

MOOG

Proportional Throttle Cartridge Valve PCME/PCLME NG16, 25, 32, 40, 50



OVERVIEW

PCME/PCLME

Section	Page
General Description	3
Specifications	4
Characteristic Curves	5-7
Mounting Dimensions	8-9
Dimensions	10-11
Standard Models	12
Ordering Information	13
Spare Parts	14
Electronics	15-17

This catalog is for users with technical knowledge. To ensure that all necessary characteristics for function and safety of the system are given, the user has to check the suitability of the products described herein. In case of doubt, please contact Moog.

Technical Design

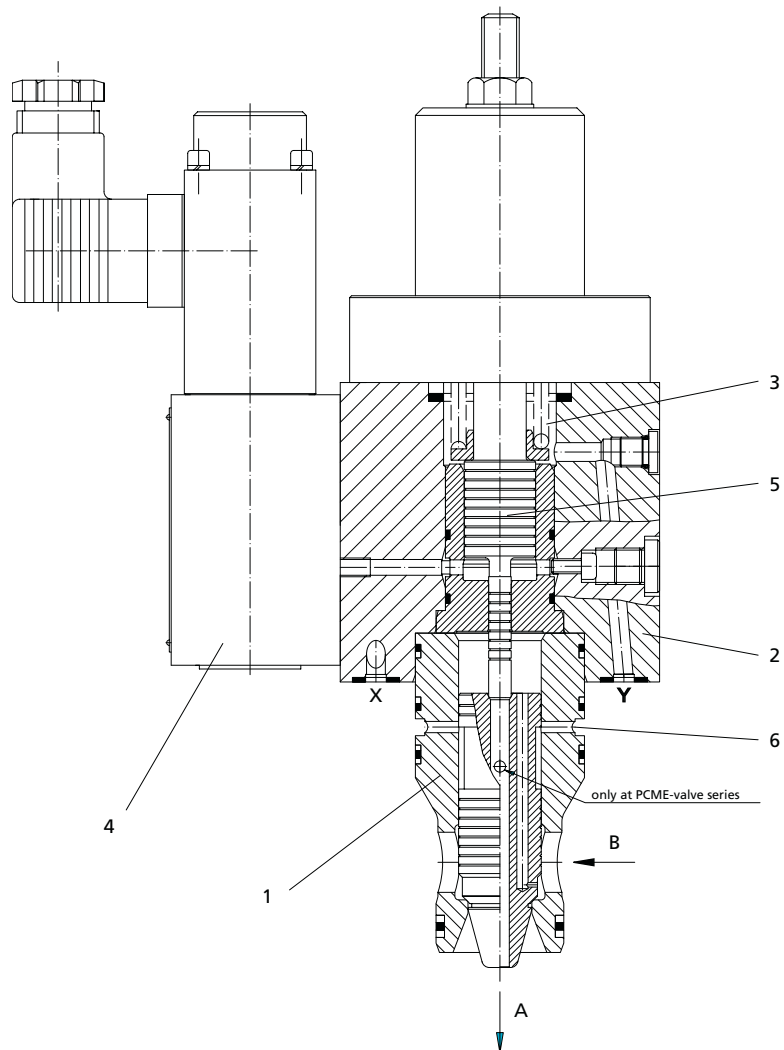
- ❶ Main stage cartridge
- ❷ Cover
- ❸ Pressure spring
- ❹ Proportional pressure reducing valve
- ❺ Pilot piston
- ❻ Load sensing

Proportional Throttle Cartridge Valve Solenoid Pilot Operated (PCME-Valve)

The proportional throttle valve of the PCME-series is a low pressure controlled, piloted throttle valve in cartridge version.

An integrated proportional pressure reducing valve ❹, electronically controlled by 200-800mA positions the pressure balanced pilot piston ❺ against a strong spring ❸. This pilot piston ❺ is followed by the main stage cone.

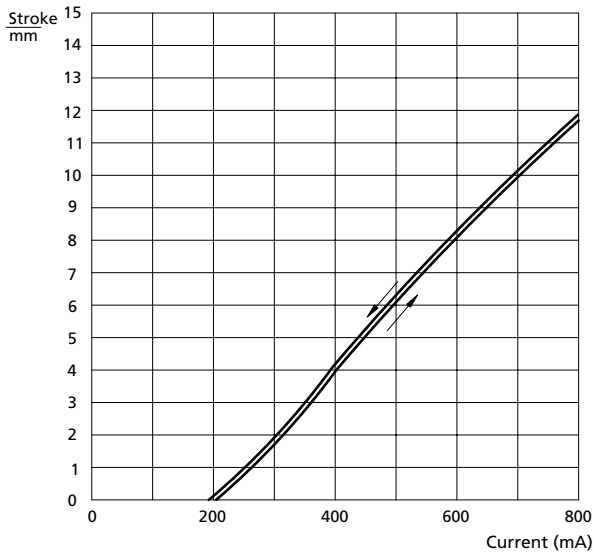
The PCME valve offers additionally the possibility of load sensing ❻ (PCLME-valve series, picture on right side) for example on applications as electro-hydraulic operated flow control valve.



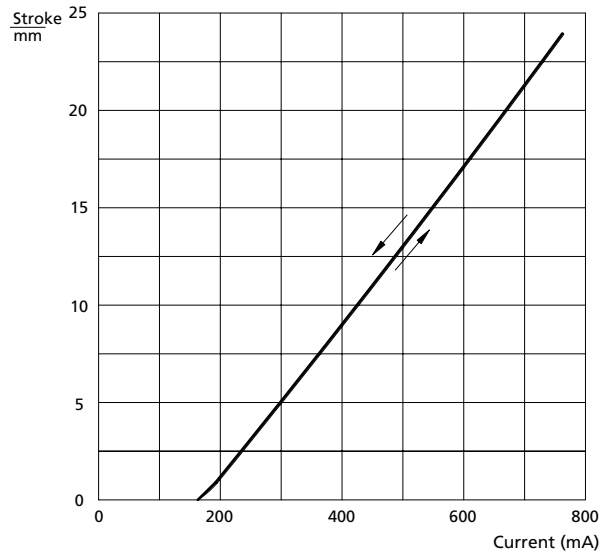
General Data	Value	Unit	Specifications
Designation and Symbol	–	–	Proportional throttle cartridge valve
Type Designation	–	–	see How to Order, page 13
Mode of Construction	–	–	pilot operated seat valve
Manner of Mounting	–	–	manifold cartridge mounting
Mounting Dimensions	–	mm	see Mounting Dimensions, pages 8 and 9
Mounting Position	–	–	any
Flow Direction	–	–	B -> A
Ambient Temperature Range	min.	°C	-25°
	max.	°C	+60°
Working pressure			
Input	min.	bar	0
	max.	bar	350
Output	min.	bar	0
	max.	bar	350
Temperature	min.	°C	-25
	max.	°C	+80
Viscosity range	min.	mm ² • s ⁻¹	2.8
	max.	mm ² • s ⁻¹	380
Operational Viscosity	v	mm ² • s ⁻¹	35
Size	–	–	NG16 NG25 NG32 NG40 NG50
Weight	m	kg	3.3 5.7 9.7 11.7 23.6
Nominal Flow at Δp = 10bar	Qn	l/min	see Characteristic Curves, page 6

SOLENOID CURRENT - STROKE CURVES

NG16-40

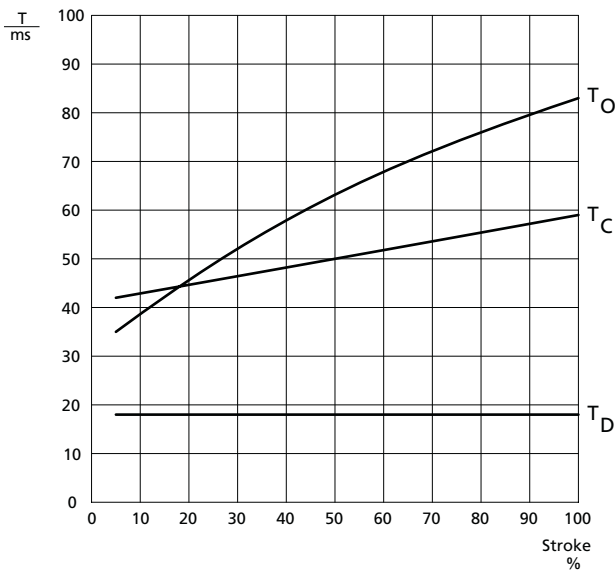


NG50

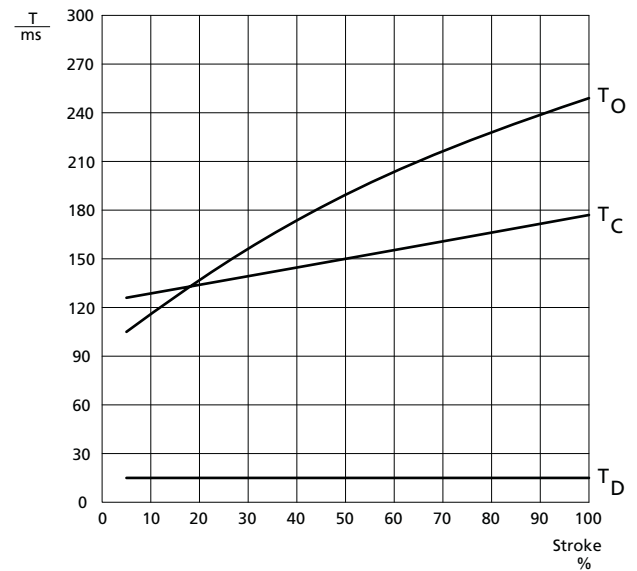


CLOSING TIME

Closing Time NG16-40



Closing Time NG50

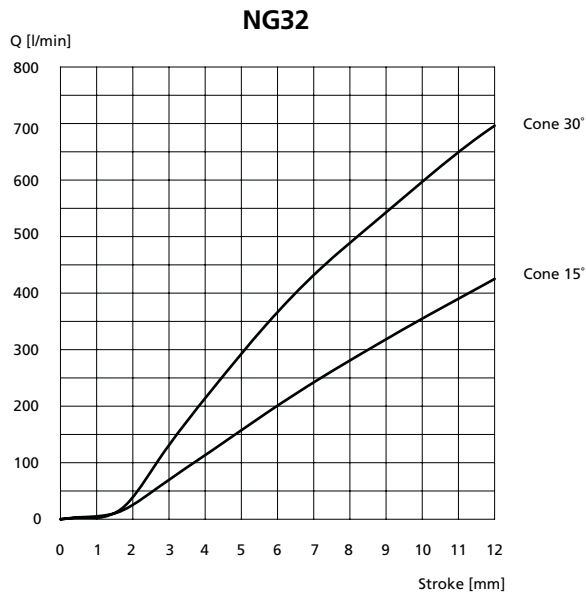
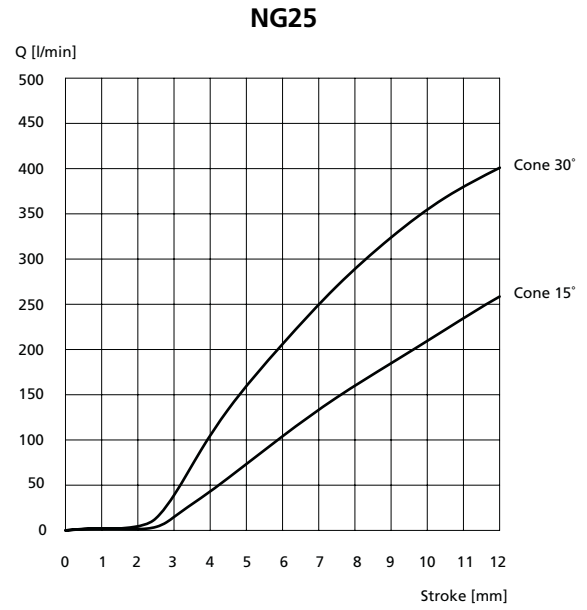
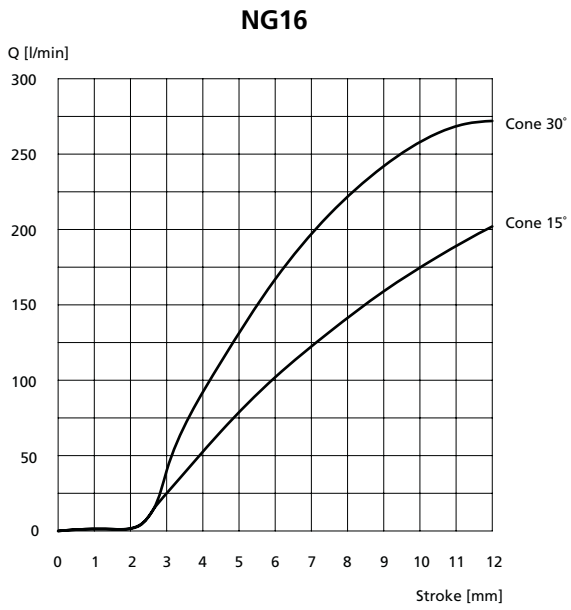


T_O = Opening time

T_C = Closing time

T_D = Dead band

Δp - Q CHARACTERISTIC CURVES AT Δp = 10 BAR

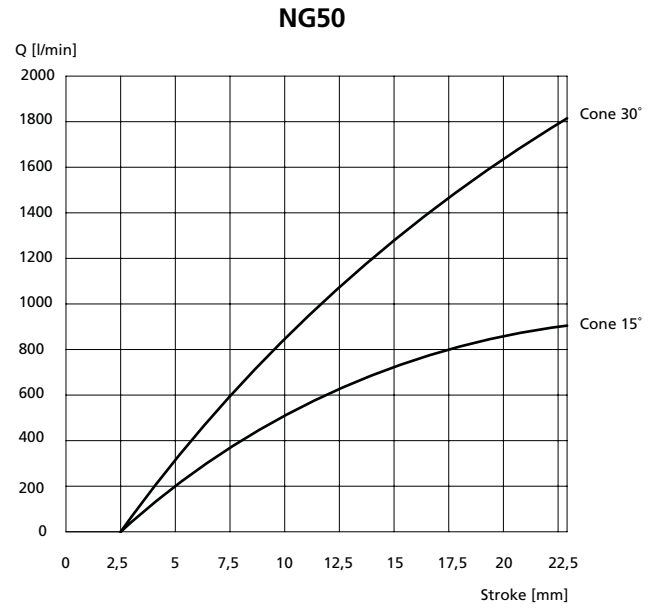
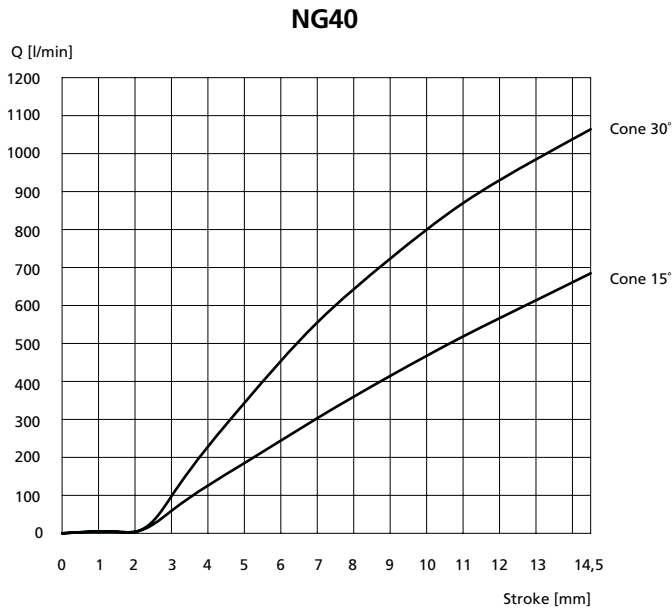


Oil Temperature 45°C

Calculation of the flow Q_x
for other pressure differences Δp_x :

$$Q_x = Q \cdot \sqrt{\frac{\Delta p_x}{10}}$$

Δp - Q CHARACTERISTIC CURVES AT $\Delta p = 10$ BAR

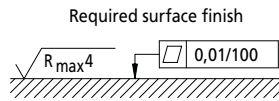
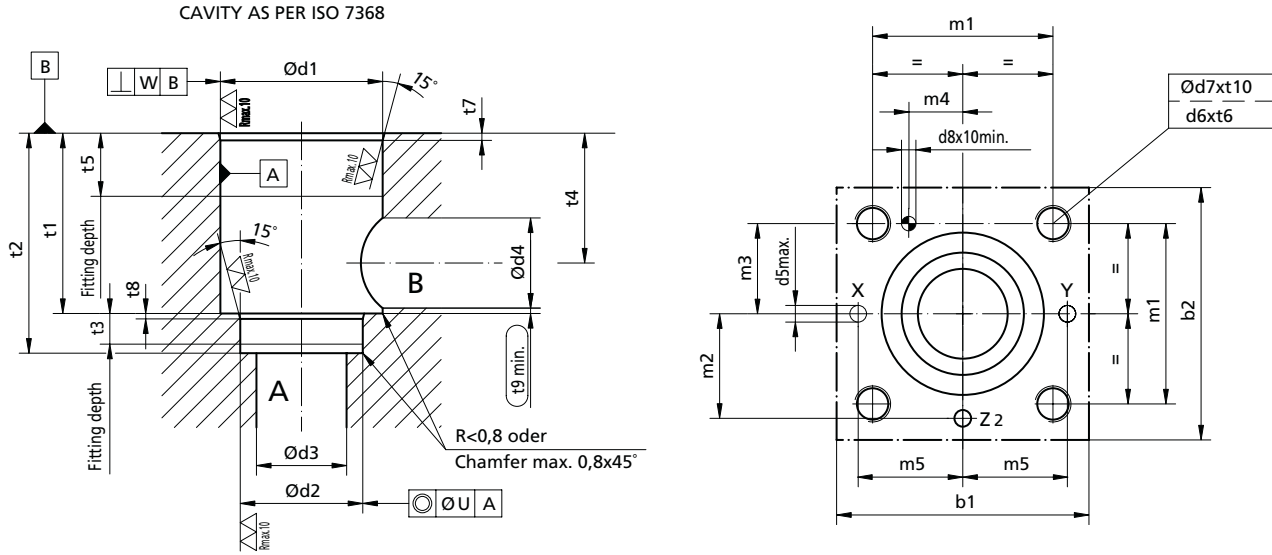


Oil Temperature 45°C

Calculation of the flow Q_x
for other pressure differences Δp_x :

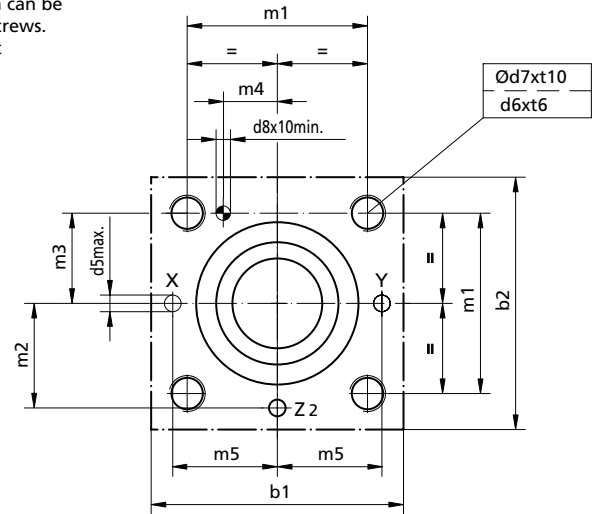
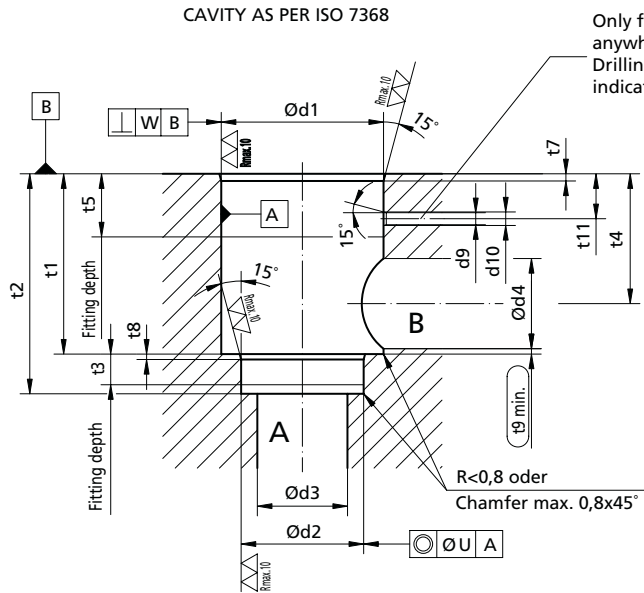
$$Q_x = Q \cdot \sqrt{\frac{\Delta p_x}{10}}$$

MOUNTING DIMENSIONS NG16-NG50 (WITHOUT LOAD SENSING)

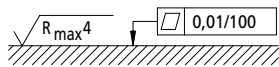


Dimensions mm	NG16	NG25	NG32	NG40	NG50
b1	65	85	102	125	140
b2	65	85	102	125	140
d1 ^{H7}	32	45	60	75	90
d2 ^{H7}	25	34	45	55	68
d3	16	25	32	40	50
d4	16	25	32	40	50
d4 max.	25	32	40	50	63
d5 max.	4	6	8	10	10
d6	M8	M12	M16	M20	M20
d7	6.8	10.2	14	17.5	17.5
d8 ^{H13}	4	6	6	6	8
m1 ^{±0.2}	46	58	70	85	100
m2 ^{±0.2}	25	33	41	50	58
m3 ^{±0.2}	23	29	35	42.5	50
m4 ^{±0.2}	10.5	16	17	23	30
m5 ^{±0.2}	25	33	41	50	58
t1 ^{+0.1}	43	58	70	87	100
t2 ^{+0.1}	56	72	85	105	122
t3	11	12	13	15	17
t4	34	44	52	64	72
t4 at d4 max.	29.5	40.5	48	59	65.5
t5	20	30	30	30	35
t6	14	20	26	33	33
t7	2	2.5	2.5	3	4
t8	2	2.5	2.5	3	4
t9	0.5	1.0	1.5	2.5	2.5
t10	17	24	31	38	38
U	0.03	0.03	0.03	0.05	0.05
W	0.05	0.05	0.1	0.1	0.1

MOUNTING DIMENSIONS NG25-NG50 (WITH LOAD SENSING)

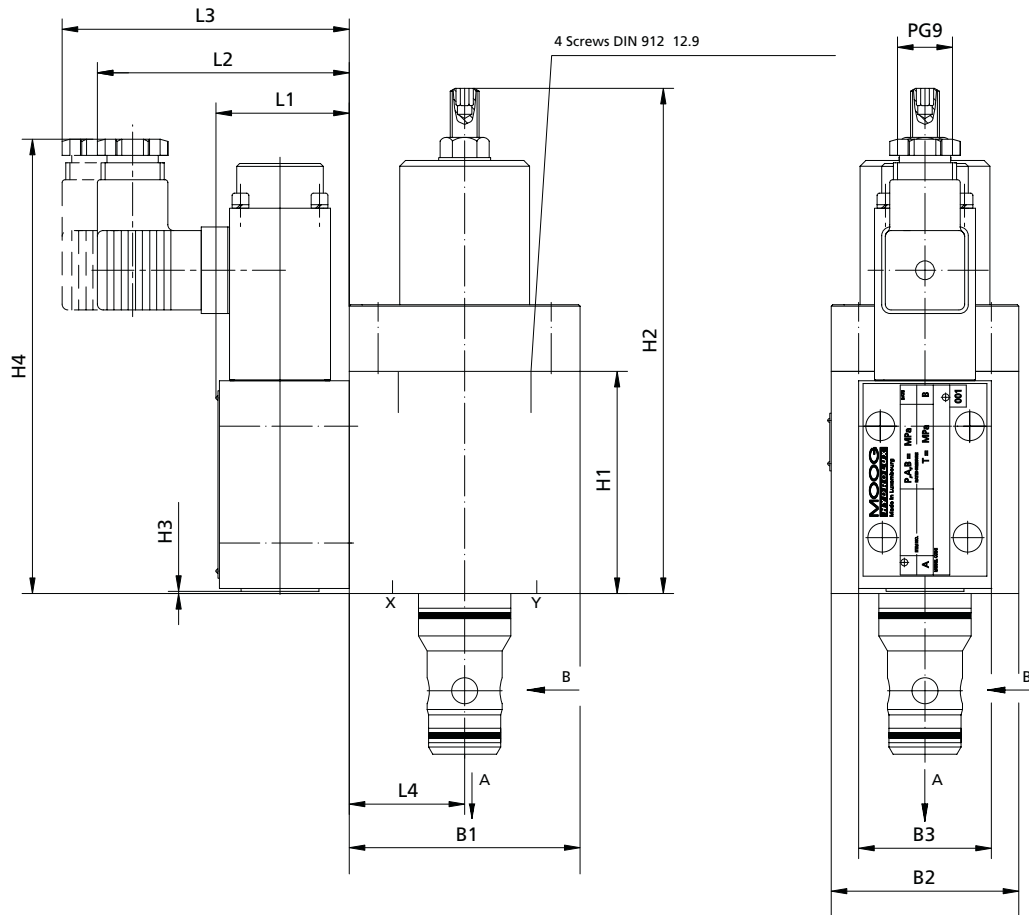


required surface finish



Dimensions mm	NG25	NG32	NG40	NG50
b1	85	102	125	140
b2	85	102	125	140
d1 ^{H7}	45	60	75	90
d2 ^{H7}	34	45	55	68
d3	25	32	40	50
d4	25	32	40	50
d4 max.	32	40	50	63
d5 max.	6	8	10	10
d6	M12	M16	M20	M20
d7	10.2	14	17.5	17.5
d8 ^{H13}	6	6	6	8
d9 max.	3	4	6	6
d10 max.	4	6	9	9
m1 ^{±0.2}	58	70	85	100
m2 ^{±0.2}	33	41	50	58
m3 ^{±0.2}	29	35	42.5	50
m4 ^{±0.2}	16	17	23	30
m5 ^{±0.2}	33	41	50	58
t1 ^{+0.1}	58	70	87	100
t2 ^{+0.1}	72	85	105	122
t3	12	13	15	17
t4	44	52	64	72
t4 at d4 max.	40.5	48	59	65.5
t5	30	30	30	35
t6	20	26	33	33
t7	2.5	2.5	3	4
t8	2.5	2.5	3	4
t9	1.0	1.5	2.5	2.5
t10	24	31	38	38
t11	12	13.4	16.7	17
U	0.03	0.03	0.05	0.05
W	0.05	0.1	0.1	0.1

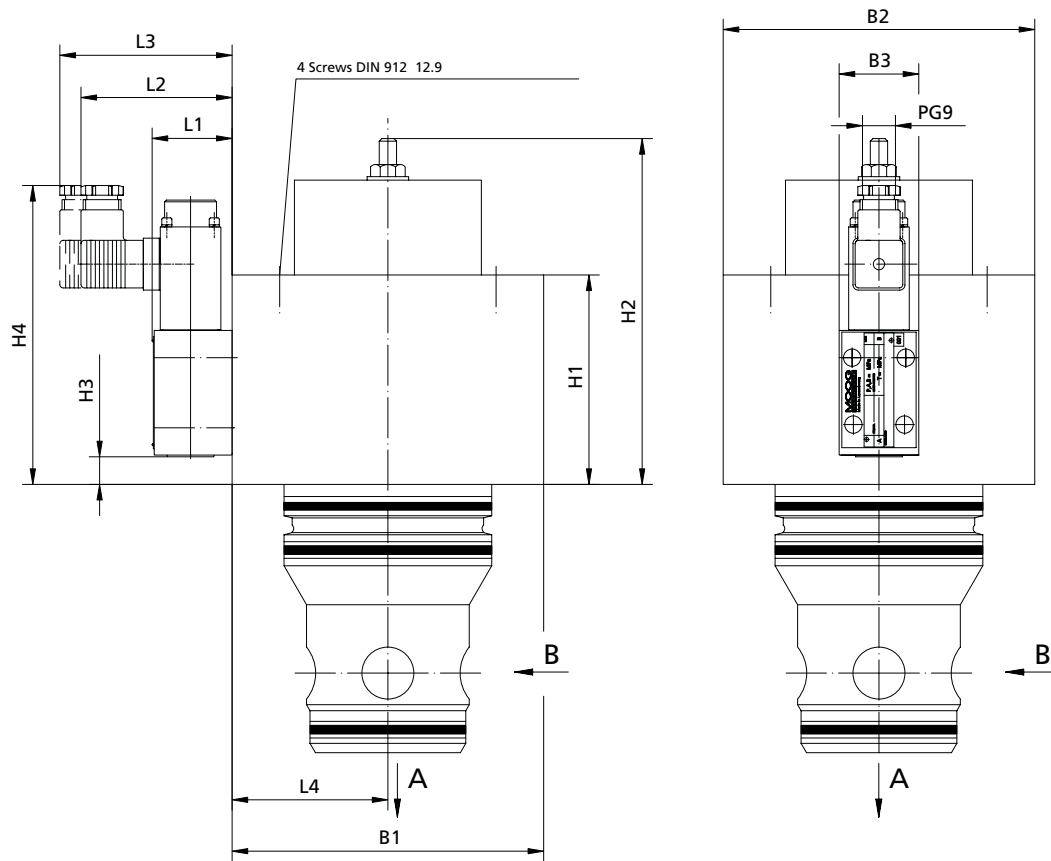
DIMENSIONS PC(L)ME VALVES NG16-NG40



Dimensions mm	NG16	NG25	NG32	NG40
H1	77	80	84	84
H2	177	180	84	184
H3	1	3	5	5
H4	158	160	159	159
L1	45	45	45	45]
L2	88	88	88	88
L3	100	100	100	100
L4	40	42.5	58	58
B1	80	85	116	125
B2	65	85	100	125
B3	45	45	45	45
*S = Screws	4x	4x	4x	4x
DIN EN ISO 4762-12.9	M8 x 100	M12 x 100	M16 x 90	M20 x 90
Tightening Torque M _A [Nm]	30	100	300	550

*not part of the delivery

DIMENSIONS PC(L)ME VALVES NG50



Dimensions mm	NG50
H1	123
H2	208
H3	18
H4	172
L1	45
L2	88
L3	100
L4	70
B1	140
B2	140
B3	45
*S = Screws	4x
DIN EN ISO 4762-12.9	M20 x 120
Tightening torque M_A [Nm]	550

*not part of the delivery

PCME STANDARD VALVES

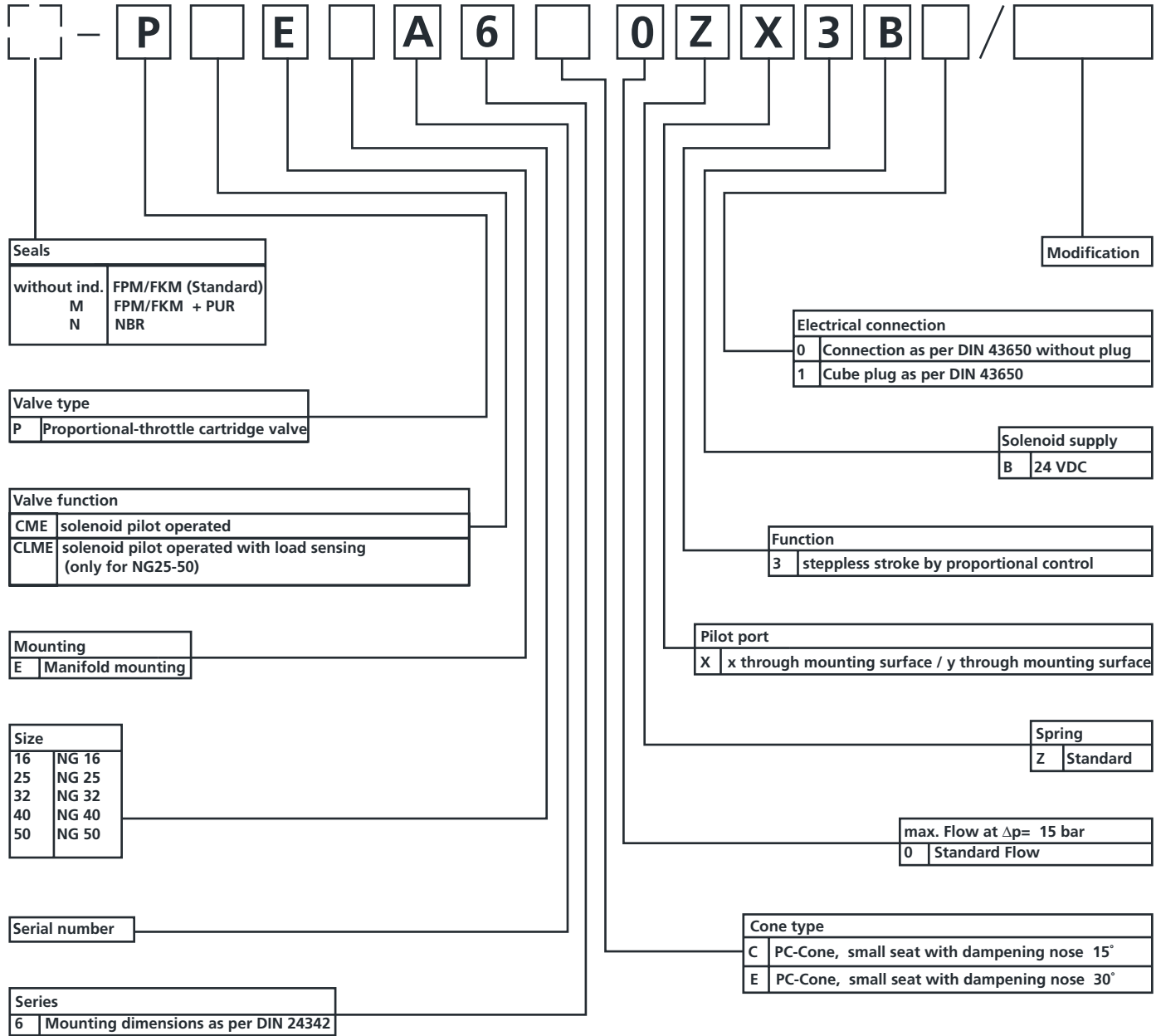
Symbol	Cone	Size NG mm	Weight kg	Part Designation	Part Number
	15° Cone	16	3.3	PCMEE16A6C0ZX3B	XPB10048-000-01
		25	5.7	PCMEE25A6C0ZX3B	XPB10077-000-01
		32	9.7	PCMEE32A6C0ZX3B	XPB10078-000-01
		40	11.7	PCMEE40A6C0ZX3B	XPB10025-000-01
		50	23.6	PCMEE50A6C0ZX3B	XPB10028-000-01
	30° Cone	16	3.3	PCMEE16A6E0ZX3B	XPB10049-000-01
		25	5.7	PCMEE25A6E0ZX3B	XPB10066-000-01
		32	9.7	PCMEE32A6E0ZX3B	XPB10046-000-01
		40	11.7	PCMEE40A6E0ZX3B	XPB10004-000-01
		50	23.6	PCMEE50A6E0ZX3B	XPB10059-000-01

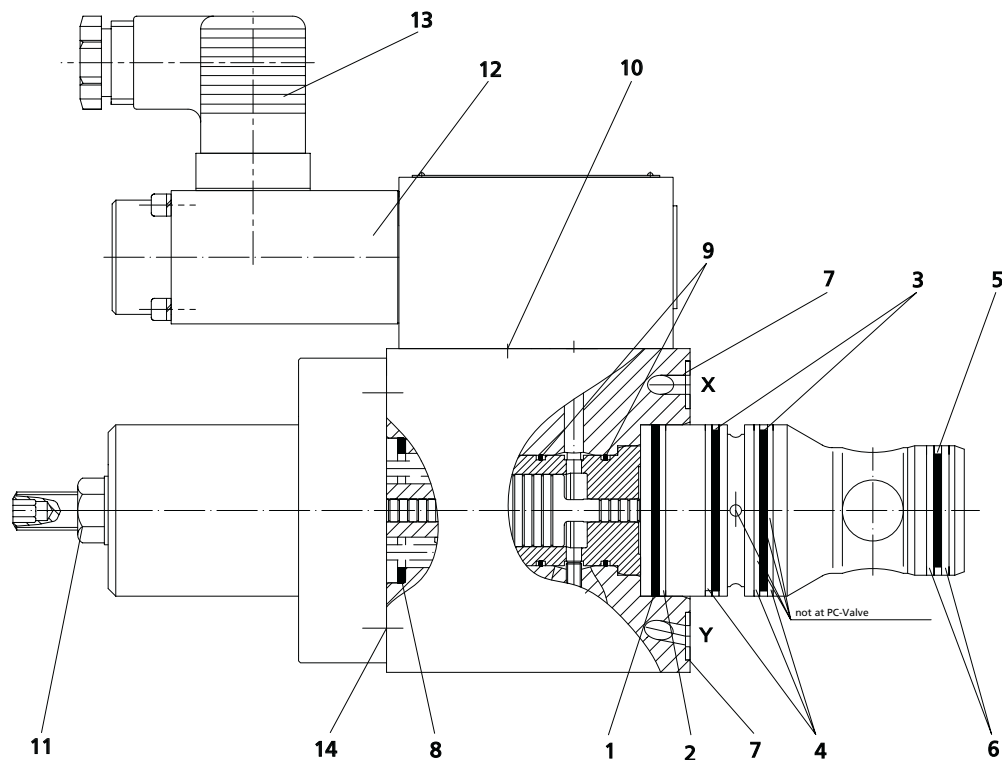
PCLME STANDARD VALVES

Symbol	Cone	Size NG mm	Weight kg	Part Designation	Part Number
	15° Cone	25	5.7	PCLMEE25A6C0ZX3B	XPB10082-000-01
		32	9.7	PCLMEE32A6C0ZX3B	XPB10083-000-01
		40	11.7	PCLMEE40A6C0ZX3B	XPB10084-000-01
		50	23.6	PCLMEE50A6C0ZX3B	XPB10085-000-01
	30° Cone	25	5.7	PCLMEE25A6E0ZX3B	XPB10087-000-01
		32	9.7	PCLMEE32A6E0ZX3B	XPB10024-000-01
		40	11.7	PCLMEE40A6E0ZX3B	XPB10088-000-01
		50	23.6	PCLMEE50A6E0ZX3B	XPB10089-000-01

ORDERING INFORMATION

PCME/PCLME





Position	Designation	Part Number					
			NG16	NG25	NG32	NG40	NG50
1	Seal Kit	XEB	12273	12273	12274	2275	12276
2	O-Ring	X980-	02122	02030	02139	02148	02152
3	Back-Up Ring	X780-	08122	18030	08139	18148	18152
4	O-Ring	X980-	02024	02030	02139	02148	02152
5	Back-Up Ring	X780-	18024	18030	08139	18148	18152
6	O-Ring	X980-	02020	02122	02222	02225	02229
7	Back-Up Ring	X780-	08020	18122	18222	18225	18229
8	O-Ring	X980-	02010	02012	02013	02112	02112
9	O-Ring	X980-	02120	02125	02125	02125	02125
10	O-Ring	X980-	02022	02022	02022	02022	02022
11	O-Ring	X980-	02112	02112	02112	02112	02112
11	Seal-Lock Collar Nut	X786-	11108	11108	11108	11108	11108
12	Solenoid Valve	X788-	10243	10243	10243	10243	10243
13	Cube Plug Gray	X798-	00005	00005	00005	00005	00005
14	Cube Plug Black	X798-	00004	00004	00004	00004	00004
14	Screws	X784-	10811	11209	11605	12015	12008

Order example: O-Ring Pos.3 NG40 => Part number: X980-02148

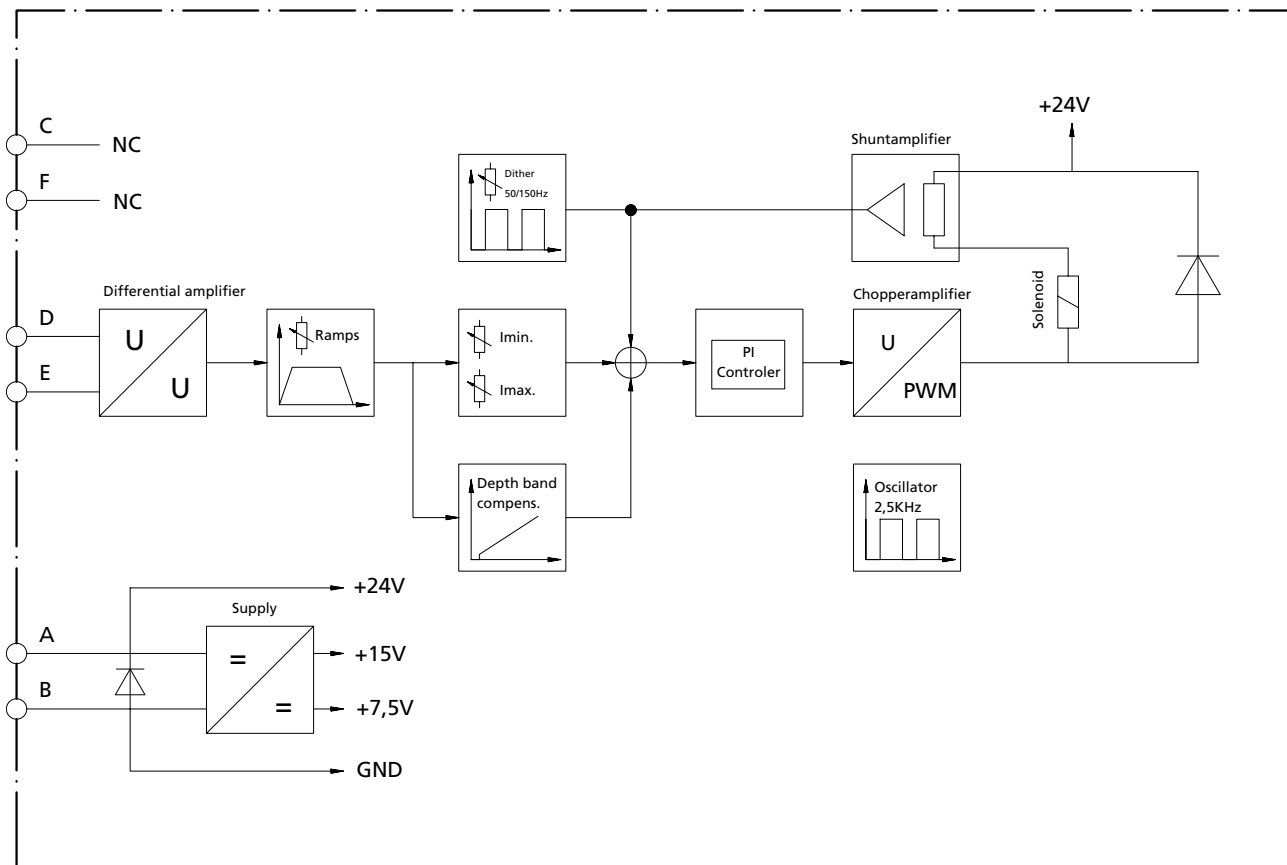
PLUG AMPLIFIER STV1010

The plug amplifier has the function of actuating proportional valves without position control. It is plugged directly into the valve solenoid plug.



Part Number	Description
XEB15753-001-01	STV1010AC15AF50R0T0A1

DIAGRAM



Specification STV1010	
Supply Voltage	19...30V DC
Max. Output Current	1.5A
Input Voltage	-0.4V bis 15V (gegen GND)
Signal Output	0...10V
Connection	Connection an solenoid: DIN 43650 Connection on plug amplifier: 6pin+PE DIN 43563
Dither Frequency	50Hz with Jumper
Dimensions L x B x H mm	104 x 45 x 51
Weight g	ca. 200

For further technical data please take our electronics catalogue

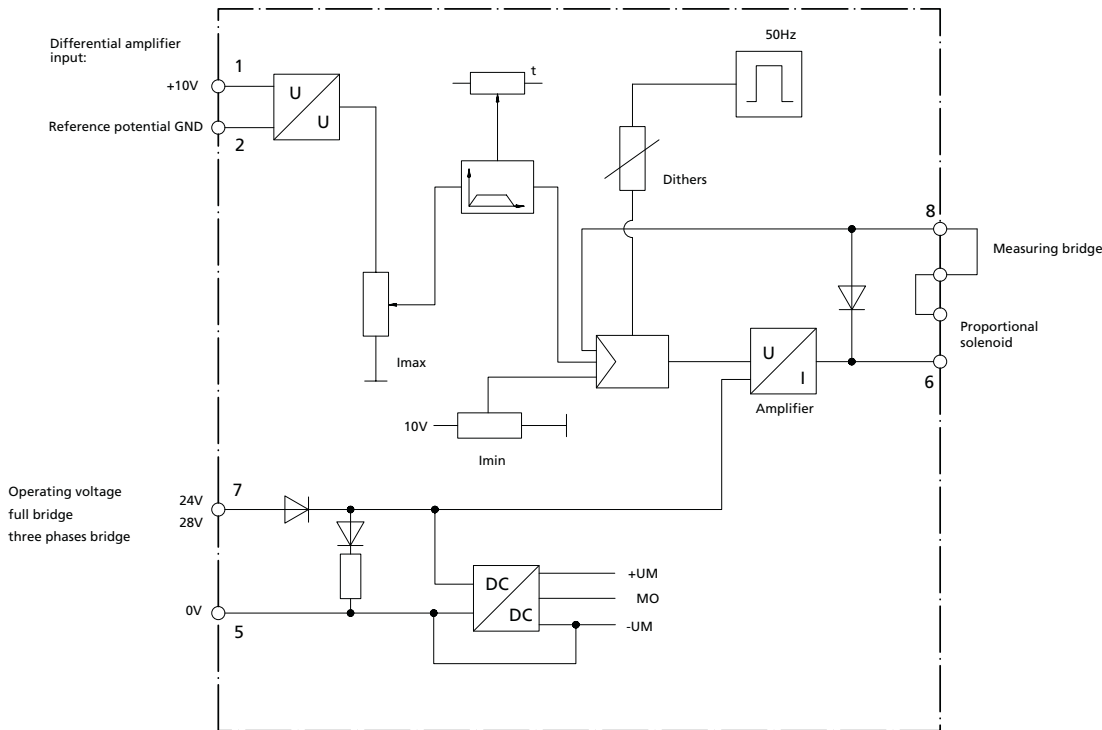
AMPLIFIER MODULE EM1020

These amplifier modules are suitable for controlling a proportional solenoid. They are to be snapped onto carrier rails according to DIN 50 022. The electrical connection is made by means of screw terminals. The modules are powered by 24 V DC. The solenoid current (actual value) is measured and compared with the externally provided command value. Any occurring difference between the actual and command value, caused, e.g., by changes in the solenoid temperature or the operating voltage, are balanced.



Part Number	Description
X798-02031	EM1020 (50Hz)

DIAGRAM



Specification STV1010	
Supply Voltage	24...28V DC
Max. Output Current	0...1.2A (1.3A max. Power 0)
Min. Output Current	0...800mA Signal Output 0...10V
Signal Output	0...10V
Ramp Time	0.1...7s
Dither Frequency	50Hz with Jumper
Mounting Style	Mounting rail NS 35/7.5 to DIN 50022
Connection	Screw terminals
Dimensions L x B x H mm	74 x 79 x 22.5
Weight g	ca. 130

For further technical data please take our electronics catalogue

AMPLIFIER CARD HAN209 FOR PROPORTIONAL VALVES WITH ONE SOLENOID

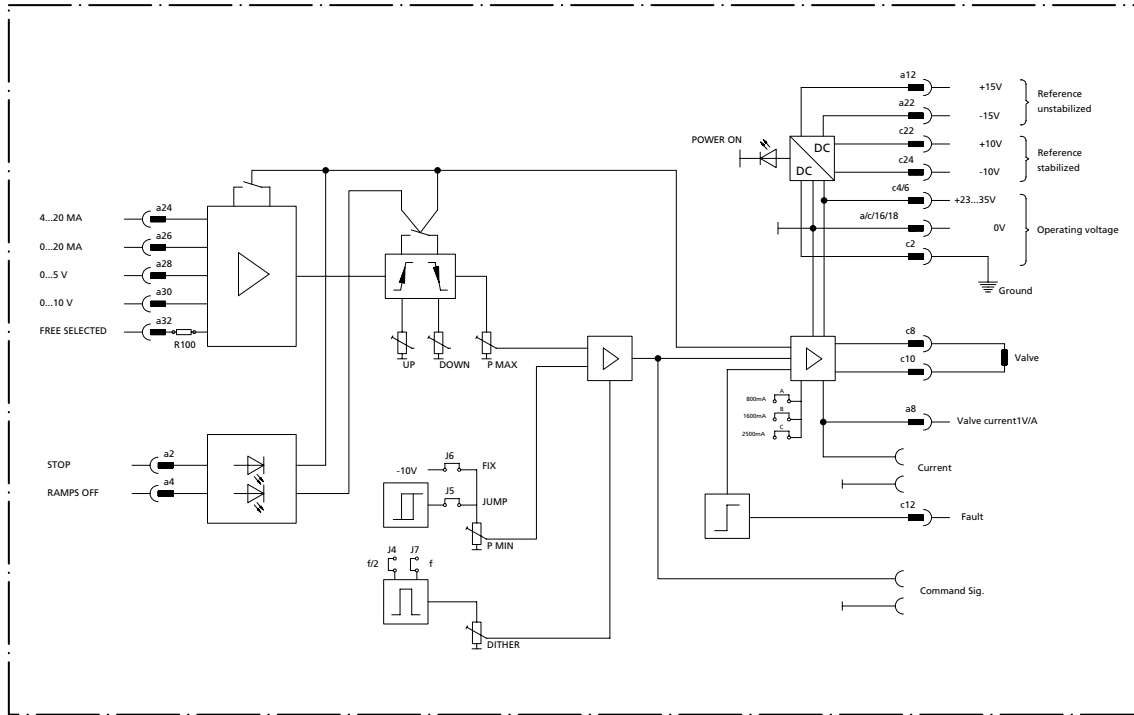
The amplifier card HAN209 is for proportional valves with one solenoid. They are used to control the input for proportional pressure adjustment valve and throttles. The module is with 5 inputs equipped.(1x 4 ...20mA, 1x 0 ...20mA,1x 0 ...5V,1x 0 ...10V,1x free selected 10kΩ/V).

The card can be closed external over the approved input. The ramp time can be leave separate for the pressure climp and for the pressure drop.



Part Number	Description
X798-02005	Amplifier Card HAN209

DIAGRAM



Specification STV1010	
Supply Voltage	24V DC nominal 20...35V DC smooth battery-tension ca. 16...24V DC rectified change voltage
Output Current	$I_{max} = 0...800mA$
Command Value Input	1x 4...20mA 100 1x 0...20mA 100 1x 0...5V 50k 1x 0...10V 100k 1x free selected 10kΩ/V
Connection	32-pin blade connector DIN 41612 D32
Dimensions L x B x H mm	186.5 x 128.4 X 40, Front panel: 3HE x 8TE
Weight g	ca. 210

For further technical data please take our electronics catalogue



Argentina
Australia
Austria
Brazil
China
Finland
France
Germany
India



Ireland
Italy
Japan
Korea
Luxembourg
Norway
Russia
Singapore
Spain
Sweden
United Kingdom
USA

MOOG

Industrial Controls Division

Moog Inc., East Aurora, NY 14052-0018

Telephone: 716/655-3000

Fax: 716/655-1803

Toll Free: 1-800-272-MOOG

www.moog.com