

2-circuit lift axle control valve 463 084 0.. 0

463 084 000 0
mechanical



463 084 010 0
electric



463 084 020 0
pneumatic



Application

Semitrailer or drawbar trailer with lift axle
Control conventional or via ECAS / Trailer EBS

Purpose

The lifting axle compact valve is in charge of lowering or raising the lifting axle(s) manually and again automatically, as soon as the axle(s) that are down have reached their maximum permissible load.

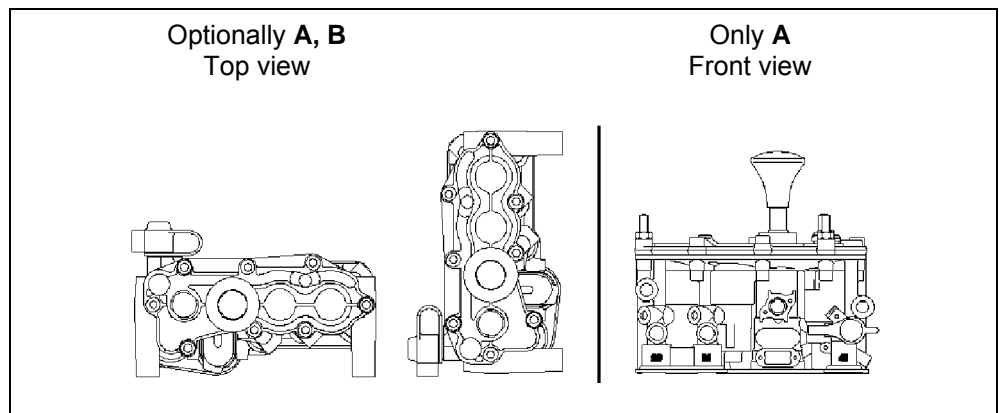
Maintenance

Special maintenance that extends beyond the legally specified inspections is not required.

Installation recommendation

- Fasten the lift axle control valve using the three stud bolts M6 (**A** = tightening torque 10 Nm) or with two bolts M8 (**B** = tightening torque 20 Nm), see following figure "Installation position".
The unit is equipped with 9 mm holes for mounting.

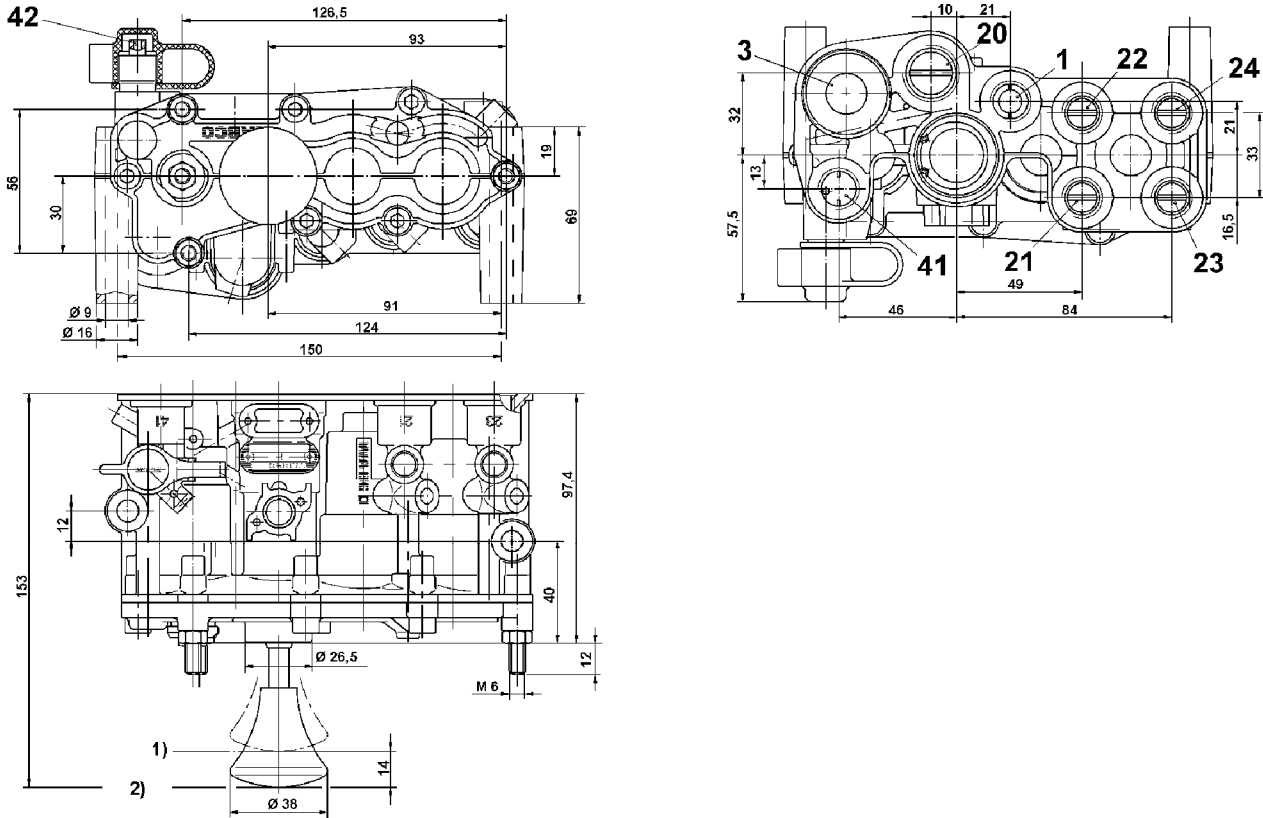
Mounting position



Lift axle control valve 463 084

Installation dimensions

463 084 000 0



Legend

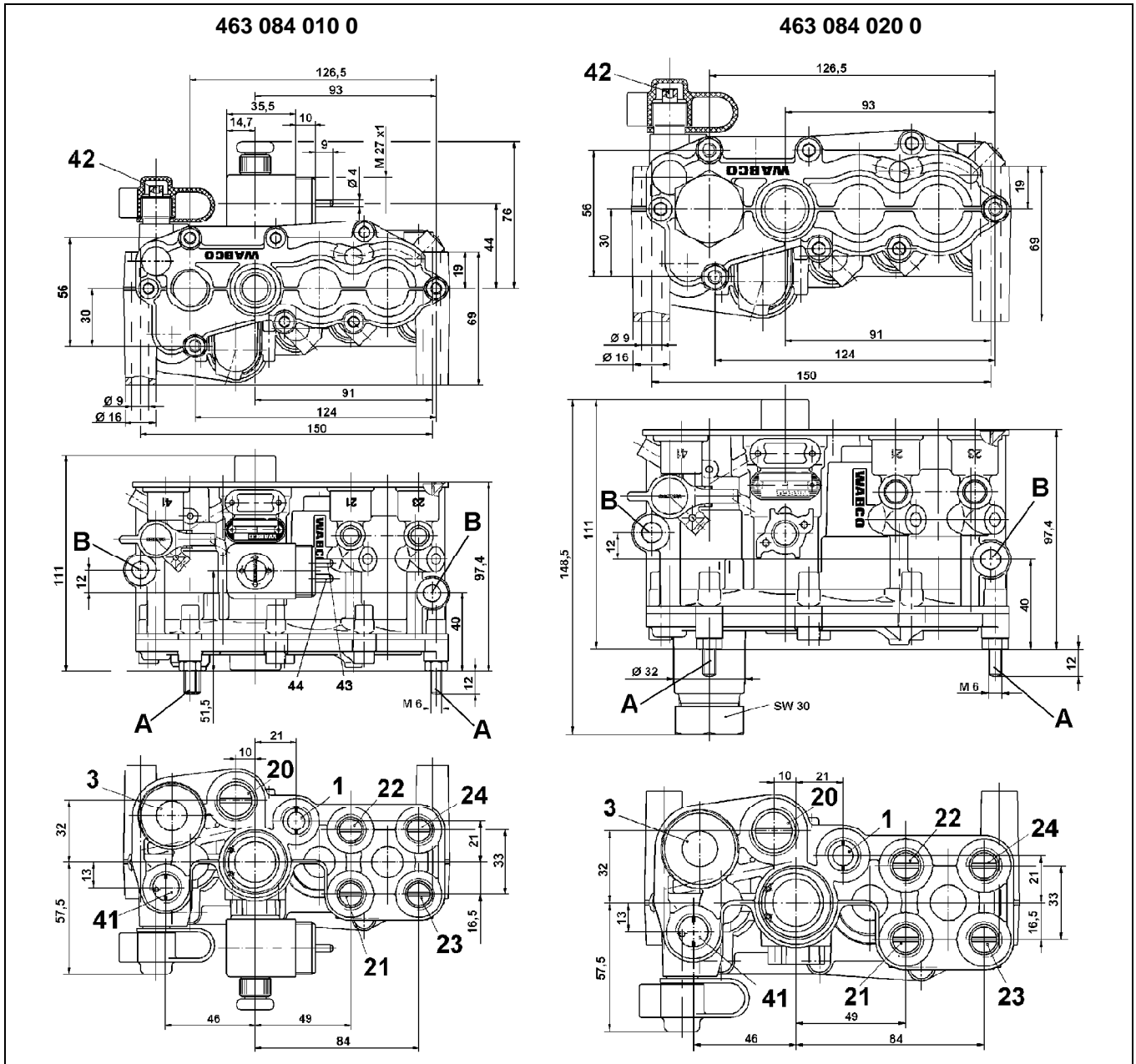
1) Lifting 2) Lowering

Connections

Connections		Port threads	
1	Supply	3	Exhaust
20	Port lifting bag	21, 23	Air-suspension bellows "Vehicle"
22, 24	Air-suspension bellows "Lift axle"	41	Damping volume
42	Test valve for setting the switching pressures	42	

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Installation dimensions



Legend

A	Stud bolt	B	Bolt
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Connections

1	Supply	3	Exhaust
20	Port lifting bag	21, 23	Air-suspension bellows "Vehicle"
22, 24	Air-suspension bellows "Lift axle"	41	Damping volume
42	Test valve for setting the switching pressures		

Port threads

1, 21, 22, 23, 24, 41	M 16x1.5
20	M 22x1.5
42	M 16x1.5 (ISO 3583)

Setting instructions

After the valve has been installed according to the fixing instruction and the scheme, the adjustment of the switch pressure has to be made.



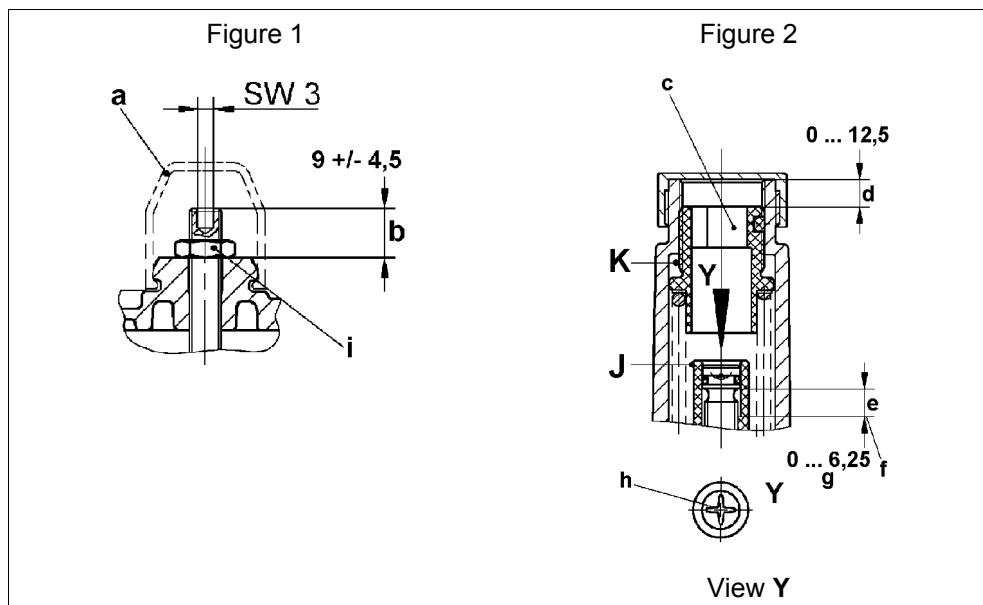
Circuit diagrams

Open the WABCO website www.wabco-auto.com.

Click on *Product Catalogue INFORM* => *Product number*.

Enter the number of the desired circuit diagram into the search field.

Click the *Start* button.



Legend

a Provided cap	b Range of adjustment	c Wrench size 12 / M = max. 15 Nm
d Lowering	e Lifting	f Stop
g corresponds with 5 full turns	h Size 2 / M = max. 1.5 Nm	i Wrench size 10 / M = 4 ± 1 Nm

Mechanically actuated lift axle control valve 463 084 000 0

See circuit diagram 841 801 448 0 and section "Functionality".

- Press the actuation button (a).
- Set the switch pressure for lowering the lifting axle according to the pressure, at which it is made sure, that the permissible axle load is not exceeded. This is done by connecting a test hose with pressure gauge and pressure reduction valve with test connection 42.
 - ➔ The compressed air flows via duct (f) into chamber B. By increasing the pressure of the test hose the switching point on which the actuation button springs out is detected, port 20 is getting pressureless (lifting axle lowers) and the air supply of the bellows on the lifting axle sets in.
- You can change the switching pressure with set screws: If the switching pressure is too high, turn the screw outward; if the switching pressure is too low, turn the screw inward.

While checking the test pressure always has to be increased starting from 0 bar to switch off the hysteresis.

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- When the setting is completed successfully, counter-lock the adjustment screw and cover it with the provided cap.

Electrically actuated lift axle control valve 463 084 010 0

See circuit diagram 841 801 447 0 and section "Functionality".

- Connect pressure switch 441 042 000 0 (set-range 1.0 to 5.0 bar) according to the circuit diagram.
- Set the pressure switch in the same way as the mechanically actuated lift axle control valve.

Fully automatic pneumatic lift axle control valve 463 084 020 0

See circuit diagram 841 801 449 0 and section "Functionality".

Two switching pressures must be set.

- First remove the protective cap with an SW 30 spanner ($M = 45 \pm 5 \text{ Nm}$).
- Thread the Philips screw J (Size 2) inward to the stop (see figure 2).
- Set the switching pressure for lowering the lift axle (screw K) with an Allen key 12 mm the same as the version that is actuated mechanically (see figure 2).
- Set the switching pressure for automatic lifting using a Philips screwdriver (size 2). This requires lowering the test pressure of 8.0 bar again.
 - ➔ The pressure difference of the switch pressures for the automatic lowering and raising has to be 0.4 bar higher than the difference in pressures for the air suspension bellows between lifted and non-lifted axle.

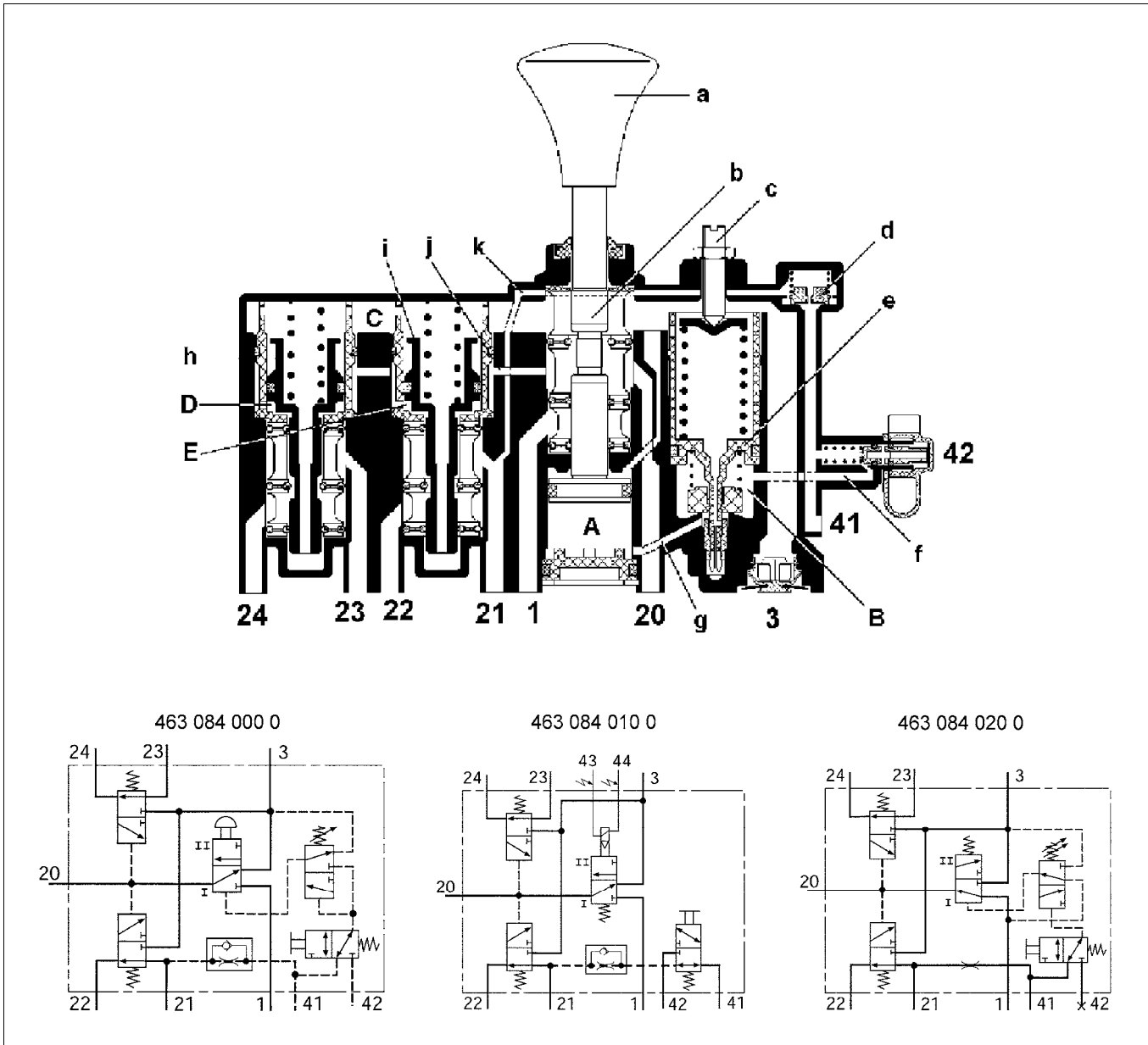
Technical data

Order number	463 084 000 0	463 084 010 0	463 084 020 0
Max. operating pressure	13 bar		
Actuation	mechanical	electric	pneumatic
Nominal diameter	7 mm		
Permissible medium	Air		
Operating temperature range	-40 °C to +80 °C		
Switching pressure setting "lowering"	2.5 to 7 bar	–	2.5 to 7 bar
Adjusted switch pressure	4 ±0.2 bar	–	Lowering 4.5 ±0.2 bar Raising 2.5 ±0.2 bar
Adjustable hysteresis	–	–	1.5 to 4 bar
Voltage	–	24 V ^{+6V} _{-4.4V}	–
Current	–	Direct current	–
Nominal current	–	IN = 0.22 A	–
Weight	2,3 kg		

Order numbers	463 084 000 0	463 084 010 0	463 084 020 0
Vehicle is loaded	Automatic lowering	Automatic lowering	Automatic lowering
Vehicle is unloaded	Raise with button press	Electric raising	Automatic raising

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Operation



To lower the lift axle, the compressed air flows from connection 21 (air-suspension bellows) via the duct (k) through the throttling port of the check valve (d) to port 41 (expansion tank) and via duct (f) into chamber B. After achieving the switching pressure set with the screw (c), the piston (e) is raised. The compressed air flows via duct (g) into chamber A and moves the tappet (b) into its respective top end position. Connection 1 (supply) is blocked off. Connection 20 and chambers D and E are connected with vent 3. The tappets (h and i) move to the lower stop and the air-suspension bellows connections are connected (21 with 22 and 23 with 24).

For raising the lifting axle the actuation button (a) has to be pushed (only possible when piston (e) is lowered) and the supply air flows via port 20 to the downstream lifting bag. At the same time the compressed air flows via duct (j) into the chambers D and E, moves the tappets (h and i) against the power of the compression spring upwards. The connection of the bellows (21 with 22) and (23 with 24) is closed and compressed air from the bellows of the lifting axle (port 22 and 24) is venting through the tappets (h and j), chamber C and exhaust 3 to atmosphere.

Single circuit lift axle compact valve (spring-returned) 463 084 031 0

463 084 031 0



Application

Semitrailer or drawbar trailer with lift axle Control via ECAS or Trailer EBS Because of the single-circuit, only suitable for rigid trailer axles.

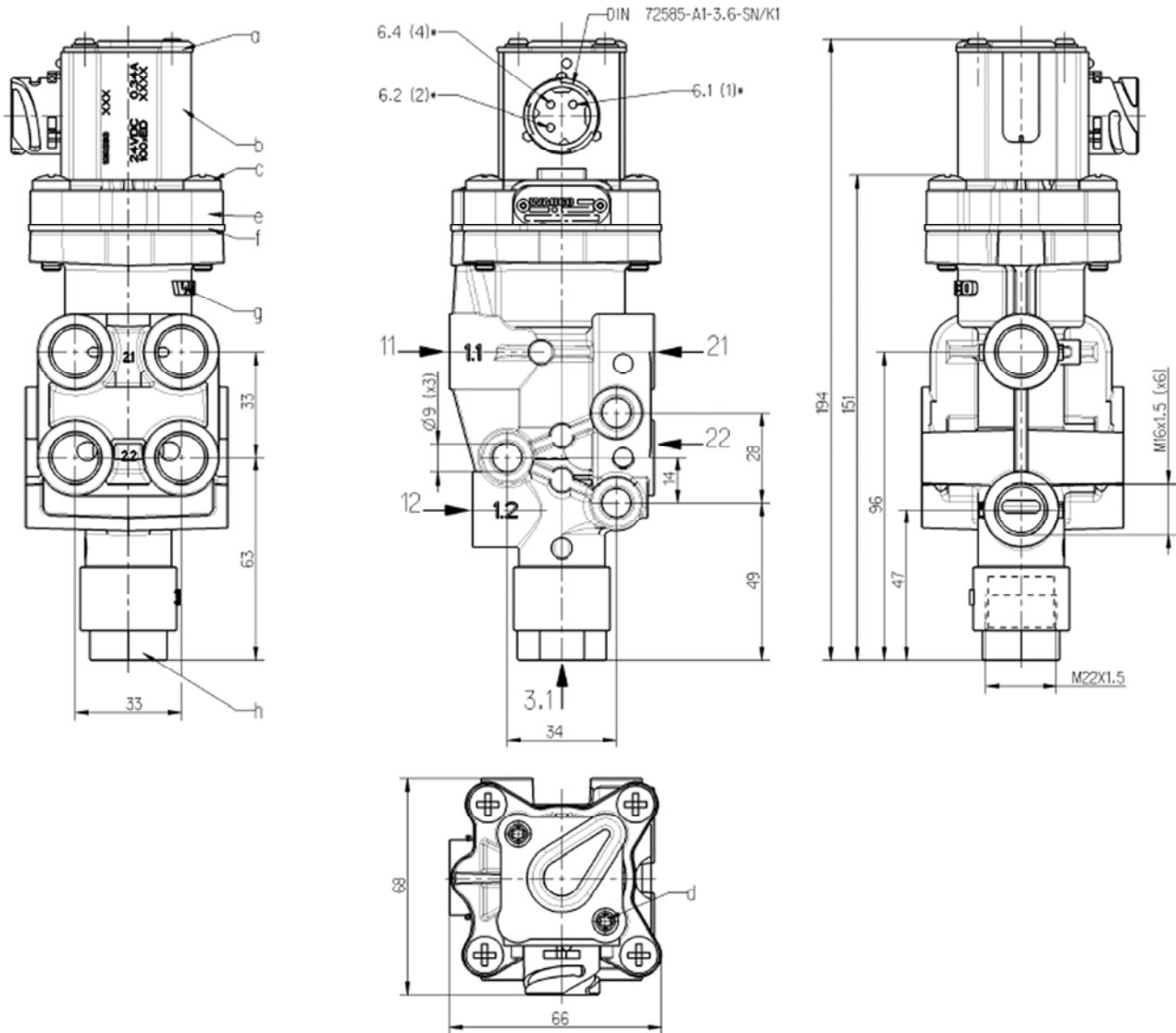
Purpose

The conventional lifting axle valve series (spring-returned) has been expanded with the single-circuit variant. One lifting axle is actuated automatically depending on the axle load. Es kann zusätzlich die Funktion „Anfahrhilfe“ in Abhängigkeit der aktuellen Achslast vom Trailer EBS oder Trailer ECAS gesteuert werden. This variant can be used on rigid axles, for which the support bellows can be connected pneumatically for the left and right vehicles sides. Here the specifications of the axle manufacturer must be observed.

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Installation dimensions

463 084 031 0



Connections

11	Supply	12	Air-suspension bellows „Vehicle“
22	Air-suspension bellows „Lift axle“	31, 32	Exhaust

Port threads

21	Port lifting bag	11, 12, 21, 22	M 16x1.5
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Lift axle control valve 463 084

Technical data

Order number	463 084 031 0	463 084 041 0	463 084 042 0
Max. operating pressure	13 bar		
Nominal diameter	Ø 8 mm		
Permissible medium	Air		
Operating temperature range	-40 °C to +80 °C	-40 °C to +65 °C	
Voltage	24 V +6 V/-6 V		
Current	Direct current		
Nominal current	IN = 0.22 A		
Weight	0,9 kg		
Quickfit connections	–	4x Ø8x1	3x Ø8x1 1x Ø12x1.5



The electrical connection to the Trailer EBS or ECAS is made via system cables, see Cable Overview or ECAS System Description/EBS System Description for more information.

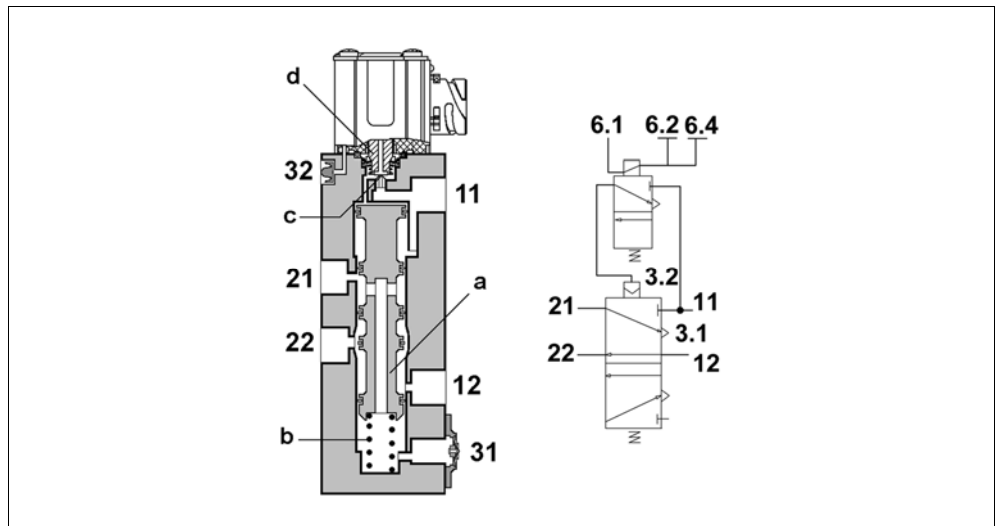
Open the WABCO website www.wabco-auto.com.

Click on *Product Catalogue INFORM* => *Index*.

Enter *EBS*, *ECAS* or *Overview*.

Click the *Start* button.

Operation



The supply line, coming from reservoir is connected to port 11. The armature (d) which forms the valve body keeps inlet (c) closed and the lifting bellows (port 21) is connected to vent 31.

When a current reaches solenoid coil, armature (d) is lifted, and inlet (c) is opened. The supply air moves the piston (a) down against the force of spring (b). The connection of air-suspension bellows 12 with 21 is closed and compressed air from the air-suspension bellows of the lifting axle (port 22) flows through piston (a) and vent 31 to atmosphere. In parallel, supply air pressurises from port 11 via port 21 the downstream lifting bag.

To lower the lifting axle, the current to the solenoid coil is interrupted and armature (d) closes inlet (c). The compressed air upon piston (a) is exhausted via solenoid

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coil and vent 32. The compression spring raises piston (a) and the lift axle control valve is back in its initial position where the ports are connected; 12 with 22 and 21 with 31.

If the lift axle valve for the traction help is used with residual pressure holding in combination with Trailer EBS, the vent must be removed. To do this, a line is routed from the vent to the 3/2-way solenoid valve for residual pressure holding and port IN/OUT 1 of the modulator must be connected via cable 449 764 ... 0. The lifting axle valve vent (connection 3) is shut off by a two-way valve, vented accordingly by the Trailer EBS modulator and the maximum possible bellows pressure is maintained. The traction help can be activated by a button.

See circuit diagram 841 802 191 0.

Two-circuit lift axle control valve (pulse-controlled) 463 084 100 0



Application

Semitrailer or drawbar trailer with lift axle. Control via Trailer EBS and ECAS. Enables Traction Help, dynamic wheelbase control and immobilizer functionality.

Purpose

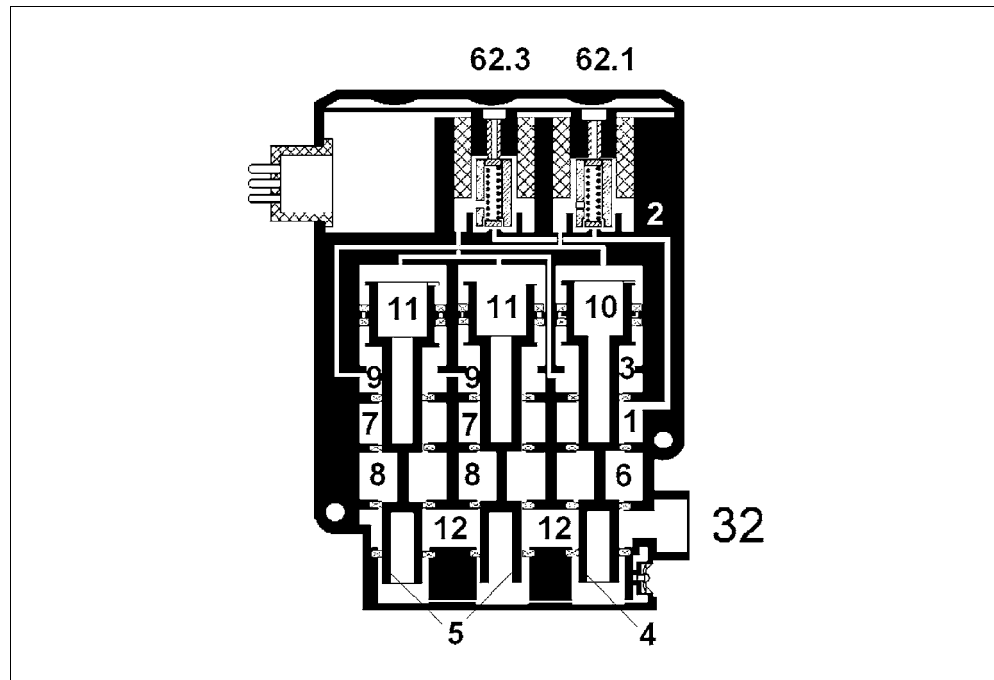
With pulse-controlled valves, a special lifting axle actuation is possible, e.g. the lift axle can be kept in the raised position after the ignition is switched OFF. This is not possible using spring-returned lift axle valves.

Technical data

Order number	463 084 100 0
Max. operating pressure	13 bar
Nominal diameter	Connection 1, 21, 22 (ø 10 mm) Connection 23, 24, 25 (ø 8 mm) Connection 32 (ø 8.7 mm)
Permissible medium	Air
Operating temperature range	-40 °C to +65 °C
Voltage	24 ^{+6 V} _{-4.4 V}
Current	Direct current
Nominal current	IN ≤ 0.34 A
Weight	2,3 kg

Lift axle control valve 463 084

Operation



The 3/3 directional control valves operate as follows:

In annular chamber (1), the supply pressure acts on control solenoid (62.3 'raise' lifting axle) and (62.1 'lower' lifting axle) via channel (2).

For raising, control solenoid (62.3) receives a current pulse - hence pulse-controlled - and opens its valve seat. Air is let into the annular chamber (3) at control piston (4) via the system of ducts. This forces the control piston upwards and the annular chamber (1) is connected with the annular chamber (6) at whose outlet the lifting bellows are connected. This causes the lifting bellows to be charged. At the same time, pressure acts on the top of the two control piston (5) as the pressure in chambers (11) is increased, and the control pistons are forced downwards. The annular chambers (8) connected to the supporting bellows of the lifting axle are connected to channel (12) and exhausted via vent (32). These processes cause the lifting axle to be raised. When there is no longer any current pulse on the solenoid, chambers (3) and (11) are exhausted by means of the solenoid vent. The slide positions in the ECAS solenoid valve remain as they are until a subsequent control pulse changes them.

To lower the lifting axle, the solenoid (62.1) receives a current pulse and opens its valve seat. Air is let into the annular chamber (10) at control piston (4) via a system of ducts. This pushes the piston downwards and the annular chamber (6) whose outlet is connected to the lifting bellows is connected to the channel (12). The lifting axle bellows are therefore vented. At the same time, the annular chambers (7), where the supporting bellows pressure is generated, are connected to the annular chambers (8) to which the support bellows of the lifting axle are connected. The same pressure is therefore applied to the supporting bellows of the main axle and the lifting axle. These processes cause the lifting axle to be lowered.

When there is no longer any current pulse on the solenoid, chambers (9) and (10) are exhausted by means of the solenoid vent. The valve position represents a special case and causes the pressure in all bellows to be held. This will occur, for instance, when the pressure in the supporting bellows for the leading axle and the lifting axle vary while traction help is active. This means the pressure in the supporting bellows of the main axle is at its maximum and the pressure in the supporting bellows of the lifting axle is lower. This condition is achieved by control solenoids (62.1) and (62.3) being continuously switched on simultaneously.