99900288

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500 Highway 18 West, Garner, Iowa 50438
Phone 515-923-2827

TIREHANDS
1833, 1836 & 1836A

BEFORE 9-18-92

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SECTION 1. GENERAL

1-1. INTRODUCTION

This manual is provided to acquaint you with the operation of your IMT 1833/1836/1836A Tirehand and supply you with the information necessary for proper equipment maintenance.

Three means are used throughout this manual to gain the attention of operating and service personnel: NOTES, CAUTIONS and WARNINGS. They are defined as follows:

NOTE

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

CAUTION

A CAUTION is used when there is the possibility of damage to the equipment or premature equipment failure.

WARNING

A WARNING is used when there is the potential for personal injury or a fatality.

Treat this equipment with respect and service it regularly. These two things can add up to a safer working environment and a longer equipment life.

1-2. ORDERING INFORMATION

When placing orders for parts or requesting assistance, refer to the information below:

TO BE COMPLETED BY DEALER

Carrier vehicle information:

Make:_____ Model:_____ VIN:_____

Transmission Model_____

PTO Ratio:_____ Make:_____

Tirehand information:

Model:_____ Serial No.:_____

Pump Make:_____ Model:_____

Serial No.:_____ Accessories:_____

SECTION 2. OPERATION

2-1. INTRODUCTION

Every Tirehand has an identification placard (Figure B-1) fastened to the unit between the clamping arms. When ordering parts, communicating warranty information or referring to the unit in correspondence, always include the assigned serial and model numbers. All inquiries should be addressed to Iowa Mold Tooling Co., Inc.; 500 Highway 18 West; Garner, Iowa; 50438 or telephone (515) 923-3711.

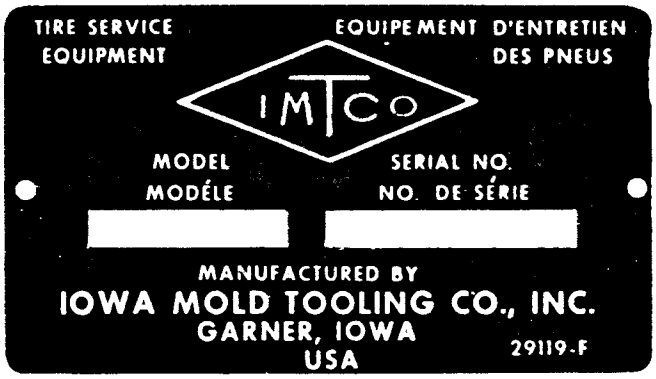


Figure B-1. Identification Placard

2-2. 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 rated capacity. The safety precautions contained in this section should be read carefully and observed at all times during operation.

2-2-1. Load Limits

The Tirehand is designed to give satisfactory service if operated within maximum allowable load limits - 8000# (3629 kg) for the 1833 and 11,400# (5171 kg) for the 1836 and 1836A. Overloading the unit may result in potentially serious safety hazards and shortened service life of the unit - exceeding the stated load limit can cause tipping or structural failure.

Warranty of the 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 IMT new machinery and equipment warranty will be valid with this unit.

2-2-2. 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.

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

HYDRAULIC OIL SUPPLY - Check oil level in the hydraulic oil reservoir and fill if necessary.

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

CONTROLS - Make a short test for proper control operation.

REPAIRS - Before putting the unit into service, correct all defects and malfunctions.

This equipment check should be performed before every work task and as a periodic preventive maintenance check.

2-2-3. Work Station Positioning

The best location for the working unit is on firm, level and dry pavement or ground. Overhead abstructions should be avoided as much as possible.

Care should be taken to assure that all personnel are clear of work area before starting operation.

At job sites where terrain is graded or unfirm, unit operations should be restricted to compensate for reduced stability.

WARNING

The operator should be alert at all times for the presence of personnel in the work area. Operations should be suspended until the work area is cleared.

2-2-4. 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 attachement to the unit have been erected to prevent physical contact with the lines, unit 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 or the unit or load shall be 10 feet.

2. For lines rated over 50 kV, minimum clearance between the lines and any part of the unit or load shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or use twice the length of the 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 disignated 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.

2-3. OPERATOR TRAINING

The Tirehand is designed for operator simplicity. Prior to operating the unit at job sites, the operator should be thoroughly familiar with control operation, prescribed operating procedures and safety precautions. In addition, the operator should conduct simulated job operations before actual use at the job site. The operator should be prepared to take any necessary remedial action in an emergency situation.

2-4. CONTROLS

The controls for the Tirehand and the carrier vehicle are located in the cab of the carrier vehicle.

2-4-1. Vehicle Controls

The vehicle is equipped with controls which enable the operator to raise, lower and tilt the Tirehand.

2-4-2. Unit Controls

The controls for the Tirehand are located in the cab of the carrier vehicle. Their function and operation is as follows:

LEFT CLAMP - Push the lever to move the arm toward the center and pull to extend the arm.

RIGHT CLAMP - Push the lever to move the arm toward the center and pull to extend the arm

WARNING

Attempting to use the clamping motions of the arms as a supplementary side-shift function is a hazardous practice and may result in a serious injury.

SIDE-SHIFT - Push the lever for right movement and pull for left.

ROTATION - Push the lever for clockwise rotation and pull for counterclockwise.

AXIAL - Push the lever to rotate the pads forward and pull to rotate backwards.

NOTE

Direction of pad rotation is as seen from the operator's position with the arm placard arrow pointing up. Rotating the hand 180^{o} will result in causing the pads to rotate in a direction opposite to that shown on the control placard.

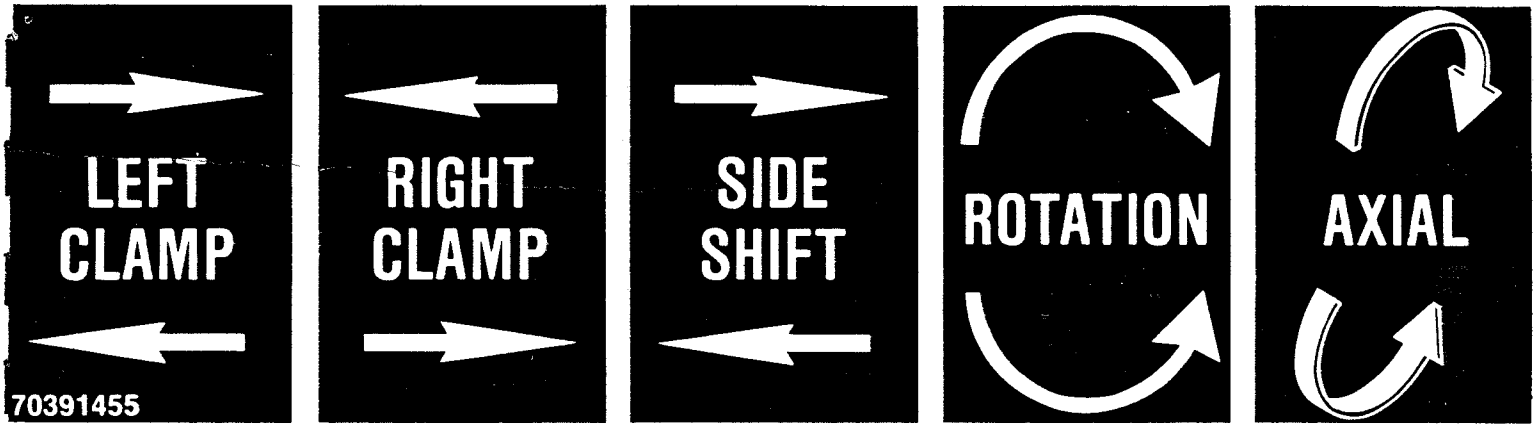


Figure B-2. Control Placard

2-5. TASK PERFORMANCE

Prior to operating the unit, thoroughly familiarize yourself with the operating restrictions in Figure B-3. To initiate operation:

1. Maneuver the vehicle into a position which provides proper orientation of the Tirehand to the tire with the carrier boom at the proper elevation.

2. Position the opened hand in order to properly grasp the tire.

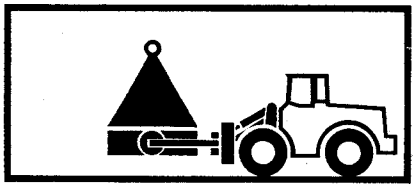
WARNING

Make certain personnel are clear before continuing.

3. Advance the carrier vehicle, manipulate the controls to perform the desired function and grasp the tire. Refer to paragraph 2-4 for the control functions available.

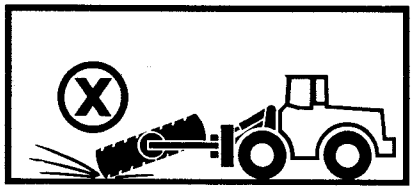
ALWAYS use this unit for removing, transporting, replacing and storage stacking of tires specified.	ALWAYS travel and operate at reasonable speeds.
ALWAYS use this unit as a tirehandling device only.	ALWAYS transport tires with arms rotated in a plane parallel (horizontal) to the ground.
ALWAYS keep load in position low to ground and backward (upward) tilted when transporting to ensure maximum vehicle stability.	ALWAYS check the security of clamping action when rotating a load to a position perpendicular to ground.

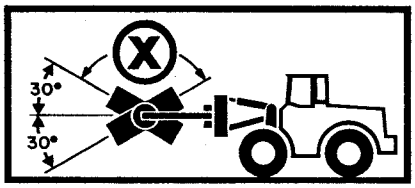
Figure B-3. Operating Requirements



NEVER attempt to handle tires filled with ballast. The 1836 Tirehand has a maximum rated lifting capacity of 11,400 lbs. (5,171 kg). Stability or structural failure may result if the limit is exceeded.

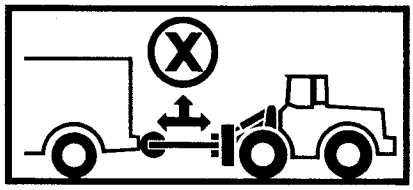
NEVER drag the tire - the unit is designed to lift and carry.

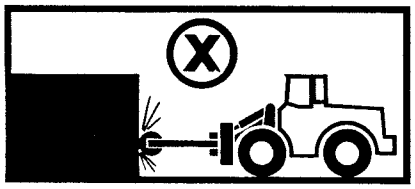




NEVER transport a tire rotated more than 30^{o} off the horizontal plane - i. e. do not transport in a vertical attitude.

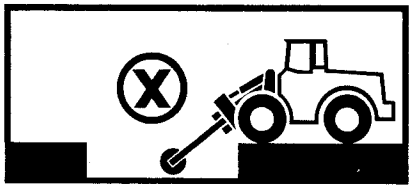
NEVER use the unit for any jacking, pushing, pulling or dragging operation involving an object or another vehicle.

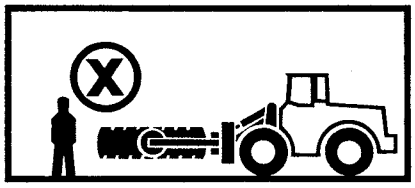




NEVER impact-load or hammer-push with the unit.

NEVER operate hand below ground level.





NEVER operate the unit while any auxiliary personnel are proximate to the job site, especially when the unit is carrying a tire.

NEVER clamp an uninflated tire and then inflate. Damage or injury will result.

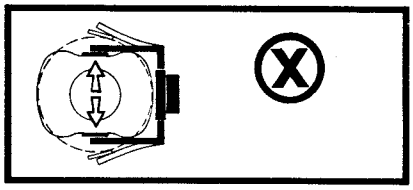


Figure B-4. Operating Restrictions

SECTION 4. PREVENTIVE MAINTENANCE

4-1. INTRODUCTION

Proper maintenance on a regular schedule is essential to keep your unit operating efficiently. Outlined in this section are proper maintenance procedures and necessary service intervals. Personnel responsible for unit upkeep should become familiar with frequency and type of maintenance required and perform these tasks at recommended intervals.

4-2. LUBRICATION

Maintaining the proper lubrication schedule will vary with climatic conditions and use frequency. The lubrication chart (Table D-1) is intended to serve as a schedule for a normal work load and moderate weather variance. Periods of heavy use qould shorten service intervals.

TABLE D-1. LUBRICATION CHART

APPLICATION POINT	LUBRICATION PRODUCT	APPLICATION MEANS	INTERVAL
Carrier Boom Pivot Points	Shell Alvania 2EP	Hand Grease Gun	Monthly
Linear Bearings			
Inside Walls of Body	or Shell Retinax "A"	or Pneumatic	
Trunnions			
Sides of Arm (Upper & Lower)	or Equivalent	Pressure Gun	
Spindle Bearings			
Pinion Support Bearing			
Rotation Gear Box	EP 90 Gear Oil	Fill to Check Plug	Monthly

4-3. HYDRAULIC SYSTEM

4-3-1. Hydraulic Fluid Selection

Minimum viscosity specifications for hydraulic oil to be used in the Tirehand are given in Table D-2. Any major oil company can supply products which meet these requirements.

Oils selected for use with 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

4-3-2. Hydraulic Fluid Specifications

Table D-2 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 analyzed individually. Consult your oil supplier for the proper hydraulic fluids for working under these severe conditions. Electric reservoir heaters are available to improve operation at extremely low temperatures.

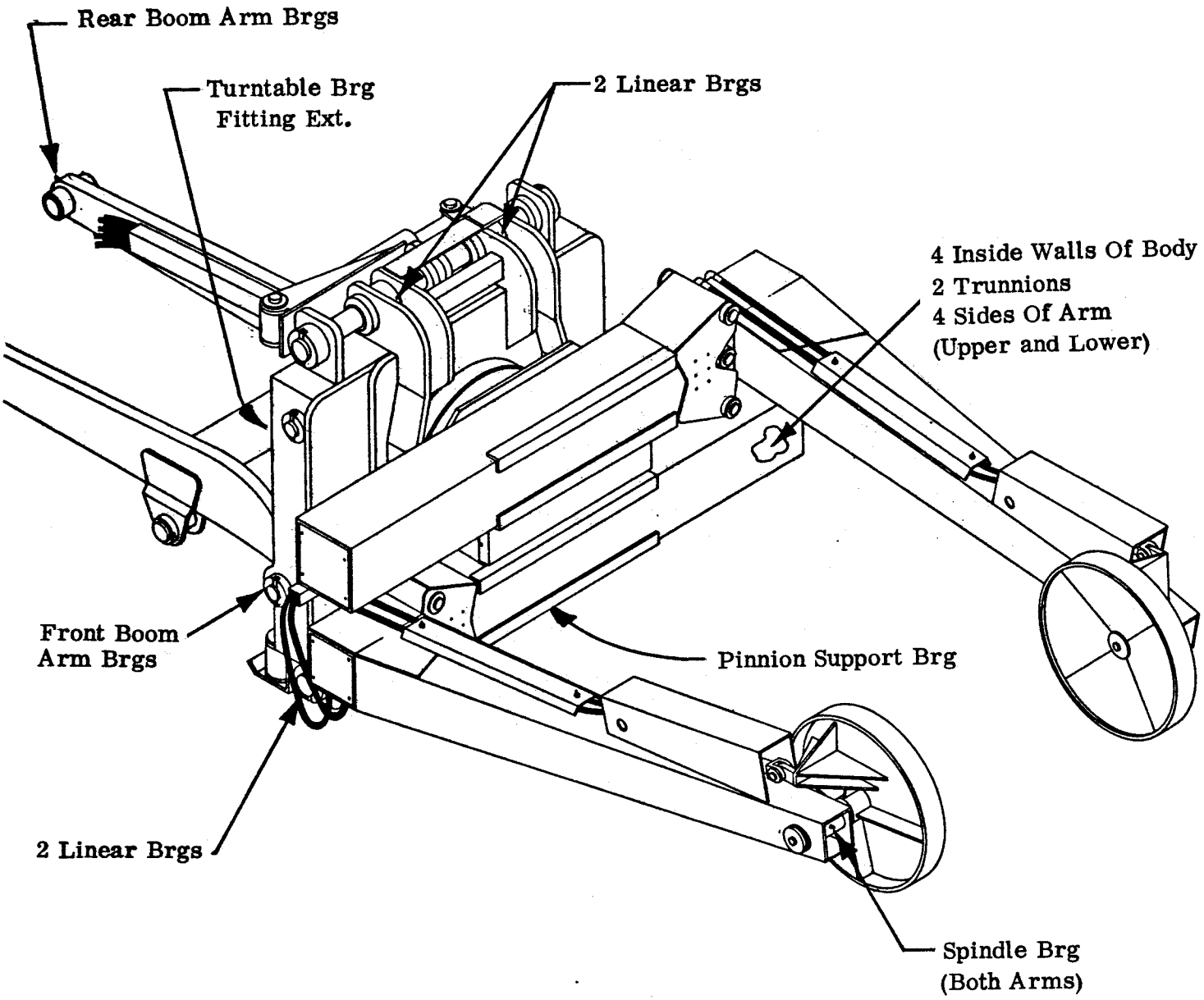


Figure D-1. Lubrication Points

Figure D-1. Lubrication Points

TABLE D-2. HYDRAULIC FLUID SPECIFICATIONS

Ambient Temperature Range, °F	0-90	Below 32	32-90	Above 90
Minimum Pour Point, °F	-30	-25	+10	+10
Maximum Viscosity, SSU @ 0°F	4000	4000	---	---
Minimum Viscosity, SSU @ 100°F	140-190	100-130	150-200	200-315
Minimum Viscosity, SSU @ 210°F	48	41	43	47
Minimum Viscosity Index	139	90	90	90

4-3-3. Hydraulic Fluid Deterioration

Contamination of the hydraulic fluid by solvents, water dust or other abrasives will cause deterioration of the fluid. Sustained presence of these impurities will result in premature breakdown of antifoam, lubrication and anti-rust and viscosity properties. Introduction of water to the system and operation at high temperatures (above 180°F will result in an increase in the oil oxidation rate. Oxidation produces varnish-forming materials and sludge in the oil.

Operating the system on a sustained basis with contaminated oil or broken down oil will increase wear and efficient service life of the unit can be significantly shortened.

Periodically, draw off a sample of the oil and check the oil for breakdown. To check oil quality:

1. Place oil sample in a clean glass.

2. Smell the oil to detect a burnt or rancid odor.

3. Visually examine the sample for a dark or cloudy color.

4. Allow the sample to stand for several minutes. Inspect the sample for water which will settle to the bottom of the glass if present. Water can result from a system leak or condensation due to temperature extremes.

When any of these conditions is observed, the system should be purged and filled with new oil. In addition, the oil should be changed in the reservoir and complete system:

1. After every 800 hours of operation or every six months whichever occurs first.

2. After pump or other major hydraulic component failure.

4-3-4. Hydraulic System Purging

Purging the hydraulic system requires a new oil supply sufficient to completely fill the reservoir, lines, cylinders, etc., and an extra allowance for loss during this procedure.

To reduce oil loss during this process, operate the vehicle engine at a reduced speed.

In purging, new oil is supplied to the pump pressure line and old oil is discharged from the reservoir return line.

Two operators will be required during this procedure: one to operate the controls and another to regulate pump flow (engine speed).

CAUTION

DO NOT allow the reservoir level to drop below 1/3 capacity during this operation.

Purging is accomplished as follows:

1. Locate the unit in an area that provides solid, level footing and space to accomodate the full operating range of the unit. Shift the carrier vehicle's transmission into neutral.

2. Raise the carrier vehicle's boom approximately 5 feet above ground level. Operate the side shift function fully one way.

3. With the Tirehand right side up, rotate it so that it is 30° off the horizontal position. Extend the clamping arms full stroke.

NOTE

On those units using the optional cylinders for pad (axial) rotation, rotate the pads backward full stroke.

4. Kill the engine, drain the hydraulic reservoir and remove the suction hose and the hose to the pump. Drain and reassemble.

NOTE

The method of waste oil disposal is left to the discretion of the service personnel.

5. Disconnect the reservoir return line at the reservoir and direct the discharge into a sump or waste container. Plug the return line port on the reservoir and fill the reservoir with clean oil (refer to Paragraph 4-3-1)

NOTE

Be thoroughly familiar with the following steps and prepared to perform them in an uninterrupted sequence or stop the engine at the end of each step. If this is not done, excessive oil waste will occur.

6. Start the engine and engage the pump if necessary. With the return line directed into a sump (Step 5), retract the clamping arms, rotate pads and operate side shift full stroke. Rotate the Tirehand back to the horizontal position. Stop the engine.

7. Reconnect the return line to the reservoir port and change the return line filter. All components of the Tirehand system are now purged.

8. Check the reservoir oil level and add oil as necessary.

NOTE

This paragraph dealt with only the Tirehand purging. The carrier vehicle's hydraulic system is covered in the vehicle manufacturer's service manual.

4-3-5. Purging Trapped Air

Air may sometimes be introduced into the hydraulic system either through a leak in the system or due to disconnecting a component for servicing. Air in the system will cause erratic operation and must be corrected.

To purge air from the system, fully extend and retract the affected cylinder(s) several times. At the end of the stroke, hold the control valve open about 10-15 seconds longer. Continue extending and retracting the cylinder until operation is smooth and continuous.

NOTE

Purging is especially critical on those units with a single control valve for the clamping function.

4-3-6. Filter Element Replacement

NOTE

Some of the carrier vehicles may not be equipped with both a suction and return line filter. On those vehicles, it is our policy to install filters. These instructions apply only to those vehicles which require IMT installed filters. On those vehicles equipped with suction and return line filters by the carrier vehicle manufacturer, refer to the manufacturer's instructions.

To avoid residue accumulation in the reservoir and to protect hydraulic components - valves, cylinders, motors, pumps, etc. - the filters must be serviced on a regular basis.

They must be changed after the initial 50 hours of new-unit operation and every 200 hours thereafter.

To change filter elements:

1. Shut the gate valve and remove the filter element.

2. Install the new filter ensuring proper rubber seal seating and tighten as much as possible using both hands.

3. Open the gate valve and check for leaks.

CAUTION

Pump failure can result if the shutoff (gate) valve is left closed.

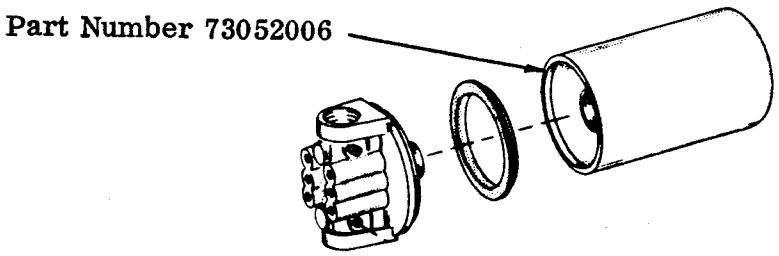


Figure D-2. Filter Element Replacement

4-4. PREVENTIVE MAINTENANCE CHECK LIST

The preventive maintenance check list (Table D-3) is designed to assist you in keeping your Tirehand unit in efficient operating condition. Items in this section apply to the Tirehand unit only. The carrier vehicle should also be inspected periodically (refer to the carrier vehicle's service manual).

TABLE D-3. PREVENTIVE MAINTENANCE CHECK LIST

Item	Description	Frequency
Walk around	Visually inspect unit on all sides for hydraulic leaks, loose parts and obvious damage to external structural members.	Daily
Cylinders	Check securing pins on cylinders and attached members for proper installation.	Monthly
Hydraulic hoses and fittings	Inspect hose surfaces and metal end coupling junctions for oil leakage. Check outer hose coverings for blistering, excessive wear or flattening.	Daily
Rotation system	Check for excessive backlash (play) in vertical rotational stops. Normal variation at the body location is not to exceed 1/8-3/16"	Weekly
Structural damage	Inspect all structural members for broken welds or fatigue cracks. Check carrier vehicle boom for structural defects - bends, weld cracks or dents.	Monthly
Locking holding valves	Conduct a holding test with loaded boom to assure proper operation of locking holding valves on both clamping cylinders (Paragraph 5-2-2).	Weekly
Reservoir	With all cylinders retracted, check fluid level.	Daily
Oil leaks	Inspect all valves and cylinders for signs of leakage.	Monthly

4-5. REGULAR INSPECTION

Every three months or more often when the equipment is subjected to heavy use, the following inspections should be perfromed in addition to the preventive maintenance check list (Table D-3).

4-5-1. Tirehand Arm Assemblies

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

2. Check cylinder holding valves.

3. Check cylinders for leaks.

4. Check both internal and external clamping arm bearings for wear and lubrication.

5. Check operating timing - both clamping arms should function together at the same rate of motion.

NOTE

Step 5 applies only to those Tirehands with a single control valve for the CLAMP function.

4-5-2. Axial Pad Rotation

1. Check for structural defects.

2. Check cylinders for leaks and damage.

NOTE

Step 2 applies only to those units with optional cylinder-driven axial rotation.

3. Check motor for leaks.

4. Check disc bearings located on support shafts.

5. Check all pins and their retainers.

4-5-3. Hydraulic System

4-5-3-1. Cylinders

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

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

3. Check cylinder barrel for dents and cracks.

4-5-3-2. Hydraulic Pump

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

2. Check for a drop in operating speed.

3. Check hydraulic oil for excessive heating.

4. Check bolts and fasteners for tightness and note unusual vibration or or noise.

4-5-3-3. Hydraulic Control Valves

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

2. Inspect valve housing for cracks.

3. Make certain relief valve reaches the proper setting (refer to Paragraph 5-2-5).

4-5-3-4. Hydraulic Reservoir and Hoses

1. Check filters for clogged elements.

2. Check oil level in reservoir.

3. Check all hoses for damage.

4-5-4. Carrier Boom and Cylinder

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

2. Check all pins and their retainers on carrier boom and cylinders.

3. Check cylinder rods for damage and check for leaks.

4-5-5. Side Shift Assembly

1. Check cylinders for leaks and damage.

2. Check slide bars for lubrication.

3. Check for structural defects.

4. Check cylinder retaining pins.

4-5-6. Rotation Assembly

1. Check gear box for proper anchoring and/or bolt tightness (refer to Table D-4)

2. Check turntable bearing bolts for tightness.

3. Check for gear backlash.

TABLE D-4. 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 psi (44,998,400 kgs/sq m)		105,000 psi (73,835,500 kgs/sq m)		133,000 psi (93,512,300 kgs/sq m)		150,000 psi (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	11	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	64.45	660	91.27	714	98.74

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

1. Manufacturer's 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 measurements are given in foot-pounds.
4. The information in the chart is pertinent to lightly lubricated coarse and fine thread fasteners.
5. To convert measurement to inch-pounds, multiply by 12.

SECTION 5. REPAIR

5-1. INTRODUCTION

This section deals with disassembly, repair and assembly of many of the components used on the 1833/1836 Tirehands

5-2. HYDRAULIC SYSTEM

Certain procedures involving the hydraulic system require special consideration for proper functioning and service life of the unit. These steps are to be taken whenever a hydraulic component is disconnected.

1. ALWAYS relieve internal hydraulic pressure before proceeding with the repair.

2. NEVER allow foreign matter - dirt, water, metal particles, etc. - to enter the hydraulic system through the open connection. Seal the connection as tightly as possible. If dirt does get in, a filter change is required after about 50 hours of operation.

3. ALWAYS cycle all of the controls after completing a repair. This will eliminate air that is trapped in the cylinders, hoses, spool valves, etc., and avoid bumpy, erratic behavior during actual working conditions.

4. ALWAYS check for hydraulic leaks after a repair. A high pressure leak is hazardous and must be repaired before putting the unit to work.

5-2-1. CYLINDERS

All of the cylinders used on the Tirehand are of the same basic type; therefore, the same disassembly and repair instructions apply. Check the PARTS section for specific information. The following list of tools will be a definite asset in the disassembly and repair of all IMTCO cylinders.

1. Spanner Wrench - IMTCO Part Number 3Y140510. Fits all IMTCO cylinders

2. Needle-nose pliers - For removal and replacement of seals.

3. Ice pick or sharp awl - For removal and replacement of seals.

4. Plastic hammer - Used with the spanner wrench for head and piston assembly.

5-2-1-1. Clamp Cylinder Removal and Installation

To remove the clamping cylinder:

1. Rotate the Tirehand until the affected cylinder is on top and the arms are parallel to the floor.

2. Extend the affected cylinder full stroke.

NOTE

On those units with a single CLAMP cylinder control valve, both cylinders will extend.

3. Shut off the carrier vehicle's engine. Relieve internal hydraulic pressure by cycling the controls.

4. Remove the end cover from the body (refer to the appropriate body drawing) and disconnect the hydraulic hoses at the cylinder port block. Cap the hydraulic hoses.

5. Support the clamp arm with a lifting device capable of supporting the arm. Take up the slack in the lifting device.

WARNING

Make certain that the chain or cable used on the lifting device is unable to slip. Also support the pad end of the arm so that it will not rotate the arm.

6. Remove the trunnions.

7. Remove the retaining ring and machinery bushing from the base cylinder pin. Drive out the pin.

8. Disconnect the axial rotation hoses at the motor (cylinder). Cap the lines and plug the motor ports.

9. With the lifting device assisting, work the arm out of the body.

10. Remove the retaining ring and machinery bushing from the cylinder rod end, drive out the pin and slide the cylinder out of the arm.

11. Disassemble and repair the cylinder as necessary (Paragraph 5-2-1-4 and 5-2-1-5).

To install the cylinder and arm:

1. Slide the cylinder into the arm until the rod end of the cylinder lines up with the hole on the arm. Drive the rod-end pin into the hole and install the machinery bushing and retaining ring.

2. Lift the arm with a lifting device capable of supporting the arm. Slide the end of the arm into the body and work it in as far as possible.

WARNING

Make certain that the lifting device will not allow the arm to slide or rotate while lifting.

3. Line up the cylinder base-end pin boss with the hole in the arm. Drive the pin in and install the retaining ring and machinery bushing.

NOTE

It may be necessary to connect the hydraulic hoses to the cylinder's port block in order to extend and retract the base end of the cylinder to make it line up.

4. Connect the hydraulic hoses to both the clamp cylinder and axial rotation motor.

5. Install the trunnions and end cover.

6. Start the engine, cycle the CLAMP and AXIAL controls through at least five cycles to purge any air that may be trapped in the system. Check for leaks.

7. Check the hydraulic fluid level with all cylinders retracted. Fill if necessary.

8. Test the unit with a simulated job operation before proceeding to the job site.

5-2-1-2. Side Shift Cylinder Removal and Installation

Cylinder removal is accomplished as follows:

1. Rotate the Tirehand so that the affected cylinder is at the top.

2. Disconnect the hydraulic hoses from the cylinder port block. Cap the hoses.

3. Remove the retaining rings and bushings from the rod end and base end of the cylinder. Drive out the pins.

4. Disassemble and repair the cylinder (refer to Paragraphs 5-2-1-4 and 5-2-1-5).

To install the cylinder:

1. Line up the cylinder base-end pin boss with the holes in the base. Drive in the pin and install the machinery bushing and retaining ring.

2. Connect the hydraulic hoses to the cylinder port block.

3. Extend or retract the cylinder until the rod-end pin boss lines up with the holes in the sub-base. Drive in the pin and install the machinery bushing and retaining ring.

4. Extend and retract the cylinder through five complete cycles to purge air that may be trapped in the system. Check for leaks.

5. Check the hydraulic reservoir fluid level with all cylinders retracted. Fill if necessary.

6. Conduct a simulated job operation before proceeding to the job site.

5-2-1-3. Axial Cylinder Removal and Installation

NOTE

This is an option that replaces the hydraulic motors normally used for axial rotation.

To remove the axial cylinders:

1. Remove the retaining ring and machinery bushing on the rod end of the cylinder. Drive out the pin and rotate the pad out of the way.

2. Disconnect the hydraulic hoses from the cylinder port block. Cap the hoses.

3. Remove the retaining ring and machinery bushing from the base end of the cylinder. Drive out the pin and remove the cylinder.

4. Repair the cylinder (refer to Paragraphs 5-2-1-4 and 5-2-1-5).

To install the cylinder:

1. Slide the cylinder into position until the base-end pin boss lines up with the holes on the arm. Drive in the pin and install the machinery bushing and retaining ring.

2. Connect the hoses to the cylinder port block.

3. Rotate the pad until the rod-end pin boss lines up with the hole on the pad. Drive in the pin and install the machinery bushing and retaining ring.

4. Extend and retract the cylinder through five full cycles to purge air that may be trapped in the system.

5. Check the hydraulic reservoir fluid level with all cylinders retracted. Fill if necessary.

6. Conduct a simulated job operation before proceeding to the job site.

5-2-1-4. Cylinder Disassembly

CAUTION

If solvent is used to clean the internal cylinder components, all traces of solvent must be removed. Any residual will damage the seals.

WARNING

Do not use compressed air to assist in withdrawing the piston/rod assembly. The use of compressed air may result in propelling the piston/rod assembly out of the cylinder and may cause serious injury or death.

NOTE

If the cylinder is being repaired due to a worn seal, we recommend replacing all components found in a repair kit. The small additional expense may save you expensive equipment down-time in the near future. Refer to the PARTS section for seal kit numbers.

1. Thoroughly wash the exterior of the cylinder case.

NOTE

After the case has been washed, proceed with disassembly in a clean environment, one that is free of dust and dirt.

2. Remove the six allen head screws and lift off the holding valve. Check out the holding valve for proper operation (refer to Paragraph 5-2-2, Step 4 through Step 6).

3. Place the cylinder on a flat surface near a vise. Slip a pin through the pin boss and clamp the pin in a vise.(Figure E-1).

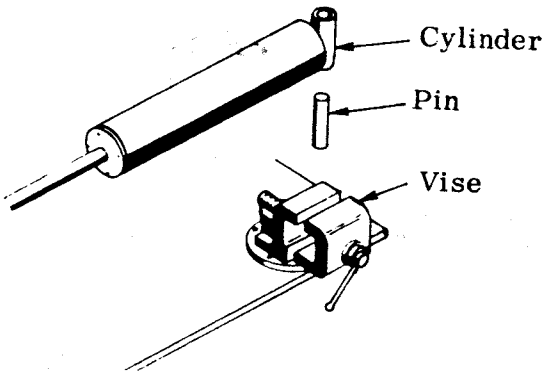


Figure E-1. Securing Cylinder

CAUTION

Do not clamp the cylinder in a vise. It may damage the cylinder case.

4. Unscrew the head (No. 4, Figure E-2) in a counterclockwise direction with the spanner wrench. Withdraw the head from the cylinder case.

5. Secure the rod pin boss in the same manner as the cylinder pin boss (Figure E-1).

6. Unscrew the piston (No. 8, Figure E-2) from the rod with the spanner wrench in the same manner as the head (Step 4).

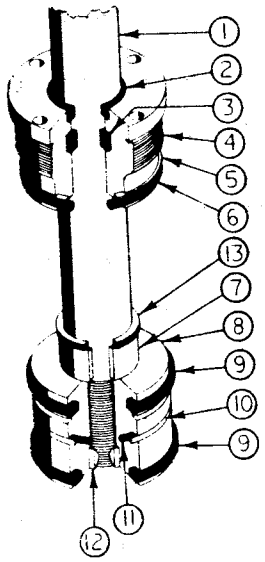
CAUTION

Do not clamp the machined surface of the rod in a vise. Damage to the rod will result.

7. Remove the wafer lock (No. 13) and the stop tubes (No. 7) from the rod (No. 1). The wafer lock was crushed to secure it and will have to be broken to remove it.

CAUTION

Make certain the rod isn't damaged during removal of the wafer lock.



1. Rod
2. Wiper
3. Dynamic Rod Seal
4. Head
5. Static Back-up
6. Static O-Ring
7. Stop Tube
8. Piston
9. Piston Rings
10. Dynamic Piston Seal
11. Companion O-Ring
12. Lock Ring
13. Wafer Lock

Figure E-2. Cylinder Layout

8. Slide the head off the rod.

9. Inspect the cylinder interior and the rod for dents, nicks, scratches, etc. and replace if necessary.

CAUTION

Failure to replace a damaged rod or cylinder may result in leaks and poor performance that will have to be repaired.

NOTE

Further work should be done in a warm environment (70°F or warmer). This makes the seals more pliable and easier to work with.

10. Work a slack section into the head seal static o-ring (No. 6) and pick it up out of the groove (Figure E-3). Lift the static back-up out of its groove with the needle-nose pliers.

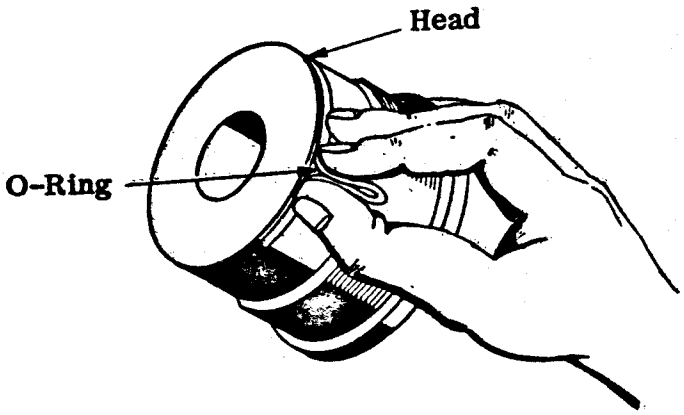


Figure E-3. O-Ring Removal

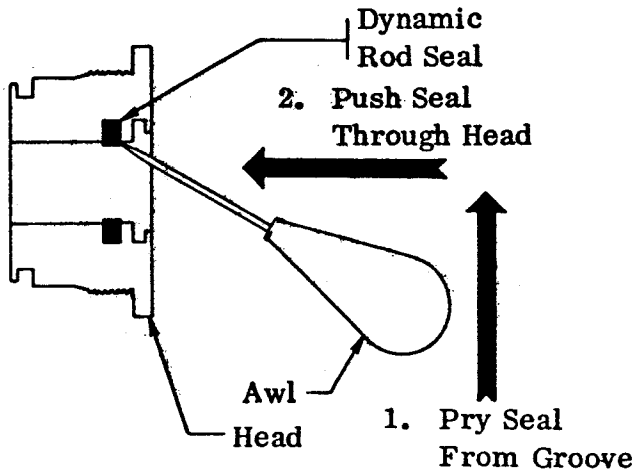


Figure E-4. Dynamic Rod Seal Removal

11. Pinch the lip of the rod wiper (No. 2) with the needle-nose pliers and pull it out of the head.

12. Position the head with the top of the head up and puncture the dynamic rod seal (No. 3) with the ice pick. Pry it out of the groove and push it on through the head (Figure E-4)

13. Spread the piston rings (No. 9) and slide them over the land and off the end of the piston nearest to the ring.

14. Carefully lift the dynamic piston seal (No. 10) out of the groove with a thin blade such as a putty knife. Take care not to nick the edges of the groove. Twist and break the seal.

CAUTION

Damaging the edges of the groove is likely to cause premature seal failure.

15. Prick the companion o-ring with a pin or needle and lift it out of the groove. Roll it off the end of the piston.

16. Pry the lock ring (No. 12) from its seat in the bottom of the piston.

17. Clean the piston, head, rod and cylinder. Dress any nicks and gouges in the head and piston that may have occurred during disassembly.

5-2-1-5. Cylinder Assembly

CAUTION

Use all of the seals in the seal kit. It may save you expensive down-time in the future.

1. Install the companion o-ring (No. 11, Figure E-2). Make certain it is free of twists.

2. Slide the piston seal (No. 10) carefully into position.

CAUTION

Work the piston seal carefully into position from the top of the piston using the assembly groove. Do not attempt to install it from the bottom of the piston. You may stretch the seal and render it useless.

3. Slide the piston rings (No. 9) over the lands and allow them to snap into position.

4. Carefully press the lock ring (No. 12) into position.

5. Install the static back-up (No. 5) and the o-ring (No. 6). Make certain that there are no twists.

6. Position the head with the rod wiper pocket up. Grasp the dynamic rod seal (No. 3) with the needle-nose pliers (Figure E-5)

CAUTION

Do not apply too much pressure to the rod seal or you may cut it with the needle-nose pliers.

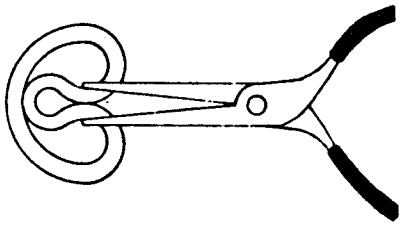


Figure E-5. Rod Seal Installation

7. Insert the dynamic rod seal into the head and allow it to snap into position. Use your fingers to help it if necessary.

8. Install the rod wiper (No. 2)

9. Generously lubricate the inside diameter of the head with a non-fibrous bearing grease such as Lubriplate.

10. Carefully slide the head onto the rod. Make certain that the rod wiper (No. 2) does not catch on the rod when it is first started. Slide the head all of the way onto the rod and up to the pin boss.

11. Slide the wafer-lock (No. 13) and stop tubes (No. 7 - if applicable) onto the rod.

12. Lubricate the entire threaded area of the rod and the inside diameter of the piston with non-fibrous bearing grease.

13. Secure the rod as shown in Figure E-1 and screw the piston onto the rod by hand. You should be able to get the piston almost all of the way onto the rod before using the spanner wrench.

CAUTION

Check to make certain that the lock ring (No. 12) stays in position. It must remain in position or leaks may occur resulting in poor performance.

14. Torque the piston onto the rod at 250 ft. lbs. of torque. Impact the wrench three times with a heavy plastic hammer while maintaining the torque (Figure E-6).

15. Generously lubricate the outside diameter of both the head and piston with non-fibrous bearing grease. Also lubricate the threads and beveled area at the top of the cylinder case.

16. With a side-to-side or up-and-down motion, work the piston into the cylinder and past the threads and beveled area at the top of the cylinder case.

17. Slide the piston into the cylinder. With a rotating motion, work the o-ring (No. 6) and the back-up (No. 5) past the threads and hand tighten the cylinder head.

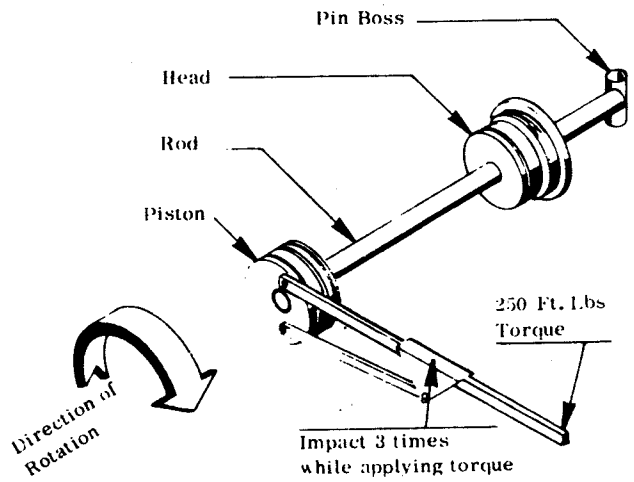


Figure E-6. Piston/Rod Assembly

18. Secure the cylinder (Figure E-1) and torque the head in the same manner as the piston (step 14 and Figure E-6).

19. Install the holding valves and their o-rings. Make certain that the o-rings are in good position and properly positioned.

5-2-2. Locking Holding Valves

The cylinders are equipped with locking holding valves (Figure E-7. Its function is to prevent damage or injury from the crane descending in the event of a hydraulic hose or other down-stream component failure.

The valve is non-adjustable and failure is unlikely. However, if a malfunction is suspected, it may be checked in the following manner:

1. Extend the cylinder in question and kill the engine. Check to see if the cylinder "creeps". If not the valve is serviceable. If it does "creep", continue through this test procedure.

WARNING

These instructions apply only to the Tirehand and not to the carrier vehicle's cylinders. For information on the carrier vehicle, refer to the manufacturer's instructions.

NOTE

Be prepared for reasonable oil drainage from the affected cylinder.

2. Remove the six (6) allen head screws securing the valve to the cylinder.

3. Lift the holding valve away from the cylinder. Be careful not to llosen the o-ring seals and introduce dirt into the cylinder base.

4. Check the smallest port for a dirt plug and clean it out if necessary (pilot port).

5. Carefully test actuate the valve needle with a small screwdriver through the center port. If the needle is free, reinstall the valve. If not, proceed with Step 6 or replace the valve.

6. The valve may be assembled and cleaned as follows:

   A. Unscrew the plugs from both ends of the valve body and remove the spring, needle, seat and spool. The o-rings will come out with the plugs.

   B. Immerse all of the parts except for the o-rings in a container of clean solvent.

CAUTION

Solvent may be corrosive to o-rings and damage them.

   C. Thoroughly clean the components and then rinse them in clean solvent. Blow the parts dry with compressed air.

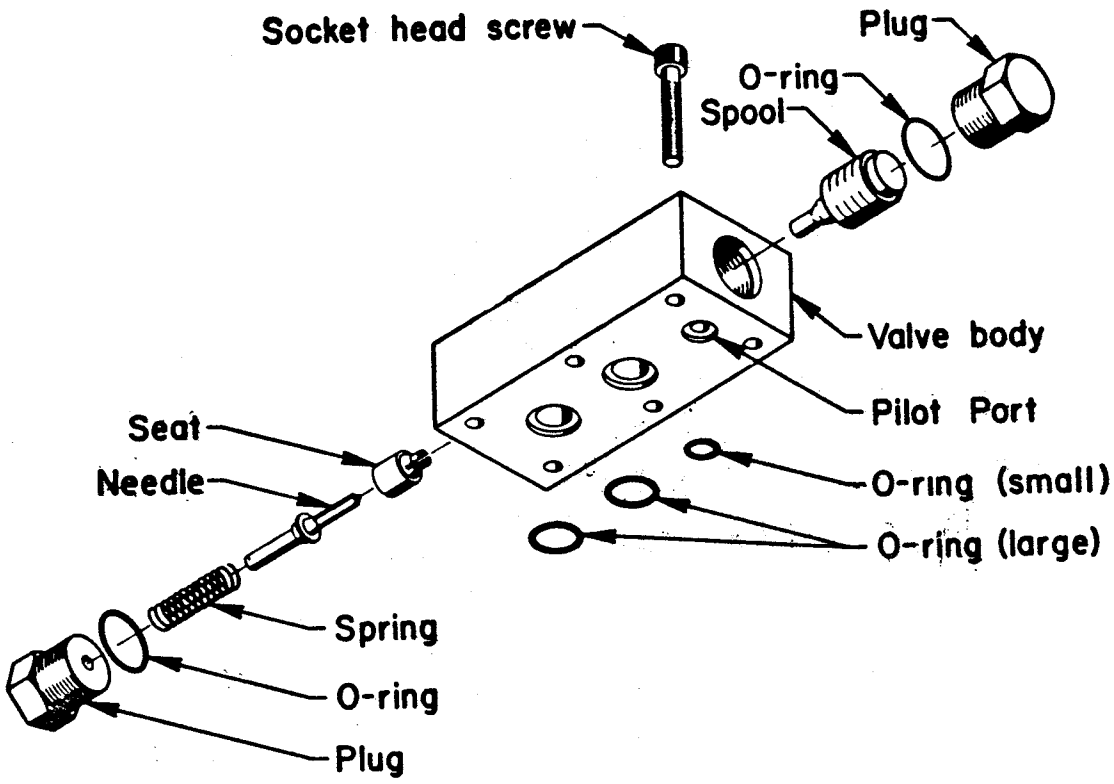


Figure E-7. Locking Holding Valve

D. Reassemble the valve and repeat step 5.

7. Install the valve and evenly tighten the six (6) allen head mounting screws.

NOTE

Take care that the o-ring seals are properly placed and are dirt free. Also be sure that the small pilot port is properly located over the small o-ring seal and port.

8. Activate the system and check for leaks.

NOTE

If the valve appears to be functioning properly and the cylinder still "creeps", hydraulic fluid is probably bypassing the piston rings. This indicates the need for new rings (refer to Paragraph 5-2-1).

5-2-3. HYDRAULIC PUMP

Most carrier vehicles do not require the addition of a hydraulic pump. However, some vehicles use a pump with a capacity too small to power the Tirehand. In these cases, a Vicker's V210-6 pump is used. The pump capacity is 6 GPM (22.7 l/min.) with an operating pressure of 2300 PSI (161.7 kg/cm^2) maximum at 1600 RPM. Figure E-8 shows the rotation direction indicated by the arrow on the cartridge body.

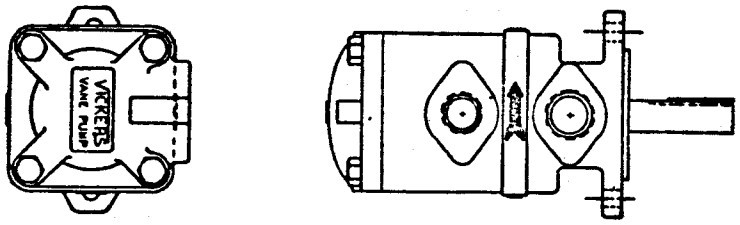


Figure E-8. Hydraulic Pump

The only field repair that may be done on this pump is the replacement of the cartridge which may be obtained from your local Vickers supplier or from IMTCO Customer Service. To replace the cartridge:

1. Remove the four bolts at the rear of the pump.

2. Remove the defective cartridge and install a new cartridge. Make certain that the arrow points in the same direction as the old cartridge.

3. Install the bolts and torque to 35 in. lbs. (0.4 kg/m).

5-2-4. HYDRAULIC MOTORS

Two hydraulic motors are used on the standard Tirehand: one for Tirehand rotation and the other for axial (pad) rotation. These motors are not considered field-repairable and should be replaced if defective.

5-2-4-1. Tirehand Rotation Motor Removal and Replacement

To remove rotation motor:

1. Disconnect and cap the hydraulic hoses.

2. Remove the four motor mounting bolts.

3. Remove the cushion block and hose fittings from the old motor.

To install the new motor:

1. Install the cushion block and hose fittings from the old motor. Do not use the old o-rings - they should be replaced.

2. Position the motor on the gear reducer, install the four mounting bolts and torque them to the proper value (Table D-4).

3. Connect the hoses.

4. Start the engine, rotate the Tirehand five (5) times in both directions and check for leaks.

5. With all cylinders retracted, check the fluid level in the reservoir and fill if necessary.

5-2-4-2. Axial Rotation Motor Removal and Installation

To remove the motor:

1. Disconnect and cap the hoses.

2. Remove the mounting bolts and lift out the motor.

Install the motor as follows:

1. Bolt the motor in place. Torque the bolts to the proper torque value (Table D-4).

2. Connect the hoses.

3. Start the engine and rotate the pads five times in both directions. Check for leaks.

4. With all cylinders retracted, check the fluid level in the reservoir and fill if necessary.

5-2-5. RELIEF VALVE ADJUSTMENT

The hydraulic system is designed to operate at a pressure requirement of 2350-2400 PSI with an optimum oil flow of 6 GPM. If unit pressure is less than 2350, the unit relief valve may require adjustment or replacement.

The following procedure is recommended for relief valve adjustment:

1. Start the vehicle and engage the pump.

2. With the vehicle transmission in neutral, operate any function full stroke and, with function lever still engaged at end of stroke, read the pressure on the gauge at the control valve. It should read between 2350-2400 PSI.

3. If the pressure reading is low, shut off the engine and remove the relief valve plug (Figure E-9). Install one 0.010" shim which will provide a 125 PSI increase.

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

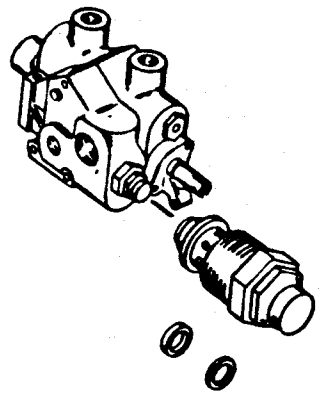


Figure E-9. Relief Valve Adjustment

5. If the 125 PSI increase is achieved, add shims as necessary to bring the pressure up to the required 2350 PSI minimum.

5-3. BEARINGS

This paragraph covers the removal and installation of turntable gear-bearings and bushings.

5-3-1. TURNTABLE GEAR-BEARINGS

There are three turntable gear-bearings used on the standard Tirehand: one is used for Tirehand rotation and the other two are used for axial (pad) rotation. These gear-bearings are not considered field-repairable and must be replaced if defective.

5-3-1-1. Tirehand Rotation Gear Bearing

To remove the Tirehand rotation gear-bearing:

1. Disconnect and cap the hydraulic hoses from the rotation manifold. Number the hoses for ease in assembly (manifold port numbers are stamped in the top of the manifold).

2. Support the clamp arms and body with an overhead lifting device capable of supporting the weight of the unit (Approximately 3200 lbs - 1451.5 kg). Take up the slack in the lifting device.

WARNING

The lifting device must be fastened to the Tirehand in such a manner that will prevent shifting of the load due to slippage.

3. Remove the eighteen bolts that secure the body to the gear-bearing. Slowly work the hoses out of the rotation adapter (item 4, Figure 6-) while simultaneously withdrawing the body. Set the body carefully to one side.

4. Disconnect the grease fitting extension from the turntable gear-bearing.

5. Remove the twenty-four gear-bearing mounting bolts and remove the gear-bearing.

To install the gear-bearing:

1. Position the gear-bearing and torque the twenty-four mounting bolts (Table D-4).

2. Install the grease fitting extension.

3. Carefully position the body and clamp arms until the holes in the body line up with the holes in the gear-bearing. Install the mounting bolts and torque to the proper value (Table D-4).

4. Connect the hydraulic hoses to the rotation manifold.

5. Start the engine and cycle all of the Tirehand controls at least five (5) times in both directions to purge the air in the system.

6. Check the system for leaks and repair any leaks that are found.

7. With all cylinders retracted, check the fluid level in the reservoir and fill if necessary.

5-3-1-2. Axial Rotation Gear-Bearing

To remove the axial rotation gear-bearing:

1. Remove the eighteen pad mounting bolts.

2. Disconnect the grease fitting extension.

3. Remove the twenty-one gear-bearing mounting bolts and remove the bearing.

To install the bearing:

1. Position the bearing so that the holes align with those in the arm. The grease fitting extension port must be toward the pinion gear. Install and torque the mounting bolts (Table D-4).

2. Install the grease fitting extension.

3. Position the pad over the gear-bearing, install and torque the mounting bolts (Table D-4).

5-3-2. BUSHING REMOVAL AND INSTALLATION

To replace a bushing:

1. Remove the weldment containing the bushing.

2. Position the bushing removal tool as shown in Figure E-10 and extract the bushing.

3. To install the bushing, assemble the tool as shown in Figure E-11 and press the bushing in.

5-4. TROUBLESHOOTING

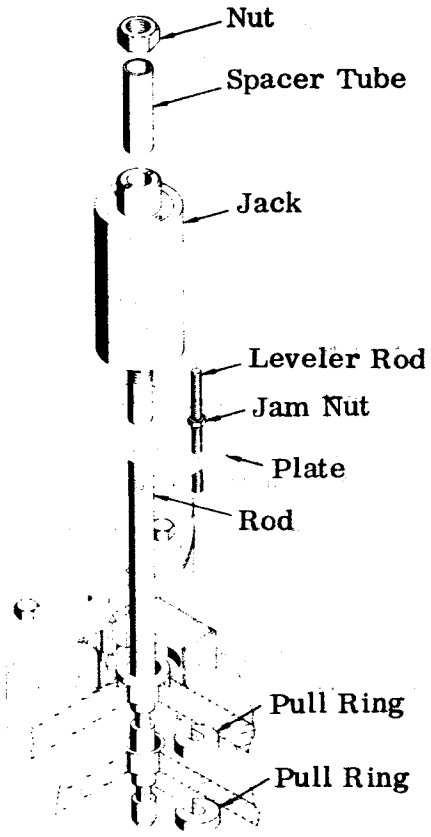
Table E-1 is intended for use as a quick reference in diagnosing on-the-job malfunctions. Care has been taken to list the most likely possible causes in order of probable occurence.

TABLE E-1. TROUBLESHOOTING

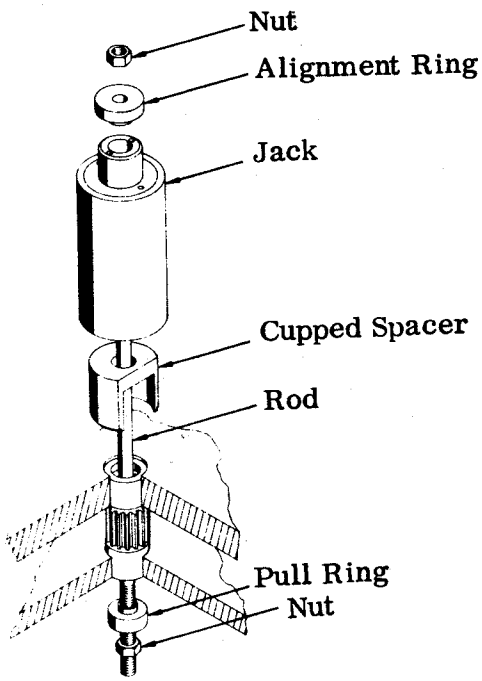
SYMPTOM	PROBABLE CAUSE (Paragraph)
Controls fail to respond	1. Pump not engaged - if supplied with electric clutch. 2. Hydraulic oil supply is low. 3. Hydraulic pressure line is ruptured. 4. Suction line shut-off valve is obstructed. 5. Hydraulic pump is faulty (5-2-3). 6. Relief valve is set incorrectly (5-2-5)
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 (5-2-5) 4. Pump or cylinder is worn (5-2-1-4 or 5-2-3) 5. Pump is slipping due to excessive oil temperature. This is a factor which will increase with worn components. 6. Filter is dirty (4-3-6) 7. Valve spools are inoperative 8. Obstruction has occurred in cylinder holding valve (5-2-2)

TABLE E-1. TROUBLESHOOTING (Continued)

SYMPTOM	PROBABLE CAUSE (Paragraph)
Rotation control slowed or erratic.	1. Internal port orifices are clogged. 2. Rotation gears are locked or damaged (5-3-1-1).
Arms and pads drift when loaded and controls neutralized.	1. Hydraulic oil is bypassing at piston rings (5-2-1-4) 2. Cylinder holding valves are defective or contaminated (5-2-2).
Unusual noise in operation	1. Cavitation is occurring due to low hydraulic oil supply. 2. Loading is excessive (2-2-1). 3. Restriction or collapse of suction line has occurred. 4. Bypass settings on relief valve are too low (5-2-5). 5. Relief valve is damaged. 6. Valve closure is obstructed due to particle accumulation.
Side step chatter or slow	1. Bearings need lubrication (4-2) 2. Mechanical damage to bracket. 3. Lower cylinder damaged (5-2-1-4).
Arm chatter or noise	1. Arms need both internal and external lubrication (4-2). 2. Bearing damaged (5-3-2).

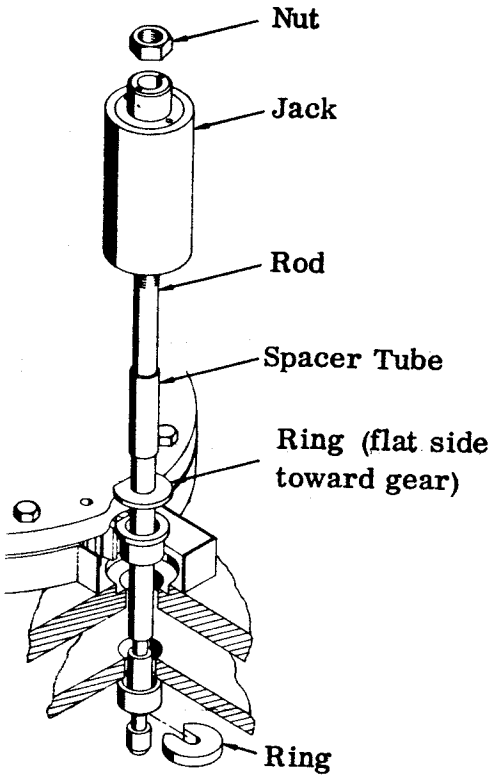


Pinion Gear

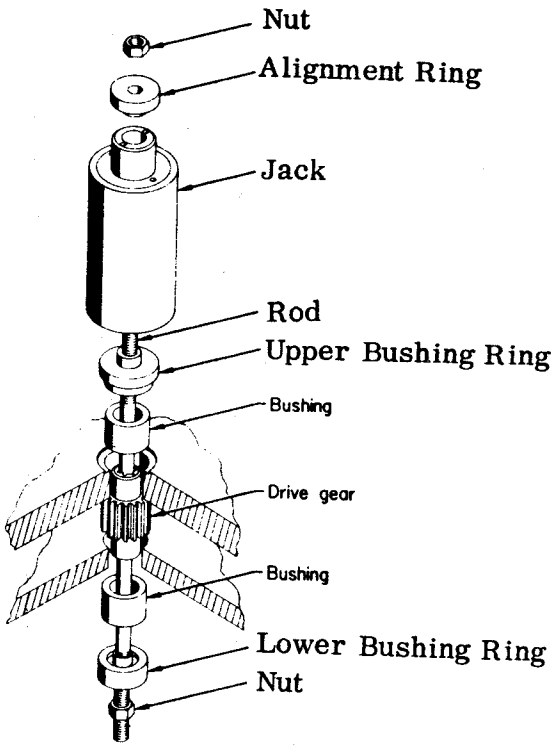


Drive Gear

Figure E-10. Bushing Removal



Pinion Gear



Drive Gear

Figure E-11. Bushing Installation

SECTION 6. PARTS

6-1. GENERAL

This section consists of the parts breakdown drawings of the different assemblies used on the IMT 1833.1836 and 1836A Tirehands. Table F-1 list all of the assemblies shown and Figure F-1 shows the major components.

TABLE F-1. STANDARD AND OPTIONAL EQUIPMENT

DESCRIPTION	PART NUMBER		
	1833	1836	1836A
Body	40701285	40070966	40702551
Rotation	40070967	40070967	40702553
Hydraulic Parts Kit	91702025	91702025	91702025
Standard Arm with Gear Train Driven Claw	40702132	41702447	40702552
Arm with Cylinder Driven Claw	30702163	30070968	--
Base - A62 Ford Loader	30070965	30070965	--
Base - A66 Ford Loader	30701436	30701436	30702555
Base - 966 Caterpillar with American Coupler	30701320	30701320	--
Base - 966 Caterpillar Loader	30701670	30701670	30702813
Base - Clark CY-225-300 Forklift	30701468	30701468	--
Base - 950 Caterpillar Loader	30702109	--	--
Base - V300 Caterpillar Forklift	--	30702616	--
Boom - A62 Ford Loader	40070944	40070944	--
Boom - A66 Ford Loader	40701420	40701420	--
Motor Monkey Option	90701634	90701634	30702800
Installation Kit - A62 Ford Loader	91702020	91702020	--
Installation Kit - A66 Ford Loader	91702021	91702021	--
Installation Kit - 966 Caterpillar Loader	91702022	91702022	--
Installation Kit - 966C Caterpillar Loader	91702023	91702023	91702478
Installation Kit - Clark CY-225-300 Forklift	91702024	91702024	--

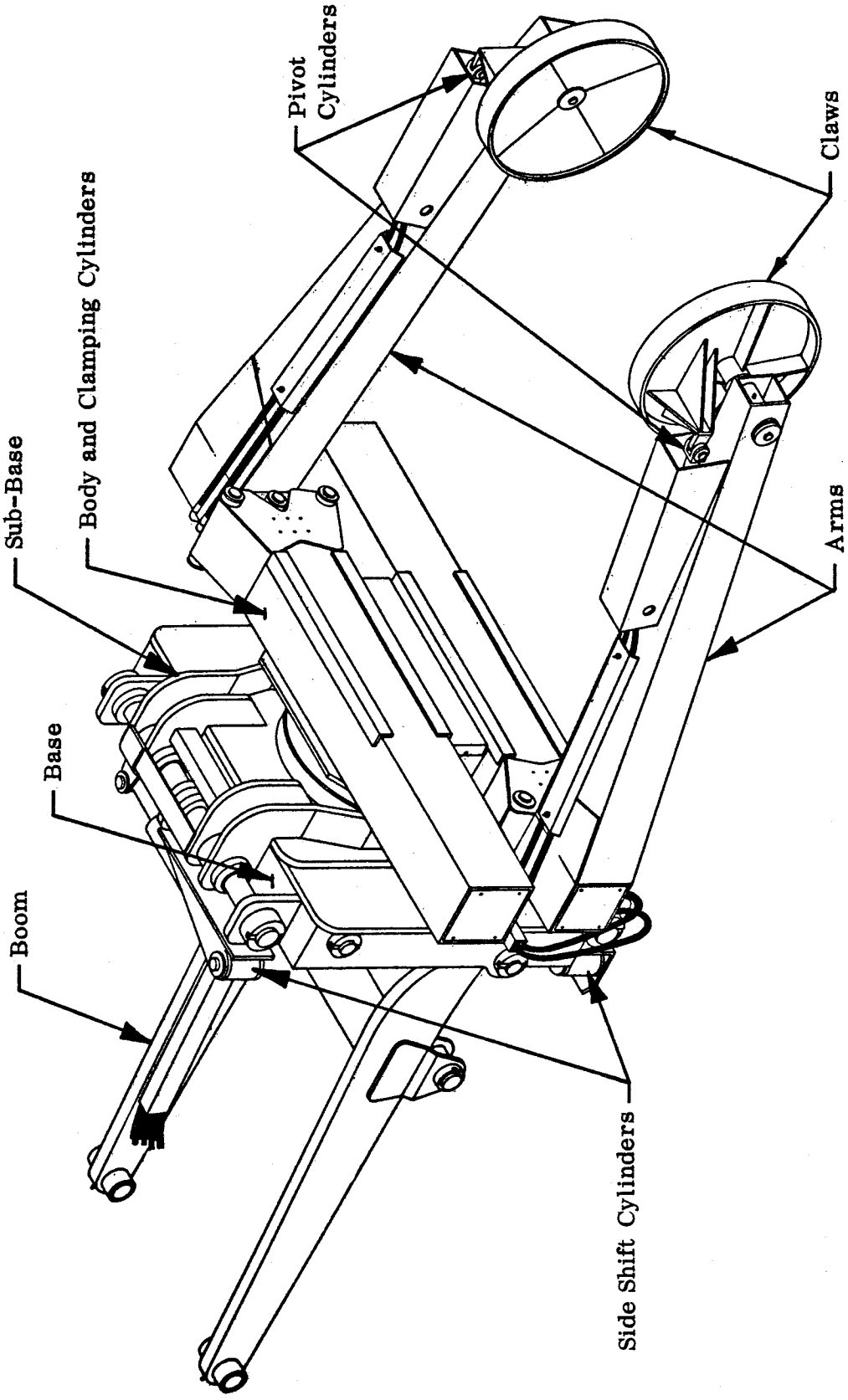


Figure F-1. Major Components

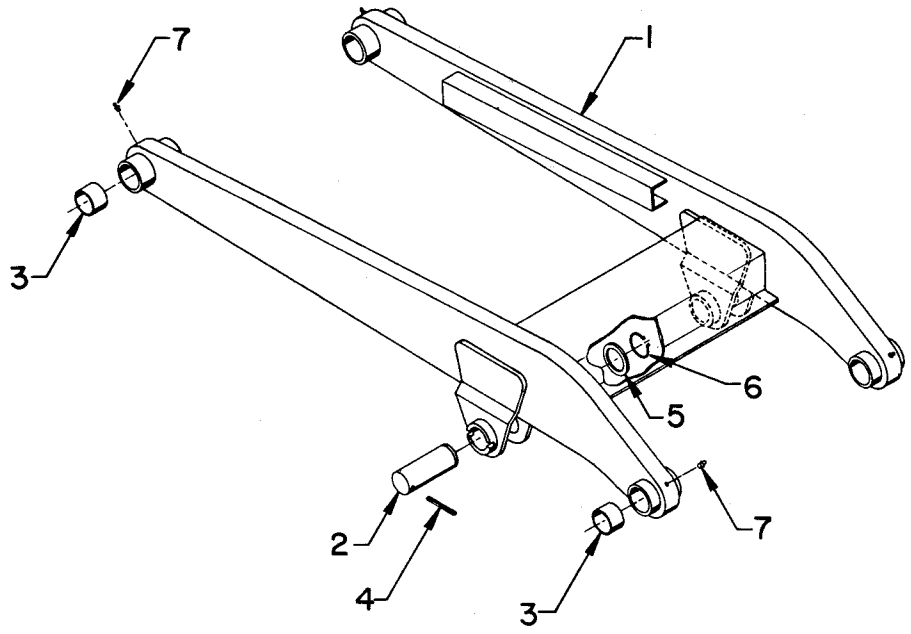


Figure F-2. Boom Assembly (Part Number 40070994 - A62 Ford and 40701420 - A66 Ford)

	A-62 Ford Loader			A-66 Ford Loader		
Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52070986	BOOM	1	1.	52701423	BOOM	1
2.	60102197	PIN, loader cylinder/boom	2	2.	60103150	PIN, loader cylinder/boom	2
3.	7BF82020	BUSHING	8	3.	7BF81225	BUSHING	12
4.	72066317	PIN, spring; 1/2" x 4" lg.	2	4.	72066317	PIN, spring; 1/2" x 4" lg.	2
5.	72063039	BUSHING, machy; 2" x 10 ga.	2	5.	72063040	BUSHING, machy; 2-1/2" x 10 ga.	2
6.	72066136	RING, retaining	2	6.	72066103	RING, retaining	2
7.	72053508	ZERK; 1/8" npt	4	7.	72053508	ZERK; 1/8" npt	4

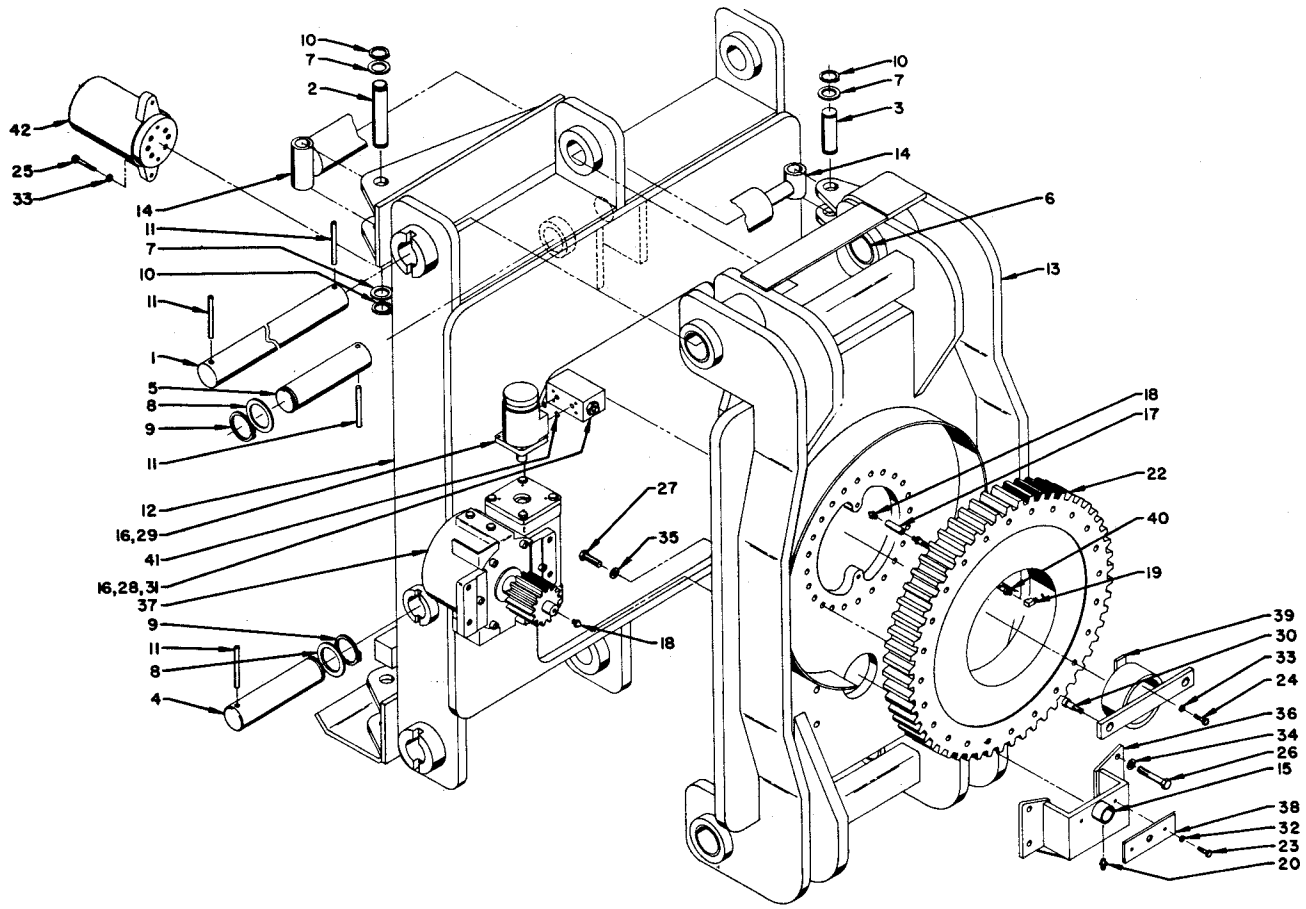


Figure F-3. 1836 A Base (Part Number 3070255) and Rotation (Part Number 40702553)

Item No.	Part No.	Description	Qty
		BASE ASSEMBLY (Part Number 3070255) - includes items 1 through 14)	
1.	60102160	SHAFT, linear	2
2.	60102201	PIN, cylinder to base	2
3.	60102202	PIN, cylinder/sub-base	2
4.	60103156	PIN, loader boom to base	2
5.	60103157	PIN, loader cylinder to base	1
6.	60020084	BUSHING, linear	4
7.	72063037	BUSHING, machy.; 1-1/2" x 10 ga.	8
8.	72063040	BUSHING, machy.; 2-1/2" x 10 ga.	3
9.	72066103	RING, retaining; 2-1/2"	3
10.	72066132	RING, retaining; 1-1/2"	8
11.	72066317	PIN, spring; 1/2" dia. x 4" lg.	7
12.	52701429	BASE	1
13.	52702559	SUB-BASE	1
14.	3B205510	CYLINDER, side shift	2
		ROTATION ASSEMBLY (Part Number 40702553) - includes items 15 through 42	
15.	60020083	BUSHING, pinion support	1
16.	73051001	MOTOR, hydraulic	1
17.	72053301	COUPLER; 1/8" npt	1
18.	72053508	ZERK; 1/8" npt	2
19.	72053589	ELBOW, street, 90°; 1/8" npt brass	1
20.	72531357	ZERK; 3/16" press fit	1
21.	72054015	VALVE, cushion	1
22.	71056055	GEAR-BEARING, turntable	1
23.	72060046	BOLT; 3/8-16 x 1" lg.	2
24.	72060062	BOLT; 7/16-14 x 1" lg.	2
25.	72060066	BOLT; 7/16-14 x 2" lg.	2
26.	72060175	BOLT; 5/8-11 x 2-3/4" lg. gr. 8	4
27.	72060206	BOLT; 3/4-16 x 2" lg. gr. 8	24
28.	72060738	SCREW, soc. hd.; 5/16-18 x 2-1/2" lg.	4
29.	72060760	SCREW, soc. hd.; 3/8-16 x 3/4" low profile	4
30.	72601124	BOLT, shoulder; 5/8" x 3/4" lg 1/2-13 thd.	2
31.	72063050	WASHER, lock; 5/16"	4
32.	72063051	WASHER, lock; 3/8"	2
33.	72063052	WASHER, lock; 7/16"	4
34.	72063055	WASHER, lock; 5/8"	4
35.	72063056	WASHER, lcok; 3/4"	24
36.	52070995	SUPPORT, pinion	1
37.	52702525	REDUCER, gear	1
38.	52702549	RETAINER, bushing	1
39.	52702578	ADAPTER, rotation	1
40.	73731173	EXTENSION, grease	1
41.	7Q072112	O-RING	2
42.	3R345810	MANIFOLD, rotation	1

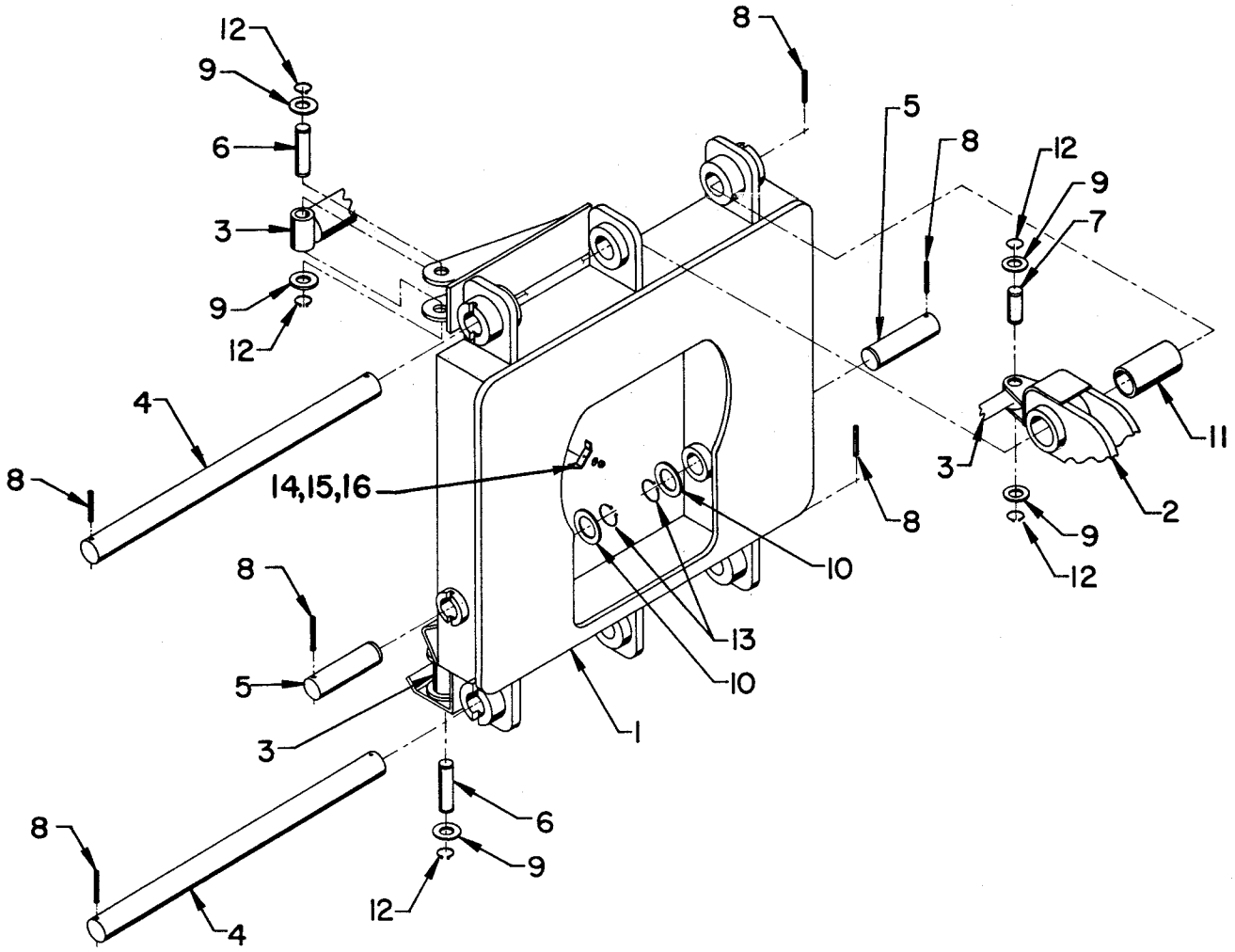


Figure F-4. Base Assembly - A62 Ford Loader (Part Number 30070965)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52701002	BASE	1	9.	72063037	BUSHING, machy; 1-1/2" x 10 ga.	8
2.	52701011	SUB-BASE	1	10.	72063039	BUSHING, machy; 2" x 10 ga.	2
3.	3B205510	CYLINDER, side shift	2	11.	60020084	BUSHING, linear	4
4.	60102160	SHAFT, linear	2	12.	72066132	RING, retaining	8
5.	60102200	PIN, base/boom	2	13.	72066136	RING, retaining	2
6.	60102201	PIN, base/cylinder	2	14.	60010118	CLAMP, hose	2
7.	60102202	PIN, sub-base/cylinder	2	15.	72063051	LOCKWASHER; 3/8"	2
8.	72066317	PIN, spring; 1/2" x 4" lg	6	16.	72062002	NUT, hex; 3/8-16	2

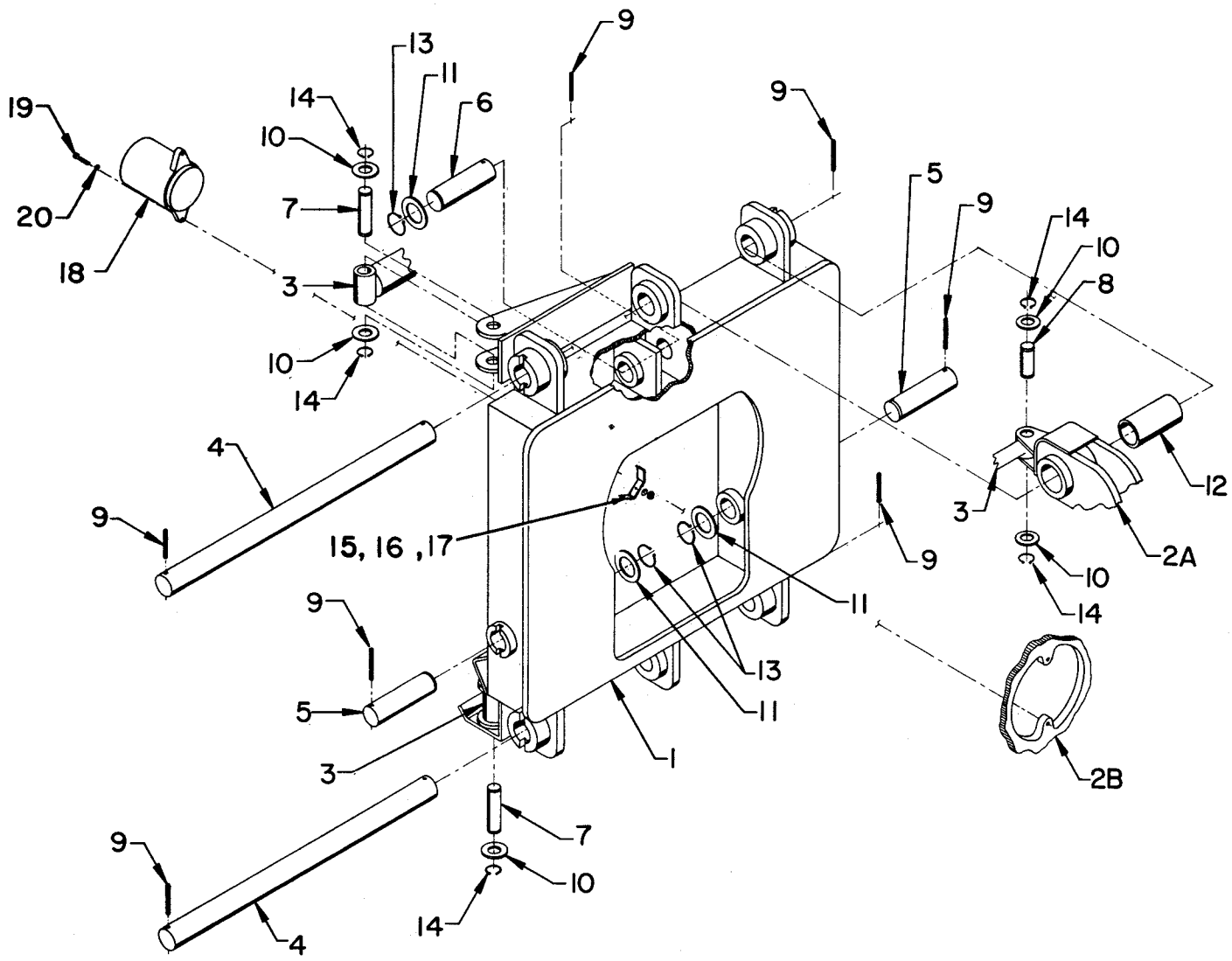


Figure F-5. Base Assembly - A66 Ford Loader (Part Number 30701436)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52701429	BASE	1	11.	72063040	BUSHING, machy.; 1-1/2" x 10 ga.	3
2A.	52701011	SUB-BASE (1833/1836 only)	1	12.	60020084	BUSHING, linear	4
2B.	52702559	SUB-BASE (1836A only)	1	13.	72066103	RING, retaining	3
3.	3B205510	CYLINDER, side shift	2	14.	72066132	RING, retaining	8
4.	60102160	SHAFT, linear	2	15.	60010118	CLAMP, hose	1
5.	60103156	PIN, boom/base	2	16.	72063051	LOCK WASHER; 3/8"	1
6.	60103157	PIN, loader cylinder/base	2	17.	72062002	NUT, hex; 3/8-16	1
7.	60102201	PIN, cylinder base	2	18.	3B345810	MANIFOLD, rotation (1836A only)	1
8.	60102202	PIN, cylinder/sub-base	2	19.	72060066	BOLT; 7/16-14 x 2" (1836A only)	2
9.	72066317	PIN, spring; 1/2" x 4" lg.	7	20.	72063052	LOCK WASHER; 7/16" (1836A only)	2
10.	72063037	BUSHING, machy.; 1-1/2" x 10 ga.	3				

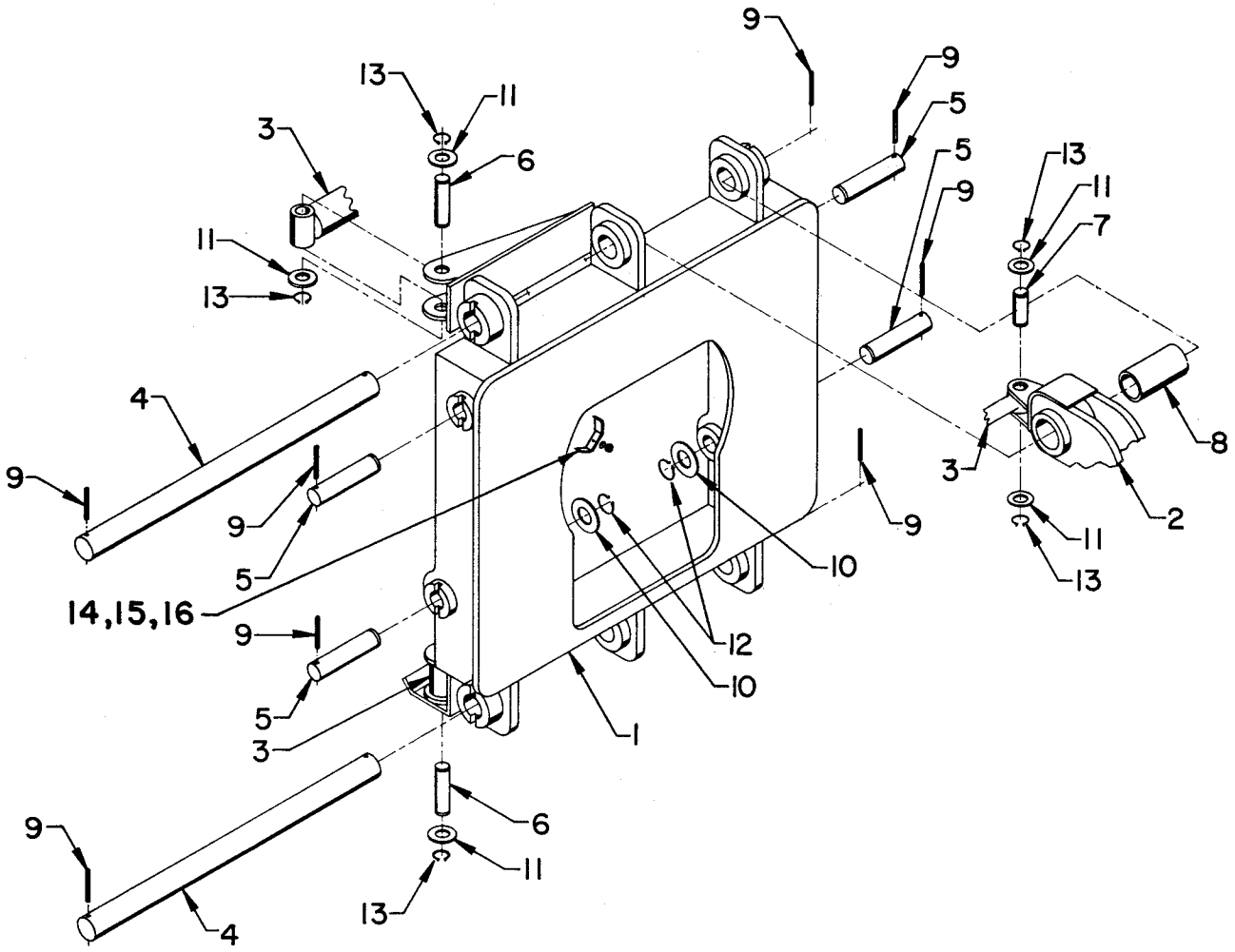


Figure F-6. Base Assembly - 950 Caterpillar Loader (Part Number 30702109) and 966 Caterpillar Loader (Part Number 30701670)

Base assembly - 966 Cat

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52701671	BASE	1	9.	72066317	PIN, spring; 1/2" x 4" lg.	8
2.	52701011	SUB-BASE	1	10.	72063039	BUSHING, machy; 2" x 10 ga.	4
3.	3B205510	CYLINDER, side shift	2	11.	72063037	BUSHING, machy; 1-1/2" x 10 ga.	8
4.	60102160	SHAFT, linear	2	12.	72066136	RING, retaining	4
5.	60103529	PIN	4	13.	72066132	RING, retaining	8
6.	60102201	PIN, cylinder/base	2	14.	60010118	CLAMP, hose	2
7.	60102202	PIN, cylinder/sub-base	2	15.	72063051	LOCK WASHER; 3/8"	2
8.	60020084	BUSHING, linear	4	16.	72062002	NUT, hex; 3/8-16	2

Base assembly - 950 Cat loader

Item	Part	Description	Qty	Item	Part	Description	Qty
1.	52702110	BASE	1	9.	72066317	PIN, spring; 1/2" x 4" lg.	8
2.	52701011	SUB-BASE	1	10.	72063100	BUSHING, machy; 1-3/4" x 10 ga.	4
3.	3B205510	CYLINDER, side shift	2	11.	72063037	BUSHING, machy; 1-1/2" x 10 ga.	8
4.	60102160	SHAFT, linear	2	12.	72066134	RING, retaining' 1-3/4"	4
5.	60104178	PIN, base/boom & tilt arm	4	13.	72066132	RING, retaining; 1-1/2"	8
6.	60102201	PIN, cylinder/base	2	14.	60010118	CLAMP, hose	2
7.	60102202	PIN, cylinder/sub-base	2	15.	72063051	LOCK WASHER; 3/8"	2
8.	60020084	BUSHING, linear	4	16.	72062002	NUT, hex; 3/8-16	2

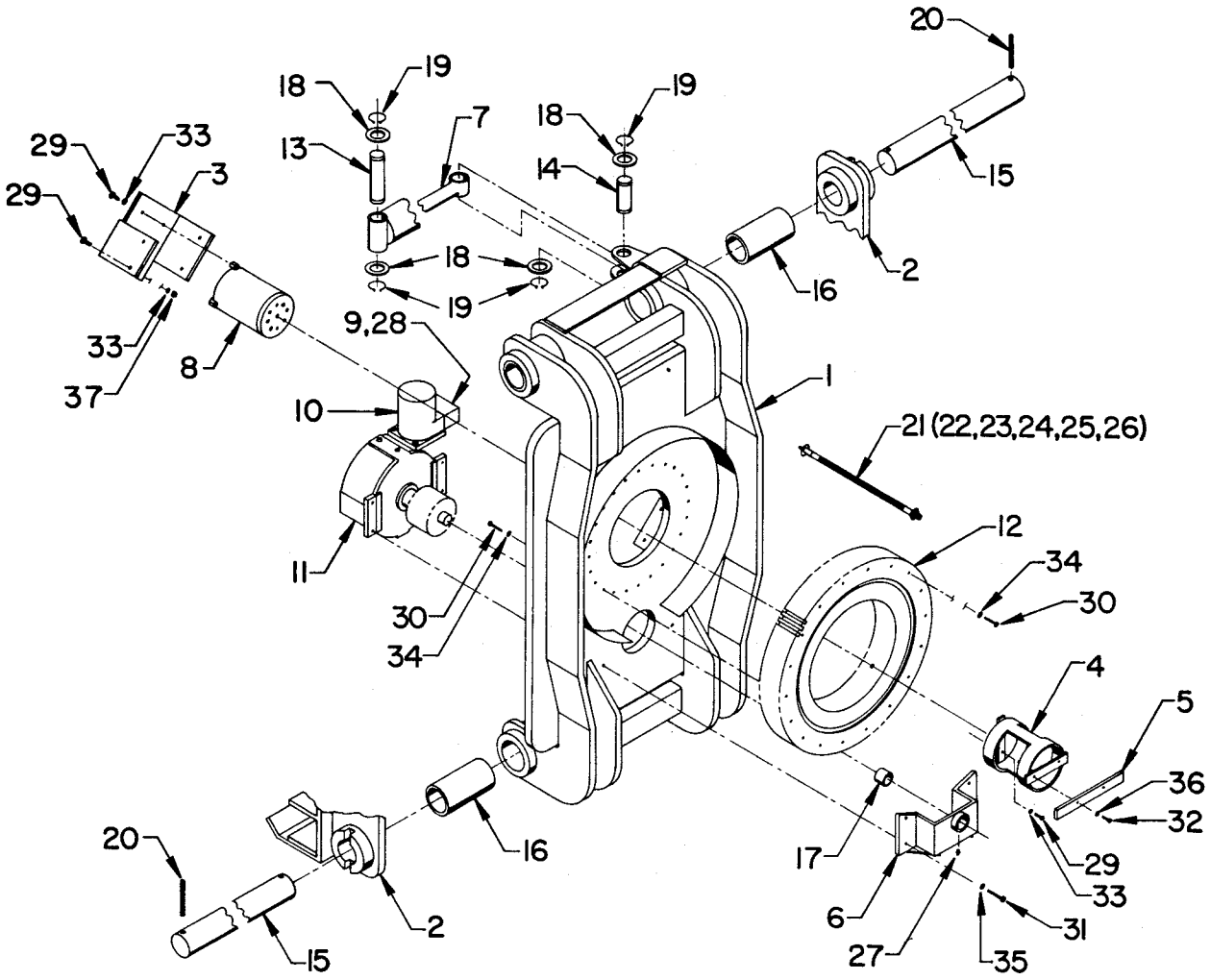
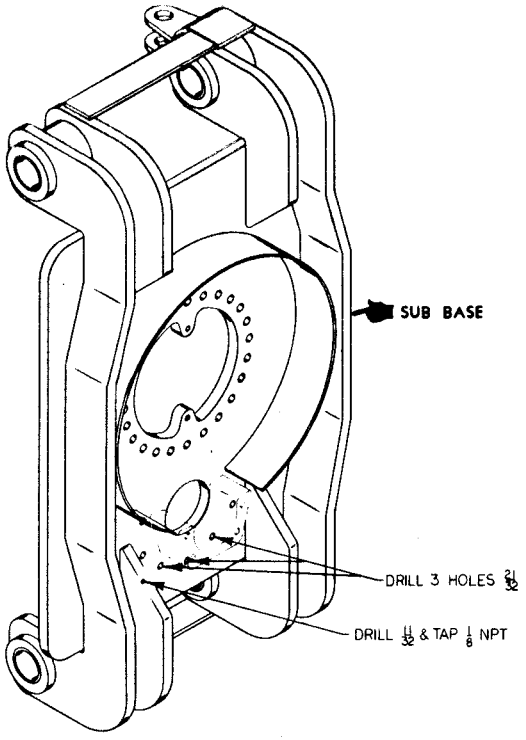
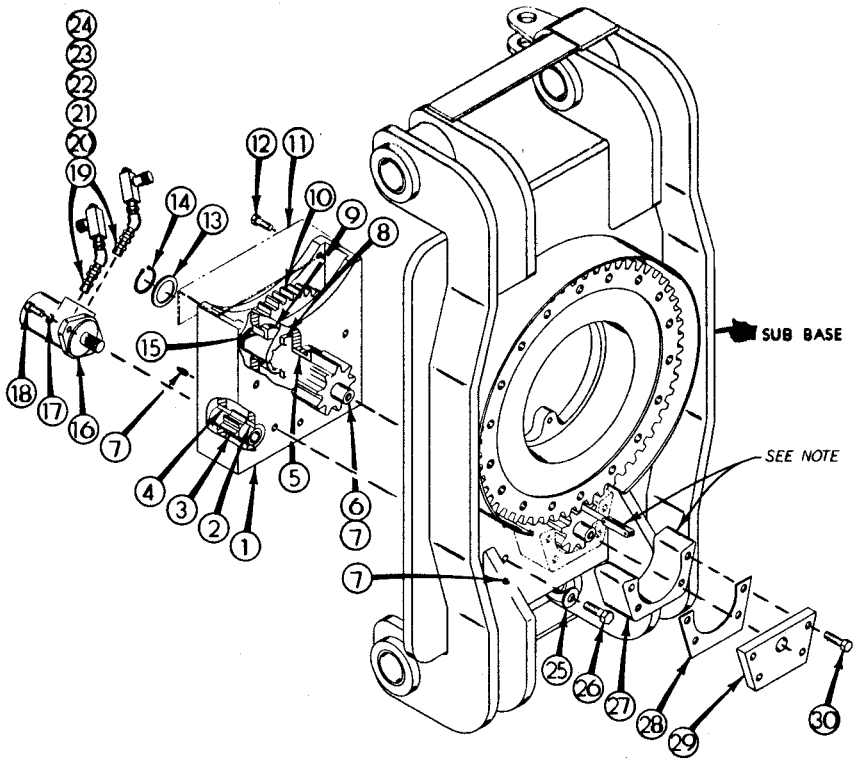


Figure F-7. Rotation (Part Number 40070967) and Base (Part Number 30701320) for 966 Caterpillar Loader with American Coupler System

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52701011	SUB-BASE	1	20.	72066317	PIN, spring; 1/2" x 4" lg.	4
2.	52701318	BASE	1	21.	51701379	EXTENSION, grease fitting	1
3.	52701017	BRACKET, center post mounting	1	22.	72053301	COUPLING, pipe; 1/8" npt	1
4.	52701018	ADAPTER, rotation	1	23.	72053508	ZERK; 1/8" npt	1
5.	60102186	PLATE, center post alignment	1	24.	72531826	BUSHING, red.; 1/4" npt(m) x 1/8" npt(f)	1
6.	52070995	SUPPORT, pinion	1	25.	72063003	WASHER, wrt.; 3/8"	1
7.	3B205510	CYLINDER, side shift	2	26.	73073101	EXTENSION, grease fitting	1
8.	3R330610	POST, center (6-port shown)	1	27.	72531357	ZERK, 45°; 3/16"	1
9.	73054015	VALVE, cushion	1	28.	7Q072112	O-RING, cushion valve	2
10.	73051001	MOTOR, hydraulic	1	29.	72060063	BOLT; 7/16-14 x 1-1/4"	10
11.	71057001	REDUCER, gear, w/pinion	1	30.	72060206	BOLT; 3/4-16 x 2" Grade 8	42
12.	71056055	GEAR-BEARING, turntable	1	31.	72060175	BOLT; 3/8-10 x 2-3/4" Grade 8	4
13.	60102201	PIN, cylinder/base	2	32.	72060046	BOLT; 3/8-16 x 1"	2
14.	60102202	PIN, cylinder/sub-base	2	33.	72063052	LOCK WASHER; 7/16"	10
15.	60102160	SHAFT, linear	2	34.	72063056	LOCK WASHER; 3/4"	42
16.	60020084	BUSHING, linear	4	35.	72063055	LOCK WASHER; 5/8"	4
17.	60020083	BUSHING, pinion support	1	36.	72063051	LOCK WASHER; 3/8"	2
18.	72063037	BUSHING, machy	8	37.	72062003	NUT; 7/16-14	4
19.	72066132	RING, retaining	8				



STEP 3



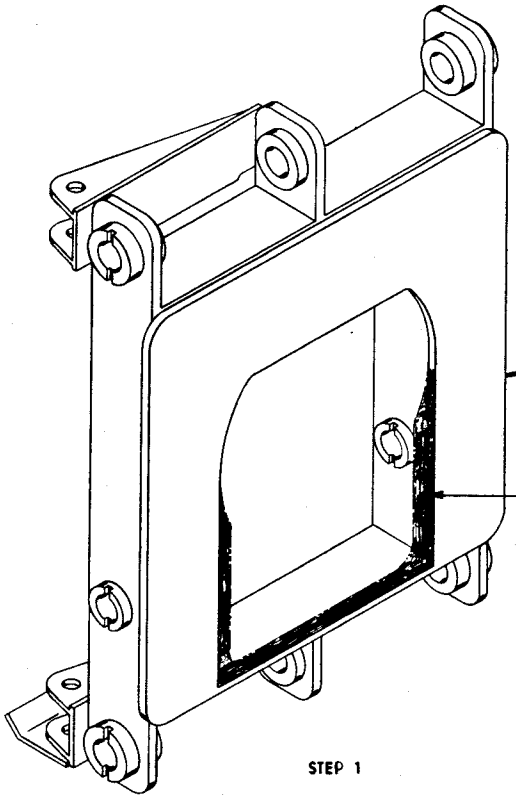
STEP 4

NOTE: REMOVE OLD STYLE PINION SUPPORT & INSTALL GEAR BOX. WITH FEELER GAUGE, POSITION SO THERE IS 0.025" TO 0.035" CLEARANCE BETWEEN PINION TOOTH AND TURNTABLE GEAR BEARING TOOTH & TIGHTEN BOLTS.
ASSEMBLE ITEMS 27,28,29 & (4) 30 TORQUING BOLTS 90 FT LBS.
POSITION THIS PINION SUPPORT ASSEMBLY ON SUB BASE & TACK WELD TO SUB BASE. DISSASSEMBLE & 1/2" FILLET WELD ITEM 27 TO SUB BASE, THEN REASSEMBLE.

1836A Gear Box Conversin Kit (P/N 95703473)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	51703568	GEAR BOX	1	17.	72063053	WASHER, lock; 1/2"	4
2.	60020173	BUSHING, lower drive gear	1 Ref.	18.	72060794	SCREW; 1/2-13 x 1-1/4" socket hd.	2
3.	71056011	GEAR, drive	1 Ref.	19.	72531829	BUSHING, reducer; 1/2" npt(m) x 3/8" npt(f)	2
4.	60020177	BUSHING, upper drive gear	1 Ref.	20.	72053642	SWIVEL; 3/8" npt	2
5.	60020176	BUSHING, upper pinion gear	1 Ref.	21.	72053563	ELBOW, street, 45°; 3/8" npt	2
6.	71056073	PINION	1	22.	72053723	NIPPLE; 3/8" npt	2
7.	72053508	ZERK; 1/8" npt	3	23.	73054139	CONTROL, flow; 3/8"	2
8.	60020175	WASHER, thrust	1	24.	72053413	PLUG; 3/8" npt	2
9.	60020172	BEARING, thrust	1	25.	72063119	WASHER, hardened; 5/8"	7
10.	71056264	GEAR, intermediate	1	26.	72060151	SCREW; 5/8-11 x 2" gr. 8 hex hd.	7
11.	60106043	COVER, gear box	1	27.	60106034	PLATFORM, pinion support	1
12.	72060089	SCREW; 1/2-13 x 3/4" hex hd.	2	28.	60106035	SPACER, pinion support	1
13.	72063039	BUSHING; 2" x 10 ga.	1	29.	60020178	PLATE, pinion support	1
14.	72066095	RING, retaining	1	30.	72601144	SCREW; 9/16-12 x 2" gr. 8 hex hd.	4
15.	60020174	BUSHING, lower pinion	1 Ref.	31.	60106038	TEMPLATE, drill (not shown)	1
16.	73051030	MOTOR, hydraulic	1				

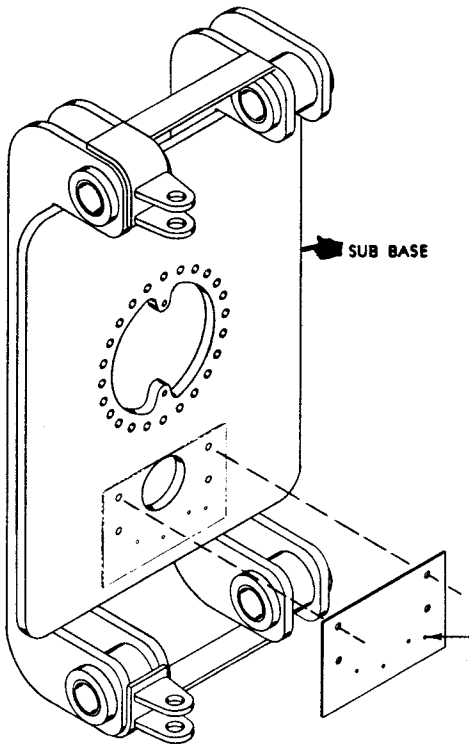
60106042



NOTE: 1. DISCONNECT HOSES FROM CONTINUOUS ROTATION MANIFOLD. MARK HOSES AS TO MANIFOLD PORT LOCATION.
2. REMOVE ROTARY MANIFOLD
3. REMOVE OLD STYLE GEAR REDUCER & PINION SUPPORT.

STEP 1

E.C.O. No	Date	Chg	SUB ASSY NO.	PRODUCT NO. 24901836A	SHEET 1 OF 4	Iowa Mold Tooling Co., Inc. SPUR GEAR BOX CONV. SHIP OUT KIT	95703473 D



AFTER MODIFYING BASE PLATE,
ALIGN TEMPLATE NO. 60106038 B WITH
4 EXISTING HOLES & DRILL (4) $\frac{1}{4}$" PILOT HOLES

STEP 2

E.C.O. No	Date	Chg	SUB ASSY NO.	PRODUCT NO. 24901836A	SHEET 2 OF 4	Iowa Mold Tooling Co., Inc. SPUR GEAR BOX CONV. SHIP OUT KIT	95703473 D

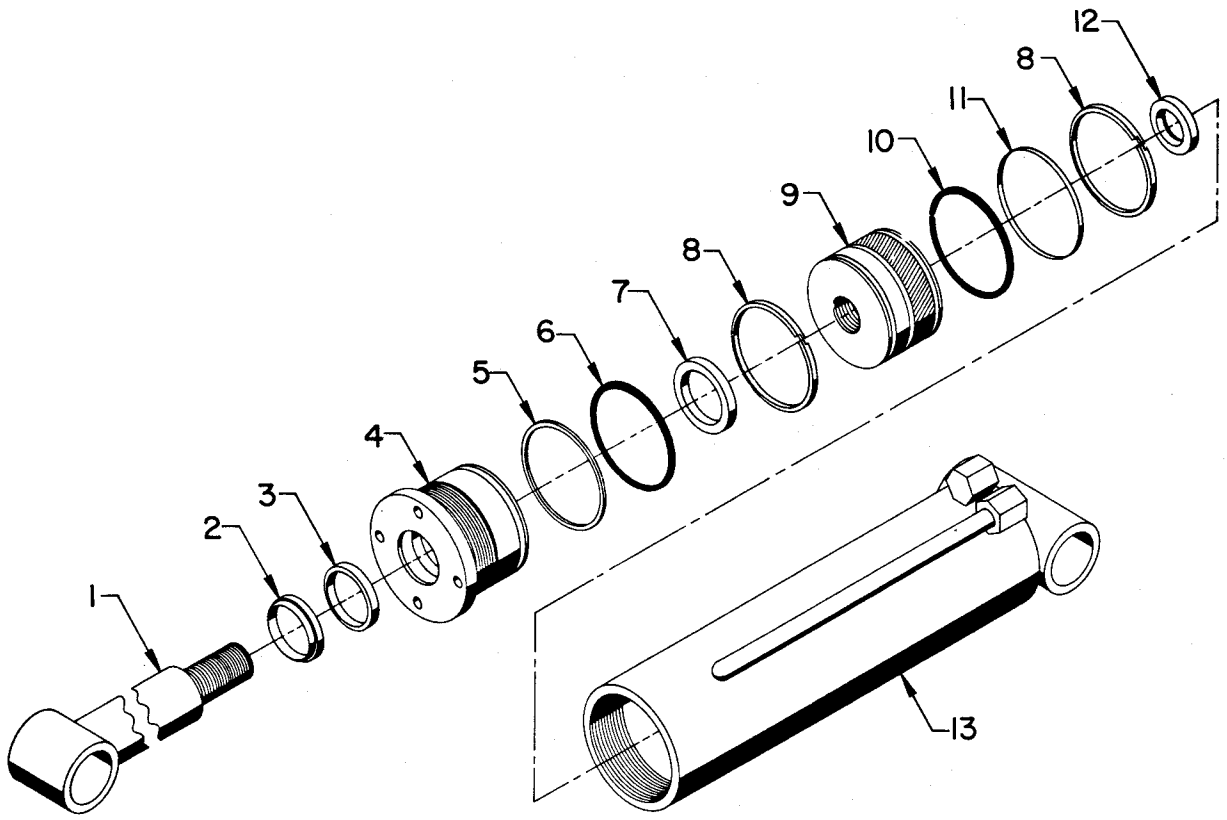


Figure F-8. Side Shift Cylinder (Part Number 3B205510)

Item No.	Part No.	Description	Qty
1.	4G205510	ROD	1
2.	7R14P015	*WIPER, rod	1
3.	7R546015	*SEAL, rod	1
4.	6H030015	HEAD	1
5.	7Q10P334	*RING, back-up	1
6.	7Q072334	*O-RING	1
7.	6A025015	*WAFER - LOCK	1
8.	7T65I030	*RING, piston	2
9.	6I030106	PISTON	1
10.	7Q072145	*O-RING	1
11.	7T66P030	*SEAL, piston	1
12.	7T61N106	*SEAL, lock ring	1
13.	4A205510	CASE, cylinder	1

*Part of seal kit - Part Number 9C121217

DIMENSIONS	
Bore	3"
Stroke	8"
Rod Diameter	1-1/2"
Pin Diameter	1-1/2"

NOTE

Whenever the cylinder is disassembled, we strongly recommend replacing all of the components in the seal kit. This may save expensive down-time in the immediate future.

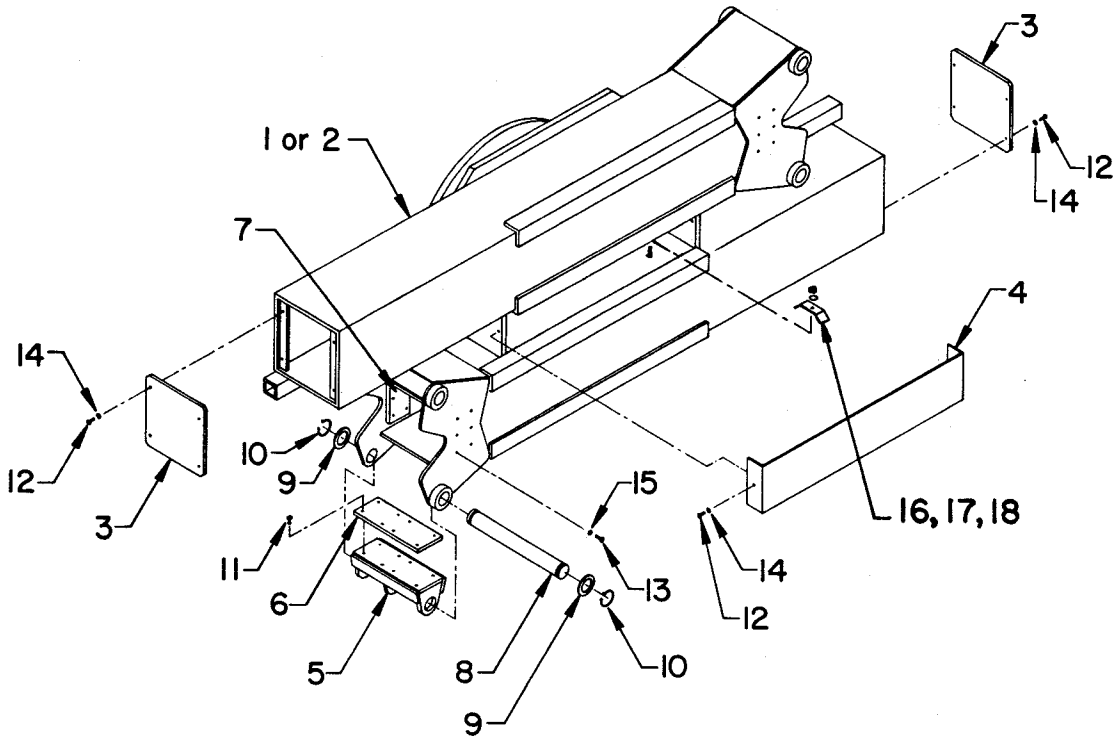


Figure F-9. 1833 Body (Part Number 40701285) and 1836 Body (Part Number 40070966)

1833 and 1836 Body Assembly (Part Number 701285 and 40070966

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52701286	BODY, 1833	1	10.	72066132	RING, retaining	8
2.	52701971	BODY, 1836	1	11.	72060868	BOLT; 1/4-20 x 1/2"	32
3.	60102175	COVER, end	2	12.	72060833	BOLT; 5/16-18 x 3/4" self tapping	10
4.	60103442	COVER	1	13.	72060047	BOLT; 3/8-16 x 1-1/4"	24
5.	52070974	TRUNNION	4	14.	72063050	LOCK WASHER; 5/16"	10
6.	60020080	BAR, rub	4	15.	72063051	LOCK WASHER; 3/8"	24
7.	60020079	BODY, rub bar	4	16.	60010118	CLAMP, hose	4
8.	60102199	PIN, trunnion/body	4	17.	72063051	LOCK WASHER; 3/8"	4
9.	72063037	BUSHING, machy; 1-1/2" x 10 ga.	8	18.	72062002	NUT, hex; 3/8-16	4

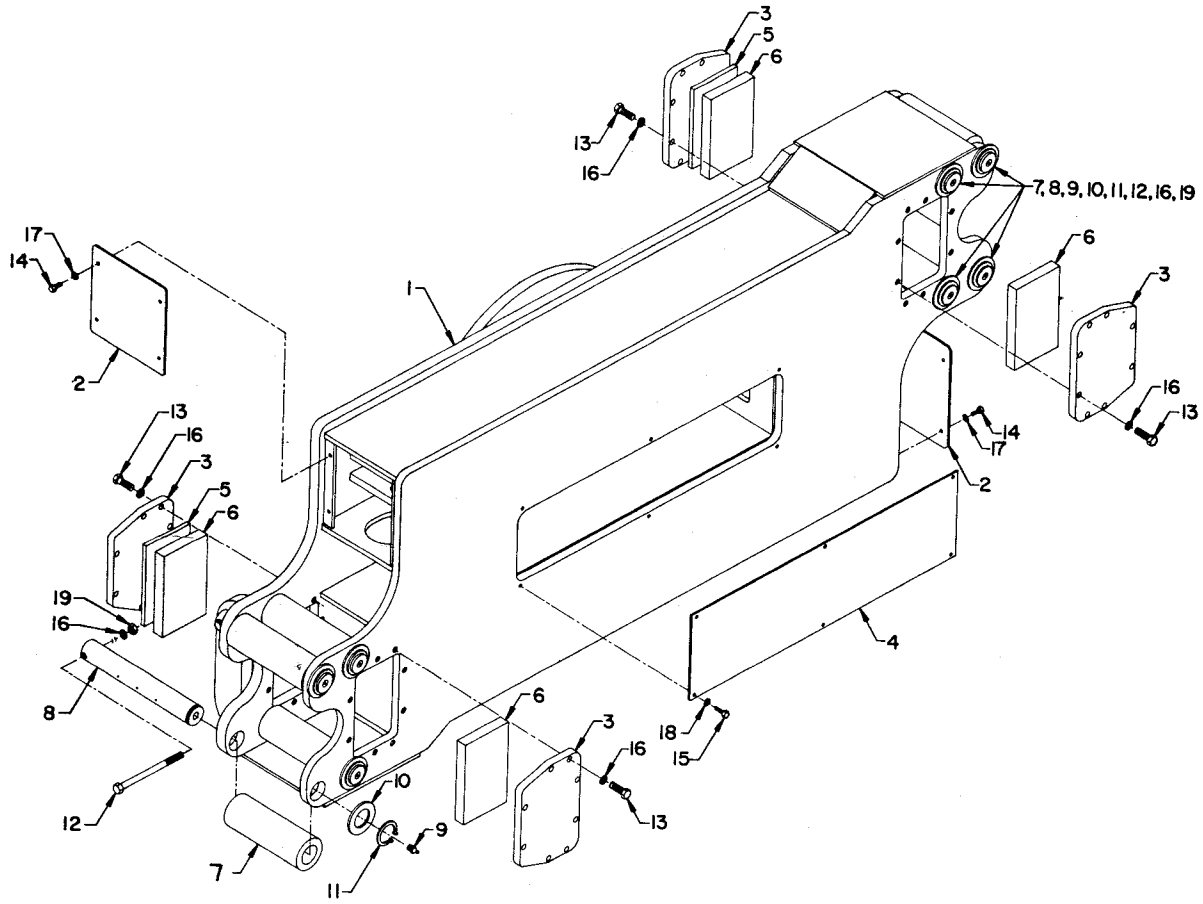


Figure F-10. Body Assembly - 1836A Tirehand (Part Number 40702551)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52702550	BODY	1	11.	72066092	RING, retaining; 1-3/4"	8
2.	60102175	COVER, end	2	12.	72060105	SCREW; 1/2-13 x 7"	4
3.	60105159	COVER, wear pad	4	13.	72060117	SCREW; 1/2-13 x 1-1/2"	40
4.	60105160	COVER, body	1	14.	72060833	SCREW; 5/16-18 x 3/4"	
5.	60105161	SPACER, wear pad	2			self-tapping	8
6.	60020160	PAD, wear	4	15.	72060004	SCREW; 1/4-20 x 1" lg.	6
7.	60020159	ROLLER	8	16.	72063053	LOCK WASHER; 1/2"	36
8.	60105158	PIN, roller	8	17.	72063050	LOCK WASHER; 5/16"	8
9.	72053508	ZERK; 1/8" npt	8	18.	72063049	LOCK WASHER; 1/4"	6
10.	72063100	BUSHING, machy.; 1-3/4" x 10 ga.	8	19.	72062004	NUT; 1/2-13	4

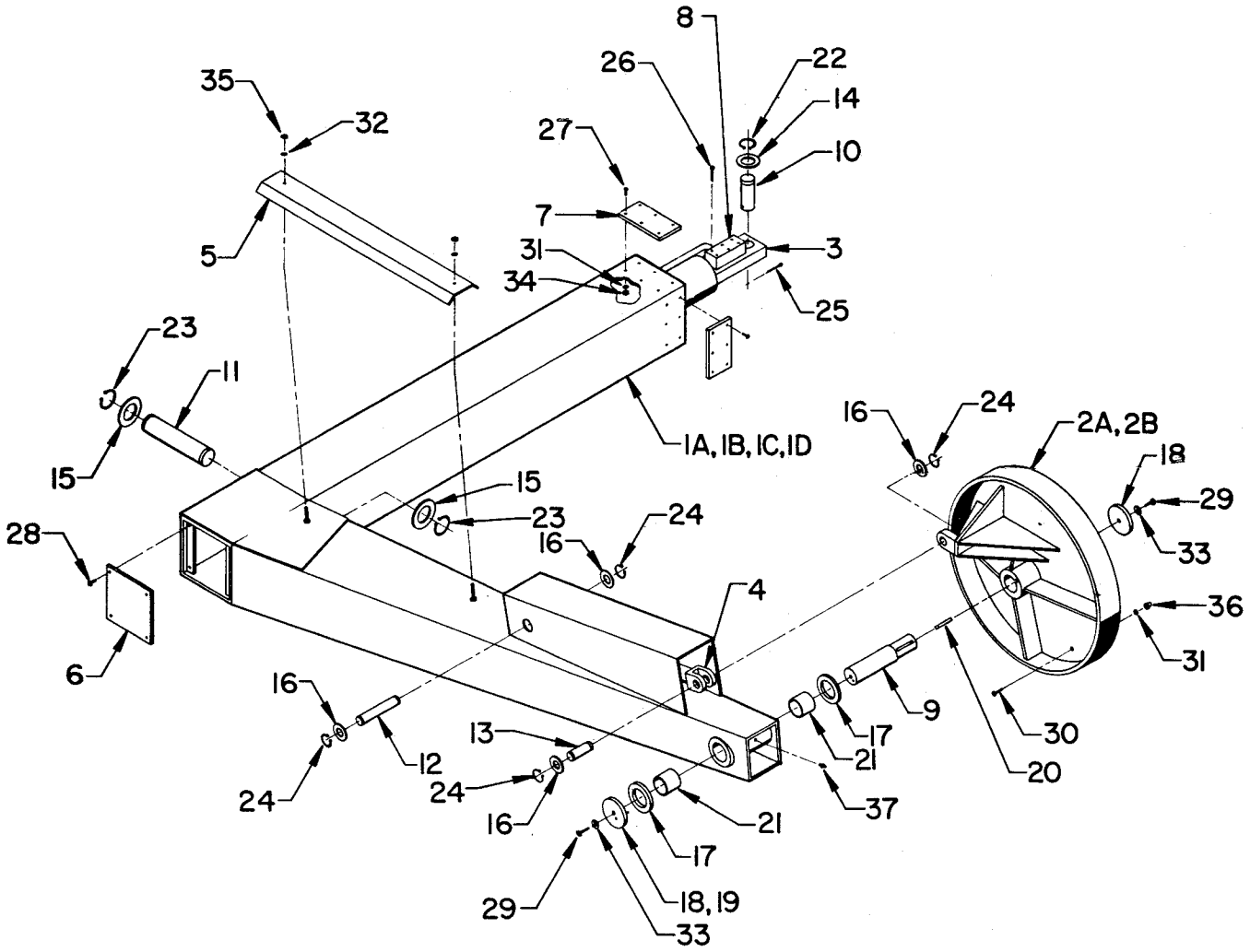


Figure F-11. Clamping Arm - 1833 Tirehand (Part Number 30701263) and 1836 Tirehand (Part Number 30070968)

Item No.	Part No.	Description	*Qty
1*.	52701266	ARM, right hand, 1833	1
	52701265	ARM, left hand, 1833	1
	52070973	ARM, right hand, 1836	1
	52070972	ARM, left hand, 1836	1
2*	52070976	CLAW, right hand	1
	52070975	CLAW, left hand	1
3.	3B308412	CYLINDER, clamp	1
4.	3B110510	CYLINDER, pivot	1
5.	60101823	SHROUD, hose	1
6.	60102082	COVER, arm end	1
7.	60020075	BAR, rub	4
8.	73054004	VALVE, safety locking	1
9.	60102091	SPINDLE, claw	1
10.	60102096	PIN, clamp cylinder, base end	1
11.	60102097	PIN, clamp cylinder, rod end	1
12.	60102099	PIN, cylinder/arm	1
13.	60102098	PIN, cylinder/claw	1
14.	72063037	BUSHING, machy; 1-1/2" x 10 ga.	1
15.	72063039	BUSHING, machy; 2" x 10 ga.	2
16.	72063034	BUSHING, machy; 1" x 10 ga.	4
17.	60025023	WASHER, thrust	2
18.	60102092	PLATE, retainer	2
19.	72066309	PIN, spring	1
20.	60102093	KEY, claw	1
21.	7BF82020	BUSHING, arm	2
22.	72066132	RING, retaining	1
23.	72066136	RING, retaining	2
24.	72066125	RING, retaining	4
25.	72066194	PIN, cotter	1
26.	72060709	BOLT, shcs; 1/4-20 x 1-1/2" lg.	6
27.	72060911	BOLT; 1/2-13 x 1-1/4"	24
28.	72060833	BOLT; 5/16-18 x 3/4" self-tapping	4
29.	72060148	BOLT; 5/8-11 x 1-1/4"	2
30.	72060089	BOLT; 1/2-13 x 3/4"	27
31.	72063053	LOCK WASHER; 1/2"	51
32.	72063051	LOCK WASHER; 3/8"	2
33.	72063055	LOCK WASHER; 5/8"	2
34.	72062004	NUT, hex; 1/2-13	24
35.	72062002	NUT, hex; 3/8-16	2
36.	72062079	NUT, acorn; 1/2-13	27
37.	72053508	ZERK; 1/8" npt	1

*Quantity specified is per arm. 1833 and 1836 arm assemblies are alike except for item 1.

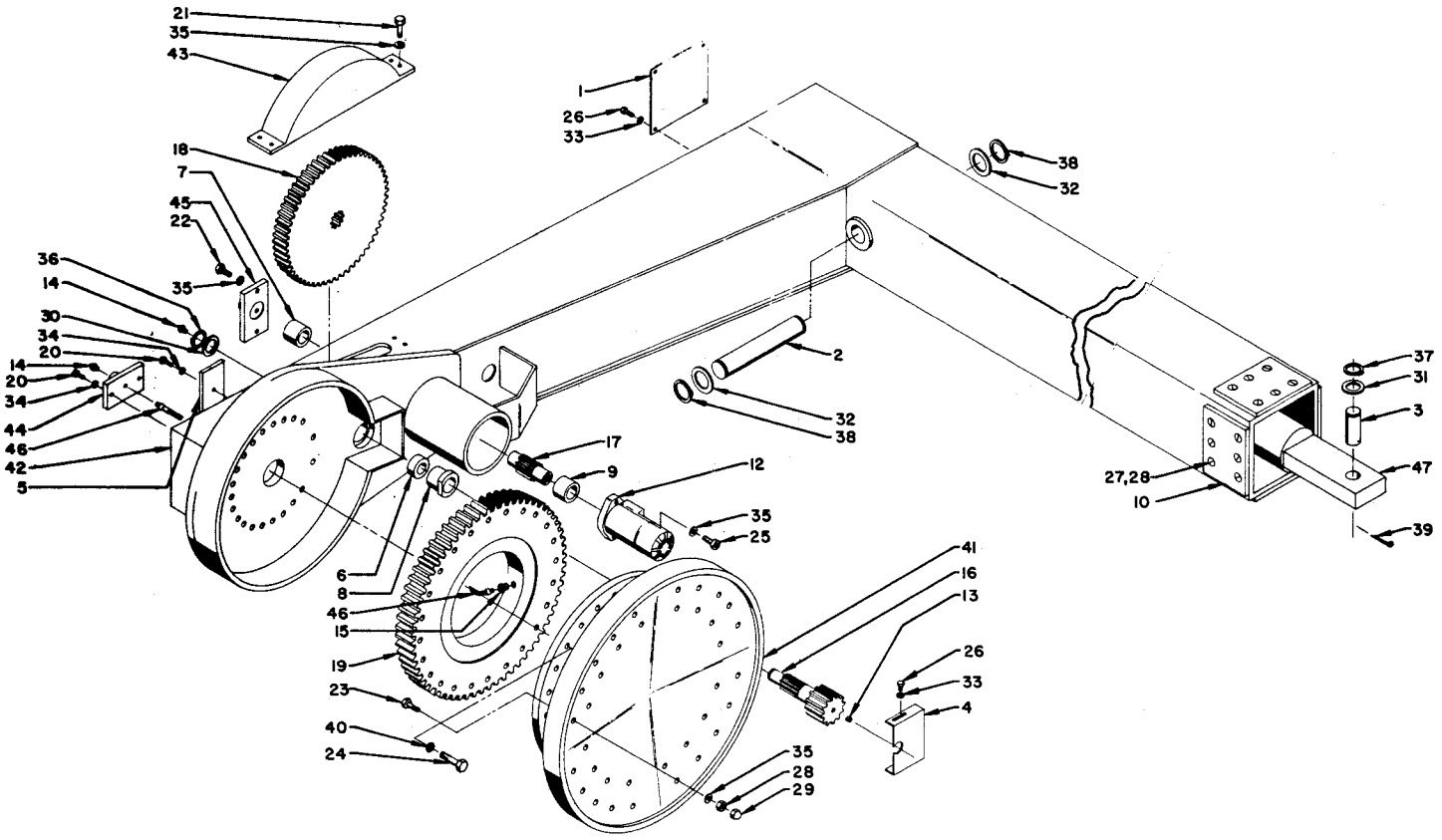


Figure F-12. 1836A Tirehand Clamping Arm (Part Number 40702552)

Item No.	Part No.	Description	Qty
1.	60102082	PLATE, cover	1
2.	60102096	PIN	1
3.	60102097	PIN	1
4.	60104763	COVER, pinion gear	1
5.	60105494	COVER, arm	1
6.	60020081	BUSHING	1
7.	60020100	BUSHING	1
8.	60020114	BUSHING	1
9.	60020115	BUSHING	1
10.	60020161	BAR, rub	4
11.	70391454	PLACARD, "TOP" (not shown)	1
12.	73051023	MOTOR, hydraulic	1
13.	72053240	PLUG; 1/8" npt	1
14.	72053508	ZERK; 1/8" npt	3
15.	72531826	BUSHING, red.; 1/4" npt(m) x 1/8" npt(f)	1
16.	71056010	GEAR, pinion	1
17.	71056011	GEAR, drive	1
18.	71056012	GEAR, intermediate	1
19.	71056062	GEAR-BEARING, turntable	1
20.	72060046	BOLT; 3/8-16 x 1" lg.	3
21.	72060091	BOLT; 1/2-13 x 1" lg.	10
22.	72060092	BOLT; 1/2-13 x 1-1/4" lg.	2
23.	72060093	BOLT; 1/2-13 x 1-1/2" lg.	16
24.	72060179	BOLT; 5/8-11 x 1-3/4" gr. 8	39
25.	72060784	BOLT; 1/2-13 x 1-1/4" soc. hd.	2
26.	72060833	BOLT; 5/16-18 x 3/4" lg. self tap	6
27.	72601000	BOLT, flat head; 1/2-13 x 1-1/2" lg.	24
28.	72062004	NUT; 1/2-13	40
29.	72062079	NUT, acorn; 1/2-13	16
30.	72063035	BUSHING, machy.; 1-1/4" x 10 ga.	1
31.	72063037	BUSHING, machy.; 1-1/2" x 10 ga.	1
32.	72063039	BUSHING, machy.; 2" x 10 ga.	2
33.	72063050	WASHER, lock; 5/16"	6
34.	72063051	WASHER, lock; 3/8"	3
35.	72053053	WASHER, lock; 1/2"	38
36.	72066129	RING, retaining; 1-1/4"	1
37.	72066132	RING, retaining; 1-1/2"	1
38.	72066136	RING, retaining; 2"	2
39.	72066194	PIN, cotter	1
40.	72066427	WASHER, lock; 5/8"	39
41.	52701454	CLAW	1
42.	52702558	ARM	1
43.	52702743	GUARD, gear	1
44.	52702796	PLATE, grease, turntable gear	1
45.	52702797	PLATE, grease, drive gear	1
46.	73073101	HOSE, w/fittings	1
47.	3B308412	CYLINDER, clamp	1

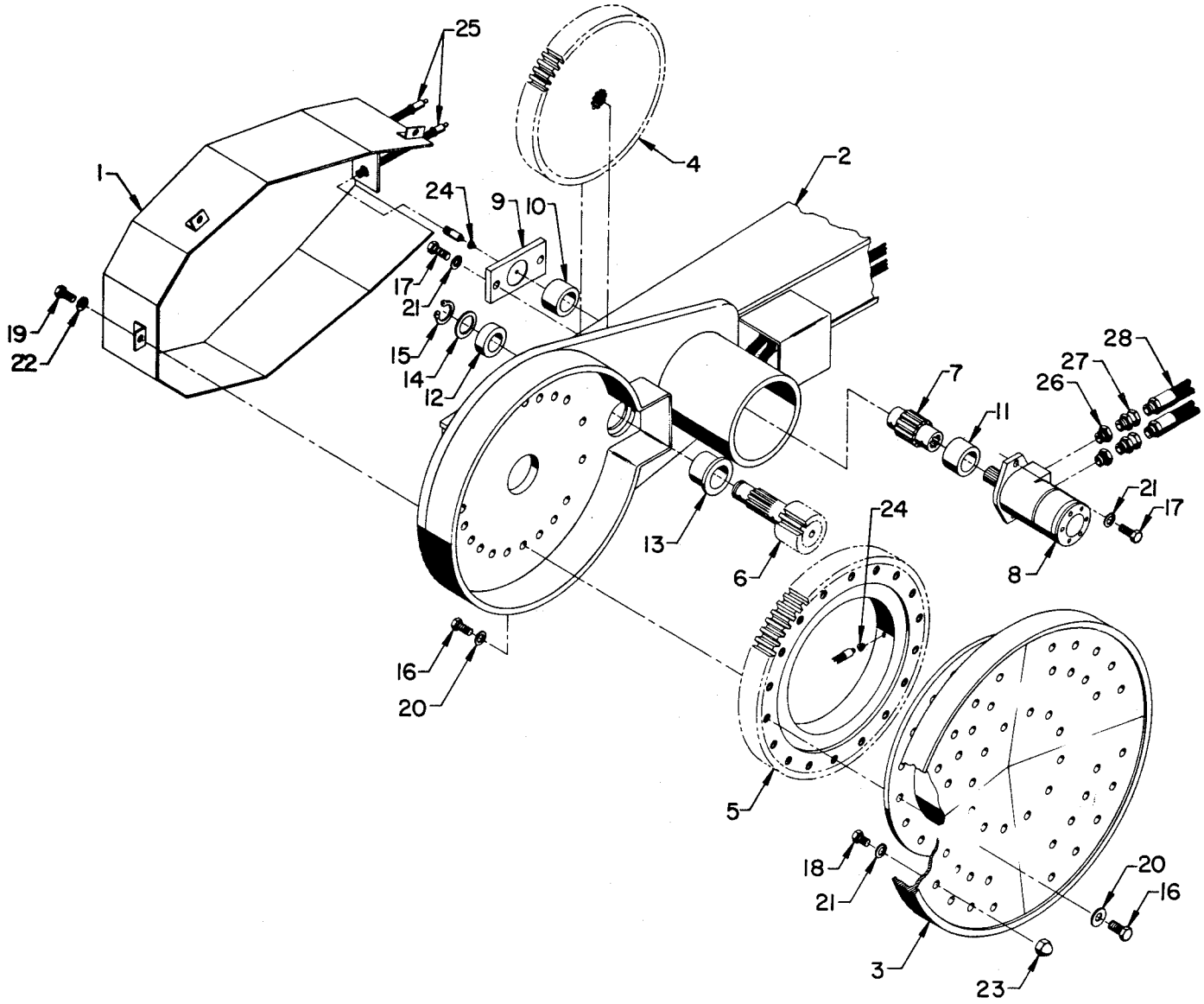


Figure F-13. Motor-Driven Axial Rotation

Item No.	Part No.	Description	Qty
1.	52702591	COVER	1
2.	52701448	ARM (1836 only)	1
	52702558	ARM (1836A only)	1
3.	52701454	CLAW	1
4.	71056012	GEAR	1
5.	71056062	GEAR-BEARING, turntable	1
6.	71056010	GEAR, pinion	1
7.	71056011	GEAR, drive	1
8.	73051023	MOTOR, hydraulic	1
9.	60010844	PLATE, cover	1
10.	60020100	BUSHING	1
11.	60020115	BUSHING	1
12.	60020081	BUSHING	1
13.	60020114	BUSHING	1
14.	72063035	BUSHING, machy.; 1-1/4" x 10 ga.	1
15.	72066129	RING, retaining	1
16.	72060179	BOLT; 5/8-11 x 1-3/4" lg.	39
17.	72060092	BOLT; 1/2-13 x 1-1/4"	4
18.	72060089	BOLT; 1/2-13 x 3/4" lg.	48
19.	72060046	BOLT; 3/8-16 x 1" lg.	5
20.	72066427	WASHER, lock; 5/8"	39
21.	72063053	WASHER, lock; 1/2"	52
22.	72063051	WASHER, lock; 3/8"	5
23.	72062079	NUT, acorn; 1/2-13	48
24.	72531808	BUSHING, red.; 1/4" npt(m) x 1/8" npt(f)	2
25.	51701379	EXTENSION, grease; 18"	2
26.	72532138	BUSHING, red.; 3/8" npt(m) x 1/4" npt(f)	2
27.	72053640	SWIVEL, pipe; 1/4" npt(m x f)	2
28.	60035048	HOSE; 1/4" ID x 6'	2

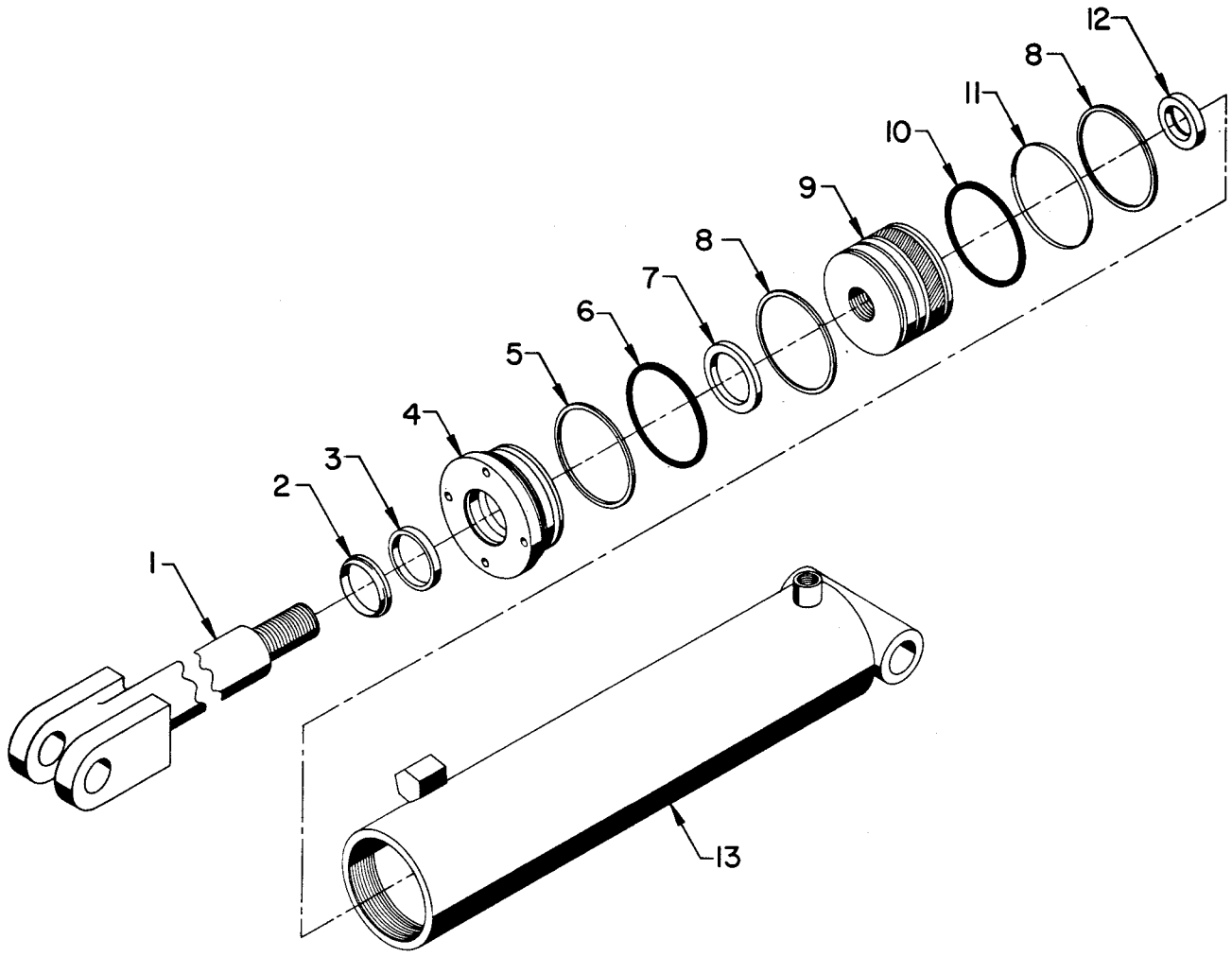


Figure F-14. Axial Rotation Cylinder (Part Number 3B110510)

Item No.	Part No.	Description	Qty
1.	4G110510	ROD	1
2.	7R14P015	*WIPER, rod	1
3.	7R546015	*SEAL, rod	1
4.	6H030015	HEAD	1
5.	7Q10P334	*RING, back-up	1
6.	7Q072334	*O-RING	1
7.	6A025015	*WAFER - LOCK	1
8.	7T65I030	*RING, piston	2
9.	6I030106	PISTON	1
10.	7Q072145	*O-RING	1
11.	7T66P030	*SEAL, piston	1
12.	7T61N106	*SEAL, lock ring	1
13.	4A110510	CASE, cylinder	1

*Part of seal kit - Part Number 9C121217

DIMENSIONS	
Bore	3"
Stroke	11-3/4"
Rod Diameter	1-1/2"
Pin Diameter	1"

NOTE

Whenever the cylinder is disassembled, we strongly recommend replacing all of the components in the seal kit. This may save expensive down-time in the immediate future.

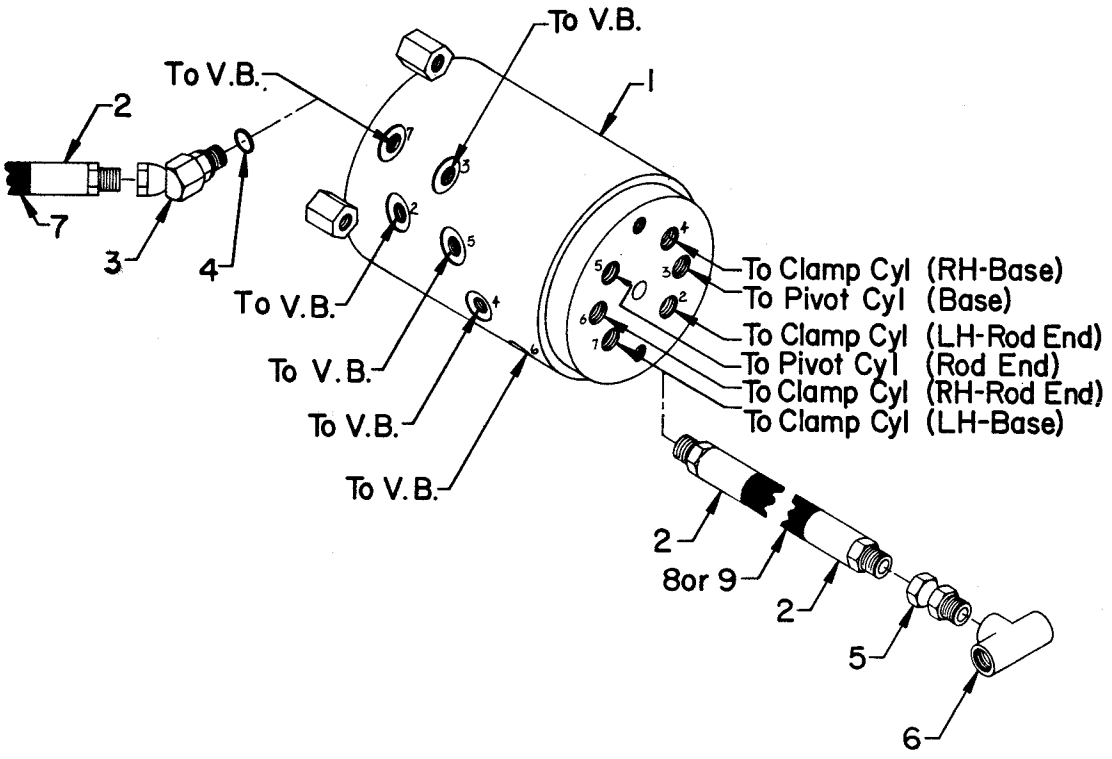


Figure F-15. Rotation Manifold Plumbing

Item No.	Part No.	Description	*Qty
1.	3R330610	MANIFOLD, rotation; 6-port	1
	3R062610	MANIFOLD, rotation; 4-port (not shown)	1
2.	72531151	FITTING, hose; 3/8"	18
3.	72053632	ADAPTER; 9/16-18 x 3/8" npt	6
4.	--	O-RING (Part of item 3)	6
5.	72053642	SWIVEL, pipe; 3/8" npt(m x f)	6
6.	72053611	TEE; 3/8" npt	2
7.	60035225	HOSE; 3/8" ID x 64" lg.	Ref.
8.	60035325	HOSE; 3/8" ID x 78" lg.	4
9.	60035332	HOSE; 3/8" ID x 14" lg.	2

*Quantities are for 6-spool manifold.

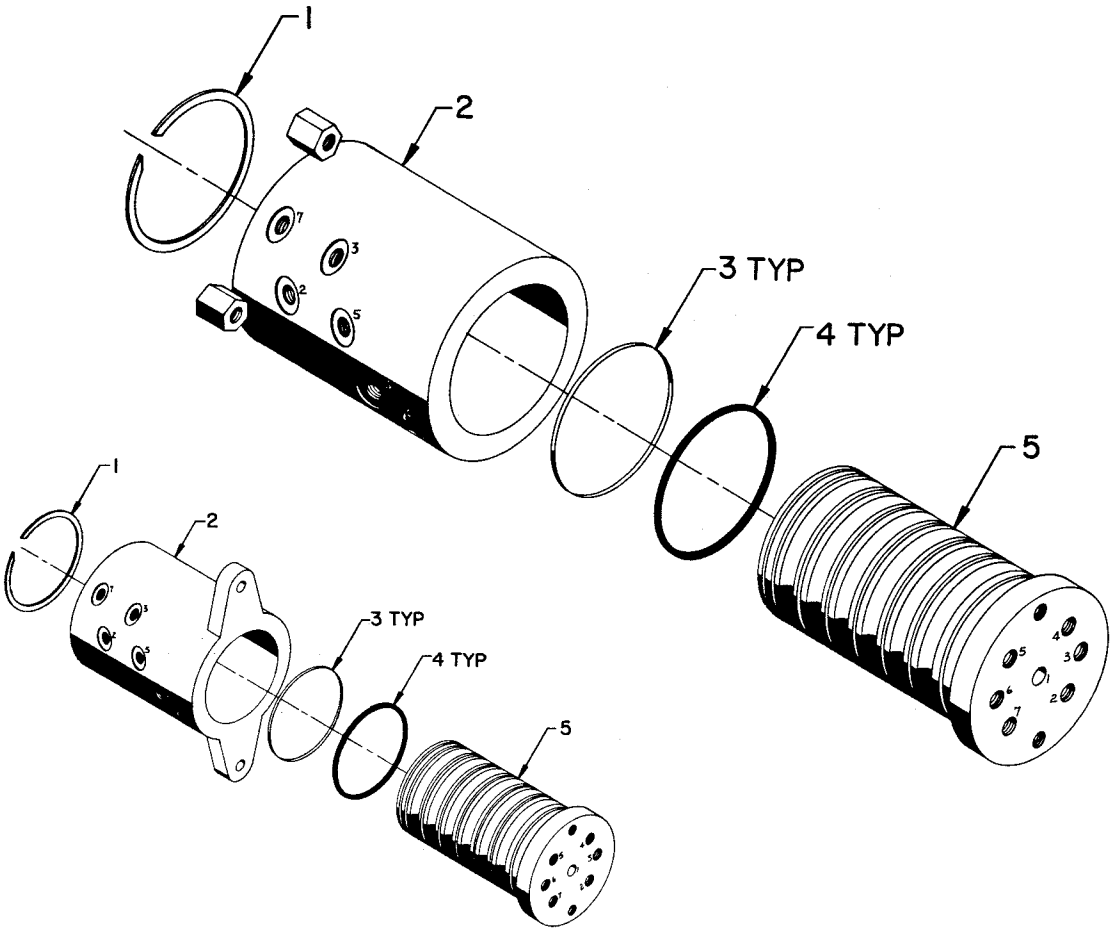


Figure F-16. Rotation Manifold (Part Number 3R330610 - 1833/1836 Tirehand and 3R345810 - 1836A Tirehand)

Rotation Manifold (Part Number 3R330610 - 1836-1833 and 3R345810 - 1836A)

Item No.	Part No.	Description	Qty
1.	7F8XN450	RING, snap	1
2.	4R330610	CASE (1833/1836 only)	1
	4R345810	CASE (1836A only)	1
3.	7T66G045	SEAL	7
4.	7Q072115	O-RING	7
5.	6R330610	SPOOL	1

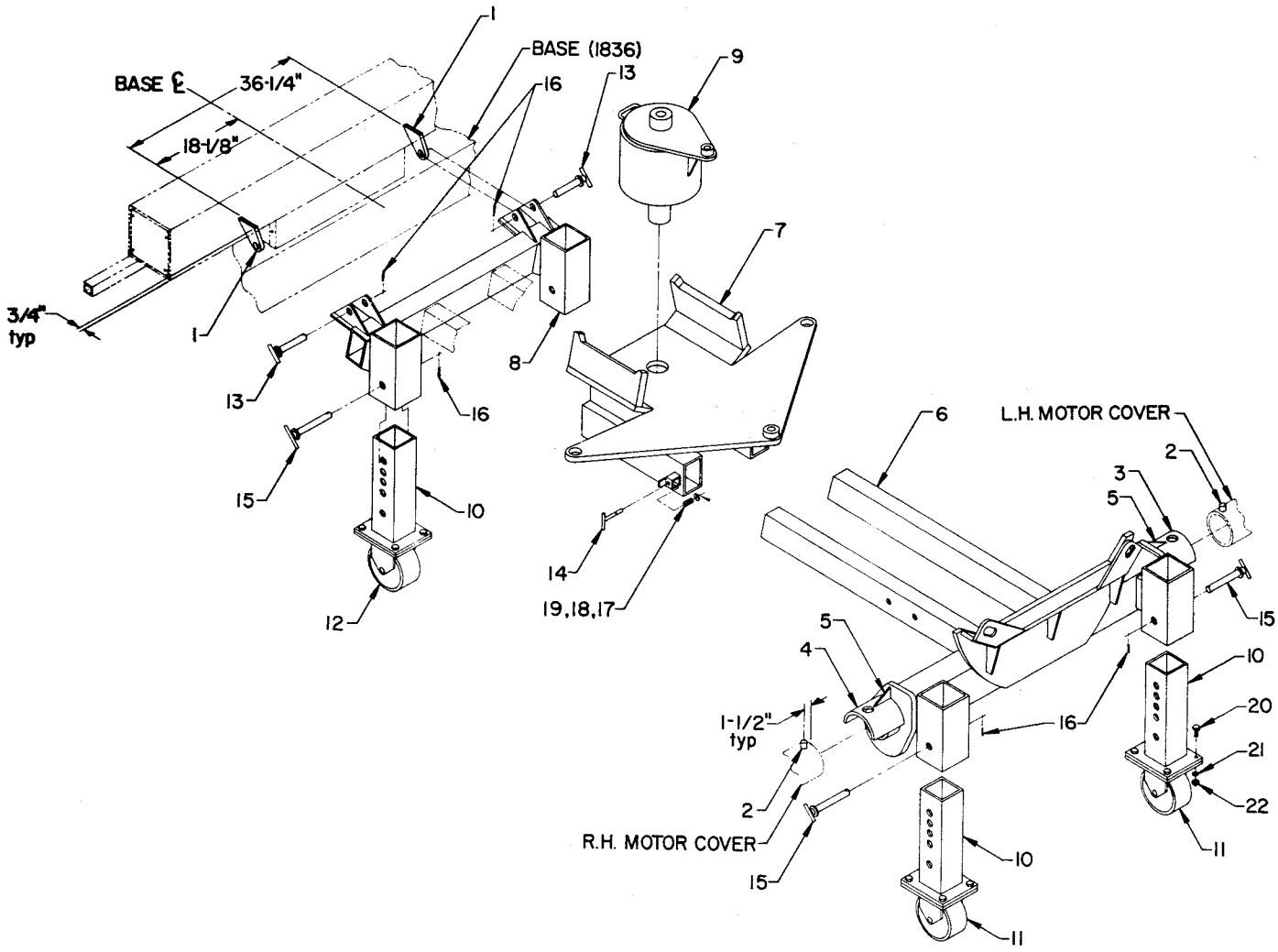


Figure F-17. Motor Monkey Option - 1836 (Part Number 90701634)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	60011642	EARS, mounting	2	12.	70056107	CASTOR, swivel	2
2.	60103476	PIN, front support	2	13.	52070152	PIN, motor monkey/ears	2
3.	52701636	BRACKET, support, left hand	1	14.	52070138	PIN, saddle/frame	1
4.	52701637	BRACKET, support, right hand	1	15.	52070635	PIN, castor post	4
5.	60011649	PLATE, brace	2	16.	72066145	PIN, hair; 3/16"	6
6.	52701618	FRAME	1	17.	72066185	PIN, cotter; 5/32" x 1"	1
7.	52701617	SADDLE	1	18.	72063007	WASHER, wrt; 5/8"	1
8.	52701619	END SECTION	1	19.	60010351	SPRING	1
9.	52701620	ADAPTER, front suspension	1	20.	72060150	BOLT, hex hd.; 5/8-11 x 1-3/4"	16
10.	52701661	POST, castor	4	21.	72063055	LOCKWASHER; 5/8"	16
11.	70056108	CASTOR, solid	2	22.	72062006	NUT, hex; 5/8-11	16

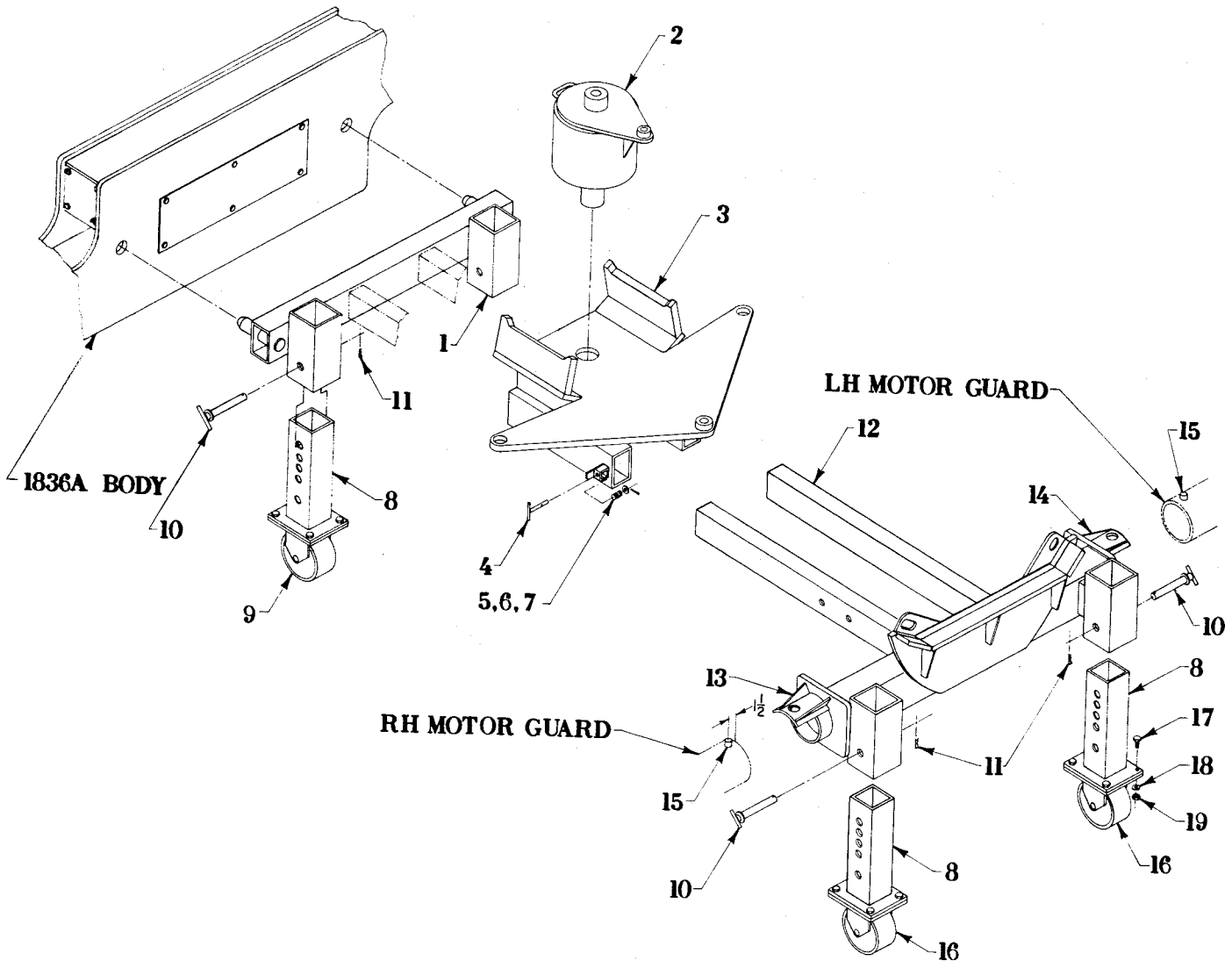


Figure F-18. Motor Monkey Option - 1836A (Part Number 30702800)

60103474 Sleeve Type C 6x6 3/4 x 2 1/2 (2)
60105504 gusset 1/4 x 2 x 6 3/4 (4)
60105505 Sheath, supt bkt (2)
72060094 CS 1/2-13x1 3/4 (16)

Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1.	52702801	SECTION, tail	1	10.	52070635	PIN, casters	4
2.	52701620	SUSPENSION, front (for (Wabco 170)	1 Opt.	11.	72066145	PIN, hair; 3/16"	4
3.	52701617	SADDLE	1	12.	52702802	FRAME	1
4.	52070138	PIN, lock	1	13.	52702804	BRACKET, support, right hand	1
5.	60010351	SPRIN, lock pin	1	14.	52702803	BRACKET, support, left hand	1
6.	72063007	WASHER, wrt.; 5/8"	1	15.	60103476	PIN, front support	2
7.	72066185	PIN, cotter; 5/32" x 1" lg.	1	16.	70056107	CASTER, swivel	2
8.	52701661	POST, caster	4	17.	72060095	BOLT; 1/2-13 x 1-3/4"	16
9.	70056108	CASTER, rigid	2	18.	72063053	WASHER, lock; 1/2"	16
				19.	72062004	NUT, hex; 1/2-13	16

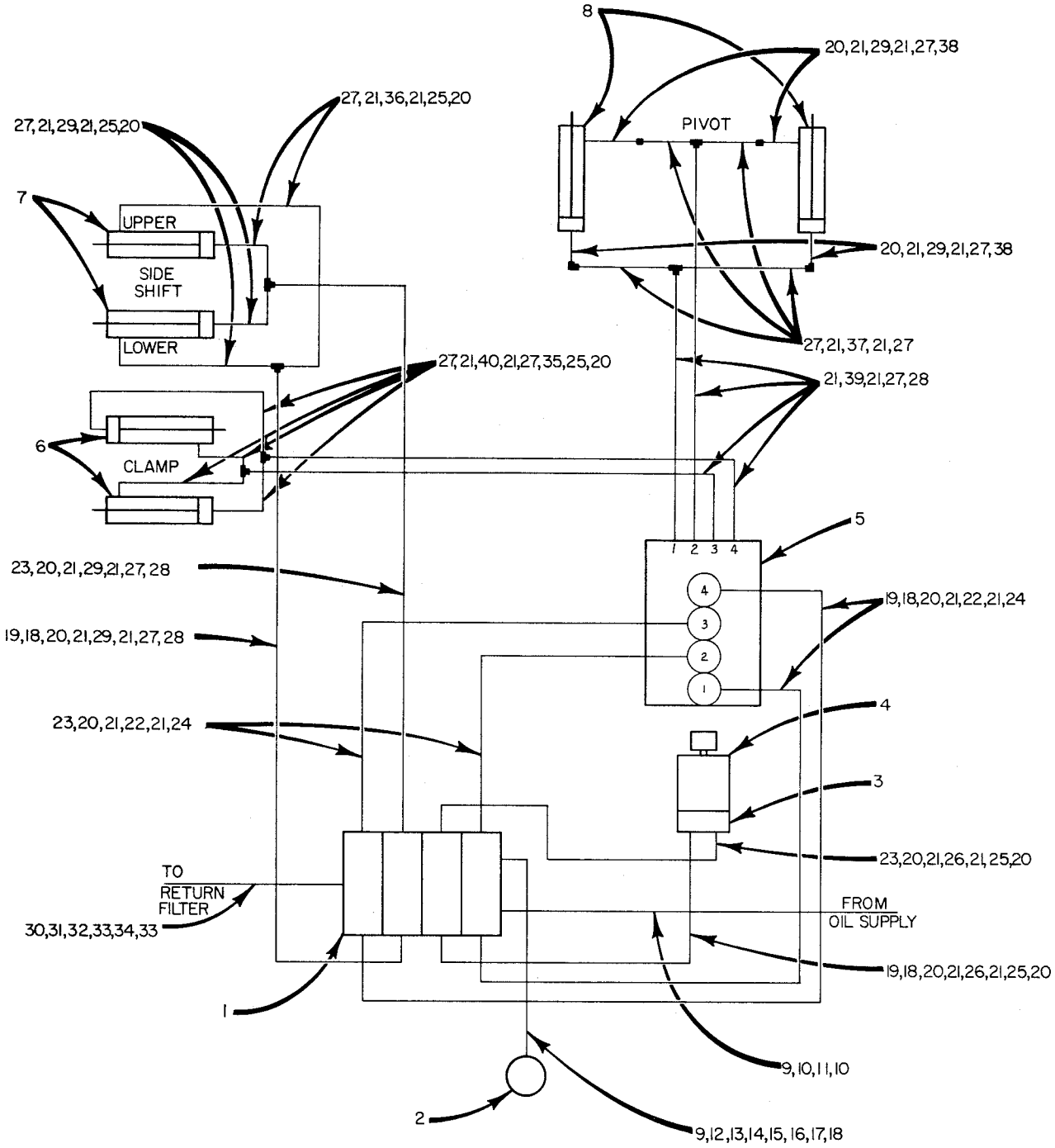


Figure F-19. Hydraulic Schematic - 4-spool Valve Bank with 4-spool Rotation Manifold

Item No.	Part No.	Description	Qty
1.	73073087	VALVE BANK, 4-spool	1
2.	73054003	GAUGE, pressure (0-5000 PSI)	1
3.	74054015	VALVE, cushion	1
4.	73051001	MOTOR, hydraulic	1
5.	3R062610	MANIFOLD, rotation; 4-port	1
6.	3B308412	CYLINDER, clamp	2
7.	3B205510	CYLINDER, side shift	2
8.	3B110510	CYLINDER, pivot	2
9.	72053556	ELBOW, street, 90°; 3/8" npt	2
10.	72531168	FITTING, hose; 3/4"	2
11.	89039174	HOSE; 3/4"	As Required
12.	72053558	NIPPLE; 3/4" npt	1
13.	72531102	ELBOW, 90°; 3/4" npt	1
14.	72532163	BUSHING, red.; 3/4" npt(m) x 1/4" npt(f)	1
15.	72053013	NIPPLE, close; 1/4" npt	1
16.	72531084	ELBOW, 45°; 1/4" npt	1
17.	72053017	NIPPLE, pipe; 1/4" npt x 3"	1
18.	72531099	ELBOW, 90°; 1/4" npt	5
19.	72053015	NIPPLE, pipe; 1/4" npt x 2"	4
20.	72053641	SWIVEL, pipe; 1/4" x 3/8"	22
21.	72531151	FITTING, hose; 3/8"	56
22.	60035225	HOSE, double-braid; 3/8" x 64"	4
23.	72531131	ELBOW, street, 90°; 1/4" npt	4
24.	72053632	ADAPTER, 45° elbow, swivel	4
25.	72531132	ELBOW, street, 90°; 3/8" npt	10
26.	60035325	HOSE, double-braid; 3/8" x 72"	2
27.	72053642	SWIVEL, pipe; 3/8"	30
28.	72053611	TEE; 3/8" npt	6
29.	60035064	HOSE; double-braid; 3/8" x 60"	8
30.	72053385	BUSHING, red.; 3/4" npt(m) x 1/2" npt(f)	1
31.	72053522	ELBOW, street, 90°; 1/2" npt	1
32.	72053522	ELBOW, street, 45°; 1/2" npt	1
33.	72531161	FITTING, hose; 1/2"	2
34.	89039101	HOSE; 1/2"	As Required
35.	72053563	ELBOW, street, 45°; 3/8" npt	4
36.	60035106	HOSE, double-braid; 3/8" x 48"	2
37.	60035110	HOSE; double-braid; 3/8" x 78"	4
38.	72531100	ELBOW, 90°; 3/8" npt	4
39.	60035352	HOSE; 3/8" x 14"	4
40.	60035324	HOSE; 3/8" x 28"	4

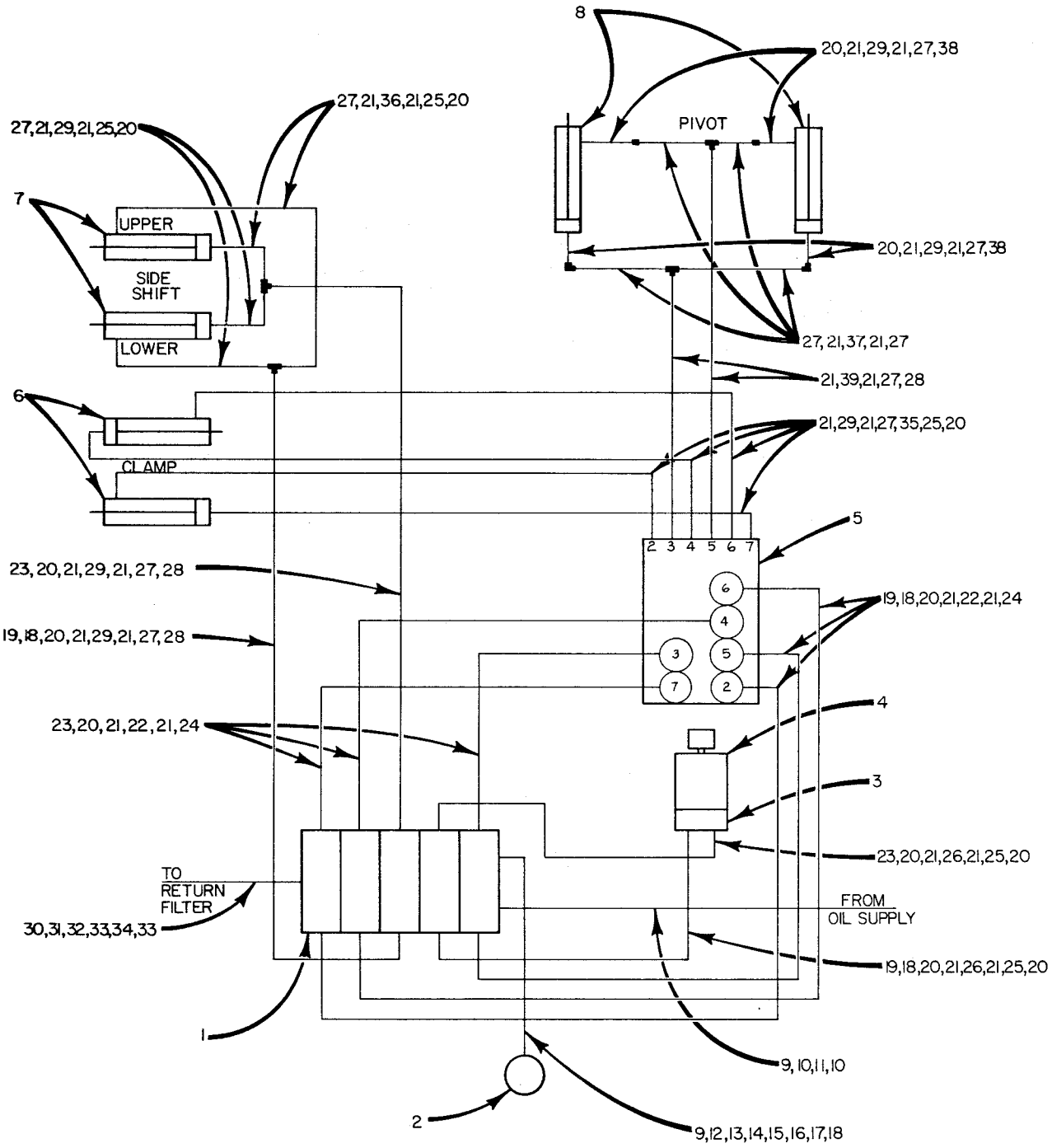


Figure F-20. Hydraulic Schematic - 5-spool Valve Bank with 6-spool Rotation Manifold

Item No.	Part No.	Description	Qty
1.	73073083	VALVE BANK; 5-spool	1
2.	73054003	GAUGE, pressure; 0-5000 PSI	1
3.	74054015	VALVE, cushion	1
4.	73054001	MOTOR, hydraulic	1
5.	3R330610	MANIFOLD, rotation; 6-port	1
6.	3B308412	CYLINDER, clamp	2
7.	3B205510	CYLINDER, side shift	2
8.	3B110510	CYLINDER, pivot	2
9.	72053556	ELBOW, street, 90°; 3/4" npt	2
10.	72531168	FITTING, hose; 3/4"	2
11.	89039174	HOSE; 3/4"	As Required
12.	72053558	NIPPLE, 3/4" npt	1
13.	72531102	ELBOW, 90°; 3/4" npt	1
14.	72532163	BUSHING, red.; 3/4" npt(m) x 1/4" npt(f)	1
15.	72053013	NIPPLE, close; 1/4" npt	1
16.	72531084	ELBOW, 45°; 1/4" npt	1
17.	72053017	NIPPLE, pipe; 1/4" npt x 3"	1
18.	72531099	ELBOW, 90°; 1/4" npt	6
19.	72053015	NIPPLE, pipe; 1/4" npt x 2"	5
20.	72053641	SWIVEL, pipe	24
21.	72531151	FITTING, hose; 3/8"	56
22.	60035225	HOSE, double-braid; 3/8" x 64"	6
23.	72531131	ELBOW, street, 90°; 1/4" npt	5
24.	72053632	ADAPTER, 45°	6
25.	72531132	ELBOW, street, 90°; 3/8" npt	10
26.	60035325	HOSE, double-braid; 3/8" x 72"	2
27.	72053642	SWIVEL, pipe; 3/8" npt	26
28.	72053611	TEE; 3/8" npt	4
29.	60035064	HOSE, double-braid; 3/8" x 60"	12
30.	72053385	BUSHING, red.; 3/4" npt(m) x 1/2" npt(f)	1
31.	72531133	ELBOW, street, 90°; 1/2" npt	1
32.	72053522	ELBOW, street, 45°; 1/2" npt	1
33.	72531161	FITTING, hose; 1/2" npt	2
34.	89039101	HOSE; 1/2"	As Required
35.	72053563	ELBOW, street, 45°; 3/8" npt	4
36.	60035106	HOSE; 3/8" x 48"	2
37.	60035110	HOSE; 3/8" x 78"	4
38.	72531100	ELBOW, 90°; 3/8" npt	4
39.	60035352	HOSE; 3/8" x 14"	2

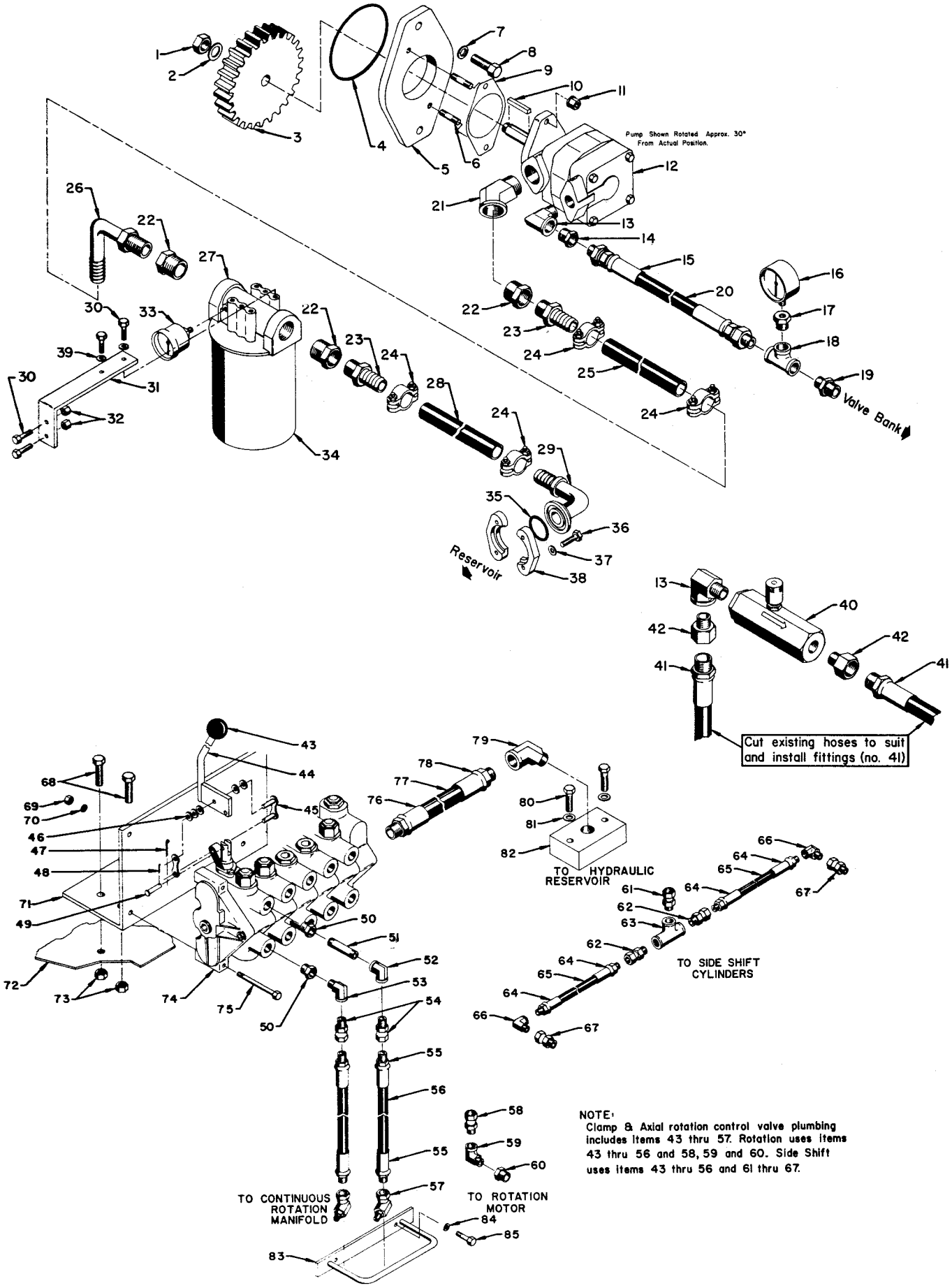


Figure F-21. Hydraulic Installation Kit - 966 Caterpillar Loader (Part Number 91702748)

Item No.	Part No.	Description	Qty
1.	*	NUT, special	1
2.	94731027	ADAPTER, pump mounting (includes items 3 thru 8 and 11)	1
3.	**	GEAR, pump drive	1
4.	**	O-RING	1
5.	**	PLATE, pump mounting	1
6.	**	STUD	2
7.	**	LOCK WASHER	2
8.	**	BOLT	2
9.	*	GASKET, pump	1
10.	*	KEY	1
11.	**	NUT, lock	1
12.	73051210	PUMP, hydraulic	1
13.	72053556	ELBOW, street, 90°; 3/4" npt	3
14.	72531833	BUSHING, red.; 3/4" npt(m) x 1/2" npt(f)	1
15.	72531185	SWEDGE, solid; 1/2" npt(m) x 1/2" hose ID	2
16.	73054003	GAUGE, pressure; 0-5000	1
17.	72531830	BUSHING, red.; 1/2" npt(m) x 1/4" npt(f)	1
18.	72053612	TEE, 1/2" npt	1
19.	72053726	NIPPLE, red.; 3/4" x 1/2" npt	1
20.	60035484	HOSE; 1/2" ID x 198" lg.	1
21.	72053565	ELBOW, street, 45°; 1-1/4" npt	1
22.	72531837	BUSHING, red.; 1-1/4" npt(m) x 1" npt(f)	3
23.	72531549	NIPPLE, barbed; 1" npt x 1" hose	2
24.	72066515	CLAMP, hose; 1"	3
25.	60035482	HOSE; 1" ID x 40" lg.	1
26.	72532345	NIPPLE, barbed, 90°; 1" npt x 1" hose	1
27.	73052012	FILTER, suction (includes item 34)	1
28.	60035483	HOSE; 1" ID x 110" lg.	1
29.	72532756	ADAPTER, 90°; 1" hose	1
30.	72060004	SCREW, hex hd.; 1/4-20 x 1" lg.	4
31.	60105423	BRACKET, filter mounting	1
32.	72062000	NUT, hex; 1/4-20	2
33.	73048031	GAUGE, vacuum	1
34.	73052014	ELEMENT, filter; 25-micron	1
35.	7Q072219	O-RING	1
36.	72060047	SCREW; 3/8-16 x 1-1/4" lg.	4
37.	72063051	LOCK WASHER; 3/8"	4
38.	72532780	KIT, flange (includes items 35, 36 and 37)	1
39.	72063049	LOCK WASHER; 1/4"	4
40.	73054318	VALVE, flow control	2
41.	72531172	FITTING, hose; 1"	4
42.	72053737	ADAPTER; 1" x 3/4" npt (f)	4
43.	71039096	KNOB; 1-1/2" dia. black plastic	5
44.	52702774	LEVER, control - CLAMP	2
	52702775	LEVER, control - AXIAL, SIDE SHIFT and ROTATION	3
45.	71058003	LINK, connecting	5
46.	72063001	WASHER, wrt.; 1/4"	25
47.	72066064	PIN, cotter; 1/16" x 1-1/2" lg.	5
48.	72066336	PIN, cotter; 5/64" x 1/2" lg.	5
49.	72066338	PIN, clevis	5
50.	72531823	BUSHING, red.; 1/2" npt(m) x 3/8" npt(f)	10
51.	72053051	NIPPLE, pipe; 3/8" npt x 2" lg.	5
52.	72531100	ELBOW, 90°; 3/8" npt	5
53.	72531132	ELBOW, street, 90°; 3/8" npt	5
54.	72053642	SWIVEL; 3/8" npt	10
55.	72531151	SWEDGE, solid; 3/8" npt x 3/8" hose	20
56.	60035490	HOSE; 3/8" ID x 270" lg.	10
57.	72053632	SWIVEL, 45°; 3/8" npt x 9/16-18	16
58.	72053642	SWIVEL; 3/8" npt	2
59.	72531132	ELBOW, street, 90°; 3/8" npt	2
60.	72531823	BUSHING, red.; 1/2" npt(m) x 3/8" npt(f)	2
61.	72053642	SWIVEL; 3/8" npt	2
62.	72053611	TEE; 3/8" npt	2
63.	72053537	SWIVEL, red.; 3/8" npt(m) x 1/4" npt(f)	2
64.	72531142	SWEDGE, solid; 1/4" npt x 1/4" hose	8
65.	60035362	HOSE; 1/4" ID x 36" lg.	4
66.	72531131	ELBOW, street, 90°; 1/4" npt	4
67.	72053640	SWIVEL; 1/4" npt	4
68.	72060093	SCREW, hex hd.; 1/2-13 x 1-1/2" lg.	2
69.	72062001	NUT; 5/16-18	3
70.	72063050	LOCK WASHER; 5/16"	3
71.	60105440	BRACKET, valve bank	1
72.	***	LEDGE, 966 Caterpillar	Ref.
73.	72062080	NUT, nylon locking; 1/2-13	2
74.	73073083	VALVE BANK; 5-spool	1
75.	72060033	SCREW, hex hd.; 5/16-18 x 3" lg.	3
76.	72531187	SWEDGE, swivel; 3/4"	1
77.	60035061	HOSE; 3/4" ID x 72" lg.	1
78.	72531168	SWEDGE, solid; 3/4"	1
79.	72053535	ELBOW, street, 45°; 3/4" npt	1
80.	72060048	SCREW, hex hd.; 3/8-16 x 1-1/2" lg.	2
81.	72063051	LOCK WASHER; 3/8"	2
82.	60105454	ADAPTER, reservoir; 3/4" npt	1
83.	60105456	BRACKET, hose	1
84.	***	LOCK WASHER	Ref.
85.	***	SCREW, hex hd.	Ref.

*Not a replacement part - part of item 12
**Not a replacement part - part of item 2
***Not a replacement part - part of 966 Caterpillar Tractor

SECTION 7. INSTALLATION

7-1. INSTALLATION - 966 Caterpillar®

To install the IMT 1836A Tirehand on a Model 966 Caterpillar wheel loader, proceed as follows:

1. Remove the cover on the timing gear housing and install the pump mounting adapter (Figures F-21 & G-1). Install the pump with gasket.

2. Locate and install the hydraulic filter bracket. Drill two (2) 5/16" diameter holes using the bracket as a template. (Figures F-21 & G-2). Install the filter.

3. Drain the reservoir.

4. Remove the outermost cover on the front side of the hydraulic reservoir near the top of the reservoir and install the adapter block (Figures F-21 and G-3). To install the block, the plate inside the reservoir must be removed and drilled to 3/4". To remove the inside plate, remove the reservoir cover and hold the plate with your hand while removing the outside cover. Install the adapter block using the bolts and washers provided.

NOTE

If the inside plate is not held, it will drop into the reservoir and make removal more difficult.

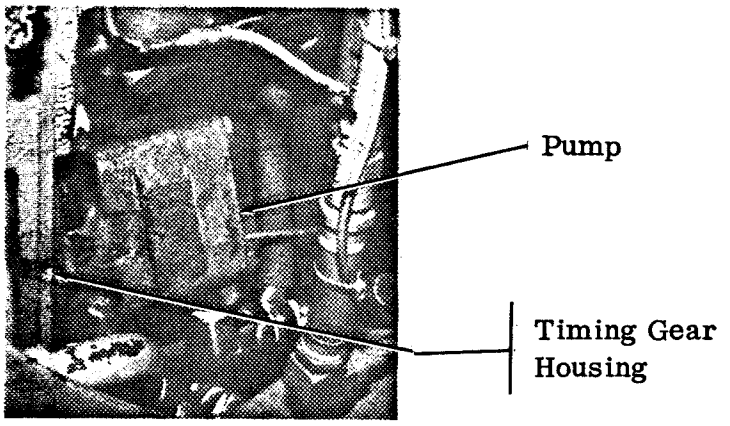


Figure G-1. Pump Installation

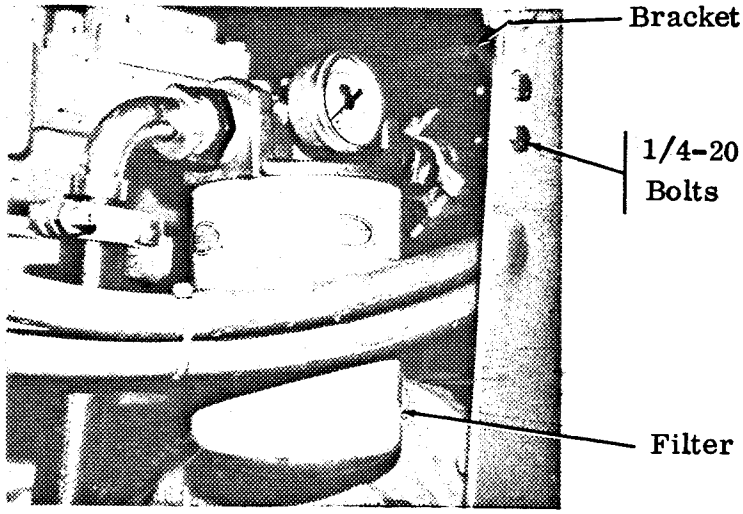


Figure G-2. Filter Installation

5. Remove the cover on the bottom of the reservoir toward the center of the unit and install the elbow and flange kti (Figure F-21 and G-4)

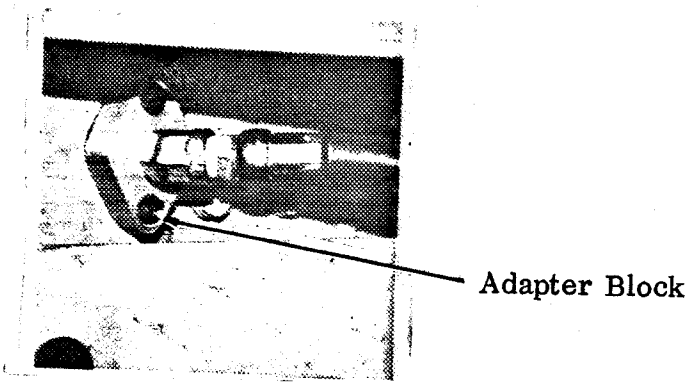


Figure G-3. Return Port

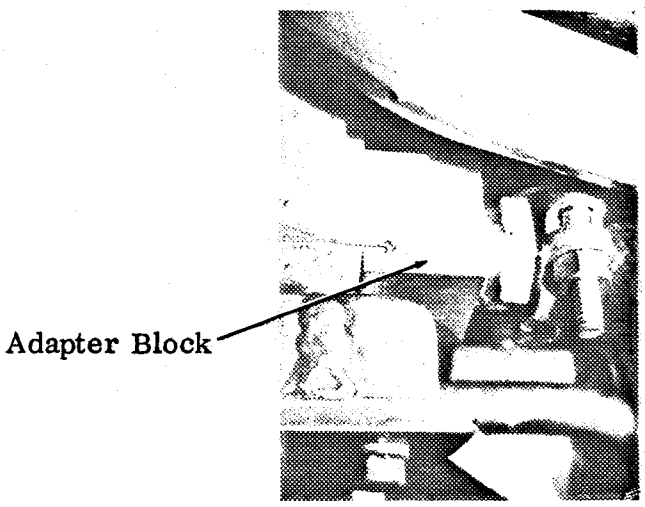


Figure G-4. Suction Port

6. Remove the bolts (2) on the dashboard and install the control valve bracket (Figures F-21 and G-5) using the bolts and lock nuts provided. Install the valve bank.

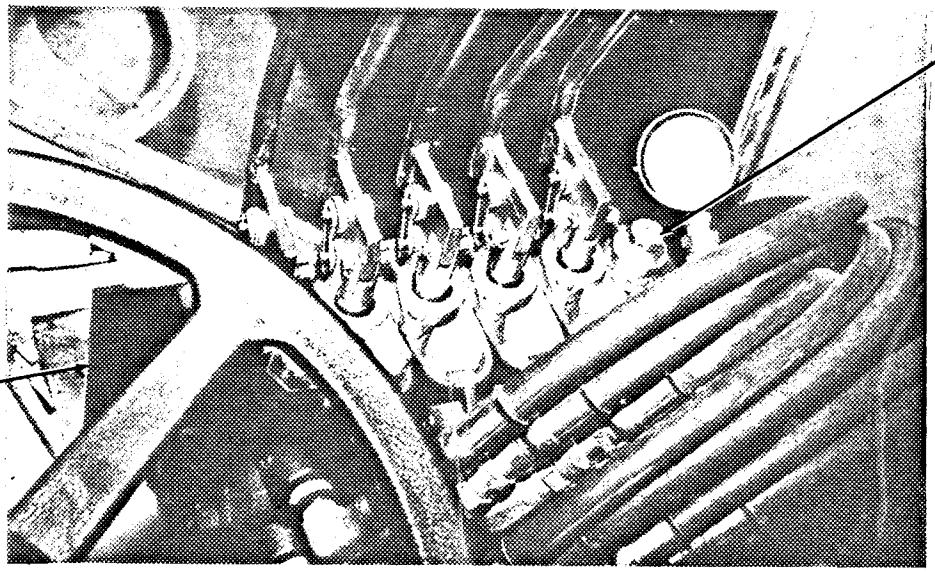


Figure G-5. Valve Bank Installation

7. Cut a 4" square or 5" diameter round hole in the floor of the cab as shown in Figure G-6.

8. Cut the main cylinder hoses and install the fittings as shown in Figures F-21 and G-7.

NOTE

We recommend that this operation be performed in a qualified hydraulic shop.

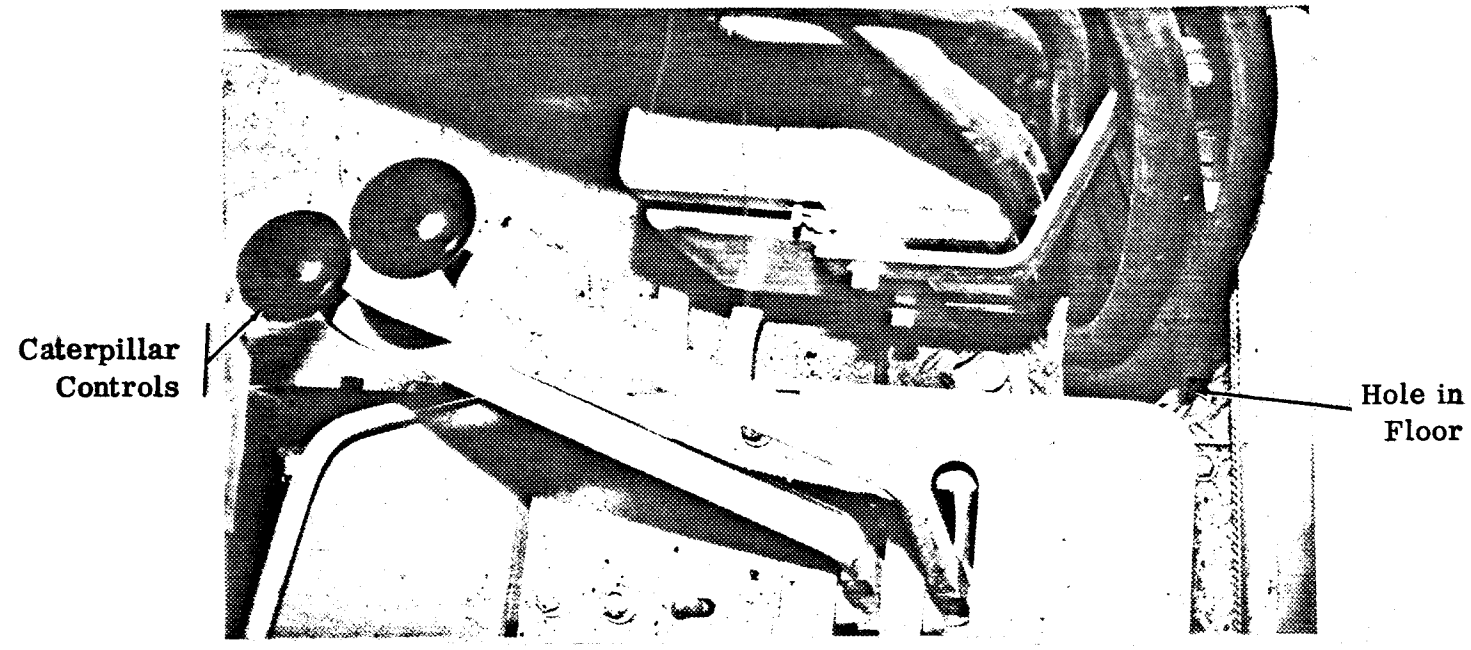


Figure G-6. Hose Routing

9. Install the hoses and fittings between the bottom port (suction) of the reservoir (Figures F-21 and G-4) and the "IN" port of the filter.

10. Install the hoses and fittings between the suction port of the pump and filter (Figure F-21)

11. Install the hoses and fittings between the pressure port of the pump and the control valve bank.

12. Install the hoses and fittings between the valve bank and the return port on the reservoir (Figures F-21, G-3 and G-5)

13. Install the hoses between the valve bank and the Tirehand. The hoses must be looped up between the arms and routed through the hose retaining bracket (Figure G-8.

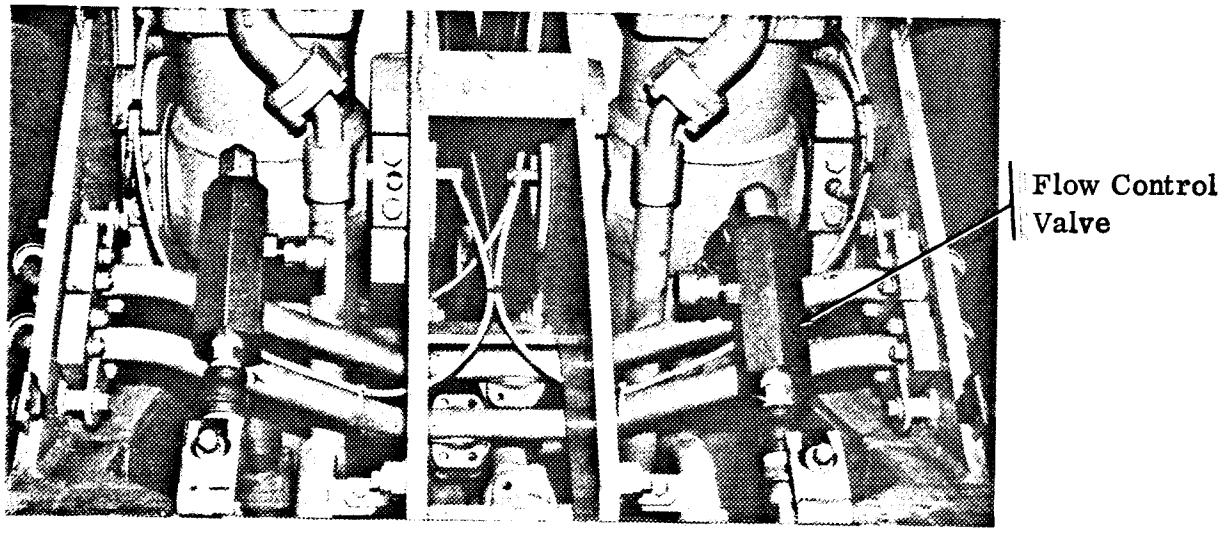


Figure G-7. Main Cylinder Hose Modification

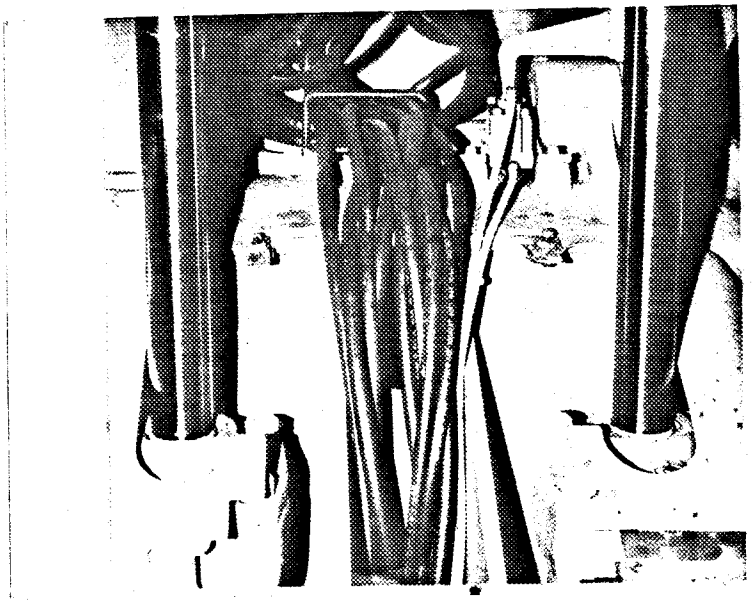


Figure G-8. Tirehand Hose Routing

14. Install the base on the arms of the loader.

15. Install the body on the base.

16. Connect the hoses to the sideshift cylinders, rotation motor and continuous rotation manifold. Refer to Table G-1 for manifold connections.

TABLE G-1. ROTATION MANIFOLD CONNECTIONS

MANIFOLD PORT	FUNCTION
1	Right Clamp - Pressure *
2.	Right Clamp - Return *
3	Left Clamp - Pressure *
4.	Left Clamp - Return *
5	Axial Rotation - Pressure *
6	Axial Rotation - Return *

*Return hose is connected to control valve port nearest control valve handle.

17. Fill the hydraulic reservoir.

18. Start the vehicle engine and allow it to warm up for a period of time. Observe the pressure gauge near the controls for proper operating pressure. Check for leaks in the system and repair immediately.

19. Once the system is warmed up, operate the controls beginning with TILT (up).

CAUTION

Do not hold the TILT control too long. It may cause damage to the hoses if tilted too far back.

20. Tilt the Tirehand back as far as it will go without causing any interference at point "B" (Figure G-9). Weld stop block "A" to the boom of the carrier vehicle. It must be flush against the linkage arms.

21. Raise the boom and tilt the Tirehand down as far as it will bo without causing any interference at point "D". Weld the stop block "C" to the boom of the carrier vehicle. It must be flush against the linkage arms.

22. Lower the carrier vehicle's arms until the base is within 8" (point "F") of ground level. Position and weld stop block "E" to the inside of the carrier vehicles boom. The flat end of the stop block must be resting against the carrier vehicle's cast frame member.

23. Manipulate the controls for positioning and welding the stop blocks on the other boom using the welded stop blocks to position them.

CAUTION

Failure to comply with Steps 20 through 23 may result in damage to the equipment.

24. Raise the arms and rotate the Tirehand 360° in both directions at least five cycles. This will purge trapped air from hoses and motors.

25. Operate all controls to purge air from the system until operation is smooth - without bumpy erratic motion.

26. Check for leaks and repair if necessary.

27. Check the reservoir level and add oil as required.

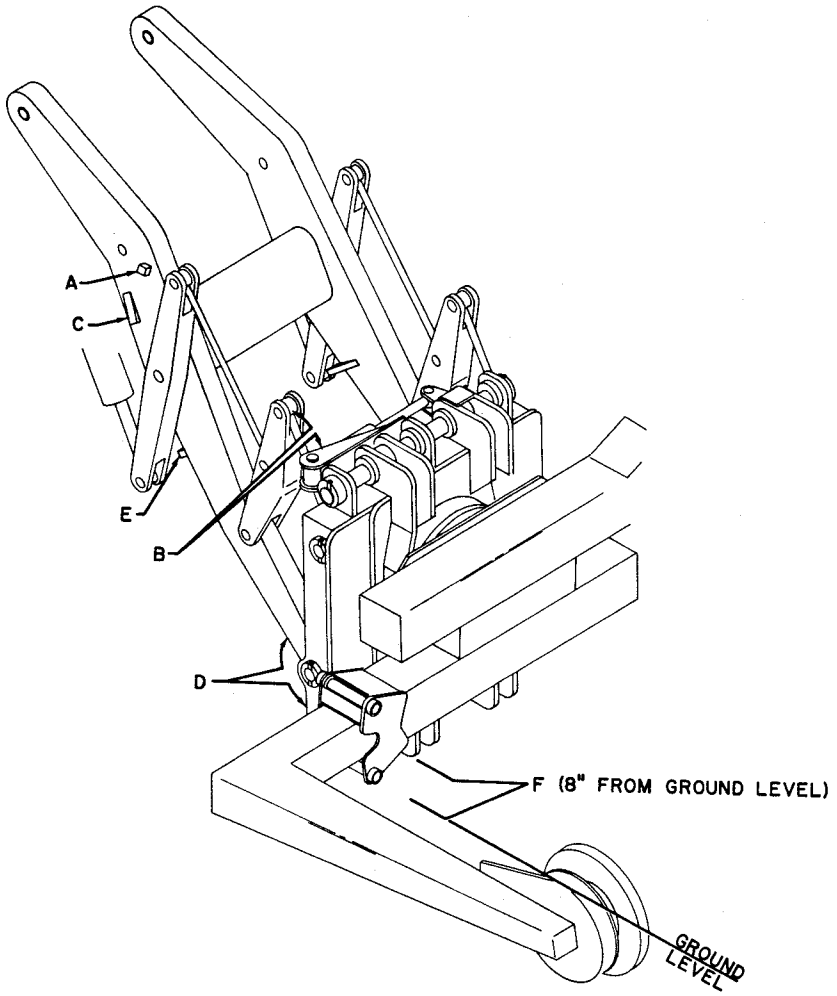


Figure G-9. Stop Block Positioning

HYDRAULIC INSTALLATION

To install the hydraulic components:

1. Cut a 4" square hole in the cab floor toward the front of the cab just behind the accelerator pedal.

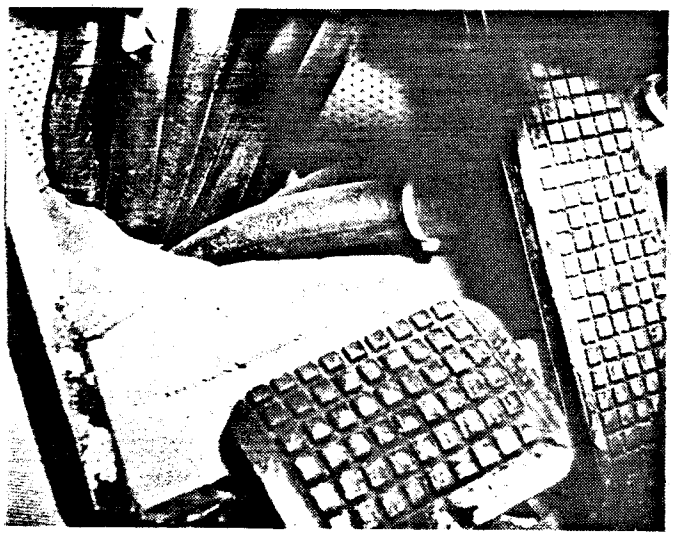


Figure 3

2. Install the components between the pump and valve bank. The existing pressure hose must be removed from the pump. Cut the hose and install the swedges on the hoses (Item 4, Figure 4 and Item 10, Figure 5). Install the hoses on the pump and tube.

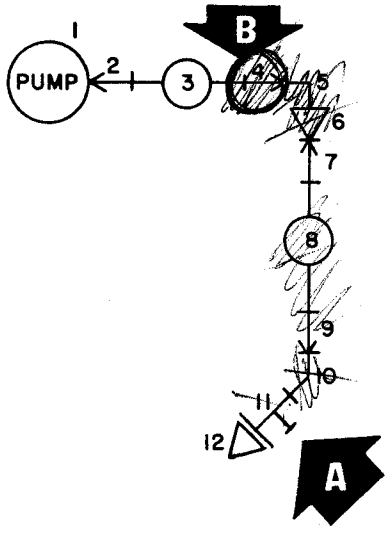
NOTE

Use a good thread sealer and adequately tighten fittings to prevent leaks.

3. Install the components in Figure 5 between the valve bank and the other end of the hose that was cut in Step 2.

4. Install the return hose between the valve bank and the power steering return line (Figure 6). Disconnect the end of the return hose from the tube. The return hose is identified by the port location on the power steering manifold. The ports are located on the right hand side of the manifold, under the floor on the end of the steering column.

5. Route the hoses through the hole in the floor of the cab and up through the hole between the booms (Figure 7). The hoses are then routed through the guides on the inside of the boom



Item No.	Part No.	Description
1.	--	PUMP (part of loader)
2.	--	SWEDGE (part of loader)
3.	--	HOSE (cut to length - part of loader)
4.	72531168	SWEDGE; 3/4" npt x 3/4" hose ID
5.	72531102	ELBOW, 90°; 3/4" npt
6.	72531833	BUSHING, reducer; 3/4" npt(m) x 1/2" npt(f)
7.	72531185	SWEDGE, swivel; 1/2" npt x 1/2" hose ID
8.	51703260	HOSE; 1/2" (includes items 7 & 9)
9.	72531161	SWEDGE; 1/2" npt x 1/2" hose ID
10.	72053522	ELBOW, street, 45°; 1/2" npt
11.	72053612	TEE; 1/2" npt
12.	72053744	ADAPTER; 7/8-14 x 1/2" npt

A Install pressure gauge fittings B Cut existing hose - approximately 6"

Figure 4

TIREHAND INSTALLATION

To install the 1836A Tirehand:

1. Install the booms on the loader. The slotted areas by the driving lights must be widened to accommodate the cylinder.

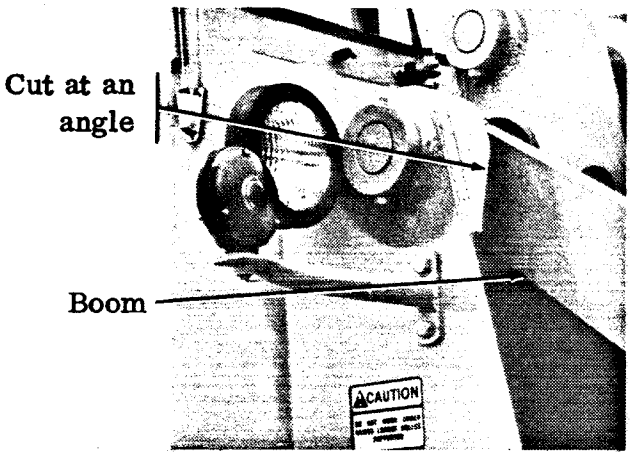


Figure 1

2. Line up the lift cylinder rod pin bosses with the holes on the boom. Install the pin, groove pin, machinery bushing and retaining ring.

3. Lift the Tirehand with an overhead lifting device capable of supporting the unit - approximately 7100 lbs. Move it into position. Line up the holes in the end of the boom with the holes on the sides of the base. Install the pins, groove pins, machinery bushings and retaining rings.

4. Line up the rod end of the tilt cylinder with the holes in the center of the back side of the base. Install the pin, groove pin, machinery bushing and retaining ring. The Tirehand is now installed. If necessary, it is possible to raise, tilt and lower the Tirehand.

VALVE BANK INSTALLATION

To install the valve bank:

1. Position the valve bank bracket under the dash on the right hand side (Figure 1). Drill two 3/8" dia. holes through the bracket and dash. Bolt the bracket into position. The bracket must be positioned so the valve handles are toward the seat.

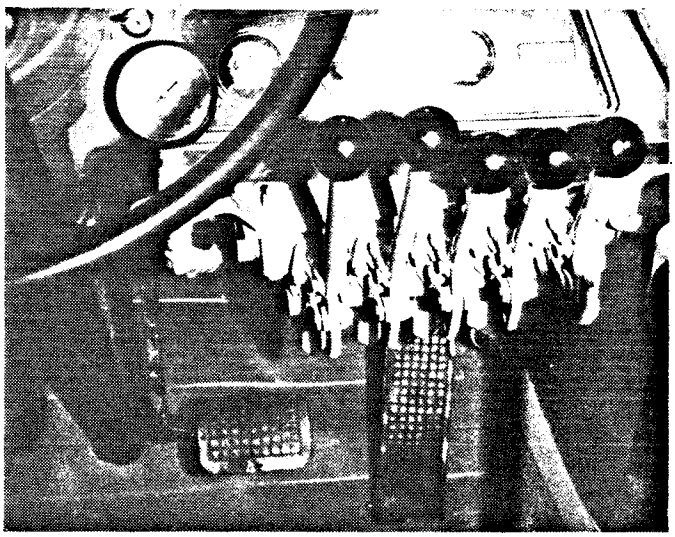
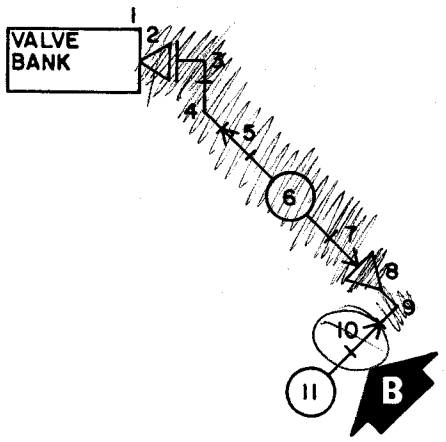


Figure 2

2. Bolt the valve bank to the bracket with the 5/16-18 x 3" lg. bolts and locknuts. Install the pressure gauge bracket on the bolt closest to the seat.

3. Install the control handles and connecting links.

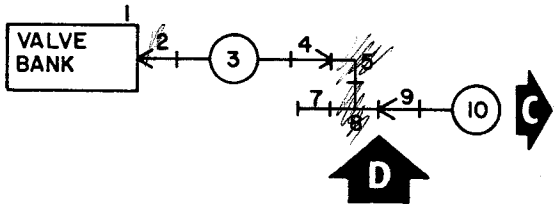
4. Install the control placard (part number 70391455) and the operating restrictions placard (part number 70391580) inside the cab in a position where they may be easily seen by the operator.



Item No.	Part No.	Description
1.	51702959	VALVE BANK; 5-spool
2.	73073023	ADAPTER, power beyond
3.	72531133	ELBOW, street, 90°; 1/2" npt
4.	72053522	ELBOW, street, 45°; 1/2" npt
5.	72531185	SWEDGE, swivel; 1/2" npt x 1/2" hose ID
6.	51703260	HOSE; 1/2" (includes items 5 & 7)
7.	72531161	SWEDGE; 1/2" npt x 1/2" hose ID
8.	72531833	BUSHING, reducer; 3/4" npt(m) x 1/2" npt(f)
9.	72531102	ELBOW, 90°; 3/4" npt
10.	72531168	SWEDGE; 3/4"
11.	--	HOSE (cut to length - part of loader)

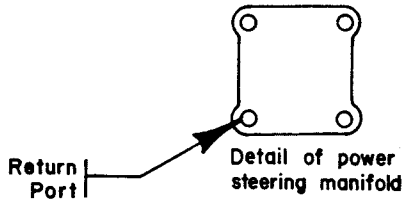
B Other end of hose cut at point "B" in previous illustration

Figure 5



C Hose to return port on power steering manifold

D Disconnect return hose from tube at this point



Item No.	Part No.	Description
1.	51702959	VALVE BANK; 5-spool
2.	72531168	SWEDGE; 3/4" npt x 3/4" hose ID
3.	51703261	HOSE; 3/4" (includes items 2 & 4)
4.	72531187	SWEDGE, swivel; 3/4" npt(m) x 3/4" hose ID
5.	72531102	ELBOW, street, 90°; 3/4" npt
6.		NOT USED
7.	--	NIPPLE (Part of loader)
8.	72053555	TEE; 3/4" npt
9.	72531187	SWEDGE, swivel; 3/4" npt(m) x 3/4" hose ID
10.	--	HOSE (Part of loader)

Figure 6

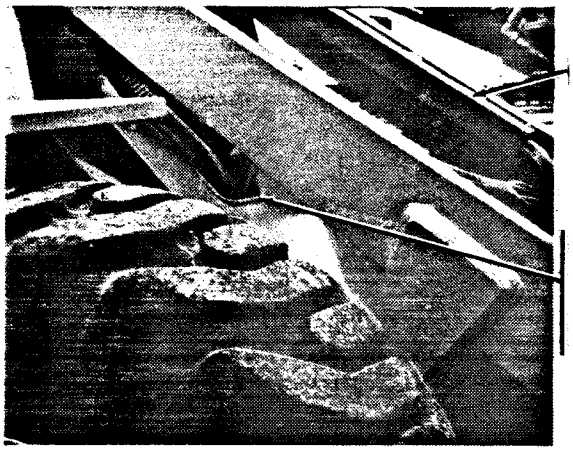
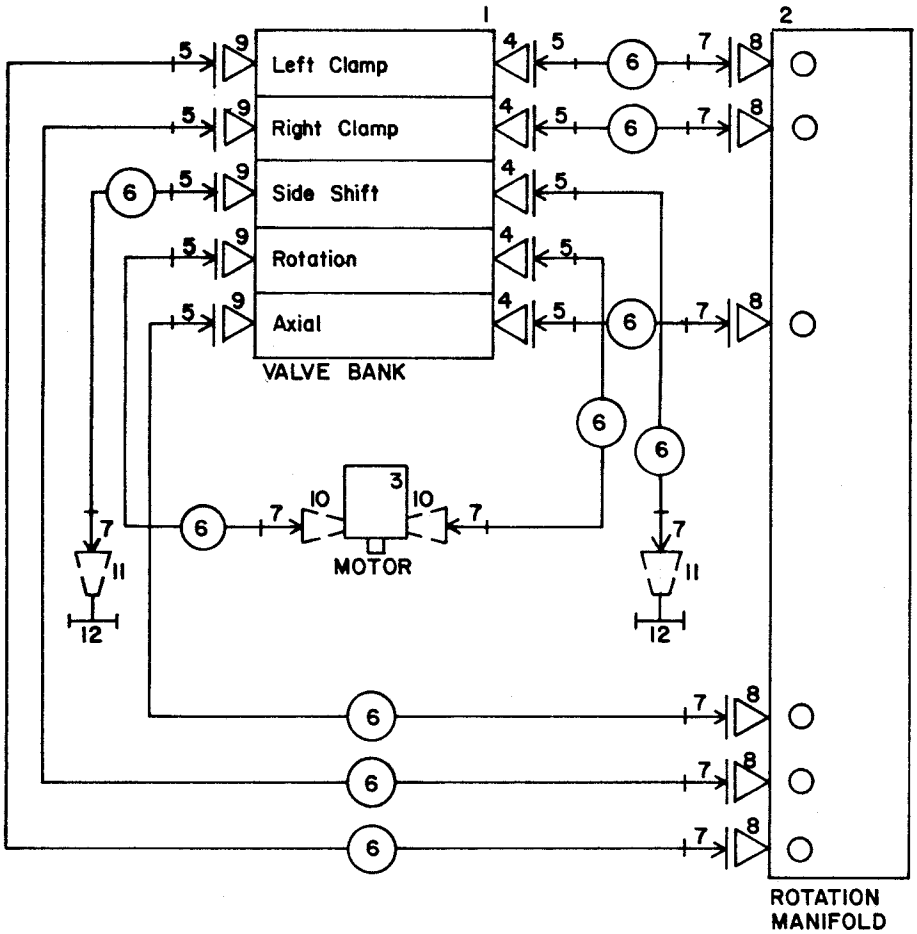


Figure 7

6. Install the components between the valve bank and the rotation manifold, motor and sideshift tee (Figure 8)

7. Install the pressure gauge components. The gauge mounting bracket is located between items 2 and 3 of Figure 9.



Item No.	Part No.	Description
1.	51702959	VALVE BANK; 5-spool
2.	--	MANIFOLD; 6-port (part of Tirehand)
3.	--	MOTOR, rotation (part of Tirehand)
4.	72531417	ADAPTER, 90°; 9/16-18 str. thd x 3/8" npt
5.	72531193	SWEDGE; 9/16-18 str. thd. x 3/8" hose ID
6.	51703259	HOSE (includes items 5 & 7)
7.	72531143	SWEDGE; 3/8"
8.	72532151	ADAPTER, 90° swivel; 9/16-18 str. thd. x 3/8" npt(f)
9.	72532505	ADAPTER, long, 90° 9/16-18 str. thd. x 3/8" npt(m)
10.	72053644	SWIVEL; 3/8" npt(f) x 1/2" npt(m)
11.	72053642	SWIVEL; 3/8" npt(m x f)

Figure 8

INSTALLATION INSTRUCTIONS

1836A TIREHAND, 966D Caterpillar Loader

WARNING

IMT strongly recommends that the loader be equipped with full logging counterweight, ballasted rear tires (23.5 x 25, 24 PR L-3) and flow control valves on the main cylinders.

To mount the TIREHAND on the loader:

1. Mount the TIREHAND to loader arms using the three pins provided.

2. Remove the oil fill plate and install the hydraulic pump using the pump adaptor plate (Figure 1 - right, rear engine compartment). Loosely install the pump and adaptor plate.

3. Remove the plate (Figure 1) and replace with the new oil-fill plate.

4. Drain the hydraulic oil reservoir into a clean container. Save the oil for later re-use.

5. Remove the bulkhead plate from the bottom of the oil reservoir and install the manifold block (Figure 2).

6. Install the fittings and suction filter on the pump inlet (Figures 3 and 4). The pump and adaptor plate will have to be removed to provide clearance for the oil filter and fittings. Use a good thread sealer and adequately tighten fittings to prevent leaks.

7. Install the suction line and fittings between the reservoir and suction filter (Figure 3).

8. Securely bolt the pump to the adaptor plate. Use Loctite on the nut to secure it. Bolt the adaptor plate in place on the loader.

9. Install the return line with fittings between the valve bank and oil reservoir (Figures 2 and 3).

10. Check for clearances on all hoses. Make sure that steering the loader or moving the arms will not pinch or overstress the hoses.

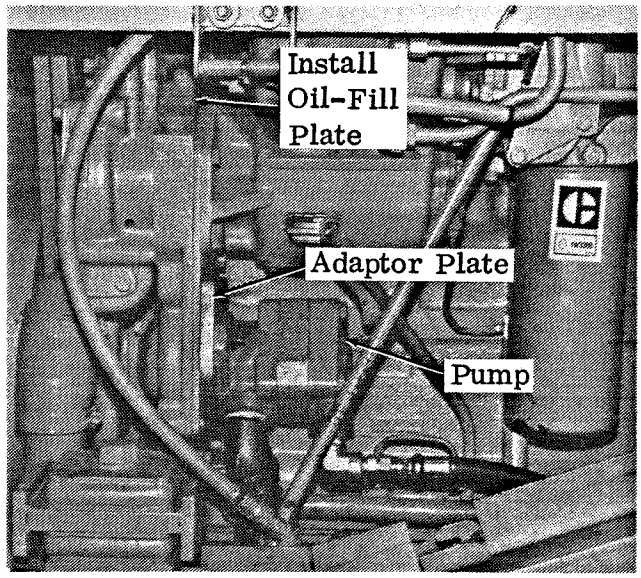


Figure 1

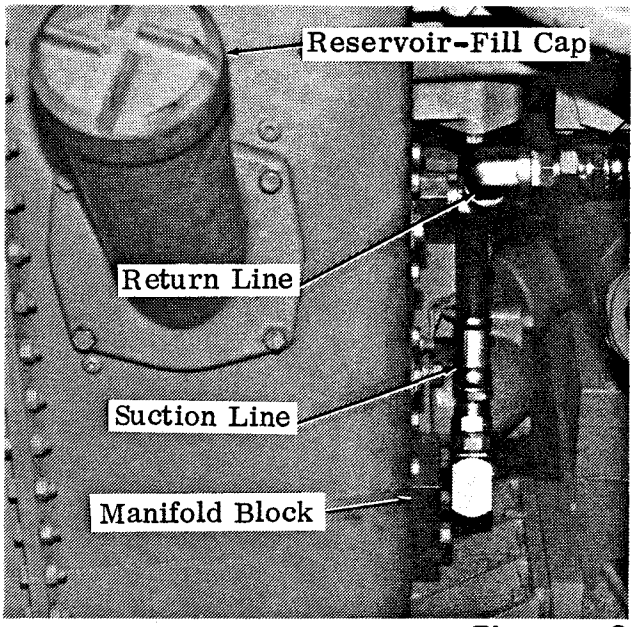


Figure 2

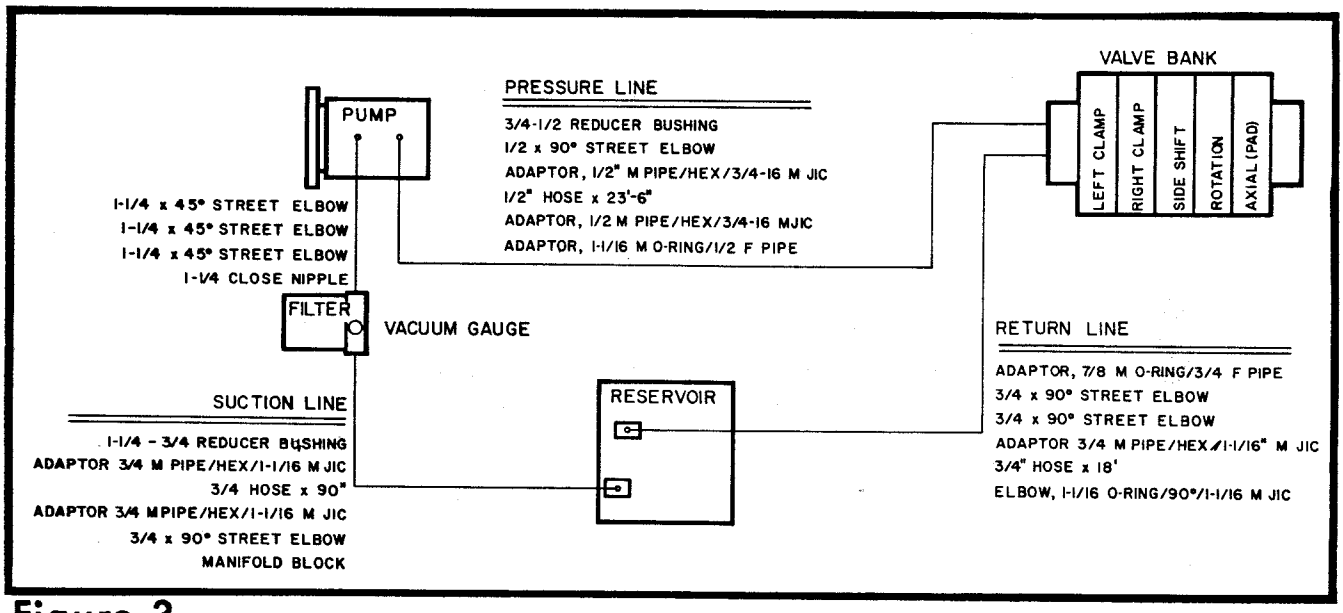


Figure 3

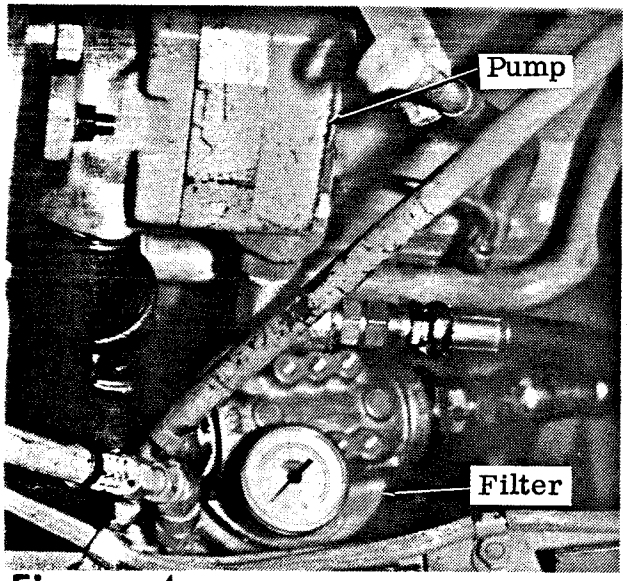


Figure 4

11. Install the converter inside the right side compartment (Figure 5 - below the door to the cab).

12. There are three wires attached to the converter: black-on-white, solid black and red-on-white. Attach the black-on-white wire to the fuze bracket (ground - Figure 5). Attach the solid black wire with in-line fuse to battery +. Route the black cable from the junction box (Figure 6) back to the converter and attach it to the red-on-white wire (Figure 5). Make sure there is adequate clearance around the solid black wire.

13. Install the control mounting bracket in the cab (Figure 7). Remove existing screws from the loader and use to secure bracket.

14. Route the control cable from the junction box on the TIREHAND (Figure 6) back to the converter compartment. Cut a hole in the compartment bulkhead to allow the cable to pass into the cab. Check for clearance along the full length of the cable.

15. Position the lugs on the back of the control through the slots in the mounting bracket (Figure 7). Secure the control with a cotter pin through the holes in the lugs.

16. Connect the cable to the control.

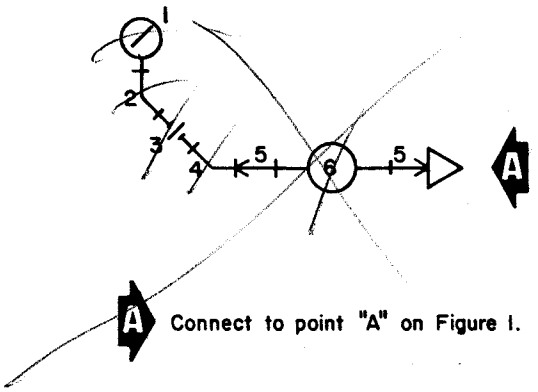
17. Fill the hydraulic reservoir.

18. Start the loader's engine and operate all controls to purge air from the system. Make sure the steering system is also checked out completely.

19. With the loader running, check for leaks and repair if necessary. Check all hoses and cables for adequate clearance.

20. Check the reservoir oil level and fill if necessary.

21. Test operate the loader at full rated load.



Item No.	Part No.	Description
1.	73054003	GAUGE
2.	72053533	ELBOW, street, 45°; 1/4" npt
3.	72053469	COUPLING; 1/4" npt
4.	72053533	ELBOW, street, 45°; 1/4" npt
5.	72531177	SWEDGE, swivel; 1/4" npt x 1/4" hose ID
6.	51703258	HOSE; 1/4" (includes item 5)

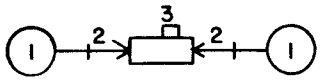
Figure 9

8. Cut the hose on the retract side of the tilt cylinder and the hose on the extend side of the main cylinder. Install 3/4" swedges on the hoses and install the flow control valves (Figure 10).

9. Weld the stop blocks to the loader as shown in Figure 11. They should be aligned to hit at point "A" if the steering is turned too sharply.

10. Weld on the counterweight bracket as shown in Figure 12.

11. Install the counterweights.



Item No.	Part No.	Description
1.	--	HOSE (part of loader
2.	72531168	SWEDGE; 3/4" npt x 3/4" hose ID
3.	73054318	VALVE, flow control

Figure 10

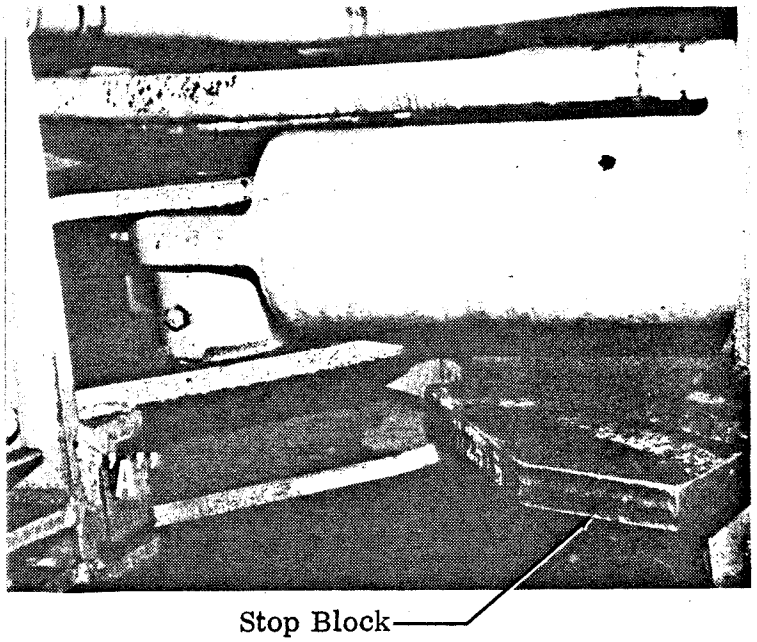


Figure 11

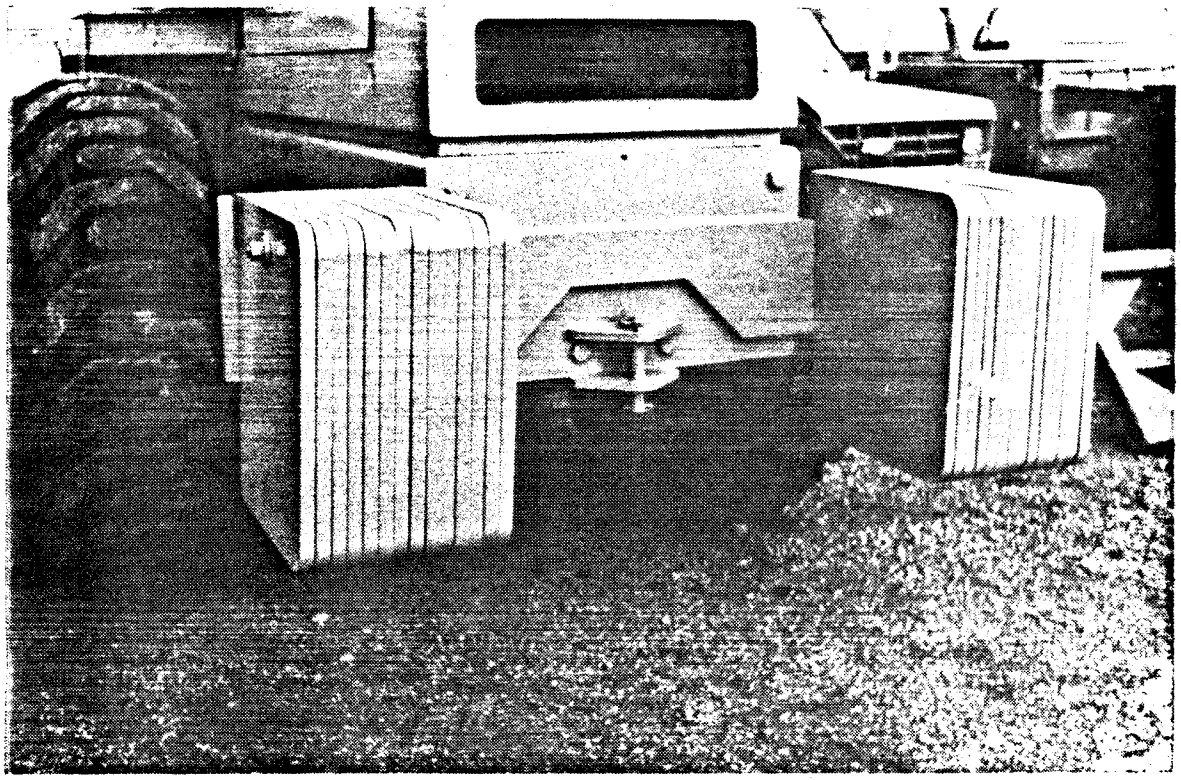


Figure 12

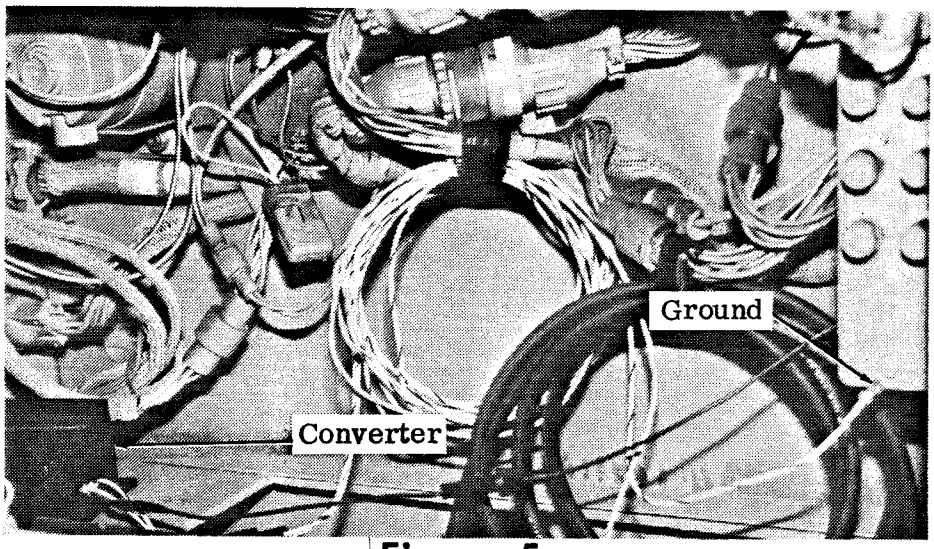


Figure 5

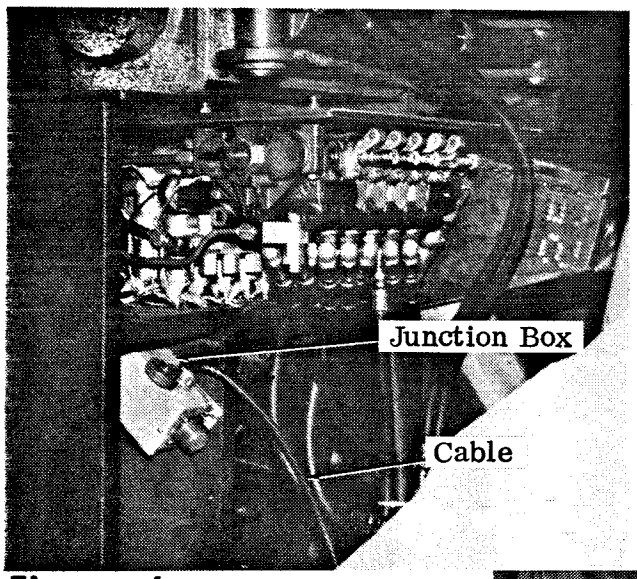


Figure 6

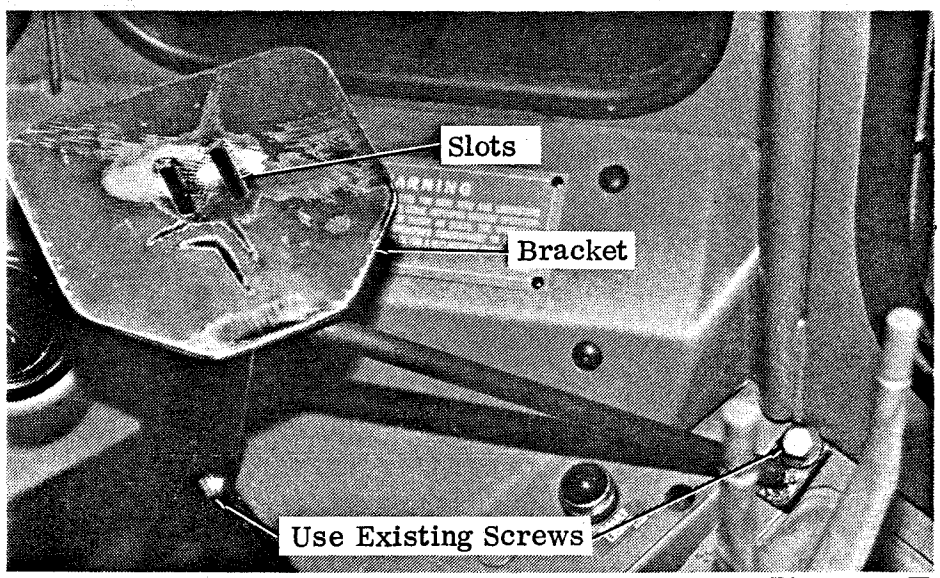


Figure 7