

FRONT SYSTEM

All models are equipped with either a wide fixed axle, or a wide adjustable axle. Two tie rods are attached to a bell crank mounted on a center axle unit. The bell crank is actuated by hydrostatic steering and two single acting hydraulic cylinders.

AXLE AND SUPPORT

Fixed Axle Models

1. HOUSING AND PIVOT BRACKET. The front axle attaches to tractor frame by pivot bracket (1-Fig. 1). Pivot pin bushing (5) installed I.D. should be 2.004-2.018 inches, with 2.011 nominal. Tighten pivot bracket to frame cap screws to 300 ft. lbs. torque, and pivot pin to housing cap screws to 85 ft. lbs.

2. SPINDLES AND BUSHINGS. Knuckle pin bushings (8-Fig. 1) should have an installed I.D. of 1.237-1.241 inches. The bushing hole must line up with grease fitting hole. Thrust washers (10) control the knuckle end play, which should be 0.005-0.045 inch.

Adjustable Axle Models.

3. HOUSING AND PIVOT BRACKET. The pivot pin bushings (5-Fig. 2) should have an installed I.D. of 2.004-2.018 inches, with 2.011 in. nominal. Tighten pivot bracket to frame cap screws to 300 ft. lbs. torque, and pivot pin to housing cap screws to 85 ft. lbs.

4. SPINDLE AND BUSHINGS. The O.D. of knee bushing (7-Fig. 2) should be 2.189-2.190 inches. Check bore I.D. before installing bushing to make sure that it is not worn. Bore should measure 2.185 inches. Align grease fitting hole as bushing is installed, and installed I.D. of bushing should be 2.001-2.004 inches. End play of knuckle (10) is adjusted by thrust washers (9) and should be 0.005-0.045 inch. Spring pins prevent thrust washers from turning.

Fig. 1—Exploded view of fixed front axle and pivot bracket assembly.

1. Pivot bracket
2. Expansion plug
3. Hollow dowel
4. Pivot pin
5. Bushing
6. Axle housing
7. Knuckle pin
8. Bushing
9. Knuckle
10. Thrust washers

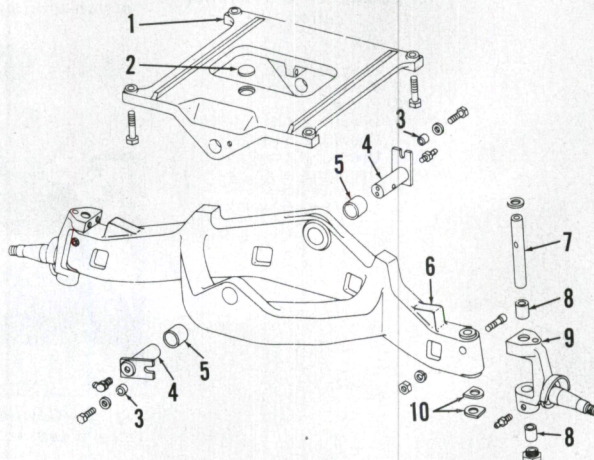


Fig. 2—Exploded view of adjustable front axle and pivot bracket assembly.

1. Pivot bracket
2. Expansion plug
3. Hollow dowel
4. Pivot pin
5. Bushing
6. Axle housing
7. Knee bushing
8. Knee
9. Thrust washers
10. Knuckle

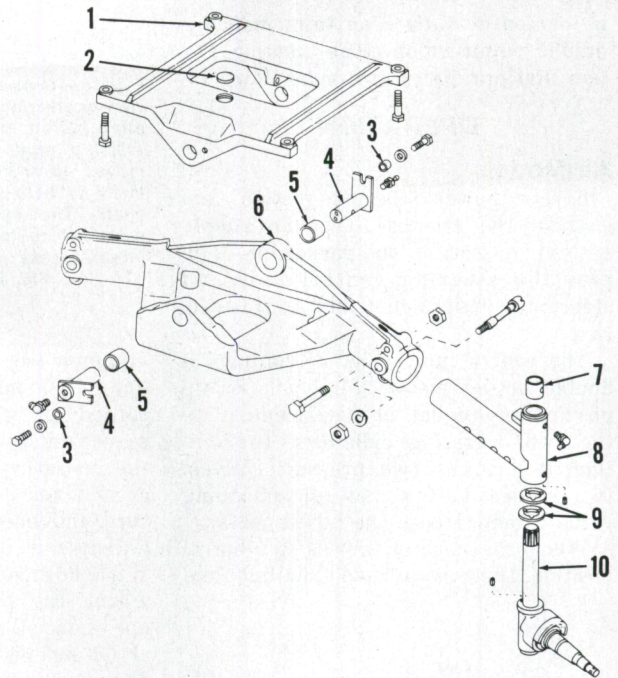
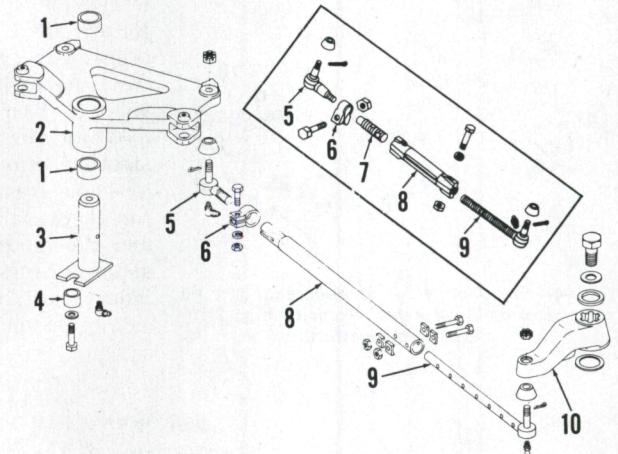


Fig. 3—Exploded view of bellcrank and tie rods used on adjustable axles. Inset shows parts used on tractors to serial no. 034597.

1. Bushing
2. Bellcrank
3. Pivot pin
4. Hollow dowel
5. Inner tie rod end
6. Clamp
7. Inner tie rod
8. Tie rod
9. Outer tie rod end
10. Steering arm



TIE RODS AND TOE IN

All Models

5. Tractors with adjustable axles were equipped with threaded tie rods and ends (inset Fig. 3) up to serial number 034597. After that serial num-

ber, outer tie rod ends were provided with holes and cap screws for easier adjustment. Toe in (all models) should be 1/8-3/8 inch measured at wheel center height, and both tie rods must be equal length so tractor will steer as far to the right as to the left. Tighten clamps in the downward position to 35 ft. lbs. torque.

POWER STEERING SYSTEM

All models are equipped with a full power steering system. No mechanical linkage exists between steering wheel and steering cylinders; however, steering can be manually accomplished by hydraulic pressure when tractor hydraulic unit is inoperative. Power is supplied by the same hydraulic pump which powers the lift and brake systems. A pressure control (priority) valve

Paragraphs 6-7

is located in outlet line from main hydraulic pump which gives steering system first priority on hydraulic flow.

OPERATION

All Models

6. The power steering system consists of the tractor hydraulic supply system described in paragraph 116, plus the steering control unit and steering cylinders described in this section.

The control unit (Fig. 5) contains a double acting piston (3) which is approximately equal in displacement to the two operating cylinders. In addition, it contains two pressure valves, two return valves and an unloading valve which actuate the power assist.

When the control unit is in neutral position, there is no fluid flow but fluid

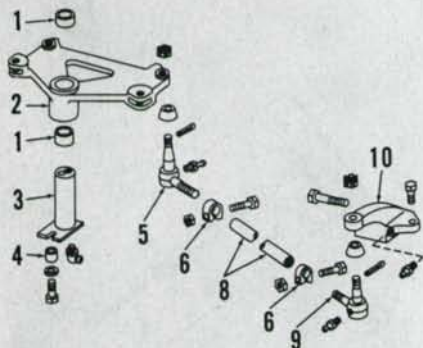


Fig. 4—Exploded view of bellcrank and tie rods used on fixed axles. Refer to Fig. 3 for parts identification.

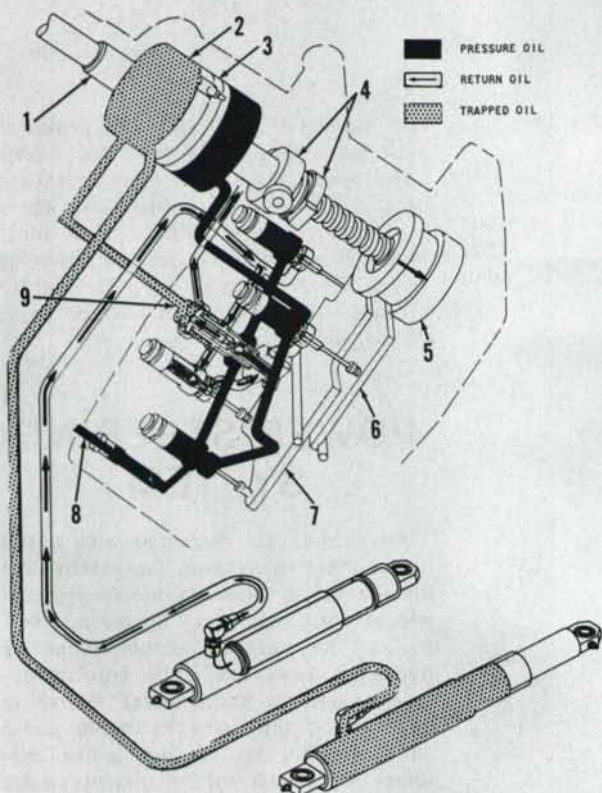
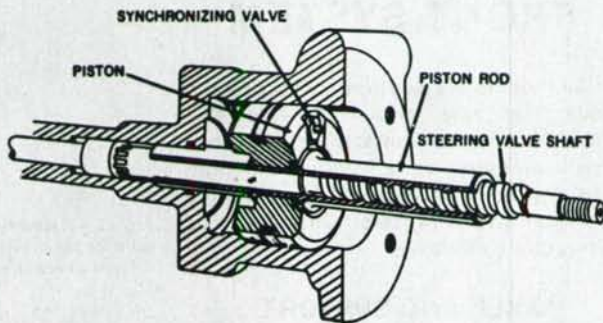


Fig. 5—Schematic view of power steering gear showing operating parts. Refer to paragraph 6 for operation.

1. Steering shaft
2. Slave cylinder
3. Piston
4. Operating nut
5. Operating collar
6. Operating lever
7. Operating lever
8. Pressure line
9. Unloading valve

Fig. 6—Cross sectional view of steering valve operating piston, cylinder and steering shaft. Piston is moved up or down in cylinder by helix on steering shaft. The synchronizing valve which corrects for internal leaks is shown in Fig. 7.



at pump pressure is available at inlet line (8). When the steering wheel is turned for a right or left turn, first movement of steering wheel reacts on the operating collar (5) and one operating lever (6 or 7) to open one pressure and one return valve leading to either end of metering cylinder (2). With continued turning of steering wheel, the pressurized fluid entering one side of metering cylinder moves actuating piston (3) toward opposite end of cylinder and the trapped fluid is forced out line to operating cylinder. Return fluid from the opposite operating cylinder passes through the return metering valve and unloading valve (9) back to the reservoir.

When the pressure required for steering effort exceeds the pressure available from hydraulic system pump, the check valve in inlet line (8) closes and the metering piston (3) manually supplies pressure to the operating cylinders and return fluid flows to back side of piston (3).

Refer also to Figs. 6 and 7 for operating principles regarding the synchronizing valve and associated parts.

BLEEDING

All Models

7. To bleed the steering system, first remove the cowling and attach a small transparent hose from bleed screw (Fig. 8) on left side of steering valve housing. Bleed hose should be long

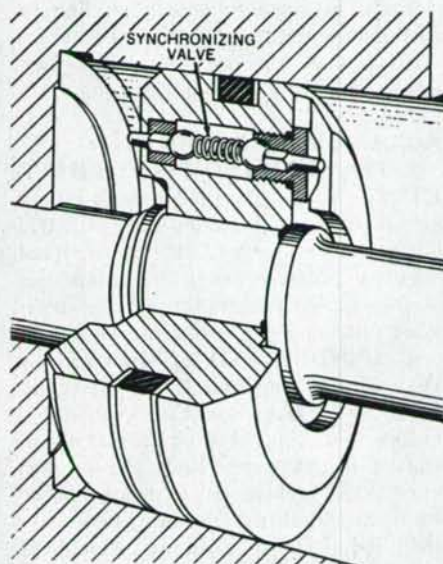


Fig. 7—Steering valve piston must be synchronized with steering cylinders for full turning action. Synchronization is automatically accomplished. When control valve piston reaches end of its stroke, the extended rod unseats the ball check valve, allowing pressurized fluid to flow through piston until cylinders complete their travel.

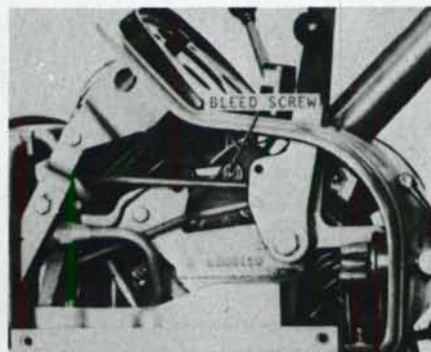


Fig. 8—Cowling removed to show steering valve bleed screw. Refer to paragraph 7 for procedure.



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