IMTCO

10,000 Crane

AUGUST 1976	1200 st
FEBRUARY 1977	2200 nd
DECEMBER 1978	3050 rd
FEBRUARY 1979	4050 th
AUGUST 1979	5050 th
AUGUST 1980	6025 th
JULY 1982	7010 th
JANUARY 1983	8015 th
February 1984	9015 th
August 1986	10010 th
October 1986	11008th

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INTRODUCTION

This manual is provided to acquaint you with the operation of your IMTCO 10,000 series truck mounted, articulating hydraulic crane and supply you with the information necessary for proper equipment maintenance.

The service life, performance and efficiency of the unit depends upon close adherence to operation and service procedures described in this manual. Operators of this unit and those responsible for service should thoroughly familiarize themselves with these maintenance instructions.

If information is required which is beyond the scope of this manual, please contact your IMTCO distributor or the IMTCO Customer Service Department.

When placing parts orders or requesting assistance please refer to the information below.

TO BE COMPLETED BY DEALER

Chassis Information

Make_____Model_____Serial No._____

Transmission Model_____Serial No._____

P.T.O. Ratio_____Make_____

Crane and Pump Information

Crane Serial No._____Model_____Selector Valve_____

Pump Make_____Model_____Serial No._____

Accessories and Options_____

_____

_____

LIMITED WARRANTY
APRIL 1, 1977

Products manufactured by Iowa Mold Tooling Co., Inc. are warranted to be free from defects in material and workmanship, under proper use, application and maintenance in accordance with IMTCO's written recommendations, instructions and specifications, for a period of ninety (90) days from the date of shipment to the end user. IMTCO's obligation under this warranty is limited to, and the sole remedy for any such defect shall be the repair or replacement (at IMTCO's option) of unaltered parts returned to IMTCO, freight prepaid, and proven to have such defect, provided such defect occurs within the 90 day warranty period and is reported within fourteen (14) days of its occurrence.

This is the only authorized IMTCO warranty and is in lieu of all other express or implied warranties or representations, including any implied warranties of merchantability or fitness, or of any other obligations on the part of IMTCO. Warranty claims must be submitted and shall be processed in accordance with IMTCO's established warranty claim procedure. In no event will IMTCO be liable for business interruptions, loss of sales and/or profits, personal injury, costs of delay or for any other special indirect incidental or consequential losses, costs or damages.

IOWA MOLD TOOLING CO., INC.
500 HIGHWAY 18 WEST
GARNER, IOWA 50438, U S A.

OPERATION INFORMATION

CRANE IDENTIFICATION

Every IMTCO crane has an identification placard of the type shown below attached to its mast assembly. When ordering parts, communicating warranty information or referring to unit in correspondence always include the assigned serial and model numbers. All inquiries should be addressed to Iowa Mold Tooling Co., Inc. Garner, Iowa 50438 or telephone (515) 923-2827.

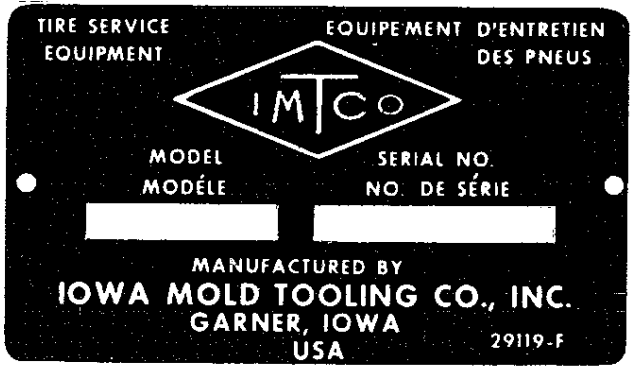


Fig. A-1

CONTROL INFORMATION

VEHICLE CONTROLS

POWER TAKE-OFF MANUAL SHIFT CONTROL: Transmission mounted, manual PTO's are usually installed with the shifting control knob located near the steering column. To engage the PTO the knob is pulled out. To disengage the PTO the knob is pushed in.

NOTE: In order to shift the PTO in either direction the truck transmission must be in neutral and the clutch depressed.

HAND BRAKE: Prior to unit operation the vehicle hand brake should be securely set.

C A U T I O N
Power take-off should always be disengaged before driving the vehicle.

UNIT CONTROLS

The unit is equipped with dual control stations, one at each side of the vehicle. All controls have placards which indicate operating direction for the crane function desired. A hand throttle control is located at the driver's side only and provides engine speed control.

Some units will be provided with a triple dual selector valve which removes outrigger control handles from main control bank and allows for optional equipment installation. Due to optional equipment considerations, controls can vary in placement and/or location but operation is basically as follows:

1. MAIN BOOM: Push lever to lower and pull lever to raise.

2. SECONDARY BOOM: Push lever to lower and pull lever to raise.

3. EXTENSION BOOM: Push lever to extend and pull lever to retract.

4. ROTATION: Pull lever for counterclock-wise motion and push lever for clock-wise rotation.

5. STABILIZERS: Push lever to extend and pull lever to retract.

6. HAND THROTTLE: Rotate knob counterclock-wise to increase speed and rotate clock-wise or push to lower engine speed to idle.

C A U T I O N
Prior to operating the crane, stabilizers must be lowered to a firm footing. The main boom must be raised to allow adequate clearance before any other crane function can be initiated.

REMOTE CONTROLS (OPTIONAL)

The 10,000 series crane may be equipped with optional remote controls. These remote controls are for either crane or crane and winch operation. These controls will only include functions #1 through #4 in preceeding unit controls section.

When a remote control option is to be employed, it is necessary to first set stabilizers and adjust throttle speed using standard manual controls.

Referring to remote control placard in Fig. A-2 the operations are as follows:

1. POWER: Switch up for ON and switch down for OFF. Switch remains in place.

NOTE: Remote function controls will always be overridden by manual function control instructions when both systems are installed on a unit.

2. MAIN BOOM: Switch up to raise and switch down to lower. Neutral return switch.

3. SECONDARY BOOM: Switch up to extend and switch down to retract. Neutral return switch.

4. ROTATION: Switch up for counterclock-wise rotation (left) and switch down for clock-wise rotation (right). Neutral return switch.

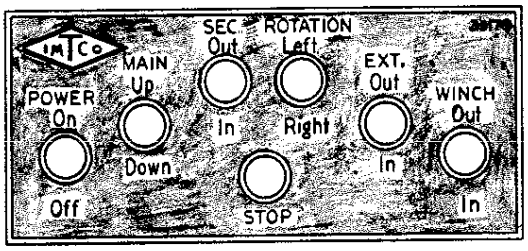
5. EXTENSION BOOM: Switch up to extend and switch down to retract. Neutral return switch.

6. WINCH: Switch up to extend line and switch down to retract line. Neutral return switch.

NOTE: Units on which the 10,000 lb. winch option is installed will be equipped with only one control mode, either remote or manual, for this function.

7. STOP: Push button to kill operation.

Further discussion of remote control options may be found in Section 2.



REMOTE CONTROL PLACARD

Fig. A-6

10,000 CRANE GROUP

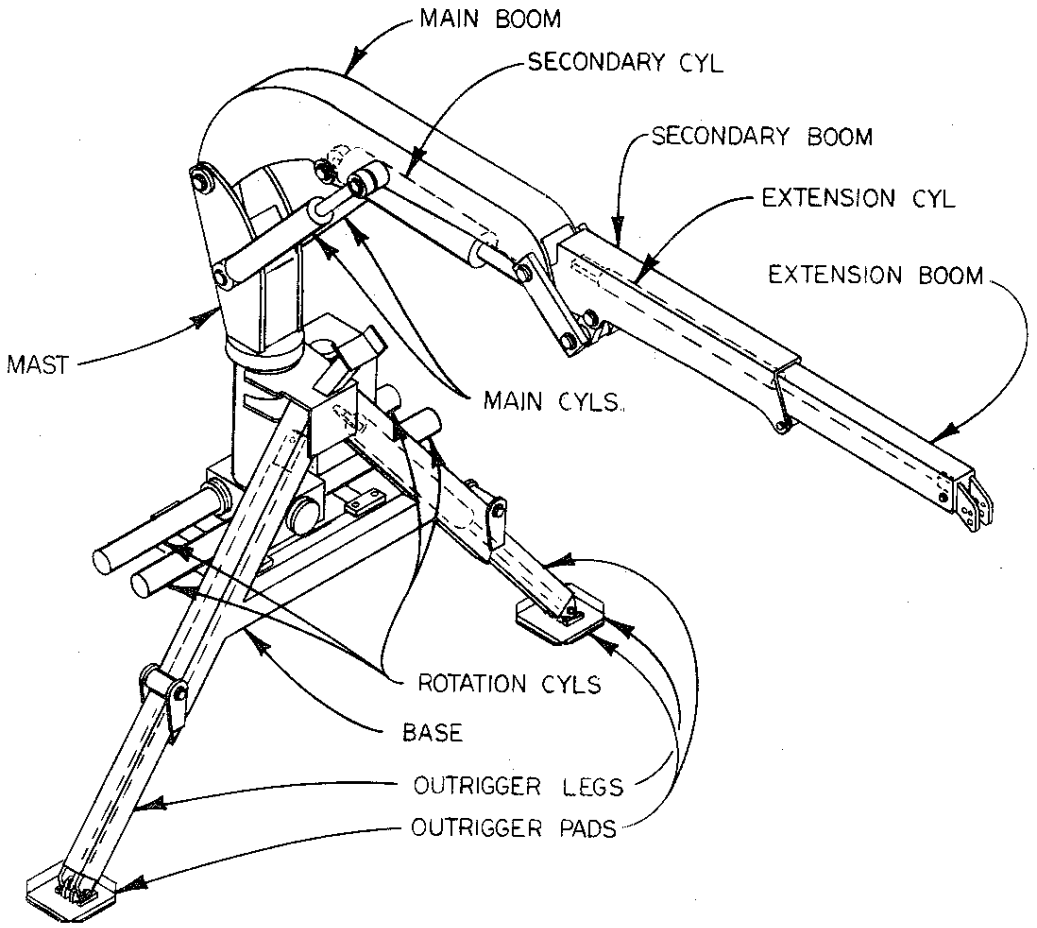


Fig. A-3

OPERATING INSTRUCTIONS

The IMTCO 10,000 crane is relatively simple to operate. However, prior to any work at job sites, the operator should thoroughly familiarize himself with the control operations, load limitations, prescribed operating procedures and safety precautions applicable to the unit. In addition, simulated job operations should be performed by the operator before putting the unit to a work task. The operator's understanding of emergency measure execution is essential; he should be prepared to take remedial action at any time.

SAFETY FACTORS

Three important factors in the safe operation of the unit are a competent operator, mechanical soundness of the unit and absolute assurance that the unit is not loaded to exceed its maximum specified capacities. The safety precautions contained in this section should be read carefully and observed at all times during unit operation.

LOAD LIMITS

The IMTCO 10,000 crane is designed to give satisfactory service if operated within maximum allowable load specifications stated on the unit's capacity placard. Potentially serious safety hazards and shortened service life of the unit can be the results of overloading.

The capacity placard should be studied before lifting operations are carried out. Exceeding stated load limit for a given radius can cause tipping or structural failure.

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

EQUIPMENT INSPECTION

Before operating the unit always perform the safety checks outlined below. These procedures are vital to the detection of equipment malfunction and damage which may be potential safety hazards.

1. STRUCTURAL SOUNDNESS. Inspect unit for damaged members and loose nuts or bolts.

2. HYDRAULIC OIL SUPPLY. Check oil level in hydraulic reservoir and fill to dipstick "full" mark if it is low.

3. LEAKAGE. Examine all visible hydraulic hoses for frays and blisters. Look for signs of lubricating or hydraulic oil leakage.

4. CONTROLS. Make short test for proper control operation.

5. REPAIRS. Before putting the unit into service correct all observed defects and malfunctions.

This equipment check should be performed before every operation and as a periodic preventive maintenance procedure.

WORK STATION POSITIONING

The optimum location for the working unit is on firm, level and dry pavement or ground in close job proximity. Overhead obstructions on the work side of the unit should be avoided as much as possible.

Wheel chocks should be used when parking unit on a slope. If parking on curbed roadway, turn front wheels toward curb. At work site the vehicle should be parked with the grade. When across grade parking is necessary, restricted operation will be required to compensate for increased tipping risk due to the shortened fulcrum point of stabilizers.

POWER LINE PROXIMITY

Except where the electrical distribution and transmission lines have been de-energized and visibly grounded at point of work, or where insulating barriers not a part of or an attachment to the crane have been erected to prevent physical contact with the lines, cranes shall be operated proximate to, under, over, by, or near power lines only in accordance with the following:

1. For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.

2. For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or use twice the length of the line insulator but never less than 10 feet.

3. In transit with no load and boom lowered the clearance shall be a minimum of four feet.

4. It is recommended that a person be designated to observe the clearance and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.

In addition to the above mentioned safety measures, the operator must take into account sag, sway and deflection factors in allowing for proper clearances.

BEGINNING OPERATION

To initiate unit operation:

1. Choose a unit operating location with two factors considered. The vehicle position should permit, if possible, total task performance without repositioning and the terrain should be firm, dry and level for proper stabilization throughout the operation.

2. Securely set the truck hand brake and set any auxiliary device, if supplied. Adjacent to curbing, turn front wheels in to further secure the vehicle. Wheel chocks should be firmly placed.

3. Shift truck into neutral, keep clutch depressed if transmission is mechanical and pull out the power take-off knob to engage the system.

4. Accelerate engine to proper operating speed using the unit hand throttle control.

5. Allow the system to idle at operating speed with all controls at neutral until the hydraulic system reaches operating temperature. Hydraulic reservoir should be warm to touch.

6. Outriggers should be extended until firm ground contact is made. Do not hold controls open to point of jacking action. When stabilizing the unit on soft ground bearing pads should be used to retard sinking and provide blocks to insure firm contact when operating on sloping terrain. Correct all defects in stabilization system before continuing.

W A R N I N G
Do not operate crane until the vehicle is firmly stabilized.

7. Several precautions should be taken in actuating the hydraulic controls on the unit. Before actual work begins put each control through one complete test cycle. To prevent shock loading no control operation should begin with a full open position. Sudden stops and starts stress equipment unduly and can shorten equipment life. When maximum speed is desired controls should be actuated slowly and acceleration achieved smoothly.

ENGINE SPEED REGULATION

The speed of the hydraulic pump dictates the speed of the operating unit. In order for the unit to function at speeds stated in the specifications the pump must operate at optimum speed.

To determine the engine speed required for operation, the pump requirement-optimum-is divided by engine to PTO ratio of the truck. When the engine to PTO ratio is not known, this

information may be obtained from a local IMTCO dealer or distributor or Iowa Mold Tooling co., Inc. direct. To find the ratio it will be necessary to know the PTO and transmission model numbers as well as the make, model and year of the truck. When this information is obtained, compute the proper engine speed as shown in the following examples:

$\frac{\text{Required Pump Speed (RPM}}{\text{Engine to PTO Ratio (\%)}}$ = Required Engine Speed (RPM)		
PUMP SIZE	RECOMMENDED PTO RATIO	
13 GPM	100% to 140%	$\frac{\text{Optimum Speed (2000 RPM)}}{\text{140\% (1.4)}}$ = 1450 RPM
17 GPM	75% to 100%	$\frac{\text{Optimum Speed (1500 RPM)}}{\text{100\% (1.0)}}$ = 1500 RPM
24 GPM	55% to 75%	$\frac{\text{Optimum Speed (1100 RPM)}}{\text{75\% (.75)}}$ = 1450 RPM

Efficient operation of the unit is dependent upon proper pump speed. When operation is too slow always check the pump speed when diagnosing the cause. An electric tachometer with accurate calibration may be used to check engine speed.

LOAD LIFTING

Capacity placards are located on unit mainframe near the operator stations. The structural capacities and permissible radii of operation stated on these placards should be carefully studied and strictly adhered to during equipment operation.

NOTE: Capacity placards are specifically located for close proximity to the operator. This is to assure ready reference in determining when a load can or cannot be handled.

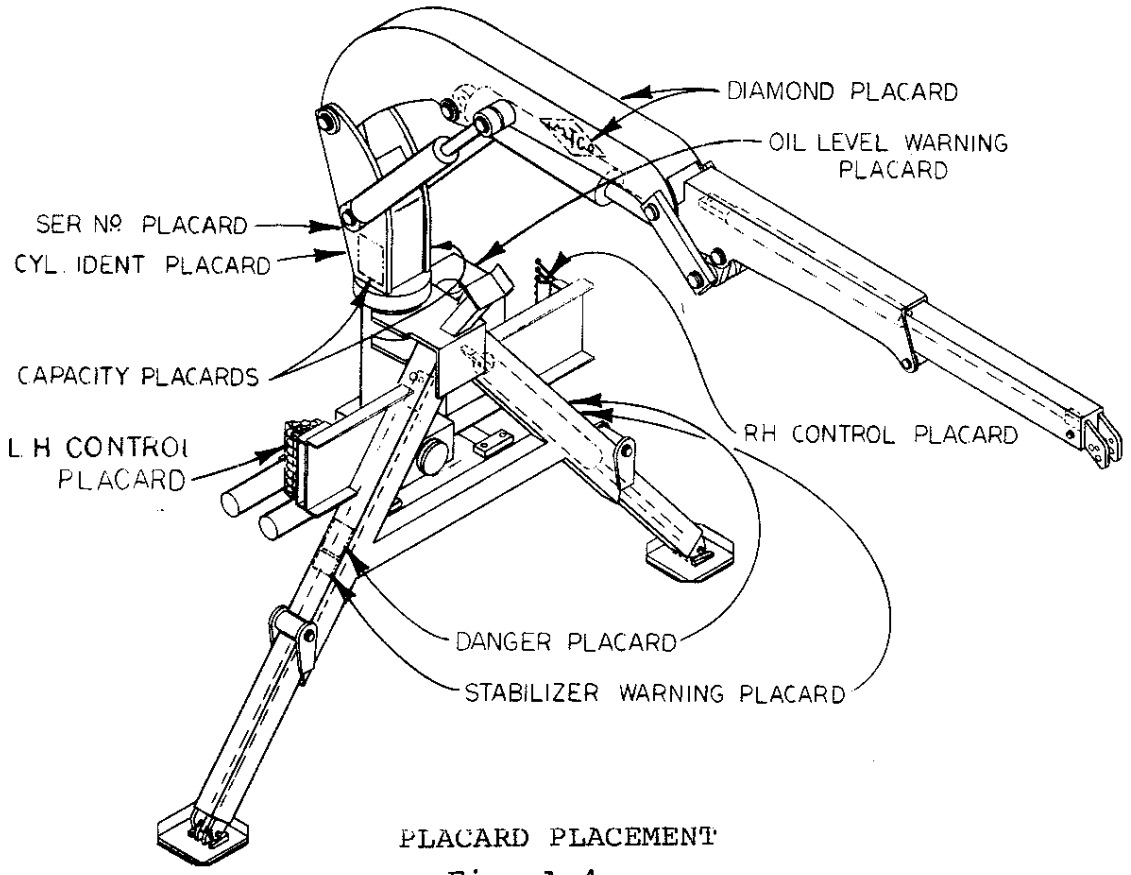
Load limit information given on the capacity chart is formulated on 85% of tipping if:

1. The unit has been correctly installed on a factory approved truck.

2. A satisfactory stability test has been performed.

3. The intended operation is to be carried out on level, solid footing with proper outrigger placement.

It should be understood that each stated capacity is directly related to the radius of a given operation. The radius is measured from center of rotation to load line on the horizontal plane.



PLACARD PLACEMENT
Fig. A-4

STABILITY RATING

Capacity ratings project unit stability to no more than 85% of tipping provided:

1. The vehicle on which the unit is mounted complies with factory specifications.

2. Factory installation instructions are adhered to when unit is mounted on vehicle.

3. Counter weight sufficient to supplement vehicle weight has been installed and meets factory requirements.

4. Tire inflation pressures meet requirements stipulated in "Tire Inflation Table."

5. The outriggers are in use, making proper contact with firm level footing.

The "Load Capacity Chart" ratings depend upon compliance with the curb weights coupled with truck size. Adherence to minimum chassis specifications and/or requirements is necessary to obtain and maintain safe stabilization.

STABILITY CHART

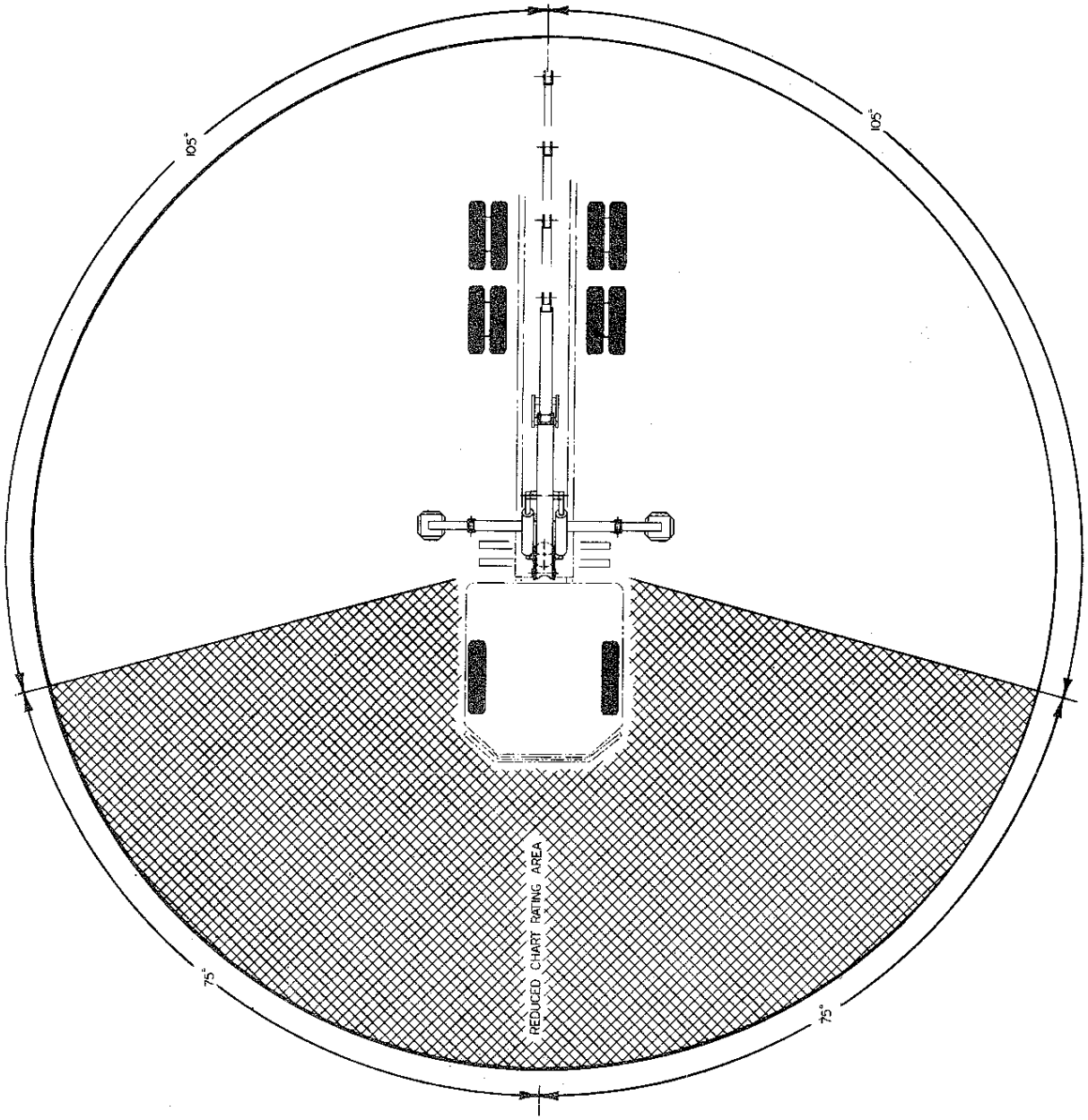


Fig. A-5

W A R N I N G

The minimum curb weights shown do not insure the unit will be stable. Actual stability ratings will be obtained from the initial start up and testing procedures.

CONVENTIONAL CAB

Stability rating for an IMTCO 10,000 crane mounted on a conventional chassis with a 220" wheel base and a 156" cab-to-axle dimension shown below. These specifications will provide complete 360° rotation stability based upon 85% tipping factor without capacity chart restrictions. Required axle weights are as follows:

Front Axle----------	(4767 kgs)-------	10,000 lbs.
Rear Axle----------	(6628.4 kgs)-----	14,600 lbs.
Total Weight----------	(11,395.4 kgs)---	25,100 lbs.

Care should be employed however, when the crane is rotated over the cab, refer to chart, Fig. A-5, because it is likely that the chassis payload will vary reducing the rear axle weights.

OPERATION SHUT DOWN

Proper shut down procedure is:

1. Stow the crane to the rear, centered over chassis.
2. Retract the outriggers.
3. Disengage throttle control.
4. Disengage PTO.

SPECIFICATIONS & OPERATING CHARACTERISTICS

1116, 1119, 1123 SPECIFICATIONS & OPERATING CHARACTERISTICS

	1116	1119	1123	1116	1119	1123
REACH (From ℄ Rot.)---	(4.9 m)	(6.0 m)	(7.0 m)	16'-1"	19'-7"	23'-1"
EXTENSION----------	(102 cm)	(208 cm)	(315 cm)	40"	82"	124"
LIFTING HEIGHT-------	(7.7 m)	(8.6 m)	(9.4 m)	25'-3"	28'-2"	31'-0"
WEIGHT OF CRANE------	(2.65 Ks)	(2.69 Ks)	(2.73 Ks)	5840#	5940#	6020#
OUTRIGGER SPAN-------	(3.45 m)			11'-4"		
OPTIMUM PUMP CAPACITY-	(49.2 liters)			13 US		
OIL RESERVOIR CAPACITY	(71.9 liters)			19 US		
MOUNTING SPACE REQ'D--	(91.4 cm)			36"		
STORAGE HEIGHT-------	(3.48 m)			11'-5"		

(Based on 41" (104.1 cm) truck frame height).

DESIGN FACTORS

Materials	3/1
Pins & Hydraulics	4/1

PERFORMANCE CHARACTERISTICS

ROTATION (360°)	30 Sec.
MAIN BOOM ELEVATION - (-38° to +54°)	30 Sec.
SECONDARY BOOM ELEVATION - (165°)	19 Sec.
EXTENSION - (40")-(101.6 cm)	6 Sec.
OUTRIGGER EXTENSION	10 Sec.

LIFTING CAPACITY
(From Centerline Rotation)

(2.13 m)	7'-0"	6356 kg	14,000#
(3.89 m)	12'-9"	4540 kg	10,000#
(4.91 m)	16'-1"	3632 kg	8,000#
(6.00 m)	19'-7"	2806 kg	6,400#
(7.00 m)	23'-1"	2406 kg	5,300#

HYDRAULIC SYSTEM

Open centered, full pressure system that requires 13 GPM (49.2 liters) optimum oil flow @ 2300 psi (161.7 kgs/sq.cm.). Six spool stack type control valve with dual operational handles located at both sides for convenient operation. System includes-hydraulic oil reservoir, suction line filter, pump, control valve, return line filter.

POWER SOURCE

Integral mounted hydraulic pump and PTO application. Other standard power sources may be utilized.

CYLINDERS

MAIN----------	(15.2 cm)	6" Bore --------	(64.8 cm)	25½" Stroke
SECONDARY---------	(16.5 cm)	6½" Bore--------	(69.9 cm)	27½" Stroke
EXTENSION---------	(7.6 cm)	3" Bore --------	(101.6 cm)	40" Stroke
* OUTRIGGERS--------	(7.6 cm)	3" Bore --------	(101.6 cm)	40" Stroke
ROTATION----------	(10.2 cm)	4" Bore --------	(76.8 cm)	30¼" Stroke

* Optional fold over outriggers available; cylinder-6½" (16.5 cm) bore and 28¼" (71.8 cm) stroke, which will provide 15' (4.57 m)span.

ROTATION SYSTEM

Rack and pinion style with power supplied by four single acting hydraulic cylinders, two for each direction.

MINIMUM CHASSIS SPECIFICATIONS

Body Style	Conventional Cab	
Wheel Base	(558.8 cm)	220"
Cab to Axle	(396.2 cm)	156"
Frame Section Modulus	(426 cc)	26 cu.in.
R B M	(19,178 kgs/m)	1,664,000 in.lbs.
Front Axle	(4990 kgs)	11,000 lbs.
Rear Axle	(15,422 kgs)	34,000 lbs.
Transmission		5 Speed

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

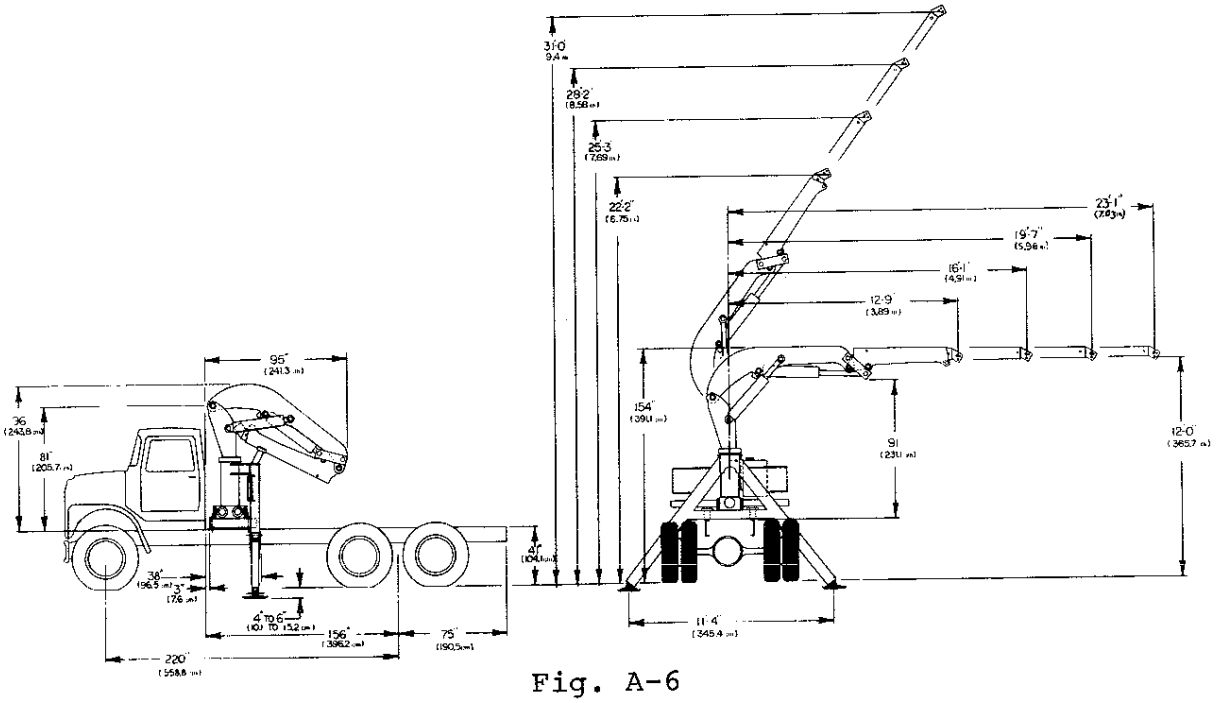


Fig. A-6

LOAD CAPACITY CHART
MODELS 1116, 1119 AND 1123

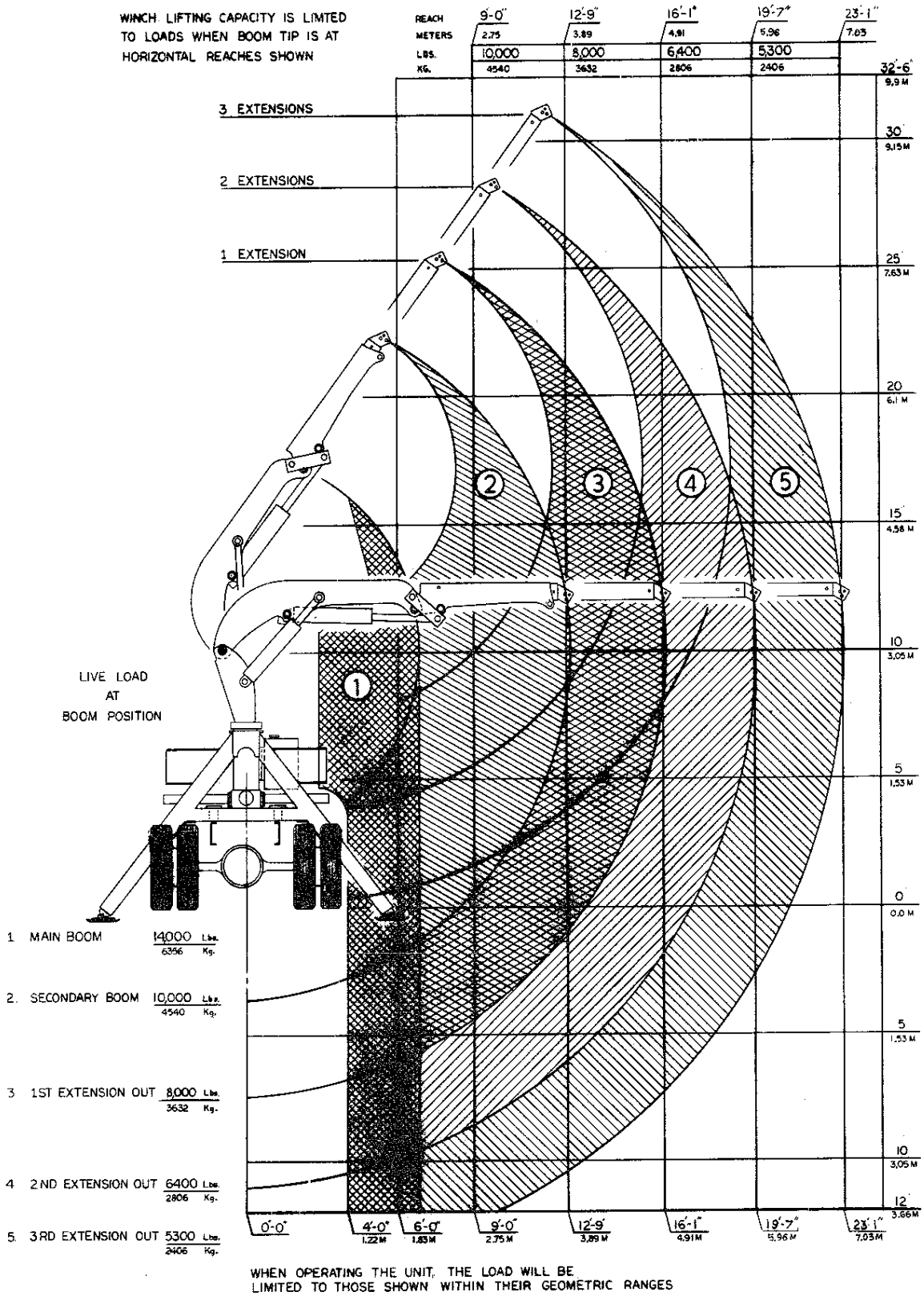


Fig. A-7

OPTIONAL LOAD CAPACITY CHART

MODEL 1125

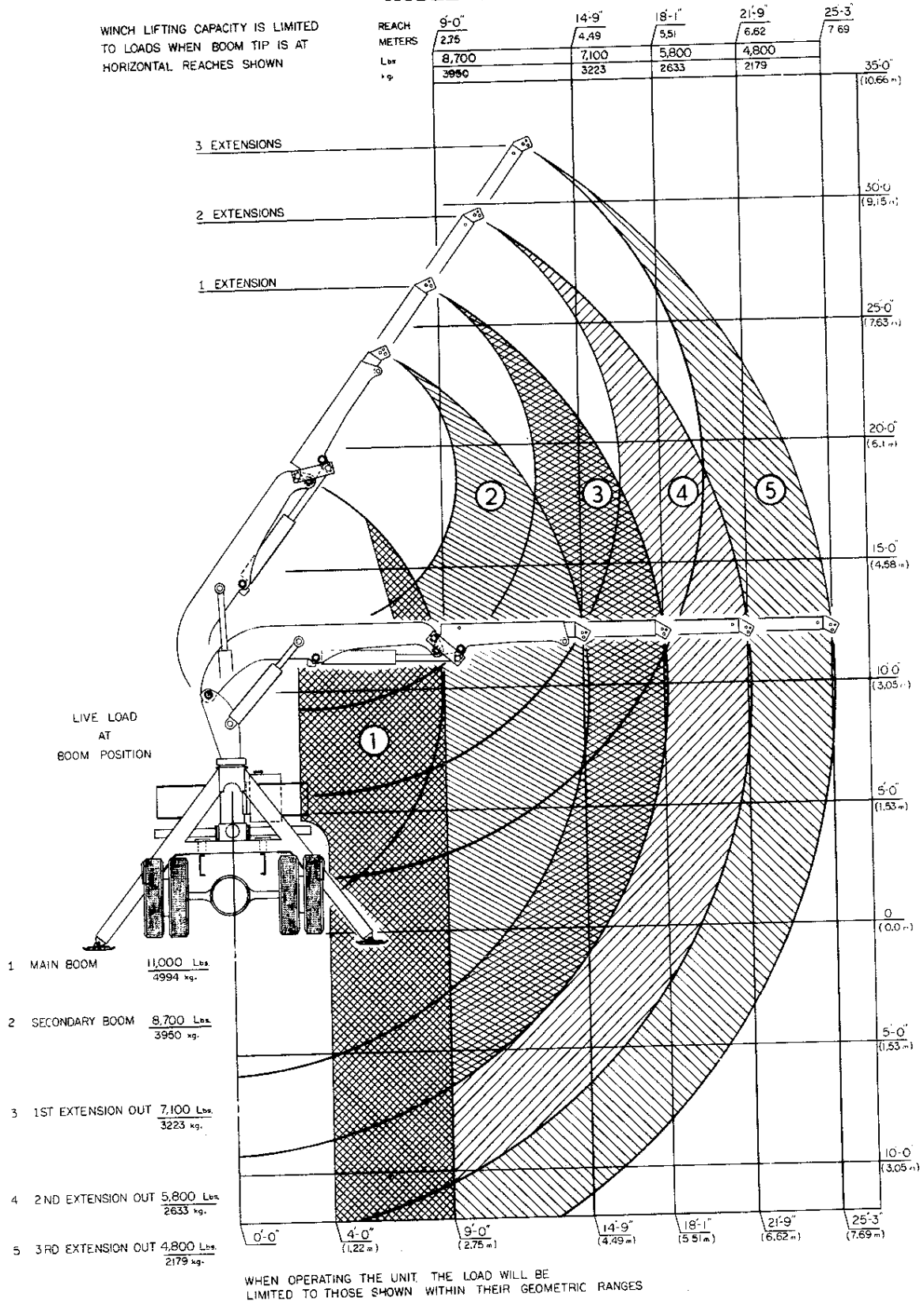


Fig. A-8

OPTIONAL 1125 SPECIFICATIONS & OPERATING CHARACTERISTICS

(EXTENSIONS)				1st	2nd	3rd
REACH (From ℄ Rot.)-------	(5.51 m)	(6.63 m)	(7.69 m)	18'-1"	21'-9"	25'-3"
EXTENSION----------	(102 cm)	(208 cm)	(315 cm)	40"	82"	124"
LIFTING HEIGHT----------	(8.18 m)	(9.07 m)	(9.93 m)	26'-10"	29'-9"	32'-7"
WEIGHT OF CRANE----------	(2788 Ks)	(2833 Ks)	(2869 Ks)	6140#	6240#	6820#
OUTRIGGER SPAN * ---------	(4.57 m)			15'-0"		
OPTIMUM PUMP CAPACITY-----	(49.2 liters)			13 US		
OIL RESERVOIR CAPACITY----	(71.9 liters)			19 US		
MOUNTING SPACE REQ'D------	(91.4 cm)			36"		
STORAGE HEIGHT----------	(3.48 m)			11'-5"		

(Based on 41" (104.1 cm) truck frame height).

*Optional fold over outriggers are req'd.

DESIGN FACTORS

Materials----------	3/1
Pins & Hydraulics----------	4/1

PERFORMANCE CHARACTERISTICS

ROTATION - (360°)----------	30 Sec.
MAIN BOOM ELEVATION - (-38° to +54°)----------	30 Sec.
SECONDARY BOOM ELEVATION - (165°)----------	19 Sec.
EXTENSION - (40")---(101.6 cm)----------	6 Sec.
OUTRIGGER EXTENSION----------	10 Sec.

LIFTING CAPACITY

(From Centerline Rotation)

(2.74 m) 9'-0" ----------	4994 kg----------	11,000#
(4.50 m) 14'-9"----------	3950 kg----------	8,700#
(5.51 m) 18'-1"----------	3223 kg----------	7,100#
(6.63 m) 21'-9"----------	2633 kg----------	5,800#
(7.69 m) 25'-3"----------	2179 kg----------	4,800#

HYDRAULIC SYSTEM

Open centered, full pressure system that requires 13 GPM (49.2 liters) optimum oil flow @ 2300 psi (161.7 kgs/sq.cm). Six spool stack type control valve with dual operational handles located at both sides for convenient operation. System includes - hydraulic oil reservoir, suction line filter, pump, control valve, return line filter.

POWER SOURCE

Integral mounted hydraulic pump and PTO application. Other standard power sources may be utilized.

CYLINDERS

MAIN----------	(15.2 cm)	6" Bore	(64.8 cm)	25½" Stroke
SECONDARY----------	(16.5 cm)	6½" Bore	(69.9 cm)	27½" Stroke
EXTENSION----------	(7.6 cm)	3" Bore	(101.6 cm)	40" Stroke
* OUTRIGGERS---------	(7.6 cm)	3" Bore	(101.6 cm)	40" Stroke
ROTATION----------	(10.2 cm)	4" Bore	(76.8 cm)	30¼" Stroke

* Optional fold over outriggers available; Cylinder- 6½" (16.5 cm) bore and 28¼" (71.8 cm) stroke, which will provide 15' (4.57 m) span.

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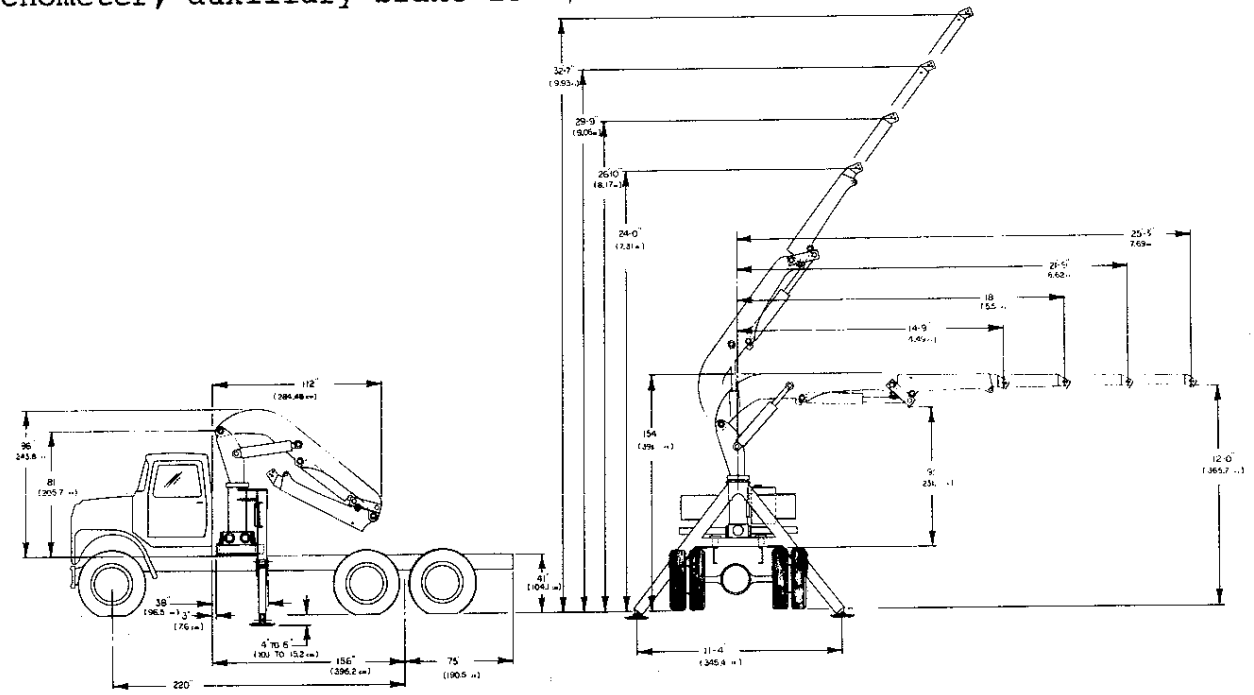
Frame Section Modulus	(426 cc)	26 cu.in.
R B M	(19,178 kgs/m)	1,664,000 in.lbs.
Front Axle	(4990 kgs)	11,000 lbs.
Rear Axle	(15,422 kgs)	34,000 lbs.
Transmission		5 Speed

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



NOTICE

Capacity and performance figures are based on factory test conducted with units mounted on standard cab chassis, with minimum requirements, under actual working conditions. In accordance with our policy of constant product improvement, all specifications are subject to change without notice or obligation.

OPTIONAL EQUIPMENT

8,000 POUND WINCH

Shown in Fig. D-25, page 4-37, is the 8,000 pound winch option. Included in this option package are winch, mounting brackets, tip sheave and bracket, and all manual control parts and fasteners. Not included in this option package are rope, downhaul weight, hooks and fasteners.

This winch is rated for delivery of 8,000 lbs. (3629 kgs) pull on the first wrap of an 8½ in. (21.6 cm) drum at a approximate speed of 15 ft. (4.6 m) per minute. Additional references to this option are: finished installation, Fig. E-5, page 5-7; gear case parts breakdown, Fig. D-26, page 4-38; hydraulic schematics, Fig. D-28, page 4-49.

A worm gear type winch with an integrally mounted adjustable brake is employed in this system. A correct secondary boom mounting station of the drum allows sufficient rope extension for proper fleet angle and level winding.

Three winch control options are available with this winch installation. They are manual, remote or both manual and remote in combination. Refer to hydraulic schematics mentioned above.

10,000 POUND WINCH

Shown in Fig. D-24, page 4-35, is the 10,000 pound winch option. Included in this option package are winch, mounting brackets, tip sheave and bracket, and all manual control parts and fasteners. Not included in this option package are rope, downhaul weight, hooks and fasteners.

This winch is rated for delivery of 10,000 lbs. (4336 kgs) pull on the first wrap of a 9 in. (23 cm) drum at an approximate speed of 15 ft. (4.6 m) per minute. Additional references to this option are: hydraulic schematics, Fig. D-28, page 4-42; Fig. D-29, page 4-45; and Fig. D-30, page 4-49

A planetary gear type winch with an integrally mounted adjustable brake is employed in this system. Operation must be with a motor spool to insure break actuation and holding capabilities. A correct secondary boom mounting station of the drum allows sufficient rope extension for proper fleet angle and level winding.

Two winch control options are available with this winch installation. They are manual or remote. Please refer to hydraulic schematics mentioned above.

NOTE: This winch option is not available with combination manual and remote controls.

WIRE ROPE AND HOOK KIT

Wire rope kits for both 8,000 and 10,000 pound winches include: 65 ft. (19.8 m) of ½ in. IWRC wire rope, downhaul weight, rope hook with latch and all necessary fasteners. Upon special request, an additional 25 ft. (7.6 m) of wire rope can be provided.

1125 MAIN BOOM

A main boom two feet longer than that supplied with standard 1123 model cranes is available. This longer boom is designed to provide 25'-3" (7.7 m) maximum reach.

For further information refer to capacity placard and specifications and operating characteristics found on pages 1-15, 16 and 17. This option is only available on factory mounted equipment.

TWO HYDRAULIC EXTENSION BOOMS

Illustrated in Fig. D-22, page 4-30 is a double hydraulic extension boom assembly. This cylinder will provide 40 in. (101.6 cm) stroke on first stage extension and 44 in. (111.8 cm) on second stage extension. The third extension is accomplished by a manually extended boom and provides an additional 42 in. (106.7 cm) reach.

All booms in this option are special and must be factory installed on original new equipment.

FOLDOVER OUTRIGGERS

Foldover outriggers shown in Fig. D-27, page 4-41, provide 15 ft. (4.6 m) span for an increased stabilization base. The primary advantage of this option is, with added stability provided, overall vehicle weight can be reduced 2000 lbs. (907 kg) from those shown on page 1-10. This option is available only on new original equipment and cannot be added at a later date.

HAND THROTTLE

A vernier type hand throttle control can be mounted so that an operator will have access from control valve side of the crane. Counterclock-wise adjustment of the control knob slowly increases truck engine speed to desired level. Deactivation is accomplished by pushing button located at knob's center.

HYDRAULIC THROTTLE CONTROL

Engine acceleration is accomplished by hydraulic pressure derived from main pressure hose leading from pump to crane control valve. Upon actuation of a crane function the throttle control will be automatically engaged, raising the engine speed to a predetermined rate. This option will not be supplied on diesel engines unless they are equipped with a variable governor system.

BOOM TIP HYDRAULIC SERVICE

Optional hydraulic service can be supplied to boom tip providing control for a material handling tool. This is accomplished by adding a control valve section, two hydraulic hoses to boom tip, and quick couples at tip. Two circuits maximum or four hoses can be employed.

MANUAL CONTROLS

Standard equipment on 10,000 crane units, unless otherwise specified, includes manual controls which are discussed in detail on page 1-2. Additional reference may be found in the standard hydraulic schematic shown on page 4-42. This control system is applicable to all units and both 8,000 and 10,000 pound winch options.

REMOTE CONTROLS

Remote controls are available as an option package on 10,000 cranes. This system employs remote control for all crane and winch option functions. Not included in remote control are throttle regulation, except for kill switch, and stabilizer functions. These two controls are manual only on all units.

A discussion of this remote control option may be found on page 1-13 and a remote control hydraulic schematic is located on page 4-45.

COMBINATION REMOTE AND MANUAL CONTROLS

In addition to two separate control systems discussed in the preceding sections, a combination remote and manual control option is available on 10,000 crane units. For an understanding of this system the reader is referred to pages 1-2 and 1-3. A hydraulic schematic of the combination control system may be found on page 4-49.

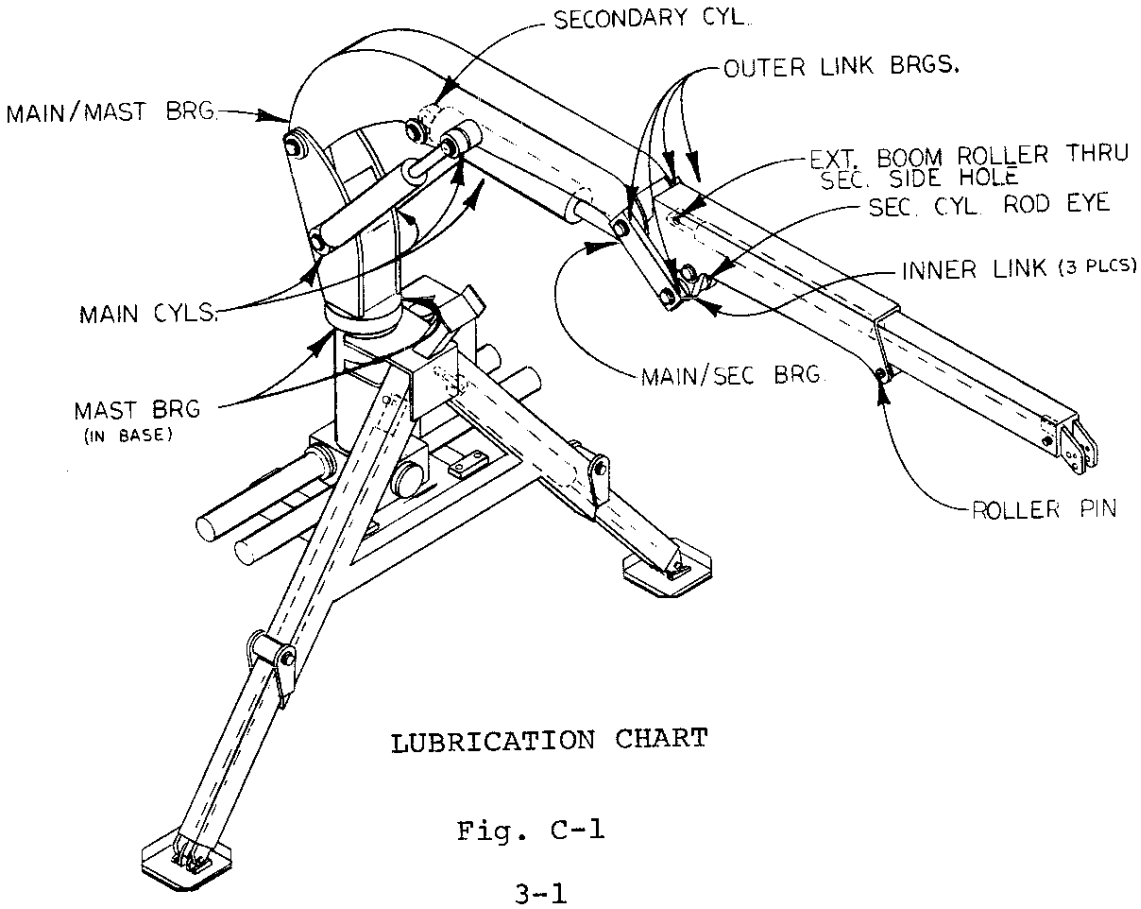
An important restriction should be noted on this control option respective to units on which 10,000 pound winches are employed. The controls for the 10,000 winch must be manual or remote; combination controls are not available. See notes on pages 1-3 and 4-49 regarding this restriction.

MAINTENANCE

Proper maintenance on a regular schedule is essential to keep your unit operating at peak efficiency. This section outlines required maintenance information and necessary service intervals. Personnel responsible for care of the unit should familiarize themselves with the frequency and type of lubrication and maintenance operations to be performed.

LUBRICATION

Maintaining the proper lubrication schedule will vary with climatic conditions and use frequency. The lubrication chart is intended to serve as a schedule for normal work load and moderate weather variance. Periods of heavy use would shorten service intervals.



LUBRICATION CHART

Fig. C-1

L U B R I C A T I O N C H A R T			
APPLICATION POINT	LUBRICATION PRODUCT	APPLICATION MEANS	INTERVAL
MAST HOUSING MAIN CYLINDER MAIN & SECONDARY BOOM PINS EXTENSION BOOM ROLLERS SECONDARY CYLINDER	Shell Alvania 2EP or Shell Retinax "A" or equivalent	Hand Grease gun or pneumatic pressure gun	Monthly
POWER TAKE-OFF OR TRANSMISSION ROTATION GEAR CASE	EP 90 Gear oil	Fill to check plug	Monthly

HYDRAULIC SYSTEM

OIL SELECTION: Minimum viscosity specifications for hydraulic oil to be used in the IMTCO 10,000 crane are given in the table provided in this section. Any major oil company can supply products which meet these requirements.

Oils selected by user for this class of equipment, in addition to meeting viscosity specifications, should have the following additives:

1. Antifoam inhibitors
2. Antioxidant inhibitors
3. Rust resistant additives
4. Antiwear additives

OIL SPECIFICATIONS: The chart on the following page states oil specifications for a full range of operating temperatures encountered in the temperate zones. Arctic conditions present special requirements which are not in the scope of this chart and must be given individual analysis. Consult your oil supplier for the proper fluids for working under these severe conditions. In addition, electric hydraulic oil reservoir heaters are available to improve operations at extremely low temperatures.

HYDRAULIC OIL SPECIFICATIONS				
Ambient Temperature Range, ^{o}F	0-90	Below 32	32-90	Above 90
Max. Pour Point, ^{o}F	-30	-25	+10	+10
Max. Viscosity, SSU @ ^{o}F	4000	4000	-	-
Min. Viscosity, SSU @ 100^{o}F	140-195	100-130	150-200	200-315
Min. Viscosity, SSU @ 210^{o}F	48	41	43	47
Min. Viscosity Index	139	90	90	90

HYDRAULIC OIL DETERIORATION

Contamination by entry of solvents, water and dust or other abrasives will cause deterioration of the system's hydraulic oil. Sustained presence of these impurities will result in premature breakdown in antifoam, lubrication, anti-rust and viscosity properties. An increase in the oil oxidation rate will result from water and operation at high temperatures (above 180^{o}F). Oxidation produces varnish forming materials and sludge in the oil.

The hydraulic system which is operated on a sustained basis with contaminated or broken down oil will be subject to an increased component wear rate which can significantly shorten the efficient unit life.

Periodically the hydraulic oil in the system should have a sample drawn off and its condition checked for break down. To check oil quality:

1. Place oil sample in clean glass.
2. Smell oil to detect a burnt or rancid odor.
3. Visually examine the sample for a cloudy or dark color.
4. After a standing period of several minutes, inspect sample for water which will settle to the bottom of glass if present. Water can result from a system leak or condensation due to temperature extremes.

When any condition described above is observed, the system should be purged and filled with new oil.

The hydraulic oil should be changed in the reservoir and complete system:

1. After every 800 hours of operation or every six months, which ever occurs first.
2. After pump or other major hydraulic component failure.

HYDRAULIC SYSTEM PURGING

Purging the hydraulic system requires a new oil supply sufficient to completely fill the reservoir, lines, cylinders and extra allowance for loss during the procedure. To minimize oil loss during this process, operate the truck engine at low speed.

In purging, new oil is supplied to the pump pressure line and an escape flow is provided for oil from the reservoir return line.

Two operators will be required, one to operate the controls and another to regulate pump flow, during the following procedure:

W A R N I N G
During this operation do not allow reservoir level to drop below 1/3 capacity.

1. Initiate drainage by locating unit in an area which provides solid, level footing and space to accomodate full operating range of crane.

2. Extend outriggers out and down to full stroke. Move crane to maximum, extended, horizontal position completely rotated to front of vehicle. Kill engine.

3. Disengage PTO, drain hydraulic oil reservoir, remove suction line filter and drain hoses. Disconnect pressure hoses from pump, drain and reassemble. Install new cartridge and reassemble filter.

NOTE: Mode of waste disposal is left to the discretion of service personnel in this discussion of system drainage.

4. Remove reservoir return line and direct this flow into a sump or waste container. Plug drain port on reservoir and refill with new oil.

NOTE: Personnel should thoroughly familiarize themselves with the following steps and be prepared to perform them in uninterrupted sequence or stop engine at the end of each function. If this is not done, excessive new oil waste will occur.

5. Start truck engine and engage PTO. Rotate the crane full travel horizontally, retract extension boom, elevate main boom to full height and lower secondary boom to lowest position.

6. Rotate crane toward rear center of vehicle, raise outriggers and kill engine.

7. All components of the system should now be purged. Replace return line filter cartridge and reinstall return line on reservoir.

8. Check oil level and add oil to "full" mark if needed.

HYDRAULIC COMPONENTS

FILTER REPLACEMENT

This unit's hydraulic system contains two filters: a 25 micron suction line filter to strain out large contaminating particles and a 10 micron return line filter for removal of smaller particles. To avoid residue accumulation in the reservoir and protect hydraulic components-valves, pump, cylinders, etc. - these filters must be serviced on a regular basis.

The filters should be replaced after the first 50 hours of new unit operation and approximately every 200 service hours thereafter. In addition to this service schedule, the suction line filter is equipped with a danger coded vacuum gauge. This gauge should be checked daily when operating unit. If it reads 8 inches of mercury pull, the suction line filter must be replaced to be effective. When the suction line filter requires changing, the return line filter should also be replaced.

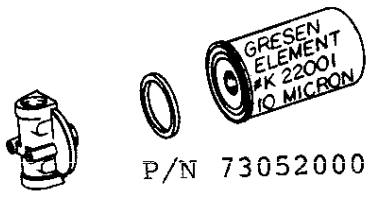
To change filter cartridges:

1. Shut gate valve and remove filter cartridges.

2. Replace with new cartridges insuring proper rubber seal seating and tightening as much as possible with both hands.

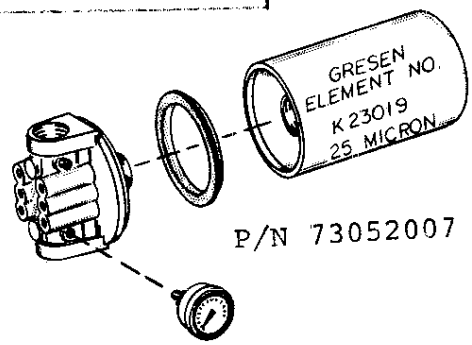
3. Open gate valve and test system for leaks.

W A R N I N G
Pump failure can result if shut-off valve is left closed.



P/N 73052000

RETURN FILTER
Fig. C-2



P/N 73052007

SUCTION FILTER
Fig. C-3

HOLDING VALVES

The main, secondary, extension and outrigger cylinders are all equipped with locking holding valves. The function of these valves is to insure against extensive damage due to load release in the event of hydraulic hose or other down stream component failure.

These valves, as supplied, are of a nonadjustable, nonserviceable type. Little reason exists for failure of this type valve but if valve malfunction is suspected, it may be checked in the procedure outlined below:

1. Place crane in a fully supported mode. Do this either by lowering secondary, main and extension booms until their respective cylinders are completely bottomed out or fully support suspected member by an overhead crane or other lifting device.

2. Be prepared for reasonable oil drainage from cylinder in question.

3. Remove the six Allen head valve mounting cap screws.

4. Lift holding valve off taking care not to loosen O-ring seals and introduce dirt to cylinder base.

5. Check smallest end port for dirt plug and remove if necessary.

6. Using small screw driver carefully test actuate plunger through center port. If plunger is free, the valve should be operable.

7. Install new valve if it is required.

8. If old valve is to remain in use, reinstall taking care to insure O-ring seals are placed properly and are dirt free. Also be sure small pilot port is located at rod end of cylinder.

9. Tighten six mounting bolts evenly.

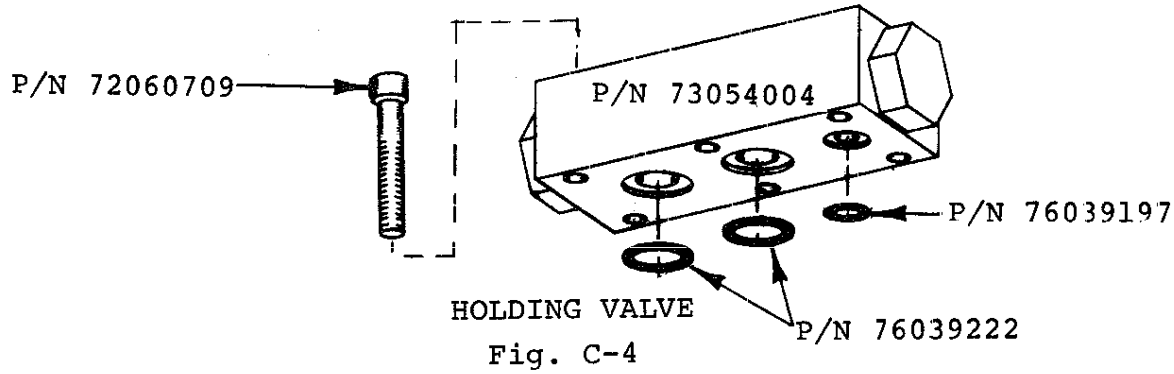


Fig. C-4

COUNTER BALANCE HOLDING VALVES

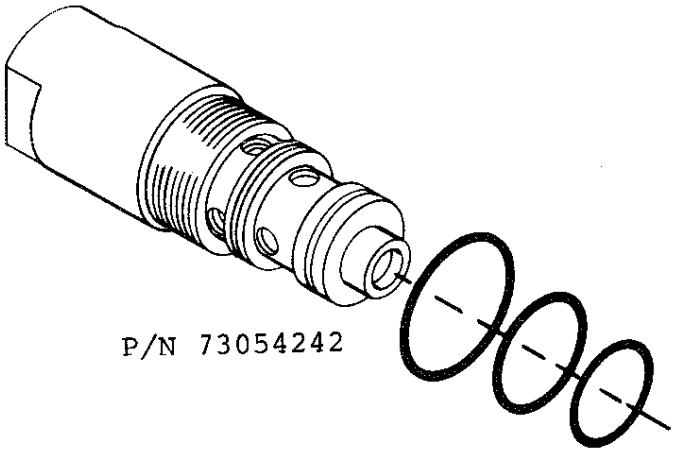
The counter balance valve shown in Fig. C-5 can be checked for holding capabilities by following the procedure outlined on page 3-6. This style valve was utilized as standard on or about April 1, 1976 on main cylinders only. It serves as a holding valve in the event of hydraulic failure and also functions as a metering valve which allows a feathered motion when lowering the main boom while under load.

This valve should be checked for its holding characteristics and if faulty, replaced. It is not field repairable; it can be repaired and re-adjusted at the factory. Settings are 3000 psi and 0.125 in. gap adjustment.

W A R N I N G
Do not use a cylinder with a counter-balance valve with one equipped with a holding valve as shown on page 3-6.

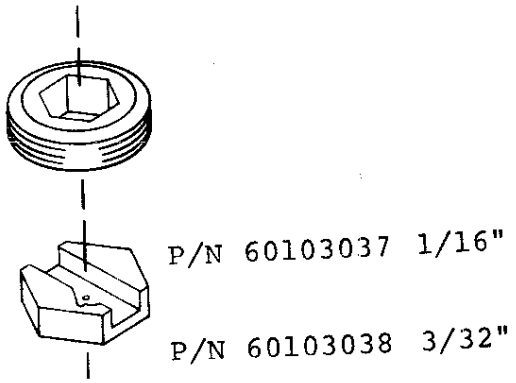
VALVE PORT ORIFICES

Fig. C-6 shows a valve port orifice which may be installed on the cylinder base side of the main control valve. The purpose is to slow descent of crane under load. Back pressure is maintained preventing erratic holding valve action. It is mounted with slot side of plate located upward in the control valve. Orifice size is usually 1/16" to 3/32" and is used in main, secondary, and extension cylinders' base side.



COUNTER BALANCE HOLDING VALVE

Fig. C-5



VALVE PORT ORIFICE

Fig. C-6

RELIEF VALVE ADJUSTMENT

The 10,000 crane hydraulic system is set to operate at 2350 to 2400 psi with an optimum oil flow of 13 gallons per minute. If unit pressure is below specifications noted, the following procedure is recommended:

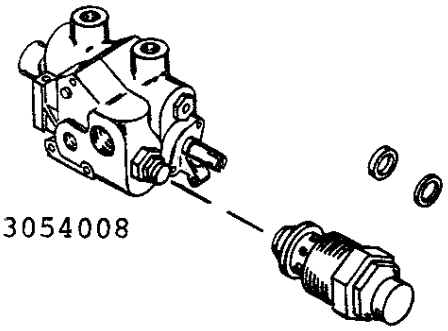
1. Engage PTO and set engine speed at rate required to provide 13 gallons per minute.

2. Read pressure on gauge located at main control valve.

3. If low, shut off engine and remove relief plug. Install one 0.010 inch shim which will provide a 125 psi increase.

4. Reinstall relief valve plug and start engine. If pressure has not increased by the stated 125 psi increment, the malfunction indicates pump slippage.

5. If 125 psi increment is achieved, add shims required to bring pressure up to the required 2350 psi minimum.

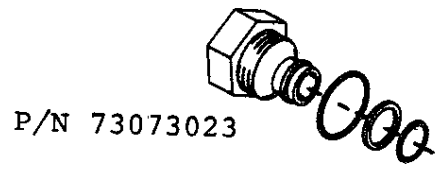


RELIEF VALVE

Fig. C-7

POWER BEYOND PLUG

Hydraulic power for an auxiliary function can be obtained by insertion of a power beyond plug as shown below: Remove Items #4 and #5 shown in figure D-15, page 4-16. Install plug taking care that two gasket seals are in place or function pressure will be lost. Install high pressure hose to auxiliary function control valve. Order P/N - 73073023.



POWER BEYOND PLUG

Fig. C-8

HYDRAULIC SCHEMATICS

In the PARTS section, pages 4-1 through 4-52, there are three hydraulic schematics shown for the IMTCO 10,000 crane unit.

Figure D-27, page 4-42, shows a standard hydraulic schematic applicable to units with manual controls only for all functions-outriggers, crane and winch options.

Figure D-28, page 4-45, shows an optional hydraulic schematic applicable to units with manual outrigger controls and remote controls for crane and winch option functions.

Figure D-29, page 4-49, shows an optional hydraulic schematic applicable to units with manual outrigger controls and dual control systems - manual and remote - for crane and winch option functions.

NOTE: The preceding paragraph applies in its entirety to units having no winch or an 8000 lb. winch option only. Units equipped with a 10,000 lb. winch will have one control system only - either manual or remote - for this option. See note on Fig. D-29, page 4-49.

ELECRICAL SCHEMATIC

Shown in Fig. C-9 is remote control electrical schematic. Winch option should be ignored if not applicable.

PLUG PIN NO.	WIRE COLOR	WIRE NO.
1	BLACK / ORANGE	16
2	BLACK / GREEN	15
3	BLACK / RED	14
4	BLACK / WHITE	13
5	WHITE / GREEN	12
6	RED / BLUE	11
7	RED / BLACK	10
8	WHITE / RED	8
9	WHITE / BLACK	7
10	BLACK / BLUE	9
11	WHITE	2
12	RED	4
13	GREEN	5
14	ORANGE	6
15	WHITE / BLUE	3
16	BLACK	1

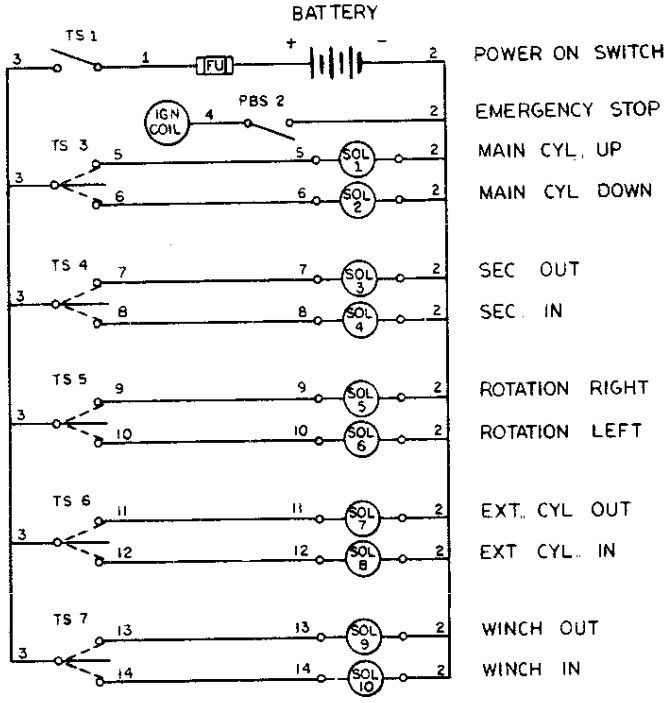


Fig. C-9

PREVENTIVE MAINTENANCE

The following inspection check list is designed to assist you in keeping the vehicle and crane unit in safe operating condition. Items which apply to the unit should be checked before unit operation and the carrying vehicle should be inspected before moving the equipment.

VEHICLE CHECK LIST				
Item	Description	Frequency		
		Daily	Weekly	Monthly
Battery	Inspect for correct fluid level. In hot, dry weather increase inspection frequency.		X	X
Engine	Check for proper level. Make sure oil level on dipstick is above "add oil" mark.	X		
Brakes (Service & Parking)	Operate both systems to assure positive, efficient functioning.	X		
Radiator	Inspect coolant level. Check for antifreeze protection in cold weather.	X		
Safety Equipment Warning Signals & Lights	Inspect all devices and lights for proper operation	X		
Suspension	Inspect for broken or weak springs.	X		
Tires & Wheels	Inspect tires for bruises, cuts and proper inflation. Check for loose wheel stud nuts, mud lumps or stones between dual wheels and bent wheels.	X		
UNIT CHECK LIST				
Walk Around Inspection	Visually inspect unit on all sides for hydraulic leaks, loose parts and obvious damage to external structural members.	X		

Item	Description	Frequency		
		Daily	Weekly	Monthly
Cylinders	Check securing pins on cylinders and booms for proper installation. Check for proper installation of bolts securing outrigger cylinders.			X
Hydraulic Hoses & Fittings	Inspect hose surfaces and metal end coupling junctions for oil leakage. Check outer hose coverings for blistering, excessive wear or flattening.	X		
Hydraulic Reservoir	With all cylinders retracted check fluid level in reservoir.	X		
Load Hook	Check load hook pin for proper installation. Inspect hook twist exceeding 10 degrees from normal opening. Check for throat opening spread exceeding 15 percent of normal.	X		
Mounting Bolts	Inspect and check torque. Permissible torque range requires 740-800 ft. lbs.			X
Oil Leaks	Inspect all valves and cylinders for signs of leakage.			X
Power Take-Off	Check for sufficient transmission lubrication. Check security of mounting bolts, leakage and correct alignment.		X	
Rotation System	Check for excessive back lash (play) in horizontal rotational stops. Normal variation at the mast location is not to exceed 1/8-3/16 inch. Check push blocks located fore and aft of mast support gear box. Insure bearings properly located and in good condition.		X	
Structural Damage	Inspect all structural members for broken welds or fatigue cracks. Check booms for structural defects such as bends, weld cracks or dents			X

Item	Description	Frequency		
		Daily	Weekly	Monthly
Holding Valve	Conduct a holding test with loaded boom to assure proper operation of pilot actuated holding valve on main, secondary and extension.		X	

REGULAR INSPECTION

Every three months or more often when equipment is subjected to heavy use, the following inspections should be performed in addition to the preceeding routing preventive maintenance outline.

MAIN AND SECONDARY BOOMS

1. Check structural defects evidenced in weld cracks, dents, or bends.

2. Check boom rollers for wear.

3. Check main and secondary boom cylinder pins for proper installation and worn pivot pin bushings.

MAINFRAME

1. Check control valve and all other fittings for oil leaks and tightness.

2. Check all roll pins and lock rings on main pin assemblies for proper installation.

3. Check torque on all unit mounting bolts to range of 740-800 ft. lbs.

4. Check for loose bolts, fatigue cracks or corroded structural members.

MAST AND ROTATION SYSTEM

1. Check mast housing for cracks.

2. Check for proper rotation function by making several start-stop operations. Maximum allowable free-play at mast front should be 1/8" to 3/16".

3. Check upper mast bearing for lubrication and proper engagement.

4. Check for leakage around cylinder mounting plates.

5. Check cylinder and push block mounting bolts for tightness.

HYDRAULIC SYSTEM

1. Cylinders

   A. Check rods for damage such as scarring, nicks, dents and rust on out of service units.

   B. Check for leaks at weld joints and rod seals. Check for drift indicating leakage around piston.

   C. Check cylinder barrel for dents.

2. Hydraulic Pump

   A. Check for leaks at shaft seal and section joints.

   B. Check for drop in operating speed.

   C. Check hydraulic oil for excessive heating.

   D. Check bolts and fasteners for tightness and note unusual vibrations or noise.

3. Hydraulic Control Valves

   A. Check spools for sticking and failure to return to neutral position. Inspect for leaks at joints and spools.

   B. Inspect valve housing for cracks.

   C. Make sure relief valve reaches correct pressure setting.

UNDERDRIVE AND PUMP

1. Inspect for proper transmission gear to PTO engagement.

2. When supplied, inspect drive line U-joints for securing cap screw tightness and adequate lubrication.

3. Check mounting bolts on pump and PTO for tightness.

TROUBLE SHOOTING

The following chart is designed for quick reference in diagnosing on the job malfunctions. Care has been taken to list the possible causes in the most likely order of occurrence.

Malfunction	Possible Defect
Controls fail to respond	1. The PTO is not engaged. 2. Hydraulic oil supply is low. 3. Hydraulic pressure line is ruptured. 4. Suction line shutoff valve is obstructed. 5. Hydraulic Pump is faulty. 6. Relief valve is set incorrectly.
Operation slow down	1. Hydraulic oil supply is low. 2. Hydraulic pump is operating at a reduced speed. 3. Relief valve is set too low. 4. Pump or cylinder is worn. 5. Pump is slipping due to excessive oil temperature. This is a factor which will increase with worn components. 6. Filters are dirty. 7. Valve spools are inoperative. 8. Obstruction has occured in boom holding valve.
Rotation control slowed or erratic	1. Color flow valve is clogged or improperly adjusted. 2. Rotation cylinder packing is worn. 3. Rotation gears are locked or damaged. 4. Rack support is loose or the bushing is worn.

Malfunction	Possible Defect
Boom drifts when loaded and controls neutralized.	1. Hydraulic oil is bypassing at piston seal. 2. Main, secondary or extension cylinder holding valves are defective or contaminated.
Unusual noise in operation.	1. Cavitation is occurring due to low hydraulic oil supply. 2. Loading is excessive. 3. Restriction or collapse of suction lines has occurred. 4. Suction filter is clogged and requires changing. 5. Bypass settings on relief valve are too low. 6. Relief valve is damaged. 7. Valve closure is obstructed due to particle accumulation.
Outriggers fail to retract.	1. Control valve spool is inoperative. 2. Cylinder or check valve is defective. 3. Hydraulic lines are restricted or ruptured.
Outriggers yield or drift.	1. Hydraulic lines are ruptured. 2. Internal bypass is occurring in cylinders.
Boom jumps or bounces when lowered under load.	1. Check cylinder base side port of control valve and install orifice. See page 3-7.

PARTS

CYLINDER IDENTIFICATION

Every IMTCO 10,000 Crane has a cylinder identification tag as shown in Fig. D-1 attached to the mast assembly.

The numbers stamped will begin with the letters IM or SD. Parts lists for both types are included in this section. Be sure to specify in any parts request a complete letter-number sequence to insure correct identification.

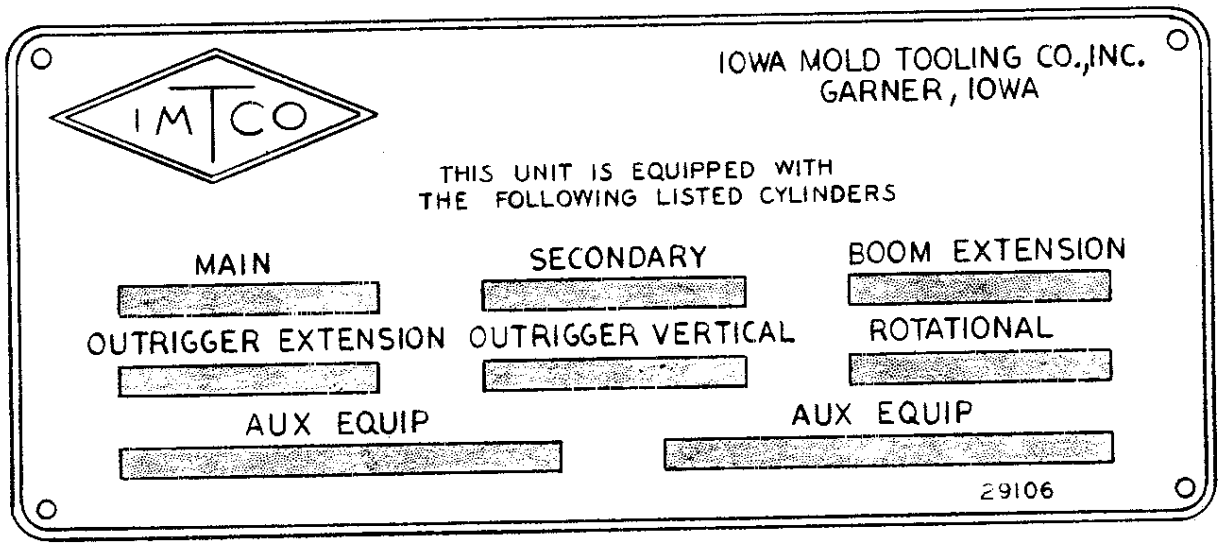


Fig. D-1

W A R N I N G

Employ extreme care when replacing any main cylinder for the following reasons:

1. Early models were equipped with metering blocks on main cylinders.
2. Most recent models were equipped with cartridge-type counter-balance holding valves.

No two types of cylinders can be used in conjunction with one another without serious damage resulting.

IM STYLE

IMTCO P/N 3X335412

ROTATION CYLINDER

Bore - 4" Single Acting

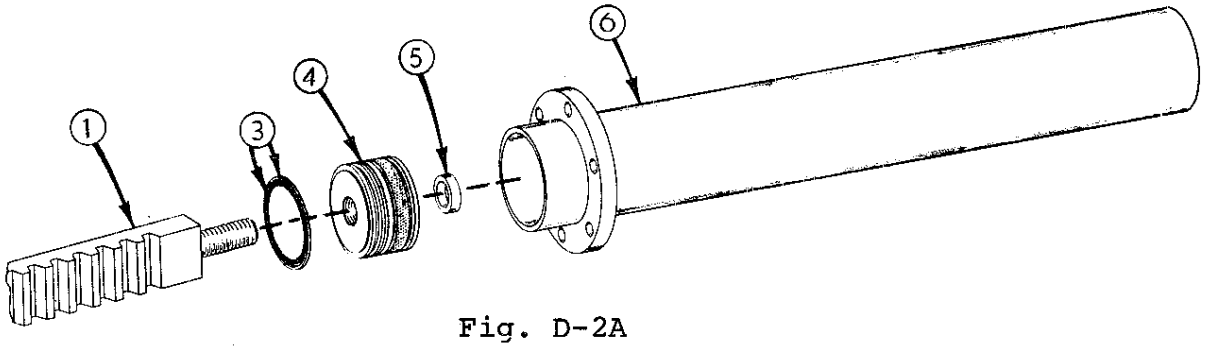


Fig. D-2A

REF. NO.	IMTCO P/N	DESCRIPTION
1	51701049	Rack Assembly
3 *	7T66P040	Sirvon Ring, Dynamic Psn. Seal
*	7Q07X153	Psn. O-Ring, Companion
4	6I030143	Piston
5 *	7T61N143	Seal Lok
6	4B335410	Case
3A	6C075015	Stop Tube
	9A160023	Seal Kit

NOTE: * Included in Seal Kit.

Units manufactured from March, 1976 to mid-July, 1976 incorporated this design (Fig. D-2A). Replacement parts will be supplied as shown in Fig. D-2B below. Also, all new units after July, 1976 will be manufactured with cylinder as shown below. Parts, items #1, 5 & 6 are similar as shown above.

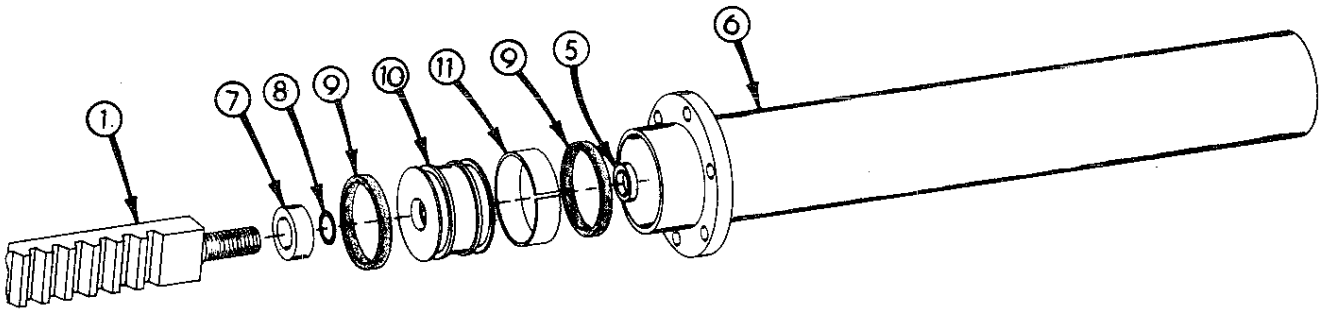


Fig. D-2B

REF. NO.	IMTCO P/N	DESCRIPTION
7	6C335430	Stop Tube
8 *	7Q07X127	O-Ring
9 *	7R546040	Seal (2 Req'D)
10	6IX33542	Piston
11	7T2N4006	Wear Ring

NOTE: * Included in Seal Kit.

IM STYLE

IMTCO P/N 3C325413

MAIN CYLINDER W/ HOLDING VALVE

Bore - 6" Stroke-25½" Rod Dia.-3" Pin Size,Base End-2 3/4"

Pin Size, Rod End - 2 3/4" c-c Closed - 40-3/4"

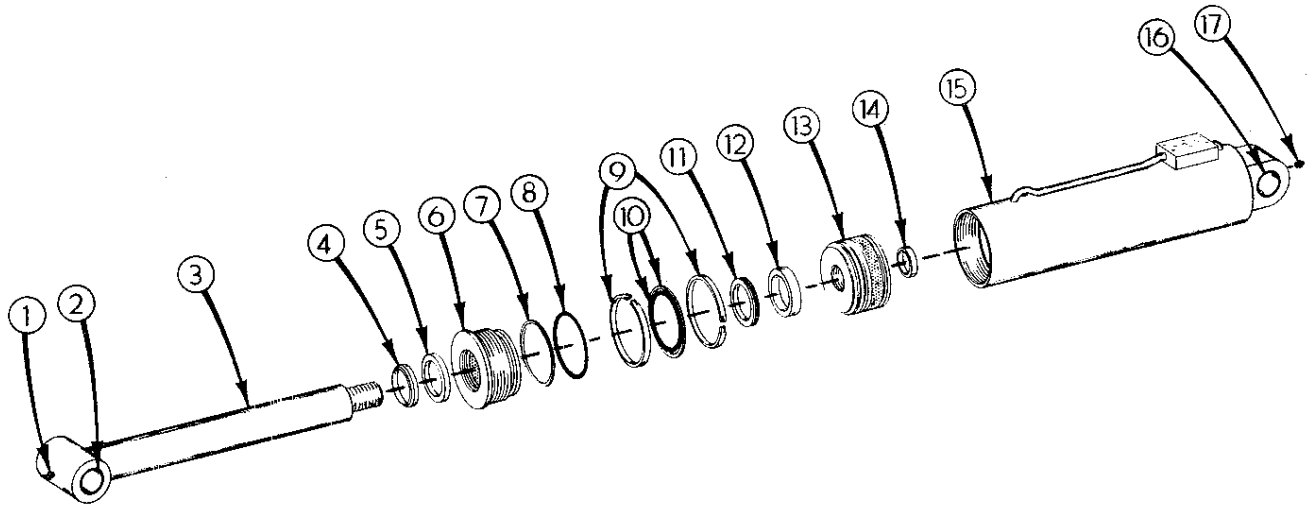


Fig. D-3

REF. NO.		IMTCO P/N	DESCRIPTION
1		72053508	Zerk
2		71024103	Bushing
3		4G325413	Rod
4	*	7R14P030	Rod Wiper
5	*	7R546030	Rod Seal, Dynamic
6		6H060030	Head
7	*	7Q10P358	Back-Up Ring
8	*	7Q07X358	Head Static Seal
9	*	7T65I060	Piston Ring
10	*	7T66P060	Sirvon Ring, Dynamic Psn. Seal
	*	7Q07X253	Psn. O-Ring, Companion
11	*	6A025030	Wafer Lok
12		6C075030	Stop Tube
13		6I060200	Piston
14	*	7T61N200	Seal Lok
15		4C325411	Case
16		71024103	Bushing
17		72053508	Zerk
		9C242432	Seal Kit

NOTE: See WARNING page 4-1.

* Included in seal kit.

IM STYLE

IMTCO P/N 3C152512

MAIN CYLINDER W/ CARTRIDGE VALVE

Bore - 6" Stroke - 25½" Rod Dia. - 3" Pin Size, Base End - 2-3/4"

Pin Size, Rod End - 2-3/4" c-c Closed 40-3/4"

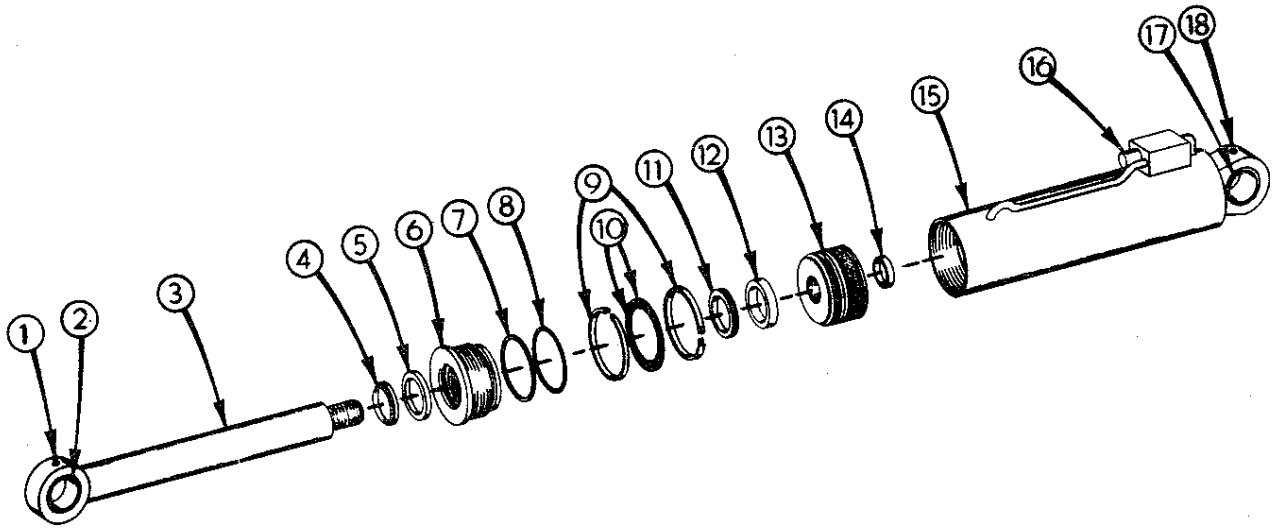


Fig. D-4

REF. NO.		IMTCO P/N	DESCRIPTION
1		72053508	Zerk
2		71024103	Bushing
3		4G325413	Rod
4	*	7R14P030	Rod Wiper
5		7R546030	Rod Seal, Dynamic
6		6H060030	Head
7	*	7Q10P358	Back-Up Ring
8	*	7Q07X358	Head Static Seal
9	*	7T65I060	Piston Ring
10	*	7T66P060	Sirvon Ring, Dynamic Psn. Seal
	*	7Q07X253	Psn. O-Ring, Companion
11	*	6A025030	Wafer Lok
12		6C075030	Stop Tube
13		6I060200	Piston
14	*	7T61N200	Seal Lok
15		4C152511	Case
16		73054242	Cartridge Valve
17		71024103	Bushing
18		72053508	Zerk
		9C242432	Seal Kit

NOTE: * Included in Seal Kit.

See WARNING page 4-1.

IM STYLE

IMTCO P/N 3C326413

SECONDARY CYLINDER

Bore - 6½" Stroke - 27½" Rod Dia. - 3" Pin Size, Base End-2 3/4"

Pin Size, Rod End - 2 3/4" c-c Closed - 43½"

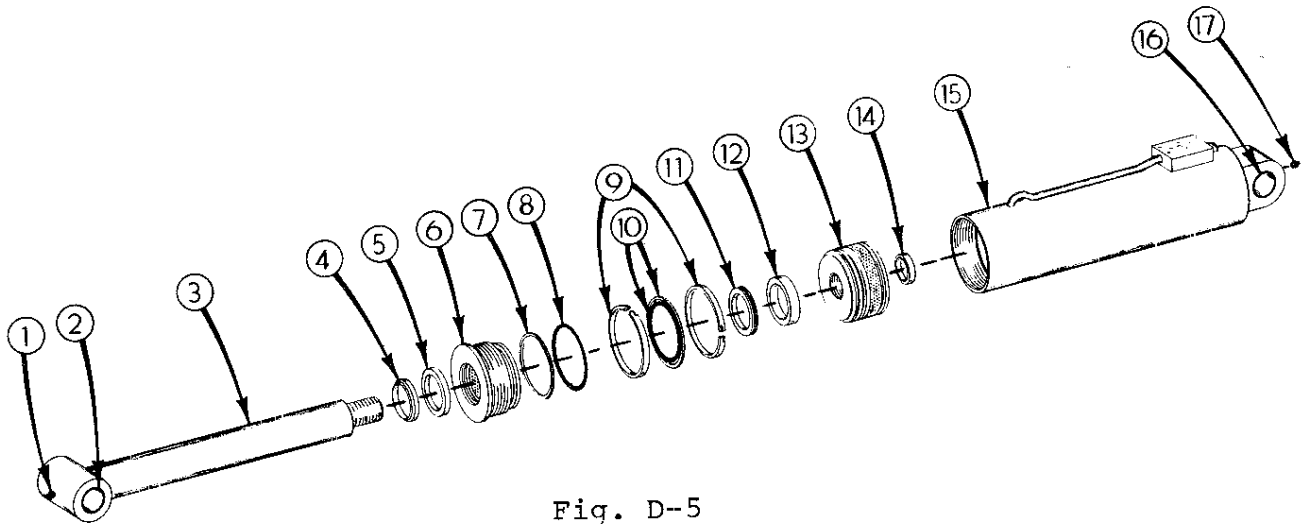


Fig. D-5

REF. NO.	IMTCO P/N	DESCRIPTION
1	72053508	Zerk
2	71024104	Bushing
3	4G326413	Rod
4 *	7R14P030	Rod Wiper
5 *	7R546030	Rod Seal, Dynamic
6	6H065030	Head
7 *	7Q10P361	Back-Up Ring
8 *	7Q07X361	Head Static Seal
9 *	7T65I065	Piston Ring
10 *	7T66P065	Sirvon Ring, Dynamic Psn. Seal
*	7Q07X257	Psn. O-Ring, Companion
11 *	6A025030	Wafer Lok
12	6C075030	Stop Tube (2 Req'd)
13	6I065200	Piston
14	7T61N200	Seal Lok
15	4C326413	Case
16	71024103	Bushing
17	72053506	Zerk
	9C262432	Seal Kit

NOTE: * Included in Seal Kit.

IM STYLE

IMTCO P/N 3B218412

EXTENSION AND OUTRIGGER CYLINDERS

Bore - 3" Stroke - 40" Rod Dia. - 1-3/4" c-c Closed - 58-3/4"

Pin Size, Base End - 1" Pin Size, Rod End - 1'

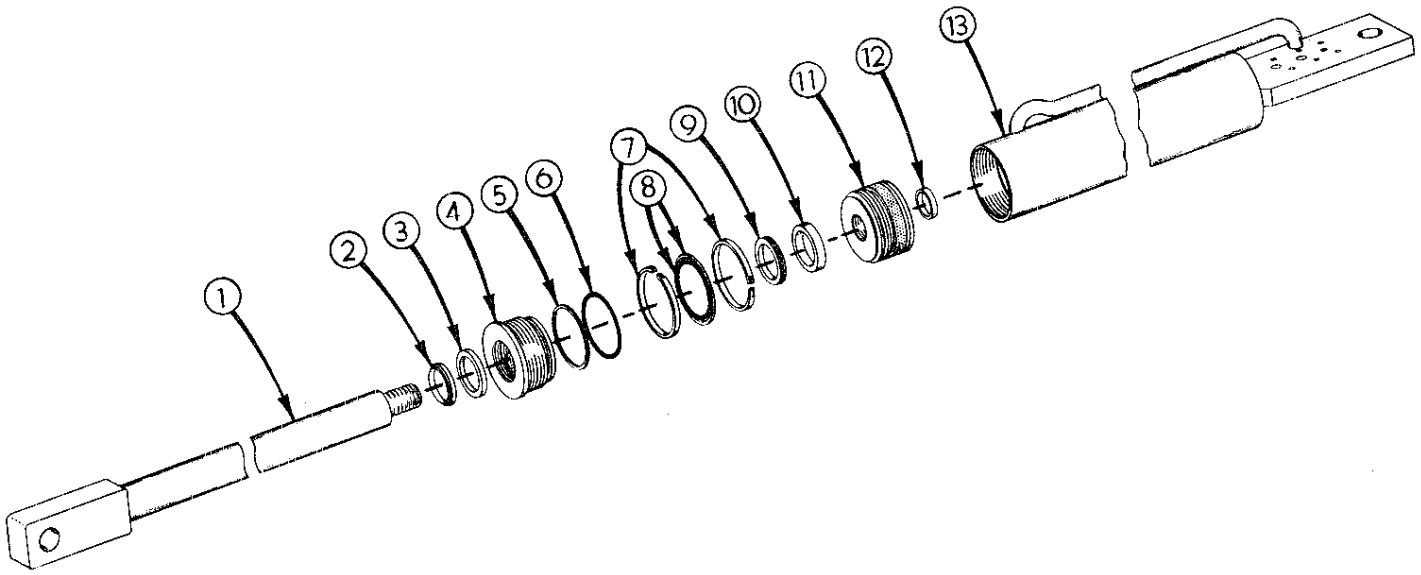


Fig. D-6

REF. NO.		IMTCO P/N	DESCRIPTION
1		4G218410	Rod
2	*	7R14P017	Rod Wiper
3	*	7R546017	Rod Seal, Dynamic
4		6H030017	Head
5	*	7Q10P334	Back-Up Ring
6	*	7Q07X334	Head Static Seal
7	*	7T65I030	Piston Ring
8	*	7T66P030	Sirvon Ring, Dynamic Psn. Seal
	*	7Q07X145	Psn. O-Ring, Companion
9	*	6A025017	Wafer Lok
10		6C075017	Stop Tube (3 Req'd)
11		6I030106	Piston
12	*	7T61N106	Seal Lok
13		4B218411	Case
		9C121417	Seal Kit

NOTE: * Included in Seal Kit.

NOTE: With TH-10 option the rod diameter is 2". Refer to page 4-24, Fig. D-19.

IM STYLE

IMTCO P/N 3B116512

SPECIAL EXTENSION CYLINDER WHEN TH-10 IS INSTALLED

Bore - 3" Stroke - 40" Rod Dia.-2" Pin Size, Base End - 1"

Pin Size, Rod End - 1" c-c Closed - 58-3/4"

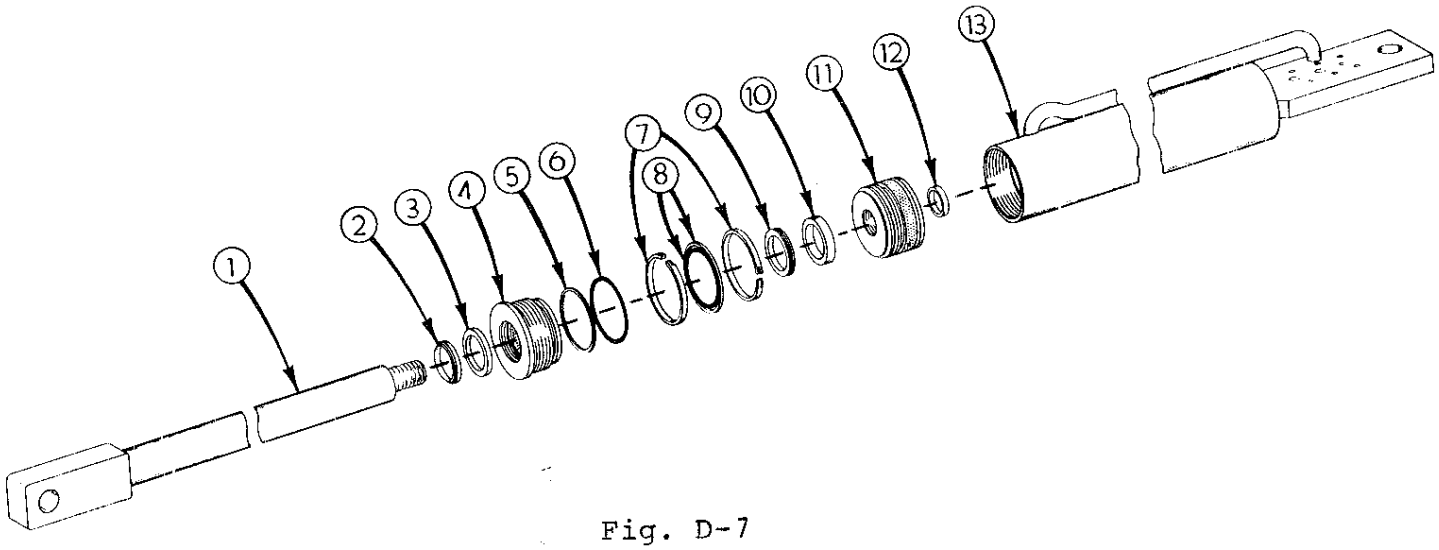


Fig. D-7

REF. NO.	IMTCO P/N	DESCRIPTION
1	4G116510	Rod
2 *	7R14P020	Rod Wiper
3 *	7R546020	Rod Seal, Dynamic
4	6H030020	Head
5 *	7Q10P334	Back-Up Ring
6 *	7Q07X334	Head Static Seal
7 *	7T65I030	Piston Ring
8 *	7T66P030	Sirvon Ring, Dynamic Psn. Seal
*	7Q07X145	Psn. O-Ring, Companion
9 *	6A025020	Wafer Lok
10	6C075020	Stop Tube (3 Req'd)
11	6I030106	Piston
12 *	7T61N106	Seal Lok
13	4B218411	Case
	9C121617	Seal Kit

NOTE: * Included in Seal Kit.

IM STYLE

OPTIONAL IMTCO P/N 3C210550

FOLD DOWN OUTRIGGER

Bore - 6" Stroke - 18" Rod Dia. - 3" Pin Size,Base End - 2"

Pin Size, Rod End - 2" c-c Closed - 35"

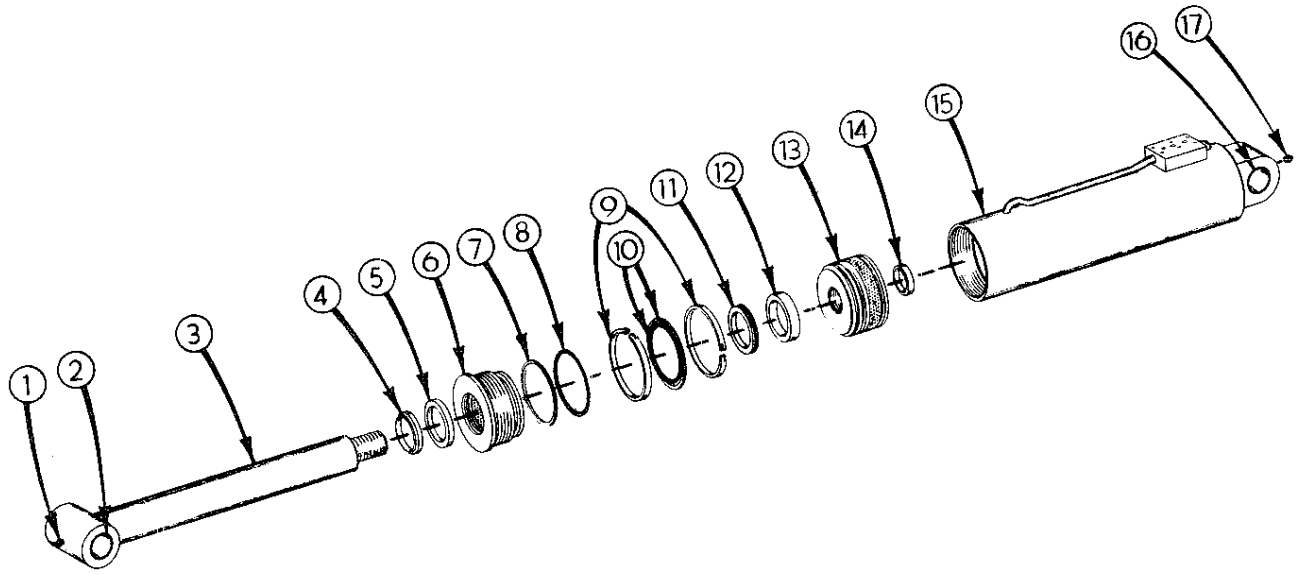


Fig. D-8

REF.NO.		IMTCO P/N	DESCRIPTION
1		72053506	Zerk
2		7BF81220	Bushing (2 Req'd)
3		4G210550	Rod
4	*	7R14P030	Rod Wiper
5	*	7R546030	Rod Seal, Dynamic
6		6H060030	Head
7	*	7Q10P358	Back-Up Ring
8	*	7Q07X358	Head Static Seal
9	*	7T65I060	Piston Ring
10	*	7T66P060	Sirvon Ring, Dynamic Psn. Seal
	*	7Q07X253	Psn. O-Ring, Companion
11	*	6A025030	Wafer Lok
13		6I060200	Piston
14	*	7T61N200	Seal Lok
15		4B210550	Case
16		7BF82020	Bushing (2 Req'd)
17		72053506	Zerk
		9C242432	Seal Kit

NOTE: * Included in Seal Kit.

NOTE: Used prior to 11/75.

IM STYLE

IMTCO P/N 3C263511

OPTIONAL

FOLD DOWN OUTRIGGER CYLINDER

Bore - 6½" Stroke - 28¼" Rod Dia.-3½" Pin Size,Base End-2½"

Pin Size, Rod End-2½" c-c Closed- 42 1/8"

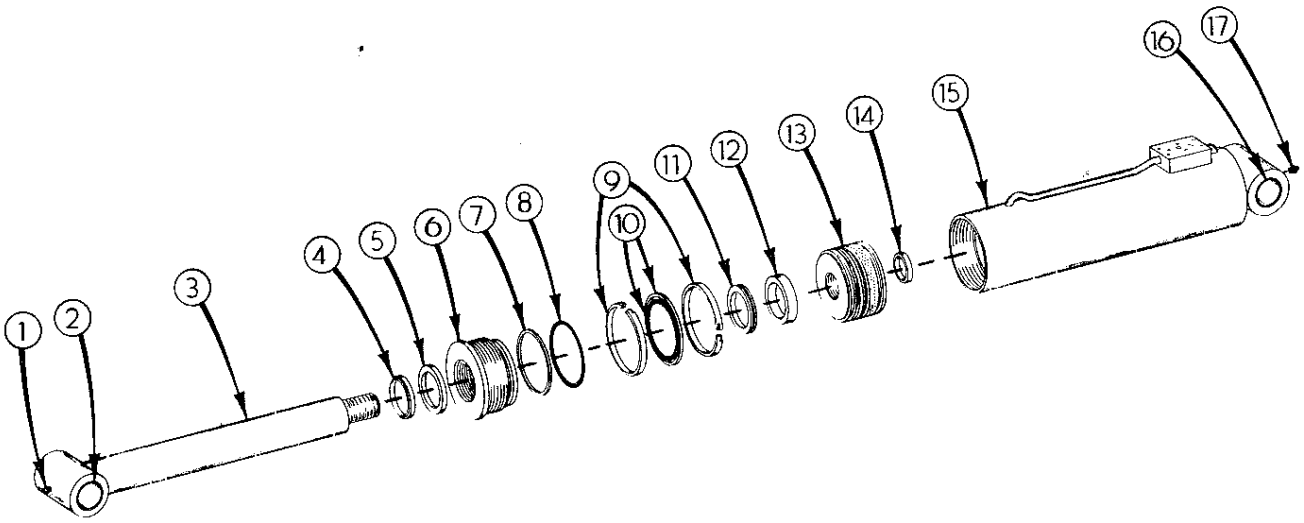


Fig. D-9

REF. NO.	IMTCO P/N	DESCRIPTION
1	72053506	Zerk
2	7BF81225	Bushing (3 Req'd)
3	4G263510	Rod
4 *	7R14P035	Rod Wiper
5 *	7R546035	Rod Seal, Dynamic
6	6H065035	Head
7 *	7010P361	Back-Up Ring
8 *	7007X361	Head Static Seal
9 *	7T65I065	Piston Ring
10 *	7T66P065	Sirvon Ring, Dynamic Psn.Seal
*	7Q07X257	Psn. O-Ring, Companion
11 *	6A025030	Wafer Lok
13	6I065200	Piston
14 *	6T61N200	Seal Lok
15	4C263510	Case
16	7BF81225	Bushing (4 Req'd)
17	72053506	Zerk
	9C262832	Seal Kit

Note: * Included in Seal Kit.

NOTE: Used after 11/75.

IM STYLE

OPTIONAL

IMTCO P/N 3K348512

1100 SERIES TELESCOPIC EXTENSION

Bore-4" Stroke-40"; Bore-2½" Stroke-44" Rod Dia.-3½" ;

Rod Dia.-1½", Trunnion Mounts (2)-1¼" Rod Eye-1"

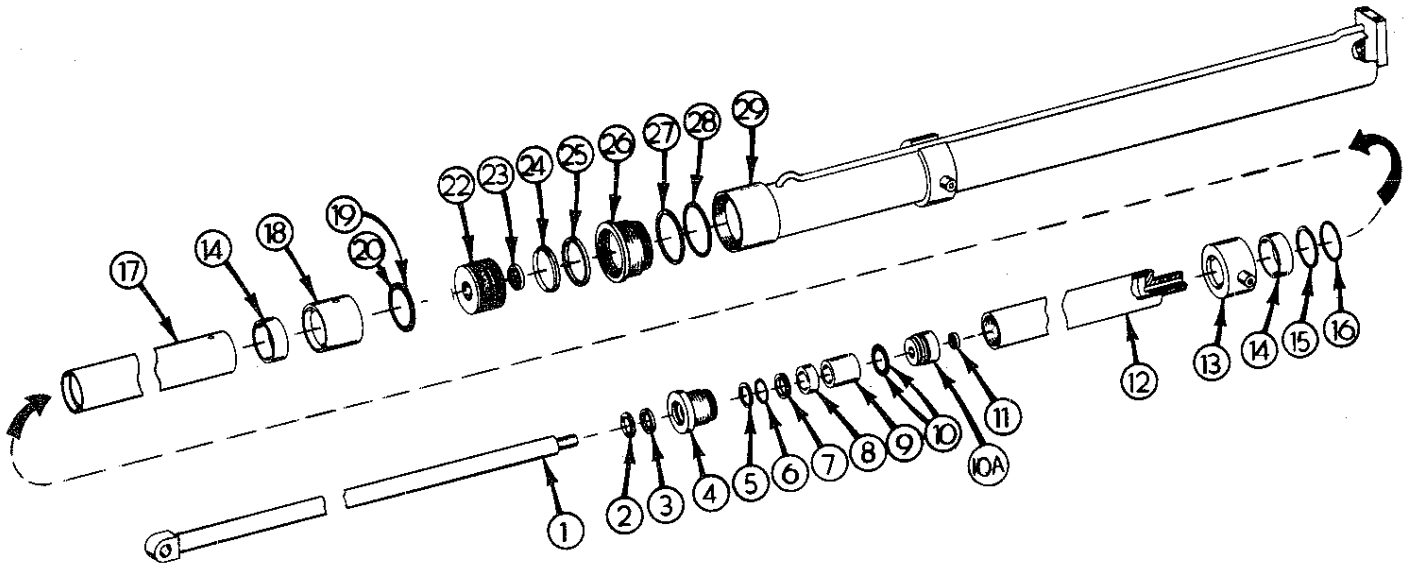


Fig. D-10

REF. NO.	IMTCO P/N	DESCRIPTION
1	4G348510	Rod
2 **	7R14P015	Rod Wiper
3 **	7R546015	Rod Seal, Dynamic
4	6H271510	Head
5 **	7Q10P228	Back-Up Ring, Static
6 **	7Q07X228	O-Ring, Static
7 **	6A025015	Wafer Lok
8	6C075015	Stop Tube
9	6C300015	Stop Tube
10 **	7T66P025	Sirvon Ring, Dynamic Psn. Seal
**	7Q07X137	O-Ring, Companion
10A	6I025087	Piston
11 **	7T61N087	Seal Lok
12	4H348510	Rod
13	5FG27152	Trunnion Head
14	6M271510	Adaptor Ring (2 Req'd)
15 *	7Q10P233	Back-Up Ring
16 *	7Q07X233	O-Ring, Static
17	5H348510	Rod Sleeve
18	6C271510	Stop Tube
19 *	7T66P040	Sirvon Ring, Dynamic Psn. Seal
20 *	7Q07X153	O-Ring, Companion

REF. NO.	IMTCO P/N	DESCRIPTION
22	6I040143	Piston
23 *	7T61N143	Seal Lok
24 *	7R14P035	Rod Wiper
25 *	7R546035	Rod Seal, Dynamic
26	6H271520	Head
27 *	7Q07X346	O-Ring, Static
28 *	7Q10P346	Back-Up Ring
29	4K348511	Case
	9X348512	Seal Kit "A"
	9B101214	Seal Kit "B"

NOTE: * Included in Seal Kit "A".
** Included in Seal Kit "B".

W A R N I N G

Serious damage will result if:

1. Extension cylinder is improperly plumbed.

2. Hose leading from rod end of cylinder is restricted.

Exercise care upon initial extension after cylinder has been serviced and/or control valve hoses have been altered.

SD STYLE

IMTCO P/N 3XM12614

SLEWING CYLINDER

Bore - 4" Single Acting

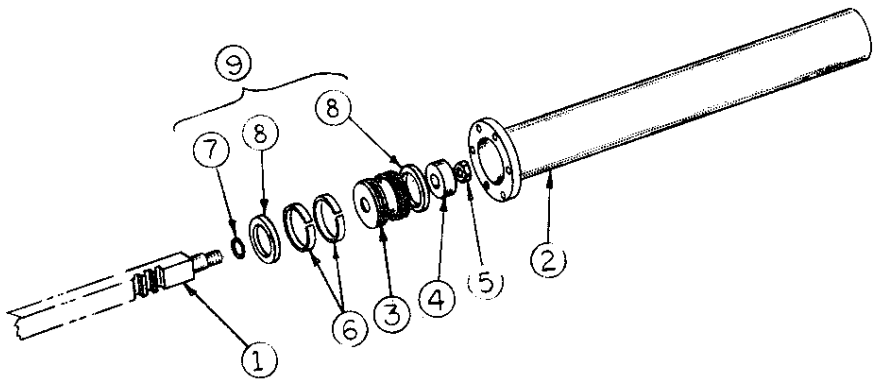


Fig. D-11

REF. NO.	IMTCO P/N	DESCRIPTION
1	51070187	Slewing Rack
2	4BM12614	Cylinder Tube
3	6IM12614	Piston
4	6CM12614	Stroke Stop
5	72062078	Nut-1¼"
* 6	7T2N4040	Piston Wear Ring (2 Req'd)
* 7	7Q07X214	O-Ring
* 8	7R246035	Seal (2 Req'd)
9	9CM12614	Seal Kit

Note: * Included in Seal Kit.

SD STYLE

IMTCO P/N 3CM12593

MAIN CYLINDER

Bore - 6" Stroke - 25½" Rod Dia. - 3" Pin Size,Base End- 2 3/4"

Pin Size, Rod End - 2 3/4" c-c Closed - 40 3/4"

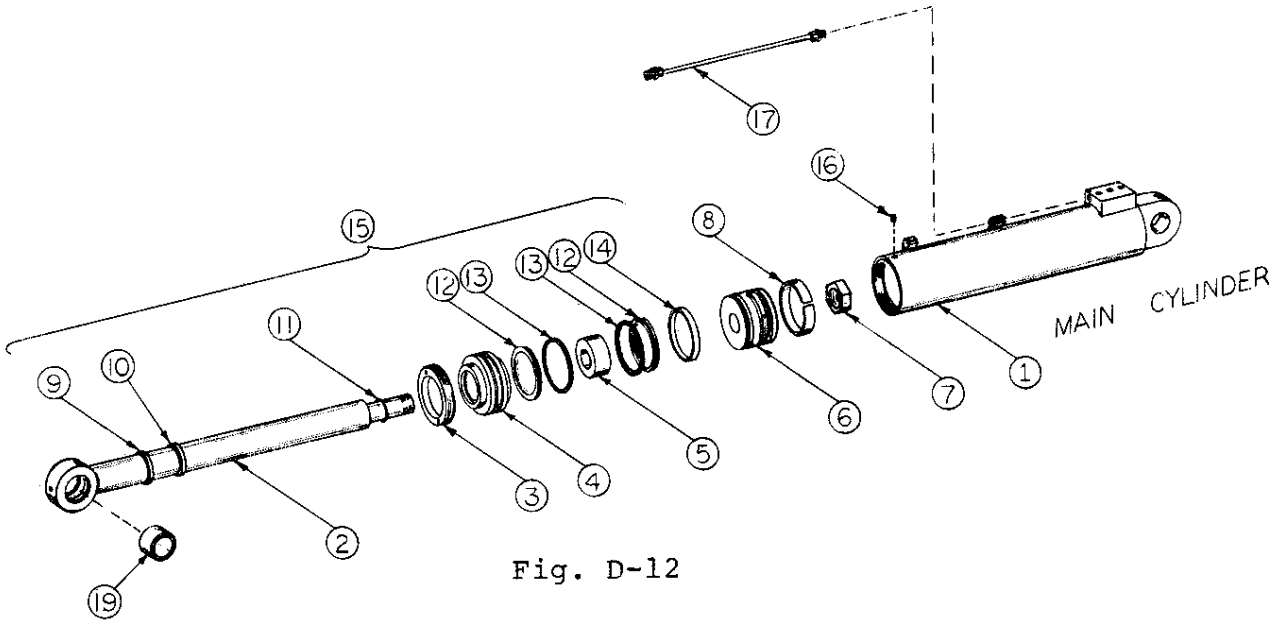


Fig. D-12

REF. NO.		IMTCO P/N	DESCRIPTION
1		4CM12593	Cylinder Tube
2		4GM12593	Cylinder Rod
3		6DM12593	Gland Nut
4		6HM12593	Head Gland
5		6CM12593	Stop Tube
6		6IM12593	Piston
7		72062050	Nut-2"
8	*	7T2N4060	Piston Wear Ring(2 req'd)
9	*	7R14P030	Wiper
10	*	7R546030	Seal
11	*	7Q07X224	O-Ring
12	*	7Q10P433	Back-Up Ring
13	*	7Q07X433	O-Ring
14	*	7R249055	Seal
15		9CM12593	Seal Kit
16		72060567	Set Screw
17		4PM12593	Pipe Assembly

NOTE: * Included in Seal Kit.

See WARNING page 4-1.

SD STYLE

IMTCO P/N 3CM12735

SECONDARY CYLINDER

Bore - 6½" Stroke - 27½" Rod Dia. - 3" Pin Size,Base End- 2 3/4"

Pin Size, Rod End - 2 3/4" c-cClosed - 43½"

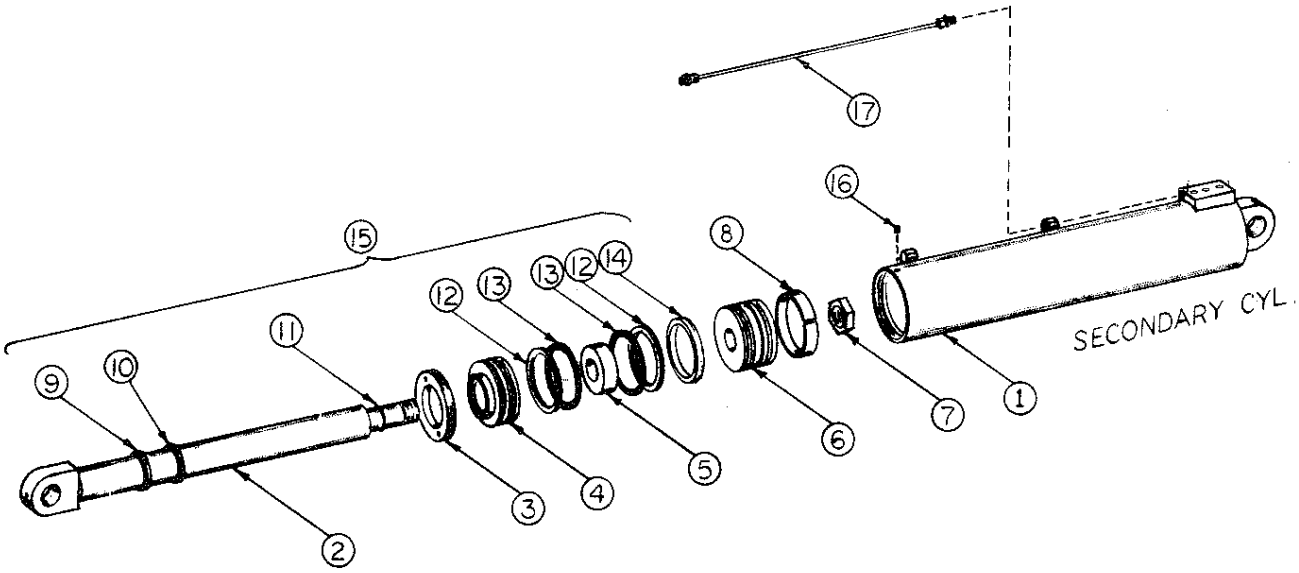


Fig. D-13

REF. NO.	IMTCO P/N	DESCRIPTION
1	4CM12735	Cylinder Tube
2	4GM12735	Cylinder Rod
3	6DM12735	Gland Nut
4	6HM12735	Head Gland
5	6CM12735	Stop Tube
6	6IM12735	Piston
7	72062050	Nut-2"
8 *	7T2N4065	Piston Wear Ring(2 Req'd)
9 *	7R14P030	Wiper
10 *	7R546030	Seal
11 *	7Q07X224	O-Ring
12 *	7Q10P437	Back-Up Ring
13 *	7Q07X437	O-Ring
14 *	7R249060	Seal
15	9CM12735	Seal Kit
16	72060567	Set Screw
17	4PM12735	Pipe Assembly

NOTE: * Included in Seal Kit.

SD STYLE

IMTCO P/N 3BM12599

EXTENSION AND OUTRIGGER CYLINDERS

Bore - 2 3/4" Stroke - 80" Rod Dia.-2" Pin Size,Base End-1"

Pin Size,Rod End-1" c-c Closed-102½"

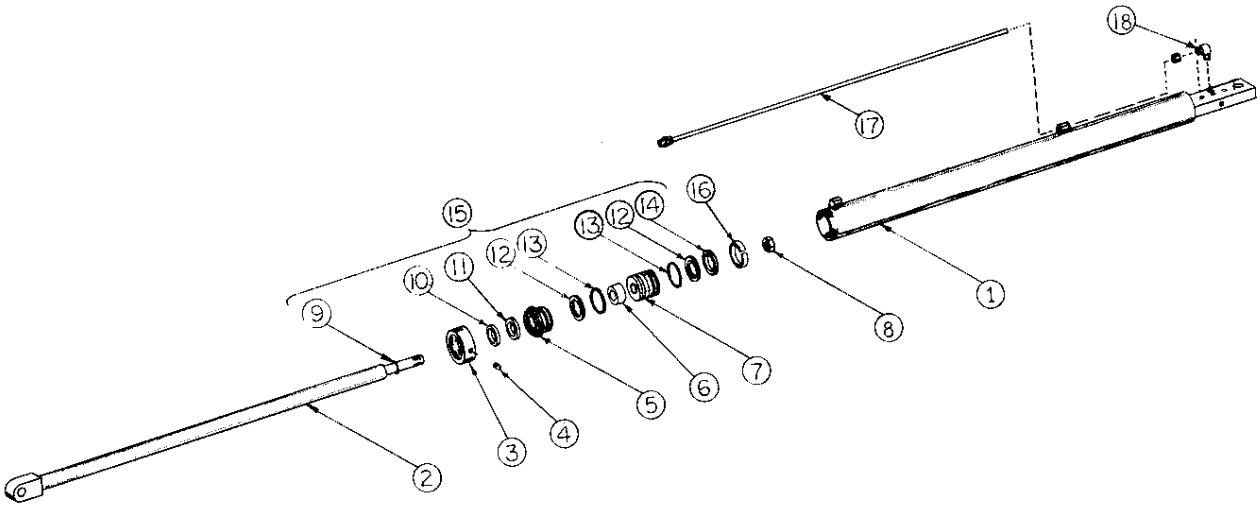


Fig. D-14

REF. NO.	IMTCO P/N	DESCRIPTION
1	4BM12599	Cylinder Tube
2	4GM12599	Cylinder Rod
3	6DM12599	Gland Nut
4	72060556	Set Screw
5	6HM12599	Head Gland
6	6CM12599	Stroke Stop
7	6IM12599	Piston
8	72062044	Nut-1"
9 *	7Q07X020	O-Ring
10 *	7R13P020	Wiper
11 *	7R546020	Seal
12 *	7Q10P326	Back-Up Ring
13 *	7Q07X326	O-Ring
14 *	7R546022	Seal (2 Req'd)
15	9CM12599	Seal Kit
16	7T2N4027	Piston Wear Ring
17	4PM12599	Pipe Assembly
18	72053515	3/8" Male Elbow

NOTE: * Included in Seal Kit.

GRESEN CONTROL VALVE

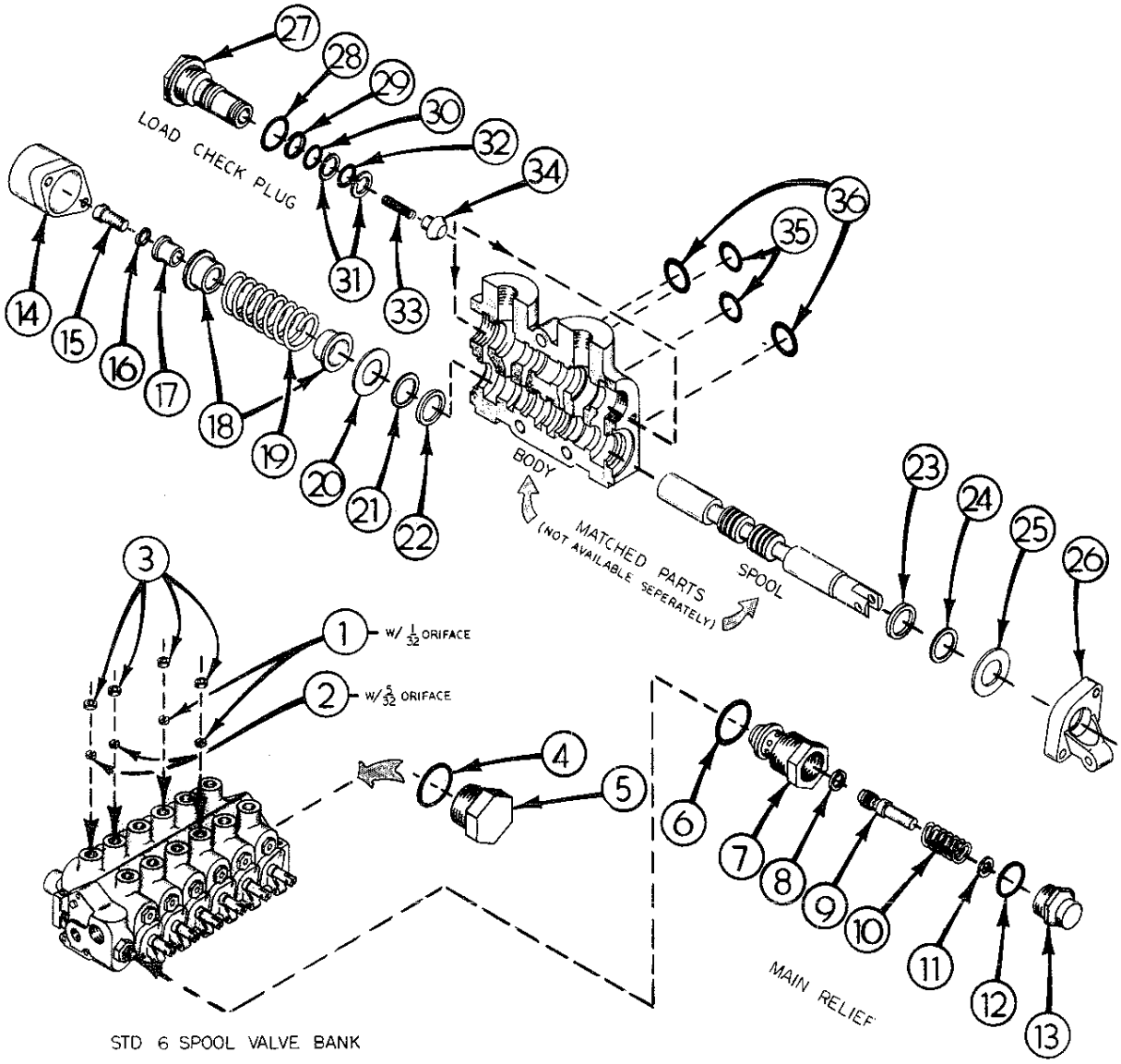


Fig. D-15

GRESEN CONTROL VALVE PARTS LIST

REF. NO.	IMTCO P/N	DESCRIPTION
1 *	73014691	1/32" Orifice
2 *	73014693	5/32" Orifice
3 *	73014692	Orifice Retainer
4	76039083	Seal, O-Ring
5	73014593	Std. Outlet Conversion Plug
6	76039082	Seal, O-Ring
7	73029056	Body
8	73034020	Ring, Piston
9	73014617	Poppet, Relief
10	73014588	Spring, 2201-3000 PSI Crack
11	73014618	Shim, .040"
	73014619	Shim, .020"
	73014620	Shim, .010"
12	76039070	Seal, O-Ring
13	73024101	Cap, Relief
14	73029051	Bonnet
15	72060831	Screw, Fill Hd. 5/16 x 3/4
16	72063055	Lock Washer
17	73014597	Collar, Spool
18	73014606	Collar, Spring
19	73014589	Spring, Return
20	73014591	Retainer, Plate Washer
21	73034022	Washer, Back-Up
22	76039087	Seal, Spool
23	76039087	Seal, Spool
24	73034022	Washer, Back-Up
25	73014591	Retainer, Plate Washer
26	73029053	Bracket, Die Cast
27	73029047	Plug, Lift Check
28	76039070	Seal, O-Ring
29	73014616	Washer, Back-Up Outer
30	76039071	Seal, O-Ring, Outer
31	73034019	Washer, Back-Up, Inner
32	76039072	Seal, O-Ring
33	73014587	Spring, Lift Check
34	73014602	Poppet, Lift Check
35	76039226	O-Ring
36	76039228	O-Ring

NOTE: * Orifices used in special applications ONLY.

CONTROL ASSEMBLY
(Standard 6 Spool System)

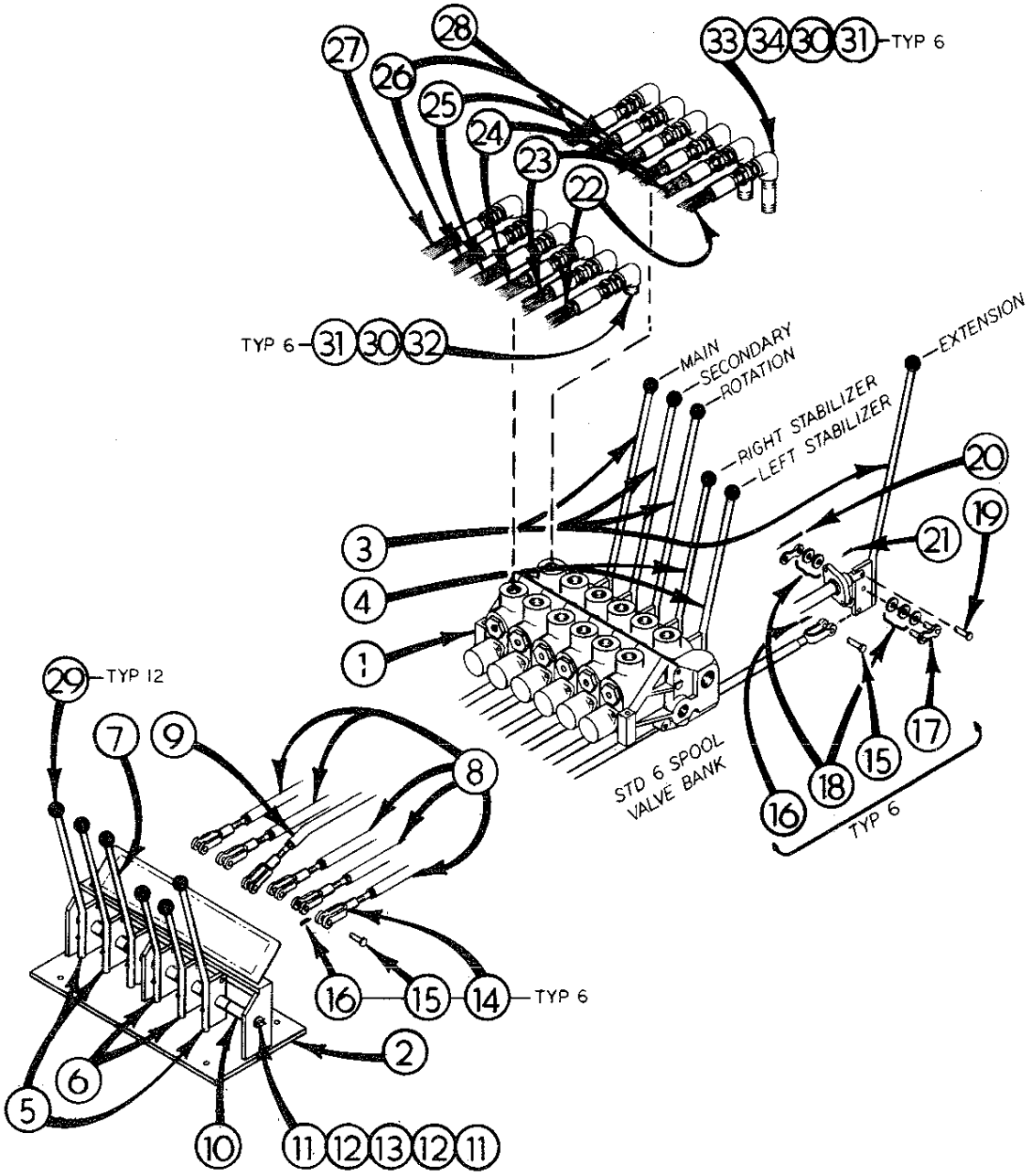


Fig. D-16

CONTROL ASSEMBLY
(Standard 6 Spool System)

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1	73073011	CP-4 Way 6 Spool Valve Bank	1
2	52070369	RH Control Frame, 7 Spool	1
3	52070168	Long Valve Lever	4
4	52070167	Short Valve Lever	2
5	52070163	Long Lever	3
6	52070162	Short Lever	2
7	52070166	Rotation Lever	1
8	52070165	Link	5
9	52070165-2	Bent Link	1
10	60010360	Sleeve	1
11	60010860	Rod	1
12	72063003	3/8" Washer	2
13	72066185	5/32" x 1" Cotter Pin	2
14	72058002	Clevis	6
15	72066338	Pin	12
16	72066168	3/32" x 3/4" Cotter Pin	12
17	72058003	Connecting Link	6
18	72063001	¼" Washer	30
19	72066337	¼" x 7/8" Pin	6
20	72066335	1/16" x 1½" Cotter Pin	6
21	72066336	5/64" x ½" Cotter Pin	6
22	60035177	3/8" Hose x 20' Lg.	2
23	60035175	3/8" Hose x 4' Lg.	2
24	60035175	3/8" Hose x 4' Lg.	2
25	60035086	3/8" Hose x 28" Lg.	2
26	60035155	3/8" Hose x 14' Lg.	2
27	60035176	3/8" x 9' Lg.	1
28	60035176	3/8" Hose x 9' Lg.	1
29	72039096	1" Black Ball Knob	12
30	72053642	3/8"M / 3/8"F Pipe Swivel	12
31	72531155	3/8" Hose Fitting	12
32	72531132	3/8"-90° St. Elbow	6
33	72053051	3/8" x 2" Nipple	6
34	72531100	3/8"-90° Elbow	6

BASE AND OUTRIGGER ASSEMBLY

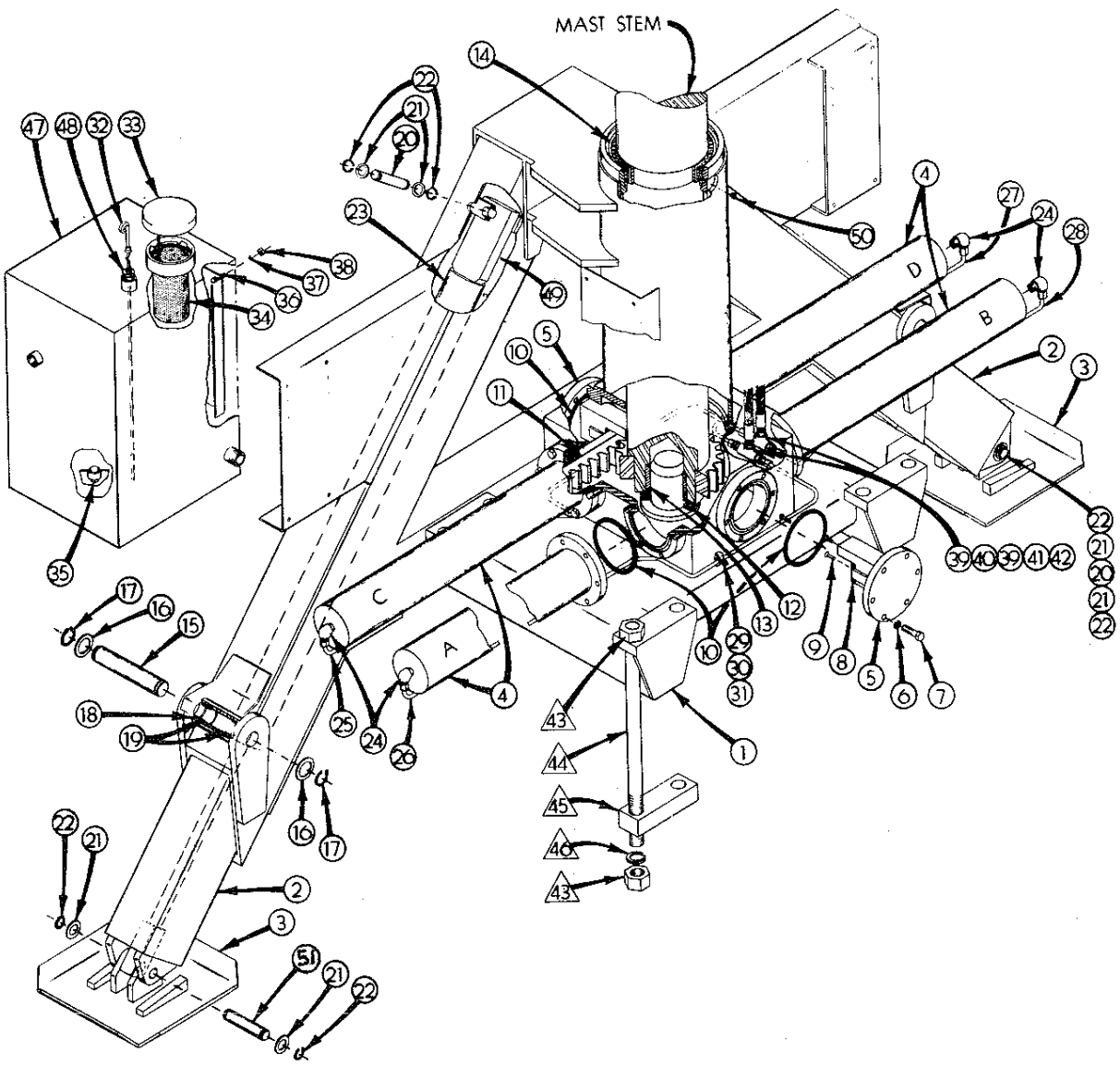


Fig. D-17

NOTE: In Fig. D-17 a reinforced rack is shown. This rack is employed on units manufactured after 6/15/76. This also required modification in rack support. For units with a rotation cylinder (IM Style) 3X335412 use parts as shown as listed for most recent models. For units with same cylinder manufactured between 6/75 and 6/76 use for item #11 P/N 51701049 and for item #5 52070225. Units manufactured prior to 6/75 employed an SD Style cylinder P/N 3XM12614. In these units use for item #11 P/N 51070187 and for item #5 P/N52070225.

NOTE: A modification to (IM Style) 3X335412 cylinder piston head has been made as of 7/76. See Fig. D-2 page 4-2 for information pertaining to this modification.

BASE AND OUTRIGGER ASSEMBLY

IMTCO P/N 41070195

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	52701323		Base Weldm't	1
2	52070004		Outrigger Leg	2
3	52070005		Outrigger Pad	2
4	3X335412		Rotation Cylinder	4
5	52701245		Rack Support	2
6	72063053		½" Lock Washer	36
7	72060092		½"-13 x 1¼ Cap Screw	36
8	60020020		Rub Bar	2
9	72060836		Screw	4
10	76039075		O-Ring	6
11	52701241		Rack Assy	2
12	70055001		Thrust Bearing	1
13	60020002		Bushing	Ref.
14	70055000		Bearing	Ref.
15	60010005		Pin, Roller	2
16	72063037		Machy Bushing	4
17	72066132		Retaining Ring	4
18	60010006		Roller	2
19	7BF81215		Bushing	4
20	60101874		Pin	2
21	72063034		Machy Bushing	8
22	72066125		Retaining Ring	8
23	3B218412		Outrigger Cylinder	2
24	72053515		3/8" Male Elbow	2
25	71014739		Hydraulic Tube	1
26	71014740		Hydraulic Tube	1
27	71014741		Hydraulic Tube	1
28	71014742		Hydraulic Tube	1
29	60102038		Clamp, Hydraulic Tube	4
30	72063049		¼" Lock Washer	4
31	72062000		¼"-20 Hex Nut	4
32	73073010		Dipstick Assy	1
33	73014671		Fill Cap	1
34	73024133		Fill Screen	1
35	73052001		Magnetic Plug	1
36	72060046		Bolt	4
37	72063051		Lock Washer	4
38	72062002		Nut	4
39	72053516		3/8" Male Connector	4
40	72053611		3/8" Tee	2
41	72053642		3/8"M / 3/8"F Pipe Swivel	2
42	72531152		3/8" Hose Fitting	2
43	72062046	*	1¼"-7 Hex Nut	16
44	71014054	*	Stud	8
45	60010665	*	Clamp Plate	4
46	72063060	*	1¼" Lock Washer	8
47	52070035		Reservoir	1
48	51070864		Adapter, Dipstick	1
49	73054004		Holding Valve	2
50	72531360		Zerk	2
51	60010470		Pin	2

NOTE: These parts are included in Installation Kit.

MAST ASSEMBLY, COMPLETE

MAIN BOOM ASSEMBLY, COMPLETE

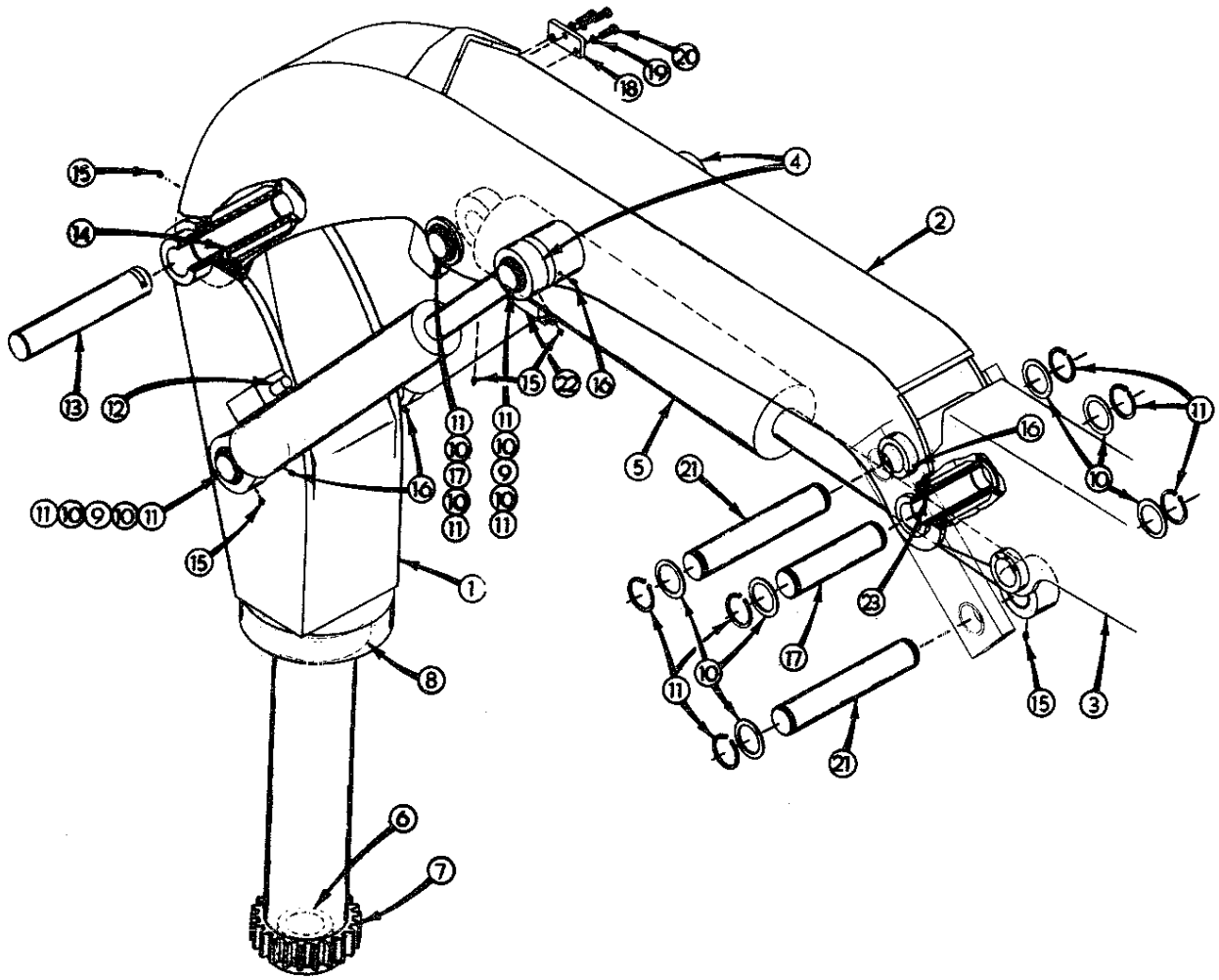


Fig. D-18

MAST ASSEMBLY, COMPLETE IMTCO P/N 41070071

MAIN BOOM ASSEMBLY, COMPLETE IMTCO P/N 41070321

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	52070078	*	Mast Weldm't	1
2	52070322		Main Boom Weldm't	1
3	52070237		Secondary Boom Weldm't	Ref.
4	3C152511		Main Cylinder	2
5	3C326413		Secondary Cylinder	1
6	60020002	*	Bushing	1
7	71056000	*	Gear	1
8	71055000	*	Bearing	1
9	60010114		Pin	2
10	72063043		Machy Bushing	12
11	72066106		Retaining Ring	12
12	73054242	**	Cartridge Valve	2
13	60010115		Pin	1
14	71024099		Bushing	1
15	72053508		Zerk	1
16	72060581		Set Screw	6
17	60010689		Pin	1
18	60010291		Lock Plate	1
19	72063053		½" Lock Washer	3
20	72060793		½"-13 x 1 Cap Screw Soc. Hd.	3
21	60010343		Pin, Outer Link	2
22	73054004		Holding Valve	1
23	71024111		Bushing, Sec. Boom Rot.	1

NOTE: * Purchase these parts assembled under P/N 51070078.
** Older models use (1) Metering Block, P/N 60010711 and (1) Holding Valve P/N 73054004.

See WARNING page 4-1.

SECONDARY BOOM ASSEMBLY, COMPLETE

STD. EXTENSION BOOM ASSEMBLY, COMPLETE

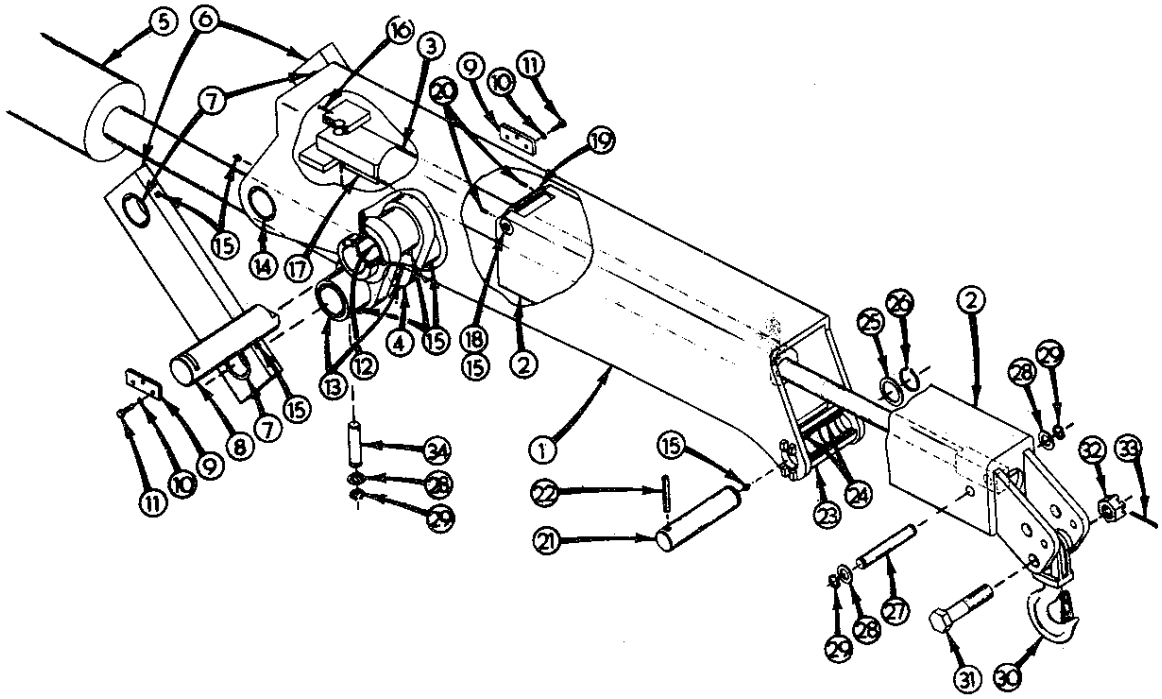


Fig. D-19

NOTE: See Fig. D-7, page 4-7 for cylinder, Item #3, when unit is equipped with a TH-10 option.

SECONDARY BOOM ASSEMBLY, COMPLETE IMTCO P/N 41070239

STD. EXTENSION BOOM ASSEMBLY, COMPLETE IMTCO P/N 41070640

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1	52070237	Secondary Boom Weldm't	1
2	52070645	Std. 16' Ext. Boom Weldm't	1
3	3B218412	Extension Cylinder	1
4	52070017	Inner Link Weldm't	1
5	3C326413	Secondary Cylinder	Ref.
6	60010014	Outer Link	2
7	71024098	Bushing	4
8	60010346	Pin, Inner Link to Boom	1
9	60010362	Lock Plate	2
10	72063051	Lock Washer	6
11	72060047	3/8"-16 x 1¼" Cap Screw	6
12	71024106	Bushing, Inner Link	1
13	71024105	Bushing, Inner Link	2
14	71024111	Bushing, Secondary Boom	1
15	72053508	Zerk	7
16	72066194	Cotter Pin	1
17	73054004	Holding Valve	1
18	60102208	Pin, Roller	1
19	60020087	Roller	1
20	72060858	Set Screw	2
21	60010688	Pin, Roller	1
22	72066317	Spring Pin	1
23	60010687	Roller	1
24	7BF82020	Bushing	2
25	72063038	Machy Bushing	1
26	72066136	Retaining Ring	1
27	60101874	Pin	1
28	72063034	Machy Bushing	3
29	72066125	Retaining Ring	3
30	71073016	Hook Assembly	1
31	72102663	Bolt	1
32	72062082	Castellated Nut	1
33	72066197	Cotter Pin	1
34	60101905	Pin	1

1119 EXTENSION BOOM ASSEMBLY, COMPLETE

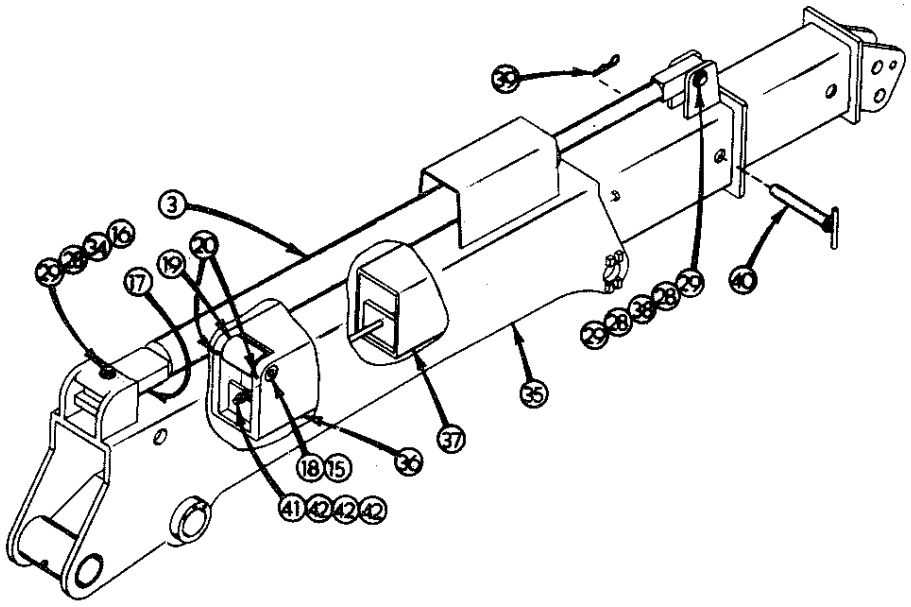


Fig. D-20

NOTE: To convert a Model 1116 crane into a Model 1119 crane, purchase the following parts:

1. One each of #15,16,18,19,34,36,37,38,39,40 and 41.
2. Two of #43.
3. Three each of 28,29 and 42.
4. One each of lower cylinder anchor assembly and boom support bracket.

It is necessary to weld the last two items onto the secondary boom; relocate the extension cylinder from inside to outside as illustrated, and install new booms.

1119 EXTENSION BOOM ASSEMBLY, COMPLETE

IMTCO P/N 41070638

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
3	3B218412	Extension Cylinder	Ref.
15	72053508	Zerk	1
16	72066194	Cotter Pin	1
17	73054004	Holding Valve	Ref.
18	60102208	Pin, Roller	1
19	60020087	Roller	1
20	72060858	Set Screw	2
28	72063034	Machy Bushing	3
29	72066125	Retaining Ring	3
34	60101905	Pin	1
35	51070661	Secondary Boom Assy.	1
36	52070641	Weldm't, 1st. Stage Ext. Boom	1
37	52070644	Weldm't, 19' Stinger	1
38	60101907	Pin	1
39	72066145	Hair Pin	1
40	52070635	Pin	1
41	60010265	Stud	1
42	72062004	Nut	3

1123 EXTENSION BOOM ASSEMBLY, COMPLETE

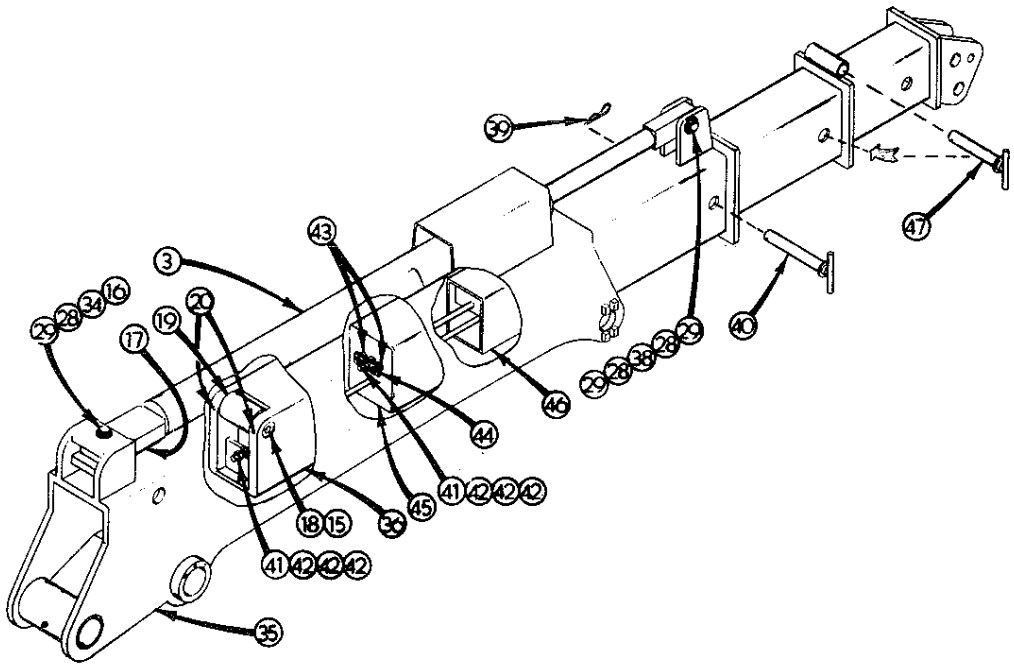


Fig. D-21

NOTE: To convert a Model 1119 crane into a Model 1123 crane, purchase the following parts:
1. One each of #39, 45, 46 and 47.
2. Two of #43.
3. Three of #42.

Remove Second Extension Boom and replace with the above listed parts.

To convert a Model 1116 crane into a Model 1123 crane, refer to page 4-26 for general information and purchase the following parts:
1. B/M page 4-29, items #28 thru #29.
2. One each of Lower Cylinder Anchor Assembly and Boom Support Bracket.

1123 EXTENSION BOOM ASSEMBLY, COMPLETE

IMTCO P/N 41070639

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
3	3B218412	Extension Cylinder	Ref.
15	72053508	Zerk	1
16	72066194	Cotter Pin	1
17	73054004	Holding Valve	Ref.
18	60102208	Pin, Roller	1
19	60020087	Roller	1
20	72060858	Set Screw	2
28	72063034	Machy Bushing	3
29	72066125	Retaining Ring	3
34	60101905	Pin	1
35	51070661	Secondary Boom Assy.	1
36	52070641	Weldm't, 1st. Stage Ext. Boom	1
38	60101907	Pin	1
39	72066145	Hair Pin	1
40	52070635	Pin	1
41	60010265	Stud	2
42	72062004	Nut	6
43	60010264	Spacer	2
44	60010263	Lock Plate	1
45	52070642	Weldm't, 2nd Stage Ext. Boom	1
46	52070643	Weldm't, 23' Stinger	1
47	52070634	Pin	1

1123 WINCH OPTION WITH TELESCOPING CYLINDER

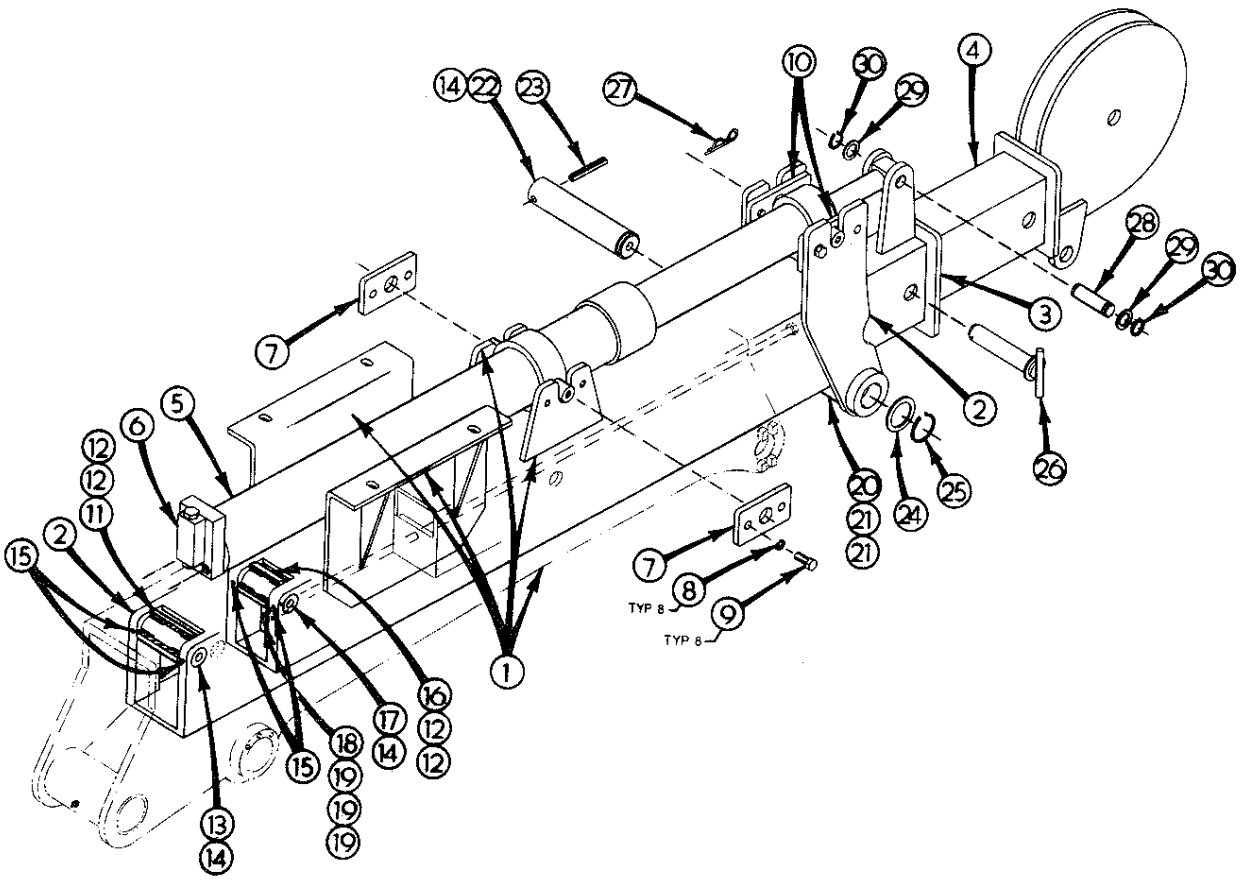


Fig. D-22

1123 WINCH OPTION WITH TELESCOPING CYLINDER

OPTIONAL

IMTCO P/N 31701359

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1	51701171	Secondary Boom Assy	1
2	52701165	Weldm't, 1st Stage Ext. Boom	1
3	52701166	Weldm't, 2nd Stage Ext. Boom	1
4	52701167	Weldm't, Stinger	1
5	3K348512	Telescoping Hydraulic Cylinder	1
6	73054004	Holding Valve	1
7	60102589	Lock Plate	2
8	72063053	½" Lock Washer	8
9	72060091	½"-13 x 1" Cap Screw	8
10	60102573	Lock Plate	2
11	60102673	Roller, 1st Stage Extension	1
12	7BF81215	Bushing	4
13	60102570	Pin, 1st Stage Ext. Roller	1
14	72053508	Zerk	3
15	72060858	Set Screw	4
16	60102580	Roller, 2nd Stage Extension	1
17	60102579	Pin, 2nd Stage Extension Roller	1
18	60102280	Stud	1
19	72060091	½"-13 Hex Nut	3
20	60102153	Supt. Roller, 1st Stage Ext. Boom	1
21	7BF82020	Bushing	2
22	60102571	Pin, Supt. Roller	1
23	72066317	Spring Pin	1
24	72063039	Machy Bushing	1
25	72066136	Retaining Ring	1
26	52070634	Pin	1
27	72066145	Hair Pin	1
28	60101841	Pin, Extension Cylinder	1
29	72063034	Machy Bushing	2
30	72066125	Retaining Ring	2

REMOTE CONTROL SYSTEM

OPTIONAL

IMTCO P/N 30070675

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1		Base	Ref.
2		Mast	Ref.
3	60102664	Formed Channel	1
4	60102665	Shield	1
5	72060023	Bolt, 5/16"-18 x 3/4"	4
6	72063050	Lock Washer, 5/16"	4
7	72062001	Hex Nut, 5/16"-18	4
8	52070681	Electrical Box	1
9	72073161	Waterman 4 Spool Valve Bank	1
10	72531829	1/2"-3/8" Reducer Bushing	10
11	72531132	3/8"-90° St. Elbow	11
12	72053052	3/8" x 2½" Nipple	4
13	72053656	3/8"F / 3/8"F Pipe Swivel	3
14	72053723	3/8" Hex Nipple	1
15	72053642	3/8"M / 3/8"F Pipe Swivel	5
16	72054139	3/8" NPT F.Color-Flo Valve	2
17	72531133	½"-90° St. Elbow	4
18	72053516	3/8" Male Connector	1
19	72053515	3/8" Male Elbow	1
20	72053725	1/2" Hex Nipple	1
21	72053612	1/2" Tee	1
22	72531100	3/8"-90° Elbow	AR
23	72531152	3/8" Hose Fitting	8
24	72531185	1/2" Swivel Hose Fitting	2
25	60102878	Tube	1
26	60101424	Cover	1
27	77044018	1/2" Strain Relief Connector	1
28	77044017	1" Strain Relief Connector	2
29	77044040	Receptacle W/Cap	1
30	77044039	#14-3 Wire	AR
31	77044035	16 Wire Cable 10' Lg.	1
32	77044041	Male Plug	1
33	77044042	16 Wire Cable 35' Lg.	1
34	72053306	1" Coupling	1
35	52070674	Remote Control Handle	1
36	60101416	Handle Cover	1
37	72061003	6 x ½" Self Tapping Screw	10
38	77041004	Toggle Switch, Single Throw	1
39	77041005	Momentary Contact Switch	1
40	77041006	Toggle Switch, Double Throw	4
41	60035179	½" Hose x 40" Lg.	1
42	60035178	½" Hose x 32" Lg.	1
43	60035176	3/8" Hose x 9' Lg.	1
44	60035176	3/8" Hose x 9' Lg.	1
45	60035155	3/8" Hose x 14' Lg.	1
46	60035155	3/8" Hose x 14' Lg.	1
47	60035086	3/8" Hose x 28" Lg.	1

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
48	60035086	3/8" Hose x 28" Lg.	1
49	60035177	3/8" Hose x 20' Lg.	1
50	60035177	3/8" Hose x 20' Lg.	1
51	72060063	[illegible]-14 x 1¼" Cap Screw	4
52	72063052	[illegible]16" Lock Washer	4
53	7206200[illegible]	[illegible]16 -14 Hex Nut	4

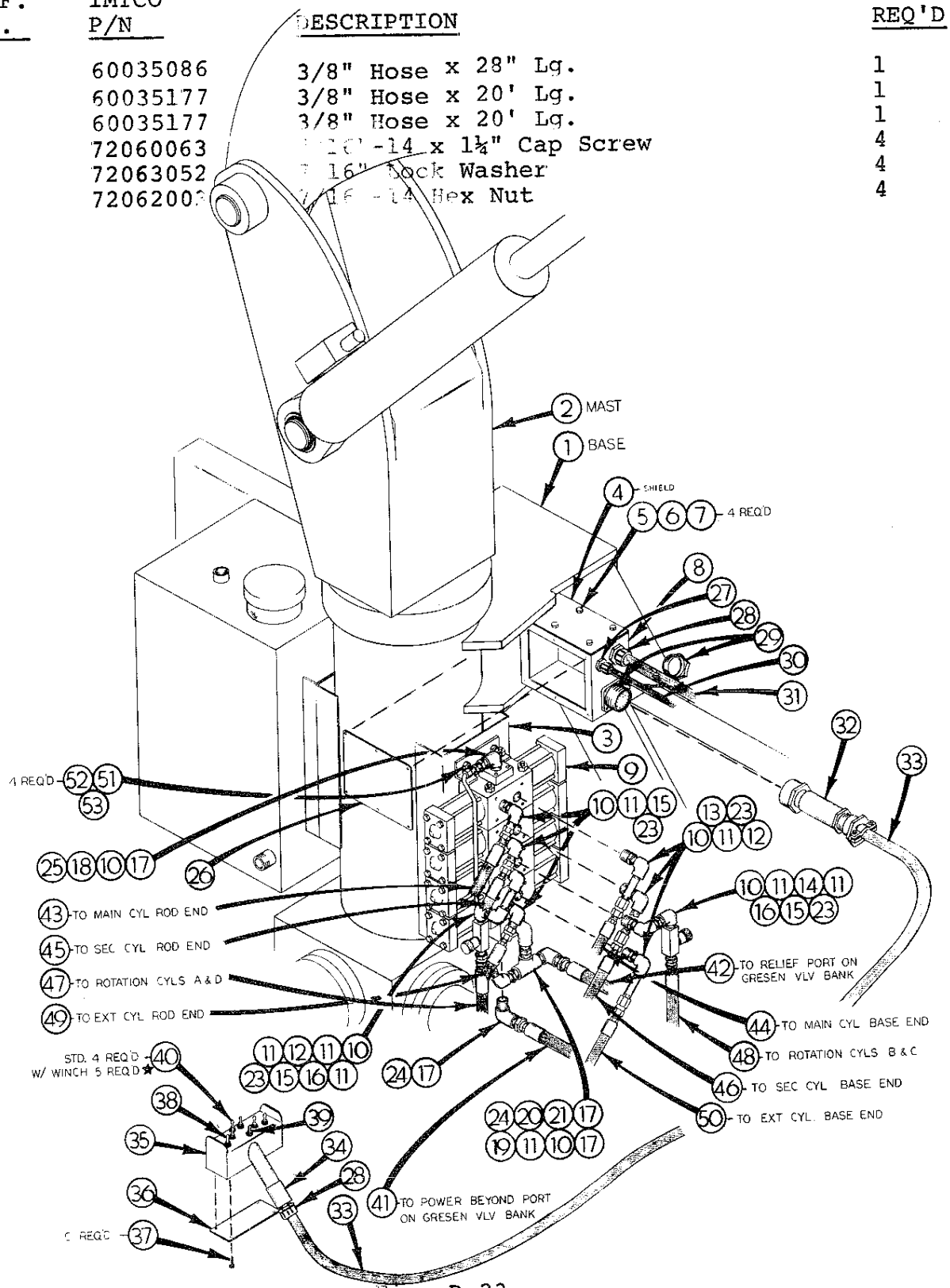


Fig. D-23

10,000 LB WINCH INSTALLATION

IMTCO P/N 93070856

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	51701324	*	Secondary Boom Assy.	1
2	52701325		Weldm't, Extension Boom	1
3	52701102		Weldm't, Winch Mtg.	1
4	71073080		10,000 lb. Winch	1
5	60010118		Hose Clamp	1
6	72063051		3/8" Lock Washer	1
7	72062002		3/8"-16 Hex Nut	1
8	72053750		Adaptor	2
9	72531833		3/4"-1/2" Reducer Bushing	4
10	72053522		½"-45° St. Elbow	2
11	72531185		½" Hose Fitting	4
12	72531133		½"-90° St. Elbow	1
13	60102595		½" Cable 65' Lg.	1
14	60101842		Spacer	1
15	72060071		7/16"-14 x 3½" Cap Screw	1
16	72063052		7/16" Lock Washer	1
17	72062003		7/16"-14 Hex Nut	1
18	60101840		Sheave	1
19	70055023		Bearing	1
20	70055030		Brg. Inner Sleeve	1
21	60102596		Spacer Ring	2
22	60101841		Pin	1
23	72053508		Zerk	1
24	72063035		Machy Washer	2
25	72066129		Retaining Ring	2
26	52070857		Pin, Crane Hook	1
27	72066145		3/16" Hair Pin	1
28	60101839		Hook Link	1
29	71073017		Swivel Hook, 5 Ton	1
30	72058074		½" Cable Clamp	2
31	60101503		Haul Down Weight	1
32	52070851		Pin	1
33	72063034		Machy Bushing, 1"	1
34	72066194		Cotter Pin, 3/16" x 1½"	1
35	72058017		Wedge Socket Complete	1
36	71073016		Swivel Hook W/Latch	1
37	60035174		½" Hose 23'-6" Lg.	2
38	70039169		RH Decal	1
39	70039168		LH Decal	1
40	52070163		RH Lg. Control Lever	1
41	71039096		1" Black Ball Knob	2
42	52070232		Control Link	1
43	71058002		Clevis	1
44	72066338		Clevis Pin	2
45	72066178		Cotter Pin	2
46	52070168		Long Valve Lever	1
47	72063001		¼" Washer	5
48	72058003		Connecting Link	Ref.
49	72066337		Pin	Ref.

10,000 LB. WINCH INSTALLATION Cont.

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
50	72066336	Cotter Pin	Ref.
51	73054245	Tandem Valve Assy	1
52	72053119	½" x 2" Nipple	1
53	76039228	O-Ring (Large)	2
54	76039226	O-Ring (Small)	2
55	73014603	Inlet Cover	Ref.
56	73014596	Stud for 7 Spool Valve Bank	3
57	72062002	Nut	Ref.
58	72531101	½"-90° Elbow	1
	60060848	5/8"-11 x 2" Cap Screw	4
	60063055	5/8" Lock Washer	8
	60062006	5/8"-11 Nut	8
	72060149	5/8"-11 x 1½" Cap Screw	4

NOTE: * Std. Secondary Boom #52070237 with 2 m[illegible] bolts. ** 70997 added.

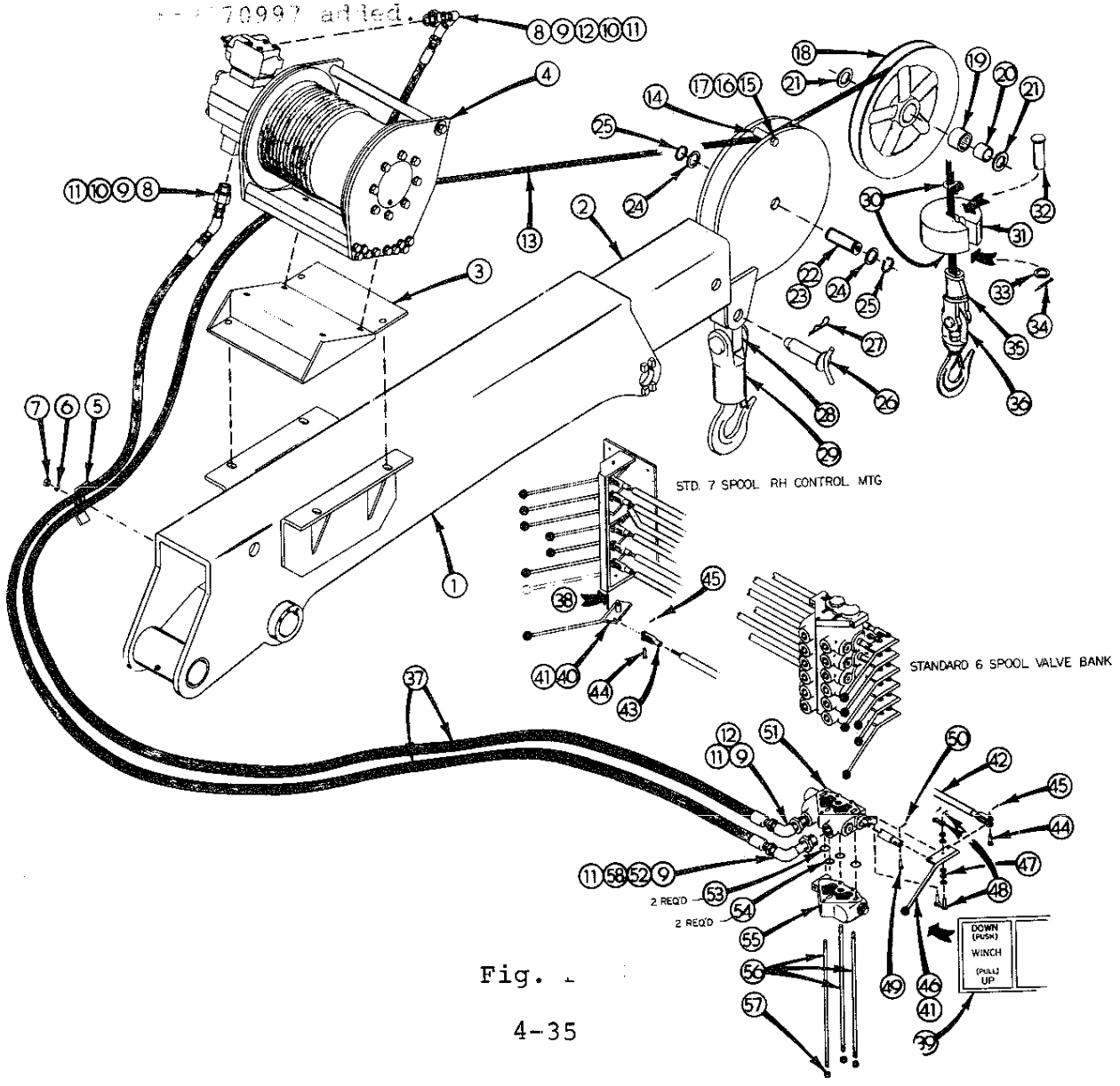


Fig. -

8,000 LB. WINCH INSTALLATION ASSEMBLY

IMTCO P/N 93070587

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	51701324	*	Secondary Boom Assy	1
5	60010118		Hose Clamp	1
6	72063051		3/8" Lock Washer	1
7	72062002		3/8"-16 Hex Nut	1
9	72531833		3/4"-1/2" Reducer Bushing	4
11	72531185		½" Hose Fitting	4
12	72531133		½"-90° St. Elbow	1
13	60102595		½" Cable 65' Lg.	1
14	60101842		Spacer	1
15	72060071		7/16"-14 x 3½" Cap Screw	1
16	72063052		7/16" Lock Washer	1
17	72062003		7/16"-14 Hex Nut	1
18	60101840		Sheave	1
19	70055023		Bearing	1
20	70055030		Brg. Inner Sleeve	1
21	60102596		Spacer Ring	2
22	60101841		Pin	1
23	72053508		Zerk	1
24	72063035		Machy Washer	2
25	72066129		Retaining Ring	2
26	52070857		Pin, Crane Hook	1
27	72066145		3/16" Hair Pin	1
28	60101839		Hook Link	1
29	71073017		Swivel Hook, 5 Ton	1
30	72058074		½" Cable Clamp	2
31	60101503		Haul Down Weight	1
32	52070851		Pin	1
33	72063034		Machy Bushing, 1"	1
34	72066194		Cotter Pin, 3/16" x 1½"	1
35	72058017		Wedge Socket Complete	1
36	71073016		Swivel Hook W/Latch	1
37	60035174		½" Hose 23'-6" Lg.	2
38	70039169		RH Decal	1
39	70039168		LH Decal	1
40	52070163		RH Lg. Control Lever	1
41	71039096		1" Black Ball Knob	2
42	52070232		Control Link	1
43	71058002		Clevis	1
44	72066338		Clevis Pin	2
45	72066178		Cotter Pin	2
46	52070168		Long Valve Lever	1
47	72063001		¼" Washer	5
48	72058003		Connecting Link	Ref.
49	72066337		Pin	Ref.
50	72066336		Cotter Pin	Ref.
51	73054246		Tandem Valve Assy.	1
52	72053119		½" x 2" Nipple	1
53	76039228		O-Ring (Large)	2
54	76039226		O-Ring (Small)	2

8,000 LB. WINCH INSTALLATION ASSEMBLY Cont.

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
55	73014603	Inlet Cover	Ref.
56	73014596	Stud for 7 Spool Valve Bank	3
57	72062002	Nut	Ref.
58	72531101	½"-90° Elbow	1
59	52070589	Weldm't, Winch Mtg.	1
60	71073028	8,000 Lb. Winch	1
61	52070588	Winch Drum	1
62	72060596	Set Screw	1
63	52701325	Weldm't, Extension Boom	1
64	72053744	Adaptor	2
65	70055006	Bearing	1
66	72053522	½"-45° St. Elbow	2

NOTE: * Std. Secondary Boom #52070237 w/ 2 mtg. brkts #52070997 added.

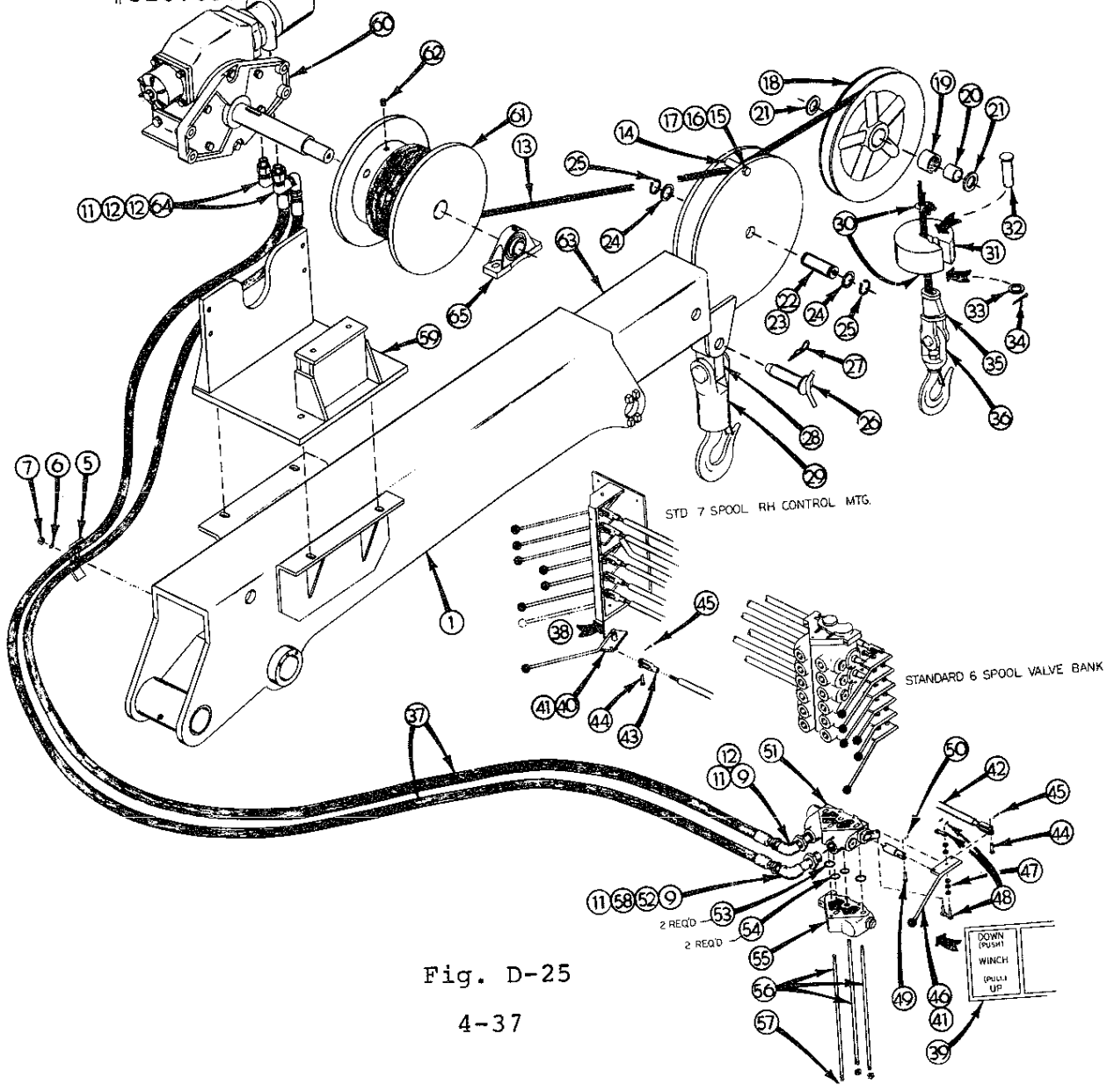


Fig. D-25

8000 LB. WINCH ASSEMBLY

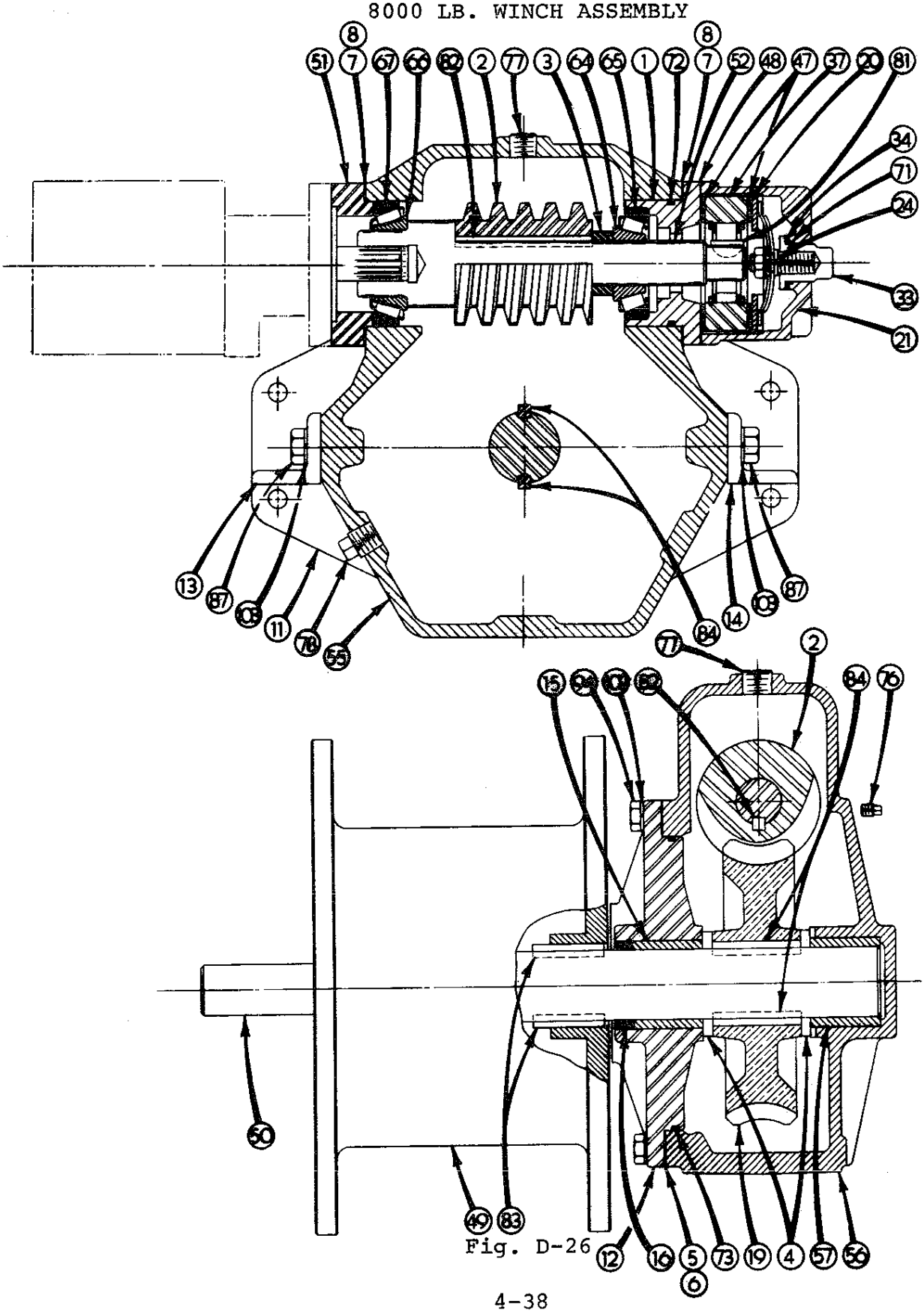


Fig. D-26

8000 LB. WINCH ASSEMBLY

IMTCO P/N 71073135

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1	70014828	Brg. Container	1
2	70014829	Worm, Left	1
3	70014830	Spacer, Worm	1
4	70014831	Ring, Thrust	2
5	76039274	Gasket, Cover - 1/64" Thk.	AR
6	76039275	Gasket, Cover - 1/32" Thk.	AR
7	76039276	Gasket, Brg. Container - 1/64" Thk.	AR
8	76039277	Gasket, Brg. Container - 1/ 32" Thk.	AR
11	70014832	Cover Assembly	1
19	70024160	Gear, Worm	1
20	70014833	Plate, Pressure	1
21	70014834	Hsg., Safety Brk.	1
24	70014835	Spring Assembly	1
33	70014836	Nut, Worm Brk. Adj.	1
34	76039293	Gasket, Hard Rubber	1
37	70014837	Rotor Assembly	1
47	70039296	Disc, Friction	2
48	76039294	Gasket, SafetyBrk. Hsg. - 1/32" Thk.	1
49	52070588	Drum, Cable	1
50	70014838	Shaft, Cable Drum	1
51	70014839	Brg. Container & Mtr. Adapter	1
52	70014840	Shaft, Worm	1
55	80014941	Housing Assembly	1
61	76039295	Gasket	1
62	73051021	Motor, Hydraulic	1
64	70055036	Cone, Brg. (Timken #43125)	1
65	70055037	Cup, Brg. (Timken #43312)	1
66	70055038	Cone, Brg. (Timken #M804049)	1
67	70055039	Cup, Brg. (Timken #M804010)	1
71	76039271	O-Ring	1
72	76039272	O-Ring	2
73	76039273	O-Ring	1
76	72053411	Plug, Pipe	1
77	72053394	Plug, Pipe	1
78	60053414	Plug, Pipe	1
81	72066283	Key	1
82	70014842	Key, Worm	1
83	70014843	Key, Cable Drum	2
84	70014844	Key, Worm Gear	2
87	72060148	Cap Screw	4
90	72060065	Cap Screw	8
91	72060093	Cap Screw	2

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
94	72060063	Cap Screw	6
100	72063050	Lock Washer	8
101	72063052	Lock Washer	8
102	72063053	Lock Washer	10
103	72063055	Lock Washer	4

NEWEST

OUTRIGGER ASSEMBLY

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
120	52701037	Weldm't-Base & Frame	1
121	52701024	Outrigger Leg	2
122	52701025	Outrigger Pad	2
123	3C263511	Outrigger Cylinder	2
124	60102226	Pin, OR Pad	2
125	72066317	Spring Pin	2
126	72063040	Washer	2
127	72066103	Retainer Ring	2
128	60010227	Pin, OR Frame	4

NOTE: This outrigger assembly used after November, 1975.

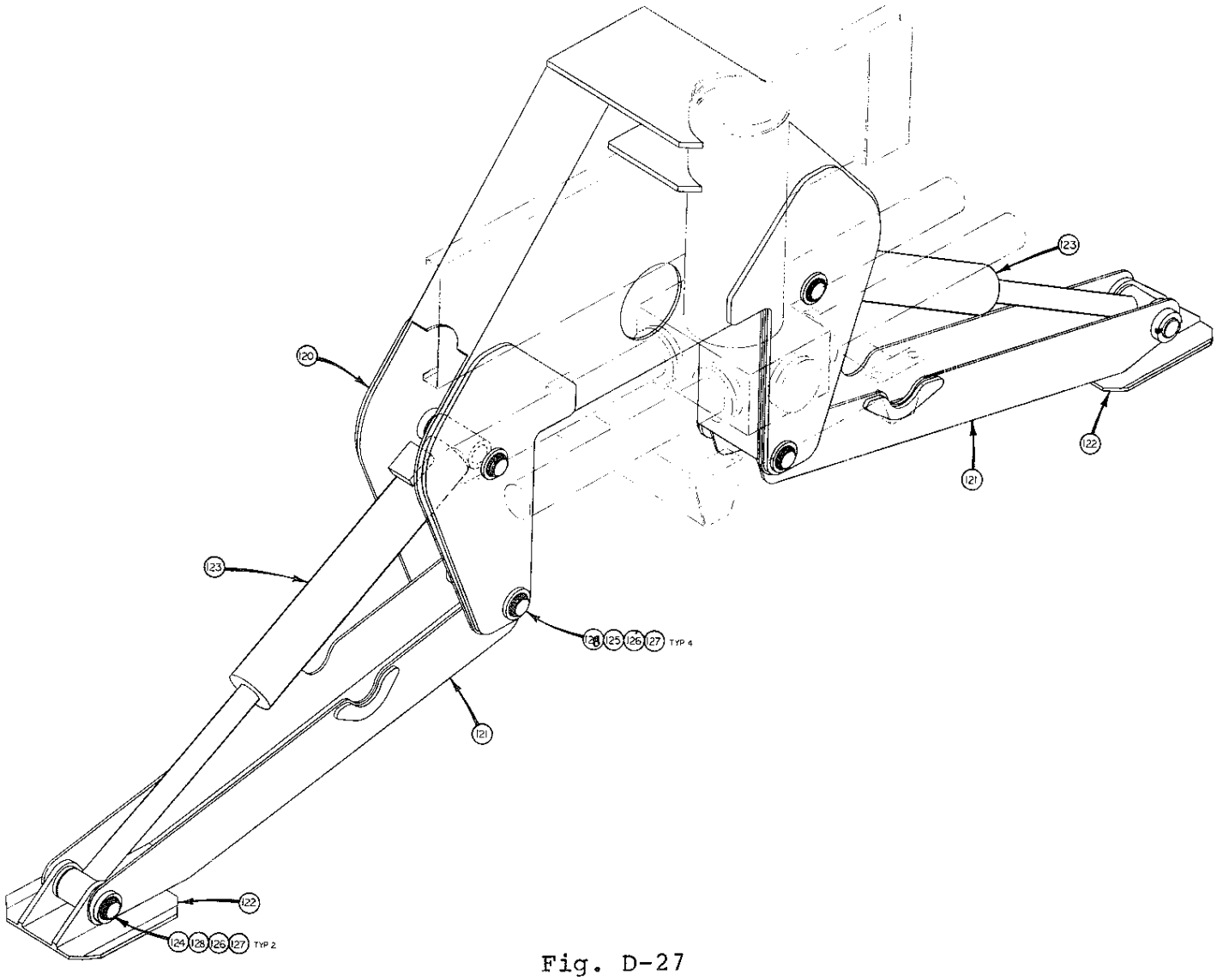


Fig. D-27

STANDARD HYDRAULIC SCHEMATIC

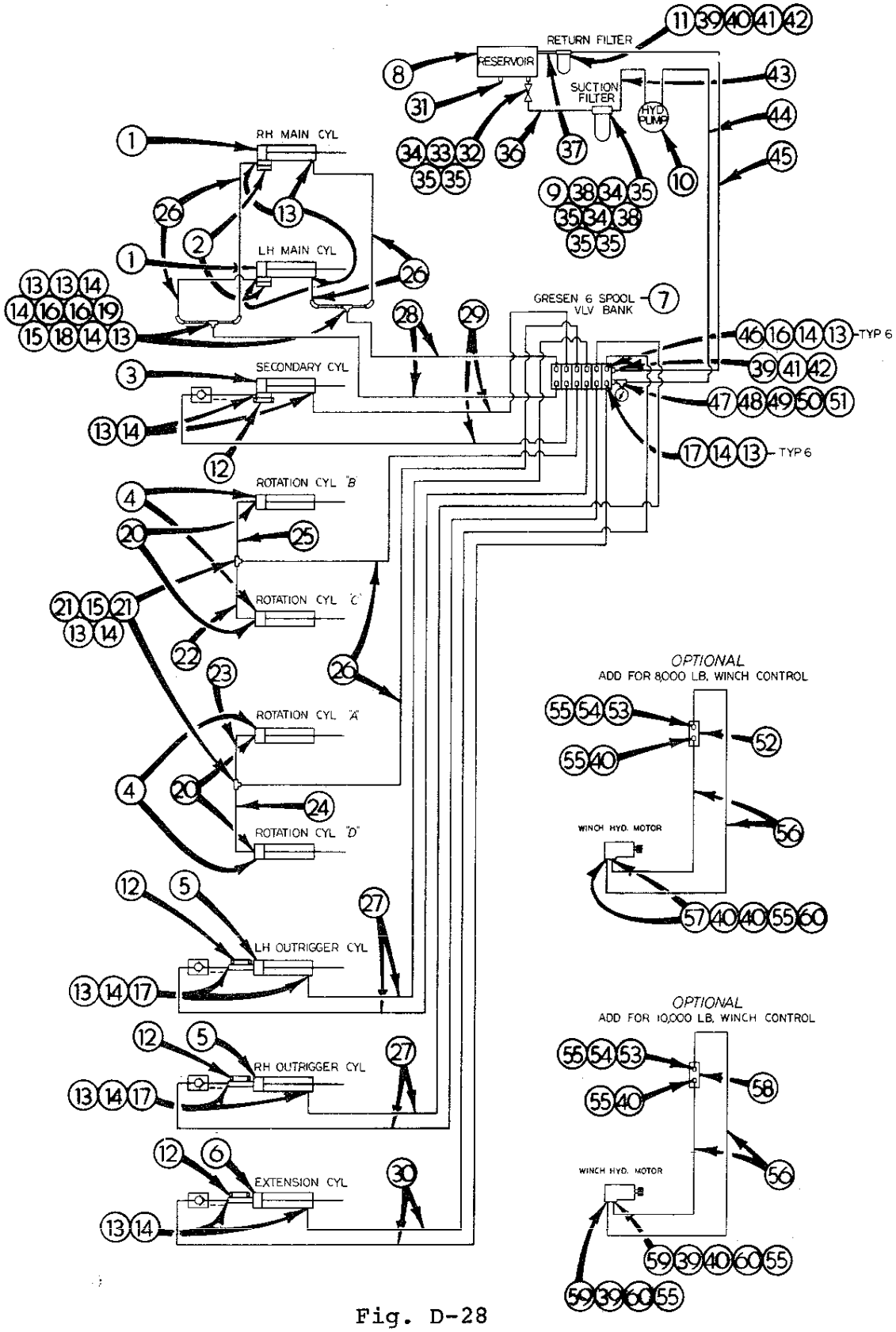


Fig. D-28

STANDARD HYDRAULIC SCHEMATIC

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	3C325413		Main Cylinder w/Metering Block	2 (See
	3C152512		Main Cylinder w/Cartridge Vlv.(New)	Cyl. Dwgs)
2	60010711		Metering Block	2 (See
	73054242		Cartridge Valve (New)	Cyl. Dwgs)
3	3C326413		Secondary Cylinder	1
4	3X335412		Rotation Cylinder	4
5	3B218412		Outrigger Cylinder	2
6	3B218412		Extension Cylinder	1
7	73073011		Gresen CP 4-Way 6 Spool Vlv. Bank	1
8	52070035		Reservoir	1
9	73052007	*	Suction Filter	1
10	730XXXXX	* **	Hydraulic Pump	1
11	73052000		Return Filter	1
12	73054004		Holding Valve (Use 5 w/3C325413 cyl)	4
13	72531152		3/8" Hose Fitting	32
14	72053642		3/8" M / 3/8"F Pipe Swivel	28
15	72053611		3/8" Tee	4
16	72531100		3/8" - 90° Elbow	10
17	72531132		3/8"-90° St. Elbow	10
18	72053057		3/8" x 5" Nipple	2
19	72053058		3/8" x 7" Nipple	2
20	72053515		3/8" Male Elbow	4
21	72053516		3/8" Male Connector	4
22	71014739		Hydraulic Tube	1
23	71014740		Hydraulic Tube	1
24	71014741		Hydraulic Tube	1
25	71014742		Hydraulic Tube	1
26	60035086		3/8" Hose x 28" Lg.	6
27	60035175		3/8" Hose x 4' Lg.	4
28	60035176		3/8" Hose x 9' Lg.	2
29	60035155		3/8" Hose x 14' Lg.	2
30	60035177		3/8" Hose x 20' Lg.	2
31	73052001		3/4" NPT Magnetic Plug	1
32	72053185	*	1" Close Nipple	1
33	73054001	*	1" Gate Valve	1
34	72531549	*	1" Barbed Nipple	3
35	72066001	*	#24 Hose Clamp	6
36	60039188	*	1" x AR Lg. Hose	1
37	72053141		3/4" Close Nipple	1
38	72531837	*	1¼"-1" Reducer Bushing	2
39	72531833		3/4"-1/2" Reducer Bushing	2
40	72531133		½" - 90° St. Elbow	1
41	72053457		½" Barbed Nipple	2
42	72066000		#12 Hose Clamp	2
43	60039188	*	1" X AR Lg. Hose	1
44	60039101	*	½" x AR Lg. Hose	1
45	60039101	*	½" x AR Lg. Hose	1
46	72053051		3/8" x 2" Nipple	6

STANDARD HYDRAULIC SCHEMATIC Cont.

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
47	72053725	½" Hex Nipple	1
48	72053612	½" Tee	1
49	72531830	½" - ¼" Reducer Bushing	1
50	72053533	¼" - 45° St. Elbow	1
51	73054003	Pressure Gauge	1

NOTE: * These parts are in Installation Kit.
** See Pump requirements on page 1-8.

ADD FOR 8000 LB. WINCH OPTION

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
40	72531133	½"-90° St. Elbow	5
52	73054246	Gresen CP 4-Way Tandem Vlv. Section	1
53	72053119	½" x 2" Nipple	1
54	72531101	½"-90° Elbow	1
55	72531185	½" Swivel Hose Fitting	4
56	60035174	½" Hose x 23'-6" Lg.	2
57	72053744	Adapter	2
60	72053522	½" - 45° St. Elbow	2

ADD FOR 10,000 LB. WINCH OPTION

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
39	72531833	3/4" - 1/2" Reducer Bushing	2
40	72531133	½"-90° St. Elbow	2
53	72053119	½" x 2" Nipple	1
54	72531101	½"-90° Elbow	1
55	72531185	½" Swivel Hose Fitting	4
56	60035174	½" Hose x 23'-6" Lg.	2
58	73054245	Gresen 3-Way Free Flow Tandem Valve Section	1
59	72053750	Adapter	2
60	72053522	½" - 45° St. Elbow	1

HYDRAULIC SCHEMATIC WITH REMOTE CONTROL

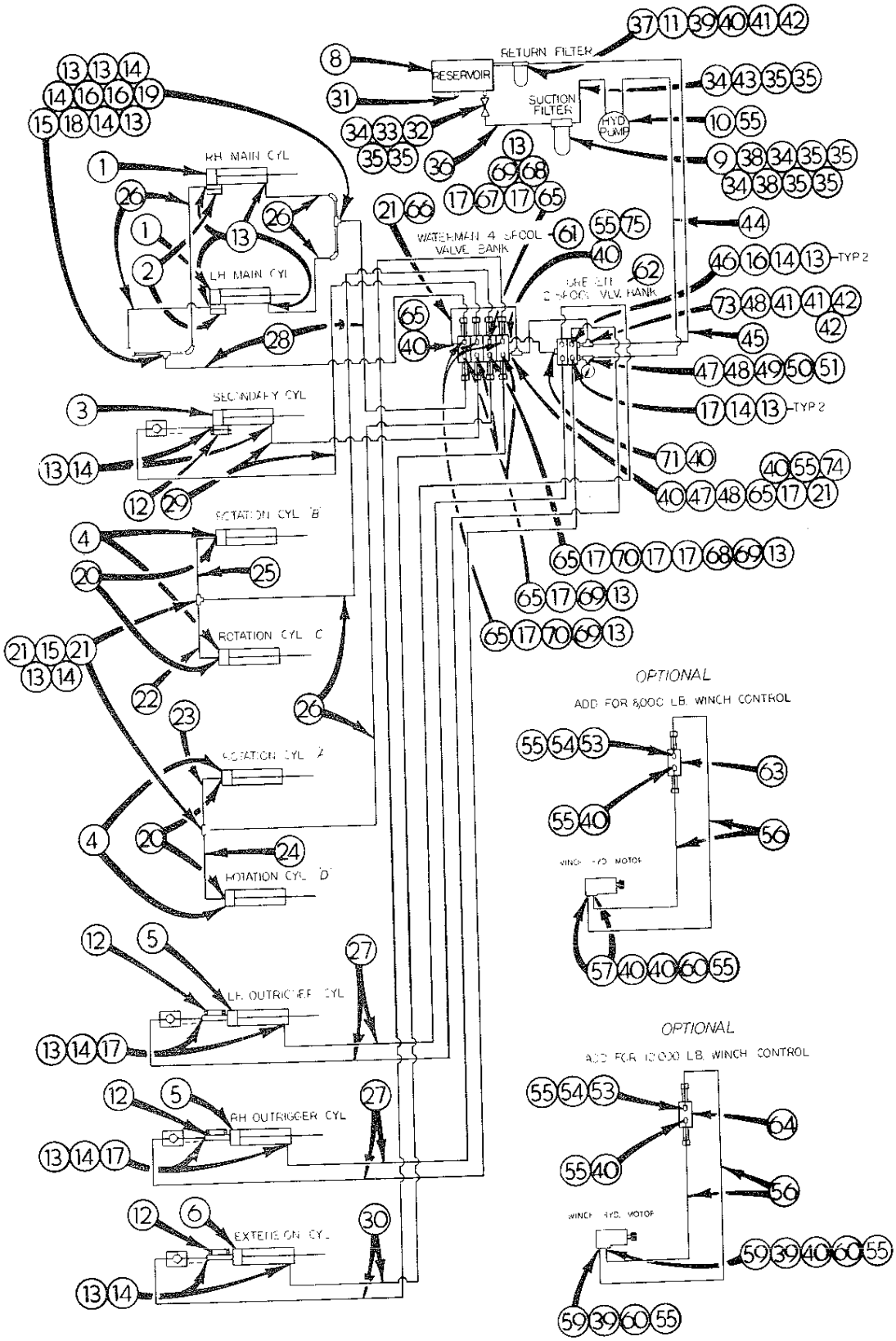


Fig. D-29

HYDRAULIC SCHEMATIC WITH REMOTE CONTROL

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	3C325413		Main Cylinder w/Metering Block	2 (See
	3C152512		Main Cylinder w/Cartridge Vlv.(New)	Cyl. Dwgs)
2	60010711		Metering Block	2 (See
	73054242		Cartridge Valve (New)	Cyl. Dwgs)
3	3C326413		Secondary Cylinder	1
4	3X335412		Rotation Cylinder	4
5	3B218412		Outrigger Cylinder	2
6	3B218412		Extension Cylinder	1
8	52070035		Reservoir	1
9	73052007	*	Suction Filter	1
10	730XXXXX	* **	Hydraulic Pump	1
11	73052000		Return Filter	1
12	73054004		Holding Valve	4
13	72531152		3/8" Hose Fitting	32
14	72053642		3/8"M / 3/8"F Pipe Swivel	20
15	72053611		3/8" Tee	4
16	72531100		3/8" - 90° Elbow	6
17	72531132		3/8" - 90° St. Elbow	18
18	72053057		3/8" x 5" Nipple	2
19	72053058		3/8" x 7" Nipple	2
20	72053515		3/8" Male Elbow	4
21	72053516		3/8" Male Connector	4
22	71014739		Hydraulic Tube	1
23	71014740		Hydraulic Tube	1
24	71014741		Hydraulic Tube	1
25	71014742		Hydraulic Tube	1
26	60035086		3/8" Hose x 28" Lg.	6
27	60035175		3/8" Hose x 4' Lg.	2
28	60035176		3/8" Hose x 9' Lg.	2
29	60035155		3/8" Hose x 14' Lg.	2
30	60035177		3/8" Hose x 20' Lg.	2
31	73052001		3/4" NPT Magnetic Plug	1
32	72053185	*	1" Close Nipple	1
33	73054001	*	1" Gate Valve	1
34	72531549	*	1" Barbed Nipple	3
35	72066001	*	#24 Hose Clamp	6
36	60039188	*	1" x AR Lg. Hose	1
37	72053141		3/4" Close Nipple	1
38	72531837	*	1¼" - 1" Reducer Bushing	2
39	72531833		3/4" - 1/2" Reducer Bushing	1
40	72531133		1/2"-90° St. Elbow	5
41	72053457		½" Barbed Nipple	2
42	72066000		#12 Hose Clamp	2
43	60039188	*	1" x AR Lg. Hose	1
44	60039101	*	½" x AR Lg. Hose	1
45	60039101	*	½" x AR Lg. Hose	1
46	72053051		3/8" x 2 Nipple	2
47	72053725		½" Hex Nipple	2

HYDRAULIC SCHEMATIC WITH REMOTE CONTROL

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
48	72053612	½" Tee	3
49	72531830	½" - ¼" Reducer Bushing	1
50	72053533	¼"-45° St. Elbow	1
51	73054003	Pressure Gauge	1
55	72531185	½" Swivel Hose Fitting	3
61	73073160	4 Spool Waterman Valve Bank	1
62	73073034	CP 4-Way 2 Spool Gresen Vlv Bank	1
65	72531829	½" - 3/8" Reducer Bushing	10
66	60102934 (1)	Cross Over Tube	1
67	72053723	3/8" Hex Nipple	1
68	73054002	3/8" Color Flow Valve	2
69	72053656	3/8"F / 3/8" F Pipe Swivel	8
70	72053052	3/8" x 2½" Nipple	4
71	73073023	Power Beyond Adapter	1
73	72533726	3/4" x 1/2" Hex Nipple	1
74	60035178	½" Hose x 32" Lg.	1
75	60035179	½" Hose x 40" Lg.	1

NOTE: * These parts are in Installation Kit.
** See Pump Requirements on Page 1-8.
(1) If fifth Waterman spool is added, use #60102935 cross over tube.

ADD FOR 8000 LB. WINCH OPTION

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
40	72531133	½" - 90° St. Elbow	5
53	72053119	½" x 2" Nipple	1
54	72531101	½" - 90° Elbow	1
55	72531185	½" Swivel Hose Fitting	4
56	60035174	½" Hose x 23'-6" Lg.	2
57	72053744	Adapter	2
60	72053522	½" - 45° St. Elbow	2
63	73073105	4-Way Waterman Tandem Valve	1

NOTE: See Note(1) following Hydraulic Schematic with Remote Control.

ADD FOR 10,000 LB. WINCH OPTION

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
39	72531833	3/4" - 1/2" Reducer Bushing	2
40	72531133	½"-90° St. Elbow	2
53	72053119	½" x 2" Nipple	1
54	72531101	½"-90° Elbow	1
55	72531185	½" Swivel Hose Fitting	4
56	60035174	½" Hose x 23'-6" Lg.	2
59	72053750	Adapter	2
60	72053522	½"-45° St. Elbow	2
64	73073162	3-Way Free Flow Waterman Tandem Vlv.	1

NOTE: See Note (1) following Hydraulic Schematic with Remote Control.

HYDRAULIC SCHEMATIC WITH MANUAL AND REMOTE CONTROL

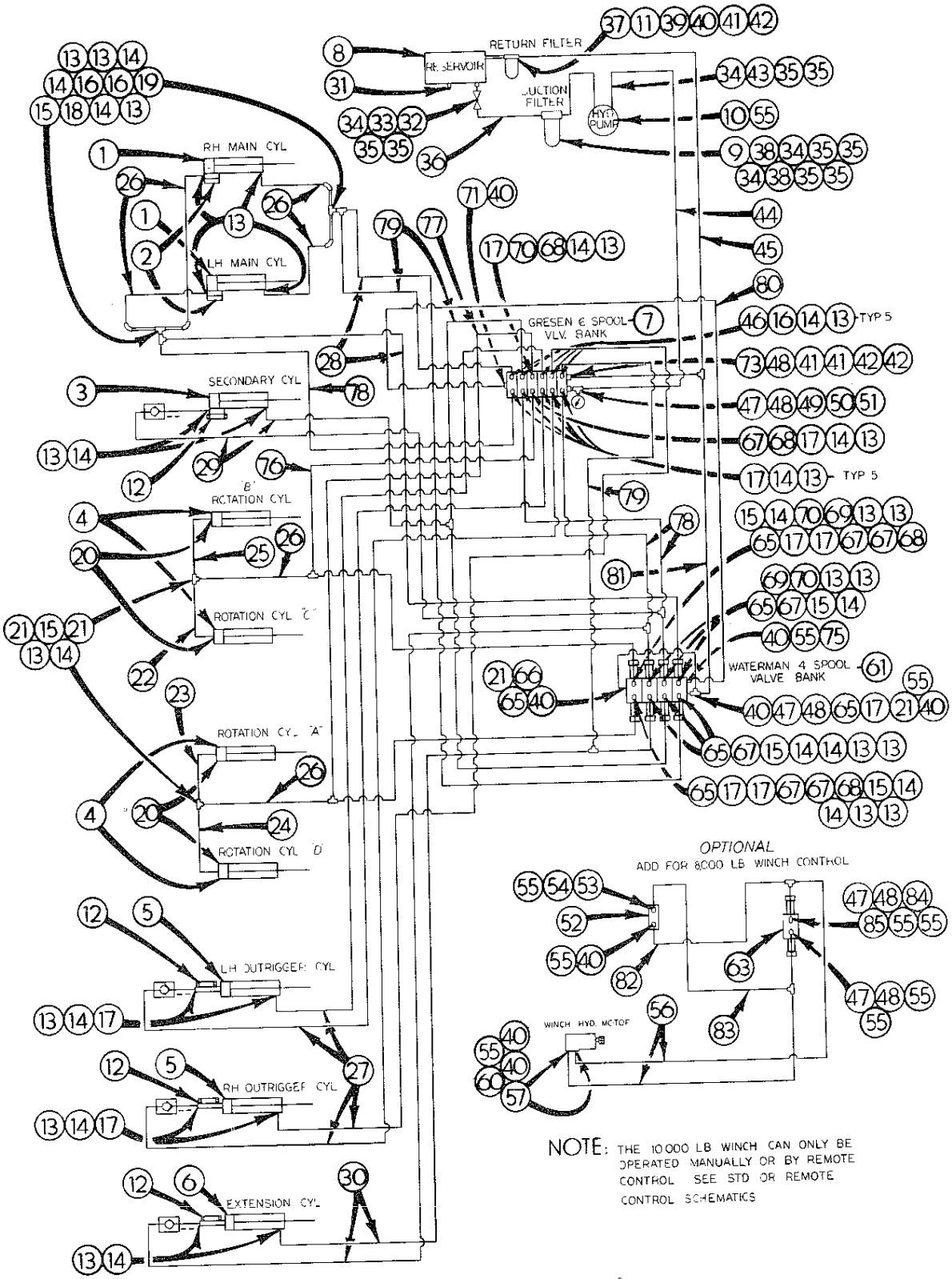


Fig. D-30

HYDRAULIC SCHEMATIC WITH MANUAL & REMOTE CONTROL

REF. NO.	IMTCO P/N		DESCRIPTION	NO. REQ'D
1	3C325413		Main Cylinder w/Metering Block	2 (See
	3C152512		Main Cylinder w/Cartridge Valve (New)	Cyl. Dwgs)
2	60010711		Metering Block	2 (See
	73054242		Cartridge Valve (New)	Cyl. Dwgs)
3	3C326413		Secondary Cylinder	1
4	3X335412		Rotation Cylinder	4
5	3B218412		Outrigger Cylinder	2
6	3B218412		Extension Cylinder	1
7	73073011		Gresen CP-4 Way 6 Spool Valve Bank	1
8	52070035		Reservoir	1
9	73052007	*	Suction Filter	1
10	730XXXXX	* **	Hydraulic Pump	1
11	73052000		Return Filter	1
12	73054004		Holding Valve	4
13	72531152		3/8" Hose Fitting	44
14	72053642		3/8"M / 3/8"F Pipe Swivel	40
15	72053611		3/8" Tee	12
16	72531100		3/8"-90° Elbow	9
17	72531132		3/8"-90° St. Elbow	15
18	72053057		3/8" x 5" Nipple	2
19	72053058		3/8" x 7" Nipple	2
20	72053515		3/8" Male Elbow	4
21	72053516		3/8" Male Connector	4
22	71014739		Hydraulic Tube	1
23	71014740		Hydraulic Tube	1
24	71014741		Hydraulic Tube	1
25	71014742		Hydraulic Tube	1
26	60035086		3/8" Hose x 28" Lg.	6
27	60035175		3/8" Hose x 4' Lg.	4
28	60035176		3/8" Hose x 9' Lg.	2
29	60035155		3/8" Hose x 14' Lg.	2
30	60035177		3/8" Hose x 20' Lg.	2
31	73052001		3/4" NPT Magnetic Plug	1
32	72053185	*	1" Close Nipple	1
33	73054001	*	1" Gate Valve	1
34	72531549	*	1" Barbed Nipple	3
35	72066001	*	#24 Hose Clamp	6
36	60039188	*	1" x AR Lg. Hose	1
37	72053141		3/4" Close Nipple	1
38	72531837	*	1¼"-1" Reducer Bushing	2
39	72531833		3/4" - 1/2" Reducer Bushing	1
40	72531133		½"-90° St. Elbow	4
41	72053457		½" Barbed Nipple	2
42	72066000		#12 Hose Clamp	2
43	60039188	*	1" x AR Lg. Hose	1
44	60039101	*	½" x AR Lg. Hose	1
45	60039101	*	½" x AR Lg. Hose	1
46	72053051		3/8" x 2" Nipple	5
47	72053725		½" Hex Nipple	1

HYDRAULIC SCHEMATIC WITH MANUAL & REMOTE CONTROL Cont.

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
48	72053612	½" Tee	2
49	72531830	½"-¼" Reducer Bushing	1
50	72053533	¼"-45° St. Elbow	1
51	73054003	Pressure Gauge	1
55	72531185	½" Swivel Hose Fitting	2
61	73073161	4 Spool Waterman Valve Bank	1
65	72531829	½"-3/8" Reducer Bushing	10
66	600102934 (1)	Cross Over Tube	1
67	72053723	3/8" Hex Nipple	10
68	73054002	3/8" Color Flow Valve	2
69	72053656	3/8"F / 3/8"F Pipe Swivel	4
70	72053052	3/8" x 2½" Nipple	4
71	73073023	Power Beyond Adapter	1
73	72053726	3/4" x 1/2" Hex Nipple	1
75	60035179	½" Hose x 40" Lg.	1
76	60035180	3/8" Hose x 8" Lg.	1
77	60035181	3/8" Hose x 11" Lg.	1
78	60035182	3/8" Hose x 14" Lg.	3
79	60035183	3/8" Hose x 17" Lg.	1
80	60035178	½" Hose x 32" Lg.	1
81	60039101	½" Hose x AR Lg.	1

NOTE: * These parts are in Installation Kit.
** See pump requirements on page 1-3.
(1) If fifth Waterman spool is added, use #60102935 Cross Over Tube.

ADD FOR 8000 LB. WINCH OPTION

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
40	72531133	½"-90° St. Elbow	5
47	72053725	½" Hex Nipple	2
48	72053612	½" Tee	2
52	73054246	Gresen CP-4 Way Tandem Valve Section	1
53	72053119	½" x 2" Nipple	1
54	72531101	½"-90° Elbow	1
55	72531185	½" Swivel Hose Fitting	8
56	60035174	½" Hose x 23'-6" Lg.	2
57	72053744	Adapter	2
60	72053522	½"-45° St. Elbow	2
63	73073105	4 Way Waterman Tandem Valve	1
82	60035184	½" Hose x 14" Lg.	1
83	60035185	½" Hose x 17" Lg.	1
84	72053093	½" x 2½" Nipple	1
85	72053471	½" F/F Adapter	1

NOTE: See Note (1) following Hydraulic Schematic with Manual & Remote Control.

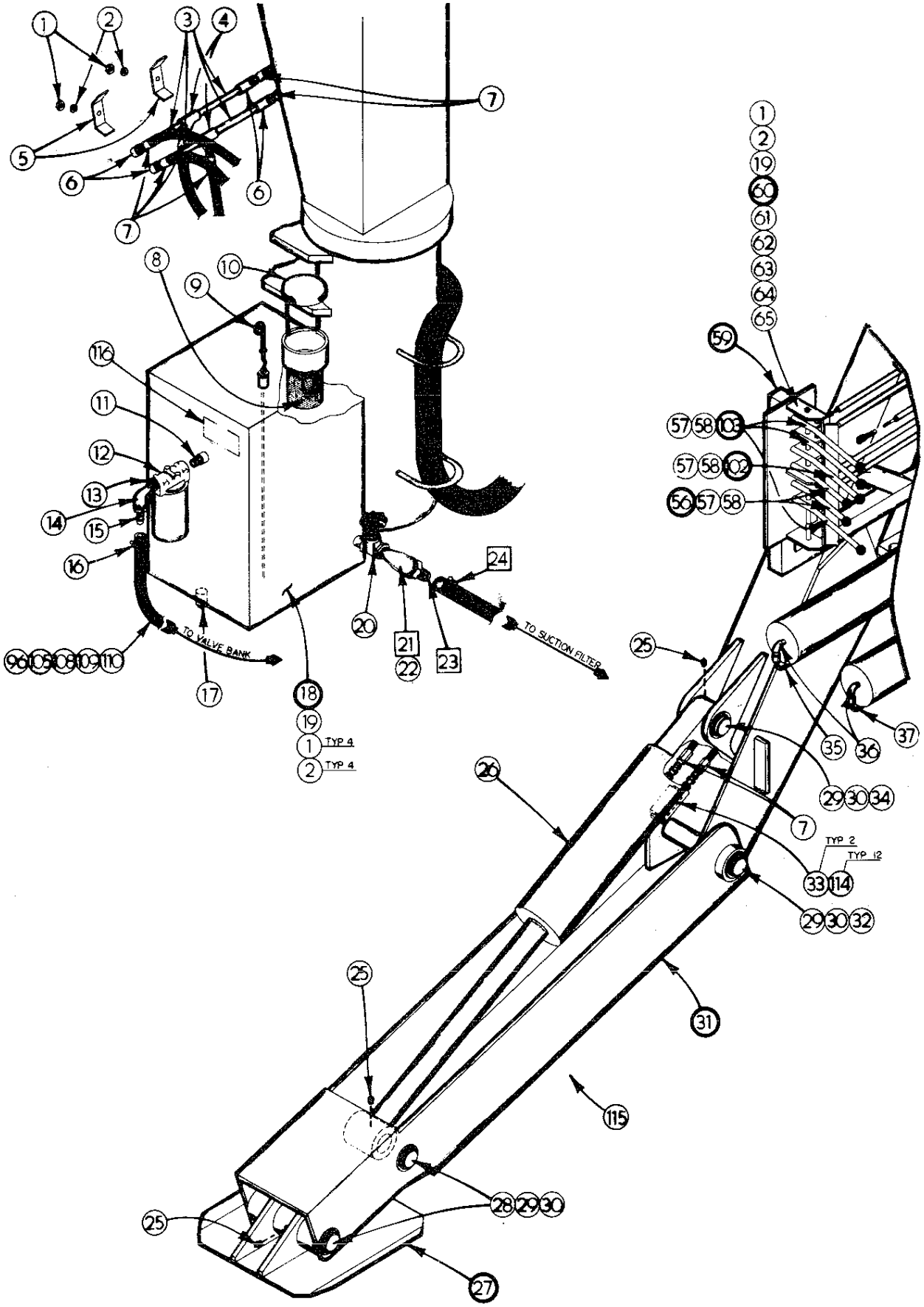


Fig. D-31

BASE ASSEMBLY (SEC. A)

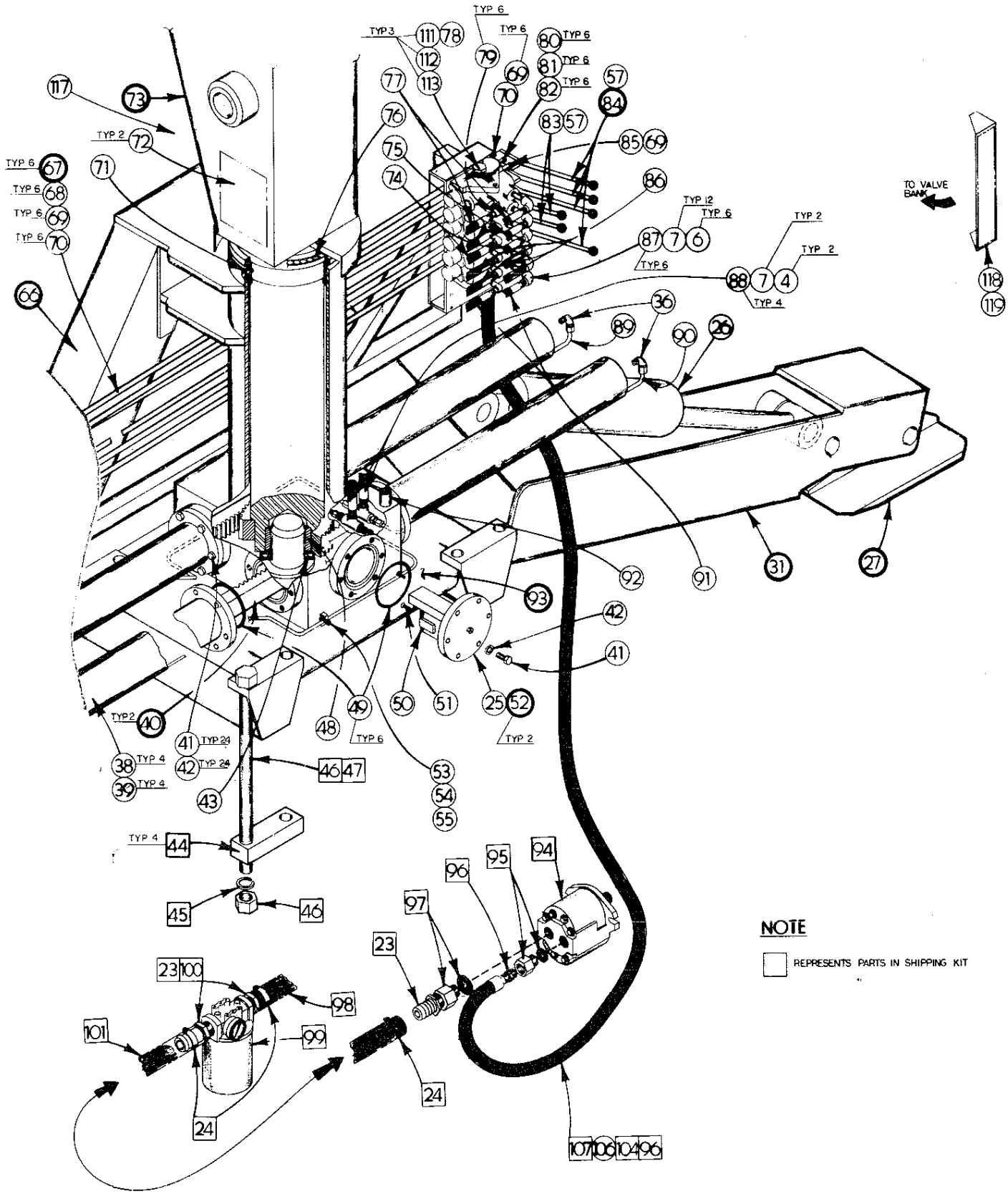


Fig. D-31

BASE ASSEMBLY (SEC. B)

BASE ASSEMBLY

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
1	72062002	Nut, 3/8"-16 USS Hex	10
2	72063051	Lock Washer, 3/8" Std	10
3	72053046	Nipple, 3/8"NPT x 6½ Lg. Black	4
4	72053611	Tee, 3/8" Steel	4
5	72010118	Hose Clamp	2
6	72531100	Elbow, 3/8"-90° Stl	10
7	72531181	Hose Fitting, 3/8"	24
8	73024133	Fill Screen, Wisco 4679	1
9	73073010	Dip Stick Assy.	1
10	73014671	Cap, Fill Neck	1
11	72053141	3/4" NPT Close Nipple	1
12	73052000	Hydraulic Filter, Gresen Fa-101	1
13	72053375	3/4"-1/2" Reducer Bushing, Blk.	1
14	72053284	1/2"-90° St. Elbow	1
15	72053457	½" Barbed Nipple, Brass	1
16	72066000	#12 Hose Clamp	1
17	73052001	3/4" NPT Mag. Plug	1
18	52070035	Weldm't, Reservoir	1
19	72060046	Cap Screw, 3/8"-16 x 1 US Hex	8
20	73054001	1" Gate Valve	1
21	72053286	1"-90° Blk. St. Elbow	1
22	72053416	1" Pipe Plug, Blk	1
23	72531549	1" Barbed Nipple	4
24	72066001	#24 Hose Clamp	4
25	72053508	1/8" NPT Zerk	8
26	3C210550	Outrigger Cylinder, New	2
27	52070089	Weldm't, Outrigger Pad	2
28	60010111	Pin, Outrigger Cyl. and Pad	4
29	72063038	Machy Bushing	16
30	72066136	Retaining Ring	16
31	52070077	Weldm't, Outrigger Leg	2
32	60010109	Pin, Outrigger Leg	2
33	73054004	Holding Valve	2
34	60010110	Pin, Outrigger Cylinder	2
35	71102034	Tube, Slewing Cylinder	1
36	72053515	Elbow, 3/8" Stl Ferulok Male	4
37	60102035	Tube, Slewing Cylinder	1
38	3XM12614	Slewing Cylinder	4
39	60010455	Stroke Stop	4
40	52070187	Rack Assy.	2
41	72060092	Cap Screw, ½-13 x 1¼ US Hex	36
42	72063053	½" Std Lock Washer	36
43	70055001	Thrust Bearing, Torrington NTHA	1
44	60010665	Clamp Plate	4
45	72063060	1¼" Std. Lock Washer	8
46	72062046	Nut, 1¼"-12 USS Hex	16
47	60014054	Stud, 1¼ x 24" SP1144	8
48	70020002	Bushing, Mast	1
49	76039075	O-Ring, Slewing Cyl. Mtg.	6
50	60020020	Wear Plate	2

BASE ASSEMBLY

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
51	72060836	Soc. Hd. Cap Screw, ¼-20 x 3/4"	4
52	52070225	Weldm't, Rack Support	2
53	60102038	Clamp, Hydraulic Tube	4
54	72063049	¼" Std. Lock Washer	4
55	72062000	Nut, ¼"-20 USS Hex	4
56	52070162	Weldm't, Short Lever	2
57	72039096	Ball, 1" Blk. ½-13 Tapped Hole	12
58	72053506	Zerk, 3/16 Press Fit	6
59	52070008	Weldm't, Control Mtg.	1
60	52070673	Weldm't, Frame, Lever Mtg.	1
61	60101412	Rod, Frame, Lever Mtg.	1
62	72066185	Cotter Pin, 5/16 x 1	2
63	72063003	Washer, 3/8" Wraught	2
64	60010360	Sleeve	2
65	71039127	Decal, Control RH	1
66	52070114	Weldm't, Outrigger	1
67	52070232	Weldm't, Link	6
68	72058002	Clevis, Austin Hdw.(Fin. End Yoke)	6
69	72066336	Cotter Pin, Short Gresen 086-001	18
70	72066338	Pin, ¼" x 1 Liedske	12
71	72531360	Zerk, 1/8" NPT x 45°	2
72	71029032	Plaque, 10,000 Load Limit Chart	2
73	52070078	Weldm't, Mast	1
74	60035086	Hose, 3/8 x 28" (Slewing)	2
75	60035089	Hose, 3/8 x 268" (Secondary)	2
76	70055000	Bearing,Torrington 190-SD-39K	1
77	60035088	Hose, 3/8 x 108" (Main)	2
78	73073011	Valve Bank-6 Spool	1
79	72531132	3/8" x 90° St. Elbow	6
80	72058003	Connector Link, Gresen 0928-001	6
81	72066335	Cotter Pin, Long, Gresen 929-001	6
82	72063001	Washer, ¼" Wraught	6
83	52070167	Weldm't, Valve Lever (Short)	2
84	52070168	Weldm't, Valve Lever (Long)	4
85	72066337	Pin, Gresen 1857-001	6
86	60035087	Hose 3/8 x 132" (Outrigger)	4
87	72053051	Nipple, 3/8"Npt x 2" Black	6
88	72053516	Male Connector, 3/8" Stl Ferulok	4
89	60102036	Tube, Slewing Cylinder	1
90	60102037	Tube, Slewing Cylinder	1
91	60035090	Hose 3/8" x 328" (Extension)	2
92	72053415	Pipe Plug, 3/4" sq. Hd. Black	1
93	52070076	Weldm't, Mast Base	1
94	73051011	Hydraulic Motor 17 Gal.	1
95	72053749	Adapter , 1-5/16 STR THD x 1/2" F/Pipe w/O-Ring	1
96	72531185	Hose Fitting	3
97	72053752	Adapter, 1-5/16 STR THD x 1 F/Pipe w/O-Ring	1
98	60035095	Hose, 1" x 48"(Oil Tank to Suction Filter)	1

BASE ASSEMBLY

REF. NO.	IMTCO P/N	DESCRIPTION	NO. REQ'D
99	73052004	Hydraulic Filter, FS252-1B2C	1
100	72053376	1" - 3/4" Reducer Bushing	2
101	60035094	Hose, 1" x 28" (Filter to Pump)	1
102	52070166	Weldm't, Slewing Lever	1
103	52070163	Weldm't, Long Lever	3
104	60035093	Hose, ½"x72" Lg.	1
105	60035092	Hose, ½" x 96" Lg.	1
106	72053424	Pipe Plug, ½" Galv.	1
107	72531133	½"-90° Street Elbow	1
108	72531101	½"-90° Elbow	1
109	72053090	½" NPT Nipple, Close Black	1
110	72531833	3/4"-1/2" Reducer Bushing	1
111	72060033	Cap Screw, 5/16-18 x 3" US Hex	3
112	72062001	Nut, 5/16-18 USS Hex	3
113	72063050	5/16" Std. Lock Washer	3
114	72060709	Soc. Hd. Fl. Screw, ⅜"-20 x 1½	12
115	71039129	Decal-Warning Stabilizers	2
116	71039134	Decal-Caution Oil Level	1
117	71039131	Decal-Patent Pending	1
118	71039126	Decal-Control LH	1
119	71101428	Shield-Decal Mtg.	1

NOTE: This assembly is shown for two purposes:

1. Outriggers shown are optional and were used prior to 11/75.

2. The racks and push blocks, Items #40 and #52, were used prior to 6/76 and after 6/75.

For additional information refer to page 4-20.

INSTALLATION

PROPER INSTALLATION

Satisfactory performance of the IMTCO 10,000 crane depends to a great measure upon correct installation, servicing, inspection and testing of the unit prior to placing it in job operation.

During all phases of installation systematic double checking of work should be employed to minimize any necessity for rework. All inspection and tests should be meticulously performed and any malfunctions corrected immediately upon detection. Adherence to detail during crane installation will do much to insure proper unit performance when it is placed in service.

This section provides step by step installation instructions with accompanying illustrations. Critical inspection and test procedures are included in proper sequence to insure a successful installation and service ready unit.

CRANE GROUP COMPONENTS

All major components of the IMTCO 10,000 crane are completely assembled at the factory. This includes crane base, crane, cylinders, hydraulic oil reservoir, controls, and stabilizer system. Accompanying the unit in (ship out box) are small components required to complete installation. These include mounting hardware, hydraulic oil, connecting hoses, fittings and filters, optional PTO pump and parts.

PRE-INSTALLATION PARTS CHECK

Prior to starting crane installation, check all parts against packing list. Make sure there are no parts shortages or shipping damage.

HOIST USE

Preparatory to lifting main assembly the following factors regarding mode of hoisting should be observed:

1. Assure unit weight does not exceed rated capacity of hoist or other lifting device to be employed.

2. Take precautions to protect finish on unit with protective padding or wrap of heavy material.

3. Establish balance point of unit prior to lifting into position. Do this by conducting vertical test lift not less than two feet and not more than three feet from rest position. In most cases a hook is located at the balance point.

BOLT TORQUE

Close adherence to bolt torque specifications should be observed as they occur in installation instructions. The specified values are minimum requirements for secure unit installation. Tighten all bolts to specified torque values. Refer to Torque Chart found on page 5-11.

STRUCTURAL AND STABILITY TEST FORM

Located at the back of this section, pages 5-13 and 5-14 is a Structural and Stability Test Form for use by dealer or installation agent.

Prior to placing unit into service make sure of the following:

1. Chassis information is complete.

2. All inspection and test check items have been carried out.

3. All operating tests have been satisfactorily performed.

4. Agent certification signature has been affixed and properly dated.

CHASSIS PREPARATION

1. Inspect carrier vehicle to assure compliance with listed requirements shown under "Minimum Chassis Requirements", page 1-13.
2. Chassis frame must be clear of all obstructions immediately behind the cab for 40" (101.6 cm). Space will be available for gas tanks, etc., after crane is installed. Some modification of hanger brackets may be required.
3. Install PTO in accordance with manufacturer's instructions (see Fig. E-6 or Fig. E-7 pages 5-8 or 5-9).
4. Install pump, insure that correct rotation is employed. See Hydraulic Pump (Fig. E-10 page 4-10).
5. Replace transmission grease and check for leaks.
6. Install suction filter. Select location at a point approximately 20" (50.8 cm) behind cab and within 48" (122 cm) of PTO-pump location. Filter must be below top of chassis frame and should be accessable for servicing.
7. If rivets protrude thru top of frame flange, install ¼" x 3" (0.64 cm x 7.6 cm) flat bar strip on top of frame flange to provide a flat mounting surface. Tack weld along edge of frame, do not weld across the flange.
8. Refer to Tire Inflation Chart (page 5-12) and inflate tires to correct pressure.
9. Spray paint all unpainted steel surfaces.

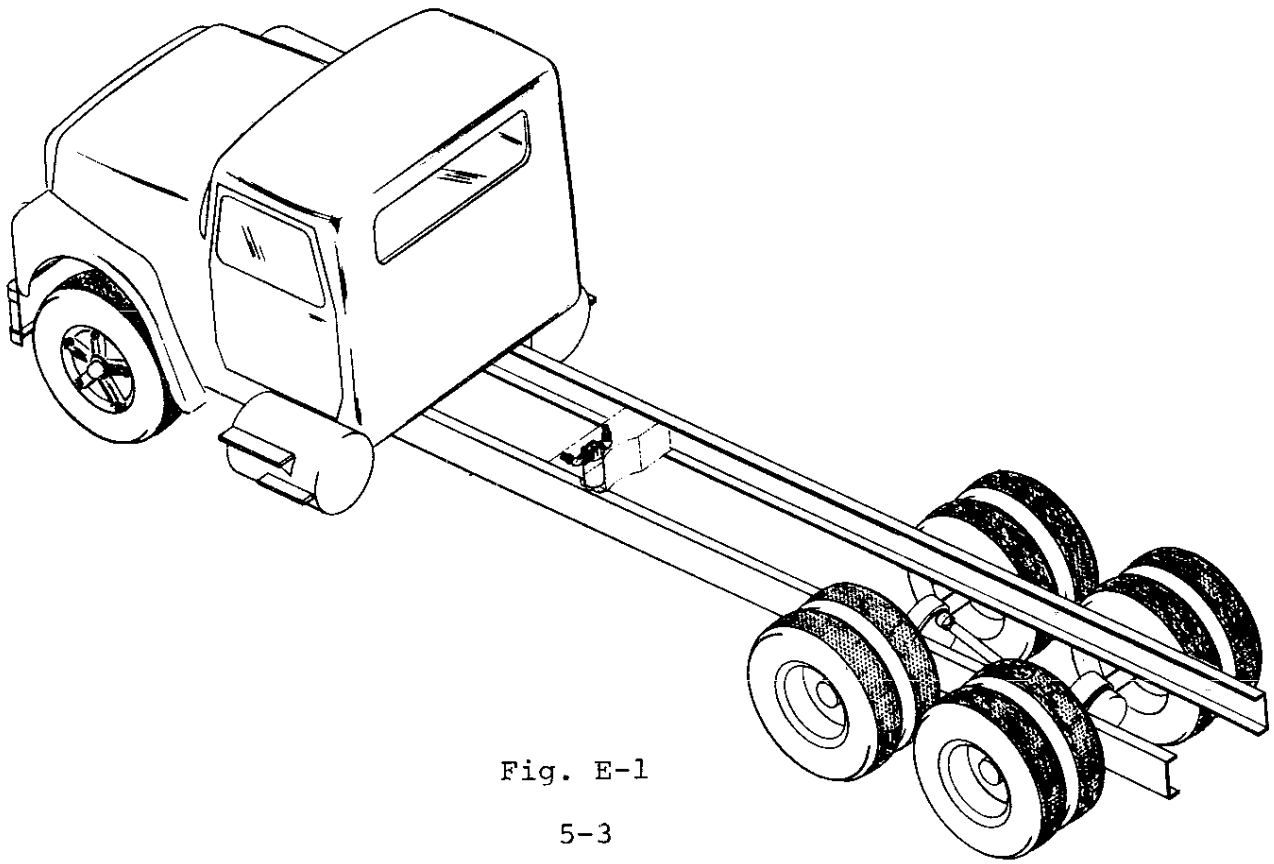


Fig. E-1

CHASSIS FRAME REINFORCEMENT

1. If chassis frame does not meet minimum section modulus or R B M requirements it must be fishplated.
2. Use the same material as in the frame.
3. Strip frame of all steps, tanks, etc. which are attached from the back of the front spring hanger to the front of the rear spring hanger.
4. Clamp 3/8" x 12" plate to both sides from a point directly behind the rear front spring hanger to a point directly in front of the foreward rear spring hanger. Use heavy duty C-clamps and secure the plates tightly to the frame.
5. Drill and reinstall all original bolts possible.
6. Weld fishplate and "L" reinforcing angles as shown below.

W A R N I N G
Do not weld on high tensile frames. Bolt fishplate utilizing bolt pattern below. Use 3/4"-8 NC Grade 6 or 8 bolts, hardened flat washers both sides and self locking nuts. Torque according to specifications on Torque Data page E-11.

7. Paint fishplate and all welds black.

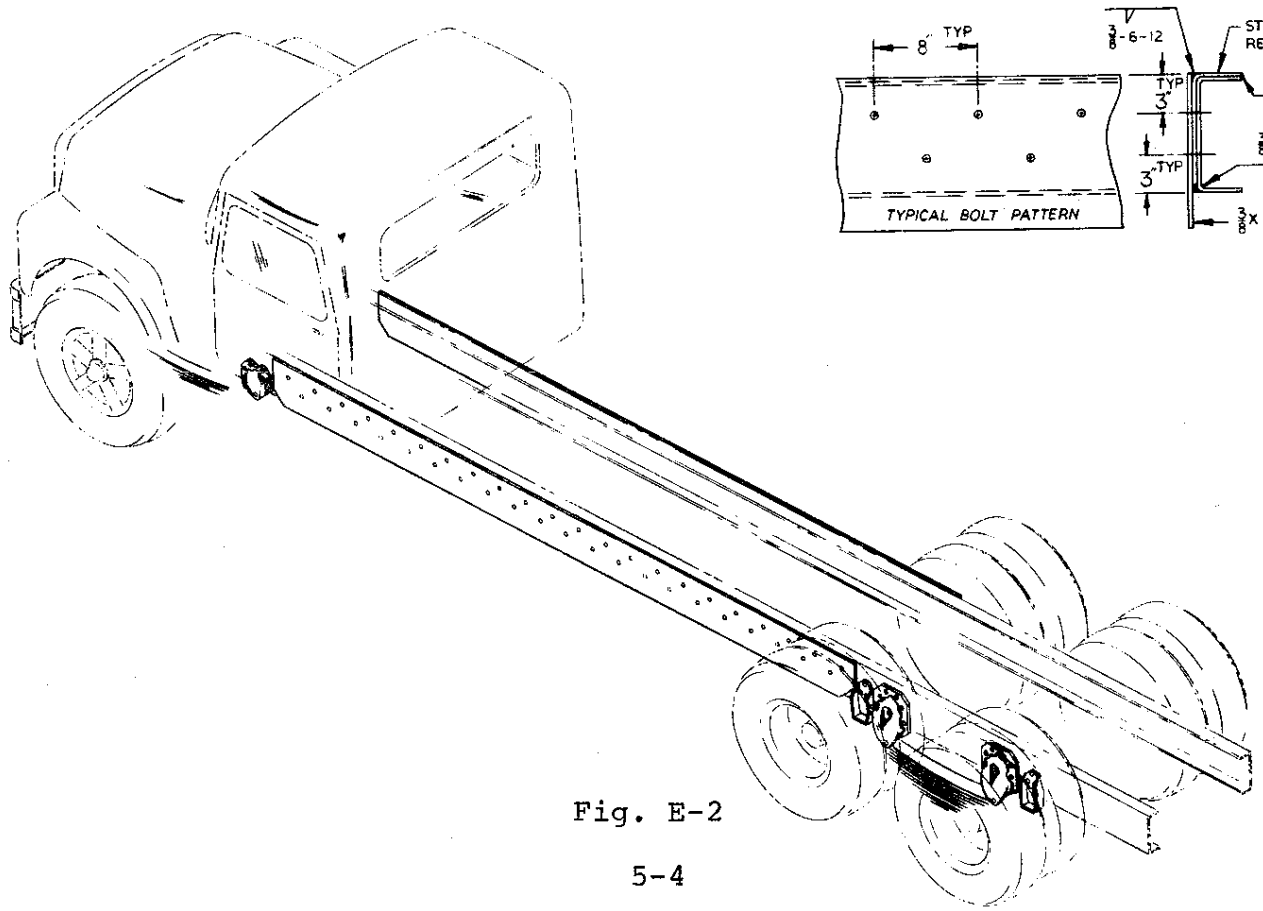
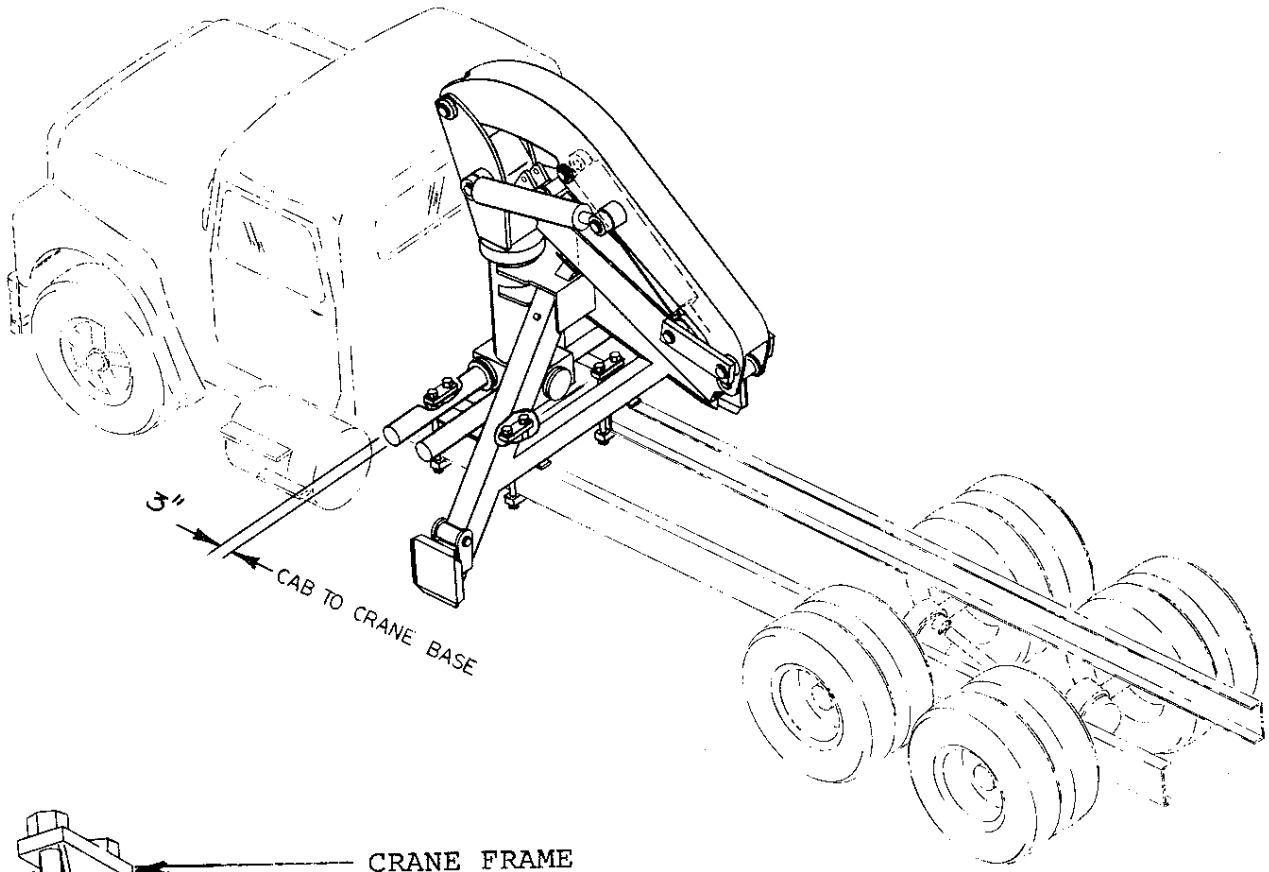


Fig. E-2

INSTALLING BASIC CRANE ASSEMBLY

1. Reinforce frame flanges by tack welding 4 each 3/8" x 3" (0.95 cm x 7.6 cm) flat bar strips vertically as shown below. Front pair should be centered approximately at a point 5" (12.7 cm) behind cab and another pair centered 24" (61 cm) behind those. These bars will prevent frame flange collapse.
2. Employ adequate lifting device; attach lifting hook to eye supplied on top of main boom. Raise crane, move chassis under and lower crane into desired location upon chassis. Check for front to rear alignment.
3. Install mounting bolts, clip bars, lock washers, and nuts to secure crane to chassis. Torque all eight bolts to 740 ft-lbs. or 102.3 kg-m.



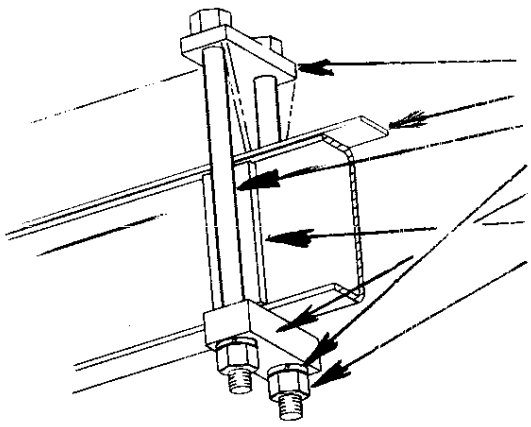


Fig. E-3

HYDRAULIC CONNECTIONS

1. Install suction hose between oil reservoir and filter.
2. Install suction hose between filter and pump.
3. Install pressure hose between pump and control valve input port.
4. All fittings should be properly treated with a good sealant material and are to be adequately tightened to prevent leaks.
5. Open gate valve located at suction port on oil reservoir and fill tank with oil. See oil specifications on page 3-3.
6. Check unit for leaks.
7. Start engine, engage PTO and charge system with oil.
8. Check oil reservoir and refill as necessary.
9. Test unit in accordance to Structural And Stability Test form pages 5-13 & 5-14.
10. At the conclusion of test procedures, re-inspect and completely check all lubrication points. See Lubrication Chart page 3-2.
11. Make all final adjustments and corrections.
12. Paint unit as required.
13. Insure all operation placards are in place. See Fig. A-4, page 1-9.

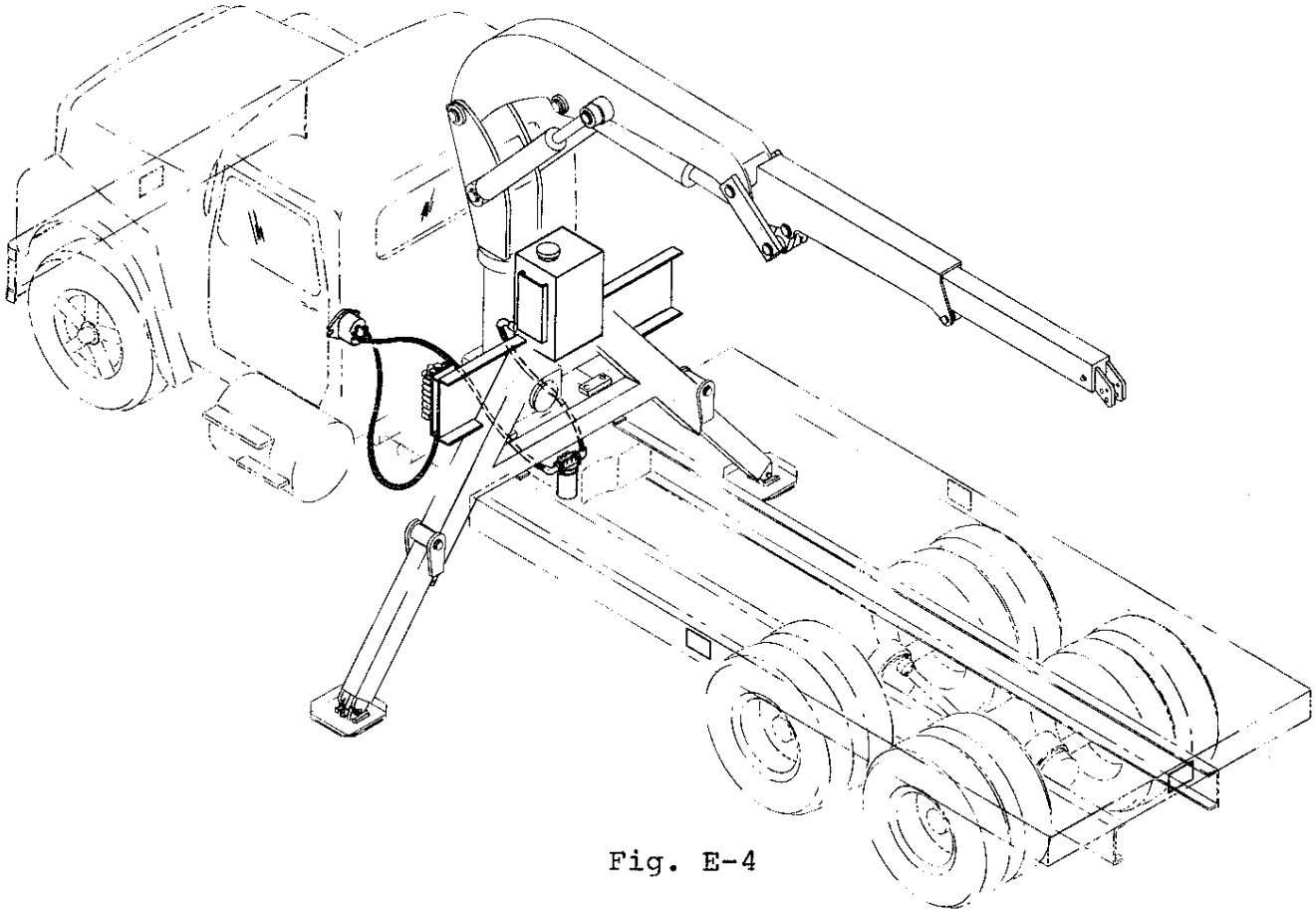
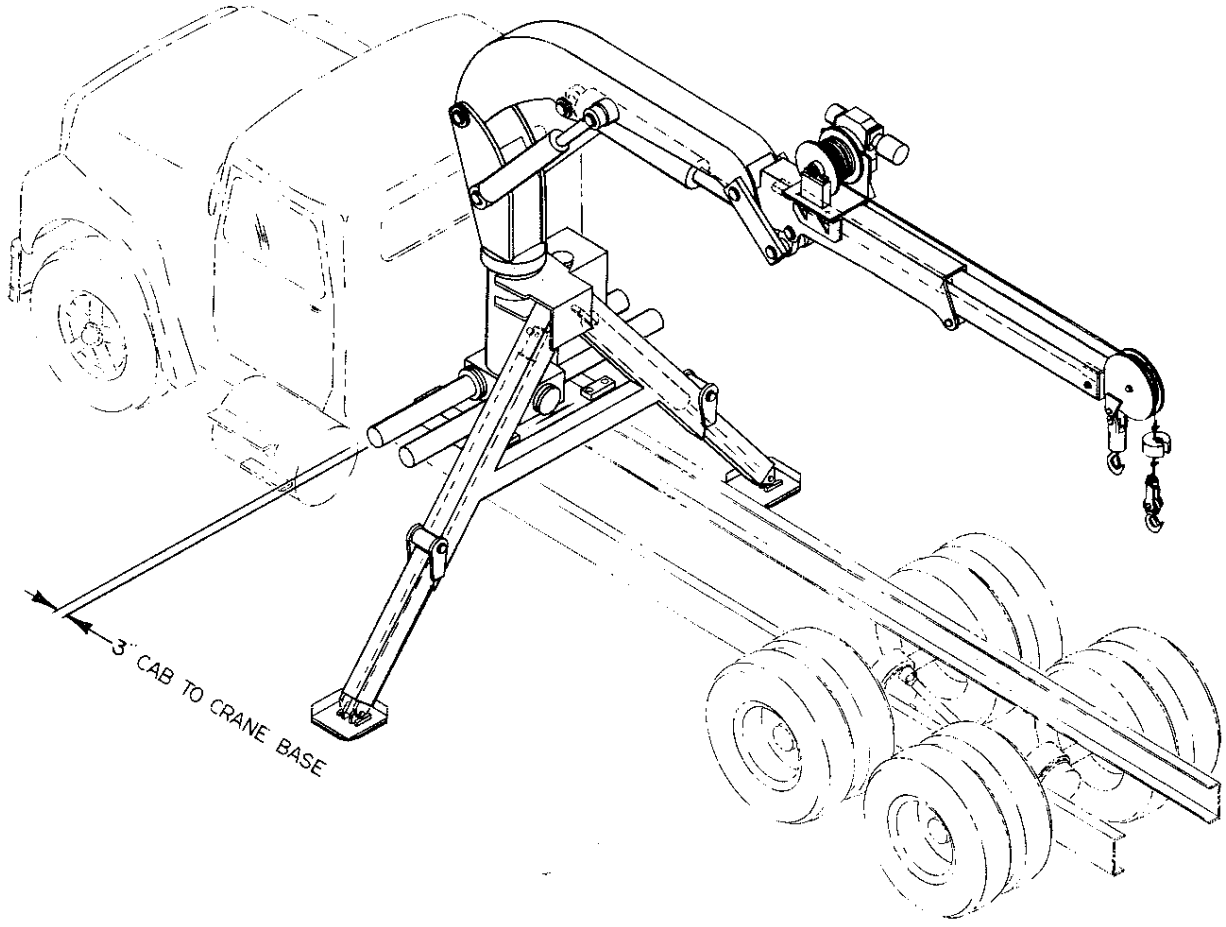


Fig. E-4

OPTIONAL WINCH INSTALLATION

The winch option is usually completely installed at the factory. If so no additional installation work is required. If however, the winch is to be added to an in service unit, the kit will consist of materials as shown in Fig. D-24, page 4-35 or Fig. D-25, page 4-37, and is installed as follows:

1. Weld boom side plates in position as shown with top flanges level with upper side of secondary boom.
2. Bolt winch to tilt bracket, Item #3, and then bolt bracket to boom member. Insure motor is to left hand side of boom.
3. Add control valve section and cross-over control rod. Torque control valve bolts to 25 to 30 ft-lbs. Check to insure free valve spool movement.
4. Replace extension boom assembly.
5. Route hoses from valve to winch motor and add control valve placard.
6. Operate winch, check for leaks.
7. Install wire rope, downhaul weight, and hook assembly. Underwind rope as shown in the Figure.
8. Test winch. Speed will be approximately 15 ft. (4.6 m) per min. and 10,000 pounds (4536 kgs) pull on the bare drum for 10,000 pound winch. For 8,000 pound winch speed remains same and pull will be 8,000 pounds (3629 kgs) on the bare drum.



POWER TAKE-OFF INSTALLATION

Power take-off manufacturers provide installation specifications pertinent to individual products. These specifications should be adhered to when installing a PTO. The following steps are a guide in this application:

1. Drain transmission oil into a clean container for reuse if vehicle is new. If vehicle is used dispose of the oil.
2. Temporarily install PTO with proper gaskets and only two studs. Check backlash for a maximum allowance of 1/32" to 1/16".
3. Remove PTO, apply Perma-Tex to gaskets, install remaining studs, PTO, bronze seal washers and nuts. Make sure all nuts are tightened evenly and securely. Recheck backlash.
4. Install operation cable to suit conditions.
5. Replace transmission oil.

NOTE: The application shown is the one normally employed by IMTCO. If a driveline is utilized, employ standard practices pertinent to that application.

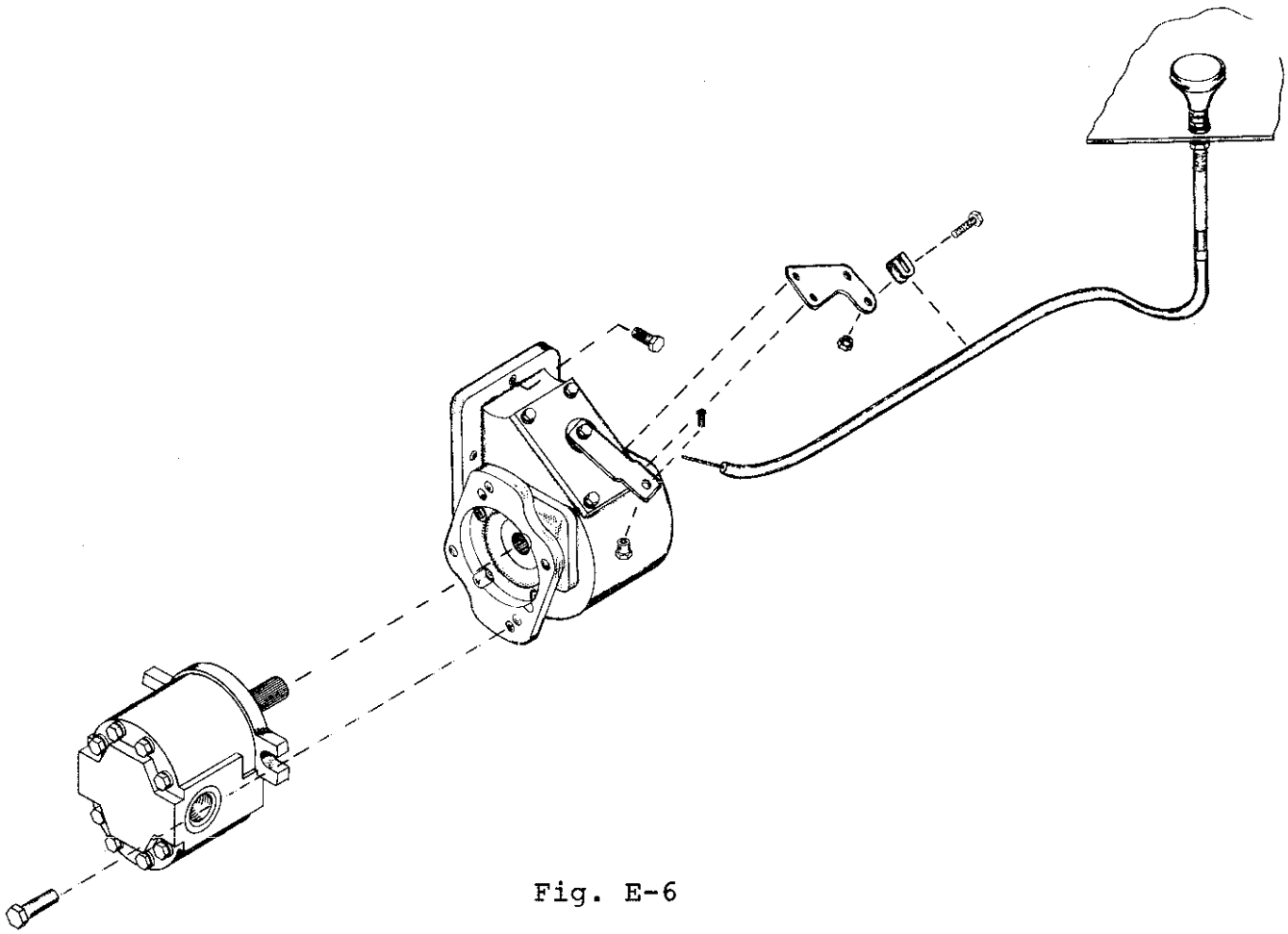


Fig. E-6

DRIVELINE POWER APPLICATION

The pump can be driven as shown below as an optional method to that shown on the previous page. The following steps are a guide in this application.

1. Install PTO as discussed on page 5-8.
2. Loosely bolt pump mounting bracket Item "A" to adjustable bracket Item "B".
3. The adjustable bracket is to be bolted to chassis frame at a point that will provide that the driveline will not exceed 48" (122 cm) and the joint angle will not be greater than 8^{o}.
4. Check pump rotation, see page 5-10, and install pump, pump end yoke and PTO end yoke.
5. Size, cut, and weld driveline at choosen length. Insure driveline balance. Allow 1" (2.54 cm) in slip yoke.
6. Install driveline, lock set screws, and lubricate joints.
7. Insure all mounting bolts are tight.

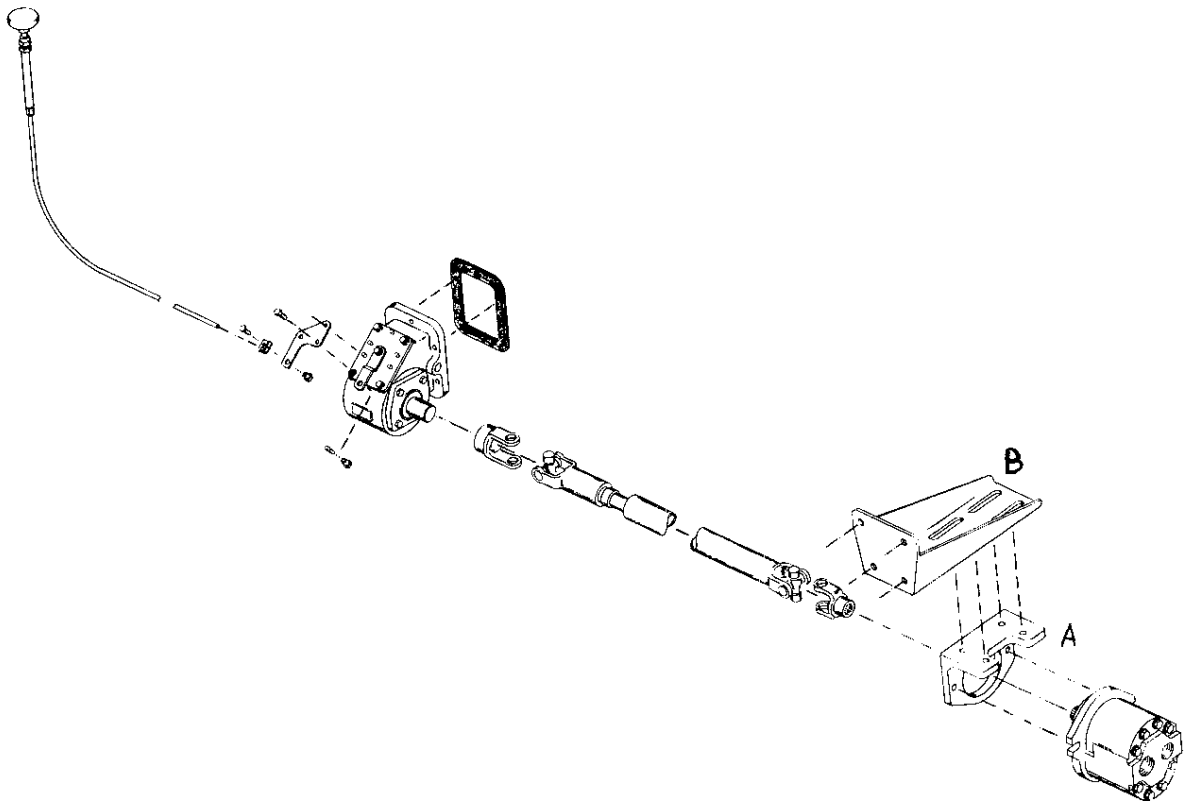


Fig. E-7

HYDRAULIC PUMP

Shown below is a parts breakdown for the pump used to power the 10,000 series crane. We do not recommend that this pump be rebuilt in case of failure. It should be replaced with a new pump. If, however, you elect to repair the pump, parts are numbered and IMTCO will supply replacement parts if requested. In making a parts order please refer to pump model number on your unit and the item number in the pump parts list.

When installing the pump it may be necessary, in an emergency, to reverse its rotation. It is not recommended practice, but if necessary the following procedure may be used:

1. Remove bolts shown as Item #6.
2. Back off Item #5.
3. Remove Items #4, 3 and 2.
4. Remove Item #1 and rotate 180° side to side. Do not turn over fore to aft.
5. Insure seal on Item #1 is in place and properly fitted to its slot.
6. Replace Items #1, 2, 3, and 4.
7. Rotate Item # 5 so that large fitting #7 is opposite side as originally located.
8. Replace bolts, Item #6, and torque from 28 to 32 ft./lbs.
9. Pump is now ready to install.

NOTE: If, when the pump is engaged, it will not hold its pressure at 2300 psi and falls as low as 1500 - 1600 psi, the seal in Item #1 is misplaced and will require correction or replacement.

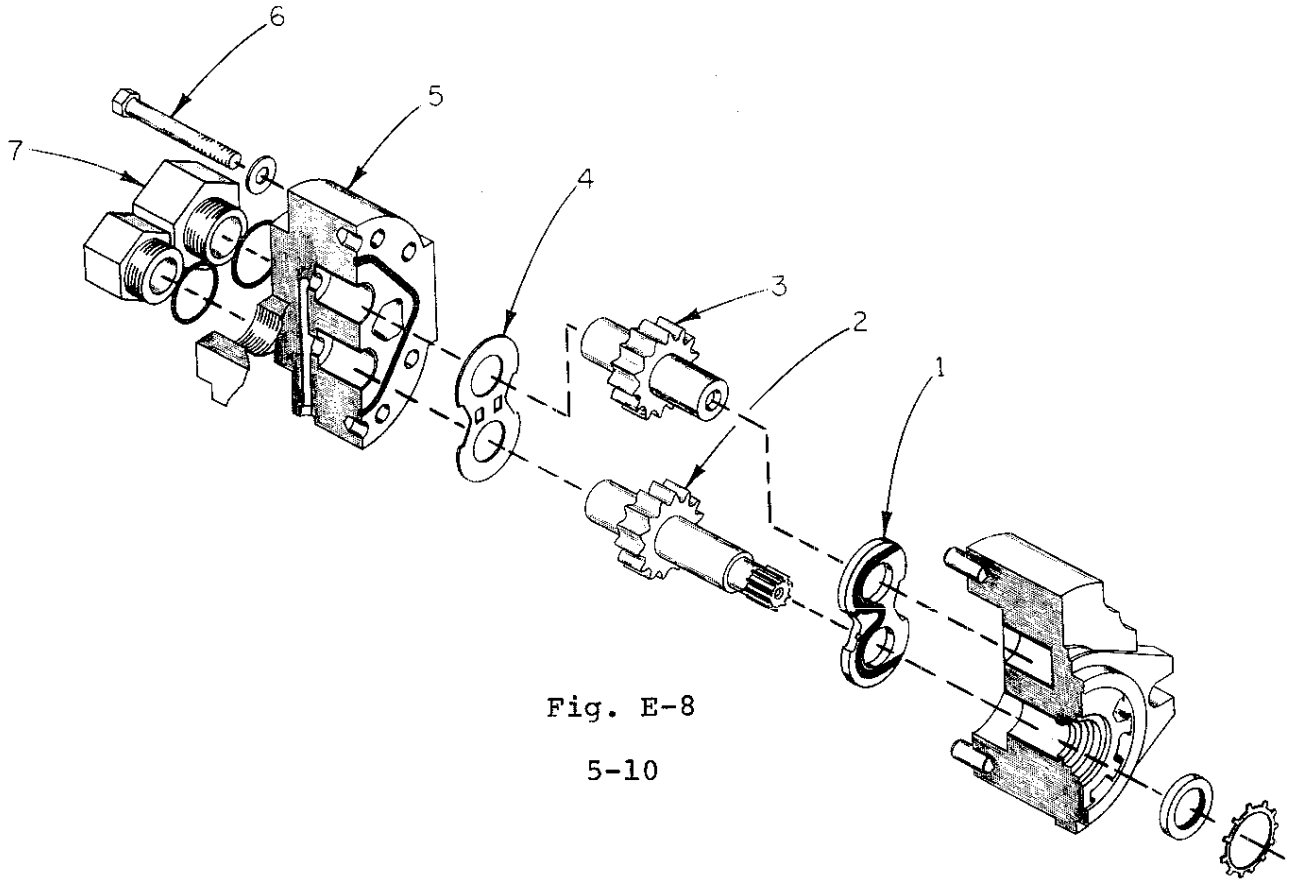


Fig. E-8

TORQUE DATA

GRADE BOLT	SAE GRADE 1 OR 2	SAE GRADE 5	SAE GRADE 6	SAE GRADE 8
MARKING				
DEFINITION	INDETERMINATE QUALITY	MINIMUM COMMERCIAL QUALITY	MEDIUM COMMERCIAL QUALITY	BEST COMMERCIAL QUALITY
MATERIAL	LOW CARBON STEEL	MEDIUM CARBON STEEL TEMPERED	MEDIUM CARBON STEEL Q & T	MED. CARBON ALLOY STEEL Q & T
MIN. TENSILE STRENGTH	64 000 P.S.I. 44 998 400 kgs/sq m	105 000 P.S.I 73 825 500 kgs/sq m	133 000 P.S.I. 93 512 300 kgs/sq m	150 000 P.S.I. 105 465 000 kgs/sq m

BOLT SIZE		RECOMMENDED TORQUE VALUES							
FRAC.	mm	FT. LBS.	kg-m	FT. LBS.	kg-m	FT. LBS.	kg-m	FT. LBS.	kg-m
1/4	6.35	5	.69	7	.96	10	1.38	10.5	1.45
5/16	7.92	9	1.24	14	1.93	19	2.62	22	3.04
3/8	9.52	15	2.07	25	3.45	34	4.7	37	5.11
7/16	11.09	24	3.31	60	8.29	55	7.6	60	8.29
1/2	12.7	37	5.11	60	8.29	85	11.75	92	12.72
9/16	14.27	53	7.32	88	12.17	120	16.59	132	18.25
5/8	15.87	74	10.23	120	16.59	167	23	180	24.89
3/4	19.05	120	16.59	200	27.66	280	38.72	296	40.93
7/8	22.22	190	26.27	302	41.76	440	60.85	473	65.41
1"	25.4	282	39	466	6445	660	91.27	714	98.74

Fig. E-9

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

1. Manufacturers' particular specifications should be consulted when provided.
2. When multiple tapered tooth (shakeproof) are employed, the torque should be increased by 20%.
3. All torque measurement values are given in foot-pounds.
4. The information in the chart is pertinent to lightly lubricated course and fine thread fasteners.
5. To convert measurement to inch pounds multiply by 12.

TIRE INFLATION CHART

Definite tire inflation pressures are established for each tire size depending upon the load imposed on the tires. For greater stability, riding comfort and prolonged tire life, tires should be inflated for thc loads carricd. The "Load and Inflation Table" shown below indicates the proper inflation pressures.

TIRE LOAD AND INFLATION TABLES

Tire and Rim Association Standard Tire Loads At Various Inflation Pressures
Load Range Letters and Corresponding Ply Rating-(D=8 ply, E=10 ply, F=12 ply and G=14 ply)

SINGLE TIRES FOR TRUCKS IN HIGHWAY SERVICE

TIRE SIZE	LOAD RANGE	TIRE LOAD LIMITS AT VARIOUS INFLATION PRESSURES										
		50	55	60	65	70	75	80	85	90	95	100
7.00-20	D	2100	2260	2390	2530	2670	2790					
7.00-20	E	2100	2260	2390	2530	2670	2920	3030	3150			
7.50-20	D	2360	2530	2680	2840	2990	3140					
7.50-20	E	2360	2530	2680	2840	2990	3140	3270	3410	3530		
8.25-20	E	2800	3010	3190	3370	3560	3730	3890	4050			
8.25-20	F	2800	3010	3190	3370	3560	3730	3890	4050	4210	4350	4500
9.00-20	E		3560	3770	4000	4210	4410	4610				
9.00-20	F		3560	3770	4000	4210	4410	4610	4790	4970	5150	
10.00-20	F			4290	4530	4770	4990	5220	5430			
10.00-20	G			4290	4530	4770	4990	5220	5430	5640	5840	604
11.00-20	F			4670	4940	5200	5450	5690	5920			
11.00-20	G			4670	4940	5200	5450	5690	5920	6140	6370	6590
11.00-22	F			4960	5240	5520	5790	6040	6290			
11.00-22	G			4960	5240	5520	5790	6040	6290	6530	6770	7000

DUAL TIRES FOR TRUCKS IN HIGHWAY SERVICE

TIRE SIZE	LOAD RANGE	TIRE LOAD LIMITS AT VARIOUS INFLATION PRESSURES										
		40	45	50	55	60	65	70	75	80	85	90
7.00-20	D	1840	1980	2100	2220	2340	2450					
7.00-20	E	1840	1980	2100	2220	2340	2450	2560	2660	2760		
7.50-20	D	2070	2220	2350	2490	2620	2750					
7.50-20	E	2070	2220	2350	2490	2620	2750	2870	2990	3100		
8.25-20	E	2460	2640	2800	2960	3120	3270	3410	3550			
8.25-20	F	2460	2640	2800	2960	3120	3270	3410	3550	3690	3820	3950
9.00-20	E		3120	3310	3510	3690	3870	4040				
9.00-20	F		3120	3310	3510	3690	3870	4040	4200	4360	5420	
10.00-20	F			3760	3970	4180	4380	4580	4760			
10.00-20	G			3760	3970	4180	4380	4580	4760	4950	5120	5300
11.00-20	F			4100	4330	4560	4780	4990	5190			
11.00-20	G			4100	4330	4560	4780	4990	5190	5390	5590	5780
11.00-22	F			4350	4600	4840	5080	5300	5520			
11.00-22	G			4350	4600	4840	5080	5300	5520	5730	5940	6140

STRUCTURAL AND STABILITY TEST FORM

10,000 CRANE

CHASSIS INFORMATION

Make_____ Model_____ Serial Number_____

W/B_____ C/A_____ Transmission_____

GAWR-FRT_____ GAWR-Rear_____ GVWR_____

PTO Model_____ PTO %_____

Pump Model_____ Pump Rotation_____

Unit Model_____ Unit Serial Number_____

Order Number_____ Date_____

Prior to placing unit into service the following test must be performed.

INSPECTION & TEST CHECK

A) Power Take-Off shifting cable for efficient operation

B) PTO mounting bolts

C) Transmission grease

D) Underdrive hoses for brakes

E) Routing of hoses-no kinks, muffler or tail pipe contact

F) All pins and retainer parts

G) Mounting bolts for tightness

H) Lubricate all necessary lube points - check chart

I) Fill oil reservoir

J) Shut off valve open

OPERATING TEST

1) Slowly operate unit through all motions. Check hoses, cylinders, and all structural parts for proper operation.

2) Check placards to insure correctness.

3) With full rated load - 8000# (3632 kgs) @ 16'-1" (4.91 m) and booms at 30° above horizontal position check holding valves, shut engine off and open control valves, one at a time, starting with secondary down, main down, extension at retract and outrigger down. No function drift should occur.

4) Restart engine extend & retract extension boom five times for proper operation.

5) Raise and lower secondary boom five times.

6) Raise and lower main boom five times.

7) Check stability by lowering the rated load - 8000# (3632 kgs) @ 16'-1" (4.91 m) to a low practical position. Rotate crane very slowly while constantly observing vehicle wheels for contact with ground.

   a) Note % rated load stability
   b) Position of stability (360° or portion thereof)

8) If unit is stable, rotate complete cycle five times.

9) Time unit functions for speed, record & compare with these shown in ( ) below:

Extension-----	6 Sec.	Rotation--------	30 Sec.
Main----------	30 Sec.	Outriggers------	10 Sec.
Secondary-----	19 Sec.		

10) Give unit final inspection, note & correct deficiencies.

DEALER OR INSTALLATION AGENT

I HAVE TESTED THIS UNIT AS DESCRIBED ABOVE & HEREBY RELEASE IT FOR SERVICE

DATE_____ S/N_____

NAME_____