 lb-ft	6-7 lb-ft	10-11 lb-ft
1/4-28	4-5 lb-ft	8-9 lb-ft	11-12 lb-ft
5/16-18	8-9 lb-ft	14-15 lb-ft	21-22 lb-ft
5/16-24	9-10 lb-ft	15-16 lb-ft	21-22 lb-ft
3/8-16	17-18 lb-ft	24-26 lb-ft	37-40 lb-ft
3/8-24	19-20 lb-ft	28-30 lb-ft	40-43 lb-ft
1/2-13	38-42 lb-ft	60-65 lb-ft	90-100 lb-ft
1/2-20	43-47 lb-ft	70-75 lb-ft	95-105 lb-ft
5/8-11	75-80 lb-ft	122-130 lb-ft	180-190 lb-ft
5/8-18	85-90 lb-ft	145-150 lb-ft	200-210 lb-ft
3/4-10	132-140 lb-ft	220-230 lb-ft	315-330 lb-ft
3/4-16	152-160 lb-ft	250-260 lb-ft	355-370 lb-ft

The following abbreviations are used in describing hydraulic fittings.

ORBM	O-Ring Boss - Male Thread
NPTM	Pipe - Male Thread
NPTF	Pipe - Female Thread
JICM	JIC 37° - Male Thread
JICF	JIC 37° - Female Thread

INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

The hydraulic system for the Power Tailgate consists of two lift cylinders, already installed in the rear pillars, the Power Tailgate control valve and a control switch. Flow controls are installed on the hydraulic cylinders to control the down speed of the tailgate. To complete the installation of the hydraulic system, follow the instruction beginning on page 5.

The air system for the Power Tailgate consists of two lift cylinders, already installed in the rear pillars, an air valve and a control switch. Flow controls are installed on the hydraulic cylinders to control the down speed of the tailgate. To complete the installation of the air system, use the following instructions.

AIR SYSTEM INSTALLATION

Mount the air valve mounting bracket near the rear of the truck in a protected location. This bracket can be welded to the rear hinge or to the body. Mount the control valve to this bracket using the #8-32 x 1 1/2 machine screws and hex nuts.

Using 3/8" O.D. air line tubing, connect the pressure protection valve (not supplied with the Power Tailgate) to the #1 port on the air valve. Connect the #2 port to the tee (already installed) connected to the base end of the air cylinders. Install an exhaust muffler in port #3.

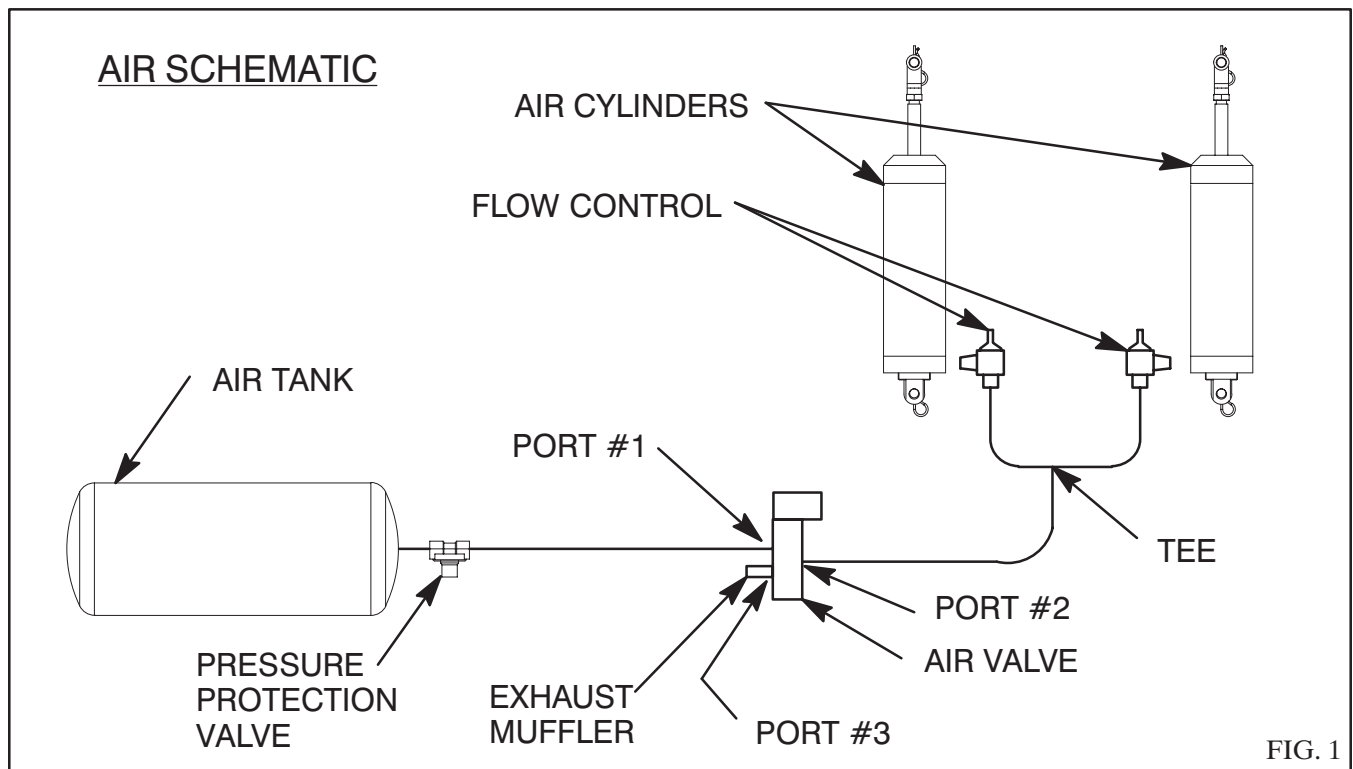
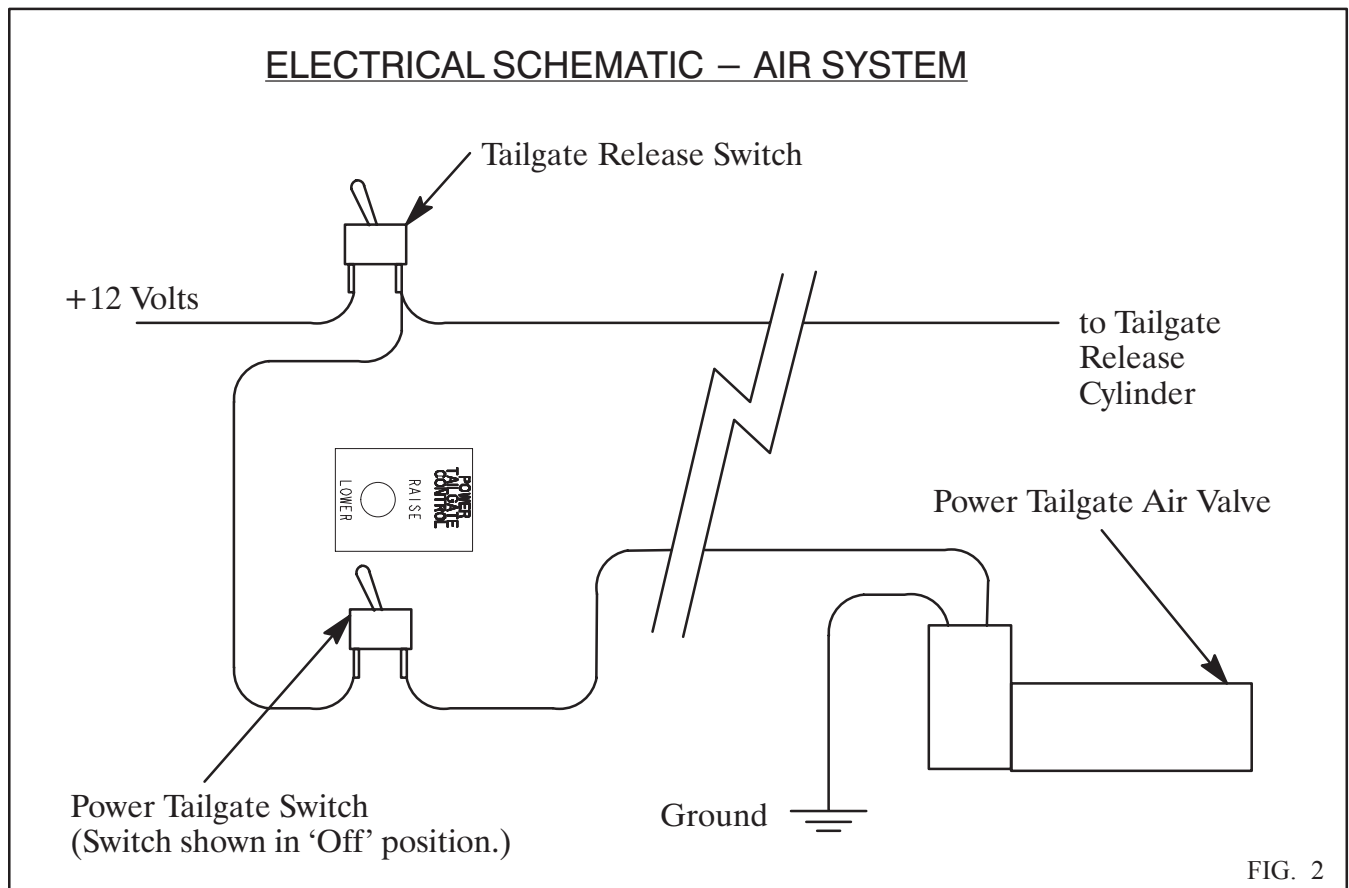


FIG. 1

The tailgate latch fingers must be opened before the Power Tailgate is operated. The following electrical diagram ensures that the air tailgate control is operated before the Power Tailgate control can be used.

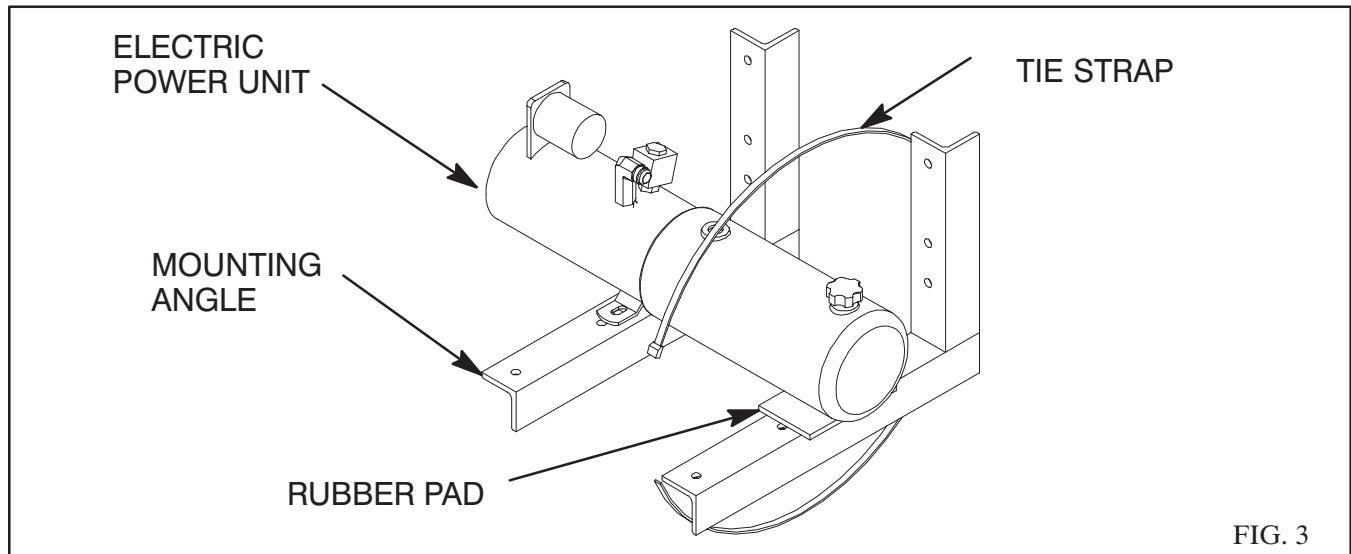
Mount the control switch in the cab in a convenient location near the hoist control.



Connect a 16 gauge wire from the switched side of the Tailgate Release Switch to the common terminal of the Power Tailgate Switch. Connect a 16 gauge wire from the switched side of the Power Tailgate Switch to one of the wires on the Power Tailgate air valve. Connect the other wire on the air valve to ground.

HYDRAULIC SYSTEM INSTALLATION

The electric power unit should be mounted close behind the cab, either inside or outside the truck frame. After determining where to mount the power unit, bolt one mounting angle to the power unit using the 3/8 x 1 hex head cap screws, flat washers and hex lock nuts, tightening to 25 to 28 lb-ft. Clamp the mounting bracket to the truck frame. Clamp the second mounting angle to the truck frame so it supports the far end of the reservoir.

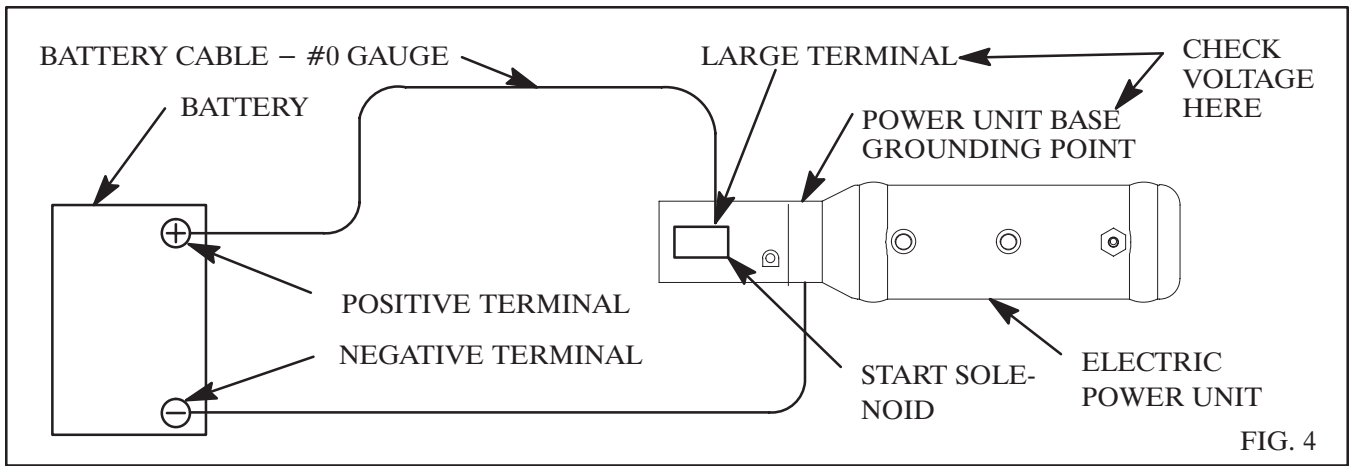


CAUTION: BE CAREFUL OF BRAKELINES, WIRING, ETC. INSIDE THE TRUCK FRAME WHEN DRILLING THE TRUCK FRAME.

Drill 17/32 diameter holes in the truck frame and bolt the mounting angles in place using 1/2 x 2 hex head cap screws and hex lock nuts, tightening to 90 to 100 lb-ft. Insert the 3 x 5 rubber pad between the reservoir and the second mounting angle. Clamp the reservoir and rubber pad to the mounting angle with the tie strap provided.

For rated performance, the voltage at the power unit must be a minimum of 12VDC. This should be measured between the large terminal of the start solenoid (where the battery cable is connected) and the power unit base. NOTE: Grounding of the power unit is just as important as the installation of the positive battery cable. It is easier to get a good ground by using a second battery cable.

Connect the large terminal on the motor start solenoid to the positive terminal on the battery with a #0 gauge battery cable. Grounding of the power unit can be completed either through the vehicle chassis or by a second battery cable. If grounding through the vehicle chassis, be sure to replace the light ground strap between the battery and the vehicle chassis with a #0 gauge cable. If grounding with a second battery cable, connect the negative terminal on the battery to the grounding hole on the power unit base using an #0 size battery cable. See Figure 4. Check the voltage between the large terminal on the start solenoid and the power unit base.

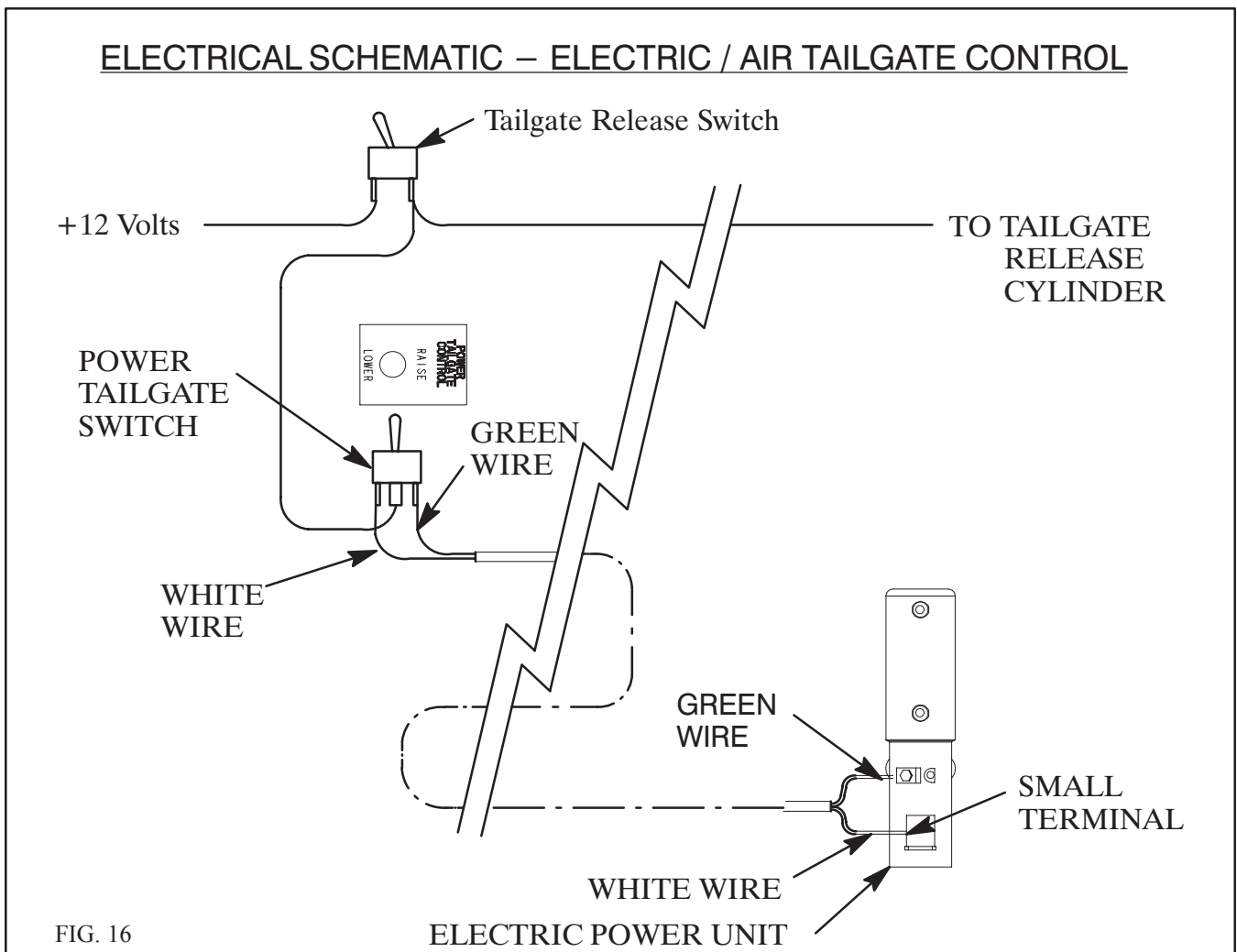


Clamp the motor solenoid cover to the motor using the long tie-strap included with the electric power unit.

INSTALL POWER TAILGATE CONTROL - ELECTRIC / AIR TAILGATE CONTROL

The tailgate latch fingers must be opened before the Power Tailgate is operated. The following electrical diagram ensures that the air tailgate control is operated before the Power Tailgate control can be used.

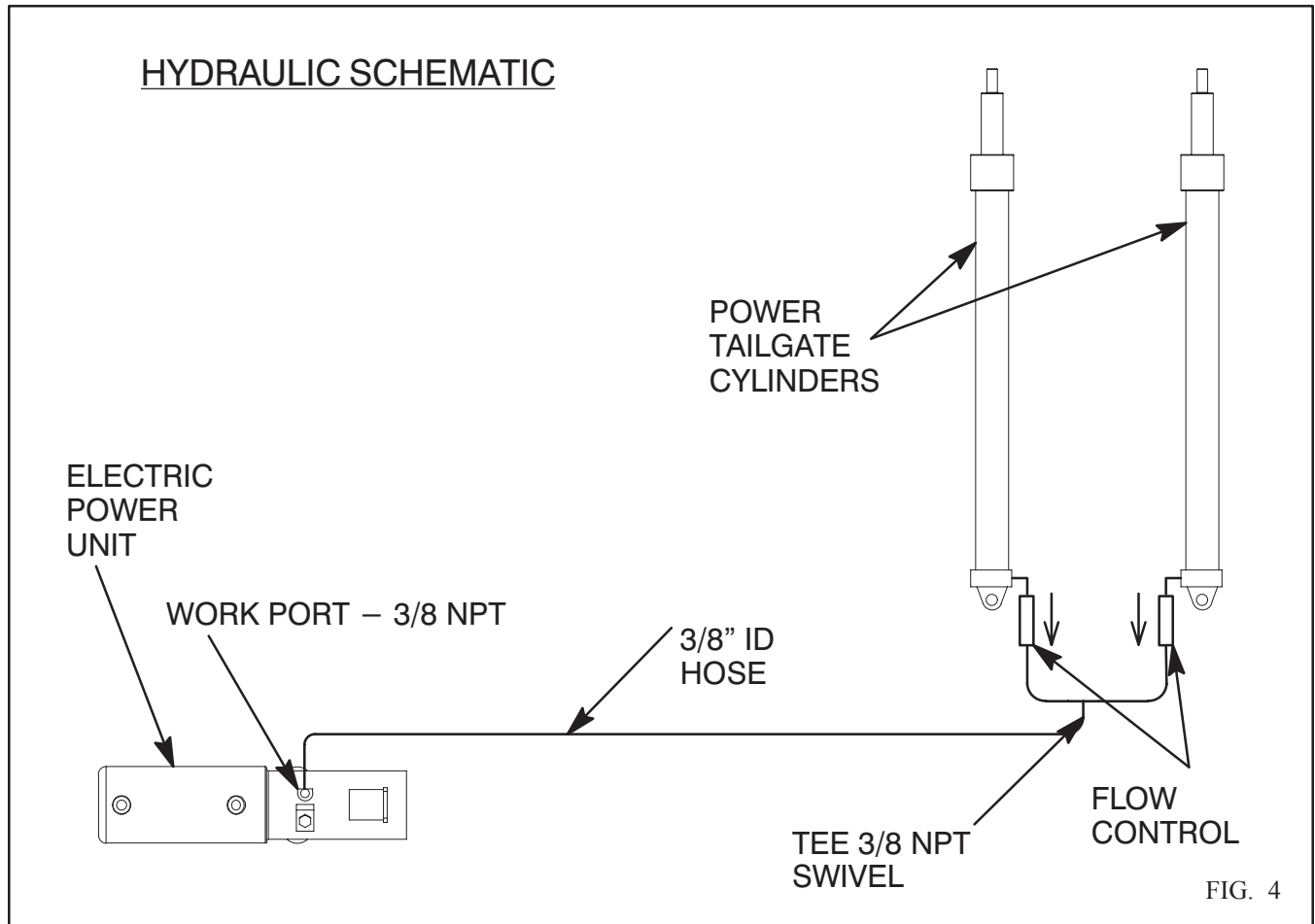
Mount the control switch in the cab in a convenient location near the hoist control.



Connect a 16 gauge wire from the switched side of the Tailgate Release Switch to the common, middle terminal of the Power Tailgate Switch. The electric power unit has a two wire, 20 foot long cable prewired to the power unit. Route the free end of the cable into the cab of the truck. Connect the white and green wires to the Power Tailgate switch - white wire to raise the tailgate, green wire to lower the tailgate.

HYDRAULIC HOSE INSTALLATION

Install a 3/8 pipe x 3/8 female pipe 90_ long adapter in the work port on the power unit. Connect a 3/8" ID hose, minimum pressure rating of 4000 psi, from this adapter to the 3/8 pipe swivel tee at the rear of the body. This hose is not provided.



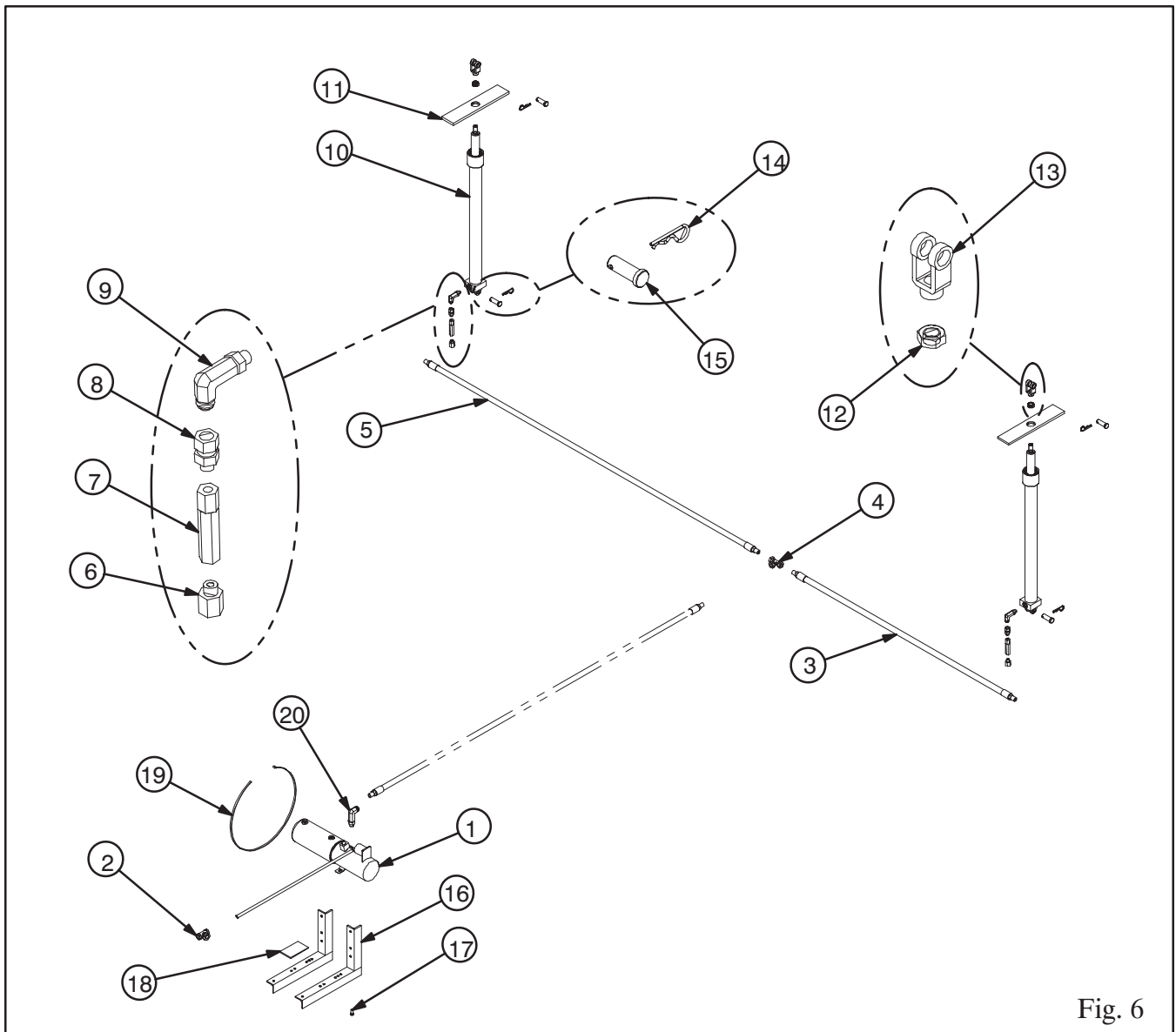


Fig. 6

ITEM	DESCRIPTION	MODEL	PART NO.	QTY.
1.	Electric Power Unit	ALL	1644673	1
2.	Toggle Switch - (On) - Off - (On)	ALL	1643878	1
3.	Hose 3/8 NPT x 48 RM/SM 4000	ALL	1642825	1
4.	Tee 3/8 NPSM Swivel Nut	ALL	1643235	1
5.	Hose 3/8 NPT x 72 RM/RM 4000	ALL	1643014	1
6.	Adapter 9/16 ORBM x 3/8 NPSM	ALL	1643709	1
7.	Flow Control - 1 GPM	ALL	1644125	2
8.	Swivel 9/16 ORBM x 3/4 JICM	ALL	1643587	2
9.	Pipe Plug 3/4 Magnetic	ALL	1642794	2
10.	Assy Cylinder 1.25 x 20.9 TGL Disp	ALL	1623841	2
11.	Shield Slide Cover Vert TG Shield Slide Cover Sloped Rear TG	Vertical Pillar Sloped Pillar	1633617 1633618	2 2
12.	Nut Hex Jam 5/8-18	ALL	1643149	2

ITEM	DESCRIPTION	MODEL	PART NO.	QTY.
13.	End Yoke 5/8-18 x 5/8 x 1 7/8"	ALL	1633845	2
14.	Hairpin Cotter 1/2 Shaft	ALL	1643748	4
15.	Clevis Pin 5/8 x 1 23/32	ALL	1643180	4
16.	Assy Pump Mount	ALL	1621438	2
17.	Cap Screw 3/8-16 x 1 Hex Head	ALL	1642714	2
18.	Rubber Pad 3 x 5	ALL	1643881	1
19.	Cable Tie 33"	ALL	1643817	1
20.	Adapter 3/8 NPTM x 3/8 NPSM 90° Long	ALL	1644755	1

POWER TAILGATE HYDRAULIC CYLINDER PARTS

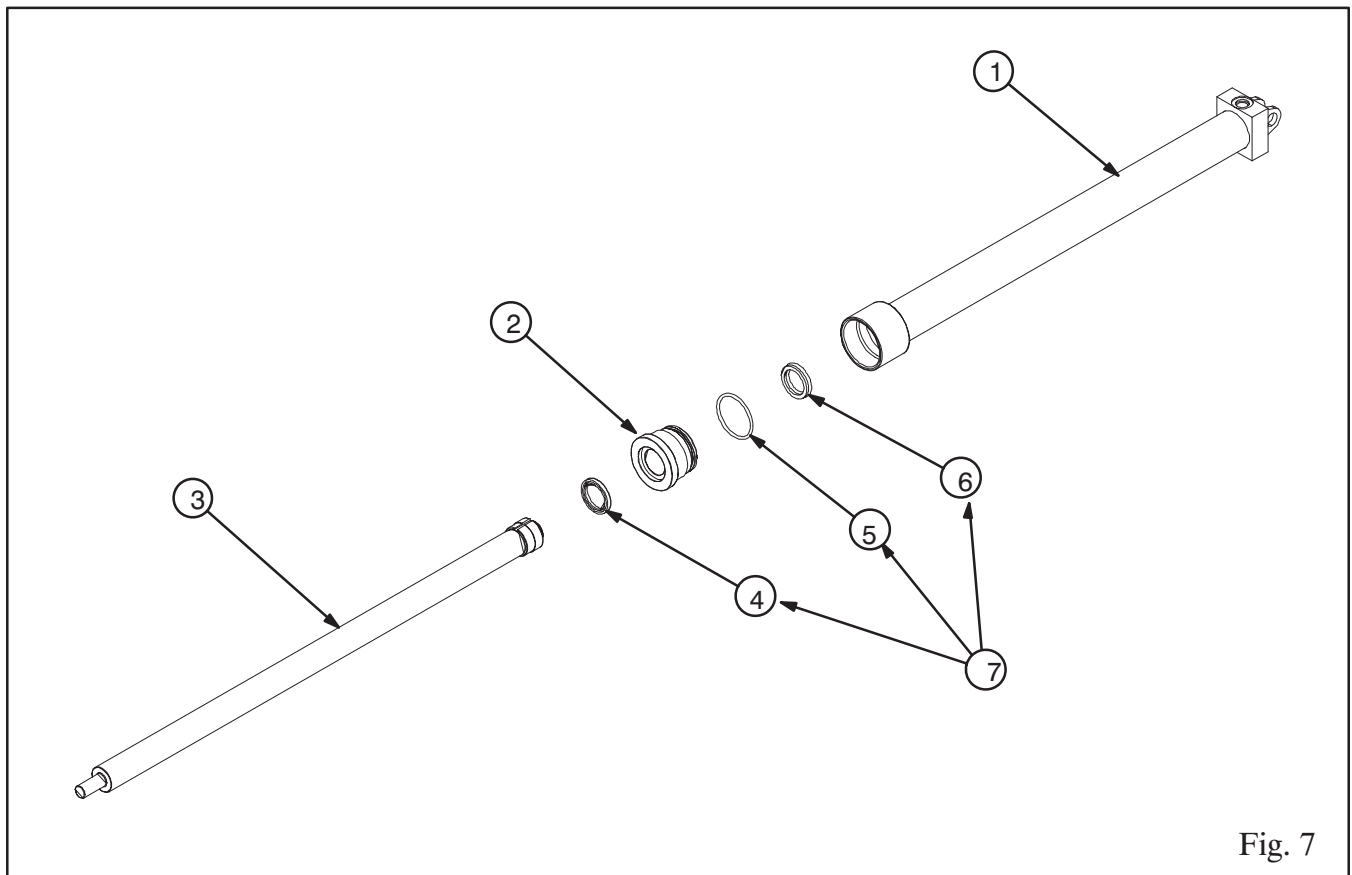


Fig. 7

ITEM	DESCRIPTION	PART NO.	QTY.
1.	Assy cylinder Tube Outer	1623842	1
2.	Head Cylinder 2 1/4	1640423	1
3.	Assy Cylinder Shaft	1624753	1
4.	Wiper 1 1/4 ID	1645070	1
5.	O-Ring 1 7/8 ID x .210 CS	1642784	1
6.	Seal Poly 1 1/4 ID x 3/16 CS	1645233	1
7.	Seal Kit - Power Tailgate	1623555	1

POWER TAILGATE PARTS - AIR

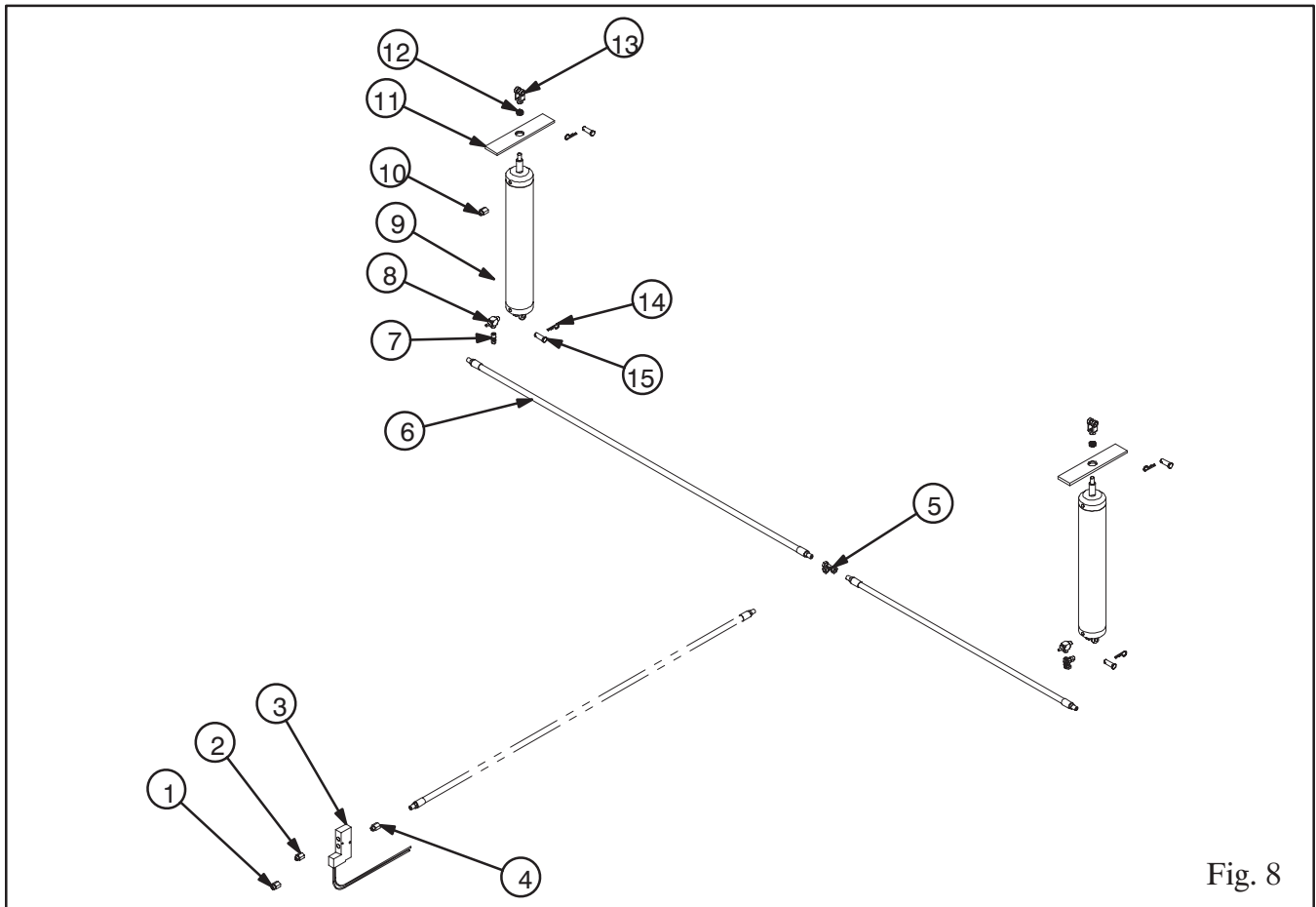
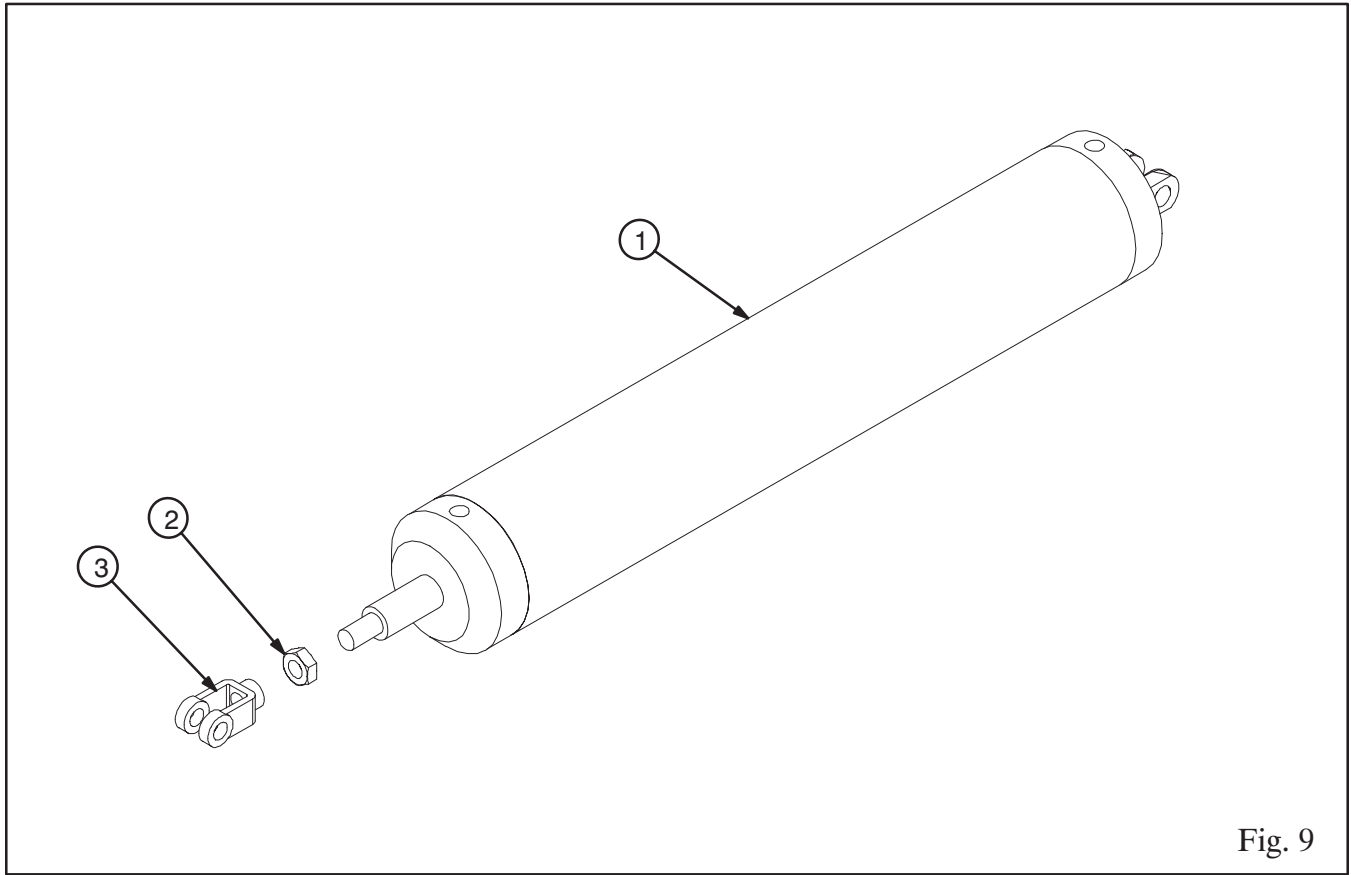


Fig. 8

ITEM	DESCRIPTION	MODEL	PART NO.	QTY.
1.	Male Connector 3/8 OD Tube x 1/4 NPT	ALL	1642991	1
2.	Muffler, Exhaust 1/4 NPT	ALL	1644016	2
3.	Air Valve	ALL	1643864	1
4.	Elbow Male 3/8 OD Tube x 1/4 NPT	ALL	1642990	1
5.	Tee Tube End 3/8 OD Tube	ALL	1643483	1
6.	Hose Nylon Air - 3/8 OD	ALL	1642831	20'
7.	Flow Control Air	ALL	1644255	2
8.	Connector 3/8 OD Tube x 3/8 NPT	ALL	1643525	2
9.	Air Cylinder 4" Bore x 20.75" Stroke	ALL	1643863	2
10.	Muffler, Exhaust 3/8 NPT	ALL	1644017	2
11.	Shield Slide Cover Vert TG Shield Slide Cover Sloped Rear TG	Vertical Pillar Sloped Pillar	1633617 1633618	2 2
12.	Nut Hex Jam 5/8-18	ALL	1643149	2
13.	End Yoke 5/8-18 x 5/8 x 1 7/8"	ALL	1633845	2
14.	Hairpin Cotter 1/2 Shaft	ALL	1643748	
15.	Clevis Pin 5/8 x 1 23/32	ALL	1643180	
16.	Switch Toggle - On-Off	ALL	1644018	

POWER TAILGATE AIR CYLINDER PARTS



ITEM	DESCRIPTION	MODEL	PART NO.	QTY.
1.	Air Cylinder 4" Bore x 20.75" Stroke	ALL	1643863	2
2.	Nut Hex Jam 5/8-18	ALL	1643149	1
3.	End Yoke 5/8-18 x 5/8 x 1 7/8"	ALL	1633845	1
4.	Seal Kit - 4" Air	ALL	Call	1

**CRYSTEEL MANUFACTURING'S
5 YEAR CUSTOMER SATISFACTION PLEDGE
& WARRANTY**

Crysteel offers the most comprehensive warranty in the truck equipment industry. Crysteel warrants each product against defects in material and workmanship for 60 months from the in-service date.

For the full Customer Satisfaction Pledge and Warranty information, please visit our website.

<http://www.crysteel.com>

! CAUTION !

- **BODY MUST BE BRACED BEFORE SERVICING HOIST OR WORKING IN AREA WITH BODY IN RAISED POSITION**
- **LUBRICATE HOIST GREASE FITTINGS OFTEN – AT LEAST EACH TIME TRUCK IS SERVICED**
- **TRUCK MUST BE LEVEL FOR DUMPING**
- **DO NOT OVERLOAD**

CRYSTEEL MFG, INC.

CRYSTEEL MANUFACTURING, INC.
