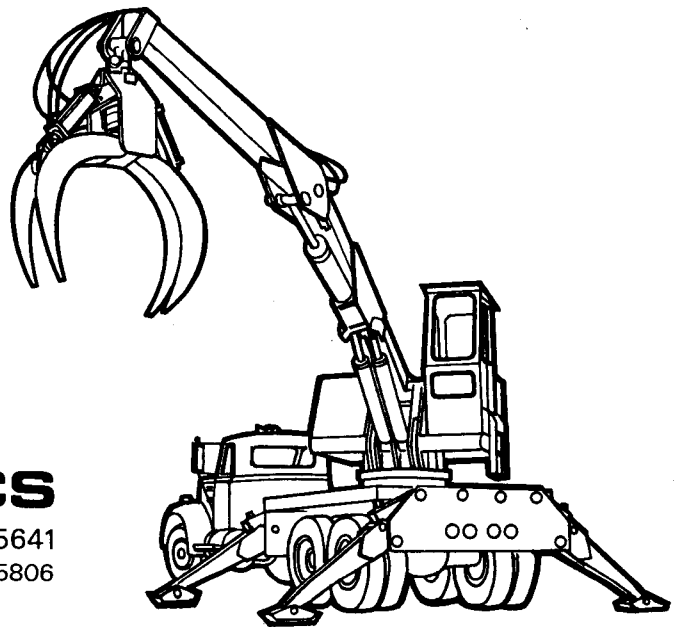


Owner's Manual

MODEL NO. 80

SERIAL NO. 13423



 **BARKO
HYDRAULICS**

Office: Superior, Wisconsin Phone: (715) 392-5641
Mailing address: P.O. Box 6227 Duluth, Minnesota 55806

**BARKO HYDRAULICS, INC.**Office: Superior, Wisconsin Phone: (715) 392-5641
Mailing address: P.O. Box 6227 Duluth, Minnesota 55806**PRE-DELIVERY REPORT**PRODUCTION
NUMBER **5374**Dealer **PETTIBONE CORPORATION - BARAGA, MICHIGAN**Date **03/08/83**

	Make/Model	Serial	Make/Model	Serial
Machine	80 BACK OF CAB	13423	Magnet Drive Pump	
Carrier/Crawler			Magnet Controller	
Diesel Engine			Drive Axle	
Coupler/PTO Gear Box			Hydraulic Propel Motor	
Main Pump	25-21 VICKERS	7998	Steering Cylinder	
Secondary Pump			Grapple	1/3 CORD BUTT
Swing Pump			Grapple Motor	CHARLYNN (STD)
Servo Pump			Grapple Cylinders	3510 - 2
Steering Pump			Electric Motor #1	6793,6690
Main Boom	12'0"	7691	Electric Motor #2	
Secondary Boom	10'4"	7691	Electric Motor #3	
Main Valve Bank	GRESEN V42	1334	FRAME	LI-1021
Secondary Valve Bank	GRESEN V42	1329	TANK	10986
Third Valve Bank			HEAD	No Ser. No.
Servo Valves				
Turntable Bearing	KAYDON	S-32-8F2		
Hydraulic Collector				
Electrical Collector				
Magnet Generator				
Magnet Drive Motor				

	Make/Model	Serial Number	Serial Number
Swing Motors	COMMERCIAL	R H B102-2883	L H
Planetary Gear Boxes	FAIRFIELD S3A	R H C2K04740	L H
Accumulators		R H	L H

	Size	Serial Number	Serial Number
Main Boom Cylinders	6036 - 2.5	R H 6892	L H
Secondary Boom Cylinders	6024 - 2.5	R H 4888	L H
Live Heel Cylinders			
Stabilizer Cylinders		R F L F	R R L R

Main Relief	Swing	Mag Drive Relief	*Check Diesel Engine & All Magnet Generator Speeds w/Photo-Tach.
Secondary Relief	Steering	Mag Drive R.P.M.	
Third Relief	Servo	Engine R.P.M.	

Check operation of machine and record only defects and corrections made:

- 2 - Parts Box**
- 1 - 3" x 60" Suction Hose**
- 1 - Seat w/Arm Rests**

Serviceman's Signature

NON-CLIQUE

MODEL 80



WARNING

MAXIMUM HYDRAULIC PRESSURE FOR THIS MACHINE IS 1,750 psi. SETTINGS HIGHER THAN THIS MAY RESULT IN HARM TO PERSONS AND PROPERTY.

BARKO HYDRAULICS, INC.

In many instances, we have learned that the hydraulic relief valves of this equipment have been reset, increasing the maximum system pressure, and with it, the load the unit will lift before the relief valve opens. In some instances, the consequences of increasing this setting have been serious. The function of the relief valve is to provide a fuse action to protect the machine and the operator from overloading. When overloaded, different portions of the machine can become stressed to a level where parts fracture and serious physical damage to the equipment and personnel can result. **This is an extremely dangerous practice.**

Accordingly, you are advised that the setting of this valve is limited to a maximum of **1,750 psi**. Pressure settings in excess of this level render each and all Barko warranties null and void and constitute an obvious misuse and abuse of our product.

WARRANTY

Barko Hydraulic Loader

Barko Hydraulics Warranty to Dealers and/or original Buyers of hydraulic loaders and parts thereof, manufactured by Barko Hydraulics is:

- A. Hydraulic loaders and parts manufactured by Barko Hydraulics will conform to the designation or description under which they are sold.
- B. Hydraulic loaders and parts manufactured by Barko Hydraulics shall be delivered free from all security interests, liens and other encumbrances, good title shall be conveyed, and transfer rightful.
- C. Hydraulic loaders manufactured by Barko Hydraulics will be free from defects in materials and workmanship for a period of three (3) months or five hundred (500) hours of operation from first day in service, whichever occurs first, provided first day of service is not later than sixty (60) days from delivery to Dealer and/or original Buyer, unless Barko Hydraulics extends the period in which such first day of service is to occur, and Barko Hydraulics or Dealer certifies such extended period for Warranty to commence.
- D. Replacement parts manufactured by Barko Hydraulics will be free from defects in material and workmanship for a period of three (3) months or five hundred (500) hours of operation from first day in service, whichever occurs first, provided first day of service is not later than one hundred twenty (120) days from delivery to Dealer and/or original Buyer, and installation of repair parts is made by authorized Dealer.

Barko Hydraulics liability under this Warranty or otherwise shall be limited to providing a replacement part for any non-conforming part, not including freight, special charges or cost of installation, or in the alternative, at Barko Hydraulics' sole option, the cost of repairs (excluding travel) during normal working hours to that non-conforming part.

Proof of any defect in any hydraulic loader or replacement part must be submitted to designated Dealer or Barko Hydraulics' factory within ten (10) days from the date on which the defect was originally discovered.

Barko Hydraulics makes no warranty with respect to parts supplied to it by other manufacturers; these components shall be subject to the warranties of their respective manufacturers.

This Warranty does not extend to any of the following:

1. Defects, damage or deterioration due to normal use, wear and tear, exposure, storage or corrosion. Normal use ordinarily affects hoses, seals and packings, work surfaces and the like.
2. Normal maintenance service or the replacement or repair of parts required to be replaced or repaired in the course of normal maintenance service. Normal maintenance ordinarily includes replacement of filters, seals and the like.
3. Defects, damage or deterioration due to failure to properly maintain equipment or parts, including but not limited to inspections or maintenance not in accordance with manuals, schedules or good practice.
4. Damage or defects caused by abuse of the equipment or parts by overloading, misapplication, improper operation or use, installation of unapproved accessories or unauthorized alterations.
5. Damage or defects resulting from repairs of equipment or parts in an unauthorized manner or the installation of components other than Barko Hydraulics or authorized parts.

The liability of Barko Hydraulics, except as to Paragraphs A and B above, arising out of supplying hydraulic loaders or replacement parts therefore, or their use, whether premised on warranties, contract, negligence or otherwise, shall not in any case exceed the cost of correcting the defects in the hydraulic loaders or replacement parts therefore as herein provided, and upon expiration of the applicable Warranty period herein all such liability shall terminate.

Barko Hydraulics shall in no event be liable for any incidental, consequential, or special damages or for any expenses or delays caused by defective material or workmanship, and no allowance will be made for repairs, replacements or alterations without Barko Hydraulics prior written approval. The foregoing shall constitute the sole and exclusive remedy of Dealer and Buyer and the sole and exclusive liability of Barko Hydraulics.

The warranties stated herein are in lieu of all other warranties whether written or oral, statutory, express or implied, including any warranty of merchantability or fitness for purpose.

INTRODUCTION

This Parts Manual has been designed to assist you in identifying and ordering replacement parts for your Barko loader.















The manual is divided into seven sections: Nomenclature, Structural Upper, Structural Lower, Mechanical, Electrical, Hydraulic and Options and Accessories.

Your Barko loader has been designed to provide you with long, efficient service—and, in its manufacture, only the highest quality parts and components have been used.

"THE USE OF PARTS OTHER THAN GENUINE BARKO OR APPROVED PARTS MAY VOID ANY PRODUCT WARRANTY THAT MAY BE IN EFFECT AT THE TIME OF SUBSTITUTION."



CAUTION

-  1. Under no circumstances should any modifications be made to Barko loaders without factory authorization. This machine was designed to do a specific job and alterations to loader could result in injury to operator or machine.
-  2. If loader is not functioning properly, machine should be shut down and proper repair procedures followed.
-  3. Read this manual thoroughly. Get to know the operation and care of your Barko Loader.
-  4. Become as familiar as possible with the requirements of each loading job and the terrain you'll be working in before you start each job.
-  5. Go through the pre-start checklist thoroughly before you start each job — to make sure your equipment is in safe, working condition. Be sure all damage or defects are corrected first by qualified service personnel.
-  6. Make sure that all walking and climbing surfaces of the loader are free of dirt, debris, water, grease, oil, ice and snow . . . and don't leave loose tools and rags on the loader. One slip can be disastrous.
-  7. Be sure to wear shoes with some kind of non-slip soles—and always use both hands when climbing aboard the machine.
-  8. Do not allow anyone to ride on the outside of the cab or anywhere else on the machine while you're operating. Only the operator should be on the machine.
-  9. Be constantly aware of people and obstacles in your job area while operating—and never allow anyone to be under your boom or load.
-  10. If your machine is equipped with stabilizers, do not operate the loader until you have lowered the stabilizers and the machine is on firm, level ground or cribbing.
-  11. Try to keep your eyes on the load at all times. If you must look elsewhere, bring the loader to a stop.
-  12. **DO NOT OPERATE THE LOADER NEAR POWER LINES!** If you must work near them, have them disconnected first.
-  13. Be sure to wear safety equipment and clothing required for working with, or near heavy equipment—and keep that hard hat on.
-  14. This machine should not be used unless operators manual is read and thoroughly understood.



MODIFICATIONS

Slight modifications in design as dictated by field experience or desire to improve the unit, or changes of materials due to inability to procure those originally specified may become necessary. Such changes in design will be obvious and, wherever possible, parts or assemblies will be interchangeable with the original design.

ILLUSTRATIONS

The illustrations in the manual are intended to show typical construction of the various parts. In some instances the shapes or details of the parts illustrated may not exactly represent their actual appearance; however, they will serve to show the servicing methods explained or help to identify parts performing the same function.



OIL RECOMMENDATIONS FOR MOBILE HYDRAULIC SYSTEMS

The oil in a hydraulic system serves as the power transmission medium. It is also the system's lubricant and coolant. Selection of the proper oil is a requirement for satisfactory system performance and life.

Recommendations presented in this data sheet will assist in the selection of suitable oils for use with Sperry Vickers' products. Sperry Vickers does not publish a recommended oil list by brand name or supplier due to the extremely wide variety of oil types on the market.

In most cases, use of these recommendations will lead to selection of a suitable oil. However, due to the complex nature of oil formulation, the variety of oils available and peculiarities of individual hydraulic applications, there will be rare instances where an oil selected on the basis of these recommendations will yield unsatisfactory results. Sperry Vickers cannot be responsible for such exceptions. In this respect, the customer is encouraged to consult his Sperry Vickers representative when selecting an oil.

IMPORTANT FACTORS IN SELECTING AN OIL

1. **ADDITIVES** — Research has developed a number of additive agents which materially improve various characteristics of oil for hydraulic systems. These additives are selected to reduce wear, increase chemical stability, inhibit corrosion and depress the pour point.

Pump performance and reliability are directly affected by the anti-wear additive formulation contained in the oil. Oils providing a high level of anti-wear protection are recommended for optimum performance and long life.

2. **VISCOSITY** — Viscosity is the measure of fluidity. The oil selected must have proper viscosity to maintain an adequate lubricating film at system operating temperature.

In addition to dynamic lubricating properties, oil must have sufficient body to provide an adequate sealing effect between working parts of pumps, valves, cylinders and motors, but not enough to cause pump cavitation or sluggish valve action. Optimum operating viscosity of the oil should be between 16 cSt (80 SUS) and 40 cSt (180 SUS).

"Viscosity index" reflects the way viscosity changes with temperature. The smaller the viscosity change, the higher the viscosity index. The viscosity index of hydraulic system oil should not be less than 90. Multiple viscosity oils, such as SAE 10W-30, incorporate additives to improve viscosity index (polymer thickened). Oils of this type generally exhibit both a temporary and permanent decrease in viscosity due to oil shear encountered in the operating hydraulic system. The actual viscosity can, therefore, be far less in the operating hydraulic system than what is shown in normal oil data. Accordingly, when such oils are selected, it is necessary to use those with high shear stability to insure that viscosity remains within recommended limits while in service.

3. **CHEMICAL STABILITY** — Oxidative and thermal stability are essential characteristics of oils for Mobile hydraulic systems. The combination of base stocks and additives should be stable during the expected lifetime of the oil when exposed to the environment of these systems.

SUITABLE TYPES OF OIL

1. **CRANKCASE OIL** having letter designation SC, SD or SE per SAE Technical Report J183a. Note that one oil may meet one or more of these designations.
2. **ANTI-WEAR HYDRAULIC OIL** — There is no common designation for oils of this type. However, they are

produced by all major oil suppliers and provide the anti-wear qualities of the above designated crankcase oils.

3. **CERTAIN OTHER TYPES OF PETROLEUM OIL** are suitable if they meet the following provisions:

- A. Contain the type and content of anti-wear additives found in the above designated crankcase oils, or have passed pump tests similar to those used in developing anti-wear type hydraulic oils.
- B. Meet the viscosity recommendations shown in the following table.
- C. Have sufficient chemical stability for Mobile hydraulic system service.

OIL VISCOSITY RECOMMENDATIONS

HYDRAULIC SYSTEM OPERATING TEMPERATURE RANGE*	SAE VISCOSITY DESIGNATION
-10°F. to 130°F. (-23°C. to 54°C.)	5W 5W-20 5W-30
0°F. to 180°F. (-18°C. to 83°C.)	10W
0°F. to 210°F. (-18°C. to 99°C.)	10W-30
50°F. to 210°F. (10°C. to 99°C.)	20-20W

*Temperatures shown are cold (ambient) start-up to maximum operating. During cold start-up, avoid high-speed operation of hydraulic components until the system is warmed up to provide adequate lubrication.

ARTIC CONDITIONS represent a specialized field where extensive use is made of heating equipment before starting. If necessary, this and judicious use of the following recommendations should be used:

1. SAE 5W or 5W-20 oil.
2. Oils specially developed for use in arctic conditions; such as synthetic hydrocarbons, esters, or mixtures of the two.

Operating temperature should be closely monitored to avoid exceeding a temperature of 130°F. (54°C.) with any lightweight oil.

SPECIAL REQUIREMENTS

When special considerations indicate a need to depart from recommended oils or operating conditions, consult your Sperry Vickers representative.

CLEANLINESS

Thorough precautions should always be observed to insure the hydraulic system is clean:

- A. Clean (flush) entire system to remove paint, metal chips, welding shot, etc.
- B. Filter each change of oil to prevent introduction of contaminant into the system.
- C. Provide continuous oil filtration to remove sludge and products of wear and corrosion generated during the life of the system.
- D. Provide continuous protection of the system from entry of airborne contamination by sealing the system and/or by proper filtration of the air.
- E. During usage, proper oil filling and servicing of filters, breathers, reservoirs, etc., cannot be overemphasized.
- F. Thorough precautions should be taken, by proper system and reservoir design, to insure that aeration of the oil will be kept to a minimum.

START-UP INSTRUCTIONS

Your pre-operational check should include the following:

1. Check reservoir oil level.
2. Check lubrication chart and diagram to determine if all points have been properly lubricated.
3. Check hydraulic piping against hydraulic diagram for correctness of connections.
4. Check mounting installation for completeness and security.
5. Start engine and check for proper engine speed. Compare actual swing time with rating on specification page.
6. Operate all systems to extreme limits of travel in order to raise hydraulic pressure in each line to maximum. Check for leaks in connections.
7. You are now ready to operate the BARKO HYDRAULIC LOADER.

COLD WEATHER INSTRUCTIONS

When the oil viscosity is below 4,000 SSU (SAE 10W @ 20° F, SAE 20 @ 35° F, SAE 30 @ 50° F), extreme care should be used in starting the machine operation to allow warming of the hydraulic oil to a temperature suitable for proper circulation. The following method may be used to warm the oil:

1. Jog Pump: on 5 seconds off 20 seconds (ten times) then on 20 seconds off 20 (about 5 times). Idle system a few minutes.
2. Run pump at 1/2 speed (about 800 to 1000 engine RPM) and run any ram to end and stall it, thus blowing oil thru the pressure relief valve. Relieve pressure 10 seconds of each minute.
3. Oil passing thru the relief valve does no useful work and picks up 8-1/2 degrees of warmth per 1000 pounds of pressure drop. (Approx. ten times.)

When the oil viscosity is below 20,000 SSU (SAE 10 @ -5° F, SAE 20 @ 7° F), warm tank (up about 40 degrees) before starting pump, then follow step above.

For prolonged service in sub zero temperatures, ATF Type "A" and Mil 5606 specification hydraulic oil may be used.

SERVICE AND MAINTENANCE INSTRUCTIONS

Details of parts and construction for your BARKO HYDRAULIC LOADER are shown on the individual parts list. The exploded views are arranged in proper order for assembly and dis-assembly so that, in general, parts may be removed in the order shown.

Two lifting lugs are provided on the boom, one closest to boom pivot for raising entire loader assembly and one farthest out for boom and job assembly.

Instruction for servicing pump, motor, valves and filter are covered on separate pages.

It is of utmost importance that the entire hydraulic system be kept clean and free from dirt, grit, water, air or acids at all times. Periodic draining, cleaning and refilling with new oil is recommended to insure proper performance and service. All openings in the hydraulic circuit must be properly capped, if component units are removed. These units should also be capped or plugged to protect them from entry of foreign matter.

Service and clean the hydraulic system oil filters at each oil change. Quite often a new oil will have a lint like material, which when present in the oil will plug oil filters. For this reason, the filters should be checked during the first 25 hours of operation after any considerable amount of oil has been added to the hydraulic system.

Always drain hydraulic fluid system after working machine because the oil will be warm and will flow freely, which is needed to carry all the dirt and sludge with it.

FOLLOWING, IS A LIST OF WRENCHES THAT CAN BE PURCHASED
FROM BARKO. FOR USE ON YOUR BARKO LOADER.

PART NUMBER

TOOL

27000

FOR USE WHEN REPLACING SPOOL
SEALS IN 2SP VALVES

042200

WRENCH - 1 1/2" BOLT

042201

WRENCH - 2" BOLT

042202

WRENCH - 2 1/2" BOLT

042203

WRENCH - 3 1/2" BOLT

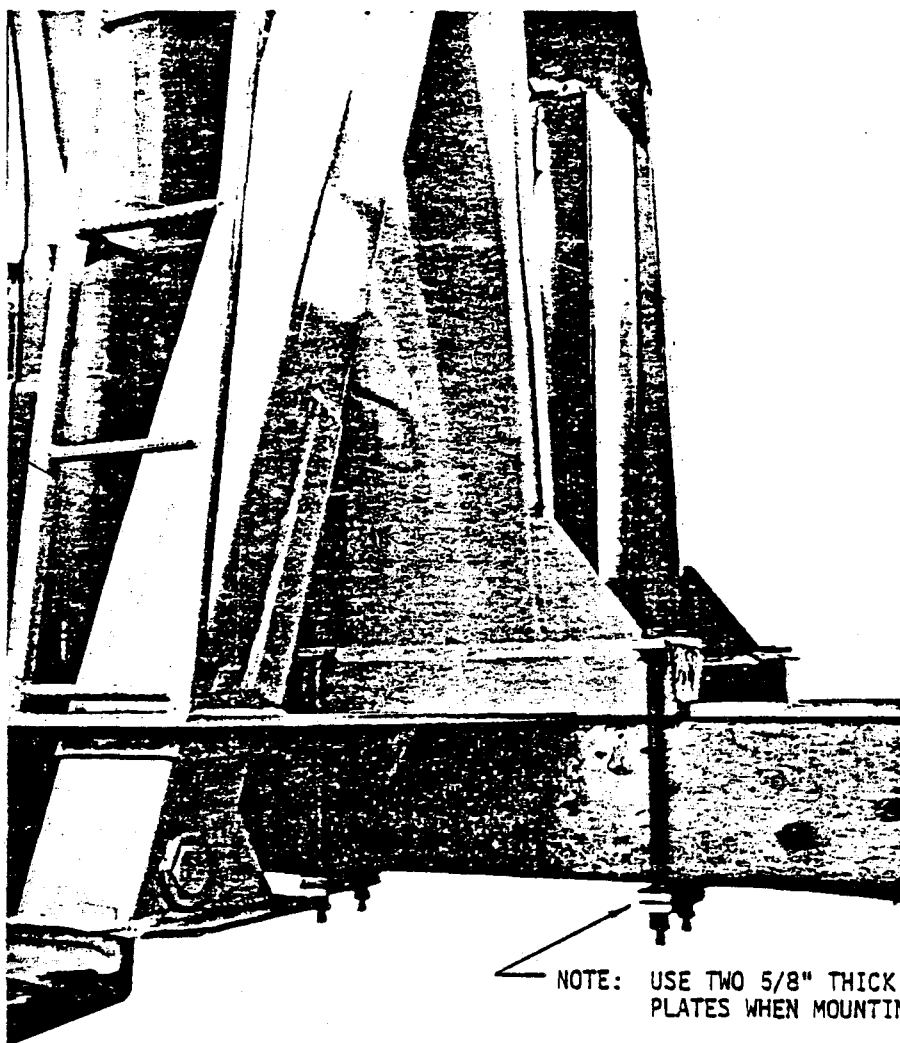
ORDERING INSTRUCTIONS — PARTS

All parts for your BARKO HYDRAULIC LOADER may be ordered from your nearest authorized distributor, if you are not certain of the distributor's location call the factory for assistance, (715) 392-9216.

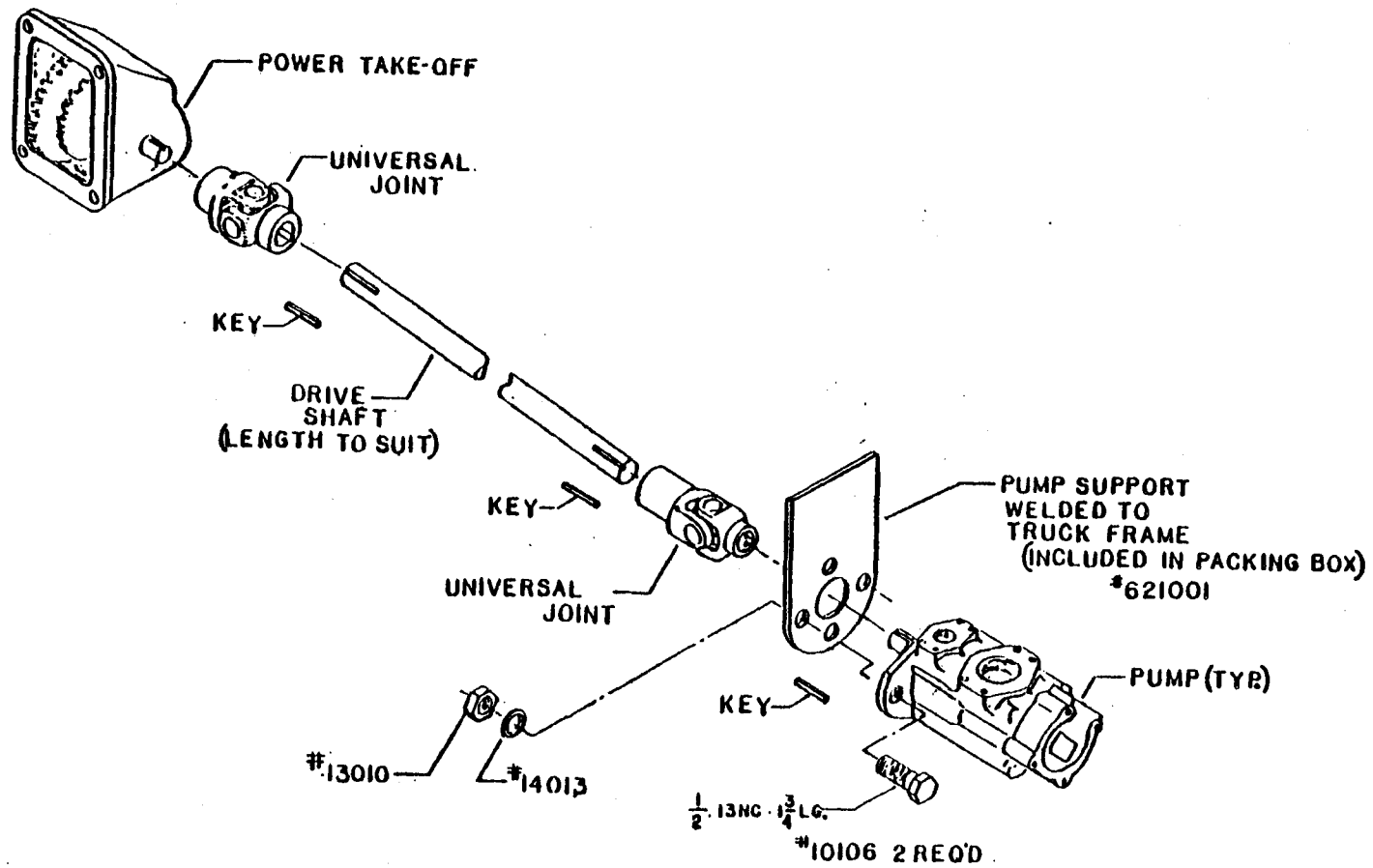
When ordering parts, please specify the following information:

1. Model and Serial # of machine.
2. PART NUMBER — Specify Barko part number as given in your Owner's manual. Do not take numbers from castings, etc.
3. QUANTITY — Specify how many you desire.
4. NAME OF PART — Use proper description or title given in Owner's Manual.
5. RIGHT OR LEFT HAND — Right or left hand is your right or left when operating the loader from the normal operators seat position behind the boom. In reference to cylinders, it is the port location off center viewed from butt of cylinder. Pump & motor rotation is determined by viewing from the shaft end.
6. MODEL & SERIAL NUMBERS — **IMPORTANT!!!** Model & Serial numbers are found on the title page of the Owner's Manual and on the identification plate attached to the loader. Cylinders—give number stamped on gland. Pump drive gear box—give numbers & spec. stamped on Bell Housing Plate.
7. SHIPPING INSTRUCTIONS — Specify definite shipping instructions such as Bus, Air Frt., Air Express, parcel Post or Truck. When no instructions are given, parts will be shipped Best Way i.e., shipping method will be determined by shipping cost, nature of the part and urgency of the repair.
8. RETURN ADDRESS — When ordering parts, always include a return address where part should be sent.
9. RETURN PARTS — New parts returned by distributor or customer to the factory will have a 15% handling charge subtracted from the amount of the part unless parts were sent by mistake from the factory.
10. SHORTAGE — On all parts shipments & packing kits, if any parts are missing (other than parts marked Backordered) call the factory immediately (warranty & return material department.)
11. WARRANTY — Warranty parts must be returned by prepaid freight, but only after consent has been obtained from the warranty & return material department.

FIG. 2. MID MOUNT INSTALLATION OF MODELS 40;60;80
TELESCOPIC & STANDARD CONFIGURATIONS



TYPICAL P.T.O. MOUNTING
INSTALLATION DIAGRAM

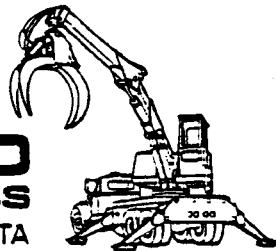


GENERAL MOUNTING PROCEDURE

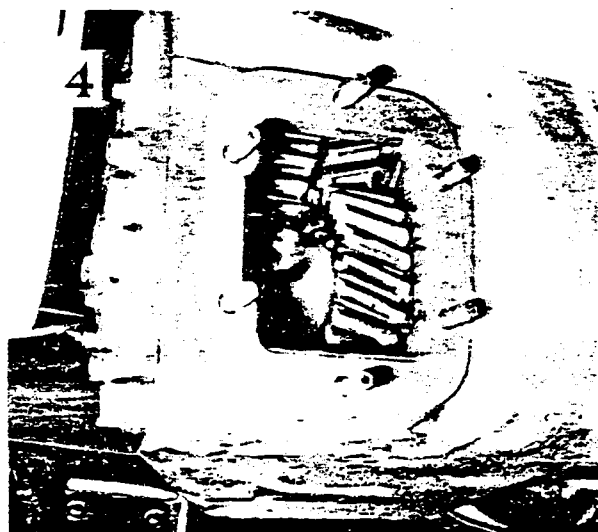
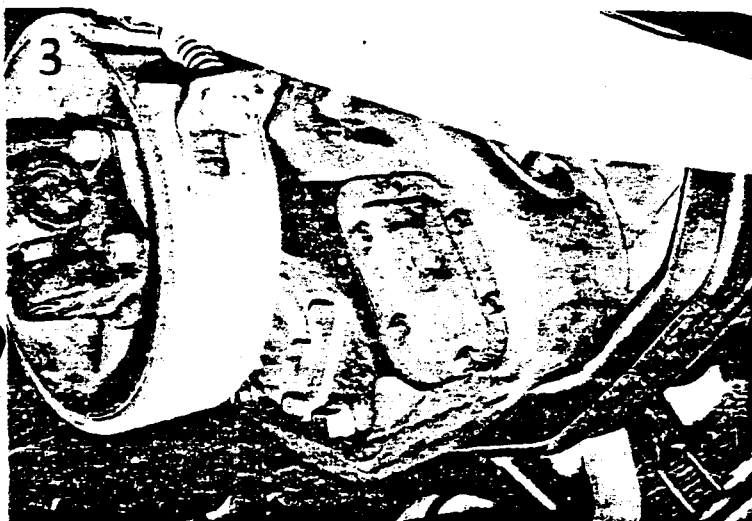
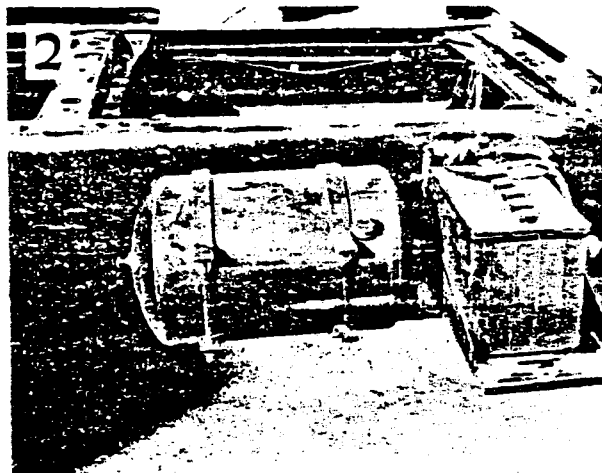
BARKO MID-MOUNT LOADERS



BARKO
HYDRAULICS
DULUTH, MINNESOTA

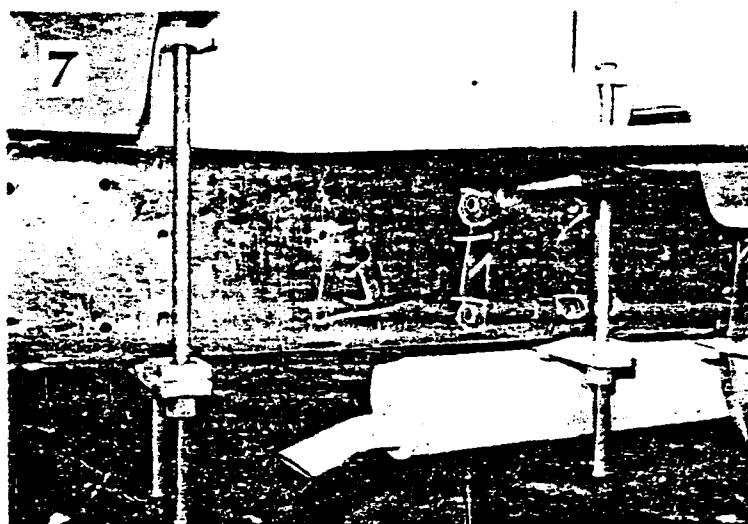
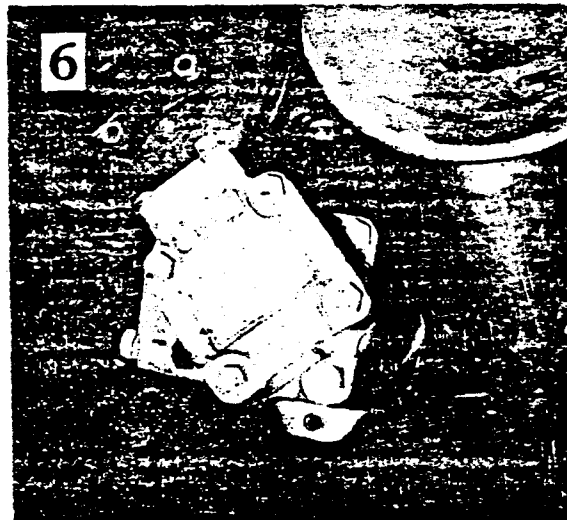


"the loader with everything built in but the operator"

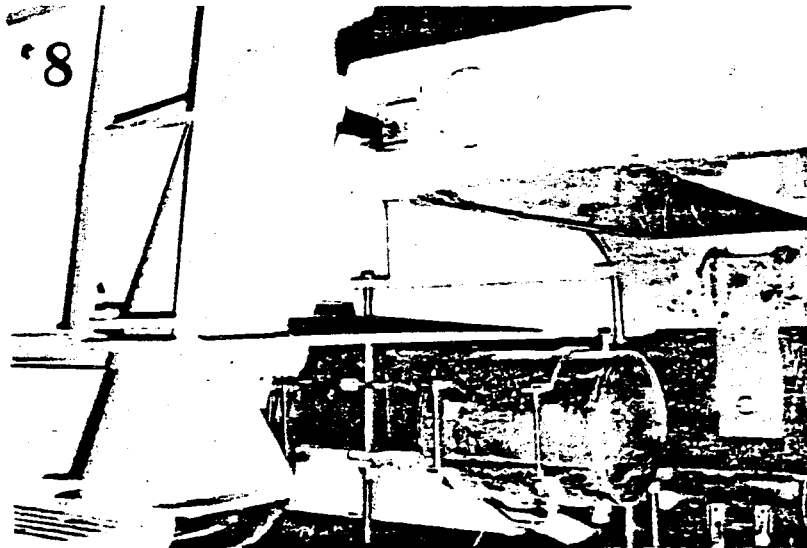


GENERAL INSTRUCTION FOR MOUNTING MID-MOUNT BARKO LOADERS

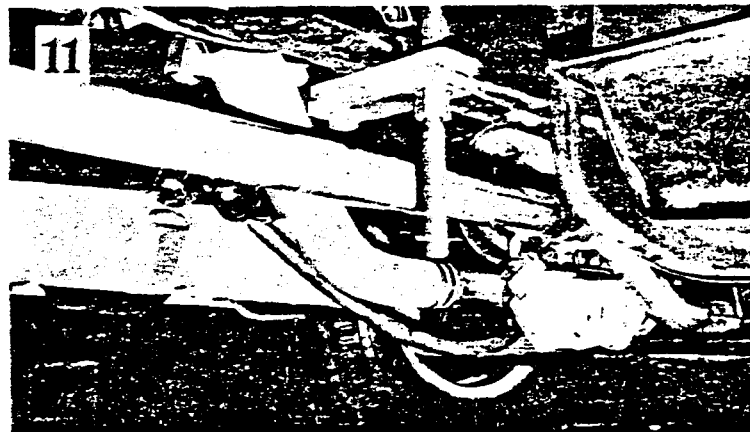
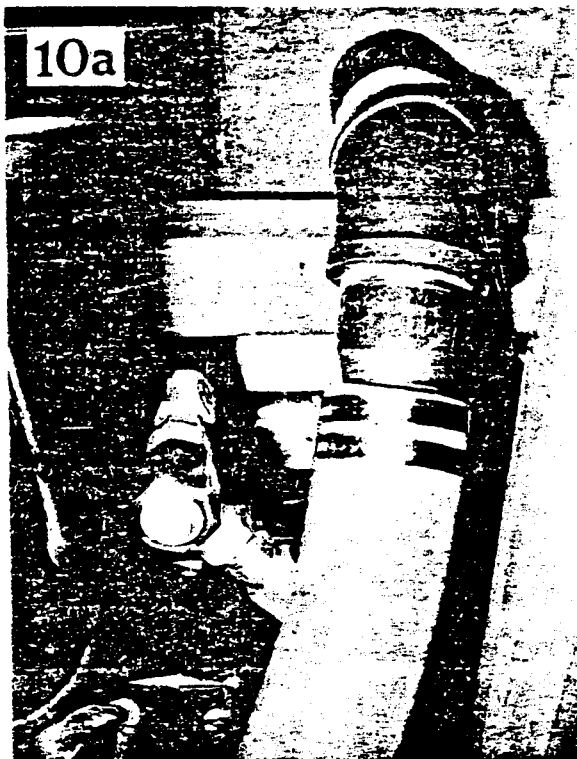
1. Remove or slide truck platform back to provide a minimum of 28" of unobstructed frame area.
2. To facilitate mounting, remove all accessories that are frame mounted within the 28" area that the loader is to occupy on the frame, such as fuel tanks and mounting brackets, air or vacuum tanks, batteries and battery boxes, etc.
3. Select a power take off compatible with the transmission in the truck to secure a hydraulic pump operating speed of 1400-1800 RPM.
4. Install the appropriate PTO mounting studs in the transmission case using caution to be sure the studs are installed to the correct depth.



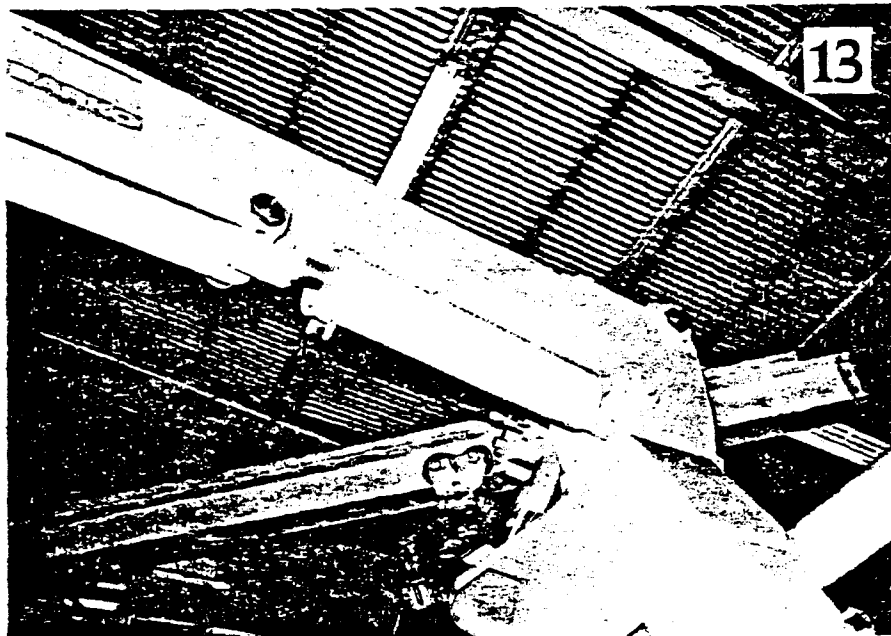
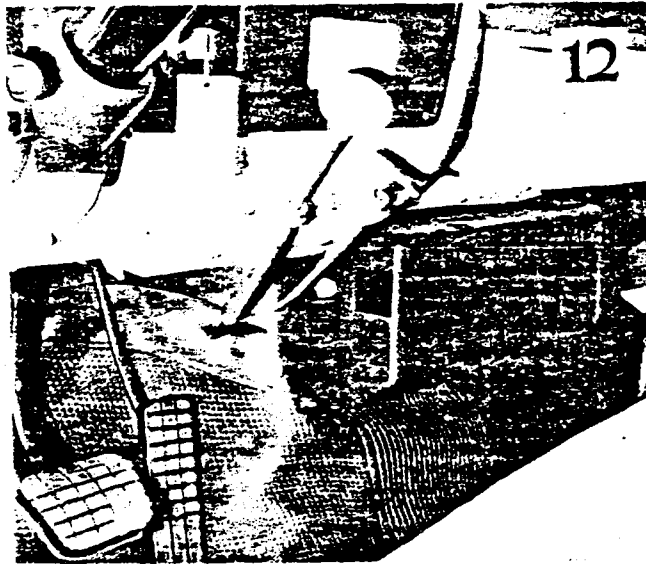
5. Install the previously selected PTO on the transmission using the proper amount of gaskets to assure the proper gear tooth contact between the transmission drive and PTO driven gear. Refill transmission w/lubricant.
6. Mount the hydraulic pump to the PTO (Vickers pump direct mounted to PTO shown, other combinations similar.)
7. Using suitable lifting equipment, the loader can now be placed on the truck frame with the diagonal support gussets on the lower loader frame toward the truck load area. (i.e. truck bed). Install all hold down bolts and nuts utilizing two plates under the truck frame and tighten the nuts to approximately 100 ft. lbs. of torque - alternately loosen each set of mounting bolts and install a spacer between the frame flanges to prevent bending the lower flange when the loader mounting bolts are tightened. Tighten all mount bolts. (Note: In the accompanying photos some mount bolts are installed with the heads up and some with the heads down. This is done to provide clearance around various truck components. The way these bolts are installed is optional.)



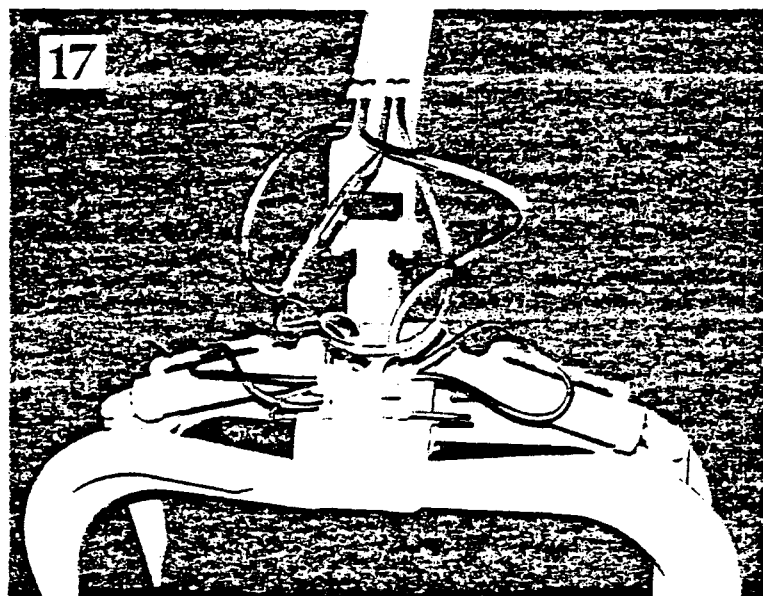
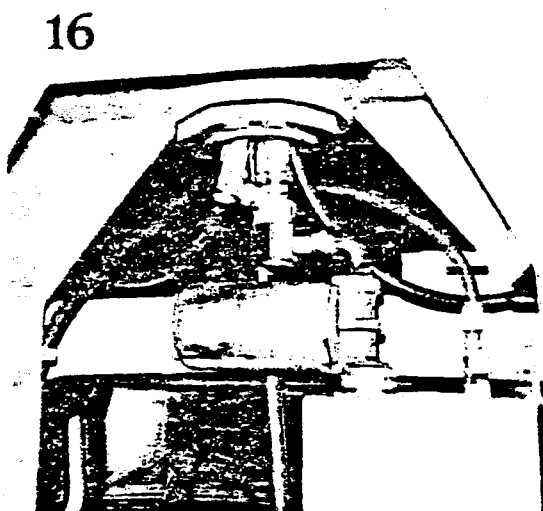
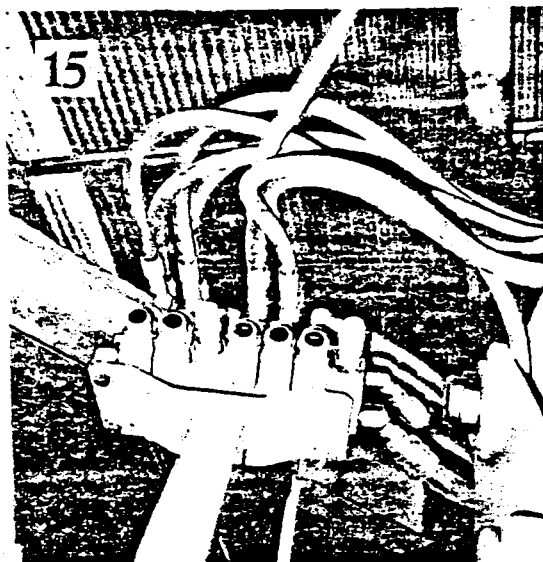
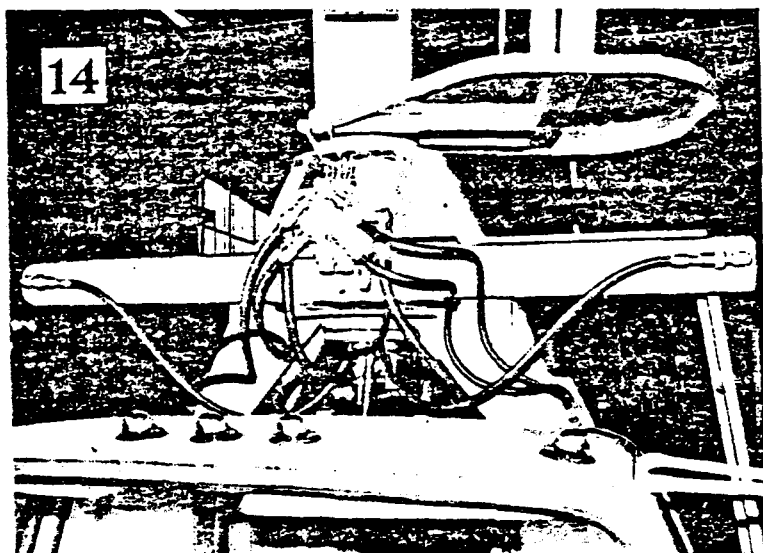
8. The truck bed can now be moved to within 1" of the loader frame and be secured. All items that were previously removed, tanks, batterys, etc., should now be reinstalled making modifications as necessary for re-mounting. Do NOT weld to truck frame. If dual fuel tanks are used, it must be remembered that the tops of both tanks must be at equal elevations.
9. The hydraulic piping and hoses can now be installed between the pump and the loader. Under normal circumstances the small (rear) cartridge on vane style pumps is connected to the mid-inlet for tandem pump and valve installations.



10. Connect the pump suction hose between the hydraulic tank (10a) and pump suction fitting (10b). There is a possibility that exhaust pipes, mufflers, air, vacuum, or fuel lines, miscellaneous linkage, etc. may have to be relocated or rerouted to clear hydraulic system or loader components.
11. Any of these modifications should be made if there is any possibility of interference between the components or if the exhaust system is close enough to the hydraulic pump or lines that it can transmit heat to the hydraulic components.



12. Mount, route and connect the P.T.O. control, and if so desired, an engine throttle control. Be sure that the PTO fully engages and disengages and the throttle does not allow the engine to run at excessive speed.
13. Assemble the boom to the head being sure that all bearings are properly installed and the body fit bolts used to connect the head and boom are of the correct length to properly tighten the boom bearings.



14 & 15. Complete the connection of all hydraulic hoses.

16. Fill the hydraulic reservoir with a good grade of H.D. hydraulic oil containing anti-wear and anti-foam properties with a viscosity of approximately 217 S.U.S. @ 100° F.

17. Complete the hydraulic system by attaching the grapple to the boom tip and connect the grapple open-close and rotate hoses to their respective boom tubes.

18. Start the engine and engage the P.T.O. - with the engine at idle, release the clutch to start the P.T.O. in motion and listen for any abnormal sounds such as gear noise, pump cavitation, or excessive power drain. If no problem exists allow the engine to idle, raise and lower the main boom to its extremes. Then raise the main boom to approximately a 45° angle and cycle the jib boom to its extremes. Next, operate the stabilizer cylinders through their strokes and return the stabilizers to ground level. Disengage the power take off and refill the hydraulic oil tank to its full mark. Reengage the P.T.O. and with the boom elevated high enough to clear all obstructions, fully cycle the swing system slowly to its extremes. Fully open and close the grapple and rotate the grapple in both directions to expell all air from the lines. Recheck the hydraulic system oil level. Make sure all bolts and nuts, including mounting bolts and body fit bolts, are properly tightened. Pick up a weight of approximately 800-1000 lbs. and function all operations to check all relief valves and the general machine operation.

GETTING TO KNOW YOUR BARKO LOADER

Your new Barko loader has been built to work hard for you for a long time — but just how hard and just how long will be determined by your technique of operation and your efforts at proper care and maintenance.

However, before you can properly operate the loader or give it proper maintenance, you need to know something about its construction and the theory of its operation. In other words, as with any other piece of operating equipment, you should get to know your Barko loader well. We hope this manual will help you with this process of familiarization.

Before we get into the specifics of your new loader, let's take a brief, simple look at the hydraulic theory behind the machine.

WHAT IS HYDRAULIC POWER?

Simply said — it is *energy transmitted by a liquid in a confined system*.

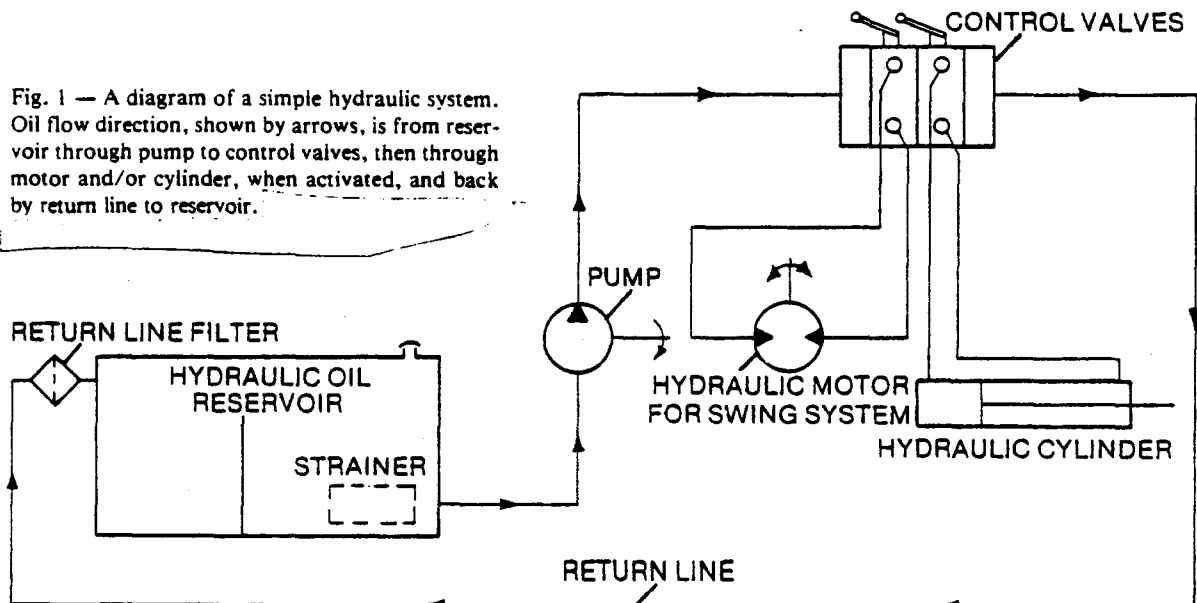
The fact that energy can be transmitted by a liquid is based on a fundamental law of physics discovered back in the year 1650 by French scientist Blaise' Pascal. "Pascal's Law" states that, "Pressure exerted on a confined liquid is transmitted undiminished in all directions and acts with equal force on all equal areas." The pressure applied to the liquid at one point will be transmitted to any other point the liquid reaches because a liquid (as compared to a gas) is essentially incompressible and flows readily.

In today's hydraulic systems, the fluid is usually some form of oil; the pressure is provided by a pump; there are hoses or tubes for containing and transmitting the fluid under pressure, and hydraulic cylinders and fluid motors to convert the energy in the fluid into mechanical work. In addition, the system includes valves to control and direct the flow of fluid and limit the pressure, a reservoir to contain the supply of the fluid, and return lines to carry the fluid back to the reservoir.

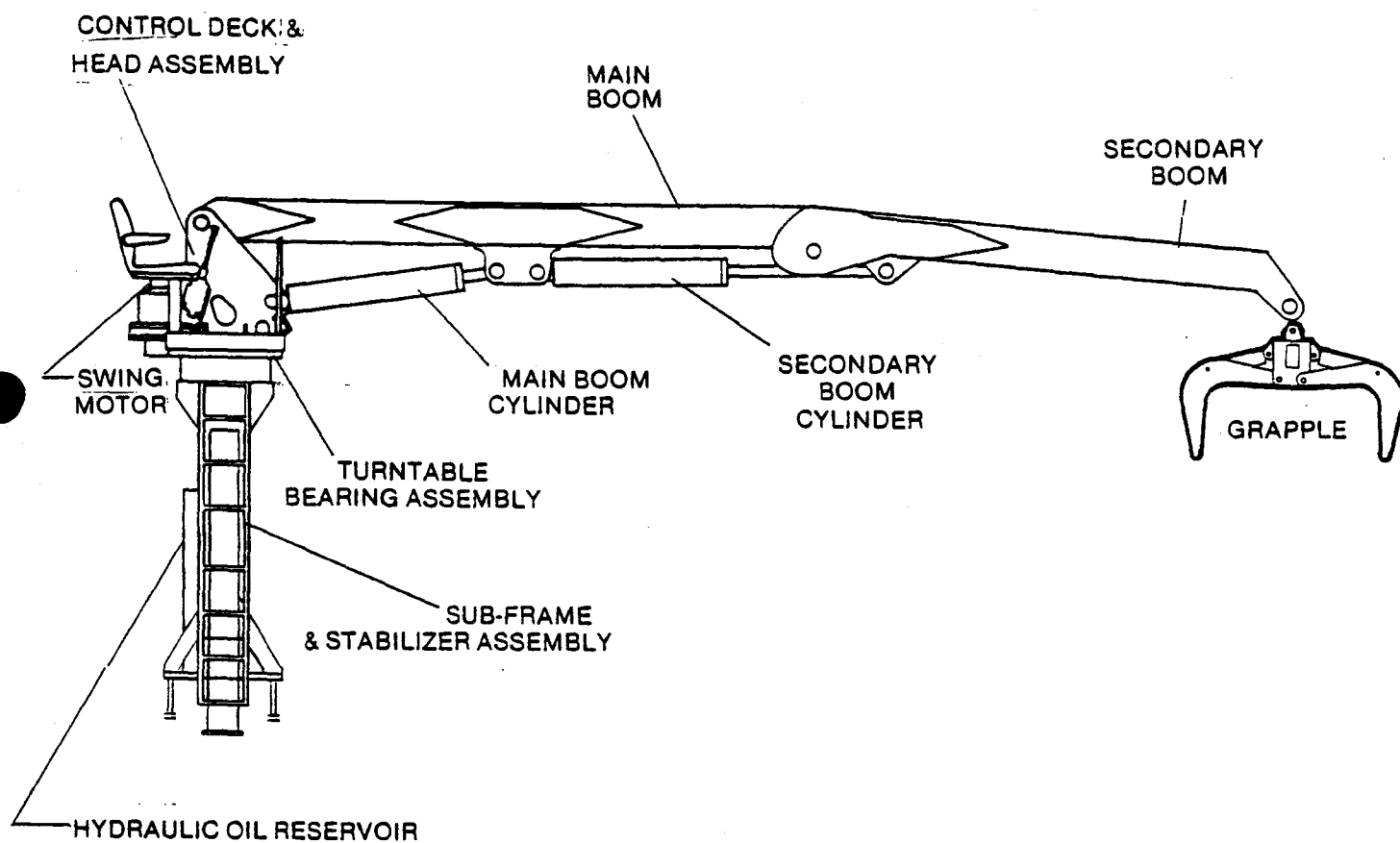
after it has done its job. Figure 1 shows the basic components of a simple hydraulic system.

Translated to the actual operation of the Barko loader, all of this simply means that as you move the foot and hand controls in the operators cab, you are regulating and directing the flow of liquid from the oil reservoir and the pump to either hydraulic cylinders, motors or other hydraulic components. Your foot and hand control levers are attached to valves which control, direct and limit the oil flow to the various working parts of the loader.

Because the direction and control of oil pressure and flow within the loader system is what makes the loader work for you, we will bear down rather heavily in this manual on the necessity of a smooth operating technique, of keeping the oil in the system clean and free of any dirt and debris, and of maintaining a leak-free system. These precautions observed at all times will insure not only a trouble-free, productive operation — but also safety on the job.



MODEL 80 CONTINUOUS ROTATION GENERAL ASSEMBLY



THE BOOM STRUCTURE

The description, 'knuckle-boom loader', comes from the combination of a main boom, secondary boom, and grapple (or other attachment), connected at pivot points and powered by hydraulic cylinders. This operates much like the combination of the human arm and hand (hence 'knuckle-

boom') — and it is this combination which gives the Barko loader its agility, maneuverability and strength. And even greater maneuverability is provided by mounting this structure on a continuously rotating platform, also powered hydraulically.

HYDRAULIC MOTORS

Hydraulic motors mounted on the turntable head provide the power for the 360° continuous rotation on a shear-ball type turntable bearing. Swing system operating pressure for your loader can be found on the Specifications page in this manual.

HYDRAULIC CYLINDERS

The 'business-end' of the loader's hydraulic system — the part that does all the work — is the hydraulic cylinder. Cylinders move the main boom, the secondary boom, and in loaders so equipped, the live heel boom. They also provide the force for the attachments and stabilizers, when so equipped.

HYDRAULIC COLLECTOR

All hydraulic components below the turntable bearing continue to be operable during rotation of the upper because of the hydraulic collector. Located on the rotating turntable assembly, the collector is so designed as to allow the flow of hydraulic oil to the cylinders at all points in the turntable rotation. On most stationary electric models the hydraulic collector is replaced by an electric collector that feeds the power to the upper to run the electric motors and still allow for continuous rotation.

HYDRAULIC OIL FILTERS

The hydraulic oil filters are mounted in the vicinity of the reservoir. They are identical in construction, and each contains a replaceable filter element and a filter condition indicator, or gauge.

HYDRAULIC HOSE & TUBE NETWORK

A heavy-wall tubing and multi-wire hose network carries the hydraulic oil from the reservoir to the pumps and valves and then to cylinders and motors and finally back to the reservoir. Operating pressure of the hydraulic system varies from model to model. For your loader, consult the specifications page in this manual.

STABILIZER ASSEMBLY

Stabilizers on models so equipped provide stability during operation and allow the operator to maintain the loader in a level position. Attached to the sub-frame, they are activated by control levers in the operator's cab.

CONTROL VALVES

The valve system in the Barko loader performs a three-way job — to direct the oil flow to the cylinders and motors, to control the volume of oil, and to limit the pressure at difference points. The Barko loader uses stack-type valves to perform this task. The valve banks are mechanically activated by the control levers on the operator's platform. On large models these valves may be activated hydraulically by hand.

SWING CONTROL FOOT PEDAL. This pedal, located in front of the control lever cluster, has left and right foot pads. When operating, both feet must be on the pedal. Pressure on the right foot pad will swing the machine to the right — and pressure on the left pad will swing the machine to the left.

To slow the swing down or bring it to a stop, gradually bring the pedal to center by pushing on the foot pad opposite to the direction of travel. In other words, if your swing is to the right, and you want to stop the unit at a certain point, you should push gradually on the *left* pad until the pedal is back at center position.

A few moments of actual operation and you'll get the feel of the swing pedal. Just remember, both feet must be on the pedal at all times to insure a smooth, safe movement of the swing system.

GETTING THE FEEL OF YOUR BARKO LOADER

Before starting your first job with the new loader, it is our suggestion that you find a good open spot on firm, level ground that's free of obstructions such as trees, buildings and other equipment — and preferably free of people, too. Move your loader to this area — and spend some time just getting to know the “operating feel” of the machine.

Every piece of operating equipment, no matter where it is manufactured, or by whom, has a slight-

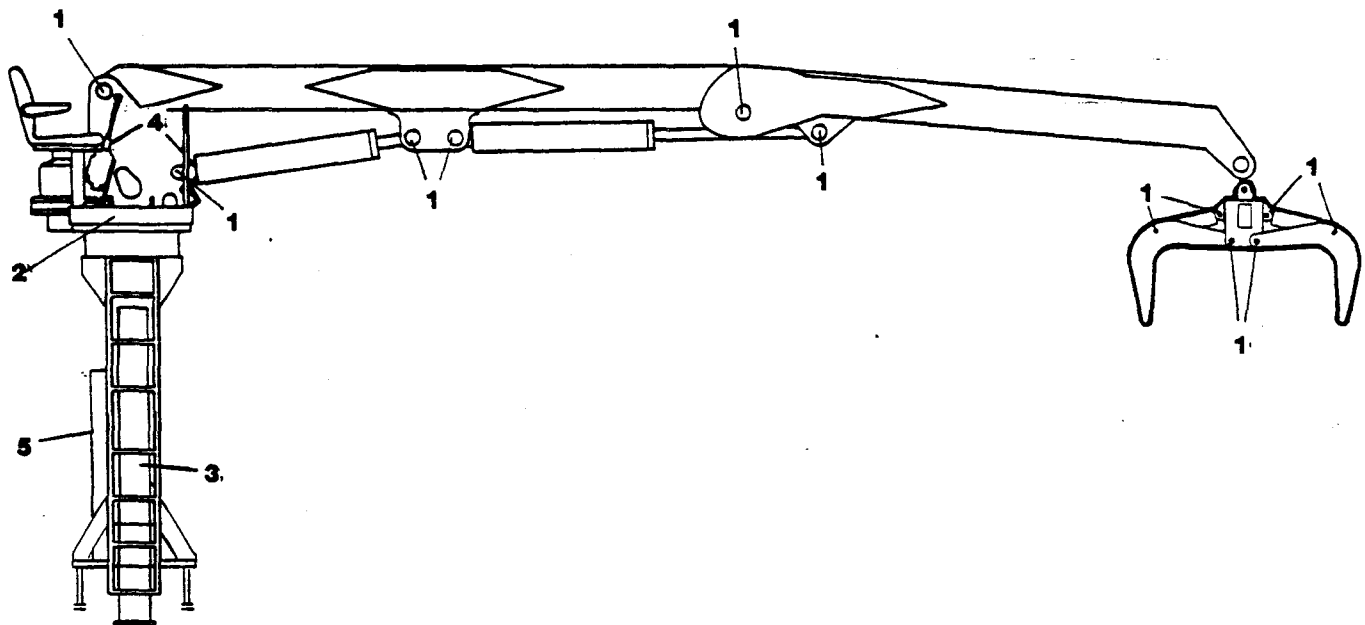
ly different “operating feel” — a sort of an individual machine response to the movement of the controls.

This extra ‘get acquainted’ time spent at the beginning will allow you to become familiar with the instrument panel and control levers and pedals *before* the work begins. It will bring you closer to the point at which your hydraulic loader will truly be a powerful extension of your hands and feet — and, for that matter, your brain.

BEFORE GETTING ON MACHINE

1. Check the entire machine for loose bolts, cracks, frayed or dangling hoses and loose fittings. Also, watch out for any possible vandalism that might have occurred between periods of operation.
2. Check all boom hoses for damage, including those between the head plates.
3. Look for suspicious oil leaks or pools of oil on the machine or on the ground under the machine.
4. Check the grapple for loose or frayed hoses.
5. Check the tires on your vehicle for proper pressure and any damage.
6. Check the hoses and other parts of your stabilizer assemblies for leaks, damage or looseness.
7. Remove any dirt, snow, ice, debris, tools or water from the working surfaces of the loader. A slippery, cluttered operator's deck can be exceedingly hazardous.

LUBRICATION INFORMATION



Regular, proper lubrication of your Barko loader will help prevent costly repairs and will promote longer life of the equipment. Again, lubrication is the key to *preventive* maintenance.

The chart illustrations, along with the following hints, will give you all the necessary information for proper lubrication.

When lubricating:

A. Be sure that all lubricants and lubricating equipment are kept free of contaminating dirt and foreign matter when in use and while in storage.

B. Before using your grease gun, clean all the fittings. This will prevent dirt from being forced into the fittings during greasing.

C. Don't be stingy with lubricants. It is hard to over-lubricate most equipment — but *under*-lubrication can cause damage and can even be dangerous. Always apply enough grease to force the old grease out of the fitting.

D. Be sure to wipe off excess lubricants that spill or overflow at the fittings. Surfaces that are oily or greasy collect dirt which can eventually work its way into bearings and gears.

LUBRICATION CHART

Location	Description	Frequency	Type
1	Boom & grapples	Daily	Multi-purpose
2	Turntable	Daily	Multi-purpose
3	Stabilizers	Daily	Multi-purpose
4	Control Linkage	Weekly	SAE 30 Oil
5	Hydraulic Reservoir	Check Daily	See below

REGULAR MAINTENANCE & LUBRICATION SCHEDULE

● DAILY, OR EVERY 8 HOURS ●	
HYDRAULIC OIL RESERVOIR Check level & quality of oil.	NUTS AND BOLTS. Do walk-around inspection for tightness and/or damage on boom, grapple, turntable, and mounting nuts and bolts.
DIESEL FUEL TANK Check level and fill, if necessary.	ENGINE AIR FILTER. Service per manufacturer's instructions.
ENGINE CRANKCASE OIL Check level.	CONTROL LINKAGE. Lubricate per instruction
ENGINE RADIATOR Check coolant level, and inspect exterior for dirt, leaves, bugs, etc.	● TWO WEEKS, OR 100 HOURS ●
HOSES - CONNECTIONS - CYLINDERS Do 'walk-around' inspection for oil & water leaks and damage.	TURNABLE BOLTS. Check torque, and re-torque, if necessary.
FAN & DRIVE BELTS Check for looseness & wear.	HYDRAULIC OIL COOLER. Inspect and clean cooler fins.
VEHICLE TIRES Check for proper pressure.	OIL COLLECTOR. Check tightness of attaching bolts.
OPERATOR'S DECK Clean off debris, tools, rags, water, ice & snow.	HYDRAULIC OIL FILTERS. Check condition and change.
BOOM, GRAPPLE, STABILIZER FITTINGS. Lubricate all fittings with multi-purpose grease.	● SIX MONTHS, OR 1000 HOURS ●
TURNABLE BEARINGS. Lubricate per instructions.	HYDRAULIC RESERVOIR. Drain old oil, clean tank and suction screens and refill with new oil.
● WEEKLY, OR EVERY 50 HOURS ●	ENTIRE LOADER. Steam clean, and check for stress and wear signs, cracks, damage and looseness.
HYDRAULIC OIL TANK BREATHER. Clean with fuel oil or nonflammable solvent.	

LUBRICANT RECOMMENDATIONS

Hardworking equipment such as your Barko loader requires careful operation and regular maintenance if you want it to continue to work hard for a long time.

Just as important is the selection of lubricants to be used in the maintenance procedure. This includes the hydraulic oil that goes into the reservoir and the grease that lubricates all moving parts.

Hydraulic Fluid

The hydraulic fluid used in your loader will have to be tough enough to provide peak pressure and instant power through many hours of constant operation. It has to be ready-to-go on cold winter mornings and not let you down on hot summer afternoons.

Because of the wide variety of oils available we will not recommend oil by brand name. However, the following list of features to look for in an oil should help you in ordering the right oil from your supplier. Or, contact your Barko dealer for his advice. The hydraulic oil for your loader should feature:

1. Rust resistant additives to prevent rust formation from moisture condensation.
2. Anti-foam agents to break up air bubbles and prevent "foaming" that causes sluggish and erratic operation.
3. High stability to resist oxidation and prevent varnish formation and deposits that foul systems.

4. Anti-wear properties to prevent scuffing and excessive wear at high speeds and high pressure operation.

5. Good viscosity index for easy flow at low temperatures without thinning out at high temperatures after hours of use. We recommend an anti-wear hydraulic oil (AW) with a viscosity index of 90 or higher and an SSU viscosity of 140 or higher at 100°F.

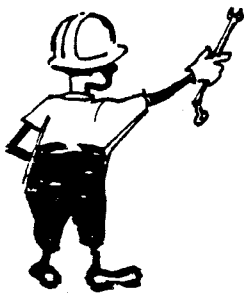
For operation in different outside temperatures, please use the following chart for selection of your hydraulic oil.

AVERAGE OUTSIDE TEMPERATURE	SAE DESIGNATION OR EQUIVALENT
Above 65°F	SAE 30
From 32°F. To 65°F.	SAE 20
From 0°F. to 32°F.	SAE 10
* From -10°F to 0°F.	SAE 5W
*When exposed to these temperatures use of a tank heater to warm oil is advised. Also, when using lightweight oil, operating temperature of equipment should be closely monitored to avoid exceeding 130°F.	

Grease recommendation

All fittings on your Barko loader should be lubricated on schedule with good quality #2 multi-purpose lithium grease. Open control linkage should be lubricated with SAE 20W oil.

TAKING CARE OF YOUR BARKO LOADER



INTRODUCTION TO PREVENTIVE MAINTENANCE

Preventive maintenance is really just a simple matter of common sense. If you keep any piece of mechanical equipment clean and properly lubricated, and promptly replace any worn or damaged parts, you are going to "prevent" deterioration and promote long life and safe, productive service. The only other requisite to such a program is the *regular scheduling* of such maintenance.



Generally, there are two ways to set up a maintenance and lubrication schedule for your loader — either by the calendar (daily, weekly, monthly, etc.), or by the operating hours of the machine. For your convenience, we have used both methods of intervals in our suggested Maintenance and Lubrication Schedule.

Obviously, when you are operating under severe job conditions, such as a dusty job site, in extreme

heat or cold, a long operating day, or extremely heavy loads, the recommended intervals in the schedule should be shortened.

The suggested schedule which follows is designed to be just a reminder of what should be done. For detailed instructions on each item, consult the Itemized Instructions which follow the Maintenance and Lubrication Schedule.

HYDRAULIC OIL CHANGING PROCEDURE

This procedure should be used once during the breaking period of a new loader (after one week, or 50 hours of operation) and then every six months, or 1000 hours.

Throughout the oil changing procedure remember that cleanliness is absolutely necessary. Hands, tools, funnels, oil filling equipment, the oil filler opening and, above all, the hydraulic oil itself must be kept absolutely clean. Dirt in the hydraulic system can cause serious damage to pumps, valves and cylinders.

CLEANING THE RESERVOIR

- (1) Clean the area around the inspection cover on tank, and then remove the cover.
- (2) Remove suction strainer from inside reservoir. Clean it with a solvent.
- (3) Remove all dirt and sediment from inside the reservoir.
- (4) Clean the oil filter screen and check for damage. If damaged, replace screen.
- (5) After everything in and around reservoir is completely clean, replace suction strainer, drain plug and inspection cover.

DRAINING THE RESERVOIR

- (1) First, raise main boom and extend secondary boom to their limits, and then turn off the engine.
- (2) Remove the reservoir drain plug to drain oil.
- (3) After the tank has drained, lower main and secondary booms gradually to force oil out of cylinders. **DO NOT START ENGINE.**

FILLING THE RESERVOIR

- (1) With drain plug in place and tightened, refill the tank with recommended oil. Be sure filler opening screen is in place and clean.
- (2) Start engine, running it slowly until the new oil circulates throughout system.
- (3) With all control valves in neutral, run engine until the pump quiets down, then add more oil, if needed.
- (4) As an operator works the main and secondary booms, grapple and stabilizers, add more oil as needed to maintain proper level in reservoir. This will work the air out of the system and prevent cavitation, which is caused by air bubbles in the oil as it passes through a pump.
- (5) Check oil level again after the loader has been operating for an hour or two.

TORQUE SPECIFICATIONS FOR BARKO BOLTS

SAE GRADE 5

RECOMMENDED TORQUE FOOT POUNDS

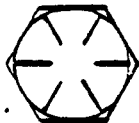


GRADE 5

DIA.	DRY		*LUBRICATED	
	COARSE	FINE	COARSE	FINE
1/4	9	10	5	6
5/16	17	20	10	12
3/8	31	35	19	21
7/16	50	55	30	33
1/2	75	85	45	51
5/8	110	120	66	72
3/4	150	170	90	100
7/8	265	300	160	180
1	400	435	240	260
1 1/8	600	650	380	390
1 1/4	800	900	480	540
1 1/2	1120	1240	620	745
1 3/4	1470	1670	880	1000
2	1950	2200	1170	1320

SAE GRADE 8

RECOMMENDED TORQUE FOOT POUNDS



GRADE 8

DIA.	DRY		*LUBRICATED	
	COARSE	FINE	COARSE	FINE
1/4	12	14	7	9
5/16	25	27	15	17
3/8	44	49	26	30
7/16	70	78	42	47
1/2	107	120	64	72
5/8	154	171	92	102
3/4	212	240	127	144
7/8	376	420	226	252
1	606	668	364	400
1 1/8	909	995	545	597
1 1/4	1288	1444	773	866
1 1/2	1817	2012	1090	1207
1 3/4	2382	2712	1430	1627
2	3161	3557	1897	2134

BARKO GRADE 9 (BOWMALLOW) RECOMMENDED TORQUE FOOT POUNDS

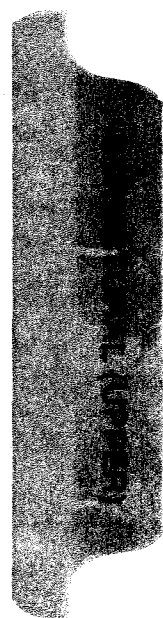


Grade 9
(NINE RADIAL MARKS
ON HEAD)

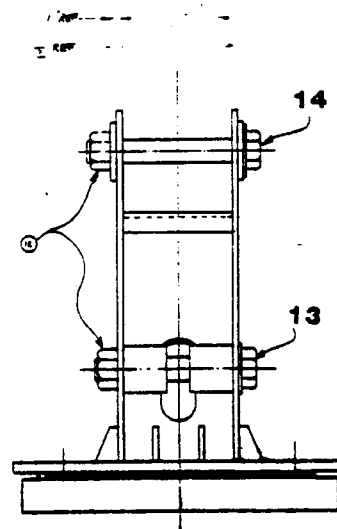
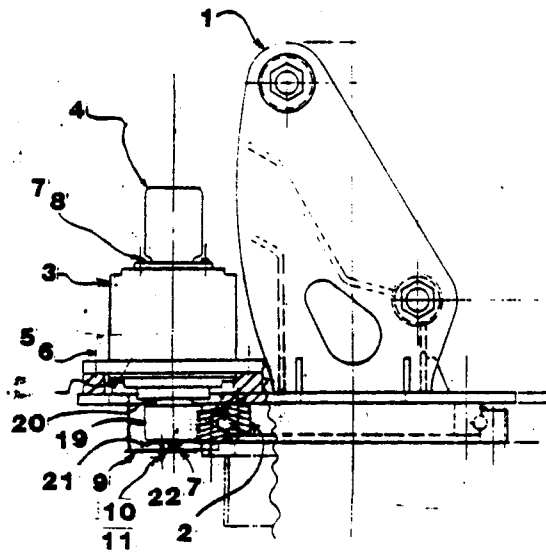
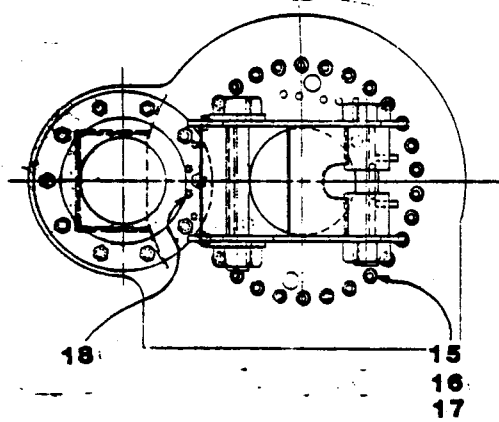
DIA.	DRY		*LUBRICATED	
	COARSE	FINE	COARSE	FINE
1/4	17	19	10	12
5/16	34	37	20	22
3/8	60	68	36	41
7/16	96	108	58	65
1/2	145	165	87	100
5/8	210	235	125	140
3/4	290	330	175	200
7/8	515	575	310	345
1	830	980	500	560
1 1/8	1250	1350	750	810
1 1/4	1750	1950	1050	1170
1 1/2	2500	2750	1500	1650
1 3/4	3250	3700	1950	2220
2	4350	4850	2800	2900

*LUBRICATE WITH ANTI-SEIZE COMPOUND

NOTE: 1. GRADE 9 BOLTS MUST BE USED WITH GRADE 9
WASHERS



MODEL 80 HEAD ASSEMBLY



EFFECTIVE: 11-1-82

MODEL 80

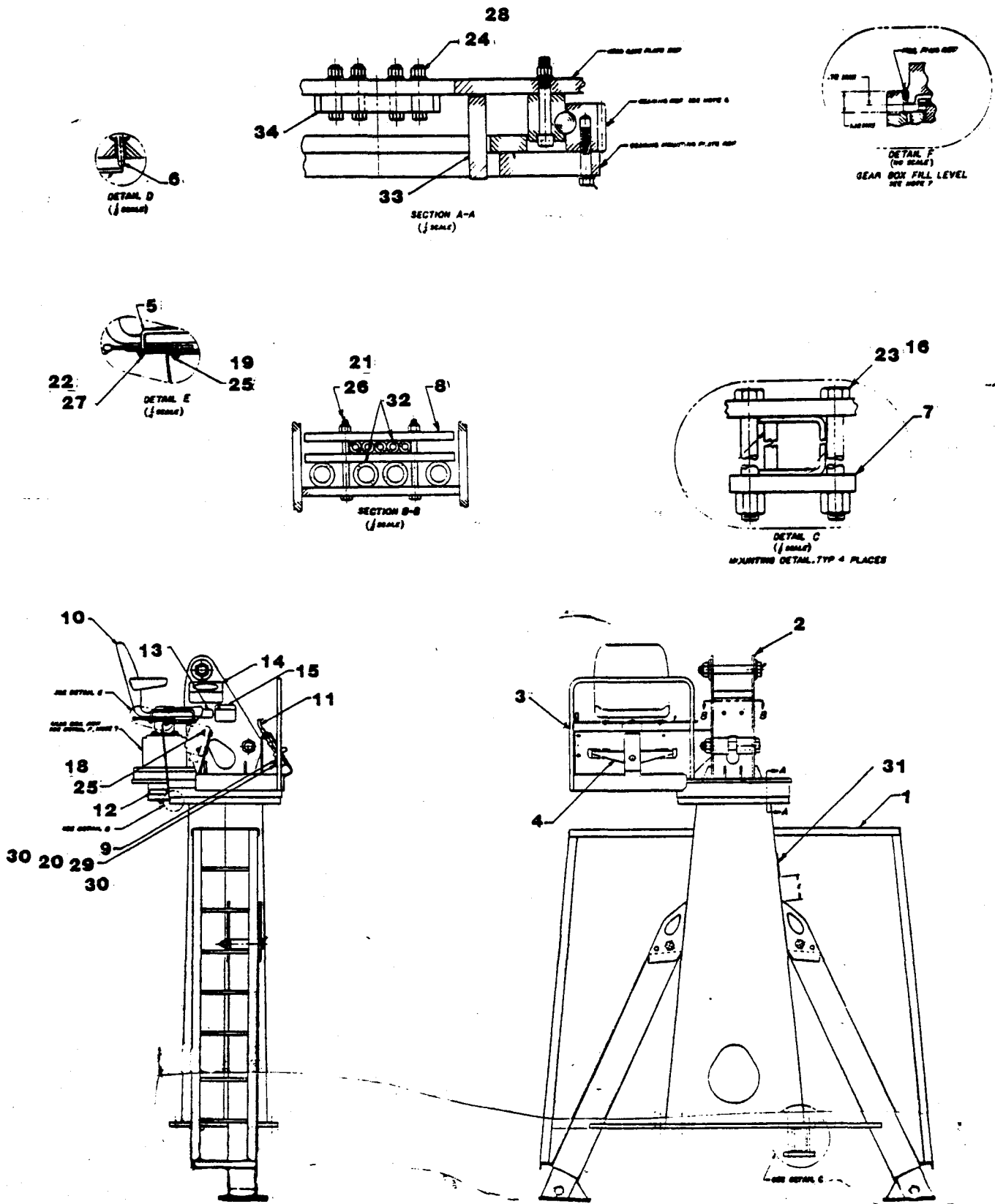
HEAD ASSEMBLY

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
	1	ASSEMBLY, complete	124-00066
1	1	WELDMENT, head	124-00148
2	1	BEARING, turntable.	541-00589
3	1	GEARBOX	535-00548
4	1	MOTOR, hydraulic	560-00056
5	10	WASHER, flat	514-00151
6	10	BOLT, hex head	512-00415
7	4	WASHER, lock	514-00013
8	2	BOLT, hex head	510-00704
9	1	COVER, pinion	121-00510
10	2	NUT, hex	513-00427
11	2	WASHER, flat	514-00082
12	2	NUT, hex	513-00417
13	1	BOLT, body fit	482-00350
14	1	BOLT, body fit	482-00272
15	26	CAPSCREW, socket head	511-00408
16	26	NUT, hex	513-00454
17	26	WASHER, flat	514-00150
18	4	CAPSCREW, socket head	511-00407
19	1	PINION	403-00804
20	1	SPACER, pinion	401-00849
21	1	PLATE, pinion retaining	121-00637
22	2	BOLT, hex head	511-00003

EFFECTIVE: 11-1-82

MODEL 80 FRAME AND HEAD ASSEMBLY



EFFECTIVE: 11-1-82

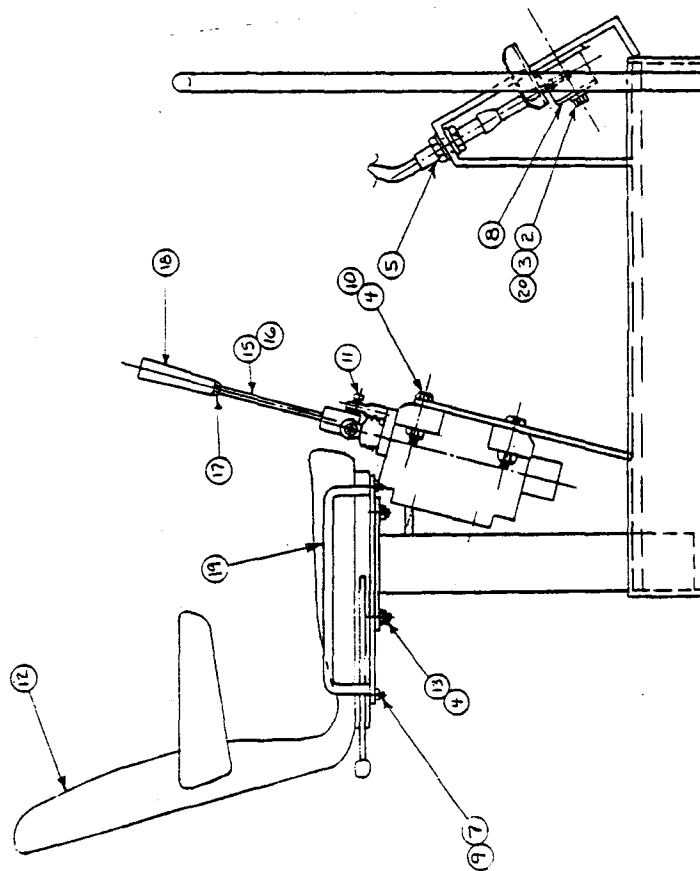
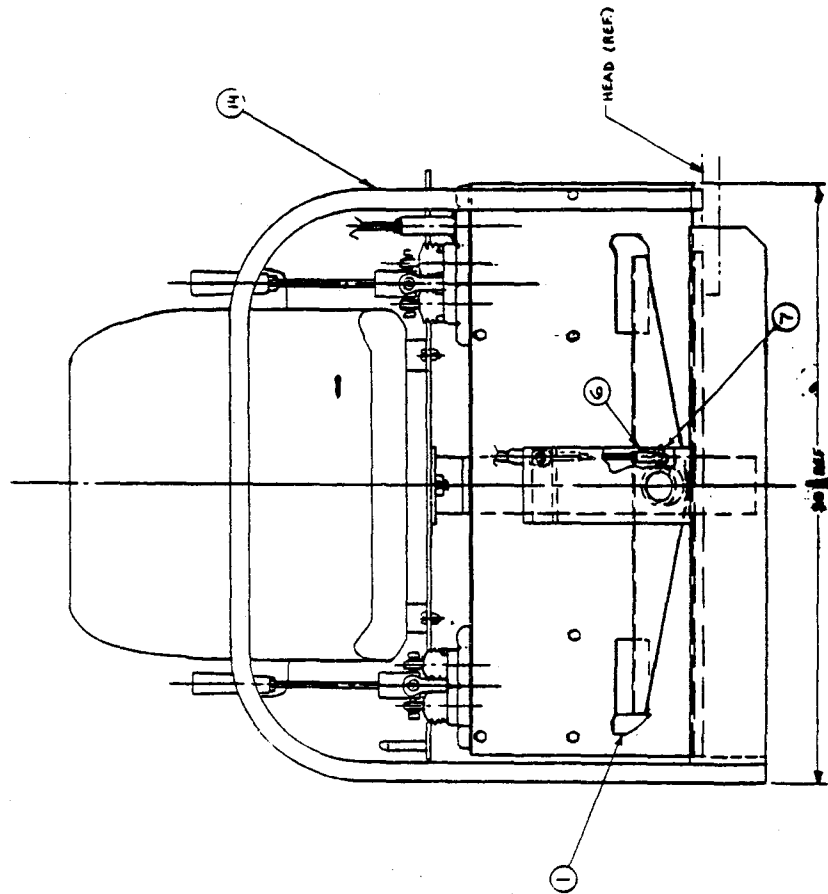
MODEL 80

HEAD, PLATFORM AND SUBFRAME ASSEMBLY

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
	1	ASSEMBLY, complete.	135-00006
1	1	ASSEMBLY, tubular frame	134-00050
2	1	ASSEMBLY, head.	124-00066
3	1	WELDMENT, head platform	164-00392
4	1	WELDMENT, swing pedal	212-00114
5	1	WELDMENT, seat adapter.	162-00238
6	1	BAR, shipping lock.	161-01165
7	4	PLATE, mounting lug	131-00680
8	2	PLATE, hose clamp	121-00649
9	1	RETAINER, swing pedal	211-00204
10	1	SEAT, bucket.	536-00033
11	1	ASSEMBLY, swing cable	535-00237
12	1	DECAL, tongue spec.	539-00689
13	1	DECAL, grease instructions	539-00596
14	1	DECAL, danger	539-00590
15	1	DECAL, warning.	539-00669
16	8	BOLT, hex head.	514-00440
17	28	BOLT, hex head.	511-00409
18	6	BOLT, hex head.	510-00708
19	2	BOLT, hex head.	510-00704
20	1	BOLT, hex head.	510-00703
21	2	BOLT, hex head.	510-00667
22	4	BOLT, carriage.	510-00231
23	8	NUT, hex, high.	513-00513
24	4	NUT, hex.	513-00454
25	8	NUT, nylock	513-00429
26	2	NUT, nylock	513-00427
27	4	NUT, nylock	513-00426
28	28	WASHER, flat.	514-00150
29	1	WASHER, lock.	514-00013
30	1	FITTING, grs.	517-00300
31	1	PLATE, serial no.	539-00667
32	1	ASSEMBLY, hydraulic	604-00388
33	1	WELDMENT, swing stop.	133-00319
34	1	PLATE, swing stop	133-00436

EFFECTIVE: 11-1-82

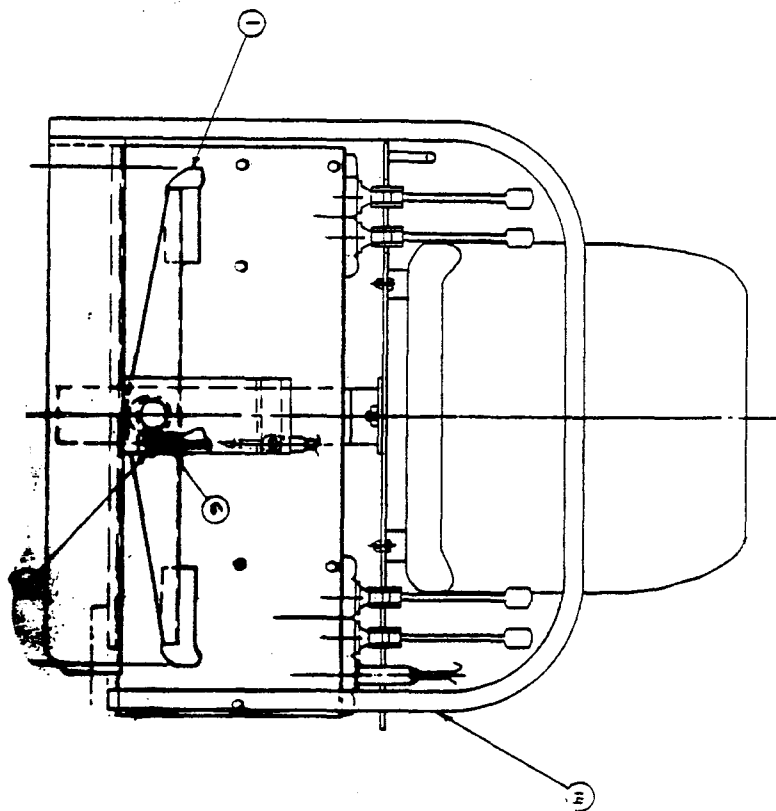
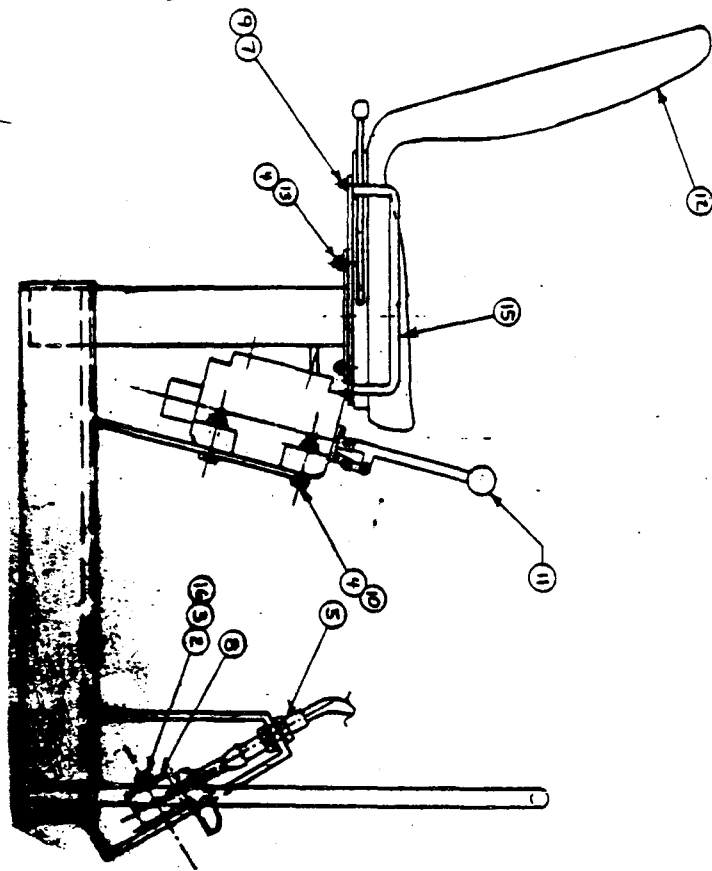


MODEL 80

PLATFORM ASSEMBLY - JOYSTICK

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
0	1	ASSEMBLY, platform.....	454-00023
1	1	WELDT, swing pedal.....	212-00114
2	1	WASHER, 1/2 lock.....	514-00013
3	1	BOLT, hex head 1/2 X 1.....	510-00703
4	8	NUT, hex nylock 1/2.....	513-00429
5	1	ASSEMBLY, swing cable 60".....	535-00237
6	1	BALL JOINT, 5/16.....	524-00100
7	5	NUT, hex nylock 5/16.....	513-00426
8	1	RETAINER, swing pedal.....	211-00204
9	4	BOLT, carriage 5/16 X 1.....	511-00231
10	6	BOLT, hex head 1/2 X 2 1/4 lg.....	510-00708
11	2	ASSEMBLY, joystick controller.....	454-00030
12	1	SEAT, bucket w/arm rests.....	536-00033
13	2	BOLT, hex head 1/2 X 1 1/4.....	510-00704
14	1	WELDT, joystick rotating platform...	164-00337
15	1	WELDT, lh control lever.....	454-00200
16	1	WELDT, rh control lever.....	454-00201
17	2	NUT, hex 3/8.....	513-00308
18	2	KNOB, control tapered.....	539-00552
19	1	WELDT, seat adapter.....	162-00238
20	1	GREASE FITTING, straight 1/8.....	517-00300



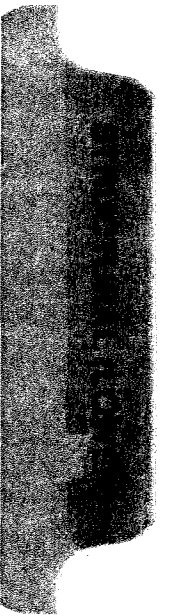
MODEL 80

PLATFORM ASSEMBLY-

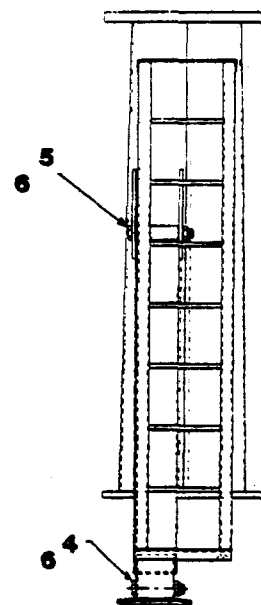
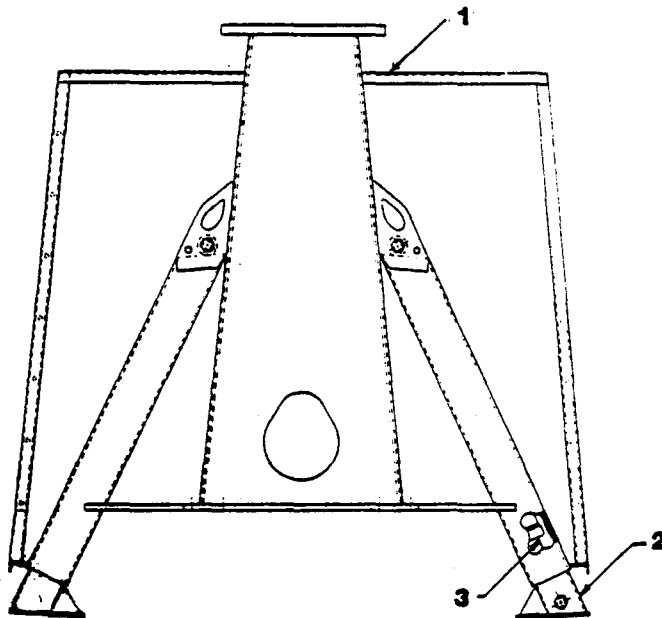
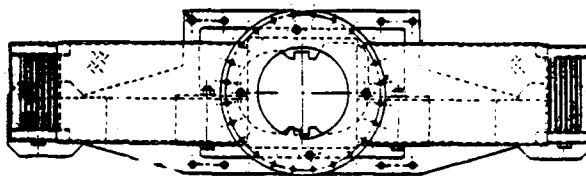
(STANDARD CONTROLS)

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
0	1	ASSEMBLY PLATFORM.....	454-00028
1	1	WELDT, swing pedal.....	212-00114
2	1	WASHER, 1/2 lock.....	514-00013
3	1	BOLT, hex head 1/2 X 1.....	510-00703
4	8	NUT, hex nylock 1/2.....	513-00429
5	1	ASSEMBLY, swing cable 60".....	535-00237
6	1	BALL JOINT, 5/16.....	524-00100
7	5	NUT, hex nylock 5/16.....	513-00426
8	1	RETAINER, swing pedal.....	211-00204
9	4	BOLT, carriage 5/16 X 1.....	511-00231
10	6	BOLT, hex head 1/2 X 2 1/4 lg.....	510-00708
11	4	HANDLE, str.....	552-00164
12	1	SEAT, bucket.....	536-00023
13	2	BOLT, hex head 1/2 X 1 1/4.....	510-00704
14	1	WELDT, 80 cr rotating plem.....	164-00337
15	1	WELDT, seat adapter.....	162-00238
16	1	GREASE, ftg-str 1/8.....	517-00300



MODEL 80 FRAME ASSEMBLY



EFFECTIVE: 11-1-82

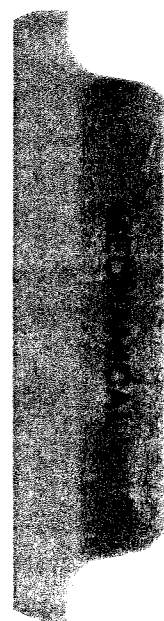
MODEL 80

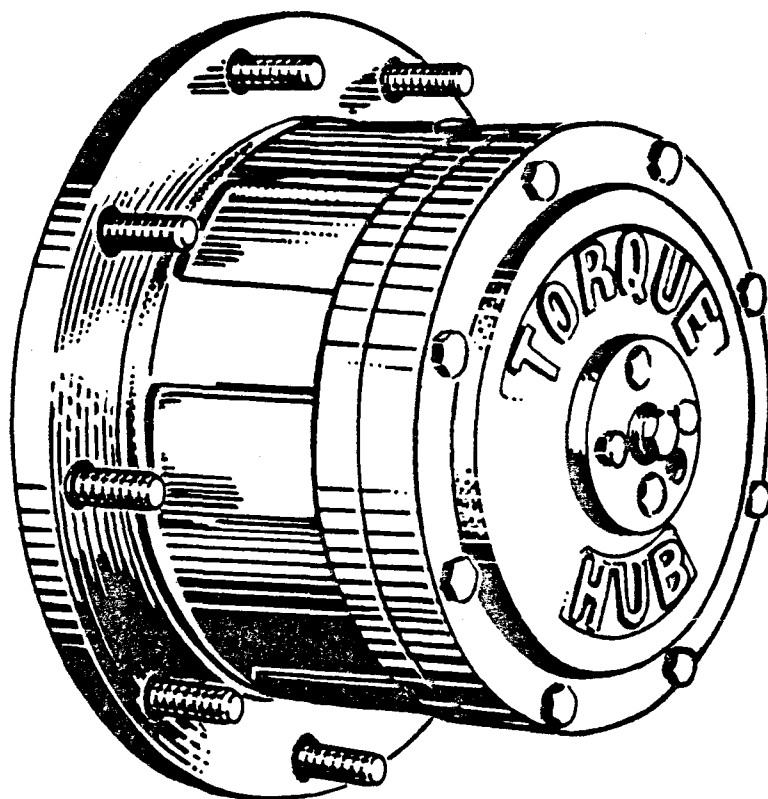
SUBFRAME ASSEMBLY

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
	1	ASSEMBLY, complete	134-00050
1	1	WELDMENT, sec. platform & ladders.	134-00220
2	2	WELDMENT,, stub. leg	173-00116
3	2	ASSEMBLY, hyd. cyl.	812-00045
4	2	WELDMENT, bolt	482-00204
5	2	WELDMENT, bolt	482-00261
6		NUT, hex lock thin	513-00770

EFFECTIVE: 11-1-82





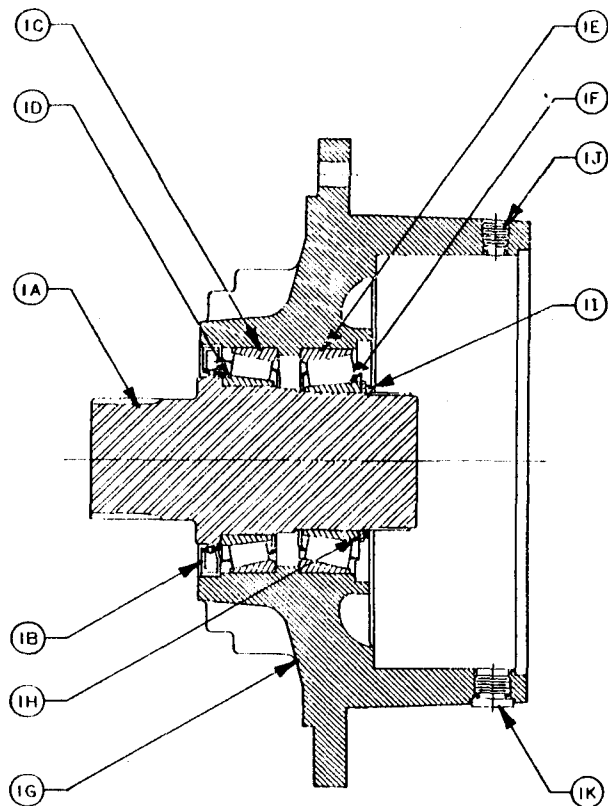
FOR MATERIAL HANDLING EQUIPMENT, FARM MACHINERY, ROAD EQUIPMENT, MINING MACHINERY, ETC.

Fairfield Manufacturing Company, Inc.

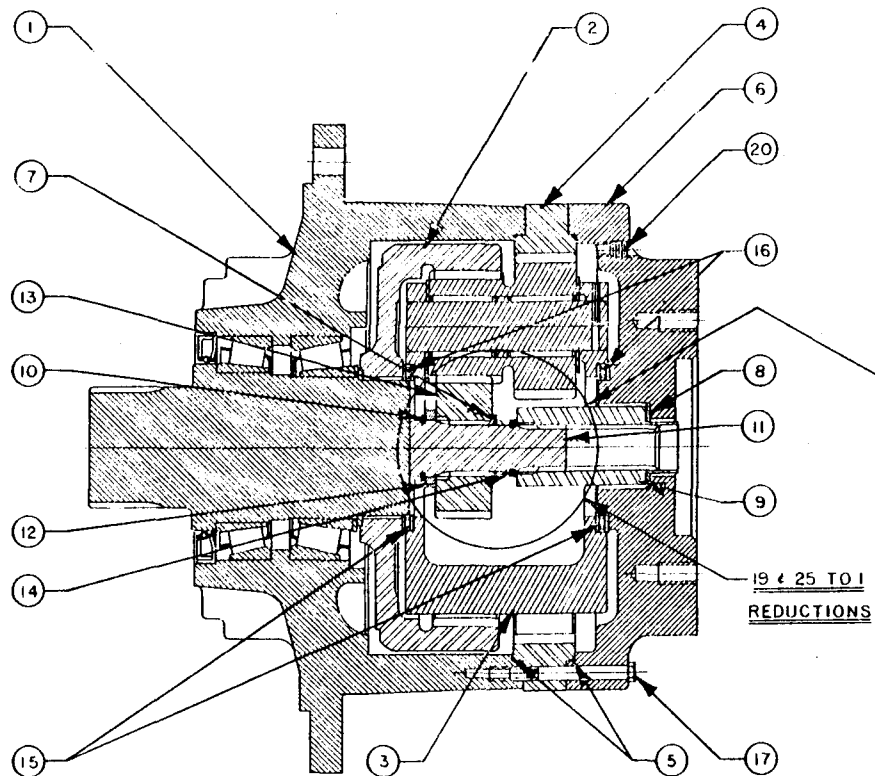
South Concord Road, Lafayette, Indiana 47902, U.S.A. 317/474-3474

Fairfield

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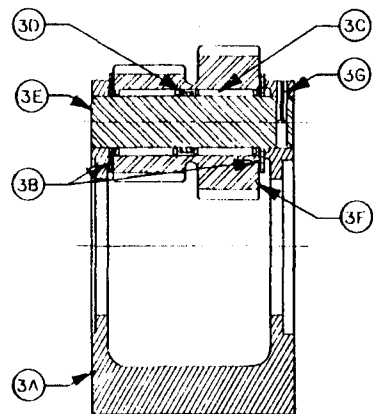


HUB-SHAFT SUBASSEMBLY

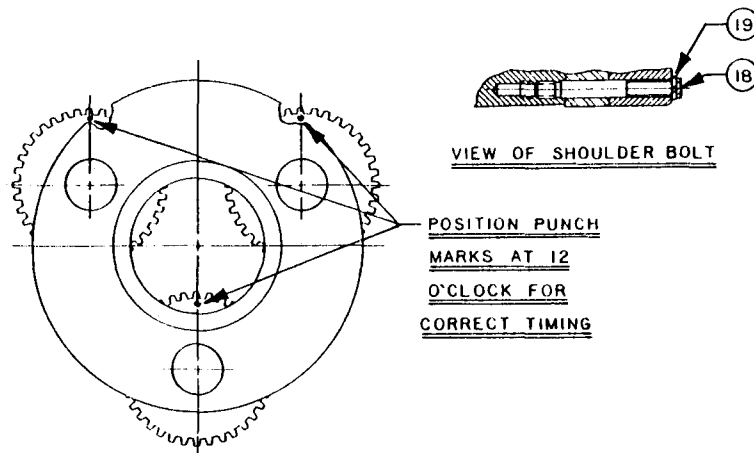


COMPLETE ASSEMBLY

THIS DRIVE POSITION
COVERED IN THIS MANUAL



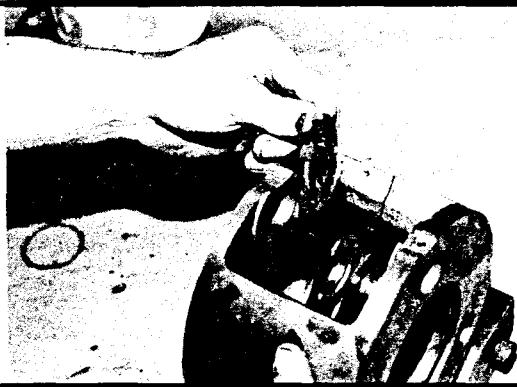
CARRIER SUBASSEMBLY



02-18-81

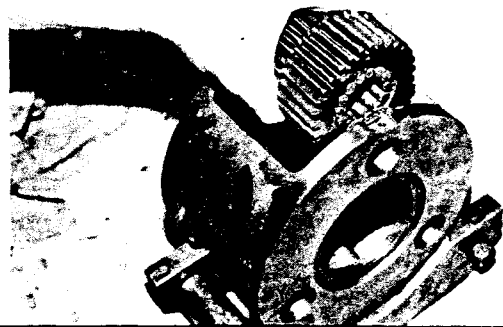
ASSEMBLY NO. - S3AF3336
SHAFT OUTPUT ASSY

ITEM	PART NO.	QTY.	DESCRIPTION	STOCK FACT
1	S3AF	1	HUB-SHAFT SUB-ASSY	
1A	3500106	1	OUTPUT SHAFT	1
1B	3501301	1	SEAL	5
1C	3500803	1	BRG. CUP (JM716610)	3
1D	3500804	1	BRG. CONE (JM716649)	3
1E	3500805	1	BRG. CUP (JM515610)	3
1F	3500806	1	BRG. CONE (JM515649)	3
1G	3500619	1	HUB	1
1H	3900904	1	SPACER	1
1I	910002	1	RETAINING RING	5
1J	950003	3	PIPE PLUG	6
1K	951001	2	PLUG	4
1Q	950001	1	PIPE PLUG	2
2	3400079	1	INTERNAL GEAR	2
3	3200031	1	CARRIER ASSEMBLY	1
3A	3200505	1	CARRIER	1
3B	3200305	6	THRUST WASHER	18
3C	3200801	84	NEEDLE ROLLER	252
3D	3201001	3	SPACER	3
3E	3200101	3	PLANET SHAFT	9
3F	3300031	3	CLUSTER GEAR	6
3G	920001	3	ROLL PIN	3
4	3500085	1	RING GEAR	2
5	3940001	2	O RING	1
6	3500404	1	COVER	
8	3200304	1	THRUST WASHER	1
13	31000123	1	INPUT GEAR	2
15	3200306	4	THRUST WASHER	4
16	3200307	2	THRUST BEARING	2
17	930103	8	BOLT	8
18	3930202	4	SHOULDER BOLT	12
19	960002	4	LOCK WASHER	4
20	950003	1	PIPE PLUG	2
24	901202	1	ID PLATE	
25	930301	4	DRIVE SCREW	

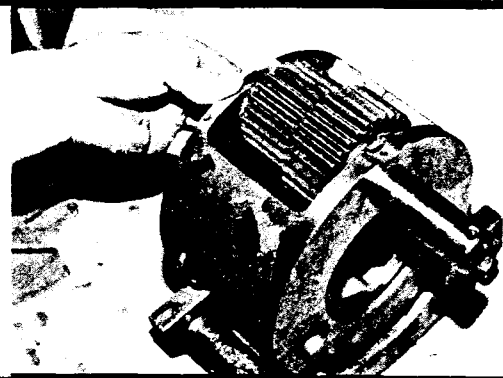


5. Apply grease or petroleum jelly to the tang side of two Thrust Washers (3B). Place Thrust Washers (3B) against bosses in Carrier (3A) with washer tang fitting into slot in Carrier outside diameter.

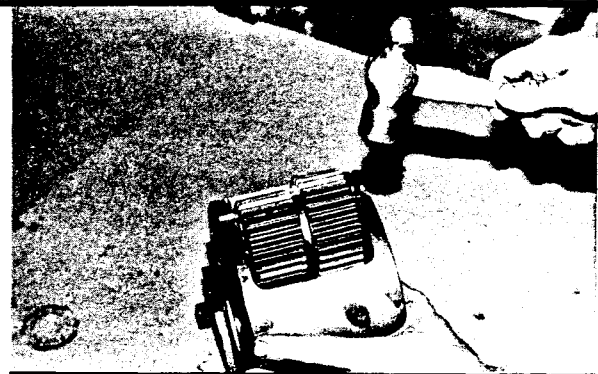
Note: Some old style Carriers will not have slots and tangs should be located inside boss relief.



6. While keeping Thrust Washers (3B) in place, slide Cluster Gear (3F) into Carrier (3A) with the larger gear on the side with the small pin hole.



7. Line up Cluster Gear (3F) and thrust Washers (3B) with hole in Carrier (3A) and slide Planet Shaft (3E) through. Line up chamfered side of hole in Planet Shaft (3E) with pin hole in Carrier (3A).

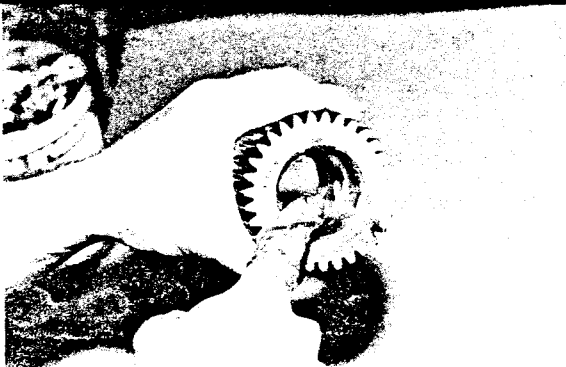


8. Drive Anti-Roll Pin (3G) flush into Carrier (3A) hole, thereby locking Planet Shaft (3E) into place.

Repeat these steps for remaining two Cluster Gears to complete Carrier Sub Assembly.

⚠ Eye protection is to be worn during this operation.

Carrier Sub-Assembly



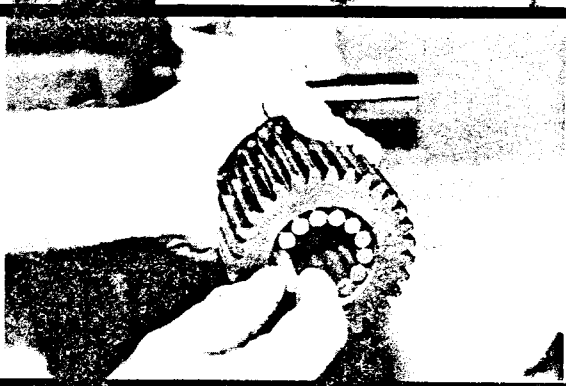
1. Apply a coat of grease or petroleum jelly to Cluster Gear (3F) bore.



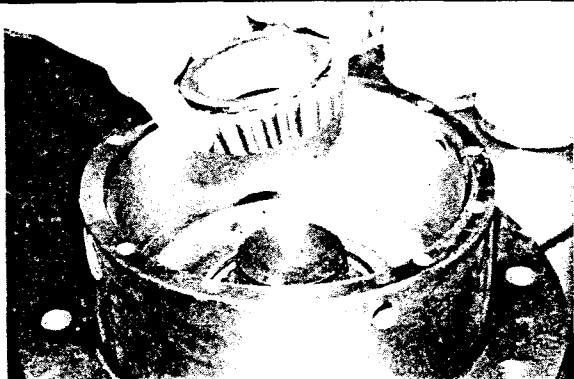
2. Place fourteen Needle Rollers (3C) into Cluster Gear (3F) bore.



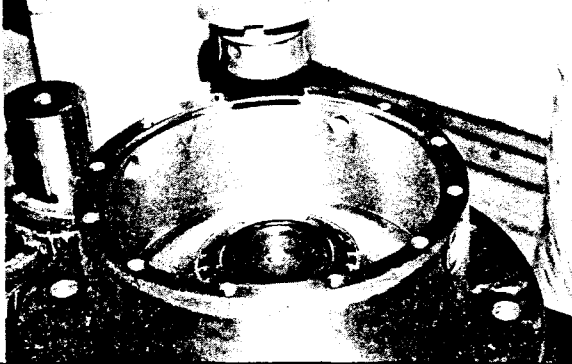
3. Place Spacer washer (3D) into opposite side of Cluster Gear (3F) and against Needle Rollers (3C).



4. Place second set of fourteen Needle Rollers (3C) into Cluster Gear (3F).



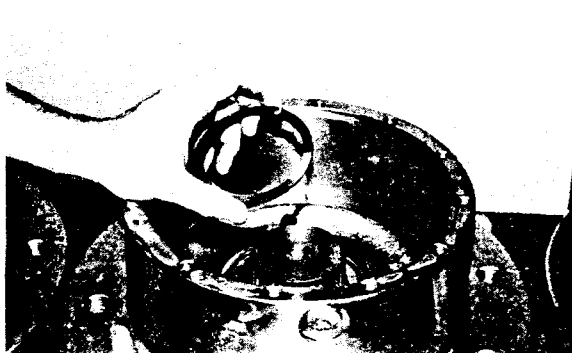
5. Bearing Cone (1F) is started on to the Output Shaft (1A).



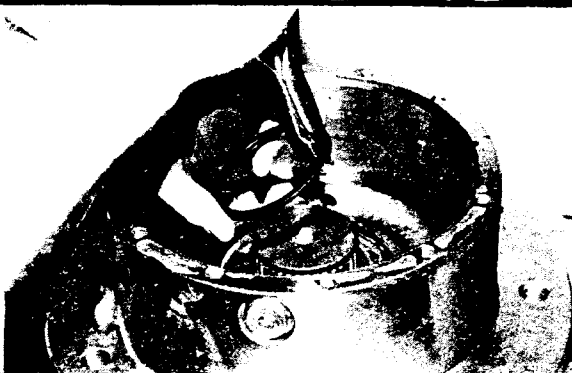
6. The Bearing Cone (1F) is an interference fit and has to be pressed or tapped on.



7. Pipe Plugs (1J & 1K) should be checked and/or installed using a lubricant seal.

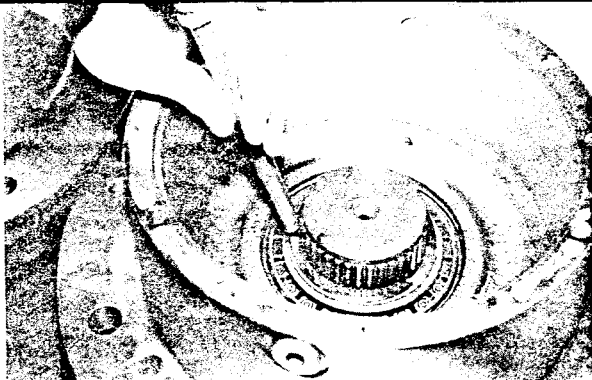


8. Bearing Spacer (1H) is installed around the Output Shaft (1A) and locates on Bearing Cone (1F).



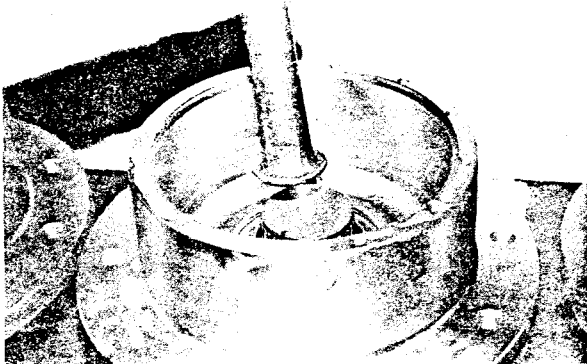
9. Retaining Ring (1I) installed into the groove provided in the Output Shaft (1A). This Retaining Ring (1I) should never be reused in a repair or rebuild.

⚠ Eye protection should be worn during this procedure.



10. A soft metal punch should be used to insure that this Retaining Ring (1I) is completely seated in the groove of the Output Shaft (1A).

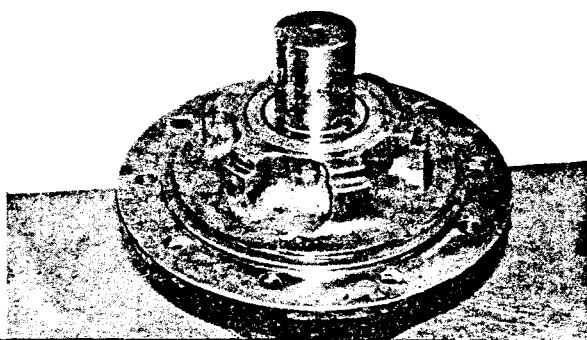
⚠ Eye protection should be worn during this procedure.



11. Upon completion of Step 10, rap the internal end of the Output Shaft (1A) twice with a piece of soft metal rod. This will release any preload which was on the Bearings.



12. Invert Hub (1G) and locate it on the large diameter in preparation of installing the Seal (1B). Care should be taken to insure Seal (1B) is being correctly installed (smooth face up).

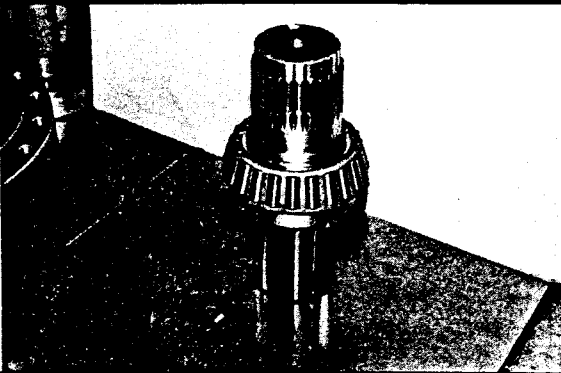


13. The Seal (1B) is to be pressed or tapped into the counterbore of Hub (1G) to the point where it becomes flush with the Hub (1G) face.



14. This completes the Hub Shaft sub-assembly — items (1A) through (1K.) If it is not going to be used immediately, it should be oiled and covered to help prevent rusting.

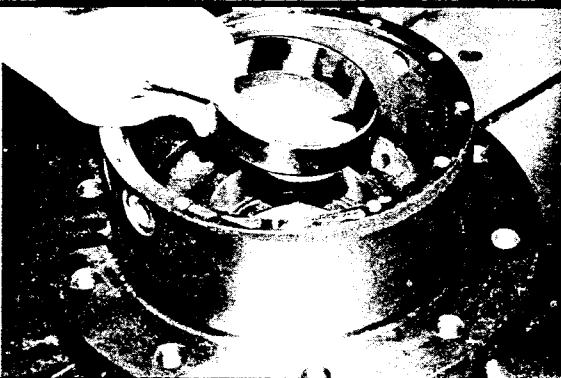
Hub Shaft Sub-Assembly



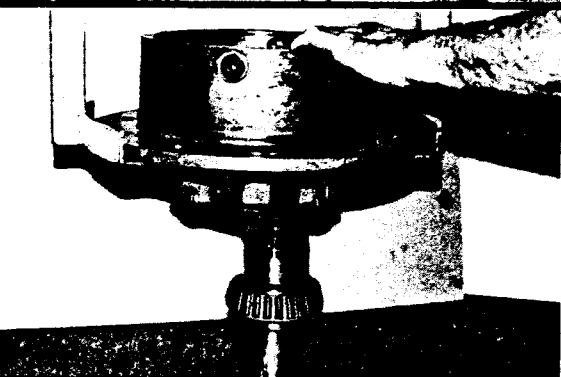
1. Press Bearing Cone (1D) onto Shaft (1A).



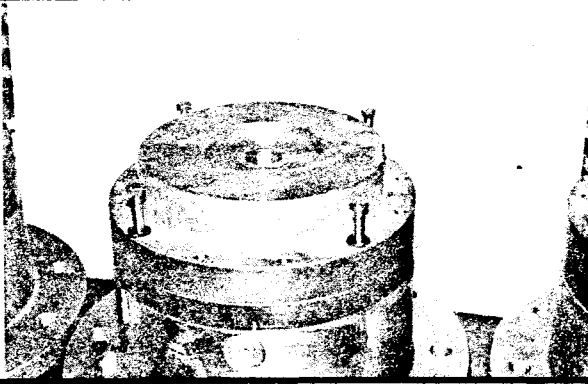
2. Press Bearing Cup (1C) into Hub (1G) taking care to insure cup start square with the bore of Hub (1G).



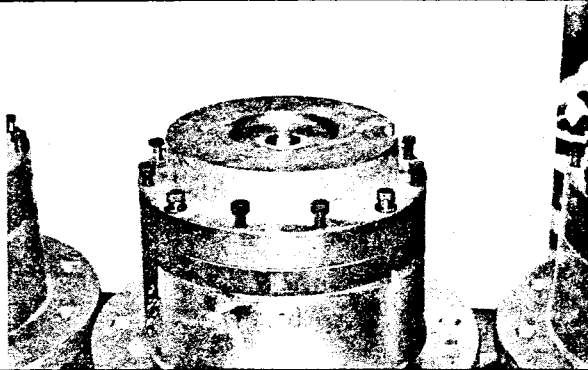
3. Invert Hub (1G) and press Bearing Cup (1E) into intercounterbore of Hub (1G).



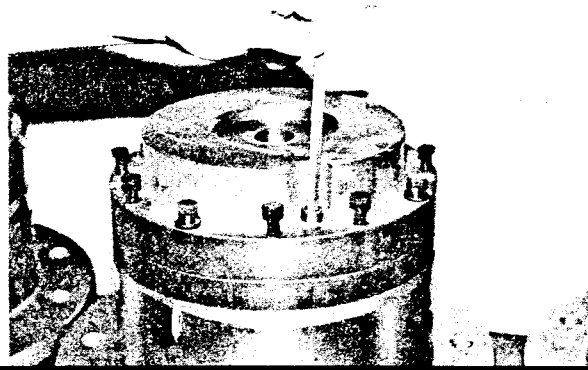
4. The Hub (1G) is now carefully lowered on to the output shaft (1A).



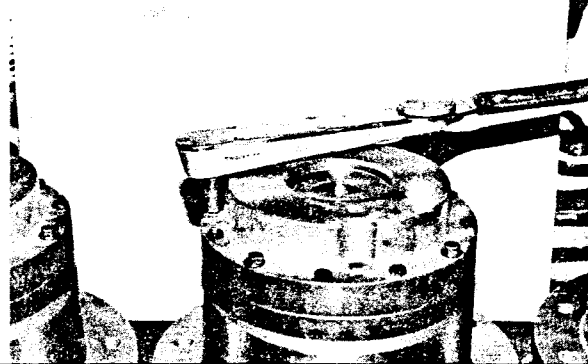
14. Locate the 4 counterbored holes in Hub (1G) [marked in Step 5] and install 4 Shoulder Bolts (18) with Lockwashers (19). A slight tap with a hammer may be necessary to align Shoulder Bolt with Hub (1G) counterbore.



15. Install regular Grade 8 Bolts (17) with Lockwashers (19) into remaining holes.

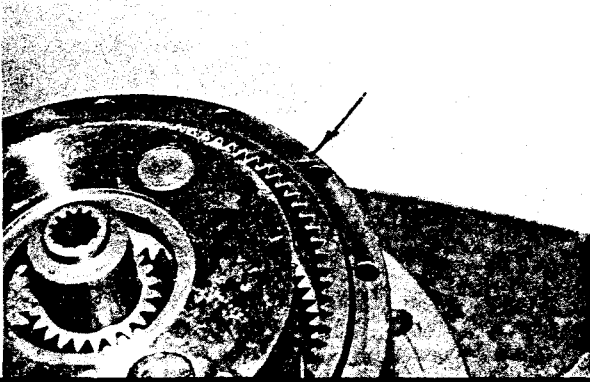


16. Pipe Plugs (20) are to be installed into Cover (6) using a lubricant seal of some sort.

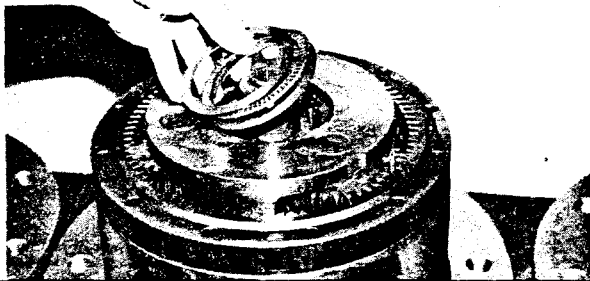


17. Torque Shoulder Bolts (18) to 43-47 ft.-lbs. and regular Grade 8 Bolts (17) to 43-47 ft.-lbs.

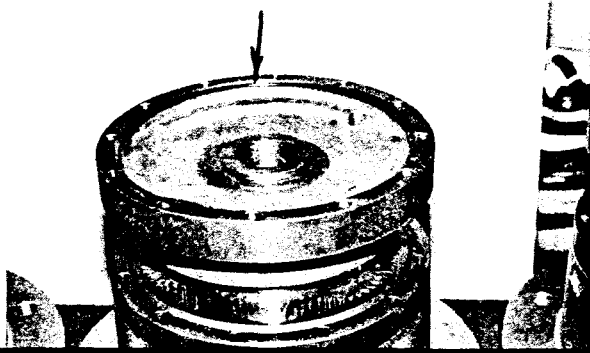
This completes the assembly. The unit must be filled one-half full of EP 90 lubricant before operation if the unit is mounted horizontally and completely filled if mounted vertically. In vertical mounting application circulation cooling of the oil is recommended.



9. The Main Assembly should have this appearance at this time. Note hole marked with an "X".



10. Another Thrust Washer (15)/Thrust Bearing (16) set is now installed into the counterbore in the face of the carrier. Use grease or Petroleum jelly to hold in place.



11. Place "O" Ring (5) into Cover (6) counterbore. Use grease or petroleum jelly to hold "O" Ring in place.

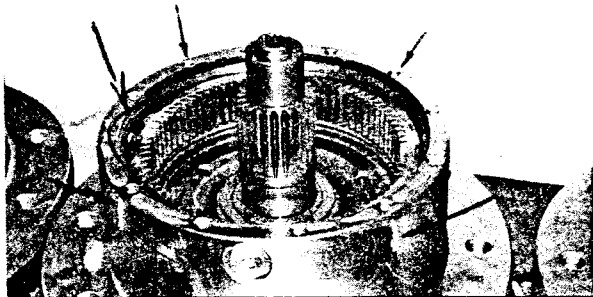
⚠ Beware of sharp edges of the counterbore while seating this "O" Ring.



12. Using sufficient grease or Petroleum jelly to hold in place, install Thrust Washer (8) into the counterbore of the interface of the Cover (6).



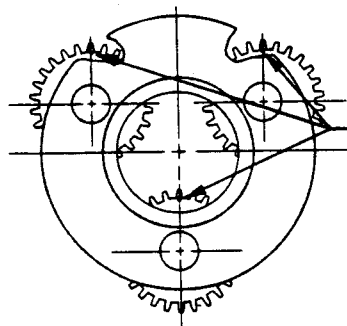
13. The Cover (6) is now installed, taking care to correctly align Pipe Plug Hole (20) with those in the Hub (1J), usually 90° to one another.



5. Place "O" Ring (5) into Hub counterbore. Use petroleum jelly to hold "O" Ring in place.

⚠ Beware of sharp edges of the counterbore while seating this "O" Ring.

Also at this time locate and mark the 4 counterreamed holes in the face of the Hub (1G). This is for identification later in the assembly.



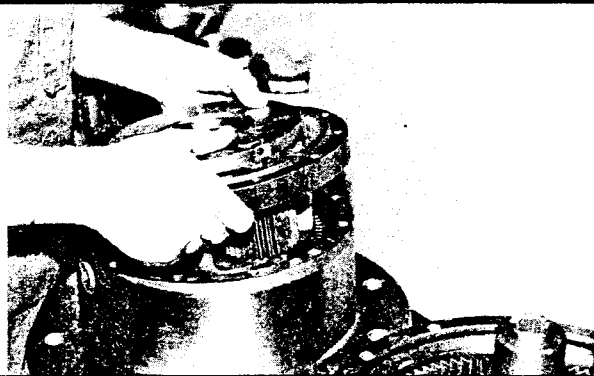
position
punchmarks
at 12 o'clock



6. Place Carrier Assembly on a flat surface with the large gears up and positioned as shown. Find the punch marked tooth on each large gear and locate at 12 o'clock (straight-up) from each planet pin. Marked tooth will be located just under the Carrier on upper two gears.



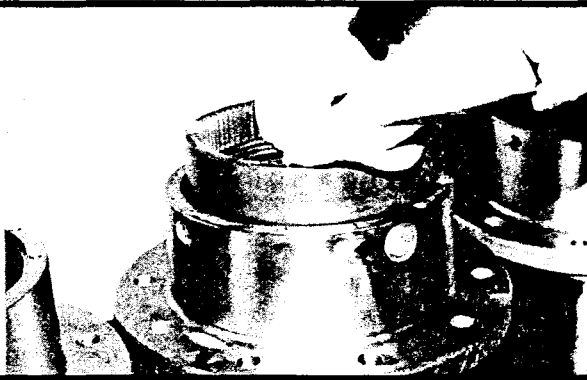
7. With large shoulder side of Ring Gear (4) facing down, place Ring Gear (4) over (into mesh with) large gears. Be sure that punch marks remain in correct location during Ring Gear (4) installation. The side of the Ring Gear (4) with an "X" stamped on it should be up.



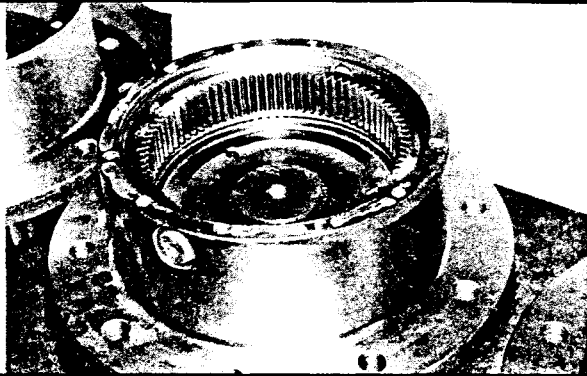
8. While holding Ring Gear (4) and Cluster Gears (3F) in mesh, place small side of Cluster Gears (3F) into mesh with the Internal Gear (2) and Input Gear (13). On the Ring Gear (4) locate the hole marked "X" over one of the marked counterbored holes (Step 5) in Hub (1G).

Note: If gears do not mesh easily or Carrier Assembly does not rotate freely, then remove the Carrier and Ring Gear and check the Cluster Gear timing.

Main Assembly Procedure



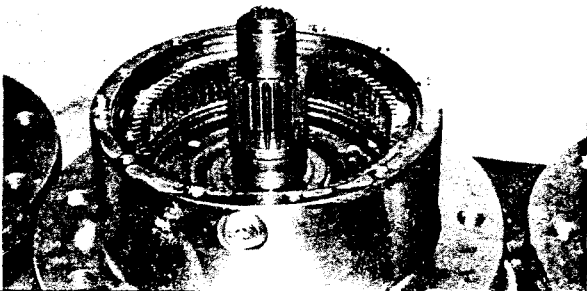
1. With the Hub Shaft Sub-assembly resting on the Shaft (1A) install Internal Gear (2). The Spline of the Internal Gear (2) bore will mesh with the Spline of the Output Shaft (1A).



2. Inspect the location of the Internal Gear (2) on the Output Shaft (1A). The portion of the Output Shaft (1A) which does not have full Spline should protrude through the Internal Gear (2) bore.



3. The 2 Thrust Washers (15) and 1 Thrust Bearing (16) are installed on that portion of Output Shaft (1A) which protrudes through Internal Gear (2).



4. The Input Gear (13) is now located and centered large diameter down on the internal end of Output Shaft (1A).

S3A-B Drive Disassembly Procedure

1. Loosen all 12 Cover Bolts [4 Shoulder Bolts (18), 8 Grade 8 (17)] and drain the oil from the unit.

2. Remove the 12 Cover Bolts and lift off the Cover (6). Discard the 'O' Ring Seal (5) from the Cover (6) counterbore.

Remove Thrust Washer (8) from counterbore of the inside face of the Cover (6).


3. Lift out the Carrier Sub-Assembly (3A) and Thrust Bearing Set (15 & 16). A Thrust Washer (15) may stick inside the Cover (6).

4. Pry or tap the Ring Gear (4) loose and remove it. Discard the 'O' Ring Seal (5) from the Hub (1G) counterbore.

5. Remove the Input Gear (13).

6. Lift out the Internal Gear (2) and Thrust Bearing Set (15 & 16). A Thrust Washer (15) may stick to the bottom of the Carrier (3A).

7. Remove the Retaining Ring (1I) from the Output Shaft (1A) and discard; Remove Bearing Shim (1H) from the Output Shaft (1A).

 Eye Protection should be worn during Retaining Ring removal.

8. The Output Shaft (1A) may now be pressed out of the Hub (1G).

9. The Bearing Cups (1C) & (1E) will remain in Hub (1G) as will Bearing Cone (1F). Bearing Cone (1D) will remain on the Output Shaft (1A). Seal (1B) will be automatically removed during this procedure.

Note: If bearing replacement is necessary, the Bearing Cups (1C & 1E) can be removed with a "slide hammer puller" or driven out with a punch.

10. To remove the Cluster Gears (3F) from the Carrier (3A) drive the anti-Roll Pin (3G) into the Planet Shaft (3E). The Planet Shaft (3E) can now be tapped out of the Carrier (3A) and Cluster Gear (3F). After the Planet Shaft (3E) is removed, the Roll Pin (3G) should be driven out of the Planet Shaft (3E). The Cluster Gear (3F) can now be removed from the Carrier (3A) along with the Thrust Washer (3B). After separating the Thrust Washers (3B) from the ends of the Cluster Gear (3F), the Needle Rollers (3C) and Spacer (3D) can be removed from the Cluster Gear (3F) bore.

WARNING: When rebuilding the unit, the 'O' Rings and Retaining Rings should always be replaced.

Introduction


This Service Manual is a step-by-step guide designed for the customer or shop mechanic who is servicing or repairing a particular model of Torque-Hub Final Drive. (The model covered by this copy of the Manual is specified on the Manual cover.)

Included are —

1. assembly and exploded view drawings
2. disassembly procedure
3. main assembly procedure (assuming all sub-assemblies to be intact)
4. sub-assembly procedures.

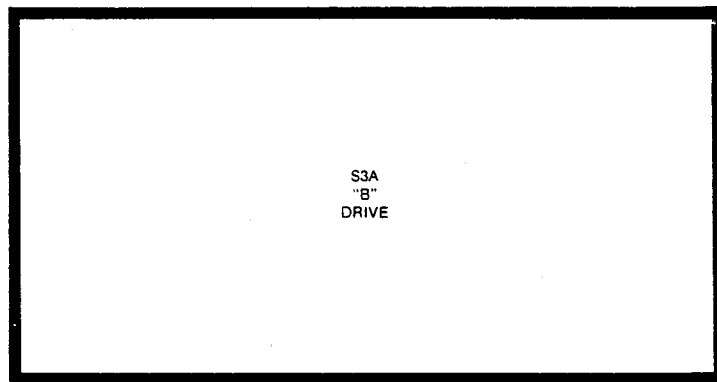
At the time of printing, this Manual was complete for the specific Torque-Hub model designated. However, Fairfield Manufacturing Co., Inc., reserves the right to update and improve its products at any time. All specifications and procedures are therefore subject to change without notice.

Safety

Standard safety practices should be followed during the disassembly and assembly procedures described. Safety glasses and safety shoes should be worn; heavy, heat resistant gloves should be used when heated components are handled. Be especially alert when you see a caution symbol () . This symbol indicates that a particular operation could cause personal injury if not performed properly or if certain safety procedures are not followed.

Torque-Hub® Final Drives

Service Manual



Fairfield Manufacturing Company, Inc.

South Concord Road, Lafayette, Indiana 47902, U.S.A. 317/474-3474

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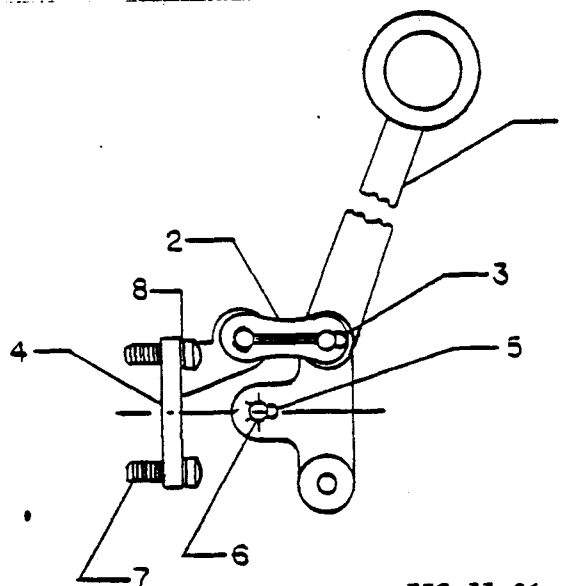


FIG. II-26

HANDLE ASSEMBLY

PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	HANDLE, assembly.....	52006
(1)	1	HANDLE.....	(58009)
(2)	2	LINK, handle.....	(58003)
(3)	1	PIN, cotter.....	(58004)
(4)	1	BRACKET, handle.....	(58008)
(5)	1	PIN, cotter.....	(58001)
(6)	1	PIN, handle.....	(58000)
(7)	4	SCREW, machine.....	(58019)
(8)	4	LOCKWASHER.....	(58002)

NOTE: Numbers in brackets () indicate superceded numbers.
Serviced only in appropriate kits.

HANDLE BRACKET

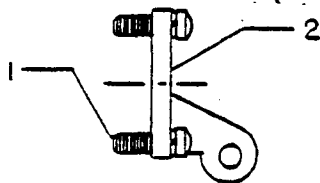


FIG. II-27

RETAINER ASSY.

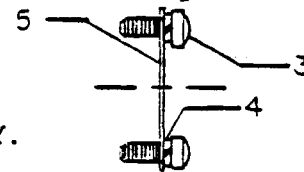
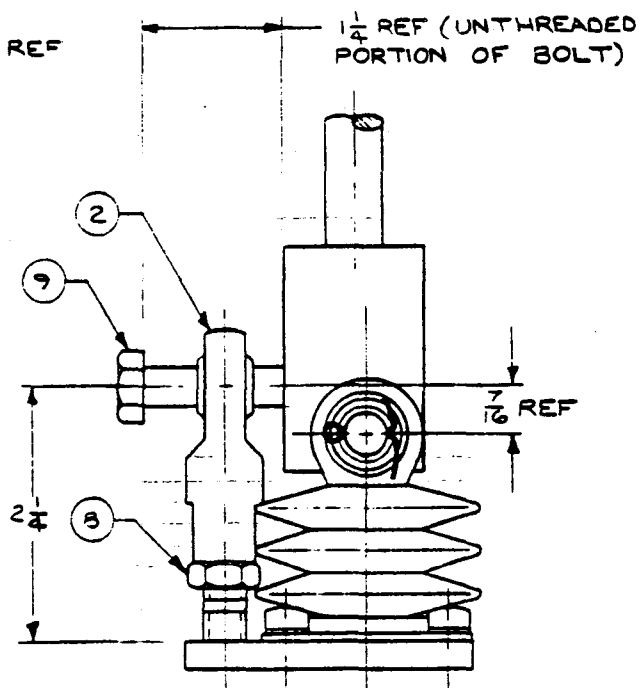
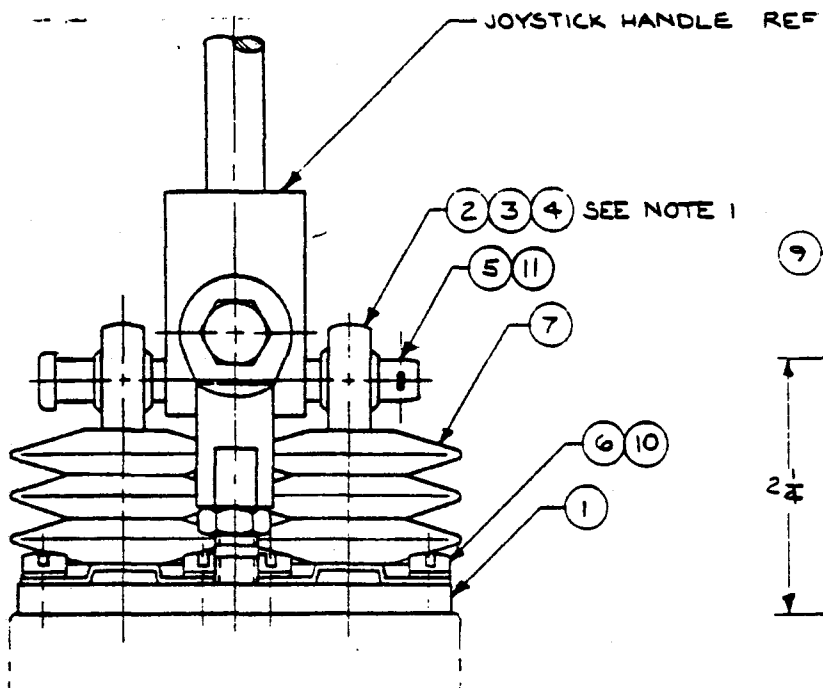
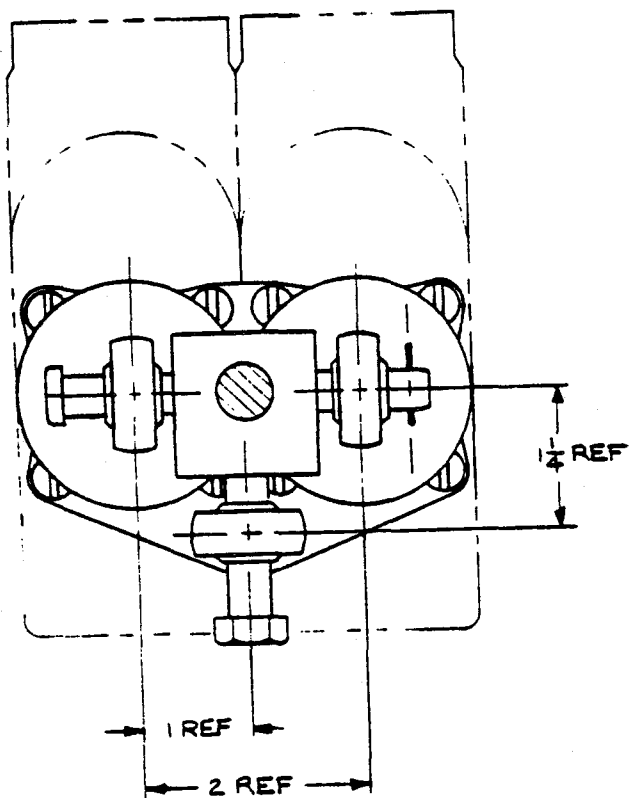


FIG. II-28

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	BRACKET, handle.....	52007
1	4	SCREW.....	
2	1	BRACKET.....	
-	1	RETAINER, assembly.....	52029
3	4	SCREW.....	
4	4	LOCKWASHER.....	
5	1	PLATE, retainer.....	

Effective: 1/1/75
Supercedes Page Dated: 3/15/74

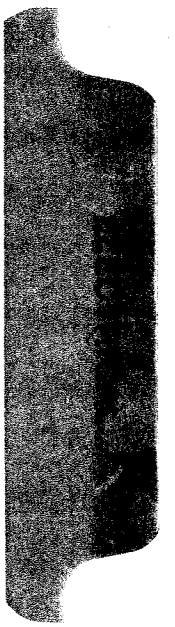


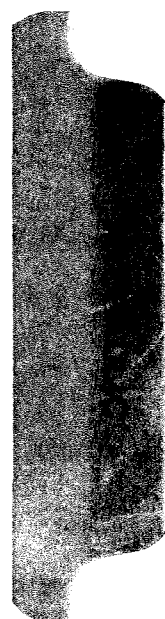
MODEL 80

ASSEMBLY JOYSTICK CONTROLLER

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NO.
	1	ASSY, joystick.....	454-00030
1	1	WELDT, joystick mtg plate.....	452-00155
2	3	BALL JOINT, 3/8 X 3/8.....	524-00101
3	2	STUD, 3/8 X 3/8 X 1 1/4.....	513-00830
4	2	WASHER, lock 3/8.....	514-00011
5	1	PIN, clevis 3/8 X 3 1/4.....	514-00550
6	8	SCREW, 1/4 X 1.....	558-00027
7	2	SPOOL, protector kit.....	552-00163
8	1	NUT, jam 3/8.....	513-00331
9	1	BOLT, H.H. 3/8 X 2 1/4.....	510-00659
10	8	WASHER, lock 1/4.....	514-00009
11	1	PIN, cotter 3/32 X 1.....	543-00707



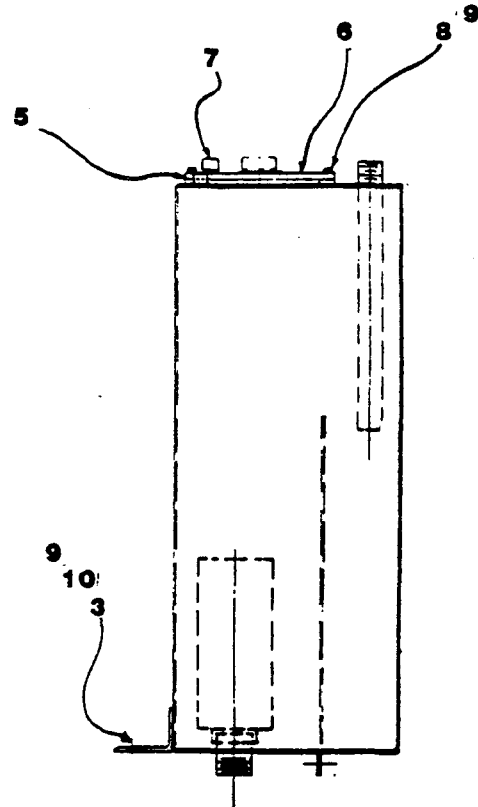
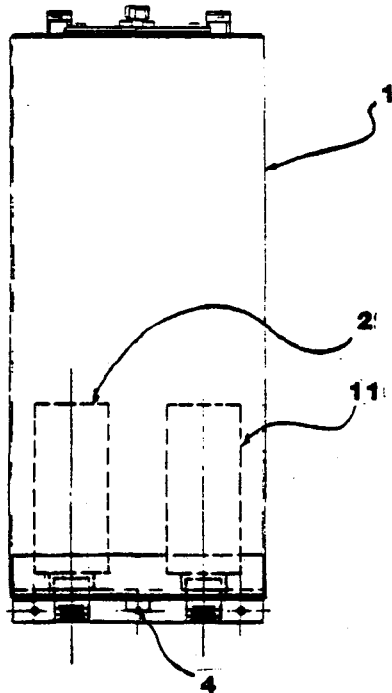


MODEL 80

ASSEMBLY 42 GAL. HYD. RESERVOIR

PARTS LIST

<u>ITEM</u>	<u>QTY</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
0	1	ASSEMBLY, reservoir.....	644-00028
1	1	WELDMENT, hydraulic reservoir.....	644-00131
2	1	STRAINER, suction 2".....	565-00018
3	6	WASHER, flat 3/8.....	514-00082
4	1	PIPE PLUG, 1" magnetic.....	522-00338
5	1	GASKET.....	651-00302
6	1	ASSEMBLY, inspection cover.....	643-00201
7	1	WELDMENT, 12" dipstick.....	641-00101
8	6	BOLT, hex head 3/8 x 3/4 lg.....	510-00652
9	12	LOCKWASHER, 3/8.....	514-00011
10	6	BOLT, hex head 3/8 x 1 lg.....	510-00654
11	1	STRAINER, suction 3".....	565-00020

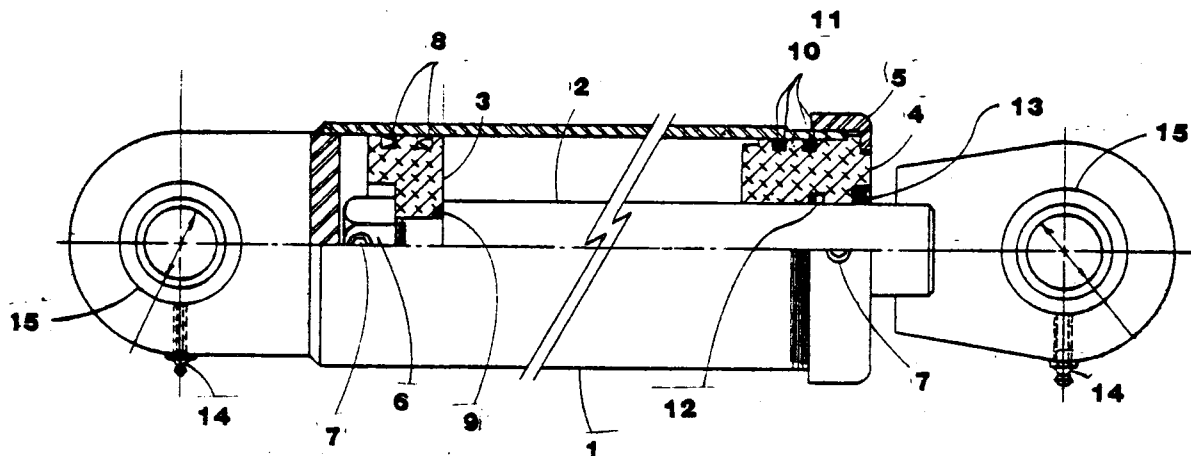


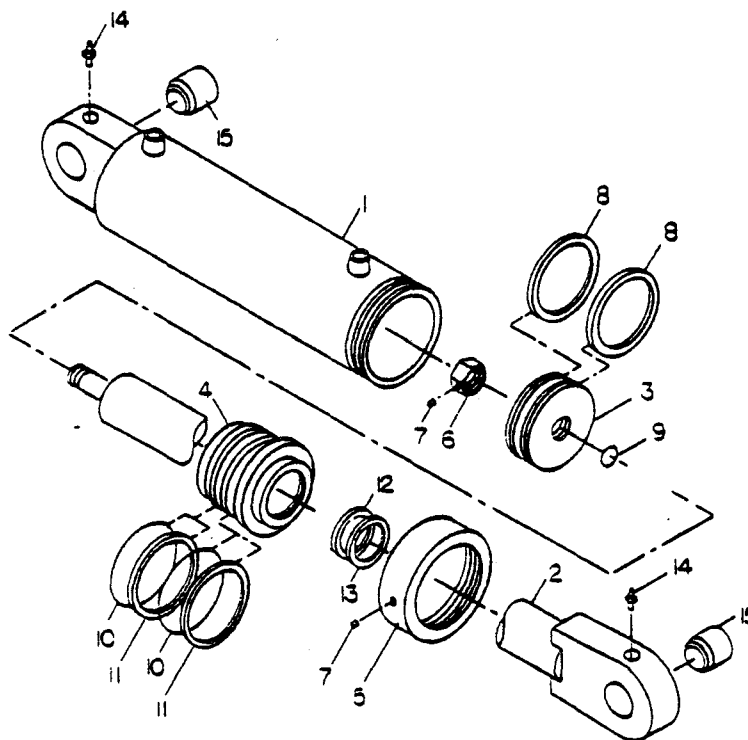
MODEL 80

MAIN BOOM CYLINDER

6" x 36" WITH 2 1/2" ROD

<u>ITEM</u>	<u>QTY</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
0	1	ASSEMBLY, hyd. cylinder 6 x 36.....	812-00541
1	1	WELDMENT, butt & tube.....	832-00176
2	1	WELDMENT, rod.....	842-00018
3	1	PISTON.....	852-00003
4	1	GLAND.....	852-00304
5	1	CAP, gland.....	852-00814
6	1	NUT, hex head 1 1/2.....	513-00119
7	2	SCREW, set 3/8.....	512-00616
8	2	SEAL, loaded lip 6 O.D. x 3/8 SQ. CS....	555-00044*
9	1	O RING, 1 1/2 x 1 3/4 x 1 1/8.....	565-00318*
10	2	O RING, 5 1/2 x 6 x 1/4.....	565-00355*
11	2	BACK-UP RING, 5 1/2 x 6 x 1/8.....	565-00655*
12	1	SEAL-LOADED LIP, 2 1/2 I.D.-3/8x1/4CS...	555-00288*
13	1	SEAL-WIPER, 2 1/2 I.D.....	556-00902*
14	2	FITTING, lub. str. 1/8.....	517-00300
15	2	BUSHING, ball 2" I.D.....	541-00515
		* Included in Seal Kit.....	565-00524

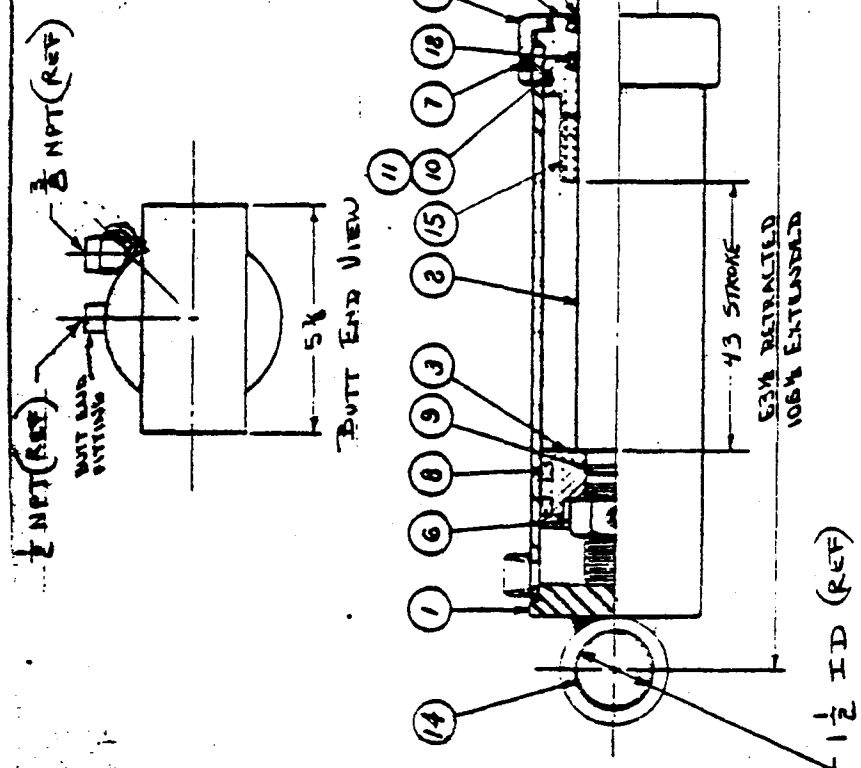




MODEL 80
SECONDARY BOOM CYLINDER
6 x 24 WITH 2 1/4" ROD

<u>ITEM NO</u>	<u>QTY</u>	<u>DESCRIPTION</u>	<u>PART NO</u>
0	1	ASSEMBLY, complete-----	812421
1	1	WELDMENT, butt and tube-----	832033
2	1	WELDMENT, rod-----	842015
3	1	PISTON-----	852003
4	1	GLAND-----	852304
5	1	CAP, gland-----	852814
6	1	NUT, hex-----	13119
7	2	SCREW, set-----	12616
(1) (3) 8	2	SEAL, piston-----	
(1) (3) 9	1	O-RING-----	
(2) (3) 10	2	O-RING-----	
(2) (3) 11	2	WASHER, back up-----	
(2) (3) 12	1	SEAL, rod-----	
(2) (3) 13	1	SEAL, wiper-----	
14	2	FITTING, grease-----	17300
15	2	BUSHING, ball-----	41515
<u>SEAL KITS AVAILABLE</u>			
(1)	PISTON SEAL KIT-----	65489	
(2)	GLAND SEAL KIT-----	65490	
(3)	COMPLETE SEAL KIT-----	65524	

Effective 4-1-78



ITEM	QTY	UNIT	PART NO.	DESCRIPTION	WT
1	1	BM	933-00002	BUTT & TUBE	49
2	1	BM	842-00002	ROD	55
3	1	-	852-00000	PISTON	1
4	1	-	852-00000	SEAL	1.1
5	1	-	852-00012	SEAL	3.6
6	1	-	852-00012	NUT - HEX LOCK THIN 1 1/2-12 UNF	
7	2	-	852-00012	SEAL - PISTON	
8	2	-	852-00012	O-RING - PISTON	
9	1	-	852-00012	O-RING - PISTON	
10	1	-	852-00012	O-RING - PISTON	
11	1	-	852-00012	O-RING - PISTON	
12	1	-	852-00012	O-RING - PISTON	
13	1	-	852-00012	O-RING - PISTON	
14	1	-	852-00012	O-RING - PISTON	
15	1	REF	852-00012	STOP	1
				UNAPPLICABLE SEAL KIT	
				APPROX. TOTAL WEIGHT	114.2



BARKO HYDRAULICS, INC.
 Office: Superior, Wisconsin Phone (763) 382-8841
 Mailing address: P.O. Box 6221 Duluth, Minnesota 55806

FOR CATALOGS, UNITS, & OTHER INFORMATION	
NAME	1/32
ADDRESS	113
CITY	113
STATE	113
COUNTRY	113
DATE	3-13-80
TIME	4-15-80
NAME	PK
NAME	DHS

ASSY - HYD CYL - 3/8" LG	
TELESCOPIC STABILIZER (N)	
DATE	8/2-00045
TIME	8/2-00045

A

COMMERCIAL TANDEM PUMP (20/20)

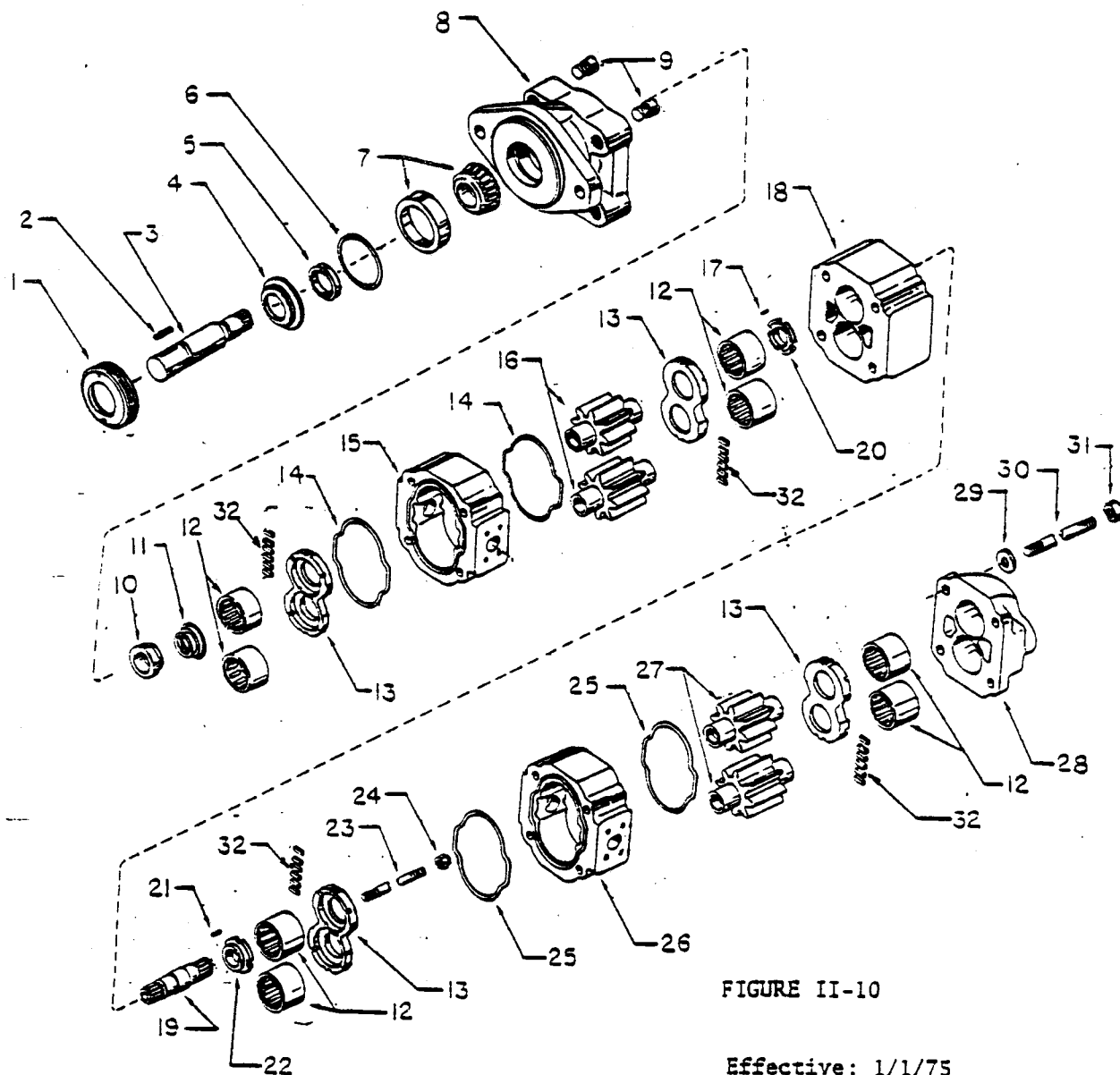


FIGURE II-10

Effective: 1/1/75

COMMERCIAL TANDEM PUMP

TYPE: 1½ GEARS

PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NO
-	-	PUMP, assembly (splined).....	60527
-	-	PUMP, assembly (keyed).....	60552
1	1	RING, retainer.....	60673
2	1	KEY.....	60679
	1	SHAFT, splined (optional).....	60677
3	1	SHAFT, keyed (standard).....	60676
4	1	SEAL, retainer.....	60674
(1) 5	1	SEAL, double lip.....	(60627)
(1) 6	1	O-RING.....	(60628)
7	1	BEARING.....	60675
8	1	END COVER, shaft.....	60680
9	1	CHECK ASSEMBLY.....	60681
(1) 10	1	BUSHING, bronze shaft.....	(60636)
(1) 11	1	SPRING, conical.....	(60637)
12	8	BEARING, roller.....	60682
13	4	PLATE, thrust.....	60678
(1) 14	2	GASKET, o-ring.....	(60641)
15	1	HOUSING, gear.....	60642
16	2	GEARS, matched, 1½".....	60685
17	1	PIN, roll.....	60646
18	1	CARRIER, bearing.....	60647
19	1	SHAFT, connecting.....	60648
(1) 20	1	BUSHING, shaft.....	(60645)
21	1	PIN, roll.....	60646
(1) 22	1	BUSHING, shaft.....	(60645)
23	1	STUD.....	60649
24	1	NUT, lock.....	60650
(1) 25	2	GASKET, o-ring.....	(60641)
26	1	HOUSING, gear.....	60642
27	2	GEARS, matched, 1½".....	60685
28	1	END COVER, port.....	60653
29	4	WASHER.....	60654
30	4	STUD.....	60669
31	4	NUT.....	60657
(1) 32	4	SEALS, pocket.....	(60640)

- (1) The following items are included in Seal Kit #65581

Change Notice No. 2
Effective: 5/21/76
Supercedes page dated:
11/24/75

VICKERS TANDEM PUMP

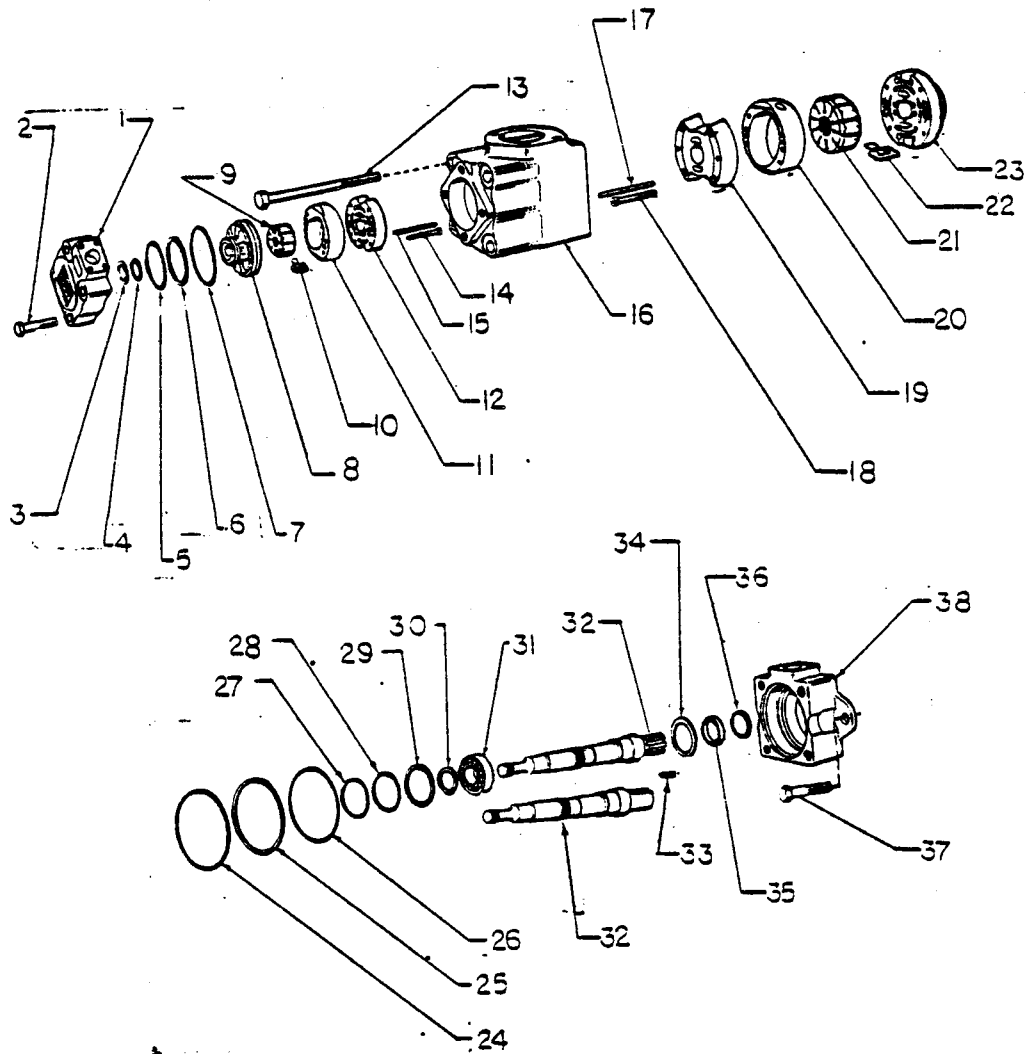
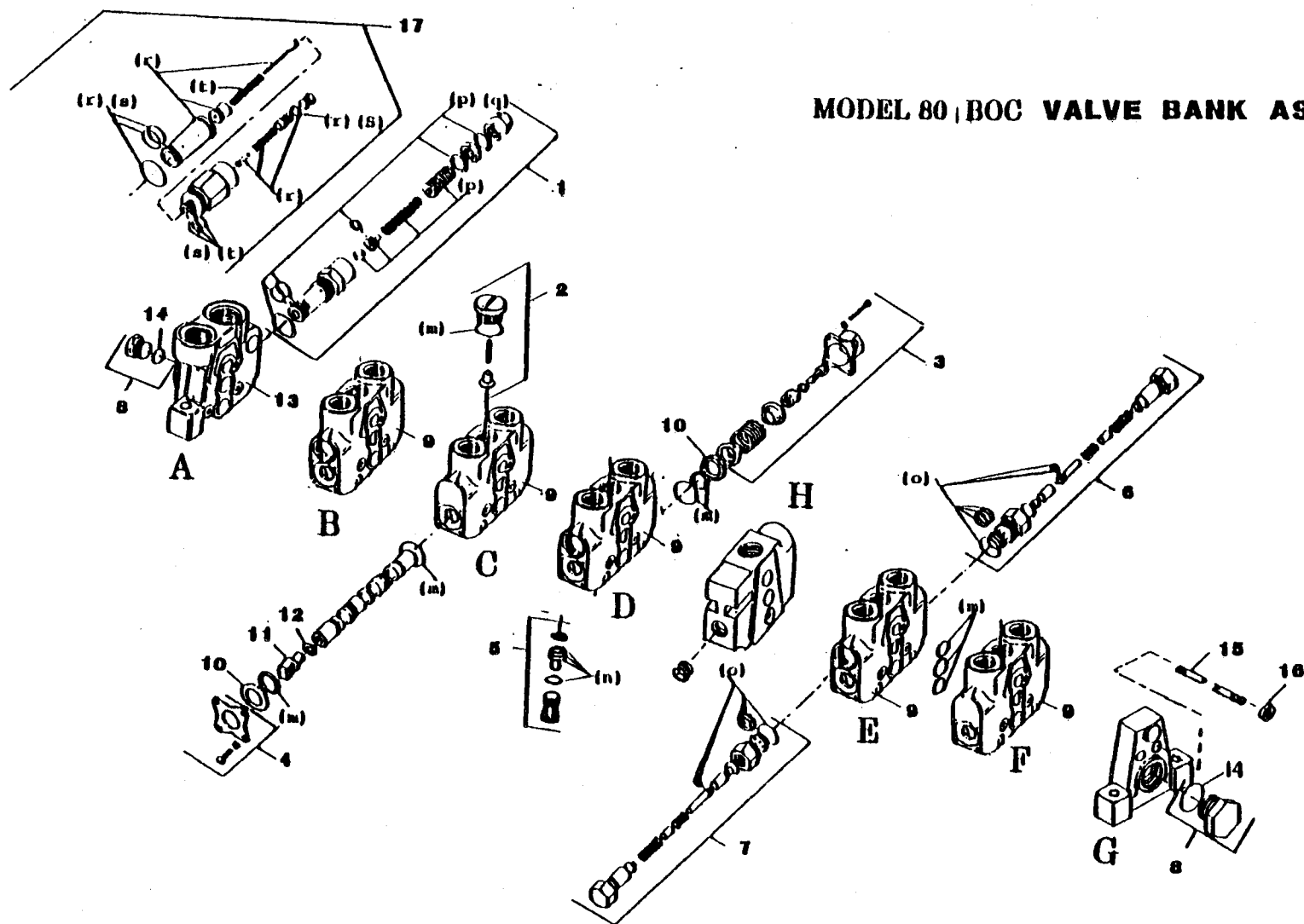


FIGURE II-12

Effective: 1/1/75
 Supercedes Page Dated: 3/15/74

EFFECTIVE DATE 1/1/81

MODEL 80 BOC VALVE BANK ASSEMBLY



ITEM NO.	QTY.	DESCRIPTION	PART NO.	INCLUDED IN VALVE SECT.
	1	ASSEMBLY, valve bank (complete) includes all items below	558-007.48	A B C D E F G H
A	1	VALVE SECTION, left end inlet/outlet	551-00097	
B	1	VALVE SECTION, swing	551-00061	

(Continued on Next Page)

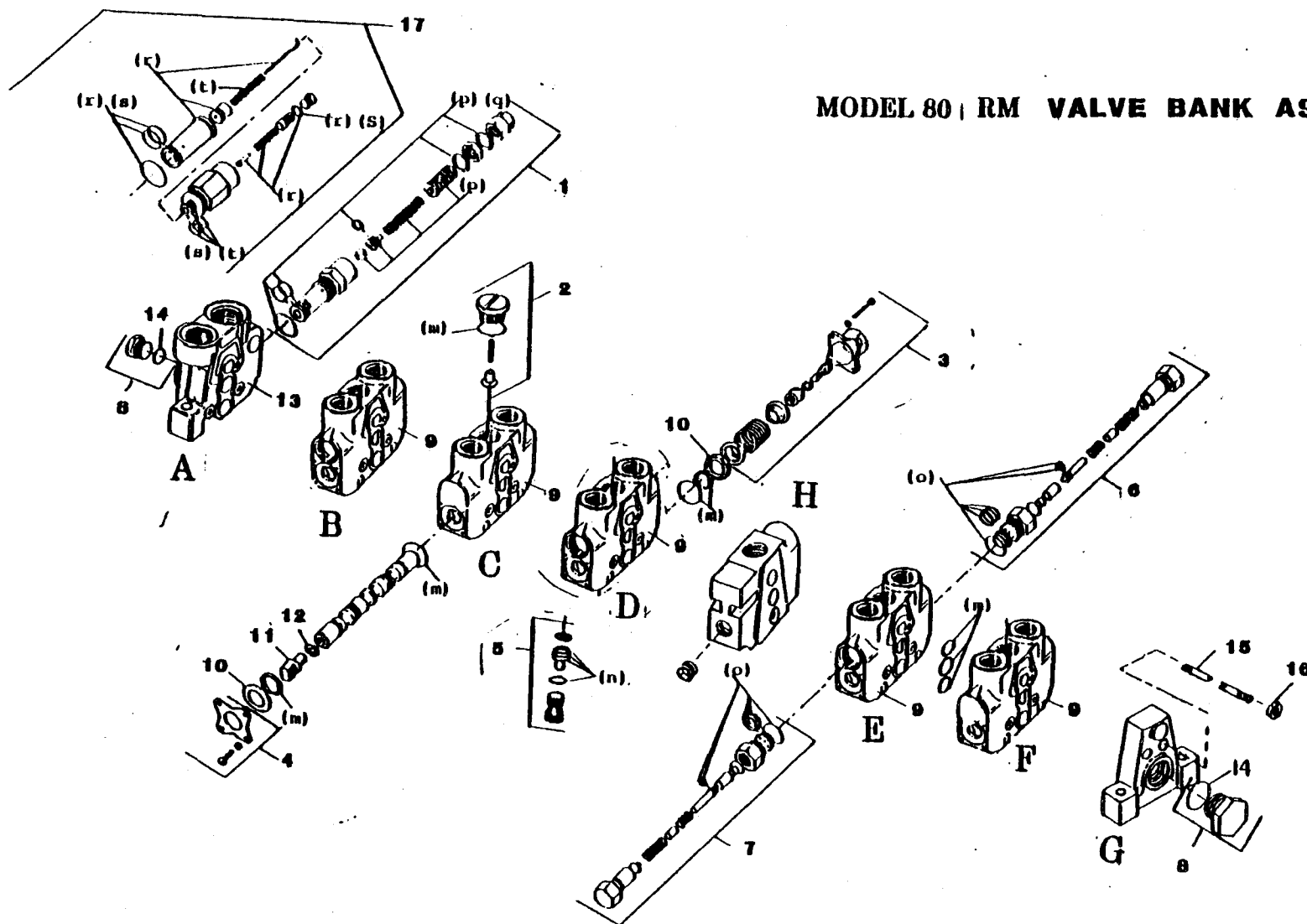
MODEL 80 BOC VALVE BANK ASSEMBLY (Continued)

ITEM NO.	QTY.	DESCRIPTION	PART NO.	INCLUDED IN VALVE SECT.							
				A	B	C	D	E	F	G	H
C	1	VALVE SECTION, grapple	551-00058								
D	1	VALVE SECTION, main boom lift	551-00059								
E	1	VALVE SECTION, secondary boom lift	551-00060								
F	1	VALVE SECTION, grapple	551-00058								
G	1	VALVE SECTION, right end outlet	551-00068								
H	1	VALVE SECTION, mid inlet,	551-000								
1	2	ASSEMBLY, main relief valve	558-00100	X							X
2	5	KIT, check plug	552-00002		X	X	X	X	X		
3	5	ASSEMBLY, positioner	552-00028		X	X	X	X	X		
4	5	KIT, retainer	552-00029		X	X	X	X	X		
5	3	ASSEMBLY, anti cavitation check	558-00534		X		X	X			
6	2	ASSEMBLY, port relief valve	557-00017				X	X			
6	1	ASSEMBLY, port relief valve	557-00015	X							
7	1	ASSEMBLY, port relief valve	557-00017					X			
7	1	ASSEMBLY, port relief valve	557-00015	X							
7	1	ASSEMBLY, port relief valve	557-00019				X				
8	2	PLUG & O-RING	558-00510	X						X	
9	5	HOUSING & SPOOL, (N.S.S.) (order complete valve section)			X	X	X	X	X		
10	10	PLATE, seal	551-00109		X	X	X	X	X		
11	5	ADAPTER, clovis	551-00119		X	X	X	X	X		
12	5	LOCKWASHER	551-00118		X	X	X	X	X		
13	1	CASTING, outlet cover		X							
14	2	O-RING		X						X	X
15	4	STUD		X	X	X	X	X	X	X	X
16	4	NUT	558-00034	X	X	X	X	X	X	X	X
17	1	ASSEMBLY, main relief valve (optional)	557-00150	X							X
(m)	as req'd	Included in seal kit	552-00013		X	X	X	X	X		
(n)	as req'd	Included in anti cavitation seal kit	552-00047		X		X	X			
(o)	as req'd	Included in port relief seal kit	558-00800		X		X	X			
(p)	as req'd	Included in rebuilding kit	552-00032	X							X
(q)	as req'd	Included in seal kit	552-00017	X							X
(r)	as req'd	Included in rebuilding kit	552-00030	X							X
(s)	as req'd	Included in seal kit	552-00018	X							X
(t)	as req'd	Included in piston & cylinder kit	552-00031	X							X

(N.S.S.) — NOT SOLD SEPARATELY

EFFECTIVE DATE 1/1/81

MODEL 80 RM VALVE BANK ASSEMBLY



ITEM NO.	QTY.	DESCRIPTION	PART NO.	INCLUDED IN VALVE SECT.
	1	ASSEMBLY, valve bank (complete) includes all items below	558-007.47	A B C D E F G H
A	1	VALVE SECTION, left end inlet/outlet	551-00097	
B	1	VALVE SECTION, swing	551-00058	

(Continued on Next Page)

MODEL 80 RM VALVE BANK ASSEMBLY **(Continued)**

ITEM NO.	QTY.	DESCRIPTION	PART NO.	INCLUDED IN VALVE SECT.							
				A	B	C	D	E	F	G	H
C	1	VALVE SECTION, grapple	551-00055								
D	1	VALVE SECTION, main boom lift	551-00053								
E	1	VALVE SECTION, secondary boom lift	551-00054								
F	1	VALVE SECTION, grapple	551-00055								
G	1	VALVE SECTION, right end outlet	551-00098								
H	1	VALVE SECTION, mid inlet,	551-000								
1	1	ASSEMBLY, main relief valve	558-00100	X							X
2	5	KIT, check plug	552-00002		X	X	X	X	X		
3	5	ASSEMBLY, positioner	552-00028		X	X	X	X	X		
4	5	KIT, retainer	552-00029		X	X	X	X	X		
5	3	ASSEMBLY, anti cavitation check	558-00534		X		X	X			
6	1	ASSEMBLY, port relief valve	557-00019				X				
6	1	ASSEMBLY, port relief valve	557-00017					X			
6	1	ASSEMBLY, port relief valve	557-00015		X						
7	2	ASSEMBLY, port relief valve	557-00017				X	X			
7	1	ASSEMBLY, port relief valve	557-00015		X						
8	2	PLUG & O-RING	558-00510	X							X
9	5	HOUSING & SPOOL, (N.S.S.) (order complete valve section)			X	X	X	X	X		
10	10	PLATE, seal	551-00109		X	X	X	X	X		
11	5	ADAPTER, clevis	551-00119		X	X	X	X	X		
12	5	LOCKWASHER	551-00118		X	X	X	X	X		
13	1	CASTING, outlet cover		X							
14	2	O-RING		X						X	X
15	4	STUD		X	X	X	X	X	X	X	X
16	4	NUT	558-00034	X	X	X	X	X	X	X	X
17	1	ASSEMBLY, main relief valve (optional)	557-00160	X							X
(m)	as req'd	Included in seal kit	552-00013		X	X	X	X	X		
(n)	as req'd	Included in anti cavitation seal kit	552-00047		X		X	X			
(o)	as req'd	Included in port relief seal kit	558-00860		X		X	X			
(p)	as req'd	Included in rebuilding kit	552-00032	X							X
(q)	as req'd	Included in seal kit	552-00017	X							X
(r)	as req'd	Included in rebuilding kit	552-00030	X							X
(s)	as req'd	Included in seal kit	552-00018	X							X
(t)	as req'd	Included in piston & cylinder kit	552-00031	X							X

(N.S.S.) — NOT SOLD SEPARATELY