WAGNER DUAL PISTON MASTER CYLINDER

International Harvester

NOTE — Some models use other units, see Bendix/Delco-Moraine Tandem Dual Piston Master Cylinder in this Section.

DESCRIPTION

Wagner tandem dual piston master cylinder is a single casting with front and rear pistons, and a separate reservoir and outlet for each piston. Rear piston is operated by a push rod connected to brake pedal. Front piston is operated by rear piston. In a combination drum and disc brake system, reservoir which feeds disc brakes is larger, to correspond with larger size of disc brake caliper cylinders. Master cylinder outlet which feeds drum brakes has a residual valve under tube seat. Disc brake outlet has no valve, since disc brakes must not have any residual pressure. *NOTE — Master cylinder used with 4-Wheel drum brakes has residual pressure valves and springs in both brake line outlets.* Failure in either front or rear system does not result in failure of entire system.

ADJUSTMENT

BRAKE PEDAL

There is no adjustment for pedal height correction, however it should be checked as follows to determine if sufficient height exists. Open a wheel cylinder bleeder valve to simulate brake system failure and depress brake pedal until it becomes solid. Pedal should contact floorboard when fully depressed under these conditions. If pedal does contact floorboard, correction can be made only by straightening, aligning, or replacing parts.

BRAKE WARNING SWITCH

If pressure loss of 85-150 psi occurs between front and rear brake systems, brake warning light will come on and stay on until system has been repaired and switch has been reset. To reset switch, disconnect wire at switch and remove switch from valve. This will allow pistons to recenter themselves. Reinstall and tighten switch in valve.

REMOVAL & INSTALLATION

MASTER CYLINDER

Removal — Disconnect front and rear hydraulic brake lines at master cylinder, and cover ends of lines to prevent entry of foreign matter. On vehicles equipped with manual brakes, disconnect brake pedal push rod at brake pedal. On all models, remove master cylinder retaining bolts and remove master cylinder.

Installation — Position master cylinder on vehicle and install cylinder attaching bolts. Connect front and rear hydraulic brake lines to cylinder.Install brake pedal push rod, stop light switch wire, and warning light wire, if removed. Fill reservoir with clean brake fluid, and bleed entire brake system. *See Hydraulic Brake Bleeding in this Section.*

HYDRAULIC CONTROL VALVES

Removal — Disconnect brake warning light wire at switch. Remove hydraulic brake lines at control valve and cover ends to prevent entry of foreign matter. Remove control valve mounting bolts(s), and remove valve assembly from vehicle.

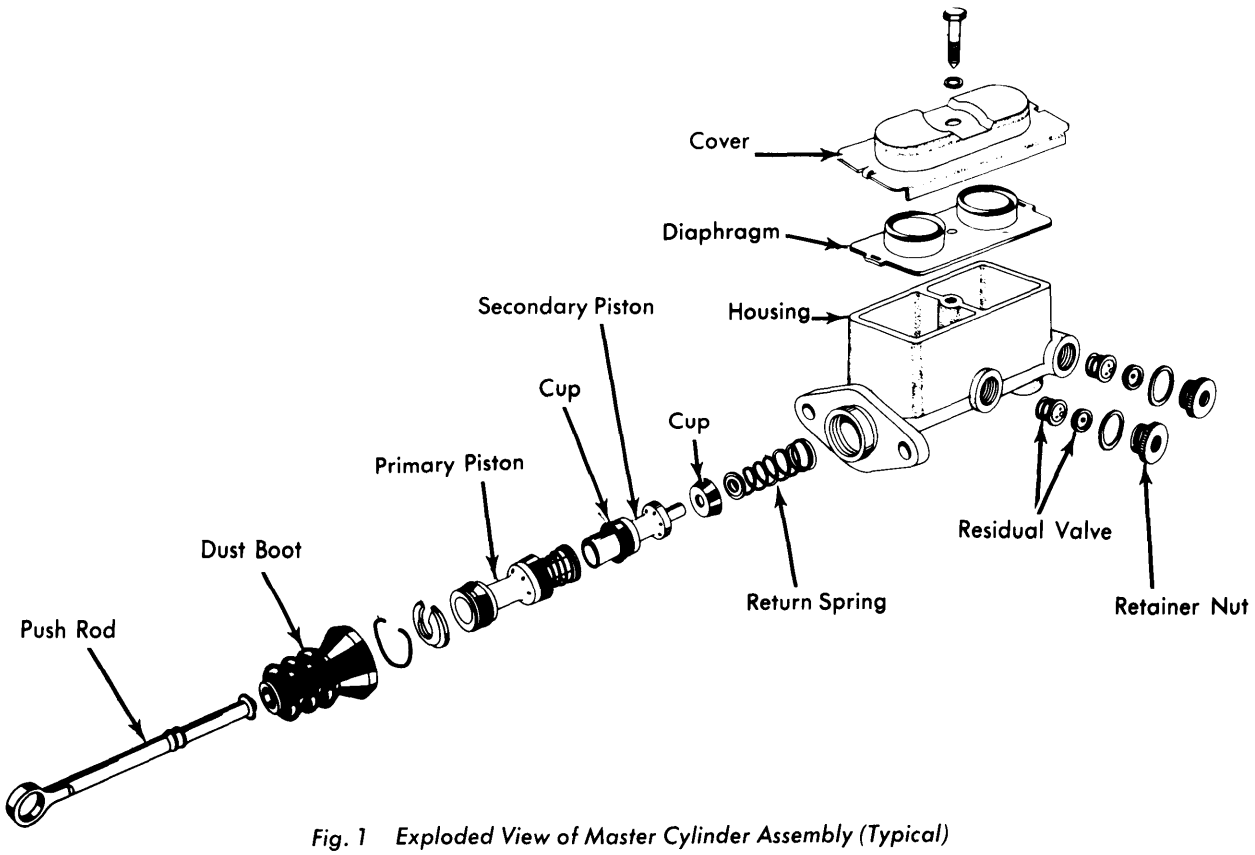

Fig. 1 Exploded View of Master Cylinder Assembly (Typical)

WAGNER DUAL PISTON MASTER CYLINDER (Cont.)

Installation – To install, reverse removal procedure, bleed entire brake system (see Hydraulic Brake Bleeding in this Section) and adjust brake warning light switch (see Brake Warning Switch Adjustment).

OVERHAUL

MASTER CYLINDER

Disassembly – 1) Remove master cylinder cover and diaphragm and drain fluid from reservoirs. Stroke piston to force out residual fluid through outlet ports. Remove piston stop bolt from bottom of housing, and remove retainer ring from groove in end of cylinder bore.

2) Remove stop plate from push rod end of cylinder and turn cylinder assembly so that forward end is up. Lightly tap open end of cylinder on bench. All internal parts should slide easily out of cylinder bore. *NOTE – If parts do not slide out of bore, carefully apply air pressure to forward brake tube outlet to force parts out.*

3) Remove and discard all rubber parts. On vehicles with removable residual valves, unscrew and remove check valve retaining nut. Lift out residual valve assembly.

Inspection – Clean master cylinder using denatured alcohol, and dry with compressed air or lint free cloth. Inspect cylinder bore for signs of scoring, pitting, and corrosion. Light scratches and corrosion may be removed, using crocus cloth. Manufacturers do not recommend honing cylinder. If defects cannot be removed with crocus cloth, replace cylinder assembly.

Reassembly – 1) Dip all parts, except housing, in clean brake fluid prior to assembly. Carefully install rubber cup on rear piston with lip of cup facing toward open end of cylinder. *NOTE – All other cup lips face in opposite direction.*

2) Stack and install front piston return spring, pressure cup, and piston assembly in cylinder bore. Install front piston stop bolt in housing, be sure bolt enters bore behind front piston. Install rear piston assembly into cylinder bore. Position stop plate in bore and install retainer ring. Install reservoir cover and diaphragm, then install dust boot.

HYDRAULIC CONTROL VALVES

Disassembly & Reassembly – With valve assembly removed from vehicle, remove brake warning light switch. Remove piston retaining nuts, then remove springs, piston stops, and piston assemblies. Inspect all parts for damage and replace as necessary. To assemble, reverse disassembly procedure.

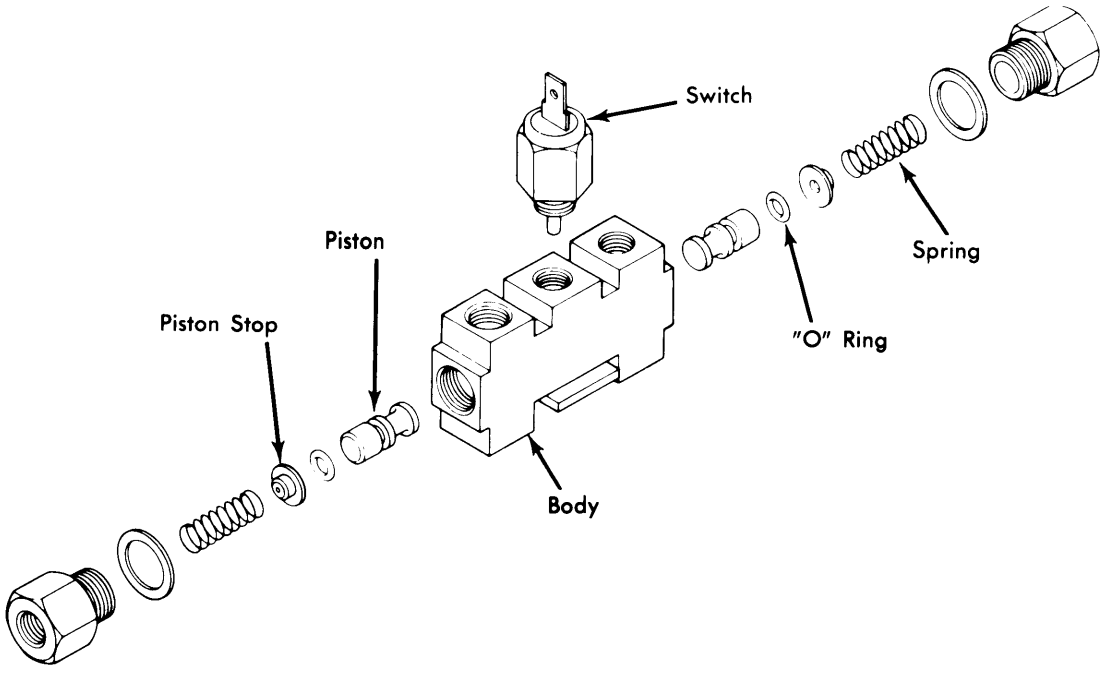

Fig. 2 Exploded View of IHC Hydraulic Control Valve