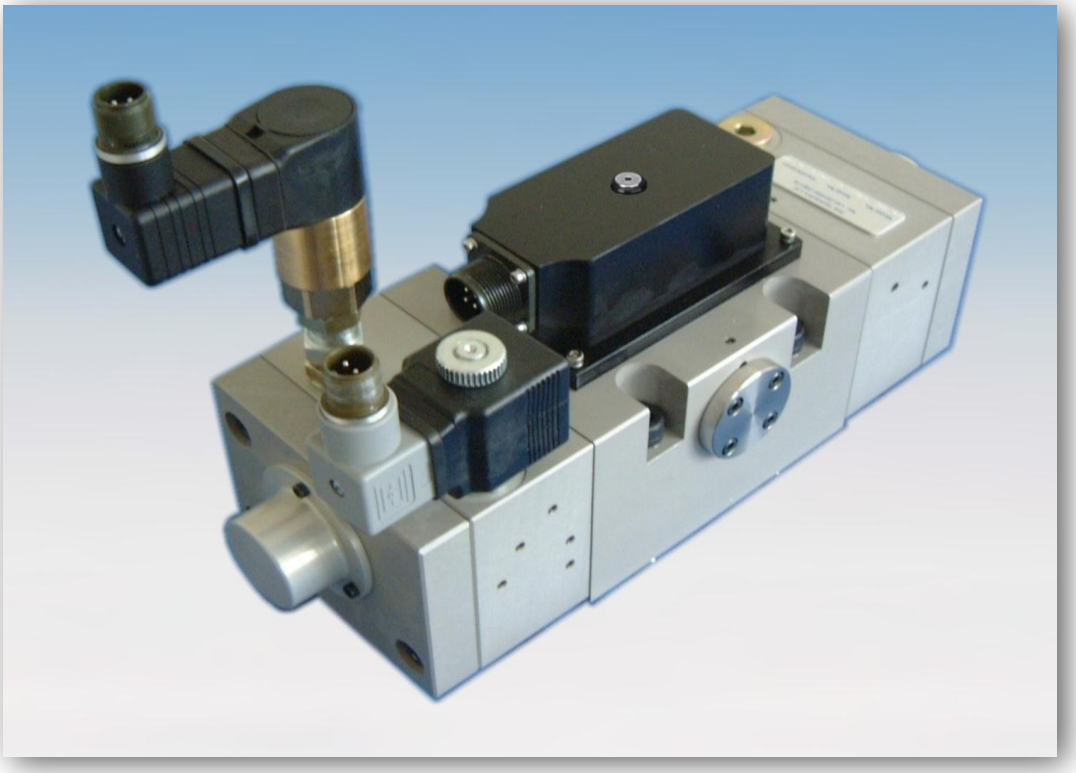
STAR
SERVO TECHNOLOGY

990-3

2-Stage Servovalve
Motion Simulation Series

Sapphire Technology

Symmetric or asymmetric flow
Flight sim spool lap conditions
Integral abort module with indicating switch
Long life "Sapphire Technology"
Maximum operating pressure 210 bar
Maximum flow 300 l/min at 70 bar
Direct interchange with competitive models



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

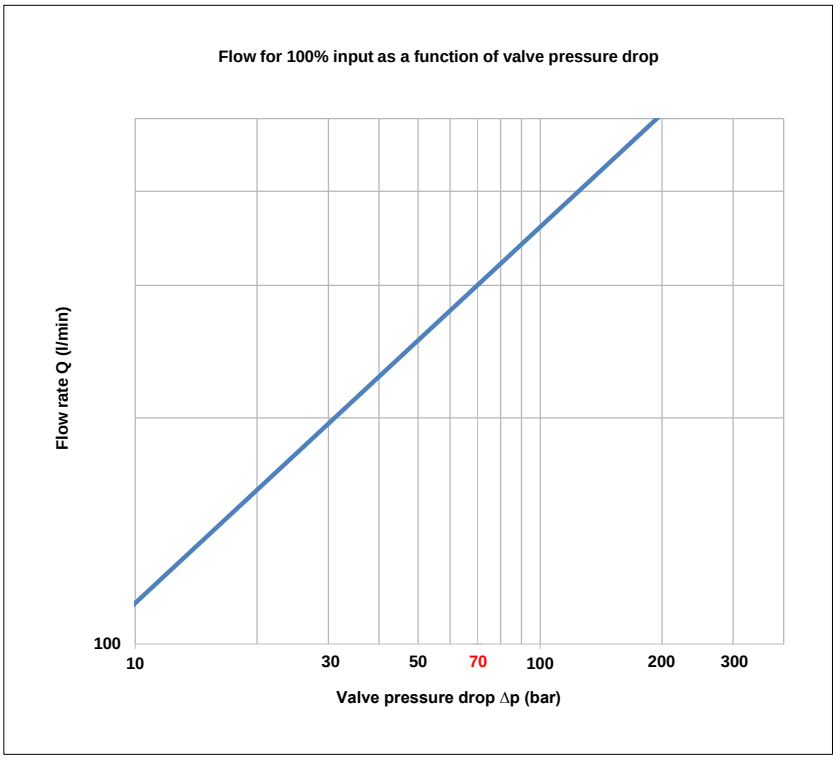
www.star-hydraulics.co.uk

990-3-2Q12-En

Technical Data

Nominal flow ratings at 70 bar Δp	**300 l/min**
Hysteresis	**≤ 4.0%**
Threshold	**≤ 1.5%**
Null shift	**≤ 2%**
Internal leakage at 140 bar supply	**≤ 9.0 l/min**
Mass	**9.9 kg**
Seal material / shore hardness	**NBR, FPM**
Temperature range (fluid)	**-20 to 85 °C**
External leakage	**zero**
Degree of protection EN 50529P	**IP 65**
Vibration	**25 g, 3 axes**
Mounting position	**Any, fixed or movable**
Supply filtration	
non by-pass	**Beta 10 = 200 (10 µm abs)**
cleanliness control filter	**Beta 3 = 200 (3 µm abs)**
Fluid cleanliness level per ISO 4406: 1999	
minimum	**16/ 14/ 12**
recommended	**14/ 12/ 10**
Operating pressure (max)	**210 bar**
Supply pressure	**Constant**
Fluid viscosity	**10 to 100 cSt**
Fluid type	**Petroleum based mineral oil**

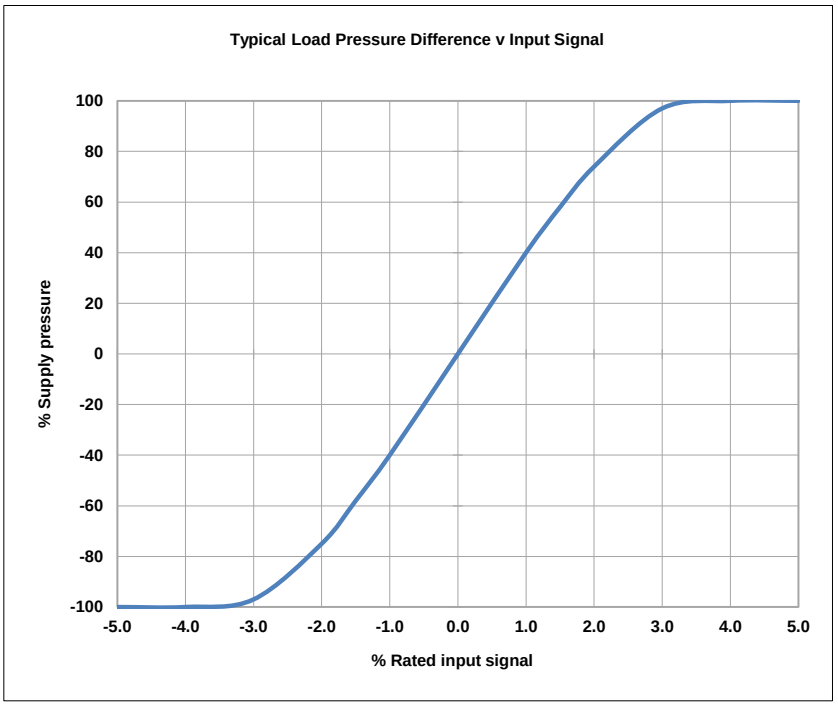
Technical Data

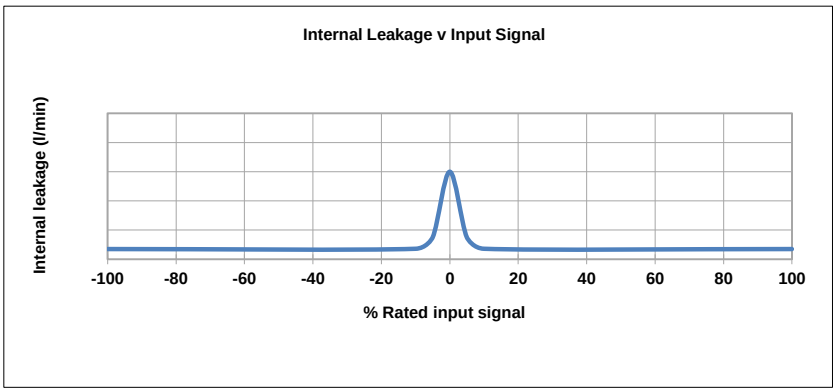


The diagram shows the maximum controlled flow rate according to the valve pressure drop between ports P & T.

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

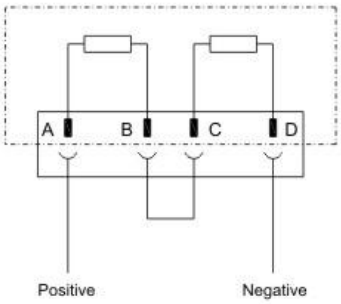
The rated flow (Qn) is quoted at 70 bar Δp bar, 100% rated input signal. Lap condition equtes to 1.0% positive lap to 1.0% negative lap per land on standard lap condition units.



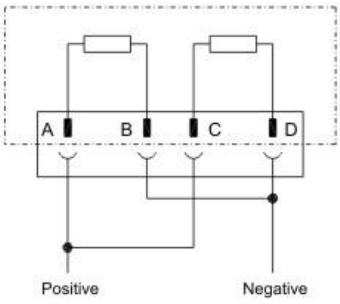


Typical null leakage charac-teristics, max values shown on page 2.

Electrical Details



Series connection



Parallel connection

Output flow polarity

Flow in the direction of P » C2, C1 » R when coils connected as shown

Coil options

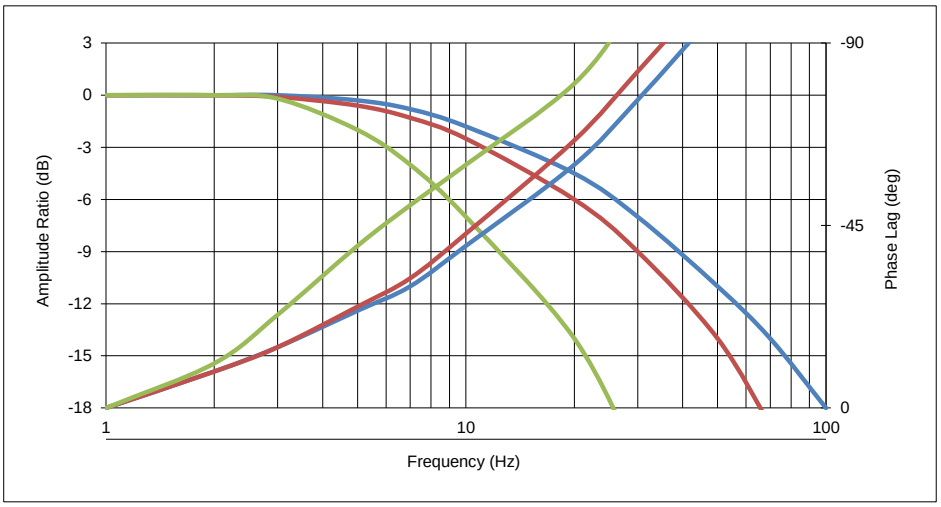
		Series connection		Parallel connection	
Rated current	Resistance / coil	Input current	Effective resistance	Input current	Effective resistance
mA	Ω	mA	Ω	mA	Ω
20	1200	10	2400	20	600
60	320	30	640	60	160

Frequency Response

5% In 40% In 90% In

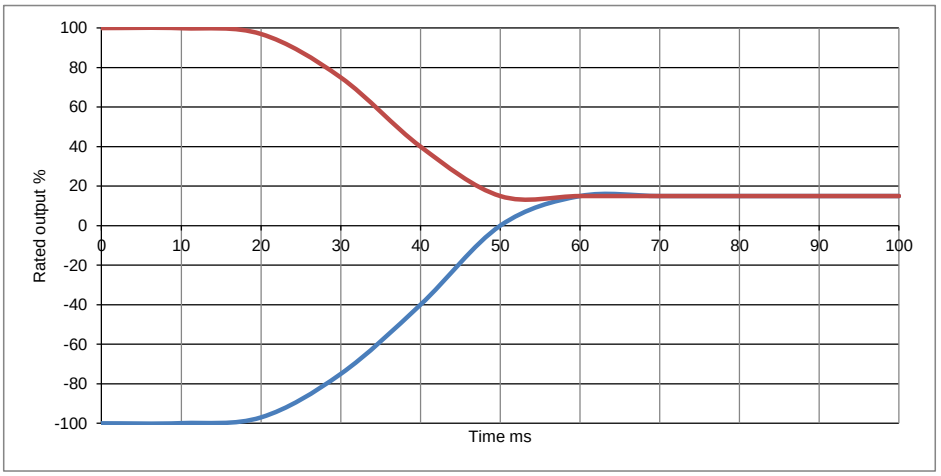
Resp code D, pilot code A or B

Flow code 200



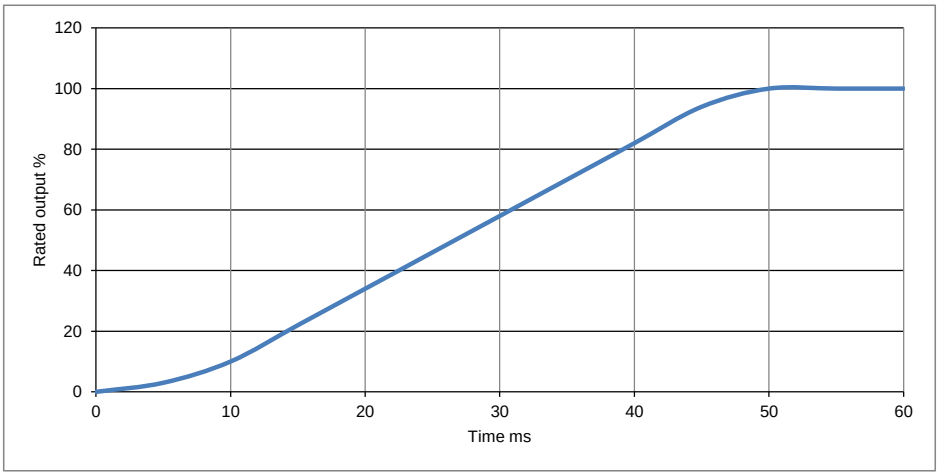
Abort Response

100% stroke



Step Response

100% stroke



Typical performance curves optimised per 140 bar supply pressure, fluid viscosity 32 cSt at 40 ºC