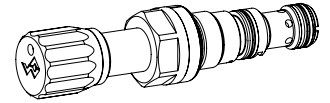


Accumulator loading cartridge

- ◆ pilot operated
- ◆ $p_{max} = 400$ bar
- ◆ $p_{Nmax} = 350$ bar
- ◆ $Q_{max} = 30$ l/min

M22 x 1,5
ISO 7789



DESCRIPTION

Pilot operated accumulator unloading valve in screw-in cartridge construction for cavity according to ISO 7789. The valve has an adjustable upper switching point and a switching pressure difference which is fixed by the design. If the pressure in P exceeds the upper, adjustable switching pressure, the pilot control is opened by the pilot control spool. A pilot oil flow passes, and the reverse side of the main spool is unloaded. The produced pressure difference shifts the main spool against the spring, and the valve switches to unloading circuit. Due to the surface difference in the pilot control part, the pilot oil flow is interrupted, as soon as the pressure in the accumulator drops by 15 %, resp. 25 % of the upper switching point. Pressures at the main spool balance out, and the spring shifts the main spool into the closed position. The pump can now again build up the system pressure up to the upper switching point, the cycle starts again.

APPLICATION

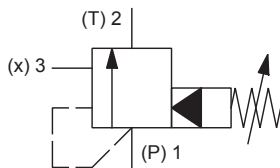
Accumulator unloading valves are used in hydraulic systems with pressure accumulators. They allow an energy and cost-saving system design in the case of strongly varying oil requirement of cylinders, or for maintaining pressures over a period of time, e.g. in the case of clamping procedures. The screw-in cartridge is perfectly suitable for installation in control blocks and is installed in sandwich- (vertical stacked systems) and in flange plates (corresponding data sheets in this register). For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets in register 2.13.

Note!



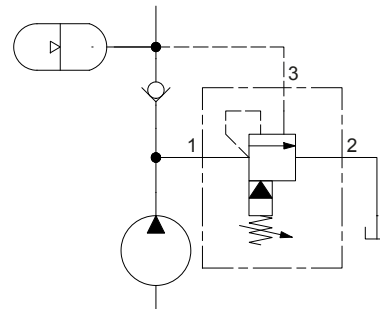
An additional pressure relief valve must be present for the system protection. Please observe the adjustment and connection example in the „Symbol“ section.

SYMBOL



Adjustment and connection example

Upper switching point (OS) adjusted = 100 bar
 Switching pressure difference 15 % fixed
 Lower switching point (US) = OS - 15 % = 85 bar
 Gas preload for accumulator max. 90 % of US = 76 bar



TYPE CODE

Pilot operated, accumulator loading valve		US	<input type="checkbox"/>	PM22	-	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Type of adjustment	Key	<input type="checkbox"/>	S	Control knob	<input type="checkbox"/>	D	Cover	<input type="checkbox"/>	A	(see Data sheet 2.0-50)
Screw-in cartridge M22 x 1,5										
Nominal pressure range p_N	100 bar	<input type="checkbox"/>	100	160 bar	<input type="checkbox"/>	160	350 bar	<input type="checkbox"/>	350	
Sealing material	NBR	<input type="checkbox"/>		FKM (Viton)	<input type="checkbox"/>	D1				
Design index (subject to change)										

2.1-548

GENERAL SPECIFICATIONS

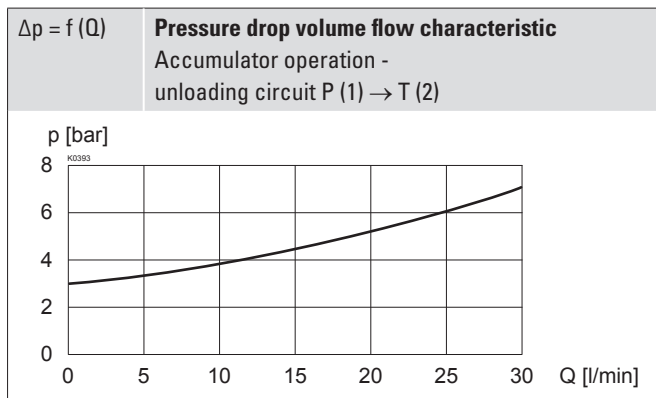
Designation	Accumulator loading valve
Construction	Pilot operated
Mounting	Screw-in cartridge construction
Nominal size	M22 x 1,5 according to ISO 7789
Actuation	Manually
Ambient temperature	-25...+70 °C
Weight	0,22 kg key adjustment 0,24 kg control knob 0,28 kg cover

ACTUATION

Actuation	S = lockable key adjustment D = lockable knob adjustment
Actuation angle	$p_N = 100 / 160 \text{ bar}$ $\alpha_0 = 1368^\circ$ (3,8 rotations) $p_N = 350 \text{ bar}$ $\alpha_0 = 2700^\circ$ (7,5 rotations)
Actuation stroke	$p_N = 100 / 160 \text{ bar}$ $S_0 = 3,8 \text{ mm}$ $p_N = 350 \text{ bar}$ $S_0 = 7,5 \text{ mm}$

PERFORMANCE SPECIFICATIONS

Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$



HYDRAULIC SPECIFICATIONS

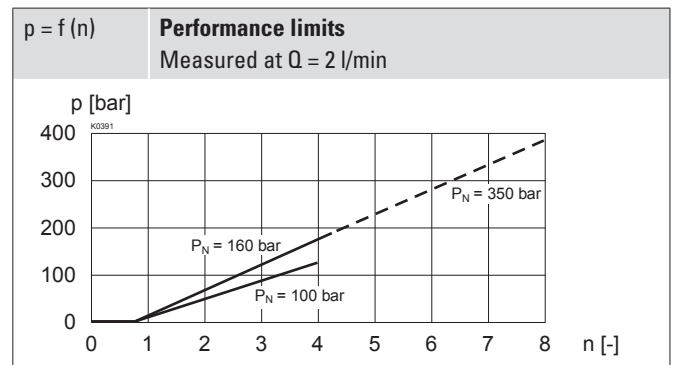
Working pressure	$p_{\max} = 400 \text{ bar}$
Nominal pressure range	$p_N = 100 \text{ bar}, 160 \text{ bar}, 350 \text{ bar}$
Minimum pressure	$p_{\min} = 50 \text{ bar}$ for $p_N = 160 / 350 \text{ bar}$ $p_{\min} = 25 \text{ bar}$ for $p_N = 100 \text{ bar}$
Volume flow range	$Q = 1 \dots 30 \text{ l/min}$
Leakage oil	Maximum 4 drops / min in accumulator unloading operation P - T
Fluid	Mineral oil, other fluid on request
Viscosity range	$12 \text{ mm}^2/\text{s} \dots 320 \text{ mm}^2/\text{s}$
Temperature range fluid	-25...+70 °C (NBR) -20...+70 °C (FKM)
Contamination efficiency	Class 18 / 16 / 13
Filtration	Required filtration grade $\beta_{6 \dots 10} \geq 75$, see data sheet 1.0-50
Diff. unloading / loading	$15 \pm 3 \%$ for $p_N = 160 / 350 \text{ bar}$ $25 \pm 3 \%$ for $p_N = 100 \text{ bar}$

SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

STANDARDS

Cartridge cavity	ISO 7789
Contamination efficiency	ISO 4406



SURFACE TREATMENT

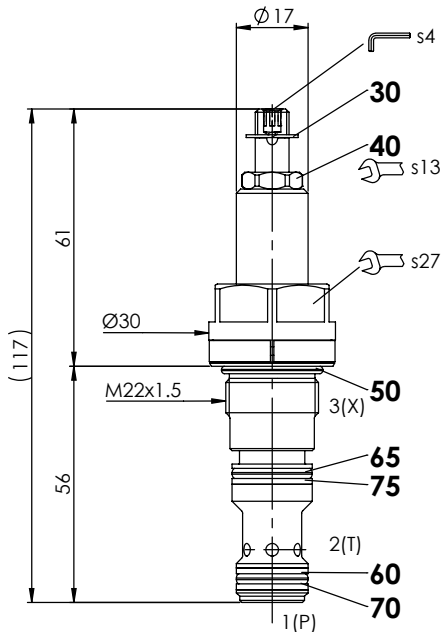
- ◆ The cartridge body is zinc-nickel coated
- ◆ The control knob is made of plastic

INSTALLATION NOTES

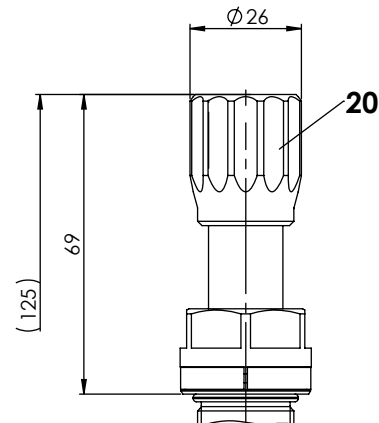
Mounting type	Screw-in cartridge M22 x 1,5
Mounting position	Any, preferably horizontal
Tightening torque	$M_D = 60 \text{ Nm}$ Screw-in cartridge

DIMENSIONS

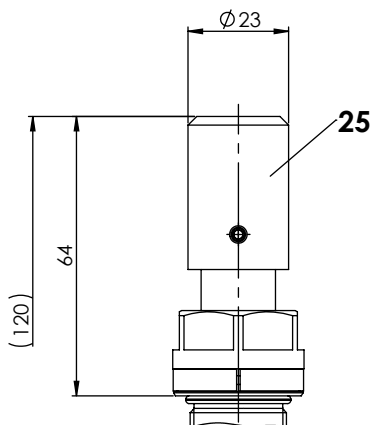
Key adjustment «S»



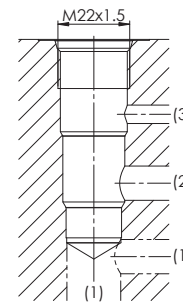
Control knob adjustment «D»



Cover «A»


HYDRAULIC CONNECTION

Cavity drawing according to ISO 7789-22-06-0-98


Note!


For detailed cavity drawing and cavity tools see data sheet 2.13-1006

PARTS LIST

Position	Article	Description
20	114.2224	Control knob
25	032.0611	Cover rd 23 / 3 x 35
30	193.1061	Retainer rd 6 DIN 6799
40	153.1402	Hexagon nut 0,5d M8 x 1
45	212.1488	Washer (only for $p_N = 100, 160$ bar)
50	160.2188	O-ring ID 18,77 x 1,78 (NBR)
	160.6188	O-ring ID 18,77 x 1,78 (FKM)
60	160.2140	O-ring ID 14,00 x 1,78 (NBR)
	160.6141	O-ring ID 14,00 x 1,78 (FKM)
65	160.2156	O-ring ID 15,60 x 1,78 (NBR)
	160.6156	O-ring ID 15,60 x 1,78 (FKM)
70	049.3176	Backup ring rd 14,1 x 17 x 1,4
75	049.3196	Backup ring rd 16,1 x 19 x 1,4

ACCESSORIES

Types of adjustment for screw-in cartridges	Data sheet 2.0-50
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50

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