HYDAC INTERNATIONAL

Hydraulic Accessories

Valves - Ball Valves, Coaxial Valves and In-Line Flow Control Valves

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HYDAC

Components, Systems and Service. All from one Company.

Our fluid engineering solutions are defined by the scope and complexity of our customers' requirements.

Our products range from individually designed components in the fields of fluid engineering, hydraulics and electronics right up to complete systems for specific functions.

All components and systems are conceived and designed in-house. Experienced industrial and product specialists develop innovative products and efficient solutions for high-quality, cost-effective production. Throughout the globe, our production facilities share one common goal: quality. We take great pride in both our products and solutions.

Industries and Applications

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Section:

HYDAC

Accessory Division
2204 Avenue C
Bethlehem, PA 18017
+1.610.266.0100
Internet: www.hydac-na.com
Email: HYD.catalog@hydac-na.com

NOTE

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HYDAC ACCESSORIES

We've made Advanced Technical Support (ATS) better by adding a "hunt" telephone number:

484-240-2871

HOW ATS BENEFITS YOU:

ATS is one central phone, Skype and email contact to remember or save

ATS answers every call by utilizing the hunt group telephone number

ATS addresses your day-to-day concerns while finding the most appropriate contact

ATS eliminates missed calls due to any one team member being out of the office

OUR COMMITMENT:

Answer all phone calls and return or acknowledge emails in two hours or less!

Call Hours:
8am to 5pm (EST)

Internal Skype: Accessories ATS
Email: Accessories.ATS@hydacusa.com

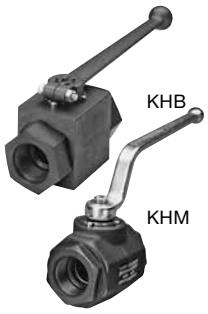
Global Replacement

The offerings of HYDAC Technology Corp, the USA branch of HYDAC Accessories GmbH, does not have an identical line of offerings and as such maintains a separate catalog housed at www.hydac-na.com. However, as a global company, we also provide our commitment to our US based customers to replace any items offered by our European counterparts that is installed on a machine or piece of equipment. If you need to replace one of these items, contact our Advanced Technical Support Team today!

A Overview of Valves

OVERVIEW OF VALVES

Quick Reference Guide of Valves

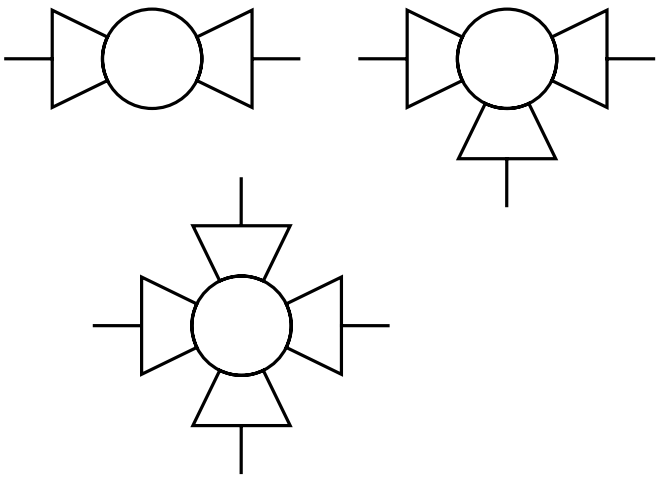
Section	Type	Series	Product	Size	Pressure Rating	Pg. No.
A1 High Pressure Ball Valves		KHB, KHM	Ball Valves with NPT and SAE Threaded Connection	1/4” to 2”	Up to 7250 psi	B4
		KHB, KHM	Ball Valve with BSP and Metric Tube Connections	DN04—25	Up to 7250 psi (500 bar)	B6
		KHB, KHM	Ball Valve with SAE Split Flange Connections	1/4” to 2”	Up to 6000 psi	B8
		–	Ball Valve Actuators, Pnuematic Operation	—	—	B10
		KHF3/6, KHF3	SAE Fixed Flange Ball Valves	1/2” to 4”	Up to 6000 psi	B12
		KHP	Manifold Mounted Ball Valves	3/8” to 2”	Up to 5000 psi	B14
		KHB3H	Three—Piece High—Pressure Ball Valve	1/2” to 4”	Up to 6000 psi	B16
		KHB3K	3/2 Way Ball Valves	1/4” to 2”	Up to 7250 psi	B18
		KH3, KH4	3—Way and 4—Way Ball Valves	1/4” to 3/4”	Up to 7250 psi	B20
		—	Ball Valve Locking Devices	—	—	B22
		—	Ball Valves with Limit Switches	—	—	B23
	Image N/A	—	Seal Kits	—	—	B24

Quick Reference Guide of Valves *(continued)*

Section	Type	Series	Product	Size	Pressure Rating	Pg. No.
A2 Low Pressure Ball Valve		KHR	Aluminum Ball Valves	1/2” to 2”	Up to 400 psi	C2
		KHNVL	Brass Ball Valve	1/4” to 4”	Up to 600 psi	C8
		KHNVN	Stainless Steel	1/4” to 2”	Up to 1000 psi	C9
A3 CX Valves		CX	Coaxial Valves	—	—	D2
A4 Flow Control Valves		DV, DRV Sz. 06-16	Needle Valves	1/8” to 1 1/2”	Up to 5000 psi	E2
		DV, DRV Sz. 20-40				E6
		DVP, DRVP	Needle Valves	1/8” to 1 1/2”	Up to 5000 psi	E10
		SRVR, SRVRP	Pressure Compensated Flow Control Valves	1/4” to 3/4”	Up to 3000 psi	E15
		RV, RVP	Check Valves	1/8” to 2”	Up to 5000 psi	E20
		RB, RBE	Hose Break Valves	—	Up to 5000 psi	E23
		AEV	Automatic Air Vent Valves	1/4”	Up to 8700 psi	E27

Compatibility List

For 2/2–, 3/2– and 4/2–Way Ball Valves



Medium	Ball valve materials: Housing Ball Control spindle — Steel	Brass	GG, GS—C	1.4571	Soft seals — NBR	FKM	Sealing cups — POM	PTFE
A								
Acetaldehyde	3	2	3	1	4	3	2	1
Acetic acid	3	3	3	1	4	4	4	1
Acetic anhydride	4	3	4	2	4	4	4	1
Acetone	1	1	1	1	4	4	2	2
Acetylene	1	4	1	1	2	2	2	2
Acrylonitrile	1	1	3	1	4	3	4	1
Air	1	1	1	1	1	1	1	1
Alcohol	4	4	4	4	4	1	1	1
Alum, aqueous	3	3	3	1	2	1	2	1
Aluminium chloride	3	3	3	1	2	1	1	1
Ammonia	1	4	2	1	3	4	2	1
Ammonium carbonate	2	4	2	2	3	3	3	1
Ammonium chloride	4	4	4	2	2	1	2	1
Ammonium phosphate, aqueous	4	4	4	2	2	1	2	1
Ammonium sulphate	3	4	3	2	2	1	2	1
Amyl acetate	3	3	3	2	4	4	2	1
Aniline	2	3	3	1	4	2	2	1
Argon gas	1	1	1	1	1	1	1	1
Aviation fuel JP 3–6	1	1	1	1	3	2	3	1
B								
Beer	4	1	4	1	1	1	1	1
Beet sugar solution	2	–	2	1	2	1	1	1
Benzene	2	2	2	2	4	3	2	1
Bitumen	1	2	2	1	4	2	3	1
Borax, aqueous	3	3	3	2	1	1	1	1
Boric acid, aqueous	3	3	4	2	1	1	2	1
Brake fluid	2	2	3	2	4	3	2	1
Brandy	2	2	3	2	2	1	2	1
Bromine	4	3	4	4	4	2	–	1
Brown coal tar	1	4	1	1	4	4	4	1
Butane, gaseous	2	1	2	2	2	2	2	1
Butter fat	4	4	4	1	1	4	1	1
Butyric acid, aqueous	4	3	4	2	2	2	2	1
C								
Cadmium chloride	4	4	4	1	1	4	4	1
Cadmium sulphate	1	1	1	1	1	1	1	1
Calcareous water	1	1	1	1	1	1	1	1
Calcium bisulphate, aqueous	4	2	4	2	2	2	2	1
Calcium carbonate	1	4	4	1	1	1	4	1
Calcium chloride, aqueous	3	2	3	2	1	1	1	1
Calcium hydroxide	3	1	3	2	1	1	2	1
Carbon dioxide	1	1	2	1	2	1	4	1
Carbon disulphide	3	3	3	2	4	1	2	1
Carbonic acid	2	4	4	2	2	2	2	1
Castor oil	2	1	2	1	1	1	1	1
Cellolube 220	1	1	1	1	4	1	1	1
Chlorine wet + dry	4	4	4	4	4	2	4	1
Chlorine, gaseous up to 100 °C	4	4	4	1	4	1	4	1
Chlorobenzene	2	2	2	1	4	2	2	1
Chloroform	2	2	2	1	4	2	4	1
Citric acid	4	2	4	2	2	1	2	1
Clophen A	1	1	1	1	4	1	4	1
Coal tar oil	1	1	1	1	4	2	3	1

Description

The HYDAC compatibility list is intended as a non—binding recommendation for the selection of materials for the housing, connection adapters, control spindle, ball and seals for ball valves.

The data given in this brochure is based on the tests, recommendations and experience of our suppliers. Given the immense variety of applications, media concentrations, pressures and temperatures, the data is intended to be a general guideline only.

NOTES
All the data applies to the usual concentrations of the media at room temperature, 20 °C. In individual cases we can select specific seal combinations and suitable materials for problematic operating conditions on request.

Medium	Ball valve materials: Housing Ball		Control spindle		Soft seals		Sealing cups	
	Steel	Brass	GG, GS—C	1.4571	NBR	FKM	POM	PTFE
C								
Coke oven gas	2	3	2	1	4	2	–	1
Condenser oil	1	4	1	1	4	1	1	1
Copper nitrate, aqueous	4	4	4	2	2	1	2	1
Copper sulphate, aqueous	4	4	4	2	2	1	2	1
Cresolyl, aqueous	3	3	4	2	4	2	4	1
Crude oil	2	2	2	1	2	1	1	1
Crude oil	2	2	2	1	2	1	2	1
Cutting oil	1	1	1	1	1	1	1	1
Cutting oil emulsion	3	3	2	2	1	2	1	1
D								
Diesel fuel	1	1	1	1	3	1	2	1
E								
Edible oil	4	4	4	1	1	4	4	1
Ethane	2	1	2	2	1	1	1	1
Ethanol	2	2	2	1	3	3	2	1
Ether	1	1	1	1	4	4	4	1
Ethyl acetate	2	3	2	2	4	4	2	1
Ethylene	2	–	2	1	2	2	2	1
F								
Faecal matter	1	4	1	1	1	1	1	1
Fatty acids	4	–	4	1	3	1	1	1
Fertilizer solution	4	3	4	3	4	4	–	1
Fire extinguishing substance	1	1	1	1	1	4	4	1
Fish oil	2	2	2	1	2	1	1	1
Formaldehyde	3	1	3	1	2	2	1	1
Formic acid	4	2	4	2	4	4	4	1
Freon	2	2	2	1	2	2	2	1
Fruit juices	4	3	4	1	2	1	1	1
Fuel oil, heavy	2	2	3	1	4	3	3	1
Fuel oil, light	2	2	2	1	3	2	3	1
Furan	1	4	4	1	4	4	4	1
Furfurol	1	1	2	1	4	4	2	1
G								
Gas liquor	2	2	2	2	2	1	2	1
Gas oil	2	2	2	1	3	1	2	1
Gasoline, pure	1	1	2	1	2	2	2	1
Gelatine	3	3	4	1	1	1	1	1
Glucose	2	1	2	1	1	1	2	1
Glycerine	2	2	2	1	1	2	3	1
Glycol	2	2	2	2	2	2	3	1
H								
Heavy oil	1	1	1	1	4	4	4	1
Heptane	2	1	2	1	2	1	1	1
Hexane	2	2	2	2	2	1	1	1
Hydraulic fluid, based on phosphate—ester	2	4	2	1	4	1	1	1
Hydraulic fluid, based on glycol	2	3	2	1	3	2	3	1
Hydraulic fluid, based on mineral oil	1	1	1	1	1	1	1	1
Hydrochloric acid	4	4	4	4	–	1	–	1
Hydrogen	2	2	2	1	2	2	–	1
Hydrogen peroxide	4	4	4	2	4	2	4	1
Hydrogen sulphide	3	4	4	2	3	2	3	1

Medium	Ball valve materials: Housing Ball		Control spindle		Soft seals		Sealing cups	
	Steel	Brass	GG, GS—C	1.4571	NBR	FKM	POM	PTFE
I								
Ink	4	3	4	1	1	1	1	1
Iron chloride	4	2	4	4	2	1	3	1
Iron sulphate	4	2	4	2	3	1	1	1
Isobutyl alcohol	2	2	3	2	3	1	3	1
Isooctane	1	1	1	1	1	1	3	1
Isopropyl alcohol	2	2	3	2	3	1	2	1
Isopropyl ether	1	1	3	1	3	4	–	1
K								
Kerosene	2	2	2	1	2	1	1	1
Ketone	4	4	4	1	4	4	4	1
L								
Lacquers	2	1	2	1	4	3	2	1
Latex emulsion	2	1	2	1	–	–	1	1
Lead acetate, aqueous	4	3	4	1	4	2	3	1
Linseed oil	1	2	1	2	2	1	1	1
Lubricating oil	1	2	1	1	1	1	1	1
Lubricating oil, mineral	1	1	1	1	1	1	2	1
Lyes, alkaline	4	4	4	1	1	4	1	1
M								
Magnesium chloride	3	3	4	2	2	1	1	1
Magnesium hydroxide	2	4	2	1	2	1	1	1
Magnesium sulphate	3	2	3	2	2	1	1	1
Maleic anhydride	4	2	4	2	–	2	3	1
Malic acid	4	3	4	2	1	1	1	1
Mercury	1	4	1	1	1	1	1	1
Mercury chloride	4	4	4	3	2	1	4	1
Methane	2	1	2	2	1	1	2	1
Methanol	2	2	2	2	3	4	2	1
Methyl ethyl ketone	1	1	3	1	4	4	1	1
Methylamine, aqueous	2	4	2	1	4	4	–	1
Methylene bromide	4	1	4	4	4	1	3	1
Methylene chloride	2	1	3	1	4	3	3	1
Milk of lime	2	–	2	1	4	2	2	1
Mine gas	1	1	4	1	1	1	1	1
N								
Naphtha	2	2	2	1	2	1	1	1
Naphthalene	2	2	2	2	4	1	1	1
Natural gas	2	2	2	1	2	1	2	1
Nickel chloride	4	4	4	2	1	1	2	1
Nickel sulphate	4	4	4	2	2	1	2	1
Nitric acid	1	4	1	1	4	4	4	1
Nitrobenzene	–	4	3	1	4	3	4	1
Nitrogen	1	1	1	1	1	1	1	1
O								
Oil—water emulsion	1	1	1	1	1	1	1	1
Oleic acid	2	2	3	2	2	1	1	1
Oleum	3	4	3	2	4	2	4	1
Oxalic acid	4	4	4	2	2	1	3	1
Oxygen	2	1	3	1	4	2	4	1
Oxygen gas	1	1	1	1	1	1	1	1
Ozone	4	4	4	1	–	–	–	1
P								
Palm oil	4	4	4	1	4	1	1	1
Palmitic acid	2	2	2	2	2	1	2	1

OVERVIEW OF VALVES

Medium	Ball valve materials: Housing Ball Control spindle — Steel	Brass	GG, GS—C	1.4571	Soft seals — NBR	FKM	Sealing cups — POM	PTFE
P								
Paraffin	2	1	2	1	1	1	2	1
Pentane	2	1	2	1	1	1	2	1
Perchloroethylene	1	4	1	1	4	4	4	1
Petroleum	2	2	2	1	2	1	1	1
Phenol	2	2	2	2	4	2	4	1
Picric acid	4	3	4	1	2	1	–	1
Pine needle oil	2	2	2	1	2	1	2	1
Pit water	1	1	1	1	1	1	1	1
Potassium bromide, aqueous	4	3	4	1	2	1	2	1
Potassium carbonate, aqueous	2	2	2	2	1	1	2	1
Potassium chlorate, aqueous	2	2	2	2	4	1	2	1
Potassium chloride, aqueous	3	2	3	3	1	1	2	1
Potassium nitrate, aqueous	2	2	2	2	1	1	1	1
Potassium sulphate, aqueous	2	2	2	2	1	1	1	1
Propane	2	1	2	2	2	2	2	1
Propyl alcohol	4	1	4	1	4	–	–	1
Propylene glycol	2	2	2	2	2	1	3	1
Pydraul F9	1	1	1	1	4	1	1	1
S								
Salicylic acid	4	3	4	1	1	1	2	1
Silver nitrate	4	4	4	2	2	2	2	1
Soap solutions	1	1	2	1	1	1	1	1
Sodium bicarbonate	2	2	2	2	2	1	2	1
Sodium carbonate	2	2	2	2	2	1	2	1
Sodium chlorate	3	–	3	2	3	1	2	1
Sodium chloride	2	2	2	2	1	1	1	1
Sodium cyanide	2	4	2	2	2	1	2	1
Sodium hydroxide	2	2	2	1	3	3	–	1
Sodium hydroxide solution	4	4	4	1	1	4	4	1
Sodium nitrate	2	2	2	2	2	1	1	1
Sodium phosphate	3	2	3	1	2	1	2	1
Sodium silicate	2	2	2	2	2	1	2	1
Sodium sulphate	2	2	2	1	2	1	1	1
Sodium sulphide	2	4	3	2	2	1	2	1
Sodium sulphite, aqueous	4	–	4	1	4	3	3	1
Sodium thiosulphate	2	3	2	1	4	1	1	1
Solvents	2	2	2	1	4	3	2	1
Spirit	1	1	1	1	4	4	4	1
Steam (water)	2	1	2	1	4	4	4	1
Stearic acid	3	3	3	2	1	1	1	1
Styrene	1	1	2	1	4	2	2	1
Sugar solution	4	4	4	1	1	4	1	1
Sulphur	3	4	3	2	4	1	2	1
Sulphur dioxide	2	2	2	1	4	1	2	1
Sulphuric acid	2	3	2	1	4	2	4	1
T								
Tannic acid	3	2	3	1	2	2	1	1
Tartaric acid	4	2	4	2	2	1	2	1
Tin chloride	4	4	4	4	2	1	2	1
Toluene	1	1	1	1	4	2	2	1
Town gas	1	1	1	1	2	1	2	1
Transformer oil	1	2	2	1	2	2	1	1
Transmission oil	1	1	1	1	1	1	1	1
Tributyl phosphate	2	2	2	1	4	3	–	1

Medium	Ball valve materials: Housing Ball Control spindle — Steel	Brass	GG, GS—C	1.4571	Soft seals — NBR	FKM	Sealing cups — POM	PTFE
T								
Trichloroacetic acid	4	4	4	1	4	4	4	1
Trichloroethylene	2	3	3	2	4	3	3	1
Turbine oil	1	1	1	1	4	1	4	1
Turpentine oil	3	2	2	2	2	1	1	1
Urea, aqueous	3	2	3	2	2	2	2	1
V								
Vinegar	4	3	4	1	3	2	4	1
Vinyl chloride	2	3	2	2	4	3	2	1
Viscose	1	4	1	1	1	4	1	1
Volatile oils	2	2	2	1	3	2	2	1
W								
Water up to 180 °C.	2	1	2	1	4	4	4	1
Water up to 80 °C.	2	1	2	1	2	2	2	1
Water, distilled	4	1	4	1	2	2	2	1
Water, sea water	4	2	4	2	3	2	3	1
Wax	1	1	1	1	3	2	1	1
X								
Xylenes	2	1	2	1	4	2	1	1
Z								
Zinc chloride	4	4	3	4	3	1	2	1
Zinc sulphate	4	2	4	2	1	1	2	1

1 = recommended
2 = mostly suitable
3 = probably suitable
4 = not recommended
– = not yet determined

Note:
Medium tested at room temperature 20 °C

Materials Summary and Applications of the Materials in HYDAC Ball Valves.

Housing, connection adapter, control spindle and ball:

Material Code	Material	Application
1	Carbon Steel 9SMnPb28K	General oil hydraulics without special materials requirement.
2	Brass (MS58)	General oil and water hydraulics with increased corrosion protection requirements. Low and medium pressure range.
3	Stainless steel (1.4571)	Special application in the chemical and power industry with high corrosion protection requirements of the material.
5	Structural steel (ST52—3)	General oil and water hydraulics with special materials requirement.
6	Tempered steel (C 22.8)	General oil and water hydraulics with special materials requirement.
8	Cast iron (GG25)	Low pressure applications with good corrosion resistance.
10	Cast steel (GS—C 25)	High temperature applications with high stability values. Poor corrosive property.

Material of ball seal cup:

Material Code	Material	Application
1	Polyacetal (POM)	Primarily for high pressure hydraulics in the temperature range from — 20 °C to + 100 °C. Operating pressure up to max. 500 bar. Not resistant to aggressive media.
3	PTFE	Given the excellent chemical and thermal properties, the application ranges are varied. Temperature range from — 200 °C to + 100 °C. Temperatures up to 200 °C possible at reduced pressures. Operating pressure up to max. 100 bar.
8	Victrex— Peek	Good chemical and thermal properties. Temperature range from — 150 °C to + 200 °C. Operating pressure up to max. 500 bar.

Material of O-Rings on the control spindle and the connection adapters:

Material Code	Material	Application
2	Perbunan (NBR)	General hydraulics. Temperature range from — 20 °C to + 100 °C. Operating pressure up to max. 500 bar
4	(FKM)	General hydraulics, however primarily for aggressive media. Temperature range from — 10 °C to + 200 °C. Operating pressure up to max. 500 bar.
5	EPR	Ethylene Propylene Rubber

*Not all material combinations are available for all valves. Call HYDAC for more information.

Notes

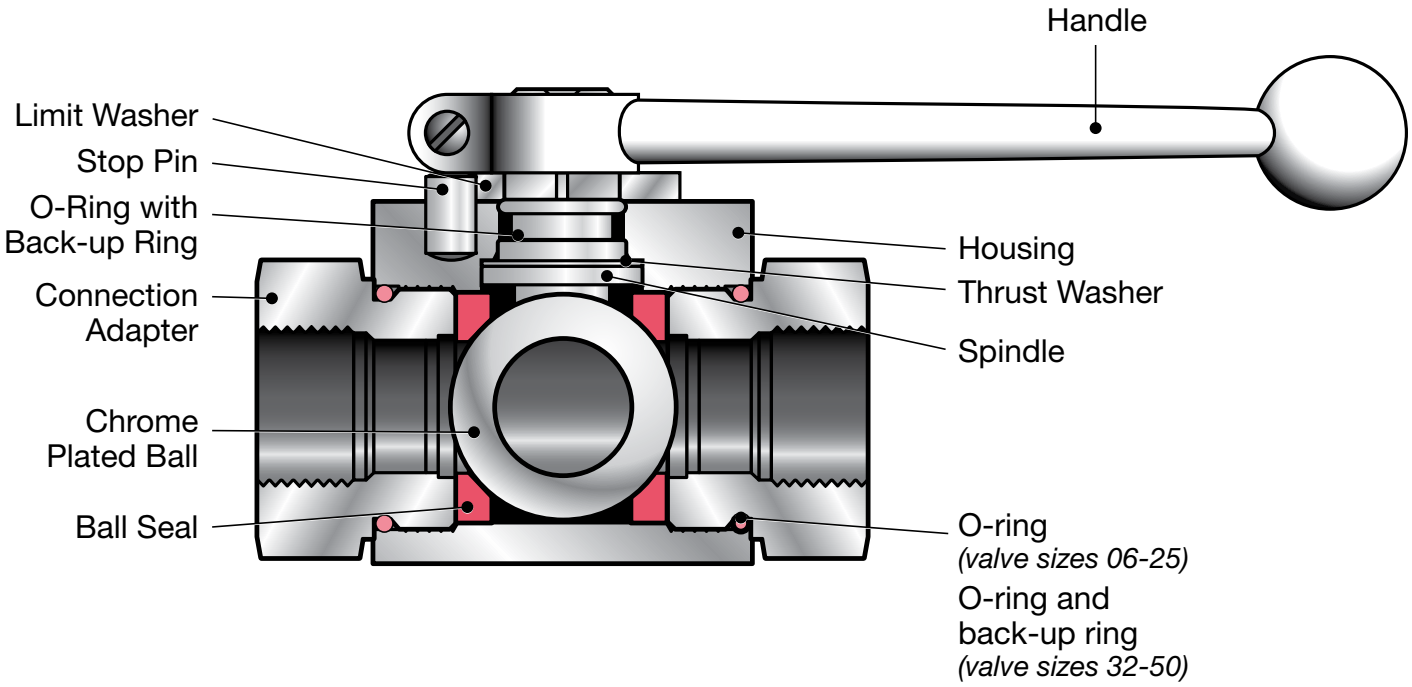
B

High Pressure Ball Valves

The HYDAC family of dependable high pressure ball valves provides full, unrestricted flow and positive shut-off of fluids and gases under extreme service conditions. Models are available to accommodate system pressures up to 7,250 PSI. Since a variety of materials are available, HYDAC valves can be used with various fluids and gases including petroleum based oils and some water glycols.

KHB, KHM, KHP, KHB3K Series

Standard Ball Valve Design Features and Options



Description

The HYDAC family of dependable high pressure ball valves provides full, unrestricted flow and positive shut-off of fluids and gases under extreme service conditions. Models are available to accommodate system pressures up to 7,250 PSI. Since a variety of materials are available, HYDAC valves can be used with various fluids and gases including petroleum-based oils and some water glycols.

Valve Design

The design of HYDAC ball valves is based on the “floating ball” principle which allows the ball to turn freely between the ball seals. A positive seal is attained by fluid pressure acting on the upstream surface of the ball and producing a constant uniform contact between the downstream ball seal and the ball. The ball is operated by a sealed spindle with a projecting square end to which the control handle or optional actuator is attached. *Ball valves are intended to be used as on/off flow control devices and are not to be used to throttle fluid flow. The valves should always be either fully open or closed.*

Features

- Full passage for unrestricted flow of medium
- Floating ball provides positive seal
- Direction of flow indicated by milled slot in control spindle
- Valve positioning controlled by a stop pin and limit washer
- Fluoroelastomer O-rings *(standard)*
- Zinc plated carbon steel valve body *(standard)* NEW

Available Options

HYDAC can furnish ball valves with special options including:

- Locking devices
- Stainless steel valve bodies
- Pneumatic or electrical actuators
- Limit switch
- Off-set or straight control handles
- Custom solutions - Contact HYDAC

Product Improvements:

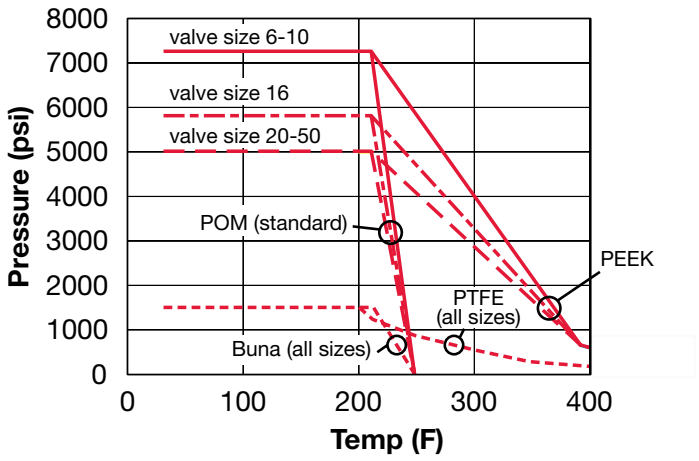
Zinc Plating: Carbon Steel Valves now come with Zinc Plating as the standard surface finish. Corrosion protection is improved.

Pressure Rating: Standard Carbon Steel Valves now rated up to 6000psi see specific product pages for details.

Engineering Data

Housing
Block Type (KHB) Carbon Steel *(standard)* 14˚F Min temp
Forged Type (KHM) Forged Steel *(standard)* 14˚F Min temp Stainless Steel *(optional)* -40˚F Min temp
Coatings Standard Models Phosphate Coated *(Others available on Request)*
Ball
Chrome Plated Steel *(standard)* Stainless Steel *(optional)*
Spindle
Zinc Plated Steel *(standard)* Stainless Steel *(optional)*
Handles *(see page A1-24)*
11X Straight Aluminum, Red Anodized
12X Offset Aluminum, Red Anodized
16X Offset Steel, Galvanized
Ball Seal
Polyacetal (POM) Standard for Hydraulic Oils, Water Glycol Maximum Pressure: to 7250 psi (500 bar) Temperature Range: -22° to 212°F (-30° to 100°C)
PTFE For Corrosive Media Maximum Pressure: to 1500 psi (100 bar) Temperature Range: -328° to 212°F (-200° to 100°C) ***Temperature to 392°F (200°C) at reduced Pressure*** *(see chart below for pressure-temperature profile)*
NBR For Gaseous Media Maximum Pressure: to 1500 psi (100 bar) Temperature Range: -13° to 212°F (-25° to 100°C) *(see chart below for pressure-temperature profile)*
PEEK High Temperature Seal Maximum Pressure: to 7250 psi (500 bar) Temperature Range: -238° to 212°F (-150° to 100°C) ***Better high temperature profile than PTFE Temperature to 482°F (250°C) at reduced Pressure*** *(see chart below for pressure-temperature profile)*
Spindle Seal & O-rings
Fluorocarbon (FPM) Standard for hydraulic oils and many acids Maximum Pressure: to 7250 psi (500 bar) Temperature Range: -4° to 392°F (-20° to 200°C)
NBR Seal for hydraulic oils, lubricants, greases Maximum Pressure: to 7250 psi (500 bar) Temperature Range: -13° to 212°F (-25° to 100°C)
PTFE for corrosive media and bases Maximum Pressure: to 1500 psi (100 bar) Temperature Range: -328° to 212°F (-200° to 100°C) Temperature to 392°F (200°C) at reduced pressure
EPR Ethylene Propylene Rubber for some phosphate esters Maximum Pressure: to 7250 psi (500 bar) Temperature Range: -58° to 300°F (-50° to 150°C)
Special Seals
Other materials are available for special applications. Consult HYDAC for your specific application.

Press-Temp Curve For Different Ball Seal Materials



KHB & KHM Series

2-way Ball Valves with SAE & NPT Connections

KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/4" - 2" Full Port Design
- NPT or SAE O-Ring Connections
- Carbon Steel or Stainless Steel Housings
- Block Housing: Sizes 06 - 25
- Forged Housing: Sizes 32 - 50
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure: to 7250 psi depending on valve size and seal materials selected
- Temperature Range: 14˚F to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚F to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KHB - 16 NPT - 1 1 1 4 - 11X - A - L

Housing Type
- KHB = Block Housing, Sizes 06 - 25
- KHM = Forged Housing, Sizes 32 - 50

Nominal Sizes

Nom Size	SAE Tube Size	SAE Thread Size	NPT Pipe Size	NPT Pipe øD
06	-4	7/16-20 UNF	1/4"	0.540"
10	-6	9/16-18 UNF	3/8"	0.675"
16	-8	3/4-16 UNF	1/2"	0.840"
20	-12	1-1/16-12 UN	3/4"	1.050"
25	-16	1-5/16-12 UN	1"	1.315"
32	-20	1-5/8-12 UN	1-1/4"	1.660"
40	-24	1-7/8-12 UN	1-1/2"	1.900"
50	-32	2-1/2-12 UN	2"	2.375"

Connection Type
- NPT = ANSI/ASME 1.20.1 Taper Pipe Thread
- SAE = SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing

Body Material
- 1 = Carbon Steel
- 3 = Stainless Steel

Spindle and Ball Material
- 1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
- 3 = Stainless Steel

Ball Seal Material
- 1 = Polyacetal *(standard)*
- 3 = PTFE *(1500 psi max)*
- 8 = PEEK

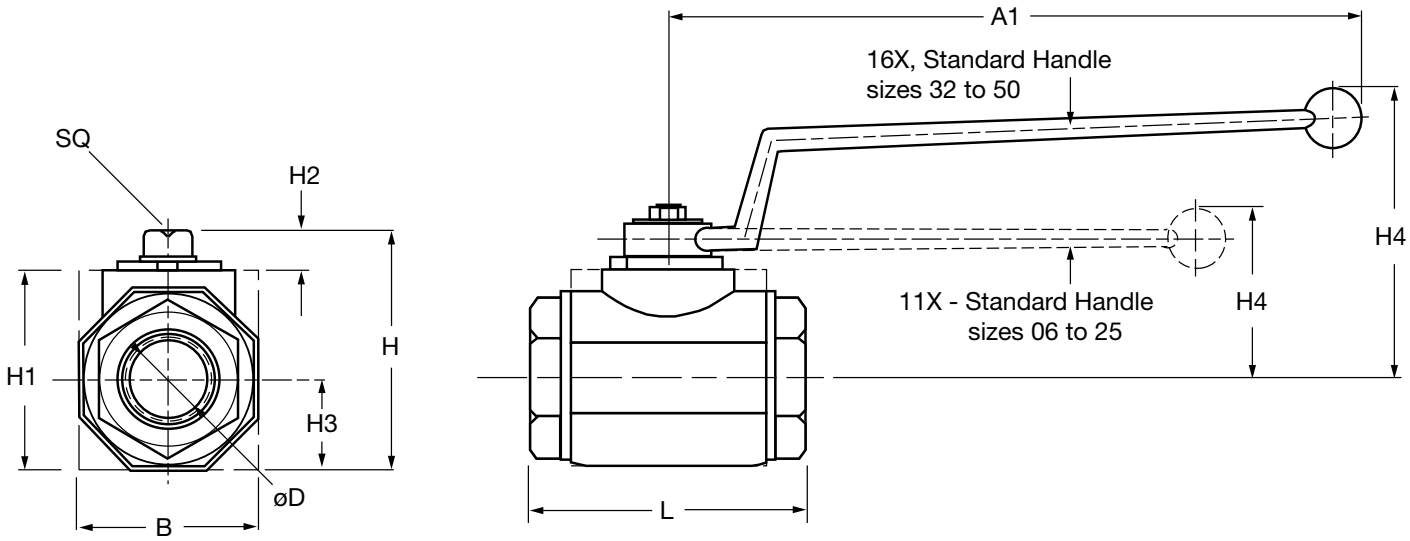
O-Ring Material
- 2 = NBR *(Buna)*
- 3 = PTFE Spindle Seals and FPM *(fluoroelastomer)* O-Rings *(1500 psi max)*
- 4 = FPM *(fluoroelastomer) (standard)*
- 5 = EPR

Handle Codes
- 09x = Without Handle *(see page A1-24 to order handle separately)*
- 11x = Straight Aluminum, Sizes 06-25
- 16x = Offset Steel, Sizes 32-50
- 18x = Offset Stainless Steel - option for stainless valves size 06-50

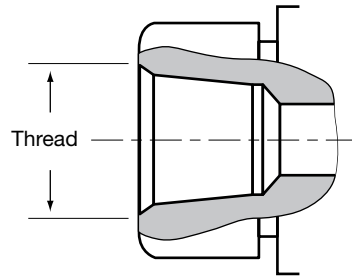
Housing Surface Finish
- A = Zinc plated *(standard for all carbon steel valves)*
- *(omit)* = No plating for Stainless Steel

Locking Device Option
- L = Locking Device *(see page A1-22 to order locking device separately)*
- LS = Locking Device with 5 amp Limit Switch, Available for sizes 20-50 *(Not available with PTFE Spindle Seals)*

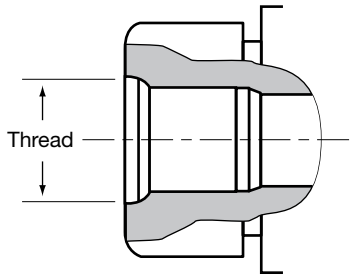
Dimensions



NPT Port
Internal Thread



SAE Port
Straight Thread
O-Ring Boss



Model	Thread	Max. psi*	A1	B	øD	H	H1	H2	H3	H4	L	SQ	Weight
KHB-06SAE	7/16-20UNF (SAE 4)	7250	5.91 (150)	0.98 (25)	0.24 (6)	1.89 (48)	1.38 (35)	0.28 (7)	0.51 (13)	1.65 (42)	2.72 (69)	0.35 (9)	0.66 (0.3)
KHB-06NPT	1/4" NPT												
KHB-10SAE	9/16-18UNF (SAE 6)	7250	5.91 (150)	1.26 (32)	0.39 (10)	2.09 (53)	1.57 (40)	0.33 (8.5)	0.67 (17)	1.69 (43)	2.83 (72)	0.35 (9)	1.10 (0.5)
KHB-10NPT	3/8" NPT												
KHB-16SAE	3/4-16UNF (SAE 8)	6000 CS 5800 SS	6.88 (175)	1.50 (38)	0.63 (16)	2.48 (63)	1.77 (45)	0.43 (11)	0.75 (19)	2.01 (51)	3.27 (83)	0.47 (12)	1.65 (0.75)
KHB-16NPT	1/2" NPT												
KHB-20SAE	1-1/16-12UN (SAE 12)	6000 CS 5000 SS	7.88 (200)	1.89 (48)	0.79 (20)	2.95 (75)	2.24 (57)	0.43 (11)	0.96 (24.5)	2.28 (58)	3.74 (95)	0.55 (14)	2.87 (1.3)
KHB-20NPT	3/4" NPT												
KHB-25SAE	1-5/16-12UN (SAE 16)	6000 CS 5000 SS	7.88 (200)	2.24 (57)	0.98 (25)	3.23 (82)	2.52 (64)	0.43 (11)	1.12 (28.5)	2.40 (61)	4.45 (113)	0.55 (14)	4.41 (2.0)
KHB-25NPT	1" NPT												
KHM-32SAE	1-5/8-12UN (SAE 20)	6000 CS 5000 SS	12.00 (305)	2.95 (75)	1.18 (30)	4.06 (103)	3.35 (85)	0.47 (12)	1.48 (37.5)	5.94 (151)	4.33 (110)	0.67 (17)	6.84 (3.1)
KHM-32NPT	1-1/4" NPT												
KHM-40SAE	1-7/8-12UN (SAE 24)	6000 CS 5000 SS	12.00 (305)	3.35 (85)	1.50 (38)	4.49 (114)	3.78 (96)	0.47 (12)	1.67 (42.5)	6.18 (157)	5.12 (130)	0.67 (17)	9.70 (4.4)
KHM-40NPT	1-1/2" NPT												
KHM-50SAE	2-1/2-12UN (SAE 32)	6000 CS 5000 SS	12.00 (305)	4.13 (105)	1.89 (48)	5.18 (131.5)	4.43 (112.5)	0.47 (12)	2.07 (52.5)	6.46 (164)	5.51 (140)	0.67 (17)	14.55 (6.6)
KHM-50NPT	2" NPT												

*Dependent upon valve and seal materials selected.
Notes:
1. Note difference in pressure ratings for Carbon Steel (CS) and Stainless Steel (SS).
2. Dimensions are in inches (mm) and lbs (kg).
3. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHB & KHM Series

2-way Ball Valves with BSP & Metric Tube Connections

KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/4" - 2" Full Port Design
- BSP or DIN2353 Connections
- Carbon Steel or Stainless Steel Housings
- Block Housing: Sizes 06 - 25
- Forged Housing: Sizes 32 - 50
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure to 7250 psi (500 bar) depending on valve size and seal materials selected
- Temperature Range: 14˚F to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚F to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KHB - 16 SR - 1 1 1 4 - 11X - A - L

Housing Type
- KHB = Block Housing, DN 06 - 25
- KHM = Forged Housing, DN 32 - 50

Nominal Sizes

Nom Size	G (BSP)	LR		SR	
DN04	-	06LR	M12X1.5	08SR	M16X1.5
DN06	G1/4	08LR	M14X1.5	10SR	M18X1.5
DN08	-	10LR	M16X1.5	12SR	M20X1.5
DN10	G3/8	12LR	M18X1.5	14SR	M22X1.5
DN12	-	15LR	M22X1.5	16SR	M24X1.5
DN16	G1/2	18LR	M26X1.5	20SR	M30X2
DN20	G3/4	22LR	M30X1.5	25SR	M36X2
DN25	G1	28LR	M36X1.5	30SR	M42X2
DN32	G11/4	35LR	M45X1.5	-	M52X2
DN40	G11/2	42LR	M52X1.5	-	-
DN50	G2	-	-	-	-

Connection Type
- G = BSP ports with ISO 228 threads
- LR = Light Range Metric Tube Connections, DIN 2353
- SR = Heavy Range Metric Tube Connections, DIN 2353

Body Material
- 1 = Carbon Steel
- 3 = Stainless Steel

Spindle and Ball Material
- 1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
- 3 = Stainless Steel

Ball Seal Material
- 1 = Polyacetal *(standard)*
- 3 = PTFE (1500 psi max)
- 8 = PEEK

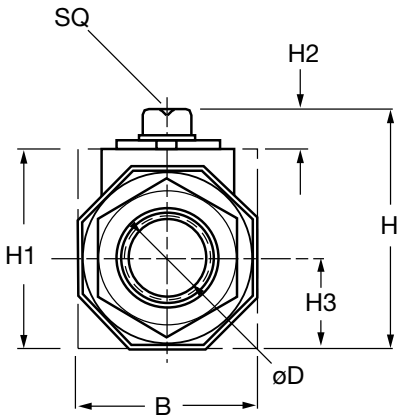
O-Ring Material
- 2 = NBR *(Buna)*
- 3 = PTFE Spindle Seals and FPM (fluoroelastomer) O-Rings (1500 psi max)
- 4 = FPM *(fluoroelastomer) (standard)*
- 5 = EPR

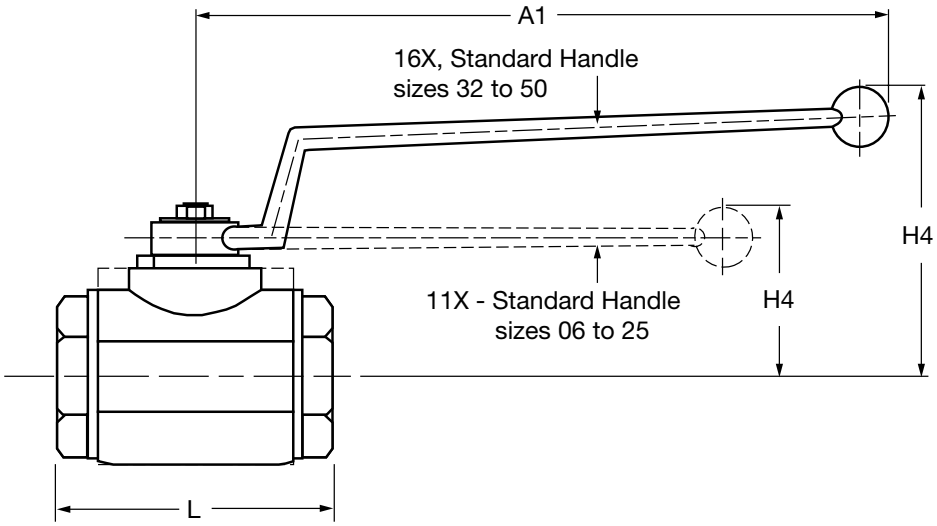
Handle Codes
- 09x = Without Handle *(see page A1-24 to order handle separately)*
- 11x = Straight Aluminum, Sizes 06-25
- 16x = Offset Steel, Sizes 32-50
- 18x = Offset Stainless Steel - optional for Stainless Steel valves, all sizes

Housing Surface Finish
- A = Zinc plated *(standard for all Carbon Steel valves)*
- (omit) = No plating (for Stainless Steel Valves)

Locking Device Option
- L = Locking Device *(see page A1-22 to order locking device separately)*
- LS = Locking Device with 5 amp Limit Switch, Available for sizes 20-50 *(Not available with PTFE Spindle Seals)*

Dimensions





Connection Type	Type	DN	øD	RA	d1	l	L	L1	B	H	h1	h2	h3	SW1	SW2	Weight (kg)	Nom. pressure PN (bar)
DIN ISO 228 Female thread	KHB-G1/4	6	8	–	G1/4	14	69	37	28	44	14	33	7	9	22	0.32	500
	KHB-G3/8	10	10	–	G3/8	14	72	42	32	53	17	40	8,5	9	27	0.46	500
	KHB-G1/2	16	15	–	G1/2	16	83	47	40	62	20	46	11	12	32	0.7	420
	KHB-G3/4	20	20	–	G3/4	18	95	60	49	75	24.5	57	11.6	14	41	1.3	420
	KHB-G1	25	25	–	G1	20,5	113	65	58	82	28.5	65	11.6	14	50	2.03	420
	KHM-G11/4	32	30	–	G11/4	22	109.4	83.4	82	106.2	40	87.7	12	17	60	3.1	420
	KHM-G11/2	40	38	–	G11/2	24	130	91	94	118.2	45	99.7	12	17	70	4.4	420
	KHM-G2	50	48	–	G2	28	140	100	111	134.2	55.5	115.7	12	17	80	6.6	420
DIN 2353 Light range	KHB-06LR	4	4	6	M12x1.5	7	67	37	28	44	14	33	7	9	22	0.26	500
	KHB-08LR	6	6	8	M14x1.5	7	67	37	28	44	14	33	7	9	22	0.26	500
	KHB-10LR	8	8	10	M16x1.5	11	74	42	32	53	17	40	8.5	9	27	0.43	500
	KHB-12LR	10	10	12	M18x1.5	11	74	42	32	53	17	40	8.5	9	27	0.43	500
	KHB-15LR	12	12	15	M22x1.5	12	82	47	40	62	20	46	11.6	12	32	0.64	420
	KHB-18LR	16	15	18	M26x1.5	12	82	47	40	62	20	46	11	12	32	1.25	420
	KHB-22LR	20	19	22	M30x2	14	101	60	49	75	24.5	57	11.6	14	41	1.54	420
	KHB-28LR	25	24	28	M36x2	14	108	65	58	82	28.5	65	11.6	14	50	1.54	420
	KHM-35LR	32	30	35.3	M45x2	16	141.4	83.4	82	106.2	40	87.7	12	17	60	3.36	420
	KHM-42LR	40	36	42.3	M52x2	16	162	91	94	118.2	45	99.7	12	17	70	4.88	420
DIN 2353 Heavy range	KHB-08SR	4	5	8	M16x1.5	7	73	37	28	44	14	33	7	9	22	0.28	500
	KHB-10SR	6	7	10	M18x1.5	7,5	73	37	28	44	14	33	7	9	22	0.32	500
	KHB-12SR	8	8	12	M20x1.5	12	76	42	32	53	17	40	8.5	9	27	0.45	500
	KHB-14SR	10	10	14	M22x1.5	14	80	42	32	53	17	40	8.5	9	27	0.46	500
	KHB-16SR	12	12	16	M24x1.5	14	86	47	40	62	20	46	11.6	12	32	0.65	420
	KHB-20SR	16	15	20	M30x2	16	90	47	40	62	20	46	11	12	32	0.67	420
	KHB-25SR	20	20	25	M36x2	18	109	60	49	75	24.5	57	11.6	14	41	1.32	420
	KHB-30SR	25	25	30	M42x2	20	120	65	58	82	28.5	65	11.6	14	50	1.87	420
	KHM-38SR	32	30	38.3	M52x2	22	153.4	83.4	82	106.2	40	87.7	12	17	60	3.43	420

Notes:
1. Dimensions are in (mm), (kg) and (bar).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHB & KHM Series

2-way Ball Valves with Split Flange Connections

KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/2" - 2" Full Port Design
- SAE Code 61 and 62 Split Flange Connections
- Carbon Steel or Stainless Steel Housings
- Block Housing: Sizes 16 - 25
- Forged Housing: Sizes 32 - 50
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure: to 6000 psi depending on valve size and seal materials selected
- Temperature Range: 14˚F to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚F to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KHB - 20 F3 - 1 1 1 4 X - 12X - A - L

Housing Type
- KHB = Block Housing - Sizes 16-25
- KHM = Forged Housing - Sizes 32-50

Nominal Sizes

Valve Size	Nominal Flange Size	Flange Dash Size
16	1/2"	-8
20	3/4"	-12
25	1"	-16
32	1-1/4"	-20
40	1-1/2"	-24
50	2"	-32

Connection Type

SAE J518 Four bolt split flange type:
- F3 = Standard Pressure Series, Code 61
- F6 = High Pressure Series, Code 62

Body Material
- 1 = Carbon Steel
- 3 = Stainless Steel

Spindle and Ball Material
- 1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
- 3 = Stainless Steel

Ball Seal Material
- 1 = Polyacetal *(standard)*
- 3 = PTFE (1500 psi max)
- 8 = PEEK

O-Ring Material
- 2 = NBR (Buna N)
- 3 = PTFE Spindle Seals and FPM (fluoroelastomer) O-Rings (1500 psi max)
- 4 = FPM *(Fluoroelastomer) (standard)*
- 5 = EPR

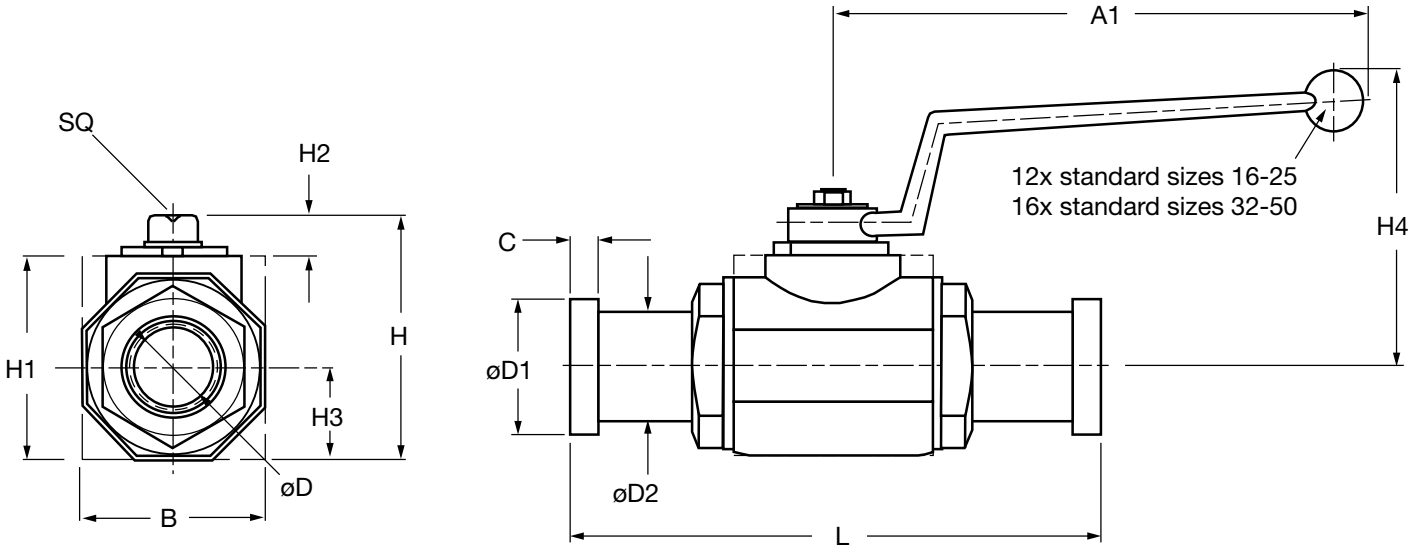
Split Flange Material
- X = Without Split Flanges *(order split flanges separately see page C2-21)*

Handle Codes
- 09X = Without Handle, Sizes 16-50
- 12X = Offset Aluminum, Sizes 16-25
- 16X = Offset Steel, Sizes 32-50
- 18x = Offset Stainless Steel - option for stainless valves size 06-50

Housing Surface Finish
- A = Zinc plated *(standard for all carbon steel valves)*
- (omit) = No plating for Stainless Steel

Locking Device Option
- L = Locking Device *(see page A1-22 to order locking device separately)*
- LS = Locking Device with 5 amp Limit Switch, Available for sizes 20-50 *(Not available with PTFE Spindle Seals)*

Dimensions



For dimensional information on flanges, C2-21

SAE Code 61 (...F3)

Mw	Max. psi*	Size	A1	B	C	øD	øD1	øD2	H	H1	H2	H3	H4	L	SQ	Wt.
KHB-16 F3	5000	1/2”	6.42 (163)	1.50 (38)	0.27 (6.8)	0.51 (13)	1.19 (30.2)	0.94 (24)	2.44 (62)	1.77 (45)	0.43 (11)	0.75 (19)	3.27 (83)	5.94 (151)	0.47 (12)	2.4 (1.1)
KHB-20 F3	5000	3/4”	7.20 (183)	1.89 (48)	0.27 (6.8)	0.75 (19)	1.50 (38.1)	1.24 (31.5)	2.95 (75)	2.24 (57)	0.43 (11)	0.96 (24.5)	3.62 (92)	6.69 (170)	0.55 (14)	4.0 (1.8)
KHB-25 F3	5000	1”	7.20 (183)	2.24 (57)	0.31 (8)	0.98 (25)	1.75 (44.45)	1.50 (38)	3.23 (82)	2.52 (64)	0.43 (11)	1.12 (28.5)	3.74 (95)	6.95 (176.5)	0.55 (14)	5.1 (2.3)
KHM-32 F3	4000	1-1/4”	12.01 (305)	2.95 (75)	0.31 (8)	1.18 (30)	2.00 (50.8)	1.69 (43)	4.06 (103)	3.35 (85)	0.47 (12)	1.48 (37.5)	5.94 (151)	7.54 (191.4)	0.67 (17)	9.0 (4.1)
KHM-40 F3	3000	1-1/2”	12.01 (305)	3.35 (85)	0.31 (8)	1.50 (38)	2.38 (60.35)	1.97 (50)	4.49 (114)	3.78 (96)	0.47 (12)	1.67 (42.5)	6.18 (157)	9.09 (231)	0.67 (17)	13.1 (5.9)
KHM-50 F3	3000	2”	12.01 (305)	4.13 (105)	0.38 (9.6)	1.89 (48)	2.81 (71.4)	2.44 (62)	5.18 (131.5)	4.43 (112.5)	0.47 (12)	2.07 (52.5)	6.46 (164)	9.21 (234)	0.67 (17)	19.2 (8.7)

SAE Code 62 (...F6)

Model	Max. psi*	Size	A1	B	C	øD	øD1	øD2	H	H1	H2	H3	H4	L	SQ	Wt.
KHB-16 F6	6000 CS 5800 SS	1/2”	6.41 (163)	1.50 (38)	0.31 (7.8)	0.51 (13)	1.25 (31.8)	0.94 (24)	2.44 (62)	1.77 (45)	0.43 (11)	0.75 (19)	3.27 (83)	5.94 (151)	0.47 (12)	2.4 (1.1)
KHB-20 F6	6000 CS 5000 SS	3/4”	7.20 (183)	1.89 (48)	0.35 (8.8)	0.75 (19)	1.63 (41.3)	1.26 (32)	2.95 (75)	2.24 (57)	0.43 (11)	0.96 (24.5)	3.62 (92)	6.69 (170)	0.55 (14)	4.0 (1.8)
KHB-25 F6	6000 CS 5000 SS	1”	7.20 (183)	2.24 (57)	0.37 (9.5)	0.98 (25)	1.87 (47.6)	1.50 (38)	3.23 (82)	2.52 (64)	0.43 (11)	1.12 (28.5)	3.72 (95)	7.81 (198.5)	0.55 (14)	5.4 (2.4)
KHM-32 F6	6000 CS 5000 SS	1-1/4”	12.01 (305)	2.95 (75)	0.41 (10.3)	1.18 (30)	2.13 (54)	1.73 (44)	4.06 (103)	3.35 (85)	0.47 (12)	1.48 (37.5)	5.94 (151)	8.80 (223.4)	0.67 (17)	10.6 (4.8)
KHM-40 F6	6000 CS 5000 SS	1-1/2”	12.01 (305)	3.35 (85)	0.50 (12.6)	1.50 (38)	2.50 (63.5)	2.01 (51)	4.49 (114)	3.78 (96)	0.47 (12)	1.67 (42.5)	6.18 (157)	11.06 (281)	0.67 (17)	15.4 (7.0)
KHM-50 F6	6000 CS 5000 SS	2”	12.01 (305)	4.13 (105)	0.50 (12.6)	1.89 (48)	3.13 (79.4)	2.64 (67)	5.18 (131.5)	4.43 (112.5)	0.47 (12)	2.07 (52.5)	6.46 (164)	12.40 (315)	0.67 (17)	22.5 (10.2)

*Dependent upon valve and seal materials selected.
Notes:
1. Note difference in pressure ratings for Carbon Steel (CS) and Stainless Steel (SS).
2. Dimensions are in inches (mm) and lbs (kg).
3. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Ball Valve Actuator

Pneumatic Operation

Description

The HYDAC dependable rack and pinion pneumatic actuators are compact and efficient components with a trouble-free, high-cycle service life.

The double piston design allows significantly reduced cylinder diameter and overall size as compared to single piston design.

Each piston has a gear rack that applies an equal force at two points directly across the diameter of a common pinion gear.

This feature, combined with the patented suspension system, creates a symmetrically balanced, center-mount actuator with a short, powerful stroke, rapid response, and fully concentric operating loads for optimum life expectancy and performance in control valve applications.

Features

- Reliable rack and pinion design
- High output torque and compactness
- Integrated air manifold and internal porting
- A solenoid valve can be mounted directly onto actuator body thus external piping is simplified
- Double-acting and single-acting (spring return) models are available
- Self-lubricating bands reduce friction and smooth piston travel, and increase efficiency
- Limit switch available

Model Code

KHB-25SAE-1114 - A 5 1 A A

Ball Valve
Available for both KHB & KHM Series
(See pages A1-4 thru A1-18 for details on ball valve model codes)
Note: OMIT the Handle code rather than entering the code for no handle.

Actuator Type
A = Pneumatic - single (FSA) or double acting (FDA)

Size*
2 = 25 (recommended for valves KHB-06... - KHB-20)
3 = 40
4 = 65
5 = 100 *(recommended for valves KHB-25... & KHM-32)*
6 = 200
7 = 350 (recommended for valves KHM-40... & KHM-50)

Operation
1 = All Double acting *(air to A to open, air to B to close)*
2 = #2 Spring Set (balances with 40 psi)
3 = #3 Spring Set (balances with 60 psi)
4 = #4 Spring Set (balances with 80 psi)
5 = #5 Spring Set (balances with 100 psi)
6 = #6 Spring Set (balances with 120 psi)
Single acting, spring return (air to A to open, spring to close)

Limit Switches
A = none
B = Standard Limit Switch Module *(2 SPDT)*

Additional Options
A = none
B = Control Valve: 120V AC
C = Control Valve: 24V DC

Ordering

Pneumatic Actuators (double acting) & Mounting Kits

Valve Size	Actuator Model Code	Actuator Part Number	Mounting Kit Part Number
KHB-06 (1/4")	FDA-25	2700205	2201839
KHB-10 (3/8")	FDA-25	2700205	2201839
KHB-16 (1/2")	FDA-25	2700205	2061509
KHB-20 (3/4")	FDA-25	2700205	2061510
KHB-25 (1")	FDA-100	2700206	2061511
KHM-32 (1 1/4")	FDA-100	2700206	2061512
KHM-40 (1 1/2")	FDA-350	2700207	2061513
KHM-50 (2")	FDA-350	2700207	2061513

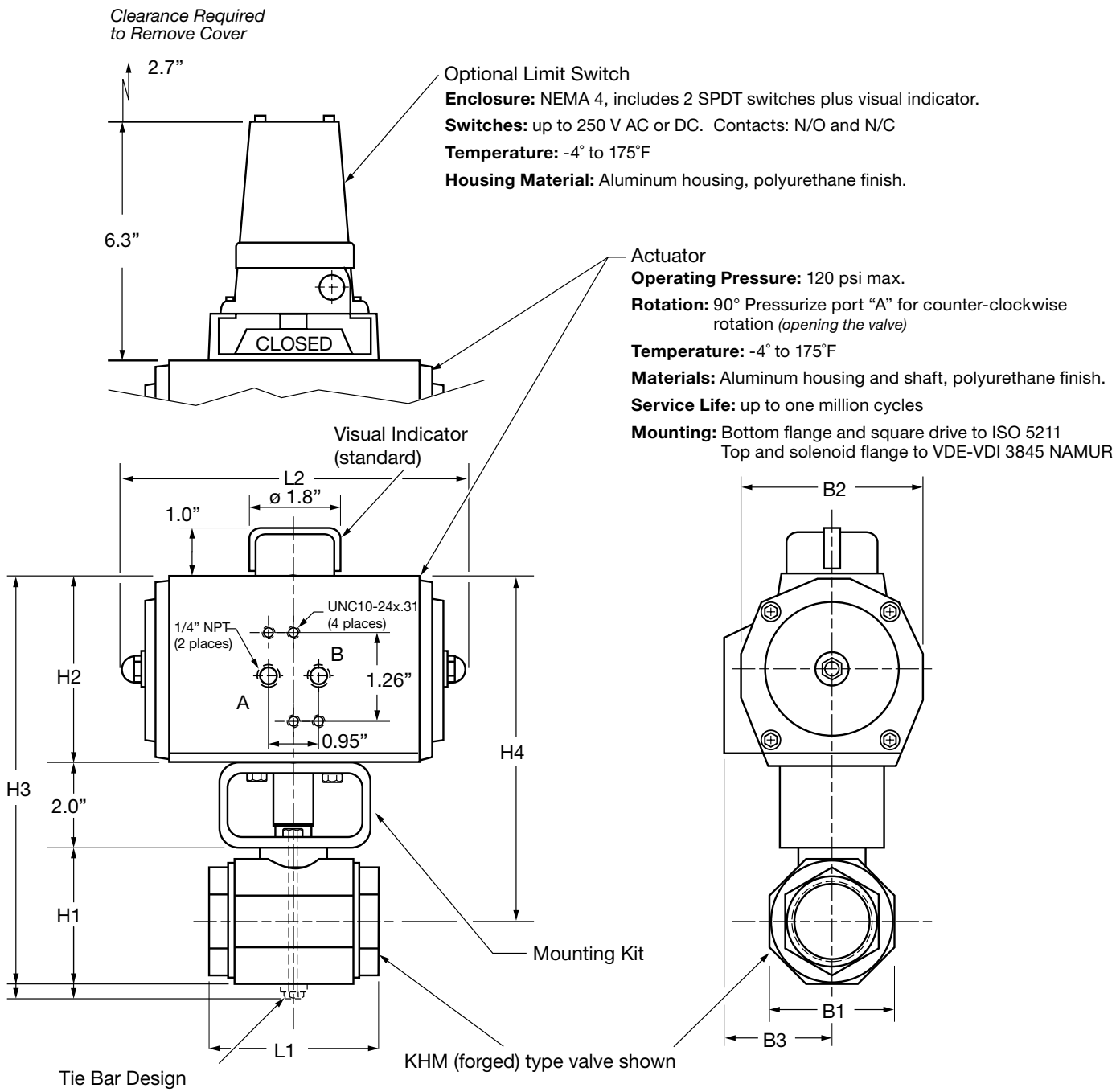
Optional Accessories (model code / part number)

Limit Switch Box *(2 SPDT switches)*		
ACTUATOR LIMIT SWITCH		02700282
Limit Switch Mounting Kit *(for FDA-25 thru FDA-350)*		
ACTUATOR LIMIT SWITCH MTG KIT		02700284
Solenoid Control Valve** (120 VAC)	3-Way (for FSA)	02082888
	4-Way (for FDA)	02082890
Solenoid Control Valve** (24 VDC)	3-Way (for FSA)	02082887
	4-Way (for FDA)	02082889

*Recommendations for actuator size are based on a typical application: Double acting actuator, 3000 psi max. pressure, mineral based hydraulic fluid, 80-100 psi shop air, and a moderate duty cycle. Applications with Spring Return actuators, higher system pressures, low lubricity fluids, or infrequent cycling (< once/hr.) may require a larger size actuator. Please consult HYDAC Engineering Department for assistance sizing actuators for these applications.

**See pages A3-10 to A3-11 for information on Solenoid Valves.

Dimensions



Ball Valve / Actuator Size	H1	H2	H3	H4	L1	L2	B1	B2	B3	Operating Time (sec)	Air Cons. (in3/1atm)	Weight
KHB-06 / EDA-12	2.2	2.4	6.6	5.3	2.8	4.1	1.0	2.4	1.9	0.4	4	3.5
KHB-10 / EDA-12	2.2	2.4	6.6	5.3	2.9	4.1	1.3	2.4	1.9	0.4	4	4
KHB-16 / EDA-25	2.5	3.2	7.7	6.2	3.3	6.3	1.5	2.9	1.8	0.5	7	6.5
KHB-20 / EDA-25	3.2	3.2	8.4	6.5	3.8	6.3	1.9	2.9	1.8	0.5	7	8
KHB-25 / EDA-100	3.5	4.7	10.2	8.1	4.5	8.7	2.3	4.3	2.5	1.2	30	14
KHM-32 / EDA-100	3.4	4.7	10.1	8.6	4.4	8.7	3.0	4.3	2.5	1.2	30	16
KHM-40 / EDA-350	3.8	7.1	12.9	11.2	5.2	12.0	3.4	6.8	3.7	3.6	120	37
KHM-50 / EDA-350	4.5	7.1	13.6	11.5	5.6	12.0	4.2	6.8	3.7	3.6	120	42

Notes:
1. Dimensions are in inches and lbs.
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHF3/6 Series

Direct Mount SAE Flange 1/2” to 2”

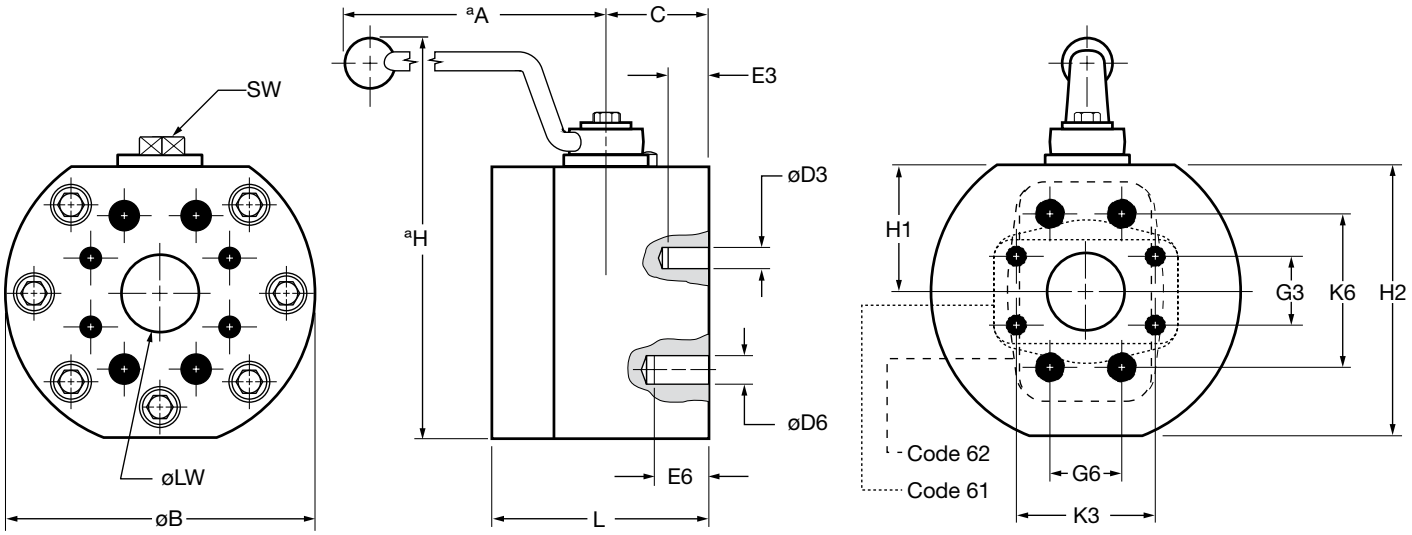
Features

- Compact, space saving design
- Full passage for unrestricted flow of medium
- Floating ball provides positive seal
- Valve positioning controlled by a stop pin and limit washer
- Zinc plated Carbon Steel Housing

Specifications

- Connection: Dual bolt pattern fits Code 61 and 62 SAE flanges
- Operating Pressure: to 6000 psi
- Ball Seal Material: Polyacetal
- O-ring Material: Fluoroelastomer *(FPM)*
- Housing Material: Carbon Steel
- Temperature Range: 14˚ to 176˚F

Dimensions



Size	Model Code	Code 61					Code 62				
		K3	G3	øD3	E3	MAWP (psi)*	K6	G6	øD6	E6	MAWP (psi)*
1/2”	KHF3/6-16-1114-16X-A-UNC	1.50	0.69	5/16”-18UNC	0.63	5000	1.59	0.72	5/16”-18UNC	0.63	6000
3/4”	KHF3/6-20-1114-16X-A-UNC	1.87	0.88	3/8”-16UNC	0.71	5000	2.00	0.94	3/8”-16UNC	0.71	6000
1”	KHF3/6-25-1114-16X-A-UNC	2.06	1.03	3/8”-16UNC	0.71	5000	2.25	1.09	7/16”-14UNC	0.83	6000
1 1/4”	KHF3/6-32-1114-36X-A-UNC	2.31	1.19	7/16”-14UNC	0.71	4000	2.62	1.25	1/2”-13UNC	0.83	6000
1 1/2”	KHF3/6-40-1114-36X-A-UNC	2.75	1.41	1/2”-13UNC	1.02	3000	3.12	1.44	5/8”-11UNC	1.02	6000
2”	KHF3/6-50-1114-36X-A-UNC	3.06	1.69	1/2”-13UNC	1.02	3000	3.87	1.75	3/4”-10UNC	1.18	6000

Size	Model Code	øB	H1	H2	øLW	L	H	C	SW (mm)	A	Weight
1/2”	KHF3/6-16-1114-16X-A-UNC	3.11	1.34	2.81	0.51	2.95	5.08	1.28	12	7.00	5.5
3/4”	KHF3/6-20-1114-16X-A-UNC	3.90	1.73	3.54	0.75	3.15	5.79	1.35	14	7.00	8.6
1”	KHF3/6-25-1114-16X-A-UNC	4.69	1.85	4.02	0.98	3.46	6.30	1.50	14	7.00	13.2
1 1/4”	KHF3/6-32-1114-36X-A-UNC	5.47	2.32	4.88	1.18	3.94	8.31	1.73	17	12.0	25.6
1 1/2”	KHF3/6-40-1114-36X-A-UNC	6.30	2.56	5.51	1.50	4.33	8.94	2.01	17	12.0	36.2
2”	KHF3/6-50-1114-36X-A-UNC	7.05	2.86	6.17	1.89	4.57	9.61	2.13	17	12.0	54.9

*Pressure rating listed is valve pressure only. Pressure ratings for available flanges may be less. Consult flange manufacturer and ISO 6162 for flange pressure rating.

Notes:

1. Dimensions are in inches and lbs.
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHF3 Series

Direct Mount SAE Flange 2 1/2” to 4”

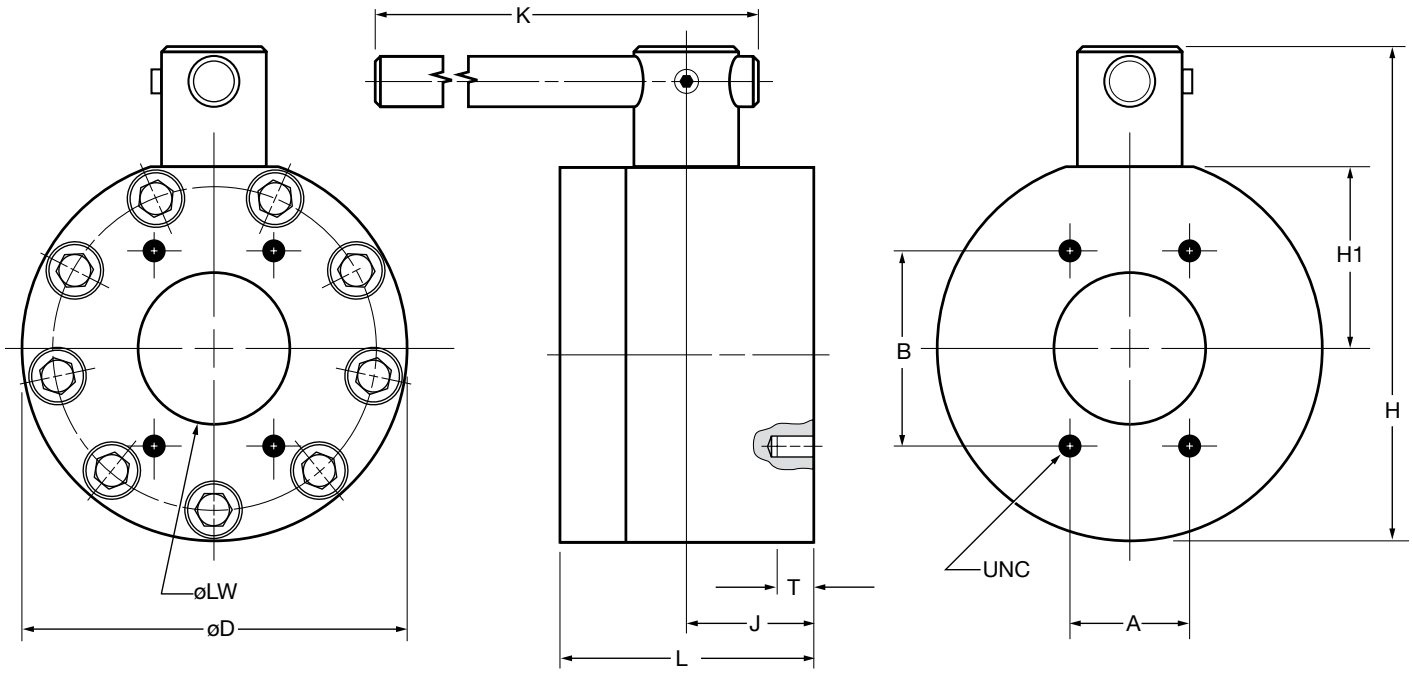
Features

- Compact, space saving design
- Full passage for unrestricted flow of medium
- Floating ball provides positive seal
- Zinc plated Carbon Steel Housing
- Individually tested for leakage free performance

Specifications

- Connection: Bolt pattern fits code 61 SAE flanges
- Operating Pressure: to 2500 psi
- Ball Seal Material: Polyacetal
- O-ring Material: Fluoroelastomer *(FPM)*
- Housing Material: Carbon Steel
- Temperature Range: 14˚ to 176˚F

Dimensions



Size	Model Code	øLW	L	J	H1	H	øD	A	B	UNC	T	K	MAWP (psi)*	Weight
2 1/2”	KHF3-065-1114-05X-A-UNC	2.48	5.90	2.95	3.70	10.8	7.80	2.00	3.50	1/2”-13UNC	0.75	36	2500	73
3”	KHF3-080-1114-05X-A-UNC	2.99	5.51	2.76	4.09	11.4	8.27	2.44	4.19	5/8”-11UNC	0.95	36	2000	88
4”	KHF3-100-1114-05X-A-UNC	3.94	6.69	3.35	4.80	13.1	10.16	3.06	5.13	5/8”-11UNC	0.95	36	500	132

*Pressure rating listed is valve pressure only. Pressure ratings for available flanges may be less.
Consult flange manufacturer and ISO 6162 for flange pressure rating.
Notes:
1. Dimensions are in inches and lbs.
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHP Series

2-way Manifold Mounted Ball Valves

Specifications

- Sizes 3/8" - 2"
- Carbon Steel Housing
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure: to 5000 psi depending on seal materials selected
- Temperature Range: 14˚ to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KHP - 20 - 1 1 1 4 - 12X - A - L

Housing Type
KHP = Block Housing for Manifold mounting

Nominal Sizes

Valve Size	Nominal Size
10	3/8"
16	1/2"
20	3/4"
25	1"
32	1-1/4"
40	1-1/2"
50	2"

Body Material
1 = Carbon Steel

Spindle and Ball Material
1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
3 = Stainless Steel

Ball Seal Material
1 = Polyacetal *(standard)*
3 = PTFE (1500 psi max)

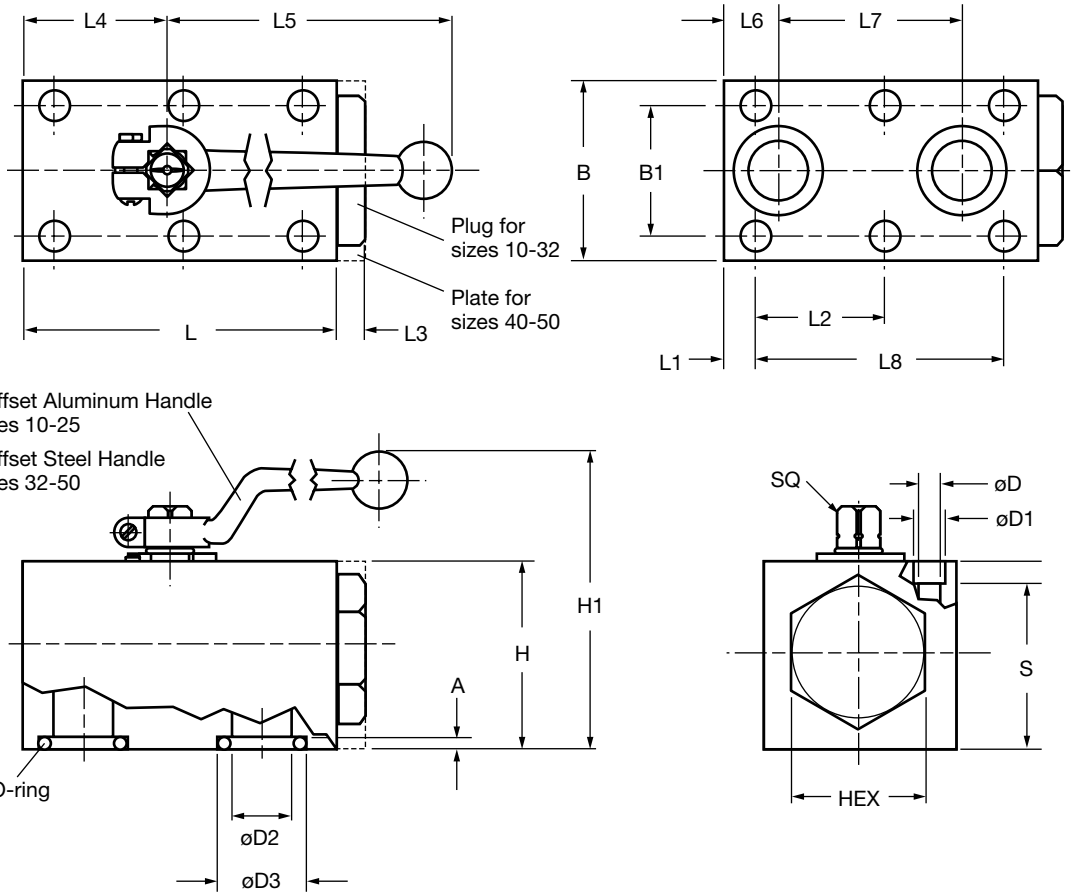
O-Ring Material
2 = NBR (Buna N)
3 = PTFE Spindle Seals and FPM (fluoroelastomer) O-Rings (1500 psi max)
4 = FPM *(fluoroelastomer) (standard)*
5 = EPR

Handle Codes
09x = Without Handle
12x = Offset Aluminum sizes 10 - 25
16x = Offset Steel sizes 32 - 50

Housing Surface Finish
A = Zinc plated *(standard for all carbon steel valves)*

Locking Device Option
L = Locking Device *(see page A1-22 to order locking device separately)*
LS = Locking Device with 5 amp Limit Switch *(Sizes 20, 25 only) (Not available with PTFE Spindle Seals)*

Dimensions



Model	Max. psi*	A	B	B1	ø D	ø D1	ø D2	ø D3	HEX	H	H1	O-ring	Weight
KHP-10	5000	0.08 (2)	2.17 (55)	1.575 (40)	0.35 (9)	0.55 (14)	0.374 (9.5)	0.591 (15)	1 3/16 (30)	1.77 (45)	3.58 (91)	10x2.6	2.6 (1.2)
KHP-16	5000	0.08 (2)	2.36 (60)	1.772 (45)	0.35 (9)	0.55 (14)	0.630 (16)	0.984 (25)	1 7/16 (36)	2.17 (55)	4.45 (113)	20.3x2.6	4.6 (2.1)
KHP-20	5000	0.12 (3)	2.76 (70)	2.008 (51)	0.41 (10.5)	0.65 (16.5)	0.787 (20)	1.181 (30)	1 5/8 (41)	2.76 (70)	5.16 (131)	23.4x3.5	8.2 (3.7)
KHP-25	5000	0.12 (3)	3.15 (80)	2.362 (60)	0.41 (10.5)	0.65 (17)	0.925 (23.5)	1.378 (35)	2 (50)	3.15 (80)	5.55 (141)	28.2x3.5	12.3 (5.6)
KHP-32	5000	0.12 (3)	3.94 (100)	3.071 (78)	0.51 (13)	0.75 (19)	1.260 (32)	1.551 (39.4)	2 9/16 (65)	3.94 (100)	8.07 (205)	32.9x3.5	23.4 (10.6)
KHP-40	5000	0.12 (3)	5.12 (130)	3.740 (95)	0.69 (17.5)	1.02 (26)	1.496 (38)	1.906 (48.4)	–	3.94 (100)	8.07 (205)	42x3.5	38.6 (17.5)
KHP-50	5000	0.12 (3)	5.91 (150)	4.409 (112)	0.87 (22)	1.30 (33)	1.89 (48)	2.181 (55.4)	–	4.33 (110)	8.46 (215)	49x3.5	43.7 (19.8)

Model	L	L1	L2	L3	L4	L5	L6	L7	L8	S	SQ	Bolt Size**	Torque**
KHP-10	2.76 (70)	0.295 (7.5)	1.083 (27.5)	0.39 (10)	1.14 (29)	5.51 (140)	0.394 (10)	1.732 (44)	2.165 (55)	1.42 (36)	0.35 (9)	5/16" - 18 UNC x 2"	26 ft/lb
KHP-16	3.94 (100)	0.335 (8.5)	1.634 (41.5)	0.39 (10)	1.73 (44)	6.42 (163)	0.669 (17)	2.284 (58)	3.268 (83)	1.81 (46)	0.47 (12)	5/16" - 18 UNC x 2 1/4"	26 ft/lb
KHP-20	4.61 (117)	0.394 (10)	1.909 (48.5)	0.39 (10)	2.01 (51)	7.20 (183)	0.787 (20)	2.717 (69)	3.819 (97)	2.34 (59.5)	0.55 (14)	3/8" - 16 UNC x 3"	45 ft/lb
KHP-25	5.32 (135)	0.394 (10)	2.264 (57.5)	0.39 (10)	2.44 (62)	7.20 (183)	0.945 (24)	3.189 (81)	4.528 (115)	2.72 (69)	0.55 (14)	3/8" - 16 UNC x 3 1/4"	45 ft/lb
KHP-32	6.50 (165)	0.472 (12)	2.677 (68)	0.43 (11)	2.95 (75)	12.00 (305)	1.142 (29)	3.780 (96)	5.354 (136)	3.31 (84)	0.67 (17)	7/16" - 14 UNC x 4"	75 ft/lb
KHP-40	7.09 (180)	1.122 (28.5)	2.205 (56)	0.98 (25)	3.33 (84.6)	12.00 (305)	1.122 (28.5)	4.409 (112)	4.409 (112)	3.25 (82.5)	0.67 (17)	5/8" - 11 UNC x 4 1/4"	220 ft/lb
KHP-50	8.66 (220)	1.496 (38)	2.677 (68)	0.98 (25)	4.17 (106)	12.00 (305)	1.496 (38)	5.354 (136)	5.354 (136)	3.48 (88.5)	0.67 (17)	3/4" - 10 UNC x 4 1/2"	400 ft/lb

*Dependent upon valve and seal materials selected.
**Bolt size and torque provided as reference only. Manifold designs must take all factors (materials, pressure, etc.) into consideration. Consult HYDAC Engineering for more information.
Notes:
1. Dimensions are in inches (mm) and lbs (kg)
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHB3H Series

3 Piece Ball Valve

Specifications

- 1/2” - 4” Standard Port
- 1/2” - 2” Class 2500 ANSI *(up to 6000 psi)*
  3” - 4” Class 1500 ANSI *(up to 3800 psi)*
- Blow-out proof stem
- Handle operated or actuated
- Applications: Offshore, Oil & Gas, Chemical, Petrochemical, Refining, Energy
- Media: Liquid or gas
- Material: Stainless Steel
- End Connections: Socket weld and threaded.
  Other options available *(consult factory)*
- Locking devices available

Model Code

KHB3H - SP - 1 SW - 3 3 8 2

Series Type
KHB3H = High Pressure 3 Piece Ball Valve

Port
SP = Standard Port

Connection Size *(inches)*
1/2”, 3/4”, 1”, 1 1/4”, 1 1/2”, 2”, 2 1/2”, 3”, 4”

Connection Type
SW = Socket Weld
NPT = Tapered Pipe Threads

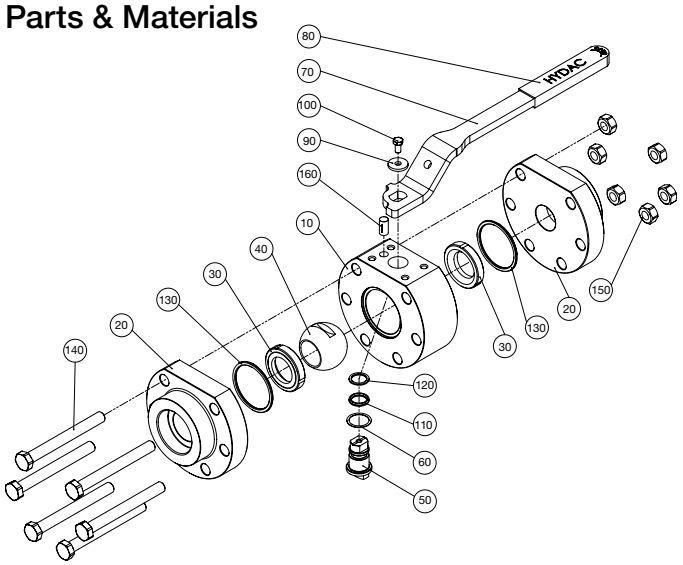
Body Material
3 = Stainless Steel

Spindle & Ball Material
3 = Stainless Steel

Ball Seal Material
8 = PEEK

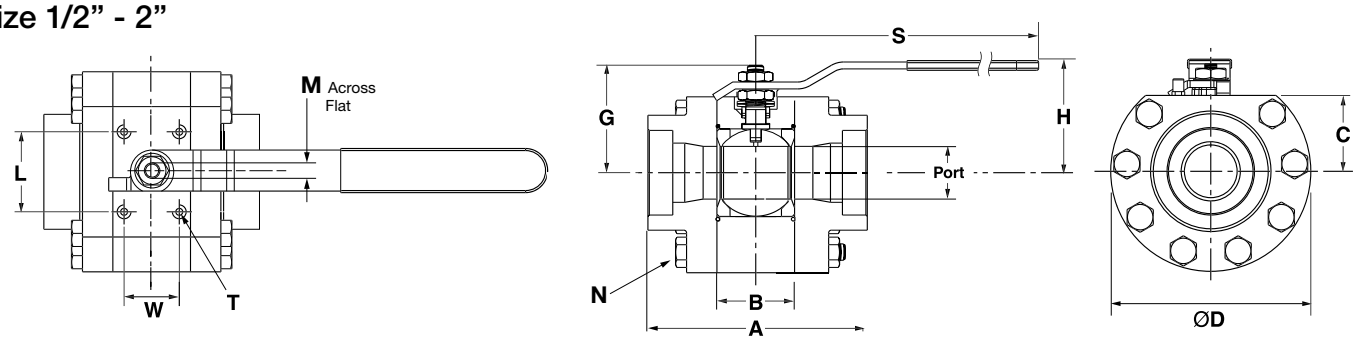
Body Seal Material
2 = NBR *Buna (standard)*
4 = FPM (Fluoroelastomer)

Parts & Materials

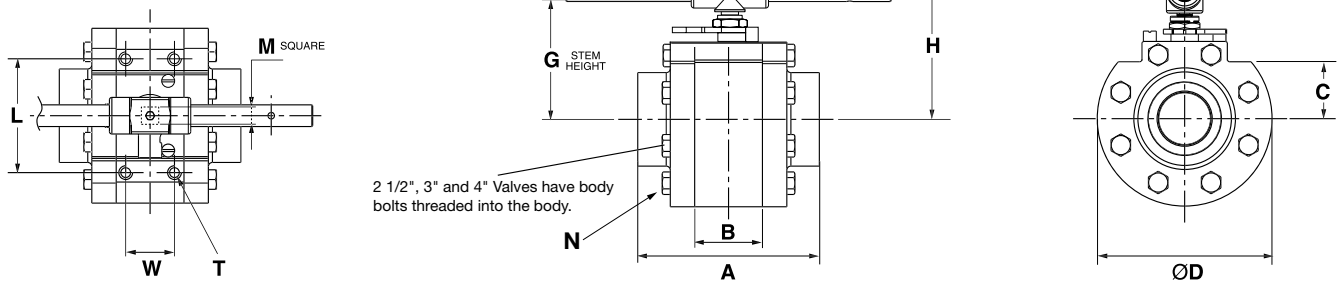


Item	Designation	Material
10	Housing	Stainless steel A479 316/316L
20	Connection adapter	Stainless steel A479 316/316L
30	Sealing cup	PEEK
40	Ball	Stainless steel 1.4404, 1.4408
50	Spindle	Stainless steel 1.4462
60	Thrust washer	PEEK
70	Handle	Stainless steel 1.4301
80	Protective cap	PVC
90	Washer	Stainless steel A2
100	Screw	Stainless steel A2
110	O-ring	NBR or FPM
120	Back-up ring	PTFE
130	O-ring	NBR or FPM
140	Screw	Stainless steel A4
150	Nut	Stainless steel A4
160	Stop pin	Stainless steel A4

Dimensions
Size 1/2” - 2”



Size 3” - 4”



Size	Port	A	B	C	G	ØD	H	M	N	S	T	W	L	Weight (kg)
1/2”	0.47 (12)	3.07 (78)	0.98 (25)	1.06 (27)	1.30 (33)	2.76 (70)	2.40 (61)	0.35 (9)	6 qty. M8x55	7.20 (183)	M5	0.59 (15)	1.34 (34)	3.7 (1.7)
3/4”	0.59 (15)	3.35 (85)	1.10 (28)	1.30 (33)	1.54 (39)	3.11 (79)	2.64 (67)	0.35 (9)	6 qty. M8x65	7.20 (183)	M5	0.59 (15)	1.34 (34)	6.6 (3.0)
1”	0.79 (20)	4.25 (108)	1.50 (38)	1.65 (42)	1.97 (50)	3.86 (98)	3.23 (82)	0.47 (12)	6 qty. M10x90	10.39 (264)	M6	0.94 (24)	1.65 (42)	11.2 (5.1)
1 1/4”	0.98 (25)	4.76 (121)	1.69 (43)	1.77 (45)	2.09 (53)	4.29 (109)	3.35 (85)	0.47 (12)	6 qty. M10x95	10.39 (264)	M6	0.94 (24)	1.65 (42)	14.3 (6.5)
1 1/2”	1.18 (30)	5.16 (131)	2.05 (52)	2.28 (58)	2.60 (66)	5.04 (128)	3.82 (97)	0.67 (17)	8 qty. M12x110	14.92 (379)	M8	1.42 (36)	1.57 (40)	23.1 (10.5)
2”	1.50 (38)	5.63 (143)	2.13 (54)	2.52 (64)	2.83 (72)	5.71 (145)	4.09 (104)	0.67 (17)	8 qty. M12x110	14.92 (379)	M8	1.57 (40)	2.28 (58)	31.0 (14.1)
2 1/2”	1.89 (48)	6.81 (173)	2.72 (69)	3.03 (77)	3.62 (92)	6.46 (164)	5.35 (136)	0.67 (17)	16 qty. M16x45	19.69 (500)	M8	4 x ø1.73 (ø44)		48.2 (21.9)
3”	2.48 (63)	8.82 (224)	3.78 (96)	4.06 (103)	5.20 (132)	8.58 (218)	7.36 (187)	1.06 (27)	16 qty. M20x60	35.43 (900)	M10	1.97 (50)	1.38 (35)	109.8 (49.9)
4”	2.99 (76)	10.55 (268)	4.41 (112)	4.45 (113)	5.59 (142)	9.41 (239)	7.76 (197)	1.06 (27)	16 qty. M20x60	35.43 (900)	M10	1.97 (50)	1.38 (35)	150.0 (68.2)

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHB3K Series

3-way Diverter Ball Valves

Specifications

- 1/4" - 1" Full Port Design
- 2 Position
- Carbon Steel Housing
- NPT or SAE O-Ring Connections
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure: to 7250 psi depending on valve size and seal materials selected
- Temperature Range: 14˚ to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KHB3K - 16 NPT - L - 1 1 1 4 - 11X - A - L

Housing Type
KHB3K = Three-Way Diverter Ball Valve

Nominal Sizes

Nom Size	SAE Tube	SAE Thread	NPT Pipe Size	NPT Pipe OD
06	-4	7/16-20 UNF	1/4"	0.540"
10	-6	9/16-18 UNF	3/8"	0.675"
16	-8	3/4-16 UNF	1/2"	0.840"
20	-12	1-1/16-12 UN	3/4"	1.050"
25	-16	1-5/16-12 UN	1"	1.315"
32	-20	1-5/8-12 UN	1-1/4"	1.660"
40	-24	1-7/8-12 UN	1-1/2"	1.900"
50	-32	2-1/2-12 UN	2"	2.375"

Connection Type
NPT = ANSI/ASME 1.20.1 Taper Pipe Thread
SAE = SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing

Ball Drilling
L = standard

Body Material
1 = Carbon Steel *(phosphate coated)*

Spindle and Ball Material
1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
3 = Stainless Steel

Ball Seal Material
1 = Polyacetal *(standard)*
3 = PTFE (1500 psi max)

O-Ring Material
2 = NBR (Buna N)
3 = PTFE Spindle Seals and FPM (Fluoroelastomer) O-Rings (1500 psi max)
4 = FPM *(Fluoroelastomer) (standard)*

Handle Codes
09x = Without Handle
11x = Straight Aluminum, Sizes 06-25
16x = Offset Steel Handle, Sizes 32-50

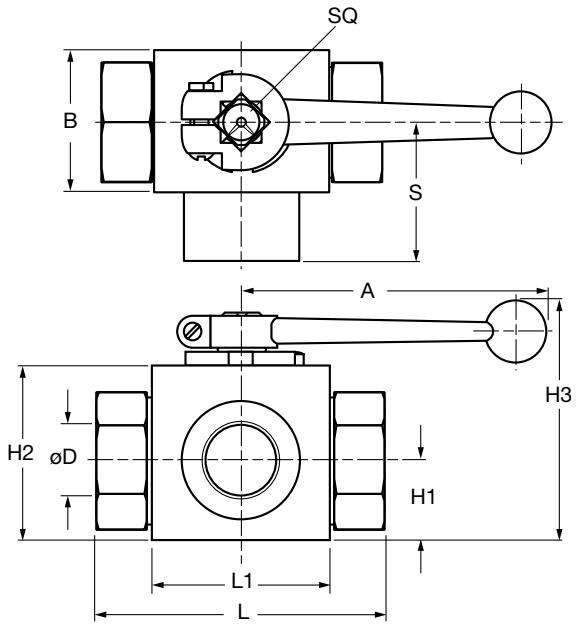
Housing Surface Finish
A = Zinc plated *(standard for all carbon steel valves)*
(omit) = No plating for Stainless Steel

Locking Device Option
L = Locking Device *(see page A1-22 to order locking device separately)*
LS = Locking Device with 5 amp Limit Switch, Available for Sizes 20-50 *(Not available with PTFE Spindle Seals)*

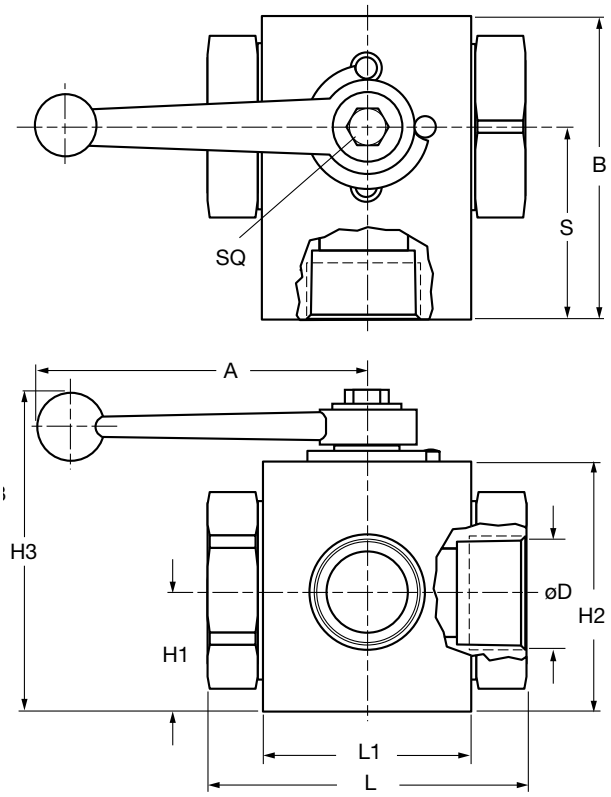
PN#00000000 / 11.20 / ACC2010-2208

Dimensions

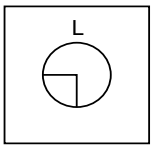
Sizes 06 - 25



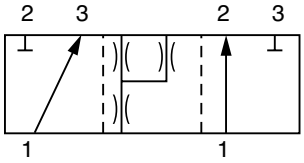
Sizes 32 - 50



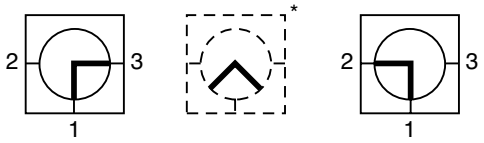
Ball Drilling



Function Diagrams



Notes: Pressure port 1 should always be the highest pressure port



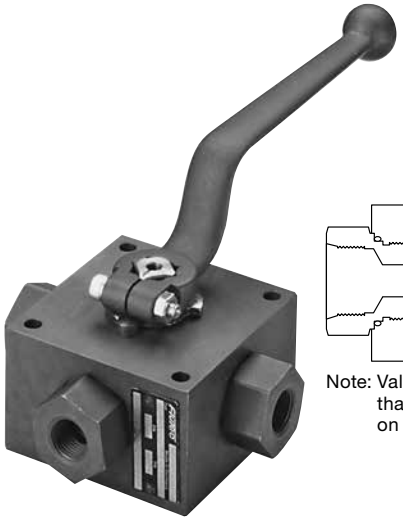
At intermediate position flow will not be completely shut off.
Notes: Valve is not designed to be used as a flow control valve. Valve should not be left in an intermediate position to avoid seal damage.

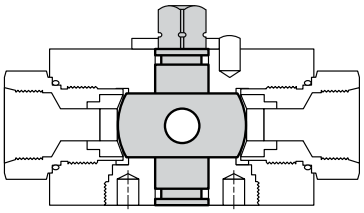
Model	Port Threads	Max. psi*	A	B	øD	H1	H2	H3	L	L1	SQ	S	Weight
KHB3K-06SAE...	7/16"-20 UNF	7250	5.90 (150)	1.02 (26)	0.24 (6)	0.51 (13)	1.26 (32)	1.65 (42)	2.72 (69)	1.46 (37)	0.35 (9)	1.36 (34.5)	0.88 (0.4)
KHB3K-06NPT...	1/4" NPT												
KHB3K-10SAE...	9/16"-18 UNF	7250	5.90 (150)	1.26 (32)	0.39 (10)	0.67 (17)	1.57 (40)	1.69 (47)	2.83 (72)	1.65 (42)	0.35 (9)	1.42 (36)	1.32 (0.6)
KHB3K-10NPT...	3/8" NPT												
KHB3K-16SAE...	3/4"-16 UNF	5800	6.89 (175)	1.50 (38)	0.63 (16)	0.75 (19)	1.77 (45)	2.01 (51)	3.27 (83)	1.85 (47)	0.47 (12)	1.64 (41.5)	1.76 (0.8)
KHB3K-16NPT...	1/2" NPT												
KHB3K-20SAE...	1-1/16"-12 UN	5000	7.87 (200)	1.93 (49)	0.79 (20)	1.08 (27.5)	2.36 (60)	2.28 (58)	3.74 (95)	2.36 (60)	0.55 (14)	1.87 (47.5)	3.31 (1.5)
KHB3K-20NPT...	3/4" NPT												
KHB3K-25SAE...	1-5/16"-12 UN	5000	7.87 (200)	2.28 (58)	0.98 (25)	1.16 (29.5)	2.56 (65)	2.40 (61)	4.45 (113)	2.56 (65)	0.55 (14)	2.22 (56.5)	4.85 (2.2)
KHB3K-25NPT...	1" NPT												
KHB3K-32SAE...	1-5/8"-12 UNF	5000	9.00 (228)	4.35 (110.5)	1.18 (30)	1.70 (43.3)	3.54 (90.0)	5.47 (139)	4.53 (115)	2.99 (76)	0.67 (17)	2.76 (70)	7.7 (3.5)
KHB3K-32NPT...	1-1/4" NPT												
KHB3K-40SAE...	1-7/8"-12 UN	5000	9.00 (228)	4.69 (119)	1.38 (35)	1.71 (43.5)	3.79 (96.2)	5.71 (145)	5.31 (135)	3.35 (85)	0.67 (17)	2.95 (75)	11 (5)
KHB3K-40NPT...	1-1/2" NPT												
KHB3K-50SAE...	2-1/2"-12 UN	5000	9.00 (228)	5.73 (145.5)	1.73 (44)	2.35 (59.8)	4.72 (120)	6.02 (153)	5.91 (150)	4.72 (120)	0.67 (17)	3.35 (85)	16.5 (7.5)
KHB3K-50NPT...	2" NPT												

*Dependent upon valve and seal materials selected.
Notes:
1. Dimensions are in inches (mm) and lbs (kg)
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KH3 & KH4 Series

Multiway Ball Valves





Note: Valves use a trunion design, rather than the "floating ball" design used on all other ball valves.

Specifications

- Sizes 1/4" to 3/4"
- 2 Positions, 90˚ Switching Standard
- Carbon Steel Housing
- L and T Ball Drilling: KH3
- L, T and X Ball Drilling: KH4
- NPT or SAE O-Ring Connections
- Ball Seals: Polyacetal *(standard)*
- O-Rings: Fluoroelastomer *(FPM) (standard)*
- Operating Pressure: to 7250 psi depending on valve size and seal materials selected
- Temperature Range: 14˚ to 176˚F with standard materials *(1114)* up to maximum pressure rating. Extended temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page A1-3)*.

Model Code

KH3 - 12 NPT - L - 1 1 1 4 - 12X - A - L

Housing Type
KH3 = Three-Way
KH4 = Four-Way

Nominal Sizes

Nom Size	SAE Tube	Thread	NPT Pipe Size	Pipe OD
06	-4	7/16-20 UNF	1/4"	0.540"
10	-6	9/16-18 UNF	3/8"	0.675"
12	-8	3/4-16 UNF	1/2"	0.840"
20	-12	1-1/16-12 UN	3/4"	1.050"

Connection Type
NPT = ANSI/ASME 1.20.1 Taper Pipe Thread
SAE = SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing

Ball Drilling
L = standard for KH3
T = (optional)
X = standard for KH4

Body Material
1 = Carbon Steel

Spindle and Ball Material
1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
3 = Stainless Steel

Ball Seal Material
1 = Polyacetal *(standard)*
3 = PTFE (1500 psi max)

O-Ring Material
2 = NBR (Buna N)
4 = FPM *(Fluoroelastomer) (standard)*

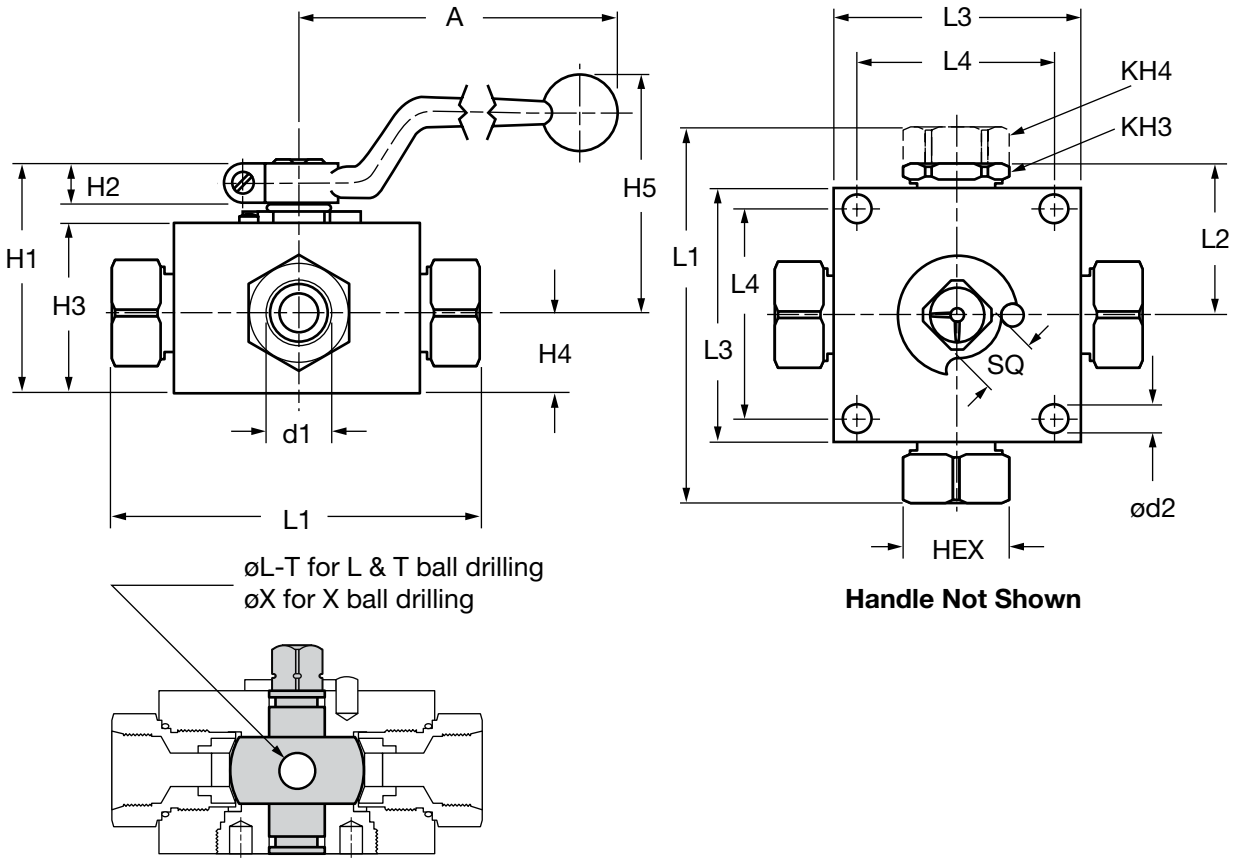
Handle Codes
09x = Without Handle
12x = Offset Aluminum *(standard)*

Housing Surface Finish
A = Zinc plated *(standard for all carbon steel valves)*

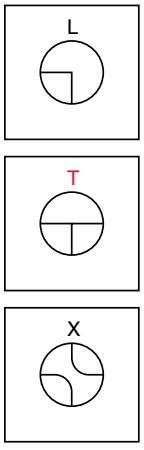
Locking Device Option
L = Locking Device *(see page A1-22 to order locking device separately)*

PN#00000000 / 11.20 / ACC2010-2208

Dimensions

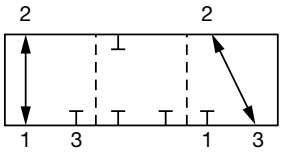


Ball Drilling



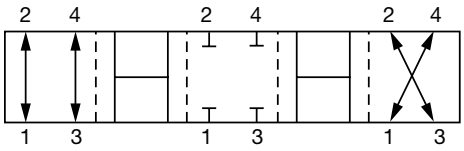
Function Diagrams

3-Way Ball Valve L-Bore

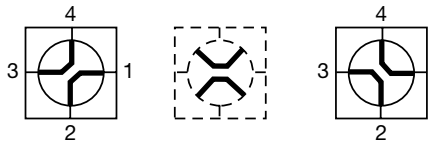


90° Switch

4-Way Ball Valve X-Bore



90° Switch



Notes: These are positive overlap valves. At approximately 45° rotation, flow will be blocked to all ports.
For "T" function diagram, contact HYDAC.

Model	d1	Max. psi*	A	L1	L2	L3	L4	H1	H2	H3	H4	H5	ød2	SQ	HEX	øL-T	øX	Wt.
KH...06SAE	7/16"-20 UNF	7250	6.42	3.94	1.67	2.76	2.17	2.28	0.51	1.57	0.87	2.48	0.26	0.47	0.95	0.20	0.18	3.5
KH...06NPT	1/4" NPT		(163)	(100)	(42.5)	(70)	(55)	(58)	(13)	(40)	(22)	(63)	(6.5)	(12)	(24)	(5)	(4.5)	(1.6)
KH...10SAE	9/16"-18 UNF	7250	7.20	4.53	1.81	3.15	2.56	2.72	0.55	1.97	1.06	2.95	0.26	0.55	1.18	0.35	0.24	5.3
KH...10NPT	3/8" NPT		(183)	(115)	(46)	(80)	(65)	(69)	(14)	(50)	(27)	(75)	(6.5)	(14)	(30)	(9)	(6)	(2.4)
KH...12SAE	3/4"-16 UNF	5800	7.20	5.32	2.20	3.94	3.15	3.11	0.55	2.36	1.22	3.46	0.35	0.55	1.42	0.47	0.39	9.5
KH...12NPT	1/2" NPT		(183)	(135)	(56)	(100)	(80)	(79)	(14)	(60)	(31)	(88)	(9)	(14)	(36)	(12)	(10)	(4.3)
KH...20SAE	1 1/16"-12 UN	4500	8.94	5.67	2.26	3.94	3.35	3.68	0.61	2.87	1.42	3.82	0.35	0.67	1.81	0.71	0.55	13.2
KH...20NPT	3/4" NPT		(227)	(144)	(57.5)	(100)	(85)	(93.5)	(15.5)	(73)	(36)	(97)	(9)	(17)	(46)	(18)	(14)	(6.0)

*Dependent upon valve and seal materials selected.

Notes:
1. Dimensions are in inches (mm) and lbs (kg)
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Ball Valve Locking Devices

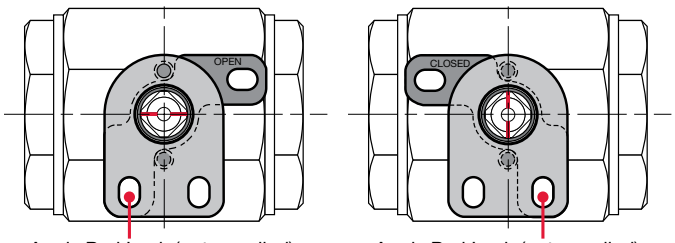
Description

In situations where the opening or closing of a ball valve can cause severe damage or personal injury, HYDAC recommends the installation of a locking device. Locking devices are available for our entire range of high pressure ball valves. Two different styles are available to accommodate the different valve body styles. All HYDAC high pressure ball valves can be ordered with a locking device. Locking devices can also be ordered separately using the chart below.

Material note: All lock plates and lock bars are made of Zinc plated Steel.

Operation

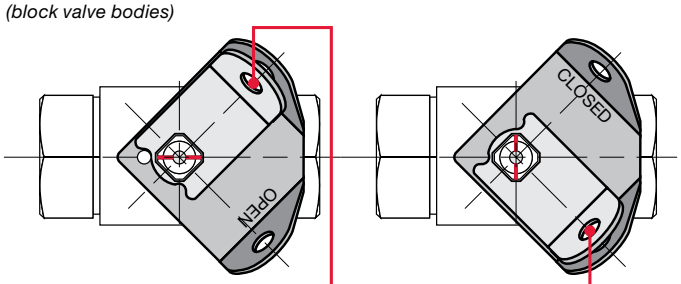
KHM...
(forged valve bodies)



Apply Pad Lock (not supplied) here to lock in OPEN Postition

Apply Pad Lock (not supplied) here to lock in CLOSED Postition

KHB..., KHP..., KH3..., KH4..., KHB3K...
(block valve bodies)



Apply Pad Lock (not supplied) here to lock in OPEN Postition

Apply Pad Lock (not supplied) here to lock in CLOSED Postition

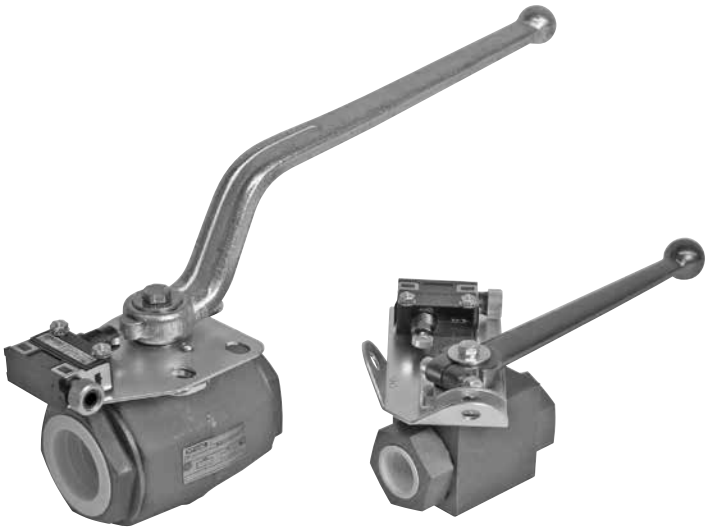
Installation

Ordering

To order a ball valve with a locking device, simply add “-L” to the end of the model code. See the model code page for that particular valve to create a complete code. To order a locking device separately, use the chart below.

Size	KHB	KHM	KHP	KH3 & KH4	KHB3K
6	02061169	02061169	N/A	02061172	02061175
10	02061169	02061169	02061169	02061173	02061175
12	N/A	N/A	N/A	02061173	N/A
16	02061170	02061170	02061170	N/A	02061176
20	02061171	02061171	02061171	02061174	02061177
25	02061171	02061171	02061171	N/A	02061177
32	N/A	02055711	02063434	N/A	N/A
40	N/A	02055711	02063434	N/A	N/A
50	N/A	02055711	02063434	N/A	N/A

Ball Valve Locking Devices with Limit Switches



Description:

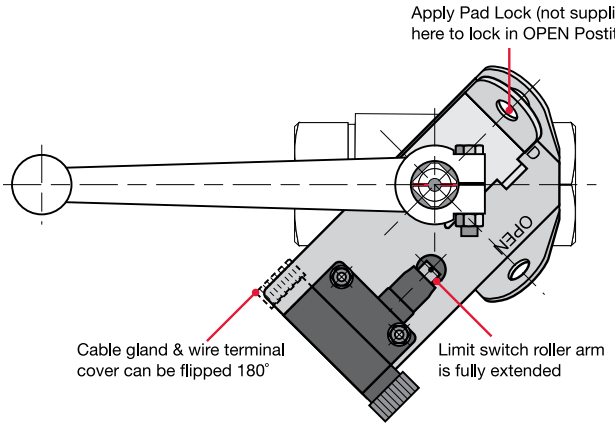
When remote indication of the valve position is required, a limit switch can be added to the valve assembly.

- A reliable single pole, double throw (SPDT) switch to indicate either open or closed position of a two-way valve
- Hermetically sealed
- Can be wired as Normally Open (N/O), or Normally Closed (N/C)
- Available for HYDAC valve sizes 20 through 50
- Mounting brackets serve as locking devices

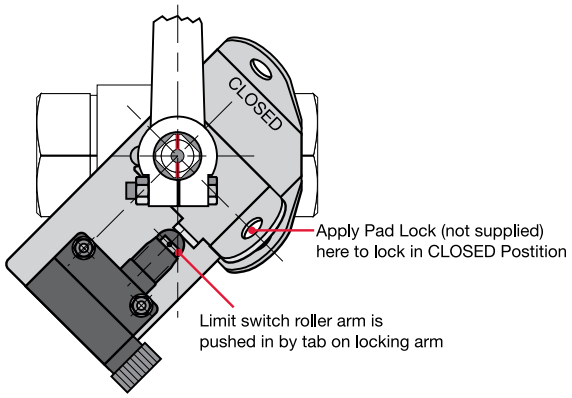
Ordering:
To order a valve with limit switch, add **"-LS"** to the end of the valve **Model Code**, i.e.: KHM-32NPT-1114-16X-LS

Operation

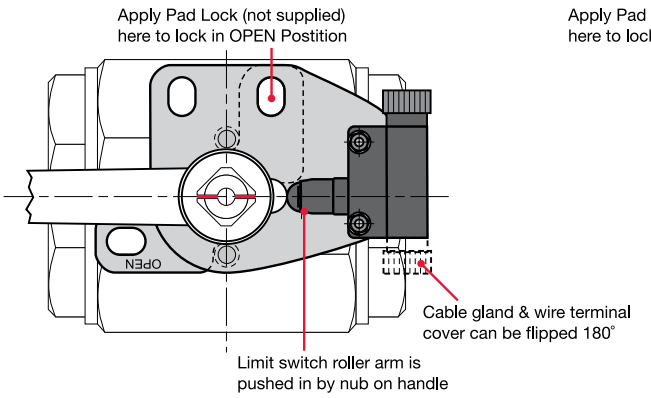
KHB..., KHP..., KH3..., KH4..., KHB3K... *(block valve bodies, sizes 20 & 25)*

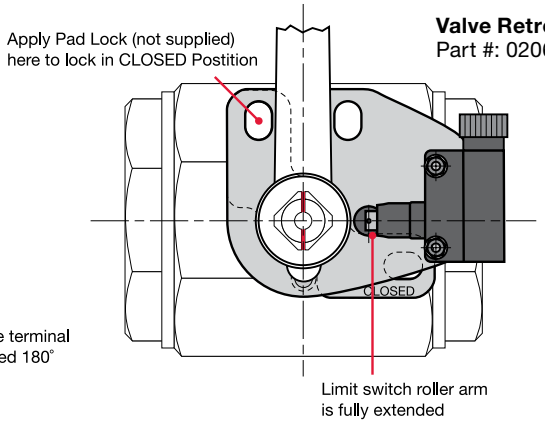


Valve Retrofit kit
Part #: 02067694



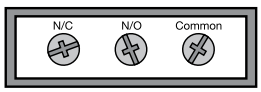
KHM... *(forged valve bodies, sizes 32 through 50)*



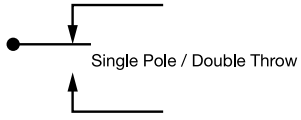


Valve Retrofit kit
Part #: 02063537

Wiring Details



M3 Terminal Screws

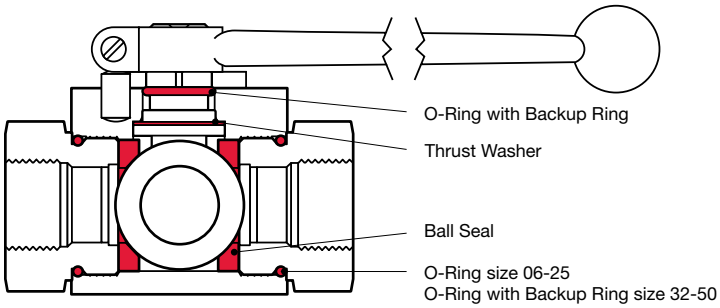


Electrical Specifications

- NEMA 3, 4, 13 and IEC IP 67
- 5A- up to 250 VAC, 30 VDC
- Temperature range: 14 to 158˚F
- UL listed

Replacement Switch
Part #: 02700009

Seal Kits



Model Code	Part Number
SEAL KIT KHB-06NPT/SAE-XX14	02061479
SEAL KIT KHB-10NPT/SAE-XX14	02061467
SEAL KIT KHB-16F3/F6-XX14	02061469
SEAL KIT KHB-16NPT/SAE-XX14	02061468
SEAL KIT KHB-20F3/F6-XX14	02061471
SEAL KIT KHB-20NPT/SAE-XX14	02061470
SEAL KIT KHB-25F3/F6-XX14	02061473
SEAL KIT KHB-25NPT/SAE-XX14	02061472
SEAL KIT KHM-32F3/F6-XX14	02061481
SEAL KIT KHM-32NPT/SAE-XX14	02061480
SEAL KIT KHM-40F3/F6-XX14	02061483
SEAL KIT KHM-40NPT/SAE-XX14	02061482
SEAL KIT KHM-50F3/F6-XX14	02061485
SEAL KIT KHM-50NPT/SAE-XX14	02061484
SEAL KIT KHP-06-XX14	00554029
SEAL KIT KHP-10-XX14	02061486
SEAL KIT KHP-16-XX14	02061487
SEAL KIT KHP-20-XX14	02061507
SEAL KIT KHP-25-XX14	02061488
SEAL KIT KHP-32-XX14	02061489
SEAL KIT KHP-40-XX14	02061505
SEAL KIT KHP-50-XX14	02061506

Model Code

SEAL KIT KHB - 06 NPT/SAE - XX14

Seal Kit

Valve Body Type
- KHB = Block Housing
- KHM = Forged Housing
- KH3/4 = 3-Way & 4-Way Valves
- KHP = Manifold Mount

Valve Size
06, 10, 16, 20, 25, 32, 40,50

Connection Type
- *(omit)* = Manifold Mount *(KHP)*
- NPT/SAE = NPT or SAE
- F3/F6 = F3 or F6 Split Flange

Materials

Body Material
- X = Body material does not affect seal kits

Spindle and Ball Material
- X = Spindle and ball material does not affect seal kits

Ball Seal Material
- 1 = Polyacetal *(standard)*
- 3 = PTFE
- 8 = PEEK

O-Ring Material
- 2 = NBR *(Buna N)*
- 3 = PTFE Spindle Seals and FPM *(Fluoroelastomer)*

O-Rings
- 4 = FPM *(Fluoroelastomer) (standard)*
- 5 = EPDM

Complete maintenance instructions are available on our web site:
http://www.hydac-na.com/sites/hydac-na/Downloads/Manuals/Accessories

www.HYDAC-NA.com

Handles

DN Sizes	Description	Handle Code	Spindle Sq. Size	Model Code	Part Number
06, 10	Straight Aluminum	11X	SW09	HANDLE STR AL SW09	00270099
06, 10	Offset Aluminum	12X	SW09	HANDLE OFS AL SW09	00271423
06, 10	Offset Steel	16X	SW09	HANDLE KIT OFS STL SW09	02064265*
06,10	Wing Steel	20X	SW09	HANDLE KIT WING TYPE STL SW09 20X	2210360*
16	Straight Aluminum	11X	SW12	HANDLE STR AL SW12	00270100
16	Offset Aluminum	12X	SW12	HANDLE OFS AL SW12	00270381
16	Offset Steel	16X	SW12	HANDLE KIT OFS STL SW12	02064266*
16	Wing Steel	20X	SW12	HANDLE KIT WING TYPE STL SW12 20X	2206497*
20, 25	Straight Aluminum	11X	SW14	HANDLE STR AL SW14	00270101
20, 25	Offset Aluminum	12X	SW14	HANDLE OFS AL SW14	00270382
20, 25	Offset Steel	16X	SW14	HANDLE KIT OFS STL SW14	02064267*
20,25	Wing Steel	20X	SW14	HANDLE KIT WING TYPE STL SW14 20X	2210361*
32, 40, 50	Offset Steel	16X	SW17	HANDLE KIT OFS STL SW17 16X	02064268*
32, 40, 50	Offset Aluminum	12X	SW17	HANDLE OFS AL SW17	00270383
32, 40, 50	Straight Aluminum	11X	SW17	HANDLE STR AL SW17	00270311
	No Handle	09X			
	Loose Handle	0XX			

*These handles require the additional mounting hardware which is included

C

Low Pressure Ball Valves

HYDAC's line of low pressure ball valves complements our high pressure offering. Trust HYDAC for all of your manual isolation requirements.

KHR Series

2-way Ball Valves with SAE & G Connections (Low Pressure)

Specifications

- 1/2” - 2” Full Port Design
- SAE O-ring Connections
- Ball Seals: Polyaceal *(standard)*
- O-rings: NBR *(Buna) (standard)*
- Aluminum Housing
- Operating Pressure: up to 400 psi *(30 bar)*
- Temperature Range: -10°C to 80°C with standard materials *(4112)*

Model Code

KHR - 25 SAE - 4 1 1 2 - 16X - SO760 E 1 000

Housing Type
KHR

Nominal Sizes

Nom Size	Tube Size	SAE Thread Size	G Thread Size
16	-8	3/4-16 UNF	G 1/2”
20	-12	1-1/16-12 UN	G 3/4”
25	-16	1-5/16-12 UN	G 1”
32	-20	1-5/8-12 UN	G 1 1/4”
40	-24	1-7/8-12 UN	G 1 1/2”
50	-32	2-1/2-12 UN	G 2”

Connection Type
SAE = SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing
G = Whitworth Internal Thread to ISO 228

Body Material
4 = Aluminum

Spindle and Ball Material
1 = Carbon Steel *(ball is chrome plated, spindle is zinc plated)*
2 = Stainless Steel

Ball Seal Material
1 = Polyacetal *(standard)*
3 = PTFE

O-Ring Material
2 = NBR *(Buna) (standard)*
4 = FPM (fluoroelastomer)

Handle Codes
09x = No Handle
12x = Offset Aluminum
16x = Offset Steel

Locking Device Option
SO760 = Locking Device *(padlock not included)*

Limit Switch Option
E = Limit switch (position switch)

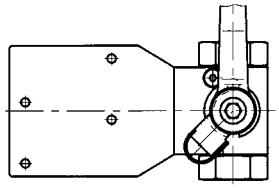
Monitored switching position
1 = Monitoring of valve - open position
2 = Monitoring of valve - closed position
3 = Monitoring of valve - open & closed position

Limit switch code
000 = Includes Limit switch to DIN EN 50041 – Type A
100 = Prepared for Limit switch to DIN EN 50041 – Type A (switches not included)

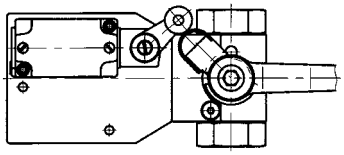
KHR Limit Switches Options

Examples of different models

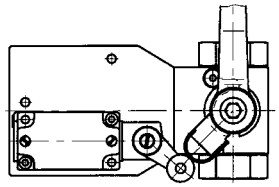
E-1.100



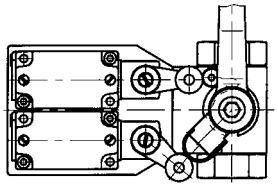
E-2.000



E-1.000



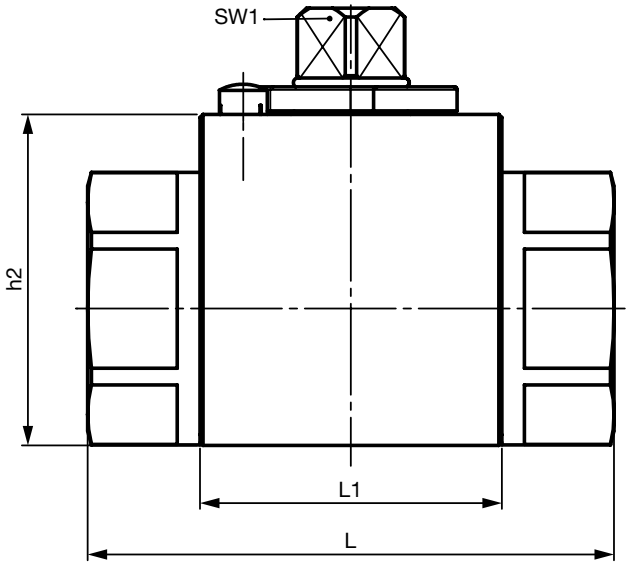
E-3.000

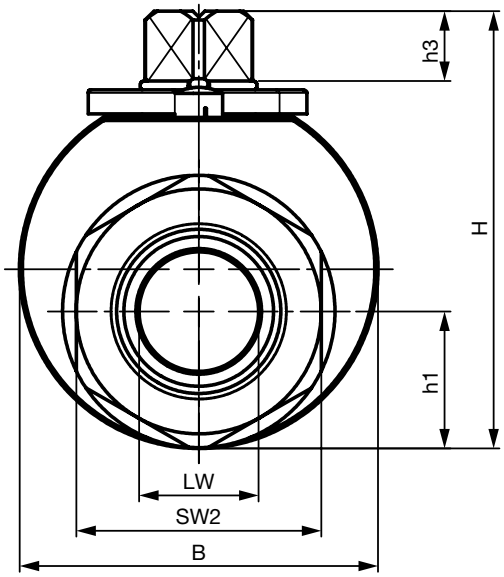


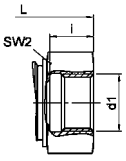
Limit Switch Specifications

- Position switch: to DIN EN 50041 Form A, metal enclosure with roller lever
- Standard Switch Kit Contains 1 N/C contact or 1 N/O contact
- Protection class: IP 67
- Insulation group: 500 V AC
- Continuous current: 10 A
- Nominal voltage: 300 V AC
- Mechanical service life: 30 x 106 switching cycles
- Switching frequency: 6 x 103 switching cycles/hour
- Permitted ambient temperature: -40 to +85°C

Dimensions





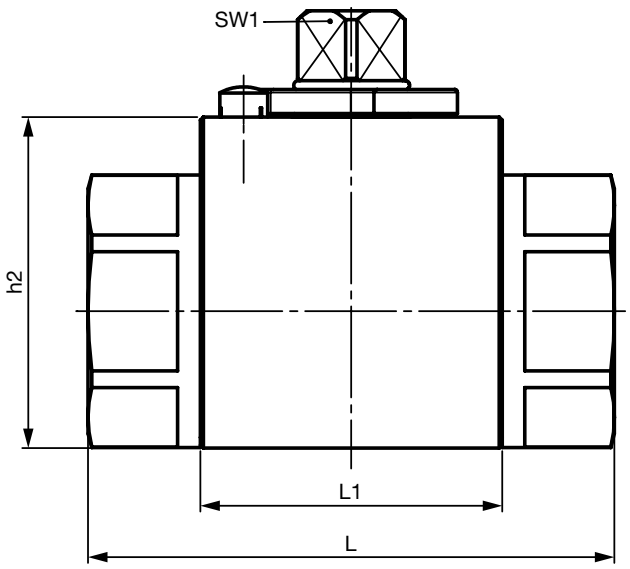
Connection Type	Type	DN	LW	d1	i	L	L1	B	H	h1	h2	h3	SW1	SW2	Weight	PN [bar]
DIN ISO 228	KHR-G1/2	0.629 (16)	0.629 (16)	G1/2	0.629 (16)	3.070 (78)	1.653 (42)	1.968 (50)	2.429 (61.7)	0.728 (18.5)	1.751 (44.5)	0.433 (11)	0.472 (12)	1.259 (32)	0.793 (0.36)	435 (30)
Female pipe thread	KHR-G3/4	0.787 (20)	0.787 (20)	G3/4	0,708 (18)	3.645 (92.6)	1.988 (50.5)	2.362 (60)	2.881 (73.2)	0.921 (22.9)	2.181 (55.4)	0.456 (11.6)	0.551 (14)	1.614 (41)	1.46 (0.66)	435 (30)
	KHR-G1	0.984 (25)	0.984 (25)	G1	0.807 (20.5)	4.043 (102.7	2.145 (54.5)	2.755 (70)	3.153 (80.1)	1.062 (27)	2.460 (62.5)	0.456 (11.6)	0.551 (14)	1.811 (46)	1.98 (0.90)	435 (30)
	KHR-G11/4	1.259 (32)	1.259 (32)	G11/4	0.866 (22)	4.015 (102)	2.519 (64)	3.346 (85)	3.862 (98.1)	1.295 (32.9)	3.133 (79.6)	0.472 (12)	0.669 (17)	2.165 (55)	3.24 (1.47)	435 (30)
	KHR-G11/2	1.574 (40)	1.496 (38)	G11/2	0.944 (24)	4.330 (110)	2.874 (73)	3.740 (95)	4.318 (109.7	1.515 (38.5)	3.590 (91.2)	0.472 (12)	0.669 (17)	2.599 (65)	4.52 (2.05)	435 (30)
	KHR-G2	1.968 (50)	1.880 (48)	G2	1.102 (28)	5.157 (131)	2.913 (74)	4.527 (115)	5.027 (127.7	1.929 (49)	4.299 (109.2	0.472 (12)	0.669 (17)	3.346 (85)	7.52 (3.41)	435 (30)
	KHR-G21/2	2.559 (65)	2.559 (65)	G21/2	1.377 (35)	7.204 (183)	4.921 (125)	5.472 (139)	6.023 (153)	2.5 (63.5)	5.295 (134.5	0.472 (12)	0.669 (17)	3.937 (100)	13.9 (6.31)	247 (17)
	KHR-G3	3.149 (80)	3.149 (80)	G3	1.377 (35)	7.480 (190)	4.724 (120)	6.259 (159)	6.870 (174.5	2.972 (75.5)	6.141 (156)	0.472 (12)	0.669 (17)	4.724 (120)	21.4 (9.69)	247 (17)
	KHR-G4	3.937 (100)	3.937 (100)	G4	1.574 (40)	9.055 (230)	5.905 (150)	7.401 (188)	8.051 (204.5	3.562 (90.5)	7.322 (186)	0.472 (12)	0.669 (17)	5.511 (140)	33.4 (15.14	247 (17)

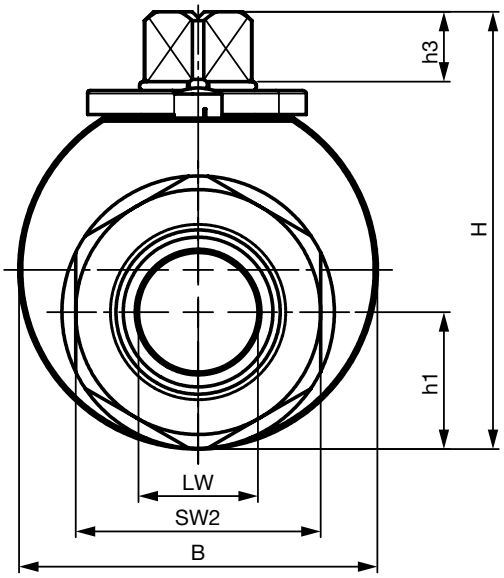
Dimensions are in inches/(mm), lbs. (kg.) and psi (bar) and are for general information only, all critical dimensions should be verified by requesting a certified print.
Notes: 1. Dependent upon valve and seal materials selected.
2. Bolt size and torque provided as reference only. Manifold designs must take all factors (materials, pressure, etc.) into consideration.

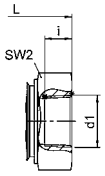
Consult HYDAC Engineering for more information.

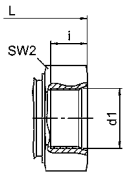
(continued on next page)

Dimensions *(continued)*





Connection Type	Type	DN	LW	d1	i	L	L1	B	H	h1	h2	h3	SW1	SW2	Weight	PN
SAE J 514 UN/UNF	KHR-16SAE	0.629 (16)	0.629 (16)	3/4 -16 UNF	0.590 (15)	2.677 (68)	1.653 (42)	1.968 (50)	2.429 (61.7)	0.728 (18.5)	1.751 (44.5)	0.433 (11)	0.472 (12)	1.259 (32)	1.17 (0.53)	435 (30)
Female thread	KHR-20SAE	0.787 (20)	0.787 (20)	1 1/16 - 12 UN	0,787 (20)	3.468 (88.1)	1.988 (50.5)	2.362 (60)	2.881 (73.2)	0.921 (22.9)	2.181 (55.4)	0.456 (11.6)	0.551 (14)	1.614 (41)	1.3 (0.58)	435 (30)
	KHR-25SAE	0.984 (25)	0.984 (25)	1 5/16 -12 UN	0.787 (20)	3.649 (92.7)	2.145 (54.5)	2.755 (70)	3.153 (80.1)	1.062 (27)	2.460 (62.5)	0.456 (11.6)	0.551 (14)	1.811 (46)	1.7 (0.77)	435 (30)
	KHR-32SAE	1.259 (32)	1.259 (32)	1 5/8 -12 UN	0.787 (20)	4.014 (102)	2.519 (64)	3.346 (85)	3.862 (98.1)	1.295 (32.9)	3.133 (79.6)	0.472 (12)	0.669 (17)	2.165 (55)	2.99 (1.36)	435 (30)
	KHR-40SAE	1.574 (40)	1.496 (38)	1 7/8 - 12 UN	0.787 (20)	4.330 (110)	2.874 (73)	3.740 (95)	4.318 (109.7	1.515 (38.5)	3.590 (91.2)	0.472 (12)	0.669 (17)	2.599 (65)	4.17 (1.89)	435 (30)
	KHR-50SAE	1.968 (50)	1.880 (48)	2 1/2 - 12 UN	0.787 (20)	4.921 (125)	2.913 (74)	4.527 (115)	5.027 (127.7	1.929 (49)	4.299 (109.2	0.472 (12)	0.669 (17)	3.346 (85)	7.4 (3.36)	435 (30)
	KHR-65SAE	2.559 (65)	2.559 (65)	3 - 12 UN	1.003 (25.5)	7.204 (183)	4.921 (125)	5.472 (139)	6.023 (153)	2.5 (63.5)	5.295 (134.5	0.472 (12)	0.669 (17)	3.937 (100)	14.7 (6.65)	435 (30)
	KHR-80SAE	3.149 (80)	3.149 (80)	3 1/2 - 12UN	1.003 (25.5)	7.480 (190)	4.724 (120)	6.259 (159)	6.870 (174.5	2.972 (75.5)	6.141 (156)	0.472 (12)	0.669 (17)	4.724 (120)	20.7 (9.41)	247 (17)
	KHR-100SAE	3.937 (100)	3.937 (100)	4 1/2 - 12 UN	1.574 (40)	9.055 (230)	5.905 (150)	7.401 (188)	8.051 (204.5	3.562 (90.5)	7.322 (186)	0.472 (12)	0.669 (17)	5.511 (140)	34.5 (15.64)	247 (17)

Connection Type	Type	DN	LW	d1	i	L	L1	B	H	h1	h2	h3	SW1	SW2	Weight	PN
ANSI B1.20.1	KHR-16NPT	0.629 (16)	0.629 (16)	1/2 - 14 NPT	0.533 (13.56)	2.677 (68)	1.653 (42)	1.968 (50)	2.429 (61.7)	0.728 (18.5)	1.751 (44.5)	0.433 (11)	0.472 (12)	1.259 (32)	1.15 (0.52)	435 (30)
NPT female thread	KHR-20NPT	0.787 (20)	0.787 (20)	3/4 -14 NPT	0.545 (13.86)	3.468 (88.1)	1.988 (50.5)	2.362 (60)	2.881 (73.2)	0.921 (22.9)	2.181 (55.4)	0.456 (11.6)	0.551 (14)	1.614 (41)	1.2 (0.56)	435 (30)
	KHR-25NPT	0.984 (25)	0.984 (25)	1 - 11 1/2 NPT	0.682 (17.34)	3.649 (92.7)	2.145 (54.5)	2.755 (70)	3.153 (80.1)	1.062 (27)	2.460 (62.5)	0.456 (11.6)	0.551 (14)	1.811 (46)	1 6 (0.75)	435 (30)
	KHR-32NPT	1.259 (32)	1.259 (32)	1 1/4 - 11 1/2 NPT	0.706 (17.95)	4.014 (102)	2.519 (64)	3.346 (85)	3.862 (98.1)	1.295 (32.9)	3.133 (79.6)	0.472 (12)	0.669 (17)	2.165 (55)	2.9 (1.35)	435 (30)
	KHR-40NPT	1.574 (40)	1.496 (38)	1 1/2 -11 1/2 NPT	0.723 (18.38)	4.330 (110)	2.874 (73)	3.740 (95)	4.318 (109.7)	1.515 (38.5)	3.590 (91.2)	0.472 (12)	0.669 (17)	2.599 (65)	4.08 (1.85)	435 (30)
	KHR-50NPT	1.968 (50)	1.880 (48)	2 - 11 1/2 NPT	0.756 (19.22)	4.921 (125)	2.913 (74)	4.527 (115)	5.027 (127.7	1.929 (49)	4.299 (109.2	0.472 (12)	0.669 (17)	3.346 (85)	7.34 (3.33)	435 (30)
	KHR-65NPT	2.559 (65)	2.559 (65)	2 1/2 - 8 NPT	1.137 (28.9)	7.204 (183)	4.921 (125)	5.472 (139)	6.023 (153)	2.5 (63.5)	5.295 (134.5)	0.472 (12)	0.669 (17)	3.937 (100)	14.15 (6.42)	247 (17)
	KHR-80NPT	3.149 (80)	3.149 (80)	3 - 8 NPT	1.2 (30.48)	7.480 (190)	4.724 (120)	6.259 (159)	6.870 (174.5)	2.972 (75.5)	6.141 (156)	0.472 (12)	0.669 (17)	4.724 (120)	21/6 (9.78)	247 (17)
	KHR-100NPT	3.937 (100)	3.937 (100)	4 - 8 NPT	1.3 (33.02)	9.055 (230)	5.905 (150)	7.401 (188)	8.051 (204.5)	3.562 (90.5)	7.322 (186)	0.472 (12)	0.669 (17)	5.511 (140)	33.8 (15.32)	247 (17)

Dimensions are in inches/(mm), lbs. (kg.) and psi (bar) and are for general information only, all critical dimensions should be verified by requesting a certified print.
Notes: 1. Dependent upon valve and seal materials selected.
2. Bolt size and torque provided as reference only. Manifold designs must take all factors (materials, pressure, etc.) into consideration.

Consult HYDAC Engineering for more information.

KHNVL Series

Brass Ball Valve

Description

The KHNVL Series ball valves are full port, brass, NPT threaded manual ball valves.

Features

- Full port ball drilling for unrestricted flow
- Cast 2-piece brass body
- Compact assembly
- Anti-blow out stem
- Locking device available upon request

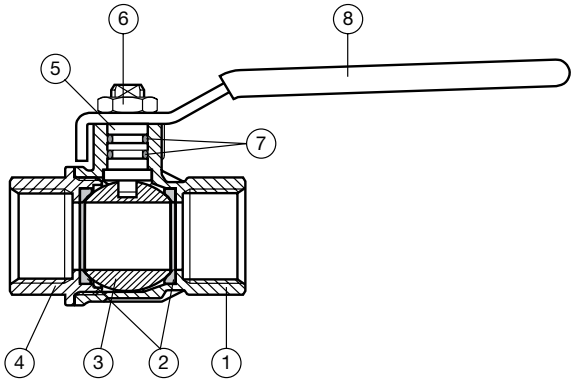
Specifications

Maximum Pressure: 600 psi (up to 100°F)
Maximum Temperature: 400°F

End Connections

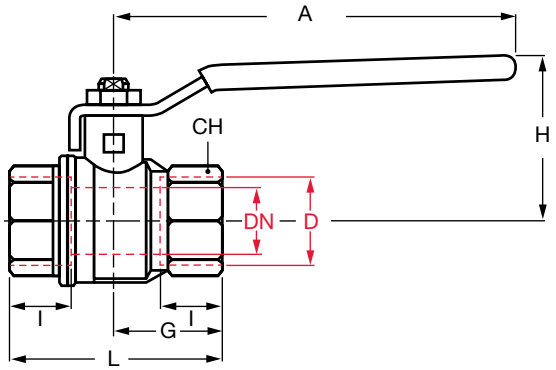
- NPT Threaded *(female)*

Materials of Construction

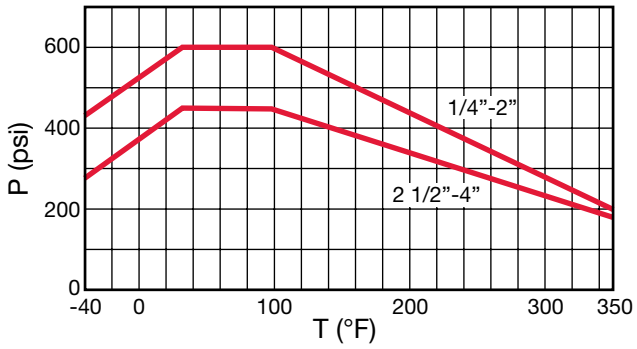


Part	Description	Qty	Material
1	Unplated NPT body	1	CW617N
2	Seat	2	PTFE
3	Chrome plated ball	1	CW617N
4	Unplated NPT end cap	1	CW617N
5	Nickel plated stem O'ring design	1	CW617N
6	Geomet Nut	1	CB4FF
7	O-ring	2	PFPM
8	Steel handle	1	DD11

Dimensions



Pressure/Temperature Curve



Size	Model Code	Part No.	D	DN	I	L	G	A	H	CH
1/4"	KHNVL-1/4NPT-2234	02092890	1/4"	0.314	0.472	1.771	0.885	3.228	1.563	0.787
3/8"	KHNVL-3/8NPT-2234	02092891	3/8"	0.393	0.472	1.771	0.885	3.228	1.563	0.787
1/2"	KHNVL-1/2NPT-2234	02092892	1/2"	0.59	0.61	2.322	1.161	3.937	1.695	0.984
3/4"	KHNVL-3/4NPT-2234	02092893	3/4"	0.787	0.669	2.519	1.259	4.724	1.988	1.22
1"	KHNVL-1NPT-2234	02092894	1"	0.984	0.826	3.188	1.594	4.724	2.153	1.574
1-1/4"	KHNVL-1-1/4NPT-2234	02092895	1-1/4"	1.259	0.905	3.661	1.83	6.22	2.988	1.929
1-1/2"	KHNVL-1-1/2NPT-2234	02092896	1-1/2"	1.574	0.905	4.015	2.007	6.22	3.236	2.125
2"	KHNVL-2NPT-2234	02092897	2"	1.968	1.043	4.763	2.381	6.22	3.5	2.696
2-1/2"	KHNVL-2-1/2NPT-2234	02093535	2-1/2"	2.559	1.26	6.141	3.07	10.039	5.196	3.346
3"	KHNVL-3NPT-2234	02093536	3"	3.149	1.377	6.968	3.484	10.039	5.511	3.897
4"	KHNVL-4NPT-2234	02093537	4"	3.937	1.633	8.504	4.252	10.039	6.062	4.921

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

KHNVN Series

Stainless Steel

Specifications

Max. Temperature:

- 400°F

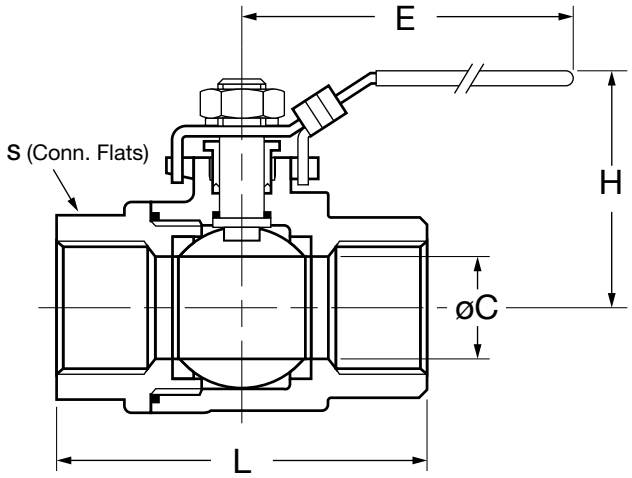
Max. Pressure:

- 1000 psig (up to 100°F)
- 2000 psig available KHNVS

End Connections

- NPT Threaded *(female)*

Dimensions



Description

The KHNVN Series manual ball valves are full port, 316 stainless steel, NPT threaded manual ball valves. They are equipped with a manual handle with a locking device.

Features

- Full port ball drilling for unrestricted flow
- Investment cast 2-piece SS body
- Blow-out proof stem
- Compact assembly
- Locking device

Materials of Construction

Body & End Cap

- ASTM A351 Cast SS Grade CF8M

Stem Seals

- PTFE

Seats:

- PTFE

Ball & Stem:

- 316 SS

Stem Nut & Washer:

- 304 SS

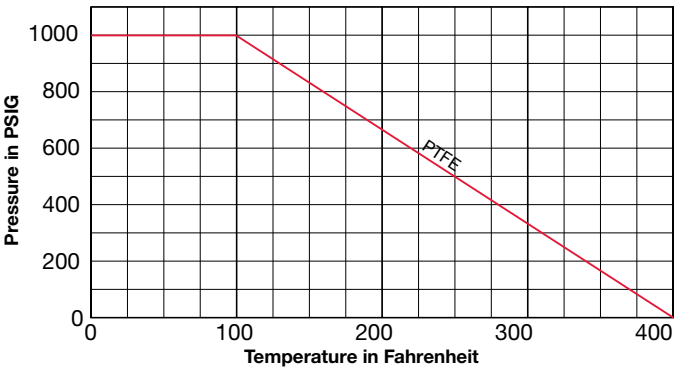
Handle & Locking Device:

- 304 SS

Handle Sleeve:

- Vinyl

Pressure vs. Temperature Curve



Size	Model Code	DN	øC	E	H	L	S	Weight
1/4”	KHNVN-1/4 NPT-3333	02089401	0.45	3.90	2.03	1.91	0.83	0.54
3/8”	KHNVN-3/8 NPT-3333	02089402	0.49	3.90	2.03	1.91	0.83	0.51
1/2”	KHNVN-1/2 NPT-3333	02089403	0.59	4.13	2.09	2.20	1.06	0.74
3/4”	KHNVN-3/4 NPT-3333	02089404	0.79	4.13	2.20	2.56	1.28	0.98
1”	KHNVN-1 NPT-3333	02089405	0.98	4.76	2.60	2.95	1.57	1.51
1 1/4”	KHNVN-1-1/4 NPT-3333	02089406	1.26	5.39	2.91	3.43	1.89	2.38
1 1/2”	KHNVN-1-1/2 NPT-3333	02089407	1.50	6.30	3.27	3.86	2.13	3.75
2”	KHNVN-2 NPT-3333	02089408	1.97	7.48	3.62	4.92	2.68	6.39

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

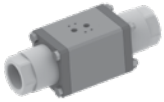
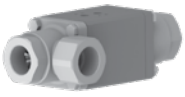
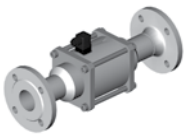
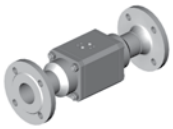
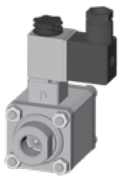
D

Coaxial Valves

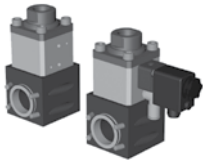
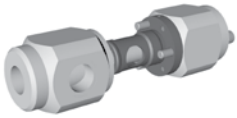
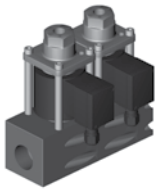
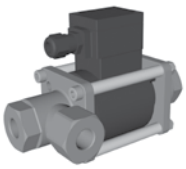
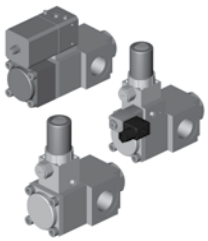
HYDAC Coaxial Valves offer an isolation valve solution for highly contaminated applications that traditionally can harm the seats of a traditional ball valve. We have expanded this offering to include many solutions outside traditional isolation. Please contact HYDAC for more information on this offering or visit our global site: **hydac.com** and search CX valves.

Overview

Switching Cycles and Switching times

Valve Type		Control System	Series / Brochure Number
	2/2-way Piston valves	Pilot operated	CXK01, CXK02 **E 6.175***
	2/2-way Coaxial valves	Direct acting	CX02, CX03, CX04, CX05 **E 6.176***
		Pilot operated	CX06, CX07, CX08, CX09 **E 6.178***
	3/2-way Coaxial valves	Direct acting	CX03, CX04 **E 6.180***
		Pilot operated	CX06, CX07 **E 6.181***
	2/2-way Coaxial valves Flange design	Direct acting	CX02F, CX03F, CX05F **E 6.183***
		Pilot operated	CX06F, CX07F, CX08F **E 6.184***
	2/2-way Coaxial valves Modular design	Direct acting	CX03M, CX04M, CX05M **E 6.177***
		Pilot operated	CX06M, CX07M, CX08M **E 6.179***
	2/2-way Coaxial valves Compact	Pilot operated	CXR **E 6.188***

Switching Cycles and Switching times
(continued)

Valve Type		Control System	Series / Brochure Number
	2/2-way Coaxial valves Compact, modular design	Pilot operated	CXRM **E 6.189***
	2/2-way Coaxial valves Compact, modular design	Pilot operated	CXC **E 6.190***
	2/2-way Coaxial valves High pressure	Direct acting	CXH1, CXH2 **E 6.182***
	2/2-way Coaxial valves ATEX	Direct acting	CXEX **E 6.186***
	2/2-way Coaxial valves ATEX, modular design	Direct acting	CXMEX **E 6.185***
	3/2-way Coaxial valves ATEX	Direct acting	CX EX **E 6.191***
	2/2 way Pressure relief valves Coaxial design	Pilot operated	CX CBV **E 6.172***
	2/2 way Pressure relief valves Right angle design	Pilot operated	CX DBV **E 6.173***

Contact HYDAC Accessories Group for more information or visit our global website:
www.HYDAC.com and search the ***brochure number** for details on the valve

Notes

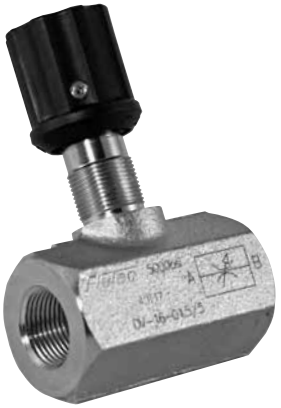
E

Flow Control Valves

The HYDAC family of flow control valves permit safe, simple and repeatable control of hydraulic fluids at operating pressures to 5000 psi. The standard slotted control spindle allows for a wide range of infinitely variable flow adjustments with excellent flow characteristics. Precise adjustment of flow is achieved by a micrometer style adjustment knob for accurate, easy-to-read visual flow reference. Design modifications and special materials are also available.

DV & DRV Series

Sizes 06 to 16

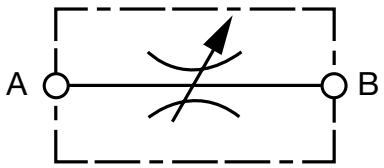


DV Series
Needle Valves
Inline Mounted

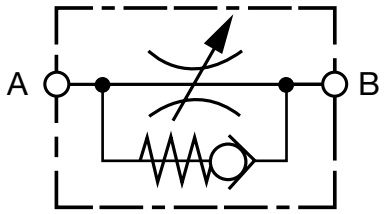
DRV Series
Flow Control Valves
Inline Mounted

Hydraulic Symbols

DV



DRV



Up to 48 gpm (180 l/min)
Up to 5000 psi (350 bar)

Description

The DV is an inline mounted flow control valve which controls the flow by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.

The scale on the lower edge of the control knob enables accurate repeat setting. The DRV is a flow control valve in the same design which also allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve – cracking pressure 7 psi (0.5 bar).

Features

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load without a dead man's circuit
- Spindle patented secured before complete loosening
- An Allen set-screw locks the setting of the knob
- Choice of five sizes ensures best possible adaptability to the system
- Drop forged housings with high safety factor
- Zinc plated housing *(standard)*

Technical Specifications

Operating pressure:	max. 5000 psi (350 bar)
Nominal flow:	
DV, DRV-06	max. 5 gpm (20 l/min)
DV, DRV-08	max. 13 gpm (50 l/min)
DV, DRV-10	max. 16 gpm (60 l/min)
DV, DRV-12	max. 24 gpm (90 l/min)
DV, DRV-16	max. 48 gpm (180 l/min)
Cracking Pressure *(on DRV)*:	7 psi (0.5 bar)
Media Operating Temp. Range:	-4°F to 212°F (-20°C to 100°C)
Ambient Temp Range:	-4°F to 212°F (-20°C to 100°C)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 & 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions, preferably horizontal
Materials:	
Valve Body:	Steel
Piston:	Hardened and ground steel
Seals:	FKM *(standard)*
Back-up Rings:	PTFE
Weight:	
DV 06 = 0.21 lbs (0.10 kg)	DRV 06 = 0.23 lbs (0.10 kg)
DV 08 = 0.57 lbs (0.26 kg)	DRV 08 = 0.61 lbs (0.28 kg)
DV 10 = 0.83 lbs (0.38 kg)	DRV 10 = 0.90 lbs (0.41 kg)
DV 12 = 1.36 lbs (0.62 kg)	DRV 12 = 1.42 lbs (0.64 kg)
DV 16 = 2.28 lbs (1.04 kg)	DRV 16 = 2.51 lbs (1.14 kg)

Model Code

DRV – 08 – 01 . X / 0 25 S

Flow Control Valve
- DV = Needle valve
- DRV = Needle valve with reverse flow check

Nominal Sizes
06, 08, 10, 12, 16

Type
- 01 = standard, housing zinc-plated
- 11 = housing zinc-plated, fine throttle spindle in stainless steel *(BSP standard)*
- 12 = housing zinc-nickel coated *(seawater-resistant)*, fine throttle spindle in steel with protective dome nut - adjustment with tool *(BSP standard)*
- 30 = housing stainless steel *(BSP standard)*

Other types available on request.

Series *(to be determined by manufacturer)*

Threaded connection
- 0 = BSP thread, Form X to DIN 3852 Part 2
- 5 = NPT thread
- 12 = UNF thread

Cracking Pressure *(for DRV Series only)*
- *(omit)* = 7 psi standard
- 25 = 25 psi optional
- 65 = 65 psi optional

Supplementary Details
- S = Panel mounting kit

Model Codes containing RED are non-standard items
– Minimum quantities may apply
– Contact HYDAC for information and availability
– Not all combinations are available

Standard Models

Type	Code	Part No.
1/8" NPT	DV-06-01.X/5	705006
1/4" NPT	DV-08-01.X/5	705018
3/8" NPT	DV-10-01.X/5	705030
1/2" NPT	DV-12-01.X/5	705042
3/4" NPT	DV-16-01.X/5	705054
-4 SAE	DV-08-01.X/12	705022
-6 SAE	DV-10-01.X/12	705034
-8 SAE	DV-12-01.X/12	705046
-12 SAE	DV-16-01.X/12	705058
1/8" NPT	DRV-06-01.X/5	705506
1/4" NPT	DRV-08-01.5/5	705518
3/8" NPT	DRV-10-01.X/5	705530
1/2" NPT	DRV-12-01.X/5	705542
3/4" NPT	DRV-16-01.X/5	705554
-4 SAE	DRV-08-01.X/12	705522
-6 SAE	DRV-10-01.X/12	705534
-8 SAE	DRV-12-01.X/12	705546
-12 SAE	DRV-16-01.X/12	705558

Other models on request

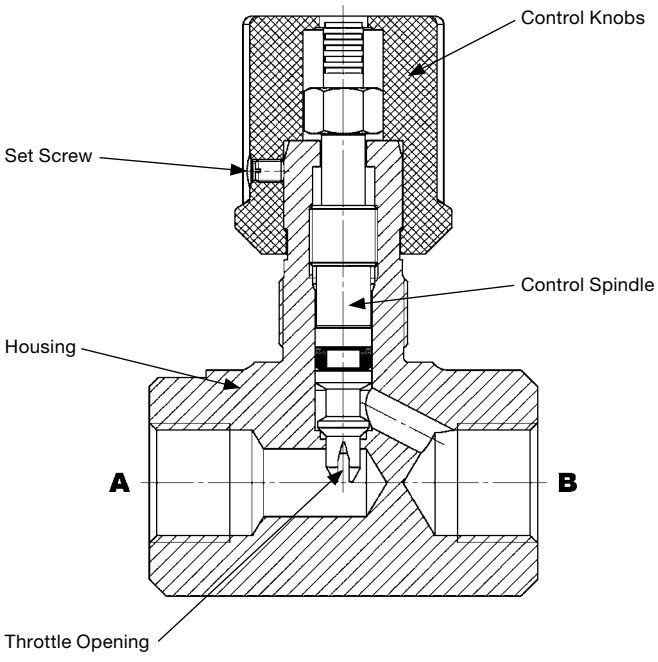
Accessories

Panel mounting sets, nickel-plated, consisting of locking washer, disc and hex nut.

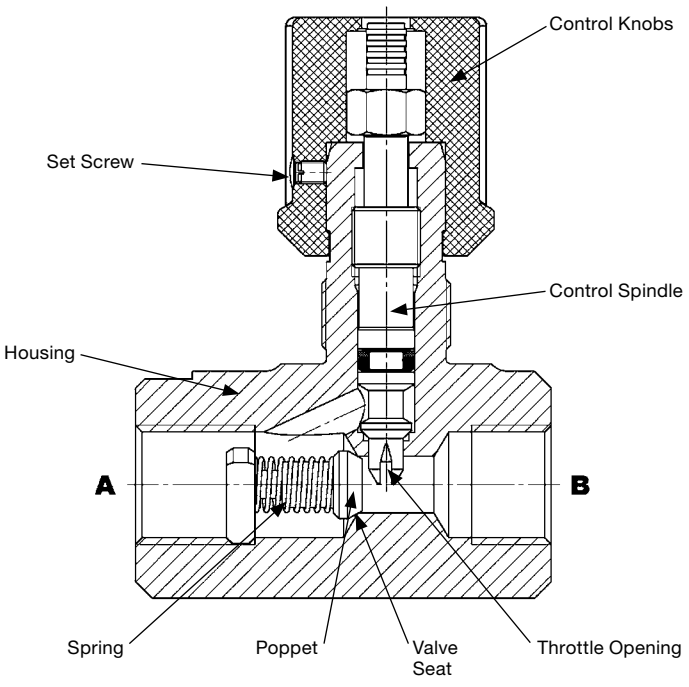
Size	Part No.
06	705300
08	705310
10	705310
12	705311
16	705311

Function

DV



DRV



Performance

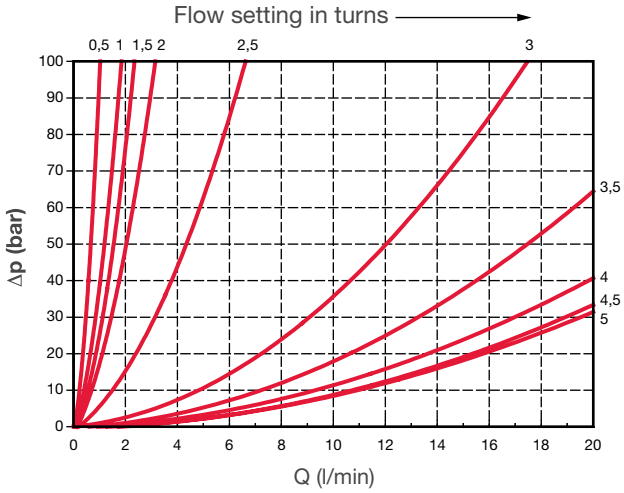
Pressure drop, dependent on flow rate

DV = flow direction A → B and B → A

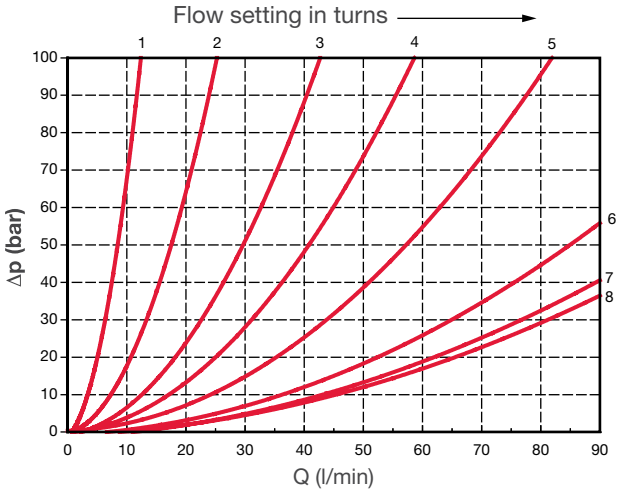
DRV = flow direction A → B

Pressure differential Δp measured against flow rate Q,
measured at constant flow setting, ν = 53 mm²/s and T_{oil} = 36 °C

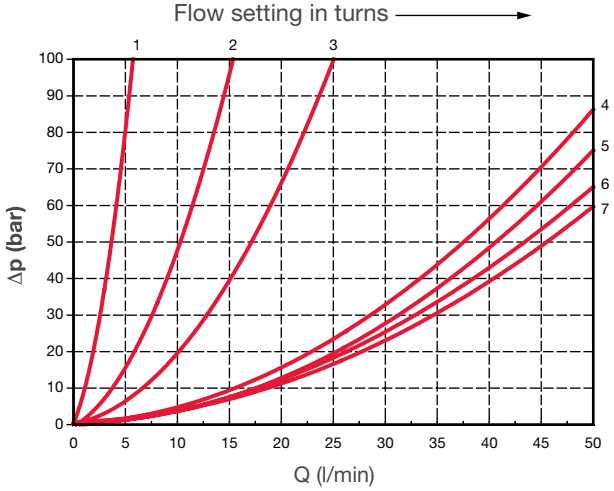
DV-06-01.3/0 A → B



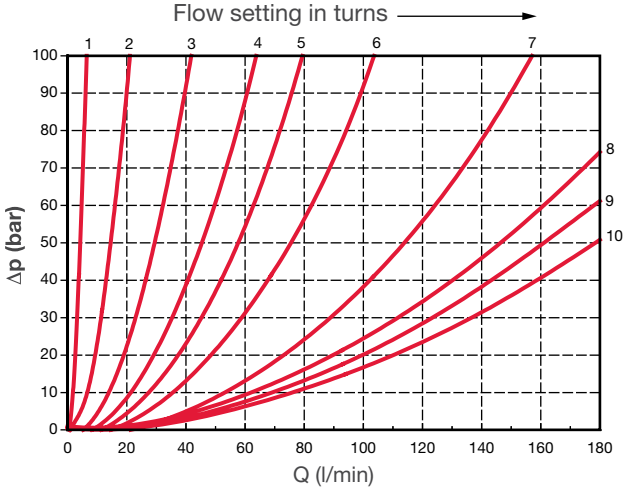
DV-12-01.3/0 A → B



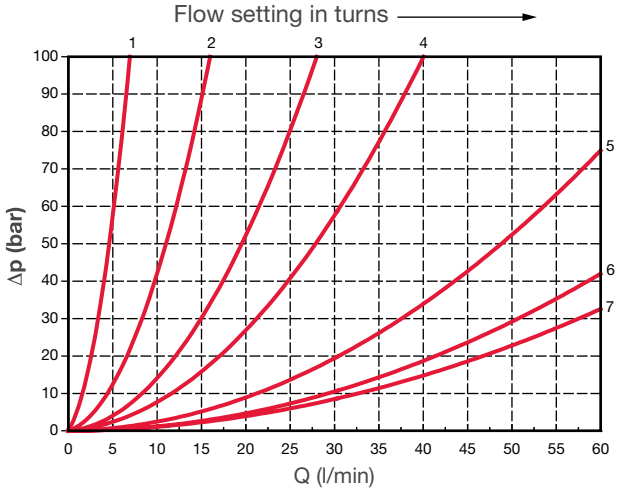
DV-08-01.3/0 A → B



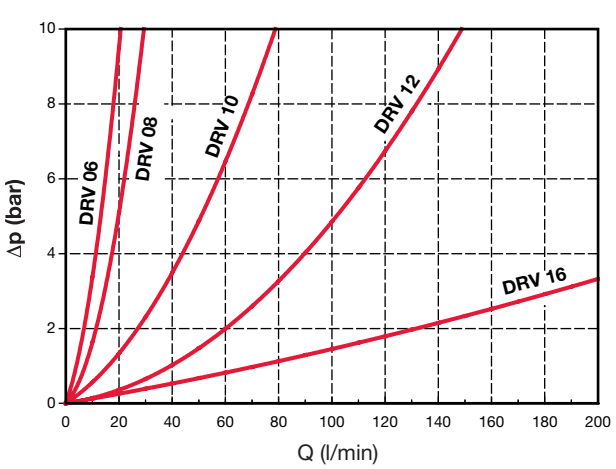
DV-16-01.3/0 A → B



DV-10-01.3/0 A → B



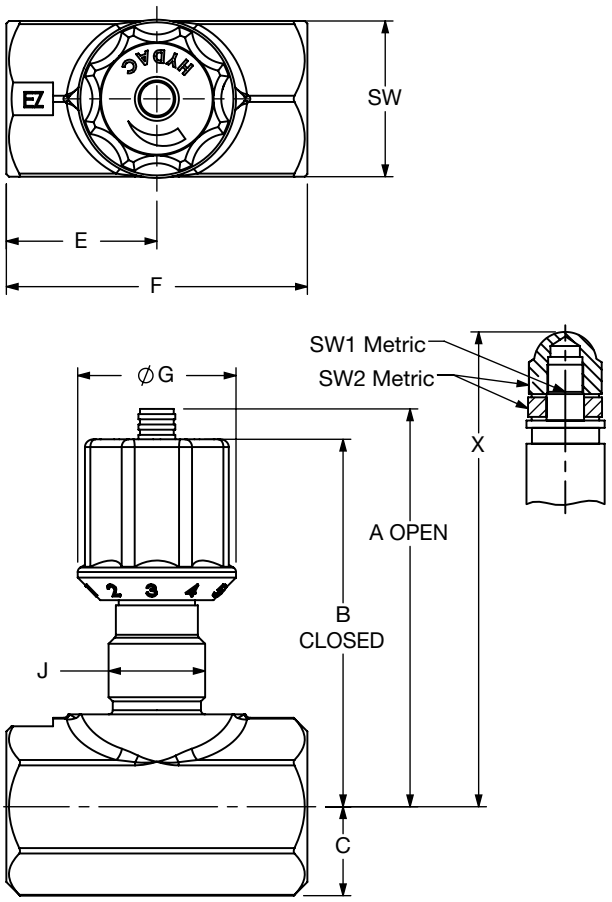
DRV-06-16 B → A



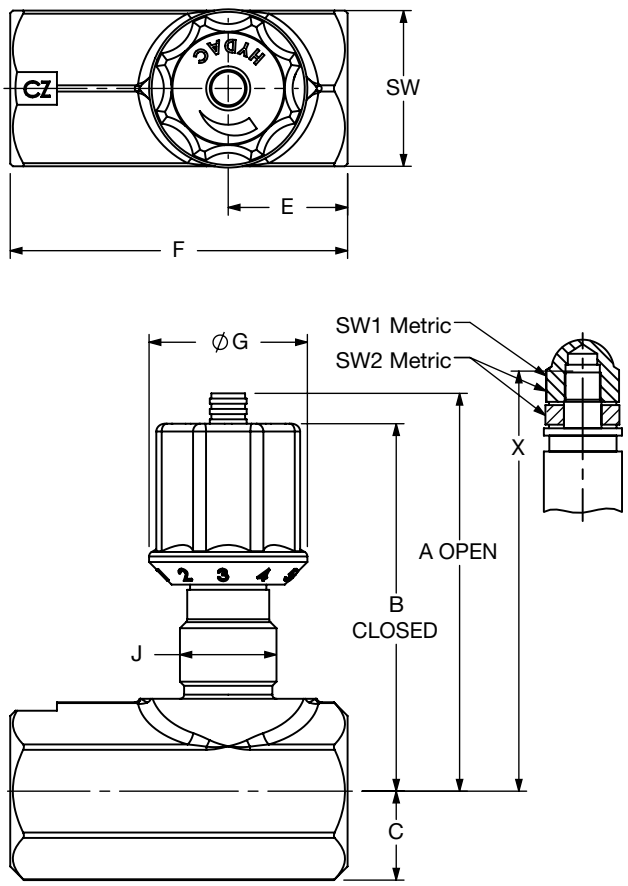
Pressure Drop curves were established by using mineral oil with kinematic viscosity 165 SUS at 112°F / 50°C

Dimensions

DV Sizes 06 to 16



DRV Sizes 06 to 16



Size	NPT	BSP	SAE	A	B	C	SW	E
6	1/8”	G1/8”		2.24 (57.0)	2.08 (52.9)	0.35 (9.0)	0.63 (16)	0.75 (19)
8	1/4”	G1/4”	-4 (7/16”-20)	2.77 (70.4)	2.53 (64.3)	0.56 (14.2)	0.98 (25)	0.94 (24)
10	3/8”	G3/8”	-6 (9/16”-18)	3.02 (76.6)	2.79 (70.8)	0.70 (17.7)	1.18 (30)	1.14 (29)
12	1/2”	G1/2”	-8 (3/4”-16)	3.51 (89.2)	3.24 (82.3)	0.79 (20.0)	1.38 (35)	1.34 (34)
16	3/4”	G3/4”	-12 (1-1/6”-12)	4.18 (106.2)	3.83 (97.3)	1.01 (25.7)	1.77 (45)	1.54 (39)

Size	F	ØG	J*	SW1	SW2	X	Wt.
6	1.50 (38)	0.99 (25)	Pg7	0.12 (3)	0.39 (10)	2.31 (58.6)	0.21 (0.10)
8	1.89 (48)	1.20 (31)	Pg11	0.16 (4)	0.51 (13)	2.85 (72.3)	0.57 (0.26)
10	2.28 (58)	1.20 (31)	Pg11	0.16 (4)	0.51 (13)	3.10 (78.8)	0.83 (0.38)
12	2.68 (68)	1.50 (38)	Pg16	0.20 (5)	0.67 (17)	3.52 (89.3)	1.36 (0.62)
16	3.07 (78)	1.50 (38)	Pg16	0.24 (6)	0.75 (19)	4.38 (111.3)	2.28 (1.04)

Size	NPT	BSP	SAE	A	B	C	SW	E
6	1/8”	G1/8”		2.24 (57.0)	2.08 (52.9)	0.35 (9.0)	0.63 (16)	1.13 (29)
8	1/4”	G1/4”	-4 (7/16”-20)	2.77 (70.4)	2.53 (64.3)	0.56 (14.2)	0.98 (25)	1.34 (34)
10	3/8”	G3/8”	-6 (9/16”-18)	3.02 (76.6)	2.79 (70.8)	0.70 (17.7)	1.18 (30)	1.65 (42)
12	1/2”	G1/2”	-8 (3/4”-16)	3.51 (89.2)	3.24 (82.3)	0.79 (20.0)	1.38 (35)	1.73 (44)
16	3/4”	G3/4”	-12 (1-1/6”-12)	4.18 (106.2)	3.83 (97.3)	1.01 (25.7)	1.77 (45)	2.24 (57)

Size	F	ØG	J*	SW1	SW2	X	Wt.
6	1.77 (45)	0.99 (25)	Pg7	0.12 (3)	0.39 (10)	2.31 (58.6)	0.23 (0.10)
8	2.17 (55)	1.20 (31)	Pg11	0.16 (4)	0.51 (13)	2.85 (72.3)	0.61 (0.28)
10	2.56 (65)	1.20 (31)	Pg11	0.16 (4)	0.51 (13)	3.10 (78.8)	0.90 (0.41)
12	2.87 (73)	1.50 (38)	Pg16	0.20 (5)	0.67 (17)	3.52 (89.3)	1.42 (0.64)
16	3.46 (88)	1.50 (38)	Pg16	0.24 (6)	0.75 (19)	4.38 (111.3)	2.51 (1.14)

*Pg style thread per DIN 40430

Notes:

1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

DV & DRV Series

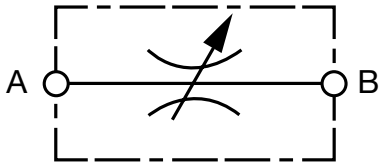
Sizes 20 to 40

DV Series
Needle Valves
Inline Mounted

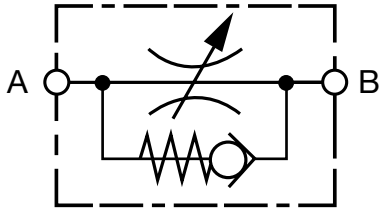
DRV Series
Flow Control Valves
Inline Mounted

Hydraulic Symbols

DV



DRV



Up to 80 gpm (300 l/min)
Up to 5000 psi (350 bar)

Description

The DV is an inline mounted flow control valve which controls the flow by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.

The scale on the lower edge of the control knob enables accurate repeat setting. The DRV is a flow control valve in the same design which also allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve – cracking pressure 7 psi (0.5 bar).

Features

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load without a dead man's circuit
- Spindle patented secured before complete loosening
- An Allen set-screw locks the setting of the knob
- Choice of four sizes for optimum adaptability to the system
- Phosphated housing *(standard)*

Technical Specifications

Operating pressure:	max. 5000 psi (350 bar)
Nominal flow:	
DV, DRV-20	max. 80 gpm (300 l/min)
DV, DRV-25	max. 80 gpm (300 l/min)
DV, DRV-30	max. 80 gpm (300 l/min)
DV, DRV-40	max. 80 gpm (300 l/min)
Cracking Pressure *(on DRV)*:	7 psi (0.5 bar)
Media Operating Temp. Range:	-4°F to 212°F (-20°C to 100°C)
Ambient Temp Range:	-4°F to 212°F (-20°C to 100°C)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 & 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions, preferably horizontal
Materials:	
Valve Body:	Steel
Piston:	Hardened and ground steel
Seals:	FKM *(standard)*
Back-up Rings:	PTFE
Weight:	
DV 20 = 4.62 lbs (2.1 kg)	DRV 20 = 5.28 lbs (2.4 kg)
DV 25 = 6.16 lbs (2.8 kg)	DRV 25 = 7.7 lbs (3.5 kg)
DV 30 = 7.7 lbs (3.5 kg)	DRV 30 = 10.12 lbs (4.6 kg)
DV 40 = 12.1 lbs (5.5 kg)	DRV 40 = 16.94 lbs (7.7 kg)

Model Code

DRV – 20 – 01 . X / 0 25

Flow Control Valve
- DV = Needle valve
- DRV = Needle valve with reverse flow check

Nominal Sizes
20, 25, 30, 40 *(BSP only)*

Type
- 01 = standard, housing phosphated
- 12 = housing zinc-nickel coated *(seawater-resistant)*, fine throttle spindle in steel with protective dome nut - adjustment with tool,soldered *(BSP std. - not sz. 40)*
- 17 = housing zinc-plated *(BSP std. - not sz. 40)*
- 30 = housing stainless steel *(BSP standard - size 20 only)*

Other types available on request.

Series *(to be determined by manufacturer)*

Threaded connection
- 0 = BSP thread, Form X to DIN 3852 Part 2
- 5 = NPT thread
- 12 = UNF thread

Cracking Pressure *(for DRV Series only)*
- *(omit)* = 7 psi standard
- 25 = 25 psi optional
- 65 = 65 psi optional

Model Codes containing RED are non-standard items
– Minimum quantities may apply
– Contact HYDAC for information and availability
– Not all combinations are available

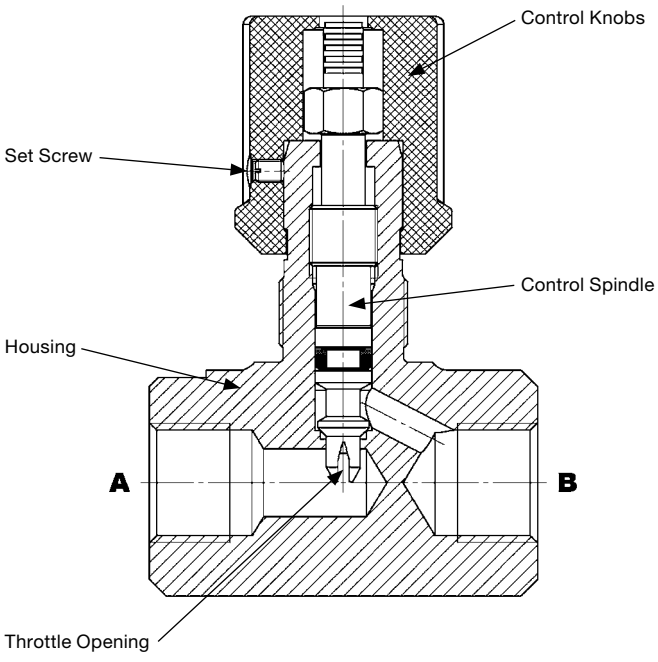
Standard Models

Type	Code	Part No.
1” NPT	DV-20-01.X/5	705066
1-1/4” NPT	DV-25-01.X/5	705078
1-1/2” NPT	DV-30-01.X/5	705090
-16 SAE	DV-20-01.X/12	705070
-20 SAE	DV-25-01.X/12	705082
-24 SAE	DV-30-01.X/12	705094
1” NPT	DRV-20-01.X/5	705566
1-1/4” NPT	DRV-25-01.X/5	705578
1-1/2” NPT	DRV-30-01.X/5	705590
-16 SAE	DRV-20-01.X/12	705570
-20 SAE	DRV-25-01.X/12	705582
-24 SAE	DRV-30-01.X/12	705594

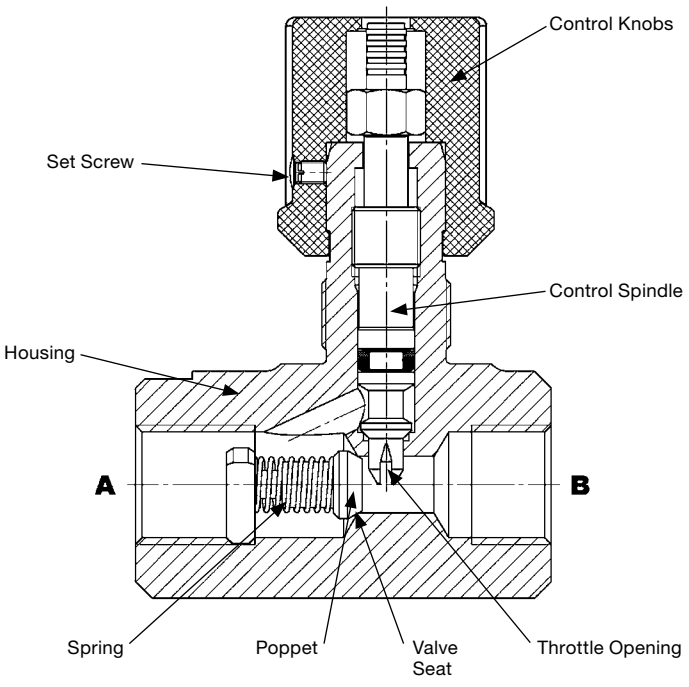
Other models on request

Function

DV



DRV



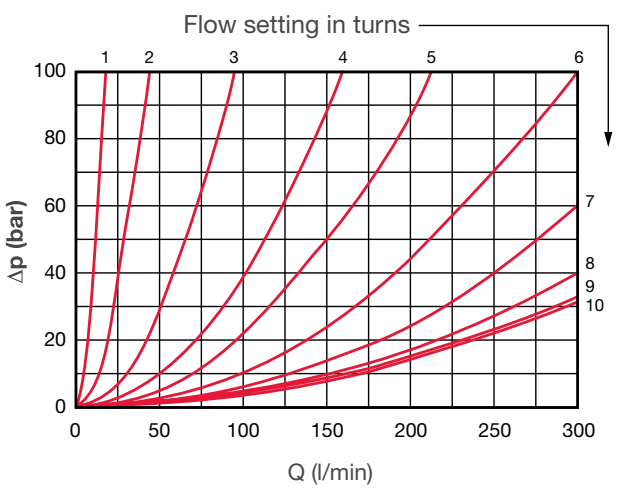
Performance

Pressure drop, dependent on flow rate

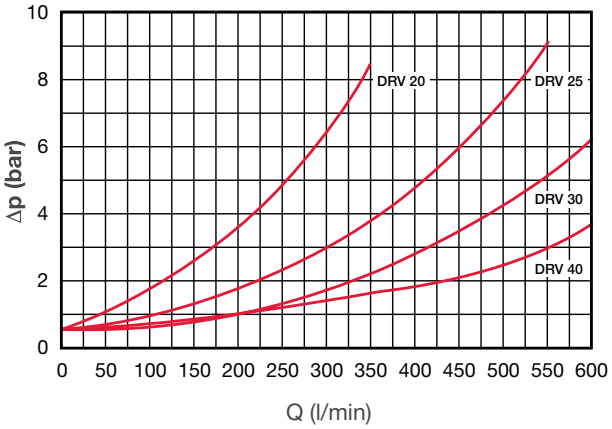
DV = flow direction A → B and B → A

DRV = flow direction A → B

Pressure differential Δp measured against flow rate Q,
measured at constant flow setting, ν = 54 mm²/s and T_{oil} = 36 °C



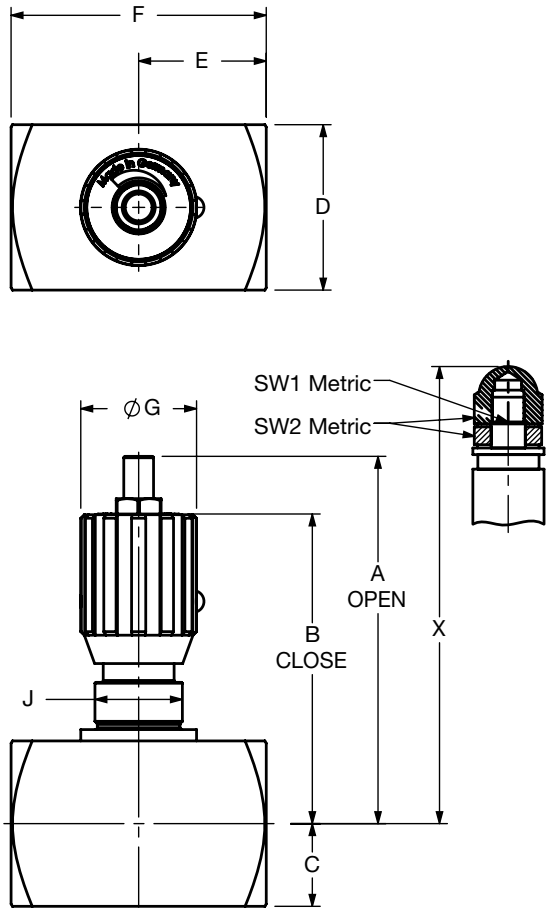
DRV Flow Direction B → A



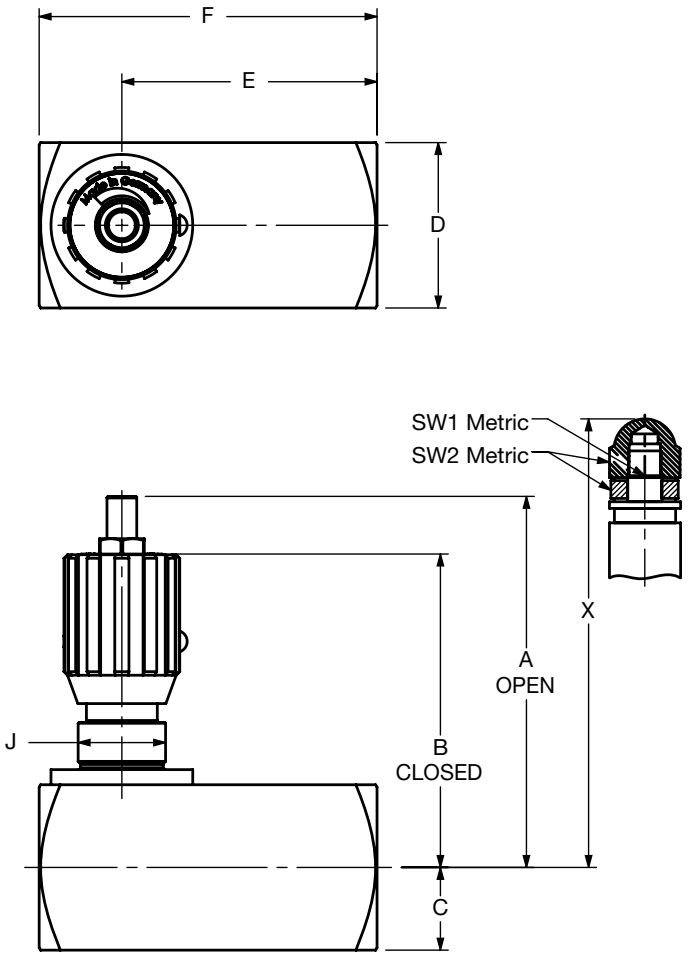
Pressure Drop curves were established by using mineral oil with kinematic viscosity 165 SUS at 112°F / 50°C

Dimensions

DV Sizes 20 to 40



DRV Sizes 20 to 40



Size	NPT	BSP	SAE	A	B	C	D	E
20	1”	G1”	-16 (1-5/16”-12)	5.71 (145)	5.04 (128)	0.98 (25)	1.97 (50)	2.13 (54)
25	1-1/4”	G1/4”	-20 (1-5/8”-12)	5.91 (150)	5.24 (133)	1.18 (30)	2.36 (60)	2.13 (54)
30	1-1/2”	G1/2”	-24 (1-7/8”-12)	6.10 (155)	5.43 (138)	1.38 (35)	2.76 (70)	2.13 (54)
40	—	G2”	—	6.50 (165)	5.83 (148)	1.77 (45)	3.54 (90)	2.56 (65)

Size	F	G	J*	SW1	SW2	X	Wt.
20	4.25 (108)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.08 (129)	4.62 (2.10)
25	4.25 (108)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.28 (134)	6.16 (2.80)
30	4.25 (108)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.47 (139)	7.70 (3.50)
40	5.12 (130)	1.93 (49)	Pg29	—	—	—	12.10 (5.50)

Size	NPT	BSP	SAE	A	B	C	D	E
20	1”	G1”	-16 (1-5/16”-12)	5.71 (145)	5.04 (128)	0.98 (25)	1.97 (50)	3.03 (77)
25	1-1/4”	G1/4”	-20 (1-5/8”-12)	5.91 (150)	5.24 (133)	1.18 (30)	2.36 (60)	3.66 (93)
30	1-1/2”	G1/2”	-24 (1-7/8”-12)	6.10 (155)	5.43 (138)	1.38 (35)	2.76 (70)	4.25 (108)
40	—	G2”	—	6.50 (165)	5.83 (148)	1.77 (45)	3.54 (90)	5.12 (130)

Size	F	G	J*	SW1	SW2	X	Wt.
20	5.00 (127)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.08 (129)	5.28 (2.40)
25	5.63 (143)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.28 (134)	7.70 (3.50)
30	5.63 (143)	1.93 (49)	Pg29	0.31 (8)	0.94 (24)	5.47 (139)	10.12 (4.60)
40	6.50 (165)	1.93 (49)	Pg29	—	—	—	16.94 (7.70)

*Pg style thread per DIN 40430

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

DVP & DRVP Series

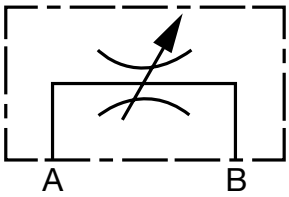
Sizes 06 to 40

DVP Series
Needle Valves
Manifold Mounted

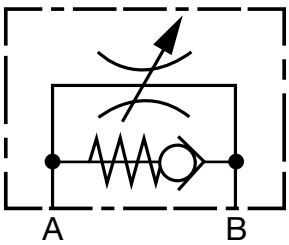
DRVP Series
Flow Control Valves
Manifold Mounted

Hydraulic Symbols

DVP



DRVP



Up to 80 gpm (300 l/min)
Up to 5000 psi (350 bar)

Description

The DVP is a manifold mounted flow control valve which controls the flow rate by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions. The scale and colored rings on the top of the control knob enable accurate repeat setting.

The DRVP is a manifold mounted flow control valve which allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve – cracking pressure 7 psi (0.5 bar).

Features

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load
- Spindle patented secured before complete loosening
- An Allen set-screw locks the setting of the knob
- Choice of nine sizes ensures best possible adaptability to the system
- Hardened and ground valve components to ensure minimal wear and extended service life
- Phosphated housing *(standard)*

Technical Specifications

Operating pressure:	max. 5000 psi (350 bar)
Nominal flow:	
DVP, DRVP-06	max. 5 gpm (20 l/min)
DVP, DRVP-08	max. 13 gpm (50 l/min)
DVP, DRVP-10	max. 16 gpm (60 l/min)
DVP, DRVP-12	max. 24 gpm (90 l/min)
DVP, DRVP-16	max. 48 gpm (180 l/min)
DVP, DRVP-20	max. 80 gpm (300 l/min)
DVP, DRVP-25	max. 80 gpm (300 l/min)
DVP, DRVP-30	max. 80 gpm (300 l/min)
DRVP-40	max. 80 gpm (300 l/min)
Cracking Pressure *(on DRVP)*:	7 psi (0.5 bar)
Media Operating Temp. Range:	-4°F to 212°F (-20°C to 80°C)
Ambient Temp Range:	-4°F to 212°F (-20°C to 80°C)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 & 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions, preferably horizontal
Materials:	
Valve Body:	Steel
Piston:	Hardened and ground steel
Seals:	FKM *(standard)*
Back-up Rings:	PTFE
Weight:	
DVP 06 = 0.4 lbs (0.2 kg)	DRVP 06 = 0.6 lbs (0.3 kg)
DVP 08 = 0.9 lbs (0.4 kg)	DRVP 08 = 1.1 lbs (0.5 kg)
DVP 10 = 1.3 lbs (0.6 kg)	DRVP 10 = 1.8 lbs (0.8 kg)
DVP 12 = 2.2 lbs (1.0 kg)	DRVP 12 = 2.4 lbs (1.1 kg)
DVP 16 = 3.7 lbs (1.7 kg)	DRVP 16 = 5.5 lbs (2.5 kg)
DVP 20 = 7.9 lbs (3.6 kg)	DRVP 20 = 8.6 lbs (3.9 kg)
DVP 25 = 12.1 lbs (5.5 kg)	DRVP 25 = 14.7 lbs (6.7 kg)
DVP 30 = 16.5 lbs (7.5 kg)	DRVP 30 = 24.2 lbs (11 kg)
DVP 40 = 18.0 lbs (8.2 kg)	DRVP 40 = 38.5 lbs (17.5 kg)

Model Code

DRVP - 08 - 01.X / 25

Flow Control Valve
- DVP = Needle valve
- DRVP = Needle valve with check valve

Nominal Sizes
06, 08, 10, 12, 16, 20, 25, 30

Type
- 01 = standard *(housing phosphated, seals FKM)*
- 12 = housing nickel-plated, fine throttle spindle in steel with protective dome nut – adjustment with tool *(not for size 40)*

Other types available on request.

Cracking Pressure *(for DRVP Series only)*
- *(omit)* = 7 psi standard
- 25 = 25 psi optional
- 65 = 65 psi optional

Model Codes containing RED are non-standard items
– Minimum quantities may apply
– Contact HYDAC for information and availability
– Not all combinations are available

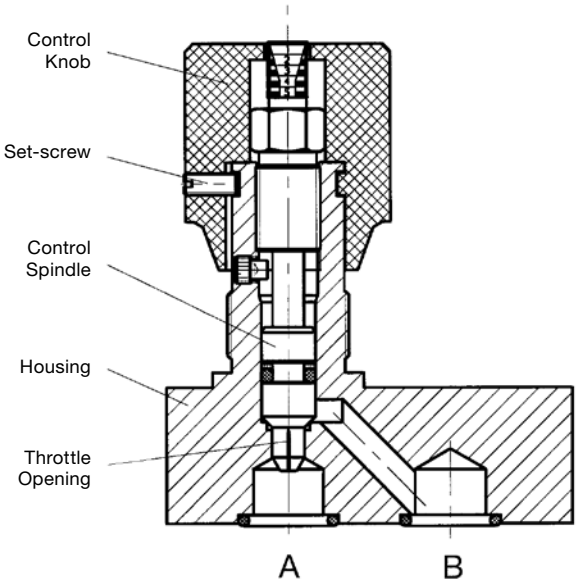
Standard Models

Code	Part No.
DVP-06-01.X	705351
DVP-08-01.X	705353
DVP-10-01.X	705355
DVP-12-01.X	705357
DVP-16-01.X	705359
DVP-20-01.X	705361
DVP-25-01.X	705363
DVP-30-01.X	705365
DRVP-06-01.X	705777
DRVP-08-01.X	705779
DRVP-10-01.X	705781
DRVP-12-01.X	705783
DRVP-16-01.X	705785
DRVP-20-01.X	705787
DRVP-25-01.X	705789
DRVP-30-01.X	705791
DRVP-40-01.X	705792

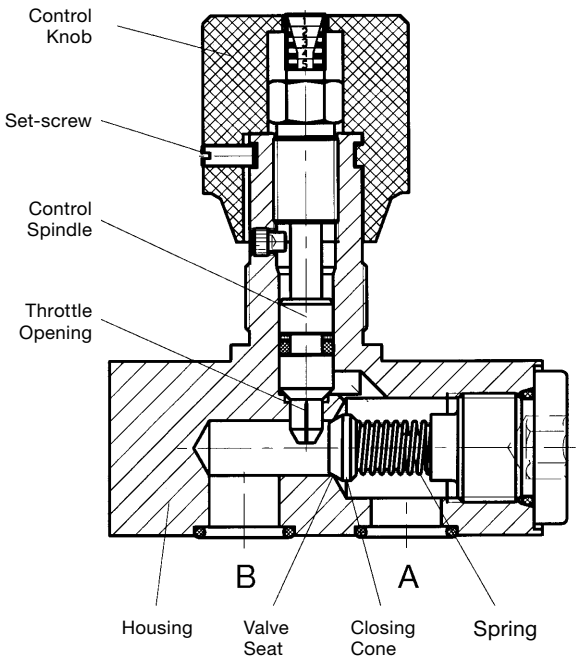
Other models on request

Function

DVP



DRVP



Performance

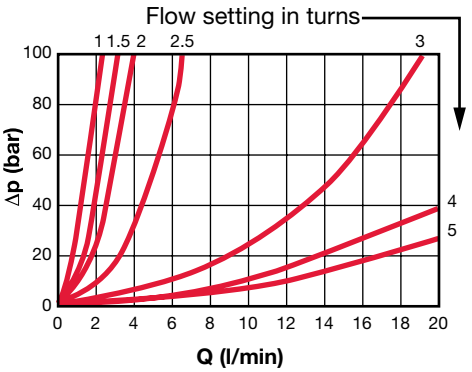
Pressure drop, dependent on flow rate

DVP = flow direction A → B and B → A

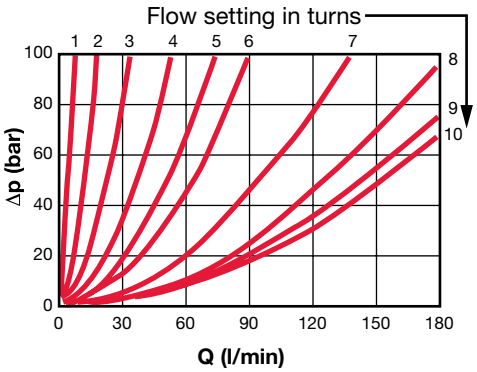
DRVP = flow direction A → B

Pressure differential Δp measured against flow rate Q, measured at constant flow setting, ν = 54 mm²/s and T_{oil} = 36 °C

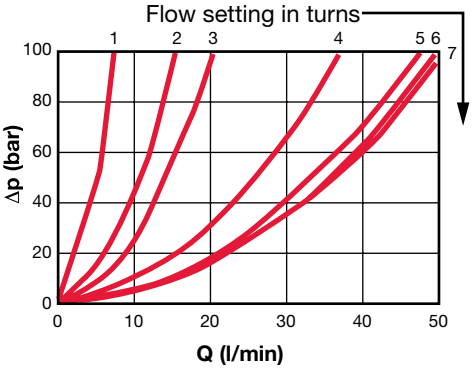
DVP/DRVP-06-01.X



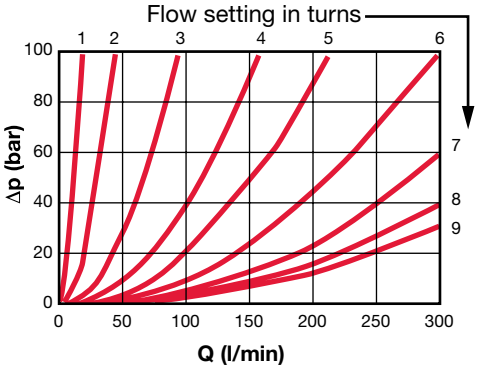
DVP/DRVP-16-01.X



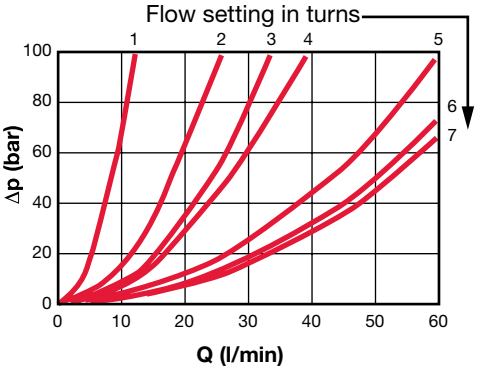
DVP/DRVP-08-01.X



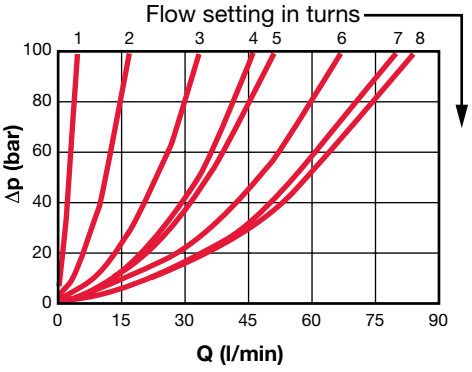
DVP/DRVP-20 to 40-01.X



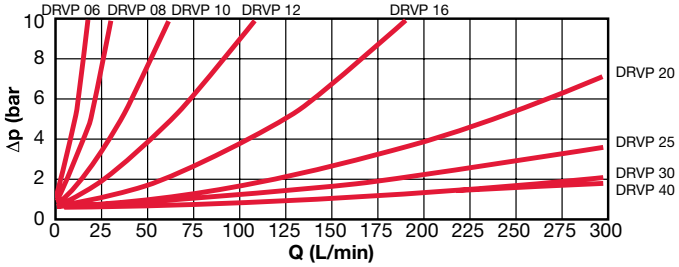
DVP/DRVP-10-01.X



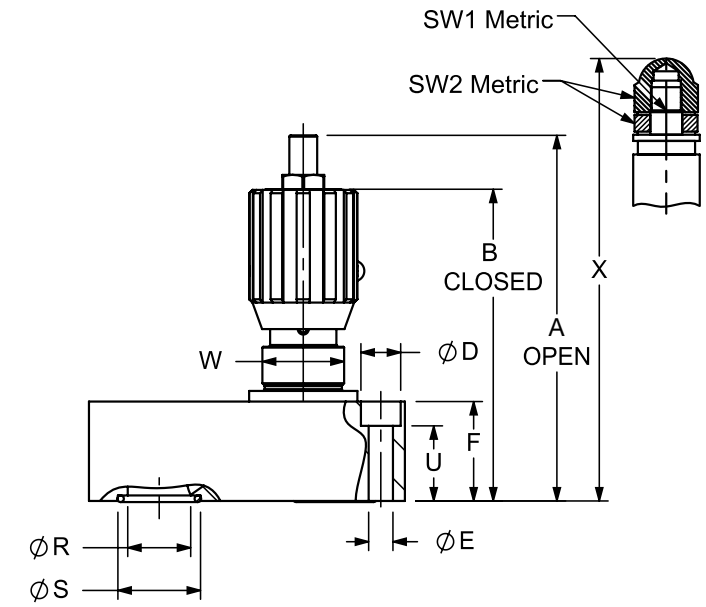
DVP/DRVP-12-01.X

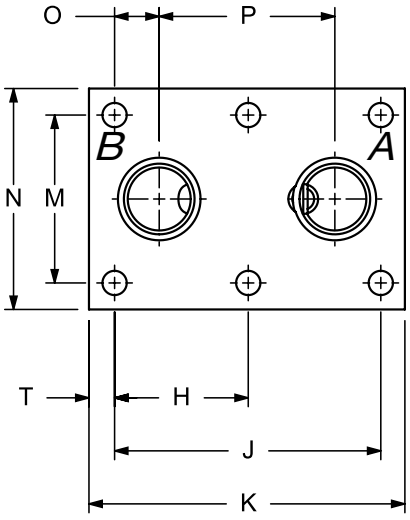


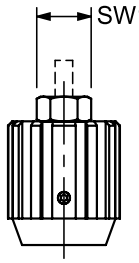
DRVP-06-01.X to DRVP-40-01.X



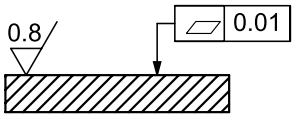
Dimensions
DVP Series







Control knob with hex. is standard on size 20



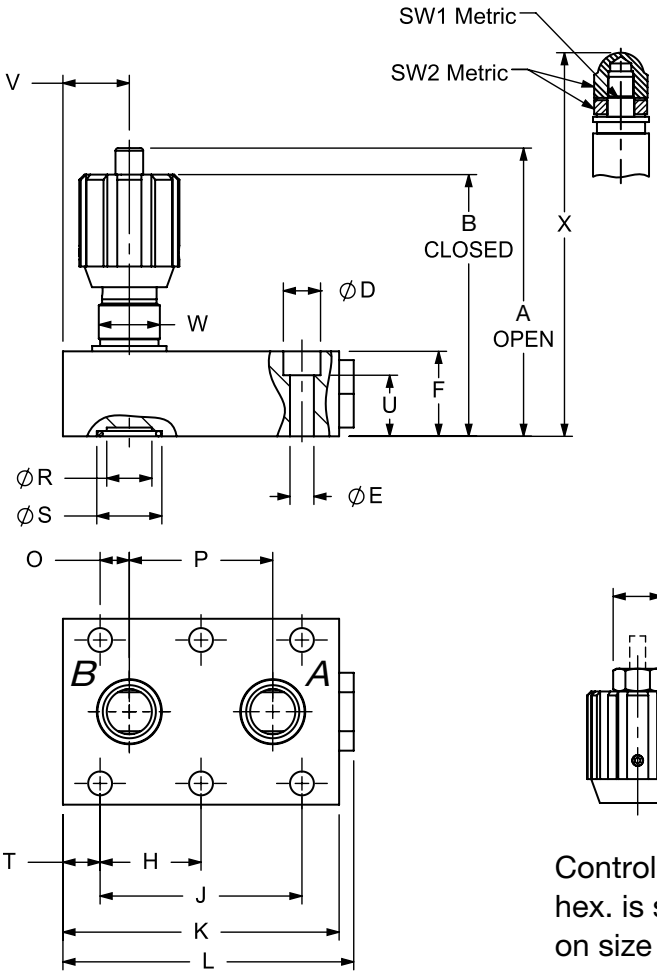
Required surface finish on interface area

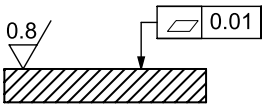
Size	A	B	ØD	ØE	F	G	H	J	K	M
6	2.48 (63)	2.28 (58)	0.43 (11)	0.26 (6.6)	0.63 (16)	0.94 (24)	–	0.75 (19)	1.38 (35)	1.12 (28.5)
8	3.11 (79)	2.83 (72)	0.43 (11)	0.26 (6.6)	0.79 (20)	–	–	1.38 (35)	1.87 (47.5)	1.32 (33.5)
10	3.31 (84)	3.03 (77)	0.43 (11)	0.26 (6.6)	0.98 (25)	–	–	1.32 (33.5)	2.01 (51)	1.5 (38)
12	3.9 (99)	3.5 (89)	0.43 (11)	0.26 (6.6)	0.98 (25)	–	–	1.5 (38)	2.95 (75)	1.75 (44.5)
16	4.45 (113)	4.06 (103)	0.55 (14)	(0.35) 9	1.18 (30)	1.5 (38)	1.5 (38)	2.99 (76)	3.68 (93.5)	2.13 (54)
20	6.5 (165)	5.83 (148)	0.55 (14)	(0.35) 9	1.77 (45)	1.93 (49)	1.87 (47.5)	3.74 (95)	4.37 (111)	2.36 (60)
25	6.5 (165)	5.83 (148)	0.71 (18)	0.43 (11)	1.77 (45)	1.93 (49)	2.36 (60)	4.74 (120.5)	5.63 (143)	2.99 (76)
30	6.69 (170)	6.02 (153)	0.79 (20)	0.55 (14)	1.97 (50)	1.93 (49)	2.81 (71.5)	5.63 (143)	6.73 (171)	3.62 (92)
40	6.69 (170)	6.02 (153)	0.79 (20)	0.55 (14)	1.97 (50)	1.93 (49)	2.64 (67)	5.26 (133.5)	7.56 (192)	4.37 (111)

Size	N	O	P	ØR	ØS	T	U	V	W	X	Weight
6	1.63 (41.5)	0.06 (1.5)	0.63 (16)	0.2 (5)	0.38 (9.7)	0.31 (8)	0.35 (9)	0.37 (9.5)	PG7	2.43 (61.7)	0.4 (0.2)
8	1.81 (46)	0.18 (4.5)	1 (25.5)	0.28 (7)	0.5 (12.7)	0.26 (6.5)	0.51 (13)	0.47 (12)	PG11	2.84 (72.2)	0.9 (0.4)
10	2.01 (51)	0.17 (4.2)	1 (25.5)	0.39 (10)	0.61 (15.6)	0.33 (8.5)	0.71 (18)	0.55 (14)	PG11	3.19 (81)	1.3 (0.6)
12	2.26 (57.5)	0.16 (4)	1.18 (30)	0.51 (13)	0.73 (18.6)	0.73 (18.5)	0.71 (18)	0.89 (22.5)	PG16	1.32 (33.5)	2.2 (1)
16	2.76 (70)	0.43 (11)	2.13 (54)	0.67 (17)	0.96 (24.5)	0.33 (8.5)	0.83 (21)	0.77 (19.5)	PG16	4.9 (124.5)	3.7 (1.7)
20	3.01 (76.5)	0.75 (19.1)	2.24 (57)	0.87 (22)	1.2 (30.5)	0.31 (8)	1.42 (36)	1.24 (31.5)	PG29	6.54 (166)	7.9 (3.6)
25	3.94 (100)	0.82 (20.8)	3.13 (79.5)	1.12 (28.5)	1.47 (37.4)	0.43 (11)	1.34 (34)	1.81 (46)	PG29	7.17 (182)	12.1 (5.5)
30	4.41 (112)	0.94 (23.8)	3.74 (95)	1.38 (35)	1.71 (43.4)	0.59 (15)	1.46 (37)	1.54 (39)	PG29	8.27 (210)	16.5 (7.5)
40	5.51 (140)	1 (25.5)	3.5 (89)	1.87 (47.5)	2.26 (57.5)	0.63 (16)	1.46 (37)	2.28 (58)	PG29	0.01 (0.26)	18 (8.2)

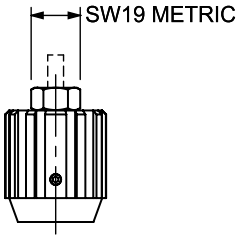
Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions
DRVP Series





Required surface finish on interface area



Control knob with hex. is standard on size 20

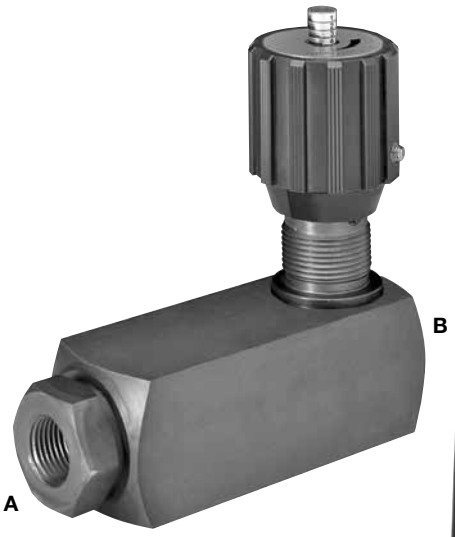
Size	A	B	ØD	ØE	F	G	H	J	K	L	M	N
6	2.48 (63)	2.28 (58)	0.43 (11)	0.26 (6.6)	0.63 (16)	0.94 (24)	–	0.75 (19)	1.63 (41.5)	1.81 (46)	1.12 (28.5)	1.63 (41.5)
8	3.11 (79)	2.83 (72)	0.43 (11)	0.26 (6.6)	0.79 (20)	–	–	1.38 (35)	2.5 (63.5)	2.64 (67)	1.32 (33.5)	1.81 (46)
10	3.31 (84)	3.03 (77)	0.43 (11)	0.26 (6.6)	0.98 (25)	–	–	1.32 (33.5)	2.76 (70)	2.91(74)	1.5 (38)	2.01 (51)
12	4.17 (106)	3.78 (96)	0.43 (11)	0.26 (6.6)	1.26 (32)	–	–	1.5 (38)	3.15 (80)	3.33 (84.5)	1.75 (44.5)	2.26 (57.5)
16	5.04 (128)	4.65 (118)	0.55 (14)	0.35 (9)	1.77 (45)	1.5 (38)	1.5 (38)	2.99 (76)	4.09 (104)	4.31 (109.5)	2.13 (54)	2.76 (70)
20	6.69 (170)	6.02 (153)	0.55 (14)	0.35 (9)	1.97 (50)	1.93 (49)	1.87 (47.5)	3.74 (95)	5 (127)	5.24 (133)	2.36 (60)	3.01 (76.5)
25	6.89 (175)	6.22 (158)	0.71 (18)	0.43 (11)	2.17 (55)	1.93 (49)	2.36 (60)	4.74 (120.5)	6.5 (165)	6.77 (172)	2.99 (76)	3.94 (100)
30	7.68 (195)	7.01 (178)	0.79 (20)	0.55 (14)	2.95 (75)	1.93 (49)	2.81 (71.5)	5.63 (143)	7.32 (186)	7.72 (196)	3.62 (92)	4.41 (112)
40	8.66 (220)	7.99 (203)	0.79 (20)	0.55 (14)	3.94 (100)	1.93 (49)	2.64 (67)	5.26 (133.5)	7.56 (192)	7.91 (201)	4.37 (111)	5.51 (140)

Size	O	P	ØR	ØS	T	U	V	W	SW1	SW2	X	Weight
6	0.06 (1.6)	0.63 (16)	0.2 (5)	0.38 (9.7)	0.25 (6.4)	0.35 (9)	0.53 (13.5)	PG7	–	–	2.43 (61.7)	0.6 (0.26)
8	0.19 (4.8)	1 (25.5)	0.28 (7)	0.5 (12.7)	0.56 (14.2)	0.51 (13)	1.22 (31)	PG11	–	–	2.84 (72.2)	1.1 (0.5)
10	0.16 (4)	1 (25.5)	0.39 (10)	0.61 (15.6)	0.71 (18)	0.71 (18)	1.16 (29.5)	PG11	–	–	3.19 (81)	1.8 (0.8)
12	(0.16 (4)	1.18 (30)	0.51 (13)	0.73 (18.6)	0.83 (21)	0.98 (25)	1.44 (36.5)	PG16	6	13	1.32 (33.5)	2.4 (1.1)
16	0.43 (11)	2.13 (54)	0.67 (17)	0.96 (24.5)	0.55 (14)	1.42 (36)	1.93 (49)	PG16	6	17	4.9 (124.5)	5.5 (2.5)
20	0.75 (19)	2.24 (57)	0.87 (22)	1.2 (30.5)	0.63 (16)	1.61 (41)	1.93 (49)	PG29	8	19	5.91 (150)	8.6 (3.9)
25	0.81 (20.6)	3.13 (79.5)	1.12 (28.5)	1.47 (37.4)	0.59 (15)	1.73 (44)	3.03 (77)	PG29	–	–	7.17 (182)	14.7 (6.7)
30	0.94 (23.8)	3.74 (95)	1.38 (35)	1.71 (43.4)	0.59 (15)	2.44 (62)	3.35 (85)	PG29	–	–	8.27 (210)	24.2 (11)
40	1 (25.5)	3.5 (89)	1.87 (47.5)	2.26 (57.5)	0.63 (16)	3.43 (87)	2.52 (64)	PG29	–	–	0.01 (0.26)	38.5 (17.5)

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

SRVR & SRVRP Series

Pressure Compensated Flow Control Valves
Sizes 08 to 20

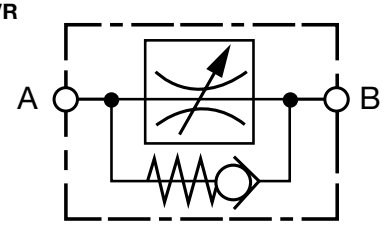


SRVR Series
Pressure Compensated
Inline Flow Control Valve

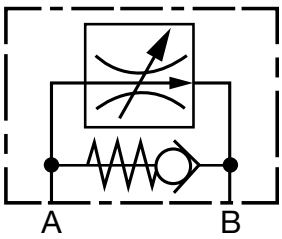
SRVRP Series
Pressure Compensated
Manifold Mount Flow Control Valve

Hydraulic Symbols

SRVR



SRVRP



Up to 42 gpm (160 l/min)
Up to 3000 psi (210 bar)

Description

The SRVR / SRVRP is a pressure-compensated flow control valve which maintains a constant outlet flow by means of a control function. The flow rate is largely independent of the pressure and viscosity. The valve has a variable orifice with pressure compensator spool. The variable orifice determines the flow cross section. If oil is flowing from A to B, a pressure drop occurs at the variable orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area and overcoming the spring force.

As the flow rate increases (increasing pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate from A to B is therefore achieved. In the reverse direction there is free flow via a built-in check valve.

Important: if the required control pressure differential is not reached, the valve operates as a non-compensated throttle valve.

Features

- For regulating the speed of loads independently of the pressure
- For limiting the max. speed of lifting gear
- For limiting the flow rate for control oil circuits in the main circuit and offline
- Hardened and ground valve components to ensure minimal wear and extended service life
- Choice of five sizes for optimum adaptability to the system
- Space-saving installation
- Phosphated housing *(standard)*

Technical Specifications

Operating pressure:	max. 3000 psi (210 bar)
Nominal flow:	
SRVR / SRVRP08	up to max. 3 gpm (12 l/min)
SRVR / SRVRP10	up to max. 6 gpm (22 l/min)
SRVR / SRVRP12	up to max. 15 gpm (55 l/min)
SRVR / SRVRP16	up to max. 24 gpm (90 l/min)
SRVR 20	up to max. 42 gpm (160 l/min)
Media Operating Temp. Range:	-4°F to 212°F (-20°C to 80°C)
Ambient Temp Range:	-4°F to 212°F (-20°C to 80°C)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 & 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions, preferably horizontal
Materials:	
Valve Body:	Steel
Piston:	Hardened and ground steel
Seals:	FKM *(standard)*
Weight:	
SRVR 08 = 1.3 lbs (0.6 kg)	SRVRP 08 = 1.9 lbs (0.9 kg)
SRVR 10 = 2.0 lbs (0.9 kg)	SRVRP 10 = 3.1 lbs (1.4 kg)
SRVR 12 = 3.7 lbs (1.7 kg)	SRVRP 12 = 5.1 lbs (2.3 kg)
SRVR 16 = 4.8 lbs (2.2 kg)	SRVRP 16 = 7.3 lbs (3.3 kg)
SRVR 20 = 8.8 lbs (4.0 kg)	

Model Code

SRVR – 10 – 01 . X / 0

Flow Control Valve
SRVR = Flow control valve for inline mountingwith bypass check valve
SRVRP= Flow control valve for manifold mounting with bypass check valve

Nominal Sizes
08, 10, 12, 16,
20 (SRVR only- BSP only)

Type
01 = standard *(housing phosphated)*
12 = housing nickel-plated, seals FKM with protective dome nut – adjustment with tool
(only SRVR-10 to 16 and SRVRP-10 and 12)
Other types available on request.

Series
(determined by manufacturer)

Threaded connection *(SRVR only)*
0 = BSP thread, Form X to DIN 3852 Part 2
5 = NPTF thread

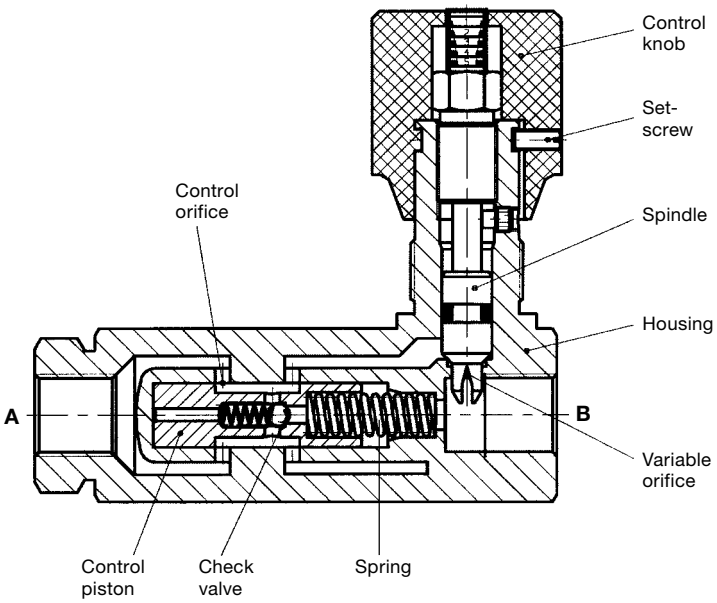
Model Codes containing RED are non-standard items
– Minimum quantities may apply
– Contact HYDAC for information and availability
– Not all combinations are available

Standard Models

Code	Part No.
SRVR-08-01.X/5	706071
SRVR-10-01.X/5	706079
SRVR-12-01.X/5	706087
SRVR-16-01.X/5	706095
SRVR-08-01.X/0	706067
SRVR-10-01.X/0	706075
SRVR-12-01.X/0	706083
SRVR-16-01.X/0	706091
SRVR-20-01.X/0	706115
SRVRP-08-01.X	706151
SRVRP-10-01.X	706153
SRVRP-12-01.X	706155
SRVRP-16-01.X	706157

Other models on request

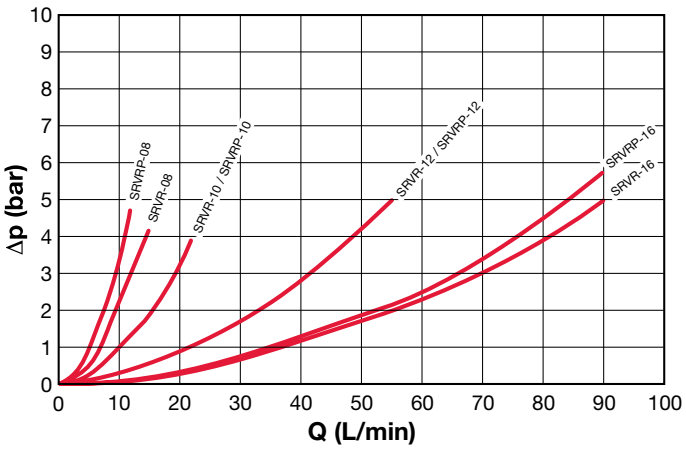
Function



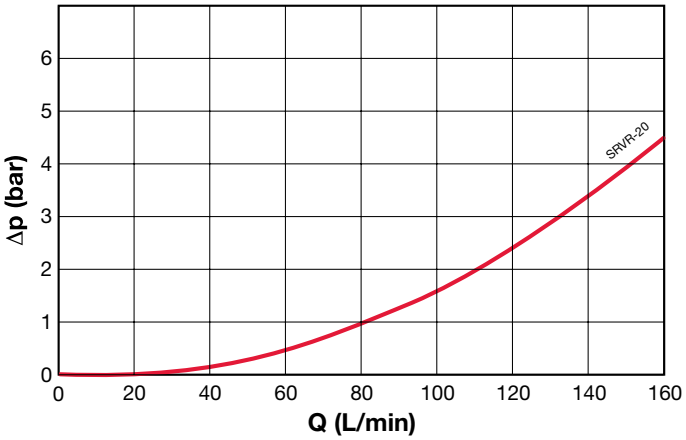
Performance

Pressure drops, dependent on flow rate
Flow direction from B to A
Pressure differential Δp dependent on flow rate Q via variable orifice and check valve (SRVR / SRVRP) with fully open spindle measured at ν= 34 mm²/s and t_{oil} = 46 °C

SRVR/SRVRP, Nominal sizes 8-16



SRVR, Nominal size 20



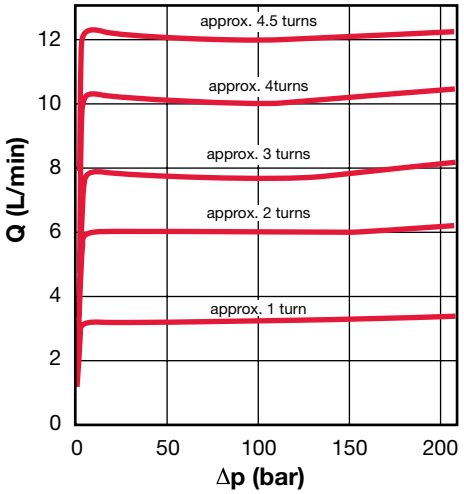
Flow Rate / Operating Pressure Ranges

Nominal Size	Flow Rate		Required control pressure differential $\Delta p = p_1 - p_2$	
	l/min	GPM	bar	psi
08	12	3	7	101.5
10	22	6	7	101.5
12	55	15	7	101.5
16	90	24	7	101.5
20	160	42	12	174

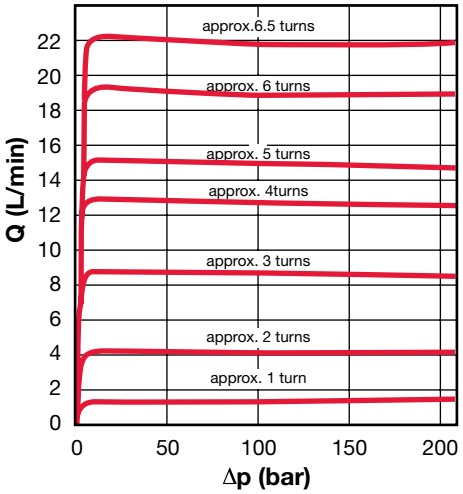
Performance

Flow rate, pressure-dependent
Flow direction A to B
Q–Δp curve measured at ν = 34 mm²/s and t_{oil} = 46 °C

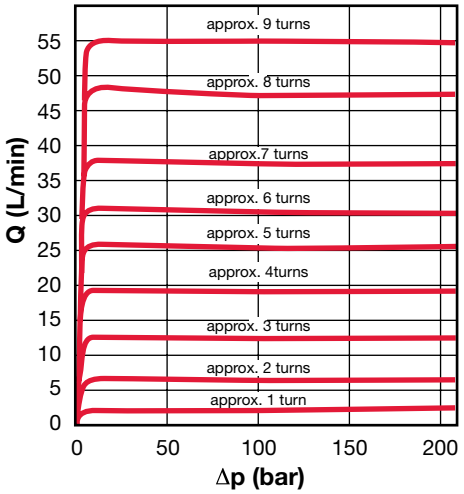
SRVR / SRVRP–08–01.X



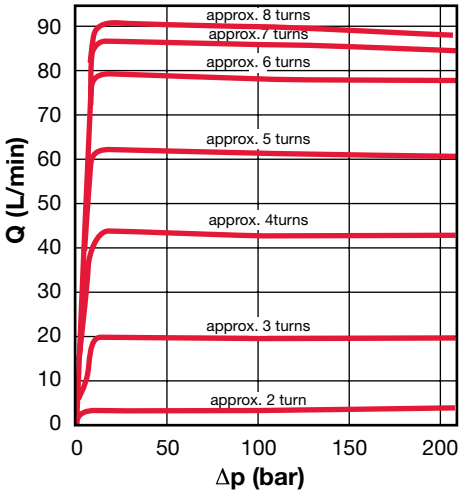
SRVR / SRVRP–10–01.X



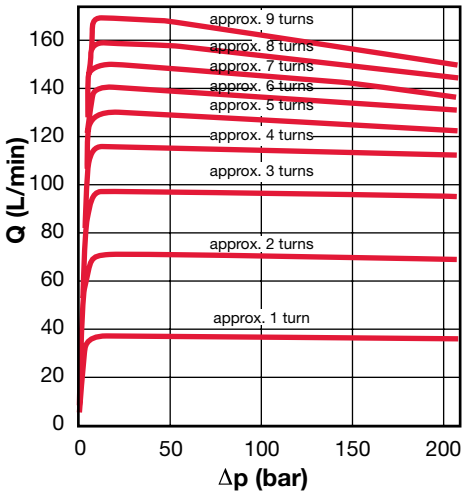
SRVR / SRVRP–12–01.X



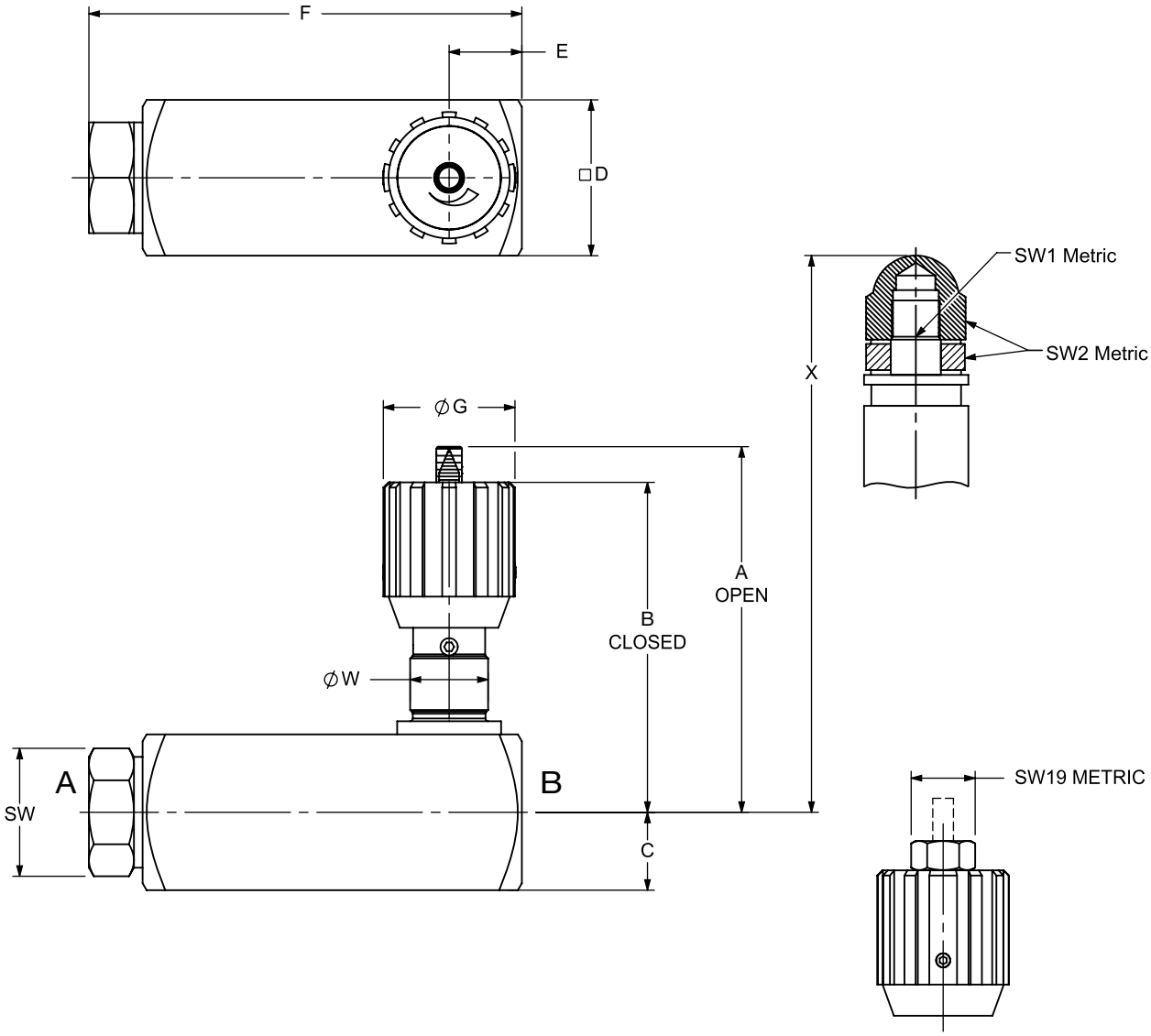
SRVR / SRVRP–16–01.X



SRVR–20–01.X



Dimensions
SRVR

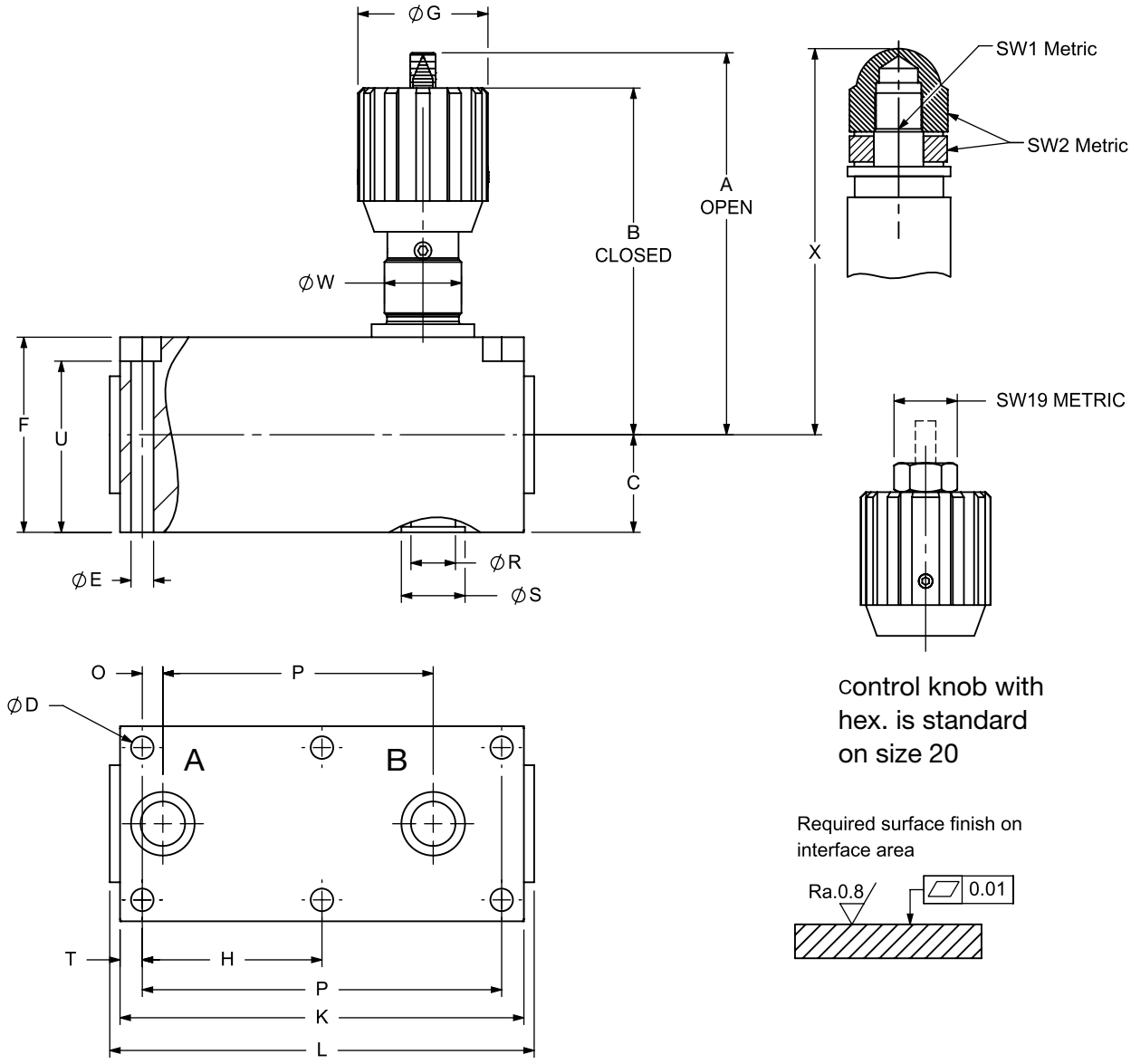


control knob with hex. is standard on size 20

Size	NPT	BSP	A	B	C	D	E	F	ØG	ØW	SW	SW1	SW2	X	Wt.
08	1/4”	G 1/4	2.99 (76)	2.68 (68)	0.59 (15)	1.18 (30)	0.69 (17.5)	3.62 (92)	1.14 (29)	PG11	0.94 (24)	–	–	–	1.3 (0.6)
10	3/8”	G 3/8	3.58 (91)	3.21 (81.5)	0.69 (17.5)	1.38 (35)	0.71	4.13 (105)	1.50 (38)	PG16	1.06 (27)	0.20 (5)	0.67 (17)	3.37 (85.5)	2.0 (0.9)
12	1/2”	G 1/2	4.19 (106.5)	3.80 (96.5)	0.89 (22.5)	1.77 (45)	0.83 (21)	4.92 (125)	1.50 (38)	PG16	1.26 (32)	0.24 (6)	0.75 (19)	4.11 (104.5)	3.7 (1.7)
16	3/4”	G 3/4	4.29 (109)	3.94 (100)	0.98 (25)	1.97 (50)	1.02 (26)	5.51 (140)	1.50 (38)	PG16	1.61 (41)	0.24 (6)	0.75 (19)	4.21 (107)	4.8 (2.2)
20		G 1	5.91 (150)	5.28 (134)	1.18 (30)	2.36 (60)	1.30 (33)	6.89 (175)	1.93 (49)	PG29	1.97 (50)	–	–	–	8.8 (4.0)

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions
SRVRP



control knob with hex. is standard on size 20

Required surface finish on interface area

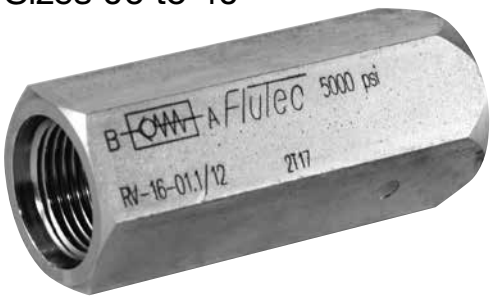
Size	A	B	ØD	ØE	F	ØG	H	J	K	L	M	N
08	3.58 (91)	3.27 (83)	0.43 (11)	0.26 (6.6)	1.18 (30)	1.14 (29)	–	2.87 (73)	3.39 (86)	3.50 (89)	1.32 (33.5)	1.77 (45)
10	4.27 (108.5)	3.90 (99)	0.43 (11)	0.26 (6.6)	1.38 (35)	1.50 (38)	–	3.50 (89)	4.13 (105)	4.23 (107.5)	1.50 (38)	2.01 (51)
12	5.08 (129)	4.69 (119)	0.43 (11)	0.26 (6.6)	1.77 (45)	1.50 (38)	–	4.13 (105)	4.65 (118)	4.78 (121.5)	1.75 (44.5)	2.36 (60)
16	5.28 (134)	4.92 (125)	0.59 (15)	0.35 (9)	1.97 (50)	1.50 (38)	2.44 (62)	4.88 (124)	5.71 (145)	5.73 (145.5)	2.13 (54)	2.76 (70)

Size	O	P	ØR	ØS	T	U	V	ØW	SW1	SW2	X	Weight
08	0.37 (9.5)	2.13 (54)	0.30 (7.5)	0.50 (12.7)	0.26 (6.5)	0.91 (23)	0.89 (22.5)	PG11	–	–	–	1.9 (0.9)
10	0.40 (10.2)	2.68 (68)	0.39 (10)	0.61 (15.6)	0.25 (6.4)	1.10 (28)	1.18 (30)	PG16	0.20 (5)	0.67 (17)	4.06 (103)	3.1 (1.4)
12	0.49 (12.5)	3.11 (79)	0.51 (13)	0.73 (18.6)	0.26 (6.5)	1.50 (38)	1.16 (29.5)	PG16	0.24 (6)	0.75 (19)	5.0 (127)	5.1 (2.3)
16	0.63 (16)	3.62 (92)	0.67 (17)	0.96 (24.5)	0.41 (10.5)	1.61 (41)	1.54 (39)	PG16	–	–	–	7.3 (3.3)

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

RV & RVP Series

Check Valves
Sizes 06 to 40



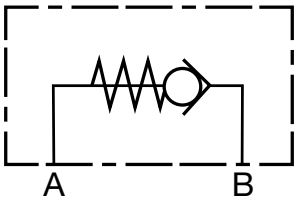
RV Series
Inline Mounting

RVP Series
Manifold Mounting

Hydraulic Symbols

RV

RVP



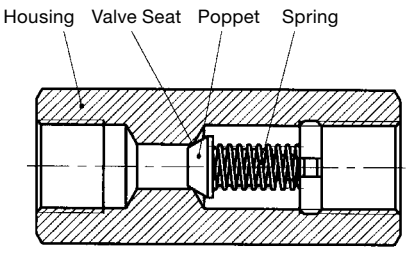
Up to 160 gpm (600 l/min)
Up to 5000 psi (350 bar)

Features

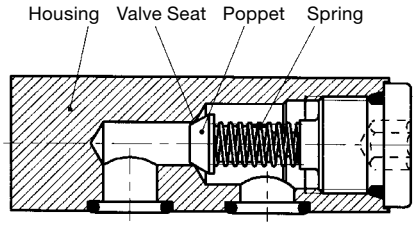
- Check valves for mounting directly inline and directly onto control manifolds
- Choice of nine sizes ensures best possible adaptability to the system
- Leak-free poppet design for complete shut-off
- 3 cracking pressures 7psi *(standard)*, 25psi and 65psi *(optional)*
- RV Series *(Zinc plated housing)*
  except RV-30 & 40 NPT, RV-40 SAE *(Phosphated housing)*
- RVP Series *(Phosphated housing)*

Function

RV



RVP



RV and RVP are check valves which allow flow in one direction (port B → port A) while the other direction is shut off. The shut-off function is provided by the spring-loaded cone poppet. The standard cracking pressure is 7 psi (0.5 bar).

Technical Specifications

Operating pressure:	max. 5000 psi (350 bar)
Nominal flow:	
RV / RVP06	max. 5 gpm (20 l/min)
RV / RVP08	max. 11 gpm (40 l/min)
RV / RVP10	max. 18 gpm (70 l/min)
RV / RVP12	max. 42 gpm (160 l/min)
RV / RVP16	max. 53 gpm (200 l/min)
RV / RVP20	max. 92 gpm (350 l/min)
RV / RVP25	max. 145 gpm (550 l/min)
RV / RVP30	max. 160 gpm (600 l/min)
RV / RVP40	max. 160 gpm (600 l/min)
Cracking Pressure	7 psi *(standard)* (0.5 bar)
Media Operating Temp. Range:	-4°F to 212°F (-20°C to 80°C)
Ambient Temp Range:	-4°F to 212°F (-20°C to 80°C)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 & 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	
Valve Body:	Steel
Piston:	Hardened and ground steel
Seals:	FKM *(standard)*
Weight:	
RV 06 = 0.2 lbs (0.1 kg)	RVP 06 = 0.4 lbs (0.2 kg)
RV 08 = 0.4 lbs (0.2 kg)	RVP 08 = 0.9 lbs (0.4 kg)
RV 10 = 0.4 lbs (0.2 kg)	RVP 10 = 1.1 lbs (0.5 kg)
RV 12 = 0.7 lbs (0.3 kg)	RVP 12 = 2.2 lbs (1.0 kg)
RV 16 = 1.1 lbs (0.5 kg)	RVP 16 = 4.6 lbs (2.1 kg)
RV 20 = 2.4 lbs (1.1 kg)	RVP 20 = 7.3 lbs (5.8 kg)
RV 25 = 4.0 lbs (1.8 kg)	RVP 25 = 12.8 lbs (3.3 kg)
RV 30 = 5.7 lbs (2.6 kg)	RVP 30 = 22.7 lbs (10.3 kg)
RV 40 = 9.7 lbs (4.4 kg)	RVP 40 = 39.4 lbs (17.9 kg)

Model Code

RVP – 08 – 01 . X / 0 – 1 BAR

Check Valve
RV = Inline Mounting
RVP = Manifold Mounting

Sizes
06, 08, 10, 12, 16, 20, 25, 30, 40

Type
01 = standard *(RVP = housing phosphated)*
(RV = housing zinc-plated)
30 = housing in stainless steel *(for RV only)*
(BSP only)
Other types on request

Series
(determined by manufacturer)

Threaded Connection *(RV only)*
0 = BSP thread, Form X to DIN 3852 Part 2
5 = NPT thread
12 = UNF thread

Specific Cracking Pressure
(on request)

Standard Models

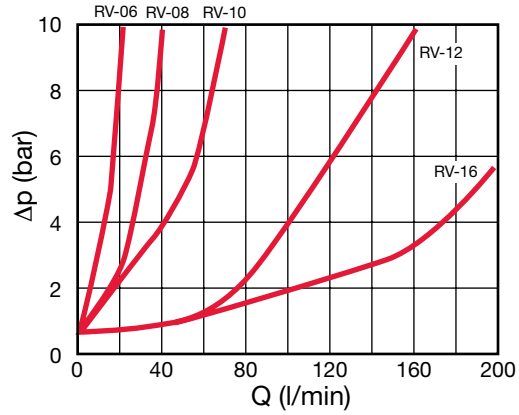
Type	Code	Plating	Part No.
1/8”NPT	RV-06-01.X/5	Zinc	705827
1/4”NPT	RV-08-01.X/5	Zinc	705830
3/8”NPT	RV-10-01.X/5	Zinc	705833
1/2”NPT	RV-12-01.X/5	Zinc	705836
3/4”NPT	RV-16-01.X/5	Zinc	705839
1”NPT	RV-20-01.X/5	Zinc	705842
1-1/4”NPT	RV-25-01.X/5	Zinc	705845
1-1/2”NPT	RV-30-01.X/5	Phos	2057126
2”NPT	RV-40-01.X/5	Phos	2055684
-2SAE	RV-06-01.X/12	Zinc	705828
-4SAE	RV-08-01.X/12	Zinc	705831
-6SAE	RV-10-01.X/12	Zinc	705834
-8SAE	RV-12-01.X/12	Zinc	705837
-12SAE	RV-16-01.X/12	Zinc	705840
-16SAE	RV-20-01.X/12	Zinc	705843
-20SAE	RV-25-01.X/12	Zinc	705846
-24SAE	RV-30-01.X/12	Zinc	2064132
-32SAE	RV-40-01.X/12	Phos	2055686
1/4”BSP	RV-08-01.X/0	Zinc	705829
3/8”BSP	RV-10-01.X/0	Zinc	705832
1/2”BSP	RV-12-01.X/0	Zinc	705835
3/4”BSP	RV-16-01.X/0	Zinc	705838
1”BSP	RV-20-01.X/0	Zinc	705841
1-1/4”BSP	RV-25-01.X/0	Zinc	705844
DN12	RVP-12-01.X	Phos	705933
DN16	RVP-16-01.X	Phos	705935
DN25	RVP-25-01.X	Phos	705939
DN30	RVP-30-01.X	Phos	705941

Other models on request

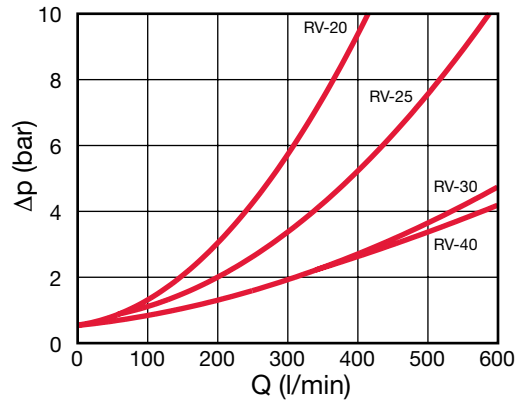
Performance

Pressure drops, dependent on flow rate
RV = Flow direction B → A, measured at ν = 72 mm²/s and T_{oil} = 30°C
RVP = Flow direction B → A, measured at ν = 38 mm²/s and T_{oil} = 43°C
Pressure differential Δp against flow rate Q

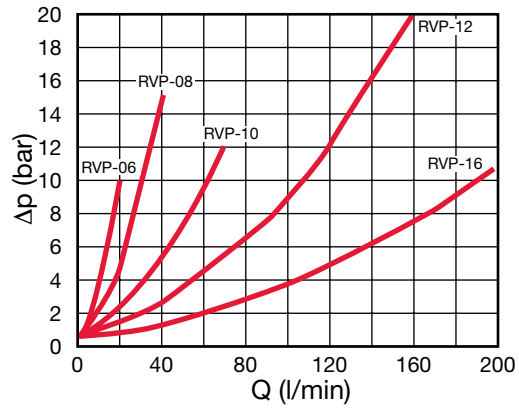
RV-06-01.X to RV-16-01.X



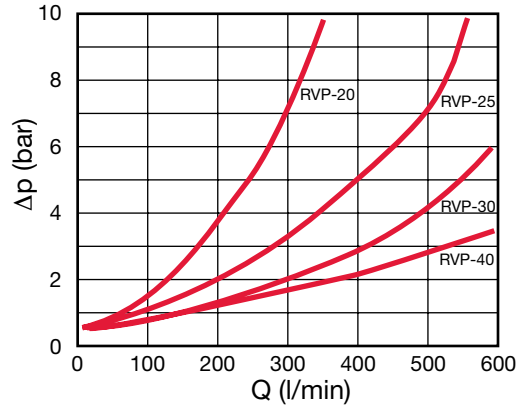
RV-20-01.X to RV-40-01.X



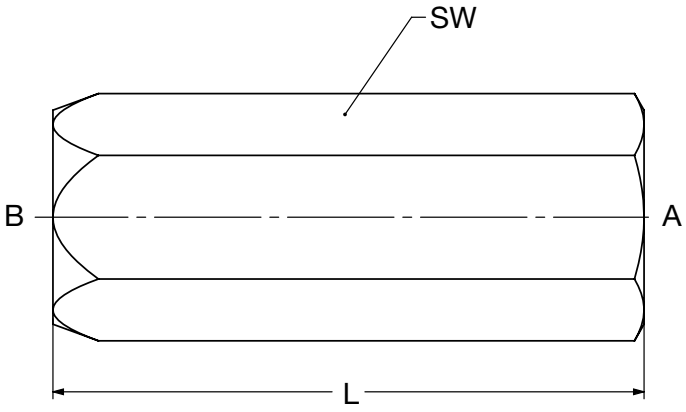
RVP-06-01.X to RVP-16-01.X



RVP-20-01.X to RVP-40-01.X

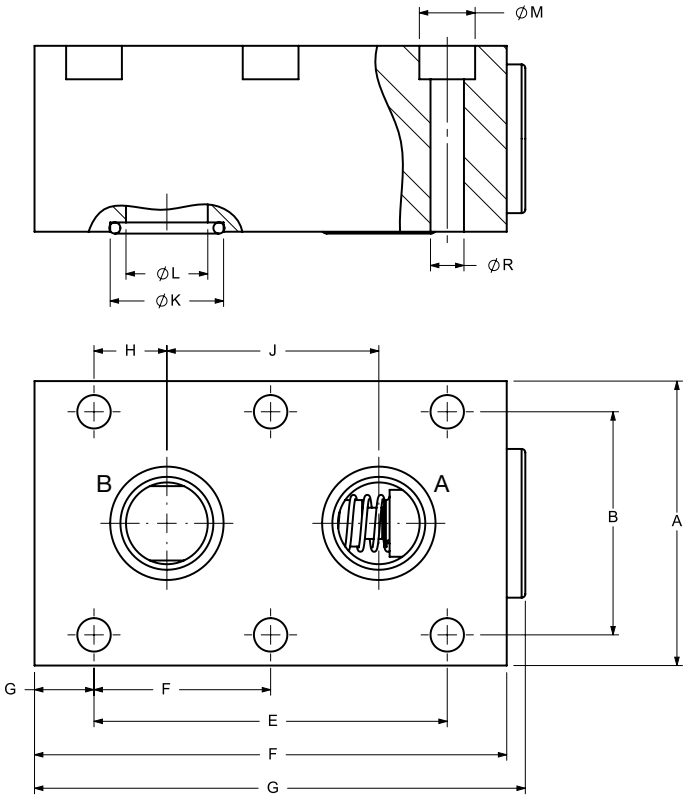


Dimensions
RV Inline Check Valves



Size	Threaded Connection			SW	L	Wt.
	NPT	SAE	BSP			
06	1/8”	-2 (5/16”-24)	G1/8”	0.67 (17)	1.77 (45)	0.2 (0.1)
08	1/4”	-4 (7/16”-20)	G1/4”	0.75 (19)	2.17 (55)	0.4 (0.2)
10	3/8”	-6 (9/16”-18)	G3/8”	0.94 (24)	2.56 (65)	0.4 (0.2)
12	1/2”	-8 (3/4”-16)	G1/2”	1.18 (30)	2.87 (73)	0.7 (0.3)
16	3/4”	-12 (1-1/6”-16)	G3/4”	1.42 (36)	3.46 (88)	1.1 (0.5)
20	1”	-16 (1-5/16”-12)	G1”	1.81 (46)	5.0 (127)	2.4 (1.1)
25	1-1/4”	-20 (1-5/8”-12)	G1-1/4”	2.36 (60)	5.63 (143)	4.0 (1.8)
30	1-1/2”	-24 (1-7/8”-12)	G1-1/2”	2.56 (65)	5.63 (143)	5.7 (2.6)
40	2”	-32 (2-1/2”-12)	G2”	3.15 (80)	6.50 (165)	9.7 (4.4)

Dimensions
RVP Manifold Mounted Check Valves



Size	A	B	C	D	E	F*	G	H
06	1.63 (41.5)	1.12 (28.5)	1.81 (46)	1.63 (41.5)	0.75 (19)	–	0.25 (6.4)	0.06 (1.6)
08	1.81 (46)	1.32 (33.5)	2.64 (67)	2.50 (63.5)	1.38 (35)	–	0.56 (14.2)	0.19 (4.8)
10	2.01 (51)	1.50 (38)	2.91 (74)	2.76 (70)	1.32 (33.5)	–	0.71 (18)	0.16 (4)
12	2.26 (57.5)	1.75 (44.5)	3.33 (84.5)	3.15 (80)	1.50 (38)	–	0.83 (21)	0.16 (4)
16	2.76 (70)	2.13 (54)	4.31 (109.5)	4.09 (104)	2.99 (76)	1.50 (38)	0.55 (14)	0.43 (11)
20	3.01 (76.5)	2.36 (60)	5.24 (133)	5.0 (127)	3.74 (95)	1.87 (47.5)	0.63 (16)	0.75 (19)
25	3.94 (100)	2.99 (76)	6.77 (172)	6.5 (165)	4.74 (120.5)	2.36 (60)	0.59 (15)	0.81 (20.6)
30	4.53 (115)	3.62 (92)	7.72 (196)	7.32 (186)	5.63 (143)	2.81 (71.5)	0.59 (15)	0.94 (23.8)
40	5.51 (140)	4.37 (111)	7.91 (201)	7.56 (192)	5.26 (133.5)	2.64 (67)	0.63 (16)	1.0 (25.5)

Size	J	ØK	ØL	ØM	N	O	ØR	Wt.
06	0.63 (16)	0.38 (9.7)	0.20 (5)	0.43 (11)	0.35 (9)	0.63 (16)	0.26 (6.6)	0.4 (0.2)
08	1.0 (25.5)	0.50 (12.7)	0.28 (7)	0.43 (11)	0.51 (13)	0.79 (20)	0.26 (6.6)	0.9 (0.4)
10	1.00 (25.5)	0.61 (15.6)	0.39 (10)	0.43 (11)	0.71 (18)	0.98 (25)	0.26 (6.6)	1.1 (0.5)
12	1.18 (30)	0.73 (18.6)	0.51 (13)	0.43 (11)	0.98 (25)	1.26 (32)	0.26 (6.6)	2.2 (1)
16	2.13 (54)	0.96 (24.5)	0.67 (17)	0.55 (14)	1.42 (36)	1.77 (45)	0.35 (9)	4.6 (2.1)
20	2.24 (57)	1.20 (30.5)	0.87 (22)	0.55 (14)	1.61 (41)	1.97 (50)	0.35 (9)	7.3 (3.3)
25	3.13 (79.5)	1.47 (37.4)	1.12 (28.5)	0.71 (18)	1.73 (44)	2.17 (55)	0.45 (11.5)	12.8 (5.8)
30	3.74 (95)	1.71 (43.4)	1.38 (35)	0.79 (20)	2.44 (62)	2.95 (75)	0.55 (14)	22.7 (10.3)
40	3.50 (89)	2.25 (57.2)	1.85 (47)	0.79 (20)	3.43 (87)	3.94 (100)	0.55 (14)	39.4 (17.9)

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

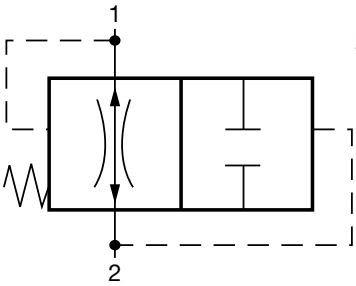
RB Series

Hose Break Valves

RB...
Housing Valves

RBE...
Cartridge Valves

Hydraulic Symbol



1-2 Free Flow
2-1 Operating Direction;
Valve closes if flow exceeds adjusted flow rate.

Model Code

RB E - SAE1-1/16-12 - X - 120L/MIN

Hose Break Valve

Housing Type
Refer to "code" column below

Size of Connection
Refer to "Size of Connection" below

Modification Number
X = Latest Revision

Closing Flow Rate
XXXL/MIN = Standard
Max. closing flow rate listed below in l/min
XXXGPM = Factory Set
Customer specifies closing flow rate in gpm

*R threaded connections are not standard but can be specified and made available at extended lead times by visiting HYDAC.com and searching for EN 5.174.

Description

HYDAC Hose Break Valves eliminate uncontrolled movements of the actuator in case of line rupture. They are commonly applied with dead weight cylinders.

These valves are volume limiting flat seat valves.

At normal flow, the poppet is held open by a spring with enough force to counteract the force on the poppet created by the flow.

When the supply line is ruptured, the flow from 2 to 1 exceeds the specified flow rate, the P across the poppet creates a force greater than the spring force and closes the valve. This closing flow rate is adjustable. The valve opens automatically by pressurizing connection 1.

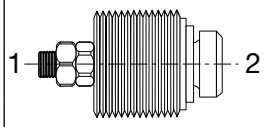
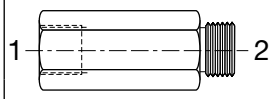
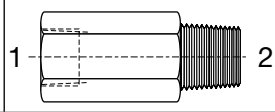
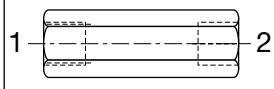
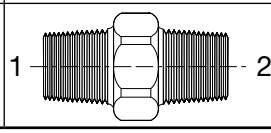
Depending on the pressure P, the leakage rate through the valve is approximately 0 to 6 in^3 / min. If this is excessive, the valve threads can be sealed and made leak-free.

The valves are installed between actuators and possible line breakage points.

A cartridge-type valve can be installed into an actuator port.

A housing-type valve can be installed close to the actuator or even directly into the actuator itself.

Type and Size Codes

Code	Housing Type		Connection 1	Connection 2	Size*	Closing Flow Rate (GPM)	Closing Flow Rate (L/min)	HYDAC P/N	HYDAC Model Code
E		Cartridge Only	–	–	SAE 9/16-18	1-4	4-15	710031	RBE-SAE 9/16-18-X-15LPM STD. SET
					SAE 3/4-16	1.6-12	6-45	710032	RBE-SAE 3/4-16-X-45LPM STD. SET
					SAE 1 1/16-12	6.5-32	25-120	710033	RBE-SAE 1-1/16-12-X-120LPM STD. SET
XB		Cartridge Valve in Housings	SAE Straight Thread Port	SAE Straight Thread Stud End	SAE 9/16-18	1-4	4-15	2069016	RBXB-SAE 9/16-18-X-15LPM STD. SET
					SAE 3/4-16	1.6-12	6-45	2062157	RBXB-SAE 3/4-16-X-45LPM STD. SET
					SAE 1 1/16-12	6.5-32	25-120	2061898	RBXB-SAE 1-1/16-12-X-120LPM STD. SET
XB			NPT Port	NPT Male Connector	NPT 3/8	1-4	4-15	2062818	RBXB-NPT 3/8-X-15LPM STD. SET
XX			SAE Straight Thread Port	SAE Straight Thread Port	SAE 1 1/16-12	6.5-32	25-120	2063213	RBXX-SAE 1-1/16-12-X-120LPM STD. SET
CC			NPT Male Connector	NPT Male Connector	NPT 3/4	1.6-12	6-45	2062871	RBE-NPT 3/4-X-45LPM STD. SET

* Dependent on Desired Closing Flow Rate
** Other sizes may be available at extended lead times. Contact Acessories.ATS@HYDAC-NA.com.

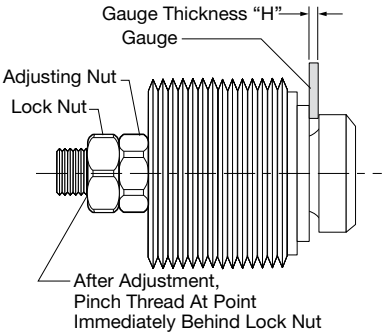
Closing Flow Rate (min - max) *(from 2 to 1)*	
To avoid the activation of hose break valves on flow surges, the closing flow rate should be at least 20% above the normal flow rate.	Valves are shipped with maximum closing flow setting. Closing flow can be adjusted according to the curve on the next page. If closing flow must be set by factory, please specify when ordering.

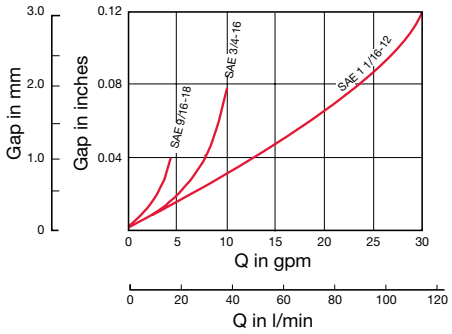
Adjustment Curves for Closing Flow Rate

The closing flow rate is dependent on the dimensions ”H”.

After loosening the lock nut, set the GAP to dimension ”H” with a thickness gauge.

The lock nut must be tightened after adjustment.



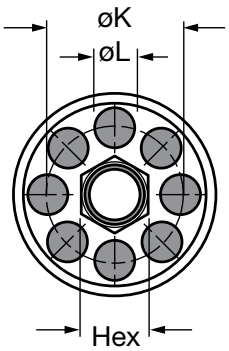


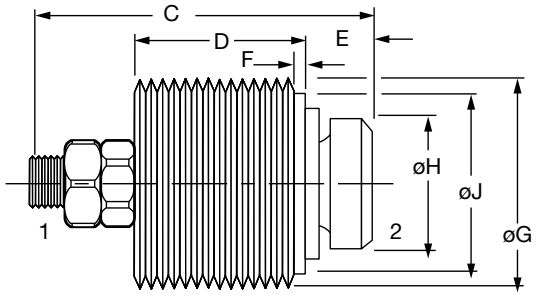
The adjustment curves are valid for cartridge RBE...and for all housing valves RB... in accordance with ”Type and Size Codes” charts on previous page. For model RB... the cartridge must be removed from the housing for adjustment.

See special tool for installation and removal on page A5-19.

Dimensions

Cartridges



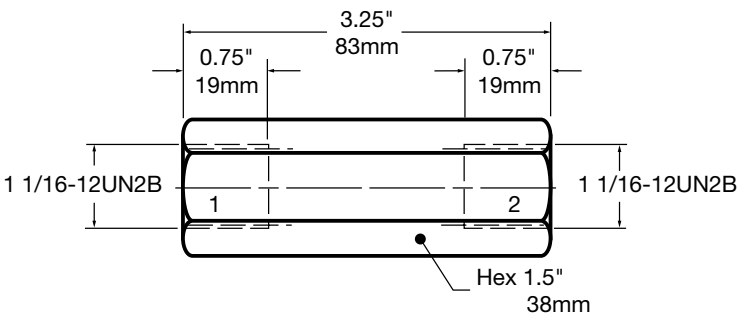


Valve Type	C	D	E	F	øG	øH	øJ	øK	øL	Hex
RBE-SAE 9/16	0.866 (22)	0.453 (11.5)	0.138 (3.5)	0.13 (3)	9/16-18UNF-2B	0.374 (9.5)	0.460 (11.7)	0.315 (8)	0.098 (2.5)	0.197 (5)
RBE-SAE 3/4	1.063 (27)	0.531 (13.5)	0.197 (5)	0.14 (3.5)	3/4-16UNF-2B	0.472 (12)	0.640 (16.3)	0.394 (10)	0.138 (3.5)	0.217 (5.5)
RBE-SAE 1 1/16	1.614 (41)	0.925 (23.5)	0.256 (6.5)	0.17 (4)	1 1/16-12UNF-2B	0.709 (18)	0.930 (23.6)	0.630 (16)	0.256 (6.5)	0.276 (7)

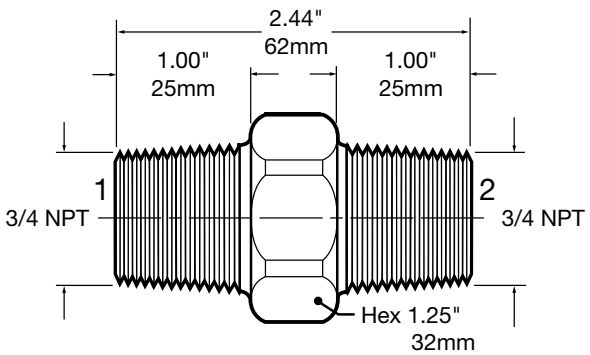
Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions

RBXX-SAE 1-1/16-12

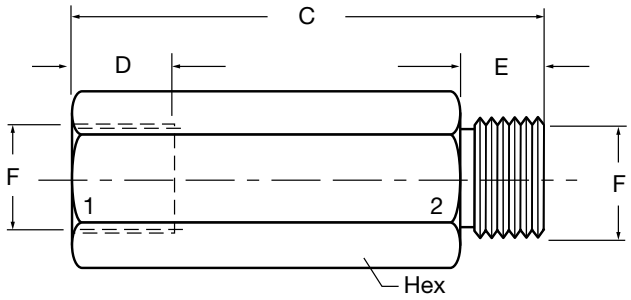


RBCC-NPT 3/4 Housing Valve

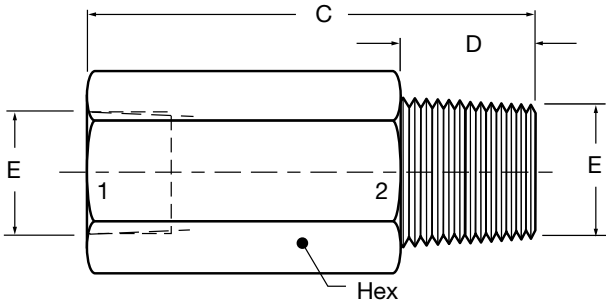


Dimensions

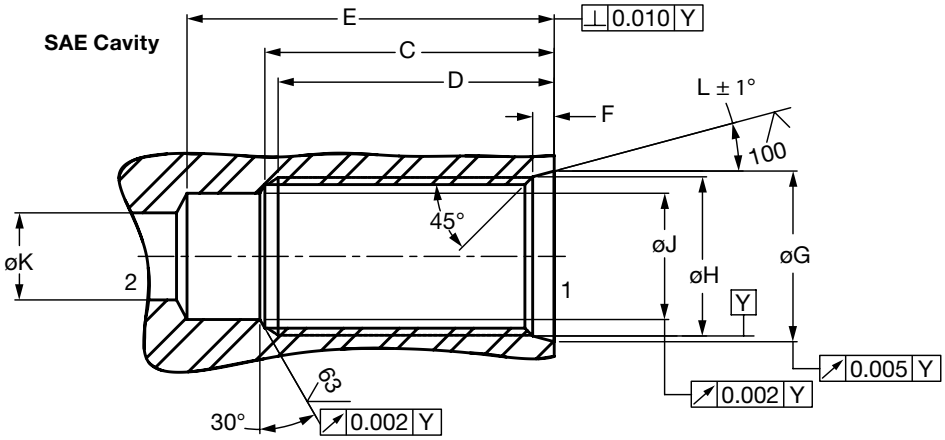
RBXB-... SAE



RBXB-... NPT



Housing Type	C	D	E	F	Hex
RBXB-SAE 9/16-18	2.13 (54)	0.50 (13)	0.39 (10)	9/16-18UNF-2B	0.75 (19)
RBXB-SAE 3/4-16	2.38 (60)	0.56 (14)	0.44 (11)	3/4-16UNF-2B	1.00 (25)
RBXB-SAE 1 1/16-12	3.25 (83)	0.75 (19)	0.59 (15)	1 1/16-12UNF-2B	1.50 (38)
RBXB-NPT 3/8	2.09 (53)	0.59 (15)	3/8 NPT		0.88 (22)
RBXB-NPT 1/2	2.75 (70)	0.78 (20)	1/2 NPT		1.00 (25)
RBXB-NPT 1	3.31 (84)	0.98 (25)	1 NPT		1.75 (44)



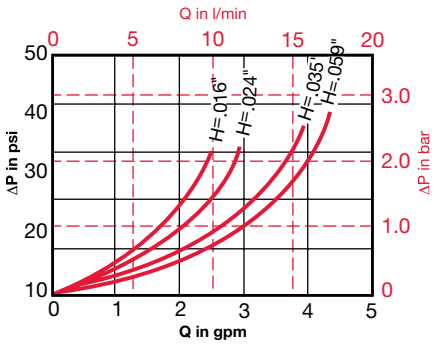
Housing Type	C	D	E	F	øG	øH	øJ	øK Min	L
RBE-SAE 9/16	1.250	1.188	1.56	0.106	0.618	9/16"-18UNF-2B	0.435	0.297	12°
RBE-SAE 3/4	1.375	1.312	1.69	0.106	0.813	3/4"-16UNF-2B	0.600	0.422	15°
RBE-SAE 1 1/16	2.000	1.938	2.44	0.138	1.150	1-1/16"-12UN-2B	0.890	0.609	15°

Notes:
1. Dimensions are in inches (mm) and lbs (kg).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

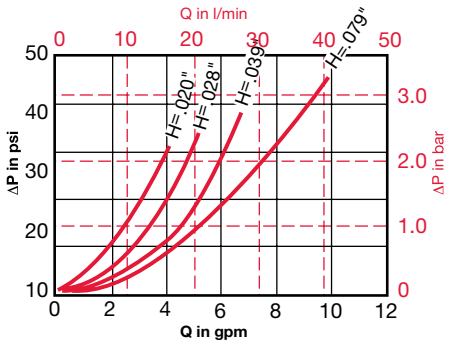
Nominal Flow Curves

Flow rate is dependent on operating setting "H". See "Adjusting Curves for Closing Flow Rates - Settings". Curves are valid for Cartridges RBE and Housing RB... in accordance with charts on previous page. Limit Lines indicate the maximum closing flow rates. These rates cannot be exceeded. Curves were established at 150 SUS.

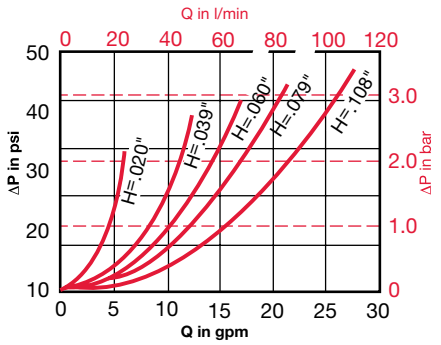
RBE-SAE 9/16 - 18



RBE-SAE 3/4 - 16



RBE-SAE 1-1/16 - 12



Engineering Data

Design		Flat Seat Valve
Mounting Method	RBE	Cartridge
	RB..	Housing Valve for In-line Installation
Connection		Refer to chart on page A5-16
Mounting Position		Optional
Direction of Flow	1 to 2	Free Flow
	2 to 1	Free Flow; valve automatically closes if flow exceeds preset level
Fluid		General purpose hydraulic oil. Consult HYDAC for other media
Operating Pressure Ratings	P Max:	5000 psi (350 bar)
	P Min:	145 psi / 10 bar
Fluid Temperature Range		-4° to 176°F (-20° to 80°C)
Material		Carbon Steel

Weights

RBE	lbs.
SAE 9/16-18	0.02
SAE 3/4-16	0.04
SAE 1 1/16-12	0.13
RBXB	**lbs.**
SAE 9/16-18 3/8 NPTF	0.17
SAE 3/4-16 1/2 NPTF	0.24
SAE 1 1/16-12 1 NPTF	0.88
RBXX	**lbs.**
SAE 1 1/16-12	0.92
RBCC	**lbs.**
3/4 NPTF	0.37

Recommendations

Hose break valves, type RBE must only be used to safeguard users in the event of hose breaks. They must not be used as switching valves for repeated closing actions.

If closing actions occur during normal operation, the setting of the hose break valve is not suitable for the operating parameters of the system. The hose break valve must be replaced by a new one with a modified setting.

In order to prevent hose break valves reacting to flow rate fluctuations inherent in the system, e.g. due to switching of directional valves, the actuating flow rate should be at least 20% above the normal maximum system flow rate. If high viscosity fluctuations occur, the valves must be set to a higher actuating flow rate to ensure trouble-free operation at high viscosity. However, the valves must still react at a low viscosity. Since this range depends largely on the system, whose operational flow rate fluctuations can also depend on viscosity, the appropriate setting for the valve is best determined on site.

Sizing Hose Break Valves

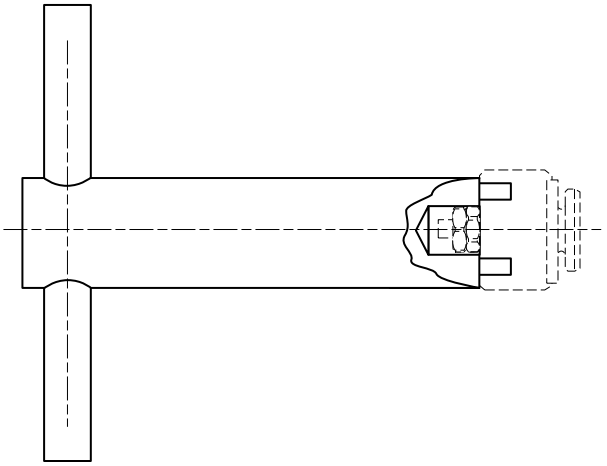
In order for a hose break valve to work properly there must be a difference between the normal operating flow rate (from pump) and the emergency flow rate created by a hose or line break. The emergency flow rate must be significantly higher than the normal operating flow. Why? The hose break valve is designed to only be closed in an emergency situation. These valves should not be cycled (opened and closed) with the system. Cycling the valve and/or excessive vibrations will lead to premature failure of the valve components.

How do you determine the emergency flow rate? You must perform a test with the actual system in a hose break simulation. This test should be run with the minimum load on the cylinder/lift to determine the minimum emergency flow rate for the system. To test, break the line open or open a directional valve and allow gravity to pull down the cylinder/lift. The flow rate measured during this test is the emergency flow rate.

The hose break closing flow rate setting is adjustable and should be set to close at a flow rate between the normal flow rate and the emergency flow rate. The closing flow rate should be set at least 20% higher than the normal flow rate, and should be set at least 20% below the emergency flow rate.

How do you set the closing flow rate for the valve? The gap between the poppet and the valve body is adjustable by means of the lock nut and adjustment nut on the end of the poppet. The larger the gap, the higher the closing flow rate for the valve.

Installation Tools



Cartridge Size	Part Number
9/16-18	00161421
3/4-16	00160561
1-1/16-12	00164180

AEV Series

Automatic Air Vent Valves

Description

The HYDAC Air Vent Valve eliminates air bubbles which accumulate in hydraulic systems immediately after start-up or after long periods of shut-down of the system.

The Air Vent Valve remains open until the valve reaches a 45 psi differential pressure.

Pressure must be maintained above 45 psi to keep valve closed.

This type of operation of the HYDAC Air Vent Valve allows for easy start-up of hydraulic systems.

Due to the compact design the Air Vent Valve requires minimum space.

Model Code

AEV - 6 / 5

Part Number

00230223

Technical Data

Operating Pressure Range

- P min 43 psi (3 bar)
- P max 8700 psi (600 bar)

Material

- Carbon Steel

Operating Flow Range

- Q min 0.25 gpm (1 l/min)
- Q max 15 gpm (57 l/min)

to achieve higher flow rates, parallel connection is possible

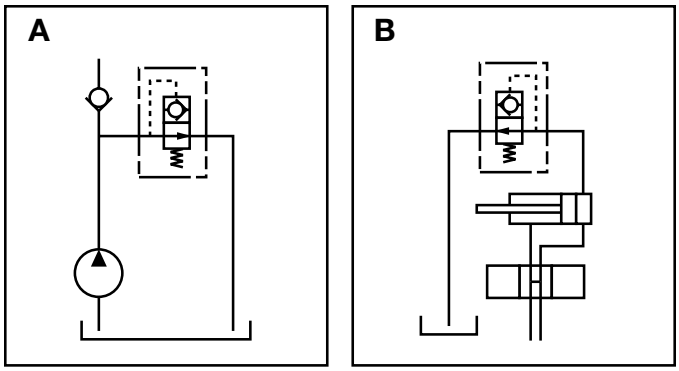
Mounting

The inlet port is connected to the pressure line and the outlet port should be connected back into the non-pressurized reservoir.

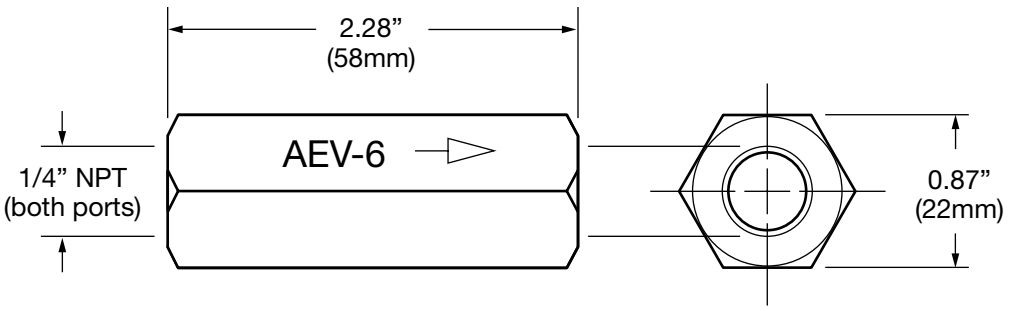
For ventilation of pumps the valve should be mounted adjacent to the pump outlet. For system ventilation the valve should be mounted at the system's highest point.

Mounting Positions

Optional - see figures A and B.
The return line must be connected to reservoir below the minimum oil level.



Dimensions



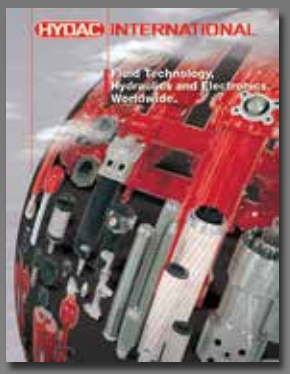
Notes:
1. Dimensions are in inches (mm).
2. Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Notes

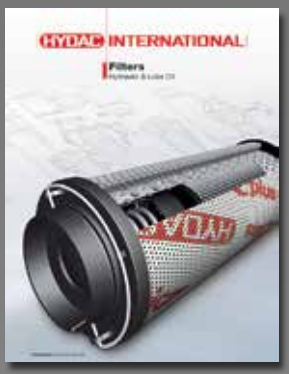
Ordering HYDAC Literature...

HYDAC literature is available for ordering.
Email us at **HYD.catalog@hydac-na.com** using the appropriate Part Number (PN) and name. Other brochures, manuals and technical documents are also available when ordering from our website.

Overview Brochure
PN02088157



Filters Catalog
PN02081318



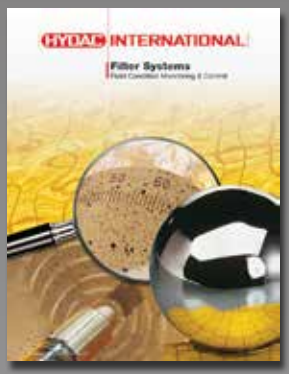
Accumulators Catalog
PN02068195

Compact Hydraulics Catalog* (online only)

Elec. Sensors & Controls Brochure PN2205620

Standard Coolers Catalog - PN02085359

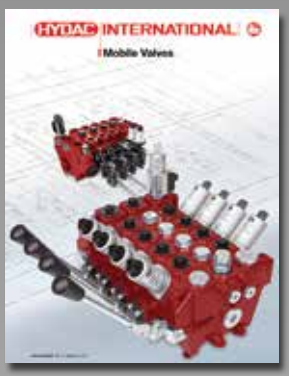
Filter Systems Catalog PN02075860



Control Technology* Catalog (online only)

Accessories Catalog PN02080105

Mobile Valves Brochure PN02092408



Hydraulic Cylinders Brochure PN2204454

Process Technology* Catalog (online only)

***These catalogs are digital file versions only.**

Various market and product brochures are also available for ordering.

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
2260 City Line Road
Bethlehem, PA 18017
+1.610.266.0100
HYD.catalog@hydac-na.com
www.hydac-na.com

PN#00000000 / 11.20 / ACC2010-2208

HYDAC INTERNATIONAL

Global Headquarters
HYDAC INTERNATIONAL GMBH

Industriegebiet
D – 66280 Sulzbach/Saar
Germany

Tel.: +49 6897 509-01

Fax: +49 6897 509-577

Internet: **www.hydac.com**
Email: info@hydac.com

North America Locations

USA

www.HYDAC-NA.com

North America Headquarters
HYDAC TECHNOLOGY CORPORATION
Filter Division
2260 City Line Road
Bethlehem, PA 18017
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
Electronic Division
Process Filter Division
HYDAC CORPORATION
Accumulator Division
90 Southland Drive
Bethlehem, PA 18017
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
Accessory Division
2204 Avenue C
Bethlehem, PA 18017
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
Filter System Division
Process Filter Division
Fuel Filtration Division
580 West Park Road
Leetsdale, PA 15056
+1.724.318.1100

HYDAC TECHNOLOGY CORPORATION
Hydraulic Division –
Compact Hydraulics
450 / 445 Windy Point Drive
Glendale Heights, IL 60139
+1.630.545.0800

HYDAC TECHNOLOGY CORPORATION
Hydraulic Division – Tech Center
430 Windy Point Drive
Glendale Heights, IL 60139
+1.630.545.0800

HYDAC TECHNOLOGY CORPORATION
Cooling System Division
1051 Airlie Parkway
Denver, NC 28037
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
Mobile Hydraulic Division
4265 East Lincoln Way • Bldg. C
Wooster, OH 44691
+1.610.266.0100

HYDAC CYLINDERS LLC
540 Carson Road North
Birmingham, AL 35217
+1.205.520.1220

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
Sales Office & Operations
510 Stonegate Drive
Katy, TX 77494
+1.281.579.8100

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
NW Sales Office & Operations
1201 NE 144th St. Bldg. B • Suite 111
Vancouver, WA 98685
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
NE Sales Office
4265 East Lincoln Way • Bldg. C
Wooster, OH 44691
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
SE Sales Office
1051 Airlie Parkway
Denver, NC 28037
+1.610.266.0100

HYDAC TECHNOLOGY CORPORATION
HYDAC CORPORATION
NC Sales Office
9415 West Forest Home Ave. • Suite 200
Hales Corners, WI 53130
+1.610.266.0100

Canada

www.HYDAC-NA.com

HYDAC CORPORATION
14 Federal Road
Welland, Ontario, Canada L3B 3P2
+1.905.714.9322

HYDAC CORPORATION
Sales Office
5160 75 Street NW
Edmonton, Alberta, Canada T6E 6W2
+1.780.484.4228

HYDAC CORPORATION
Sales Office
Montreal, Québec, Canada J2M 1K9
+1.877.539.3388

Mexico

www.HYDACmex.com

HYDAC INTERNATIONAL SA de CV
Calle Alfredo A Nobel No 35
Col Puente de Vigas
Tlalnepantla, Edo Mexico
CP 54090
Mexico
+011.52.55.4777.1262

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