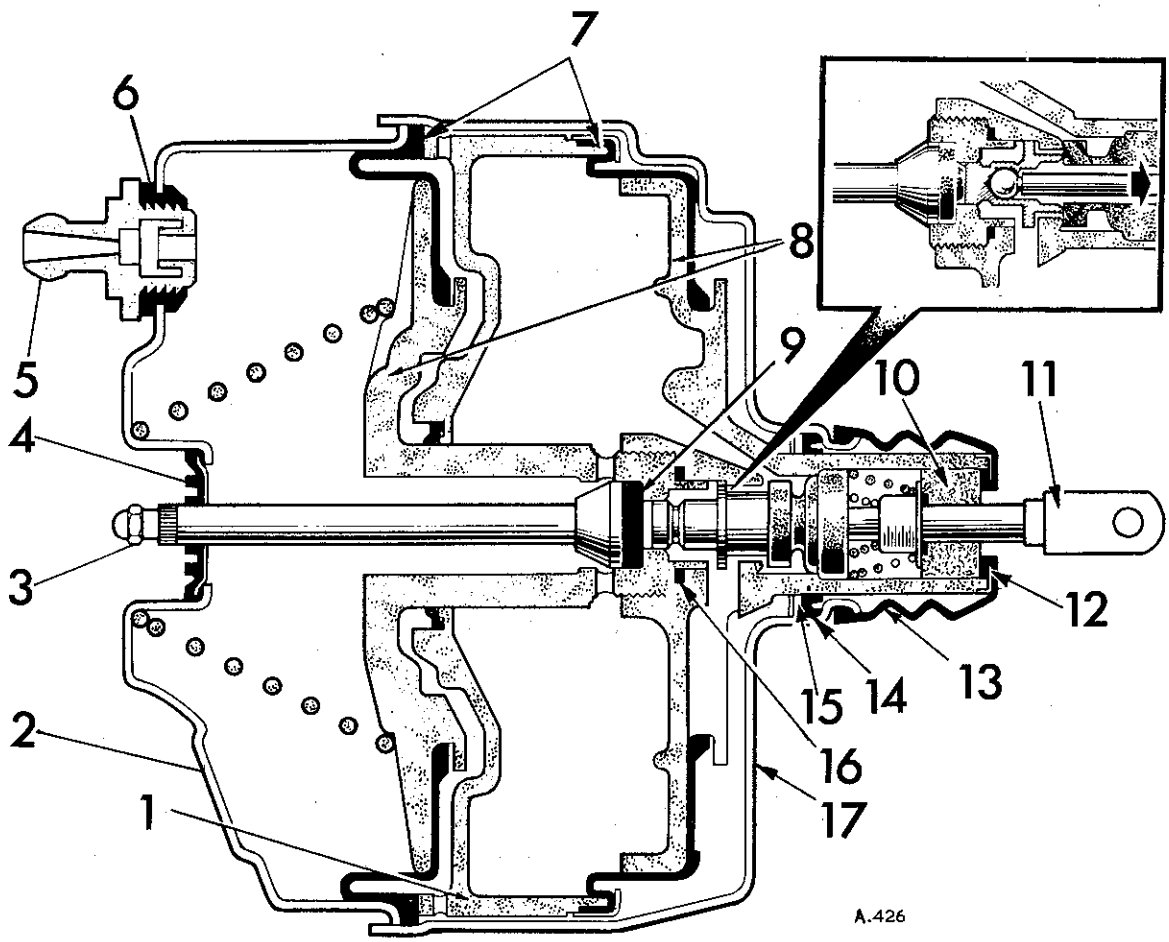
SERVO - GIRLING TYPE 100

Introduction

The Tandem Supervac (Fig. 1) is a mechanical servo unit designed to provide adequate controlled assistance to the brake systems of the larger and more powerful vehicles.

Power supplied by the unit is obtained from vacuum created either in the engine inlet manifold or by an exhauster unit. The vacuum is applied to both sides of twin diaphragms and by admitting atmospheric pressure to one side of the diaphragms, the power is obtained.

Mounted between the brake pedal and the master cylinder, the unit is connected to these parts by push rods. Should a vacuum failure occur, the two push rods act as a single rod and the brakes will therefore work in the conventional manner; but more effort will be required on the brake pedal.



1. CENTRE PLATE
2. FRONT SHELL
3. OUTPUT ROD
4. SEAL
5. VACUUM CONNECTION
6. GROMMET
7. DIAPHRAGMS
8. DIAPHRAGM PLATES
9. REACTION DISC
10. FILTER
11. INPUT ROD
12. RETAINER
13. DUST COVER
14. SEAL
15. BEARING
16. SEAL
17. REAR SHELL

Fig. 1 *Sectional view of servo unit Type 100*

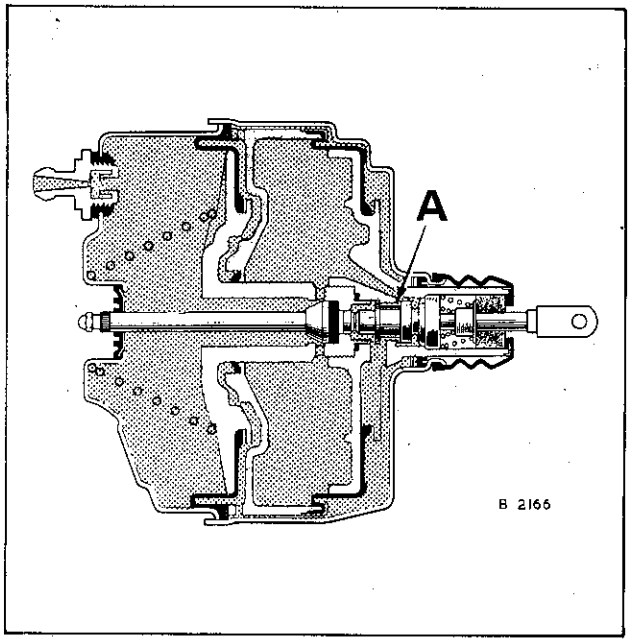


Fig. 2 *Operation – Brakes off*

Brake off

The twin diaphragms are fully recuperated and held against the stop faces by the diaphragm return spring. The input rod assembly is also fully retracted by the brake pedal return spring, within the diaphragm plate, as far as the valve control piston will allow. With the input rod in this position the vacuum port is open and there is a vacuum each side of both diaphragms.

VACUUM
AIR

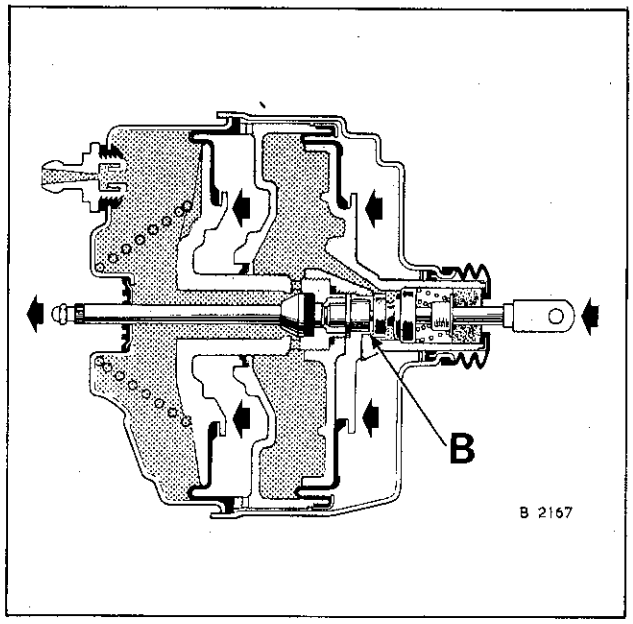


Fig. 3 *Operation – Brakes being applied*

Brake being applied

When the brake pedal is depressed, the input rod moves forward and the rubber valve seal closes the vacuum port, isolating the chambers behind the diaphragms from the vacuum source. The input rod continues to move forward through the now stationary valve seal opening the air valve. This allows air to pass through the centre of the seal into the chambers behind the two diaphragms. The driving force provided by the air acting on the diaphragms and the drivers foot on the brake pedal moves the output rod forward, operating the master cylinder.

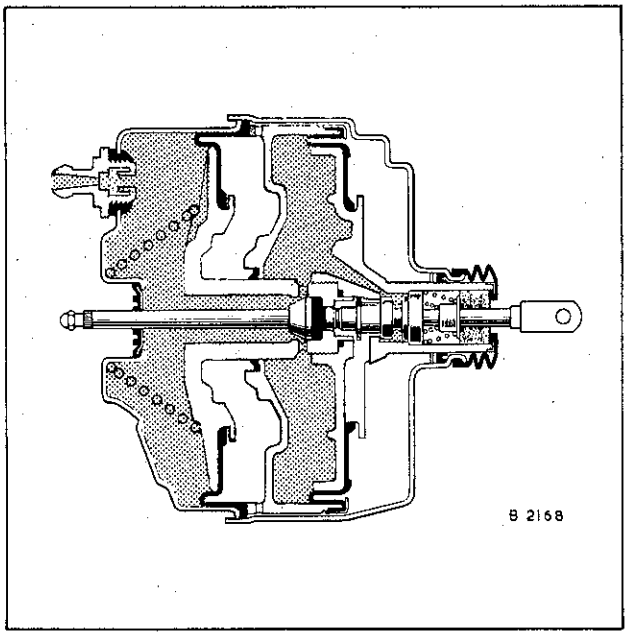


Fig. 4 *Operation – Brakes held on*

Brake held on

When the brake pedal is held on, the front and rear diaphragms will momentarily continue to move forward and so compress the outer edges of the reaction disc. This compression causes the centre of the disc to extrude, pressing back the input rod (see inset above) and thus closing the atmospheric port. Further movement of the brake pedal either opens the vacuum or atmospheric port, depending on whether the brake pedal is released or depressed.

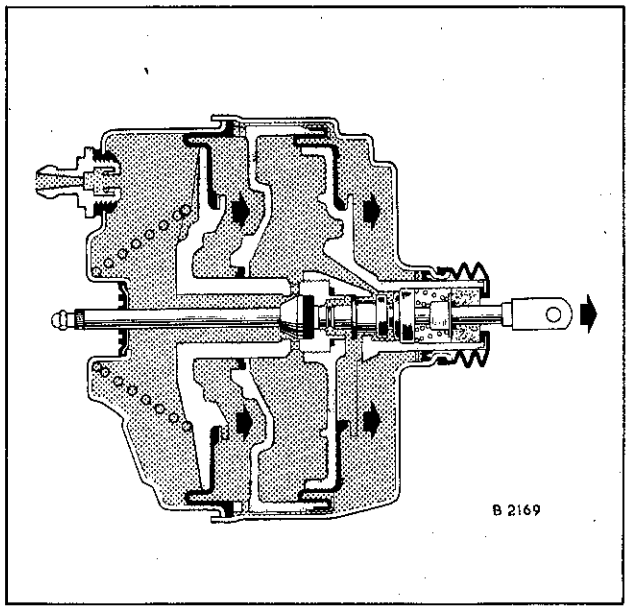


Fig. 5 *Operation – Brakes released*

Brake released

Immediately the brake pedal is released, the vacuum port is opened and the atmospheric pressure in the unit is extracted to the inlet manifold via the non-return valve. The atmospheric port remains closed whilst the input rod assembly returns to its original position (as shown on Fig. 2) assisted by the diaphragm return spring. The twin diaphragms are then suspended in vacuum until the brake pedal is depressed.