

**Volume 2
Parts and Specifications
Model 8031 Crane**

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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. INSPECTION & TEST REPORT
- SECTION 5. INSTALLATION - CHASSIS PREPARATION
- SECTION 6. 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 articulating 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 B30.5A-1984
ARTICULATING BOOM 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 very 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.

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Section 1. SPECIFICATIONS

1-1. GENERAL

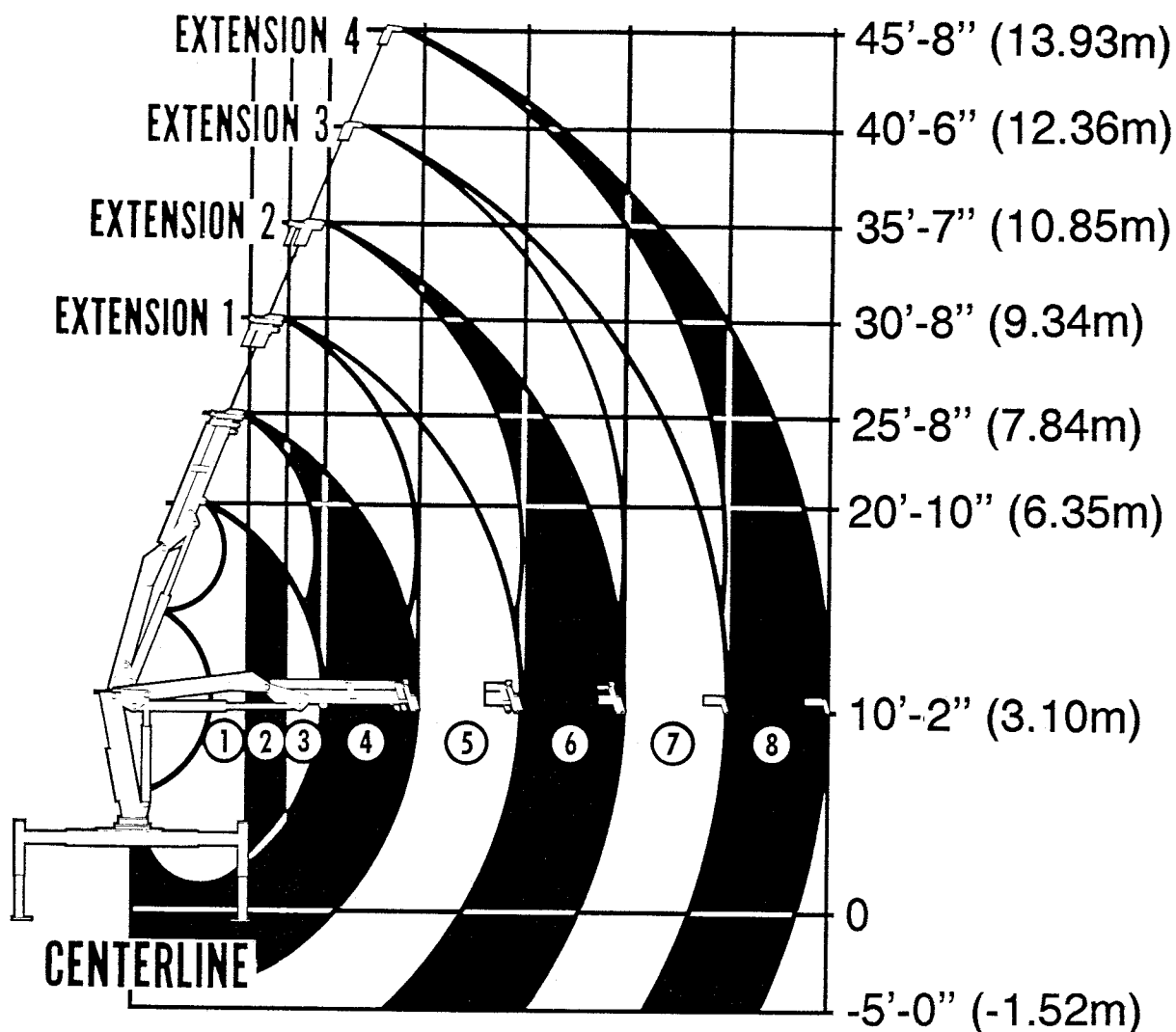
	19' (1 H) (Optional)	25' (2H) (Optional)	31' (2H1M or 3H) (Standard)	36' (2H2M or 3H1M) (Optional)
CRANE RATING	80,000 ft-lbs (11.06 ton-m)	80,000 ft-lbs (11.06 ton-m)	80,000 ft-lbs (11.06 ton-m)	80,000 ft-lbs (11.06 ton-m)
REACH (from centerline of rotation)	19'-8" (5.99m)	25'-7" (7.80m)	31'-3" (9.53m)	36'-7" (11.15 m)
HYDRAULIC EXTENSION				
1-STAGE HYDRAULIC (1H)	64" (162.6cm)	---	---	---
2-STAGE HYDRAULIC (2H)	---	64" x 2 (162.6cm x 2)	64" x 2 (162.6cm x 2)	64" x 2 (162.6cm x 2)
3-STAGE HYDRAULIC (3H)	---	---	64" x 3 (162.6cm x 3)	64" x 3 (162.6cm x 3)
MANUAL EXTENSION				
2-STAGE HYDRAULIC (2H)	---	---	64" (162.6cm)	64" x 2 (162.6cm x 2)
3-STAGE HYDRAULIC (3H)	---	---	---	64" (162.6cm)
* LIFTING HEIGHT	29-9" (9.07m)	35'-3" (10.75m)	40'-6" (12.35m)	45'-8" (13.92 m)
CRANE WEIGHT	4095 lbs (1857 kg)	4380 lbs (1987 kg)	4510 lbs (2H1M) (2048 kg) 4650 lbs (3H) (2110 kg)	4585 lbs (2H2M) (2080 kg) 4715 lbs (3H1M) (2139 kg)
OUTRIGGER SPAN	12'-3" (3.73m)	12'-3" (3.73m)	12'-3" (3.73m)	12'-3" (3.73m)
CRANE STORAGE HEIGHT	96" (243.8cm)	96" (243.8cm)	96" (243.8cm)	96" (243.8cm)
** MOUNTING SPACE REQD	30" (76.2cm)	30" (76.2cm)	30" (76.2cm)	30" (76.2cm)
OPTIMUM PUMP CAPACITY	11 U.S. GPM (41.6 liters/min)	11 U.S. GPM (41.6 liters/min)	11 U.S. GPM (41.6 liters/min)	11 U.S. GPM (41.6 liters/min)
OIL RESERVOIR CAPACITY	20 U.S. gallons (76 liters)	20 U.S. gallons (76 liters)	20 U.S. gallons (76 liters)	20 U.S. gallons (76 liters)
*** VERTICAL CENTER OF GRAVITY (From Crane Base)	27-1/4" (69.2cm)	27-1/2" (69.8cm)	27-3/4" (70.5cm)	28" (71.1cm)
*** HORIZONTAL CENTER OF GRAVITY (From Centerline Of Rotation)	3/4" (1.9cm)	1/2" (1.3cm)	3/8" (0.9cm)	1/4" (0.6cm)
DESIGN FACTOR (Pins and Hydraulics)	4/1	4/1	4/1	4/1

* Based on 38" (97 cm.) truck chassis frame height.

** Allow 5" (13 cm.) between the truck cab and crane base for swing clearance.

*** Crane in the stowed position.

1-2. LIFTING CAPACITY (from centerline of rotation)



RANGE	19' (1H) REACH	CAPACITY	25' (2H) REACH	CAPACITY	31' (2H1M or 3H) REACH	CAPACITY	36' (2H2M or 3H1M) REACH	CAPACITY
①	6'-0" (1.83m)	*13,000 LBS *(5897 KG)	6'-0" (1.83m)	*13,000 LBS *(5897 KG)	6'-0" (1.83m)	*13,000 LBS *(5897 KG)	6'-0" (1.83m)	*13,000 LBS *(5897 KG)
②	8'-0" (2.44m)	10,000 LBS (4536 KG)	8'-0" (2.44m)	10,000 LBS (4536 KG)	8'-0" (2.44m)	10,000 LBS (4536 KG)	8'-0" (2.44m)	10,000 LBS (4536 KG)
③	10'-0" (3.05m)	8000 LBS (3629 KG)	10'-0" (3.05m)	8000 LBS (3629 KG)	10'-0" (3.05m)	8000 LBS (3629 KG)	10'-0" (3.05m)	8000 LBS (3629 KG)
④	14'-4" (4.37m)	5700 LBS (2586 KG)	14'-11" (4.55m)	5400 LBS (2449 KG)	15'-3" (4.65m)	5200 LBS (2359 KG)	15'-3" (4.65m)	5100 LBS (2313 KG)
⑤	19'-8" (5.99m)	4000 LBS (1814 KG)	20'-3" (6.17m)	3800 LBS (1724 KG)	20'-7" (6.27m)	3600 LBS (1633 KG)	20'-7" (6.27m)	3500 LBS (1587 KG)
⑥	---	---	25'-7" (7.80m)	2900 LBS (1315 KG)	25'-11" (7.90m)	2800 LBS (1270 KG)	25'-11" (7.90m)	2700 LBS (1225 KG)
⑦	---	---	---	---	31'-3" (9.53m)	2100 LBS (953 KG)	31'-3" (9.53m)	2000 LBS (907 KG)
⑧	---	---	---	---	---	---	36'-7" (11.15m)	1500 LBS (680 KG)

* ORDER OPTION HOOK - IMT PART NUMBER 70073725)

Figure A-1. Capacity Chart

1-3. PERFORMANCE CHARACTERISTICS

Rotation: 370° (6.46 rad.)	30 seconds
Inner Boom Elevation: -52° to +75° (-0.91 rad. to +1.31 rad.)	24 seconds
Outer Boom Articulation: 139° (2.43 rad.)	23 seconds
Telescopic Extension Cylinder (3-Stage Hydraulic):	
1st Stage - 64" (162.6cm)	30 seconds
2nd Stage - 64" (162.6cm)	15 seconds
3rd Stage - 64" (162.6cm)	8 seconds
Telescopic Extension Cylinder (2-Stage Hydraulic):	
1st Stage - 64" (162.6cm)	21 seconds
2nd Stage - 64" (162.6cm)	9 seconds
Extension Cylinder (Single-Stage):	
64" (162.6cm)	12 seconds
Power Down Outrigger Extension:	
24" (61.0cm)	7 seconds
Optional Power Out Outrigger Extension:	
26" (66.0cm)	3 seconds

1.4 CYLINDERS

Inner Boom Cylinder	Bore	Stroke
Outer Boom Cylinder	4" (10.2cm)	35-3/4" (90.8cm)
Telescopic Extension Cylinder (3-Stage Hydraulic)	5" (12.7cm)	44-3/8" (112.7cm)
1st Stage	5" (12.7cm.)	64" (162.6cm)
2nd Stage	3-1/2" (8.9cm)	64" (162.6cm)
3rd Stage	2-1/2" (6.4cm)	64" (162.6cm)
Telescopic Extension Cylinder (2-Stage Hydraulic)		
1st Stage	4" (10.2cm)	64" (162.6cm)
2nd Stage	2-1/2" (6.4cm)	64" (162.6cm)
Extension Cylinder (Single-Stage)	3" (7.6cm)	64" (162.6cm)
Power Down Outrigger Cylinder	2-1/2" (6.4cm)	24" (61.0cm)
Optional Power Out Outrigger Cylinder	1-1/4" (3.2cm)	26" (66.0cm)

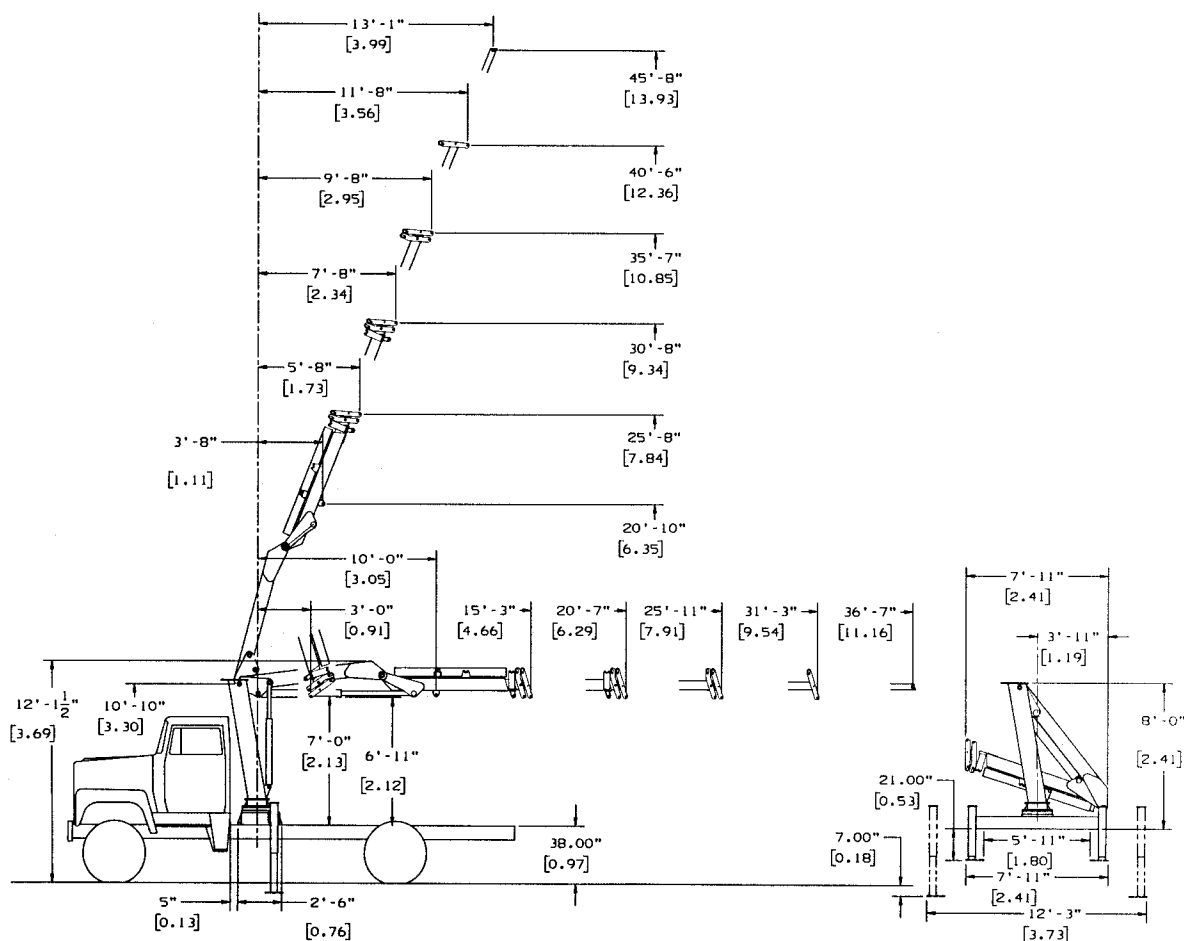


Figure A-2. Geometric Configuration

1-5. POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 19 horsepower.

1-6. CYLINDER HOLDING VALVES

The holding sides of all standard cylinders are equipped with integral-mounted holding or counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure. The outrigger cylinders have positive, pilot-operated holding valves that open only on command.

The inner, outer and extension cylinders have pilot-operated counter balance valves. 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.

1-7. ROTATION SYSTEM

Rotation of the crane is accomplished through a turntable bearing, powered by a high torque hydraulic motor through a ring and pinion type spur gear train. Total gear reduction is 50.7:1.

1-8. HYDRAULIC SYSTEM

The hydraulic system is an open centered, full pressure system, requiring 11 gpm (41.6 liters/min) optimum oil flow, at 2500 psi (175.7 kg/cm²). Eight -spool, stack-type control valve, six of which are used for the standard crane and the remaining two are plugged, but easily adapted for additional optional features. Dual operational handles for six functions are located at both sides of crane for convenient operation. System includes hydraulic oil reservoir, suction-line filter, pump, 8-section control valve, return-line filter and all hoses and fittings.

1-9. MINIMUM CHASSIS SPECIFICATIONS

Body Style	Conventional Cab	Conventional Cab
Wheelbase	189"	(480.1cm)
Cab-to-axle	120"	(304.8cm)
Frame Section Modulus	22 in ³	(360 cc)
RBM	1,100,000 in-lbs	(12,674 kg-m)
Front Axle Rating	10,000 lbs	(4,536 kg)
Rear Axle Rating	18,500 lbs	(8391.6 kg)
Transmission	5 speed	5 speed
* Minimum Finished Unit Weight To Maintain Full Stability:		
Front Axle	7,800 lbs	(3,538 kg)
Rear Axle	9,200 lbs	(4,173 kg)
Total Finished Unit Weight	17,000 lbs	(7,711 kg)

* Allows lifting full capacity loads in a 180° (3.14 Rad.) arc around rear of vehicle from outrigger to outrigger, when the crane is installed immediately behind the cab. If lifting is to be done over the front of the vehicle, then auxiliary outriggers are recommended.

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. IMT reserves the right to change specifications and design without notice. (12/90)

Section 2. CRANE DESCRIPTION

2-1. GENERAL

This section describes the major assemblies that are available with this crane. Figure B-1 illustrates the locations of the assemblies.

There are four different models covered in this manual. They are the 8031-19' with one hydraulic extension, the 8031-25' with two hydraulic extensions, the 8031-31' with two hydraulic and one manual or three hydraulic extensions, and the 8031-36' with two hydraulic and two manual or three hydraulic and one manual extension. The 8031-31' is considered to be the standard crane model with the other models offered as optional cranes. The differences are discussed in paragraph 2-6.

2-2. BASE

The base provides a platform for mounting the crane to a truck. It incorporates the 370 degrees (6.46 Rad.) rotation mechanism and outriggers. The outriggers are powered through double acting hydraulic cylinders, and provide stabilization during crane operation.

2-3. MAST

The mast provides the necessary elevation for crane operation as well as a hinge point for the inner boom. The mast consists of two vertical tubes welded to the base to allow the crane to fold into the figure-4 configuration for travel.

2-4. INNER BOOM

The inner boom will swing through a full 127° (2.22 Rad.) from -52° to +75° (-0.91 to +1.31 Rad.). It is raised and lowered through the use of twin double-acting hydraulic cylinders.

2-5. OUTER BOOM

The outer boom will swing through a full 139° (2.43 Rad.). The boom is raised and lowered with a single double-acting hydraulic cylinder mounted under the inner and outer hinge point. It also provides storage for the extension booms in the retracted position.

2-6. EXTENSION BOOMS

The differences between the 8031-19', 8031-25', 8031-31' and 8031-36' cranes are in the extension booms. The 8031-19' crane uses a one-stage hydraulic extension for an additional 64" (1.63m) of reach. The 8031-25' uses a 2-stage hydraulic extension for an additional 64" (1.63m) of reach for each stage for a total of 128" (3.25m). The 8031-31' uses a 2-stage telescoping hydraulic extension cylinder for an additional 128" (3.25m) of reach, plus a 1-stage manual extension for another 64" (1.63m) of reach or a three-stage hydraulic extension cylinder providing 64" (1.63m) of addition reach for each stage, a total of 16' (4.88m). The 8031-36' is identical to the 8031-31' with the addition of a 64" (1.63m) manually operated extension boom.

2-7. CONTROLS

The eight section control valve may be operated from either side of the crane. The crane functions utilize six sections, leaving two sections plugged, but easily adaptable, for additional functions.

2-8. HYDRAULICS

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

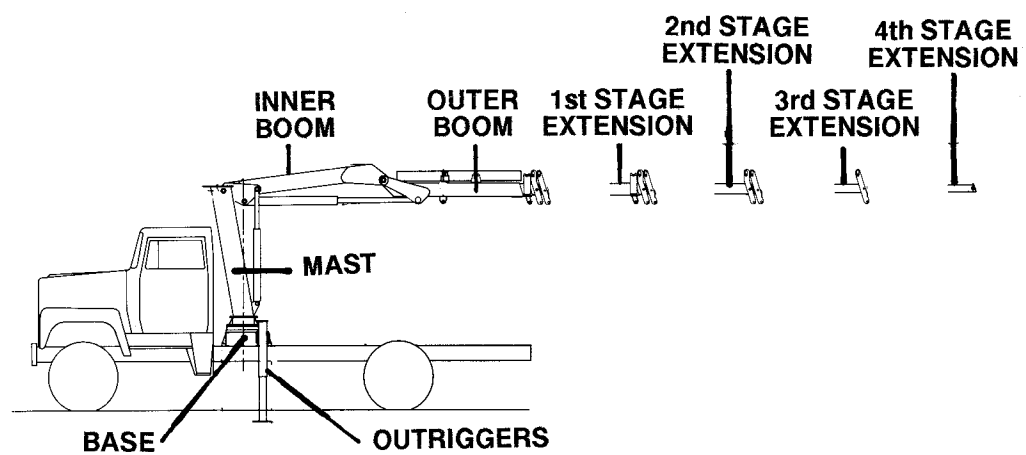


Figure B-1. 8031 Crane Group

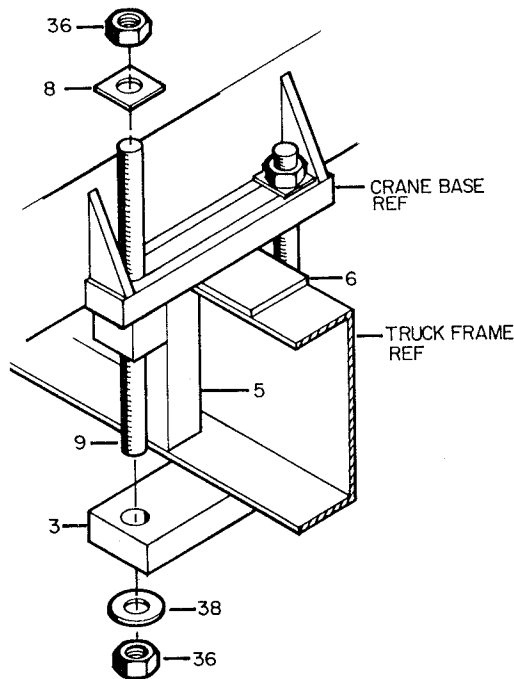
Section 3. INSTALLATION

3-1. GENERAL

This section contains specific instructions for the installation of your crane. Prior to installing the crane and hydraulic components, make sure the chassis is ready to receive the crane (refer to VOLUME 1, Installation).

3-2. CRANE MOUNTING

1. See SPECIFICATIONS in Section 1 for crane weight. Using an overhead hoist and fabric slings of adequate capacity, lift the crane about a foot to see if the crane is adequately balanced. If not, lower hoist and adjust slings. Re-check balance and re-position crane until mounting surface is level.
2. Install the truck frame support so that the tie-down studs pass through the supports (Figure C-1). Cut the support to the inside dimensions of the truck frame. Allow about 1/16" extra. Grind the end of the support to fit inside the frame channel. Use a hammer to drive it into position if necessary.



ITEM	DESCRIPTION	QTY
3.	CLAMP PLATE	4
5.	FRAME SUPPORT	4
6.	SPACER	2
8.	SQUARE WASHER	8
9.	TIE DOWN STUD	8
36.	LOCK NUT	16
38.	WASHER	8

3. Position one bar on top of each frame rail where crane will be located, allowing sufficient clearance between the cab and crane base, at least 5" (12.7cm). Position the crane on the chassis per the applicable installation drawing, centering the mounting slots over the truck frame rails. While holding crane with hoist, start mounting hardware per Figure C-1. Note position of support weldments on truck frame. Hand tighten nuts. Observe underside of crane base. No clearance between base and frame bars is allowed. Grind bar on frame rails to eliminate clearance.

4. Torque the 1"-8 UNC Grade 5 mounting hardware to 442 ft-lbs (62 kg-m). When torquing the mounting hardware the following precautions must be followed:

A. Never use lock washers.

B. Hardened washers must be used, and under the turning element, whether the turning element is the nut or the head of the bolt.

C. Torque values specified are with residual oils or without special lubricants applied to the threads. If special lubricants are used, such as Never-Seize compound graphite and oil, molybdenum disulphite colloidal copper or white lead, reduce torque values 10%. Torque values for threaded fasteners are not affected with the use of Loctite.

D. Do not use rusty fasteners, the rust will alter torque values significantly.

E. Touch-up paint around mounting anchor plates.

CAUTION

Do not attempt to apply the same torque to the tie rod and self-locking nuts as shown in the Torque Data Chart. Do not exceed 442 ft. lbs. (62 kg-m). Exceeding this torque value could damage either the chassis or crane base.

Power wrenching is not recommended until the lead thread of the nut insert is engaged by hand turning.

Figure C-1. CRANE INSTALLATION

3-3. HYDRAULIC INSTALLATION

To install the hydraulic hoses, fittings, etc.:

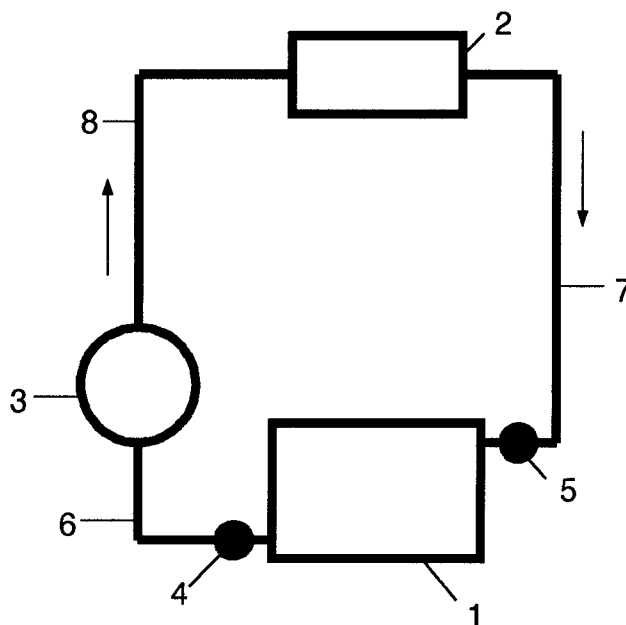
1. Install the hydraulic reservoir on the crane base.
2. Plumb the suction-line filter as shown in Figure C-1.
3. Install the suction hose between the suction-line filter and the pump inlet. Tighten the hose clamps.
4. Install the pressure hoses between the pump outlet and the inlet port on the valve bank.
5. Install the return filter and gate valve on the reservoir. Install the hose between the valve bank and return filter.
6. Fill the hydraulic reservoir to the "FULL" mark.

7. Open the gate valve at the suction-line filter.

CAUTION

Failure to open the gate valve will result in a dry running pump which may damage the pump.

8. Open the return gate valve.
9. Start the vehicle's engine and engage the PTO. Allow the system to run for about five minutes and then check the vacuum gauge on the suction-line filter (it should read 8" mercury or less). If the vacuum reading is too high, check to make certain that the gate valve is opened completely. If the valve is fully opened, check for a collapsed or restricted suction line.
10. Cycle all hydraulic functions. Check for leaks, and refill the reservoir if necessary.



ITEM	DESCRIPTION
1.	OIL RESERVOIR
2.	VALVE BANK
3.	PUMP
4.	SUCTION FILTER
5.	RETURN FILTER
6.	SUCTION HOSE
7.	RETURN HOSE
8.	PRESSURE HOSE

Figure C-2. 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, INJURY OR DEATH.

4-2. CRANE IDENTIFICATION

Every crane has an identification placard (Figure D-1) attached to the mast. 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 addressed to:

Iowa Mold Tooling Company, Inc.
Box 189, Garner, IA 50438-0189
Telephone: 515-923-3711
Product Support Fax: 515-923-3674

or

IMT Cranes Canada, Ltd.
385 West Street South
Orillia, Ontario L3V 5H2 Canada
Telephone: 705-325-7458
Fax: 705-325-7625

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

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-2) against the information contained in this manual. You must use the part number stamped on the cylinder case when ordering parts.

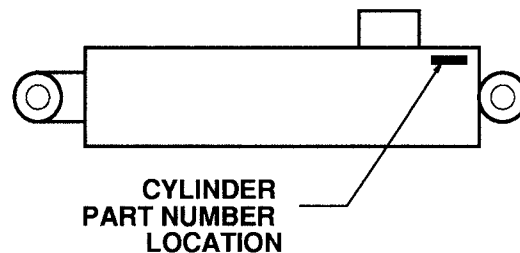


Figure D-2. CYLINDER PART NUMBER LOCATION

4-4. WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, inner boom, outer 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-3.

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.

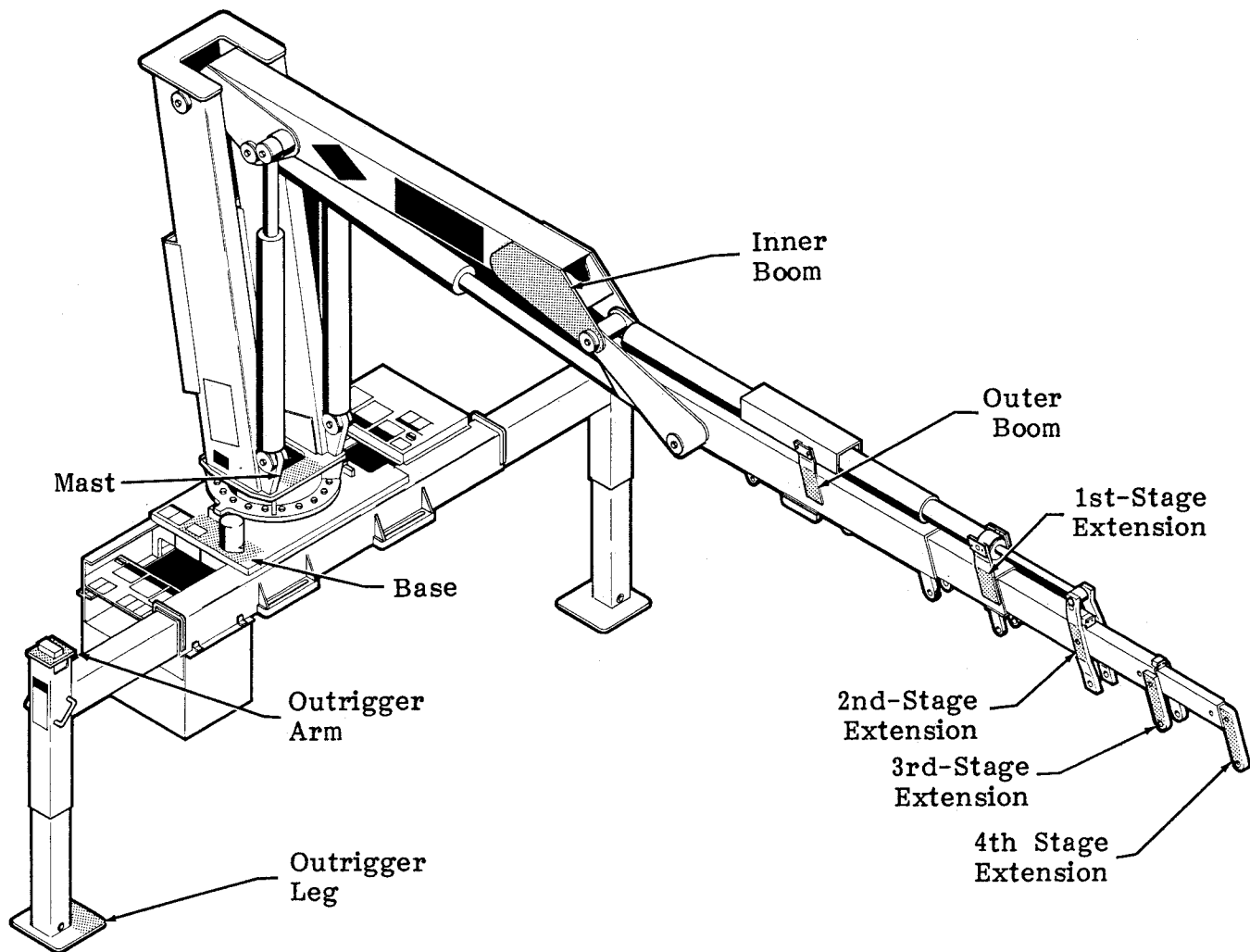


Figure D-3. WELDMENT PART NUMBER LOCATIONS

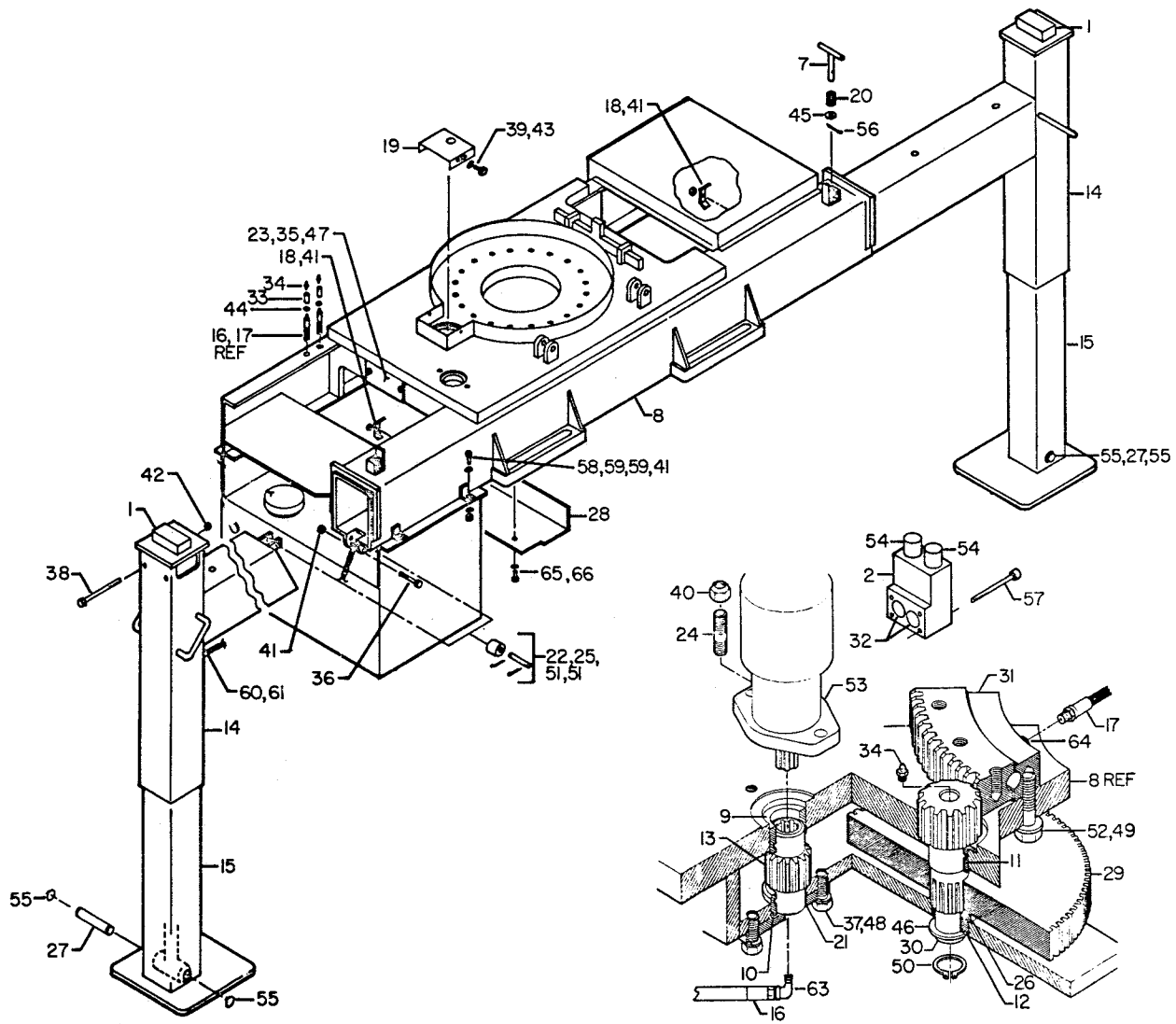
ITEM	PART NO.	DESCRIPTION	QTY
1.	3B221850	OUTRIGGER CYLINDER	2
2.	5V151830	MOTOR BLOCK	1
3.	70732578	RESERVOIR ASM	1
7.	52070138	"T"-PIN	2
8.	52705868	BASE (INCL:9-13)	1
9.	60020115	BUSHING (PART OF 8)	1REF
10.	60020116	BUSHING (PART OF 8)	1REF
11.	60020187	BUSHING (PART OF 8)	1REF
12.	60020188	BUSHING (PART OF 8)	1REF
13.	71056011	DRIVE GEAR (PART OF 8)	1REF
14.	52706167	OUTRIGGER ARM	2
15.	52705871	OUTRIGGER LEG	2
16.	53000703	GREASE EXTENSION 20"	1
17.	53000713	GREASE EXTENSION 38"	1
18.	60107648	HOSE CLAMP	2
19.	60010235	PINION COVER	1
20.	60010351	SPRING	2
21.	60010844	GREASE PLATE	1
22.	60030053	ROLLER	4
23.	60102767	ACCESS COVER	1
24.	60106032	STUD 1/2-13 X 2	2
25.	60106314	PIN	4
26.	60106886	PINION SPACER	1
27.	60106968	PIN	2
28.	60108888	INTERMEDIATE GEAR GUARD	1
29.	71056072	INTERMEDIATE GEAR	1
30.	71056265	PINION GEAR	1
31.	71056361	TURNTABLE BEARING	1
32.	7Q072112	O-RING	2
33.	72053301	COUPLING 1/8NPT	2
34.	72053508	ZERK 1/8NPT	3
35.	72060002	CAP SCR 1/4-20X3/4 HH GR5	2
36.	72060053	CAP SCR 3/8-16X2-3/4 HH GR5	2
37.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	2
38.	72060102	CAP SCR 1/2-13X5-1/2 HH GR5	4
39.	72060833	SCR 5/16-18X3/4 HH SLFTPG	2
40.	72062080	NUT 1/2-13 LOCK	2
41.	72062103	NUT 3/8-16 LOCK	8
42.	72062107	NUT 1/2-13 CTR LOCK	4
43.	72063002	WASHER 5/16 WRT	2
44.	72063003	WASHER 3/8 WRT	2
45.	72063027	MACH BUSHING 5/8X14GA	2
46.	72063039	MACH BUSHING 2 X 10GA NR	1
47.	72063049	WASHER 1/4 LOCK	2
48.	72063053	WASHER 1/2 LOCK	2
49.	72063116	WASHER 3/4 HARDENED	20
50.	72066095	RETAINING RING 2" EXT STD	1
51.	72066178	COTTER PIN 1/8 X 1	8
52.	72601295	CAP SCR 3/4-10X3-1/2 HH GR8	20
53.	73051004	MOTOR	1
54.	73054470	VALVE CARTRIDGE	2
55.	72066125	RETAINING RING 1" EXT HD	4
56.	72066185	COTTER PIN .16 X 1	2
57.	72060738	CAP SCR 5/16-18X2-1/2 SH	4
58.	72060046	CAP SCR 3/8-16X1 HH GR5	4
59.	72063003	WASHER 3/8 WRT	8
60.	60108883	CHAIN	2
61.	70058060	COLD-SHUT LINK	2
63.	72053281	STREET ELBOW 1/8NPT	1
64.	72531826	REDUCER BUSHING 1/4-1/8NPT	1
65.	72060023	CAP SCR 5/16-18X3/4 HH GR5	2
66.	72063050	WASHER 5/16 LOCK	2

WARNING

ANYTIME A GEAR-BEARING BOLT IS REMOVED, IT MUST BE REPLACED WITH A NEW BOLT OF THE IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO FATIGUE, CAUSING SERIOUS INJURY OR DEATH.

SEE PAGE 4-4 FOR DRAWING

Figure D-4. BASE AND MANUAL OUTRIGGER ASSEMBLY (41705842)



SEE PAGE 4-3 FOR PARTS LIST

Figure D-4A. BASE AND MANUAL OUTRIGGER ASSEMBLY (41705842)

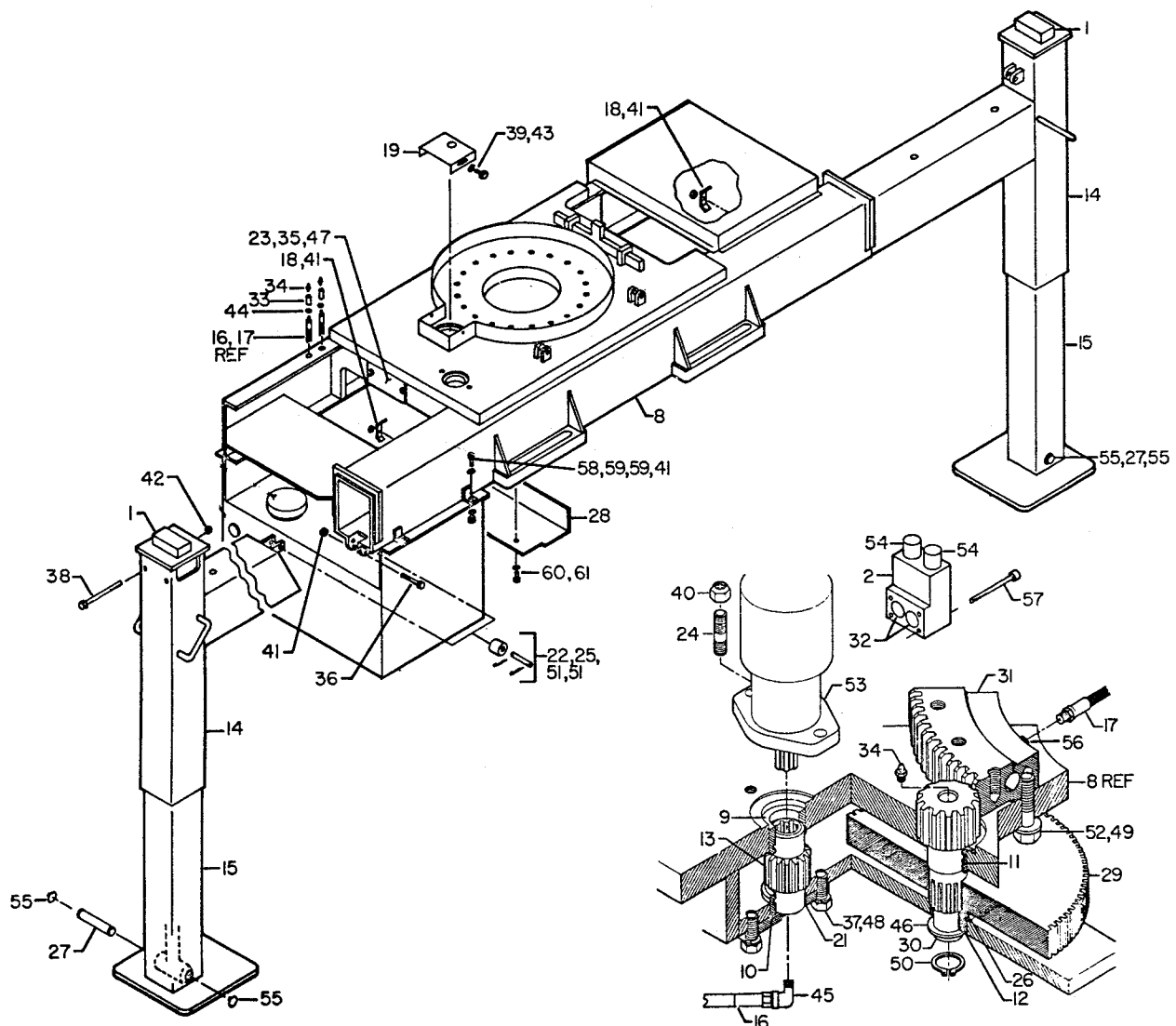
ITEM	PART NO.	DESCRIPTION	QTY
1.	3B221850	OUTRIGGER CYLINDER	2
2.	5V151830	MOTOR BLOCK	1
3.	70732578	RESERVOIR ASM	1
8.	52706166	BASE (INCL:9-13)	1
9.	60020115	BUSHING (PART OF 8)	1REF
10.	60020116	BUSHING (PART OF 8)	1REF
11.	60020187	BUSHING (PART OF 8)	1REF
12.	60020188	BUSHING (PART OF 8)	1REF
13.	71056011	DRIVE GEAR (PART OF 8)	1REF
14.	52706167	OUTRIGGER ARM	2
15.	52705871	OUTRIGGER LEG	2
16.	53000703	GREASE EXTENSION 20"	1
17.	53000713	GREASE EXTENSION 38"	1
18.	60107648	HOSE CLAMP	2
19.	60010235	PINION COVER	1
21.	60010844	GREASE PLATE	1
22.	60030053	ROLLER	4
23.	60102767	ACCESS COVER	1
24.	60106032	STUD 1/2-13 X 2	2
25.	60106314	PIN	4
26.	60106886	PINION SPACER	1
27.	60106968	PIN	2
28.	60108888	INTERMEDIATE GEAR GUARD	1
29.	71056072	INTERMEDIATE GEAR	1
30.	71056265	PINION GEAR	1
31.	71056361	TURNTABLE BEARING	1
32.	7Q072112	O-RING	2
33.	72053301	COUPLING 1/8NPT	2
34.	72053508	ZERK 1/8NPT	3
35.	72060002	CAP SCR 1/4-20X3/4 HH GR5	2
36.	72060053	CAP SCR 3/8-16X2-3/4 HH GR5	2
37.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	2
38.	72060102	CAP SCR 1/2-13X5-1/2 HH GR5	4
39.	72060833	SCR 5/16-18X3/4 HH SLFTPG	2
40.	72062080	NUT 1/2-13 LOCK	2
41.	72062103	NUT 3/8-16 LOCK	8
42.	72062107	NUT 1/2-13 CTR LOCK	4
43.	72063002	WASHER 5/16 WRT	2
44.	72063003	WASHER 3/8 WRT	2
45.	72053281	STREET ELBOW 1/8NPT	1
46.	72063039	MACH BUSHING 2 X 10GA NR	1
47.	72063049	WASHER 1/4 LOCK	2
48.	72063053	WASHER 1/2 LOCK	2
49.	72063116	WASHER 3/4 HARDENED	20
50.	72066095	RETAINING RING 2" EXT STD	1
51.	72066178	COTTER PIN 1/8 X 1	8
52.	72601295	CAP SCR 3/4-10X3-1/2 HH GR8	20
53.	73051004	MOTOR	1
54.	73054470	VALVE CARTRIDGE	2
55.	72066125	RETAINING RING 1" EXT HD	4
56.	72531826	REDUCER BUSHING 1/4-1/8NPT	1
57.	72060738	CAP SCR 5/16-18X2-1/2 SH	4
58.	72060046	CAP SCR 3/8-16X1 HH GR5	4
59.	72063003	WASHER 3/8 WRT	8
60.	72060023	CAP SCR 5/16-18X3/4 HH GR5	2
61.	72063050	WASHER 5/16 WRT	2

WARNING

ANYTIME A GEAR-BEARING BOLT IS REMOVED, IT MUST BE REPLACED WITH A NEW BOLT OF THE IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO FATIGUE, CAUSING SERIOUS INJURY OR DEATH.

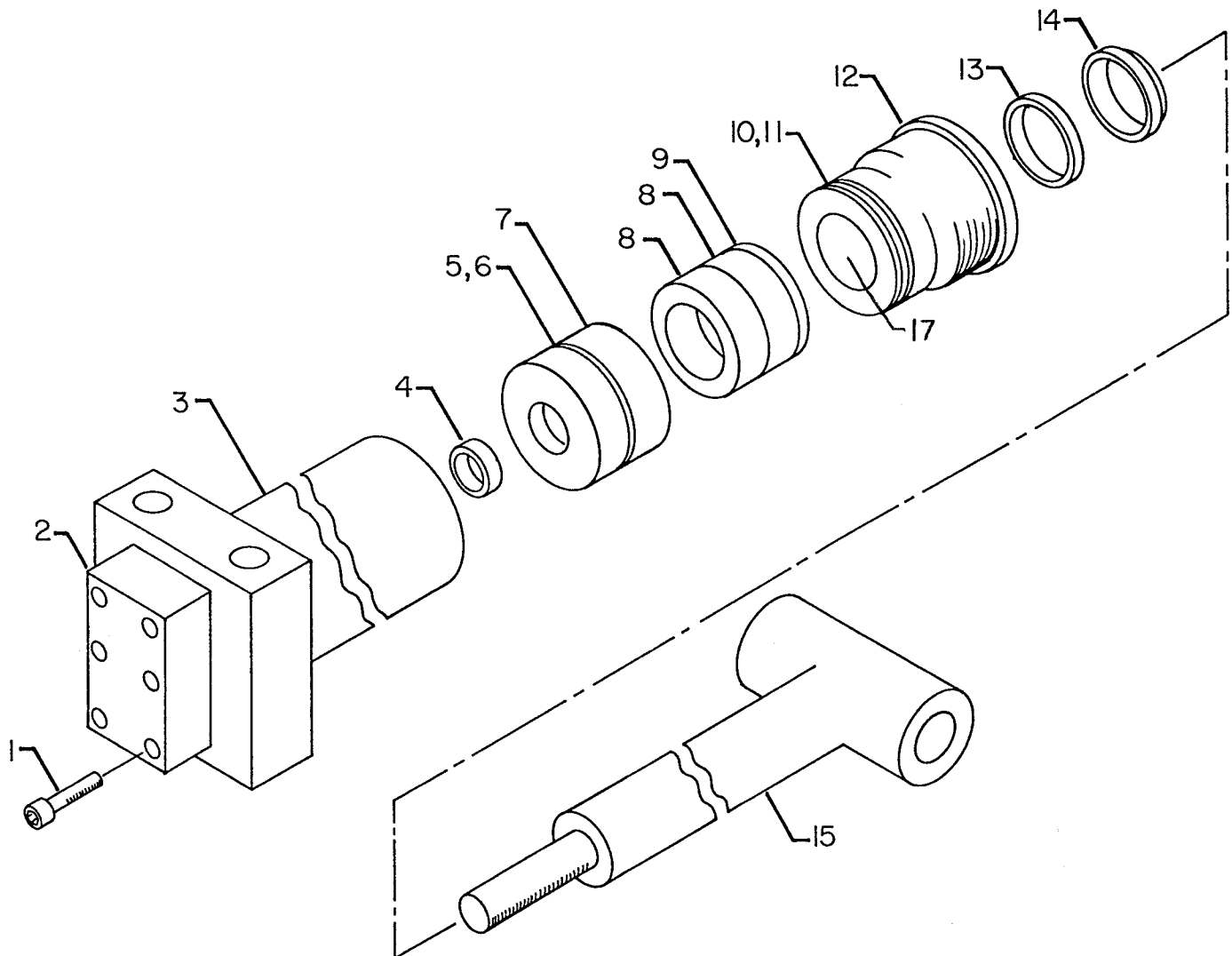
SEE PAGE 4-6 FOR DRAWING

Figure D-5. BASE AND POWER OUTRIGGER ASSEMBLY (41706165)



SEE PAGE 4-5 FOR PARTS LIST

Figure D-5A. BASE AND MANUAL OUTRIGGER ASSEMBLY (41706165)



DIMENSIONS

Bore	2-1/2
Stroke	24
C-C Closed	33-3/8
Rod diameter	1-1/2
Pin diameter	1

NOTE

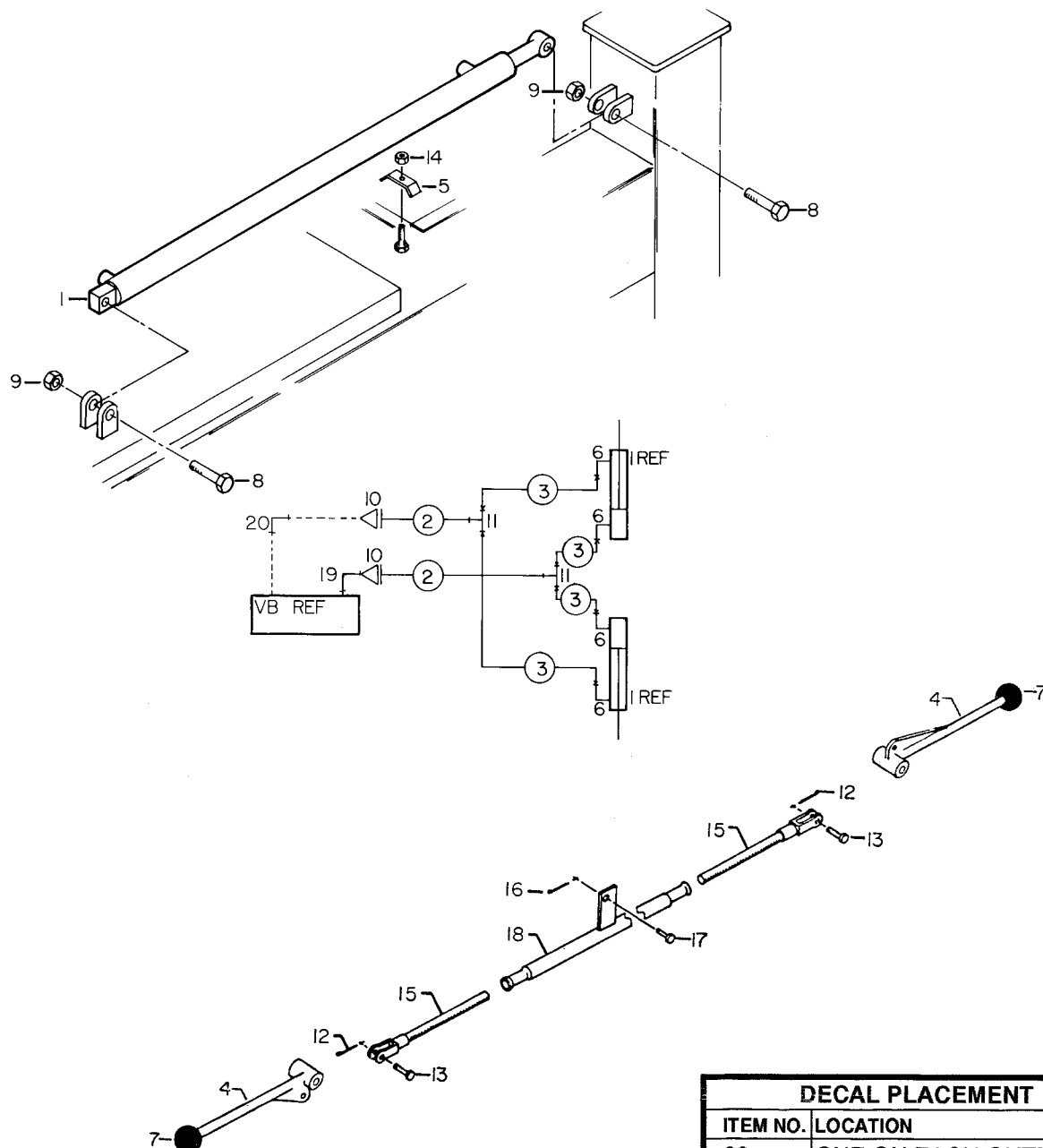
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

ITEM	PART NO.	DESCRIPTION	QTY
1.	72060708	CAP SCR 1/4-20 X 1 1/4 SH	6
2.	73054004	LOCKING/ HOLDING VALVE	1
3.	4B221850	CASE	1
4.	7T61N087	LOCK RING SEAL (PART OF 16)	1REF
5.	7Q072137	O-RING (PART OF 16)	1REF
6.	7T66P025	SEAL, PISTON (PART OF 16)	1REF
7.	6I025087	PISTON	1
8.	6C075015	STOP TUBE	2
9.	6A025015	WAFER LOCK (PART OF 16)	1REF
10.	7Q072228	O-RING (PART OF 16)	1REF
11.	7Q10P228	BACK-UP RING (PART OF 16)	1REF
12.	6H025015	HEAD	1
13.	7R546015	ROD SEAL (PART OF 16)	1REF
14.	7R14P015	ROD WIPER (PART OF 16)	1REF
15.	2G221850	ROD	1
16.	9B101214	SEAL KIT (INCL:4-6,9-11,13,14,17)	1
17.	7T2N8015	WEAR RING (PART OF 16)	1REF

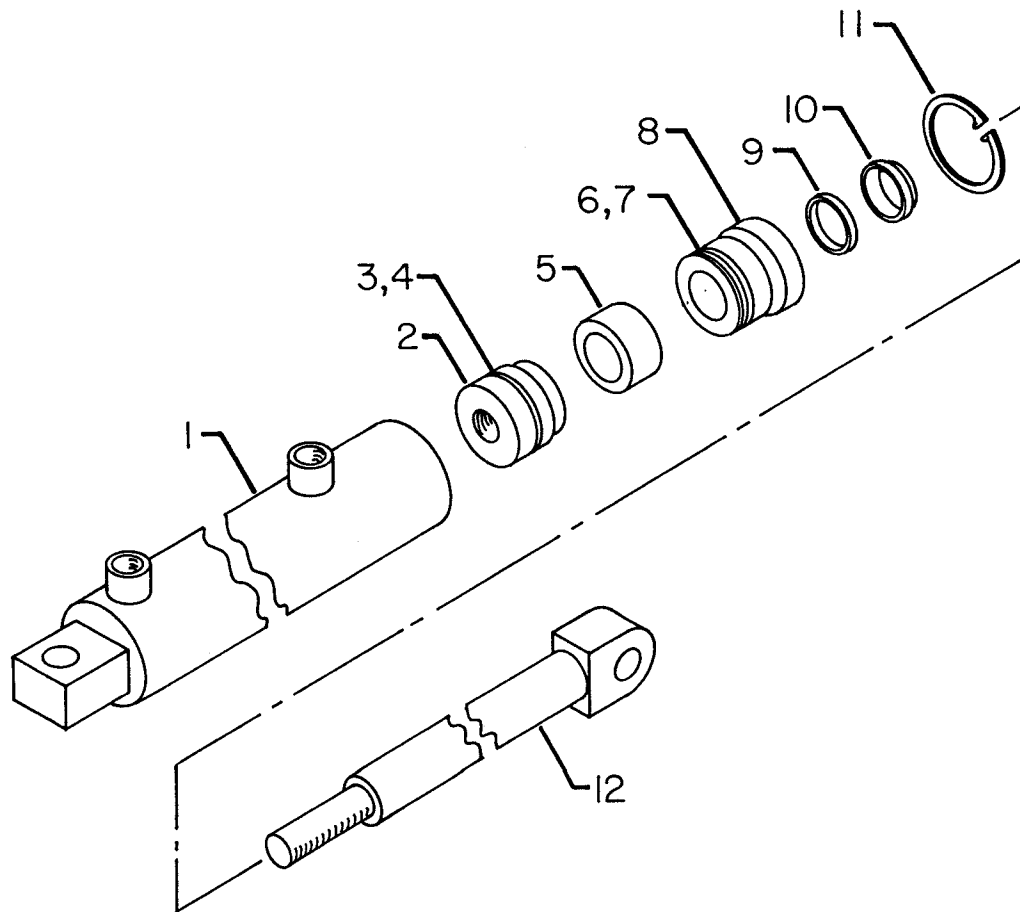
Figure D-6. POWER DOWN OUTRIGGER CYLINDER (3B221850)



DECAL PLACEMENT	
ITEM NO.	LOCATION
22	ONE ON EACH OUTRIGGER
23	AT OPERATING STATION
21	AT POWER OUT CONTROLS

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART	DESCRIPTION	QTY
1.	3B220850	POWER OUT CYLINDER	2	12.	72066168	COTTER PIN	2
2.	51703771	HOSE ASSEMBLY 1/4ID X 29	2	13.	72066338	CLEVIS PIN	2
3.	51704280	HOSE ASSEMBLY 1/4ID X 40	4	14.	72062104	NUT 1/4-20 LOCK	2
4.	60025254	CONTROL HANDLE	2	15.	52704745	CONTROL ROD - MALE	2
5.	60103278	HOSE CLAMP	2	16.	72066336	COTTER PIN	1
6.	72053758	ELBOW 90° 7/16MSTR X 7/16MJIC	4	17.	72066337	PIN	1
7.	71039096	KNOB	2	18.	52705877	CONTROL ROD - FEMALE	1
8.	72060928	CAP SCR 1/2-13 X 2-1/4 HH GR5	4	19.	72053763	ELBOW 3/4MSTR X 3/4MJIC	REF
9.	72062080	NUT 1/2-13 LOCK	4	20.	72532666	ELBOW 3/4MSTR X 3/4MJIC XLG	REF
10.	72532665	AADPTER 7/16MJIC X 3/4MJIC	2	21.	71382277	DECAL - PWR OUT OUTRG	2
11.	72532768	TEE 7/16MJIC	2	22.	70392864	DECAL - DANGER STD CLR	2
				23.	70392867	DECAL - DANGER OR MOVING	2

Figure D-7. OPTION - Power-Out Outrigger Kit (Part Number 31705851)

**NOTE**

IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

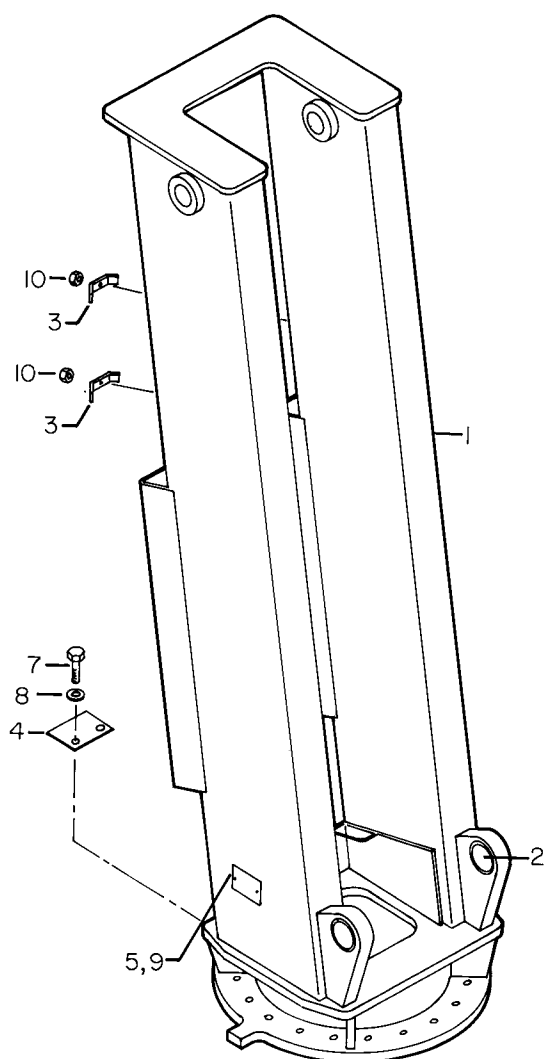
USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

DIMENSIONS

Bore	1-1/4
Stroke	26
Rod Diameter	3/4
Pin Diameter	1/2
C-C Closed	32-7/16

ITEM	PART NO.	DESCRIPTION	QTY
1.	4B220850	CASE ASM	1
2.	6I012050	PISTON	1
3.	7Q072021	O-RING (PART OF 13)	1REF
4.	7T66P012	PISTON SEAL (PART OF 13)	1REF
5.	6C125007	STOP TUBE	1
6.	7Q072214	O-RING (PART OF 13)	1REF
7.	7Q10P214	BACK-UP RING (PART OF 13)	1REF
8.	6H012007	HEAD	1
9.	7R66P075	SEAL (PART OF 13)	1REF
10.	7R13P007	ROD WIPER	1REF
11.	72066029	RING, RETAINING	1
12.	4G115830	ROD	1
13.	9B050608	SEAL KIT (INCL:3,4,6,7,9,10)	1

Figure D-8. Power-Out Outrigger Cylinder (Part Number 3B220850)



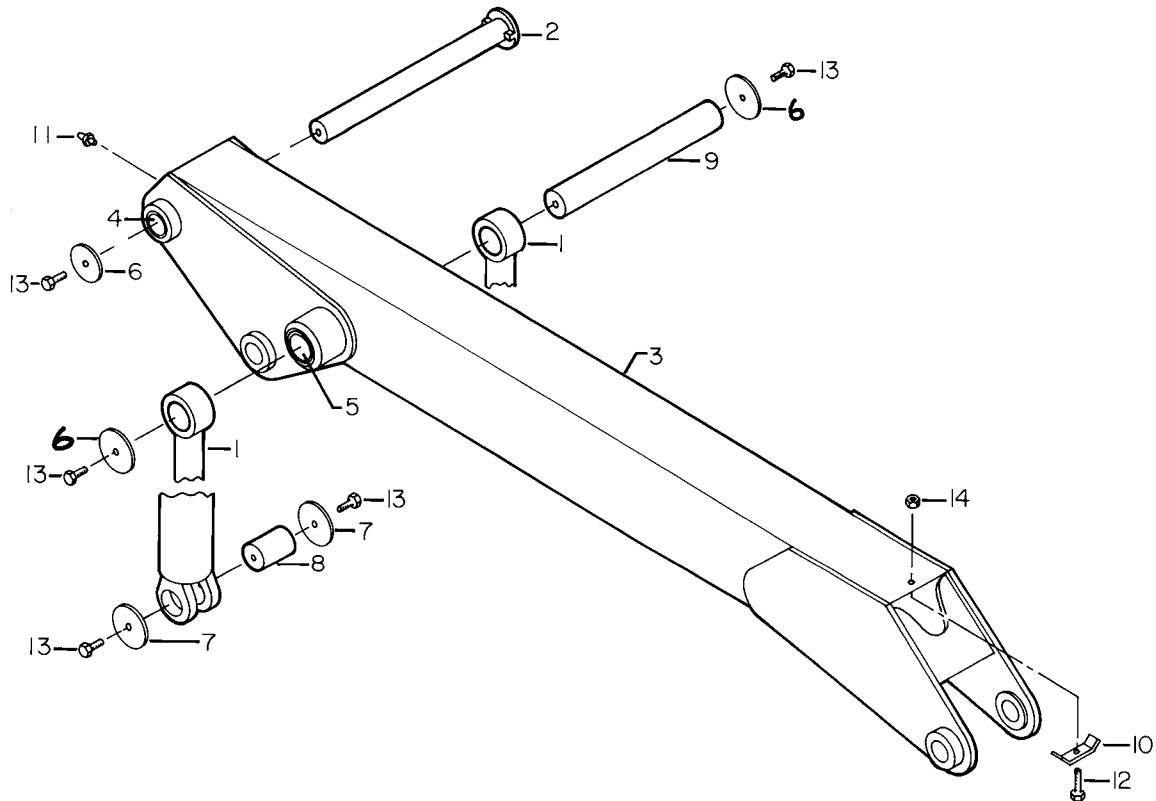
A. MAST ASSEMBLY
B. MAST ASSEMBLY WITH CHAIR (NOT SHOWN)

WARNING

ANYTIME A GEAR-BEARING BOLT IS REMOVED, IT MUST BE REPLACED WITH A NEW BOLT OF THE IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE, CAUSING SERIOUS INJURY OR DEATH.

ITEM	PART NO.	DESCRIPTION	A	QTY	B
1.	52705862	MAST (INCL: 2)	1		
	52706139	MAST W/CHAIR (INCL:2)			1
2.	7BF81225	BUSHING (PART OF 1)	2	REF	2
3.	60010118	HOSE CLAMP	2		
4.	60104539	PINION COVER	1		1
5.	70029119	SER. NO. PLACARD	1		1
7.	72060177	CAP SCR 5/8-11 X 3 HH GR8	20		20
8.	72063119	WASHER 5/8 FLAT HARDENED	20		20
9.	72066340	POP RIVET 1/8	2		6
10.	72062103	NUT 3/8-16 LOCK	2		2
11.	70731411	CHAIR			1
12.	72060025	CAP SCR 5/16-18 X 1 HH GR5			4
13.	72063050	WASHER 5/16 LOCK			4

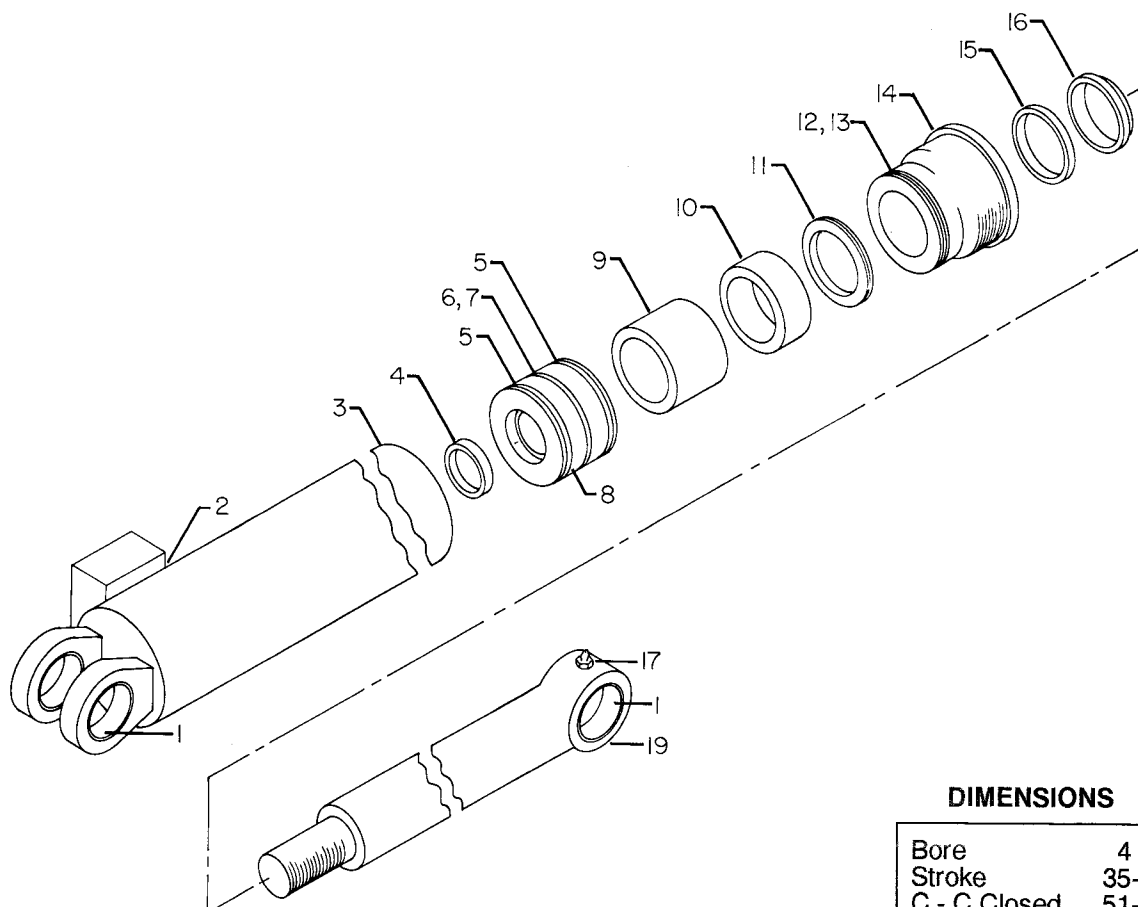
**Figure D-9. MAST ASSEMBLY (41705843) and
MAST ASSEMBLY WITH CHAIR (41706135)**

**NOTE**

ANYTIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B223850	INNER CYLINDER	2
2.	52703709	PIN	1
3.	52705864	INNER BOOM (INCL: 4,5)	1
4.	7BF81220	BUSHING (PART OF 3)	6REF
5.	7BF81225	BUSHING (PART OF 3)	9REF
6.	60106331	PIN RETAINER PLATE 3-1/2"	3
7.	60106332	PIN RETAINER PLATE 4"	4
8.	60106341	PIN	2
9.	60106353	PIN	1
10.	60107648	HOSE CLAMP	1
11.	72053508	GREASE ZERK 1/8NPT	1
12.	72060049	CAP SCR 3/8-16 X 1-3/4 HH GR5	1
13.	72060147	CAP SCR 5/8-11 X 1 HH GR5	7
14.	72062103	NUT 3/8-16 LOCK	1

Figure D-10. Inner Boom (Part Number 41705844)



DIMENSIONS

Bore	4
Stroke	35-3/4
C - C Closed	51-1/2
Rod Diameter	2-1/2
Pin Diameter	2-1/2

NOTE

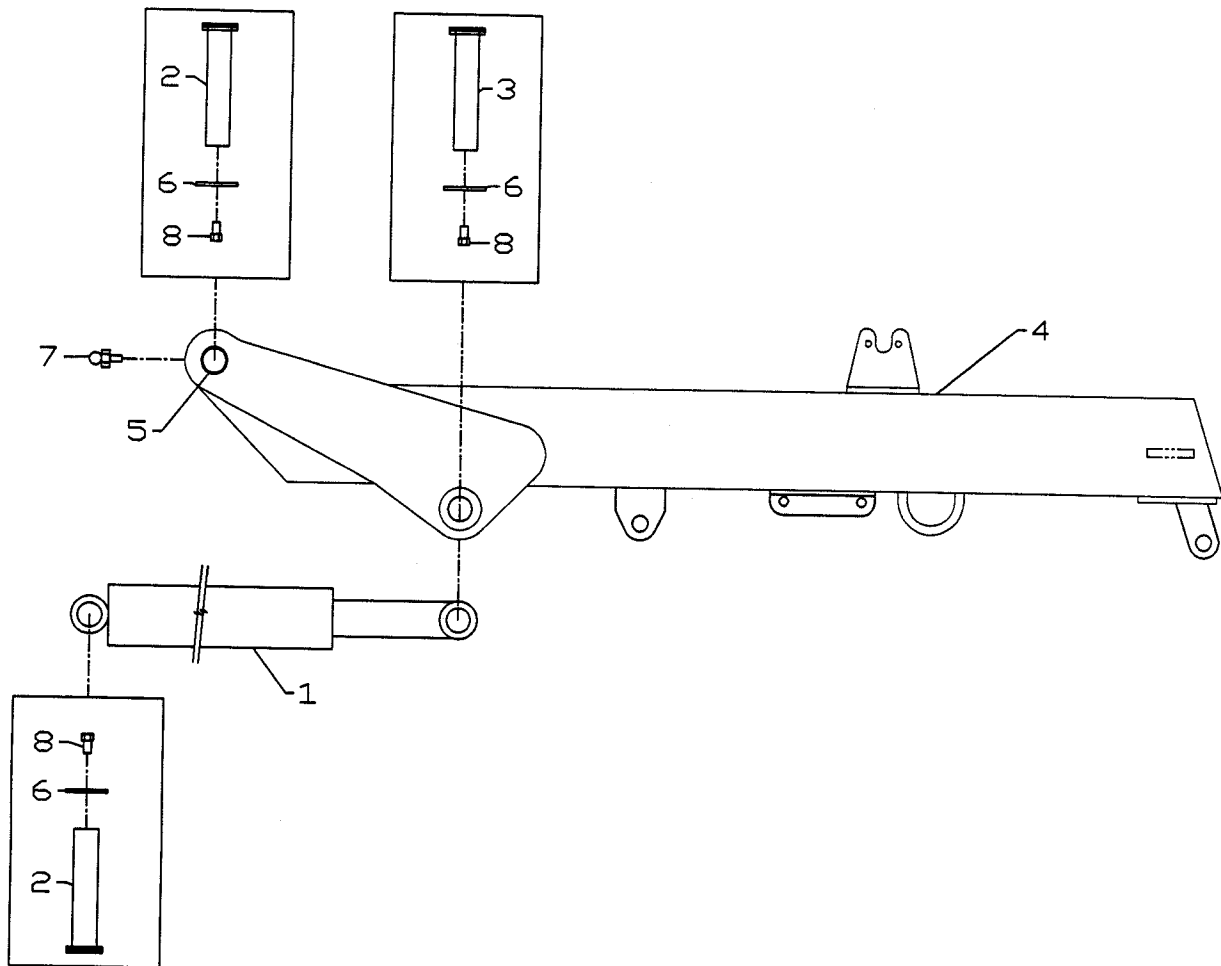
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

ITEM	PART NO.	DESCRIPTION	QTY
1.	7BF81025	BUSHING (PART OF 3 & 19)	4REF
2.	73054242	VALVE 25GPM	1
3.	4B223850	CASE (INCL:1,20)	1
4.	7T61N143	LOCK RING SEAL (PART OF 18)	1REF
5.	7T65I040	PISTON RING (PART OF 18)	2REF
6.	7T66P040	PISTON SEAL (PART OF 18)	1REF
7.	7Q072153	O-RING (PART OF 18)	1REF
8.	6I040143	PISTON	1
9.	6C300025	STOP TUBE	1
10.	6C150025	STOP TUBE	1
11.	6A025025	WAFFER LOCK (PART OF 18)	1REF
12.	7Q10P342	BACK-UP RING (PART OF 18)	1REF
13.	7Q072342	O-RING (PART OF 18)	1REF
14.	6H040025	HEAD	1
15.	7R546025	ROD SEAL (PART OF 18)	1REF
16.	7R14P025	ROD WIPER (PART OF 18)	1REF
17.	72053507	ZERK (PART OF 19)	1REF
18.	9C162023	SEAL KIT (INCL:4-7,11-13,15,16)	1
19.	4G223850	ROD (INCL:17)	1
20.	7PNPXT02	PIPE PLUG 1/8NPT (NOT SHWN)	3REF

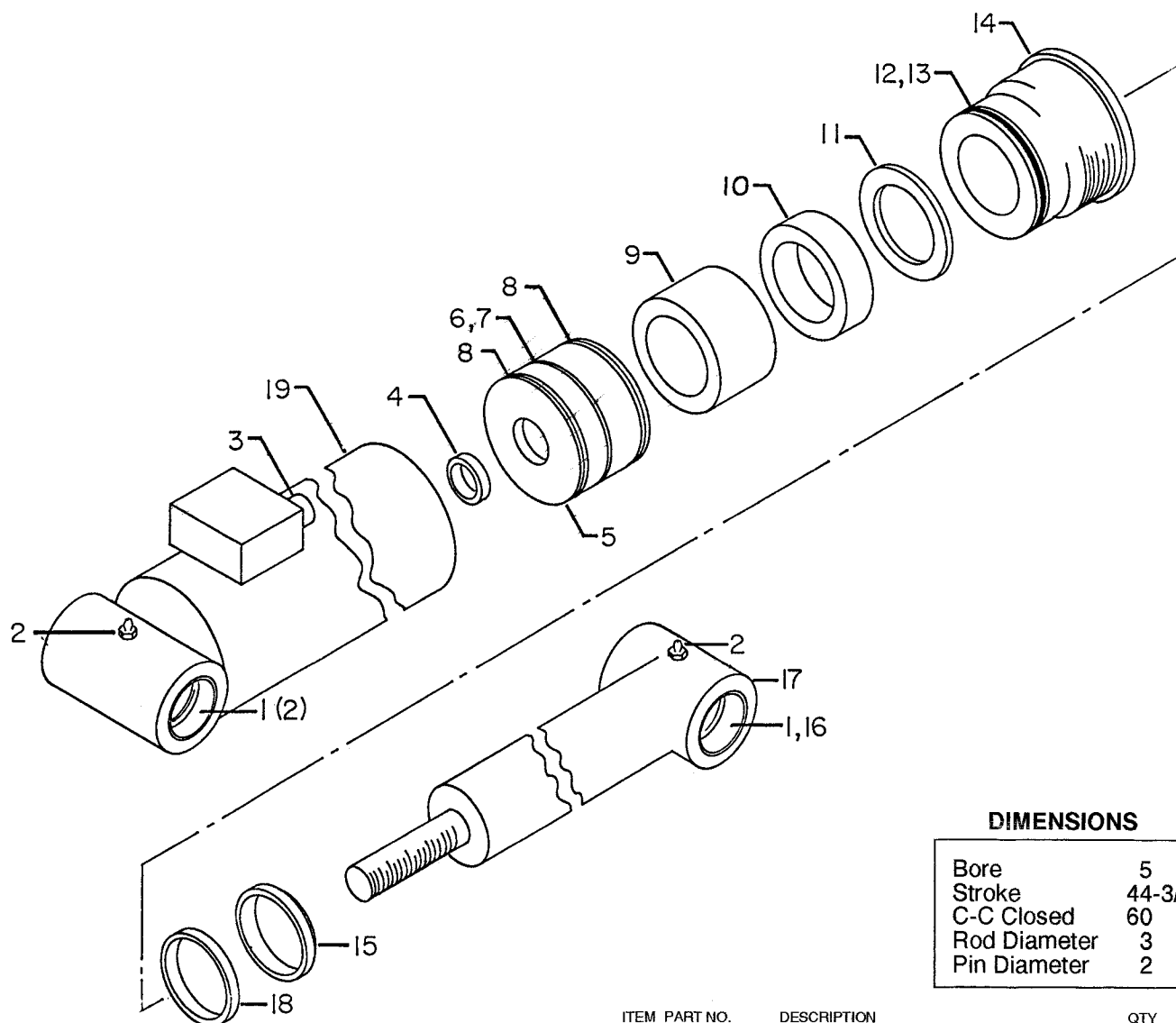
Figure D-11. Inner Cylinder (Part Number 3B223850)

**NOTE**

ANYTIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE RE-ASSEMBLY.

ITEM	PART NO.	DESCRIPTION	QTY
1.	3C224850	OUTER CYLINDER	1
2.	52703295	PIN	2
3.	52703710	PIN	1
4.	52709680	OUTER BOOM (INCL. 5)	1
5.	7BF81520	BUSHING (PART OF 4)	4REF
6.	60106331	PIN RETAINER PLATE 3-1/2"	3
7.	72053508	GREASE ZERK 1/8NPT	2
8.	72060147	CAP SCR 5/8-11 X 1 HH GR5	3

Figure D-12. Outer Boom (Part Number 41709698)



DIMENSIONS

Bore	5
Stroke	44-3/8
C-C Closed	60
Rod Diameter	3
Pin Diameter	2

NOTE

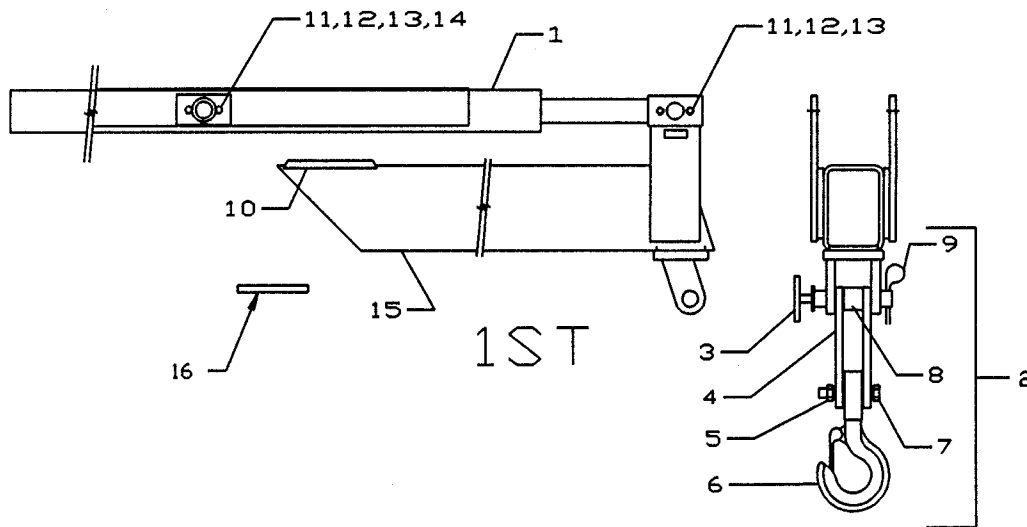
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

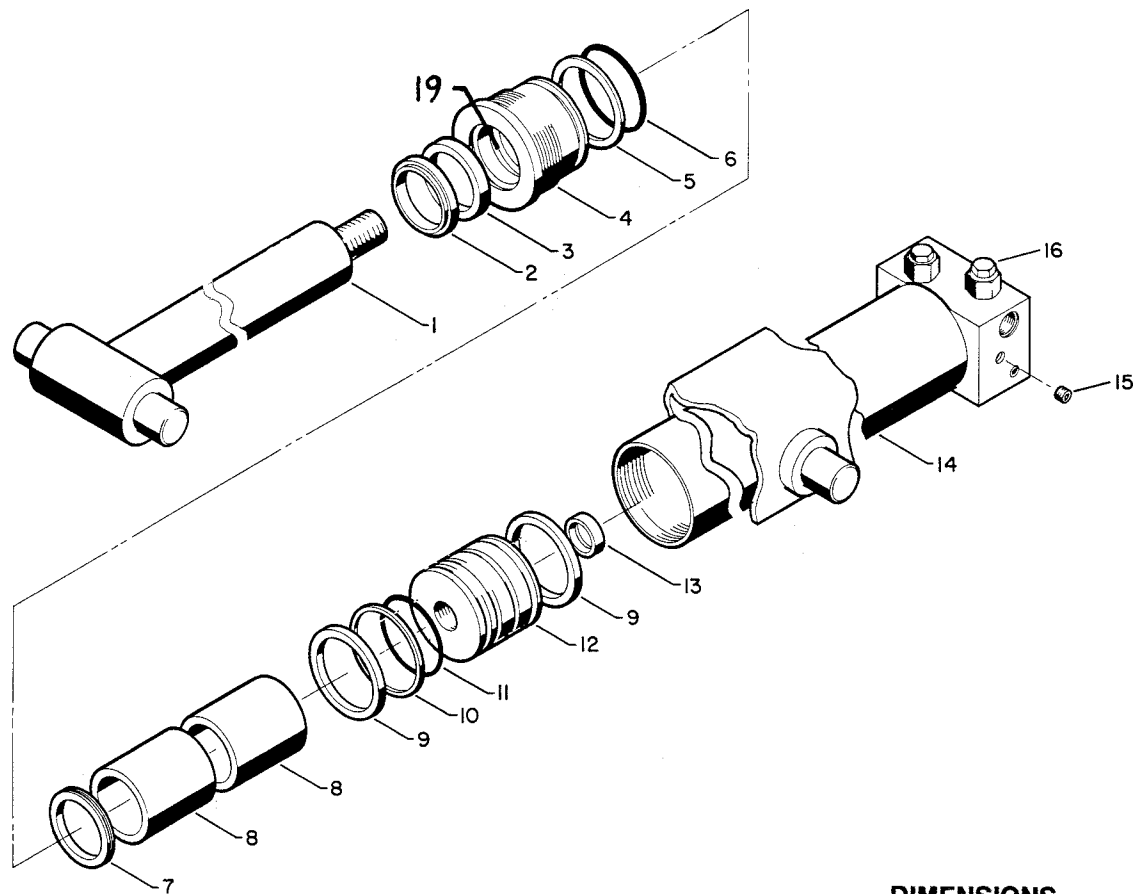
ITEM	PART NO.	DESCRIPTION	QTY
1.	7BF82020	BUSHING (PART OF 17,19)	3REF
2.	72053507	ZERK 1/4-28 (PART OF 17,19)	2REF
3.	73054242	VALVE 25GPM	1
4.	7T61N181	LOCK RING SEAL (PART OF 21)	1REF
5.	6I050181	PISTON	1
6.	7T66P050	PISTON SEAL (PART OF 21)	1REF
7.	7Q072157	O-RING (PART OF 21)	1REF
8.	7T65I050	PISTON RING (PART OF 21)	2REF
9.	6C300030	STOP TUBE	1
10.	6C150030	STOP TUBE	1
11.	6A025030	WAFFER LOCK (PART OF 21)	1REF
12.	7Q10P350	BACK-UP RING (PART OF 21)	1REF
13.	7Q072350	O-RING (PART OF 21)	1REF
14.	6H050030	HEAD	1
15.	7R14P030	ROD WIPER (PART OF 21)	1REF
16.	7BF81520	BUSHING (PART OF 17)	1REF
17.	4G224850	ROD (INCL:2,16)	1
18.	7R546030	ROD SEAL (PART OF 21)	1REF
19.	4C224850	CASE (INCL:1,2,20)	1
20.	7PNPXT02	PIPE PLUG 1/8 (NOT SHOWN)	3REF
21.	9C202429	SEAL KIT (INCL:4,6-8,11-13,15,18)	1

Figure D-13. Outer Cylinder (Part Number 3C224850)



ITEM	PART	DESCRIPTION	QTY
1.	3B099910	EXTENSION CYLINDER	1
2.	51706200	HOOK ASM 8-TON SWVL (INCL:3-9)	1
3.	52070151	PIN (PART OF 2)	1REF
4.	60107324	HOOK LINK (PART OF 2)	2REF
5.	72062073	NUT 1-1/4-7 LOCK (PART OF 2)	1REF
6.	60103575	HOOK 8-TON (PART OF 2)	1REF
7.	72601666	CAP SCR 1-1/4-7 X 4 HH GR5 (PART OF 2)	1REF
8.	60108902	PIPE (PART OF 2)	1REF
9.	72066145	HAIR PIN (PART OF 2)	1REF
10.	60030118	WEAR PAD	1
11.	60107152	CYL RETAINING PLATE	4
12.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
13.	72063053	WASHER 1/2 LOCK	8
14.	60113933	SPACER	2
15.	52709681	EXTENSION BOOM - 1ST STG	1
16.	60030119	WEAR PAD	1

Figure D-14. 8031-19' 1H EXTENSION BOOM ASSEMBLY (41709699)



DIMENSIONS

BORE	3
STROKE	6 4
C-C CLOSED	31-1/2
ROD DIAMETER	2
PIN DIAMETER	1-1/4

NOTE

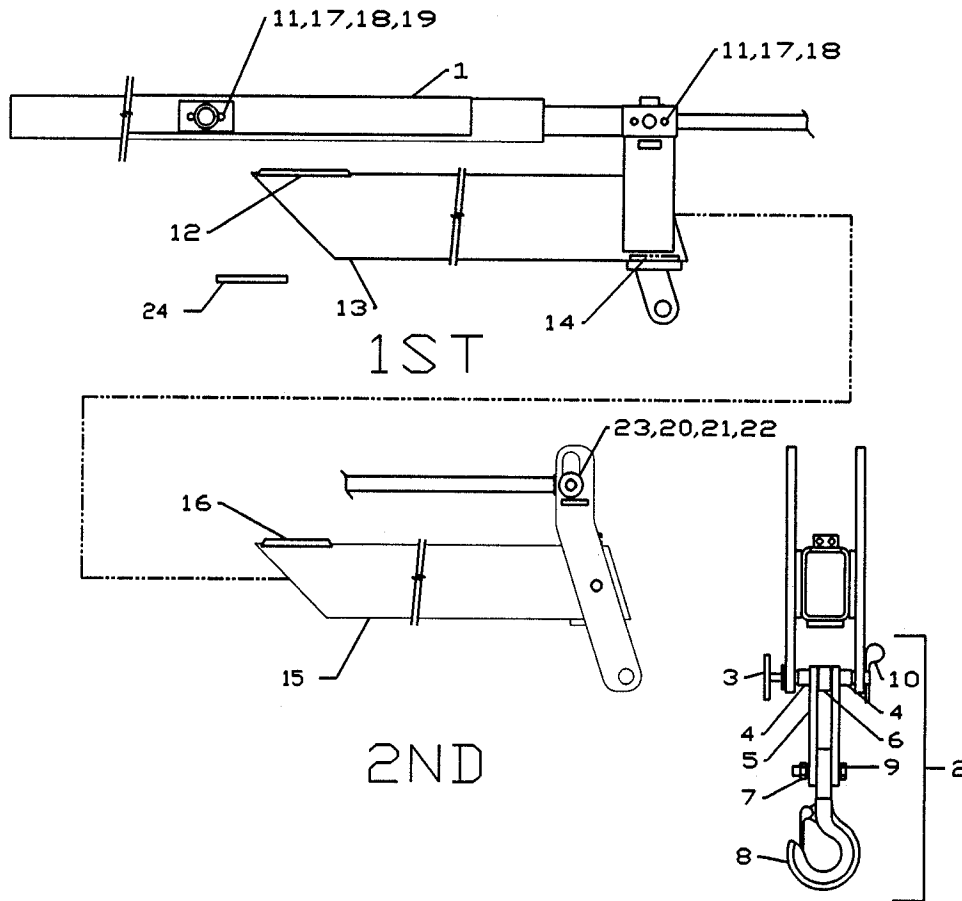
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

ITEM	PART	DESCRIPTION	QTY
1.	4G099910	ROD	1
2.	7R14P020	ROD WIPER (PART OF 18)	1REF
3.	7R546020	ROD SEAL (PART OF 18)	1REF
4.	6H030020	HEAD	1
5.	7Q10P334	BACK-UP RING (PART OF 18)	1REF
6.	7Q072334	O-RING (PART OF 18)	1REF
7.	6A025020	WAFER LOCK (PART OF 18)	1REF
8.	6C300020	STOP TUBE	2
9.	7T65I030	PISTON RING (PART OF 18)	2REF
10.	7T66P030	PISTON SEAL (PART OF 18)	1REF
11.	7Q072145	O-RING (PART OF 18)	1REF
12.	6I030106	PISTON	1
13.	7T61N106	LOCK RING SEAL (PART OF 18)	1REF
14.	4B099910	CASE (INCL: 15)	1
15.	7PNPXT02	PLUG 1/8NPT (PART OF 14)	6REF
16.	73054304	COUNTER BALANCE VALVE	2
17.	5M126820	SADDLE (WELDED TO 14)	1
18.	9C121617	SEAL KIT (INCL: 2, 3, 5, 7, 9, 11, 13, 15, 19)	1
19.	7T2N4022	WEAR RING-ROD (PART OF 18)	1REF

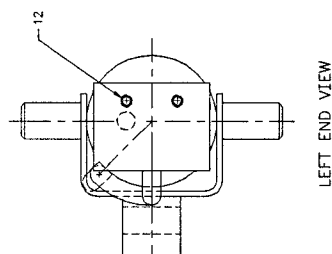
Figure D-15. 1-STAGE EXTENSION CYLINDER (3B099910)



ITEM	PART NO.	DESCRIPTION	QTY
1.	3K120850	EXTENSION CYLINDER	1
2.	51706200	HOOK ASM 8-TON (INCL:3-10)	1
3.	52705801	PIN (PART OF 2)	1REF
4.	60102466	SLEEVE (PART OF 2)	2REF
5.	60107324	HOOK LINK (PART OF 2)	2REF
6.	60108857	SLEEVE (PART OF 2)	1REF
7.	72062073	NUT 1-1/4-7 LOCK (PART OF 2)	1REF
8.	60103575	HOOK 8-TON (PART OF 2)	1REF
9.	72601666	CAP SCR 1-1/4-7X4 HHGR5 (PART OF 2)	1REF
10.	72066145	HAIR PIN (PART OF 2)	1REF
11.	60107152	PLATE	4
12.	60030118	WEAR PAD	1

ITEM	PART NO.	DESCRIPTION	QTY
13.	52709681	1ST STG EXT BOOM	1
14.	60030123	WEAR PAD	1
15.	52709682	2ND STG EXT BOOM	1
16.	60030122	WEAR PAD	1
17.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
18.	72063053	WASHER 1/2 LOCK	8
19.	60113933	SPACER	4
20.	72066125	RETAINING RING 1" EXT HD	2
21.	60106833	PIN	1
22.	60020197	ROLLER	4
23.	72063010	WASHER 1 WRT	2
24.	60030119	WEAR PAD	2

Figure D-16. 8031-25' EXTENSION BOOM ASSEMBLY (41709700)



LEFT END VIEW

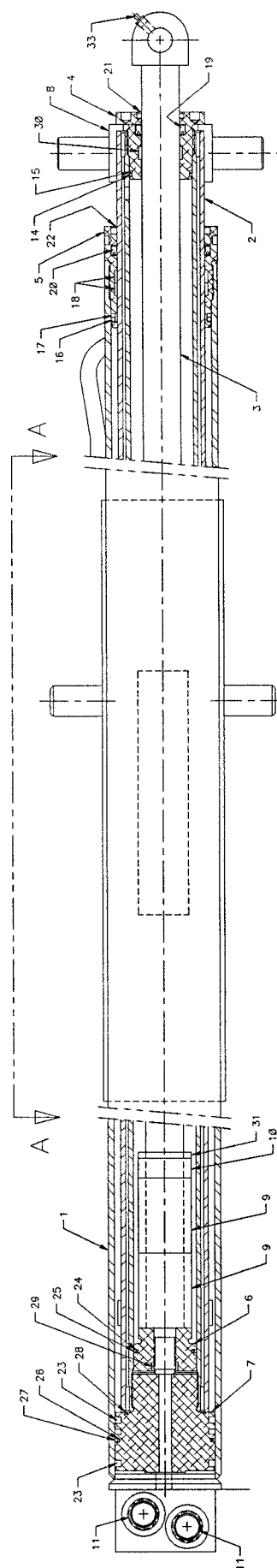
NOTE

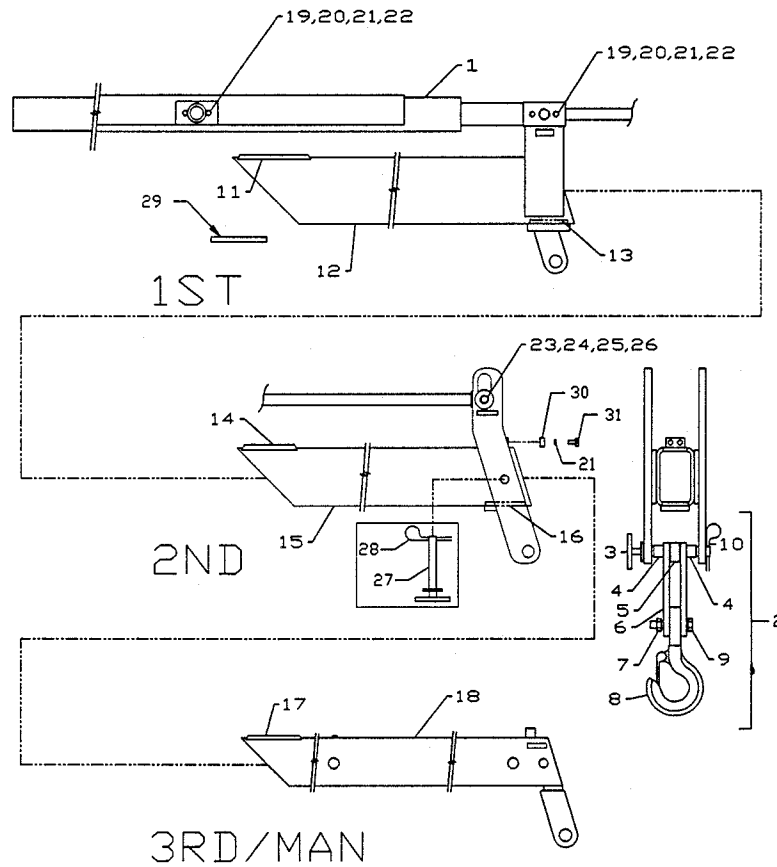
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

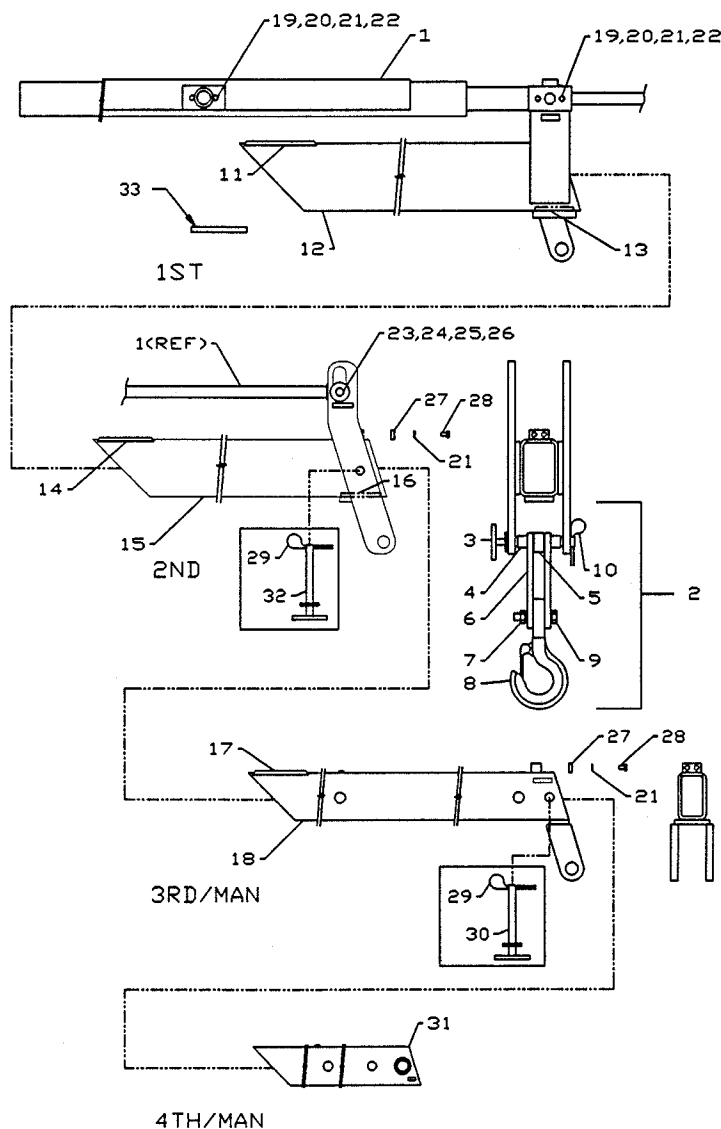
ITEM	PART	DESCRIPTION	QTY
1.	4K120850	CASE ASM	1
2.	4H120850	INNER CASE	1
3.	4G120850	ROD (INCL:33)	1
4.	6H271511	HEAD	1
5.	6H112820	HEAD	1
6.	6I025087	PISTON	1
7.	6I095850	PISTON	1
8.	4FG12085	MOUNTING RING	1
9.	6C300015	STOP TUBE	2
10.	6C075015	STOP TUBE	1
11.	73054242	COUNTER BALANCE VALVE	2
12.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	6REF
13.	9X095850	SEAL KIT	1
14.	7Q072228	O-RING (PART OF 13)	1REF
15.	7Q10P228	BACK-UP RING (PART OF 13)	1REF
16.	7Q072342	O-RING (PART OF 13)	1REF
17.	7Q10P342	BACK-UP RING (PART OF 13)	1REF
18.	7T2N4037	WEAR RING (PART OF 13)	1REF
19.	7R546015	ROD SEAL (PART OF 13)	1REF
20.	7R546035	ROD SEAL (PART OF 13)	1REF
21.	7R14P015	ROD WIPER (PART OF 13)	1REF
22.	7R14P035	ROD WIPER (PART OF 13)	1REF
23.	7T65I040	PISTON RING (PART OF 13)	2REF
24.	7Q072137	O-RING (PART OF 13)	1REF
25.	7T66P025	PISTON SEAL (PART OF 13)	1REF
26.	7Q072153	O-RING (PART OF 13)	1REF
27.	7T66P040	PISTON SEAL (PART OF 13)	1REF
28.	7Q072151	O-RING (PART OF 13)	1REF
29.	7T61N087	LOCK RING SEAL (PART OF 13)	1REF
30.	7T2N8015	ROD WEAR RING (PART OF 13)	1REF
31.	6A025015	WAFFER LOCK (PART OF 13)	1REF
32.	5M126820	SADDLE	1
33.	72053507	ZERK 1/4-28 (PART OF 3)	1REF

**Figure D-17. 2-STAGE EXTENSION CYLINDER (3K120850)**



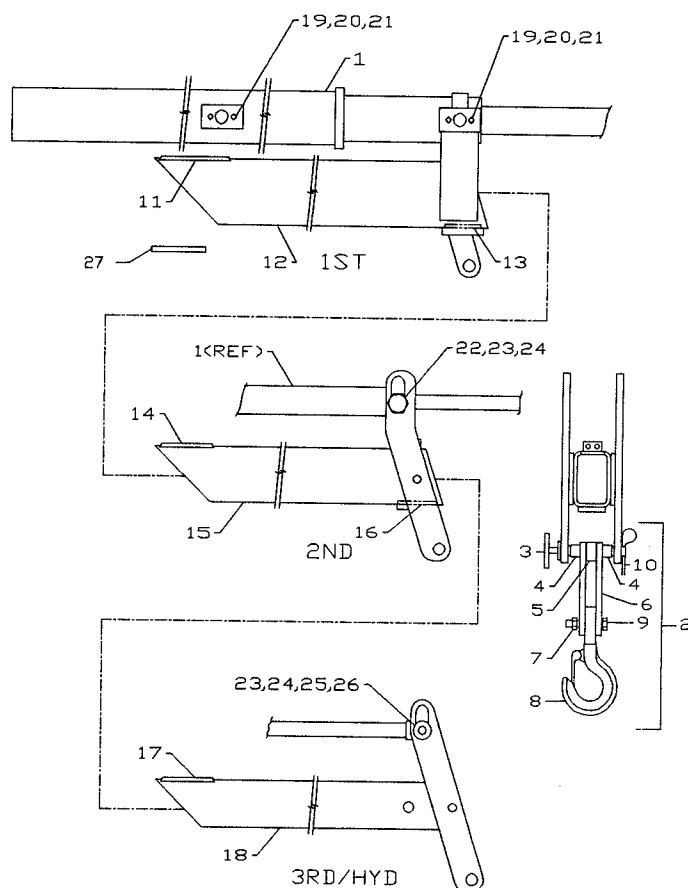
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K120850	EXTENSION CYLINDER	1	15.	52709682	2ND STG EXT BOOM	1
2.	51706266	HOOK ASM 8-TON (INCL:3-10)	1	16.	60030202	WEAR PAD	1
3.	52705801	PIN (PART OF 2)	1REF	17.	60030203	WEAR PAD	1
4.	60102466	SLEEVE (PART OF 2)	2REF	18.	52709683	3RD STG EXT BOOM - MANUAL	1
5.	60108857	SLEEVE (PART OF 2)	1REF	19.	60107152	PLATE	4
6.	60107324	LINK (PART OF 2)	1REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
7.	72062073	NUT 1 1/4-7 LOCK (PART OF 2)	1REF	21.	72063053	WASHER 1/2 LOCK	10
8.	60103575	HOOK 8-TON (PART OF 2)	1REF	22.	60113933	SPACER	4
9.	72601666	CAP SCR 1 1/4-7X4 HH GR5 (PART OF 2)	1REF	23.	60106833	PIN	1
10.	72066145	HAIR PIN (PART OF 2)	1REF	24.	60020197	ROLLER	4
11.	60030118	WEAR PAD	1	25.	72066125	RETAINING RING 1" EXT HD	2
12.	52709681	1ST STG EXT BOOM	1	26.	72063010	WASHER 1 WRT	2
13.	60030123	WEAR PAD	1	27.	52705802	PIN	1
14.	60030122	WEAR PAD	1	28.	72066145	HAIR PIN 3/16	1
				29.	60030119	WEAR PAD	1
				30.	60107294	STROKE STOP	1
				31.	72060094	CAP SCR 1/2-13X1-3/4 HH GR5	2

Figure D-18. 8031-31' 2H1M EXTENSION BOOM ASSEMBLY (41709701)



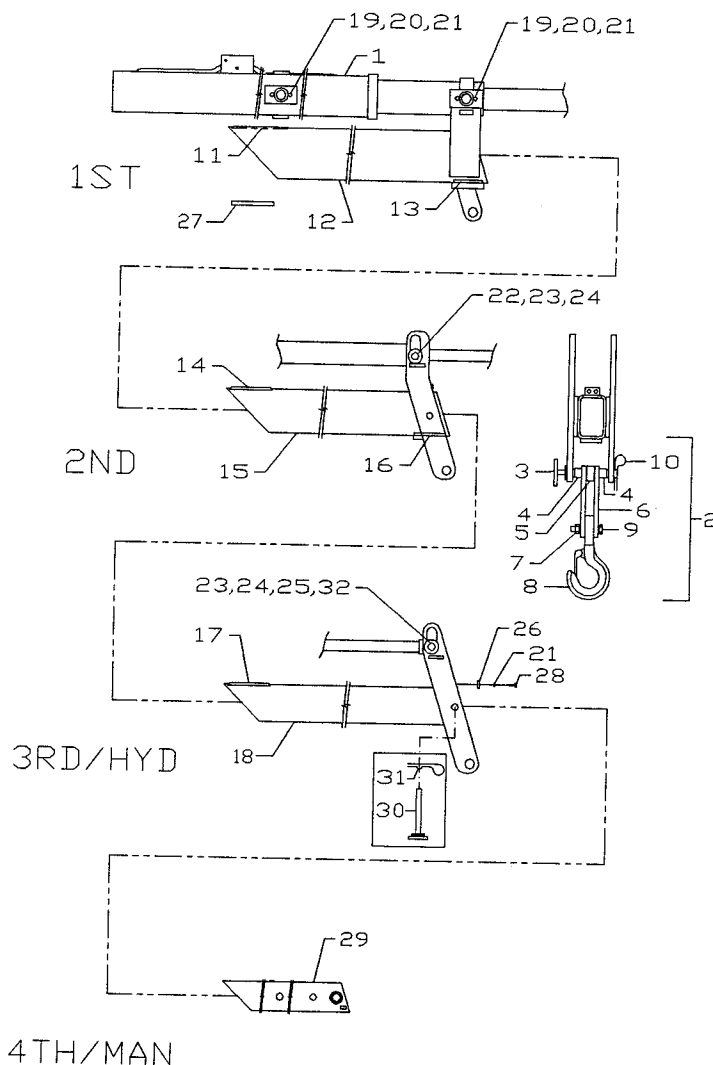
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K120850	EXTENSION CYLINDER	1	16.	60030202	WEAR PAD	1
2.	51706266	HOOK ASM 8-TON (INCL:3-10)	1	17.	60030203	WEAR PAD	1
3.	52705801	PIN (PART OF 2)	1REF	18.	52709683	3RD STG EXT BOOM - MANUAL	1
4.	60102466	SLEEVE (PART OF 2)	2REF	19.	60107152	PLATE	4
5.	60108857	SLEEVE (PART OF 2)	1REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
6.	60107324	LINK (PART OF 2)	2REF	21.	72063053	WASHER 1/2 LOCK	12
7.	72062073	NUT 1 1/4-7 LOCK (PART OF 2)	1REF	22.	60113933	SPACER	4
8.	60103575	HOOK 8-TON (PART OF 2)	1REF	23.	60106833	PIN	1
9.	72601666	CAP SCR 1 1/4-7X4 HH GR5 (PART OF 2)	1REF	24.	60020197	ROLLER	4
10.	72066145	HAIR PIN (PART OF 2)	1REF	25.	72066125	RETAINING RING 1" EXT HD	2
11.	60030118	WEAR PAD	1	26.	72063010	WASHER 1 WRT	2
12.	52709681	1ST STG EXT BOOM	1	27.	60107294	STROKE STOP	2
13.	60030123	WEAR PAD	1	28.	72060094	CAP SCR 1/2-13X1-3/4 HH GR5	4
14.	60030122	WEAR PAD	1	29.	72066145	HAIR PIN 3/16	2
15.	52709682	2ND STG EXT BOOM	1	30.	52707478	PIN	1
				31.	52709502	4TH STG EXT BOOM - MANUAL	1
				32.	52705802	PIN	1
				33.	60030119	WEAR PAD	1

Figure D-19. 8031-36' 2H2M EXTENSION BOOM ASSEMBLY (41709702)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K150920	EXTENSION CYLINDER	1	14.	60030122	WEAR PAD	1
2.	51706266	HOOK ASM 8-TON(INCL:3-10	1	15.	52709682	2ND STG EXT BOOM	1
3.	52705801	PIN (PART OF 2)	1REF	16.	60030202	WEAR PAD	1
4.	60102466	SLEEVE (PART OF 2)	2REF	17.	60030203	WEAR PAD	1
5.	60108857	SLEEVE (PART OF 2)	1REF	18.	52709684	3RD STG EXT BOOM	1
6.	60107324	HOOK LINK (PART OF 2)	2REF	19.	60107152	CYL RETAINING PLATE	4
7.	72062073	NUT 1-1/2-7 LOCK	1REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
8.	60103575	HOOK 8-TON (PART OF 2)	1REF	21.	72063053	WASHER 1/2 LOCK	8
9.	72601666	CAP SCR 1-1/4-7X4 HH		22.	72601591	CAP SCR 1-14X2 HH GR5	2
		GR5 (PART OF 2	1REF	23.	60020198	ROLLER	4
10.	72066145	HAIR PIN (PART OF 2)	1REF	24.	72063010	WASHER 1 WRT	4
11.	60030118	WEAR PAD	1	25.	60106065	PIN	1
12.	52709681	1ST STG EXT BOOM	1	26.	72066125	RETAINING RING 1"	2
13.	60030123	WEAR PAD	1	27.	60030119	WEAR PAD	1

Figure D-20. 8031-31' 3H EXTENSION BOOM ASSEMBLY (41709703)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K150920	EXTENSION CYLINDER	1	16.	60030202	WEAR PAD	1
2.	51706266	HOOK ASM 8-TON (INCL:3-10)	1	17.	60030203	WEAR PAD	1
3.	52705801	PIN (PART OF 2)	1REF	18.	52709684	3RD STG EXT BOOM	1
4.	60102466	SLEEVE (PART OF 2)	2REF	19.	60107152	PLATE	4
5.	60108857	SLEEVE (PART OF 2)	1REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	8
6.	60107324	LINK (PART OF 2)	1REF	21.	72063053	WASHER 1/2 LOCK	10
7.	72062073	NUT 1 1/4-7 LOCK (PART OF 2)	1REF	22.	72061591	CAP SCR 1-14 X 2 HH GR5	2
8.	60103575	HOOK 8-TON (PART OF 2)	1REF	23.	60020198	ROLLER	4
9.	72601666	CAP SCR 1 1/4-7X4 HH GR5 (PART OF 2)	1REF	24.	72063010	WASHER 1" WRT	4
10.	72066145	HAIR PIN (PART OF 2)	1REF	25.	60106065	PIN	1
11.	60030118	WEAR PAD	1	26.	60107294	STOP	1
12.	52709681	1ST STG EXT BOOM	1	27.	60030119	WEAR PAD	1
13.	60030123	WEAR PAD	1	28.	72060094	CAP SCR 1/2-13X1-3/4 HH GR5	2
14.	60030122	WEAR PAD	1	29.	52709502	4TH STG EXT BOOM	1
15.	52709682	2ND STG EXT BOOM	1	30.	52705883	PIN	1
				31.	72066145	HAIR PIN	1
				32.	72066125	RETAINING RING 1" EXT HD	2

Figure D-21. 8031-36' 3H1M EXTENSION BOOM ASSEMBLY (41709704)

NOTE

IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

ITEM	PART NO.	DESCRIPTION	QTY
1.	4C150920	CASE ASM	1
2.	4J148920	ROD / CASE ASM 4-1/2 OD	1
3.	4K148920	ROD / CASE ASM 3 OD	1
4.	4H066900	ROD ASM	1
5.	4P066900	INTERNAL PORT ASM	1
6.	4FG06690	MTG RING 4-1/2 ID	1
7.	5FG66900	MTG RING 3 ID	1
8.	6I503369	PISTON 5"	1
9.	6I352269	PISTON 3-1/2"	1
10.	6I252144	PISTON 2-1/2"	1
11.	6H503450	HEAD 5"	1
12.	6H352300	HEAD 3-1/2"	1
13.	6H271511	HEAD 2-1/2"	1
14.	6C400150	STOP TUBE 1-1/2 X 4L	1
15.	73054817	COUNTERBALANCE VALVE	1
16.	73054818	COUNTERBALANCE VALVE	1
17.	9X355900	SEAL KIT	1
18.	7Q10P228	BACK-UP RING (PART OF 17)	3REF
19.	7Q072228	O-RING (PART OF 17)	2REF
20.	7Q10P338	BACK-UP RING (PART OF 17)	1REF
21.	7Q072338	O-RING (PART OF 17)	1REF
22.	7Q10P350	BACK-UP RING (PART OF 17)	1REF
23.	7Q072350	O-RING (PART OF 17)	1REF
24.	7Q072240	O-RING (PART OF 17)	1REF
25.	7R546015	U-CUP SEAL (PART OF 17)	1REF
26.	7R546030	U-CUP SEAL (PART OF 17)	1REF
27.	7R488450	U-CUP SEAL (PART OF 17)	1REF
28.	7R100750	U-CUP SEAL (PART OF 17)	3REF
29.	7T66P250	PISTON SEAL (PART OF 17)	1REF
30.	7T66P350	PISTON SEAL (PART OF 17)	1REF
31.	7T66P500	PISTON SEAL (PART OF 17)	1REF
32.	7R14P015	ROD WIPER (PART OF 17)	1REF
33.	7R14P030	ROD WIPER (PART OF 17)	1REF
34.	7R14P045	ROD WIPER (PART OF 17)	1REF
35.	7T2N4050	WEAR RING (PART OF 17)	2REF
36.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	4REF
37.	7Q092916	O-RING (PART OF 15)	1REF
38.	72053507	ZERK 1/4-28	1
39.	7T2N4025	WEAR RING (PART OF 17)	1REF
40.	7T2N4035	WEAR RING (PART OF 17)	1REF
41.	7T2N8047	ROD WEAR RING (PART OF 17)	1REF
42.	7T2N8032	ROD WEAR RING (PART OF 17)	1REF
43.	7T2N8015	ROD WEAR RING (PART OF 17)	1REF

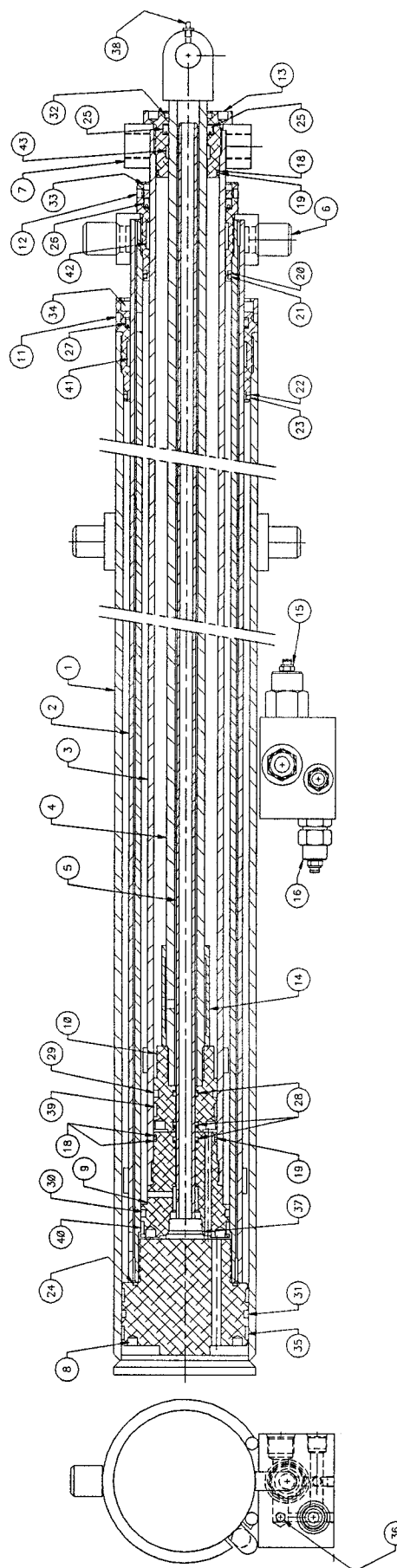


Figure D-22. 3-STAGE EXTENSION CYLINDER (3K150920)

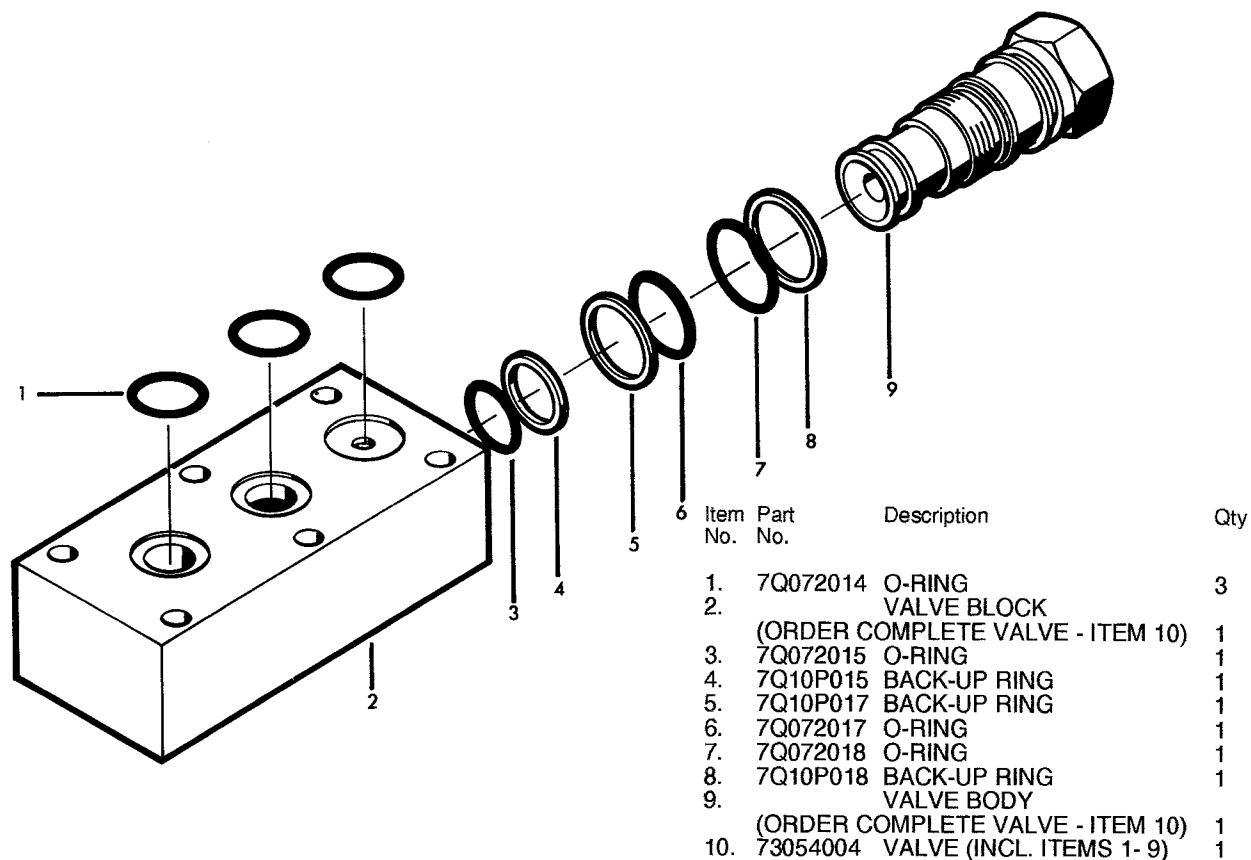


Figure D-23. Locking/Holding Valve (Part Number 73054004)

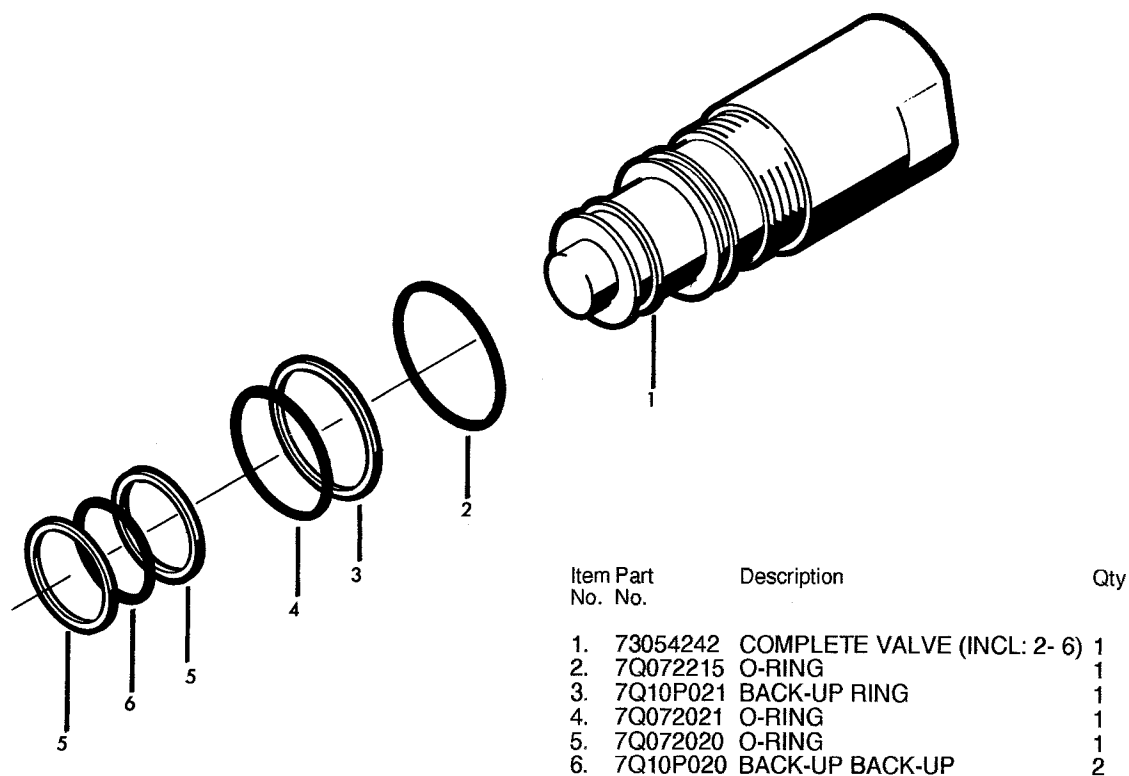
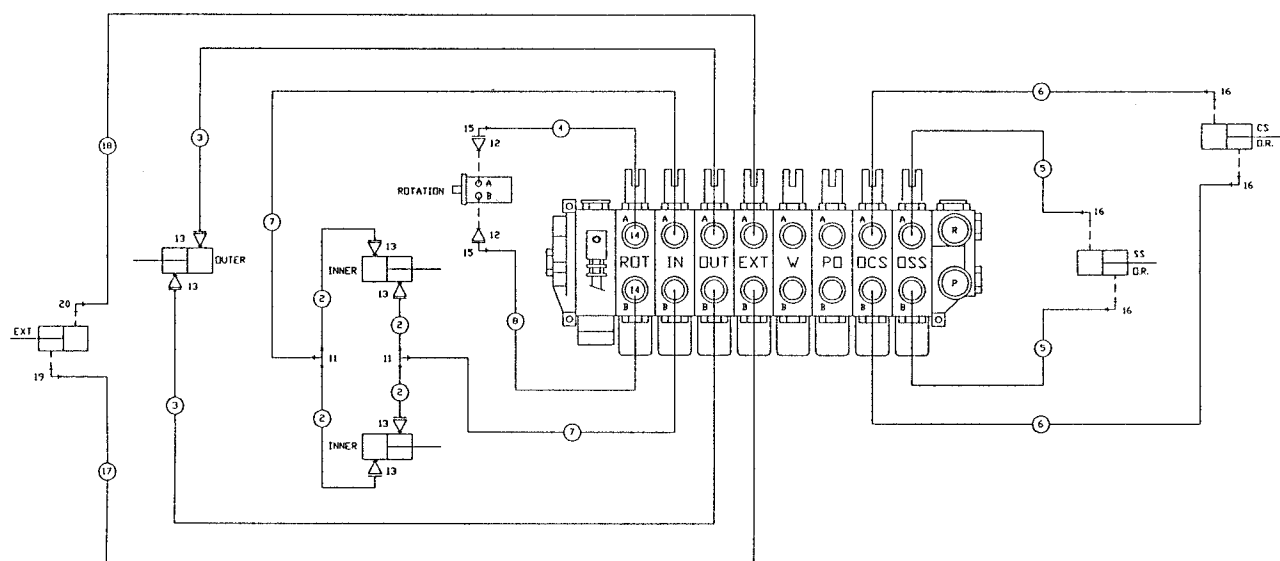
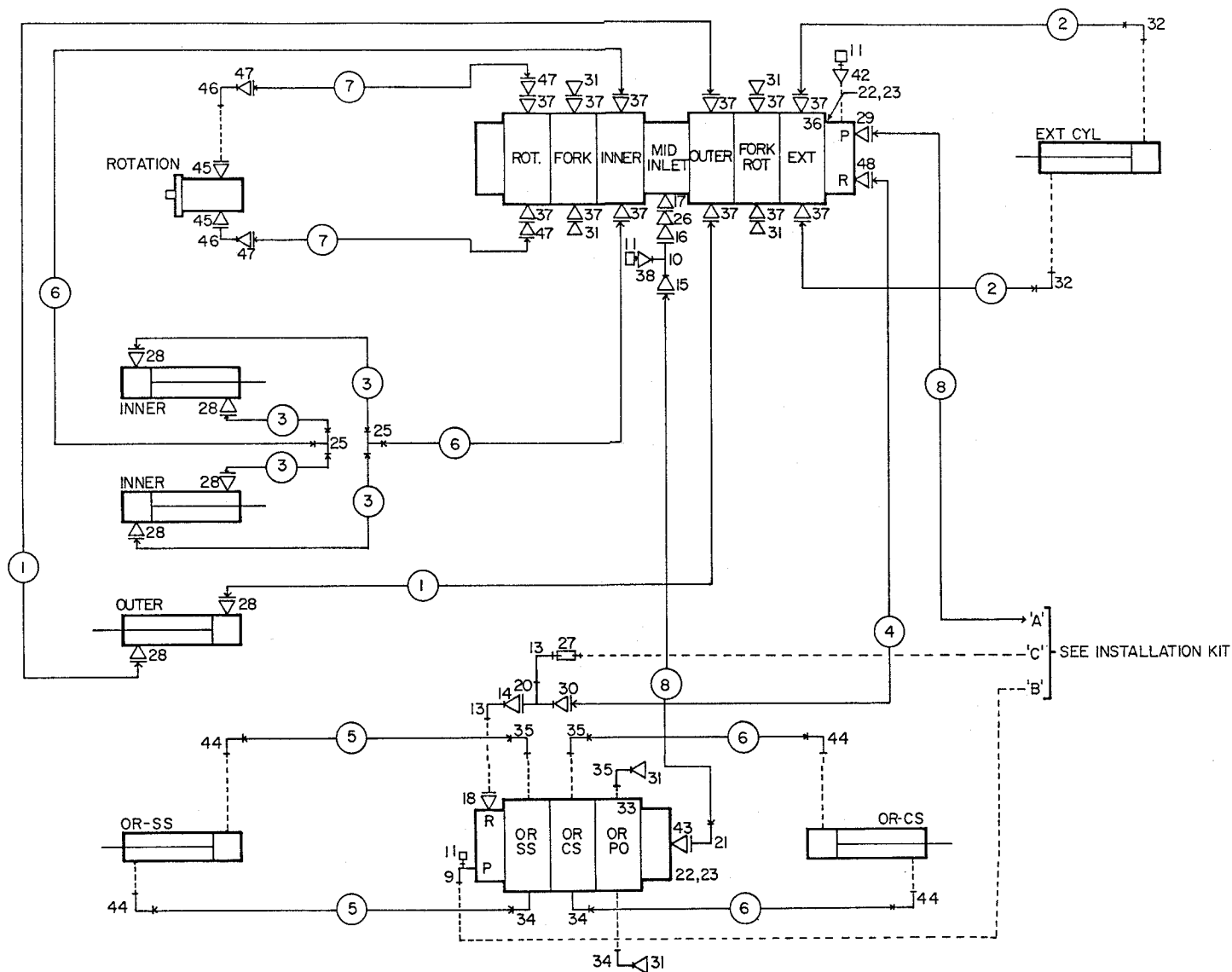


Figure D-24. 25-GPM Counter-Balance/Holding Valve (Part Number 73054242)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.		VALVEBANK ASM	REF	14.	72532665	ADAPTER #4MJIC #8FJIC	2
2.	51703588	HOSE ASM 3/8X31 FF	4	15.	72532690	ELBOW #4MJIC #4FJIC SW	2
3.	51703727	HOSE ASM 3/8X144 FF	2	16.	72532779	ELBOW #6MSTR #8MJIC XLG	4
4.	51704024	HOSE ASM 1/4X54 FF	1	FOR CRANES WITH 1 OR 2 STG HYD EXT CYL			
5.	51704298	HOSE ASM 3/8X80 FF	2	17.	51703614	HOSE ASM 1/2X240 FF-EXTEND	1
6.	51704308	HOSE ASM 3/8X110 FF	2	18.	51703614	HOSE ASM 1/2X240 FF-RETRACT	1
7.	51704997	HOSE ASM 3/8X42 FF	2	19.	72532740	ELBOW #8MSTR #8MJIC SWVL	1
8.	51705365	HOSE ASM 1/4X56 FF	1	20.	72532740	ELBOW #8MSTR #8MJIC SWVL	1
9.	72060032	CAP SCR 5/16-18X2-3/4 HHGR5	3	FOR CRANES WITH 3 STG HYD EXT CYL			
10.	72062109	NUT 5/16-18 LOCK	3	17.	51703875	HOSE ASM 3/4X264 FF-EXTEND	1
11.	72531205	TEE 3/4MJIC 1/2TUBE	2	18.	51703615	HOSE ASM 1/2X264 FF-RETRACT	1
12.	72532351	ADAPTER #4MSTR #4MJIC	2	19.	72053767	ELBOW #12MSTR #12MJIC	1
13.	72532358	ADAPTER #8MSTR #8MJIC	8	20.	72532666	ELBOW #8MSTR #8MJIC XLG	1

Figure D-25. HYDRAULIC KIT - 6 SECTION (91706401)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703601	HOSE ASM 3/8ID X 90	2	27.	72531548	BARB NIPPLE 3/4MPT 3/4HOSE	1
2.	51703156	HOSE ASM 1/2ID X 180	2	28.	72532358	ADAPTER 3/4MSTR 3/4MJIC	6
3.	51703586	HOSE ASM 3/8ID X 31	4	29.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1
4.	51704570	HOSE ASM 3/4ID X 150	1	30.	72053676	ADAPTER 3/4MPT 1-1/16MJIC	1
5.	51704298	HOSE ASM 3/8ID X 80	2	31.		CAP (PART OF 33 & 36)	6REF
6.	51704308	HOSE ASM 3/8ID X 110	4	32.	72532740	ELBOW 3/4MSTR 3/4MJIC	2
7.	51706046	HOSE ASM 1/4ID X 152	2			90° SWIVEL	1REF
8.	51705639	HOSE ASM 1/2ID X 150	2	33.		VALVEBANK ASM (INCL:31,34,35)	2REF
9.	60106322	ELBOW-MODIFIED	1	34.		ELBOW 3/4MSTR 3/4MJIC 90°	2REF
10.	72053363	TEE 3/8NPT	1			(PART OF 33)	1REF
11.	72053412	PIPE PLUG 1/4 SQHD	3	35.		ELBOW 3/4MSTR 3/4MJIC XLG	2REF
13.	72053556	STRT ELBOW 3/4NPT 90°	2	36.		VALVEBANK ASM (INCL:37)	1REF
14.	72053558	ADAPTER 3/4MPT 3/4MPT	1	37.		ADAPTER 3/4MSTR 3/4MJIC	8REF
15.	72053670	ADAPTER 3/8MPT 3/4MJIC	1			(PART OF 36, INCL:31)	
16.	72053723	ADAPTER 3/8MPT 3/8MPT	1	38.	72053372	RED. BUSHING 3/8 X 1/4NPT	1
17.	72053746	ADAPTER 1-1/16MSTR 1/2FPT	1	42.	60107746	PLUG	1
18.	72053747	ADAPTER 1-1/16MSTR 3/4FPT	1	43.	73731242	POWER BEYOND ADAPTER	1REF
20.	72053555	TEE 3/4NPT	1	44.	72532779	ELBOW 9/16MSTR 3/4MJIC XLG	4
21.	72053763	ELBOW 3/4MSTR X3/4MJIC 90°	1	45.	72532351	ADAPTER 7/16MSTR 7/16MJIC	2
22.	72060032	CAP SCR 5/16-18X2-3/4 HHGR5	6	46.	72532690	ELBOW 7/16MJIC 7/16FJIC SW	2
23.	72062109	NUT 5/16-18 LOCK	6	47.	72532665	ADAPTER 7/16MJIC 3/4FJIC	4
25.	72531205	TEE 3/4MJIC 1/2TUBE	2	48.	72532366	ADAPTER 1-1/16MSTR 1-1/16MJIC	1
26.	72053629	ADAPTER 1/2MPT 3/8MPT	1				

Figure D-26. HYDRAULIC KIT - 8 SECTION CHAIR MOUNT (91706138)

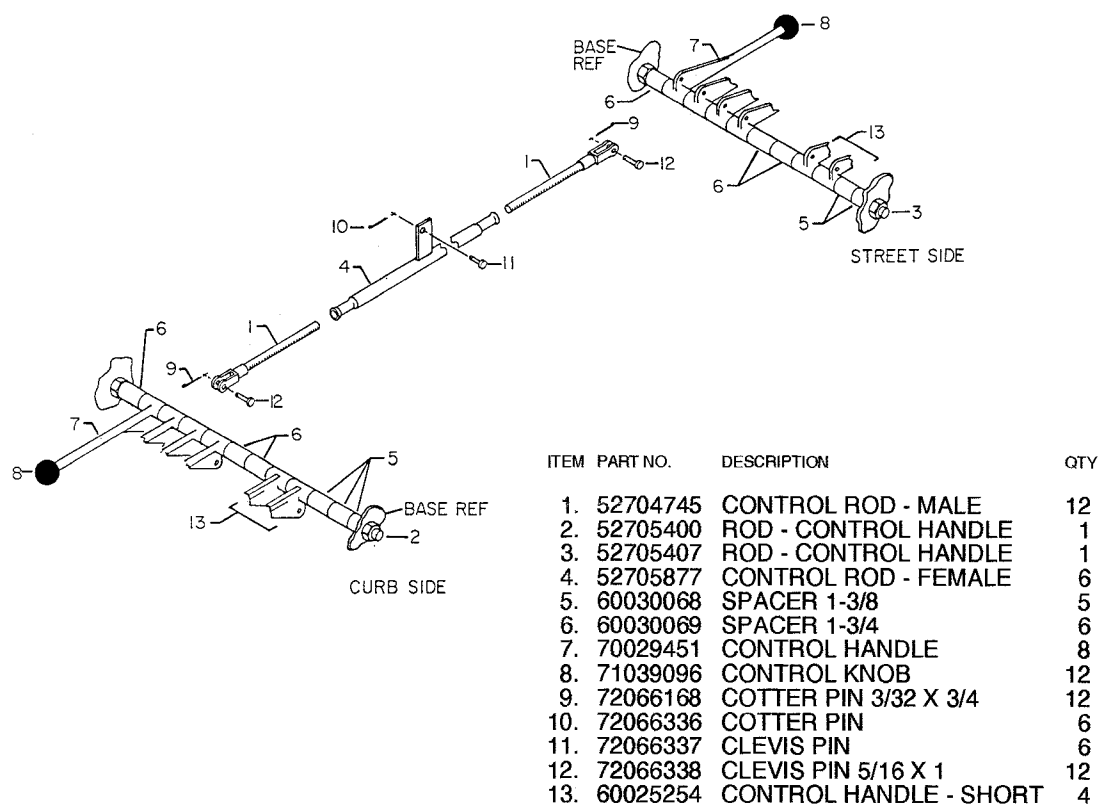


Figure D-27. Control Kit - Manual 6- Function(Part Number 90705854)

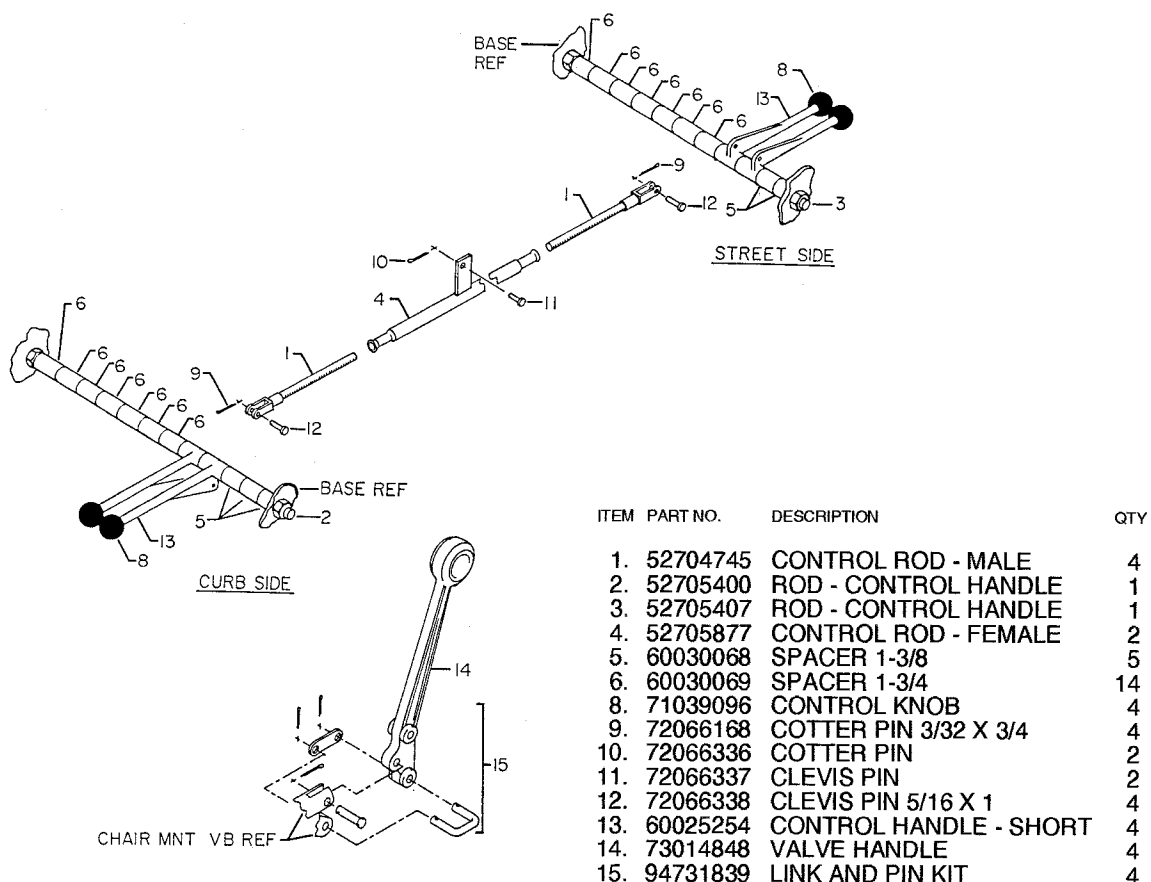
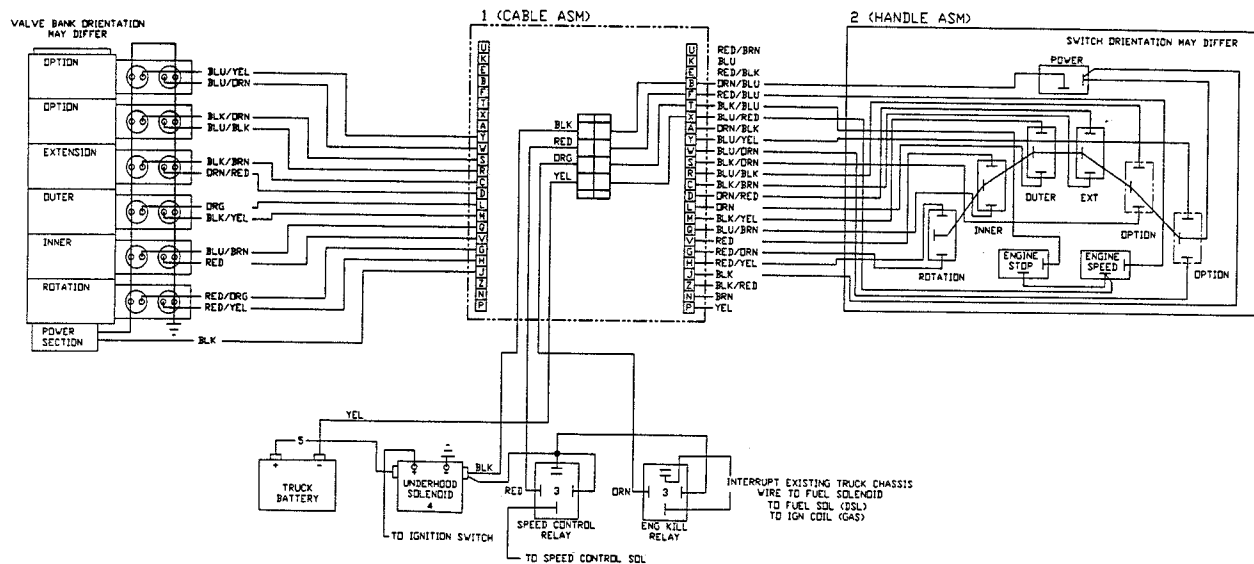


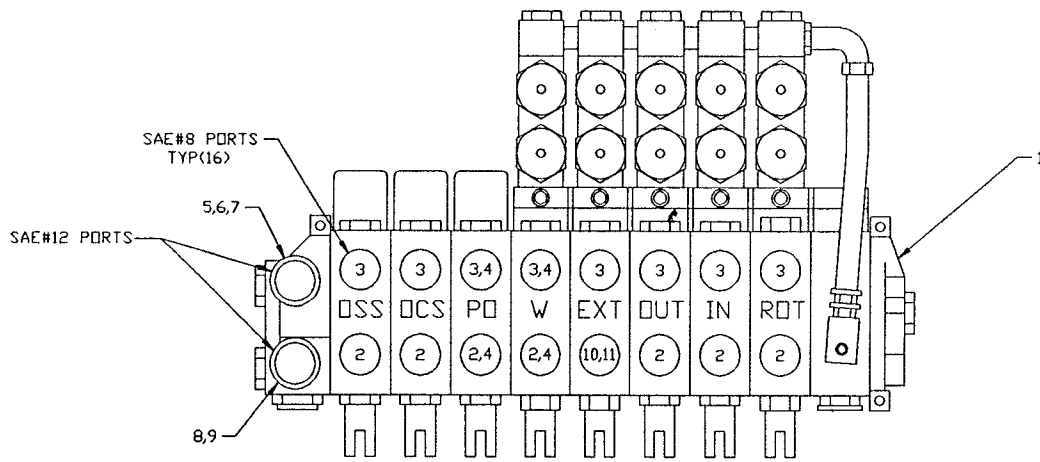
Figure D-28. Control Kit - Chair Mount (Part Number 90706137)



- A. 4 RMT/4 MAN - 90706370
 B. 5 RMT/3 MAN - 90705936
 C. 6 RMT/2 MAN - 90706371

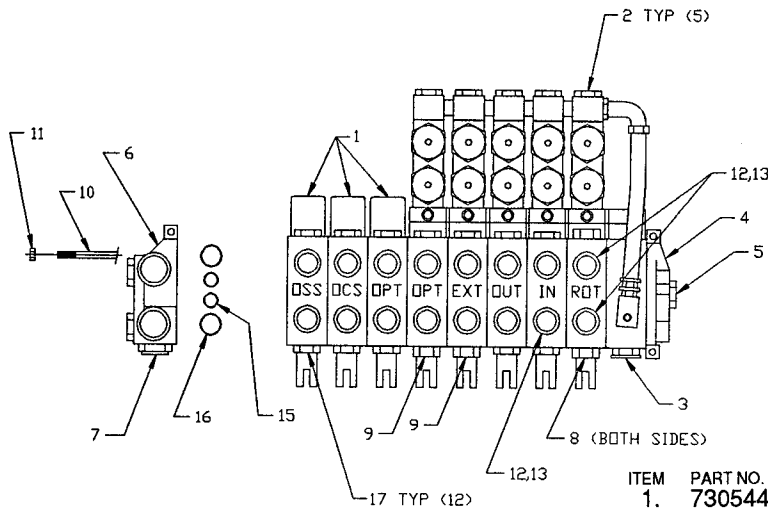
ITEM	PART NO.	DESCRIPTION	A QTY	B QTY	C QTY
1.	51706365	CABLE ASM 94" JIC BOX	1	1	1
2.	51705986	HANDLE ASM	1		
	51705985	HANDLE ASM		1	
	51705313	HANDLE ASM			1
3.	77041251	RELAY	2	2	2
4.	77041237	SOLENOID 12V 150A	1	1	1
5.	51704784	CABLE ASM #1WIRE X 6"	1	1	1
6.	70034060	PLASTIC TIE	4	4	4
7.	99900495	ELECTRICAL SCHEMATIC	1	1	1

Figure D-29. REMOTE CONTROL KITS



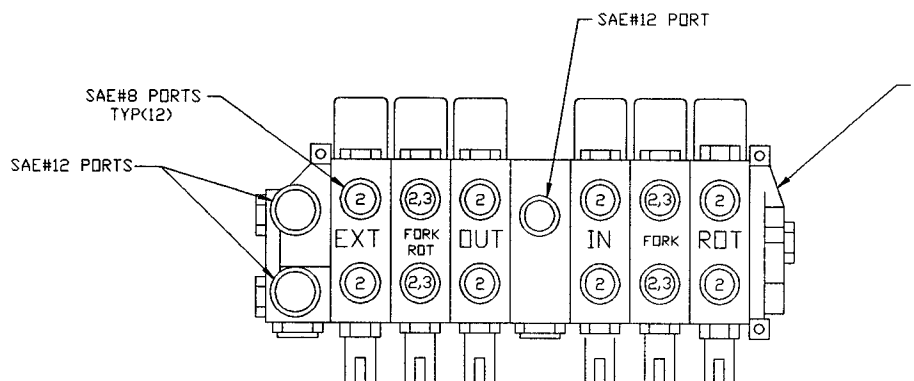
ITEM	PART NO.	DESCRIPTION	QTY
1.	51705934	VALVEBANK 5R/3M	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	7
3.	72532666	ELBOW #8MSTR #8MJIC 90° XLG	8
4.	72532675	CAP 3/4JIC STL	4
5.	60106322	ELBOW-PR GAUGE MOD	1
6.	72532669	ADAPTER #8MJIC #10FJIC	1
7.	72053241	PIPE PLUG 1/4NPT HOLHEX	1
8.	72053747	ADAPTER #12MSTR 3/4FPT	1
9.	72053556	STREET ELBOW 3/4NPT 90°	1
10.	72532364	ADAPTER #8MSTR #12MJIC	1
11.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-31. VALVEBANK ASSEMBLY-5R/3M (51705935)



ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY SAE8	3
2.	73054468	VALVE SECT V20R 4WAY SAE8	5
3.	73054502	VALVE SECT V20R UTILITY	1
4.	73054442	END COVER RH	1
5.	73073022	CONVERSION PLUG	1
6.	73731424	END COVER LH	1
7.	73054537	RELIEF VALVE 2500PSI	1
8.	73054516	RELIEF 1300PSI NON-ADJ	2
9.	73054007	RELIEF 1800PSI NON-ADJ	2
10.	73014672	STUD 3/8X18-3/4	3
11.	72062037	NUT 3/8-24 HEX	6
12.	70142402	ORIFICE PLATE	3
13.	70142403	SPRING	3
14.	51393494	O-RING KIT	REF
15.	7Q072117	O-RING	20
16.	7Q072119	O-RING	20
17.	73054010	LOAD CHECK PLUG ASM	12

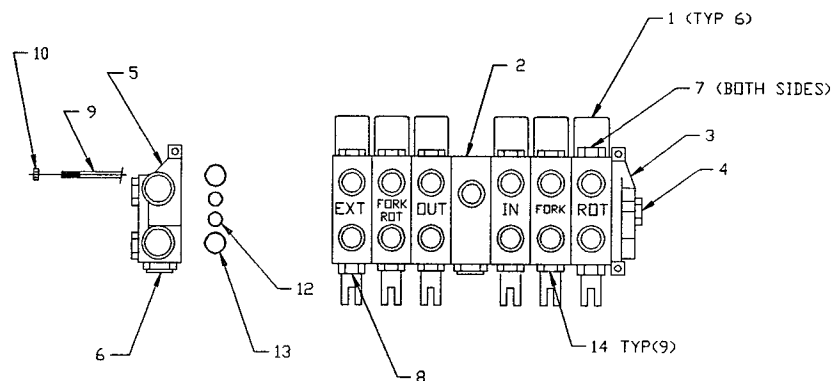
Figure 31A. VALVEBANK (51705934)



ITEM	PART NO.	DESCRIPTION	QTY
1.	51703623	VALVEBANK 6-SECT MID-INLET	1
2.	72532358	ADAPTER #8MSTR #8MJIC	12
3.	72532675	CAP 3/4JIC STL	4

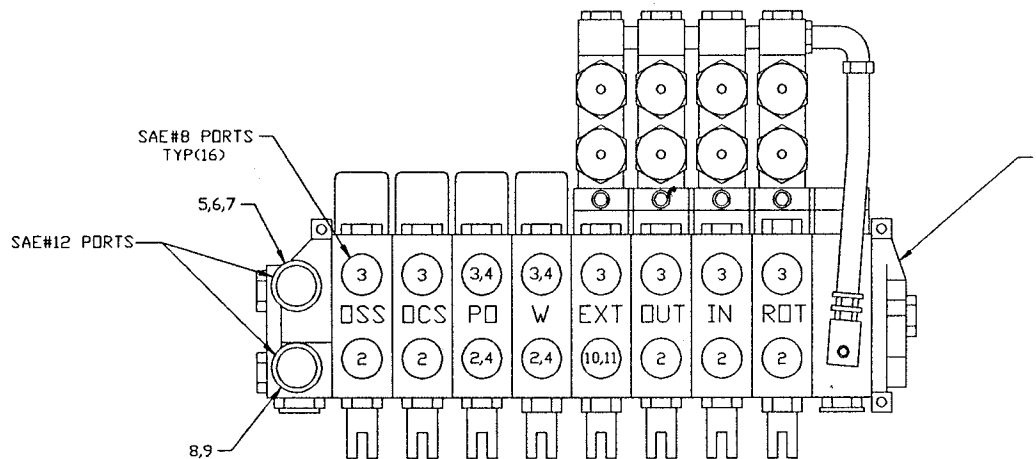
NOTE:
SET SYSTEM PRESSURE AT 2500PSI.

Figure D-32. VALVEBANK - 6 SECTION CHAIR MOUNT (51704671)



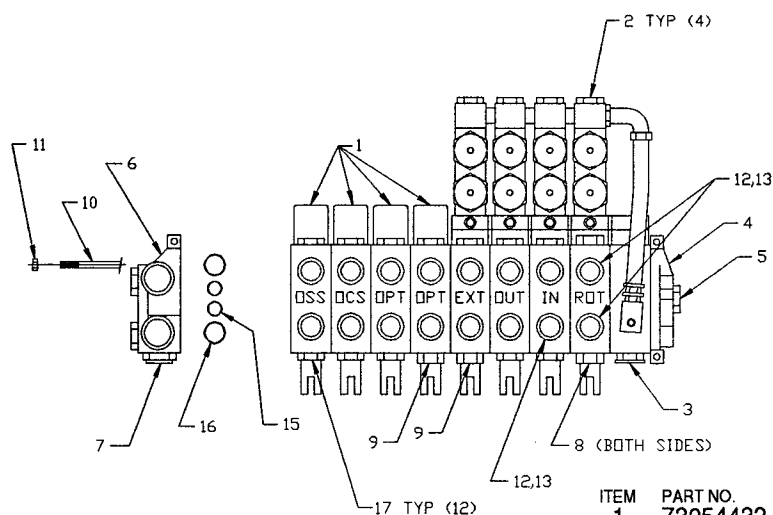
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY SAE8	6
2.	73054467	MID-INLET V20 2300WH #12	1
3.	73054442	END COVER RH	1
4.	73073022	CONVERSION PLUG	1
5.	73731424	END COVER LH	1
6.	73054673	RELIEF VALVE	1
7.	73054516	RELIEF 1300PSI NON-ADJ	2
8.	73054007	RELIEF 1800PSI NON-ADJ	1
9.	73014596	STUD 3/8X15-1/4	3
10.	72062037	NUT 3/8-24 HEX	6
11.	51393494	O-RING KIT	REF
12.	7Q072117	O-RING	16
13.	7Q072119	O-RING	16
14.	73054010	LOAD CHECK PLUG ASM	9

Figure D-32A. VALVEBANK (51703623)



ITEM	PART NO.	DESCRIPTION	QTY
1.	51706376	VALVEBANK 8-SECT 4R/4M	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	7
3.	72532666	ELBOW #8MSTR #8MJIC 90° XLG	8
4.	72532675	CAP 3/4JIC STL	4
5.	60106322	ELBOW-PR GAUGE MOD	1
6.	72532669	ADAPTER #8MJIC #10FJIC	1
7.	72053241	PIPE PLUG 1/4NPT HOLHEX	1
8.	72053747	ADAPTER #12MSTR 3/4FPT	1
9.	72053556	STREET ELBOW 3/4NPT 90°	1
10.	72532364	ADAPTER #8MSTR #12MJIC	1
11.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-34. VALVEBANK - 4R/4M (51706377)



ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY SAE8	4
2.	73054468	VALVE SECT V20R 4WAY SAE8	4
3.	73054502	VALVE SECT V20R UTILITY	1
4.	73054442	END COVER RH	1
5.	73073022	CONVERSION PLUG	1
6.	73731424	END COVER LH	1
7.	73054537	RELIEF VALVE 2500PSI	1
8.	73054516	RELIEF 1300PSI NON-ADJ	2
9.	73054007	RELIEF 1800PSI NON-ADJ	2
10.	73014672	STUD 3/8X18-3/4	3
11.	72062037	NUT 3/8-24 HEX	6
12.	70142402	ORIFICE PLATE	3
13.	70142403	SPRING	3
14.	51393494	O-RING KIT	REF
15.	7Q072117	O-RING	20
16.	7Q072119	O-RING	20
17.	73054010	LOAD CHECK PLUG ASM	12

Figure D-34A. VALVEBANK (51706376)

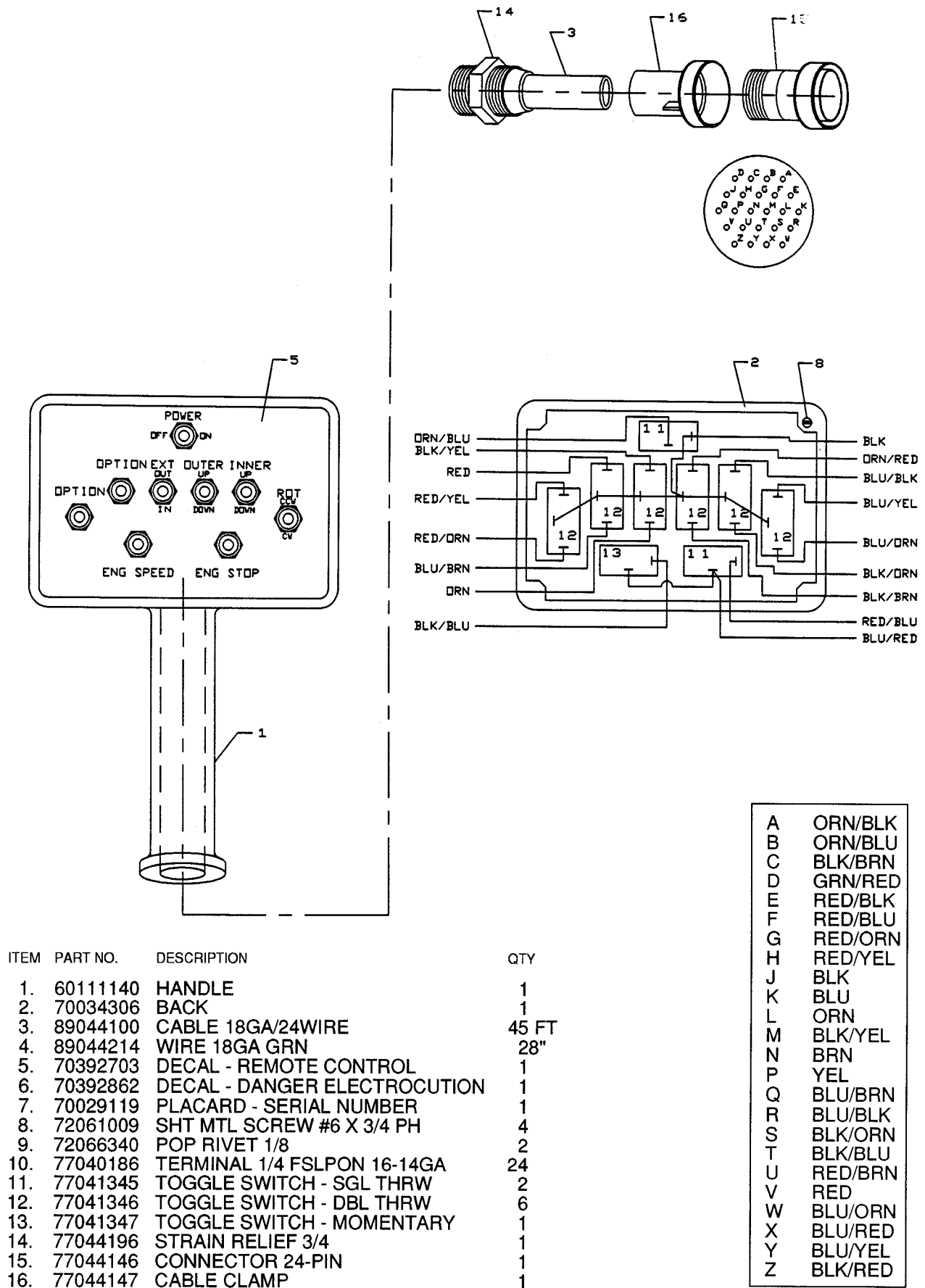
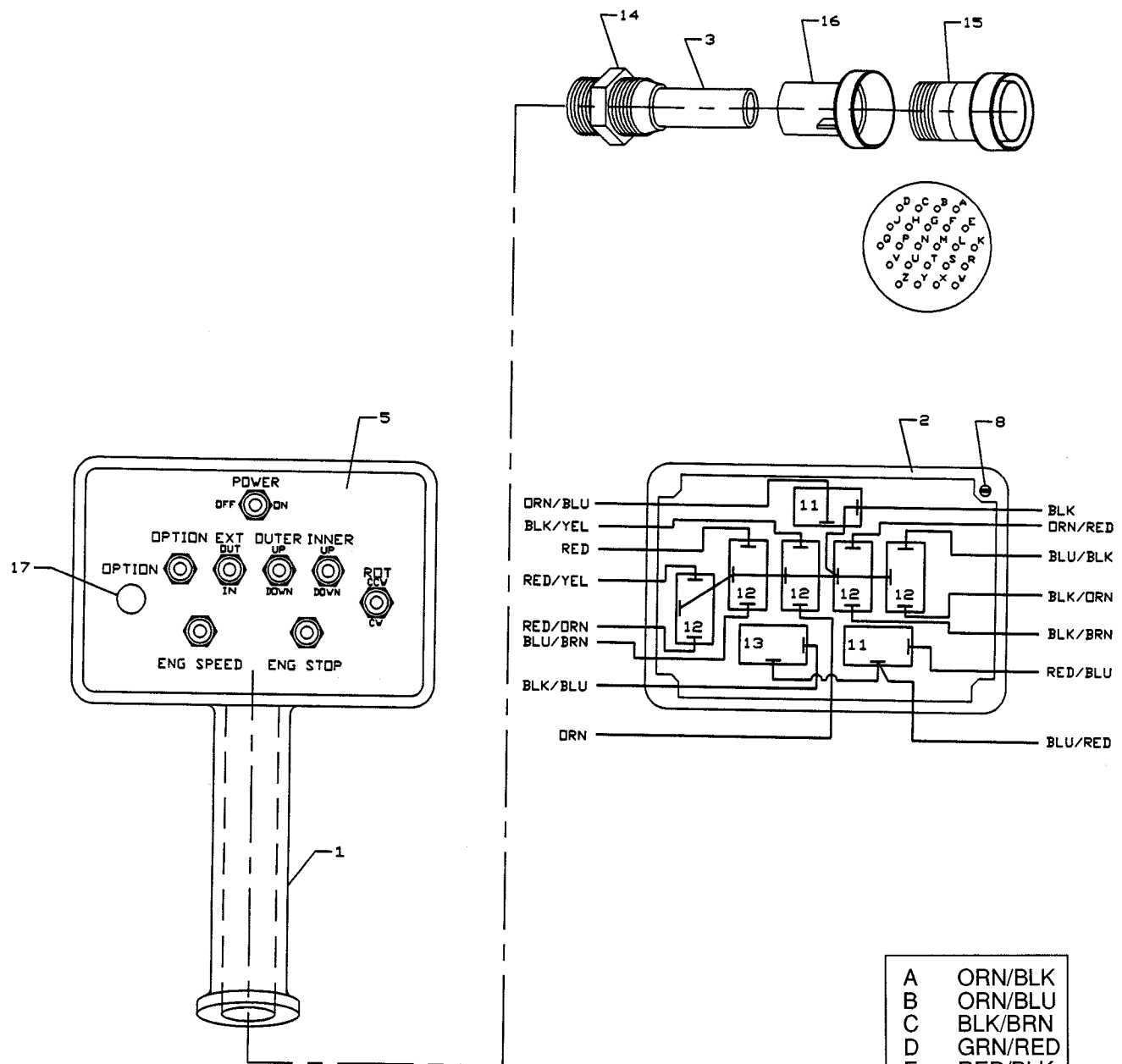


Figure D-37. REMOTE CONTROL HANDLE ASSEMBLY (51705313)



ITEM PART NUMBER DESCRIPTION

QTY

1.	60111140	HANDLE	1
2.	70034306	BACK	1
3.	89044100	CABLE 18GA/24WIRE	45 FT
4.	89044214	WIRE 18GA GRN	28"
5.	70392703	DECAL - REMOTE CONTROL	1
6.	70392862	DECAL - DANGER ELECTROCUTION	1
7.	70029119	PLACARD - SERIAL NUMBER	1
8.	72061009	SHT MTL SCREW #6 X 3/4 PH	4
9.	72066340	POP RIVET 1/8	2
10.	77040186	TERMINAL 1/4 FSLPON 16-14GA	21
11.	77041345	TOGGLE SWITCH - SGL THRW	2
12.	77041346	TOGGLE SWITCH - DBL THRW	5
13.	77041347	TOGGLE SWITCH - MOMENTARY	1
14.	77044196	STRAIN RELIEF 3/4	1
15.	77044146	CONNECTOR 24PIN	1
16.	77044147	CABLE CLAMP	1
17.	70392785	PLUG 1/2	1

A	ORN/BLK
B	ORN/BLU
C	BLK/BRN
D	GRN/RED
E	RED/BLK
F	RED/BLU
G	RED/ORN
H	RED/YEL
J	BLK
K	BLU
L	ORN
M	BLK/YEL
N	BRN
P	YEL
Q	BLU/BRN
R	BLU/BLK
S	BLK/ORN
T	BLK/BLU
U	RED/BRN
V	RED
W	BLU/ORN
X	BLU/RED
Y	BLU/YEL
Z	BLK/RED

Figure D-38. REMOTE CONTROL HANDLE ASSEMBLY (51705985)

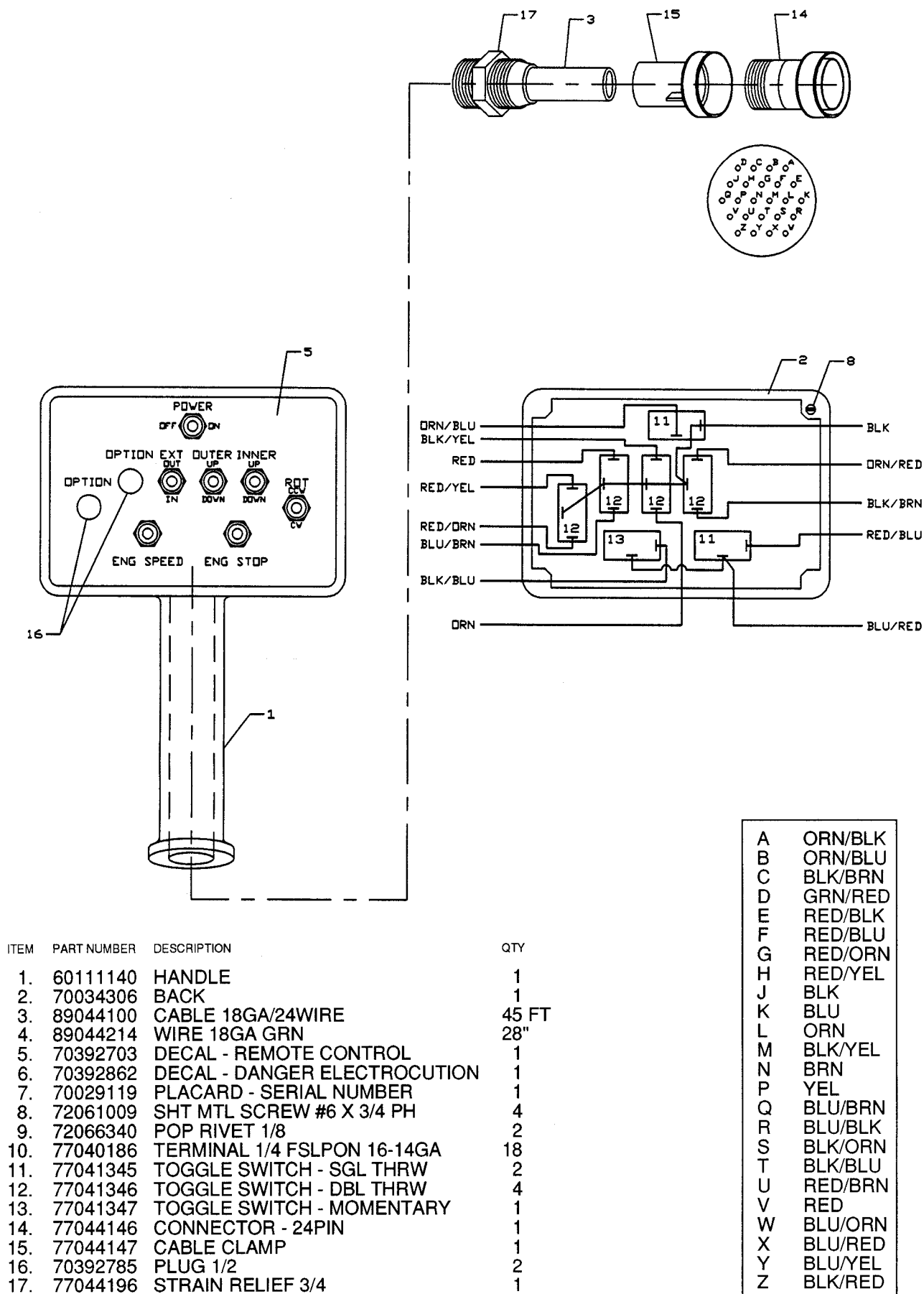
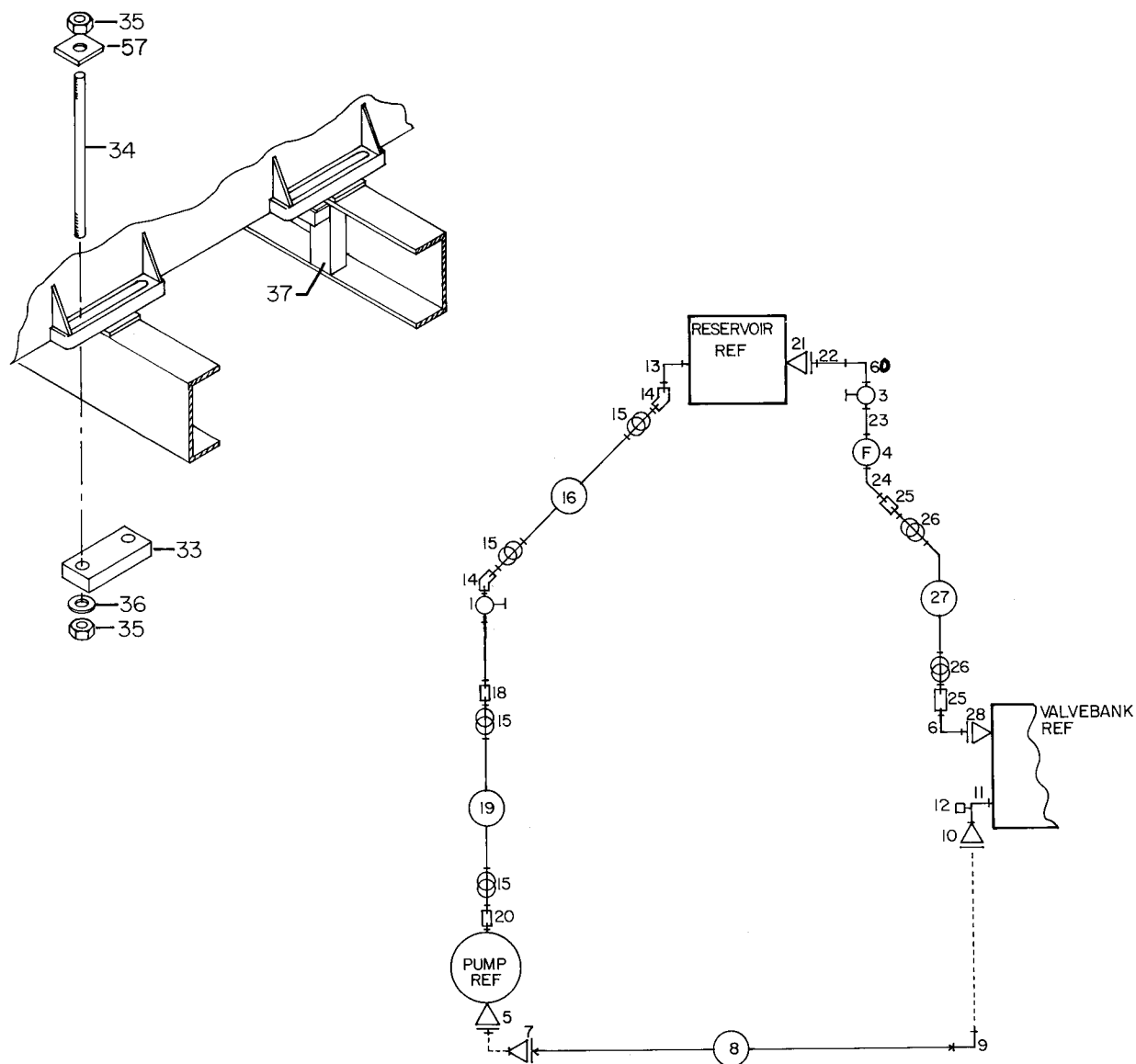
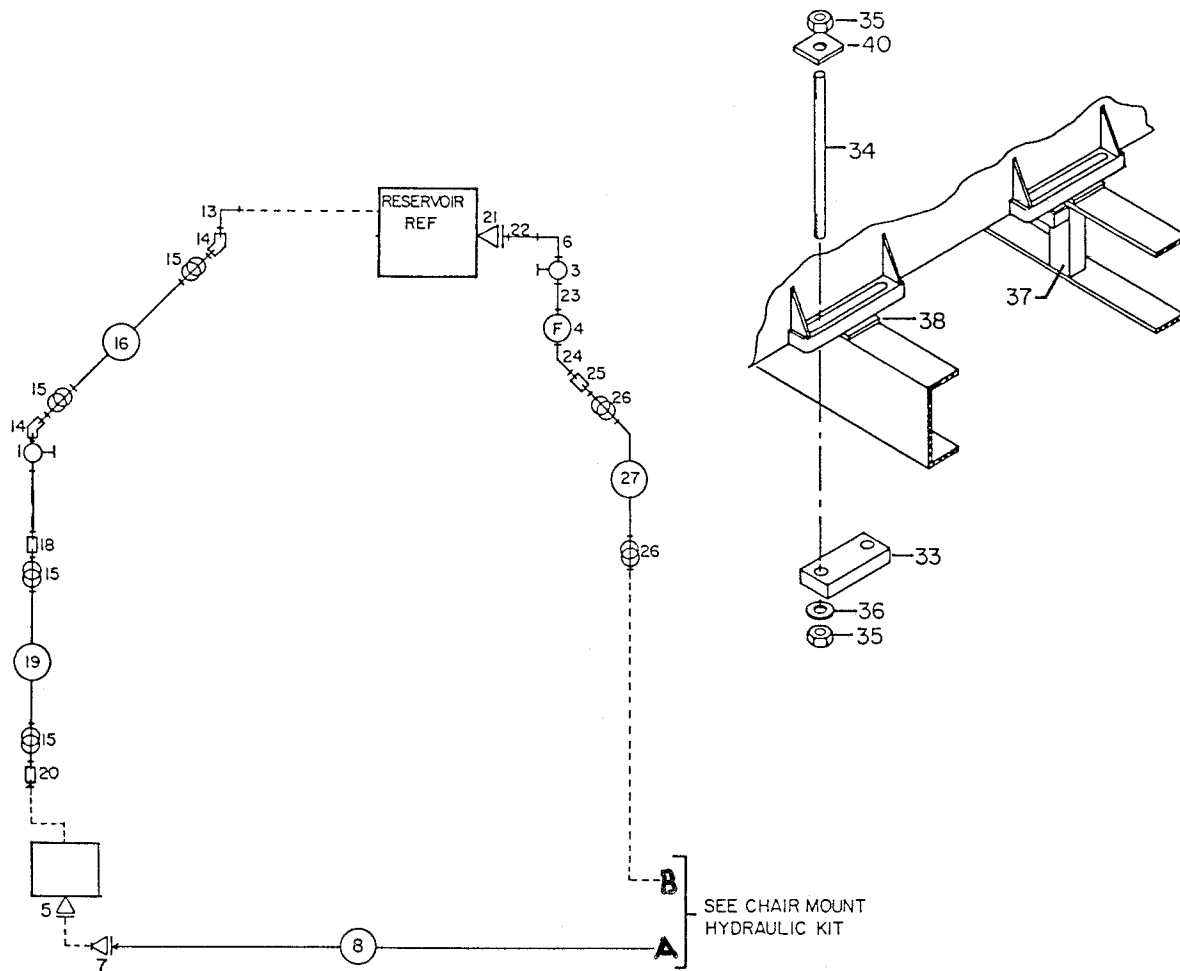


Figure D-39. REMOTE CONTROL HANDLE ASSEMBLY 4-FCTN W/SPD (51705986)



ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART	DESCRIPTION	QTY
1.	73054130	GATE VALVE 1-1/4	1	19.	60035829	HOSE 1-1/4 X 48	1
3.	73054129	GATE VALVE 3/4	1	20.	72532708	BARB NIPPLE 1-5/16 X 1-1/4 90°	1
4.	73052000	RETURN FILTER	1	21.	72531836	RED. BUSHING 1-1/4 X 3/4NPT	1
5.	72532948	ADAPTER 1-5/16MSTR 1-1/16FSTR	1	22.	72053558	NIPPLE 3/4NPT	1
6.	72053556	ELBOW 3/4NPT 90°	REF	23.	72053141	NIPPLE 3/4NPT X CLOSE	1
7.	72532360	ADAPTER 1-1/16MSTR X 3/4MJIC	1	24.	72053535	ELBOW 3/4NPT 45°	1
8.	51705643	HOSE ASM, 1/2ID X 62	1	25.	72531548	BARB NIPPLE 3/4	2
9.	72532658	ELBOW 3/4MJIC 3/4FJIC 90° SWVL	1	26.	72066000	HOSE CLAMP 3/4	2
10.	72532669	ADAPTER 3/4MJIC X 7/8FJIC	REF	27.	60035819	HOSE 3/4ID X 60	1
11.	60106322	ELBOW - MODIFIED	REF	28.	72053747	ADAPTER 1-1/16MSTR X 3/4FPT	REF
12.	72053241	PIPE PLUG 1/4NPT	REF	33.	60010354	TIE-DOWN BLOCK	4
13.	72531135	ELBOW 1-1/4NPT 90°	1	34.	60107829	TIE-DOWN STUD 1 X 18	8
14.	72531196	BARB NIPPLE 1-1/4 45°	2	35.	72062141	NUT 1-7 LOCK	16
15.	72066516	HOSE CLAMP 1-1/4	4	36.	72063066	WASHER 1" HI-STRGTH	8
16.	60035837	HOSE 1-1/4ID X 23	1	37.	52706660	SUPPORT	4
18.	72532346	BARB NIPPLE 1-1/4 90°	1	57.	60107478	WASHER 2" SQUARE	8
				60.	72053556	STREET ELBOW 3/4NPT 90°	1

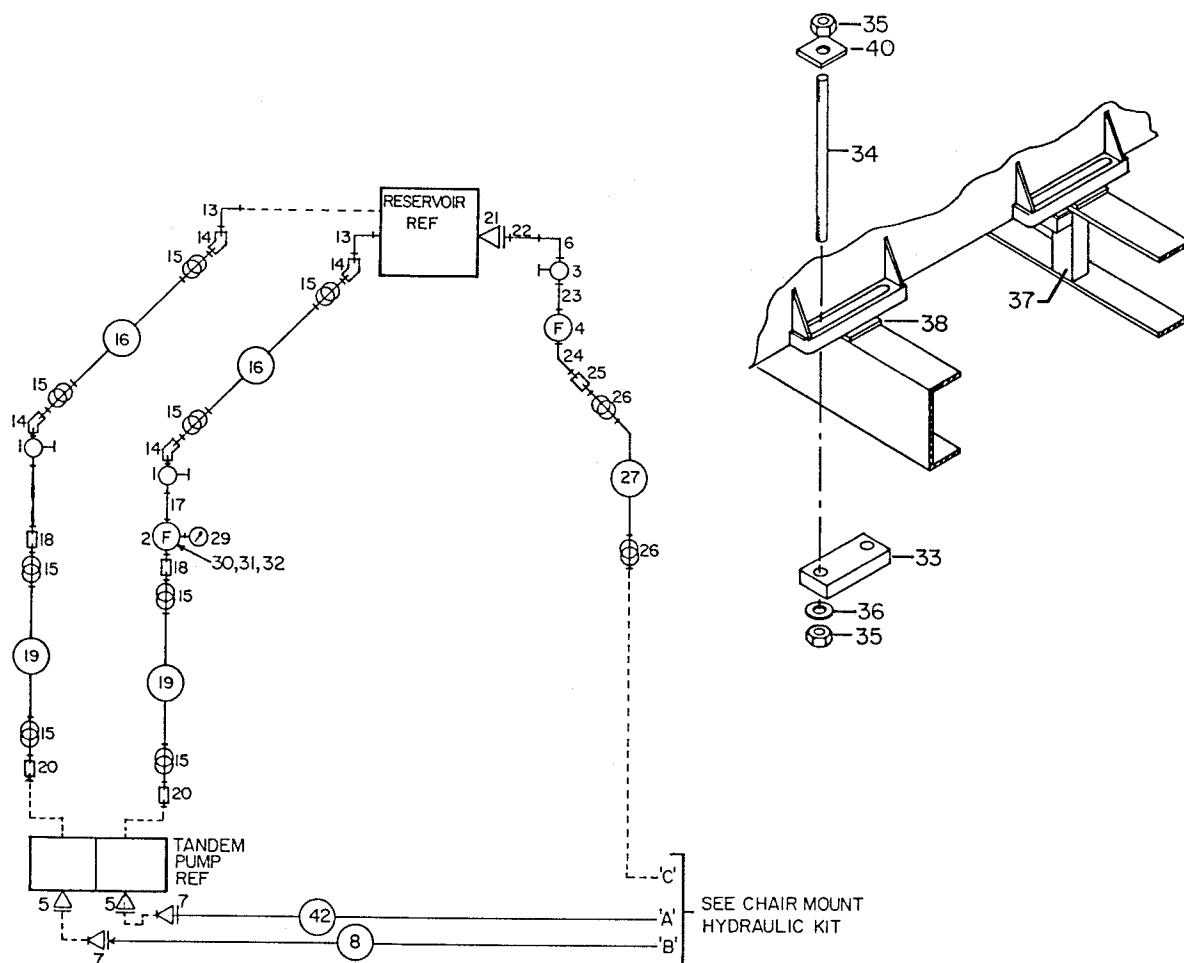
Figure D-40. INSTALLATION KIT - MANUAL CONTROLS (93709977)



ITEM	PART	DESCRIPTION	QTY
1.	73054130	GATE VALVE 1-1/4	1
3.	73054129	GATE VALVE 3/4	1
4.	72052000	RETURN FILTER	1
5.	72532948	ADAPTER 1-5/16MSTR 1-1/16FSTR	1
6.	72053556	ELBOW 3/4NPT 90°	1
7.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1
8.	51705643	HOSE ASM 1/2 X 62	1
13.	72531135	ELBOW 1-1/4NPT 90°	1
14.	72531196	BARB NIPPLE 1-1/4 45°	2
15.	72066516	HOSE CLAMP 1-1/4	4
16.	60035837	HOSE 1-1/4 100R4 X 23	1
18.	72532346	BARB NIPPLE 1-1/4 90°	1
19.	60035829	HOSE 1-1/4 100R4 X 48	1
20.	72532708	BARB NIPPLE 1-5/16 1-1/4 90°	1

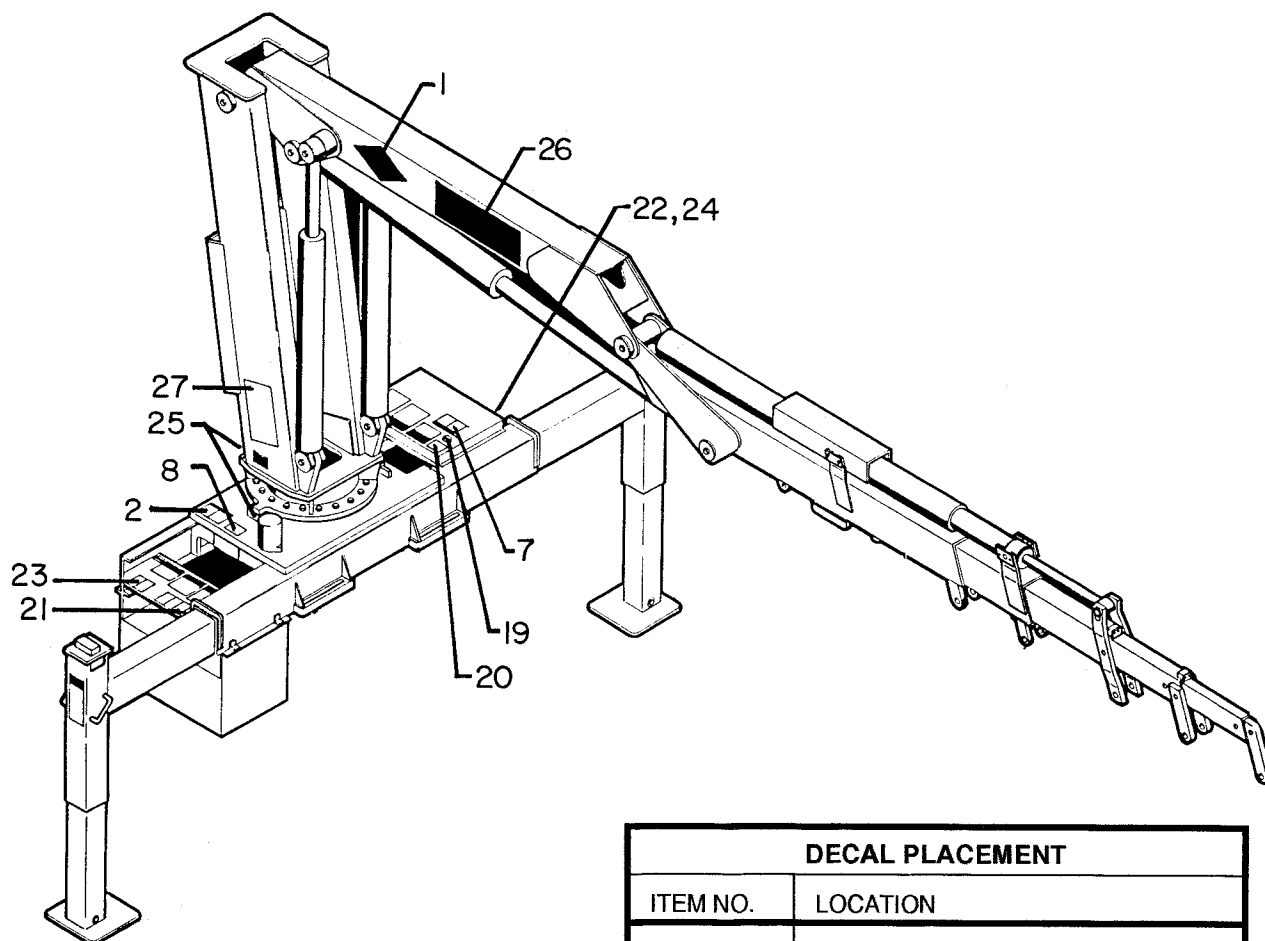
ITEM	PART	DESCRIPTION	QTY
21.	72531836	RED. BUSHING 1-1/4 3/4NPT	1
22.	72053558	NIPPLE 3/4NPT	1
23.	72053141	NIPPLE 3/4NPT X CLOSE	1
24.	72053535	ELBOW 3/4NPT 45°	1
25.	72531548	BARB NIPPLE 3/4NPT	1
26.	72066000	HOSE CLAMP 3/4	2
27.	60035819	HOSE 3/4 100R4 X 60	1
33.	60010354	TIE-DOWN BLOCK	4
34.	60107829	TIE-DOWN STUD 1 X 18	8
35.	72062141	NUT 1-7 LOCK	16
36.	72063066	WASHER 1" HI-STRGTH	8
37.	52706660	SUPPORT	4
38.	60103563	FLANGE SPACER	2
40.	60107478	WASHER 2" SQUARE	8

Figure D-41. INSTALLATION KIT - CHAIR MOUNT (93711317)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	73054130	GATE VALVE 1-1/4	2	22.	72053558	NIPPLE 3/4NPT	1
3.	73054129	GATE VALVE 3/4	1	23.	72053141	NIPPLE 3/4NPT X CLOSE	1
4.	72052000	RETURN FILTER	1	24.	72053535	ELBOW 3/4NPT 45°	1
5.	72532948	ADAPTER 1-5/16MSTR 1-1/16FSTR	2	25.	72531548	BARB NIPPLE 3/4	1
6.	72053556	ELBOW 3/4NPT 90°	1	26.	72066000	HOSE CLAMP 3/4	2
7.	72532360	ADAPTER 1-1/16MSTR X 3/4MJIC	2	27.	60035819	HOSE 3/4ID X 60	1
8.	51705643	HOSE ASM, 1/2ID X 62	1	33.	60010354	TIE-DOWN BLOCK	4
13.	72531135	ELBOW 1-1/4NPT 90°	2	34.	60107829	TIE-DOWN STUD 1 X 18	4
14.	72531196	BARB NIPPLE 1-1/4 45°	4	35.	72062141	NUT 1-7 LOCK	16
15.	72066516	HOSE CLAMP 1-1/4	8	36.	72063066	WASHER 1" HI-STRGTH	8
16.	60035837	HOSE 1-1/4ID X 23	2	37.	52706660	SUPPORT	4
18.	72532346	BARB NIPPLE 1-1/4 90°	2	38.	60103563	FLANGE SPACER	2
19.	60035829	HOSE 1-1/4 X 48	2	40.	60107478	WASHER 2" SQUARE	8
20.	72532708	BARB NIPPLE 1-5/16 X 1-1/4 90°	2	42.	51705639	HOSE ASM 1/2ID X 150	1REF
21.	72531836	RED. BUSHING 1-1/4 X 3/4NPT	1				

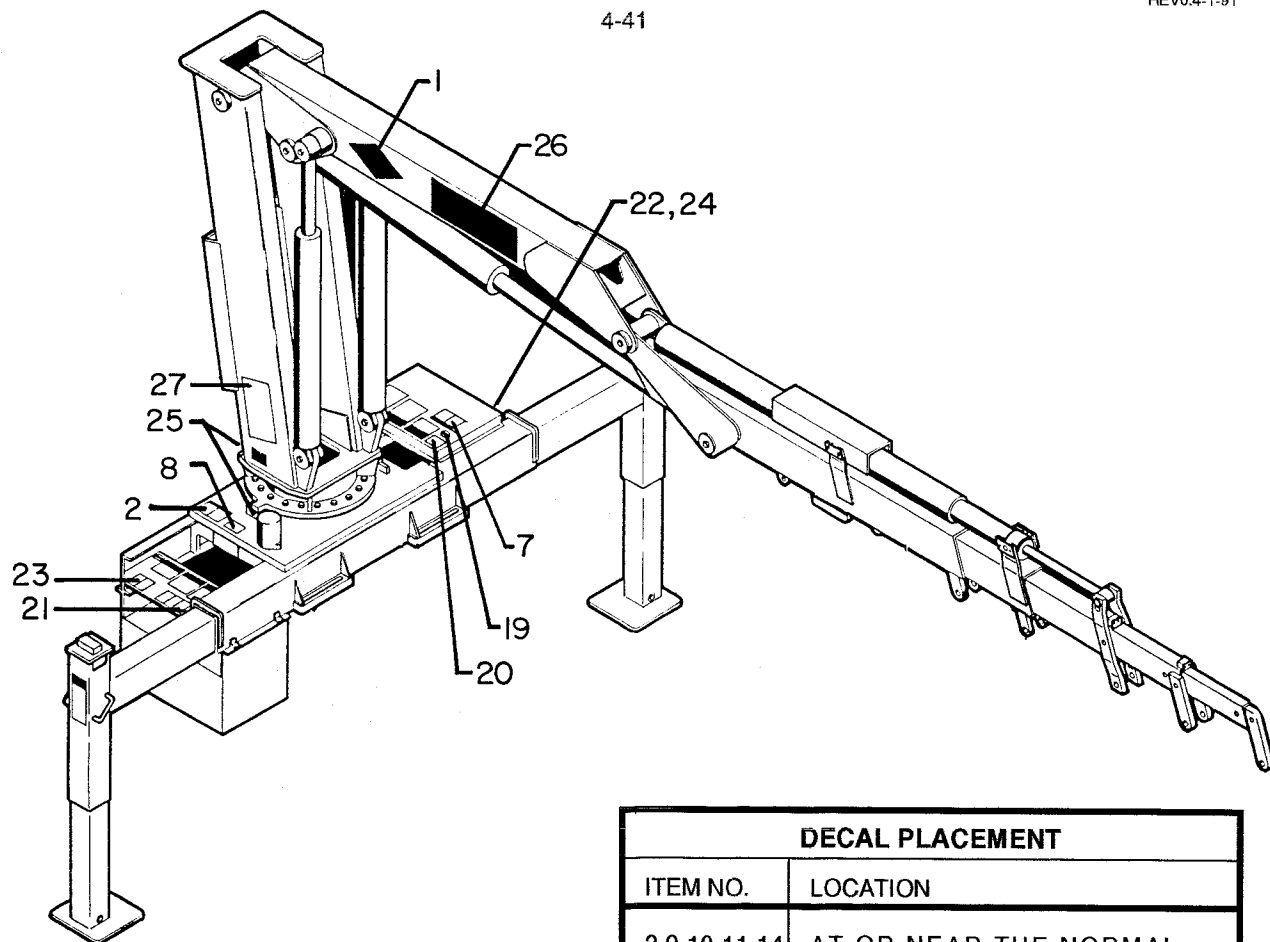
Figure D-42. INSTALLATION KIT - CHAIR MOUNT (93709976)



DECAL PLACEMENT	
ITEM NO.	LOCATION
2,9,10,11,14,16,17,18	AT OR NEAR THE NORMAL OPERATING STATIONS.
12,15	ONE ON EACH OUTRIGGER
13	ONE ON EACH SIDE OF CARRIER VEHICLE
8	AT THE TURNTABLE GREASE ZERK
3,4	AT ALL GREASE ZERKS
6	ON THE RESERVOIR, AT THE RETURN LINE
5	ON THE RESERVOIR, AT THE SUCTION LINE

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70029251	PLACARD - IMT DIAMOND	2	14.	70392866	DECAL-DANGER OPER COND	2
2.	70391583	DECAL-SETUP/STOW INST.	2	15.	70392867	DECAL-DANGER OUTR MOVING	2
3.	70391612	DECAL-GREASE WEEKLY LEFT	3	16.	70392888	DECAL-DANGER OPER RESTRICT	2
4.	70391613	DECAL-GREASE WEEKLY RIGHT	7	17.	70392890	DECAL-DANGER STOW/UNFOLD	2
5.	70392108	DECAL-SUCTION LINE	1	18.	70392891	DECAL-DANGER DRIVELINE	2
6.	70392109	DECAL-RETURN LINE	1	19.	70392982	DECAL-CONTACT IMT	1
7.	70392213	DECAL-CAUTION WASH/WAX	1	20.	71039134	DECAL-CAUTION OIL LEVEL	1
8.	70392524	DECAL-ROTATE CRANE/GREASE	1	21.	71392255	DECAL-CONTROL STRT SIDE	1
9.	70392813	DECAL-DANGER ELECTROC'N	2	22.	71392256	DECAL-CONTROL CURB SIDE	1
10.	70392814	DECAL-DANGER OPERATOR	2	23.	71392257	DECAL-OUTR PWR DN STRT SIDE	1
11.	70392815	DECAL-DANGER OPERATION	2	24.	71392258	DECAL-OUTR PWR DN CURB SIDE	1
12.	70392864	DECAL-DANGER OUTR STD CLR	2	25.	71392365	DECAL-ALIGNMENT CRANE ROT	1
13.	70392865	DECAL-DANGER ELECTROC'N	4	26.	70393311	DECAL-8031 IDENTIFICATION	2
				27.	71393312	CAPACITY PLACARD 8031	2

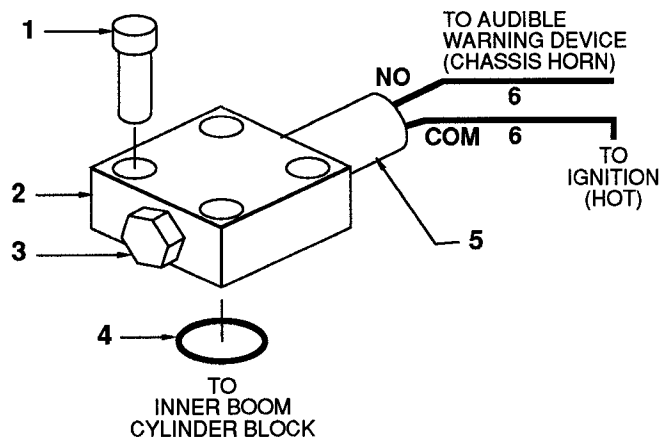
Figure D-43. Decal Kit - Manual Controls (Part Number 95709973)



DECAL PLACEMENT	
ITEM NO.	LOCATION
2,9,10,11,14,16,17,18,28	AT OR NEAR THE NORMAL OPERATING STATIONS.
12,15	ONE ON EACH OUTRIGGER
13	ONE ON EACH SIDE OF CARRIER VEHICLE
8	AT THE TURNTABLE GREASE ZERK
3,4	AT ALL GREASE ZERKS
6	ON THE RESERVOIR, AT THE RETURN LINE
5	ON THE RESERVOIR, AT THE SUCTION LINE

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70029251	PLACARD - IMT DIAMOND	2	14.	70392866	DECAL-DANGER OPER COND	2
2.	70391583	DECAL-SETUP/STOW INST.	2	15.	70392867	DECAL-DANGER OUTR MOVING	2
3.	70391612	DECAL-GREASE WEEKLY LEFT	3	16.	70392888	DECAL-DANGER OPER RESTRICT	2
4.	70391613	DECAL-GREASE WEEKLY RIGHT	7	17.	70392890	DECAL-DANGER STOW/UNFOLD	2
5.	70392108	DECAL-SUCTION LINE	1	18.	70392891	DECAL-DANGER DRIVELINE	2
6.	70392109	DECAL-RETURN LINE	1	19.	70392982	DECAL-CONTACT IMT	1
7.	70392213	DECAL-CAUTION WASH/WAX	1	20.	71039134	DECAL-CAUTION OIL LEVEL	1
8.	70392524	DECAL-ROTATE CRANE/GREASE	1	21.	71392255	DECAL-CONTROL STRT SIDE	1
9.	70392813	DECAL-DANGER ELECTROC'N	2	22.	71392256	DECAL-CONTROL CURB SIDE	1
10.	70392814	DECAL-DANGER OPERATOR	2	23.	71392257	DECAL-OUTR PWR DN STRT SIDE	1
11.	70392815	DECAL-DANGER OPERATION	2	24.	71392258	DECAL-OUTR PWR DN CURB SIDE	1
12.	70392864	DECAL-DANGER OUTR STD CLR	2	25.	71392365	DECAL-ALIGNMENT CRANE ROT	1
13.	70392865	DECAL-DANGER ELECTROC'N	4	26.	70393311	DECAL-8031 IDENTIFICATION	2
				27.	71393312	CAPACITY PLACARD 8031	2
				28.	70392889	DECAL-DANGER RC ELECTR-LG	2

Figure D-44. Decal Kit - Remote Controls (Part Number 95709974)

**NOTE**

This capacity alert system consists of a pressure switch mounted on the lift side of the inner boom lift cylinder which senses hydraulic pressure. It is to be connected electrically (by the customer) to an audible warning device such as the truck chassis horn, using 14-gauge wire.

ITEM	PART NO.	DESCRIPTION	QTY
1.	72060731	CAP SCR 5/16-18X3/4 SH	4
2.	60025221	MANIFOLD	1
3.	72532140	PLUG 9/16-18 STR THD HH	1
4.	7Q072015	O-RING	1
5.	77041283	PRESSURE SWITCH	1
6.	89044188	WIRE-14GA (Customer Supplied)	REF
7.	99900118	INSTALLATION DWG	1

Figure D-45. CAPACITY ALERT KIT - AUDIBLE (31705698)

ITEM	PART NO.	DESCRIPTION	QTY
1.	70732794	VB 6-SECT (INCL:4-15)	1
2.	72532675	CAP #8JIC	4
3.	72532358	ADAPTER 3/4MSTR 3/4MJIC	12
4.	7Q072019	O-RING	16REF
5.	7Q072021	O-RING	16REF
6.	72062037	NUT	6REF
7.	73014596	STUD	3REF
8.	73054516	RC PORT RELIEF 1300PSI	2REF
9.	73054007	RC PORT RELIEF 1800PSI	1REF
10.	73054432	TANDEM VALVE SECTION	5REF
11.	73731241	END CAP RH (INCL:16,17)	1REF
13.	73054643	RELIEF VALVE 2300PSI	1REF
15.	73731424	END CAP LH	1REF
16.	73073022	CONV PLUG (PART OF 11)	1REF
17.	73054442	END CAP (PART OF 11)	1REF

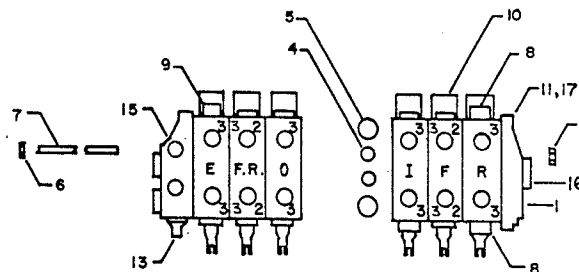


Figure D-45A. VALVEBANK ASSEMBLY 6-SECTION W/O MID-INLET (51711542)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT 4-WAY SAE#8	6
2.	73054442	END COVER-RH	1
3.	73073022	CONVERSION PLUG	1
4.	73731424	END COVER-LH	1
5.	73054643	RELIEF VALVE 2300PSI	1
6.	73054516	RELIEF-RC NON ADJ 1300PSI	2
7.	73054007	RELIEF-RC NON ADJ 1800PSI	1
8.	73014595	STUD 3/8X13-1/2	3
9.	72062037	NUT 3/8-24 HEX	6
10.	7Q072117	O-RING	14
11.	7Q072119	O-RING	14
12.	73054010	LOAD CHECK PLUG ASM	9

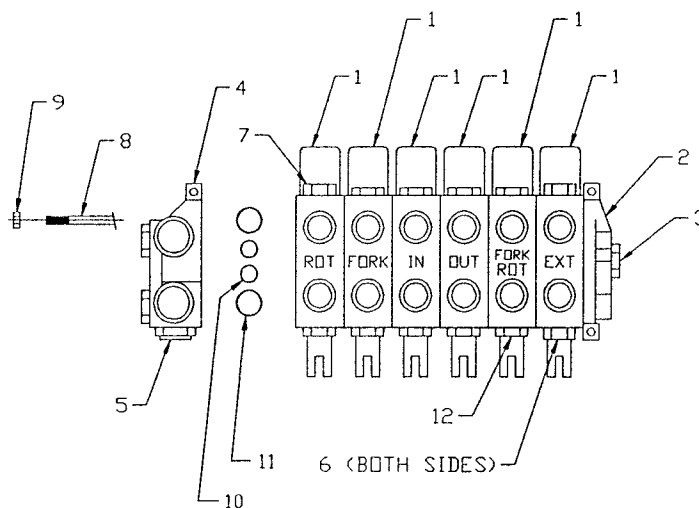
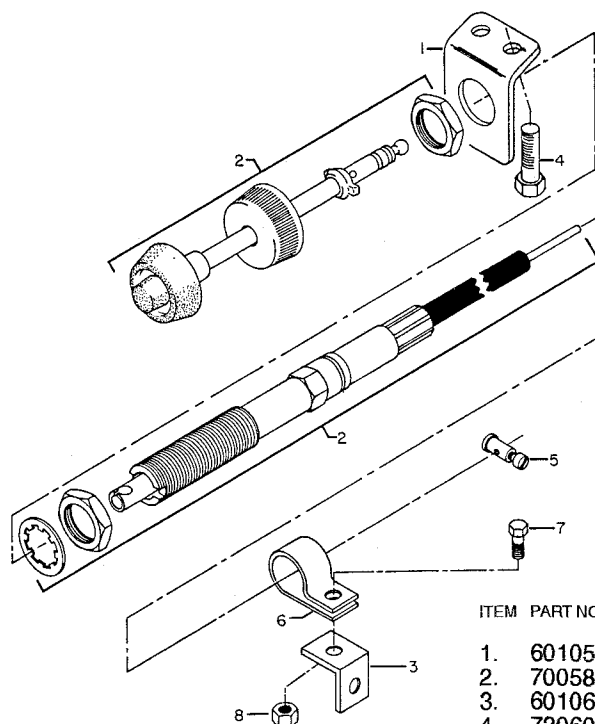
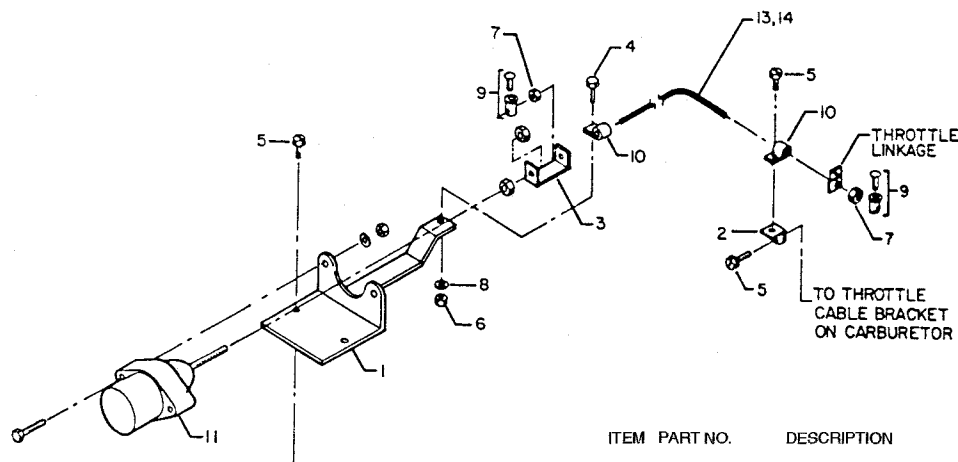


Figure D-45B. VALVEBANK 6-SECTION (70732794)



ITEM	PART NO.	DESCRIPTION	QTY
1.	60105400	MOUNTING BRACKET	1
2.	70058067	THROTTLE CONTROL 18'	1
3.	60106760	LINKAGE BRACKET	1
4.	72060962	SCR 5/16-18X1 HH SLFTPG	2
5.	72066377	CABLE STOP	1
6.	72066523	CLAMP	1
7.	72060636	MACH SCR #10-24X3/4 RDHD	2
8.	72062106	NUT #10-24 LOCK	2

Figure D-46. OPTION - Manual Throttle Control Kit (Part Number 31702746)



ITEM	PART NO.	DESCRIPTION	QTY
1.	52705080	BRACKET	1
2.	60106760	LINKAGE BRACKET	1
3.	60108086	PLUNGER BRACKET	1
4.	72060002	CAP SCR 1/4-20 X 3/4 HH GR5	5
5.	72061004	SCREW #14 X 3/4 SHT METAL	5
6.	72062000	NUT 1/4-20 HEX	5
7.	72062093	NUT #8-32 HEX	2
8.	72063049	WASHER 1/4 LOCK	5
9.	72066377	CABLE STOP	2
10.	72066523	CLAMP	2
11.	73054654	SOLENOID VALVE 12V	1
13.	89058892	CASING	3.5'
14.	89058934	CABLE	4'
15.	77041251	RELAY	1
16.	89044233	WIRE - 14GGA BRN	20'
17.	77040186	TERMINAL	4
18.	60103535	SWITCH BRACKET (NOT SHOWN)	2
19.	77041345	TOGGLE SWITCH (NOT SHOWN)	2

FOR CRANE INSTALLATIONS

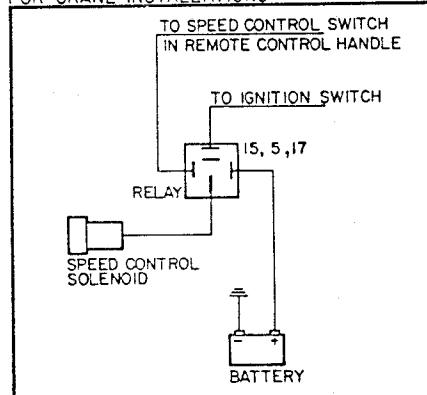
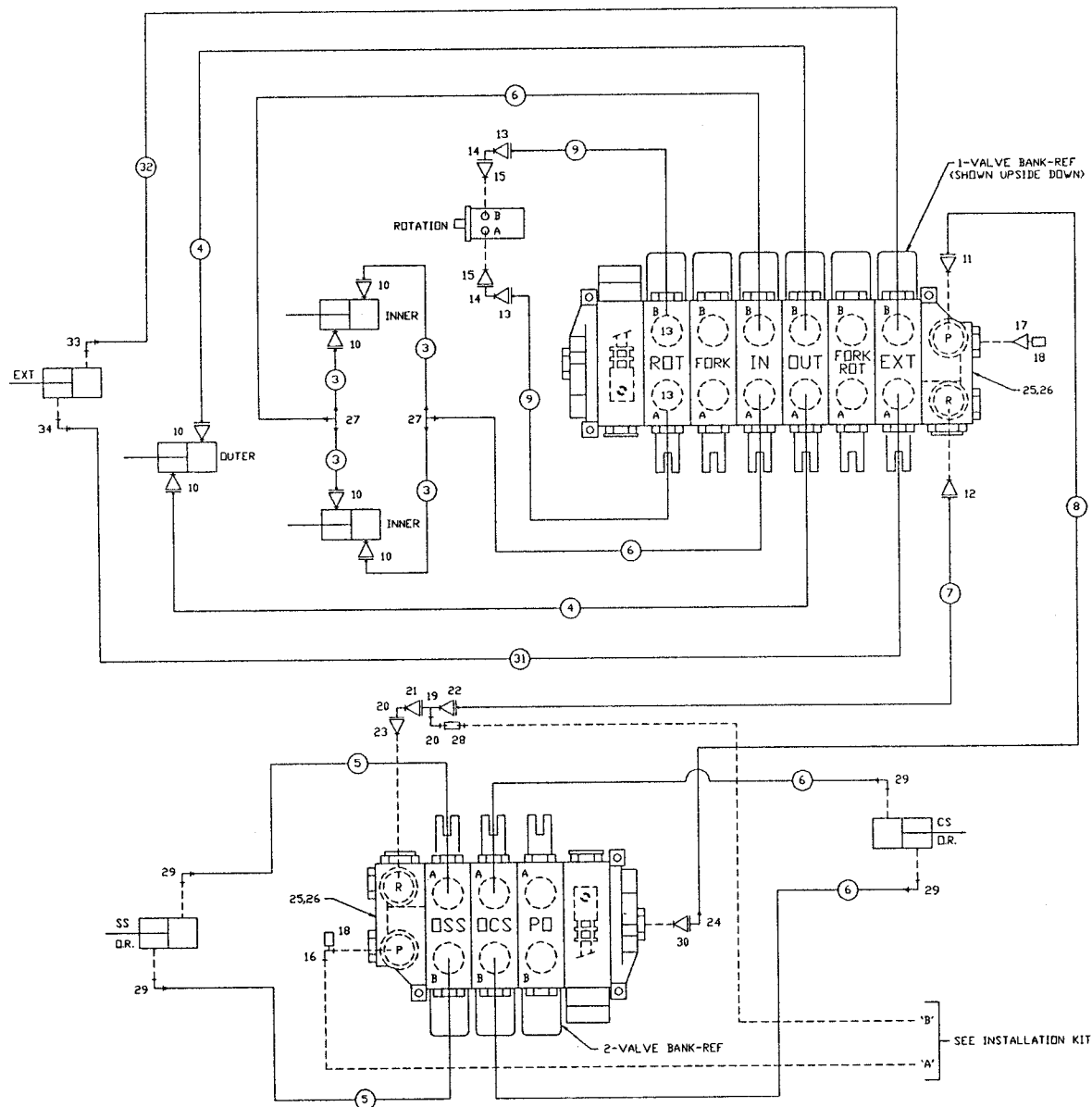
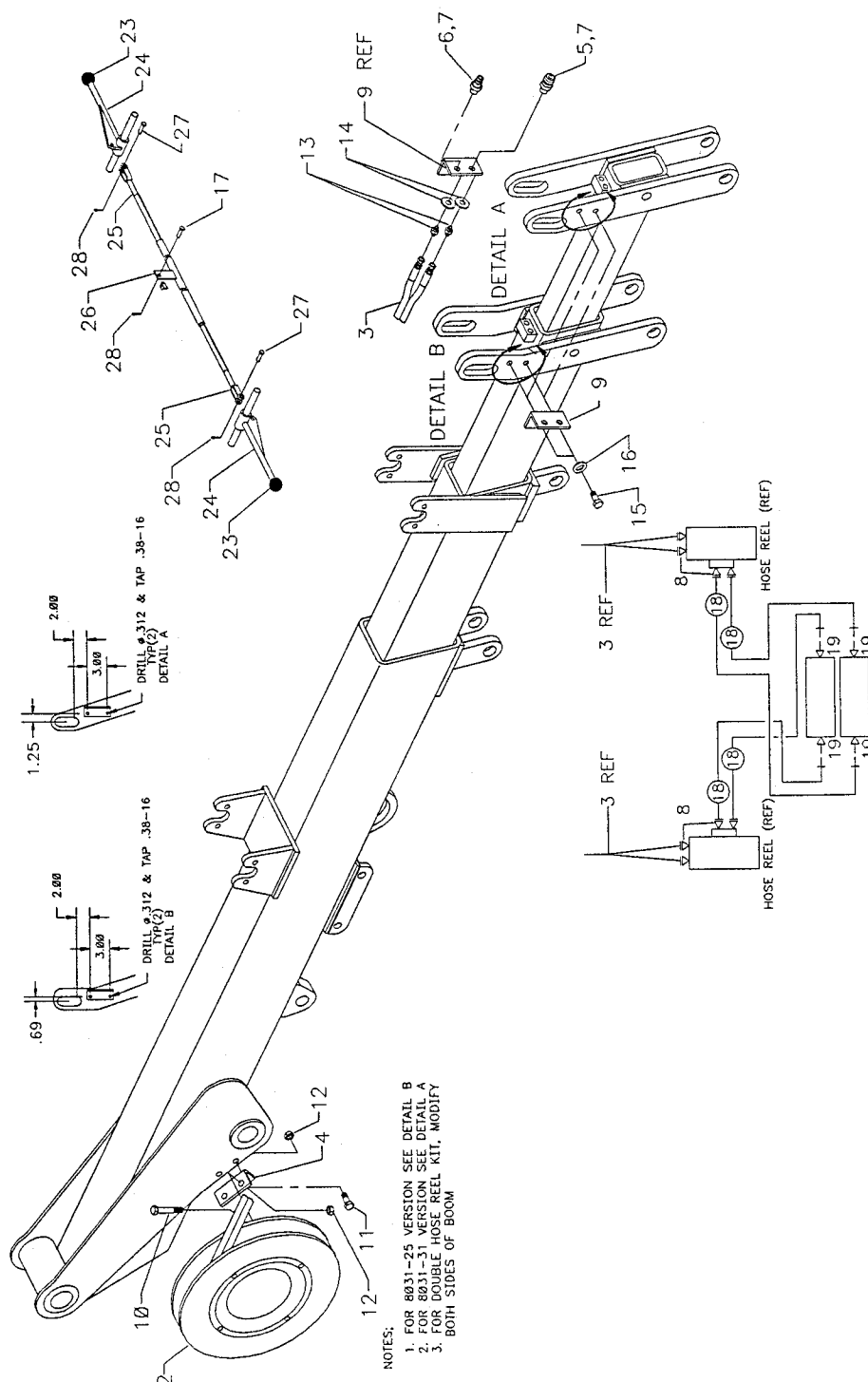


Figure D-47. OPTION - Synchro Start Throttle Control (Part Number 31705270)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.		VALVEBANK ASM	REF	21.	72053558	ADAPTER 3/4MPT 3/4MPT	1
2.		VALVEBANK ASM	REF	22.	72053676	ADAPTER 3/4MPT #12MJIC	1
3.	51703586	HOSE ASM 3/8X31 FF	4	23.	72053747	ADAPTER #12MSTR 3/4FPT	1
4.	51703601	HOSE ASM 3/8X90 FF	2	24.	72053763	ELBOW #8MSTR #8MJIC 90°	1
5.	51704298	HOSE ASM 3/8X80 FF	2	25.	72060032	CAP SCR 5/16-18X2-3/4 HHGR5	6
6.	51704308	HOSE ASM 3/8X110 FF	4	26.	72062109	NUT 5/16-18 LOCK	6
7.	51704570	HOSE ASM 3/4X150 FF	1	27.	72531205	TEE 3/4MJIC 1/2TUBE	2
8.	51705639	HOSE ASM 1/2X150 FF	1	28.	72531548	BARB NIPPLE 3/4MPT 3/4HOSE	1
9.	51706046	HOSE ASM 1/4X152 FF	2	29.	72532779	ELBOW #6MSTR #8MJIC XLG	4
10.	72532358	ADAPTER #8MSTR #8MJIC	6	30.	73731242	ADAPTER-PWR BEYOND	REF
11.	72532360	ADAPTER #12MSTR #8MJIC	1	FOR CRANES WITH 1 OR 2 STG HYD EXT CYL			
12.	72532366	ADAPTER #12MSTR #12MJIC	1	31.	SHORTEN EXISTING EXTEND HOSE TO 180"		
13.	72532665	ADAPTER #4MJIC #8FJIC	4	32.	SHORTEN EXISTING RETRACT HOSE TO 180"		
14.	72532690	ELBOW #4MJIC #4FJIC SWVL	2	33.	72532740	ELBOW #8MSTR #8MJIC 90° SW	
15.	72532351	ADAPTER #4MSTR #4MJIC	2	34.	72532740	ELBOW #8MSTR #8MJIC 90° SW	
16.	60106322	ELBOW-PR GAUGE MOD	1	FOR CRANES WITH 3 STG HYD EXT CYL			
17.	60107746	MACH PLUG	1	31.	SHORTEN EXISTING EXTEND HOSE TO 240"		
18.	72053412	PIPE PLUG 1/4NPT SQHD	2	32.	SHORTEN EXISTING RETRACT HOSE TO 240"		
19.	72053555	TEE 3/4NPT	1	33.	72053767	ELBOW #12MSTR #12MJIC 90°	
20.	72053556	STREET ELBOW 3/4NPT 90°	2	34.	72532666	ELBOW #8MSTR #8MJIC XLG	

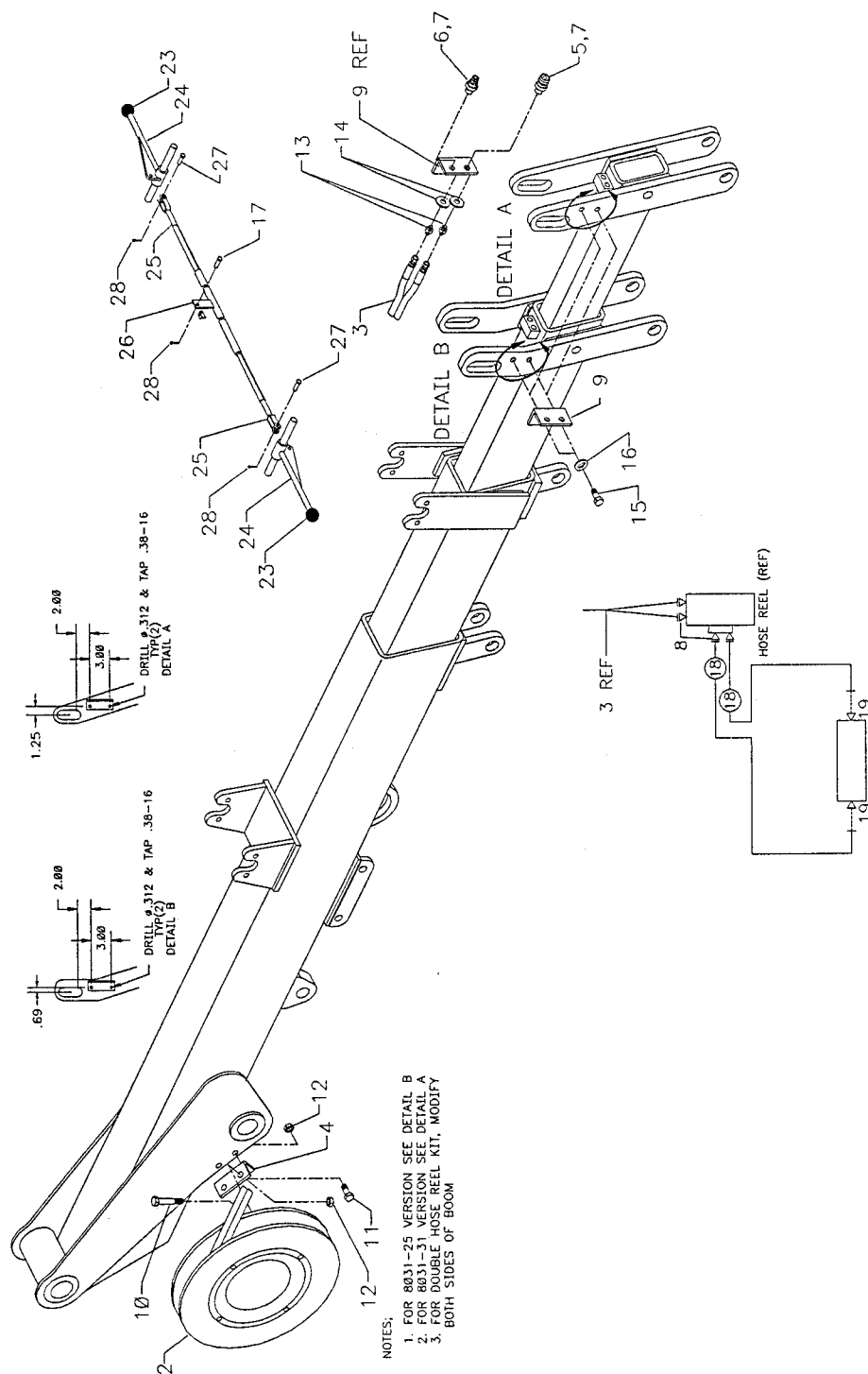
Figure D-48. HYDRAULIC KIT 6-SECTION CHAIR W/O MID INLET (91711315)



NOTES:
 1. FOR 8031-25 VERSION SEE DETAIL B
 2. FOR 8031-31 VERSION SEE DETAIL A
 3. FOR DOUBLE HOSE REEL KIT, MODIFY BOTH SIDES OF BOOM

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732863	HOSE REEL-LH	1	14.	72063003	WASHER 3/8 WRT	4
2.	70732864	HOSE REEL-RH	1	15.	72063003	WASHER 3/8 WRT	4
3.	51393812	HOSE ASM 1/4X300 TWIN-LINE	2	16.	72060044	CAP SCR 3/8-16X3/4	4
4.	60117715	BRACKET	2	17.	72066337	PIN-SPECIAL	2
5.	72533380	DISCONNECT COUPLER 1/4NPT	2	18.	51708888	HOSE ASM 1/4X323 FF	4
6.	72533382	DISCONNECT NIPPLE 1/4NPT	2	19.	72532665	ADAPTER #4MJIC #8FJIC	4
7.	72533381	DUST CAP	4	23.	71039096	KNOB	4
8.	72532353	ADAPTER #6MSTR #4MJIC	8	24.	70029451	CONTROL HANDLE	4
9.	60115137	ANGLE	2	25.	52704745	CONTROL ROD-M	4
10.	72060097	CAP SCR 1/2-13X3 HHGR5	4	26.	52705877	CONTROL ROD-F	2
11.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	4	27.	72066338	CLEVIS PIN 5/16X1	4
12.	72062080	NUT 1/2-13 LOCK	8	28.	72066168	COTTER PIN .09X.75	6
13.	72053499	ADAPTER 1/4MPT #4MJIC	4				

Figure D-50. OPTION - DOUBLE HOSE REEL KIT (31712011)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
2.	70732864	HOSE REEL-RH	1	14.	72063003	WASHER 3/8 WRT	2
3.	51393812	HOSE ASM 1/4X300 TWIN-LINE	1	15.	72063003	WASHER 3/8 WRT	4
4.	60117715	BRACKET	1	16.	72060044	CAP SCR 3/8-16X3/4	4
5.	72533380	DISCONNECT COUPLER 1/4NPT	1	17.	72066337	PIN-SPECIAL	2
6.	72533382	DISCONNECT NIPPLE 1/4NPT	1	18.	51708888	HOSE ASM 1/4X323 FF	2
7.	72533381	DUST CAP	2	19.	72532665	ADAPTER #4MJIC #8FJIC	2
8.	72532353	ADAPTER #6MSTR #4MJIC	4	23.	71039096	KNOB	2
9.	60115137	ANGLE	1	24.	70029451	CONTROL HANDLE	2
10.	72060097	CAP SCR 1/2-13X3 HHGR5	2	25.	52704745	CONTROL ROD-M	2
11.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	2	26.	52705877	CONTROL ROD-F	1
12.	72062080	NUT 1/2-13 LOCK	4	27.	72066338	CLEVIS PIN 5/16X1	2
13.	72053499	ADAPTER 1/4MPT #4MJIC	2	28.	72066168	COTTER PIN .09X.75	3

Figure D-51. OPTION - SINGLE HOSE REEL KIT (31712010)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52708487	RESERVOIR - 30 GALLON	1
2.	72532261	SIGHT GAUGE 3/4	1
3.	73014671	FILL CAP	1
4.	73052001	MAGNETIC PIPE PLUG 3/4 SQHD	1
5.	73141276	FILL NECK SCREEN	1

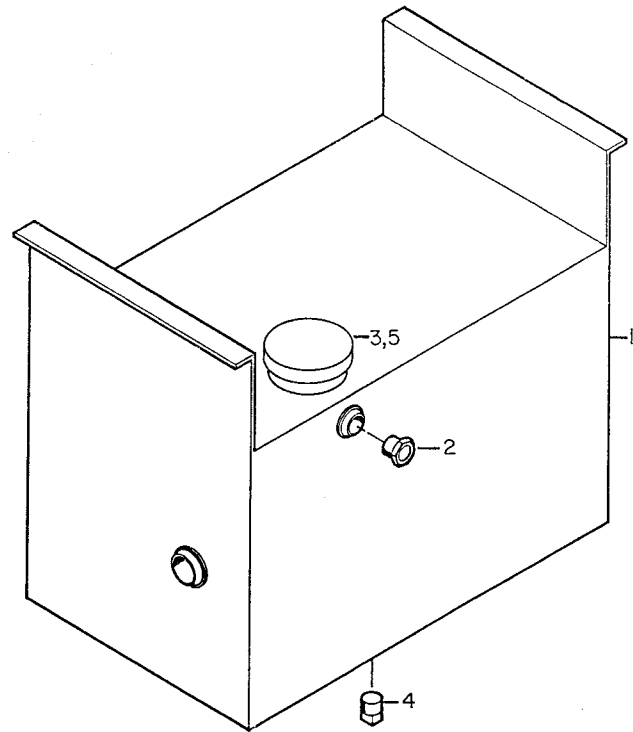
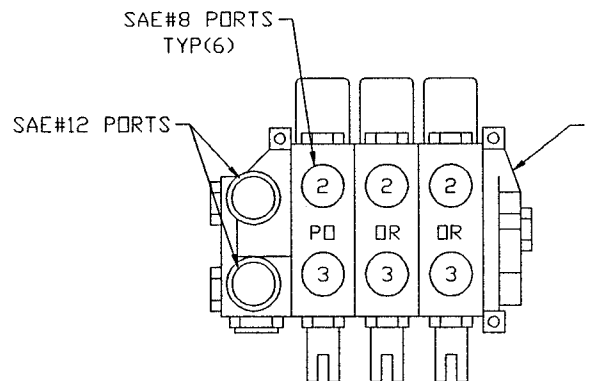


Figure D-52. OPTION - Reservoir Assembly - 30 Gallon (Part Number 51708488)

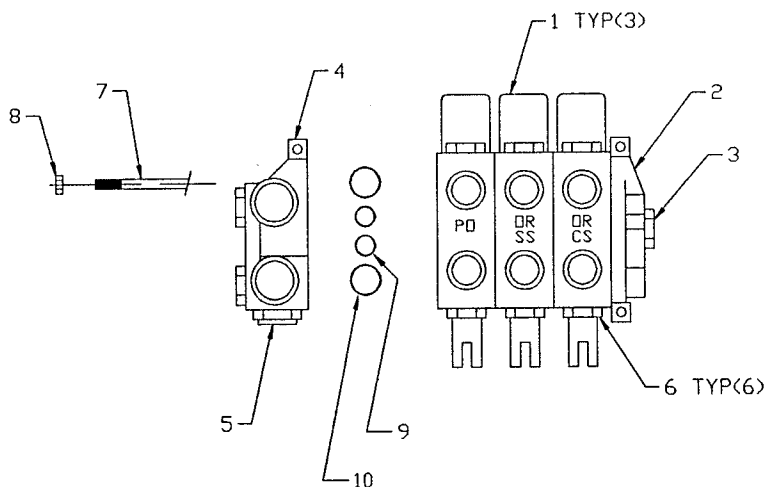
ITEM	PART NO.	DESCRIPTION	QTY
1.	70144163	COVER	1
2.	70732789	DIPSTICK ASM	1
3.	70034410	DIFFUSER 3/4NPT 33GPM	1
4.	70732791	SCREEN 100MESH	1
5.	70144166	STRAINER 100MESH 20GPM	1
6.	73052001	PLUG 3/4FPT SQHD MAGNETIC	1
7.	76393565	O-RING 6" ID 6.5" OD	1

Figure D-52A. RESERVOIR ASSEMBLY 20-GALLON (70732578)



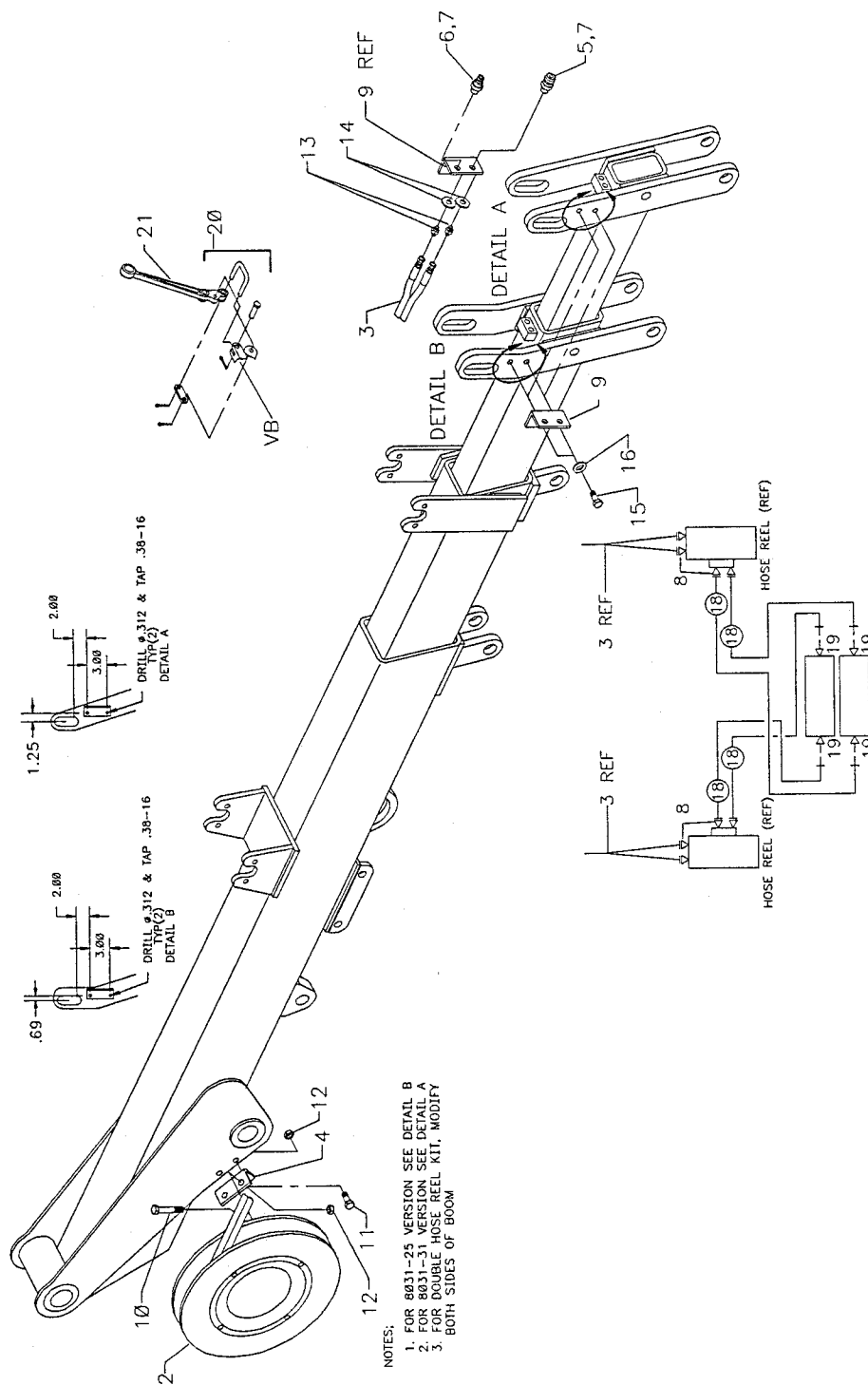
ITEM	PART NO.	DESCRIPTION	QTY
1.	51705973	VALVEBANK 3 SECT W/PB	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	3
3.	72532666	ELBOW #8MSTR #8MJIC XLG	3

Figure D-53. VALVEBANK ASSEMBLY - 3 SECTION W/POWER BEYOND (51706751)



ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT 4-WAY SAE#8	3
2.	73054442	END COVER RH	1
3.	73731242	POWER BEYOND ADAPTER SAE#8	1
4.	73731424	END COVER LH	1
5.	73054643	RELIEF VALVE 2300PSI	1
6.	73054010	LOAD CHECK PLUG ASM	6
7.	73014594	STUD 3/8-24X8-1/4	3
8.	72062037	NUT 3/8-24 HEX	6
9.	7Q072117	O-RING .81X1X.09	8
10.	7Q072119	O-RING .94X1.12X.09	8
11.	51393494	O-RING KIT (SERVICE PART)	REF

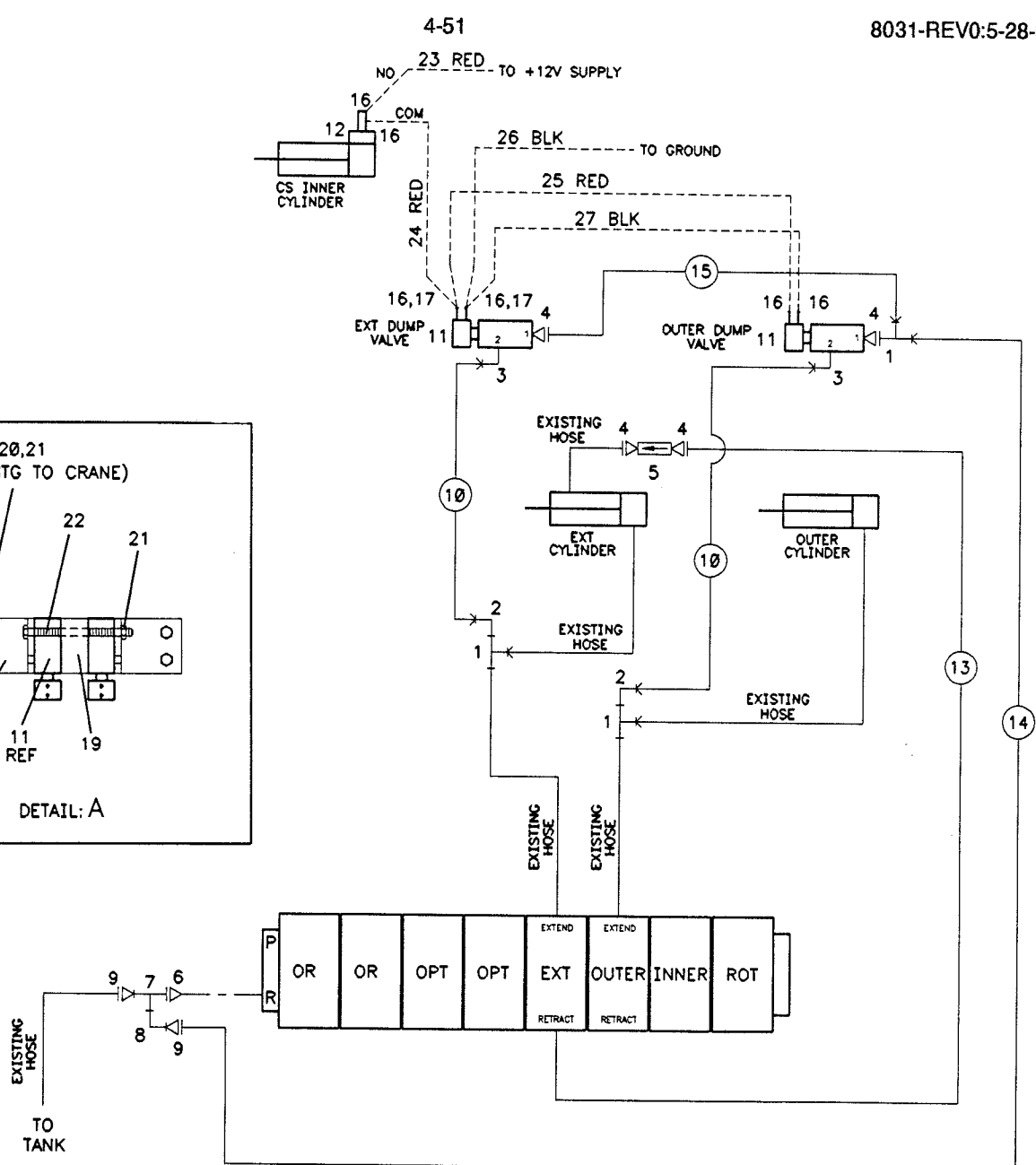
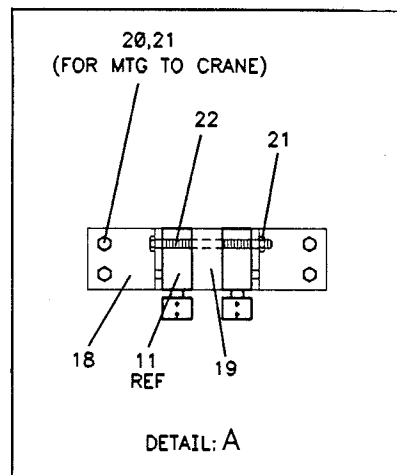
Figure D-53A. VALVEBANK (51705973)



NOTES:
 1. FOR 8031-25 VERSION SEE DETAIL B
 2. FOR 8031-31 VERSION SEE DETAIL A
 3. FOR DOUBLE HOSE REEL KIT, MODIFY BOTH SIDES OF BOOM

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732863	HOSE REEL-LH	1	11.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	4
2.	70732864	HOSE REEL-RH	1	12.	72062080	NUT 1/2-13 LOCK	8
3.	51393812	HOSE ASM 1/4X300 TWIN-LINE	2	13.	72053499	ADAPTER 1/4MPT #4MJIC	4
4.	60117715	BRACKET	2	14.	72063003	WASHER 3/8 WRT	4
5.	72533380	DISCONNECT COUPLER 1/4NPT	2	15.	72063003	WASHER 3/8 WRT	4
6.	72533382	DISCONNECT NIPPLE 1/4NPT	2	16.	72060044	CAP SCR 3/8-16X3/4	4
7.	72533381	DUST CAP	4	18.	51704968	HOSE ASM 1/4X186 FF	4
8.	72532353	ADAPTER #6MSTR #4MJIC	8	19.	72532665	ADAPTER #4MJIC #8FJIC	4
9.	60115137	ANGLE	2	20.	94731839	LINK & PIN KIT	2
10.	72060097	CAP SCR 1/2-13X3 HHGR5	4	21.	73014848	HANDLE	2

Figure D-54. DOUBLE HOSE REEL KIT - CHAIRMOUNT (31712012)



ITEM	PART NO.	DESCRIPTION	QTY
1.	72532657	TEE 3/4JIC SWVL NUT RUN	3
2.	72532658	ELBOW #8MJIC #8FJIC	2
3.	72053763	ELBOW #8MSTR #8MJIC 90°	2
4.	72532358	ADAPTER #8MSTR #8MJIC	4
5.	73054426	RELIEF VALVE - ADJ	1
6.	72053676	ADAPTER 3/4MPT #12MJIC	1
7.	72532950	TEE 1-1/16JIC SWVL NUT RUN	1
8.	72532696	ELBOW #12MJIC #12FJIC SWVL	1
9.	72532972	ADAPTER #8MJIC #12FJIC	2
10.	51703863	HOSE ASM 3/8X14 FF	2
11.	73054576	SOLENOID VALVE	2
12.	31705698	KIT-CAPACITY ALERT (ELECT)	1
13.	51706239	HOSE ASM 1/2X5 FF	1
14.	51704914	HOSE ASM 3/8X60 FF	1
15.	51703701	HOSE ASM 3/8X10 FF	1
16.	77040186	TERM-FSLPON 1/4TAB 16-14GA	6
17.	77040282	TERM-PIGBAC 1/4TAB 16-14GA	2
18.	60250259	MTG ANGLE-DUMP VALVE	2
19.	60250260	MTG SPACER-DUMP VALVE	1
20.	72060004	CAP SCR 1/4-20X1 HH GR5	4
21.	72062104	NUT 1/4-20 LOCK	6
22.	72060017	CAP SCR 1/4-20X4-1/2 HH GR5	2
23.	89044232	WIRE 14GA RED X 180	1
24.	89044232	WIRE 14GA RED X 120	1
25.	89044232	WIRE 14GA RED X 6	1
26.	89044274	WIRE 14GA BLK X 60	1
27.	89044274	WIRE 14GA BLK X 6	1

NOTES:

1. FUNCTION OF SYSTEM IS SUCH THAT WHEN THE INNER CYLINDERS ARE OVERLOADED, THE PRESSURE SWITCH WILL ACTIVATE THE SOLENOID DUMP VALVE(S); THUS DUMPING OIL TO "TANK" INSTEAD OF THE OUTER CYLINDER "EXTEND", EXTENSION CYLINDER "EXTEND", OR WINCH "UP" FUNCTIONS WHICH WILL NOT ALLOW PRESSURE TO BUILD FOR THESE FUNCTIONS. THIS SYSTEM IS BASED ON THE FACT THAT THE OIL WILL TAKE THE PATH OF LEAST RESISTANCE.

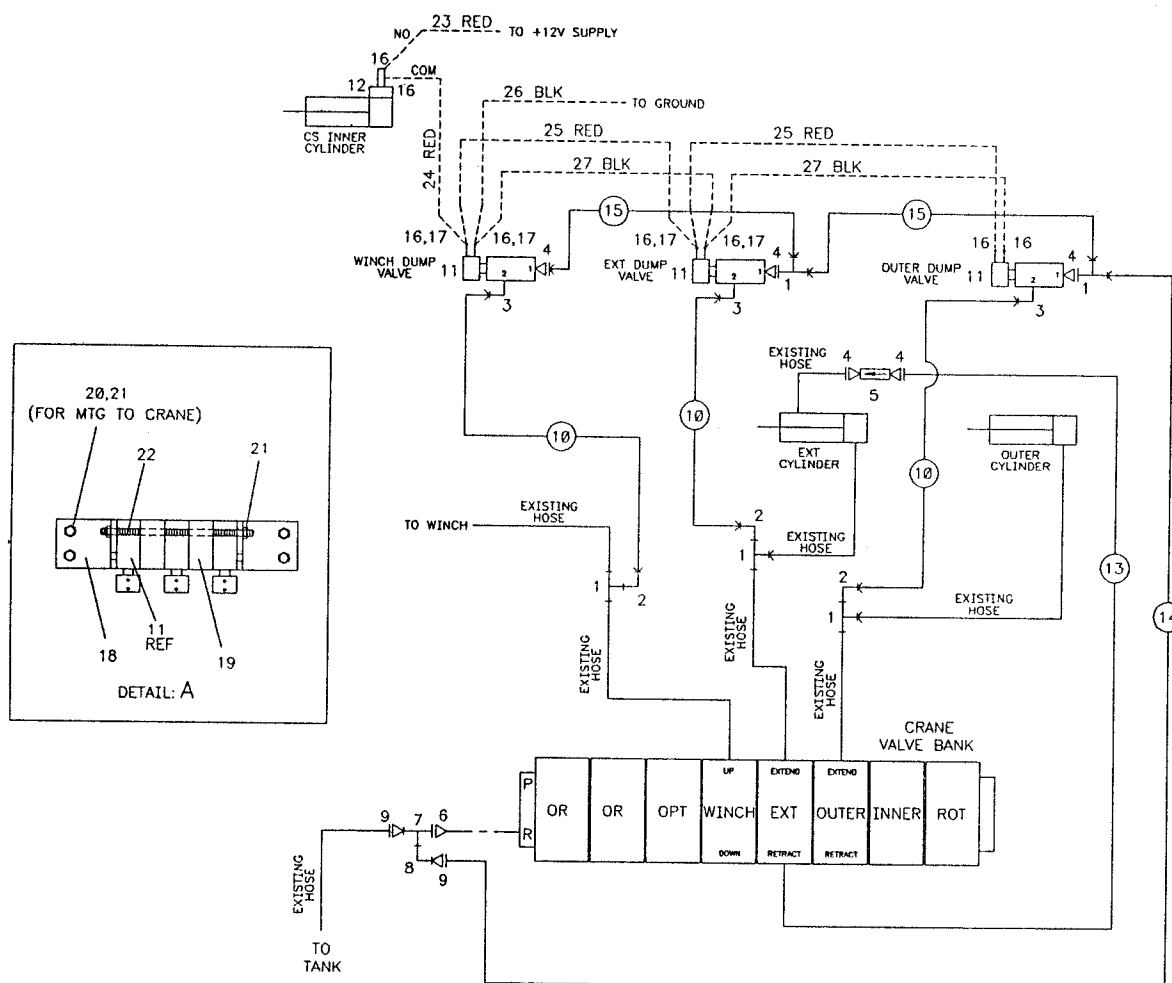
2. THE FUNCTIONS THAT ARE SHUT DOWN, IF OVERLOADED, ARE THE FOLLOWING:

- OUTER BOOM "EXTEND"
- EXTENSION CYLINDER "EXTEND"

3. INSTALL A RELIEF (PART NO. 73054426, 700PSI) IN LINE OF THE RETRACT SIDE OF THE EXTENSION CYLINDER TO CREATE BACK PRESSURE SO EXTENSION CYLINDER WILL NOT EXTEND WHEN THE DUMP SYSTEM IS ACTIVATED.

4. ITEMS 11, 18, 19, 20, 21 AND 22 SHOULD BE BOLTED TOGETHER BEFORE THEY ARE MOUNTED TO THE CRANE (SEE DETAIL A).

Figure D-55. OPTION-HYDRAULIC OVERLOAD KIT 2-FUNCTION (51710922)



ITEM	PART NO.	DESCRIPTION	QTY
1.	72532657	TEE 3/4JIC SWVL NUT RUN	5
2.	72532658	ELBOW #8MJIC #8FJIC	3
3.	72053763	ELBOW #8MSTR #8MJIC 90°	3
4.	72532358	ADAPTER #8MSTR #8MJIC	5
5.	73054426	RELIEF VALVE - ADJ	1
6.	72053676	ADAPTER 3/4MPT #12MJIC	1
7.	72532950	TEE 1-1/16JIC SWVL NUT RUN	1
8.	72532696	ELBOW #12MJIC #12FJIC SWVL	1
9.	72532972	ADAPTER #8MJIC #12FJIC	2
10.	51703863	HOSE ASM 3/8X14 FF	3
11.	73054576	SOLENOID VALVE	3
12.	31705698	KIT-CAPACITY ALERT (ELECT)	1
13.	51706239	HOSE ASM 1/2X5 FF	1
14.	51704914	HOSE ASM 3/8X60 FF	1
15.	51703701	HOSE ASM 3/8X10 FF	2
16.	77040186	TERM-FSLPON 1/4TAB 16-14GA	8
17.	77040282	TERM-PIGBAC 1/4TAB 16-14GA	4
18.	60250259	MTG ANGLE-DUMP VALVE	2
19.	60250260	MTG SPACER-DUMP VALVE	2
20.	72060004	CAP SCR 1/4-20X1 HH GR5	4
21.	72062104	NUT 1/4-20 LOCK	6
22.	60117338	THREADED ROD 1/4-20X6-1/2	2
23.	89044232	WIRE 14GA RED X 180	1
24.	89044232	WIRE 14GA RED X 120	1
25.	89044232	WIRE 14GA RED X 6	2
26.	89044274	WIRE 14GA BLK X 60	1
27.	89044274	WIRE 14GA BLK X 6	2

NOTES:

1. FUNCTION OF SYSTEM IS SUCH THAT WHEN THE INNER CYLINDERS ARE OVERLOADED, THE PRESSURE SWITCH, MOUNTED ON THE INNER CYLINDER, WILL ACTIVATE THE SOLENOID DUMP VALVE(S); THUS DUMPING OIL TO "TANK" INSTEAD OF THE OUTER CYLINDER "EXTEND", EXTENSION CYLINDER "EXTEND", OR WINCH "UP" FUNCTIONS WHICH WILL NOT ALLOW PRESSURE TO BUILD FOR THESE FUNCTIONS. THIS SYSTEM IS BASED ON THE FACT THAT THE OIL WILL TAKE THE PATH OF LEAST RESISTANCE.

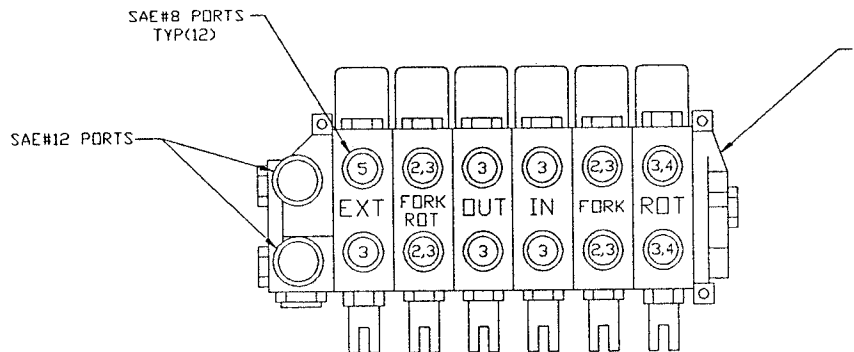
2. THE FUNCTIONS THAT ARE SHUT DOWN, IF OVERLOADED, ARE THE FOLLOWING:

- OUTER BOOM "EXTEND"
- EXTENSION CYLINDER "EXTEND"
- WINCH "UP"

3. INSTALL A RELIEF (PART NO. 73054426, 700PSI) IN LINE OF THE RETRACT SIDE OF THE EXTENSION CYLINDER TO CREATE BACK PRESSURE SO EXTENSION CYLINDER WILL NOT EXTEND WHEN THE DUMP SYSTEM IS ACTIVATED.

4. ITEMS 11, 18, 19, 20, 21 AND 22 SHOULD BE BOLTED TOGETHER BEFORE THEY ARE MOUNTED TO THE CRANE (SEE DETAIL A).

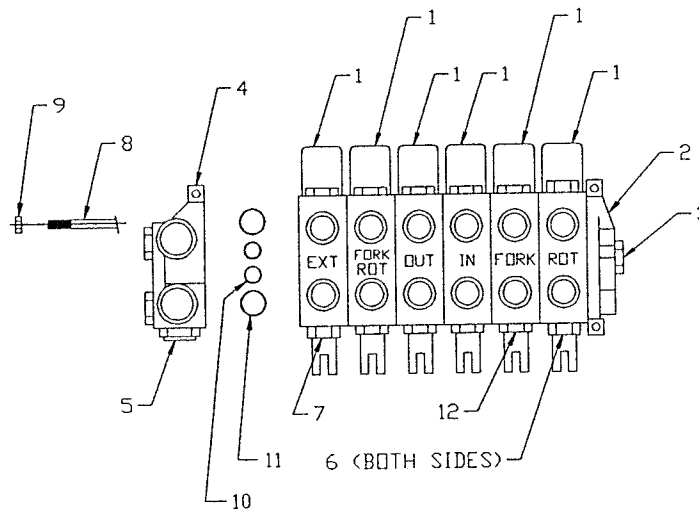
Figure D-56. OPTION-HYDRAULIC OVERLOAD KIT 3-FUNCTION (51710923)



ITEM	PART NO.	DESCRIPTION	QTY
1.	51711324	VALVEBANK ASM 6-SECT	1
2.	72532675	CAP 3/4JIC STL	4
3.	72532358	ADAPTER #8MSTR #8MJIC	11
4.	72532665	ADAPTER #4FJIC #8MJIC	2
5.	72532364	ADAPTER #8MSTR #12MJIC	1

NOTE:
SET SYSTEM PRESSURE AT 2500PSI.

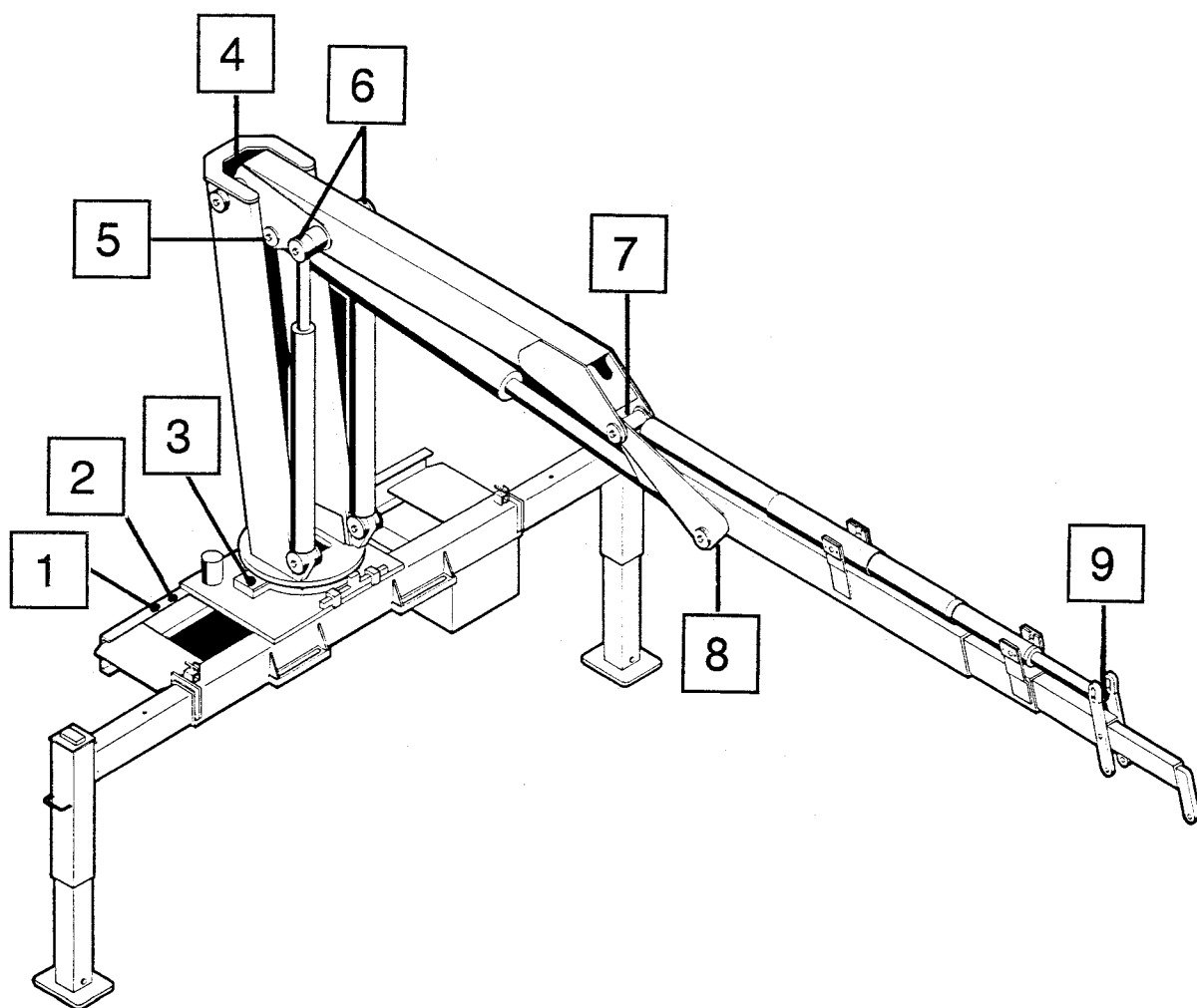
Figure D-57. VALVEBANK ASSEMBLY 6-SECTION CHAIR MOUNT (51711543)



ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY SAE#8	6
2.	73054442	END COVER RH	1
3.	73073022	CONVERSION PLUG	1
4.	73731424	END COVER LH	1
5.	73054673	RELIEF VALVE - ADJ	1
6.	73054516	RELIEF 1300PSI NON ADJ	2
7.	73054007	RELIEF 1800PSI NON ADJ	1
8.	73014595	STUD 3/8X13-1/2	3
9.	72062037	NUT 3/8-24 HEX	6
10.	7Q072117	O-RING	14
11.	7Q072119	O-RING	14
12.	73054010	LOAD CHECK PLUG ASM	9

Figure D-57A. VALVEBANK (51711324)

SECTION 5. Reference



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	DRIVE GEAR GREASE EXTENSION	SHELL ALVANIA 2EP OR SHELL RETINAX "A"	WEEKLY
2.	TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING		
3.	PINION GEAR		
4.	MAST/INNER BOOM HINGE PIN		
5.	OUTER CYLINDER BASE		
6.	INNER CYLINDER ROD		
7.	INNER BOOM/OUTER BOOM HINGE PIN		
8.	OUTER CYLINDER ROD		
9.	2-STAGE EXTENSION CYLINDER ROD		

NOTE: All application points must be greased weekly under normal work loads and moderate weather conditions. Under severe operating conditions, lubrication should be performed more frequently. See Volume 1; Operation, Maintenance and Repair for additional lubrication requirements.

Figure E-1. Grease Zerk Locations and Lubricant Requirements

TORQUE DATA CHART

FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (LB FT)	PLATED (LB FT)	PLAIN (LB FT)	PLATED (LB FT)
5/16-24	0.3125	19	14	27	20
3/8-24	0.3750	35	26	49	35
7/16-20	0.4375	55	41	78	58
1/2-20	0.5000	90	64	120	90
9/16-18	0.5625	120	90	170	130
5/8-18	0.6250	170	130	240	180
3/4-16	0.7500	300	225	420	315
7/8-11	0.8750	445	325	670	500
1-12	1.0000	645	485	995	745
1 1/8-12	1.1250	890	670	1445	1085
1 1/4-12	1.2500	1240	930	2010	1510
1-3/8-12	1.3750	1675	1255	2710	2035
1 1/2-12	1.5000	2195	1645	3560	2670

COARSE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (LB FT)	PLATED (LB FT)	PLAIN (LB FT)	PLATED (LB FT)
5/16-18	0.3125	17	13	25	18
3/8-16	0.3750	31	23	44	33
7/16-14	0.4375	49	37	70	52
1/2-13	0.5000	75	57	105	80
9/16-12	0.5625	110	82	155	115
5/8-11	0.6250	150	115	220	160
3/4-10	0.7500	265	200	375	280
7/8-9	0.8750	395	295	605	455
1-8	1.0000	590	445	910	680
1 1/8-7	1.1250	795	595	1290	965
1 1/4-7	1.2500	1120	840	1815	1360
1-3/8-6	1.3750	1470	1100	2380	1780
1 1/2-6	1.5000	1950	1460	3160	2370

When using the torque data in the charts above, the following rules should be observed.

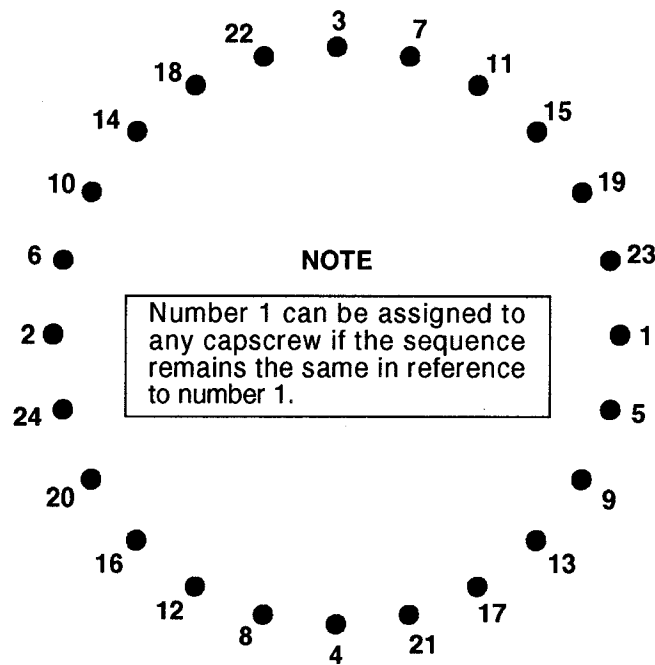
1. Bolt manufacturer's particular specifications should be consulted when provided.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
4. Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, collodial copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

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.

Figure E-2. TORQUE DATA CHART

Refer to the diagram below for proper tightening/torquing sequence of the turntable bearing to the crane base and crane mast. The total quantity of cap screws varies dependent on crane model.



TIGHTENING PROCEDURE:

1. Refer to the Torque Data Chart to determine the proper torque value to apply to the size of cap screw used.
2. Follow the tightening sequence shown in the diagram. Note that the quantity of cap screws may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.
3. Torque all cap screws to approximately 40% of the specified torque value, by following the sequence. (EXAMPLE: $.40 \times 265 \text{ FT-LBS} = 106 \text{ FT-LBS}$)
4. Repeat Step 3, but torqueing all cap screws to 75% of the specified torque value. Continue to follow the tightening sequence. (EXAMPLE: $.75 \times 265 \text{ FT-LBS} = 199 \text{ FT-LBS}$)
5. Using the proper sequence, torque all cap screws to the listed torque value as determined from the Torque Data Chart.

Figure E-3. TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE

Before a bearing is removed from a crane for inspection, one of the following conditions should be evident:

1. Metal particles present in the bearing lubricant.
2. Increased drive power required to rotate the crane.
3. Noise emitting from the bearing during crane rotation.
4. Rough crane rotation.
5. Uneven or excessive wear between the pinion gear and turntable gear.

If none of the above conditions exists, the bearing is functioning properly and need not be replaced. But, if one or more of the above conditions exists, inspection may be required. Limits are measured in "TILT" which is dependent on the internal clearances of the bearing. TILT is the most practical determination of a bearing's internal clearance once mounted on a crane.

Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

TEST PROCEDURE

STEP 1.

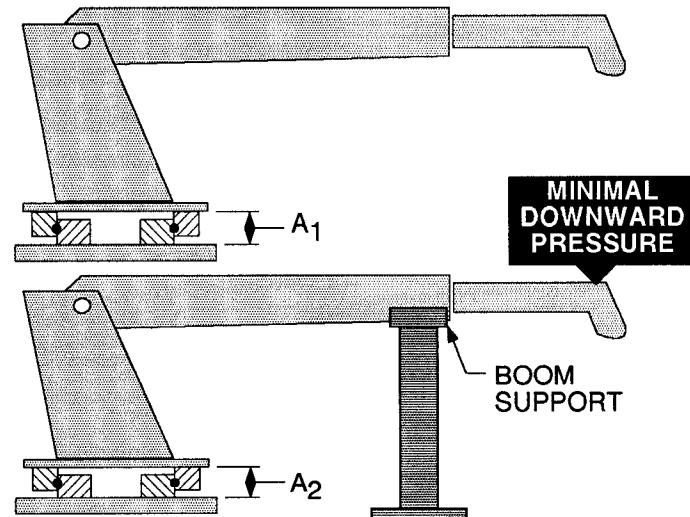
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A_1), using a dial indicator for accuracy.

STEP 2.

Reverse the load by applying minimal downward pressure on the boom while the boom is in the boom support or on a solid surface. Again measure A_2 .

STEP 3.

Subtract A_1 from A_2 to determine tilt and compare the result with the accompanying chart.



COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION

NOTE	IMT CRANE OR TIREHAND MODEL	814 1007 1014 2010 215 2015 2109 2815 3016 315A 320H 3515 3617 3625 421 425 5016 TH7 BODY ROT'N TH1449A BODY ROT'N TH15A CLAMP TH1836A CLAMP TH2551 CLAMP TH2557 CLAMP TH2557A CLAMP	4817 4825 516 525 5826 6014 6425 725 7020 7025 8025 8031 TH10 BODY ROT'N TH12 BODY ROT'N	32018 32030 HAWK-H1150 HAWK-H1150TL HAWK-H4961	9616 9825 9831 10020 10025 1216 1325 1331 13031 13034 13426 14018 14048 14126 15033 1725 18026 20017 HAWK-H1200 TH1836 BODY ROT'N TH1836A BODY ROT'N TH2551 BODY ROT'N TH2557 BODY ROT'N TH2557A BODY ROT'N
	BALL DIA. (REF)	.875" (22mm)	1.00" (25mm)	1.18" - 1.25" (30 - 32mm)	1.75" (44mm)
	TILT DIM. ($A_1 - A_2$)	.060" (1.524mm)	.070" (1.778mm)	.075" (1.905mm)	.090" (2.286mm)

Figure E-4. TURNTABLE BEARING INSPECTION FOR REPLACEMENT

SPARE PARTS LIST

(Standard Assemblies Only)

1-Year Supply

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 minimal 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 the item numbers on the page listed.

Figure No.	Item No.	Part No.	Description	Qty
D-4.	9	60020115	BUSHING	1
D-4.	10	60020116	BUSHING	1
D-4.	11	60020187	BUSHING	1
D-4.	12	60020188	BUSHING	1
D-4.	13	71056011	DRIVE GEAR	1
D-4.	22	60030053	ROLLER	4
D-4.	29	71056072	INTERMEDIATE GEAR	1
D-4.	30	71056265	PINION GEAR	1
D-4.	31	71056361	TURNTABLE BEARING	1
D-4.	32	7Q072112	O-RING	2
D-4.	49	72063116	WASHER 3/4 FLAT HARDENED	20
D-4.	52	72601295	CAP SCR 3/4-10 X 3-1/2 HH GR8	20
D-4.	53	73051004	HYDRAULIC MOTOR	1
D-4.	54	73054470	VALVE	2
D-6.	2	73054005	VALVE	2
D-6.	16	9B101214	SEAL KIT	2
D-9.	2	7BF81225	BUSHING	2
D-9.	7	72060177	CAP SCR 5/8-11 X 3 HH GR8	20
D-9.	8	72063119	WASHER 5/8 FLAT HARDENED	20
D-10.	4	7BF81220	BUSHING	6
D-10.	5	7BF81225	BUSHING	9
D-11.	1	7BF81025	BUSHING	8
D-11.	2	73054242	VALVE	2
D-11.	18	9C162023	SEAL KIT	2
D-12.	5	7BF81520	BUSHING	4
D-13.	1	7BF82020	BUSHING	3
D-13.	3	73054242	VALVE	1
D-13.	16	7BF81520	BUSHING	1
D-13.	21	9C202429	SEAL KIT	1
D-17.	11	73054242	VALVE	2
D-17.	13	9X095850	SEAL KIT	1
D-18.	8	60103575	HOOK 8-TON	1
D-18.	11	60030118	WEAR PAD	1
D-18.	13	60030123	WEAR PAD	1
D-18.	14	60030122	WEAR PAD	1
D-18.	16	60030202	WEAR PAD	1
D-18.	17	60030203	WEAR PAD	1
D-18.	24	60020197	ROLLER	4
D-18.	29	60030119	WEAR PAD	1

The information within this manual has been compiled and checked but errors do occur. To provide our customers with a method of communicating those errors we have provided the Manual Change Request form below. In addition to error reporting, you are encouraged to suggest changes or additions to the manual which would be of benefit to you. We cannot guarantee that these additions will be made but we do promise to consider them. When completing the form, please write or print clearly. Submit a copy of the completed form to the address listed below.

MANUAL CHANGE REQUEST

DATE	PRODUCT MANUAL	8031 Crane	MANUAL PART NO.	99900411-4/91
SUBMITTED BY				
COMPANY				
ADDRESS				
CITY, STATE, ZIP				
TELEPHONE				

☐ ERROR FOUND

LOCATION OF ERROR (page no.): _____

DESCRIPTION OF ERROR: _____

☐ REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: _____

REASON FOR ADDITION: _____

MAIL TO: IOWA MOLD TOOLING Co., Inc.
Box 189,
Garner IA 50438
ATTN: Technical Publications

MANUFACTURER'S LIMITED WARRANTY

WARRANTY COVERAGE - Products manufactured by Iowa Mold Tooling Co., Inc. (IMT) are warranted to be free from defects in material and workmanship, under proper use, application and maintenance in accordance with IMT's written recommendations, instructions and specifications as follows:

1. Ninety (90) days; labor on IMT workmanship from the date of delivery to the end user.
2. One (1) year; original IMT parts from the date of delivery to the end user.

IMT's obligation under this warranty is limited to, and the sole remedy for any such defect shall be the repair or replacement (at IMT's option) of unaltered parts returned to IMT, freight prepaid, provided such defect occurs within the above stated warranty period and is reported within fourteen (14) days of its occurrence.

IMPLIED WARRANTY EXCLUDED - This is the only authorized IMT warranty and is in lieu of all other express or implied warranties or representations, including any implied warranties of merchantability or fitness for any particular purpose or of any other obligations on the part of IMT.

ITEMS EXCLUDED - The manufacturer gives no warranty on any components or parts purchased by the manufacturer, and such components as are covered only by the warranties of their respective manufacturers.

WARRANTY CLAIMS - Warranty claims must be submitted and shall be processed in accordance with IMT's established warranty claim procedure.

WARRANTY SERVICE - Warranty service will be performed by any IMT distributor authorized to sell new IMT products of the type involved or by any IMT Service Center authorized to service the type of product involved or by IMT in the event of direct sales made by IMT. At the time of requesting warranty service, the purchaser must present evidence of the date of delivery of the product. The purchaser shall pay any premium for overtime labor requested by the purchaser, any charge for making service calls and for transporting the equipment to the place where warranty work is performed.

WARRANTY VOIDED - All obligations of IMT under this warranty shall be terminated: (1) if service other than normal maintenance or normal replacement of service items is performed by someone other than an authorized IMT dealer, (2) if product is modified or altered in ways not approved by IMT.

PURCHASER'S RESPONSIBILITY - This warranty covers only defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper protection in storage, or improper use. The purchaser has the obligation of performing the care and maintenance duties discussed in IMT's written recommendations, instructions and specifications. Any damage which results because of purchaser's failure to perform such duties shall not be covered by this warranty. The cost of normal maintenance and normal replacement of service items such as filters, belts, etc. shall be paid by the purchaser.

CONSEQUENTIAL DAMAGES - The only remedies the purchaser has in connection with the breach or performance of any warranty on IMT products are those set forth above. In no event will the dealer, IMT or any company affiliated with IMT, be liable for business interruptions, loss of sales and/or profits, rental or substitute equipment, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

REPRESENTATIONS EXCLUDED - IMT products are subject to no expressed, implied or statutory warranty other than herein set forth, and no agent, representative or distributor of the manufacturer has any authority to alter the terms of this warranty in any way whatsoever or to make any representations or promises, express or implied, as to the quality or performance of IMT products other than those set forth above.

CHANGE IN DESIGN - IMT reserves the right to make changes in design or improvements upon its products without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

Effective January, 1984

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