

STAR 550 SERIES

2 STAGE SERVO VALVE

FEATURES

- Standard & high response versions
- Maximum operating pressure of 315 bar
- Rated flows up to 75 lpm
- ISO 10372-04-04-0-92 mounting pattern
- Internal pilot supply (4 port)
- 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

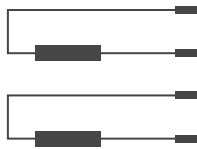
HYDRAULIC			
	at 70 bar		
Nominal flow ratings [$\pm 10\%$]	standard response	2, 4, 10, 20, 40, 60, 75 lpm	
	high response	4, 10, 20, 40 lpm	
Operating pressure (max)	Ports	P, C1, C2	R
Seal material	NBR, FPM	315 bar	315 bar
	EPDM	280 bar	210 bar
Fluid viscosity range (recommended)	10 to 100 mm ² /s (cSt)		
Fluid type	Mineral oil to ISO 11158, DIN 51524 or equivalent MIL-H-5606 Skydrol Kerosene Water glycols others on request		
Filter rating (recommended)	Pressure line	Beta 10 = 200 (10 μ m abs), non by-pass & indicator	
	Off-line	Beta 2 = 1000 (2 μ m abs)	
Fluid cleanliness	ISO 4406: 1999		
	Minimum	16/14/11	
	Recommended	15/13/10	

TECHNICAL DATA

OPERATIONAL PARAMETERS

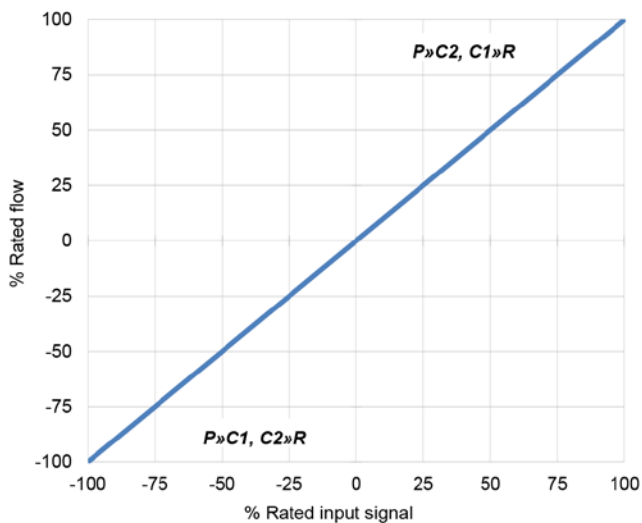
Hysteresis		≤ 3.0% without dither
Threshold		≤ 0.5% without dither
Null shift	ΔT 40°C	≤ 2.0%
Internal leakage	140 bar supply (0.5% overlap)	
	2, 4, 10 lpm	≤ 1.2 lpm
	20, 40, 60, 75 lpm	≤ 1.6 lpm
Load pressure difference	1% input	≥ 30% of supply pressure can be as high as 100%
Response time	0-100% rated spool stroke	
	Standard response	
	2, 4, 10, 20, 40 lpm	8 ms
	60 lpm	13 ms
	75 lpm	15 ms
	High response	
	4, 10, 20 lpm	4.5 ms
	40 lpm	6 ms
Mounting pattern		ISO 10372-04-04-0-92 without X port
Mounting position		Any fixed or movable
Weight	Standard unit	1.1 kg
Design protection	EN 60529	IP65
Shipping protection		Sealed base plate
Vibration		30 g all axis, 5 Hz to 2,000 Hz
Shock		30 g all axis
Seal material options		NBR, FPM, EPDM
Temperature range		-30 to 135°C

ELECTRICAL

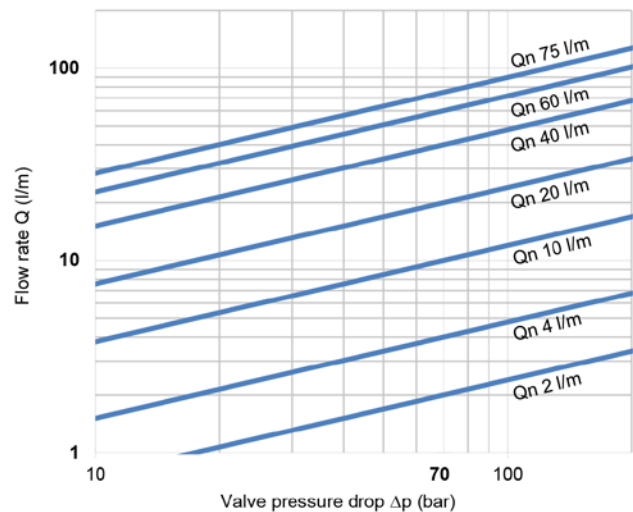
Rated input ± (mA)	Single (Differential)	8	15	30	40	100	200
Other coil rates available	Series	4	7.5	15	20	50	100
	Parallel	8	15	30	40	100	200
Coil resistance (Ω)	per coil	1000	200	300	80	28	22
Power (W)	Single (Differential)	0.064	0.045	0.27	0.128	0.280	0.88
	Series	0.032	0.023	0.135	0.064	0.140	0.440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

TECHNICAL DATA

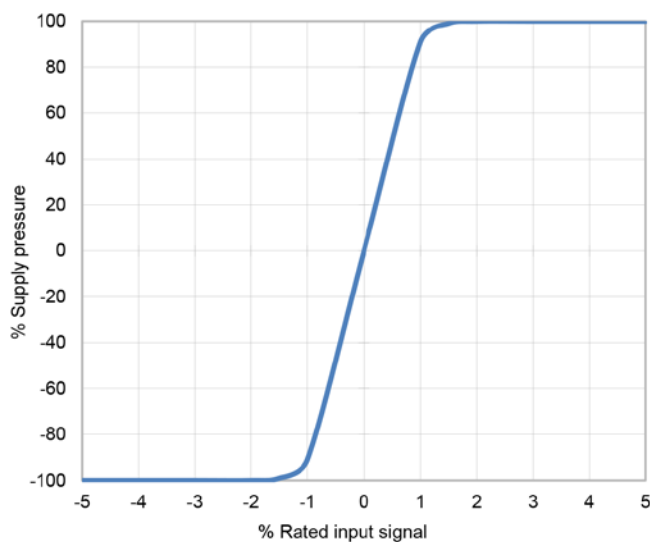
Output Polarity (per std wiring)



Flow for 100% input as a function of valve pressure drop



Typical Load Pressure Difference v Input Signal



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

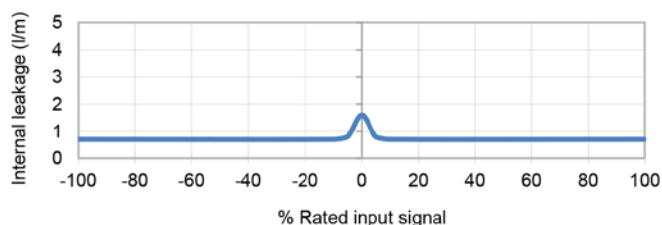
Rated Signal [In] is the specified input voltage or current of either polarity to produce rated flow. Rated input does not include null bias values.

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.

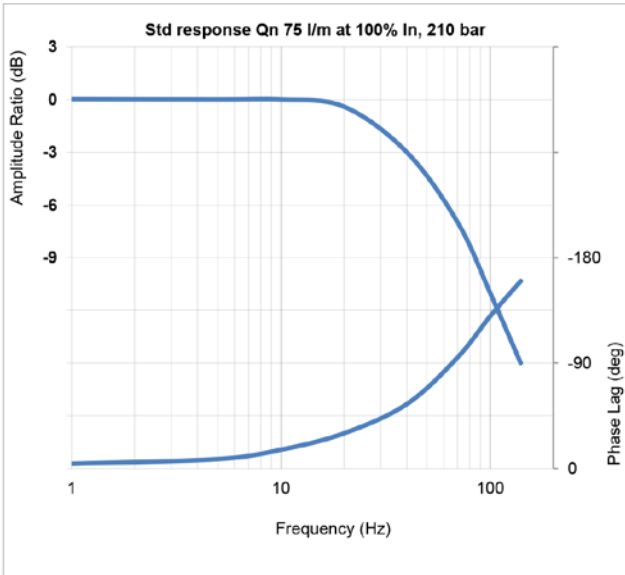
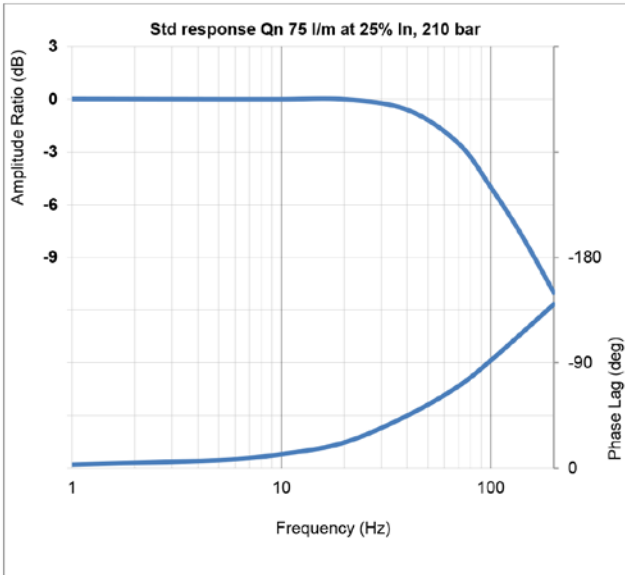
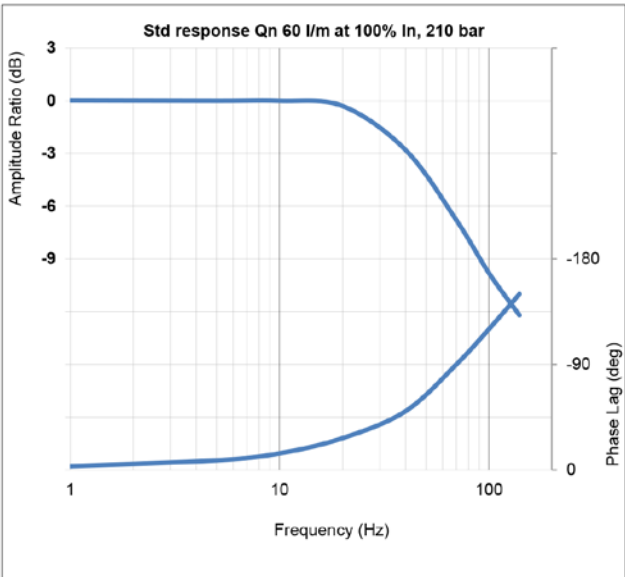
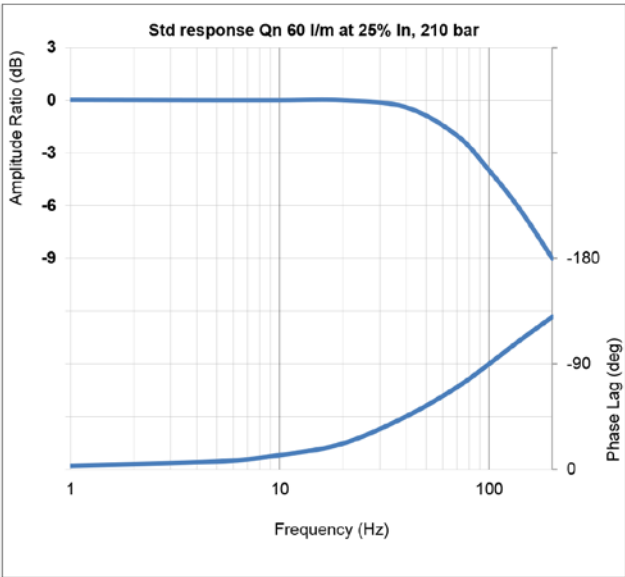
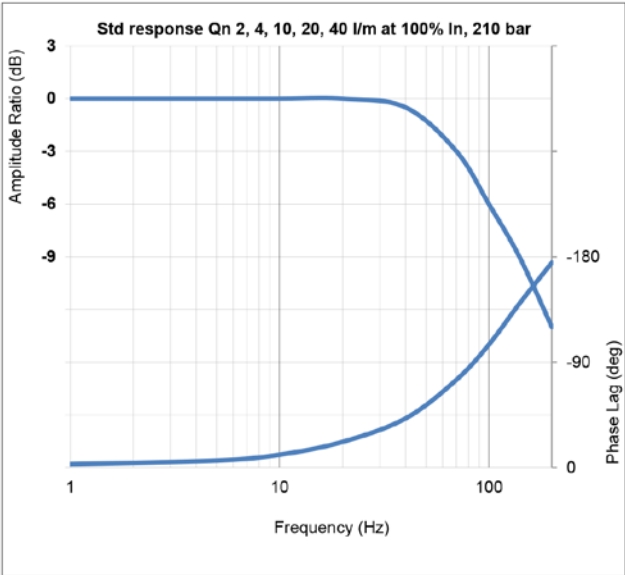
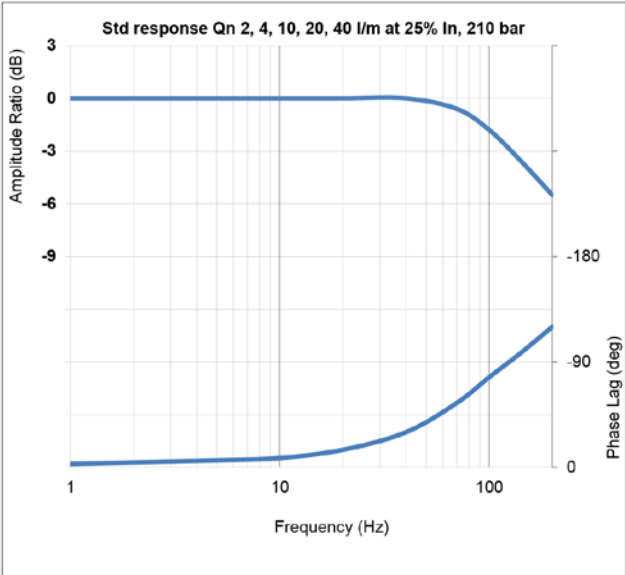
Load pressure difference versus input signal indicates typical differential pressure gain between ports C1 (A) and C2 (B) for standard lap spools. Negative and positive overlap change this characteristic significantly.

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.

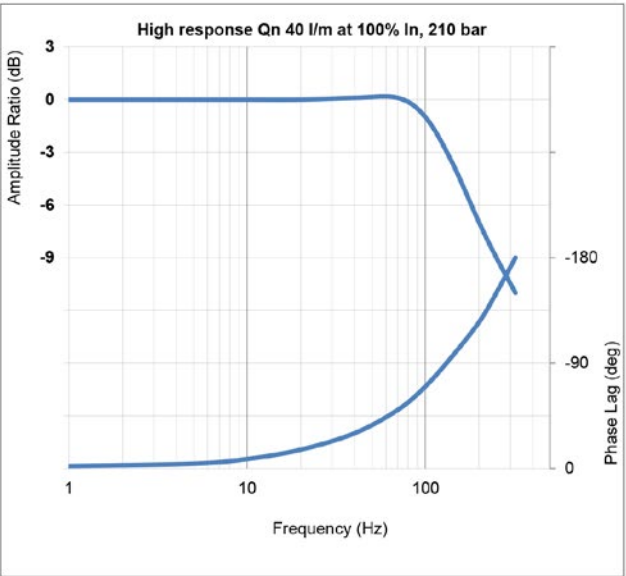
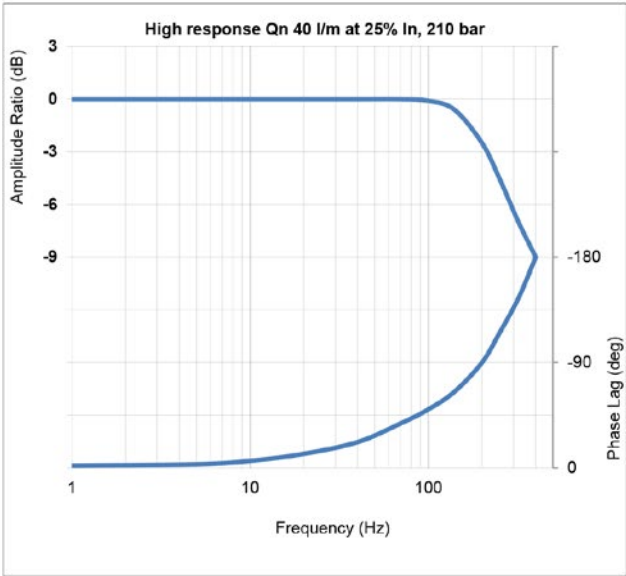
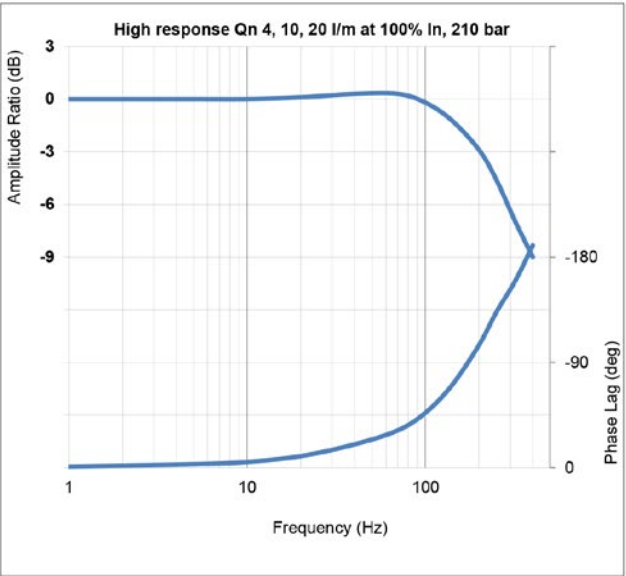
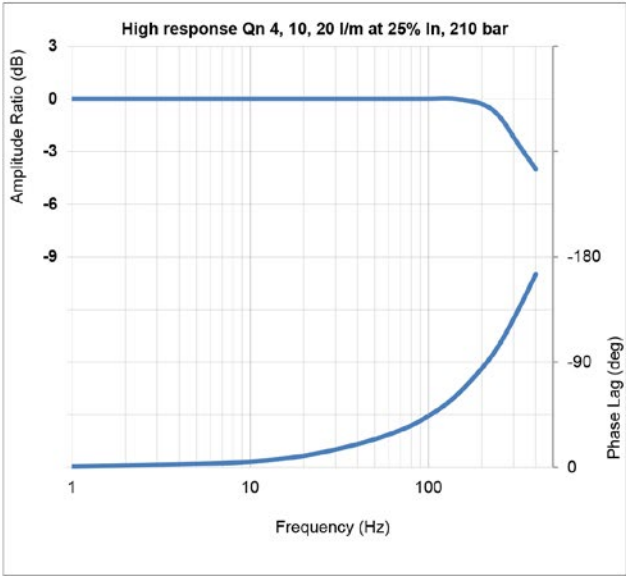
Internal Leakage v Input Signal



TECHNICAL DATA



TECHNICAL DATA



DIMENSIONS

INSTALLATION DETAILS

Mounting Screws

Socket head cap screws M8 x 50 - 10.9 ISO 4762

Null Adjust (Mechanical)

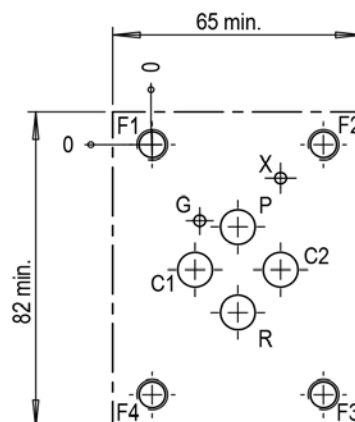
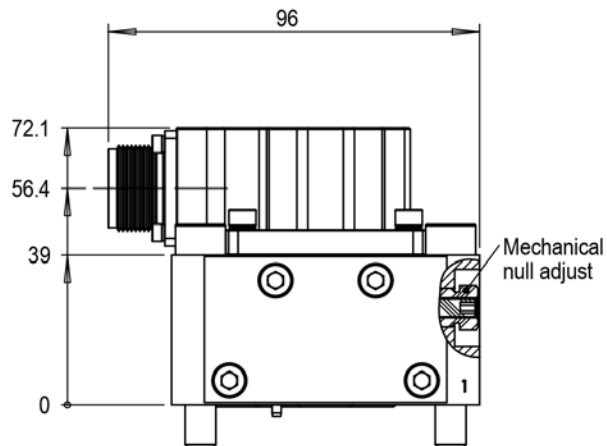
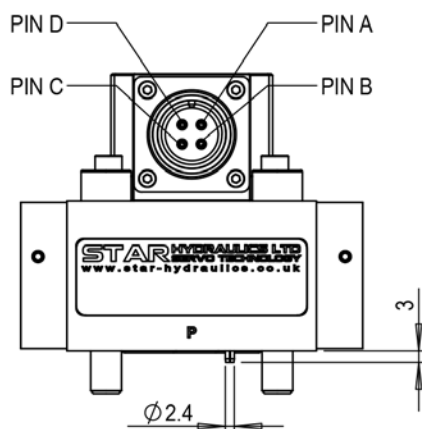
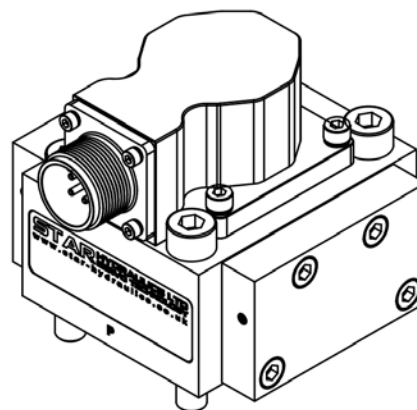
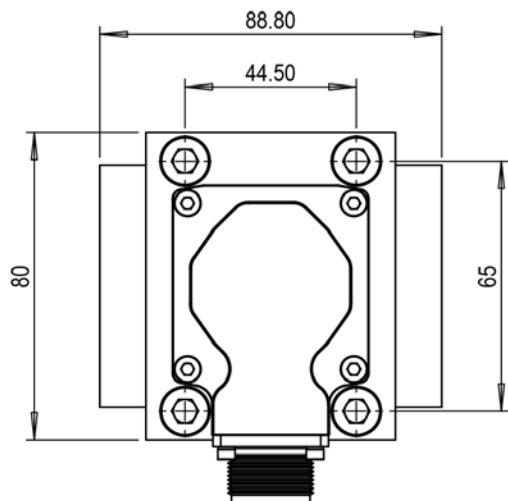
- 2.5 Hex socket & 10 A/F lock nut
- Slacken/loosen lock nut (CCW) half-turn with 10 A/F ring spanner
- Insert 2.5 Hex key into socket and rotate to obtain required null / offset value
- Hold Hex key in desired position then tighten lock nut to 2 Nm

Porting Details

P, C1, C2, R ports $\varnothing 9.0$, $\perp \varnothing 14.25 \nabla 1.40$ on 22.2 P.C.D.

Interface Seals

Ports P, C1, C2, R - ID 10.82 x $\varnothing 1.78$ O-Ring



MOUNTING INTERFACE CONFORMS TO ISO 10372-04-04-0-92 (X PORT MUST NOT BE USED)

	P	C1	C2	R	X	F1	F2	F3	F4	G
SIZE	$\varnothing 9$	$\varnothing 9$	$\varnothing 9$	$\varnothing 9$	-	M8	M8	M8	M8	$\varnothing 3 \nabla 5$
X	22.25	11.14	33.35	22.25	-	0	44.50	44.50	0	12.35
Y	21.39	32.50	32.50	43.61	-	0	0	65	65	19.80
Surface flat within 0.01 / 100 : finish better than 0.8 μm										



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