

# STAR 1550 SERIES

## 2 STAGE SERVO VALVE

### FEATURES

- Standard & high response versions
- Maximum operating pressure of 315 bar
- Rated flows up to 70 lpm
- ISO 4401-5 mounting pattern
- Internal pilot supply
- Suitable for 3-way or 4-way applications
- Low hysteresis & zero point drift
- High spool drive forces
- Spool in bushing design
- Dry torque motor with mechanical feedback
- Long life Sapphire Technology



### SAPPHIRE BALL IN SLOT DESIGN

- Many billions of cycles per service life
- Increased spool life due to spool rotation
- Ultra low coefficient of friction sapphire to steel
- Feedback mechanism unhindered by spool rotation

### SAFETY

- Flame proof
- Intrinsic safety
- Class, Div & Zone coverage
- Mechanical failsafe
- Double & triple coil redundancy

### TECHNICAL DATA


HYDRAULIC		
	at 70 bar	
<b>Nominal flow ratings [<math>\pm 10\%</math>]</b>	standard response	4, 10, 20, 40, 60, 70 lpm
	high response	4, 10, 20, 40 lpm
<b>Operating pressure (max)</b>	Ports	P, C1, C2 R
<b>Seal material</b>	NBR, FPM	315 bar 315 bar
	EPDM	280 bar 210 bar
<b>Fluid viscosity range (recommended)</b>		10 to 100 mm <sup>2</sup> /s (cSt)
<b>Fluid type</b>		Mineral oil to ISO 11158, DIN 51524 or equivalent MIL-H-5606 Skydrol Kerosene Water glycols others on request
<b>Filter rating (recommended)</b>	Pressure line	Beta 10 = 200 (10 $\mu$ m abs), non by-pass & indicator
	Off-line	Beta 2 = 1000 (2 $\mu$ m abs)
<b>Fluid cleanliness</b>	ISO 4406: 1999	
	Minimum	16/14/11
	Recommended	15/13/10

# TECHNICAL DATA

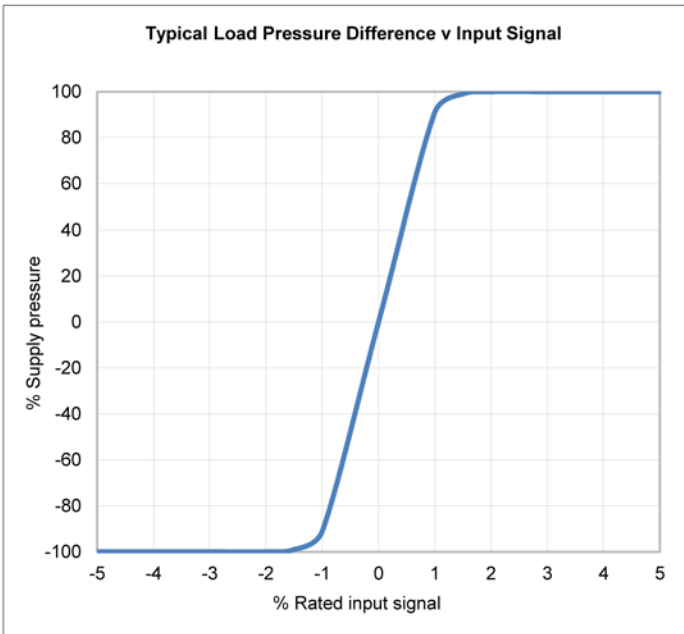
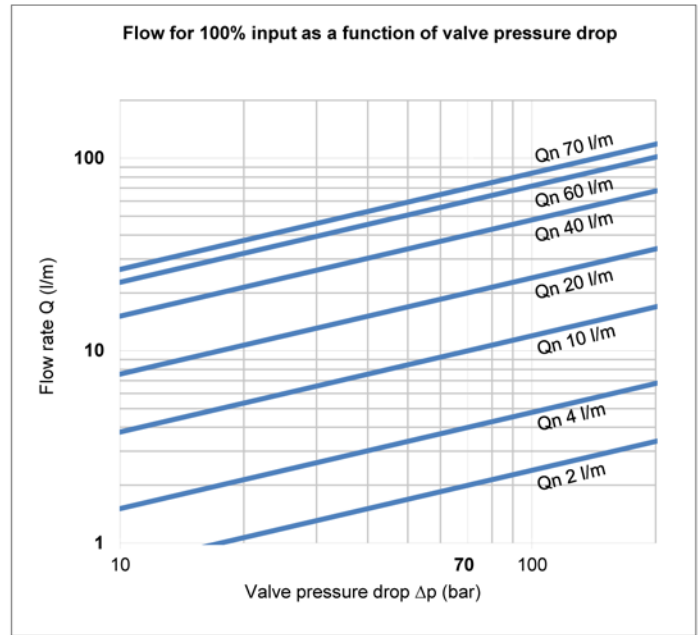
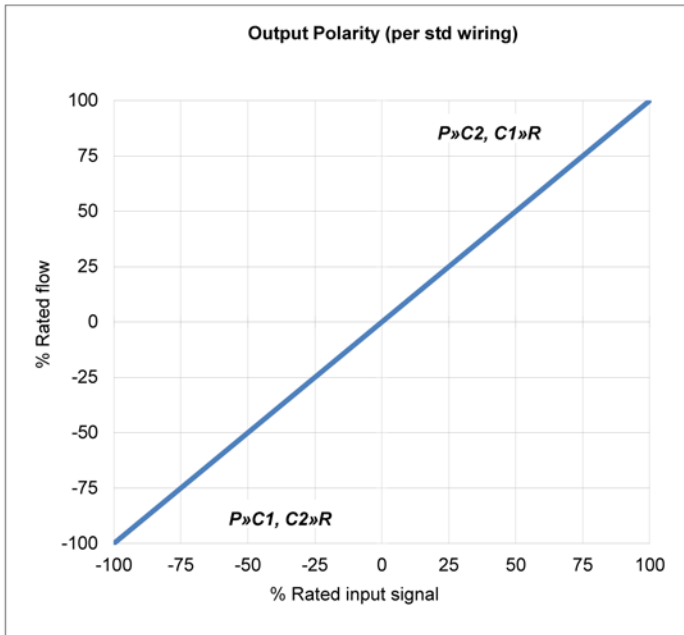
## OPERATIONAL PARAMETERS

<b>Hysteresis</b>		≤ 3.0% without dither	
<b>Threshold</b>		≤ 0.5% without dither	
<b>Null shift</b>	ΔT 40°C	≤ 2.0%	
<b>Internal leakage</b>	140 bar supply (0.5% overlap)		
	2, 4, 10 lpm	≤ 1.2 lpm	
	20, 40, 60, 75 lpm	≤ 1.6 lpm	
<b>Load pressure difference</b>	1% input	≥ 30% of supply pressure can be as high as 100%	
<b>Response time</b>	0-100% rated spool stroke		
	<b>Standard response</b>	2, 4, 10, 20, 40 lpm	8 ms
		60 lpm	13 ms
		70 lpm	15 ms
	<b>High response</b>	4, 10, 20 lpm	4.5 ms
		40 lpm	6 ms
<b>Mounting pattern</b>		ISO 4401-05-05-0-94 without X and Y port	
<b>Mounting position</b>		Any fixed or movable	
<b>Weight</b>	Standard unit	1.1 kg	
<b>Design protection</b>	EN 60529	IP65	
<b>Shipping protection</b>		Sealed base plate	
<b>Vibration</b>		30 g all axis, 5 Hz to 2,000 Hz	
<b>Shock</b>		30 g all axis	
<b>Seal material options</b>		NBR, FPM, EPDM	
<b>Temperature range</b>		-30 to 135°C	

## ELECTRICAL

<b>Rated input ± (mA)</b>	<b>Single (Differential)</b>	<b>8</b>	<b>15</b>	<b>30</b>	<b>40</b>	<b>100</b>	<b>200</b>
<b>Other coil rates available</b>	<b>Series</b>	4	7.5	15	20	50	100
	<b>Parallel</b>	8	15	30	40	100	200
<b>Coil resistance (Ω)</b>	<b>per coil</b>	1000	200	300	80	28	22
<b>Power (W)</b>	<b>Single (Differential)</b>	0.064	0.045	0.27	0.128	0.280	0.88
	<b>Series</b>	0.032	0.023	0.135	0.064	0.140	0.440
	<b>Parallel</b>	0.032	0.023	0.135	0.064	0.140	0.440
<b>Connector pin out identification</b>		A					
		B					
		C					
		D					
<b>Polarity P→C2, C1→R</b>	<b>Single</b>	A+, B- or C+, D-					
	<b>Series</b>	A+, D-, B & C linked					
	<b>Parallel</b>	A & C linked+, B & D linked-					
<b>Valve connector type</b>	<b>MIL-C-5015</b>	MS3102E-14S-2P mates with MS3106F-14S-2S <i>consult for more options</i>					
<b>Standard connector orientation</b>		P port					
	<b>also available over</b>	C1, C2 or R port; please advise when ordering					

# TECHNICAL DATA



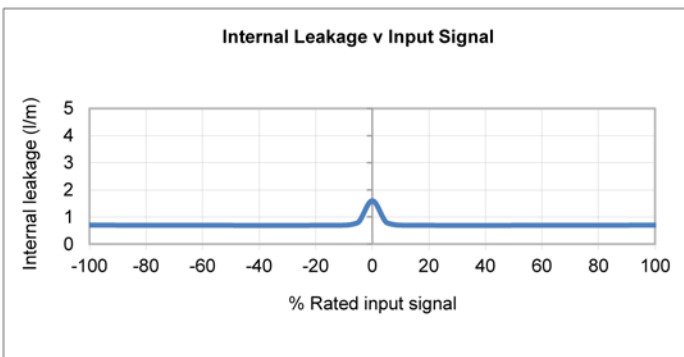
The flow tolerance for standard servovalves is  $\pm 10\%$  of the rated flow at 100% rated input signal.

Rated Signal [In] is the specified input voltage or current of either polarity to produce rated flow. Rated input does not include null bias values.

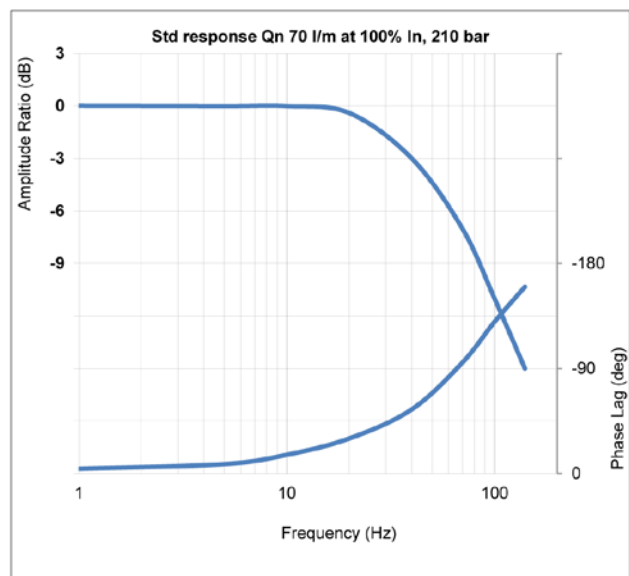
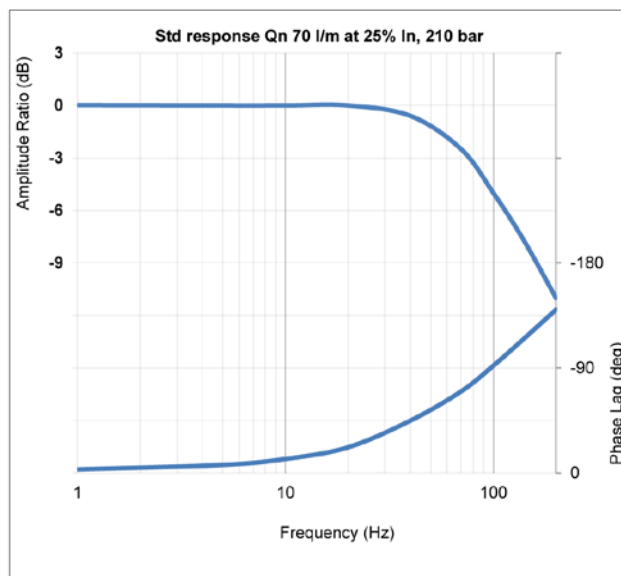
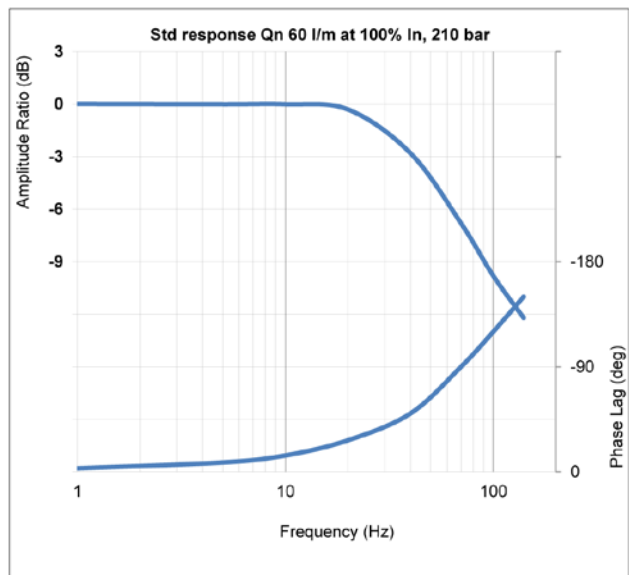
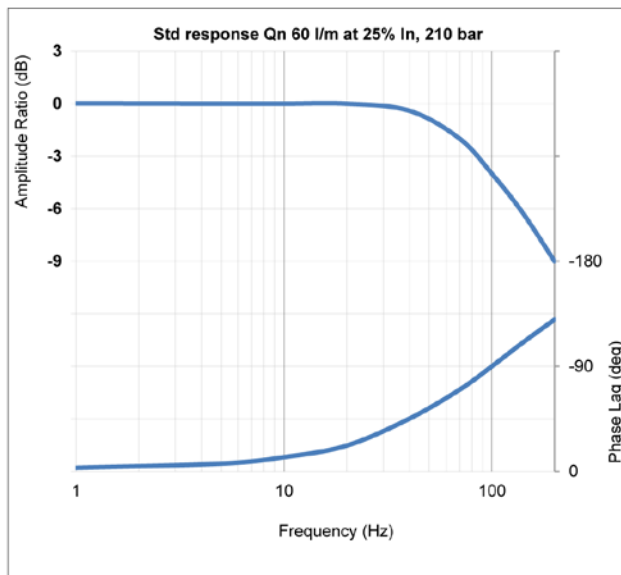
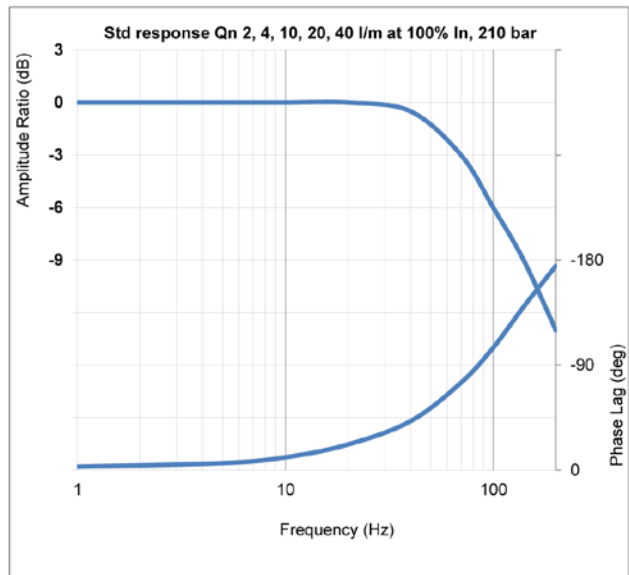
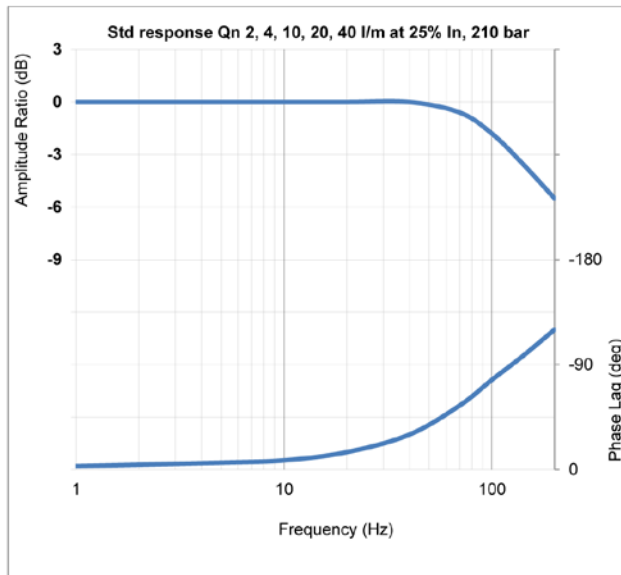
Rated flow corresponds to the flow at rated input at 10 bar or 70 bar, with no load, therefore in 4-way valves there will be a pressure drop of 5 bar or 35 bar respectively across each land.

Load pressure difference versus input signal indicates typical differential pressure gain between ports C1 (A) and C2 (B) for standard lap spools. Negative and positive overlap change this characteristic significantly.

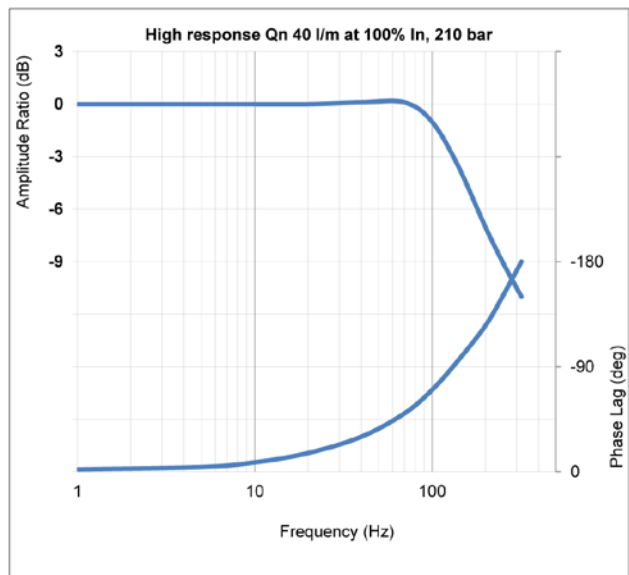
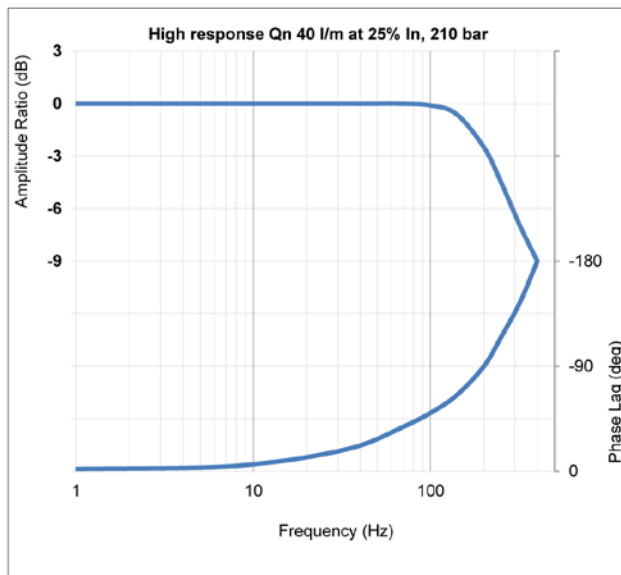
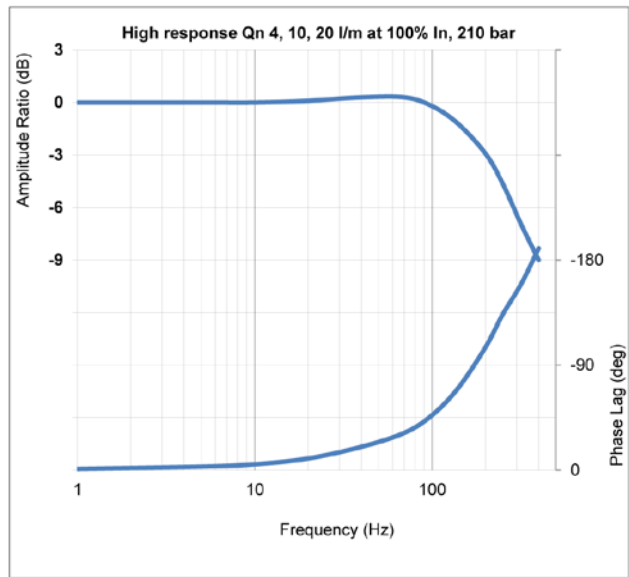
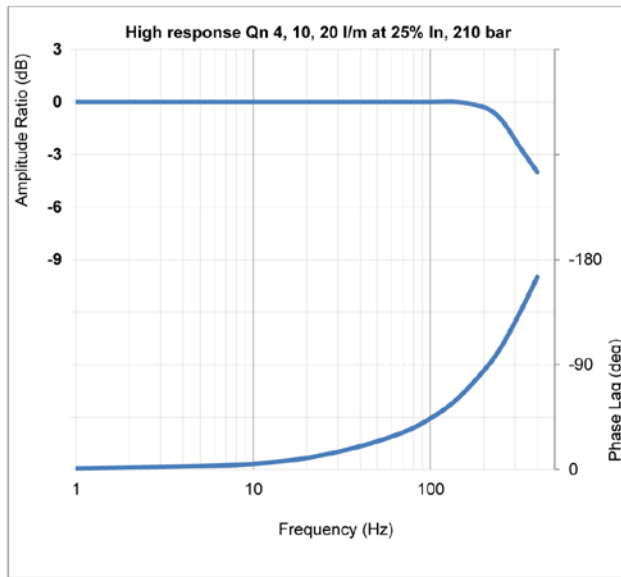
Internal leakage comprises of tare first stage and laminar leakage between spool and sleeve. With critical lap conditions in 4-way designs the leakage peaks through the null region.



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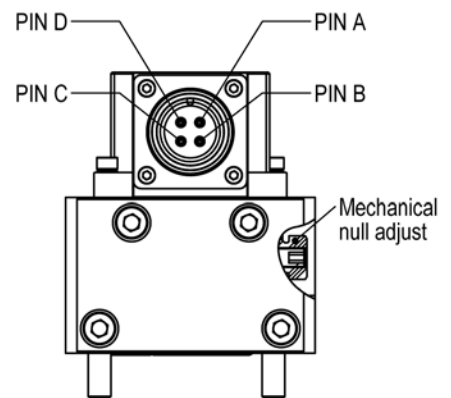
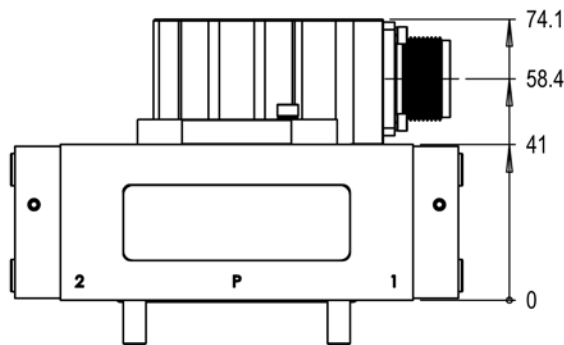
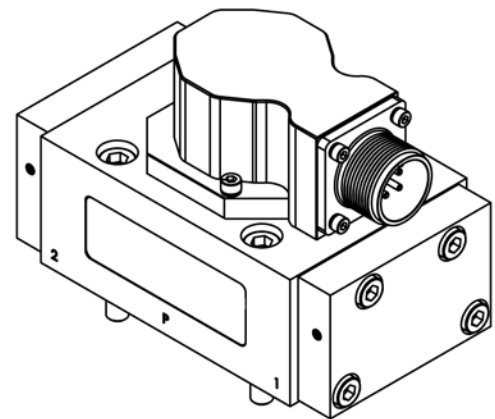
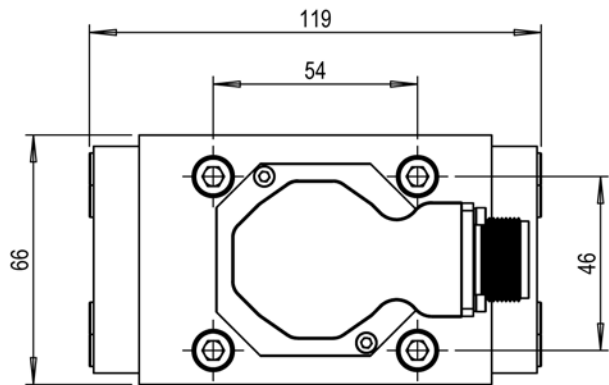
# TECHNICAL DATA



# DIMENSIONS

## INSTALLATION DETAILS

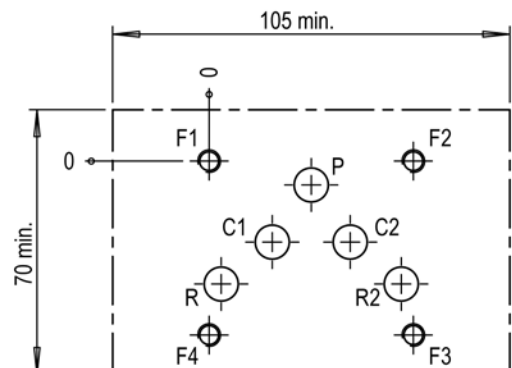
<b>Mounting Screws</b>	Socket head cap screws M6 x 45 - 10.9 ISO 4762
<b>Null Adjust (Mechanical)</b>	<ul style="list-style-type: none"> <li>• 2.5 Hex socket &amp; 10 A/F lock nut</li> <li>• Slacken/loosen lock nut (CCW) half-turn with 10 A/F ring spanner</li> <li>• Insert 2.5 Hex key into socket and rotate to obtain required null / offset value</li> <li>• Hold Hex key in desired position then tighten lock nut to 2 Nm</li> </ul>
<b>Porting Details</b>	P, C1, C2, R, R2 ports $\varnothing 9.0$ , $\perp \varnothing 15.85 \nabla 1.50$
<b>Interface Seals</b>	Ports P, C1, C2, R, R2 - ID 12.0 x $\varnothing 2.0$ O-Ring



**MOUNTING INTERFACE CONFORMS TO ISO 4401-05-05-0-94  
(X PORT MUST NOT BE USED)**

	P	C1	C2	R	R2	X	F1	F2	F3	F4
<b>SIZE</b>	$\varnothing 9$	$\varnothing 9$	$\varnothing 9$	$\varnothing 9$	$\varnothing 9$	-	M6	M6	M6	M6
<b>X</b>	27	16.70	37.30	3.0	50.80	-	0	54	54	0
<b>Y</b>	6.30	21.40	21.40	32.50	32.50	-	0	0	46	46

Surface flat within 0.01 / 100 : finish better than 0.8  $\mu\text{m}$





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