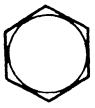
STANDARD TIGHTENING TORQUE FOR NORMAL ASSEMBLY APPLICATIONS

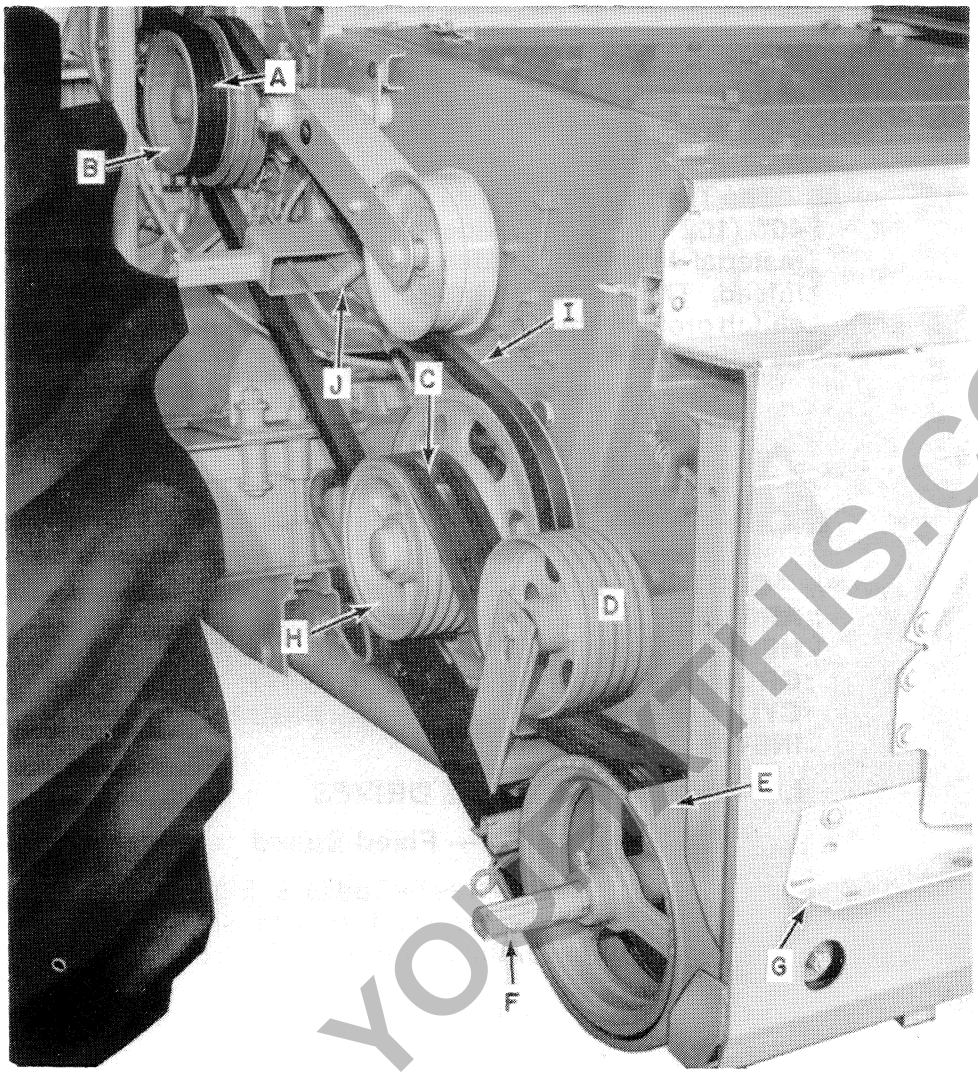
Size	SAE Gr. 2 Min. Torque Ft. Lbs. (N·m)	SAE Gr. 5 Min Torque Ft. Lbs. (N·m) Plain	SAE Gr. 5 Plated	SAE Gr. 8 Min. Torque Ft. Lbs. (N·m) Plain	SAE Gr. 8 Plated	Carr Bolts & B RH SSQ Bolts Min. Torque Ft. Lbs. (N·m)
1/4"	5 (7)	8 (11)	7 (10)	12 (16)	10 (14)	4 (5)
5/16"	10 (14)	18 (24)	15 (20)	26 (35)	21 (29)	8 (11)
3/8"	18 (24)	31 (42)	25 (34)	48 (65)	39 (53)	15 (20)
7/16"	31 (42)	53 (72)	43 (58)	75 (102)	60 (81)	26 (35)
1/2"	45 (61)	82 (111)	66 (90)	115 (156)	92 (125)	38 (52)
5/8"	82 (111)	170 (231)	140 (190)	235 (319)	190 (258)	70 (95)
3/4"	155 (210)	290 (393)	230 (312)	415 (563)	330 (448)	130 (176)
7/8"	165 (224)	430 (583)	340 (461)	600 (814)	480 (651)	140 (190)
1"	250 (339)	640 (868)	510 (692)	900 (1220)	720 (976)	210 (285)

SPECIFICATIONS AND DESIGN SUBJECT TO CHANGE WITHOUT NOTICE.

Identification Grade Marking	Specification and Grade
	SAE — Grade I
	ASTM — A307
NO MARK	SAE — Grade 2 (b)
	SAE — Grade 5
	ASTM — A449
	SAE — Grade 8
	ASTM — A 354 Grade BD

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SHIELDS SHOWN REMOVED FOR CLARITY.

FIGURE 4

these belts by prying idler, A, Figure 3, up and locking with slide stop, B. The belts can then be removed one at a time.

2. Release the main drive belt tension spring, J, Figure 4.
3. Remove sheave, B, Figure 4, by removing the four ⅜" cap screws.
4. Remove idler, A, Figure 5. **NOTE: The belts may be able to be removed without removing this sheave on some units.**
5. Unbolt and remove wrap-around shield at E, Figure 4.
6. Remove the belts, C, Figure 4.
7. Remove belt, I, Figure 4, from upper sheave and then from intermediate sheave.

The main drive belts are now removed. Reinstall in the reverse procedure.

NOTE: After reinstalling the main drive belt, tension spring, J, Figure 4, to obtain a deflection of 1⅝" (41 mm) with 15 lbs. (7 kg) of force applied to the long span of the belt. Check each belt individually. Tension five V-belts to 1-13/32" (36 mm) as shown in Figure 6.

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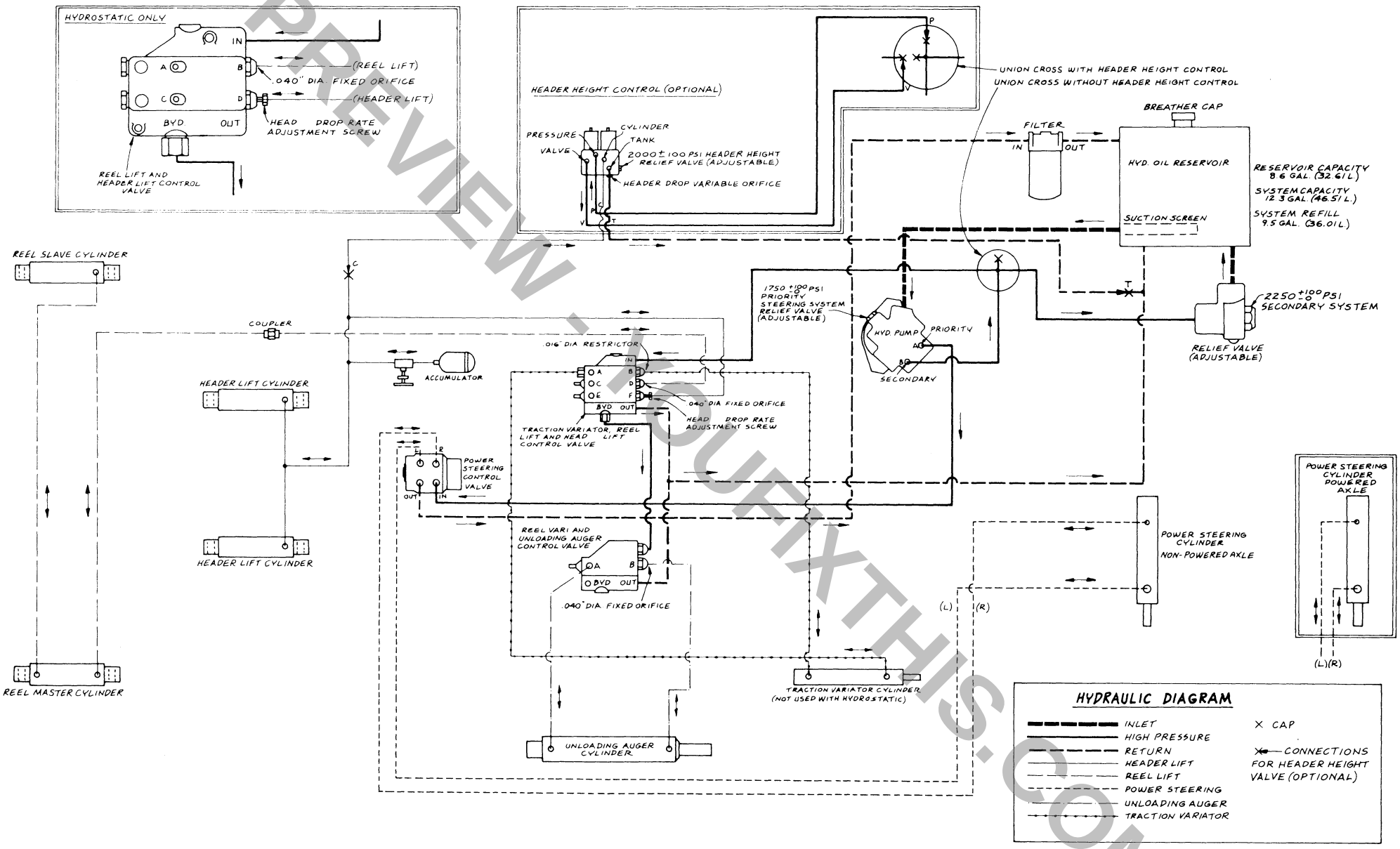
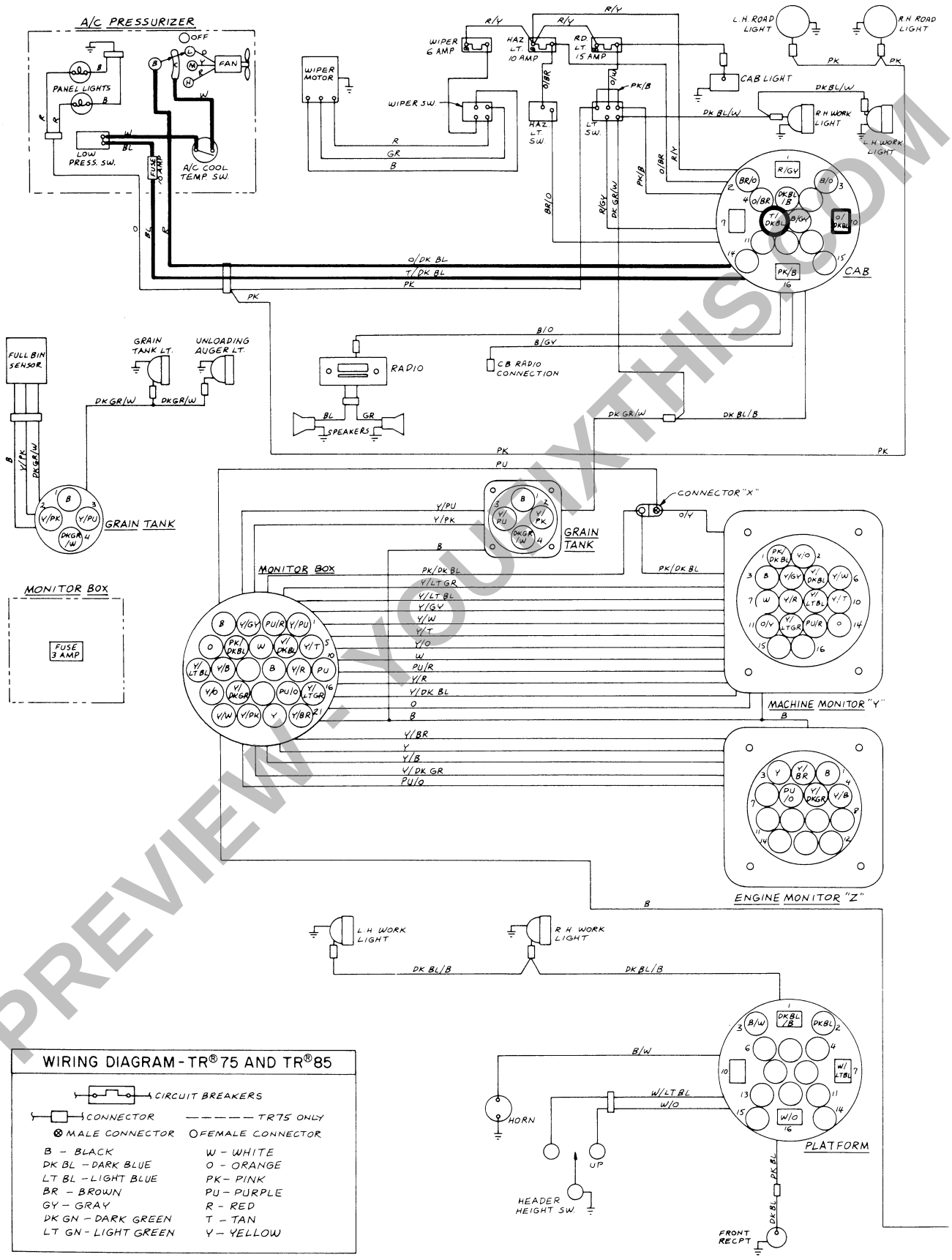


FIGURE 570

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SPECIFICATIONS

TABLE OF SPEEDS (RPM)

	TR™75	TR™85
1. Discharge beater	815	807
2. Cleaning fan	(min.) 510 ± 5	1100 ± 15 (max.)
3. Eccentric shaft	334	331
4. Engine (High Idle)*	2420 ± 30	2715 ± 30
5. Engine (Idle)	1000 ± 25	1000 ± 25
6. Main shaft	1310 ± 10	
7. Rotors	(min.) 650 ± 10	1500 ± 20 (max.)
	(min.) 800 ± 10	1750 ± 20 (max.) (High Speed Kit)
8. Straw chopper (Low)	1407	1393
9. Straw chopper (High	2770	2743
10. Straw spreader (Input)	230	228
11. Unloading auger	524	519
12. Slow fan kit	(min.) 270 ± 5	610 ± 15 (max.)

***Including accessory loads.**

FEEDER

CONVEYOR CHAIN

Type ..... Agricultural implement roller
Riveted slats made of high strength steel

Speed (pivot shaft) —
Fixed speed ..... 335 RPM
Variable speed ..... 334 RPM max.
248 RPM min.

Front roll ..... Large diameter drum, spring-loaded

Stone trap ..... Spring-loaded, latch type - Stone ejection roller

Approximate weight —
Fixed speed ..... 1759 lbs. (798 kg)
Variable speed ..... 1861 lbs. (844 kg)

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PLEASE READ CAREFULLY!

INCLUDED THROUGHOUT THIS MANUAL AND ON MACHINE DECALS YOU WILL FIND PRECAUTIONARY STATEMENTS SUCH AS "CAUTION", "WARNING" AND "DANGER", FOLLOWED BY SPECIFIC INSTRUCTIONS.

THESE PRECAUTIONS ARE INTENDED FOR THE PERSONAL SAFETY OF YOU AND THOSE WORKING WITH YOU. PLEASE TAKE THE TIME TO READ THEM.

PERSONAL SAFETY!

CAUTION: THE WORD "CAUTION" IS USED WHERE A SAFE BEHAVIORAL PRACTICE ACCORDING TO OPERATING AND MAINTENANCE INSTRUCTIONS AND COMMON SAFETY PRACTICES WILL PROTECT THE OPERATOR AND OTHERS FROM ACCIDENT INVOLVEMENT.

WARNING: THE WORD "WARNING" DENOTES A POTENTIAL OR HIDDEN HAZARD WHICH HAS A POTENTIAL FOR SERIOUS INJURY. IT IS USED TO WARN OPERATORS AND OTHERS TO EXERCISE EVERY APPROPRIATE MEANS TO AVOID A SURPRISE INVOLVEMENT WITH MACHINERY.

DANGER: THE WORD "DANGER" DENOTES A FORBIDDEN PRACTICE IN CONNECTION WITH A SERIOUS HAZARD.

ADDITIONAL PRECAUTIONARY STATEMENTS SUCH AS "ATTENTION" AND "IMPORTANT" ARE FOLLOWED BY SPECIFIC INSTRUCTIONS. THESE STATEMENTS ARE INTENDED FOR MACHINE SAFETY.

MACHINE SAFETY!

ATTENTION: THE WORD "ATTENTION" IS USED TO WARN THE OPERATOR OF POTENTIAL MACHINE DAMAGE IF A CERTAIN PROCEDURE IS NOT FOLLOWED.

IMPORTANT: THE WORD "IMPORTANT" IS USED TO INFORM THE READER OF SOMETHING HE NEEDS TO KNOW TO PREVENT MINOR MACHINE DAMAGE IF A CERTAIN PROCEDURE IS NOT FOLLOWED.

IMPORTANT!

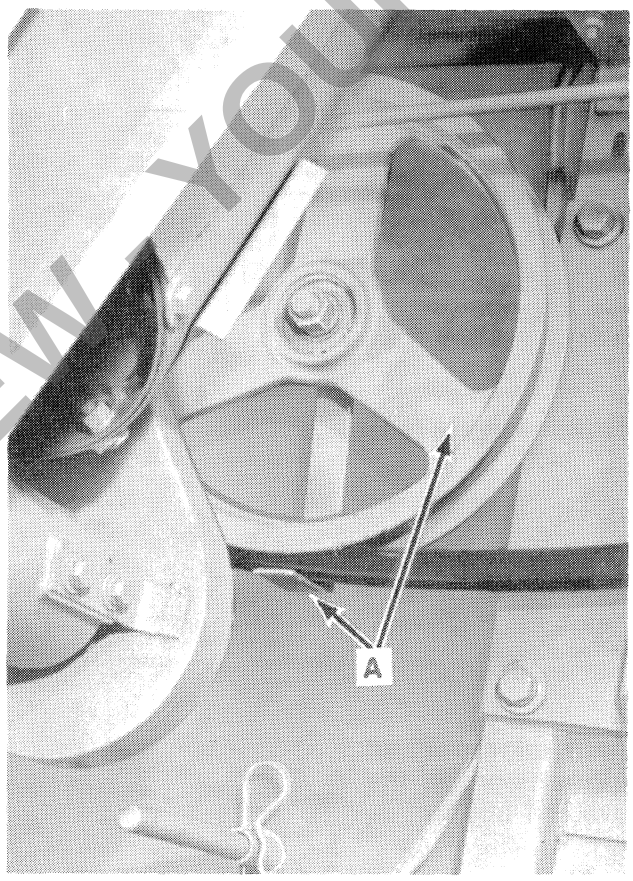
FAILURE TO FOLLOW THE "CAUTION", "WARNING", AND "DANGER" INSTRUCTIONS MAY POSSIBLY RESULT IN SERIOUS BODILY INJURY.

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B. Removal of Main Header Drive Belt

1. Remove the feeder drive belts as detailed in part A, of "Belt Removal" section.
2. Loosen belt guides, B and C, Figure 69.
3. Remove the belt from the idler sheave, D, Figure 69.
4. Loosen belt guide and idler, A, Figure 70. Slide belt off the idler.
5. Loosen rotor drive belt tension and remove the rotor drive belt from the lower sheave as detailed in the "Rotor Drive" section of this manual.
6. Remove the header drive belt and install the replacement belt.
7. Reassemble the rotor drive and set the rotor drive RPM range as detailed in the "Rotor Drive" section of this manual.



SHIELDS SHOWN REMOVED FOR CLARITY. **FIGURE 70**

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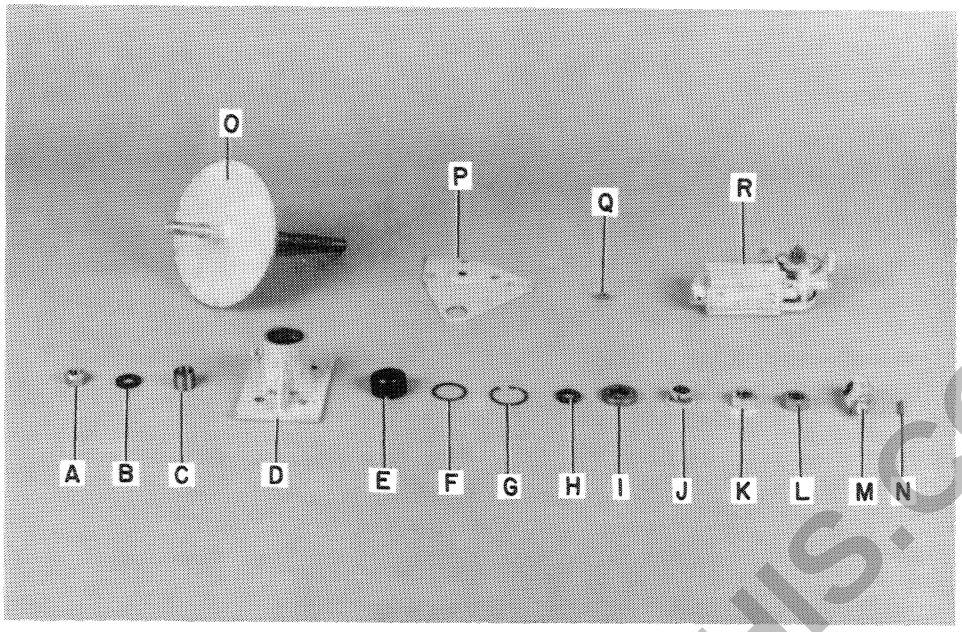


FIGURE 136

3. Slide motor mount bracket, G, Figure 135, and special nut, H, off the speed screw.
4. Remove the ⅝" lock nut, A, Figure 137. Next remove the special washer, B, and bushing, C, Figure 136. The speed screw can now be removed from the mounting bracket, D.
5. Next remove the seal, I, Figure 136, and special washer, H, from the mounting bracket.
6. Remove the snap ring, A, Figure 138. Press the spherical bushing, E, Figure 136, out of the mounting bracket. Remove the spherical bushing and a washer, F.

Assemble in reverse order.

Assemble rotor drive and set rotor speed RPM range as detailed in the "Rotor Drive" section of this manual.

ROTOR DRIVE VARI-SPEED MOTOR AND SPEED SCREW PARTS (Refer to Figure 136)

A. Lock nut, ⅝"
B. Special washer
C. Bushing
D. Mount bracket
E. Spherical bushing
F. Washer
G. Snap ring
H. Special washer
I. Seal
J. Bushing
K. Special nut
L. Special nut
M. Pivot nut
N. Drive pin
O. Speed screw
P. Motor mount plate
Q. Bushing
R. Vari-speed motor

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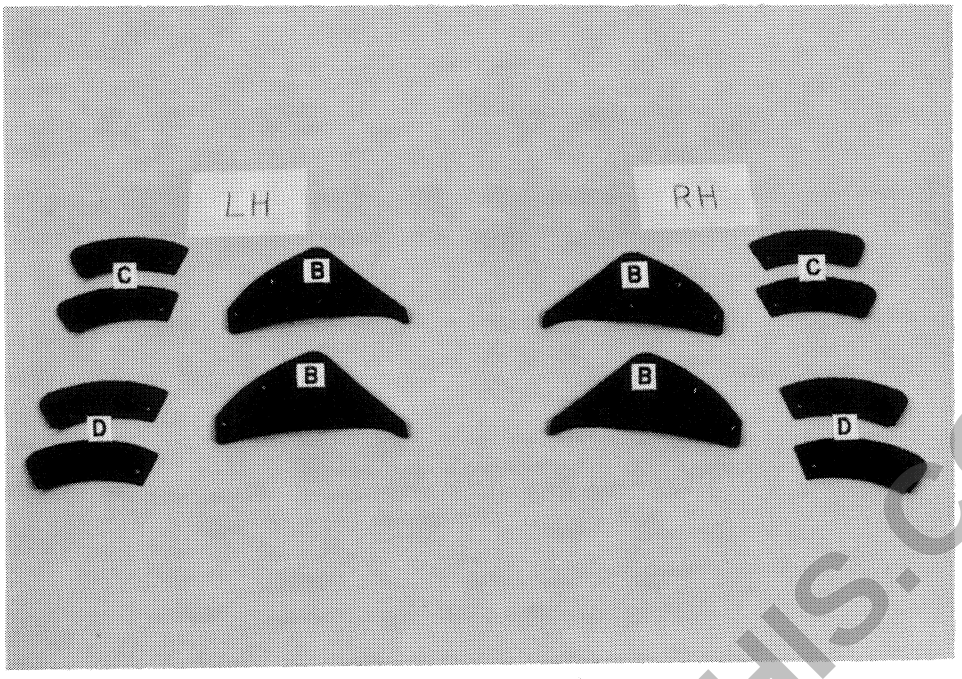


FIGURE 200

DISASSEMBLY

Auger flight extensions are mounted to the feed augers to assist the feeding of crop to the rasp bars. These auger extensions are hard surfaced at B, Figure 200. There are left and right auger extensions as well as front (B), center (C), and rear (D), Figures 199 and 200, extensions. Center and rear extensions are the same. Auger extensions should be replaced in pairs 180° from each other on the same rotor to maintain rotor balance. **NOTE: Serrated auger extensions can be installed at D, Figure 199 (see operator's manual).**

To remove the feed auger, A, Figure 201, portion of the rotor, remove the ½" bolt and self-locking nut. It is usually necessary to drive the auger flighting off the front end of the rotor stub shaft, C, Figure 201. Use care in this driving, making sure not to hit the tubing, D, Figure 201, that the auger flighting is welded to. Be sure not to hit the very outer edges of the auger flighting, B, as they are hard surfaced. This hard surfacing will chip off if struck.

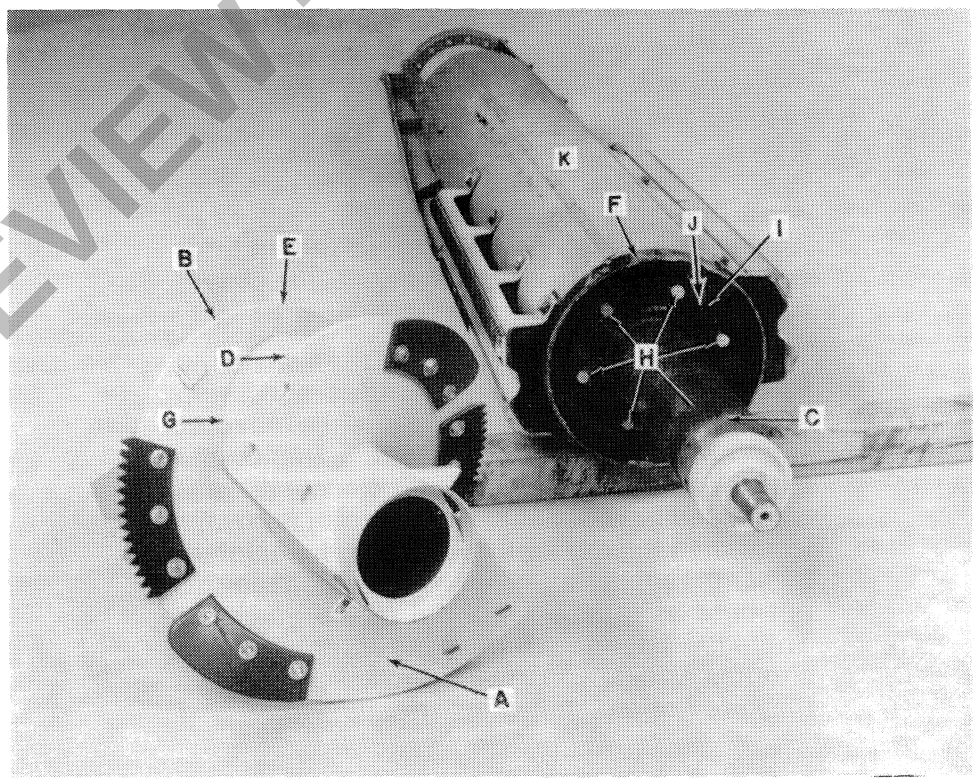


FIGURE 201

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CLEANING SYSTEM

INTRODUCTION

The TR75 and 85 combines are equipped with a cleaning system, made up of the cleaning fan, A, Figure 268, wind deflectors, B, cleaning sieves, C, D, E and F, and the shoe which houses these sieves. Refer to the operator's manual supplied with the combine base unit when attempting to remove or replace any of the cleaning sieves, C, D, E and F. Also refer to the operator's manual for special adjustments and notations on the chaffer extension, F, and the chaffer extension rake, G.

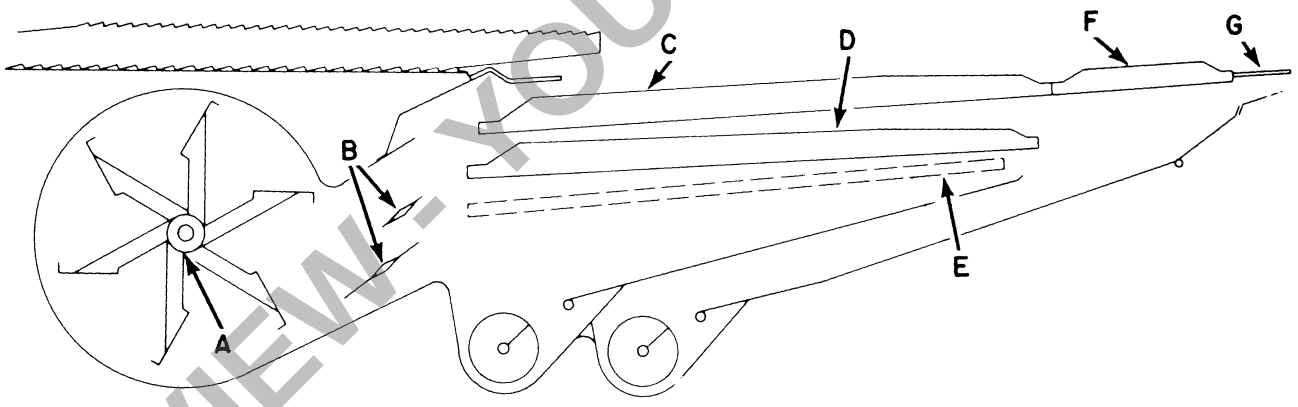


FIGURE 268

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1. Assembly of Differential
   Lightly oil all parts before assembly.
   A. Install gear, A, Figure 313.
   B. Install gears, C, Figure 312, and spider shafts, D.

      Be sure to position gears and shafts in the same location as before disassembly. Use alignment marks made in instruction 9B. Be sure dished washers, E, are positioned as shown.
   C. Install gear, A, Figure 312.
   D. Install housing, C, Figure 311. Use cap screws, B, with the lock tab washers, A. Torque screws to 66 ft. lbs. (90 N:m). Bend locking tabs.
   E. Press on bearings, A, Figure 309 and 310. Use a suitable press.
2. Installation of Differential
   A. Place differential, C, Figure 309, in transmission.
   B. Install right-hand brake housing, A, Figure 315. Tap it in place with the plastic mallet. Tighten down the three lock nuts, C, Figure 316. Use a new gasket, B, Figure 315.
   C. Install the left-hand brake housing and tap it in place with a plastic mallet. Tighten the housing using the three lock nuts.
3. Assembly of the Differential Half Shaft (do both sides the same way).
   A. Place seal, 11, Figure 317, in housing.
   B. Install half shaft, 13, Figure 317.
   C. Install snap ring, 45, Figure 317, on shaft.
   D. Install spacer ring, 8, Figure 317.
   E. Install snap ring, 9, Figure 317.
4. Assembly of Brakes
   A. Place inner brake disc, A, Figure 318.
   B. Install brake actuating mechanism, A, Figure 319. Connect all brake activating linkages.

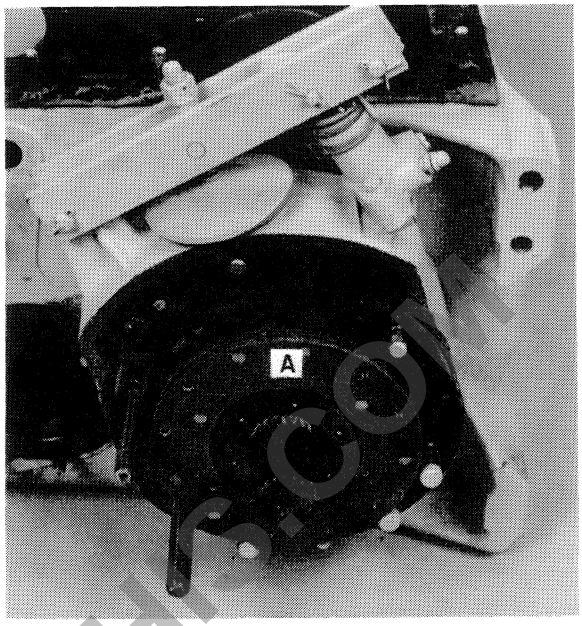


FIGURE 318

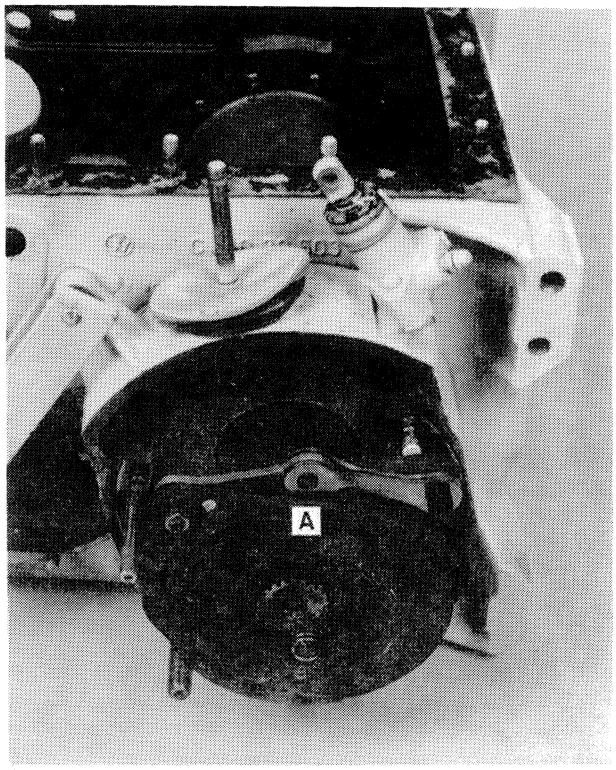


FIGURE 319

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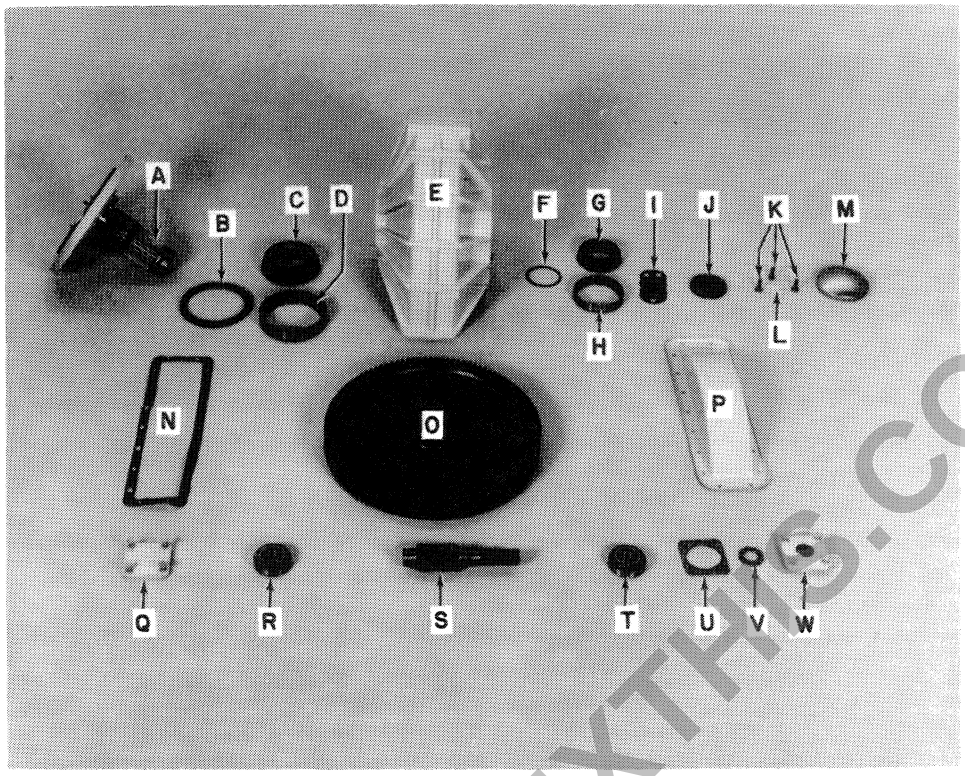


FIGURE 366

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Final Drive Parts
(Refer to Figure 366)

A. Output shaft
B. Output shaft seal
C. Bearing cone (rollers, cage, and inner race)
D. Bearing cup (outer bearing race)
E. Final drive housing
F. Spacer
G. Bearing cone (rollers, cage, and inner race)
H. Bearing cup (outer bearing race)
I. Shims (.010", .012", .015", .025" thickness) (.25 mm, .30 mm, .38 mm, .63 mm)
J. Securing plate
K. Cap screws (½" x 1¼")
L. Lock tab washer
M. Cap
N. Cover gasket
O. Output gear
P. Final drive cover
Q. End cap with ⅜" x 1¼" cap screws
R. Bearing (cup and cone)
S. Input shaft with integral gear
T. Bearing (cup and cone)
U. Shims (.010", .012", .015" thickness) (.25 mm, .30 mm, .38 mm)
V. Input shaft seal
W. End cap with ⅜" x 1¼" cap screws

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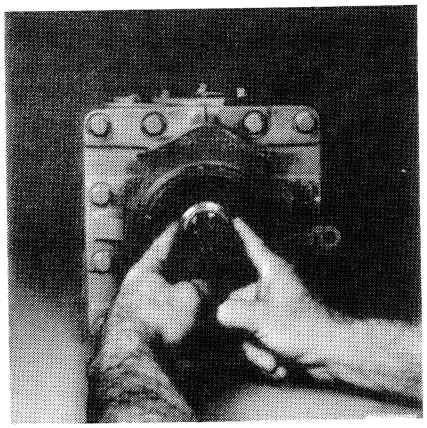


FIGURE 406

The bronze sealing ring is held in place by inner O-ring friction. Work this part free and carefully slide it over the shaft. See Figure 406.

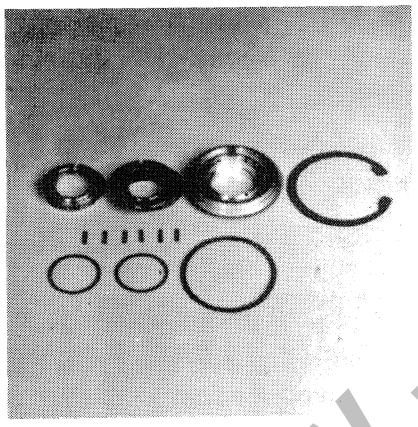


FIGURE 407

All the shaft seal parts, which are included in the shaft seal kit, have now been removed. Inspect each part if the seal is to be reused. If necessary, replace the entire shaft seal. See Figure 407.

Slide the sealing ring over the shaft and onto the shaft pilot diameter with the O-ring facing the pump. Work the ring into place using hand force only. See Figure 409.

Before assembly, place one O-ring in the ID of the bronze sealing ring and one O-ring in the ID of the aluminum housing. Place the six springs in the cavities of the housing. Protect the parts from damage by the shaft during assembly. See Figure 408.

Insert the stationary seal pilot into the aluminum housing, locating the notch in the stationary seal over the pin in the housing.

Install the O-ring on the OD of the housing, then slide it into place against the bronze sealing ring. This is a spring-loaded assembly, so it may be necessary to push against the aluminum housing to expose the retaining ring groove. See Figure 410.



FIGURE 408

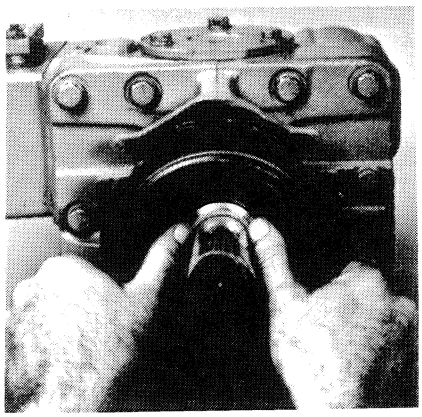


FIGURE 409



FIGURE 410

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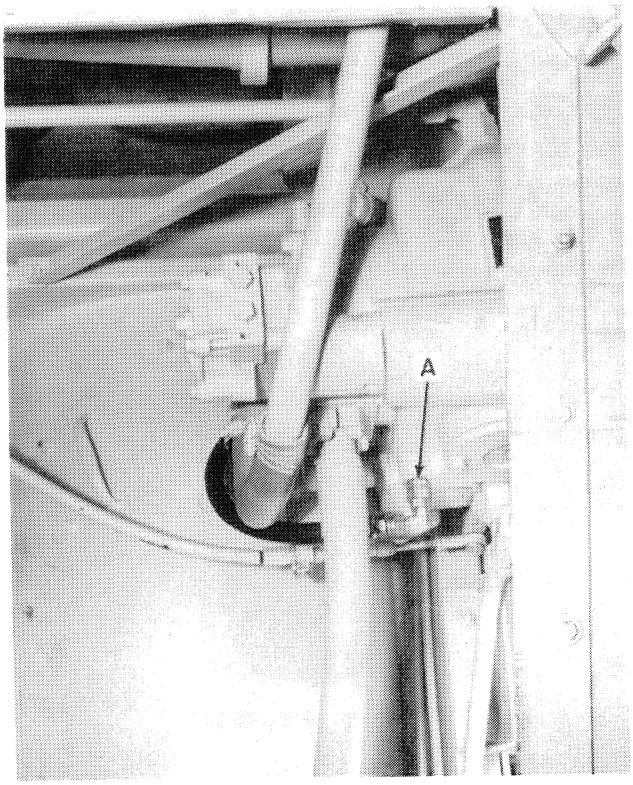


FIGURE 559

Charge pressure is 190 to 210 psi (13-14 bar) above case pressure. Check at fitting, A, Figure 559.

High pressure is 5300 psi (366 bar). Check at rear wheel assist selector valve. Check forward high pressure at A, Figure 555, and reverse pressure at B.

Case pressure is a maximum of 40 psi (2.8 bar).

FLOW LIMITERS

The 23 gpm (87.1 Lpm) flow limiter limits flow to 23 gpm (87.1 Lpm) to the rear wheels when traveling forward. The 12 gpm (45.4 Lpm) flow limiter allows full flow in forward.

In reverse, the 12 gpm (45.4 Lpm) flow limiter limits flow to 12 gpm (45.4 Lpm). The 23 gpm (87.1 Lpm) flow limiter allows full flow.

Flow limiters are not serviceable separately and must be replaced as a complete assembly if faulty.

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STEERING CONTROL UNIT

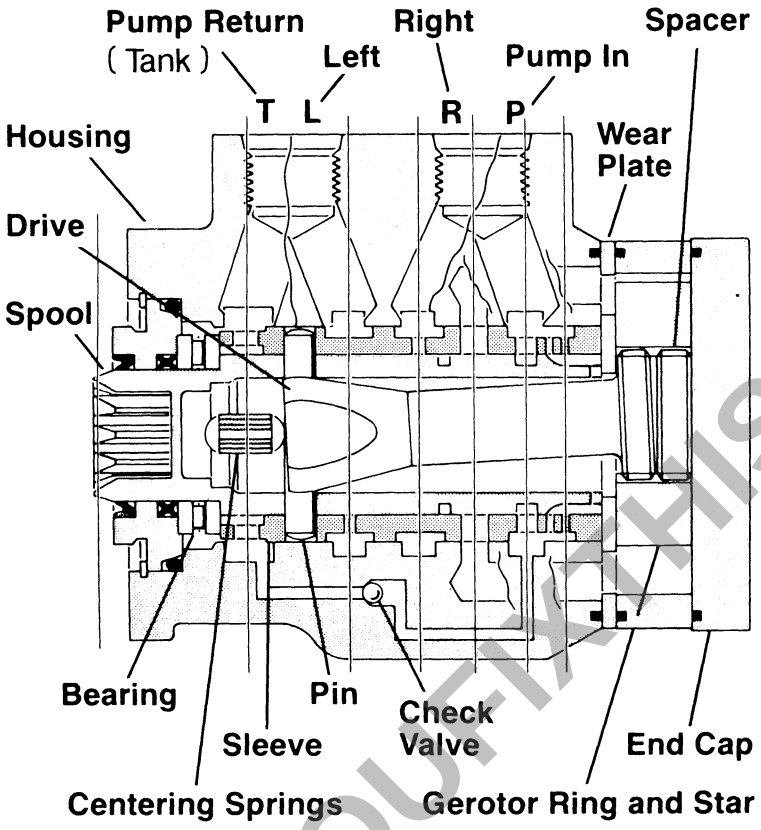


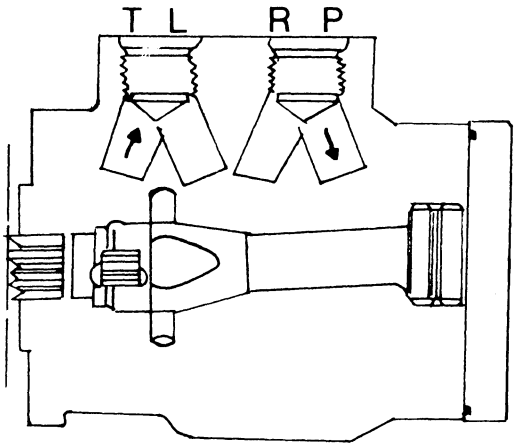
FIGURE 600

STEERING CONTROL OPERATION (Refer to Figure 600 for Component Identification)

Neutral (Refer to Figure 601)

Oil flows from the pump to the "P" port (pump in), through the center of the spool, out the "T" port (tank), and back to the reservoir.

Note that the ball check valve is seated.



NEUTRAL

FIGURE 601

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5. **Manual Reset Circuit Breaker Option (See F, Figure 642)**

When the circuit breaker interrupts current flow due to an electrical system malfunction, the fuel solenoid on the Caterpillar engine shuts off the engine. The red ring indicates the breaker has tripped. Pushing the reset button and the circuit breaker can be by-passed to start the engine. **CAUTION: THIS SHOULD ONLY BE DONE WHEN MOVEMENT OF THE MACHINE IS NECESSARY FOR SAFETY REASONS. PROLONGED USE OF THIS BUTTON COULD CAUSE DAMAGE TO THE ELECTRICAL SYSTEM.**



FIGURE 642

The manual reset circuit breaker protects the wiring and components from the circuit breaker to the oil pressure gauge, coolant temperature gauge, fuel gauge and the engine fuel shut-off solenoid.

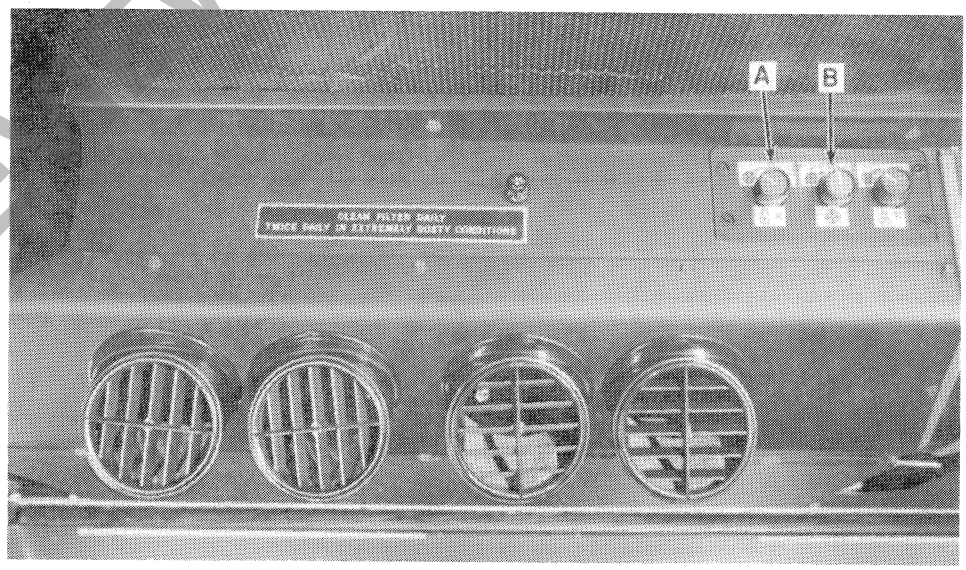


FIGURE 643

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