

GRADER
PLANNER
ROLLER
CRANE

Shop Manual E-12.10

MAIN SYSTEM PUMP (COMMERCIAL SHEARING)

Applicable Models

RP-30
 T-500C
 T-500M
 T-600C

Serial Numbers

01001 & Up
 07995 & Up
 07995 & Up
 02539 & Up

CAUTION

- ALL** COMPONENTS MUST BE PROPERLY SUPPORTED DURING DISASSEMBLY AND ASSEMBLY.
- ALL** JACKING HOISTING AND GENERAL WORKSHOP EQUIPMENT REQUIRED FOR THIS OPERATION MUST BE IN GOOD WORKING ORDER.
- EXTREME** CAUTION TO BE OBSERVED AT ALL TIMES TO PREVENT INJURY.
- SAFE** WORKSHOP PRACTICES ARE A MUST.

CONTENTS

	<u>Page</u>
Torque Sheet	Back of Cover
T-500C, T-500M, & T-600C Main System Pump Removal	1
RP-30 Main System Pump Removal	2
Main System Pump Disassembly	3
Cleaning	6
Inspection of Components	7
Main System Pump Reassembly	8
T-500C, T-500M, & T-600C Main System Pump Installation	12
RP-30 Main System Pump Installation	13
Start-Up Procedure	14
Special Tools	15



Galion Manufacturing Division

Dresser Industries, Inc., Galion, Ohio 44833, USA

GENERAL TORQUE VALUES

HEAT TREATED MATERIAL SAE GRADE 5 & GRADE 8				
THREAD SIZE	NOTE: INCREASE VALUES 1/3 FOR DRY THREADS			
	GRADE 5 (3 radial dashes on bolt or cap screw head)		GRADE 8 (6 radial dashes on bolt or cap screw head)	
	Foot-Pounds	Metric Kgm	Foot-Pounds	Metric Kgm
1/4 - 20	6	0,8	9	1,2
1/4 - 28	7	0,9	11	1,5
5/16 - 18	13	1,8	18	2,5
5/16 - 24	15	2,1	21	2,9
3/8 - 16	24	3,3	34	4,7
3/8 - 24	27	3,7	38	5,3
7/16 - 14	38	5,3	54	7,5
7/16 - 20	42	5,8	60	8,3
1/2 - 13	58	8,0	82	11,3
1/2 - 20	65	8,9	90	12,4
9/16 - 12	84	11,6	120	16,6
9/16 - 18	93	12,9	132	18,2
5/8 - 11	115	15,9	165	22,8
5/8 - 18	130	17,9	185	25,6
3/4 - 10	205	28,3	290	40,1
3/4 - 16	230	31,8	320	44,2
7/8 - 9	305	42,2	455	62,9
7/8 - 14	335	46,3	515	71,2
1 - 8	455	62,9	695	96,1
1 - 14	510	70,5	785	108,5
1 1/8 - 7	610	84,3	990	136,9
1 1/8 - 12	685	94,7	1110	153,5
1 1/4 - 7	860	118,9	1400	193,6
1 1/4 - 12	955	132,0	1550	214,3
1 3/8 - 6	1130	156,2	1830	253,0
1 3/8 - 12	1290	178,3	2085	288,3
1 1/2 - 6	1500	207,4	2430	335,9
1 1/2 - 12	1690	233,7	2730	377,4
1 3/4 - 5	2370	327,7	3810	526,8
2 - 4 1/2	3550	490,8	5760	796,3

T-500C & M AND T-600C MAIN SYSTEM PUMP REMOVAL

The following is only one method of obtaining a removal of the main system pump from your grader.

Remove four capscrews and lockwashers (1) and split flange (2) from each side of pump (3) to disconnect hoses (4 & 5). Plug hoses.

Match mark pump (3) and transmission (6) as shown. Remove four nuts and lockwashers (7) from studs (8). Pull pump (3) straight forward to remove from transmission (6).

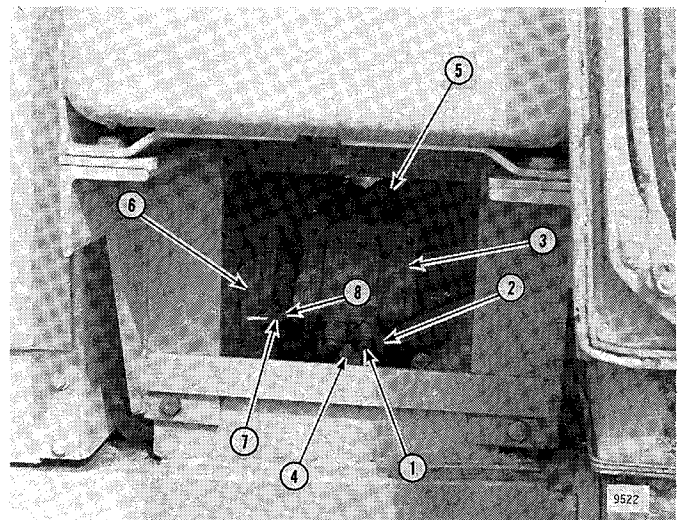


Figure 1

RP-30 MAIN SYSTEM PUMP REMOVAL

The following is only one method of obtaining a removal of the main system pump from the RP-30 Road Planer.

Remove two nuts, lockwashers, washers and capscrews (1).

NOTE: *If planer is not equipped with a cab, there are three more additional capscrews and lockwashers along back of seat box cover (4) to remove.*

Remove two nuts (2) and lift seat (3) and seat box cover (4) off seat box (5).

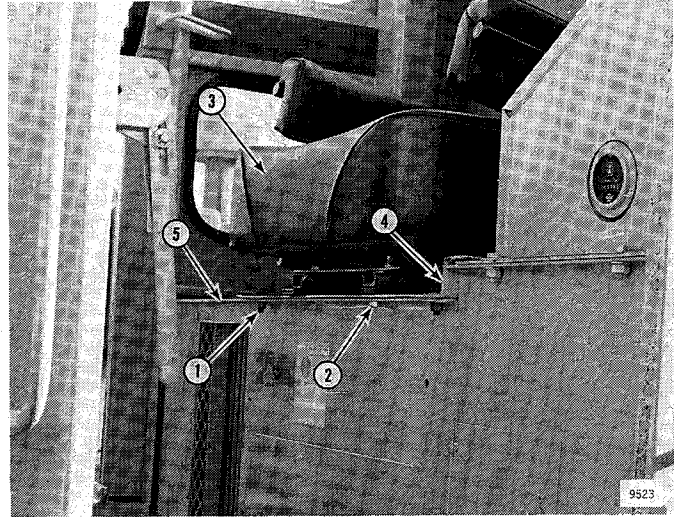


Figure 2

Remove four capscrews and lockwashers (1) and split flange (2) from each side of pump (3) to disconnect hoses (4 & 5). Plug hoses.

Match mark pump (3) and transmission (8) as shown. Remove four nuts and lockwashers (6) from studs (7). Pull pump (3) straight forward to remove from transmission (8).

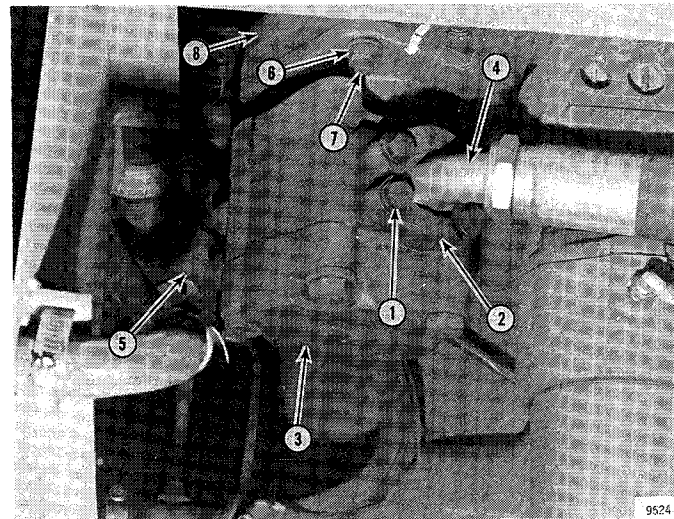


Figure 3

MAIN SYSTEM PUMP DISASSEMBLY

The following procedure is only one method of obtaining a complete disassembly of the main system pump.

Clean all dirt and oil from pump (1) being careful to keep any contamination out of pump's interior. Position pump in a vise and match mark as shown.

Remove four capscrews and lockwashers (2), and end cover (3) from pump (1).

NOTE: *End cover may have to be gently pried off. Do not damage machined surfaces.*

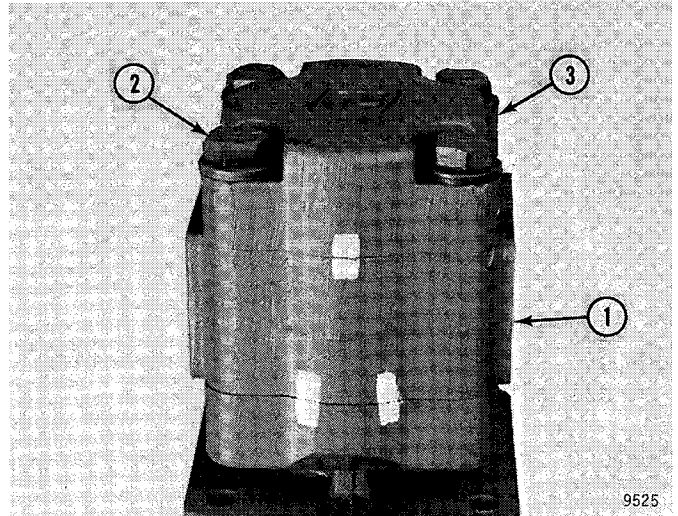


Figure 4

Remove both bearings (1) and ring seal (2) from end cover (3) if replacement is necessary.

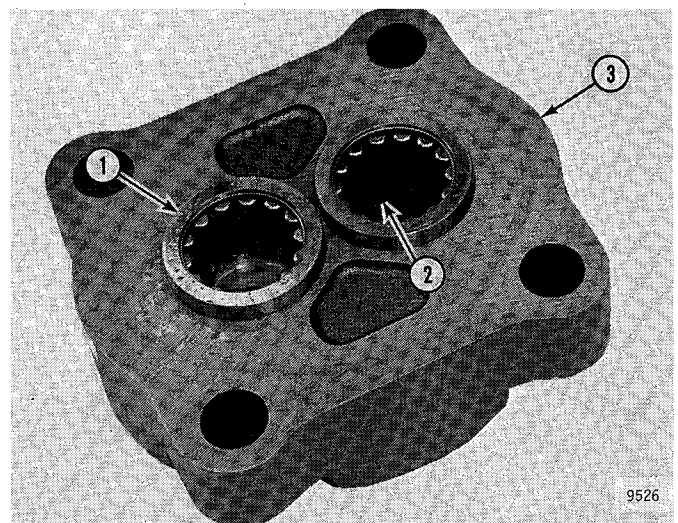


Figure 5

Remove six pocket seals (1) from thrust plate (2).

Remove seal (3) from gear housing assembly (4).

Remove gear housing assembly (4) from shaft end cover (5).

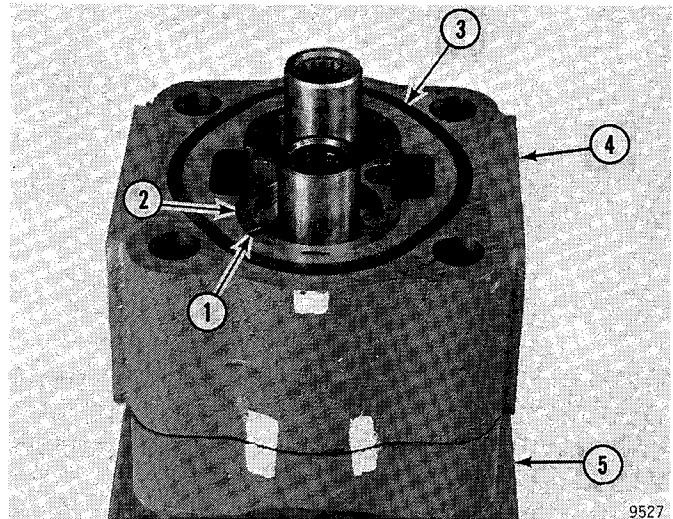


Figure 6

Remove six pocket seals (1) from bottom thrust plate (2).

Remove seal (3) from gear housing assembly (4).

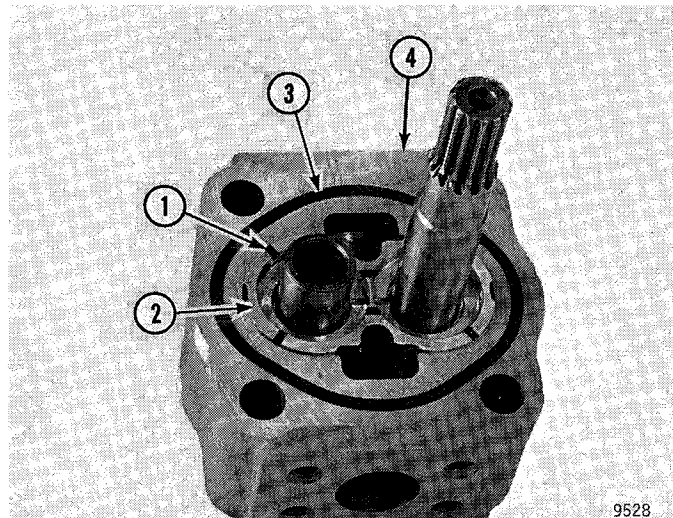


Figure 7

Position gear housing (1) on its side. With a soft face hammer tap gear shaft ends (2 & 3) to remove thrust plate (4) and gear shafts from housing.

NOTE: *Note the location of each gear shaft in the housing for reassembly.*

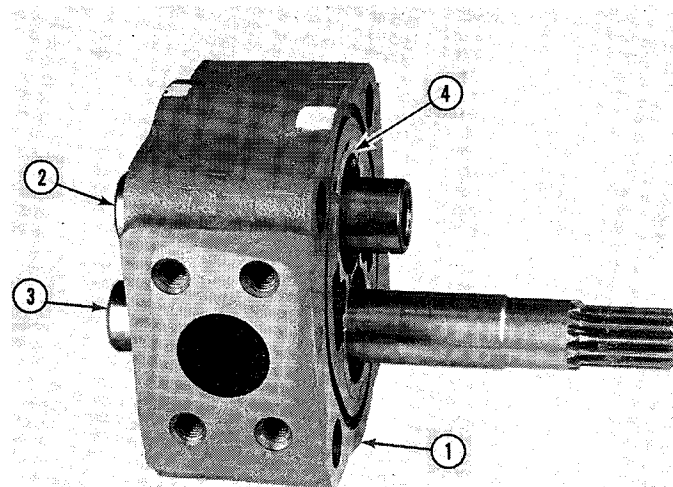


Figure 8

Remove remaining thrust plate (1) from housing (2).

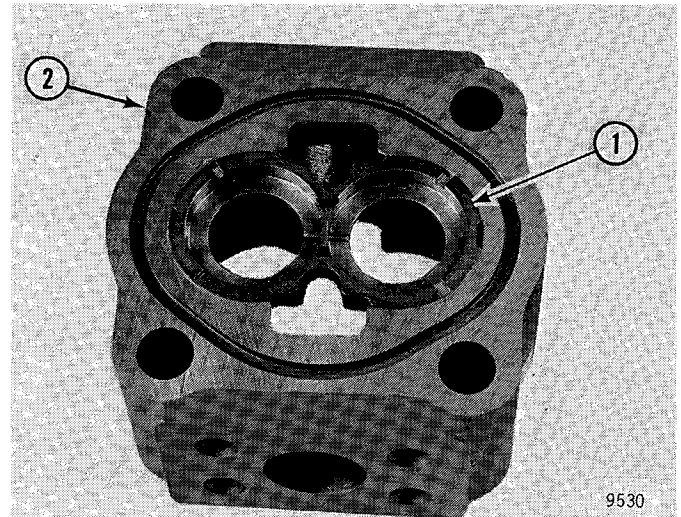


Figure 9

Remove both bearings (1) and ring seal (2) from shaft end cover (3) if replacement is necessary.

Remove plug (4) from shaft end cover (3) for cleaning purposes.

NOTE: *Note position of plug when removed.*

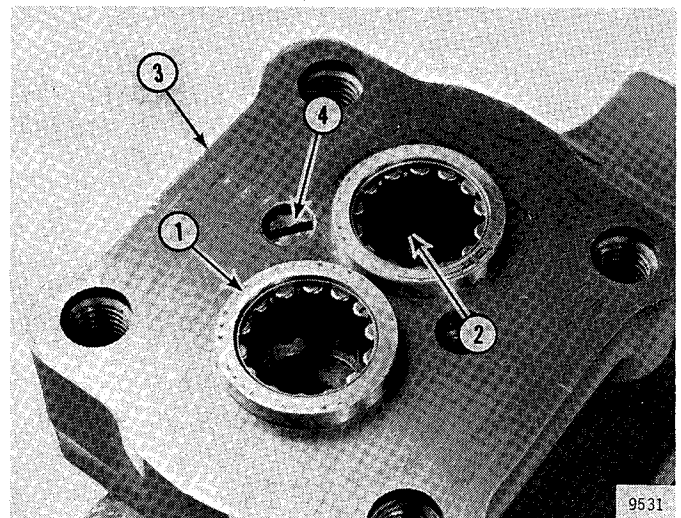


Figure 10

Remove seal (1) from shaft end cover (2).

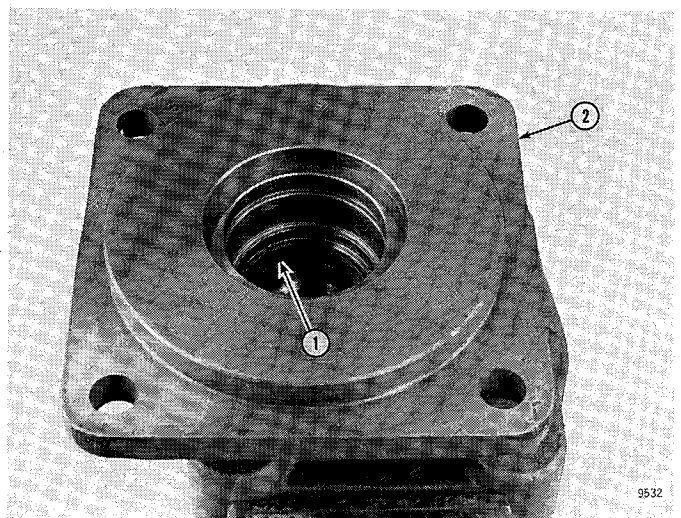


Figure 11

CLEANING

- A. Clean all metal parts thoroughly using a suitable type cleaning fluid.

NOTE: *Be careful not to use a solvent on the thrust plates that has an adverse effect on bronze.*

It is recommended that parts being immersed in cleaning fluid be moved up and down slowly until all hydraulic oil and foreign material is dislodged and parts are thoroughly cleaned.



CAUTION

CARE SHOULD BE EXERCISED TO AVOID SKIN RASHES, FIRE HAZARDS AND INHALATION OF VAPORS WHEN USING SOLVENT TYPE CLEANERS.

- B. Clean bearings in a suitable type cleaning fluid. Follow cleaning instructions mentioned in paragraph "A".

INSPECTION OF COMPONENTS

- A. Gear Housings: Wear in excess of .005" cut-out necessitates replacement of the gear housing.

Place a straight-edge across the inside bores at various locations. If you can slip a .005" feeler gauge under the straight-edge in the cut-out areas(s), replace the gear housing.

Pressures push the gears against the housing on the system working inlet low pressure side. As the hubs and bearings wear, the cut-out becomes more pronounced. Excessive cut-out in a short period of time indicates excessive pressure or oil contamination. If the relief valve settings are within prescribed limits, check for shock pressures or tampering. Withdraw oil sample and check it and tank for dirt.

- B. Gears: Any wear on gear hubs detectable by touch, or in excess of .002" necessitates replacement. Scoring, grooving, or burring of outside diameter of teeth requires replacement. Nicking, grooving, or fretting of teeth surfaces also necessitates replacement.

- C. Drive Shaft: Replace if there is any wear detectable by touch in the seal areas or at drive coupling. .002" wear is the maximum allowable.

Wear in the shaft seal area indicates oil contamination. Wear or damage to splines necessitates replacement.

- D. Thrust Plates: The thrust plates seal the gear section at the sides of the gears. Wear here will allow internal slippage, that is, oil will by-pass within the pump.

.002" maximum wear is allowable. Replace thrust plates if they are scored, eroded or pitted.

Check center of thrust plate where the gears mesh. Erosion here indicates oil contamination.

Pitted thrust plates indicate cavitation of oil aeration.

Discolored thrust plates indicate overheating, probably insufficient oil.

- E. Bearings: If gears are replaced, bearings must be replaced. Bearings should fit into bore with a light press fit. A neat hand fit is allowable. If bearings can fall out, bore maybe oversize,

- F. Seals: Replace all rubber and polymer seals whenever disassembling pump. Include all pocket seals behind thrust plates, shaft seal and housing seals.

MAIN SYSTEM PUMP REASSEMBLY

The following procedure is only one method of obtaining a complete reassembly of the main system pump.

Coat outside of new seal (1) and its recess in shaft end cover (2) with purple locite seal retainer and install seal using a suitable press.

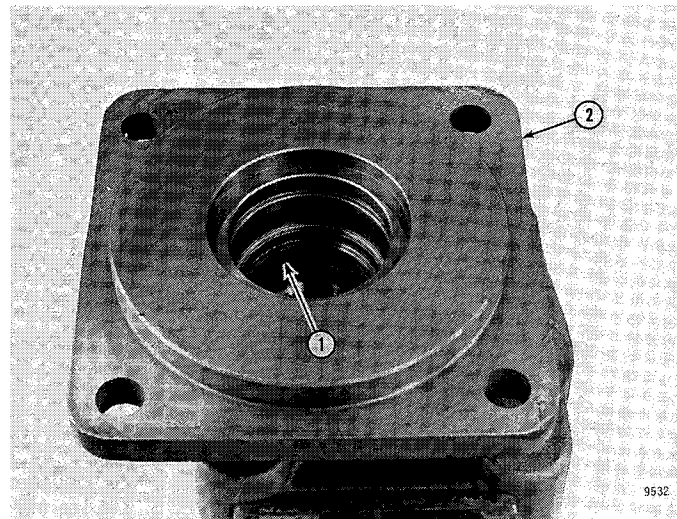


Figure 12

Install plug (4) into shaft end cover (3).

NOTE: *Be sure to install plug in same port hole that it was removed from.*

Install ring seal (2) and both bearings (1) in shaft end cover (3) if removal was necessary.

NOTE: *Notch in ring seal should be visible. This is a check to be certain that the notch is next to the bearing. Arbor press may be needed to install bearing in cover.*

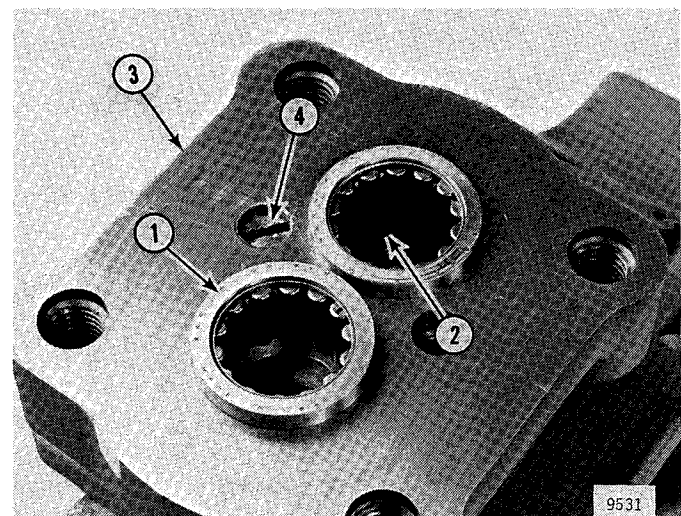


Figure 13

Take a thrust plate (1) and cut new pocket seals (2) from the D-101399 seal strips with a sharp knife to fit pockets as shown.

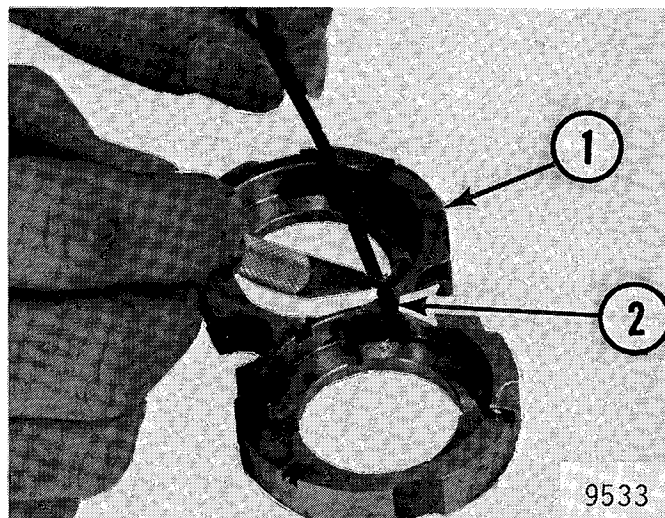


Figure 14

With a soft face hammer install thrust plate (1) in housing (2).

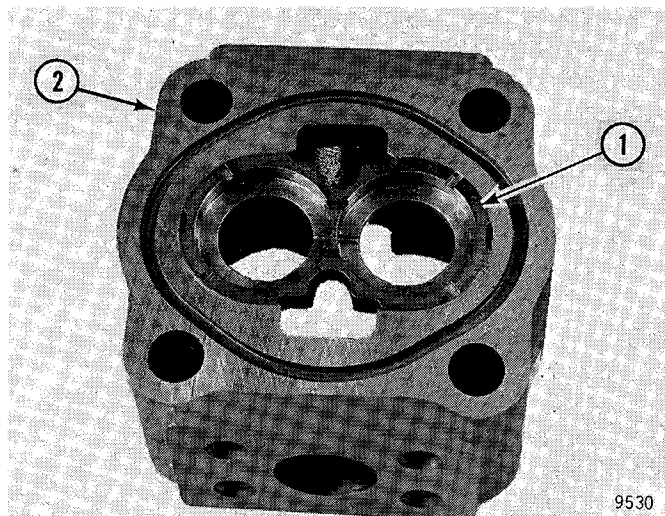


Figure 15

Position gear housing (1) on its side. Position gears (2 & 3) in housing as noted at disassembly. Slide thrust plate (4) over shafts and using soft face hammer tap into position.

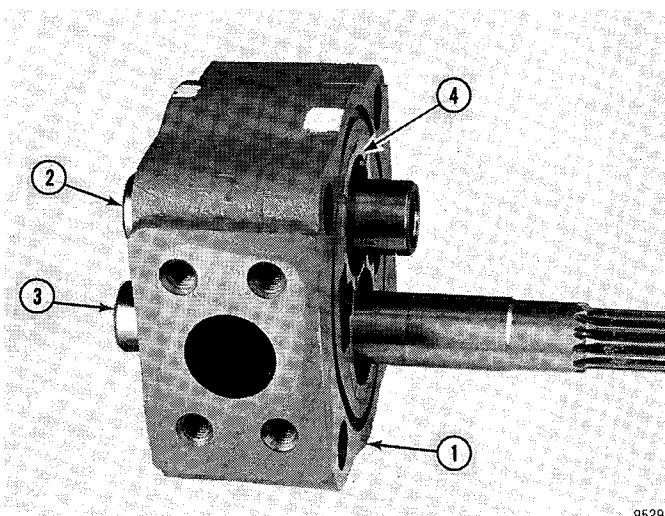


Figure 16

Install seal (3) on gear housing assembly (4).

Install one set (six) of the pocket seals (1) in thrust plate (2).

NOTE: *By applying a light coating of hydraulic oil to the gasket and seals, will help them stay in place.*

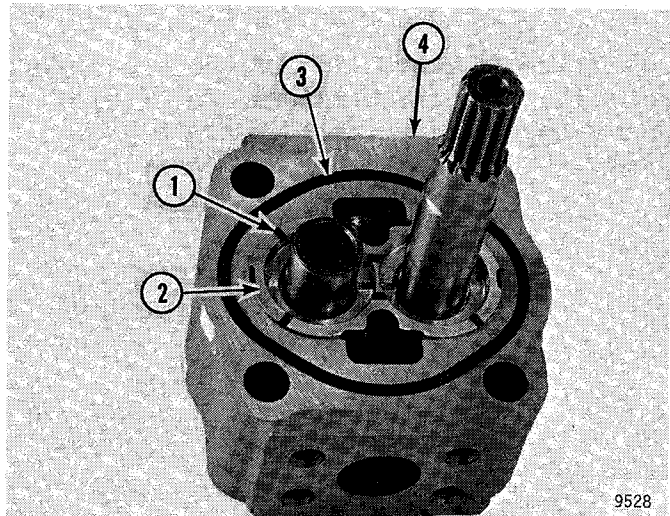


Figure 17

Place special tool (see special tool in this manual for manufacturing of tool) over drive shaft's splined end. Align match marks and position gear housing assembly (4) into shaft end cover (5).

NOTE: *Special tool will protect seal in shaft end cover (5). Be careful that seals on bottom of housing stay in place.*

Install seal (3) on gear housing assembly (4).

Position one set (six) of the pocket seals (1) in thrust plate (2).

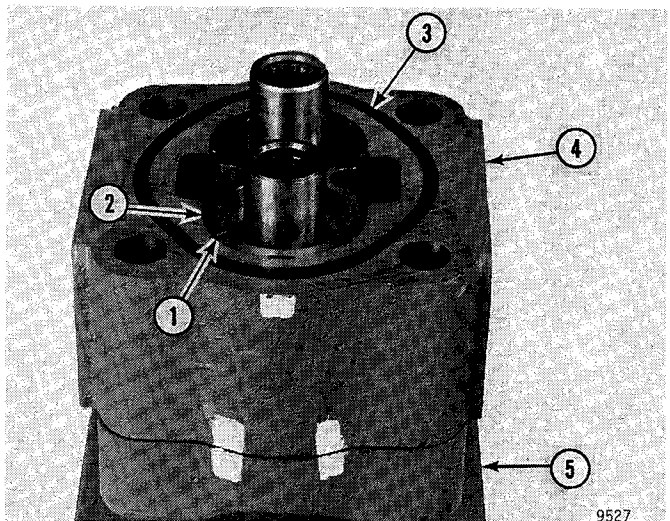


Figure 18

Install ring seal (2) and both bearings (1) in end cover (3) if removal was necessary.

NOTE: *Notch in ring seal should be visible. This is a check to be certain that the notch is next to the bearing. Arbor press may be needed to install bearings in cover.*

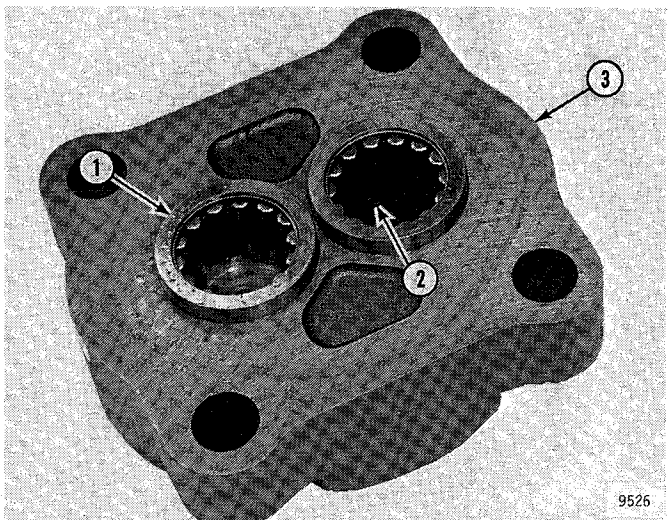


Figure 19

Align match marks and position end cover (3) on pump (1) and install four washers and capscrews (2).

NOTE: *Snug up capscrews and turn drive shaft to check for binding. If no binding is detected tighten capscrews to 200 FT. LBS. If binding exists, check alignment of parts.*

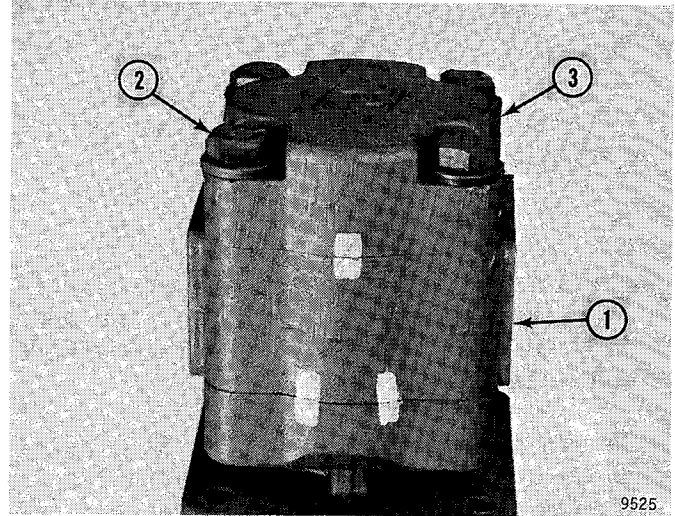


Figure 20

After assembly is completed, fill pump with proper hydraulic oil (see Shop Manual J-1 for proper hydraulic oil specifications) to lubricate pump before installation.

T-500C & M AND T-600C MAIN SYSTEM PUMP INSTALLATION

The following is only one method of obtaining a complete installation of the main system pump in your grader.

Align match marks and spline on pump (3) with transmission (6) and position pump on studs (8). Install four lockwashers and nuts (7) on studs.

Remove plugs from hoses (4 & 5). Position hoses against pump (3) and install split flange (2) and four lockwashers and cap-screws (1) on each side.

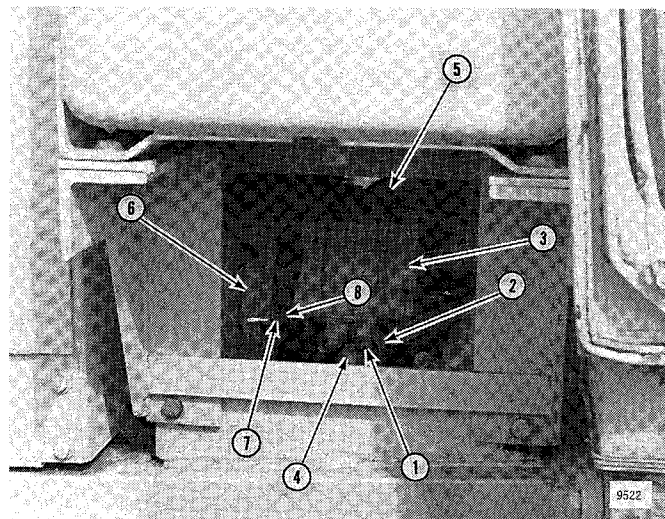


Figure 21

RP-30 MAIN SYSTEM PUMP INSTALLATION

The following is only one method of obtaining a complete installation of the main system pump in the RP-30 Road Planer

Align match marks and spline on pump (3) with transmission (8) and position pump on studs (7). Install four lockwashers and nuts (6) on studs.

Remove plugs from hoses (4 & 5). Position hoses against pump (3) and install split flange (2) and four lockwashers and cap-screws (1) on each side.

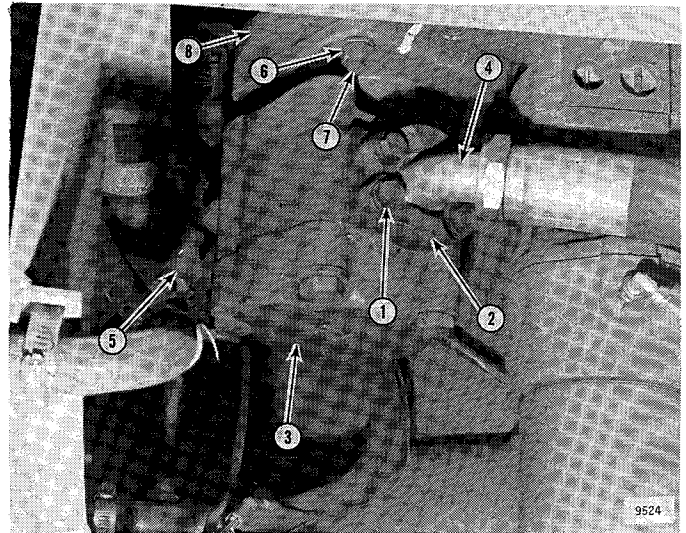


Figure 22

Position seat (3) and seat box cover (4) on seat box (5) and install two nuts (2).

Install two capscrews, washers, lockwashers and nuts (1).

NOTE: *If planer is not equipped with a cab, there are three more additional capscrews and lockwashers along back of seat cover (4) to install.*

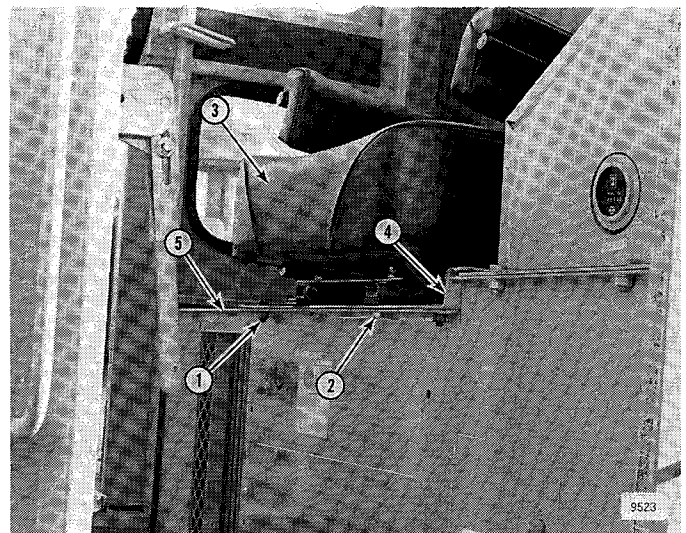


Figure 23



SHOP MANUAL

FILE E
SECTION 12.10

START-UP PROCEDURE

After the installation is completed, operate the pump at least two minutes under a no load condition at the lowest possible rpm. During this break-in period, the unit should run free and not develop an excessive amount of heat. If the unit operates properly, speed and pressure can then be increased to normal operating conditions.

SPECIAL TOOLS

The special steel sleeve is used to insert the drive shaft through the oil seal without damage and can be made from bar stock.

