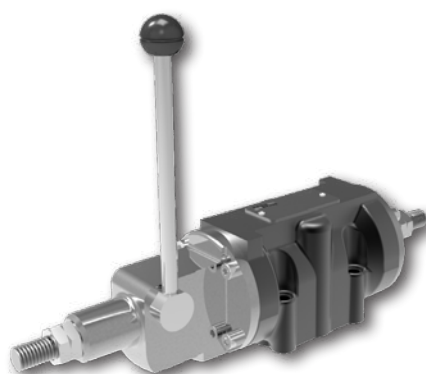


4/2, 4/3 Directional Control Valve, Manually Operated

RPR1-10

Size 10 (D05) • Q_{max} 140 l/min (37 GPM) • p_{max} 350 bar (5100 PSI)

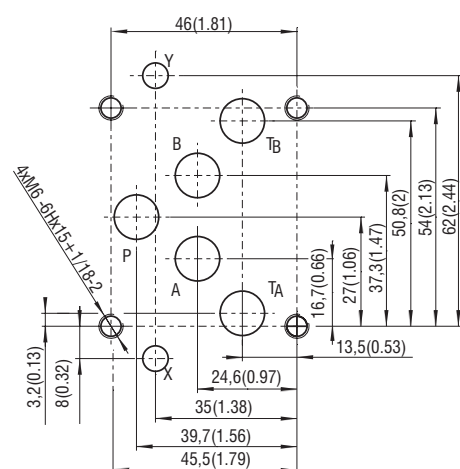


Technical Features

- › Directional control valve with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 05)
- › High transmitted hydraulic power up to 350 bar with optimized design to minimize pressure drops
- › Three chamber housing design for production cost saving
- › Manual lever and actuation element can be rotated in 90° increments for flexible installation
- › Wide range of interchangeable spools available
- › Springless, detented valves available, valve holds last selected position, available for all spools
- › Spool end position sensing option
- › Spool stroke limit option
- › In the standard version, the valve housing is phosphated for basic surface corrosion protection and as preparation for painting. Steel parts are zinc-coated for 240 h salt spray protection acc. to ISO 9227
- › Enhanced surface protection for mobile sector available for the valve housing and steel parts (ISO 9227, 520 h salt spray)

Model Code	Z11	Z11 with Sensors	R11	J15
Symbol				

ISO 4401-05-04-0-05



Ports P, A, B, T - max $\varnothing 11.2$ mm (0.44 in)

Technical Data

Valve size	10 (D05)	
Max. flow	l/min (GPM)	140 (37)
Max. operating pressure at ports P, A, B	bar (PSI)	350 (5080)
Max. operating pressure at port T	bar (PSI)	100 (1450) 50 (725) for versions with sensor
Operating force	N (lbf)	< 40 (9)
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +212)
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... +248)
Service life	cycles	10 ⁶
Weight	kg (lbs)	2.9 (6.40)

Technical Data Sensor and Connector		S1, S4
Rated power supply voltage	V	24 DC
Power supply voltage range	V	10 ... 30 DC
Rated current	mA	200
Enclosure type of sensor to EN 60529		IP 67
Switching frequency	Hz	1000
Ambient temperature range	°C (°F)	-25 ... +80 (-13 ... +176)

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Mounting interface	SMT_0019	Size 10
Spare parts	SP_8010	

Ordering Code

RPR1 -10				/		-		-		-		/		-		-	
4/2 and 4/3 directional control valve, manually operated																	
Valve size																	
Number of valve positions																	
two positions		2															
three positions		3															
Spool symbols		see the table "Spool Symbols"															
Spool flow rate																	
directional control valve spool		No designation															
prop. spool, nominal flow 30 l/min (7.9 GPM)		30															
prop. spool, nominal flow 60 l/min (15.8 GPM)		60															
Manual lever and actuating section position																	
standard, lever on side A, upward		A1															
standard, lever on side B, upward		B1															
Stroke limit option																	
without stroke limiter		0															
with stroke limiter, side A		SLA															
with stroke limiter, side A		SLB															
with stroke limiter, side A and B		SLC															
Surface treatment																	
No designation		standard															
A		zinc-coated (ZnCr-3), ISO 9227 (240 h)															
B		zinc-coated (ZnNi), ISO 9227 (520 h)															
Seals																	
No designation		NBR															
V		FPM (Viton)															
Spool and position sensor type																	
No designation		without sensor															
S1		normally-open sensor															
S4		normally closed sensor															
Spool position sensor supply voltage																	
No designation		without sensor															
24		rated supply voltage, 24 V DC															
Spool position sensor																	
0		without spool position sensor															
A		one spool position sensor, side A															
B		one spool position sensor, side B															
C		one spool position sensor, side A and B															

The port restrictor plugs can be ordered separately from the spare parts data sheet SP_8010.

Mounting bolts M6x45 DIN 912-10.9 or studs must be ordered separately. Tightening torque is 14 Nm (10.3 lbf.ft).

Besides the commonly used valve versions shown other special models are available. Contact our technical support for their identification, feasibility and operating limits.

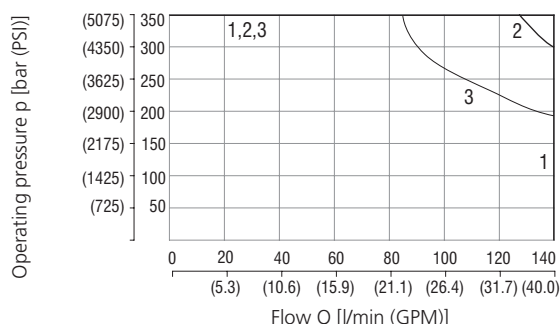
Spool Symbols

Type	Symbol	Interposition	Type	Symbol	Interposition
Z11			P15		
C11			R11		
H11			R21		
P11			Z15		
Y11			J15		
C15			R25		
H15			Y15		
Z11			Y11		

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits (Directional valve)

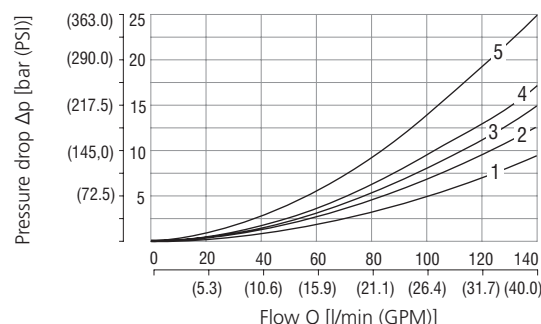
Operating limits for maximum hydraulic power and rated lever force



Z11	1	H11	1
Y11	1	C11	3
P11	1	R11	2

For operating limits under conditions and flow directions other than shown contact our technical support. Admissible operating limits may be considerably lower with only one direction of flow (A or B plugged, or without flow).

Pressure drop related to flow rate

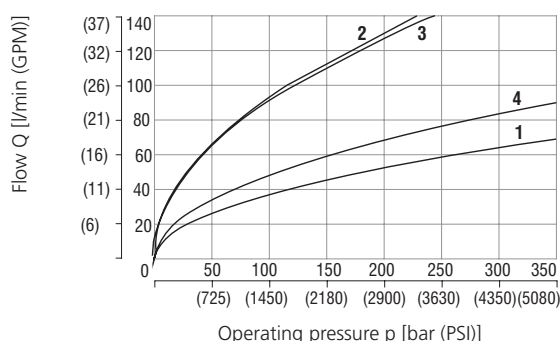


	P-A	P-B	A-T	B-T	P-T		P-A	P-B	A-T	B-T	P-T
Z11	1	1	3	3		H11	1	1	1	1	3
Y11	1	1	2	2		C11	1	1	3	3	5
P11	1	1	3	3		R11	1	1	4	4	

Operating limits (Proportional valve)

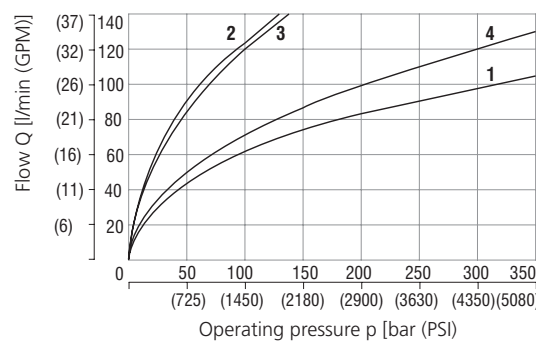
Operating limits for maximum hydraulic power and rated lever force

30 l/min (7.9 GPM)



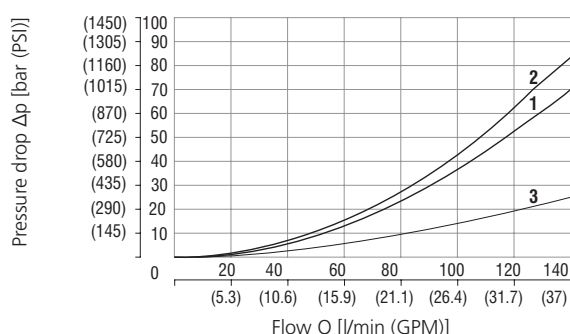
s	50% [2.3mm (0.09in)]	100% [4.6mm (0.18in)]
Z11/30	1	2
Y11/30	3	4

60 l/min (15.8 GPM)



s	50% [2.3mm (0.09in)]	100% [4.6mm (0.18in)]
Z11/60	1	2
Y11/60	3	4

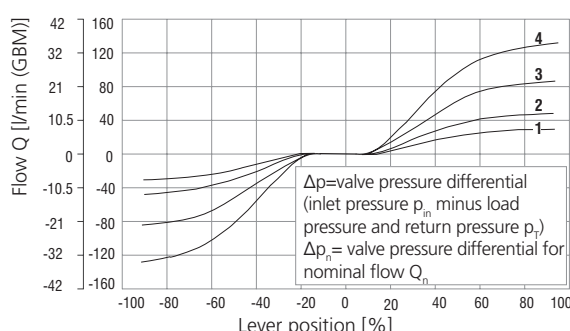
Pressure drop related to flow rate



	P-A	P-B	A-T	B-T
Z11/30	1	1	2	2
Y11/30	1	1	2	2
Z11/60	3	3	3	3
Y11/60	3	3	3	3

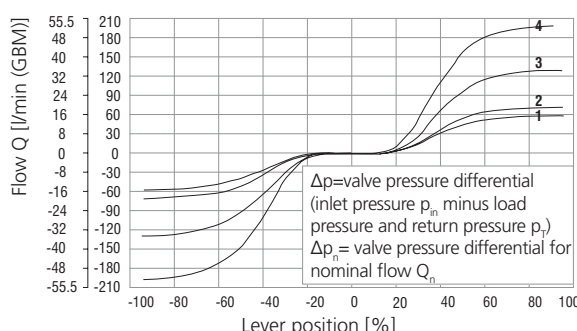
Proportional Valve Actuation Characteristics

Proportional spool flow rate 30 l/min (7.9 GPM)



1	$\Delta p_n = 10 \text{ bar (145 PSI)}$	3	$\Delta p = 160 \text{ bar (2321 PSI)}$
2	$\Delta p = 50 \text{ bar (725 PSI)}$	4	$\Delta p = 350 \text{ bar (5076 PSI)}$

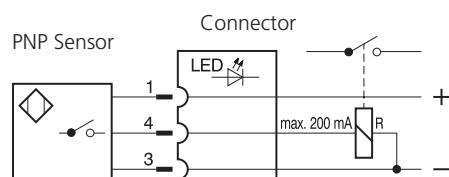
Proportional spool flow rate 60 l/min (15.8 GPM)



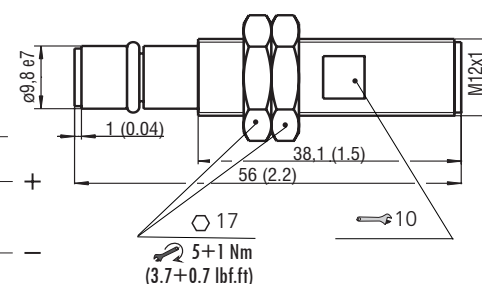
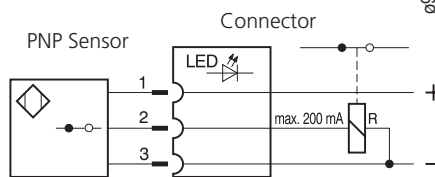
1	$\Delta p_n = 10 \text{ bar (145 PSI)}$	3	$\Delta p = 160 \text{ bar (2321 PSI)}$
2	$\Delta p = 50 \text{ bar (725 PSI)}$	4	$\Delta p = 350 \text{ bar (5076 PSI)}$

Technical Data - Sensor in millimeters (inches)

S1 Circuit diagram of the normally - OPEN sensor



S4 Circuit diagram of the normally - CLOSED sensor

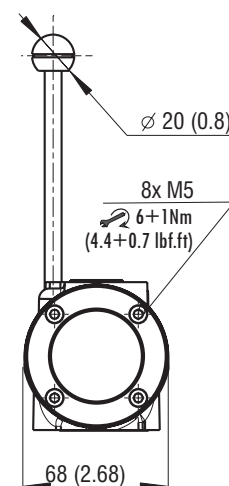
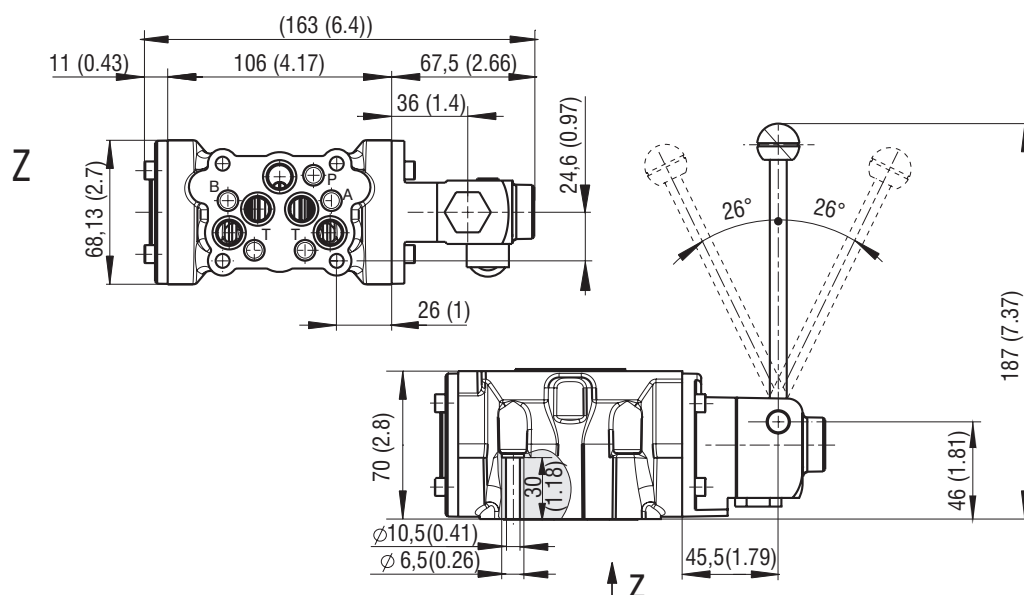
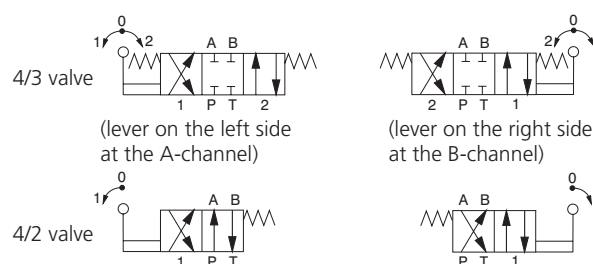


Dimensions in millimeters (inches)

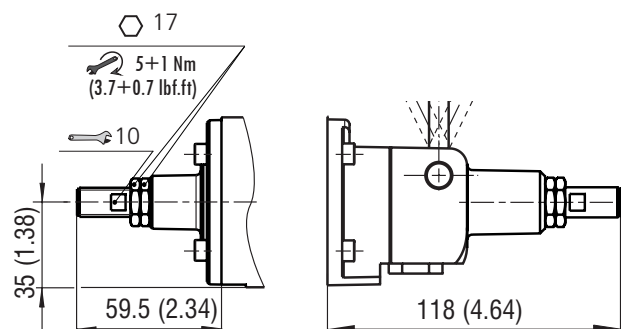
RPR1-10*/A1-0-0

without stroke limiter and position sensor

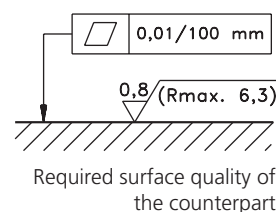
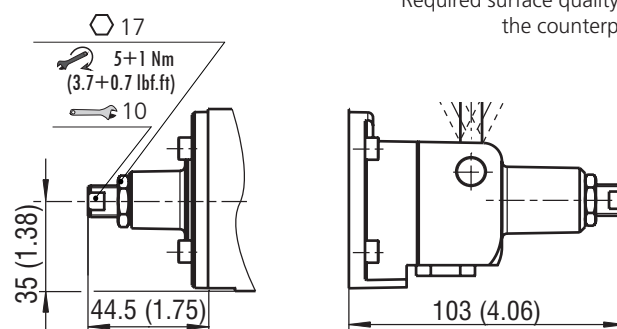
Spool position according to the position of hand lever



RPR1-10*/A(B,C) Position sensor



RPR1-10*/SL* Stroke limiter



Manual lever and actuating section are shown in the most frequently used standard position. Both elements can be rotated in 90° increments. For other positions of lever and actuating section contact our technical support.