HYDRAULIC SYSTEM CONTROL VALVES

DESCRIPTION

All vehicles have some type of hydraulic system control valve or switch in the brake system. Unit is usually mounted on left front fender splash shield or frame side rail beneath master cylinder, and is connected to master cylinder and wheel cylinders through hydraulic lines. Drum brake vehicles use a simple pressure differential warning switch. Disc brake vehicles (except Corvette) use valves which combine the warning switch with a metering valve, a proportioning valve, or both.

DIFFERENTIAL WARNING SWITCH

Switch is used to warn vehicle operator that one of the hydraulic systems has failed. When hydraulic pressure is equal in both front and rear systems, switch piston remains centered and does not contact terminal in switch cylinder bore. Switch includes a centering spring on each side of piston to hold piston in centered position. If pressure falls in one of the systems, hydraulic pressure moves piston towards inoperative side. Shoulder of piston then contacts switch terminal to provide a ground for warning lamp circuit and light warning lamp.

PROPORTIONING VALVE

Valve operates by restricting, at a given ratio, hydraulic pressure to rear brakes when system hydraulic pressure reaches a certain point. This improves front-to-rear brake balance at high deceleration, when a percentage of rear weight is transfered to front wheels. Valve reduces rear brake pressure, and delays rear wheel skid. On light pedal application valve allows full hydraulic pressure to rear brakes.

METERING VALVE

Valve holds off hydraulic pressure to front disc brakes to allow rear drum brake shoes to overcome return spring pressure and begin to contact drums. This feature helps prevent locking front brakes on slippery or icy surfaces under light braking conditions. Valve has no effect on front brake pressure during hard braking conditions.

TESTING

ELECTRICAL CIRCUIT

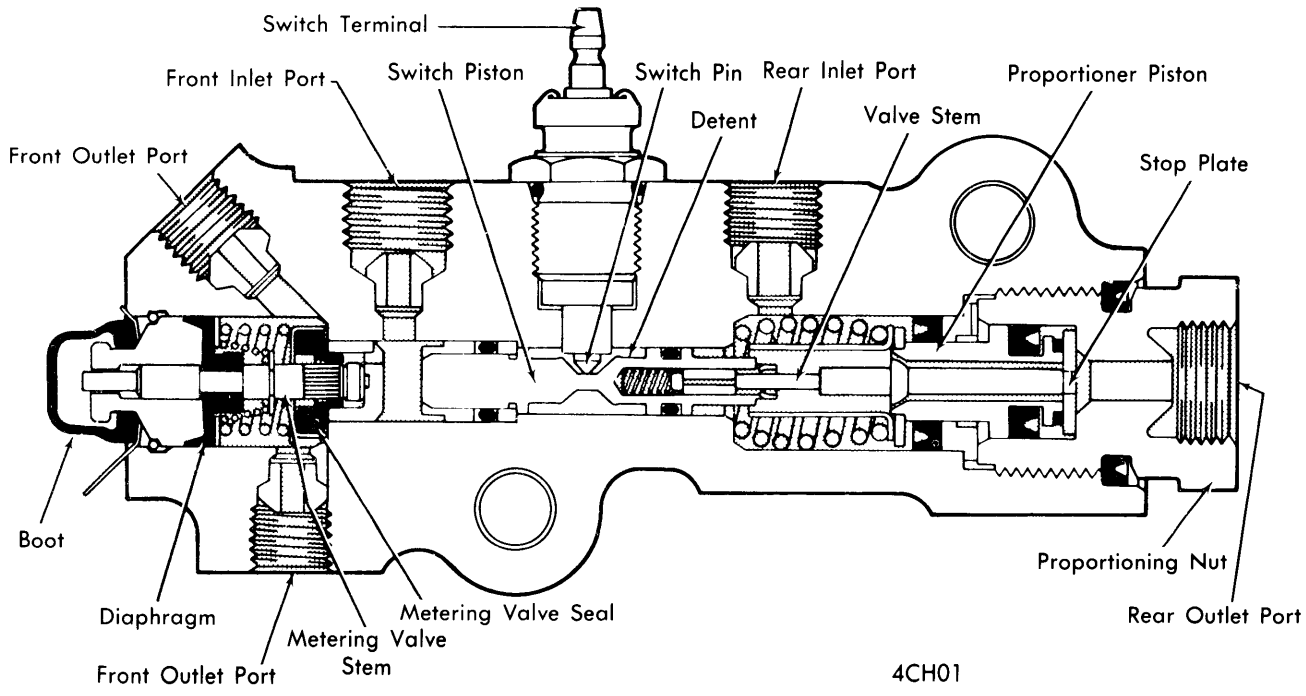
Disconnect wire from switch terminal and ground the wire. Turn ignition switch to "ON". Warning light should come on. If lamp does not light, bulb is defective, or wiring circuit is defective. Replace bulb or wiring as necessary. When light comes on, turn off ignition switch and reconnect wire to switch.

WARNING LIGHT SWITCH SELECTION

Attach bleeder hose to either rear brake and immerse other end of hose in container with brake fluid. Turn ignition switch to "ON", open bleeder screw while pressure is applied to brake pedal. Warning lamp should light. Close bleeder screw before pressure is released from pedal. Reapply pedal pressure (moderate to heavy). Light should go out. Repeat test on front system. Results should be the same. Turn ignition off. If lamp does not light on either system, but electrical system checked good, warning light switch portion of valve is defective.

SERVICING

All hydraulic system switches and valves are non-adjustable and non-serviceable. If any part of valve is found to be defective, entire unit must be replaced.



COMBINATION CONTROL VALVE (TYPICAL)