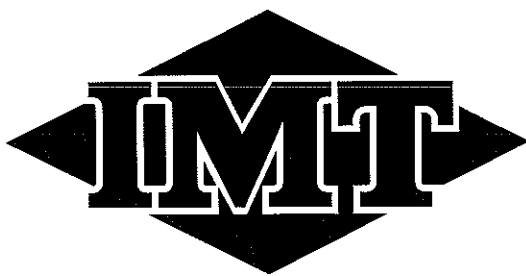


MANUAL CHANGE NOTICE

9800

The following revisions have been made to the listed IMT product manuals.
Please revise your manuals to agree with these revisions.

PRODUCT	DATE	FIGURE	PAGE	CHANGE
9800	01-12-96		LOI	DELETE D-63. DBL HOSE REEL 31708878 4-56 - NOT USED (ECO7158)
9800	05-22-96	D-63	4-56	REMOVE FIG D-63. DBL HOSE REEL KIT 31708878)
		D-8	4-6	ADD 64-67, GUARD-CTRL HANDLES & HARDWARE, CHG DWG
		D-48	4-46	ADD 29. 70394190 DECAL (2)
		D-49	4-47	ADD 30. 70394190 DECAL (2)
9800	05-29-96	D-33	4-31	ADD ITEM 4.72532675 CAP (2) & CHG DWG
9800	07-23-96			ADD PG 4-67, 68 & 69 (90713554, 51713429 & 51713568)
9800	07-31-96		4-58	CHG ITEM 5 FROM: 73054877 TO: 73054426 & ITEM 12 FROM: 72532360 TO: 72532358
9800	08-13-96		4-69	ADD 23. 77044667 PLUG-CAP (1)
9800	08-28-96		4-67	90713554-CHG DWG
			4-69	51713568-CHG DWG & BOM
9800	10-15-96		4-68	51713429-CHG CABLE FROM 30' TO 45'
9800	10-23-96		4-68	51713429-CHG POT ASM PN
	12-12-96			Manual Replaced by 9800/1495 Manual



Volume 2
Parts and Specifications
9800 SERIES CRANE

IOWA MOLD TOOLING CO., INC.

BOX 189, GARNER, IA 50438-0189
515-923-3711

PRODUCT SUPPORT FAX: 515-923-2424

MANUAL PART NUMBER 99900370
LAST REVISED: 10-23-96

INTRODUCTION

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

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 you 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 B30.22
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.

Read and familiarize yourself with the IMT OPERATOR'S CRANE SAFETY MANUAL before operating or performing any maintenance on your crane.

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9800-REV2:04-27-95

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Section 1. SPECIFICATIONS

9800 SERIES CRANE

W/POWER OUT & DOWN OUTRIGGERS

1-1. GENERAL

	2H	9800 SERIES CRANE 3H	3H1M	3H2M
*CRANE RATING (ANSI B30.22)	98,600 ft-lbs	98,450 ft-lbs	97,700 ft-lbs	96,960 ft-lbs
*MAXIMUM CRANE RATING	99,000 ft-lbs	98,500 ft-lbs	98,000 ft-lbs	98,000 ft-lbs
HORIZONTAL REACH from centerline of rotation	25'-2"	30'-11"	36'-3"	41'-7"
HYDRAULIC EXTENSION	64" x 2	64" x 3	64" x 3	64" x 3
MANUAL EXTENSION	None	None	64"	64" x 2
VERTICAL REACH from mounting surface	31'-6"	36'-9"	41'-6"	46'-7"
VERTICAL REACH from ground / 38" frame ht.	34'-8"	39'-11"	44'-8"	49'-9"
CRANE WEIGHT	6230 lbs	6460 lbs	6560 lbs	6660 lbs
OUTRIGGER SPAN	14'-6"	14'-6"	14'-6"	14'-6"
OUTRIGGER PADS	12" x 12"	12" x 12"	12" x 12"	12" x 12"
CRANE STORAGE HEIGHT from mounting surface	8'-5"	8'-5"	8'-5"	8'-5"
CRANE STORAGE HEIGHT from ground / 38" frame ht.	11'-7"	11'-7"	11'-7"	11'-7"
**MOUNTING SPACE REQUIRED	38"	38"	38"	38"
ROTATIONAL TORQUE	13665 ft-lbs	13665 ft-lbs	13665 ft-lbs	13665 ft-lbs
OPTIMUM PUMP CAPACITY	13 gallons/min	13 gallons/min	13 gallons/min	13 gallons/min
SYSTEM OPERATING PRESSURE	2500 psi	2500 psi	2500 psi	2500 psi
OIL RESERVOIR CAPACITY	23 gallons	23 gallons	23 gallons	23 gallons
HOOK APPROACH - HORIZONTAL from centerline of rotation	34"	34"	34"	34"
HOOK APPROACH - VERTICAL from mounting surface	7'-11"	7'-7"	7'-7"	7'-7"
***HORIZONTAL CTR OF GRAVITY from centerline of rotation	3"	2-3/4"	2-1/2"	2-3/8"
***VERTICAL CTR OF GRAVITY from crane base	39-1/2"	39-1/2"	39-1/2"	39-1/2"

* Maximum Crane Rating (ft-lbs) is defined as that rated load (lbs) which when multiplied by its respective distance (ft) from centerline of rotation gives the greatest ft-lb value.

ANSI B30.22 Crane Rating (ft-lbs) = With all extensions retracted and inner plus outer boom in a horizontal position, rated load (lbs) X respective distance (ft) from centerline of rotation = nominal ft-lb value.

** Allow an additional 5" between the cab and crane base for swing clearance.

*** Crane in stowed position.

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1-2. PERFORMANCE CHARACTERISTICS

ROTATION:	450°	33 seconds
INNER BOOM ELEVATION:	-52° to +72°	23 seconds
OUTER BOOM ARTICULATION:	140°	17 seconds
TELESCOPIC EXTENSIONS:	64"/64"/64"	25 / 13 / 7 seconds
VERTICAL OUTRIGGER STROKE:	24"	4 seconds
HORIZONTAL OUTRIGGER STROKE	39-3/8"	6 seconds

1-3. POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized, with engineering approval.

1-4. 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 boom 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.

1-5. 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. A spring loaded brake is supplied between the drive gear and motor, providing rotation brake and parking brake action. Total gear reduction is 56.7 to 1.

1-6. HYDRAULIC SYSTEM

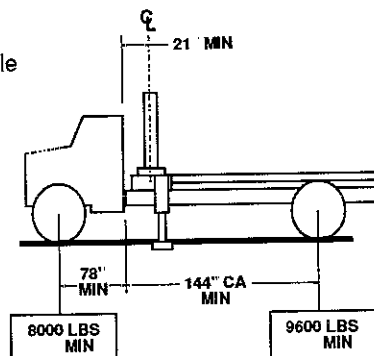
The hydraulic system is an open centered, full pressure system, requiring 13 gallons/min optimum oil flow, at 2500 psi. Nine-spool, stack-type control valve, seven of which are used for the standard crane and the remaining two are plugged, but easily adapted for additional optional features. Dual operational handles for seven functions are located at both sides of crane for convenient operation. System includes hydraulic oil reservoir, suction-line strainer, pump, 9-section control valve, return-line filter and all hoses and fittings.

IMT reserves the right to change specifications and design without notice.

1-7. MINIMUM CHASSIS SPECIFICATIONS - For Standard 9800 Series Crane

CRANE MOUNT	Behind Cab
CRANE WORKING AREA	360°
CHASSIS STYLE	Conventional Cab
FRONT AXLE RATING (GAWR)	11000 lbs
REAR AXLE RATING (GAWR)	21000 lbs Single Axle
WHEELBASE	222"
CAB-TO-AXLE	144"
RBM	1,440,000 in-lbs
FRAME SECTION MODULUS	24in ³
FRAME YIELD STRENGTH	60,000
MINIMUM FINISHED UNIT WEIGHT TO MAINTAIN VEHICLE STABILITY	
FRONT AXLE	8000
REAR AXLE	9600
TOTAL FINISHED UNIT WT.	17600

360° WORKING AREA



Allows lifting full capacity load in a 360° arc when crane is installed immediately behind the cab. Great care should be taken when swinging the load from rear of vehicle to front of vehicle since the front axle springs will compress, thus affecting the levelness of the vehicle.

NOTES:

1. GAWR means Gross Axle Weight Rating and is dependent on all components of the vehicle such as axles, tires, wheels, springs, brakes, steering and frame strength meeting the manufacturer's recommendations. Always specify GAWR when purchasing a truck.
2. Minimum axle requirements may increase with use of diesel engines, longer wheelbase or service bodies. Contact the factory for further information.
3. Weight distribution calculations are required to determine final axle loading.
4. All chassis and crane combinations must be stability tested to ensure stability per ANSI B30.22

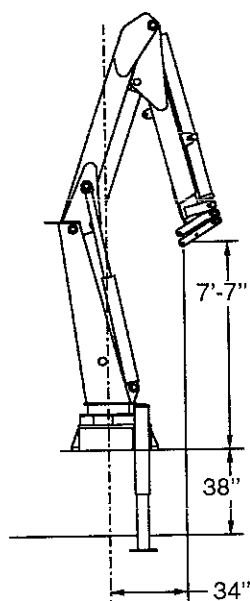


Figure A-1.

HOOK APPROACH DIMENSIONS

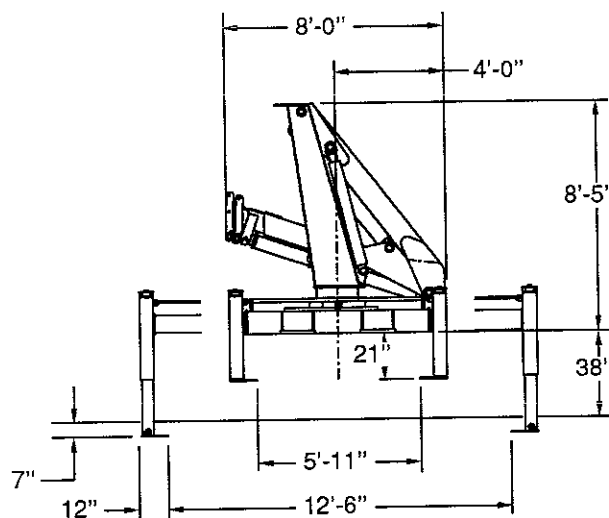


Figure A-2.

STOWED POSITION AND OUTRIGGER DIMENSIONS

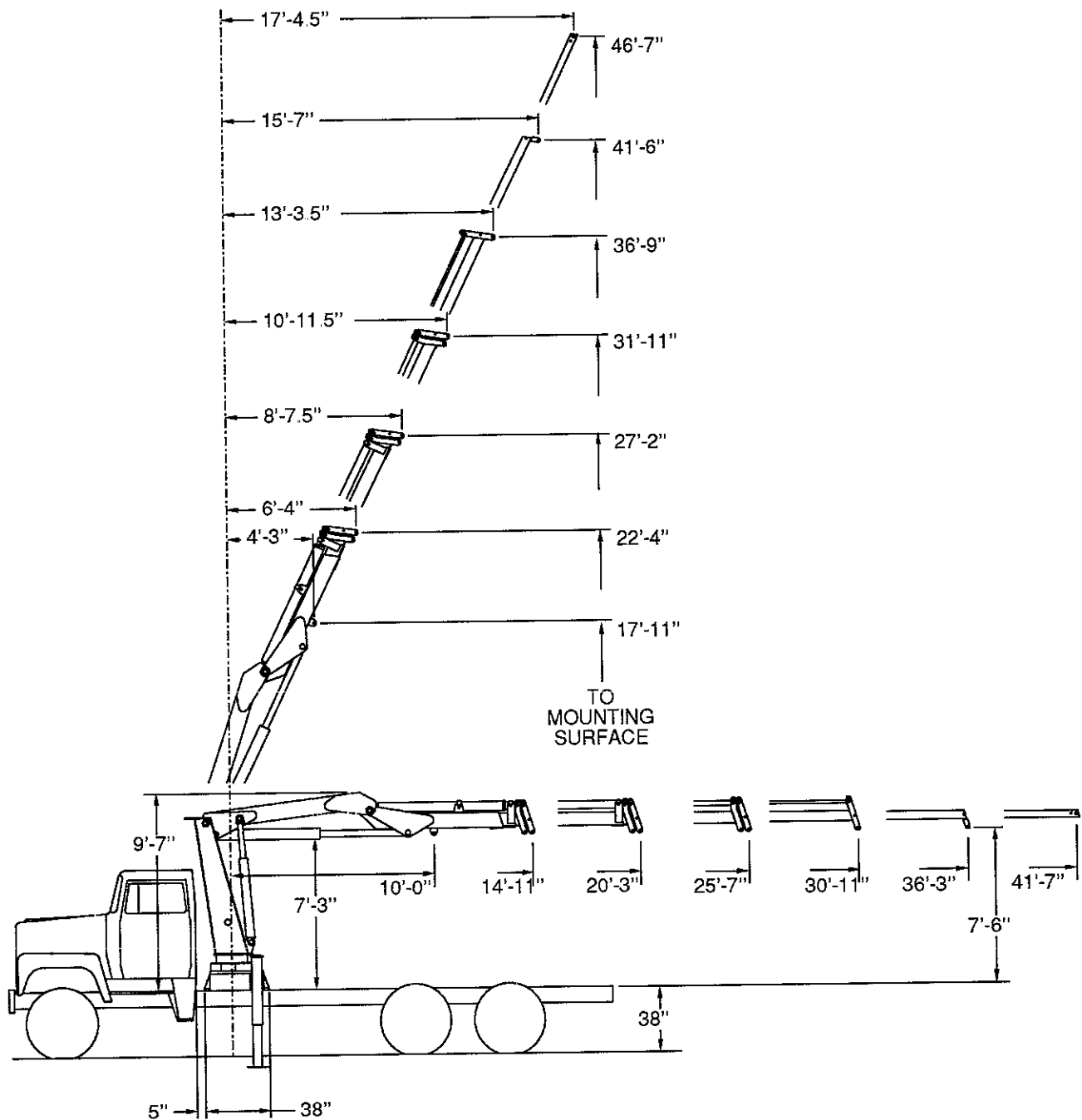


Figure A-3. GEOMETRIC CONFIGURATION

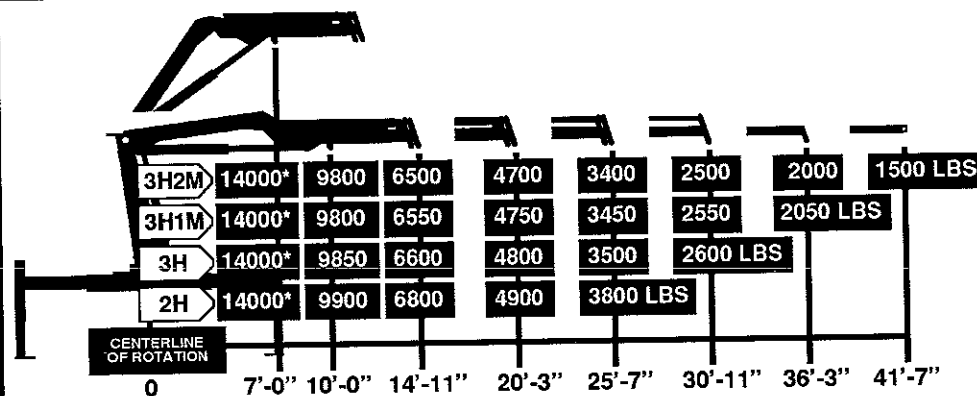
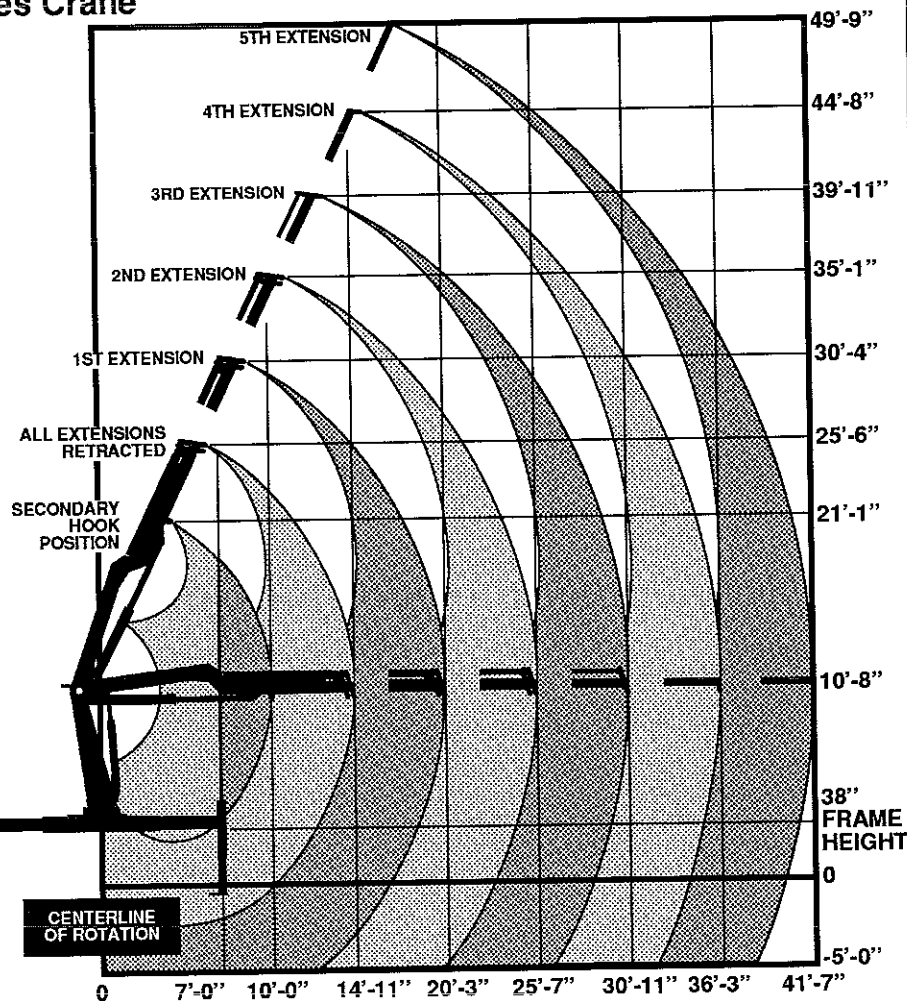
IOWA MOLD TOOLING CO., INC. • BOX 189 • GARNER • IA • 50438 • 515-923-3711
 Capacities through geometric range are limited to those shown in horizontal position.



9800

Series Crane

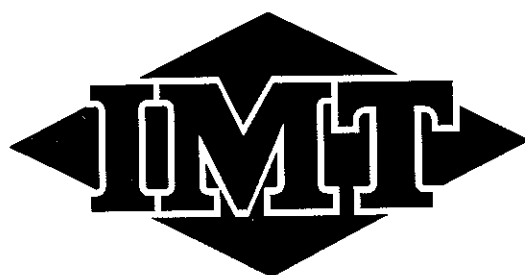
- Loads shown are based on crane structural or hydraulic capability. Before lift is made, stability must be checked per SAE J765A.
- Working loads will be limited to those shown. Deduct the weight of load handling devices.
- Winch lifting capacity is limited to those shown - Maximum 4000 LBS for 1-part line.



71393226

* Requires optional hook - IMT part number 70073725.

Figure A-4. CAPACITY CHART



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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 models of cranes covered in this manual. They are the 9800 Series-2H, 3H, 3H1M and 3H2M cranes. The 3H 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 450° rotation mechanism and outriggers. The outriggers are powered through double acting hydraulic cylinders, and provide stabilization during crane operation. The outriggers are of the power out and down variety.

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 124° from -52 degrees to +72 degrees. 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 140°. 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 2H, 3H, 3H1M and 3H2M cranes are in the extension booms. The 2H crane uses a single-stage hydraulic extension boom cylinder for an additional 64" of reach. The 3H uses a 2-stage hydraulic extension for an additional 64" of reach for each stage for a total of 128". The 3H1M uses a 2-stage telescoping hydraulic extension cylinder for an additional 128" of reach, plus a manual extension for another 64" of reach. The 3H2M uses a 2-stage telescoping hydraulic extension cylinder for an additional 128" of reach, plus two manual extensions of 64" each for an additional 128" of reach.

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.

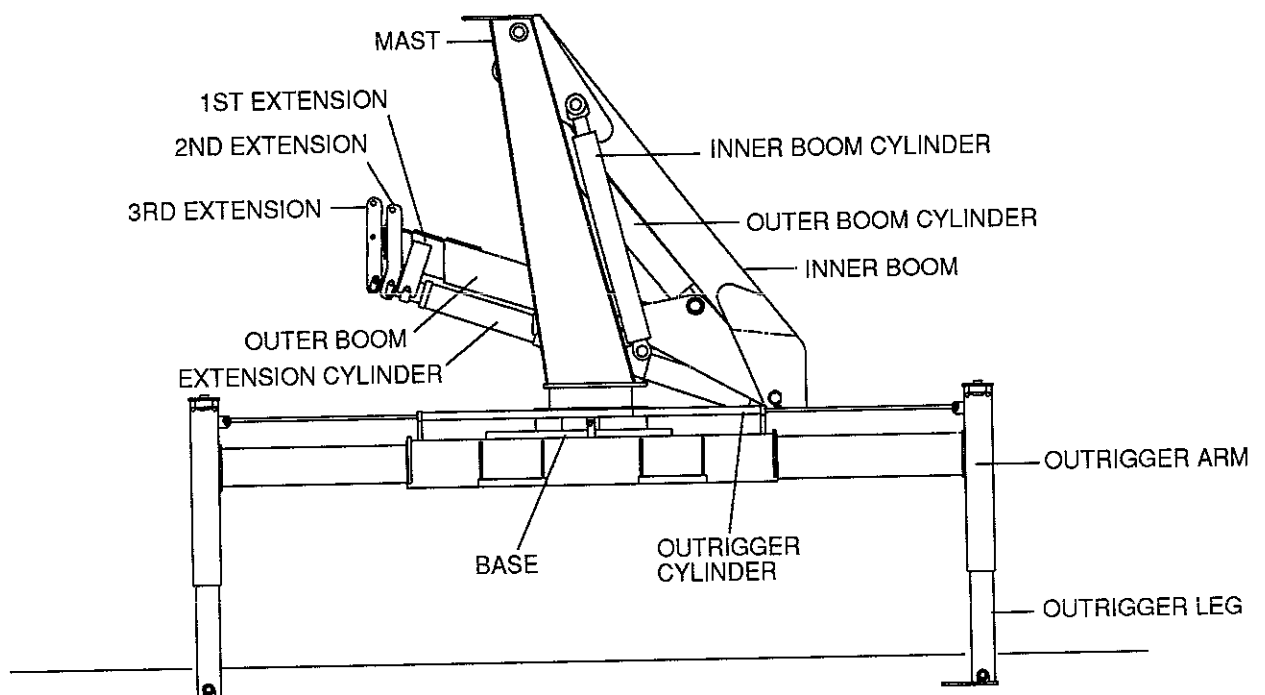


Figure B-1. MAJOR CRANE COMPONENTS

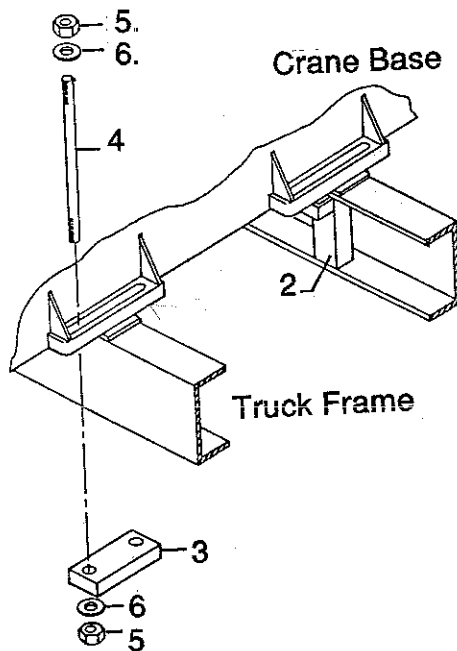
Section 3. INSTALLATION

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
2.	FRAME SUPPORT	4
3.	CLAMP PLATE	4
4.	TIE DOWN STUD	8
5.	LOCK NUT	16
6.	WASHER	16

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". 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 1/4"-7 UNC Grade 5 mounting hardware to 840 ft-lbs (116 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 collodial 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 840 ft. lbs. 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-2.
3. Install the 1-1/4" suction hose between the suction-line filter and the pump inlet. Tighten the hose clamps.
4. Install the 1/2" 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" of 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.

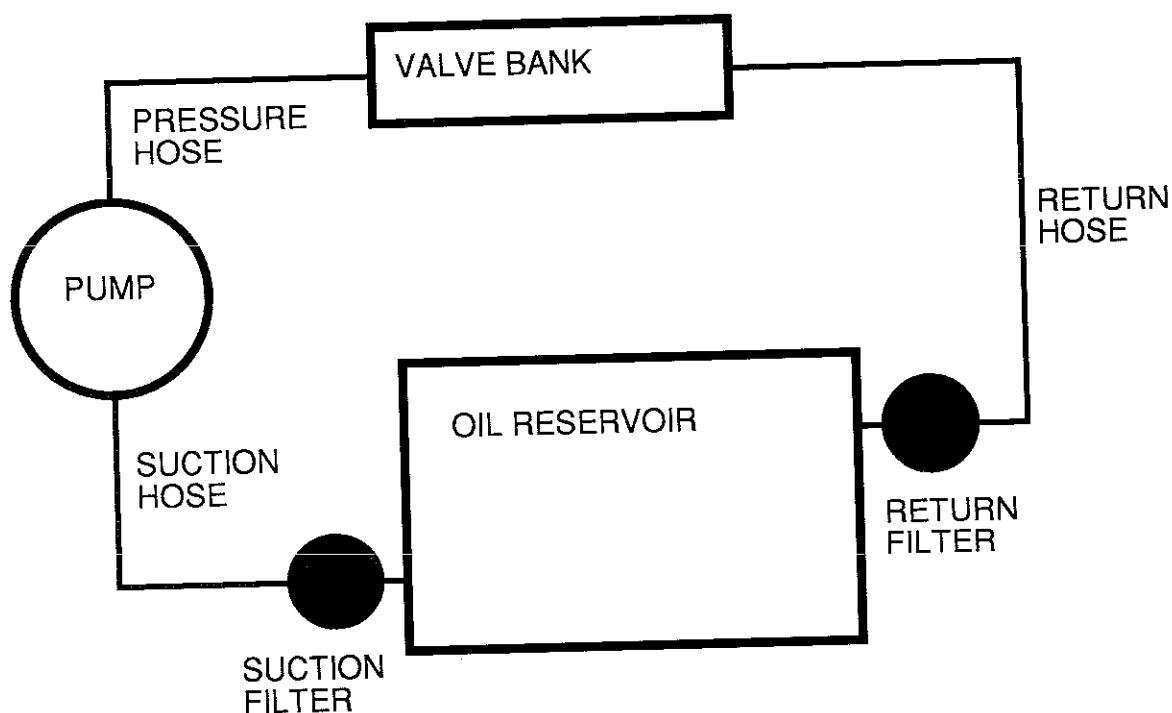


Figure C-2. HYDRAULIC INSTALLATION

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.

NOTE

SHOWN IN THE PARTS SECTION ARE ASSEMBLIES FOR A SPIDER LEG OUTRIGGER MODEL. THIS IS A PREVIOUS MODEL AND IS NO LONGER AVAILABLE.

WARNING

DO NOT ATTEMPT TO REPAIR ANY COMPONENT WITHOUT READING THE INFORMATION CONTAINED IN THE REPAIR SECTION IN VOLUME 1. PAY PARTICULAR ATTENTION TO THE WARNING'S, CAUTION'S AND NOTE'S CONTAINED IN THAT SECTION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE EQUIPMENT, AN INJURY OR 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, Iowa 50438-0189
Telephone: 515-923-3711
Product Support Fax: 515-923-2424

or

IMT Cranes Canada, Ltd.
385 West Street South
Orillia, Ontario, L3V 5H2, Canada
Telephone: 705-325-7458
Fax: 705-325-7624

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.

4-4. WELDMENT IDENTIFICATION

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

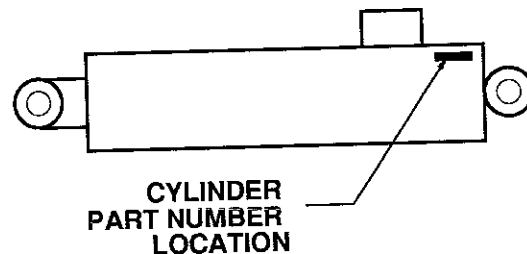


Figure D-2. CYLINDER PART NUMBER LOCATION

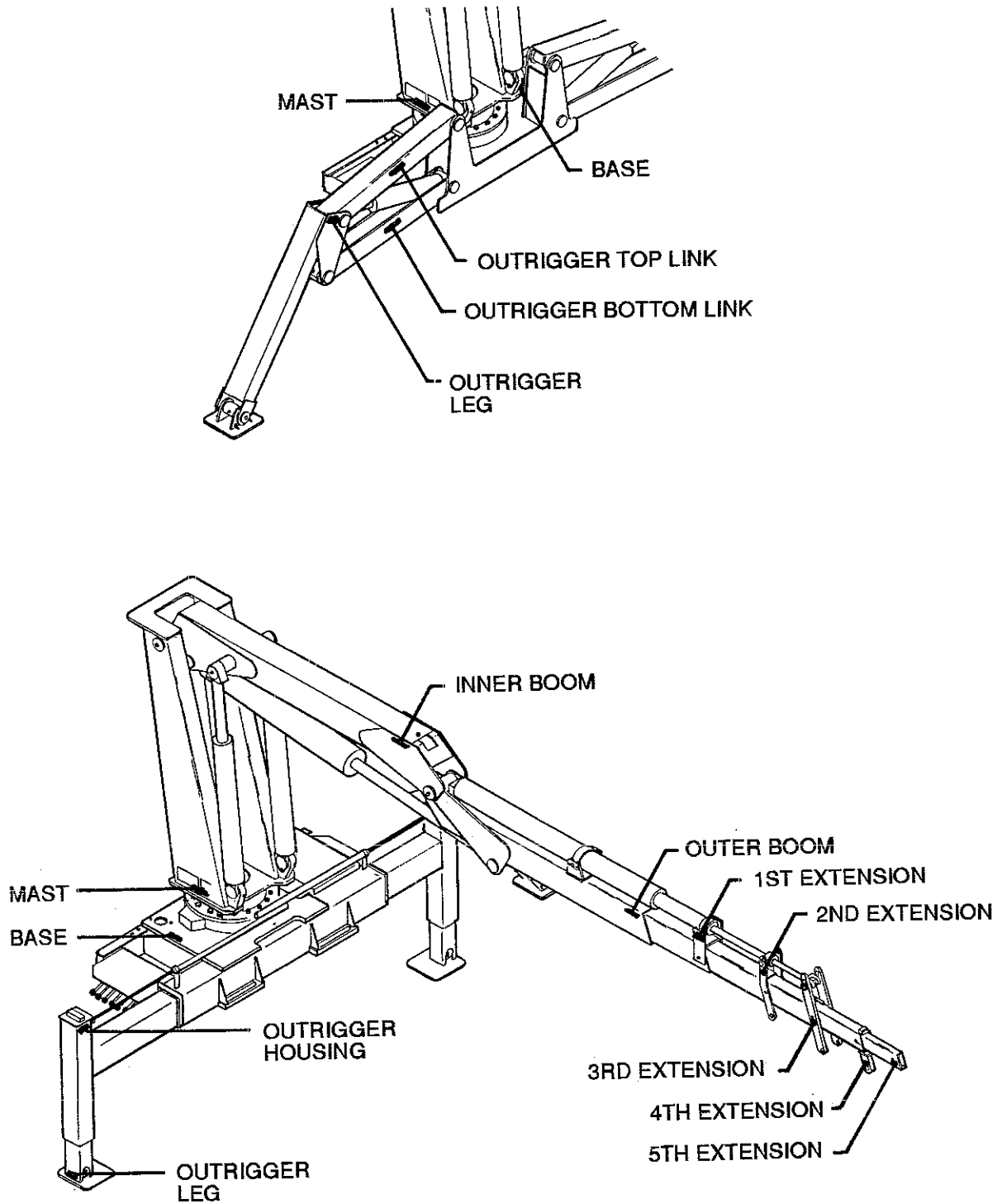
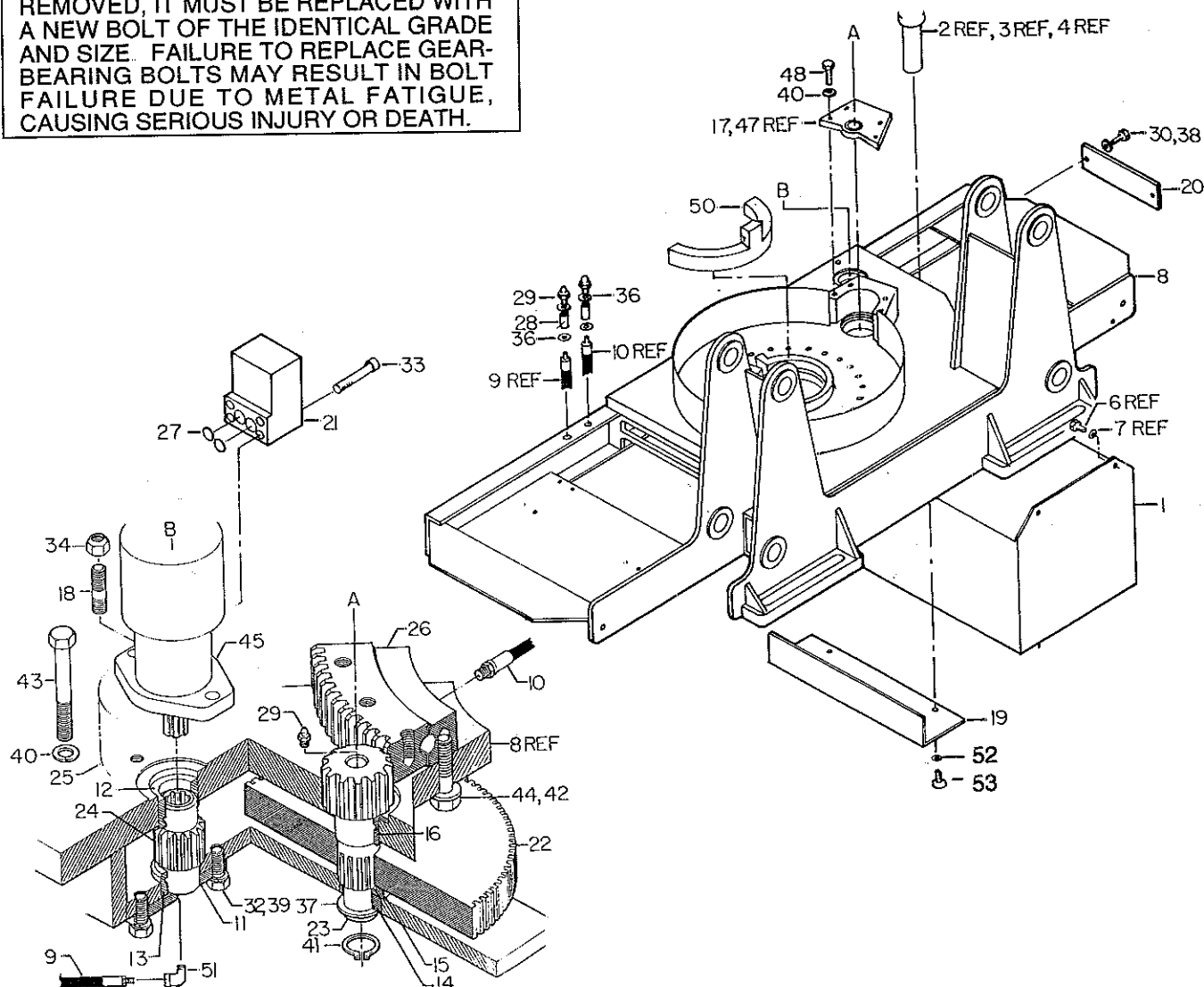


Figure D-3. WELDMENT PART NUMBER LOCATION

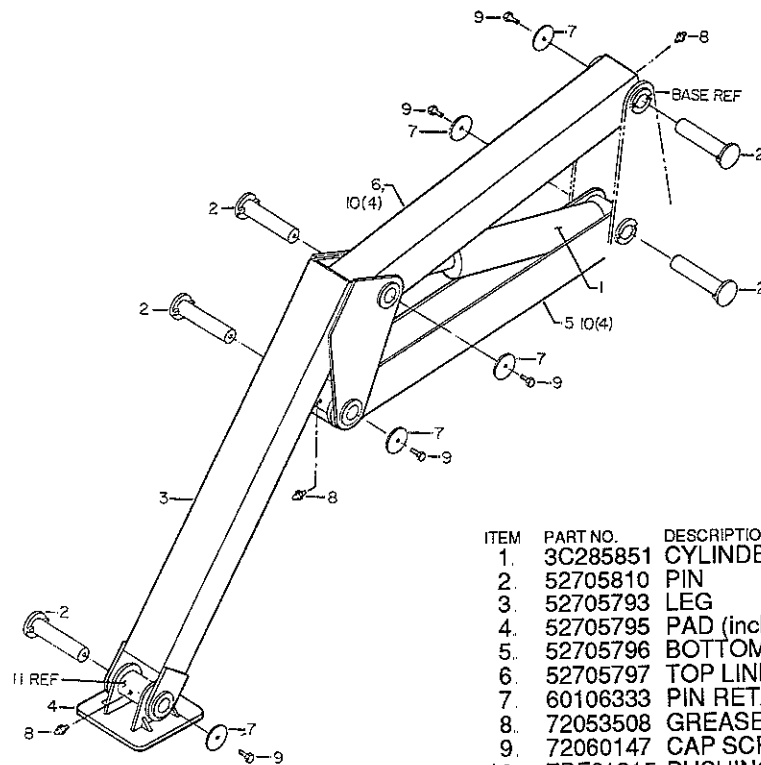
WARNING

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.



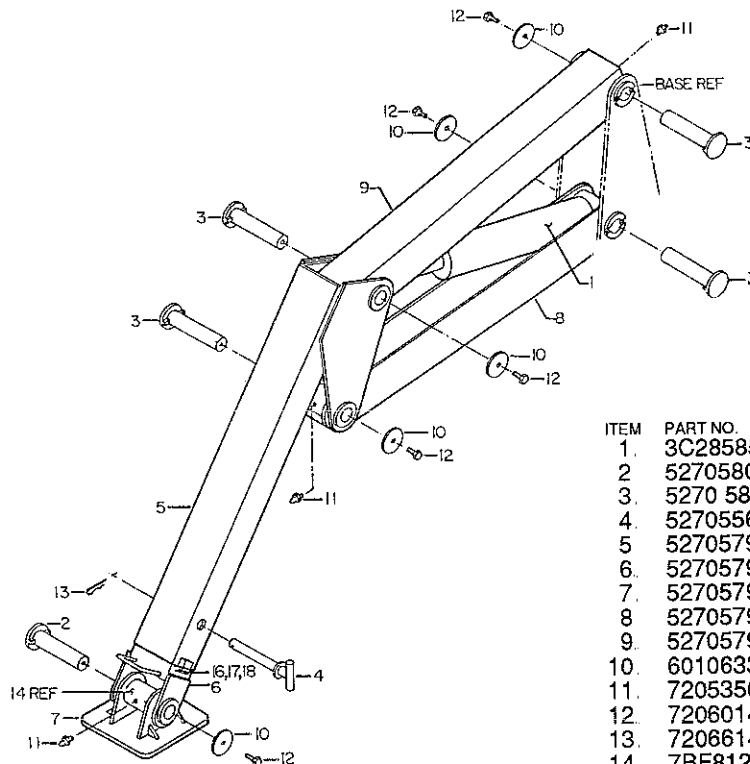
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732579	RESERVOIR ASM	1	28.	72053301	COUPLING 1/8NPT	2
6.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4	29.	72053508	GREASE ZERK 1/8NPT	3
7.	72063051	WASHER 3/8 LOCK	4	30.	72060002	CAP SCR 1/4-20X3/4 HHGR5	2
8.	52709519	BASE (INCL:12-14,16,24)	1	32.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	2
9.	53000710	GREASE EXTENSION 29"	1	33.	72060739	CAP SCR 5/16-18X3 SH	4
10.	53000713	GREASE EXTENSION 38"	1	34.	72062080	NUT 1/2-13 LOCK	2
11.	60010844	GREASE PLATE	1	36.	72063003	WASHER 3/8 WRT	4
12.	60020120	BUSHING (PART OF 8)	1REF	37.	72063039	MACH BUSHING 2X10GA	1
13.	60020121	BUSHING (PART OF 8)	1REF	38.	72063049	WASHER 1/4 LOCK	2
14.	60020122	BUSHING (PART OF 8)	1REF	39.	72063053	WASHER 1/2 LOCK	2
15.	60020123	THRUST WASHER	1	40.	72063117	WASHER 9/16 HARD FLAT GR8	6
16.	60020124	BUSHING (PART OF 8)	1REF	41.	72066095	RETAINING RING 2"	1
17.	60105964	PINION SUPPORT PLATE	2	42.	72063115	WASHER 7/8 HARD FLAT GR8	23
18.	60106032	STUD	1	43.	72601037	CAP SCR 9/16-12X4-1/2 HHGR8	2
19.	60108760	GEAR GUARD	1	44.	72601148	CAP SCR 7/8-9X3 HHGR8	23
20.	60108761	INSPECTION COVER	1	45.	73051004	MOTOR	1
21.	70731731	MOTOR BLOCK	1	47.	70034295	BEARING (PART OF 17)	1REF
22.	71056072	INTERMEDIATE GEAR	1	48.	72601144	CAP SCR 9/16-12X2 HHGR8	4
23.	71056073	PINION GEAR	1	50.	52707194	SLIDE 450° ROTATION	1
24.	71056074	DRIVE GEAR (PART OF 8)	1REF	51.	72053281	STREET ELBOW 1/8NPT 90°	1
25.	71056374	BRAKE	1	52.	72063050	WASHER 5/16 LOCK	2
26.	71056273	TURNABLE GEAR	1	53.	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
27.	7Q072112	O-RING	2				

Figure D-4. BASE - SPIDER LEG OUTRIGGERS (41709506)



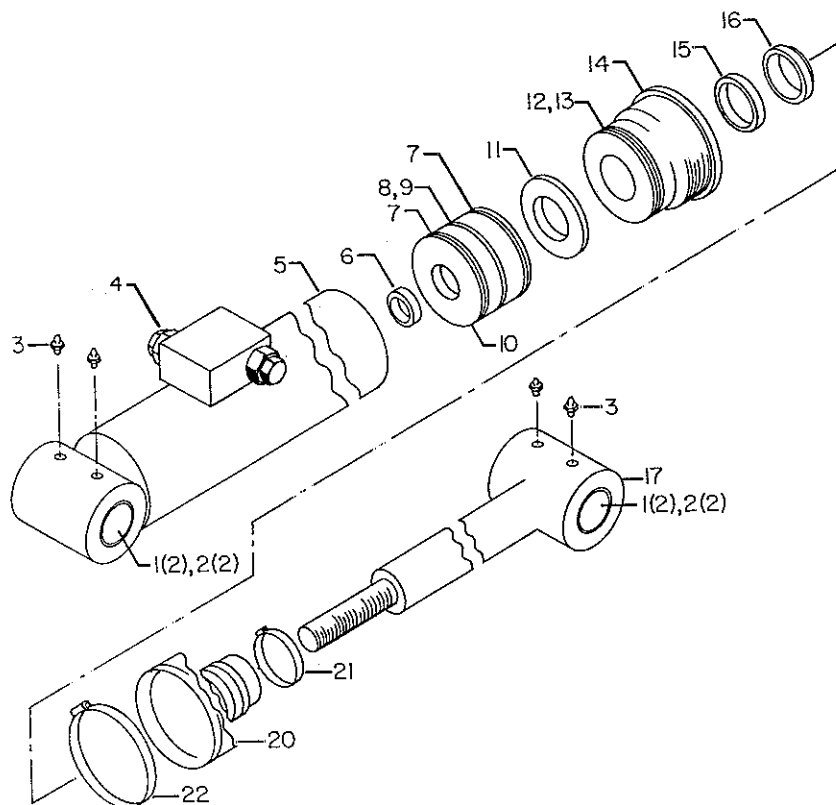
ITEM	PART NO.	DESCRIPTION	QTY
1.	3C285851	CYLINDER	2
2.	52705810	PIN	10
3.	52705793	LEG	2
4.	52705795	PAD (incl: 11)	2
5.	52705796	BOTTOM LINK (incl: 10)	2
6.	52705797	TOP LINK (incl: 10)	2
7.	60106333	PIN RETAINER	10
8.	72053508	GREASE ZERK 1/8 NPT	6
9.	72060147	CAP SCREW 5/8-11X1 HHGR5	10
10.	7BF81215	BUSHING (PART OF 5 & 6)	16 REF
11.	7BF81215	BUSHING (PART OF 4)	8 REF

Figure D-5. SPIDER LEG OUTRIGGERS-TRUCK MOUNT (41705762)



ITEM	PART NO.	DESCRIPTION	QTY
1.	3C285851	CYLINDER	2
2.	52705809	PIN	2
3.	5270 5810	PIN	8
4.	52705565	PIN	2
5.	52705792	LEG	2
6.	52705794	EXTENDABLE LEG	2
7.	52705795	PAD (INCL: 14)	2
8.	52705796	BOTTOM LINK (INCL: 15)	2
9.	52705797	TOP LINK (INCL: 15)	2
10.	60106333	PIN RETAINER	10
11.	72053508	GREASE ZERK 1/8 NPT	6
12.	72060147	CAP SCR 5/8-11X1 HHGR5	10
13.	72066145	HAIR PIN 3/16	2
14.	7BF81215	BUSHING (PART OF 7)	8 REF
15.	7BF81215	BUSHING (PART OF 8 & 9)	16 REF
16.	60109438	EXTENSION STOP	4
17.	72060094	CAP SCR 1/2-13X1-3/4 HHGR5	8
18.	72063053	WASHER 1/2 LOCK	8

Figure D-6. SPIDER LEG OUTRIGGERS-TRAILER MOUNT (41705763)



ITEM	PART NO.	DESCRIPTION	QTY
1.	7BF81215	BUSHING (PART OF 5 & 17)	4 REF
2.	7BF81015	BUSHING (PART OF 5 & 17)	4 REF
3.	72053507	GREASE ZERK 1/4-28	4
4.	73054304	VALVE - 10 GPM	2
5.	4C285850	CASE ASM (INCL: 1, 2)	1
6.	7T61N143	LOCK RING SEAL (PART OF 19)	1 REF
7.	7T651045	PISTON RING (PART OF 19)	2 REF
8.	7Q072155	O-RING (PART OF 19)	1 REF
9.	7T66P045	PISTON SEAL (PART OF 19)	1 REF
10.	6I045143	PISTON	1
11.	6A025022	WAFFER LOCK RING (PART OF 19)	1 REF
12.	7Q072345	O-RING (PART OF 19)	1 REF
13.	7Q10P346	BACK-UP RING (PART OF 19)	1 REF
14.	6H045022	HEAD	1
15.	7R546022	ROD SEAL (PART OF 19)	1 REF
16.	7R14P022	ROD WIPER (PART OF 19)	1 REF
17.	4G285850	ROD ASM (INCL: 5 & 17)	1
18.	7PNPXT02	PIPE PLUG 1/8 NPT (NOT SHOWN)	2
19.	9C181823	SEAL KIT (INCL: 6-9, 11-13, 15, 16)	1
20.	70392332	COVER	1
21.	72066062	HOSE CLAMP	1
22.	72661299	HOSE CLAMP	1

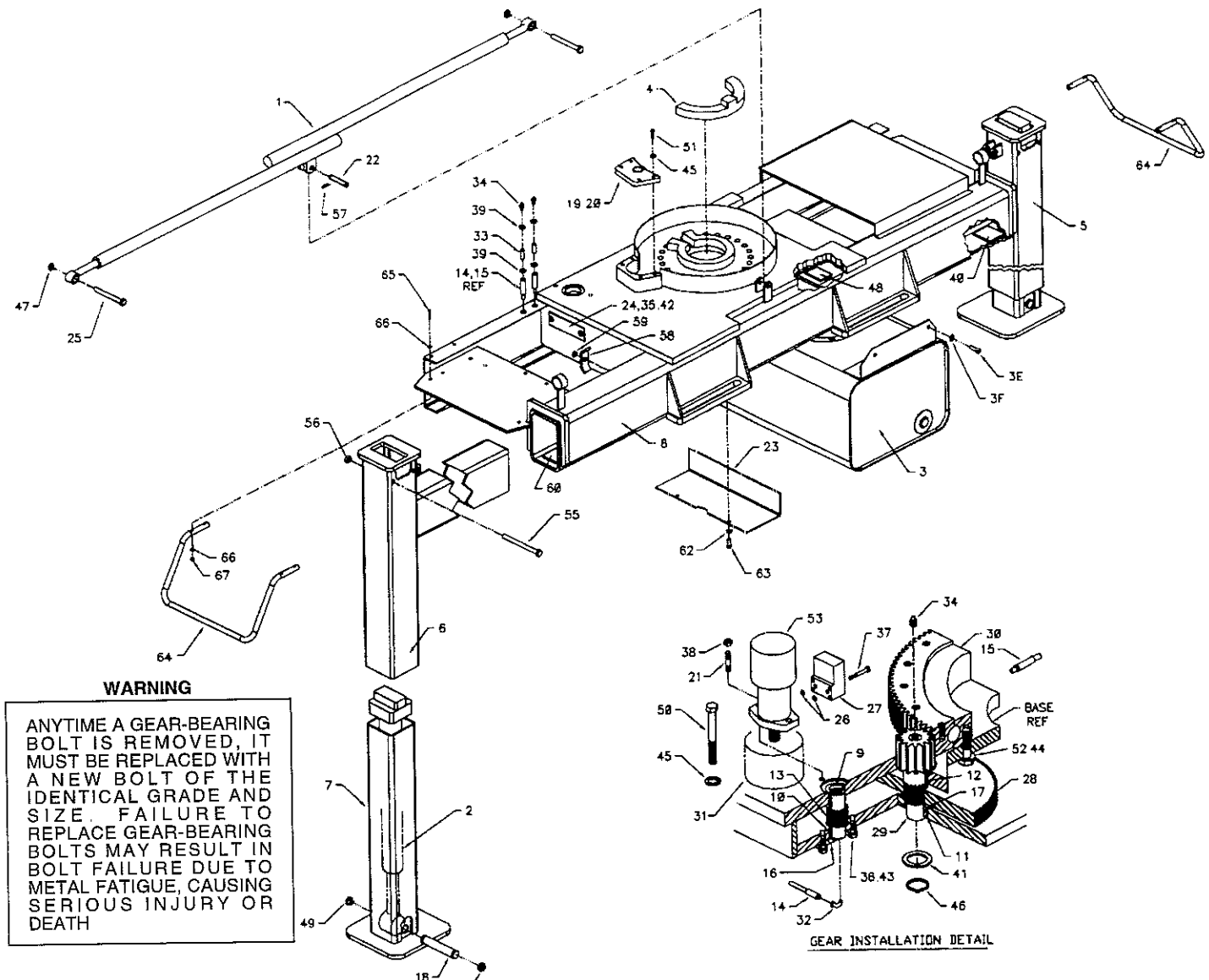
NOTE

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

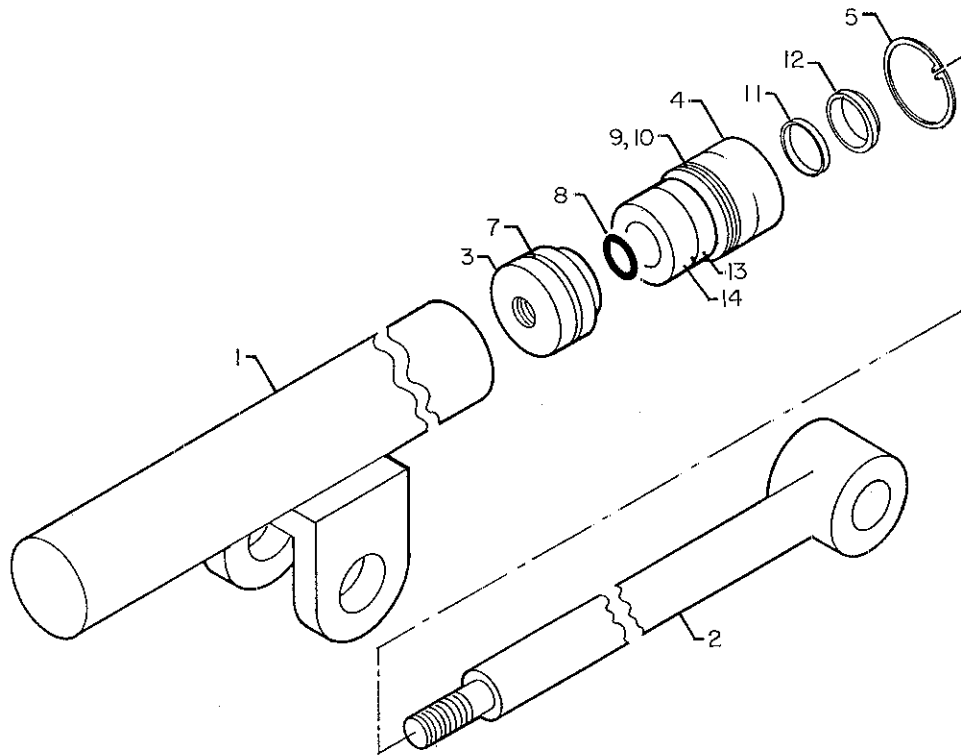
APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

Figure D-7. SPIDER LEG OUTRIGGER CYLINDER (3C285851)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	3A170890	POWER OUT CYLINDER	2	33	72053301	COUPLING 1/8NPT	2
2	3B171890	POWER DOWN CYLINDER	2	34	72053508	GREASE ZERK 1/8NPT	3
3	70732579	RESERVOIR ASM	1	35	72060002	CAP SCR 3/8-16X3/4 HHGR5	4
3E	72060044	CAP SCR 3/8-16X3/4 HHGR5	4	36	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	2
3F	72063051	WASHER 3/8 LOCK	4	37	72060739	CAP SCR 5/16-18X3 SH	4
4	52707194	SLIDE 450° ROTATION	1	38	72062080	NUT 1/2-13 LOCK	2
5	52709188	OUTRIGGER ARM - CURBSIDE	1	39	72063003	WASHER 3/8 WRT	4
6	52709189	OUTRIGGER ARM - STREETSIDE	1	40	60030119	WEAR PAD	1
7	52709190	OUTRIGGER LEG	2	41	72063039	MACH BUSHING 2 X 10GA	1
8	52709195	BASE (INCL: 9-13)	1	42	72063049	WASHER 1/4 LOCK	4
9	60020120	BUSHING (PART OF 8)	1REF	43	72063053	WASHER 1/2 LOCK	2
10	60020121	BUSHING (PART OF 8)	1REF	44	72063115	WASHER 7/8 FLAT	23
11	60020122	BUSHING (PART OF 8)	1REF	45	72063117	WASHER 9/16 FLAT	6
12	60020124	BUSHING (PART OF 8)	1REF	46	72066095	RETAINING RING 2" EXT	2
13	71056074	DRIVE GEAR (PART OF 8)	1REF	47	72062114	NUT 3/4-10 LOCK	2
14	53000701	GREASE EXTENSION 14"	1	48	60030121	WEAR PAD	1
15	53000713	GREASE EXTENSION 38"	1	49	72066132	RETAINING RING 1-1/2" EXT	2
16	60010844	GREASE PLATE	1	50	72601037	CAP SCR 9/16-12X4-1/2 HHGR8	2
17	60020123	THRUST WASHER	1	51	72601144	CAP SCR 9/16-12X2 HHGR8	4
18	60104977	PIN	2	52	72601148	CAP SCR 7/8-9X3 HHGR8	23
19	60105964	PINION SUPPORT PLATE (INCL:20)	1	53	73051004	MOTOR	1
20	70034295	BEARING (PART OF 19)	1REF	55	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	4
21	60106032	STUD 1/2-13X2	2	56	72062107	NUT 1/2-13	4
22	60113676	PIN	1	57	72066145	HAIR PIN	1
23	60108760	INTERMEDIATE GEAR GUARD	1	58	60107648	HOSE CLAMP	2
24	60108761	INSPECTION PLATE COVER	1	59	72062103	NUT 3/8-16	2
25	72060188	CAP SCR 3/4-10X3-1/2 HHGR5	2	60	60030149	WEAR PAD	1
26	7Q072112	O-RING	2	62	72063050	WASHER 5/16 LOCK	2
27	70731731	VALVEPAC	1	63	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
28	71056072	INTERMEDIATE GEAR	1	64	60119747	CTRL HANDLE GUARD	2
29	71056073	PINION GEAR	1	65	72060005	CAP SCR 1/4-20X1-1/4 HHGR5	8
30	71056273	TURNTABLE GEAR BEARING	1	66	72063001	WASHER 1/4 WRT	16
31	71056374	BRAKE	1	67	72062104	NUT 1/4-20 LOCK	8
32	72053281	STREET ELBOW 1/8NPT 90°	1				

Figure D-8. BASE - POWER OUT/DOWN OUTRIGGERS (41709196)



ITEM	PART NO.	DESCRIPTION	QTY
1	4A170890	CASE ASM	1
2	4G170890	ROD ASM	1
3	M6I012050	PISTON	1
4	6H125075	HEAD	1
5	72066029	RETAINING RING 1-5/16 INT	1
6	9A050608	SEAL KIT (INCL: 7-12)	1
7	M7T66P012	PISTON SEAL (PART OF 6)	REF
8	M7Q072014	O-RING (PART OF 6)	REF
9	7Q072214	O-RING (PART OF 6)	REF
10	7Q10P214	BACK-UP RING (PART OF 6)	REF
11	7R66P075	T-SEAL (PART OF 6)	REF
12	M7R13P007	ROD WIPER (PART OF 6)	REF
13	6C075007	STOP TUBE 3/4	1
14	6C125007	STOP TUBE 1-1/4	3

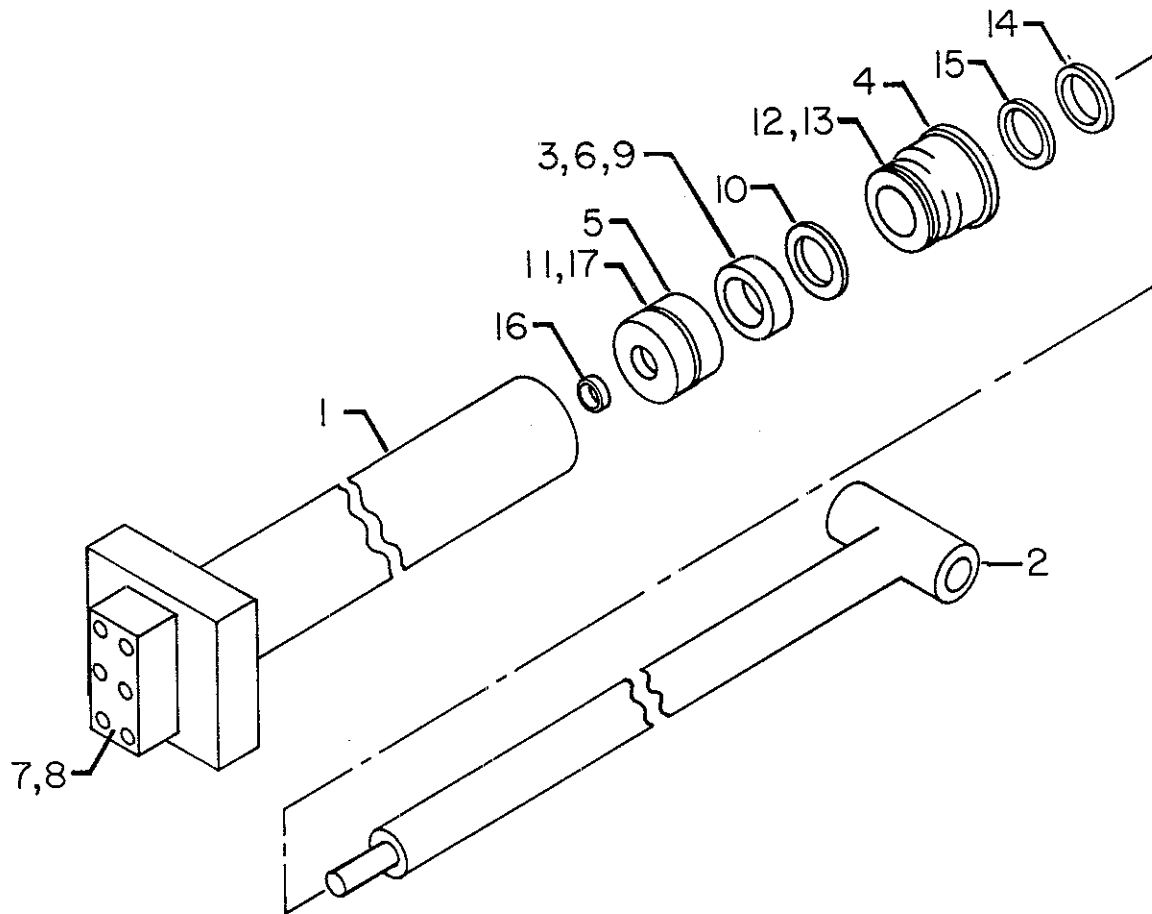
NOTE

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

Figure D-9. POWER OUT OUTRIGGER CYLINDER (3A170890)



ITEM	PART NO.	DESCRIPTION	QTY
1.	4B171890	CASE ASM	1
2.	4G171890	ROD ASM	1
3.	6C300017	STOP TUBE	1
4.	6H030017	HEAD	1
5.	6I030106	PISTON	1
6.	6C075017	STOP TUBE	1
7.	72060708	CAP SCR 1/4-20X1-1/4 SH	6
8.	73054004	VALVE	1
9.	6C150017	STOP TUBE	1
10.	6A025017	WAFER LOCK (PART OF 20)	REF
11.	7Q072145	O-RING (PART OF 20)	REF
12.	7Q072334	O-RING (PART OF 20)	REF
13.	7Q10P334	BACK-UP RING (PART OF 20)	REF
14.	7R14P017	ROD WIPER (PART OF 20)	REF
15.	7R546017	ROD SEAL (PART OF 20)	REF
16.	7T61N106	LOCK RING SEAL (PART OF 20)	REF
17.	7T66P030	PISTON SEAL (PART OF 20)	REF
18.	7T65I030	PISTON RING (PART OF 20)	2 REF
20.	9C121417	SEAL KIT (INCL: 10-18)	1

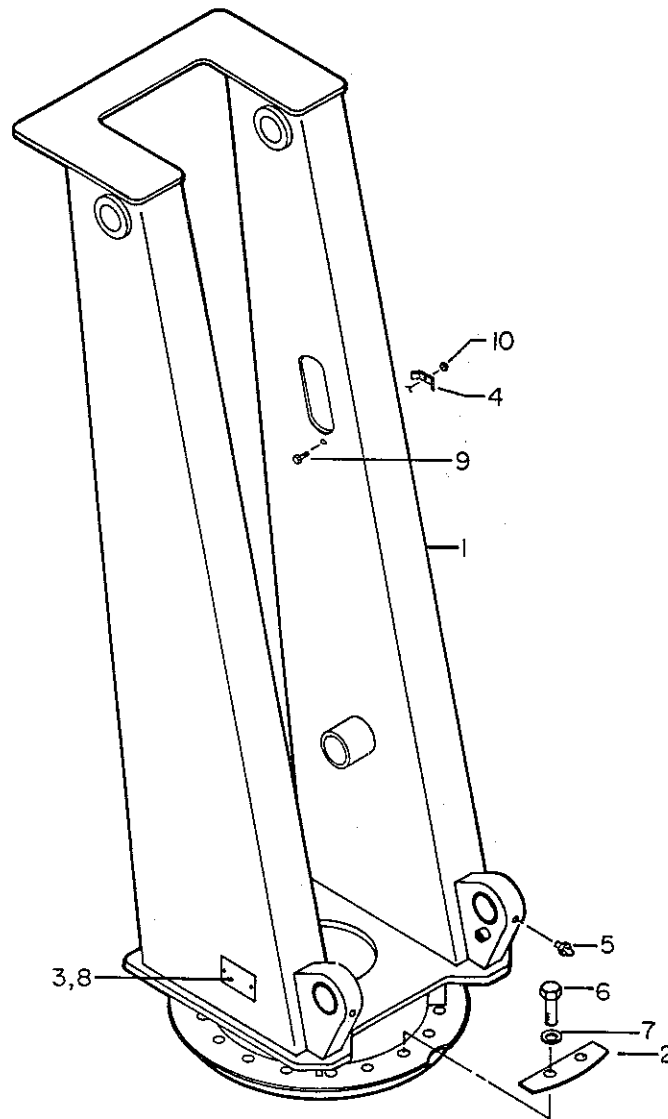
NOTE

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

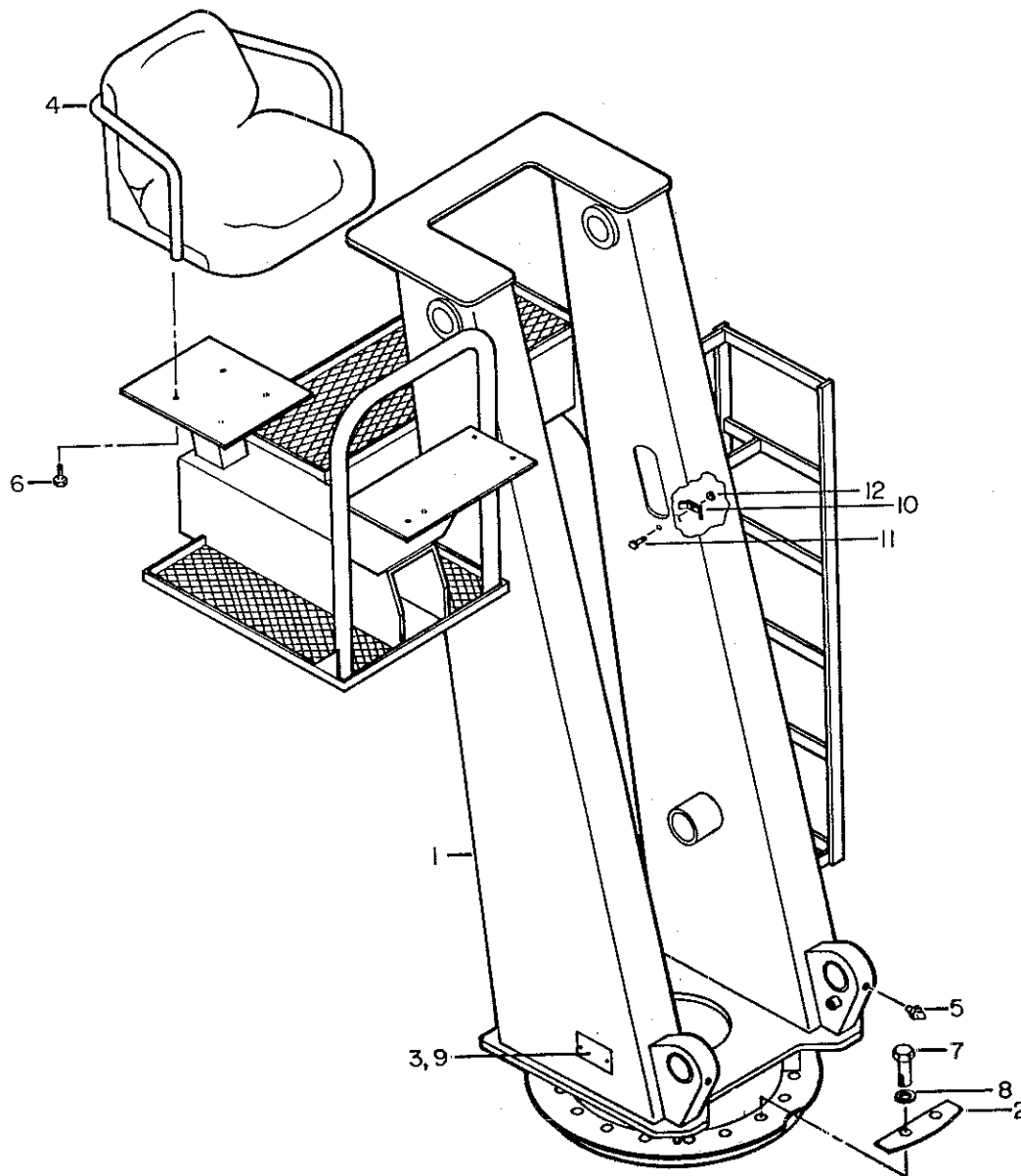
Figure D-10. POWER DOWN OUTRIGGER CYLINDER (3B171890)

**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	QTY
1.	52709518	MAST	1
2.	60104247	PINION GEAR COVER	1
3.	70029119	SERIAL NUMBER PLACARD	1
4.	60010118	HOSE CLAMP	2
5.	72053508	GREASE ZERK 1/8 NPT	2
6.	72060209	CAP SCR 3/4-10X2-3/4 HHGR8	18
7.	72063116	WASHER 3/4 FLAT HARDENED	18
8.	72661216	GRIPNAIL FASTENER 1/8	2
9.	72060051	CAP SCR 3/8-16X2-1/4 HHGR5	2
10.	72062103	NUT 3/8-16 LOCK	2

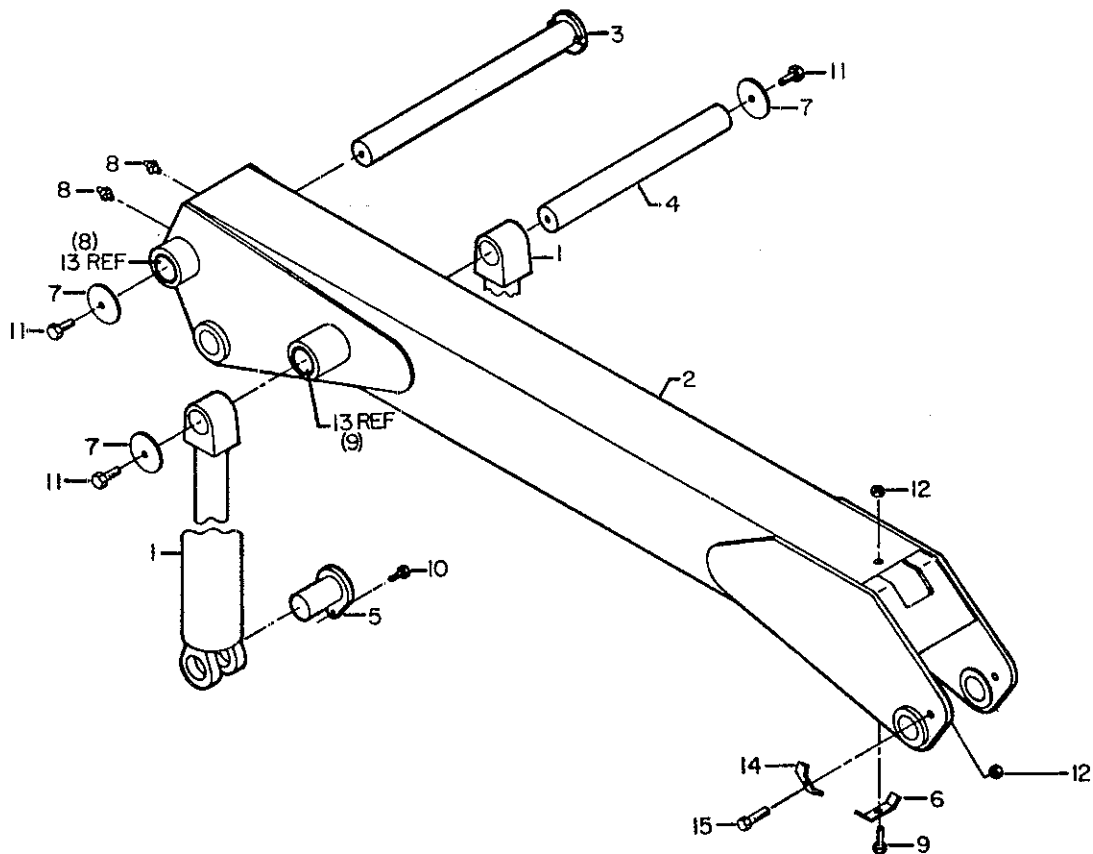
Figure D-11. MAST ASSEMBLY (41709507)

**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	QTY
1.	52709521	MAST WITH CHAIR	1
2.	60104247	PINION GEAR COVER	1
3.	70029119	SERIAL NUMBER PLACARD	1
4.	70731411	CHAIR	1
5.	72053508	GREASE ZERK 1/8 NPT	2
6.	72060025	CAP SCR 5/16-18X1 HHGR5	4
7.	72060209	CAP SCR 3/4-10X2-3/4 HHGR8	18
8.	72063116	WASHER 3/4 FLAT HARDENED	18
9.	72661216	GRIPNAIL FASTENER 1/8	2
10.	60010118	HOSE CLAMP	2
11.	72060051	CAP SCR 3/8-16X2-1/4 HHGR5	2
12.	72062103	NUT 3/8-16 LOCK	2

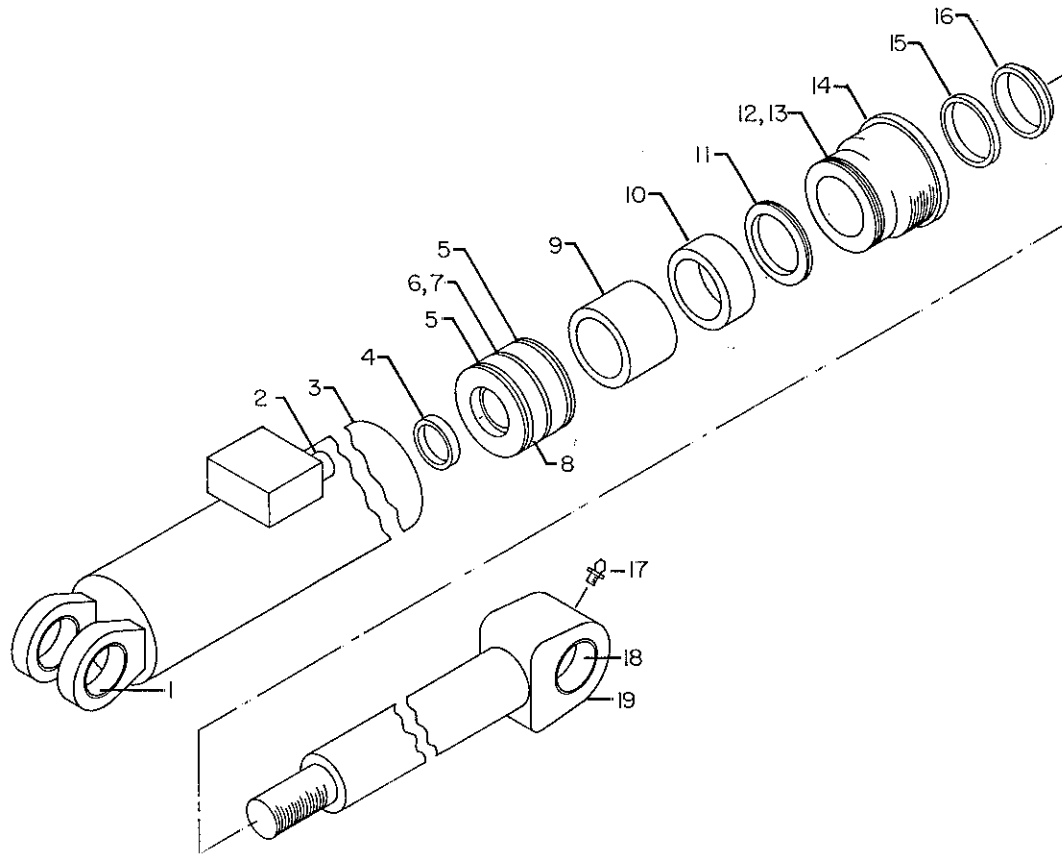
Figure D-12. MAST ASSEMBLY WITH CHAIR (41709508)

**NOTE**

ROUTE EXTENSION CYLINDER HOSES ON
THIS (RIGHT) SIDE OF BOOM

ITEM	PART NO.	DESCRIPTION	QTY
1.	3C279840	INNER CYLINDER	2
2.	52705781	INNER BOOM (incl: 13)	1
3.	52703750	PIN	1
4.	60108835	PIN	1
5.	52705803	PIN	2
6.	60010118	HOSE CLAMP	1
7.	60106332	PIN RETAINER	3
8.	72053508	GREASE ZERK 1/8 NPT	2
9.	72060050	CAP SCR 3/8-16X2 HHGR5	1
10.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	2
11.	72060147	CAP SCR 5/8-11X1 HHGR5	3
12.	72062103	NUT 3/8-16 LOCK	1
13.	7BF81225	BUSHING (part of 2)	17 REF
14.	60107648	HOSE CLAMP	1
15.	72060051	CAP SCR 3/8-16 X 2-1/4 HHGR5	1

Figure D-13. INNER BOOM ASSEMBLY (41705766)



ITEM	PART NO.	DESCRIPTION	QTY
1.	7BF81025	BUSHING (PART OF 3)	2 REF
2.	73054242	VALVE - 25 GPM	1
3.	4C279840	CASE ASM (INCL: 1)	1
4.	7T61N143	LOCK RING SEAL (PART OF 21)	REF
5.	7T651045	PISTON RING (PART OF 21)	2 REF
6.	7T66P045	PISTON SEAL (PART OF 21)	REF
7.	7Q072155	O-RING (PART OF 21)	REF
8.	6I045143	PISTON	1
9.	6C300030	STOP TUBE	1
10.	6C150030	STOP TUBE	1
11.	6A025030	WAFER LOCK (PART OF 21)	REF
12.	7Q10P346	BACK-UP RING (PART OF 21)	REF
13.	7Q072345	O-RING (PART OF 21)	REF
14.	6H045030	HEAD	1
15.	7R546030	ROD SEAL (PART OF 21)	1
16.	7R14P030	ROD WIPER (PART OF 21)	REF
17.	72053507	GREASE ZERK 1/4-28	1
18.	7BF81225	BUSHING (PART OF 19)	2 REF
19.	4G279840	ROD ASM (INCL: 18)	1
20.	7PNPXT02	PLUG 1/8 NPT (NOT SHOWN)	3
21.	9C182423	SEAL KIT (INCL: 4-7, 11-13, 15, 16)	1

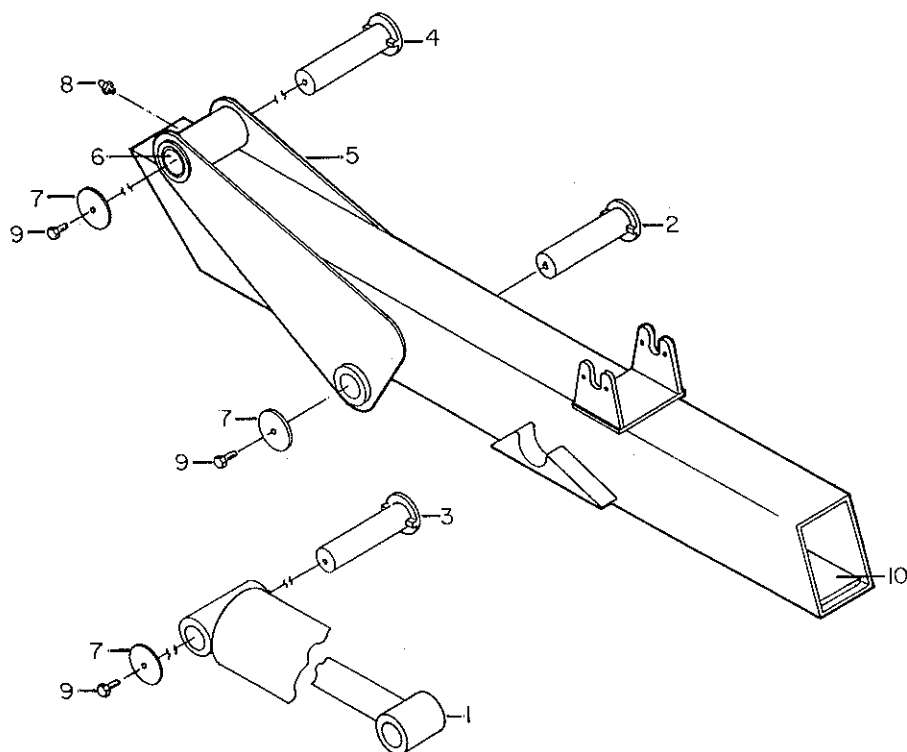
NOTE

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

Figure D-14. INNER BOOM CYLINDER (3C279840)



ITEM	PART NO.	DESCRIPTION	QTY
1.	3C282840	OUTER CYLINDER	1
2.	52703694	PIN	1
3.	52703753	PIN	1
4.	52704916	PIN	1
5.	52709497	OUTER BOOM (incl: 6)	1
6.	7BF81225	BUSHING (part of 5)	4 REF
7.	60106332	PIN RETAINER	3
8.	72053508	GREASE ZERK 1/8 NPT	1
9.	72060147	CAP SCR 5/8-11X1 HHGR5	3
10.	60030120	WEAR PAD	1

Figure D-15. OUTER BOOM ASSEMBLY (41709509)

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

ITEM	PART NO.	DESCRIPTION	QTY
1.	4C282840	CASE ASM (INCL:3,4,21)	1
2.	4G282840	ROD ASM (INCL:4,21,22)	1
3.	7PNPXT02	PIPE PLUG 1/8NPT (PART OF 1)	3REF
4.	72053507	GREASE ZERK (PART OF 1&2)	4REF
5.	6H055035	HEAD	1
6.	6I055181	PISTON	1
7.	9C222829	SEAL KIT (INCL:8-17)	1
8.	7Q072354	O-RING (PART OF 7)	1REF
9.	7Q10P354	BACKUP RING (PART OF 7)	1REF
10.	7T2N4037	WEAR RING (PART OF 7)	2REF
11.	7R546035	U-CUP SEAL (PART OF 7)	1REF
12.	7R14P035	ROD WIPER (PART OF 7)	1REF
13.	7T61N181	LOCK RING (PART OF 7)	1REF
14.	7T65I055	PISTON RING (PART OF 7)	2REF
15.	7T66P055	PISTON SEAL (PART OF 7)	1REF
16.	7Q072159	O-RING (PART OF 7)	1REF
17.	6A025035	WAFFER LOCK (PART OF 7)	1REF
18.	6C300035	STOP TUBE 3"	1
19.	6C150035	STOP TUBE 1-1/2"	1
20.	73054242	COUNTERBALANCE VALVE 25GPM	1
21.	7BF81025	BUSHING (PART OF 1&2)	8REF
22.	7BF81225	BUSHING (PART OF 2)	2REF

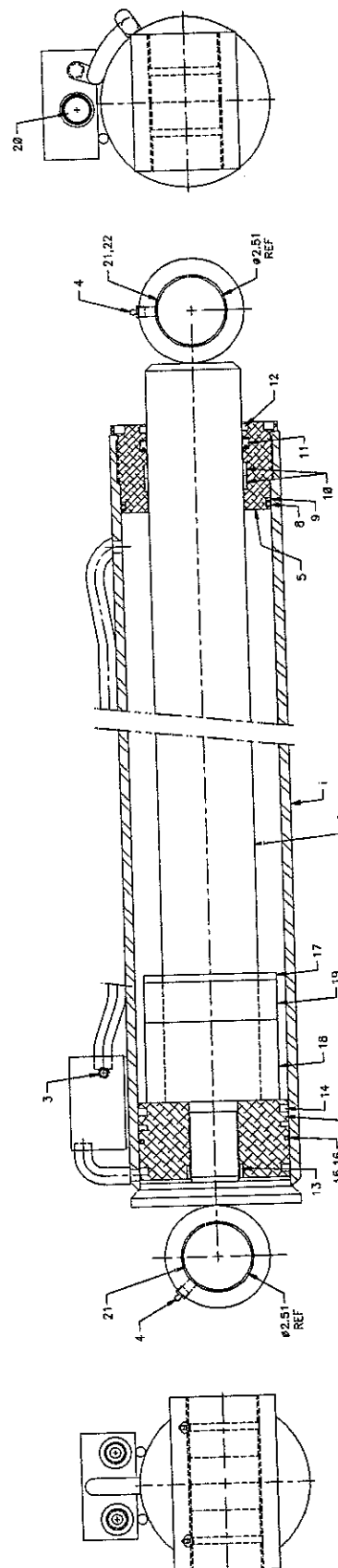
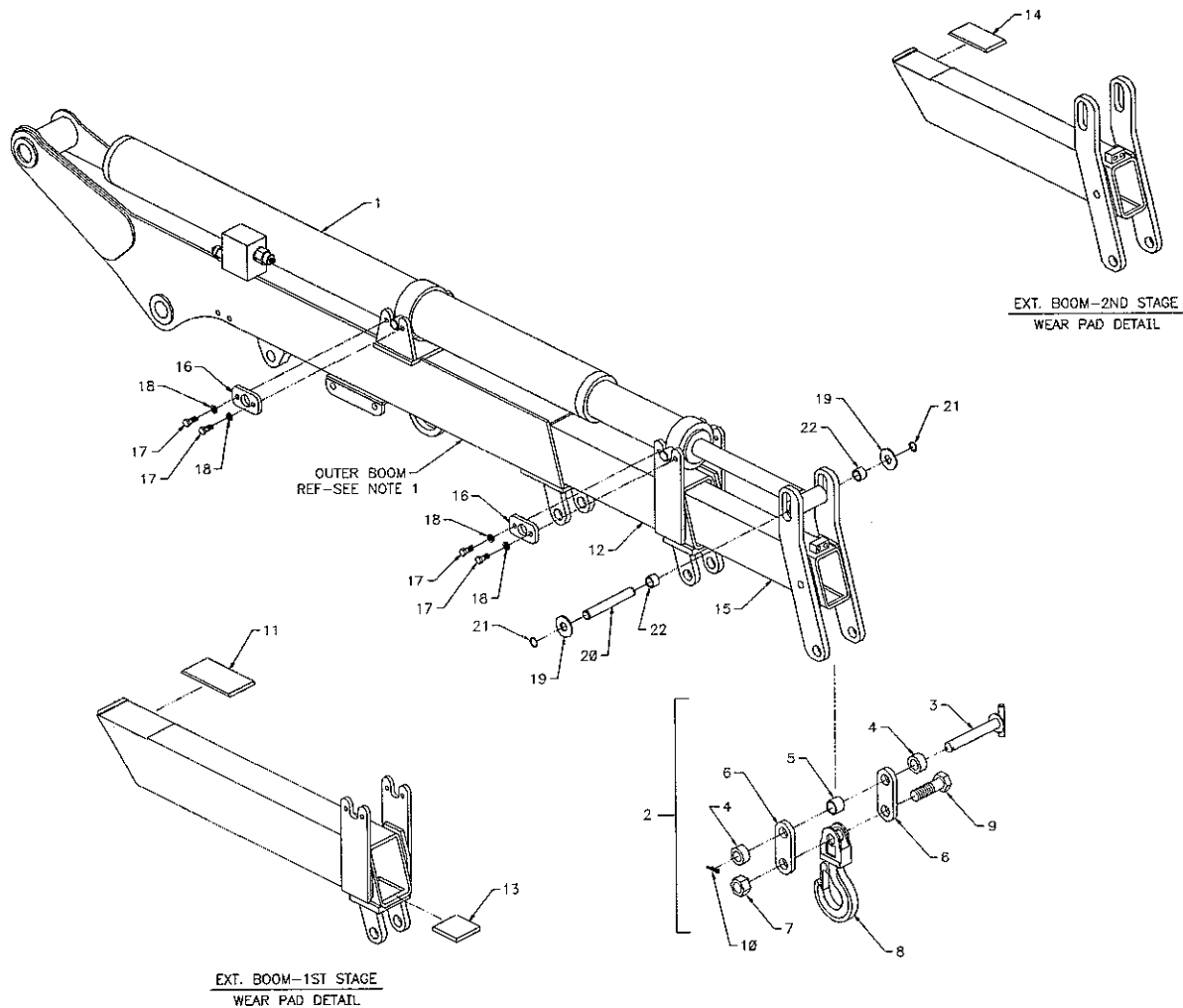


Figure D-16. OUTER BOOM CYLINDER (3C282840)



ITEM	PART NO.	DESCRIPTION	QTY
1	3K152920	EXTENSION CYLINDER	1
2	51706266	HOOK ASM 8-TON (INCL:3-10)	1
3	52705801	PIN (PART OF 2)	REF
4	60102466	SLEEVE (PART OF 2)	2REF
5	60108857	SLEEVE (PART OF 2)	REF
6	60107324	HOOK LINK (PART OF 2)	2REF
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	1REF
10	72066145	HAIR PIN (PART OF 2)	1REF

ITEM	PART NO.	DESCRIPTION	QTY
11	60030121	WEAR PAD	1
12	52709498	1ST STG EXT BOOM	1
13	60030119	WEAR PAD	1
14	60030118	WEAR PAD	1
15	52709499	2ND STG EXT BOOM	1
16	60107152	RETAINER PLATE	4
17	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	8
18	72063053	WASHER 1/2 LOCK	8
19	72063010	WASHER 1" WRT	2
20	60106833	PIN	1
21	72066125	RETAINING RING 1"	2
22	60020197	ROLLER	2

Figure D-17. 2H EXTENSION BOOM ASSEMBLY (41709510)

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

ITEM	PART NO.	DESCRIPTION	QTY
1.	4C148920	CASE ASM	1
2.	4J148920	ROD/CASE ASM 3-1/2 ID	1
3.	4G082900	ROD ASM 2"	1
4.	4FG06690	MOUNTING RING 4-1/2 BORE	1
5.	6H503450	HEAD 5" BORE	1
6.	6H352200	HEAD 3-1/2 BORE	1
7.	6I503369	PISTON 5" BORE	1
8.	6I352125	PISTON 3-1/2 BORE	1
9.	6C512100	STOP TUBE	1
10.	73054817	COUNTERBALANCE VALVE	1
11.	73054902	COUNTERBALANCE VALVE	1
12.	7PNPXT02	PIPE PLUG 1/8 NPT (PART OF 1)	6REF
13.	9X082900	SEAL KIT (INCL:14-30)	1
14.	7Q10P338	BACK-UP RING (PART OF 13)	1REF
15.	7Q072338	O-RING (PART OF 13)	1REF
16.	7Q10P350	BACK-UP RING (PART OF 13)	1REF
17.	7Q072350	O-RING (PART OF 13)	1REF
18.	7Q072240	O-RING (PART OF 13)	1REF
19.	7Q072124	O-RING (PART OF 13)	1REF
20.	7R546020	U-CUP SEAL (PART OF 13)	1REF
21.	7R488450	U-CUP SEAL (PART OF 13)	1REF
22.	7T66P350	PISTON SEAL (PART OF 13)	1REF
23.	7T66P500	PISTON SEAL (PART OF 13)	1REF
24.	7T2N4022	WEAR RING (PART OF 13)	2REF
25.	7T2N4035	WEAR RING (PART OF 13)	2REF
26.	7T2N4050	WEAR RING (PART OF 13)	2REF
27.	7T61N125	LOCK RING (PART OF 13)	1REF
28.	7R14P020	ROD WIPER (PART OF 13)	1REF
29.	7R14P045	ROD WIPER (PART OF 13)	1REF
30.	7T2N8047	WEAR RING (PART OF 13)	1REF

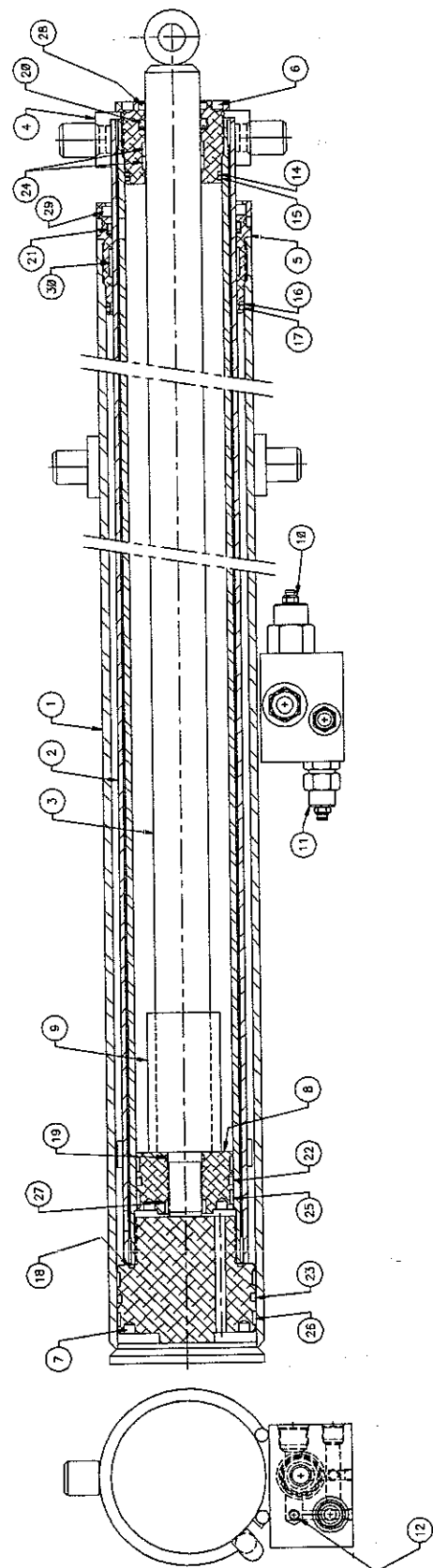
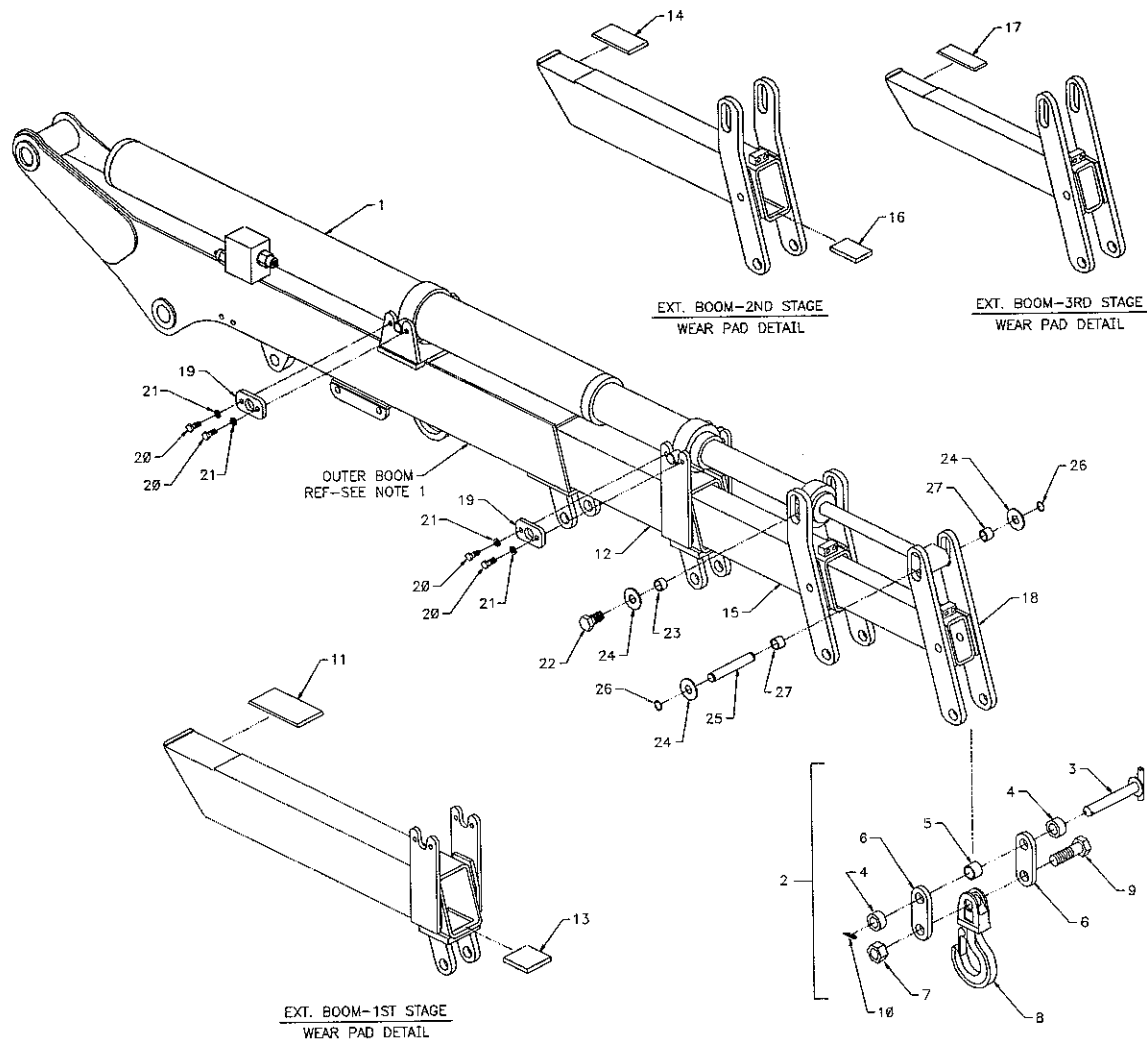


Figure D-18. EXTENSION CYLINDER (3K152920)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K148920	EXTENSION CYLINDER	1	14.	60030118	WEAR PAD	1
2.	51706266	HOOK ASM 8-TON (INCL:3-10)	1	15.	52709499	2ND STG EXT BOOM	1
3.	52705801	PIN (PART OF 2)	REF	16.	60030201	WEAR PAD	1
4.	60102466	SLEEVE (PART OF 2)	2REF	17.	60030200	WEAR PAD	1
5.	60108857	SLEEVE (PART OF 2)	REF	18.	52709500	3RD STG EXT BOOM	1
6.	60107324	HOOK LINK (PART OF 2)	2REF	19.	60107152	RETAINER PLATE	4
7.	72062073	NUT 1 1/4-7 LOCK (PART OF 2)	REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	8
8.	60103575	HOOK - 8 TON (PART OF 2)	REF	21.	72063053	WASHER 1/2 LOCK	8
9.	72601666	CAP SCR 1 1/4-7X4 HHGR5 (PART OF 2)	REF	22.	72601591	CAP SCR 1-14X2 HHGR5	2
10.	72066145	HAIR PIN (PART OF 2)	REF	23.	60020198	ROLLER	4
11.	60030121	WEAR PAD	1	24.	72063010	WASHER 1" WRT	4
12.	52709498	1ST STG EXT BOOM	1	25.	60106065	PIN	1
13.	60030119	WEAR PAD	1	26.	72066125	RETAINING RING 1"	2
				27.	60020197	ROLLER	2

Figure D-19. 3H EXTENSION BOOM ASSEMBLY (41709511)

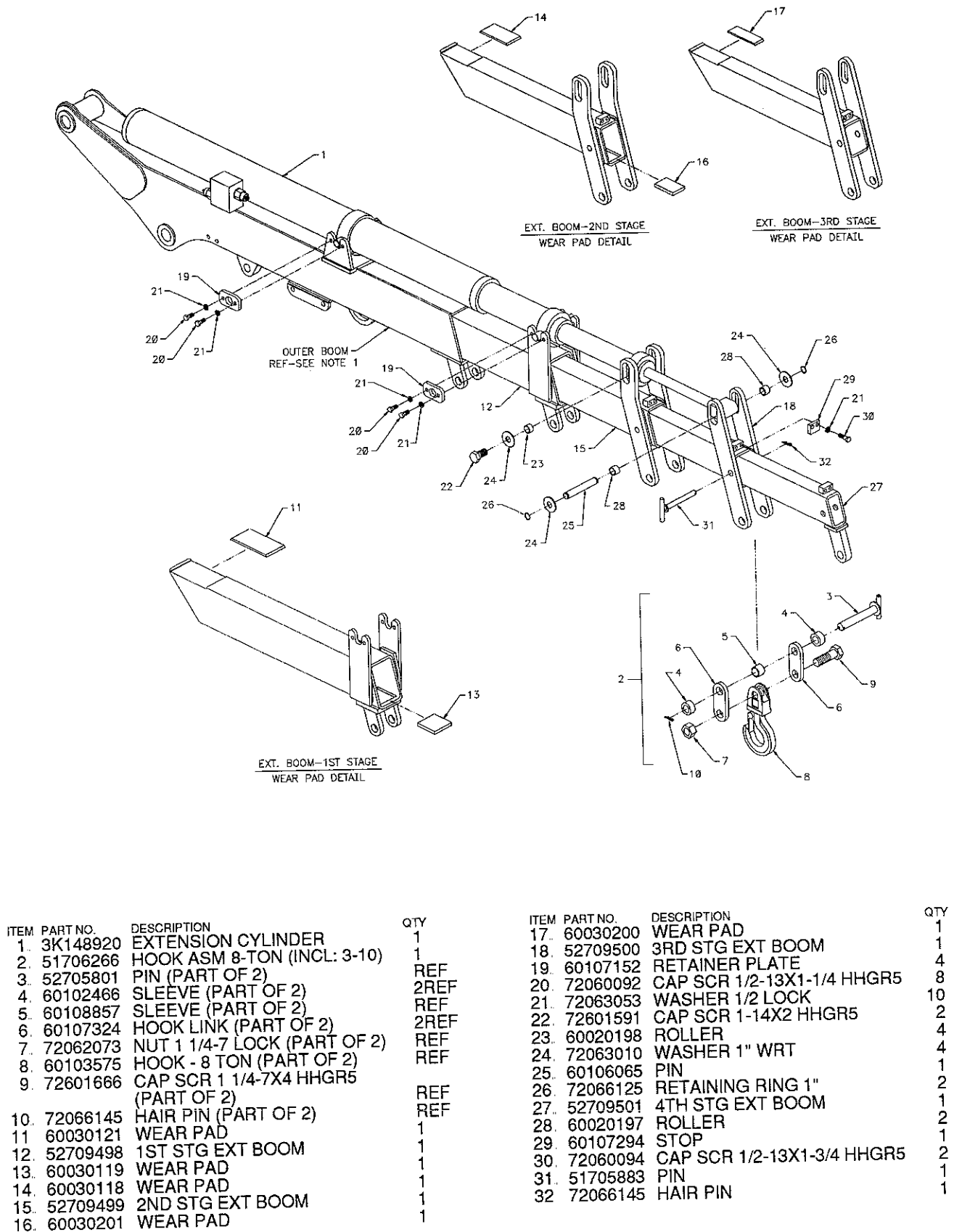
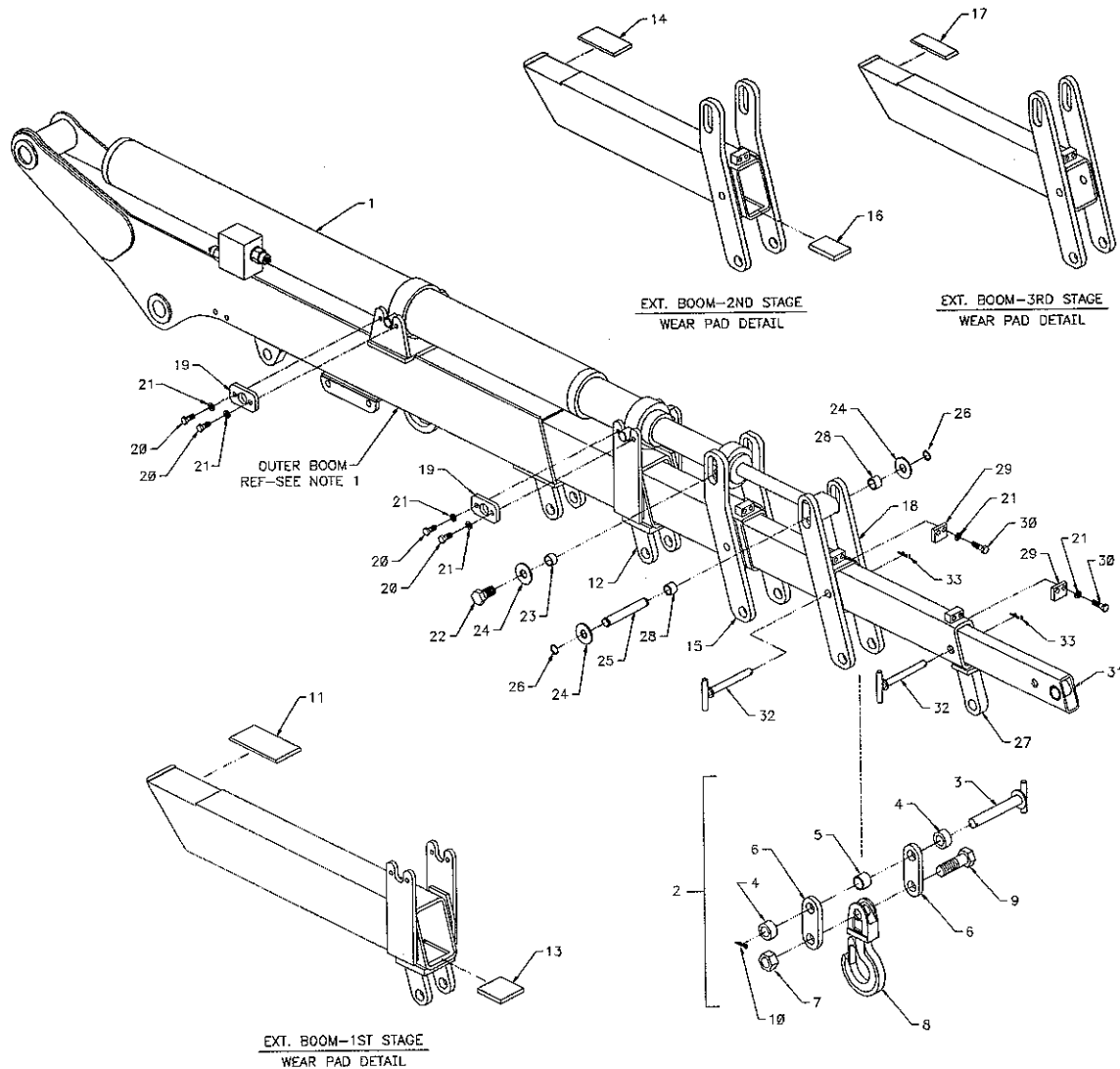


Figure D-20. 3H1M EXTENSION BOOM ASSEMBLY (41709512)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	3K148920	EXTENSION CYLINDER	1	17.	60030200	WEAR PAD	1
2.	51706266	HOOK ASM 8-TON (INCL: 3-10)	1	18.	52709500	3RD STG EXT BOOM	1
3.	52705801	PIN (PART OF 2)	1REF	19.	60107152	RETAINER PLATE	4
4.	60102466	SLEEVE (PART OF 2)	2REF	20.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	8
5.	60108857	SLEEVE (PART OF 2)	1REF	21.	72063053	WASHER 1/2 LOCK	12
6.	60107324	HOOK LINK (PART OF 2)	2REF	22.	72601591	CAP SCR 1-14X2 HHGR5	2
7.	72062073	NUT 1 1/4-7 LOCK (PART OF 2)	1REF	23.	60020198	ROLLER	4
8.	60103575	HOOK - 8 TON (PART OF 2)	1REF	24.	72063010	WASHER 1" WRT	4
9.	72601666	CAP SCR 1 1/4-7X5 HHGR5 (PART OF 2)	1REF	25.	60106065	PIN	1
10.	72066145	HAIR PIN (PART OF 2)	1REF	26.	72066125	RETAINING RING 1"	2
11.	60030121	WEAR PAD	1	27.	52709501	4TH STG EXT BOOM	1
12.	52709498	1ST STG EXT BOOM	1	28.	60020197	ROLLER	2
13.	60030119	WEAR PAD	1	29.	60107294	STOP	2
14.	60030118	WEAR PAD	1	30.	72060094	CAP SCR 1/2-13X1-3/4 HHGR5	4
15.	52709499	2ND STG EXT BOOM	1	31.	52709502	5TH STXG EXT BOOM	1
16.	60030201	WEAR PAD	1	32.	51705883	PIN	2
				33.	72066145	HAIR PIN	2

Figure D-21. 3H2M EXTENSION BOOM ASSEMBLY (41709513)

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, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

APPLY "NEVER-SEEZ" REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO CYLINDER HEAD AND CASE THREADS.

ITEM	PART	DESCRIPTION	QTY
1.	4C148920	CASE ASM	1
2.	4J148920	ROD/CASE ASM 3-1/2 ID	1
3.	4K148920	ROD/CASE ASM 2-1/2 ID	1
4.	4H066900	ROD ASM 1-1/2 OD	1
5.	4P066900	INTERNAL PORT ASM	1
6.	4FG06690	MOUNTING RING 4-1/2 BORE	1
7.	5FG66900	MOUNTING RING 3" BORE	1
8.	6I503369	PISTON 5" BORE	1
9.	6I352269	PISTON 3-1/2 BORE	1
10.	6I252144	PISTON 2-1/2 BORE	1
11.	6H503450	HEAD 5" BORE	1
12.	6H352300	HEAD 3-1/2 BORE	1
13.	6H271511	HEAD 2-1/2 BORE	1
14.	6C400150	STOP TUBE 1-1/2 ROD X 4	1
15.	73054817	COUNTERBALANCE VALVE	1
16.	73054902	COUNTERBALANCE VALVE	1
17.	9X355900	SEAL KIT (INCL:18-35,39-43)	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.	7R072240	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	PIPE PLUG 1/8NPT (PART OF 1)	6REF
37.	7Q092916	O-RING (PART OF 5)	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	WEAR RING (PART OF 17)	1REF
42.	7T2N8032	WEAR RING (PART OF 17)	1REF
43.	7T2N8015	WEAR RING (PART OF 17)	1REF

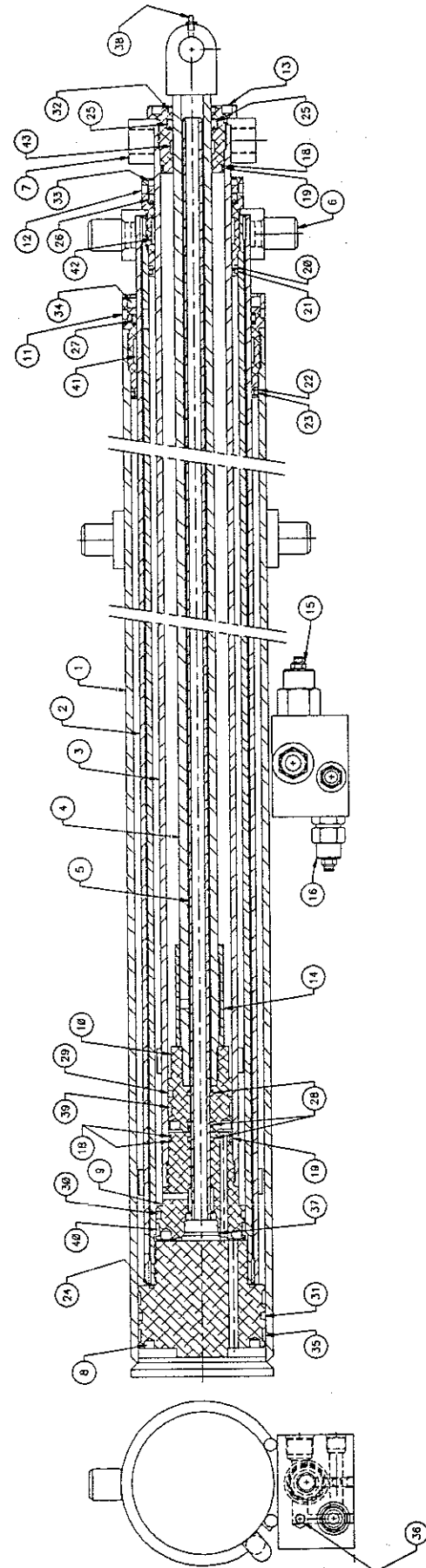
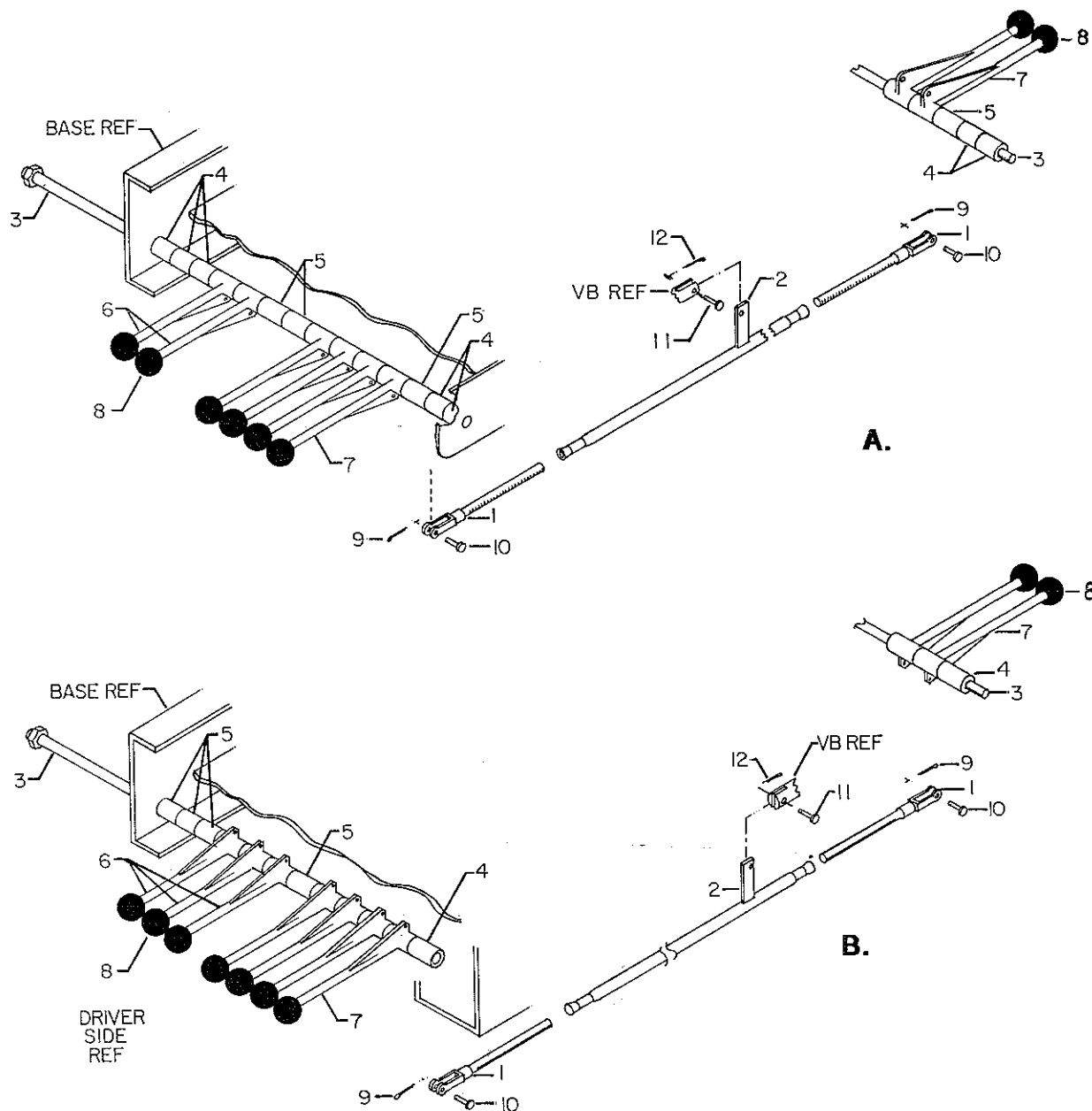
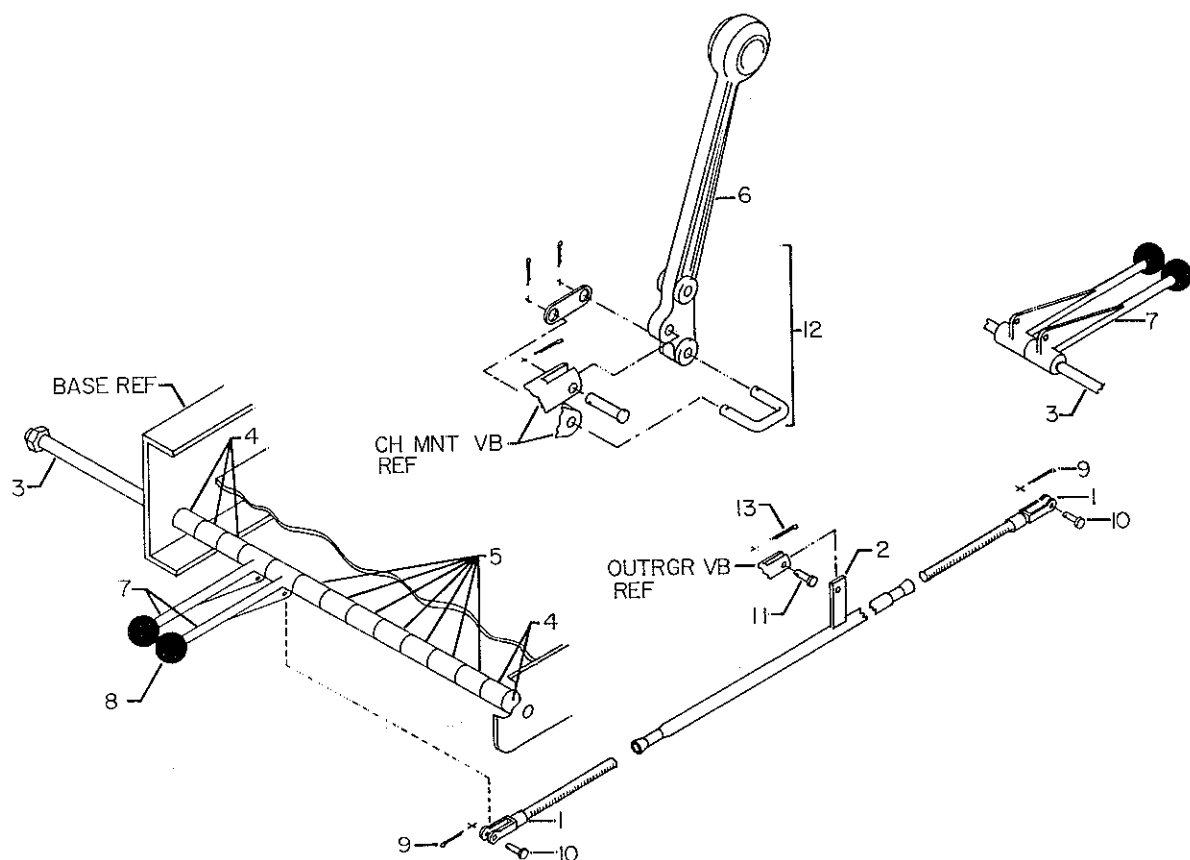


Figure D-22. TELESCOPIC EXTENSION CYLINDER (3K148920)



ITEM	PART NO	DESCRIPTION	90705775 90709359	
			QTY A	QTY B
1.	52704745	CONTROL ROD - MALE	12	14
2.	52705799	CONTROL ROD - FEMALE	6	7
3.	52705800	CONTROL HANDLE ROD	2	2
4.	60030068	SPACER 1-3/8	10	2
5.	60030069	SPACER 1-3/4	6	8
6.	60025254	SHORT CONTROL HANDLE - VB	4	6
7.	70029451	CONTROL HANDLE - VB	8	8
8.	71039096	CONTROL KNOB	12	14
9.	72066168	COTTER PIN	12	14
10.	72066338	CLEVIS PIN 5/16 X 1	12	14
11.	72661169	PIN	6	
	72066337	PIN		7
12.	72066336	COTTER PIN - SPECIAL SHORT	6	7

Figure D-23
CONTROL KIT - 6 FUNCTION MANUAL-SPIDER LEG (90705775)
CONTROL KIT - 7 FUNCTION MANUAL-OUT / DOWN (90709359)



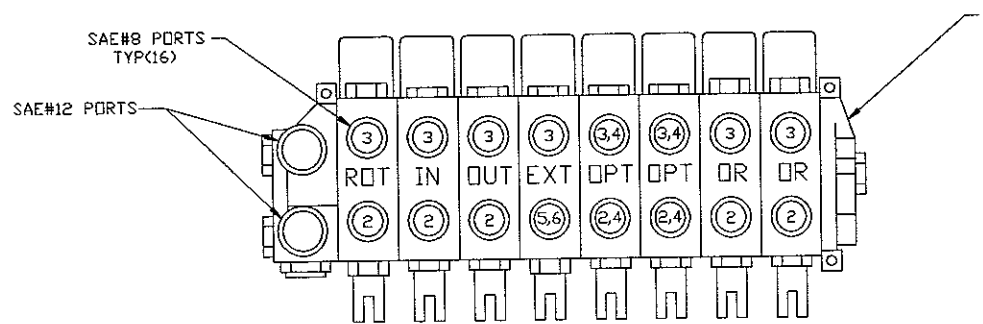
ITEM	PART NO.	DESCRIPTION	QTY
1.	52704745	CONTROL ROD - MALE	4
2.	52705799	CONTROL ROD - FEMALE	2
3.	52705800	CONTROL HANDLE ROD	2
4.	60030068	SPACER 1-3/8	10
5.	60030069	SPACER 1-3/4	14
6.	73014848	CONTROL HANDLE	4
7.	70029451	CONTROL HANDLE - VB	4
8.	71039096	CONTROL KNOB	4
9.	72066168	COTTER PIN	4
10.	72066338	CLEVIS PIN 5/16 X 1	4
11.	72661169	PIN	2
12.	94731839	LINK AND PIN KIT	4
13.	72066336	COTTER PIN - SPECIAL SHORT	2

Figure D-24. CONTROL KIT - CHAIR MOUNT (90706886)



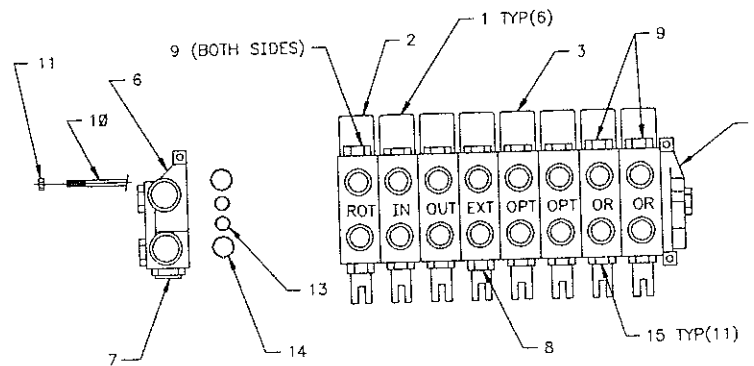
ITEM	PART NO	DESCRIPTION	QTY A	QTY B	QTY C	QTY D	QTY E	QTY F
A.		CONTROL KIT - 4 REMOTE/4 MANUAL			90706398			
B.		CONTROL KIT - 5 REMOTE/3 MANUAL			90706399			
C.		CONTROL KIT - 6 REMOTE/2 MANUAL			90706400			
D.		CONTROL KIT - 4 REMOTE/4 MANUAL			90709601			
E.		CONTROL KIT - 5 REMOTE/3 MANUAL			90709602			
F.		CONTROL KIT - 6 REMOTE/2 MANUAL			90709603			
1.	51703243	CABLE ASM 50"	1	1	1	1	1	1
3.	51705986	HANDLE ASM	1			1		
	51705985	HANDLE ASM		1			1	
	51705313	HANDLE ASM			1			1
4.	51704784	CABLE ASM #1 WIRE X 6"	1	1	1	1	1	1
5.	60107719	JIC BOX (part of 1)	1 REF	1 REF	1 REF	1 REF	1 REF	1 REF
7.	77041237	SOLENOID 12V 150A	1	1	1	1	1	1
8.	70034060	PLASTIC TIE (not shown)	4	4	4	4	4	4
9.	77041251	RELAY	2	2	2	2	2	2
10.	90705775	CONTROL KIT (See Fig. D-23)	1	1	1			
	90709359	CONTROL KIT (See Fig. D-23)				1	1	1

CONTROL KIT - 4 REMOTE/4 MANUAL-SPIDER LEG (90706398)
CONTROL KIT - 5 REMOTE/3 MANUAL-SPIDER LEG (90706399)
CONTROL KIT - 6 REMOTE/2 MANUAL-SPIDER LEG (90706400)
CONTROL KIT - 4 REMOTE/4 MANUAL-OUT/DOWN (90709601)
CONTROL KIT - 5 REMOTE/3 MANUAL-OUT/DOWN (90709602)
CONTROL KIT - 6 REMOTE/2 MANUAL-OUT/DOWN (90709603)



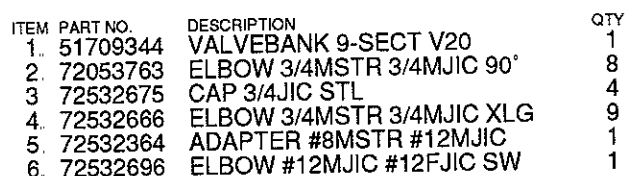
ITEM	PART NO.	DESCRIPTION	QTY
1.	73731769	VALVEBANK 8-SECT V20	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	7
3.	72532666	ELBOW #8MSTR #8MJIC XLG	8
4.	72532675	CAP 3/4JIC STL	4
5.	72532364	ADAPTER #8MSTR #12MJIC	4
6.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-26. VALVEBANK ASSEMBLY - 8 SECTION MANUAL SPIDER LEG OUTRIGGERS (51705774)



ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY	6
2.	73054452	VALVE SECT V20 4WAY	1
3.	73054722	VALVE SECT V20 4WAY BS	1
4.	73731241	END COVER RH W/CONV PLUG	1
6.	73731424	END COVER LH (INCL:7)	1
7.	73054673	RELIEF VALVE (PART OF 6)	1 REF
8.	73054400	RELIEF 2300PSI NON-ADJ	1
9.	73054007	RELIEF 1800PSI NON-ADJ	4
10.	73014668	STUD 3/8X17	3
11.	72062037	NUT 3/8-24 HEX	6
12.	51393494	O-RING KIT	REF
13.	7Q072117	O-RING	18
14.	7Q072119	O-RING	18
15.	73054010	LOAD CHECK PLUG	11

Figure D-26A. VALVEBANK (73731769)



**Figure D-27. VALVEBANK ASSEMBLY - 9 SECTION MANUAL PWR OUT/PWR DN OUTRIGGERS
(51709341)**

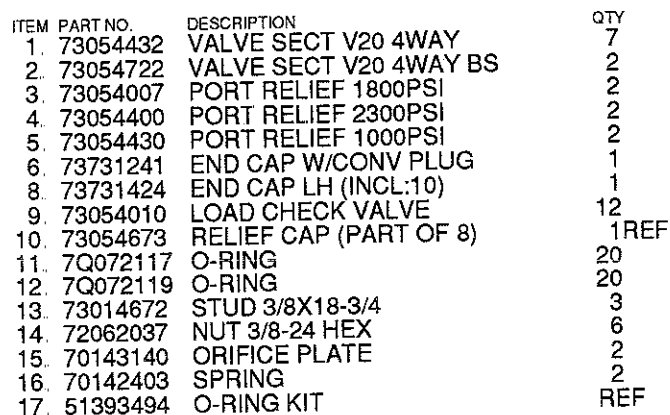
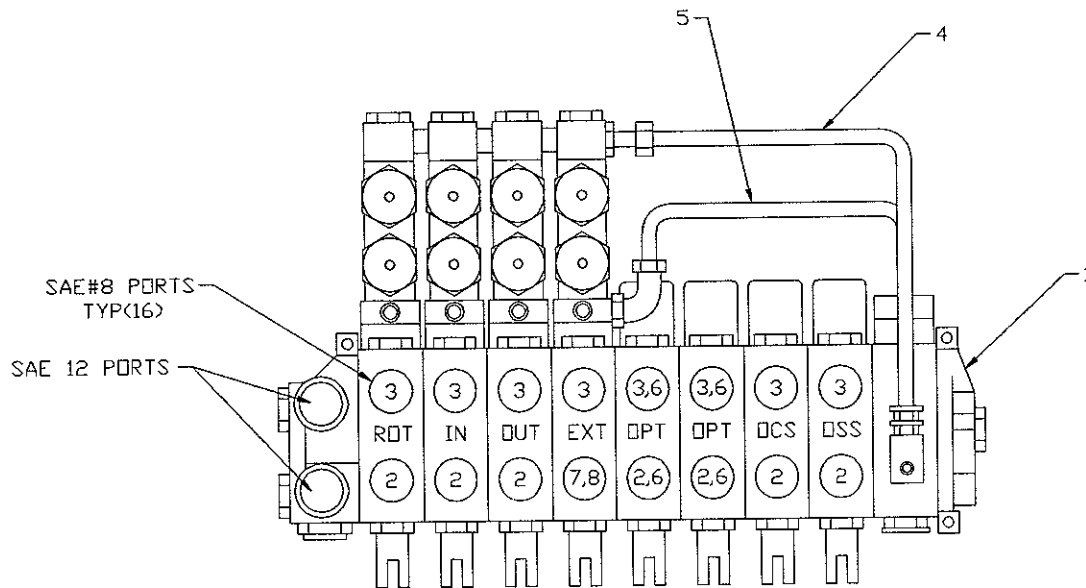
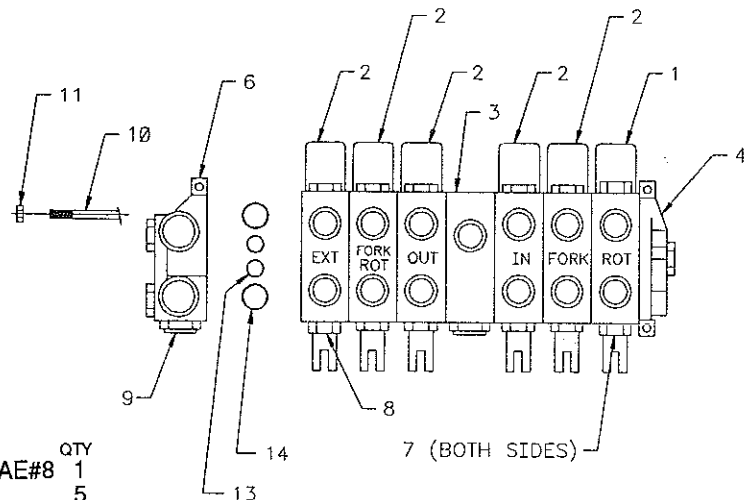


Figure D-27A. VALVEBANK (51709344)



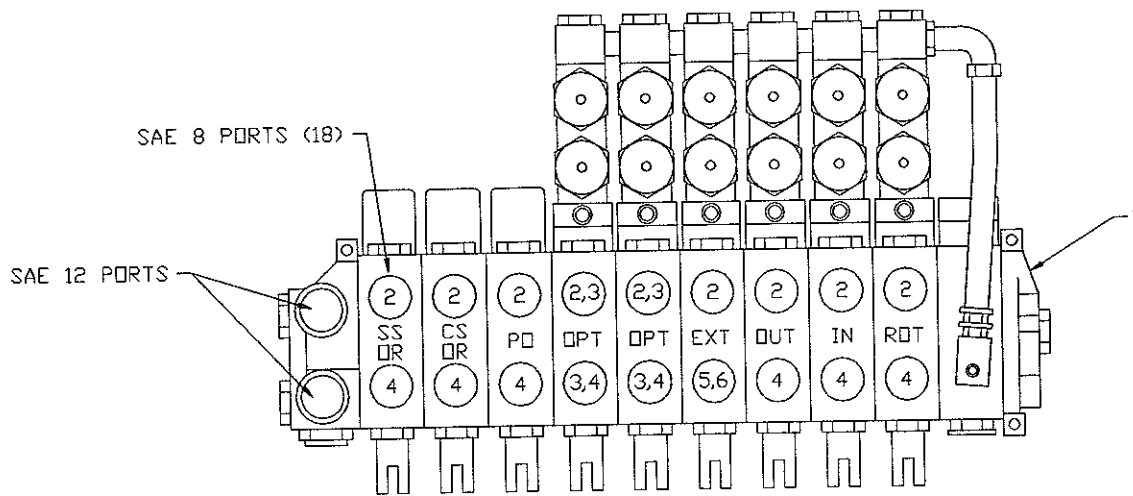
ITEM	PART NO.	DESCRIPTION	QTY
1.	51706877	VALVEBANK 6-SECTION W/MID-INLET	1
2.	72532675	CAP 3/4JIC STL	4
3.	72532358	ADAPTER #8MSTR #8MJIC	11
4.	72532364	ADAPTER #8MSTR #12MJIC	1
5.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-28. VALVEBANK ASSEMBLY - 6 SECTION CHAIR MOUNT W/MID-INLET (51706876)



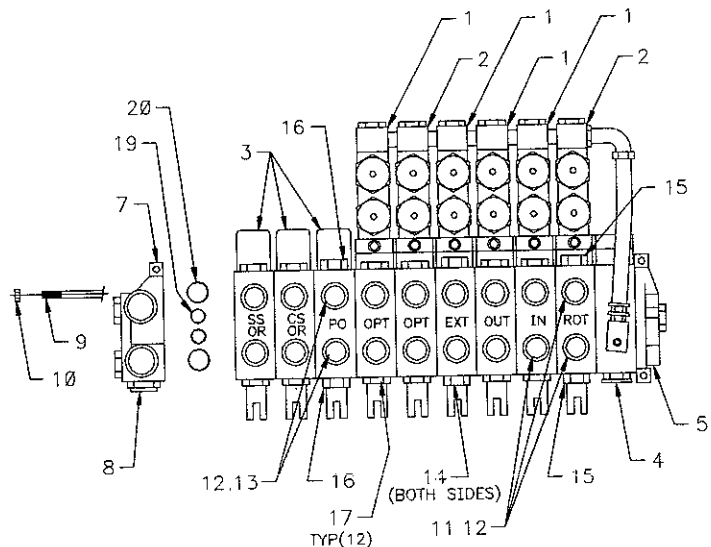
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054452	VALVE SECT 4-WAY W/BS SAE#8	1
2.	73054432	VALVE SECT 4-WAY SAE#8	5
3.	73054467	MID-INLET W/2300WH SAE#12	1
4.	73731241	END COVER RH W/CONV PLUG	1
6.	73731424	END COVER LH (INCL:9)	1
7.	73054007	RELIEF RC NON-ADJ 1800PSI	2
8.	73054400	RELIEF RC NON-ADJ 2300PSI	1
9.	73054673	RELIEF VALVE (PART OF 6)	1 REF
10.	73014596	STUD 3/8-24X15-1/4	3
11.	72062037	NUT 3/8-24 HEX	6
12.	51393494	O-RING KIT (SERVICE PART)	REF
13.	7Q072117	O-RING .81X1X.09	16
14.	7Q072119	O-RING .94X1.12X.09	16
15.	73054010	LOAD CHECK PLUG ASM	9

Figure D-28A. VALVEBANK - 6 SECTION CHAIR MOUNT W/MID-INLET (51706877)



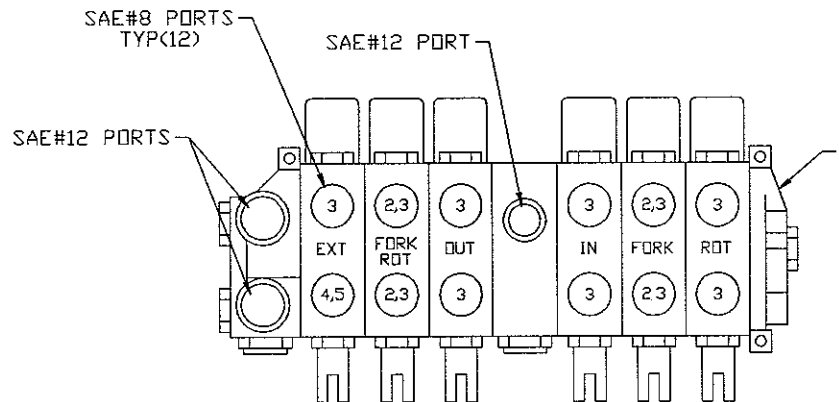
ITEM	PART NO.	DESCRIPTION	QTY
1.	51709340	VALVEBANK 9-SECTION 6R/3M	1
2.	72532666	ELBOW 3/4MSTR 3/4MJIC 90° XLG	9
3.	72532675	CAP 3/4JIC STL	4
4.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	8
5.	72532364	ADAPTER #8MSTR #12MJIC	1
6.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-29. VALVEBANK ASSEMBLY - 9 SECTION 6 REMOTE/3 MANUAL W/PWR OUT & DN (51710749)



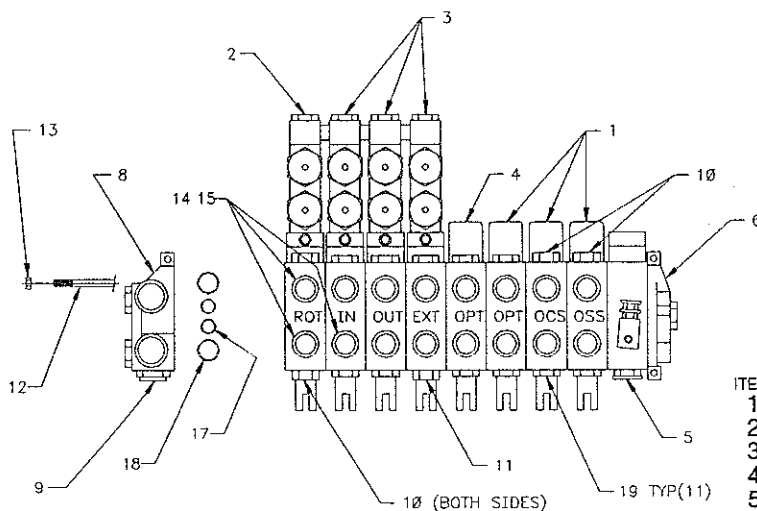
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054468	VALVE SECT 4-WAY SAE#8	4
2.	73054482	VALVE SECT 4-WAY W/BS SAE#8	2
3.	73054432	VALVE SECT 4-WAY SAE#8	3
4.	73054502	VALVE SECT UTILITY	1
5.	73731241	END COVER RH W/CONV PLUG	1
7.	73731424	END COVER LH (INCL:8)	1
8.	73054673	RELIEF VALVE (PART OF 7)	1 REF
9.	60108011	STUD 3/8-24X20-1/2	3
10.	72062037	NUT 3/8-24 HEX	6
11.	70142402	ORIFICE PLATE	3
12.	70142403	ORIFICE SPRING	5
13.	70143140	ORIFICE PLATE	2
14.	73054400	RELIEF RC NON-ADJ 2300PSI	2
15.	73054007	RELIEF RC NON-ADJ 1800PSI	2
16.	73054430	RELIEF RC NON-ADJ 1000PSI	2
17.	73054010	LOAD CHECK PLUG ASM	12
18.	51393494	O-RING KIT (SERVICE PART)	REF
19.	7Q072117	O-RING .81X1X .09	22
20.	7Q072119	O-RING .94X1.12X .09	22

Figure D-29A. VALVEBANK - 9 SECTION 6 REMOTE/3 MANUAL W/PWR OUT & DN (51709340)



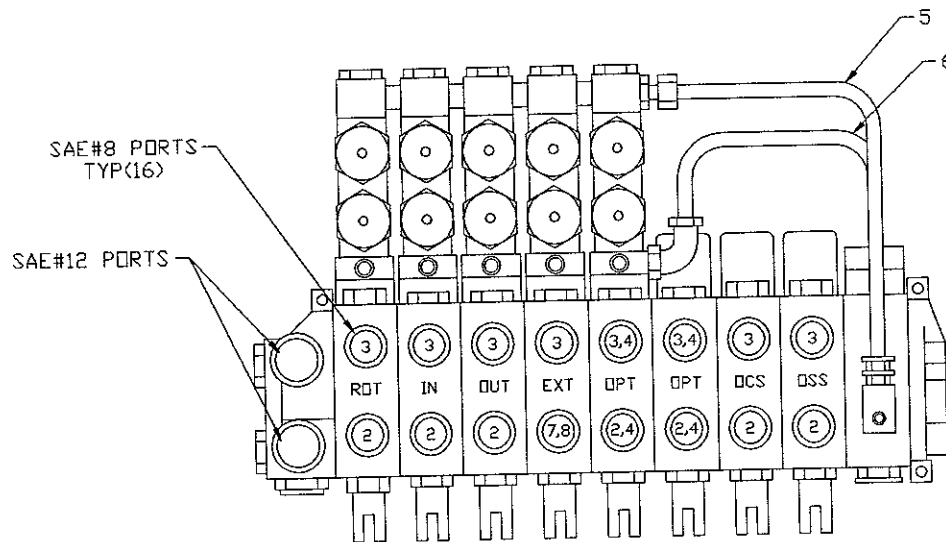
ITEM	PART NO.	DESCRIPTION	QTY
1.	51706379	VALVEBANK 4R/4M	1
2.	72053763	ELBOW #8MSTR #8MJIC	7
3.	72532666	ELBOW #8MSTR #8MJIC XLG	8
4.	51706383	TUBE ASM	1
5.	51706384	TUBE ASM	1
6.	72532675	CAP 3/4JIC STL	4
7.	72532364	ADAPTER #8MSTR #12MJIC	1
8.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-30. VALVEBANK ASSEMBLY - 4 REMOTE/4 MANUAL-SPIDER LEGS (51706390)



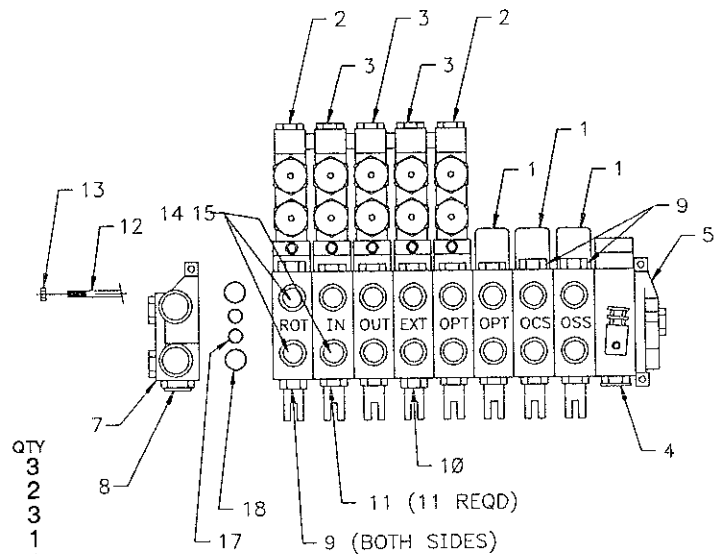
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY	3
2.	73054482	VALVE SECT V20 4WAY BS	1
3.	73054468	VALVE SECT V20 4WAY	3
4.	73054722	VALVE SECT V20 4WAY BS	1
5.	73054502	VALVE SECT V20R UTIL	1
6.	73731241	END COVER RH W/CONV PLUG	1
8.	73731424	END COVER LH (INCL:9)	1
9.	73054673	RELIEF VALVE (PART OF 8)	1 REF
10.	73054007	RELIEF 1800PSI NON-ADJ	4
11.	73054400	RELIEF 2300PSI NON-ADJ	1
12.	73014672	STUD 3/8X18-3/4	3
13.	72062037	NUT 3/8-24 HEX	6
14.	70142402	ORIFICE PLATE	3
15.	70142403	SPRING	3
16.	51393494	O-RING KIT	REF
17.	7Q072117	O-RING	20
18.	7Q072119	O-RING	20
19.	73054010	LOAD CHECK VALVE	11

Figure D-30A. VALVEBANK (51706379)



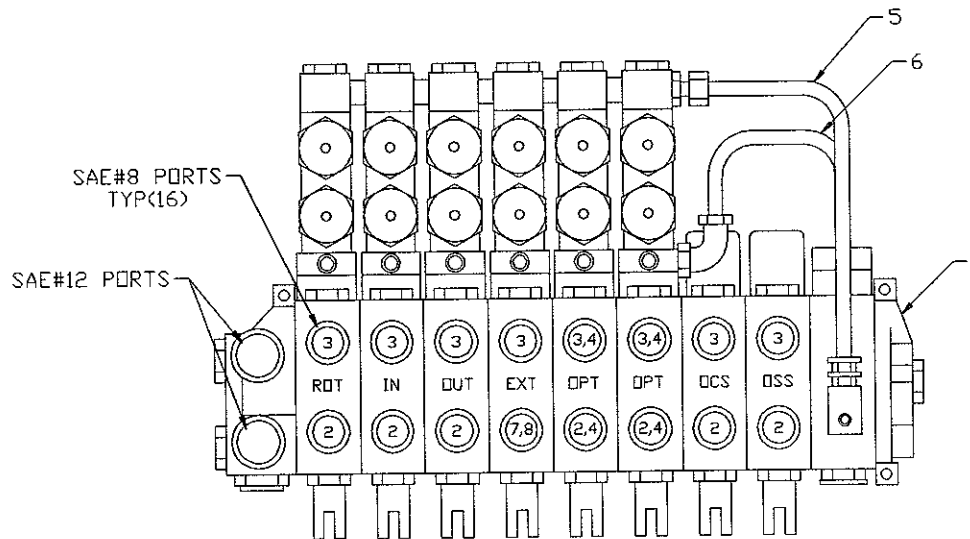
ITEM	PART NO.	DESCRIPTION	QTY
1.	51706380	VALVEBANK 8-SECTION 5R/3M	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	7
3.	72532666	ELBOW #8MSTR #8MJIC XLG	8
4.	72532675	CAP 3/4JIC STL	4
5.	51706381	TUBE ASM "L"	1
6.	51706382	TUBE ASM "U"	1
7.	72532364	ADAPTER #8MSTR #12MJIC	1
8.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-31. VALVEBANK ASSEMBLY - 5 REMOTE/3 MANUAL-SPIDER LEGS (51706391)



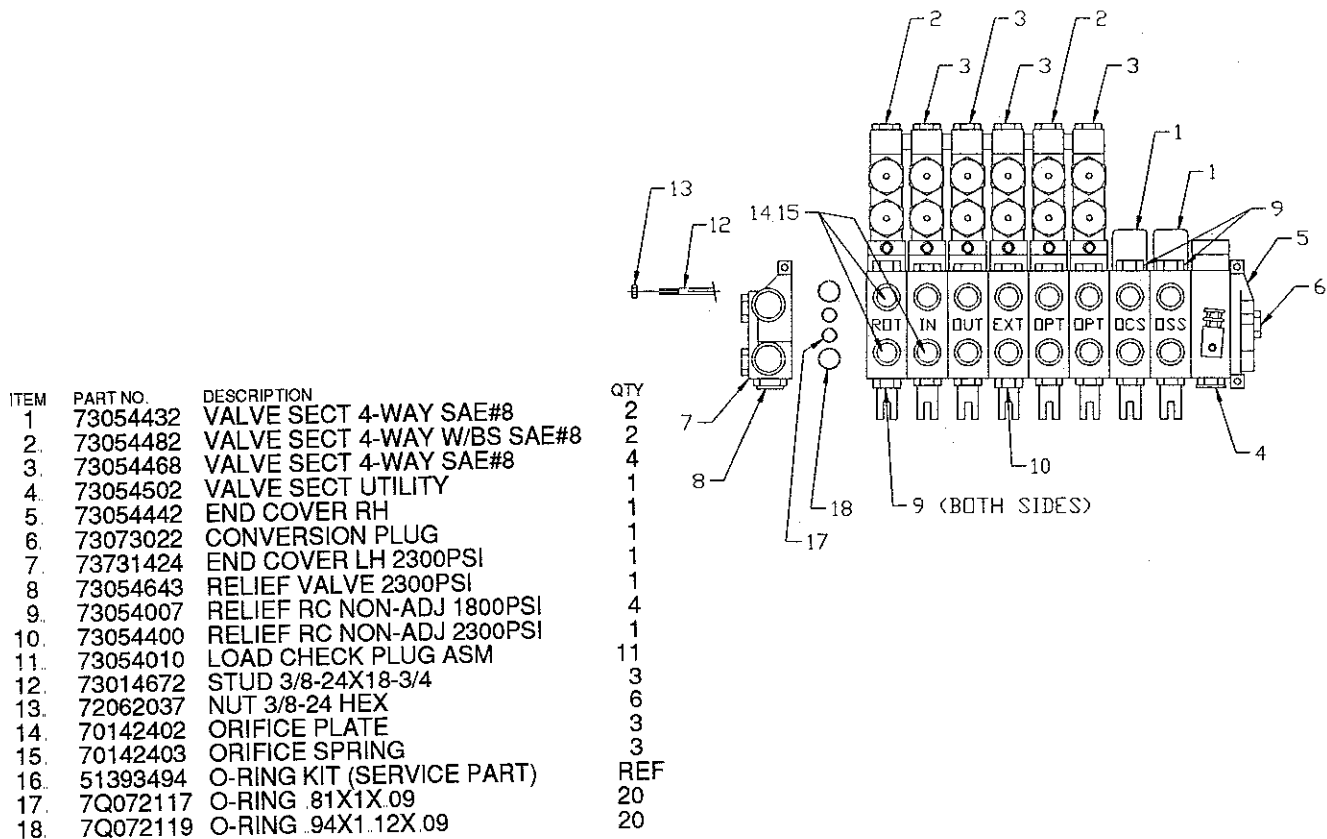
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT 4-WAY SAE#8	3
2.	73054482	VALVE SECT 4-WAY W/BS SAE#8	2
3.	73054468	VALVE SECT 4-WAY SAE#8	3
4.	73054502	VALVE SECT UTILITY	1
5.	73731241	END COVER RH W/CONV PLUG	1
6.	73731424	END COVER LH (INCL:8)	1
7.	73054673	RELIEF VALVE (PART OF 7)	1 REF
8.	73054007	RELIEF RC NON-ADJ 1800PSI	4
9.	73054400	RELIEF RC NON-ADJ 2300PSI	1
10.	73054010	LOAD CHECK PLUG ASM	11
11.	73014672	STUD 3/8-24X18-3/4	3
12.	72062037	NUT 3/8-24 HEX	6
13.	70142402	ORIFICE PLATE	3
14.	70142403	ORIFICE SPRING	3
15.	51393494	O-RING KIT (SERVICE PART)	REF
16.	7Q072117	O-RING .81X1X.09	20
17.	7Q072119	O-RING .94X1.12X.09	20

Figure D-31A. VALVEBANK - 5 REMOTE/3 MANUAL-SPIDER LEGS (51706380)



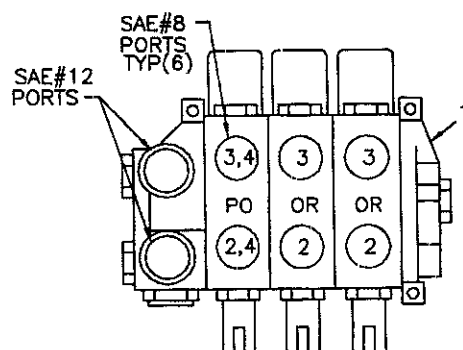
ITEM	PART NO.	DESCRIPTION	QTY
1.	51706369	VALVEBANK 8-SECTION 6R/2M	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	7
3.	72532666	ELBOW #8MSTR #8MJIC XLG	8
4.	72532675	CAP 3/4JIC STL	4
5.	51705093	TUBE ASM "L"	1
6.	51705092	TUBE ASM "U"	1
7.	72532364	ADAPTER #8MSTR #12MJIC	1
8.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-32. VALVEBANK ASSEMBLY - 6 REMOTE/2 MANUAL-SPIDER LEGS (51706392)



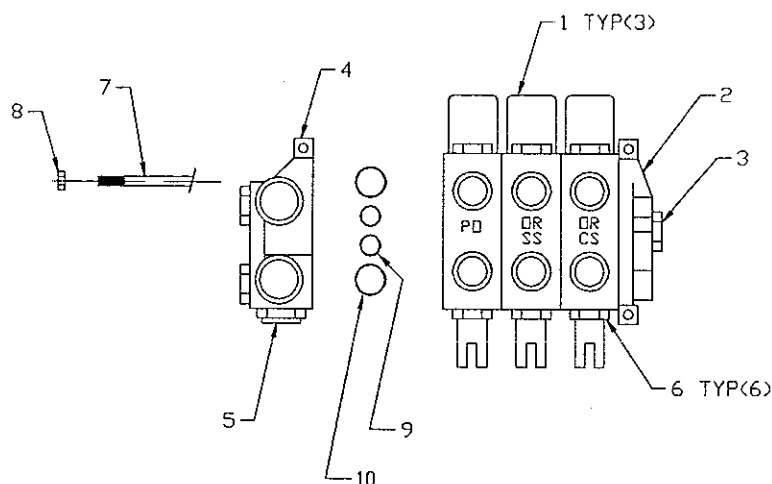
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT 4-WAY SAE#8	2
2.	73054482	VALVE SECT 4-WAY W/BS SAE#8	2
3.	73054468	VALVE SECT 4-WAY SAE#8	4
4.	73054502	VALVE SECT UTILITY	1
5.	73054442	END COVER RH	1
6.	73073022	CONVERSION PLUG	1
7.	73731424	END COVER LH 2300PSI	1
8.	73054643	RELIEF VALVE 2300PSI	1
9.	73054007	RELIEF RC NON-ADJ 1800PSI	4
10.	73054400	RELIEF RC NON-ADJ 2300PSI	1
11.	73054010	LOAD CHECK PLUG ASM	11
12.	73014672	STUD 3/8-24X18-3/4	3
13.	72062037	NUT 3/8-24 HEX	6
14.	70142402	ORIFICE PLATE	3
15.	70142403	ORIFICE SPRING	3
16.	51393494	O-RING KIT (SERVICE PART)	REF
17.	7Q072117	O-RING .81X1X.09	20
18.	7Q072119	O-RING .94X1.12X.09	20

Figure D-32. VALVEBANK - 6 REMOTE/2 MANUAL-SPIDER LEGS (51706369)



ITEM	PART NO.	DESCRIPTION	QTY
1.	51705973	VALVEBANK 3-SECTION W/PB	1
2.	72053763	ELBOW #8MSTR #8MJIC 90°	3
3.	72532666	ELBOW #8MSTR #8MJIC XLG	3
4.	72532675	CAP #8JIC	2

Figure D-33. 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-33A. VALVEBANK - 3 SECTION W/POWER BEYOND (51705973)

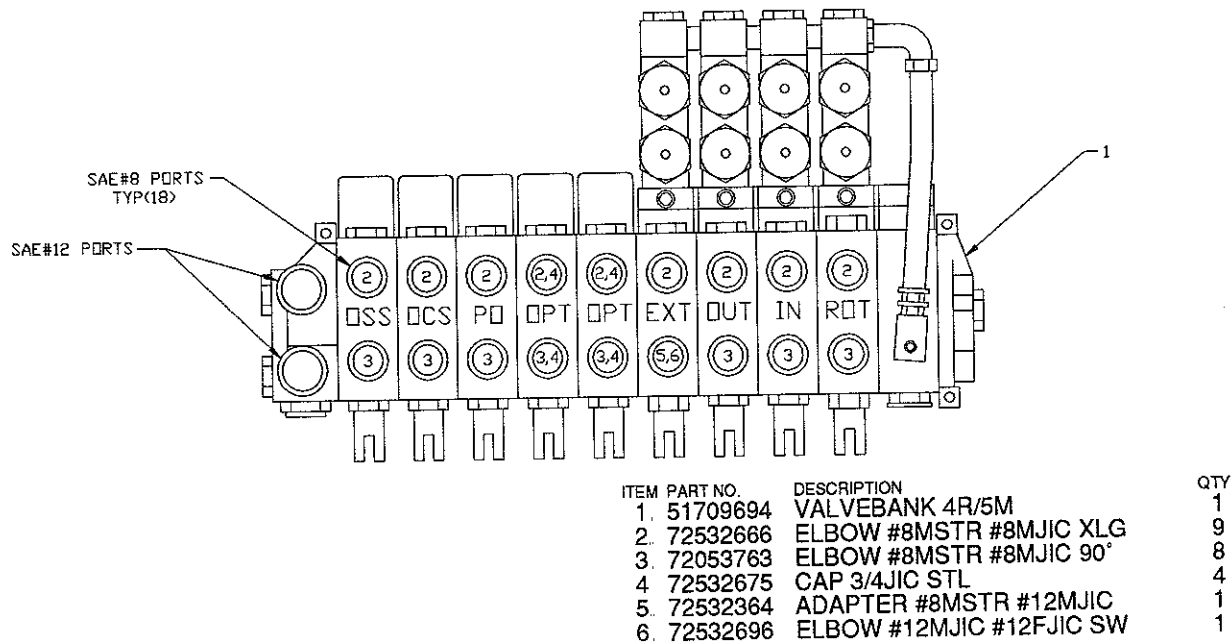


Figure D-34.
VALVEBANK ASSEMBLY 4 REMOTE/5 MANUAL POWER OUT/DOWN OUTRIGGERS
(51709677)

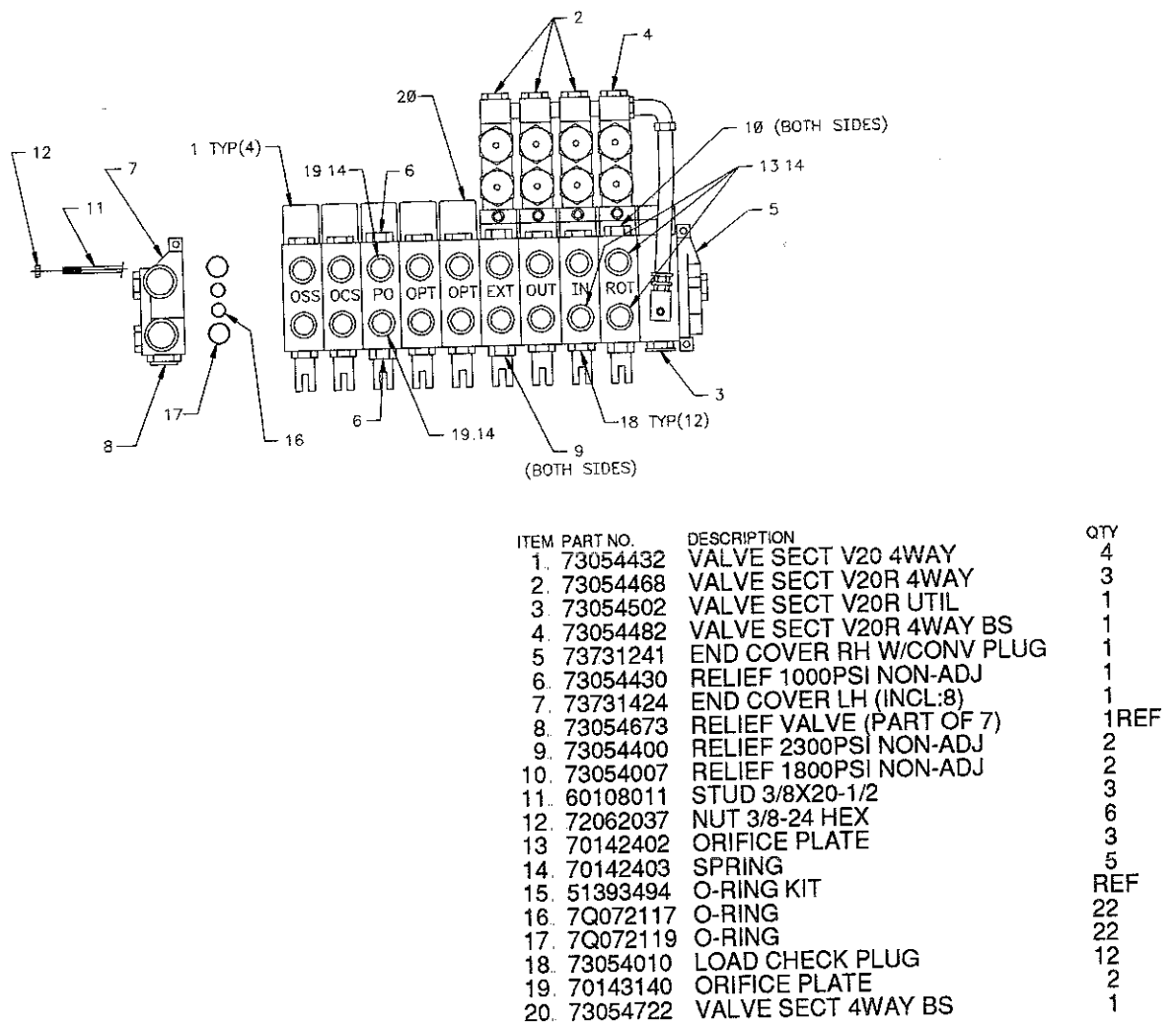
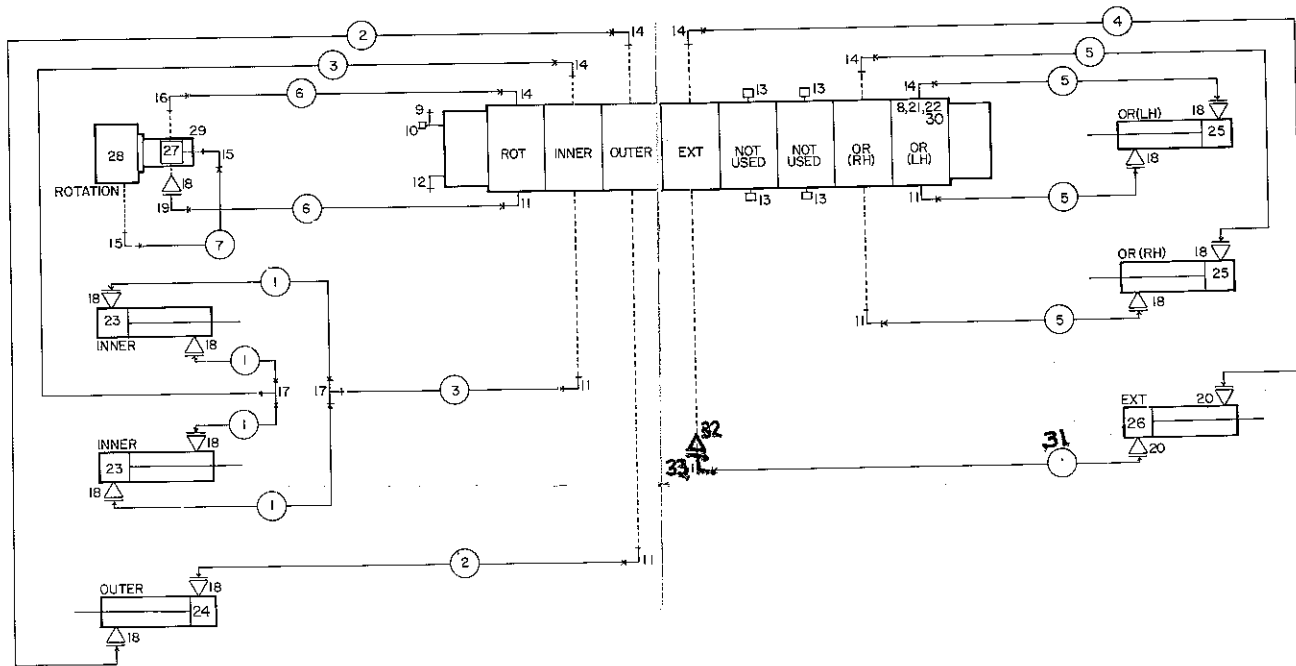
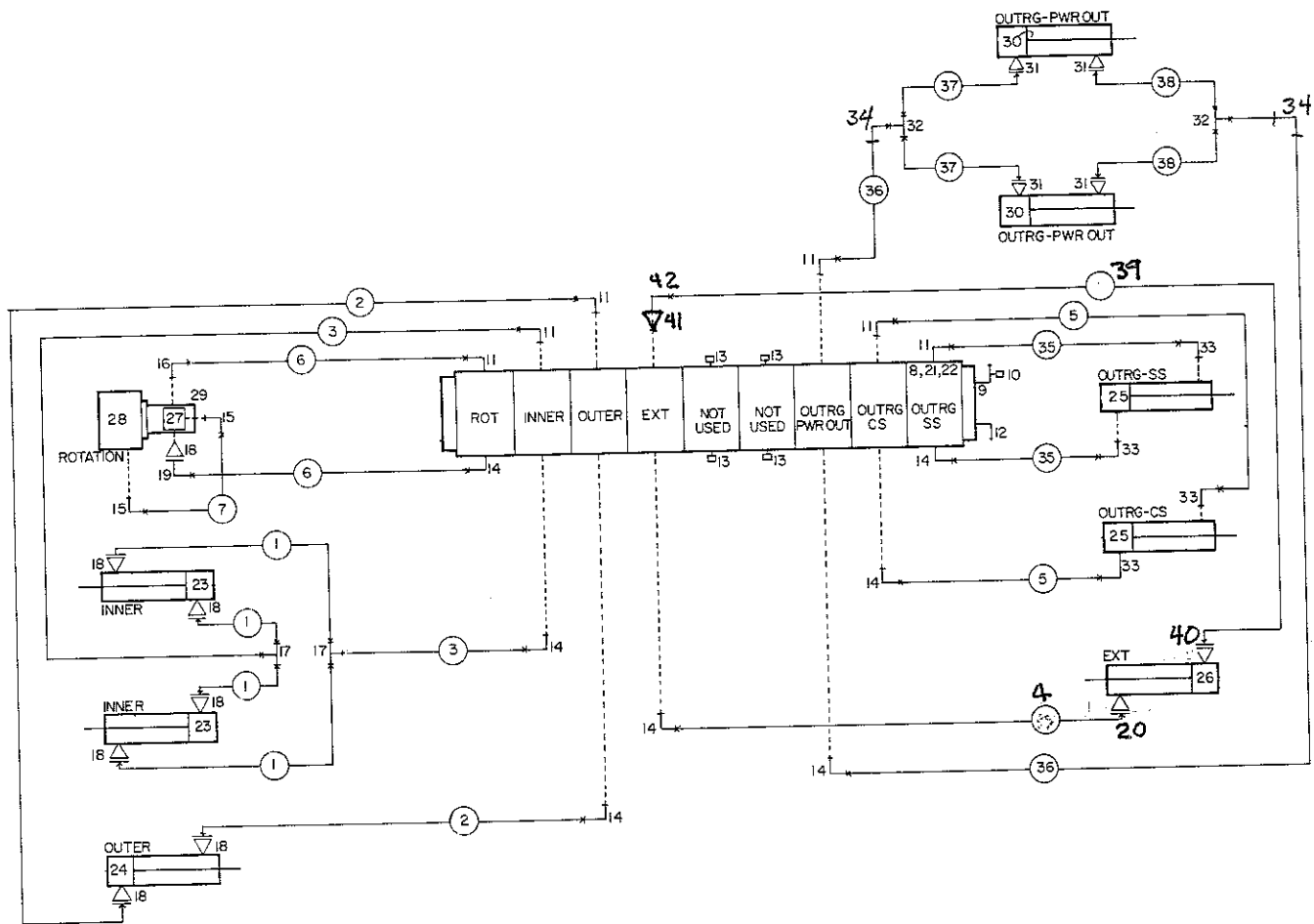


Figure D-34A. VALVEBANK (51709694)



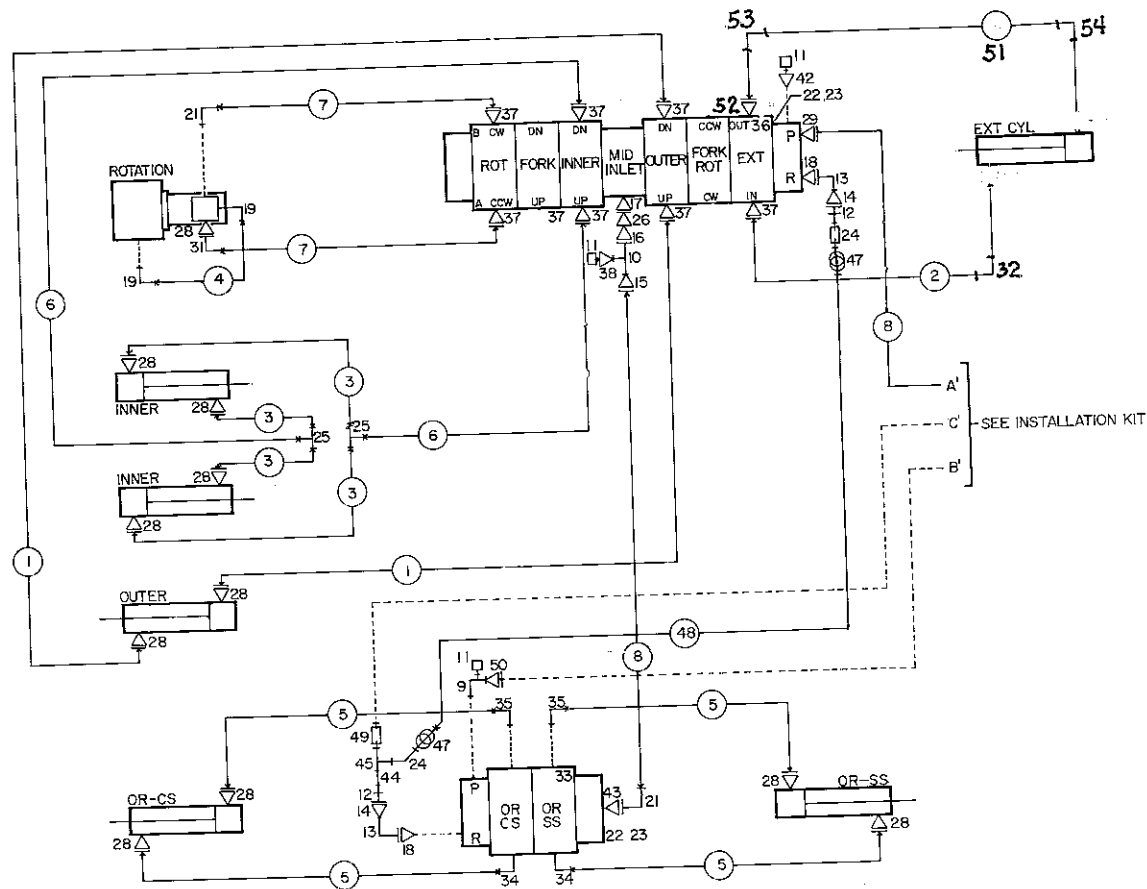
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703586	HOSE ASM 3/8X30	4	18.	72532358	ADAPTER 3/4MSTR 3/4MJIC	11
2.	51703588	HOSE ASM 3/8X150	2	19.	72532658	ELBOW 3/4MJIC 3/4FJIC 90°	1
3.	51704206	HOSE ASM 3/8X28	2	20.	72532666	ELBOW #8MSTR #8MJIC XLG	1
4.	51704918	HOSE ASM 1/2X282	1	21.		CAP SCR 5/16-18X2-3/4 HHGR5	3 REF
5.	51704914	HOSE ASM 3/8X60	4	22.		NUT 5/16-18 LOCK	3 REF
6.	51705406	HOSE ASM 3/8X63	2	23.		INNER CYLINDER	2 REF
7.	51705641	HOSE ASM 1/4X6	1	24.		OUTER CYLINDER	1 REF
8.		VALVEBANK ASM (INCL: 11,13,14,30)	1 REF	25.		OUTRIGGER CYLINDER	2 REF
9.	60106322	ELBOW- MODIFIED	1	26.		EXTENSION CYLINDER	1 REF
10.	72053412	PLUG 1/4 NPT	1	27.		CARTRIDGE BLOCK	1 REF
11.		ELBOW 3/4MSTR 3/4MJIC 90°	5 REF	28.		BRAKE	1 REF
12.	72053767	(PART OF 8)	1	29.		MOTOR	1 REF
13.		ELBOW 1-1/16MSTR 1-1/16MJIC 90°	4 REF	30.		VALVEBANK (PART OF 8)	1 REF
14.		PLUG 3/4MSTR (PART OF 8)	6 REF	31.	51710952	HOSE ASM 3/4X282 FF	1
15.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	2	32.		ADAPTER #8MSTR #12MJIC	REF
16.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	1	33.		(PART OF 8)	REF
17.	72531205	TEE 3/4-16MJIC 1/2 TUBE	2	34.	72053767	ELBOW #12MSTR #12MJIC 90°	1

Figure D-35. HYDRAULIC KIT-SPIDER LEG OUTRIGGERS (91705776)



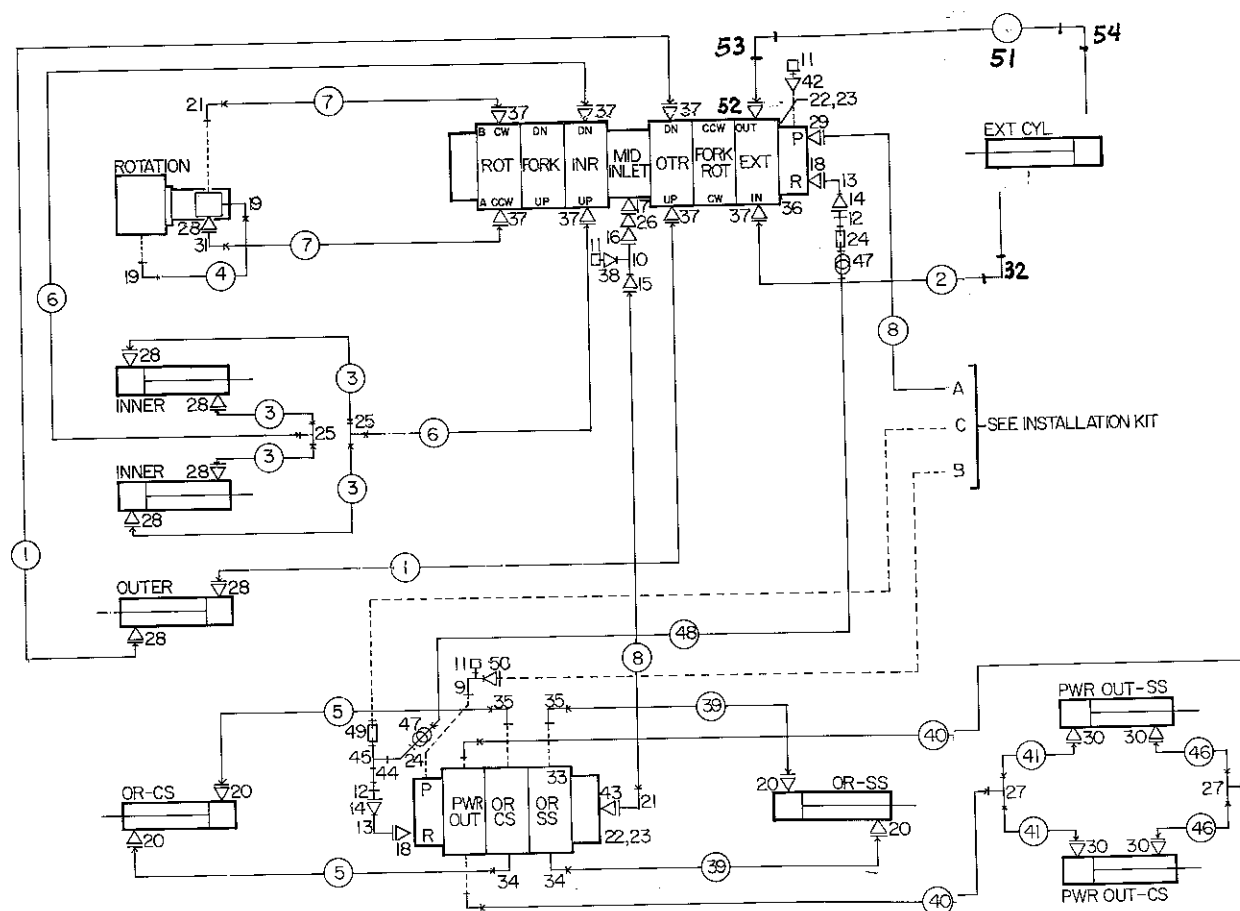
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703586	HOSE ASM 3/8X30	4	22.		NUT 5/16-18 LOCK	3REF
2.	51703588	HOSE ASM 3/8X150	2	23.		INNER CYLINDER	2REF
3.	51704206	HOSE ASM 3/8X28	2	24.		OUTER CYLINDER	1REF
4.	51704918	HOSE ASM 1/2X282	1	25.		OUTRIGGER CYLINDER	2REF
5.	51703601	HOSE ASM 3/8X90	2	26.		EXTENSION CYLINDER	1REF
6.	51705406	HOSE ASM 3/8X63	2	27.		CARTRIDGE BLOCK	1REF
7.	51705641	HOSE ASM 1/4X6	1	28.		BRAKE	1REF
8.		VALVEBANK ASM (INCL:11,13,14)	1REF	29.		MOTOR	1REF
9.	60106322	ELBOW- MODIFIED	1	30.		POWER OUT CYLINDER	2REF
10.	72053412	PLUG 1/4 NPT	1	31.	72532351	ADAPTER 7/16MSTR 7/16MJIC	4
11.		ELBOW 3/4MSTR 3/4MJIC 90° (PART OF 8)	6REF	32.	72532768	TEE 7/16MJIC	2
12.	72053767	ELBOW 1-1/16MSTR 1-1/16MJIC 90°	1	33.	72532779	ELBOW #6MSTR #8MJIC XLG	4
13.		PLUG 3/4MSTR (PART OF 8)	4REF	34.	72532690	ELBOW #4MJIC #4FJIC SWVL	2
14.		ELBOW 3/4MSTR 3/4MJIC XLG (PART OF 8)	7REF	35.	51703693	HOSE ASM 3/8X114	2
15.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	2	36.	51706028	HOSE ASM 1/4X34	2
16.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	1	37.	51706152	HOSE ASM 1/4X36	2
17.	72531205	TEE 3/4-16MJIC 1/2TUBE	2	38.	51705376	HOSE ASM 1/4X44	2
18.	72532358	ADAPTER 3/4MSTR 3/4MJIC	7	39.	51710952	HOSE ASM 3/4X282 FF	1
19.	72532658	ELBOW 3/4MJIC 3/4FJIC 90°	1	40.	72053767	ELBOW #12MSTR #12MJIC 90°	1
20.	72532666	ELBOW #8MSTR #8MJIC XLG	1	41.		ADAPTER #8MSTR #12MJIC (PART OF 8)	REF
21.		CAP SCR 5/16-18X2-3/4 HHGR5	3REF	42.		ELBOW #12MJIC #12FJIC SW (PART OF 8)	REF

Figure D-36. HYDRAULIC KIT-POWER OUT/DOWN OUTRIGGERS (91709203)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703789	HOSE ASM 1/2X92	2	31.	72532658	ELBOW 3/4MJIC 3.4FJIC 90°	1
2.	51703933	HOSE ASM 1/28X186	2	32.	72532740	SWIVEL ELBOW 3/4MSTR 3/4MJIC 90°	2
3.	51704029	HOSE ASM 3/8X32	4	33.		VALVEBANK ASM (INCL:34,35,43)	1 REF
4.	51705641	HOSE ASM 1/4X6	1	34.		ELBOW 3/4MSTR 3/4MJIC 90°	2 REF
5.	51706859	HOSE ASM 3/8X62	4			(PART OF 33)	
6.	51706860	HOSE ASM 3/8X123	2	35.		ELBOW 3/4MSTR 3/4MJIC XLG	2 REF
7.	51706861	HOSE ASM 3/8X170	2			(PART OF 33)	
8.	51706863	HOSE ASM 1/2X166	2	36.		VALVEBANK ASM (INCL:37)	1 REF
9.	60106322	ELBOW- MODIFIED	1	37.		ADAPTER 3/4MSTR 3/4MJIC	7 REF
10.	72053363	TEE 3/8 NPT	1			(PART OF 36)	
11.	72053412	PIPE PLUG 1/4 SQHD	3	38.	72053372	REDUCER BUSHING 3/8 X 1/4	1
12.	72053489	REDUCER COUPLING 1-1/4 X 3/4	2	42.	60107746	PLUG	1
13.	72053556	ELBOW 3/4 X 90°	2	43.		ADAPTER - POWER BEYOND	1 REF
14.	72053558	ADAPTER 3/4MPT 3/4MPT	2			(PART OF 33)	
15.	72053670	ADAPTER 3/8MPT 3/4MJIC	1	44.	72053211	PIPE NIPPLE 1-1/4 X CLOSE	1
16.	72053723	ADAPTER 3/8MPT 3/8MPT	1	45.	72053615	TEE 1-1/4	1
17.	72053746	ADAPTER 1-1/16MSTR 1/2FPT	1	47.	72066516	HOSE CLAMP 1-1/4	2
18.	72053747	ADAPTER 1-1/16MSTR 3/4FPT	2	48.	60035830	HOSE 1-1/4 100R4 X 144	1
19.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	2	49.	72531550	BARB NIPPLE 1-1/4 X 1-1/4	1
21.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2	50.	72532669	ADAPTER 3/4MJIC 7/8FJIC	1
22.	72060033	CAP SCR 5/16-18X3 HHGR5	6	51.	51703874	HOSE ASM 3/4X186 FF	1
23.	72062109	NUT 5/16-18 LOCK	6	52.		ADAPTER #8MSTR #12MJIC	REF
24.	72531196	BARB NIPPLE 1-1/4 X 1-1/4 45°	2			(PART OF 36)	
25.	72531205	TEE 3/4MJIC	2	53.		ELBOW #12MSTR #12FJIC SW	REF
26.	72053629	REDUCER BUSHING 1/2 X 3/8	1			(PART OF 36)	
28.	72532358	ADAPTER 3/4MSTR 3/4MJIC	11	54.	72053767	ELBOW #12MSTR #12MJIC 90°	1
29.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1				

Figure D-37. HYDRAULIC KIT-CHAIR MOUNT-SPIDER LEG OUTRIGGERS (91706854)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703789	HOSE ASM 1/2X92	2	31.	72532658	ELBOW 3/4MJIC 3/4FJIC 90°	1
2.	51703933	HOSE ASM 1/28X186	2	32.	72532740	ELBOW 3/4MSTR 3/4MJIC 90° SWVL	1
3.	51704029	HOSE ASM 3/8X32	4	33.		VALVEBANK ASM (INCL:34,35,43)	1 REF
4.	51705641	HOSE ASM 1/4X6	1	34.		ELBOW 3/4MSTR 3/4MJIC 90° (PART OF 33)	3 REF
5.	51703601	HOSE ASM 3/8X90	2	35.		ELBOW 3/4MSTR 3/4MJIC XLG (PART OF 33)	3 REF
6.	51706860	HOSE ASM 3/8X123	2	36.		VALVEBANK ASM (INCL:37)	1 REF
7.	51706861	HOSE ASM 3/8X170	2	37.		ADAPTER 3/4MSTR 3/4MJIC (PART OF 36)	8 REF
8.	51706863	HOSE ASM 1/2X166	2	38.	72053372	REDUCER BUSHING 3/8 X 1/4	1
9.	60106322	ELBOW- MODIFIED	1	39.	51703693	HOSE ASM 3/8X114	2
10.	72053363	TEE 3/8 NPT	1	40.	51706028	HOSE ASM 1/4X34	2
11.	72053412	PIPE PLUG 1/4 SQHD	3	41.	51704280	HOSE ASM 1/4X40	2
12.	72053489	REDUCER COUPLING 1-1/4 X 3/4	2	42.	60107746	PLUG	1
13.	72053556	ELBOW 3/4NPT 90°	2	43.		ADAPTER - POWER BEYOND (PART OF 33)	1 REF
14.	72053558	ADAPTER 3/4MPTX3/4MPT	2	44.	72053211	PIPE NIPPLE 1-1/4 X CLOSE	1
15.	72053670	ADAPTER 3/8MPTX3/4MJIC	1	45.	72053615	TEE 1-1/4	1
16.	72053723	ADAPTER 3/8MPTX3/8MPT	1	46.	51705376	HOSE ASM 1/4X44	2
17.	72053746	ADAPTER 1-1/16MSTR 1/2FPT	2	47.	72066516	HOSE CLAMP 1-1/4	2
18.	72053747	ADAPTER 1-1/16MSTR 3/4FPT	2	48.	60035830	HOSE 1-1/4 100R4 X 144	1
19.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	2	49.	72531550	BARB NIPPLE 1-1/4 X 1-1/4	1
20.	72532666	ELBOW 3/4MSTR 3/4MJIC XLG	4	50.	72532669	ADAPTER 3/4MJIC 7/8FJIC	1
21.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2	51.	51703874	HOSE ASM 3/4X186 FF	1
22.	72060033	CAP SCR 5/16-18X3 HHGR5	6	52.		ADAPTER #8MSTR #12MJIC (PART OF 36)	REF
23.	72062109	NUT 5/16-18 LOCK	6	53.		ELBOW #12MJIC #12FJIC SW (PART OF 36)	REF
24.	72531196	BARB NIPPLE 1-1/4 X 1-1/4 45O	2	54.	72053767	ELBOW #12MSTR #12MJIC 90°	1
25.	72531205	TEE 3/4MJIC	2				
26.	72053629	REDUCER BUSHING 1/2 X 3/8	1				
27.	72532768	TEE 7/16MJIC	2				
28.	72532358	ADAPTER 3/4MSTR 3/4MJIC	7				
29.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1				
30.	72532351	ADAPTER 7/16MSTR 7/16MJIC	4				

Figure D-38. HYDRAULIC KIT-CHAIR MOUNT-POWER OUT/DOWN OUTRIGGERS (91709216)

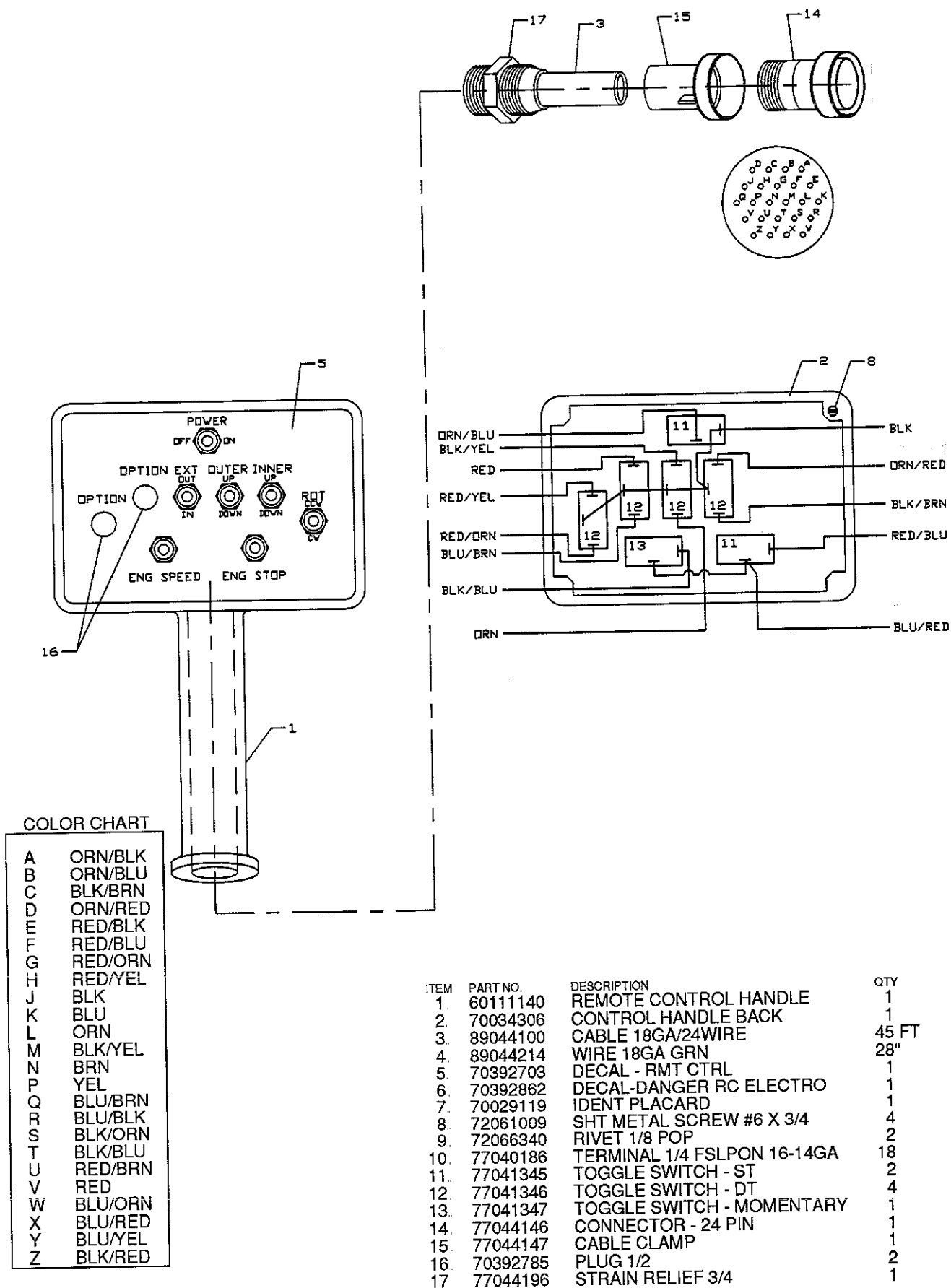


Figure D-39. REMOTE CONTROL HANDLE - 4 FUNCTION PTO WITH SPEED CONTROL (51705986)

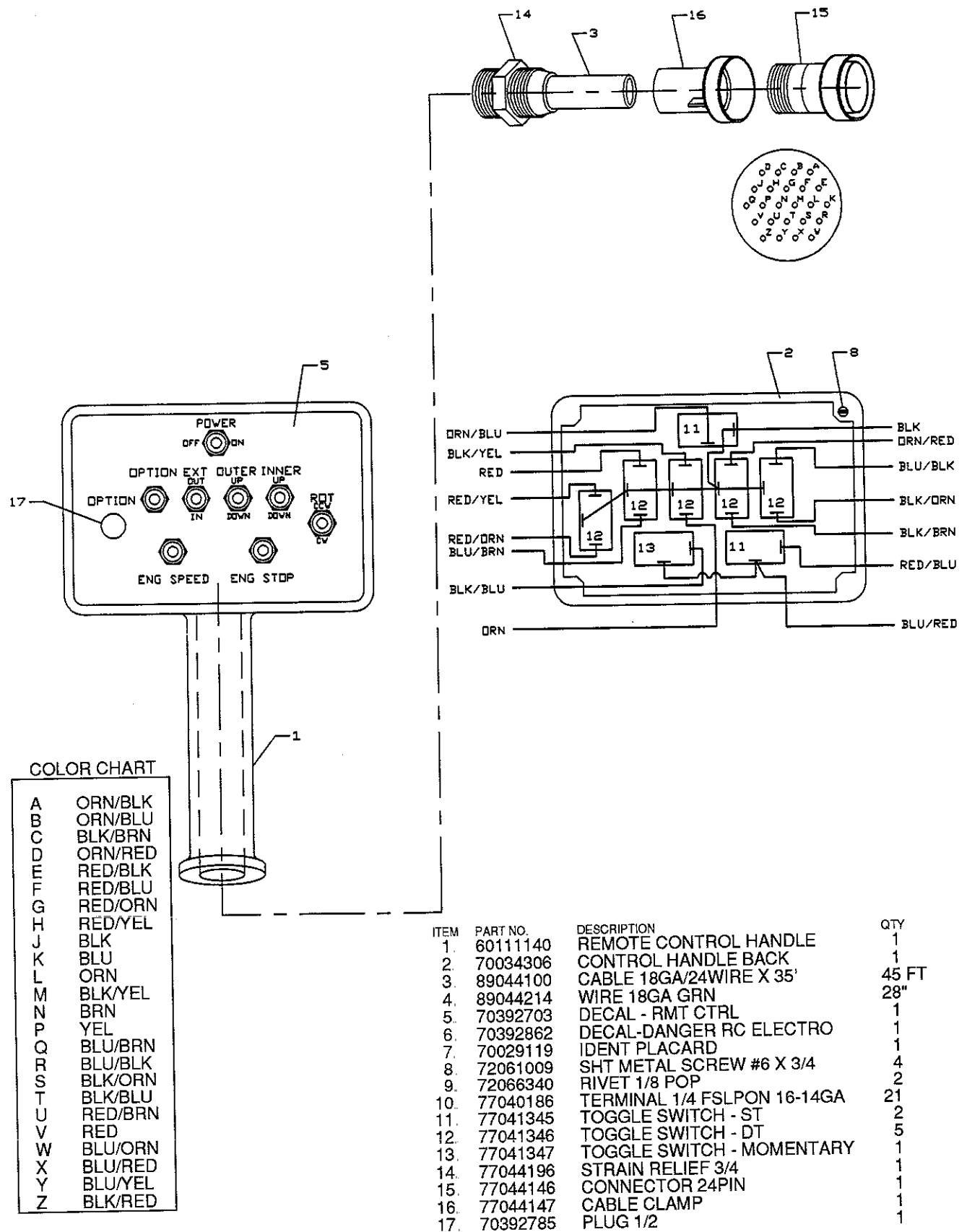


Figure D-40. REMOTE CONTROL HANDLE - 5 FUNCTION PTO WITH SPEED CONTROL (51705985)

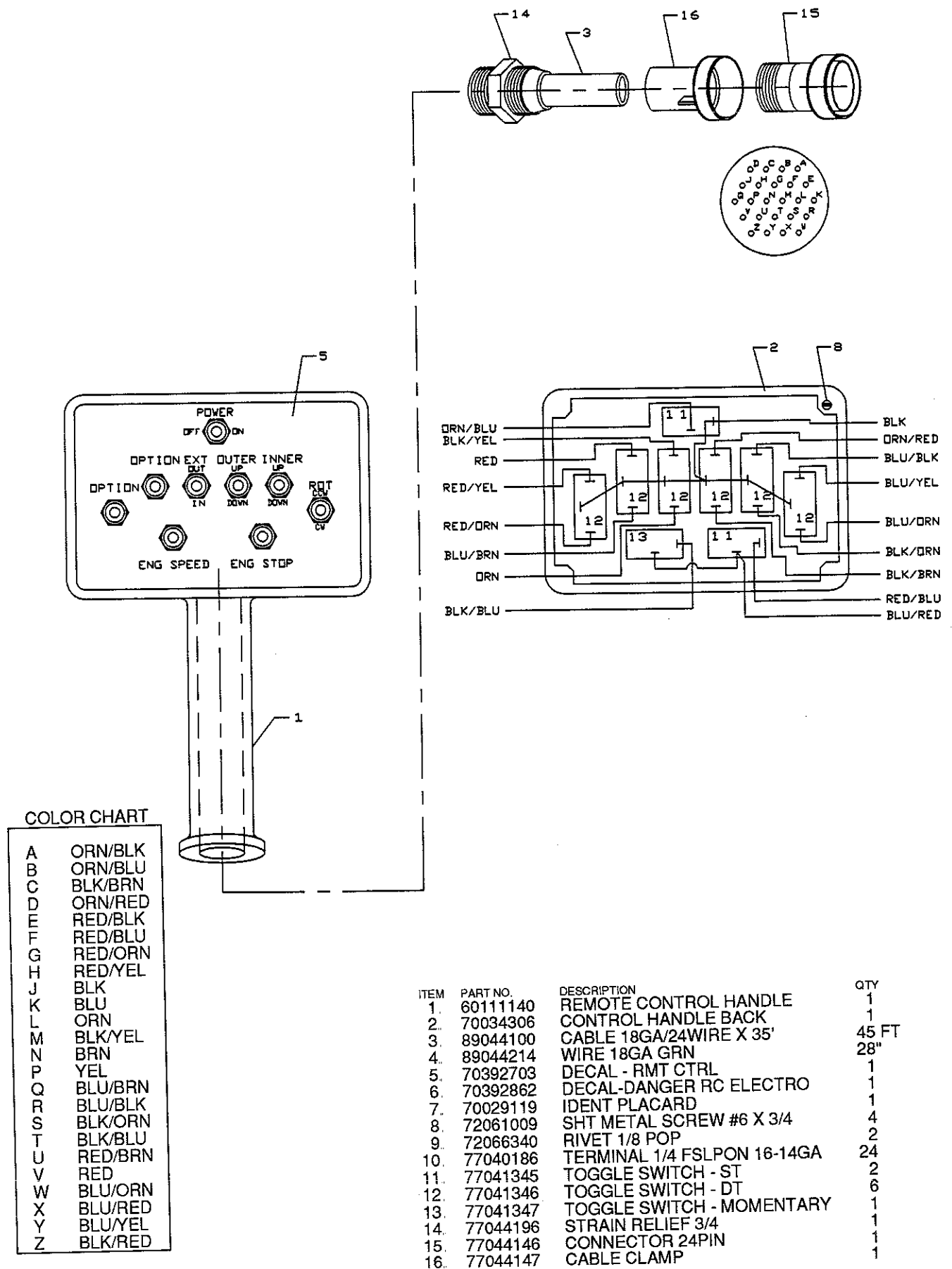
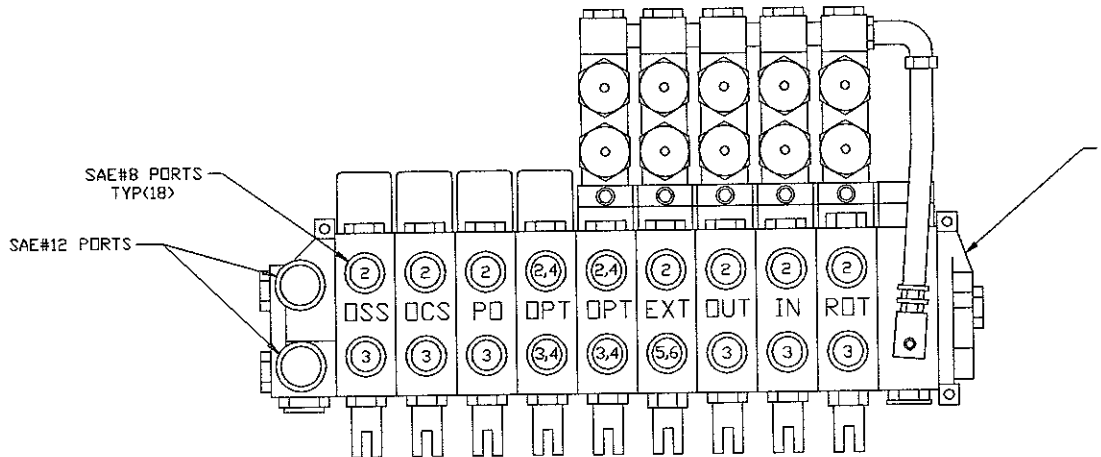
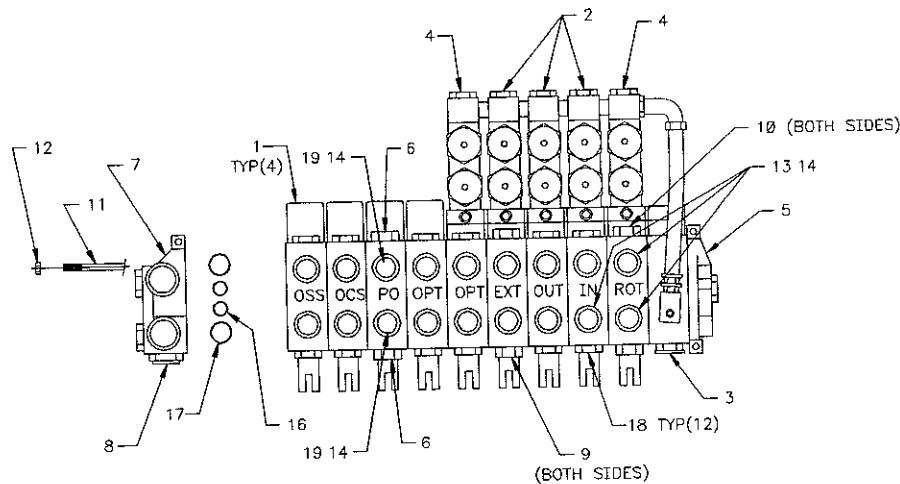


Figure D-41. REMOTE CONTROL HANDLE - 6 FUNCTION PTO WITH SPEED CONTROL (51705313)



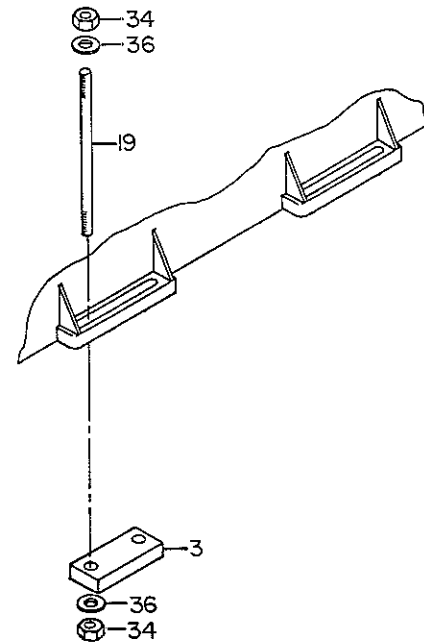
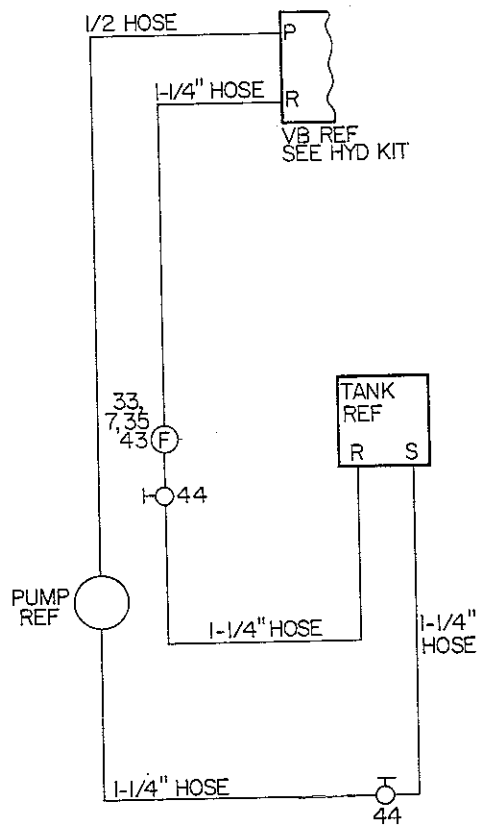
ITEM	PART NO.	DESCRIPTION	QTY
1.	51709695	VALVEBANK 5R/4M	1
2.	72532666	ELBOW #8MSTR #8MJIC XLG	9
3.	72053763	ELBOW #8MSTR #8MJIC 90°	8
4.	72532675	CAP 3/4JIC STL	4
5.	72532364	ADAPTER #8MSTR #12MJIC	1
6.	72532696	ELBOW #12MJIC #12FJIC SW	1

Figure D-42.
VALVEBANK ASSEMBLY 5 REMOTE/4 MANUAL POWER OUT/DOWN OUTRIGGERS
(51709678)



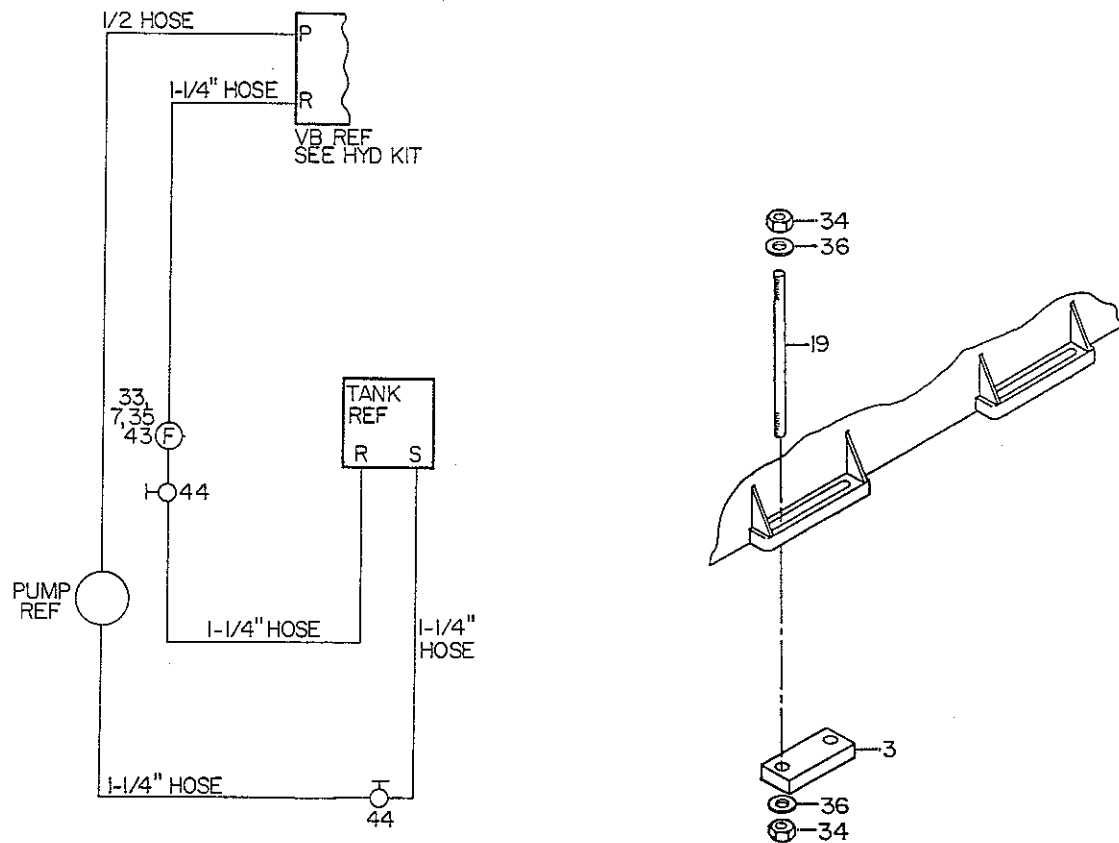
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054432	VALVE SECT V20 4WAY	4
2.	73054468	VALVE SECT V20R 4WAY	3
3.	73054502	VALVE SECT V20R UTIL	1
4.	73054482	VALVE SECT V20R 4WAY BS	2
5.	73731241	END COVER RH W/CONV PLUG	1
6.	73054430	RELIEF 1000PSI NON-ADJ	2
7.	73731424	END COVER LH (INCL:8)	1
8.	73054673	RELIEF VALVE (PART OF 7)	1 REF
9.	73054400	RELIEF 2300PSI NON-ADJ	2
10.	73054007	RELIEF 1800PSI NON-ADJ	2
11.	60108011	STUD 3/8X20-1/2	3
12.	72062037	NUT 3/8-24 HEX	6
13.	70142402	ORIFICE PLATE	3
14.	70142403	SPRING	5
15.	51393494	O-RING KIT	REF
16.	7Q072117	O-RING	22
17.	7Q072119	O-RING	22
18.	73054010	LOAD CHECK PLUG	12
19.	70143140	ORIFICE PLATE	2

Figure 42A. VALVEBANK (51709695)



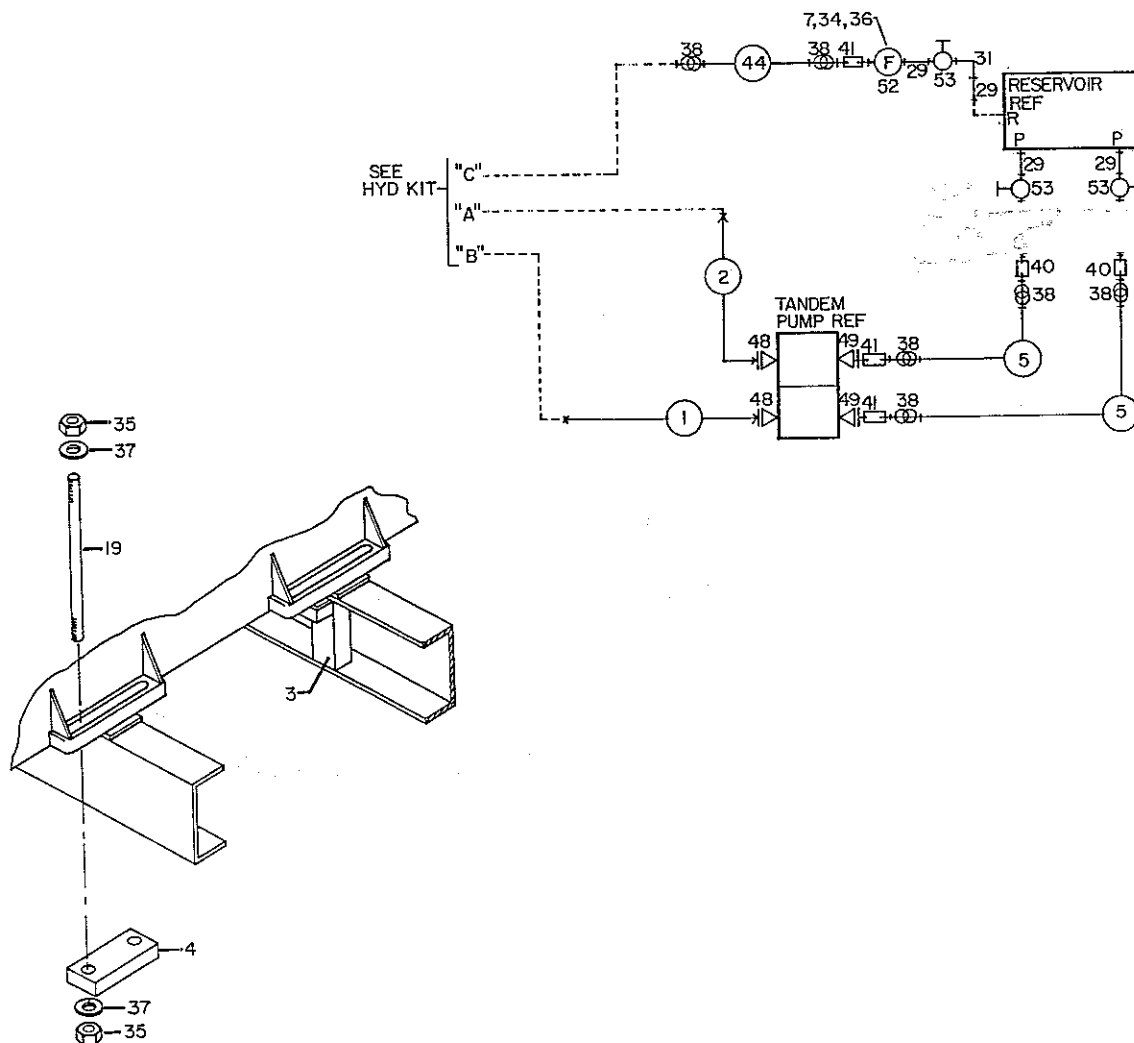
ITEM	PART NO.	DESCRIPTION	QTY
3	60105326	CLAMP PLATE	4
7	60103870	OIL FILTER BRACKET	1
19	60108621	TIE DOWN STUD 1-1/4 X 33	8
33	72060025	CAP SCREW 5/16-18 X 1 HH GR5	2
34	72062142	NUT 1-1/4-7 STEEL INSERT	16
35	72063050	WASHER 5/16 LOCK	2
36	72063067	WASHER 1-1/4 HI-STRENGTH	16
43	73052040	RETURN FILTER	1
44	73054130	GATE VALVE 1-1/4	2

Figure D-45. INSTALLATION KIT - TRAILER MOUNT MANUAL CONTROLS (93709561)



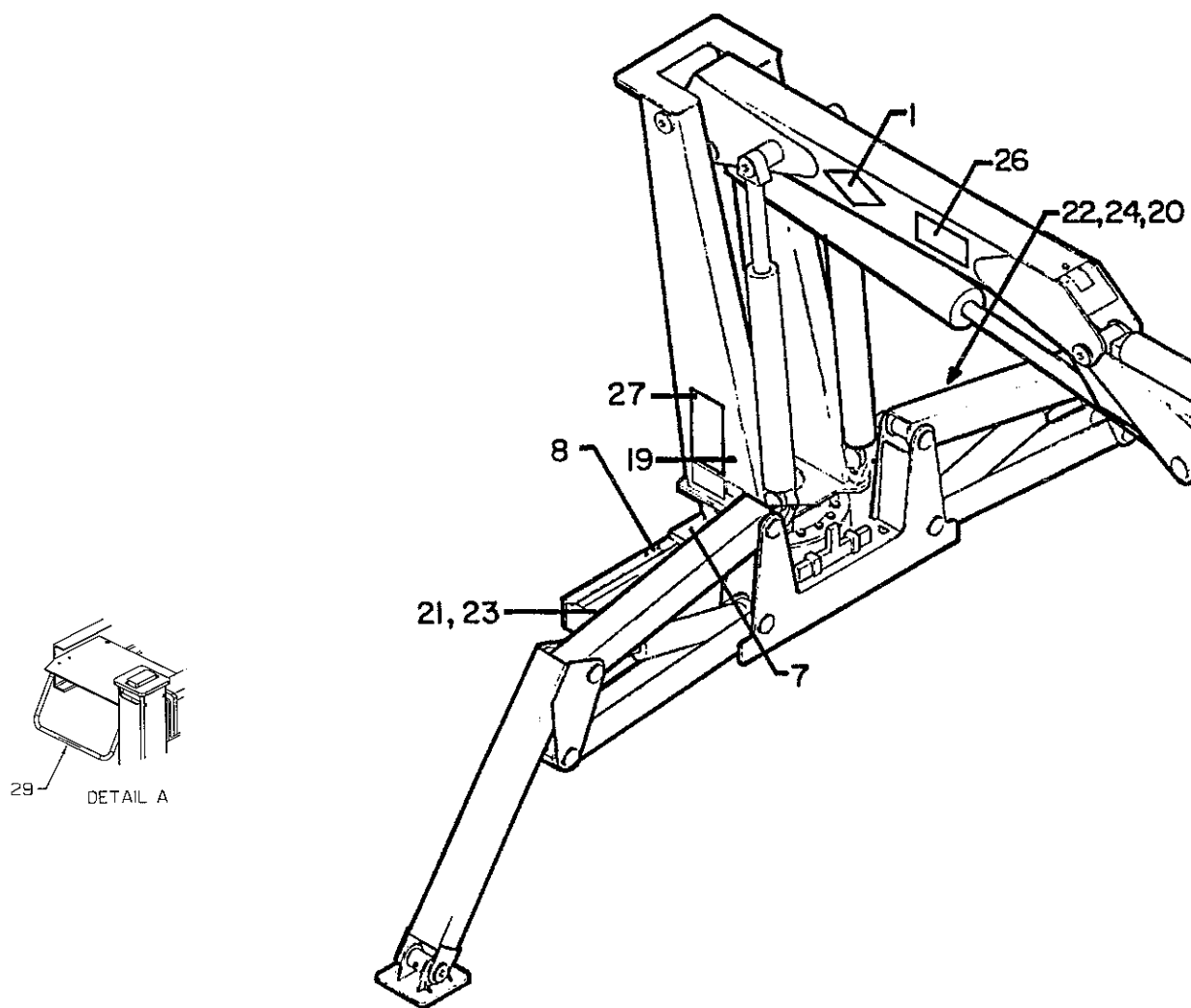
ITEM	PART NO.	DESCRIPTION	QTY
3.	60105326	CLAMP PLATE	4
7.	60103870	OIL FILTER BRACKET	1
19.	60108621	TIE DOWN STUD 1-1/4 X 33	8
33.	72060025	CAP SCREW 5/16-18 X 1 HH GR5	2
34.	72062142	NUT 1-1/4-7 STEEL INSERT	16
35.	72063050	WASHER 5/16 LOCK	2
36.	72063067	WASHER 1-1/4 HI-STRENGTH	16
43.	73052040	RETURN FILTER	1
44.	73054130	GATE VALVE 1-1/4	2

Figure D-46. INSTALLATION KIT - TRAILER MOUNT REMOTE CONTROLS (93709563)



ITEM	PART NO.	DESCRIPTION	QTY
1.	51703703	HOSE ASM 1/2 X 72	1
2.	51706863	HOSE ASM 1/2 X 166	1 REF
3.	52706660	SUPPORT	4
4.	60010665	CLAMP PLATE	4
5.	60035829	HOSE 1-1/4 100R4 X 48	2
7.	60103870	OIL FILTER BRACKET	1
19.	71014054	TIE DOWN STUD 1-1/4 X 24	8
29.	72053211	PIPE NIPPLE 1-1/4 X CLOSE	6
31.	72053287	STREET ELBOW 1-1/4 X 90°	1
34.	72060025	CAP SCREW 5/16-18 X 1 HH GR5	2
35.	72062142	NUT 1-1/4-7 STEEL INSERT	16
36.	72063050	WASHER 5/16 LOCK	2
37.	72063067	WASHER 1-1/4 HI-STRENGTH	16
38.	72066516	HOSE CLAMP 1-1/4	6
40.	72531550	BARB NIPPLE 1-1/4 X 1-1/4	2
41.	72532346	BARB NIPPLE 1-1/4 X 1-1/4 90°	3
44.	60035828	HOSE 1-1/4 100R4 X 72	1
48.		ADAPTER (determined by pump)	2 REF
49.		ADAPTER (determined by pump)	2 REF
52.	73052040	RETURN FILTER	1
53.	73054130	GATE VALVE 1-1/4	3

Figure D-47. INSTALLATION KIT - CHAIR MOUNT (93709564)

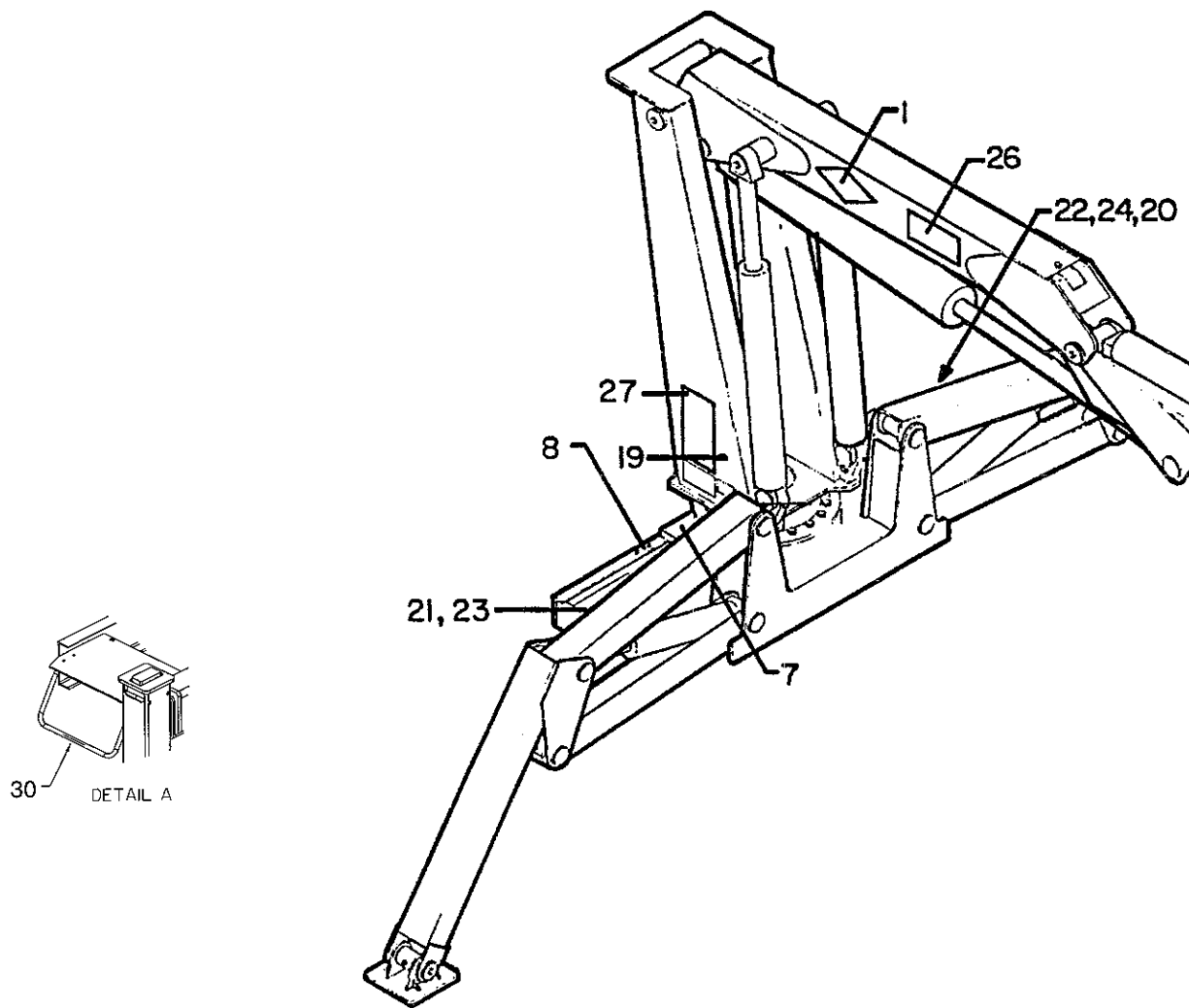


DECAL PLACEMENT

ITEM NO.	LOCATION
2,9,10,11,14 16,17,18,28	AT OR NEAR NORMAL OPERATING STATION
12,15	ONE ON EACH OUTRIGGER
13	ONE ON EACH SIDE OF CARRIER VEHICLE
8	AT TURNABLE GREASE ZERK
3,4	AT ALL GREASE ZERKS
6	ON RESERVOIR AT RETURN LINE
5	ON RESERVOIR AT SUCTION LINE
25	AT LOWER REAR OF MAST

ITEM	PART NO.	DESCRIPTION	QTY
1.	70029252	PLACARD - IMT DIAMOND	2
2.	70391583	DECAL - SET UP/STOW	2
3.	70391612	DECAL - GREASE WEEKLY LEFT	6
4.	70391613	DECAL - GREASE WEEKLY RIGHT	6
5.	70392108	DECAL - SUCTION LINE	1
6.	70392109	DECAL - RETURN LINE	1
7.	70392213	DECAL - WASH/WAX	1
8.	70392524	DECAL - ROTATE/GREASE	1
9.	70392813	DECAL - DANGER ELECTROCUTION	2
10.	70392814	DECAL - DANGER OPERATOR	2
11.	70392815	DECAL - DANGER OPERATION	2
12.	70392864	DECAL - DANGER OUTRG STD CLR	2
13.	70392865	DECAL - DANGER ELECTROCUTION	4
14.	70392866	DECAL - DANGER OPER COND	2
15.	70392867	DECAL - DANGER OUTRG MOVING	2
16.	70392888	DECAL - DANGER OPER RESTRICT	2
17.	70392890	DECAL - DANGER STOW/UNFOLD	2
18.	70392891	DECAL - DANGER DRIVELINE	2
19.	70392982	DECAL - CONTACT IMT	1
20.	71039134	DECAL - CAUTION OIL LEVEL	1
21.	71392255	DECAL - CTRL STREETSIDE	1
22.	71392256	DECAL - CTRL CURBSIDE	1
23.	71392257	DECAL - OUTRG PWR DN STREET	1
24.	71392258	DECAL - OUTRG PWR DN CURB	1
25.	71392365	DECAL - ALIGN CRANE ROTATION	1
26.	70393224	DECAL - 9800 SERIES IDENT	2
27.	71393226	PLACARD - CAPACITY	2
28.	71392277	DECAL - OUTRG PWR OUT	2
29.	70394190	DECAL-CAUTION NOT A STEP	2

Figure D-48. DECAL KIT - MANUAL CONTROLS (95709557)



DECAL PLACEMENT	
ITEM NO.	LOCATION
2,9,10,11,14 16,17,18,28,29	AT OR NEAR NORMAL OPERATING STATION
12,15	ONE ON EACH OUTRIGGER
13	ONE ON EACH SIDE OF CARRIER VEHICLE
8	AT TURNTABLE GREASE ZERK
3,4	AT ALL GREASE ZERKS
6	ON RESERVOIR AT RETURN LINE
5	ON RESERVOIR AT SUCTION LINE
25	AT LOWER REAR OF MAST

ITEM	PART NO.	DESCRIPTION	QTY
1.	70029252	PLACARD - IMT DIAMOND	2
2.	70391583	DECAL - SET UP/STOW	2
3.	70391612	DECAL - GREASE WEEKLY LEFT	6
4.	70391613	DECAL - GREASE WEEKLY RIGHT	6
5.	70392108	DECAL - SUCTION LINE	1
6.	70392109	DECAL - RETURN LINE	1
7.	70392213	DECAL - WASH/WAX	1
8.	70392524	DECAL - ROTATE/GREASE	1
9.	70392813	DECAL - DANGER ELECTROCUTION	2
10.	70392814	DECAL - DANGER OPERATOR	2
11.	70392815	DECAL - DANGER OPERATION	2
12.	70392864	DECAL - DANGER OUTRG STD CLR	2
13.	70392865	DECAL - DANGER ELECTROCUTION	4
14.	70392866	DECAL - DANGER OPER COND	2
15.	70392867	DECAL - DANGER OUTRG MOVING	2
16.	70392888	DECAL - DANGER OPER RESTRICT	2
17.	70392890	DECAL - DANGER STOW/UNFOLD	2
18.	70392891	DECAL - DANGER DRIVELINE	2
19.	70392982	DECAL - CONTACT IMT	1
20.	71039134	DECAL - CAUTION OIL LEVEL	1
21.	71392255	DECAL - CTRL STREETSIDE	1
22.	71392256	DECAL - CTRL CURBSIDE	1
23.	71392257	DECAL - OUTRG PWR DN STREET	1
24.	71392258	DECAL - OUTRG PWR DN CURB	1
25.	71392365	DECAL - ALIGN CRANE ROTATION	1
26.	70393224	DECAL - 9800 SERIES IDENT	2
27.	71393226	PLACARD - CAPACITY	2
28.	70392889	DECAL - DANGER RC ELECTROC.	2
29.	71392277	DECAL - OUTRG PWR OUT	2
30.	70394190	DECAL-CAUTION NOT A STEP	2

Figure D-49. DECAL KIT - REMOTE CONTROLS (95709558)

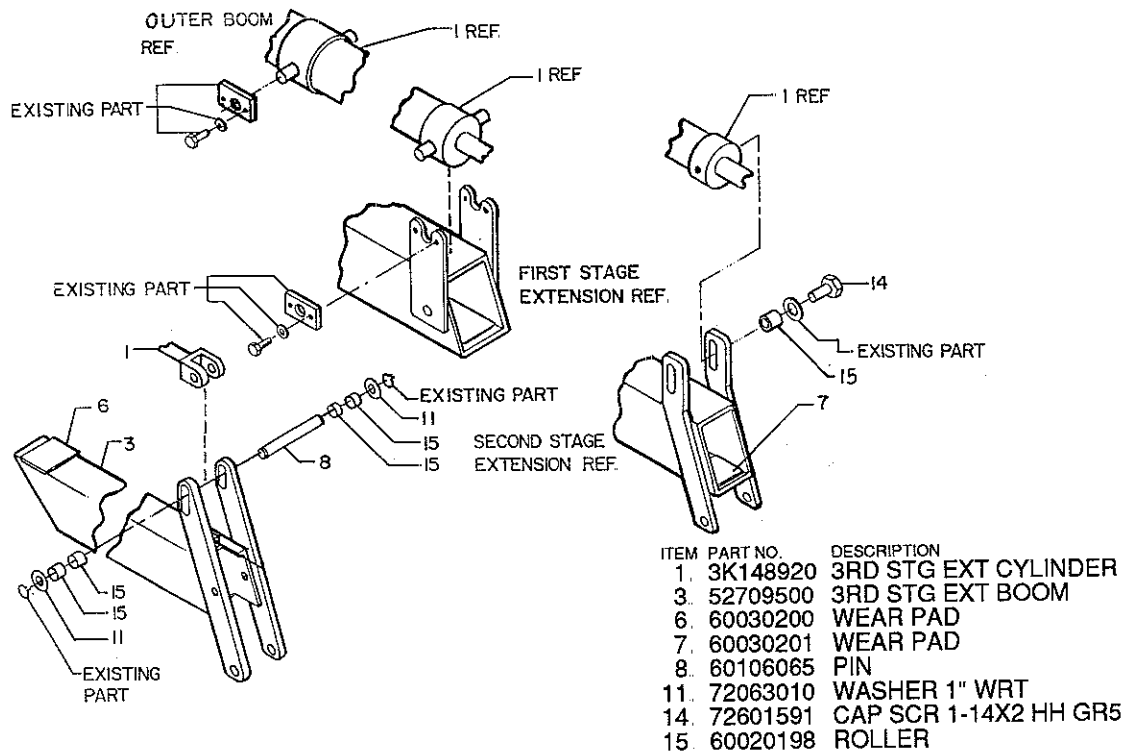


Figure D-50. COVERSON KIT 2H TO 3H (95709565)

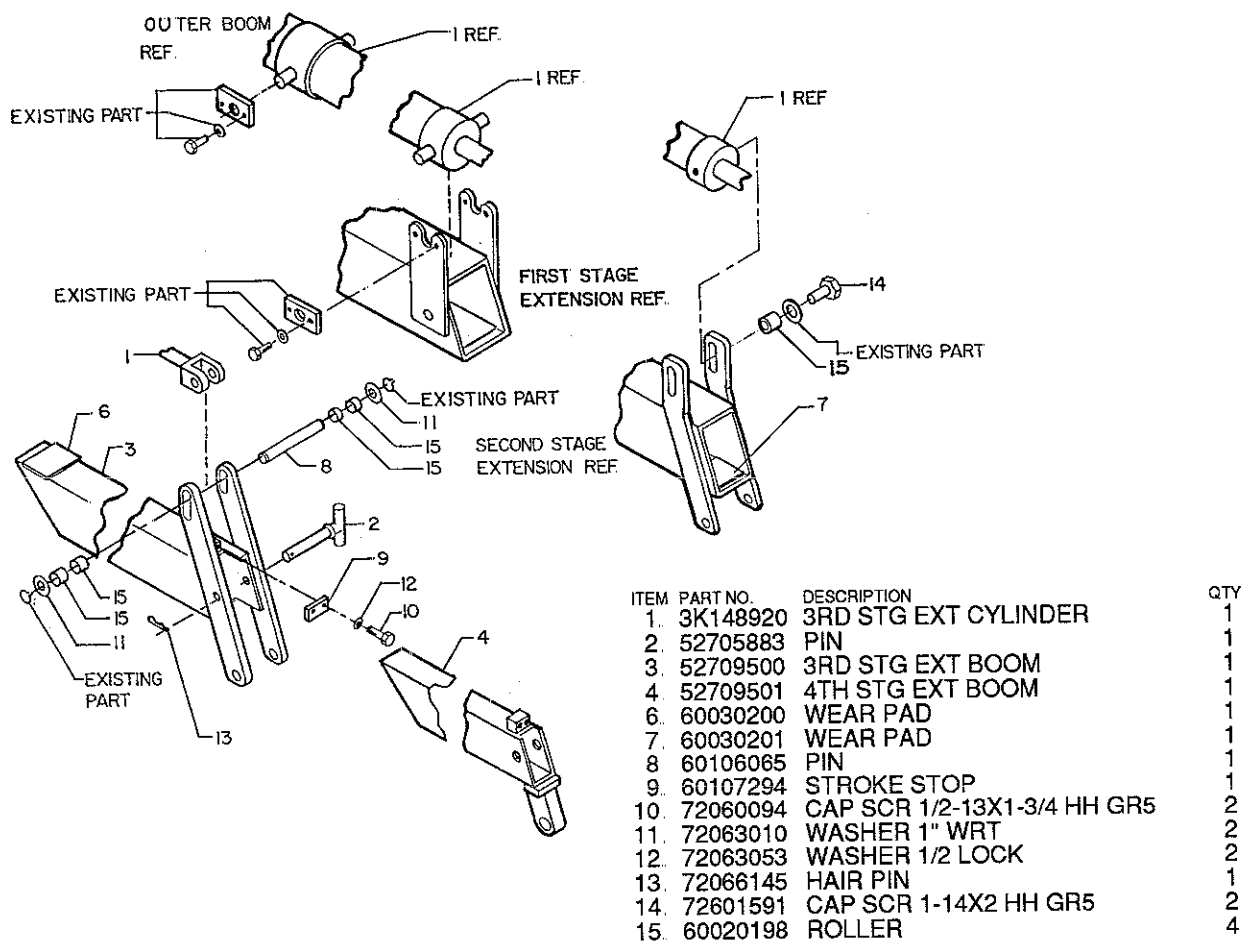


Figure D-51. COVERSON KIT 2H TO 3H1M (95709566)

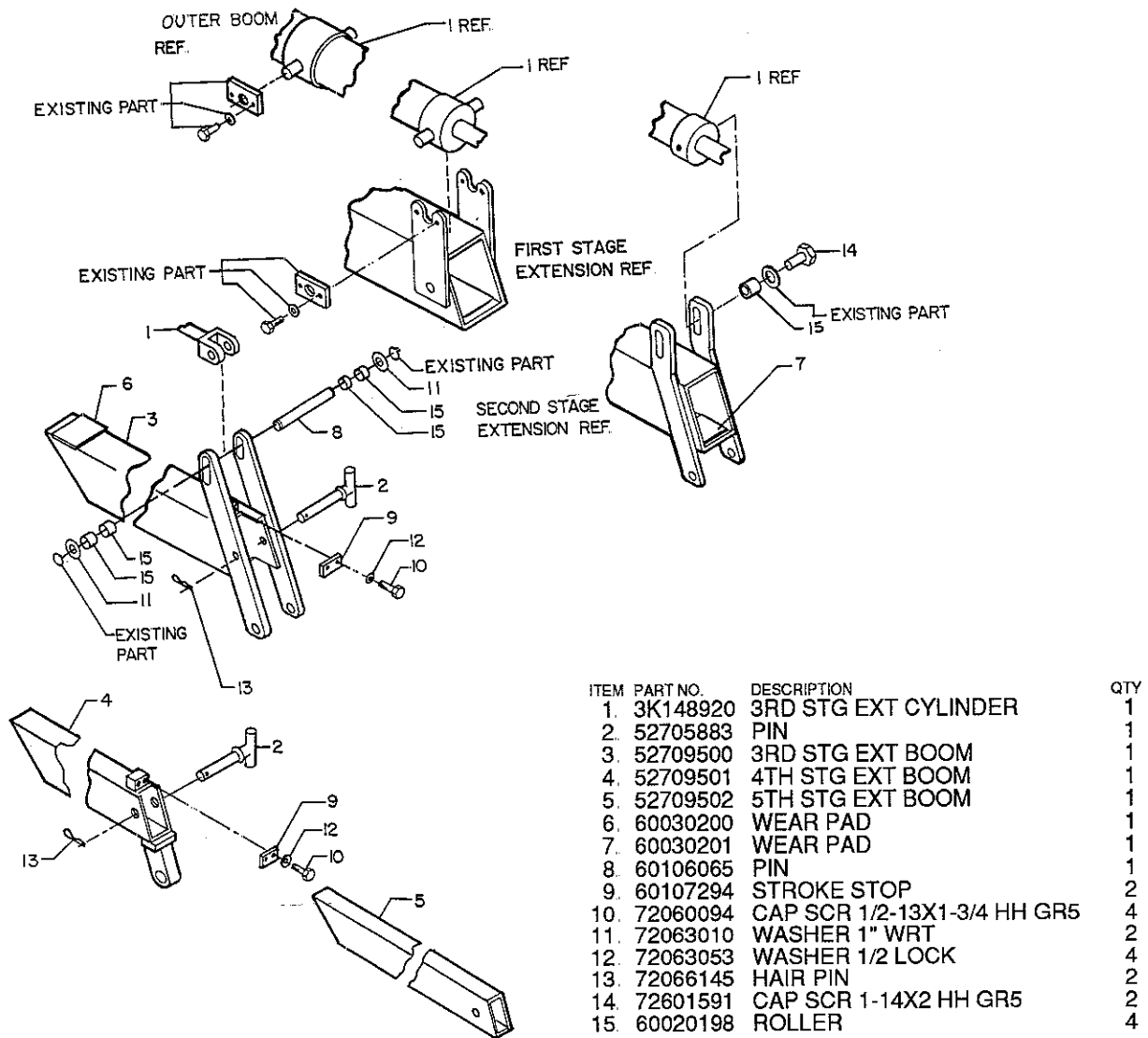


Figure D-52. COVERSON KIT 2H TO 3H2M (95709567)

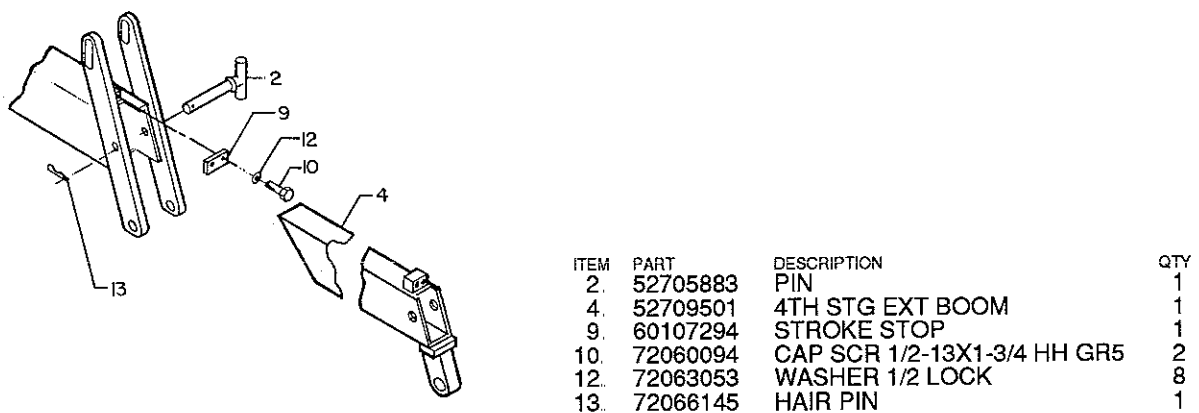
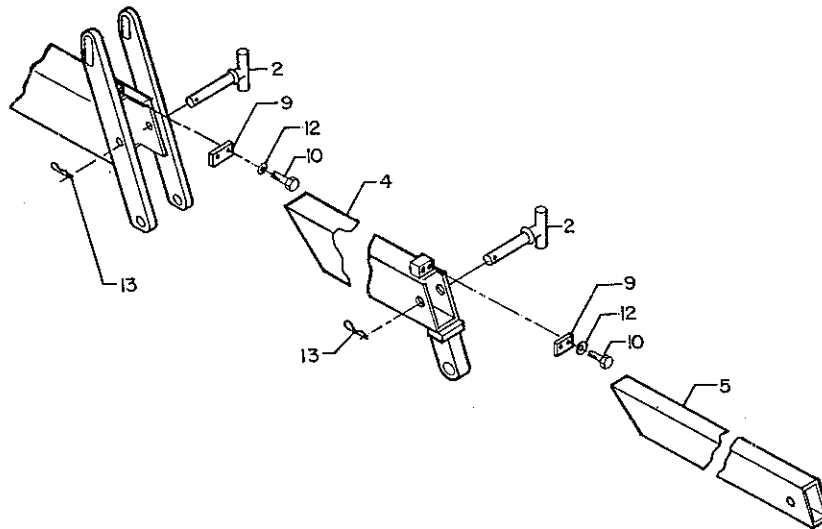
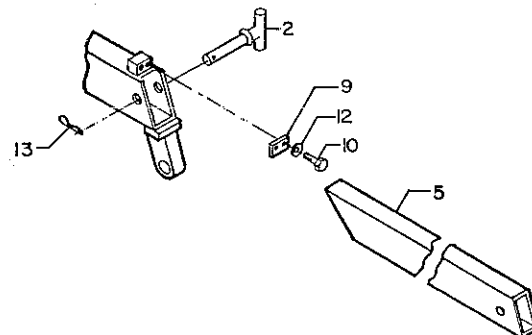


Figure D-53. COVERSON KIT 3H TO 3H1M(95709568)



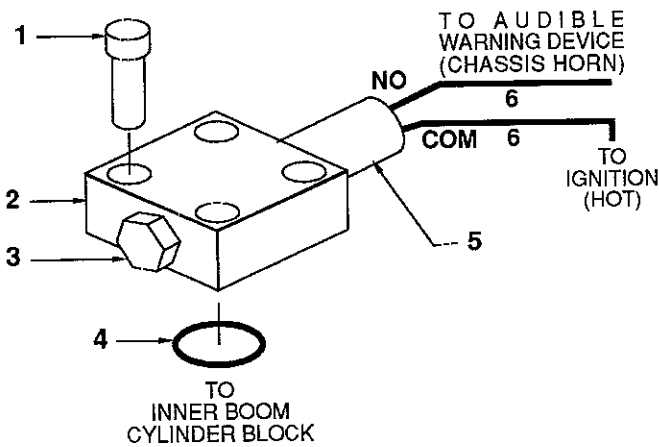
ITEM	PART NO.	DESCRIPTION	QTY
2	52705883	PIN	2
4	52709501	4TH STAGE EXTENSION BOOM	1
5	52709502	5TH STAGE EXTENSION BOOM	1
9	60107294	STROKE STOP	2
10	72060094	CAP SCREW 1/2-13 X 1-3/4 HH GR5	4
12	72063053	WASHER 1/2 LOCK	4
13	72066145	HAIR PIN	2

Figure D-54. COVERSON KIT 3H TO 3H2M (95709569)



ITEM	PART	DESCRIPTION	QTY
2	52705883	PIN	1
5	52709502	5TH STAGE EXTENSION BOOM	1
9	60107294	STROKE STOP	1
10	72060094	CAP SCREW 1/2-13 X 1-3/4 HH GR5	2
12	72063053	WASHER 1/2 LOCK	2
13	72066145	HAIR PIN	1

Figure D-55. COVERSON KIT 3H1M TO 3H2M (95709570)

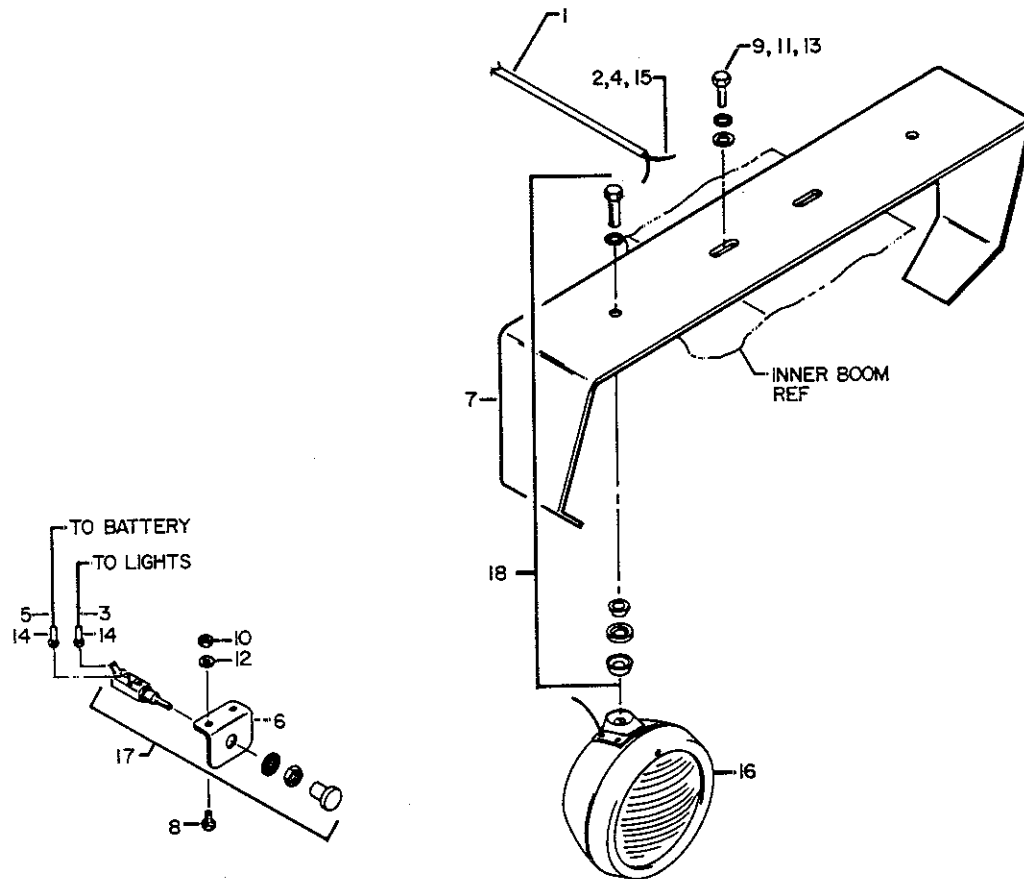


NOTE

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)	
7.	99900118	INSTALLATION DWG	REF 1

Figure D-56. CAPACITY ALERT KIT - AUDIBLE (31705698)



ITEM	PART NO.	DESCRIPTION	QTY
1.	60030048	LOOM 5/16 X 240"	1
2.	60030049	SPIRAL WRAP 10"	2
3.	60045054	WIRE 14GA X 240"	1
4.	60045055	WIRE 14GA YEL X 60"	2
5.	60045056	WIRE 14GA BLK X 36"	1
6.	60103535	SWITCH BRACKET	1
7.	60103694	LIGHT GUARD	1
8.	72060000	CAP SCR 1/4-20X1/2 HHGR5	2
9.	72060046	CAP SCR 3/8-16X1 HHGR5	2
10.	72062000	NUT 1/4-20	2
11.	72063003	WASHER 3/8 WRT	2
12.	72063049	WASHER 1/4 LOCK	2
13.	72063051	WASHER 3/8 LOCK	2
14.	7704000	RING TERMINAL	2
15.	77040048	BUTT CONNECTOR	2
16.	77040281	FLOOD LIGHT 12VDC	2
17.	77041014	SWITCH WITH FUSE	1
18.	77040280	FLOOD LIGHT MOUNTING KIT	2

Figure D-57. LIGHT KIT (31701759)

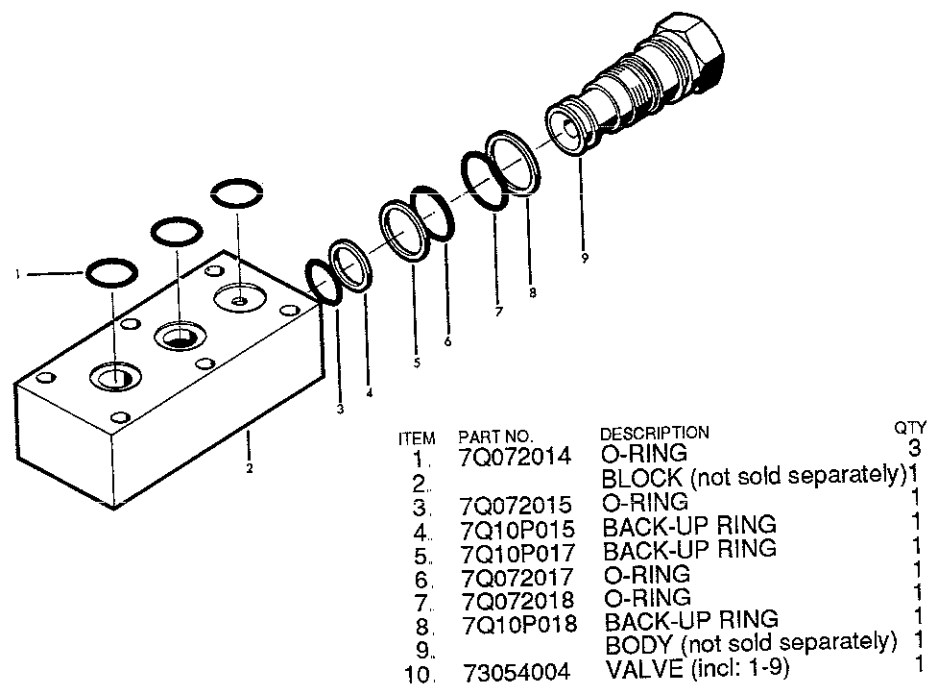
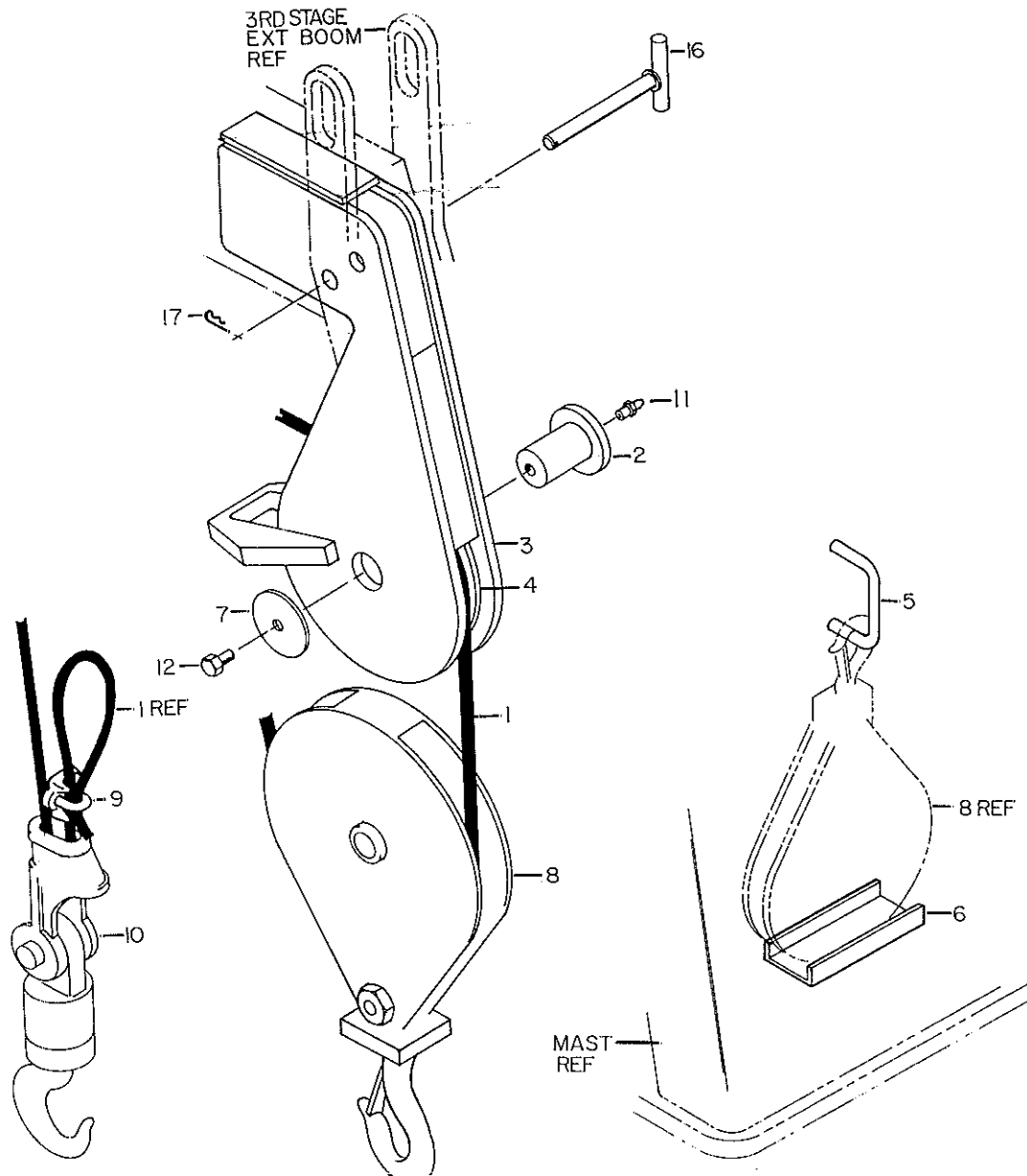
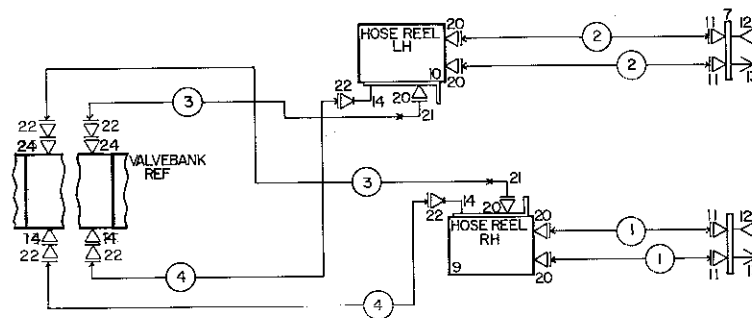
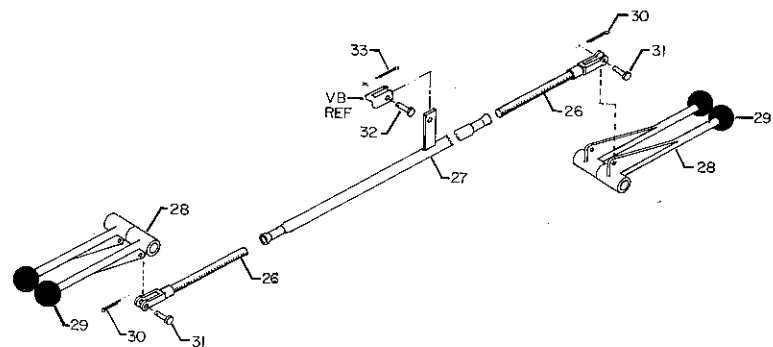
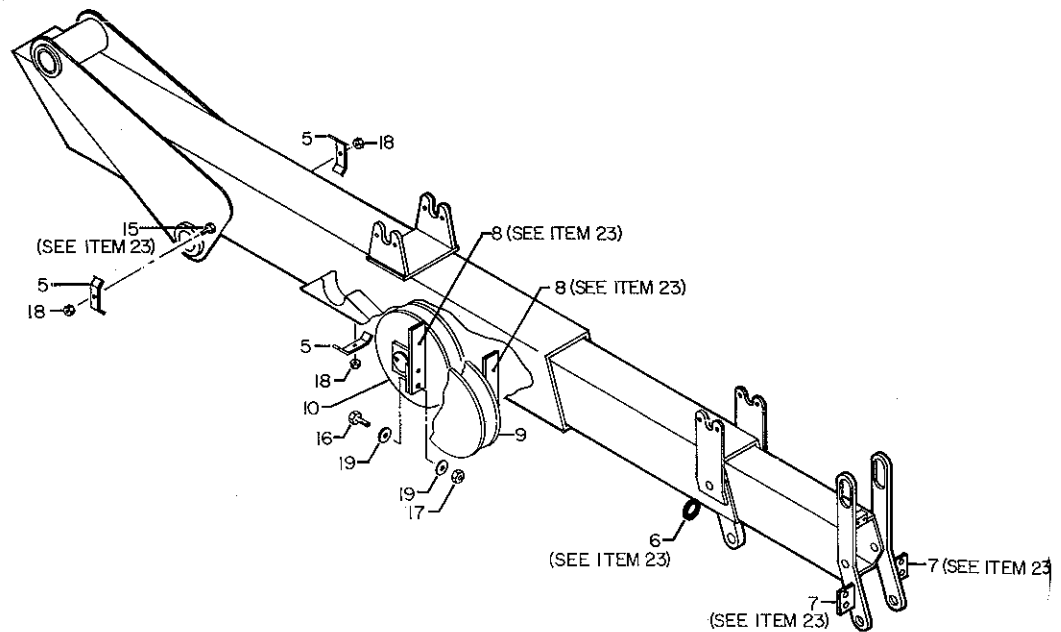


Figure D-60. HOLDING VALVE (73054004)



ITEM	PART NO.	DESCRIPTION	QTY
1.	60105311	CABLE 1/2 X 100'	1
2.	52705161	PIN	1
3.	52709812	SHEAVE HOLDER	1
4.	60030102	SHEAVE	1
5.	60105575	HANGER	1
6.	60105580	SNATCH BLOCK HOLDER	1
7.	60106331	PIN RETAINER PLATE	1
8.	70056253	SHEAVE	1
9.	70058034	CLAMP	1
10.	70731056	COMPLETE HOOK	1
11.	72053508	ZERK 1/8NPT	1
12.	72060147	CAP SCR 5/8-11X1 HHGR5	1
16.	52705802	PIN	1
17.	72066145	HAIR PIN	1
18.	99900402	MAST MODIFICATION DWG	1

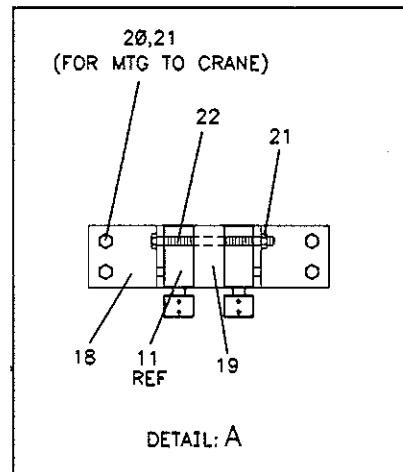
Figure D-61. OPTION - CABLE AND HOOK KIT 1/2 X 100' (31709813)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51708884	HOSE ASM 1/4X220	2	17.	72062080	NUT 1/2-13 LOCK	4
2.	51708885	HOSE ASM 1/4X229	2	18.	72062109	NUT 5/16-18 LOCK	3
3.	51708887	HOSE ASM 1/4X296	2	19.	72063005	WASHER 1/2 WRT	8
4.	51708888	HOSE ASM 1/4X323	2	20.	72532792	ADAPTER #8MSTR #4MJIC	6
5.	60010118	HOSE CLAMP	3	21.	72532690	ELBOW #4MJIC #4FJIC SWVL	2
6.	60010355	HOSE GUIDE	2	22.	72532665	ADAPTER 7/16MJIC 3/4FJIC	6
7.	60110232	BULKHEAD PLATE	2	23.	99900669	BOOM MOD DRAWING	1
8.	60110233	HOSE REEL MTG BRKT	2	24.	72532666	ELBOW 3/4MSTR 3/4MJIC 90° XL	2
9.	70731403	HOSE REEL 10GPM RH	1	26.	52704745	CONTROL ROD - M	4
10.	70731515	HOSE REEL 10GPM LH	1	27.	52705799	CONTROL ROD - F	2
11.	72053499	ADAPTER 1/4MPT 7/16MJIC	4	28.	70029451	CONTROL HANDLE	4
12.	72053539	DISCONNECT COUPLER 1/4FPT	2	29.	71039096	CONTROL KNOB 1-1/2	4
13.	72053541	DISCONNECT NIPPLE 1/4FPT	2	30.	72066168	COTTER PIN .09X.75	4
14.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	4	31.	72066338	CLEVIS PIN 5/16X1	4
15.	72060026	CAP SCR 5/16-18X1-1/4 HHGR5	3	32.	72661169	CLEVIS PIN 5/16X3/4	2
16.	72060091	CAP SCR 1/2-13X1 HHGR5	4	33.	72066336	COTTER PIN-SPCL	2

Figure D-62. DOUBLE HOSE REEL KIT - 25' (31708877)

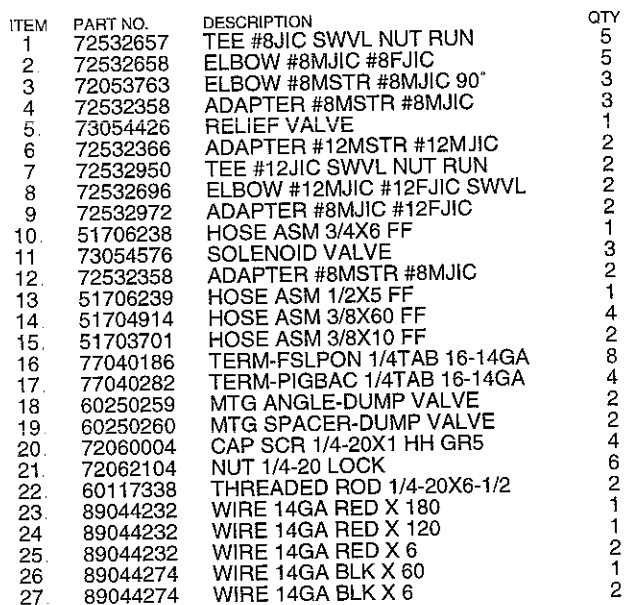
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NOTES:

- 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:
 - A OUTER BOOM "EXTEND"
 - B 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-64. OPTION-HYDRAULIC OVERLOAD KIT 2-FUNCTION (51710922)



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

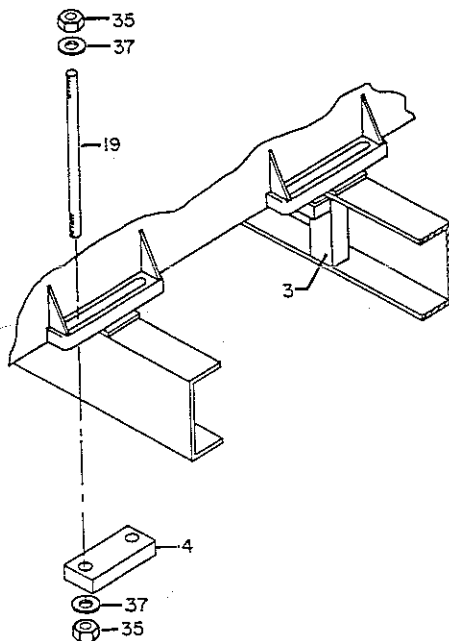
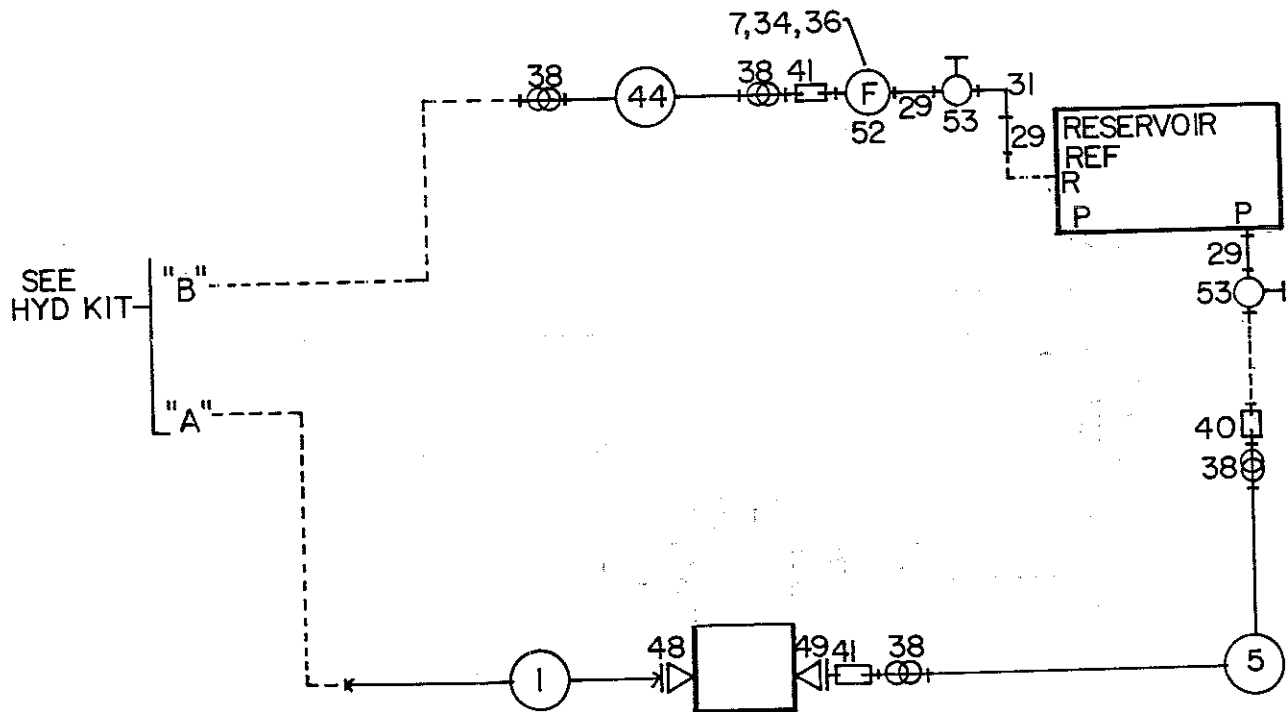
2. THE FUNCTIONS THAT ARE SHUT DOWN, IF OVERLOADED, ARE THE FOLLOWING:

- A. OUTER BOOM "EXTEND"
- B. EXTENSION CYLINDER "EXTEND"
- C. WINCH "UP"

3. INSTALL A RELIEF VALVE IN THE EXTEND LINE OF THE EXTENSION CYLINDER SO CYLINDER WILL NOT EXTEND WHEN DUMP SYSTEM IS ACTIVATED.

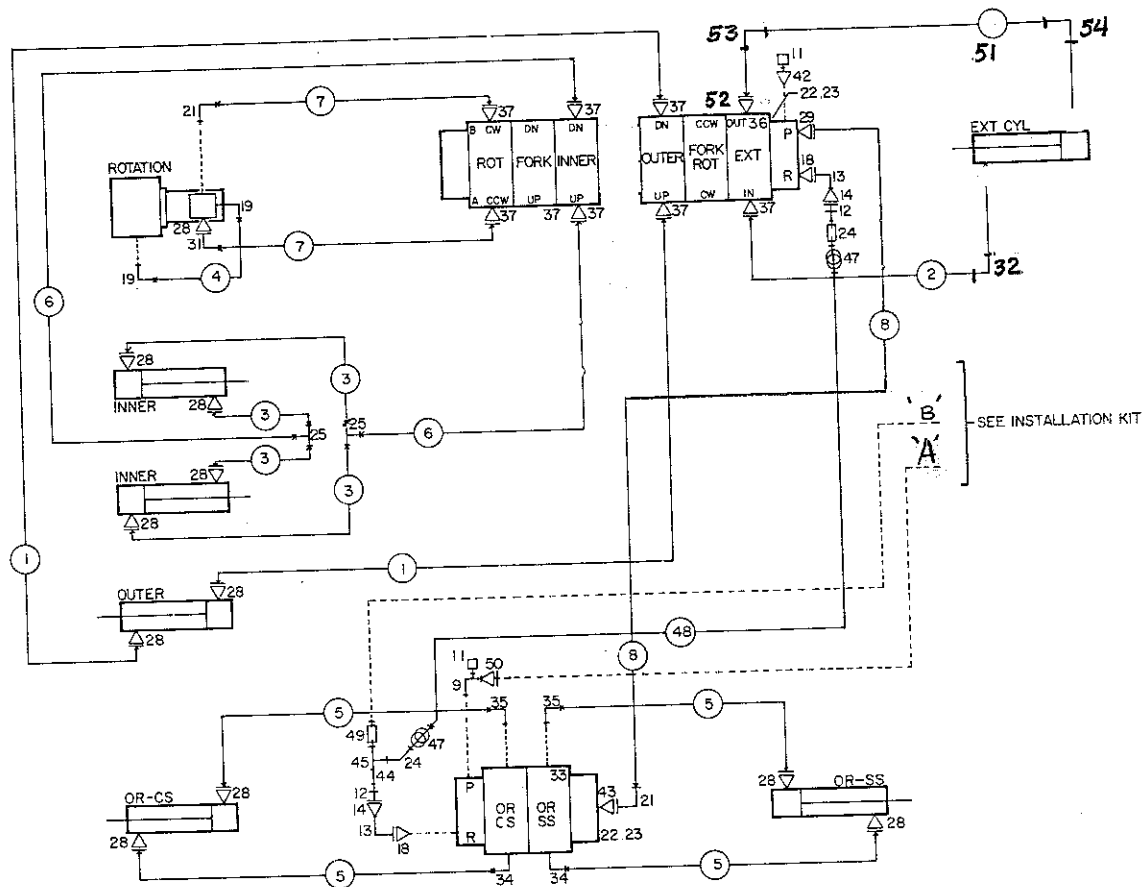
4. ITEMS 11, 18, 19, 20, 21 AND 22 SHOULD BE BOLTED TOGETHER BEFORE THEY ARE MOUNTED TO THE CRANE (SEE DETAIL A).

OPTION-HYDRAULIC OVERLOAD KIT 3-FUNCTION (51710923)



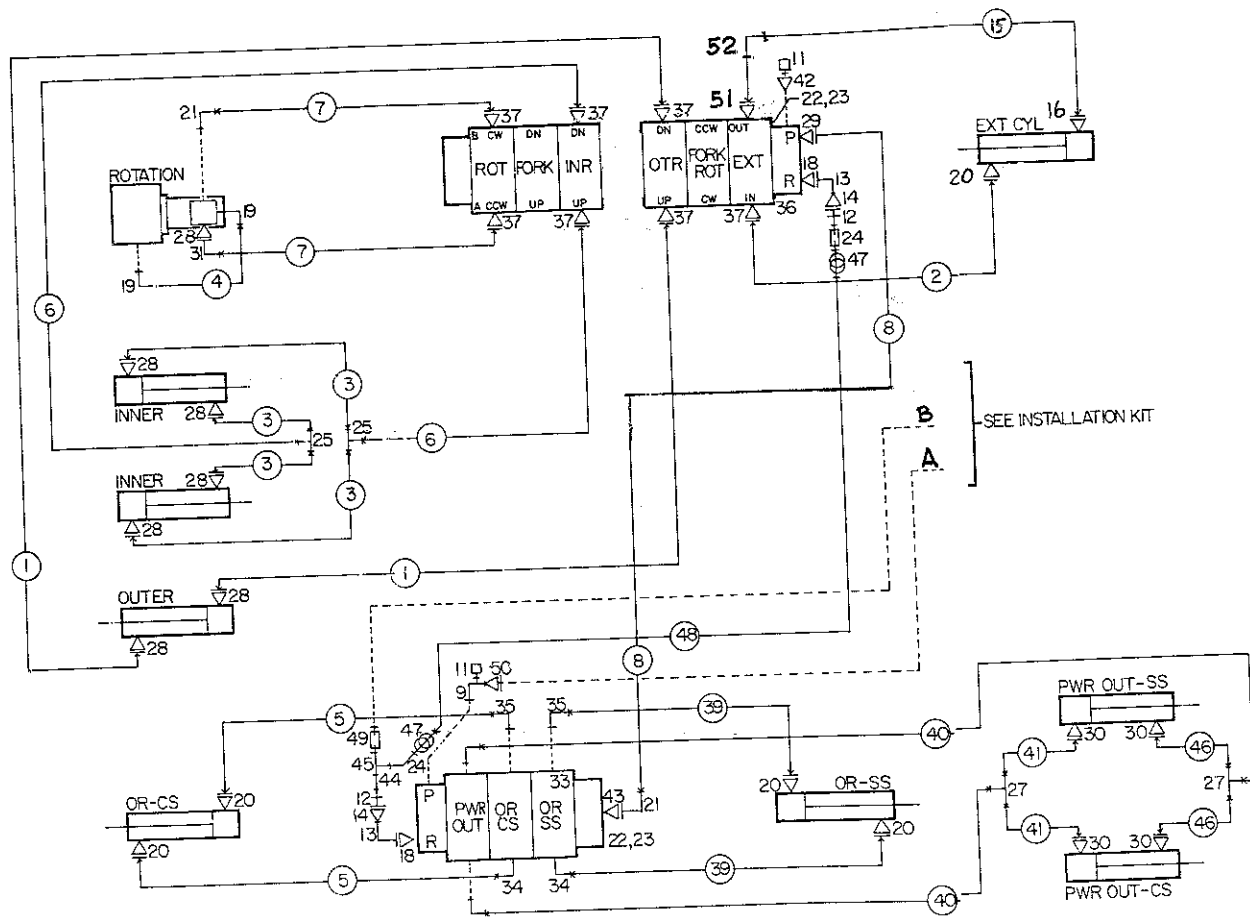
ITEM	PART NO.	DESCRIPTION	QTY
1.	51703703	HOSE ASM 1/2X72 FF	1
3.	52706660	SUPPORT	4
4.	60010665	CLAMP PLATE	4
5.	60035829	HOSE 1-1/4 100R4 X 48	1
7.	60103870	OIL FILTER BRACKET	1
19.	71014054	TIE-DOWN STUD 1-1/4X24	8
29.	72053211	PIPE NIPPLE 1-1/4NPT X CLOSE	3
31.	72053287	STREET ELBOW 1-1/4NPT 90°	1
34.	72060025	CAP SCR 5/16-18X1 HHGR5	2
35.	72062142	NU 1 1/4-7 STL INSERT GR5	16
36.	72063050	WASHER 5/16 LOCK	2
37.	72063067	WASHER 1-1/4 HI-STRENGTH	16
38.	72066516	HOSE CLAMP 1-1/4 2-BOLT	4
40.	72531550	BARB NIPPLE 1-1/4 1-1/4	1
41.	72532346	BARB NIPPLE 1-1/4 1-1/4 90°	2
44.	60035828	HOSE 1-1/4 100R4 X 72	1
48.		ADAPTER (determined by pump)	1REF
49.		ADAPTER (determined by pump)	1REF
52.	73052040	RETURN FILTER	1
53.	73054130	GATE VALVE 1-1/4NPT	2

Figure D-66. INSTALLATION KIT 8-SECT CHAIR MOUNT (93711288)



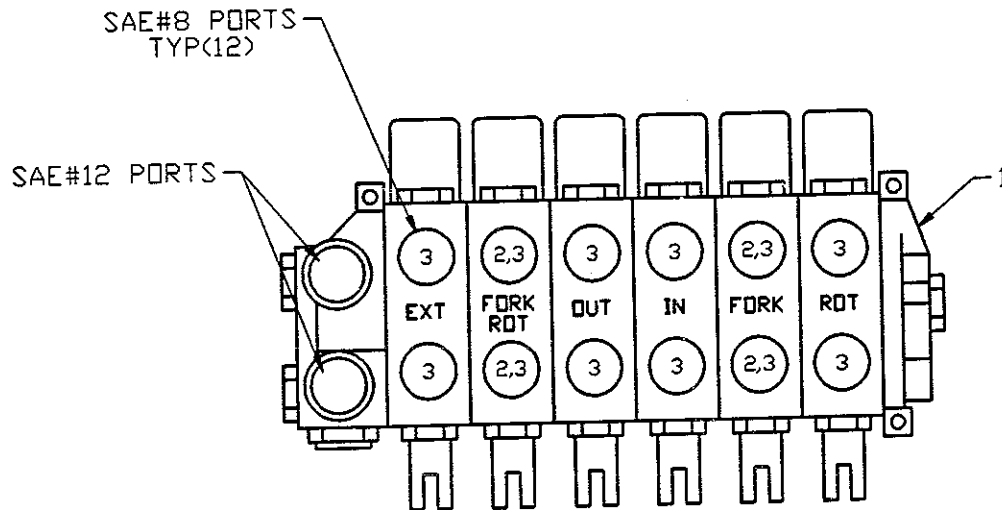
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703789	HOSE ASM 1/2X92	2	31.	72532658	ELBOW 3/4MJIC 3/4FJIC 90°	1
2.	51703933	HOSE ASM 1/2X186	1	32.	72532740	SWIVEL ELBOW 3/4MSTR 3/4MJIC 90°	2
3.	51704029	HOSE ASM 3/8X32	4	33.		VB ASM (incl:34,35,43)	1REF
4.	51705641	HOSE ASM 1/4X6	1	34.		ELBOW 3/4MSTR 3/4MJIC 90° (part of 33)	2REF
5.	51706859	HOSE ASM 3/8X62	4	35.		ELBOW 3/4MSTR 3/4MJIC XLG (part of 33)	2REF
6.	51706860	HOSE ASM 3/8X123	2	36.		VALVEBANK ASM (incl:37)	1REF
7.	51706861	HOSE ASM 3/8X170	2	37.		ADAPTER 3/4MSTR 3/4MJIC (part of 36)	7REF
8.	51706863	HOSE ASM 1/2X166	1	42.	60107746	PLUG	1
9.	60106322	ELBOW- MODIFIED	1	43.		ADAPTER-POWER BEYOND (part of 33)	1REF
11.	72053412	PIPE PLUG 1/4 SQHD	2	44.	72053211	PIPE NIPPLE 1-1/4 X CLOSE	1
12.	72053489	REDUCER COUPLING 1-1/4 X 3/4	2	45.	72053615	TEE 1-1/4	1
13.	72053556	ELBOW 3/4 X 90°	2	47.	72066516	HOSE CLAMP 1-1/4	2
14.	72053558	ADAPTER 3/4MPT 3/4MPT	2	48.	60035830	HOSE 1-1/4 100R4 X 144	1
18.	72053747	ADAPTER 1-1/16MSTR 3/4FPT	2	49.	72531550	BARB NIPPLE 1-1/4 1-1/4	1
19.	72053758	ELBOW 7/16MSTR 3/4MJIC 90°	2	50.	72532669	ADAPTER 3/4MJIC 7/8FJIC	1
21.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2	51.	51703874	HOSE ASM 3/4X186 FF	1
22.	72060033	CAP SCR 5/16-18X3 HH GR5	6	52.		ADAPTER #8MSTR #12MJIC (PART OF 36)	REF
23.	72062109	NUT 5/16-18 LOCK	6	53.		ELBOW #12MJIC #12FJIC SW (PART OF 36)	REF
24.	72531196	BARB NIPPLE 1-1/4 1-1/4 45°	2	54.	72053767	ELBOW #12MSTR #12MJIC 90°	1
25.	72531205	TEE 3/4MJIC	2				
28.	72532358	ADAPTER 3/4MSTR 3/4MJIC	11				
29.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1				

Figure D-67. HYDRAULIC KIT 8-SECT CHAIR MOUNT W/O MID-INLET (91711286)



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	51703789	HOSE ASM 1/2X92	2	28.	72532358	ADAPTER 3/4MSTR 3/4MJIC	7
2.	51703933	HOSE ASM 1/2X186	1	29.	72532360	ADAPTER 1-1/16MSTR 3/4MJIC	1
3.	51704029	HOSE ASM 3/8X32	4	30.	72532351	ADAPTER 7/16MSTR 7/16MJIC	4
4.	51705641	HOSE ASM 1/4X6	1	31.		ELBOW 3/4MJIC 3/4FJIC 90°	1
5.	51703601	HOSE ASM 3/8X90	2	33.		VALVEBANK ASM (incl:34,35,43)	1 REF
6.	51706860	HOSE ASM 3/8X123	2	34.		ELBOW 3/4MSTR 3/4MJIC 90° (part of 33)	3 REF
7.	51706861	HOSE ASM 3/8X170	2	35.		ELBOW 3/4MSTR 3/4MJIC XLG	3 REF
8.	51706863	HOSE ASM 1/2X166	1			(part of 33)	1 REF
9.	60106322	ELBOW- MODIFIED	1	36.		VALVEBANK ASM (incl:37)	7 REF
11.	72053412	PIPE PLUG 1/4 SQHD	2	37.		ADAPTER 3/4MSTR 3/4MJIC (part of 36)	2
12.	72053489	REDUCER COUPLING 1-1/4 3/4NPT	2	39.	51703693	HOSE ASM 3/8X114	2
13.	72053556	ELBOW 3/4NPT 90	2	40.	51706028	HOSE ASM 1/4X34	2
14.	72053558	ADAPTER 3/4MPT 3/4MPT	2	41.	51704280	HOSE ASM 1/4X40	1
15.	51703874	HOSE ASM 3/4X186 FF	1	42.	60107746	PLUG	1 REF
16.	72053767	ELBOW #12MSTR #12MJIC 90°	1	43.		ADAPTER - POWER BEYOND(part of 33)	1
18.	72053747	ADAPTER 1-1/16MSTR	2	44.	72053211	PIPE NIPPLE 1-1/4 X CLOSE	1
19.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	2	45.	72053615	TEE 1-1/4	2
20.	72532666	ELBOW 3/4MSTR 3/4MJIC XLG	5	46.	51705376	HOSE ASM 1/4X44	2
21.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2	47.	72066516	HOSE CLAMP 1-1/4	1
22.	72060033	CAP SCR 5/16-18X3 HH GR5	6	48.	60035830	HOSE 1-1/4 100R4 X 144	1
23.	72062109	NUT 5/16-18 LOCK	6	49.	72531550	BARB NIPPLE 1-1/4 1-1/4	1
24.	72531196	BARB NIPPLE 1-1/4 1-1/4 45°	2	50.	72532669	ADAPTER 3/4MJIC 7/8FJIC	1
25.	72531205	TEE 3/4MJIC	2	51.		ADAPTER #8MSTR #12MJIC	REF
27.	72532768	TEE 7/16MJIC	2	52.		(PART OF 36)	REF
						ELBOW #12MJIC #12FJIC SW	
						(PART OF 36)	

Figure D-68. HYDRAULIC KIT 9-SECT CHAIRMOUNT W/PO & PD (91711287)



ITEM	PART NO.	DESCRIPTION	QTY
1	51711281	VB 6-SECT W/O MID-INLET	1
2	72532675	CAP 3/4JIC	4
3	72532358	ADAPTER #8MSTR #8MJIC	12

Figure D-69. VALVEBANK ASSEMBLY 6 SECTION W/O MID-INLET (51711541)

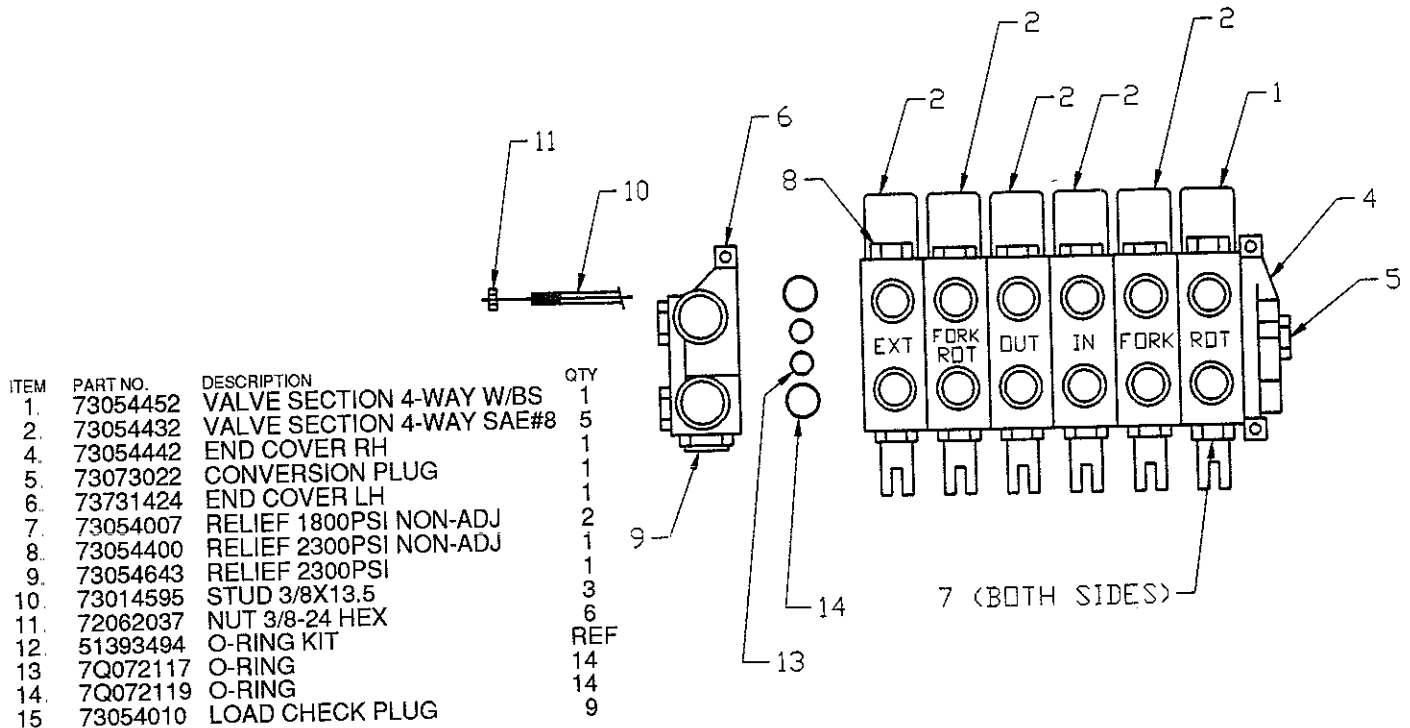
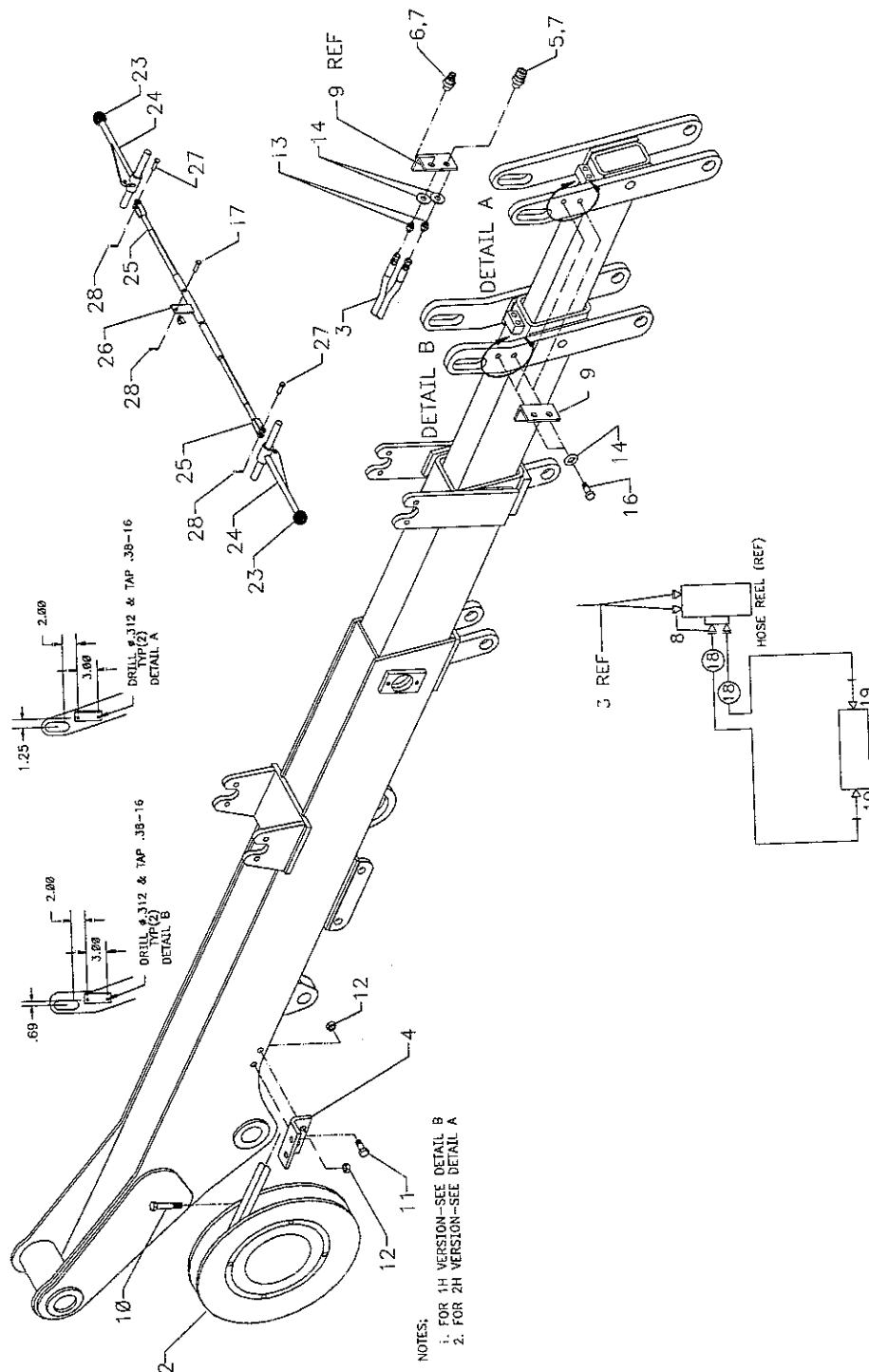


Figure D-69A. VALVEBANK CHAIRMOUNT (51711281)

ITEM	PART NO.	DESCRIPTION	QTY
1	701444163	COVER	1
2	70732718	DIPSTICK ASSEMBLY	1
3	70034410	DIFFUSER 3/4NPT 33GPM	1
4	70732791	SCREEN 100MESH	1
5	70144166	STRAINER 100MESH 20GPM	1
6	73052001	PLUG 3/4NPTF SQHD MAG	1
7	76393565	O-RING 6 ID X 6.5 OD	1

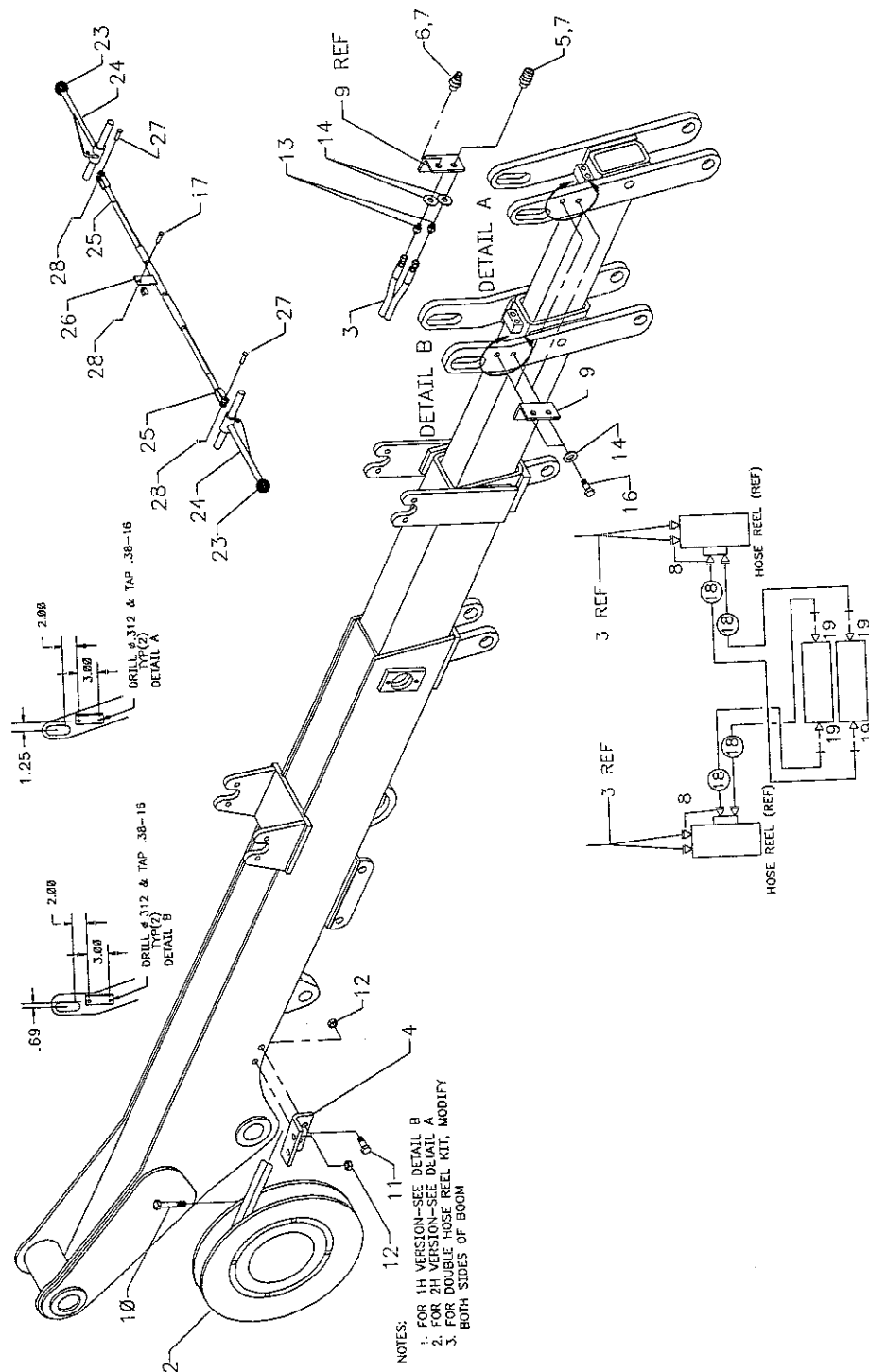
Figure D-70. RESERVOIR ASSEMBLY 22-GALLON (70732579)



NOTES:
 1. FOR 1H VERSION-SEE DETAIL B
 2. FOR 2H VERSION-SEE DETAIL A

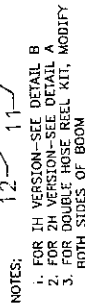
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
2.	70732864	HOSE REEL-RH	1	14.	72063003	WASHER 3/8 WRT	4
3.	51393812	HOSE ASM 1/4X300 FF TWIN	1	16.	72060044	CAP SCR 3/8-16X3/4 HHGR5	2
4.	60117715	HOSE REEL MTG BRKT	1	17.	72066337	PIN-SPCL VB	2
5.	72533380	DISCONNECT COUPLER 1/4NPT	1	18.	51708888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

Figure D-71. SINGLE HOSE REEL KIT-V20 (31712010)



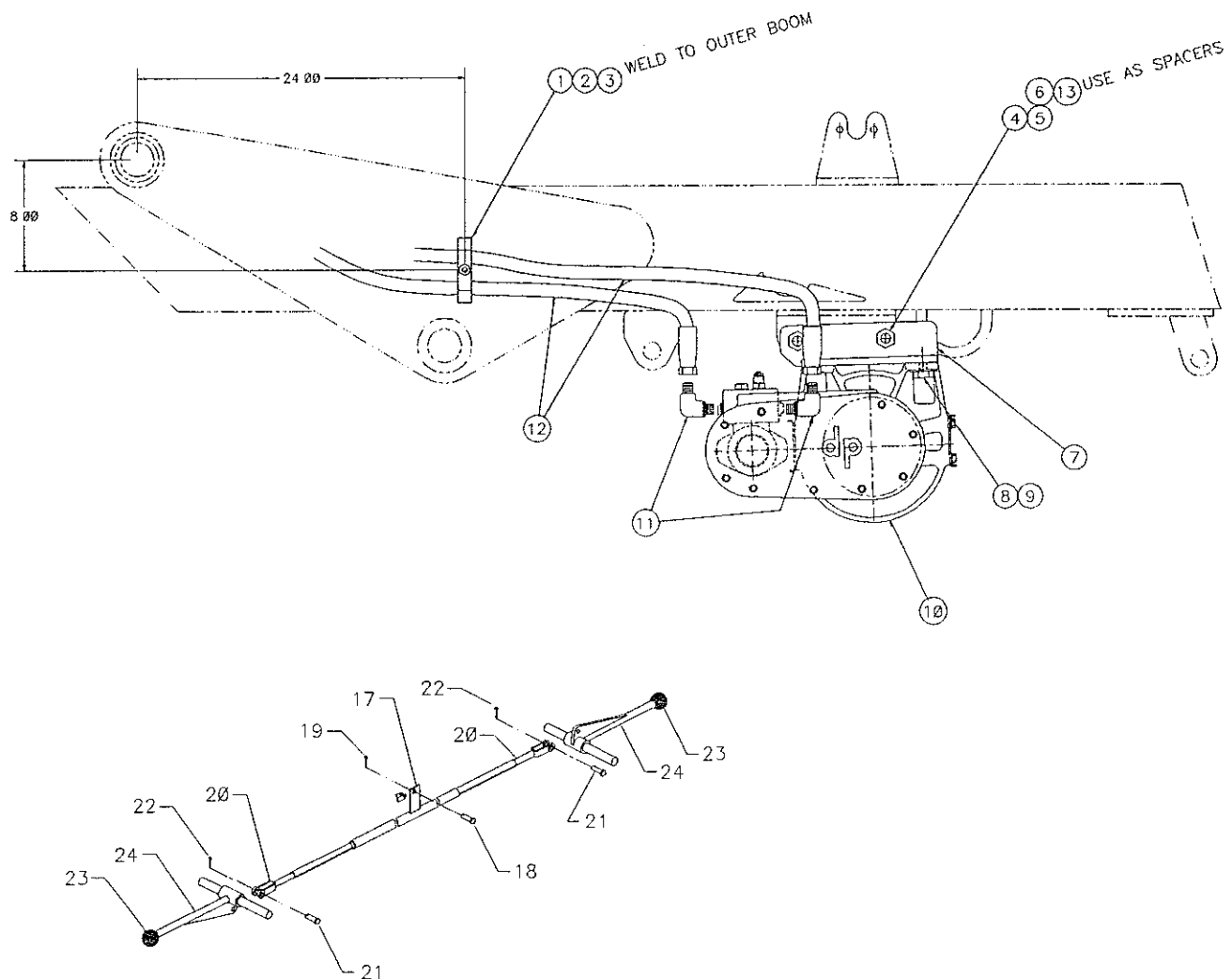
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732863	HOSE REEL-LH	1	13.	72053499	ADAPTER 1/4MPT #4MJIC	4
2.	70732864	HOSE REEL-RH	1	14.	72063003	WASHER 3/8 WRT	8
3.	51393812	HOSE ASM 1/4X300 FF TWIN	2	16.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4
4.	60117715	HOSE REEL MTG BRKT	2	17.	72066337	PIN-SPCL VB	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	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

Figure D-72. DOUBLE HOSE REEL KIT-V20 (31712011)



ITEM	PART NO.	DESCRIPTION	QTY
11.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	4
12.	72062080	NUT 1/2-13 LOCK	8
13.	72053499	ADAPTER 1/4MPT #4MJIC	4
14.	72063003	WASHER 3/8 WRT	8
16.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4
18.	51704295	HOSE ASM 1/4X186 FF	4
19.	72532665	ADAPTER #4MJIC #8FJIC	4
20.	94731839	LINK & PIN KIT	2
21.	73014848	VALVE HANDLE	2

Figure D-73. DOUBLE HOSE REEL KIT-V20 CHAIR (31712012)

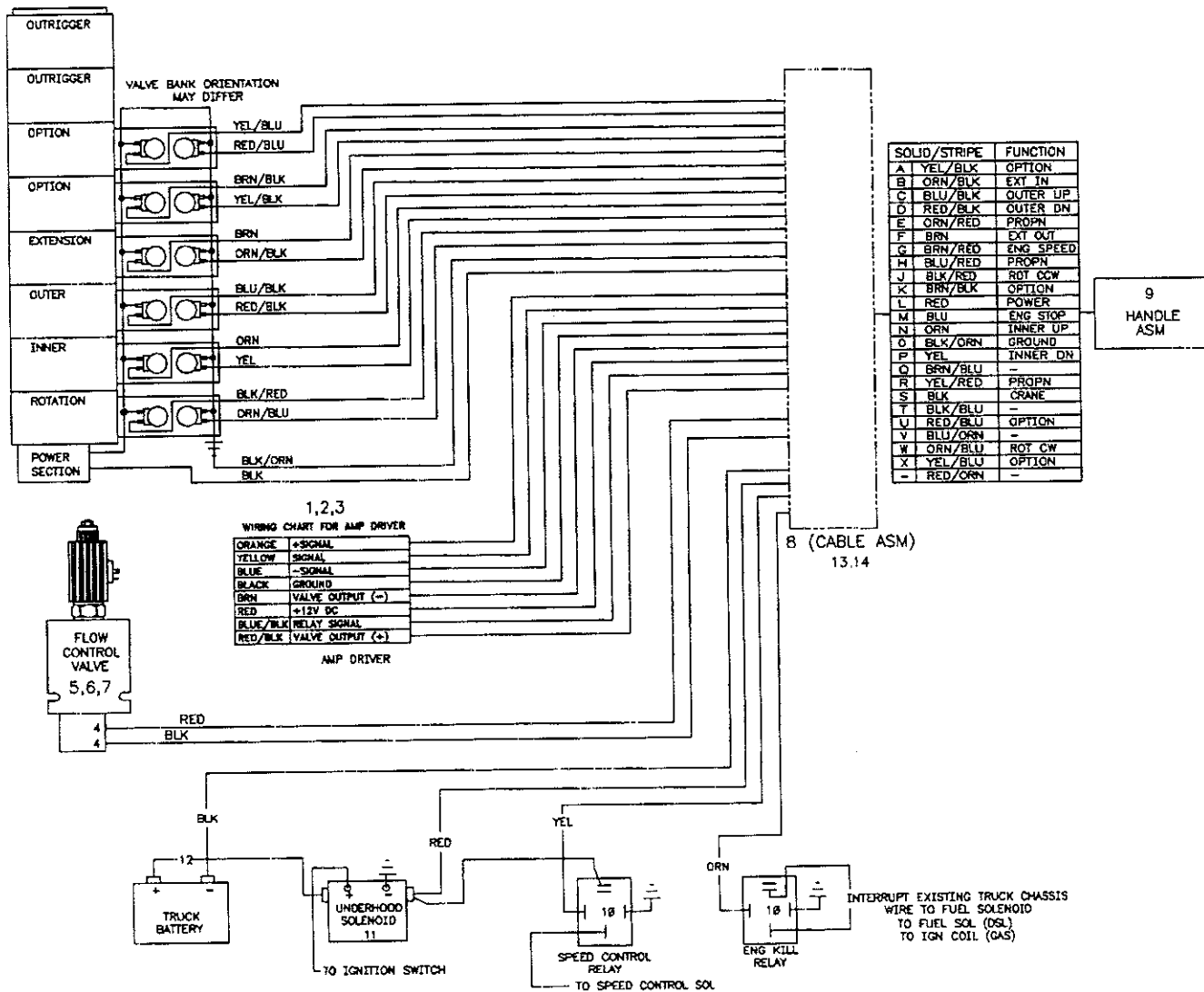


DECAL PLACEMENT

ITEM NO.	LOCATION
14,15	AT OR NEAR NORMAL OPERATING STATION
16	ONE ON EACH SIDE OF CARRIER VEHICLE

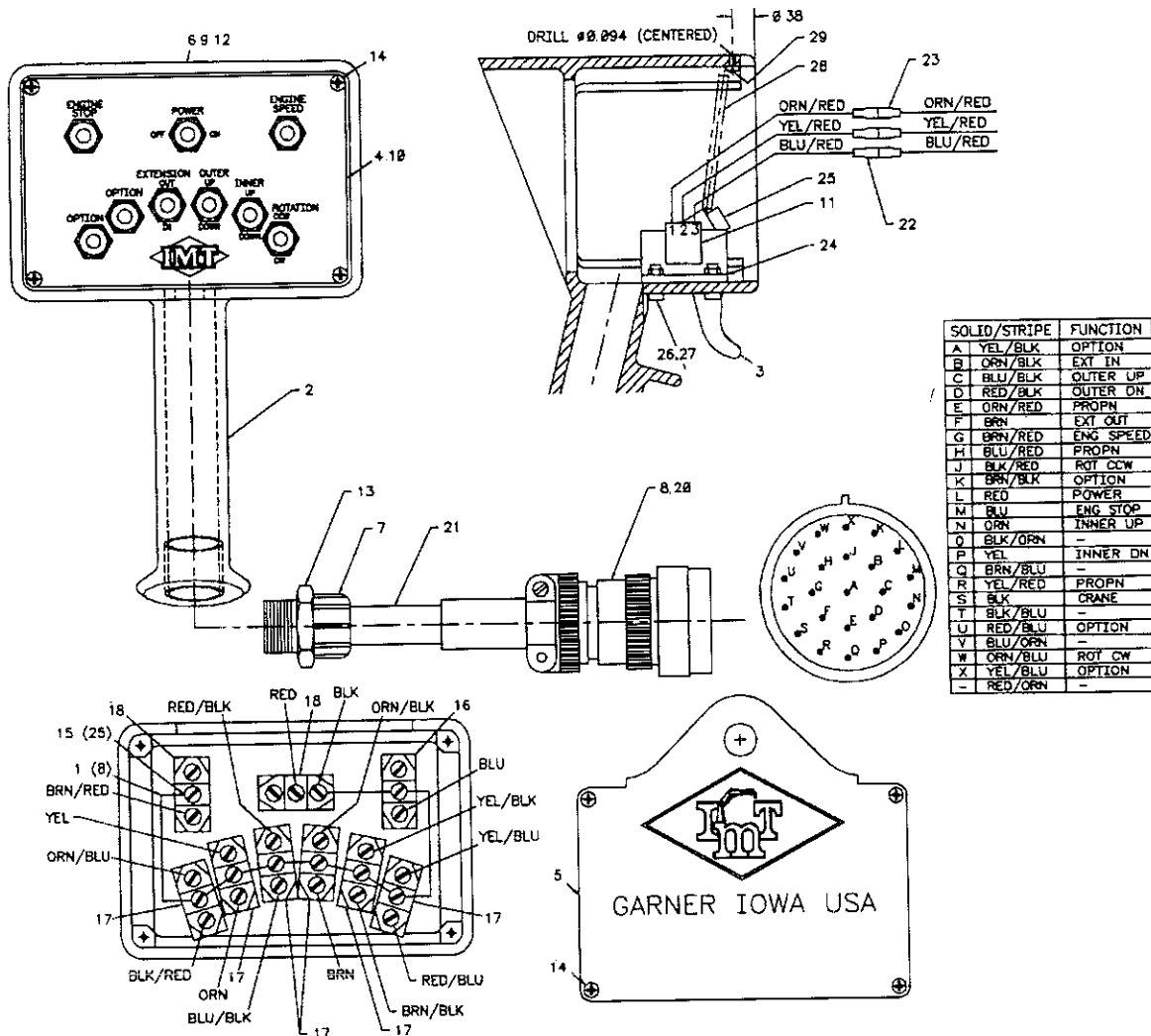
ITEM	PART NO.	DESCRIPTION	QTY
1.	72062103	NUT 3/8-16 LOCK	1
2.	60010118	HOSE CLAMP	1
3.	72060047	CAP SCR 3/8-16X1-1/4 HHGR5	1
4.	72062114	NUT 3/4-10 LOCK	2
5.	72060199	CAP SCR 3/4-10X9 HHGR5	2
6.	72063028	MACH BUSHING 3/4 X 14GA	4
7.	52712475	MTG BRACKET	1
8.	72601272	CAP SCR 1/2-13X1-1/4 HHGR8	4
9.	72063053	WASHER 1/2 LOCK	4
10.	71570217	WINCH 5000 LB	1
11.	72053763	ELBOW #8MSTR #8MJIC 90°	2
12.	51712818	HOSE ASM 3/8X285 #6F #8F	2
13.	60107967	SPACER	4
14.	70392861	DECAL-DNGR 2-BLOCKING	2
15.	70392863	DECAL-DNGR HOIST PERSONNEL	2
16.	70392868	DECAL-DNGR CRANE LOADING	4
17.	52705799	CONTROL ROD-F	1
18.	72066337	PIN-SPECIAL VB	1
19.	72066336	COTTER PIN-SPECIAL SHORT	1
20.	52704745	CONTROL ROD-M 7/16-14X8-1/4	2
21.	72066338	CLEVIS PIN 5/16X1	2
22.	72066168	COTTER PIN 5/32X3/4	2
23.	71039096	CONTROL KNOB 1-1/2	2
24.	70029451	CONTROL HANDLE-VB	2

Figure D-74. WINCH KIT-5000 LB DP BOLT-ON (31905002)



ITEM	PART NO.	DESCRIPTION	QTY
1.	77041390	AMP DRIVER	1
2.	72060703	CAP SCR 1/4-20X1/2 SH	2
3.	72063049	WASHER 1/4 LOCK	2
4.	77040186	TERMINAL 1/4 FSLPON 16-14GA	2
5.	73054876	FLOW VALVE	1
6.	72060051	CAP SCR 3/8-16X2-1/4 HHGR5	2
7.	72062103	NUT 3/8-16 LOCK	2
8.	51713568	CABLE ASM	1
9.	51713429	HANDLE ASM	1
10.	77041251	RELAY	2
11.	77041237	SOLENOID 12V	1
12.	51704784	CABLE ASM #1WIRE X 6	1
13.	72060004	CAP SCR 1/4-20X1 HHGR5	4
14.	72062104	NUT 1/4-20 LOCK	4

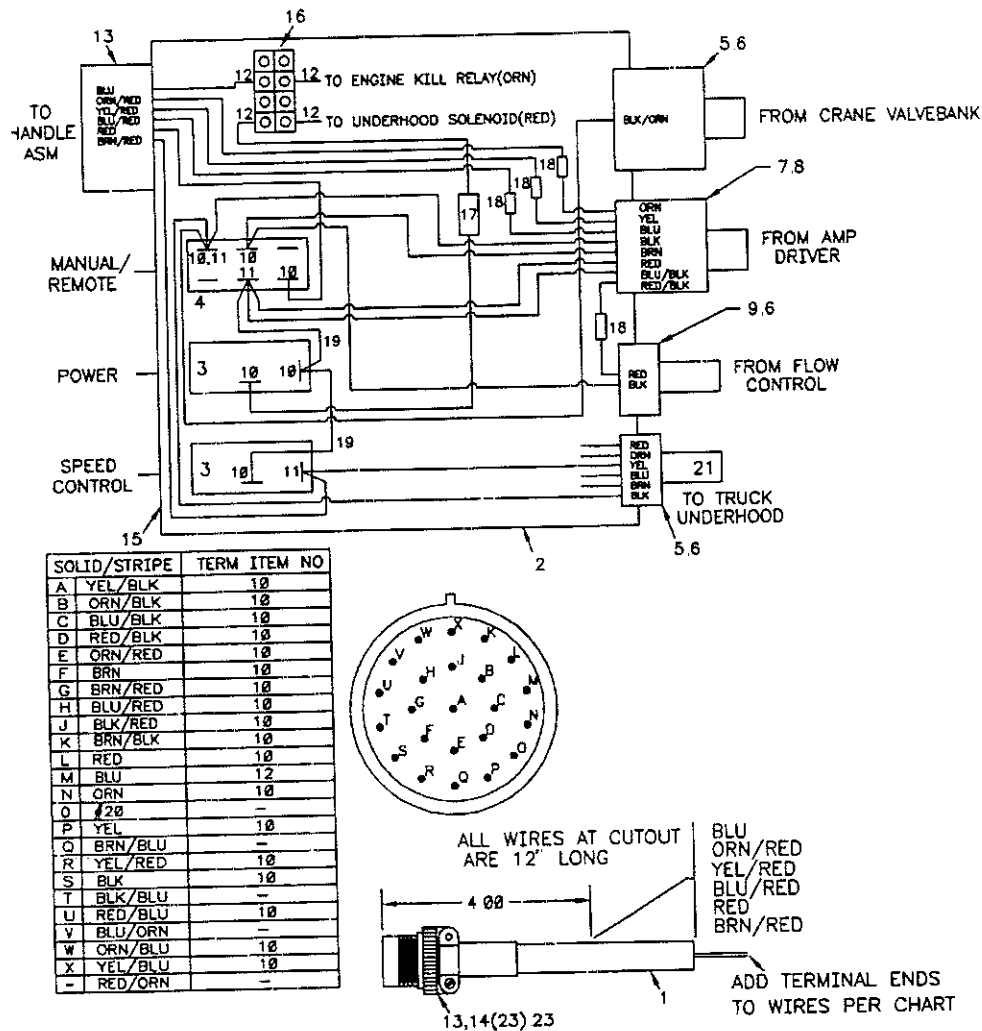
PROPORTIONAL REMOTE CONTROL KIT (90713554)



ITEM	PART NO.	DESCRIPTION	QTY
1.	60045031	WIRE 18GA X 4 GRN	8
2.	60119335	CONTROL HANDLE BACK	1
3.	60111141	TRIGGER	1
4.	60119277	COVER	1
5.	70034306	BACK COVER	1
6.	70029119	SERIAL NUMBER PLACARD	1
7.	77044096	CORD GRIP	1
8.	77044621	PIN	23
9.	70392862	DECAL-DGR RC ELECTRO	1
10.	71394282	DECAL-RC HANDLE	1
11.	51707507	POTENTIOMETER ASM (INCL:22)	1
12.	72066340	POP RIVET	2
13.	72531833	REDUCER BUSHING 3/4-1/2NPT	1
14.	72061009	SHT MTL SCR #6X3/4 PH	8

ITEM	PART NO.	DESCRIPTION	QTY
15.	77040051	TERMINAL #8 SPRSPD 16-14GA	25
16.	77040371	TOGGLE SWITCH SPST	1
17.	77040372	TOGGLE SWITCH SPDT	6
18.	77040373	TOGGLE SWITCH SPST	2
20.	77044579	CONNECTOR	1
21.	89044100	CABLE 18GA/24WIRE X 45FT	1
22.	77040047	TERMINAL MSLPON(PART OF 11)	3REF
23.	77040186	TERMINAL 1/4 FSLPON 16-14GA	3
24.	60111142	MTG BRACKET	1
25.	72060669	CAP SCR #10-32X5/8 SH	1
26.	72060636	CAP SCR #10-24X3/4 SH	2
27.	72062106	NUT #10-24 LOCK	2
28.	70143223	SPRING	1
29.	72061000	SHT MTL SCR #6X1/2 PH	1

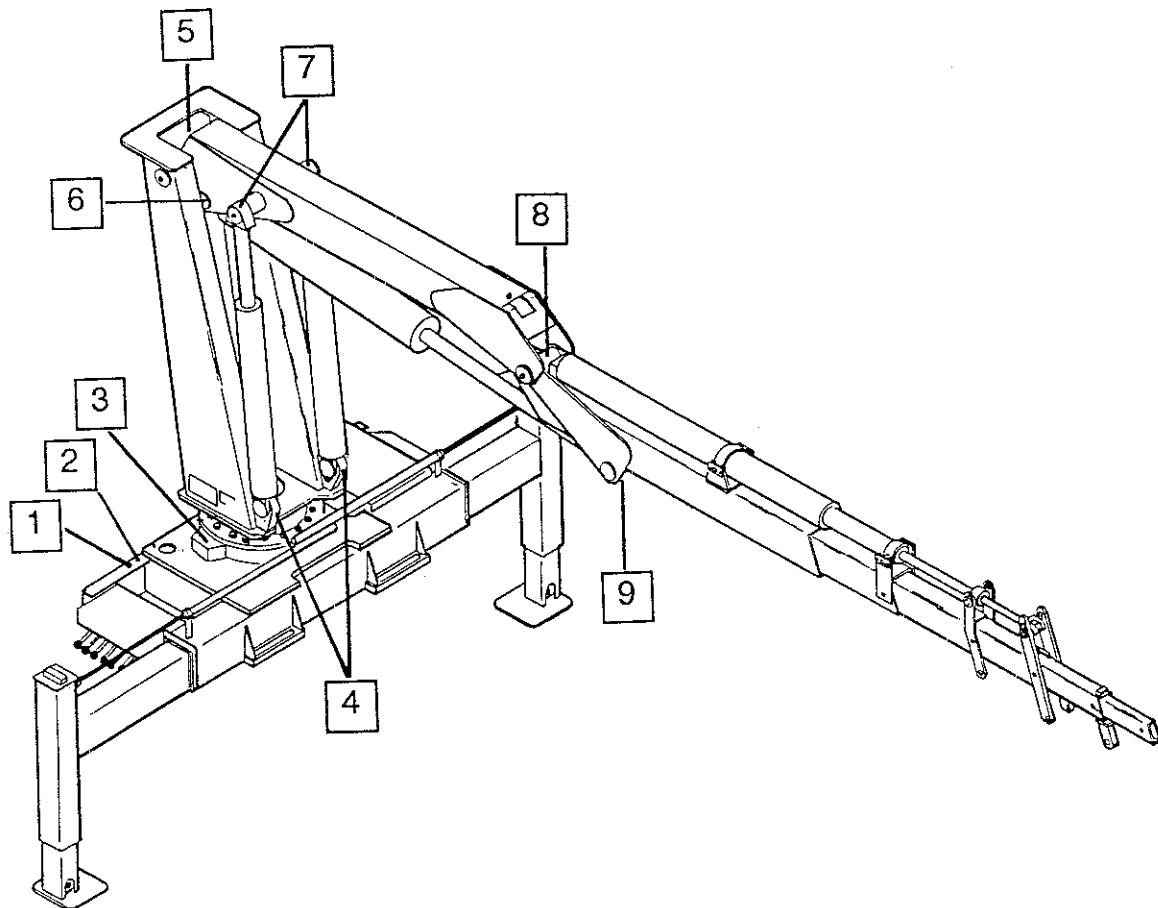
PROPORTIONAL REMOTE HANDLE ASSEMBLY (51713429)



ITEM	PART NO.	DESCRIPTION	QTY
1.	89044100	CABLE 18GA/24WIRE X 94	1
2.	90713575	JIC BOX	1
3.	77041345	TOGGLE SWITCH ST	2
4.	77041354	TOGGLE SWITCH DT	1
5.	77044018	STRAIN RELIEF 1/2	2
6.	77044201	NUT 1/2 ELEC LOCK	3
7.	77044196	STRAIN RELIEF 3/4	1
8.	77044202	NUT 3/4 ELEC LOCK	1
9.	77044468	STRAIN RELIEF 1/2	1
10.	77040186	TERMINAL 1/4 FSLPON 16-14GA	25
11.	77040282	TERMINAL 1/4 PIGBAC 16-14GA	3
12.	77040051	TERMINAL #8 SPRSPD 16-14GA	4
13.	77044620	CONNECTOR	1
14.	77044580	SOCKET	23
15.	70393257	DECAL-JIC BOX	1
16.	77044341	TERMINAL BLOCK-4	1
17.	77041056	FUSE 20A IN-LINE	1
18.	77040048	BUTT CONNECTOR 16-14GA	4
19.	89044232	WIRE 14GA RED X 3	2
20.	77044668	PLUG-SEAL	1
21.	89044354	CABLE 14GA/6WIR	84"
23.	77044667	PLUG-CAP	1

CABLE ASM-JIC BOX 94" (51713568)

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 CYLINDER HINGE PIN		
5	MAST/INNER BOOM HINGE PIN		
6	OUTER CYLINDER BASE		
7	INNER CYLINDER ROD		
8	INNER BOOM/OUTER BOOM HINGE PIN		
9	OUTER 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-2. GREASE ZERK LOCATIONS AND LUBRICANT REQUIREMENTS (PWR OUT & DOWN)

TORQUE DATA CHART

FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
					
		SAE J429 GRADE 5		SAE J429 GRADE 8	
		PLAIN (FT-LB)	PLATED (FT-LB)	PLAIN (FT-LB)	PLATED (FT-LB)
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 (FT-LB)	PLATED (FT-LB)	PLAIN (FT-LB)	PLATED (FT-LB)
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.

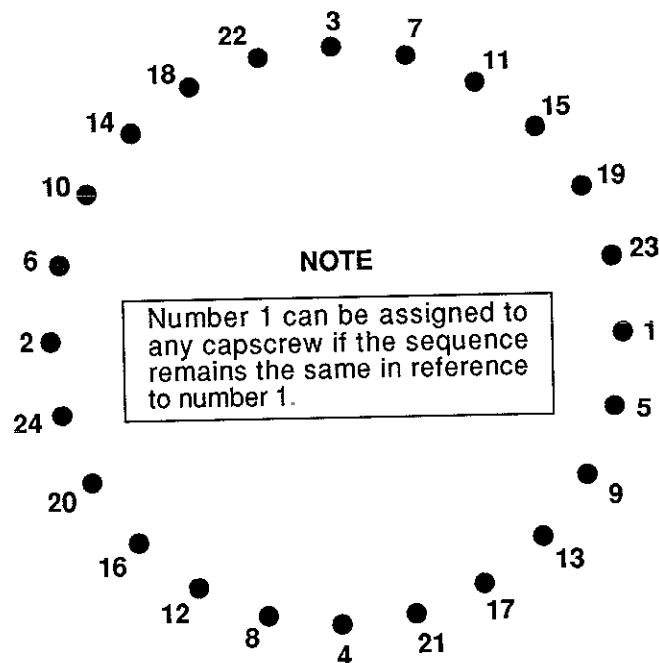
1. Bolt manufacturer's particular specifications should be consulted when provided.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
4. Torque values specified are for bolts with residual oils or no special 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-3. 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 torquing 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-4. 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.

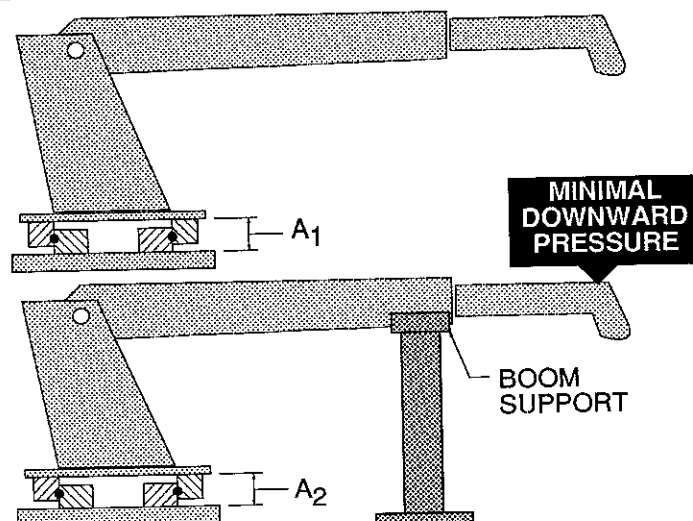
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A_1), using a dial indicator for accuracy.

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 THE FIGURES LISTED IN THIS CHART ARE SERVICE GUIDELINES AND DO NOT, IN THEMSELVES, REQUIRE THAT THE BEARING BE INSPECTED. IF THERE IS REASON TO SUSPECT AN EXCESS OF BEARING WEAR AND THE MEASURED TILT DIMENSION EXCEEDS THE DIMENSION LISTED, REMOVE THE BEARING FOR INSPECTION.	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 5800 SERIES 6014 6425 725 7020 7025 8025 8031 TH10 BODY ROT'N TH12 BODY ROT'N	32018 32030 HAWK-H1150 HAWK-H1150TL HAWK-H4961	9616 9800 SERIES 10020 10025 1216 1325 1331 13031 13034 13426 14018 14000 SERIES 14126 15000 SERIES 1725 18000 SERIES 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-5. TURNTABLE BEARING INSPECTION FOR REPLACEMENT

Spare Parts List

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 no down-time waiting for parts. Obviously, there may be part failures not covered by this list. The item numbers shown on this list correspond to the item numbers on the figure listed.

FIG	ITEM	PART NO>	DESCRIPTION	SPIDER LEG (SL) OUT/DOWN (O&D)	QTY
D-4. BASE-SPIDER LEG OUTRIGGERS (41709506)					
	12.	60020120	BUSHING, TOP DRIVE GEAR	SL	1
	13.	60020121	BUSHING, BOTTOM DRIVE GEAR	SL	1
	14.	60020122	BUSHING, BOTTOM PINION GEAR	SL	1
	15.	60020123	THRUST WASHER	SL	1
	16.	60020124	BUSHING, TOP PINION GEAR	SL	1
	17.	60105964	PINION SUPPORT PLATE	SL	1
	22.	71056072	INTERMEDIATE GEAR	SL	1
	23.	71056073	PINION GEAR	SL	1
	24.	71056074	DRIVE GEAR	SL	1
	25.	71056374	BRAKE	SL	1
	26.	71056273	TURNTABLE GEAR	SL	1
	42.	72063115	WASHER 7/8 HARDENED FLAT	SL	23
	44.	72601148	CAP SCREW 7/8-9 X 3 HH GR8	SL	23
	45.	73051004	HYDRAULIC MOTOR	SL	1
D-5. SPIDER LEG OUTRIGGERS-TRUCK MOUNT (41705762)					
	10.	7BF81215	BUSHING	SL	16
	11.	7BF81215	BUSHING	SL	8
D-6. SPIDER LEG OUTRIGGERS-TRAILER MOUNT (41705763)					
	14.	7BF81215	BUSHING	SL	8
	15.	7BF81215	BUSHING	SL	16
D-7. SPIDER LEG OUTRIGGER CYLINDER (3C285851)					
	1.	7BF81215	BUSHING	SL	8
	2.	7BF81015	BUSHING	SL	8
	4.	73054304	COUNTERBALANCE VALVE	SL	4
	19.	9C181823	SEAL KIT	SL	2
D-8. BASE-POWER OUT/DOWN OUTRIGGERS (41709196)					
	9.	60020120	BUSHING	O&D	1
	10.	60020121	BUSHING	O&D	1
	11.	60020122	BUSHING	O&D	1
	12.	60020124	BUSHING	O&D	1
	13.	71056074	DRIVE GEAR	O&D	1
	17.	60020123	THRUST WASHER	O&D	1
	19.	60105964	PINION SUPPORT PLATE	O&D	1
	20.	70034295	BEARING	O&D	1
	28.	71056072	INTERMEDIATE GEAR	O&D	1
	29.	71056073	PINION GEAR	O&D	1
	30.	71056273	TURNTABLE GEAR	O&D	1
	31.	71056374	BRAKE	O&D	1
	44.	72063115	WASHER 7/8 HARDENED FLAT	O&D	23
	52.	72601148	CAP SCREW 7/8-9 X 3 HH GR8	O&D	23
	60.	60030149	WEAR PAD	O&D	2
D-9. POWER OUT OUTRIGGER CYLINDER (3A170890)					
	6.	9A050608	SEAL KIT	O&D	2
D-10. POWER DOWN OUTRIGGER CYLINDER (3B171890)					
	20.	9C121417	SEAL KIT	O&D	2
D-11. MAST ASSEMBLY (41709507)					
	6.	72060209	CAP SCR 3/4-10X2-3/4 HHGR8	BOTH	18
	7.	72063116	WASHER 3/4 FLAT HARD	BOTH	18
D-12. MAST ASSEMBLY WITH CHAIR (41709508)					
	7.	72060209	CAP SCR 3/4-10X2-3/4 HHGR8	BOTH	18
	8.	72063116	WASHER 3/4 FLAT HARD	BOTH	18
D-13. INNER BOOM ASSEMBLY (41705766)					
	13.	7BF81225	BUSHING	BOTH	17
D-14. INNER BOOM CYLINDER (3C279840)					
	1.	7BF81025	BUSHING	BOTH	4
	2.	73054242	COUNTERBALANCE VALVE	BOTH	2
	18.	7BF81225	BUSHING	BOTH	4
	21.	9C182423	SEAL KIT	BOTH	2
D-15. OUTER BOOM ASSEMBLY (41709509)					
	6.	7BF81225	BUSHING	BOTH	4
	10.	60030120	WEAR PAD	BOTH	1

Spare Parts List

(continued)

FIG	ITEM	PART	DESCRIPTION	SPIDER LEG (SL) OUT/DOWN (O&L)	QTY
D-16.			OUTER BOOM CYLINDER (3C282840)		
	7.	9C222829	SEAL KIT	BOTH	1
	20.	73054242	COUNTERBALANCE VALVE 25GPM	BOTH	1
	21.	7BF81025	BUSHING	BOTH	8
	22.	7BF81225	BUSHING	BOTH	2
D-17.			2H EXTENSION BOOM ASSEMBLY (41709510)		
	11.	60030121	WEAR PAD	BOTH (25' ONLY)	1
	13.	60030119	WEAR PAD	BOTH (25' ONLY)	1
	14.	60030118	WEAR PAD	BOTH (25' ONLY)	1
D-18.			EXTENSION CYLINDER (3K152920)		
	10.	73054817	COUNTERBALANCE VALVE	BOTH (25' ONLY)	1
	11.	73054902	COUNTERBALANCE VALVE	BOTH	1
	13.	9X082900	SEAL KIT	BOTH (25' ONLY)	1
D-19.			3H EXTENSION BOOM ASSEMBLY (41709511)		
	8.	60103575	HOOK - 8 TON	BOTH (31' ONLY)	1
	11.	60030121	WEAR PAD	BOTH (31' ONLY)	1
	13.	60030119	WEAR PAD	BOTH (31' ONLY)	1
	14.	60030118	WEAR PAD	BOTH (31' ONLY)	1
	16.	60030201	WEAR PAD	BOTH (31' ONLY)	1
	17.	60030200	WEAR PAD	BOTH (31' ONLY)	1
D-20.			3H1M EXTENSION BOOM ASSEMBLY (41709512)		
	8.	60103575	HOOK - 8 TON	BOTH (36' ONLY)	1
	11.	60030121	WEAR PAD	BOTH (36' ONLY)	1
	13.	60030119	WEAR PAD	BOTH (36' ONLY)	1
	14.	60030118	WEAR PAD	BOTH (36' ONLY)	1
	16.	60030201	WEAR PAD	BOTH (36' ONLY)	1
	17.	60030200	WEAR PAD	BOTH (36' ONLY)	1
D-21.			3H2M EXTENSION BOOM ASSEMBLY (41709513)		
	8.	60103575	HOOK - 8 TON	BOTH (41' ONLY)	1
	11.	60030121	WEAR PAD	BOTH (41' ONLY)	1
	13.	60030119	WEAR PAD	BOTH (41' ONLY)	1
	14.	60030118	WEAR PAD	BOTH (41' ONLY)	1
	16.	60030201	WEAR PAD	BOTH (41' ONLY)	1
	17.	60030200	WEAR PAD	BOTH (41' ONLY)	1
D-22.			TELESCOPIC EXTENSION CYLINDER (3K148920)		
	15.	73054817	COUNTERBALANCE VALVE	BOTH	1
	16.	73054902	COUNTERBALANCE VALVE	BOTH	
	17.	9X355900	SEAL KIT	BOTH (25', 31', 36' AND 41' ONLY)	1
	16.	73054242	COUNTERBALANCE VALVE	BOTH (25', 31', 36' AND 41' ONLY)	1
		73052014	SUCTION FILTER ELEMENT	ALL	6
		73052006	RETURN FILTER ELEMENT	ALL	6



Section 6.

O.S.H.A. Crane Inspection Requirements

O.S.H.A. 1926.550 requires employers to perform daily and monthly inspections and to maintain the results of inspections for each hoisting machine and piece of equipment. It also requires a thorough annual inspection of hoisting machinery. This inspection is to be made by a competent person, or by a government or private agency recognized by the U. S. Department of Labor. Records of the dates and results of inspections for each hoisting machine and piece of equipment must also be maintained by the employer. The following inspections are to be performed on Iowa Mold Tooling Co., Inc. truck-mounted hydraulic cranes in order to comply with O.S.H.A. Regulation 1926.550.

TO BE FILLED IN BY OWNER OF CRANE
CRANE SERIAL NO:
DATE LAST INSPECTED:
NEXT INSPECTION DUE:
INSPECTED BY:

TO BE FILLED IN BY A COMPETENT PERSON, OR BY A GOVERNMENT OR PRIVATE AGENCY RECOGNIZED BY THE U.S. DEPT OF LABOR
DATE INSPECTED:
IS THE UNIT OPEATIONAL? YES ☐ NO ☐
SIGNATURE

INSTRUCTIONS

All inspections listed below should be performed as the schedule indicates. It is not necessary to record daily inspections but they must be verified and recorded monthly. The inspections listed on this form do not eliminate or replace any other prescribed maintenance or inspections which may be referenced in other manuals pertaining to your equipment. A copy of this completed form should remain with the applicable unit at all times.

INSPECTIONS TO BE PERFORMED BY EMPLOYER

ITEM	DESCRIPTION	FREQUENCY			INSP. RESULT		REPAIRED?		DATE INSPECTED
		DAILY	WEEKLY	MONTHLY	ACCEPT	REJECT	YES(Y) NO(N)	DATE	
HYDRAULIC SYSTEM LEAKS	Visually inspect hoses, hyd tubes and fittings for hydraulic leaks.								
LOOSE PARTS	Check for the presence of loose parts, missing fasteners and safety guards.								
STRUCTURAL DAMAGE	Visually examine crane for broken welds, cracks, deficiencies, bends and dents								
ROTATION SYSTEM LEAKS	Visually check rotation system motor, brake, and connections for leaks								
WIRE ROPE	Check for conditions outlined in "Wire Rope Inspection"								
ELECTRICAL- REMOTE CONTROL OPTION	Operate remote control to check for proper operation								
ELECTRIC- LIGHTS AND OPTIONS	Operate lights and other electrical devices to check for proper operation.								
HYDRAULIC FLUID LEVEL	Visually check hydraulic fluid level of reservoir								
CONTROL VALVES- LEAKS / CRACKS	Visually examine control valves for leaks, cracks or other deficiencies								
CONTROL VALVES- OPERATION	Operate control valves to check for smooth operation of each function and possible excessive wear of valves								
ANTI-TWO BLOCKING DEVICE	Test the Anti-Two Blocking Device as described in "Anti-Two Blocking Device Inspection"								

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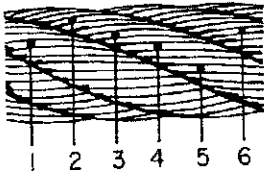
INSPECTIONS TO BE PERFORMED BY EMPLOYER (continued)

ITEM	DESCRIPTION	FREQUENCY			INSP. RESULT		REPAIRED?		DATE INSPECTED
		DAILY	WEEKLY	MONTHLY	ACCEPT	REJECT	YES(Y) NO(N)	DATE	
CRANE HOOK	Visually examine hook for enlarged throat opening twist and presence of safety latch. Also check for conditions outlined in "Hook Inspection"								
ELECTRICAL SYSTEM WEAR	Check for deterioration of parts, the presence of dirt or moisture near contacts, and worn or frayed wiring								
HYDRAULIC HOSE WEAR	Visually examine all hydraulic hoses and fittings for possible blistering abrasions, cuts, cracking or deterioration.								
HOLDING VALVES-LOAD TEST	Perform a load holding test with loaded boom. See "Holding Valve Inspection"								
POWER TAKE-OFF	Check transmission for proper lubrication, signs of leakage, alignment and PTO mounting bolt torque								
ROTATION SYSTEM	Check torque of both upper and lower rotation gear bearing mounting bolts								
ALL FASTENERS	Visually examine all fasteners (screws, nuts & retaining rings) for looseness, deformation and corrosion.								
STRUCTURAL DAMAGE	Visually examine crane for any broken welds, cracks structural deficiencies, bends or dents.								
CONTROLS	Check all controls for excessive wear, cleanliness and proper functioning								
ROTATION SYSTEM MOUNTING BOLTS	Check torque of both upper and lower rotation gear bearing mounting bolts								
HYDRAULIC FLUID	Check quality of hydraulic fluid and for the presence of water								
PUMP & MOTOR	Check for loose fasteners, unusual noise vibration, reduced operating speed and excessive heating.								
HYDRAULIC CYLINDERS	Visually examine all cylinders for leaks; scored, nicked or dented rods; dented case, deformed pin boss, and corrosion								
WINCH, SHEAVES & DRUM	Check for cracks and worn or damaged sheaves. Visually examine winch drum for irregularities								
DECALS	Visually examine the crane for the presence of all warning decals, instructional decals and capacity charts. Inspect all decals for legibility								

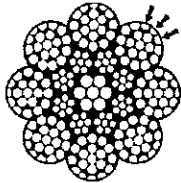
WIRE ROPE INSPECTION

Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

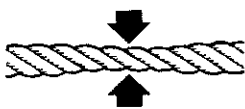
- A. Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.
- B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



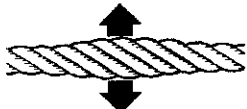
- C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



- D. When there is a decrease of diameter indicating a core failure.



- E. When kinking, crushing, birdcaging or other distortion occurs



- F. When there is noticeable heat damage (discoloration) of the rope by any means.



- G. When the diameter is reduced from nominal size by 1/32" or more.



- H. If a broken wire protrudes or loops out from the core of the rope.



HOOK INSPECTION

Hooks having any of the listed deficiencies shall be removed from service unless a qualified person approves their continued use and initiates corrective action. Hooks approved for continued use shall be subjected to periodic inspection.

A. DISTORTION

Bending / Twisting

A bend or twist exceeding 10° from the plane of the unbent hook.

Increased Throat Opening

HOOK WITHOUT LATCH: An increase in throat opening exceeding 15% (Or as recommended by the manufacturer)

HOOK WITH LATCH: An increase of the dimension between a fully-opened latch and the tip section of the hook exceeding 8% (Or as recommended by the manufacturer)

B. WEAR

If wear exceeds 10% of the original sectional dimension. (Or as recommended by the manufacturer)

C. CRACKS, NICKS, GOUGES

Repair of cracks, nicks, and gouges shall be carried out by a designated person by grinding longitudinally, following the contour of the hook, provided that no dimension is reduced more than 10% of its original value. (Or as recommended by the manufacturer) (A qualified person may authorize continued use if the reduced area is not critical)

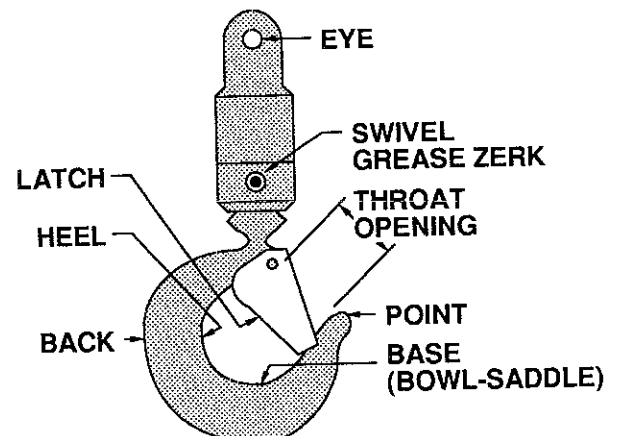
D. LATCH

Engagement, Damage & Malfunction

If a latch becomes inoperative because of wear or deformation, and is required for the service involved, it shall be replaced or repaired before the hook is put back into service. If the latch fails to fully close the throat opening, the hook shall be removed from service or "moused" until repairs are made.

E. HOOK ATTACHMENTS & SECURING MEANS

If any indication of distortion, wear, cracks, nicks or gouges are present, unless a qualified person authorizes their use. (Or as recommended by the manufacturer)



HOLDING VALVE INSPECTION

The cylinders are equipped with holding valves that prevent sudden movement of the cylinder rods in the event of a hydraulic hose or other hydraulic component failure. The valve is checked in the following manner:

1. With a full rated load, extend the cylinder in question and kill the engine.
2. Operate the control valve to retract the cylinder. If the cylinder "creeps", replace the holding valve. If the cylinder does not "creep", the valve is serviceable.

ANTI-TWO BLOCKING DEVICE INSPECTION

(See Vol. 1, Operation, Maintenance and Repair for a complete description)

The anti two block system should be checked daily as follows:

1. Examine flexible rod and weight to insure free unrestricted mechanical operation
2. Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.
3. Start vehicle, engage PTO and slowly winch loadline up until anti-two block weight comes in contact with the hook end of the loadline cable. At the moment the weight is fully supported, a marked difference in winch operation should be noted. At this point, the winch up function should become very sluggish or non-functioning and have very little pull capability. Slowly increase truck engine speed while simultaneously actuating the winch up function. The winch characteristics should remain sluggish with little or no tensioning of the cable. If operation other than as described occurs, stop immediately and investigate. Failure to do so will risk damage to the cable or the crane

If all is well at this point, actuate the boom extend function slowly, and gradually increase to full actuation. Once again the function should be sluggish or non-existent with no tightening of the winch cable. If operation other than described occurs, stop immediately and reverse the function.

The final check involves actuating both the winch up and extend functions together and checking for proper operation of the anti two blocking circuit. Once again, start slowly and stop if it appears the cable is being tensioned.

If the anti two block function appears to be functioning normally, winch the cable down until the sensing weight swings free.

TORQUE DATA CHART

COARSE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (FT-LB)	PLATED (FT-LB)	PLAIN (FT-LB)	PLATED (FT-LB)
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, colloidal 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

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	9800 Series Crane	MANUAL PART NO.	99900370-03/94
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

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 shipment to the end user.
2. One (1) year; original IMT parts from the date of shipment 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, and proven to have such defect, 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 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, 1985

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IOWA MOLD TOOLING CO., INC.

BOX 189, GARNER, IA 50438-0189

TEL: 515-923-3711

PRODUCT SUPPORT FAX: 515-923-2424