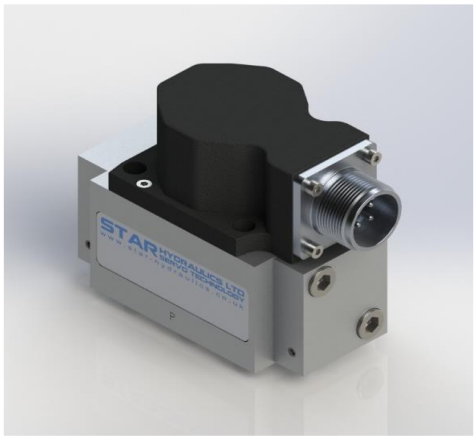
STAR

series

455

2-Stage Servovalve
Rated flows up to 40 l/m



Features

Standard & high response versions
Maximum operating pressure 315 bar
ISO 10372-03-03-0-92 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

Star Hydraulics Limited
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Tewkesbury Business Park
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England (UK)

www.star-hydraulics.co.uk

ST-455-2016.1-En

Benefits and Features

Sapphire ball in slot design

- Incorporated into Star designs since 1988
- 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
- Extended warranties available

Safety

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

Quality

- Independant audit process is our commitment on quality
- Focus on customer needs and expectations
- Delivery schedules on time
- Continual improvements on products and services
- Maintaining design and manufacturing integrity

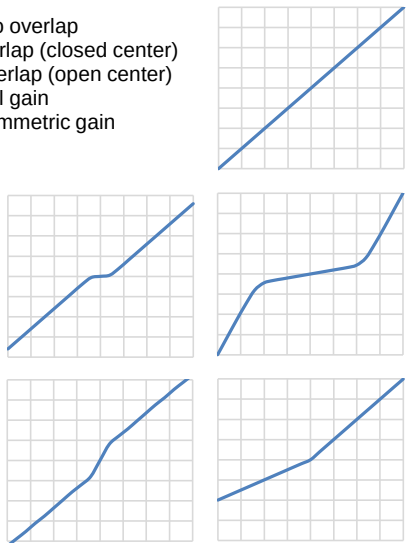
A +, D -

Special projects

- Compact servo designs
- Special interfaces
- Modular components

Custom spool lap & bushing port geometries

- Zero overlap
- Overlap (closed center)
- underlap (open center)
- Dual gain
- Asymmetric gain



Sealing materials

- Nitrile
- Fluorocarbon (Viton)
- Ethylene-Propylene
- Fluorosilicone

Sapphire flow

- Ensuring first stage stability
- Precisely matched flow properties
- Long life in extreme environments

Special connectors

- MIL-C-5015
- MIL-DTL-38999
- Conduit style male/female
- Hermetic

Technical data

Hydraulic

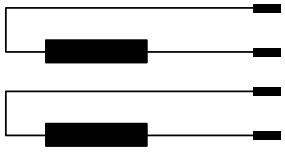
Nominal flow ratings [±10%]	at 70 bar Δp	
	standard response	2, 4, 10, 20, 40 l/m
	high response	4, 10, 20, 40 l/m
Operating pressure (max)	Ports	P, C1, C2, R
Seal material	*NBR, FPM*	315 bar
Fluid viscosity range (recommended)		10 to 100 mm^2/s (cSt)
Fluid type		Mineral oil to ISO 11158, DIN 51524 or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

Operational parameters

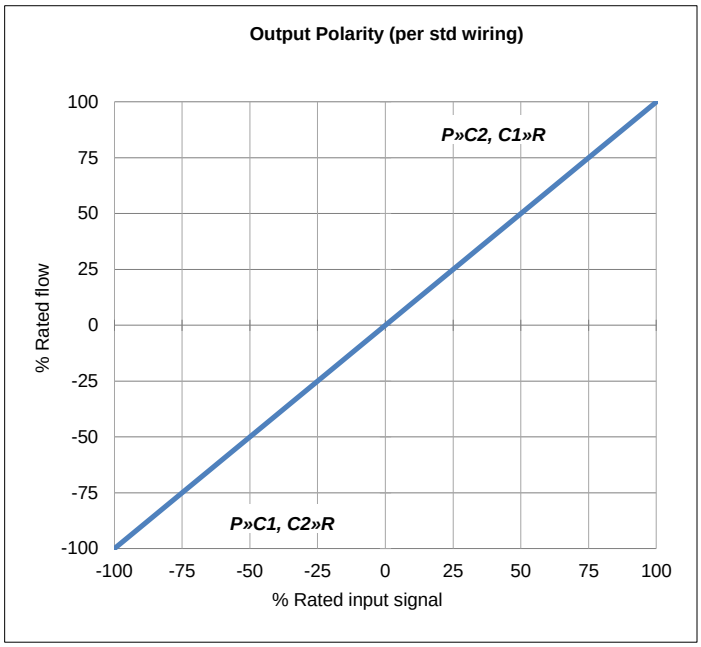
Hysteresis			≤ 3.0% without dither
Threshold			≤ 0.5% without dither
Null shift		ΔT 40°C	≤ 2.0%
Internal leakage		140 bar supply (0.5% overlap)	
		2, 4, 10 l/m	≤ 1.2 l/m
		20, 40 l/m	≤ 1.6 l/m
Load pressure difference		1% input	≥ 30% of supply pressure can be as high as 100%
Response time		0-100% rated spool stroke	
	standard response	2, 4, 10, 20, 40 l/m	8 ms
	high response	4, 10, 20 l/m	4.5 ms
		40 l/m	6 ms
Mounting pattern			ISO 10372-03-03-0-92
Mounting position			Any, fixed or movable
Weight		std unit	0.8 kg
Design protection		EN 60529	IP 65
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
Temperature range			-30 to 135 °C

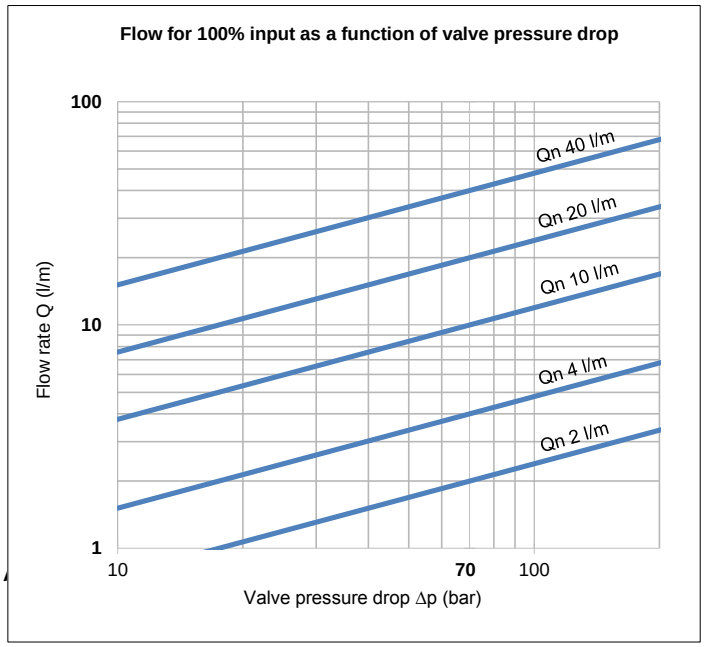
Technical data

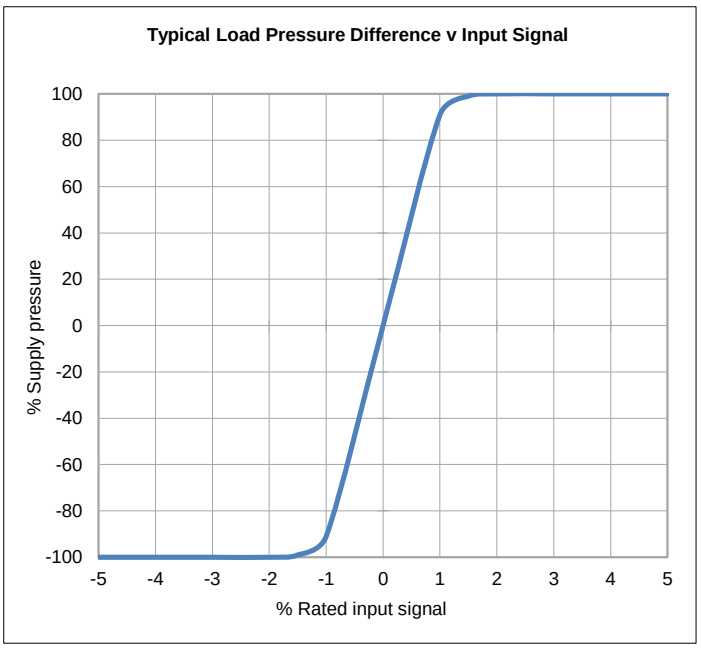
Electrical

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	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 factory for more options					
Standard connector orientation		N/A					
	also available over	C2, C1 port; please advise when ordering					

Technical data







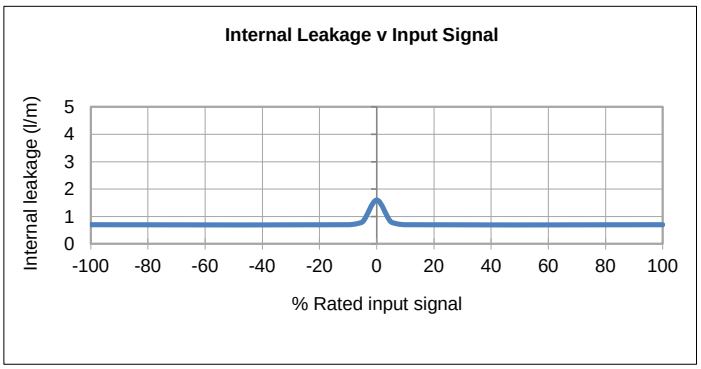
The flow tolerance for standard servovalves is ±10% of the rated flow at 100% rated input signal.

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 signifcantly.

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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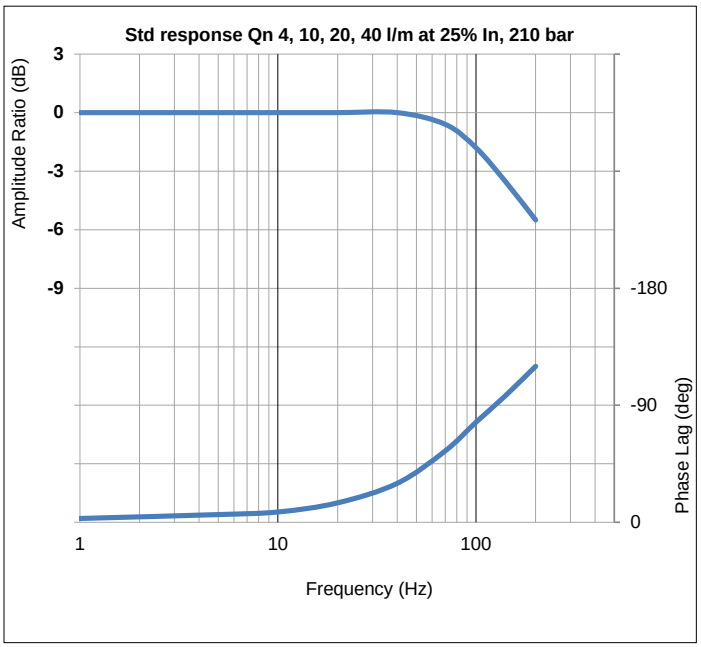
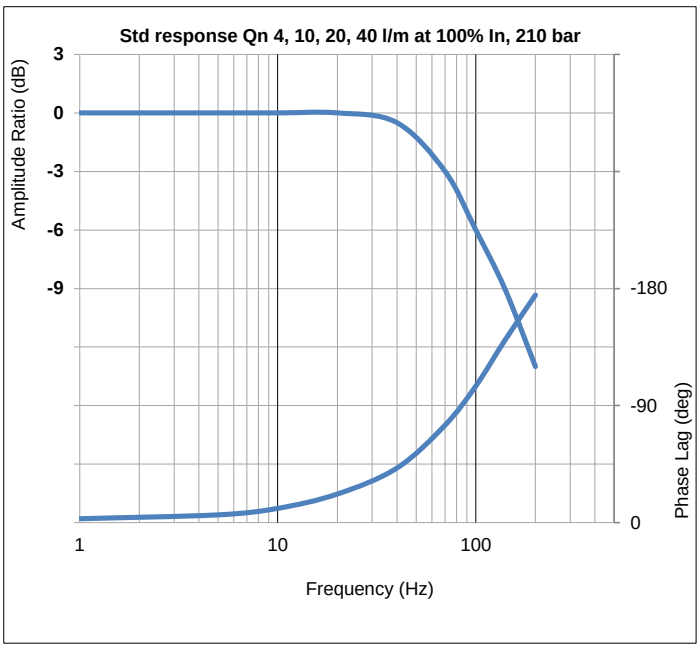
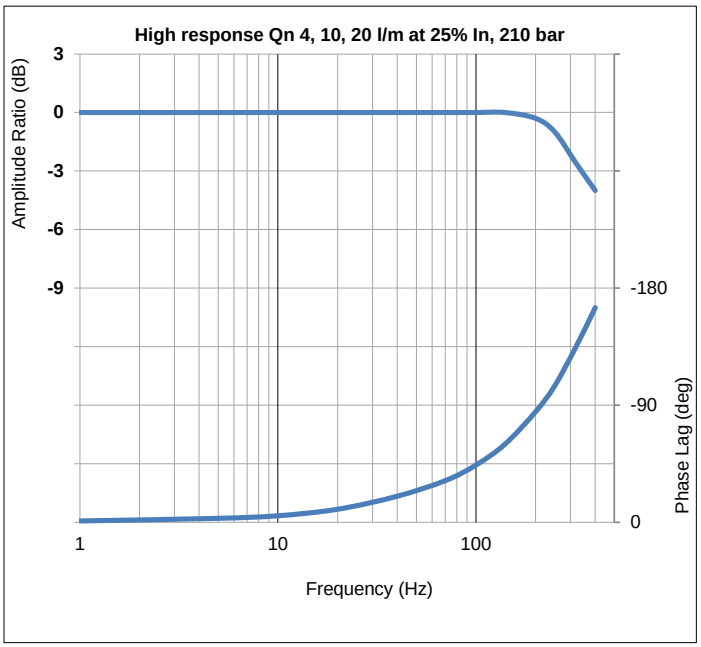
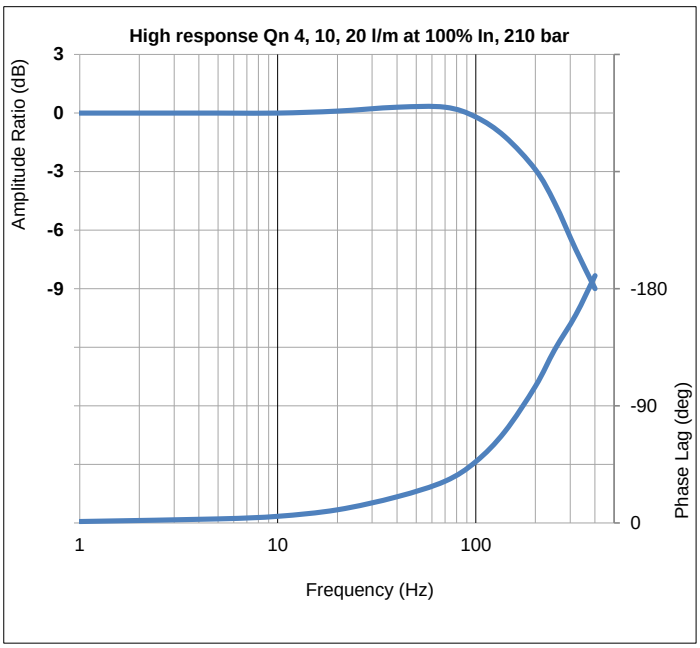
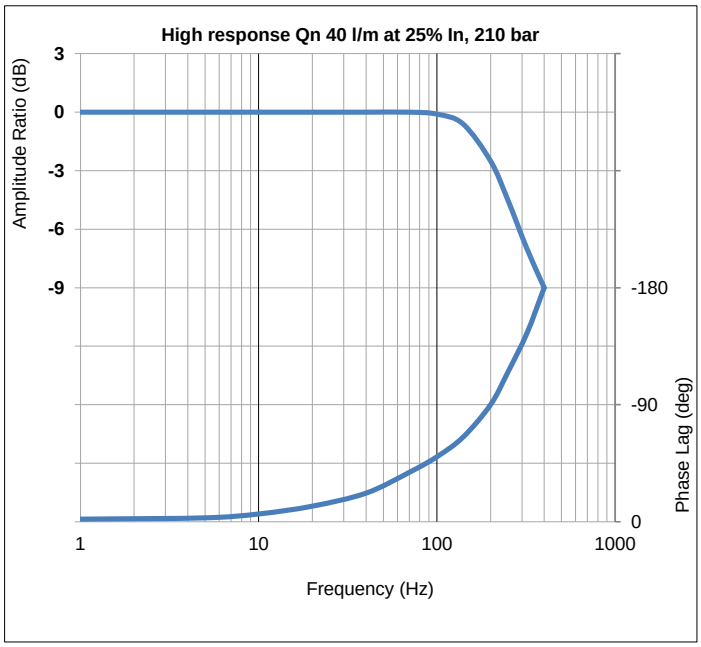
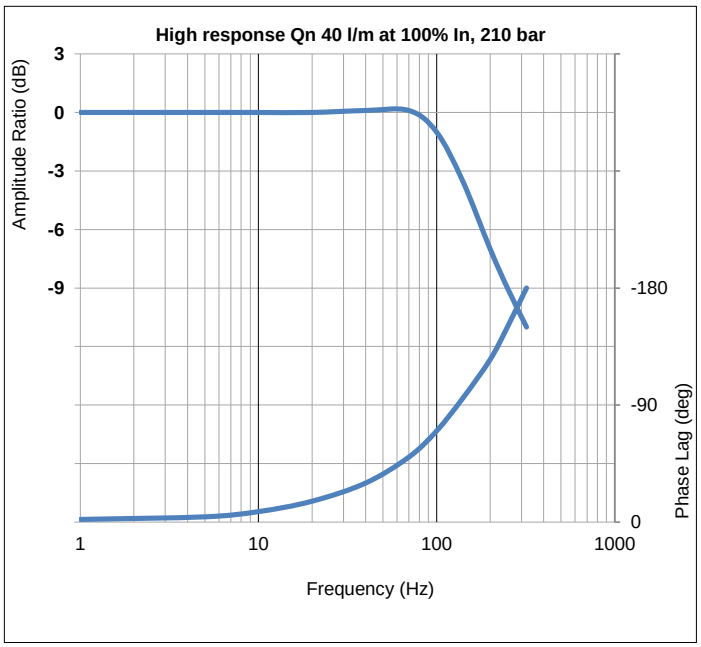




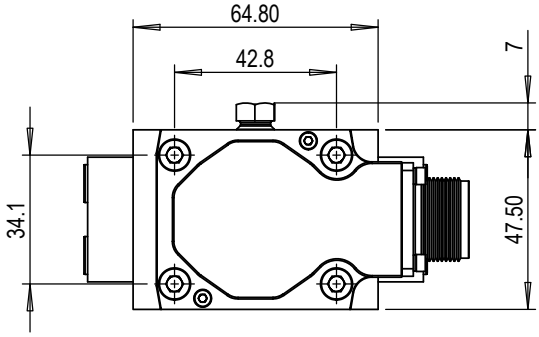


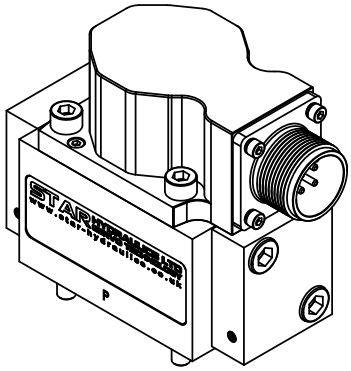


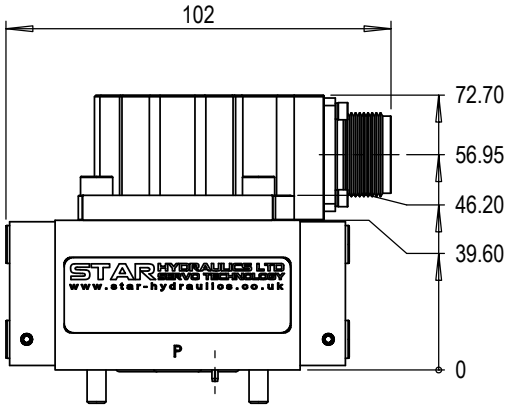


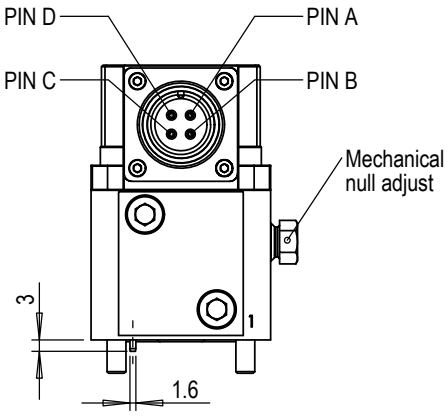


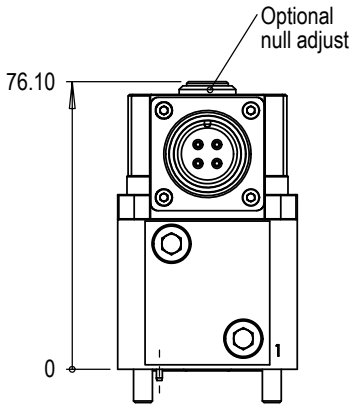
Mounting screws	Skt head cap screws M5 x 55 10.9 ISO 4762
Null adjust (Mechanical)	- 2.5 hex skt & 10 A/F lock nut - slacken lock nut (ccw) half-turn with 10 A/F ring spanner - insert 2.5 hex key into socket and rotate to obtain required null / offset value - hold hexagon key in desired position then tighten lock nut to 2 Nm
Optional null adjust	- 2.5 hex skt - insert 2.5 hex key into socket and rotate to obtain required null / offset value
Porting details	P, C1, C2, R ports ⌀7.5, ⌴ ⌀12.70 ↧1.40 on 19.8 P.C.D.
Interface seals	Ports P, C1, C2, R - ID 9.25 x ⌀1.78 O-Ring



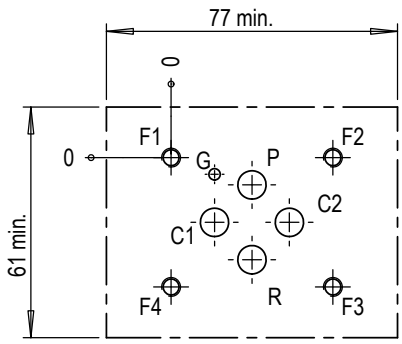








Mounting interface conforms to ISO 10372-03-03-0-92									
	P	C1	C2	R	F1	F2	F3	F4	G
size	⌀7.5	⌀7.5	⌀7.5	⌀7.5	M5	M5	M5	M5	⌀3↧5
x	21.40	11.50	31.30	21.40	0	42.80	42.80	0	11.50
y	7.20	17.10	17.10	27	0	0	34.20	34.20	4.40
Surface flat within 0.01 / 100 : finish better than 0.8 µm									

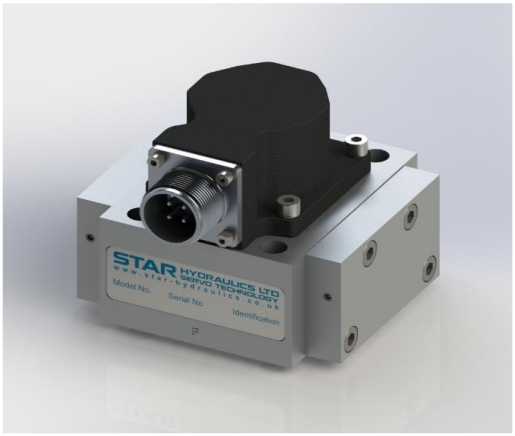


STAR

series

552

2-Stage Servovalve
Rated flows up to 75 l/m



Features

Standard & high response versions
Maximum operating pressure 315 bar
ISO 10372-04-04-0-92 mounting pattern
External pilot supply (5 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

Star Hydraulics Limited
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www.star-hydraulics.co.uk

ST-552-2016.1-En

Benefits and Features

Sapphire ball in slot design

- Incorporated into Star designs since 1988
- 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
- Extended warranties available

Safety

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

Quality

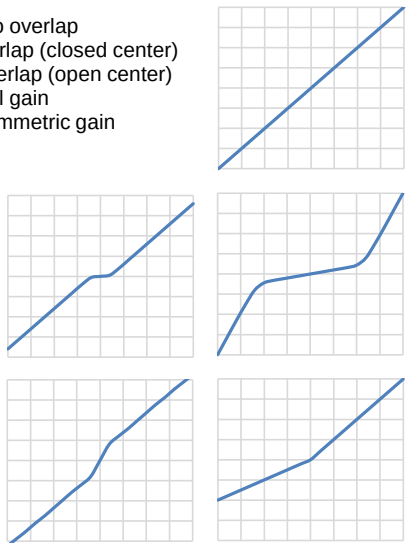
- Independant audit process is our commitment on quality
- Focus on customer needs and expectations
- Delivery schedules on time
- Continual improvements on products and services
- Maintaining design and manufacturing integrity

Special projects

- Compact servo designs
- Special interfaces
- Modular components

Custom spool lap & bushing port geometries

- Zero overlap
- Overlap (closed center)
- underlap (open center)
- Dual gain
- Asymmetric gain



Sealing materials

- Nitrile
- Fluorocarbon (Viton)
- Ethylene-Propylene
- Fluorosilicone

Sapphire flow

- Ensuring first stage stability
- Precisely matched flow properties
- Long life in extreme environments

Special connectors

- MIL-C-5015
- MIL-DTL-38999
- Conduit style male/female
- Hermetic

Technical data

Hydraulic

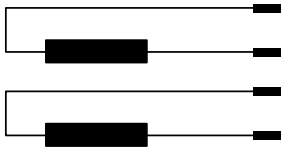
Nominal flow ratings [±10%]	at 70 bar Δp		
	standard response	2, 4, 10, 20, 40, 60, 75 l/m	
	high response	4, 10, 20, 40 l/m	
Operating pressure (max)	Ports	P, C1, C2, X	R
Seal material	*NBR, FPM*	315 bar	315 bar
	EPDM	280 bar	210 bar
Fluid viscosity range (recommended)		10 to 100 mm^2/s (cSt)	
Fluid 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 μm abs), non by-pass & indicator	
	Off-line	Beta 2 = 1000 (2 μm abs)	
Fluid cleanliness	ISO 4406: 1999		
	minimum	16/ 14/ 11	
	recommended	15/ 13/ 10	

Operational parameters

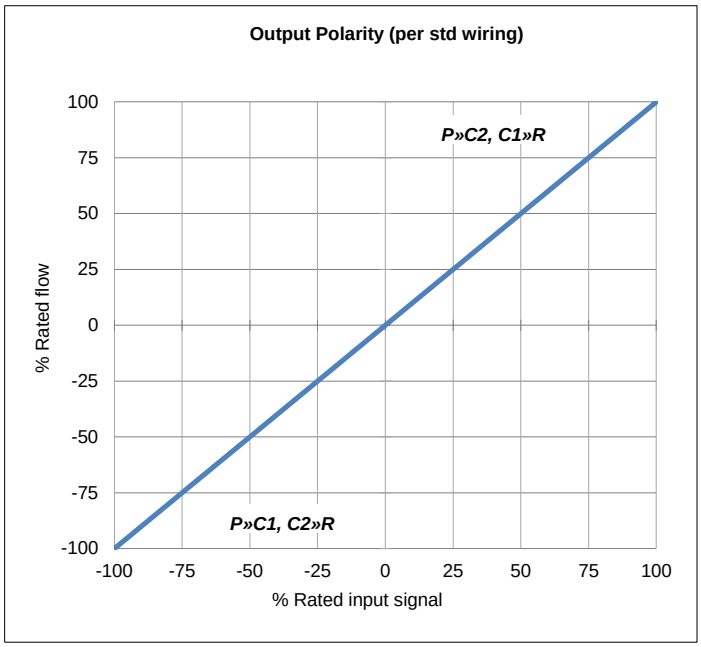
Hysteresis		≤ 3.0% without dither	
Threshold		≤ 0.5% without dither	
Null shift	ΔT 40°C	≤ 2.0%	
Internal leakage	140 bar supply (0.5% overlap)		
	2, 4, 10 l/m	≤ 1.2 l/m	
	20, 40, 60, 75 l/m	≤ 1.6 l/m	
Load pressure difference	1% input	≥ 30% of supply pressure can be as high as 100%	
Response time	0-100% rated spool stroke		
standard response	2, 4, 10, 20, 40 l/m	8 ms	
	60 l/m	13 ms	
	75 l/m	15 ms	
high response	4, 10, 20 l/m	4.5 ms	
	40 l/m	6 ms	
Mounting pattern		ISO 10372-04-04-0-92 with X port	
Mounting position		Any, fixed or movable	
Weight	std unit	1.1 kg	
Design protection	EN 60529	IP 65	
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	

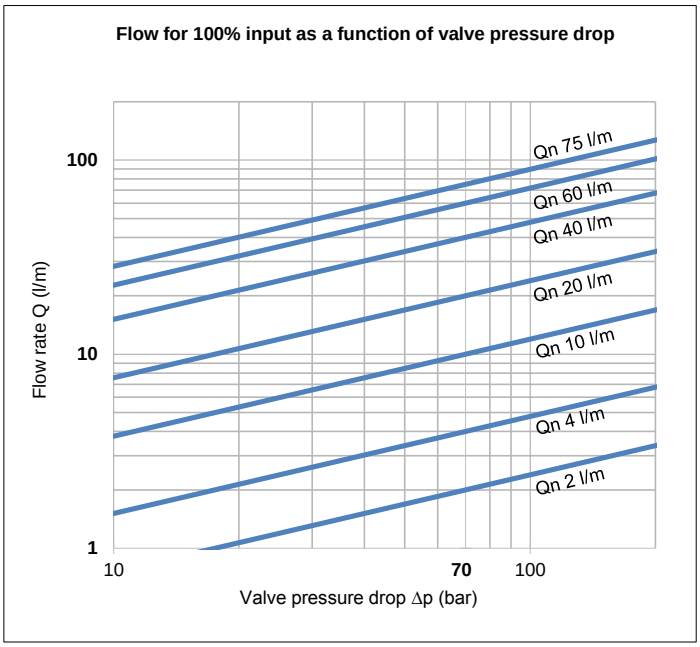
Technical data

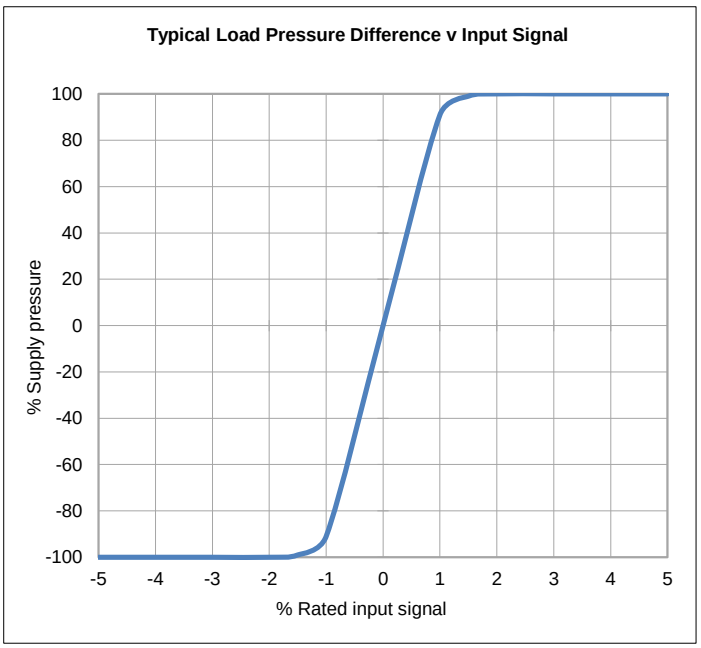
Electrical

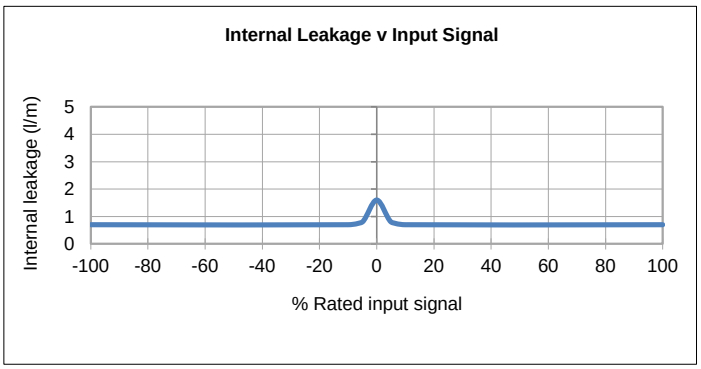
Rated input ± (mA)	single (differential)	**8**	**15**	**30**	**40**	**100**	**200**
Other coil rates available	series	4	7.5	15	20	50	100
	parallel	8	15	30	40	100	200
Coil resistance (Ω)	per coil	1000	200	300	80	28	22
Power (W)	single	0.064	0.045	0.27	0.128	0.280	0.88
	series	0.032	0.023	0.135	0.064	0.140	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 factory for more options					
Standard connector orientation		P port					
	also available over	C1, C2 or R port; please advise when ordering					

Technical data









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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 signifcantly.

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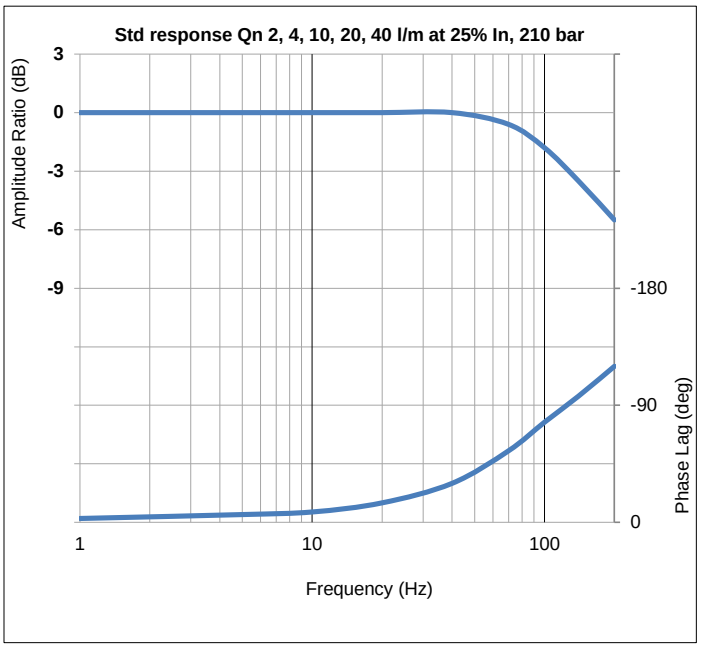

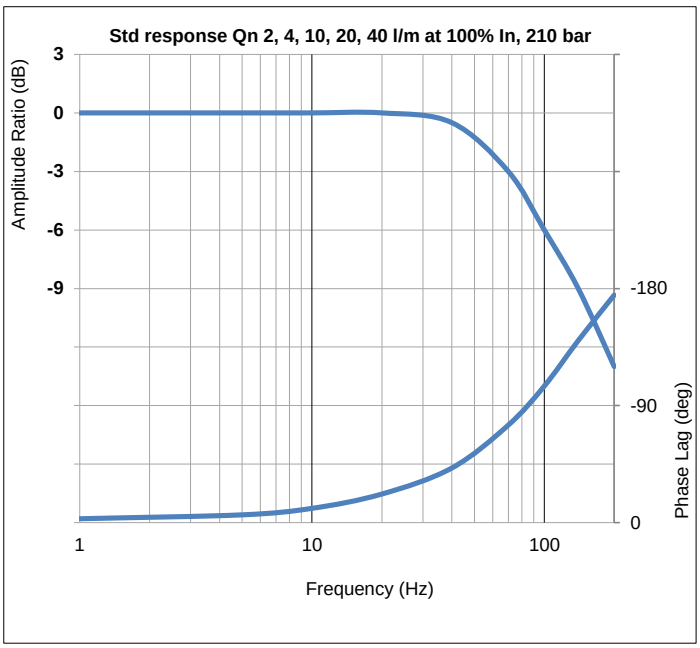

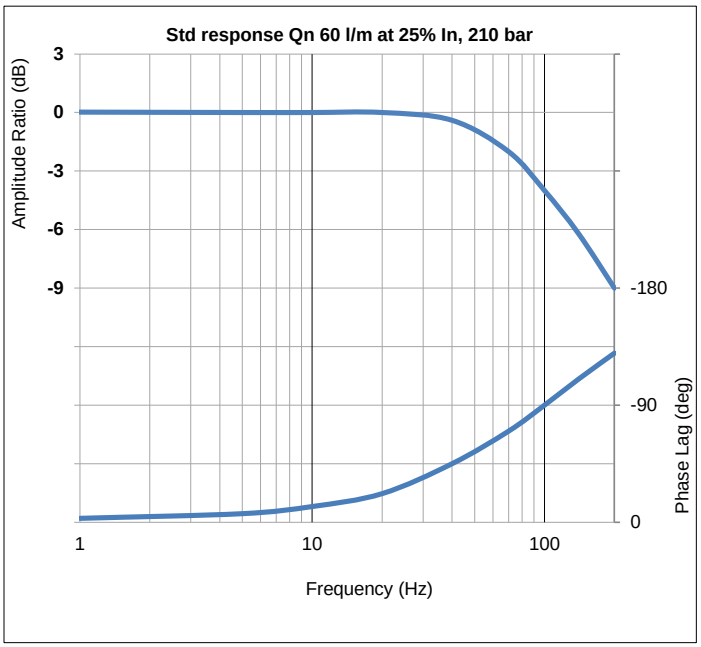

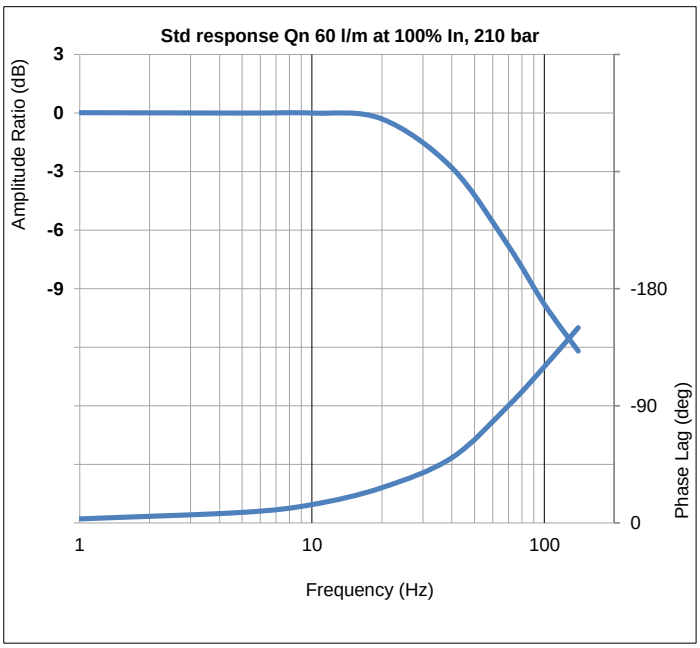

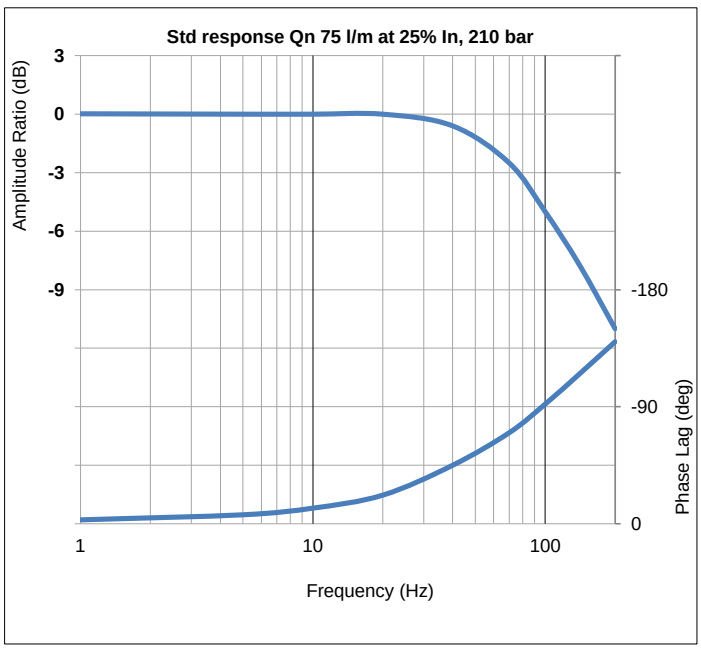

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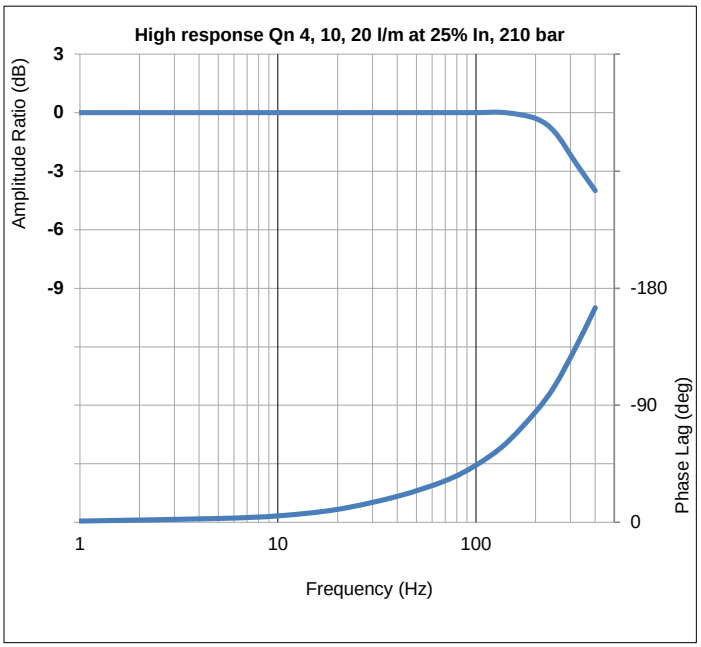
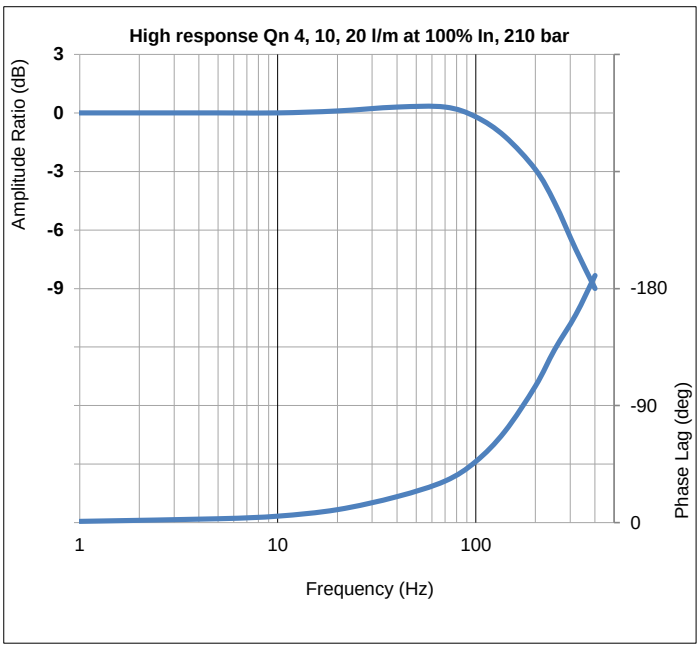
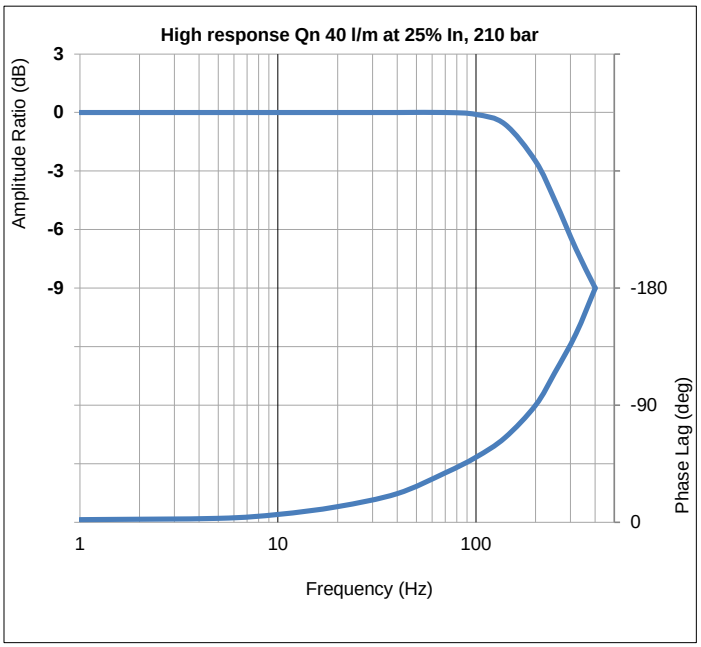
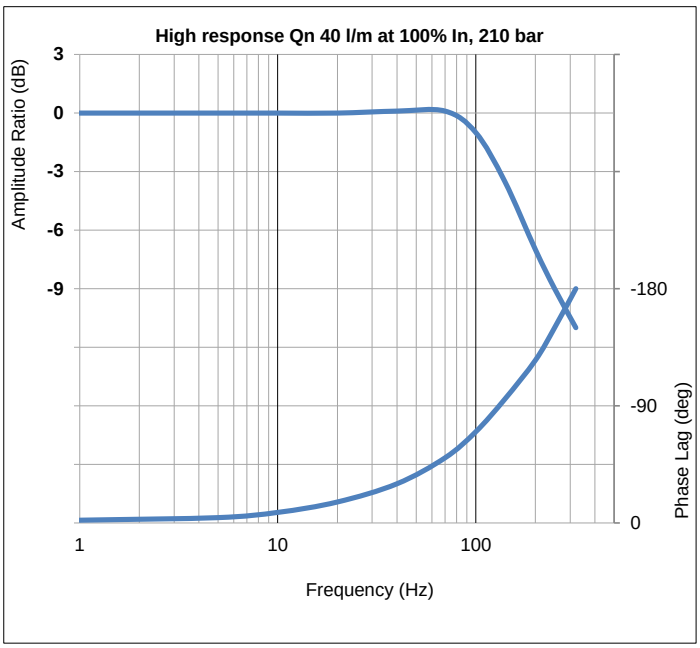


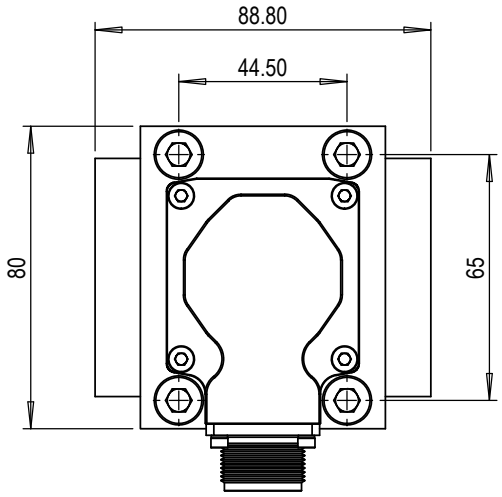


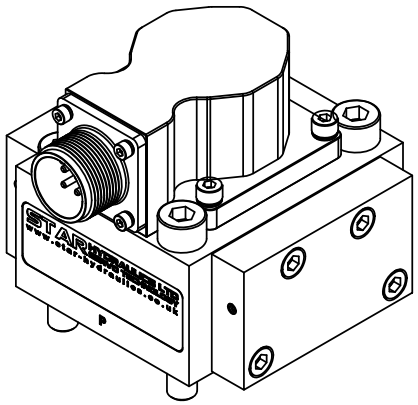


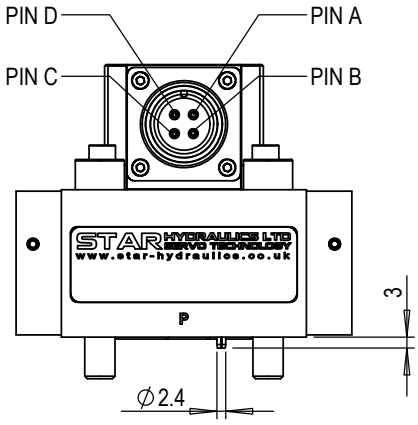


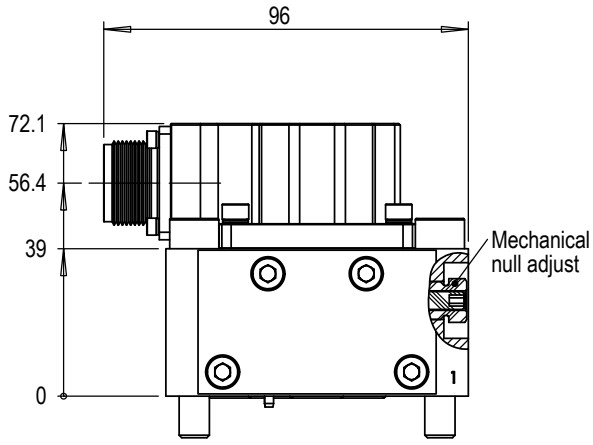
552 series
INSTALLATION DETAILS

Mounting screws	Skt head cap screws M8 x 50 - 10.9 ISO 4762
Null adjust (Mechanical)	- 2.5 hex skt & 10 A/F lock nut - slacken 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 hexagon key in desired position then tighten lock nut to 2 Nm
Porting details	P, C1, C2, R ports ⌀9.0 ⌴ ⌀14.25 ↧1.40 on 22.2 P.C.D. X port ⌀3.0 ⌴ ⌀14.25 ↧1.40
Interface seals	Ports P, C1, C2, R, X - ID 10.82 x ⌀1.78 O-Ring

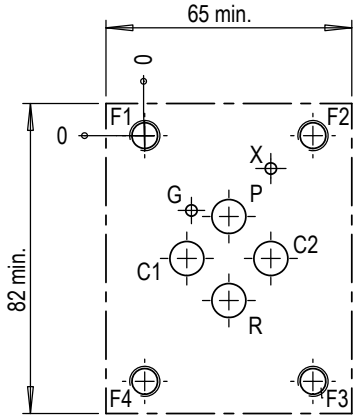








Mounting interface conforms to ISO 10372-04-04-0-92										
	P	C1	C2	R	X	F1	F2	F3	F4	G
size	⌀9	⌀9	⌀9	⌀9	⌀3	M8	M8	M8	M8	⌀3 ↧5
x	22.25	11.14	33.35	22.25	33.35	0	44.50	44.50	0	12.35
y	21.39	32.50	32.50	43.61	8.70	0	0	65	65	19.80
Surface flat within 0.01 / 100 : finish better than 0.8 µm										

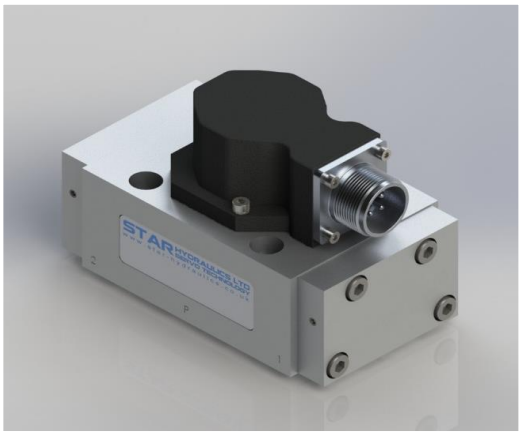


STAR

series

1552

2-Stage Servovalve
Rated flows up to 70 l/m



Features

Standard & high response versions
Maximum operating pressure 315 bar
ISO 4401-05 mounting pattern
External 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

Star Hydraulics Limited
Severn Drive
Tewkesbury Business Park
Tewkesbury
Gloucestershire
GL20 8SF
England (UK)

www.star-hydraulics.co.uk

ST-1552-2016.1-En

Benefits and Features

Sapphire ball in slot design

- Incorporated into Star designs since 1988
- 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
- Extended warranties available

Safety

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

Quality

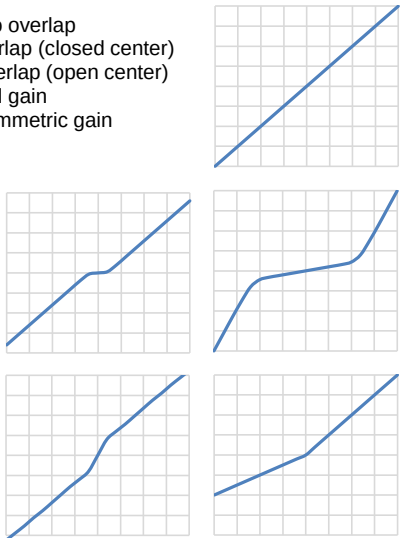
- Independant audit process is our commitment on quality
- Focus on customer needs and expectations
- Delivery schedules on time
- Continual improvements on products and services
- Maintaining design and manufacturing integrity

Special projects

- Compact servo designs
- Special interfaces
- Modular components

Custom spool lap & bushing port geometries

- Zero overlap
- Overlap (closed center)
- underlap (open center)
- Dual gain
- Asymmetric gain



Sealing materials

- Nitrile
- Fluorocarbon (Viton)
- Ethylene-Propylene
- Fluorosilicone

Sapphire flow

- Ensuring first stage stability
- Precisely matched flow properties
- Long life in extreme environments

Special connectors

- MIL-C-5015
- MIL-DTL-38999
- Conduit style male/female
- Hermetic

Technical data

Hydraulic

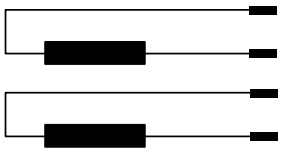
Nominal flow ratings [±10%]	at 70 bar Δp		
	standard response	4, 10, 20, 40, 60, 70 l/m	
	high response	4, 10, 20, 40 l/m	
Operating pressure (max)	Ports	P, C1, C2, X	R
Seal material	*NBR, FPM*	315 bar	315 bar
	EPDM	280 bar	210 bar
Fluid viscosity range (recommended)		10 to 100 mm^2/s (cSt)	
Fluid type		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 μm abs), non by-pass & indicator	
	Off-line	Beta 2 = 1000 (2 μm abs)	
Fluid cleanliness	ISO 4406: 1999		
	minimum	16/ 14/ 11	
	recommended	15/ 13/ 10	

Operational parameters

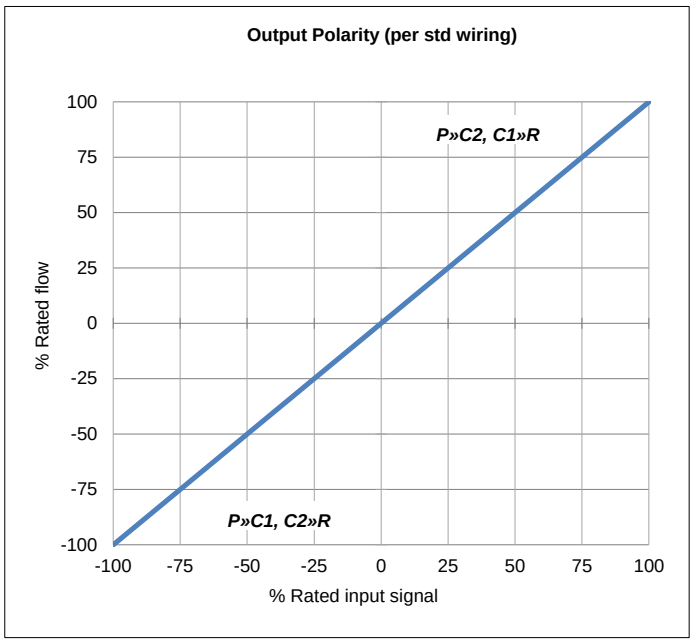
Hysteresis		≤ 3.0% without dither	
Threshold		≤ 0.5% without dither	
Null shift	ΔT 40°C	≤ 2.0%	
Internal leakage	140 bar supply (0.5% overlap)		
	2, 4, 10 l/m	≤ 1.2 l/m	
	20, 40, 60, 75 l/m	≤ 1.6 l/m	
Load pressure difference	1% input	≥ 30% of supply pressure can be as high as 100%	
Response time	0-100% rated spool stroke		
standard response	2, 4, 10, 20, 40 l/m	8 ms	
	60 l/m	13 ms	
	70 l/m	15 ms	
high response	4, 10, 20 l/m	4.5 ms	
	40 l/m	6 ms	
Mounting pattern		ISO 4401-05 with special X port location	
Mounting position		Any, fixed or movable	
Weight	std unit	1.1 kg	
Design protection	EN 60529	IP 65	
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	

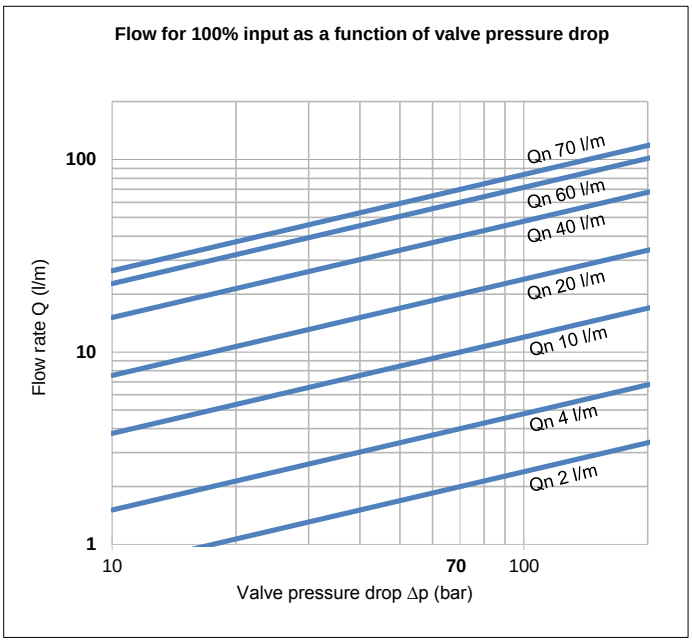
Technical data

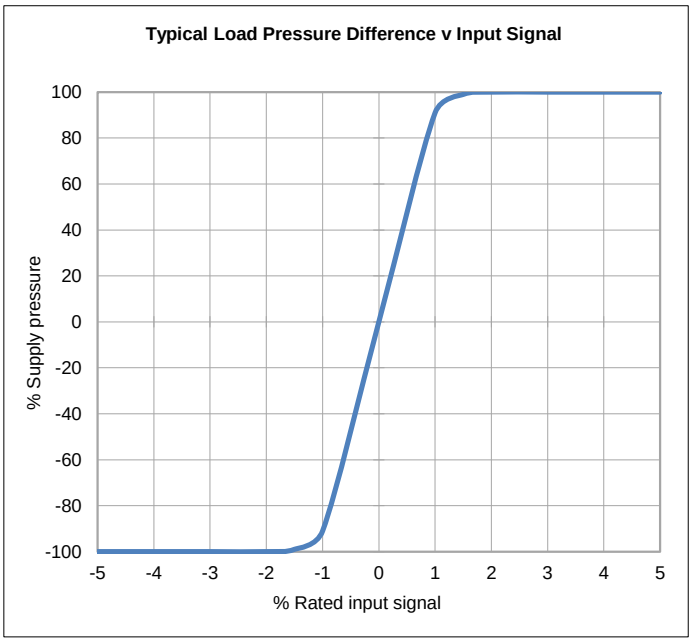
Electrical

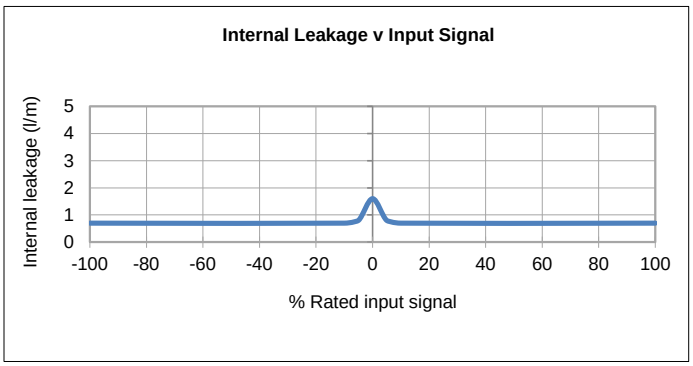
Rated input ± (mA)	single (differential)	**8**	**15**	**30**	**40**	**100**	**200**
Other coil rates available	series	4	7.5	15	20	50	100
	parallel	8	15	30	40	100	200
Coil resistance (Ω)	per coil	1000	200	300	80	28	22
Power (W)	single	0.064	0.045	0.27	0.128	0.280	0.88
	series	0.032	0.023	0.135	0.064	0.140	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 factory for more options					
Standard connector orientation		P port					
	also available over	C1, C2 or R port; please advise when ordering					

Technical data









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

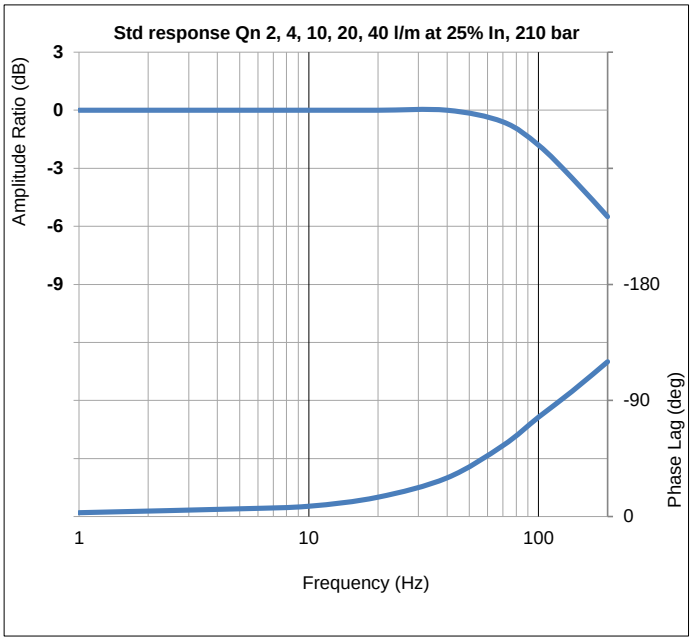
Rated Signal [In] is the specified input voltage or current of either polarity to produce rated flow. Rated input does not include null bias values.

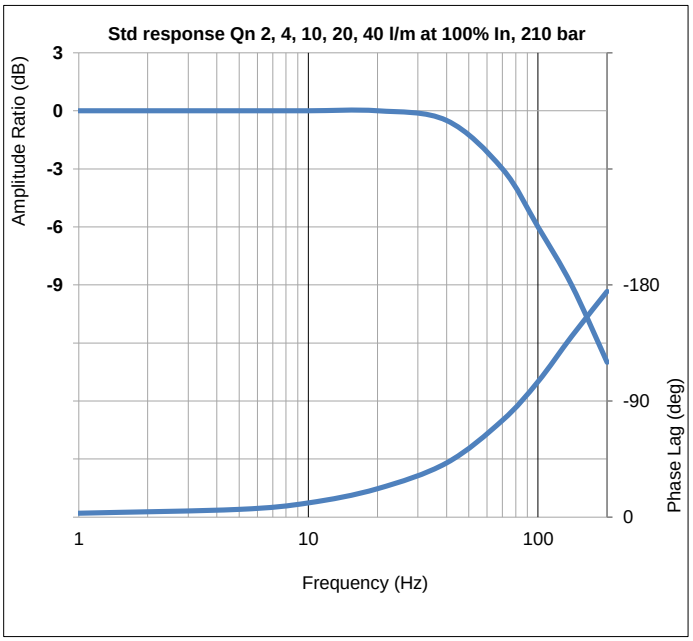
Rated flow corresponds to the flow at rated input at 10 bar or 70 bar, with no load, therefore in 4-way valves there will be a pressure drop of 5 bar or 35 bar respectively across each land.

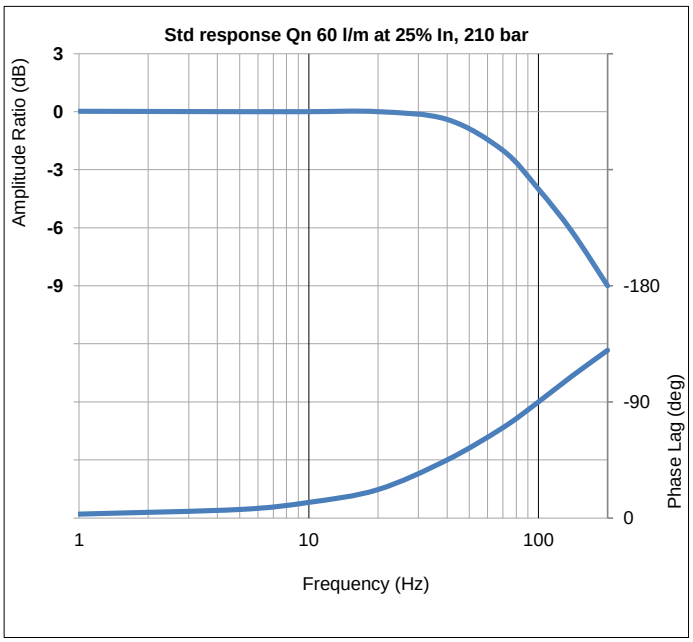
Load pressure difference versus input signal indicates typical differential pressure gain between ports C1 (A) and C2 (B) for standard lap spools. Negative and positive overlap change this characteristic signifcantly.

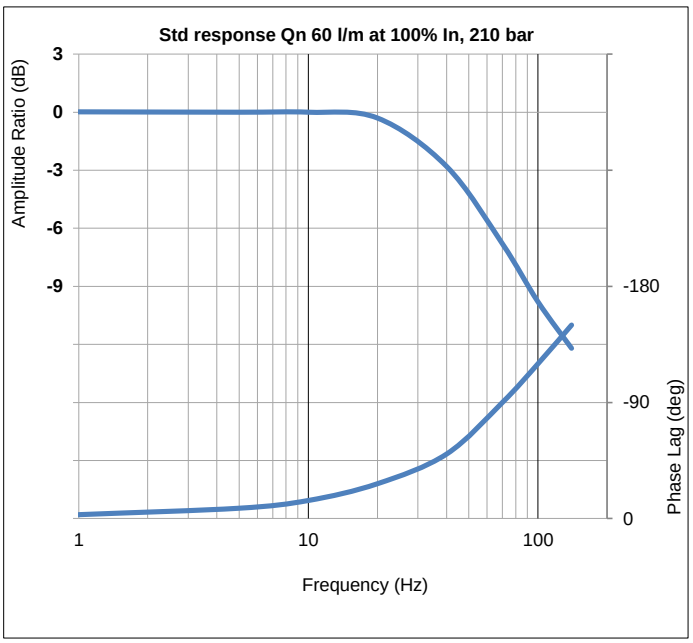
Internal leakage comprises of tare first stage and laminar leakage between spool and sleeve. With critical lap conditions in 4-way designs the leakage peaks through the null region.

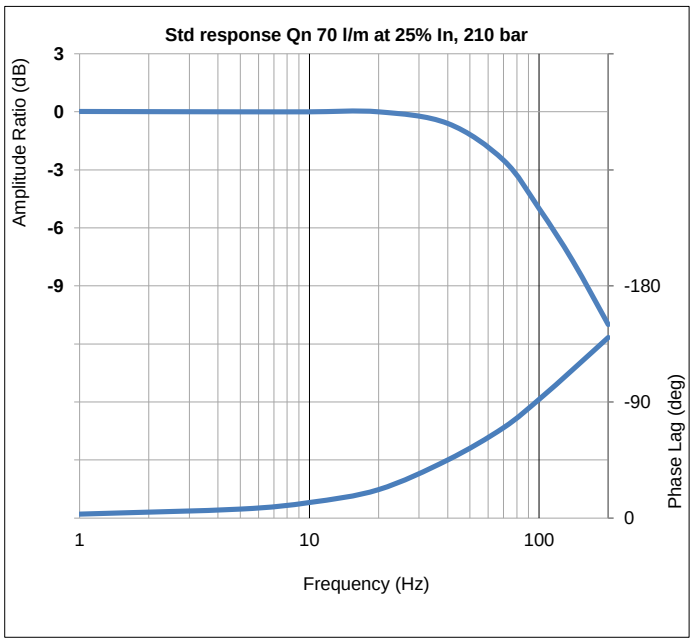
Technical data

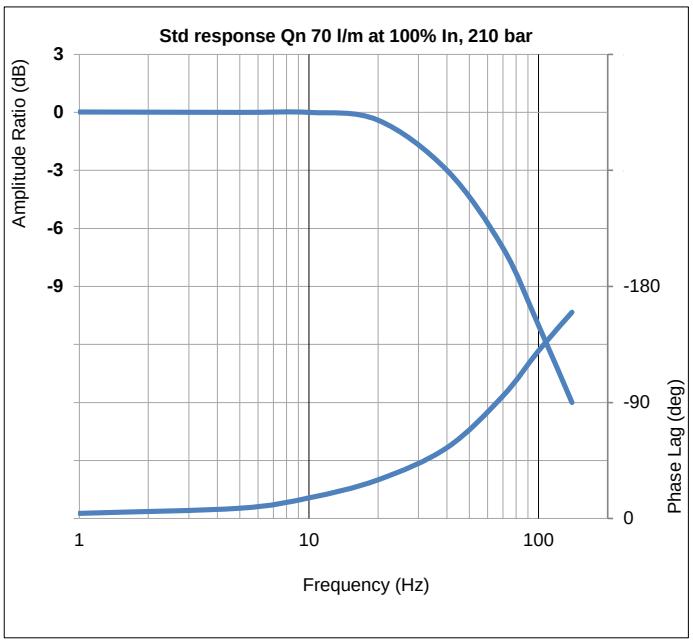




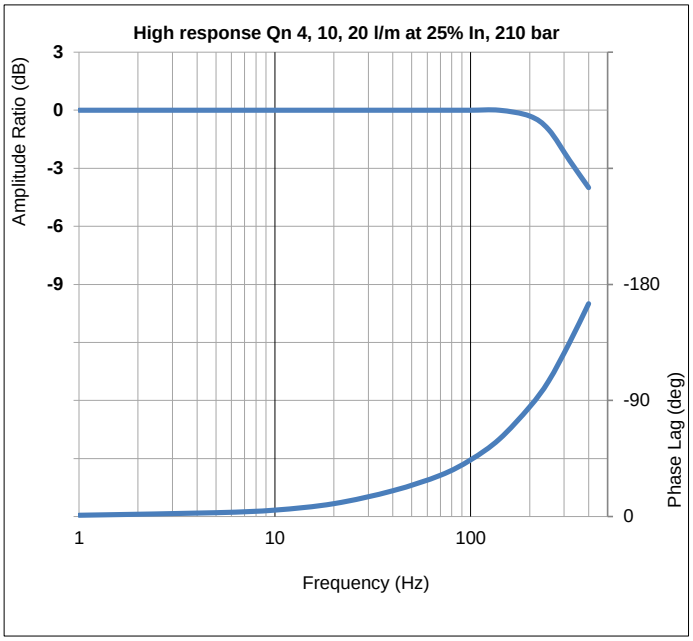


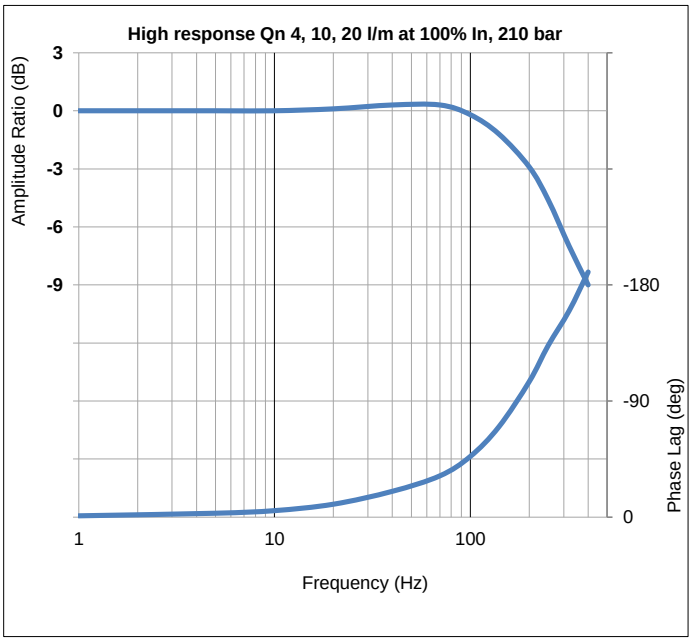


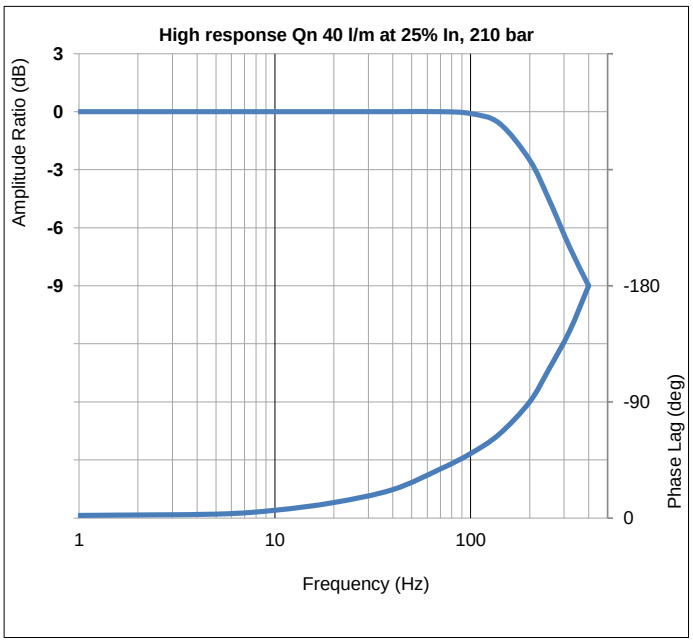


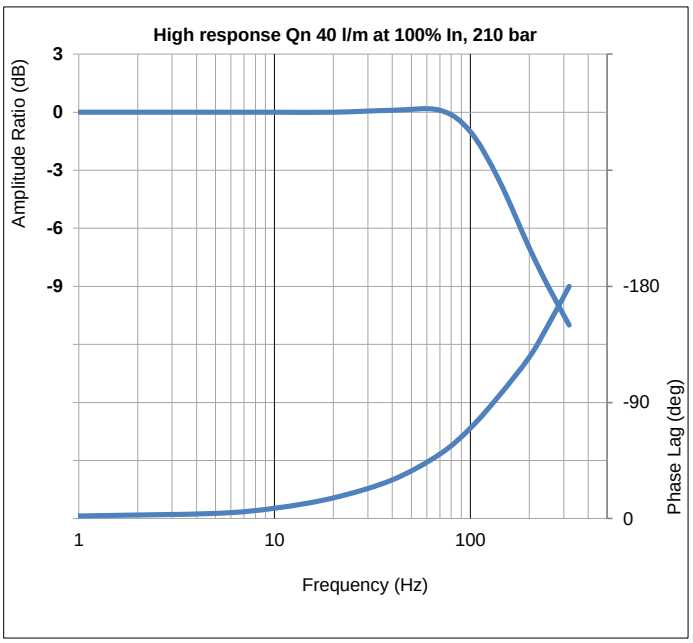


Technical data



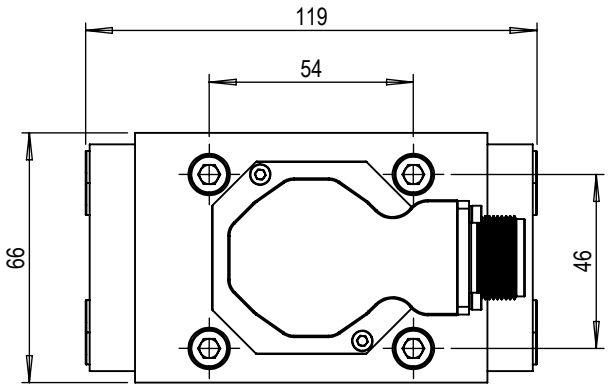


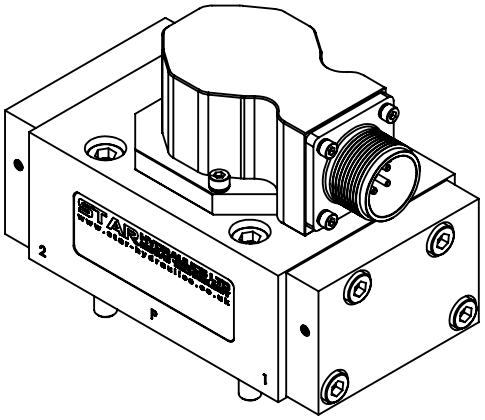


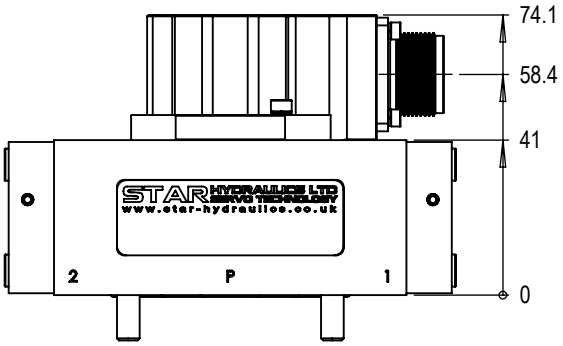


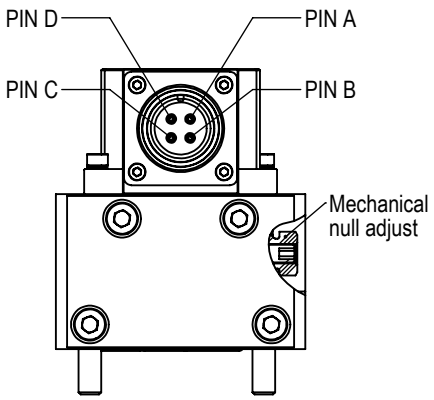
1552 series
INSTALLATION DETAILS

Mounting screws	Skt head cap screws M6 x 45 - 10.9 ISO 4762
Null adjust (Mechanical)	- 2.5 hex skt & 10 A/F lock nut - slacken 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 hexagon key in desired position then tighten lock nut to 2 Nm
Porting details	P, C1, C2, R, R2 ports ⌀9.0, ⌴ ⌀15.85 ↧1.50 X port ⌀3.0 ⌴ ⌀11.85 ↧1.50
Interface seals	Ports P, C1, C2, R, R2 - ID 12.0 x ⌀2.0 O-Ring Port X - ID 8.0 x ⌀2.0 O-Ring

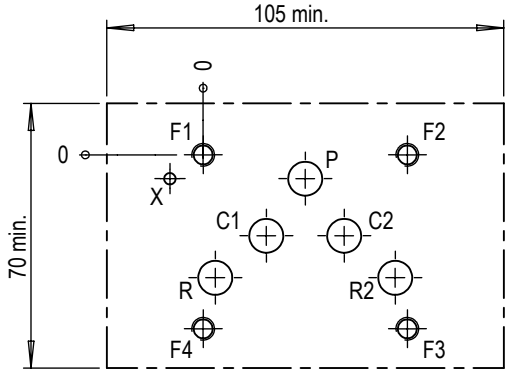








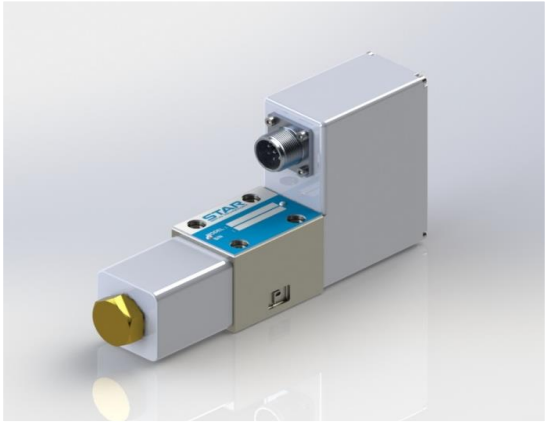
Mounting interface conforms to ISO 10372-04-04-0-92 (X port location non-standard)										
	P	C1	C2	R	R2	X	F1	F2	F3	F4
size	⌀9	⌀9	⌀9	⌀9	⌀9	⌀3	M6	M6	M6	M6
x	27	16.70	37.30	3.20	50.80	8.80	0	54	54	0
y	6.30	21.40	21.40	32.50	32.50	6.30	0	0	46	46
Surface flat within 0.01 / 100 : finish better than 0.8 µm										



series

DD3

Servo proportional valve
Rated flows up to 40 l/m



Features

Direct drive bi-directional linear motor
Maximum operating pressure 350 bar
3-way or 4-way options
Linear & dual-gain flow curve options
Spool in bushing design
3 command signal options
High temperature version

Star Hydraulics Limited
Severn Drive
Tewkesbury Business Park
Tewkesbury
Gloucestershire
GL20 8SF
England (UK)

www.star-hydraulics.co.uk

ST-DD3-2017.3-En

Technical data

Hydraulic

Nominal flow ratings [±10%]	at 70 bar Δp	1, 2, 5, 10, 20, 40 l/m		
Operating pressure (max)	Ports	P, A, B	T without Y	T with Y
		350 bar	250 bar	350 bar
Fluid viscosity range (recommended)		10 to 360 mm^2/s (cSt)		
Fluid type		Mineral oil to ISO 11158, DIN 51524 or equivalent		
		others on request		
Filter rating (recommended)	Pressure line	Beta 10 = 200 (10 μm abs), non by-pass & indicator		
	Off-line	Beta 2 = 1000 (2 μm abs)		
Fluid cleanliness	ISO 4406: 1999			
	minimum	18/ 15/ 12		
	recommended	17/ 14/ 11		

Operational parameters

Hysteresis		≤ 0.2%
Threshold		≤ 0.1%
Null shift	ΔT 40°C	≤ 1.5%
Internal leakage	140 bar supply (0.5% overlap)	
	5, 10, 20 l/m	≤ 0.6 l/min
	40 l/m	≤ 1.0 l/min
Load pressure difference	1% input	≥ 30% of supply pressure can be as high as 100%
Response time	0-100% rated spool stroke	< 12 ms
Max. valve flow		75 l/m
Mounting pattern		ISO 4401-03-03-0-94
Mounting position		Any, fixed or movable
Weight	DD3S	2 kg
	DD3T	1.7 kg
Design protection	EN 60529	IP 67
Shipping protection		Sealed base plate
Seal material options		NBR, FPM
Temperature range	DD3S	-20 to 70 °C
	DD3T	-20 to 160 °C

Technical data - Electrical details

Model DD3S

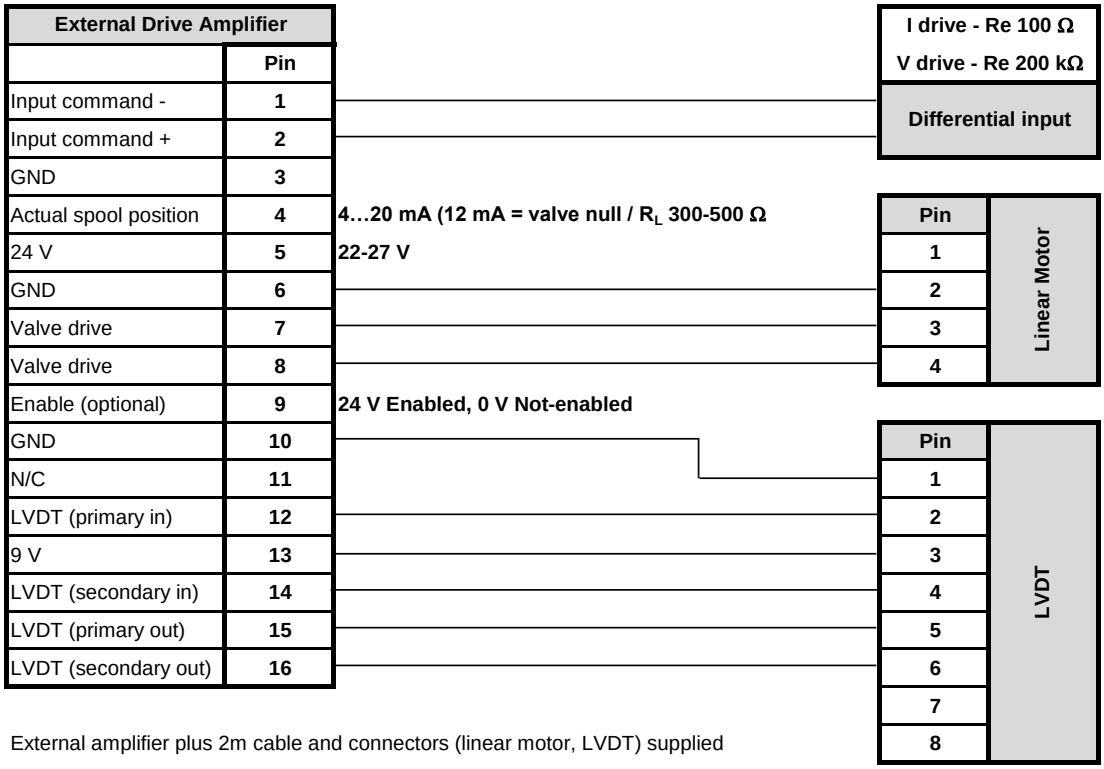
Factory set options are as follows

Pin	Function	Values
A	Supply	24 Vdc (22…27 Vdc)
B	GND	0 V
C	Not used	
D	Input rated command (differential)	±10 V, ±10 mA, 4…20 mA
E	*Inverse bi-polar command signals*	
F	Actual spool position	4…20 mA
PE	Protective earth	

Valve connector type MIL-C-5015 or DIN 43563 6+PE

Mating connector not supplied

Model DD3T

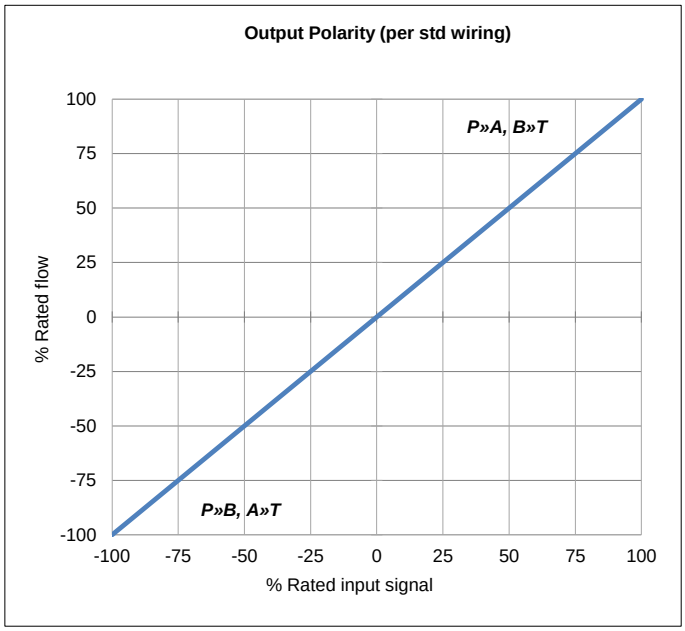


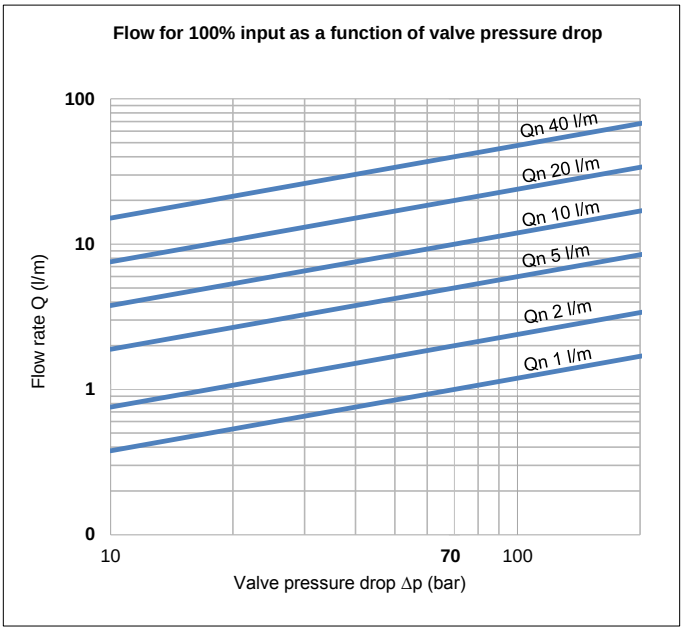
External amplifier plus 2m cable and connectors (linear motor, LVDT) supplied

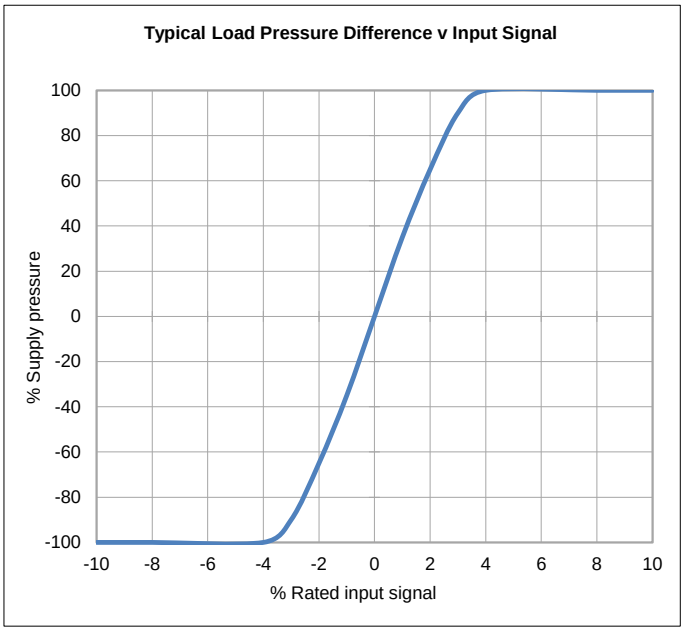
Power supply

Current consumption (max.) 1.8 A

Technical data





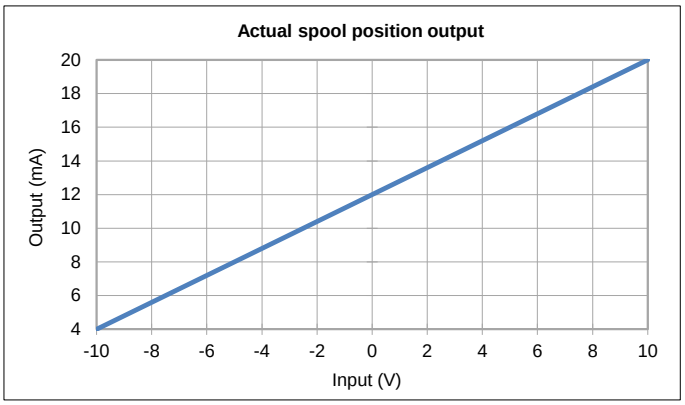


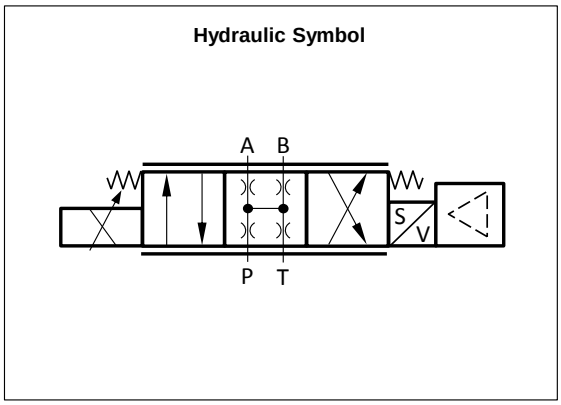
The flow tolerance for is ±10% of the rated flow at 100% rated input signal.

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

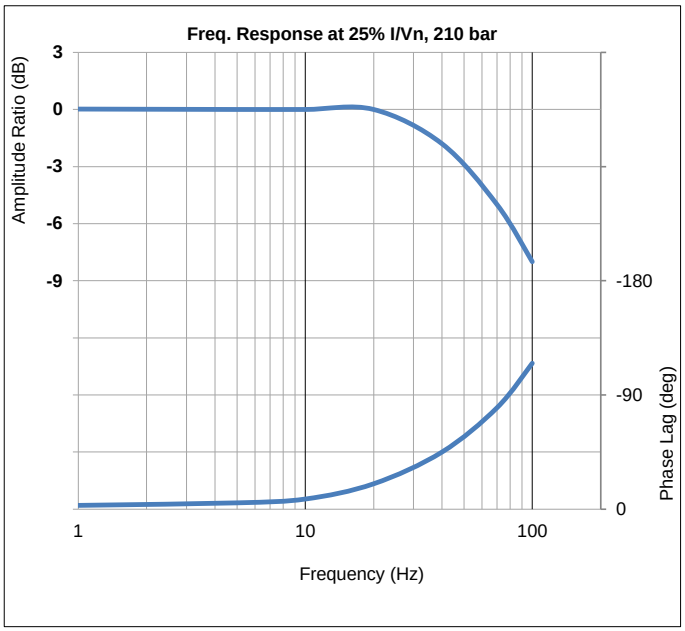
Rated flow corresponds to the flow at rated input at 10 bar or 70 bar, with no load, therefore in 4-way valves there will be a pressure drop of 5 bar or 35 bar respectively across each land.

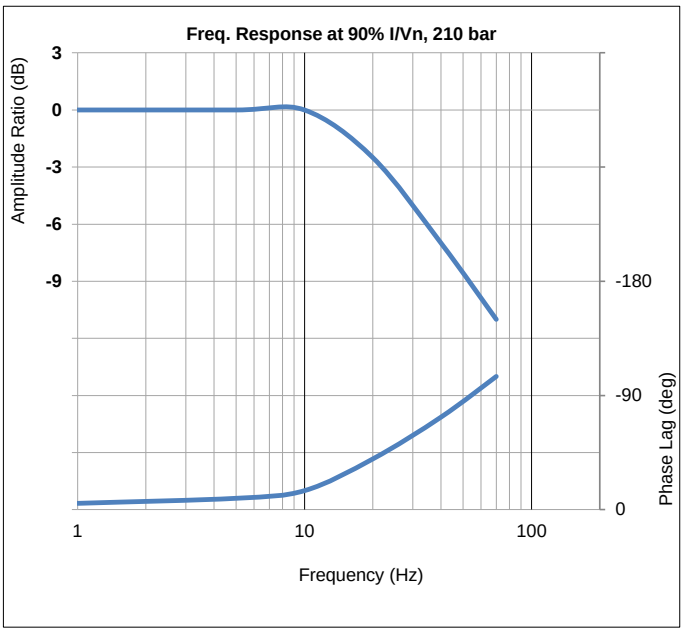
Load pressure difference versus input signal indicates typical differential pressure gain between ports A and B for standard lap spools. Positive overlap changes this characteristic signifcantly.

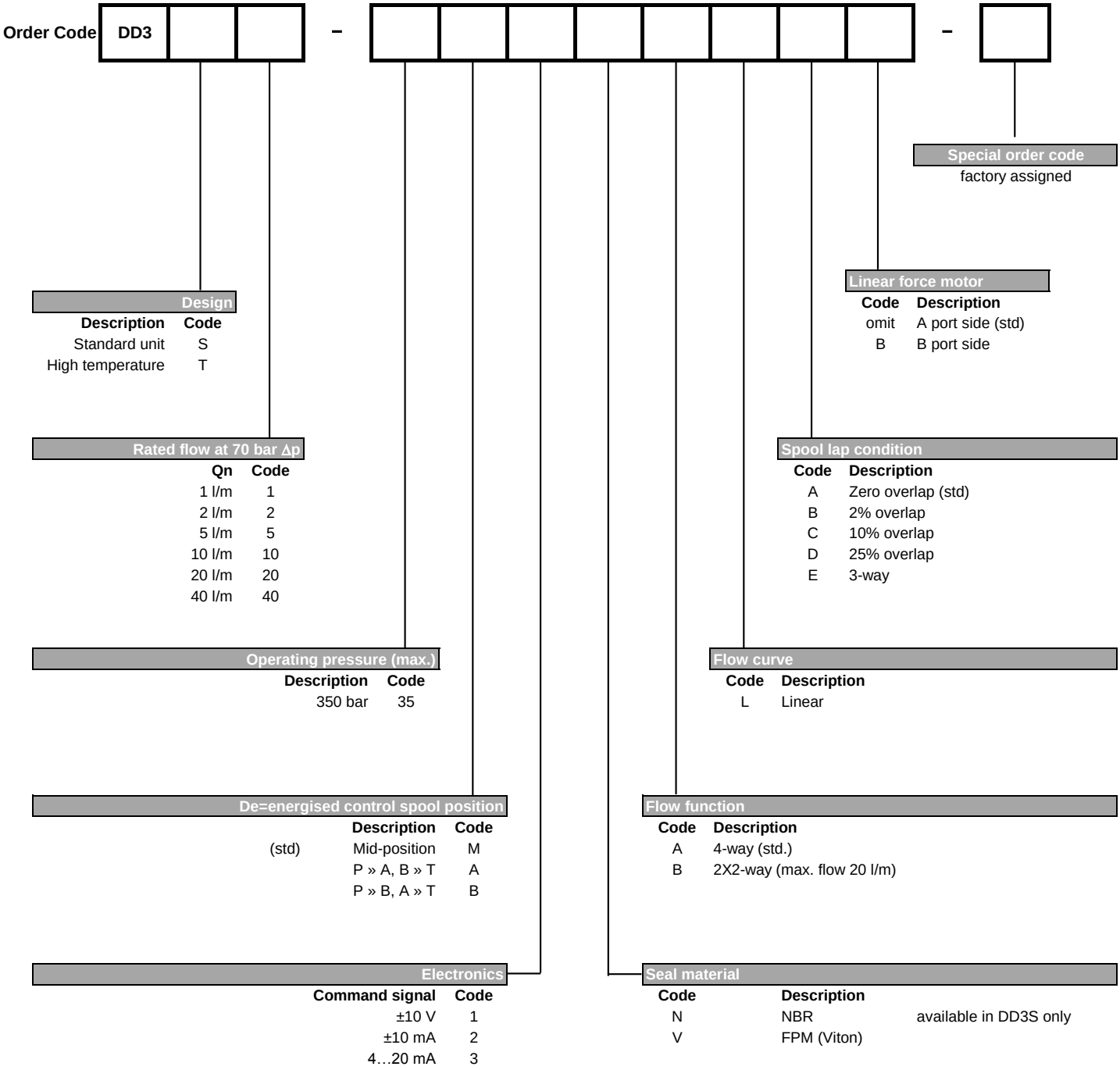




Technical data

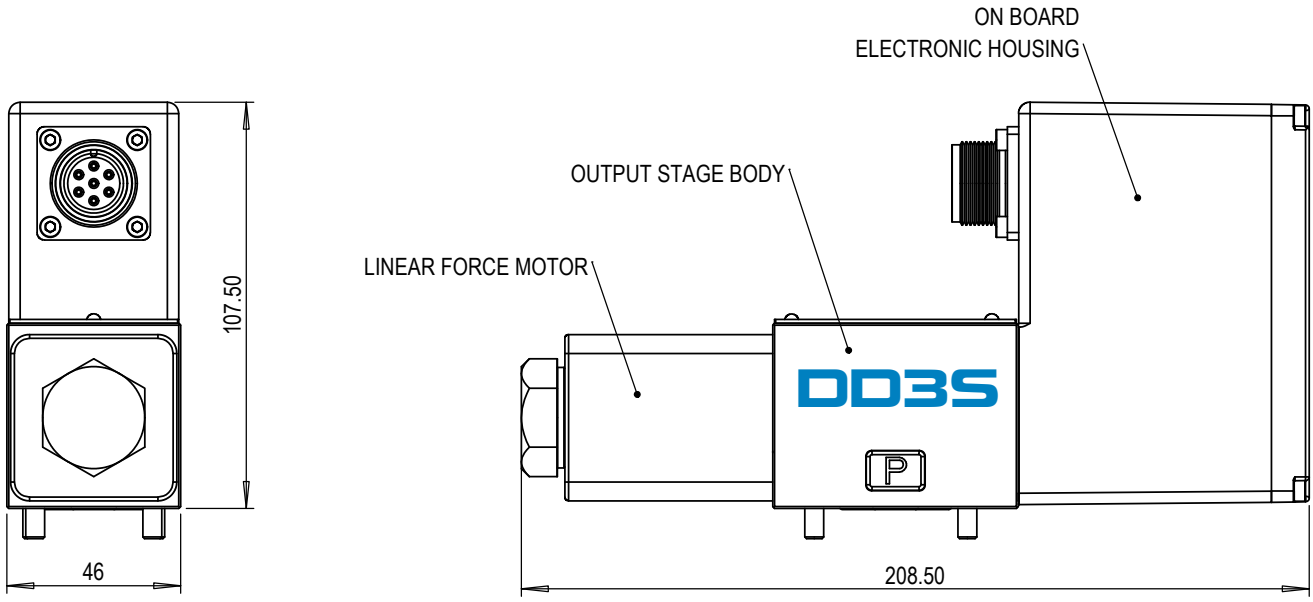


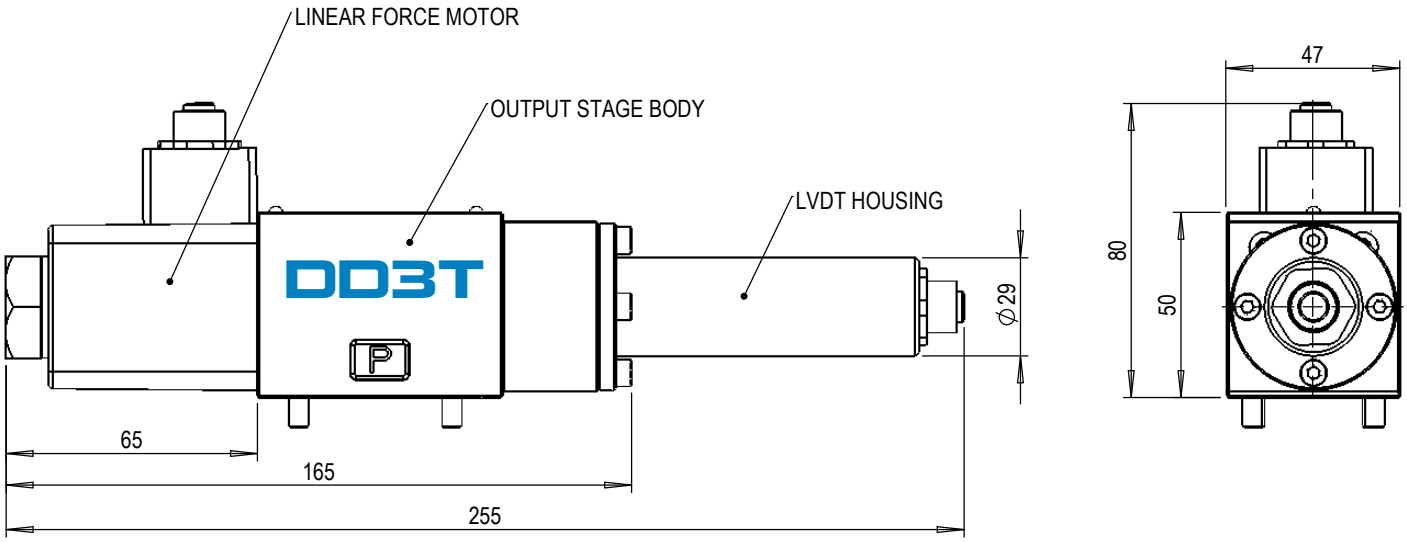



Order Code
DD3
–
–
Special order code
factory assigned
Linear force motor
Code Description
omit A port side (std)
B B port side
Design
Description Code
Standard unit S
High temperature T
Rated flow at 70 bar Δp
Qn Code
1 l/m 1
2 l/m 2
5 l/m 5
10 l/m 10
20 l/m 20
40 l/m 40
Spool lap condition
Code Description
A Zero overlap (std)
B 2% overlap
C 10% overlap
D 25% overlap
E 3-way
Operating pressure (max.)
Description Code
350 bar 35
Flow curve
Code Description
L Linear
De=energised control spool position
Description Code
(std) Mid-position M
P » A, B » T A
P » B, A » T B
Flow function
Code Description
A 4-way (std.)
B 2X2-way (max. flow 20 l/m)
Electronics
Command signal Code
±10 V 1
±10 mA 2
4…20 mA 3
Seal material
Code Description
N NBR available in DD3S only
V FPM (Viton)

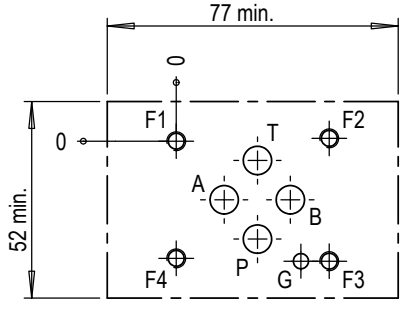
DD3S & DD3T series
INSTALLATION DETAILS

Mounting screws	Skt head cap screws M5 x 50 10.9 ISO 4762
Porting details	P, A, B, T ports ⌀7.5, ⌴ ⌀11.10 ↧1.40
Interface seals	Ports P, A, B, T - ID 8.0 x ⌀1.5 O-Ring
Linear force motor orientation	As shown below linear force motor positioned on port A side as standard, available on B port with special order code 'B'



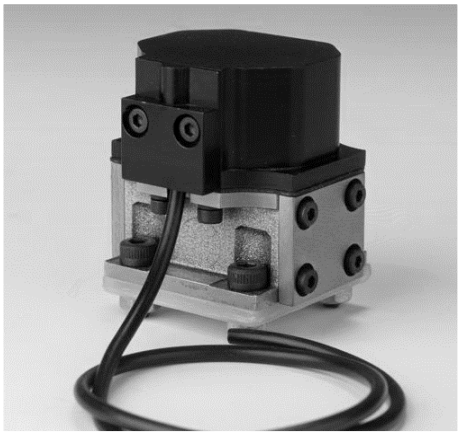


Mounting interface conforms to ISO 4401-03-03-0-94 (G not required)								
	P	**A**	**B**	**T**	**F1**	**F2**	**F3**	**F4**
size	⌀7.5	⌀7.5	⌀7.5	⌀7.5	M5	M5	M5	M5
x	21.50	12.70	30.20	21.50	0	40.50	40.50	0
y	25.90	15.50	15.50	5.10	0	-0.75	31.75	31
Surface flat within 0.01 / 100 : finish better than 0.8 µm								



STAR

series
200
2-Stage Servovalve
Rated flows up to 7 l/m



Features

Miniature design
Maximum operating pressure 315 bar
ISO 10372-01-01-0-92 mounting pattern
Internal pilot supply (4 port)
Suitable for 3-way or 4-way applications
Low hysteresis & zero point drift
High spool drive forces
Dry torque motor with mechanical feedback
Long life Sapphire Technology

Star Hydraulics Limited
Severn Drive
Tewkesbury Business Park
Tewkesbury
Gloucestershire
GL20 8SF
England (UK)

www.star-hydraulics.co.uk

ST-200-2017.2.2-En

Benefits and Features

Sapphire ball in slot design

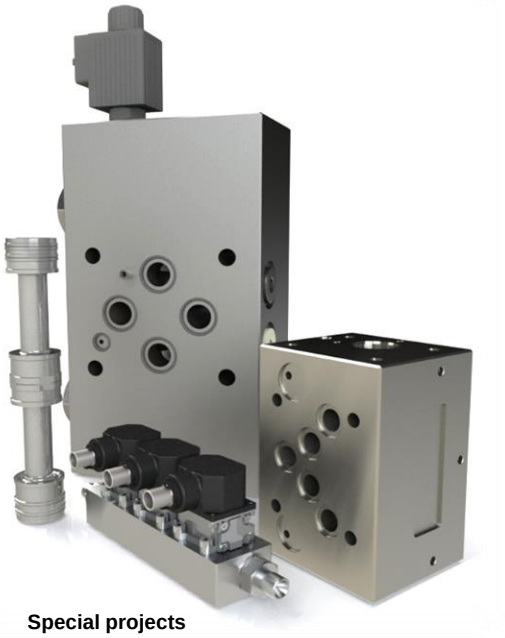
- Incorporated into Star designs since 1988
- Many billions of cycles per service life
- Increased spool life due to spool rotation
- Ultra low coefficient of friction sapphire to steel
- Feedback mechanism unhindered by spool rotation
- Extended warranties available

Safety

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

Quality

- Independant audit process is our commitment on quality
- Focus on customer needs and expectations
- Delivery schedules on time
- Continual improvements on products and services
- Maintaining design and manufacturing integrity

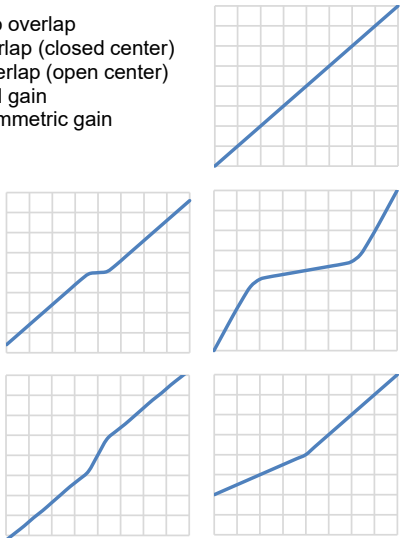


Special projects

- Compact servo designs
- Special interfaces
- Modular components

Custom spool lap & bushing port geometries

- Zero overlap
- Overlap (closed center)
- underlap (open center)
- Dual gain
- Asymmetric gain



Sealing materials

- Nitrile
- Fluorocarbon (Viton)
- Ethylene-Propylene
- Fluorosilicone

Sapphire flow

- Ensuring first stage stability
- Precisely matched flow properties
- Long life in extreme environments

Special connectors

- MIL-C-5015
- MIL-DTL-38999
- Conduit style male/female
- Hermetic

Technical data

Hydraulic

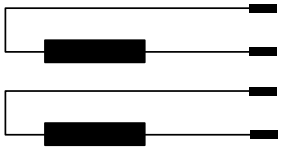
Nominal flow ratings [±10%]	at 70 bar Δp	2, 4, 7 l/m
Operating pressure (max)	Ports	P, C1, C2, R
Seal material	*NBR, FPM*	315 bar
	EPDM	210 bar
Fluid viscosity range (recommended)		10 to 100 mm^2/s (cSt)
Fluid type		Mineral oil to ISO 11158, DIN 51524 or equivalent
		MIL-H-5606
		Others on request
Filter rating (recommended)	Pressure line	Beta 10 = 200 (10 μm abs), non by-pass & indicator
	Off-line	Beta 2 = 1000 (2 μm abs)
Fluid cleanliness	ISO 4406: 1999	
	minimum	16/ 14/ 11
	recommended	15/ 13/ 10

Operational parameters

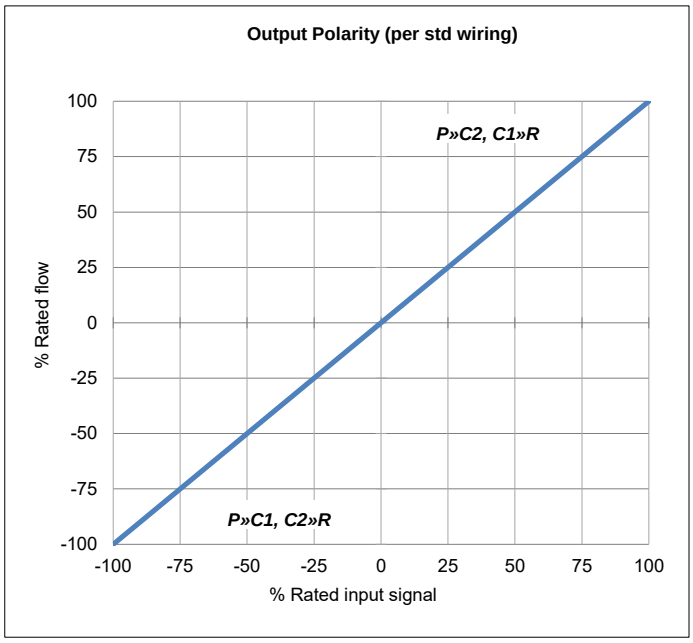
Hysteresis		≤ 3.0% without dither
Threshold		≤ 1.0% without dither
Null shift	ΔT 40°C	≤ 2.0%
Internal leakage	140 bar supply (0.5% overlap)	
	2, 4 l/m	≤ 0.55 l/m
	7 l/m	≤ 0.80 l/m
Load pressure difference	2% input	≥ 50% of supply pressure
Response time	0-100% rated spool stroke	6 ms
Mounting pattern		ISO 10372-01-01-0-92
Mounting position		Any, fixed or movable
Weight	std unit	230 g
Design protection	EN 60529	IP 65
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

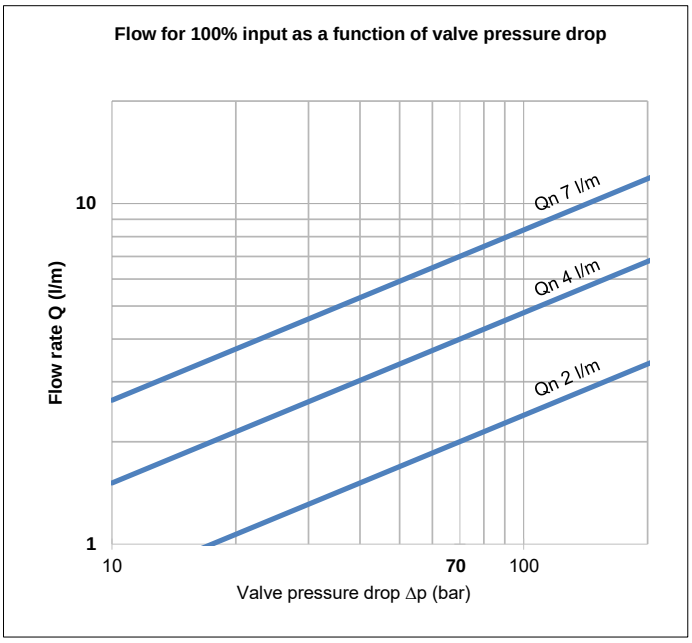
Technical data

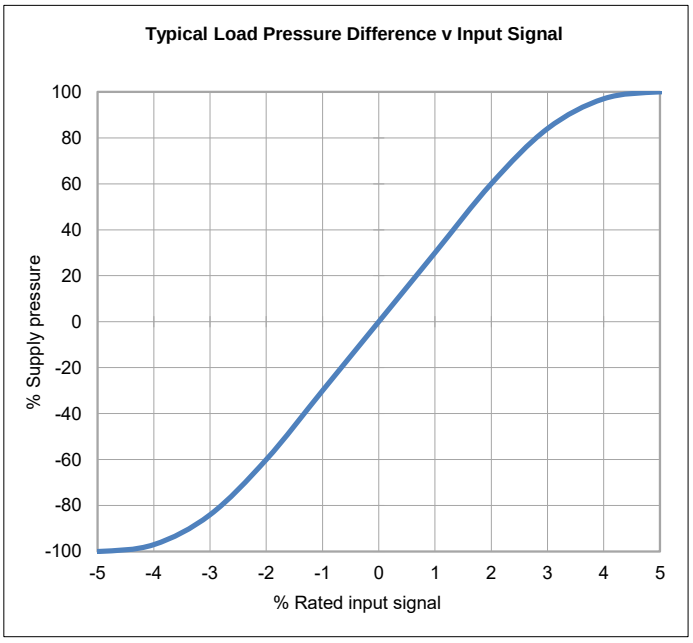
Electrical

Rated input ± (mA)	single (differential)	**10**	**30**	**40**
	series	5	15	20
	parallel	10	30	40
Coil resistance (Ω)	per coil	1000	300	80
Power (W)	single	0.1	0.270	0.128
	series	0.050	0.135	0.064
	parallel	0.050	0.135	0.064
Inductance (H)	single	1.82	0.31	0.1
	series	5.7	0.88	0.3
	parallel	1.44	0.22	0.07
Coil lead out identification		Blue Red White Black	White Red Green Yellow	Green Red Yellow Blue
Polarity P»C2, C1»R	single	Blue +, Red - or White +, Black -	White +, Red - or Green +, Yellow -	Green +, Red - Yellow +, Blue -
	series	Blue +, Black -, link Red & White	White +, Yellow -, link Red & Green	Green +, Blue - link Red & Yellow
	parallel	link Blue & White +, link Red & Black -	link White & Green +, link Red & Green -	link Green & Yellow + link Red & Blue -
Valve connection type		PTFE type A O/D 0.82 mm, core 7/0.15 mm 26 AWG 600 mm long flying lead		
Standard connector orientation		N/A		
	available over	P or R port; please advise when ordering		

Technical data







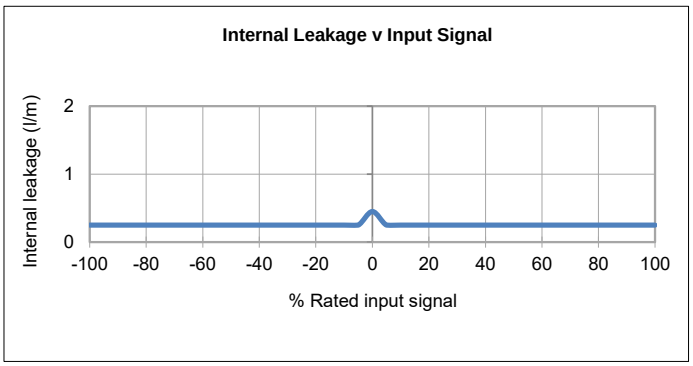
The flow tolerance for standard servovalves is ±10% of the rated flow at 100% rated input signal.

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.

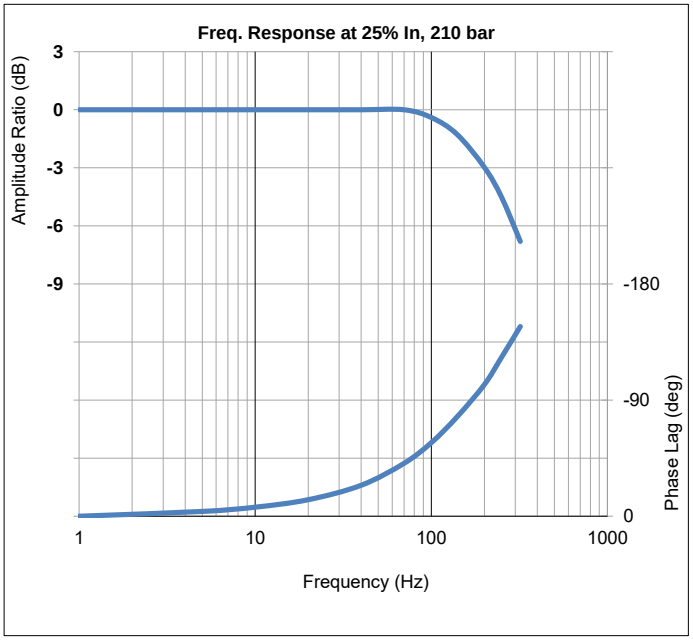
Rated flow corresponds to the flow at rated input at 10 bar or 70 bar, with no load, therefore in 4-way valves there will be a pressure drop of 5 bar or 35 bar respectively across each land.

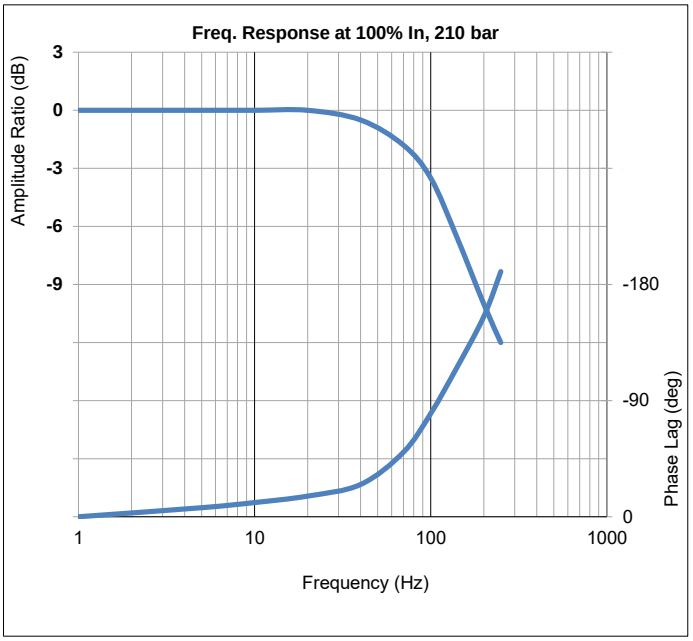
Load pressure difference versus input signal indicates typical differential pressure gain between ports C1 (A) and C2 (B) for standard lap spools. Negative and positive overlap change this characteristic signifcantly.

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.



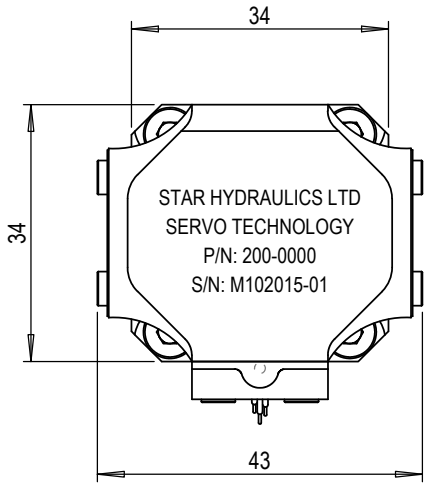
Technical data

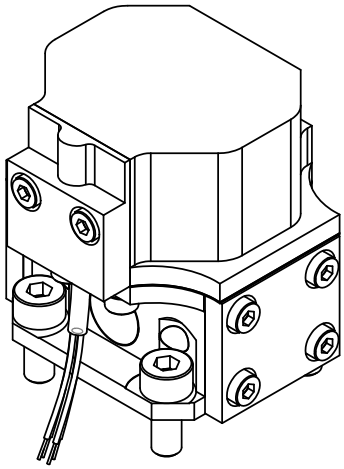


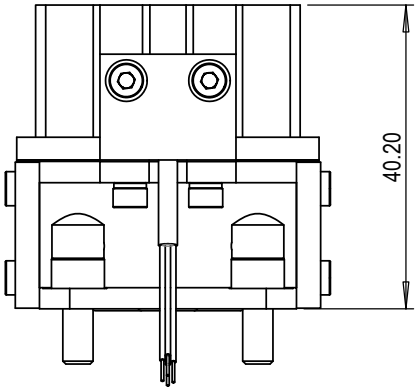


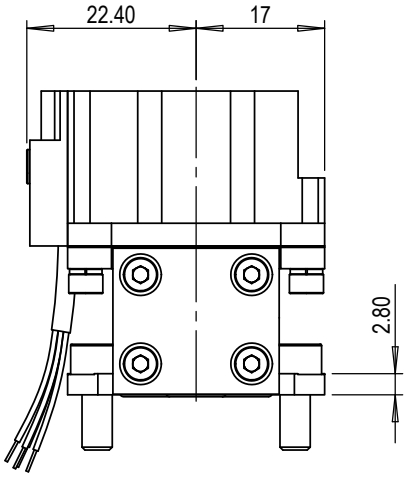
200 series
INSTALLATION DETAILS

Mounting screws	Skt head cap screws M4 x 10 10.9 ISO 4762
Null adjust (Mechanical)	N/A
Porting details	P, C1, C2, R ports ∅4.0, ⌴ ∅8.0 ↧0.75 on 12.2 P.C.D.
Interface seals	Ports P, C1, C2, R - ID 6.0 x ∅1.0 O-Ring









Mounting interface conforms to ISO 10372-01-01-0-92 (without locating pin)								
	P	C1	C2	R	F1	F2	F3	F4
size	∅3.8	∅3.8	∅3.8	∅3.8	M4	M4	M4	M4
x	11.90	5.80	18	11.90	0	23.80	23.80	0
y	7	13.10	13.10	19.20	0	0	26.20	26.20
Surface flat within 0.01 / 100 : finish better than 0.8 µm