Load-dependent control valve 475 800

Application

Vehicles with leaf-spring and trailing steering axle.

Purpose

Control of the steering stabilisation on a trailing steering axle depending on the spring deflection and thus on the load status of the vehicle.

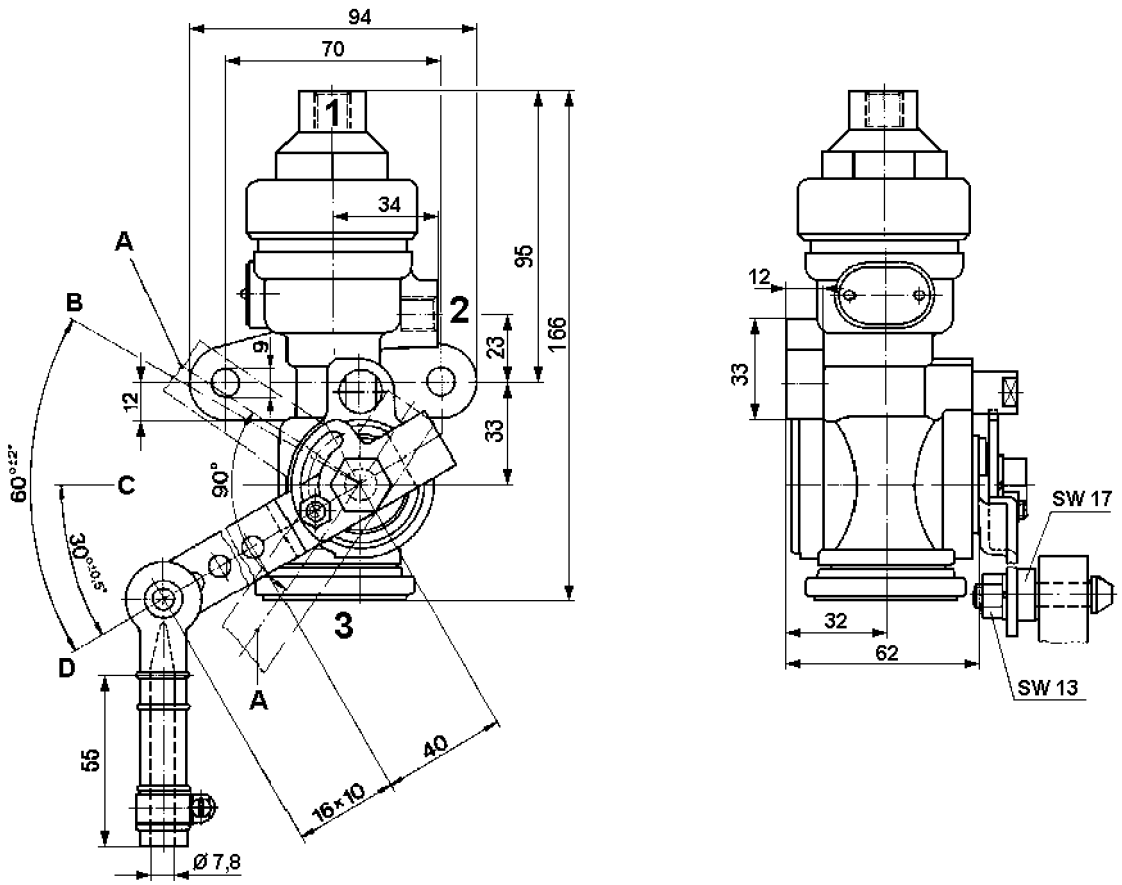
Maintenance

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

Installation recommendation

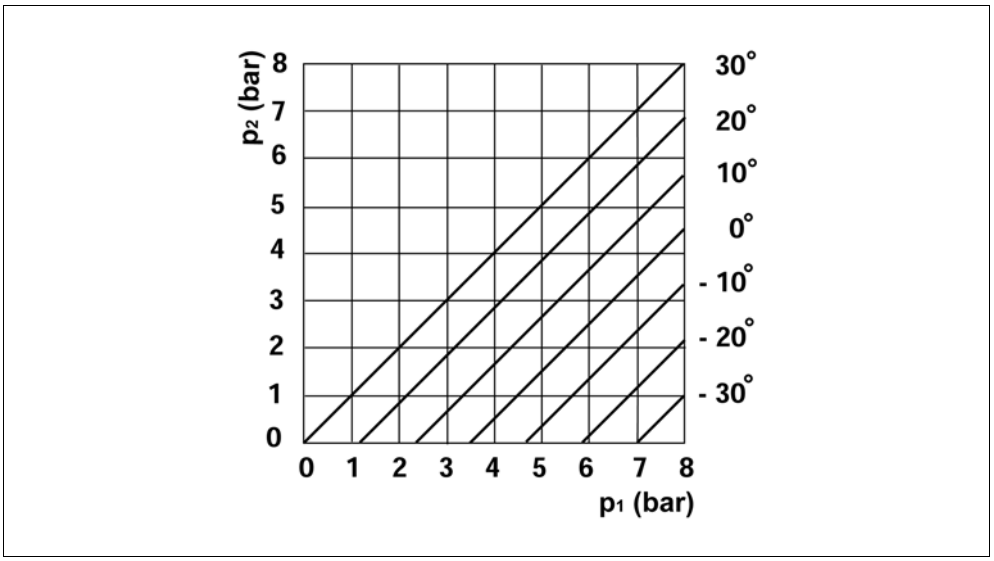
- Install the load-dependent control valve vertically so that the vent 3 points downward.
- Fasten the load-dependent control valve with two M8 bolts on the respective flange.

Installation dimensions



Connections				Port threads	Legend			
1	Energy supply	**3**	Exhaust	M 12x1.5 - 12 deep	**A**	Over travel	**B**	Fully laden position
2	Energy delivery				**C**	Central position	**D**	Unladen position

Diagram



Legend					
p_1	Input pressure	p_2	Output pressure	**-30° to 30°**	Lever travel

Determining lever length L

For determining the lever length L, the following values must be known:

Spring deflection f = ... mm	Output pressure "unladen“ $p_{2\ unladen}$ = ... bar
Supply pressure p_1 = ... bar	Output pressure "laden“ = $p_{2\ laden}$ = ... bar

– For determining scale point A (output pressure p_2) subtract $p_{2\ unladen}$ from $p_{2\ laden}$.
– Then subtract the determined pressure difference Δp_2 from the supply pressure p_1.
  ➔ The resulting value p_2 is the starting point A for a line that is made to point B (scale for spring deflection f).
  The extension of these lines cross the scale of lever length L, at which the lever length at point C can then be read.

Example

f = 40 mm

p_1 = 7.0 bar

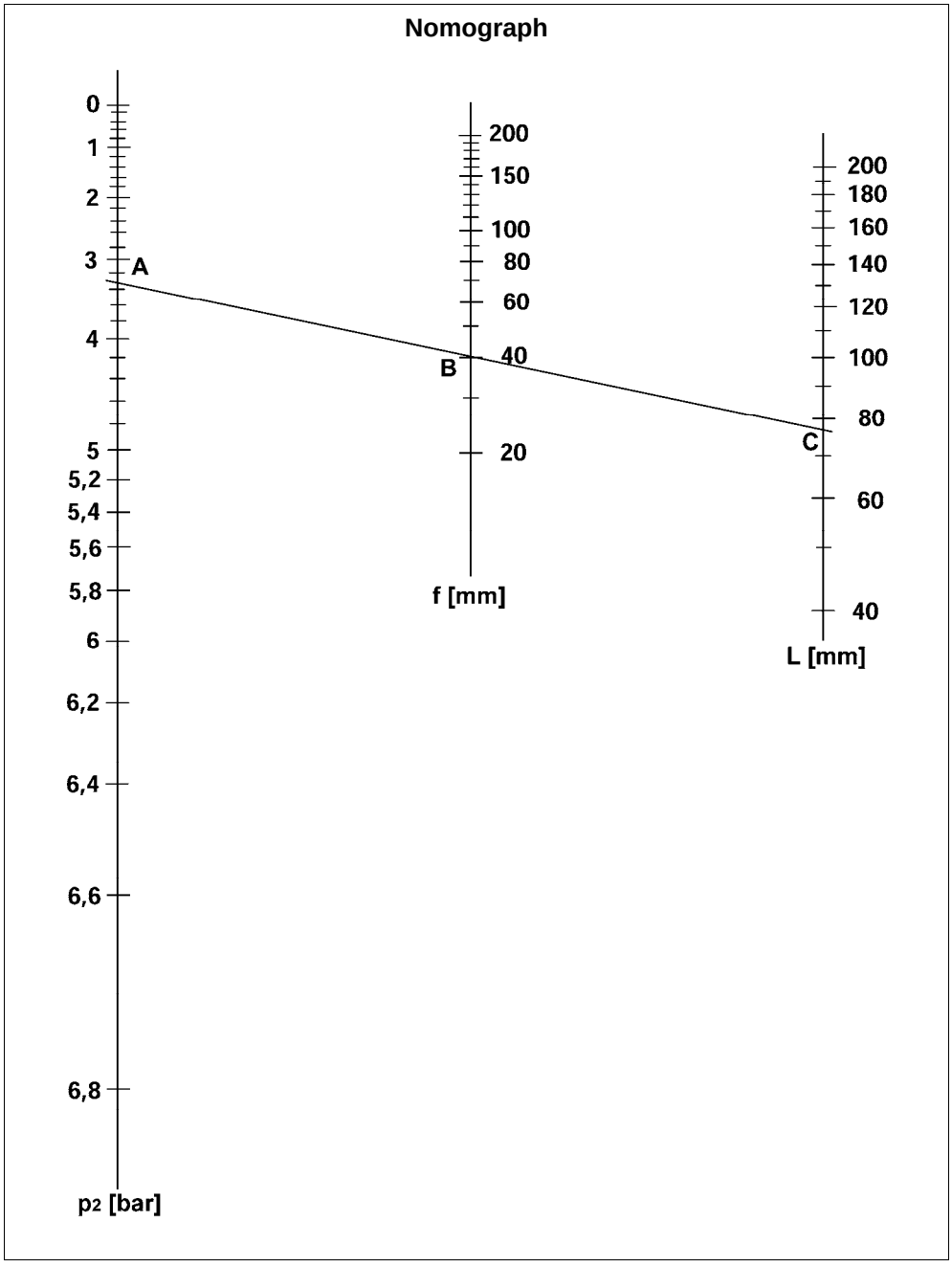
$p_{2\ unladen}$ = 1.8 bar

$p_{2\ laden}$ = 5.5 bar

$\Delta p_2 = p_{2\ laden} – p_{2\ unladen}$ = 5.5 - 1.8 = 3.7 bar

$p_2 = p_1 - \Delta p_2$ = 7.0 - 3.7 = 3.3 bar

In the following nomograph, a line is made from scale point A = 3.3 bar to scale point B = 40 mm. Extending this line crosses the scale for lever length L in point C at 75 mm.

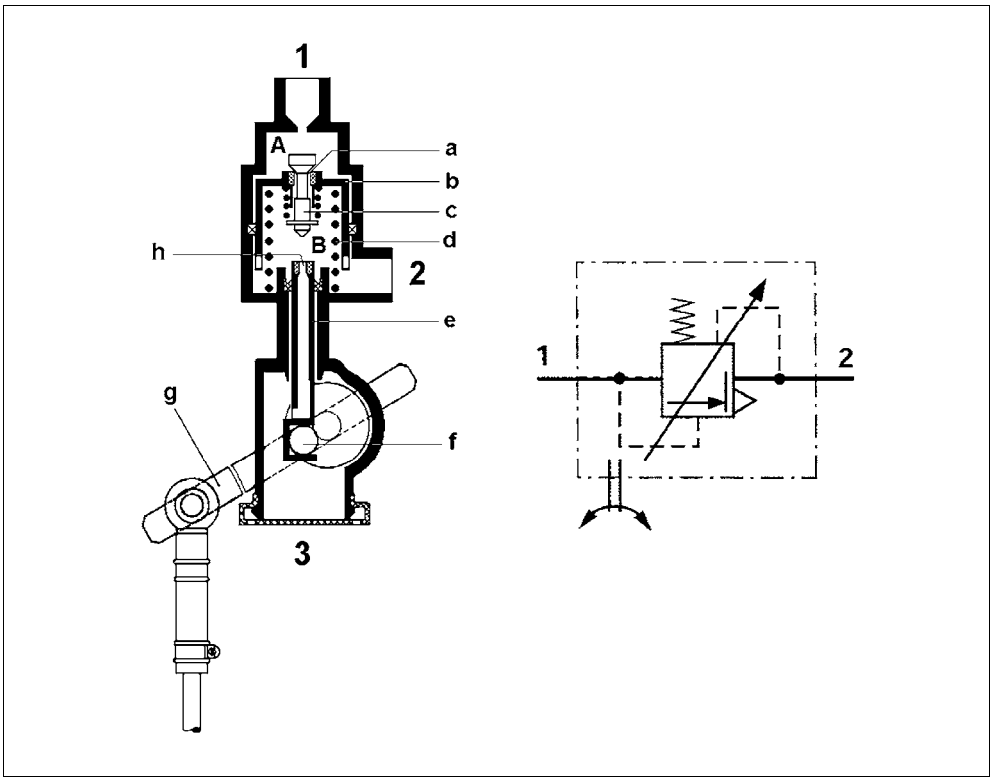


Legend					
f	Spring deflection	**L**	Lever length	p_2	Output pressure for p_1 = 7 bar

Technical data

Order number	475 800 301 0
Max. operating pressure	8 bar
Control range	0 to 7.2 bar
Permissible medium	Air
Operating temperature range	-40 °C to +80 °C
Weight	1.1 kg

Operation



The control valve is fixed on the vehicle frame and connected via a linkage with a knuckle joint attached to the axle. When the vehicle is unladen, the lever (g) is at its lowest position. With a loaded vehicle, the distance between the axle and the vehicle frame and the lever (g), is moved from the unladen position toward the full-load position.

The compressed air flows from the supply reservoir through connection 1 into chamber A and presses the piston (b) down against the force of the compression spring (d). The valve (c) seats on tappet (e), closes outlet (h) and opens inlet (a). The compressed air flows from chamber B to the downstream compressed air devices via port 2.

At the same time, pressure builds up in chamber B, amplifying the force of the compression spring (d) on the underside of piston (b). As soon as this force is greater than that acting on the top side of the piston (b), the piston (b) is raised and inlet (a) is closed. The end position has now been reached.

The position of tappet (e) which is controlled by the position of lever (g) determines the level of output pressure. In the full-load position of the lever (g), the cam (f) has moved its tappet (e) into the upper end position. The valve (c) is continually open and the compressed air goes through the control valve unhindered.

If the lever (g) moves toward the unladen position again, the tappet (e) moves down by the cam (f). Valve (c) closes inlet (a) and via the opening outlet (h) and vent 3, the lever (g) is positioned according to the partial or complete exhausting of the downstream compressed air devices. In the unladen position, the tappet (e) is in its lower end position and inlet (a) is closed.