

Rationalised Pressure Modulator Valves



... for electronic systems such as:

ABS = Anti-lock Braking System, **ASR** = Anti-spin Regulation (Traction Control), **EBS** = Electronic Braking System

Product features:

- Constructed to original equipment quality standards.
- Have the latest technology and quality features as found on original equipment products.
- Reduced stock levels required. Only 8 parts stocked instead of 23

Disclaimer

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If service work is carried out on the vehicle, it is the responsibility of the workshop to ensure the vehicle is fully tested and in full functional order before the vehicle is returned into service. Knorr-Bremse accepts no liability for problems caused as a result of appropriate tests not being carried out.

This disclaimer is an English translation of a German text, which should be referred to for all legal purposes.



Disposal of Waste Equipment by Business Users in the European Union

This symbol on the product, packaging or in user instructions, indicates that this product must not be disposed of with other general waste. Instead, it is your responsibility to dispose of the waste electrical and electronic parts of this product by handing them over to a company or organisation authorised for the recycling of waste electrical and electrical equipment. For more information about arrangements for waste equipment disposal please contact your Knorr-Bremse distributor or local Knorr-Bremse representative.

Safety Advice

Note: The safety advice below is applicable to general service and diagnostic work on air braking systems and may not all be directly relevant to the activities and products described in this document.

Before and whilst working on or around air braking systems and devices, the following precautions should be observed in addition to any specific advice given in this document:

- Always wear safety glasses when working with air pressure.
- Never exceed manufacturer's recommended air pressures.
- Never look into air jets or direct them at anyone.
- Never connect or disconnect a hose or line containing pressure; it may whip as air escapes.
- Never remove a device or pipe plug unless you are certain all system pressure has been depleted.
- Park the vehicle on a level surface, apply the parking brakes, and always chock the wheels as depleting vehicle air system pressure may cause the vehicle to roll.
- If work is being performed on the vehicle's air braking system, or any auxiliary pressurised air systems, and if it is necessary to drain the air pressure from reservoirs, etc., keep clear of brake actuator push rods and levers since they may move as system pressure drops. Be aware that if the vehicle is equipped with an air dryer system, it can also contain air pressure along with its purge reservoir, if fitted, even after pressure has been drained from the other reservoirs.
- When working under or around the vehicle, and particularly when working in the engine compartment, the engine should be shut off and the ignition key removed. Where circumstances require that the engine be running, EXTREME CAUTION should be taken to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components. Additionally, it is advisable to place a clear sign on or near the steering wheel advising that there is work in progress on the vehicle.
- Examine all pipework for signs of kinks, dents, abrasion, drying out or overheating. Be aware that kinks in pipework may result in air pressure being trapped in the pipework and associated equipment. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems. Check the attachment of all pipework; it should be supported so that it cannot abrade or be subjected to excessive heat.
- Components with stripped threads or damaged/corroded parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle or component manufacturer.
- Never attempt to install, remove, disassemble or assemble a device until you have read and thoroughly understood the recommended procedures. Some units contain powerful springs and injury can result if not properly dismantled. Use only the correct tools and observe all precautions pertaining to use of those tools. Before removing any device note its position and the connections of all pipework so that the replacement/serviced device can be properly installed. Ensure that adequate support or assistance is provided for the removal/installation of heavy items.
- Use only genuine Knorr-Bremse replacement parts, components and kits.
- Prior to returning the vehicle to service, make certain all components and systems are leak free and restored to their proper operating condition.

Welding

To avoid damage to electronic components when carrying out electrical welding, the following precautions should be observed:

- In all cases, before starting any electrical welding, remove all connections from any electronic control units or modules, noting their position and the order in which they are removed.
- When re-inserting the electrical connectors (in reverse order) it is essential that they are fitted to their correct assigned position - if necessary this must be checked by PC Diagnostics.

Introduction and product features

Introduction

- Updated and extended product range only from Knorr-Bremse and suitable for the Aftermarket.
- Replacing 23 OE pressure modulator valves with only 8 rationalised part numbers.

Product features

- Constructed to original equipment quality standards
- Have the latest technology and quality features as found on original equipment products.

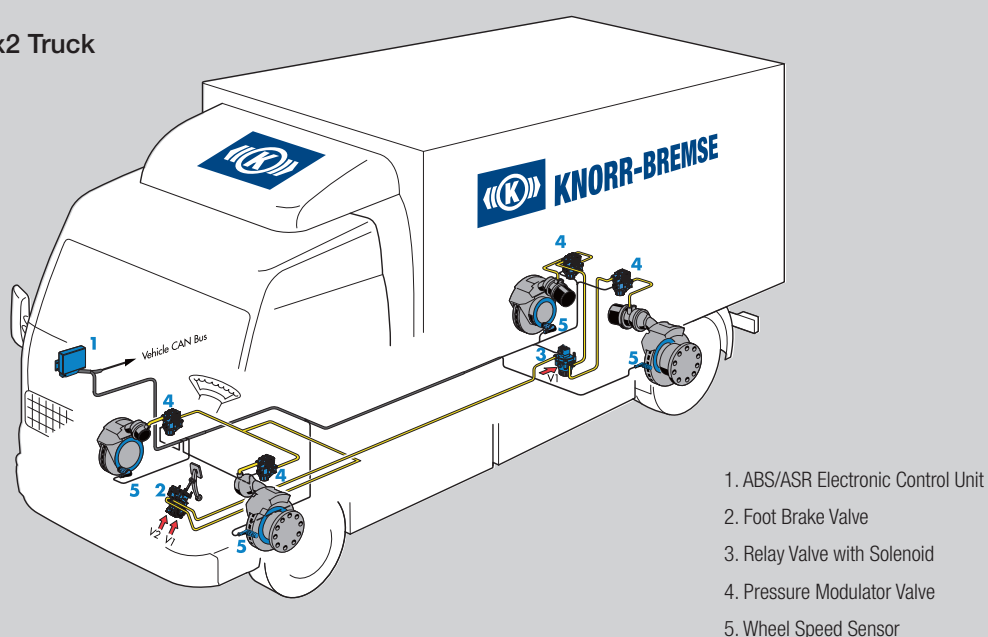
Pressure modulator valve – applications:

In general, pressure modulator valves are used in electronically controlled braking systems, in order to modulate pressure in the brake actuators in response to signals from the electronic control unit (ECU). Specific applications are as follows:

- ABS = Anti-lock Braking System - pressure modulator valves are used to modulate the brake pressure supplied by the foot brake valve, so that locking of the wheels is prevented.
- ASR = Anti-spin Regulation (also known as Traction Control) - pressure modulator valves are used to balance the axle's driving torque by supplying the brake actuator of the spinning drive wheel with air. The pressure is controlled so that wheel spin is reduced, allowing engine torque to be applied to the other drive wheel having a higher tyre to road adhesion.
- EBS 5 and ABS 6 Advanced with integrated ESP (Electronic Stability Program) - pressure modulator valves are used to control the pressure to the brake actuators, when the brake is applied, to stabilise the vehicle. In the case of EBS 5, pressure modulator valves are used if only one single-channel pressure control module is installed on the front axle.

Example:

ABS/ASR in a 4x2 Truck

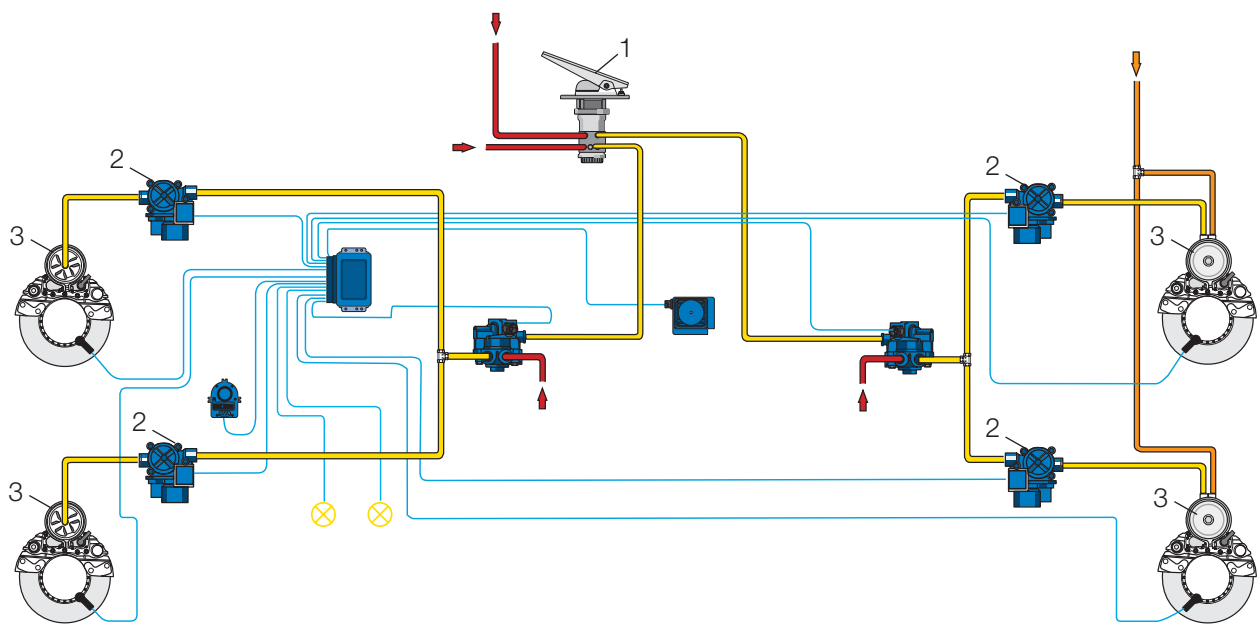


Product features

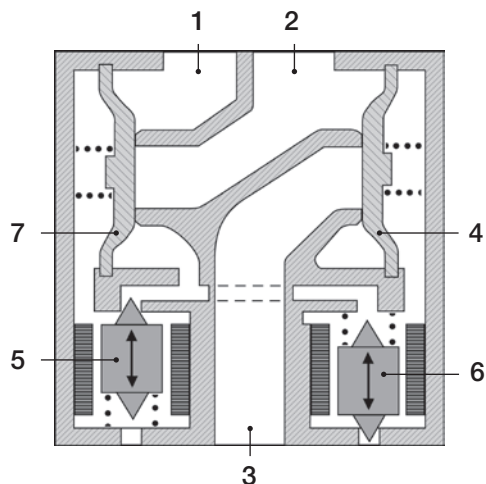
Function

Installation:

The pressure modulator valve (2) is installed between the foot brake valve (1) and each brake actuator (3). Each circuit requires a pressure modulator valve to individually control pressure to its respective brake actuator.



Construction



Legend

- 1 = From Foot Brake Valve (Port 1)
- 2 = To Brake Actuator (Port 2)
- 3 = Exhaust (Port 3)
- 4 = Release Valve
- 5 = Solenoid Valve (pilot control Hold Valve)
- 6 = Solenoid Valve (pilot control Release Valve)
- 7 = Hold Valve

Standardisation

The outer dimensions, mounting holes and position of the pneumatic and electrical connections of the pressure modulator valve range are standardised. However, different pneumatic and electrical connections exist as described below.

Pneumatic connections

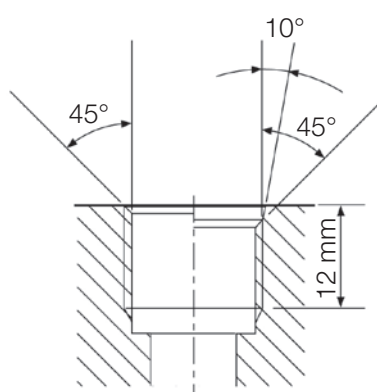
Compressed air connection

The pressure modulator valve has three ports:

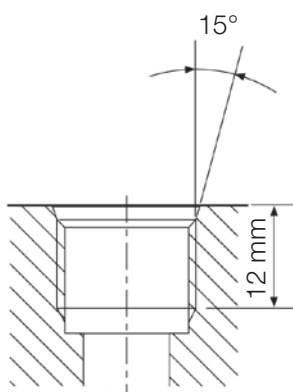
- Port 1: Supply (from foot brake valve) with thread M22x1.5*
- Port 2: Delivery (to the brake actuator) with thread M22x1.5*
- Port 3: Exhaust, (to atmosphere) via exhaust check valve - prevents dirt and water ingress**

*Variants exist differing by the angle of the countersink leading to the seal of the thread connectors.

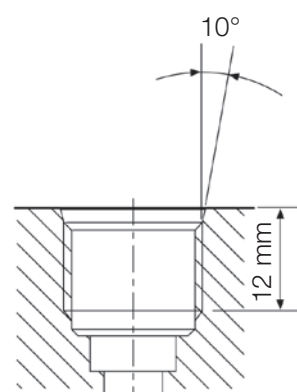
**In some cases, due to customer requests or exceptional installation needs, the exhaust port has been modified and/or its function changed. These valves will not be replaced by the standard version and will continue to be supplied.



Thread M22x1.5
(DIN-ISO 4039-2)



Thread M22x1.5
(DIN-ISO 6149)



Thread M22x1.5
for Voss plug connection
VG230 NG12

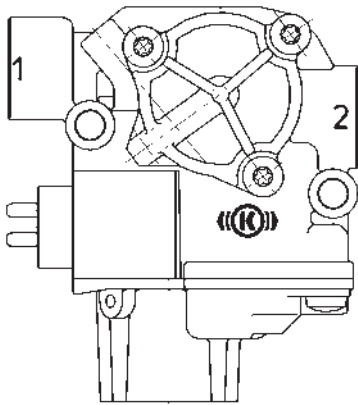
Extensive tests by Knorr-Bremse and its customers have shown that the countersink for Voss plug connection VG230 NG12 covers the other thread connections to DIN and ISO standards shown above and therefore assures an optimal seal. Please note that the length of the M22x1.5 thread on the mating connector should not exceed 12 mm.

Product features

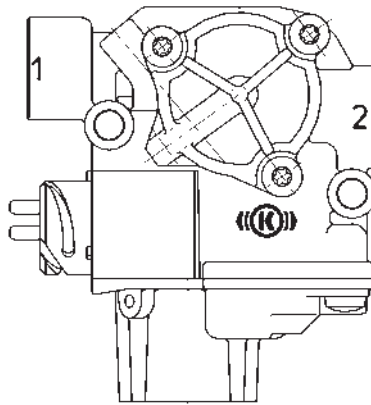
Electrical connections

The electrical activation of the double solenoids is supplied directly from the electronic control unit via a 3 pin connector.

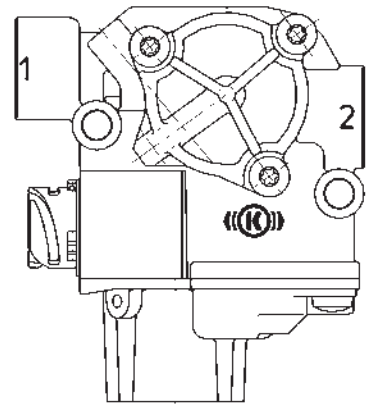
In the original equipment product range, three variants are used:



Thread M24x1
with protruding pins
(Kostal connection)



Bayonet connection
with protruding pins
(Schlemmer Bayonet)



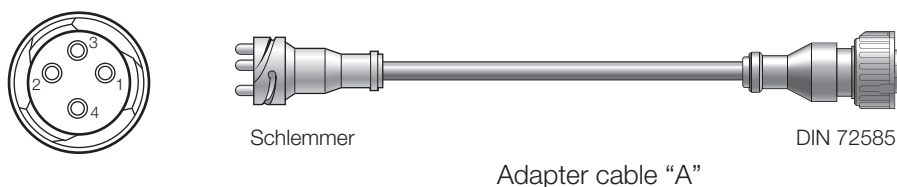
Bayonet connection with
protected pins
(DIN 72585)

Rationalisation of the pressure modulator valve

Knorr-Bremse aftermarket offers three pressure modulator valve options:

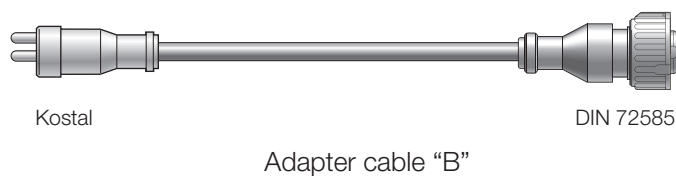
Option 1: As a replacement for pressure modulator valves with DIN 72585 Bayonet connector, use **II17776N00**

Option 2: As a replacement for pressure modulator valves with Schlemmer Bayonet electrical connector, use **K015676N00** (II17776N00 + Adapter cable "A")



NOTE: The adapter cable "A" has 4 pins, if the mating connector has only 3 sockets then the extra pin (No. 3) needs to be cut off without damaging the bayonet housing.

Option 3: As a replacement for pressure modulator valves with M24x1 "Kostal" electrical connector, use **K015677N00** (II17776N00 + Adapter cable "B")



Comparison Chart

Knorr-Bremse part number comparison chart

Fitted Pressure Modulator Valve		Electrical Connection	Compressed Air Port Thread M22X1.5	Replacement for the Aftermarket
Part Number	Type-No.			Part Number
II15492	BR9150	Schlemmer Bayonet	DIN	K015676N00 ⁵⁾
II15687	BR9151	M24x1	VOSS VG230	K015677N00
II16278	BR9152	M24x1	DIN	K015677N00
II17776	BR9154	DIN Bayonet	VOSS VG230	II17776N00
II32612	BR9156	DIN Bayonet	DIN	II17776N00
II37086	BR9180	DIN Bayonet	VOSS VG230	II17776N00
II38665F	BR9182	DIN Bayonet	VOSS VG230	II17776N00
II40864F	BR9159	DIN Bayonet	VOSS VG230 / DIN	II17776N00
II41119F	BR9191	DIN Bayonet	ISO	II17776N00
0265351101		M24x1	DIN	K015677N00
0265351102		Schlemmer Bayonet	DIN	K015676N00 ⁵⁾
0265351105 ¹⁾		Schlemmer Bayonet	DIN	0265351105000
0265351107 ²⁾		Schlemmer Bayonet	DIN	0265351107000
0265351108		M24x1	VOSS VG230	K015677N00
0265351110 ³⁾		M24x1	DIN	0265351110N00
0265351114		M24x1	VOSS VG230	K015677N00
0265351118		DIN Bayonet	VOSS VG230	II17776N00
0265351122		DIN Bayonet	VOSS VG230	II17776N00
0486201001		DIN Bayonet	DIN	II17776N00
0486201003		DIN Bayonet	DIN	II17776N00
0486201010		M24x1 (12 V)	DIN	0486201010N00
0486201017 ⁴⁾		DIN Bayonet	VOSS VG230	0486201017N00

- 1) 0265351105 has a small throttle in the valve
- 2) 0265351107 had an M22 x 1.5 thread at port 3 for wading capability
- 3) 0265351110 has a silencer at port 3
- 4) 0486201017 has a hose connection at port 3
- 5) For valves with Schlemmer Bayonet connection see note on page 9

Comparison Chart

Competitor part number comparison chart

Fitted WABCO Pressure Modulator Valve	Electrical Connection	Compressed Air Port Thread M22X1.5	Replacement for the Aftermarket
Part Number			Part Number
472 195 004 0	M24x1	DIN	K015677N00
472 195 007 0	M24x1	VOSS VG230	K015677N00
472 195 008 0	M24x1	VOSS VG230	K015677N00
472 195 009 0	Schlemmer Bayonet	DIN	K015676N00 ⁵⁾
472 195 011 0	Schlemmer Bayonet	DIN	K015676N00 ⁵⁾
472 195 014 0	M24x1	DIN	K015677N00
472 195 015 0	M24x1	ISO	K015677N00
472 195 016 0	DIN Bayonet	VOSS VG230	II17776N00
472 195 018 0	DIN Bayonet	DIN	II17776N00
472 195 053 0	M24x1	DIN	K015677N00
472 195 056 0	DIN Bayonet	ISO	II17776N00
472 195 058 0	DIN Bayonet	DIN	II17776N00
472 195 069 0	DIN Bayonet	VOSS VG230	II17776N00
472 195 097 0	DIN Bayonet	DIN	II17776N00

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