TBEI

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Colt

SCISSOR TRAILER HOIST

CRYSTEEL

THIS MANUAL MUST BE INCLUDED WITH THE TRAILER AFTER COMPLETING THE INSTALLATION.

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Phone (507) 726-2728
Toll Free (800) 533-0494

DATE PURCHASED _____

HOIST SERIAL NUMBER _____

CYLINDER SERIAL NUMBER _____

DEALER _____

ADDRESS _____

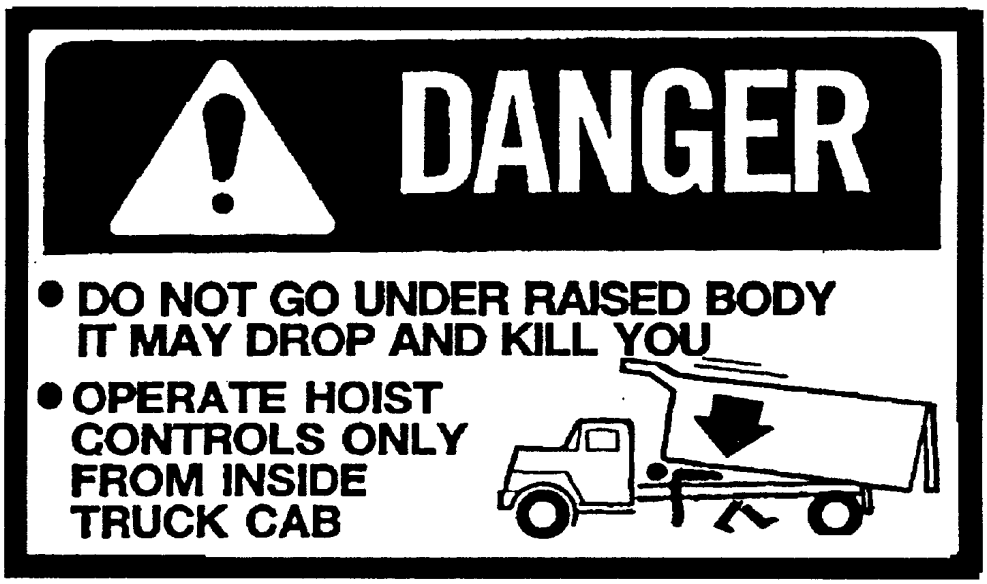
PHONE _____

FOREWORD

This manual contains the information needed for the proper installation and operation of Crysteel's Colt scissor hoists.

These instructions are for installing and maintaining all Colt trailer scissor hoists. With proper installation, use and regular maintenance, Crysteel's Colt trailer hoists will give many years of trouble free service.

When ordering parts, be sure to give serial number of hoist and cylinder. The serial number of the hoist is stamped into the hoist frame near the base end of the cylinder. The serial number of the cylinder is stamped on the barrel of the cylinder near the base. 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.



OPERATION AND USE

1. Operate hoist controls only from a safe location.
2. To raise the hoist, press and hold the `UP' button. To hold the body in a raised position, release the `UP' button. To lower the hoist, press and hold the `DOWN' button.
3. Grease the hoist every 100 cycles or every two months
4. To use the body prop, raise the body, raise the body prop arm to its upright position and lower the body onto the body prop arm.
5. To lower the body prop, raise the body, lower the body prop arm to its storage position and lower the body.
6. The fluid in the electric power unit should be changed annually. Use automatic transmission fluid (Dexron II or equivalent) Clean the breather cap each time the fluid is changed.

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

1. Use the proper hydraulic fluid. KEEP IT CLEAN. Remember to change it regularly.
2. Lubricate all grease fittings at regular intervals.
3. ALWAYS carefully block up the body, using the body prop, before working under it.
4. Do not load the hoist beyond its capacity.
5. DO NOT tamper with the hydraulic relief valve. This will void the warranty. It can cause severe damage to the hoist and cylinder.
6. Check all bolts and fittings regularly. Keep them tight.

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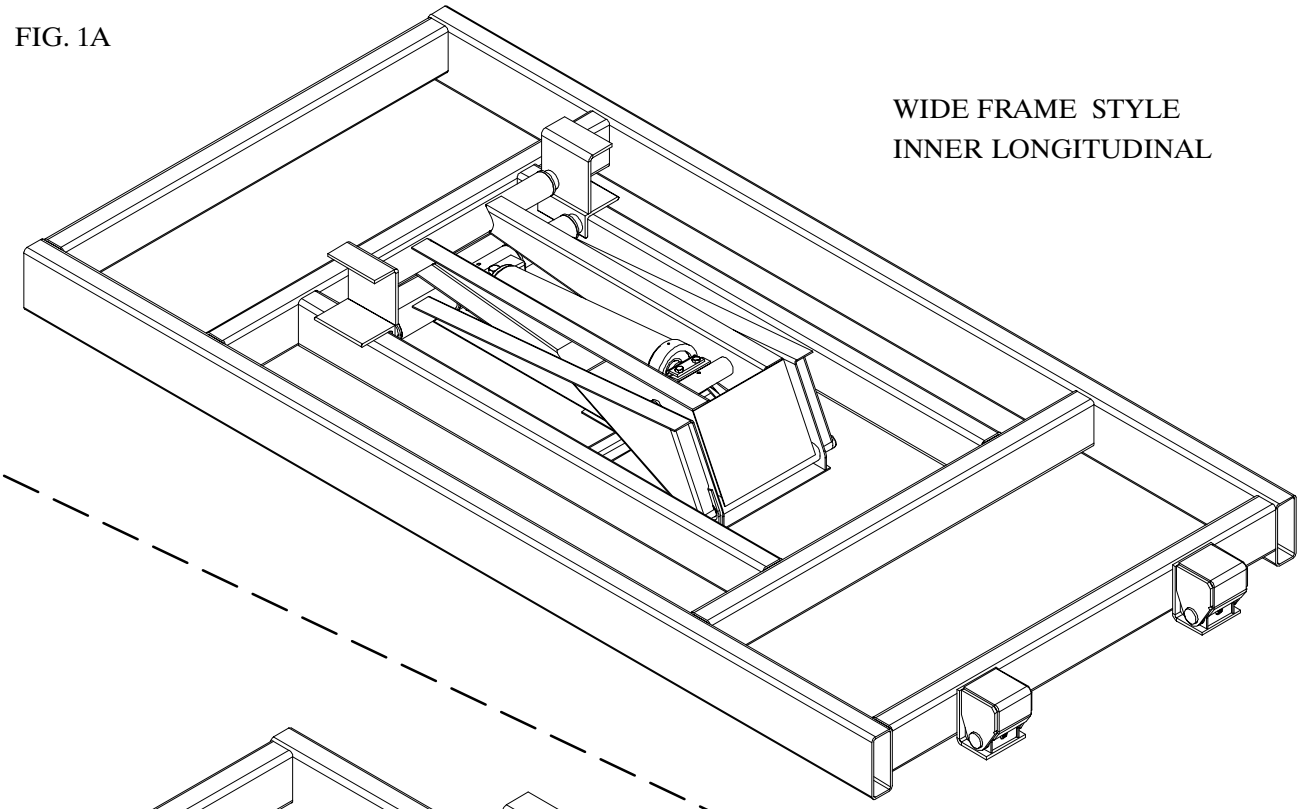
TRAILER FRAME CONSTRUCTION - PREFERRED HOIST MOUNTING

The following illustrations show two concepts of trailer frame construction for the preferred method of mounting the hoist frame and cylinder.

FIG. 1A



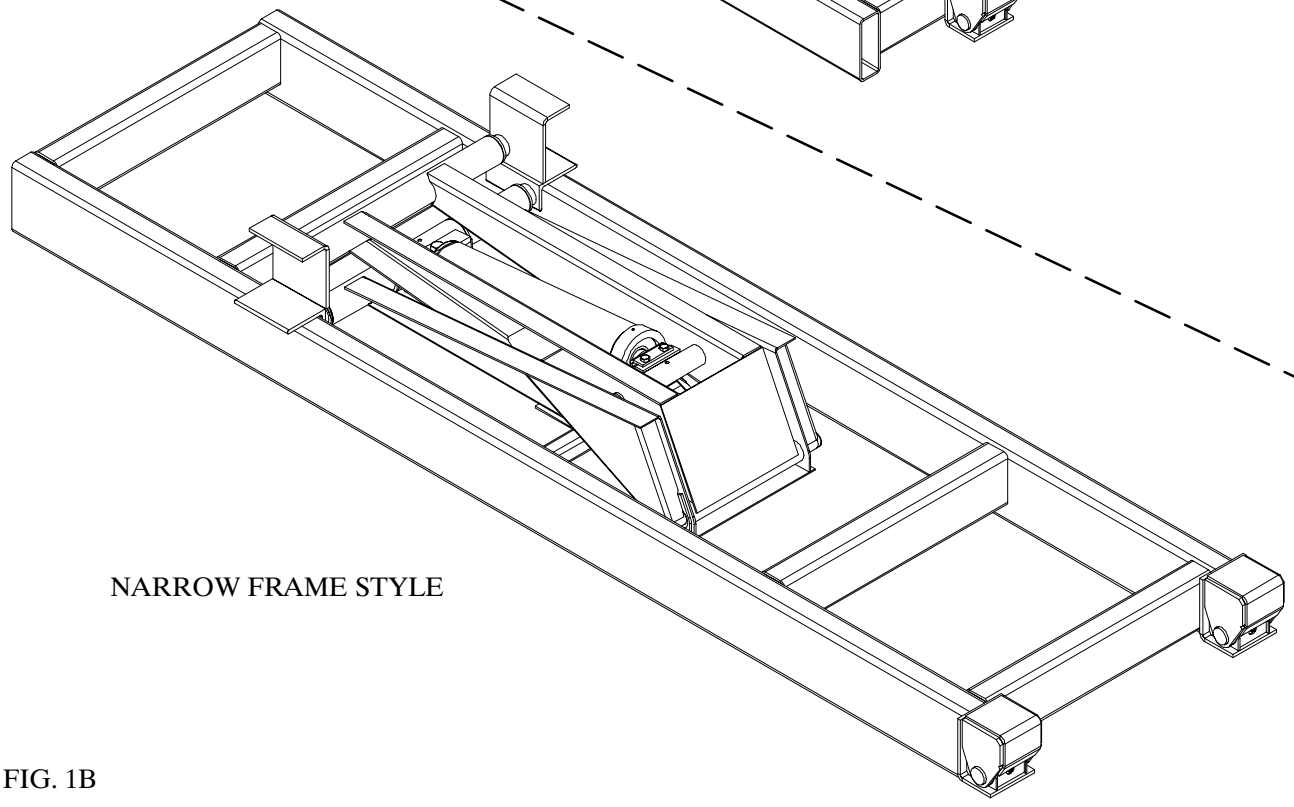


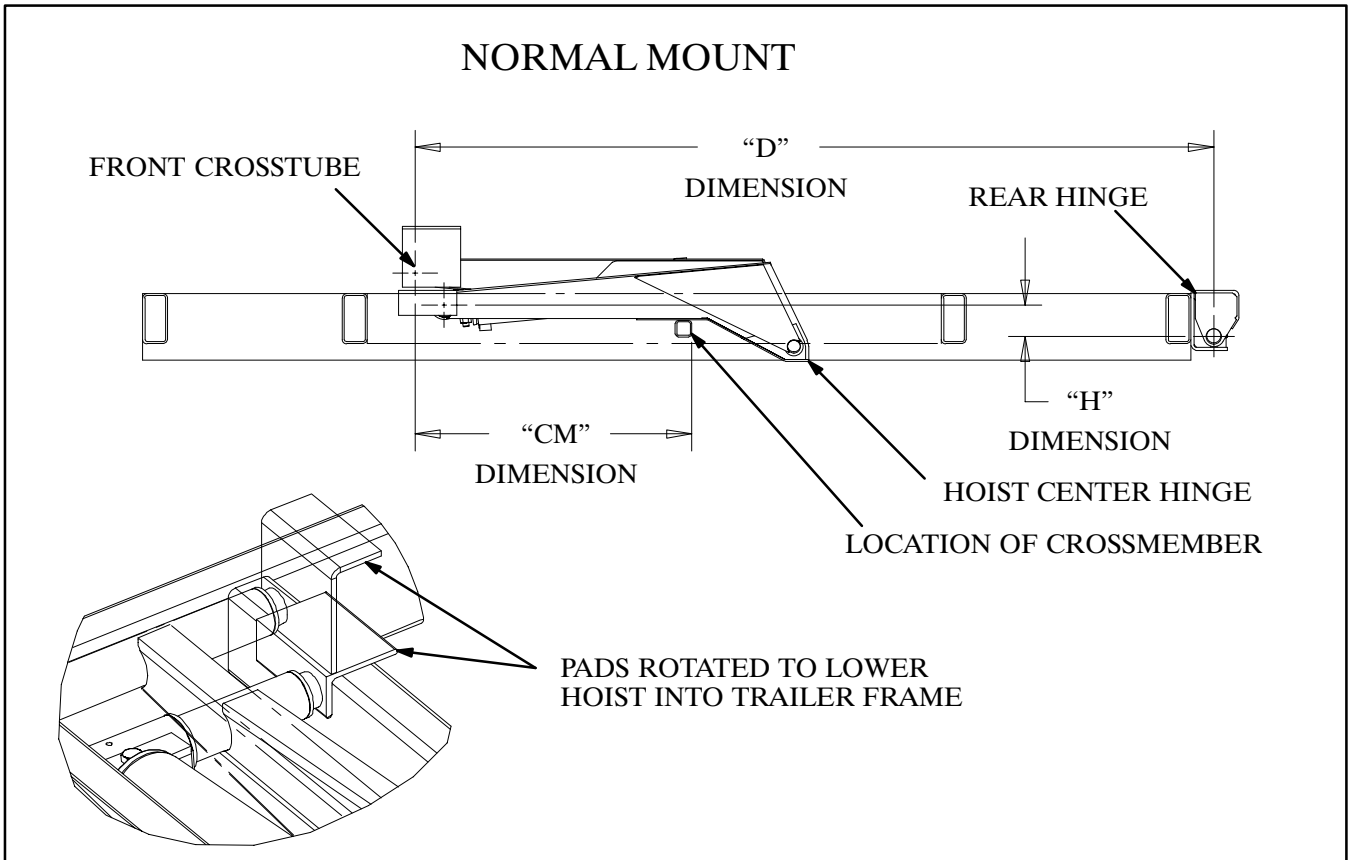
FIG. 1B

LOCATE AND MOUNT HOIST - PREFERRED

Determine where to mount the hoist on the trailer. Please refer to the chart in Fig. 2 for the relationship between dump angle and "D" dimension. Measure forward from the center of the rear hinge pin and mark, on the trailer frame, the location of the front crosstube of the hoist frame. Place the hoist on the trailer frame and clamp the hoist pivot pads to the trailer frame. The back end of the hoist must be supported by a crossmember in the trailer frame to keep the top of the hoist frame level. The "CM" dimension shows the location for this crossmember. Make sure the hoist frame is centered on and square with the trailer frame. Securely weld the lower hoist pivot pads to the trailer frame. Remove the clamps.

These illustrations show the hoist mounting pads rotated to lower the hoist into the trailer frame. This reduces the height from the top of the trailer frame to the top of the hoist approximately 3 inches.

NOTE: if the rear hinges from crysteel are not used, locate the rear pivot as shown by the `h' dimension. maintain this `h' dimension as a minimum. failure to locate the rear hinge pivot as shown may cause the hoist to fail prematurely.



DIMENSIONS	"D"					"CM"	"H"
DUMP ANGLE	35°	40°	45°	50°	55°		
TR3	67	59	53	48	44	18	2 3/4
TR5 & TR8	96 1/2	85 3/4	76 3/4	69 1/2	63 3/4	30	2 7/8
TR10 & TR15	122	108	99	88	81	34	3 1/4
TR18	169	149	133	120	111	43	3 1/4

FIG. 2

TRAILER FRAME CONSTRUCTION - OPTIONAL HOIST MOUNTING

The following illustrations show three methods of trailer frame construction for two optional methods of mounting the hoist frame and cylinder.

FIG. 3A

NARROW FRAME STYLE

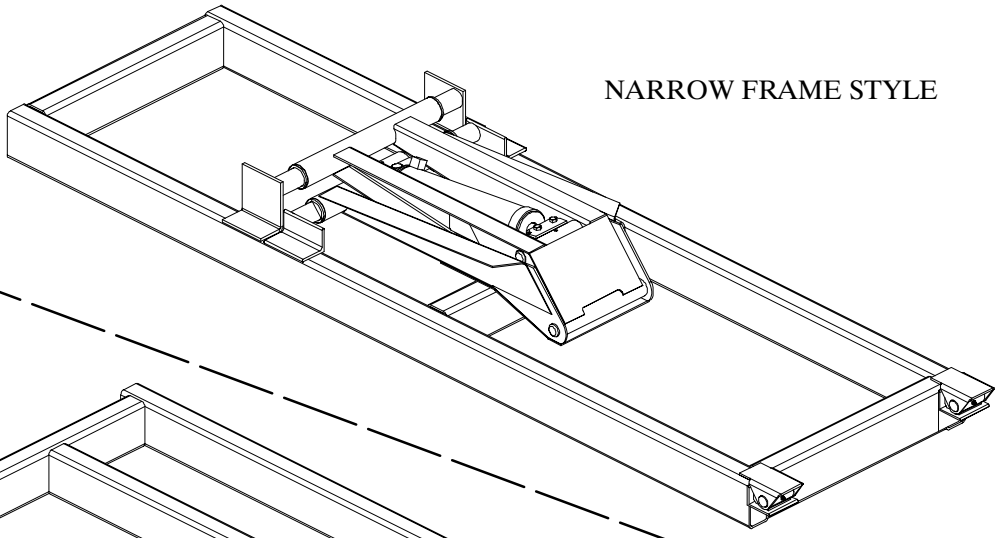
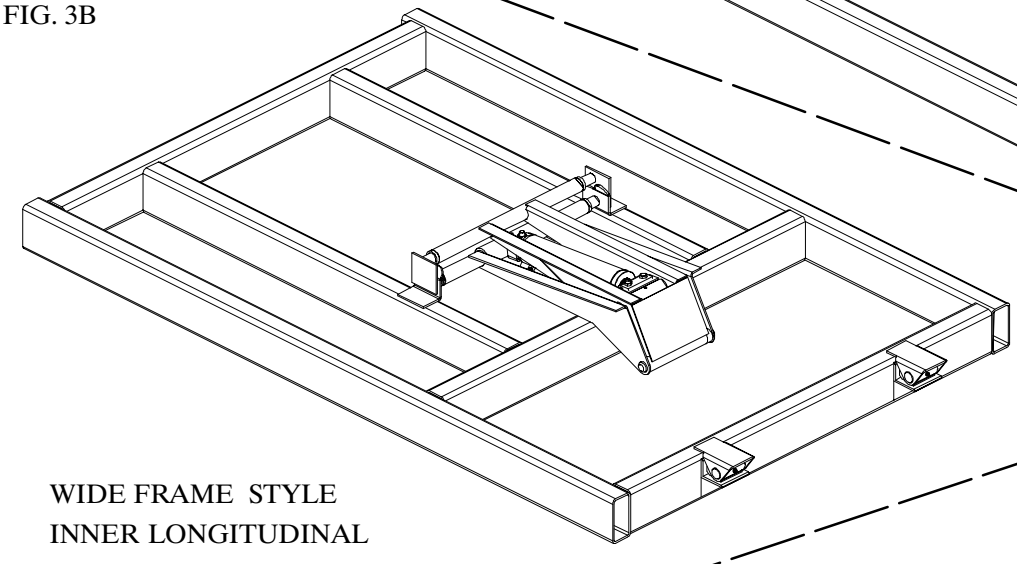
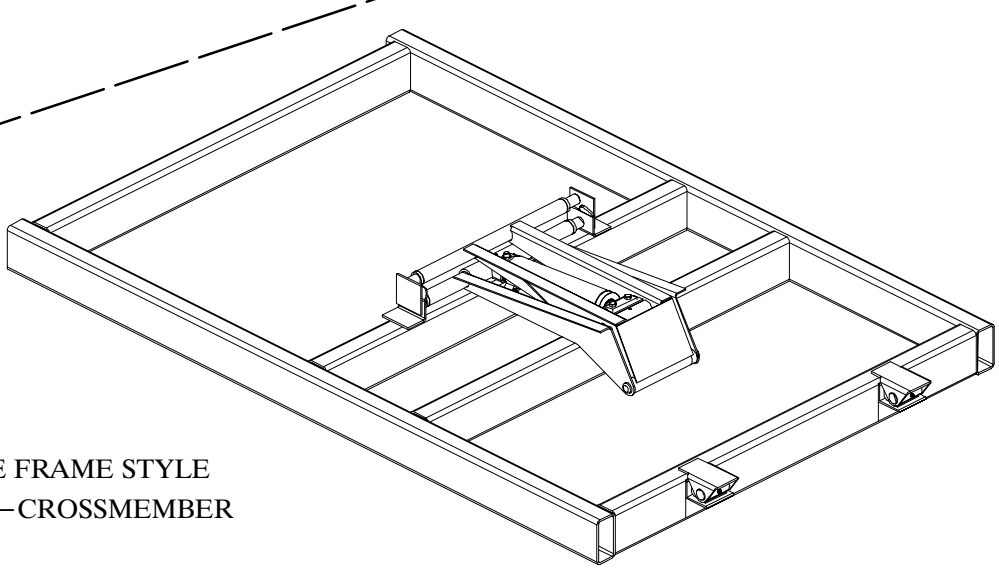


FIG. 3B



WIDE FRAME STYLE
INNER LONGITUDINAL

FIG. 3C

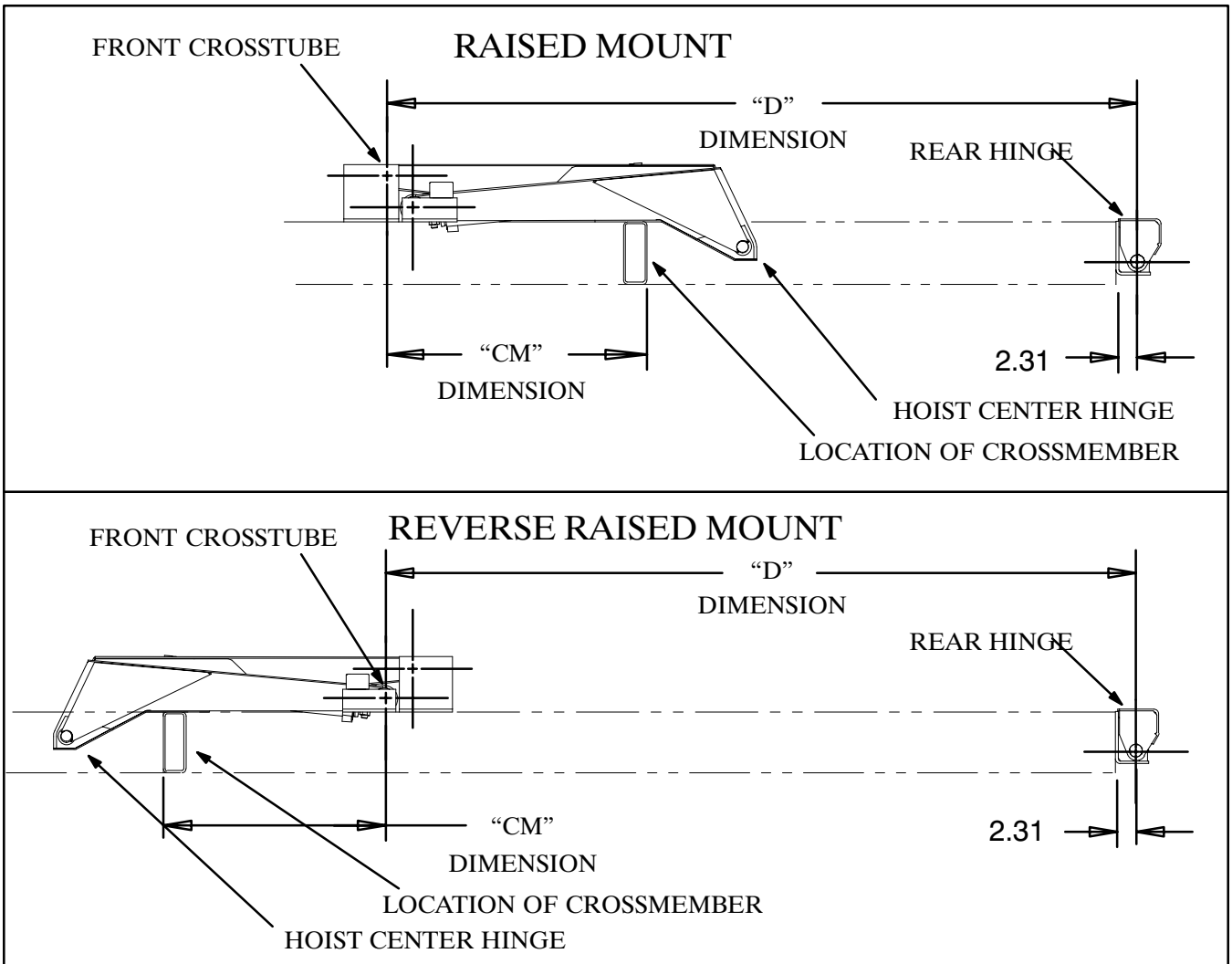


WIDE FRAME STYLE
TWO−CROSSMEMBER

LOCATE AND MOUNT HOIST - OPTIONAL RAISED

Determine where to mount the hoist on the trailer. Please refer to the chart in Fig. 4 for the relationship between dump angle and "D" dimension. Measure forward from the center of the rear hinge pin and mark, on the trailer frame, the location of the front crosstube of the hoist frame. Place the hoist on the trailer frame and clamp the hoist pivot pads to the trailer frame. The hoist should be level with the trailer frame. The back end of the hoist must be supported by a crossmember in the trailer frame. The "CM" dimension shows the location for this crossmember. Make sure the hoist frame is centered on and square with the trailer frame. Securely weld the lower hoist pivot pads to the trailer frame. Remove the clamps.

If desired, the hoist can be turned end for end for a 'Reverse' mount. This does not affect the lifting capacity.



DIMENSIONS	"D"					"CM"
DUMP ANGLE	35°	40°	45°	50°	55°	
TR3	67	59	53	48	44	18
TR5 & TR8	96 1/2	85 3/4	76 3/4	69 1/2	63 3/4	30
TR10 & TR15	122	108	99	88	81	34
TR18	169	149	133	120	111	43

FIG. 4

INSTALL REAR HINGE

Colt's rear hinge pads are designed to be welded to the rear crossmember of the trailer frame as shown in Figure 5. The Colt trailer hoists and rear hinge are designed so the longbeams of the platform sit on the mounting angles of the hoist frame and on top of the rear hinge pad. When locating the rear hinge pads, be sure the top of the hinge pad is even with the top of the hoist mounting angles and that they are aligned with each other. Fully weld the rear hinge angles to the trailer frame as shown in Figures 6 & 7.

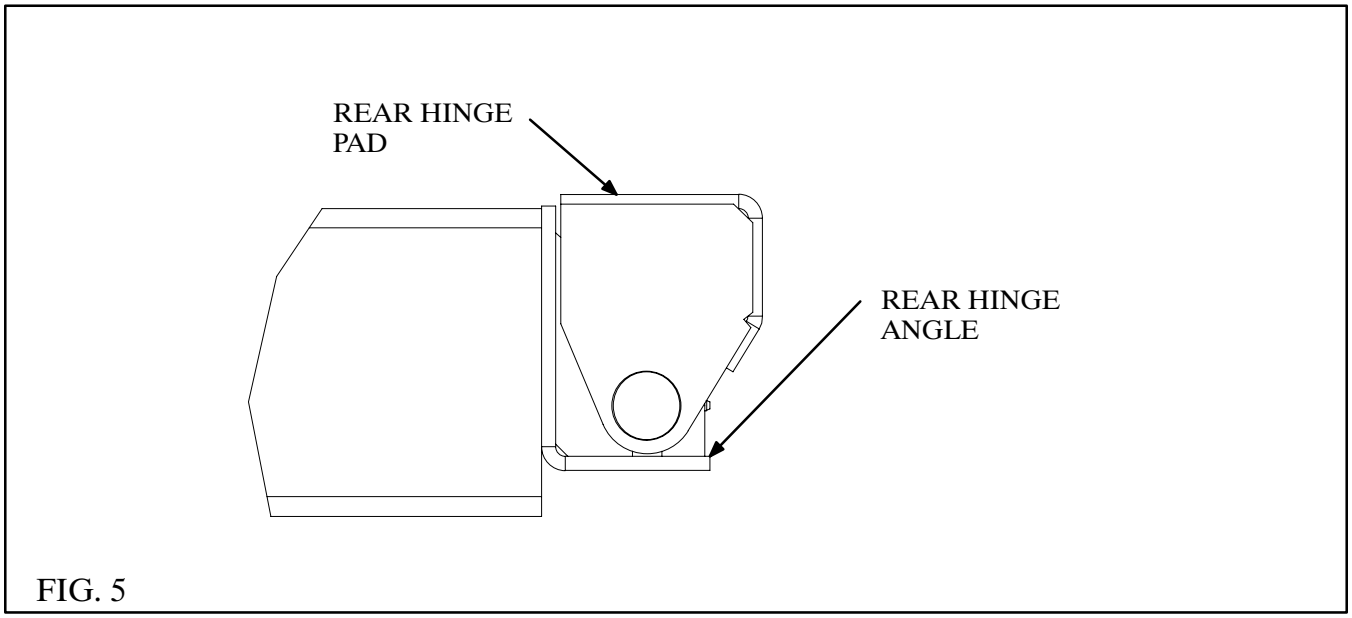


FIG. 5

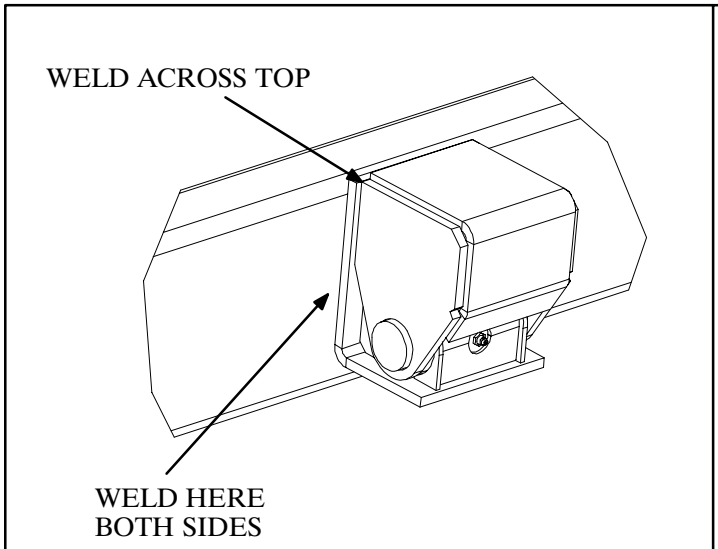


FIG. 6

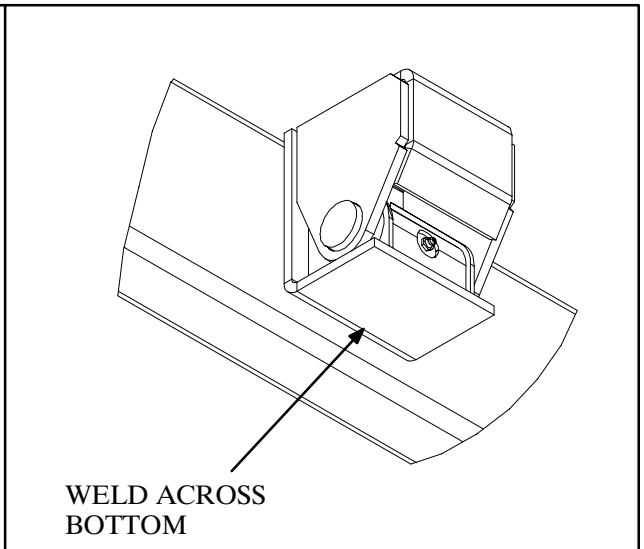


FIG. 7

MOUNT ELECTRIC POWER UNIT

The electric power unit and the battery should be mounted in a protected area. Bolt the power unit in place using the 3/8 x 1 hex head cap screws, tightening to 24 to 26 lb-ft.

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.

Connect the large terminal on the motor start solenoid to the positive terminal on the battery with a #1 gauge battery cable. Connect the negative terminal on the battery to the grounding hole on the power unit base using an #1 size battery cable. See Figure 8. Check the voltage between the large terminal on the start solenoid and the power unit base.

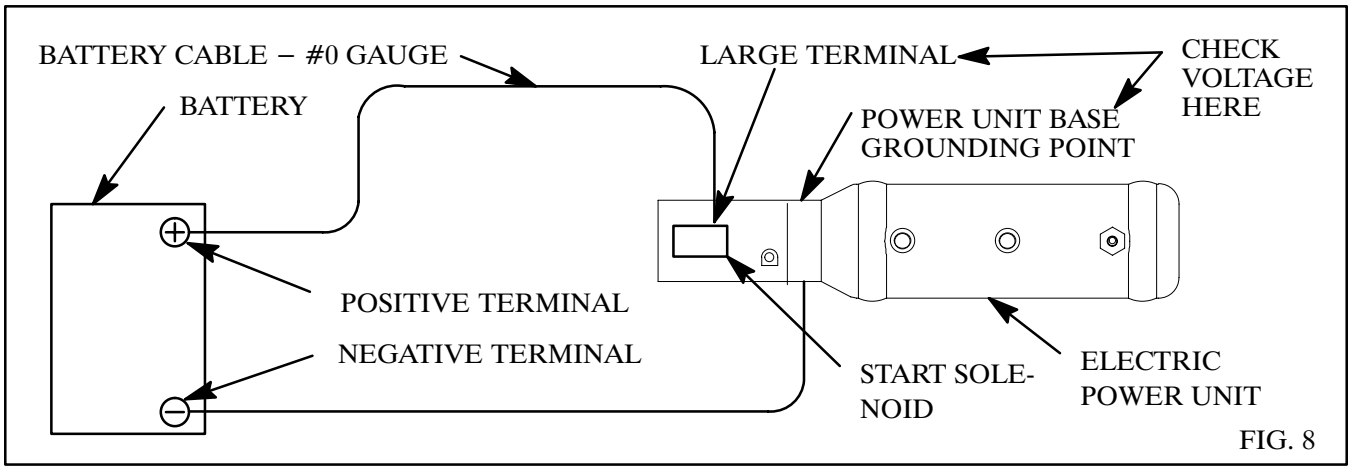


FIG. 8

The hoist control should be operated only from a safe location. Mount the hoist control pendant in a safe location.

CONNECT HOSES - SINGLE-ACTING

Install a 1/4 NPT x 7/16 JIC male elbow in a 3/4 x 1/4 hex bushing and install this in the port on the top of the reservoir.

For TR3, TR5 and TR8 hoist models, install a 9/16 ORB x 3/4-16 JIC male adapter in the base-end cylinder port; install a 9/16 ORB x 7/16-16 JIC male adapter in the rod-end cylinder port. Install a 9/16 ORB x 3/4-16 JIC male elbow in the power port on the electric power unit.

Connect a 3/8" hose (3500 psi minimum pressure rating) to the base end cylinder port on the hoist and to the power port on the electric power unit. Connect a 1/4" hose (250 psi minimum pressure rating) to the rod end cylinder port and to the reservoir on the electric power unit. See Figure 9.

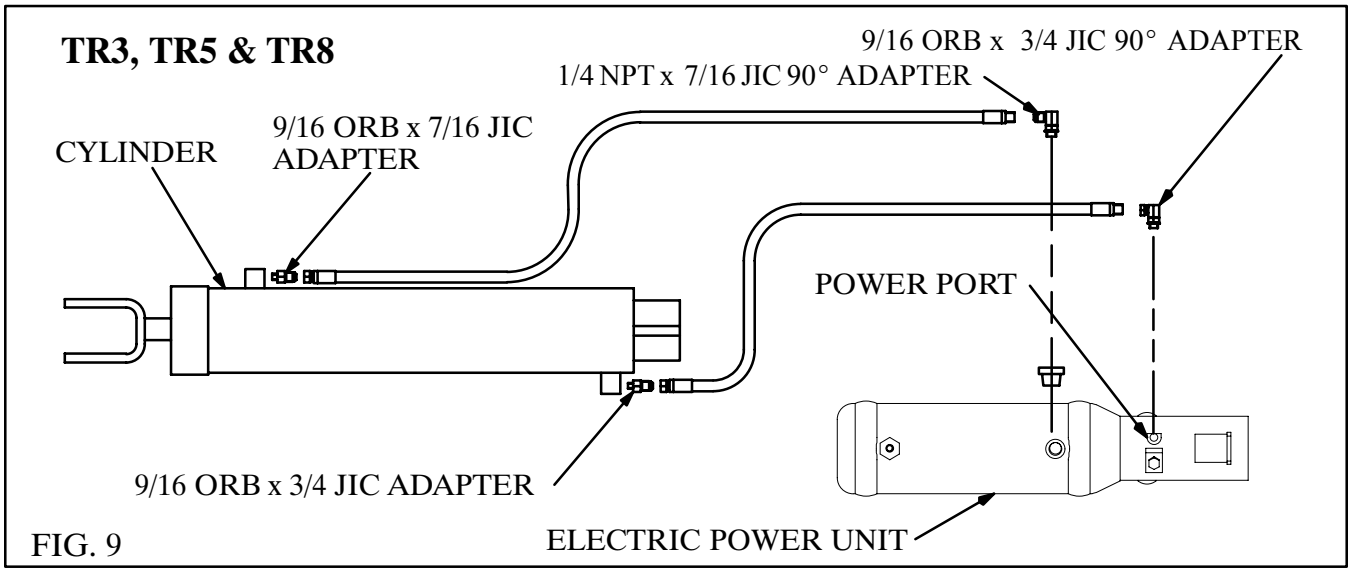


FIG. 9

For TR10, TR15 and TR18 hoist models, install a 3/4 ORB x 3/4-16 JIC male adapter in the base-end cylinder port; install a 3/4 ORB x 7/16-16 JIC male adapter in the rod-end cylinder port. Install a 9/16 ORB x 3/4-16 JIC male elbow in the power port on the electric power unit.

Connect a 3/8" hose (3500 psi minimum pressure rating) to the base end cylinder port on the hoist and to the power port on the electric power unit. Connect a 1/4" hose (250 psi minimum pressure rating) to the rod end cylinder port and to the reservoir on the electric power unit. See Figure 10.

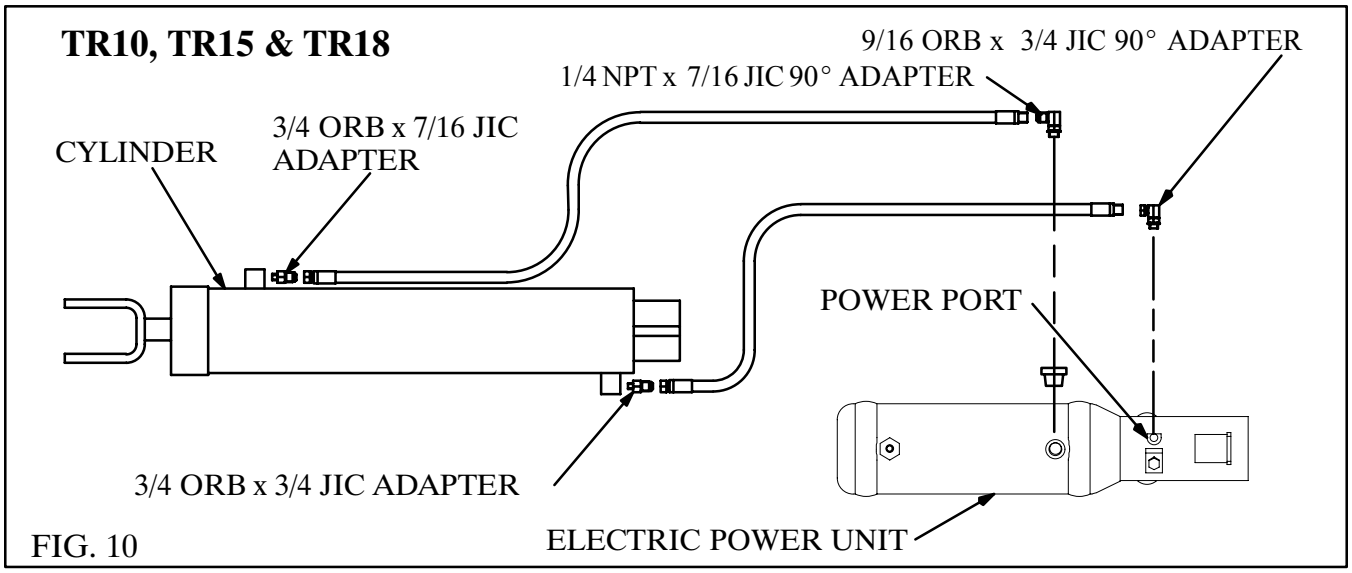


FIG. 10

CONNECT HOSES - DOUBLE-ACTING

NOTE: When using a double-acting power unit, the rod end hose MUST be rated to 3500 psi.

Install 9/16 ORB x 3/4 JIC 90³ swivel adapters in both work ports on the electric power unit. If needed, for good hose routing, install 3/4 JIC x 3/4 JIC 90³ swivel adapters to both of these adapters. (see Figures 14, 15 & 16.)

For TR3, TR5 and TR8 hoist models, install 9/16 ORB x 3/4-16 JIC straight adapters in both cylinder ports. Connect a 3/8" hose (3500 psi minimum pressure rating) from the `C1' port on the pump to the base end port on the cylinder. Connect a second 3/8" ID hose (3500 psi minimum pressure rating) from the `C2' port to the rod end port. (See Figure 11.)

NOTE: The `C2' port is the power down port and has only 500 PSI maximum pressure.

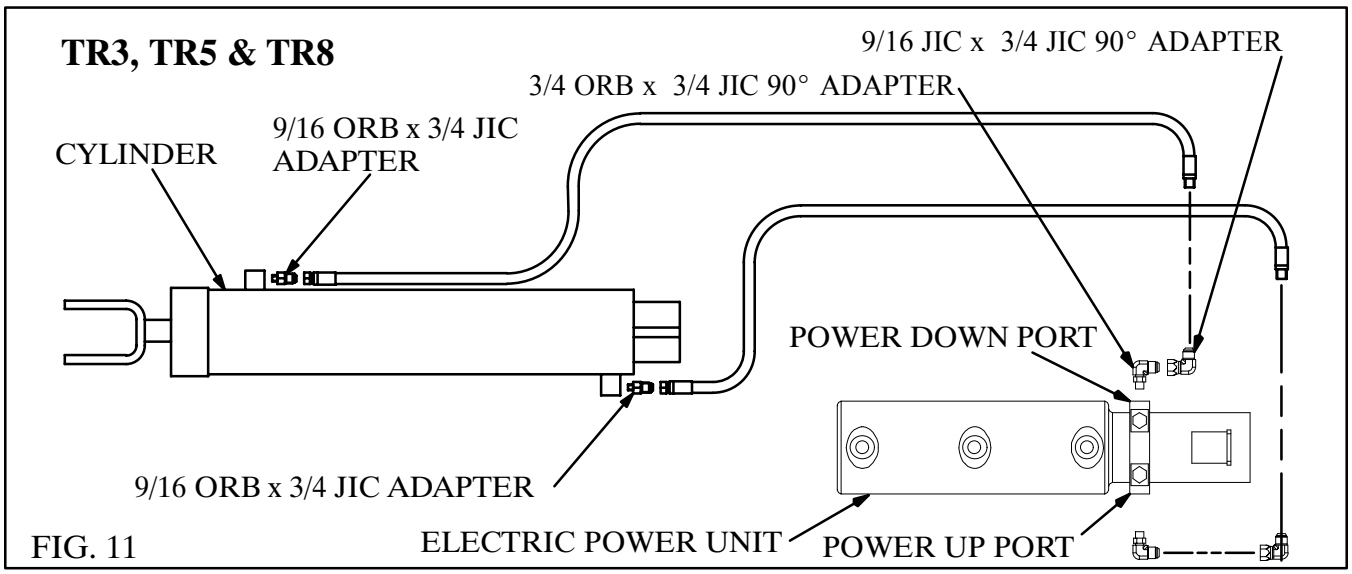


FIG. 11

For TR10, TR15 and TR18 hoist models, install 3/4 ORB x 3/4-16 JIC straight adapters in both cylinder ports. Connect a 3/8" hose (3500 psi minimum pressure rating) from the `C1' port on the pump to the base end port on the cylinder. Connect a second 3/8" ID hose (3500 psi minimum pressure rating) from the `C2' port to the rod end port. (See Figure 12.)

NOTE: The `C2' port is the power down port and has only 500 PSI maximum pressure.

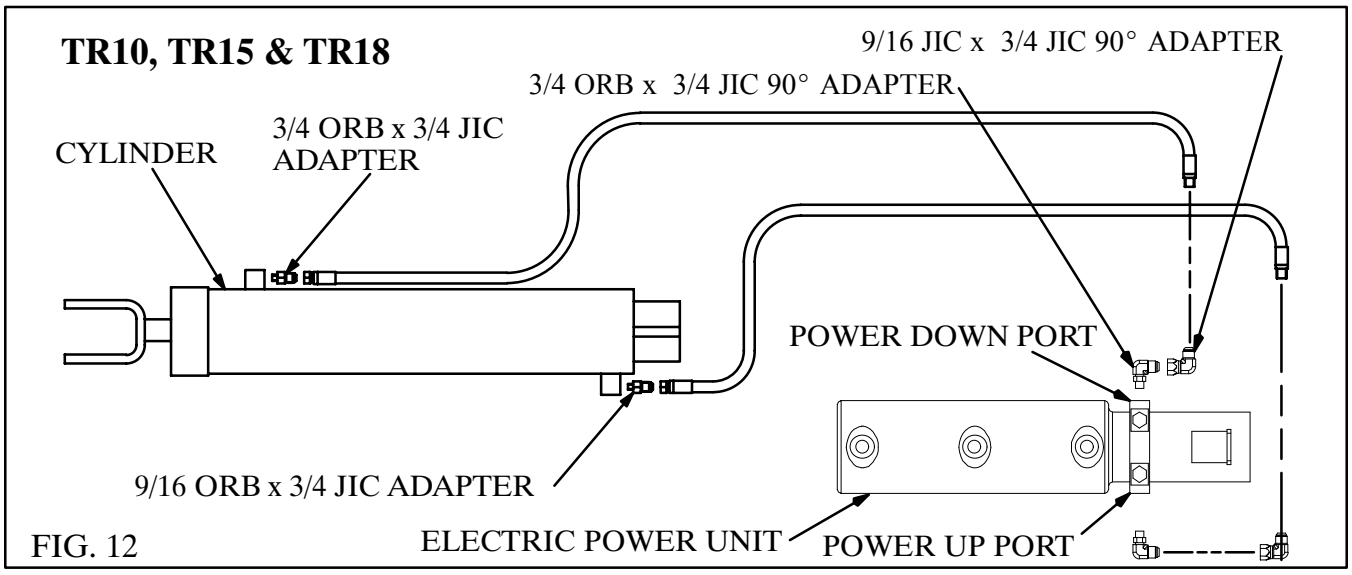


FIG. 12

ADD AUTOMATIC TRANSMISSION FLUID

For the TR3, TR5, TR8 and TR10, with single-acting electric power units, add 7 quarts of DEXRON II or DEXRON III automatic transmission fluid to the reservoir. For the TR15 and TR18 with single-acting electric power units, add 20 quarts of DEXRON II or DEXRON III automatic transmission fluid. DO NOT OVERFILL THE RESERVOIR! Fully raise the hoist and hold the 'UP' button for 15 seconds. This will remove the air that is inside the cylinder. Raise and lower the hoist several times and check the fluid level in the reservoir. Add fluid as needed.

For all models with double-acting electric power units, add 7 quarts of DEXRON II or DEXRON III automatic transmission fluid. DO NOT OVERFILL THE RESERVOIR. For the TR15 and TR18, raise the hoist until there is 2" of ATF in the reservoir. Add 2 quarts and raise the hoist until there is 2" of ATF in the reservoir. Repeat this until the hoist can be fully raised. Fully raise the hoist and hold the 'UP' button for 15 seconds. This will remove the air that is inside the cylinder. Raise and lower the hoist several times and check the fluid level in the reservoir. Add fluid as needed.

KEEP THE ATF CLEAN! USE CLEAN CONTAINERS, FUNNELS AND OTHER EQUIPMENT!

With normal use and working conditions the automatic transmission fluid should be changed annually. The breather cap should be cleaned every time the automatic transmission fluid is changed. With heavy use or very dusty working conditions the automatic transmission fluid should be changed more often.

NOTE: If a single-acting power unit is being replaced by a double-acting power unit, the 250 psi rated rod end hose must be replaced with a 3500 psi rated hose.

INSTALL BODY LONGBEAMS

Place the body longbeams in position on the trailer frame. Align them carefully with the trailer frame. Securely weld the longbeams to the rear hinge pads and to the upper hoist pivot pads.

If channels are used for the body longbeams, turn them flat side in, legs out, so the hoist pivot pads can be welded directly to the longbeams. Continuously weld the hoist pivot pads to the body longbeams on both front and back sides. Continuously weld the rear hinge pivot pads to the body longbeams on both inside and outside of longbeams

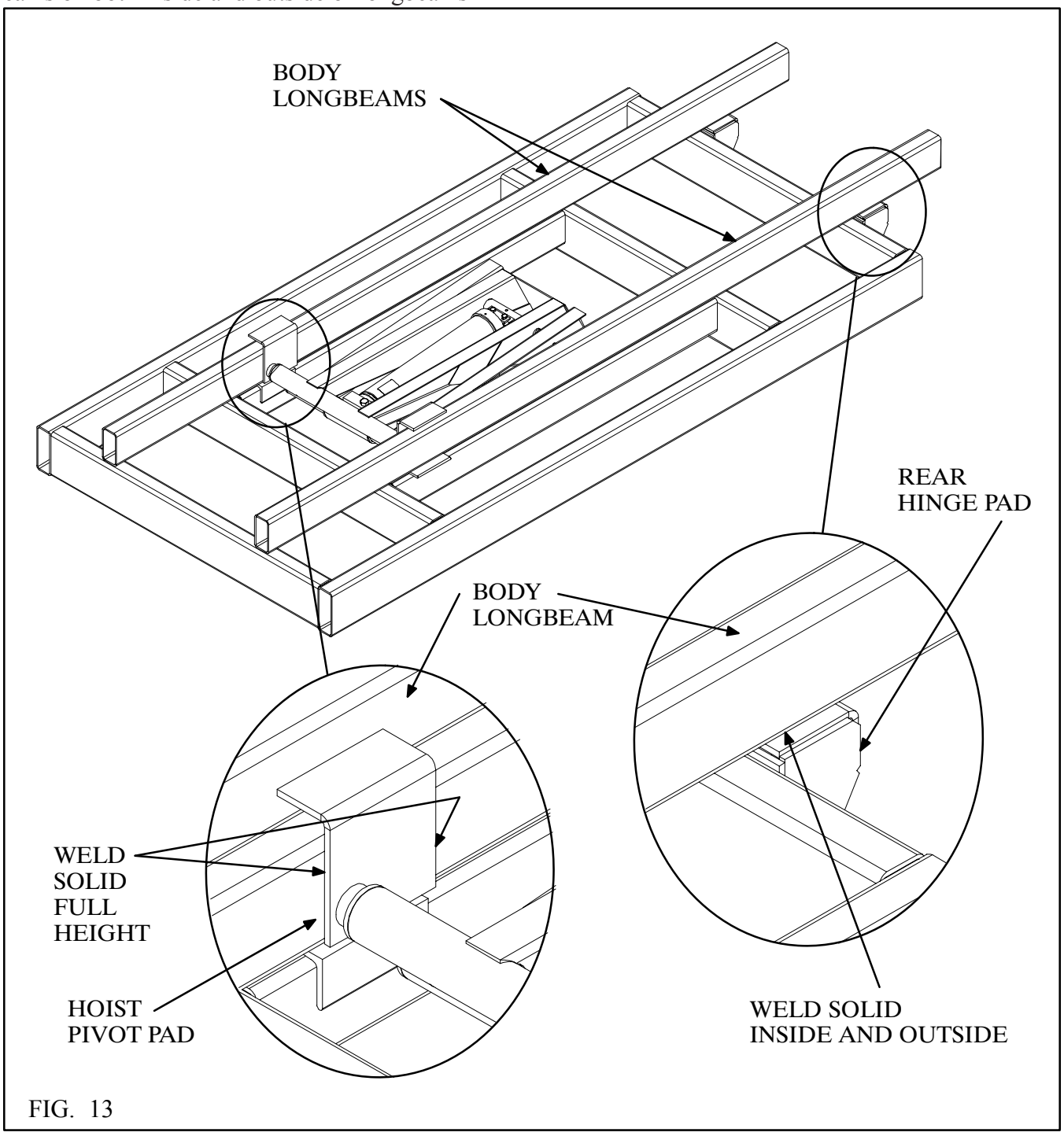


FIG. 13

DO NOT WORK UNDER A RAISED BODY UNLESS THE BODY IS SECURELY BLOCKED OR PROPPED IN THE RAISED POSITION.

DOWN SPEED

Once the hoist is installed raise the hoist to its full stroke and time the down cycle. Crysteel Mfg. recommends a lowering time of 15 seconds or longer for an empty body (the time will vary depending on body weight and ambient temperature). If the down cycle time is less than 15 seconds, contact Crysteel to purchase an optional flow control kit. Flow control kits are available from Crysteel in different flow rates to control the down speed.

INSTALL BODY GUIDES

Crysteel Mfg. recommends that guides be used to keep the body and trailer frame aligned when the body is down. These body guides are not supplied because one body guide design would not work on all trailer frame designs.

INSTALL BODY PROP

The body prop is designed and intended to support an EMPTY trailer body in the raised position. Use of the body prop permits service to be performed safely beneath a raised body. Install the prop on the trailer as explained below and shown in Fig. 14.

1. Raise the body to a 20³ to 30³ angle and brace it securely before beginning installation.
2. Clamp the prop pivot against the outside of the trailer frame. Raise the body prop arm to a free standing position. Reposition the prop if needed to locate the prop bracket on the longbeam. It may be necessary to raise or lower the body to get the best location for the prop pivot mount. Securely weld the prop pivot to the trailer frame.
3. A pocket needs to be constructed on the body to prevent the top end of the prop tube from sliding forward or back or from side-to-side.
4. To operate the body prop, raise the body to the desired height, raise the prop arm to a free standing position. Lower the body slowly until the body contacts the prop arm.
5. To place the body prop in the storage position, raise the body to clear the body prop, lower the body prop to the storage position and lower the body.

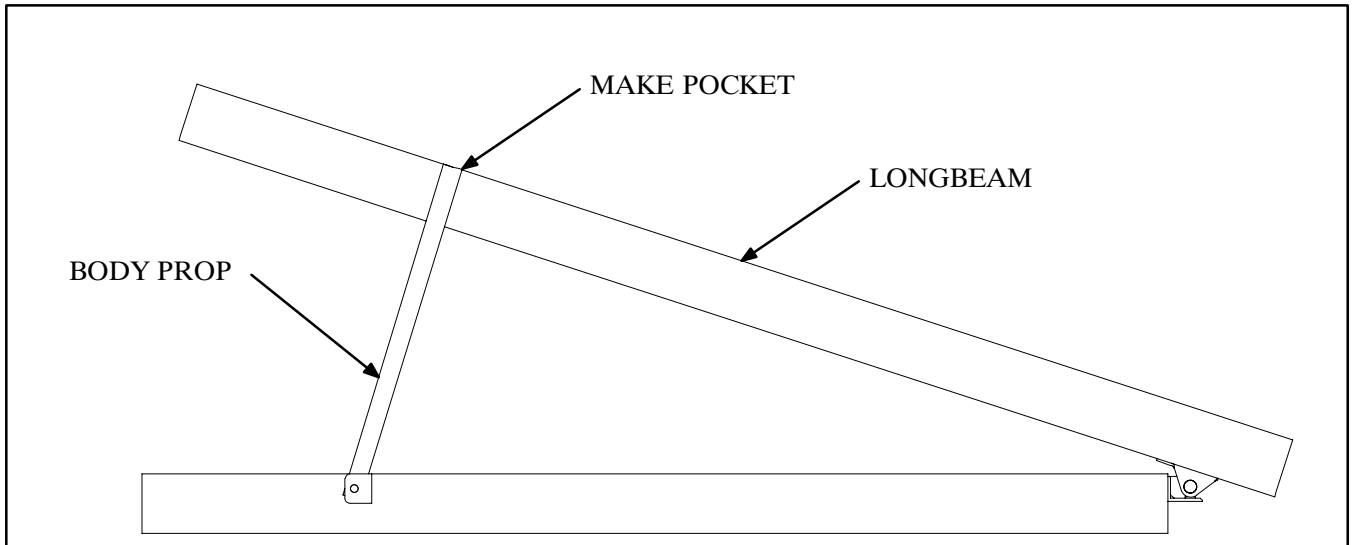


FIG. 14

INSTALL GREASE ZERKS AND LUBRICATE

Install grease zerks in the hoist frame. Lubricate all fittings at regular intervals, at least every 100 cycles or every two months. The grease fittings are located (See Fig. 15.) as follows:

A.	Rear Hinge	2 fittings (already installed)
B.	Lower Cylinder Mount	1 fitting
C.	Lower Crosstube	2 fittings
D.	Upper Crosstube	2 fittings
E.	Cylinder Crosshead	1 fitting
F.	Center Hinge	1 or 2 fitting(s)

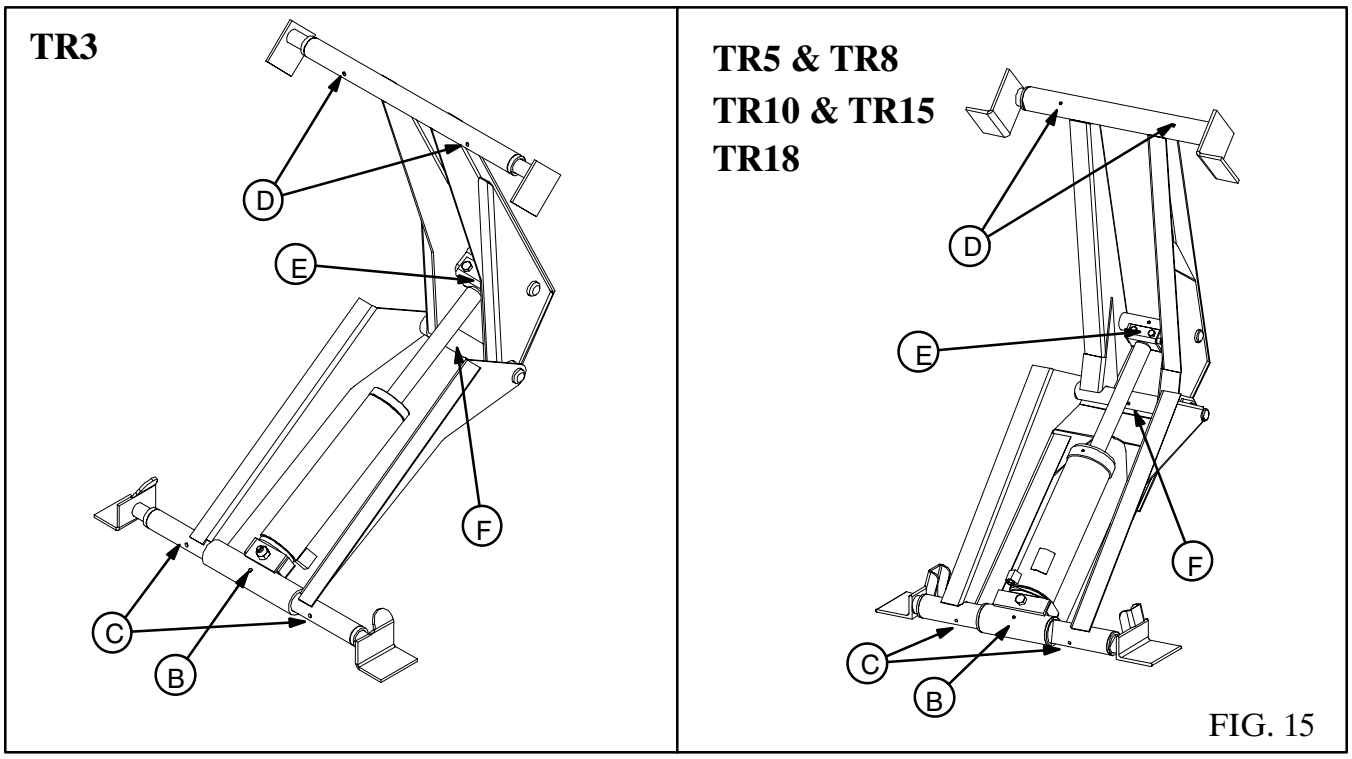


FIG. 15

INSTALL DECALS

Mount decals in the proper places as shown in Figure 16.

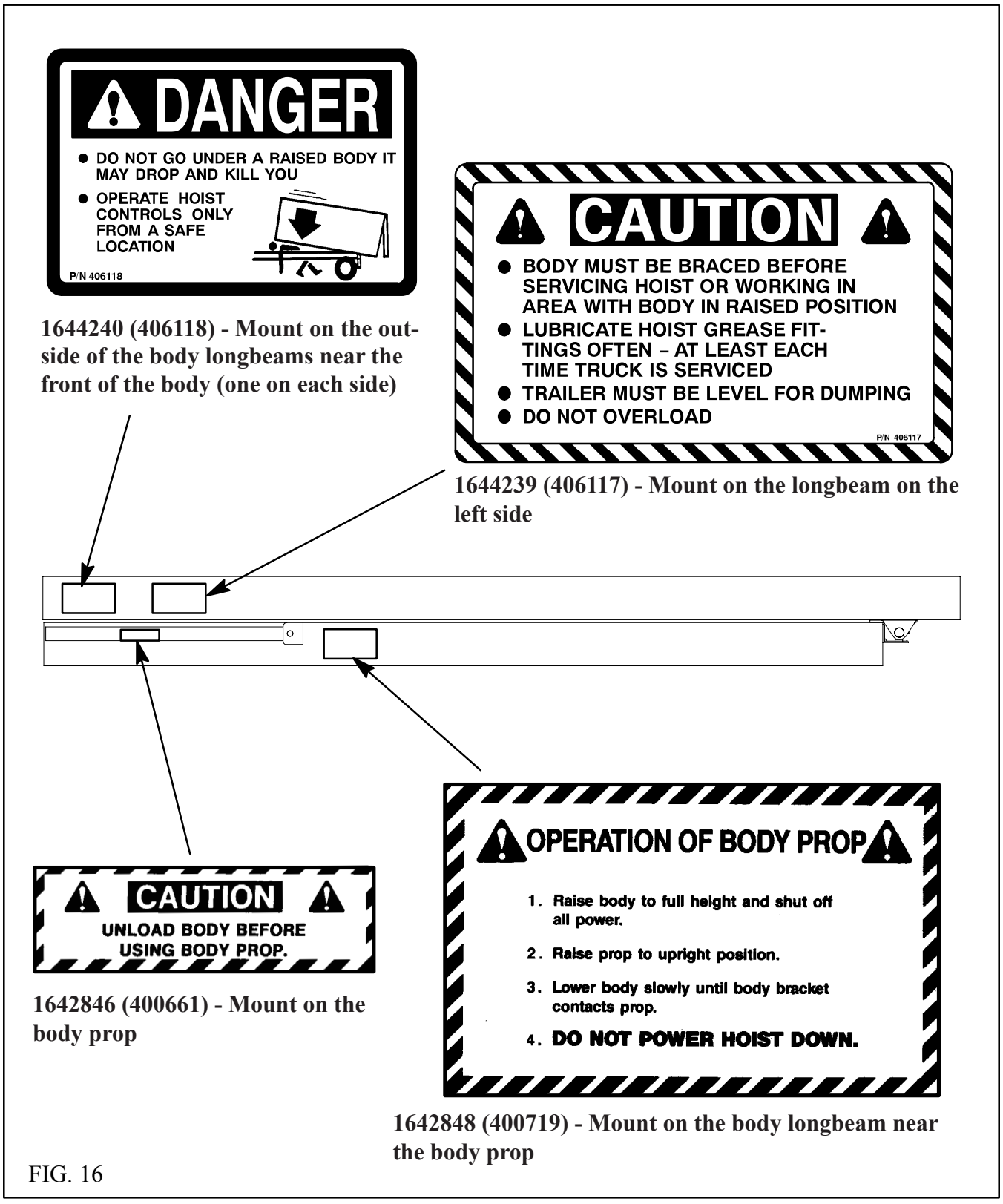


FIG. 16

TR 3 HOIST PARTS

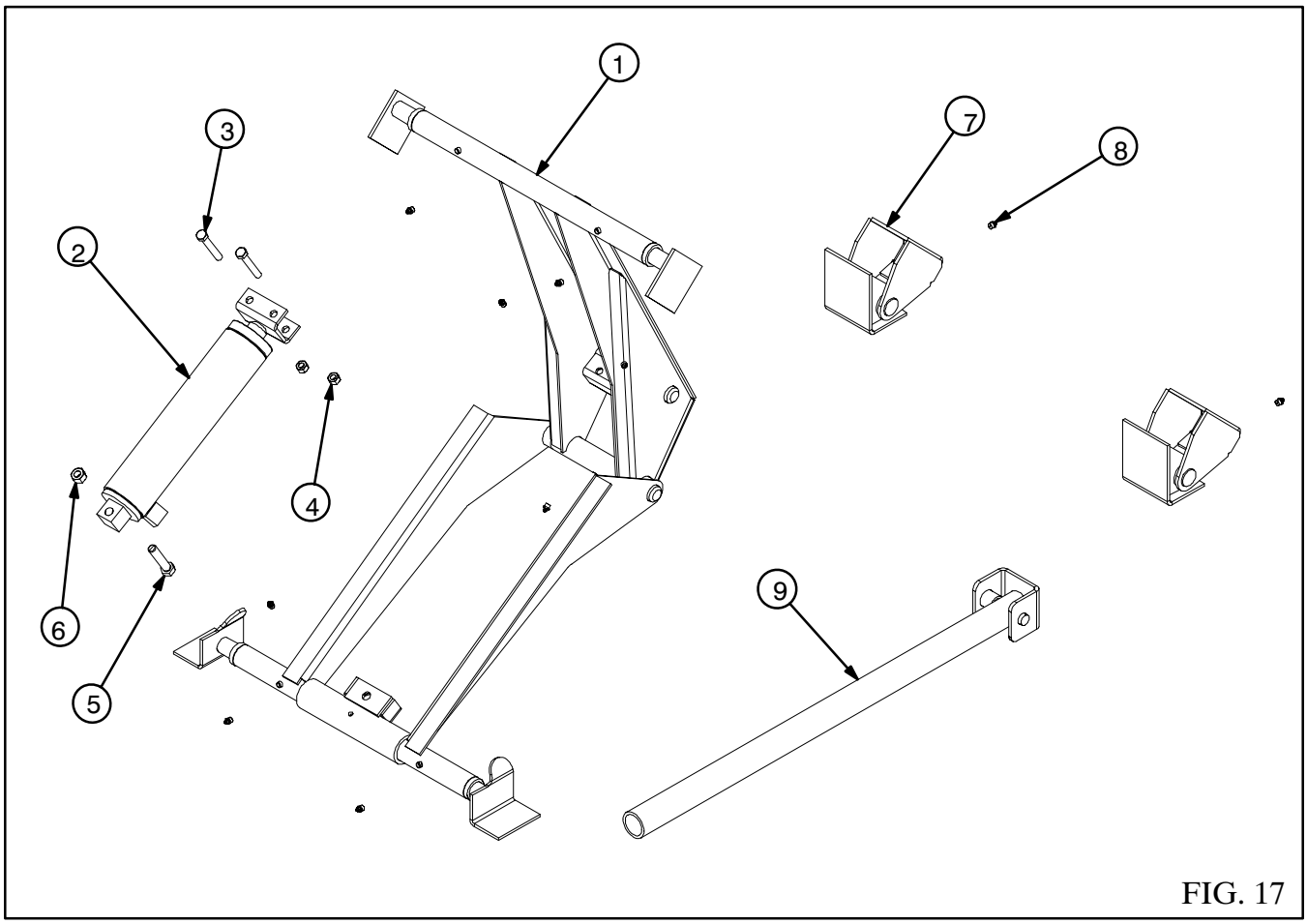


FIG. 17

ITEM	DESCRIPTION	MODEL	PART NO.	QTY
1.	Assy Frame	TR3	1623992	1
2.	Assy Cylinder	TR3	1623943	1
3.	Cap Screw 1/2-13 x 3 1/4 Gr 5	TR3	1642944	2
4.	Hex Lock Nut 1/2-13	TR3	1642984	2
5.	Cap Screw 5/8-11 x 3 Gr 8	TR3	1644218	1
6.	Hex Lock Nut 5/8-11	TR3	1643070	1
7.	Assy Rear Hinge Pad - Sm	TR3	1625701	2
8.	Grease Zerk 1/8 NPT	TR3	1642699	9
9.	Assy Body Prop	TR3	1624035	1

TR5, TR8, TR10, TR15 & TR18 HOIST PARTS

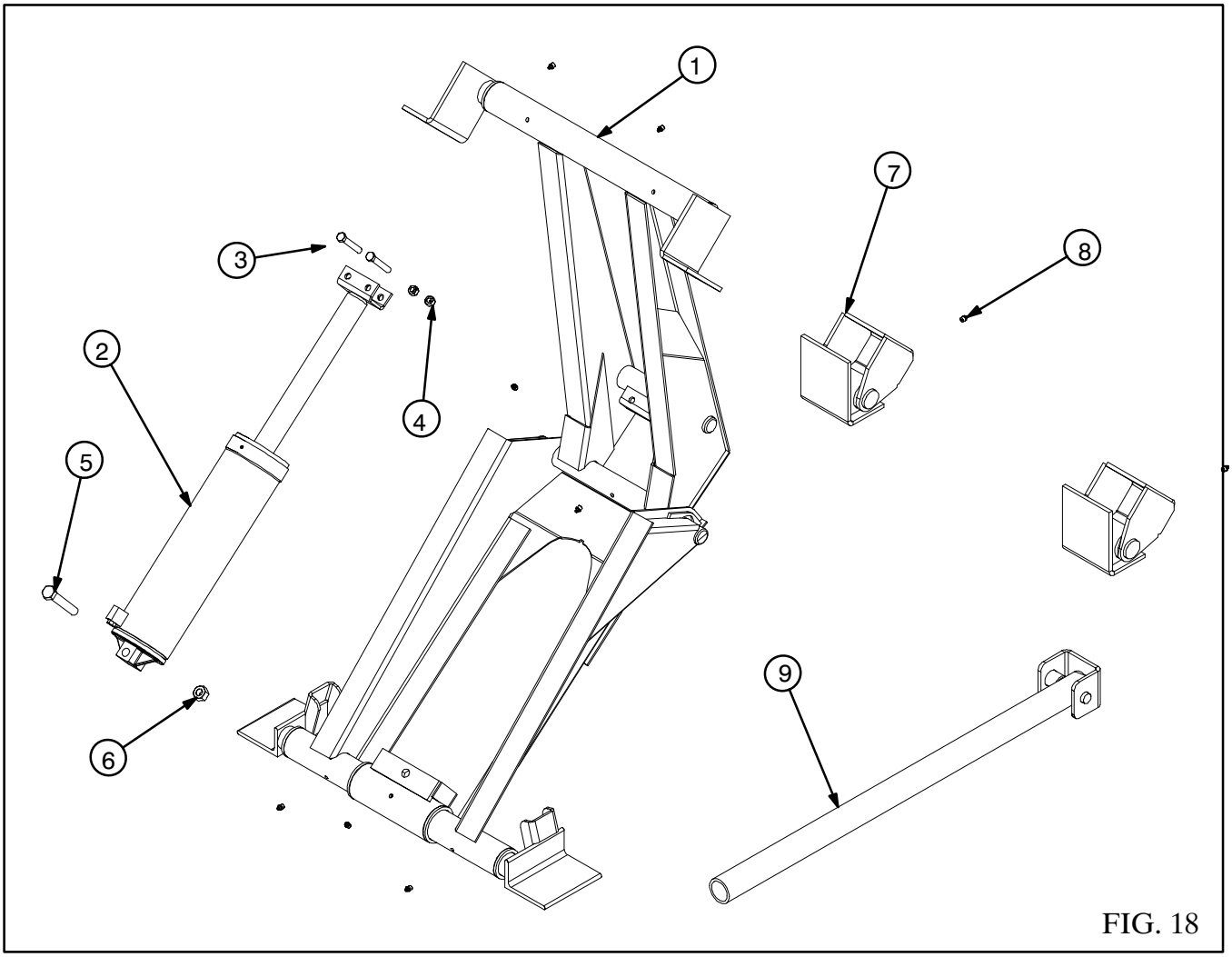


FIG. 18

ITEM	DESCRIPTION	MODEL	PART NO.	QTY
1.	Assy Frame	TR3	1623992	1
2.	Assy Cylinder	TR3	1623943	1
3.	Cap Screw 1/2-13 x 3 1/4 Gr 5	TR3	1642944	2
4.	Hex Lock Nut 1/2-13	TR3	1642984	2
5.	Cap Screw 5/8-11 x 3 Gr 8	TR3	1644218	1
6.	Hex Lock Nut 5/8-11	TR3	1643070	1
7.	Assy Rear Hinge Pad - Sm	TR3	1625701	2
8.	Grease Zerk 1/8 NPT	TR3	1642699	9
9.	Assy Body Prop	TR3	1624035	1

TR3, TR5, TR8, TR10 & TR18 CYLINDER PARTS

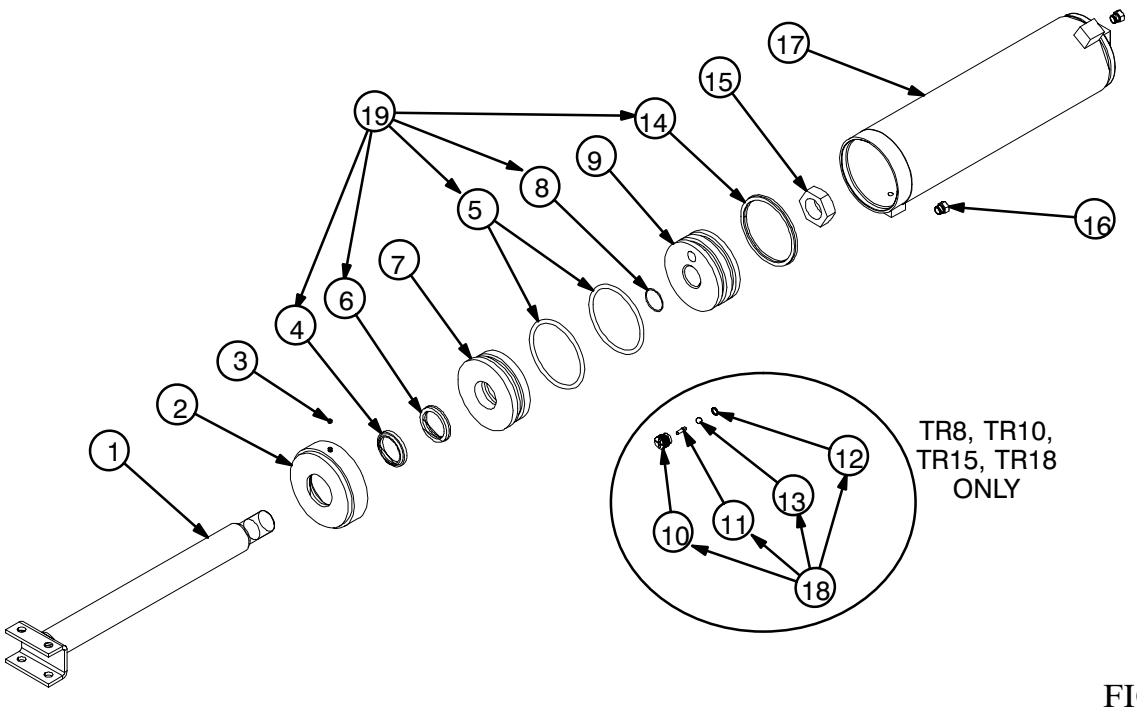


FIG. 19

ITEM	DESCRIPTION	MODEL TR3	MODEL TR5	MODEL TR8	MODEL TR10	MODEL TR15	MODEL TR18	QTY
1.	Shaft Assy	1623946	1621574	1621727	1624218	1624218	1624592	1
2.	Cylinder Cap Assy		1621575					1
3.	Set Screw 1/4 x 3/16 Nylon Tip		1642724	1642724	1642724	1642724	1642724	1
4.	Wiper	1643081	1642942	1642878	1642878	1642878	1642879	1
5.	O-Ring	1644211	1642774	1642766	1642766	1642770	1642770	2
6.	Poly Seal	1642941	1642941	1642765	1642765	1642765	1642874	1
7.	Cylinder Head	1634774						1
8.	O-Ring	1642940	1642940	1642767	1642767	1642767	1642767	1
9.	Cylinder Piston	1630442	1629848	1629601	1629601	1629604	1629604	1
10.	Bypass Valve Body			1642893	1642893	1642893	1642893	1
11.	Bypass Valve Pin			1642894	1642894	1642894	1642894	1
12.	O-Ring 7/16			1642907	1642907	1642907	1642907	1
13.	Steel Ball 3/8 Dia			1642679	1642679	1642679	1642679	1
14.	Poly Seal	1643091	1642773	1642764	1642764	1642769	1642769	1
15.	Hex Jam Nut			1642995	1642995	1642995	1642995	1
16.	Plug ORB	1642793	1642793	1642793	1642805	1642805	1642805	2
17.	Cylinder Tube Assy	1623945	1621573	1621726	1624217	1624267	1624591	1

ITEM	DESCRIPTION	MODEL TR3	MODEL TR5	MODEL TR8	MODEL TR10	MODEL TR15	MODEL TR18	QTY
18.	Bypass Valve Kit			1621569	1621569	1621569	1621569	1
19.	Seal Kit	155795	1621639	1621640	1621640	1621642	1621642	1

HYDRAULIC PARTS - SINGLE-ACTING

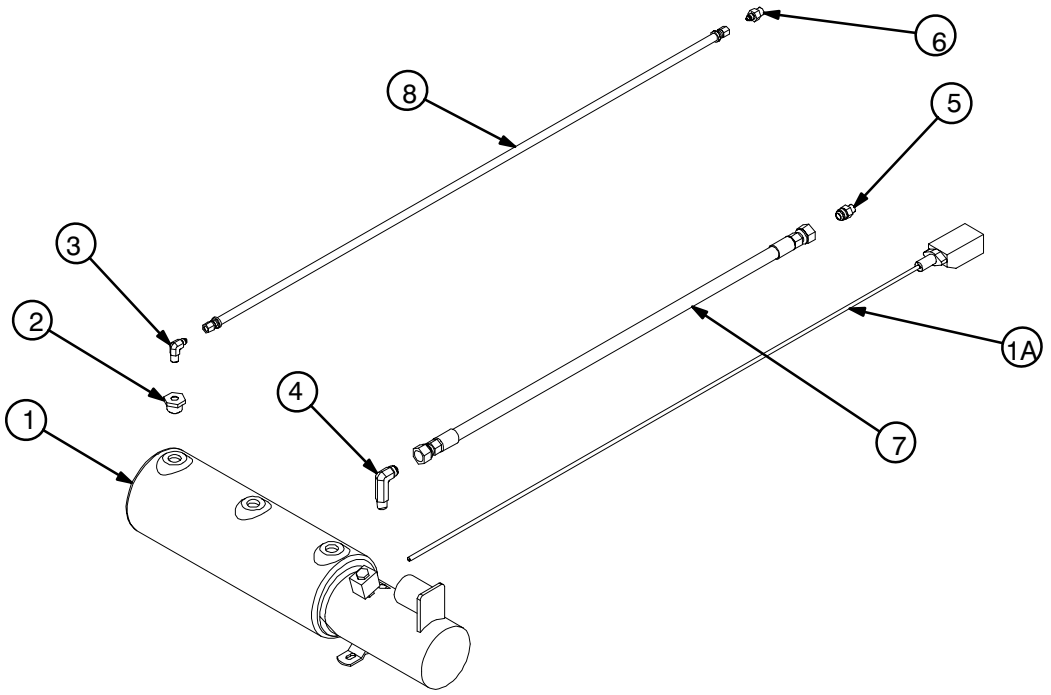


FIG. 20

ITEM	DESCRIPTION	MODEL	PART NO.	QTY
1.	Electric Power Unit SA - 7 Qt	TR3, TR5, TR8 & TR10	1624632	1
	Electric Power Unit SA - 20 Qt	TR15 & TR18	1624634	1
1A.	Push-Button Control - 10' Cord	All	1644258	1
2.	Bushing Hex 3/4 x 1/4	All	1643962	1
3.	Adapter 7/16 JICM x 1/4 NPTM 90°	All	1644252	2
4.	Adapter 3/4 JICM x 9/16 ORBM 90°	All	1644238	2
5.	Adapter 3/4 JICM x 9/16 ORBM	All	1643375	1
6.	Adapter 7/16 JICM x 9/16 ORBM	All	1644253	1
7.	Hose 3/4 JIC x 36 SF/SF 4000	All	1643797	1
	Hose 3/4 JIC x 42 SF/SF 4000	All	1643359	1
	Hose 3/4 JIC x 48 SF/SF 4000	All	1643360	1
	Hose 3/4 JIC x 54 SF/SF 4000	All	1644005	1
	Hose 3/4 JIC x 60 SF/SF 4000	All	1643376	1
	Hose 3/4 JIC x 66 SF/SF 4000	All	1643505	1

ITEM	DESCRIPTION	MODEL	PART NO.	QTY
	Hose 3/4 JIC x 72 SF/SF 4000	All	1643804	1
	Hose 3/4 JIC x 78 SF/SF 4000	All	1644006	1
	Hose 3/4 JIC x 84 SF/SF 4000	All	1644007	1
	Hose 3/4 JIC x 90 SF/SF 4000	All	1644244	1
	Hose 3/4 JIC x 96 SF/SF 4000	All	1644245	1
8.	Hose 7/16 JIC x 48 SF/SF 250	All	Call	1
	Hose 7/16 JIC x 54 SF/SF 250	All	Call	1
	Hose 7/16 JIC x 60 SF/SF 250	All	1644248	1
	Hose 7/16 JIC x 66 SF/SF 250	All	1644249	1
	Hose 7/16 JIC x 72 SF/SF 250	All	Call	1
	Hose 7/16 JIC x 78 SF/SF 250	All	Call	1
	Hose 7/16 JIC x 84 SF/SF 250	All	1644250	1
	Hose 7/16 JIC x 90 SF/SF 250	All	Call	1
	Hose 7/16 JIC x 96 SF/SF 250	All	1644251	1
	Hose 7/16 JIC x 108 SF/SF 250	All	1644374	1

HYDRAULIC PARTS - DOUBLE-ACTING

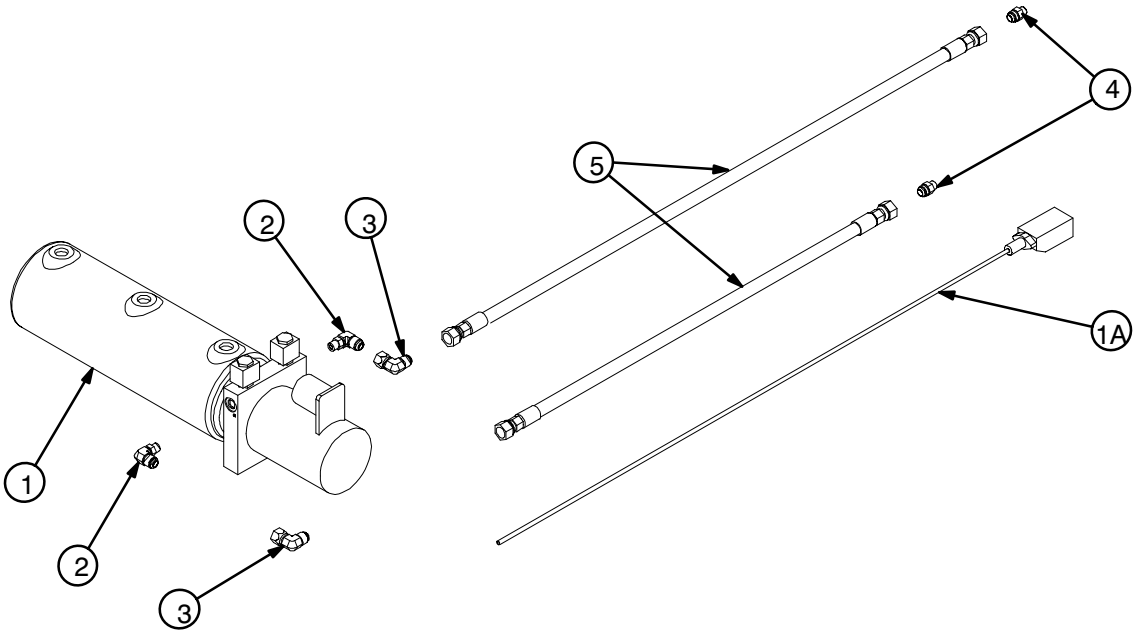


FIG. 21

ITEM	DESCRIPTION	MODEL	PART NO.	QTY
1.	Electric Power Unit DA - 7 Qt	ALL	1624633	1
1A.	Push-Button Control - 6 1/2' Cord	ALL	1200095	1
2.	Adapter 9/16 ORBM x 3/4 JICF 90°	TR3, TR5 & TR8	1643544	2
3.	Adapter 3/4 JICM x 3/4 JICF 90°	TR10, TR15 & TR18	1643545	2
4.	Adapter 3/4 JICM x 3/4 ORMB	ALL	1643375	2
	Adapter 3/4 JICM x 3/4 ORBM	ALL	1643395	2
5.	Hose 3/4 JIC x 36 SF/SF 4000	ALL	1643797	1
	Hose 3/4 JIC x 42 SF/SF 4000	ALL	1643359	1
	Hose 3/4 JIC x 48 SF/SF 4000	ALL	1643360	1
	Hose 3/4 JIC x 54 SF/SF 4000	ALL	1644005	1
	Hose 3/4 JIC x 60 SF/SF 4000	ALL	1643376	1
	Hose 3/4 JIC x 66 SF/SF 4000	ALL	1643505	1
	Hose 3/4 JIC x 72 SF/SF 4000	ALL	1643804	1
	Hose 3/4 JIC x 78 SF/SF 4000	ALL	1644006	1
	Hose 3/4 JIC x 84 SF/SF 4000	ALL	1644007	1
	Hose 3/4 JIC x 90 SF/SF 4000	ALL	1644244	1
	Hose 3/4 JIC x 96 SF/SF 4000	ALL	1644245	1

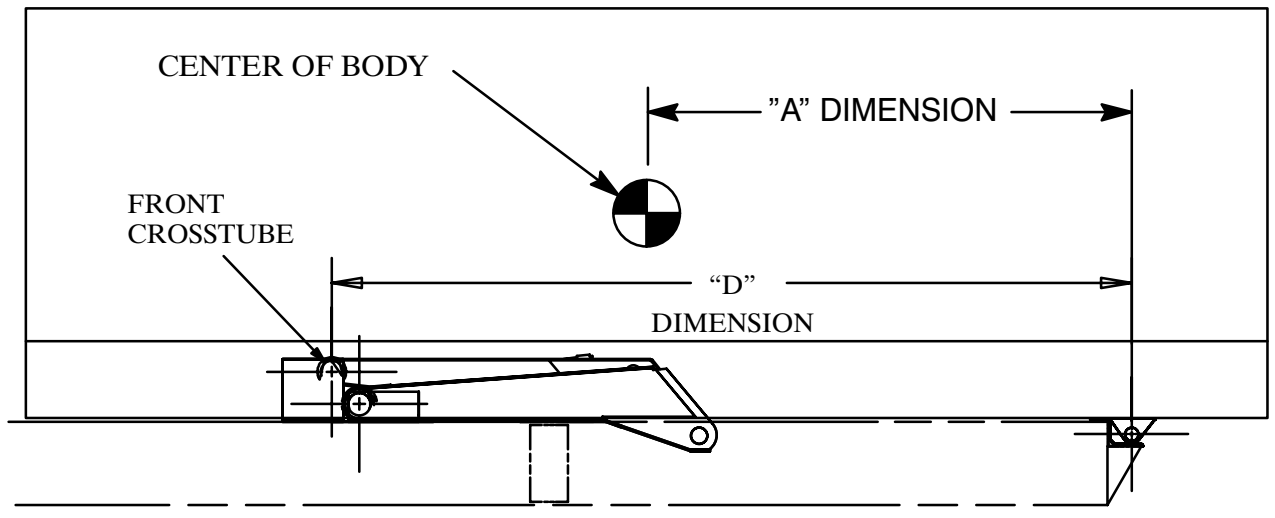
SPECIFICATIONS

Hoist Model	Cylinder Bore	Cylinder Stroke	Cylinder Shaft	Operating Pressure
TR3	3 1/4”	11”	1 1/2”	3250 PSI
TR5	4”	15 1/4”	1 1/2”	3250 PSI
TR8	5”	15 1/4”	2”	3250 PSI
TR10	5”	20 11/16”	2”	3250 PSI
TR15	6”	20 11/16”	2”	3250 PSI
TR18	6”	29 5/16”	2 1/4”	3250 PSI

CAPACITY FORMULA

The capacity of the Colt trailer hoists can be calculated using the following steps.

1. Measure the distance, in inches, from the center of the rear hinge to the center of the body. Call this “A”.
2. Measure the distance, in inches from the center of the rear hinge to the forward crosstube on the hoist. Call this “D”. (See Figures 2 or 4 for “D” dimensions for the various models.)
3. For Model TR3, multiply “D” by 2.76.
   For Model TR5, multiply “D” by 3.87.
   For Model TR8, multiply “D” by 6.05.
   For Model TR10, multiply “D” by 6.16.
   For Model TR15, multiply “D” by 8.87.
   For Model TR18, multiply “D” by 8.75.
4. Divide the result of Step 3 by “A”. This is the capacity in tons for an evenly distributed load (over the whole length of the body) and includes the weight of the body.



SEE FIGURE 2 OR 4 FOR THE “D” DIMENSION.

FIG. 22

NOTES

WARRANTY

- Crysteel's Colt Hoist Warranty covers new products for a period of one (1) year after the date of hoist manufacturer's invoice.
- This warranty covers Colt Hoist products for defective material and/or workmanship at a rate of 100%.
- This warranty is limited to product manufactured by Crysteel Mfg. and does not cover modifications. Repair or replacement is at Crysteel's option. Crysteel will not assume responsibility for travel, loss of use, or downtime expenses. This warranty is void if the product has been obviously abused, subjected to other than intended usage, or modified from its original design. There are no other warranties except as described above, and Crysteel makes no warranty of fitness for a particular purpose.

CRYSTEEL MANUFACTURING, INC.