

SHOP MANUAL

ALLIS-CHAMBERS

MODELS 170, 175

Models 170 and 175 tractors are available in single wheel tricycle, dual wheel tricycle or adjustable front axle version. Model 170 and early 175 are equipped with either a 226 cubic inch non-diesel or 236 cubic inch diesel engine. Late Model 175 is equipped with either a 226 cubic inch non-diesel or a 248 cubic inch diesel engine.

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CONDENSED SERVICE DATA

GENERAL

	Gasoline	Diesel	Diesel
Engine Make	Own	Perkins	Perkins
Cylinders	4	4	4
Bore-Inches	4	3.875	3.975
Stroke-Inches	4½	5	5
Displacement-Cubic Inches	226	236	248
Piston Removed From	Above	Above	Above
Main Bearings, Number of	3	5	5
Main Bearings Adjustable?	No	No	No
Rod Bearings Adjustable?	No	No	No
Cylinder Sleeves	Wet	Dry	Dry

TUNE UP

	1-2-4-3	1-3-4-2	1-3-4-2
Firing Order	1-2-4-3	1-3-4-2	1-3-4-2
Valve Tappet Gap (Hot)			
Intake	0.010-0.012	0.010	0.010
Exhaust	0.014-0.016	0.010	0.010

TUNE-UP Cont.

	30	45	45
Valve Seat & Face			
Intake	30	45	45
Exhaust	45	45	45
Ignition Distributor Make	D-R	—	—
Mark Indicating:			
Retarding Timing	See	—	—
Full Advanced Timing	Paragraph	—	—
Mark Location	117	—	—
Breaker Point Gap	0.022	—	—
Spark Plug Gap	0.025	—	—
Injection Pump Make	—	CAV	CAV
Injection Pump Timing	—	See Paragraph 98	
Compression Pressure			
at Cranking Speed	160	390-410	390-410
Low Idle RPM	525	600	600
High Idle RPM	2000	2000	2000
Full Load RPM	1800	1800	1800

SINGLE WHEEL TRICYCLE

1. WHEEL ASSEMBLY. The single front wheel assembly may be removed after raising front of tractor and removing bolts (3—Fig. 1) at each end of front wheel spindle (1).

To renew bearing and/or seals, first remove wheel assembly; then, unbolt and remove bearing retainer (10—Fig. 2), seal (4), seal retainers (5) and shims (9). Drive or press on opposite end of spindle to remove spindle (8), bearing cones (7) and bearing cup from retainer side of hub. Then drive remaining seal and bearing cup out of hub. Remove bearing cones from spindle.

Soak new felt seals in oil prior to installation of seals and seal retainers. Drive bearing cup into hub until cup is firmly seated. Drive bearing cones tightly against shoulders on spindle. Pack bearings with No. 2 wheel bearing grease. Install spindle and bearings in hub and drive remaining bearing cup in against cone. When installing bearing retainer, vary the number of shims (9) to give free rolling fit of bearings with no end play.

Front wheel bearings should be repacked with No. 2 wheel bearing grease after each 500 hours of use.

CAUTION: If necessary to renew single front wheel hub or repair tire, completely deflate tire before unbolting tire retaining rings.

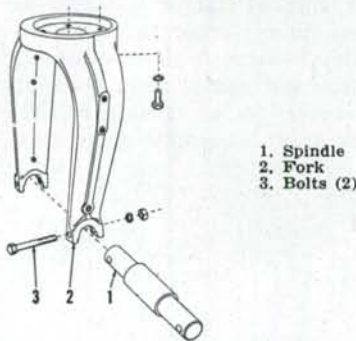


Fig. 1 — Exploded view of single front wheel fork and associated parts.

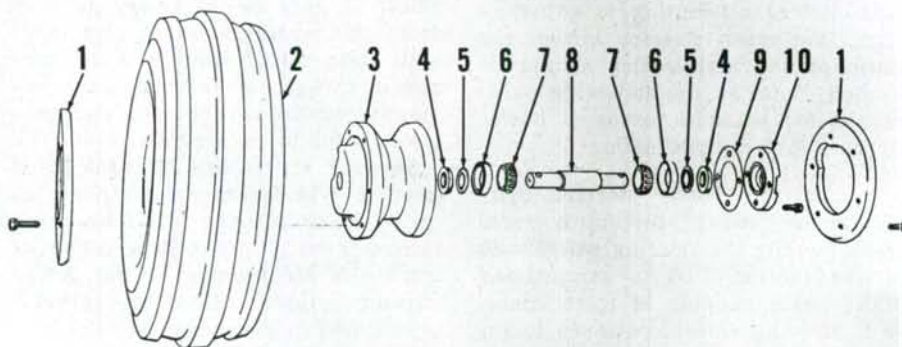
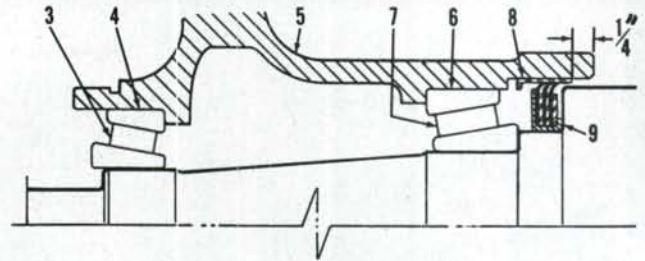


Fig. 2 — Exploded view of single front wheel assembly.

- | | | | | |
|---------------|----------|-------------------|------------------|----------------------|
| 1. Side rings | 3. Wheel | 5. Seal retainers | 7. Bearing cones | 9. Shims |
| 2. Tire | 4. Seals | 6. Bearing cups | 8. Spindle | 10. Bearing retainer |



1. Nut
2. Washer
3. Bearing cone
4. Bearing cup
5. Wheel hub
6. Bearing cup
7. Bearing cone
8. Wear sleeve
9. Seal
10. Bearing spacer
11. Spacer shield
12. Spindle

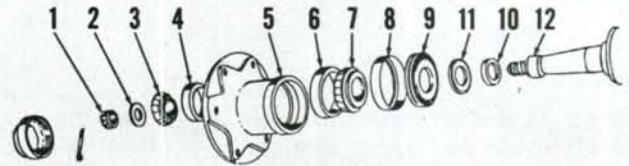


Fig. 3 — Views of front wheel hub assembly used on dual front wheel tricycle models. Wide front axle models are similar except spacer (10) and shield (11) are not used.

2. R&R SINGLE FRONT WHEEL FORK. Remove wheel assembly as outlined in paragraph 1. Then unbolt and remove fork (2—Fig. 1) from steering sector shaft (14—Fig. 14).

When reinstalling fork, tighten the retaining cap screws to a torque of 130-140 Ft.-Lbs.

DUAL WHEEL TRICYCLE

3. WHEEL ASSEMBLY. Front wheel and bearing construction on dual wheel tricycle models is of conventional design. Stamped steel wheel disc is reversible on hub. Bearing adjustment is made by tightening retaining nut on spindle until bearings are firmly seated and then backing nut off one castellation and installing cotter pin. Bearings should be repacked with No. 2 wheel bearing grease after each 500 hours of use.

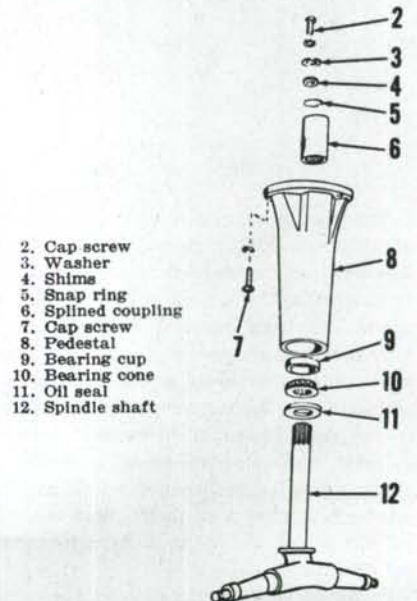
The three lips on outside diameter of seal (9—Fig. 3) contact steel wear sleeve (8) which is pressed into the front wheel hub. Install spacer shield (11) and spacer (10) on spindle. Install seal on spindle with large diameter metal flange (with name and number) out toward bearing (7). Pack

wheel bearings with No. 2 wheel bearing grease and install inner cone in cup. Drive wear sleeve into hub with crimped edge of wear sleeve towards bearing. Edge of wear sleeve should be 1/4-inch past flush with hub.

4. R&R PEDESTAL. Raise front of tractor, then remove cap screws retaining pedestal to front support casting. The splined coupling (6—Fig. 4) will be removed with the pedestal assembly.

When reinstalling pedestal, hold steering wheel in the center (straight ahead) position and install pedestal with wheels in straight ahead position (caster to rear).

5. OVERHAUL. To overhaul the removed unit, remove cap screw (2—Fig. 4), washer (3), shims (4) and coupling (6). NOTE: Make certain that



2. Cap screw
3. Washer
4. Shims
5. Snap ring
6. Splined coupling
7. Cap screw
8. Pedestal
9. Bearing cup
10. Bearing cone
11. Oil seal
12. Spindle shaft

Fig. 4—Exploded view of dual wheel tricycle pedestal and associated parts.

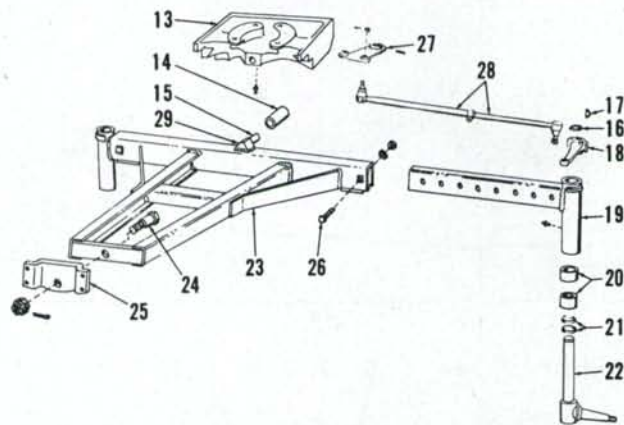


Fig. 5—Exploded view of typical adjustable axle and associated parts. Radius rod (23) is welded to axle main member (29).

- 13. Axle support
- 14. Bushing
- 15. Axle pivot
- 16. Snap ring
- 17. Woodruff key
- 18. Spindle arm
- 19. Spindle support
- 20. Bushings
- 21. Thrust washers
- 22. Front axle spindle
- 23. Radius rod
- 24. Radius rod pivot hole
- 25. Pivot strap
- 26. Cap screw
- 27. Center steering arm
- 28. Tie rod
- 29. Axle main member

shims (4) are not lost or damaged as they provide the proper bearing adjustment. With splined coupling removed, spindle shaft can be withdrawn from pedestal. Pack bearing (10) with No. 2 wheel bearing grease. Oil seal (11) is of the lip type and should be installed with lip towards bearing. Coupling should be installed on spindle shaft with end of coupling nearest internal snap ring downward. When reassembling, vary the number of shims (4) to provide shaft with a free rolling fit and no end play.

ADJUSTABLE FRONT AXLE

6. WHEEL ASSEMBLY. Front wheel and bearing construction on wide front axle models is of conventional design. Stamped steel wheel disc is reversible on hub. Bearing adjustment is made by tightening retaining nut on spindle until bearings are firmly seated; then, backing nut off one castellation and installing cotter pin. Bearings should be repacked with No. 2 wheel bearing grease after each 500 hours of use.

The three lips on outside diameter of seal (9—Fig. 3) contact a steel wear sleeve (8) that is pressed into the wheel hub. Install the seal over spindle with large diameter metal flange (with name and number) out toward bearing (7). Pack wheel bearings with No. 2 wheel bearing grease and install inner cone in cup. Drive the wear sleeve into hub with crimped edge of sleeve towards bearing. Edge of wear sleeve should be 1/4-inch past flush with hub.

7. ADJUSTMENTS. Front wheel toe-in should be checked after each tread width adjustment on adjustable front axle models. All wide front axle models are provided with toe-in alignment marks; however, it is advisable to measure front wheel toe-in and adjust to 1/16-1/8-inch if necessary. Be sure that the tie rod clamps are securely tightened.

8. REMOVE AND REINSTALL. Support tractor, and disconnect tie rods from center steering arm (27—Fig. 5). Detach radius rod rear pivot from torque tube and lower rear of

radius rod. NOTE: Some rear pivots may be different from type shown in Fig. 5. Move front axle assembly rearward and roll axle assembly away from tractor. Axle support (13) can be removed from the front support after removing the attaching cap screws. Center steering arm is attached to steering shaft with a roll pin.

STEERING KNUCKLES (SPINDLES)

9. The procedure for removing the spindle is evident after an examination of the unit and reference to Fig. 5. Bushings (20) should be installed flush with spindle support (19). These bushings are pre-sized and if carefully installed will need no reaming. Tie-rod length should be varied to provide a toe-in of 1/16-1/8-inch.

FRONT SPLIT

Detaching (splitting) the front wheels and steering gear assembly from tractor is a partial job required in several other jobs such as removing the timing gear cover.

10. To detach (split) the front wheels and steering gear assembly from tractor, first remove the grille and hood. Drain coolant from radiator and disconnect upper and lower radiator hoses. Unbolt and remove the radiator and radiator shell as a unit. Disconnect tubes from the steering cylinder, support tractor under torque tube and unbolt front support from side rails. On wide front axle models, disconnect the radius rod from its pivot bracket. On all models, roll the complete front assembly away from tractor.

STEERING SYSTEM

Tractors are equipped with a hydrostatic steering system that has no mechanical linkage between the steering wheel and tractor front wheels. The control valve unit (Fig. 8) contains a rotary metering motor, a commutator feed valve sleeve and a selector valve spool. In the event of engine or hydraulic power failure, the metering motor becomes a rotary pump to actuate the power steering cylinder when steering wheel is turned. A check valve in the control valve housing allows recirculation of fluid within the control valve and steering cylinder during manual operation.

Power for the steering system is supplied by a gear type pump mounted on right side of the torque tube.

TROUBLE SHOOTING

11. Before attempting to adjust or repair the power steering system, the cause of any malfunction should be located. Refer to the following paragraphs for possible causes of power steering system malfunction:

Irregular or "Sticky" steering. If irregular or "sticky" feeling is noted when turning the steering wheel with forward motion of tractor stopped and with engine running at rated speed, or if steering wheel continues to rotate after being turned and released, foreign material in the power steering fluid is the probable cause of trou-

ble. Renew the throw-away type oil filter. It may be necessary to also drain the hydraulic sump and refill with clean oil. If trouble is not corrected, the power steering valve assembly should be removed and serviced; refer to paragraphs 15 and 16.

Steering Cylinder "Hesitates". If steering cylinder appears to pause in travel when steering wheel is being turned steadily, probable cause of trouble is air trapped in the power steering cylinder. Bleed the cylinder as outlined in paragraph 12.

Slow Steering. Slow steering may be caused by low oil flow from pump. Check time required for full stroke

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