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MANUAL PREVIEW

*Allis Chalmers*

Service Manual

American Bosch

Diesel Pump

PSB Series

Service Manual

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MANUAL PREVIEW

FUEL INJECTION  
PUMP

(AMERICAN BOSCH PSB series)

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## 2. EXTERNAL SPRING TYPE

As the governor weights revolve around the shaft, centrifugal force throws them outward, moving the weight fingers and the sliding sleeve along the shaft and against the fingers on the fulcrum lever. The lever in turn moves the control sleeve in the hydraulic head thru the control rod. As speed increases, the greater centrifugal force throws the weights out farther, the sleeve moves the lever farther and fuel is decreased. As speed decreases, the force of the extension spring connecting the operating lever to the operating shaft overcomes the centrifugal force of the weights and they partially collapse, letting the sleeve move back on the shaft and moving the fulcrum lever to a position of more fuel delivery.

The operating lever is intended to be actuated by a rod from the driver's seat or control panel. Thru its connection with the fulcrum lever and the latter's linkages to the control sleeve, the operating lever's position influences fuel delivery and engine speed. If the operating lever is in a fixed position and engine load is suddenly increased, the speed will momentarily decrease and the flyweights will lack the centrifugal force necessary to balance the spring forces on the sliding sleeve, which then shifts and moves the fulcrum lever and control sleeve toward increased fuel delivery; the engine thereupon returns to its original speed. If engine load is suddenly decreased, the speed will momentarily increase, the flyweights move farther out, their fingers shift the sliding sleeve against the spring force and move the fulcrum lever and control sleeve to decreased fuel delivery and the engine speed is reduced.

At low idle position the operating lever exerts little tension on the extension spring and consequently the operating shaft and fulcrum lever are moved with little force from the weights. As the operating lever is moved toward full-load position, the spring is extended toward increased fuel delivery. The engine speed then increases until the force of the weights balances the force of the spring.

The engine is shut off from the driver's seat or control panel thru a connection to the lower end of the shut-off screw on the operating shaft, which moves the fulcrum lever to the position of no fuel delivery.

The function of torque build-up at decreasing speeds, so important in tractor applications, is accomplished

when this simplified governor is used, by suitable modification of the delivery valve in the injection pump to lessen the effectiveness of the valve's retraction piston at lower speeds. The requisite delivery valve modification is made at the time of manufacture; no adjustment is possible.

## E. FUEL TRANSFER PUMP

The PSB injection pump is designed to be equipped with a fuel pump of the positive-displacement gear type and to have a through-flow supply system.

The American Bosch positive-displacement gear-type transfer pump is mounted on the pad provided on the front side of the injection pump housing. This pump is fitted with a gear which meshes with the integral camshaft gear.

A through-flow fuel transfer system is required with this type of transfer pump. This calls for installing in the hydraulic head opposite to the fuel inlet connection and overflow valve with connecting tubing for returning the bypass fuel to the supply tank. With this overflow valve, fuel transfer pressures of 20-25 psi will be obtained, adequate to assure full delivery from the injection pump at highest recommended speeds.

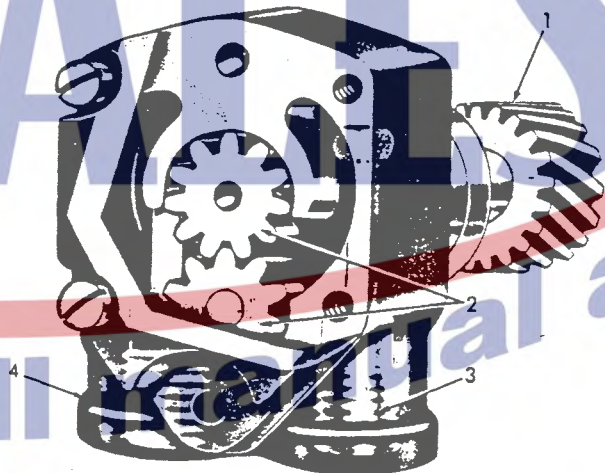


Fig. 6 Fuel Transfer Pump  
(T-72904)

1. Drive Gear
2. Positive Displacement Pumping Gears
3. Outlet
4. Inlet



Fig. 13 Checking Friction Clutch Torque  
(T-53075)

1. Torque Wrench TSE 76201

2. 0-10 lb. Spring Scale TSE 7927B

tion hub retainer (7), spacer (8), spring disc (9), .035" spacer (10), spring disc (11), friction hub nut washer (12), (for spanner nuts only), and friction hub nut (13).

9. Turn the friction clutch assembly over and place it on the camshaft extension as shown. Apply lubricating oil to the face of the spider touched by the spring discs. Use torque wrench TSE 76201 and spring scales TSE 7927B as shown to determine proper slippage. **THIS IS ESSENTIAL TO PROPER GOVERNOR ACTION.** The spider should move through a complete revolution on the drive hub with a uniform pull of 4-1/4 - 5 lbs. Add or remove spacers below the spring discs to obtain this reading. Do not read starting torque.

b. Assemble to the shaft the long bushing (4). The hole for the locating screw should be close to the integral gear (towards the top of the pump).

c. Replace second spacer (3).

d. Insert Woodruff key into shaft slot.

e. Assemble gear (5) spacing washer (6), and snap ring (7) to the shaft.

10. Assemble a dial indicator as shown to check for concentricity of the camshaft extension. The dial indicator must not move more than .003" in a complete revolution of the camshaft. If it does, straighten or replace the camshaft as necessary.

11. Using a suitable arbor press and pressing tool TSE 76199, press the friction clutch assembly onto the camshaft until firmly seated.

12. Mount the pump housing on bracket TSE 76193 and hold in vise. (Refer to Figure 16).

13. Install the ball bearing retaining plate in the housing with the cutaway portion of the plate coinciding with the slots in the housing. Fasten with four screws and lock tabs.

14. Reassemble the quill shaft as follows: (Fig. 17)

a. Place spacer (3) on shaft (1).



Fig. 14 Checking Camshaft Extension Concentricity  
(T-53061)