

PBR air brake valves



NEW GENERATION CA400 & CA700 AIR BRAKE CONTROL VALVES



CA400



CA700

**ENGINEERED FOR ANY TRAILER
ON ANY AUSTRALIAN ROAD**



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a continuous improvement

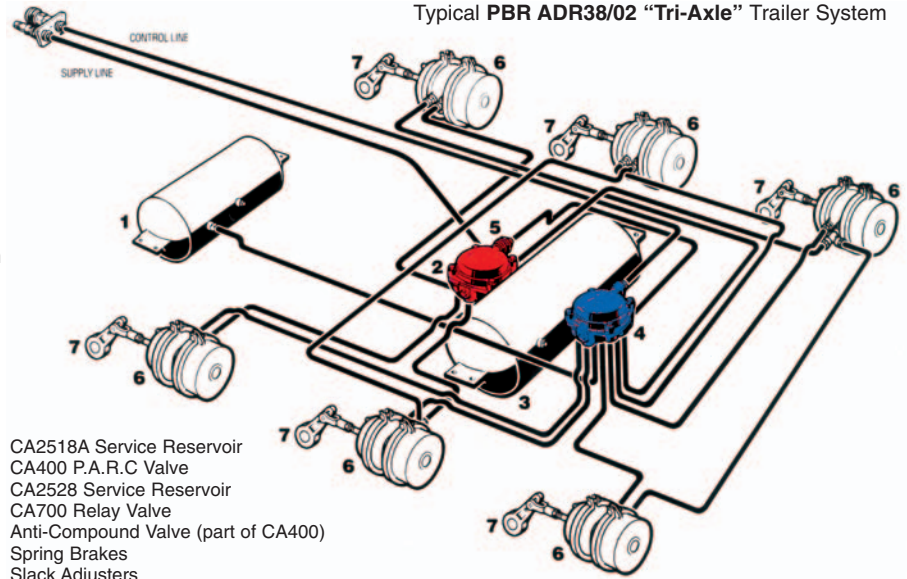
INTRODUCTION

The PBR commitment to "Continuous Improvement" sees the regeneration of its Air Brake Valve technology. This innovative design has been developed to enhance conventional design brake performance while maintaining full compliance with the stringent Australian Design Rule ADR38/02. The simple PBR Trailer Brake system still incorporates a cost effective two valve strategy, with a "6" port Service Relay Valve, the CA700 and the "4" port Spring Brake Valve, the CA400.

These two valves combine to perform the six functions inherent in safe control of vehicle retardation.

These are as follows: -

- 1 Charging the system. The vehicle secondary braking system holds at MAXIMUM until reservoir pressure attains a minimum of 450kPa.
- 2 Loss of supply line air pressure will apply the secondary brake actuation system automatically.
- 3 The vehicle may be parked on the secondary brake actuation system.
- 4 Failed service brake actuation system will not cause automatic application of the secondary brake system which remains in driver control.
- 5 The secondary system, once applied during a service system failure mode, cannot be air pressure released until failure is corrected.
- 6 The CA700 service relay valve meets the ADR application and release times criteria governing the service brake system of a semi trailer.



- 1 CA2518A Service Reservoir
- 2 CA400 P.A.R.C Valve
- 3 CA2528 Service Reservoir
- 4 CA700 Relay Valve
- 5 Anti-Compound Valve (part of CA400)
- 6 Spring Brakes
- 7 Slack Adjusters

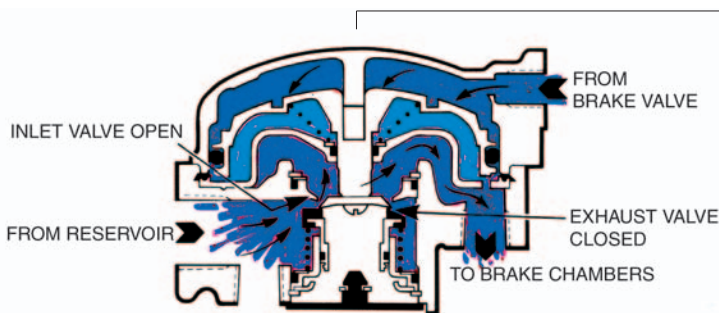
Drawing shown for illustration purposes only

CA700 RELAY VALVE (Predominance Relay Valve)

The advantage of CA700 over standard relay valves:

This unique valve provides virtually instantaneous system "take-up" to provide near optimum braking times between the prime mover and trailer. This is achieved by minimising the time for the valve to reach its balanced state through controlling pressure differences across the relay piston surfaces.

- "6" Port Valve. 3 axles in sub ADR38/02 times
- Pressure predominance - provides rapid system 'take-up' by amplifying foot valve pressures
- Provides brake "balance" between truck and trailer during low pressure brake applications
- Assists in even and improved brake lining life
- Easy overhaul
- Australian designed and manufactured
- ADR38/02 compliant
- Fully interchangeable with CA47
- Colour Coded for valve identification and maintenance simplicity

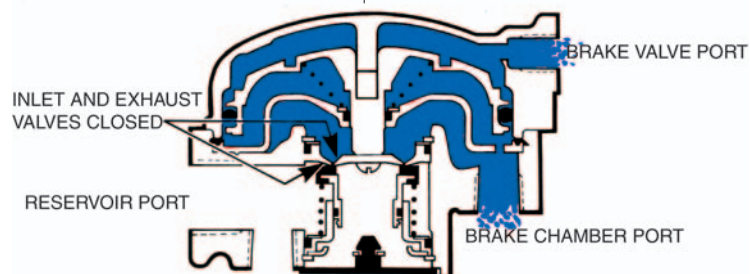


APPLYING POSITION

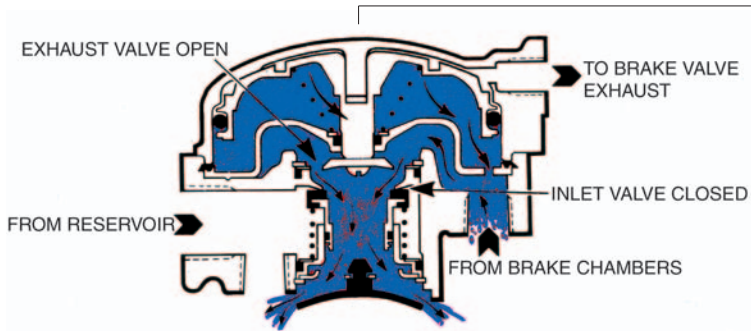
When the relay valve is in the OFF position, ie. the spring under the piston keeps the piston biased towards the top cover and the exhaust seat is held away from the inlet / exhaust valve, the brake chambers are also at atmospheric pressure. When air is passed down the control line from the prime mover and passed through the port in the top cover, pressure builds up on top of the piston. The piston moves downwards, closing the exhaust seat against the inlet/exhaust valve. When the pressure acting on the piston is sufficient to overcome the valve spring, the inlet/exhaust valve is moved away from the inlet seat and air is delivered to the brake chambers directly from the reservoir.

BALANCING POSITION

As compressed air passes to the brake chambers the built up pressure acts on the underside of the piston, moving the piston upwards allowing the inlet/exhaust valve to contact the inlet seat in the body. In this position, with the inlet and exhaust seats closed, the valve is in a balanced state: the air pressure on top of the piston is approximately equal to that under the piston. If the driver exerts more pressure on the treadle, delivering more air from the brake valve, the air pressure on top of the piston is increased. This moves the inlet/exhaust valve away from the inlet seat and more compressed air flows to the brake chambers until balance is reached at a higher pressure. If the driver permits the treadle to return slightly, some air is exhausted from the brake valve and from the top of the piston until balance is reached at a lower pressure.



CA700 RELAY VALVE (Predominance Relay Valve)



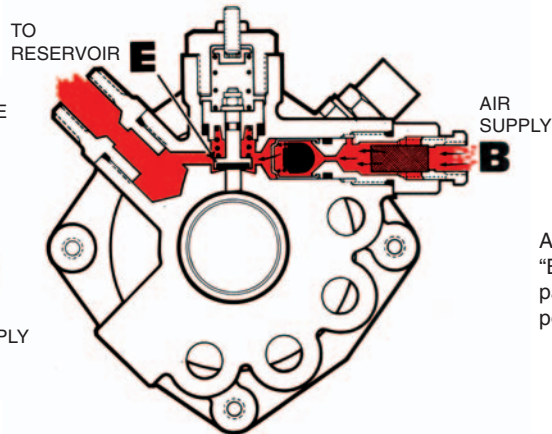
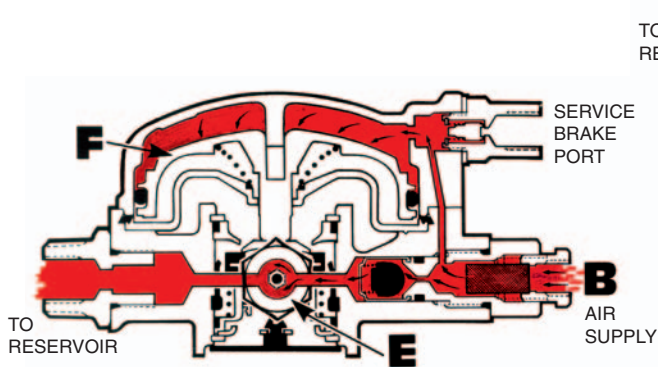
RELEASING POSITION

When the brake treadle is released completely, all the air from the top of the piston is released through the brake valve and the air pressure, acting on the underside of the piston, moves the piston upwards to its full extent, sharply opening the exhaust passage. This allows all the air from the brake chambers to pass through the exhaust diaphragm to the atmosphere and the brakes are fully released.

CA400 P.A.R.C VALVE (Parking and Air Reservoir Control)

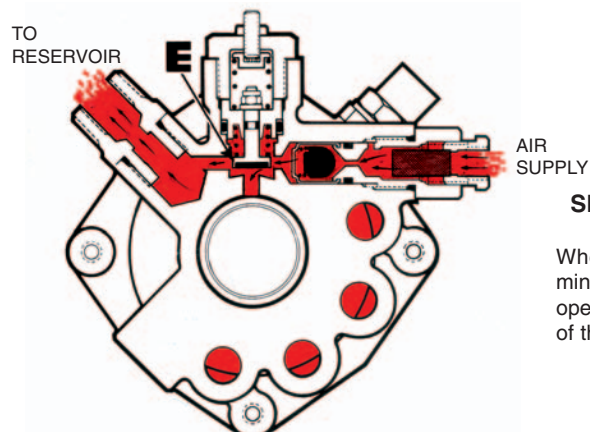
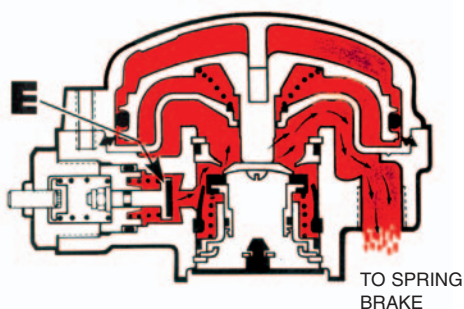
The PBR CA400 P.A.R.C (Parking and Air Reservoir Control) valve provides a means of admitting and releasing air to and from the spring brake chambers. The CA400 P.A.R.C valve will service multiples of spring brake chambers, eg. tri-axles, quads etc. The valve is reservoir mounted and controlled by the supply line running from the prime mover. All air delivered to and released from the spring brakes passes through the P.A.R.C valve with only a small amount of supply line air being exhausted from a valve mounted on the prime mover.

- Anti-compound function prevents possibility of full emergency and service brake application simultaneously
- Ideally suited for single and multi-axle configurations
- Easy overhaul
- Australian designed and manufactured
- ADR38/02 compliant
- Fully interchangeable with CA48
- Inline filter
- Colour Coded for valve identification and maintenance simplicity



SYSTEM CHARGING

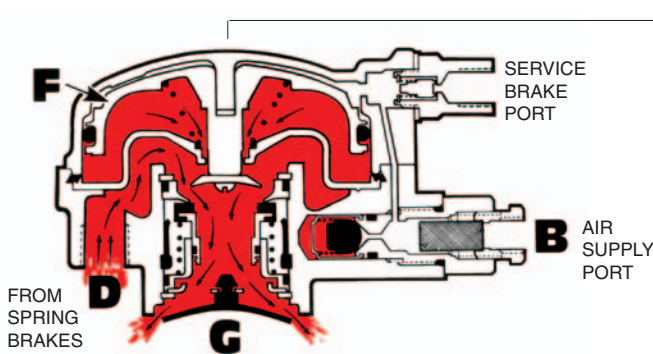
Air supply from prime mover at port "B" is used to depress piston "F" and passes through the check valve to poppet "E".



SPRING BRAKE RELEASE

When the pressure reaches a minimum of 450kPa, poppet "E" opens allowing controlled release of the spring brakes.

CA400 P.A.R.C VALVE (Parking and Air Reservoir Control)

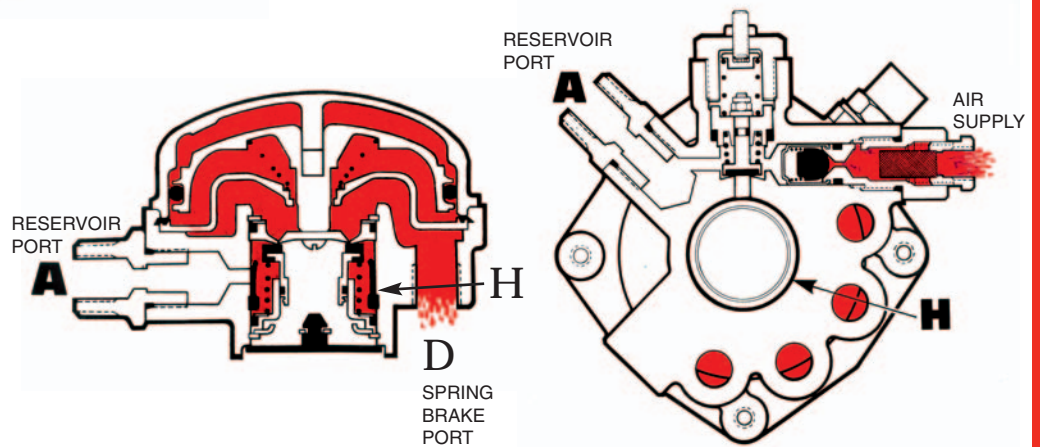


SUPPLY LINE FAILURE OR PARKING

The exhausting of air from supply line "B", because of a supply line failure or through action taken by the driver wanting to park the trailer, automatically applies the spring brakes. In this case, when the supply line is exhausted, piston "F" is raised to open ports "D" to the exhaust port "G".

FAILED SERVICE SYSTEM

In the instance of a failed service system, such as the relay or P.A.R.C valves becoming detached and losing all service reservoir air pressure or a relay valve to booster line failure or a service booster diaphragm failure, the spring brakes will not apply on any axles. In this event, annular check valve "H" seals reservoir port "A". Full line pressure is contained in the spring brake system.



ANTI-COMPOUND FUNCTION

This function of the P.A.R.C valve eliminates the hazard of both service and emergency brakes applying together.

Air pressure being fed through port "B" holds the check valve in port "C" closed. Port "C" is connected to a delivery line running from the relay valve located in the brake circuit. In the event of an application of the prime mover brake valve and the simultaneous exhausting of the supply line, eg. tractor protection application, delivery air pressure from the relay valve would pass through the check valve in port "C" and depress piston "F", thus holding the spring brakes in the "release" position until the brake valve in the prime mover is released.

