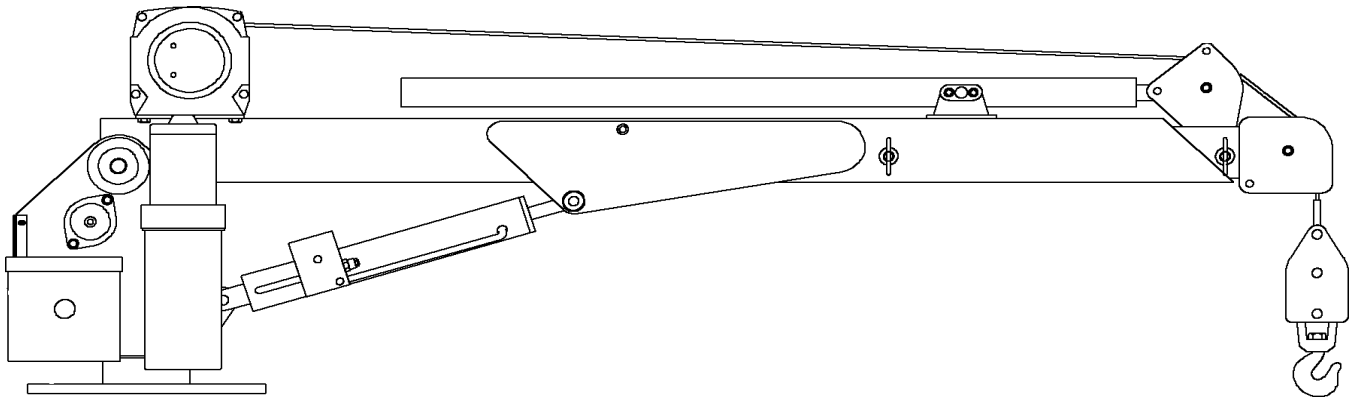




# WorkSaver™ 100

## Volume 2 - PARTS AND SPECIFICATIONS

Section 1	SPECIFICATIONS
Section 2	CRANE DESCRIPTION
Section 3	INSTALLATION
Section 4	OPERATION
Section 5	PARTS
Section 6	MAINTENANCE



### IOWA MOLD TOOLING CO., INC.

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TECHNICAL SUPPORT FAX: 515-923-2424

MANUAL PART NUMBER 99900665

## **-READ FIRST- SAFETY PRECAUTIONS**

Read and understand the IMT Operator's Crane Safety Manual before operation of the crane.

DO NOT exceed crane capacity.

Before attempting full capacity lifts, practice with light loads to familiarize yourself with crane operation and controls. Also, observe tilt and effects on the carrier vehicle's body during loading.

Remove the remote control cable from the crane when the crane is left unattended, even for short time periods.

The remote control cable must be kept away from the crane to avoid entanglement. Be certain never to allow the cable to be crushed by any outrigger or crimped between anything.

DO NOT use winch when crane is in the stored position.

When winding cable onto the winch, apply tension to the cable to keep it straight.

DO NOT wrap wire rope around the load. Use chains or hooks designed for the job.

Continuous use of the crane winch should be avoided to prevent overheating of the electric motor.

Check the crane hook for cracks and distortion, and safety latch for function, prior to work each day.

The safety latch of the hook must be closed before lifting a load.

A heavy-duty battery of 85 amperes or more is recommended.

The vehicle must be on a level surface for crane operation.

Raise load no higher than required to perform the lift.

Lubricate as required - regularly.

The vehicle's emergency brake must be set prior to crane operation.

Load ratings are based on crane capacity, not unit stability.

NEVER operate the crane near electrically charged power lines or other sources of electricity.

The path of the crane must be clear of all personnel and obstructions.

DO NOT permit cable to be totally unwrapped from drum. There should be no less than 3 wraps of cable on the drum during operation.

DO NOT weld, modify, or use unauthorized parts. This can result in crane failure, causing serious injury or death.

ALWAYS store the outriggers and crane properly before moving the carrier vehicle.

DO NOT permit unnecessary objects to be in the vicinity of the crane during operation.

The carrier vehicle must meet minimum chassis specifications but these specifications do not guarantee unit stability.

The crane must be installed per IMT specifications. Consult your local distributor or IMT for any required information.

Outriggers must be used to stabilize the vehicle whenever the crane is in use.

Outriggers must be positioned correctly on a firm surface.

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

# INTRODUCTION

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

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 & 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.

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## Section 1. SPECIFICATIONS

### WorkSaver™ 100

#### 1-1. GENERAL SPECIFICATIONS

	<b>11' VERSION</b>	<b>15' VERSION</b>
CRANE RATING	10000 ft-lbs (1.383 ton-meters)	10000 ft-lbs (1.383 ton meters)
MAXIMUM HORIZONTAL REACH from centerline of rotation	11'-0" (3.35m)	15'-0" (2.16m)
MANUAL BOOM EXTENSION	7'-0" to 11'-0" (2.13 to 3.35m)	7'-0" to 15'-0" (2.13 to 4.57m)
CRANE WEIGHT	535 lbs (243 kg)	575 lbs (261 kg)
CRANE STORAGE HEIGHT	30" (76.2cm)	30" (76.2cm)
MOUNTING SPACE REQUIRED FOR BASE PLATE	14" x 17" (35.6 x 43.2cm)	14" x 17" (35.6 x 43.2cm)
MOUNTING BOLT PATTERN CENTER TO CENTER	11.5" x 14.75" (29.2 x 37.5cm)	11.5" x 14.75" (29.2 x 37.5cm)

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

1'-9" (.53m)	3200 lbs (1452 kg)	3200 lbs (1452 kg)
3'-6" (1.07m)	2640 lbs (1198 kg)	2640 lbs (1198 kg)
5'-0" (1.52m)	2130 lbs (966 kg)	2130 lbs (966 kg)
7'-0" (2.13m)	1560 lbs (708 kg)	1560 lbs (708 kg)
9'-0" (2.74m)	1200 lbs (544 kg)	1200 lbs (544 kg)
11'-0" (3.35m)	920 lbs (417 kg)	920 lbs (417 kg)
13'-0" (3.96m)	—	810 lbs (367 kg)
15'-0" (4.57m)	—	690 lbs (313 kg)

#### 1-3. PERFORMANCE CHARACTERISTICS

ROTATION (hydraulic)	360° (6.28 rad) continuous	360° (6.28 rad) continuous
BOOM ELEVATION	-5° to +75° (-.087 to 1.309 rad)	-5° to +75° (-.087 to 1.309 rad)
EXTENSION BOOM (manual pull-out/pinned in 2' increments)	48" (1.22m)	48" / 48" (1.22 / 1.22m)
OPTIONAL HYDRAULIC EXTENSION	48" (1.22m)	48" (1.22m)

#### 1-4. POWER SOURCE

12VDC chassis must have minimum 50-amp alternator. Chassis battery must be deep cycle with a minimum of 80 amp/hour rating and 450 cold cranking amp capacity.

#### 1-5. WINCH

The winch is powered by 12VDC supplied by the chassis battery to a 12VDC motor through a planetary gear drive. Maximum double-line pull is 3200 lbs (1452 kg) and maximum single line pull is 1600 lbs (726 kg). Maximum current draw when lifting 1000 lbs (544 kg) single-line is 75 amps. Single line speed is 20 feet/minute (6.10 m/min) at 25 amps with no load, and 13 feet/minute (3.96 m/min) at 105 amps with 1600 lb (726 kg) load. Hook speed with 2000 lb (907 kg) load is 8 feet/minute (2.44 m/min).

The winch is equipped with 65 feet (19.8m) of 7/32 inch diameter galvanized "aircraft" cable with minimum breaking strength of 5600 lbs (2540 kg). A swivel snatch block with hook and safety latch are included.

#### 1-6. CONTROLS

Remote control with a 20'-0" (6.10m) detachable control cable. The included battery cable is 25' (7.62m) in length. A two-block damage prevention feature and a capacity alert system are standard features.

#### 1-7. OPTION

Hydraulic extension boom from 7'-0" to 11'-0" (2.13 to 3.35m) with counterbalance valve.

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

### 1-8. CYLINDERS

LOWER BOOM CYLINDER  
 OPTIONAL EXTENSION CYLINDER

#### BORE

2-1/2" (6.4cm)  
 2" (5.1cm)

#### STROKE

16-1/4" (41.3cm)  
 48" (121.9cm)

### 1-9. CYLINDER HOLDING VALVES

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

The counterbalance 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.

### 1-10. 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.

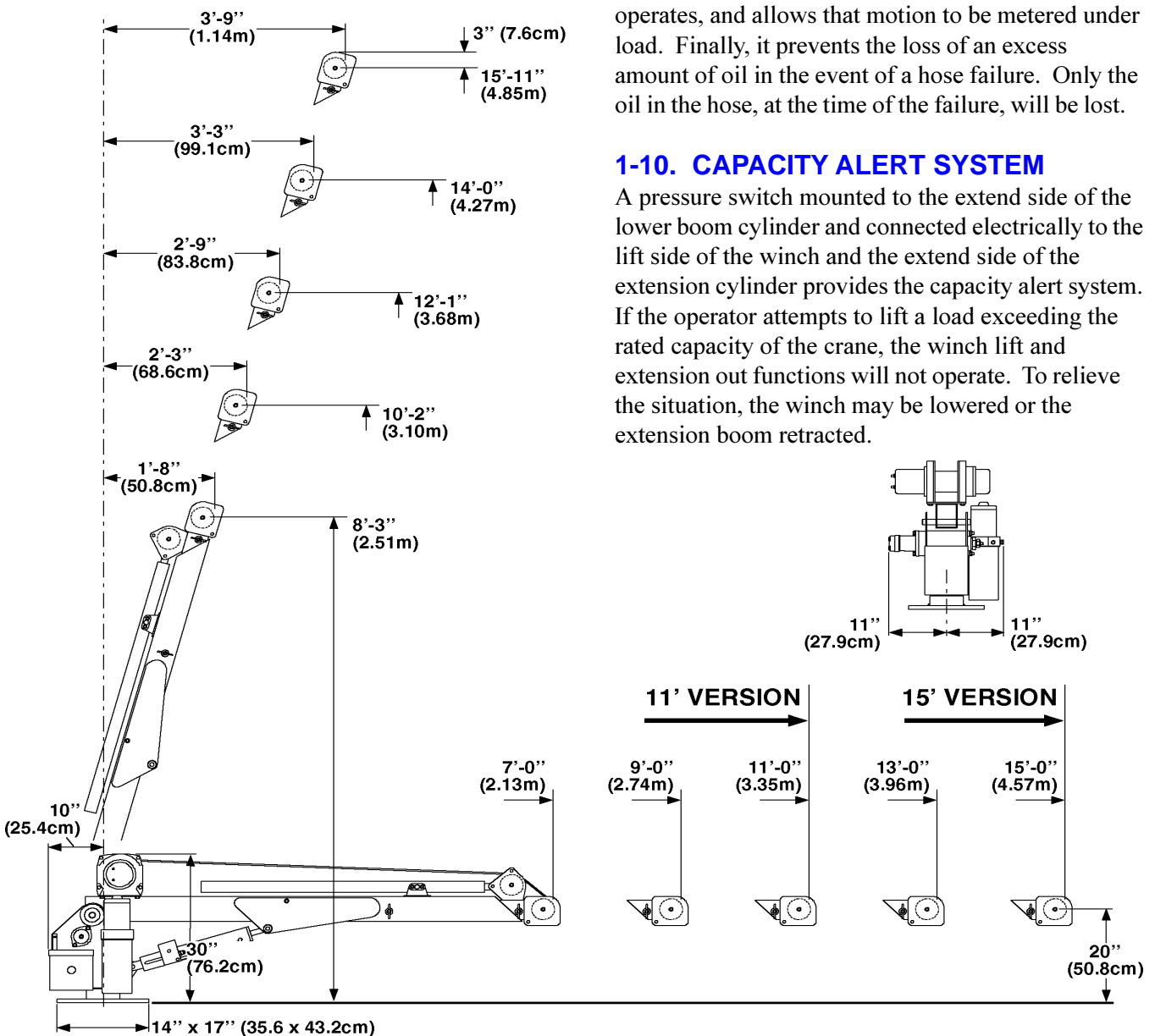
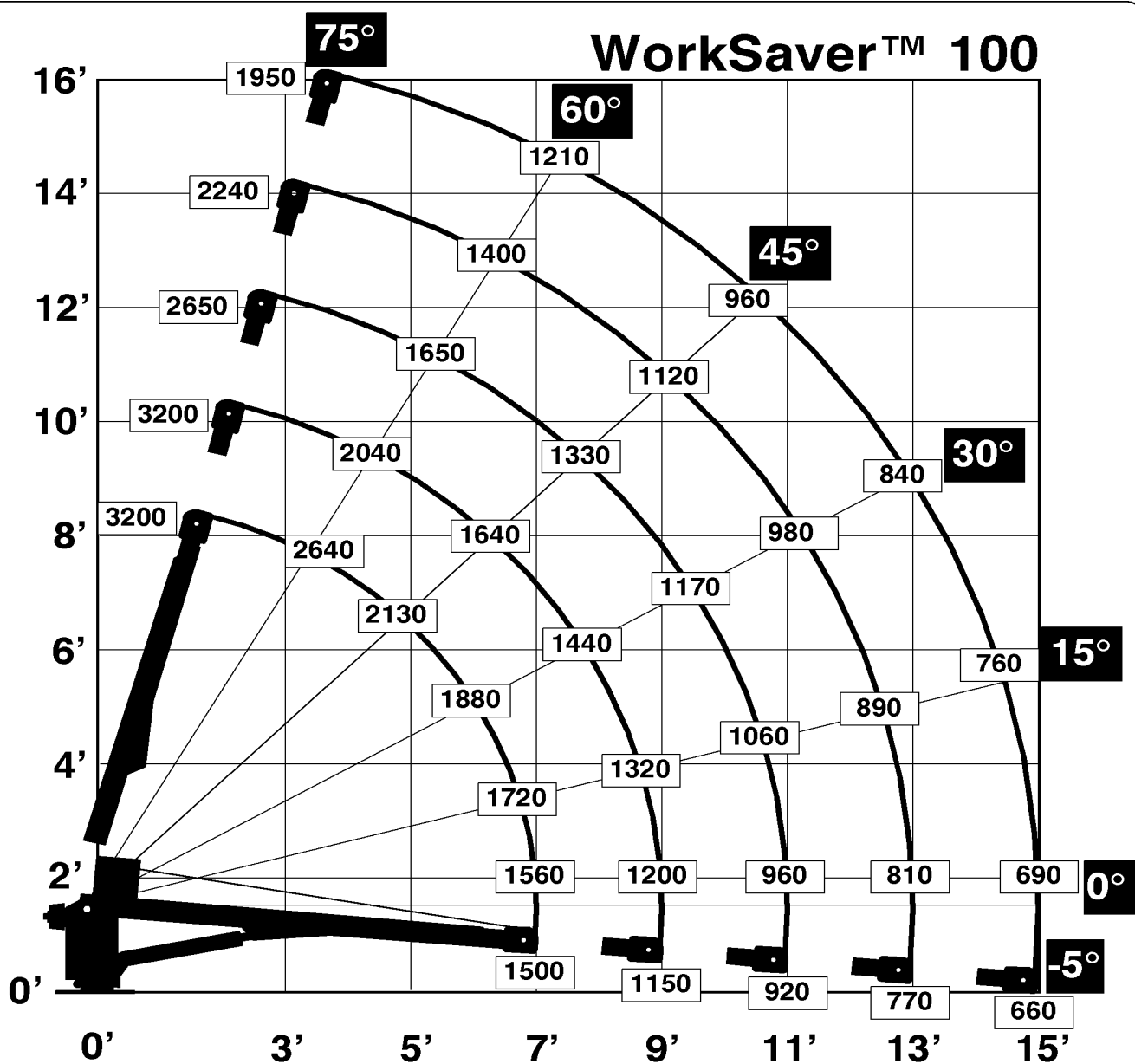


Figure A-1. GEOMETRIC CONFIGURATION-11' & 15' VERSIONS

Figure A-2. CAPACITY CHART-WorkSaver 100



Loads shown are based on crane structural or hydraulic capability. Before lift is made, stability must be checked per SAE J765A.

Maximum 1-part line capacity is 1600 lbs. For greater loads use 2-part line.

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

Capacities are in pounds.

71393613



IOWA MOLD TOOLING CO., INC.  
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**MINIMUM CHASSIS SPECIFICATIONS**

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

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## Section 2. CRANE DESCRIPTION

### 2-1. GENERAL

This section describes the assemblies that make up the IMT WorkSaver™ 100. Figure B-1 illustrates the locations of the assemblies, as well as various other components of the crane.

### 2-2. MAST ASSEMBLY

The base portion of the mast assembly provides the means for mounting the crane to the carrier vehicle. The mast incorporates a remotely operated, worm gear swing mechanism with continuous 360° (6.28 rad.) rotation capabilities. The mast also provides the mounting location of the control box and power unit.

### 2-3. LOWER/EXTENSION BOOM

The standard lower boom assembly provides for a horizontal reach from centerline of rotation of 7'-0" to 11'-0" (2.13 to 3.35m). The optional boom assembly provides for a reach of 7'-0" to 15'-0" (2.13 to 4.57m). This is accomplished through the use of manually operated extension booms stored within the lower boom. The lower boom also provides a mounting bracket for the winch. The extension boom includes mounting location for the sheave.

An optional hydraulically operated, remotely controlled, extension boom is available, providing hydraulic extension from 7'-0" to 11'-0" (2.13 to 3.35m).

The lower boom angle is adjusted through the use of a remotely operated hydraulic cylinder which provides articulation from a -5° to +75° (-.087 to 1.308 rad.) above horizontal.

### 2-4. WINCH ASSEMBLY

The winch assembly includes the electric winch, sheave, hook block and mounting hardware. The winch is powered by the carrier vehicle's 12VDC electrical system.

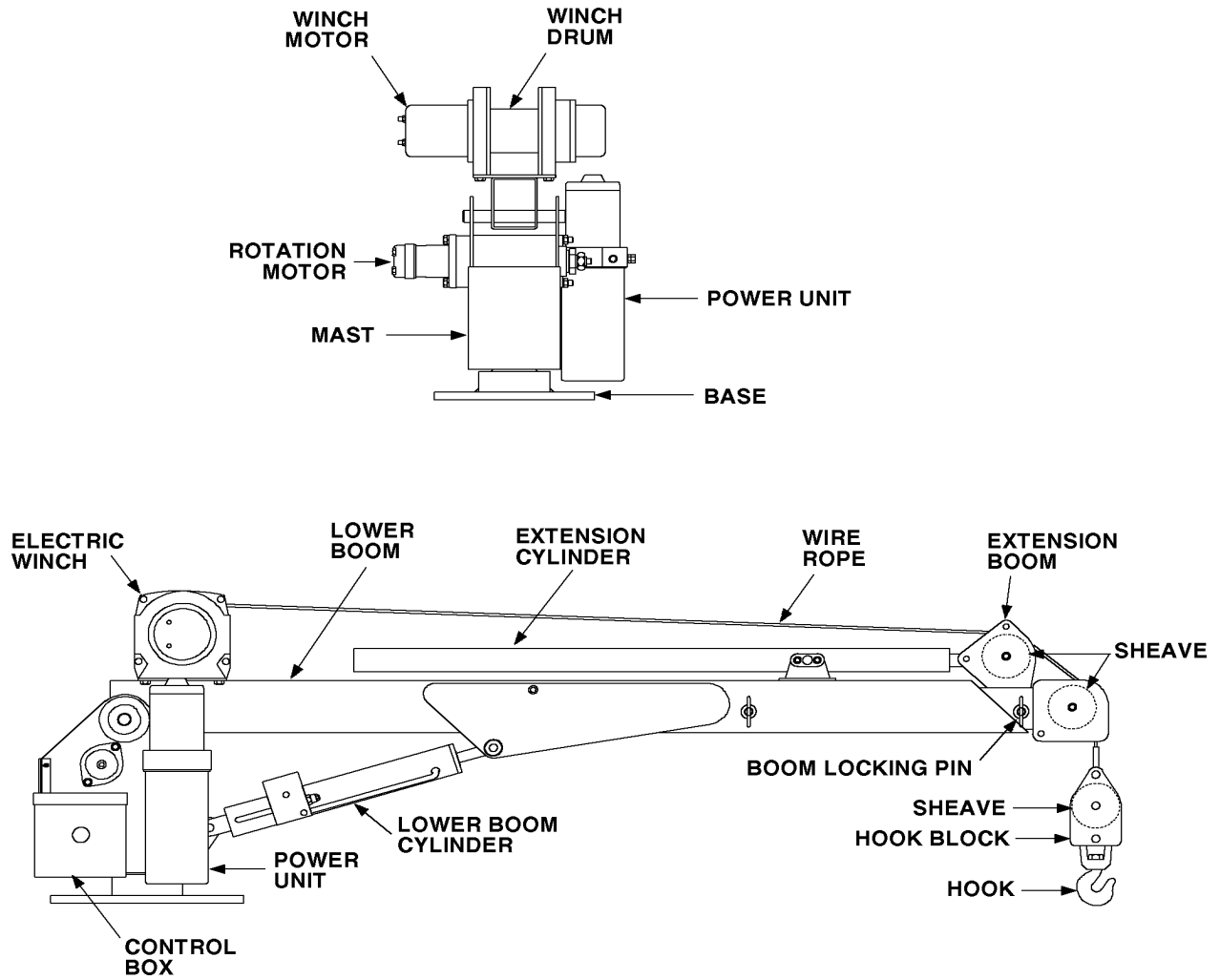
### 2-5. CONTROL KIT

The control kit includes the necessary 12VDC remote control handle and wiring, for operation of the winch, lower boom cylinder, rotation, and hydraulic extension (optional).

### 2-6. OUTRIGGERS

Various manually operated outrigger assemblies are available, dependent on chassis selection. These assemblies are illustrated in the parts section.

**Figure B-1. CRANE COMPONENTS**



## Section 3. INSTALLATION

### 3-1. GENERAL

This section provides installation instructions for the IMT WorkSaver™ 100. See the illustrations in the Parts Section for specific remote control wiring and hydraulics.

### 3-2. CHASSIS INFORMATION

The WorkSaver™ 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 to be installed on any other body other than an IMT mechanics body, check with the manufacturer of the body to determine suitability.

### 3-3. INSTALLATION

The mounting space required for the crane base is 14" x 17" (35.6 x 43.2cm) with a rectangular mounting bolt hole pattern of 11-1/2" x 14-3/4" (29.2 x 37.5cm). Before determining the location for mounting, keep in mind that the crane will have a horizontal reach from centerline of rotation of 11'-0" (3.35m) or 15'-0" (4.57m), dependent on your version. Be certain there is sufficient space for rotation of the power unit and motor which are mounted on the mast.

Using the holes in the base as a pattern, mark the location of the four mounting holes as well as the inside electrical access hole. Drill 13/16" diameter holes at these five (5) locations. See Figure C-1. Deburr all holes.

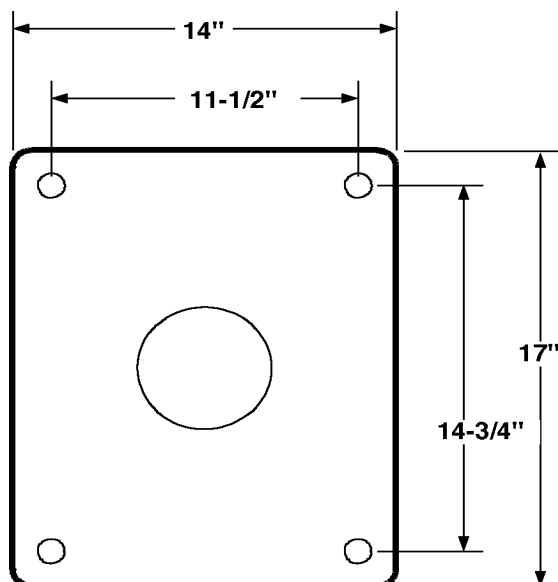


Figure C-1. MOUNTING DIMENSIONS

#### CAUTION

BEFORE DRILLING MOUNTING HOLES, CHECK BELOW THE MOUNTING SURFACE FOR ANY OBSTRUCTIONS, FUEL LINES, EXHAUST OR ELECTRICAL COMPONENTS.

#### 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.

Lift the crane into position using a lifting device capable of supporting approximately 600 lbs (272 kg). Feed the power wire through the center hole and lower the crane.

Secure the base to the mounting surface using four (4) 3/4-10, hex head, grade 5, cap screws; eight (8) 3/4 flat washers and four (4) 3/4-10 self-locking, hex nuts. Torque the bolts to 265 ft-lbs (36.6 kg-meters).

Once the crane is in place, run the positive feed wire along the truck frame and connect to the starter side of the starter solenoid. Secure this wire to the truck frame using cable clamps at approximately 18" (45cm) intervals. Grounding is accomplished through the crane itself.

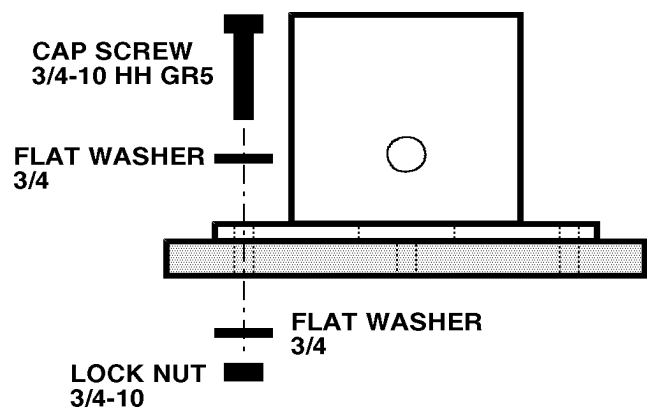


Figure C-2. MOUNTING HARDWARE



## Section 4. OPERATION

### 4-1. GENERAL

This section describes set-up, general operation and storage procedures. It is the operator's responsibility to familiarize himself with these procedures and conform to safety standards as specified in the IMT Operator's Crane Safety Manual and any Federal, State or local codes.

### 4-2. INSPECTION

An inspection of the crane and vehicle should be performed daily, before the crane is used. Visually inspect the crane for:

- STRUCTURAL DAMAGE**
- LOOSE PARTS**
- MOUNTING BOLT TIGHTNESS**
- HOOK DEFORMATION/CRACKS**
- WIRE ROPE DEFORMATIONS**
- ELECTRICAL SYSTEM MOISTURE**
- PROPER ELECTRICAL CONTACTS**
- PROPER LUBRICATION**
- SHEAVES & DRUM FOR CRACKS/WEAR**

Visually inspect the vehicle for:

- UNDER-INFLATED TIRES**
- WORN/UNSAFE TIRES**
- BROKEN SPRINGS/SUSPENSION**
- FULLY CHARGED BATTERY**
- SECURE PARKING BRAKE**

Any defects found or suspected should be reported and corrected immediately.

### 4-3. JOB SET-UP

Before operation, position the crane so the load can be handled easily without obstructions and within specified range of crane. The vehicle must be parked on a firm, level surface.

#### WARNING

THE PRESENCE OF ANY ELECTRICALLY CHARGED POWERLINES IS TO BE AVOIDED. FAILURE TO DO SO WILL RESULT IN SERIOUS INJURY OR DEATH. CONSULT THE IMT OPERATOR'S CRANE SAFETY MANUAL FOR FURTHER INFORMATION.

Engage the emergency brake, turn the ignition OFF and place the transmission in PARK (on automatic transmissions).

With the vehicle secured, extend the outriggers so they are positioned on a firm surface and locked into position.

Remove the control handle/cable from its storage container and plug it into the receptacle at the left side of the lower boom.

#### WARNING

DO NOT ALLOW PERSONNEL WITHIN 10 FEET OF ANY PORTION OF AN OPERATING CRANE.

Rotate the crane by using the appropriate switch on the remote control handle. See Figure D-1.

Position the boom at the desired angle above horizontal, using the appropriate switch on the remote control handle.

To extend the boom on manually operated cranes, unwind a few feet of cable from the winch and pull the extension boom out to line-up the desired extension boom pin hole with that in the lower boom. Insert the extension boom pin.

To extend the boom on hydraulic extension models, unwind a few feet of cable from the winch and extend the boom using the appropriate switch on the remote control handle. The second stage manual extension boom is extended by pulling the boom out to line-up the desired extension boom pin hole with that in the first stage extension boom. Insert the extension boom pin.

#### WARNING

DO NOT PULL EXTENSION BOOM COMPLETELY OUT OF LOWER BOOM AS IT CAN CAUSE SERIOUS PERSONAL INJURY IF DROPPED.

The crane is now in the work position.

### 4-4. PERFORMING A LIFT

First, know the weight of the load being lifted and that load is within the capacity of the crane.

#### WARNING

NEVER EXCEED THE CRANE'S RATED LOAD CAPACITIES. DOING SO WILL CAUSE STRUCTURAL DAMAGE AND DAMAGE TO THE WINCH AND CABLE WHICH CAN LEAD TO SERIOUS INJURIES OR DEATH.

Position the hook block directly over the load by rotating the crane. Lower the hook block by pressing the control switch until the hook can be attached to a sling or other suitable handling device which is securely attached to the load. The sling must be captivated by the safety latch. See Figure D-2.

**WARNING**

DO NOT WRAP THE WINCH WIRE ROPE AROUND THE LOAD. THIS WILL DAMAGE AND WEAKEN THE WIRE ROPE, MAKING IT POTENTIALLY DANGEROUS.

By pressing the control switch for raising the boom, lift the load slightly off the ground to test the load and effect on the outriggers and vehicle. If there are no indications of problems, the load can be lifted to the desired height by continuing to press the switch. When the load is at the desired height, swing the crane slowly over the desired position.

To lower the load, press the switch DOWN, making certain there are no obstructions under the load. Release tension on the hook/sling and remove the sling from the hook, being careful not to let it swing out of control.

**4-5. STORING THE CRANE**

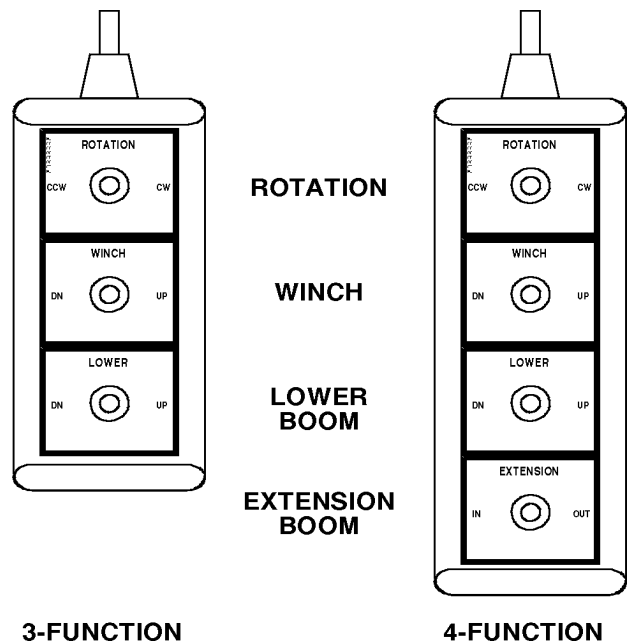
Before leaving the job site, it is necessary to store the crane. Retract the extension boom by removing the pin in the lower boom and positioning the extension boom in its fully retracted position. Insert the locking pin. On hydraulic extension models, retract the extension cylinder and manual extension booms completely, making certain to lock the second stage extension boom in place with the pin.

The boom tip should be lowered to the deck or preferably a sturdy boom support and secured in that position. Attach the hook to a hook hanger bracket as shown in Figure D-5, to prevent swing during travel. Be certain the winch cable is drawn up firmly and that the cylinder pump handle and all other loose objects are stored before driving the carrier vehicle.

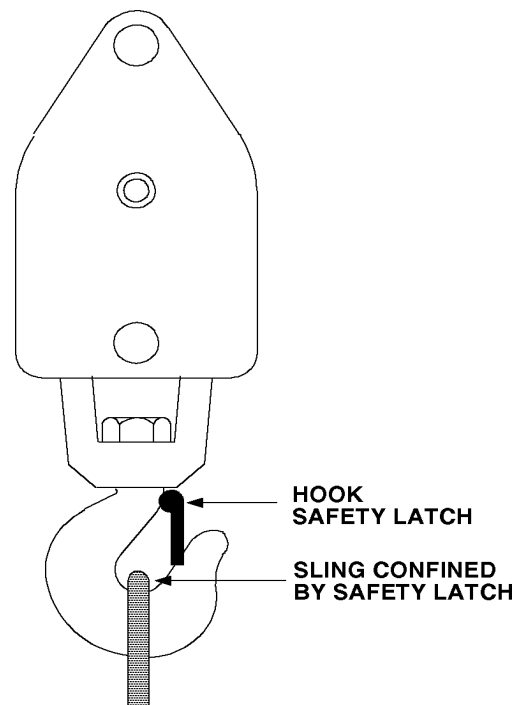
Disconnect the remote control handle cable and store in the truck cab or other suitable, secure location.

**WARNING**

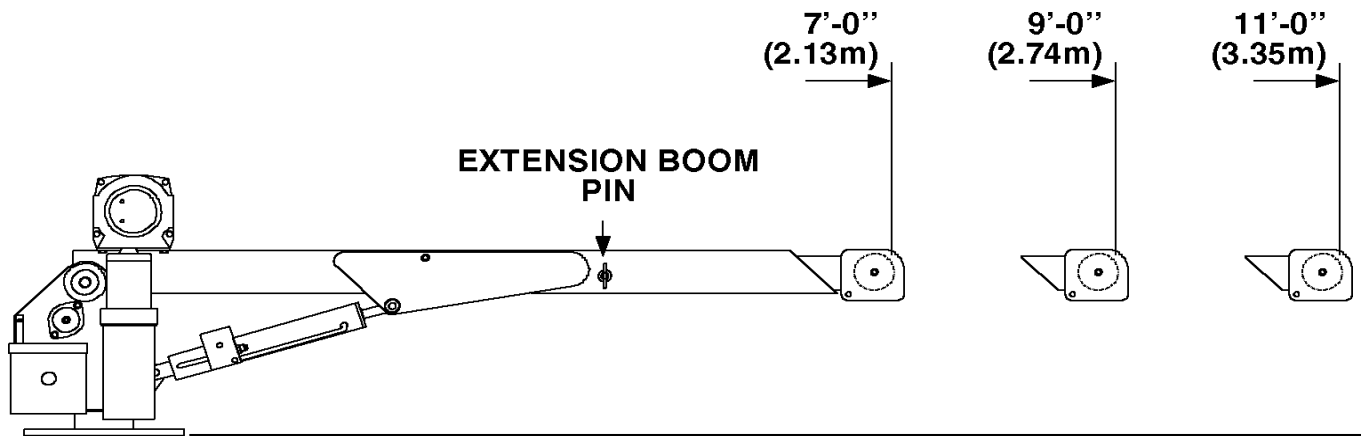
NEVER DRIVE THE VEHICLE UNLESS THE CRANE IS IN THE STORED POSITION AND SECURED PROPERLY.



**Figure D-1. REMOTE CONTROL HANDLES**



**Figure D-2. HOOK SAFETY LATCH**

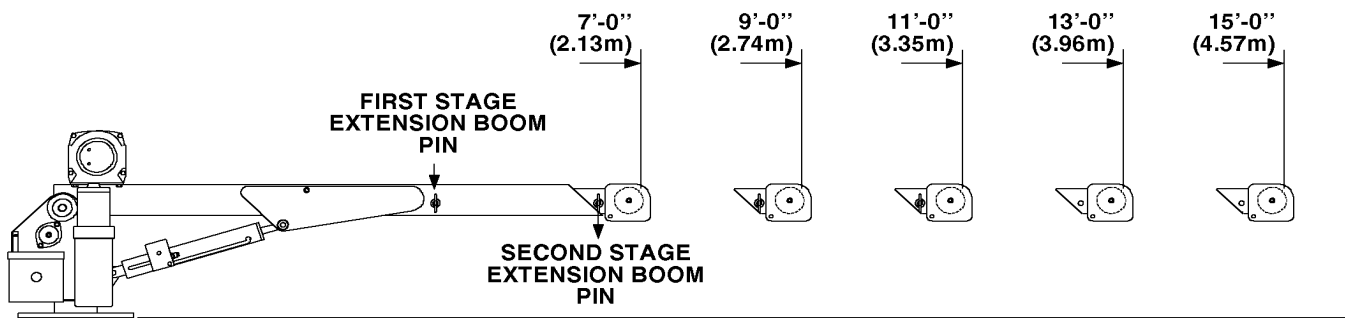


**Figure D-3. MANUAL EXTENSION BOOM POSITIONING DIAGRAM - 11' VERSION**

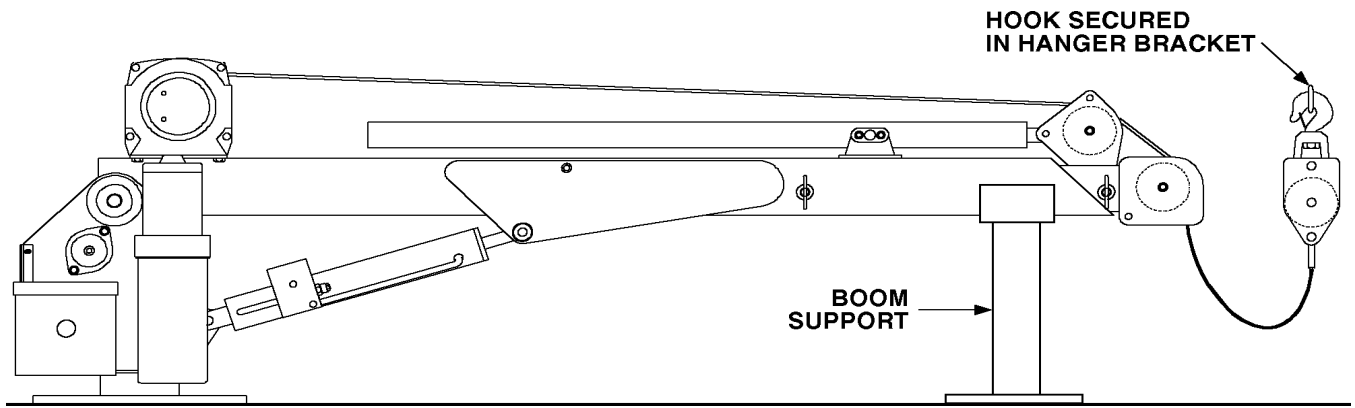
**WARNING**

EXTENSION BOOMS ARE TO ALWAYS BE **EXTENDED** IN THEIR PROPER SEQUENCE, LARGEST TO SMALLEST. NEVER EXTEND BOOMS OUT OF SEQUENCE.

EXTENSION BOOMS ARE TO ALWAYS BE **RETRACTED** IN THEIR PROPER SEQUENCE, SMALLEST TO LARGEST. NEVER RETRACT BOOMS OUT OF SEQUENCE.



**Figure D-4. MANUAL EXTENSION BOOM POSITIONING DIAGRAM - 15' VERSION**



**Figure D-5. STORED POSITION**



## Section 5. PARTS

### 5-1. GENERAL

This section contains the parts drawings and accompanying parts lists for the assemblies used on the crane. These drawings are intended to be used for parts identification and as an aid in ordering parts.

### 5-2. CRANE IDENTIFICATION

Every IMT crane has an identification placard (Figure E-1) attached to the crane 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. Inquiries should be directed to:

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

### 5-3. WELDMENT IDENTIFICATION

Each of the major weldments; base, mast, lower boom and extension boom have a part number stamped on the weldment. The location of the part numbers are shown in Figure E-2.

### 5-4. 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.
4. Give a complete description of the part.
5. Specify the quantity required.


		IOWA MOLD TOOLING CO., INC. BOX 189, GARNER, IA 50438-0189	
MODEL NUMBER		SERIAL NUMBER	
MFG DATE		70029119	

Figure E-1. SERIAL NUMBER PLACARD

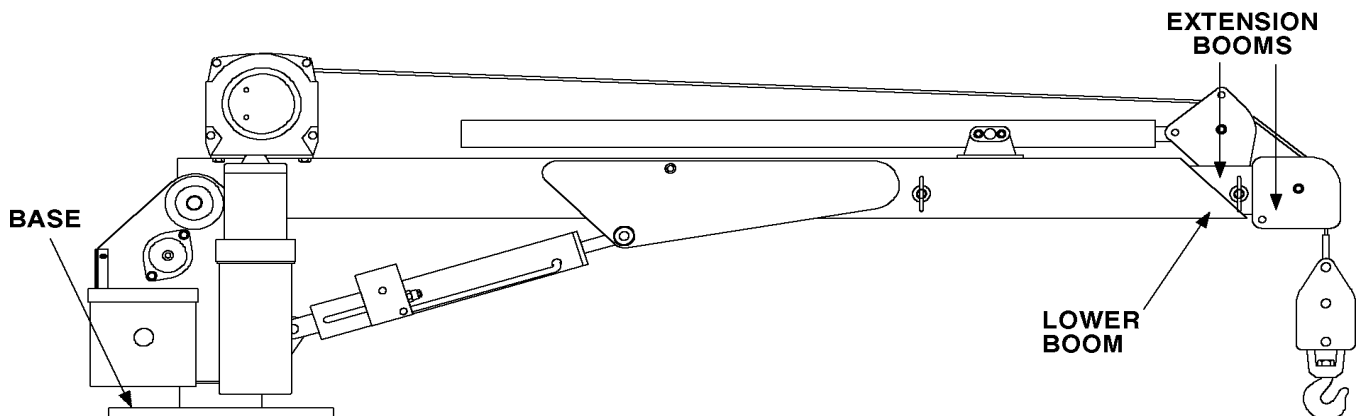


Figure E-2. WELDMENT PART NUMBER LOCATIONS

**Figure E-3. MAST ASM W/PWR SWING (41711137-1)**

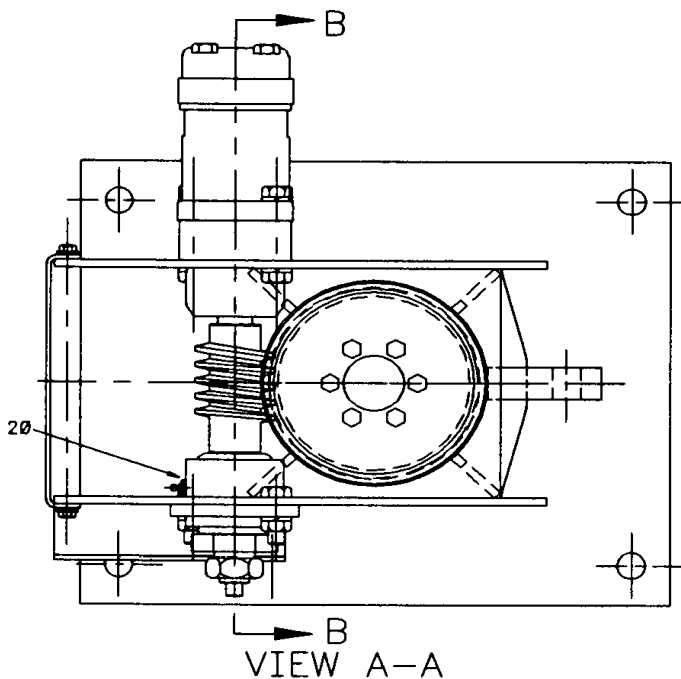
ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711124	MAST	1
2.	70055248	BALL BEARING	2
3.	52711007	BASE	1
4.	60116635	SHAFT COUPLING	1
6.	60116865	MAST COVER	1
7.	72661431	DOWEL PIN .19X1.5	1
8.	70055253	BALL BEARING	1
10.	70055252	BEARING CONE	2
11.	70055251	BEARING CUP	2
12.	60116618	SPACER	1
13.	70056483	WORM GEAR	1
14.	72063001	WASHER 1/4 WRT	4
15.	72063049	WASHER 1/4 LOCK	4
16.	52711138	BEARING SUPPORT	1

**CONTINUED**

17.	52711123	BEARING SUPPORT	1
18.	70056484	WORM GEAR 36-TOOTH	1
19.	72062251	LOCKNUT - DRAKE	1
20.	72053508	GREASE ZERK 1/8NPT	1
21.	72060870	CAP SCR 3/8-16X1-1/2 HHGR8	6
22.	72060004	CAP SCR 1/4-20X1 HHGR5	4
23.	73051776	ROTATION MOTOR	1
24.	72066113	RETAINING RING 3.34 EXT STD	1
25.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	6
26.	72062004	NUT 1/2-13 HEX	2
27.	72063053	WASHER 1/2 LOCK	6
28.	72063186	WASHER 3/8 FLAT NAR	6

**NOTE**

PACK BEARING (ITEM 2) WITH GREASE PRIOR TO INSTALLATION



QTY 4 14  
QTY 4 15  
QTY 4 22

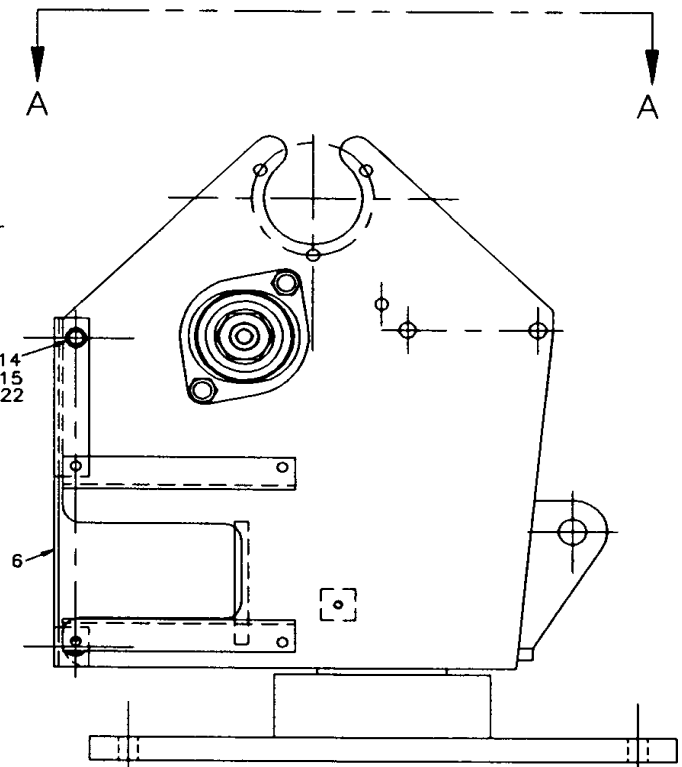
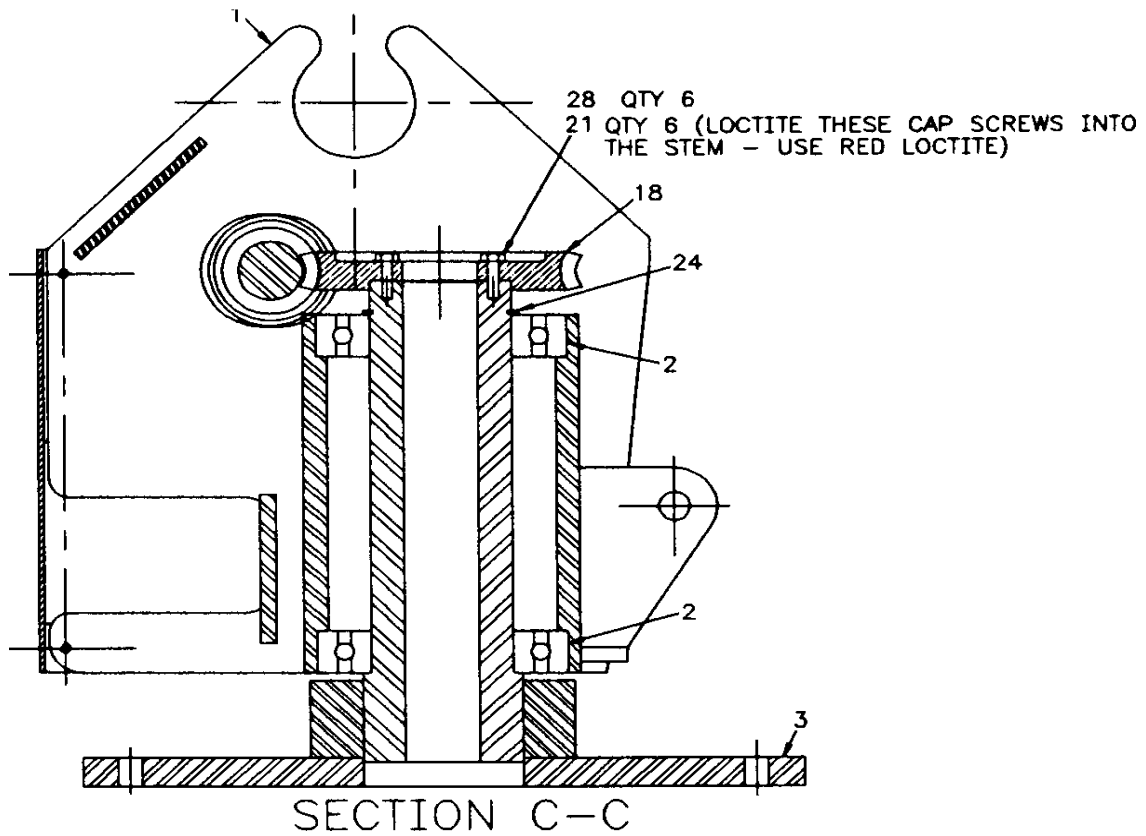
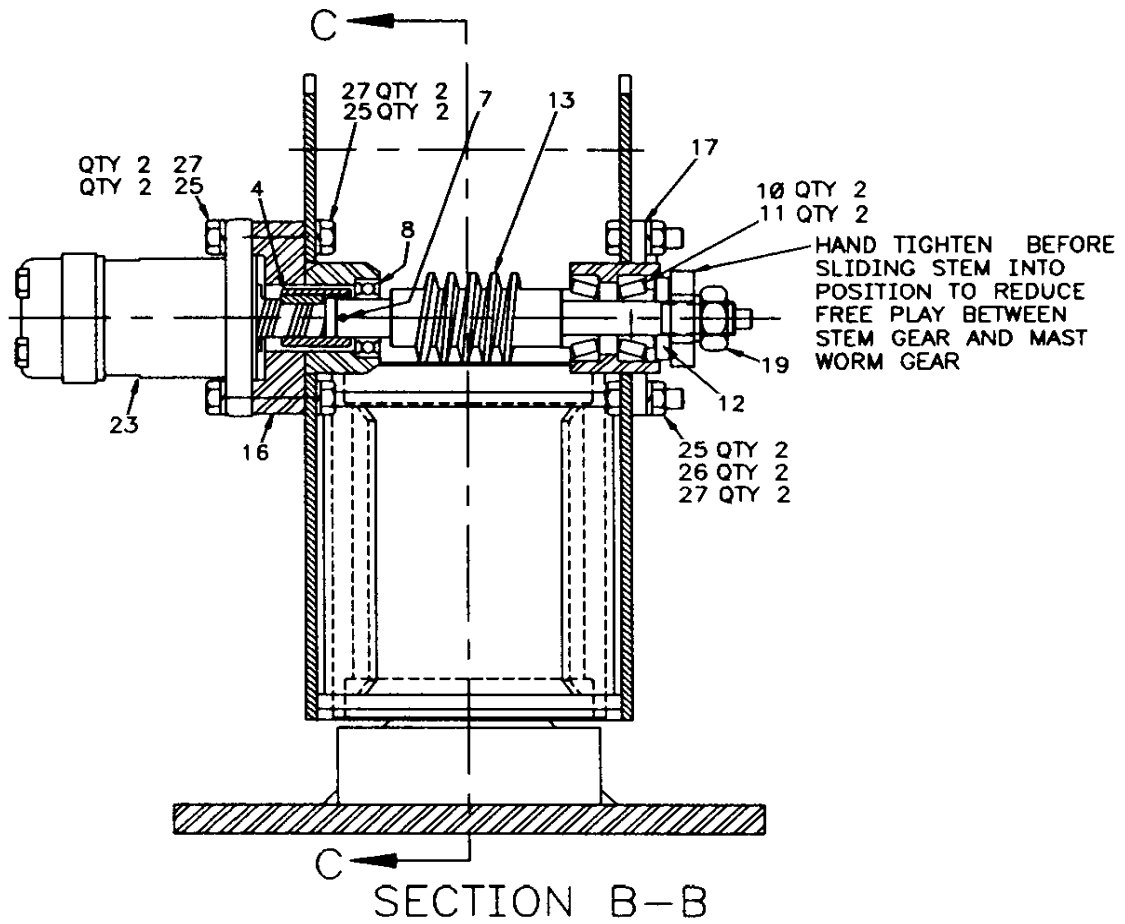
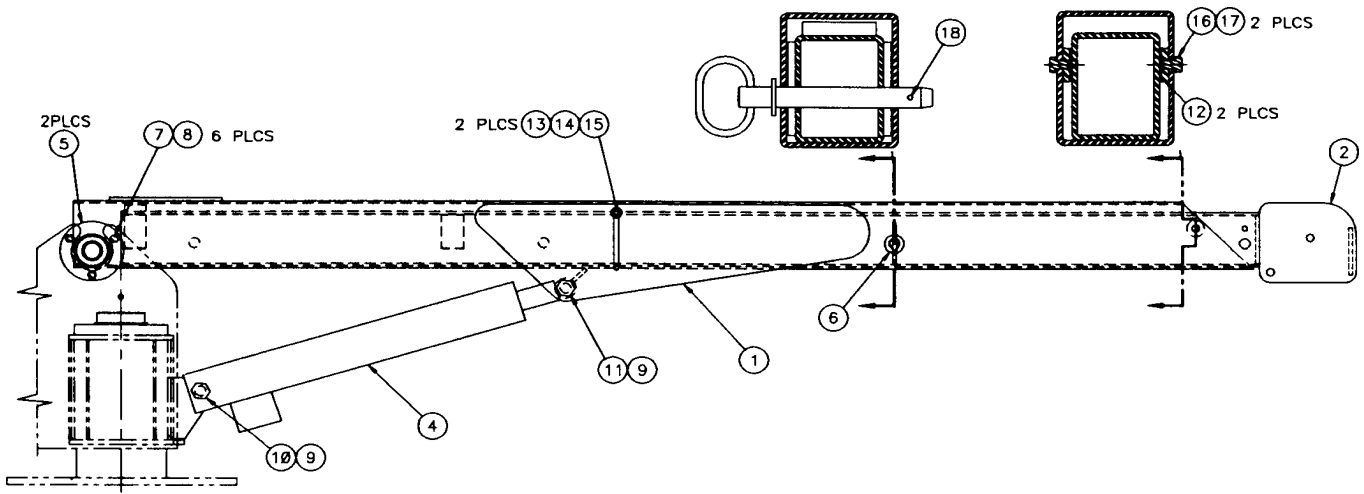


Figure E-3A. MAST ASM W/PWR SWING (41711137-2)



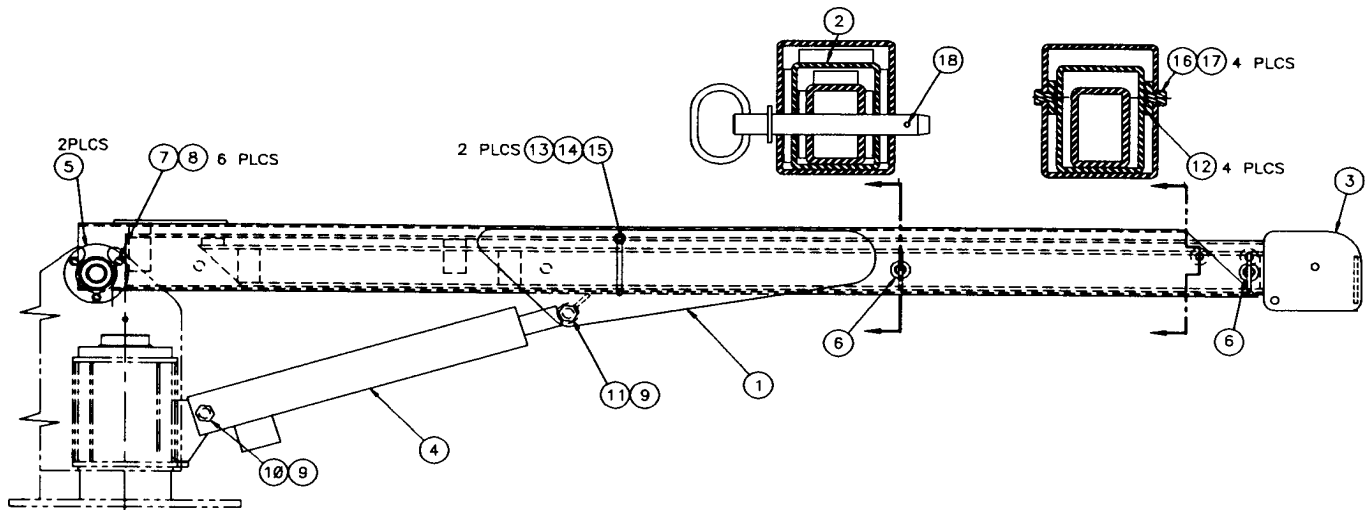
**Figure E-4. BOOM ASM-11' VERSION (41711148)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711008	LOWER BOOM	1
2.	52711026	1ST STG EXT BOOM	1
4.	73050162	CYLINDER	1
5.	70055249	BEARING 3-BOLT FLANGE	2
6.	70144209	PIN (INCL: 18)	1
7.	72062103	NUT 3/8-16 LOCK	6
8.	72060046	CAP SCR 3/8-16X1 HHGR5	6
9.	72062114	NUT 3/4-10 LOCK	2
10.	72060187	CAP SCR 3/4-10X3 HHGR5	1
11.	72060193	CAP SCR 3/4-10X6 HHGR5	1
12.	60116534	STOP BLOCK	2
13.	72062103	NUT 3/8-16 LOCK	2
14.	72063003	WASHER 3/8 WRT	2
15.	60117052	ROD END	2
16.	72060021	CAP SCR 5/16-18X1/2 HHGR5	2
17.	72063050	WASHER 5/16 LOCK	2
18.	72066143	HAIR PIN 1/8 (PART OF 6)	1REF



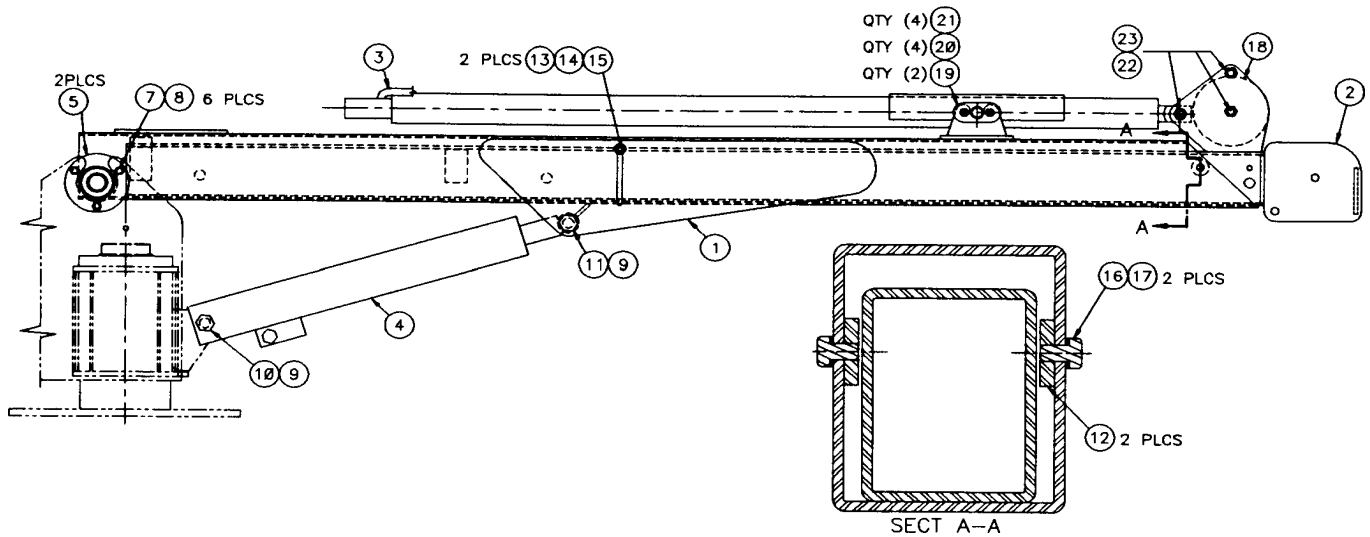
**Figure E-5. BOOM ASM-15' VERSION (41711149)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711008	LOWER BOOM	1
2.	52711009	1ST STG EXT BOOM	1
3.	52711018	2ND STG EXT BOOM	1
4.	73050162	CYLINDER	1
5.	70055249	BEARING 3-BOLT FLANGE	2
6.	70144209	PIN (INCL: 18)	2
7.	72062103	NUT 3/8-16 LOCK	6
8.	72060046	CAP SCR 3/8-16X1 HHGR5	6
9.	72062114	NUT 3/4-10 LOCK	2
10.	72060187	CAP SCR 3/4-10X3 HHGR5	1
11.	72060193	CAP SCR 3/4-10X6 HHGR5	1
12.	60116534	STOP BLOCK	4
13.	72062103	NUT 3/8-16 LOCK	2
14.	72063003	WASHER 3/8 WRT	2
15.	60117052	ROD END	2
16.	72060021	CAP SCR 5/16-18X1/2 HHGR5	4
17.	72063050	WASHER 5/16 LOCK	4
18.	72066143	HAIR PIN 1/8 (PART OF 6)	2REF



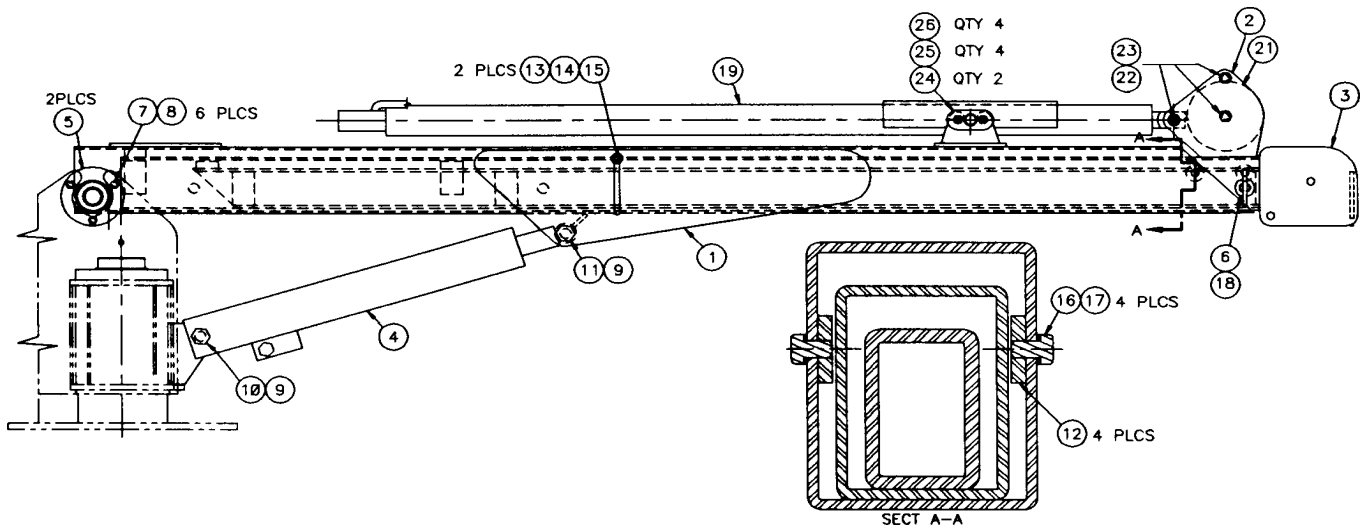
**Figure E-6. BOOM ASM-11' VERSION W/HYD EXT (41711164)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711165	LOWER BOOM	1
2.	52711166	1ST STG EXT BOOM	1
3.	73050163	CYLINDER	1
4.	73050162	CYLINDER	1
5.	70055249	BEARING 3-BOLT FLANGE	2
7.	72062103	NUT 3/8-16 LOCK	6
8.	72060046	CAP SCR 3/8-16X1 HHGR5	6
9.	72062114	NUT 3/4-10 LOCK	2
10.	72060187	CAP SCR 3/4-10X3 HHGR5	1
11.	72060193	CAP SCR 3/4-10X6 HHGR5	1
12.	60116534	STOP BLOCK	2
13.	72062103	NUT 3/8-16 LOCK	2
14.	72063003	WASHER 3/8 WRT	2
15.	60117052	ROD END	2
16.	72060021	CAP SCR 5/16-18X1/2 HHGR5	2
17.	72063050	WASHER 5/16 LOCK	2
18.	70056480	SHEAVE	1
19.	60107922	LOCK PLATE	2
20.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4
21.	72063051	WASHER 3/8 LOCK	4
22.	72060928	CAP SCR 1/2-13X2-1/4 HHGR5	3
23.	72062080	NUT 1/2-13 LOCK	3



**Figure E-7. BOOM ASM-15' VERSION W/HYD EXT (41711167)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711165	LOWER BOOM	1
2.	52711168	1ST STG EXT BOOM	1
3.	52711018	2ND STG EXT BOOM	1
4.	73050162	CYLINDER	1
5.	70055249	BEARING 3-BOLT FLANGE	2
6.	70144209	PIN 3/4X4-1/2 (INCL:18)	1
7.	72062103	NUT 3/8-16 LOCK	6
8.	72060046	CAP SCR 3/8-16X1 HHGR5	6
9.	72062114	NUT 3/4-10 LOCK	2
10.	72060187	CAP SCR 3/4-10X3 HHGR5	1
11.	72060193	CAP SCR 3/4-10X6 HHGR5	1
12.	60116534	STOP BLOCK	4
13.	72062103	NUT 3/8-16 LOCK	2
14.	72063003	WASHER 3/8 WRT	2
15.	60117052	ROD END	2
16.	72060021	CAP SCR 5/16-18X1/2 HHGR5	4
17.	72063050	WASHER 5/16 LOCK	4
18.	72066143	HAIR PIN 1/8 (PART OF 6)	1REF
19.	73050163	CYLINDER	1
21.	70056480	SHEAVE	1
22.	72060928	CAP SCR 1/2-13X2-1/4 HHGR5	3
23.	72062080	NUT 1/2-13 LOCK	3
24.	60107922	LOCK PLATE	2
25.	72063051	WASHER 3/8 LOCK	4
26.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4

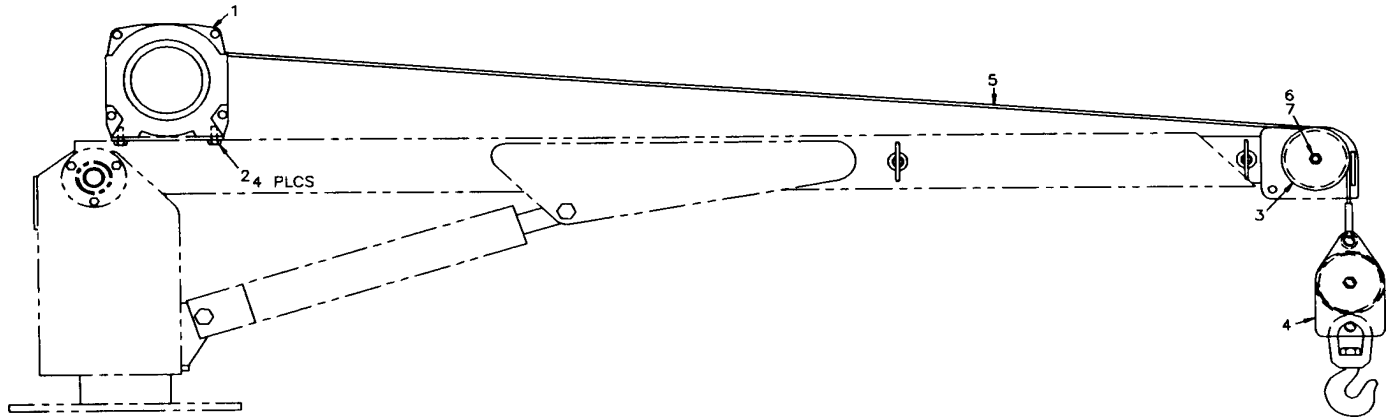


**Figure E-8. WINCH ASM (31711020)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	71570132	WINCH-ELECTRIC (INCL: 2)	1
2.		CAP SCR METRIC 12-1.75X35 (PART OF 1)	4REF
3.	70056480	SHEAVE 5" PD	1
4.	51711010	HOOK BLOCK ASM	1
5.	51711021	CABLE ASM	1
6.	72060928	CAP SCR 1/2-13X2-1/4 HHGR5	1
7.	72062080	NUT 1/2-13 LOCK	1

**NOTE**

THE WINCH IS SUPPLIED WITH 25 FT OF 3/16" DIA GALVANIZED 7X19 AIRCRAFT CABLE WITH SWAGED THIMBLE.

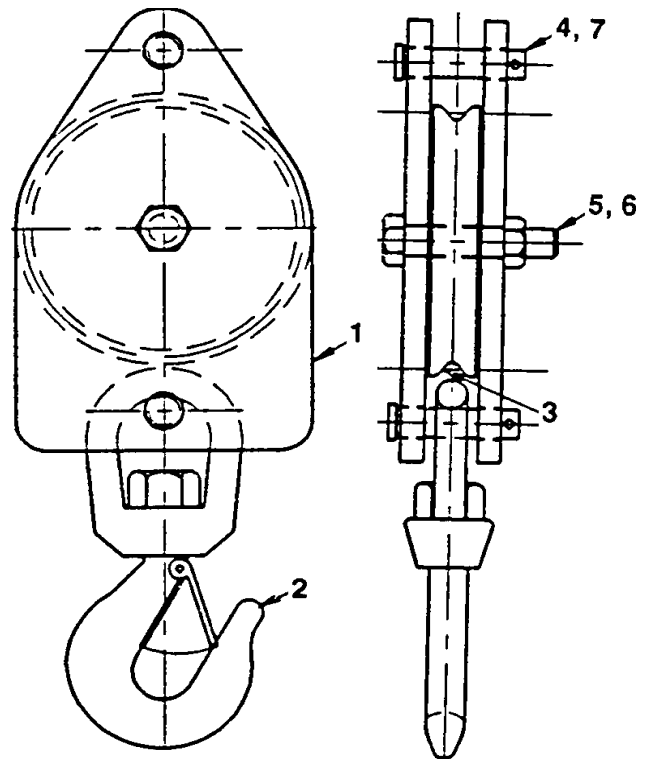


**Figure E-9. HOOK BLOCK ASM (51711010)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	60116446	SIDE PLATE	2
2.	71732760	HOOK 1.5TON SWIVEL	1
3.	70056480	SHEAVE 5"	1
4.	72066143	HAIR PIN 1/8	2
5.	72060928	CAP SCR 1/2-13X2-1/4 HHGR5	1
6.	72062080	NUT 1/2-13 HEX LOCK	1
7.	72661421	CLEVIS PIN 1/2X2	2

**NOTE**

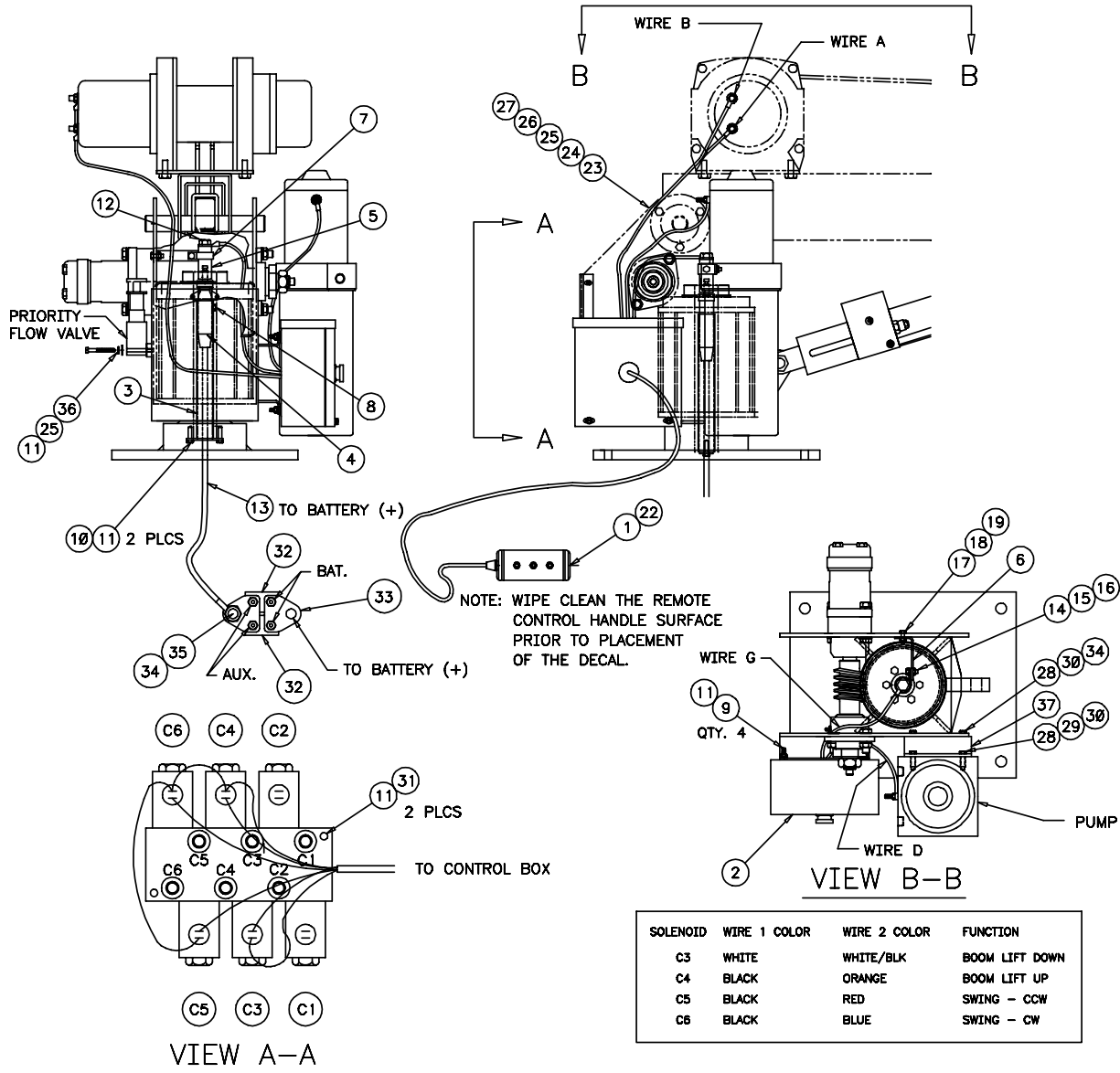
TIGHTEN THIS CAP SCREW AND NUT TO APPROXIMATELY .06" PLAY. THE SHEAVE MUST BE FREE TO ROTATE.





**Figure E-10. CONTROL KIT-3F (90711347-1)**

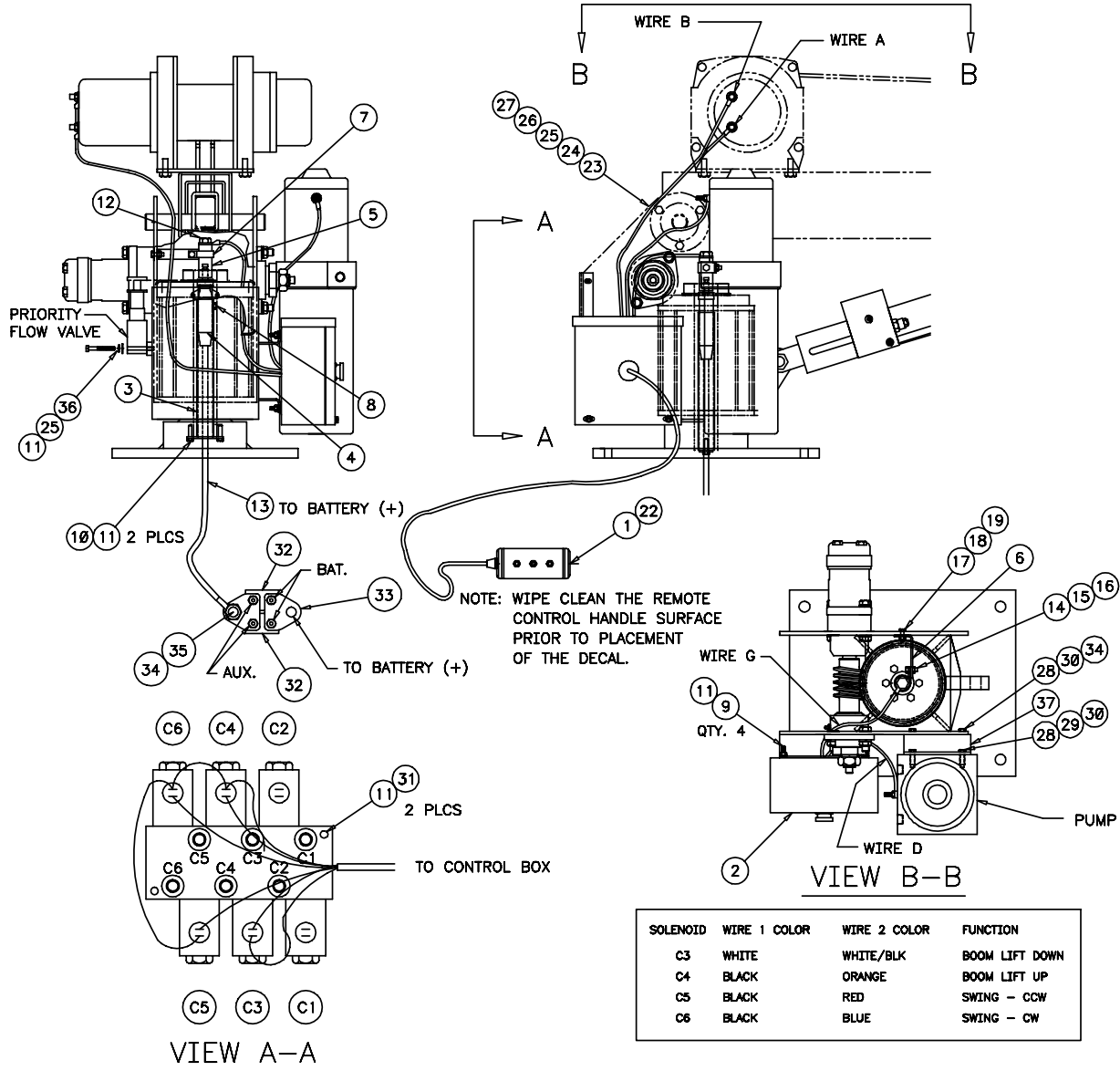
ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1.	51711348	REMOTE CONTROLLER	1	20.	91711381	HYDRAULIC ASM (SEE DWG)	1
2.	77044536	CONTROL BOX ASM	1	21.	99900695	ELECTRICAL SCHEMATIC	1
3.	52711039	BRACKET	1			3-FUNCTION (SEE DWG)	1
4.	60118032	CABLE CONNECTOR-MALE	1	22.	70393694	DECAL-REMOTE CONTROL	1
5.	77044528	CABLE CONNECTOR-FEMALE	1	23.	72661312	CLAMP	1
6.	60116464	SWIVEL BRACKET	1	24.	72066580	CLAMP	1
7.	72066526	P-CLAMP 1" ID	1	25.	72063001	WASHER 1/4 WRT	6
8.	72601692	SET SCR 1/4-20X3/8 NYL TIP	1	26.	72060004	CAP SCR 1/4-20X1 HHGR5	2
9.	72062000	NUT 1/4-20 HEX	4	27.	72062104	NUT 1/4-20 LOCK	2
10.	72060002	CAP SCR 1/4-20X3/4 HHGR5	2	28.	72063003	WASHER 3/8 WRT	4
11.	72063049	WASHER 1/4 LOCK	10	29.	72063051	WASHER 3/8 LOCK	2
12.	72060089	CAP SCR 1/2-13X3/4 HHGR5	1	30.	72060046	CAP SCR 3/8-16X1 HHGR5	4
13.	51711035	CABLE ASM	1	31.	72060010	CAP SCR 1/4-20X2-1/2 HHGR5	2
14.	72060636	MACH SCR #10-24X3/4 RDHD	1	32.	77041320	CIRCUIT BREAKER 40AMP	2
15.	72062106	NUT #10-24 LOCK	1	33.	70144821	MTG BRKT-CIRC BRKR	2
16.	72063123	WASHER #10 WRT	1	34.	72062103	NUT 3/8-16 LOCK	3
17.	72060023	CAP SCR 5/16-18X3/4 HHGR5	1	35.	72060044	CAP SCR 3/8-16X3/4 HH	1
18.	72062109	NUT 5/16-18 LOCK	1	36.	72060008	CAP SCR 1/4-20X2 HHGR5	2
19.	72063002	WASHER 5/16 WRT	1	37.	60121923	BRACKET	1



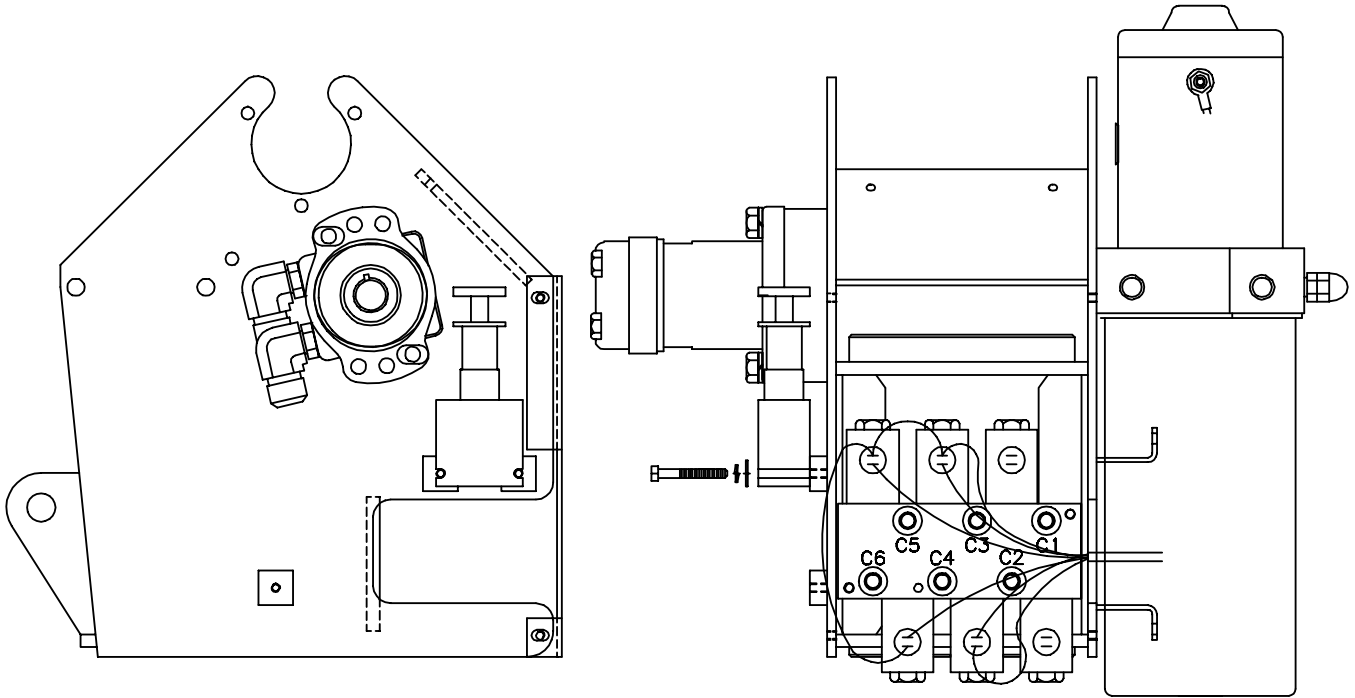
**Figure E-11. CONTROL KIT-4F (90711343-1)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	51711345	REMOTE CONTROLLER	1
2.	77044536	CONTROL BOX ASM	1
3.	52711039	BRACKET	1
4.	60118032	CABLE CONNECTOR-MALE	1
5.	77044528	CABLE CONNECTOR-FEMALE	1
6.	60116464	SWIVEL BRACKET	1
7.	72066526	P-CLAMP 1" ID	1
8.	72601692	SET SCR 1/4-20X3/8 NYL TIP	1
9.	72062000	NUT 1/4-20 HEX	4
10.	72060002	CAP SCR 1/4-20X3/4 HHGR5	2
11.	72063049	WASHER 1/4 LOCK	10
12.	72060089	CAP SCR 1/2-13X3/4 HHGR5	1
13.	51711035	CABLE ASM	1
14.	72060636	MACH SCR #10-24X3/4 RDHD	1
15.	72062106	NUT #10-24 LOCK	1
16.	72063123	WASHER #10 WRT	1
17.	72060023	CAP SCR 5/16-18X3/4 HHGR5	1
18.	72062109	NUT 5/16-18 LOCK	1
19.	72063002	WASHER 5/16 WRT	1

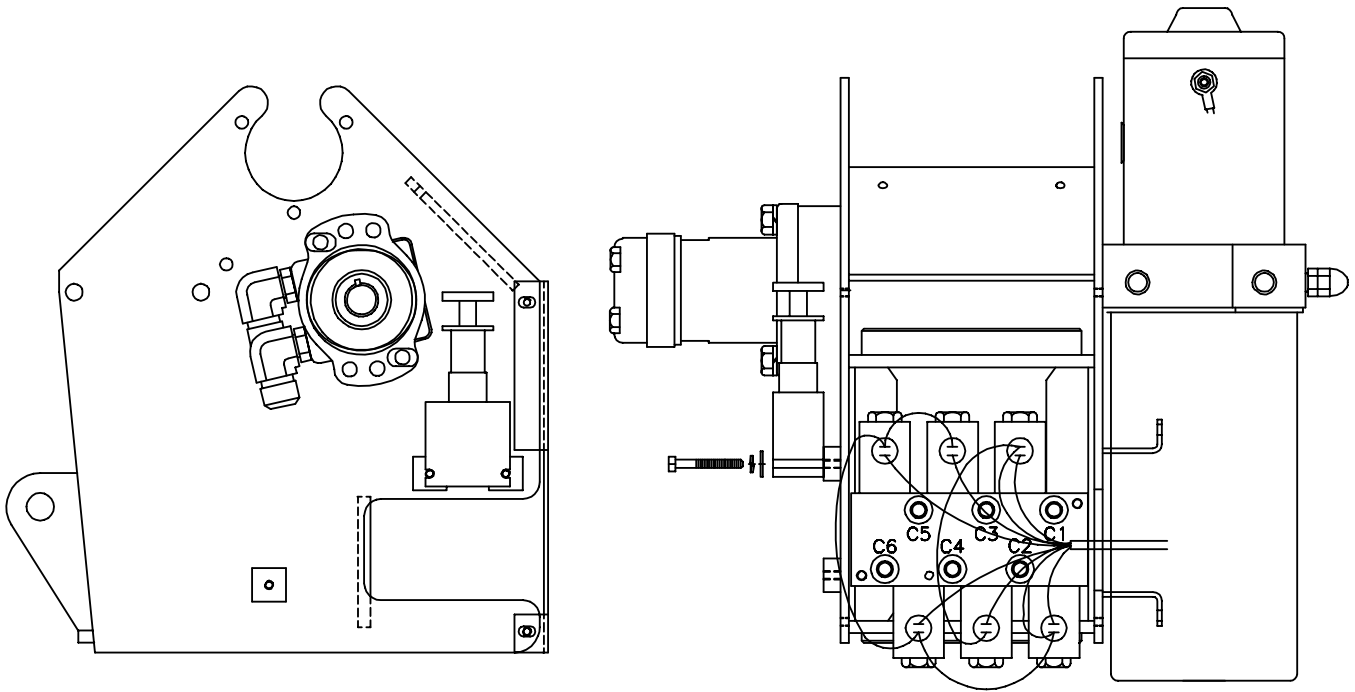
ITEM	PART NUMBER	DESCRIPTION	QTY
20.	91711380	HYDRAULIC ASM (SEE DWG)	1
21.	99900688	ELECTRICAL SCHEMATIC 4-FUNCTION (SEE DWG)	1
22.	70393667	DECAL-REMOTE CONTROL	1
23.	72661312	CLAMP	1
24.	72066580	CLAMP	1
25.	72063001	WASHER 1/4 WRT	6
26.	72060004	CAP SCR 1/4-20X1 HHGR5	2
27.	72062104	NUT 1/4-20 LOCK	2
28.	72063003	WASHER 3/8 WRT	4
29.	72063051	WASHER 3/8 LOCK	2
30.	72060046	CAP SCR 3/8-16X1 HHGR5	4
31.	72060010	CAP SCR 1/4-20X2-1/2 HHGR5	2
32.	77041320	CIRCUIT BREAKER 40AMP	2
33.	70144821	MTG BRKT-CIRC BRKR	2
34.	72062103	NUT 3/8-16 LOCK	3
35.	72060044	CAP SCR 3/8-16X3/4 HH	1
36.	72060008	CAP SCR 1/4-20X2 HHGR5	2
37.	60121923	BRACKET	1



**Figure E-10A. CONTROL KIT-3F (90711347-2)**

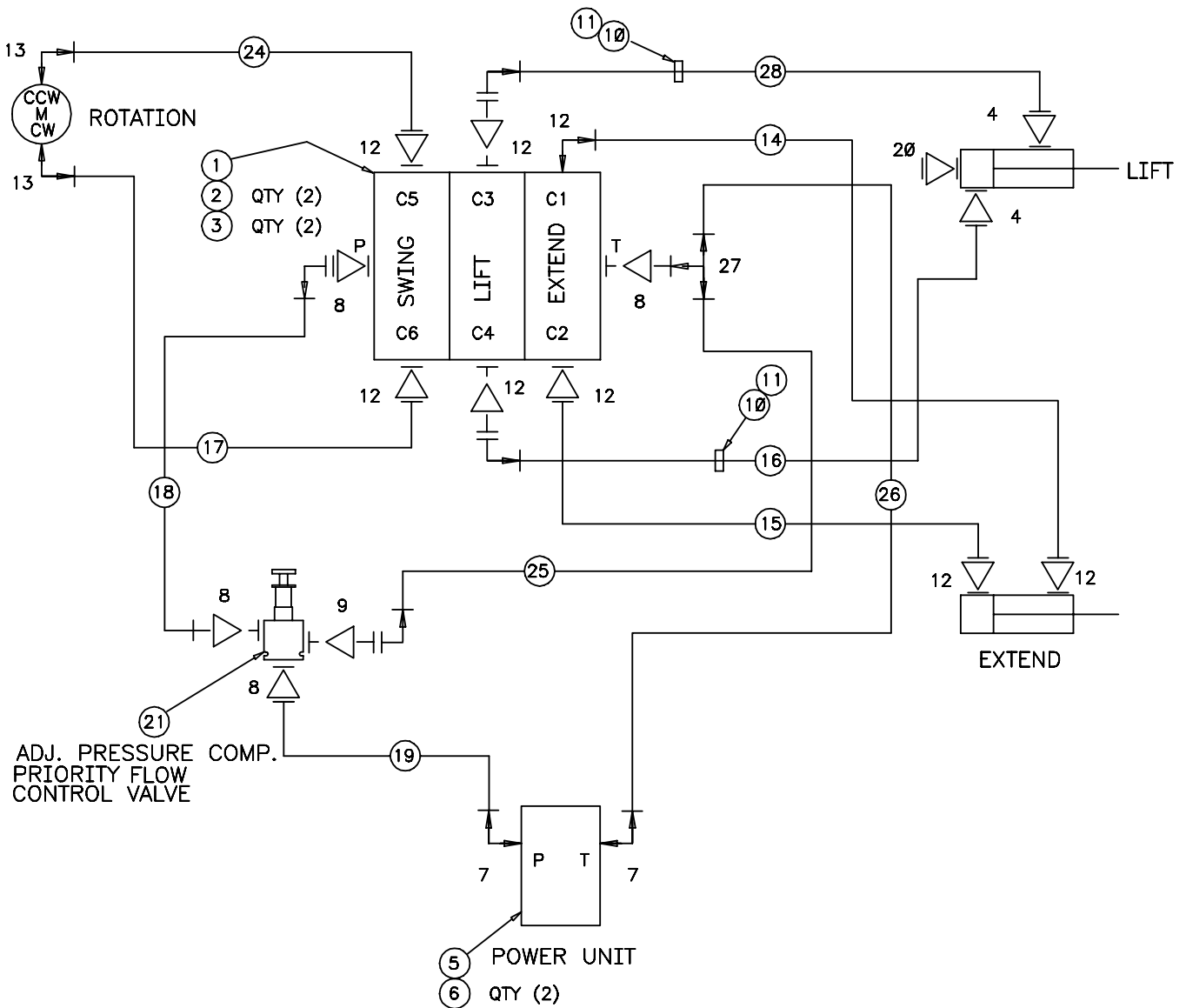


**Figure E-11A. CONTROL KIT-4F (90711343-2)**



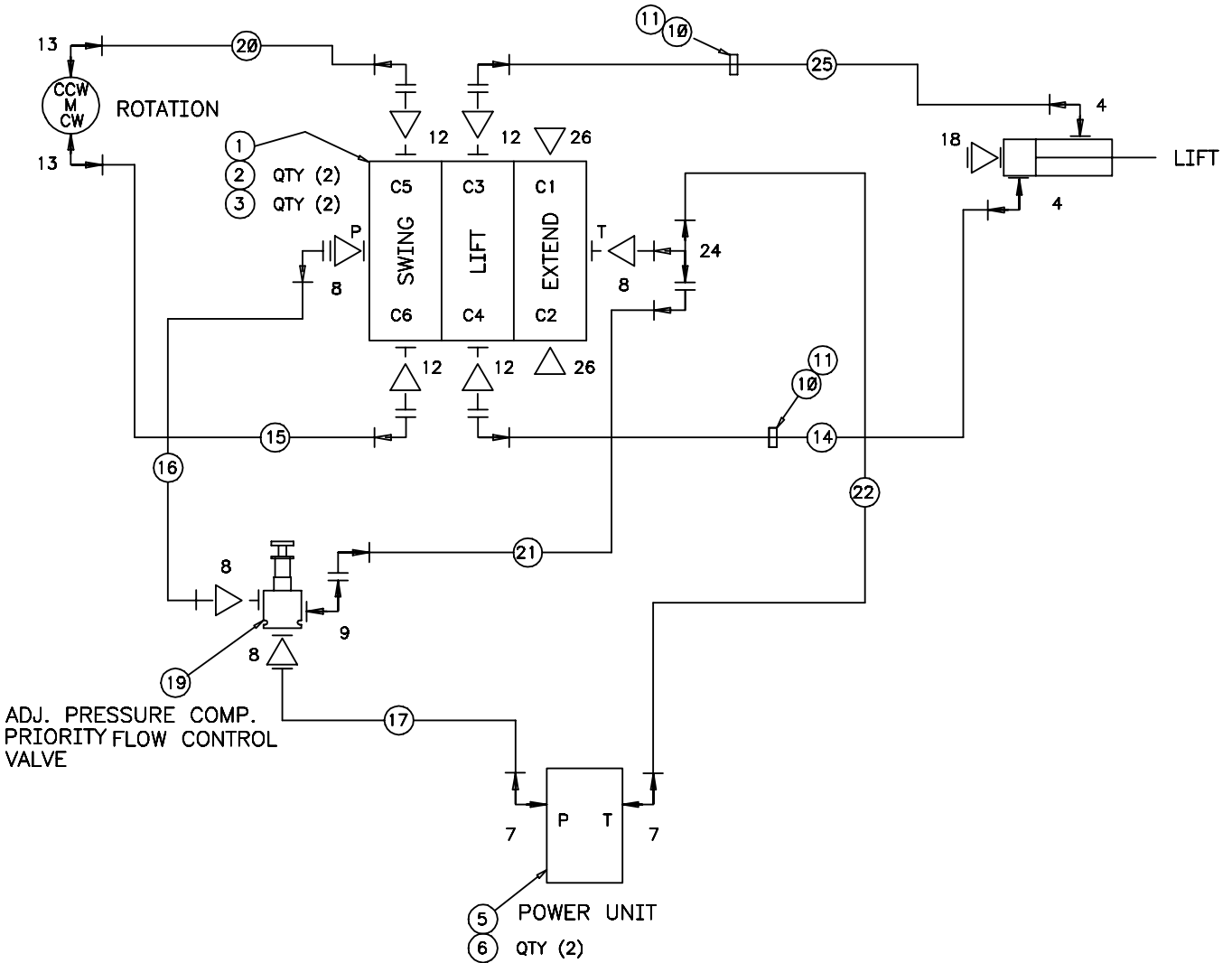
**Figure E-12. HYDRAULIC ASM-3F (91711380)**

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732799	VALVE 3-FUNCTION	1	15.	51393952	HOSE ASM 1/4X37 FJ	1REF
2.	72060010	CAP SCR 1/4-20X2-1/2	2	16.	51393948	HOSE ASM 1/4X28 FZ	1REF
3.	72063049	WASHER 1/4 LOCK	2	17.	51393950	HOSE ASM 1/4X13 FJ	1REF
4.	72053758	ELBOW #4MSTR #4MJIC 90°	2	18.	51393951	HOSE ASM 3/8X11 FJ	1REF
5.	73051958	POWER UNIT	1REF	19.	51395553	HOSE ASM 3/8X24 FJ	1REF
6.	72060043	CAP SCR 3/8-16X5/8	2	20.	77041258	PRESSURE SWITCH	1
7.	72053760	ELBOW #6MSTR #6MJIC 90°	2	21.	73054920	PRIORITY FLOW VALVE	1
8.	72532355	ADAPTER #6MSTR #6MJIC	4	22.	51712407	HOSE KIT (INCL:14&15)	1
9.	72053760	ELBOW #6MSTR #6MJIC 90°	1	23.	51715609	HOSE KIT (INCL:16-19,24-26,28)	1
10.	72661312	CLAMP 1/2 LOOP CUSHIONED	2	24.	51394161	HOSE ASM 1/4X16 FJ	1REF
11.	72060000	CAP SCR 1/4-20X1/2	1	25.	51394162	HOSE ASM 3/8X16 FZ	1REF
12.	72532351	ADAPTER #4MSTR #4MJIC	8	26.	51395554	HOSE ASM 3/8X14 FF	1REF
13.	72533331	ELBOW #10MSTR #6MJIC 90°	2	27.	72533474	TEE #6JIC SWVL NUT BRANCH	1
14.	51393953	HOSE ASM 1/4X34 FJ	1REF	28.	51394236	HOSE ASM 1/4X28 FZ	1REF

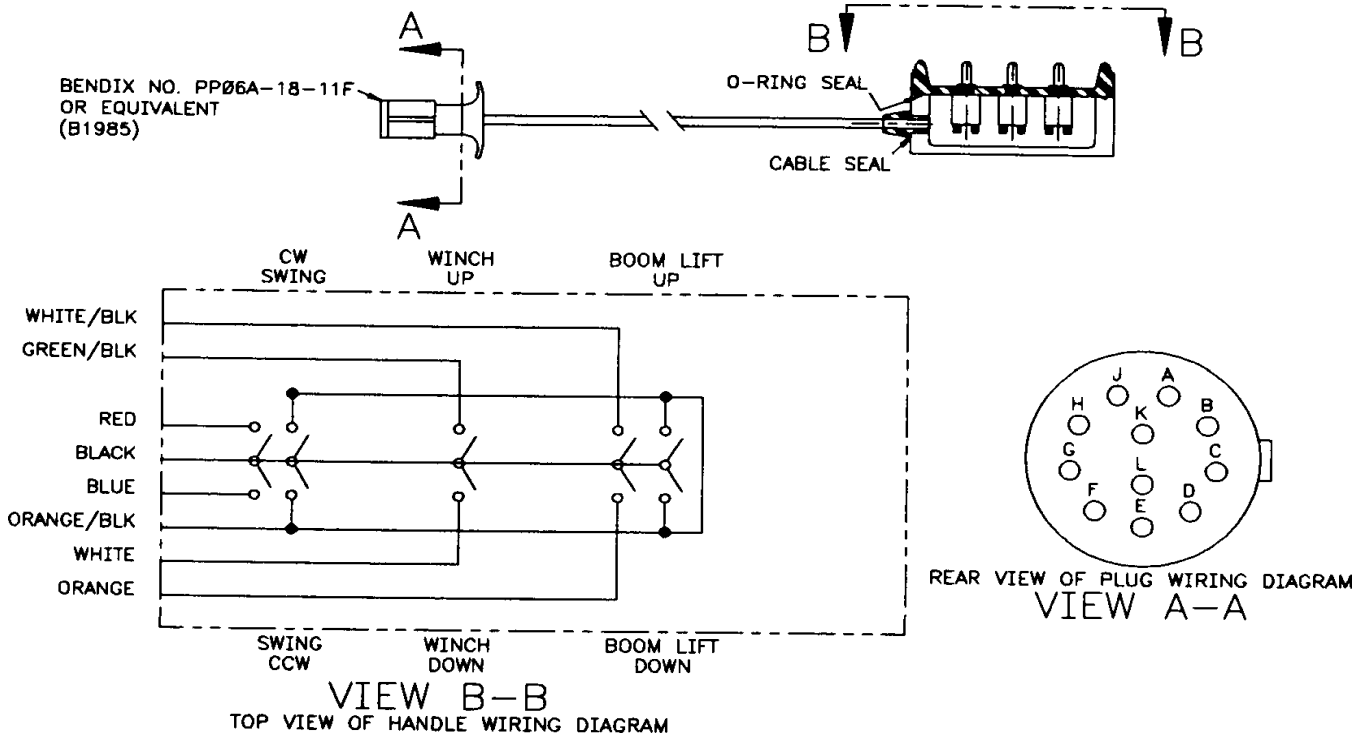


**Figure E-13. HYDRAULIC ASM-2F (91711381)**

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	70732799	VALVE 3-FUNCTION	1	14.	51393948	HOSE ASM 1/4X28 FZ	1REF
2.	72060010	CAP SCR 1/4-20X2-1/2	2	15.	51393950	HOSE ASM 1/4X13 FJ	1REF
3.	72063049	WASHER 1/4 LOCK	2	16.	51393951	HOSE ASM 3/8X11 FJ	1REF
4.	72053758	ELBOW #4MSTR #4MJIC 90°	2	17.	51395553	HOSE ASM 3/8X24 FJ	1REF
5.	73051958	POWER UNIT	1REF	18.	77041258	PRESSURE SWITCH	1
6.	72060043	CAP SCR 3/8-16X5/8	2	19.	73054920	PRIORITY FLOW VALVE	1
7.	72053760	ELBOW #6MSTR #6MJIC 90°	2	20.	51394161	HOSE ASM 1/4X16 FJ	1REF
8.	72532355	ADAPTER #6MSTR #6MJIC	3	21.	51394162	HOSE ASM 3/8X16 FZ	1REF
9.	72053750	ADAPTER #16MSTR 3/4FPT	2	22.	51395554	HOSE ASM 3/8X14 FF	1REF
10.	72661312	CLAMP 1/2 LOOP CUSHIONED	2	23.	51715609	HOSE KIT (INCL:14-17,22,24,25)	1
11.	72060000	CAP SCR 1/4-20X1/2	1	24.	72533474	TEE #6JIC SWVL NUT BRANCH	1
12.	72532351	ADAPTER #4MSTR #4MJIC	4	25.	51394236	HOSE ASM 1/4X28 FJ	1REF
13.	72533331	ELBOW #10MSTR #6MJIC 90°	2	26.	72532522	PLUG-STR HEX HD STL 7/16	2

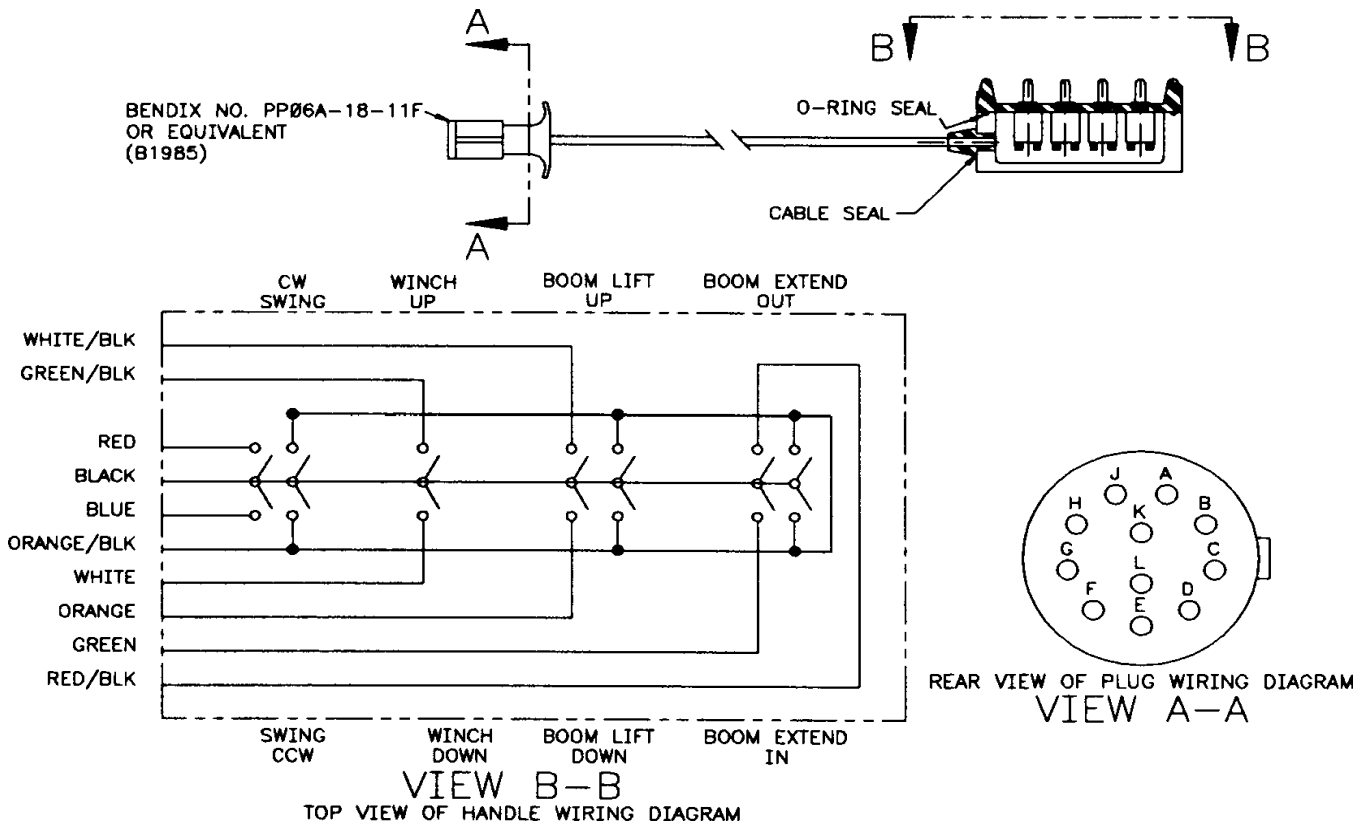


**Figure E-14. REMOTE CONTROLLER-3F (51711348)**



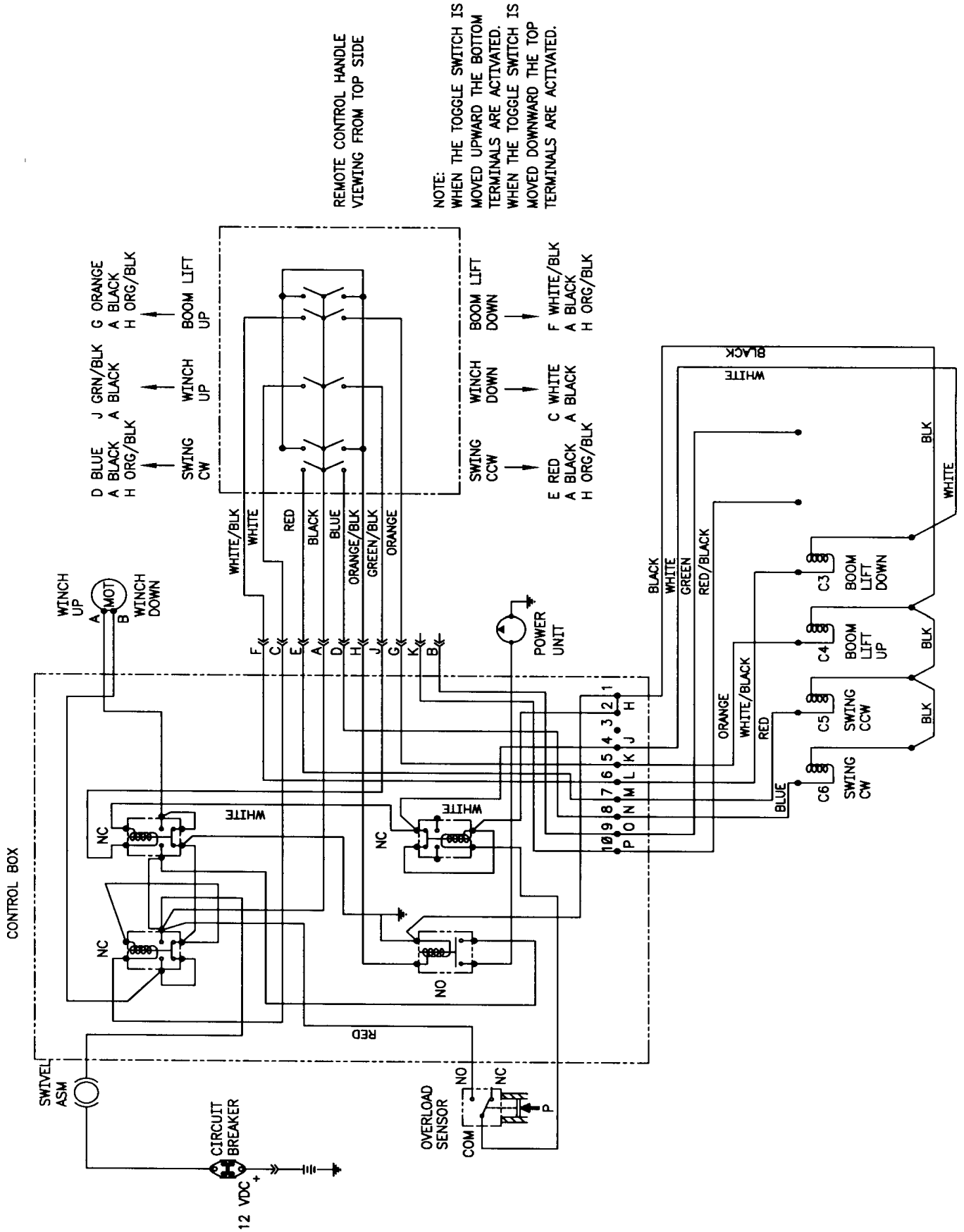
WIRE COLOR	LOCATION
BLACK	A
—	B
WHITE	C
BLUE	D
RED	E
WHITE/BLK STRIPE	F
ORANGE	G
ORANGE/BLK STRIPE	H
GREEN/BLACK STRIPE	J
—	K

**Figure E-15. REMOTE CONTROLLER-4F (51711345)**



WIRE COLOR	LOCATION
BLACK	A
GREEN	B
WHITE	C
BLUE	D
RED	E
WHITE/BLK STRIPE	F
ORANGE	G
ORANGE/BLK STRIPE	H
GREEN/BLACK STRIPE	J
RED/BLK STRIPE	K

Figure E-16. ELECTRICAL SCHEMATIC-3F (99900695)

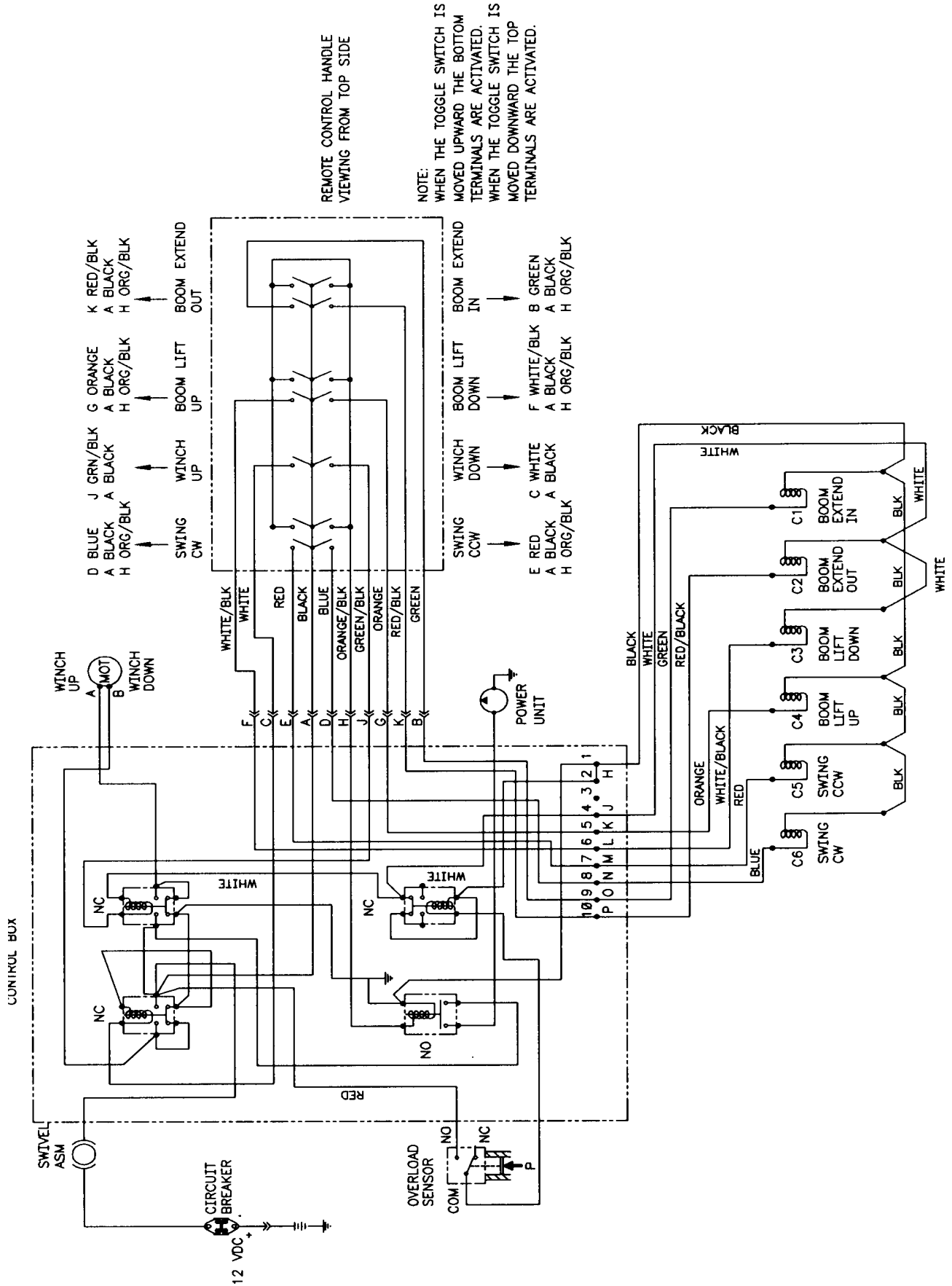


REMOTE CONTROL HANDLE VIEWING FROM TOP SIDE

NOTE: WHEN THE TOGGLE SWITCH IS MOVED UPWARD THE BOTTOM TERMINALS ARE ACTIVATED. WHEN THE TOGGLE SWITCH IS MOVED DOWNWARD THE TOP TERMINALS ARE ACTIVATED.

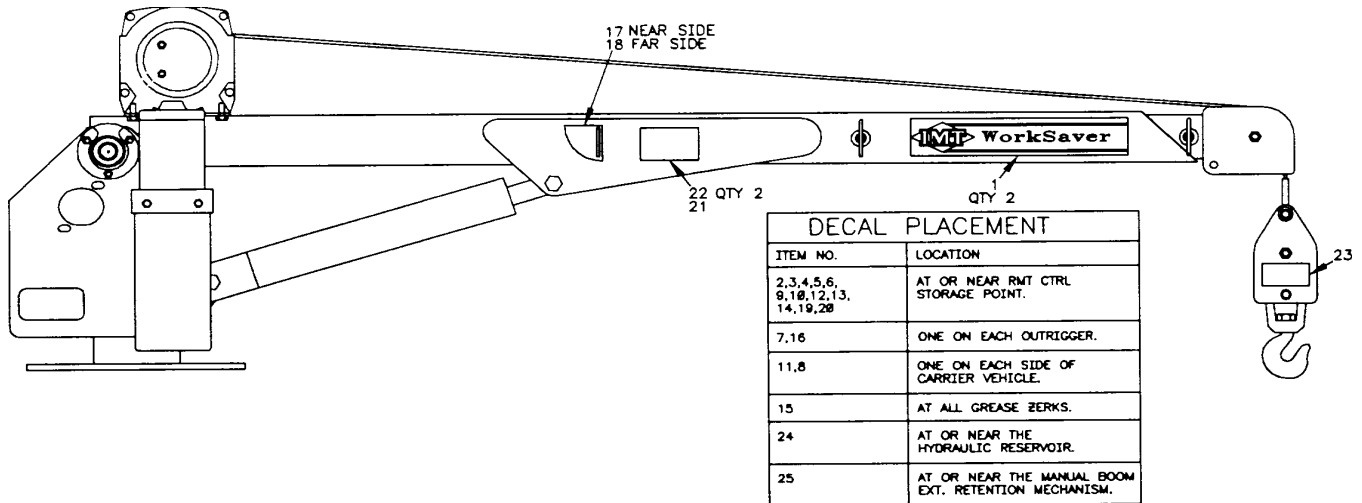


**Figure E-17. ELECTRICAL SCHEMATIC-4F (99900688)**



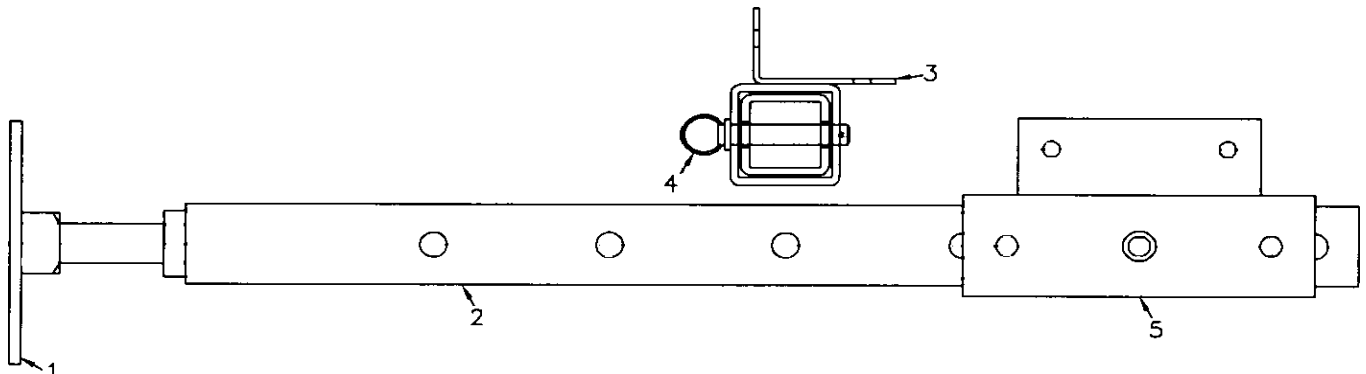
**Figure E-18. DECAL KIT (95711104)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	70393645	DECAL-WORKSAVER	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.	70392863	DECAL-DGR HOISTING PERS	1
7.	70392864	DECAL-DGR OUTRG STD CLR	2
8.	70394445	DECAL-DANGER ELECTRO	4
9.	70392866	DECAL-DANGER OPER COND	1
10.	70392867	DECAL-DGR OUTRG MOVING	1
11.	70392868	DECAL-DANGER LOADLINE	4
12.	70392888	DECAL-DGR OPER RESTRICT	1
13.	70394446	DECAL-DANGER RC ELECTRO	1
14.	70392213	DECAL-CAUTION WASH/WAX	1
15.	70391613	DECAL-GREASE WKLY RH	
16.	70391598	DECAL-WARNING OUTRIGGER	2
17.	71393664	DECAL-ANGLE CHART RH	1
18.	71393665	DECAL-ANGLE CHART LH	1
19.	71393613	CAPACITY PLACARD	2
20.	70392982	DECAL-CONTACT IMT	1
21.	70029119	SERIAL NUMBER PLACARD	1
22.	72066340	RIVET	2
23.	71394083	DECAL-LOAD BLK RATING 2.0T	2
24.	70394189	DECAL-RECOMMEND HYD OIL	1
25.	70394443	DECAL-DGR FREEFALL BOOM	1

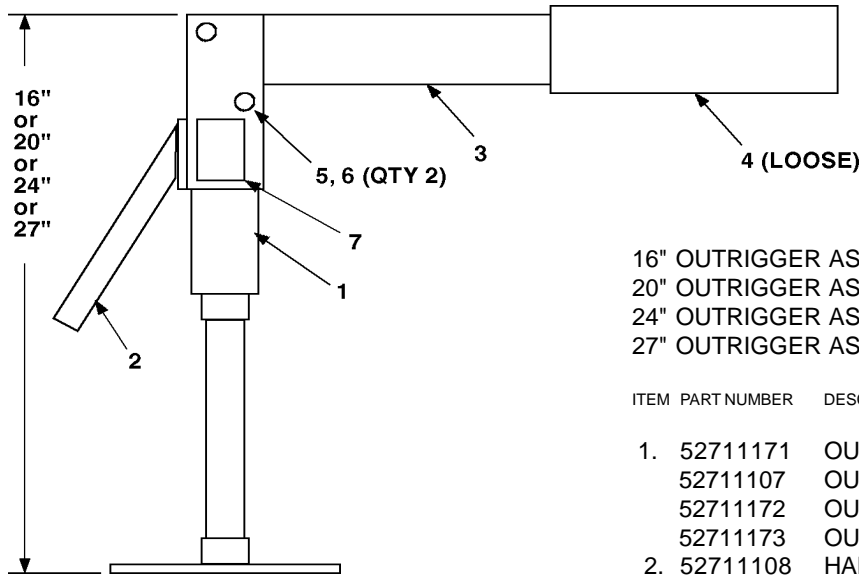


**Figure E-19. OUTRIGGER ASM-DROP LEG (41711109)**

ITEM	PART NUMBER	DESCRIPTION	QTY
1.	52711032	OUTRIGGER PAD	1
2.	52711030	DROP LEG OUTRIGGER	1
3.	52711031	OUTRIGGER HOUSING	1
4.	71731711	PIN 1/2X2-1/2 QUICK RELEASE	1
5.	70392864	DECAL-DANGER STAND CLEAR	1
6.	72060047	CAP SCR 3/8-16X1-1/4 HHGR5	4
7.	72062103	NUT 3/8-16 LOCK	4
8.	72063003	WASHER 3/8 WRT	8



**Figure E-20. OUTRIGGER ASMS**



- 16" OUTRIGGER ASSEMBLY (41711174)
- 20" OUTRIGGER ASSEMBLY (41711106)
- 24" OUTRIGGER ASSEMBLY (41711175)
- 27" OUTRIGGER ASSEMBLY (41711176)

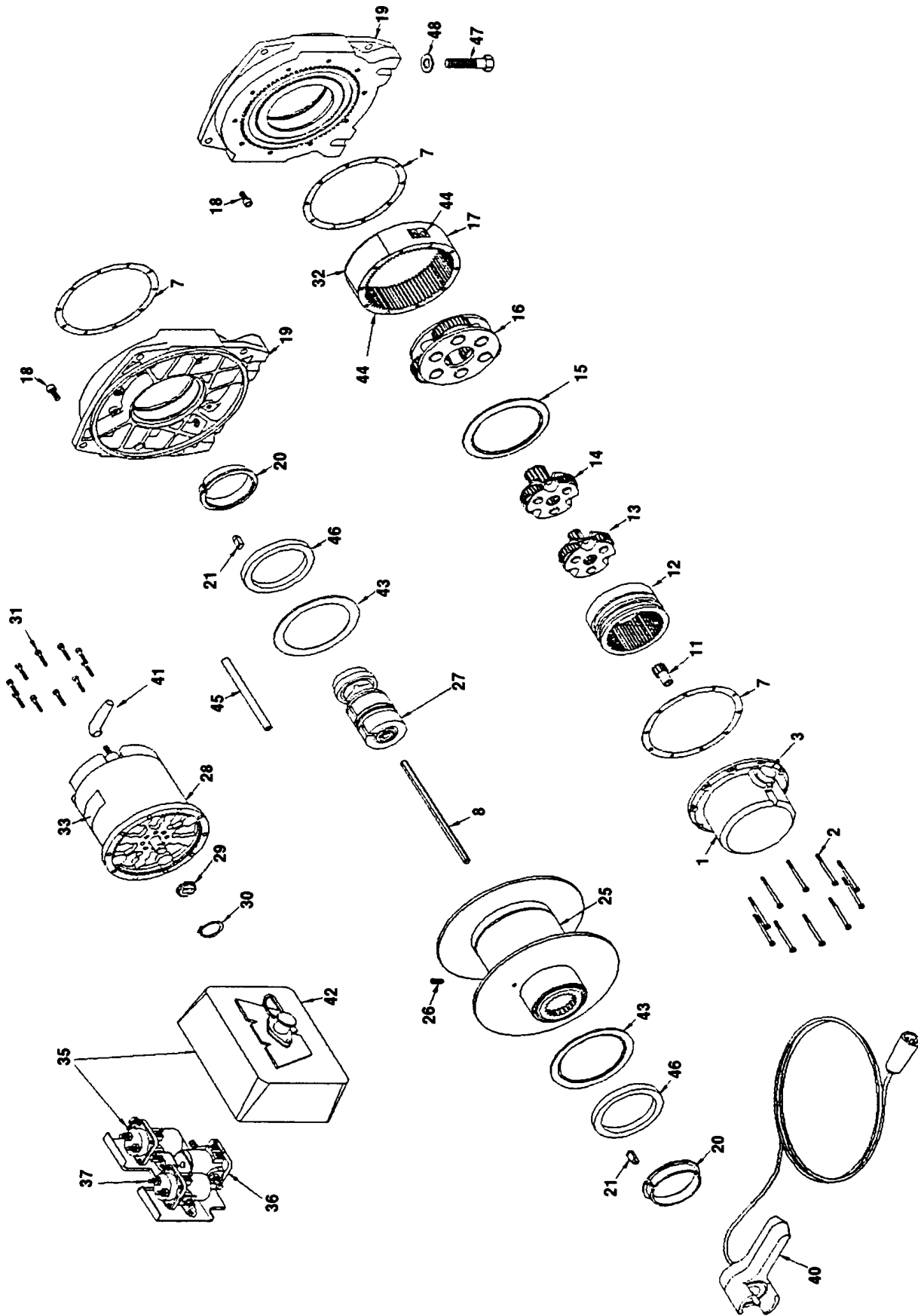
ITEM	PART NUMBER	DESCRIPTION	16" QTY	20" QTY	24" QTY	27" QTY
1.	52711171	OUTRIGGER WELDMENT 16"	1			
	52711107	OUTRIGGER WELDMENT 20"		1		
	52711172	OUTRIGGER WELDMENT 24"			1	
	52711173	OUTRIGGER WELDMENT 27"				1
2.	52711108	HANDLE WELDMENT	1	1	1	1
3.	60116598	OUTRIGGER TUBE	1	1	1	1
4.	60116602	OUTRIGGER TUBE	1	1	1	1
5.	72060054	CAP SCR 3/8-16X3 HH GR5	2	2	2	2
6.	72062103	NUT 3/8-16 HEX LOCK	2	2	2	2
7.	70392864	DECAL-DANGER STAND CLR	1	1	1	1

**Figure E-21. WINCH REPLACEMENT PARTS (71570132-1)**

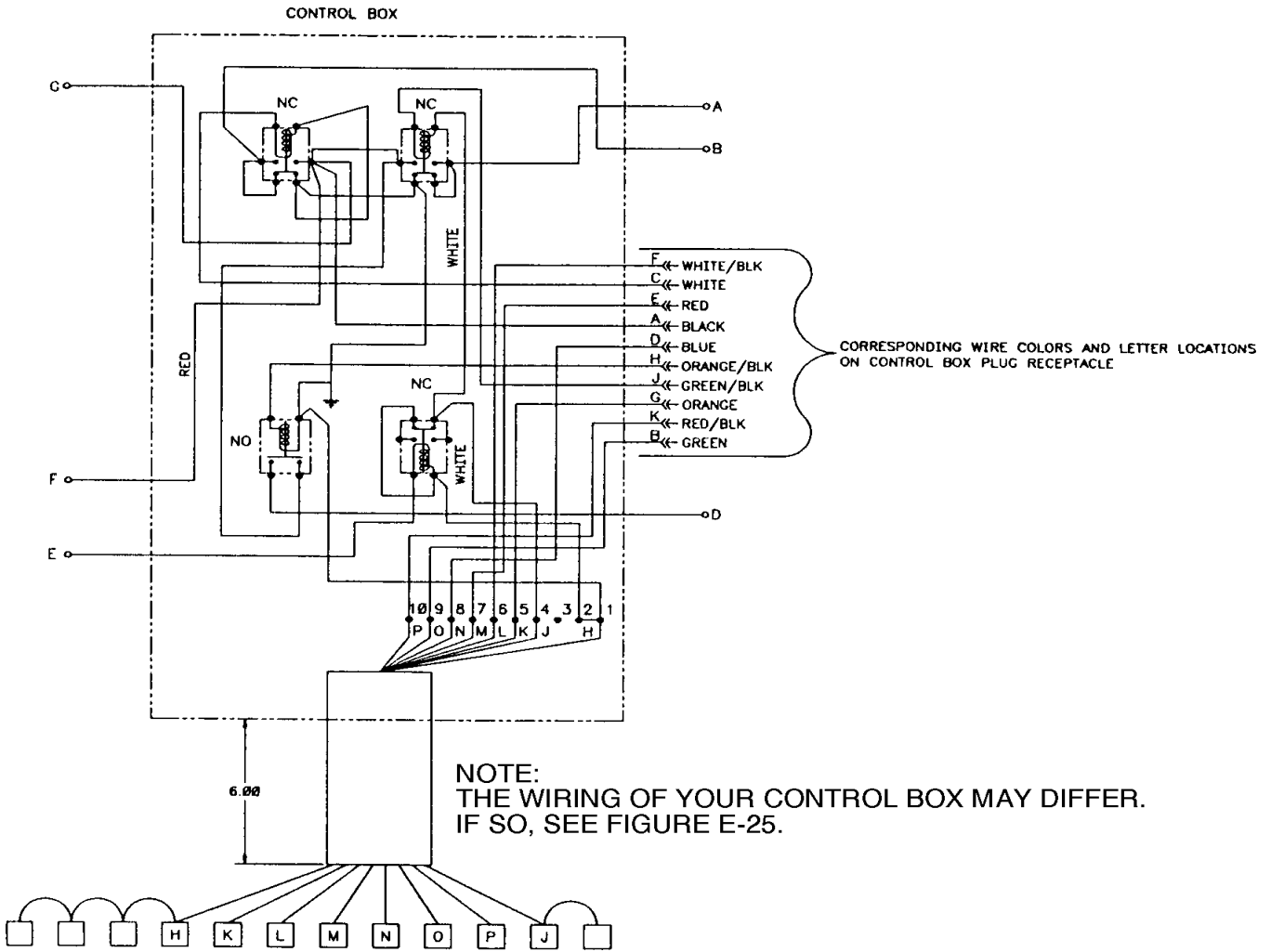
ITEM	VENDOR PART NO.	DESCRIPTION	QTY
1.	13819	GEAR HOUSING-BLACK	1
2.	13850	CAP SCR #10-24X2-1/4 SH	10
3.	21213	CLUTCH BLOCKOUT	1
	24530	PLUG	1REF
	21008	SEAL RETAINER WASHER	1REF
	21010	SEAL	1REF
	25573	SETSCR SH	1REF
7.	13848	GASKET	3
8.	27422	SHAFT 5/16 HEX	1
11.	13874	GEAR 12T SUN	1
12.	13839	GEAR-SLIDING RING	1
13.	14401	CARRIER ASM STG 1	1
14.	25628	CARRIER ASM STG 2	1
15.	13826	THRUST WASHER-NYLON	1
16.	28115	CARRIER ASM STG 3	1
17.	28077	RING GEAR 75T BLK (INCL:32&34)	1
18.	18627	CAP SCR 3/8-16X1 HH	6
19.	28106	DRUM SUPPORT	2
20.	15598	DRUM BUSHING-NYLON	2
21.	21373	KEY-DRUM BUSHING	2
25.	28108	DRUM ASM (INCL:26)	1
26.	28569	SETSCR 1/4-20X1/2 SH	3
27.	15663	BRAKE ASM	1
28.	14114	MOTOR 12VDC 4.8"	1
29.	6221	INPUT GEAR	1
30.	1159	RETAINING RING	1
31.	5553	CAPSCR SH	10
32.	25511	LABEL-H1600	1
33.	23879	LABEL-12VDC	1
35.	24531	CONTROL-HOIST 12VDC 3-SOL	1
36.	2040	SOLENOID 12VDC SPST	1
37.	9639	SOLENOID 12VDC SPDT	2
40.	21221	REMOTE CONTROL 12'	1
41.	2090	BOOT-ELECTRICAL TERMINAL	2
42.	13329	SOLENOID HOUSING ASM	1
43.	18545	THRUST WASHER-NYLON	2
44.	27186	LABEL-DRUM ROTATION	2
45.	28107	TIE ROD	3
46.	15668	OIL SEAL	2
47.	28514	CAP SCR M12X1.75X35 HHGR8	8
48.	9213	WASHER-FLAT	8

SEE FOLLOWING PAGE FOR DRAWING

**Figure E-21. WINCH REPLACEMENT PARTS (71570132-2)**



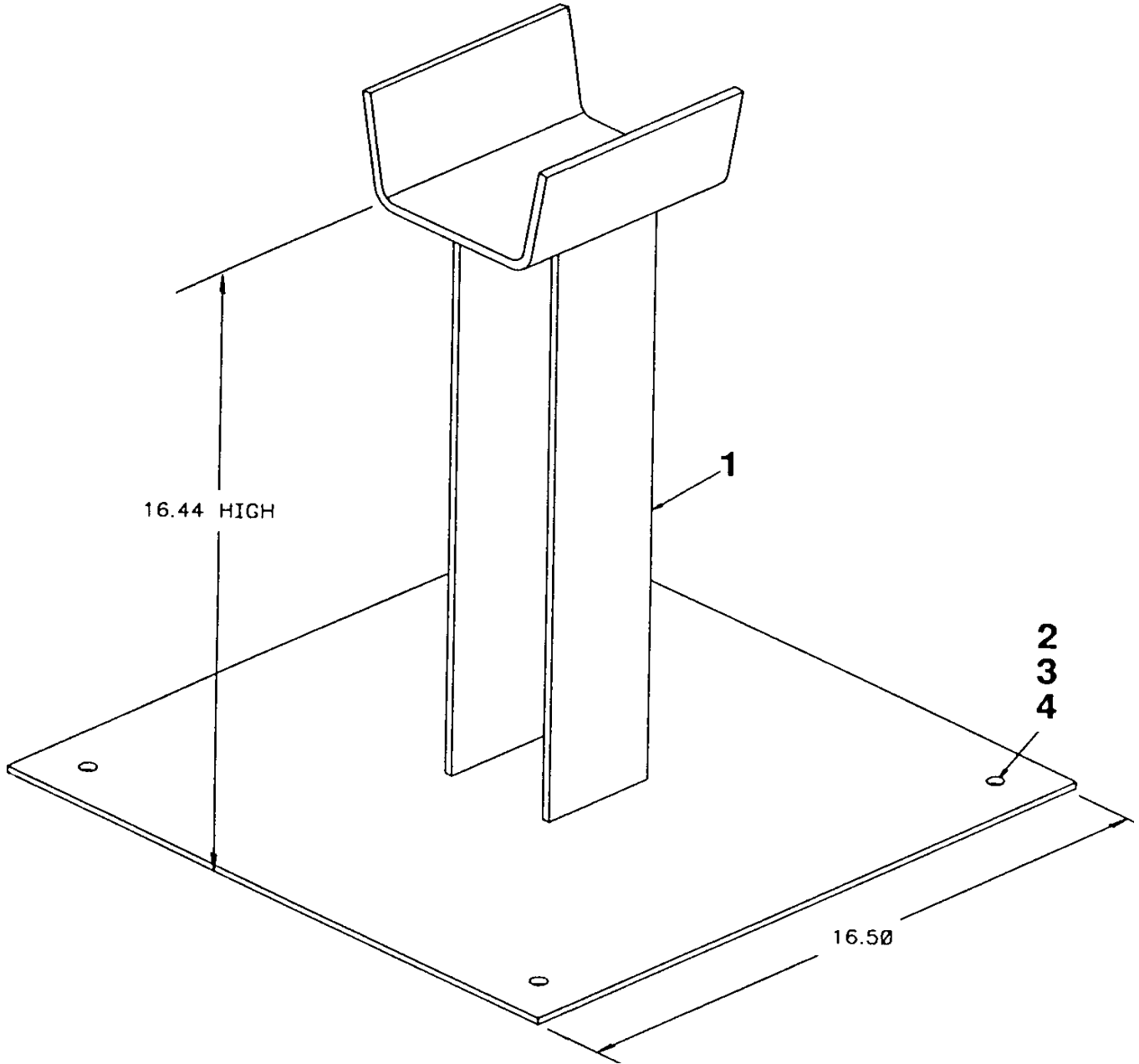
**Figure E-22. CONTROL BOX ELECTRICAL SCHEMATIC (77044536)**



FUNCTION	WIRE	LENGTH OUTSIDE BOX	WIRE GAGE	TERMINAL SIZE & TYPE	WIRE COLOR
WINCH UP	A	35	4	.25 RING	BLK
WINCH DOWN	B	35	4	.25 RING	BLK
NOT USED	C				
PUMP POWER	D	18	4	.31 RING	BLK
OVERLOAD SENSOR	E	40	18	#8 RING	BLK
OVERLOAD SENSOR	F	40	18	#8 RING	WHT
POWER IN	G	18	1	.50 RING	BLK
GROUND	H	6+5+6+6+6	18	(4) .25 F SPADE	BLK
GROUND	J	6+5+6	18	(2) .25 F SPADE	WHT
BOOM LIFT UP	K	6+5	18	.25 F SPADE	ORN
BOOM LIFT DOWN	L	6+5	18	.25 F SPADE	WHT/BLK
SWING CCW	M	6+5	18	.25 F SPADE	WHT/BLK
SWING CW	N	6+5	18	.25 F SPADE	BLU
BOOM EXT IN	O	6+5	18	.25 F SPADE	GRN
BOOM EXT OUT	P	6+5	18	.25 F SPADE	RED/BLK

**Figure E-23. BOOM SUPPORT ASM (51712415)**

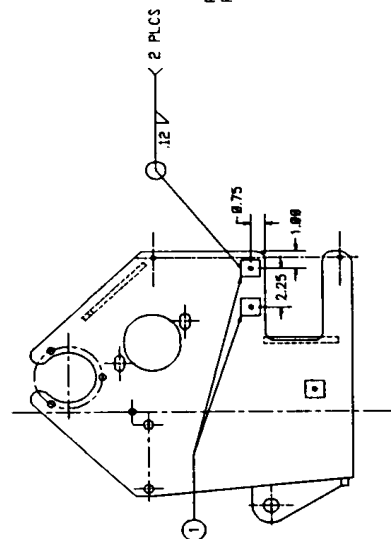
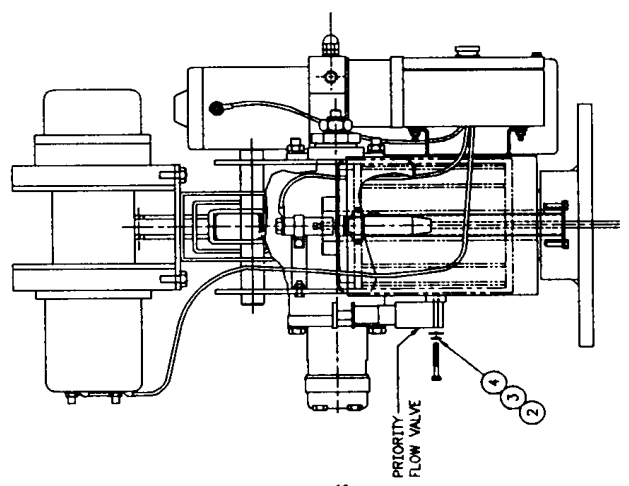
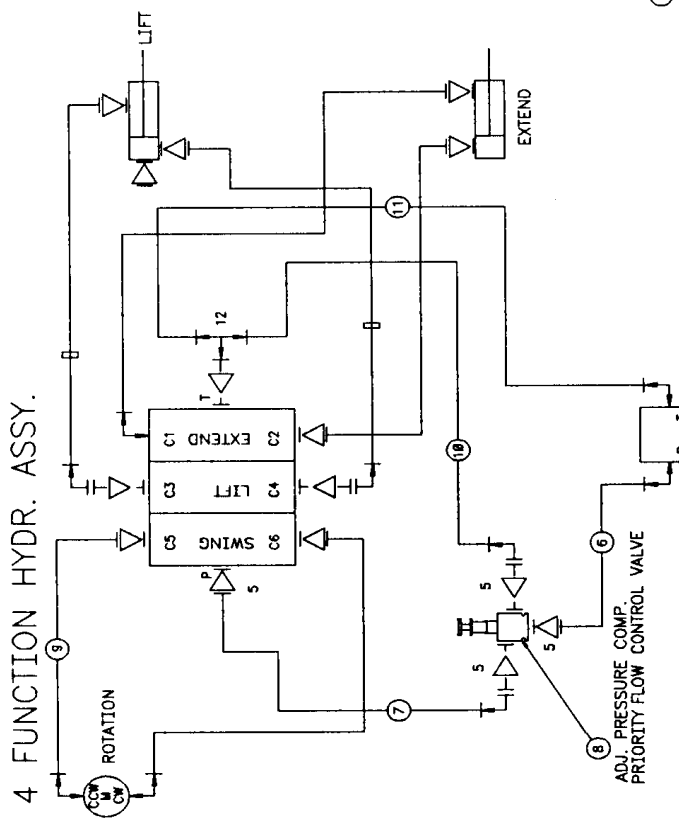
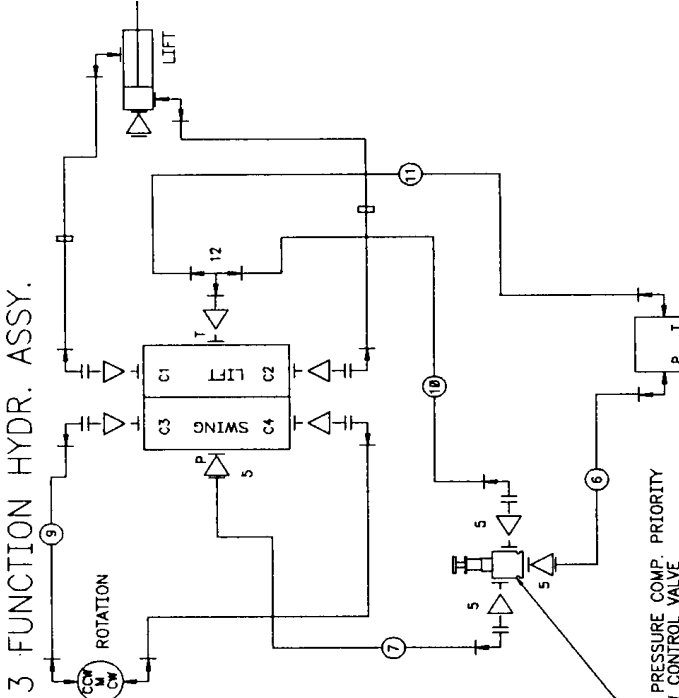
ITEM	PART NO.	DESCRIPTION	QTY
1.	52712775	BOOM SUPPORT	1
2.	72060046	CAP SCR 3/8-16X1 HHGR5	4
3.	72062103	NUT 3/8-16 LOCK	4
4.	72063003	WASHER 3/8 WRT	4



**Figure E-24. RETROFIT KIT-PRIORITY FLOW VALVE (95713206-1)**

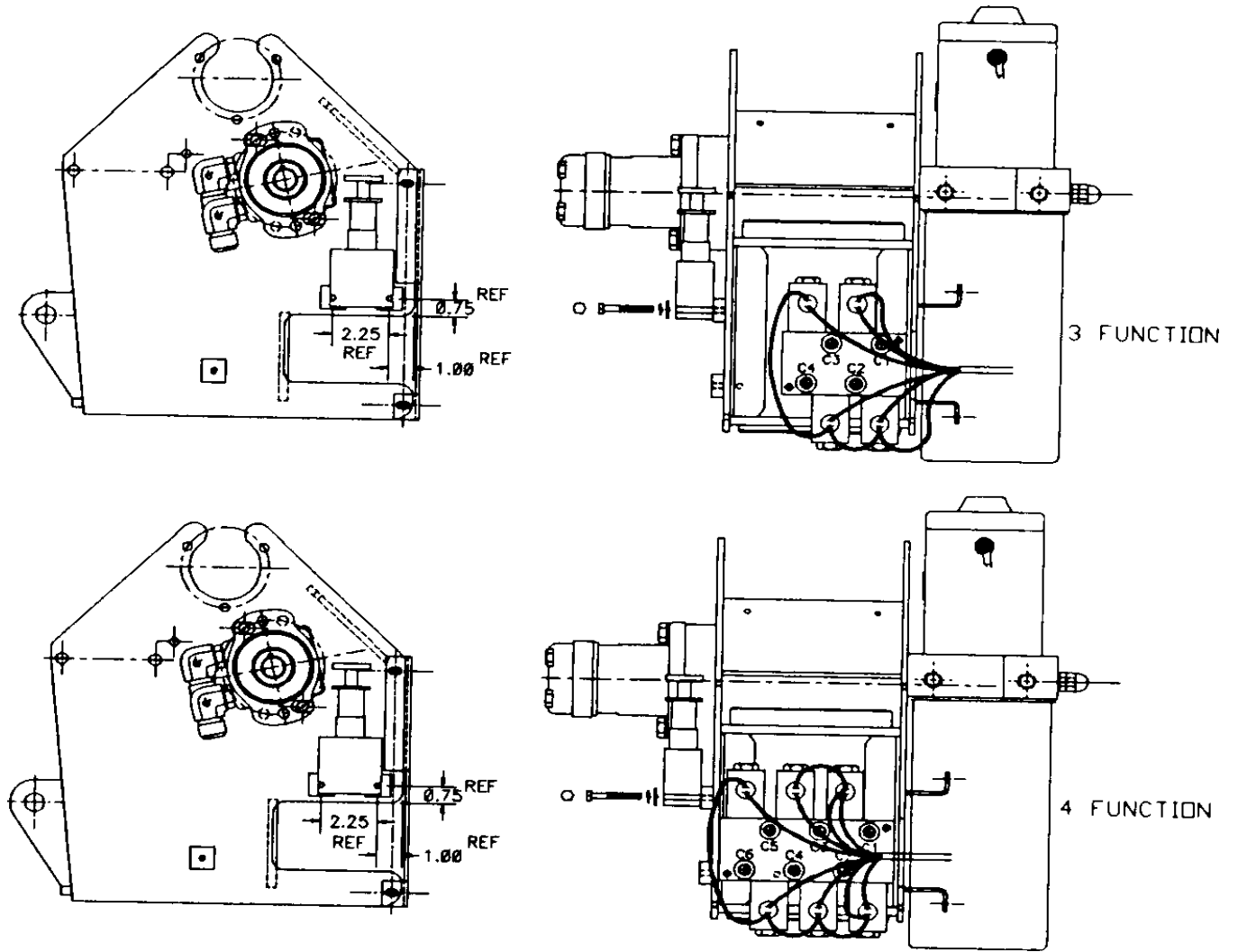
CONTINUED

ITEM	PART NO.	DESCRIPTION	QTY
1.	60107237	MOUNTING BLOCKS	1
2.	72063049	WASHER 1/4 LOCK	2
3.	72063001	WASHER 1/4 WRT	2
4.	72060008	CAP SCR 1/4-20X2 HHGR5	2
5.	72532355	ADAPTER #6MSTR #6MJIC	4
6.	51393949	HOSE ASM 3/8X21 FJ	1
7.	51393951	HOSE ASM 3/8X11 FJ	1
		(PART OF ORIGINAL HYD ASM)	1 REF
8.	73054920	PRIORITY FLOW VALVE	1
9.	51394161	HOSE ASM 1/4X16 FJ	1
10.	51394162	HOSE ASM 3/8X16 FZ	1
11.	51394163	HOSE ASM 3/8X11 FF	1
12.	72533474	TEE #6JIC SWVL NUT BRANCH	1

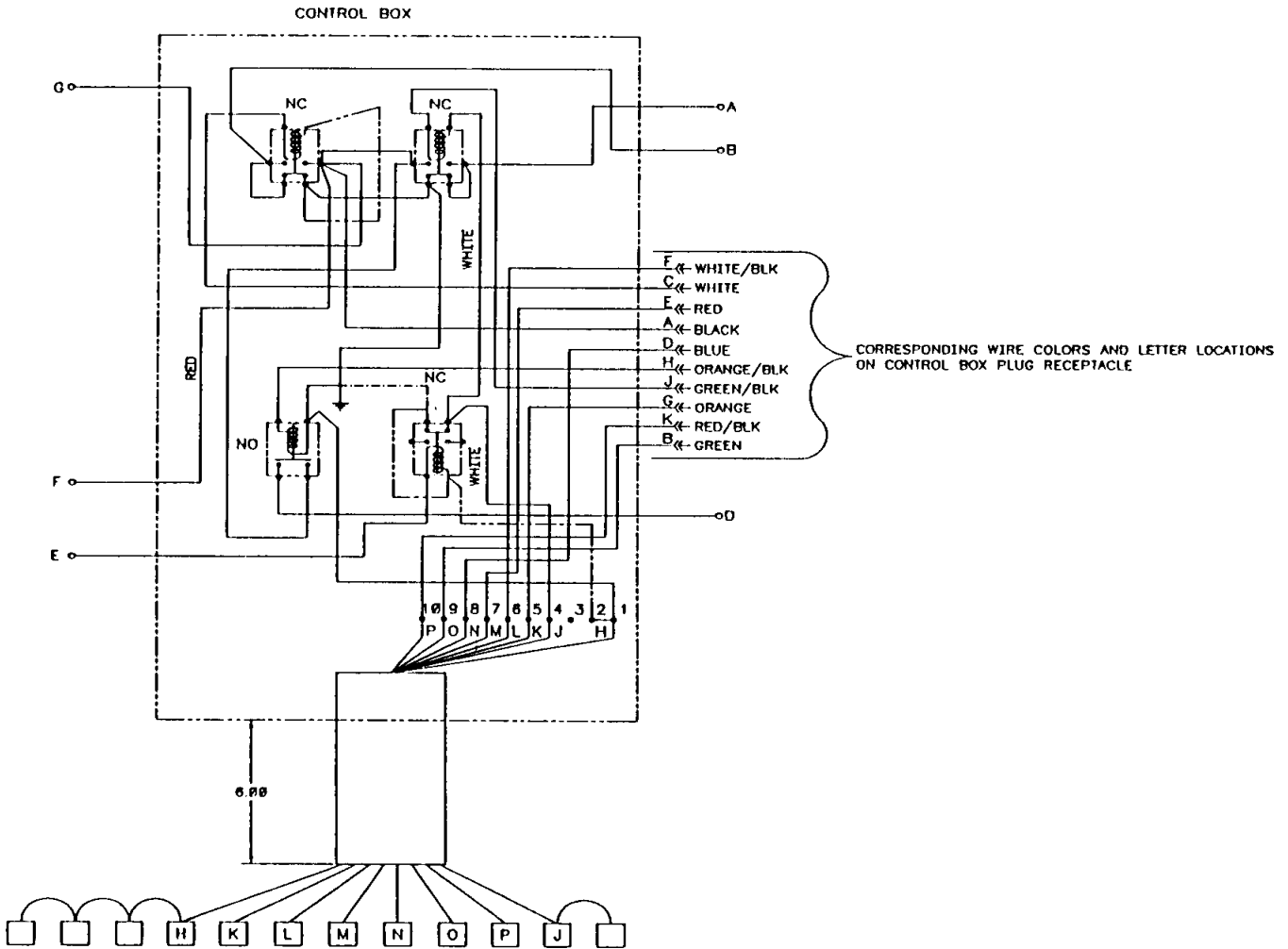




**Figure E-24A. RETROFIT KIT-PRIORITY FLOW VALVE (95713206-2)**



**Figure E-25. CONTROL BOX ELECTRICAL SCHEMATIC-DEVIATION (77044536)**



**NOTE:**

This Control Box deviated from previous boxes by replacing the top left and bottom right, terminal grounded solenoids with case or self grounded solenoids. The case grounded solenoids have only one small terminal instead of two. The small terminal that was eliminated, was used for a ground connection. The top right solenoid must have the grounding terminal so the ground can be broken during overload situation. When the top right solenoid ground is broken, the winch up function is inoperable during overload. The wires that were removed due to the change in solenoids are shown in phantom line type. The one wire added due to the change in solenoids is shown in dashdot line type.

**WIRE CODE**

FUNCTION	WIRE	LENGTH OUTSIDE BOX	WIRE GAGE	TERMINAL SIZE & TYPE	WIRE COLOR
WINCH UP	A	35	4	.25 RING	BLK
WINCH DOWN	B	35	4	.25 RING	BLK
NOT USED	C				BLK
PUMP POWER	D	18	4	.31 RING	BLK
OVERLOAD SENSOR	E	40	18	#8 RING	BLK
OVERLOAD SENSOR	F	40	18	#8 RING	WHT
POWER IN	G	18	1	.50 RING	BLK
GROUND	H	6+5+6+6+6	18	(4) .25 F SPADE	BLK
GROUND	J	6+5+6	18	(2) .25 F SPADE	WHT
BOOM LIFT UP	K	6+5	18	.25 F SPADE	ORN
BOOM LIFT DOWN	L	6+5	18	.25 F SPADE	WHT/BLK
SWING CCW	M	6+5	18	.25 F SPADE	RED
SWING CW	N	6+5	18	.25 F SPADE	BLU
BOOM EXT IN	O	6+5	18	.25 F SPADE	GRN
BOOM EXT OUT	P	6+5	18	.25 F SPADE	RED/BLK

## Section 6. MAINTENANCE

### 6-1. GENERAL

The WorkSaver™ 100 is easy to maintain but to provide for maximum service life from this unit, a program of periodic checks and maintenance are necessary. This section describes lubrication requirements and general maintenance procedures. See Figure F-1 for a graphic representation.

### 6-2. HYDRAULICS

It is necessary to inspect the crane for hydraulic fluid leakage before start-up. Visually inspect hydraulic hoses, power unit, cylinders, winch and motor for signs of hydraulic fluid leakage. This may indicate the need for replacement seals or tightening of fasteners. Always maintain hydraulic fluid at proper levels and be careful not to introduce contaminants or dirt into the system.

### 6-3. LUBRICATION

Lubrication is critical to the protection of your crane. It provides for smooth operation and protection from corrosion/rust. Following are the areas which will require periodic lubrication.

#### ROTATION BEARINGS:

The two rotation bearings in the base were lubricated at assembly. If the crane becomes difficult to rotate or becomes noisy, inspect the bearings and grease if necessary.

#### EXTENSION BOOM:

Lightly grease the sides of the extension booms to provide for easy withdrawal from the lower boom when adjusting crane reach. An extension boom which is difficult to slide in and out can be hazardous.

#### WIRE ROPE:

Wire rope is lubricated during its manufacture but this lubrication will not protect the rope for its service life. It is necessary to lubricate wire rope in order to prevent corrosion, friction created heat and to extend its life.

Lubricate the wire rope as follows:

1. Clean the rope of dirt, dust and any other foreign matter.

2. Apply a light lubricant which will penetrate the strands of the rope. Apply by dropping on, spraying on or bushing on.
3. Apply lubricant heavily to portions which encounter bending such as at the sheave and winch.

### 6-4. WIRE ROPE REPLACEMENT

Replace the entire wire rope when any of the following conditions exist:

1. When there are either 3 broken strands or a total of six broken wires in all strands in any rope lay.
2. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.
3. When there is a decrease of diameter indicating a core failure.
4. When kinking, crushing, birdcaging or other distortion occurs.
5. When there is noticeable heat damage (discoloration) of the rope by any means.
6. When the diameter is reduced from nominal size by 1/32" or more.
7. If a broken wire protrudes or loops out from the core of the rope.

See the IMT Operator's Crane Safety Manual for more information concerning wire rope.

### 6-5. CRANE ELECTRICAL

Inspect the winch motor, control box and power unit for secure electrical contacts and the presence of moisture. Loose contacts should be tightened and moisture should be removed to help eliminate corrosion.

Replace any severely crimped, broken or frayed electrical wires.

### 6-6. VEHICLE ELECTRICAL

The vehicle's battery must be maintained and fully charged in order to provide maximum efficiency. A program of regular inspection and maintenance of the battery will help to assure a reliable power source for the crane's electrical requirements. Following is a battery maintenance checklist:

#### ELECTROLYTE LEVEL:

Keep the battery filled to its recommended level. If low, fill with distilled water to its recommended level.

#### BATTERY:

Clean all corrosion from the terminals and apply a light coating of petroleum jelly to the terminals when re-connecting.

Keep the exterior of the battery clean.

#### CABLE CONNECTIONS:

Remove all corrosion, sand the inside of clamps to provide maximum electrical contact and firmly tighten without damaging the battery posts.

#### ALTERNATOR:

Check for proper operation and repair or replace if deficient.

#### ALTERNATOR BELT:

Check for tightness per vehicle specification and adjust if out of specification. Also, check for cracking and replace if found to be excessively cracked.

Extremely cold conditions put extra strain on the vehicle's electrical system. Battery/electrical maintenance is extremely important when temperatures fall below 0°F.

Consult your vehicle owner's manual for specific information concerning your vehicle and its recommended maintenance procedures.

### 6-7. CLEANLINESS

Keep the crane clean, and the decals legible to the operator, especially the capacity placard and warning decals. Cleanliness will make inspection and maintenance easier. Also, the application of wax to the crane will help protect and prolong the life of the unit.

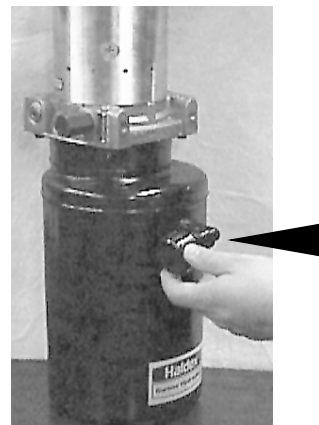
### 6-8. RESERVOIR FILL PROCEDURE



1. REMOVE ELBOW.

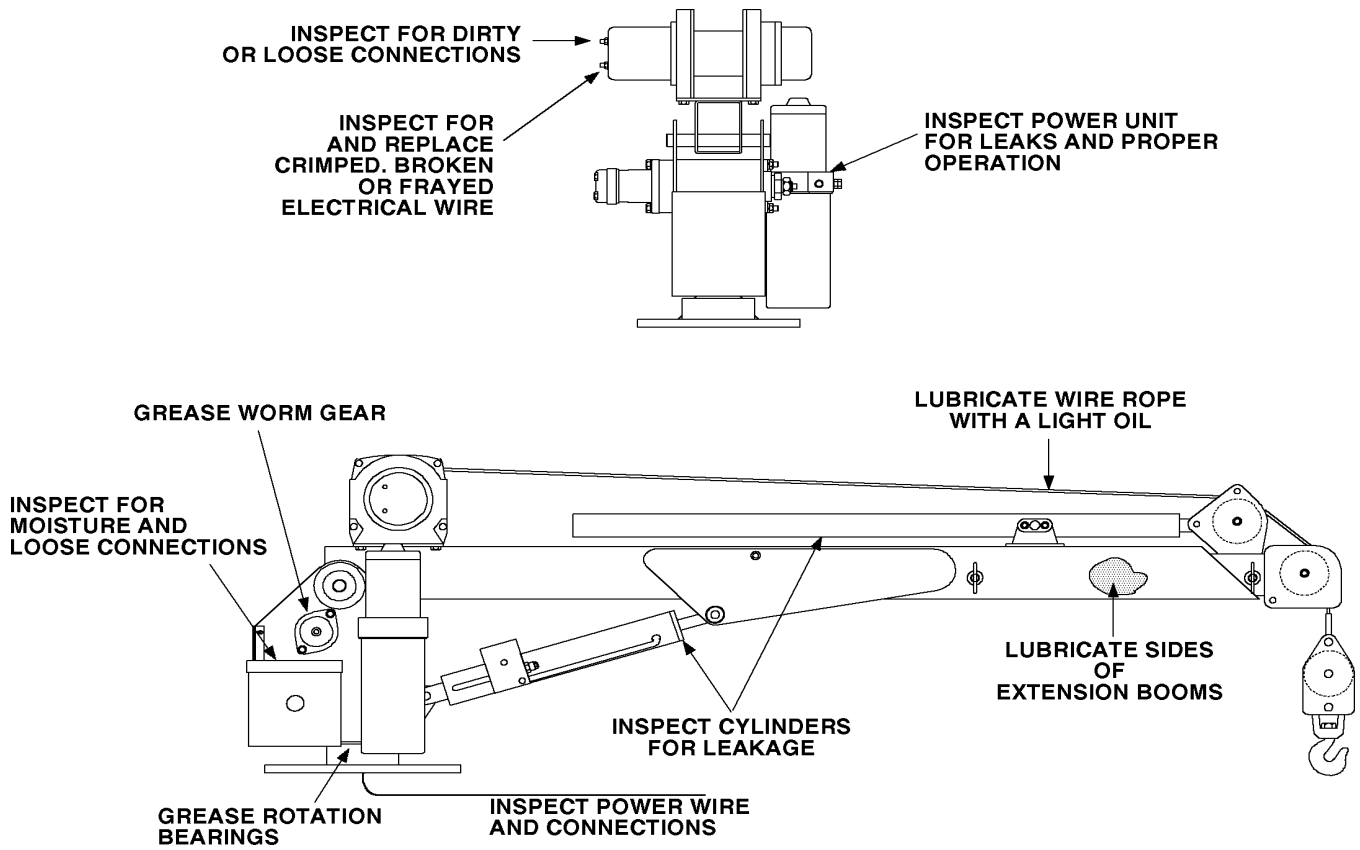


2. FILL UNIT TO 1" BELOW OPENING.





3. REINSTALL ELBOW.

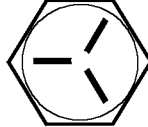

**Figure F-1. MAINTENANCE POINTS**



**Figure F-2. TORQUE DATA CHART****FINE THREAD BOLTS**

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

**COARSE THREAD BOLTS**

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

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

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

**WARNING**

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

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

## MANUAL CHANGE REQUEST

DATE	PRODUCT MANUAL	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: \_\_\_\_\_

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REASON FOR ADDITION: \_\_\_\_\_

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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 occurrence.

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

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

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

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

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

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

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

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

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

Effective January, 1985

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