

HYDRAULIC SERVO VALVE

Cost-effectiveness

Miniature Design for Hydraulic Robots

Customization



We provide hydraulic servo valves that are inexpensive and suitable for robots.

KNR Systems develops its own nozzle-flapper-type servo valve, specifically for use in hydraulic robots. The valve operates at a bandwidth over 150Hz(**KSV-NF07**). We provide product specification, such as frequency response and Internal leakage, in order to help developers establish a dynamics system model.

The servo valve can be easily applied to a system, similar to the method of the servo-motor, with the use of KNR's HAC board as well as other valve control boards. Simply connect the valve to a control board, and the valve-actuator system can be controlled like a motor.

While miniature servo valves generally cost a lot, KNR's ability to customized and to optimize presents economically priced custom-manufactured servo valves.

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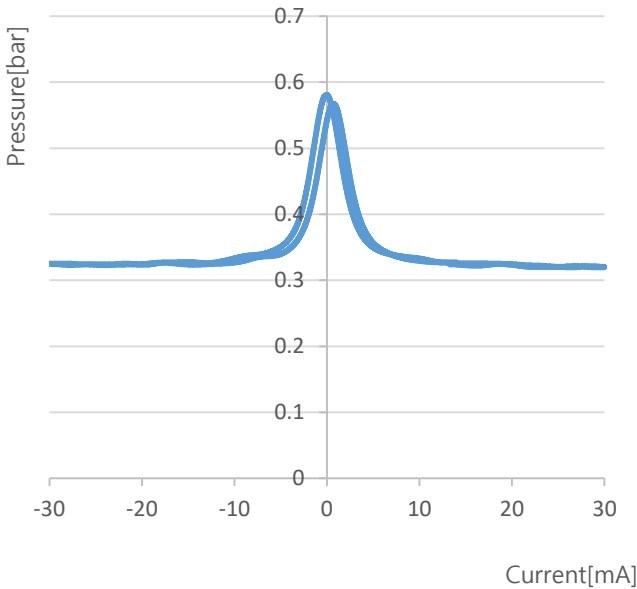
HYDRAULIC SERVO VALVE

TECHNICAL DATA

Nominal flow ratings	Up to 6.5L/min at ΔP 70bar
Hysteresis	$\leq 3\%$ without dither
Threshold	$\leq 1.0\%$
Leakage	$\leq 0.7\text{Lpm}$
Step Response	$\leq 6\text{ms}$
Seal materials	VITON
Temperature range	$-50^{\circ}\text{C} \sim 140^{\circ}\text{C}$
Proof pressure	$< 150\%$ max supply pressure
Burst pressure	$< 250\%$ max supply pressure
External leakage	Zero
Weight	190g
Recommended filter rating	3 micron
Fluid cleanliness level	NAS 1638-CLASS 4
Supply pressure	Max continuous 210bar
Viscosity	ISO VG32

HYDRAULIC SERVO VALVE

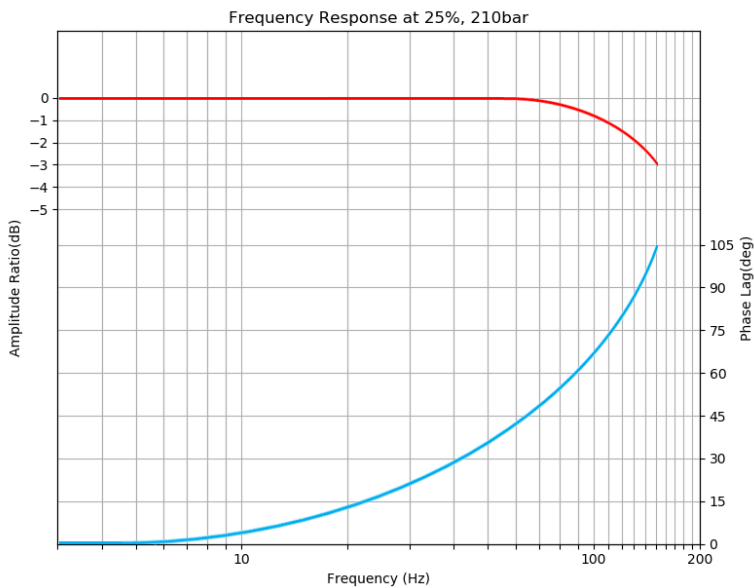
PERFORMANCE GRAPH



The figure shows the internal leakage curve of a valve. The maximum leakage is effected by the type of the spool used, which can be customized between underlap and overlap.

- Internal Leakage ≤ 0.7 ℓ/min @110bar
- Customization

- Internal Leak -



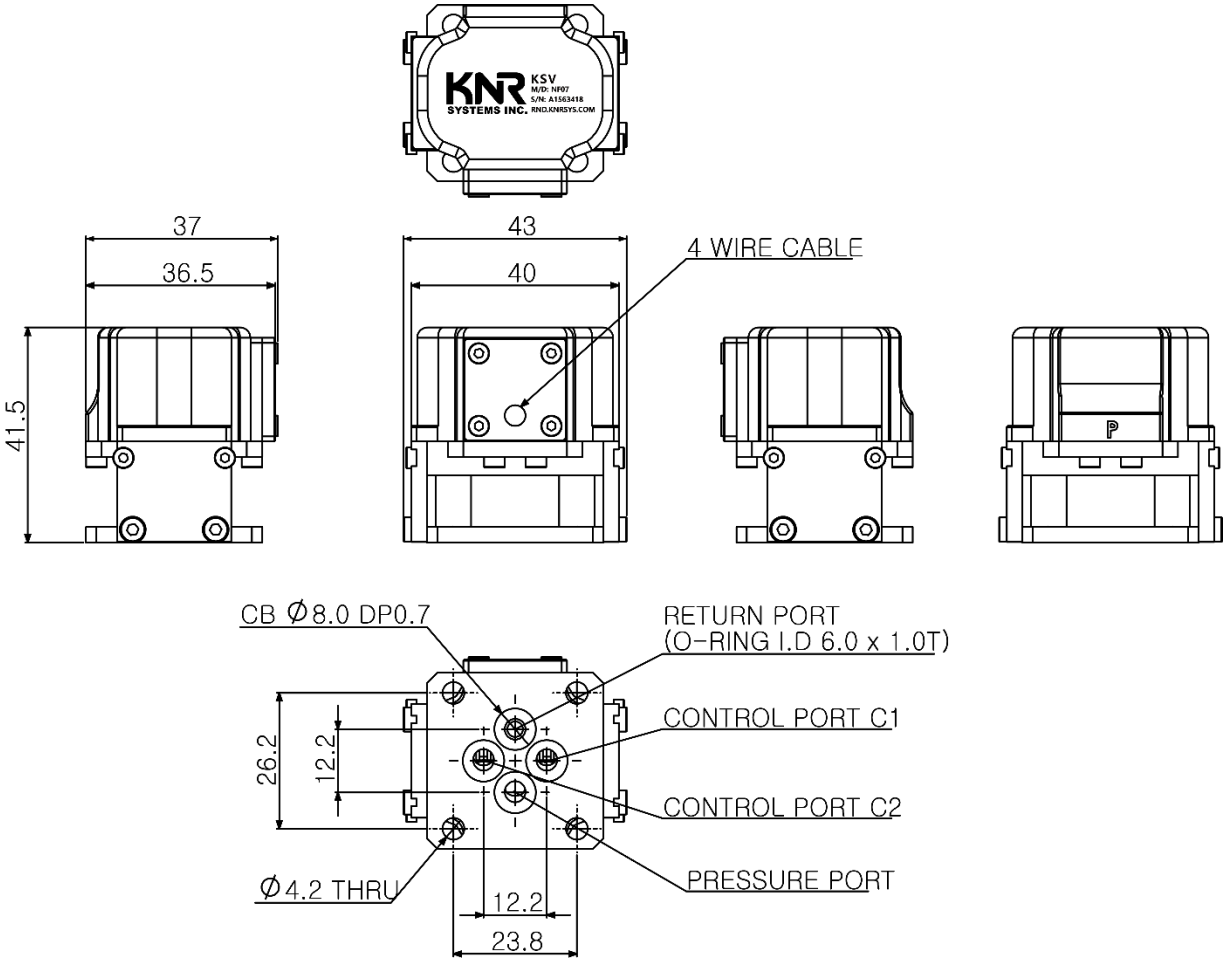
The figure shows the frequency response at an input pressure of 210 bar. Upon request, the valve can be customize to perform over 150Hz.(Special Type $\geq 200\text{Hz}$)

- Frequency Response:
 $\geq 150\text{Hz}$ @Magnitude -3dB
- Rated Signal: 25%
- System Pressure: 210bar
- Customization

- Frequency Response -

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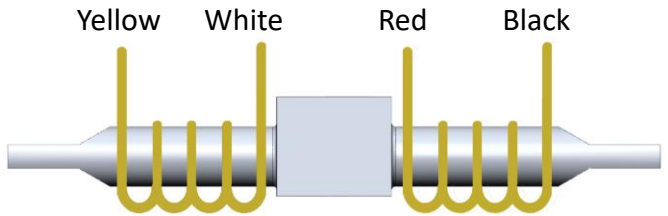
DIMENSION



Electrical Detail

Rated current : 30mA
 Coil Resistance : 300 Ω

Connection : Black & White (+)
 Yellow & Red (-)



HYDRAULIC SERVO VALVE

APPLICATIONS

- **Manipulator**



HYDRA-UW
(KNR's Underwater Manipulator)



HYDRA-MP3
(KNR's Multi-Purpose Manipulator)

- **Field Robot**



GIBBON
(KNR's Hydraulic Mobile Robot in a nuclear power plant)



DCR

(KNR's Hydraulic Mobile Robot in high dust & high temperature environment)



NCR

