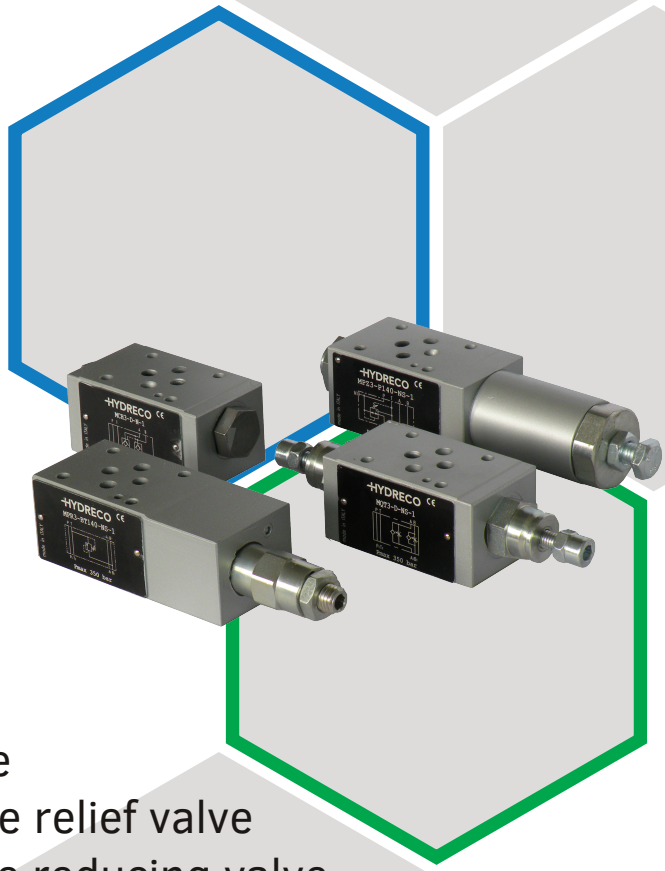
HYDRECO

STACK VALVES

ISO 4401-03 VALVES (CETOP 03)



MQT3 - Flow restrictor valve
MCH3 - Pilot operated check valve
MPR3 - Direct operated pressure relief valve
MPZ3 - Direct operated pressure reducing valve

TECHNICAL CATALOGUE

STACK03_EN_2023_01

INTRODUCTION

We offer a complete range of stack valves with porting pattern compliant to ISO 4401-03 standards.

Our range includes throttle valves, non-return valves, pressure relief and pressure reducing valves.

These valves are supplied with a zinc-nickel plating making them the perfect choice for mobile and environmental applications that require better protection.
Salt spray resistance is up to 600 h (test according to UNI EN ISO 9227 and UNI EN ISO 10289 tests and standards).

FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V).

For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.
Using fluids at temperatures higher than 80 °C causes a faster degradation of seals as well as the fluid physical and chemical properties. From a safety standpoint, temperatures above 55 °C (130 °F) are not recommended.

OPERATING PARAMETERS

MAXIMUM OPERATING PRESSURE	P - A - B ports	350 bar	5076 psi
	T port	210 bar	3046 psi
FLOW RATE		50 l/min	13.2 gpm
MAXIMUM FLOW RATE IN THE CONTROLLED LINES		75 l/min	19.8 gpm
MOUNTING SURFACE		ISO 4401-05-04-0-05 NFPA D05	

RANGE TEMPERATURES	ambient	-20 to +60 °C	-4 to +140 °F
	fluid	-20 to +80 °C	-4 to +176 °F
FLUID VISCOSITY	range	10-400 cSt	60-1900 SUS
	recommended	25 cSt	120 SUS
FLUID CONTAMINATION		ISO 4406:1999 class 20/18/15	

SUMMARY

MQT3 - FLOW RESTRICTOR VALVE

Non-compensated flow control valve with check valve for reverse free flow.
— The built-in check valve allows the reverse free flow (cracking pressure of 0.5 bar).
— It is supplied with a hexagon socket adjustment screw.

MQT3 - ☐ - ☐ ☐ - 1

desing mark

FUNCTION	
D	Meter-out control in lines A-B
A	Meter-out control in line A
B	Meter-out control in line B

ADJUSTMENT TYPE	
S	Screw (**standard**)
K	Knob

SEAL	
N	NBR (**standard**)
V	Viton

CODE EXAMPLE:

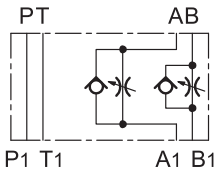
MQT3-D-NS-1

OPERATING PARAMETERS

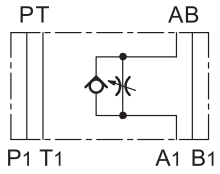
MAXIMUM OPERATING PRESSURE	P - A - B ports	350 bar	5076 psi
	T port	210 bar	3046 psi
CHECK VALVE CRACKING PRESSURE		0.5 bar	0.13 gpm
MAXIMUM FLOW RATE IN THE CONTROLLED LINES		50 l/min	13.2 gpm
MAXIMUM FLOW RATE IN THE FREE LINES		75 l/min	19.8 gpm
MIN. CONTROLLED FLOW RATE WITH Δp 10 bar		≤ 0.060 bar	0.87 psi
MASS		1.3 kg	2.87 lb

HYDRAULIC SYMBOLS

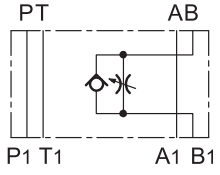
MQT3-D



MQT3-A

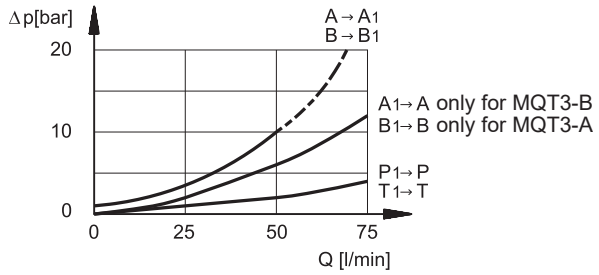


MQT3-B

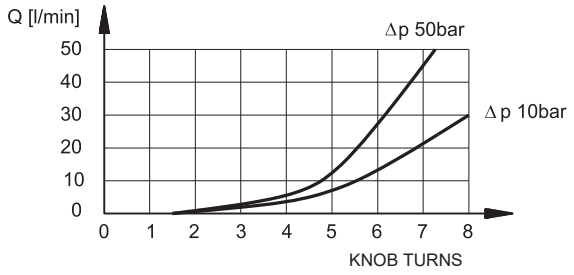


Flow characteristic curves obtained with mineral oil with viscosity of 36 cSt (170 sus) at 50 °C (122 °F)

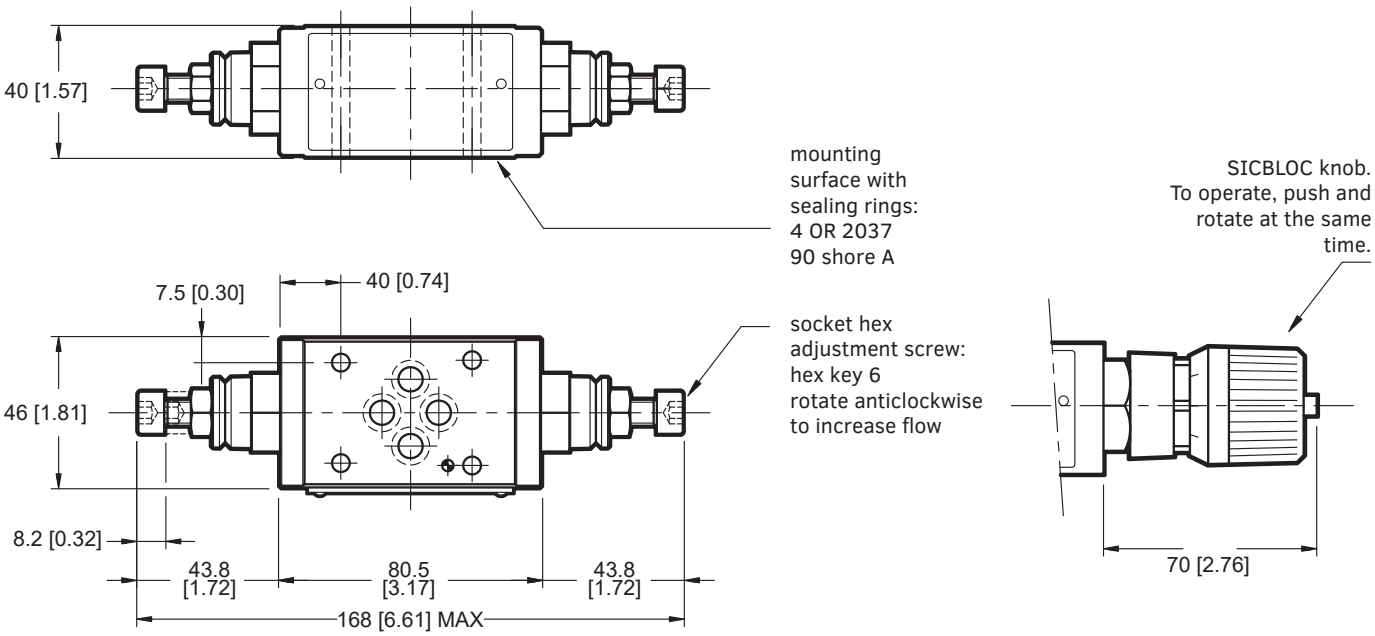
PRESSURE DROPS Δp - Q



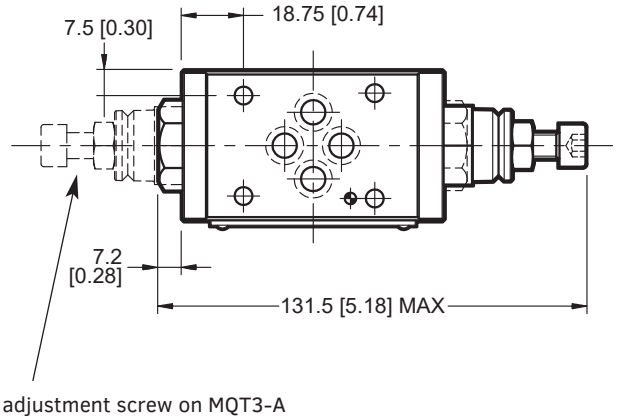
PERFORMANCE CURVES - STANDARD OPERATION



MQT3-D - INSTALLATION DATA mm [inch]



MQT3-B - INSTALLATION DATA mm [inch]



MCH3 - PILOT OPERATED CHECK VALVE

This is a check valve (spring closing and cone on edge seals) with a built-in flow control feature.
Its use allows:
- to stop the flow in one direction;
- the flow in one direction, if opened by a pilot pressure;
- the free flow in the other direction.

MCH3 - [ ] - [ ] - 1

desing mark

FUNCTION	
D	Seal on lines A and B of the actuator
A	Seal on line A of the actuator
B	Seal on line B of the actuator

SEAL	
N	NBR (**standard**)
V	Viton

CODE EXAMPLE:

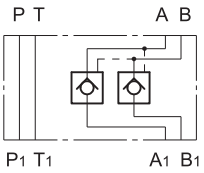
MCH3-D-N-1

OPERATING PARAMETERS

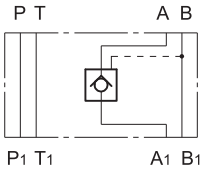
MAXIMUM OPERATING PRESSURE	P - A - B ports	350 bar	5076 psi
	T port	210 bar	3046 psi
CHECK VALVE CRACKING PRESSURE		3 bar	43.5 psi
MAXIMUM FLOW RATE IN THE CONTROLLED LINES		50 l/min	13.2 gpm
MAXIMUM FLOW RATE IN THE FREE LINES		75 l/min	19.8 gpm
RATIO BETWEEN THE PRESSURE IN THE LOCKED CHAMBERS		3.4:1	
MASS		1.3 kg	2.87 lb

HYDRAULIC SYMBOLS

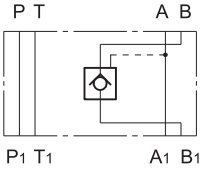
MCH3-D



MCH3-A

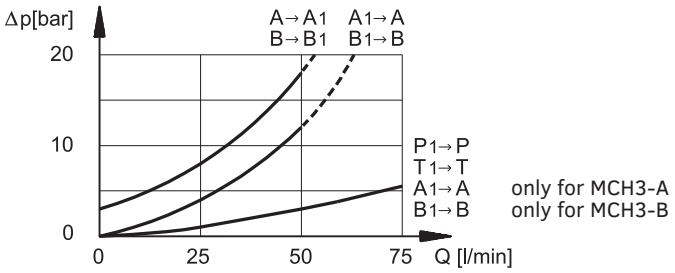


MCH3-B

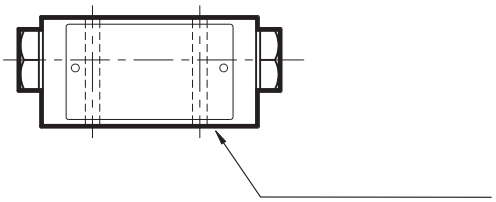


Flow characteristic curves obtained with mineral oil with viscosity of 36 cSt (170 sus) at 50 °C (122 °F)

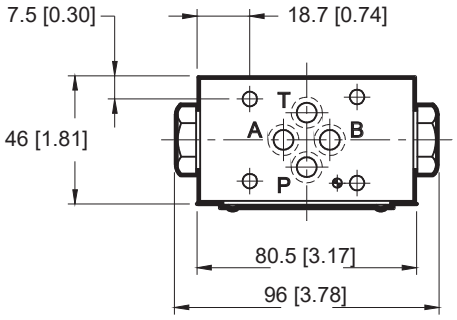
PERFORMANCE CURVES



MCH3 - INSTALLATION DATA mm [inch]



Mounting surface with sealing rings:
4 OR type 2037
90 Shore



MPR3 - DIRECT OPERATED PRESSURE RELIEF VALVE

This valve is a direct operated pressure relief valve. It is available in versions for single adjustment on one control line, or dual on two control lines, in five different pressure adjustment ranges.
This valve is used as a hydraulic circuit pressure limiting device or as a limiting device of the pressure peaks generated during the movement of hydraulic actuators. It is supplied with a hexagonal head adjustment screw, locking nut and limitation of the maximum adjustment travel.

MPR3 - [ ] [ ] [ ] [ ] - [ ] S - 1

desing mark

FUNCTION	
PT	Single on line P with discharge in T
AT	Single on line A with discharge in T
BT	Single on line B with discharge in T
DT	Double on lines A-B with discharge in T
D	Double on lines A-B with crossed discharges
BA	Single on line B with discharge in A

PRESSURE ADJ.	
025	Up to 25 bar
070	Up to 70 bar
140	Up to 140 bar
210	Up to 210 bar
350	Up to 350 bar

SEAL	
N	NBR (**standard**)
V	Viton

ADJUSTMENT TYPE	
S	Screw

CODE EXAMPLE:

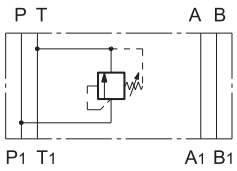
MPR3-PT070-NS-1

OPERATING PARAMETERS

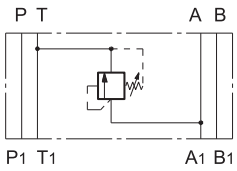
MAXIMUM OPERATING PRESSURE	350 bar	5076 psi
MINIMUM CONTROLLED PRESSURE	see Δp diagram	
MAXIMUM FLOW RATE IN THE CONTROLLED LINES	50 l/min	13.2 gpm
MAXIMUM FLOW RATE IN THE FREE LINES	75 l/min	19.8 gpm
MASS MPR3-PT/AT/BT/BA	1.4 kg	3.08 lb
MASS MPR3-DT/D	2.0 kg	3.08 lb

HYDRAULIC SYMBOLS

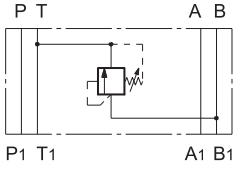
MPR3-PT



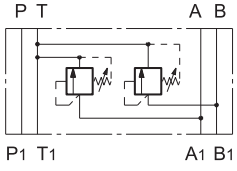
MPR3-AT



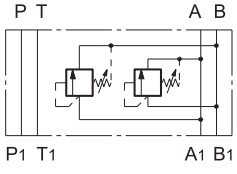
MPR3-BT



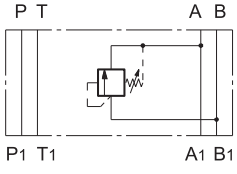
MPR3-DT



MPR3-D

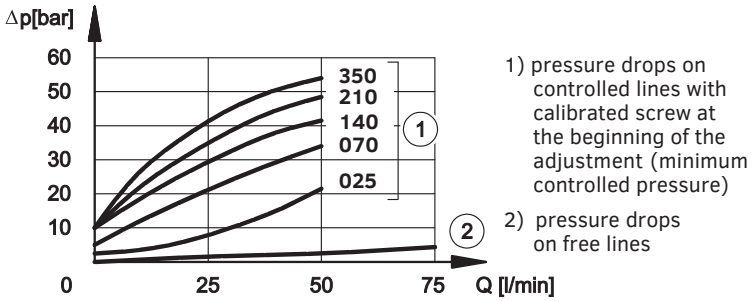


MPR3-BA



Flow characteristic curves obtained with mineral oil with viscosity of 36 cSt (170 sus) at 50 °C (122 °F).

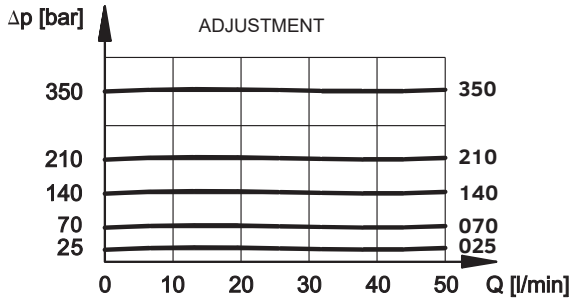
PRESSURE DROPS Δp - Q



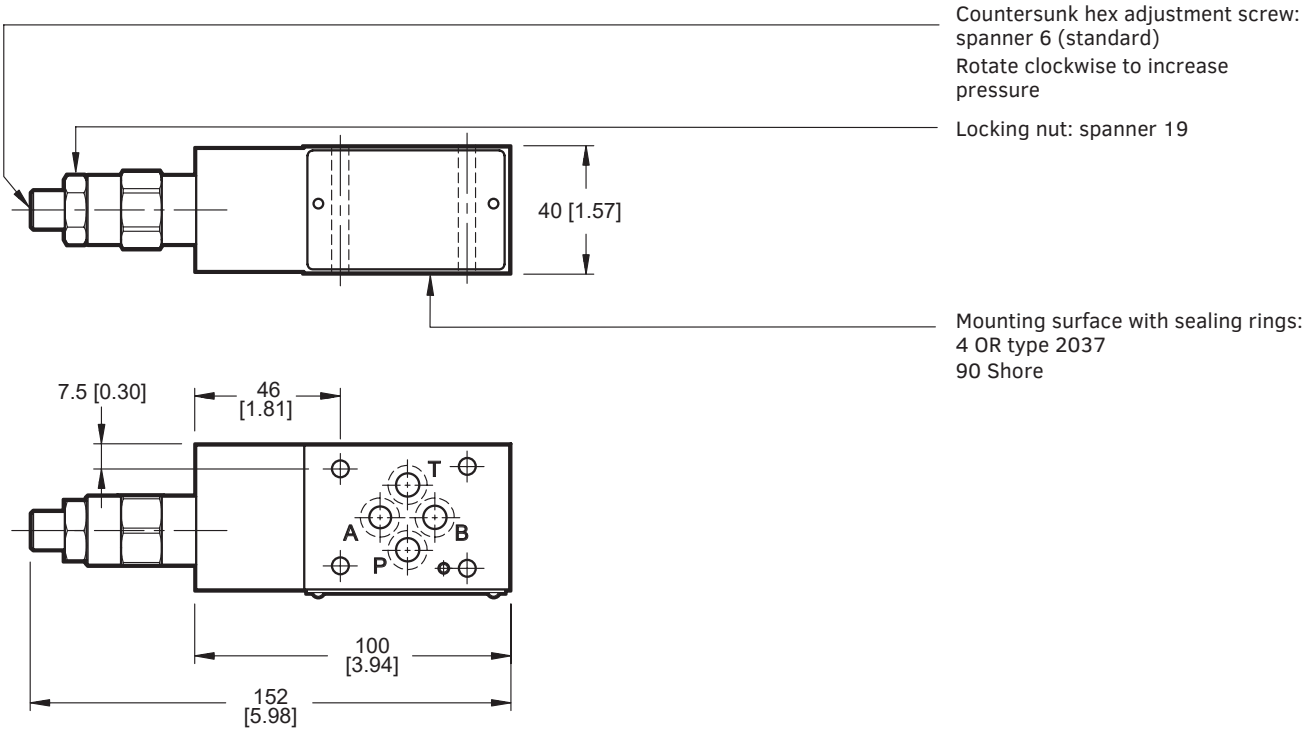
1) pressure drops on controlled lines with calibrated screw at the beginning of the adjustment (minimum controlled pressure)

2) pressure drops on free lines

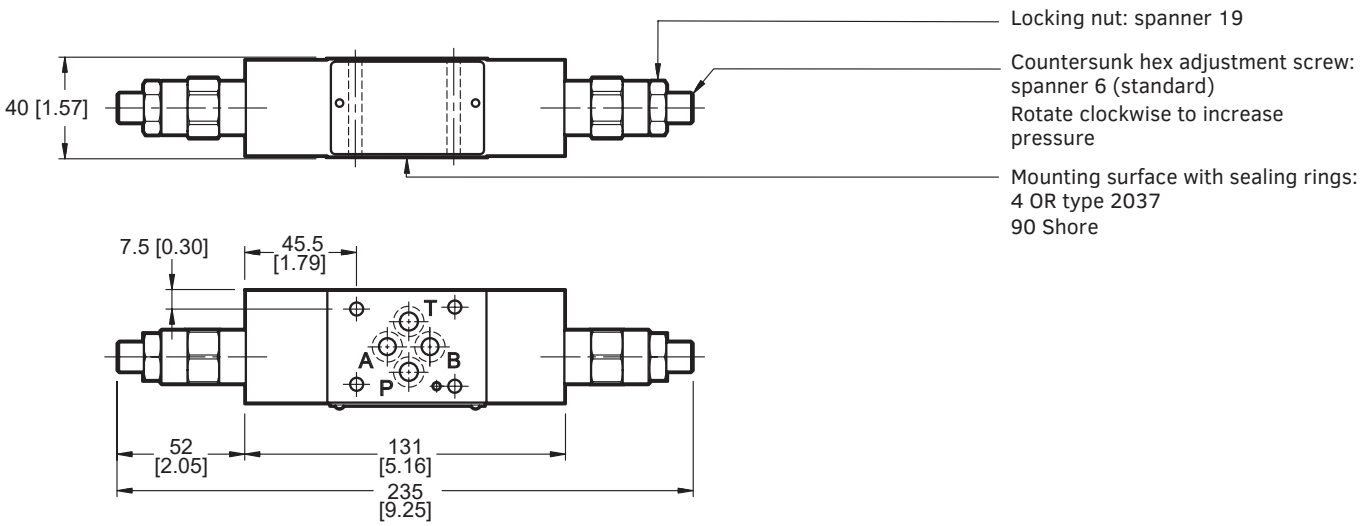
PERFORMANCE CURVES - STANDARD OPERATION



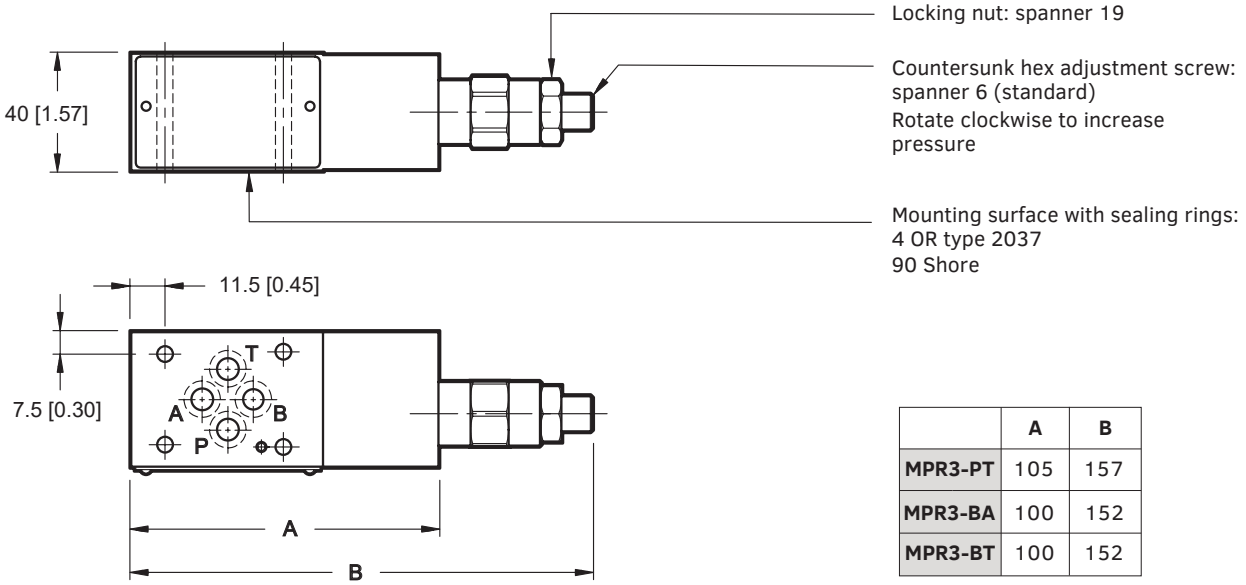
MPR3-AT - INSTALLATION DATA mm [inch]



MPR3-D/DT - INSTALLATION DATA mm [inch]



MPR3-BA/BT/PT - INSTALLATION DATA mm [inch]



	A	B
MPR3-PT	105	157
MPR3-BA	100	152
MPR3-BT	100	152

MPZ3 - DIRECT OPERATED PRESSURE REDUCING VALVE

This valve is a three-port, direct operated pressure reducing valve with variable adjustment, spool type. It is normally open and the hydraulic fluid flows freely from P1 port to P port. The three-port design provides protection of the secondary circuit from pressure surges since it allows a reverse flow from the actuator to the T discharge line. The spool is subjected to the pressure in the P path but also to the force of the counter spring. When the pressure in P1 exceeds the spring force, the valving element closes until the pressure is reduced to the set pressure value.
This valve provides good adjustment sensitivity with reduced drain flow. The drain is connected to path T inside the valve.

MPZ3 - [ ] [ ] [ ] [ ] - [ ] [ ] - 1

desing mark

FUNCTION	
P	Pressure reducing on line P and regulation unit on B
PA	Pressure reducing on line A and full pressure on line B with regulation unit on B
PB	Pressure reducing on line B and full pressure on line A with regulation unit on B

PRESSURE ADJ.	
035	Up to 35 bar
070	Up to 70 bar
140	Up to 140 bar
280	Up to 280 bar

SEAL	
N	NBR (**standard**)
V	Viton

ADJUSTMENT TYPE	
S	Screw (**standard**)
K	Knob

CODE EXAMPLE :

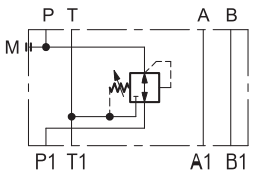
MPZ3-P070-NS-1

OPERATING PARAMETERS

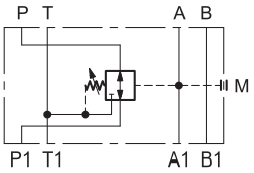
MAXIMUM OPERATING PRESSURE	P - A - B ports	350 bar	5076 psi
	T port	10 bar	145 psi
MAXIMUM FLOW RATE IN THE CONTROLLED LINES		50 l/min	13.2 gpm
MAXIMUM FLOW RATE IN THE FREE LINES		75 l/min	19.8 gpm
DRAINAGE FLOW RATE		≤ 0.080	1.16 psi
MASS		1.4 kg	3.08 lb

HYDRAULIC SYMBOLS

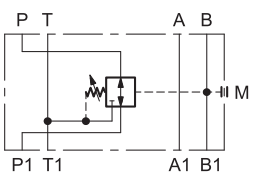
MPZ3-P



MPZ3-PA

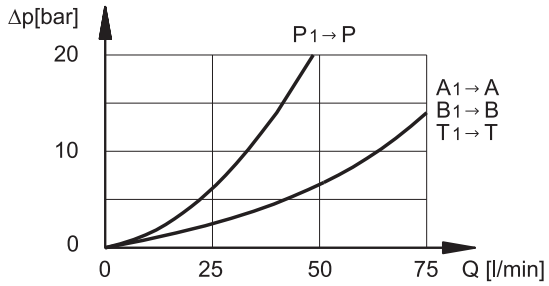


MPZ3-PB

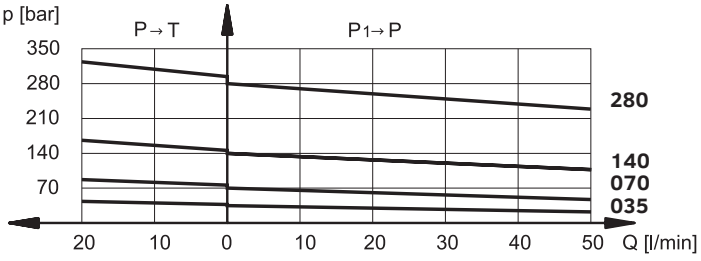


Flow characteristic curves obtained with mineral oil with viscosity of 36 cSt (170 sus) at 50 °C (122 °F) and 24V DC valve: the Δp values are measured between P and T (full loop) valve ports.

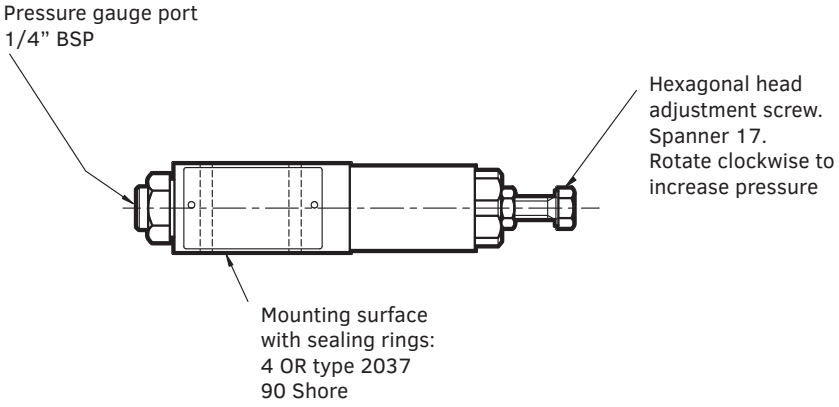
PRESSURE DROPS Δp - Q

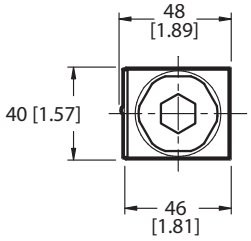


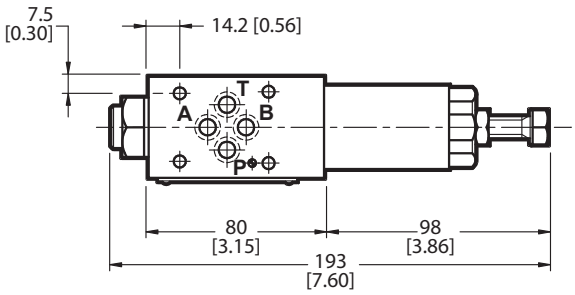
PERFORMANCE CURVES - STANDARD OPERATION

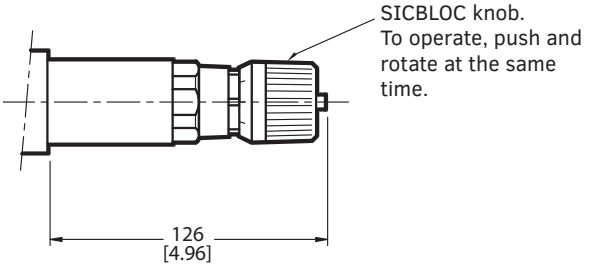


MPZ3 - INSTALLATION DATA mm [inch]









HYDRECO

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CONTACT INFORMATION

EMEA

GERMANY	Hydreco Hydraulics GmbH, Straelen (NRW)	+49 283494303-41	info-de@hydreco.com
ITALY	Hydreco Hydraulics Italia Srl, Vignola (MO)	+39 059 7700411	sales-it@hydreco.com
ITALY	Hydreco Hydraulics Italia Srl, Parma (PR)	+39 0521 1830520	sales-it@hydreco.com
ITALY	Hydreco Srl, San Cesario S/P (MO)	+39 059 330091	cylinders@hydreco.com
NORWAY	Hydreco Hydraulics Norway AS, Nittedal	+47 22909410	post-no@hydreco.com
UK	Hydreco Hydraulics Ltd, Poole, Dorset	+44 (0) 1202 627500	info-uk@hydreco.com

AMERICAS

NORTH/LATIN	Hydreco Inc / Continental Hydraulics Inc, Shakopee (MN)	+1 952 895 6400	sales@conthyd.com

APAC

AUSTRALIA	Hydreco Hydraulics Pty Ltd, Seven Hills (NSW)	+61 2 9838 6800	sales-au@hydreco.com
AUSTRALIA	Hydreco Hydraulics Pty Ltd, Welshpool (WA)	+61 8 9377 2211	reception-wa@hydreco.com
INDIA	Hydreco Hydraulics India Private Ltd, Bangalore	+91 80 67656300	sales-in@hydreco.com

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001:2015

www.hydreco.com

hydreco-hydraulics

Hydreco Hydraulics - Version Control Number: STACK03_EN_2023_01