19-2. Tandem Master Cylinder

The tandem master cylinder is similar in construction to an ordinary master cylinder, the principal differeneces being that it has two pistons and four piston cups and that hydraulic pressure is developed in two chambers, one for front brakes and the other for rear brakes.
Obviously the two-circuit foot brake system employed in the these models assures greater safety; failure of one circuit (failure of front brakes or rear brakes) due to such as an oil line rupture does not incapacitate the machine.

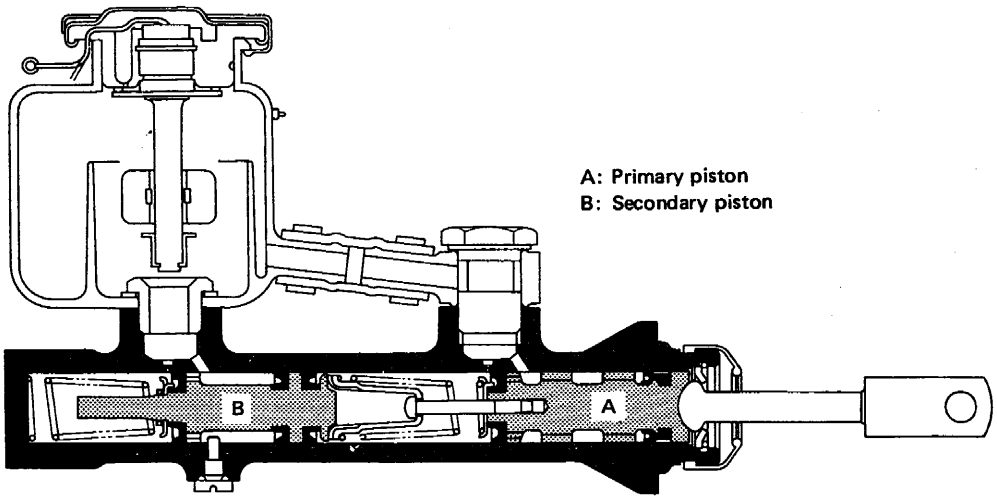

Fig. 19-2

19-3. Tandem Master Cylinder Operation

Normal operation
Depressing the brake pedal forces primary piston "A" toward the left (in Fig. 19-3) to pressurize the oil immediately ahead for front brakes. By this pressure and by the force of return spring, secondary piston "B" moves similarly to pressurize the oil for rear brakes.

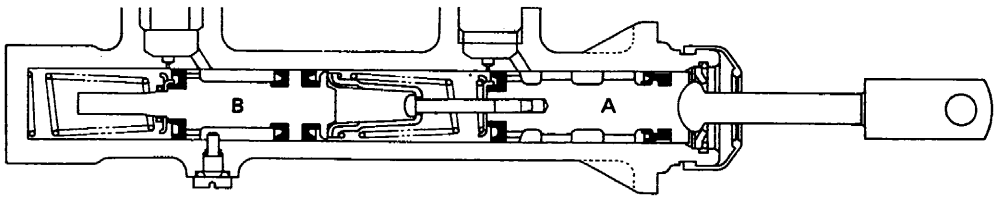

Fig. 19-3

One-circuit operation (front-brake circuit failure)
Depressing the brake pedal causes primary piston "A" to move as above but, because the front-brake circuit cannot hold pressure, the oil immediately ahead of this piston does not get pressurized. As piston "A" keeps moving, compressing the spring, it begins to push piston "B" when the spring has been compressed fully. From this point on, piston "B" moves to pressurize the oil ahead and thus actuate the rear brakes.

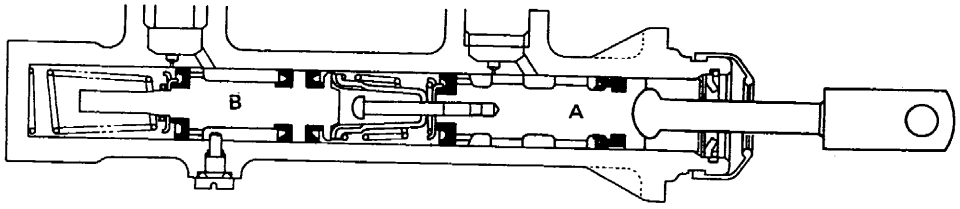

Fig. 19-4

One-circuit operation (rear-brake circuit failure)
In this case, the leftward movement of piston "A" has but little effect in pressurizing its oil (for front brakes) at first, because the initial rise in oil pressure causes piston "B" to promptly yield and move toward the left. Very soon the forward end of piston "B" comes to and bears against the head of the cylinder. From this point on, the leftward movement of piston "A" becomes effective to pressurize the oil ahead of it for the front brakes. Fig. 19-5 shows secondary piston "B" at halt.

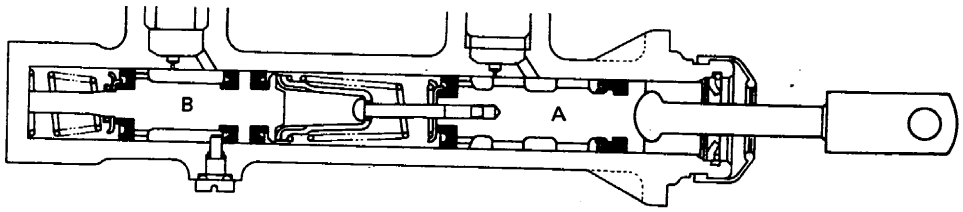

Fig. 19-5