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1 Product Description

The load control valve prevents uncontrolled cylinder movement in the event of a burst pipe or tube.

WESSEL load control valves stand out because of their sensitivity and the direct joystick action transfer.

The load control valve in the variant 4K (compact variant) is also suitable for the smallest installation spaces.

Area of application: Telescope cylinder of mobile cranes, excavators, wheel loader

Connection size(s): SAE 3/4", SAE 1", SAE 1 1/4" CODE 62

Flow volume range: up to 400 l/min

Maximum pressure: 420 bar

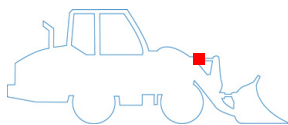
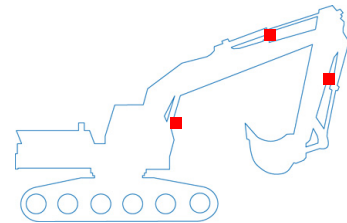
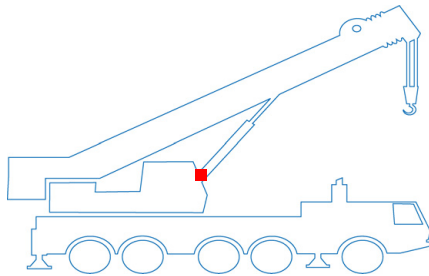
1.1 Application

Load control valves are required in different countries when construction machines perform lifting activities.

They also serve for an exact and stable positioning of the boom and enable sensitive and even movement processes.

Load control valves can compensate for leakages on the main control valves in older construction machines.

1.2 Mounting location



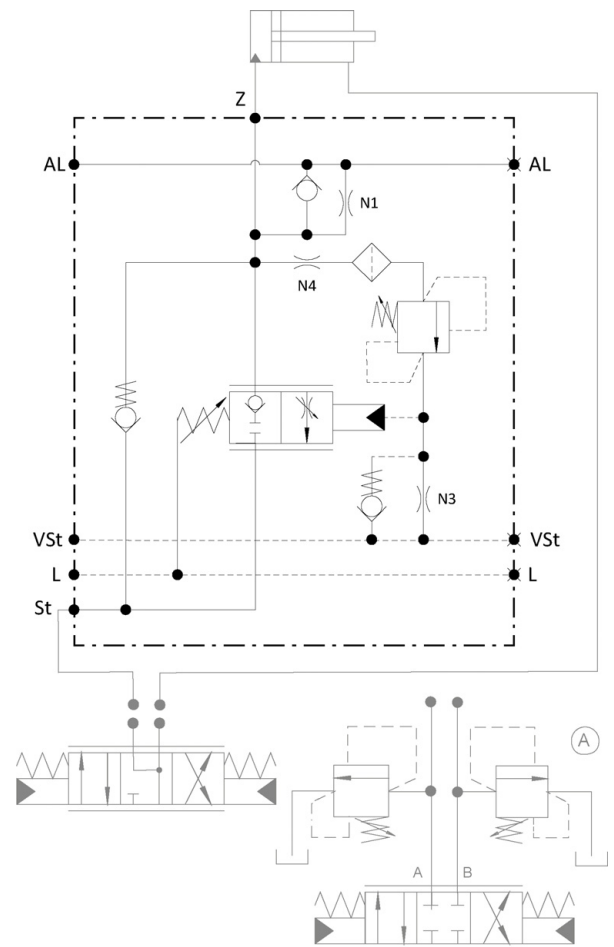
The load control valve is installed in the line to be protected between the main control valve and the hydraulic cylinder and is flanged directly on the cylinder. Additional pipework and piping between load control valve and cylinder is not permissible.

2 Function

The load control valve is closed and leakage free in the idle position (Z → ST). The cylinder cannot lower. When deploying the cylinder (ST → Z), the hydraulic fluid is fed to the cylinder via a check valve.

Pilot control pressure in the VSt connection uses control surfaces to open the load control valve piston against a pressure spring and introduces a jolt-free lowering movement. As the pilot control pressure continues to increase, the entire control cross-section of the load control valve piston is released and the maximum lowering speed is reached. If a hose or pipe breaks, the load control valve controls the maximum lowering speed to the setting defined with the control lever and the maximum specified lowering speed is thereby not exceeded. By moving the control lever into its neutral position further lowering is prevented. The load control valve piston is load-compensated so that no closing force from the return pressure affects the load control valve piston.

The secondary pressure valve is connected with connection Z and opens up to connection VSt when the permanently defined maximum pressure is achieved, which opens the load control valve piston and allows pressure to be decreased from Z to St. A downstream pressure restriction valve is required if the main directional control valve has a closed central position (A).



2.1 Characteristics

- Meets the prerequisites of standards: DIN24093, ISO 8643, EN 474
- Start opening independent of the load pressure
- Sensitive control with low hysteresis
- Leakage-free
- Load control valve piston pressure-compensated
- Symmetrical connections to/from the control valve on the right and the left side of the load control valve
- Can be flanged directly onto the cylinder connection
- Surge line for parallel operation for the minimization of the cylinder pressure differences with design SAE 3/4" & 1 1/4", for size SAE 1" realizable via the connection MZ
- Pressuring limiting valve with upstream filter sieve for protecting the cylinder

2.2 Adjustment options

- Opening Start of the Load Control Valve
- Opening Start of the Pressure Limiting Valve Adjustable
- Lowering Speed Limiting Adjustable (optional)

3 Technical Data

Criterion	Units	Value		
Z (consumer port)		SAE 3/4"	SAE 1"	SAE 1 1/4"
ST (supply port)		DIN ISO 6162-2, SAE J518 (CODE62)		
Max. recommend flow	l/min	350	400	600
Max. operating pressure	bar	420		
Range pressure setting	bar	350		
Pressure setting	bar	250 – 420		
Max. volume flow		See type code feature 04: Pressure setting		
Weight		See type code characteristic 03: Control slider		
Opening pressure	Kg	5,8	5,4	13,8
Full opening	bar	6 – 10		
Max. operating pressure	bar	Opening pressure + leak oil pressure + 17		
Connection				
	Connection sizes		Pmax	
VSt (pilot port)	G 1/4; ISO 1179-1	bar	50	
AI (compensation port)	G 1/4; ISO 1179-1	bar	420	
L (drain port)	G 1/4; ISO 1179-1	bar	<1,0	
MSt (balance line)	M8x1, ISO 6149-1	bar	350	
Installation position			Any	
Hydraulic fluid				
Hydraulic fluid		Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request		
Hydraulic fluid temperature range	°C	-20 – +80		
Ambient temperature:	°C	< +50		
Viscosity range	mm ² /s	2.8 – 500		
Contamination grade		Filtering conforming with NAS 1638, class 9, with minimum retention rate $\beta_{10} \geq 75$		
Surface protective		Zinc coated		

4 Ordering Information

4.1 Type code

LHB	4K				HYP03B		00	
00	01	02	03	04	05	06	07	08
00	Product group	Load Control Valve Boom						LHB
01	Variant	Compact variant						4K
02	Connections	Cylinder (Main control valve)	SAE 3/4" (DIN ISO 6162-2,SAE J518 (CODE62))				05C	
			SAE 1" (DIN ISO 6162-2,SAE J518 (CODE62))				05E	
			SAE 1 1/4" (DIN ISO 6162-2,SAE J518 (CODE62))				05G	
03	Spool	Design of the spool optimized for the specified volume flow; [l/min]	Version SAE 3/4"				150	
							200	
							250	
			Version SAE 1"				300	
							350	
							150	
			Version SAE 1 1/4"				200	
							300	
							400	
				300				
				400				
				500				
				600				
04	Pressure setting	Pressure limiting valve: value refers to a volume flow of 10 l/min	200 bar bis 420 bar, Standard 420 bar				XXX	
05	Actuation	hydraulic proportional, port G1/4						HYP03B
06	Opening pressure	opens at a pilot control pressure as 6 bar to 10 bar, standard 8 bar = 008						XXX
07	Setting compensation	No compensation						00
08	Maximum lowering speed adjustable	No						0
		Yes						1

XXX – permanently predetermined characteristics XXX – characteristics selectable by customer ■ available ○ not available

Different configurations are unfortunately not implementable for technical reasons. Please let us know if you have questions

4.2 Versions currently available

The versions listed below are available as standard. Further versions as part of the options given on the type code can be configured upon request. Therefore normally minimum order quantities are required.

Designation	Type Code	Ident Nr.
LHB-4K SAE3/4 CD62 150LPM 420BAR 8BAR	LHB-4K -05C -150 -420 - HYP03B -008 -00 -0	426.063.997.9
LHB-4K SAE3/4 CD62 200LPM 420BAR 8BAR	LHB-4K -05C -200 -420 - HYP03B -008 -00 -0	426.063.998.9
LHB-4K SAE3/4 CD62 250LPM 420BAR 8BAR	LHB-4K -05C -250 -420 - HYP03B -008 -00 -0	426.763.911.9
LHB-4K SAE3/4 CD62 300LPM 420BAR 8BAR	LHB-4K -05C -300 -420 - HYP03B -008 -00 -0	426.063.999.9
LHB-4K SAE3/4 CD62 350LPM 420BAR 8BAR	LHB-4K -05C -350 -420 - HYP03B -008 -00 -0	426.763.900.9
LHB-4K SAE3/4 CD62 150LPM 420BAR 8BAR SPEEDADJ	LHB-4K -05C -150 -420 - HYP03B -008 -00 -1	426.763.901.9
LHB-4K SAE3/4 CD62 200LPM 420BAR 8BAR SPEED ADJ	LHB-4K -05C -200 -420 - HYP03B -008 -00 -1	426.763.902.9
LHB-4K SAE3/4 CD62 250LPM 420BAR 8BAR SPEED ADJ	LHB-4K -05C -250 -420 - HYP03B -008 -00 -1	426.763.912.9
LHB-4K SAE3/4 CD62 300LPM 420BAR 8BAR SPEED ADJ	LHB-4K -05C -300 -420 - HYP03B -008 -00 -1	426.763.903.9
LHB-4K SAE3/4 CD62 350LPM 420BAR 8BAR SPEED ADJ	LHB-4K -05C -350 -420 - HYP03B -008 -00 -1	426.763.904.9
LHB-4K SAE1 CD62 150LPM 420BAR 8BAR	HB-4K -05E -150 -420 - HYP03B -008 -00 -0	427.763.943.9
LHB-4K SAE1 CD62 200LPM 420BAR 8BAR	HB-4K -05E -200 -420 - HYP03B -008 -00 -0	427.763.944.9
LHB-4K SAE1 CD62 300LPM 420BAR 8BAR	HB-4K -05E -300 -420 - HYP03B -008 -00 -0	427.763.945.9
LHB-4K SAE1 CD62 400LPM 420BAR 8BAR	HB-4K -05E -400 -420 - HYP03B -008 -00 -0	427.763.946.9
LHB-4K SAE1 CD62 150LPM 420BAR 8BAR SPEED ADJ	HB-4K -05E -150 -420 - HYP03B -008 -00 -1	427.763.947.9
LHB-4K SAE1 CD62 200LPM 420BAR 8BAR SPEED ADJ	HB-4K -05E -200 -420 - HYP03B -008 -00 -1	427.763.948.9
LHB-4K SAE1 CD62 300LPM 420BAR 8BAR SPEED ADJ	HB-4K -05E -300 -420 - HYP03B -008 -00 -1	427.763.949.9
LHB-4K SAE1 CD62 400LPM 420BAR 8BAR SPEED ADJ	HB-4K -05E -400 -420 - HYP03B -008 -00 -1	427.763.950.9
LHB-4K SAE1 1/4 CD62 300LPM 420BAR 8BAR	HB-4K -05G -300 -420 - HYP03B -008 -00 -0	428.063.949.9
LHB-4K SAE1 1/4 CD62 400LPM 420BAR 8BAR	HB-4K -05G -400 -420 - HYP03B -008 -00 -0	428.063.950.9
LHB-4K SAE1 1/4 CD62 500LPM 420BAR 8BAR	HB-4K -05G -500 -420 - HYP03B -008 -00 -0	428.063.951.9
LHB-4K SAE1 1/4 CD62 600LPM 420BAR 8BAR	HB-4K -05G -600 -420 - HYP03B -008 -00 -0	428.063.952.9
LHB-4K SAE1 1/4 CD62 300LPM 420BAR 8BAR SPEED ADJ	HB-4K -05G -300 -420 - HYP03B -008 -00 -1	428.063.953.9
LHB-4K SAE1 1/4 CD62 400LPM 420BAR 8BAR SPEED ADJ	HB-4K -05G -400 -420 - HYP03B -008 -00 -1	428.063.954.9
LHB-4K SAE1 1/4 CD62 500LPM 420BAR 8BAR SPEED ADJ	HB-4K -05G -500 -420 - HYP03B -008 -00 -1	428.063.955.9
LHB-4K SAE1 1/4 CD62 600LPM 420BAR 8BAR SPEED ADJ	HB-4K -05G -600 -420 - HYP03B -008 -00 -1	428.063.956.9

5 Description of Characteristics in Accordance with Type Code

5.1 Characteristic 1: Variant

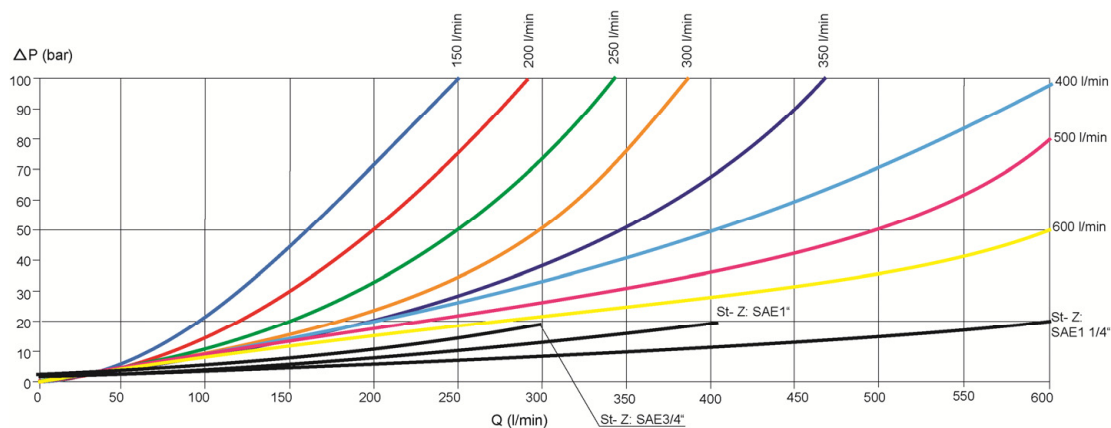
Compact variant

5.2 Characteristic 2: Connections

The valves are flanged directly on the cylinder to be protected (connection Z). The supply line from the control valve takes place via the connection ST. Both connections are designed the same size.

5.3 Characteristic 3: Spool

The control slider is calculated to the maximum desired volume flow (Z → ST). Criterion: Nominal volume flow, in which a maximum pressure loss (Δp) of 50 bar is generated (Z → ST)



5.4 Characteristic 4: Pressure setting

Setting of the pressure restriction valve for securing the cylinder (connection Z).

5.5 Characteristic 5: Actuation

Actuation type of the valve. As a rule, this is "hydraulically proportional" connection size of the pilot control connection.

5.6 Characteristic 6: Opening pressure

Level of the pilot control pressure (connection VST), in which the valve pusher opens and the cylinder begins its lowering movement.

5.7 Characteristic 7: Setting compensation

Compensation of the impact of load pressure on the lowering speed. The setting is performed in the factory and cannot be changed.

No compensation:

The load pressure had no impact on the opening cross-section of the hose rupture valve.

Higher load pressure – higher lowering speed.

5.8 Characteristic 8: Lowering speed adjustable

In addition to the design of the control pusher for a maximum volume control, the lowering speed can be further limited by this setting.

6 Installation

6.1 General remarks

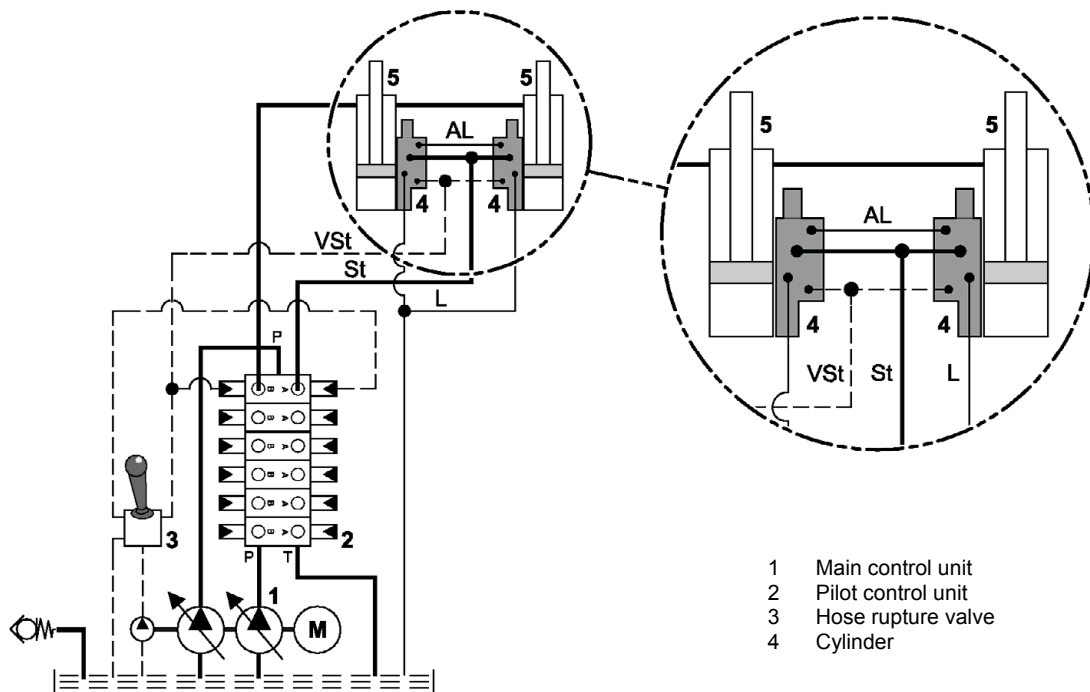
- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or dismantling, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- May only be opened with the approval of the manufacturer, otherwise the warranty is invalidated.
- The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked.

6.2 Connection recommendations



CAUTION!

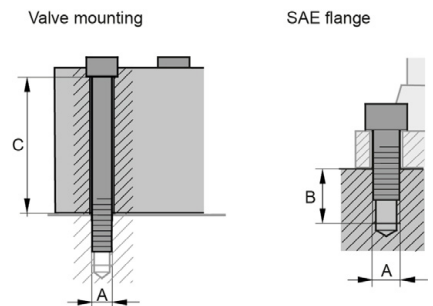
Hydraulic hoses are not to come into contact with the hose rupture valve because otherwise they are subject to thermal damaging. Ensure that standards EN 563 and EN 982 are observed.



- 1 Main control unit
- 2 Pilot control unit
- 3 Hose rupture valve
- 4 Cylinder

6.3 Installation - space

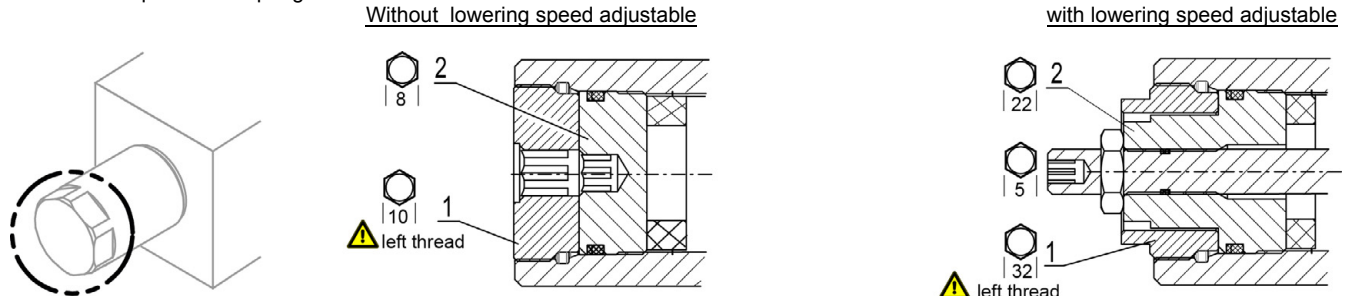
- Observe the connection labels
- Observe the strength category and torsional torque of the clamp bolts
- Do not damage seals and flange surface
- The air must be exhausted from the hydraulic system
- Observe the recommended installation screws



	Thread A	Strength class	Thread depth B (mm)	Tightening torque installation Valve (Nm)	Tightening torque SAE flange (Nm) DIN ISO 6162-2, SAE J518/2	C (mm)
SAE 3/4"	M10	10.9	16,5	71	70	78
SAE 1"	M12	10.9	21,5	123	130	78,6
SAE 1 1/4"	M14	8.8	23,5	195	150	97,5

6.4 Setting "opening start"

The opening start of the hose rupture valve is set in the factory according to type code. A setting during startup is not necessary and, for safety purposes, may only be performed by trained technicians using suitable measuring means. The setting of the opening start, that is the level of the pilot control pressure, from which the hose rupture valve opens to lower the cylinder, is set on the torque control spring.



- Remove seal (factory status).
- Loosen the AF10 (1) counter nut, **Attention: left-hand thread** (Locknut completely screw out at 1" version)
- The opening start of the hose rupture valve must be approximately 0.5 bar above the opening start of the main control unit spool.
- Increase: Turn the set-screw AF8 (2) clockwise.
- Decrease: Turn the set-screws AF8 (2) counter-clockwise.
- An adjustment of 1mm thread corresponds a variation of the opening pressure to 2,9 bar.
- Tighten the counter nut AF10 (1).

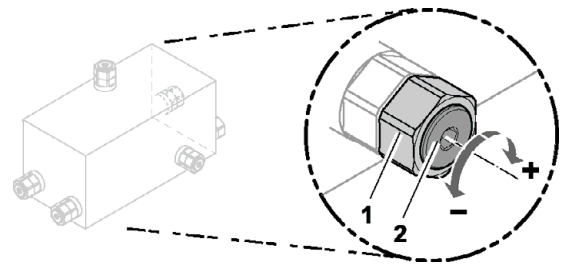
6.5 Setting "pressure restriction"

The pressure restriction of the load control valve is set in the factory according to type code. A setting during startup is not necessary and, for safety purposes, may only be performed by trained technicians using suitable measuring means. The maximum operating pressure of the pressure valve depends on the maximum operating pressure of the machine. Observe the technical data. The pressure valve is in one of the indicated positions.



ATTENTION

During operation, the valve can heat up to the oil temperature.

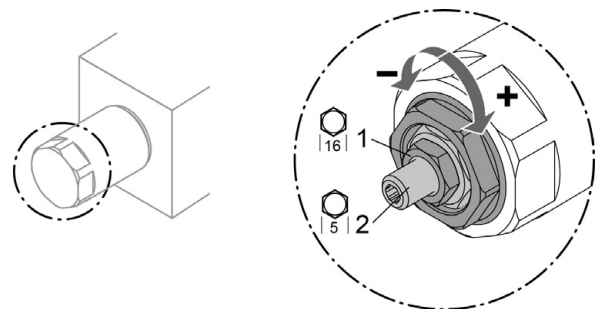


- Undo the counter nut AF19 (1).
- The operating pressure is set up (see table).
- Increase: Turn the set-screw AF5 (2) clockwise.
- Decrease: Turn the set-screws AF5 (2) counter-clockwise.
- 1 turn corresponds with 84 bar
- Settings over 420 bar (DIN ISO 6162-2, SAE J518/2 (CODE62)) or 350 bar (DIN ISO 6162-1, SAE J518/1 (CODE61)) are not permissible
- Tighten the counter nut AF19 (1).

6.6 Setting "maximum lowering speed"

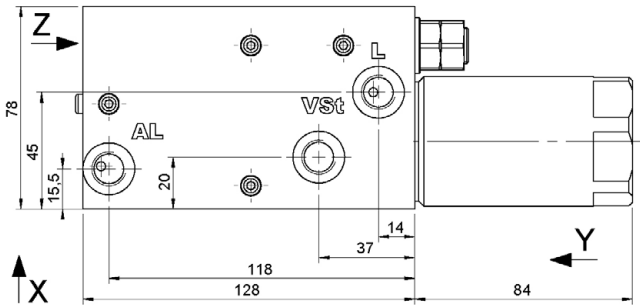
The setting of the lowering speed limit (if present) also takes place on the spring cup unit. This setting can only be made when the opening start has been set correctly.

- Undo the counter-nut (1).
- Screw in the set-screws (4) clockwise until **the stop position is detected**.
- Turn the set-screw (2) counter-clockwise until the desired maximum lowering speed is reached. SAE 1" & SAE 3/4" - 6 mm and at SAE 1 1/4" - 7mm unscrewed means maximum lowering speed, one revolution = 1mm. (Please do not unscrew further)
- By screwing the setting screw (2) in, the load control valve is limited in opening travel, which sets the lowering speed.
- Tighten counter nut (1), tightening torque 30 Nm.
- Warning:** Do not adjust to endstop.

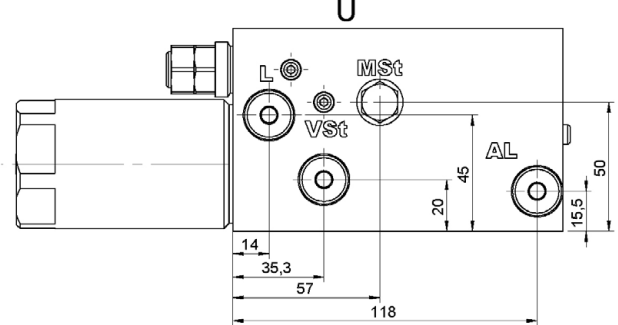
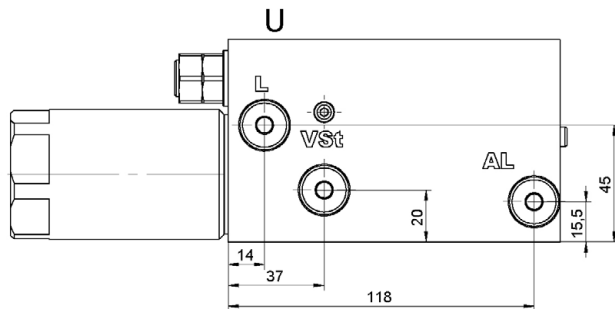
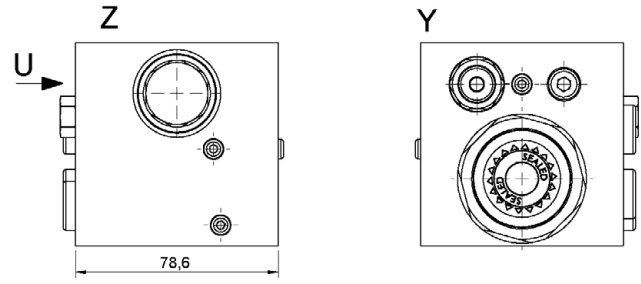
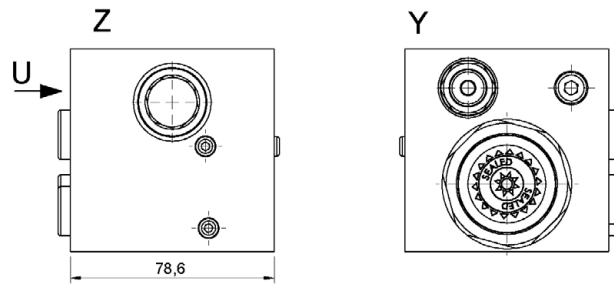
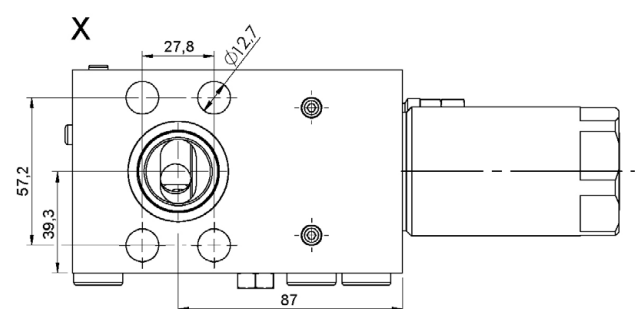
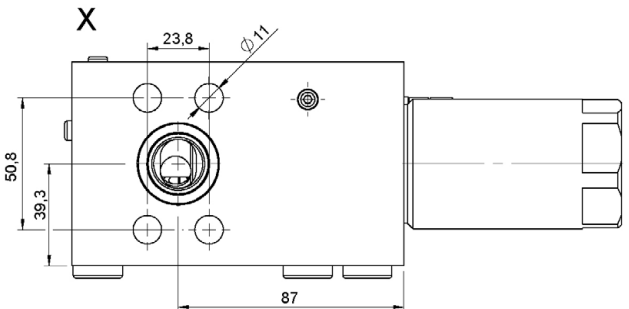
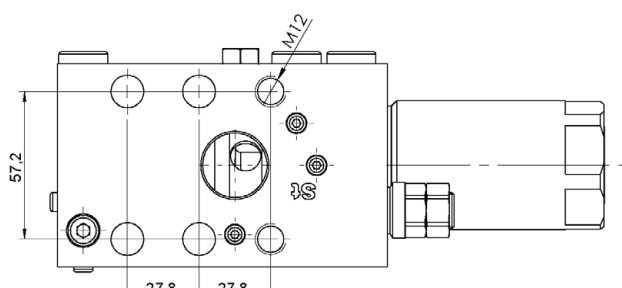
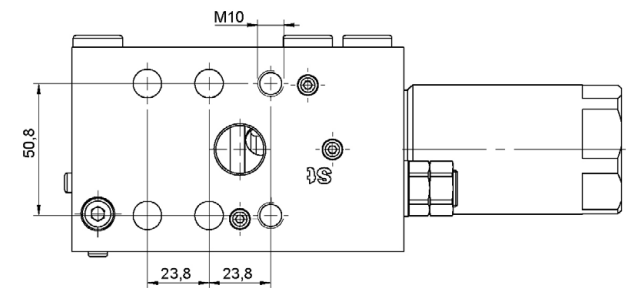
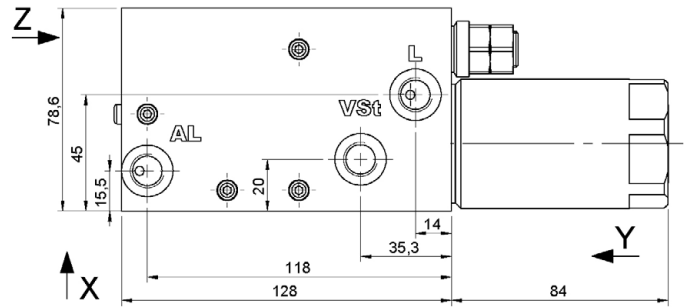


6.7 Dimensions

SAE 3/4"



SAE 1"



we engineer your progress

