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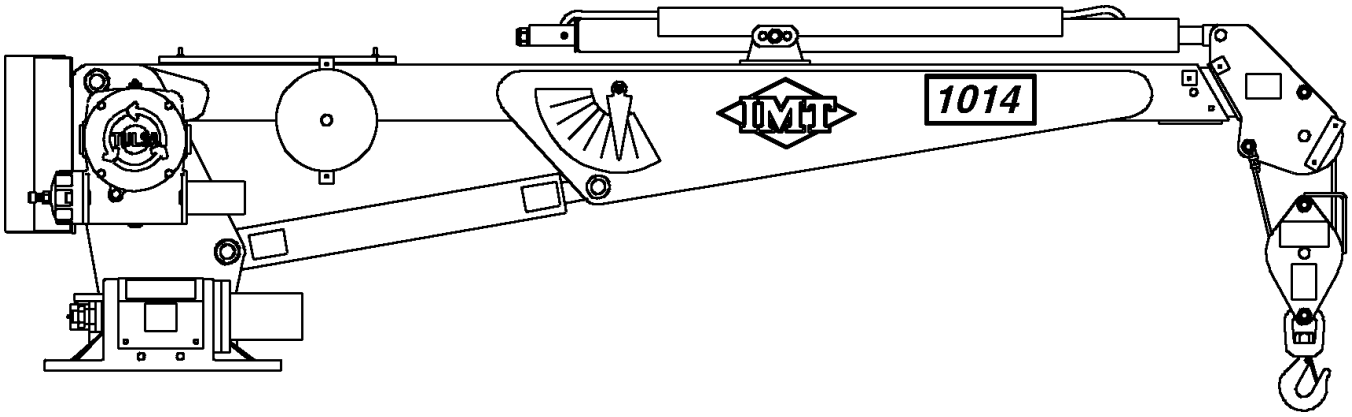
Model 1014 Crane

Volume 2 - PARTS AND SPECIFICATIONS

Section 1 CRANE SPECIFICATIONS
Section 2 CRANE REFERENCE
Section 3 REPLACEMENT PARTS
Section 4 GENERAL REFERENCE



IOWA MOLD TOOLING CO., INC.
BOX 189, GARNER, IA 50438-0189
TEL: 515-923-3711
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MANUAL PART NUMBER 99900482

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 this volume be kept in a safe place in the office.

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

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

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

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

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

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

NOTE

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

CAUTION

A CAUTION is used when there is the 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.

SECTION 1. MODEL 1014 CRANE SPECIFICATIONS

NOTES

MODEL 1014 CRANE SPECIFICATIONS

GENERAL SPECIFICATIONS

	1014-H10 CRANE	1014-HM14 CRANE
CRANE RATING	10,500 ft-lbs (1.46 ton-meters)	10,500 ft-lbs (1.46 ton-meters)
REACH - from centerline of rotation	10'-0" (3.05m)	14'-0" (4.27m)
HYDRAULIC EXTENSION	36" (91.4cm)	36" (91.4cm)
MANUAL EXTENSION		48" (121.9cm)
LIFTING HEIGHT - from base of crane	11'-4" (3.45m)	15'-2" (4.62m)
WEIGHT OF CRANE	610 lbs (277 kg)	650 lbs (295 kg)
STORAGE HEIGHT - crane only	26" (66.0cm)	26" (66.0cm)
MOUNTING SPACE REQUIRED (crane base)	14-1/2" X 17"(36.8cm x 43.2cm)	14-1/2" X 17"(36.8cm x 43.2cm)
TIE-DOWN BOLT PATTERN	11-1/2" X 14-3/4" (29.2cm X 37.5cm) on center	11-1/2" X 14-3/4" (29.2cm X 37.5cm) on center
HORIZONTAL CENTER OF GRAVITY from centerline of rotation	15" (38.1cm)	15" (38.1cm)
VERTICAL CENTER OF GRAVITY from bottom of crane base	13" (33.0cm)	13" (33.0cm)
***OPTIMUM PUMP CAPACITY** (electric 2-stage)	3 U.S. Gallons/minute (11.4 liters/min)	3 U.S. Gallons/minute (11.4 liters/min)
OIL RESERVOIR CAPACITY (electric 2-stage)	3 U.S. Gallons (11.4 liters)	3 U.S. Gallons (11.4 liters)
DESIGN FACTORS - pins and hydraulics	4/1	4/1

* The 2-stage pump delivers 1-1/2 U.S. GPM (5.7 liters/min) per stage. Normally, when operating under load, the pump will be operated as a single-stage pump. The pump will be operated as a 2-stage pump to save time during set up.

PERFORMANCE CHARACTERISTICS

ROTATION:	400° (6.98 Rad.)	*90 seconds
LOWER BOOM ELEVATION:	-0° to +72° (0 Rad. to +1.26 Rad.)	*16 seconds
EXTENSION BOOM:	36" (91.4cm)	*20 seconds
WINCH		*10 feet/minute (3.05 m/min)

CYLINDERS

	BORE	STROKE
LOWER BOOM CYLINDER	2-1/2" (6.4cm)	18" (45.7cm)
EXTENSION BOOM CYLINDER	2" (5.1cm)	36" (91.4cm)

POWER SOURCE

Power is supplied to the electric motor by a solenoid connected to the 12-VDC truck battery. The chassis must be equipped with a 4000 watt Delco Freedom battery (or equivalent) connected in parallel to the chassis' standard heavy-duty battery. The chassis must also be equipped with a heavy-duty alternator (63 amp for GM vehicles and 60 amp for Ford vehicles).

ROTATION SYSTEM

Turntable bearing with external worm gear powered with a high-torque hydraulic motor through a self-locking worm. Total gear reduction is 63 to 1.

CYLINDER HOLDING VALVES

The base ends (extend sides) of the lower boom and extension cylinders are equipped with integral-mounted counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure.

The counter balance valve serves several functions. First, it is a holding valve. Secondly, it is designed to control the speed at which the lowering function operates, and allows that motion to be metered under load. Finally, it prevents the loss of an excess amount of oil in the event of a hose failure. Only the oil in the hose, at the time of the failure, will be lost.

CAPACITY ALERT SYSTEM

A pressure switch mounted to the extend side of the lower boom cylinder and connected electrically to the lift side of the winch and the extend side of the extension cylinder provides the capacity alert system. If the operator attempts to lift a load exceeding the rated capacity of the crane, the winch lift and extension out functions will not operate. To relieve the situation, the winch may be lowered or the extension boom retracted.

WINCH

The winch is powered by a hydraulic motor through a 38:1 ratio worm-gear drive which also functions as a brake. Line speed is 10 ft/min (3.05m/min) at optimum oil flow for 1-part line and 5 ft/min (1.52m/min) for 2-part line. The winch is equipped with 65 ft (19.81m) of 7/32 (.56cm) 7 X 19 class aircraft cable having a lifting capacity of 1600 lbs (726 kg) at 2800 PSI (193 bar) for 1-part line and 3200 lbs (1452 kg) for 2-part line. A nylon sheave riding on a lubricated needle bearing is located at the tip of the extension boom. The ratio of winch drum and sheave pitch diameter to wire rope diameter is 20:1. An anti-two block device is included to prevent the lower block or hook assembly from coming in contact with the boom sheave assembly.

HYDRAULIC SYSTEM (PTO DRIVEN)

Open-centered, full-pressure system that requires 3 GPM (11.4 liters/min) optimum oil flow at 2800 PSI (193 bar). The control valvebank is a 4-spool, stack-type, 12 VDC valvebank. The hydraulic system includes a 100-mesh suction-line strainer, a return line filter and the control valvebank. An optional hydraulic reservoir is available.

ELECTRO-HYDRAULIC SYSTEM (2-SPEED)

Open-centered, full-pressure system that features a 2-stage hydraulic pump, each stage delivering 1-1/2 GPM (5.7 liters/min) at 2800 PSI (193 bar). The control valvebank is a 4-spool, stack-type, 12 VDC valvebank. The system includes a 3-gallon (11.4 liter) hydraulic oil reservoir., a 60-mesh suction-line strainer, a hydraulic pump driven by a permanent magnet electric motor and all necessary hoses and fittings.

CONTROLS

Remote control with a 25-foot (7.62m) control cable.

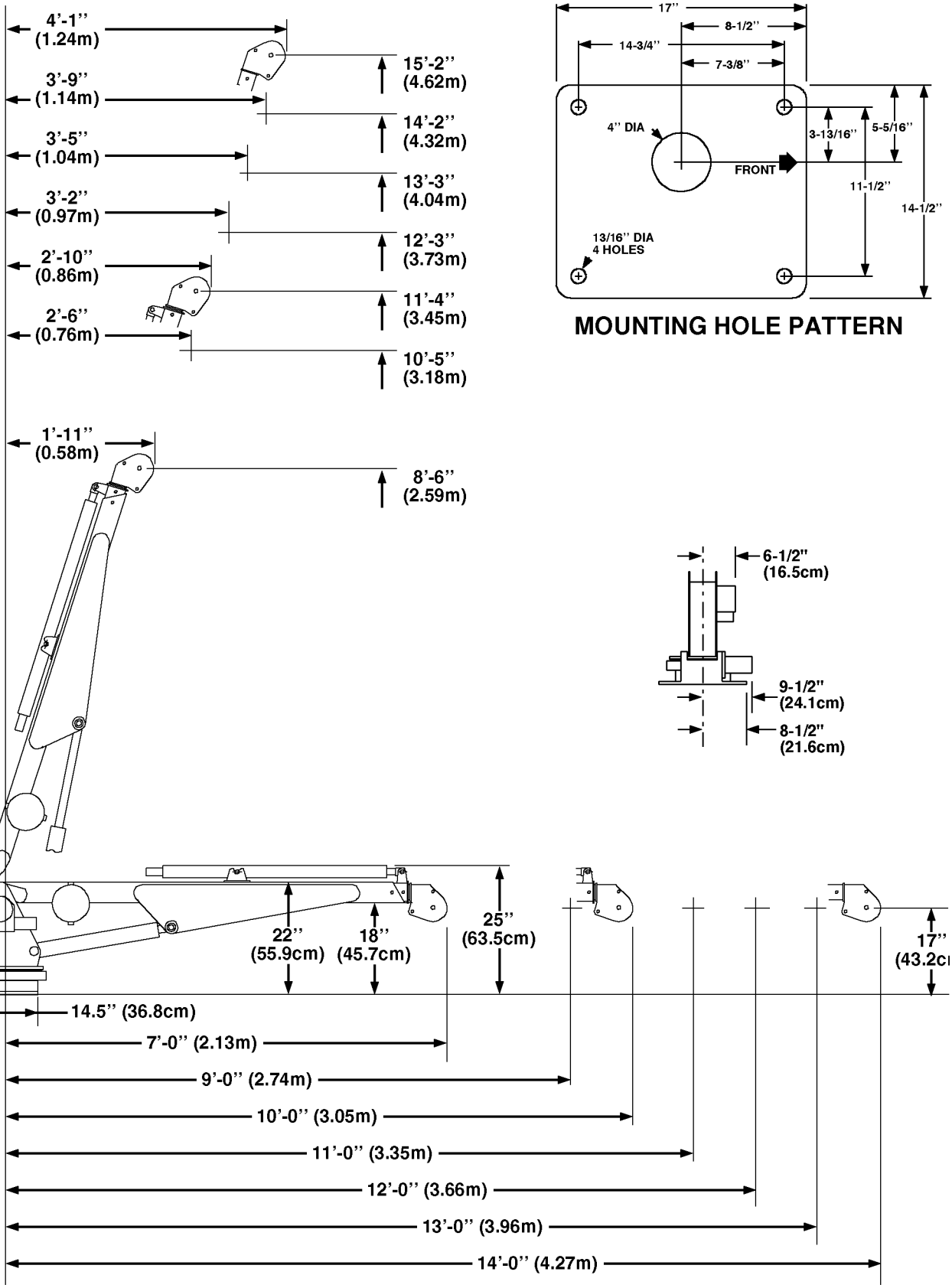
MINIMUM CHASSIS SPECIFICATIONS

BODY STYLE	Conventional Cab	Conventional Cab
WHEEL BASE	137" - 161"	348cm - 409cm
CAB TO AXLE	60" - 84"	152cm - 213cm
FRAME SECTION MODULUS	5.91"3	97cc
***RBM**	212,760 in-lbs	2451 kg-meter
FRONT AXLE RATING	2700 lbs - 4000 lbs	1315 kg - 1814 kg
REAR AXLE RATING	5480 lbs - 7500 lbs	2486 kg - 3402 kg

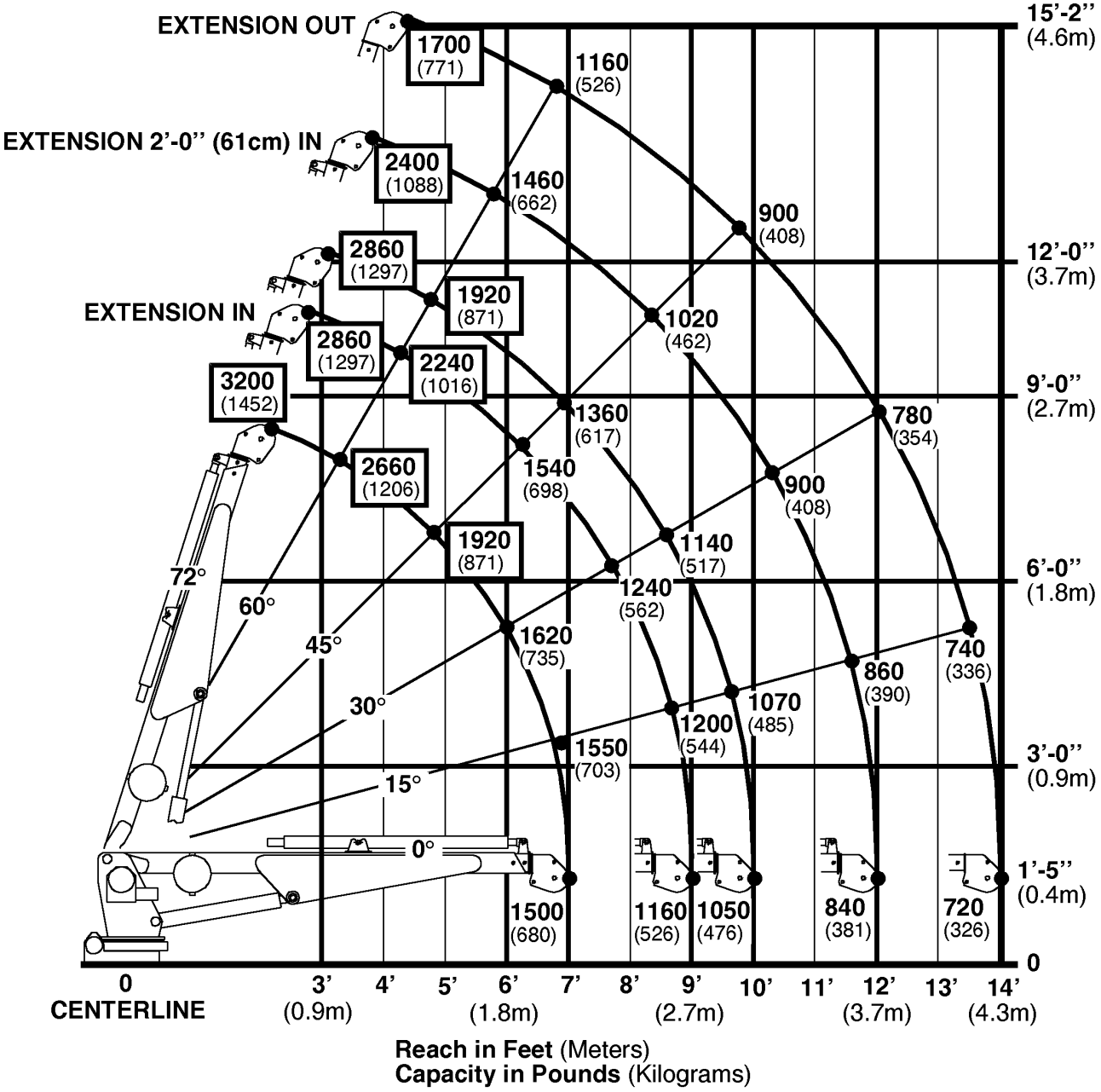
* Based on 36,000 PSI yield frame material (A-36).

In addition to these specifications, a heavy-duty battery and alternator are required. It is recommended that the vehicle have power steering and dual rear wheels..

GEOMETRIC CONFIGURATION



1014 CRANE CAPACITY CHART



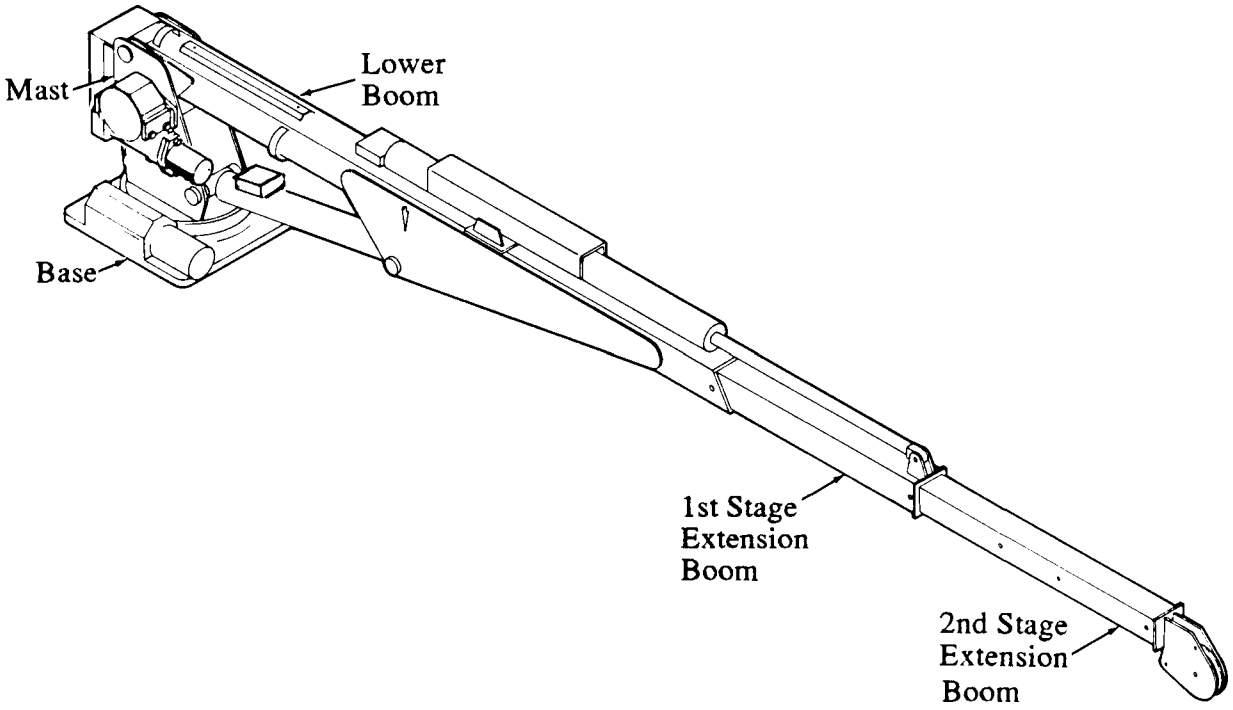
Maximum 1-part line capacity is 1,600 lbs (725 kgs)
For greater loads use 2-part line.

Weights of load handling devices are part of the load lifted and must be deducted from the capacity.

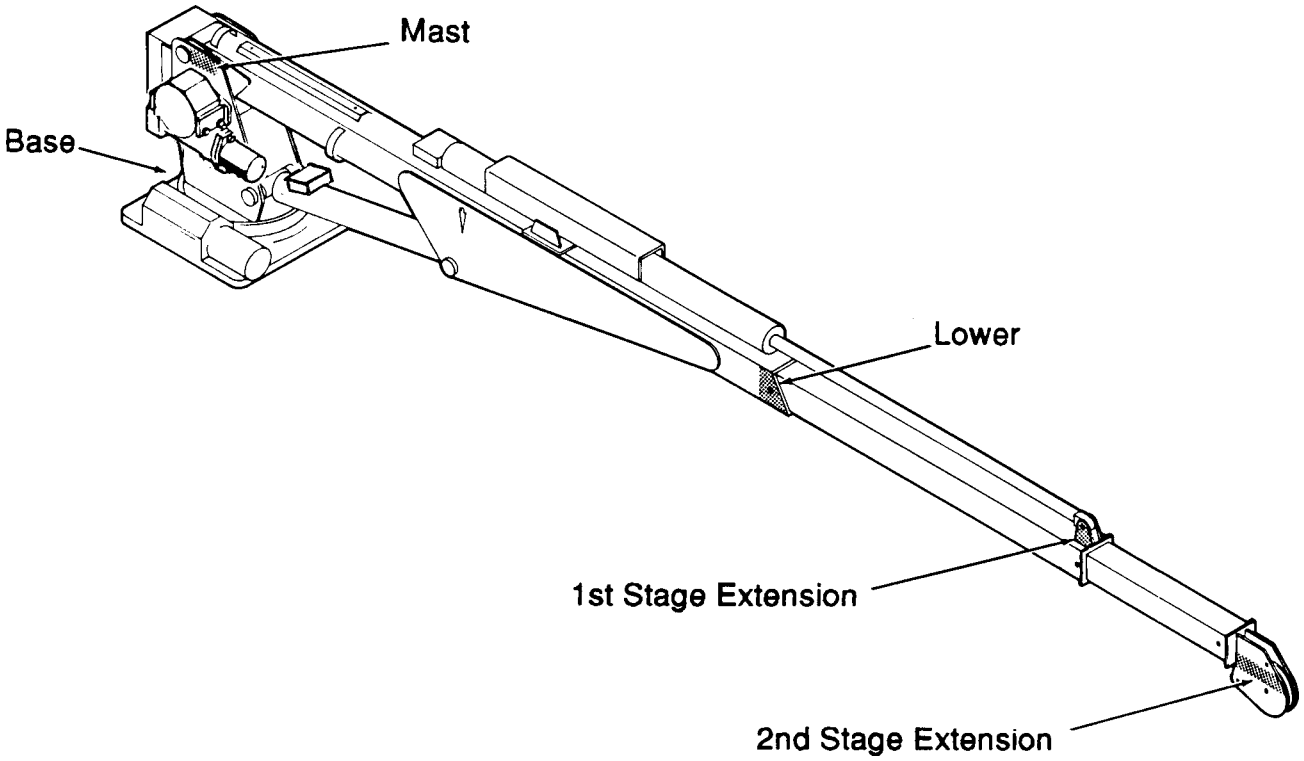
IOWA MOLD TOOLING CO., INC. 500 HWY 18 WEST, GARNER, IA 50438

SECTION 2. MODEL 1014 CRANE REFERENCE

NOTES

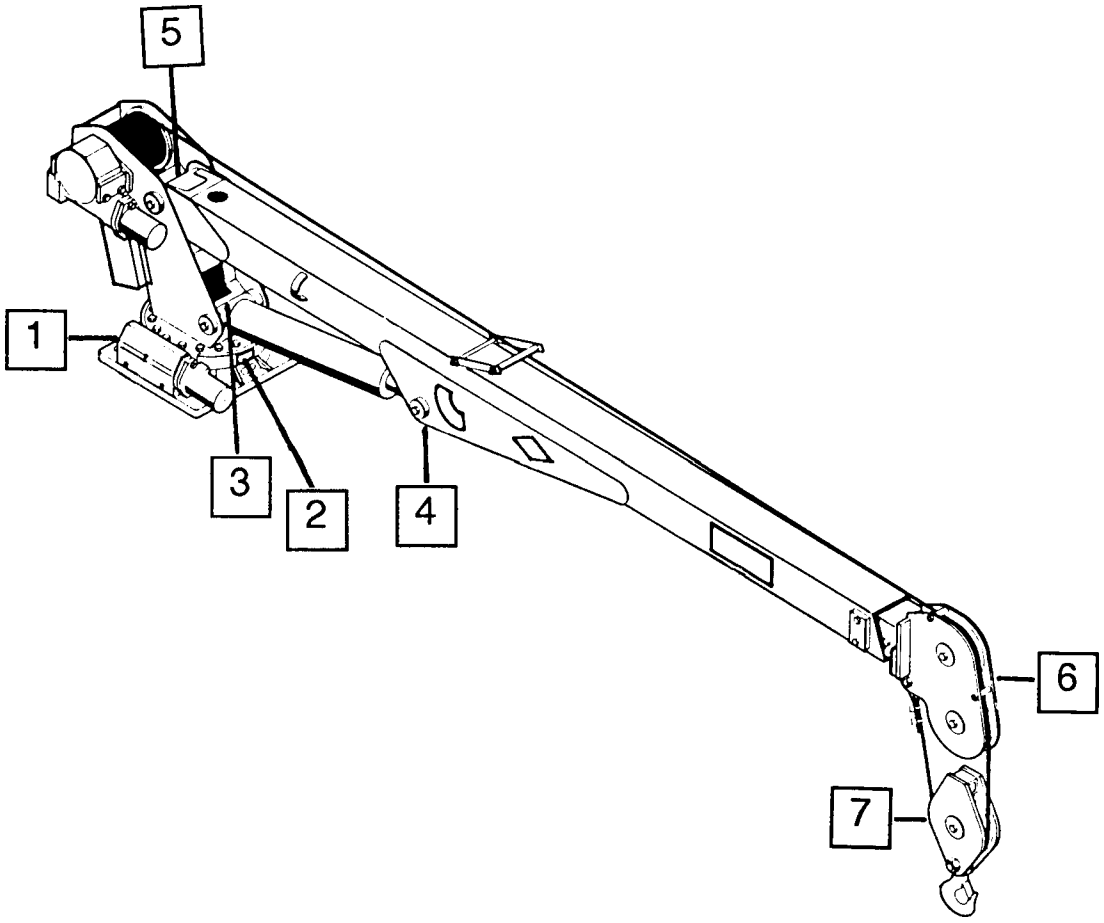


MAJOR CRANE ASSEMBLIES



WELDMENT PART NUMBER LOCATIONS

GREASE ZERK LOCATIONS & LUBRICANT REQUIREMENTS



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	WORM GEAR	SHELL ALVANIA 2EP OR SHELL RETINAX “A”	WEEKLY
2.	TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING		
3.	LOWER CYLINDER BASE		
4.	LOWER CYLINDER ROD		
5.	MAST/LOWER BOOM HINGE PIN		
6.	SHEAVE PIN		
7.	SNATCH BLOCK PIN		

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.

RECOMMENDED SPARE PARTS LIST

1 YEAR SUPPLY
MODEL 1014 CRANE
FOR MANUAL: 99900482

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 the minimal down-time waiting for parts. There may be parts failures not covered by this list. Parts not listed are considered as not being Critical or Normal Wear items during the first year of operations and you need to contact the distributor or manufacturer for availability.

ASSEMBLY DESIGNATION	ITEM NO.	PART NO.	DESCRIPTION	QTY	CODE	SHELF LIFE (MO)	ORDER QTY
41704562.01.19961004	**BASE ASM**						
	5	60030116	THRUST BEARING	2	W		
	8	70055147	BEARING	1	W		
	9	70055148	BEARING	1	W		
	10	70056307	WORM GEAR	1	W		
	REF	89086159	MOLUB	2	P		
41710136.01.19960830	**WINCH/CABLE/HOOK KIT**						
	10	70055142	BEARING	1	W		
	12	77041291	SWITCH	1	W		
	15	70732193	CORD REEL	1	W		
31710164.01.19960830	**CABLE & HOOK KIT**						
	7	70055163	ROLLER BEARING	1	W		
	8	70580059	WIRE ROPE 7/32"X65'	1	W		
	10	71732760	SWIVEL HOOK 1-1/2 TON	1	W		
	16	70055162	INNER RACE	1	W		
41704943.01.19960830	**LOWER BOOM ASM**						
	15	60030097	WEAR PAD	1	W		
3B104820.01.19970915	**LOWER BOOM CYLINDER**						
	3	6H025015	HEAD	1	W		
	4	6I025087	PISTON	1	W		
	7	73054304	VALVE 10GPM	1	C		
	8	9B101214	SEAL KIT	1	W		
41704936.01.19960830	**EXTENSION BOOM ASM-HYD/MANUAL 14'**						
	5	60030061	SHEAVE W/BEARING	1	W		
41704937.01.19960830	**EXTENSION BOOM ASM-HYD 10'**						
	5	60030061	SHEAVE W/BEARING	1	W		
3B108830.01.19960830	**EXTENSION BOOM CYLINDER**						
	3	6I020075	PISTON	1	W		
	4	6H020012	HEAD	1	W		
	6	9B081012	SEAL KIT	1	W		
	16	73054304	C'BALANCE VALVE 10GPM	1	C		
73051715.01.19970115	**HYDRAULIC POWER UNIT**						
	4	73054757	SOLENOID VALVE	1	W		
	7	77041237	SOLENOID 12V 150A	1	W		
	19	76393374	O-RING	1	W		
	24	76393376	O-RING	1	W		
51707925.01.19960830	**PROPORTIONAL VALVEBANK**						
	4	73054628	RELIEF VALVE	1	C		
	5	73054624	SOLENOID VALVE	1	C		
	REF	77041470	COIL ONLY	1	C		
73073772.01.19960830	**VALVEBANK**						
	3	77040028	COIL 12VDC	2	W		
	REF	94014962	REPAIR KIT (INCLS: 4-10)	2	W		
93704633.01.19970418	**INSTALLATION KIT-POWER UNIT**						
	4	77041237	SOLENOID 12V 150A	1	W		
93705207.01.19960830	**INSTALLATION KIT-PTO**						
	19	77041237	SOLENOID 12V 150A	1	W		
	25	77041251	RELAY	2	W		
	REF	70048149	SUCTION FILTER ELEMENT	3	P		
	REF	73052006	RETURN FILTER ELEMENT	3	P		
90713516.01.19960830	**ELECTRIC REMOTE CONTROL KIT**						
	7	7Q072015	O-RING	1	W		
	21	77041222	PRESSURE SWITCH	1	W		
90713515.01.19970418	**PROPORTIONAL REMOTE CONTROL KIT**						
	7	7Q072015	O-RING	1	W		
	21	77041222	PRESSURE SWITCH	1	W		
90713514.01.19970418	**REMOTE CONTROL KIT-PTO**						
	7	7Q072015	O-RING	1	W		
	21	77041222	PRESSURE SWITCH	1	W		

(CONTINUED)

RECOMMENDED SPARE PARTS LIST (CON'T)

ASSEMBLY DESIGNATION	ITEM NO.	PART NO.	DESCRIPTION	QTY	CODE	SHELF LIFE MO.	ORDER QTY
51713383.01.19970428	**REMOTE HANDLE ASM-DUPLEX PUMP**						
	17	77040372	TOGGLE SWITCH SPDT	4	W		
	18	77040373	TOGGLE SWITCH SPST	1	W		
	19	77040374	TOGGLE SWITCH SPDT	1	W		
	23	77041407	DIODE BOARD	1	W		
51713498.01.19970428	**PROPORTIONAL REMOTE HANDLE ASM**						
	11	51707507	POTENTIOMETER	1	W		
	16	77040371	TOGGLE SWITCH SPST	2	W		
	17	77040372	TOGGLE SWITCH SPDT	4	W		
	18	77040373	TOGGLE SWITCH SPST	1	W		
	19	77040374	TOGGLE SWITCH SPDT	1	W		
51713384.01.19970428	**REMOTE HANDLE ASM-PTO**						
	16	77040371	TOGGLE SWITCH SPST	4	W		
	17	77040372	TOGGLE SWITCH SPDT	1	W		
	18	77040373	TOGGLE SWITCH SPST	1	W		
	19	77040374	TOGGLE SWITCH SPDT	1	W		

INSTALLATION

GENERAL

This section is intended to serve as a guide in the installation of the IMT 1014 crane. Since each installation is considered unique, certain components, such as the power unit's battery cable must be cut to the proper length.

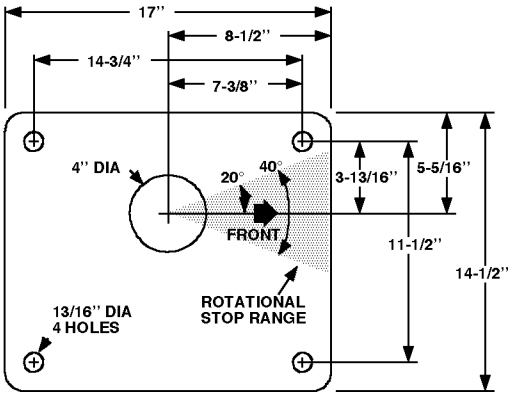
CHASSIS INFORMATION

The crane is designed for use with an IMT body installed on a vehicle meeting the minimum chassis requirements as specified in Section 1.

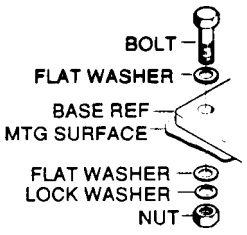
If this crane is being installed on any body other than an IMT mechanic body, check with IMT to determine the suitability of that body.

WARNING

THE USE OF THIS CRANE ON A BODY NOT CAPABLE OF HANDLING THE LOADS IMPOSED ON IT BY THE CRANE, MAY RESULT IN SERIOUS INJURY OR DEATH.



MOUNTING HOLE LAYOUT



CRANE INSTALLATION

CRANE INSTALLATION

The crane requires a mounting space of at least 14-1/2" wide by 17" long. If necessary, the truck body can be reinforced to give sufficient strength to support the crane in its operating condition. Locate and drill the four 13/16" holes (see drawing below). Use a pilot drill first and then the 13/16" drill. Cut the 4" diameter hole with a saw after starting with a drill. Deburr all holes. Lift the crane into position on the body. Use a lifting device capable of supporting the crane - 650 lbs (295 kg).

Install the bolts, lockwashers, flat washers and nuts to secure the crane to the chassis (see drawing). Torque the bolts to 200 ft. lbs. (27.66 kg-m).

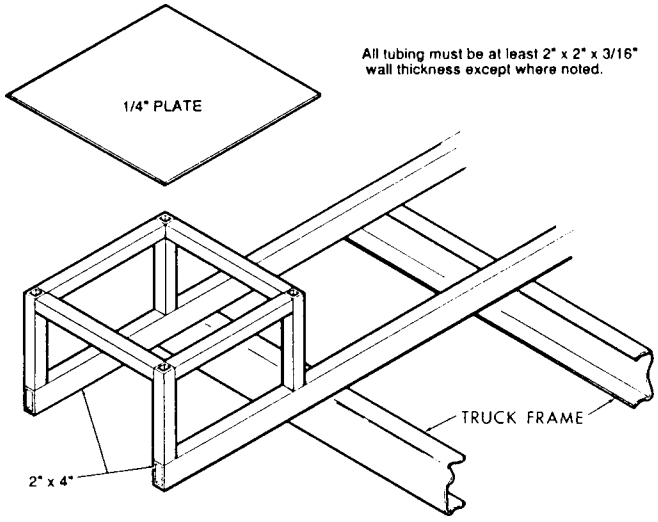
NOTE

IN ADDITION TO THESE SPECIFICATIONS, A HEAVY-DUTY BATTERY AND ALTERNATOR ARE REQUIRED. IT IS RECOMMENDED THAT THE VEHICLE HAVE POWER STEERING AND DUAL REAR WHEELS.

IMT RECOMMENDS ADHERENCE TO THE UPPER LIMIT OF THESE SPECIFICATIONS FOR BEST SYSTEM PERFORMANCE.

BODY REINFORCEMENT

If, after talking with the factory, it has been determined that the body will not support the crane with the full, rated load, the body can be reinforced as shown below. Use 1/4" fillet welds and an AWS qualified welder.



REINFORCEMENT

RELAY BOARD OPERATION

INTRODUCTION

To understand how the relay board operates, it is necessary to understand how the individual relays function.

The Bosch relay (part number 77041251) is a normally open relay between terminals 30 and 87 and normally closed between terminals 30 and 87a. Terminals 85 and 86 energize the relay through the coil. See Figure 1 and 2.

Figure 3 shows the relay board with eight relays identified with the letters “A” through “G” and by their basic function. Example: Relay “A” is the “Power ON/OFF” relay, “C” is the “Compressor Speed Control”, etc. The small numbers shown on the individual terminals of the relay indicate where that terminal is connected through the circuit board, to the terminal bar. Example: Relay “A” top terminal (#9) is connected to terminal 9 of the terminal bar. The terminal bar is provided with 16 individual terminals of which the last two (15 and 16) are not used. Wires connected to the terminal bar have been identified according to their function in the circuit. The number of terminals used vary with each application. Solid lines between relay terminals indicate existing wiring connections, through the circuit board.

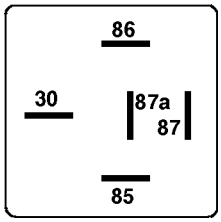


FIGURE 1.
BOTTOM VIEW OF RELAY

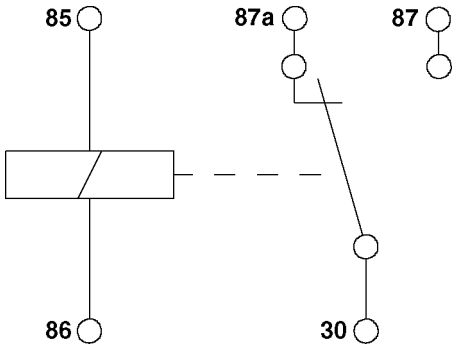


FIGURE 2.
INTERNAL WIRING

The relay board is primarily used on vehicles with remote controlled cranes and remote control cranes and compressors. The circuitry prevents remote starting of the truck engine unless the brakes are applied and the PTO is engaged. It also isolates the crane speed control from the compressor speed control.

OPERATION

IGNITION “ON”

When the ignition switch of the vehicle is turned “ON”, terminal 9 of the terminal bar is “HOT”. The coil of relay “A” is energized and voltage from terminal 1 of the terminal bar becomes present at terminals “A” of relays “A”, “B”, “E” and “H”. See Figure 3.

REMOTE STARTING THE VEHICLE

The vehicle can be remotely started from the remote control handle by toggling the “Crane-OFF-Compressor” switch to the “Crane” position.

To start the vehicle, the engine start switch at the handle must be depressed. When this is accomplished, terminal 11 of the terminal block becomes “HOT”. See Figure 5.

The truck starter is energized when terminals 11 and 12 of the terminal bar are connected through the relay board. When terminal 11 is “HOT”, the coil in relay “F” is energized connecting relay terminal 12 and “B” on relays “F” and “G”. If terminal 14 of relay “H” and terminal 13 of relay “G” are grounded (brakes and PTO engaged) terminals “B” of relays “F” and “G” are “HOT”. Since terminal “B” of relay “F” is “HOT”, the truck starter solenoid is activated. Energized circuits are shown as bold in Figure 5.

REMOTE ENGINE STOP

When the engine stop button is depressed on the remote control handle, voltage is applied to terminal 6 of the terminal block and of relay “D”. The coil in relay “D” is energized and the ground of the fuel solenoid/distributor coil is interrupted because current can no longer flow from terminal 7 to 8. Relay “D” is normally closed between terminals 7 and 8. See Figure 3.

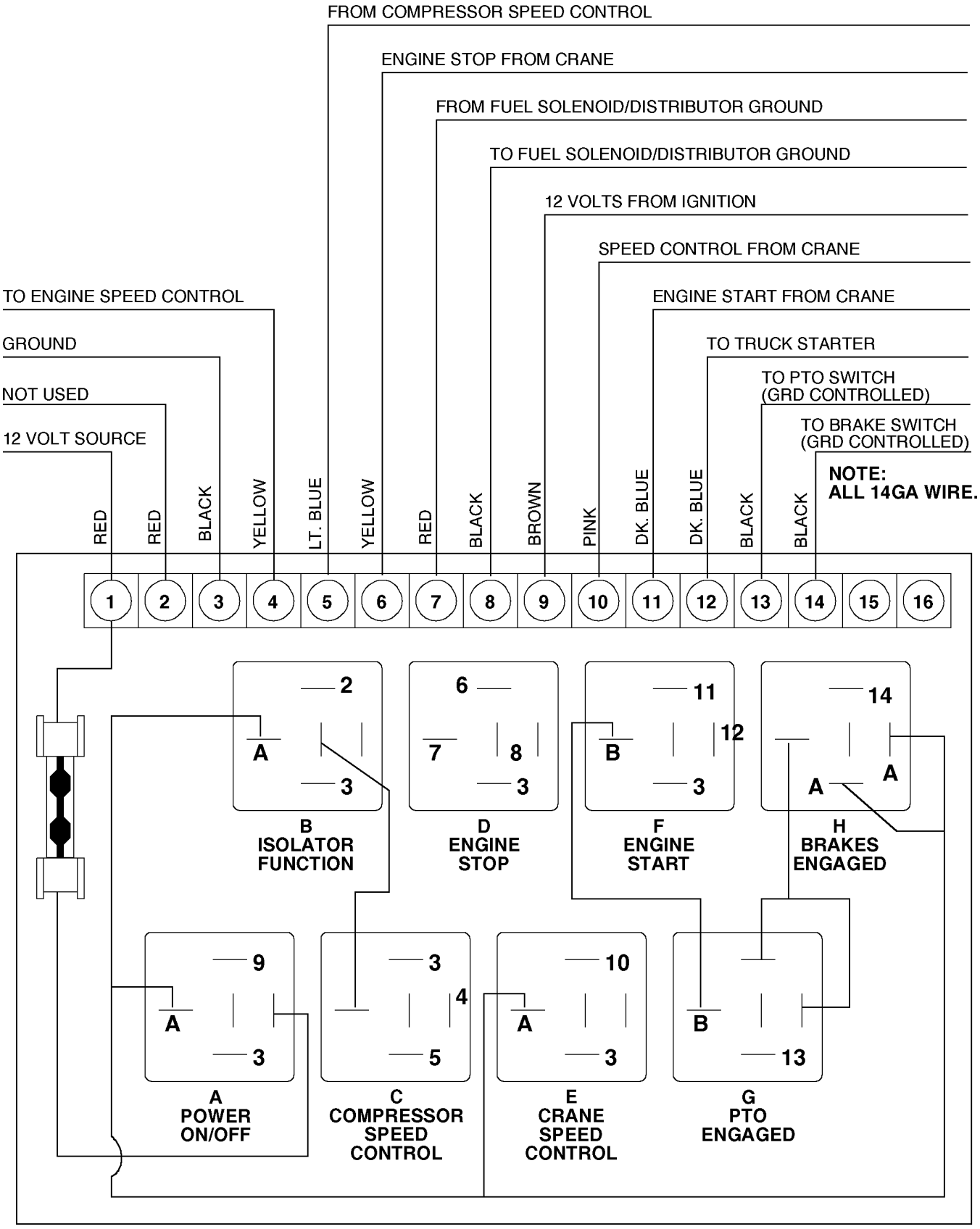


FIGURE 3. RELAY BOARD - COMPONENTS & WIRING

REMOTE ENGINE SPEED (FROM CRANE)

Engine speed can be controlled from the remote control handle. When the engine speed switch is activated, voltage is applied at terminal 10 of relay "E". The coil of relay "E" is energized and current is allowed to flow to the signal input of the speed control currently installed. The speed of the engine will remain higher as long as the engine speed switch in the remote control handle is allowed to remain in the same position. If this switch is returned to its original position, the engine speed control coil will be de-energized through relay "E".

Compressor operation will begin when the "Compressor-OFF-Crane" switch on the handset is toggled to the "Compressor" position. At that time, the power from the handset will provide power to the pressure switch on the compressor. When the pressure switch signals a need for more air pressure, the switch will trip and provide a signal to terminal 5 of the relay board.

Relay "C" energizes the coil in the relay, connecting terminal 4 to terminal "C" of the relay which is "HOT" from relay "B". Reference Figure 6 showing circuits energized (in bold) when engine speed is increased by the compressor. This will provide a "HOT" signal at terminal 4 which then provides a 12-volt signal to input of the speed control currently installed.

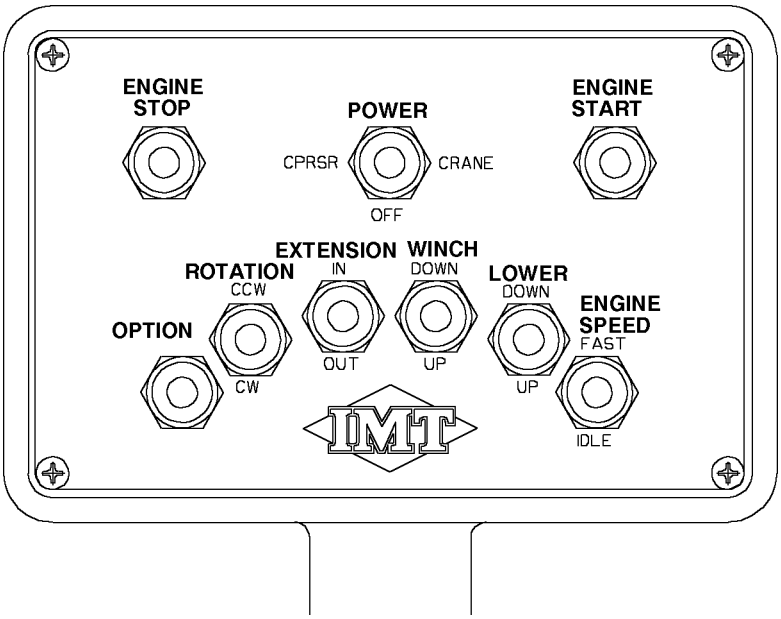


FIGURE 4. REMOTE CONTROL HANDLE

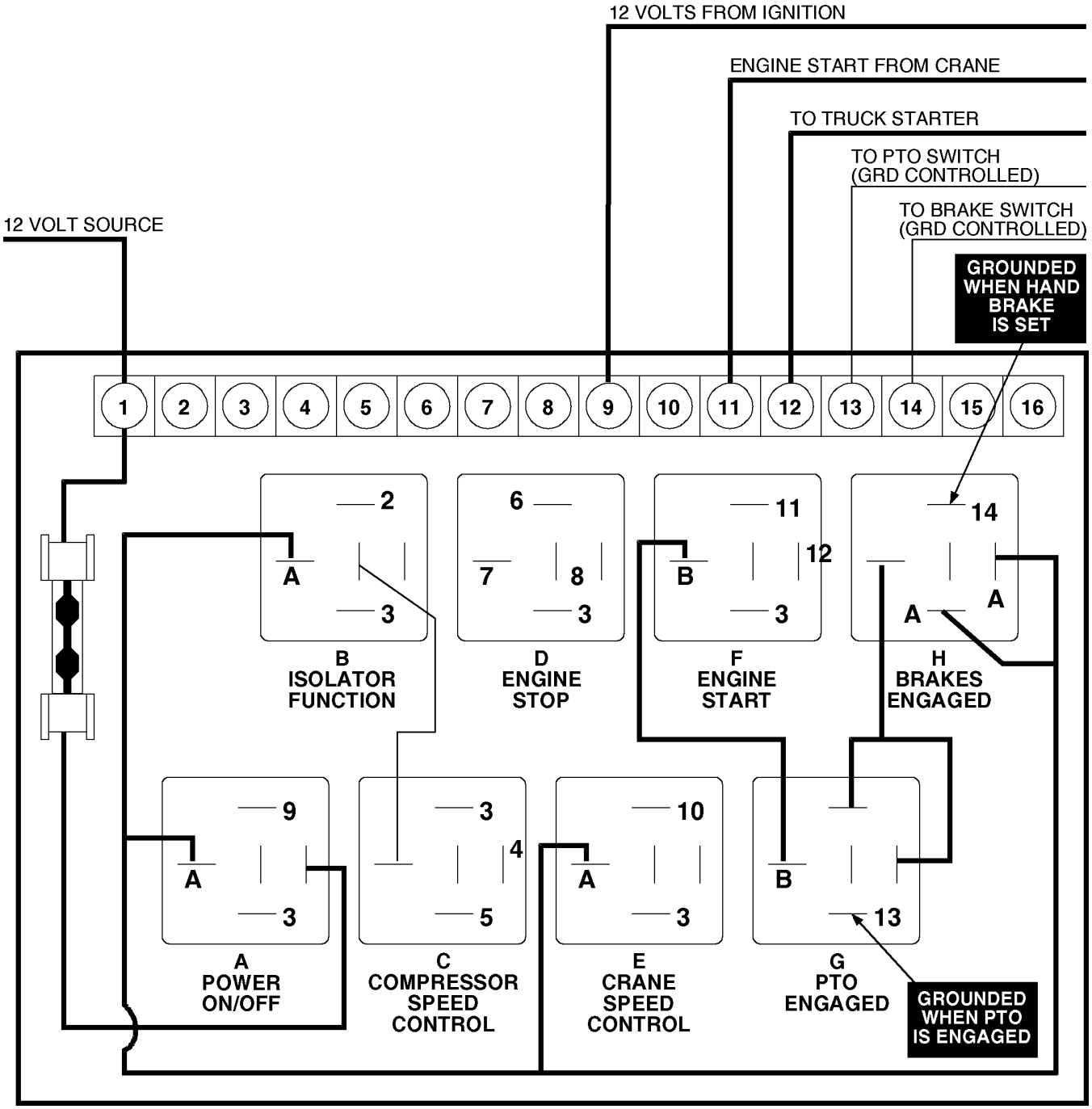


FIGURE 5. REMOTE STARTING OF VEHICLE - IGNITION "ON"

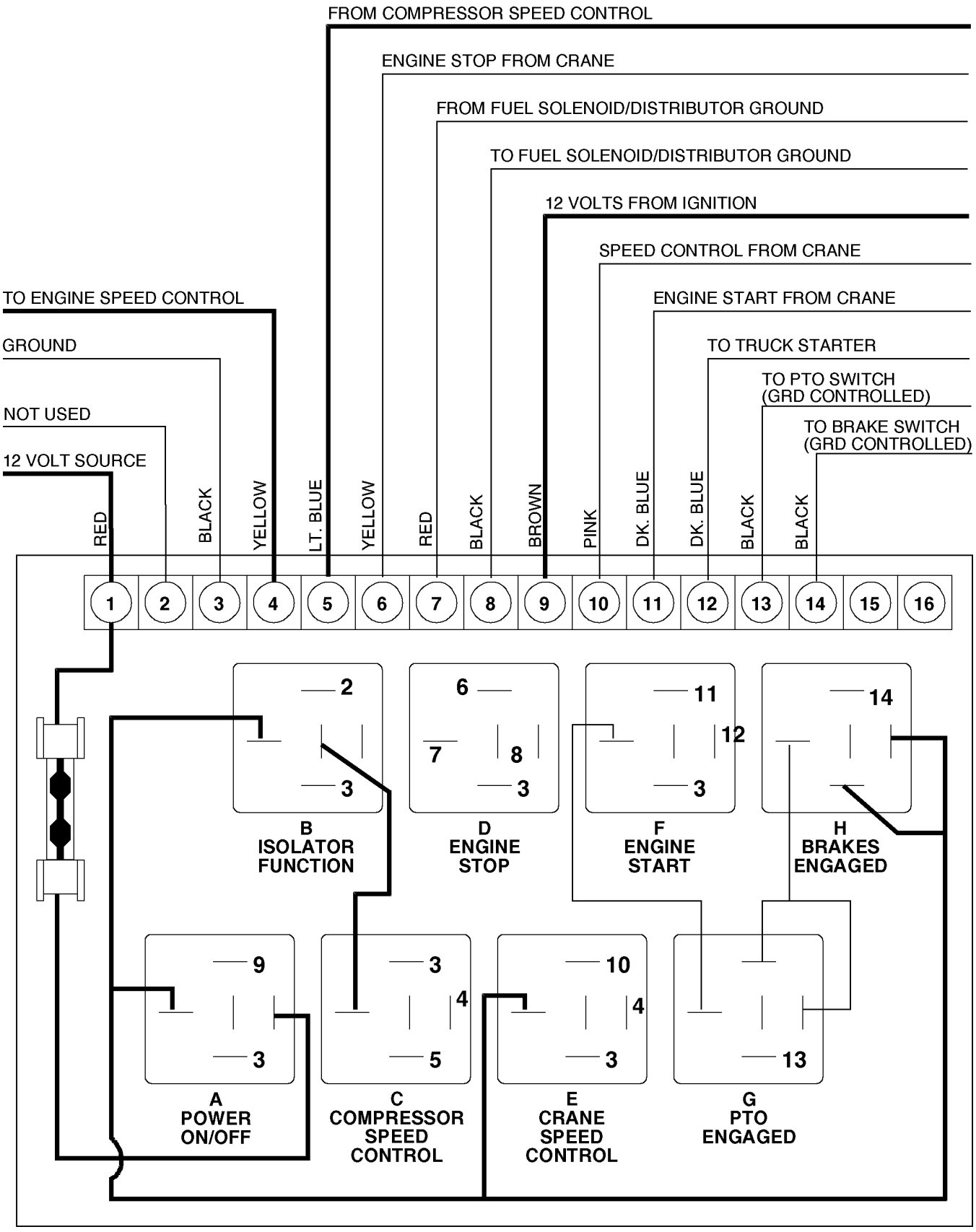


FIGURE 6. SPEED CONTROL - COMPRESSOR ONLY

INSTALLATION

1. Locate an area in the engine compartment that will both provide some protection against damage and accessibility for wiring.

2. Provide adequate space between the mounting surface and the back of the circuit board in order to prevent electrical contact. Failure to do so will cause erratic operation and/or circuit board failure.

3. Connect control wiring as indicated in Wiring Chart.

4. Jumper wires connections:

4-1. Jumper wires must connect J to K, and L to M for 12 volts excited systems. Remove the connecting wires between Ito J and M to N.

4-2. Jumper wires must connect I to J, and M to N for ground excited systems*. Remove the connecting wires between J to K and L to M.

WARNING

Failure to remove the extra connecting wire will cause the relay board to fail. Check jumper wire connections of relay board being replaced. (Most relay boards are wired as stated in item 4-1.)

*** NOTES**

Circuits that could be ground excited are 6 - 10 & 11.
Quick Check: (Before connecting wires to circuit board)
Activate the engine stop switch from the crane. If terminal 6 is hot, wire per 4-1. If not, wire per 4-2.

WIRING CHART

TERM	WIRING CONNECTION
1	12-VOLT
2	NC
3	GROUND
4	TO SPEED CONTROL
5	SPEED CONTROL FROM COMPRESSOR
6	ENGINE STOP FROM CRANE
7	FROM FUEL SOLENOID / DISTRIBUTOR GROUND
8	TO FUEL SOLENOID / DISTRIBUTOR GROUND
9	12-VOLT FROM IGNITION
10	SPEED CONTROL FROM CRANE
11	ENGINE START FROM CRANE
12	TO TRUCK STARTER
13	TO PTO SWITCH, CONTROLLED
14	TO BRAKE SWITCH, CONTROLLED
15	NC
16	NC

RELAY	FUNCTION
A	ON / OFF, POWER
B	ISOLATION, SPEED CONTROL
C	COMPRESSOR, SPEED CONTROL
D	ENGINE STOP
E	CRANE SPEED CONTROL
F	ENGINE START
G	PTO SWITCH
H	BRAKE SWITCH, CONTROLLED

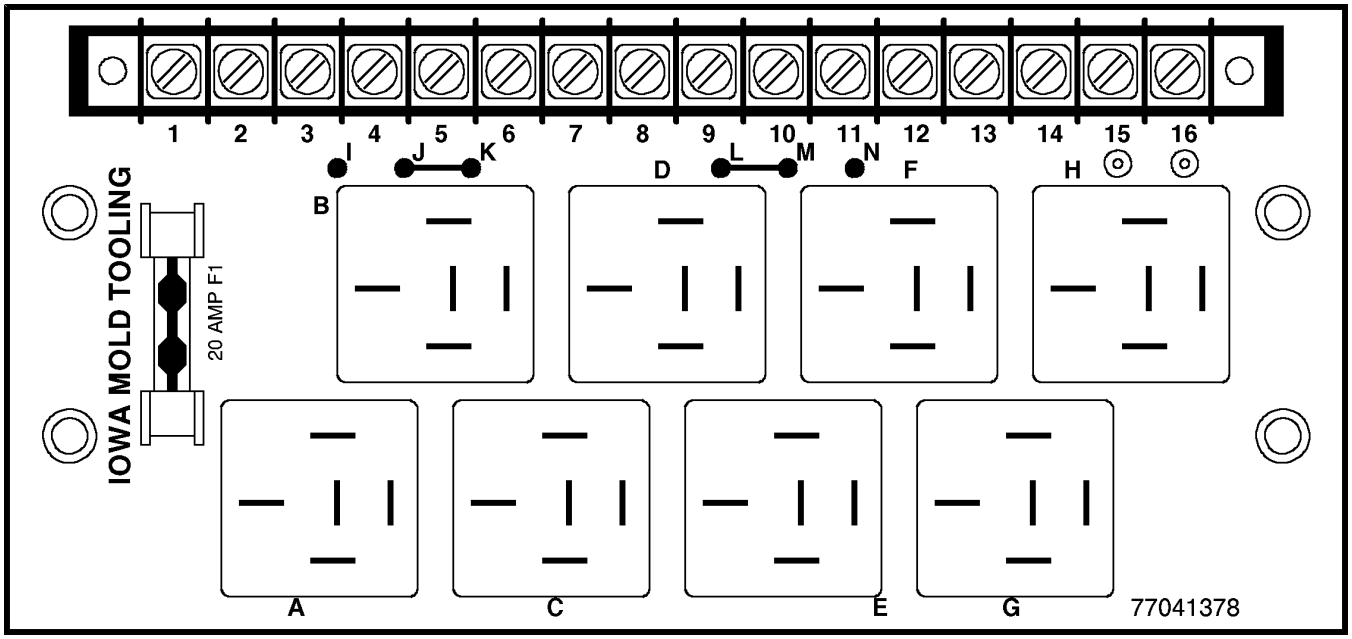


FIGURE 7. RELAY BOARD (77041378) WIRING INSTRUCTIONS

SECTION 3. MODEL 1014 REPLACEMENT PARTS

PARTS INFORMATION

GENERAL

This section contains the exploded parts drawings and accompanying parts lists 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, refer to the appropriate manual, or consult your IMT sales reprsentative.

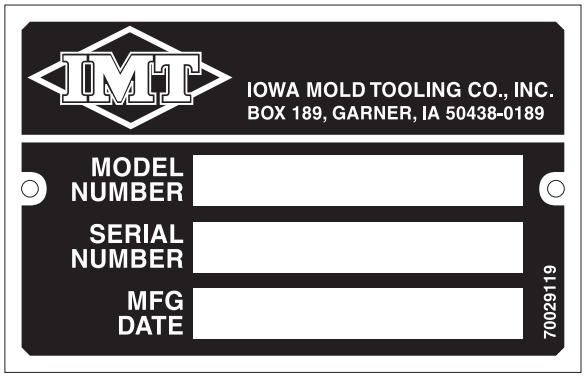
WARNING

DO NOT ATTEMPT TO REPAIR ANY COMPONENT WITHOUT READING THE INFORMATION CONTAINED IN THE REPAIR SECTION IN VOLUME 1. PAY PARTICULAR ATTENTION TO STATEMENTS MARKED WARNING, CAUTION, OR NOTE IN THAT SECTION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE EQUIPMENT, PERSONAL INJURY, OR DEATH.

CRANE IDENTIFICATION

Every IMT crane has an identification placard attached to the mast or to one of the booms in a prominent location. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model number. All inquiries should be directed to:

Iowa Mold Tooling Co., Inc.
Box 189, Garner, IA 50438-0189
Telephone: 515-923-3711
Product Support Fax: 515-923-2424



SERIAL NUMBER PLACARD

CYLINDER IDENTIFICATION

To insure that the proper cylinder replacement parts are recieved, it is necessary to specify the complete number/letter sequence for any part requested. Part numbers must be verified by checking the number stamped on the cylinder case (See figure below) against the information included in the service manual. You must include the part number stamped on the cylinder case when ordering parts.

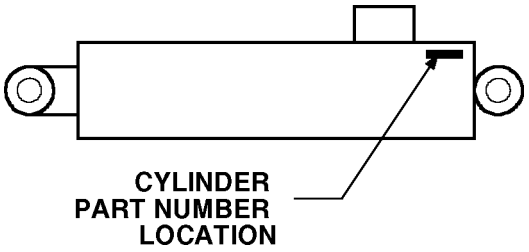
WELDMENT IDENTIFICATION

Each of the major weldments, base, mast, lower boom, extension boom, and outriggers, have a part number stamped on them. Any time one of the weldments is to be replaced, it is necessary to specify the complete part number as stamped on that weldment. The location of the part numbers are shown Section 2.

ORDERING REPAIR PARTS

When ordering replacement parts it is important to follow the steps as outlined below.

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.



CYLINDER PART NUMBER LOCATION

BASE ASM (41704562)

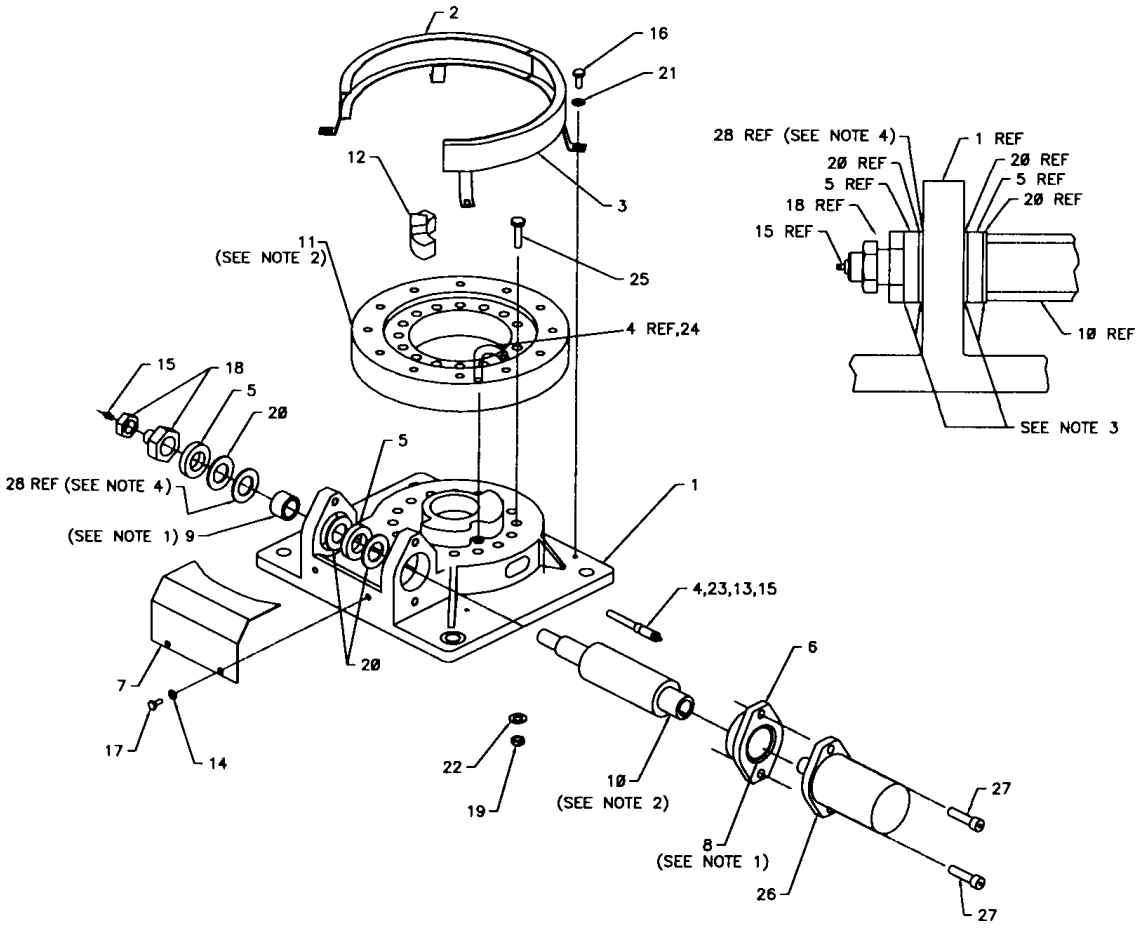
ITEM	PART NO.	DESCRIPTION	QTY
1.	51704564	BASE	1
2.	52713752	TURNTABLE GUARD-RH	1
3.	52713753	TURNTABLE GUARD-LH	1
4.	60030086	TUBING 1/4 X 6	1
5.	60030116	THRUST BEARING	2
6.	60107543	SUPPORT PLATE	1
7.	60107617	COVER	1
8.	70055147	BEARING	1
9.	70055148	BEARING	1
10.	70056307	WORM GEAR	1
11.	71056308	TURNTABLE BEARING	1
12.	71142535	SLIDE 400°	1
13.	72053301	COUPLING 1/8NPT	1
14.	72063050	WASHER 5/16 LOCK	2
15.	72053508	ZERK 1/8NPT	2
16.	72060000	CAP SCR 1/4-20X1/2 HHGR5	4
17.	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
18.	72062251	NUT 7/8-9 LOCK 2-PC GR8	1
19.	72062162	NUT 9/16-12 HEX GR8	15
20.	72063161	WASHER 1-1/8 FLAT	3
21.	72063049	WASHER 1/4 LOCK	4
22.	72063117	WASHER 9/16 FLAT HARD GR8	15
23.	72531731	ADAPTER 1/8POLY-FLO 1/4	1
24.	72531746	ELBOW 1/8MPT 1/4POLYFLO 90°	1
25.	72601313	CAP SCR 9/16-12X3-1/2 HHGR8	15
26.	73051482	MOTOR	1
27.	72601486	CAP SCR 1/2-13X1-3/4 SH	2
28.	60121433	SHIM 2.25X1.81X16GA	REF

WARNING

ANY TIME THE GEAR-BEARING BOLTS HAVE BEEN REMOVED, THEY MUST BE REPLACED WITH NEW BOLTS OF IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE CAUSING SERIOUS INJURY OR DEATH.

NOTES

1. BEARINGS MUST BE PACKED WITH GREASE AT ASSEMBLY.
2. APPLY “MOLUB-ALLOY 936” TO TURNTABLE BEARING AND WORM GEAR TEETH AT ASSEMBLY.
3. INITIAL LUBRICATION OF BOTH SIDES OF THRUST BEARING IS REQUIRED AT TIMEOF INSTALLATION. APPROVED LUBRICANTS ARE “SLIP PLATE”, “LUBRI-PLATE” OR OTHER LUBRICANTS CONTAINING GRAPHITE OR MSO_2.
4. SHIM AS REQUIRED IF NEEDED.

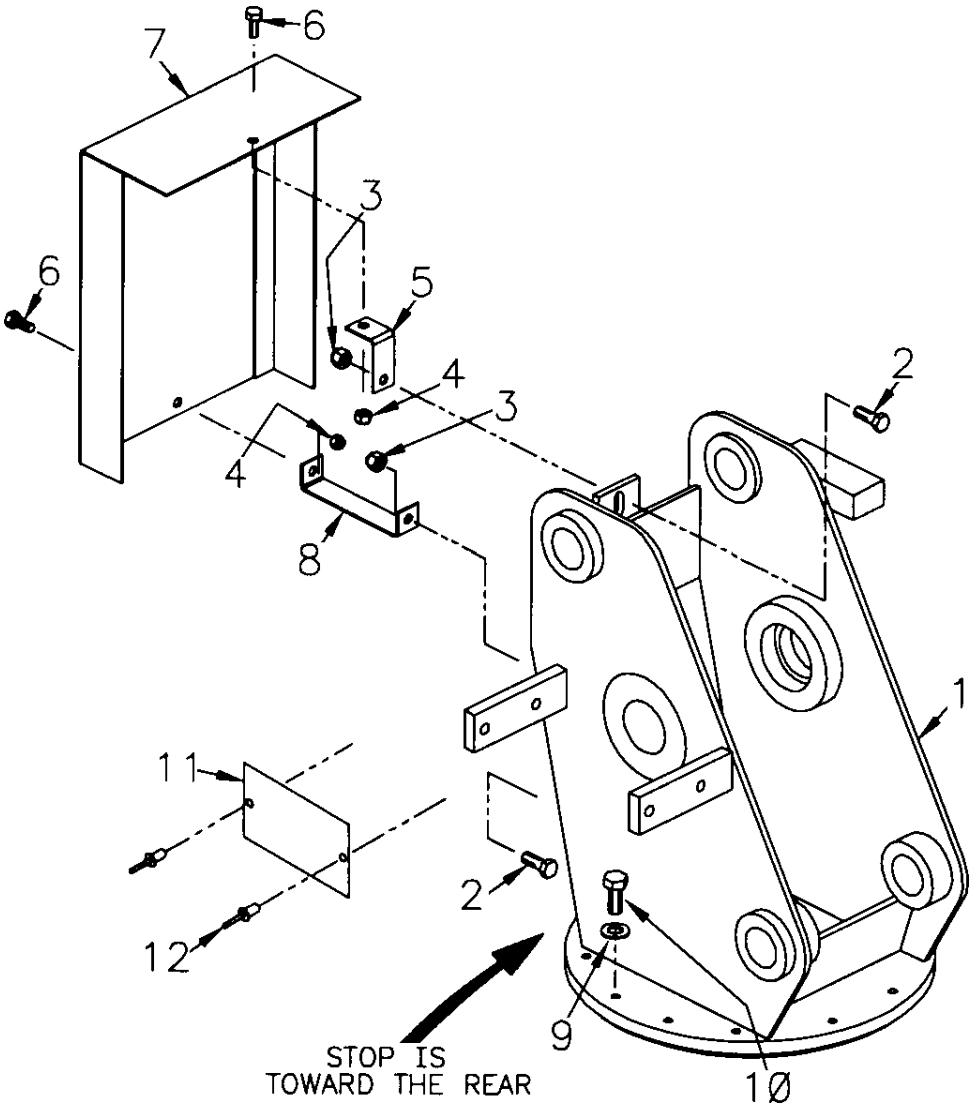


MAST ASM (41704563)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52704565	MAST	1
2.	72060046	CAP SCR 3/8-16X1 HHGR5	2
3.	72062103	NUT 3/8-16 LOCK	2
4.	72062109	NUT 5/16-18 LOCK	2
5.	60107613	COVER SUPPORT - TOP	1
6.	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
7.	52704603	COVER	1
8.	60107612	COVER SUPPORT - BOTTOM	1
9.	72063117	WASHER 9/16 FLAT HARD GR8	12
10.	72601144	CAP SCR 9/16-12X2 HHGR8	12
11.	70029119	SERIAL NUMBER PLACARD	1
12.	72066340	POP RIVET 1/8X3/8GRIP	2

WARNING

ANY TIME THE GEAR-BEARING BOLTS HAVE BEEN REMOVED, THEY MUST BE REPLACED WITH NEW BOLTS OF IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE CAUSING SERIOUS INJURY OR DEATH.

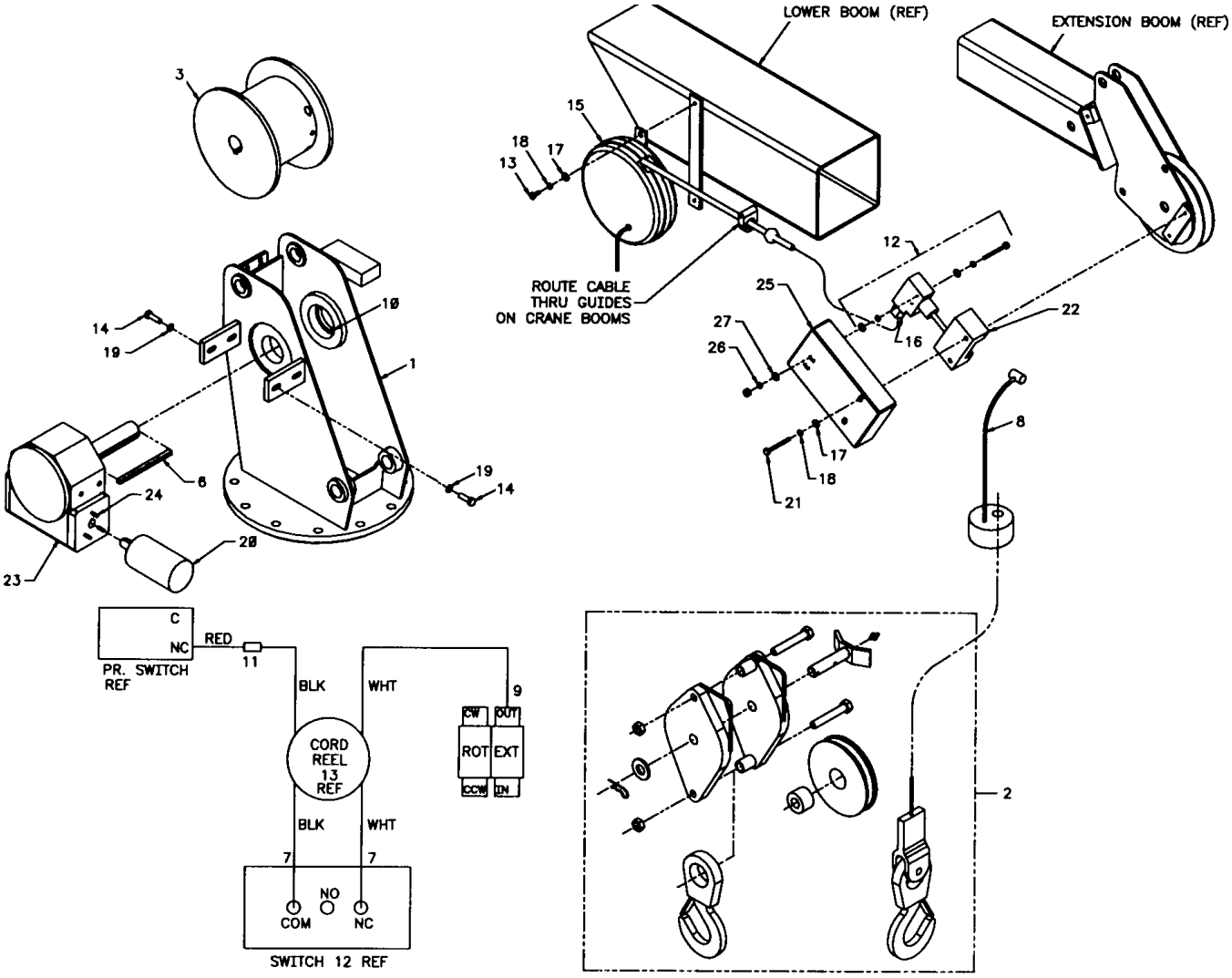


WINCH / CABLE / HOOK KIT (41710136)

ITEM	PART NO.	DESCRIPTION	QTY
1.		MAST	1REF
2.	31710164	CABLE & HOOK KIT (SEE DWG)	1
3.	60025203	WINCH DRUM	1
6.	60107226	KEY (PART OF 23)	1REF
7.	77040051	TERMINAL #8 SPRSPD 16-14GA	2
8.	52709413	CABLE WELDMENT	1
9.	77040186	TERMINAL 1/4 FSLPON	1
10.	70055142	BEARING	1
11.	77040047	TERMINAL 1/4 MSLPON	1
12.	77041291	SWITCH	1
13.	72060001	CAP SCR 1/4-20X5/8 HHGR5	2
14.	72060025	CAP SCR 5/16-18X1 HHGR5	4
15.	70732193	CORD REEL	1
16.	77044468	STRAIN RELIEF	1
17.	72063001	WASHER 1/4 WRT	4
18.	72063049	WASHER 1/4 LOCK	4
19.	72063050	WASHER 5/16 LOCK	4
20.	73051398	MOTOR	1
21.	72060008	CAP SCR 1/4-20X2 HHGR5	2
22.	60113594	COVER MTG BLOCK	1
23.	70057663	SPEED REDUCER (INCL:6)	1
24.	72060694	CAP SCR 1/4-28X3/4 SH	3
25.	60113593	COVER	1
26.	72063098	WASHER .16 FLAT	2
27.	72063047	WASHER #10 LOCK	2

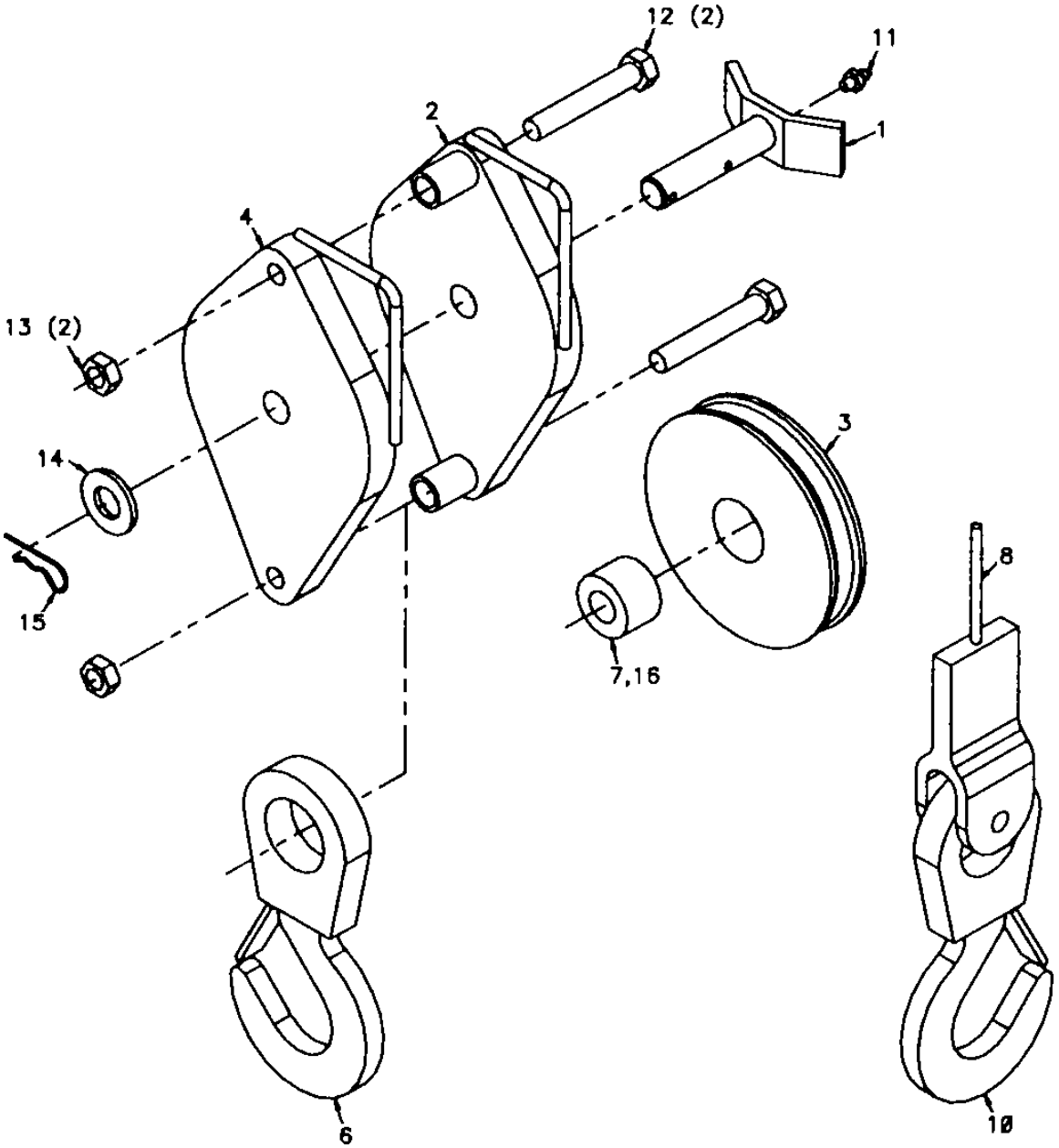
NOTE

IF THE SERIAL NO. OF YOUR CRANE CONTAINS A “G” AFTER THE CRANE MODEL NO. (1014G...) THEN THE CRANE IS EQUIPPED WITH A GEAR PRODUCTS WINCH.



CABLE & HOOK KIT (31710164)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52704828	PIN	1
2.	52704254	SNATCH BLOCK	1
3.	60030061	SHEAVE (INCL:7,16)	1
4.	52709411	SIDE PLATE	1
5.	72060569	SET SCR 5/16-18X3/8SH (DRUM)	1
6.	71073921	HOOK 2-TON	1
7.	70055163	ROLLER BEARING (PART OF 3)	1REF
8.	70580059	WIRE ROPE ASM 7/32" X 65'	1
10.	71732760	SWIVEL HOOK 1-1/2 TON	1
11.	72053508	ZERK 1/8NPT	1
12.	72060098	CAP SCR 1/2-13X3-1/2 HHGR5	2
13.	72062080	NUT 1/2-13 LOCK	2
14.	72063030	MACH BUSHING 3/4X10GA	1
15.	72066145	HAIR PIN 3/16	1
16.	70055162	INNER RACE (PART OF 3)	1REF

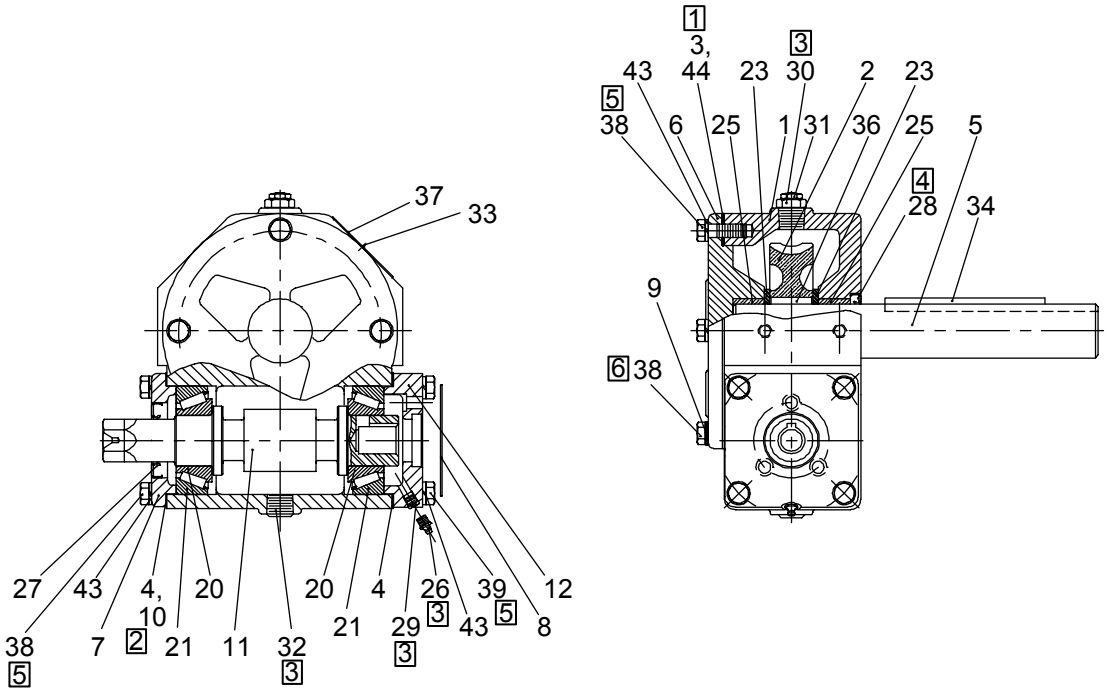


SPEED REDUCER (70057663)

ITEM	PART NO.	DESCRIPTION	QTY
	PART #	DESCRIPTION	QTY
1.	70143637	HOUSING	1
2.	70056425	GEAR, WORM	1
3.	76393144	GASKET, COVER (.015")	2
4.	76392896	GASKET, BRG. RET. (.015")	3
5.	70143633	SHAFT, OUTPUT	1
6.	70143636	COVER	1
7.	70145156	RETAINER, BEARING (WAS 70143634 BEFORE 11-94)	1
9.	76393142	WASHER, 5/16 SEALING	2
10.	76393143	GASKET, BRG. RET. (.031")	1
11.	70056511	WORM (WAS 70056424 BEFORE 11-94)	1
12.	70145157	ADAPTER, MOTOR (WAS 70143635 BEFORE 11-94)	12
20.	70055192	BEARING, CONE	2
21.	70055193	BEARING, CUP	2
23.	70143422	WASHER,THRUST	2
25.	70143632	BUSHING, (1.25 X 1.50 X .75)	2
26.	72533438	ZERK,LINCOLN #5013	1
27.	76394070	SEAL, NAT'L #471689	1
28.	76393141	SEAL, NAT'L #471413	1
29.	72533439	PLUG,SLT HD,1/4-28 TPRD	1
30.		BUSHING,RED 3/8X1/8	1
31.	72534431	VENT, 1/8 NPT, 1-5PSI	1
32.		PLUG, 3/8 NPT, SKT HD	1
33.	70142375	DRIVE SCREW	2
34.		KEY, 5/16 X5/16 X3-3/4	1
36.	81066819	KEY, 5/16X5/16X1	2
37.	70143428	LABEL PLATE, 2 7/8 X 2	1
38.	72601516	CAPSCR, HXZD 5/16NCX.88GR5	8
39.	72060026	CAPSCR, HXZD 5/16NC1.25GR5	4
43.	72063050	LOCKWASHER, STD 5/16 ZD	11
44.	76394071	GASKET, COVER (.031")	2

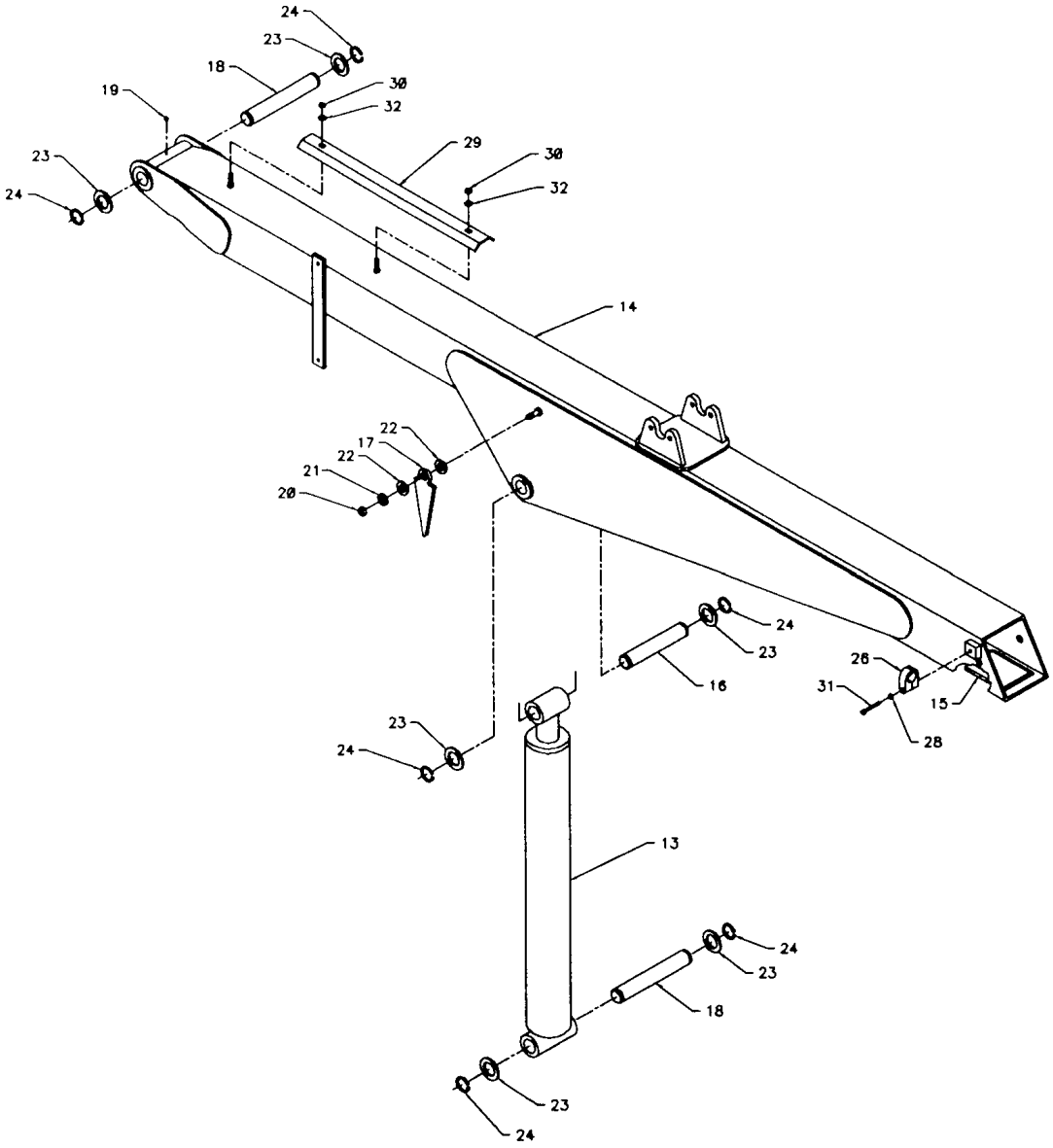
NOTES (SEE REFERENCE NUMBER IN BOX):

1) USE GASKETS TO OBTAIN .005/.015 END PLAY ON OUTPUT SHAFT.
2) USE GASKETS TO OBTAIN .000/.004 END PLAY ON WORM SHAFT.
3) INSTALL REDUCER (#30), PIPE PLUG (#32), AND SHIPPING PLUG (#29) WITH PIPE SEALANT WITH TEFLON. SHIP ZERK (#26) LOOSE.
4) INSTALL SEALS (#27 AND #28) WITH LOCTITE 609 ON O.D. LUBRICATE SEAL SURFACE BEFORE ASSEMBLY.
5) INSTALL BOLTS USING LOCTITE 242. TORQUE TO 18-21 FT-LB.
6) CAUTION - USED FOR OIL LEVEL. DO NOT USE LOCTITE. DO NOT OVERTIGHTEN.



LOWER BOOM ASM (41704943)

ITEM	PART NO.	DESCRIPTION	QTY
13.	3B104820	LOWER CYLINDER	1
14.	52704944	LOWER BOOM	1
15.	60030097	WEAR PAD	1
16.	60101906	PIN	1
17.	60105544	INDICATOR	2
18.	60106065	PIN	2
19.	72053508	ZERK 1/8NPT	1
20.	72062103	NUT 3/8-16 LOCK	2
21.	72063003	WASHER 3/8 WRT	2
22.	72063005	WASHER 1/2 WRT	4
23.	72063034	MACH BUSHING 1X10GA NR	6
24.	72066125	RETAINING RING 1" HD	6
26.	70034381	CORD GUIDE	1
28.	72063049	WASHER 1/4 LOCK	1
29.	60107993	HOSE GUARD	1
30.	72062104	NUT 1/4-20 LOCK	2
31.	72060006	CAP SCR 1/4-20X1-1/2 HHGR5	1
32.	72063001	WASHER 1/4 WRT	2



LOWER BOOM CYLINDER (3B104820)

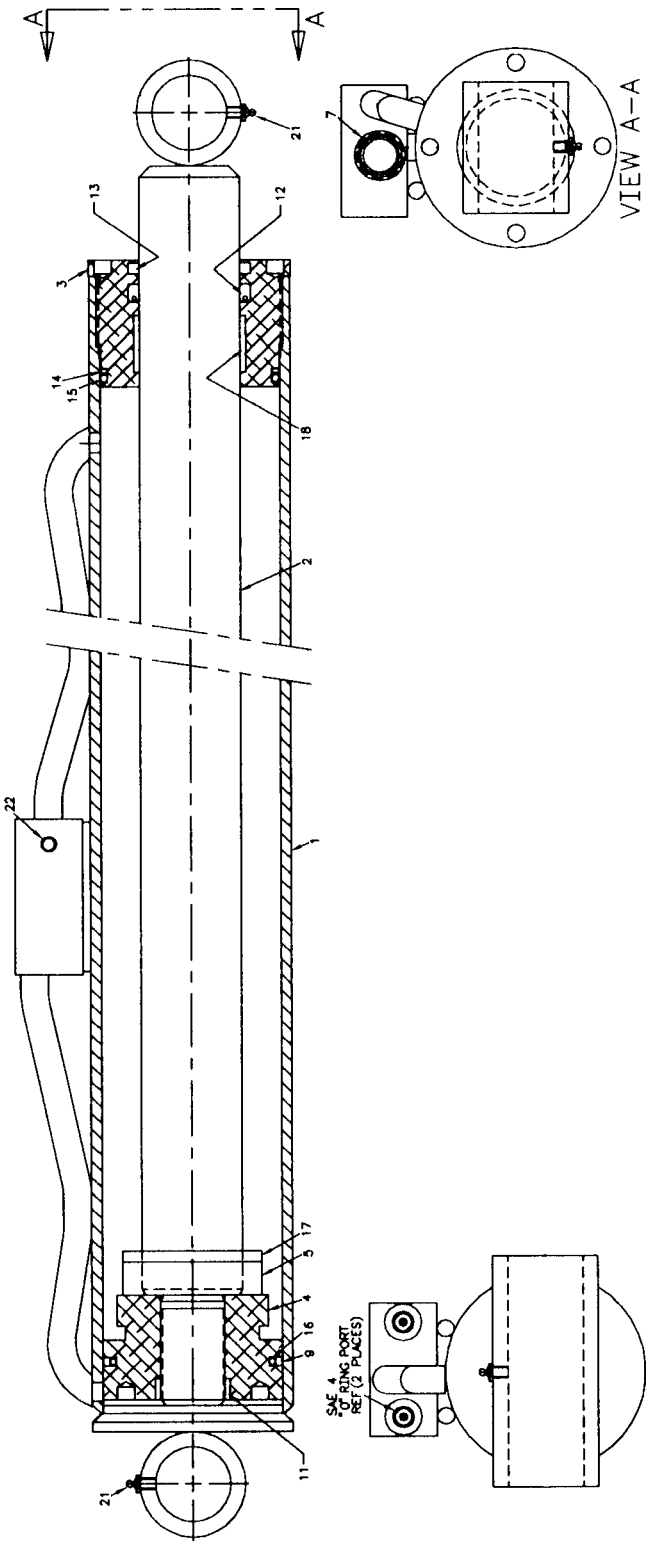
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B104820	CASE ASM (INCL:21&22)	1
2.	4G104820	ROD (INCL:1)	1
3.	6H025015	HEAD	1
4.	6I025087	PISTON	1
5.	6C075015	STOP TUBE	1
7.	73054304	VALVE 10GPM	1
8.	9B101214	SEAL KIT (INCL:9-18)	1
9.	7T66P025	PISTON SEAL (PART OF 8)	1REF
11.	7T61N087	LOCK RING SEAL (PART OF 8)	1REF
12.	7R546015	ROD SEAL (PART OF 8)	1REF
13.	7R14P015	ROD WIPER (PART OF 8)	1REF
14.	7Q10P228	O-RING (PART OF 8)	1REF
15.	7Q072228	O-RING (PART OF 8)	1REF
16.	7Q072137	O-RING (PART OF 8)	1REF
17.	6A025015	WAFER LOCK (PART OF 8)	1REF
18.	7T2N8015	WEAR RING (PART OF 8)	1REF
21.	72053507	ZERK 1/8NPT (PART OF 1 & 2)	2REF
22.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	2

NOTE

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

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

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

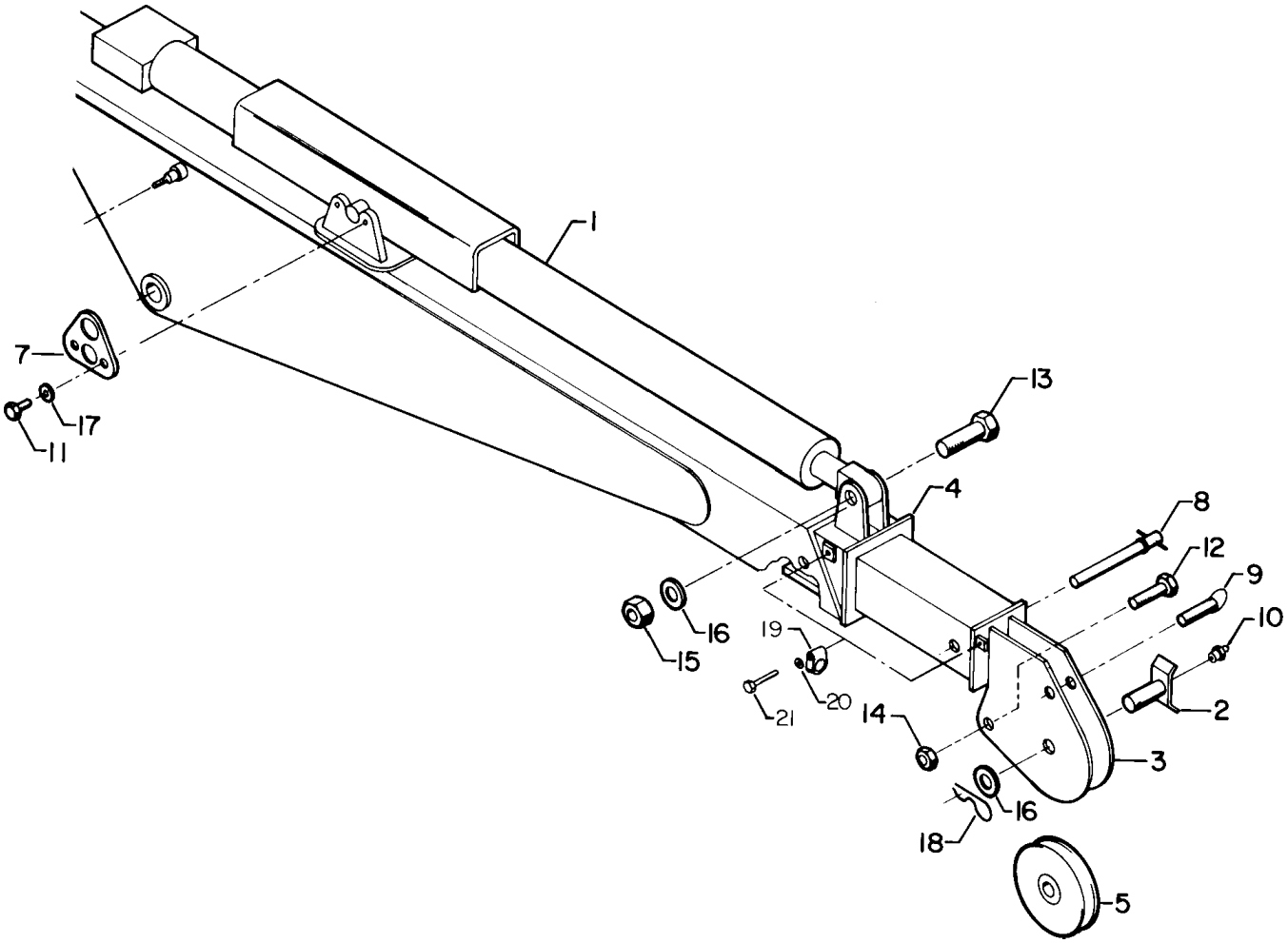


EXTENSION BOOM ASM-HYD/MNL 14' (41704936)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B108830	EXTENSION CYLINDER	1
2.	52704255	PIN	1
3.	52704945	2ND STG EXT BOOM	1
4.	52704946	1ST STG EXT BOOM	1
5.	60030061	SHEAVE WITH BEARING	1
7.	60107922	LOCKPLATE	2
8.	71731461	QUICK RELEASE PIN 1/2X4	1
9.	71731462	QUICK RELEASE PIN 1/2X1-1/2	1
10.	72053508	ZERK 1/8NPT	1
11.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4
12.	72601368	CAP SCR 1/2-13X2-1/4 HHGR8	1
13.	72060186	CAP SCR 3/4-10X2-1/2 HHGR5	1
14.	72062080	NUT 1/2-13 LOCK	1
15.	72062114	NUT 3/4-10 LOCK	1
16.	72063030	MACH BUSHING 3/4X10GA NR	1
17.	72063051	WASHER 3/8 LOCK	4
18.	72066145	HAIR PIN 3/16	1
19.	70034381	CORD GUIDE	2
20.	72063049	WASHER 1/4 LOCK	2
21.	72060006	CAP SCR 1/4-20X1-1/2 HHGR5	2

NOTE

CORD GUIDE (70034381) SHOULD BE INSTALLED WITH GUIDE HOLE UP.

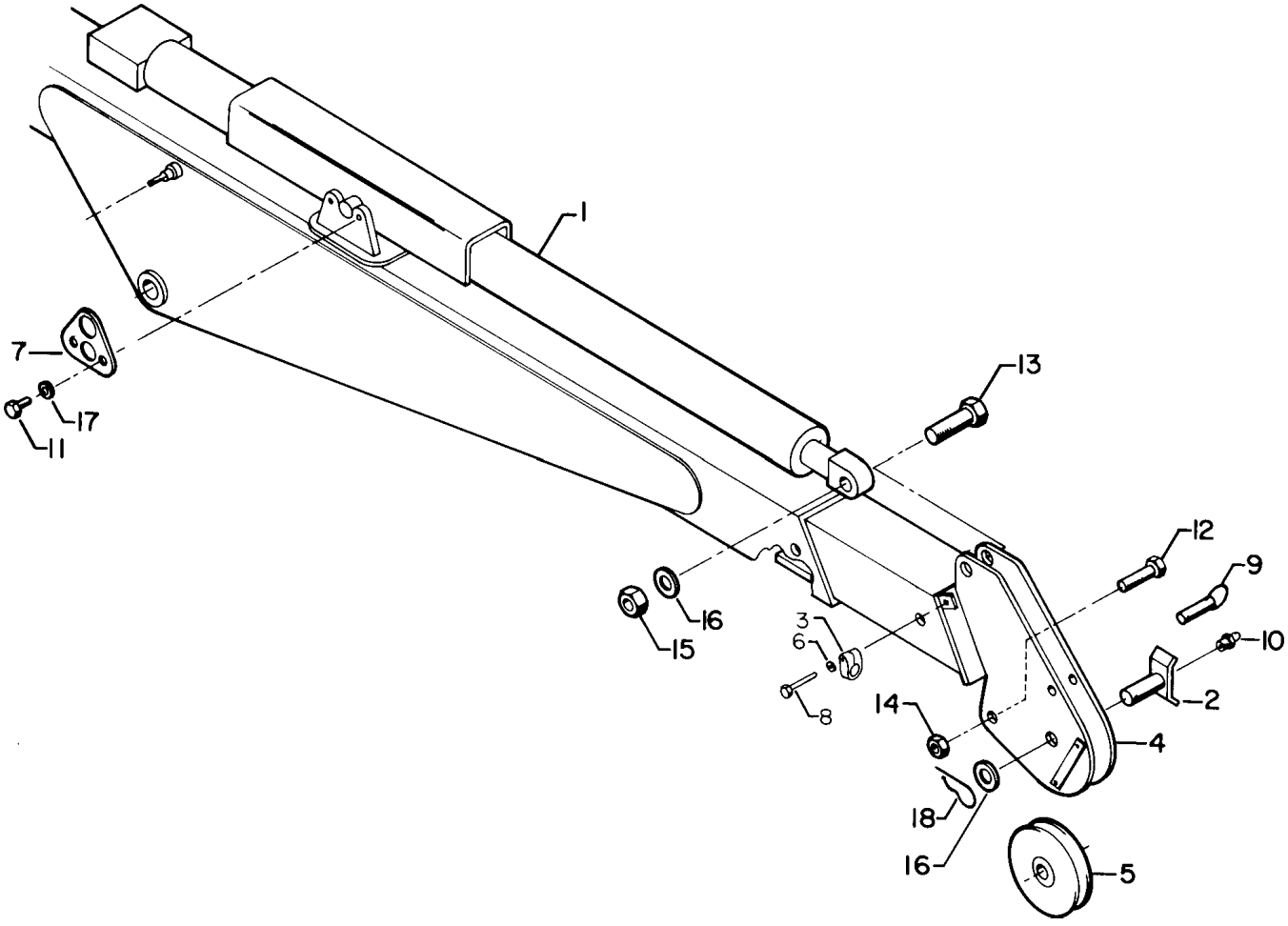


EXTENSION BOOM ASM-HYD 10' (41704937)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B108830	EXTENSION CYLINDER	1
2.	52704255	PIN	1
3.	70034381	CORD GUIDE	1
4.	52704947	EXTENSION BOOM	1
5.	60030061	SHEAVE WITH BEARING	1
6.	72063049	WASHER 1/4 LOCK	1
7.	60107922	LOCKPLATE	2
8.	72060006	CAP SCR 1/4-20X1-1/2 HHGR5	1
9.	71731462	QUICK RELEASE PIN 1/2X1-1/2	1
10.	72053508	ZERK 1/8NPT	1
11.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4
12.	72601368	CAP SCR 1/2-13X2-1/4 HHGR8	1
13.	72060186	CAP SCR 3/4-10X2-1/2 HHGR5	1
14.	72062080	NUT 1/2-13 LOCK	1
15.	72062114	NUT 3/4-10 LOCK	1
16.	72063030	MACH BUSHING 3/4X10GA NR	2
17.	72063051	WASHER 3/8 LOCK	4
18.	72066145	HAIR PIN 3/16	1

NOTE

CORD GUIDE (70034381) SHOULD BE INSTALLED WITH GUIDE HOLE UP



EXTENSION CYLINDER (3B108830)

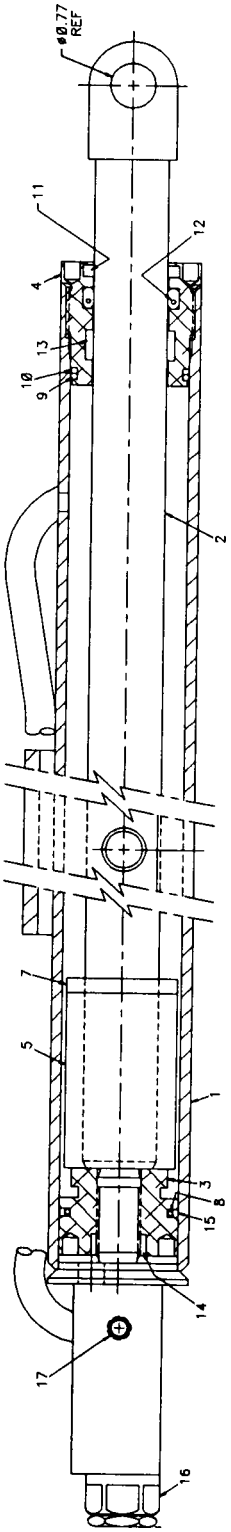
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B108830	CASE ASM (INCL:17)	1
2.	4G108830	ROD	1
3.	6I020075	PISTON	1
4.	6H020012	HEAD	1
5.	6C300012	STOP TUBE	1
6.	9B081012	SEAL KIT (INCL:7-15)	1
7.	6A025012	WAFER LOCK (PART OF 6)	1REF
8.	7Q072129	O-RING (PART OF 6)	1REF
9.	7Q072224	O-RING (PART OF 6)	1REF
10.	7Q10P224	O-RING (PART OF 6)	1REF
11.	7R14P012	ROD WIPER (PART OF 6)	1REF
12.	7R546012	ROD SEAL (PART OF 6)	1REF
13.	7T2N8012	WEAR RING (PART OF 6)	1REF
14.	7T61N075	LOCK RING SEAL (PART OF 6)	1REF
15.	7T66P020	PISTON SEAL (PART OF 6)	1REF
16.	73054304	C'BALANCE VALVE 10GPM	1
17.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	3REF

NOTE

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

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

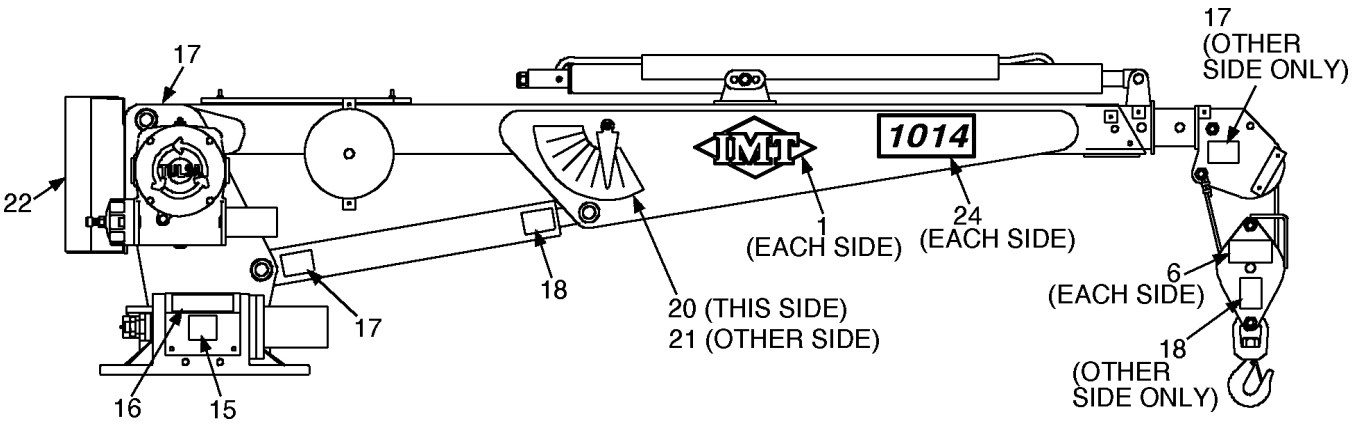
USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.



DECAL KIT-PWR UNIT (95710132)

ITEM	PART NO.	DESCRIPTION	QTY
1.	70392887	IMT DIAMOND	2
2.	70394444	DECAL-DANGER ELECTRO	1
3.	70392814	DECAL-DANGER OPERATOR	1
4.	70392815	DECAL-DANGER OPERATION	1
5.	70392861	DECAL-DANGER 2-BLOCKING	1
6.	71394083	DECAL-LOAD BLOCK RATING 2T	2
7.	70392863	DECAL-DANGER HOIST PERS	1
8.	70392864	DECAL-DGR OUTRG STD CLR	2
9.	70394445	DECAL-DANGER ELECTRO	4
10.	70392866	DECAL-DANGER OPER COND	1
11.	70392867	DECAL-DGR OUTRG MOVING	1
12.	70392868	DECAL-DANGER LOADLINE	4
13.	70392888	DECAL-DGR OPER RESTRICT	1
14.	70394446	DECAL-DANGER RC ELECTRO	1
15.	70392524	DECAL-ROTATE CRN/GREASE	1
16.	70392399	DECAL-LUBE WORM	1
17.	70391612	DECAL-GREASE WKLY LEFT	3
18.	70391613	DECAL-GREASE WKLY RIGHT	2
19.	70391598	DECAL-WARNING OUTRG	2
20.	71391522	DECAL-ANGLE CHART RH	1
21.	71391523	DECAL-ANGLE CHART LH	1
22.	71393344	CAPACITY PLACARD	2
23.	71392095	DECAL-CAUTION AMPH CONN	1
24.	70393343	DECAL-1014 IDENT	2
25.	70392213	DECAL-CAUTION WASH/WAX	1
26.	70392982	DECAL-CONTACT IMT	1
27.	70394189	DECAL-RECOMMEND HYD OIL	1
28.	70394443	DECAL-DGR FREEFALL BOOM	1

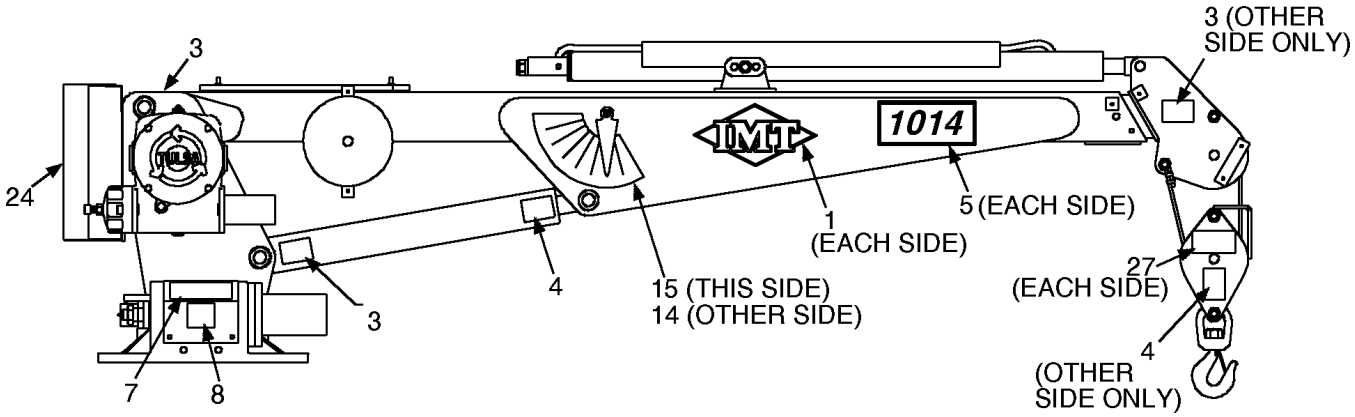
DECAL PLACEMENT	
ITEM NO.	**LOCATION**
2,3,4,5,7,25, 10,11,13,14, 22,26	AT OR NEAR REMOTE CONTROL STORAGE POINT
8,19	ONE ON EACH OUTRIGGER
9,12	ONE ON EACH SIDE OF CARRIER VEHICLE
23	NEAR CONNECTOR
27	AT OR NEAR HYD RESERVOIR
28	AT OR NEAR MNL BOOM EXT RETENTION MECHANISM



DECAL KIT-PTO (95710131)

ITEM	PART NO.	DESCRIPTION	QTY
1.	70392887	IMT DIAMOND	2
2.	70391598	DECAL-WARNING OUTRG	2
3.	70391612	DECAL-GREASE WKLY LEFT	3
4.	70391613	DECAL-GREASE WKLY RIGHT	2
5.	70393343	DECAL-1014 IDENT	2
6.	70392213	DECAL-CAUTION WASH/WAX	1
7.	70392399	DECAL-LUBE WORM	1
8.	70392524	DECAL-ROTATE CRN/GREASE	1
9.	70394444	DECAL-DANGER ELECTRO	1
10.	70392814	DECAL-DANGER OPERATOR	1
11.	70392815	DECAL-DANGER OPERATION	1
12.	70392861	DECAL-DANGER 2-BLOCKING	1
13.	70392863	DECAL-DANGER HOIST PERS	1
14.	71391522	DECAL-ANGLE CHART RH	1
15.	71391523	DECAL-ANGLE CHART LH	1
16.	70392866	DECAL-DANGER OPER COND	1
17.	70392867	DECAL-DGR OUTRG MOVING	1
18.	70392868	DECAL-DANGER LOADLINE	4
19.	70392888	DECAL-DGR OPER RESTRICT	1
20.	70394446	DECAL-DANGER RC ELECTRO	1
21.	70392864	DECAL-DGR OUTRG STD CLR	2
22.	70394445	DECAL-DANGER ELECTRO	4
23.	71392095	DECAL-CAUTION AMPH CONN	1
24.	71393344	CAPACITY PLACARD	2
25.	70392982	DECAL-CONTACT IMT	1
26.	70392891	DECAL-DANGER DRIVELINE	1
27.	71394083	DECAL-LOAD BLOCK RATING 2T	2
28.	71039134	DECAL-CAUTION OIL LEVEL	1
29.	70392109	DECAL-RETURN LINE	1
30.	70392108	DECAL-SUCTION LINE	1
31.	70394189	DECAL-RECOMMEND HYD OIL	1
32.	70394443	DECAL-DGR FREEFALL BOOM	1

DECAL PLACEMENT	
ITEM NO.	**LOCATION**
6,9,10,11,12, 13,16,17,19, 20,25,28,24	AT OR NEAR REMOTE CONTROL STORAGE POINT
2,21	ONE ON EACH OUTRIGGER
22,18	ONE ON EACH SIDE OF CARRIER VEHICLE
23	NEAR CONNECTOR
29	ON RESERVOIR AT RETURN LINE
30	ON RESERVOIR AT SUCTION LINE
26	AT OR NEAR DRIVELINE
31	AT OR NEAR HYD RESERVOIR
32	AT OR NEAR MNL BOOM EXT RETENTION MECHANISM



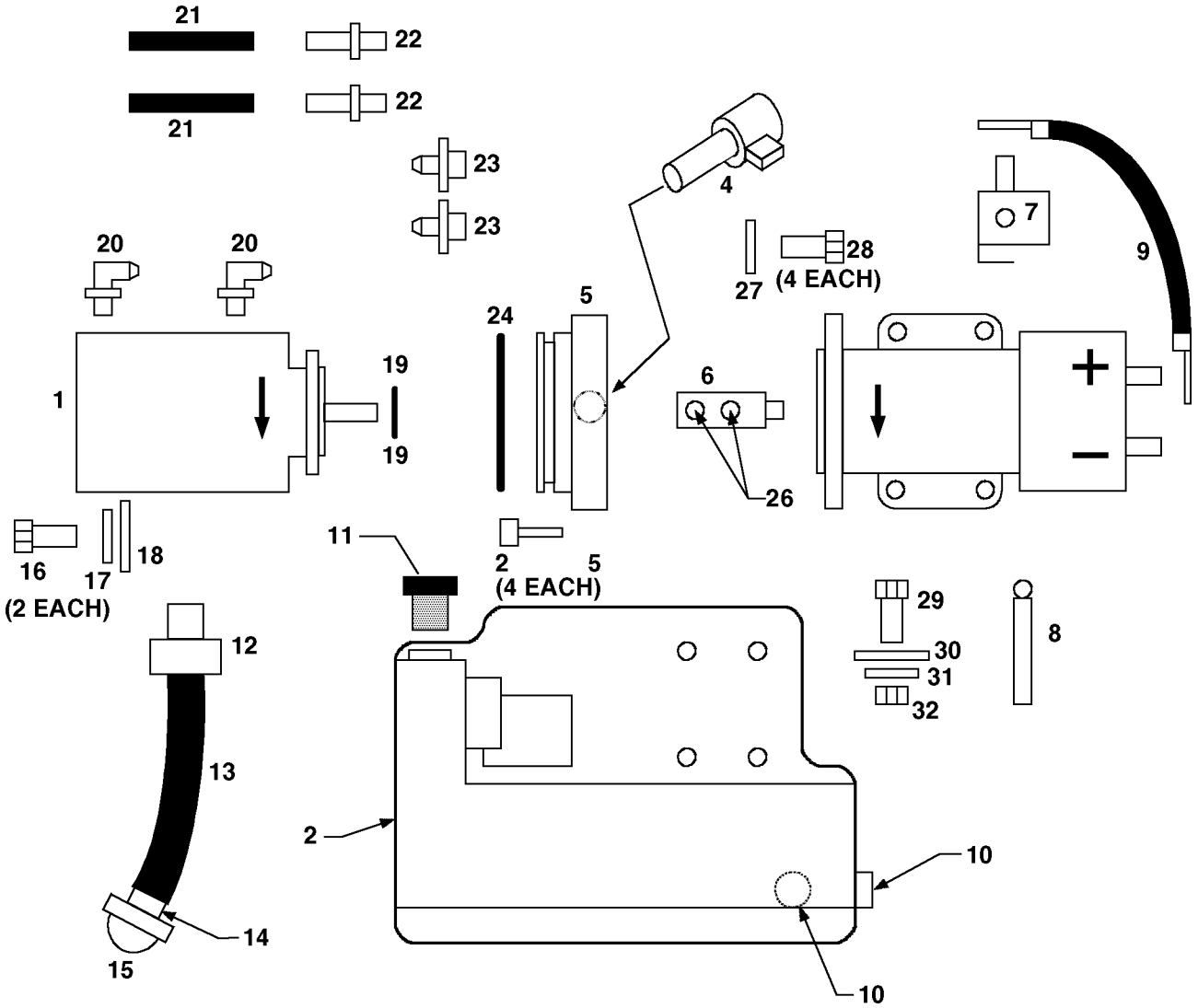
HYD PWR UNIT 12VDC (73051715)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73051725	HYDRAULIC PUMP	1
2.	70143884	RESERVOIR	1
3.	73051726	MOTOR 12VDC	1
4.	73054757	SOLENOID VALVE	1
5.	70143885	ADAPTER HOUSING	1
6.	70143886	COUPLING	1
7.	77041237	SOLENOID 12V 150A	1
8.	72661395	CLAMP	1
9.	70580062	CABLE 12VDC	1
10.	70143887	PIPE PLUG	2
11.	70048159	BREATHER	1
12.	70143888	BEAD ADAPTER	1
13.	70393373	SUCTION LINE 6"	1
14.	72533201	BARBED NIPPLE	1
15.	70143889	STRAINER	1
16.	72601639	BOLT 5/16 X 1	2
17.	72063189	WASHER 5/16 LOCK	2
18.	72063190	WASHER 5/16 FLAT	2
19.	76393374	O-RING	1
20.	72533202	CONNECTOR	2
21.	70393375	RETURN LINE	2
22.	70143890	RETURN FITTING	2
23.	70143891	FITTING	2
24.	76393376	O-RING	1
25.	72601640	BOLT	4
26.	72601643	SET SCREW #10-24	2
27.	72063191	WASHER 3/8 LOCK	4
28.	72601641	BOLT 3/8 X 1-1/4	4
29.	72601642	BOLT 5/16 X 3/4	4
30.	72063190	WASHER 5/16 FLAT	4
31.	72063189	WASHER 5/16 LOCK	4
32.	72062247	NUT 5/16 HEX	4

TYPICAL AMP DRAW
MODEL 1014 CRANE

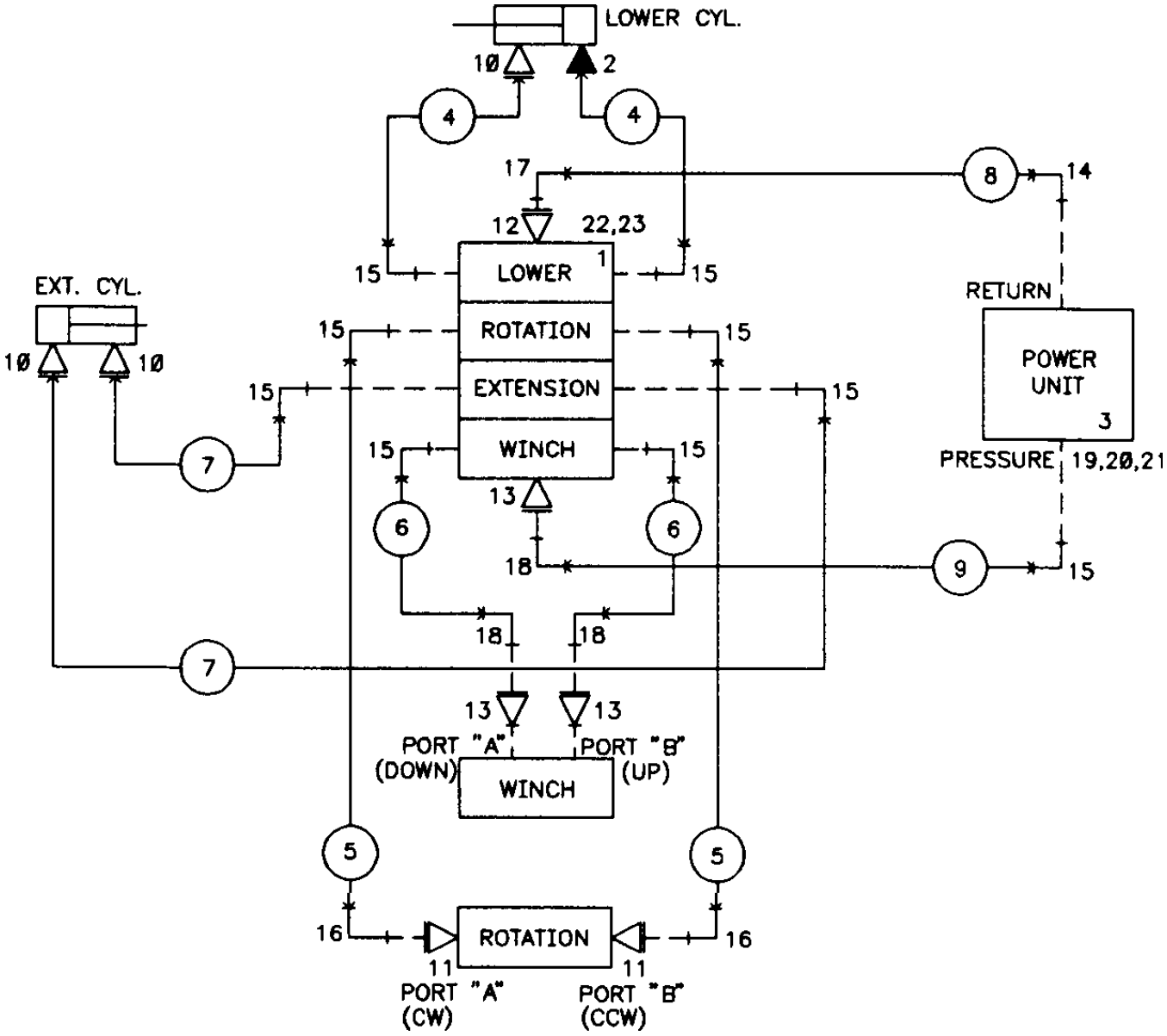
FUNCTION	SETTING SPEED (AMPS) HIGH	LOW
SWING	91	56
WINCH	132	79
BOOM UP	99	62
BOOM DN	248	115
EXT OUT	87	56
EXT IN	141	81

Actual AMP Draw will vary per unit.



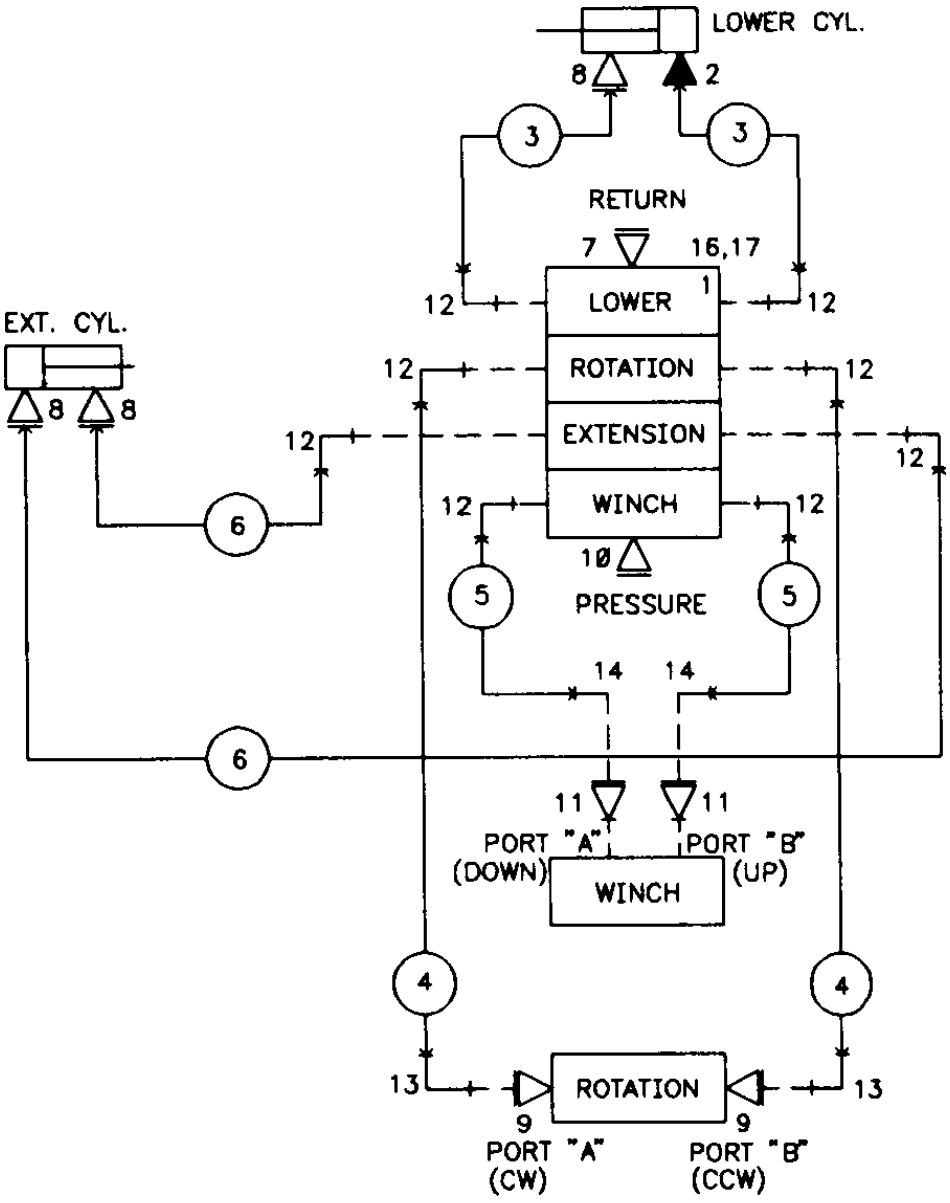
HYD KIT-4 SECT/PWR UNIT (91710133)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73073772	VALVEBANK	1
2.	73054487	CHECK VALVE	1
3.	73051715	POWER UNIT	1
4.	51393939	HOSE ASM 1/4X34 #4F#4F	2REF
5.	51393942	HOSE ASM 1/4X39 #4F#4F	2REF
6.	51393931	HOSE ASM 1/4X22 #4F#4F	2REF
7.	51393943	HOSE ASM 1/4X52 #4F#4F	2REF
8.	51393930	HOSE ASM 3/8X14 #8F#8F	1
9.	51393931	HOSE ASM 1/4X22 #4F#4F	1
10.	72532351	ADAPTER #4MSTR #4MJIC	3
11.	72432722	ADAPTER #10MSTR #6FSTR	2
12.	72532357	ADAPTER #6MSTR #8MJIC	1
13.	72532353	ADAPTER #6MSTR #4MJIC	3
14.	72053762	ELBOW #6MSTR #8MJIC 90°	1
15.	72532699	ELBOW #6MSTR #4MJIC 90°	9
16.	72532985	ELBOW #6MSTR #4MJIC 45°	2
17.	72532670	ELBOW #8MJIC #8FJIC 45°	1
18.	72532690	ELBOW #4MJIC #4FJIC SWVL	3
19.	72060023	CAP SCR 5/16-18X3/4 HHGR5	4
20.	72063002	WASHER 5/16 WRT	4
21.	72063050	WASHER 5/16 LOCK	4
22.	72601467	CARR BOLT 3/8-16X1	2REF
23.	72062103	NUT 3/8-16 LOCK	2REF
24.	51712049	HOSE KIT (INCL:4-7)	1



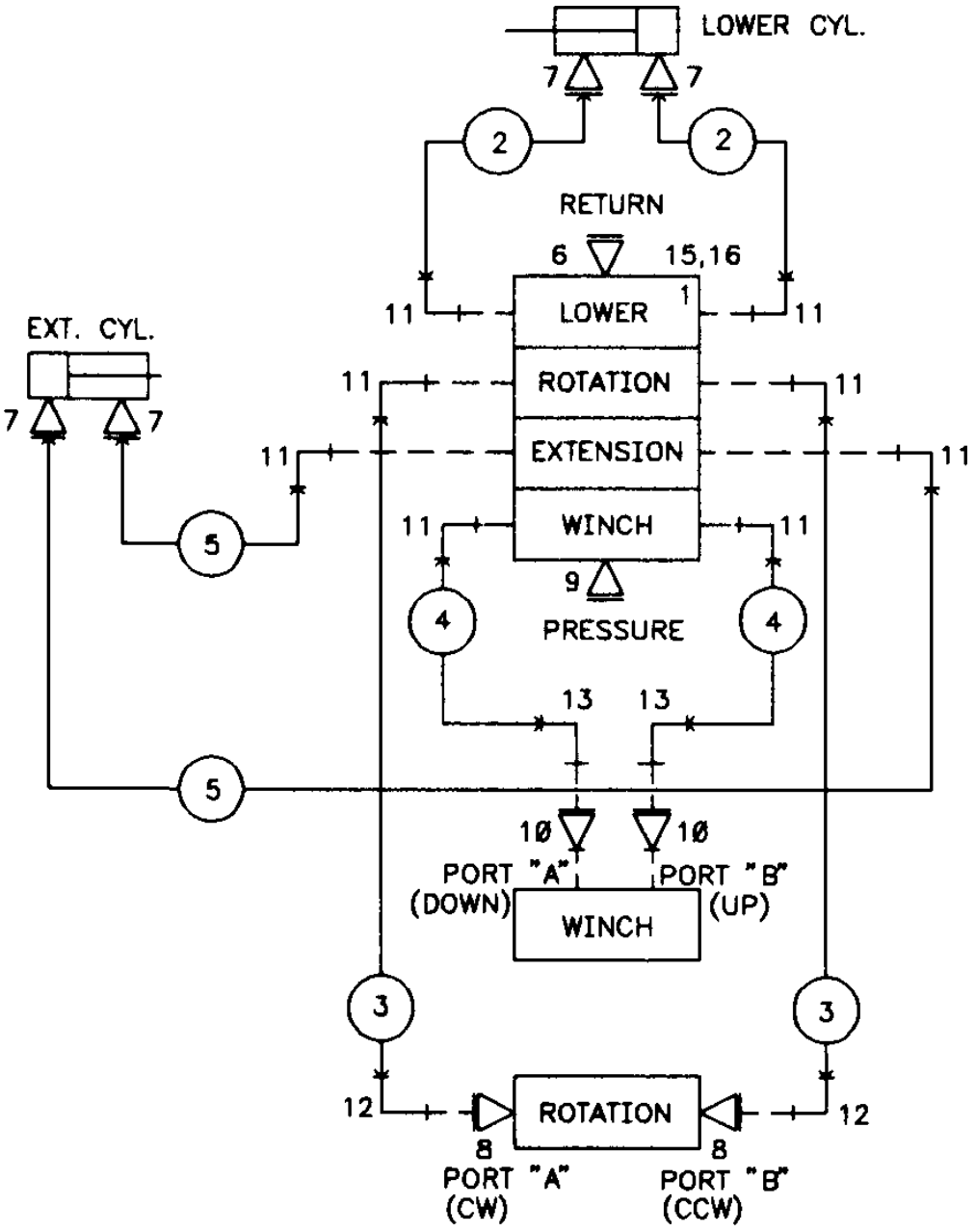
HYD KIT-4 SECT/PTO (91708891)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51707925	VALVEBANK	1
2.	73054487	CHECK VALVE	1
3.	51393939	HOSE ASM 1/4X34 #4F#4F	2REF
4.	51393942	HOSE ASM 1/4X39 #4F#4F	2REF
5.	51393931	HOSE ASM 1/4X22 #4F#4F	2REF
6.	51393943	HOSE ASM 1/4X52 #4F#4F	2REF
7.	72532795	ADAPTER #6MSTR 3/8FPT	1
8.	72532351	ADAPTER #4MSTR #4MJIC	3
9.	72532722	ADAPTER #10MSTR #6FSTR	2
10.	72532357	ADAPTER #6MSTR #8MJIC	1
11.	72532353	ADAPTER #6MSTR #4MJIC	2
12.	72532699	ELBOW #6MSTR #4MJIC 90°	8
13.	72532985	ELBOW #6MSTR #4MJIC 45°	2
14.	72532690	ELBOW #4MJIC #4FJIC	2
15.	51712049	HOSE KIT (INCL:3-6)	1
16.	72062103	NUT 3/8-16 LOCK	2REF
17.	72601467	CARR BOLT 3/8-16X1	2REF



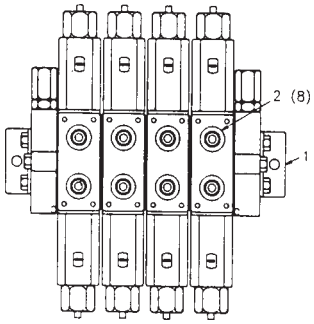
HYD KIT-4 SECT/PTO PROP'L (91710160)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51707925	VALVEBANK	1
2.	51393939	HOSE ASM 1/4X34 #4F#4F	2REF
3.	51393942	HOSE ASM 1/4X39 #4F#4F	2REF
4.	51393931	HOSE ASM 1/4X22 #4F#4F	2REF
5.	51393943	HOSE ASM 1/4X52 #4F#4F	2REF
6.	72532795	ADAPTER #6MSTR 3/8FPT	1
7.	72532351	ADAPTER #4MSTR #4MJIC	4
8.	72532722	ADAPTER #10MSTR #6FSTR	2
9.	72532357	ADAPTER #6MSTR #8MJIC	1
10.	72532353	ADAPTER #6MSTR #4MJIC	2
11.	72532699	ELBOW #6MSTR #4MJIC 90°	8
12.	72532985	ELBOW #6MSTR #4MJIC 45°	2
13.	72532690	ELBOW #4MJIC #4FJIC	2
14.	51712049	HOSE KIT (INCL:3-6)	1
15.	72062103	NUT 3/8-16 LOCK	2REF
16.	72601467	CARR BOLT 3/8-16X1	2REF



VALVEBANK ASM-4 SECT PROP'L RC (51713266)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51707925	VALVEBANK	1
2.	72532699	ELBOW #6MSTR #4MJIC 90°	8

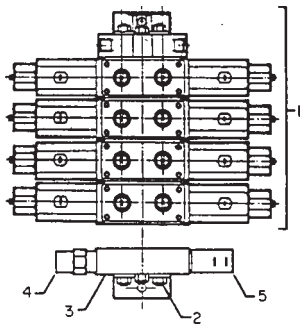


VALVEBANK (73073772)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73054077	VALVE SECTION (INCL:2-14)	4
2.	73014950	NUT	1REF
3.	77041016	COIL 12VDC (WAS 77040028)	2REF
4.	73014958	TUBE	2REF
5.	7Q072113	O-RING	2REF
6.	7Q072008	O-RING	2REF
7.	73014957	BUTTON	2REF
8.	73014956	PLUNGER	2REF
9.	73014954	PIN	2REF
10.	73014955	PLUG	2REF
REF	94014962	OUTER TUBE ASM (INCL 4-10)	REF
11.	73014953	SPRING	2REF
12.	73014952	SPRING RETAINER	2REF
13.	PART OF 73054077	SPOOL & BODY (MATCHED SET)	1REF
14.	7Q072012	O-RING	5REF
15.	73014948	INLET W/RELIEF (INCL:16-22)	1
16.		RELIEF VALVE ADJ CAP	1REF
17.		O-RING	1REF
18.		JAM NUT	1REF
19.		O-RING	1REF
20.		ADJ ROD	1REF
21.		SPRING	1REF
22.		NEEDLE	1REF
23.	73014960	TIE ROD	3
24.	72063002	WASHER 5/16	6
25.	72062001	NUT 5/16-18	6

VALVEBANK-PROP'L (51707925)

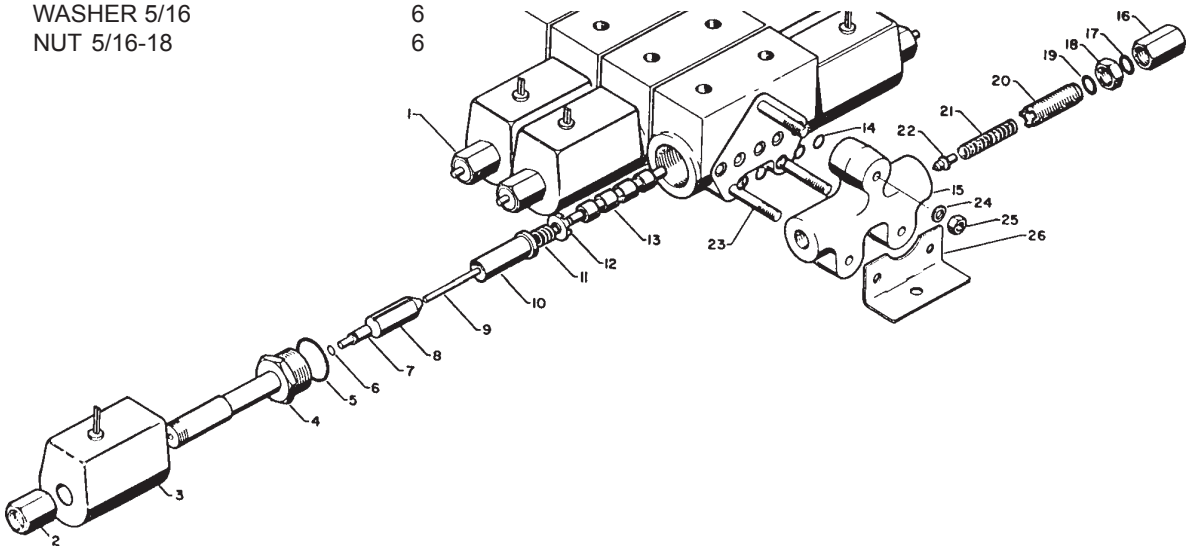
ITEM	PART NO.	DESCRIPTION	QTY
1.	73073772	VALVEBANK	1
2.	60103662	TIE-ROD	3
3.	60025669	INLET SECTION	1
4.	73054628	RELIEF VALVE	1
5.	73054624	SOLENOID VALVE 8GPM 12V	1



26.	73014959	MTG BRACKET	2

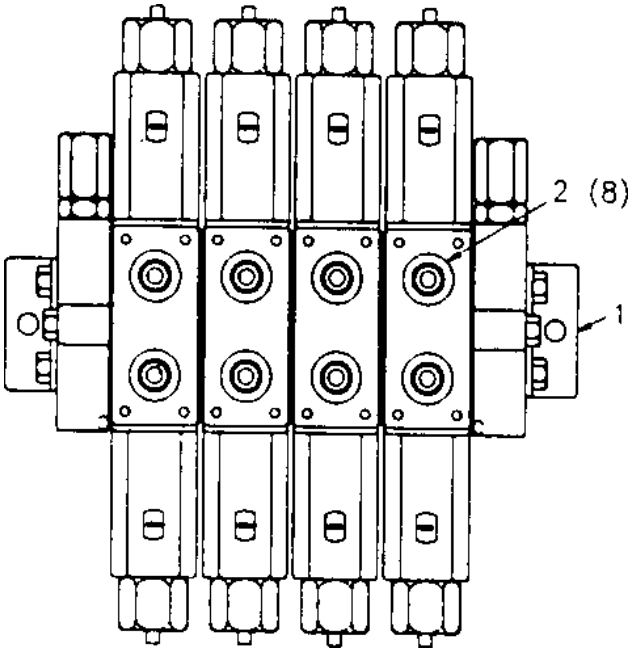
NOTE

ITEMS 2-12 INDICATE QTY PER VALVE SECTION.
ITEMS 16-22 ARE NOT AVAILABLE SEPARATELY.



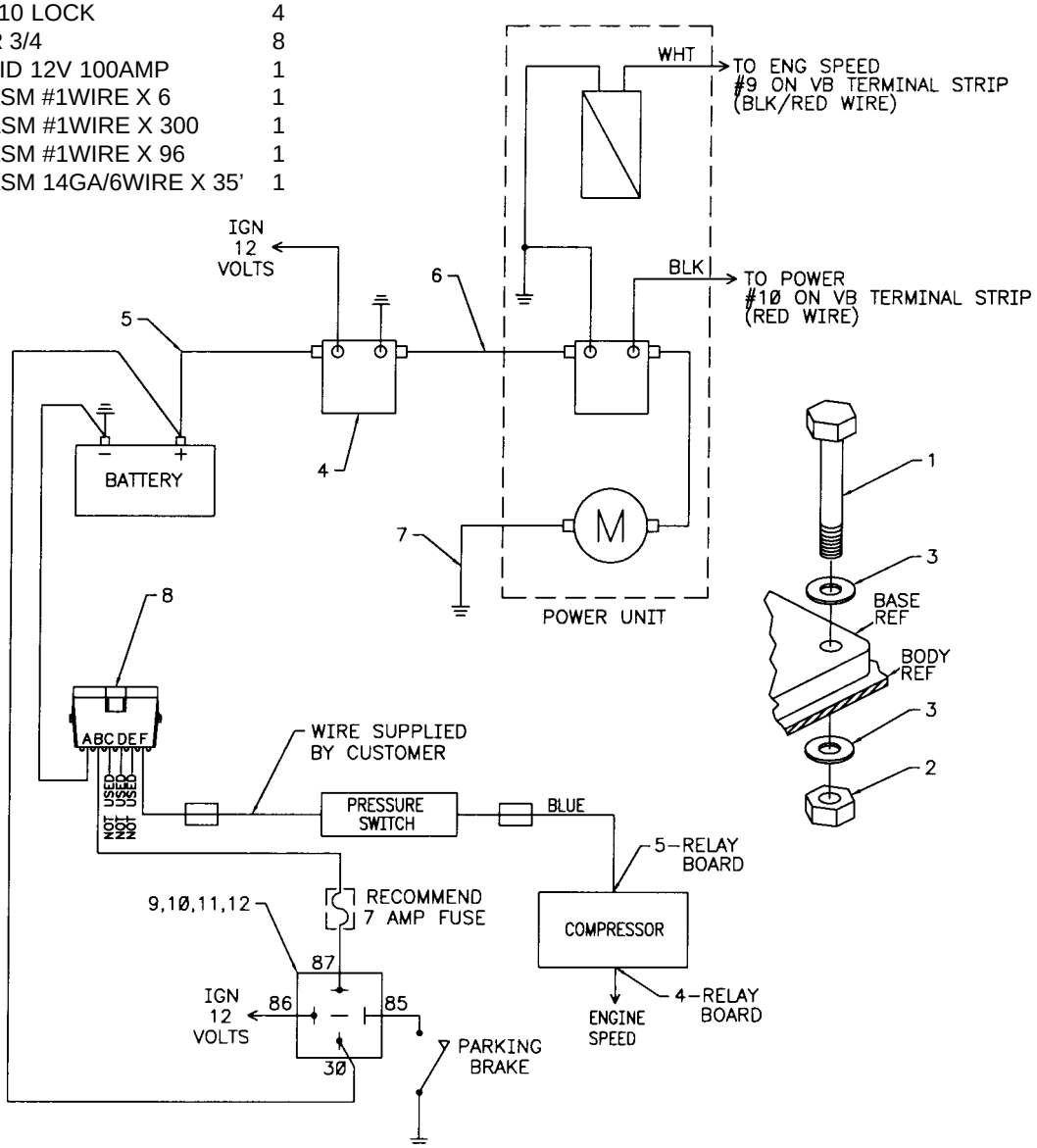
VALVEBANK ASM-4 SECT PROP'L RC (51713265)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73073772	VALVEBANK(SEE DWG PREV)	1
2.	72532699	ELBOW #6MSTR #4MJIC 90°	8



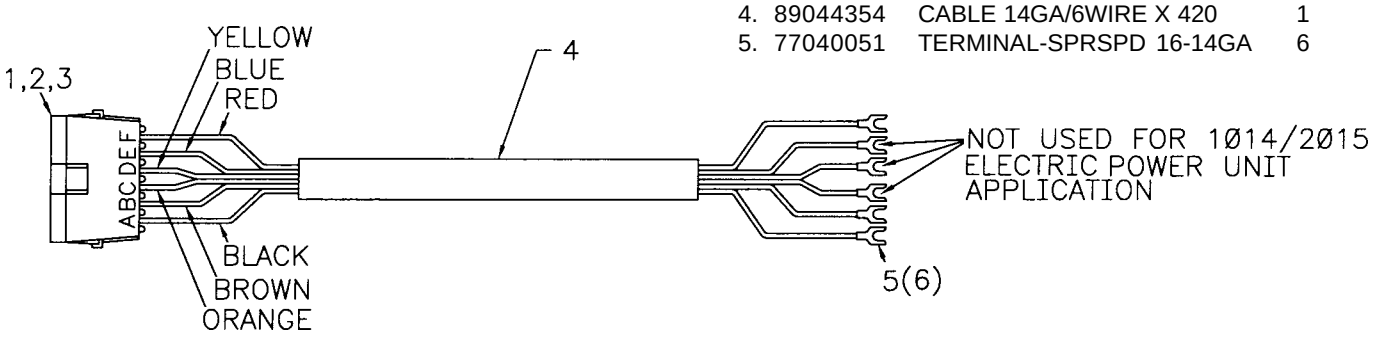
INSTALLATION KIT-PWR UNIT (93704633)

ITEM	PART NO.	DESCRIPTION	QTY
1.	72060186	CAP SCR 3/4-10X2-1/2 HH GR5	4
2.	72062140	NUT 3/4-10 LOCK	4
3.	72063008	WASHER 3/4	8
4.	77041237	SOLENOID 12V 100AMP	1
5.	51704784	CABLE ASM #1WIRE X 6	1
6.	51704785	CABLE ASM #1WIRE X 300	1
7.	51705925	CABLE ASM #1WIRE X 96	1
8.	51713199	CABLE ASM 14GA/6WIRE X 35'	1
9.	77041251	RELAY	1
10.	72063001	WASHER 1/4 WRT	1
11.	72062104	NUT 1/4-20 LOCK	1
12.	72060005	CAP SCR 1/4-20X1-1/4 HHGR5	1



CABLE ASM (51713199)

ITEM	PART NO.	DESCRIPTION	QTY
1.	77044575	CONNECTOR 6-WAY	1
2.	77044552	TERMINAL-M 18-20GA	6
3.	70394069	SEAL	6
4.	89044354	CABLE 14GA/6WIRE X 420	1
5.	77040051	TERMINAL-SPRSPD 16-14GA	6

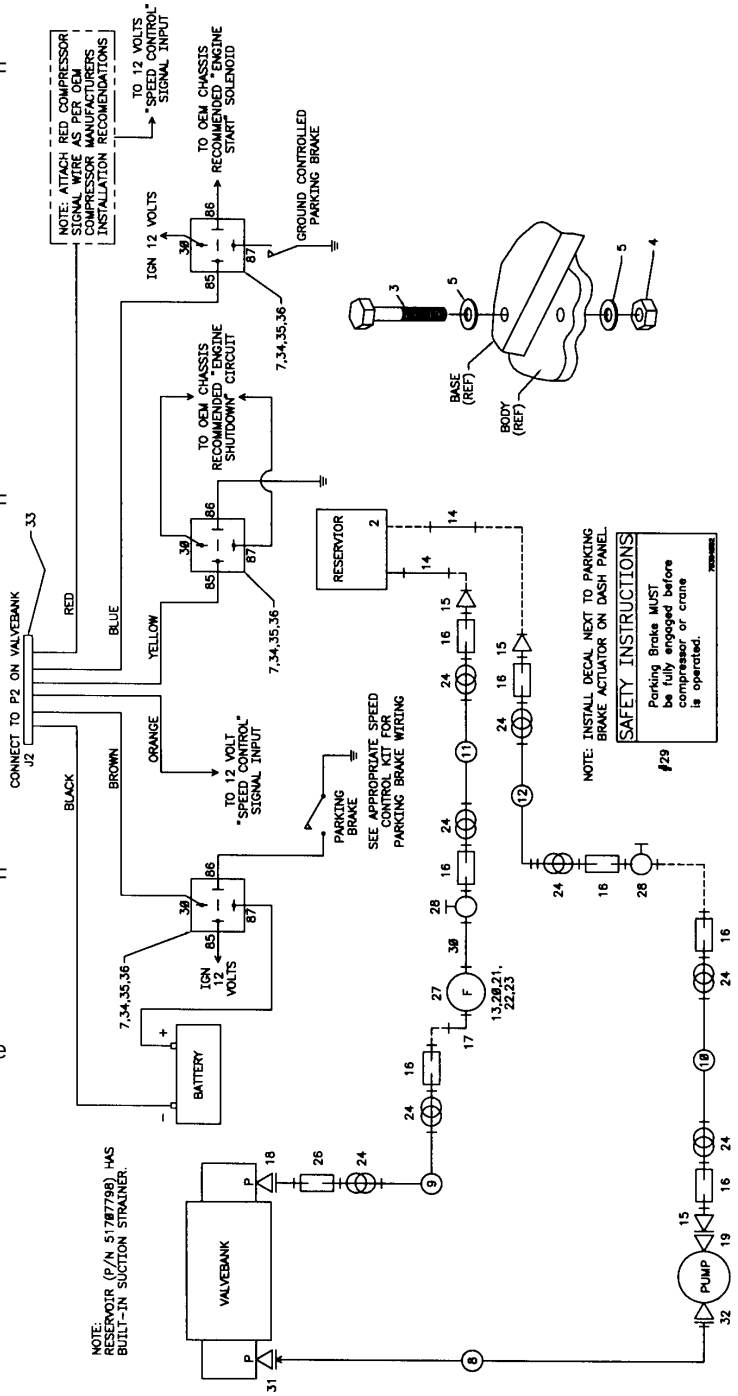


INSTALLATION KIT-PTO (93705207)

ITEM	PART NO.	DESCRIPTION	QTY
2.	51707798	RESERVOIR 20-GAL BLKHD	1REF
3.	72060186	CAP SCR 3/4-10X2-1/2 HHGR5	4
4.	72062140	NUT 3/4-10 STL INSERT LOCK	4
5.	72063008	WASHER 3/4 WRT	8
7.	77041251	RELAY	3
8.	51703614	HOSE ASM 1/2X240	1
9.	60035817	HOSE 3/4 100R4X240	1
10.	60035818	HOSE 3/4 100R4X72	1
11.	60035819	HOSE 3/4 100R4X60	1
12.	60035823	HOSE 3/4 100R4X52	1
13.	60103870	OIL FILTER BRACKET	1
14.	72053185	PIPE NIPPLE 1 X CLOSE	2
15.	72053376	REDUCER BUSHING 1" 3/4NPT	3
16.	72053458	BARB NIPPLE 3/4MPT 3/4HOSE	7
17.	72053556	STREET ELBOW 3/4NPT 90°	1
18.	72532795	ADAPTER #6MSTR 3/8FPT	1REF
19.	72053751	ADAPTER 1-5/16MSTR 1FPT	1
20.	72060002	CAP SCR 1/4-20X3/4 HHGR5	2
21.	72060025	CAP SCR 5/16-18X1 HHGR5	2
22.	72063049	WASHER 1/4 LOCK	2
23.	72063050	WASHER 5/16 LOCK	2
24.	72066000	HOSE CLAMP SAE#12	8
25.	72066377	CABLE STOP (NOT SHOWN)	1
26.	72532794	BARB NIPPLE 3/8BARB 3/4HOSE	1
27.	73052000	RETURN FILTER	1
28.	73054129	GATE VALVE 3/4NPT	2
29.	70394092	DECAL CAUTION BRK/CPRSR	1
30.	72053141	PIPE NIPPLE 3/4NPT	1
31.	72532357	ADAPTER #6MSTR #8MJIC	1REF
32.	72532360	ADAPTER #12MSTR #8MJIC	1
33.	51713199	CABLE ASM-14GA/6WIREx35	1
34.	72063001	WASHER 1/4W FLAT	3
35.	72062104	NUT 1/4-20 HEX NYLOC	3
36.	72060005	CAP SCR 1/4-20X1-1/4 HHGR5	3

The following suction filter and associated fittings are required only when a reservoir other than 51707798 is used.

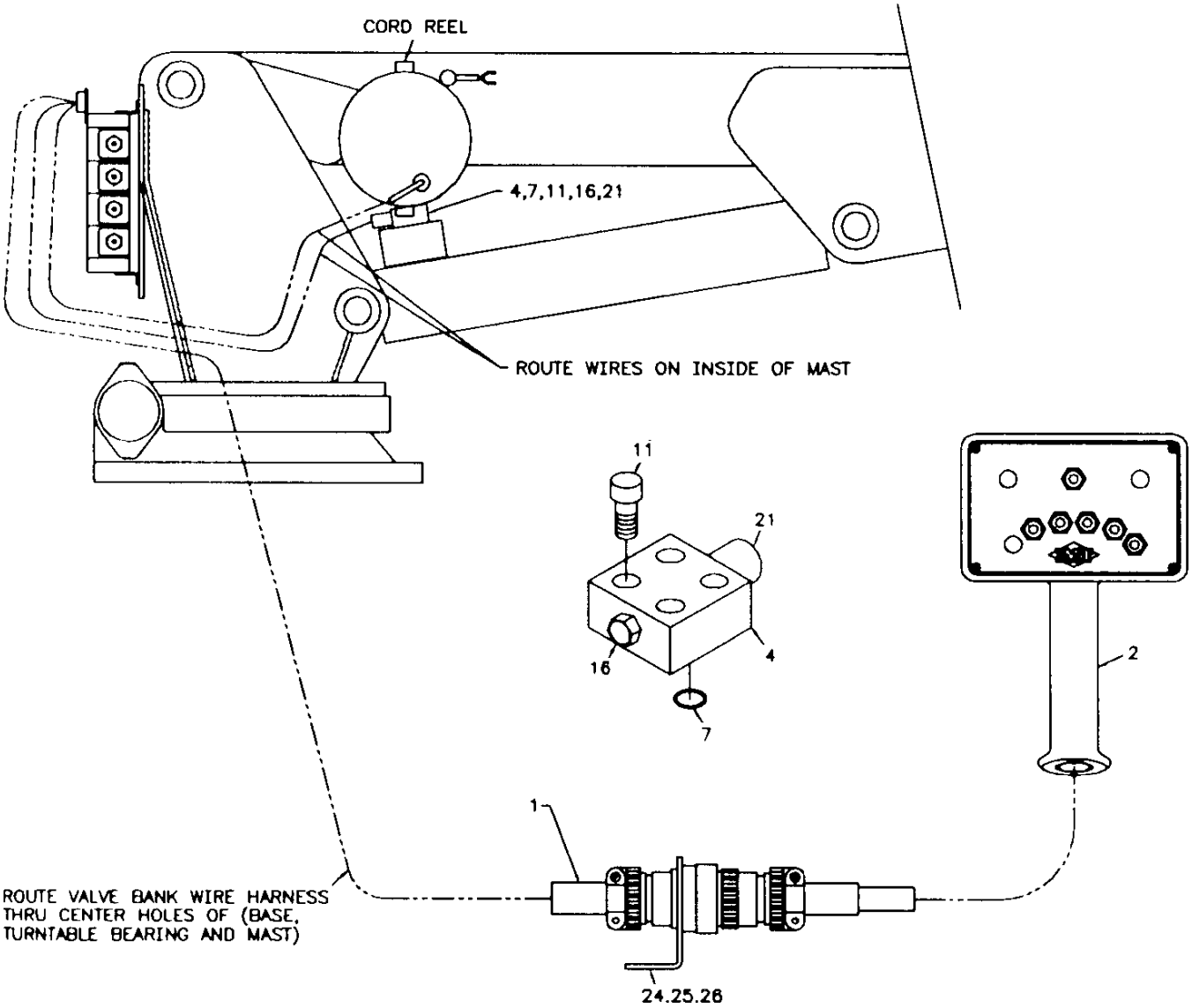
70048031	VACUUM GAUGE	REF
72053180	RED. BUSHING 1-1/4 3/4NPT	REF
72053211	PIPE NIPPLE 1-1/4 X CLOSE	REF
73052012	SUCTION FILTER	REF
72053141	PIPE NIPPLE 3/4NPT	REF



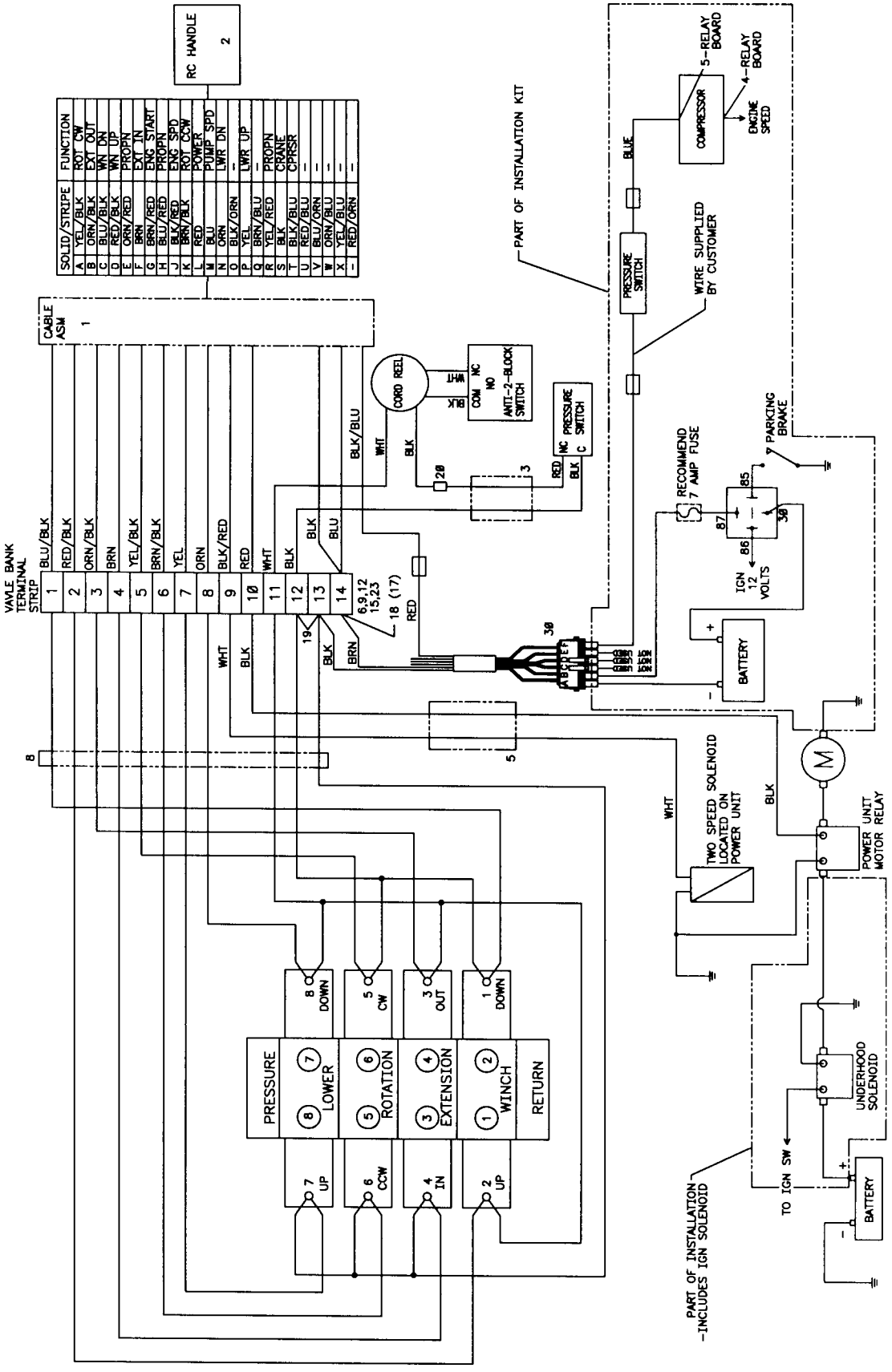
ELECTRIC RMT CTRL KIT (90713516-1)

CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
1.	51713501	CABLE ASM 18GA/24WIRE X 72	1
2.	51713383	HANDLE ASM	1
3.	51704788	CABLE ASM 14GA/2WIRE X 43	1
4.	60025221	MANIFOLD-CAPACITY ALERT	1
5.	51704787	CABLE ASM 16GA/3WIRE X 35	1
6.	60105825	TERMINAL BLOCK MTG	1
7.	7Q072015	O-RING	1
8.	70034060	PLASTIC TIE	4
9.	72060002	CAP SCR 1/4-20X3/4 HHGR5	1
10.	51713682	CABLE ASM-GROUND	1
11.	72060731	CAP SCR 5/16-18X3/4 SH	4
12.	72061009	SHT MTL SCR #6X3/4 PH	2
15.	72066525	HOSE CLAMP 3/4 VINYL COVER	1
16.	72532140	PLUG #6STR HH	1
18.	77040051	TERMINAL #8SPRSPD 16-14GA	17
19.	77040130	JUMPER BAR	1
20.	77040186	TERMINAL 1/4 FSLPON 16-14GA	1
21.	77041222	PRESSURE SWITCH	1
23.	77044309	TERMINAL BLOCK-14 CONTACT	1
24.	60119299	MOUNTING BRACKET	1
25.	77044645	NUT-CONNECTOR	1
26.	77044646	WASHER-CONNECTOR	1
27.	72060005	CAP SCR 1/4-20X1-1/4 HHGR5	2
28.	72062104	NUT 1/4-20 LOCK	2
29.	72063001	WASHER 1/4 WRT	2
30.	77044749	CABLE ASM-14GA/6WIREX72	1



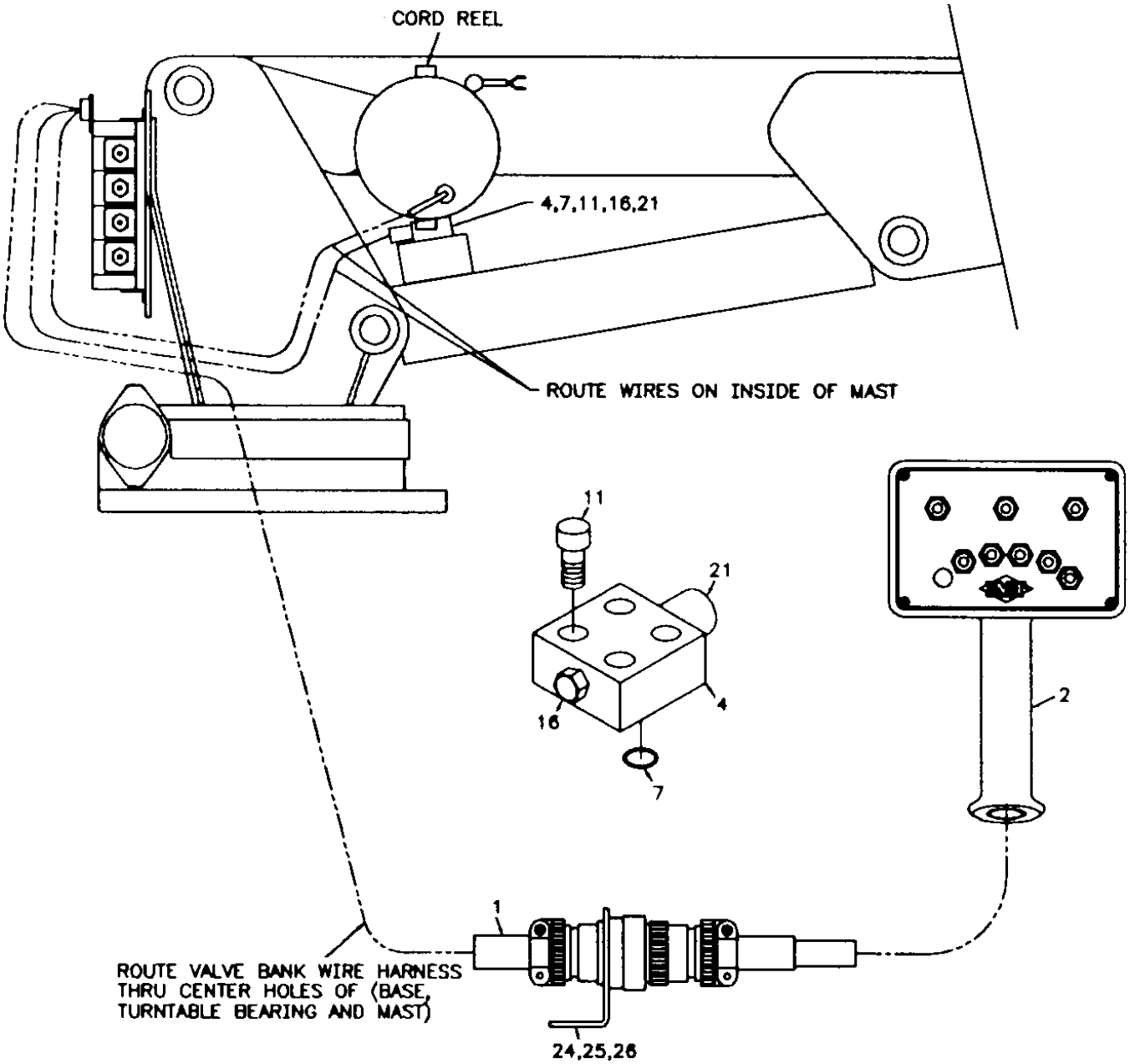
ELECTRIC RMT CTRL KIT (90713516-2)



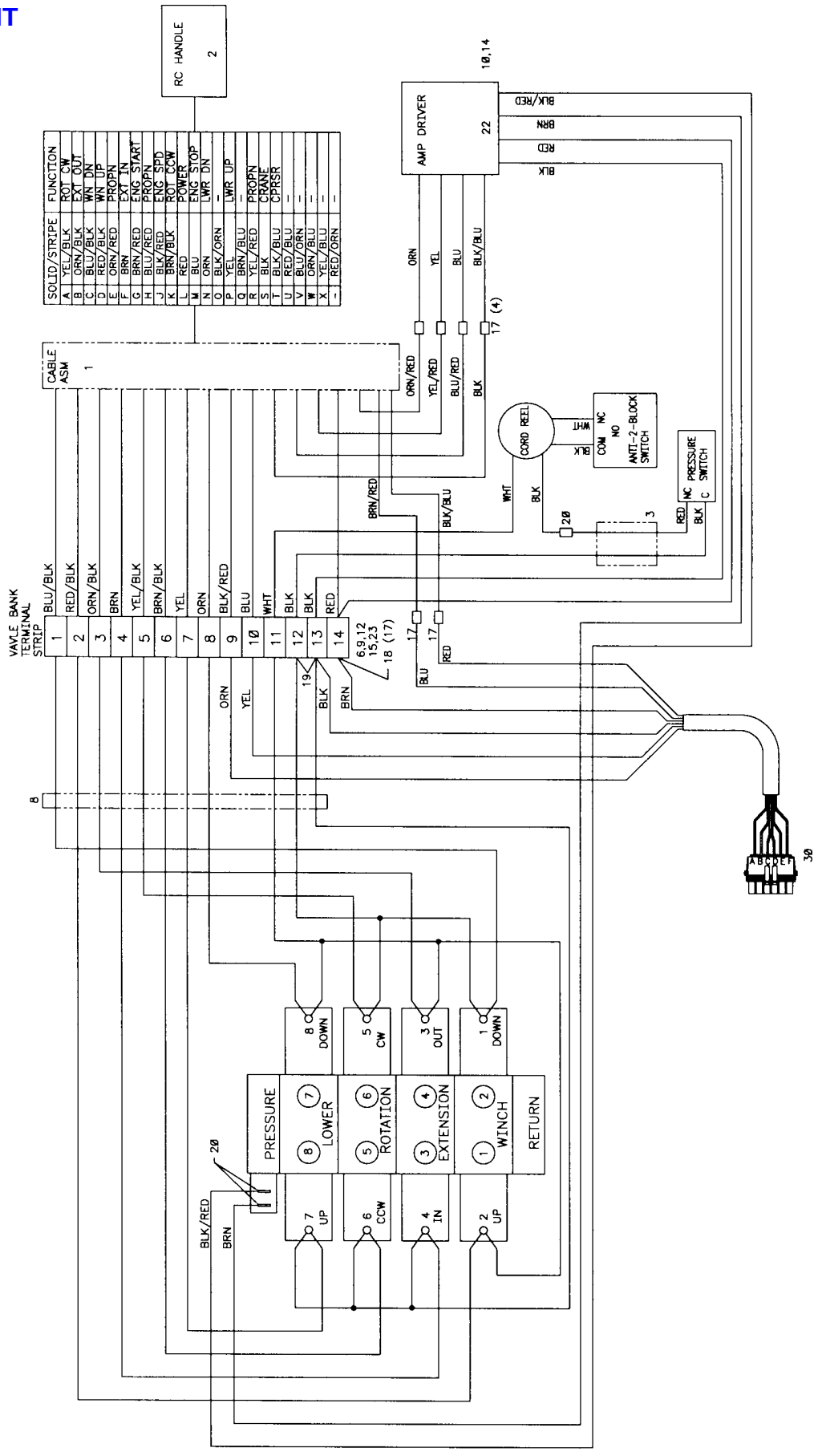
PROP'L RMT CTRL KIT (90713515-1)

CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
1.	51713501	CABLE ASM 18GA/24WIRE X 72	1
2.	51713498	HANDLE ASM	1
3.	51704788	CABLE ASM 14GA/2WIRE X 43	1
4.	60025221	MANIFOLD-CAPACITY ALERT	1
6.	60105825	TERMINAL BLOCK MTG	1
7.	7Q072015	O-RING	1
8.	70034060	PLASTIC TIE	4
9.	72060002	CAP SCR 1/4-20X3/4 HHGR5	1
10.	72060703	CAP SCR 1/4-20X1/2 SH	2
11.	72060731	CAP SCR 5/16-18X3/4 SH	4
12.	72061009	SHT MTL SCR #6X3/4 PH	2
14.	72063049	WASHER 1/4 LOCK	2
15.	72066525	HOSE CLAMP 3/4 VINYL COVER	1
16.	72532140	PLUG #6STR HH	1
17.	77040047	TERMINAL 1/4 MSLPON 16-14GA	6
18.	77040051	TERMINAL #8SPRSPD 16-14GA	17
19.	77040130	JUMPER BAR	1
20.	77040186	TERMINAL 1/4 FSLPON 16-14GA	3
21.	77041222	PRESSURE SWITCH	1
22.	77041390	AMP DRIVER	1
23.	77044309	TERMINAL BLOCK-14 CONTACT	1
24.	60119299	MOUNTING BRACKET	1
25.	77044645	NUT-CONNECTOR	1
26.	77044646	WASHER-CONNECTOR	1
30.	77044749	CABLE ASM-14GA/6 WIREX72	1



PROP'L RMT CTRL KIT (90713515-2)

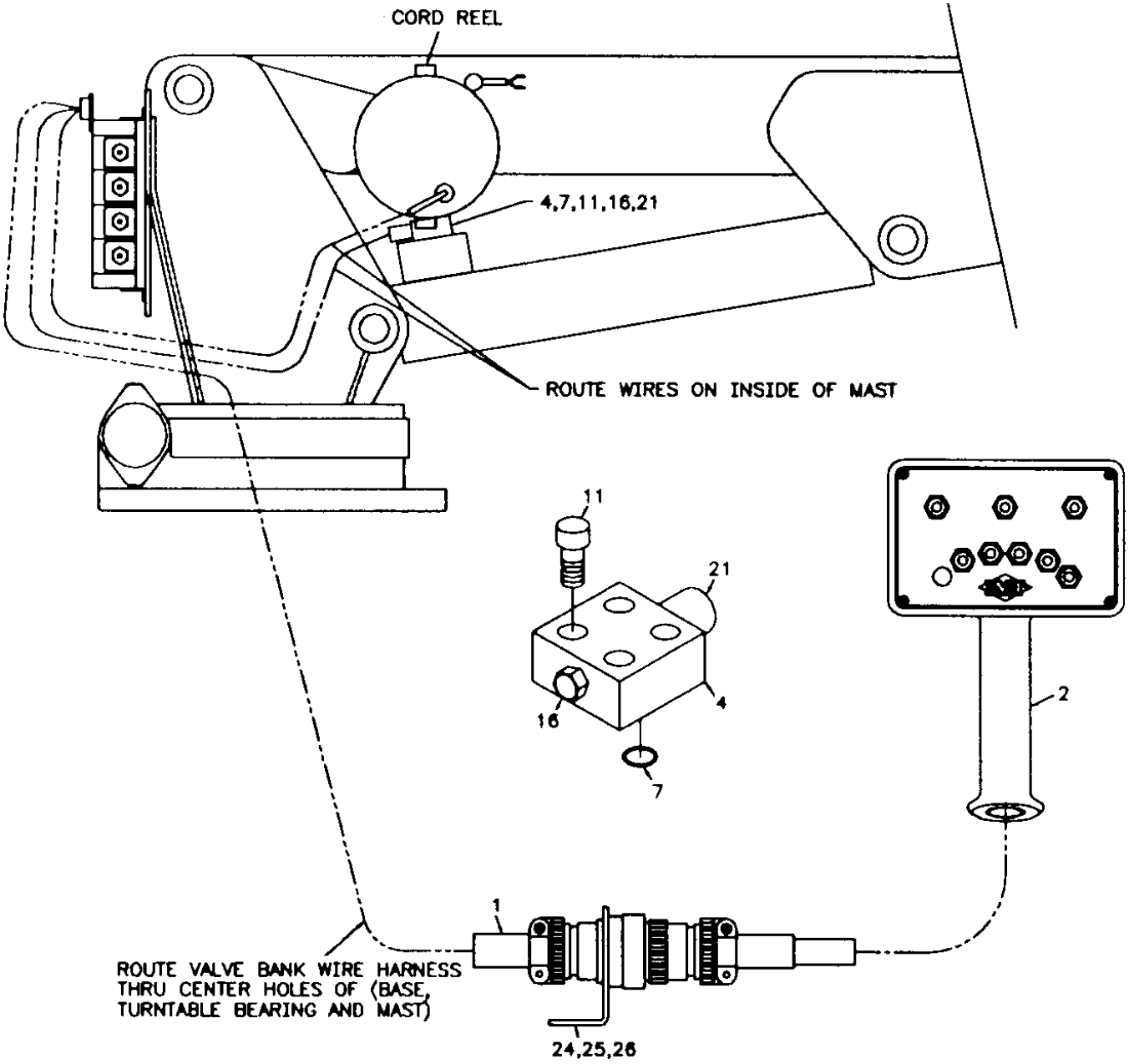


RMT CTRL KIT-PTO (90713514-1)

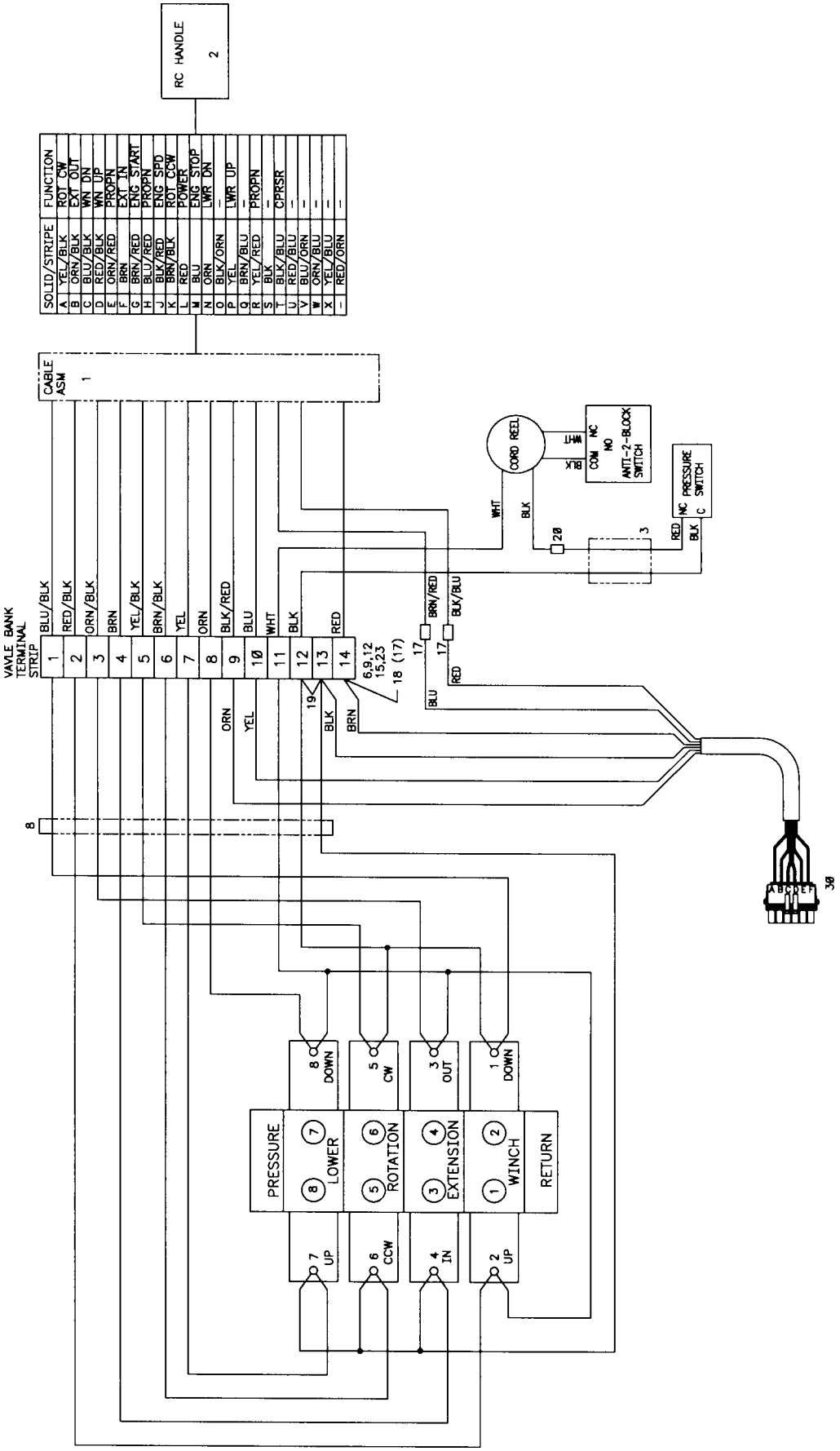
ITEM	PART NO.	DESCRIPTION	QTY
1.	51713501	CABLE ASM 18GA/24WIRE X 72	1
2.	51713384	HANDLE ASM	1
3.	51704788	CABLE ASM 14GA/2WIRE X 43	1
4.	60025221	MANIFOLD-CAPACITY ALERT	1
6.	60105825	TERMINAL BLOCK MTG	1
7.	7Q072015	O-RING	1
8.	70034060	PLASTIC TIE	4
9.	72060002	CAP SCR 1/4-20X3/4 HHGR5	1
11.	72060731	CAP SCR 5/16-18X3/4 SH	4
12.	72061009	SHT MTL SCR #6X3/4 PH	2
15.	72066525	HOSE CLAMP 3/4 VINYL COVER	1

CONTINUED

16.	72532140	PLUG #6STR HH	1
17.	77040047	TERMINAL 1/4MSLPON 16-14GA	2
18.	77040051	TERMINAL #8SPRSPD 16-14GA	17
19.	77040130	JUMPER BAR	1
20.	77040186	TERMINAL 1/4 FSLPON 16-14GA	1
21.	77041222	PRESSURE SWITCH	1
23.	77044309	TERMINAL BLOCK-14 CONTACT	1
24.	60119299	MOUNTING BRACKET	1
25.	77044645	NUT-CONNECTOR	1
26.	77044646	WASHER-CONNECTOR	1
30.	77044749	CABLE ASM-14GA/6 WIREX72	1

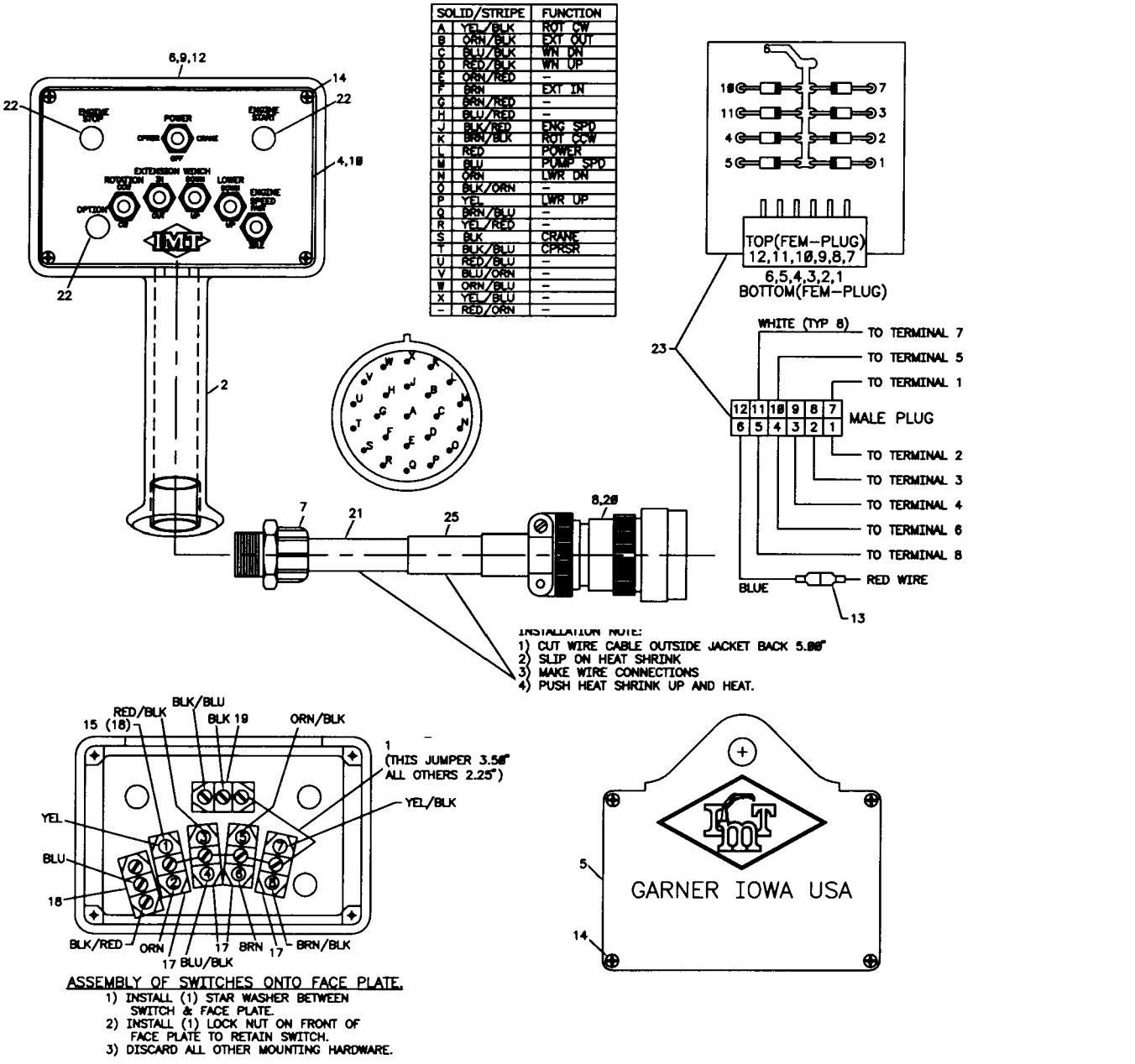


RMT CTRL KIT-PTO (90713514-2)



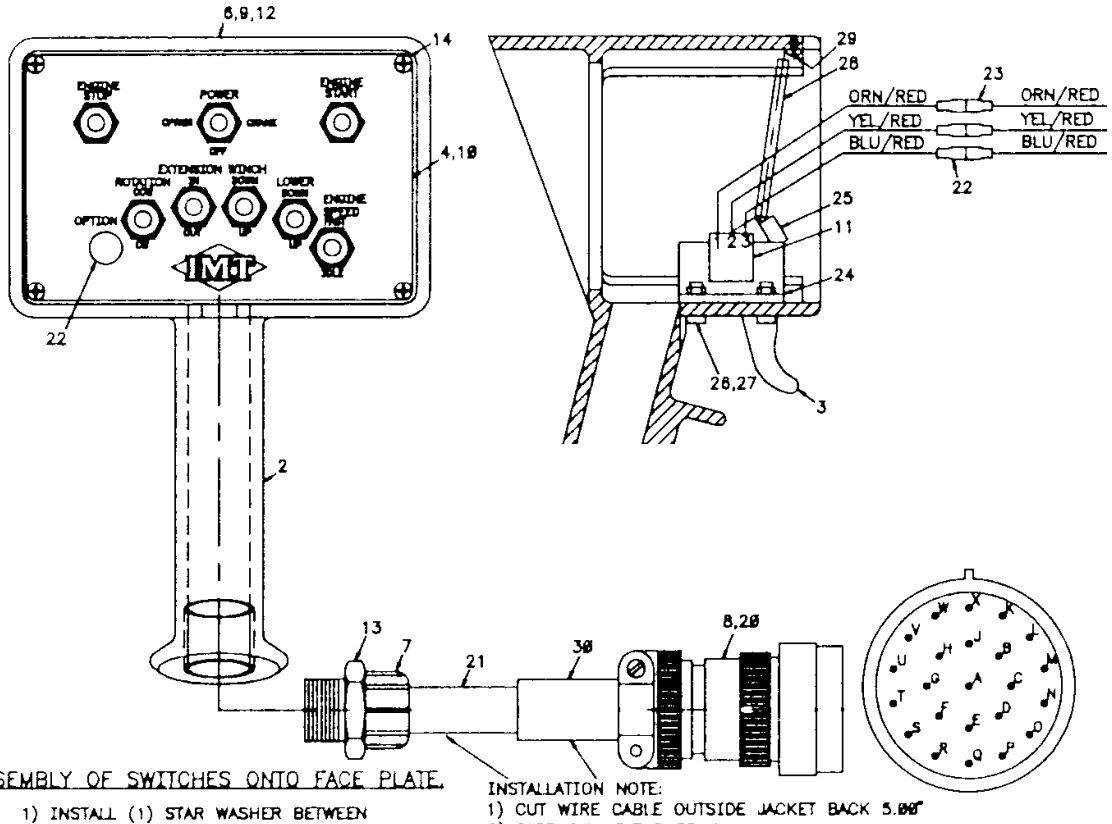
RMT HANDLE ASM-DUPLEX PUMP (51713383)

ITEM	PART NO.	DESCRIPTION	QTY
1.	89044214	WIRE 18GAX4 GRN	.86FT
2.	60119335	CONTROL HANDLE	1
4.	60119277	COVER	1
5.	70034306	BACK COVER	1
8.	77044621	PIN	23
9.	70394447	DECAL-DGR RC ELECTRO SM	1
10.	70394142	DECAL-CTRL	1
13.	77040047	TERM 1/4 TAB 16-14GA	1
14.	72061009	SHT MTL SCR #6X3/4 PH	8
15.	77040051	TERML-SPRSPD #8 16-14GA	18
17.	77040372	TOGGLE SWITCH SPDT	4
18.	77040373	TOGGLE SWITCH SPST	1
19.	77040374	TOGGLE SWITCH SPDT	1
20.	77044579	CONNECTOR	1
21.	89044100	CABLE 18GA 24WIRE	30FT
22.	70392785	PLUG 1/2	3
23.	77041407	DIODE BOARD	1
24.	77044196	CONNECTOR	1
25.	70145495	HEAT SHRINK	.50FT



PROP'L RMT HANDLE ASM (51713498)

ITEM	PART NO.	DESCRIPTION	QTY
1.	60045031	WIRE 18GAX4 GRN	7
2.	60119335	CONTROL HANDLE	1
3.	60111141	TRIGGER	1
4.	60119277	COVER	1
5.	70034306	BACK COVER	1
6.	70029119	SERIAL NUMBER PLACARD	1
7.	77044196	CORD GRIP	1
8.	77044621	PIN	23
9.	70394447	DECAL-DGR RC ELECTRO SM	1
10.	70394142	DECAL-CTRL	1
11.	51707507	POTENTIOMETER ASM	1
12.	72066340	POP RIVET 1/8X3/8 GRIP	2
13.	72531833	REDUCER BUSHING 3/4 X 1/2	1
14.	72061009	SHT MTL SCR #6X3/4 PH	8
15.	77040051	TERM-SPRSPD #8 16-14GA	23
16.	77040371	TOGGLE SWITCH SPST	2
17.	77040372	TOGGLE SWITCH SPDT	4
18.	77040373	TOGGLE SWITCH SPST	1
19.	77040374	TOGGLE SWITCH SPDT	1
20.	77044579	CONNECTOR	1
21.	89044100	CABLE 18GA 24WIRE	30FT
22.	70392785	PLUG 1/2	1
23.	77040186	TERMINAL 1/4 FSLPON 16-14GA	3
24.	60111142	MOUNTING 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
30.	70145495	HEAT SHRINK	4"

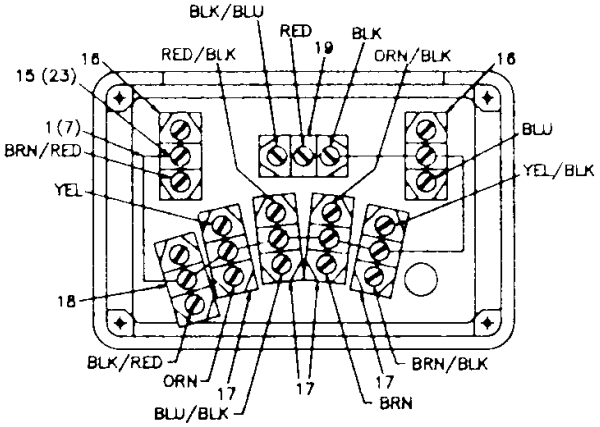


ASSEMBLY OF SWITCHES ONTO FACE PLATE.

1) INSTALL (1) STAR WASHER BETWEEN SWITCH & FACE PLATE.
2) INSTALL (1) LOCK NUT ON FRONT OF FACE PLATE TO RETAIN SWITCH.
3) DISCARD ALL OTHER MOUNTING HARDWARE.

INSTALLATION NOTE:

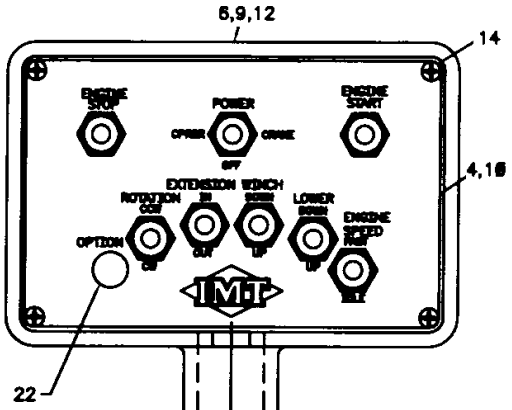
1) CUT WIRE CABLE OUTSIDE JACKET BACK 5.00"
2) SLIP ON HEAT SHRINK
3) MAKE WIRE CONNECTIONS
4) PUSH HEAT SHRINK UP AND HEAT.



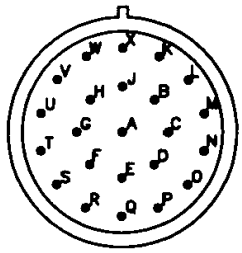
	SOLID/STRIPE	FUNCTION
A	YEL/BLK	ROT CW
B	ORN/BLK	EXT OUT
C	BLU/BLK	WN DN
D	RED/BLK	WN UP
E	ORN/RED	PROPN
F	BRN	EXT IN
G	BRN/RED	ENG START
H	BLU/RED	PROPN
J	BLK/RED	ENG SPD
K	BRN/BLK	ROT CCW
L	RED	POWER
M	BLU	ENG STOP
N	ORN	LWR DN
Q	BLK/ORN	–
P	YEL	LWR UP
Q	BRN/BLU	–
R	YEL/RED	PROPN
S	BLK	CRANE
T	BLK/BLU	CPRSR
U	RED/BLU	–
V	BLU/ORN	–
W	ORN/BLU	–
X	YEL/BLU	–
–	RED/ORN	–

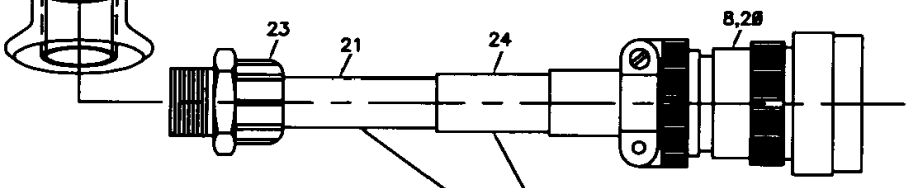
RMT HANDLE ASM-PTO (51713384)

ITEM	PART NO.	DESCRIPTION	QTY
1.	89044214	WIRE 18GAX GRN STRD	1.42FT
2.	60119335	CONTROL HANDLE	1
4.	60119277	COVER	1
5.	70034306	BACK COVER	1
8.	77044621	PIN	23
9.	70394447	DECAL-DGR RC ELECTRO SM	1
10.	70394142	DECAL-CTRL	1
14.	72061009	SHT MTL SCR #6X3/4 PH	8
15.	77040051	TERM-SPRSPD #8 16-14GA	23
16.	77040371	TOGGLE SWITCH SPST	2
17.	77040372	TOGGLE SWITCH SPDT	4
18.	77040373	TOGGLE SWITCH SPST	1
19.	77040374	TOGGLE SWITCH SPDT	1
20.	77044579	CONNECTOR	1
21.	89044100	CABLE 18GA 24WIRE	30FT
22.	70392785	PLUG 1/2	1
23.	77044196	CONNECTOR	1
24.	70145495	HEAT SHRINK	.50FT

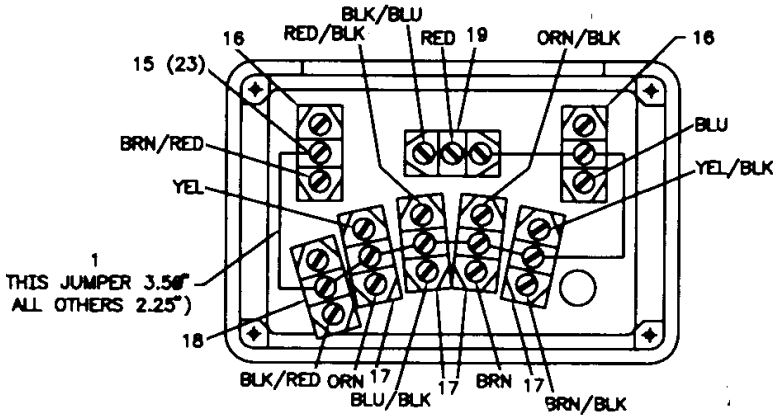


	SOLID/STRIPE	FUNCTION
A	YEL/BLK	ROT CW
B	ORN/BLK	EXT OUT
C	BLU/BLK	WN DN
D	RED/BLK	WN UP
E	ORN/RED	–
F	BRN	EXT IN
G	BRN/RED	ENG START
H	BLU/RED	–
J	BLK/RED	ENG SPD
K	BRN/BLK	ROT CCW
L	RED	POWER
M	BLU	ENG STOP
N	ORN	LWR DN
O	BLK/ORN	–
P	YEL	LWR UP
Q	BRN/BLU	–
R	YEL/RED	–
S	BLK	–
T	BLK/BLU	CPRSR
U	RED/BLU	–
V	BLU/ORN	–
W	ORN/BLU	–
X	YEL/BLU	–
–	RED/ORN	–

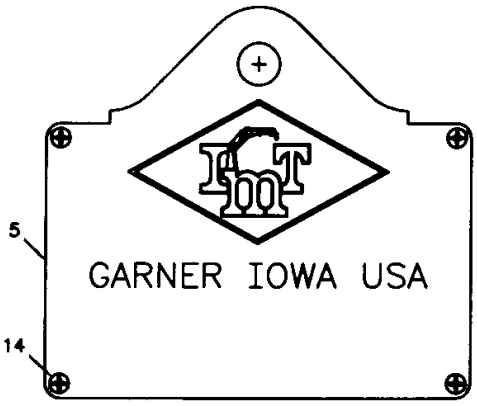




INSTALLATION NOTE:
1) CUT WIRE CABLE OUTSIDE JACKET BACK 5.00"
2) SLIP ON HEAT SHRINK
3) MAKE WIRE CONNECTIONS
4) PUSH HEAT SHRINK UP AND HEAT.

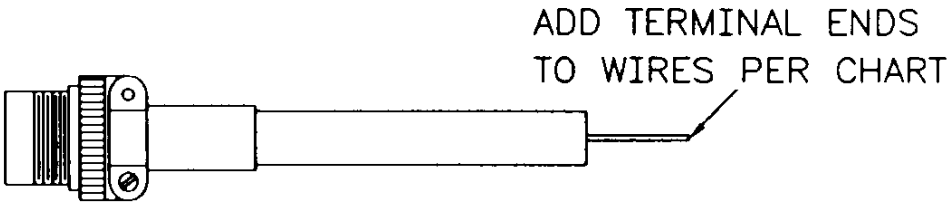


ASSEMBLY OF SWITCHES ONTO FACE PLATE.
1) INSTALL (1) STAR WASHER BETWEEN SWITCH & FACE PLATE.
2) INSTALL (1) LOCK NUT ON FRONT OF FACE PLATE TO RETAIN SWITCH.
3) DISCARD ALL OTHER MOUNTING HARDWARE.

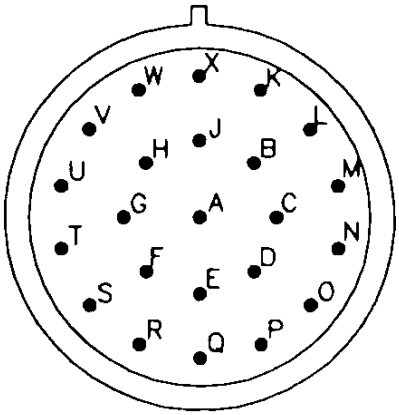


CABLE ASM-18GA/24W X 72 (51713501)

ITEM	PART NO.	DESCRIPTION	QTY
1.	89044100	CABLE 18GA/24WIRE	72"
2.	77040186	TERM-1/4 FSLPON 16-14GA	6
3.	77040051	TERM-#8 SPRSPD 16-14GA	11
4.	77044620	CONNECTOR	1
5.	77044580	SOCKET	23

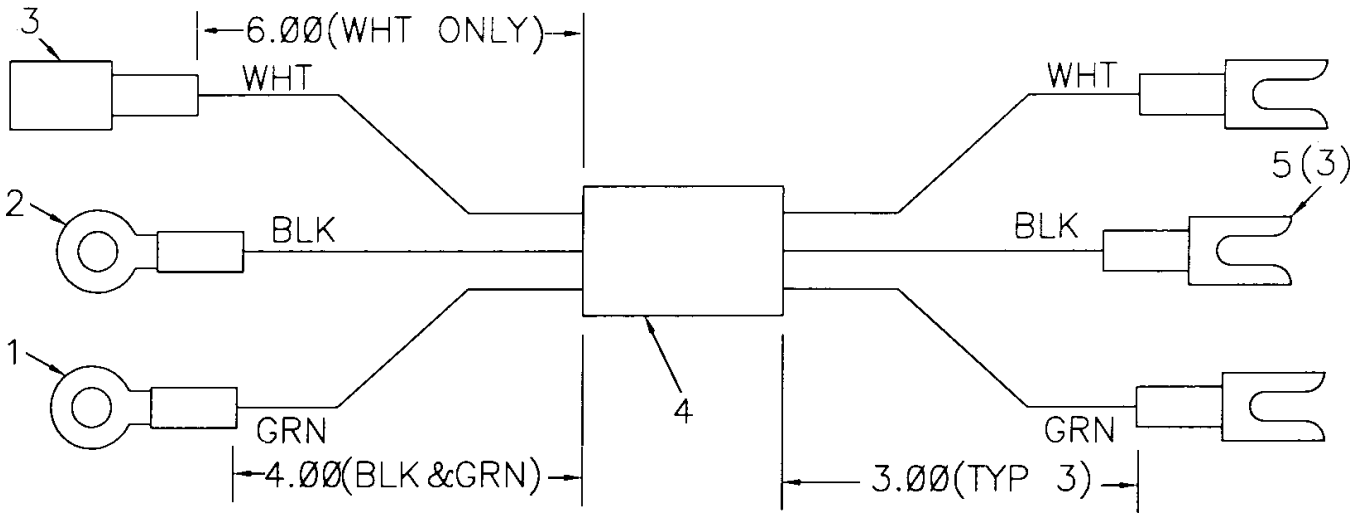


SOLID/STRIPE		TERM ITEM NO
A	YEL/BLK	3
B	ORN/BLK	3
C	BLU/BLK	3
D	RED/BLK	3
E	ORN/RED	2
F	BRN	3
G	BRN/RED	2
H	BLU/RED	2
J	BLK/RED	3
K	BRN/BLK	3
L	RED	3
M	BLU	3
N	ORN	3
0	BLK/ORN	–
P	YEL	3
Q	BRN/BLU	–
R	YEL/RED	2
S	BLK	2
T	BLK/BLU	2
U	RED/BLU	–
V	BLU/ORN	–
W	ORN/BLU	–
X	YEL/BLU	–
–	RED/ORN	–



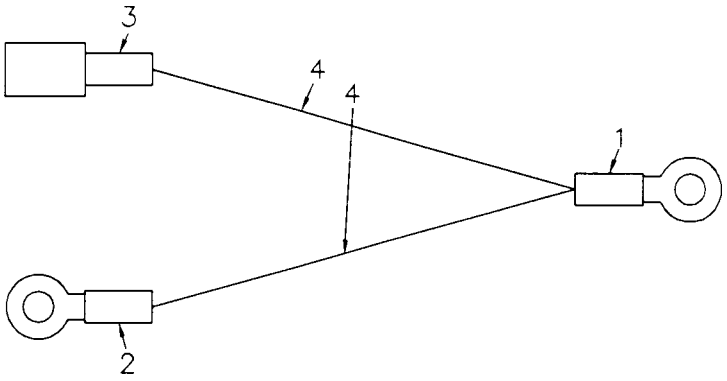
CABLE ASM-ELEC PWR UNIT GROUND (51704787)

ITEM	PART NO.	DESCRIPTION	QTY
1.	77044651	TERMINAL 3/8 RING 16-14GA	1
2.	77040000	TERMINAL #10 RING 16-14GA	1
3.	77040186	TERMINAL 1/4 FSLPON 16-14GA	1
4.	89044053	CABLE 16GA/3WIRE	35"
5.	77040051	TERMINAL #8 SPRSPD 16-14GA	3



CABLE ASM-ELEC PWR UNIT GROUND (51713682)

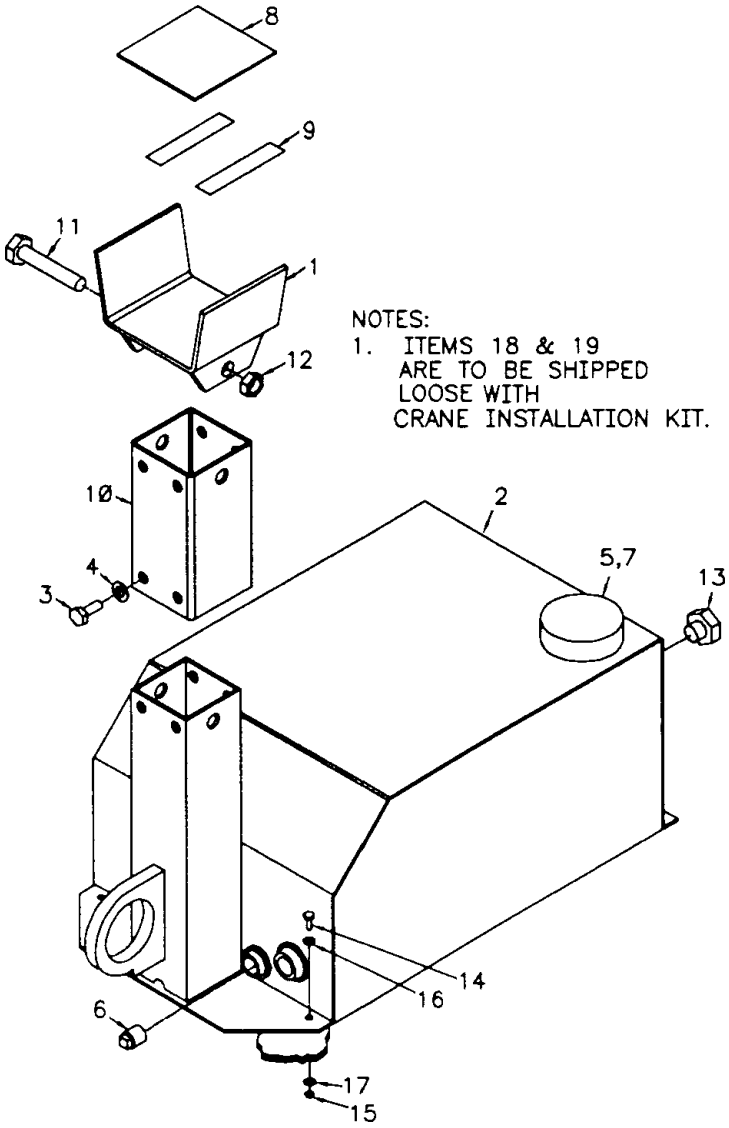
ITEM	PART NO.	DESCRIPTION	QTY
1.	77044651	TERMINAL 3/8 RING 16-14GA	1
2.	77040000	TERMINAL #10 RING 16-14GA	1
3.	77040186	TERMINAL 1/4 FSLPON 16-14GA	1
4.	89044398	WIRE 16GA BLK X 6	2



OPTION-BOOM SUPPORT/RESERVOIR 20 GAL (51706910)

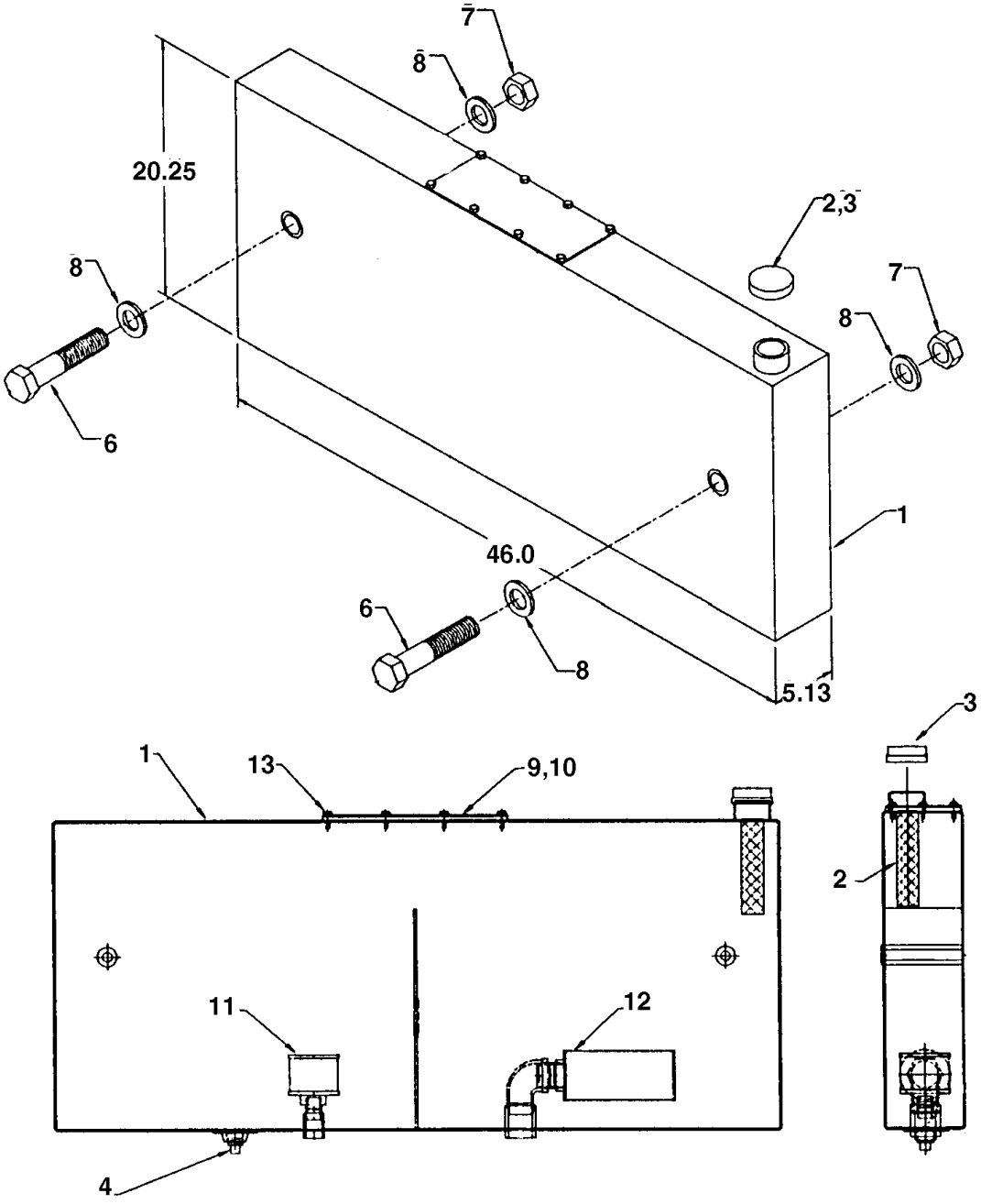
ITEM	PART NO.	DESCRIPTION	QTY
1.	52705061	SADDLE	1
2.	52706909	RESERVOIR, 20 GAL.	1
3.	72060092	CAP SCREW, 1/2 X 1 1/4 GR5	4
4.	72063053	WASHER, LOCK, 1/2	4
5.	73014671	CAP, FILL	1
6.	73052001	PLUG, MAGNETIC, 3/4 NPT	1
7.	73141276	SCREEN, FILL NECK	1
8.	60030162	PAD, WEAR	1
9.	70086054	TAPE	12"
10.	60109252	TUBE, SADDLE	1
11.	72060195	CAP SCREW, 3/4 X 7 GR5	1
12.	72062114	NUT, SELF LOCKING, 3/4	1
13.	72532261	PLUG, SIGHT GAUGE, 3/4	1
14.	72060046	CAP SCREW, 3/8 X 1 GR5	4
15.	72062103	NUT, SELF LOCKING, 3/8	4
16.	72063003	WASHER, FLAT, 3/8	4
17.	76392821	SEAL, THREAD, 3/8	4
18.	73052012	SUCTION FILTER	1*
19.	72053211	PIPE NIPPLE	1*
20.	70394189	PLACARD-MOBILOIL	1

* ITEMS 18 & 19 ARE SHIPPED LOOSE.



OPTION-RESERVOIR 18 GAL-BULKHEAD (51707798)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52711432	RESERVOIR WELDMENT	1REF
2.	70142482	FILL NECK STRAINER	1REF
3.	70142483	FILL CAP	1REF
4.	72053503	PIPE PLUG 3/4NPT SQHD	1REF
6.	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	2
7.	72062080	NUT 1/2-13 LOCK	2
8.	72063005	WASHER 1/2 WRT	8
9.	76394152	GASKET 1/4X4-5/8X11-5/8	1
10.	60119158	COVER PLATE	1
11.	70733058	DIFFUSER-33 GAL 3/4NPT	1
12.	70733059	STRAINER-20GPM 1-1/4NPT	1
13.	72061151	SCR 1/4X1 SLFTPG W/SEAL	10
	51711433	RESERVOIR ASM (INCL:1-4)	1REF



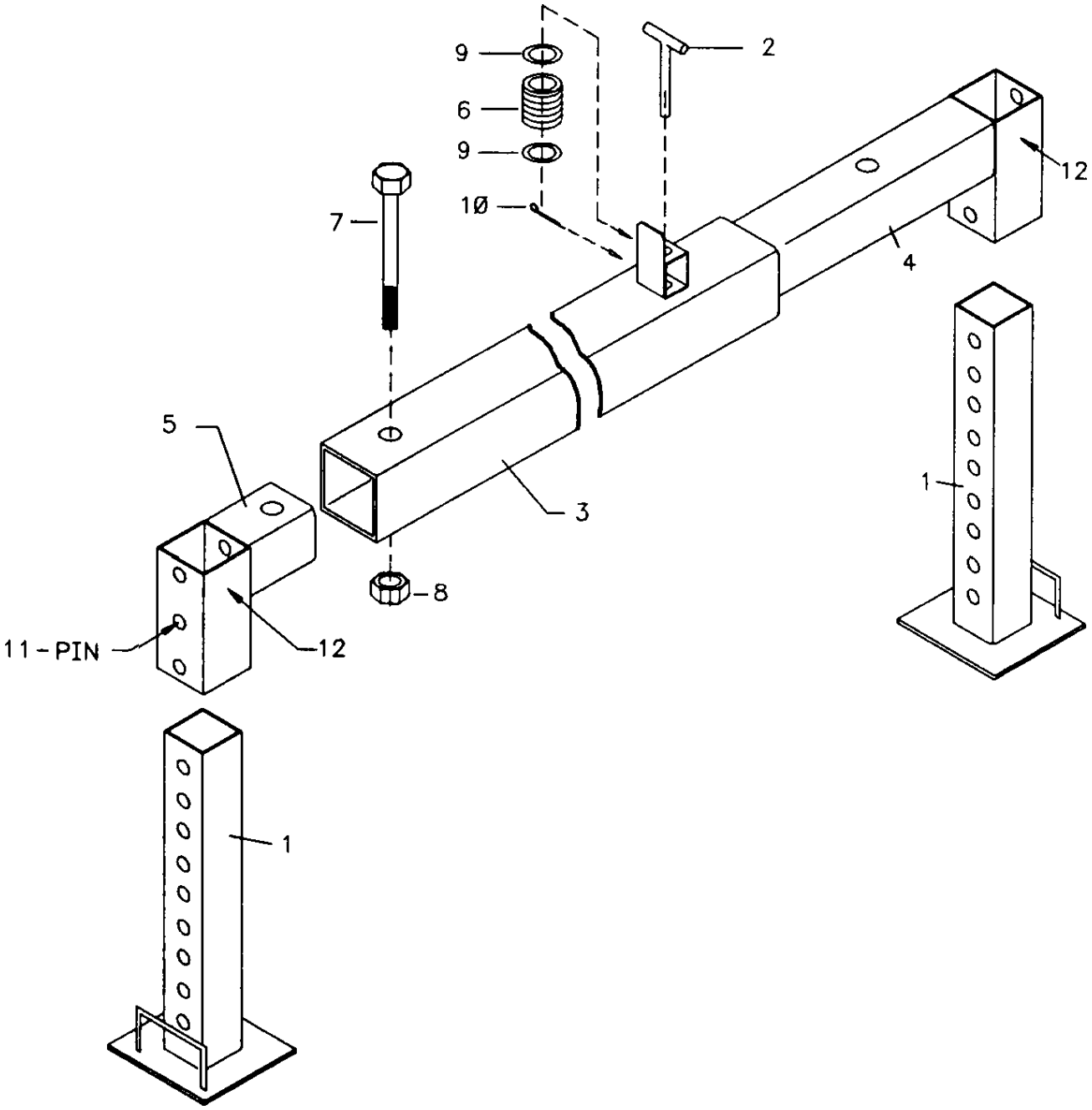
AUX OUTRIGGERS-REAR-MO/MD (31711125)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52703353	OUTRIGGER LEG-MNL DN	2
2.	52070138	T-PIN	1
3.		OUTRIGGER HOUSING	1
4.	52712688	ARM-ADJ MNL OUT/DN	1
5.	52712689	ARM-STAT MNL OUT/DN	1
6.	60010351	SPRING	1
7.	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	1
8.	72062080	NUT 1/2-13 LOCK	1
9.	72063007	WASHER 5/8 WRT	2
10.	72066185	COTTER PIN 5/32X1	1
11.	71731461	PIN-QUICK RELEASE	2
12.	70392864	DECAL-DANGER STAND CLEAR	2

INSTALLATION NOTE

OUTRIGGER HOUSING TUBE (ITEM 3)MUST BE TIED INTO THE STRUCTURAL SUPPORT OF THE CRANE.

DECAL PLACEMENT	
ITEM	**LOCATION**
14	ONE ON EACH OUTRIGGER



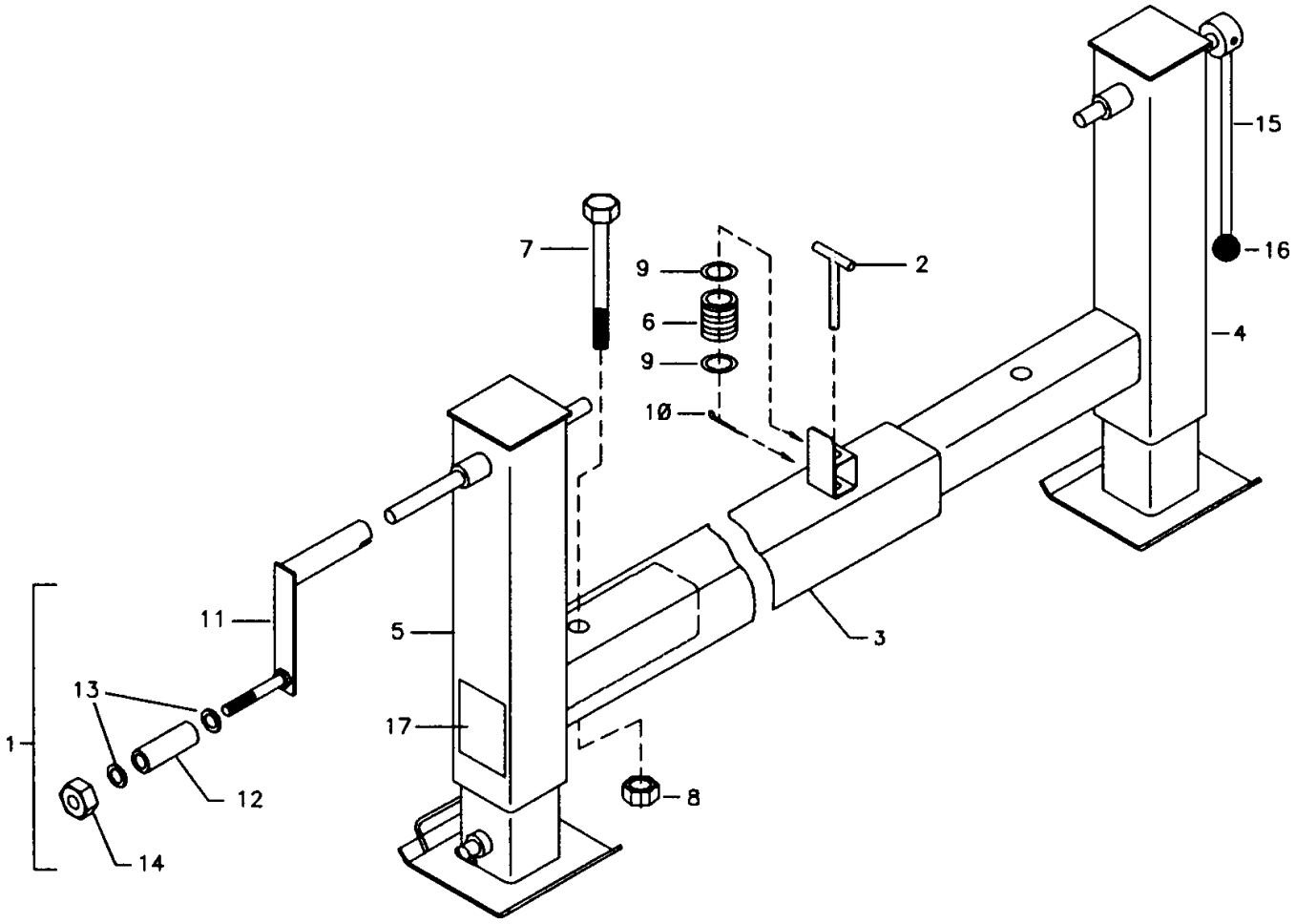
AUX OUTRIGGER-MO/CRANK DN (31711126)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51705040	CRANK ASM (INCLUDES 11-14)	1
2.	52070138	T-PIN	1
3.	52704814	HOUSING	1
4.	52712690	ARM-ADJUSTABLE	1
5.	52712691	ARM-STATIONARY	1
6.	60010351	SPRING	1
7.	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	1
8.	72062080	NUT 1/2-13 HEX LOCK	1
9.	72063007	WASHER 5/8 WRT	2
10.	72066185	COTTER PIN 5/32X1	1
11.	52705039	CRANK (PART OF 1)	1REF
12.	60030099	ROLLER (PART OF 1)	1REF
13.	72063003	WASHER 3/8 WRT (PART OF 1)	2REF
14.	72062103	NUT 3/8-16 LOCK (PART OF 1)	1REF
15.	52703319	CRANK HANDLE	1
16.	71039096	CONTROL KNOB 1-1/2"	1
17.	70392864	DECAL-DANGER STAND CLEAR	2

INSTALLATION NOTE

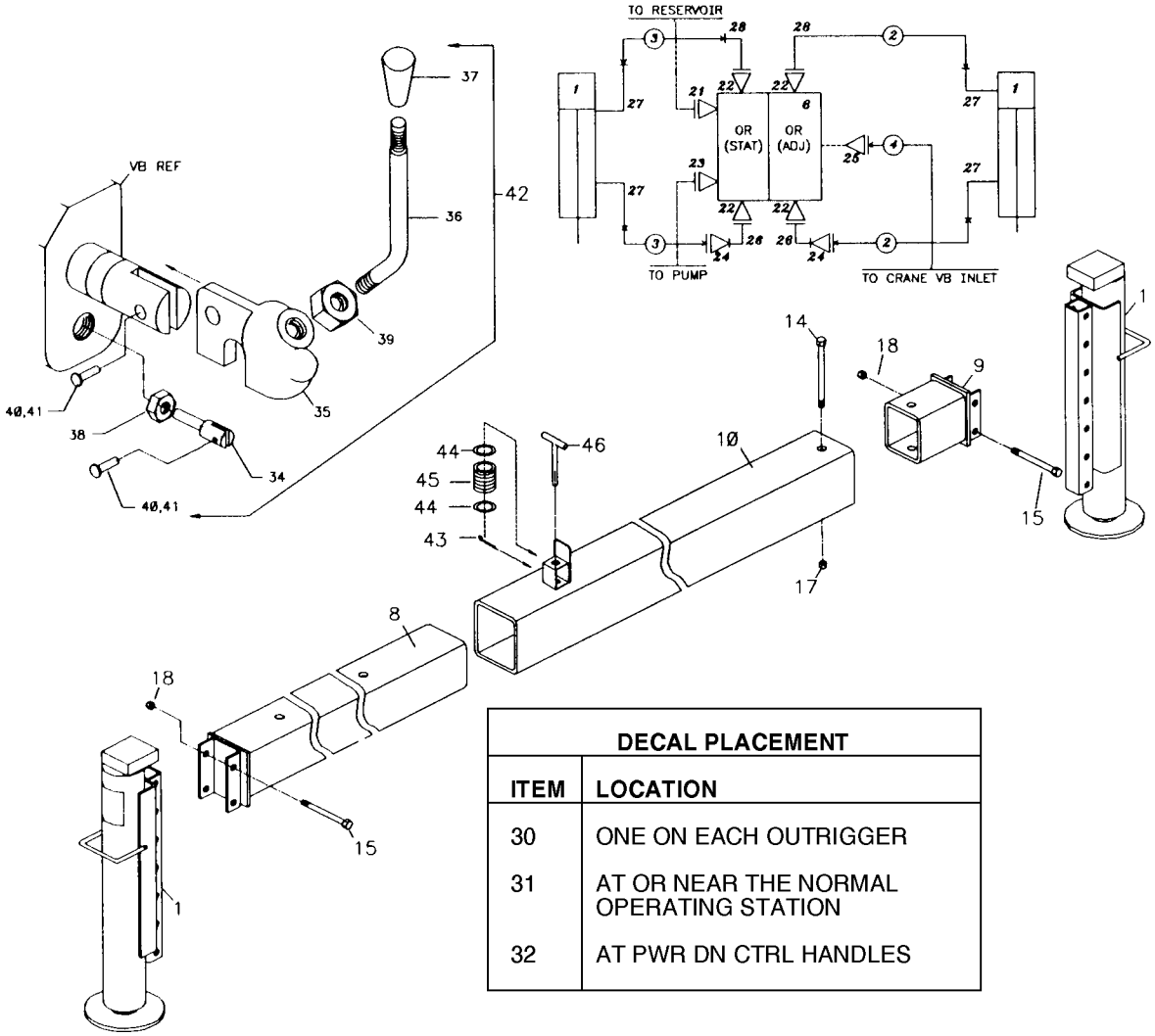
OUTRIGGER HOUSING TUBE MUST BE TIED INTO THE STRUCTURAL SUPPORT OF THE CRANE.

DECAL PLACEMENT	
ITEM	**LOCATION**
17	ONE ON EACH OUTRIGGER



AUX OUTRIGGER-MO/PD (31711127)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B048870	POWER DOWN CYLINDER	2
2.	51705191	HOSE ASM 1/4X96 FF	2
3.	51703596	HOSE ASM 1/4X120 FF	2
4.	51703939	HOSE ASM 1/2X96 FF	1
6.	51705983	VALVEBANK 2-SECT (INCL:42)	1
8.	52711140	ARM-ADJUSTABLE	1
9.	52711139	ARM-STATIONARY	1
10.	52704814	OUTRIGGER HOUSING	1
14.	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	1
15.	72060155	CAP SCR 5/8-11X3-1/2 HHGR5	4
17.	72062080	NUT 1/2-13 LOCK	1
18.	72062091	NUT 5/8-11 LOCK	4
21.	72532365	ADAPTER #10MSTR #12MJIC	1
22.	72532722	ADAPTER #10MSTR #6FSTR	4
23.	72532358	ADAPTER #8MSTR #8MJIC	1
24.	72532707	ADAPTER #4MJIC #6MJIC	2
25.	72053764	ELBOW #10MSTR #8MJIC 90°	1
26.	72532700	ELBOW #6MSTR#6MJIC XLG 90°	2
27.	72053758	ELBOW #4MSTR #4MJIC 90°	4
28.	72532699	ELBOW #6MSTR #4MJIC 90°	2
30.	70392864	DECAL-DGR STAND CLEAR	2
31.	70392867	DECAL-DGR OUTRGR MOVING	1
32.	71392257	DECAL-CONTROL PO	1
34.	70142648	LEVER PIVOT (PART OF 42)	2REF
35.	70142650	LEVER SUPPORT (PART OF 42)	2REF
36.	70142651	LEVER-CTRL HNDL (PART 42)	2REF
37.	71392269	KNOB (PART OF 42)	2REF
38.	72062021	NUT 5/16-18 HEX (PART OF 42)	2REF
39.	72062024	NUT 1/2-13 HEX(PART OF 42)	2REF
40.	72066162	COTTER PIN (PART OF 42)	4REF
41.	72661204	CLEVIS PIN (PART OF 42)	4REF
42.	51731580	HANDLE ASM (INCL:34-41) (PART OF 5)	2REF
43.	72066185	COTTER PIN 5/32X1	1
44.	72063007	WASHER 5/8 WRT	2
45.	60010351	SPRING	1
46.	52070138	T-PIN	1



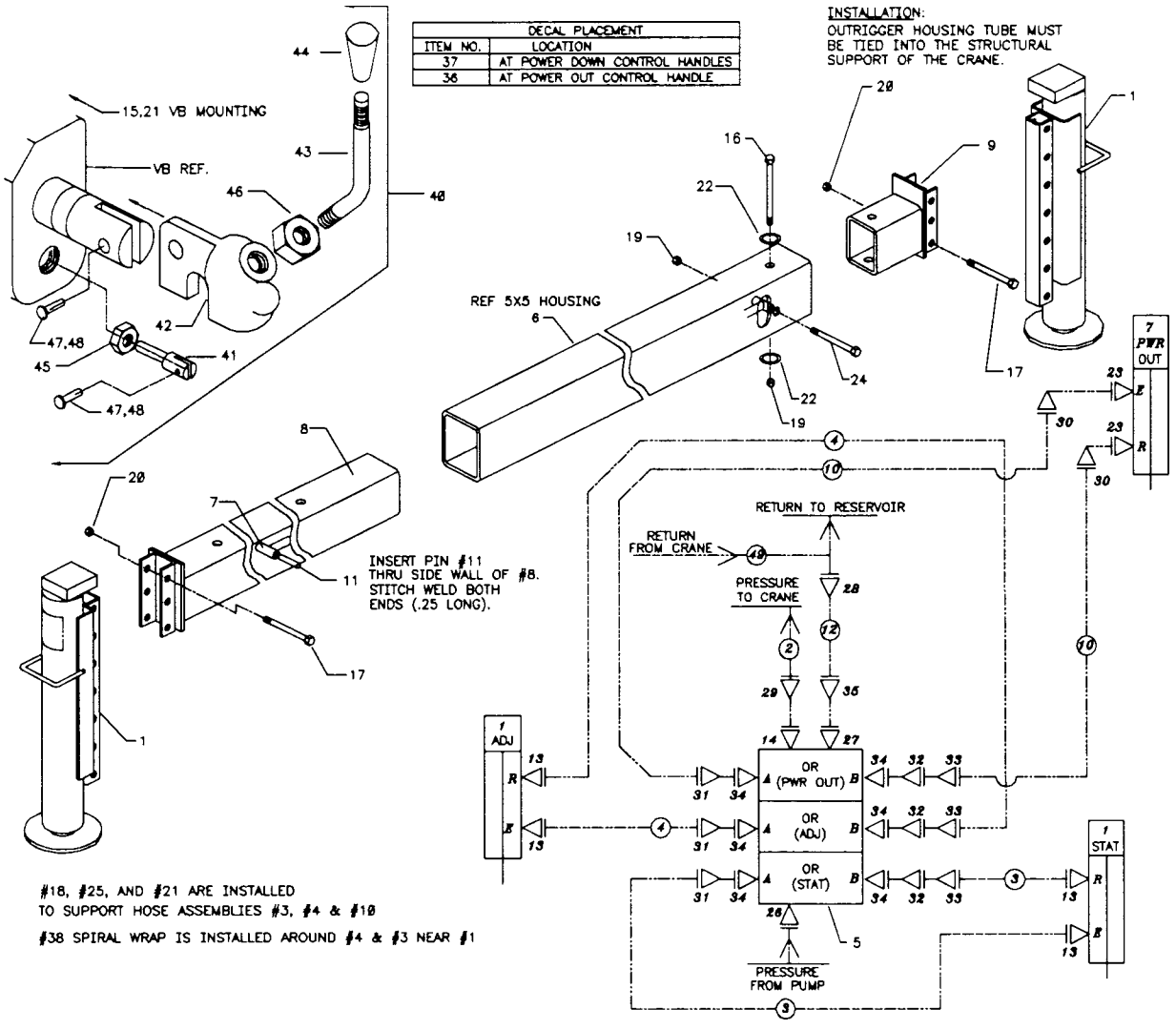
DECAL PLACEMENT	
ITEM	LOCATION
30	ONE ON EACH OUTRIGGER
31	AT OR NEAR THE NORMAL OPERATING STATION
32	AT PWR DN CTRL HANDLES

INSTALLATION NOTE

OUTRIGGER HOUSING TUBE MUST BE TIED INTO THE STRUCTURAL SUPPORT OF THE CRANE.

AUX OUTRIGGERS-PO/PD 5X5 (31711128)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B048870	CYLINDER-PWR DN	2
2.	51703604	HOSE ASM 3/8X134 FF	1
3.	51705364	HOSE ASM 1/4X128 FF	2
4.	51705191	HOSE ASM 1/4X96 FF	2
5.	51705984	VALVEBANK 3-SECT (INCL:40)	1
6.	60116643	TUBE	1
7.	3B142860	CYLINDER-PWR OUT	1
8.	52711140	ARM-ADJUSTABLE	1
9.	52711139	ARM-STATIONARY	1
10.	51707597	HOSE ASM 1/4X105 FF	2
11.	60107866	PIN	1
12.	51705062	HOSE ASM 1/2X48 FF	1
13.	72053758	ELBOW #4MSTR #4MJIC 90°	4
14.	72053764	ELBOW #10MSTR #8MJIC 90°	1
15.	72060025	CAP SCR 5/16-18X1 HHGR5	4
16.	72060104	CAP SCR 1/2-13X6-1/2 HHGR5	1
17.	72060155	CAP SCR 5/8-11X3-1/2 HHGR5	4
18.	72060833	SCR 5/16-18X3/4 THRD CUTING	2
19.	72062080	NUT 1/2-13 LOCK	2
20.	72062091	NUT 5/8-11 LOCK	4
21.	72063002	WASHER 5/16 WRT	6
22.	72063005	WASHER 1/2 WRT	2
23.	72532351	ADAPTER #4MSTR #4MJIC	4
24.	72601297	CAP SCR 1/2-13X5-3/4 HHGR5	1
25.	72066582	CLAMP	2
26.	72532358	ADAPTER #8MSTR #8MJIC	1
27.	72532365	ADAPTER #10MSTR #12MJIC	1
28.	72532769	TEE 9/16JIC 3/8TUBE	1
29.	72532658	ELBOW #8MJIC #8FJIC SW	1
30.	72532690	ELBOW #4MJIC #4FJIC SW	2
31.	72532699	ELBOW #6MSTR #4MJIC 90°	3
32.	72532700	ELBOW #6MSTR #6MJIC 90°XLG	3
33.	72532707	ADAPTER #4MJIC #6FJIC	3
34.	72532722	ADAPTER #10MSTR #6FSTR	6
35.	72532696	ELBOW #12MJIC #12FJIC SW	1
36.	71392277	DECAL-PWR OUT	1
37.	76391511	DECAL-STABILIZER	1
38.	89034049	SPIRAL WRAP	6'
39.	99900644	MANUAL-OUTRIGGER	1
40.	51731580	HANDLE (INCL:41-48,PART OF 5)	2REF
41.	70142648	PIVOT-LEVER (PART OF 40)	2REF
42.	70142650	LEVER SUPPORT (PART OF 40)	2REF
43.	70142651	LEVER-CTRL (PART OF 40)	2REF
44.	71392269	KNOB (PART OF 40)	2REF
45.	72062021	NUT 5/16-18 HEX (PART OF 40)	2REF
46.	72062024	NUT 1/2-13 HEX (PART OF 40)	2REF
47.	72066162	COTTER PIN (PART OF 40)	4REF
48.	72661204	CLEVIS PIN (PART OF 40)	4REF
49.	51703939	HOSE ASM 1/2X96 FF	1



CYLINDER-PWR DN (3B048870)

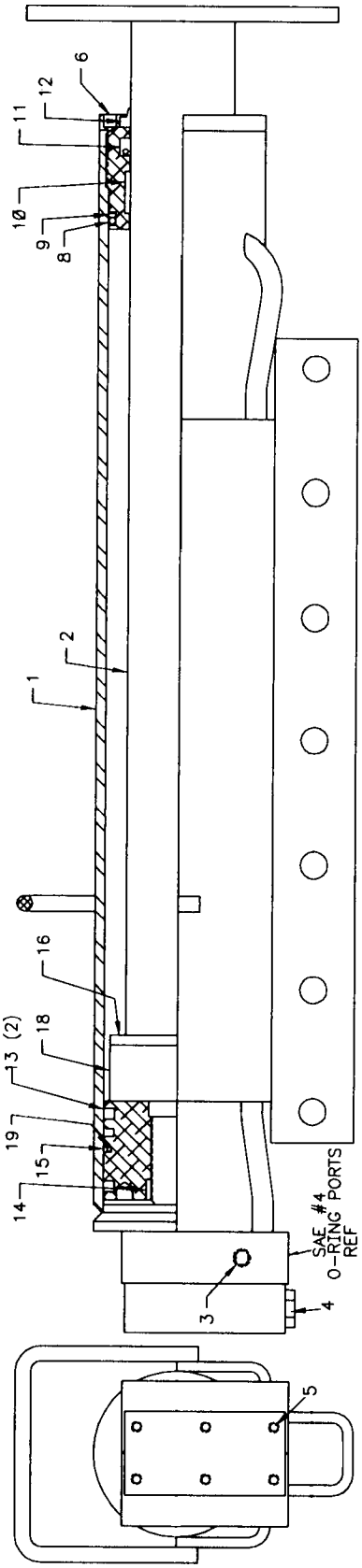
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B048870	CASE ASM	1
2.	4G048870	ROD ASM	1
3.	7PNPXT02	PIPE PLUG (PART OF 1)	4REF
4.	73054004	VALVE	1
5.	72060708	CAP SCR 1/4-20X1-1/4 SH	6
6.	6H035025	HEAD	1
7.	6I035125	PISTON	1
8.	7Q072338	O-RING (PART OF 17)	1REF
9.	7Q10P338	BACK-UP RING (PART OF 17)	1REF
10.	7T2N8027	WEAR RING (PART OF 17)	1REF
11.	7R546025	ROD SEAL (PART OF 17)	1REF
12.	7R14P025	ROD WIPER (PART OF 17)	1REF
13.	7T65I035	PISTON RING (PART OF 17)	2REF
14.	7T61N125	LOCK RING SEAL (PART OF 17)	1REF
15.	7T66P035	PISTON SEAL (PART OF 17)	1REF
16.	6A025025	WAFER LOCK (PART OF 17)	1REF
17.	9C142020	SEAL KIT (INCL:8-16,19)	1
18.	6C150025	STOP TUBE	1
19.	7Q072151	O-RING (PART OF 17)	1REF

NOTE

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

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

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



CYLINDER-PWR OUT (3B142860)

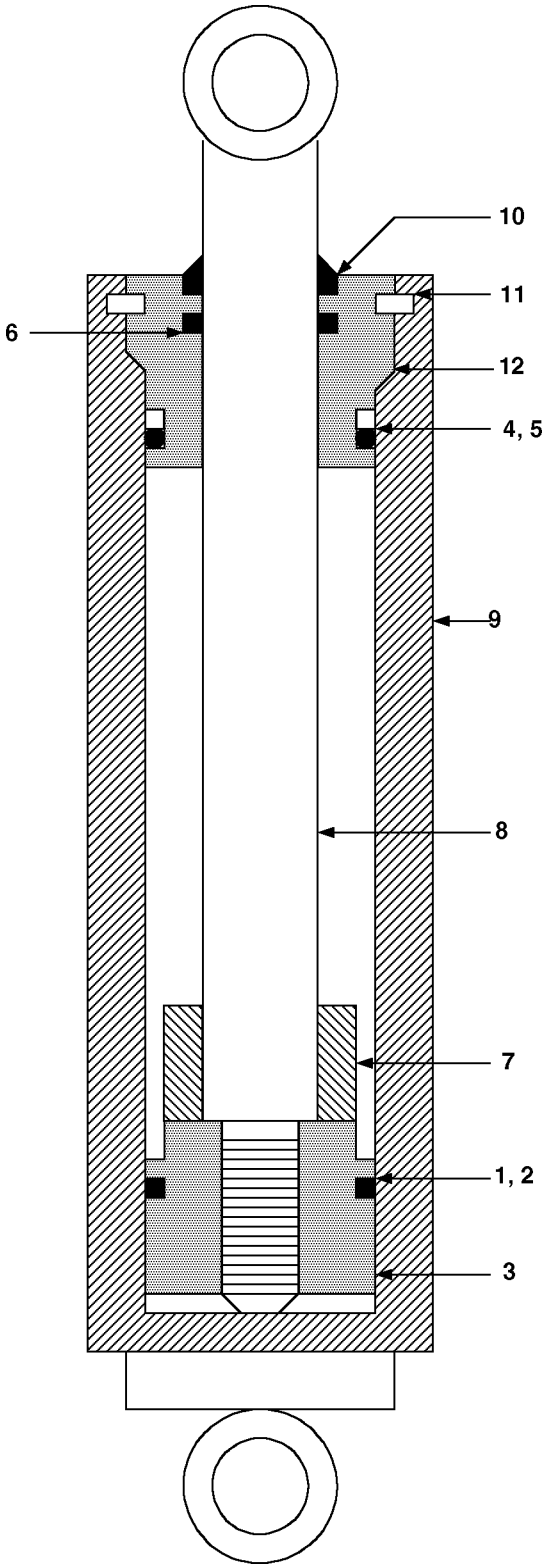
ITEM	PART NO.	DESCRIPTION	QTY
1.	7Q072021	O-RING (PART OF 13)	1REF
2.	7T66P012	PISTON SEAL (PART OF 13)	1REF
3.	6I012050	PISTON	1
4.	7Q072214	O-RING (PART OF 13)	1REF
5.	7Q10P214	BACK-UP RING (PART OF 13)	1REF
6.	7R100750	ROD SEAL (PART OF 13)	1REF
7.	6C125007	STOP TUBE	1
8.	4G142860	ROD ASM	1
9.	4B142860	CASE ASM	1
10.	7R13P007	ROD WIPER (PART OF 13)	1REF
11.	72066029	RETAINING RING	1
12.	6H012007	HEAD	1
13.	9B050608	SEAL KIT (INCL:1,2,4-6,10)	1

NOTE

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

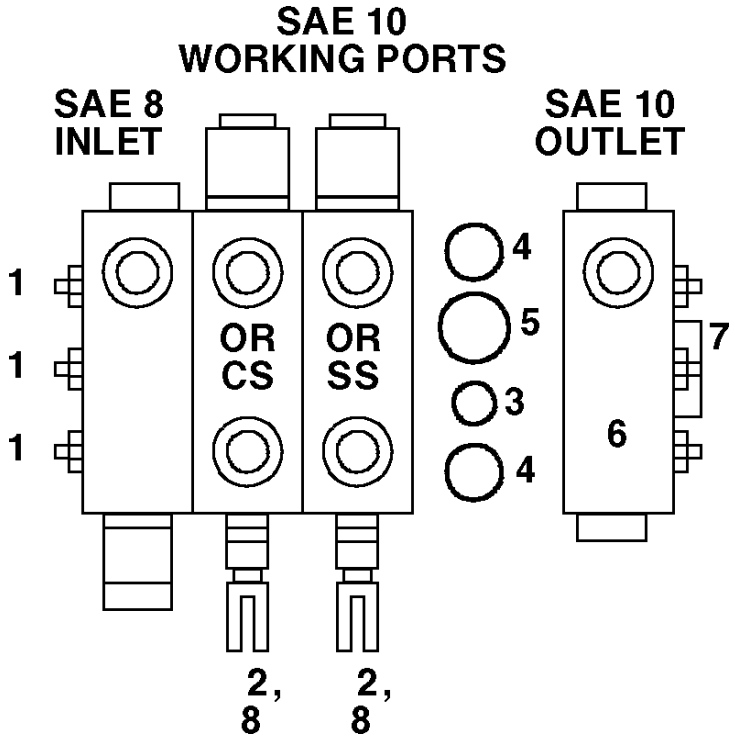
APPLY “LUBRIPLATE #630-2” MEDIUM HEAVY,MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

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



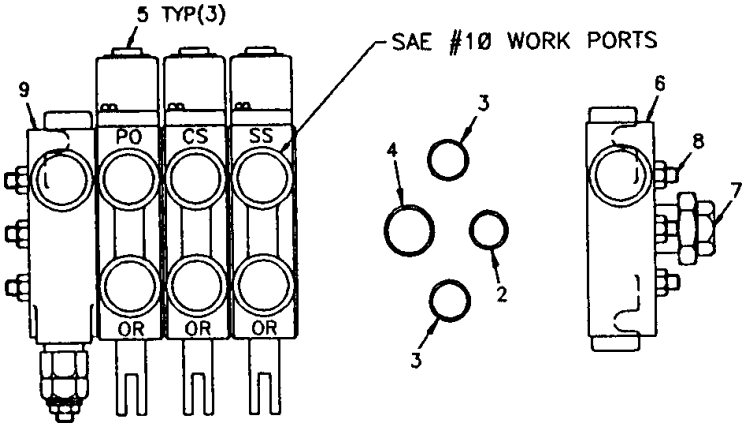
VALVEBANK ASM-2 SECT (51705983)

ITEM	PART NO.	DESCRIPTION	QTY
1.	94731764	TIE ROD KIT	3
2.	73054490	TANDEM VALVE SECTION	2
3.	7Q072017	O-RING SM	3
4.	7Q072018	O-RING MED	6
5.	7Q072021	O-RING LG	3
6.	73731576	END CAP - RH	1
7.	73731763	POWER BEYOND SLEEVE	1
8.	51731580	LEVER ASM (NOT SHOWN)	2



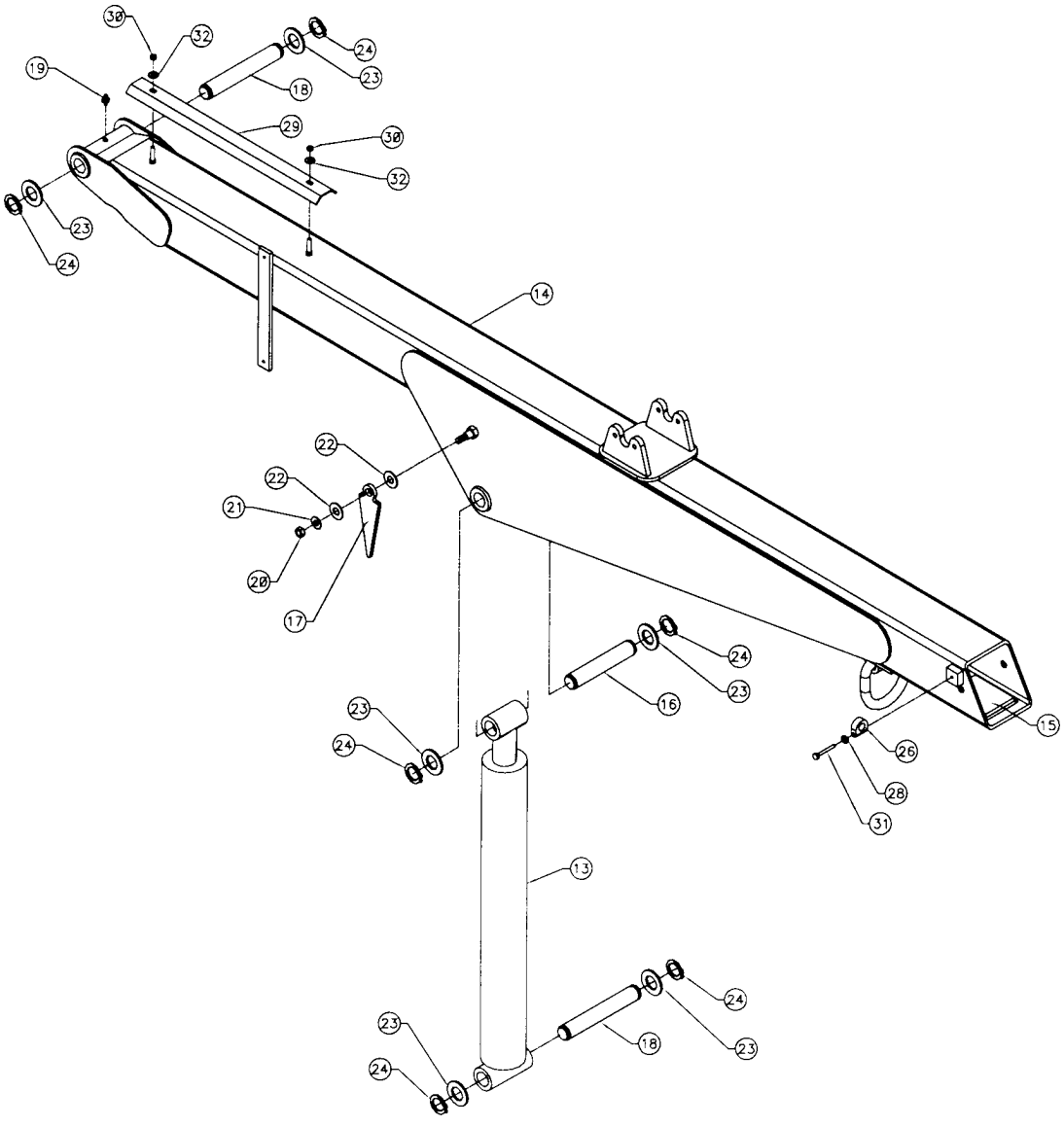
VALVEBANK ASM-3 SECT (51705984)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51731580	LEVER ASM (NOT SHOWN)	3
2.	7Q072017	O-RING SM	4
3.	7Q072018	O-RING MED	8
4.	7Q072021	O-RING LG	4
5.	73054490	TANDEM VALVE SECTION	3
6.	73731576	END CAP - RH	1
7.	73731763	POWER BEYOND SLEEVE	1
8.	94731764	TIE ROD KIT	3
9.	73054488	END COVER LH	1



LOWER BOOM ASM W/D-RING (41715072)

ITEM	PART NO.	DESCRIPTION	QTY
13.	3B104820	LOWER CYLINDER	1
14.	52714049	LOWER BOOM W/D-RING	1
15.	60030097	WEAR PAD	1
16.	60101906	PIN	1
17.	60105544	INDICATOR	2
18.	60106065	PIN	2
19.	72053508	ZERK 1/8NPT	1
20.	72062103	NUT 3/8-16 LOCK	2
21.	72063003	WASHER 3/8 WRT	2
22.	72063005	WASHER 1/2 WRT	4
23.	72063034	MACH BUSHING 1X10GA NR	6
24.	72066125	RETAINING RING 1" HD	6
26.	70034381	CORD GUIDE	1
28.	72063049	WASHER 1/4 LOCK	1
29.	60107993	HOSE GUARD	1
30.	72062104	NUT 1/4-20 LOCK	2
31.	72060006	CAP SCR 1/4-20X1-1/2 HHGR5	1
32.	72063001	WASHER 1/4 WRT	2



SECTION 4. GENERAL REFERENCE

NOTES

NOTICE

The user of this form is responsible in determining that these inspections satisfy all applicable regulatory requirements

Inspection Checklist

CRANES

1

REV: 6-18-99

OWNER/COMPANY	*TYPE OF INSPECTION (check one)* ☐ *DAILY (if deficiency found)* ☐ *QUARTERLY* ☐ *MONTHLY* ☐ *ANNUAL*
CONTACT PERSON	
CRANE MAKE & MODEL	*DATE INSPECTED*
CRANE SERIAL NUMBER	*HOUR METER READING (if applicable)*
UNIT I.D. NUMBER	*INSPECTED BY (print)*
LOCATION OF UNIT	*SIGNATURE OF INSPECTOR*

TYPE OF INSPECTION

NOTES:
Daily and monthly inspections are to be performed by a "designated" person, who has been selected or assigned by the employer or the employer's representative as being competent to perform specific duties.

Quarterly and annual inspections are to be performed by a "qualified" person who, by possession of a recognized degree in an applicable field or certificate of professional standing, or who, by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems related to the subject matter and work.

One hour of normal crane operation assumes 20 complete cycles per hour. If operation exceeds 20 cycles per hour, inspection frequency should be increased accordingly.

Consult Operator / Service Manual for additional inspection items, service bulletins and other information.

Before inspecting and operating crane, crane must be set up away from power lines and leveled with outriggers fully extended.

DAILY (D): Before each day of operation, those items designated with a (**D**) must be inspected. This inspection need not be recorded unless a deficiency (✘) is found. If the end user chooses to record all daily inspections and those daily inspections include the monthly inspection requirements, there would be no need for a separate monthly inspection.

MONTHLY (M): Monthly inspections or 100 hours of normal operation (which ever comes first) includes all daily inspections plus items designated with an (**M**). This inspection must be recorded.

QUARTERLY (Q): Every three to four months or 300 hours of normal operation (which ever comes first) includes all daily and monthly inspection items plus items designated with a (**Q**). This inspection must be recorded.

ANNUAL (A): Each year or 1200 hours of normal operation (which ever comes first) includes all items on this form which encompasses daily, monthly and quarterly inspections plus those items designated by (**A**). This inspection must be recorded.

✔ = SATISFACTORY
✘ = DEFICIENCY (must be corrected prior to operation)
R = RECOMMENDATION (should be considered for corrective action)
NA = NOT APPLICABLE

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS ✔ , ✘ *R, NA*
D	1	Labels	All load charts, safety & warning labels, & control labels are present and legible.	
D	2		Check all safety devices for proper operation.	
D	3	Controls	Control mechanisms for proper operation of all functions, leaks & cracks.	
D	4	Station	Control and operator's station for dirt, contamination by lubricants, & foreign materials.	
D	5	Hyd System	Hydraulic system (hoses, tubes & fittings) for leakage & proper oil level.	
D	6	Hook	Presence & proper operation of hook safety latches.	
D	7	Rope	Proper reeving of wire rope on sheaves & winch drum.	
D	8	Pins	Proper engagement of all connecting pins & pin retaining devices.	
D	9	General	Overall observation of crane for damaged or missing parts, cracked welds & presence of safety covers.	
D	10	Operation	During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use & determine cause & severity of hazard.	
D	11	Remote Ctrls	Operate remote control devices to check for proper operation.	
D	12	Electrical	Operate all lights, alarms, etc. to check for proper operation.	
D	13	Anti 2-Blocking	Operate anti 2-blocking device to check for proper operation.	
D	14		Other	
D	15		Other	

Inspection Checklist — CRANES — 2

FREQUENCY	ITEM	KEY	✔ = SATISFACTORY ✘ = DEFICIENCY (must be corrected prior to operation) INSPECTION DESCRIPTION	***R*** = RECOMMENDATION (should be considered for corrective action) ***NA*** = NOT APPLICABLE	STATUS ✔, ✘, *R, NA*
M	16	Daily	All daily inspection items.		
M	17	Cylinders	Visual inspection of cylinders for leakage at rod, fittings & welds. Damage to rod & case.		
M	18	Valves	Holding valves for proper operation.		
M	19	Valves	Control valve for leaks at fittings & between sections.		
M	20	Valves	Control valve linkages for wear, smoothness of operation & tightness of fasteners.		
M	21	General	Bent, broken or significantly rusted/corroded parts.		
M	22	Electrical	Electrical systems for presence of dirt, moisture & frayed wires.		
M	23	Structure	All structural members for damage.		
M	24	Welds	All welds for breaks & cracks.		
M	25	Pins	All pins for proper installation & condition.		
M	26	Hardware	All bolts, fasteners & retaining rings for tightness, wear & corrosion		
M	27	Wear Pads	Presence of wear pads.		
M	28	Pump & Motor	Hydraulic pumps & motors for leakage at fittings, seals & between sections.		
M	29	PTO	Transmission/PTO for leakage, abnormal vibration & noise.		
M	30	Hyd Fluid	Quality of hydraulic fluid and for presence of water.		
M	31	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage & secured properly.		
M	32	Hook	Load hook for abnormal throat distance, twist, wear & cracks.		
M	33	Rope	Condition of load line.		
M	34	Manual	Presence of operator's manuals with unit.		
M	35		Other		
Q	36	Daily	All daily inspection items.		
Q	37	Monthly	All monthly inspection items.		
Q	38		Condition of wear pads		
Q	39	Rotation Sys	Rotation bearing for proper torque of all accessible mounting bolts.		
Q	40	Hardware	Base mounting bolts for proper torque.		
Q	41	Structure	All structural members for deformation, cracks & corrosion.		
	42		● Base		
	43		● Outrigger beams & legs		
	44		● Mast		
	45		● Inner boom		
	46		● Outer boom		
	47		● Extension(s)		
	48		● Jib boom		
	49		● Jib extension(s)		
	50		● Other		
Q	51	Hardware	Pins, bearings, shafts, gears, rollers, & locking devices for wear, cracks, corrosion & distortion.		
	52		● Rotation bearing(s)		
	53		● Inner boom pivot pin(s) & retainer(s)		
	54		● Outer boom pivot pin(s) & retainer(s)		
	55		● Inner boom cylinder pin(s) & retainer(s)		
	56		● Outer boom cylinder pin(s) & retainer(s)		
	57		● Extension cylinder pin(s) & retainer(s)		
	58		● Jib boom pin(s) & retainer(s)		
	59		● Jib cylinder pin(s) & retainer(s)		
	60		● Jib extension cylinder pin(s) & retainer(s)		
	61		● Boom tip attachments		
	62		● Other		
Q	63	Hyd Lines	Hoses, fittings & tubing for proper routing, leakage, blistering, deformation & excessive abrasion.		
	64		● Pressure line(s) from pump to control valve		
	65		● Return line(s) from control valve to reservoir		
	66		● Suction line(s) from reservoir to pump		
	67		● Pressure line(s) from control valve to each function		
	68		● Load holding valve pipe(s) and hose(s)		
	69		● Other		

Inspection Checklist — CRANES — 3

✔ = SATISFACTORY
✘ = DEFICIENCY (must be corrected prior to operation)
R = RECOMMENDATION (should be considered for corrective action)
NA = NOT APPLICABLE

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS ✔, ✘ R, NA
Q	70	Pumps, PTO's & Motors	Pumps, PTO's & motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure.	
	71		● Winch motor(s)	
	72		● Rotation motor(s)	
	73		● Other	
Q	74	Valves	Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.	
	75		● Main control valve	
	76		● Load holding valve(s)	
	77		● Outrigger or auxiliary control valve(s)	
	78		● Other	
	79		● Other	
Q	80	Cylinders	Hydraulic cylinders for drifting, rod seal leakage & leakage at welds. Rods for nicks, scores & dents. Case for damage. Case & rod ends for damage & abnormal wear.	
	81		● Outrigger cylinder(s)	
	82		● Inner boom cylinder(s)	
	83		● Outer boom cylinder(s)	
	84		● Extension cylinder(s)	
	85		● Rotation cylinder(s)	
	86		● Jib lift cylinder(s)	
	87		● Jib extension cylinder(s)	
	88		● Other	
Q	89	Winch	Winch, sheaves & drums for damage, abnormal wear, abrasions & other irregularities.	
Q	90	Hyd Filters	Hydraulic filters for replacement per maintenance schedule.	
A	91	Daily	All daily inspection items.	
A	92	Monthly	All monthly inspection items.	
A	93	Quarterly	All quarterly inspection items.	
A	94	Hyd Sys	Hydraulic fluid change per maintenance schedule.	
A	95	Controls	Control valve calibration for correct pressures & relief valve settings	
A	96	Valves	Safety valve calibration for correct pressures & relief valve settings.	
A	97	Valves	Valves for failure to maintain correct settings.	
A	98	Rotation Sys	Rotation drive system for proper backlash clearance & abnormal wear, deformation & cracks.	
A	99	Lubrication	Gear oil change in rotation drive system per maintenance schedule.	
A	100	Hardware	Check tightness of all fasteners and bolts.	
A	101	Wear Pads	Wear pads for excessive wear.	
A	102	Loadline	Loadline for proper attachment to drum.	

Deficiency / Recommendation / Corrective Action Report

DATE	*OWNER*	*UNIT I.D. NUMBER*

GUIDELINES

A. A deficiency (✘) may constitute a hazard. ✘ must be corrected and/or faulty parts replaced before resuming operation.
B. Recommendations (***R***) should be considered for corrective actions. Corrective action for a particular recommendation depends on the facts in each situation.
C. Corrective actions (***CA***), repairs, adjustments, parts replacement, etc. are to be performed by a qualified person in accordance with all manufacturer's recommendations, specifications and requirements.

NOTE: *Deficiencies (✘) listed must be followed by the corresponding corrective action taken (**CA**).*

✘ = DEFICIENCY ***R*** = RECOMMENDATION ***CA*** = CORRECTIVE ACTION TAKEN

✘, R, CA	ITEM #	EXPLANATION	DATE CORRECTED

Deficiency / Recommendation / Corrective Action Report (cont) 4

✘, R, CA	ITEM #	EXPLANATION	DATE CORRECTED

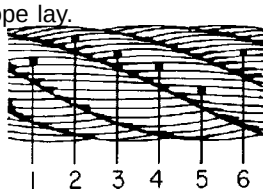
If additional space is required, reproduce this page and attach to this report.

WIRE ROPE INSPECTION

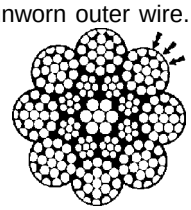
Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

A. Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.

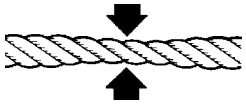
B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



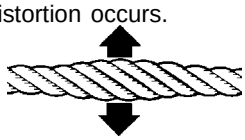
C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



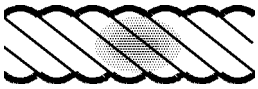
D. When there is a decrease of diameter indicating a core failure.



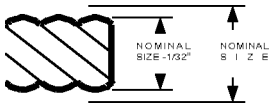
E. When kinking, crushing, birdcaging or other distortion occurs.



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.)

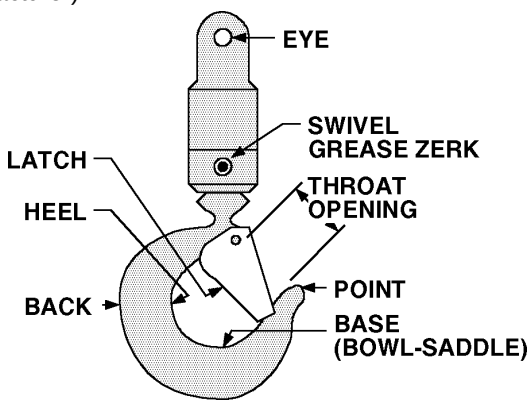
D. LATCH

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

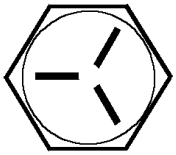
2. Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.

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.

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 fatique causing serious injury or DEATH.

TORQUE DATA CHART - DOMESTIC

FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE SAE J429 GRADE 5 PLAIN (FT-LB)	SAE J429 GRADE 5 PLATED (FT-LB)	SAE J429 GRADE 8 PLAIN (FT-LB)	SAE J429 GRADE 8 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 PLAIN (FT-LB)	SAE J429 GRADE 5 PLATED (FT-LB)	SAE J429 GRADE 8 PLAIN (FT-LB)	SAE J429 GRADE 8 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 fatique causing serious injury or DEATH.

TORQUE DATA CHART - METRIC

FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE SAE J429 GRADE 5 PLAIN (KG-M)	SAE J429 GRADE 5 PLATED (KG-M)	SAE J429 GRADE 8 PLAIN (KG-M)	SAE J429 GRADE 8 PLATED (KG-M)
5/16-24	0.3125	3	2	4	3
3/8-24	0.3750	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5000	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.6250	24	18	33	25
3/4-16	0.7500	41	31	58	44
7/8-11	0.8750	62	45	93	69
1-12	1.0000	89	67	138	103
1 1/8-12	1.1250	123	93	200	150
1 1/4-12	1.2500	171	129	278	209
1-3/8-12	1.3750	232	174	375	281
1 1/2-12	1.5000	304	228	492	369

COARSE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE SAE J429 GRADE 5 PLAIN (KG-M)	SAE J429 GRADE 5 PLATED (KG-M)	SAE J429 GRADE 8 PLAIN (KG-M)	SAE J429 GRADE 8 PLATED (KG-M)
5/16-18	0.3125	2	2	3	2
3/8-16	0.3750	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5000	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.6250	21	16	30	22
3/4-10	0.7500	37	28	52	39
7/8-9	0.8750	55	41	84	63
1-8	1.0000	82	62	126	94
1 1/8-7	1.1250	110	82	178	133
1 1/4-7	1.2500	155	116	251	188
1-3/8-6	1.3750	203	152	329	246
1 1/2-6	1.5000	270	210	438	328

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 kilogram-meters.

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.

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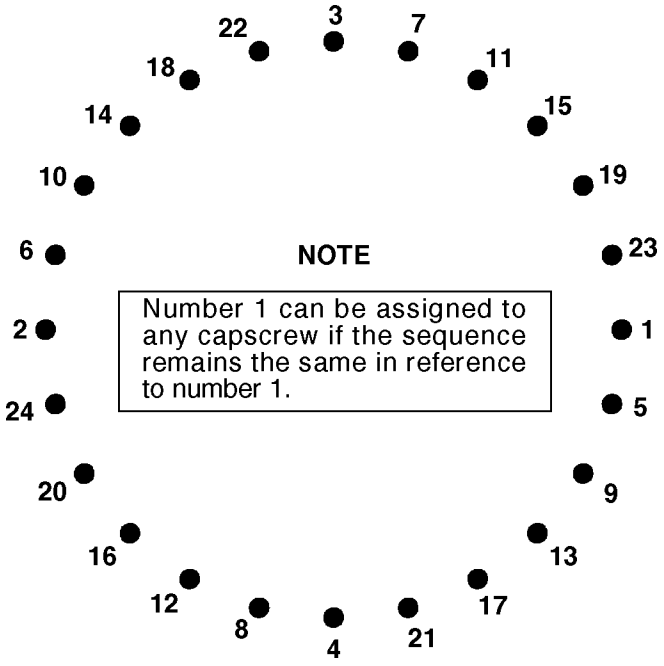
WARNING

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 fatique causing serious injury or DEATH.

TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE

Refer to the diagram below for proper tightening/torqueing 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 capscrew used.

2. Follow the tightening sequence shown in the diagram. Note that the quantity of capscrews may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.

3. Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.
   (EXAMPLE: .40 x 265 FT-LBS = 106 FT-LBS)
   (EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)

4. Repeat Step 3, but torqueing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.
   (EXAMPLE: .75 x 265 FT-LBS = 199 FT-LBS)
   (EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)

5. Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

TURNTABLE BEARING INSPECTION FOR REPLACEMENT

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 bearings internal clearance once mounted on a crane.

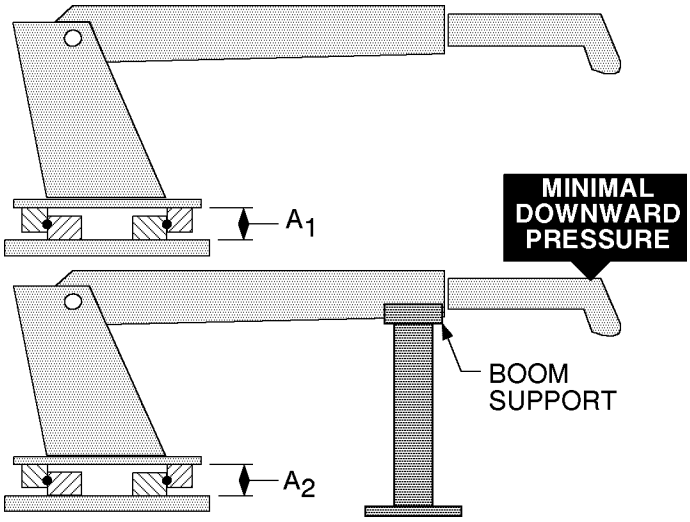
Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

TEST PROCEDURE

STEP 1.
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A1), 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 A2.

STEP 3.
Subtract A1 from A2 to determine tilt and compare the result with the accompanying chart.



COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION

NOTE	IMT CRANE, LOADER OR TIREHAND MODEL				
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.		1007 1014 1014A 2015 2020 2109 3000 3016 3816 3020 425 4300 5016 6016 TH7 BODY ROT'N TH1449 BODY ROT'N TH15B CLAMP TH2551B CLAMP TH2557A CLAMP	5200 5200R 5217 5800 7020 7025 7200 7415 9000 TH10 BODY ROT'N TH14 BODY ROT'N	16000 32018 32030 T30 T40	9800 12916 13031 13034 14000 15000 18000 20017 H1200 H1200RR T50 TH2551B BODY ROT'N TH2557B 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)**

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	MANUAL PART NO.
SUBMITTED BY		
COMPANY		
ADDRESS		
CITY, STATE, ZIP		
TELEPHONE		

☐ ERROR FOUND

LOCATION OF ERROR (page no.): _____

DESCRIPTION OF ERROR: _____

_____

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☐ REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: _____

_____

_____

_____

REASON FOR ADDITION: _____

_____

_____

_____

MAIL TO: IOWA MOLD TOOLING Co., Inc.
Box 189,
Garner IA 50438-0189
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 occurence.

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.
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TEL: 515-923-3711
TECHNICAL SUPPORT FAX: 515-923-2424