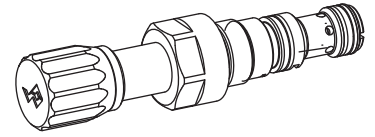


Accumulator unloading valve
Screw-in cartridge

- 1-point adjustment
- Pilot operated
- $Q_{max} = 30 \text{ l/min}$
- $p_{max} = 400 \text{ bar}$
- $p_{Nmax} = 350 \text{ bar}$

M22x1,5
 ISO 7789

DESCRIPTION

Spool type pilot operated accumulator unloading valve. Thread M22x1,5 and cavity in accordance with ISO 7789. The valve is available with two types of setting. There are three pressure stages to choose from. The valve has an adjustable unloading point and a defined re-switching difference. The steel bodies of the sandwich valve are phosphate coated. Steel cartridge body and adjustment spindle galvanised to protect them against corrosion. The quality of this product is reflected in the good performance data and design.

FUNCTION

If the system pressure exceeds the adjustable unloading point, the pilot spool is opening the pilot valve. A control flow starts to flow and the back end of the main spool is depressurised. The resultant pressure difference displaces the main spool towards the spring and the valve switches to unloading circulation. Because of the difference in section in the pilot area, the pilot flow is interrupted as soon as the pressure in the accumulator drops by 15% or 25% of the upper switching point. The pressures at the main spool are equilibrated and the spring displaces the main spool to the closed position. The pump can now build up the system pressure again as far as the unloading point and the cycle starts again.

APPLICATION

Accumulator loading valves are used in hydraulic systems with accumulators. They allow a low cost, energy saving system design in cases where the cylinder flow demand varies considerably or for retaining pressures over a period of time, e.g. for clamping processes. Installation of the proportional pressure reducing valves in control blocks, as well as Wandfluh vertical stack combination valves NG4-Mini, NG6 and NG10. (Please refer to separate data sheets in register 2.1). Cavity tools are available for hire or sale for machining aluminium or steel. See register 2.13. **Note:** An additional relief valve for system protection must be installed. Please refer to the set-up and connection example on page 2.

CONTENTS

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TYPE CODE

	U S <input type="checkbox"/> PM22 - <input type="checkbox"/> # <input type="checkbox"/>						
Pilot operated accumulator loading valve							
Types 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 M22x1,5							
Standard nominal pressure ranges:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>$p_N = 100 \text{ bar}$</td> <td>100</td> </tr> <tr> <td>$p_N = 160 \text{ bar}$</td> <td>160</td> </tr> <tr> <td>$p_N = 350 \text{ bar}$</td> <td>350</td> </tr> </table>	$p_N = 100 \text{ bar}$	100	$p_N = 160 \text{ bar}$	160	$p_N = 350 \text{ bar}$	350
$p_N = 100 \text{ bar}$	100						
$p_N = 160 \text{ bar}$	160						
$p_N = 350 \text{ bar}$	350						
Design-Index (Subject to change)							

GENERAL SPECIFICATIONS

Description	Pilot operated accumulator unloading valve	
Construction	Screw-in cartridge acc. to ISO 7789	
Mounting	Screw-in thread M22x1,5	
Ambient temperature	-20...+50 °C	
Mounting position	any	
Fastening torque	$M_D = 50 \text{ Nm}$	
Weight:	$m = 0,23 \text{ kg}$ (key)	$m = 0,24 \text{ kg}$ (control knob)

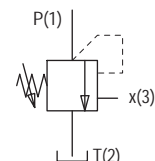
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade $\beta_{6...10} \geq 75$) (refer to data sheet 1.0-50/2)
Viscosity range	12 mm ² /s ... 320 mm ² /s
Fluid temperature	-20...+70 °C
Peak pressure	$p_{max} = 400 \text{ bar}$
Nominal pressure	$p_N = 100 \text{ bar}$, $p_N = 160 \text{ bar}$, $p_N = 350 \text{ bar}$
Minimal pressure	$p_{min} = 50 \text{ bar}$ for $p_N 160/350 \text{ bar}$ $p_{min} = 25 \text{ bar}$ for $p_N 100 \text{ bar}$
Diff. unloading/loading	$15 \pm 3\%$ for $p_N = 160/350 \text{ bar}$ $25 \pm 3\%$ for $p_N = 100 \text{ bar}$
Volume flow range	$Q = 1 \dots 30 \text{ l/min}$ (over 30 l/min on request)
Leakage volume flow	Maximum 4 drops/min in accumulator operation P - T

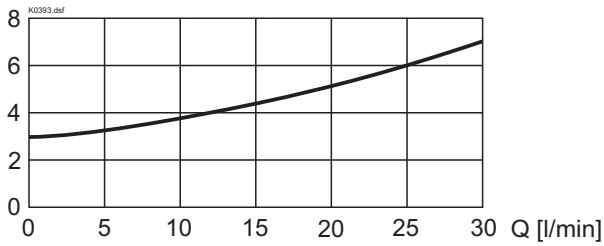
MECHANICAL ACTUATION

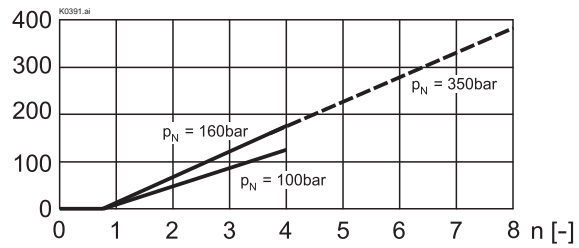
Mechanical types of operation in 2 different versions:
 S = Screw adjustment with fork wrench and Allen key
 D = knob adjustment

Nominal pressure	$p_N = 100/160 \text{ bar}$	$p_N = 350 \text{ bar}$
Stroke S_b	3,8 mm	7,5 mm
Angle a_b	1368°	2700°
(Turns)	3,8	7,5

SYMBOL


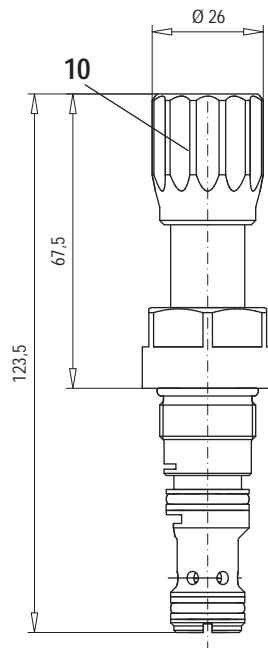
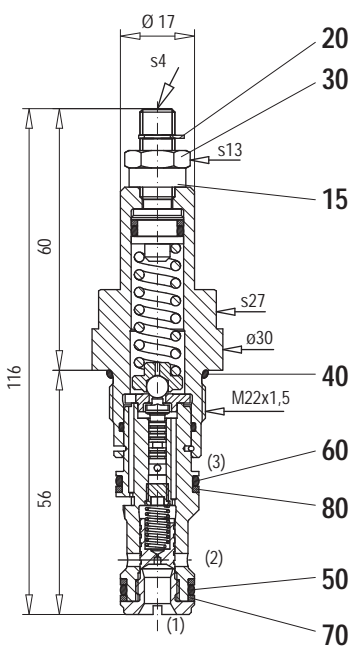
CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $\Delta p = f(Q)$ Pressure-flow characteristics curve

 Δp [bar] [Accumulator operation- pump unloading P (1) \rightarrow T (2)]

 $p = f(n)$ Pressure adjustable characteristics

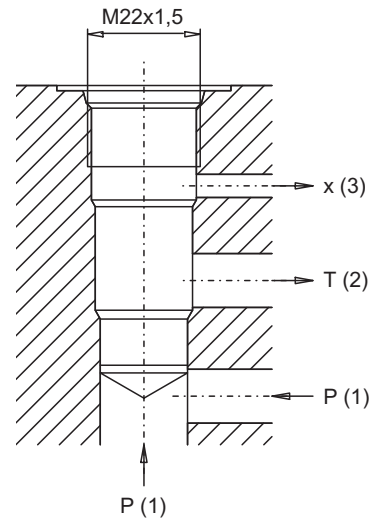
 p [bar] (at $Q = 2 \text{ l/min}$)

DIMENSIONS / SECTIONAL DRAWINGS

Screw adjustment «S»

Knob adjustment «D»



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



Detailed cavity drawing and cavity tools see data sheet no. 2.13-1006

PARTS LIST

Position	Article	Description
10	114.2224	Knob
15	212.1488	Disc (only at p_N 100 bar and 160 bar)
20	193.1061	Safety plate RD6 DIN 6799
30	153.1402	Hexagonal nut 0,5 d M8x1
40	160.2188	O-ring ID 18,77x1,78
50	160.2140	O-ring ID 14,00x1,78
60	160.2156	O-ring ID 15,60x1,78
70	049.3176	Back-up ring RD 14,1x17x1,4
80	049.3196	Back-up ring RD 16x1x19x1,4

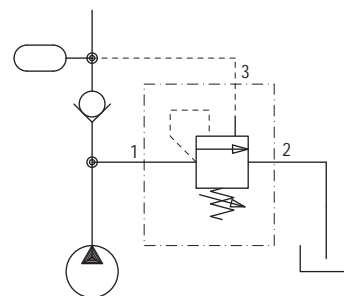
SET-UP AND CONNECTION EXAMPLES

Unloading point adjusted at 100 bar (OS)

Differential value 15%

Loading point: OS -15% = 85 bar

Gas side of accumulator loaded upto max. 90% of US = 76 bar



Technical explanation see data sheet 1.0-100