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Galion

Service Manual

T500A & T500B

Volume 1 of 2

Service Manual

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GA-S-T500A+

SMG-T500A

**Shop
Manual**



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T-500-A

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MOTOR GRADER

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SERIAL NUMBERS

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GRADER ☒
 PLANER ☐
 ROLLER ☒
 CRANE ☒

Shop Manual

A-1.20
C6

ROSS POWER STEERING GEAR

APPLICABLE GRADER MODELS

118A
 118B
 118C
 104A
 104B
 104C
 104HA
 104HB
 160B
 160C
 160L
 T500A
 T500L
 T600B

APPLICABLE ROLLER MODELS

PTR 9-Wheel Roller

APPLICABLE CRANE MODELS

80
 90 thru 125
 90A thru 125A
 125F
 125FA
 140F
 150A
 150FA
 200FA

SERIAL NUMBERS

07245 thru 07600
 07601 thru 10750
 10751 thru 12013
 07245 thru 07600
 07601 thru 10750
 10751 thru 12013
 07245 thru 07619
 07620 thru 10693
 02155 thru 02714
 02715 thru 03029
 02121 thru 03083
 02601 thru 07994
 02944 thru 07994
 01501 thru 02535

SERIAL NUMBERS

00101 thru 05678

SERIAL NUMBERS

01001 thru 03131
 01150 thru 08774
 02006 thru 08774
 07247 thru 08774
 07990 thru 08774
 07571 thru 08774
 02832 and Up
 07305 and Up
 09401 and Up

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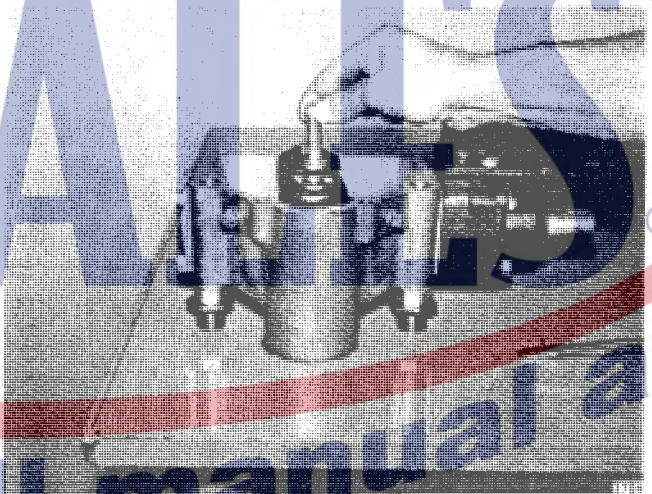
Position lever shaft in position with stud roller in center of cam.

If lever shaft is shim adjusted, proceed to Step 57 on page 20.



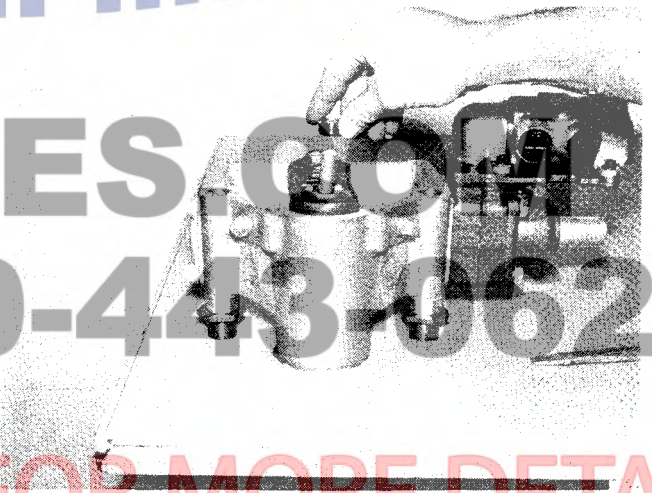
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If lever shaft is screw-adjusted, place adjusting screw in pocket of lever shaft.



53

Install adjusting screw lock nut.



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Position transmission control console (inside cab) against breastplate (2). Insert capscrew through breastplate and bracket and attach lockwasher and nut (1); tighten.



Figure 32

Remove caps and plugs, match mating parts, and connect intake hose (1), motor drain tube (2), and return hose (3) to bottom of control valve assembly (4). Tighten hose clamps.



Figure 33

Remove caps and plugs and connect twelve extended elbows (1) to matching ports. Check all connections to insure tightness.

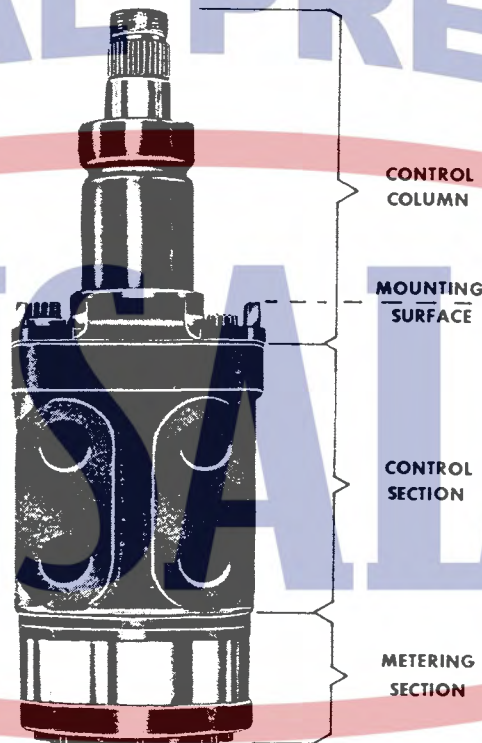


Figure 34

HYDROSTATIC STEERING VALVE

In this type of system, hydraulic lines take the place of the mechanical gear box linkage of the previous type system. One can think of this control unit containing only a hydraulic steering valve.

The combined hydrostatic steering unit contains three (3) separate sections each producing a separate function. Each of these sections are shown below.



The control column is connected to the steering wheel by a shaft. Whenever the steering wheel is turned in the appropriate direction, the control column is also rotated. Connected to this control column is the control section.

Inside the control section are two spools inside each other with centering springs to locate each in neutral position. This section functions basically the same as the hydraulic actuating unit on the mechanical power boosted steering gear box. It accomplishes a free flow downstream when in neutral, and, directs a flow to the respective side of the steering cylinder when steering. Exhausted fluid from the cylinder when steering returns through the steering valve and downstream.

In conjunction with the control section is a metering section. The metering section consists of a gerotor type housing and metering gear. The metering gear is connected to the control section and indirectly to the steering wheel. As the steering wheel is turned, the control section designates the proper flow direction for steering and the metering gear regulates the displacement flow out to the cylinder. In this way a controlled actuation of hydrostatic steering is accomplished.

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REMOVAL

The following procedure is only one method of obtaining a complete removal of the drawbar shift cylinder.

Using a suitable lifting device sling the drawbar shift cylinder (1) as shown.

Disconnect hose (2) and remove adaptor (3) from cylinder. Plug both hose and cylinder.

Remove capscrew and lockwasher (4), lock pin (5), pin (6) and cylinder from slide weldment (7).

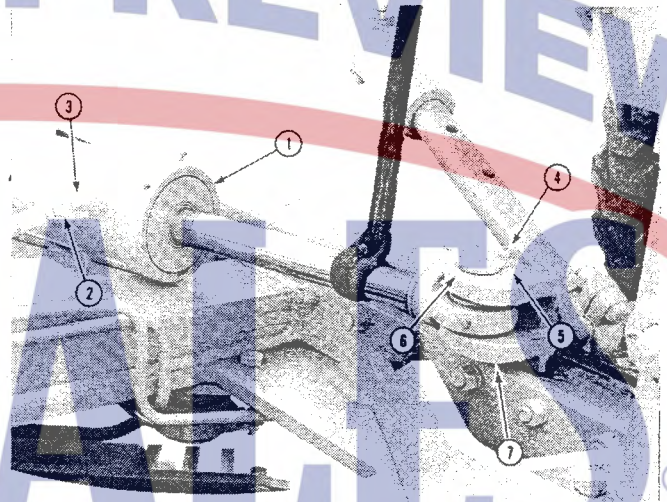


Figure 1

Disconnect hose (1) from drawbar shift cylinder (2).

Remove two nuts, lockwashers and capscrews (3), ball cap (4), shims (5) and cylinder from ball stud (6).

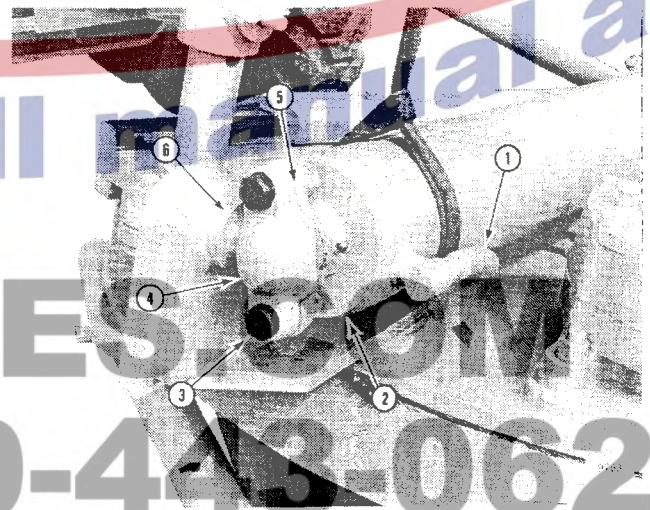
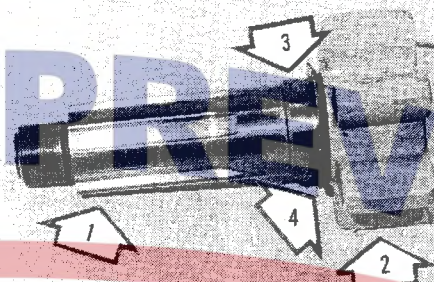


Figure 2

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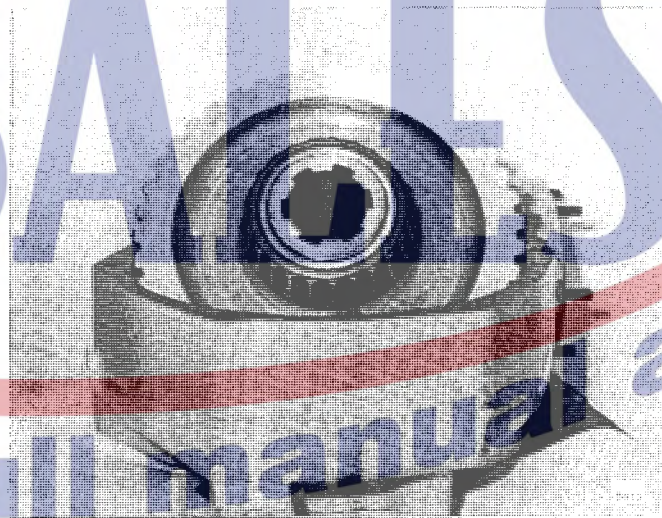
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Inspect pinion shaft. Inspect (1) splines; (2) the teeth; (3) oil seal sealing surface; (4) the oil slinger seal. If any portion of pinion is damaged or unserviceable, replace the pinion shaft. *Note: Oil slinger seal may not be on all machines. It is only on later serial numbered graders.*



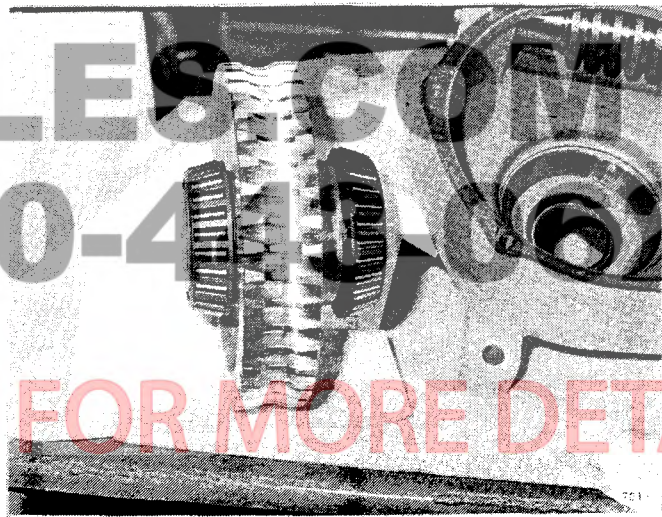
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Remove circle reverse gear and bearing assembly.



18

Inspect gear and bearings. If gear or bearings are damaged, replace them. Use care in replacing bearings. *Note: If a cup or bearing is damaged and replaced, the companion cup or bearing must be replaced also. Bearings must be seated tightly against shoulders on gear.* **CAUTION:** Use only suitable pullers in removing bearings and cups.



51. Remove plugs from hydraulic cylinder. Position hoses (2) thru hole in planer frame (3). Wrap hydraulic hoses with canvas and install clamps (1).



Figure 51

52. Remove caps from hydraulic supply lines. Spread four hose clamps (4) over hoses (2). Install hoses on tubes and tighten nuts (1). Position hose clamps on studs and install two flat washers, lockwashers and nuts (3).

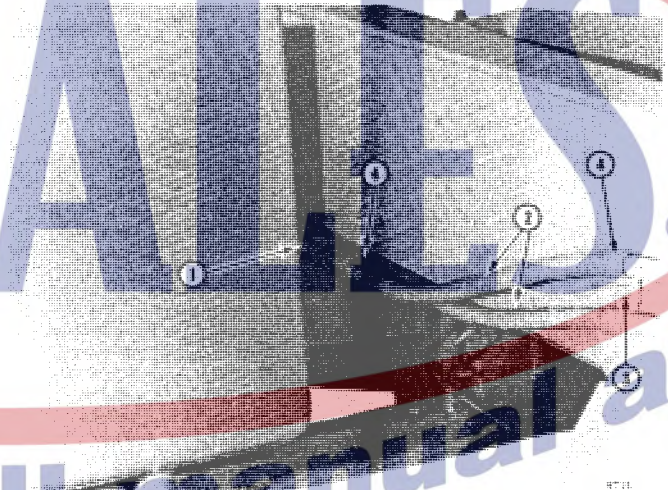


Figure 52

53. Lift carrier (2) far enough to remove blocking (3). Remove blocking (1) from tandem wheels.



Figure 53

BENCH TESTING

Check cranking motor pinion (1) for freedom of operation by turning it on the screw shaft. The armature should be checked for freedom of rotation by prying the pinion (1) with a screwdriver (2). Tight bearings, a bent armature shaft, or a loose pole shoe screw will cause the armature to not turn freely. If the armature does not turn freely, the motor should be disassembled immediately. However, if the armature does rotate freely, the motor should be given a no-load test before disassembly.

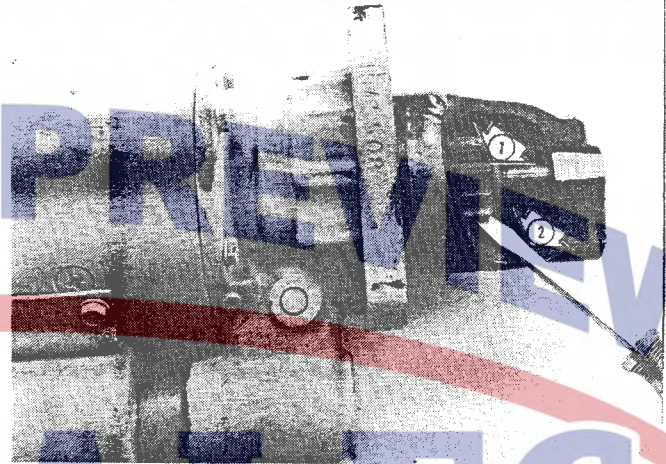


Figure 10



CAUTION

THE FOLLOWING TEST IS TO BE PERFORMED WITH THE CRANKING MOTOR REMOVED FROM THE ENGINE. DO NOT APPLY VOLTAGE ABOVE WHAT IS SPECIFIED; EXCESSIVE VOLTAGE MAY CAUSE THE ARMATURE TO THROW WINDINGS.

No-Load Test:

Prior to setting up test, check the identification tag on side of cranking motor to be tested. Use the model number found there to reference correct test data in table presented on following page. If cranking motor is a Delco-Remy product and not listed in table, contact local distributor for latest test data. If power unit is manufactured by Cummins or Deutz, contact Cummins or Deutz distributors for test data.

Connect a VOLTMETER (with 20,000 ohms/volt rating) from the motor terminal to the motor frame as shown in Figure 11. Use an rpm indicator to measure armature speed and connect the motor and an ammeter (capable of indicating a 0 to 60 amp range) in series with a fully charged battery of the specified voltage, and a switch in the open position from the solenoid battery terminal to the solenoid switch terminal. Close the switch and compare the voltage, current, and rpm readings with those presented in the following test table or latest manufacturer's specifications. It is not necessary to obtain the exact voltage specified since an accurate interpretation can be made by recognizing that if the voltage is slightly higher than specified, the rpm rate will be proportionately higher, with the current remaining essentially unchanged. However, if the exact voltage is desired, a carbon pile (standard automotive model) connected across the battery can be used to reduce the voltage to

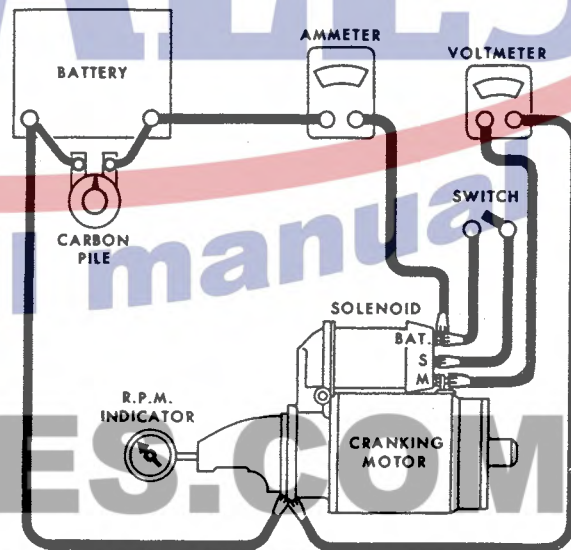


Figure 11