

Levelling valve 464 006



Application

Vehicles with conventionally controlled air-suspension.

Purpose

Control of a constant ride height of the chassis by charging the air-suspension while compressing (loading the vehicle) and by venting when releasing. The height measurement is done via the angle of the lever and linkage connected with the axle.

Height limitation: The levelling valves 464 006 100 0, 464 006 101 0 and 464 006 201 0 have an additional 3/2-way valve that closes as of a certain adjustable lever angle and switches to a venting function upon actuating the lever again. This "Height limitation" prevents the vehicle from being raised above a permitted level with the rotary slide valve.

Zero point adjustment: The ride height can be adapted to special application conditions of the vehicle with an operating cylinder integrated in the linkage.

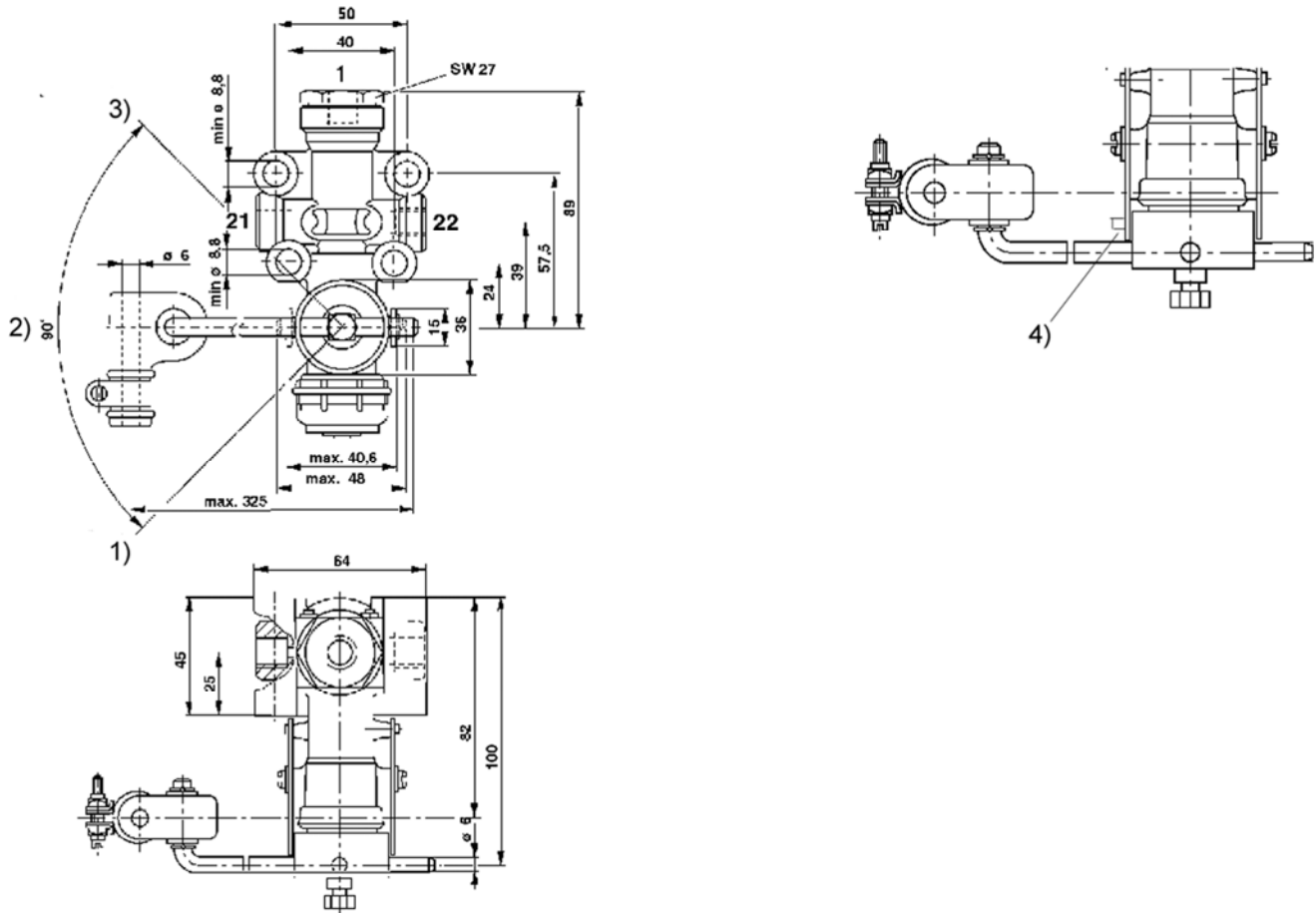
Maintenance

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

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Installation dimensions

464 006 002 0



Legend

1) Vent 2) Operating range 3) Pressurizing 4) Fixing the valve in end position with ≥ 7 bar supply pressure and ≤ 3 bar bellows pressure with $\varnothing 3h8$ or parallel pin $\varnothing 3h8 \times 24$ DIN 7

Connections

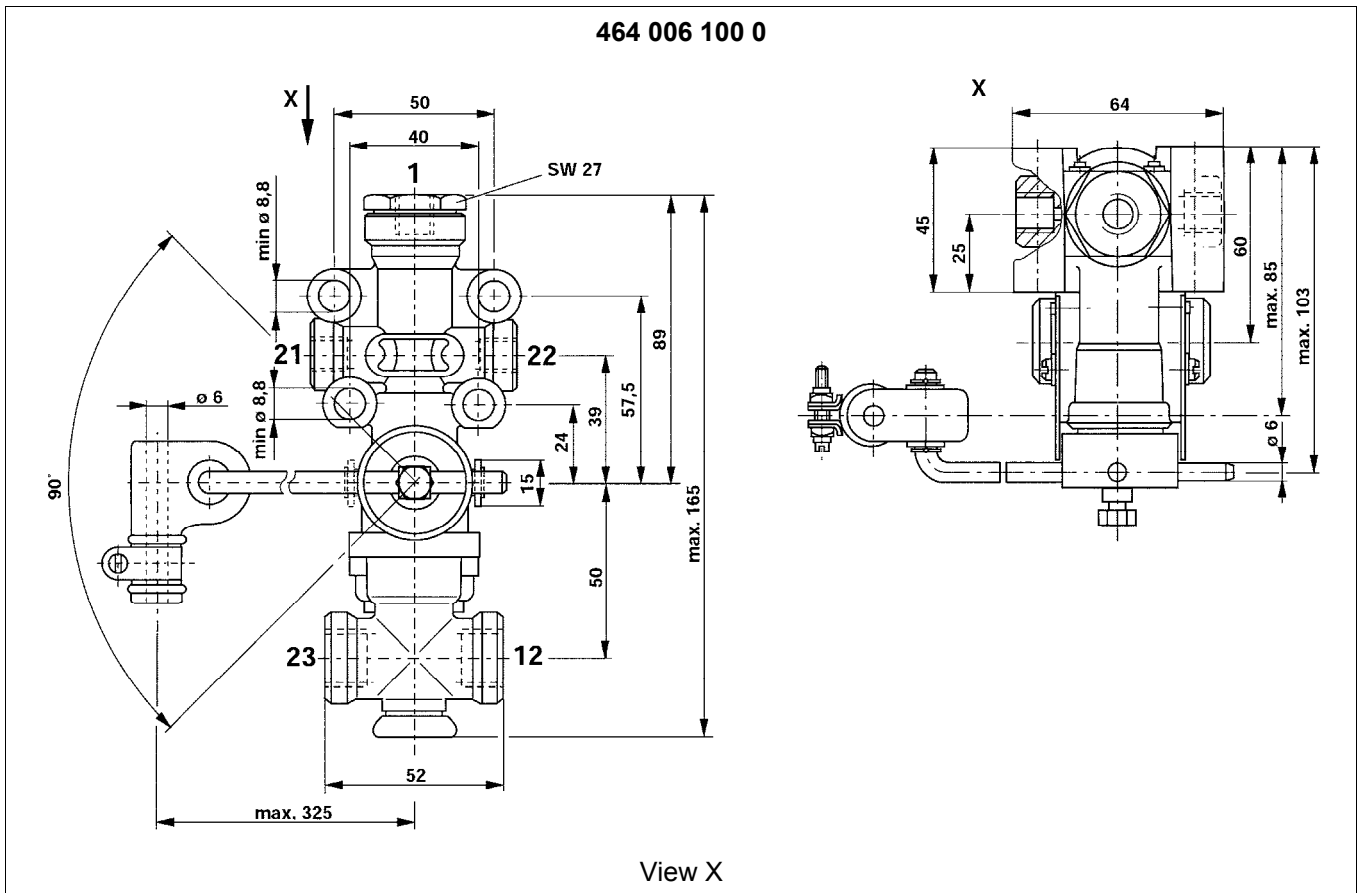
1 Energy supply (Reservoir) 3 Exhaust 21/22 Energy delivery (Air suspension bellows)

Port threads

M 12x1.5 - 12 deep

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Installation dimensions

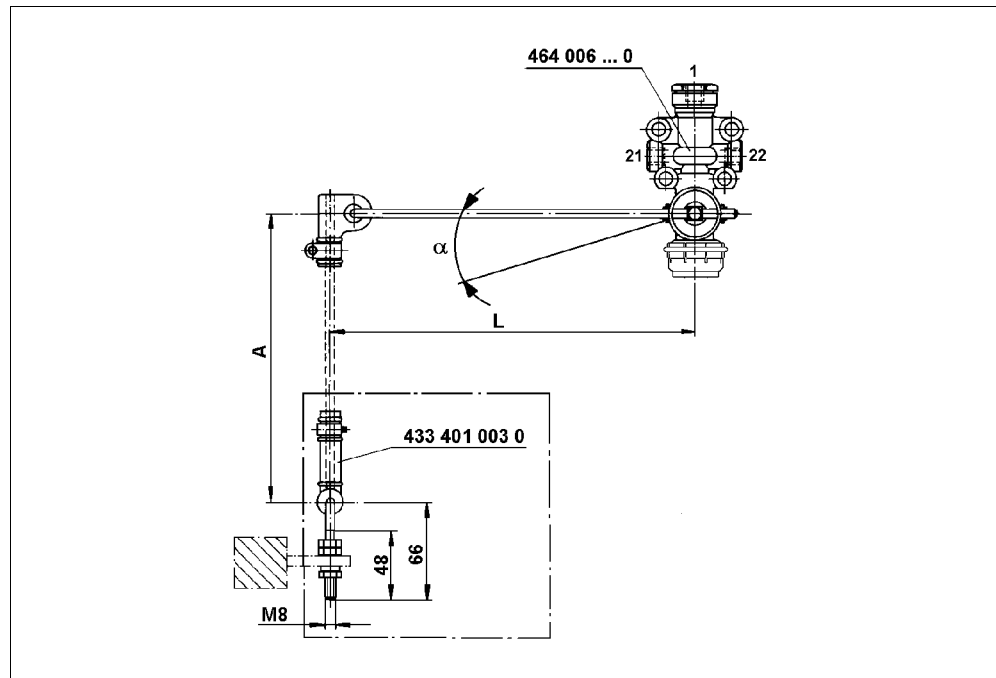


Connections			Port threads	
1	Energy supply (Reservoir)	3 Exhaust	12 Energy supply (Supply)	1, 21, 22 M 12x1.5 - 12 deep
21/22	Energy delivery (Air suspension bellows)	23 Energy delivery (Rotary slide valve)		12, 23 M 16x1.5

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Levelling valve 464 006 ... 0 – Linkage 433 401 003 0

The linkage 433 401 003 0 must be ordered separately.



Legend

α Deflection of the levelling valve lever max. 45°.

A A is the dimension between axle mounting point and the connection to the levelling valve lever (α -character).

L Lever length (at least 150 mm)

For adjusting the valve at the vehicle it is decisive which total spring travel the axle permits.

Approximate value:

The ratio "lever length L / rod length A" should be ≤ 1.2 if the closing angle of maximum 45° is not exceeded.

The lever length L should be 150 to 295 mm. If a shorter lever has to be used, a higher air consumption of the levelling valve has to be concerned.

Installation recommendation and setting information

- Fasten the levelling valve vertically or horizontally with two M8 bolts on the chassis.
The drain must point downwards.
- To make installation and setting of the lever and linkage easier, you can insert a $\varnothing 3h8$ locator pin or a $\varnothing 3h8 \times 24$ DIN 7 parallel pin into neutral position to position the air-suspension valve shaft (see previous installation dimensions).
- Install the linkage if the vehicle is positioned at normal level.
➔ The linkage has to be aligned vertically.
- Mount the levelling valve at maximum lever length if possible.
- You can clamp the lever at the desired length with the hexagon head bolt seated on the fastener for the round bar.
Depending on the fitting position various cranks of the lever are possible.

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- By accordingly fixing or turning the lever for 180° the levelling valve can be optionally operated from right or left.
- Depending on the final installation position - vertical or horizontal - the lever is to be inserted through one of the two bores in the operating shaft which are offset by 90° to one another.

The levelling valve 464 006 100 0 is set to a closing angle of 30° ±2° in the factory.

The setting adjustments lie between 15° and 45°. A closing angle of < 15° is not permitted.



Note the adjustment data of the vehicle manufacturer when replacing.

- For adjustment of the closing angle the rubber plug underneath the 3/2-Directional Control Valve has to be removed to adjust the adjusting screw with a Torx T30 screwdriver:

Counterclockwise means a reduction of the closing angle, clockwise means an increase. One rotation means an approx. 13° angle change.

The following table can be used to define the height increase of the vehicle up to shutting the supply air off to the rotary slide valve as a function of the closing angle and for determining the lever length.

- After the vehicle has been lowered to its buffers with the help of a rotary slide valve, measure the height of the chassis.
- Then raise the chassis with the rotary slide valve.
- If the permissible full suspension travel is achieved before the height limitation of the levelling valve is applied, cancel the raising process and lower the vehicle.

Turning the set screw counterclockwise reduces the closing angle and also the suspension travel. If the height limitation sets in before the chassis is at the required hub height, the vehicle has to be lowered slightly as well in this case.

Turning the self-locking set screw clockwise increases the closing angle and the suspension travel.

Repeat the process until the required suspension travel (equal or less than the maximum suspension travel specified by the axle manufacturer) is achieved.

Adjustment values

Lever length L [mm]	Hub height H [mm]					
	α = 15°	α = 20°	α = 25°	α = 30°	α = 35°	α = 45°
125	32	43	53	62	72	88
150	39	51	63	75	86	106
175	45	60	74	87	100	124
200	52	68	84	100	115	141
225	58	77	95	112	129	159
250	65	85	106	125	143	177
275	71	94	116	137	158	194
295	76	101	125	147	169	209

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Hub height H [mm]	Lever length L [mm]					
	$\alpha = 15^\circ$	$\alpha = 20^\circ$	$\alpha = 25^\circ$	$\alpha = 30^\circ$	$\alpha = 35^\circ$	$\alpha = 45^\circ$
50	193	146	118	100	87	71
60	232	176	142	120	105	85
70	271	205	166	140	122	99
80	309	234	189	160	140	113
90		263	213	180	157	127
100		293	237	200	174	141
110			260	220	192	156
120			284	240	209	170
130			308	260	227	184
140				280	244	198
150				300	262	212
160					279	226
170					297	241
180						255
190						269
200						283

Technical data

Order number	464 006 002 0	464 006 100 0	464 006 101 0	464 006 102 0	464 006 201 0
3/2 directional control valve	No	Yes	Yes	No	Yes
Max. operating pressure	13 bar				
Max. dynamic bellows pressure	15 bar				
Permissible medium	Air				
Operating temperature range	-40 °C to +80 °C				
Linkage	Round bar Ø 6 mm				
Nominal width Levelling valve	2x Ø 3 mm				
Nominal width Shut-off valve	–	Ø 6 mm	–	–	–
Weight	0.41 kg	0.51 kg	0.51 kg	0.53 kg	0.70 kg
Quickfit connections	–	–	–	5x Ø8x1	5x Ø8x1



For the zero point adjustment on the levelling valve, the following operating cylinders can be used:

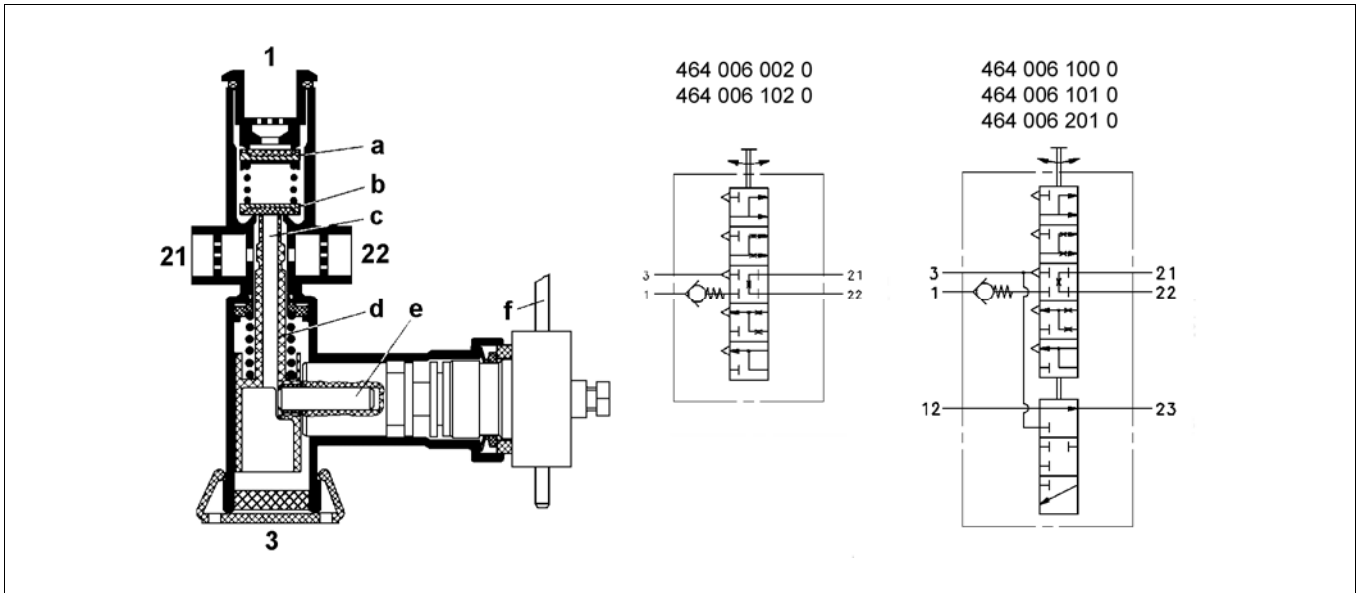
421 410 023 0, Hub 25 mm

421 410 054 0, Hub 45 mm

421 411 304 0, Hub 85 mm; with piston rod facing upward, use bellows (Accessories pack 421 411 530 2)

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Operation



With increasing load, the chassis moves down with the levelling valve fastened to it. The connection between the vehicle axle and the levelling valve presses upon the lever (f) and the guide (d) upward via the cam (e) during the process. The tappet seated on the guide opens the inlet valve (b) at the same time. The compressed air fed into the device from the supply reservoir via connection 1 and the check valve (a) can now flow into the levelling bellows via connections 21 and 22. To reduce air consumption to a minimum, grooved windings on the tappet change the cross-section of the air openings in 2 stages according to the size of the lever deflection.

The end position of the valve is achieved by means of raising the trailer box resulting from filling the bellows and closing the inlet valve (b) controlled by lever (f). In this position, connections 21 and 22 are connected with one another through a cross flow throttle.

The process is reversed upon relieving the load on the vehicle. The vehicle construction is now raised by the suspension bellows that are applied with too much pressure and the lever (f) with the cam (e) and the guide (d) pulled down. This lowers the tappet from its sealed seal on the inlet valve (b) so that the excess air can flow to atmosphere from the suspension bellows via the vent hole (c) of the tappet and the vent openings 3. The resulting lowering of the box moves the lever (f) back to its normal horizontal position. Closing the vent hole (c) by setting the tappet on the inlet valve (b) puts the levelling valve back into its end position.