

PREMIER

SKID STEER LOADER TRENCHER ATTACHMENTS

MODELS
T150, T250, T350

OPERATOR'S MANUAL

SERIAL NUMBER: _____



WARNING!
AVOID INJURY OR DEATH
READ AND UNDERSTAND THIS ENTIRE MANUAL BEFORE INSTALLING,
OPERATING OR SERVICING THIS EQUIPMENT

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1-866-458-0008
www.premierattach.com

e-mail: contact@premierattach.com
Fax: 260-456-6868
2707 Lofty Drive
Fort Wayne, IN 46808

To the Owner,

Thank you for choosing PREMIER Skid Steer Loader Trencher Attachments. You have invested in a quality piece of equipment. In order to receive the dependable performance and long life for which the trencher was designed, it is imperative that you follow the proper installation procedures as well as the operation and maintenance instructions.

*This manual contains important information regarding the installation, operation, safe use, care and maintenance of your PREMIER Skid Steer Loader Trencher Attachment. **Please be sure that all operator's study this manual carefully** and keep it on file for future reference.*

After reading this manual, if you have any questions about your PREMIER Skid Steer Loader Trencher Attachment please contact us immediately at the numbers listed at the top of this page.

Please feel free to contact us or your nearest PREMIER Dealer, should you have questions, comments, suggestions, or if you require additional assistance.

Once again, thank you for putting your trust in our product.

Sincerely,

Premier

**PREMIER
WARRANTY REGISTRATION**

DATE PURCHASED _____

MODEL NO. _____

SERIAL# _____

OWNER INFORMATION

OWNER'S NAME _____

PHONE _____

COMPANY NAME _____

ADDRESS _____

CITY _____

STATE/PROVIDENCE _____

ZIP CODE _____

COUNTRY _____

DEALER INFORMATION

DEALER SALESMAN _____

PHONE _____

DEALER NAME _____

ADDRESS _____

CITY _____

STATE/PROVIDENCE _____

ZIP CODE _____

COUNTRY _____

INSTALLATION & APPLICATION INFORMATION

This PREMIER Trencher Attachment will be mounted on:

MAKE (Brand) _____

MODEL _____

APPLICATION _____

This PREMIER Trencher Attachment has been accepted in good condition and I have been instructed by the dealer to read and understand the entire Operator's Manual for proper installation, proper and safe operation, preventative maintenance, service, warranty, and all other information covered in the Operator's Manual. I also understand that all operators must read and understand the entire Operator's Manual.

OWNER'S SIGNATURE _____

DATE _____

DEALER'S SIGNATURE _____

DATE _____

THIS PAGE MUST BE RETURNED WITHIN 10 DAYS OF PURCHASE TO VALIDATE WARRANTY

Mail to: PREMIER
2707 Lofty Drive
Ft. Wayne, IN 46808

↓ #1 - Fold down here ↓

From:

Place
Postage
Here

PREMIER
2707 Lofty Drive
Fort Wayne, IN 46808

↑ #2 - Fold up here ↑

↓ #3 - Tape or seal here ↓



WARRANTY POLICY

MODEL# _____

SERIAL# _____

Premier warrants its products to be free from defects in material or workmanship for a warranty period as stated below:

Trencher Models T150, T250, T350

Motor:24 Months

Planetary:24 Months

Frame:.....12 Months

The warranty period begins on the date of purchase by the original retail purchaser.

WARRANTY PERFORMANCE

To make a claim under this warranty, contact your Premier Dealer, who will obtain written return authorization. All warranty returns must be accompanied by a Premier Return Authorization Letter.

All warranty claims must include detailed information regarding date of purchase, make and model of machine on which the product was mounted, hours of use, summary of events leading to failure, and any other information helpful in evaluating your claim.

REMEDY

During the applicable warranty period Premier at its option, will repair or replace, free of charge, any product determined by it to be defective. Such repair or replacement shall take place at a location designated by Premier.

Freight or other transportation costs incurred in transporting any product to Premier's designated location for warranty consideration must be prepaid by the customer. If Premier determines that the product is subject to warranty performance, the customer will be allowed credit for such costs. Freight or other transportation costs incurred in returning to the customer any product subject to warranty performance will be prepaid by Premier. Any parts or labor required to rebuild or replace items not covered under this warranty will be charged to the customer.

EXCLUSIONS FROM WARRANTY COVERAGE

1. THIS WARRANTY AUTOMATICALLY IS VOID IF ANY ATTEMPT IS MADE TO MAKE FIELD REPAIRS TO HYDRAULIC MOTORS OR PLANETARY GEAR REDUCTIONS. TO QUALIFY FOR WARRANTY PERFORMANCE THE COMPLETE UNIT MUST BE AVAILABLE FOR PREMIER'S INSPECTION IN ITS ORIGINAL "FAILED" CONDITION.
2. There is no warranty against failures caused by or related to alterations or modifications made without the express written consent of Premier.
3. Under no circumstances shall Premier be responsible for the cost of labor for field replacement or repair, nor for damage caused by accident, misapplication, abuse, misuse, operator error or environmental elements.

4. This warranty does not apply to parts subject to normal wear nor to damage caused by the failure to perform recommended maintenance or to replace worn parts.
5. Under no circumstance shall Premier be obligated for the cost of any repair or replacement by anyone other than Premier, without its express written consent.

LIMITATIONS AND EXCLUSIONS

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WRITTEN OR ORAL, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE ARISING BY OPERATION OF LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.

The remedy of repair or replacement provided by this warranty is the some and exclusive for breach of this warranty, or for any other which might arise by operation of law or otherwise. Premier shall not be liable for any incidental or consequential damages resulting from or contributed to by any defect in materials, workmanship, manufacture or design negligence or failure to warn. Premier shall in no way be liable for any losses, costs, forfeitures, or damages (including loss of profits, liabilities of the customer to its customers, employees or third persons, and all incidental or consequential damages), whether direct or indirect and whether or not resulting from or contributed to by the default, defect in materials, workmanship, manufacture or design, negligence or failure to warn on the part of Premier which might be claimed as the result of, or use of malfunction of the products covered by this warranty.

THE LIABILITY OF PREMIER ARISING OUT OF THE SUPPLYING OF ANY PRODUCT COVERED BY THIS WARRANTY CONTRACT, NEGLIGENCE OR OTHERWISE SHALL NOT IN ANY CASE EXCEED THE COST OF PARTS OR LABOR REQUIRED TO REBUILD OR REPLACE SUCH DEFECTIVE PRODUCT, TOGETHER WITH THE TRANSPORTATION COSTS ATTRIBUTABLE THERETO. UPON THE EXPIRATION OF THE APPLICABLE WARRANTY PERIOD HEREIN SPECIFIED, ALL SUCH LIABILITY SHALL TERMINATE.

This warranty constitutes the entire warranty of Premier, and no oral representations, warranties or guarantees by any agent of Premier, or the seller shall be binding on Premier, and no part of this warranty may be modified or extended except upon the express written consent of Premier.

IMPROVEMENTS

Premier is continually attempting to make product improvements. It reserves the right to make changes or additions to any product without incurring any obligation whatsoever to make such changes or additions to products previously sold.



SAFETY INFORMATION TO THE OPERATOR

Your personal safety is a concern of ours. It should also be of concern to you. It is the responsibility of all operators to read and understand this entire manual before installing, operating or servicing this equipment. Pay particular attention to cautions, warnings and safe operating procedures. Be a safe and qualified operator. Operate your equipment with care and good judgment and see to it that it is properly maintained.

SAFETY ALERT SYMBOL

This Safety Alert Symbol Means...

ATTENTION! BECOME ALERT!

YOUR SAFETY IS INVOLVED!



When you see it pay attention and follow the instructions in the safety message.

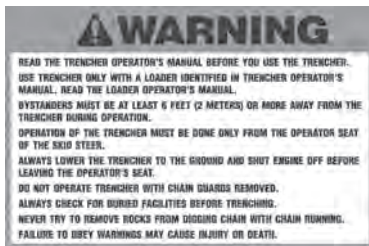
The safety alert symbol is generally used in conjunction with a key signal word to emphasize special information. The signal words listed below carry a specific meaning and should be carefully read and understood:

- DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
- WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

REPLACEMENT SAFETY DECALS

WORN, DAMAGED OR ILLEGIBLE SAFETY DECALS MUST BE REPLACED.

New safety decals can be ordered from Premier. Safety decals for Premier Trenchers are ordered and packaged in sets only. Specific part number for the DANGER Decal set (shown below) is #75200.





SAFETY INFORMATION

THE USE OF THIS EQUIPMENT IS SUBJECT TO CERTAIN HAZARDS WHICH CANNOT BE PROTECTED AGAINST MECHANICAL MEANS OR PRODUCT DESIGN. ALL OPERATORS OF THIS EQUIPMENT MUST READ AND UNDERSTAND THIS ENTIRE MANUAL, PAYING PARTICULAR ATTENTION TO SAFETY AND OPERATING INSTRUCTIONS. PRIOR TO USING THE PREMIER TRENCHER ATTACHMENT. IF THERE IS SOMETHING IN THIS MANUAL YOU DO NOT UNDERSTAND, ASK YOUR SUPERVISOR TO EXPLAIN IT TO YOU. FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS CAN RESULT IN DEATH OR SERIOUS INJURY, OR SERIOUS EQUIPMENT DAMAGE.



All bystanders should be kept a minimum of 20 feet (6 meters) away from working area of the trencher.



Always wear an OSHA approved hardhat and safety eye protection when operating or servicing this equipment. Do not wear loose fitting clothing, flopping cuffs, dangling neckties and scarves, or rings and wrist watches that can catch moving parts.



An operator must not use drugs or alcohol which can change his alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advise on whether or not he can safely operate equipment.



Always locate underground electrical wires, telephone cables, gas, water and sewer lines before digging. Maintain safe clearance and avoid contact with any underground or overhead utility lines or electrically charged conductors.



Never alter or remove any safety decals or shields. Replace all missing or damaged safety decals or safety shields. Check this manual for location of these items and replace immediately if damaged or illegible.



Never adjust a relief valve for pressure higher than recommended by vehicle manufacturer.



Whenever changing or installing this or other attachments, make sure all connections are securely fastened.



Travel with the trencher in a lowered position at all times to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.



Before exiting vehicle, lower trencher to ground, turn off vehicle engine and lock vehicle brakes



Never check a pressurized system for leaks with your bare hand. Oil escaping from pinhole leaks under pressure can penetrate skin and could cause serious infection. Hold a piece of cardboard up next to suspected leaks and wear a face shield or safety eye protection. If any fluid is injected into the skin, it must be removed immediately by a doctor familiar with this type of injury.



Before disconnecting hydraulic lines or fittings be sure to relieve all pressure by cycling all hydraulic controls after shutdown. Remember hydraulic systems are under pressure whenever the engine is running and may hold pressure after shutdown. Before applying pressure to the system make sure all connection are tight and that there is no damage to lines, fittings and hoses.



Flow and pressure gauges, fittings and hoses must have a continuous operating pressure rating of at least 25% higher than highest pressures of the system.



Avoid steep hillside operation which could cause the vehicle to overturn. Consult your vehicle Operator's and Safety Manuals for maximum incline allowable.



Never perform any work on a trencher unless you are authorized and qualified to do so. Always read the operator service manual(s) before any repair is made. After completing maintenance or repair, check for correct functioning of the trencher. If not functioning properly always tag "DO NOT OPERATE" until all problems are corrected.



This manual covers the safe use, installation, operation and service instructions for the trencher attachment only. Always read the operating and safety manuals prepared for your vehicle and any other attachments before using them.

HOOK-UP PROCEDURES

NOTE: BECAUSE OF THE DIFFERENCES IN ATTACHMENT MOUNTING METHODS AMONG THE VARIOUS BRANDS OF SKID STEER LOADERS, IT IS IMPORTANT TO CONSULT YOUR SKID STEER OWNERS MANUAL FOR THE PROPER ATTACHMENT MOUNTING METHOD.

1. Insert loader attachment plate into Trencher Mounting Bracket.
2. Secure all locking levers or pins in their proper position.
3. Connect two hydraulic hoses from the Trencher to the loader's auxiliary hydraulic system. To ensure adequate hose length and clearance through the trencher's tilt and lift range, operate the skid steer to lift the Trencher through its full range of lift and tilt. Engage the hydraulics to make sure the Trencher is turning freely in both forward and reverse rotation.
4. You are now ready to operate your Premier Trencher.

TO REMOVE TRENCHING ATTACHMENT

NOTE: BECAUSE OF THE DIFFERENCES IN ATTACHMENT MOUNTING AND REMOVAL METHODS AMONG THE VARIOUS BRANDS OF SKID STEERS, IT IS IMPORTANT TO CONSULT YOUR SKID STEER OWNERS MANUAL FOR THE PROPER ATTACHMENT REMOVAL METHOD.

1. Roll the loader's tilt arms back and lower lift arms to lay attachment level.
2. Stop the engine, release hydraulic pressure in hoses and disconnect auxiliary hoses.
3. Release locking levers or pins.
4. Start the engine and disengage loader mounting plate for trencher mounting bracket.

OPERATING INSTRUCTIONS

GENERAL INFORMATION

The design of your Premier Trencher makes it relatively simple to operate. With the help of the information in this section and a little practice you should become proficient in its operation. Observe the following points to obtain the best results with the least amount of wear on the machine. Read the "Safety Precautions" section, of this manual before you begin.

CAUTION!



- Operate the trencher only when seated at the skid steer controls.
- Never operate the skid steer without "Roll-Over-Protective-Structure", seat belt, and hardhat.
- Pay attention to the job at hand. Be alert to the possibilities of others in the work area.
- Never allow anyone to work around or perform maintenance on the trencher while it is running.
- Always use the safety bar assembly on the trencher.

BEFORE YOU START TRENCHING

Before any digging is started, plan out the job. Several things must be considered prior to trenching. The operator should inspect the job site and take notice on any potential hazards in the area. He should have a clear understanding of the task he is about to perform. Determine what will be done with the spoil (backfill or tuck out), what are the soil conditions like, will you be working around others, etc.

WARNING!



Check the trenching area for hidden utility lines before operating the trencher. Contacting a utility line with the trencher could cause electrocution resulting in death. Call utility companies and have them plot out all of their lines first. If you damage a utility line, turn off the equipment immediately.

Once you have become familiar with the job site and understand the job requirements, it is time to set up for the actual trenching. Check the soil type and the trenching requirements. If necessary, change the digging chain, boom, crumbar bar and shoe to meet the job requirements.

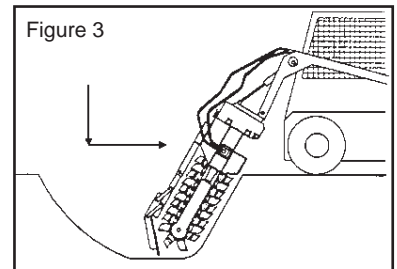
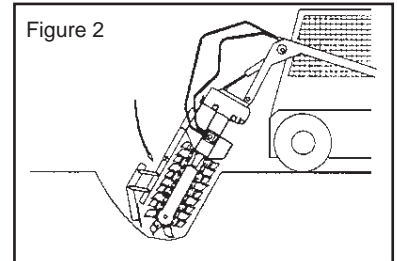
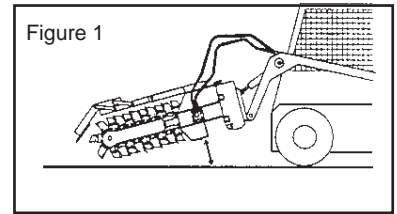
OPERATING INSTRUCTIONS

BEGIN TRENCHING

Position the trencher at a shallow (15°) angle to the ground (Fig. 1). Set the engine at 1/2 throttle to slow the chain speed. Engage the hydraulics so the chain is rotating in the cutting direction. Lower the trencher so the chain begins cutting. As the tip cuts deeper into the ground, tilt the trencher forward to increase the cutting angle and depth. Continue tilting the trencher until a 60° cutting angle is achieved.

Increase the engine speed to full throttle and slowly lower the trencher until the shoe rests on the ground (Fig. 2). The trencher is now set for maximum digging depth and proper digging angle.

With the hydraulics engaged and the chain rotating in the cutting direction, slowly drive the skid steer in reverse to cut the trench (Fig. 3). If the trencher should stall, drive the skid steer a few inches forward until the chain begins rotating again, or reverse the chain rotation temporarily to move the obstruction to the bottom of the trench.



TO SIDE-SHIFT THE TRENCHER

Manual Side-Shift:

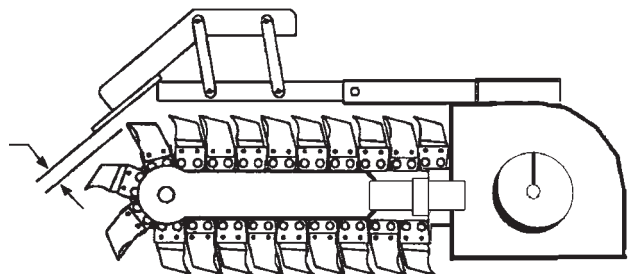
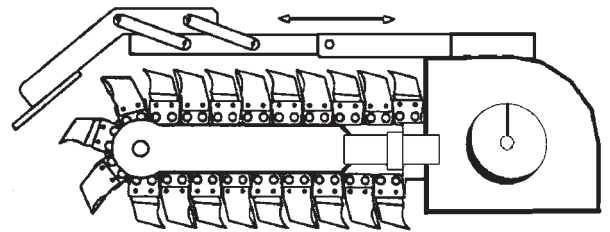
1. Move the trencher to a flat, level area.
2. Remove pin at the top of the trencher.
3. Position the trencher so that the chain is flat against the ground.
4. Using the Skid Steer Driving Controls, rotate the vehicle so that trencher frame slides along the tubes until it reaches the desired position.
5. Insert the pin to lock the trencher into position.

USING THE CRUMBER ACCESSORY

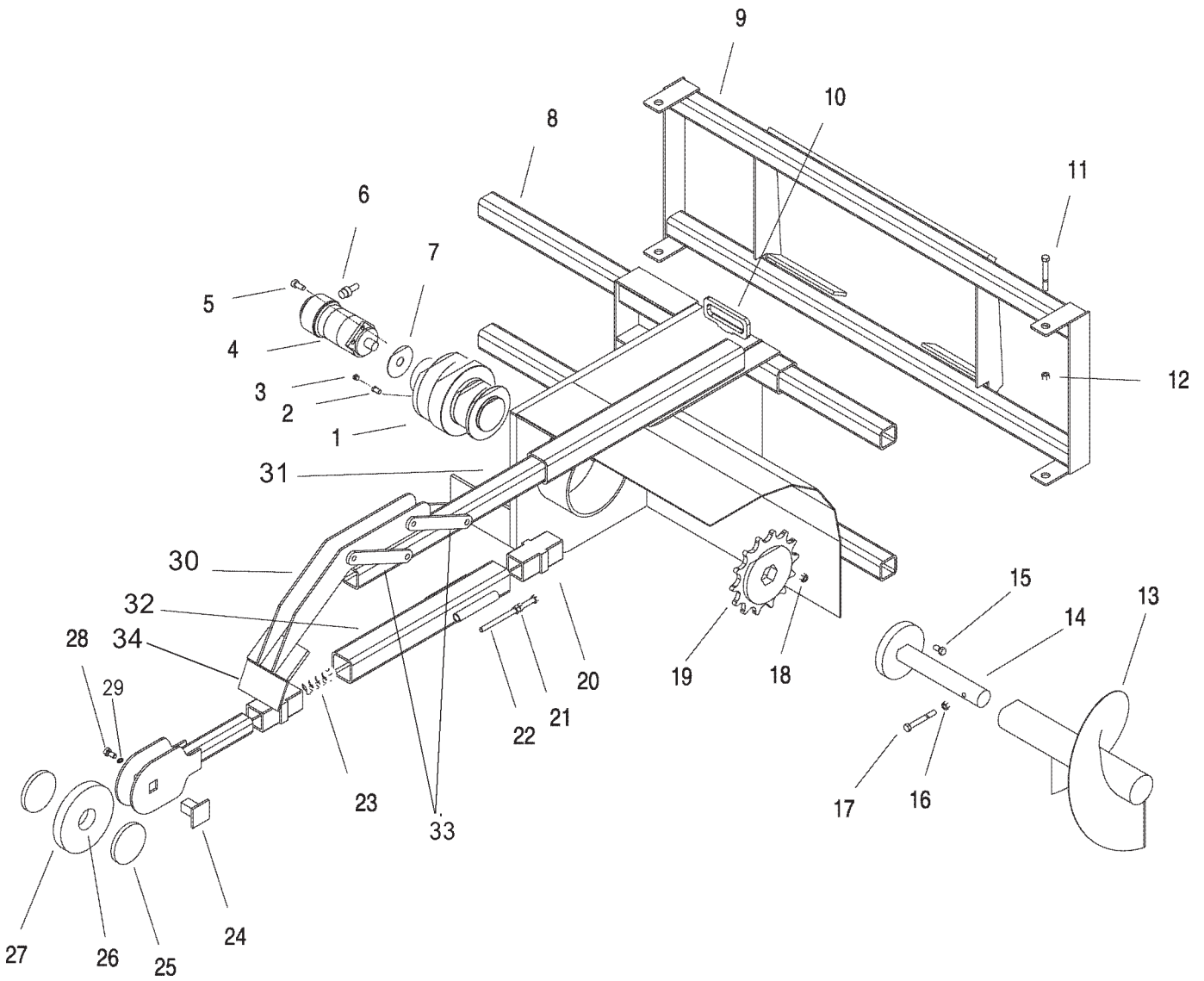
The crumber is designed to collect loose dirt from the bottom of the trench and drag it to the digging chain so it can be removed from the trench. This can increase the finished trench depth and provide a firmer trench bottom.

Adjusting Crumber Accessory:

1. Position the trencher so that the boom is horizontal.
2. Loosen the bolt holding the safety bar.
3. Slide the safety bar in its holder so that the crumber maintains a 2" clearance from the chain when it is in the retracted position.
4. Tighten the bolt to lock the safety bar into position.



TRENCHER MODELS T150, T250, T350 EXPLODED VIEW



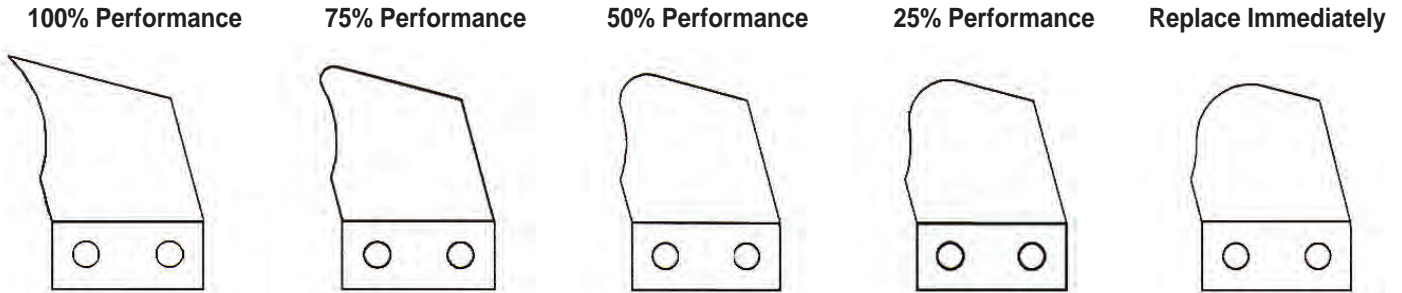
TRENCHER MODELS T150, T250, T350 PARTS LIST

REF #	PART #	QTY REQ.	DESCRIPTION	MODEL USED ON
1.....	65010.....	1.....	Planetary.....	T150 & T250
1.....	65102.....	1.....	Planetary.....	T350
2.....	61002.....	1.....	Check Valve.....	T150 & T250
3.....	61003.....	1.....	Breather Vent.....	T150 & T250
4.....	60017.....	1.....	Motor.....	T150
4.....	60001.....	1.....	Motor.....	T250
4.....	60018.....	1.....	Motor.....	T350
5.....	40004.....	4.....	1/2"-13 SHCS 1-1/2" Long.....	ALL
6.....	61004.....	2.....	Motor Fittings.....	ALL
6.....	61016.....	2.....	Motor Fittings.....	T350
7.....	61001.....	1.....	Motor Gasket.....	ALL
8.....	55056.....	2.....	Transfer Tube.....	ALL
9.....	93017.....	1.....	Mount Assembly.....	ALL
10.....	93003.....	1.....	Pin Assembly.....	ALL
11.....	40010.....	4.....	3/4"-10 x 4-112" HHCS.....	ALL
12.....	45016.....	4.....	3/4"-10 Nylock.....	ALL
13.....	93019.....	1.....	Spoil Auger Assembly.....	ALL
14.....	93018.....	1.....	Hex Shaft Assambly.....	ALL
15.....	45008.....	5.....	1/2"-13 x 1-5/8" HHCS.....	ALL
16.....	40005.....	1.....	1/2"-13 Hex Nut.....	ALL
17.....	40021.....	1.....	1/2"-13 x 4-1/2" HHCS.....	ALL
18.....	40005.....	1.....	1/2"-13 Hex Nut.....	ALL
19.....	55038.....	1.....	Sprocket.....	ALL
20.....	45003.....	2.....	Rubber Liner.....	ALL
21.....	45002.....	4.....	3/4"-10 Acme Nut.....	ALL
22.....	93008.....	2.....	3/4"-10 Acme.....	ALL
23.....	45005.....	1.....	Spring.....	ALL
24.....	93013.....	1.....	Nose Wheel Axle Assembly.....	ALL
25.....	55035.....	2.....	Nose Wheel Dust Guard.....	ALL
26.....	45004.....	1.....	Bearing.....	ALL
27.....	55034.....	1.....	Nose Wheel.....	ALL
28.....	45023.....	1.....	5/8"-11 x 4" HHCS.....	ALL
29.....	40001.....	1.....	5/8"-11 Lock Nut.....	ALL
30.....	93009.....	1.....	Crumber Assembly.....	ALL
31.....	55043.....	1.....	Crumber Boom Tube.....	ALL
32.....	93006.....	1.....	36" Boom Tube Assembly.....	ALL
32.....	93050.....	1.....	48" Boom Tube Assembly.....	ALL
32.....	93051.....	1.....	60" Boom Tube Assembly.....	ALL
33.....	55045.....	4.....	Crumber Linkage.....	ALL
34.....	55048.....	1.....	6" Wide Crumber Plate.....	ALL
34.....	55069.....	1.....	8" Wide Crumber Plate.....	ALL
34.....	55070.....	1.....	10" Wide Crumber Plate.....	ALL
34.....	55068.....	1.....	12" Wide Crumber Plate.....	ALL

MAINTENANCE

EVERY 8 HOURS:

1. Check for loose bolts and tighten as needed.
2. Inspect the chain for loose or worn teeth and repair as needed.



EVERY 40 HOURS:

1. Perform the 8-hour maintenance procedures.
2. Inspect all hoses and fittings for wear or leaks and repair as needed.
3. Check and clean all Safety Decals. Replace if damaged.
4. Check Sprocket and Nose Wheel for damage. Replace if needed.
5. Check Spring Tensioner. Replace Acme Threaded Rod if damaged.
6. Check chain for worn rollers or sideplates and replace as needed.

PARTS REPLACEMENT

In order to replace damaged or worn parts on your trencher, it is necessary to disassemble the trencher to the point needed to access the part in need of replacement. ***Refer to Trencher Exploded View on page 10 of this manual.***

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Slow Speed	<p>Low oil flow</p> <p>Line restrictions</p> <p>Fittings or connections too small</p> <p>Hydraulic pump worn or damaged</p> <p>Trencher motor not properly sized to skid steer.</p>	<p>Check with flow meter. If low, investigate cause.</p> <p>Clear lines.</p> <p>Replace with proper sizes.</p> <p>See Dealer for repair.</p> <p>Review with Equipment Dealer.</p>
Insufficient Digging Power	<p>Worn chain teeth</p> <p>Low system Pressure (PSI)</p> <p>Relief Valve damaged or setting wrong</p> <p>Excessive load</p> <p>Excessive trenching speed</p>	<p>Replace.</p> <p>Check with pressure gauge. If low, investigate cause.</p> <p>Adjust or replace as required.</p> <p>Reduce load to within machine specifications.</p> <p>Maintain proper trenching speed.</p>
Reverse Direction	Hoses reversed	Re-install hoses correctly.
Excessive Oil Heating	<p>Line restrictions</p> <p>Fluid dirty</p> <p>Insufficient quantity of hydraulic fluid</p>	<p>Clear lines.</p> <p>Replace hydraulic fluid and filter.</p> <p>Fill reservoir to proper level. Increase reservoir storage capacity.</p>
Oil Leaks	<p>Hoses loose or damaged</p> <p>Fittings loose or damaged</p> <p>Hydraulic motor seals worn or damaged</p> <p>Planetary seals worn or damaged.</p>	<p>Tighten or replace.</p> <p>Tighten or replace.</p> <p>See Dealer for repair.</p> <p>See Dealer for repair.</p>
Motor rotates but chain does not rotate	<p>Broken or worn sprocket</p> <p>Broken chain</p>	<p>Replace sprocket.</p> <p>Replace chain.</p>
Chain does not make complete rotation	<p>Obstruction in chain</p> <p>Spoil auger contacting chain</p> <p>Damaged sprocket</p>	<p>Remove debris from chain.</p> <p>Reposition auger.</p> <p>Replace sprocket.</p>

TROUBLESHOOTING *(continued)*

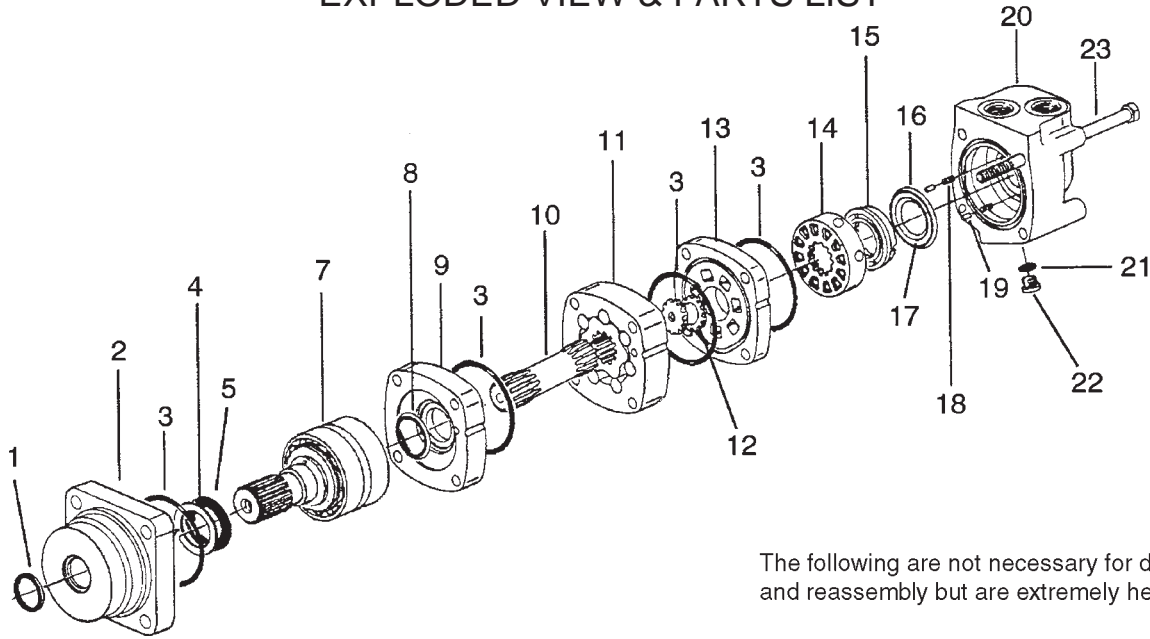
PROBLEM	POSSIBLE CAUSE	SOLUTION
Chain will not rotate	Quick couplers not functioning	Inspect and repair, or replace.
	Hose obstruction	Check for obstructions, kinks or pinching.
	Skid steer hydraulic system failure	See skid steer owner's manual or equipment dealer.
	Obstruction in chain	Remove debris from chain.
Trencher does not dig fast enough	Chain teeth worn	Replace teeth.
	Quick coupler or hose restriction	Inspect and repair hoses and couplers.
	Skid steer hydraulic system weak	See skid steer owner's manual or equipment dealer.
	Trencher motor not properly sized to skid steer	Review with equipment dealer.
	Chain not proper style for soil type	Review with equipment dealer.
Excessive vibration	Soil contains large amount of rocks or roots	Slow down trenching speed to reduce vibration.
	Chain loose	Tighten tension spring.
	Loose motor or bearing bolts	Inspect and tighten.
	Damaged sprocket	Replace sprocket.
	Worn nose wheel bearings	Replace bearings.
	Worn shaft bearing	Replace bearing.
	Worn motor bearings	Replace bearings.
	Worn Planetary bearings	Replace bearings.

**OR FURTHER ASSISTANCE PLEASE CALL YOUR DEALER, OR
CONTACT OUR SERVICE DEPARTMENT AS FOLLOWS:**

**TOLL FREE: 866-458-0008
FAX: 260-456-6868
E:MAIL: contact@premierattach.com**

HYRAULIC MOTOR MODELS T150 & T250

EXPLODED VIEW & PARTS LIST

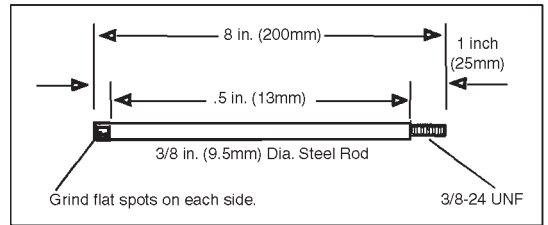


The following are not necessary for disassembly and reassembly but are extremely helpful:

- Alignment Studs (2), see dimensions below.

Tools Required For Disassembly & Reassembly:

- Torque Wrench 500 lb-in [57 Nm.] capacity
- 12-16 [300-450] Breaker Bar
- 9/16 Socket
- Small Screwdriver 6-8 x 1/4 [150-200 x 6,5] Blade
- 3/16 Allen Wrench
- Press
- Shaft Seal Installation Tool (Available by order, contact dealer.)



NOTE:
 Unless otherwise indicated, measurements are given in inches [mm], throughout hydraulic motor service procedures.

Ref.#	Part#	Description	Quantity Required	Models Used On
1.....	62001	Dust Seal	1	T150 & T250
2.....	62002	Bearing Housing	1	T150 & T250
3.....	62003	Seal	4	T150 & T250
4.....	62004	Back-up Washer.....	1	T150 & T250
5.....	62005	Shaft Seal	1	T150 & T250
7.....	62006	Bearing and Shaft Assembly, Splined	1	T150 & T250
8.....	62007	Shaft Face Seal	1	T150 & T250
9.....	62008	Wear Plate	1	T150 & T250
10.....	62009	Splined Drive, T150.....	1	T150
10.....	62010	Splined Drive, T250.....	1	T250
11.....	62013	Geroler, T150	1	T150
11.....	62014	Geroler, T250	1	T250
12.....	62017	Valve Drive	1	T150 & T250
13.....	62018	Valve Plate	1	T150 & T250
14.....	62019	Valve	1	T150 & T250
15.....	62020	Balancing Ring.....	1	T150 & T250
16.....	62021	Outer Face Seal.....	1	T150 & T250
17.....	62022	Inner Face Seal.....	1	T150 & T250
18.....	62031	Spring.....	2	T150 & T250
19.....	62032	Pin.....	2	T150 & T250
20.....	62023	Valve Housing	1	T150 & T250
21.....	62024	Case Drain Plug Seal.....	1	T150 & T250
22.....	62025	Plug.....	1	T150 & T250
23.....	62026	Tie Bolt, T150.....	4	T150
23.....	62027	Tie Bolt, T250.....	4	T250
NOTE..	62030	Seal Kit (Includes Ref. # 1,3,4,5,8,16,17,21)		T150 & T250

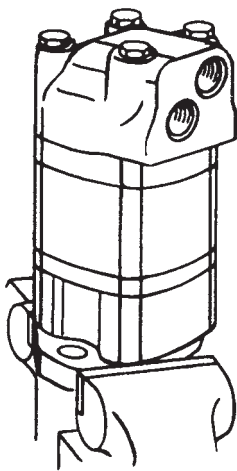
HYRAULIC MOTOR MODELS T150 & T250

SERVICE PROCEDURES

DISASSEMBLY:

Cleanliness is extremely important when repairing a hydraulic motor. Work in a clean area. Before disconnecting the lines, clean the port area of the *motor* thoroughly. Use a wire brush to remove foreign material and debris from and around the exterior joints of the *motor*. Check the shaft and keyslot, remove all nicks, burrs or sharp edges that might damage the bearing housing seals when installing the shaft and the bearing assembly. Before starting the disassembly procedures, drain the oil from inside the *motor*.

Figure 1

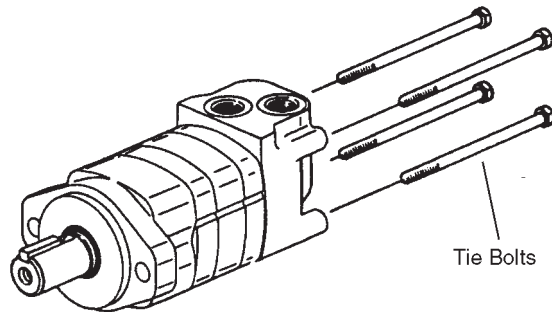


1. Place the *motor* in a vise with the output shaft down. Clamp across the mounting flange of the *motor*, not the housing. Excessive clamping pressure will cause distortion. When clamping, use some protective device on the vise, such as special soft jaws, pieces of hard rubber or board.

Although not all drawings show the motor in a vise, we recommend that you keep the motor in the vise during disassembly and reassembly. Follow the clamping procedures explained throughout the service procedures.

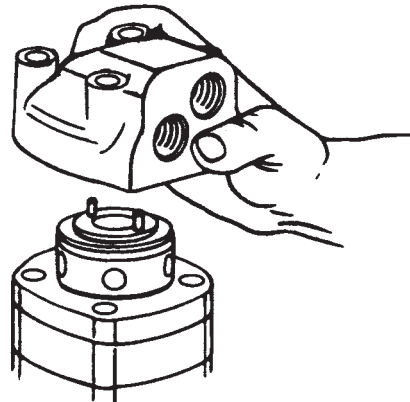
2. Remove 4 bolts from motor.

Figure 2



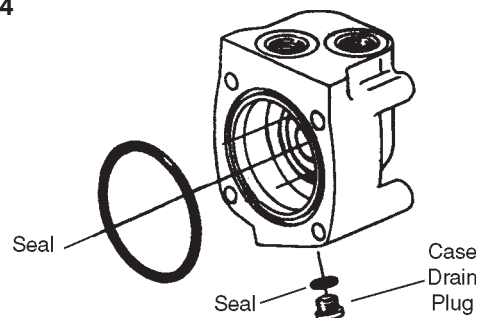
3. Lift valve housing straight up. If done carefully the pins, springs, balance ring assembly, and valve will remain on the valve plate.

Figure 3



4. Carefully remove 3 [76] diameter seal from valve housing.
5. Remove case-drain plug **with seal**, from valve housing.

Figure 4

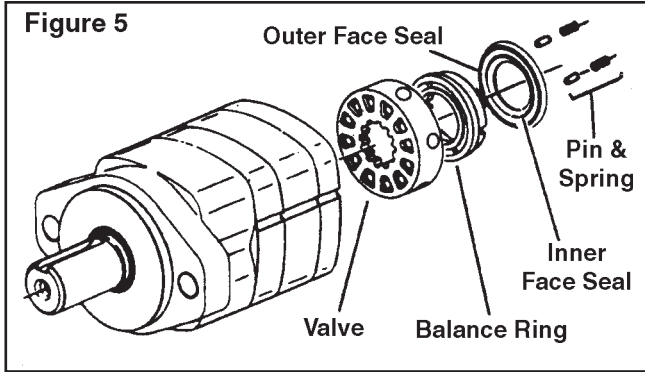


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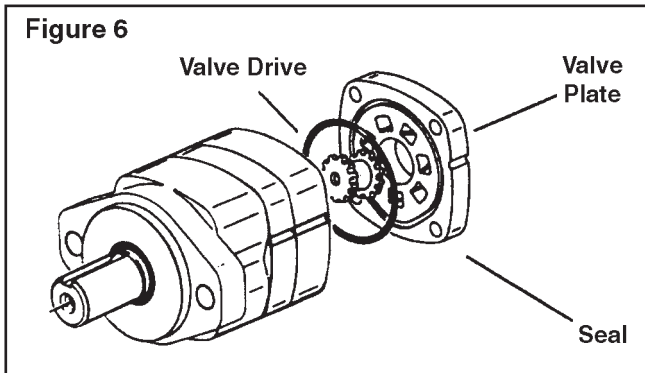
HYRAULIC MOTOR MODELS T150 & T250 SERVICE PROCEDURES

(Continued)

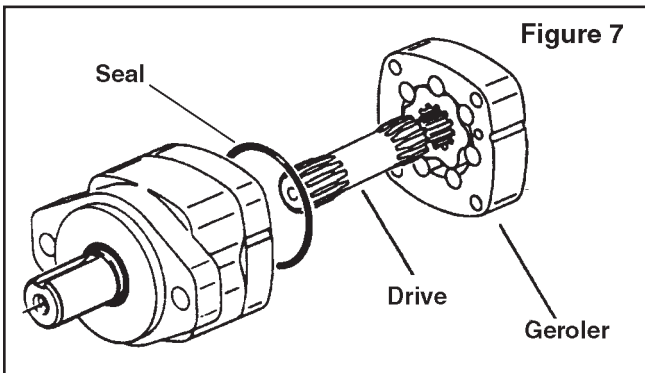
6. Remove 2 pins and 2 springs from the balance ring assembly (Fig. 5).



7. Remove balance ring assembly.
8. Remove inner and outer face seals from balance ring.
9. Remove the valve.



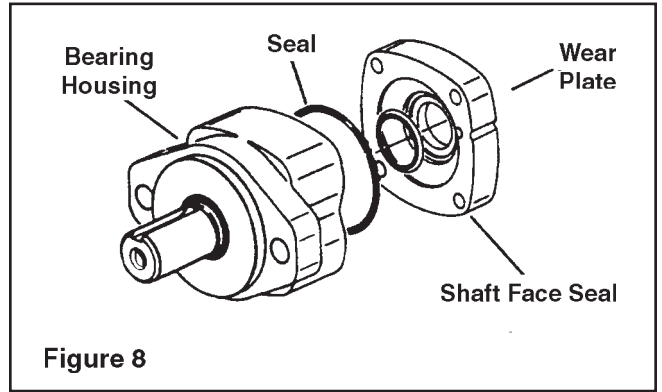
10. Remove the valve plate.
11. Remove the 3 [76] diameter seal.
12. Remove the valve drive.



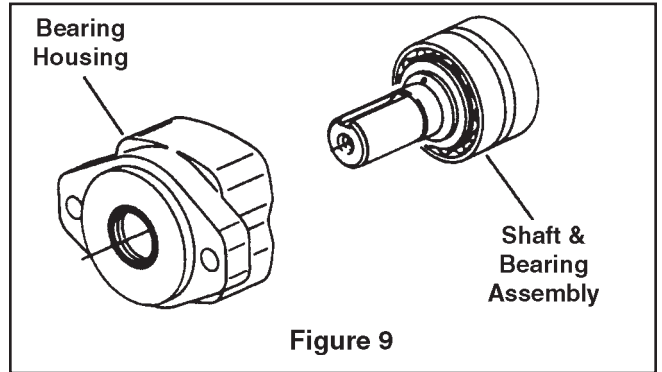
13. Remove the Geroler. Be sure to retain the rollers in the outer ring if they are loose.

14. Remove the drive.

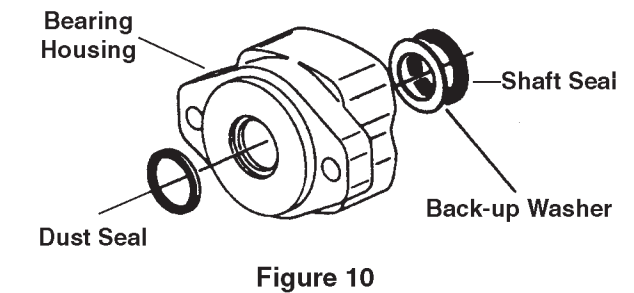
15. Remove the 3 [76] diameter seal from wear plate (Fig.7).



16. Remove the Wear Plate.
17. Remove the Shaft Face Seal from the Wear Plate.
18. Remove the 3 [76] diameter seal from Bearing Housing.



19. You may need a press to remove Shaft and Bearing Assembly from Bearing Housing.



20. Use a small screwdriver to remove Shaft Seal, Back-up Washer and Dust Seal from Bearing Housing (see Fig. 10). Do not damage bore of housing.

NOTE: Individual parts of shaft and bearing assembly are not sold separately. Replace as a unit.

Continued on next page

HYRAULIC MOTOR MODELS T150 & T250

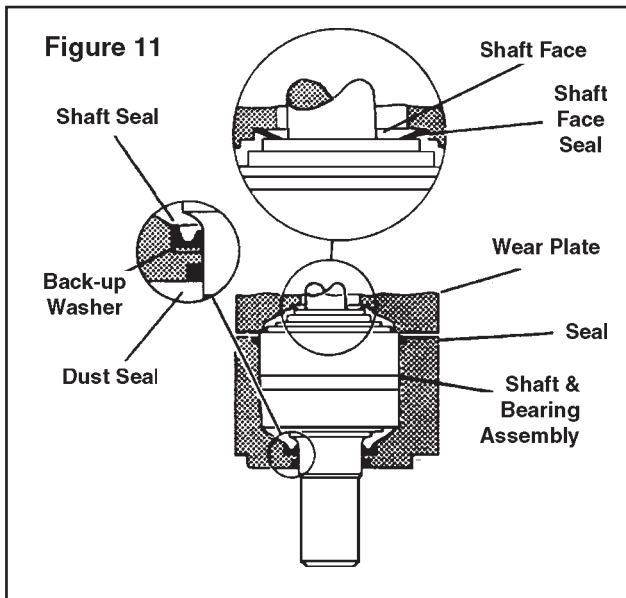
SERVICE PROCEDURES

REASSEMBLY:

Check all mating surfaces. Replace any parts that have scratches or burrs that could cause leakage. Clean all metal parts clean solvent. Blow dry with air. Do not wipe dry with cloth or paper towel because lint or other matter can get into the hydraulic system and cause damage. Do not use a coarse grit or try to file or grind these parts. Check around the keyway and chamfered area of the shaft for burrs, nicks or sharp edges that can damage the seals when reassembling the bearing housing.

Note: Lubricate all seals (prior to installation) with petroleum jelly such as Vaseline. Use new seals when reassembling this motor. Refer to parts list for proper seal kit number.

21. Use a press to install dust seal in outer bore of bearing housing. Lip of seal must face outward (see Fig.11). If a press is not available, use a plastic or rubber hammer, being careful not to damage or cock seal in the bore.



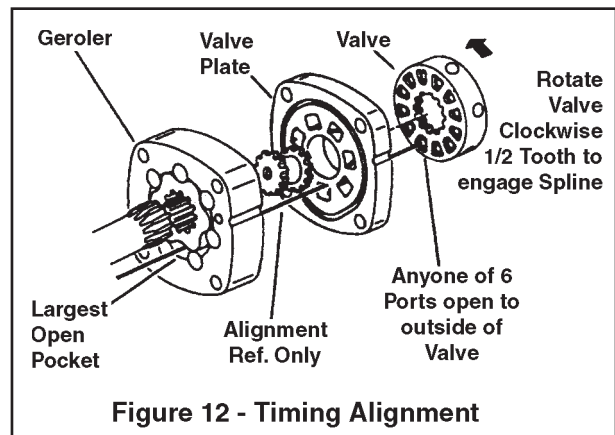
22. Place back-up washer into seal bore. Place shaft seal onto installation tool (#80-A3-300) and press seal onto seal bore of the housing.
23. Clamp housing in vise (see Fig. 1)
24. Place tape over shaft to prevent cutting the seals. Apply petroleum jelly to inside diameter of dust and shaft seal. You may need a press to install shaft and bearing assembly. Do not distort shaft seal. Damage to this seal will cause leakage.
25. Apply petroleum jelly to the 3 [76] diameter seal. Install seal into the bearing housing.

26. Alignment studs can be very helpful in reassembly of the motor (see special tools, pg. 15). If you use studs, install 2 studs diagonally opposed in the bearing housing.
27. Install the shaft face seal in the wear plate as shown in Fig. 11. Do not distort the seal.
28. Install the wear plate (see Fig. 11).
29. Apply a light film of petroleum jelly to the 3 [76] diameter seal and install seal in the wear plate.
30. Install the drive in the bearing housing.
31. Align the notch on the outside of the Geroler with the notch on the wear plate. Install the Geroler against the wear plate. Be sure to retain the rollers in the outer ring if they are loose.

Note: Installation at this time involves 3 steps in the timing of the motor. Timing determines the direction of rotation of the output shaft. Timing parts include:

1. Geroler
2. Valve Drive
3. Valve Plate
4. Valve

Timing Step #1: Locate the largest open pocket in the Geroler and mark it on the outside edge of the Geroler.



32. Install the valve drive in the Geroler.
33. Apply a light film of petroleum jelly to the 3 [76] diameter seal. Install seal in groove of valve plate.
34. Align the notch on the outside of the valve plate with the notch on the Geroler as shown in Fig. 12.

Timing Step #2: Locate the slot opening in the valve plate which is in line with the largest open pocket of the Geroler.

Continued on next page

HYRAULIC MOTOR MODELS T150 & T250

SERVICE PROCEDURES

(Continued)

Timing Step #3: Locate anyone of the side openings of the valve and align this opening with the open slot of the valve plate that is in line with the largest open pocket of the Geroler. Install the valve by rotating it clockwise until the spline teeth engage (1/2 spline tooth). This will provide the proper rotation when pressurized as shown in Fig. 13.

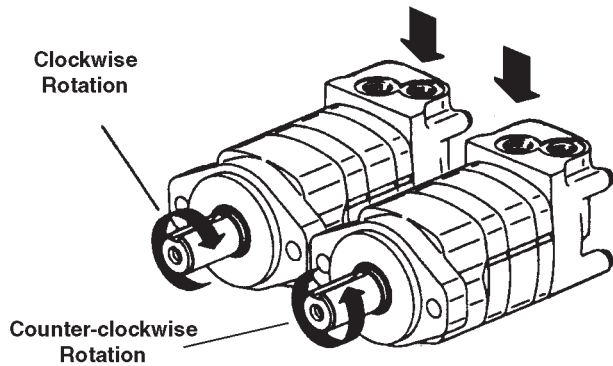


Figure 13

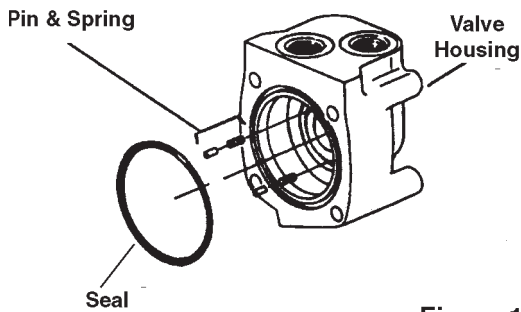


Figure 14

35. Install 2 springs and 2 pins in the holes located in the bore of the valve housing, as shown in fig. 14.
36. Apply a light film of petroleum jelly to the 3 [76] diameter seal. Install seal in the valve housing.
37. Apply petroleum jelly to inner and outer face seals. Install seals on balance ring as shown in Fig. 15.

IMPORTANT: Install face seals in the positions shown in Fig. 15 or the motor will not operate properly. Do not force or bend the face seals. Any damage to these seals will affect the operation of the motor.

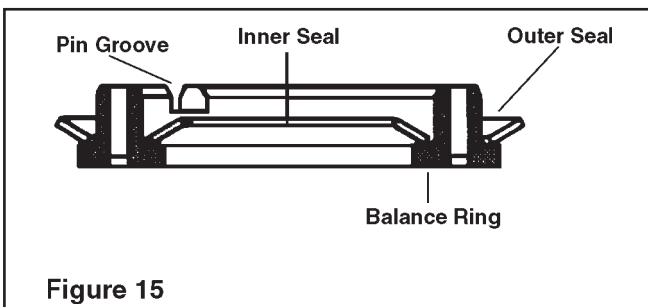


Figure 15

38. Align pin grooves in balance ring with pins in bore of valve housing. Install balance ring assembly in valve housing.

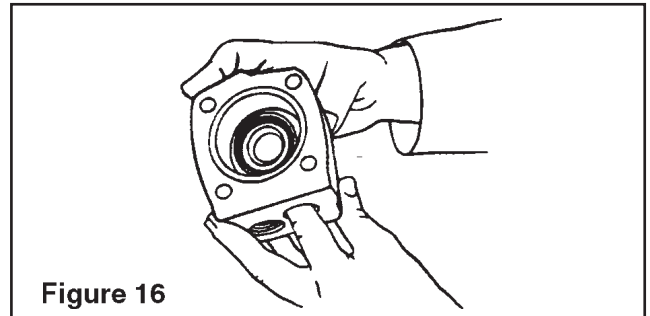


Figure 16

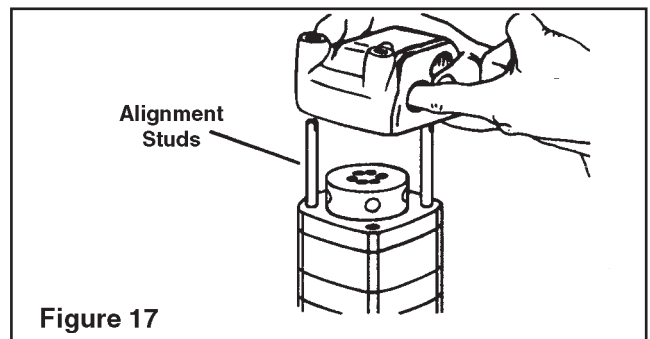


Figure 17

39. Insert your finger through port of housing. Apply pressure to side of balance ring as shown in Fig. 16. Hold the ring in position until valve housing is in place. Install valve against valve plate as shown in Fig. 17.

Note: After installing the valve housing on the valve plate, check for proper placement. Push down on the valve housing. You should get a slight spring action.

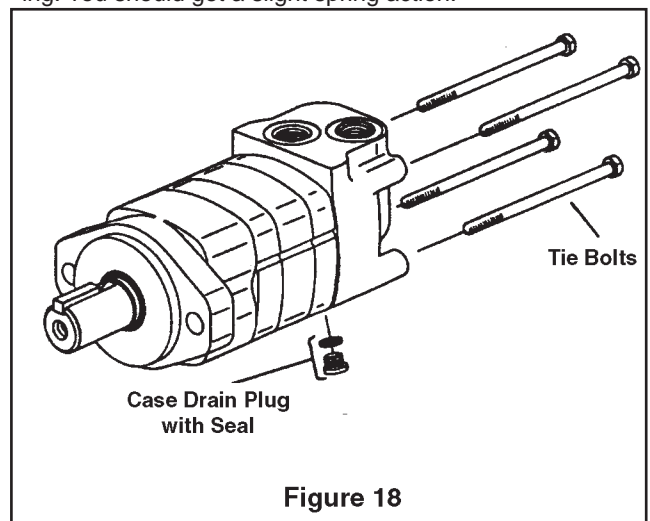
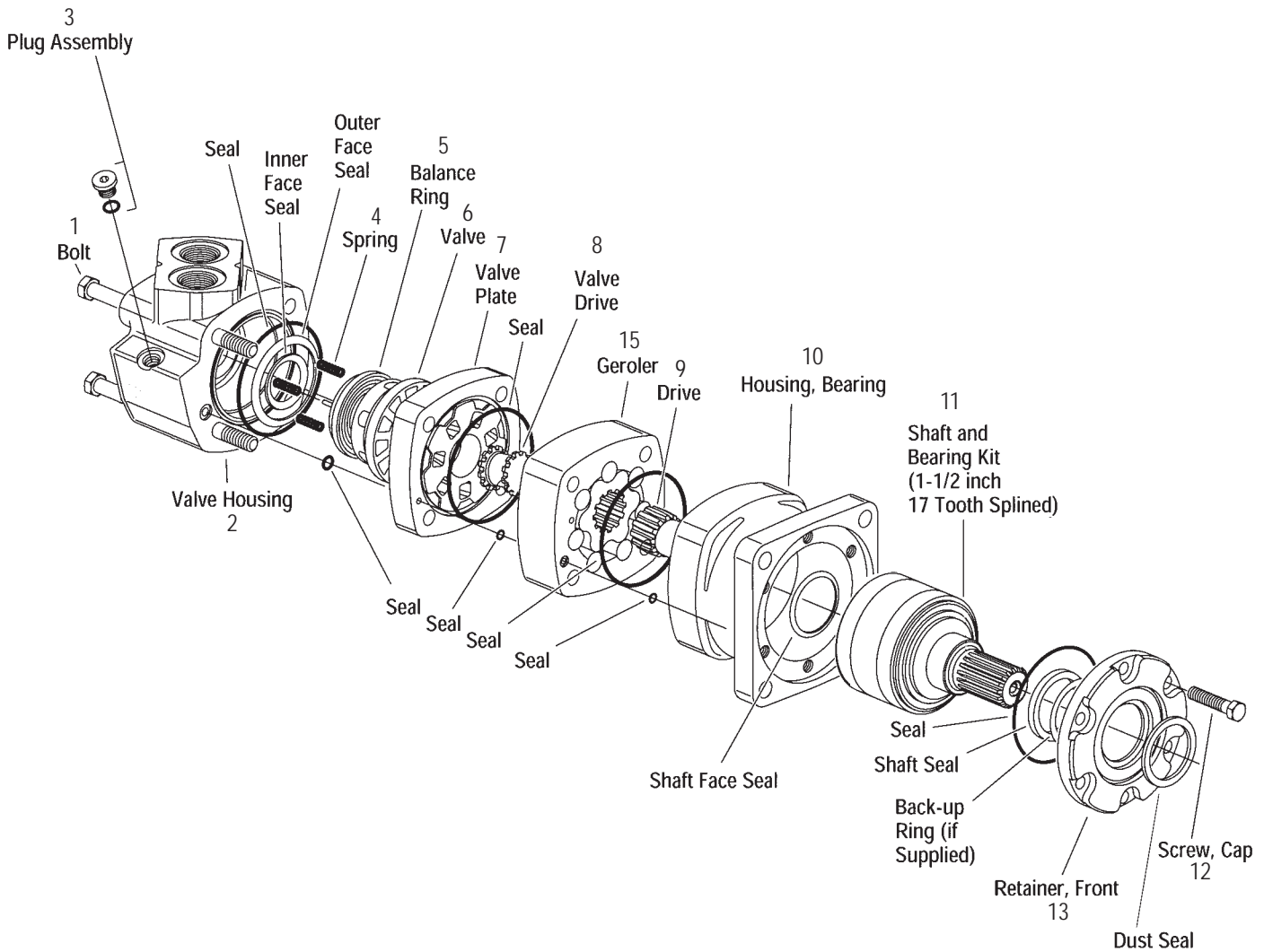


Figure 18

40. Install the tie bolts and finger tighten. Torque all 4 tie bolts alternately to 450 lb.-in. [50Nm].
41. Install seal on case drain plug then install in valve housing.

HYRAULIC MOTOR MODEL T350 EXPLODED VIEW & PARTS LIST



<u>Ref.#</u>	<u>Part#</u>	<u>Description</u>	<u>Quantity Required</u>
1.....	62600.....	Bolt	4
2.....	62601.....	Valve Housing	1
3.....	62602.....	Plug Assembly	2
4.....	62603.....	Spring.....	3
5.....	62604.....	Balance Ring.....	1
6.....	62605.....	Valve.....	1
7.....	62606.....	Valve Plate	1
8.....	62607.....	Valve Drive	1
9.....	62608.....	Drive	1
10.....	62609.....	Housing, Bearing.....	1
11.....	62610.....	Shaft and Bearing Assembly	1
12.....	62611.....	Cap Screw.....	6
13.....	62612.....	Retainer, Front.....	1
14.....	62613.....	Seal Kit, Includes All Seals Listed	1
15.....	62614.....	Geroler Set.....	1

HYRAULIC MOTOR MODEL T350

SERVICE PROCEDURES

DISASSEMBLY

Cleanliness is extremely important when repairing a hydraulic motor. Work in a clean area. Before disconnecting the lines, clean port area of motor thoroughly. Use a wire brush to remove foreign material and debris from exterior joints of motor. Check shaft and keyway, use 600 grit paper/cloth to remove all nicks, burrs, and sharp edges that might damage the shaft seals when installing retainer on shaft and bearing assembly. Before starting disassembly procedures, drain oil from inside of motor.

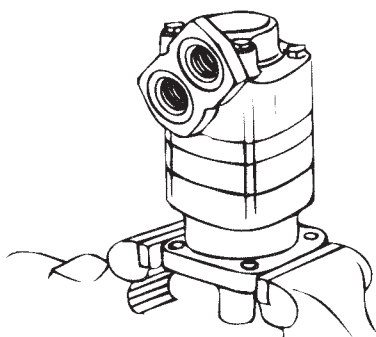


Figure 1

1 Place motor in a vise with output shaft down. Clamp across edge of bearing housing not on housing (see Figure 1). Excessive clamping pressure on housing will cause distortion. When clamping, use some protective device on vise, such as special soft jaws, pieces of hard rubber or board.

Although not all drawings show the motor in a vise, we recommend that you keep the motor in the vise during disassembly. Follow the clamping procedures explained throughout the manual.

2 Remove 4 bolts (or nuts for earlier models) from motor. Remove studs (earlier models) as shown in step 16.

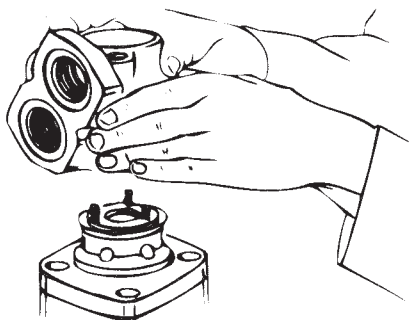


Figure 2

3 Lift valve housing straight up. If done carefully, the springs and balance ring subassembly will remain on valve for easy removal.

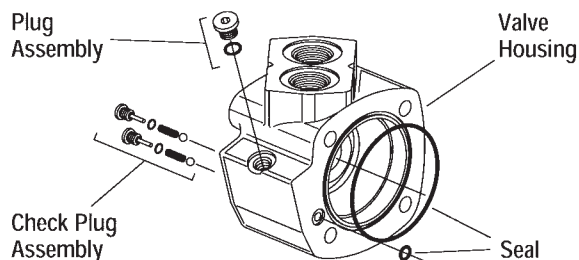


Figure 3

4 Carefully remove the following from the valve housing:

- 1 seal, 92,3 mm [3.63 inch] I.D.
- 1 seal, 7,6 mm [.30 inch] I.D.
- 2 check valve plug assemblies (plug, seal, spring, ball) 1 plug (case drain) with seal.

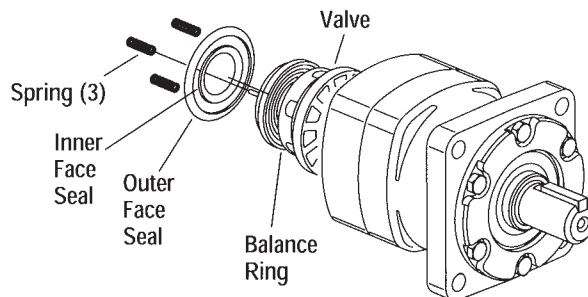


Figure 4

5 Remove 3 balance ring springs.

6 Remove balance ring subassembly.

7 Remove inner and outer face seals from the balance ring.

8 Lift off valve.

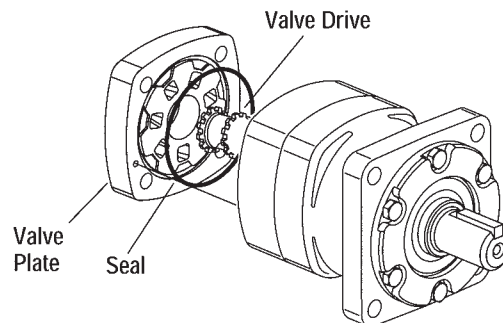


Figure 5

9 Remove valve plate.

10 Remove 95,0 mm [3.74 inch] I.D. seal from valve plate (see Figure 5).

11 Remove valve drive (see Figure 5).

Continued on next page

HYRAULIC MOTOR MODEL T350

SERVICE PROCEDURES

(Continued)

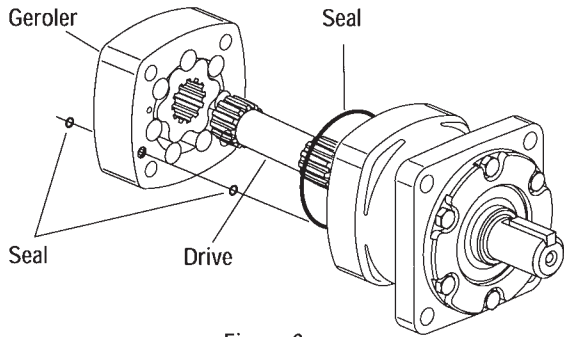


Figure 6

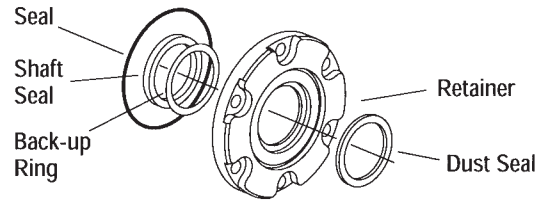


Figure 9

12 Remove Geroler. Retain rollers in outer Geroler ring if they are loose.

13 Remove 2 seals (6,1mm [.24 inch]) from Geroler, 1 seal on each side of Geroler.

14 Remove drive.

15 Remove 95,0 mm [3.74 inch] I.D. seal from bearing housing.

16 Use a stud remover or vise grips to remove studs (earlier models only). Then clamp bearing housing in vise as shown in Figure 7. Loosen 6 bolts. Then remove bolts and retainer. You may have to pry retainer free but do not damage housing or retainer.

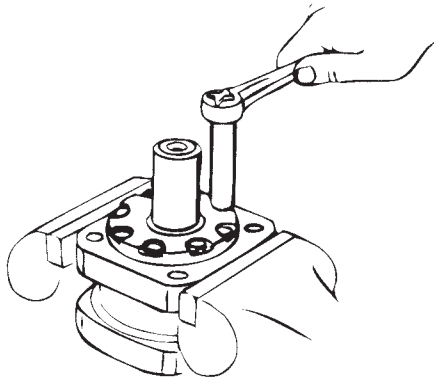


Figure 7

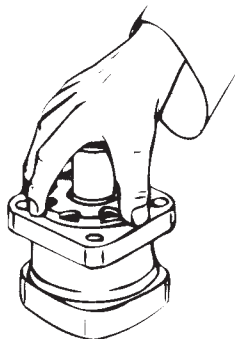


Figure 8

17 Remove 92,3 mm [3.64 inch] I.D. seal, shaft seal and back-up ring (if supplied) from retainer. Use a small screwdriver to remove dust seal. Do not damage bore of retainer.

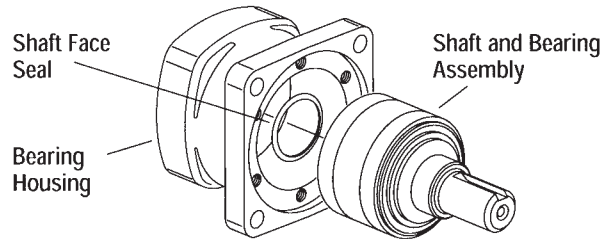


Figure 10

18 Remove shaft and bearing assembly. You may need a press to remove shaft and bearing assembly (see Figure 10).

19 Remove shaft face seal from bore of bearing housing (see Figure 10). Do not damage bore of bearing housing.

Note: Individual parts of the shaft and bearing assembly are not sold separately and must be replaced as a unit.

HYRAULIC MOTOR MODEL T350

SERVICE PROCEDURES

REASSEMBLY

Check all mating surfaces. Replace any parts that have scratches or burrs that could cause leakage. Clean all metal parts in clean solvent. Blow dry with air. Do not wipe with cloth or paper towel because lint or other matter could get into the hydraulic system and cause damage. Do not use a coarse grit papers/cloth or try to file or grind motor parts. Check around the keyway and chamfered area of the shaft for burrs, nicks, or sharp edges that can damage the seals when reassembling the retainer.

Note: Lubricate all seals (prior to installation) with petroleum jelly such as Vaseline®. Use new seals when reassembling the motor. Refer to parts list (6-127 6000 Series -005 and 6-159 6000 Series -006) for replacement parts and proper kit number.

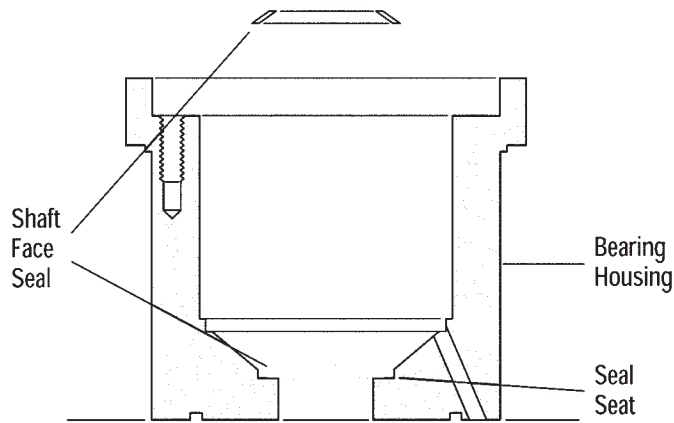


Figure 11

20 Place bearing housing on smooth flat surface with largest open end of housing up.

Apply petroleum jelly to shaft face seal. Install seal in seal seat. Seat seal properly in groove (see Figure 11 and 14). A damaged or improperly installed shaft face seal could cause internal lubrication loss and subsequent parts wear.

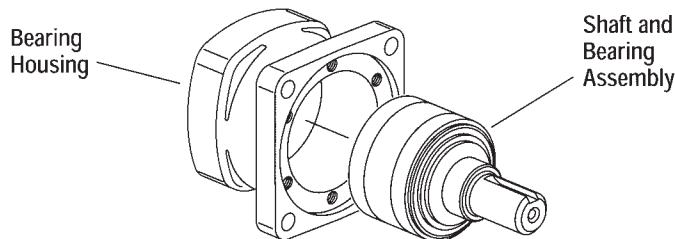


Figure 12

21 Install shaft and bearing assembly in bearing housing (see Figure 12). Do not damage seal in bore of housing. You may need a press to install shaft and bearing assembly.

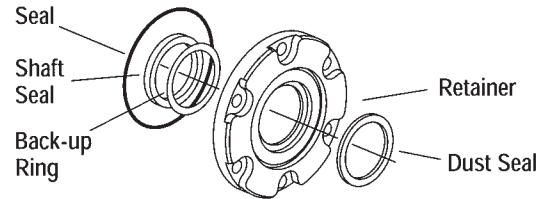


Figure 13

22 Use a small press, if available, to install dust seal in retainer. Metal side of dust seal must face toward retainer as shown in Figure 14. If a press isn't available, use a plastic or rubber hammer to tap dust seal in place.

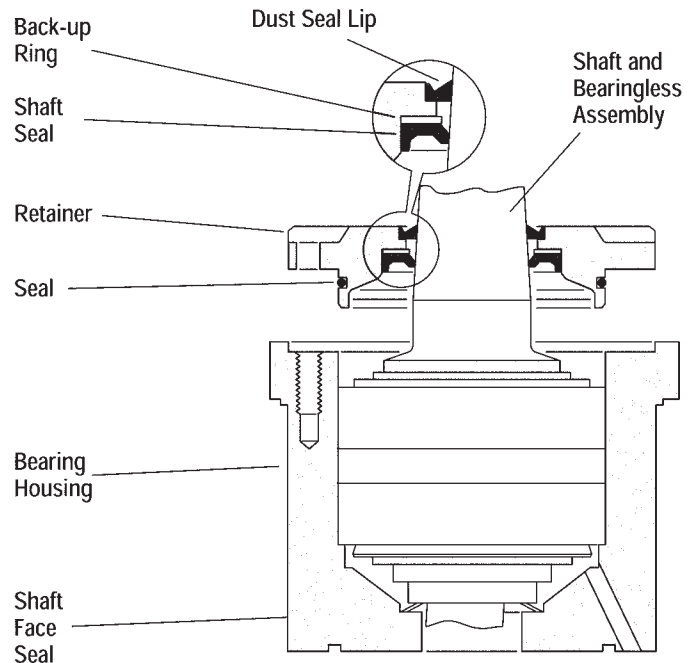


Figure 14

23 Install 92,3 [3.64] I.D. seal, back-up ring and shaft seal in retainer. Flat or smooth side of shaft seal must face toward retainer as shown in Figure 14. Apply petroleum jelly to inside diameter of shaft seal (after installing seal).

24 Before installing retainer, place a protective sleeve of bullet (see note below) over shaft. Grease inside diameter of dust and shaft seals. To prevent damage to seals, install retainer over shaft with a twisting motion. Do not cut or distort shaft seal. Damage to shaft seal will cause external leakage.

Note: Bullet 600464 for 1-1/2 inch diameter shafts available—by special order through our service department.

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HYRAULIC MOTOR MODEL T350

SERVICE PROCEDURES

(Continued)

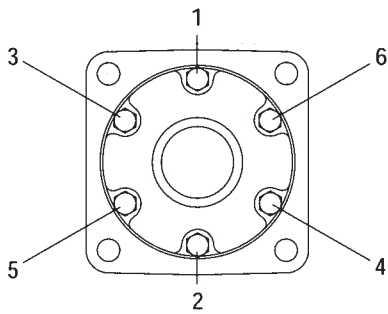


Figure 15

25 Lubricate threads of 6 bolts with a film of light oil. Install and finger tighten all 6 bolts. Torque bolts to 6 Nm [50 lb-in] in sequence (see Figure 15). Then final torque to 34 Nm [300 lb-in], in sequence.

Note: Full torque 34 Nm [300 lb-in] on one bolt at a time can damage bolt or retainer.

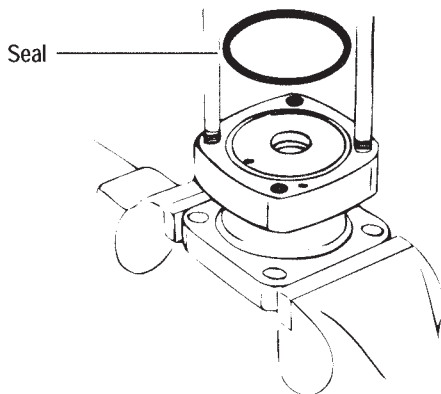


Figure 16

27 Reposition motor in vise with output shaft down. Clamp across edges of retainer as shown in Figure 16.

28 Pour a small amount of light oil inside the output shaft.

29 Install 2 studs (earlier models), diagonally opposed, in bolt holes of bearing housing (see Figure 16). If you replace studs with bolts, use 2 studs for alignment purposes when stacking parts.

30 Apply a light film of petroleum jelly on 95,0 mm [3.74 inch] I.D. seal. Install seal in bearing housing (see Figure 16).

31 Install drive in output shaft (insert longer splined end of drive first), (see parts drawing on page 3).

32 Apply petroleum jelly on 2 seals, 6,1 mm [.24 inch] I.D. Install seals (1 on each side of Geroler) in case drain grooves of Geroler.

Note: Installation at this point involves 3 steps in timing the motor. Timing determines the direction of rotation of the output shaft.

Timing parts include:

1. Geroler
2. Valve drive
3. Valve Plate
4. Valve

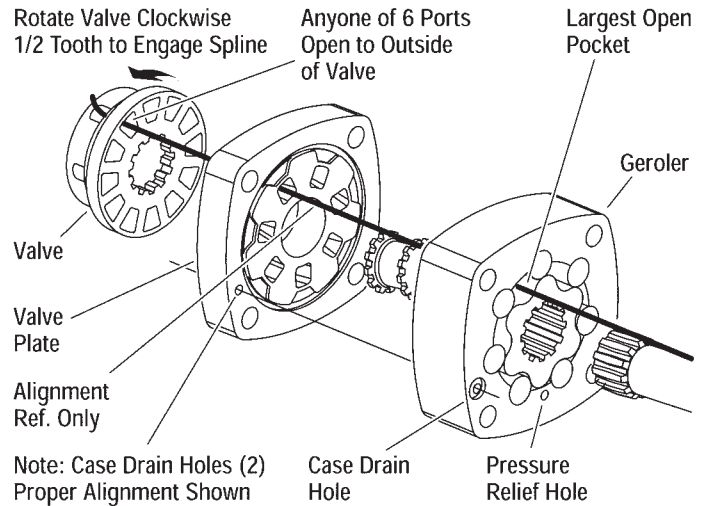


Figure 17 Timing Alignment

Timing Step No. 1 — Locate largest open pocket in Geroler. Then mark location of pocket on outside edge of Geroler (see Figure 17).

33 Align case drain hole and pressure relief hole in Geroler with case drain hole and pressure relief hole in bearing housing. Install Geroler on bearing housing (see Figure 17). Retain rollers in outer Geroler ring if they are loose.

34 Install valve drive in Geroler.

35 Apply a light film of petroleum jelly on 95,0 mm [3.74 inch] I.D. seal. Install seal in valve plate.

36 Align case drain hole in valve plate with case drain hole in Geroler. Install valve plate (seal side toward Geroler) on Geroler as shown in Figure 17.

Timing Step No. 2 — Locate slot opening in valve plate which is in line with largest open pocket of Geroler (see Figure 17).

37 Use the following procedure for installing the valve on the valve plate.

Timing Step No. 3 — Locate any one of the side openings of the valve that goes through to the face of the valve. Line up this side opening in the valve with open slot of valve plate that is in line with largest open pocket of Geroler. Rotate valve clockwise (1/2 spline tooth) to engage valve with the valve drive spline, alignment reference shown in Figure 17 (above). This procedure provides standard timing when pressurized as shown in Figure 18 (below) .

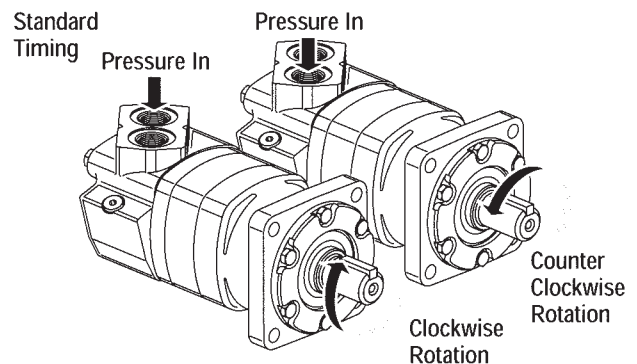


Figure 18

HYRAULIC MOTOR MODEL T350

SERVICE PROCEDURES

(Continued)

38 Apply clean grease on 3 balance ring assembly springs. Install springs in 3 holes located inside bore face of valve housing (see Fig. 19).

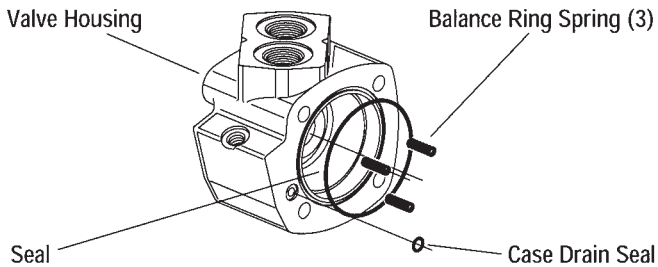


Figure 19

39 Apply a light film of petroleum jelly on 7,6 mm [.30 inch] I.D. seal. Install seal in case drain groove of valve housing.

40 Apply a light film of petroleum jelly on 92,3 mm [3.63 inch] I.D. seal. Install seal in outside seal groove of valve housing.

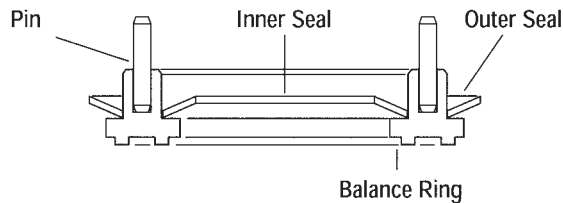


Figure 20

41 Apply petroleum jelly on inner and outer face seals. Install seals on balance ring as shown in Figure 20.

Important: Install face seals in the positions shown in Figure 20 or the motor will not operate properly. Do not force or bend these face seals. Any damage to these seals will affect the operation of the motor.

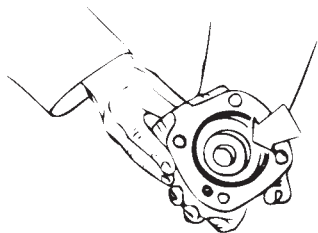


Figure 21

42 Align balance ring assembly pins with 2 holes in valve housing (see Figure 21). Install balancing ring subassembly in valve housing.

43 Insert your finger through port of housing. Apply pressure to side of balance ring assembly. Hold ring in position until valve housing is in place (see Figure 21). Align case drain hole in housing with case drain hole in valve plate. Install valve housing against valve plate (see Figure 22).

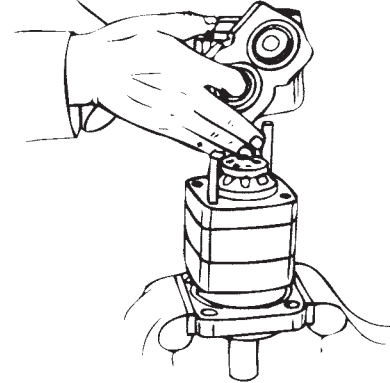


Figure 22

Note: After installing valve housing on valve plate, check between body parts of motor for unseated seals.

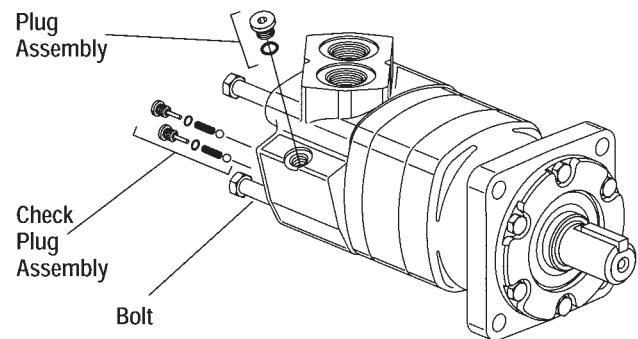


Figure 23

44 Install and finger tighten 2 bolts (or studs for earlier models) opposite alignment studs. Remove alignment studs and install remaining bolts (or studs and 4 nuts for earlier models). Torque bolts (or nuts) to 98 Nm [864 lb-in/ 72 lb-ft], in sequence (see Figure 24).

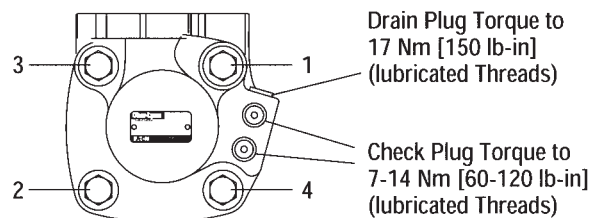
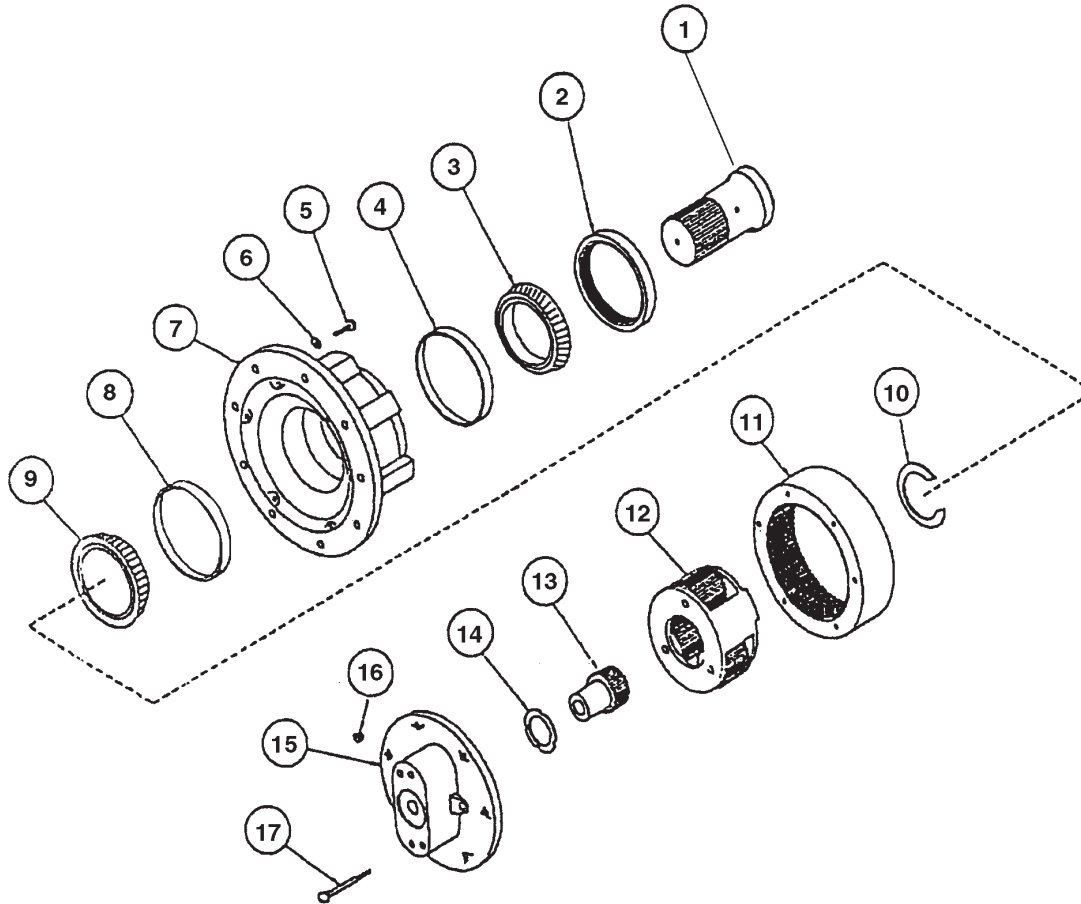


Figure 24

45 Install 2 check plug assemblies (ball, spring, plug with seal). Also install case drain plug with seal, parts shown in Figure 23 and plug torque shown in Figure 24.

TRENCHER MODELS T150, T250, T350 PLANETARY EXPLODED VIEW & PARTS LIST



Ref. #	Part #	Description	Qty.
1.....	69500.....	Output Shaft	1
2.....	69502.....	Oil Seal	1
3.....	69003.....	Outer Bearing Cones.....	1
4.....	69004.....	Bearing Cup.....	2
5.....	69005.....	Housing Bolt	6
6.....	69006.....	Housing Flat Washer	6
7.....	69501.....	Hub	1
8.....	69004.....	Bearing Cup.....	1
9.....	69008.....	Inner Bearing Cone.....	1
10.....	69009.....	Retaining Ring Set.....	1
11.....	69010.....	Ring Gear	1
12.....	69011.....	Carrier Assembly	1
13.....	69012.....	Sun Gear (Models T150 & T250).....	1
13.....	69042.....	Sun Gear (Model T350)	1
14.....	69013.....	Thrust Washer	1
15.....	69014.....	Cover (Models T150 & T250)	1
15.....	69041.....	Cover (Model T350).....	1
16.....	69015.....	Magnetic Pipe Plug.....	1
17.....	69016.....	Top Cover Bolts	8

TRENCHER MODELS T150, T250, T350 PLANETARY SERVICE PROCEDURES

General Instructions:

- To facilitate the repair of these units and before any work is done, we suggest that you first read all of the steps used in disassembly and assembly of unit.
- It is important to air blast all parts and wipe them with clean, lint free cloth before assembly.
- It is a good idea to check all replacement parts closely before installing to ensure that no damage occurred during shipment.

Caution:

- If parts are stubborn during assembly, do not force them and never employ an iron hammer.
- Never hammer bearing cones or cups. Use only an arbor press or other suitable tool.

Disassembly:

1. Index mark all sections with a punch. Be sure to align all these marks when reassembling.
2. Remove bolts (17) from cover (15). Lift cover (15) from assembly. Thrust Washer (14) usually remains with cover (15).
3. Lift sun gear (13) from carrier assembly (12). Remove carrier assembly (12).
4. Remove 6 hex bolts (5) and washers (6) from hub (7). Pull ring gear (11) from remaining assembly. It may be necessary to strike ring gear (11) with a rubber mallet to loosen from hub (7)
5. **Warning! Eye protection should be worn during retaining ring removal.** Remove retaining ring (10) from groove in output shaft (1). Pull output shaft (1) from Hub (7). **Note:** To remove retaining ring, use retaining ring expander tool.
6. Remove oil seal (2) and bearing cones (3 & 9) from hub (7). Inspect bearing cups (4 & 8) in hub (7) and remove only if replacement is required.

Assembly:

1. Press new bearing cups (4 & 8) into each side of hub (7). It is recommended that the bearing cups (4 & 8) and Cones (3 & 9) be replaced in sets.
2. Assemble bearing cone (3) into cup (4) at seal end of Hub (7).
3. Lubricate lips of oil seal (2) and lower hub (7) onto output shaft (1). Keep hub (7) centered to prevent damage to oil seal (2).
4. **Warning! Eye protection should be worn during retaining ring installation.** Assemble bearing cone (8) over output shaft (1) and into bearing cup (8). Select the thickest retaining ring (10) that can be assembled into ring groove on output shaft (1) above bearing. Bearings should have from .000 to .006 inches end-play when proper retaining ring (10) is installed.
5. Apply a bead of silicone sealant to face
6. Assemble ring gear (11) to hub (7) being careful to align all bolt holes.
7. Install six hex bolts (5) and washers (6). Torque bolts to 52-60 ft-lbs.
8. Place carrier assembly (12) into ring gear (11) aligning the gear teeth. Carrier splines mesh with splines on output shaft (1). Place sun gear (13) into carrier assembly (12). Sun gear (13) should turn freely by hand.
9. Apply a bead of silicone to cover face of ring gear (11).
10. Secure thrust washer (14) with tangs engaged in cover (15). Note: Thrust washer (14) can be secured to cover (15) with a small amount of grease or silicone sealant. Assemble cover (15) to ring gear (11).
11. Install eight bolts (17) and torque to 20-25 ft-lbs.
12. Position unit with output shaft pointing down and fill until oil just begins to flow from fill plug (approximately 2 pints).

