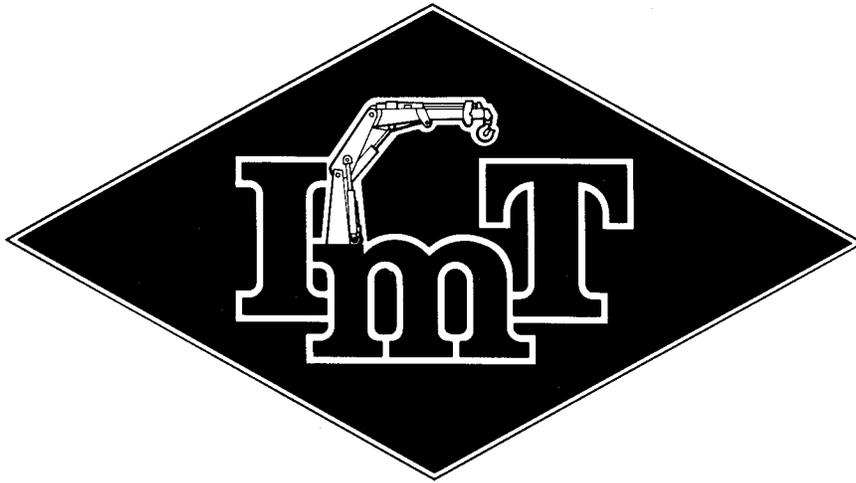


320H CRANE



IOWA MOLD TOOLING CO., INC.

500 HWY 18 WEST, GARNER, IA 50438

515-923-3711

TABLE OF CONTENTS

Paragraph	Title	Page
SECTION 1. SPECIFICATIONS		
1-1.	General	1-1
1-2.	Performance Characteristics	1-1
1-3.	Cylinders	1-1
1-4.	Minimum Chassis Specifications	1-1
1-5.	Hydraulic System	1-2
1-6.	Power Source	1-2
1-7.	Winch	1-2
1-8.	Rotation System	1-2
1-9.	Cylinder Holding Valves	1-2
1-10.	Capacity Alert System	1-2

SECTION 2. CRANE DESCRIPTION

2-1.	General	2-1
2-2.	Base	2-1
2-3.	Mast	2-1
2-4.	Lower Boom	2-1
2-5.	Extension Boom	2-1
2-6.	Controls	2-1
2-7.	Hydraulics	2-1

SECTION 3. CRANE INSTALLATION

3-1.	General	3-1
3-2.	Crane Installation	3-1
3-3.	Hydraulic Installation	3-1

SECTION 4. PARTS LIST

4-1.	General	4-1
4-2.	Crane Identification	4-1
4-3.	Cylinder Identification	4-1
4-4.	Weldment Identification	4-2
4-5.	Ordering Repair Parts	4-2

LIST OF ILLUSTRATIONS

Figure	Title	Page
A-1.	Geometric Configuration	1-3
A-2.	Capacity Chart	1-4
B-1.	320H Crane Group	2-2
C-1.	Body Reinforcement	3-1
C-2.	Mounting Hole Layout	3-2
C-3.	Tie Rod Installation	3-2
C-4.	Hydraulic Installation	3-2

LIST OF ILLUSTRATIONS (Continued)

Figure	Title	Page
D-1.	Serial Number Placard	4-1
D-2.	Cylinder Identification	4-1
D-3.	Cylinder Part Number Location.	4-2
D-4.	Weldment Part Number Location	4-2
D-5.	Base (Part Number 41705222)	4-3
D-6.	Mast (Part Number 41703263)	4-4
D-7.	Lower Boom (Part Number 41705110)	4-5
D-8.	Lower Cylinder (Part Number 3C290912)	4-6
D-9.	Counter-Balance Valve (Part Number 73054304).	4-7
D-10.	Holding Valve (Part Number 73054004)	4-7
D-11.	Extension Boom (Part Number 41705111)	4-8
D-12.	Extension Cylinder (Part Number 3B250325)	4-9
D-13.	Winch, Rope and Hook Kit (Part Number 90705120).	4-10
D-14.	Winch (Part Number 70057028)	4-11
D-15.	Throttle Control (Part Number 31705270).	4-12
D-16.	Hydraulic Kit (Part Number 91705224)	4-13
D-17.	Valve Bank (Part Number 73073772)	4-14
D-18.	Control Kit (Part Number 90705113)	4-15
D-19.	Control Handle (Part Number 51705122)	4-16
D-20.	Installation Kit (Part Number 93705112)	4-17
D-21.	Manual Outriggers (Part Number 31703350).	4-19
D-22.	Power-Down Outriggers (Part Number 31705724)	4-20
D-23.	Power-Down Outrigger Cylinder (Part Number 3B061850).	4-21
D-24.	Crank-Down Outriggers (Part Number 31703354)	4-22

INTRODUCTION – READ CAREFULLY

This volume deals with information applicable to your particular crane. For operating, maintenance and repair instructions, refer to Volume 1, *OPERATION, MAINTENANCE AND REPAIR*. Volume 1 contains the following information:

- SECTION 1. OPERATION
- SECTION 2. MAINTENANCE
- SECTION 3. REPAIR
- SECTION 4. INSTALLATION -
CHASSIS PREPARATION
- SECTION 5. APPENDIX

We recommend that Volume 2, *PARTS AND SPECIFICATIONS* be kept in a safe place in the office.

This manual is provided to assist you with ordering parts for your IMT truck-mounted telescoping crane. It also contains additional instructions regarding your particular installation.

It is the user's responsibility to maintain and operate this unit in a manner that will result in the safest working conditions possible.

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty will be valid with this unit.

In addition, it is also the user's responsibility to be aware of existing Federal, State and Local codes and regulations governing the safe use and maintenance of this unit. Listed below is a publication that the user should thoroughly read and understand.

ANSI/ASME B30.5-1982
MOBILE AND LOCOMOTIVE CRANES
The American Society of Mechanical
Engineers
United Engineering Center
345 East 47th Street
New York, NY 10017

Three means are used throughout this manual to gain the attention of personnel. They are NOTE's, CAUTION's and WARNING's and are defined as follows:

NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

CAUTION

A CAUTION is used when there is the strong possibility of damage to the equipment or premature equipment failure.

WARNING

A WARNING is used when there is the potential for personal injury or death.

Treat this equipment with respect and service it regularly. These two things can add up to a safer working environment.

Section 1. SPECIFICATIONS

1-1. GENERAL

Crane Rating	4.99 ton-meters	36,000 ft.-lbs.
Reach (from centerline of rotation)	6.10 m	20'-0"
Hydraulic Extension	182.9 cm	72"
Lifting Height (from base of crane)	6.65 m	21'-10"
Weight of Crane	862 kg.	1,900 lbs.
Outrigger Span (required option)		
Crane side from centerline of truck	228.6 cm	90"
Opposite side from centerline of truck	121.6 cm	48"
Vertical Center of Gravity (from base of crane)	48.3 cm	19"
Horizontal Center of Gravity (from centerline of rotation)	55.9 cm	22"
Storage Height (crane only)	111.2 cm	44"
Mounting Space	50.8 cm x 71.1 cm	20" x 28"
Tie-Down Bolt Pattern	37.5 cm x 37.5 cm on centers	14-3/4" x 14-3/4" on centers
Optimum Pump Capacity	18.9 liters/min.	5 U.S. GPM
Design Factors (pins and hydraulics)	4/1	4/1

1-2. PERFORMANCE CHARACTERISTICS

Rotation - 370° (6.45 Rad.)	30 Seconds
Lower Cylinder - -15° to +72° (-0.26 Rad. to +1.26 Rad.)	14 Seconds
Extension Cylinder - 72" (182.9 cm)	24 Seconds

1-3. CYLINDERS

	Bore	Stroke
Lower Boom Cylinder	(11.4 cm) 4-1/2"	(52.1 cm) 20-1/2"
Extension Boom Cylinder	(7.6 cm) 3"	(182.9 cm) 72"

1-4. MINIMUM CHASSIS SPECIFICATIONS

Body Style	Conventional Cab	Conventional Cab
Wheel Base	391 cm	154"
Cab to Axle	213 cm	84"
Frame Section Modulus	196.7 cc	12" ³
R B M	4,982 kg-m	432,000 in.-lbs.
Front Axle Rating	2,268 kg.	5,000 lbs.
Rear Axle Rating	5,897 kg.	13,000 lbs.
Transmission	4-speed	4-speed

In addition to these specifications, heavy-duty electrical and cooling systems and dual rear wheels are required. It is recommended that the vehicle be equipped with an electric engine tachometer, auxiliary brake lock and power steering.

1-5. HYDRAULIC SYSTEM

Open-centered, full-pressure system that requires 5 GPM (18.9 liters/min) optimum oil flow at 2,350 PSI (165.2 kg/cm²). Four-spool, electric, remote, stack-type control valve with a 25'-0" (7.62 m) control cable. System includes separate oil reservoir, suction-line filter, control valve and return-line filter.

1-6. POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be used - minimum power required is 8 horsepower based on 5 GPM at 2,350 PSI (18.9 liters/min. at 165.2 kg/cm²).

1-7. WINCH

The winch is powered by a hydraulic motor through a 27:1 worm gear arrangement with a mechanical brake. Line speed is 18 ft./min. (5.5 m/min.) at optimum oil flow of 5 GPM (18.9 liters/min.) and 1-part line - 9 ft./min. (2.74 m/min.) with 2-part line. Maximum single-line lifting capacity of the winch is 3,100 lbs. (1,406 kg.). The winch is equipped with 80' (24.4 m) of 3/8" (0.95 cm) 6 x 25 FW PRF RRL IWRC XIP wire rope. A nylon sheave riding on a lubricated needle bearing is located at the tip of the extension boom. The ratio of winch drum and sheave pitch diameter to wire rope diameter is 21:1 for the winch drum, 18:1 for the snatch-block sheave and 27:1 for the boom-tip sheave.

1-8. ROTATION

Turntable bearing powered by a high-torque hydraulic motor through a ring-and-pinion type spur-gear train. Total gear reduction is 43:1.

1-9. CYLINDER HOLDING VALVES

The base end of the extension cylinder is equipped with a pilot-operated locking-holding valve to prevent sudden cylinder collapse in the event of a hose or other hydraulic failure.

The extend side of the lower boom cylinder is equipped with a 10-GPM counter-balance valve. The counter-balance valve serves several functions. First, it is a holding valve. Secondly, it is so constructed that it will control the lowering function and allow that motion to be feathered while under load. Finally, if a hose breaks, the only oil loss will be that in the hose.

1-10. CAPACITY ALERT SYSTEM

A pressure switch mounted on the extend side of the lower boom cylinder and connected electrically to the lift side of the winch and the extend side of the extension boom provides a capacity alert system. If the operator tries to pick up a load in excess of the crane capacity, the winch lift and extension out functions will not operate. To relieve the condition, the winch can be lowered or the extension boom retracted.

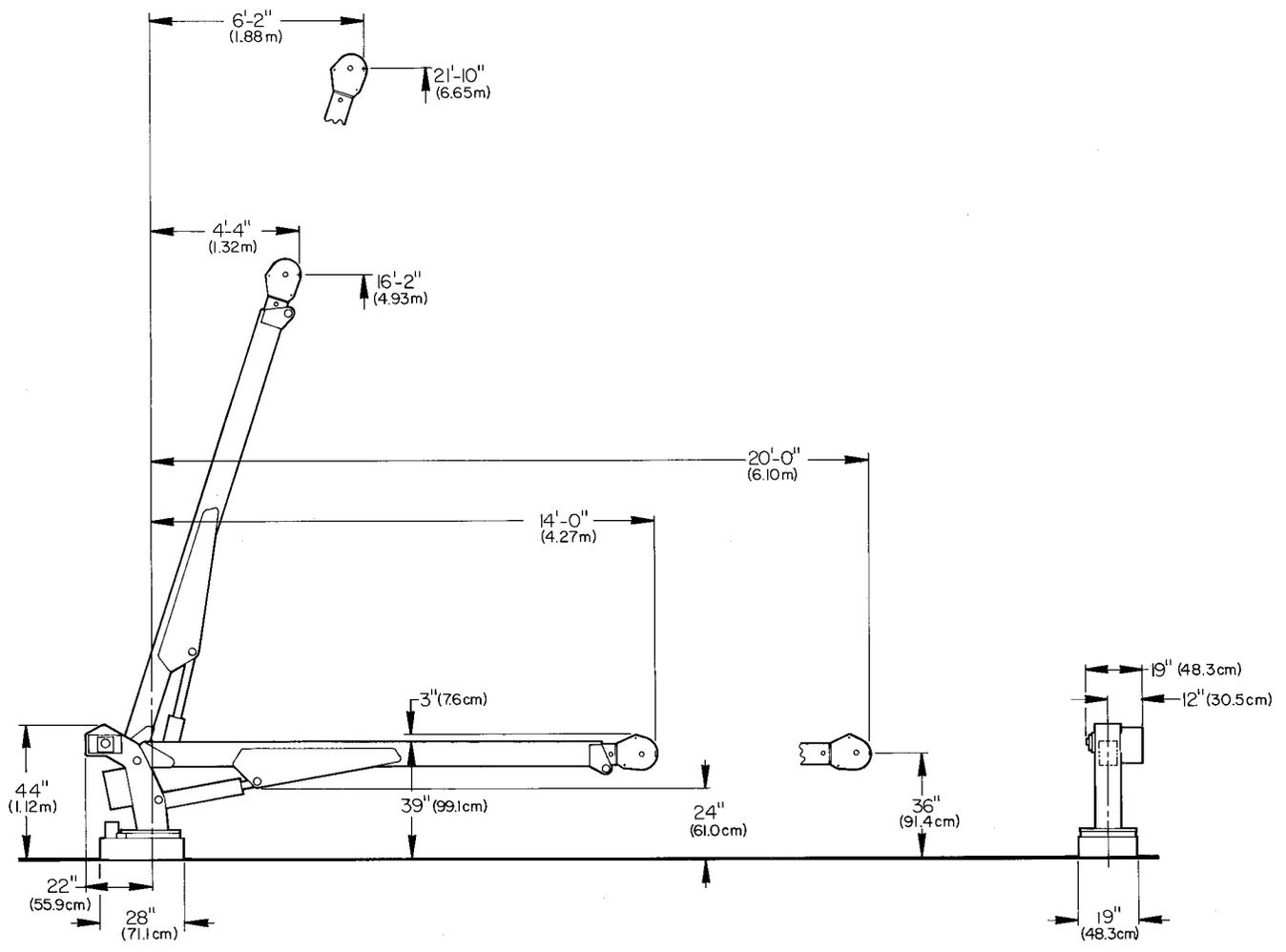
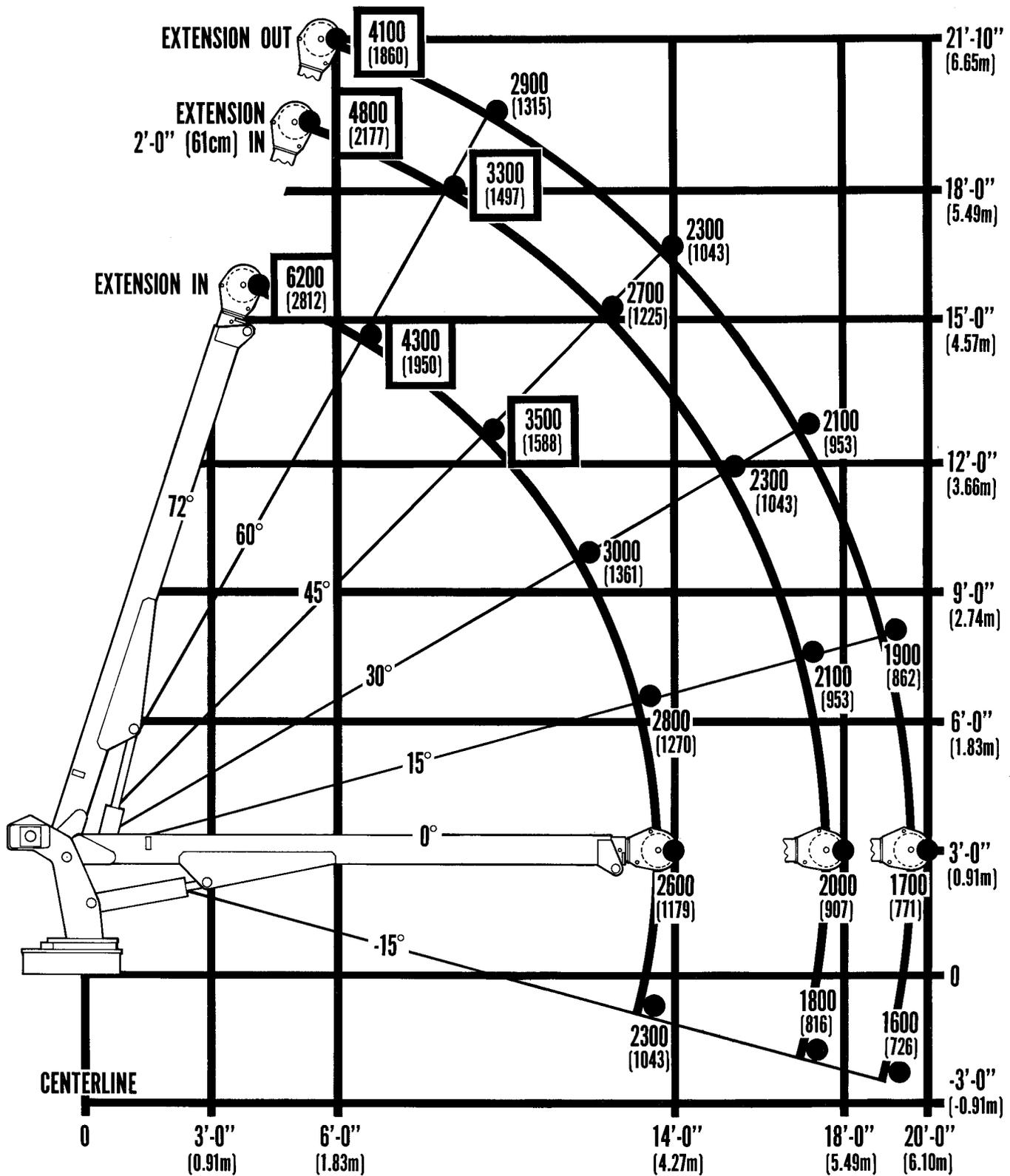


Figure A-1. Geometric Configuration



Maximum 1-part line capacity is 3100 lbs (1406 kgs).
For greater loads, use 2-part line.

● Reach in Feet (Meters)
● Capacity in Pounds (Kilograms)

Figure A-2. Capacity Chart

Section 2. CRANE DESCRIPTION

2-1. GENERAL

The 320H crane is designed primarily for use as a mechanic crane. This section describes the major assemblies on this crane and Figure B-1 illustrates their location.

2-2. BASE

The base provides the means for mounting the crane on the truck chassis. It incorporates the 370° (6.45 Rad.) rotation mechanism.

2-3. MAST

The mast provides the necessary elevation for crane operation as well as a hinge point for the lower boom. It houses the 27:1 ratio worm-gear driven winch mechanism.

2-4. LOWER BOOM

The lower boom will swing through a full 87° (1.52 Rad.) from -15° to $+72^\circ$ (-0.26 Rad. to

$+1.26$ Rad.). It is raised and lowered through the use of a single, double-acting hydraulic cylinder.

2-5. EXTENSION BOOM

The single-stage extension boom of the 320H increases the operating range from 14'-0" (4.27m) to 20'-0" (6.10m).

2-6. CONTROLS

The crane is operated remotely with a 4-function remote control unit on a 25-foot cable. In an overload condition, the winch up and extension out functions are inoperative. Those functions can be reversed to alleviate the overload condition.

2-7. HYDRAULICS

The crane hydraulics consist of double-braided pressure hoses, return hoses, filters, control valve bank and all necessary hydraulic fittings.

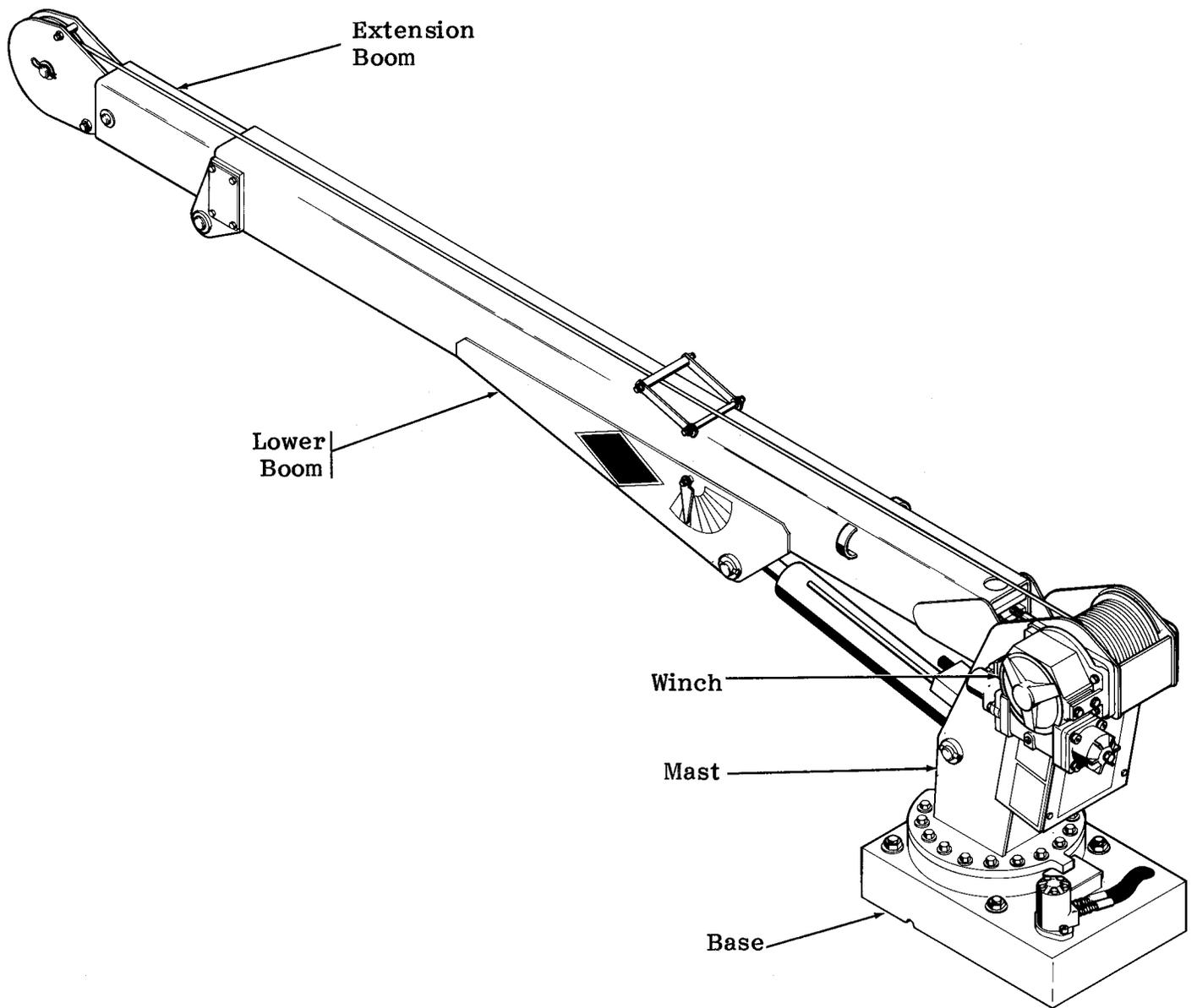


Figure B-1. 320H Crane Group

Section 3. INSTALLATION

3-1. GENERAL

This section is intended as a guide in the installation of the 320H crane. Since each installation is considered unique, certain components, such as the hydraulic hoses from the pump to the valve bank, must be cut to the proper length. Prior to beginning installation, make certain the chassis is ready to receive the crane (refer to Section 5, Installation - Chassis Preparation in Volume 1).

3-2. CRANE INSTALLATION

In addition to meeting the Minimum Chassis Specifications in Section 1, there must be sufficient room for mounting the crane and the platform must be strong enough to support the crane and the maximum rated load.

The crane base requires an area of at least 20" x 28" (51 cm x 71 cm) The platform should be reinforced as shown in Figure C-1.

1. Locate and drill the four mounting holes and the center hole for the hoses and remote control cables (Figure C-2). Make certain that the holes are located to properly orient the front of the crane base toward the front of the truck.
2. Use a lifting device capable of lifting the weight of the crane - 1,900 lbs (862 kg.). Attach the lifting device to the lift brackets of the crane (located on both sides of the lower boom, approximately 18 inches from the mast hinge). Lift the crane, apply a bead of waterproof caulking compound such as a

silicon-based caulk to the bottom of the base. Move the chassis under the crane and lower the crane into the desired position.

3. Install the mounting tie rods, washers and nuts to secure the crane base to the truck body (Figure C-3). Torque to 200 ft. lbs. (28 kg-m).

CAUTION

Exceeding the stated torque of 200 ft. lbs. (28 kg-m) may damage either the crane base or the body.

4. Install the ENGINE SPEED and ENGINE STOP functions as outlined in Volume 1.

3-3. HYDRAULIC INSTALLATION

1. Install the pressure hose between the pump and the crane control valve (Figure C-4).
2. Install the return hose between the reservoir and the crane control valve outlet.
3. Fill the hydraulic reservoir with oil (refer to Volume 1 for hydraulic oil specifications).
4. Check the unit for leaks.
5. Start the vehicle engine and test operate the crane. Conduct a walk-around inspection to make certain there are no leaks and everything is functioning properly.
6. Check the oil level in the reservoir and top off if necessary.

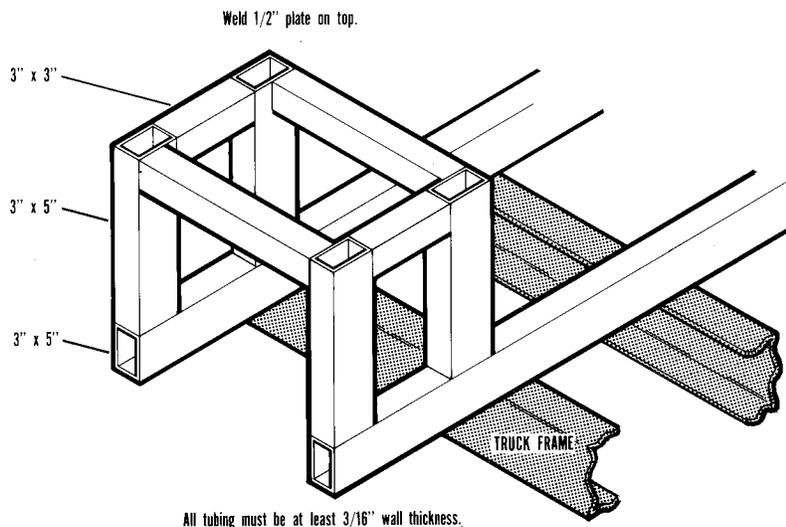


Figure C-1. Body Reinforcement

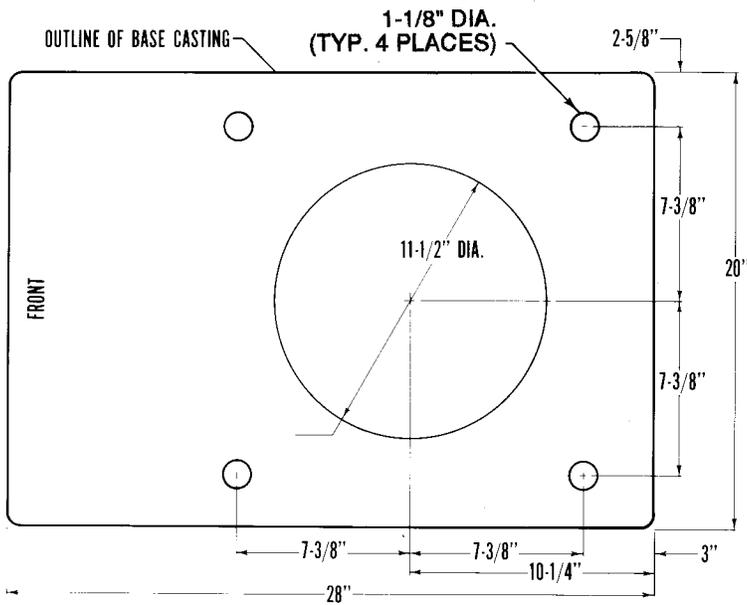


Figure C-2.
Mounting Hole Layout

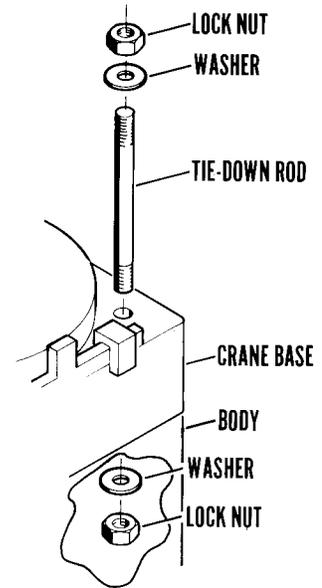


Figure C-3.
Tie Rod Installation

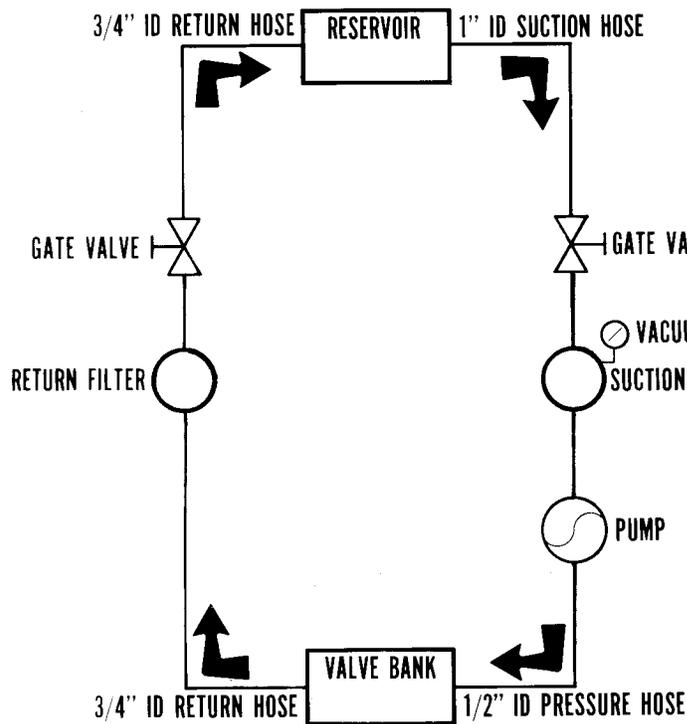


Figure C-4. Hydraulic Installation

Section 4. PARTS LIST

4-1. GENERAL

This section contains the exploded parts drawings with the accompanying parts list for the assemblies used on this crane. These drawings are intended to be used in conjunction with the instructions found in the REPAIR section in Volume 1. For optional equipment such as winches and remote controls, refer to the appropriate service manual.

WARNING

Do not attempt to repair any component without reading the information contained in the REPAIR section in Volume 1. Pay particular attention to the WARNING's, CAUTION's and NOTE's contained in that section. Failure to comply with these instructions may result in damage to the equipment, an injury or even death.

4-2. CRANE IDENTIFICATION

Every crane has an identification placard (Figure D-1) attached to the mast or one of the booms in a prominent location. When ordering parts, communicating warranty information or referring to the unit in correspondence, always include the assigned serial and model numbers. All inquiries should be directed to Iowa Mold Tooling Co., Inc.; 500 Highway 18 West; Garner, Iowa 50438; telephone: (515) 923-3711 or TWX 910-523-6930. In Canada; IMT Cranes Canada, Ltd.; Orillia, Ontario; telephone: (705) 325-7458.

MODEL MODELO MODELE []	SERIAL NUMBER NUMERO DE SERIE NUMERO DE SERIE []
DRAWING NUMBER NUMERO DE PLANO NUMERO DE PLAN []	DATE FECHA DE FABRICACION DATE []
	
Iowa Mold Tooling Co., Inc. Garner, Iowa U.S.A.	IMT Cranes Canada, Ltd. Orillia, Ontario Canada

Figure D-1. Serial Number Placard

4-3. CYLINDER IDENTIFICATION

The crane has a cylinder identification placard (Figure D-2) attached to the mast. To ensure proper replacement parts are received, it is necessary to specify a complete number/letter sequence for any part request. Part numbers may be cross checked by comparing the stamped identification of the cylinder case (Figure D-3) against the information stamped on the placard. You must use the part number stamped on the cylinder case when ordering parts.

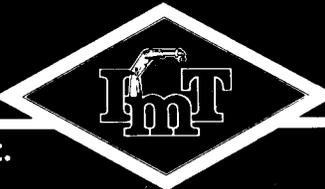
THIS UNIT IS EQUIPPED WITH THE FOLLOWING LISTED CYLINDERS ESTA UNIDAD ESTA EQUIPADA CON LOS SIGUIENTES CILINDROS CET APPARIEL EST EQUIPE DES VERINS HYDRAULIQUES SUIVANTS		
ROTATION ROTACION ROTATION []	STABILIZER VERTICAL MOVIMIENTO VERTICAL DE ESTABILIZADORES STABILISATEUR SENS VERTICAL []	INNER BOOM PLUMA INTERIOR FLECHE INFERIEURE []
BOOM EXTENSION PLUMA EXTENSIBLE FLECHE TELESCOPIQUE []	STABILIZER EXTENSION MOVIMIENTO HORIZONTAL DE ESTABILIZADORES STABILISATEUR SENS HORIZONTAL []	OUTER BOOM PLUMA EXTERIOR FLECHE SUPERIEURE []
AUXILIARY EQUIPMENT EQUIPO AUXILIAR EQUIPEMENT AUXILIAIRE []		AUXILIARY EQUIPMENT EQUIPO AUXILIAR EQUIPEMENT AUXILIAIRE []
Iowa Mold Tooling Co., Inc. Garner, Iowa USA	71029106	IMT Cranes Canada, Ltd. Orillia, Ontario Canada

Figure D-2. Cylinder Identification Placard

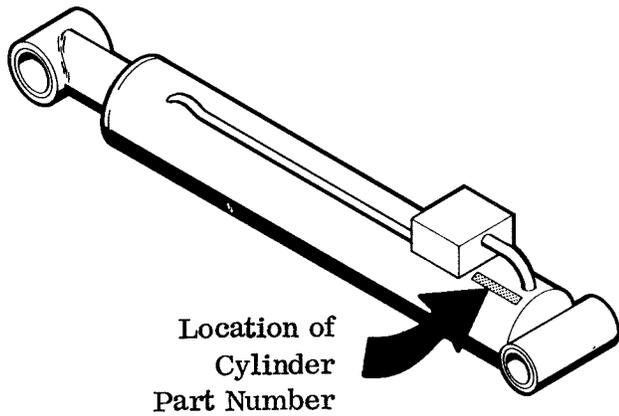


Figure D-3. Cylinder Part Number Location

4-4. WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, lower boom, extension boom and outrigger weldments - bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in Figure D-4.

4-5. ORDERING REPAIR PARTS

When ordering replacement parts:

1. Give the model number of the unit.
2. Give the serial number of the unit.
3. Specify the complete part number. When ordering cylinder parts or one of the main weldments, always give the stamped part number.
4. Give a complete description of the part.
5. Specify the quantity required.

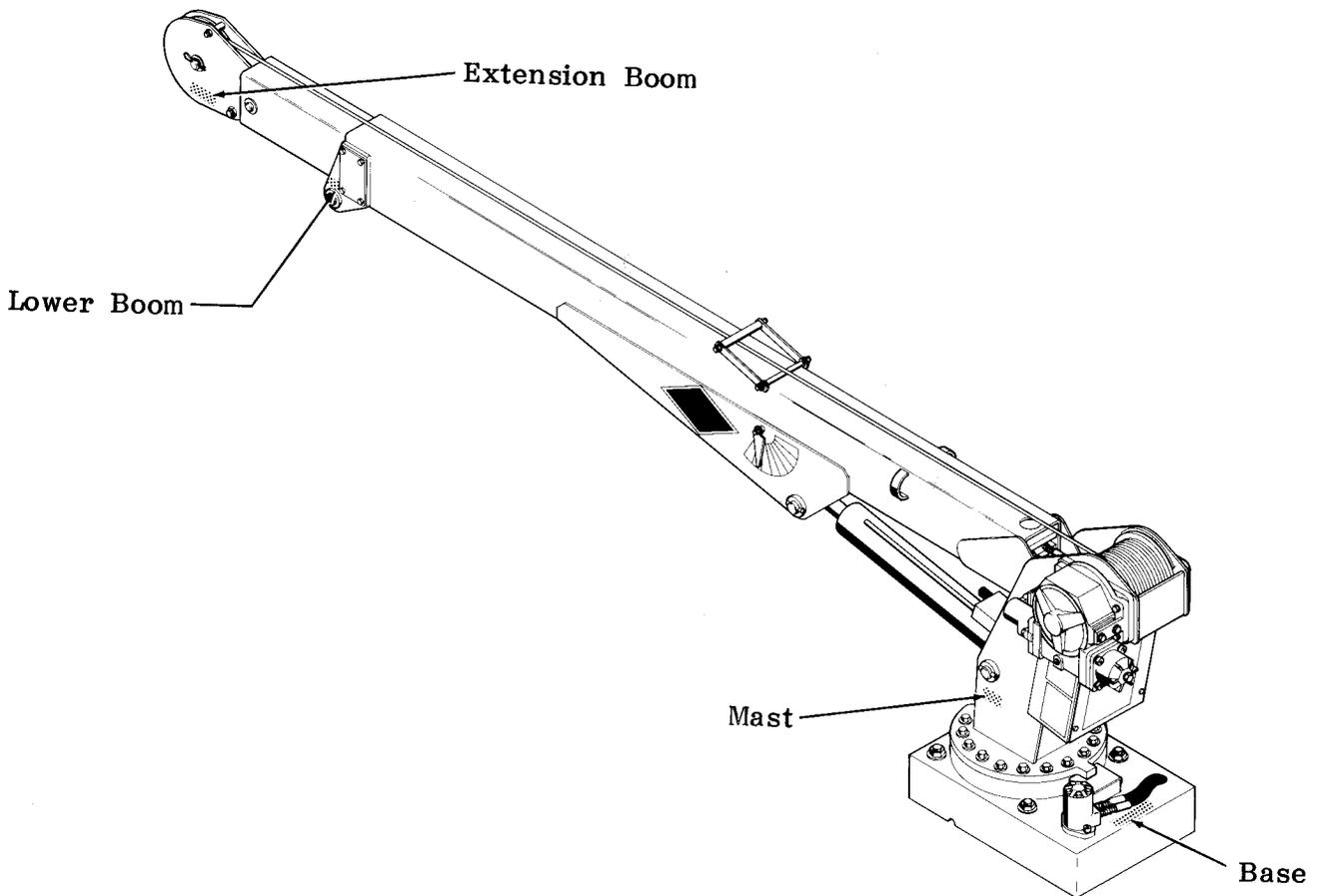
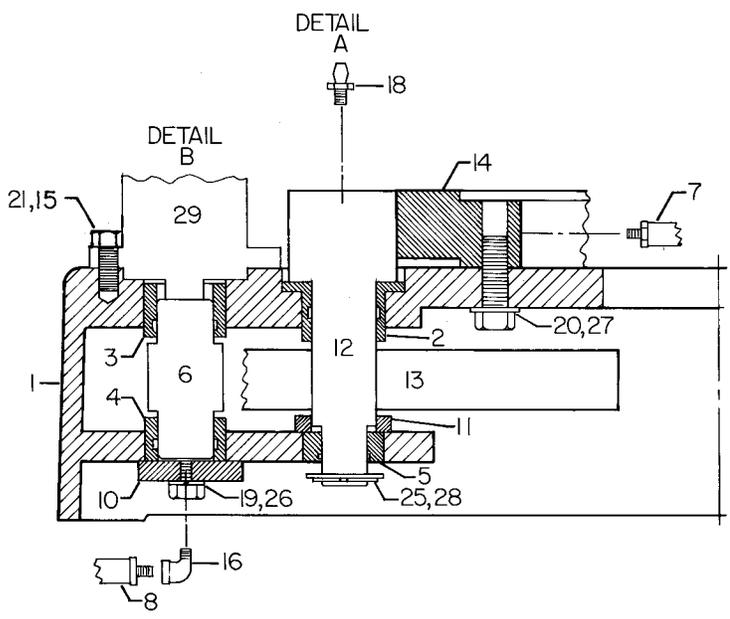
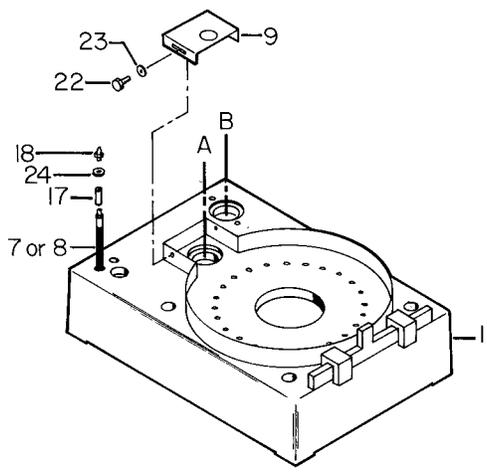


Figure D-4. Weldment Part Number Locations

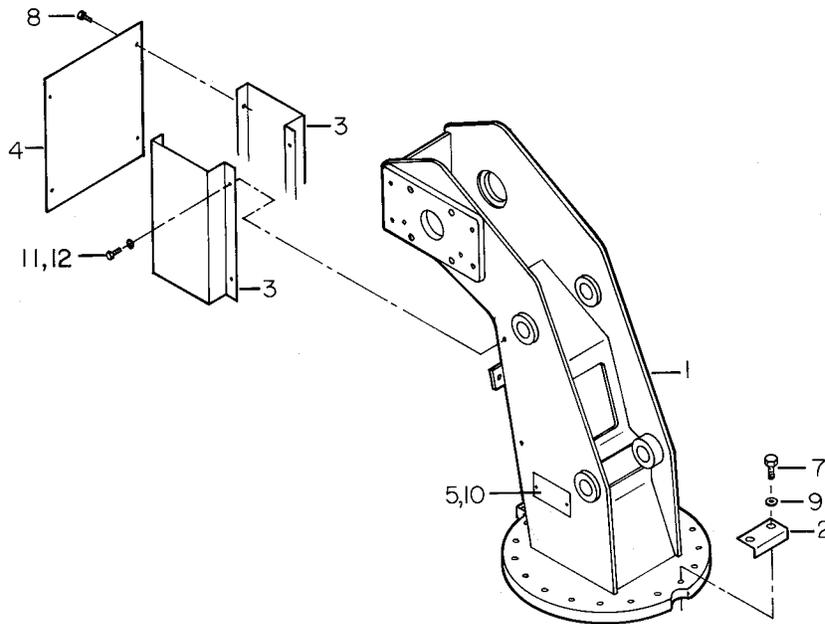


Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52705126	BASE	1	19.	72060092	SCREW; 1/2-13 x 1-1/4" hex hd.	2
2.	60020114	BUSHING, top pinion gear	1	20.	72060151	SCREW; 5/8-11 x 2" gr. 8	24
3.	60020115	BUSHING, top drive gear	1	21.	60106032	STUD; 1/2-13 x 2"	2
4.	60020116	BUSHING, bottom drive gear	1	22.	72060833	SCREW; 5/16-18 x 3/4" self-tap	2
5.	60020154	BUSHING, bottom pinion gear	1	23.	72063002	WASHER; 5/16"	2
6.	71056011	GEAR, drive	1	24.	72063005	WASHER, wrt.; 1/2"	2
7.	53000704	EXTENSION, grease; 34"	1	25.	72063035	BUSHING, machy.; 1-1/4" x 10 ga.	1
8.	53000715	EXTENSION, grease; 18"	1	26.	72063053	WASHER, lock; 1/2"	2
9.	60010235	COVER, pinion gear	1	27.	72063119	WASHER, flat; 5/8" gr. 8	24
10.	60010844	PLATE, grease, pinion gear	1	28.	72066084	RING, retaining; 1-1/4"	1
11.	60104694	SPACER, pinion gear	1	29.	73051378	MOTOR, crane rotation	1
12.	71056010	GEAR, pinion	1				
13.	71056012	GEAR, intermediate	1				
14.	71056062	GEAR-BEARING, turntable	1				
15.	72062080	NUT, lock; 1/2-13	2				
16.	72053589	ELBOW, street, 90°; 1/8" npt	1				
17.	72053301	COUPLING; 1/8" npt	2				
18.	72053508	ZERK; 1/8" npt	3				

WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical size and grade. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing serious injury or death.

Figure D-5. Base (Part Number 41705222)

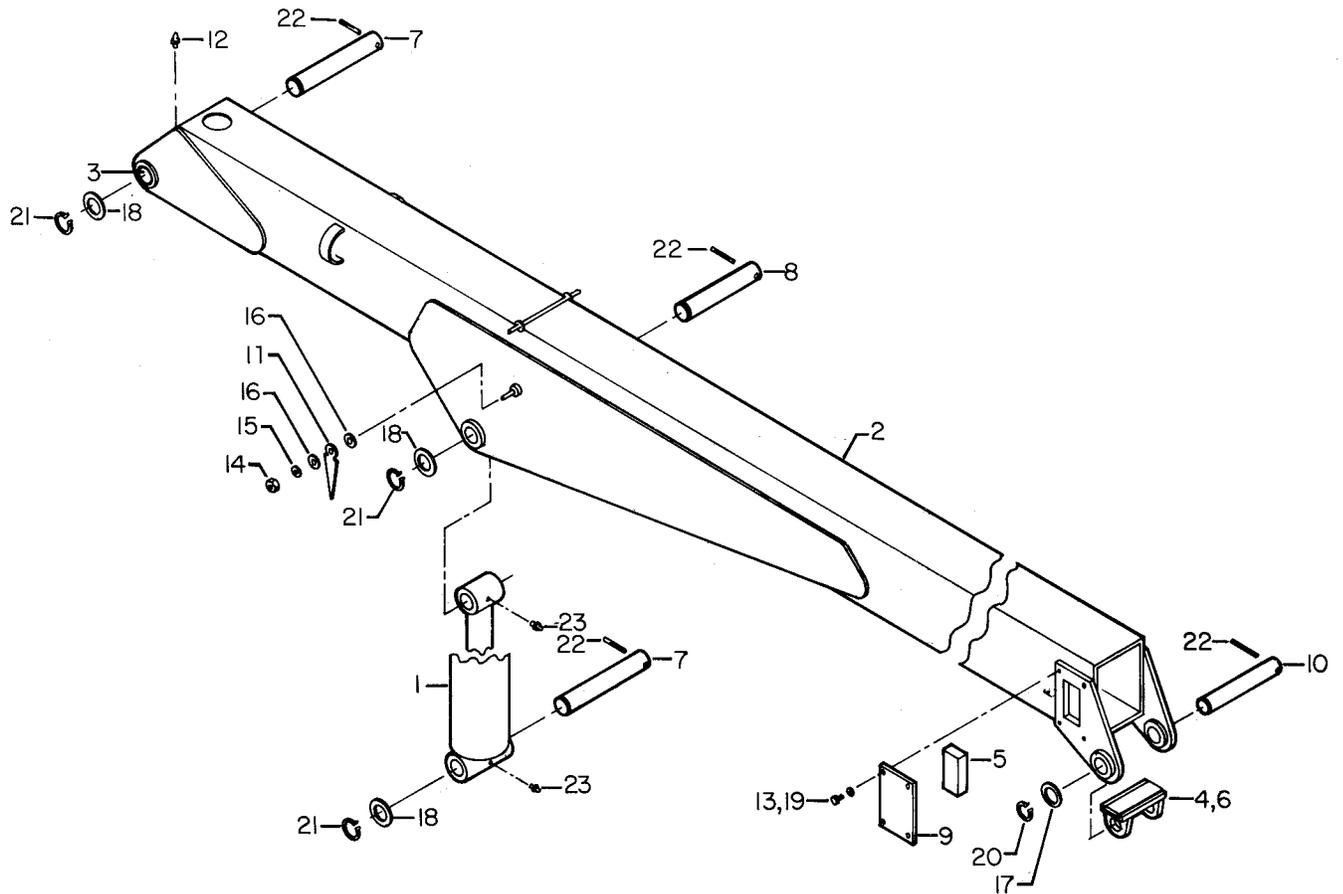


Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52703269	MAST	1	11.	72060023	SCREW; 5/16-18 x 3/4"	4
2.	60104540	COVER, pinion gear	1	12.	72063050	WASHER, lock; 5/16"	4
3.	60108120	COVER, valve bank, side	2				
4.	60108121	COVER, valve bank, back	1				
5.	70029119	PLACARD, serial number	1				
6.	--	NOT USED	-				
7.	72060151	SCREW; 5/8-11 x 2" gr. 8	18				
8.	72060833	SCREW; 5/16-18 x 3/4" self-tap	4				
9.	72063119	WASHER; 5/8" gr. 8	18				
10.	72066340	RIVET, pop; 1/8"	2				

WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical size and grade. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing serious injury or death.

Figure D-6. Mast (Part Number 41703263)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	3C290912	CYLINDER, lower boom	1	13.	72060002	SCREW; 1/4-20 x 3/4" hex hd.	8
2.	52705104	BOOM, lower (includes item 3)	1	14.	72062103	NUT; 3/8-16	2
3.	7BF81215	BUSHING	4	15.	72063003	WASHER, wrt.; 3/8"	2
4.	52705105	TRUNNION	1	16.	72063005	WASHER, wrt.; 1/2"	4
5.	60030015	PAD, wear	2	17.	72063035	BUSHING, machy.; 1-1/4" x 10 ga.	1
6.	60030083	PAD, wear, dovetailed	1	18.	72063037	BUSHING, machy.; 1-1/2" x 10 ga.	3
7.	60102376	PIN	2	19.	72063049	WASHER, lock; 1/4"	8
8.	60102388	PIN	1	20.	72066129	RING, retaining; 1-1/4"	1
9.	60103463	PLATE, retainer	2	21.	72066132	RING, retaining; 1-1/2"	3
10.	60105495	PIN	1	22.	72661157	PIN, groove; 1/2" x 2-1/2"	4
11.	60105544	INDICATOR, angle	2	23.	72053507	ZERK; 1/4-28	2
12.	72053508	ZERK; 1/8" npt	1				

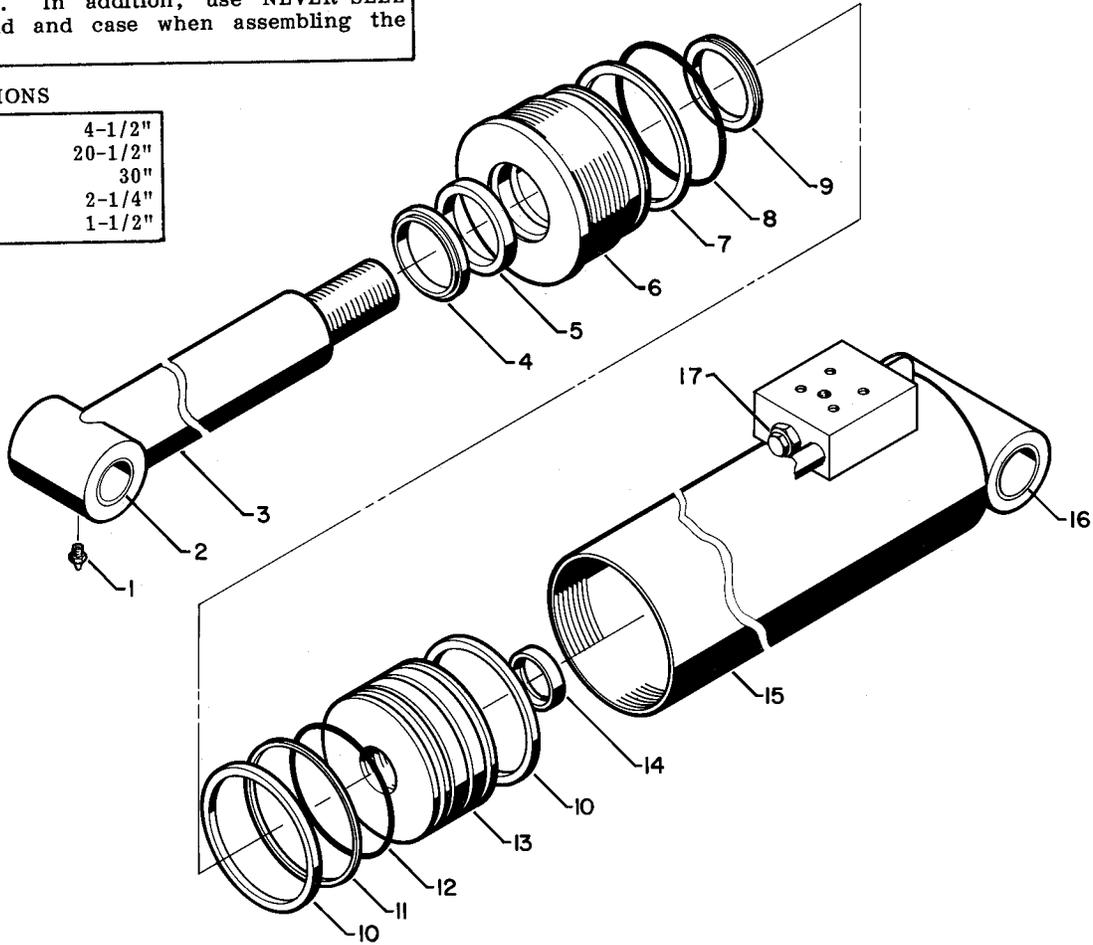
Figure D-7. Lower Boom (Part Number 41705110)

NOTE

Whenever the cylinder is disassembled, we strongly recommend replacing all of the components found in the seal kit. This may save expensive down-time in the near future. In addition, use NEVER-SEEZ between the head and case when assembling the cylinder.

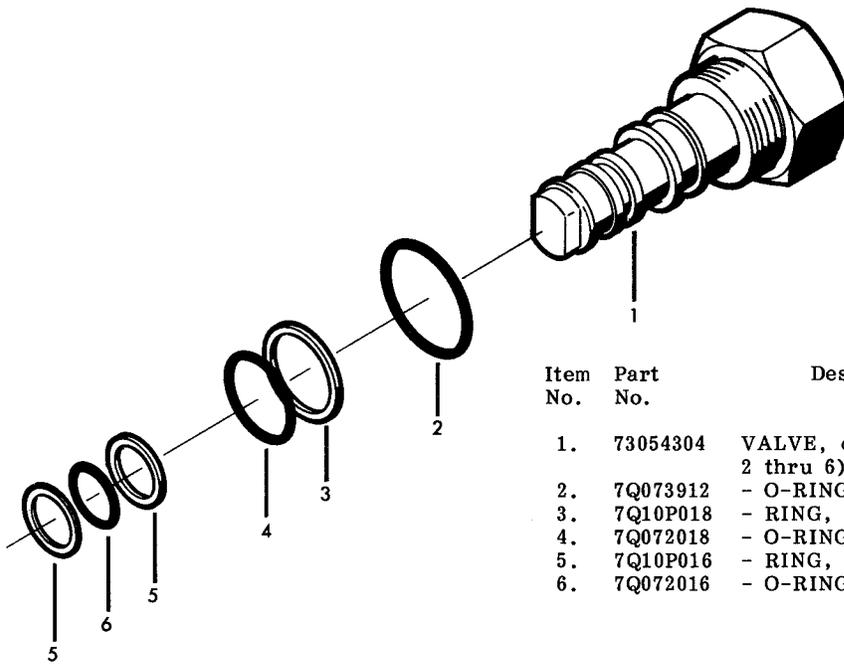
DIMENSIONS

Bore	4-1/2"
Stroke	20-1/2"
C - C Closed	30"
Rod Diameter	2-1/4"
Pin Diameter	1-1/2"



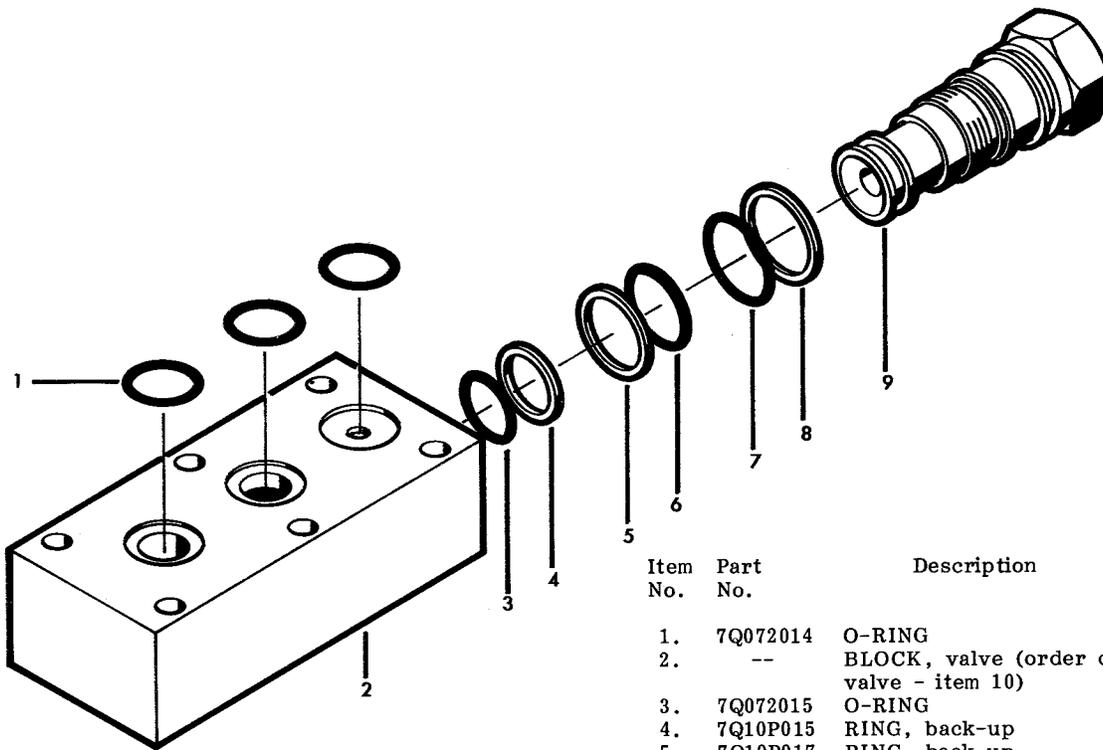
Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	72053507	ZERK; 1/4-28	2	11.	7T66P045	* SEAL, piston	1
2.	7BF81215	BUSHING	2	12.	7Q072155	* O-RING	1
3.	4G290910	ROD	1	13.	6I045143	PISTON	1
4.	7R14P022	* WIPER, rod	1	14.	7T61N143	* SEAL, lock ring	1
5.	7R546022	* SEAL, rod	1	15.	4C290912	CASE, cylinder	1
6.	6H045022	HEAD	1	16.	7BF81015	BUSHING	4
7.	7Q10P346	* RING, back-up	1	17.	73054304	VALVE, counter-balance; 10-GPM	1
8.	7Q072345	* O-RING	1	18.	7PNPXT02	PLUG; 1/8" npt (not shown)	3
9.	6A025022	* RING, wafer lock	1				
10.	7T65I045	* RING, piston	2			* Part of seal kit (Part Number 9C181823)	

Figure D-8. Lower Boom Cylinder (Part Number 3C290912)



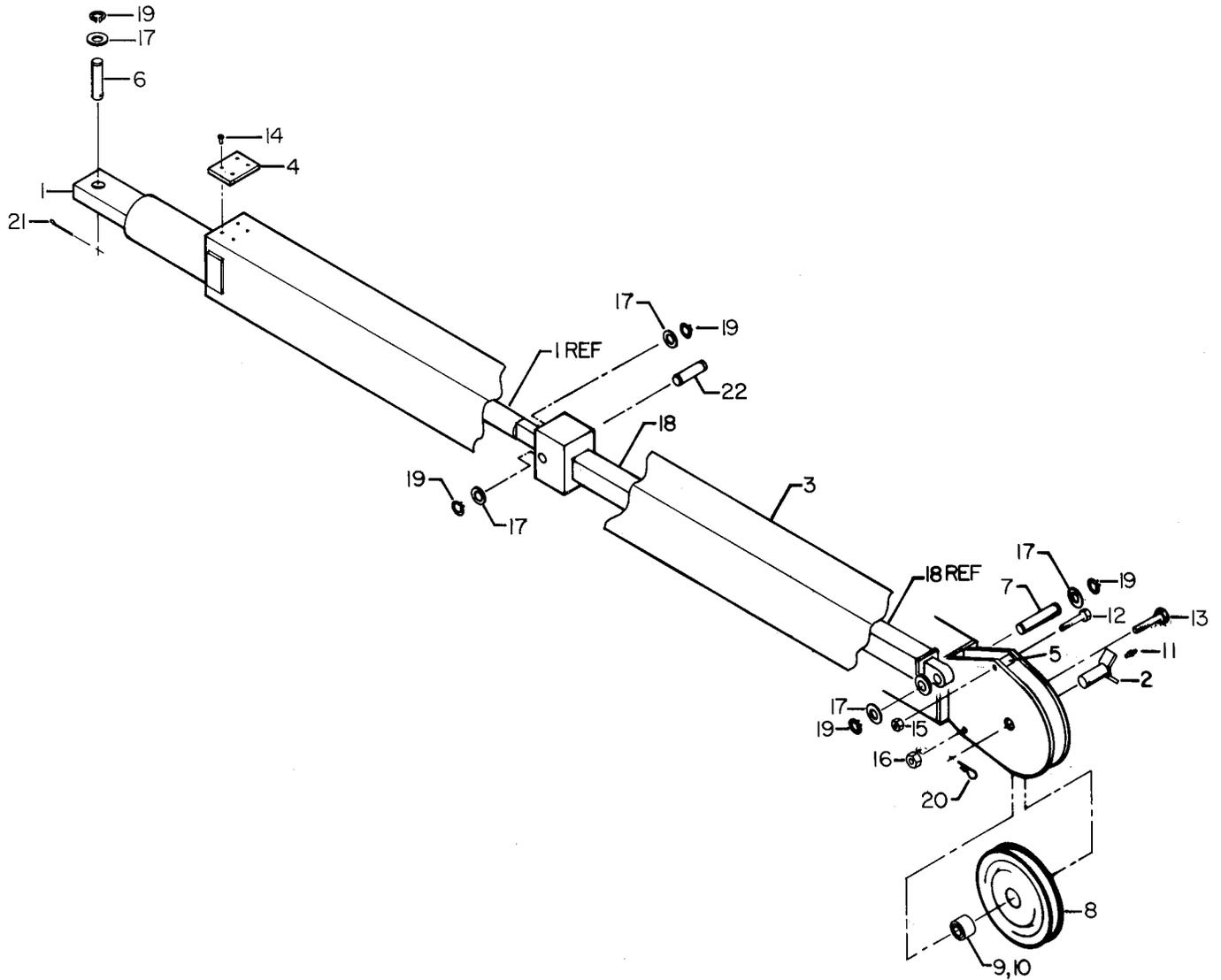
Item No.	Part No.	Description	Qty
1.	73054304	VALVE, complete (includes items 2 thru 6)	1
2.	7Q073912	- O-RING	1
3.	7Q10P018	- RING, back-up	1
4.	7Q072018	- O-RING	1
5.	7Q10P016	- RING, back-up	2
6.	7Q072016	- O-RING	1

Figure D-9. Counter-Balance Valve (Part Number 73054304)



Item No.	Part No.	Description	Qty
1.	7Q072014	O-RING	3
2.	--	BLOCK, valve (order complete valve - item 10)	1
3.	7Q072015	O-RING	1
4.	7Q10P015	RING, back-up	1
5.	7Q10P017	RING, back-up	1
6.	7Q072017	O-RING	1
7.	7Q072018	O-RING	1
8.	7Q10P018	RING, back-up	1
9.	--	BODY, valve (order complete valve - item 10)	1
10.	73054004	VALVE, complete (includes items 1 thru 9)	1

Figure D-10. Locking Holding Valve (Part Number 73054004)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	3B250325	CYLINDER, extension	1	12.	72060054	SCREW; 3/8-16 x 3" hex hd.	1
2.	52070705	PIN	1	13.	72060187	SCREW; 3/4-10 x 3" hex hd.	1
3.	52703313	BOOM, extension	1	14.	72060836	SCREW; 1/4-20 x 3/4" flat hd.	4
4.	60030016	PAD, wear	1	15.	72062103	NUT, lock; 3/8-16	1
5.	60101842	SPACER	1	16.	72062114	NUT, lock; 3/4-10	1
6.	60101905	PIN	1	17.	72063034	BUSHING, machy.; 1" x 10 ga.	5
7.	60102099	PIN	1	18.	52705109	LINK, extension cylinder	1
8.	70034204	SHEAVE; 10-1/4"	1	19.	72066125	RING, retaining; 1"	5
9.	70055024	BEARING, roller	1	20.	72066145	PIN, hair; 3/16"	1
10.	70055025	RACE, inner bearing	1	21.	72066194	PIN, cotter; 3/16" x 1-1/2"	1
11.	72053508	ZERK; 1/8" npt	1	22.	60102281	PIN	1

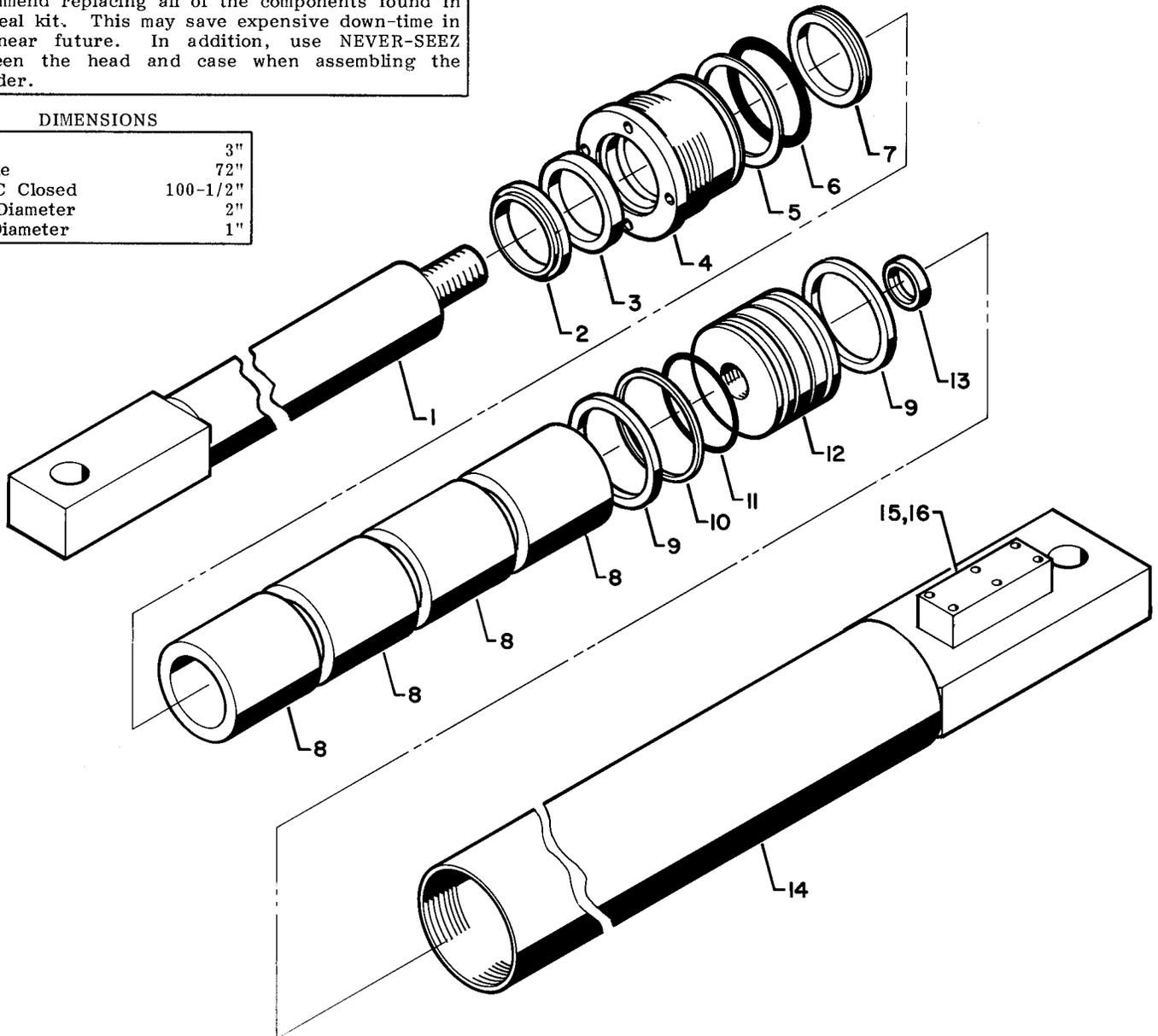
Figure D-11. Extension Boom (Part Number 41705111)

NOTE

Whenever the cylinder is disassembled, we strongly recommend replacing all of the components found in the seal kit. This may save expensive down-time in the near future. In addition, use NEVER-SEEZ between the head and case when assembling the cylinder.

DIMENSIONS

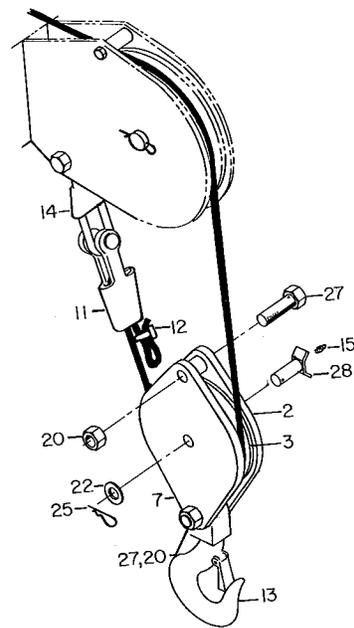
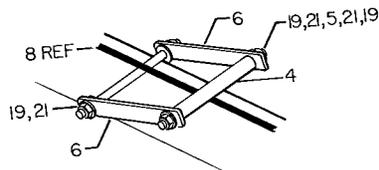
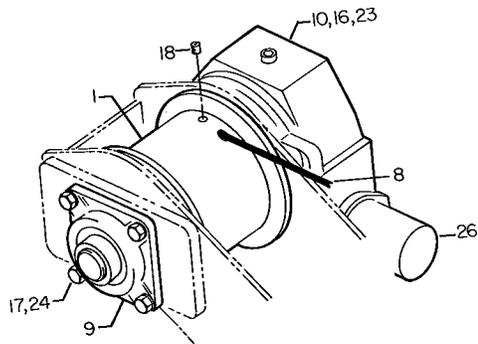
Bore	3"
Stroke	72"
C - C Closed	100-1/2"
Rod Diameter	2"
Pin Diameter	1"



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	4G250315	ROD	1	11.	7Q072145	* O-RING	1
2.	7R14P020	* WIPER, rod	1	12.	6I030106	PISTON	1
3.	7R546020	* SEAL, rod	1	13.	7T61N106	* SEAL, lock ring	1
4.	6H030020	HEAD	1	14.	4B250316	CASE, cylinder	1
5.	7Q10P334	* RING, back-up	1	15.	73054004	VALVE, locking holding	1
6.	7Q072334	* O-RING	1	16.	72060708	SCREW; 1/4-20 x 1-1/4" SHCS	6
7.	6A025020	* RING, wafer lock	1	17.	7PNPXT02	PLUG; 1/8" npt	2
8.	6C300020	TUBE, stop	4				
9.	7T65I030	* RING, piston	2				
10.	7T66P030	* SEAL, piston	1				

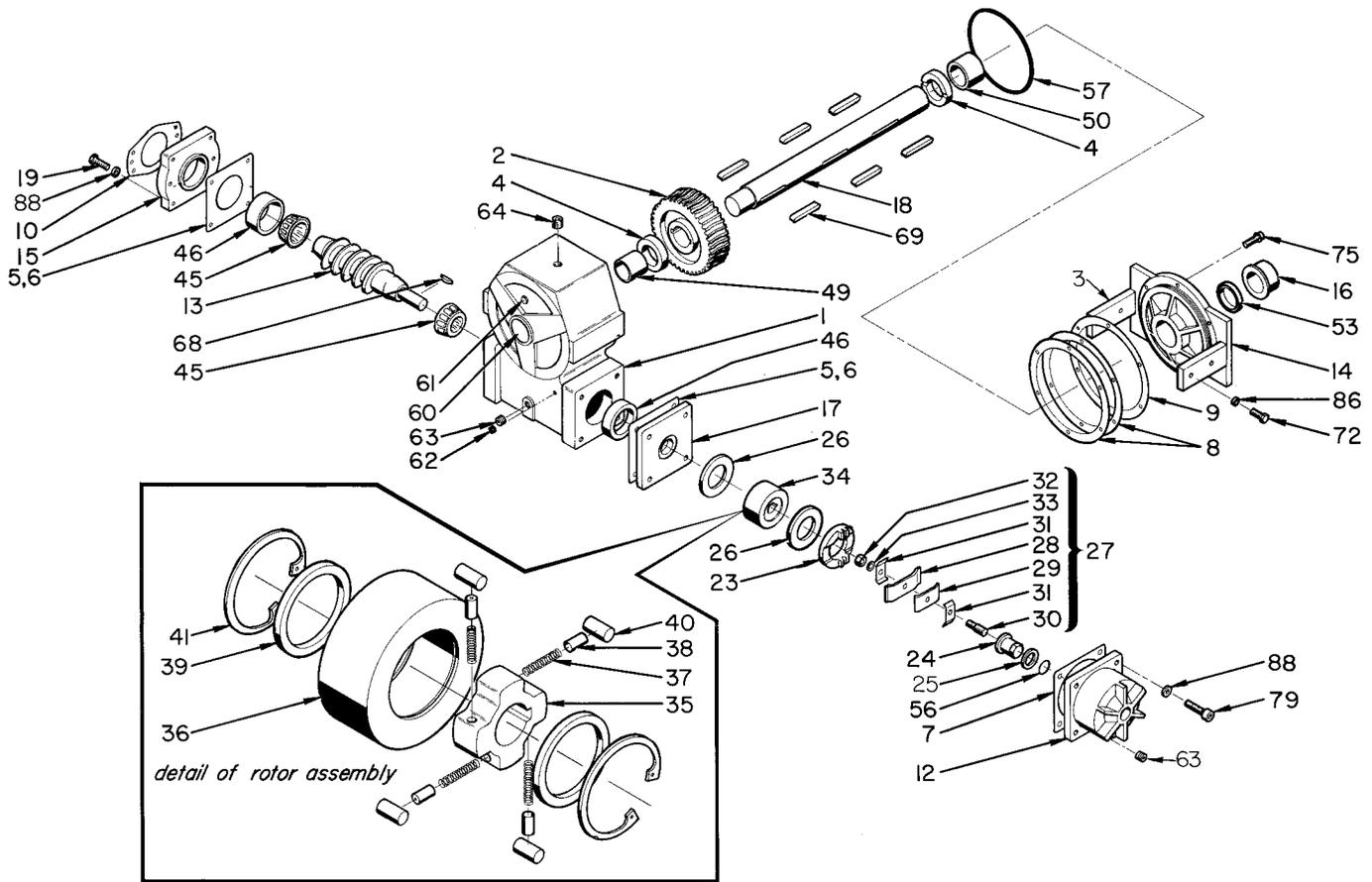
* Part of seal kit (Part Number 9C121617)

Figure D-12. Extension Cylinder (Part Number 3B250325)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52702499	DRUM, winch	1	15.	72053508	ZERK; 1/8" npt	1
2.	52704550	BLOCK, snatch	1	16.	72060093	SCREW; 1/2-13 x 1-1/2" hex hd.	4
3.	60030082	SHEAVE	1	17.	72060148	SCREW; 5/8-11 x 1-1/4" hex hd.	4
4.	60030108	ROLLER, cable guide	1	18.	72060596	SCREW, set; 1/2-13 x 3/4"	1
5.	60105538	STUD, cable guide	1	19.	72062107	NUT, lock; 1/2-13	4
6.	60105540	SIDE BAR, cable guide	2	20.	72062114	NUT, lock; 3/4-10	2
7.	60107549	SIDE PLATE, snatch block	1	21.	72063005	WASHER, wrt.; 1/2"	4
8.	60108116	CABLE	1	22.	72063030	BUSHING, machy.; 3/4" x 10 ga.	1
9.	70055117	BEARING, flange block	1	23.	72063053	WASHER, lock; 1/2"	4
10.	70057028	WINCH	1	24.	72063055	WASHER, lock; 5/8"	4
11.	70058015	SOCKET, wedge	1	25.	72066145	PIN, hair; 3/16"	1
12.	70058033	CLAMP	1	26.	73051433	MOTOR, hydraulic	1
13.	71073035	HOOK	1	27.	72060187	SCREW; 3/4-10 x 3" hex hd.	2
14.	71073920	HOOK	1	28.	52704828	PIN	1

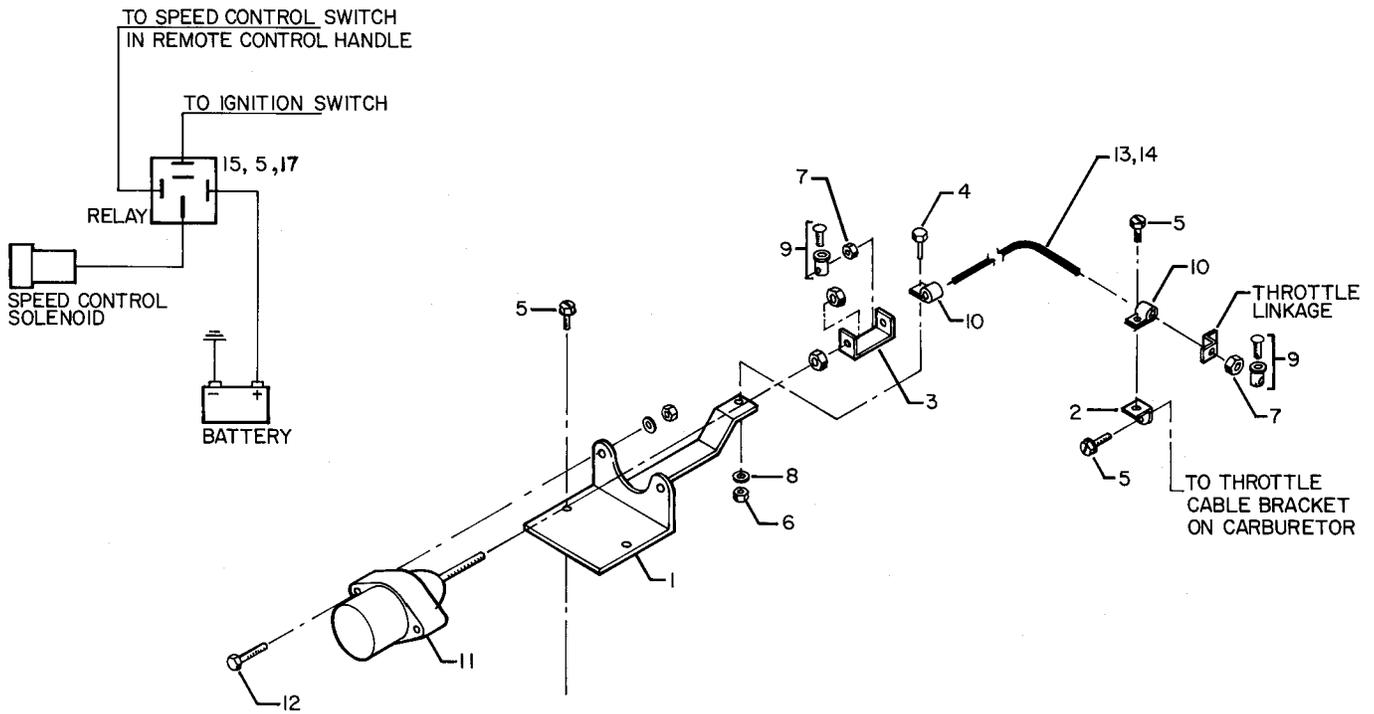
Figure D-13. Winch, Rope and Hook Kit (Part Number 90705120)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	70142224	HOUSING	1	35.	70142235	DRIVER (part of item 34)	1
2.	70056257	GEAR, worm	1	36.	70142236	RACE (part of item 34)	1
3.	70143071	BRACKET (part of item 14)	2	37.	70142237	SPRING (part of item 34)	4
4.	71014644	RING, thrust	2	38.	70142238	PLUNGER (part of item 34)	4
5.	76039191	GASKET, bearing container	*	39.	70142239	RING, retainer (part of item 34)	2
6.	76039192	GASKET, bearing container	*	40.	70142240	ROLLER (part of item 34)	4
7.	76391592	GASKET, safety brake	1	41.	72066796	RING, snap (part of item 34)	2
8.	76039189	GASKET, cover	2	45.	70055017	CONE, bearing	2
9.	76039190	GASKET, cover	1	46.	70055020	CUP, bearing	2
10.	76039295	GASKET	1	49.	70024233	BUSHING	1
12.	70142225	HOUSING, safety brake	1	50.	70024234	BUSHING	1
13.	70056258	WORM	1	53.	70142241	SEAL	1
14.	70142226	COVER	1	56.	7Q072022	O-RING	1
15.	70142227	RETAINER, bearing	1	57.	7Q072266	O-RING	1
16.	70142228	SPACER	1	60.	72661124	PLUG, expansion	1
17.	70142229	CONTAINER, bearing	1	61.	70142242	VENT; 1/8" npt	1
18.	70142230	SHAFT, cable drum	1	62.	72053244	PLUG; 1/8" npt	1
19.	72601134	SCREW; 7/16-14 x 1-1/2"	4	63.	72053393	PLUG; 3/8" npt	2
23.	71014833	PLATE, pressure	1	64.	72053394	PLUG; 1/2" npt	1
24.	71014836	NUT, worm brake adjustment	1	68.	72066283	KEY	1
25.	76039293	GASKET	1	69.	71014645	KEY	6
26.	76039296	DISC, friction	2	72.	72060062	SCREW; 7/16-14 x 1" hex hd.	4
27.	71014835	SPRING (includes items 28 thru 33)	1	75.	72601133	SCREW; 7/16-14 x 1"	6
28.	70142231	SPRING, main (part of item 27)	1	79.	72601133	SCREW; 7/16-14 x 1"	4
29.	70142232	SPRING, sec. (part of item 27)	1	86.	72063052	WASHER, lock; 7/16"	4
30.	70142233	STUD (part of item 27)	1	88.	72053113	WASHER, lock, shakeproof; 7/16"	8
31.	70142234	CLIP (part of item 27)	2				
32.	72062039	NUT, jam; 1/2-20 (part of item 27)	1				
33.	72063112	WASHER, lock (part of item 27)	1				
34.	71014837	ROTOR (includes items 35 thru 41)	1				

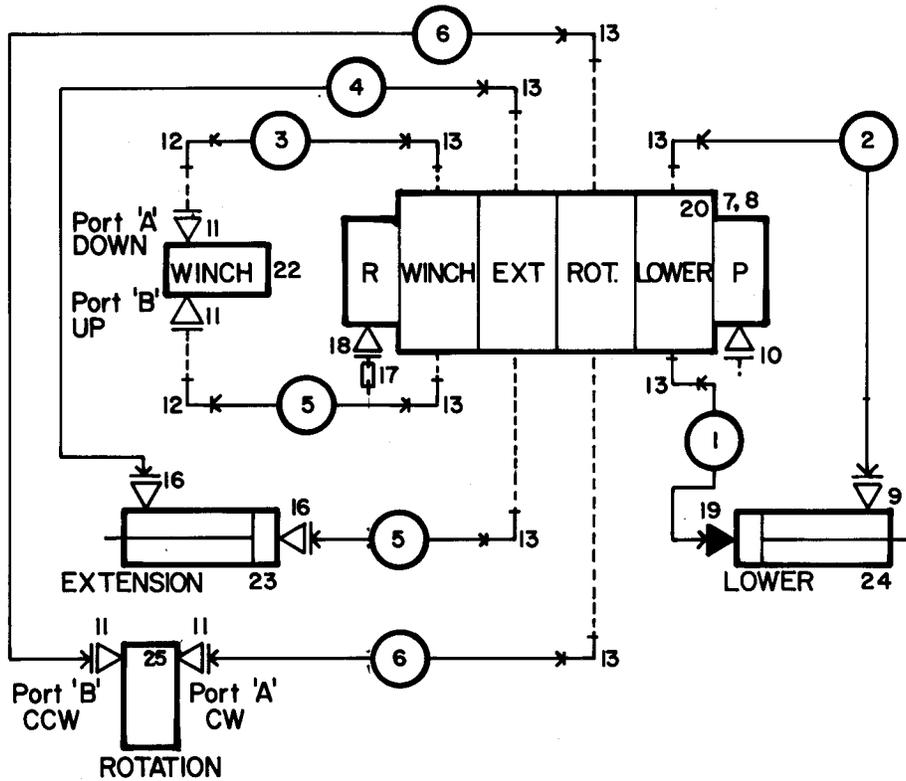
* Use quantities as necessary to permit free rotation without excessive play.

Figure D-14. Winch (Part Number 70057028)



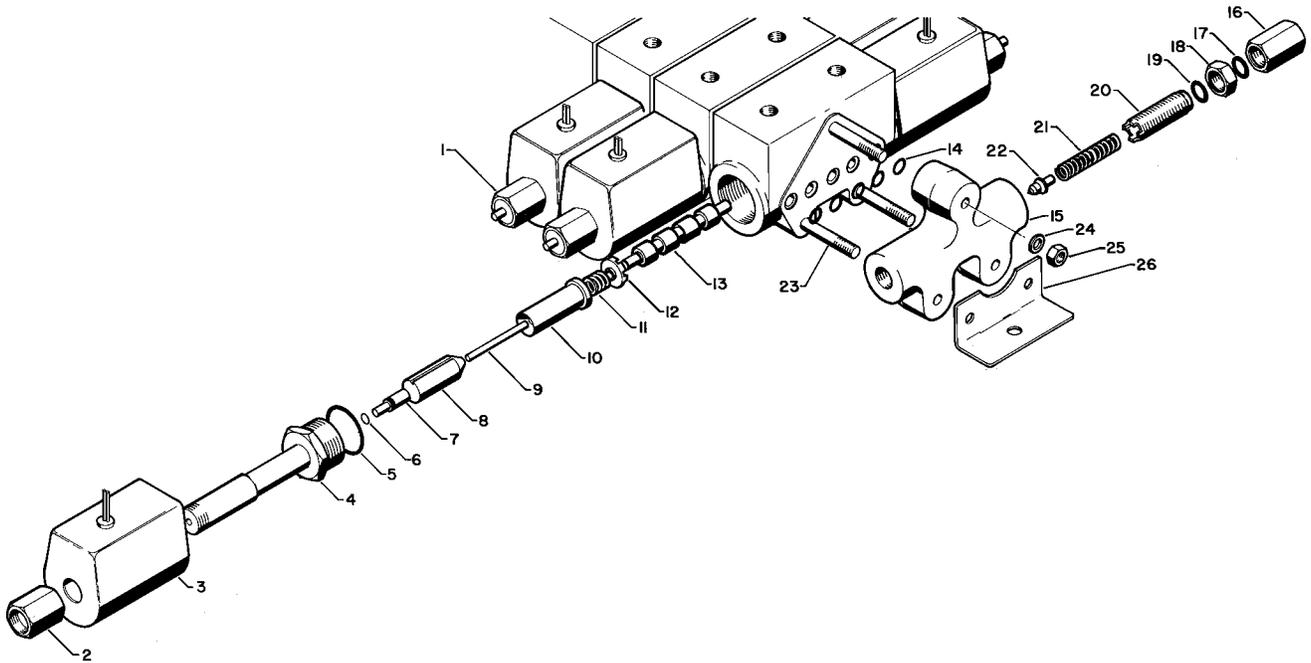
Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52705080	BRACKET, speed control	1	10.	72066523	CLAMP	2
2.	60106760	BRACKET, linkage	1	11.	77041239	SOLENOID; 12 VDC	1
3.	60108086	BRACKET, plunger adjustment	1	12.	72060028	SCREW; 5/16-18 x 1-3/4" hex hd.	2
4.	72060002	SCREW; 1/4-20 x 3/4" hex hd.	1	13.	89058892	CASING, control	1
5.	72061004	SCREW, #14 x 3/4" slotted hex hd.	5	14.	89058934	CABLE; .067" x 7 str. 48" lg.	1
6.	72062000	NUT; 1/4-20	1	15.	77041251	RELAY	1
7.	72062093	NUT; #8-32	2	16.	89044233	WIRE, brown; 14-ga x 20 ft. (not shown)	1
8.	72063049	WASHER, lock; 1/4"	1	17.	77040186	TERMINAL	4
9.	72066377	STOP, cable	2				

Figure D-15. Throttle Control (Part Number 31705270)



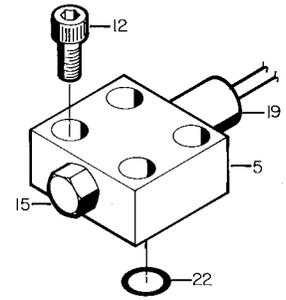
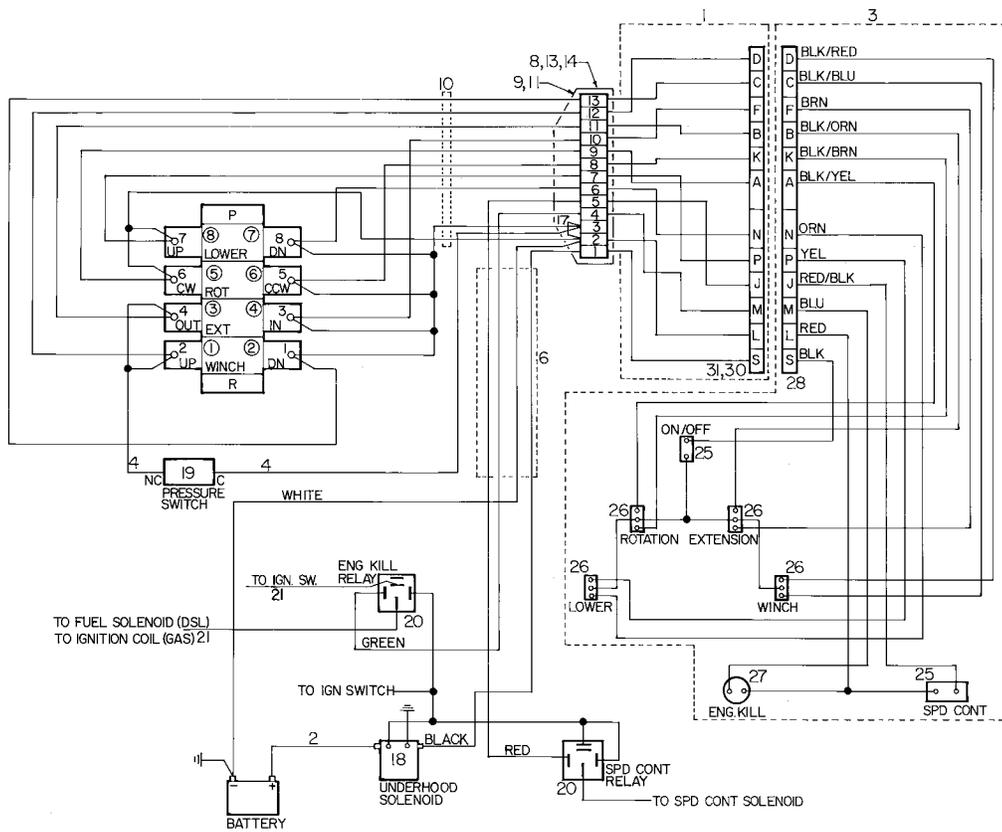
Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	51704620	HOSE; 1/4" ID x 20" lg.	1	13.	72532699	ELBOW, 90°; 9/16-18 str. thd.(m) x 7/16-20 JIC(m)	8
2.	51704621	HOSE; 1/4" ID x 22" lg.	1	14.	--	NOT USED	-
3.	51705116	HOSE; 1/4" ID x 14" lg.	1	15.	--	NOT USED	-
4.	51705117	HOSE; 1/4" ID x 15" lg.	1	16.	72532792	ADAPTER; 3/4-16 str. thd.(m) x 7/16-20 JIC(m)	2
5.	51705118	HOSE; 1/4" ID x 16" lg.	2	17.	72532794	NIPPLE, barbed	1
6.	51705119	HOSE; 1/4" ID x 61" lg.	2	18.	72532795	ADAPTER; 9/16-18 str. thd.(m) x 3/8" npt(f)	1
7.	72060046	SCREW; 3/8-16 x 1" hex hd.	2	19.	73054487	RESTRICTOR, flow	1
8.	72062103	NUT, lock; 3/8-16	2	20.	73073772	VALVE BANK	1
9.	72532351	ADAPTER; 7/16-20 str. thd.(m) x 7/16-20 JIC(m)	1	21.	--	NOT USED	-
10.	72532357	ADAPTER; 9/16-18 str. thd.(m) x 3/4-16 JIC(m)	1	22.	--	* MOTOR, winch	Ref.
11.	72532685	ADAPTER; 7/8-14 str. thd.(m) x 7/16-20 JIC(m)	4	23.	--	* CYLINDER, extension	Ref.
12.	72532690	ELBOW, 90° swivel; 7/16-20 JIC(m) x 7/16-20 JIC(f)	2	24.	--	* CYLINDER, lower	Ref.
				25.	--	* MOTOR, crane rotation	Ref.

Figure D-16. Hydraulic Kit (Part Number 91705224)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	73054077	VALVE SECTION (includes items 2 thru 14)	3	15.	73014948	INLET with relief (includes items 16 thru 22)	1
2.	73014950	- NUT	* 2	16.	**	- CAP, relief valve adjust	1
3.	77040028	- COIL; 12 VDC	* 2	17.	**	- O-RING	1
4.	73014958	- TUBE	* 2	18.	**	- NUT, jam	1
5.	7Q072113	- O-RING	* 2	19.	**	- O-RING	1
6.	7Q072008	- O-RING	* 2	20.	**	- ROD, adjustment	1
7.	73014957	- BUTTON	* 2	21.	**	- SPRING	1
8.	73014956	- PLUNGER	* 2	22.	**	- NEEDLE	1
9.	73014954	- PIN	* 2	23.	73014960	TIE ROD	3
10.	73014955	- PLUG	* 2	24.	72063002	WASHER; 5/16"	6
11.	73014953	- SPRING	* 2	25.	72062001	NUT; 5/16-18	6
12.	73014952	- RETAINER, spring	* 2	26.	73014959	BRACKET	2
13.	51014951	- SPOOL & BODY (matched set)	* 1				
14.	7Q072012	- O-RING	* 5				
* Indicates quantity per valve section				* * Not available separately. IMT does not recommend that the user attempt to repair or adjust the factory-set relief pressure.			

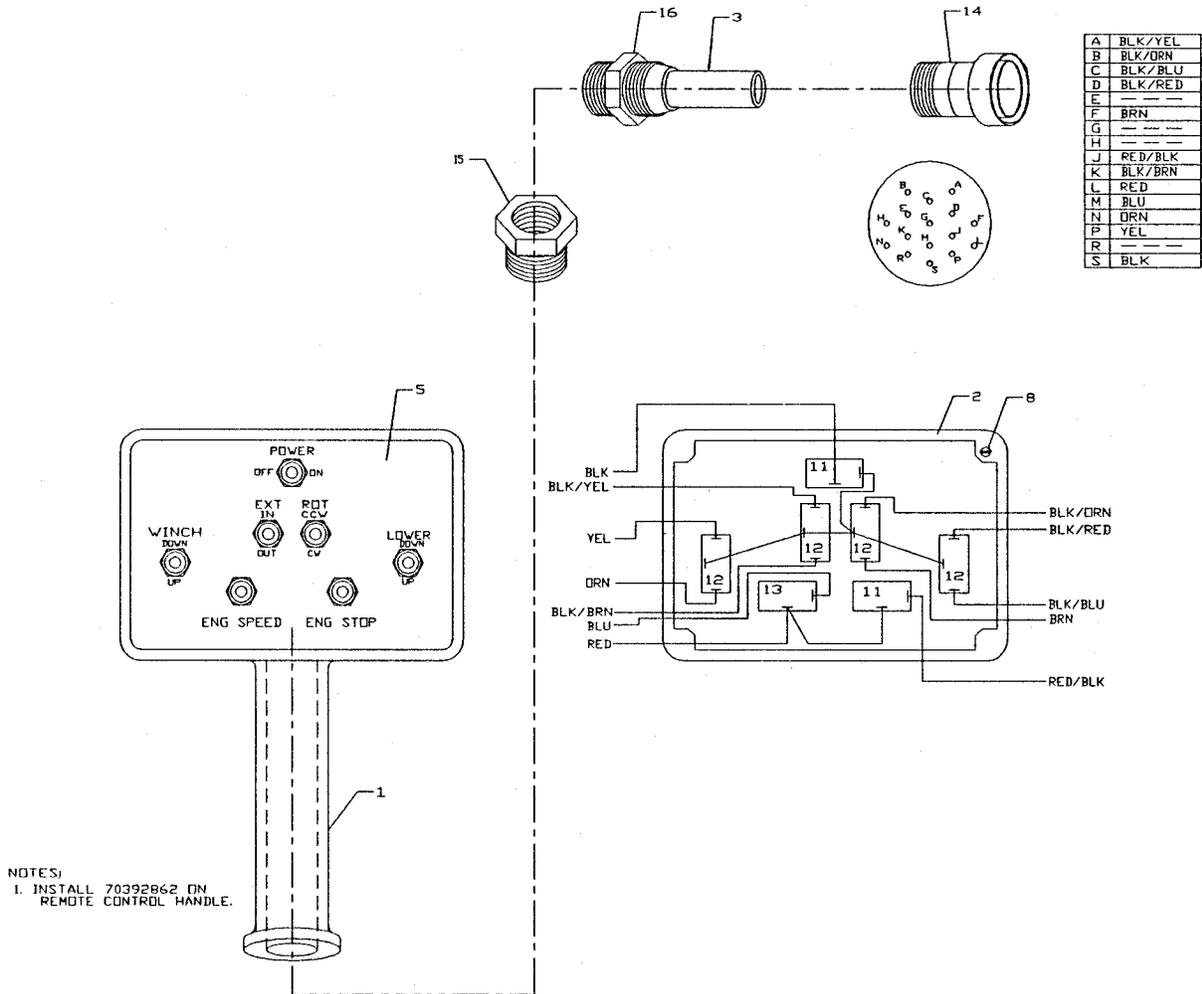
Figure D-17. Valve Bank (Part Number 73073772)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	51704975	CABLE; 18 ga./12-wire 66" lg.	1	19.	77041222	SWITCH, pressure	1
2.	51704784	CABLE; #1 wire x 6" lg.	1	20.	77041251	RELAY	2
3.	51705122	HANDLE & CABLE Assembly	1	21.	--	CHASSIS' WIRING	Reference
4.	51705244	CABLE; 14 ga./2-wire x 36" lg.	1	22.	7Q072015	O-RING	1
5.	60025221	MANIFOLD, capacity alert	1	23.	--	NOT USED	-
6.	60045019	CABLE; 16 ga./4-wire 300" lg.	1	24.	70392352	DECAL, electrocution hazard; large (not shown)	1
7.	--	NOT USED	-	25.	--	SWITCH, toggle	*
8.	77044309	STRIP, terminal; 13-contact	1	26.	--	SWITCH, toggle, double throw	*
9.	60105825	BLOCK, terminal strip mounting	1	27.	--	SWITCH, pushbutton	*
10.	70034060	TIE, plastic	4	28.	--	PLUG; 16-pin	*
11.	72060002	SCREW; 1/4-20 x 3/4" hex hd.	2	29.	--	NOT USED	-
12.	72060731	SCREW; 5/16-18 x 3/4" shcs	4	30.	--	RECEPTICAL; 16-pin	*
13.	72061009	SCREW; #6 x 3/4" pan hd.	2	31.	72060000	SCREW; 1/4-20 x 1/2" hex hd.	2
14.	72066525	CLAMP, hose; 3/4"	1				
15.	72532140	PLUG, str. thd.; 9/16-18	1				
16.	77040051	TERMINAL	16				
17.	77040130	JUMPER	1				
18.	77041003	SOLENOID; 12 VDC 4-pole	1				

* Not a part of this assembly - shown for reference only.

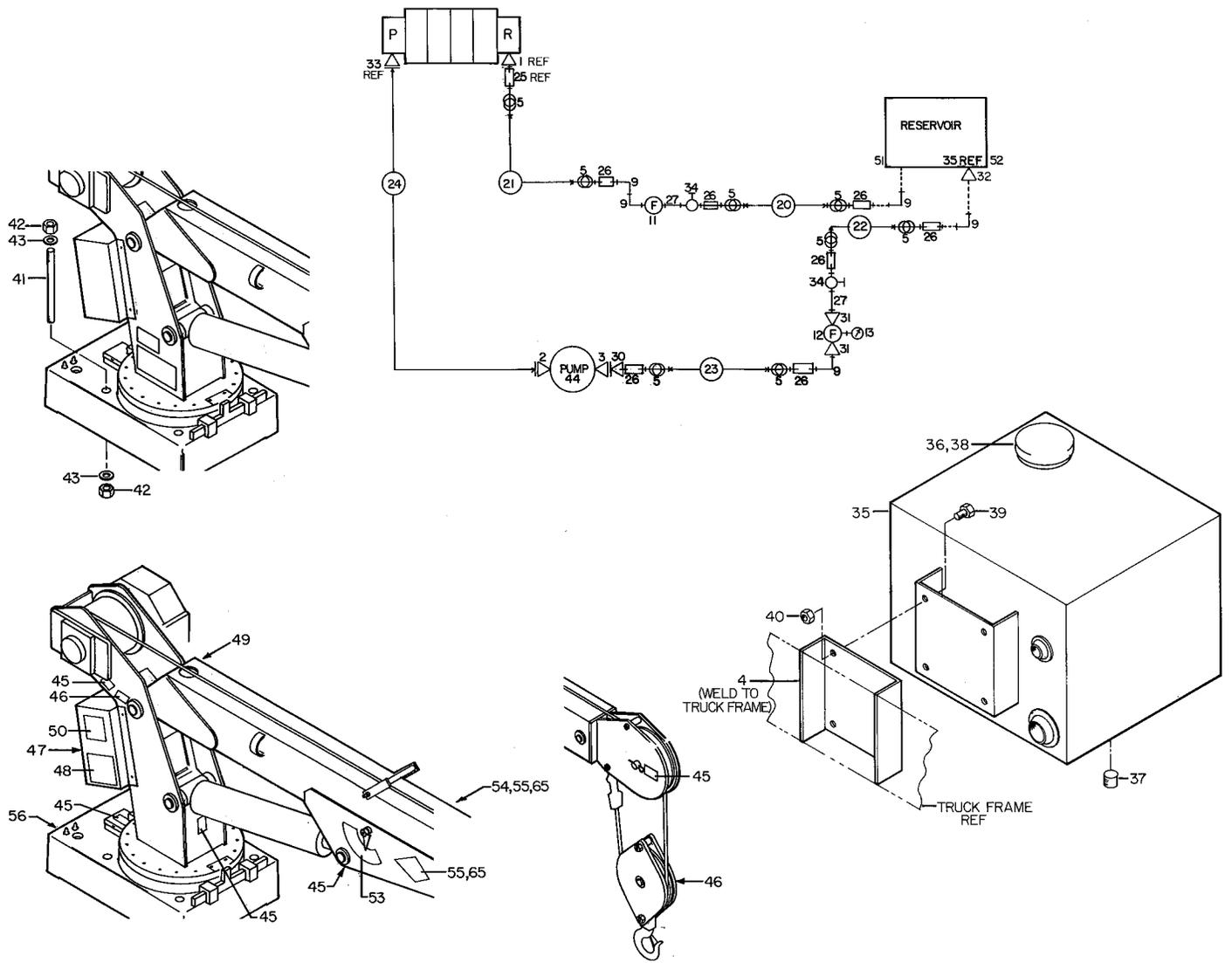
Figure D-18. Control Kit (Part Number 90705113)



NOTES:
1. INSTALL 70392862 ON
REMOTE CONTROL HANDLE.

ITEM	PART NO.	DESCRIPTION	QTY
1.	60111140	HANDLE	1
2.	70034306	BACK	1
3.	89044136	CABLE 18GA 12WIRE X 6	1
4.	89044214	WIRE 18GA GRN	1.62'
5.	70393261	DECAL-RMT CTRL	1
6.	70392862	DECAL-DANGER RC ELECTRO	1
7.	70029119	SERIAL NO. PLACARD	1
8.	72061009	SHT MTL SCR #6X3/4 PH	4
9.	72066340	POP RIVET 1/8	2
10.	77040186	TERMINAL 1/4 FSLPON	18
11.	77041345	TOGGLE SWITCH ST	2
12.	77041346	TOGGLE SWITCH DT	4
13.	77041347	TOGGLE SWITCH DT MOMEN.	1
14.	77044170	CONNECTOR 16-PIN	1
15.	72531833	REDUCER BUSHING 3/4-1/2NPT	1
16.	77044096	CORD GRIP	1

Figure D-19. CONTROL HANDLE (51705122)



DECAL PLACEMENT

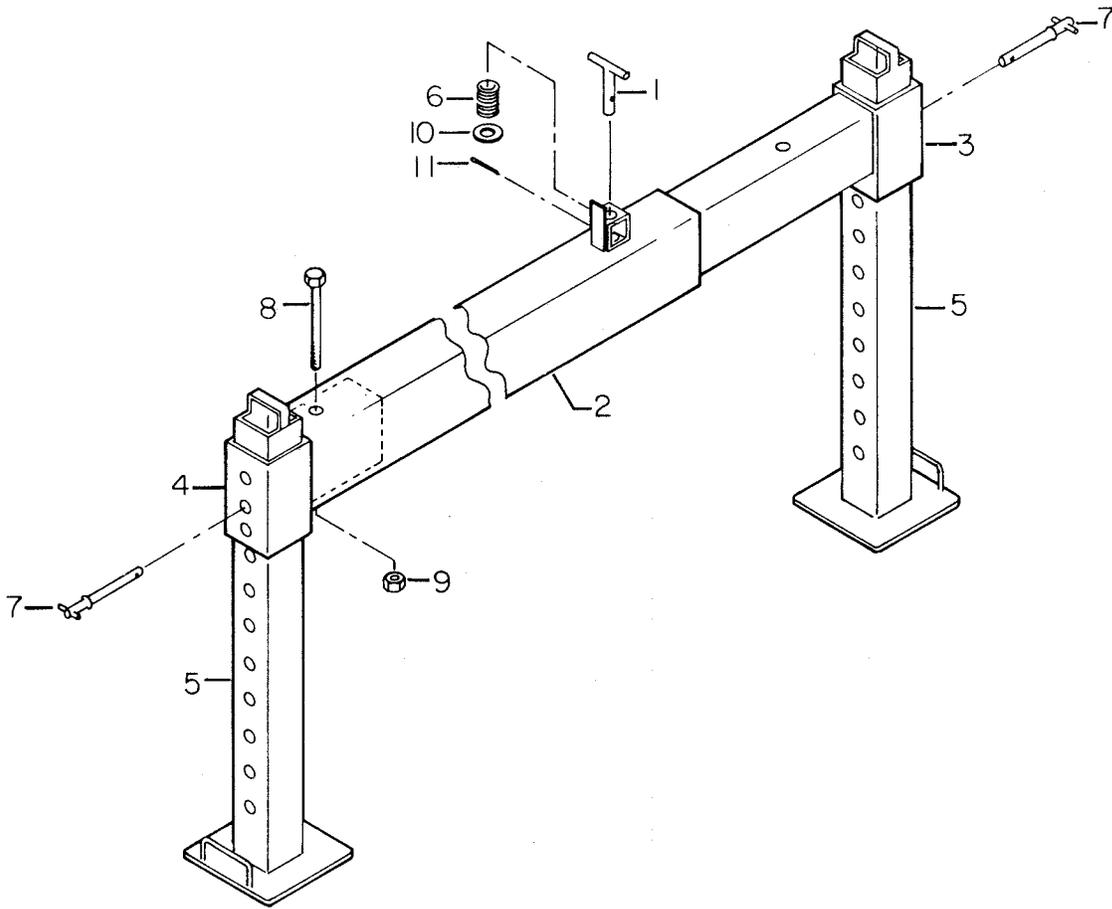
- Rear of Truck Body - 47, 59 (2) and 60 (2)
- Truck Body (Driver's Side) - 56
- Truck Body (Passenger's Side) - 56
- Inside Compartment - 48, 49, 50, 61, 62 & 63

Figure D-20. Installation Kit (Part Number 93705112)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	72532795	* ADAPTER; 9/16-18 str. thd.(m) x 3/8" npt(f)	Ref.	34.	73054129	VALVE, gate; 3/4"	2
2.	72532360	ADAPTER; 1-1/16" str. thd.(m) x 3/4-16 JIC(m)	1	35.	52705133	RESERVOIR	1
3.	72053751	ADAPTER; 1-5/16" str. thd.(m) x 1" npt(f)	1	36.	73014671	CAP, fill	1
4.	60108148	BRACKET, reservoir mounting	1	37.	73052021	PLUG, magnetic; 3/4" npt	1
5.	72066000	CLAMP, hose; #12	8	38.	73141276	SCREEN, reservoir fill	1
6.	--	NOT USED	-	39.	72060044	SCREW; 3/8-16 x 3/4" nex hd.	4
7.	--	NOT USED	-	40.	72062103	NUT, lock; 3/8-16	4
8.	--	NOT USED	-	41.	60106481	STUD, tie down; 1"-8 x 12-1/2" lg.	4
9.	72053285	ELBOW, street, 90°; 3/4" npt	5	42.	72062141	NUT, lock; 1"-8	8
10.	--	NOT USED	-	43.	72063066	WASHER, hi-strength; 1"	8
11.	73052000	FILTER, return	1	44.	--	* * PUMP	Ref.
12.	73052012	FILTER, suction	1	45.	70391612	DECAL, "GREASE WEEKLY"	5
13.	70048031	GAUGE, vacuum	1	46.	70391613	DECAL, "GREASE WEEKLY"	2
14.	--	NOT USED	-	47.	71392558	PLACARD, capacity	2
15.	--	NOT USED	-	48.	70391390	DECAL, operation caution	2
16.	--	NOT USED	-	49.	70391391	DECAL, electrocution hazard; small	2
17.	--	NOT USED	-	50.	70391392	DECAL, operation caution	2
18.	--	NOT USED	-	51.	70392109	DECAL, return line	1
19.	--	NOT USED	-	52.	70392108	DECAL, suction line	1
20.	60035819	HOSE; 3/4" ID x 60" lg.	1	53.	71391522	DECAL, angle indicator, right hand	1
21.	60035817	HOSE; 3/4" ID x 240" lg.	1	54.	71391523	DECAL, angle indicator, left hand	1
22.	60035823	HOSE; 3/4" ID x 52" lg.	1	55.	70029251	PLACARD, IMT Diamond	2
23.	60035818	HOSE; 3/4" ID x 72" lg.	1	56.	70392273	DECAL, danger, electrocution hazard; small	3
24.	51703614	HOSE; 1/2" ID x 240" lg.	1	57.	70392524	DECAL, rotate while greasing (not shown)	1
25.	72532794	* NIPPLE, barbed	Ref.	58.	--	NOT USED	-
26.	72053458	NIPPLE, barbed	7	59.	70391598	DECAL, outrigger warning	2
27.	72053141	NIPPLE, close; 3/4" npt	2	60.	71039129	DECAL, stabilizer warning	2
28.	--	NOT USED	-	61.	71392095	DECAL, caution, connectors	1
29.	--	NOT USED	-	62.	71039134	DECAL, caution, oil level	1
30.	72053376	BUSHING, reducer; 1" npt(m) x 3/4" npt(f)	1	63.	70392213	DECAL, washing precautions	1
31.	72053180	BUSHING, reducer; 1-1/4" npt(m) x 3/4" npt(f)	2	64.	70392559	DECAL, 320H Identification	2
32.	72053577	BUSHING, reducer; 1-1/2" npt(m) x 3/4" npt(f)	1	65.	72066340	RIVET, pop; 1/8"	8
33.	72532357	* ADAPTER; 9/16-18 str. thd.(m) x 3/4-16 JIC(m)	Ref.				

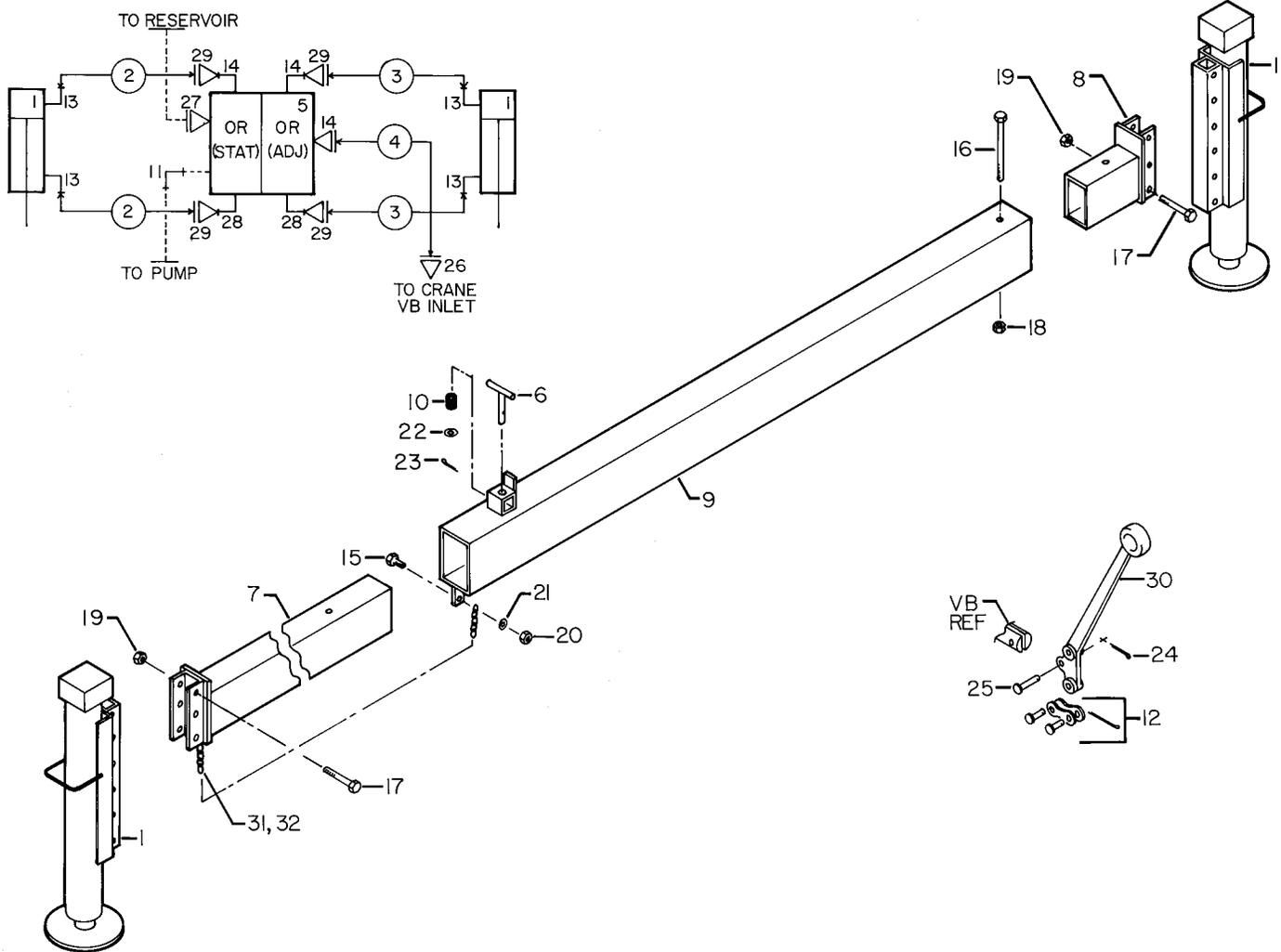
* Not a part of this assembly - shown for reference only.

* * Determined by carrier vehicle's transmission.



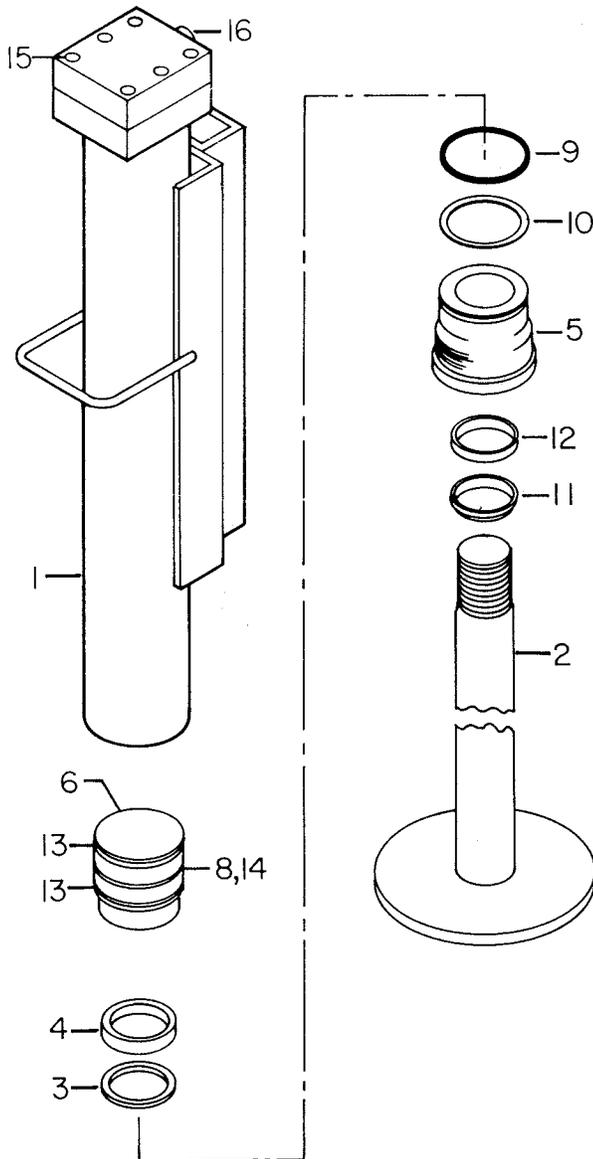
Item No.	Part No.	Description	Qty
1.	52070138	PIN, "T"	1
2.	52703334	TUBE	1
3.	52703351	ARM	1
4.	52703352	HOUSING, stationary	1
5.	52703353	LEG, outrigger	2
6.	60010351	SPRING	1
7.	71731361	PIN, quick-release	2
8.	72060105	SCREW; 1/2-13 x 7" hex hd.	1
9.	72062080	NUT, lock; 1/2-13	1
10.	72063007	WASHER, wrt.; 5/8"	1
11.	72066185	PIN, cotter; 1/16" x 1"	1

Figure D-21. Manual Outriggers (Part Number 31703350)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	3B061850	CYLINDER, power-down	2	18.	72062080	NUT, lock; 1/2-13	1
2.	51703596	HOSE; 1/4" ID x 120" lg.	2	19.	72062102	NUT, lock; 5/8-11	6
3.	51705191	HOSE; 1/4" ID x 96" lg.	2	20.	72062109	NUT, lock; 5/16-18	1
4.	51705377	HOSE; 3/8" ID x 48" lg.	1	21.	72063002	WASHER, wrt.; 5/16"	1
5.	51705739	VALVE BANK; 2-section	1	22.	72063007	WASHER, wrt.; 5/8"	1
6.	52070138	PIN "T"	1	23.	72066185	PIN, cotter	1
7.	52705725	ARM, adjustable	1	24.	72066336	PIN, cotter	2
8.	52705726	ARM, stationary	1	25.	72066337	PIN	2
9.	52705738	HOUSING	1	26.	72532357	ADAPTER; 9/16-18 str. thd.(m) x 3/4-16 JIC(m)	1
10.	60010351	SPRING	1	27.	72532366	ADAPTER; 1-1/16" str. thd.(m) x 1-1/16" JIC(m)	1
11.	60106322	ELBOW, pressure gauge	1	28.	72532666	ELBOW, extra-long 90°; 3/4-16 str. thd.(m) x 3/4-16 JIC(m)	2
12.	71058003	LINK, connecting	2	29.	72532665	ADAPTER; 7/16-20 JIC(m) x 3/4-16 JIC(f)	4
13.	72053758	ELBOW, 90°; 7/16-20 str. thd.(m) x 7/16-20 JIC(m)	4	30.	73014848	HANDLE, control valve	2
14.	72053763	ELBOW, 90°; 3/4-16 str. thd.(m) x 3/4-16 JIC(m)	3	31.	60108745	CHAIN	1
15.	72060026	SCREW; 5/16-18 x 1-1/4" hex hd.	1	32.	70058060	LINK, cold shut	1
16.	72060105	SCREW; 1/2-13 x 7" hex hd.	1				
17.	72060155	SCREW; 5/8-11 x 3-1/2" hex hd.	6				

Figure D-22. Power-Down Outriggers (Part Number 31705724)



Item No.	Part No.	Description	Qty
1.	4B061850	CASE, cylinder	1
2.	4H061850	ROD, cylinder	1
3.	6A025020	* RING, wafer-lock	1
4.	6C075020	TUBE, stop	1
5.	6H030020	HEAD	1
6.	6IX06185	PISTON	1
7.	7PNPXT02	PLUG; 1/8" npt (not shown)	4
8.	7Q072145	* O-RING	1
9.	7Q072334	* O-RING	1
10.	7Q10P334	* RING, back-up	1
11.	7R14P020	* WIPER, rod	1
12.	7R546020	* SEAL, rod	1
13.	7T651030	* RING, piston	2
14.	7T66P030	* SEAL, piston	1
15.	72060708	SCREW; 1/4-20 x 1-1/4" shcs	6
16.	73054004	VALVE, locking holding	1

* Part of seal kit (Part Number 9X061850)

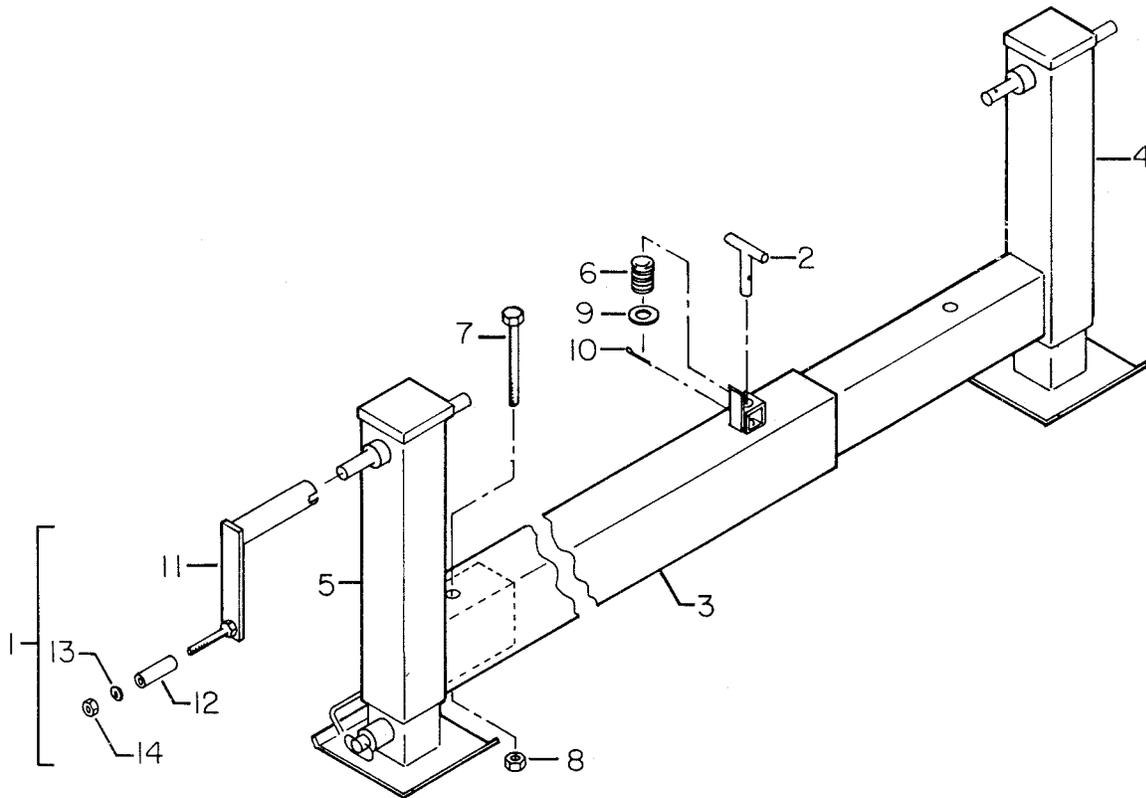
NOTE

Whenever the cylinder is disassembled, we strongly recommend replacing all of the components found in the seal kit. This may save expensive down-time in the near future. In addition, use NEVER-SEEZ between the head and case when assembling the cylinder.

DIMENSIONS

Bore	3"
Stroke	18"
C - C Closed	26-3/8"
Rod Diameter	2"

Figure D-23. Power-Down Outrigger Cylinder (Part Number 3B061850)



Item No.	Part No.	Description	Qty
1.	51705040	CRANK ASSEMBLY (includes items 11 thru 14)	1
2.	52070138	PIN, "T"	1
3.	52703334	TUBE	1
4.	52703355	OUTRIGGER, pull-out	1
5.	52703356	OUTRIGGER, stationary	1
6.	60010351	SPRING	1
7.	72060105	BOLT; 1/2-13 x 7"	1
8.	72062080	NUT, lock; 1/2-13	1
9.	72063007	WASHER, wrt.; 5/8"	1
10.	72066185	PIN, cotter; 1/16" x 1"	1
11.	52705039	CRANK (part of item 1)	1
12.	60030099	ROLLER (part of item 1)	1
13.	72063003	WASHER, wrt.; 3/8" (part of item 1)	2
14.	72062103	NUT, lock; 3/8-16 (part of item 1)	1

Figure D-24. Crank-Down Outriggers (Part Number 31703354)

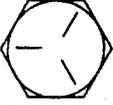
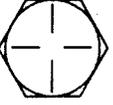
SPARE PARTS LIST

This spare parts list does not necessarily indicate that the items can be expected to fail in the course of a year. It is intended to provide the user with a stock of parts sufficient to keep the unit operating with no down-time waiting for parts. Obviously, there may be part failures not covered by this list.

The item numbers shown on this list correspond to those on the figure listed.

Figure No.	Item No.	Part No.	Description	Qty
D-5.	2.	60020114	BUSHING, top pinion gear	1
D-5.	3.	60020115	BUSHING, top drive gear	1
D-5.	4.	60020116	BUSHING, bottom drive gear	1
D-5.	5.	60020154	BUSHING, bottom pinion gear	1
D-5.	6.	71056011	GEAR, drive	1
D-5.	11.	60104694	SPACER, pinion gear	1
D-5.	12.	71056010	GEAR, pinion	1
D-5.	13.	71056012	GEAR, intermediate	1
D-5.	14.	71056062	GEAR-BEARING, turntable	1
D-5.	20.	72060151	SCREW; 5/8-11 x 2" gr. 8 hex hd.	24
D-5.	27.	72063119	WASHER, flat; 5/8" gr. 8	24
D-5.	29.	73051378	MOTOR, crane rotation	1
D-6.	7.	72060151	SCREW; 5/8-11 x 2" gr. 8 hex hd.	18
D-6.	9.	72063119	WASHER, flat, 5/8" gr. 8	18
D-7.	3.	7BF81215	BUSHING	4
D-7.	5.	60030115	PAD, wear	2
D-7.	6.	60030083	PAD, wear, dovetailed	1
D-8.	17.	73054304	VALVE, counter-balance; 10-GPM	1
D-8.	---	9C181823	KIT, seal, lower cylinder	1
D-11.	4.	60030016	PAD, wear	1
D-11.	9.	70055024	BEARING, roller	1
D-11.	10.	70055025	RACE, inner bearing	1
D-12.	15.	73054004	VALVE, locking holding	1
D-12.	---	9C121617	KIT, seal, extension cylinder	1
D-13.	8.	60108116	CABLE	1
D-13.	9.	70055117	BEARING, flange block	1
D-13.	13.	71073035	HOOK	1
D-13.	14.	71073920	HOOK	1
D-13.	26.	73051433	MOTOR, winch	1
D-16.	19.	73054487	RESTRICTOR, flow	1
D-16.	20.	73073772	VALVE BANK	1
D-17.	1.	73054077	VALVE SECTION	1
D-18.	19.	77041258	SWITCH, pressure.	1
D-19.	12.	77041004	SWITCH, toggle, SPST	2
D-19.	13.	77041006	SWITCH, toggle, SPDT	4
D-19.	14.	77041023	SWITCH, pushbutton	1
D-20.	13.	70048031	GAUGE, vacuum.	1
D-23.	16.	73054004	VALVE, holding	1
D-23.	---	9X061850	KIT, seal, outrigger cylinder	2
----	----	73052006	ELEMENT, return filter	3
----	----	73052014	ELEMENT, suction filter	3

TORQUE DATA CHART

GRADE BOLT	SAE J429 GRADE 2	SAE J429 GRADE 5	SAE J429 GRADE 7	SAE J429 GRADE 8				
MARKING								
MATERIAL AND TREATMENT	Low or Medium Carbon Steel	Medium Carbon Steel Q & T	Medium Carbon Alloy Steel Q & T	Medium Carbon Alloy Steel Q & T				
MINIMUM TENSILE STRENGTH	74,000 psi*	120,000 psi	133,000 psi	150,000 psi				
RECOMMENDED TORQUE VALUE IN Ft.-Lbs.								
BOLT SIZE	Coarse Thread	Fine Thread	Coarse Thread	Fine Thread	Coarse Thread	Fine Thread	Coarse Thread	Fine Thread
1/4"	5	5	7	8	9	10	10	12
5/16"	10	11	15	16	18	20	21	23
3/8"	17	19	26	30	32	37	37	42
7/16"	27	30	42	47	52	58	60	66
1/2"	41	47	64	72	79	89	90	102
9/16"	60	67	93	103	114	127	130	146
5/8"	82	94	128	145	157	179	180	204
3/4"	147	163	226	253	280	312	320	357
7/8"	141*	156*	365	403	451	496	515	568
1"	213*	233*	547	599	676	740	772	846

*Minimum tensile strength of 7/8" and 1" grade 2 bolts is 60,000 PSI instead of 74,000 PSI.

In using the torque data above, the following rules should be observed:

1. Bolt manufacturer's particular specifications should be consulted when provided.
2. All torque values are given in ft.-lbs. To convert these values to in.-lbs., multiply by 12.
3. Flat washers of equal bolt strength must be used.
4. The torque values in the table apply to:
 - A. Black finished fasteners with residual oil, giving a torque coefficient of friction (K) of approximately 0.17.
 - B. Fastener clamp load after torquing is equal to 75% of fastener proof load.

WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing serious injury or death.