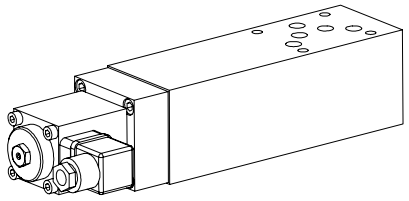
Proportional 2-way flow control valve
Flange- and sandwich construction
- **Direct operated, pressure compensated**
- **Q_{max} = 42 l/min, p_{max} = 250 bar**
- **$Q_{N\,max}$ = 40 l/min**

NG10
ISO 4401-05



DESCRIPTION
Direct operated, pressure compensated proportional flow control valve flange- and sandwich construction. Mounting interface to ISO 4401. Fitted with slip-in cartridge EMR1002 (see data sheet 2.6-687). 2 nominal volume flow ranges are available. The volume flow is adjusted by a proportional solenoid (VDE standard 0580). A progressive increase in volume flow and reduced hysteresis are characteristic of this valve.
A by pass non-return valve plate for the flange valve, for free flow from B to A can be orderd seperatly. The flange body is painted, the sandwich plates and the outside parts are phosphatised. The solenoid is zinc coated.

FUNKTION
The 2-way flow control valve is designed to keep the oil flow to any actuator constant irrespectiv of the load. The force controlled proportional solenoid running in the fluid acts directly on the control spool wich opens the triangular shaped throttling notches in the cartridge body. The throttle opening, and therefore the flow volume changes pro-portionally to the current absorption of the proportional solenoid. If pressure in the system changes the pressure compensator will change the area of the oil passage to an extend as to keep the pressure drop over the restrictor constant. When the solenoid is without courrent, the control spool is held in the closed position by a spring. To control the valve proportional amplifiers are available from Wandfluh (see register 1.13).

APPLICATION
Proportional 2-way flow control valves are used where the supply volume flow needs to be kept constant even when the load fluctuates. Depending on the application, a distinction is made between restricting the forward flow or the return flow.

CONTENTS

TYPE CODE

A EMR [ ] 10 / 2 - [ ] - [ ] # [ ]

International mounting interface ISO				
Proportional flow control valve				
Flange construction				
Flow control from	A to B	N		
Sandwich construction				
Flow control in:	P	no remark	T	T
Meter out:	A	A	B	B
	A and B	AB		
Meter in:	A	VA	B	VB
	A and BV	AB		
Nominal size 10				
2-way function				
Nominal volume	Q_N =	20 l/min		20
	Q_N =	40 l/min		40
Nominal voltage	U_N = 12 VDC			G12
Current type	U_N = 24 VDC			G24
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

Description	2-way proportional flow control valve
Size	NG10 to ISO 4401-05
Construction	Flange- and sandwich construction
Operations	Proportional solenoid
Mounting	4 holes for socket cap screws M6 or studs screws M6
Connection	Threaded connection plates Multi-flange subplate Longitudial stacking system
Ambient temperature	-20...50°C
Mounting position	any
Fastening torque	M_D = 9,5 Nm (Qual. 8.8) for fixing screws M_D = 80 Nm screw-in cartridge
Weight	Depending on the type of valve m = 3,6... 9,4 kg

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, class 18/16/13
efficiency	(Required filtration grade ß6...10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s...320 mm²/s
Fluid temperature	-20...+70°C
Peak pressure	p_{max} = 250 bar
Opening pressure over non-return valve	$p_{ö}$ = 1 bar
Nominal volume flow rates	Q_N = 20 l/min, Q_N = 40 l/min,
Max. volume flow	Q_{max} = 42 l/min
Min. volume flow	Q_{min} = 0,05 l/min
Leakage volume flow	see characteristics
Resolution	1 mA
Repeatability	≤ 1 % *
Hysteresis	≤ 3 % *
	* at optimal dither signal

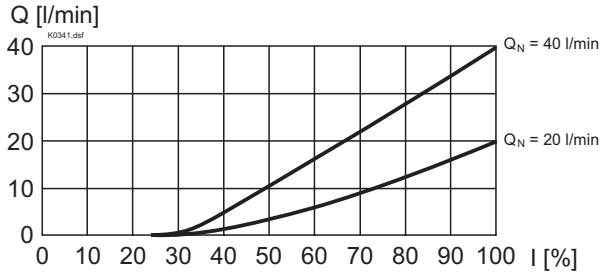
ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limit current	I_G = 1780 mA	I_G = 810 mA
Relative duty factor	100% ED (see data sheet 1.1-430)	
Protection class	IP 65 to EN 60 529	
Connection/Power supply	Over divice plug connection to ISO 4400/DIN 43650 (2P+E)	

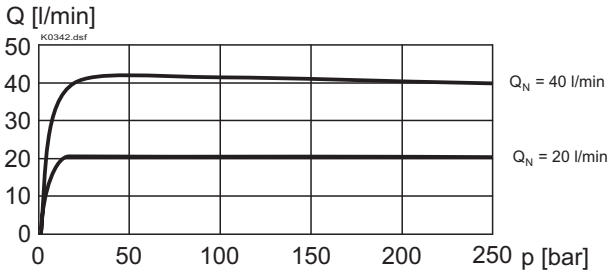
Other electrical specifications see data sheet 1.1-130 (PI45V)

CHARACTERISTICS Oil viscosity υ = 30mm²/s

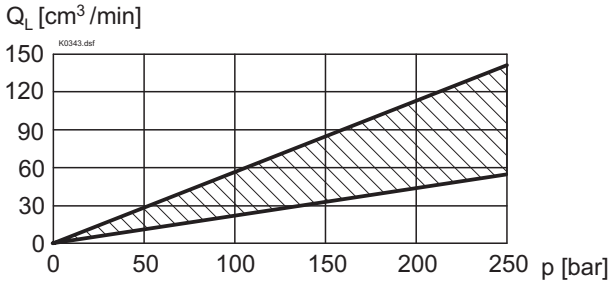
Q = f (I) Volume flow adjustment characteristics



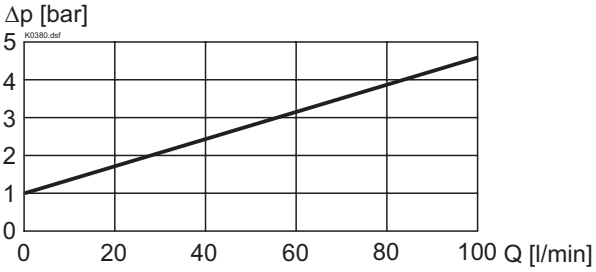
Q = f (p) Volume flow pressure characteristic



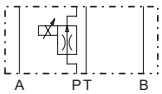
Q_L = f (p) Leakage volume flow characteristic



Δp = f (Q) Pressure drop volume flow characteristic

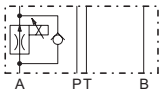


TYPE CHARTS



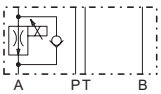
AEMR10/2

Meter-out flow control

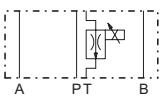


AEMRA10/2

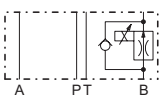
Meter-in flow control



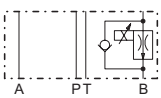
AEMRVA10/2



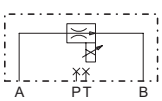
AEMRT10/2



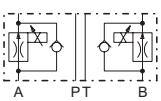
AEMRB10/2



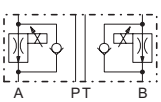
AEMRVB10/2



AEMRN10/2



AEMRAB10/2



AEMRVAB10/2

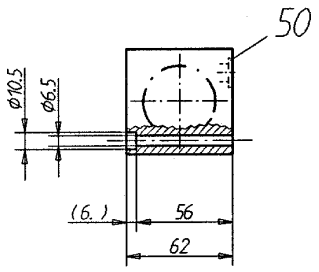
By turning around valves with meter-out function, meter-in function can be adchieved

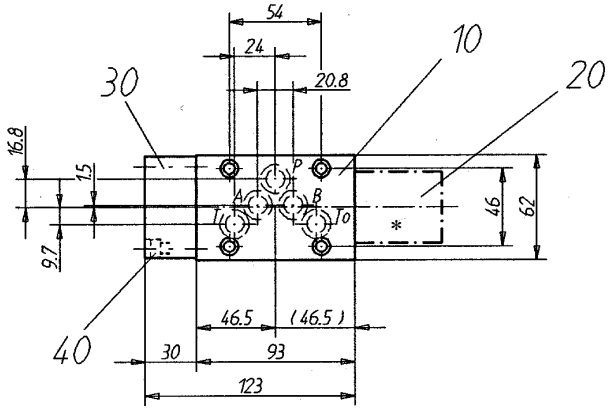
A	turns into	VB
B	turns into	VA
AB	turns into	VAB

Valves for meter-in functions are supplied with a sealing plate and a intermediate plate

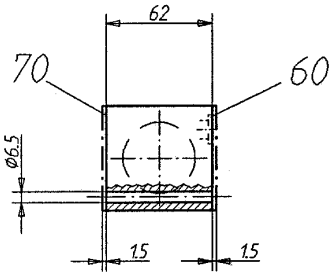
DIMENSIONS

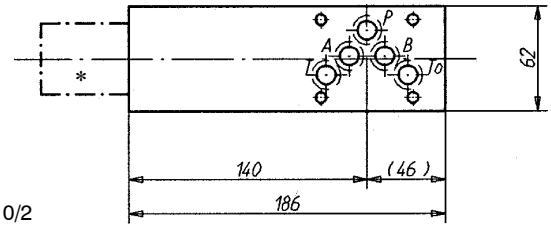
Flange construction AEMRN10/2





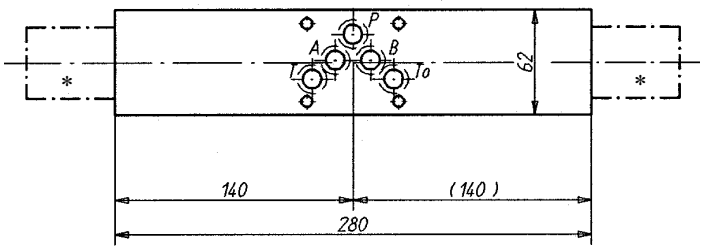
Sandwich construction AEMR, T, A, VA10/2





On sandwich construction types AEMRB, VB10/2 the screw-in cartridge is located on B-side.

Sandwich construction AEMRAB, VAB10/2



* The exterior dimensions of the cartridge can be obtained from data sheett 2.6-687

PARTS LIST

Position	Article	Description
10	136.6200	Flange body
	136.6601	Sandwich plate P
	136.6605	Sandwich plate T
	136.6604	Sandwich plate A, VB
	136.6600	Sandwich plate B, VA
	136.6602	Sandwich plate AB, VAB
20	650.8 . . .	Flow control cartridge EMR1002 to data sheet 2.6-687 For flange valve is additional reference S1537 necessary
40	246.3131	socket head cap screw M6x30 DIN912
50	160.2140	O-Ring ID 14,00x1,78 for flange- and
50	160.2120	sandwich construction P, T O-Ring ID 12,42x1,78 for sandwich construction A, B, AB, VA, VB, VAB
	160.2132	O-Ring ID 13,10x2,62 in line with RV
60	173.4700	Intermediate plate AZB10
70	173.4650	Seal plate ADB10

ACCESSORIES

Threaded connection plates and Multi-flange subplates	Register 2.9
Bypass non-return valve AMRP102	
Proportional amplifier	register 1.13

Technical explanation see data sheet 1.0-100E