HYDAC INTERNATIONAL

Hydraulic Accessories

Valves, Clamps & Reservoir Accessories

www.comoso.com

HYDAC About HYDAC

HYDAC stands for worldwide presence and accessibility to the customer. HYDAC has over 1000 distributors worldwide and more than 40 wholly owned branches. The HYCON Division of HYDAC is an industry leader in the manufacture of hydraulic valves, clamps, reservoir accessories, filters, and elements for both mobile and industrial applications. The HYCON Division has been providing standard products and custom solutions to the fluid power industry for more than 30 years.

HYDAC Products

The Valves, Clamps, & Accessories group manufactures highly engineered high pressure ball valves, which guarantee safe and reliable operation. A complete range of DIN 3015 clamps for mounting hoses, tubes, and pipes is complimented by our specialty and completely custom mounting solutions. Reservoir accessories round out our product line, and put the finishing touches on your system.

HYDAC Quality

HYDAC stands for quality and customer satisfaction. To ensure that our products are as innovative as possible, they are developed, manufactured, and tested by qualified personnel using state of the art equipment and technology.

HYDAC Customer Service

Our internal staff and worldwide distribution network take care of the important matter of customer service. HYDAC values high standards, professional ethics, and mutual respect in all transactions with customers, vendors, and employees. We invest in our relationships by providing expertise, quality, dependability, and accessibility to foster growth and a sense of partnership. Our customer service representatives are committed to serving the customers' needs.

Applications

HYDAC has over 40 years of global experience in applying hydraulic components in both mobile and industrial systems. The industries served includes, but is in no way limited to:

Mobile Hydraulics

- Construction vehicles
- Agricultural vehicles
- Aerospace
- Lift equipment
- Shipbuilding

Industrial Hydraulics

- Pulp & paper mills
- Steel mills.& heavy industry
- Plastics
- Power generation & wind energy
- Offshore oil
- Chemical processing
- Food processing

About this Catalog

Please review the information below to familiarize yourself with the conventions used in this catalog, as well as some general information about ordering the **HYDAC** products within.

Part Numbers and Model Codes

Every HYDAC Product has a *Model Code* and an eight digit *Part Number*. A *Part Number* is simply a unique, computer generated number that identifies a product. A *Model Code* is a sequence of codes that contains a complete description of the product, with each portion of the code defining some variable or option. BOTH *Model Code* and *Part Number* are listed in this catalog, whenever possible. It is recommended that you use BOTH *Model Code* and *Part Number* when communicating with HYDAC.

When options are limited, we have created charts that contain ALL possible combinations, or available products. In cases where the options create too many combinations to list, we have provided a Model Code Tree, which is used to create a complete *Model Code* which specifies the product as well as all options that are desired. *Part Number* are subject to change if HYDAC processes change, or design revisions are implemented by **HYDAC**. In this case, HYDAC Customer Service will refer you to the new part number.

Standard vs. Non-standard Products

Since HYDAC offers such a vast number of options for many product lines, it becomes necessary to differentiate between *Standard* and *Non-standard* configurations. *Standard* products are the most common configurations, which are continually supported by HYDAC in regular production. *Non-standard* configurations are less commonly ordered, and may require minimum orders and/or extended delivery times.

Throughout this catalog we have distinguished *Non-standard* products or options from the *Standard*, by listing the them in red. In model code trees, any red option selected will cause that configuration to be considered *Non-standard*. In charts that contain complete model codes, the entire model code will be in red for *Non-standard* products.

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All information is subject to change without notice.

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Overview

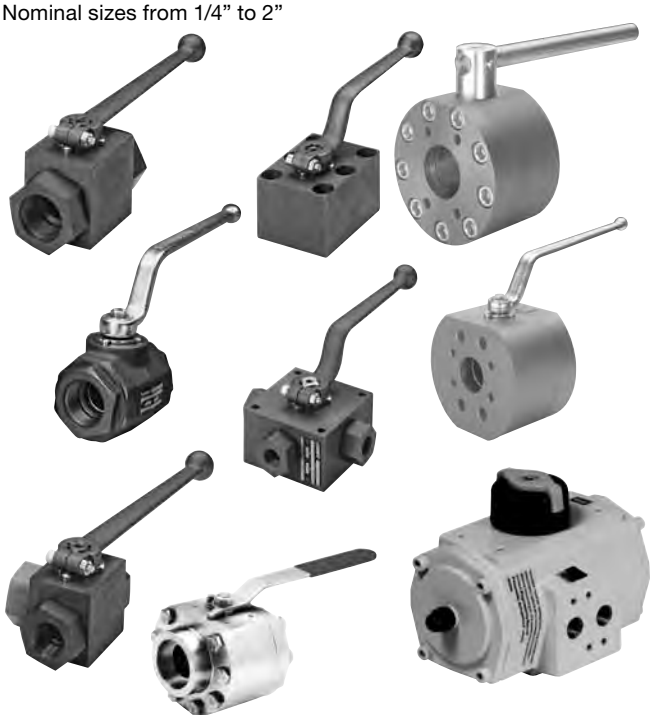
Standard Solutions

HYDAC manufactures a complete line of valves. Our standard product offerig includes:

High Pressure Ball Valves

(see pages 3 - 28)

Nominal sizes from 1/4” to 2”



Flow Control Valves

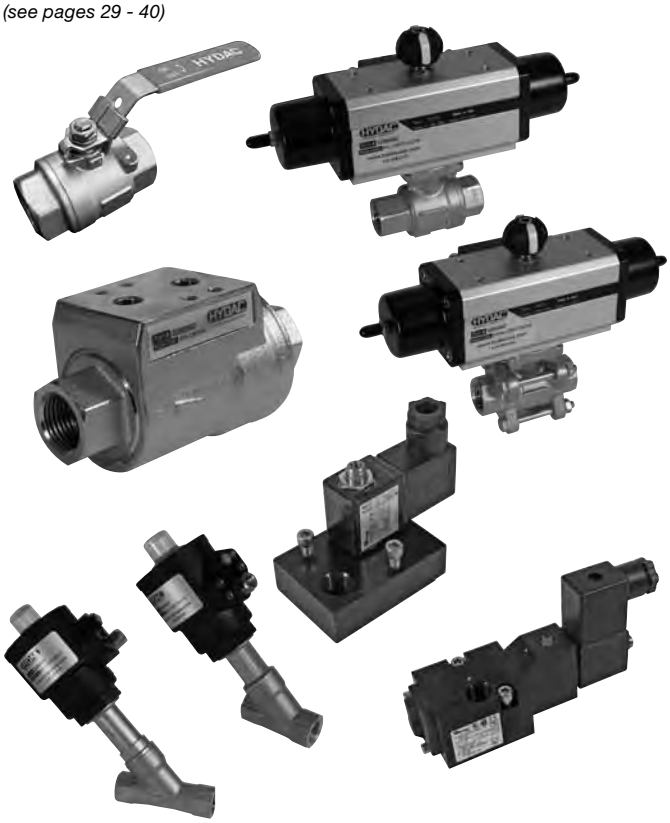
(see pages 41 - 55)

Needle Valves, Flow Control Valves, Check Valves

(Inline, Manifold Mount, Cartridge)

Process / Automated Valves

(see pages 29 - 40)



Cartridge Valves

(see pages 56 - 70)

Hose Break Valves, Shuttle Valves, Automatic Air Vent Valves, 2-way Solenoid Cartridge Valves, 3-way Solenoid Cartridge Valves, Pressure Relief Valves

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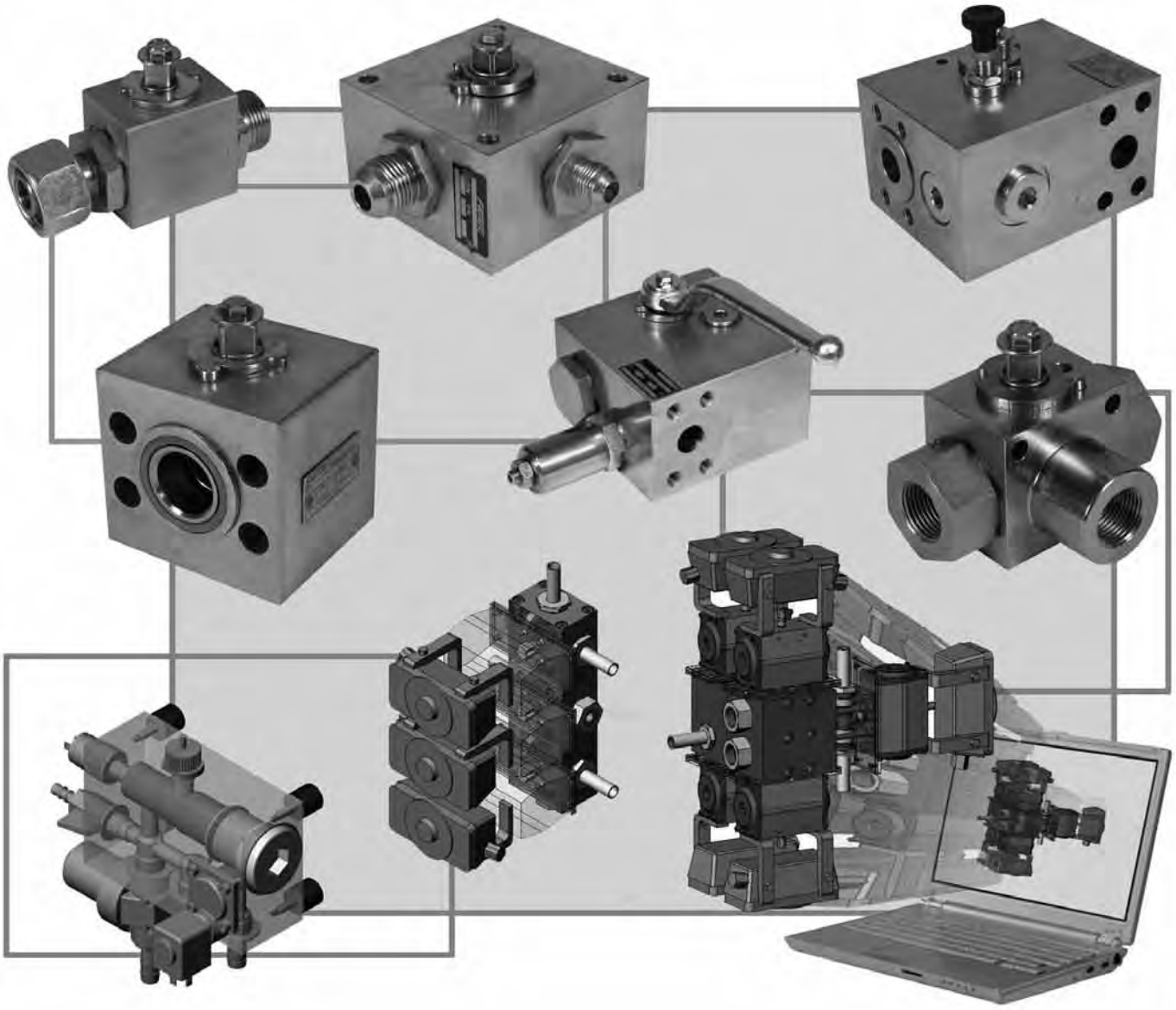
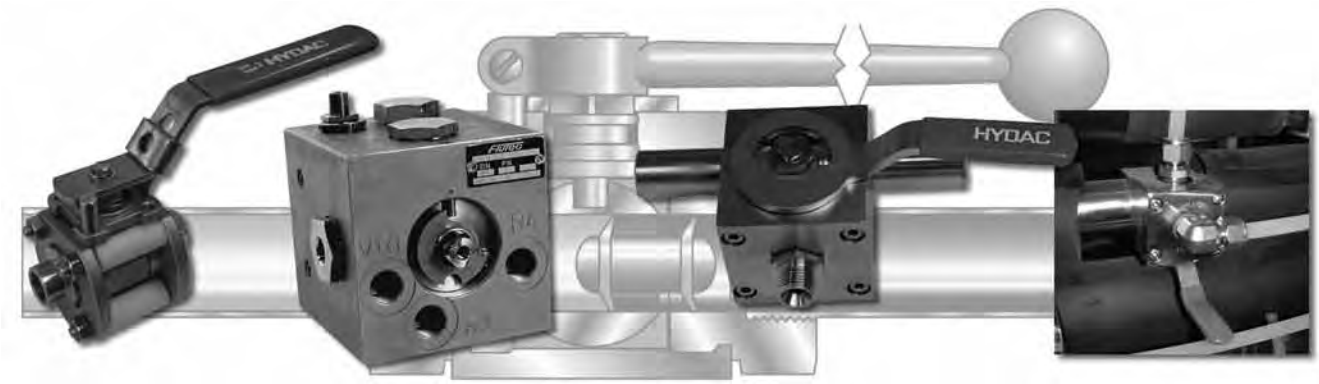
Custom Solutions

HYDAC is also a market leader in providing custom valve solutions. Our engineers work with yours to develop unique solutions that save time and money by simplifying inventory and installation. From simple modifications of standard product to complete custom manifolds, we will provide you a successful solution for your application. For more information on custom solutions, please contact product management at **1-877-GO HYDAC**.



HYDAC Accessories GmbH has done significant work in the Automotive Paint Industry.
Many custom and product developments are in the works. Contact HYDAC for additional information



Overview

2-way Ball Valves

KHB Series *(see pages 5 - 11)*
Block Bodies
Sizes 1/4" - 1"

2-way Ball Valves

KHM Series *(see pages 5 -12)*
Forged Bodies
Sizes 1 1/4" - 2"

2-way Manifold Mounted Ball Valves

KHP Series *(see page 15)*
Sizes 3/8" - 2"

3-way Diverter Ball Valves

KHB3K Series *(see page 13)*
Sizes 1/4" - 1"

Multiway Ball Valves

KH3 & KH4 Series *(see page 17)*
Sizes 1/4" - 3/4"

Direct Mount SAE Flange

KHF3/6 Series *(see page 25)*
Sizes 1/2" - 2"

Direct Mount SAE Flange

KHF3 Series *(see page 26)*
Sizes 2 1/2" - 4"

Ball Valve Actuators

For KHB & KHM Series *(see page 19)*
Pneumatic Operation

3 Piece Ball Valves

KHM3H Series *(see page 27)*
Designed in accordance with ANSI B16.34 and BS5351
Sizes 1/2" - 4"

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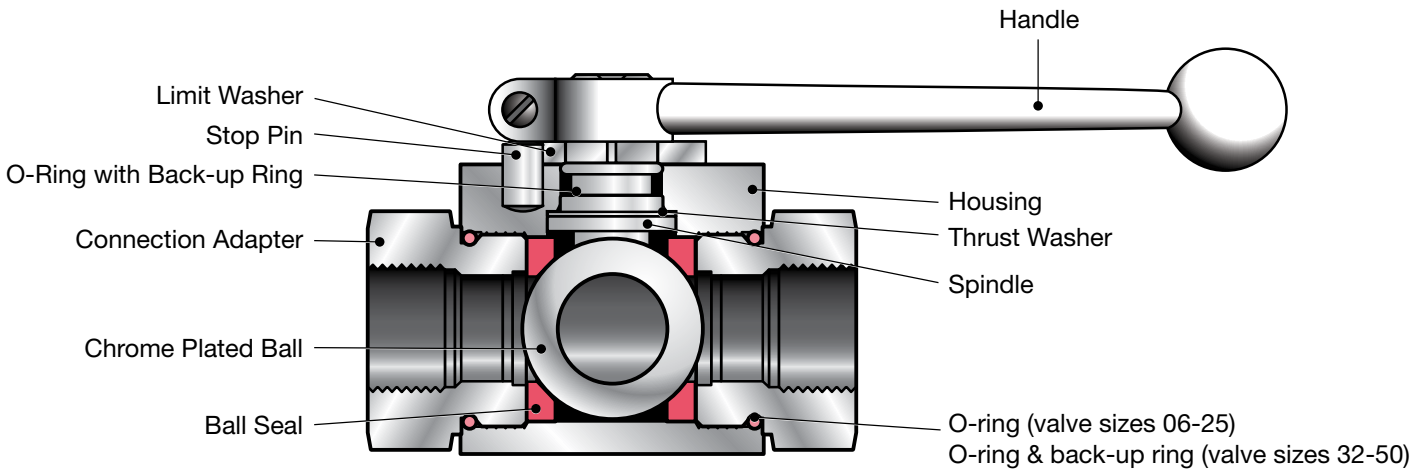
Standard Ball Valve Design Features & Options
KHB, KHM, KHP, KHB3K Series



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.*

Product 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)*
- Phosphate coated carbon steel valve body *(standard)*

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

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
- Polyacetal Ball Seals *(standard)*
- FPM (Fluoroelastomer) O-Rings *(standard)*
- Carbon Steel Housing
- Block Housing - Sizes 06 - 25
- Forged Housing - Sizes 32 - 50
- Operating Pressure to 7250 psi Depending on Valve Size and Seal Materials Selected
- Temp Range: 14˚F to 176˚F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40˚F to 392˚F on request with special materials and reduced pressure rating (see page 24).

Model Code

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

Housing Type

KHB	=	Block Housing, Carbon Steel - Sizes 06 - 25
KHM	=	Forged Housing, Carbon Steel - Sizes 32 - 50
KHM	=	Forged Housing, Stainless Steel - Sizes 06 - 50 *(see page 12 for details)*

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 *(phosphate coated)*
3	=	Stainless Steel *(see page 12 for ordering details)*

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 24 to order handle separately)*
11x	=	Straight Aluminum, Sizes 06-25
16x	=	Offset Steel, Sizes 32-50

Locking Device Option

L	=	Locking Device *(see page 21 to order locking device separately)*
LS	=	Locking Device with 5 amp Limit Switch, Available for sizes 20-50 *(Not available with PTFE Spindle Seals)*

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

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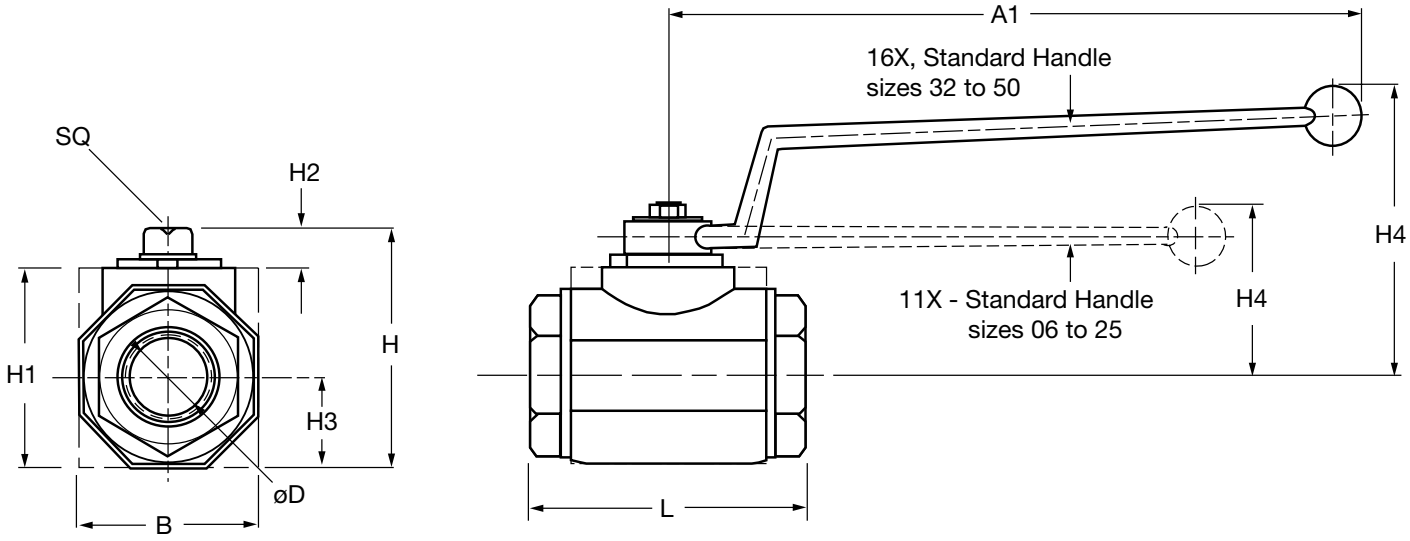
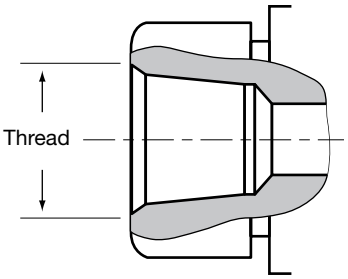
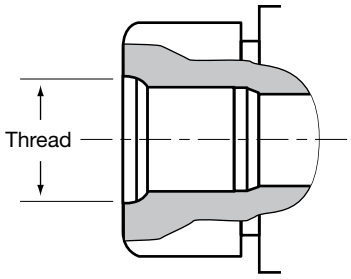
Dimensions



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)	5800	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)	5000	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)	5000	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)	5000	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)	5000	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)	5000	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												

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 Housing
- Block Housing - Sizes 16 - 25
- Forged Housing - Sizes 32 - 50
- Polyacetal Ball Seals *(standard)*
- FPM *(Fluoroelastomer)* O-Rings *(standard)*
- Operating Pressure to 5800 psi Depending on
- Valve Size and Seal Materials Selected
- Temp Range: 14˚F to 176˚F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40˚F to 392˚F on request with special materials and reduced pressure rating *(see page 24)*.

Model Code

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

Housing Type
- KHB = Block Housing, Carbon Steel - Sizes 16-25
- KHM = Forged Housing, Carbon Steel - Sizes 32-50
- KHM = Forged Housing, Stainless Steel - Sizes 06 - 50 *(see page 12 for details)*

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 *(phosphate coated)*
- 3 = Stainless Steel *(see page 12 for ordering details)*

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 151)*

Handle Codes
- 09X = Without Handle, Sizes 16-50
- 12X = Offset Aluminum, Sizes 16-25
- 16X = Offset Steel, Sizes 32-50

Locking Device Option
- L = Locking Device *(see page 21 to order locking device separately)*
- LS = Locking Device with 5 amp Limit Switch, Available for Sizes 20-50 *(Not available with PTFE Spindle Seals)*

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

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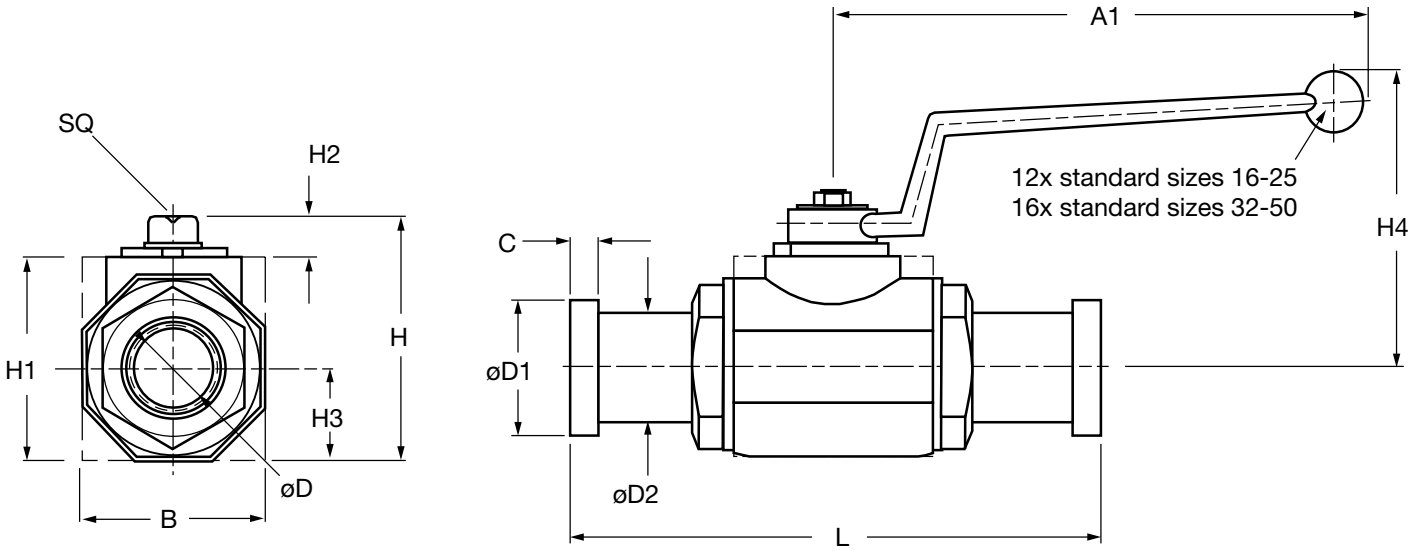
Dimensions



For dimensional information on flanges, see page 151

SAE Code 61 [...F3]

Model	max. psi*	Size	A1	B	C	øD	øD1	øD2	H	H1	H2	H3	H4	L	SQ	Weight
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	Weight
KHB-16 F6	5800	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	5000	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	5000	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	5000	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	5000	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	5000	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)

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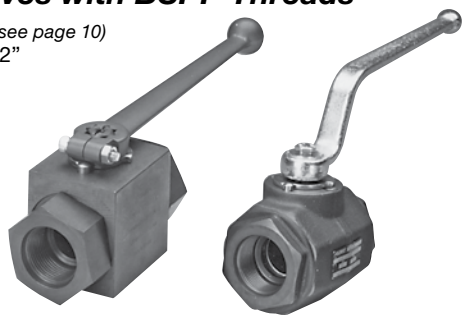
New Programs / Specialty Ball Valves

HYDAC has received feedback from customers stating that they prefer charts with model codes and part numbers rather than model code trees. As we release new programs, especially within the KHB and KHM product offering, we will include separate pages with tables including model codes and part numbers provided in tables.

2-way Ball Valves with BSPP Threads

KHB & KHM Series *(see page 10)*
Sizes from G1/4" to G2"

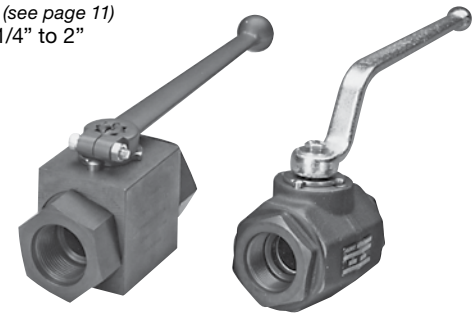


2-way Stainless Steel Ball Valves

KHM Series *(see page 12)*
Nominal Sizes from 1/4" to 2"

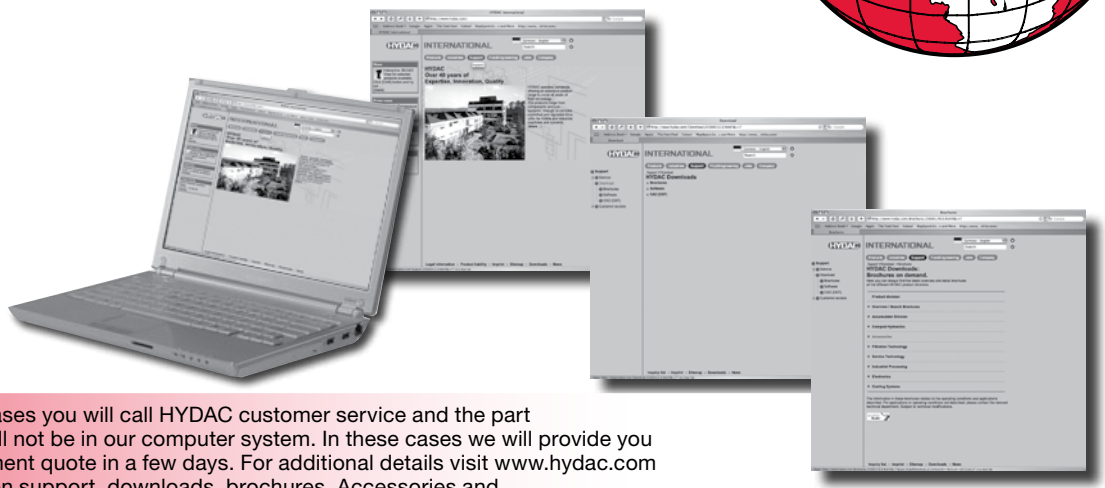
2-way Ball Valves with Steel Ball Seals

KHB & KHM Series *(see page 11)*
Nominal Sizes from 1/4" to 2"



Global Replacement Business

HYDAC Accessories GmbH is located in Germany and produces Ball Valves for the Global Market. Some of the product that they produce is not listed in this catalog.



In some cases you will call HYDAC customer service and the part number will not be in our computer system. In these cases we will provide you a replacement quote in a few days. For additional details visit www.hydac.com and click on support, downloads, brochures, Accessories and check out the literature.

www.comoso.com

KHB & KHM Series

2-way Ball Valves with BSPP Threads

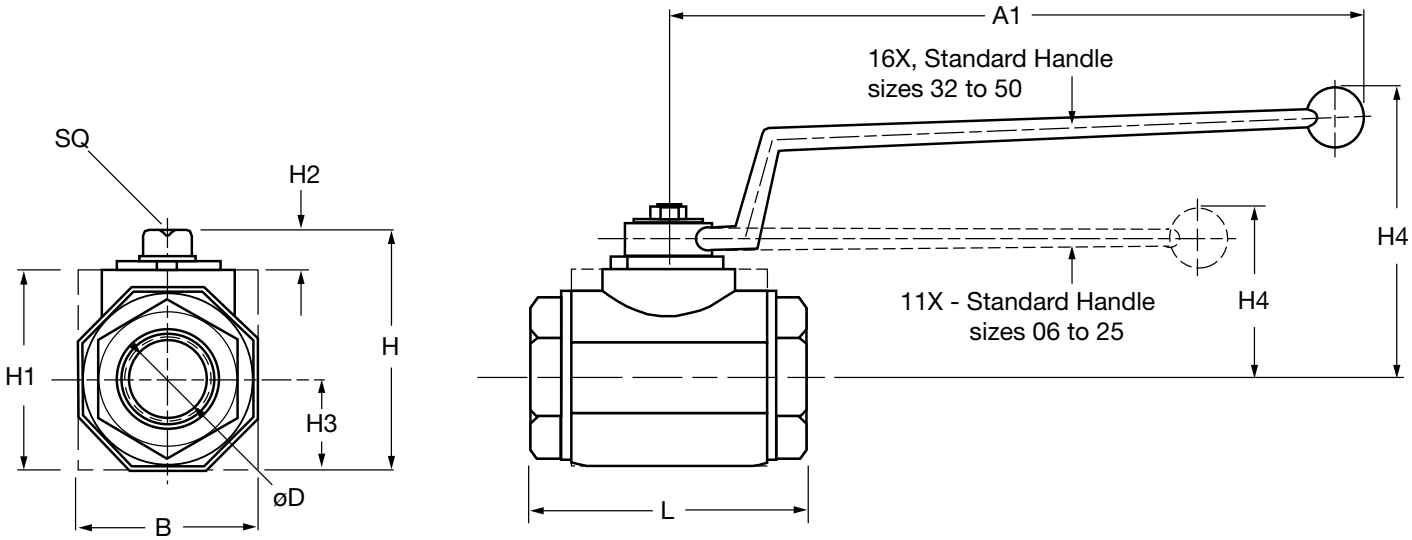
KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/8" - 2" Full Port Design
- Whitworth Internal Thread to ISO 228
- Carbon Steel Housing
- 1/8" - 1" Zinc Plated *(represented by "- G" at end of model code)*
- 1 1/4" - 2" Phosphate Coated
- Chrome Plated Steel Ball, Zinc Plated Steel Spindle
- Polyacetal Ball Seals and NBR (Buna-N) O-Rings
- Temperature Range: 14˚ to 176˚F at full pressure

Dimensions



Model Code Part Number	*MAX PSI	Thread	A1	B	øD	H	H1	H2	H3	H4	L	SQ	Weight
KHB-G1/8-1112-11X-G 02079550	7250	G1/8"	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-G1/4-1112-11X-G 02079551	7250	G1/4"	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-G3/8-1112-11X-G 02079552	7250	G3/8"	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-G1/2-1112-11X-G 02079553	5800	G1/2"	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)	47 (12)	1.65 (0.75)
KHB-G3/4-1112-11X-G 02079554	5000	G3/4"	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-G1-1112-11X-G 02079555	5000	G1"	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)
KHM-G11/4-1112-16X 02079556	5000	G1-1/4"	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-G11/2-1112-16X 02079557	5000	G1-1/2"	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-G2-1112-16X 02079558	5000	G2"	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)

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

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

KHB & KHM Series

2-way Ball Valves with Steel Ball Seals For Abrasive Media

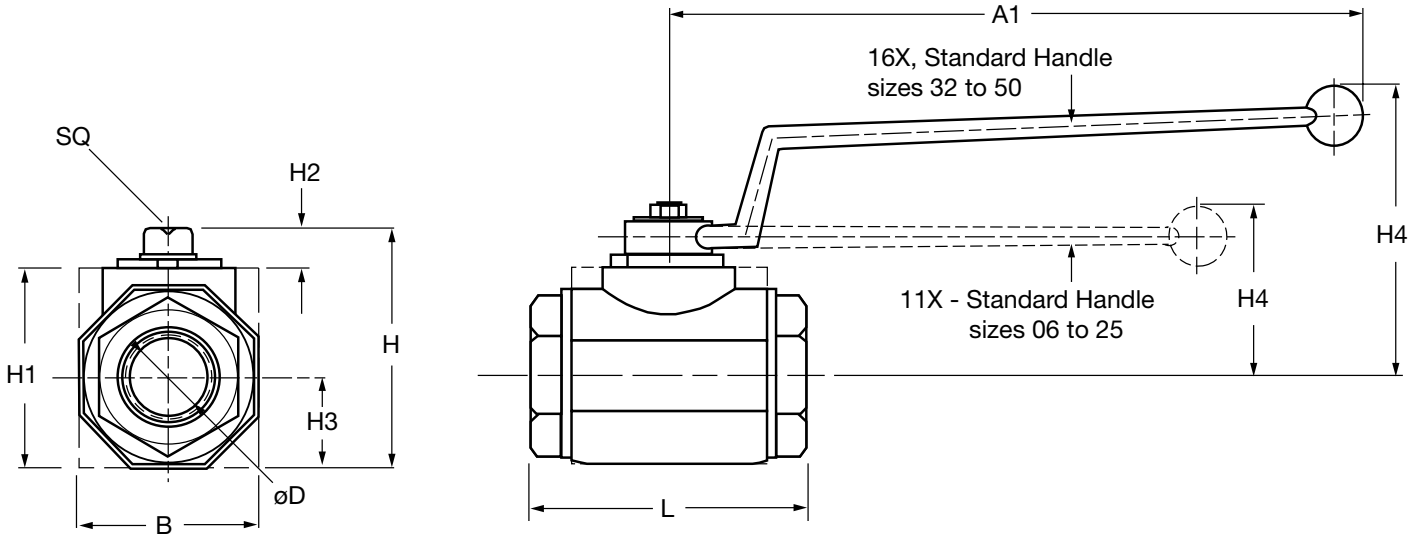
KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/4" - 2" Full Port Design
- NPT Threads
- Carbon Steel Zinc Plated Housing and Spindle
- Chrome Plated Steel Ball
- Steel Ball Seals and Viton O-Rings
- Temperature Range: 14˚ to 176˚F at full pressure
- Silicon Free *(SF in Model Code)*

Dimensions



Part Number Model Code	*MAX PSI	NPT Thread	A1	B	øD	H	H1	H2	H3	H4	L	SQ	WGT
KHB-06NPT-111114-11X-G-SF 03203692	7250	1/4"	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-10NPT-111114-11X-G-SF 03203716	7250	3/8"	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-16NPT-111114-11X-G-SF 03203717	5800	1/2"	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)	47 (12)	1.65 (0.75)
KHB-20NPT-111114-11X-G-SF 03203718	5000	3/4"	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-25NPT-111114-11X-G-SF 03203719	5000	1"	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)
KHM-32NPT-111114-16X-G-SF 03203720	5000	1 1/4"	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-40NPT-111114-16X-G-SF 03203721	5000	1 1/2"	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-50NPT-111114-16X-G-SF 03203722	5000	2"	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)

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

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

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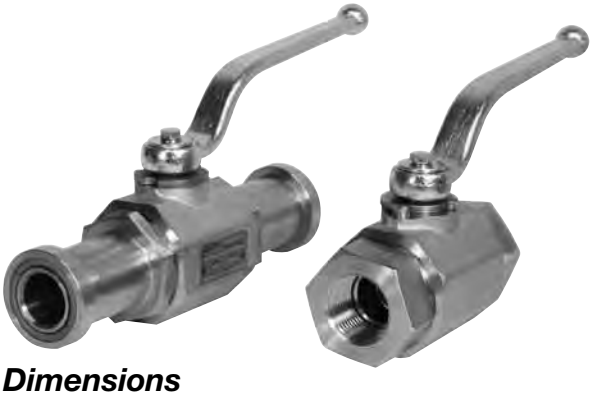
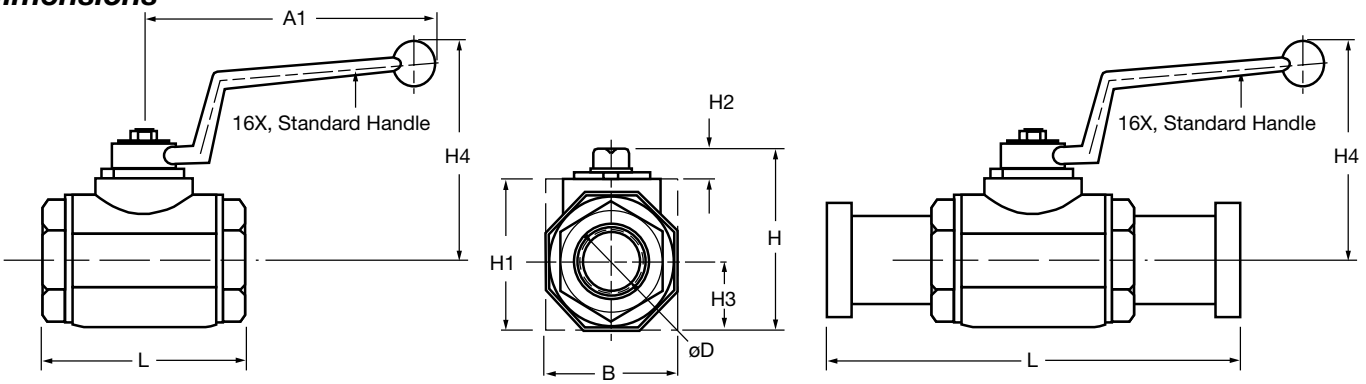
KHM Series
2-way Stainless Steel Ball Valves



Specifications:

- 1/4" to 2" Full Port Design
- Connection types available:
  NPT: Tapered Pipe Threads, ANSI/ASME B.1.20.1
  SAE: SAE J1926/1 Straight Thread O-ring Boss Port
  F3: SAE J518 (Code 61), split flange halves not included.
  F6: SAE J518 (Code 62), split flange halves not included.
- Materials:
  Housing, Ball and Spindle made of 1.4571 SS (~316 SS)
  Polyacetal (POM + MoS2) Ball Seals
  Flurocarbon (FPM) O-rings
- Offset Zinc-plated Steel Handles
- Temperature Range: -4° to 176°F at full pressure

Dimensions



Nom. Size	Connection Size/Type	Model Code	Part Number	Press Rating	Dimensions in millimeters								
					A1	B	øD	H	H1	H2	H3	H4	L
DN 06	1/4" NPT	KHM-06NPT-3314-16X	02078586	7250	101	28	6	49	37	8	14	54	69
(1/4")	SAE-4	KHM-06SAE-3314-16X	02078587	7250	101	28	6	49	37	8	14	54	69
DN 10	3/8" NPT	KHM-10NPT-3314-16X	02078588	7250	101	36	10	53	41	8	18	54	72
(3/8")	SAE-6	KHM-10SAE-3314-16X	02077119	7250	101	36	10	53	41	8	18	54	72
DN 16	1/2" NPT	KHM-16NPT-3314-16X	02078589	5800	175	46	16	66	49	8	23	91	83
	SAE-8	KHM-16SAE-3314-16X	02066415	5800	175	46	16	66	49	11	23	91	83
(1/2")	1/2" code 61	KHM-16F3-3314X-16X	02077118	5000	175	46	16	66	49	11	23	91	150.8
	1/2" code 62	KHM-16F6-3314X-16X	02078590	5800	175	46	16	66	49	11	23	91	150.8
DN 20	3/4" NPT	KHM-20NPT-3314-16X	02066406	5000	175	56	20	78	60	12	28	98	95
	SAE-12	KHM-20SAE-3314-16X	02078591	5000	175	56	20	78	60	12	28	98	95
(3/4")	3/4" code 61	KHM-20F3-3314X-16X	02078592	5000	175	56	20	78	60	12	28	98	169.8
	3/4" code 62	KHM-20F6-3314X-16X	02068045	5000	175	56	20	78	60	12	28	98	169.8
DN 25	1" NPT	KHM-25NPT-3314-16X	02078593	5000	175	65	25	83	66	12	30	101	113
	SAE-16	KHM-25SAE-3314-16X	02078594	5000	175	65	25	83	66	12	30	101	113
(1")	1" code 61	KHM-25F3-3314X-16X	02070901	5000	175	65	25	83	66	12	30	101	176.5
	1" code 62	KHM-25F6-3314X-16X	02073032	5000	175	65	25	83	66	12	30	101	198.5
DN 32	1-1/4" NPT	KHM-32NPT-3314-16X	02062809	5000	306	78	30	104	86	12	39	151	110
	SAE-20	KHM-32SAE-3314-16X	02078359	5000	306	78	30	104	86	12	39	151	110
(1-1/4")	1-1/4" code 61	KHM-32F3-3314X-16X	02077117	4000	306	78	30	104	86	12	39	151	191.4
	1-1/4" code 62	KHM-32F6-3314X-16X	02078595	5000	306	78	30	104	86	12	39	151	223.4
DN 40	1-1/2" NPT	KHM-40NPT-3314-16X	02062807	5000	306	91	38	117	99	12	46	157	130
	SAE-24	KHM-40SAE-3314-16X	02070209	5000	306	91	38	117	99	12	46	157	130
(1-1/2")	1-1/2" code 61	KHM-40F3-3314X-16X	02069236	3000	306	91	38	117	99	12	46	157	231
	1-1/2" code 62	KHM-40F6-3314X-16X	02073038	5000	306	91	38	117	99	12	46	157	281
DN 50	2" NPT	KHM-50NPT-3314-16X	02065778	5000	306	109	48	133	115	12	55	164	140
	SAE-32	KHM-50SAE-3314-16X	02078596	5000	306	109	48	133	115	12	55	164	140
(2")	2" code 61	KHM-50F3-3314X-16X	02078597	3000	306	109	48	133	115	12	55	164	234
	2" code 62	KHM-50F6-3314X-16X	02072531	5000	306	109	48	133	115	12	55	164	315

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in mm.
For information on stainless steel code 61 & 62 flanges, see page 151.

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

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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
- Polyacetal Ball Seals *(standard)*
- FPM *(Fluoroelastomer)* O-Rings *(standard)*
- Operating Pressure to 7250 psi Depending on Valve Size and Seal Materials Selected
- Temp Range: 14˚ to 176˚F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page 24)*.

Model Code

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

Locking Device Option
L = Locking Device *(see page 21 to order locking device separately)*
LS = Locking Device with 5 amp Limit Switch, Available for Sizes 20-50 *(Not available with PTFE Spindle Seals)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

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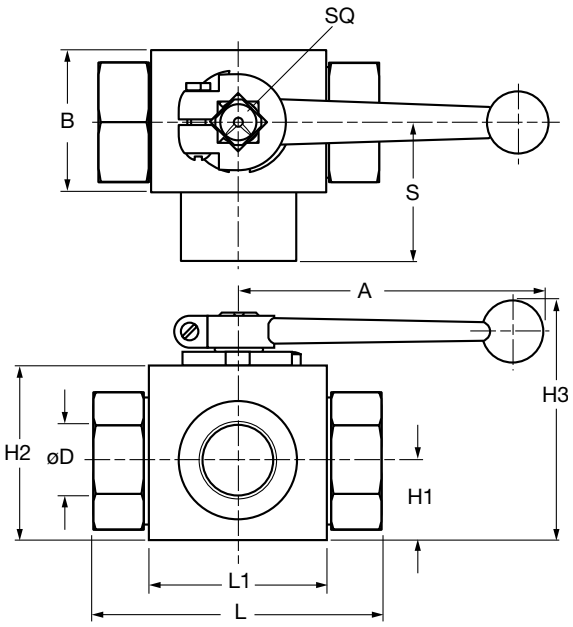
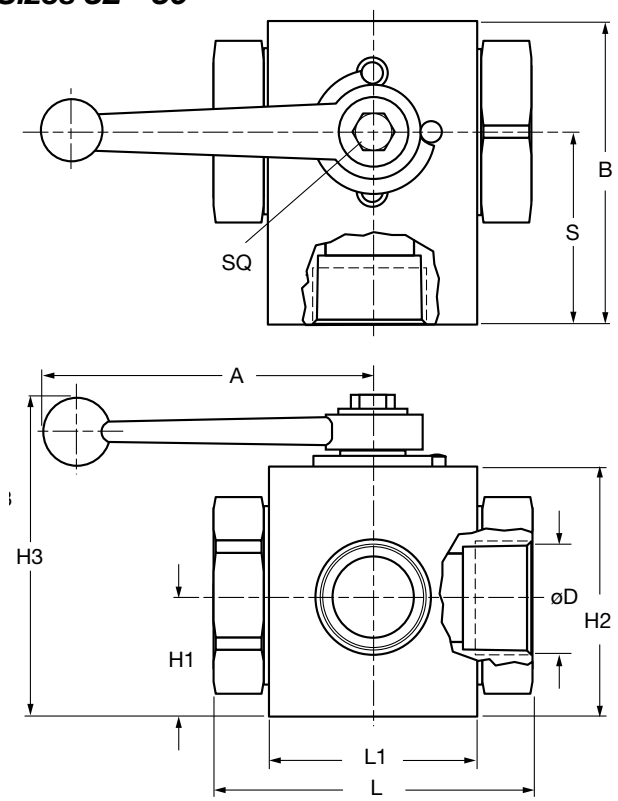
Dimensions

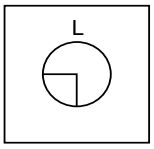
Sizes 06 - 25



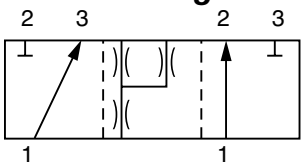
Sizes 32 - 50



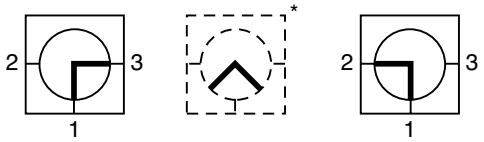
Ball Drilling



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	4500	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	4500	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												

KHP Series
2-way Manifold Mounted Ball Valves

Specifications

- Sizes 3/8” - 2”
- Carbon Steel Housing
- Polyacetal Ball Seals *(standard)*
- FPM (Fluoroelastomer) O-Rings *(standard)*
- Operating Pressure to 5000 psi Depending on
- Seal Materials Selected
- Temp Range: 14˚ to 176˚F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page 24)*.

Model Code

KHP - 20 - 1 1 1 4 - 12X - 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 *(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)*
5 = EPR

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

Locking Device Option
L = Locking Device *(see page 21 to order locking device separately)*
LS = Locking Device with 5 amp Limit Switch *(Sizes 20, 25 only) (Not available with PTFE Spindle Seals)*

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

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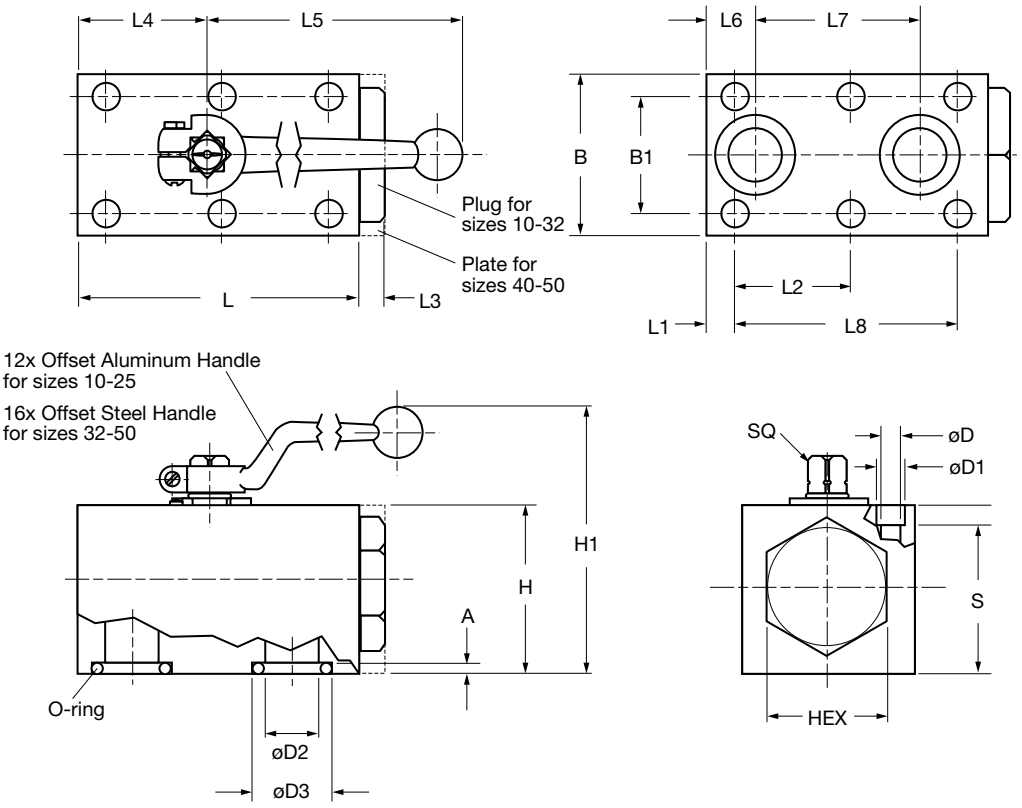
Dimensions

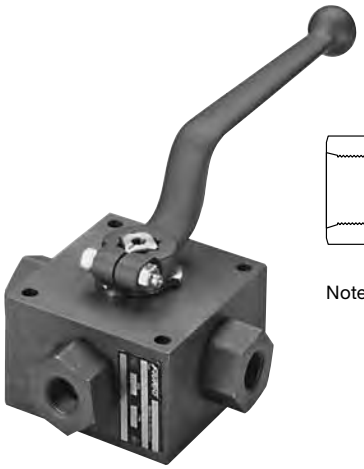


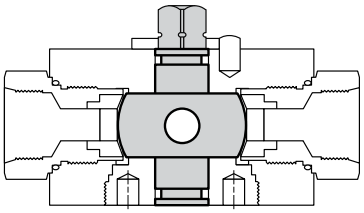
Model	Max. psi[1]	A	B	B1	ø D	ø D1	ø D2	ø D3	HEX	H	H1	O-ring	Weight
KHP-10	5000	0.08 (2)	2.17 (55)	1.575 (40)	0.35 (9)	0.55 (14)	0.374 (9.5)	0.591 (15)	1 3/16 (30)	1.77 (45)	3.58 (91)	10x2.6	2.6 (1.2)
KHP-16	5000	0.08 (2)	2.36 (60)	1.772 (45)	0.35 (9)	0.55 (14)	0.630 (16)	0.984 (25)	1 7/16 (36)	2.17 (55)	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[2]	Torque[2]
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

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

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
- Polyacetal Ball Seals *(standard)*
- Fluoroelastomer O-Rings *(standard)*
- Operating Pressure to 7250 PSI Depending on
- Valve Size and Seal Materials Selected
- Temp Range: 14˚ to 176˚F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40˚ to 392˚F on request with special materials and reduced pressure rating *(see page 24)*.

Model Code

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

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

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)*
- 4 = FPM *(Fluoroelastomer) (standard)*

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

Locking Device Option
- L = Locking Device *(see page 21 to order locking device separately)*

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

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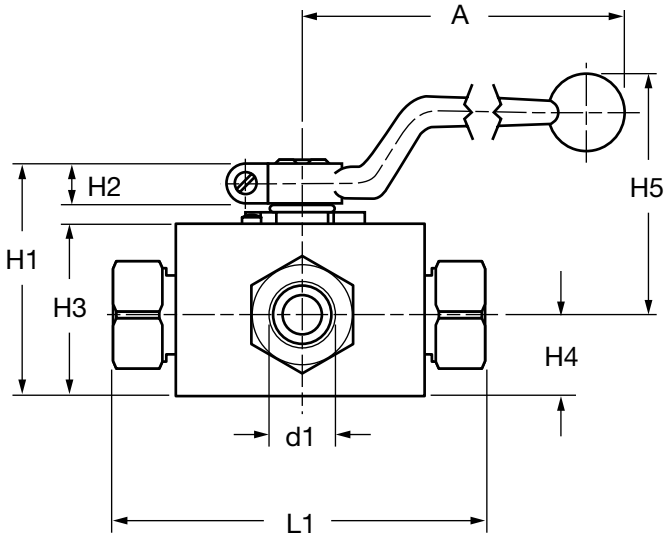
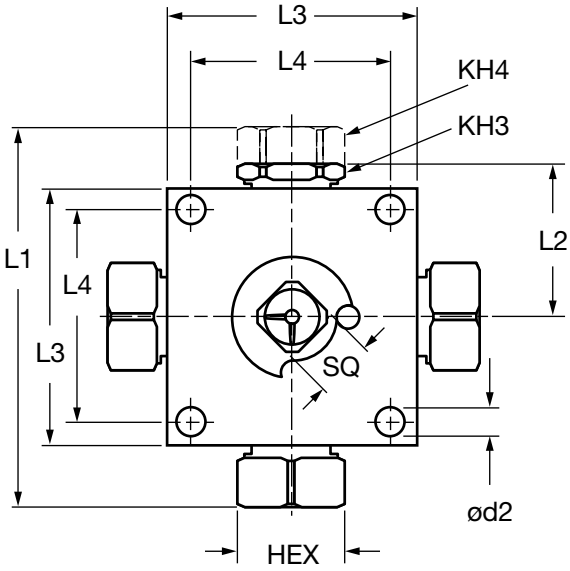
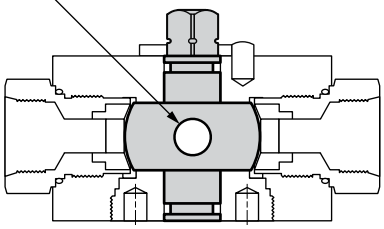
Dimensions



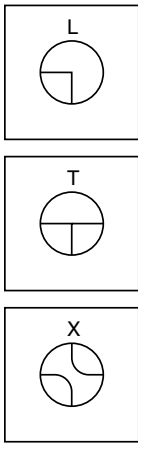


Handle Not Shown

øL-T for L & T ball drilling
øX for X ball drilling

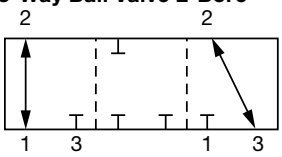


Ball Drilling



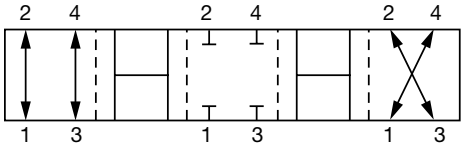
Function Diagrams

3-Way Ball Valve L-Bore

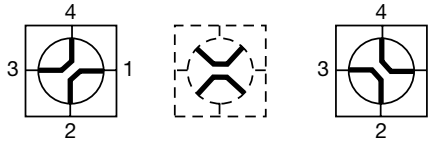


90° Switch

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

Ball Valve Actuators
Pneumatic Operation

Model Code

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

Ball Valve
Available for both KHB & KHM Series
(See pages 5 - 17 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 (ESA) or double acting (EDA)

Size*
1 = 12 *(recommended for valves KHB-06... & KHB-10)*
2 = 25 *(recommended for valves KHB-16... & 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

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

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.

Product 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

Ordering

Pneumatic Actuators (double acting) & Mounting Kits

Valve Size	Actuator Model Code	Actuator Part Number	Mounting Kit Part Number
KHB-06 (1/4")	EDA-12	02700204	02061508
KHB-10 (3/8")	EDA-12	02700204	02061508
KHB-16 (1/2")	EDA-25	02700205	02061509
KHB-20 (3/4")	EDA-25	02700205	02061510
KHB-25 (1")	EDA-100	02700206	02061511
KHM-32 (1 1/4")	EDA-100	02700206	02061512
KHM-40 (1 1/2")	EDA-350	02700207	02061513
KHM-50 (2")	EDA-350	02700207	02061513

Optional Accessories (model code / part number)

Limit Switch Box *(2 SPDT switches)*		
ACTUATOR LIMIT SWITCH HDN/2		02700282
Limit Switch Mounting Kit *(for EDA-12)*		
ACTUATOR LIMIT SWITCH MTG KIT MKN-12		02700283
Limit Switch Mounting Kit *(for EDA-25 thru EDA-350)*		
ACTUATOR LIMIT SWITCH MTG KIT MKN-25/350		02700284
Solenoid Control Valve[1] (120 VAC)	3-Way *(for ESA)*	02082888
	4-Way *(for EDA)*	02082890
Solenoid Control Valve[1] (24 VDC)	3-Way *(for ESA)*	02082887
	4-Way *(for EDA)*	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.

1) See pages 39 - 40 for information on solenoid valves.

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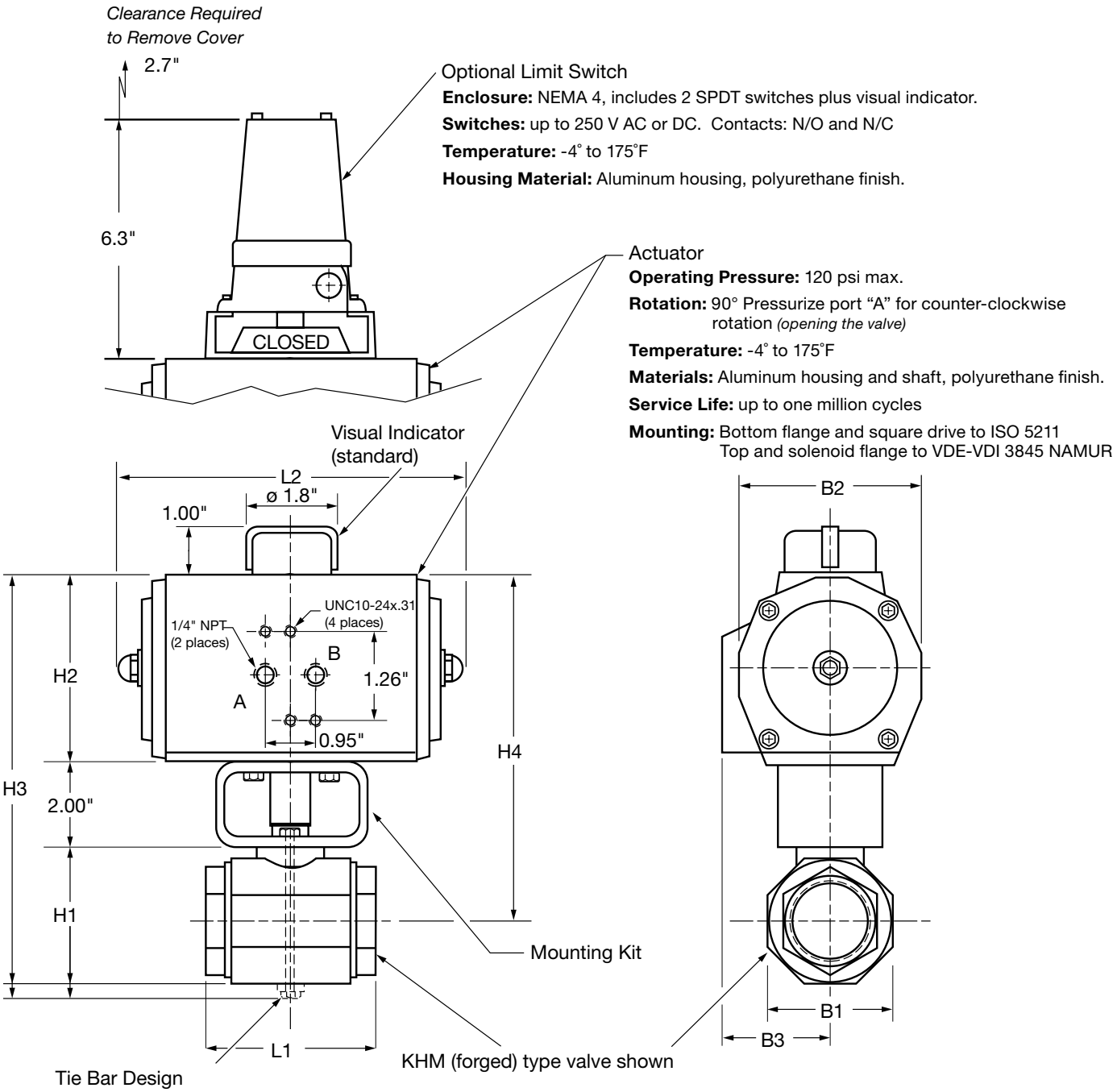
Dimensions



Ball Valve / Actuator Size	H1	H2	H3	H4	L1	L2	B1	B2	B3	Operating Time (sec)	Air Cons. (in3/1atm)	Weight (lbs.)
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

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches and lbs.
*Dependent upon valve and seal materials selected.

Ball Valve Locking Devices

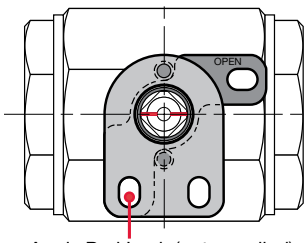
Description

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.

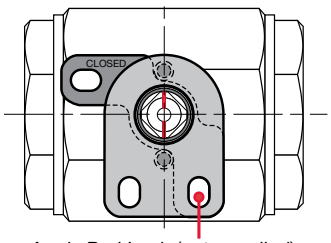
Material note: All lock plates and lock bars are made of Zinc plated Steel.

Operation

KHM...
(forged valve bodies)

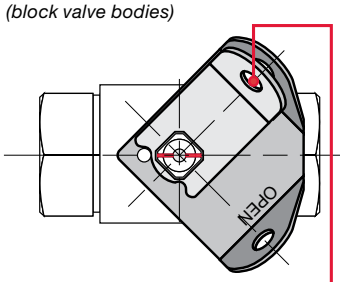


Apply Pad Lock (not supplied) here to lock in OPEN Postition

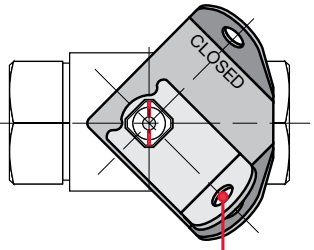


Apply Pad Lock (not supplied) here to lock in CLOSED Postition

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

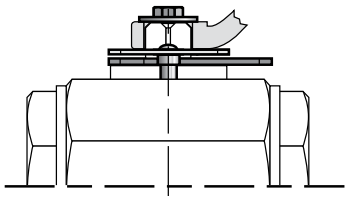


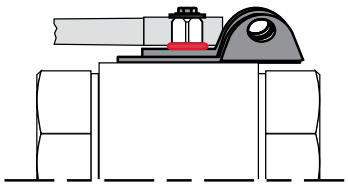
Apply Pad Lock (not supplied) here to lock in OPEN Postition



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

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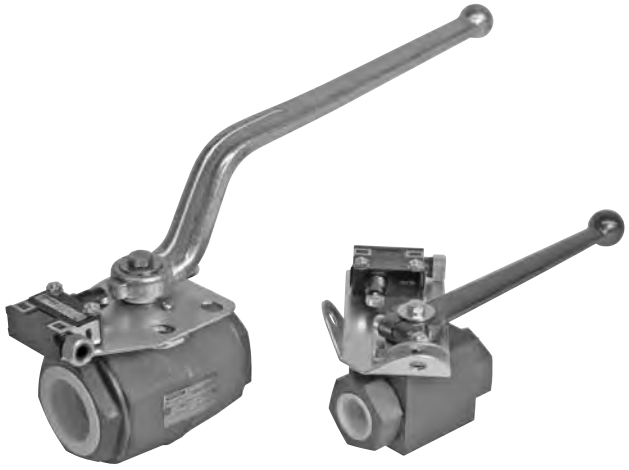
Ball Valve Locking Devices with Limit Switches



Description:

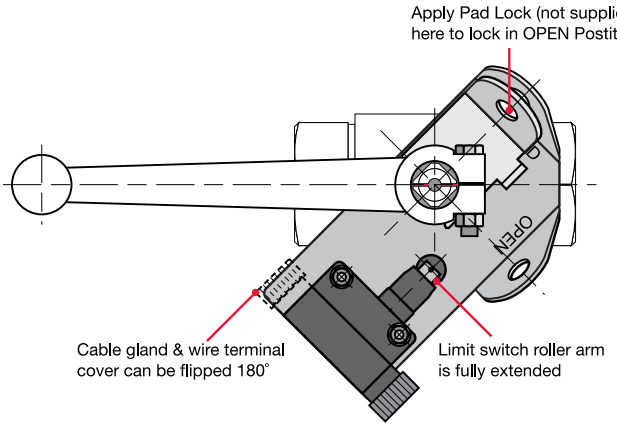
When remote indication of the valve position is required, a limit switch can be added to the valve assembly.

- 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

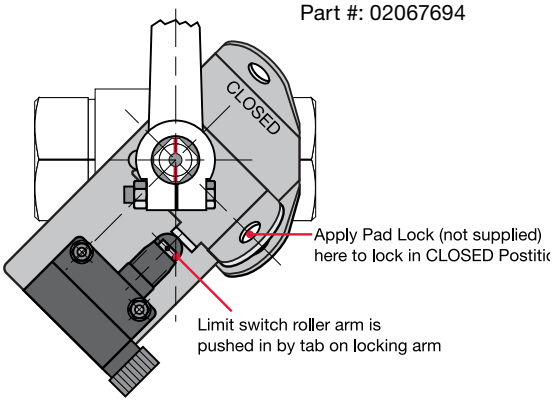
Ordering:
To Order a valve with Limit Switch, Add "-LS" to end of Valve Model Code, i.e.: KHM-32NPT-1114-16X-LS

Operation

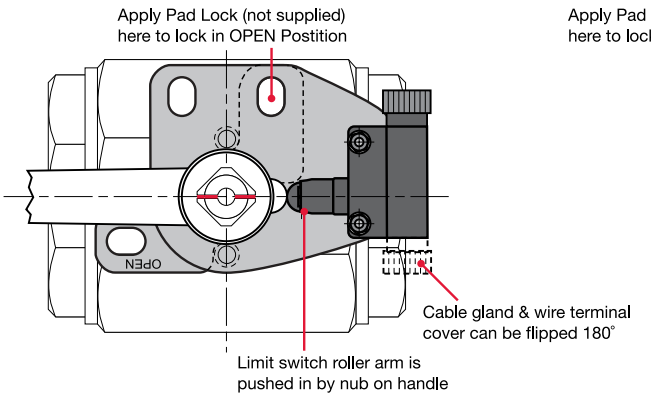
KHB..., KHP..., KH3..., KH4..., KHB3K... *(block valve bodies, sizes 20 & 25)*



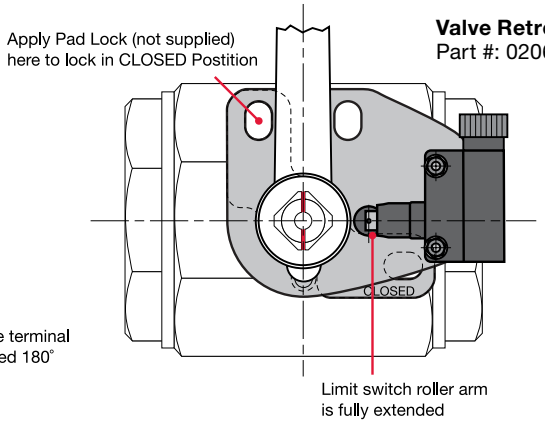
Valve Retrofit kit
Part #: 02067694



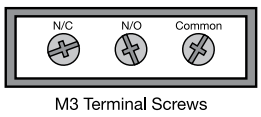
KHM... *(forged valve bodies, sizes 32 through 50)*



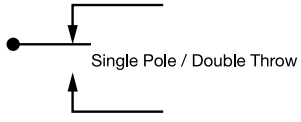
Valve Retrofit kit
Part #: 02063537



Wiring Details



M3 Terminal Screws

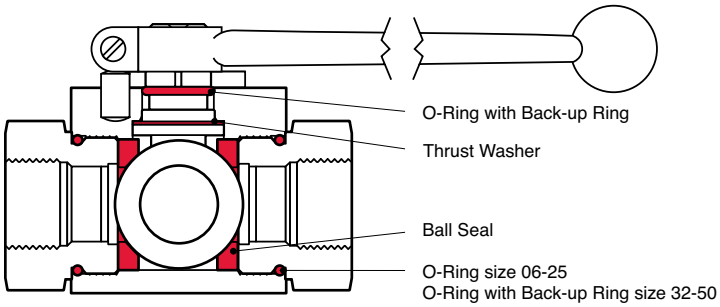


Electrical Specifications

- 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

Complete maintenance instructions are available on our web site:

www.HYDACusa.com

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

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

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Handles

DN Sizes	Description Designation	Model Code	Spindle Square 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*
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*
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*
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

* These handles require the additional mounting hardware which is included

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 above)*	
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 at right 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 at right 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 at right 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

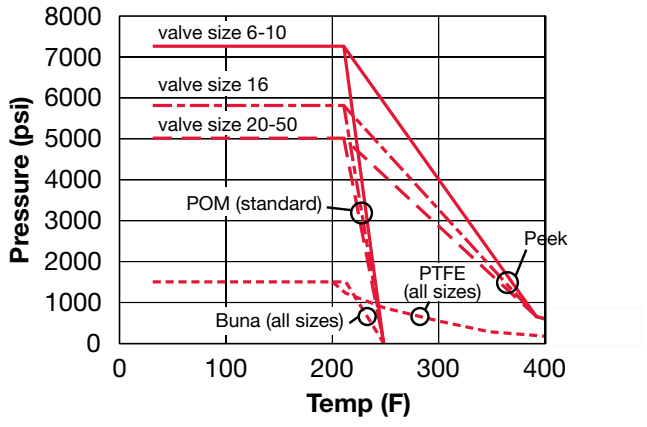
EPR Ethylene Propylene Rubber for some phosphate esters

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



KHF3/6 Series

Direct Mount SAE Flange 1/2” to 2”

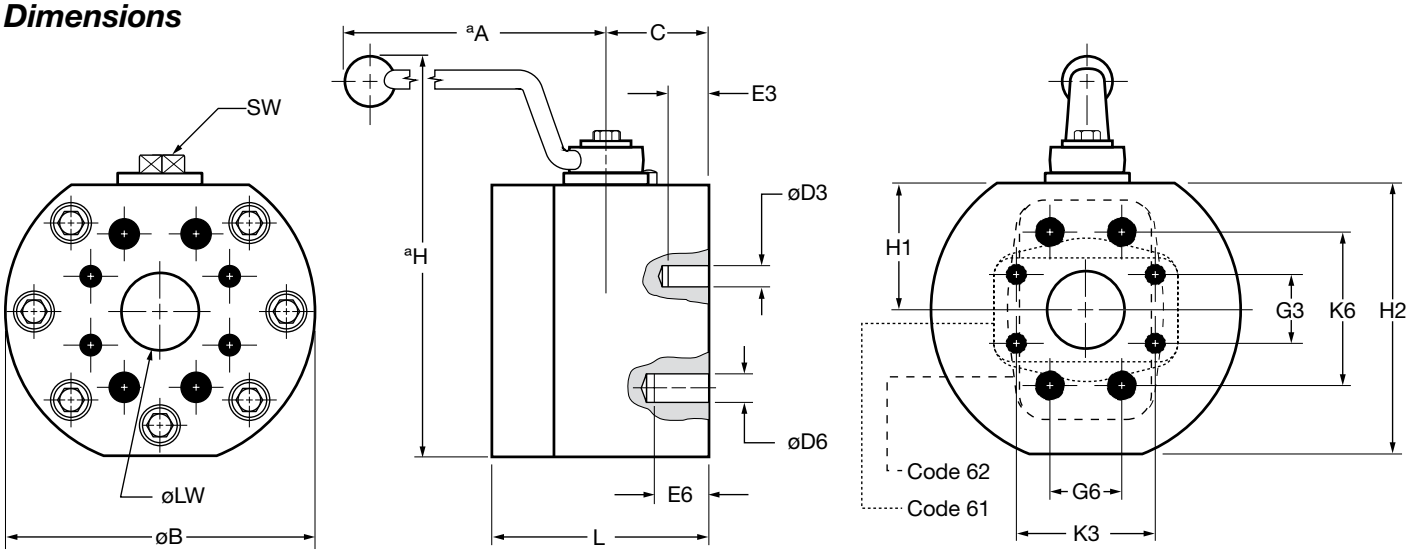
Features

- 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
- Phosphate coated valve body

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

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

www.comoso.com

KHF3 Series
Direct Mount SAE Flange 2 1/2" to 4"

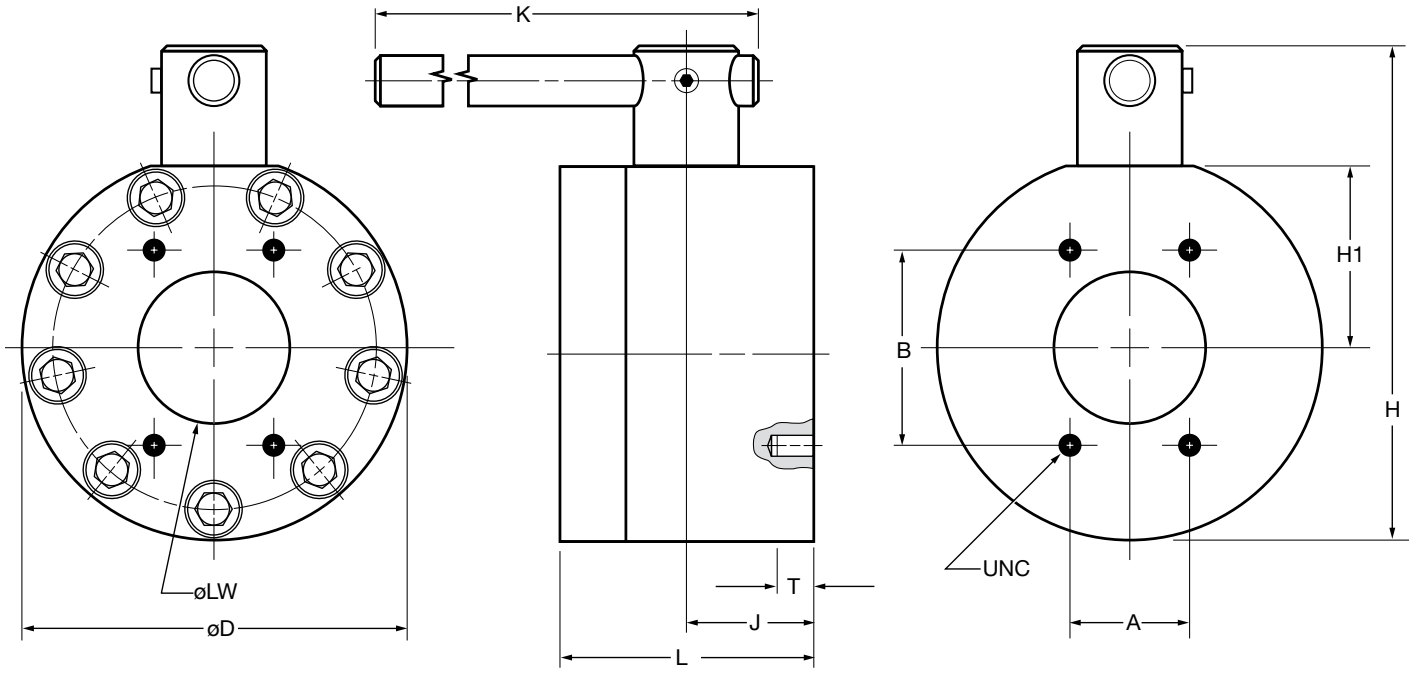
Features

- Compact, space saving design
- Full passage for unrestricted flow of medium
- Floating ball provides positive seal
- Phosphate coated valve body
- 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-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-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-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.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches and lbs.

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

KHM3H 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)*

Model Code

KHM3H - SP - 1 SW - 3 3 1 2

Series Type
KHM3H = 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, 3, 4

Connection Type
SW = Socket Weld
NPT = Tapered Pipe Threads

Body Material
3 = Stainless Steel

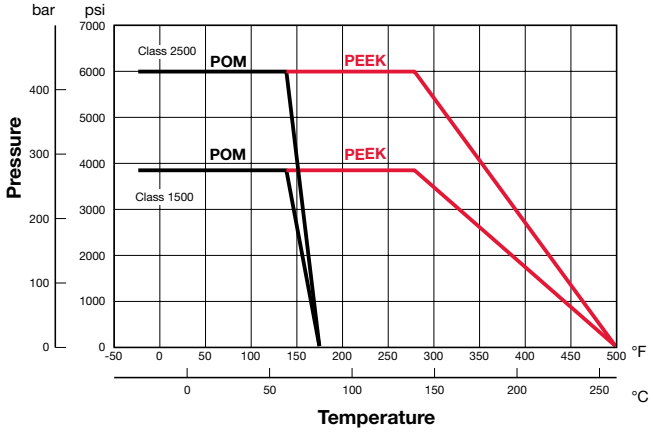
Spindle & Ball Material
3 = Stainless Steel

Ball Seal Material
1 = POM *(polyacetal) (standard)*
8 = PEEK for higher temperature applications *(see chart below)*

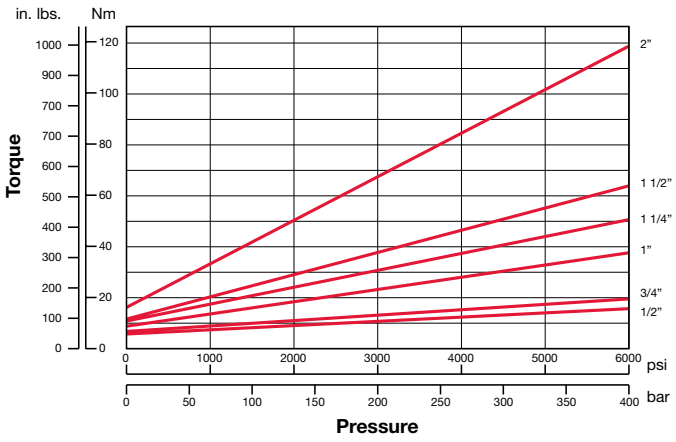
Body Seal Material
2 = NBR *(used with POM ball seal) (standard)*
8 = Graphite *(used with PEEK ball seal)* for higher temperature applications

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

Pressure/Temperature Graph



Torque/Pressure Graph



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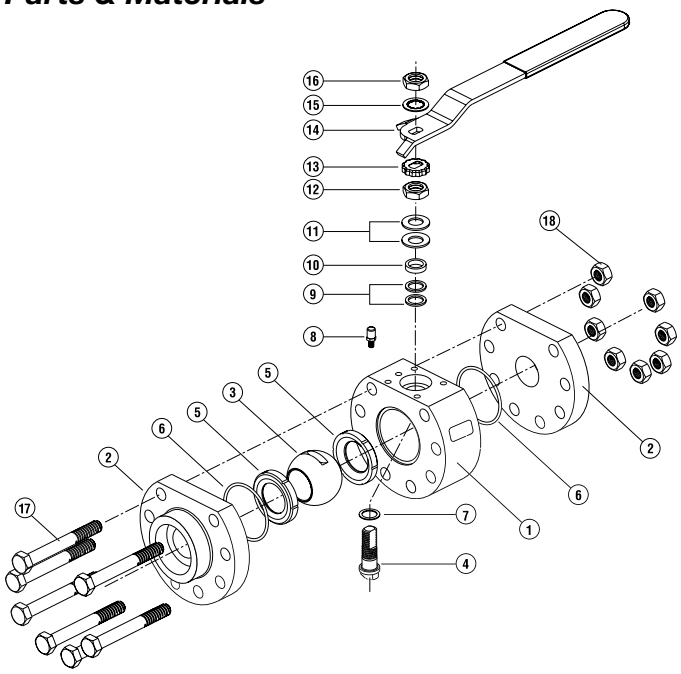
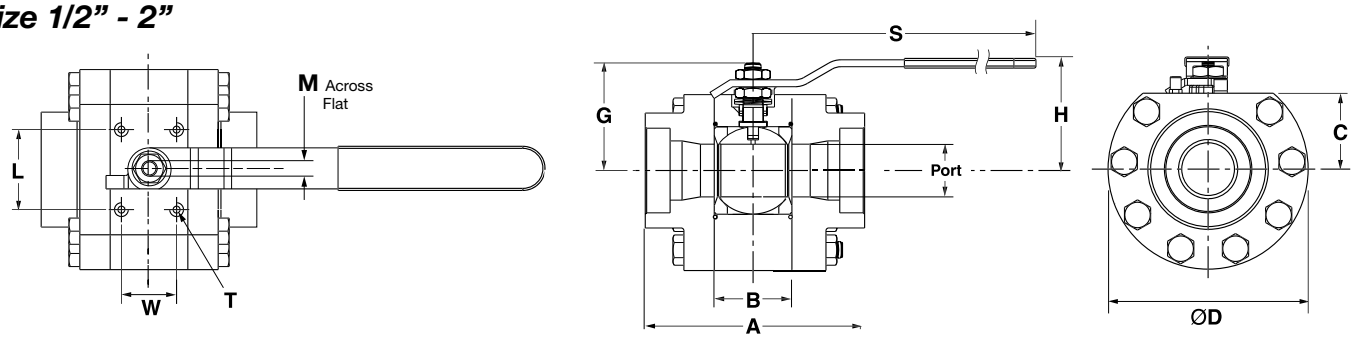
Parts & Materials



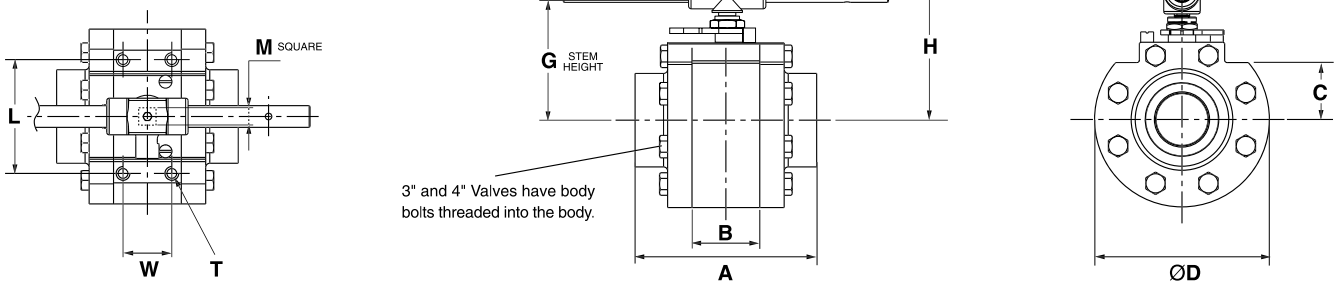
Item	Description	Material
1	Body	Stainless Steel 316
2	End Connector	Stainless Steel 316
3	Ball	Stainless Steel 316 (17-4PH 1/2”-3/4”)
4	Stem	Stainless Steel 17-4PH
5*	Ball Seal	POM / PEEK
6*	Body Seal	NBR / Graphite
7*	Stem Thrust Seal	PA (Nylon) / PEEK
8	Stop Pin	Stainless Steel
9*	Gland Packing	PTFE - 25% Carbon Filled/Graphite
10	Gland	Stainless Steel
11	Disc Spring	Stainless Steel
12	Gland Nut	Stainless Steel
13	Tab Washer	Stainless Steel
14	Handle	Stainless Steel
15	Serrated Washer	Stainless Steel
16	Handle Nut	Stainless Steel
17	Body Bolts	Stainless Steel
18	Body Nuts	Stainless Steel

Dimensions

Size 1/2” - 2”



Size 3” - 4”



Size	Port	A	B	C	G	øD	H	M	N	S	T	W	L	Wgt
1/2”	0.44	3.07	0.81	1.06	1.50	2.76	1.81	0.22	3/8” UNF	7.05	M5	-	1.34	3.5
3/4”	0.56	3.35	0.97	1.18	1.59	3.15	1.89	0.22	3/8” UNF	7.05	M5	0.59	1.34	5.3
1”	0.81	4.25	1.25	1.50	2.22	3.86	2.40	0.30	7/16” UNF	7.56	M5	0.94	1.65	10
1 1/4”	1.00	4.76	1.63	1.69	2.40	4.13	2.60	0.30	7/16” UNF	7.56	M5	0.94	1.65	12
1 1/2”	1.25	5.16	1.91	1.97	2.91	5.12	3.15	0.34	9/16” UNF	11.30	M6	1.42	1.57	21
2”	1.50	5.59	2.22	2.17	3.06	5.71	3.31	0.34	9/16” UNF	11.30	M6	1.57	2.28	29
3”	2.50	8.82	3.28	2.76	5.71	8.46	7.28	0.74	1” UNS	15.75	M12	2.36	5.51	86
4”	3.25	10.55	4.28	3.54	6.34	9.84	7.91	0.74	1” UNS	24.02	M12	2.76	5.91	141

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

Overview

Introduction

Traditionally the HYDAC product offering existed of high pressure manual valves. As we grow and are exposed to new industries we are adding to our product offering.

Description

HYDAC Automated Valves are pneumatically operated. Actuators allow valves to be operated automatically by a control system or manually from a remote location. Valve automation brings significant advantages to a plant in the areas of process quality, efficiency, safety, and productivity. Electric or hydraulically actuated valves available on special request.

Low Pressure Ball Valves

KHNVN Series *(see page 30)*
Nominal Sizes from 1/4" to 2"

Automated 2 Piece Ball Valves

KHL Series *(see page 35)*
Nominal Sizes from 1/4" to 2"

Inline Isolation Valve + Actuator

HVA Series *(see page 31)*
Nominal Sizes from 3/8" to 2"

Automated 3 Piece Ball Valves

KHM3L Series *(see page 37)*
Nominal Sizes from 1/4" to 2"

Angle Seat Valves

ASV Series *(see page 33)*
Nominal Sizes from 3/8" to 2"

Solenoid Valves

Namur 3-way & 4-way *(see page 39)*

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KHNVN Series
Low Pressure Stainless Steel

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

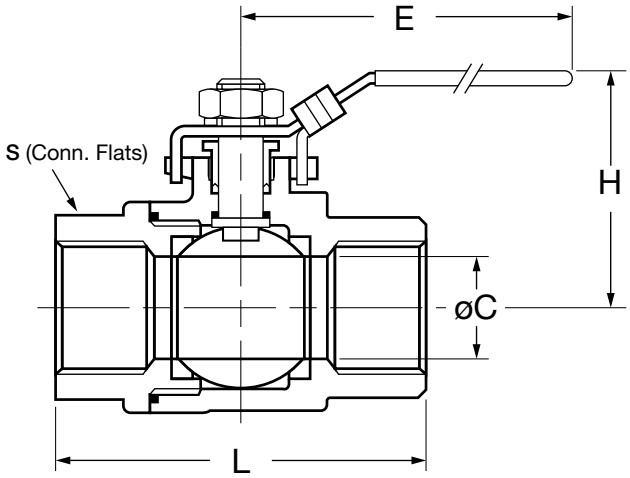
Handle & Locking Device:
- 304 SS

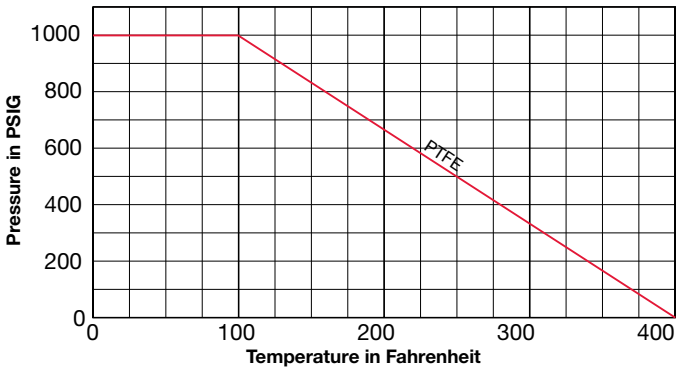
Handle Sleeve:
- Vinyl

Specifications
Max. Temperature:
- 400°F

Max. Pressure:
- 1000 psig (up to 100°F)
- 2000 psig available *(Contact HYDAC for details)*

End Connections
- NPT Threaded *(female)*

Dimensions


Pressure vs. Temperature Curve


Size	Model Code	DN	øC	E	H	L	S	Weight (lbs.)
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

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

HVA Series
Inline Isolation Valve + Actuator

Specifications

- Temperature range: -4° to 302°F (-20° to 83°C)
- Maximum pressure: 225 psi
- Vacuum rating: 740mm Hg (97% vacuum)
- Seats & Seals: VITON = High compatibility with majority of fluids, not advised for steam.
- Air pressure required: 40 to 125 psi for double acting, 60 to 125 psi for spring return
- Body and Internals: Electroless Nickel Plated Brass

Description

- The HVA Series combines a pneumatic actuator and isolation valve into one body, which acts as a automated on/off valve.

Features and Benefits

- Compact assembly / Saves space
- High CV / Less restriction *(low pressure drop)*
- Integrated actuators / Less parts to order and no mounting kits
- Integral NAMUR solenoid mounting pad

Models Available

- NC: spring return, normally closed
- NO: spring return, normally open
- DA: double acting

Model Code

HVA - 3/8 NPT - NO - 24VDC

Series
HVA = Valve + Actuator

Port Size *(NPT)*
3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"

Function
NO = Spring return, Normally open, Air to close
NC = Spring return, Normally closed, Air to open
DA = Double acting

Solenoid Valve Options
(omit) = No solenoid valve included
24VDC = 24 VDC solenoid valve included
120VAC = 120 VAC solenoid valve included

Note: see page 39 - 40 for information on solenoid valves

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

Stroke Time *(based on 80 psi actuating pressure)*

Size	Spring Return		Double Acting	
	Spring	Air	Opening Air	Closing Air
3/8"	20 mS	10 mS	10 mS	10 mS
1/2"	20 mS	10 mS	10 mS	10 mS
3/4"	30 mS	20 mS	20 mS	20 mS
1"	40 mS	20 mS	20 mS	20 mS
1 1/4"	70 mS	40 mS	30 mS	30 mS
1 1/2"	110 mS	60 mS	60 mS	60 mS
2"	130 mS	70 mS	70 mS	70 mS

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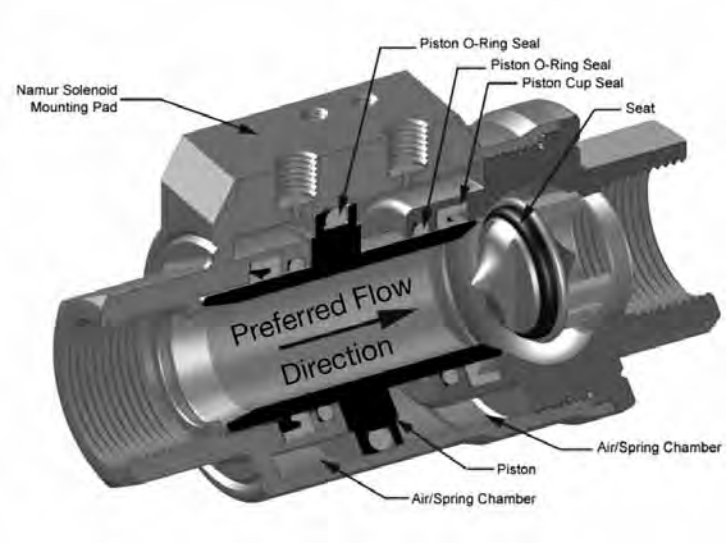
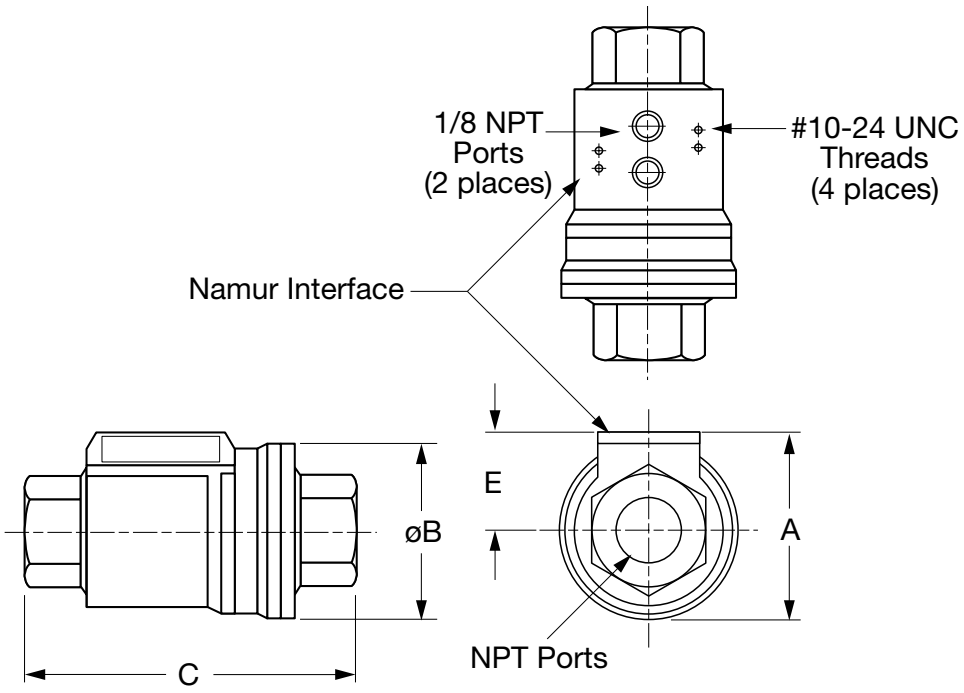
Cutaway View



Dimensions



NPT Port Size	Cv	A	B	C	E	Wt	Air Consumption
3/8"	8	2.11	1.81	3.60	1.21	1.90	0.73 cu. inches
1/2"	10	2.33	2.00	4.21	1.31	2.30	1.05 cu. inches
3/4"	13	2.76	2.10	4.92	1.51	3.70	1.90 cu. inches
1"	17	3.00	2.72	5.31	1.63	4.15	2.45 cu. inches
1 1/4"	28	3.59	3.39	6.02	1.90	7.50	4.58 cu. inches
1 1/2"	57	4.00	3.78	6.73	2.12	8.15	6.70 cu. inches
2"	81	4.50	4.29	7.51	2.35	12.75	9.50 cu. inches

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

ASV Series
Angle Seat Valve

ASV...2333
Bronze

ASV...3333
Stainless Steel

Specifications

Ambient Temperature Range
- 14° to 140°F (-10° to 60°C)

Fluid Temperature Range
- -14° to 358°F (-25° to 181°C)

Pressure/Viscosity Ratings
- From 0 to 230 psi
- Steam to 150 psi, Max 358°F
- Max Viscosity 600CST
- Required Air Pressure - 80 to 110 psi

ASV...2333
- Bronze Body & SS Plug
- PTFE seats & seals

ASV...3333
- 316 SS Body & Plug
- PTFE seats & seals

Leakage rate
- ANSI Class VI Shut off

Description

The Angle Seat Valve is a 2-way pneumatically actuated plug valve, which provides for automatic isolation of liquids, gases, steam and some aggressive fluids. Available with stainless steel or bronze bodies with plastic actuator housings.

Features and Benefits

- Self aligning stem seal reduces potential leak points
- High cycle life, provides long service life
- Compact assembly / Saves space
- Internal flow path designed to minimize pressure drop
- NAMUR Solenoid mounting pad

Easy Installation

The Angle Seat Valve can be mounted in any position. The actuator rotates 360° allowing for the selective positioning of the pneumatic inlet port.

Models Available

- Spring Return N.C. Bi-directional Flow
- Double Acting Bi-directional Flow

Stroke Time

Valve Size	Actuator Function	Closed to Open (mS)	Open to Closed (mS)
3/8”	NC	15	25
3/8”	DA	5	5
1/2”	NC	15	25
1/2”	DA	5	5
3/4”	NC	15	25
3/4”	DA	5	5
1”	NC	60	100
1”	DA	10	10
1 1/4”	NC	60	100
1 1/4”	DA	10	10
1 1/2”	NC	150	225
1 1/2”	DA	15	15
2”	NC	150	225
2”	DA	15	15

Model Code

ASV - 1 NPT - 3333 - DA - 24DC

Series
ASV = Angle Seat Valve

Port Size *(NPT)*
3/8”, 1/2”, 3/4”, 1”, 1 1/4”, 1 1/2”, 2”

Materials
2333 = Bronze body & SS plug, PTFE seats & seals
3333 = 316SS body & plug, PTFE seats & seals

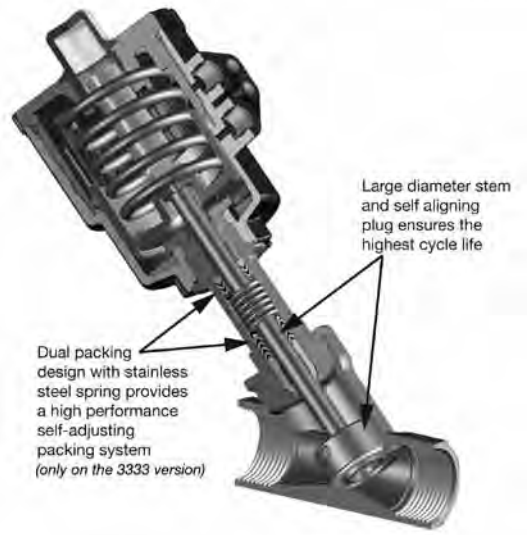
Function
NC = Spring return, normally closed
DA = Double acting

Solenoid Valve Options
(omit) = No solenoid valve included
24VDC = 24 VDC solenoid valve included
120VAC = 120 VAC solenoid valve included

Note: see page 39 - 40 for information on solenoid valves

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

Cutaway View



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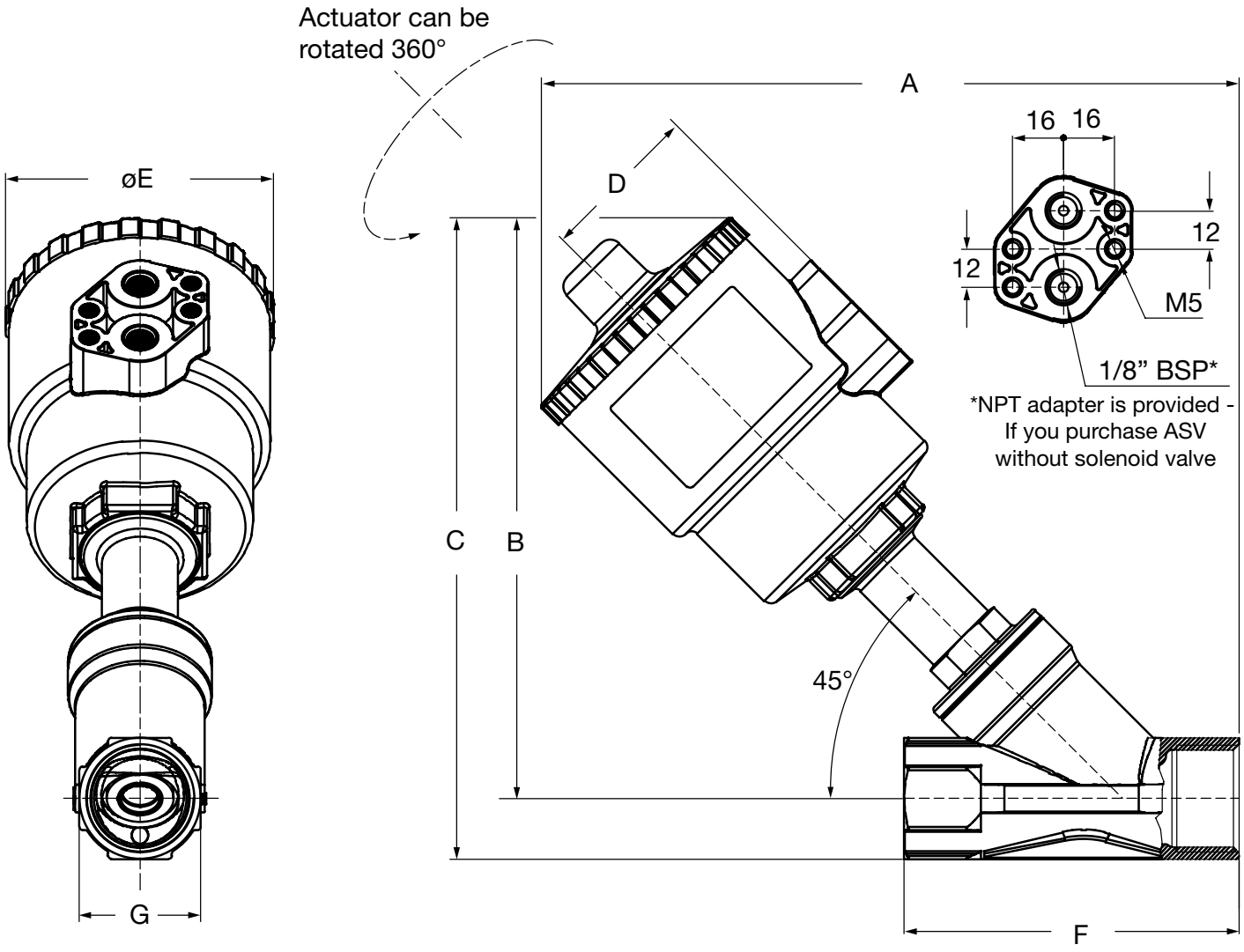
Dimensions



Type	NPT Port Size	CV	ASV...3333 (316 SS)							ASV...2333 (Bronze)							Wgt
			A	B	C	D	ø E	F	G	A	B	C	D	ø E	F	G	
NC/DA	3/8"	6	7.48	6.14	6.65	1.73	2.76	3.35	0.98	6.42	5.51	6.02	1.73	2.76	2.56	1.06	2.2
NC/DA	1/2"	7	7.48	6.14	6.65	1.73	2.76	3.35	0.98	6.42	5.51	6.02	1.73	2.76	2.56	1.06	2.2
DA	3/4"	12	7.68	6.30	6.93	1.73	2.76	3.74	1.22	6.81	5.79	6.42	1.73	2.76	2.95	1.08	2.6
NC	3/4"	12	7.68	6.30	6.93	1.73	2.76	3.74	1.22	6.81	5.79	6.42	1.73	2.76	2.95	1.08	2.6
DA	1"	23	8.62	7.17	7.95	1.99	3.32	4.13	1.50	8.11	6.93	7.72	1.99	3.32	3.54	1.61	3.5
NC	1"	23	8.62	7.17	7.95	1.99	3.32	4.13	1.50	8.11	6.93	7.72	1.99	3.32	3.54	1.61	3.7
DA	1 1/4"	33	8.90	7.32	8.23	1.99	3.32	4.72	1.85	8.46	7.09	8.07	1.99	3.32	4.33	1.97	4.2
NC	1 1/4"	33	10.47	8.90	9.80	2.61	4.58	4.72	1.85	10.04	8.66	9.65	2.61	4.58	4.33	1.97	6.6
DA	1 1/2"	54	10.67	9.06	10.16	2.61	4.58	5.12	2.13	10.63	9.25	10.39	2.61	4.58	4.72	2.28	7.9
NC	1 1/2"	54	12.09	10.47	11.57	3.05	5.54	5.12	2.13	12.05	10.67	11.81	3.05	5.54	4.72	2.28	8.8
DA	2"	78	11.22	9.45	10.79	2.61	4.58	5.91	2.60	11.02	9.45	10.83	2.61	4.58	5.91	2.76	9.5
NC	2"	78	12.64	10.87	12.20	3.05	5.54	5.91	2.60	12.44	10.87	12.24	3.05	5.54	5.91	2.76	11.7.

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

KHL Series
Automated 2 Piece Ball Valve

Specifications

- Ball Valve 316SS body, ball and stem
- Blow out proof stem
- RPTFE Seats
- PTFE seals
- Viton stem O-ring
- NPT threaded end connection

Temperature Range

- -30° to 400°F max

Pressure Rating

- 1/4" to 1" 2000 psi (-30° to 100°F)
- 1 1/4" to 2" 1500 psi (-30° to 100°F)
- 0 psi @ 400°F

Description

The KHL is a full port, 316 stainless steel, NPT threaded end automated ball valve.

It can be equipped with a manual handle or with direct mount pneumatic actuators.

Features and Benefits

- Compact direct mount assembly / Saves space since there is no bracket
- High CV / Less restriction (low pressure drop)
- No stem packing to adjust / Reduces maintenance

Models Available

- Spring Return Actuator, normally closed
- Double Acting Actuator

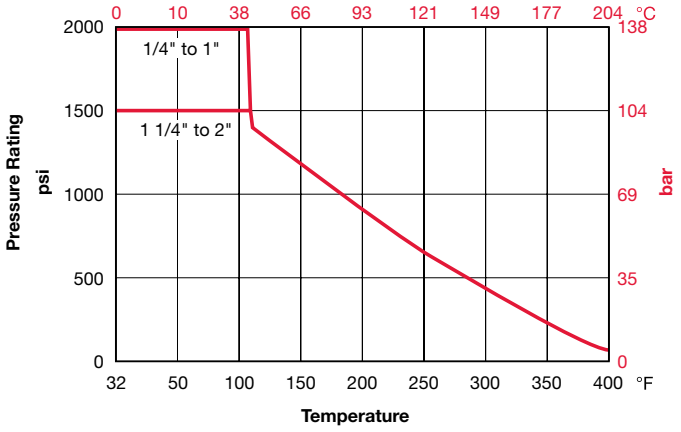
Actuators

- Compact direct mount
- Anodized aluminum actuator
- NAMUR solenoid mounting adapter
- ISO 5211 mounting standard
- Visual position indicators
- High duty cycle
- Permanent lubrication
- Pneumatic double acting and spring return
- Min. 80 psi, Max. 120 psi air supply required
- Pneumatic solenoid valves sold separately

Note: see page 39 - 40 for information on solenoid valves

Contact HYDAC for more information on electric actuators.

Pressure Vs. Temperature Chart



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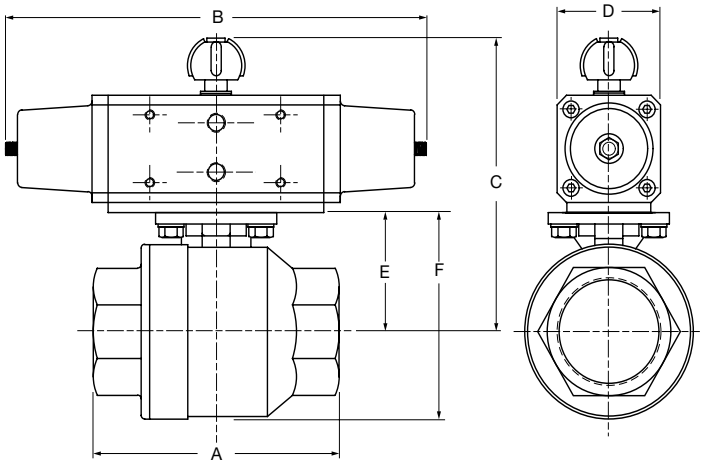
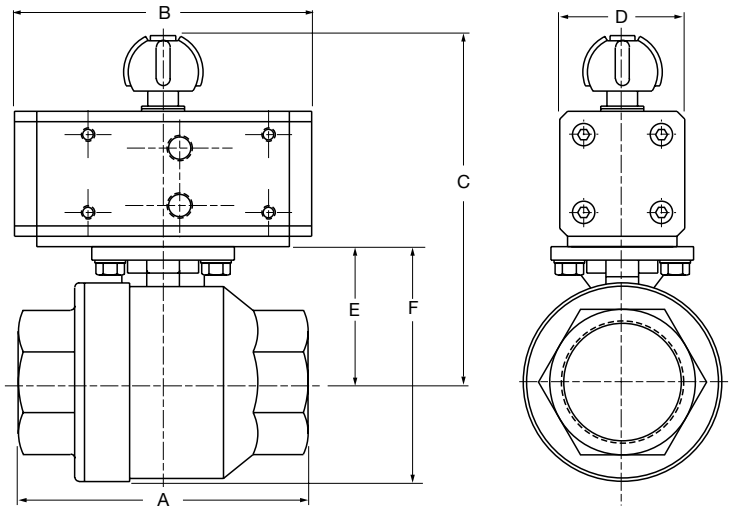
Dimensions with normally closed spring return pneumatic actuator *(NPT threaded end connection, 2 pc. body)*



CV	Size NPT	A	B	C	D	E	F	Wgt.	Model Code Part No.
13	1/4”	2.56	8.62	4.85	2.15	1.65	2.28	3.9	KHL-1/4NPT-3333-NC 02083087
13	3/8”	2.56	8.62	4.85	2.15	1.65	2.34	3.9	KHL-3/8NPT-3333-NC 02083090
23	1/2”	2.95	8.62	4.85	2.15	1.65	2.35	3.9	KHL-1/2NPT-3333-NC 02083093
70	3/4”	3.15	9.36	5.36	2.54	1.77	2.71	5.7	KHL-3/4NPT-3333-NC 02083096
116	1”	3.54	11.47	5.99	2.81	2.05	3.05	7.5	KHL-1NPT-3333-NC 02083099
151	1 1/4”	4.33	11.47	6.22	2.81	2.28	3.63	8.6	KHL-1 1/4NPT-3333-NC 02083102
197	1 1/2”	4.72	12.48	7.32	3.12	2.68	4.33	13.0	KHL-1 1/2NPT-3333-NC 02083105
325	2”	5.51	13.92	8.10	3.51	3.07	4.85	18.5	KHL-2NPT-3333-NC 02083108

Dimensions with double acting pneumatic actuator *(NPT threaded end connection, 2 pc. body)*



CV	Size NPT	A	B	C	D	E	F	Wgt.	Model Code Part No.
13	1/4”	2.56	5.07	4.85	2.15	1.65	2.28	3.2	KHL-1/4NPT-3333-DA 02083088
13	3/8”	2.56	5.07	4.85	2.15	1.65	2.34	3.2	KHL-3/8NPT-3333-DA 02083091
23	1/2”	2.95	5.07	4.85	2.15	1.65	2.35	3.3	KHL-1/2NPT-3333-DA 02083094
70	3/4”	3.15	5.07	4.97	2.15	1.77	2.71	3.5	KHL-3/4NPT-3333-DA 02083097
116	1”	3.54	5.62	5.48	2.34	2.05	3.05	5.0	KHL-1NPT-3333-DA 02083100
151	1 1/4”	4.33	5.62	5.71	2.34	2.28	3.63	6.1	KHL-1 1/4NPT-3333-DA 02083103
197	1 1/2”	4.72	6.59	6.62	2.81	2.68	4.33	9.4	KHL-1 1/2NPT-3333-DA 02083106
325	2”	5.51	6.59	7.01	2.81	3.07	4.92	12.4	KHL-2NPT-3333-DA 02083109

Note: Actuators are sized for 300 psi ΔP

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

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

KHM3L Series
Automated 3 Piece Ball Valve

Specifications

- Ball Valve 316SS body, ball and stem
- Blow out proof stem
- RPTFE seats
- PTFE seals
- Viton stem o-ring

Temperature Range

- -30° to 400°F max

Pressure Rating

- 1000 psi @ -30° to 100°F
- 0 psi @ 400°F

Description

The KHM3L is a full port, 316 stainless steel, 3 piece ball valve. It is available with NPT threads or socket weld connectors.

It can be equipped with a manual handle or with direct mount pneumatic actuators.

Features and Benefits

- Compact direct mount assembly / Saves space since there is no bracket
- High CV / Less restriction *(low pressure drop)*
- No stem packing to adjust / Reduces maintenance
- 3 piece design allows inline maintenance for socket weld connections

Models Available

- Spring Return Actuator, normally closed
- Double Acting Actuator
- Manual Handle *(contact HYDAC)*

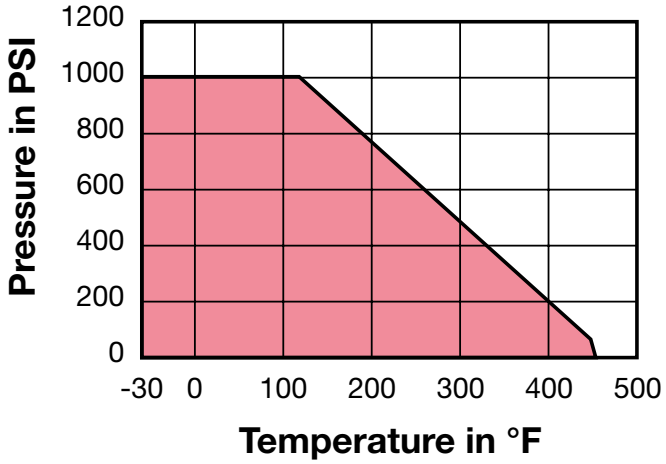
Actuators

- Compact direct mount
- Anodized aluminum actuator
- NAMUR solenoid mounting adapter
- ISO 5211 mounting standard
- Visual position indicators
- High duty cycle
- Permanent lubrication
- Pneumatic double acting and spring return
- Min. 80 psi, Max. 120 psi air supply required
- Pneumatic solenoid valves sold separately

Note: see page 39 - 40 for information on solenoid valves

Contact HYDAC for more information on electric actuators.

Pressure Vs. Temperature Chart



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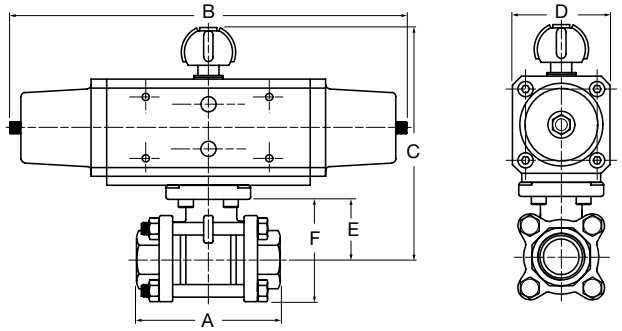
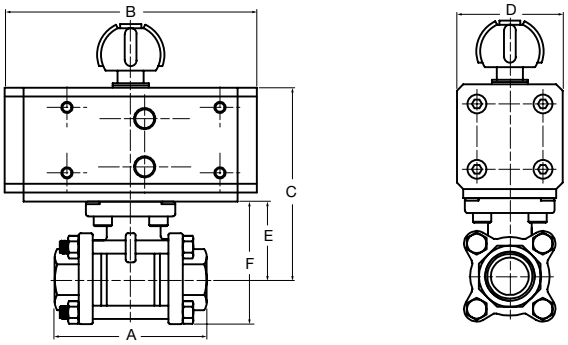
Dimensions with normally closed spring return pneumatic actuator



CV	Size	A	B	C	D	E	F	Wt	Threaded Model Code Part No.	Socket Weld Model Code Part No.
13	1/4”	2.56	8.62	4.85	2.15	1.65	2.60	4.3	KHM3L-1/4NPT-3333-NC 02083039	KHM3L-1/4SW-3333-NC 02083042
13	3/8”	2.56	8.62	4.85	2.15	1.65	2.60	4.3	KHM3L-3/8NPT-3333-NC 02083045	KHM3L-3/8SW-3333-NC 02083048
23	1/2”	2.95	8.62	4.85	2.15	1.65	2.60	4.3	KHM3L-1/2NPT-3333-NC 02083051	KHM3L-1/2SW-3333-NC 02083054
70	3/4”	3.15	9.36	5.36	2.54	1.77	2.75	6.2	KHM3L-3/4NPT-3333-NC 02083057	KHM3L-3/4SW-3333-NC 02083060
116	1”	3.54	11.47	5.99	2.81	2.05	3.32	8.4	KHM3L-1NPT-3333-NC 02083063	KHM3L-1SW-3333-NC 02083066
151	1 1/4”	4.33	11.47	6.22	2.81	2.28	3.68	9.4	KHM3L-1 1/4NPT-3333-NC 02083069	KHM3L-1 1/4SW-3333-NC 02083072
197	1 1/2”	4.72	12.48	7.32	3.12	2.68	4.30	14.3	KHM3L-1 1/2NPT-3333-NC 02083075	KHM3L-1 1/2SW-3333-NC 02083078
325	2”	5.51	13.92	8.10	3.51	3.07	4.85	20.1	KHM3L-2NPT-3333-NC 02083081	KHM3L-2SW-3333-NC 02083084

Dimensions with double acting pneumatic actuator



CV	Size	A	B	C	D	E	F	Wt	Threaded Model Code Part No.	Socket Weld Model Code Part No.
13	1/4”	2.56	5.07	4.85	2.15	1.65	2.60	3.5	KHM3L-1/4NPT-3333-DA 02083040	KHM3L-1/4SW-3333-DA 02083043
13	3/8”	2.56	5.07	4.85	2.15	1.65	2.60	3.5	KHM3L-3/8NPT-3333-DA 02083046	KHM3L-3/8SW-3333-DA 02083049
23	1/2”	2.95	5.07	4.85	2.15	1.65	2.60	3.6	KHM3L-1/2NPT-3333-DA 02083052	KHM3L-1/2SW-3333-DA 02083055
70	3/4”	3.15	5.07	4.97	2.15	1.77	2.75	3.9	KHM3L-3/4NPT-3333-DA 02083058	KHM3L-3/4SW-3333-DA 02083061
116	1”	3.54	5.62	5.48	2.34	2.05	3.32	5.9	KHM3L-1NPT-3333-DA 02083064	KHM3L-1SW-3333-DA 02083067
151	1 1/4”	4.33	5.62	5.71	2.34	2.28	3.68	7.2	KHM3L-1 1/4NPT-3333-DA 02083070	KHM3L-1 1/4SW-3333-DA 02083073
197	1 1/2”	4.72	6.59	6.62	2.81	2.68	4.30	10.1	KHM3L-1 1/2NPT-3333-DA 02083076	KHM3L-1 1/2SW-3333-DA 02083079
325	2”	5.51	6.59	7.01	2.81	3.07	4.85	13.5	KHM3L-2NPT-3333-DA 02083082	KHM3L-2SW-3333-DA 02083085

Note: Actuators are sized for 300 psi ΔP
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches and lbs
Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

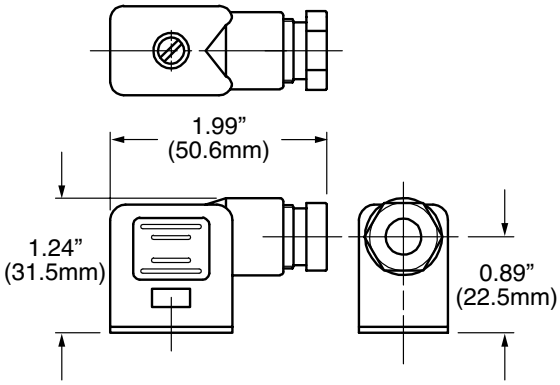
Solenoid Valves

Namur 3-way and 4-way

3-Way

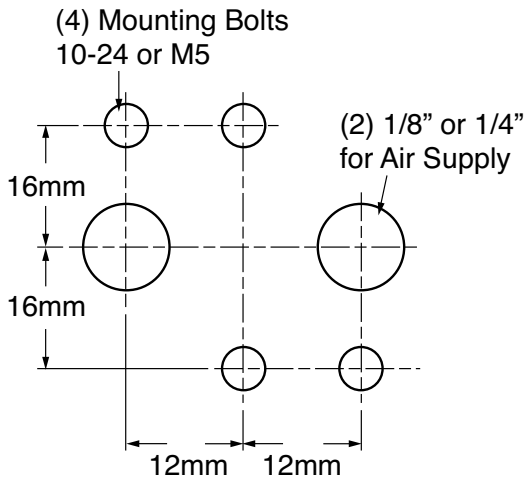
Connector

Water tight, NEMA 4/4X, mini-DIN, Cord Grip PG9 connection



4-Way

Namur Pattern



Model Code	Use With	Connectors	Nominal Coil Power	Part Number
Solenoid Valve Namur, 3-way, 24 VDC, Mini DIN	NO / NC valves with Spring Return	Mini-DIN Cord Grip PG9	AC = 8.5 watts DC = 10.5 watts	02082887
Solenoid Valve Namur, 3-way, 120 VDC, Mini DIN	NO / NC valves with Spring Return			02082888
Solenoid Valve Namur, 4-way, 24 VDC, Mini DIN	Double Acting valves			02082889
Solenoid Valve Namur, 4-way, 120 VDC, Mini DIN	Double Acting valves			02082890

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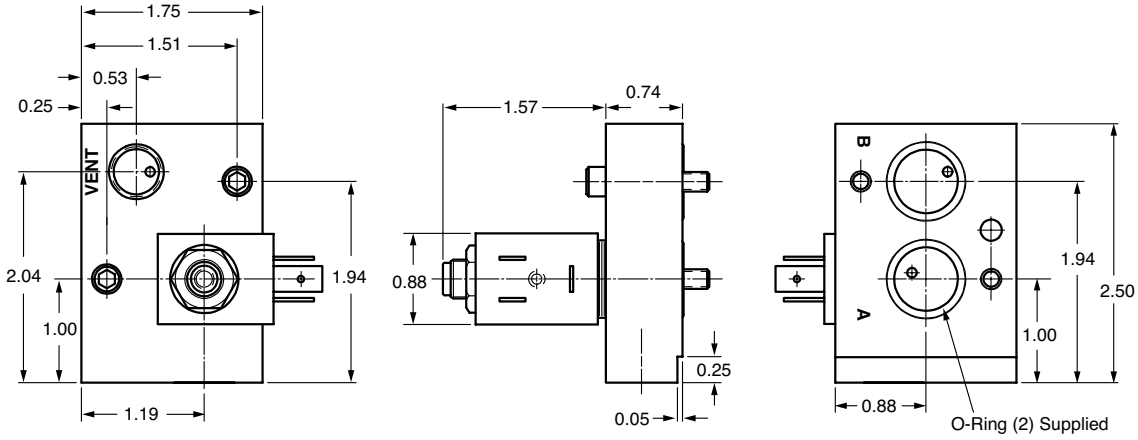
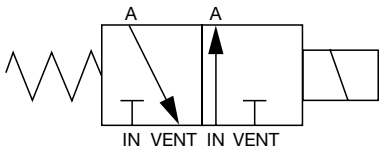
Dimensions

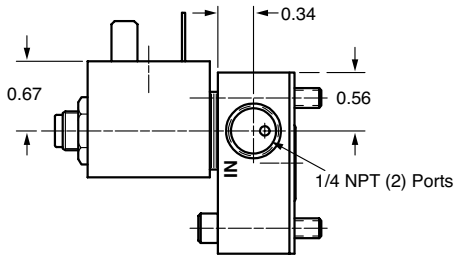
3-way Solenoid Valve used with N.O. or N.C. Valves

2 Sets of bolts provided: #10-24 and M5



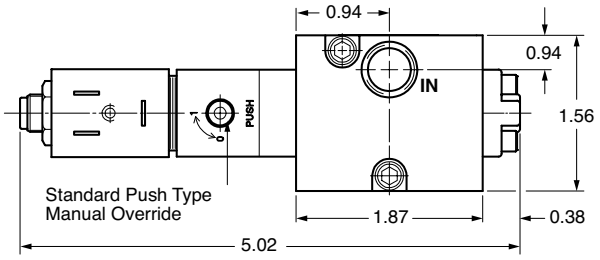
Hydraulic Symbol

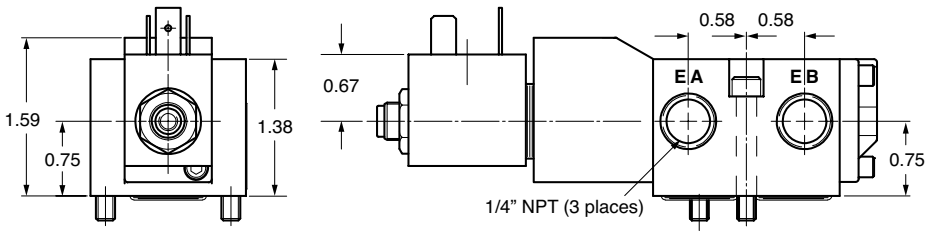




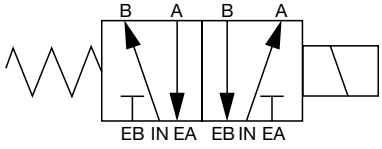
4-way Solenoid Valve used with Double Acting Valves

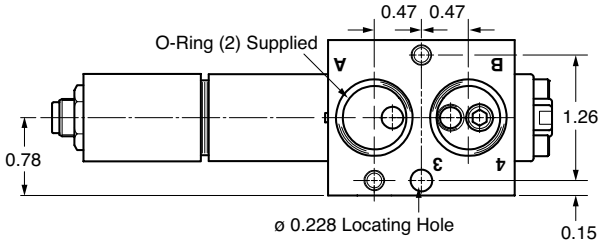
2 Sets of bolts provided: #10-24 and M5





Hydraulic Symbol





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

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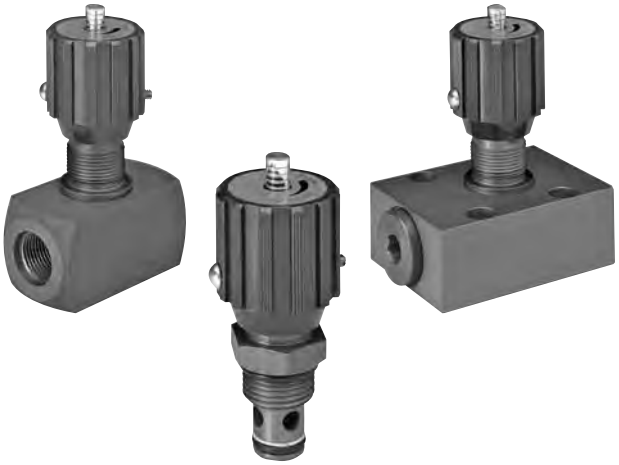
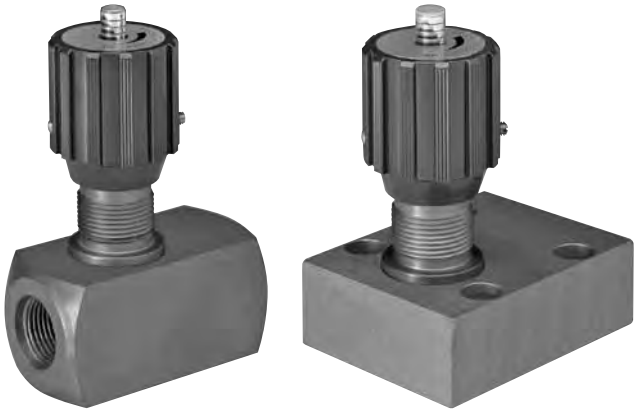
Overview

Needle Valves
DV, DVE & DVP Series *(see page 43)*

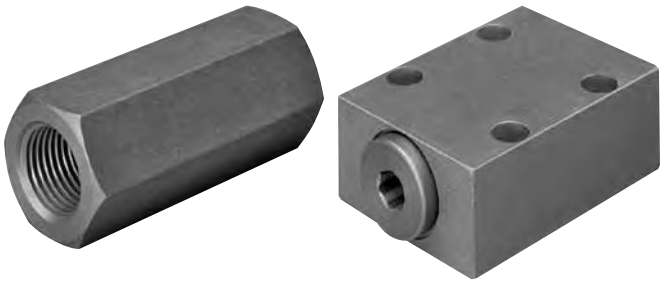


Flow Control Valves
DRV & DRVP Series *(see page 47)*



Pressure Compensated Flow Control Valves
SRVR Series *(see page 51)*

Check Valves
RV & RVP Series *(see page 53)*



Stainless Steel Flow Control Valves
DV, DRV & RV Series *(see page 55)*

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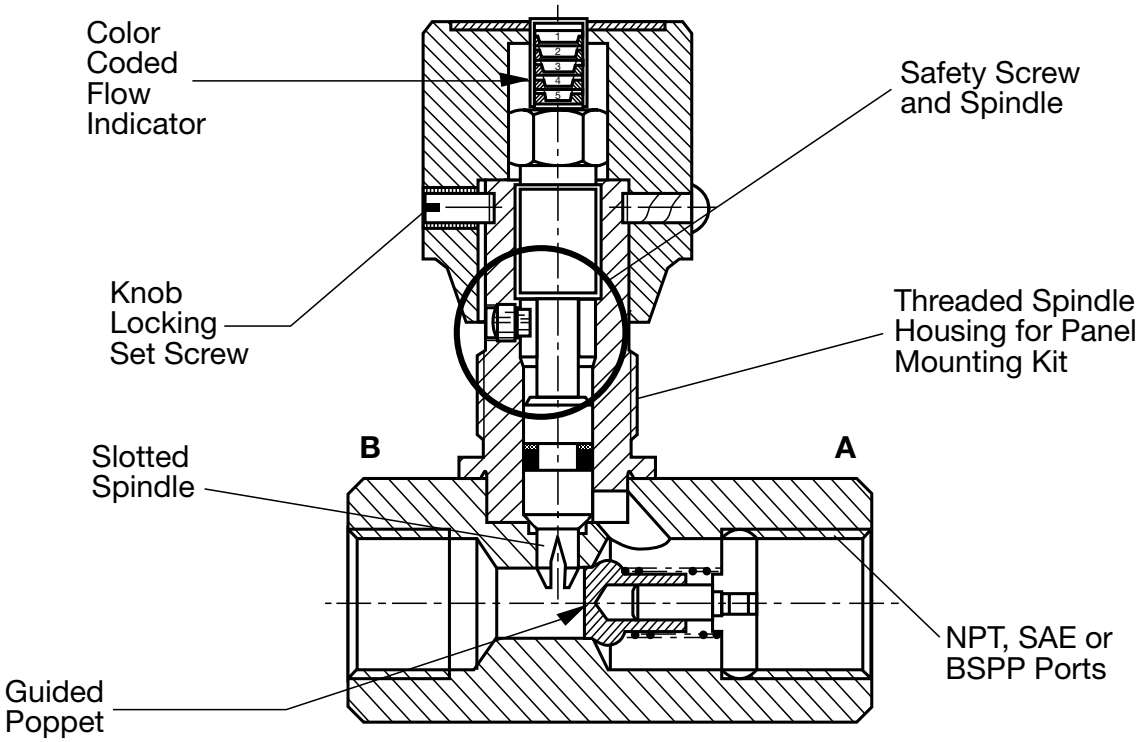
Flow Control Valve Design Features and Options



Introduction

Our complete line of flow control valves are designed and manufactured by our ISO 9001 certified FLUTEC Division.

Description

- 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 featuring a color coded flow indicator for accurate, easy-to read visual flow reference.
- Design modifications and special materials are available for corrosive fluids such as phosphate ester, acids and caustics.

Valve Design

HYDAC flow control valves can be adjusted easily and precisely by means of the control knob. Increasing the number of turns from the fully closed position provides a steady increase of the flow rate. The colored scale permits accurate repetition of settings and the colored triangle on the rising spindle provides a visual indication of the increasing cross section of the flow area. A set screw on the side locks the knob at the desired setting.

HYDAC flow control valves include a unique safety spindle design feature. As the valve spindle is turned counter-clockwise, the spindle shoulder will engage the safety screw limiting the travel of the spindle. The hardened, high-strength steel safety screw is sealed in position to discourage tampering.

Product Features

- Phosphate coated steel valve body
- FPM *(Fluoroelastomer)* seals
- Slotted control spindle for precise and linear flow adjustments
- Exclusive safety spindle design
- Color coded spindle for accurate flow control
- Guided poppets for smoother, chatter free operation

Available Options

- Panel mounting kit
- 25 and 65 PSI cracking pressure springs *(7 psi standard)*
- Zinc Plated Body. Consult HYDAC for price and delivery

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DV, DVE, & DVP Series
Needle Valves

DV Series
Inline Mounting

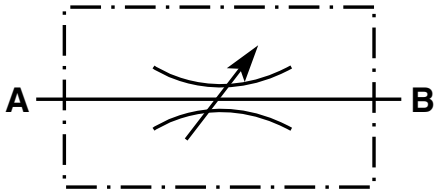
DVP Series
Manifold Mounting

DVE Series
Cartridge Valve

Specifications

- 5000 psi operating Pressure
- 8 Sizes, 1/8" - 1-1/2"
- SAE O-Ring, NPT or BSPP Threaded Connections; Manifold Mounting; and Cartridge Type
- Flows to 80 gpm
- Carbon steel housing
- FPM *(Fluoroelastomer)* O-Rings *(standard)*
- Color coded spindle for accurate flow control
- Provision for panel mounting
- Unique safety spindle design
- Temperature Range: -4° to 212°F at full pressure

Hydraulic Symbol



Model Code

DV - 06 - 01 .X / 5 - S - M

Needle Valve
DV = Inline Mounting
DVP = Manifold Mounting
DVE = Cartridge Valve

Nominal Sizes

DV & DVP Nom. Size		SAE *(DV only)* Tube Size	Thread Size	NPTF *(DV Only)* Pipe Size	Pipe OD	BSPP *(DV Only)* Thread Size
06	=			1/8"	0.405"	G1/8
08	=	-4	7/16-20 UNF	1/4"	0.540"	G1/4
10	=	-6	9/16-18 UNF	3/8"	0.675"	G3/8
12	=	-8	3/4-16 UNF	1/2"	0.840"	G1/2
16	=	-12	1-1/16-12 UN	3/4"	1.050"	G3/4
20	=	-16	1-5/16-12 UN	1"	1.315"	G1
25	=	-20	1-5/8-12 UN	1-1/4"	1.660"	G1 1/4
30	=	-24	1-7/8-12 UN	1-1/2"	1.900	G1 1/2

DVE

Nom Size		SAE Cavity	BSPP Cavity
08	=	3/4-16 UNF	G1/2
10	=	7/8-14 UNF	G1/2
12	=	1-1/16-12 UN	G3/4
16	=	1-5/16-12 UN	G1

Housing Material
01 = Carbon Steel

Modification Number

Port Configuration
(omit) = DVP Only
5 = NPTF - ANSI B1.20.3
12 = SAE - SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing
0 = BSPP to DIN 3852, Part 2-X

Supplementary Details
S = Panel Mounting Kit *(not available in sizes 20, 25, 30)*

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

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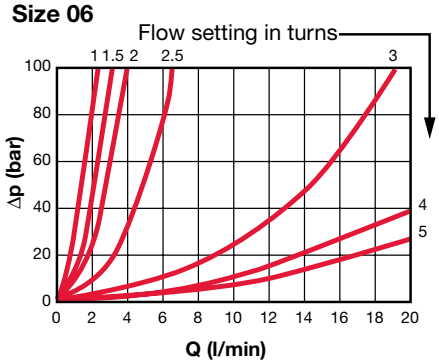
Pressure Drop Curves

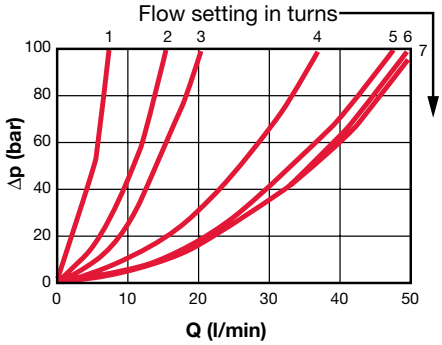
DV, DVP, DRV, DRVP Series

Flow Direction: A to B / Throttled Flow

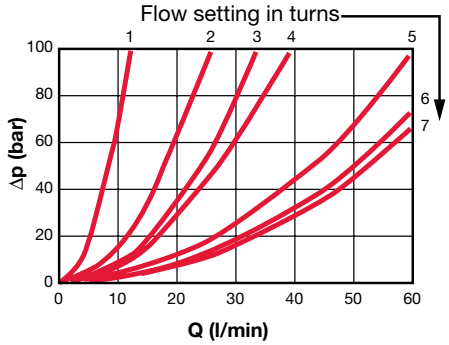
Size 06



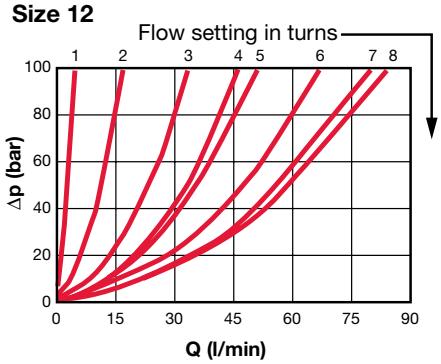
Size 08



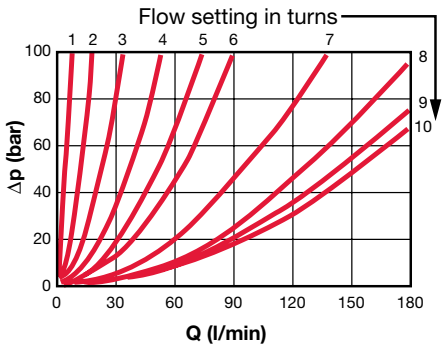
Size 10



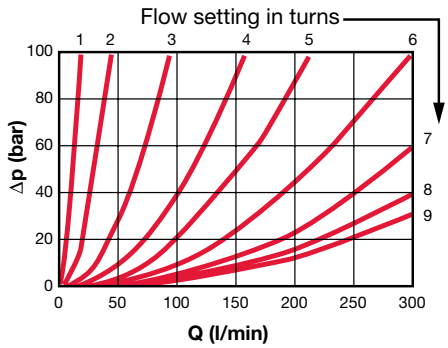
Size 12



Size 16



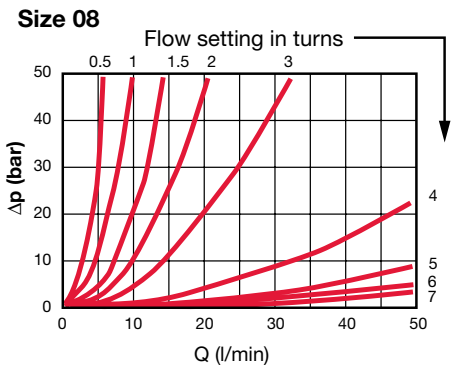
Size 20, 25, 30



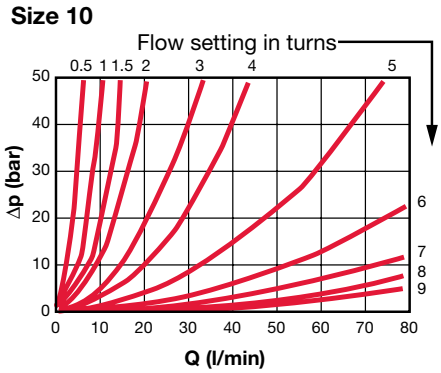
DVE Cartridge Flow Control Valves

Flow Direction: A to B / Throttled Flow

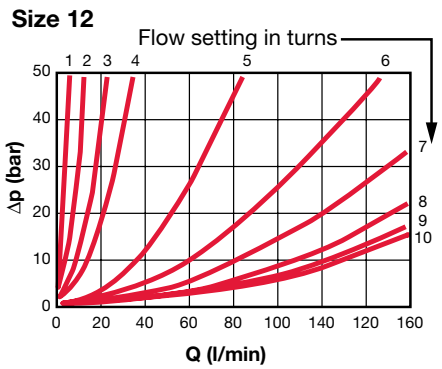
Size 08



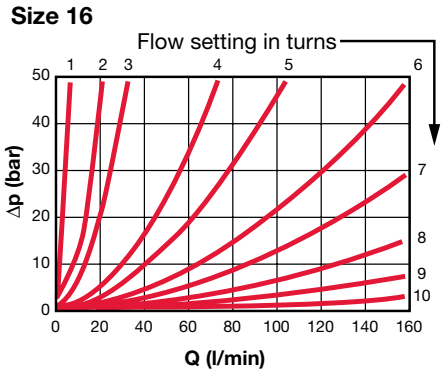
Size 10



Size 12



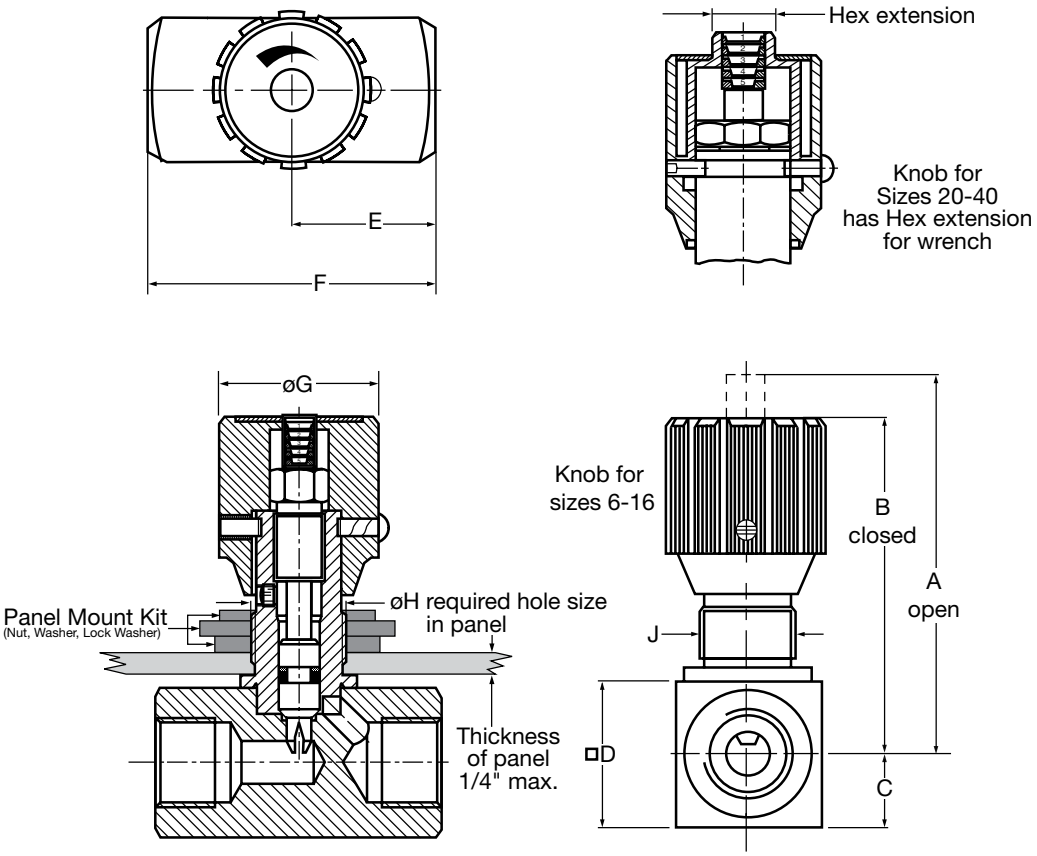
Size 16



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

Dimensions

DV Series Inline Needle Valve



Model Code	Port Size		A	B	C	D	E	F	øG	øH	J[1)]	Hex	Weight
	NPTF	SAE											
DV-06	1/8”	5/16-24UNF	2.16 (55)	1.97 (50)	0.31 (8)	0.63 (16)	0.75 (19)	1.50 (38)	0.94 (24)	0.51 (13)	Pg 7 thread	-	0.26 (0.12)
DV-08	1/4”	7/16-20UNF	2.83 (72)	2.56 (65)	0.49 (12.5)	0.98 (25)	0.94 (24)	1.89 (48)	1.14 (29)	0.75 (19)	Pg 11 thread	-	0.55 (0.25)
DV-10	3/8”	9/16-18UNF	2.91 (74)	2.64 (67)	0.59 (15)	1.18 (30)	1.14 (29)	2.28 (58)	1.14 (29)	0.75 (19)	Pg 11 thread	-	0.88 (0.40)
DV-12	1/2”	3/4-16UNF	3.62 (92)	3.23 (82)	0.69 (17.5)	1.38 (35)	1.34 (34)	2.68 (68)	1.50 (38)	0.91 (23)	Pg 16 thread	-	1.5 (0.70)
DV-16	3/4”	1-1/16-12UN	4.17 (105)	3.78 (96)	0.89 (22.5)	1.77 (45)	1.53 (39)	3.07 (78)	1.50 (38)	0.91 (23)	Pg 16 thread	-	2.6 (1.2)
DV-20	1”	1-5/16-12UN	5.71 (145)	5.04 (128)	0.98 (25)	1.97 (50)	2.13 (54)	4.25 (108)	1.93 (49)	1.50 (38)	Pg 29 thread	3/4 (19)	4.6 (2.1)
DV-25	1-1/4”	1-5/8-12UN	5.91 (150)	5.24 (133)	1.18 (30)	2.36 (60)	2.13 (54)	4.25 (108)	1.93 (49)	1.50 (38)	Pg 29 thread	3/4 (19)	6.2 (2.8)
DV-30	1-1/2”	1-7/8-12UN	6.10 (155)	5.43 (138)	1.38 (35)	2.76 (70)	2.13 (54)	4.25 (108)	1.93 (49)	1.50 (38)	Pg 29 thread	3/4 (19)	7.7 (3.5)

Panel Mount Kits

Size	Model Code	Part Number
6	Kit Panel Mount DV06	00705300
8/10	Kit Panel Mount DV08	00705310
12/16	Kit Panel Mount DV12	00705302

1) Note: Pg style thread per DIN 40430
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)
*Dependent upon valve and seal materials selected.

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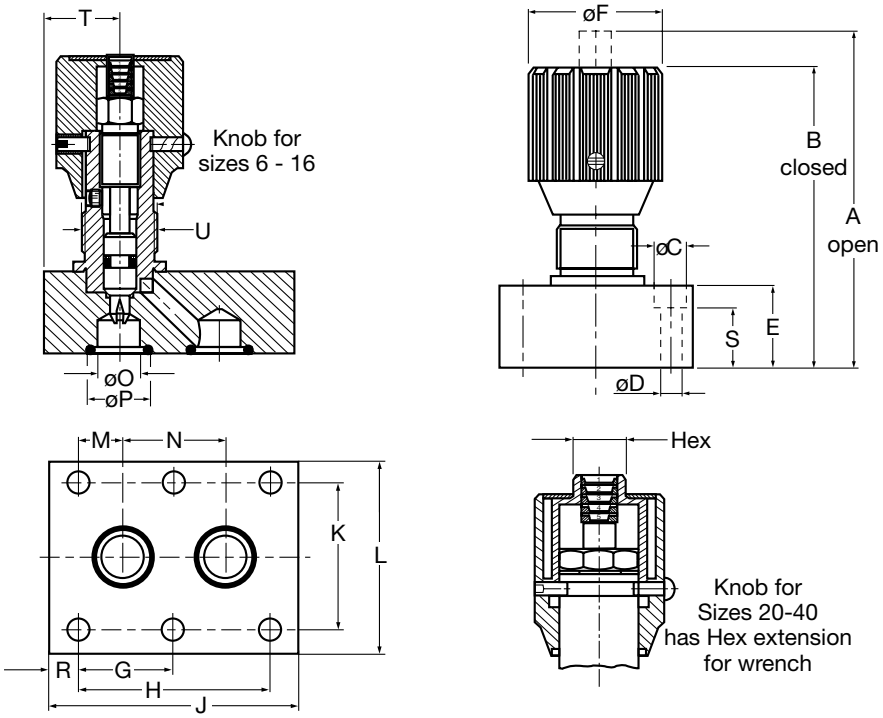
Dimensions

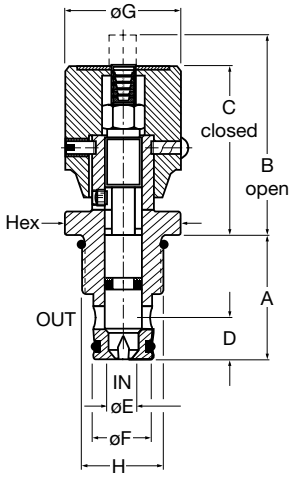
DVP Manifold Mount Needle Valve



Model Code	Nom. Size	A	B	øC	øD	E	øF	G[1]	H	J	K	L	M	N	øO	øP	R	S	T	U[2]	Hex	Wt.
DVP-06	1/8”	2.48 (63)	2.28 (58)	.43 (11)	.26 (6.6)	.63 (16)	.94 (24)	–	.748 (19)	1.38 (35)	1.112 (28.5)	1.63 (41.5)	0.059 (1.5)	.630 (16)	0.197 (5)	0.382 (9.7)	0.315 (8)	0.35 (9)	0.37 (9.5)	Pg 7 thread	–	0.44 (0.2)
DVP-08	1/4”	3.11 (79)	2.83 (72)	.43 (11)	.26 (6.6)	.79 (20)	1.14 (29)	–	1.378 (35)	1.87 (47.5)	1.319 (33.5)	1.81 (46)	0.177 (4.5)	1.004 (25.5)	0.276 (7)	0.500 (12.7)	0.256 (6.5)	0.51 (13)	0.47 (12)	Pg 11 thread	–	0.88 (0.4)
DVP-10	3/8”	3.31 (84)	3.03 (77)	.43 (11)	.26 (6.6)	.98 (25)	1.14 (29)	–	1.319 (33.5)	2.01 (51)	1.496 (38)	2.01 (51)	0.165 (4.2)	1.004 (25.5)	0.394 (10)	0.614 (15.6)	0.335 (8.5)	0.71 (18)	0.55 (14)	Pg 11 thread	–	1.3 (0.6)
DVP-12	1/2”	3.90 (99)	3.50 (89)	.43 (11)	.26 (6.6)	.98 (25)	1.50 (38)	–	1.496 (38)	2.95 (75)	1.752 (44.5)	2.26 (57.5)	0.157 (4.0)	1.181 (30)	0.512 (13)	0.732 (18.6)	0.728 (18.5)	0.71 (18)	0.89 (22.5)	Pg 16 thread	–	2.2 (1.0)
DVP-16	3/4”	4.45 (113)	4.05 (103)	.55 (14)	.35 (9.0)	1.18 (30)	1.50 (38)	1.496 (38)	2.992 (76)	3.68 (93.5)	2.126 (54)	2.76 (70)	0.433 (11)	2.126 (54)	0.669 (17)	0.965 (24.5)	0.335 (8.5)	0.83 (21)	0.77 (19.5)	Pg 16 thread	–	3.7 (1.7)
DVP-20	1”	6.5 (165)	5.83 (148)	.55 (14)	.35 (9.0)	1.77 (45)	198 (49)	1.870 (47.5)	3.740 (95)	4.37 (111)	2.362 (60)	3.01 (76.5)	0.753 (19.1)	2.244 (57)	0.866 (22)	1.201 (30.5)	0.315 (8)	1.42 (36)	1.24 (31.5)	Pg 29 thread	3/4 (19)	8.0 (3.6)
DVP-25	1 1/4”	6.5 (165)	5.83 (148)	.71 (18)	.45 (11.5)	1.77 (45)	1.93 (49)	2.362 (60)	4.744 (120.5)	5.63 (143)	2.992 (76)	3.94 (100)	0.819 (20.8)	3.130 (79.5)	1.122 (28.5)	1.472 (37.4)	0.433 (11)	1.34 (34)	1.81 (46)	Pg 29 thread	3/4 (19)	12.1 (5.5)
DVP-30	1 1/2”	6.69 (170)	6.02 (153)	.79 (20)	.55 (14)	1.97 (50)	193 (49)	2.815 (71.5)	5.630 (143)	6.73 (171)	3.622 (92)	4.53 (115)	0.937 (23.8)	3.740 (95)	1.378 (35)	1.709 (43.4)	.591 (15)	1.46 (37)	1.53 (39)	Pg 29 thread	3/4 (19)	16.6 (7.5)

DVE Cartridge Valve

Size	A	B	C	D	øE	øF	øG	H	Hex	Wt.
DVE-08	1.00 (26)	1.85 (47)	1.57 (40)	0.472 (12)	0.177 (4.5)	0.559 (14.2)	1.14 (29)	3/4-16UNF	1 1/16 (27)	0.33 (0.15)
DVE-10	1.18 (30)	2.52 (64)	2.13 (54)	0.492 (12.5)	0.315 (8)	0.622 (15.8)	1.50 (38)	7/8-14UNF	1 1/16 (27)	0.55 (0.25)
DVE-12	1.57 (40)	2.56 (65)	2.17 (55)	0.531 (13.5)	0.375 (9.5)	0.807 (20.5)	1.50 (38)	1-1/16-12UNF	1 5/16 (32)	1.10 (0.50)
DVE-16	1.71 (43.5)	2.56 (65)	2.17 (55)	0.689 (17.5)	0.433 (11)	1.060 (26.9)	1.50 (38)	1-5/16-12UNF	1 5/8 (41)	1.54 (0.70)



1) Only 4 mounting holes are used on sizes 06, 08, 10, and 12
2) Pg Style Thread per DIN 40430
Note: Contact factory for certified drawing of cartridge valve cavity.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

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DRV & DRVP Series
Flow Control Valves

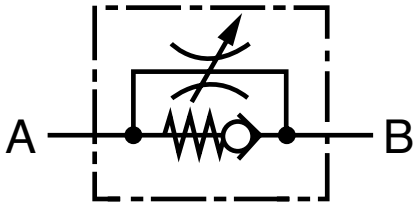
DRV Series
Inline Mounting

DRVP Series
Manifold Mounting

Specifications

- 5000 psi operating pressure
- 8 sizes, 1/8" - 1-1/2"
- NPTF or SAE O-Ring threaded connections, or manifold mounting
- Flows to 80 GPM
- Carbon steel housing
- FPM *(Fluoroelastomer)* O-Rings *(standard)*
- Color coded spindle for accurate flow control
- Provision for panel mounting
- Unique safety spindle design
- Temperature Range: -4° to 212°F at full pressure

Hydraulic Symbol



Model Code

DRV - 06 - 01 . X / 5 - 25 - S-M

Flow Control Valve

DRV	=	Inline Mounting
DRVP	=	Manifold Mounting

Nominal Sizes

Nominal Size *(DRV + DRVP)*		SAE *(DRV only)* Tube Size	SAE *(DRV only)* Thread Size	NPTF *(DRV Only)* Pipe Size	NPTF *(DRV Only)* Pipe OD	BSPP *(DRV Only)* Thread Size
06	=	-2	5/16-24 UNF	1/8"	0.405"	G1/8
08	=	-4	7/16-20 UNF	1/4"	0.540"	G1/4
10	=	-6	9/16-18 UNF	3/8"	0.675"	G3/8
12	=	-8	3/4-16 UNF	1/2"	0.840"	G1/2
16	=	-12	1-1/16-12 UN	3/4"	1.050"	G3/4
20	=	-16	1-5/16-12 UN	1"	1.315"	G1
25	=	-20	1-5/8-12 UN	1-1/4"	1.660"	G1 1/4
30	=	-24	1-7/8-12 UN	1-1/2"	1.900"	G1 1/2

Housing Material

01	=	Carbon Steel

Modification Number

Port Configuration

(omit)	=	DRVP only
0	=	BSPP to DIN 3852, Part 2 -X
5	=	NPTF *(ANSI B1.20.3)*
12	=	SAE - SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing

Cracking Pressure

(omit)	=	7 PSI standard
25	=	25 PSI optional
65	=	65 PSI optional

Supplementary Details

S	=	Panel Mounting Kit *(not available in sizes 20, 25, 30)*

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

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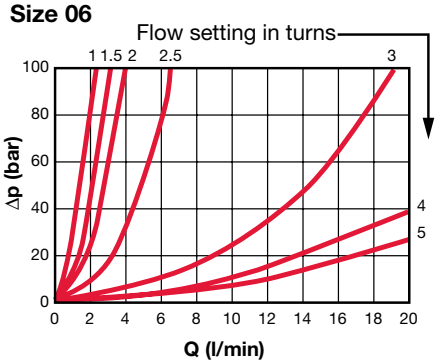
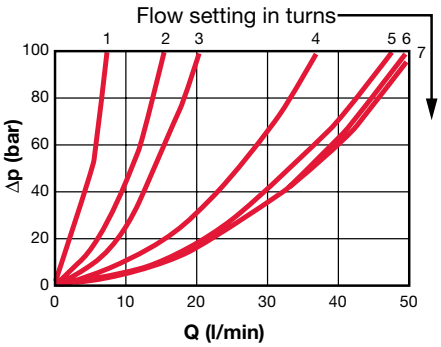
Pressure Drop Curves

Flow Direction: A to B / Throttled Flow

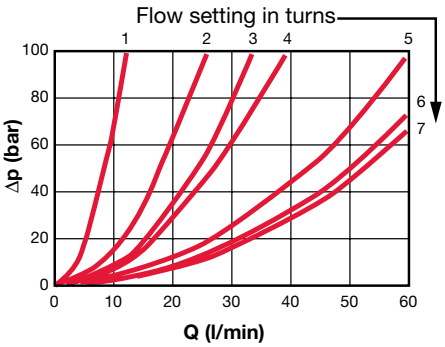
Size 06



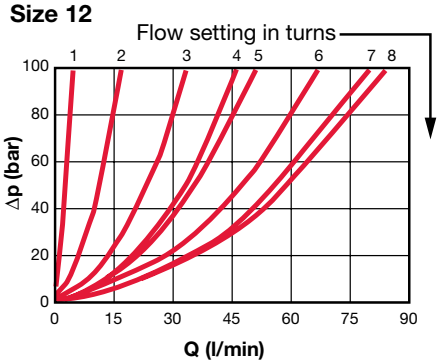
Size 08



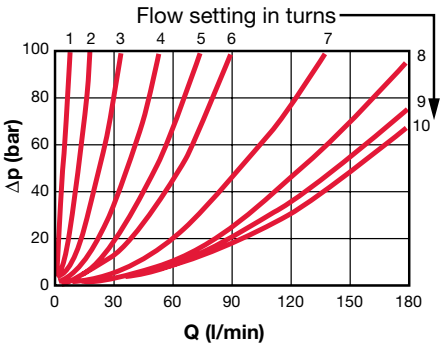
Size 10



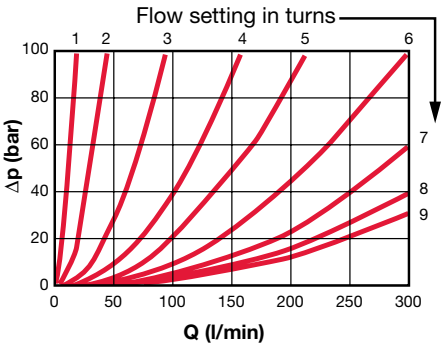
Size 12



Size 16

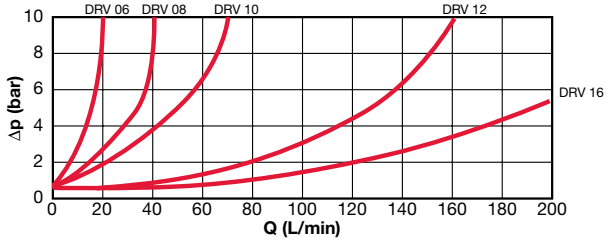


Size 20, 25, 30

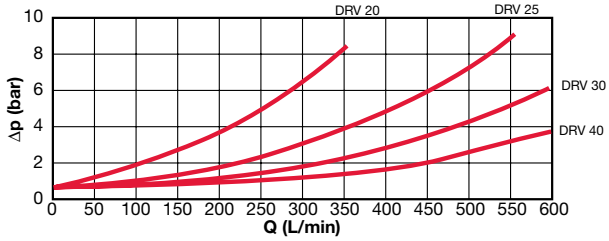


Flow Direction: B to A / Free Flow Through Check Valve

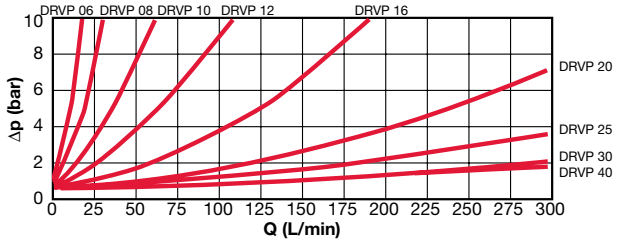
DRV-06-01.X to DRV-16-01.X



DRV-20-01.X to DRV-40-01.X



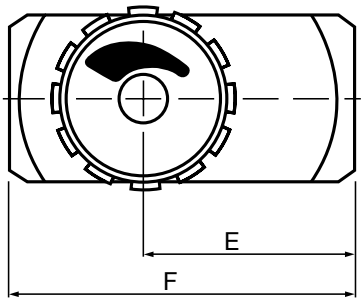
DRVP-06-01.X to DRVP-40-01.X

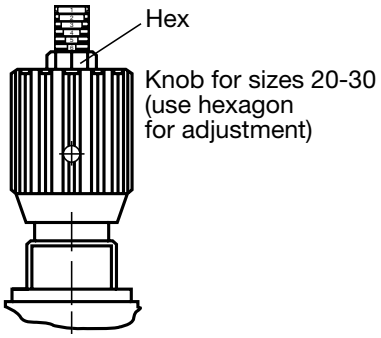


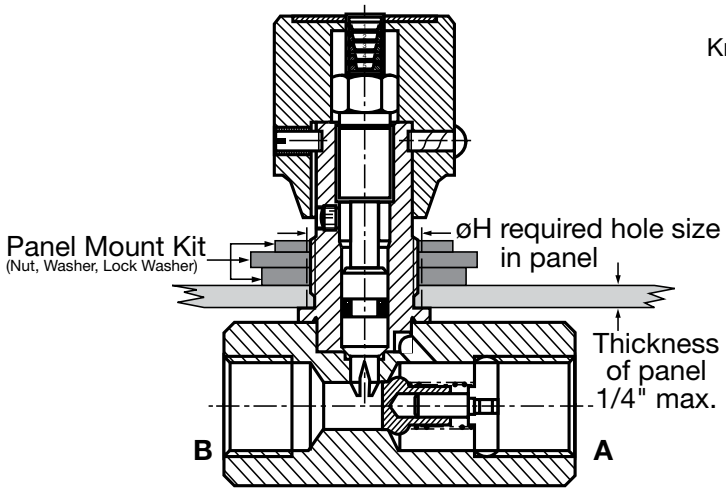
Pressure Drop curves were established by using mineral oil with kinematic viscosity 335 SUS at 86°F / 30°C

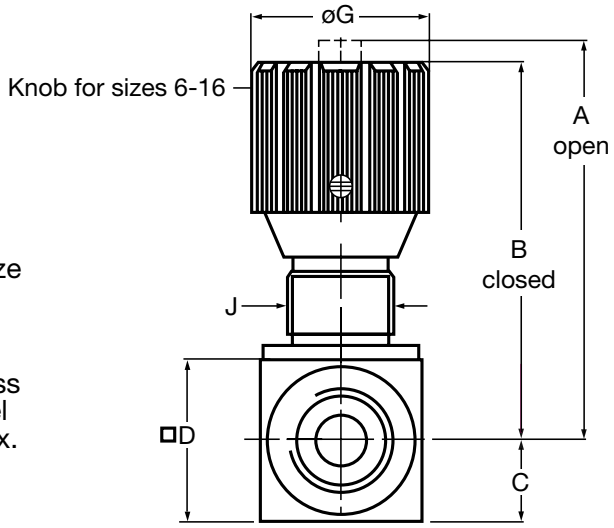
Dimensions

DRV Series









Model Code	Port Size NPTF	Port Size SAE	A	B	C	D	E	F	øG	øH	J[1] thread	Hex	Weight
DRV-06	1/8”	5/16-24UNF (SAE-2)	2.17 (55)	1.97 (50)	0.31 (8)	0.63 (16)	1.02 (26)	1.77 (45)	0.94 (24)	0.51 (13)	Pg 7	–	0.29 (0.13)
DRV-08	1/4”	7/16-20UNF (SAE-4)	2.84 (72)	2.56 (65)	0.49 (12.5)	0.98 (25)	1.32 (33.5)	2.17 (55)	1.14 (29)	0.75 (19)	Pg 11	–	0.66 (0.30)
DRV-10	3/8”	9/16-18UNF (SAE-6)	2.91 (74)	2.64 (67)	0.59 (15)	1.18 (30)	1.61 (41)	2.56 (65)	1.14 (29)	0.75 (19)	Pg 11	–	0.99 (0.45)
DRV-12	1/2”	3/4-16UNF (SAE-8)	3.62 (92)	3.23 (82)	0.69 (17.5)	1.38 (35)	1.73 (44)	2.87 (73)	1.50 (38)	0.91 (23)	Pg 16	–	1.76 (0.80)
DRV-16	3/4”	1 1/16-12UN (SAE-12)	4.17 (106)	3.78 (96)	0.89 (22.5)	1.77 (45)	2.24 (57)	3.46 (88)	1.50 (38)	0.91 (23)	Pg 16	–	2.87 (1.30)
DRV-20	1”	1 5/16-12UN (SAE-16)	5.71 (145)	5.04 (128)	0.98 (25)	1.97 (50)	3.03 (77)	5.00 (127)	1.93 (49)	1.50 (38)	Pg 29	3/4 (19)	5.29 (2.40)
DRV-25	1 1/4”	1 5/8-12UN (SAE-20)	5.91 (150)	5.24 (133)	1.18 (30)	2.36 (60)	3.66 (93)	5.63 (143)	1.93 (49)	1.50 (38)	Pg 29	3/4 (19)	7.72 (3.50)
DRV-30	1 1/2”	1 7/8-12UN (SAE-24)	6.10 (155)	5.43 (138)	1.38 (35)	2.76 (70)	4.25 (108)	5.63 (143)	1.93 (49)	1.50 (38)	Pg 29	3/4 (19)	10.14 (4.60)

Panel Mount Kits

Size	Model Code	Part Number
6	Kit Panel Mount DV06	00705300
8/10	Kit Panel Mount DV08	00705310
12/16	Kit Panel Mount DV12	00705302

1) Pg style thread per DIN 40430
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

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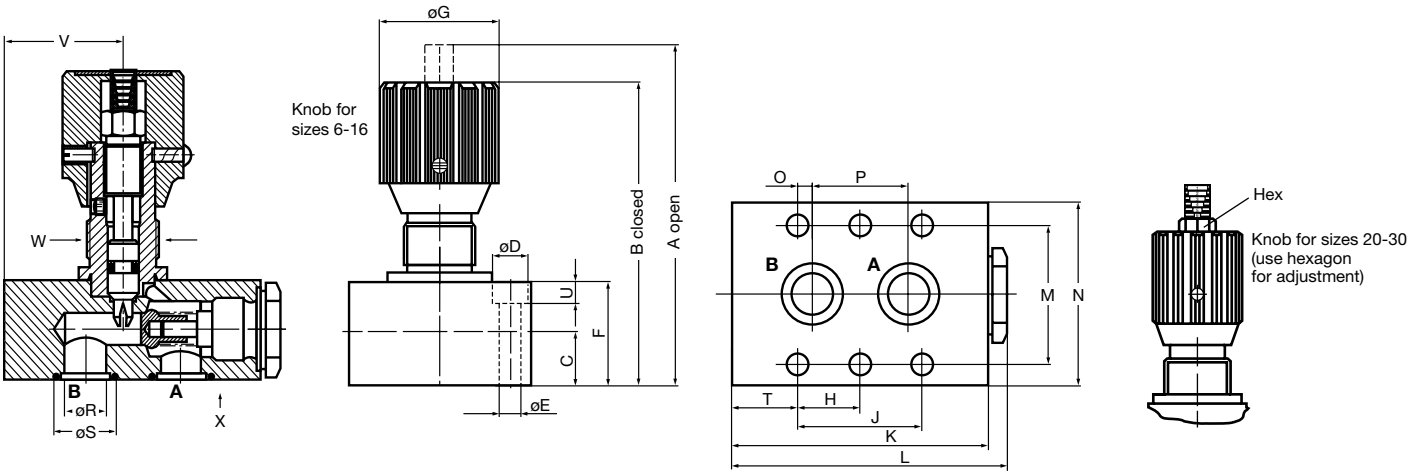
Dimensions

DRVP Series



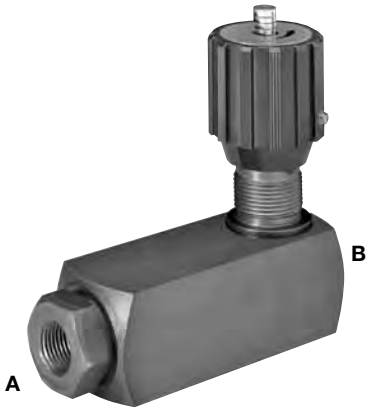
Model Code	Nominal Size	A	B	C	øD	øE	F	øG	H[1]	J	K	L
DRVP-06	1/8”	2.48 (63)	2.28 (58)	0.31 (8)	0.43 (11)	0.26 (6.6)	0.63 (16)	0.94 (24)	–	7.48 (19)	1.63 (41.5)	1.81 (46)
DRVP-08	1/4”	3.11 (79)	2.83 (72)	0.39 (10)	0.43 (11)	0.26 (6.6)	0.79 (20)	1.14 (29)	–	1.378 (35)	2.50 (63.5)	2.64 (67)
DRVP-10	3/8”	3.31 (84)	3.03 (77)	0.49 (12.5)	0.43 (11)	0.26 (6.6)	0.98 (25)	1.14 (29)	–	1.319 (33.5)	2.76 (70)	2.91 (74)
DRVP-12	1/2”	4.17 (106)	3.78 (96)	0.63 (16)	0.43 (11)	0.26 (6.6)	1.26 (32)	1.50 (38)	–	1.496 (38)	3.15 (80)	3.33 (84.5)
DRVP-16	3/4”	5.04 (128)	4.65 (118)	0.89 (22.5)	0.55 (14)	0.35 (9)	1.77 (45)	1.50 (38)	1.496 (38)	2.992 (76)	4.09 (104)	4.31 (109.5)
DRVP-20	1”	6.69 (170)	6.02 (153)	0.98 (25)	0.55 (14)	0.35 (9)	1.97 (50)	1.93 (49)	1.870 (47.5)	3.740 (95)	5.00 (127)	5.24 (133)
DRVP-25	1 1/4”	6.89 (175)	6.22 (158)	1.08 (27.5)	0.71 (18)	0.45 (11.5)	2.16 (55)	1.93 (49)	2.362 (60)	4.744 (120.5)	6.50 (165)	6.77 (172)
DRVP-30	1 1/2”	7.68 (195)	7.01 (178)	1.48 (37.5)	0.79 (20)	0.55 (14)	2.95 (75)	1.93 (49)	2.815 (71.5)	5.630 (143)	7.32 (186)	7.72 (196)

Model Code	Nominal Size	M	N	O	P	øR	øS	T	U	V	W[2] thread	Hex	Weight
DRVP-06	1/8”	1.122 (28.5)	1.63 (41.5)	0.63 (1.6)	0.630 (16)	0.20 (5)	0.382 (9.7)	0.252 (6.4)	0.28 (7)	0.53 (13.5)	Pg 7	–	0.57 (0.26)
DRVP-08	1/4”	1.319 (33.5)	1.81 (46)	0.189 (4.8)	1.004 (25.5)	0.28 (7)	0.500 (12.7)	0.559 (14.2)	0.28 (7)	1.22 (31)	Pg 11	–	1.10 (0.50)
DRVP-10	3/8”	1.496 (38)	2.01 (51)	0.157 (4)	1.004 (25.5)	0.39 (10)	0.614 (15.6)	0.709 (18)	0.28 (7)	1.16 (29.5)	Pg 11	–	1.76 (0.80)
DRVP-12	1/2”	1.752 (44.5)	2.26 (57.5)	0.157 (4)	1.181 (30)	0.51 (13)	0.732 (18.6)	0.827 (21)	0.28 (7)	1.44 (36.5)	Pg 16	–	2.42 (1.10)
DRVP-16	3/4”	2.126 (54)	2.76 (70)	0.433 (11)	2.126 (54)	0.67 (17)	0.965 (24.5)	0.551 (14)	0.35 (9)	1.93 (49)	Pg 16	–	5.51 (2.50)
DRVP-20	1”	2.362 (60)	3.01 (76.5)	0.748 (19)	2.244 (57)	0.87 (22)	1.201 (30.5)	0.630 (16)	0.35 (9)	1.93 (49)	Pg 29	3/4 (19)	8.60 (3.90)
DRVP-25	1 1/4”	2.992 (76)	3.94 (100)	0.811 (20.6)	3.130 (79.5)	1.12 (28.5)	1.472 (37.4)	0.591 (15)	0.43 (11)	3.03 (77)	Pg 29	3/4 (19)	14.77 (6.70)
DRVP-30	1 1/2”	3.622 (92)	4.53 (115)	0.937 (23.8)	3.740 (95)	1.38 (35)	1.709 (43.4)	0.591 (15)	0.51 (13)	3.35 (85)	Pg 29	3/4 (19)	24.25 (11.0)

1) Only 4 mounting holes are used on sizes 06, 08, 10, & 12
2) Pg style thread per DIN 40430
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

www.comoso.com

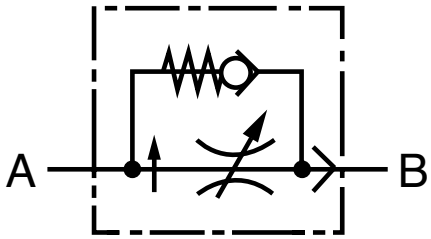
SRVR Series
Pressure Compensated Flow Control Valves



Specifications

- 4 sizes, 1/4" - 3/4"
- Working Pressure:
  Inlet: 102 psi min. / 3045 psi max.
  Outlet: 0 psi min. / 2944 psi max.
- Flows to 24 gpm
- NPTF Connections
- Carbon Steel Housing
- FPM *(Fluoroelastomer)* O-Rings *(standard)*
- Color coded spindle for accurate flow control
- Provision for panel mounting
- Unique safety spindle design
- Temperature Range: -4˚ to 212˚F at full pressure
- Viscosity Range: 13 SUS min. / 1781 SUS max.

Hydraulic Symbol



Model Code

SRVR - 08 - 01 .X / 5 - S

Pressure Compensated Flow Control Valve
SRVR = Flow Control Valve *(with internal check valve)*

Nominal Size

		NPTF Only Pipe Size	NPTF Only Pipe OD
08	=	1/4"	0.540"
10	=	3/8"	0.675"
12	=	1/2"	0.840"
16	=	3/4"	1.050"

Housing Material
01 = Carbon Steel

Modification Number

Port Configuration
0 = BSPP to DIN 3852, Part 2 -X
5 = NPTF (ANSI B1.20.3)

Supplementary Details
S = Panel Mounting Kit

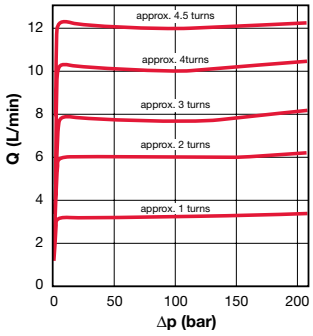
Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

www.comoso.com

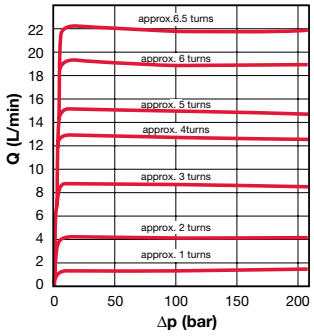
Pressure Drop Curves

Flow Direction: A to B / Throttled Flow

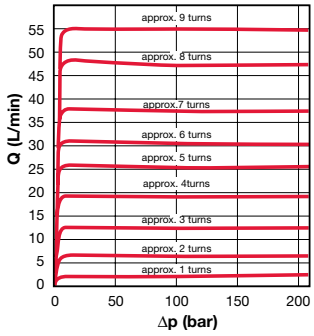
Size 08



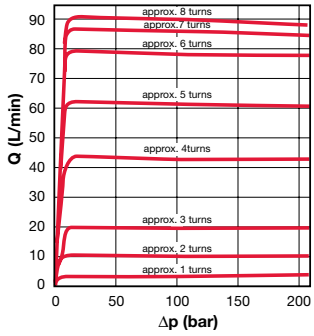
Size 10



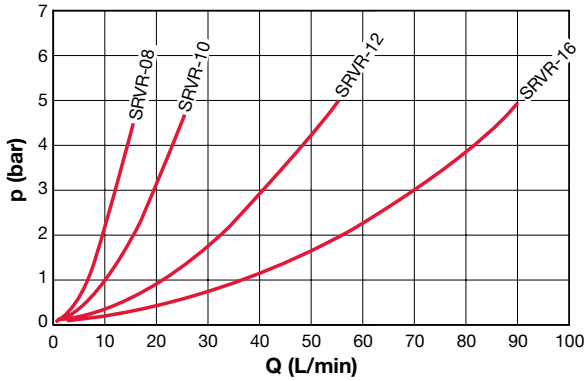
Size 12



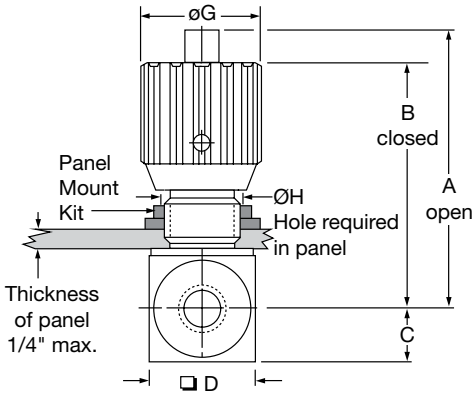
Size 16

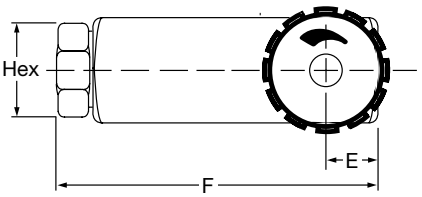


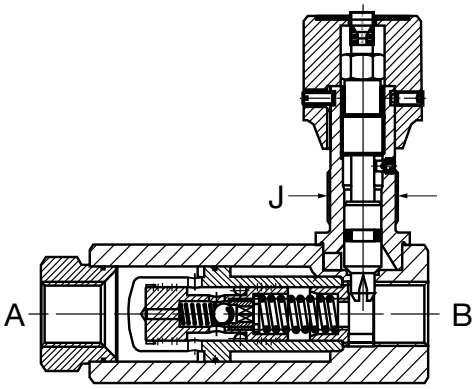
Flow Direction: B to A / Free Flow Through Check Valve



Dimensions







Model Code	Size	A	B	C	D	E	F	Ø G	ØH	J[1] thread	Hex	Weight
SRVR-08	1/4" NPTF	2.91 (74)	2.64 (67)	0.59 (15)	1.18 (30)	0.69 (17.5)	3.62 (92)	1.14 (29)	0.75 (19)	Pg 11	0.94 (24)	1.3 (0.6)
SRVR-10	3/8" NPTF	3.62 (92)	3.23 (82)	0.69 (17.5)	1.38 (35)	0.71 (18)	4.13 (105)	1.50 (38)	0.91 (23)	Pg 16	1.06 (27)	2.0 (0.9)
SRVR-12	1/2" NPTF	4.17 (106)	3.78 (96)	0.89 (22.5)	1.77 (45)	0.83 (21)	4.92 (125)	1.50 (38)	0.91 (23)	Pg 16	1.26 (32)	3.8 (1.7)
SRVR-16	3/4" NPTF	4.27 (108.5)	3.88 (98.5)	0.98 (25)	1.97 (50)	1.02 (26)	5.51 (140)	1.50 (38)	0.91 (23)	Pg 16	1.61 (41)	4.9 (2.2)

Panel Mount Kits

Size	Model Code	Part Number
08	Kit Panel Mount DV08	00705310
10/12/16	Kit Panel Mount DV12	00705302

1) Pg style thread per DIN 40430
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

RV & RVP Series
Check Valves

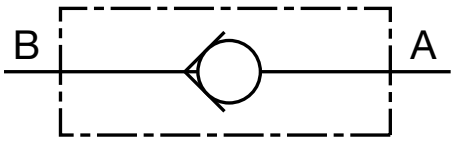
RV Series
Inline Mounting

RVP Series
Manifold Mounting

Specifications

- 5000 psi operating pressure
- 9 Sizes, 1/8" - 2"
- NPT or SAE O-Ring connections and manifold mounting
- Flows to 150 gpm
- Carbon Steel Housing
- FPM *(Fluoroelastomer)* O-Rings *(for RVP series)*
- Metal to metal seal design for poppet
- Hardened and ground steel poppet
- 3 Cracking Pressures: 7 psi *(standard)*, 25 psi and 65 psi *(optional)*
- Temperature Range: -4° to 212°F at full pressure

Hydraulic Symbol



Model Code

RV - 06 - 01 .X / 5 - 25

Check Valve
RV = Inline Mounting
RVP = Manifold Mounting

Nominal Sizes

Nom Size (RV + RVP)		SAE *(RV Only)* Tube Size	Thread Size	NPTF *(RV Only)* Pipe Size	Pipe OD	BSPP *(RV Only)* Thread Size
06	=	-2	5/16-24 UNF	1/8"	0.405"	G1/8
08	=	-4	7/16-20 UNF	1/4"	0.540"	G1/4
10	=	-6	9/16-18 UNF	3/8"	0.675"	G3/8
12	=	-8	3/4-16 UNF	1/2"	0.840"	G1/2
16	=	-12	1-1/16-12 UN	3/4"	1.050'	G3/4
20	=	-16	1-5/16-12 UN	1"	1.315"	G1
25	=	-20	1-5/8-12 UN	1-1/4"	1.660"	G1 1/4
30	=	-24	1-7/8-12 UN	1-1/2"	1.900"	G1 1/2
40	=	-32	2-1/2-12 UN	2"	2.375"	G2

Housing Material
01 = Carbon Steel

Modification Number

Port Configuration
(omit) = RVP only
0 = BSPP to DIN 3852, Part 2-X
5 = NPTF - ANSI/ASME 1.20.3 Taper Pipe Thread
12 = SAE - SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing

Cracking Pressure
(omit) = 7 psi *(standard)*
25 = 25 psi
65 = 65 psi

Note: Not recommended for high-cycle applications!

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

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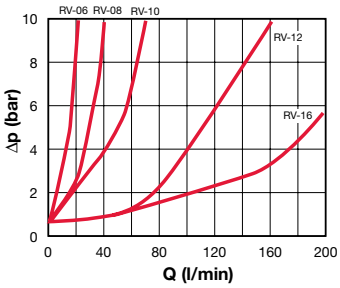
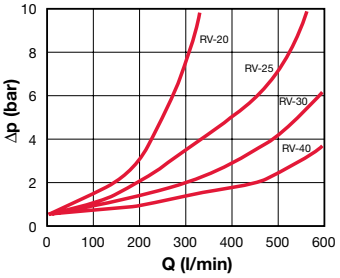
Pressure Drop Curves

Flow Direction: B to A / Free Flow Through Check Valve *(A to B is Completely Blocked)*

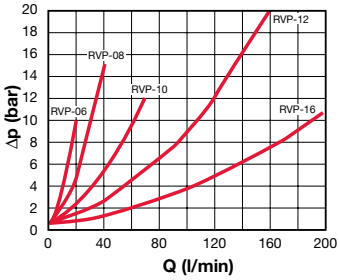
RV-06... to RV-16...



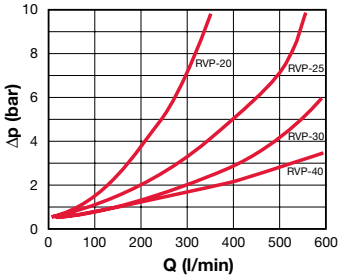
RV-20... to RV-40...



RVP-06... to RVP-16...



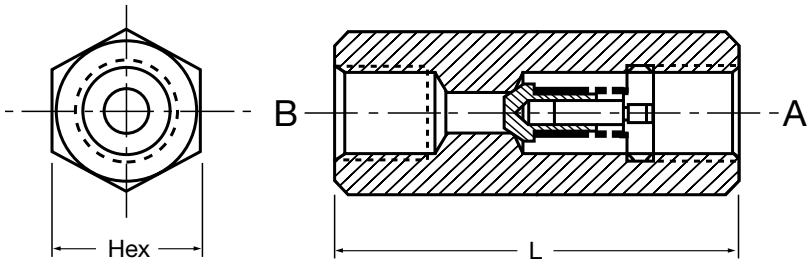
RVP-20... to RVP-40...



Pressure Drop curves were established by using mineral oil with kinematic viscosity 335 SUS at 86°F / 30°C

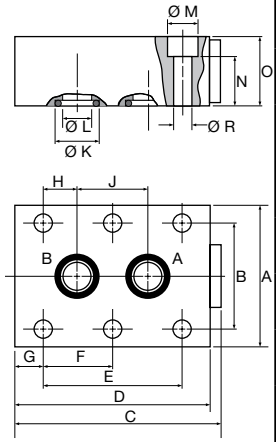
Dimensions

RV Inline Check Valves



Model Code	Port Size NPT	Port Size SAE	Hex	L	Weight
RV-06	1/8”	5/16-24 UNF	11/16 (17)	1.77 (45)	0.22 (0.1)
RV-08	1/4”	7/16-20 UNF	3/4 (19)	2.17 (55)	0.44 (0.2)
RV-10	3/8”	9/16-18 UNF	1 (24)	2.60 (65)	0.44 (0.2)
RV-12	1/2”	3/4-16 UNF	1 1/4 (30)	2.87 (73)	0.66 (0.3)
RV-16	3/4”	1 1/16-12 UN	1 7/16 (36)	3.46 (88)	1.1 (0.5)
RV-20	1”	1 5/16-12 UN	1 13/16 (46)	5.00 (127)	2.4 (1.1)
RV-25	1-1/4”	1 5/8-12 UN	2 3/8 (60)	5.63 (143)	4.0 (1.8)
RV-30	1-1/2”	1 7/8-12 UN	2 9/16 (65)	5.63 (143)	5.7 (2.6)
RV-40	2”	2 1/2-12 UN	3 3/16 (80)	6.50 (165)	9.7 (4.4)

RVP Manifold Mounted Check Valves



Model Code	A	B	C	D	E	F[1]	G	H	J	K	L	M	N	O	R	Wt.
RVP-06	1.63 (41.5)	1.12 (28.5)	1.31 (46)	1.63 (41.5)	0.75 (19)	–	0.25 (6.4)	0.06 (1.6)	0.63 (16)	0.38 (9.7)	0.2 (5)	0.43 (11)	0.35 (9)	0.63 (16)	0.26 (6.6)	0.4 (0.2)
RVP-08	1.81 (46)	1.32 (33.5)	2.64 (67)	2.5 (63.5)	1.38 (35)	–	0.56 (14.2)	0.19 (4.8)	1.00 (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)
RVP-10	2.01 (51)	1.50 (38)	2.81 (74)	2.76 (70)	1.32 (33.5)	–	0.71 (18)	0.16 (4)	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)
RVP-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)	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 (1.0)
RVP-16	2.76 (70)	2.13 (54)	4.31 (109)	4.09 (104)	2.99 (76)	1.50 (38)	0.55 (14)	0.43 (11)	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)
RVP-20	3.01 (76.5)	2.36 (60)	5.24 (133)	5.00 (127)	3.74 (95)	1.87 (47.5)	0.63 (16)	0.75 (19)	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)
RVP-25	3.94 (100)	2.99 (76)	6.77 (172)	6.50 (165)	4.74 (120.5)	2.36 (60)	0.59 (15)	0.81 (20.6)	3.13 (79.5)	1.47 (37.4)	1.12 (28)	0.71 (18)	1.73 (44)	2.17 (55)	0.45 (11.5)	12.8 (5.8)
RVP-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)	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)
RVP-40	5.51 (140)	4.37 (111)	7.91 (201)	7.56 (192)	5.26 (133.5)	2.64 (67)	0.63 (16)	1.00 (25.5)	3.50 (89)	2.25 (57.2)	1.85 (47)	0.79 (20)	3.43 (87)	3.94 (100)	0.55 (14)	39.5 (17.9)

1) Only 4 mounting holes are used on sizes 06, 08, 10, & 12
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

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DV, DRV, & RV Series

Stainless Steel Flow Control Valves - Available with BSPP Ports

DV Series
Inline Mounting
Needle Valves

DRV Series
Inline Mounting
Flow Control Valves

RV Series
Inline Mounting
Check valves

Model Code	Part Number	Dimensions
RV-06-30.X/0	00705859	Same as Standard Product See Page 53
RV-08-30.X/0	00705861	
RV-10-30.X/0	00705863	
RV-12-30.X/0	00705865	
RV-16-30.X/0	00705867	
RV-20-30.X/0	00705869	
RV-25-30.X/0	00705895	
RV-30-30.X/0	00707521	
DV-06-30.X/0	00705134	Same as Standard Product See Page 43
DV-08-30.X/0	00705142	
DV-10-30.X/0	00705150	
DV-12-30.X/0	00705158	
DV-16-30.X/0	00705166	
DV-20-30.X/0	00705174	
DV-25-30.X/0	00707424	
DV-30-30.X/0	00705295	
DRV-06-30.X/0	00705634	Same as Standard Product See Page 47
DRV-08-30.X/0	00705642	
DRV-10-30.X/0	00705650	
DRV-12-30.X/0	00705658	
DRV-16-30.X/0	00705666	
DRV-20-30.X/0	00705674	

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

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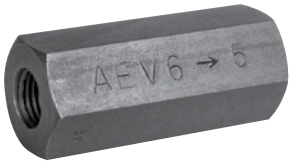
Overview

Hose Break Valves
RB Series & RBE Series *(see pages 57 - 60)*

Shuttle Valves
WVE Series (see page 61)

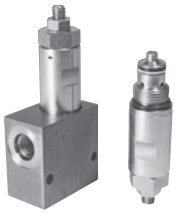
Automatic Air Vent Valves
AEV Series *(see page 62)*



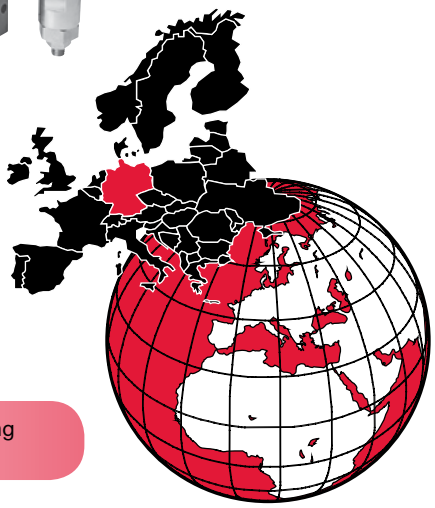
2-Way Solenoid Cartridge Valves
WSM Series *(see pages 63 - 66)*

3-Way Solenoid Cartridge Valves
WSE Series *(see pages 67 - 68)*

Pressure Relief Valves
DB4 Series *(see pages 69 - 70)*



Global Replacement Business



HYDAC Fluidtechnik GmbH is located in Germany and produces Cartridge Valves for the Global Market. The majority of the product that they produce is in the Metric standard. HYDAC Technology Corporation has a division in Chicago, called HHD or the Hydraulic Division, that manufactures Coolers, Power Units, and UNF Cartridge Valves. HYDAC Accessories Bethlehem supports the metric cartridge valve sales in the United States.

For additional information on HYDAC's UNF Cartridge Valve offering please refer to the HYDAC Cartridge Valve Catalog #02080105.

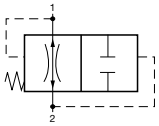
In some cases you will call HYDAC customer service and the part number will not be in our computer system. In these cases we will provide you a replacement quote in a few days. For additional details visit www.hydac.com and click on support, downloads, brochures, Compact Hydraulics and check out the literature.

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

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.

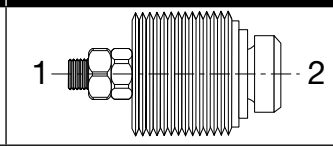
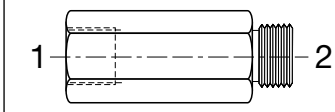
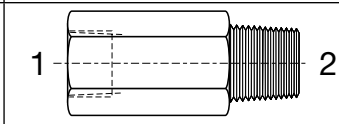
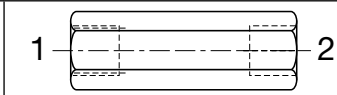
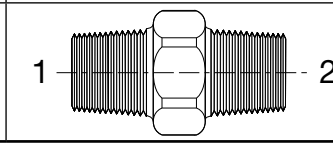
Depending on the pressure P, the leakage rate through the valve is approximately 0 to 6 in^3 / min. If this is excessive, the valve threads can be sealed and made leak-free.

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 of Connections Dependent on Desired Closing Flow Rate *(see below)*		
E		Cartridge Only	–	–	SAE 9/16-18	SAE 3/4-16	SAE 1 1/16-12
XB		Cartridge Valve in Housings	SAE Straight Thread Port	SAE Straight Thread Stud End	SAE 9/16-18	SAE 3/4-16	SAE 1 1/16-12
XB			NPT Port	NPT Male Connector	NPT 3/8 or NPT 1/2	–	NPT 1
XX			SAE Straight Thread Port	SAE Straight Thread Port	–		SAE 1 1/16-12
CC			NPT Male Connector	NPT Male Connector	–	NPT 3/4	–

Closing Flow Rate (min - max) *(from 2 to 1)*	**GPM** / **L/min**	1-4 / 4-15	1.6-12 / 6-45	6.5-32 / 25-120
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 curves on next page. If closing flow must be set by factory, please specify when ordering.			

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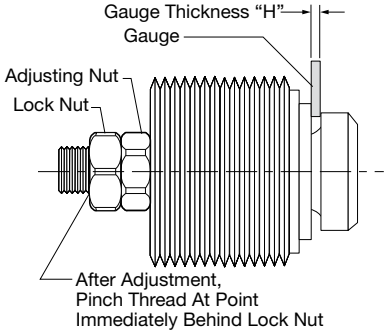
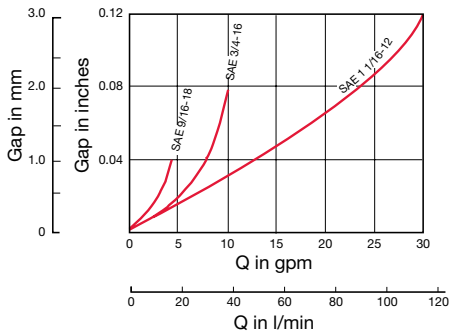
Adjustment Curves for Closing Flow Rate

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.



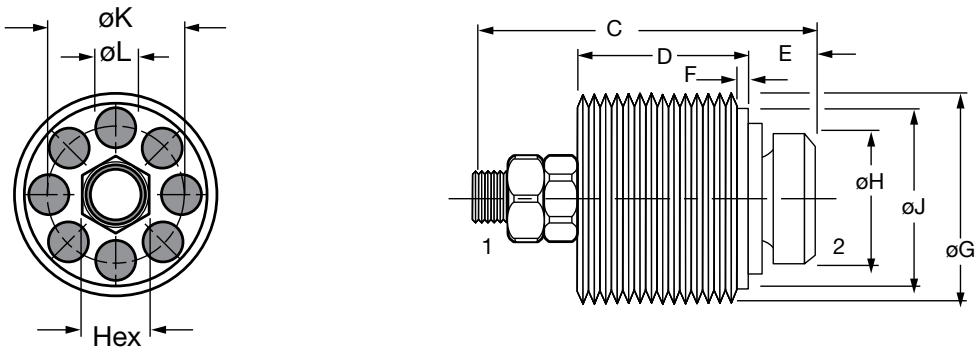


The adjustment curves are valid for cartridge RBE...and for all housing valves RB... in accordance with “Type and Size Codes” charts on previous page. For model RB... the cartridge must be removed from the housing for adjustment.

See special tool for installation and removal on page 60.

Dimensions

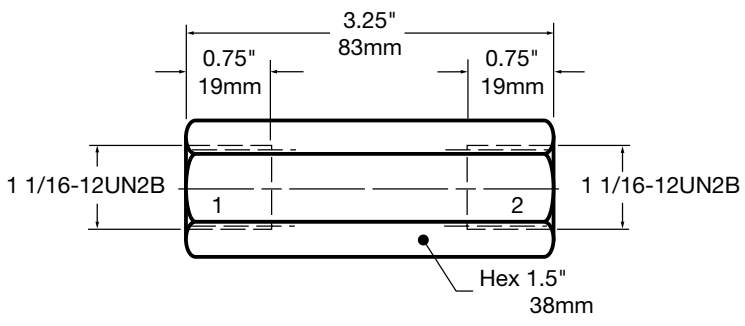
Cartridges



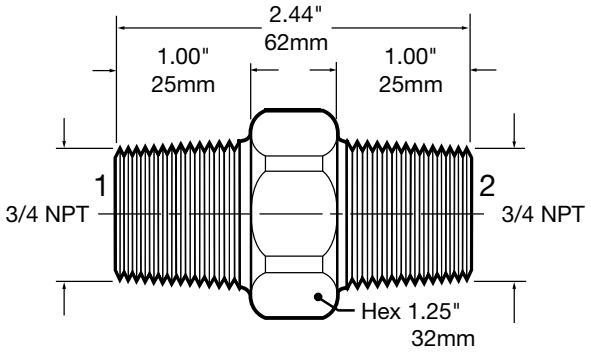
Valve Type	C	D	E	F	øG	øH	øJ	øK	øL	Hex
RBE-SAE 9/16	0.866 (22)	0.453 (11.5)	0.138 (3.5)	0.13 (3)	9/16-18UNF-2B	0.374 (9.5)	0.460 (11.7)	0.315 (8)	0.098 (2.5)	0.197 (5)
RBE-SAE 3/4	1.063 (27)	0.531 (13.5)	0.197 (5)	0.14 (3.5)	3/4-16UNF-2B	0.472 (12)	0.640 (16.3)	0.394 (10)	0.138 (3.5)	0.217 (5.5)
RBE-SAE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

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

RBXX-SAE 1-1/16-12



RBCC-NPT 3/4 Housing Valve



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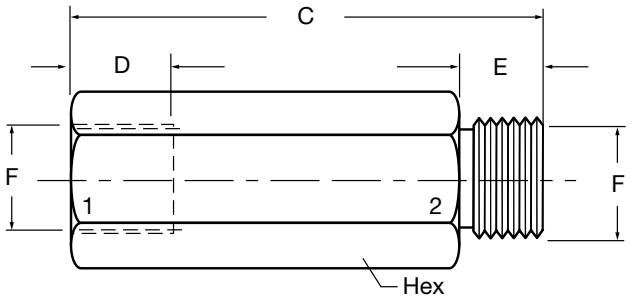
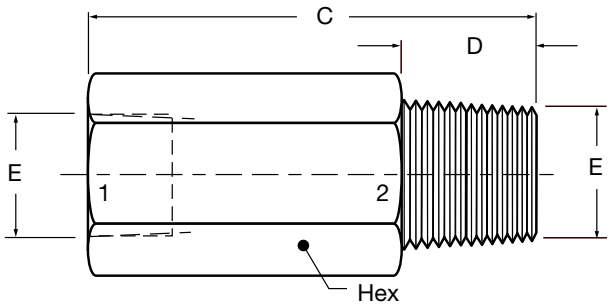
Dimensions

RBXB-... SAE

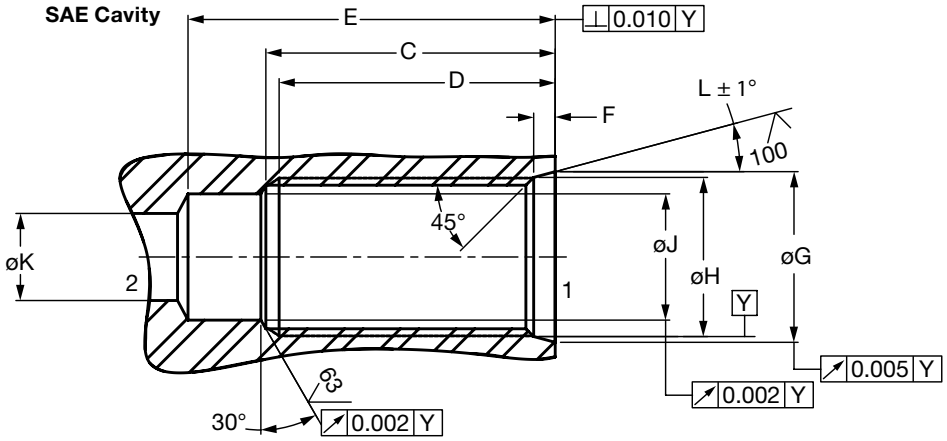


RBXB-... NPT



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)

SAE Cavity



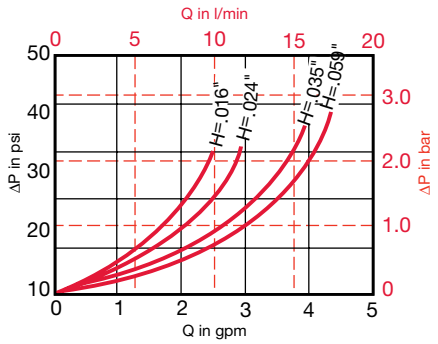
Housing Type	C	D	E	F	øG	øH	øJ	øK Min	L
RBE-SAE 9/16	1.250	1.188	1.56	0.106	0.618	9/16"-18UNF-2B	0.435	0.297	12°
RBE-SAE 3/4	1.375	1.312	1.69	0.106	0.813	3/4"-16UNF-2B	0.600	0.422	15°
RBE-SAE 1 1/16	2.000	1.938	2.44	0.138	1.150	1-1/16"-12UN-2B	0.890	0.609	15°

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches. Port dimensions per SAE J1926/1 unless noted otherwise.

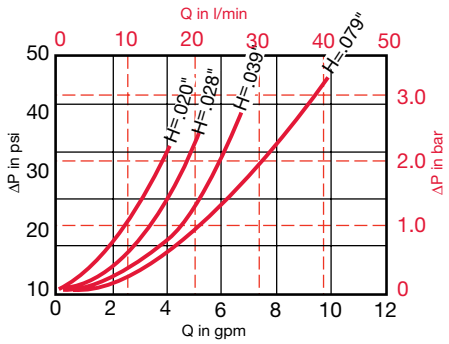
Nominal Flow Curves

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.

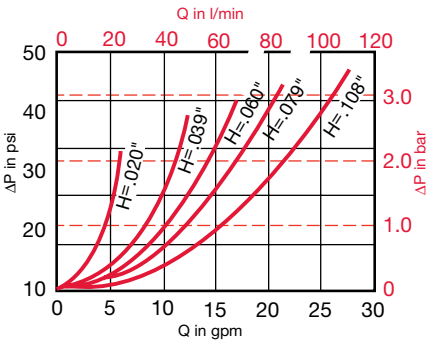
RBE-SAE 9/16 - 18



RBE-SAE 3/4 - 16



RBE-SAE 1-1/16 - 12



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Engineering Data

Design		Flat Seat Valve
Mounting Method	RBE	Cartridge
	RB..	Housing Valve for In-line Installation
Connection		Refer to charts on page 37
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)

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?

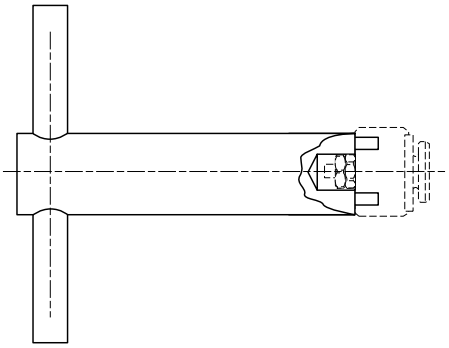
The hose break valve is designed to only be closed in an emergency situation. These valves should not be cycled (opened and closed) with the system. Cycling the valve and/or excessive vibrations will lead to premature failure of the valve components.

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

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

WVE Series
Shuttle Valves

Description

The HYDAC WVE series are shuttle valves with two inlets and one outlet. The inlet with the higher pressure is automatically connected to the outlet. The other inlet is closed. This complies with DIN-ISO 1219. The shuttle valves are cartridge type valves for installation into manifolds and control blocks. The shuttle valves are ball-seat type valves without leakage

Technical Data

Design
- Seat Valve

Mounting Method
- Cartridge

Nominal Size
- (SAE-5) 1/2”-20 UNF

Weight
- (SAE-5) 1/2”-20 UNF...12g

Mounting Position
- Optional

Material
- Carbon Steel

Direction of Flow
- Optional

Operating Pressure Range
- P max. 5000 psi = 350 bar

Temperature Range
- -4° to 104°F (-20° to 80°C)

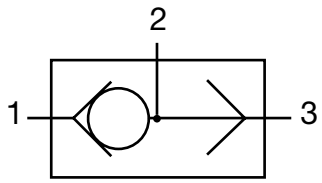
Cross-Over Effect on Shut-off
- negligible

Flow Rate
- Max flow rate 5 gpm (20 lpm) ΔP approx 175 psi (12 bar) at 5 gpm, 168 SSU, 104°F oil

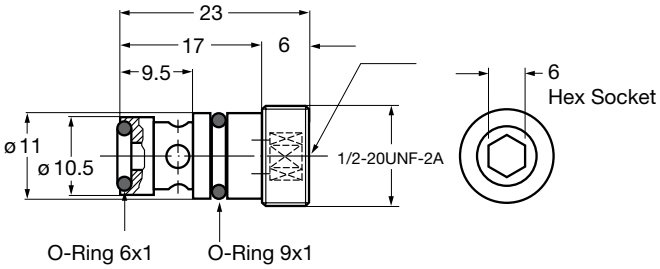
Model Code
WVE-1/2-20UNF-0

Part Number
00710128

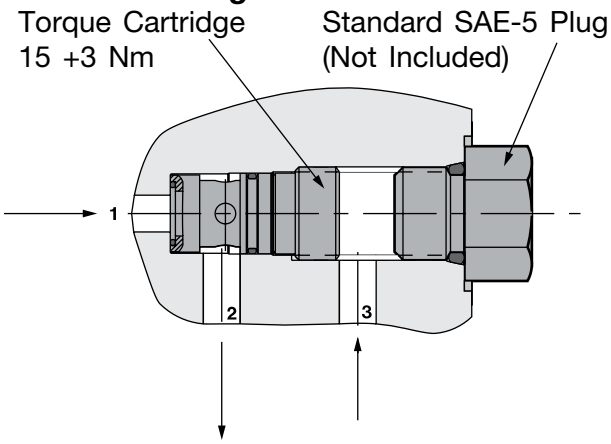
Hydraulic Symbol



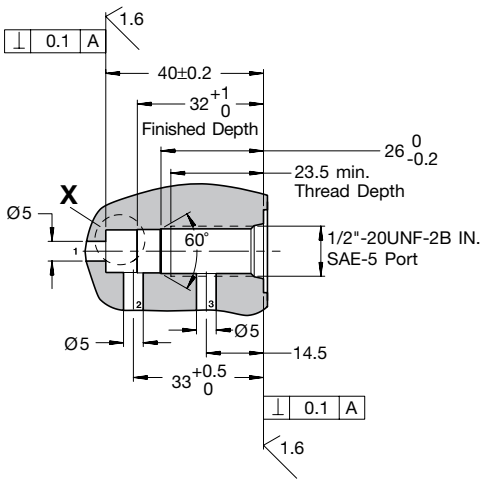
Dimensions

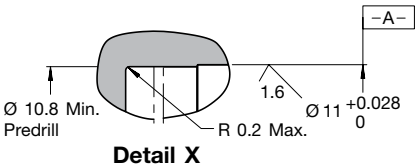


Installation Diagram



Cavity Diagram





Detail X

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in mm

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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

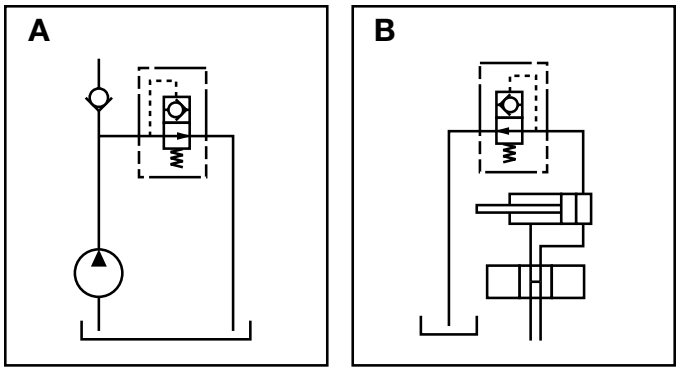
Mounting

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

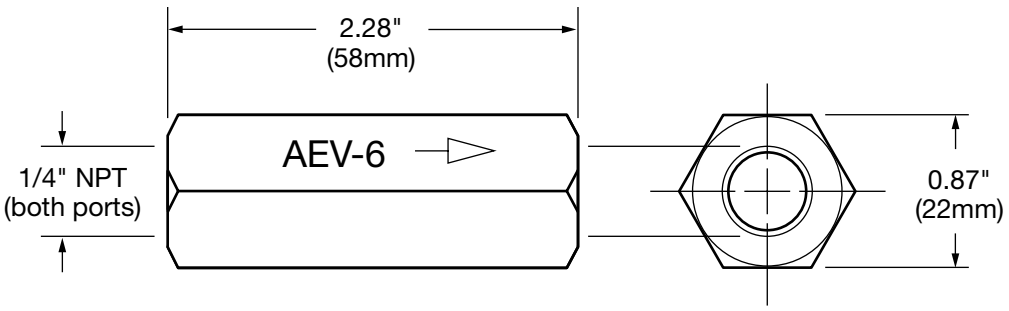
For ventilation of pumps the valve should be mounted adjacent to the pump outlet. For system ventilation the valve should be mounted at the system's highest point.

Mounting Positions

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



Dimensions



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

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WSM Series
2-Way Solenoid Cartridge Valves

Features

- Long life and low noise level due to oil-immersed solenoid armature.
- Electro-magnetic actuation in all standard international DC and AC voltages and many electrical connection types available.
- Minimal wear and long life due to hardened and polished control elements.
- In the closed position the flow paths are shut off by means of a cone seat.
- Solenoid coils can be rotated through 360˚ and replaced without opening the hydraulic system.
- Surfaces are zinc-plated.
- Built-in seals protect solenoid coils from water penetration.
- Compact construction enables space-saving installation in connection housings and control blocks.

Specifications

Operating Pressure
max. 350 bar *(see pages 65-66 for limits)*

Flow rate
max. 40 l/min *(see pages 65-66 for limits)*

Internal leakage
leakfree

Fluid Temperature Range
-4° to 248°F (-20° to 120°C)

Ambient Temperature Range
-4° to 140°F (-20° to 60°C)

Type of Voltage
DC solenoid,
AC voltage is rectified using a bridge rectifier built into the coil

Nominal Current Draw (at 20˚C)
1.5 A at 12 V DC
0.8 A at 24 V DC
0.2 A at 115 V AC

Voltage Tolerance
-15% to 15%

Switch-on Time
100% *(continuous)*

Switching Time
see pages 65-66

Operating Fluid
hydraulic oil to DIN 51524 Part 1 and 2

Viscosity Range
10 mm2/s to 420 mm2/s is recommended

Filtration
max. permissible contamination level of the operating fluid to ISO 4406 Class 21/19/16

Mounting position
optional

Materials

Valve Body:	high tensile steel
Closing Elements:	hardened and polished steel
Seals:	NBR *(standard)* FKM *(optional)* back-up ring in PTFE

Cavity
06020

Weight

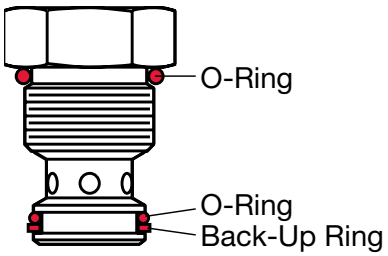
Valve Complete:	0.37 kg
Coil Only:	0.19 kg
Valve w/out Coil:	0.18 kg

Seal Kits

Includes
2 O-rings
1 Back-up Ring

NBR: Part #03119017

FPM: Part #02083918



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Model Code

WSM 06020 Y - 01 __ - C - N - 24DG - Z4

Series
WSM = Directional 2-Way Solenoid Cartridge Valve

Cavity Designation

Function Code
Y, Z, YR, ZR, W, V *(see next pages for details)*

Modification Number
Latest Version Always Supplied

Manual Override
(omit) = No manual override
M = Manual overide

Configuration
C = Cartridge Only
SS6 = Steel inline block, Zinc Plated, SAE-6 Ports, 06020 Cavity *(see page 70 for more information)*

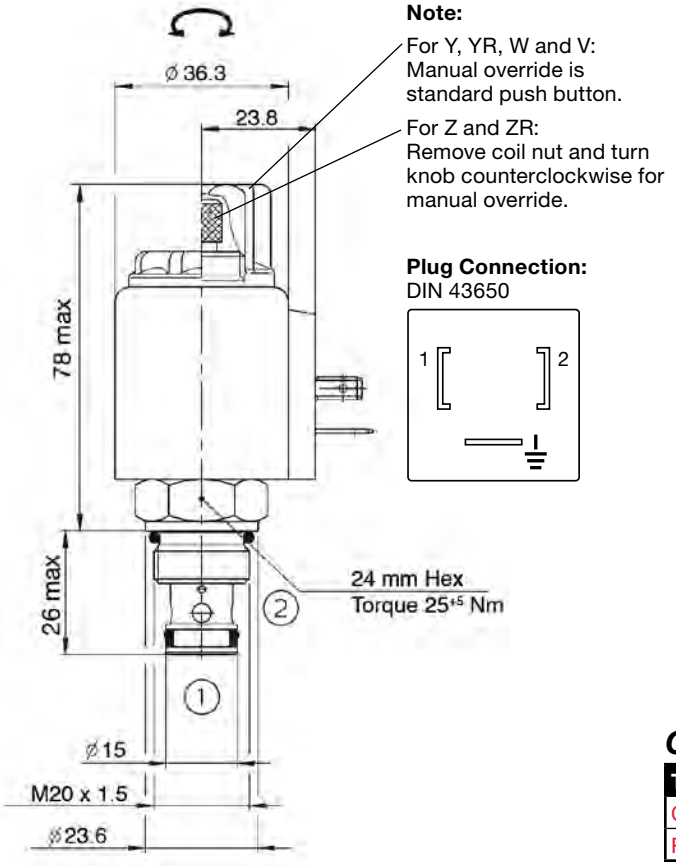
Seal Material
N = NBR
V = FPM *(Special Order Only)*

Coil Rating *(Male DIN 43650)*
12DG = 12V DC *(03000489 Replacement Coil Part Number)*
24DG = 24V DC *(03000249 Replacement Coil Part Number)*
115AG = 115V AC *(03003156 Replacement Coil Part Number)*
230AG = 230V AC *(03002594 Replacement Coil Part Number)*

DIN 43560 Electrical Connector
(omit) = Standard EN 175301-803 *(Male DIN 43650)* Z4 Plug not included
Z4 = With plug *(Female DIN 43650)* Special Order Only - Part Number 00394287 to order separately

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

Dimensions

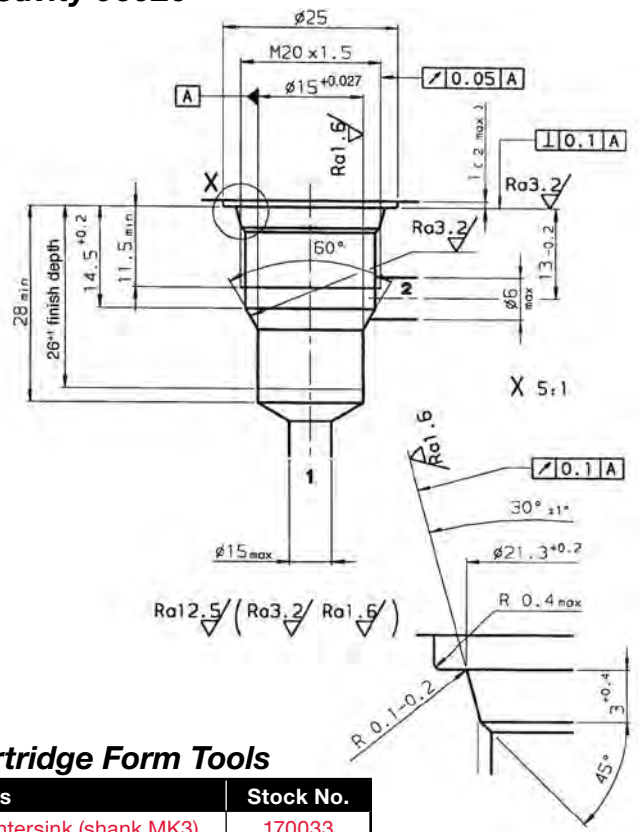


Note:
For Y, YR, W and V:
Manual override is standard push button.

For Z and ZR:
Remove coil nut and turn knob counterclockwise for manual override.

Plug Connection:
DIN 43650

Cavity 06020



Cartridge Form Tools

Tools	Stock No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in mm

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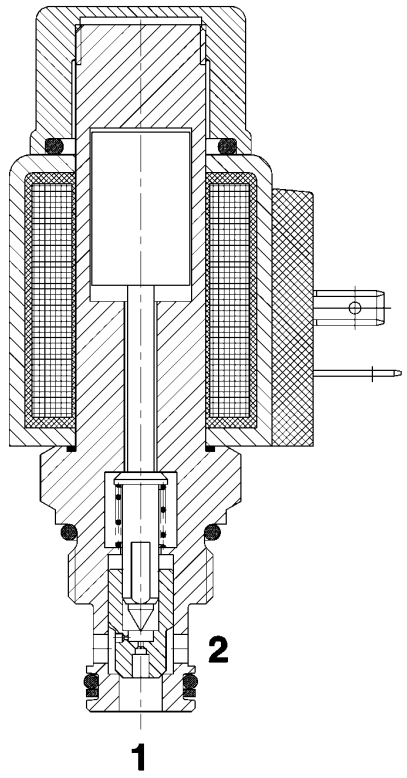
WSM06020Y-01

Normally open, Uni-Directional

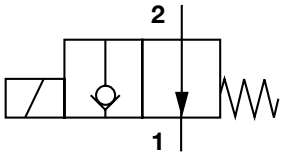


When the solenoid coil is not energized there is free flow through the valve from port 2 to port 1. Flow from port 1 to port 2 is severely restricted in this mode. When the solenoid coil is energized the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve when the pressure force on the spool exceeds the solenoid force *(approx. 9 to 20 bar)*.

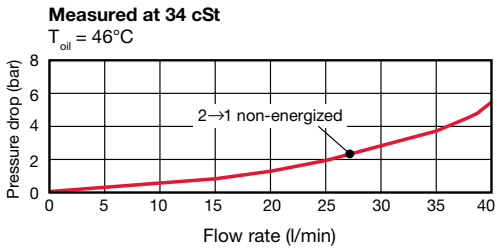
Switch Time

On: approx 50ms Up to 40 l/min
Off: approx 35ms Up to 350 bar

Hydraulic Symbol

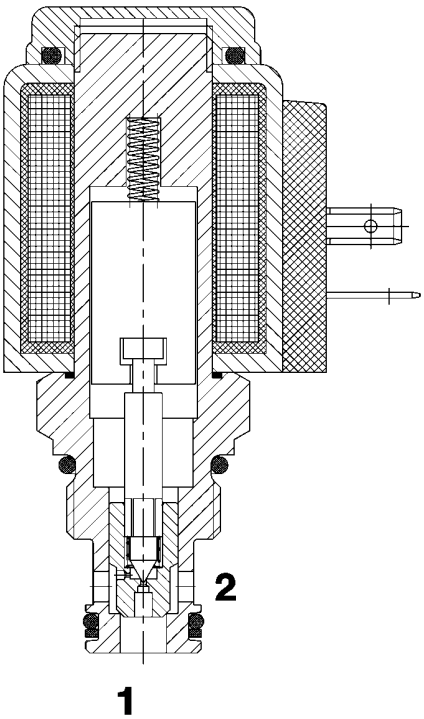


Pressure Drop



WSM06020Z-01

Normally closed, Uni-Directional

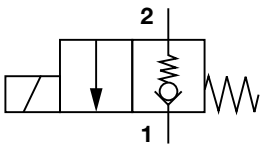


When the solenoid coil is not energized the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve. The valve spool opens at a differential pressure of approx. 1.5 bar *(check function)*. When the solenoid coil is energized, there is free flow through the valve from port 2 to port 1. Flow from port 1 to port 2 is severely restricted in this mode.

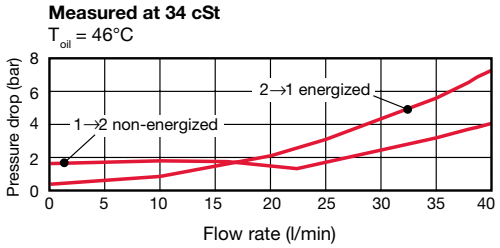
Switch Time

On: approx 35ms Up to 40 l/min
Off: approx 50ms Up to 350 bar

Hydraulic Symbol



Pressure Drop



NOTE: The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

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WSM06020YR-01

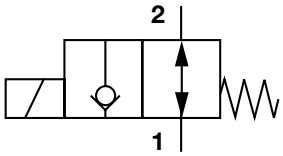
Normally open, with reverse flow

When the solenoid coil is not energized there is free flow through the valve in both directions. When the solenoid coil is energized the valve is closed from port 2 to port1. In the reverse direction there is free flow through the valve when the pressure force on the spool exceeds the solenoid force *(approx. 9 to 20 bar)*.

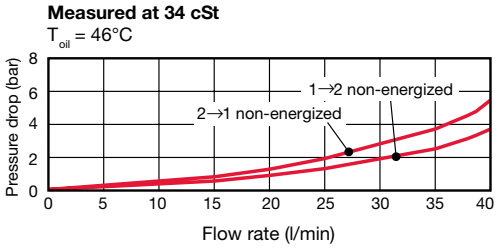
Switch Time

On: approx 50ms Up to 40 l/min
Off: approx 35ms Up to 350 bar

Hydraulic Symbol



Pressure Drop



WSM06020V-01

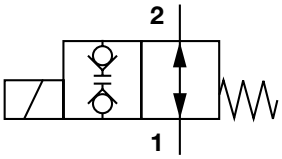
Normally open, Bi-directional

When the solenoid coil is not energized there is free flow through the valve in both directions. When the solenoid coil is energized the valve is closed in both directions.

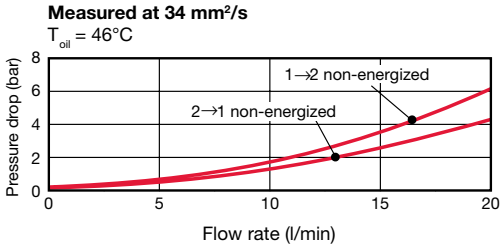
Switch Time

On: approx 40ms Up to 20 l/min
Off: approx 60ms Up to 350 bar

Hydraulic Symbol



Pressure Drop



WSM06020ZR-01

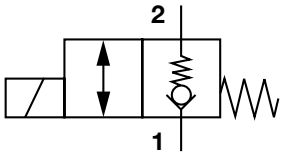
Normally closed, with reverse flow

When the solenoid coil is not energized the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve. The valve spool opens at a differential pressure of approx. 1.5 bar (check function). When the solenoid coil is energized there is free flow through the valve in both directions.

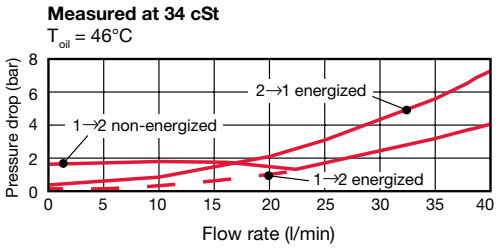
Switch Time

On: approx 35ms Up to 40 l/min
Off: approx 50ms Up to 350 bar

Hydraulic Symbol



Pressure Drop



WSM06020W-01

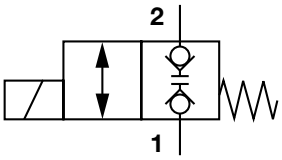
Normally closed, Bi-directional

When the solenoid coil is not energized the valve is closed in both directions. When the solenoid coil is energized there is free flow through the valve in both directions.

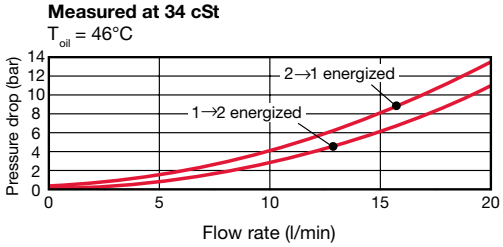
Switch Time

On: approx 35ms Up to 19 l/min
Off: approx 50ms Up to 350 bar

Hydraulic Symbol



Pressure Drop

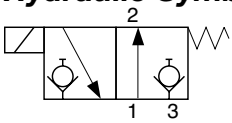


WSE3 Series
3-Way Solenoid Cartridge Valves

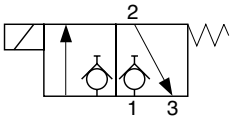
Features

- Leakfree poppet design
- No dynamic seals
- Excellent heat dissipation
- Low operating noise level
- Fully encapsulated coil
- DIN 43650 connector standard
- Fluoroelastomer seals standard

Hydraulic Symbols



Normally Open 1-2
(Configuration D)



Normally Closed 1-2
(Configuration C)

Connections
1 = Pressure Line
2 = Actuator
3 = Tank Line

Specifications

Maximum Operating Pressure
7,000 psi (500 bar)
P1 ≥ P2 ≥ P3

Nominal Flow
3 gpm (12 l/min) *(flow only in direction of arrows shown)*

Fluid Temperature Range
-4° to 176°F (-20° to 80°C)

Ambient Temperature Range
-4° to 104°F (-20° to 40°C)

Recommended Media
General Purpose Hydraulic Fluid

Viscosity Range
59 SUS to 1,760 SUS

Filtration Required
20 Micron Absolute Rating

Internal Leakage
Leakfree

Duty Cycle
Continuous at 110% Rated Voltage

Solenoid Current *(nominal)*
24 VDC, 1.04 Amps
110 VAC, 0.26 Amps

Solenoid Coil Power *(nominal)*
26 Watts

Voltage Tolerance
+10%, -5%

Materials
Valve Body: High Strength Carbon Steel
Valve Poppet: Hardened and Polished Alloy Steel
Line Body: Carbon Steel

Switch Time
On: approx. 40ms
Off: approx. 45ms

Model Code

WSE 3 E 0 C . X / G12 - Z4 - 1/4 NPT

Directional Control Valve
WSE

Size
3 = 3 gpm (12 l/min)

Type of Connection
E = Cartridge Valve Only
R = Valve with Line Body

Type

Configuration
C = Normally Closed Port 1-2
D = Normally Open Port 1-2

Modification Number *(latest version always supplied)*

Solenoid
G12 = 12 VDC *(Replacement Coil Kit - P/N 00715001 - Coil Kit G12-Z4)*
G24 = 24 VDC *(Replacement Coil Kit - P/N 00715003 - Coil Kit G24-Z4)*
W110 = 110 VAC *(Replacement Coil Kit - P/N 00715033 - Coil Kit W110-ZW4)*
W230 = 230 VAC *(Replacement Coil Kit - P/N 00715037 - Coil Kit W230-ZW4)*

Electrical Connections
Z4 = DIN 43650 Connector *(standard)*

Line Body
(omit) = None *(if E was chosen in Type of Connection above)*
SAE-4 = SAE 4 *(if R was chosen in Type of Connection above)*

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

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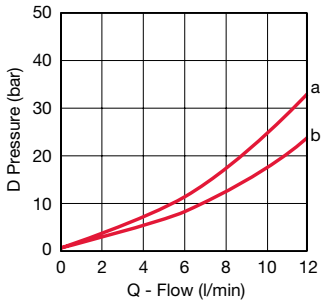
Pressure Drop vs. Flow

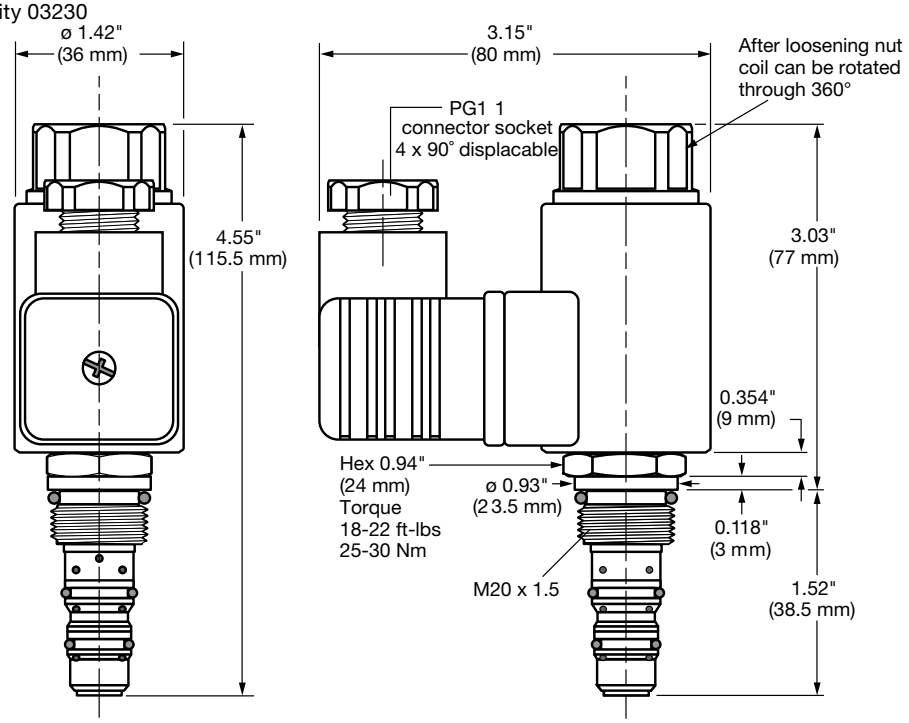
Configuration	Flow Direction	Curve
C energized	1 to 2	a
– de-energized	2 to 3	a
D de-energized	1 to 2	b
– energized	2 to 3	b

Dp/Q curves
Measured at v = 34 mm²/s
WSE 3 E

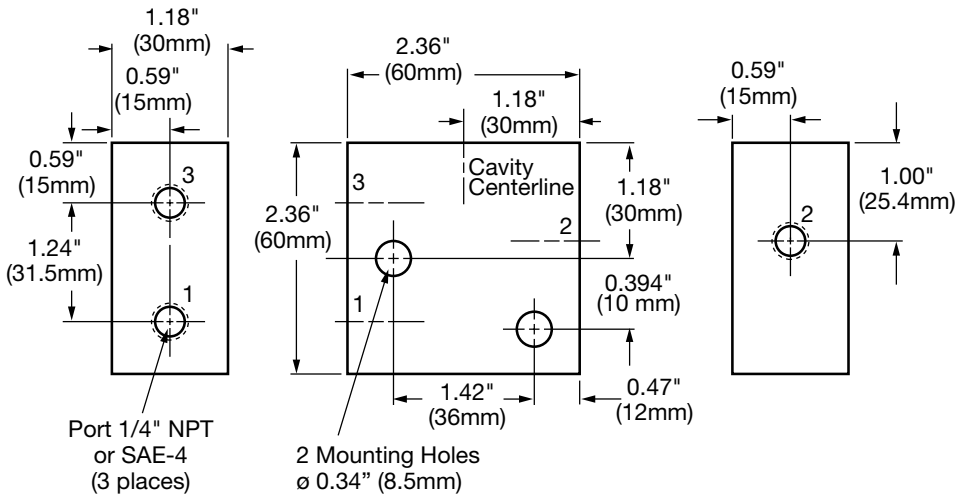


Dimensions

Ref: Install in HYDAC Cavity 03230



Line Body



Block with SAE-4 Ports: 02580401
(Blocks are not normally stocked items)
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

DB4 Series
Pressure Relief Valves

Specifications

Operating Pressure Range
Inlet (Port 1): to 9,000 psi (630 bar)
Outlet (Port 2): to 5,000 psi (350 bar)

Nominal Flow
8 gpm (30 l/min)

Operating Temperature Range
-4° to 176°F (-20° to 80°C)

Recommended Media
General Purpose Hydraulic Fluid

Viscosity Range
35 SUS to 3700 SUS

Filtration Rating
20 Micron Absolute

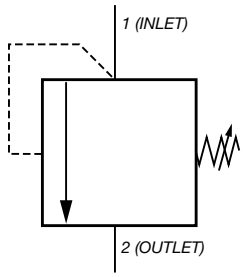
Materials
Valve Body: High Strength Carbon Steel
Valve Poppet: Hardened and Polished Alloy Steel
Line Body: Carbon Steel

Cavity
06020 Cavity *(see page 64 for more information)*

Features

- Direct acting Poppet design
- Low noise level
- Fast response
- Low Hysteresis
- Long service life
- Fluoroelastomer seal standard

Hydraulic Symbol



Model Code

DB4 E - 01 X - 100 V

Pressure Relief Valve
DB4 = Pressure Relief Valve

Type of Connection
E = Relief Valve cartridge only
R = Relief Valve with line body

Type Number
01 = *(standard)*

Modification Number *(latest version always supplied)*

Pressure Range
100 = up to 1500 psi (100 bar)
200 = up to 3000 psi (200 bar)
350 = up to 5000 psi (350 bar)
630 = up to 9000 psi (630 bar)

Type of Adjustments
V = Adjustable with tool (standard)
S = Scaled Knob, Adjustable by Hand
F = Set by Factory *(supply set pressure in bar)*

Line Body Port Size
(omit) = None *(if E was chosen in Type of Connection above)*
3/8NPT = 3/8" NPT
SAE-6 = SAE 6
(if R was chosen in Type of Connection above)

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

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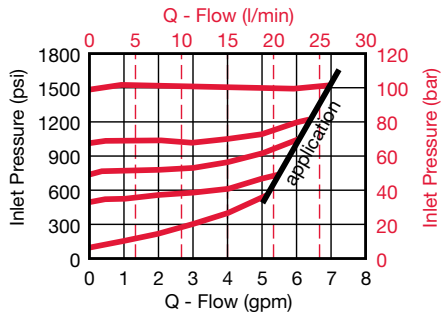
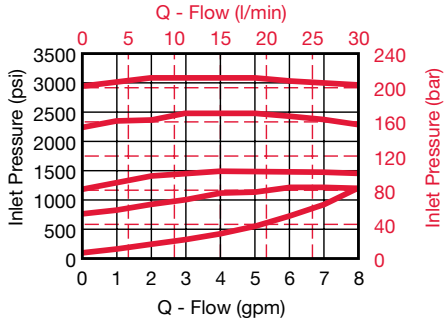
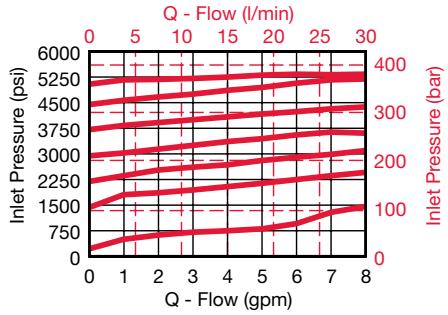
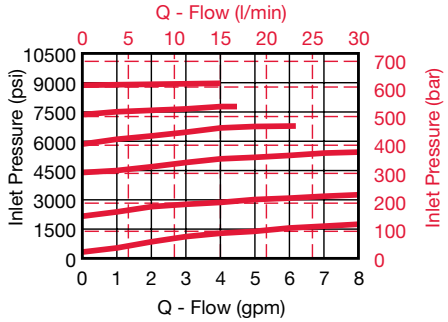
Adjustment Curves for Nominal Flow Rates

Viscosity = 170 SUS @ 120˚F



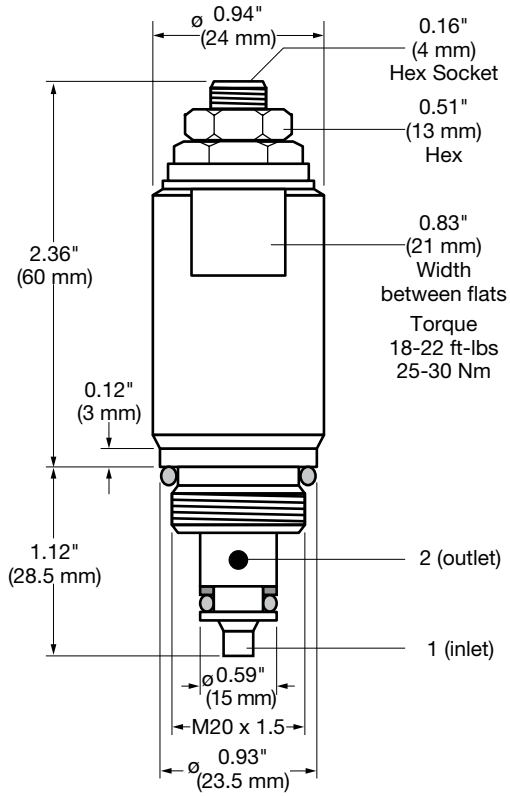




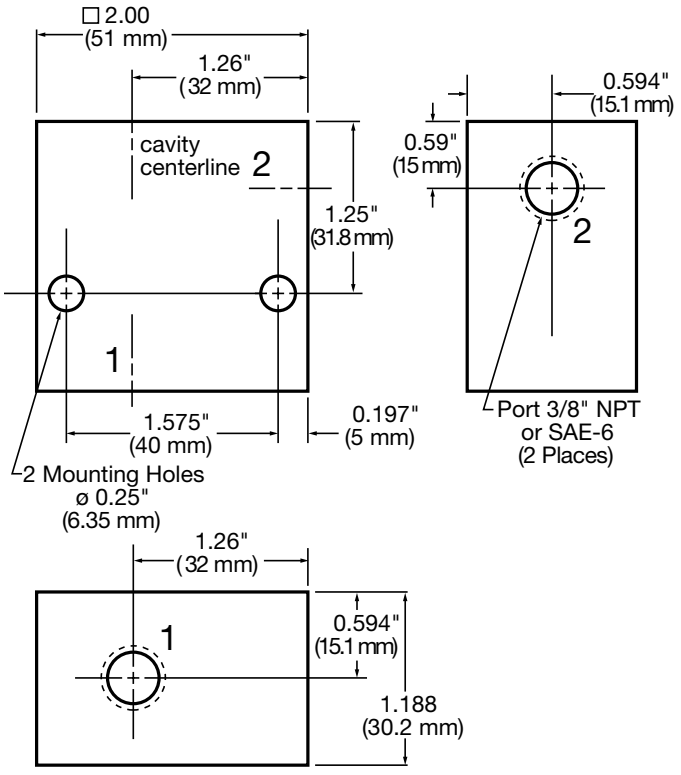


Dimensions

Relief Valve



Valve Line Body, 06020 Cavity



Block with 3/8" NPT Ports: 02056007

Block with SAE-6 Ports: 02580404

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

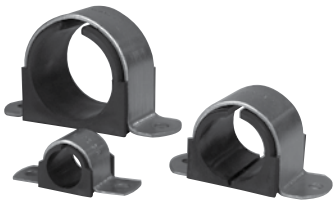
Overview

Standard Solutions

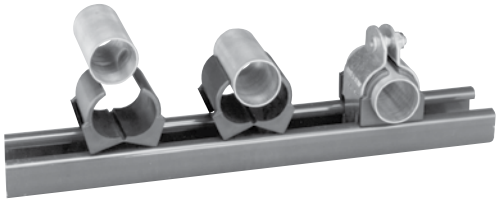
HYDAC Manufactures a complete line of hose, tube, and pipe mounting components. For many years, these products have been successfully applied, worldwide. Our standard product offering includes:

DIN 3015 Clamps
HRL, HRS, HRZ, HREL, & HRES Series *(see pages 73 - 89)*
Line Sizes from 1/4" to 16" O.D.

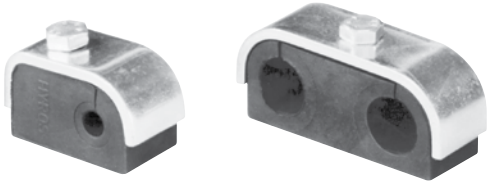
Flat Cushion Clamps
HOM Series *(see page 90)*
Line Sizes from 1/4" to 2" O.D.



Cushion Clamps
CUSH Series *(see pages 91 - 92)*
Line Sizes from 1/4" to 3 1/2" O.D.
Mount on standard 1 5/8" x 7/8" unistrut mounting rail



Buegu
HRBGS Series *(see pages 93 - 94)*
Line Sizes from 1/4" to 3/4" O.D.



U-Bolt Clamps
HRRBS Series *(see page 95)*
Line Sizes from 3/4" to 16" O.D.

U-Bolt with Cushion Clamps
HUB Series *(see pages 96)*
Line Sizes from 1/4" to 12" O.D.

Oval Clamps
HROS Series *(see page 97)*
Line Sizes from 1/4" to 1" O.D.

"P" Style Clamps
HSPN Series *(see page 98)*
Line Sizes from 1/4" to 3" O.D.

Quick Release Swivel Bolt Clamps
HRGKSM Series *(see pages 99 - 100)*
Line Sizes from 1.54" to 17.87" O.D.

NEW!

Clamp Sample Kit
P/N 00265928

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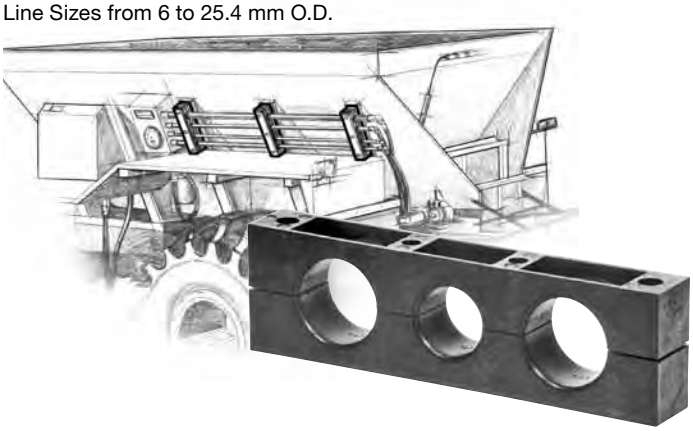
Custom Solutions

HYDAC is also a market leader in providing custom mounting solutions. Our engineers work with yours to develop unique solutions that save time and money by simplifying inventory and installation. From simple modifications of standard product to custom bracketry, we will provide you a successful solution for your application. For more information on custom solutions, please contact product management at **1-877-GO HYDAC.**

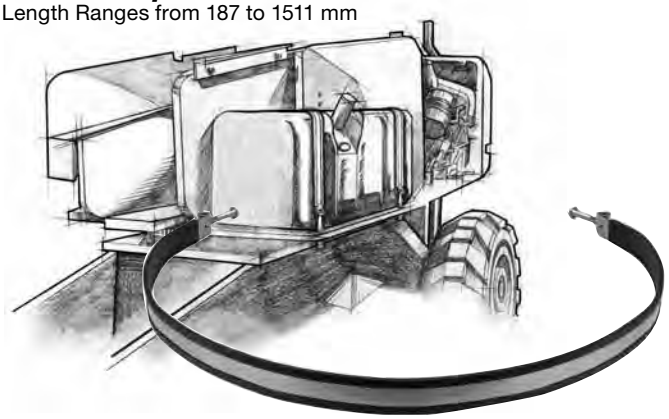
Series Strip Clamps

HRRL & HRRLE Series *(see page 101)*
Line Sizes from 6 to 25.4 mm O.D.



Band Straps *(see page 102)*

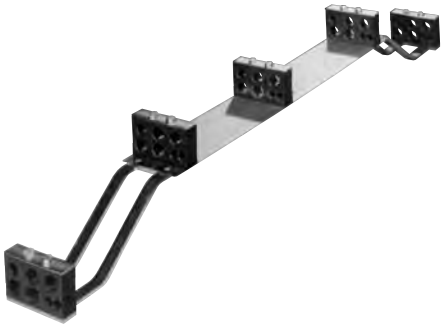
Length Ranges from 187 to 1511 mm



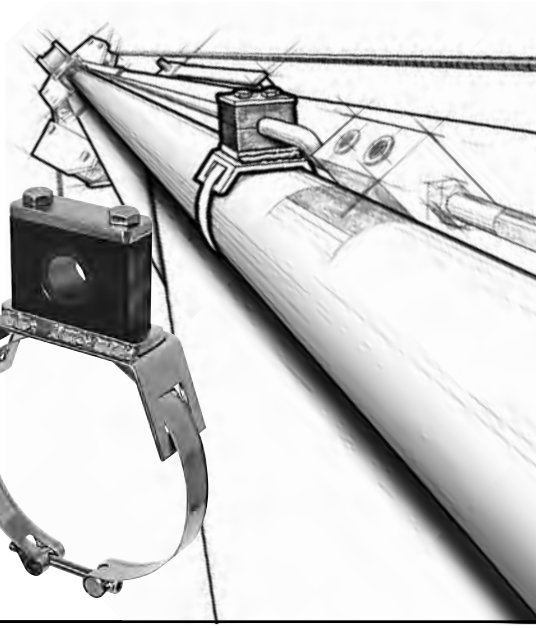
Series Strip Clamp &Custom Bracketry

Custom Molded Hose Bundle

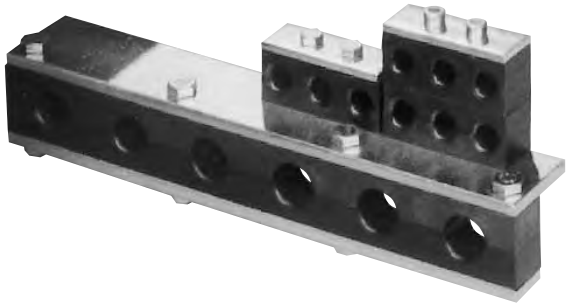
Stacking Series Strip Run



Cylinder / Tube Clamp



Series Strip Clamp & Custom Mounting Plates



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Overview

HYDAC manufactures a complete line of hose, tube, and pipe mounting components according to the DIN 3015 standard.

HYDAC clamps assure a simple, reliable dampening support for lines which absorb shock, dampen vibration, and reduce noise in plumbing systems.

Series

HRL – Standard Duty *(see pages 75 - 76)*

- Available to 2" tube outside diameter.
- Recommended for systems with less than 1500 PSI operating pressure and no dynamic loads.

HRS – Heavy Duty *(see pages 77 - 78)*

- Available to 16" nominal pipe size
- Recommended for systems with greater than 1500 PSI operating pressure, operations with pressure surges and applications with wide temperature fluctuations.

HRZ – Twin *(see pages 79 - 80)*

- Available to 1-1/4" nominal pipe size
- Recommended for systems with less than 1500 PSI operating pressure and no dynamic loads

HREL - Standard Duty w/ Rubber Insert *(see pages 81 - 82)*

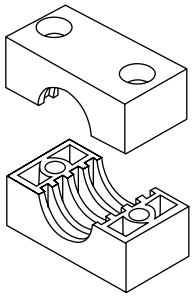
- Available to 2" tube outside diameter
- Recommended for systems with less than 1500 PSI operating pressure and no dynamic loads
- Provide for greater noise reduction and resistance to axial movement

HRES - Heavy Duty w/ Rubber Insert *(see pages 83 - 84)*

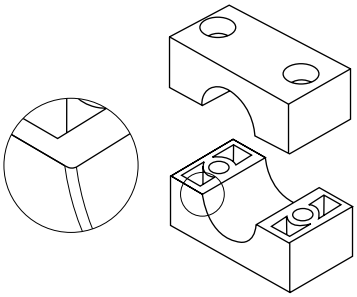
- Heavy duty available to 5 1/4" bore diameter
- Provide for greater noise reduction and resistance to axial movement

Bore Styles

Standard duty, heavy duty, and twin series are available with either ribbed bores (standard) or smooth bore (special order). When ordering a smooth bore arrangements or clamp pairs, a "G" is inserted in the code directly after the "HR" i.e. HRGL, HRGS, and HRGZ



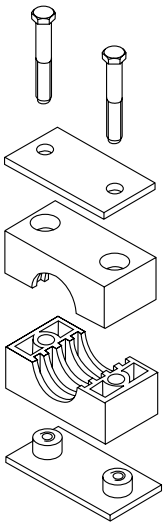
Ribbed Bore
(standard)



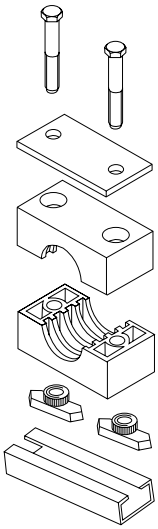
Smooth Bore
smooth surface and chamfered edge prevent chaffing of hose *(special)*

Arrangements

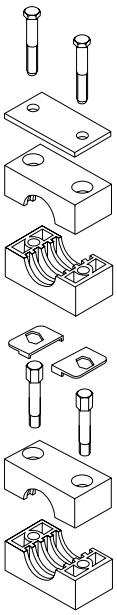
Various arrangements are available in each series.



Weld Plate Mounting



C-rail Mounting



Stacking Modules & Kits

Materials

Metal components are carbon steel *(standard)*. Stainless steel is also available *(see page 85 for details)*. Metal components to be welded *(weld plates and c-rails)* and heavy duty top plates size 5-8 are phosphate coated, while all other metal components are zinc plated. Clamp pairs are polypropylene *(standard)*. Polyamide and aluminum clamp pairs are also available.

For specifications on these materials, see page 74.

Ordering

Clamps can be ordered as complete arrangements, or separate components. See each series for details.

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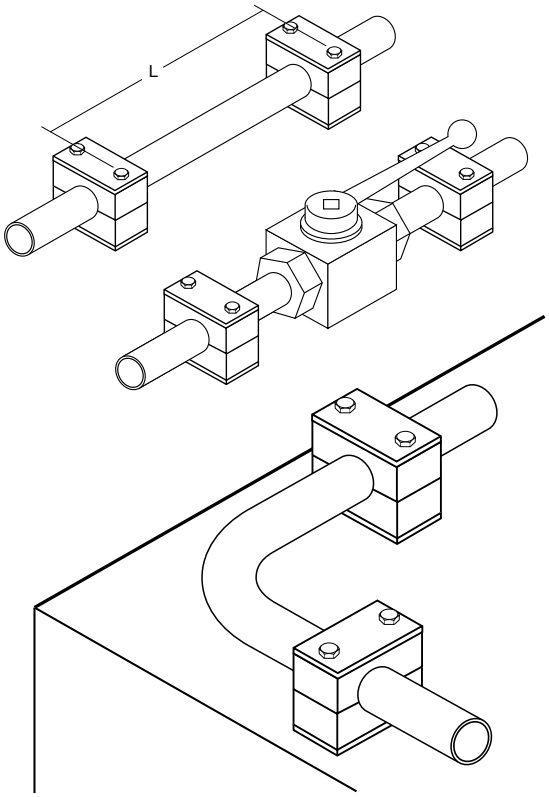
Technical Specifications

Mounting Guidelines

- The first clamp should be mounted directly after the threaded connection or coupling. This protects the connection from vibrations.
- Bends in the line should be clamped on BOTH sides of the bend.
- The line should be clamped directly before and after any inline valves.
- Proper Torquing of the clamp bolts is important, and is part of the DIN 3015 Standard

(see the chart below right for torque information)



Distance Between Clamps

Pipe Size	Distance (L)	Tube Size	Distance (L)
1/4”	4’	1/16”	3’
1/2”	4’	1/8”	3’
3/4”	5’	1/4”	3’
1”	5’	3/8”	3’
1 1/4”	7’	1/2”	3’
1 1/2”	8’	5/8”	4’
2”	10’	3/4”	4’
2 1/2”	10’	7/8”	4’
3”	12’	1”	5’
4”	13’	1 1/4”	7’
5”	13’	1 1/2”	7’
6”	14’	1 3/4”	7’
		2”	7’

Bolt Tightening Torque Specifications

Series	Size	Thread	PP	PA	AL
HRL *(Std. Duty)*	0 to 6	1/4-20	8	10	12
HRS *(Heavy Duty)*	1 & 2	3/8-16	12	20	30
	3	3/8-16	15	25	35
	4	7/16-14	30	40	55
	5	5/8-11	45	55	120
	6	3/4-10	80	150	220
	7	7/8-9	110	200	250
	8	M30	180	350	500
	9	M30	200	370	500
	10	M30	270	470	600
HRZ *(Twin)*	1	1/4-20	5	6	–
	2 to 4	5/16-18	12	12	–
	5	5/16-18	8	8	–

Note: Torque is given in Nm (Nm x 0.7376 = Ft-lbs)

Properties of Materials *(clamp pairs)*

Properties	Polypropylene PP	Polyamide PA	Aluminum AL
Mechanical Properties Tensile Strength	4200 psi	7800-11500 psi	–
Flexural Yield Strength	7600 psi	20500 psi	–
Impact Strength *(Izod Method)*	No Failure	No Failure	–
Tensile Test	–	–	28000 psi
Brinell Hardness No.	–	–	60 BHN
Modules of Elasticity	–	–	9.7×10^6 - 11.1×10^6 psi
Thermal Properties Continuous Service Temperature Range	-22° to 194°F -30° to 90°C	-40° to 284°F -40° to 140°C	-67° to 500°F -55° to 260°C
Electrical Properties Volume Resistivity	10^{15} Ohm-cm	10^{15} Ohm-cm	–
Chemical Properties Chemical Resistance	Resistant to most aqueous solutions of inorganic salts, minerals, and organic acids, even at high temperatures.	Resistant to organic solvents, dilute acids, and bases. Resistant to radiation.	Resistant to neutral and sea water, organic acids, esters, oils, and inorganic salt solutions.

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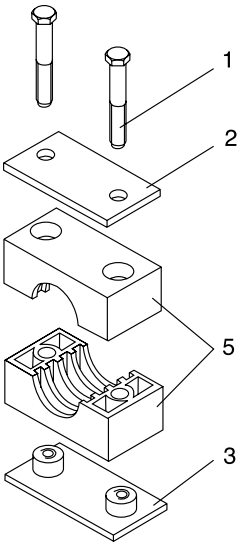
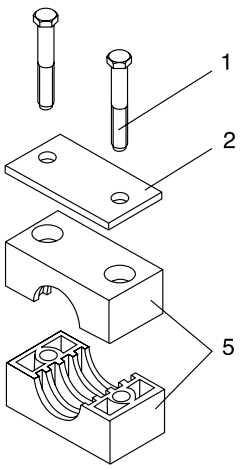
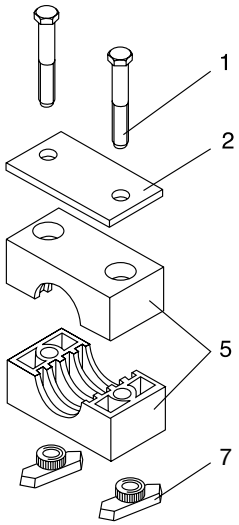
HRL Series
Standard Duty Clamps



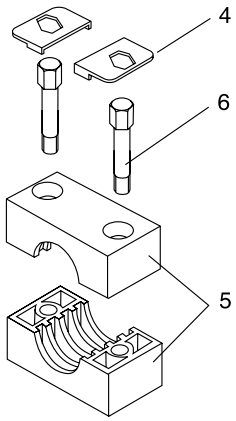
A
Single Clamp with Weld Plate



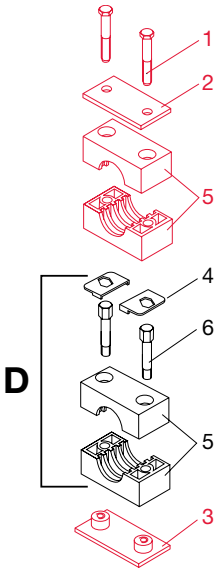
A1
Single Clamp without Weld Plate



A1TM
Single Clamp for C-Rail Mounting
(order C-Rail separately)



D
Single Clamp Stacking Module
(size 1 to 6 only)



A + D
Order one A *(red)* arrangement and one D *(black)* arrangement separately.

A maximum of 3 stacking modules is recommended

Parts Legend *(see page 87 to order parts separately)*

1	Hex Head Bolt	5	Clamp Pair
2	Top Plate	6	Stacking Bolt
3	Weld Plate	7	C-Rail Nut
4	Safety Plate		

Model Code

HRL 2 A 12.7 PP _ UNC

Series
- HRL = Standard duty single clamp with ribbed bore
- HRGL = Standard duty single clamp with smooth bore

Size Family
- 0 to 8 *(refer to table A on next page) (size 7 and 8 available in Metric only)*

Arrangement
- A = Single clamp with top plate and weld plate
- A1 = Single clamp without weld plate
- A1TM = C-Rail mounted clamp
- D = Single clamp stacking module *(size 1-6 only)*

Bore Size *(in mm)*
(refer to table A on next page)

Clamp Material
- PP = Polypropylene
- PA = Polyamide
- AL = Aluminum *(not available for size 0)*

Metal Component Material
- *(omit)* = Carbon Steel
- A2 = 304 Stainless Steel
- A4 = 316 Stainless Steel

Thread Type
- UNC = Standard
- M = Metric

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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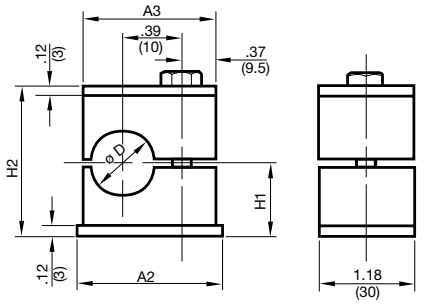
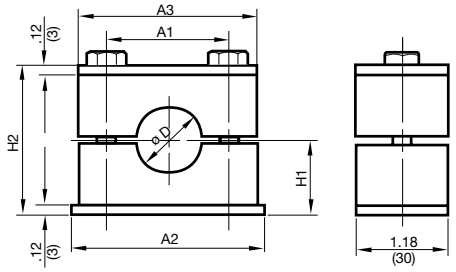
Dimensions

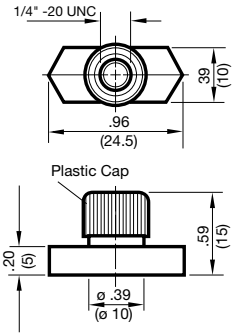
Size 0



Sizes 1-6



C-Rail Nut



C-Rail

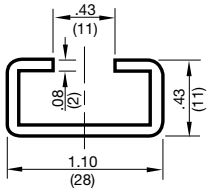
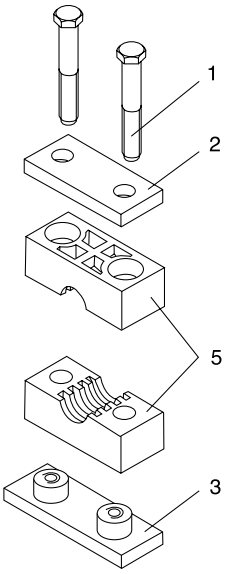


Table A

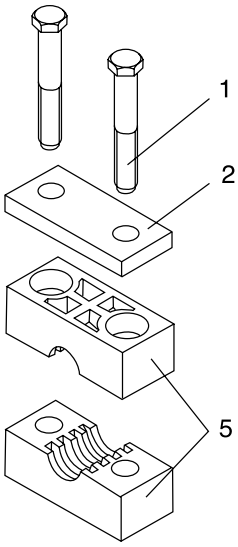
Size	øD Bore Size		Recommended Nominal Size		A1	A2	A3	H1	H2	Bolt Size Arrangement	Weight	
	in	mm	Tube O.D.	Pipe							A	B
0	0.24	6	–	–	N/A	1.18 (30)	1.10 (28)	0.63 (16)	1.26 (32)	1/4-20 x 1-1/4 (M6 x 30)	0.14 (0.06)	0.12 (0.05)
	0.25	6.4	1/4”	–								
	0.31	8.0	5/16”	–								
	0.37	9.5	3/8”	–								
	0.39	10.0	–	1/8”								
	0.47	12.0	–	–								
1	0.24	6	–	–	0.79 (20)	1.42 (36)	1.34 (34)	0.63) (16)	1.26 (32)	1/4-20 x 1-1/4 (M6 x 30)	0.18 (0.08)	0.13 (0.06)
	0.25	6.4	1/4”	–								
	0.31	8.0	5/16”	–								
	0.37	9.5	3/8”	–								
	0.39	10.0	–	1/8”								
	0.47	12.0	–	–								
2	0.50	12.7	1/2”	–	1.02 (26)	1.65 (42)	1.57 (40)	0.77 (19.5)	1.53 (39)	1/4-20 x 1-1/2 (M6 x 35)	0.27 (0.12)	0.16 (0.07)
	0.54	13.7	–	1/4”								
	0.55	14.0	–	–								
	0.59	15.0	–	–								
	0.63	16.0	5/8”	–								
	0.67	17.1	–	3/8”								
	0.71	18.0	–	–								
3	0.75	19.0	3/4”	–	1.30 (33)	1.97 (50)	1.89 (48)	0.85 (21.5)	1.69 (43)	1/4-20 x 1-1/2 (M6 x 40)	0.31 (0.14)	0.22 (0.10)
	0.79	20.0	–	–								
	0.84	21.3	–	1/2”								
	0.87	22.0	–	–								
	0.91	23.0	–	–								
	0.98	25.0	–	–								
	1.00	25.4	1”	–								
4	1.05	26.6	–	3/4”	1.57 (40)	2.32 (59)	2.24 (57)	0.94 (24)	1.89 (48)	1/4-20 x 1-3/4 (M6 x 45)	0.33 (0.15)	0.27 (0.12)
	1.10	28.0	–	–								
	1.18	30.0	–	–								
5	1.26	32.0	1-1/4”	–	2.05 (52)	2.83 (72)	2.75 (70)	1.26 (32)	2.52 (64)	1/4-20 x 2-1/2 (M6 x 60)	0.42 (0.19)	0.31 (0.14)
	1.33	33.7	–	1”								
	1.38	35.0	–	–								
	1.50	38.0	1-1/2”	–								
	1.57	40.0	–	–								
	1.65	42.0	–	1-1/4”								
6	1.75	44.5	1-3/4”	–	2.60 (66)	3.46 (88)	3.38 (86)	1.42 (36)	2.83 (72)	1/4-20 x 2-3/4 (M6 x 70)	0.53 (0.24)	0.40 (0.18)
	1.90	48.3	–	1-1/2”								
	2.00	50.8	2”	–								
7	2.37	60.3	–	2	3.7 (94)	4.8 (122)	4.64 (118)	2.15 (54.5)	4.17 (106)	(M6 x 100)	– (–)	– (–)
	2.5	63.5	2 1/2”	–								
	2.87	73	–	2 1/2”								
	3	76.1	3”	–								
8	3.5	88.9	–	3”	4.72 (120)	5.8 (148)	5.67 (143.96)	2.66 (67.6)	5.16 (131)	(M6 x 125)	– (–)	– (–)

Note: Other bore diameters are available — Consult factory for details.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

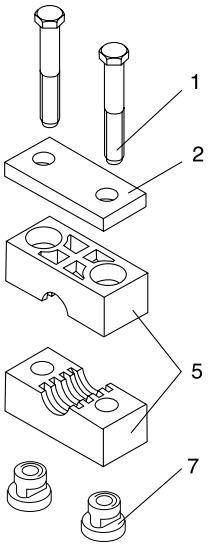
HRS Series
Heavy Duty Clamps



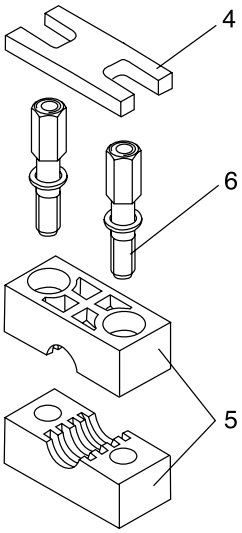
S
Single Clamp
with Weld Plate



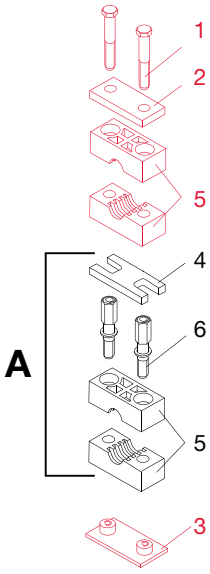
S1
Single Clamp
without Weld Plate



S1TM
Single Clamp for
C-Rail Mounting
(size 1 to 4 only)
(order C-Rail separately)



A
Single Clamp
Stacking Module
(size 1 to 5 only)



S + A
Order one S *(red)*
arrangement and one
A *(black)* arrangement
separately.

A maximum of 3 stacking modules is recommended

Parts Legend *(see page 88 to order parts separately)*

1	Hex Head Bolt	5	Clamp Pair
2	Top Plate	6	Stacking Bolt
3	Weld Plate	7	C-Rail Nut
4	Safety Plate		

Model Code

HRS 1 S 12.7 PP __ UNC

Series
- HRS = Heavy duty single clamp with ribbed bore
- HRGS = Heavy duty single clamp with smooth bore

Size Family
1 to 10 (refer to table B on next page)

Arrangement
- S = Single clamp with top plate & weld plate
- S1 = Single clamp without weld plate
- S1TM = C-Rail mounted clamp (sizes 1-4 only)
- A = Single clamp stacking module (sizes 1-5 only)

Bore Size *(in mm)*
(refer to table B on next page)

Clamp Material
- PP = Polypropylene
- PA = Polyamide
- AL = Aluminum

Metal Component Material
- *(omit)* = Carbon Steel
- A4 = 316 Stainless Steel

Thread Type
- UNC = Standard
- M = Metric

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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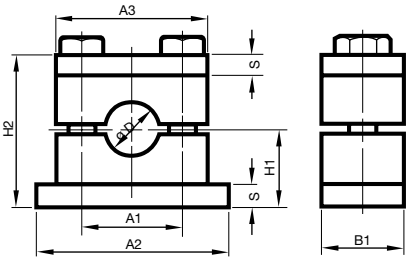
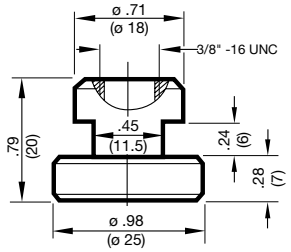
Dimensions

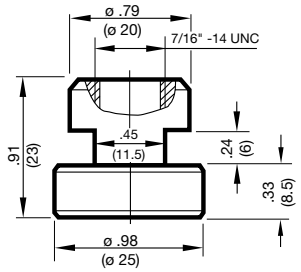
All Sizes



C-Rail Nut *(sizes 1-3)*



C-Rail Nut *(size 4)*



C-Rail *(all sizes)*

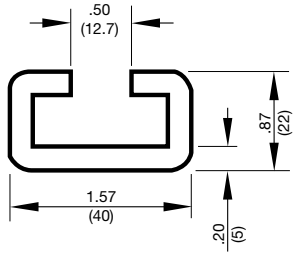


Table B

Size	øD Bore Size		Recommended Nominal Size		A1	A2	A3	B1	H1	H2	S	Bolt Size
	in	mm	Tube O.D.	Pipe								
1	0.24 0.25 0.32 0.37 0.39 0.41 0.50 0.54 0.55 0.59 0.63 0.67 0.71	6.0 6.4 8.0 9.5 10.0 10.3 12.7 13.7 14.0 15.0 16.0 17.1 18.0	– 1/4” 5/16” 3/8” – – 1/2” – – – 5/8” – –	– – – – – 1/8” – 1/4” – – – 3/8” –	1.30 (33)	2.87 (73)	2.17 (55)	1.18 (48)	0.94 (24)	1.89 (48)	0.31 (8)	3/8-16 x 1-3/4 (M10 x 45)
2	0.75 0.79 0.84 0.87 0.98 1.00 1.05 1.10 1.18	19.0 20.0 21.3 22.0 25.0 25.4 26.7 28.0 30.0	3/4” – – 7/8” – 1” – – –	– – 1/2” – – – 3/4” – –	1.77 (45)	3.35 (85)	2.76 (70)	1.18 (30)	1.26 (32)	2.52 (64)	0.31 (8)	3/8-16x2-1/4 (M10 x 60)
3	0.98 1.18 1.26 1.33 1.38 1.50 1.57 1.65	25.0 30.0 32.0 33.7 35.0 38.0 40.0 42.0	– – 1-1/4” – – 1-1/2” – –	– – – 1” – – – 1-1/4”	2.36 (60)	3.94 (100)	3.35 (85)	1.18 (30)	1.50 (38)	2.99 (76)	0.31 (8)	3/8-16 x 2-3/4 (M10 x 70)
4	1.18 1.50 1.65 1.75 1.90 2.00 2.13 2.24 2.37 2.50 2.56 2.75	30.0 38.0 42.0 44.5 48.3 50.8 54.0 57.0 60.3 63.5 65.0 70.0	– 1-1/2” – 1-3/4” – 2” – 2-1/4” – 2-1/2” – 2-3/4”	– – 1-1/4” – 1-1/2” – – – 2” – – –	3.56 (90.5)	5.51 (140)	4.52 (115)	1.77 (45)	2.17 (55)	4.33 (110)	0.39 (10)	7/16-14 x 4 (M12 x 100)
5	1.50 2.60 2.76 2.87 3.00 3.50	38.0 66.0 70.0 73.0 76.1 88.9	1-1/2” – – – 3” –	– – – 2-1/2” – 3”	4.80 (122)	7.09 (180)	5.98 (152)	2.36 (60)	2.76 (70)	5.51 (140)	0.39 (10)	5/8-11 x 5-1/2 (M16 x 130)
6	2.56 3.78 4.00 4.25 4.50	65.0 96.0 101.6 108.0 114.3	– – 4” 4-1/4” 4-1/2”	– – 3-1/2” – 4”	6.61 (168)	8.86 (225)	8.07 (205)	3.15 (80)	3.94 (100)	7.87 (200)	0.59 (15)	3/4-10x7-1/2 (M20 x 190)
7	3.54 5.35 5.50 6.61	90.0 136.0 139.7 168.0	– – – –	– – 5” 6”	8.07 (205)	10.63 (270)	9.92 (252)	3.54 (90)	4.53 (115)	9.06 (230)	0.59 (15)	7/8-9x8-1/2 (M20 x 220)
8	7.63 8.62	193.7 219.1	7-5/8” –	7” 8”	10.43 (265)	13.39 (340)	12.60 (320)	4.72 (120)	6.30 (160)	12.60 (320)	0.98 (25)	M30 x 300
9	10.75 12.75	273.0 323.9	– –	10” 12”	15.55 (395)	20.47 (520)	18.35 (466)	6.30 (160)	9.25 (235)	18.50 (470)	1.18 (30)	M30 x 450
10	14.00 16.00	355.6 406.4	– –	14” 16”	21.06 (535)	26.77 (680)	24.80 (630)	7.09 (180)	11.61 (295)	23.23 (590)	1.18 (30)	M30 x 560

Note: Other bore diameters are available — Consult factory for details.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

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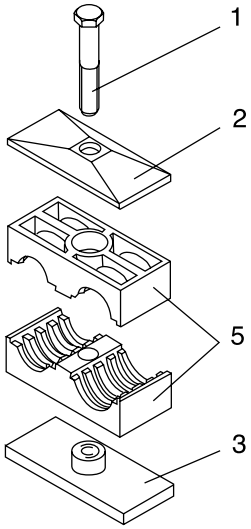
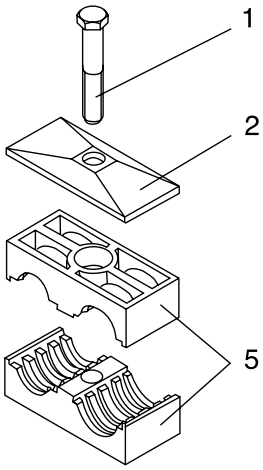
HRZ Series

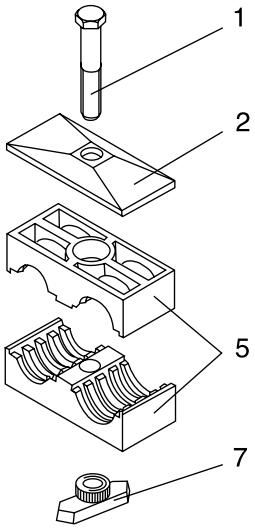
Twin Clamps



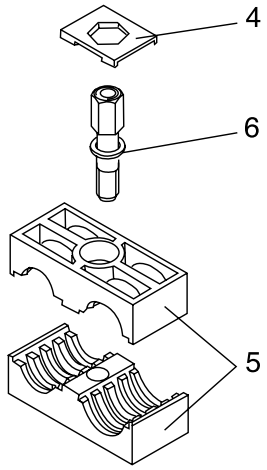
A
Twin Clamp
with Weld Plate



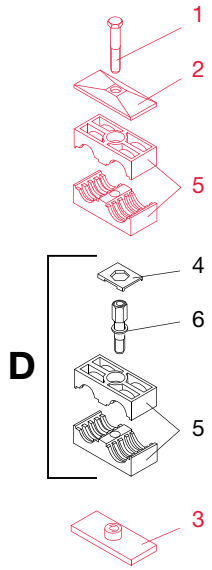
A1
Twin Clamp
without Weld Plate



A1TM
Twin Clamp for
C-Rail Mounting
(order C-Rail separately)



D
Twin Clamp
Stacking Module



A + D
Order one A *(red)*
arrangement and
one D *(black)*
arrangement separately.

A maximum of 3 stacking modules is recommended

Parts Legend *(see page 89 to order parts separately)*

1	Hex Head Bolt	5	Clamp Pair
2	Top Plate	6	Stacking Bolt
3	Weld Plate	7	C-Rail Nut
4	Safety Plate		

Model Code

HRZ 1 A 9.5 - 9.5 PP UNC

Series
- HRZ = Standard duty twin clamp with ribbed bore
- HRGZ = Standard duty twin clamp with smooth bore

Size Family
0 to 5 *(refer to table C on next page)*

Arrangement
- A = Twin clamp with weld plate
- A1 = Twin clamp without weld plate
- A1TM = C-Rail mounted twin clamp
- D = Twin clamp stacking module

Bore Size *(in mm)*
(refer to table C on next page)

Clamp Material
- PP = Polypropylene
- PA = Polyamide

Thread Type
- UNC = Standard
- M = Metric

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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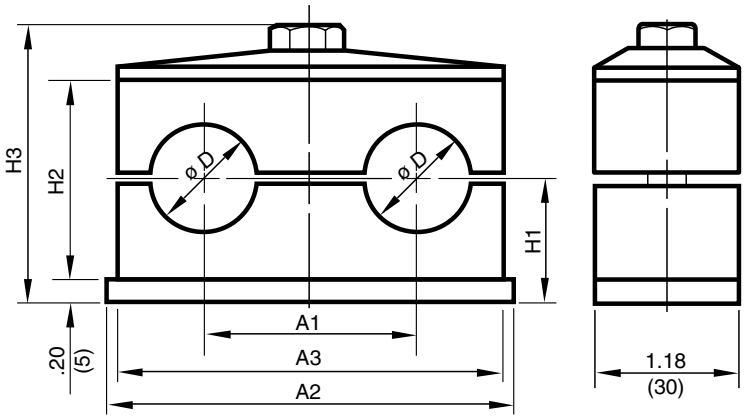
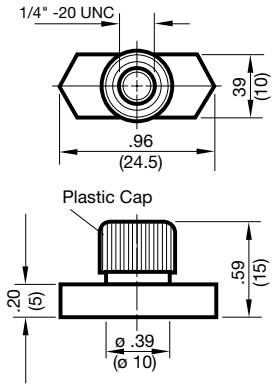
Dimensions

All Sizes



C-Rail Nut



C-Rail

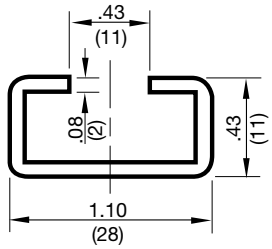


Table C

Size	Ød Bore Size		Recommended Nominal Size		A1	A2	A3	H1	H2	H3	Bolt Size
	in	mm	Tube O.D.	Pipe							
1	0.24	6.0	–	–	0.79 (20)	1.46 (37)	1.42 (36)	0.73 (18.5)	1.06 (27)	1.69 (43)	1/4-20 x 1-1/2 (M6 x 35)
	0.25	6.4	1/4”	–							
	0.32	8.0	5/16”	–							
	0.37	9.5	3/8”	–							
	0.39	10.0	–	1/8”							
	0.41	10.3	–	1/8”							
	0.47	12.0	–	–							
2	0.50	12.7	1/2”	–	1.14 (29)	2.17 (55)	2.09 (53)	0.71 (18)	1.02 (26)	1.71 (43.5)	5/16-18 x 1-1/4 (M8 x 35)
	0.54	13.7	–	1/4”							
	0.55	14.0	–	–							
	0.59	15.0	–	–							
	0.63	16.0	5/8”	–							
	0.67	17.1	–	3/8”							
3	0.75	19.0	3/4”	–	1.42 (36)	2.76 (70)	2.64 (67)	0.93 (23.5)	1.46 (37)	2.15 (54.5)	5/16-18 x 1-3/4 (M8 x 45)
	0.79	20.0	–	–							
	0.84	21.3	–	1/2”							
	0.87	22.0	7/8”	–							
	0.91	23.0	–	–							
	0.98	25.0	–	–							
	1.00	25.4	1”	–							
4	1.05	26.7	–	3/4”	1.77 (45)	3.35 (85)	3.23 (82)	1.02 (26)	1.65 (42)	2.34 (59.5)	5/16-18 x 2 (M8 x 50)
	1.10	28.0	–	–							
	1.18	30.0	–	–							
5	1.26	32.0	1-1/4”	–	2.20 (56)	4.33 (110)	4.17 (106)	1.26 (32)	2.13 (54)	2.81 (71.5)	5/16-18 x 2-1/2 (M8 x 60)
	1.33	33.7	–	1”							
	1.38	35.0	–	–							
	1.50	38.0	1-1/2”	–							
	1.65	40.0	–	–							
	1.65	42.0	–	1-1/4”							

Note: Other bore diameters are available — Consult factory for details.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

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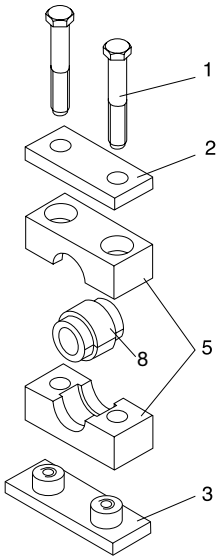
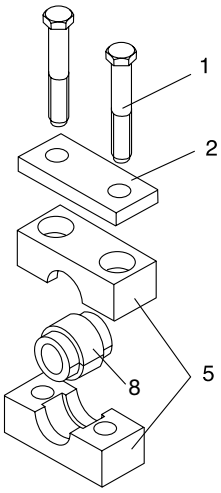
HREL Series

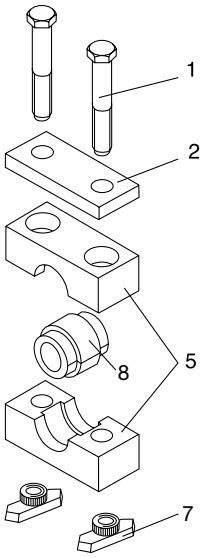
Standard Duty Clamps with Rubber Inserts



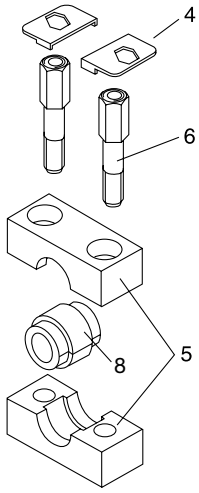
A
Single Clamp
with Weld Plate



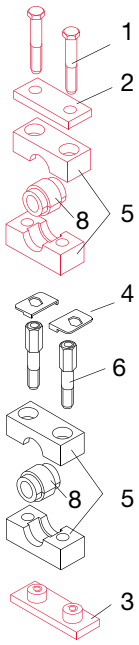
A1
Single Clamp
without Weld Plate



A1TM
Single Clamp
for C-Rail Mounting
(order C-Rail separately)



D
Single Clamp
Stacking Module
(not available for size 0)



A + D
Order one A *(red)*
arrangement and
one D *(black)*
arrangement separately.

A maximum of 3 stacking modules is recommended

Parts Legend *(see page 87 to order parts separately)*

1	Hex Head Bolt	5	Clamp Pair
2	Top Plate	6	Stacking Bolt
3	Weld Plate	7	C-Rail Nut
4	Safety Plate	8	Rubber Insert

Model Code

HREL 4 A 12.7 PP _ UNC

Series

Size Family
4, 6 *(refer to table D on next page)*

Arrangement
- A = Single clamp with top plate and weld plate
- A1 = Single clamp stacking kit
- A1TM = C-Rail mounted clamp
- D = Single clamp stacking module *(not available for size 0)*

Bore Size *(in mm)*
(refer to table D on next page)

Clamp Material
- PP = Polypropylene
- PA = Polyamide

Metal Components Materials
- *(omit)* = Carbon Steel
- A2 = 304 Stainless Steel
- A4 = 316 Stainless Steel

Thread Type
- UNC = Standard
- M = Metric

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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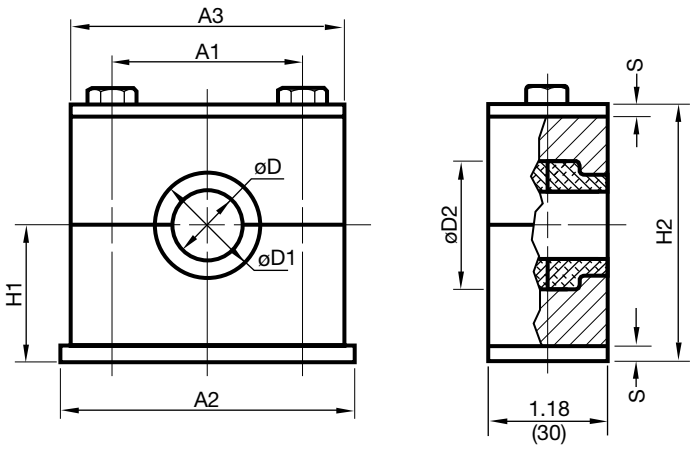
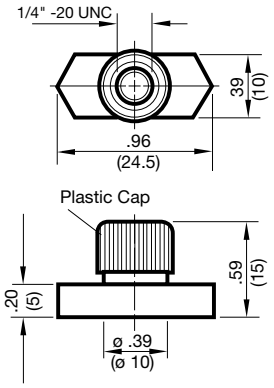
Dimensions

All Sizes



C-Rail Nut



C-Rail

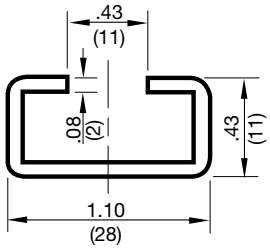


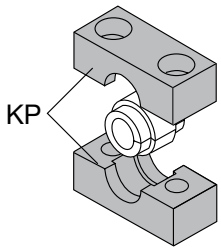
Table D

Clamp Size	EE-Rubber Insert Size	Bore Size øD in	Bore Size øD mm	Recommended Nominal Size Tube O.D.	Pipe	Hose O.D. Min (in)	Hose O.D. Max (in)	øD1	øD2	H1	H2	A1	A2	A3	S	Bolt Size
4	2/4 L	0.24	6	–	–	0.22	0.24	1.00 (25.5)	1.22 (31)	0.925 (23.5)	1.85 (47)	1.57 (40)	2.32 (59)	2.24 (57)	0.118 (3)	1/4-20 x 1 3/4 (M6 x 45)
		0.32	8	5/16”	–	0.30	0.32									
		0.39	10	–	1/8”	0.37	0.39									
		0.47	12	–	–	0.45	0.47									
		0.50	12.7	1/2”	–	0.48	0.50									
		0.55	14	–	–	0.53	0.55									
		0.59	15	–	–	0.57	0.59									
		0.63	16	5/8”	–	0.61	0.63									
		0.68	17.2	–	3/8”	0.66	0.68									
		0.75	19	3/4”	–	0.73	0.75									
6	3/6 L	0.79	20	–	1/2”	0.77	0.79	1.54 (39)	1.81 (46)	1.40 (35.5)	2.80 (71)	2.60 (66)	3.46 (88)	3.39 (86)	0.118 (3)	1/4-20x2 3/4 (M6 x 70)
		0.87	22	7/8”	–	0.85	0.87									
		0.98	25	1”	–	0.96	0.98									
		1.06	26.9	–	3/4”	1.04	1.06									
		1.10	28	–	–	1.08	1.10									
		1.18	30	–	–	1.16	1.18									
		1.26	32	1 1/4”	–	1.24	1.26									

Note: Other bore diameters are available — Consult factory for details.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

Parts

KP = Clamp Pair



HREL 4 KP PP

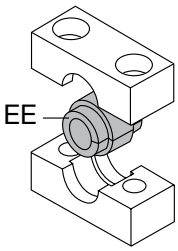
Series

Size
4, 6 *(refer to table above)*

Clamp Pair

Clamp Material
PP = Polypropylene
PA = Polyamide

EE = Rubber Insert (Santoprene TPE 73)



HRES 2/4 L EE 12

Series*

Size
2/4 L, 3/6 L *(refer to table above)*

Rubber Insert

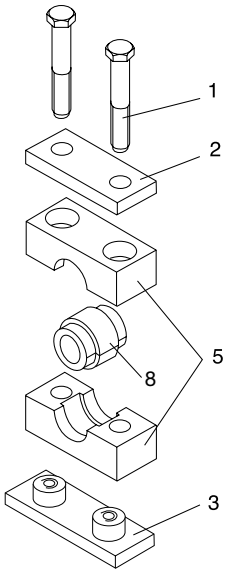
Bore Size *(in mm)*
(refer to table above)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.

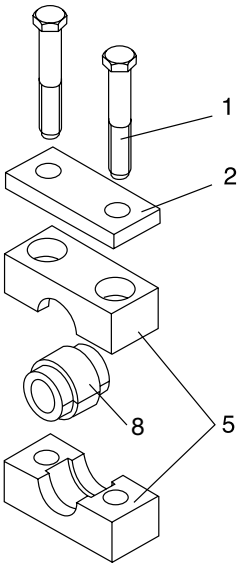
Note: All other components for these clamps are the same as for HRL series standard duty single clamps. Refer to page 87 for details.
* HREL series use the same rubber inserts as the HRES series, therefore the model code for them is HRES.

HRES Series

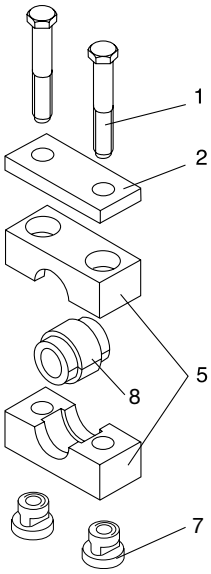
Heavy Duty Clamps with Rubber Inserts



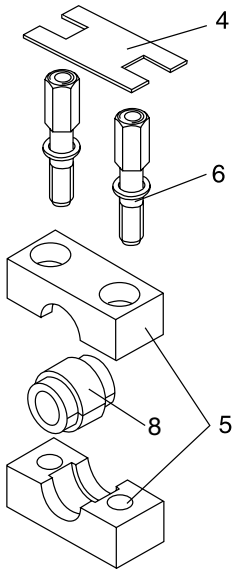
S
Single Clamp
with Weld Plate



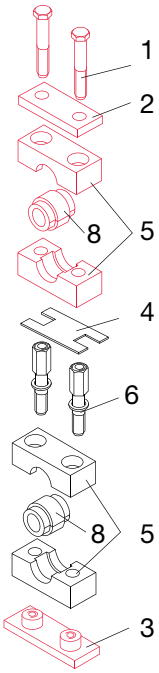
S1
Single Clamp
without Weld Plate



S1TM
Single Clamp for
C-Rail Mounting
(size 1 to 4 only)
(order C-Rail separately)



A
Single Clamp
Stacking Module
(size 1 to 5 only)



S + A
Order one S *(red)*
arrangement and one
A *(black)* arrangement
separately.

A maximum of 3 stacking modules is recommended

Parts Legend *(see page 88 to order parts separately)*

1	Hex Head Bolt	5	Clamp Pair
2	Top Plate	6	Stacking Bolt
3	Weld Plate	7	C-Rail Nut
4	Safety Plate	8	Rubber Insert

Model Code

HRES 4 S 35 PP __ UNC

Series

Size Family
2 to 7 *(refer to table E on next page)*

Arrangement
- S = Single clamp with weld plate
- S1 = Single clamp stacking kit
- S1TM = C-Rail mounted clamp
- A = Single clamp stacking module

Bore Size *(in mm)*
(refer to table E on next page)

Clamp Material
- PP = Polypropylene
- PA = Polyamide

Metal Component Material
- *(omit)* = Carbon Steel
- A4 = 316 Stainless Steel

Thread Type
- UNC = Standard
- M = Metric

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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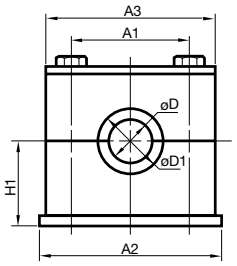
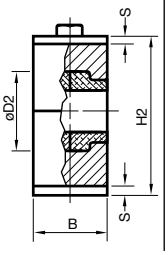
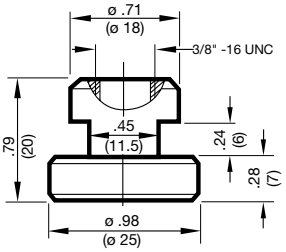
Dimensions

All Sizes

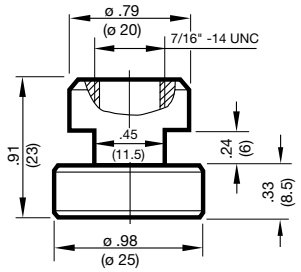




C-Rail Nut *(sizes 1-3)*



C-Rail Nut *(size 4)*



C-Rail *(all sizes)*

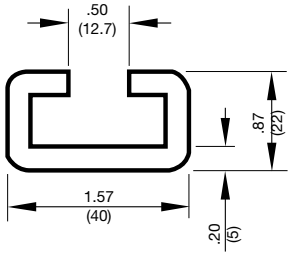


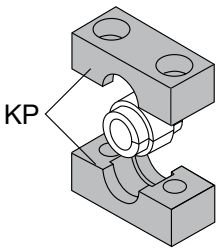
Table E

Clamp Size	EE-Rubber Insert Size	Bore Size øD in	Bore Size øD mm	Recommended Nominal Size Tube O.D.	Recommended Nominal Size Pipe	Hose O.D. Min (in)	Hose O.D. Max (in)	øD1	øD2	B	H1	H2	A1	A2	A3	S	Bolt Size
2	2/4 L	0.24 0.32 0.39 0.47 0.50 0.55 0.59 0.63 0.68 0.75	6 8 10 12 12.7 14 15 16 17.2 19	– 5/16” – – 1/2” – – 5/8” – 3/4”	– – 1/8” – – – – – 3/8” –	0.22 0.30 0.37 0.45 0.48 0.53 0.57 0.61 0.66 0.73	0.24 0.32 0.39 0.47 0.50 0.55 0.59 0.63 0.68 0.75	1.00 (25.5)	1.22 (31)	1.18 (30)	0.925 (23.5)	1.85 (47)	1.57 (40)	2.32 (59)	2.24 (57)	0.118 (3)	1/4-20 x 1 3/4 (M6 x 45)
3	3/6 L	0.79 0.87 0.98 1.06 1.10 1.18 1.26	20 22 25 26.9 28 30 32	– 7/8” 1” – – – 1 1/4”	1/2” – – 3/4” – – –	0.77 0.85 0.96 1.04 1.08 1.16 1.24	0.79 0.87 0.98 1.06 1.10 1.18 1.26	1.54 (39)	1.81 (46)	1.18 (30)	1.40 (35.5)	2.80 (71)	2.60 (66)	3.46 (88)	3.39 (86)	0.118 (3)	1/4-20x2 3/4 (M6 x 70)
4	4	1.33 1.38 1.50 1.58 1.65 1.79 1.89 2.01 2.10 2.22	33.7 35 38 40 42 45.5 48 51 53.4 56.4	- - 1 1/2” - - - - 2” - -	1” - - - - - 1 1/2” - - -	1.31 1.36 1.48 1.56 1.63 1.77 1.87 1.99 2.08 2.20	1.33 1.38 1.50 1.58 1.65 1.79 1.89 2.01 2.10 2.22	2.56 (65)	2.91 (74)	1.77 (45)	2.11 (53.5)	4.21 (107)	3.56 (90.5)	5.51 (140)	4.53 (115)	0.39 (10)	7/16-14x4 (M12 x 100)
5	5	2.36 2.56 2.76 2.87 2.99	60 65 70 73 76	- - - - 3”	2” - - 2 1/2” -	2.34 2.54 2.74 2.85 2.97	2.36 2.56 2.76 2.87 2.99	3.50 (89)	3.86 (98)	2.36 (60)	2.70 (68.5)	5.39 (137)	4.80 (122)	7.09 (180)	5.98 (152)	0.39 (10)	5/8-11x5 1/2 (M16 x 130)
6	6	3.27 3.50 3.70 3.98	83 89 94 101	- 3 1/2” - 4”	- 3” - 3 1/2”	3.19 3.43 3.62 3.90	3.27 3.50 3.70 3.98	4.57 (116)	5.20 (132)	3.15 (80)	3.88 (98.5)	7.76 (197)	6.61 (168)	8.86 (225)	8.07 (205)	0.59 (15)	3/4-10x7 1/2 (M20 x 190)
7	7	4.26 4.49 5.24	108 114 133	- - -	- 4” -	4.17 4.41 5.16	4.26 4.49 5.24	6.06 (154)	6.61 (168)	3.54 (90)	4.47 (113.5)	8.94 (227)	8.07 (205)	10.63 (270)	9.92 (252)	0.59 (15)	7/8-9x8 1/2 (M20 x 220)

Note: Other bore diameters are available — Consult factory for details.
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

Model Code

KP = Clamp Pair



HRES 3 KP PP

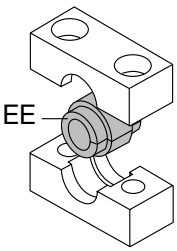
Series

Size
2 to 7 *(refer to table above)*

Clamp Pair

Clamp Material
PP = Polypropylene
PA = Polyamide

EE = Rubber Insert *(Santoprene TPE 73 - sizes 2-4)*
(Buna NBR 70 - sizes 5-7)



HRES 3/6 L EE 26.9

Series

Size
2/4 L to 7 *(refer to table above)*

Rubber Insert

Bore Size *(in mm)*
(refer to table above)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

Note: All other components for these clamps are the same as for HRS series heavy duty single clamps. Refer to page 88 for details.
* HREL series use the same rubber inserts as the HRES series, therefore the model code for them is HRES.

HRL & HRS Series
with Stainless Steel Metal Components

HRL – Standard Duty

HRS – Heavy Duty

Description

Clamps with stainless steel metal components are available for corrosive environments. Our complete line of DIN 3015 clamps are available in stainless steel. Some models are special order, which may require minimum quantities, and/or extended delivery times. Listed here are the standard duty and heavy duty single clamps with weld plate.

304 Stainless Steel: (A2)

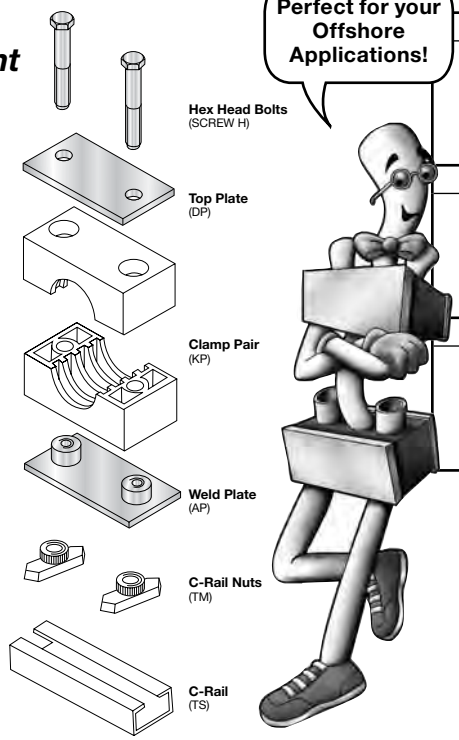
- Available from stock
- UNC bolts

316 Stainless Steel: (A4)

- Salt water resistance
- HRL sizes 1-5 in UNC - available from stock
- HRS sizes 1-4 in UNC
- Larger sizes in metric only

Typical Arrangement

Single Clamp with Weld Plate
(HRL...A...) for Standard Duty
(HRS...S...) for Heavy Duty



316 Stainless Steel UNC Stocked Program

Light Duty Series (HRL)

Size	Model Code	Part Number
	Arrangements *(complete with PP clamp pair)*	
1	HRL 1 A XX PP A4 UNC	***XX = bore diameter*** *A unique part number exists for each individual clamp bore diameter. A complete model code is sufficient for ordering. Use the dimensions table for standard HRL clamps on page 76 for available bore sizes.*
2	HRL 2 A XX PP A4 UNC	
3	HRL 3 A XX PP A4 UNC	
4	HRL 4 A XX PP A4 UNC	
5	HRL 5 A XX PP A4 UNC	
	Weld Plates	
1	HRL 1 AP A4 UNC	00268617
2	HRL 2 AP A4 UNC	03001899
3	HRL 3 AP A4 UNC	00261220
4	HRL 4 AP A4 UNC	00261221
5	HRL 5 AP A4 UNC	00261222
	Top Plates	
1	HRL 1 DP A4	00261108
2	HRL 2 DP A4	00261109
3	HRL 3 DP A4	00261110
4	HRL 4 DP A4	00261111
5	HRL 5 DP A4	00261112
	Ext Hex Screws	
1	Screw H 1/4-20 x 1.25 SS316	02700627
2	Screw H 1/4-20 x 1.50 SS316	02700906
3	Screw H 1/4-20 x 1.50 SS316	02700906
4	Screw H 1/4-20 x 1.75 SS316	02700157
5	Screw H 1/4-20 x 2.50 SS316	02700646

Heavy Duty Series (HRS)

Size	Model Code	Part Number
	Arrangements *(complete with PP clamp pair)*	
1	HRS 1 S XX PP A4 UNC	***XX = bore diameter*** *A unique part number exists for each individual clamp bore diameter. A complete model code is sufficient for ordering. Use the dimensions table for standard HRS clamps on page 78 for available bore sizes.*
2	HRS 2 S XX PP A4 UNC	
3	HRS 3 S XX PP A4 UNC	
4	HRS 4 S XX PP A4 UNC	
5	HRS 5 S XX PP A4 UNC	
	Weld Plates	
1	HRS 1 AP A4 UNC	00268617
2	HRS 2 AP A4 UNC	03001899
3	HRS 3 AP A4 UNC	00261220
4	HRS 4 AP A4 UNC	00261221
5	HRS 5 AP A4 UNC	00261222
	Top Plates	
1	HRS 1 DP A4	00261108
2	HRS 2 DP A4	00261109
3	HRS 3 DP A4	00261110
4	HRS 4 DP A4	00261111
5	HRS 5 DP A4	00261112
	Ext Hex Screws	
1	Screw H 1/4-20 x 1.25 SS316	02700627
2	Screw H 1/4-20 x 1.50 SS316	02700906
3	Screw H 1/4-20 x 1.50 SS316	02700906
4	Screw H 1/4-20 x 1.75 SS316	02700157
5	Screw H 1/4-20 x 2.50 SS316	02700646

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.

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HRL Standard Duty

304 stainless steel (A2) metal components

Size	Model Code	Part Number
	Arrangements *(complete with PP clamp pair)*	
1	HRL 1 A XX PP A2 UNC	***XX = bore diameter*** *A unique part number exists for each individual clamp bore diameter. A complete model code is sufficient for ordering. Use the dimensions table for standard HRL clamps on page 76 for available bore sizes.*
2	HRL 2 A XX PP A2 UNC	
3	HRL 3 A XX PP A2 UNC	
4	HRL 4 A XX PP A2 UNC	
5	HRL 5 A XX PP A2 UNC	
6	HRL 6 A XX PP A2 UNC	
	Weld Plates	
1	HRL 1 AP A2 UNC	02701275
2	HRL 2 AP A2 UNC	02701276
3	HRL 3 AP A2 UNC	02701277
4	HRL 4 AP A2 UNC	02701278
5	HRL 5 AP A2 UNC	02701279
6	HRL 6 AP A2 UNC	02701280
	Top Plates	
1	HRL 1 DP A2	02701283
2	HRL 2 DP A2	02701284
3	HRL 3 DP A2	02701285
4	HRL 4 DP A2	02701286
5	HRL 5 DP A2	02701287
6	HRL 6 DP A2	02701288
	Ext Hex Screws *(316 Stainless Steel)*	
1	SCREW H 1/4-20 x 1.25 SS316	02700627
2	SCREW H 1/4-20 x 1.50 SS316	02700906
3	SCREW H 1/4-20 x 1.50 SS316	02700906
4	SCREW H 1/4-20 x 1.75 SS316	02700157
5	SCREW H 1/4-20 x 2.50 SS316	02700646
6	SCREW H 1/4-20 x 2.75 SS316	02701205
	HRL C-Rail	
1	HRL TS 28 x 11 A4 2M	00261229
	HRL C-Rail Nuts	
1	HRL 0-6 TM 1/4 UNC A4	03035720

316 stainless steel (A4) metal components

Size	Model Code	Part Number
	Arrangements *(complete with PP clamp pair)*	
1	HRL 1 A XX PP A4 M	***XX = bore diameter*** *A unique part number exists for each individual clamp bore diameter. A complete model code is sufficient for ordering. Use the dimensions table for standard HRL clamps on page 76 for available bore sizes.*
2	HRL 2 A XX PP A4 M	
3	HRL 3 A XX PP A4 M	
4	HRL 4 A XX PP A4 M	
5	HRL 5 A XX PP A4 M	
6	HRL 6 A XX PP A4 M	
	Weld Plates	
1	HRL 1 AP A4 M	00268508
2	HRL 2 AP A4 M	00268509
3	HRL 3 AP A4 M	00268510
4	HRL 4 AP A4 M	00268511
5	HRL 5 AP A4 M	00261215
6	HRL 6 AP A4 M	00261216
	Top Plates	
1	HRL 1 DP A4	00261108
2	HRL 2 DP A4	00261109
3	HRL 3 DP A4	00261110
4	HRL 4 DP A4	00261111
5	HRL 5 DP A4	00261112
6	HRL 6 DP A4	00261113
	Hex Head Bolts	
1	SCREW H M6X30 A4	00603039
2	SCREW H M6X35 A4	00602136
3	SCREW H M6X40 A4	00602138
4	SCREW H M6X45 A4	00602140
5	SCREW H M6X60 A4	00602142
6	SCREW H M6X70 A4	00602144

HRS Heavy Duty

316 stainless steel (A4) metal components

Size	Model Code	Part Number
	Arrangements *(complete with PP clamp pair)*	
1	HRS 1 S XX PP A4 M	***XX = bore diameter*** *A unique part number exists for each individual clamp bore diameter. A complete model code is sufficient for ordering. Use the dimensions table for standard HRS clamps on page 78 for available bore sizes.*
2	HRS 2 S XX PP A4 M	
3	HRS 3 S XX PP A4 M	
4	HRS 4 S XX PP A4 M	
5	HRS 5 S XX PP A4 M	
6	HRS 6 S XX PP A4 M	
	Weld Plates	
1	HRS 1 AP A4 M	00263646
2	HRS 2 AP A4 M	00263647
3	HRS 3 AP A4 M	00263648
4	HRS 4 AP A4 M	00267902
5	HRS 5 AP A4 M	00263700
6	HRS 6 AP A4 M	00263701
	Top Plates	
1	HRS 1 DP A4	00262018
2	HRS 2 DP A4	00262019
3	HRS 3 DP A4	00262020
4	HRS 4 DP A4	00262021
5	HRS 5 DP A4	00262022
6	HRS 6 DP A4	00262023
	Hex Head Bolts	
1	SCREW H M10X45 A4	00602151
2	SCREW H M10X60 A4	00602153
3	SCREW H M10X70 A4	00602155
4	SCREW H M12X100 A4	00602157
5	SCREW H M16X130 A4	00602160
6	SCREW H M20X190 A4	00602163
	HRS C-Rail	
1	HRS TS 40X22 A4 2M	00263359
	HRS C-Rail Nuts	
1	HRS TM 10 A4 M	00262736
2	HRS TM 12 A4 M	00262739

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.

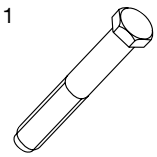
HRL Series

Parts

All metal components are carbon steel. For stainless steel metal components please refer to page 85 - 86.
ST = Carbon Steel, **BL** = Phosphate coated, **ZN** = Zinc Plated

UNC Hex Head Bolts

1

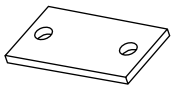


UNC Threads

Size	Model Code
0	SCREW H 1/4 - 20 x 1.25 GR2
1	SCREW H 1/4 - 20 x 1.25 GR2
2	SCREW H 1/4 - 20 x 1.50 GR2
3	SCREW H 1/4 - 20 x 1.50 GR2
4	SCREW H 1/4 - 20 x 1.75 GR2
5	SCREW H 1/4 - 20 x 2.50 GR2
6	SCREW H 1/4 - 20 x 2.75 GR2

DP = Top Plate

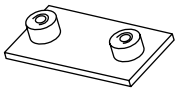
2



Size	Model Code
0	HRL 0 DP ST ZN
1	HRL 1 DP ST ZN
2	HRL 2 DP ST ZN
3	HRL 3 DP ST ZN
4	HRL 4 DP ST ZN
5	HRL 5 DP ST ZN
6	HRL 6 DP ST ZN

AP = Weld Plate

3



Size	Model Code
0	HRL 0 AP ST UNC BL
1	HRL 1 AP ST UNC BL
2	HRL 2 AP ST UNC BL
3	HRL 3 AP ST UNC BL
4	HRL 4 AP ST UNC BL
5	HRL 5 AP ST UNC BL
6	HRL 6 AP ST UNC BL

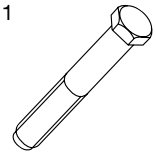
SIP = Safety Plate

4

Size	Model Code
0-6	HRL 0-6 SIP ST ZN

Metric Hex Head Bolts

1

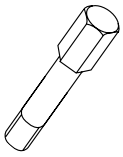


Metric Threads

Size	Model Code
0	SCREW H M6 X 30 - 8.8
1	SCREW H M6 X 30 - 8.8
2	SCREW H M6 X 35 - 8.8
3	SCREW H M6 X 40 - 8.8
4	SCREW H M6 X 45 - 8.8
5	SCREW H M6 X 60 - 8.8
6	SCREW H M6 X 70 - 8.8

AF = Stacking Bolt

6

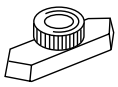


UNC Threads

Size	Model Code
1	HRL 1 AF ST UNC
2	HRL 2 AF ST UNC
3	HRL 3 AF ST UNC
4	HRL 4 AF ST UNC
5	HRL 5 AF ST UNC
6	HRL 6 AF ST UNC

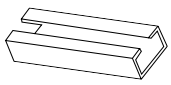
TM = C-Rail Nut

7



Size	Model Code
0 - 6	HRL 0-6 TM1/4 ST UNC KAP
0 - 6	HRL 0-6 TM ST ZN KAP

TS = C-Rail



Size	Model code
39”	HRL TS 28x11 ST BL 1M
78”	HRL TS 28x11 ST BL 2M

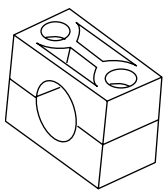
Parts Legend

1 Hex Head Bolt	5 Clamp Pair
2 Top Plate	6 Stacking Bolt
3 Weld Plate	7 C-Rail Nut
4 Safety Plate	8 Rubber Insert

Model Code

KP = Clamp Pair

5



HRL 1 KP 10 PP

Series

Size
0 to 6 *(refer to table A, page 76)*

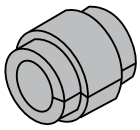
Clamp Pair

Bore Size *(in mm)*
(refer to table A, page 76)

Clamp Material
PP = Polypropylene
PA = Polyamide
AL = Aluminum

EE = Rubber Insert *(Santoprene TPE 73)*

8



HRES 2/4 L EE 12

Series

Size
2/4 L, 3/6 L *(refer to table page 82)*

Rubber Insert

Bore Size *(in mm)*
(refer to table page 82)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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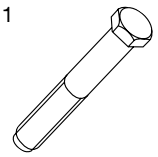
HRS Series

Parts

All metal components are carbon steel. For stainless steel metal components please refer to page 85 - 86.
ST = Carbon Steel, **BL** = Phosphate coated, **ZN** = Zinc Plated

UNC Hex Head Bolts

1



UNC Threads

Size	Model Code
1	SCREW H 3/8 - 16 x 1.75 GR5
2	SCREW H 3/8 - 16 x 2.25 GR5
3	SCREW H 3/8 - 16 x 2.75 GR5
4	SCREW H 7/16 - 14 x 4.00 GR5
5	SCREW H 5/8 - 11 x 5.50 GR5
6	SCREW H 3/4 - 10 x 7.50 GR5
7	SCREW H 7/8 - 9 x 8.50 GR5
8	N/A (size 8 metric only)

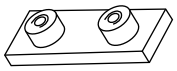
DP = Top Plate

2

Size	Model Code
1	HRS 1 DP ST ZN
2	HRS 2 DP ST ZN
3	HRS 3 DP ST ZN
4	HRS 4 DP ST ZN
5	HRS 5 DP ST ZN
6	HRS 6 DP ST BL
7	HRS 7 DP ST BL
8	HRS 8 DP ST BL

AP = Weld Plate

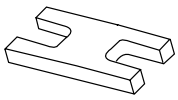
3



Size	Model Code
1	HRS 1 AP ST UNC BL
2	HRS 2 AP ST UNC BL
3	HRS 3 AP ST UNC BL
4	HRS 4 AP ST UNC BL
5	HRS 5 AP ST UNC BL
6	HRS 6 AP ST UNC BL
7	HRS 7 AP ST UNC BL
8	HRS 8 AP ST UNC BL

SIP = Safety Plate

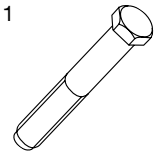
4



Size	Model Code
1	HRS 1 SIP ST ZN
2	HRS 2 SIP ST ZN
3	HRS 3 SIP ST ZN
4	HRS 4 SIP ST ZN
5	HRS 5 SIP ST ZN

Metric Hex Head Bolts

1

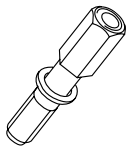


Metric Threads

Size	Model Code
1	SCREW H M10 X 45 - 8.8
2	SCREW H M10 X 60 - 8.8
3	SCREW H M10 X 70 - 8.8
4	SCREW H M12 X 100 - 8.8
5	SCREW H M16 X 130 - 8.8
6	SCREW H M20 X 190 - 8.8
7	SCREW H M20 X 220 - 8.8
8	SCREW H M30 X 300 - 8.8

AF = Stacking Bolt w/ Washer

6



UNC Threads

Size	Model Code
1	HRS 1 AF ST UNC
2	HRS 2 AF ST UNC
3	HRS 3 AF ST UNC
4	HRS 4 AF ST UNC
5	HRS 5 AF ST UNC

TM = C-Rail Nut

7

Size	Model Code
1-3	HRS 1-3 TM3/8 ST UNC BL
4	HRS 4 TM7/16 ST UNC BL

TS = C-Rail

Size	Model Code
39”	HRS TS 40x22 ST BL 1M
78”	HRS TS 40x22 ST BL 2M

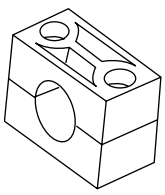
Parts Legend

1 Hex Head Bolt	5 Clamp Pair
2 Top Plate	6 Stacking Bolt
3 Weld Plate	7 C-Rail Nut
4 Safety Plate	8 Rubber Insert

Model Code

KP = Clamp Pair

5



HRS 1 KP 12.7 PP

Series

Size
1 to 8 *(refer to table B, page 78)*

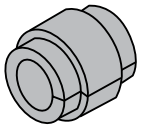
Clamp Pair

Bore Size *(in mm)*
(refer to table B, page 78)

Clamp Material
PP = Polypropylene
PA = Polyamide
AL = Aluminum

EE = Rubber Insert *(Santoprene TPE 73 - sizes 2-4)*
(Buna NBR 70 - sizes 5-7)

8



HRES 3/6 L EE 26.9

Series

Size
2/4 L to 7 *(refer to table page 84)*

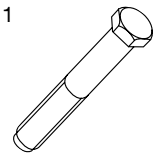
Rubber Insert

Bore Size *(in mm)*
(refer to table page 84)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

HRZ Series
Parts

1

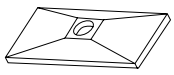


UNC Threads

UNC Hex Head Bolts

Size	Model Code
1	SCREW H 1/4 - 20 x 1.5 GR2
2	SCREW H 5/16 - 18 x 1.25 GR2
3	SCREW H 5/16 - 18 x 1.75 GR2
4	SCREW H 5/16 - 18 x 2.00 GR2
5	SCREW H 5/16 - 18 x 2.50 GR2

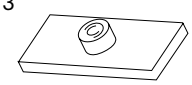
2



DP = Top Plate

Size	Model Code
1	HRZ 1 DP ST ZN
2	HRZ 2 DP ST ZN
3	HRZ 3 DP ST ZN
4	HRZ 4 DP ST ZN
5	HRZ 5 DP ST ZN

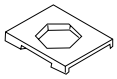
3



AP = Weld Plate

Size	Model Code
1	HRZ 1 AP ST UNC BL Anti-Turn
2	HRZ 2 AP ST UNC BL Anti-Turn
3	HRZ 3 AP ST UNC BL Anti-Turn
4	HRZ 4 AP ST UNC BL
5	HRZ 5 AP ST UNC BL

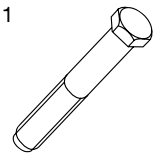
4



SIP = Safety Plate

Size	Model Code
1	HRZ 1 SIP ST ZN
2-5	HRZ 2/5 SIP ST ZN

1

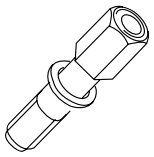


Metric Threads

Metric Hex Head Bolts

Size	Model Code
1	SCREW H M6x35 MM - 8.8 DIN 933
2	SCREW H M8x35 MM - 8.8 DIN 933
3	SCREW H M8x45 MM - 8.8 DIN 933
4	SCREW H M8x50 MM - 8.8 DIN 933
5	SCREW H M8x60 MM - 8.8 DIN 933

6

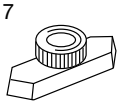


UNC Threads

AF = Stacking Bolt w/ Washer

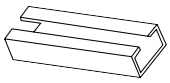
Size	Model Code
1	HRZ 1 AF ST UNC
2	HRZ 2 AF ST UNC
3	HRZ 3 AF ST UNC
4	HRZ 4 AF ST UNC
5	HRZ 5 AF ST UNC

7



TM = C-Rail Nut

Size	Model Code
1	HRZ 1 TM1/4 ST UNC KAP
2-5	HRZ 2/5 TM5/16 ST UNC O-Ring



TS = C-Rail

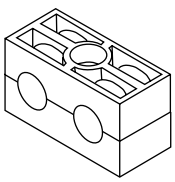
Size	Model Code
39”	HRL TS 28x11 ST BL 1M
78”	HRL TS 28x11 ST BL 2M

Parts Legend

1 Hex Head Bolt
2 Top Plate
3 Weld Plate
4 Safety Plate
5 Clamp Pair
6 Stacking Bolt
7 C-Rail Nut

Model Code
KP = Clamp Pair

5



HRZ 1 KP 9.5-9.5 PP

Series

Size
0 to 5
(refer to table C, page 80)

Clamp Pair

Bore Size *(in mm)*
(refer to table C, page 80)

Clamp Material
PP = Polypropylene
PA = Polyamide

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability. Not all combinations are available.

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HOM Series

Description

The interlock edge insures that the cushion remains in place. The HOM Series clamp assembly retains, guides, protects and uniformly spaces line runs. They go up fast, lines are rigid, and look neat.

Features

Attached with two standard* fasteners to any flat surface, the HOM Series clamp eliminates the use of specials channels, providing a savings in both space and cost.

- Low profile for limited space applications.

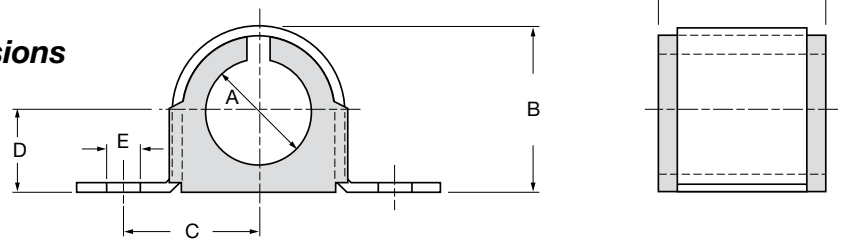
Materials

The Clamp
Available in steel (with electro-dichromate finish), and 304 stainless steel (A2 in the model code denotes 304 stainless steel).

The Cushion
Manufactured from a thermoplastic elastomer, it's built tough to withstand the effects of most oils, chemical and industrial cleaning compounds, in temperatures from -50° to 275°F.

*Note: Fasteners not provided.

Dimensions



Model Code	Part Number	Copper & Steel Tubing O.D.	Copper Water Pipe	Pipe Size	A	B	C	D	E	F
HOM 1/4T	02080747	1/4"	–	–	0.25"	0.48"	0.60"	0.22"	0.26"	0.78"
HOM 1/4T A2	02080768									
HOM 3/8T	02080748	3/8"	1/4"	–	0.37"	0.62"	0.66"	0.31"	0.26"	0.81"
HOM 3/8T A2	02080769									
HOM 1/2T - 1/4P	02080749	1/2"	3/8"	1/4"	0.50"	0.81"	0.83"	0.40"	0.26"	0.98"
HOM 1/2T - 1/4P A2	02080770									
HOM 5/8-3/8P	02080750	5/8"	1/2"	3/8"	0.62"	0.93"	0.85"	0.46"	0.26"	0.98"
HOM 5/8-3/8P A2	02080771									
HOM 3/4T	02080751	3/4"	5/8"	–	0.75"	1.02"	0.90"	0.50"	0.26"	0.98"
HOM 3/4T A2	02080772									
HOM 7/8 - 1/2P	02080752	7/8"	3/4"	1/2"	0.87"	1.12"	1.03"	0.53"	0.26"	0.98"
HOM 7/8 - 1/2P A2	02080773									
HOM 1T	02080753	1"	–	–	1.00"	1.24"	1.04"	0.59"	0.26"	0.98"
HOM 1T A2	02080774									
HOM 3/4P	02080754	–	–	3/4"	1.05"	1.40"	1.11"	0.70"	0.26"	0.98"
HOM 3/4P A2	02080775									
HOM 1 1/8T	02080755	1 1/8"	1"	–	1.12"	1.40"	1.17"	0.70"	0.26"	0.98"
HOM 1 1/8T A2	02080776									
HOM 1 1/4T	02080756	1 1/4"	–	–	1.25"	1.60"	1.20"	0.77"	0.26"	1.56"
HOM 1 1/4 A2	02080777									
HOM 1P	02080757	–	–	1"	1.31"	1.71"	1.28"	0.81"	0.26"	1.56"
HOM 1P A2	02080778									
HOM 1 3/8T	02080758	1 3/8"	1 1/4"	–	1.37"	1.71"	1.28"	0.83"	0.26"	1.56"
HOM 1 3/8T A2	02080779									
HOM 1 1/2T	02080759	1 1/2"	–	–	1.50"	1.85"	1.36"	0.90"	0.26"	1.56"
HOM 1 1/2T A2	02080780									
HOM 1 5/8T	02080760	1 5/8"	1 1/2"	–	1.62"	1.95"	1.43"	0.96"	0.26"	1.56"
HOM 1 5/8T A2	02080781									
HOM 1 1/4P	02080761	–	–	1 1/4"	1.66"	2.12"	1.55"	0.99"	0.34"	1.56"
HOM 1 1/4P A2	02080782									
HOM 1 3/4T	02080762	1 3/4"	–	–	1.75"	2.12"	1.55"	1.02"	0.34"	1.56"
HOM 1 3/4T A2	02080783									
HOM 1 7/8T - 1 1/2P	02080763	1 7/8"	–	1 1/2"	1.87"	2.25"	1.64"	1.09"	0.34"	1.56"
HOM 1 7/8T - 1 1/2P A2	02080784									
HOM 2T	02080764	2"	–	–	2.00"	2.38"	1.69"	1.15"	0.34"	1.56"
HOM 2T A2	02080785									
HOM 2 1/8T	02080765	2 1/8"	–	–	2.12"	2.62"	1.86"	1.27"	0.34"	1.56"
HOM 2 1/8T A2	02080786									
HOM 2 3/8T - 2P	02080766	2 3/8"	–	2"	2.37"	2.88"	1.94"	1.41"	0.34"	1.56"
HOM 2 3/8T - 2P A2	02080787									
HOM 5 1/8T	02080767	5 1/8"	5"	–	5.12"	5.82"	3.55"	2.84"	0.43"	1.56"

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

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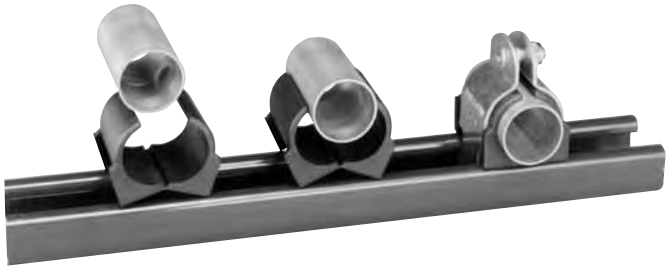
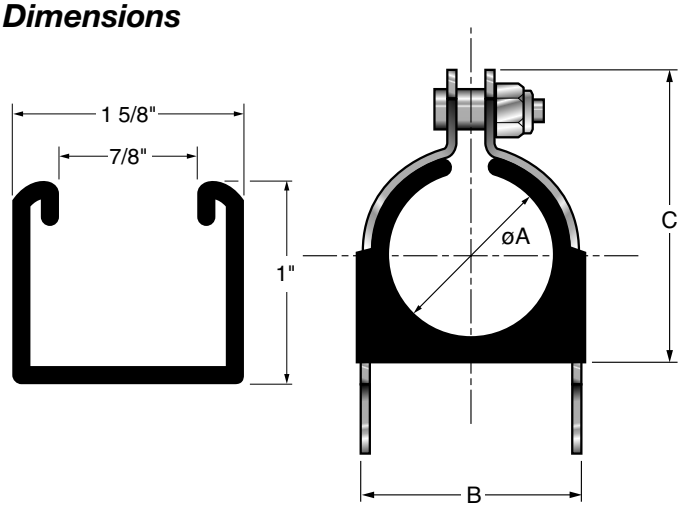
Not all combinations are available

CUSH Series
Cushion Clamps



Dimensions



Description

Cushion clamps are ideal for multiple line runs, while absorbing shock and vibration, reducing unwanted noise and preventing galvanic corrosion.

Features

- Distortion free clamping
- Shock and vibration reduction
- Elimination of rotation
- Retrofit without disassembly
- Easy installation
- Control squeeze shoulder bolt prevents over tightening of the clamp assembly, preventing the possibility of crushing the tube.
- Fits standard 1-5/8" wide mounting rail

Materials

- Clamp - carbon steel (with electrodichromate finish)
- Cushion - thermoplastic elastomer
- Cushion material withstands the effect of most oils, chemicals and industrial cleaning solvents at temperatures -40° to 275°F.

Mounting Rail

- **Part Number:** 02073325
- **Model Code:** Cush Rail 1" x 4' Galvanized
- **Material:** Low gauge carbon steel
- **Finish:** Galvanized
- **Length:** 4'

Model Code	Application			Dimensions			Part No.
	Copper & Steel Tubing in.	Copper Water Pipe (nom.) in.	Nom. Pipe Size in.	ø A in.	B in.	C in.	
CUSH 1/4T	1/4			0.25	0.62	0.98	02073330
CUSH 3/8T	3/8	1/4		0.37	0.82	1.13	02073331
CUSH 1/2T	1/2	3/8		0.50	0.94	1.34	02073332
CUSH 1/4P			1/4	0.54	0.98	1.34	02073361
CUSH 5/8T	5/8	1/2		0.62	1.06	1.54	02073333
CUSH 3/8P			3/8	0.67	1.13	1.54	02073362
CUSH 3/4T	3/4	5/8		0.75	1.20	1.68	02073334
CUSH 1/2P			1/2	0.84	1.29	1.82	02073363
CUSH 7/8T	7/8	3/4		0.87	1.31	1.82	02073335
CUSH 1T	1			1.00	1.44	1.95	02073336
CUSH 3/4P			3/4	1.05	1.50	1.95	02073364
CUSH 1-1/8T	1 1/8	1		1.12	1.57	2.08	02073337
CUSH 1-1/4T	1 1/4			1.25	1.70	2.21	02073338
CUSH 1P			1	1.31	1.76	2.34`	02073365
CUSH 1-3/8T	1 3/8	1 1/4		1.37	1.82	2.34	02073339
CUSH 1-1/2T	1 1/2			1.50	1.95	2.47	02073340
CUSH 1-5/8T	1 5/8	1 1/2		1.62	2.07	2.60	02073341
CUSH 1-1/4P			1 1/4	1.66	2.17	2.73	02073366
CUSH 1-3/4T	1 3/4			1.75	2.20	2.73	02073342
CUSH 1-7/8T	1 7/8			1.87	2.32	2.86	02073343
CUSH 1-1/2P			1 1/2	1.90	2.35	2.86	02073367
CUSH 2T	2			2.00	2.45	3.04	02073344
CUSH 2-1/8T	2 1/8			2.12	2.57	3.23	02073345
CUSH 2-3/8T	2 3/8			2.37	2.82	3.67	02073346
CUSH 2P			2	2.37	2.82	3.67	02073368
CUSH 2-5/8T	2 5/8			2.62	3.07	3.92	02073348
CUSH 2-1/2P			2 1/2	2.87	3.32	4.17	02073369
CUSH 3-1/8T	3 1/8			3.12	3.57	4.42	02073351
CUSH 3P			3	3.50	3.95	4.79	02073370
CUSH 4P			4	4.50	4.95	5.95	02073372
CUSH 5P			5	5.56	6.01	6.92	02073373
CUSH 6P			6	6.62	7.07	8.23	02073374

Tube Series: T = with Controlled Squeeze Shoulder Bolt *(sizes 1 3/8" and smaller)*
Pipe Series: P = without Controlled Squeeze Bolt
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Not all combinations are available

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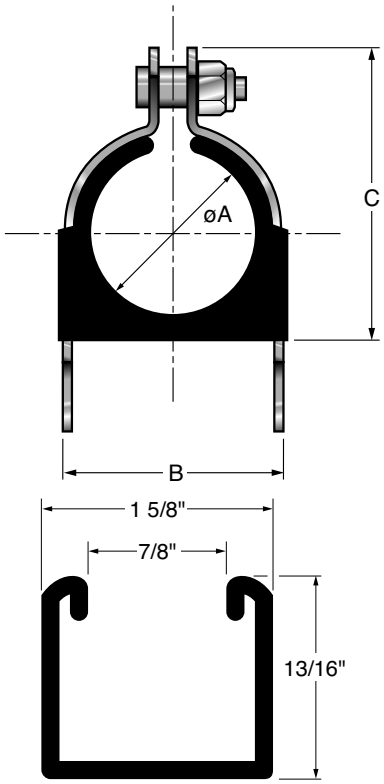
Dimensions



Materials

- Clamp - Stainless steel 304
- Cushion - thermoplastic elastomer

Mounting Rail

- **Model Code:** Cush Rail 13/16” x 10’ A2
- **Part Number:** 02701588
- **Material:** Stainless steel 304
- **Length:** 10’0”

Model Code	Part No.	Size	A	B	C
CUSH 1/4T A2	02080701	1/4”	0.25”	0.62”	0.98”
CUSH 3/8T A2	02080702	3/8”	0.37”	0.82”	1.13”
CUSH 1/2T A2	02080703	1/2”	0.50”	0.94”	1.34”
CUSH 5/8T A2	02080704	5/8”	0.62”	1.06”	1.54”
CUSH 3/4T A2	02080705	3/4”	0.75”	1.20”	1.68”
CUSH 7/8T A2	02080706	7/8”	0.87”	1.31”	1.82”
CUSH 1T A2	02080707	1”	1.00”	1.44”	1.95”
CUSH 1 1/8T A2	02080708	1 1/8”	1.12”	1.57”	2.08”
CUSH 1 1/4T A2	02080709	1 1/4”	1.25”	1.70”	2.21”
CUSH 1 3/8T A2	02080710	1 3/8”	1.37”	1.82”	2.34”
CUSH 1 1/2T A2	02080711	1 1/2”	1.50”	1.95”	2.47”
CUSH 1 5/8T A2	02080712	1 5/8”	1.62”	2.07”	2.60”
CUSH 1 3/4T A2	02080713	1 3/4”	1.75”	2.20”	2.73”
CUSH 1 7/8T A2	02080714	1 7/8”	1.87”	2.32”	2.86”
CUSH 2T A2	02080715	2”	2.00”	2.45”	3.04”
CUSH 2 1/8T A2	02080716	2 1/8”	2.12”	2.57”	3.23”
CUSH 2 1/4T A2	02080717	2 1/4”	2.37”	2.82”	3.67”
CUSH 2 3/8T A2	02080718	2 3/8”	2.37”	2.82”	3.67”
CUSH 2 1/2T A2	02080719	2 1/2”	2.50”	2.94”	3.79”
CUSH 2 5/8T A2	02080720	2 5/8”	2.62”	3.07”	3.92”
CUSH 2 7/8T A2	02080721	2 7/8”	2.87”	3.32”	4.17”
CUSH 3T A2	02080722	3”	3.00”	3.57”	4.42”
CUSH 3 1/8T A2	02080723	3 1/8”	3.12”	3.57”	4.42”
CUSH 3 5/16T A2	02080724	3 5/16”	3.31”	3.96”	4.75”
CUSH 3 1/2T A2	02080725	3 1/2”	3.50”	3.95”	4.79”
CUSH 3 5/8T A2	02080726	3 5/8”	3.62”	4.20”	5.11”
CUSH 4T A2	02080727	4”	4.00”	4.45”	5.11”
CUSH 4 1/8T A2	02080728	4 1/8”	4.12”	4.57”	5.54”
CUSH 4 1/2T A2	02080729	4 1/2”	4.50”	4.95”	5.92”
CUSH 5 1/8T A2	02080730	5 1/8”	5.12”	5.57”	6.54”
CUSH 6T A2	02080731	6”	6.12”	6.57”	7.54”
CUSH 6 1/8T A2	02080732	6 1/8”	6.12”	6.57”	7.54”
CUSH 1/4P A2	02080733	1/4”	0.54”	0.98”	1.34”
CUSH 3/8P A2	02080734	3/8”	0.67”	1.13”	1.54”
CUSH 1/2P A2	02080735	1/2”	0.84”	1.29”	1.82”
CUSH 3/4P A2	02080736	3/4”	1.05”	1.57”	2.08”
CUSH 1P A2	02080737	1”	1.31”	1.76”	2.34”
CUSH 1 1/4P A2	02080738	1 1/4”	1.66”	2.17”	2.73”
CUSH 1 1/2P A2	02080739	1 1/2”	1.90”	2.35”	2.86”
CUSH 2P A2	02080740	2”	2.37”	2.82”	3.67”
CUSH 2 1/2P A2	02080741	2 1/2”	2.87”	3.32”	4.17”
CUSH 3P A2	02080742	3”	3.50”	3.95”	4.79”
CUSH 3 1/2P A2	02080743	3 1/2”	4.00”	4.45”	5.11”
CUSH 4P A2	02080744	4”	4.50”	4.95”	5.92”
CUSH 5P A2	02080745	5”	5.56”	6.01”	6.92”
CUSH 6P A2	02080746	6”	6.62”	7.07”	8.23”

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Not all combinations are available

HRBGS Series
Buegu Clamps

Description

Buegu clamps are ideal for mobile applications where space is limited. They absorb shock and vibration, and reduce noise.

Features

- Low Profile Design
- Shock and vibration reduction
- Easy installation

Materials

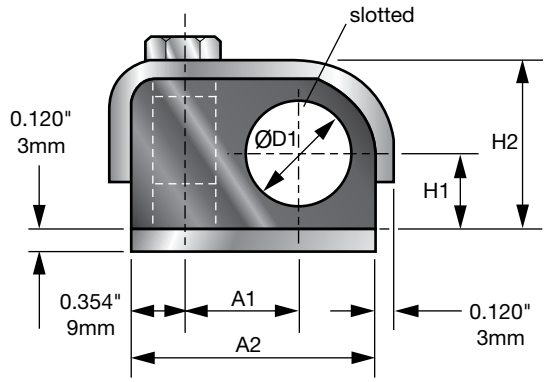
- Stirrup & Weld Plate - carbon steel
- Clamp Body - thermoplastic elastomer *(Santoprene TPE 73)*

Temp Specifications

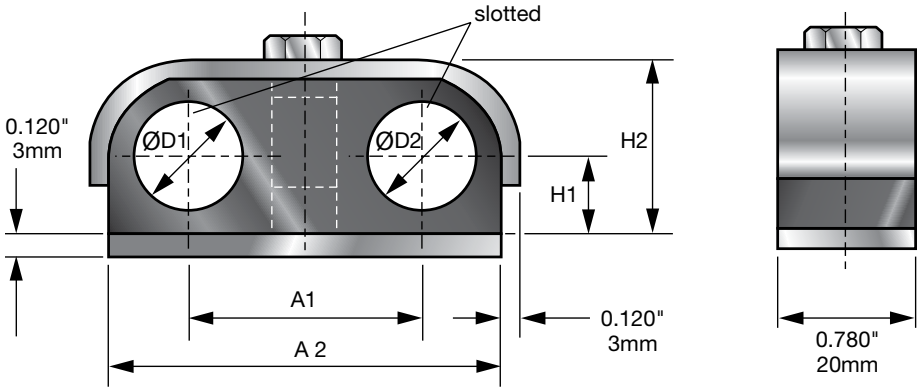
- -40° to 257°F (-40° to 125°C)

Dimensions

Size: 0A & 0B



Size: 1 and 2



Clamp Size	Tube Size	Pipe Size	Bore Diameter[1] øD1 in	Bore Diameter[1] øD1 mm	Bore Diameter[1] øD2 in	Bore Diameter[1] øD2 mm	Clamp Assembly Model Code	Part No.		Dimensions A_1	Dimensions A_2	Dimensions H_1	Dimensions H_2	Hex Head Bolt
0A	1/4"	-	0.250	6.4	-	-	HRBGS 0A A 6.4 STM	02063638	mm	15	34	10	23	M6 x 25
	3/8"	-	0.375	9.5	-	-	HRBGS 0A A 9.5 STM	02063639	in	0.59	1.34	0.39	0.91	
	-	1/8"	0.394	10.0	-	-	HRBGS 0A A 10.0 STM	02063640						
0B	1/2"	-	0.500	12.7	-	-	HRBGS 0B A 12.7 STM	02063641	mm	18	39	12	27	
	-	1/4"	0.540	13.7	-	-	HRBGS 0B A 13.7 STM	02063642						
	5/8"	-	0.625	16.0	-	-	HRBGS 0B A 16.0 STM	02063643	in	0.71	1.54	0.47	1.06	
	-	3/8"	0.675	17.1	-	-	HRBGS 0B A 17.1 STM	02063644						
	3/4"	-	0.750	19.0	-	-	HRBGS 0B A 19.0 STM	02063645						
1	1/4"	-	0.250	6.4	0.250	6.4	HRBGS 1 A 6.4-6.4 STM	02063646	mm	30	50	10	23	
	3/8"	-	0.375	9.5	0.375	9.5	HRBGS 1 A 9.5-9.5 STM	02063647						
	-"	1/8"	0.394	10.0	0.394	10.0	HRBGS 1 A 10-10 STM	02063648	in	1.18	1.97	0.39	0.91	
	1/2"	-	0.500	12.7	0.500	12.7	HRBGS 1 A 12.7-12.7 STM	02063649						
2	5/8"	-	0.625	16.0	0.625	16.0	HRBGS 2 A 16-16 STM	02063650	mm	35	59	12	27	
	-	3/8"	0.675	17.1	0.675	17.1	HRBGS 2 A 17.1-17.1 STM	02063651						
	3/4"	-	0.750	19.0	0.750	19.0	HRBGS 2 A 19-19 STM	02063652	in	1.38	2.32	0.47	1.06	

1) Consult Factory for sizes 1 and 2 with different bore diameters
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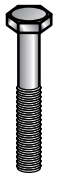
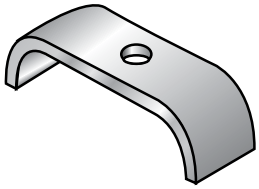
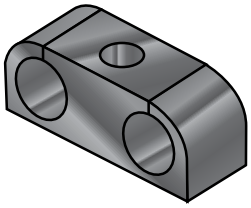
Buegu Clamp Parts



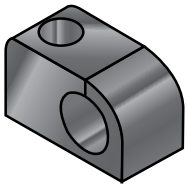
Hex Head Bolt



BUE = Stirrup

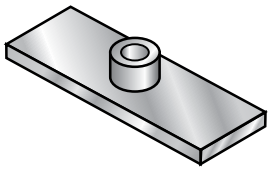


Size 1,2



Size 0
GT = Rubber Body

HUE= Sleeve



AP = Weld Plate

Hex Head Bolt for use with Weld Plate		
Sizes	**Model Code**	**Part Number**
0A, 0B, 1, 2	SCREW H M6x25-8.8 DIN933	02700852

BUE = Stirrup		
Sizes	**Model Code**	**Part Number**
0A	HRBGS 0A BUE ST ZN	00263306
0B	HRBGS 0B BUE ST ZN	00263307
1	HRBGS 1 BUE ST ZN	00263316
2	HRBGS 2 BUE ST ZN	00263309

Clamp Size	Bore Diameter[1]				GT = Clamp Body	
	øD1		øD2			
	in	mm	in	mm	Model Code	Part No.
0A	0.250	6.4	-	-	*HRBGS 0A GT 6.4*	*00268169*
	0.375	9.5	-	-	HRBGS 0A GT 9.5	00268170
	0.394	10.0	-	-	*HRBGS 0A GT 10.0*	*00263296*
0B	0.500	12.7	-	-	*HRBGS 0B GT 12.7*	*00268171*
	0.540	13.7	-	-	*HRBGS 0B GT 13.7*	*00268172*
	0.625	16.0	-	-	*HRBGS 0B GT 16.0*	*00263298*
	0.675	17.1	-	-	*HRBGS 0B GT 17.1*	*00268173*
	0.750	19.0	-	-	*HRBGS 0B GT 19.0*	*00264713*
1	0.250	6.4	0.250	6.4	HRBGS 1 GT 6.4-6.4	00268174
	0.375	9.5	0.375	9.5	HRBGS 1 GT 9.5-9.5	00268175
	0.394	10.0	0.394	10.0	HRBGS 1 GT 10-10	00263313
	0.500	12.7	0.500	12.7	*HRBGS 1 GT 12.7-12.7*	*00264011*
2	0.630	16.0	0.625	16.0	HRBGS 2 GT 16-16	00263304
	0.675	17.1	0.675	17.1	*HRBGS 2 GT 17.1-17.1*	*00268176*
	0.750	19.0	0.750	19.0	HRBGS 2 GT 19-19	00268177

1) Consult Factory for sizes 1 and 2 with different bore diameters.

HUE = Sleeve for use with Weld Plate		
Sizes	**Model Code**	**Part Number**
0A	HRBGS 0A/1 HUE 11.5 ZN	00263418
0B	HRBGS 0B/2 HUE 15.5 ZN	00263419
1	HRBGS 0A/1 HUE 11.5 ZN	00263418
2	HRBGS 0B/2 HUE 15.5 ZN	00263419
HUE = Sleeve for use without Weld Plate		
0A	*HRBGS 0A/1 HUE 18 ZN*	*00263310*
0B	HRBGS 0B/2 HUE 22 ZN	00263311
1	*HRBGS 0A/1 HUE 18 ZN*	*00263310*
2	HRBGS 0B/2 HUE 22 ZN	00263311

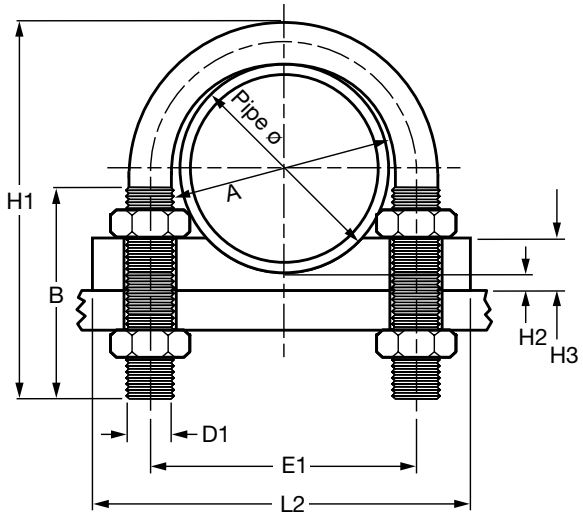
AP = Weld Plate		
Sizes	**Model Code**	**Part Number**
0A	*HRBGS 0A AP ST M BL VS*	*03280090*
0B	HRBGS 0B AP ST M BL VS	03280089
1	HRBGS 1 AP ST M BL VS	03280087
2	HRBGS 2 AP ST M BL VS	03278493

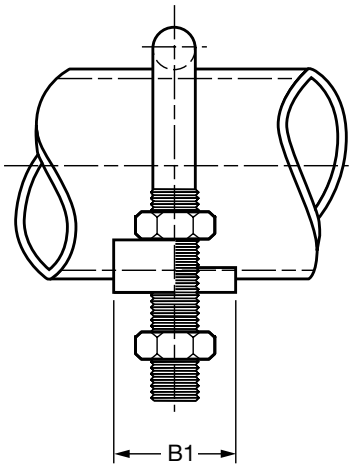
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg.)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

HRRBS Series
U-bolt Clamps

Dimensions





Description

U-bolt clamps are a simple solution for securing pipes and other cylindrical objects. The clamps consist of a threaded “U” and a contoured saddle.

Features

- Metric Threads
- Easy installation

Materials

- Threaded “U” - zinc-plated carbon steel
- Saddle - polypropylene

Size	Model Code	Part No.	Pipe or Tube	U-Bolt					Pipe support long version				
				A	B	D1	E1	H1	H2	H3	L2	B1	Pipe Ø
1	HRRBS 1 L 21.3 PP ST ZN	02072678	1/2” Pipe	23	40	M10	33	65	5	10	60	25	21.3
2	HRRBS 2 L 26.9 PP ST ZN	02065150	3/4” Pipe	30	40	M10	40	70	5	12	75	30	26.9
3	HRRBS 3 L 33.7 PP ST ZN	02065151	1” Pipe	38	40	M10	48	75	5	12	80	30	33.7
4	HRRBS 4 L 42.4 PP ST ZN	02065152	-	46	50	M10	56	86	5	12	90	30	42.4
5	HRRBS 5 L 48.3 PP ST ZN	02065153	1 1/2” Pipe	52	50	M10	62	92	5	15	95	35	48.3
6	HRRBS 6 L 60.3 PP ST ZN	02065154	2” Pipe	64	60	M12	76	109	5	15	110	35	60.3
7	HRRBS 7 L 76.1 PP ST ZN	02065155	3” Tube	82	60	M12	94	125	5	15	135	35	76.1
8	HRRBS 8 L 88.9 PP ST ZN	02065156	3” Pipe	94	60	M12	106	138	10	20	145	40	88.9
9	HRRBS 9 L 108 PP ST ZN	02065157	-	120	80	M16	136	171	10	20	190	40	108
9	HRRBS 9 L 114.3 PP ST ZN	02065158	4” Pipe / 4 1/2” Tube	120	80	M16	136	171	10	20	190	40	114.3
10	HRRBS 10 L 139.7 PP ST ZN	02065159	5” Pipe	148	80	M16	164	191	10	20	220	40	139.7
11	HRRBS 11 L 159 PP ST ZN	02065160	-	176	80	M16	192	217	12	25	250	50	159
11	HRRBS 11 L 168.3 PP ST ZN	02065161	6” Pipe	176	80	M16	192	217	12	25	250	50	168.3
13	HRRBS 13 L 219.1 PP ST ZN	02065162	8” Pipe	228	100	M20	248	283	12	25	315	50	219.1
14	HRRBS 14 L 273 PP ST ZN	02065163	10” Pipe	282	100	M20	302	334	12	25	370	50	273
17	HRRBS 17 L 406.4 PP ST ZN	02068318	16” Pipe	428	100	M24	452	487	15	30	540	60	406.4

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HUB Series

Description

Designed for the tough jobs, the HUB Series secures pipe runs to any flat surface. The U-Bolt traps and secures the cushion in place to prevent lateral movement, while nylon insert locknuts provide a positive lock.

Features

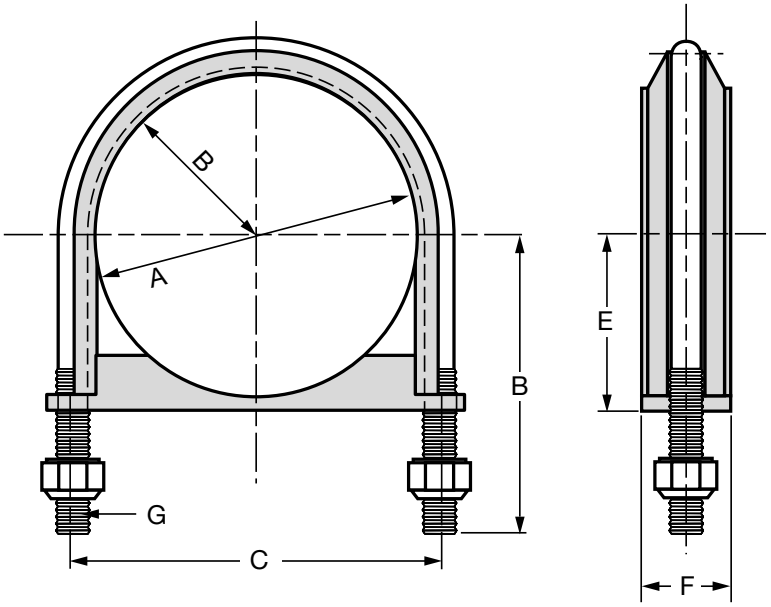
The cushion design provides total load distribution, allowing the U-Bolt to become a full contact hanger, eliminating knife-edge loading. Extremely cost effective, especially in larger sizes.

Materials

- U-Bolt - Steel with electro-galvanized finish or 316 stainless steel*
- Cushion - Thermoplastic elastomer, rated from -50˚ to 275˚F

* The A4 in the model code denotes 316 stainless steel

Dimensions



Model Code	Part Number	Pipe Size	ø A	B radius	C	D	E	F	G	H
HUB 1/2P	02080788	1/2”	0.84”	0.80”	1.60”	1.50”	0.67”	0.68”	1/4	1/4-20 UNC-2B
HUB 1/2P A4	*02080803*									
HUB 3/4P	02080789	3/4”	1.05”	0.90”	1.80”	1.60”	0.78”	0.68”	1/4	1/4-20 UNC-2B
HUB 3/4P A4	*02080804*									
HUB 1P	02080790	1”	1.31”	1.02”	2.05”	1.70”	0.91”	0.68”	1/4	1/4-20 UNC-2B
HUB 1P A4	*02080805*									
HUB 1 1/4P	02080791	1 1/4”	1.66”	1.27”	2.55”	2.10”	1.08”	1.24”	3/8	3/8-16 UNC-2B
HUB 1 1/4P A4	*02080806*									
HUB 1 1/2P	02080792	1 1/2”	1.90”	1.40”	2.80”	2.20”	1.19”	1.24”	3/8	3/8-16 UNC-2B
HUB 1 1/2P A4	*02080807*									
HUB 2P	02080793	2”	2.37”	1.67”	3.35”	2.50”	1.45”	1.24”	3/8	3/8-16 UNC-2B
HUB 2P A4	*02080808*									
HUB 2 1/2P	*02080794*	*2 1/2”*	*2.87”*	*1.95”*	*3.90”*	*3.00”*	*1.69”*	*1.24”*	*1/2*	*1/2-13 UNC-2B*
HUB 2 1/2P A4	*02080809*									
HUB 3P	02080795	3”	3.50”	2.27”	4.55”	3.30”	2.00”	1.24”	1/2	1/2-13 UNC-2B
HUB 3P A4	*02080810*									
HUB 3 1/2P	*02080796*	*3 1/2”*	*4.00”*	*2.52”*	*5.05”*	*3.70”*	*2.25”*	*1.24”*	*1/2*	*1/2-13 UNC-2B*
HUB 3 1/2P A4	*02080811*									
HUB 4P	02080797	4”	4.50”	2.75”	5.50”	3.90”	2.50”	1.24”	1/2	1/2-13 UNC-2B
HUB 4P A4	*02080812*									
HUB 5P	02080798	5”	5.56”	3.25”	6.56”	4.50”	3.03”	1.24”	1/2	1/2-13 UNC-2B
HUB 5P A4	*02080813*									
HUB 6P	02080799	6”	6.62”	3.87”	7.75”	5.40”	3.56”	1.44”	5/8	5/8-11 UNC-2B
HUB 6P A4	*02080814*									
HUB 8P	*02080800*	*8”*	*8.82”*	*4.85”*	*9.82”*	*6.40”*	*4.56”*	*1.44”*	*5/8*	*5/8-11 UNC-2B*
HUB 8P A4	*02080815*									
HUB 10P	*02080801*	*10”*	*10.75”*	*6.08”*	*12.16”*	*7.70”*	*5.68”*	*1.65”*	*3/4*	*3/4-10 UNC-2B*
HUB 10P A4	*02080816*									
HUB 12P	*02080802*	*12”*	*12.75”*	*7.13”*	*14.25”*	*8.70”*	*6.68”*	*1.65”*	*3/4*	*3/4-10 UNC-2B*
HUB 12P A4	*02080817*									

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Not all combinations are available

HROS Series
Oval Clamps

Description
Oval clamps are ideal for mobile applications where space is limited. One-piece, hinged polypropylene clamp body.

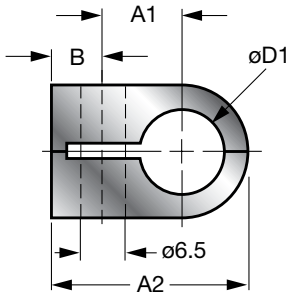
Features
- Low Profile Design
- Easy installation

Materials
- PP - Polypropylene (standard)
- PA or others may be available

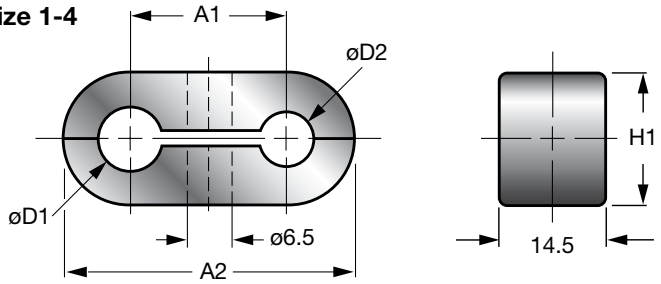
Temp Specifications
-22° to 194°F (-30° to 90°C)

Dimensions

Size 0



Size 1-4



Model Code	Part No.	Size	Tube Size	Pipe Size	A1	A2	B	øD1* & øD2*	øD1* & øD2*	H1
HROS 0a KP 6.0 PP	00264377	0A	–	–	9	22.8	7	6.0 6.4 8.0	6 to 8	13.5
HROS 0a KP 6.4 PP	00267926		1/4”	–						
HROS 0a KP 8 PP	00266455		5/16”	–						
HROS 0b KP 8 PP	00267982	0B	5/16”	–	11	27.2	7	8.0 9.5 12.7	8 to 12.7	18.5
HROS 0b KP 9.5 PP	00267981		3/8”	–						
HROS 0b KP 12.7 PP	00267931		1/2”	–						
HROS 0c KP 10 PP	00267993	0C	–	1/8”	15	33.5	6.7	10 12.7 16	10 to 16	23.6
HROS 0c KP 12.7 PP	00267991		1/2”	–						
HROS 0c KP 16 PP	00264380		5/8”	–						
HROS 0d KP 14 PP	00268008	0D	–	–	19	40	5.7	14 16 19 25.4	14 to 25.4	30.6
HROS 0d KP 16 PP	00268004		5/8”	3/8”						
HROS 0d KP 19 PP	00267999		3/4”	1/2”						
HROS 0d KP 25.4 PP	00268217		1”	–						
HROS 1 KP 6 - 6 PP	00268231	1	–	–	18	32	N/A	6-6 6.4-6.4 8-8	6 to 8	13.5
HROS 1 KP 6.4 - 6.4 PP	00268230		1/4”	–						
HROS 1 KP 8 - 8 PP	00268229		5/16”	–						
HROS 2 KP 8 - 8 PP	00268236	2	5/16”	–	22	40.5	N/A	8-8 9.5-9.5 12.7-12.7	8 to 12.7	18.5
HROS 2 KP 9.5 - 9.5 PP	00268237		3/8”	–						
HROS 2 KP 12.7 - 12.7 PP	00268241		1/2”	–						
HROS 3 KP 10 - 10 PP	00268250	3	–	1/8”	30	53.6	N/A	10-10 12.7-12.7 16-16	10 to 16	23.6
HROS 3 KP 12.7 - 12.7 PP	00268253		1/2”	–						
HROS 3 KP 16 - 16 PP	00268257		5/8”	–						
HROS 4 KP 14 - 14 PP	00268270	4	–	–	38	68.3	N/A	14-14 16-16 19-19 25.4-25.4	14 to 25.4	30.6
HROS 4 KP 16 - 16 PP	00268272		5/8”	3/8”						
HROS 4 KP 19 - 19 PP	00268275		3/4”	1/2”						
HROS 4 KP 25.4 - 25.4 PP	00268280		1”	–						

*D1 and D2 may be different bore sizes. Dimensions listed are standard.
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Not all combinations are available

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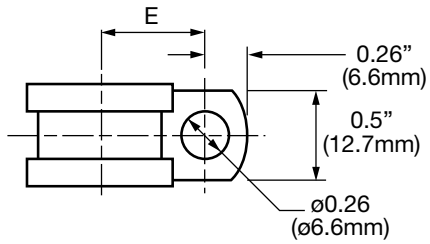
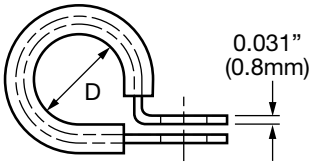
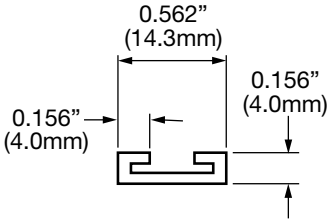
HSPN Series

Dimensions







Description

P style clamp used for mounting a multitude of light duty applications including cables, pnuematic lines, and conduit.

Features

HSPN clamps provide electrical insulation and vibration absorbtion.

Materials

- EPDM cushion
- Steel clamps are zinc electroplated for corrosion resistance
- Color- Silver with black EPDM cushion
- The A2 in the model code denotes 304 stainless steel

Model Code	Part No.	Holding Dia. D	E
HSPN-3	02080818	3/16” (4.8)	3/8” (9.5)
HSPN-4	02080819	1/4” (6.4)	13/32” (10.3)
HSPN-4 A2	02080844		
HSPN-5	02080820	5/16” (7.9)	7/16” (11.1)
HSPN-5 A2	02080845		
HSPN-6	02080821	3/8” (9.5)	15/32” (11.9)
HSPN-6 A2	02080846		
HSPN-7	02080822	7/16” (11.1)	1/2” (12.7)
HSPN-7 A2	02080847		
HSPN-8	02080823	1/2” (12.7)	17/32” (13.5)
HSPN-8 A2	02080848		
HSPN-9	02080824	9/16” (14.30)	9/16” (14.3)
HSPN-9 A2	02080849		
HSPN-10	02080825	5/8” (15.9)	19/32” (15.1)
HSPN-10 A2	02080850		
HSPN-11	02080826	11/16” (17.5)	5/8” (15.9)
HSPN-12	02080827	3/4” (19.1)	3/4” (19.1)
HSPN-12 A2	02080852		
HSPN-14	02080829	7/8” (22.2)	13/16” (20.6)
HSPN-14 A2	02080854		
HSPN-16	02080831	1” (25.4)	7/8” (22.2)
HSPN-16 A2	02080856		
HSPN-18	02080832	1-1/8” (28.6)	15/16” (23.8)
HSPN-18 A2	02080857		
HSPN-20	02080833	1-1/4” (31.8)	1” (25.4)
HSPN-20 A2	02080858		
HSPN-22	02080834	1-3/8” (34.9)	1-5/32” (29.3)
HSPN-24	02080835	1-1/2” (38.1)	1-7/32” (30.9)
HSPN-24 A2	02080860		
HSPN-26	02080836	1-5/8” (41.3)	1-9/32” (32.5)
HSPN-28	02080837	1-3/4” (44.5)	1-11/32” (34.1)
HSPN-28 A2	02080862		
HSPN-30	02080838	1-7/8” (47.6)	1-13/32” (35.7)
HSPN-32	02080839	2” (50.8)	1-15/32” (37.2)
HSPN-32 A2	02080864		
HSPN-34	02080840	2-1/8” (54.0)	1-17/32” (38.8)
HSPN-40	02080841	2-1/2” (63.5)	1-23/32” (43.6)
HSPN-48	02080842	3” (76.2)	1-31/32” (50.1)

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Not all combinations are available

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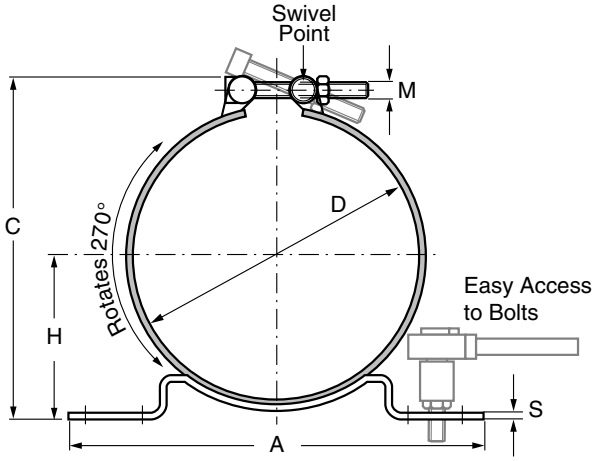
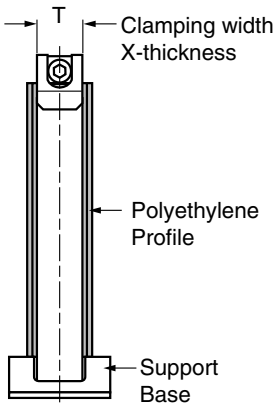
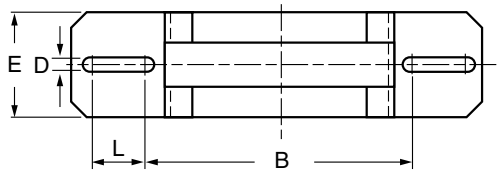
HRGKSM Series
Quick Release Swivel Bolt Clamps

Dimensions *(continued on next page)*







Description

The HRGKS is a clamp designed to mount cylindrical components. It is similar to the HYDAC HYRAC clamp, which is designed for accumulators, with some additional benefits that make it more practical for non-accumulator applications.

Features / Benefits

- Swivel Assembly Provides for simple installation and a tight fit
- Support Base Provides easy access to bolts / unit easy to install
- The clamp rotates ~270° / Easy access
- Polyethylene profile does not compress Clamp stays tight over time

For more detailed information on the HYRAC Clamps please refer to the HYDAC Accumulator Catalog

Materials

Description	Material / Coating
Support Base	Zinc Plated Steel
Polyethylene Profile	Polyethylene
Quick Release Swivel Bolt	Zinc-Plated Steel
Band Strap	Stainless Steel

HRGKSM vs. HYRAC*

Difference	HRGKSM	HYRAC
Profile Material	Polyethylene	Rubber
Capability to Rotate	Can be rotated 270°	Fixed at 90 deg
Fit in clamp	Component sits flat	Two nubs ensure H dimension is consistent with other HYDAC Accumulator Clamps

*HYRAC clamp sizes 96-100 and under have the same construction as the HRGKSM Series

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Model Code	Part No.	C Max	D*	M	T	A	S	L	B	E	d	Wt.
HRGKSM 0 R 40-43/44 ST	03018436	66.5	40-43	M 6 X 50	20x0.8	120	3	8	85	40	9	0.15
HRGKSM 0 R 44-46/47 ST	03018437	66.5	44-46									0.15
HRGKSM 0 R 47-50/50 ST	03018439	70.5	47-50									0.15
HRGKSM 0 R 51-54/55 ST	03018440	74.5	51-54									0.15
HRGKSM 0 R 55-58/59 ST	03018441	78.5	55-58									0.16
HRGKSM 0 R 58-61/62 ST	03018442	85	58-61									0.16
HRGKSM 0 R 62-65/65 ST	00444911	85	62-65									0.20
HRGKSM 0 R 66-69/69 ST	03018443	89	66-69									0.21
HRGKSM 0 R 70-73/73 ST	03018444	93	70-73									0.21
HRGKSM 0 R 73-76/76 ST	00444912	96	73-76									0.22
HRGKSM 0 R 77-80/80 ST	03018445	100	77-80									0.22
HRGKSM 0 R 81-84/85 ST	03018446	104	81-84									0.23
HRGKSM 0 R 85-88/89 ST	03018447	108	85-88									0.23
HRGKSM 0 R 89-92/93 ST	00444913	112	89-92									0.24
HRGKSM 0 R 92-95/96 ST	00444995	115	92-95									0.24
HRGKSM 0 R 96-100/100 ST	00444953	120	96-100									0.24
HRGKSM 1 R 101-109/106 ST	00444827	137	101-109	M 8 X 80	25x1.0	156	3	18	100	50	9	0.34
HRGKSM 1 R 110-118/115 ST	00444584	146	110-118									0.35
HRGKSM 1 R 119-127/124 ST	00444505	154	119-127									0.36
HRGKSM 1 R 128-136/133 ST	03013551	163	128-136									0.37
HRGKSM 1 R 137-145/142 ST	00444653	172	137-145									0.38
HRGKSM 1 R 146-154/151 ST	00444321	181	146-154									0.39
HRGKSM 1 R 150-158/154 ST	00444399	181	150-158									0.39
HRGKSM 1 R 155-163/160 ST	00444940	190	155-163									0.40
HRGKSM 1 R 164-172/169 ST	03008433	190	164-172									0.40
HRGKSM 2 R 163-171/169 ST	00444400	200	163-175	M 8 X 80	25x1.0	236	3	32	152	60	9	0.57
HRGKSM 2 R 167-175/173 ST	00444401	204	167-175									0.58
HRGKSM 2 R 172-180/178 ST	00444402	209	172-180									0.58
HRGKSM 2 R 181-192/187 ST	00444467	217	181-192									0.59
HRGKSM 2 R 186-194/192 ST	00444403	222	186-194									0.60
HRGKSM 2 R 199-207/205 ST	00444433	235	199-207									0.61
HRGKSM 2 R 208-216/214 ST	03132903	243	208-216									0.62
HRGKSM 2 R 217-225/223 ST	03001691	252	217-225									0.63
HRGKSM 2 R 226-234/231 ST	03001914	261	226-234									0.64
HRGKSM 3 R 235-246/243 ST	00444379	279	235-246	M 10 X 90	30x1.0	300	4	32	214	60	11	0.97
HRGKSM 3 R 248-259/256 ST	00444410	292	248-259									0.99
HRGKSM 3 R 261-272/269 ST	00444917	304	261-272									1.00
HRGKSM 3 R 268-279/276 ST	00444835	309	268-279									1.01
HRGKSM 3 R 274-285/282 ST	00444585	317	274-285									1.02
HRGKSM 3 R 287-298/295 ST	00444826	295	287-298									1.03
HRGKSM 3 R 293-304/301 ST	03083992	330	293-304									1.04
HRGKSM 3 R 300-311/308 ST	00444411	342	300-311									1.05
HRGKSM 3 R 313-324/321 ST	00444819	355	313-324									1.06
HRGKSM 3 R 326-337/334 ST	00444923	368	326-337									1.08
HRGKSM 4 R 339-350/347 ST	03025962	385	339-350	M 10 X 90	30x1.5	400	4	32	314	60	11	1.47
HRGKSM 4 R 343-354/351 ST	03066064	385	343-354									1.48
HRGKSM 4 R 352-363/360ST	00444795	398	352-363									1.49
HRGKSM 4 R 378-389/386 ST	00444760	424	378-389									1.52
HRGKSM 4 R 391-402/399 ST	00444506	435	391-402									1.54
HRGKSM 4 R 404-415-412 ST	00444924	448	404-415									1.56
HRGKSM 4 R 417-428/425 ST	00444857	461	417-428									1.58
HRGKSM 4 R 430-441/438 ST	03187768	474	430-441									1.60
HRGKSM 4 R 443-454-451 ST	03010052	485	443-454									1.62

*Diameter range is noted in the model code. Example: HRGKSM 0 R 40-43/44 ST.

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in millimeters and kilograms.

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

HRRL & HRRLE Series

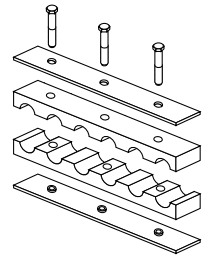
Series Strip Clamps

Description

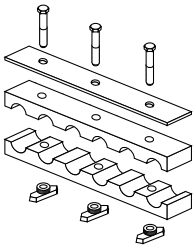
For OEM's requiring solutions for multiple line runs HYDAC offers customized series strips. These clamps reduce inventory and installation time, while providing a more compact solution than multiple DIN 3015 clamps. The design and dimensions are based on the DIN 3015 specifications set forth for single and twin clamps. The Series Strip Program, echoes that of the DIN 3015 Clamps in that it offers similar arrangements, sizes, options, and model coding.

Arrangements

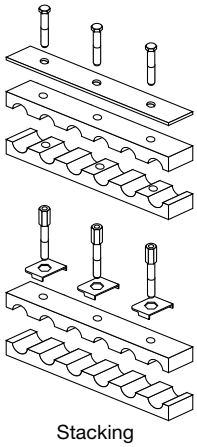
HRRL Series: Standard Duty



Weld Plate Mounting



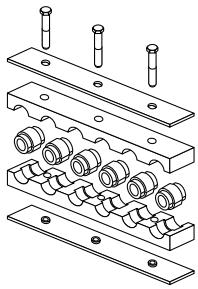
C-Rail Mounting



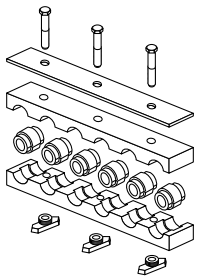
Stacking

Arrangements

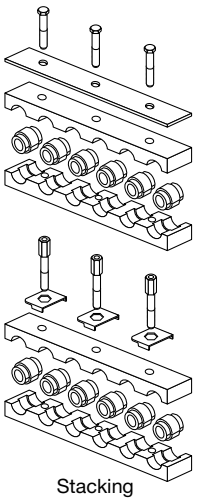
HRRLE Series: Heavy Duty with Rubber Inserts



Weld Plate Mounting



C-Rail Mounting

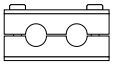


Stacking

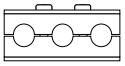
Number of Lines & Bolts

HRRL Series: Standard Duty
(diameter range: 6 to 25.4 mm)

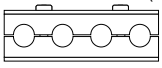
2 Lines / 2 Bolts (HRRL...2 X.../2...)



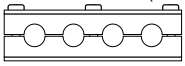
3 Lines / 2 Bolts (HRRL...3 X.../2...)



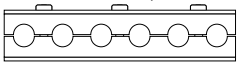
4 Lines / 2 Bolts (HRRL...4 X.../2...)



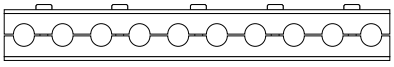
4 Lines / 3 Bolts (HRRL...4 X.../3...)



6 Lines / 3 Bolts (HRRL...6 X.../3...)



10 Lines / 5 Bolts (HRRL...10 X.../5...)

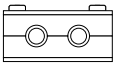


Number of Lines & Bolts

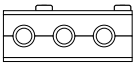
HRRLE Series: Heavy Duty with Rubber Inserts
(diameter range: 6 to 56.4 mm)

2 Lines / 1 Bolt (HRRLE...2 X.../1...)

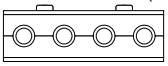
2 Lines / 2 Bolts (HRRLE...2 X.../2...)



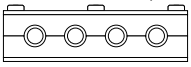
3 Lines / 2 Bolts (HRRLE...3 X.../2...)



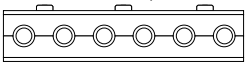
4 Lines / 2 Bolts (HRRLE...4 X.../2...)



4 Lines / 3 Bolts (HRRLE...4 X.../3...)



6 Lines / 3 Bolts (HRRLE...6 X.../3...)



Series Strip Program

Now ordering a Series Strip Clamp has become easier than ever before. Click on **www.hydacusa.com** and try out our new Series Strip Sizing Program. When you are finished you will have a model code, drawings and everything you need to place your order.

Ordering

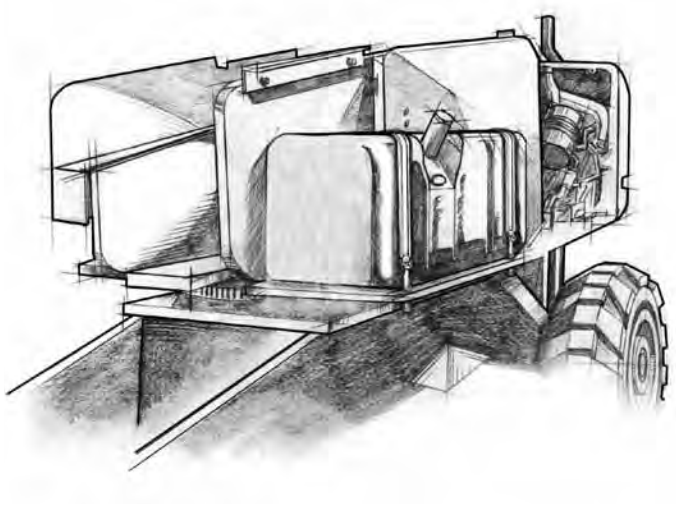
Series Strip Clamps are a custom product which must be quoted on an individual project basis. As with DIN 3015 Clamps, the Series Strip Clamps can be ordered as complete arrangements or as individual components. Series Strip Clamps are available with differing bore sizes. Contact **HYDAC** at **1.877.GO.HYDAC** with your specifications to request a quotation.

www.comoso.com

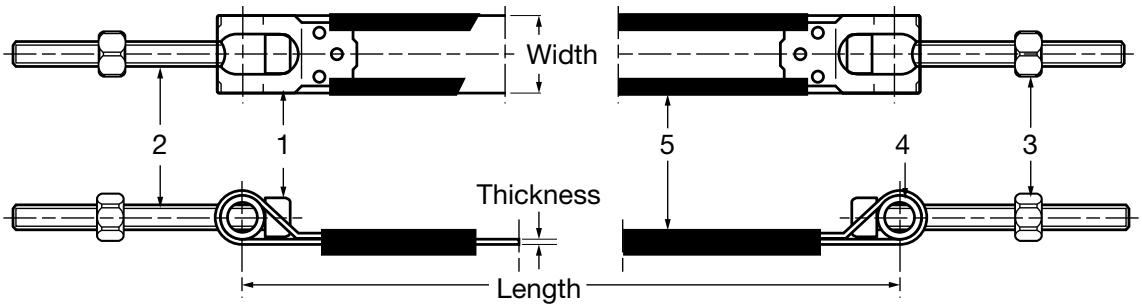
Band Straps

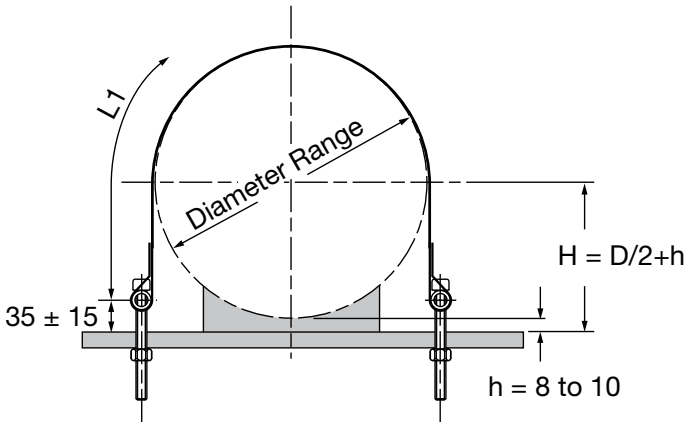
Description

For OEM's requiring mounting solutions to secure non-cylindrical objects such as plastic fuel tanks, HYDAC offers steel band straps.



Item	Description/Material
1	Clamping Band, Stainless Steel
2	Metric Zinc-Plated Steel Socket Head Bolts (Note: other bolt and connection styles are available based on customer's specifications)
3	Nuts, Zinc Plated Steel
4	Swivel Sleeve, Zinc Plated Steel
5	Rubber Profile





Dimensions

	Width x Thickness	Length Range (L1)
Light Range	25 x 1	187 - 921 mm
Heavy Range	30 X 1	232 - 1511 mm
Heavy II Range	30 X 1.5	232 - 1511 mm

Ordering

Band Straps are a custom product which must be quoted on an individual project basis. Band Straps are available with various lengths, widths, connecting hardware, and with or without rubber profiles. Contact **HYDAC** at **1-877-GO HYDAC** with your specifications to request a quotation.

www.comoso.com

Overview of Reservoir Accessories

The reservoir of a hydraulic system can be a significant source of contamination. At the same time, the reservoir is an ideal location for correcting adverse fluid conditions. The application of proper HYDAC reservoir accessories will allow for the monitoring and control of oil cleanliness, temperature, and level.

Breathers are commonly overlooked, or regarded as a commodity, and selected based solely upon price. This mistake can cause system inefficiency and component failure, resulting in lost production and costly repairs, especially when harsh environmental conditions exist. Using high quality HYDAC breathers and filler breathers will effectively combat the ingression of airborne contamination and moisture, therefore increasing the efficiency and reliability of the system.

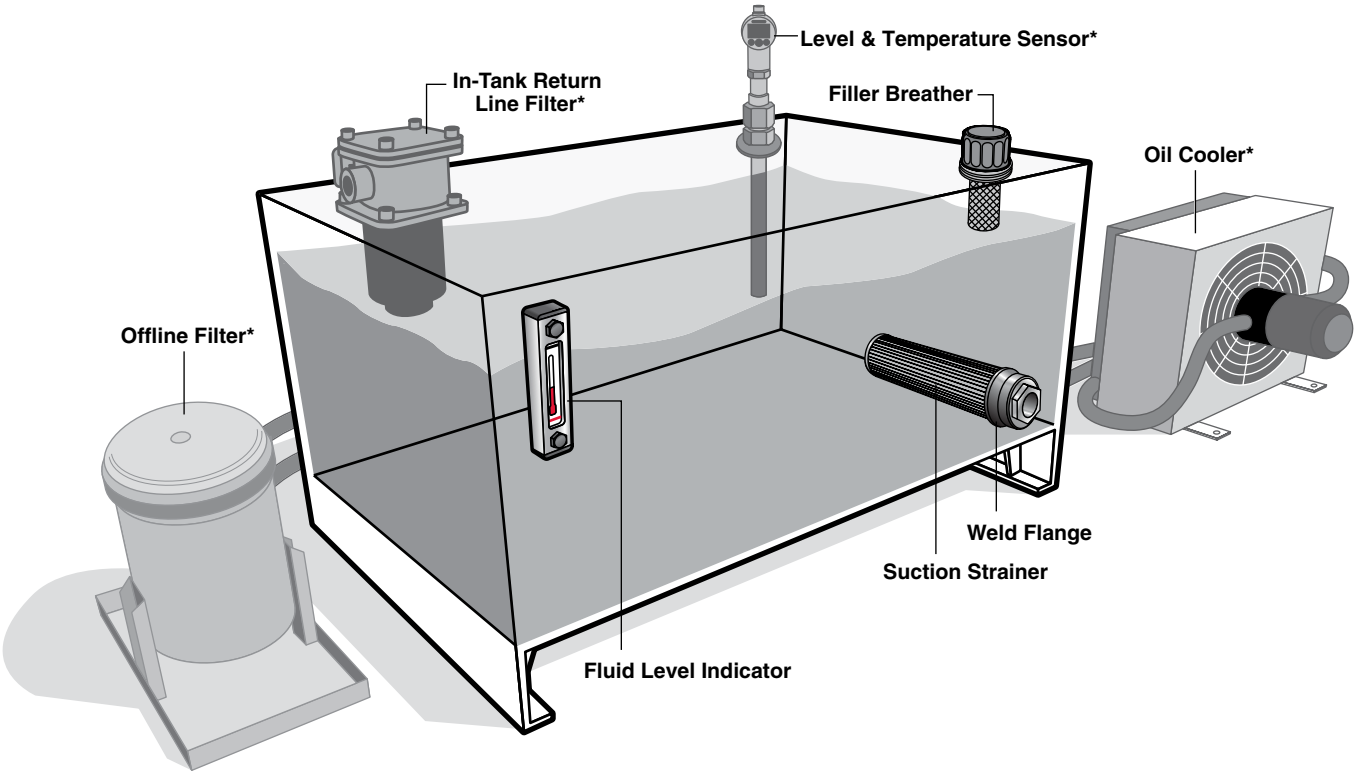
The addition of new oil to a reservoir is yet another opportunity for contaminant to enter the system. Sometimes large contaminant, which will undoubtabley cause catastrophic damage to the pump. HYDAC filler breathers will ensure that large contaminant do not enter the tank during filling, and suction strainers will keep any large contaminant that do exist in the reservoir from entering the supply line. New oil also contains more fine particle contaminant than recommended for most systems. That's right... most new oil is "dirty." Removal of these fine particles is easily accomplished by using HYDAC portable filter carts, or hand held filtration units.

Fluid level must also be monitored to avoid starving the pump.

HYDAC offers fluid level indicators (sometimes called sight gauges) which allow for the oil level to be viewed outside of the tank. These indicators are also available with electric switches which can be used to trigger alarms. Thermometers and thermal probes are additional options in HYDAC's line of fluid level indicators.

The reservoir provides an excellent opportunity to remove solid contamination as well as water through the use of offline filtration loops. HYDAC manufactures offline filtration units for both types of contamination. The application of such units will increase system reliability, and increase the service life of the system's other filter elements by capturing a large percentage of total system contamination. These units provide the added benefit of being serviceable during system operation.

If excessive heat becomes a problem, HYDAC manufactures a wide range of coolers (both air-cooled and water-cooled) to remove this heat. Cooling packages are also available complete with filters, providing a compact solution to remove both heat and contamination.



***Products Not Included in This Catalog**

For additional information on these products please refer to:

Hydraulic & Lube Oil Filters

- In-Tank
- Inside Tank
- Inline
- Duplex
- Return Line

Cooling Systems

- Air Cooled Oil Coolers
- Water Cooled Oil Coolers
- Mobile Coolers
- Industrial Coolers

Filter Systems

- Portable Filters
- Offline Filtration
- Contamination Monitors & Diagnostics
- Water Content Control
- Fluid Analysis

Electronics

- Pressure & Temperature Transducers & Switches
- Flow Rate Meters
- Digital Displays
- Portable Data Recorders

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Breathers & Filler Breathers

BF, BL & BLT, BD, BDR, BDZ, HBRP, HBRM, & ELF Series
(see pages 105 - 134)

Air Flow Rates from 80 to 1600 GPM
Various connection types
Pressurized or free flowing

Suction Strainers

SFE, HTMS, MSS Series *(see pages 135 - 138)*

In-tank models (SFE) mount to an internal fitting on reservoir
Tank Mount models (HTMS) mount through the tank wall and act as the external fitting for connecting supply line hoses
Flow rates from 3 to 100 GPM
NPT and SAE connections
models available with bypass

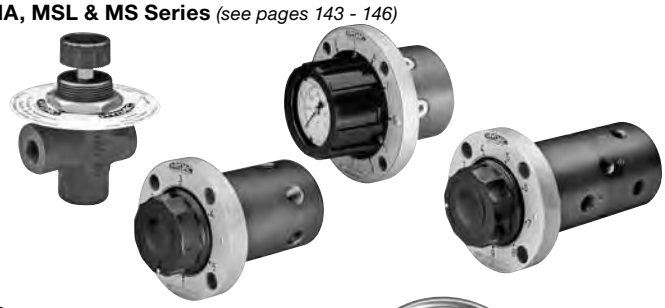
Fluid Level Indicators

FSK & FSA Series *(see pages 139 - 142)*

3" to 5" sight tubes
Electric level switches available
Pressurized or free flowing
thermometers and temperature probes available

Gauge Isolators

MA, MSL & MS Series *(see pages 143 - 146)*



Gauges

HPG Series *(see page 151)*

Test Points

1620 & 1215 Series *(see pages 147 - 150)*

Install these for measuring pressure,
or fluid sampling while system is in operation,
without fluid loss.

Split Flanges

SAE Code 61 & 62 *(see page 151)*

Overview
Breather & Filler Breather Product Range

Model

Techical Details	BF10	ELF10	BF4	ELF4	BF30	ELF30	BF3	ELF3	BF7
GPM (cfm) (at Δp = 0.01 bar)	53 (7)	53 (7)	33 (4.4)	33 (4.4)	105 (14)	105 (14)	105 (14)	105 (14)	260 (35)
GPM (cfm) (at Δp = 0.04 bar)	100 (13)	100 (13)	90 (12)	90 (12)	230 (31)	230 (31)	230 (31)	230 (31)	475 (63)
Cap Material	Polyamide	Polyamide	Steel	Steel	Polyamide	Polyamide	Steel	Steel	Polyamide
Strainer Material	N/A	Polyamide	N/A	Polyamide	N/A	Polyamide	N/A	Polyamide	N/A
Replaceable Element	No	No	No	No	No	No	No	No	Yes
Connection Type	Threaded	Flanged	Threaded	Flanged	Threaded	Flanged	Threaded	Flanged	Threaded
Connection Size(s)	G 1/4, 1/2 NPT, M22, SAE-12	3 hole flange	G1/4	3 hole flange	G 3/4, 3/4 NPT, 1 NPT, M42, SAE-12	6 hole flange	G 3/8, G 1/2, G 3/4, 3/4 NPT	6 hole flange	G 1, 3/4 NPT, SAE-16
Element Media	3 µm paper	3 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper

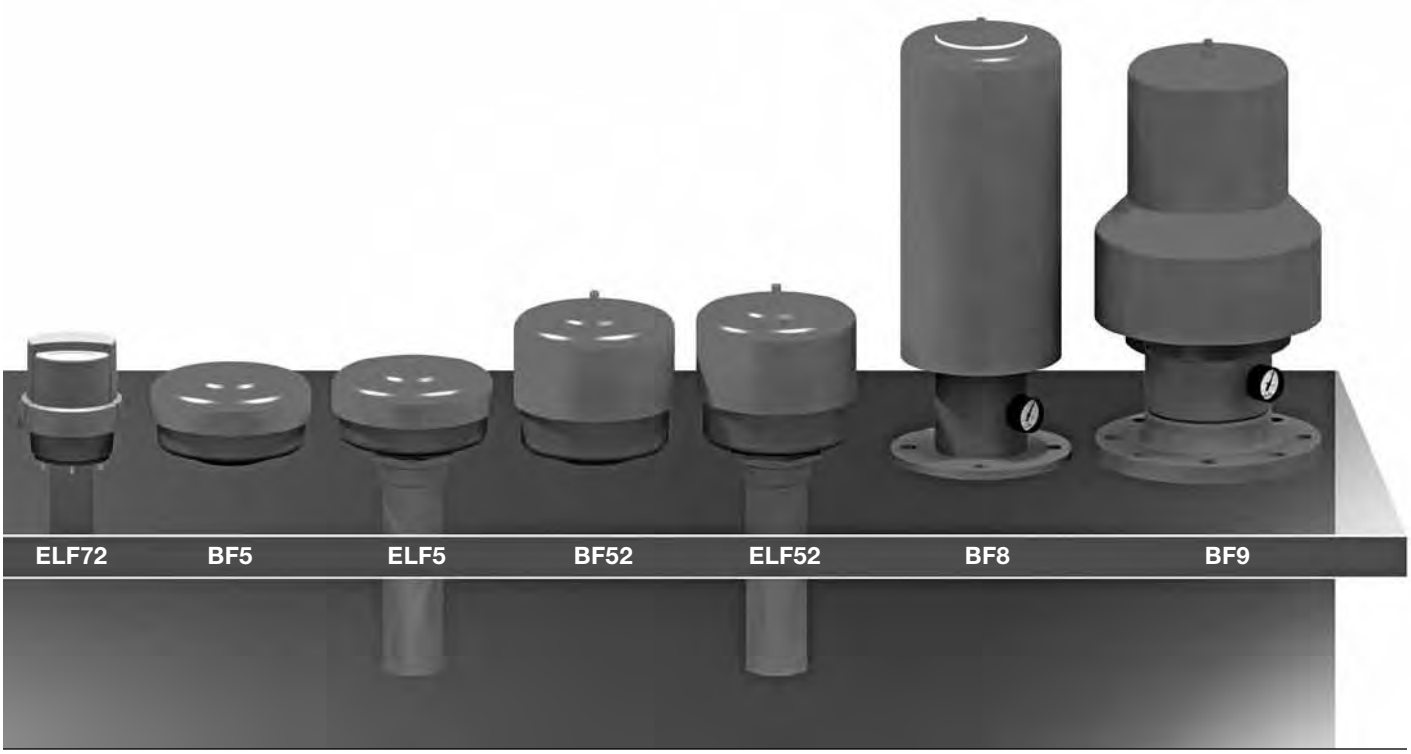
Options

Clogging Indicator	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Optional
Relief Valve	Optional	Optional	N/A	N/A	Optional	Optional	Optional	Optional	N/A
Antisplash	Optional	Optional	N/A	N/A	Optional	Optional	N/A	N/A	Optional
Dipstick	Optional	Optional	N/A	N/A	Optional	Optional	Optional	Optional	N/A

For sizes BF/ELF 10 thru BF/ELF 72 we recommend you size the breathers at Δp = 0.01 bar but in optimal conditions you may size the breathers at up to Δp = 0.04 bar (Call HYDAC if you have any questions).

See other Breather options available on page 107.

www.comoso.com



Model

ELF7	BF72	ELF72
260 (35)	315 (42)	315 (42)
475 (63)	555 (74)	555 (74)
Polyamide	Polyamide	Polyamide
Polyamide	N/A	Polyamide
Yes	Yes	Yes
Flanged	Threaded	Flanged
6 hole flange	G1	6 hole flange
3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper

Techical Details	BF5	ELF5	BF52	ELF52	BF8	BF9
GPM (cfm) (at v = 20 m/s)	690 (92)	690 (92)	950 (127)	950 (127)	1450 (193)	2550 (340)
GPM (cfm) (at Δp = 0.01 bar)	790 (105)	790 (105)	1320 (176)	1320 (176)	2640 (352)	3960 (528)
Cap Material	Steel	Steel	Steel	Steel	Steel	Steel
Strainer Material	N/A	Steel	N/A	Steel	N/A	N/A
Replaceable Element	Yes	Yes	Yes	Yes	Yes	Yes
Connection Type	Threaded	Flanged	Threaded	Flanged	Flanged	Flanged
Connection Size(s)	G 2-1/2 female	G 2-1/2, G 3 male	G 2-1/2 female	G 2-1/2, G3 male	DN93 4 hole flange	DN125 8 hole flange
Element Media	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	3 or 10 µm paper	1 or 2 µm betamicron	2 µm betamicron

Options

Optional	Optional	Optional
N/A	N/A	N/A
Optional	N/A	N/A
N/A	N/A	N/A

Clogging Indicator	N/A	N/A	N/A	N/A	Optional	Optional
Relief Valve	Optional	N/A	N/A	N/A	N/A	N/A
Antisplash	N/A	N/A	N/A	N/A	N/A	N/A
Dipstick	N/A	N/A	N/A	N/A	N/A	N/A

For sizes BF/ELF 5 thru BF/ELF 9 we recommend you size the breathers at v = 20 m/s but in optimal conditions you may size the breathers at up to Δp = 0.01 bar (Call HYDAC if you have any questions).

See other Breather options available on page 107.

www.comoso.com

BL Series *(pages 119-120)*

Specifications:

- Maximum flow rate: 110 SCFM/850 GPM
- 3 or 10 micron
- Steel Canister
- 10 micron Betamicron®
- Replaceable element

BD Series *(pages 121-126)*

Specifications

- Durable ABS plastic and impact-modified Plexiglas
- 2 micron, 100% efficiency
- Airflow up to 100 scfm (750 gpm)

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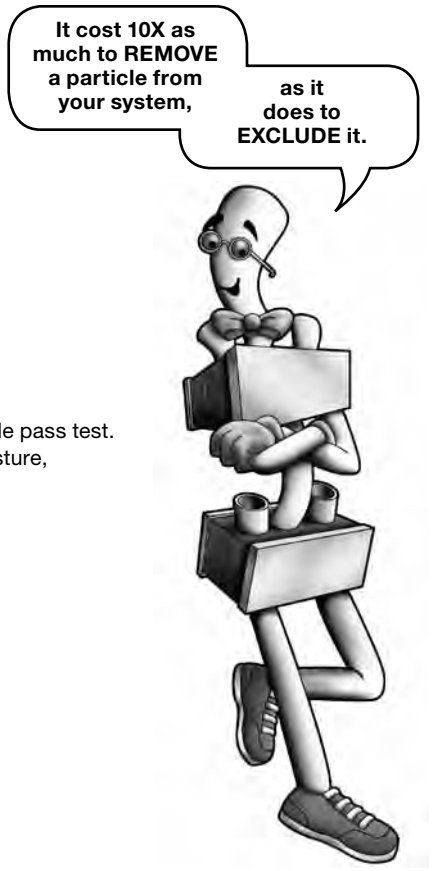
Breathers & Filler Breather Technical Overview

Importance of Breathers

Breathers are a integral component in any Hydraulic system. Breathers provide protection from contamination found in harsh industrial environments. It is well advised to address both contaminant exclusion and removal. An old rule of thumb states that it **cost 10 times as much to REMOVE a particle from your system as it does to EXCLUDE it**. Since this is true, it is easy to see that the benefits of using a high quality breather greatly out-weigh the costs.



Recommendations

1) HYDAC recommends selecting a breather with a filtration rating *(micron rating)* that is equivalent to or finer than your finest system filter.

2) Breathers do get clogged over time. HYDAC recommends the following change-out schedules:

For breathers without pressure gauges
- Change your breather annually or with every service interval

For breathers with pressure gauges
- Change your breathers at a 3 psi pressure drop, at 7 psi pressure drop the pump can cavitate

HYDAC High Quality Breathers

HYDAC Breathers use HIGH quality filtration.

- For 3µm breathers: d99.85 = 3 µm
- For 10µm breathers: d100 = 10 µm

The d100 rating means that 100% of 10 µm particles are captured by the breather during a standard ISO single pass test.

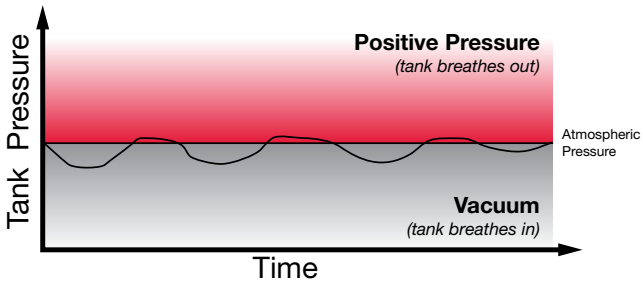
Standard elements are made of phenolic resin impregnated paper, which provides resistance to moisture, ensuring proper filtration over the operational service life of your breather.

Pressurized Breathers

The use of pressurized breathers adds certain benefits:

- Provides additional protection from moisture which can condense in your tank, causing oil degradation and tank erosion
- Provides positive pressure to pump suction line
- Increased breather service life due to less breathing
- Performs anti-splash function

Tank Pressure Using a Standard Breather

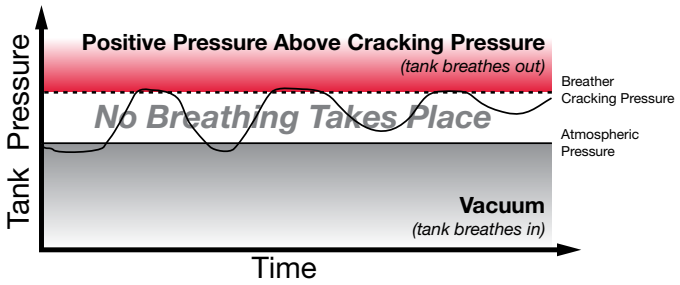


When fluid level rises, the tank pressure rises and air is immediately expelled through the breather whenever positive pressure exists.

When fluid level lowers, the tank pressure drops and air is immediately drawn in through the breather whenever a vacuum exists.

Air is constantly moving through the breather in order to maintain atmospheric pressure.

Tank Pressure Using a Pressurized Breather



When fluid level rises, the existing air volume is compressed, and no air is expelled until the cracking pressure is surpassed.

When fluid level lowers, the tank pressure drops until a vacuum is created at which point, air will be drawn in through the breather.

Air is only expelled when the tank pressure is *above the cracking pressure, and air is only drawn in below atmospheric pressure*. The majority of the operational cycle will take place between these two conditions.

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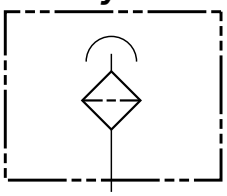
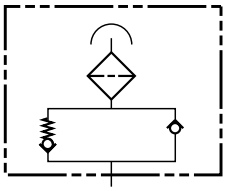
BF...3 & BF...4 Series

Hydraulic Symbols



standard



with relief valve *(BF3 only)*

Specifications

- Maximum flow rate - 31 scfm / 230 gpm at 0.04 bar
- Epoxy coated steel cap
- Zinc-plated internals
- 3 or 10 micron
- Threaded connection
- Pressurized breather with relief valve *(optional - BF3 only)*
- Phenolic resin impregnated filter element

Model Code

BF P 3 G 10 W 1.0 / _

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
3 = 31 scfm (230 gpm) max.
4 = 12 scfm (90 gpm) max.

Type of Connection
G = Threaded

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Modification Number

Connection Type

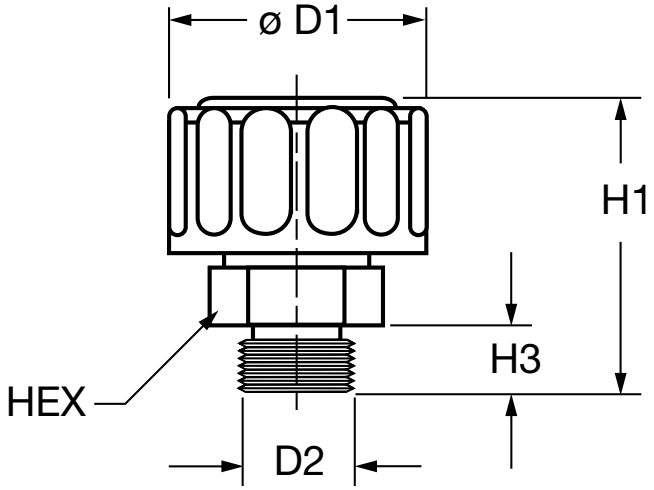
	G (BSPP) Thread	G (BSPP) Rel. Press.	N (NPT) Thread	N (NPT) Rel. Press.
BF 3…**1.0** =	G 3/4	–	3/4 NPT	–
BF 3…**2.0** =	G 3/8	–	–	–
BF 3…**3.0** =	G 1/2	–	–	–
BF 3…**4.0** =	G 3/4	0.4 bar	3/4 NPT	0.4 bar
BF 3…**5.0** =	G 3/4	0.7 bar	3/4 NPT	0.7 bar
BF 3…**6.0** =	G 3/4	0.2 bar	3/4 NPT	0.2 bar
BF 4…**1.0** =	G 1/4	–	–	–

Supplementary Details
(omit) = standard
RV = Relief Valve *(for use on pressurized tanks) (BF3 only)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Size	ø D1	D2 (male)	H1	H3	HEX
BF 3...1.0 BF 3...RV	2.99” (76mm)	G 3/4 (ISO 228)	3.11” (79mm)	0.63” (16mm)	1 7/16” (36mm)
BF 3...2.0	2.99” (76mm)	G 3/8 (ISO 228)	2.83” (72mm)	0.47” (12mm)	7/8” (22mm)
BF 3...3.0	2.99” (76mm)	G 1/2 (ISO 228)	2.99” (76mm)	0.55” (14mm)	1 1/16” (27mm)
BF 4...1.0	1.73” (44mm)	G 1/4 (ISO 228)	2.44” (62mm)	0.53” (13.5mm)	11/16” (17mm)

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

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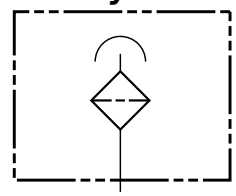
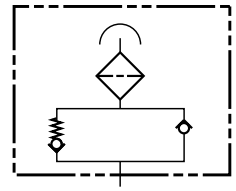
BF...10 Series

Hydraulic Symbols



standard



with relief valve

Specifications

- Maximum Flow Rate 13 scfm / 100 gpm at 0.04 bar
- Durable synthetic material (PA6)
- Filtration Rating 3 µm
- Buna N O-Ring
- Optional dipstick (contact factory)
- Optional customer logo (contact factory)
- Optional pressurized breather with relief valve
- Optional anti-splash device
- -22° to 212°F (-30° to 100°C)
- Phenolic resin impregnated filter element

Model Code

BF P 10 G 3 W 1.0 / - RV0.4

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
10

Type of Connection
G = BSPP
N = NPT
U = SAE
M = Metric threads

Filtration Rating *(micron)*
3 = 3µm Air Filtration

Gauge Option
W = Without Indicator

Modification Number

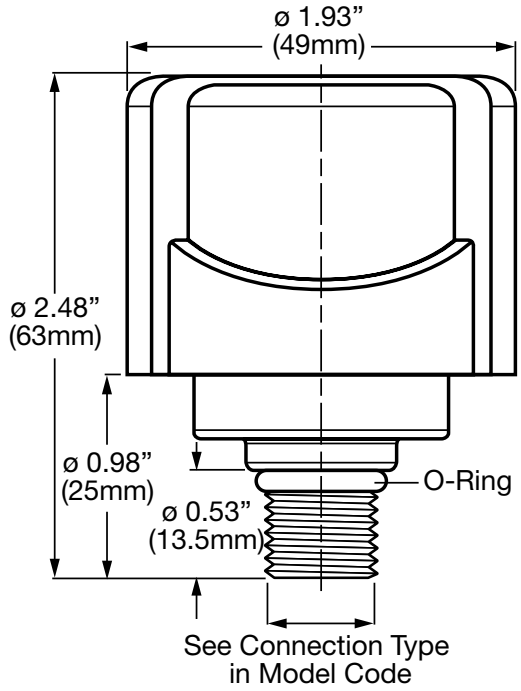
	Connection Type			
	G (BSPP)	N (NPT)	U (SAE)	M (Metric)
1.0	G 1/4	1/2 NPT	–	M22x1.5
2.0	*G 1/2*	–	–	*M18x1.5*
3.0	–	–	SAE-12	–

Options
(omit) = None
RV0.2 = *Relief Pressure 3 psi (0.2 bar)*
RV0.4 = Relief Pressure 6 psi (0.4 bar)
RV0.7 = *Relief Pressure 10 psi (0.7 bar)*
AS = Anti-splash protection *(only for version without RV)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

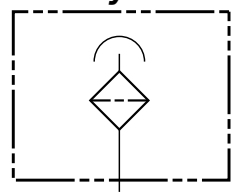
Dimensions



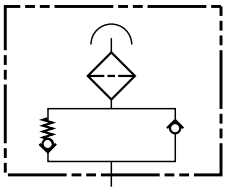
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

BF...30 Series

Hydraulic Symbols



standard



with relief valve

Specifications

- Maximum flow rate - 31 scfm / 230 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- Buna N O-Ring
- Threaded breather connection
- Optional dipstick *(contact factory)*
- Optional customer logo *(contact factory)*
- Optional pressurized breather with relief valve
- Optional anti-splash device
- -22° to 212°F (-30° to 100°C)
- Phenolic resin impregnated filter element

Model Code

BF P 30 G 3 W 1.0 / _

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
30

Type of Connection
G = BSPP
N = NPT
U = SAE
M = Metric Threads

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Modification Number

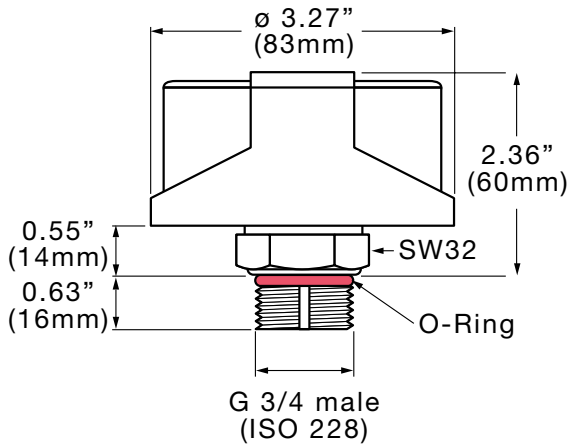
	Connection Type			
	G (BSPP)	N (NPT)	U (SAE)	M (Metric)
1.0 =	G 3/4	3/4 NPT	SAE-12	M42x2
2.0 =	–	1 NPT	–	M30x1.5

Options
(omit) = none
RV0.4 = Relief Pressure 6 psi (0.4 bar)
AS = Anti-Splash protection *(only for version without RV)*

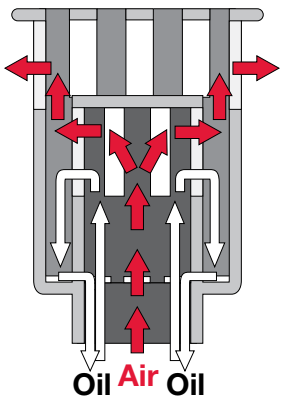
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Anti-Splash



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

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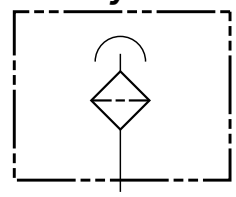
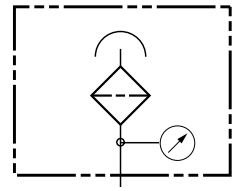
BF...7 Series

Hydraulic Symbols



standard



with indicator

Specifications

- Maximum flow rate - 63 scfm / 475 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- Replaceable element Phenolic resin impregnated paper
- Threaded breather cap connection
- Differential gauge *(optional)*
- -22° to 212°F (-30° to 100°C)

Model Code

BF P 7 G 3 K 1.0 / __

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
7

Type of Connection
G = Threaded BSPP
N = Threaded NPT *(consult factory)*
U = Threaded SAE *(consult factory)*

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator
K = With Indicator - Range: -14.5 to 9 psi (-1 to 0.6 bar)

Modification Number

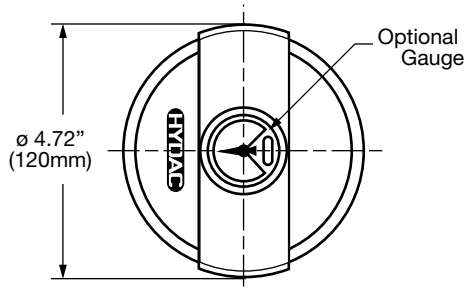
	Connection Type G (BSPP)	N (NPT)	U (SAE)
1.0 =	G 1	3/4 NPT	SAE-16

Options
AS = Anti-Splash protection

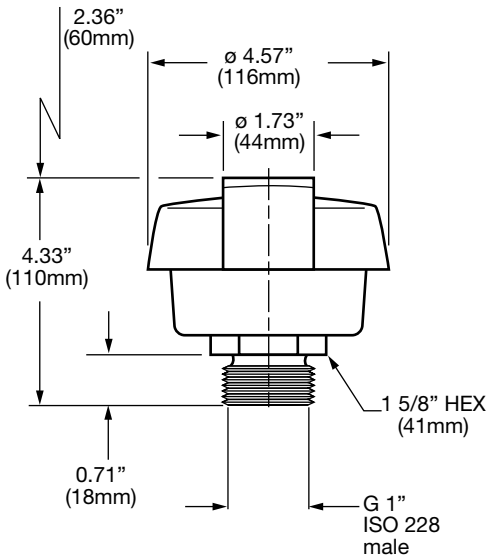
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Clearance Required for Element Removal



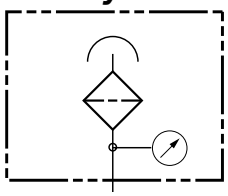
Replacement Elements

Micron	Model Code	Part No.
3	0007L003P	00310948
10	0007L010P	00310485

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

BF...7/72 Series
Breathers with Visual Indicator

Hydraulic Symbols



with indicator

Specifications

- Maximum flow rate - up to 74 scfm / 555 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- Replaceable element
- Phenolic resin impregnated paper
- Threaded or flanged breather connection
- Visual indicator *(see below)*
- -22° to 212°F (-30° to 100°C)

Model Code

BF P 7 F 3 UBM 0 . 0

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
7 (63 scfm / 475 gpm)
72 (74 scfm / 555 gpm)

Type of Connection
F = Flanged
G = Threaded

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
UBM = Visual Indicator of Vacuum Pressure with Manual Reset - Range to 0.5 psi (0.035 bar)

Tank Connection
0 = with 6 hole flange to DIN 24557/2 *(F connection)*
2 = 3/4" BSPP male *(G connection)*
3 = 1 1/2-16 UN-2B female *(G connection)*
(use with BL 160 adapters - see page 118)

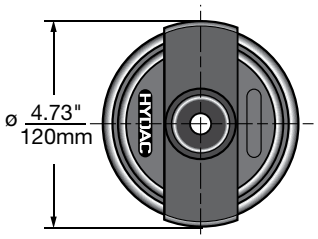
Modification Number
0 = Standard

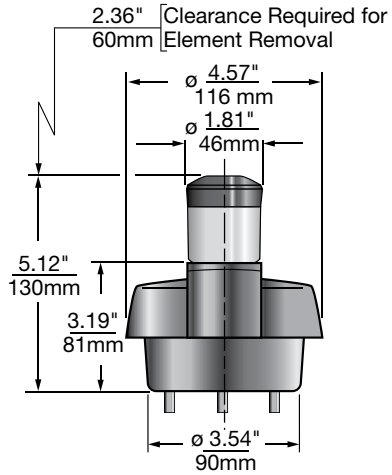
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions

BFP7F...0.0 version shown with 6 hole flange





Replacement Elements

Micron	Model Code	Part No.
3	0072L003P	03269023
10	0072L010P	03190037
3	0007L003P	00310948
10	0007L010P	00310485

Visual Indicator

The visual indicator shows by percentage the increase in vacuum pressure drop across the element. The percentage remains visible even when the system is turned off. When the element is changed a manual reset button must be pressed.

Model Code

VMF 0.035 UBM.X

Part Number

01279244

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

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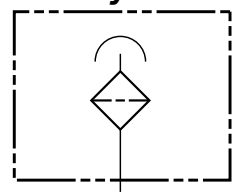
BF...72 Series

Hydraulic Symbols



standard

Specifications

- Maximum flow rate - 74 scfm / 555 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- Replaceable element
- Phenolic resin impregnated paper
- Removable lid to access fill port
- Threaded breather cap connection
- Differential gauge *(optional)*
- -22° to 212°F (-30° to 100°C)

Model Code

BF P 72 G 3 W 1 . 0

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
72

Type of Connection
G = Threaded BSPP
N = Threaded NPT *(consult factory)*

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Tank Thread Connection (ISO 228)
1 = G 1 (1" BSPP)

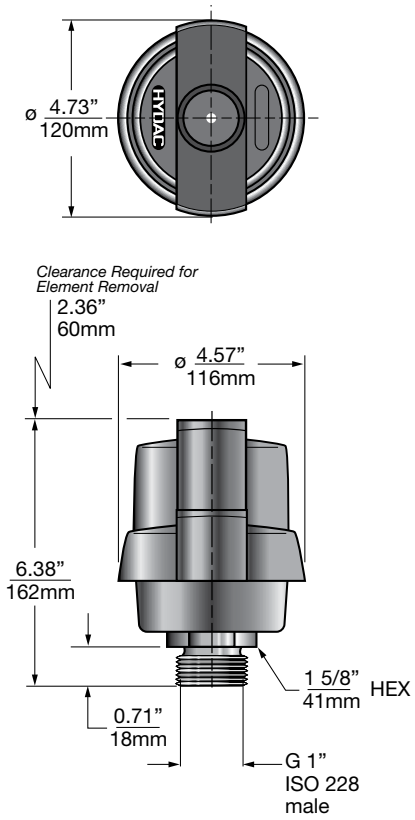
Modification Number
0 = Standard

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions

BFP7G...1.0 version shown



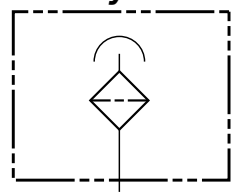
Replacement Elements

Micron	Model Code	Part No.
3	0072L003P	03269023
10	0072L010P	03190037

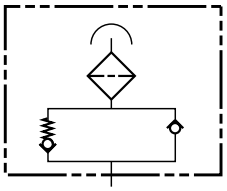
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)

BF...5 Series

Hydraulic Symbols



standard



with relief valve

Specifications

- Maximum flow rate - 105 scfm / 790 gpm at 0.01 bar
- Steel housing
- 3 or 10 micron
- Replaceable element
- G2 1/2 female threaded connection
- Phenolic resin impregnated filter element

Model Code

BF P 5 G 3 W 1 . 0 / _

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
5

Type of Connection
G = Threaded

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Tank Thread Connection *(ISO 228)*
1 = G 2 1/2 (standard)

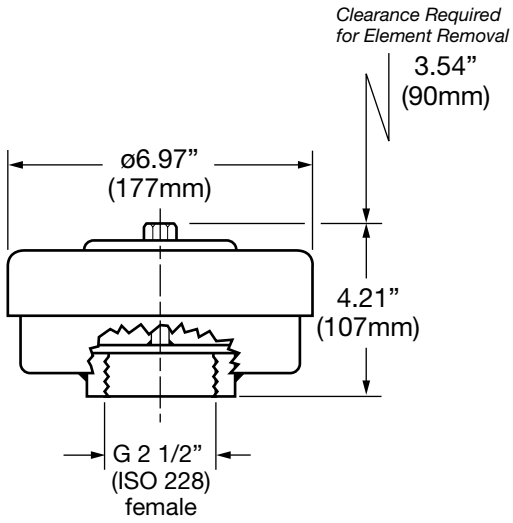
Modification Number
0 = Standard

Options
RV0.4 = Relief Pressure 6 psi (0.4 bar)

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Replacement Elements

Micron	Model Code	Part No.
3	0005L003P	00309450
10	0005L010P	00306097

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

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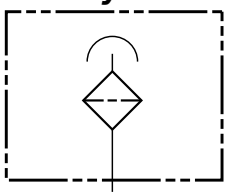
BF...52 Series

Hydraulic Symbols



Specifications

- Maximum flow rate - 176 scfm / 1320 gpm at 0.01 bar
- Steel housing
- 3 or 10 micron
- Replaceable element
  (uses 2 of the standard size 5 elements)
- Phenolic resin impregnated paper
- G 2 1/2" female threaded connection

Model Code

BF P 52 G 3 W 1 . 0

Filter Type
BF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
52

Type of Connection
G = Threaded

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

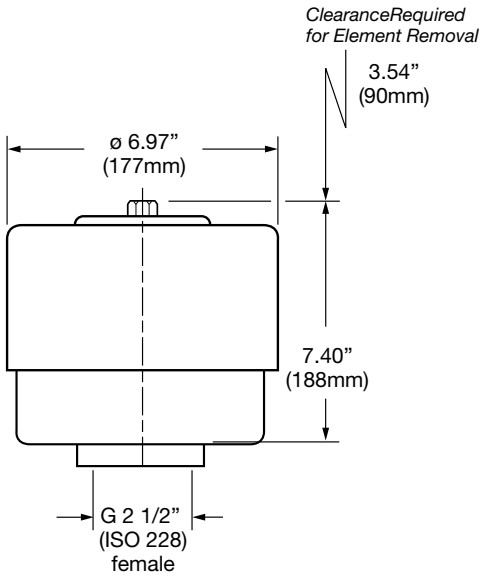
Connection Type
1 = G 2 1/2 (standard)

Modification Number
0 = Standard

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Replacement Elements

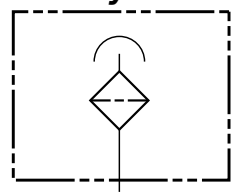
Micron	Model Code	Part No.	Qty Req.
3	0005L003P	00309450	2
10	0005L010P	00306097	2

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

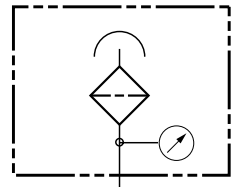
www.comoso.com

BF...8 Series

Hydraulic Symbols



standard



with indicator

Specifications

- Maximum flow rate - 352 scfm / 2640 gpm at 0.01 bar
- Steel housing
- 1 micron Air FIlter
- Replaceable element
- 4 bolt DN 93 flange

Model Code

BF BN 8 F 1 A 1.0

Filter Type
BF = Breather

Filter Element Material
BN = Betamicron®

Size
8

Type of Connection
F = Flanged (DN 93, 4 bolt)

Filtration Rating *(micron)*
1 = 1µm Air Filtration
2 = 2µm Air Filtration

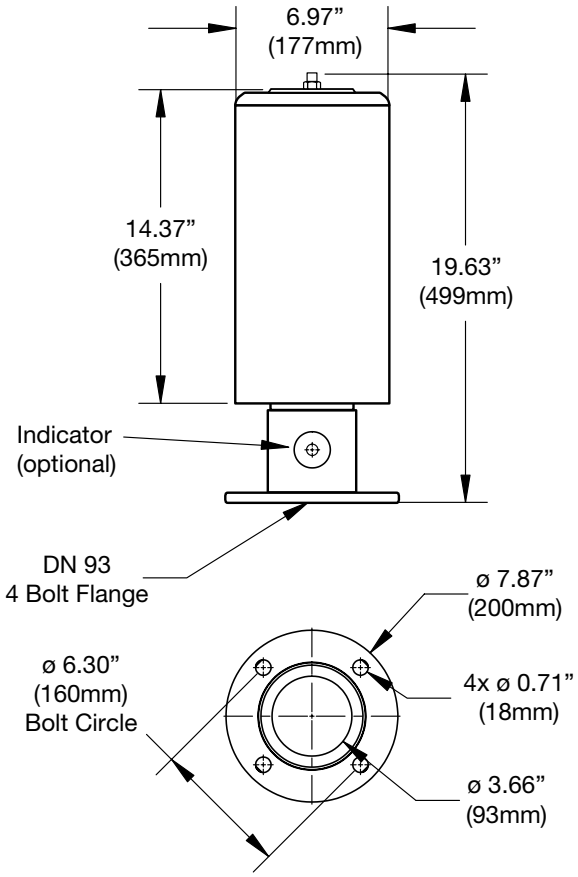
Gauge Options
A = Without Indicator
K = With Indicator Gauge (-1 bar to 0.6 bar)

Modification Number
1.0 = Standard

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Replacement Elements

Micron	Model Code	Part No.
1	0008L001BN4	01266598
2	0008L002BN4	01265021

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

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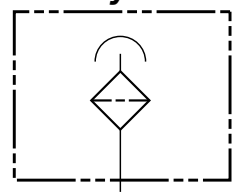
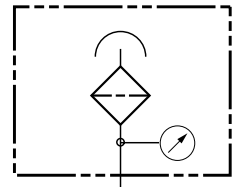
BF...9 Series
Breathers with Oil Mist Trap

Hydraulic Symbols



standard



with indicator

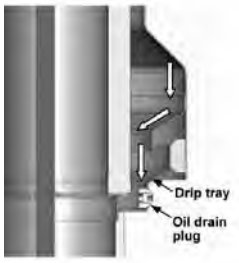
Specifications

- Maximum flow rate - 528 scfm / 3960 gpm at 0.01 bar
- Aluminum housing
- Replaceable element
- 2 µm Air Filter
- 8 bolt DN 125 flange

Oil Mist Trap

The oil mist in the filter is collected in a “drip tray” and is returned safely to the tank, or it can be drained via an oil drain plug.

No oil runs down onto the top of the tank.



Model Code

BF BN 9 F 2 A 1.0

Filter Type
BF = Breather

Filter Element Material
BN = Betamicron® Element

Size
9

Type of Connection
F = Flanged

Filtration Rating *(micron)*
2 = 2µm Air Filtration

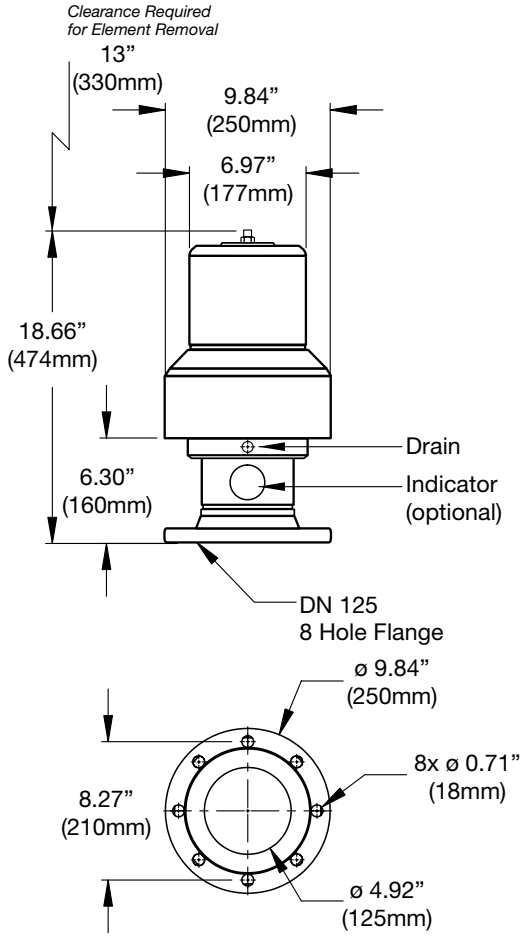
Gauge Options
A = Without Indicator
K = With Indicator - Range: -14.5 to 9 psi (-1 to 0.6 bar)

Modification Number
1.0 = Standard

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



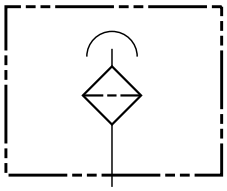
Replacement Elements

Micron	Model Code	Part No.
2	0009L002BN	01287471

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

BL Series
Spin-on Breathers

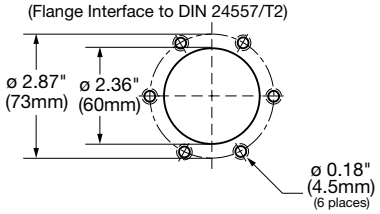
Hydraulic Symbols



Specifications:

- Maximum flow rate: 110 scfm /850 gpm
- 3 or 10 micron
- Steel Canister
- 10 micron Betamicron®
- Replaceable element

Mounting Hole Pattern for Flange Connection (F)
(Flange Interface to DIN 24557/T2)



Model Code

BL P 160 G 10 W 2 . 0

Filter Type
- BL = Spin-on Breather
- BLT = Spin-on Breather with Dehumidifying Element *(size 160 only)(in 3 micron only)*

Filter Element Material
- P = Impregnated Paper
- BN = Betamicron®
- M = Desiccant *(type BLT only)*

Size
- 080 = 35 scfm (250 gpm) max.
- 160 = 110 scfm (850 gpm) max.
- 180 = 110 scfm (850 gpm) max.

Type of Connection
- G = Threaded
- F = Flanged *(gasket included, does not include mounting hardware)*
- S = Weld Fitting

Available in sizes BL 160 and BL 180 Only

Filtration Rating *(micron)*
- 3 = 3µm Air Filtration *(paper only)*
- 10 = 10µm Air Filtration

Gauge Options
- W = Without Indicator

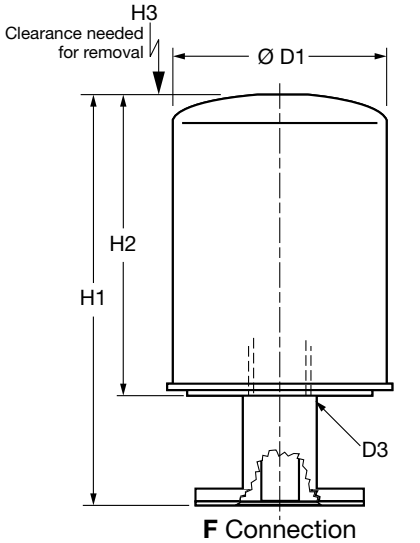
Type Number

	Size	Tank Connection
1 =	BLT 160	1 1/4" NPT Thread, Flange, or Weld Fitting
2 =	160/180	1 1/4" NPT Thread, Flange, or Weld Fitting
3 =	080	3/4" NPT Thread

Modification Number *(standard)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability
Not all combinations are available

Dimensions



Size	ø D1	D2 NPT	D3	H1 (F or S)	H1 (G)	H2	H3
BL...80	3.67 (93)	3/4"	1"-12UNF-2B	-	7 (178)	5.4 (137)	0.75 (19)
BL...160	5.00 (127)	1 1/4"	1 1/2"-16UN-2B	9.25 (235)	8.75 (222)	7 (178)	1.00 (25.4)
BL...180	5.00 (127)	1 1/4"	1 1/2"-16UN-2B	13.25 (337)	12.75 (324)	11 (279)	1.00 (25.4)
BLT...160	5.33 (136)	1 1/4"	1 1/2"-16UN-2B	9.25 (235)	8.75 (222)	7 (178)	1.00 (25.4)

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

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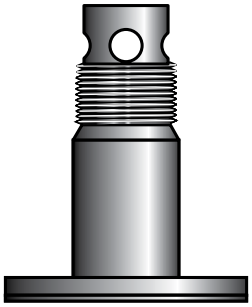
Breather Components

Replacement Elements

Size	10 micron Paper	3 micron Paper	10 micron Betamicron®	3 micron BLT Desiccant
80	0080MA010P 02058058	0080MA003P 02058079	0080MA010BN 02059424	N/A
160	0160MA010P 02058116	0160MA003P 02058114	0160MA010BN 02059436	0160MU003M 01265765
180	0180MA010P 02058121	0180MA003P 02057912	0180MA010BN 02059440	N/A

Adapters



Fiber Gasket Sold Separately
Order Part Number 00247102

Size	G Threaded Adapter	F Flanged Adapter	S Welded Adapter
80	ADAPTER BL 080G 3/4" NPT NBR 02064393	N/A	N/A
160 180	ADAPTER BL 160/180 G 1 1/4" NPT NBR 02064394	ADAPTER BL 160/180 F (PHOS) 00407646 *(w/out Gasket)* 02073864 *(w/ Gasket)*	ADAPTER BL 160/180 S (PHOS) 00416311

Weights

Model	lbs.	kg.
ELF 3	0.55	0.25
ELF E RV	0.66	0.30
ELF 4	0.44	0.20
ELF 5 (type no. 2)	5.95	2.70
ELF 5 (type no. 3)	6.83	3.10
ELF 7	0.84	0.38
BF 3	0.62	0.28
BF 3 RV	0.73	0.33
BF 4	0.18	0.08
BF 5	4.41	2.00
BF 7	0.88	0.40
BL 160	4.63	2.10
BL 80G	1.40	0.60
BL 160G	2.60	1.20
BL 180G	3.48	1.58
BL 160S	3.86	1.75
BL 180S	4.22	1.91
BLT 160	5.31	2.41

Spin-on BL80,
BL160 and BL180

Adapter Spin-on to Bayonet
Part Number 02701342

Bayonet Flange shown
on page 128.
Part Number 00002680

Engineering Data for Breathers *(Models ELF, BF & BL)*

Mounting Position:	ELF & BF BL *(spin-ons)*	Vertical *(max. 30° off vertical axis)* Vertical or Horizontal
Air Filter Material:		Phenolic Resin Impregnated Paper Note: None of the air filter elements can be cleaned.
Temperature Range:		-22° to 212°F (-30° to 100°C) Please contact HYDAC for information on extreme low or high temperature applications
Fluid Compatibility: (ISO 2943)		Compatible with all petroleum oils. Contact HYDAC office for information on other fluids.

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BD Series
Drymicron

Operational Features

Bi-directional Air Flow

- Air entering is cleaned and dried. Expelled air partially regenerates the silica gel and “backflushes” the particulate filter to prolong the life of the breather.

Durable Construction

- DRYMICRON is manufactured from rugged ABS plastic and impact-modified Plexiglas.

Water Vapor Adsorbent

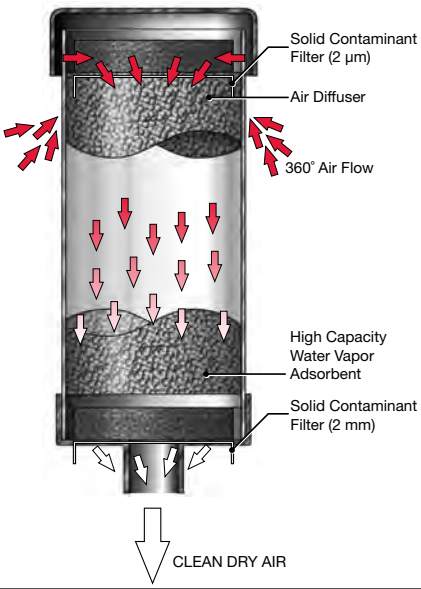
- Silica gel is chemically inert, non-toxic, and non-corrosive. The internal structure is composed of interconnected microscopic pores that adsorb up to 40% of its weight.

Color Indicator

- When maximum adsorption is reached, the silica gel turns from gold to green to indicate that replacement of the breather is required.

Safety Sealed

- Seals keep moisture from entering the units until they are placed in service. They are easily removed without tools or sharp instruments.



Description

Drymicron breathers use a three-stage filtration design to ensure optimum protection by removing water vapor and solid contaminant before they enter the fluid system.

Drymicron Breathers replace the standard breather cap or vent tube on a tank or reservoir. They are easy to install using one of several adapters designed for different applications.

When the fluid in the system is lowered, or pressure changes occur, air is drawn in through openings under the breather cap. First, air passes through a fine, 2 micron solid particle filter. The air then passes through a diffuser to ensure maximum effectiveness within the silica gel chamber.

Next, water vapor is removed as the air travels through a bed of silica gel — the highest capacity adsorbent available. After being dried, the air passes through a second 2 micron solid particle filter and enters the reservoir clean and dry!

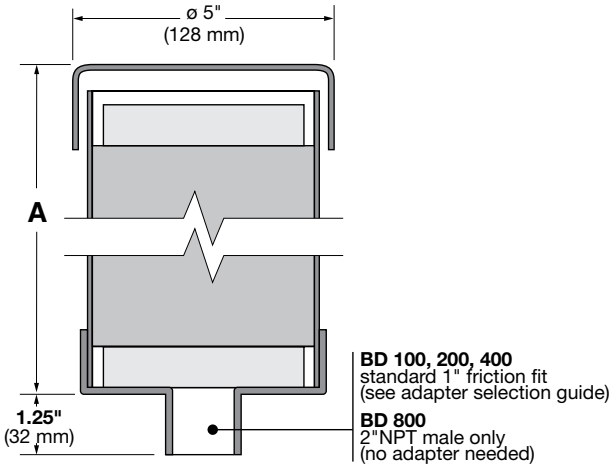
Advantages

Drymicron Breathers protect expensive equipment, increase operation efficiency, and reduce maintenance costs by:

- Eliminating corrosion
- Extending life of hydraulic, lubrication, and process fluids
- Minimizing component wear, downtime, and repairs
- Eliminating oil oxidation, additive depletion, and freezing
- Extending oil filter life

Applications

- Hydraulic Reservoirs
- Gear Boxes
- Storage Tanks



Unit Selection Guide *(adapters sold separately)*

Model Code	Part No.	Height (A)	Weight	Max. H2O Capacity lbs (ltr)
BD 100 X 2 W 0.0	02074253	3.5 (90)	1.3 (0.6)	0.2 (0.1)
BD 200 X 2 W 0.0	02074254	5 (128)	1.9 (0.9)	0.4 (0.2)
BD 400 X 2 W 0.0	02074465	8 (205)	3.3 (1.5)	0.9 (0.4)
BD 800 X 2 W 0.0	02075158	10 (254)	4.9 (2.2)	1.3 (0.6)

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

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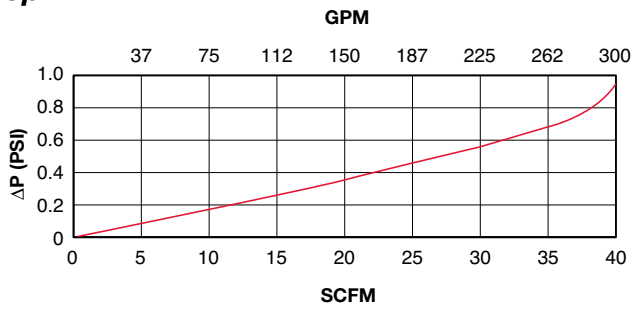
Product Specifications

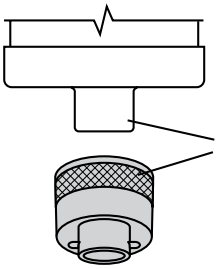
Performance		Specification
Nominal Air Flow Rate	BD 100-400	35 scfm (990 l/min) Equivalent of 260 gpm of fluid volume change
	BD 800	100 scfm (2850 l/min) Equivalent of 750 gpm of fluid volume change
Solid Contamination Filtration Level		2 micron, 100% efficiency @ 35 scfm air flow
Solid Contamination Filtration Surface area		20.6 in^2 / 133 cm^2
Operating Temperature Range		-26˚ to 200˚F (-32˚ to 93˚C)
Silica Gel:	Adsorption	Up to 40% of its weight of water
Chemical Resistance acids, salt water, and mineral or synthetic oils		Resistant to alkalis, hydrocarbons, non-oxidizing

Flow Rate vs Pressure Drop

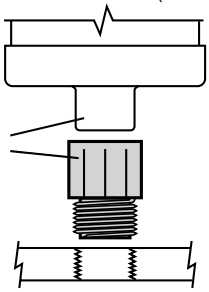


Adapters Selection Guide *(adapters sold separately - Note: no adapter needed for BD 800)*

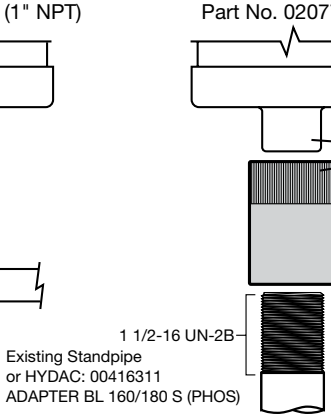
Bayonet Adapter
Part No. 02074251



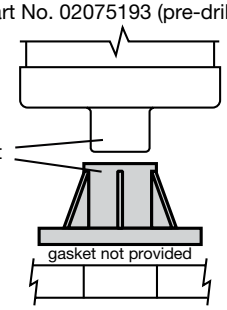
Plastic Threaded Adapter
Part No. 02074248 (3/4" NPT)
Part No. 02074249 (1" NPT)



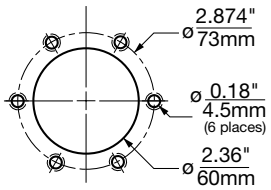
Plastic Threaded Standpipe Adapter
Part No. 02077124



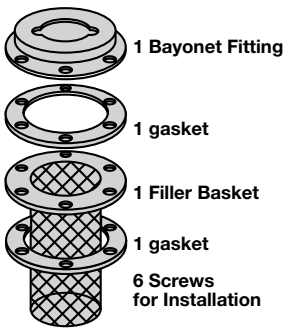
Plastic Flange Adapter
Part No. 02074250 (not drilled)
Part No. 02075193 (pre-drilled)



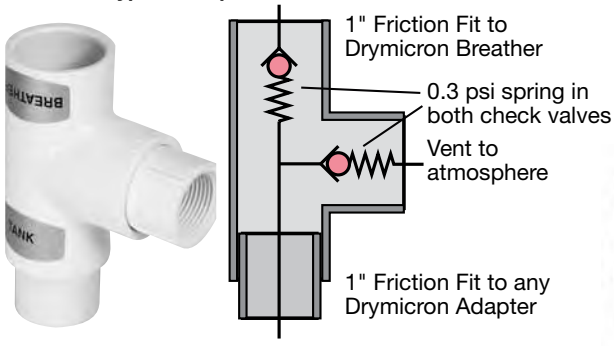
Mounting Hole Pattern for Pre-drilled Adapter
(Flange Interface to DIN 24557/T2)

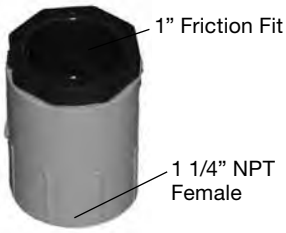


Bayonet Flange Kit with 3.5" Steel Basket
Part No. 02079076



Plastic Bypass Adapter Part No. 01278016





Plastic Adapter
Part No. 02081637

BD 900 Series

Designed for high airflow requirements

DRYMICRONS help stop oil contamination and protect your expensive equipment!

Description

A disposable desiccant cartridge screws into the top cap assembly for economical replacement when the breather has reached the end of its useful life. The BD 900 is designed for applications with airflow requirements up to 250 scfm (1875 gpm). Operating at this flow rate produces a pressure drop of less than 1 psi. Water and abrasive particles are removed before the air enters the system.

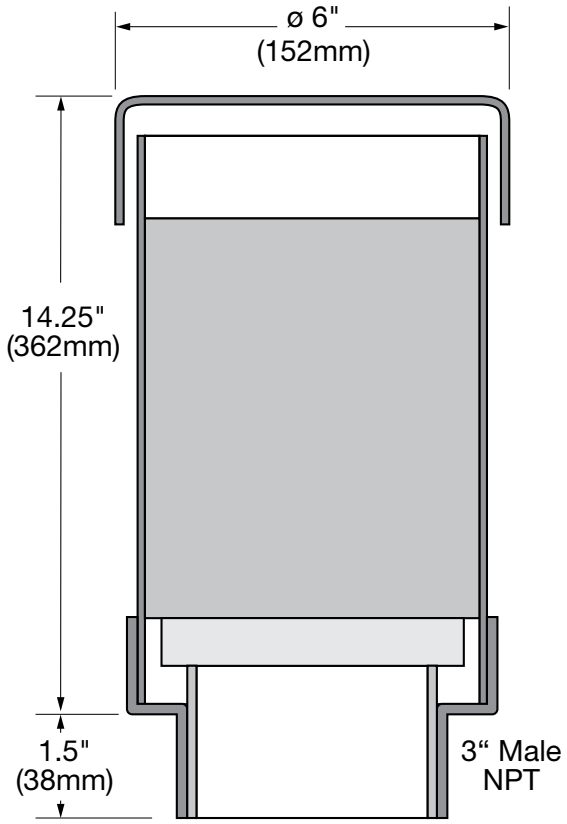
Replacement Cartridge *(top cap not included)*

BD 900 G 2W 1.0 / Cartridge

Part Number

02081633

Cap *(not included)* Replacement Cartridge



Model Code	Part Number	Rated Airflow	H2O Capacity	Mounting	Weight
BD 900 G 2 W 1.0	02080979	250 cfm / 1875 gpm	1.2 lbs / 0.54 liter	3” Male NPT	6.5 (2.9)

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BDR Series
Mobile DRYMICRON

DRYMICRONS help stop oil contamination and protect your expensive equipment!

Description

HYDAC BDR Series breathers are designed for applications where gearboxes and reservoirs are subjected to continuous vibration such as railroad maintenance equipment, off-road vehicles, mining equipment, and many more.

The units are easily attached to the equipment by rugged steel pipe threads.

Features

The metal reinforced base of the unit remains on the gearbox or reservoir, and a replacement cartridge is threaded into the base.

Benefits

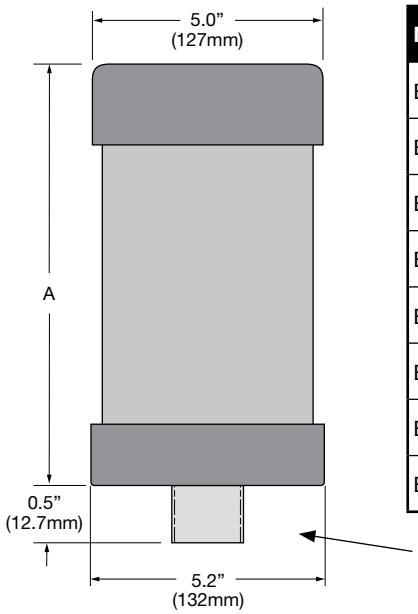
- Minimize rust & acid corrosion
- Reduce component wear
- Reduce maintenance cost
- Prolong fluid life
- Reduce oil oxidation
- Enhance lubrication

Components

Replacement Cartridge

Re-usable Bottom Cap

Dimensions



Model	Part No.	A	B	C	D	Air Flow	H_2O lbs (ltr)	Wt.
BDR 100 G 2 W 1.0	02080971	5.0"	5.2"	4.0"	5.0"	260 gpm 35 scfm	0.2 (0.1)	2.5
BDR 200 G 2 W 1.0	02080972	5.0"	5.2"	5.5"	6.5"	260 gpm 35 scfm	0.4 (0.2)	3.2
BDR 400 G 2 W 1.0	02080973	5.0"	5.2"	8.5"	9.5"	260 gpm 35 scfm	0.9 (0.4)	4.5
BDR 800 G 2 W 1.0	02080974	5.0"	5.2"	10.5	12.0"	750 gpm 100 scfm	1.3 (0.6)	5.5
BDR 100 X 2 W 0.0/Cartridge	02080975	5.0"	–	3.75"	–	260 gpm 35 scfm	0.2 (0.1)	1.8
BDR 200 X 2 W 0.0/Cartridge	02080976	5.0"	–	5.0"	–	260 gpm 35 scfm	0.4 (0.2)	2.0
BDR 400 X 2 W 0.0/Cartridge	02080977	5.0"	–	8.0"	–	260 gpm 35 scfm	0.9 (0.4)	3.3
BDR 800 X 2 W 0.0/Cartridge	02080978	5.0"	–	10.0"	–	750 gpm 100 scfm	1.3 (0.6)	4.6

BDR Series breathers are attached to the reservoir, gearbox, or tank by 1" male NPT(Models BDR 100, BDR 200, & BDR 400), and by a 2" male NPT (Models BDR 800). Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches and lbs

BDX Series

Extreme Operating Environment Drymicron

Complete Assembly | Cartridge | Cap

DRYMICRONS help stop oil contamination and protect your expensive equipment!

Description

The BDX Series is ideal for certain extreme operating environments such as paper mill, steam cleaning rooms, etc. The humidity level far exceeds that which is experienced in normal industrial applications. In these situations, lubricants and other fluids stored in tanks and reservoirs need the protection of a desiccant breather even more. However, small temperature variations draw in the humid air and unnecessarily reduce the life of the breather.

Features

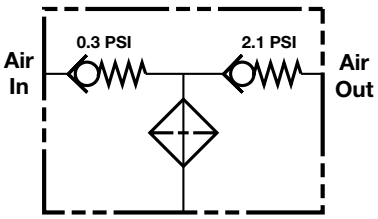
Two check valves

- One to control airflow into the protected reservoir
- One to control airflow out
- These valves establish thresholds of vacuum and pressure.

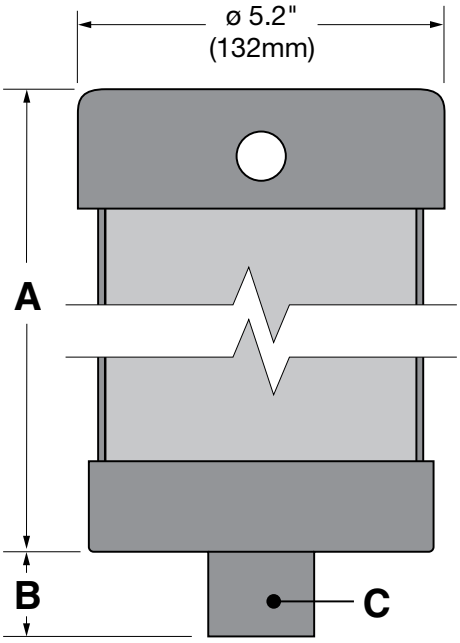
Benefits

- Reduced breathing cycles extend product life span, air to flow through the breather only when needed to protect the integrity of the tank
- The rugged design includes a reusable top cap which allows the economic replacement of the desiccant cartridge

Hydraulic Symbols



Dimensions



Model Code	Part No.	Connection (C)	Height (A)	Clearance (B)	Rated Airflow	H20 Capacity (lbs)	In (psi)	Out (psi)
BDX 200 X 2 W 0.0/RV 0.3/2.1	02084491	1" press fit	7 (178)	1.25 (32)	35 scfm / (260 gpm)	0.4	0.3	2.1
BDX 400 X 2 W 0.0/RV 0.3/2.1	02084492	1" press fit	10 (254)	1.25 (32)	35 scfm / (260 gpm)	0.9	0.3	2.1
BDX 200 G 2 W 1.0/RV 0.3/2.1	02084493	2" male NPT	7 (178)	1.5 (38)	35 scfm / (260 gpm)	0.4	0.3	2.1
BDX 400 G 2 W 1.0/RV 0.3/2.1	02084494	2" male NPT	10 (254)	1.5 (38)	35 scfm / (260 gpm)	0.9	0.3	2.1
BDX 200 X 2 W 0.0/Cartridge	02084495	1" press fit	5 (127)	1.25 (32)	35 scfm / (260 gpm)	0.4	0.3	2.1
BDX 400 X 2 W 0.0/Cartridge	02084496	1" press fit	8 (203)	1.25 (32)	35 scfm / (260 gpm)	0.9	0.3	2.1
BDX 200 G 2 W 1.0/Cartridge	02084497	2" male NPT	5 (127)	1.5 (38)	35 scfm / (260 gpm)	0.4	0.3	2.1
BDX 400 G 2 W 1.0/Cartridge	02084498	2" male NPT	8 (203)	1.5 (38)	35 scfm / (260 gpm)	0.9	0.3	2.1

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

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BDZ Series
Mini DRYMICRON

Description

HYDAC BDZ Series breathers are designed for applications when space is limited. They can replace all standard breather caps.

HYDAC BDZ Series breathers prevent dirt and water vapor from entering the gearbox or hydraulic system.

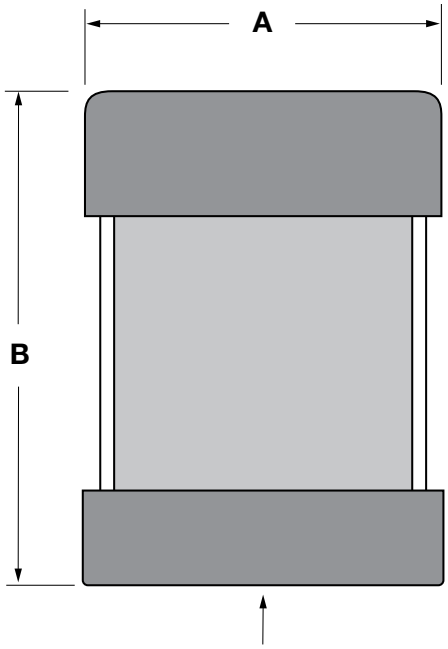
Features

- 1/2” NPT female threaded mounting hole *(1.0 models only)*
- 3/4” NPT male fitting *(2.0 model only)*
- All models are rated for 10 scfm airflow.

Benefits

- Minimize rust & acid corrosion
- Reduce component wear
- Reduce maintenance cost
- Prolong fluid life
- Reduce oil oxidation
- Enhance lubrication
- Rated Airflow - 75 gpm / 10 scfm

Dimensions



1/2” NPT Female Connection
02082356 has 3/4” male connection

Model	H2O Capacity lbs (ltr)	Part Number	A	B	Weight (lbs)
BDZ 015 G 2 W 1.0	0.032 (0.015)	02080980	2.00”	2.25”	0.19
BDZ 025 G 2 W 1.0	0.056 (0.025)	02080981	2.00”	3.50”	0.27
BDZ 045 G 2 W 1.0	0.104 (0.047)	02080982	3.25”	2.25”	0.50
BDZ 085 G 2 W 1.0	0.180 (0.082)	02080983	3.25”	3.50”	0.75
BDZ 085 G 2 W 2.0	0.180 (0.082)	02082356	3.25”	3.50”	0.75

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

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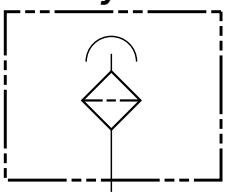
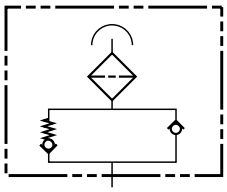
ELF...3 & ELF...4 Series
Filler Breathers

Hydraulic Symbols



standard



with relief valve *(ELF3 only)*

Specifications

- Maximum flow rate - 31 scfm / 230 gpm at 0.04 bar
- Epoxy coated steel cap
- Zinc-plated internals
- 3 or 10 micron
- 500 micron plastic filler basket
- Bayonet connection to access fill port
- Installs via 3 or 6 bolt circle *(bolts included)*
- Locking tabs *(optional - ELFL 3 only)*
- Pressurized breather with relief valve *(optional - ELF3 only)*
- Phenolic resin impregnated filter element

Model Code

ELF P 3 F 10 W 1 . 0 /

Filter Type
ELF = Filler Breather
ELFL = Lockable Filler Breather *(not available for size 4)*

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
3 = 31 scfm (230 gpm) max.
4 = 12 scfm (90 gpm) max.

Type of Connection
F = Flanged

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Type
1 = ELF 3 and 4
4 = ELF 3 RV; Reseat Pressure 6 psi (0.4 bar)
5 = ELF 3 RV; Reseat Pressure 10 psi (0.7 bar)
6 = ELF 3 RV; Reseat Pressure 3 psi (0.2 bar)

Modification Number
.0 = Standard

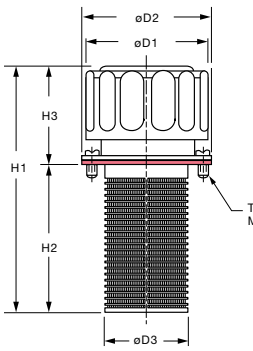
Supplementary Details
RV = Relief Valve *(for use on Pressurized Tanks; ELFP3 only)*
SO169H3.5 = 3.5 inch plated steel filler basket
SO169H6 = 6 inch plated steel filler basket *(ELFP3 only)*
SO169H8 = 8 inch plated steel filler basket

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

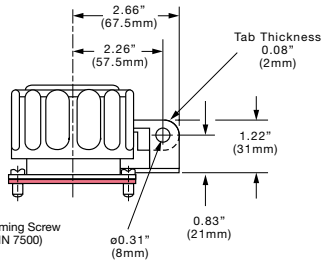
Not all combinations are available

Dimensions

ELF



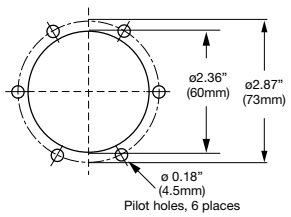
ELFL *(with locking tab)*



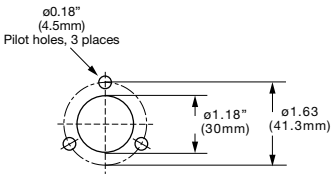
Size	ø D1	ø D2	ø D3	H1	H2	H3
ELF 3	2.99" (76mm)	3.27" (83mm)	2.05" (52mm)	6.26" (159mm)	3.80" (96.5mm)	2.46" (62.5mm)
ELF 4	1.73" (44mm)	1.97" (50mm)	1.10" (28mm)	5.32" (135mm)	3.21" (81.5mm)	2.11" (53.5mm)

Mounting Hole Patterns

ELF 3
(flange interface to DIN 24557/T2)



ELF4



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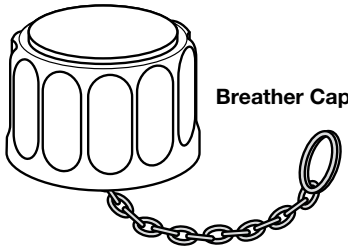
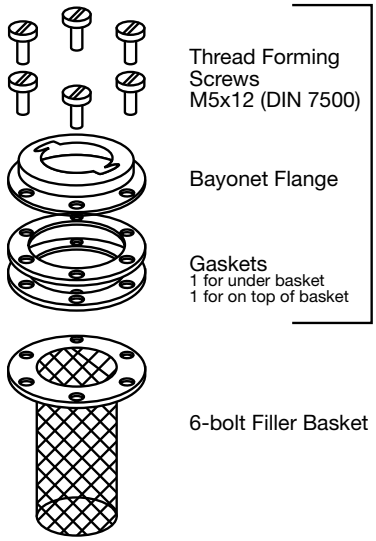
ELF 3 Series
Filler Breather Parts

ELF 3 Breather Caps



Part	Model Code	Part No.
Breather Cap	ELF P 3 CAP 10 W 1.0 W/CHAIN	02080124
Breather Cap with 3 psi relief valve	ELF P 3 CAP 10 W 6.0/RV W/CHAIN	02080125

6 bolt Bayonet Flange

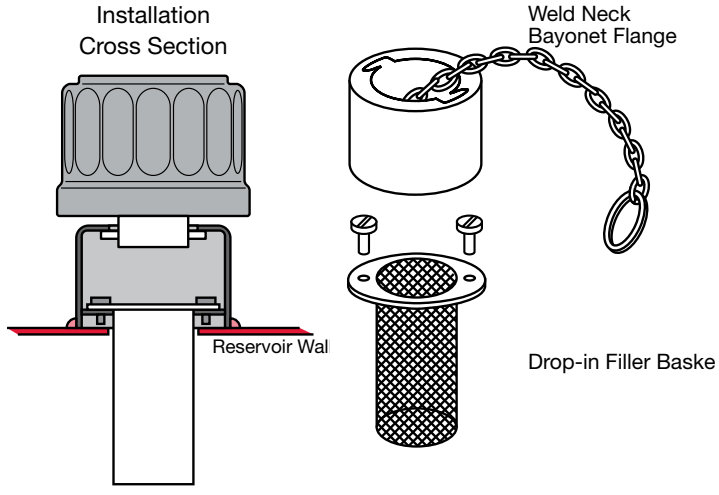


Part	Model Code	Part No.
Bayonet Flange Kit	ELF3 BAYONET FLANGE KIT ASSY	00002680

Note: Parts not sold separately

Part	Model Code	Part No.
3.5” Steel Filler Basket	ELF3 STRAINER BASKET 3.5” PLATED STEEL	02701474
6” Steel Filler Basket	ELF3 STRAINER BASKET 6” PLATED STEEL	02701475
8” Steel Filler Basket	ELF3 STRAINER BASKET 8” PLATED STEEL	02701441
4” Plastic Filler Basket	ELF3 STRAINER BASKET 4” PLASTIC	01202916

Weld Neck Bayonet Flange



Part	Model Code	Part No.
Weld Neck	ELF3 WELD NECK W/CHAIN	02080126
Drop-in Strainer	ELF3 WELD NECK STRAINER	02078939

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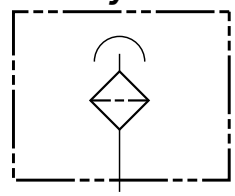
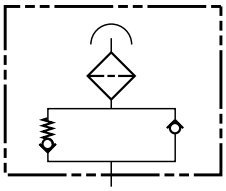
ELF...10 Series
Filler Breathers

Hydraulic Symbols



standard



with relief valve

Specifications

- Maximum Flow Rate - 13 scfm / 100 gpm at 0.04 bar
- Durable synthetic material (PA6)
- Filtration rating 3 µm
- Buna N O-Ring
- Threaded connection to access fill port
- Optional dipstick *(contact factory)*
- Optional customer logo *(contact factory)*
- Optional pressurized breather with relief valve
- Optional anti-splash device
- -22° to 212°F (-30° to 100°C)
- Phenolic resin impregnated filter element

Model Code

ELF P 10 F 3 W 1.0 / - RV0.4

Filter Type
ELF = Filler Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
10

Connection
F = Flanged connection

Filtration Rating *(micron)*
3 = 3µm air filtration

Gauge Option
W = without indicator

Type
1 = Flanged connection (see dimensions above)

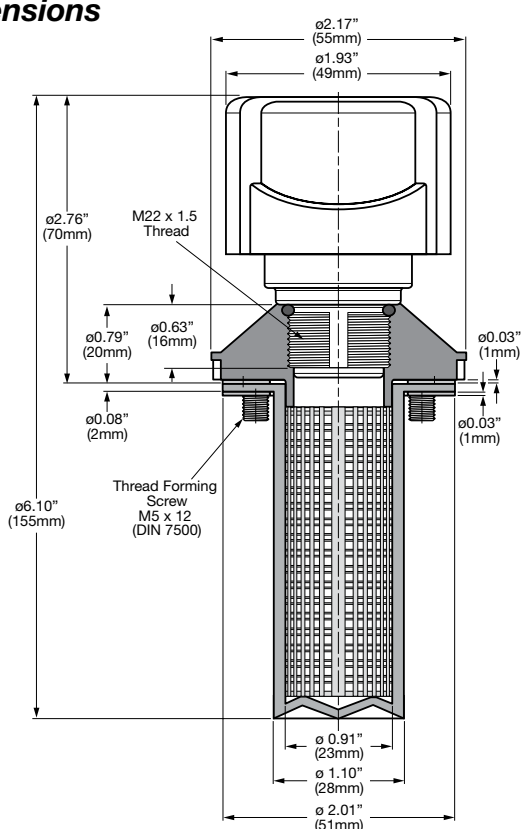
Modification Number
.0 = Standard

Options
(omit) = Standard
RV0.2 = Relief Pressure, 3 psi (0.2 bar)
RV0.4 = Relief Pressure, 6 psi (0.4 bar)
RV0.7 = Relief Pressure, 10 psi (0.7 bar)
AS = Anti-splash protection *(only for version without RV)*

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

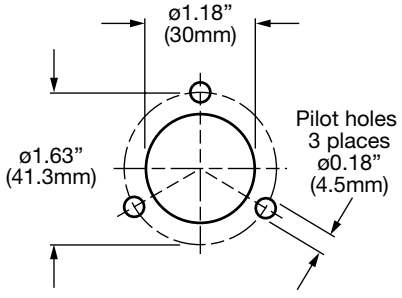
Dimensions



Replacement Cap Only *(with M22x1.5 thread)*

Model	Part No.
BF P 10 M 3 W 1.0	01284377
BF P 10 M 3 W 1.0 /-AS	01284378
BF P 10 M 3 W 1.0 /-RV0.2	01284379
BF P 10 M 3 W 1.0 /-RV0.4	01284380
BF P 10 M 3 W 1.0 /-RV0.7	01284381

Mounting Hole Pattern



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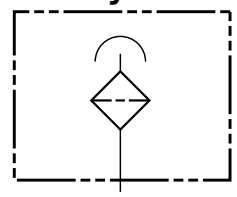
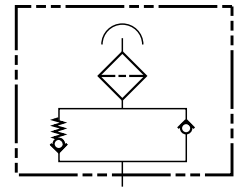
ELF...30 Series
Filler Breathers

Hydraulic Symbols



standard



with relief valve

Specifications

- Maximum flow rate - 31 scfm / 230 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- Buna N O-Ring
- Threaded connection to access fill port
- Installs via 6-bolt circle *(bolts included)*
- Optional dipstick *(contact factory)*
- Optional customer logo *(contact factory)*
- Optional pressurized breather with relief valve
- Optional anti-splash device
- -22° to 212°F (-30° to 100°C)
- Phenolic resin impregnated filter element

Model Code

ELF P 30 F 3 W 1 . 0 /

Filter Type
ELF = Filler Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
30

Type of Connection
F = Flanged Connection

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Type
1 = Flanged Connection to DIN 24557/T2

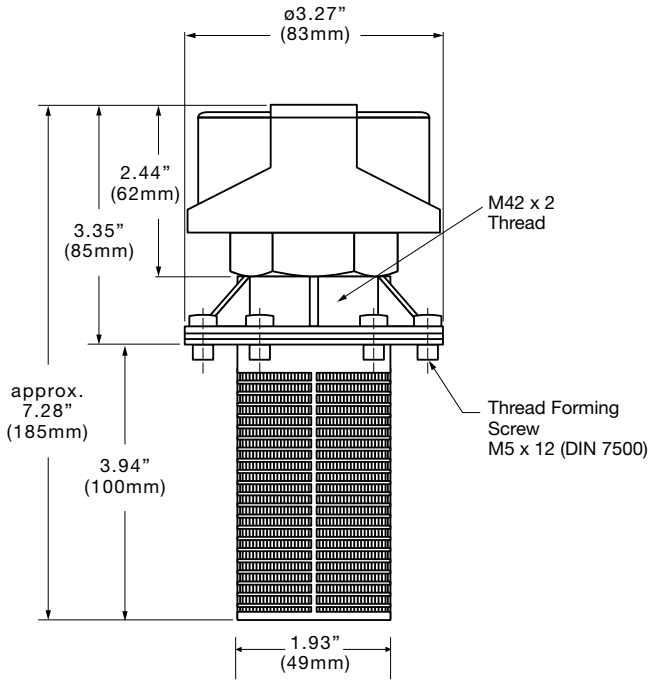
Modification Number
.0 = Standard

Supplementary Details
(omit) = Standard
RV0.2 = Relief Pressure, 3 psi (0.2 bar)
RV0.4 = Relief Pressure, 6 psi (0.4 bar)
RV0.7 = Relief Pressure, 10 psi (0.7 bar)
AS = Anti-splash protection *(only for version without RV)*

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

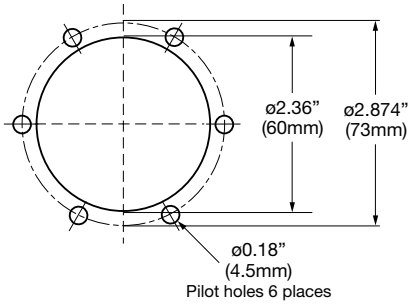
Dimensions



Replacement Cap Only *(with M42x2 thread)*

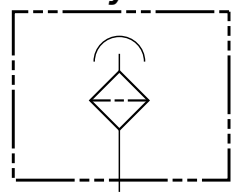
Model	Part No.
BF P 30 M 3 W 1.0	01286298
BF P 30 M 3 W 1.0 /-AS	03246445
BF P 30 M 3 W 1.0 /-RV0.2	01291009
BF P 30 M 3 W 1.0 /-RV0.4	01290498
BF P 30 M 3 W 1.0 /-RV0.7	01294026

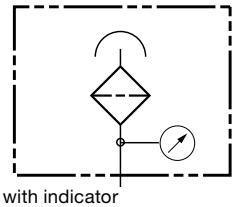
Mounting Hole Pattern *(flange interface to DIN 24557/T2)*



ELF...7 Series
Filler Breathers

Hydraulic Symbols





Specifications

- Maximum flow rate - 63 scfm / 475 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- 500 micron plastic filler basket
- Replaceable element Phenolic resin impregnated paper
- Removable lid to access fill port
- Installs via 6-bolt circle *(bolts included)*
- Differential gauge *(optional)*
- -22° to 212°F (-30° to 100°C)

Model Code

ELF P 7 F 3 K 1 . 0

Filter Type
ELF = Filler Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
7

Type of Connection
F = Flanged

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator
K = With Gauge (Range: -14.5 to 9 psi)

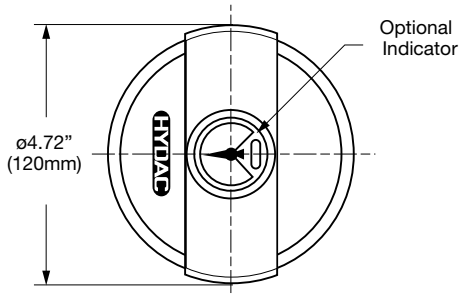
Connection Type
1 = Flange interface to DIN 24557/T2

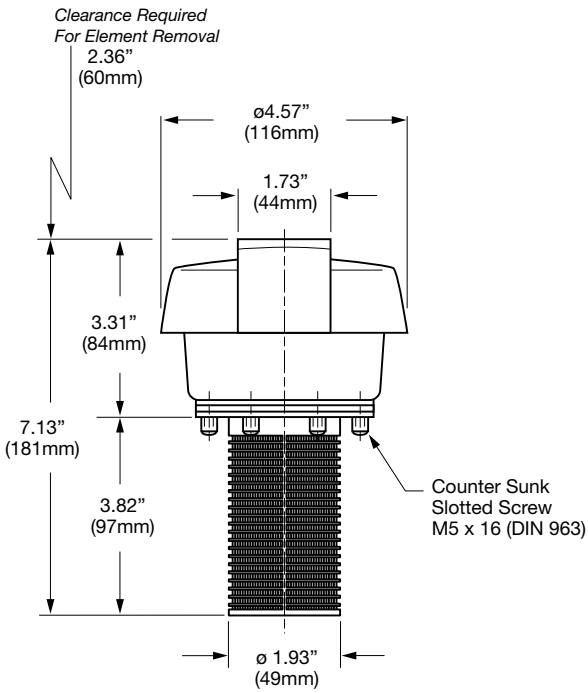
Modification Number
.0 = Standard

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply Contact HYDAC for information and availability

Not all combinations are available

Dimensions



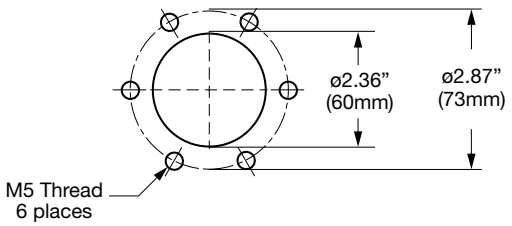


Replacement Elements

Micron	Model Code	Part No.
3	0007L003P	00310948
10	0007L010P	00310485

Mounting Hole Pattern

(flange interface to DIN 24557/T2



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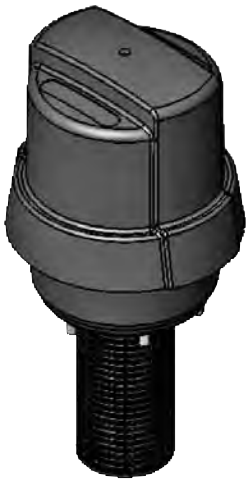
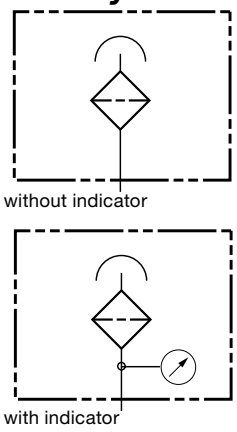
ELF...72 Series
Filler Breathers



Hydraulic Symbols



Specifications

- Maximum flow rate - 74 scfm / 555 gpm at 0.04 bar
- Durable synthetic material (PA6)
- 3 or 10 micron
- 500 micron plastic filler basket
- Replaceable element
- Phenolic resin impregnated paper
- Removable lid to access fill port
- Installs via 6-bolt circle (bolts included)
- Differential gauge (optional)
- -22° to 212°F (-30° to 100°C)

Model Code

ELF P 72 F 3 W 1.0

Filter Type
ELF = Filler Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
72

Type of Connection
F = Flanged

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator
K = With Gauge (Range: -14.5 to 9 psi)

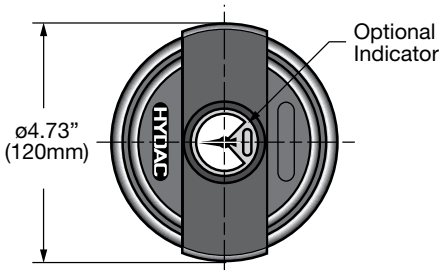
Connection Type
1 = Flange interface to DIN 24557/T2

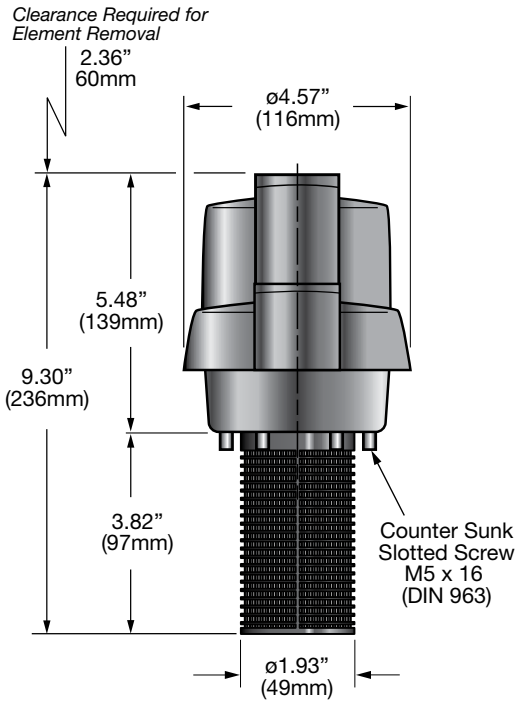
Modification Number
.0 = Standard

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



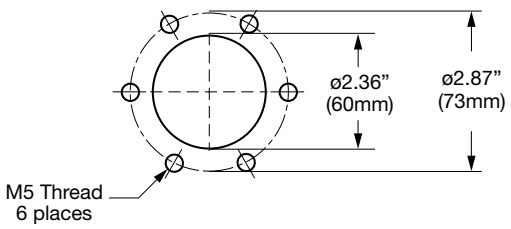


Replacement Elements

Micron	Model Code	Part No.
3	0072L003P	03269023
10	0072L010P	03190037

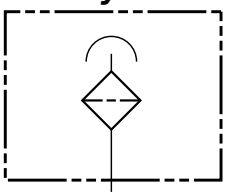
Mounting Hole Pattern

(flange interface to DIN 24557/T2



ELF...5 Series
Filler Breathers

Hydraulic Symbols



Specifications

- Maximum flow rate - 105 scfm / 790 gpm at 0.01 bar
- Steel element housing
- 240 mm Zinc-plated metal filler basket
- 3 or 10 micron
- Replaceable element
- Removable Lid to access fill port
- Installs via threaded connection *(weld ring optional)*
- Phenolic resin impregnated filter element

Model Code

ELF P 5 G 3 W 2 . 0 / _

Filter Type
ELF = Filler Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
5

Type of Connection
G = Threaded *(matching threaded weld ring available see supplementary details below)*

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Connection Type
2 = G 2 1/2 threaded connection
3 = G 3 threaded connection

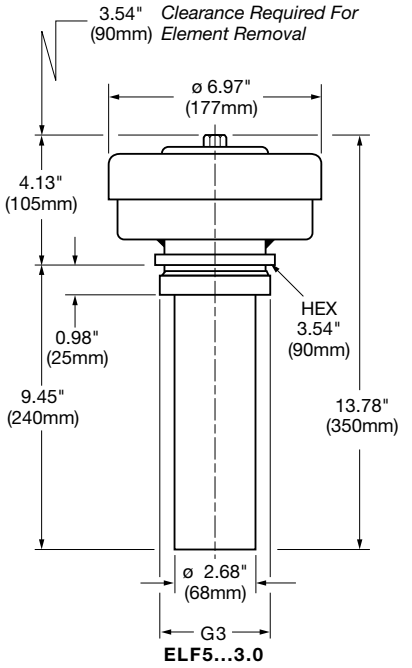
Modification Number
.0 = Standard

Supplementary Details
NO WELD RING = without weld ring
W/ WELD RING = with weld ring

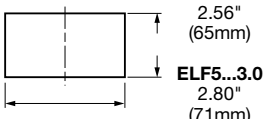
Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions



G2 1/2
ELF5...2.0



Reservoir opening for weld ring

ELF5...2.0 ø 3.46" (88mm)
ELF5...3.0 ø 3.98" (101mm)

Replacement Elements

Micron	Model Code	Part No.	Qty Req.
3	0005L003P	00309450	1
10	0005L010P	00306097	1

Weld Rings

Size	Model Code	Part No.
G 2 1/2	RING WELD ELF 5 G 2 1/2	02065053
G 3	RING WELD ELF 5 G 3	02065054

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

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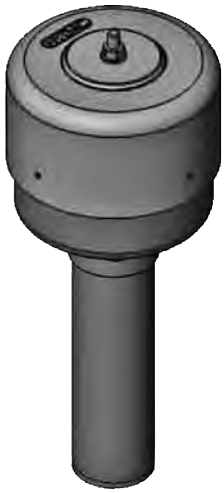
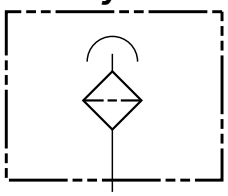
ELF...52 Series
Filler Breathers



Hydraulic Symbols



Specifications

- Maximum flow rate - 176 scfm / 1320 gpm at 0.01 bar
- Steel housing
- 3 or 10 micron
- Replaceable element
  (uses 2 of the standard size 5 elements)
- Phenolic resin impregnated paper
- Installs via threaded connection
  (weld ring optional)

Model Code

ELF P 52 G 3 W 1 . 0 / _

Filter Type
ELF = Breather

Filter Element Material
P = Phenolic Resin Impregnated Paper

Size
52

Type of Connection
G = Threaded

Filtration Rating *(micron)*
3 = 3µm Air Filtration
10 = 10µm Air Filtration

Gauge Options
W = Without Indicator

Connection Type
2 = G 2 1/2 Threaded Connection
3 = G 3 Threaded Connection

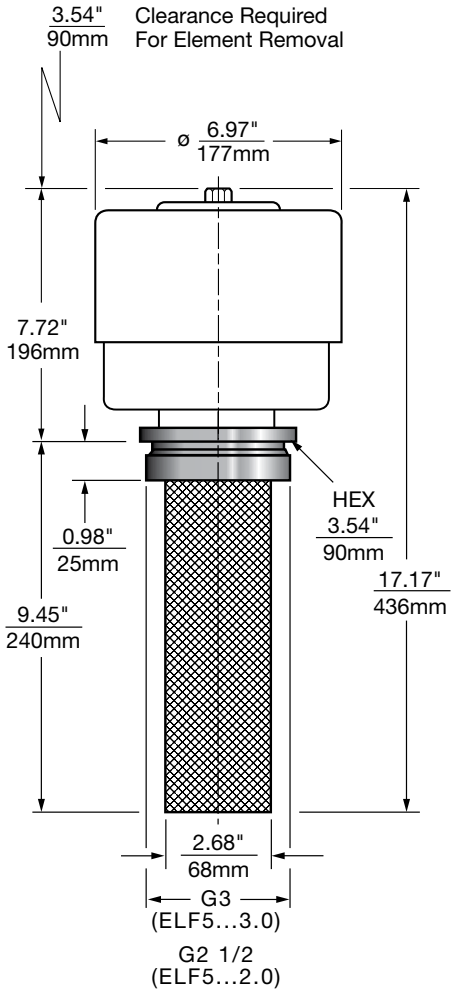
Modification Number
.0 = Standard

Supplemental Details
NO WELD RING = Without Weld Ring
W/ WELD RING = With Weld Ring

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Replacement Elements

Micron	Model Code	Part No.	Qty Req.
3	0005L003P	00309450	2
10	0005L010P	00306097	2

Weld Rings

Size	Model Code	Part No.
G 2 1/2	RING WELD ELF 5 G 2 1/2	02065053
G 3	RING WELD ELF 5 G 3	02065054

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

SFE Series
In-Tank Suction Strainer Element

Model Code

SFE 11 G 125 A 1 .0 / _

Type of Element
SFE = In-Tank Suction Strainer Element

Size
11 = 3 gpm
15 = 5 gpm
25 = 8 gpm
50 = 10 gpm
80 = 20 gpm
100 = 30 gpm
180 = 50 gpm
280 = 75 gpm
380 = 100 gpm

Type of Connection
G = NPT Threaded Connection

Nominal Filtration Rating *(micron)*
125 = 149 µm – 100 Mesh Screen
74 = 74 µm – 200 Mesh Screen

Clogging Indicator *(not applicable)*
A = No clogging indicator

Type Number
1

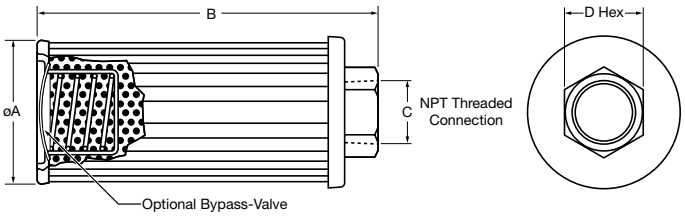
Modification Number *(latest version always supplied)*
.0

Bypass Valve
(omit) = Without Bypass-Valve
BYP = With Bypass Valve (3 psi) *(not available for size 11)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply Contact HYDAC for information and availability

Not all combinations are available

Dimensions



Description

HYDAC Suction Strainer Elements are designed for installation into suction lines of pumps. Extra caution should be taken to ensure that the suction elements are always mounted below the minimum oil level of the reservoir.

The suction strainer elements can be supplied with a bypass valve to reduce high pressure drops caused by contaminated elements or high viscosity fluids during cold starting. The bypass valve opens at 3 psi. for best results, suction strainer elements should be sized for clean element pressure drops of no higher than 0.5 to 0.7 psi.

HYDAC suction Strainer Elements are manufactured using stainless steel wire screen media, plastic nut cap, and plated steel end cap and support tube.

Suction strainer elements are only intended to protect hydraulic pumps against catastrophic failure caused by coarse contaminant.

Suction strainer elements should be inspected and cleaned regularly.

Suction strainer elements should not be used as the only filtration elements in a hydraulic system. Pressure filters and return line filters, with reasonable dirt holding capacity, must be installed to provide protection against component damage caused by fine contaminants.

Cleaning Procedure

Remove external build-up of contaminant with cleaning fluid in separate tank.

Flush element with clean solvent and blow through wire screen media with air.

Hydraulic Data

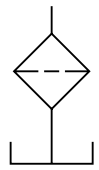
Pressure Drop vs. Flow:

- Pressure drop will be < 2 psi when strainers are used within the recommended flow range, and with a standard hydraulic fluid with a viscosity of 141 SSU and specific gravity of 0.86.

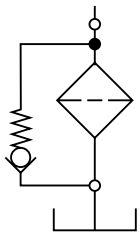
Temperature:

- 15° to 180°F (-9° to 82°C)

Hydraulic Symbols



Without Bypass-Valve



With Bypass-Valve

Size	Nominal Flow (gpm)	ØA	B	C (NPT)	D HEX	Media Area (sq. in.)
SFE 11	3	1.95	2.68	3/8	1.00	15
SFE 15	5	1.95	4.19	1/2	1.00	25
SFE 25	8	2.67	3.55	3/4	1.43	50
SFE 50	10	2.67	5.25	1	1.62	90
SFE 80	20	3.47	6.62	1 1/4	2.00	135
SFE 100	30	3.47	8.01	1 1/2	2.38	195
SFE 180	50	4.03	9.88	2	2.78	260
SFE 280	75	5.19	10.25	2 1/2	3.25	325
SFE 380	100	5.19	11.75	3	3.75	410

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

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MSS Series
Magnetic Suction Separators

Standard
Outer Screen

SS20
Mesh Screen

Description

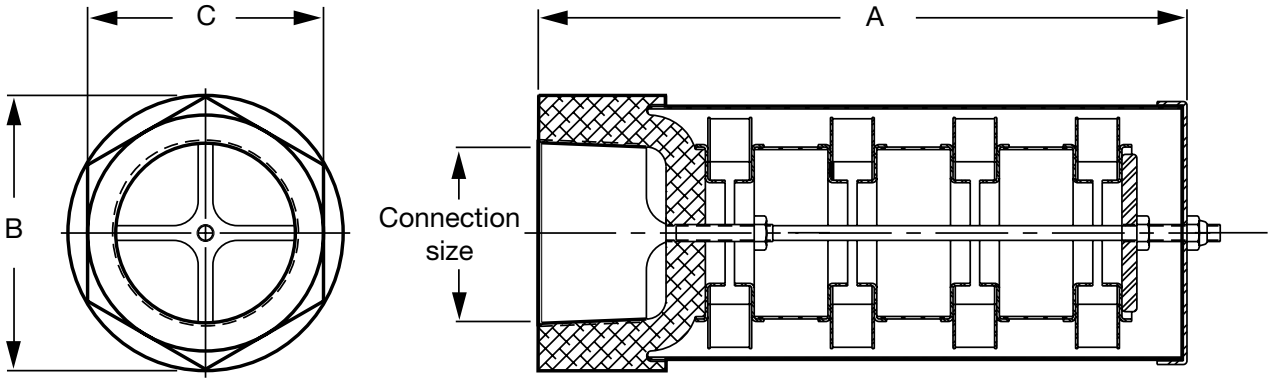
With the use of HYDAC's Magnetic Suction Separators, suction line filtration is provided without starving the pump. They offer unique protection for pumps from all sizes of ferrous particles, some of which have the potential of destroying a pump in a single pass. Large ceramic magnets are spaced along the length of the separator. All hydraulic fluid entering the pump must move at low velocity through a powerful magnetic field. This field traps large quantities of micronic ferrous particles. The viscous properties of the fluid can cause some non-ferrous particles to adhere to the magnetically trapped particles.

The MSS series is available in sizes ranging from one to three inches. The chart below shows the part numbers, specifications, and dimensions of available models.

The standard outer screen has adequate open area *(0.079 inch diameter perforations)* to eliminate the possibility of pump starvation. All models are also available with a pleated 20 mesh screen *(850 micron)* by adding SS20 to the model number. *(Example MSS-1 SS20)*.

All units have a removable outer screen that can be cleaned and re-used to extend service life and minimize pressure drop.

Dimensions



Model Number	Part No.	Connection Size	Max. Flow gpm (lpm)	Δ psi at Max. gpm	Dimensions		
					A	B	C
MSS-1	02082431	1" NPT	15 (55)	0.05	5.25" (133)	3.25" (83)	1.62" (41)
MSS-1 1/4	02082432	1 1/4" NPT	25 (95)	0.05	8.25" (210)	3.50" (89)	3.00" (76)
MSS-1 1/2	02082433	1 1/2" NPT	35 (135)	0.08	8.25" (210)	3.50" (89)	3.00" (76)
MSS-2	02082434	2" NPT	50 (190)	0.10	8.25" (210)	3.50" (89)	3.00" (76)
MSS-3	02082435	3" NPT	100 (380)	0.02	10" (254)	3.50" (89)	4.00" (102)

* B Dimension larger for SS20 versions

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

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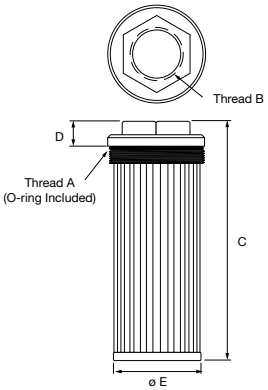
HTMS Series

Tank Mounted Suction Strainer Elements

SAE O-ring



Model Code

HTMS SAE 16 100

Series

Thread Type

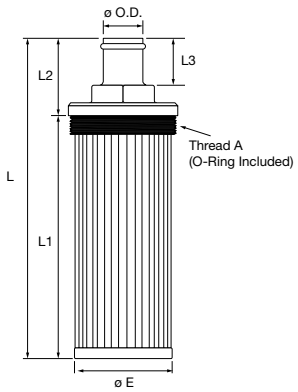
Thread B Size

Mesh Size
100 = 100 Mesh (149 micron)

Options
(omit) = Standard *(no bypass)*
RV3 = 3 psi bypass Valve

Model Code	Part No.	Per SAEJ514		Hex Size	GPM*	Screen Area (Sq. In.)	Dimensions		
		THD A	THD B				C	D	ØE
HTMS SAE 16 100	02078472	2-1/2”-12	1-5/16”-12	2.13	9	90	9.00”	0.75”	2.24”
HTMS SAE 20 100	02078473	2-1/2”-12	1-5/8”-12	2.13	14	90	9.00”	0.75”	2.24”
HTMS SAE 24 100	02078474	3-3/8”-12	1-7/8”-12	2.50	21	230	8.80”	0.90”	3.22”
HTMS SAE 32 100	02078475	3-3/8”-12	2-1/2”-12	3.00	39	230	9.30”	0.98”	3.22”

Hose Barb



Model Code

HTMS HB 1/1.25 100

Series

Connection Type

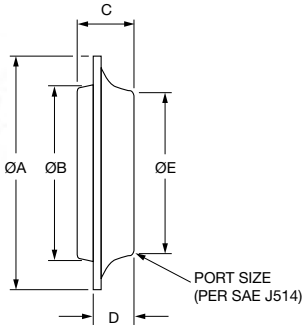
Connection / Hex Size

Mesh
100 = 100 Mesh (149 micron)

Options
(omit) = Standard *(no bypass)*
RV3 = 3 psi Bypass Valve

Model Code	Part No.	Thread A	ø O.D.	Hex Size	GPM*	Dimensions				
						L	L1	L2	L3	ø E
HTMS HB 1 / SAE 24 100	02078485	1-7/8”-12	1.00”	1.25”	8	9.30”	7.30”	2.00”	1.25”	1.65”
HTMS HB 1.25 / SAE 32 100	02078486	2-1/2”-12	1.25”	1.50”	14	10.00”	8.00”	2.00”	1.25”	2.12”
HTMS HB 1.5 / SAE 48 100	02078487	3-3/8”-12	1.50”	2.00”	21	10.30”	7.82”	2.48”	1.50”	3.22”
HTMS HB 2 / SAE 48 100	02078488	3-3/8”-12	2.00”	2.50”	40	10.80”	7.84”	2.97”	2.00”	3.22”

Weld Flange (SAE)



Model Code	Part No.	Port Size	Dimensions				
			ØA	ØB	C	D	ØE
HTMS TWF-6	02078493	9/16”-18	1.50”	0.93”	0.56”	0.31”	1.00”
HTMS TWF-8	02078494	3/4”-16	1.50”	0.93”	0.56”	0.31”	1.00”
HTMS TWF-12	02078495	1-1/16”-12	2.13”	1.38”	0.69”	0.44”	1.44”
HTMS TWF-16	02078496	1-5/16”-12	2.38”	1.66”	0.75”	0.50”	1.75”
HTMS TWF-20	02078497	1-5/8”-12	2.69”	2.00”	0.75”	0.50”	2.13”
HTMS TWF-24	02078482	1-7/8”-12	3.00”	2.25”	0.75”	0.50”	2.38”
HTMS TWF-32	02078483	2-1/2”-12	3.50”	2.63”	0.84”	0.59”	2.88”
HTMS TWF-48	02078484	3-3/8”-12	4.63”	3.66”	1.00”	0.81”	3.94

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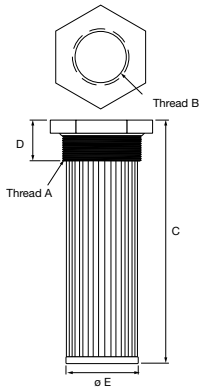
NPT



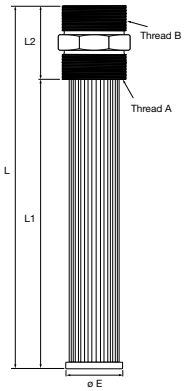
Model Code

HTMS NPT 1/2 100

- **Series** — HTMS
- **Thread Type** — NPT
- **Thread B Size** — 1/2
- **Mesh** — 100
  - 100 Mesh (149 micron)
- **Options**
  - *(omit)* = Standard *(no bypass)*
  - RV5 = 5 psi Bypass Valve

Model Code	Part No.	GPM*	Screen Area (Sq. In.)	THD A	THD B	Hex Size	Dimensions		
							C	D	ø E
HTMS NPT 1/2 100	02078460	5	35	1” NPT	1/2” NPT	1.43	5.38”	1.10”	1.18”
HTMS NPT 3/4 100	02078461	10	64	1 1/4” NPT	3/4” NPT	1.81	7.50”	1.20”	1.14”
HTMS NPT 1 100	02078462	15	86	1 1/2” NPT	1” NPT	2.00	8.25”	1.30”	1.65”
HTMS NPT 1 1/4 100	02078463	25	125	2” NPT	1 1/4” NPT	2.55	10.00”	1.30”	2.12”
HTMS NPT 2 100	02078464	50	260	3” NPT	2” NPT	3.30	10.25”	1.70”	3.03”
HTMS NPT 3 100	02078465	100	315	4” NPT	3” NPT	5.00	11.30”	1.80”	3.78”

Male NPT Ports



Model Code

HTMS NPTM 2 100

- **Series** — HTMS
- **Thread Type** — NPTM
- **Thread B Size** — 2
- **Mesh Size** — 100
  - 100 Mesh (149 micron)
- **Options**
  - *(omit)* = Standard *(no bypass)*
  - RV3 = 3 psi bypass Valve

Model Code	Part No.	GPM*	THD A	THD B	Hex Size	Dimensions			
						L	L1	L2	ø E
HTMS NPTM 2 100	02078480	50	2” NPT	2” NPT	2.75”	13.50”	10.75”	2.70”	2.12”

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches/(mm) and lbs./(kg.)
*Flow ratings listed are nominal flow ratings for typical applications. High viscosity, low temperature applications may require a strainer with a higher flow rating. Consult HYDAC Engineering for more information.

FSK Series
with Electric Level Switch

Model Code

FSK - 127 - 2 . 4 / 0 / _ / 12 _

Fluid Level Indicator
- FSK = Electrical and visual level indicator

Size *(Mounting Hole Centers)*
- 127 = 5 inches
- 176 = 7 inches
- 254 = 10 inches
- 381 = 15 inches

Seals
- 2 = Fluorocarbon

Modification Number
- 4 = FSK *(Determined by Manufacturer)*

Electrical Switch
- C = Open at Normal Level
- O = Closed at Normal Level

Thermometer
- *(omit)* = No Thermometer *(standard)*
- FT 100 = Probe Thermometer (100mm-3.94"LG)
- FT 200 = Probe Thermometer (200mm-7.87"LG)
- FT 300 = Probe Thermometer (300mm-11.87"LG)
- TS... = Thermo Switch *(see chart on page 141)*

Hex Head Bolt
- 12 = M12 x 1.75 Bolt

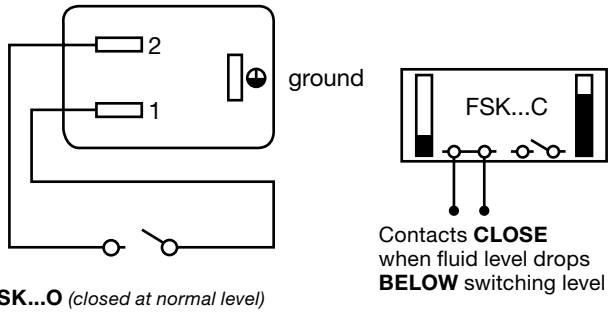
Sight Tube
- *(omit)* = Polyamide construction *(not suitable for water glycols or high water based fluids)*
- SO14 = Glass tube construction

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

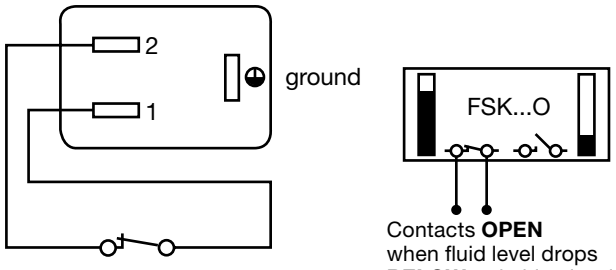
Electric Level Switch

FSK...C *(open at normal level)*



Contacts **CLOSE** when fluid level drops **BELOW** switching level

FSK...O *(closed at normal level)*



Contacts **OPEN** when fluid level drops **BELOW** switching level

Electrical Specifications

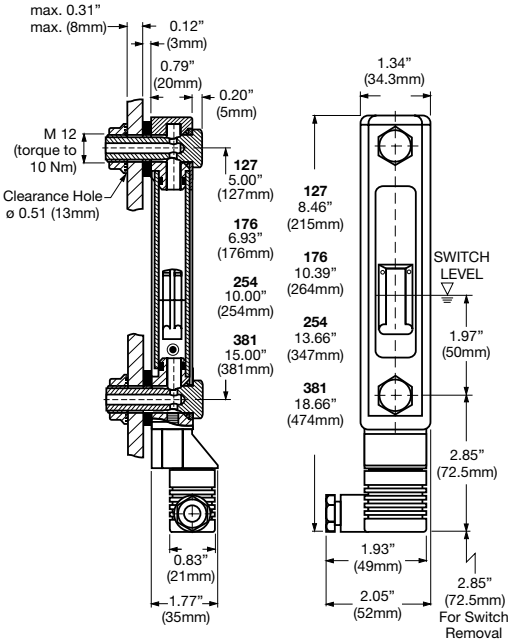
Contact Ratings
- Max. 8W

Maximum Voltage
- 50V AC or DC

Maximum Current
- 200 mA

Magnetic Float inside tube trips switch when fluid level drops within 50mm of lower bolt. *(see illustration)*

Dimensions



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

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FSA Series

Model Code

FSA 127 - 1 . 1 / T / 12 - ___

Fluid Level Indicator
FSA = Visual level indicator

Size *(Mounting Hole Centers)*
76 = 3 inches
127 = 5 inches
176 = 7 inches
254 = 10 inches
381 = 15 inches

Seals
1 = NBR
2 = Fluorocarbon

Housing Material
0 = Steel *(only for SO14 glass tube construction)*
1 = Aluminum
2 = ABS Plastic

Thermometer
(omit) = No Thermometer
T = Built-in Tube
FT 100 = Probe Thermometer *(100mm-3.94"LG)*
FT 200 = Probe Thermometer *(200mm-7.87"LG)*
FT 300 = Probe Thermometer *(300mm-11.87"LG)*
TS... = Thermo Switch *(see chart on page 141)*

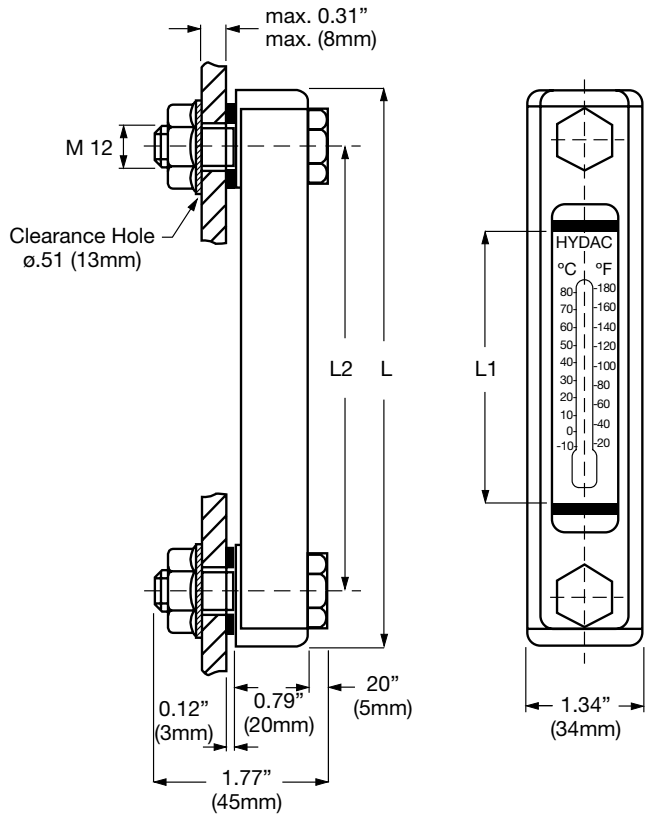
Hex Head Bolt
12 = M12 x 1.75 Bolt

Sight Tube Material
(omit) = Polyamide construction
(not suitable for water glycols or high water based fluids)
SO14 = Glass tube construction

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Dimensions

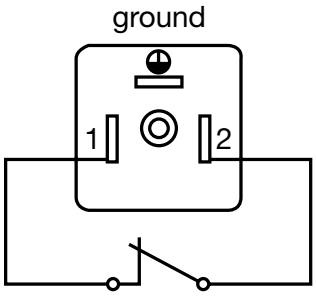


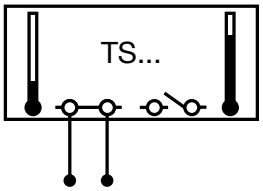
Size	L	L1	L2
76	4.25" (108mm)	1.46" (37mm)	2.99" (76mm)
127	6.26" (159mm)	2.99" (76mm)	5.00" (127mm)
176	8.19" (208mm)	4.92" (125mm)	6.93" (176mm)
254	11.26" (286mm)	7.99" (203mm)	10.00" (254mm)
381	16.26" (413mm)	12.99" (330mm)	15.00" (381mm)

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

Options

Electric Thermo Switch / TS





Contacts **OPEN**
when fluid temperature rises
ABOVE switching temperature

Electrical Specifications

Maximum Voltage

- 50 VAC or DC

Minimum Current

- 50 mA

Contact

- Normally Closed

Switching Tolerance

- ±10°F

Hysterisis

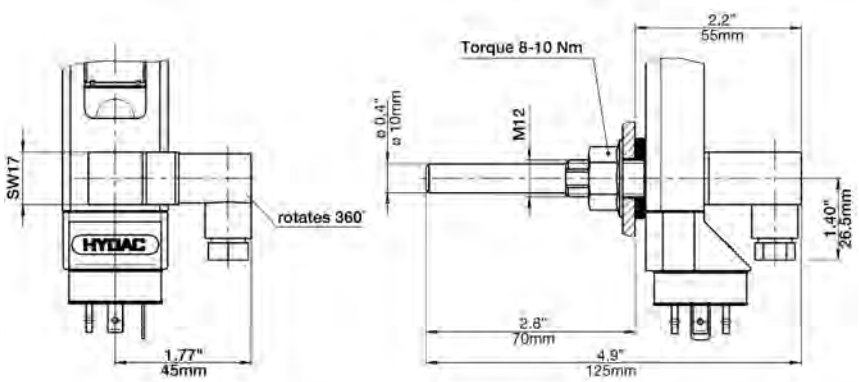
- TS 60/70 27°F (15°C)
- TS 80 36°F (20°C)

Expected Life Cycle

- at 25 A / 50 V 10,000 cycles
- at 0.5 A / 50 V 100,000 cycles

Thermo Switch - TS...

Detail of Lower Connection
for Probe Thermometer (FT...) see chart below



Thermo Switches *(Normally Closed Contact)*

Thermo Switch Code	Model Code	Part Number	Switch Opens @	Switch Closes @	Mounting Thread
TS60	TS-L-60/X/12 THERMO-SWITCH	03252752	60°C/140°F	45°C/113°F	M 12
TS70	TS-L-70/X/12 THERMO-SWITCH	03252766	70°C/158°F	55°C/131°F	M 12
TS80	TS-L-80/X/12 THERMO-SWITCH	03252767	80°C/176°F	60°C/140°F	M 12

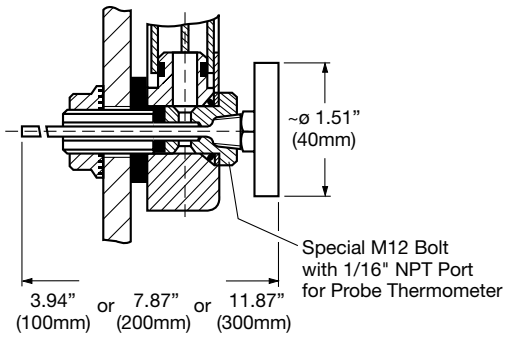
Probe Thermometer / FT Features

- Analog dial type thermometer for visual temperature indication

Temperature Range *(Dual Scale)*

- 0° to 212°F
- 0° to 100°C

Detail of Lower Connection



Probe Thermometers *Temperature Range 32° to 212°F (0° to 100°C)*

Thermo Switch Code	Model Code	Part Number	Mounting Thread
FT100	FT-100 TEMP PROBE W/M12 BOLT	02067556	M 12
FT200	FT-200 TEMP PROBE W/M12 BOLT	00086740	M 12
FT300	FT-300 TEMP PROBE W/M12 BOLT	00086741	M 12

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Technical Data

Material	
Housing	Anodized Aluminum or ABS Plastic
Sight Tube	Polyamide or Glass
Seals	Fluorocarbon, NBR
Nuts / Bolts	Steel, Zinc plated
Fluid Temperature	-4° to 176°F (-20° to 80°C)
Maximum Pressure	14.5 PSI (1 BAR)
Thermometer Range	
Type T (FSA only)	14° to 176°F (-10° to 80°C)
Type FT100	32° to 212°F (0° to 100°C)
Type FT200	32° to 212°F (0° to 100°C)
Type FT300	32° to 212°F (0° to 100°C)
Bolting Torque	Max. 8 LB-FT+1 (10 Nm +2) see installation instructions below

Recommended Installation Process

1. Drill mounting holes (13 mm) according to dimension L2.
2. Torque the Nut, item 9, to 8+ 1 LB-FT. If it is not possible to torque the nut, the bolt head must be torqued.
   To avoid damaging the indicator a washer is recommended to be used under the bolt head.
   This washer is available from HYDAC: Part Number 00001689.
   Washer Dimensions: øD 18.8 mm, ID 13.10 mm, 0.5 mm thick

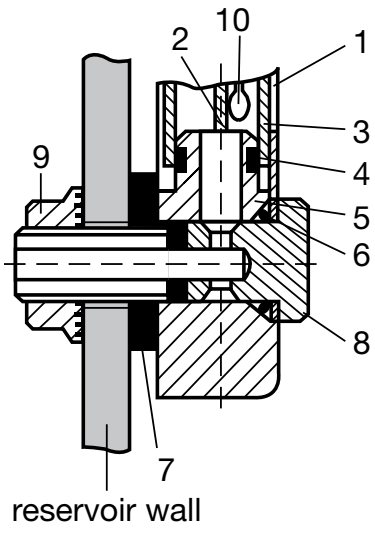
Component Parts

Item	Description		Part No.	Quantity FSA	Quantity FSK
1	Housing		-	1	1
2	Name Plate		-	1	-
3	Tube		-	1	1
4*	O-ring 13X2.5	FPM-70 (Fluorocarbon)	00601916	2	2
		NBR-70 (Buna)	00601047		
5	Tube Connector		-	2	2
6*	O-ring 12.3X2.4	FPM-70 (Fluorocarbon)	00601531	2	2
		NBR-70 (Buna)	00601045		
7*	Washer FSA/FSK	FPM (Fluorocarbon)	22183158	2	2
		NBR (Buna)	00271948		
8*	Bolt M12 SW17 FSA		22183153	2	2
9*	Nut Hex M12 FSA		22183151	2	2
10	Thermometer *(In Tube)*		-	1	-
11*	Probe Thermometer		See pg. 141	1	1
12*	Bolt FSA/K M12 SW17 for FT Temp Probe		03126743	1	1
13	Magnetic Float		-	-	1
14	Base Assembly w/Type "C" Switch		-	-	1
15	Base Assembly w/Type "O" Switch		-	-	1
16*	Washer FSA/FSK Steel		00001689	2	2

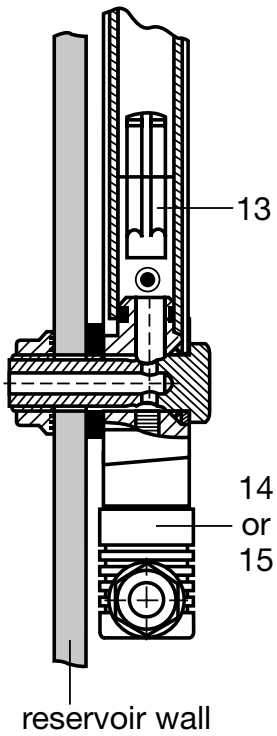
* items may be purchased individually.

Items listed in RED are not sold as spare parts.

FSA & FSK

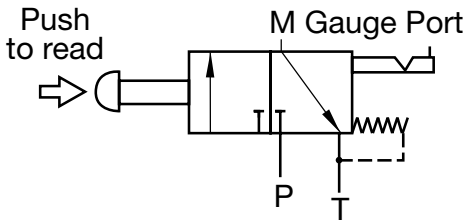


FSK Only



MA Series
Single Gauge Isolator

Hydraulic Symbol



Description

- Gauge life is extended by using the MA 1 when reading pressure. When not reading pressure, the gauge is vented to tank to protect the gauge against pressure from the system.
- There are two ways to operate the MA 1:
  Push to read *(spring return)*
  Push and rotate clockwise to lock in for continuous pressure reading

Model Code

MA 1 . A 1 0 / 5 V

Gauge Isolator Single Station

Design
1 = Push/Rotating Control Knob

Connection
A = Threaded

Type Number

Modification Number

Port Configuration

0	=	BSPP Thread (G1/4)	Part No. 02057942
5	=	1/4" NPT Thread	Part No. 02057940
12	=	SAE-5 (1/2"-20 UNF)	Part No. 02057941

Seals
V = Fluoroelastomer Seals *(standard)*

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

Specifications

Mounting
- Panel installation maximum 0.39"

Connections
- 1/4" NPT, SAE-5, or G1/4 (Ports M, P, T)

Weight
- 0.88 lbs./0.4 kg

Mounting Position
- Horizontal or Vertical

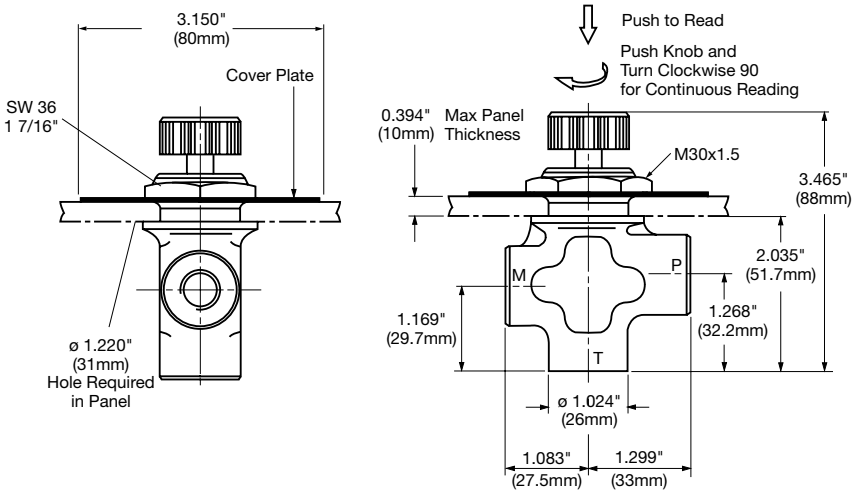
Operating Fluid
- Mineral Oils

Hydraulic Data

Operating Pressure
- P max. 5075 psi/350 bar *(T-Port max. 145 psi/10 bar)*

Temperature Range
- -4° to 176°F (-20° to 80°C)

Dimensions



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

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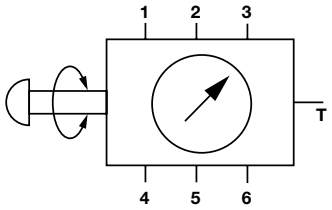
MSL Series

Zero Leakage Multi-Station Gauge Isolators with Integral Gauge

Hydraulic Symbol



Model Code

MSL 2 G 2 . 0 / 315 V

Multi-Station Gauge Isolator
MSL = Zero Leakage Model

Model
2 = with Built-in Pressure Gauge

Type and Size of Connection (All Ports)
G = 1/4" NPT
H = SAE-4 (7/16"-20 UNF)
A = BSPP (G1/4)

Type Number

Modification Number

Gauge Indication Range

Size	Operating Pressure Zone *(Black Scale)*	Over Pressure Zone *(Red Scale)*
40	0 - 570 psi (0 - 40 bar)	570 - 900 psi (40 - 63 bar)
63	0 - 900 psi (0 - 63 bar)	900 -1400 psi (63 - 100 bar)
100	0 - 1400 psi (0 - 100 bar)	1500 - 2300 psi (100 - 160 bar)
180	0 - 2600 psi (0 - 180 bar)	2600 - 3600 psi (180 - 250 bar)
315	0 - 4500 psi (0 - 315 bar)	4500 - 5700 psi (315 - 400 bar)

Supplementary Details
(omit) = Buna Seals
V = Viton Seals

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

General

Mounting Method

- Flange mounting via four 1/4" bolts. It is recommended that the measuring points with pressures of over 1450 psi (100 bar) be arranged symmetrically. Ports not in use should be plugged.

Weight

- 3.8 lbs. / 1.7 kg.

Mounting Position

- Optional

Fluids

- General purpose hydraulic oil. For other fluids, contact **HYDAC** for information.

Type of Connections

- 6 measuring points
- 1 tank connection

Hydraulic Data

Operating Pressure Range

- Max. operating pressure at measuring points 1- 6 4500 psi (315 bar)
- Max. Tank connection pressure 145 psi (10 bar)

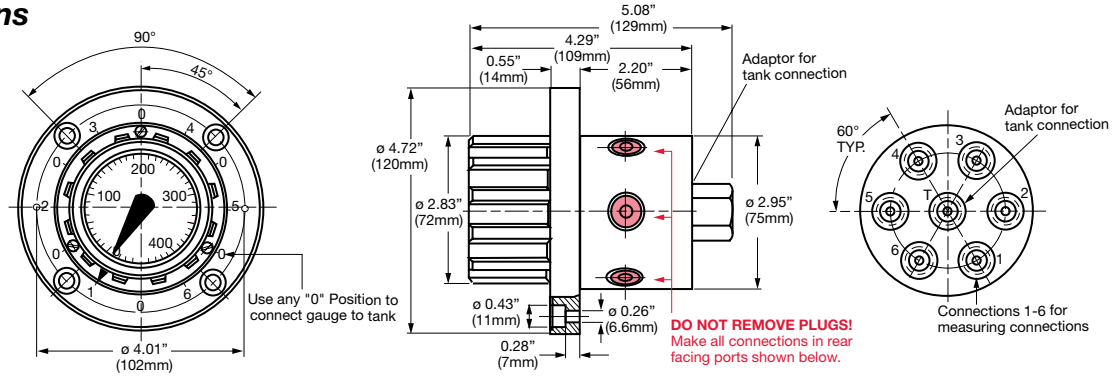
Fluid Temperature Range

- - 5° to 160°F (-20° to 70°C)

Gauge Accuracy

- Built-in gauge accuracy is ±1.6% of the max. scale value at 68°F (20°C). The error per additional 50°F (10°C) temperature increase is +0.3% and 50°F (10°C) temperature reduction is -0.3%. Values are based on red scale indication.

Dimensions



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Dimensions are in inches/(mm) and lbs./(kg.)

MS Series
Multi-Station Gauge Isolators

Model Code

MS 4 A 2 . 1 / 5 V

Multi-Station Gauge Isolator

Model
- 4 = Turn and press to read *(6 positions)*
- 5 = Turn to read *(5 positions)*
- 6 = Turn and press to read *(9 positions)*
- 7 = Turn to read *(8 positions)*

Type and Size of Connections
- A = Threaded Connections

Type Number

Modification Number

Port Type
- 5 = NPT Port *(1/4" for MS 4 & 5 only)*
- 12 = SAE Port *(SAE-4 for MS 4 & 5 only)*
- 0 = BSPP *(1/4" for MS 4 & 5 and 1/8" for MS 6 & 7)*

Seals
- *(omit)* = Buna N
- V = Fluoroelastomer Seals

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply
Contact HYDAC for information and availability

Not all combinations are available

General

Mounting Method
- Flange mounting via four 1/4" bolts. It is recommended that the measuring points with pressures of over 1450 PSI / 100 BAR be arranged symmetrically. Ports not in use should be plugged.

Weights
- **MS 4 & MS 5** 3.1 lbs. / 1.4 kg.
- **MS 6 & MS 7** 4.2 lbs. / 1.9 kg.

Mounting Position
- Optional

Fluids
- General purpose hydraulic oil. For other fluids, contact the HYDAC office for information.

Types of Connections
- **MS 4 / MS 6**
  1 gauge connection (M)
  1 tank connection (T)
- **MS 5 / MS 7**
  1 gauge connection (M)
  1 tank connection (T)
  1 leakage connection (L)

Hydraulic Data

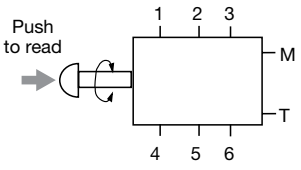
Operating Pressure Range
- **MS 4 / MS 5 / MS 6 / MS 7**
  Max. operating pressure range at measuring points
  4500 PSI / 315 BAR
- Max. tank and leakage connection pressure
  145 PSI / 10 BAR

Fluid Temperature Range
- - 5° to 160°F (-20° to 70°C)

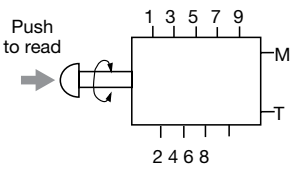
Hydraulic Symbol

M = Gauge (measuring) connectione
T = Tank connection
L = Leakage connection

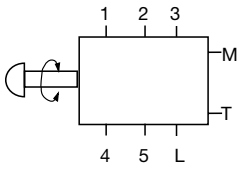
Type MS 4



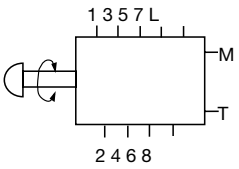
Type MS 6



Type MS 5



Type MS 7



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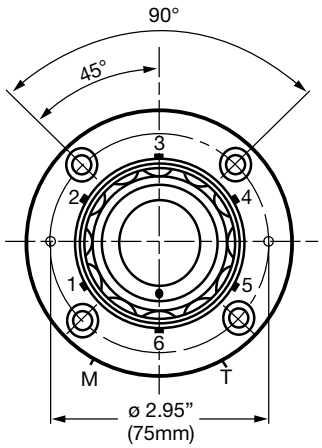
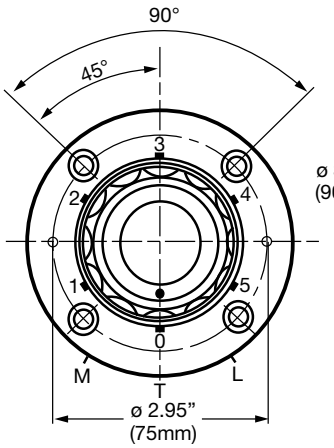
Dimensions

Type MS 4

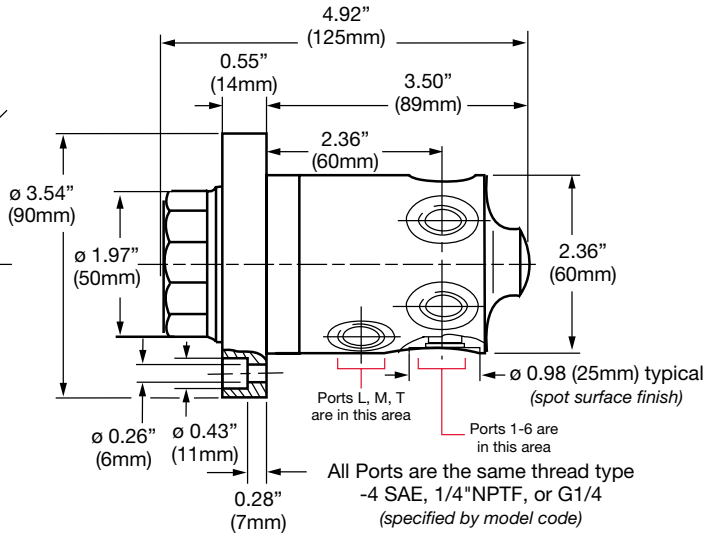


Push to read presure, release to connect gauge back to tank

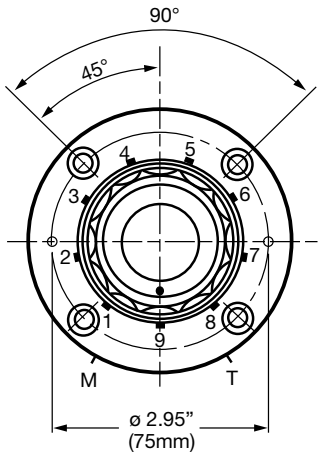
Type MS 5



Turn to "0" position to connect gauge back to tank

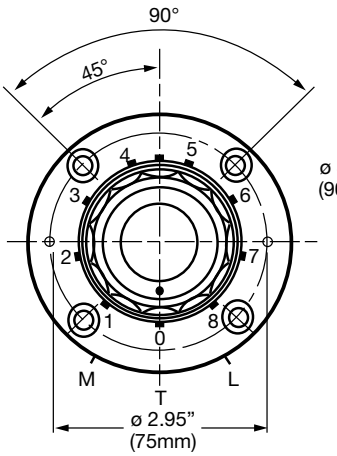


Type MS 6

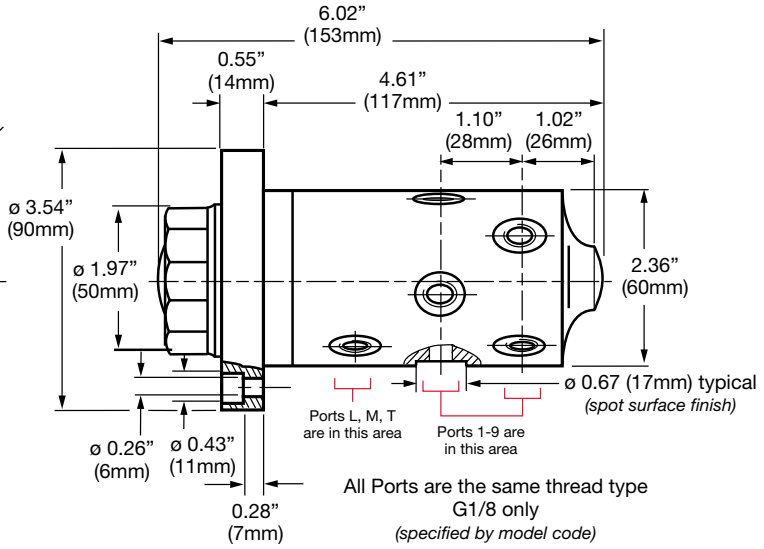


Push to read presure, release to connect gauge back to tank

Type MS 7



Turn to "0" position to connect gauge back to tank



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

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1620 Series
Test Points & Micro Bore Flex Hoses

Description

HYDAC series 1620, guided piston design, Test Points are compact, self sealing couplings that provide access to hydraulic and pneumatic systems for pressure measurement to 9000 psi. Mating adapters or hose connections can be connected without loss of fluid while the system is operating. Test Points can also be used to take oil samples or to bleed air from hydraulic systems. They are available in 1620 (M16x2.0) connection threads with a variety of screw-in port configurations.

Features

- Can be coupled and uncoupled under pressure without system shutdown or fluid loss
- Patented guided piston design for leak free performance at operating pressure to 9000 psi
- HYDAC guided piston design provides the following advantages over ball seal design:
  - Higher working Pressure
  - Better sealing characteristics particularly under high vibration
  - Less susceptible to fluid contamination
  - Can be used for gas as well as fluid

Applications

- Pressure measurement with gauges or sensors
- Fluid sampling
- Air bleeding

Technical Data

Maximum Working Pressure

- 9000 psi (630 bar)
  (see pressure utilization factor to adjust for operating temperature)

Fluid Compatibility

- Suitable for petroleum based fluids and gaseous media

Materials

- Zinc plated steel body *(standard)*
- Zinc plated metal cap *(standard)*

Seals

- Buna-N *(standard)*
- Fluorelastomer *(standard)*

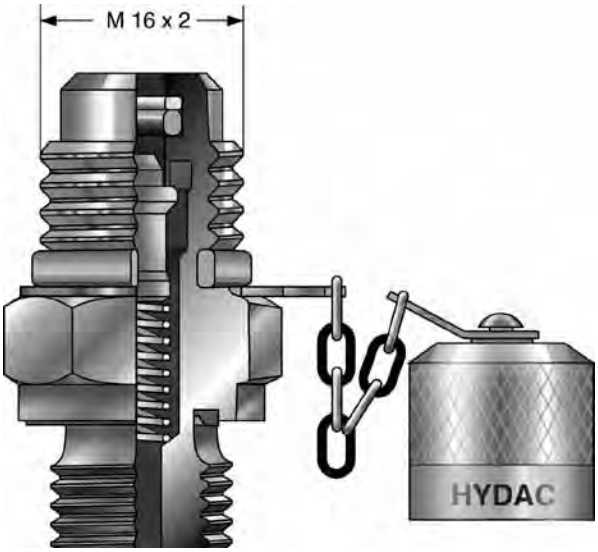
Temperature Range

- With metal cap and Buna-N seals: -22° to 248°F (-30° to 120°C)

Options

- Anti-vibration seal for metal cap

Series 1620 Test Point



Guided Piston Design

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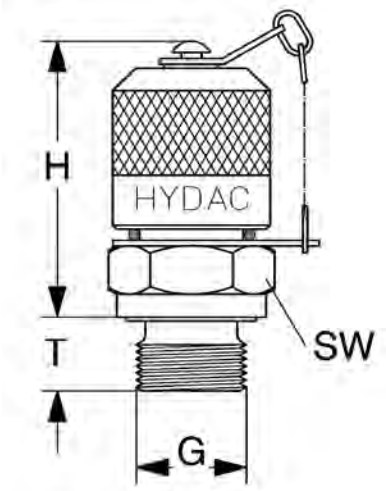
1620 Series

Dimensions

Standard 1620 Test Point Connection with Cap



Selected desired connection
in the chart to the right

Note: All Test Points have a male connection thread (G)

Carbon Steel Test Points *(Zinc-Plated, Buna N Seals)*

Thread G	P max	H (mm)	T (mm)	SW (mm)	Part No.
1/8 NPTF	5800 psi (400 bar)	33	13	17	06003734
1/4 NPTF	5800 psi (400 bar)	33	16.5	17	00639645
7/16-20 UNF	9000 psi (630 bar)	37	9	17	06003735
9/16-18 UNF	9000 psi (630 bar)	36	10	19	06003737
M 8x1	3600 psi (250 bar)	41	8.5	17	06003731
M 10x1	3600 psi (250 bar)	37.5	8.5	17	00629237
M 12x1.5	9000 psi (630 bar)	36	10	17	00632615
M 14x1.5	9000 psi (630 bar)	36	10	19	00632248
M 16x1.5	9000 psi (630 bar)	36	10	22	06003732
ISO 228-G 1/8	5800 psi (400 bar)	38	8	17	00689901
ISO 228-G 1/4	9000 psi (630 bar)	36	10	19	00680107
ISO 228-G 3/8	9000 psi (630 bar)	36	10	22	06003733
ISO 7/I-R 1/8	5800 psi (400 bar)	33	13	17	06003738
ISO 7/I-R 1/4	9000 psi (630 bar)	33	13	17	06003739

Carbon Steel Test Points *(Zinc-Plated, Fluorelastomer Seals)*

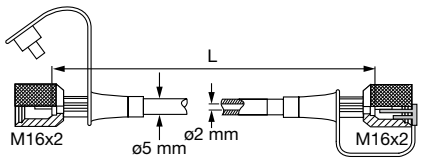
Thread G	P max	H (mm)	T (mm)	SW (mm)	Part No.
1/8 NPTF	5800 psi (400 bar)	33	13	17	06007199
1/4 NPTF	5800 psi (400 bar)	33	13	17	06007200
7/16-20 UNF	9000 psi (630 bar)	37	9	17	06007029
9/16-18 UNF	9000 psi (630 bar)	36	10	19	06007030
ISO 228-G 1/4	9000 psi (630 bar)	36	10	19	00606304

Stainless Steel Test Points *(Fluorelastomer Seals)*

Thread G	P max	H (mm)	T (mm)	SW (mm)	Part No.
1/4 NPTF	5800 psi (400 bar)	33	13	17	02701487
7/16-20 UNF	5800 psi (400 bar)	33	16.5	17	02701486

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
* for port configuration drawings contact HYDAC.

Micro Bore Flexible Hoses



L (inches)	L (mm)	Part No.
8	200	06003723
12	300	06003724
16	400	00632633
20	500	06003725
25	630	06003726
31	800	00682857
39	1000	00632634
49	1250	06003727
59	1500	00682858
79	2000	00682859
98	2500	00682860
126	3200	06003728
157	4000	06003729
197	5000	06003730
236	6000	02701721
394	10,000	02701722

Pressure Utilization Factor for Hoses

Operating Temp.	Factor	Max. Pressure
122°F (50°C)	100%	9000 psi
176°F (80°C)	86%	7740 psi
212°F (100°C)	77%	6930 psi

Specifications

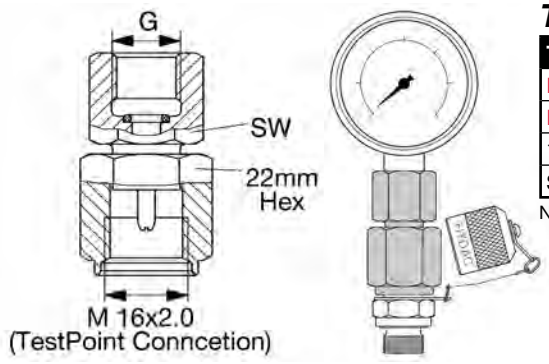
- Maximum working pressure 9000 psi (630 bar) at 122°F (50°C)
  (see pressure utilization factor to adjust for higher temperatures)
- Suitable for petroleum based fluids
- Temperature range -4° to 122°F (-20° to 50°C) at max. pressure
- Polyamid core with polyester braid reinforcement and polyamid jacket
- Plastic dust cap
- 1620 female connection at both ends
- Bending radius: min. 20mm
- Hose ID ø 2mm
- Custom Hose Assemblies Available:

NPT Male Thread, NPT Female Thread, JIC Male Hose, JIC Female swivel hose ends

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

1620 Series Adapters

Direct Gauge Adapter

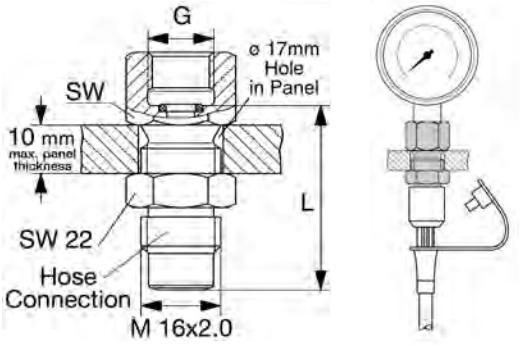


Test DGA 1620 (thread G)

Thread G	Pmax	SW	Part No.
ISO 228-G 1/4	9000 psi (630 bar)	19	06003824
ISO 228-G 1/2	9000 psi (630 bar)	27	06003825
1/4 NPT	9000 psi (630 bar)	19	06003769
SAE-4 7/16-20 UNF	9000 psi (630 bar)	9	02083643

Note: There is no check valve inside of this adapter. For permanent gauge installation only.

Hose to Gauge Bulkhead Adapter (with provisions for panel mounting)

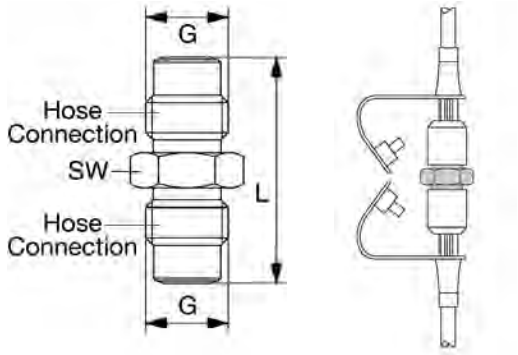


Test HGA Bulk 1620 (thread G)

Thread G	Pmax	L	SW	Part No.
ISO 228-G 1/4	9000 psi (630 bar)	38.5	19	06003822
ISO 228-G 1/2	9000 psi (630 bar)	39.5	27	06003823
1/4 NPT	9000 psi (630 bar)	38.5	19	06003768

Note: There is no check valve inside of this adapter. For permanent gauge installation only.

Straight Coupling for Hose to Hose Connections

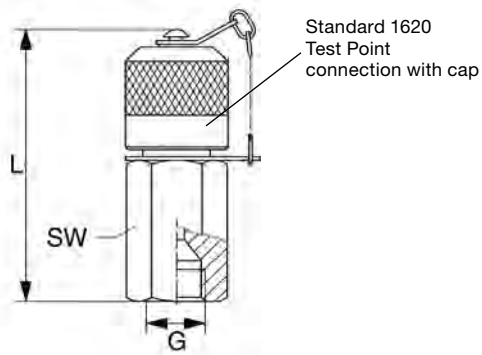


Test HHA 1620 (thread G)

Thread G	Pmax	L	SW	Part No.
M 16x2.0	9000 psi (630 bar)	42	22	00687889

Note: There is no check valve inside of this adapter.

Standpipe Adapter 37° JIC Fitting



Test 37DEG 1620 (thread G)

Thread G	Pmax	L	SW	Part No.
7/16”-20 UNF	9000 psi (630 bar)	55	17	06003792
1/2”-20 UNF	6000 psi (420 bar)	56.5	17	06003793
9/16”-18 UNF	4500 psi (315 bar)	57.5	19	06003794
3/4”-16 UNF	4500 psi (315 bar)	60.5	22	06003795

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

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1620 Series
Test Point Kits

3 Gauge Kit

5 Gauge Kit

Model Code	Part Number	3 Gauge Quantity	5 Gauge Quantity
Test Point Kit 1620 3 Gauge	**02081635**	-	-
Test Point Kit 1620 5 Gauge	**02081636**	-	-
HPG-63-1000-LM	02701547	1	1
HPG-63-1500-LM	02701548	0	1
HPG-63-2000-LM	02701549	1	1
HPG-63-3000-LM	02701550	0	1
HPG-63-5000-LM	02701551	1	1
TEST HOSE 1620 12”	06003724	1	2
TEST HOSE 1620 39”	00632634	1	2
TEST HOSE 1620 79”	00682859	1	2
Test Point 1620 (1/4 NPTF) MC/NBR	00639645	2	4
Test Point 1620 (7/16-20 UNF) MC/NBR	06003735	2	4
Test Point 1620 (9/16-18 NPTF) MC/NBR	06003737	2	4
TEST DGA 1620 (1/4 NPT)	06003769	1	3
TEST HGA BULK 1620 (1/4 NPT)	06003768	1	3
TEST HHA 1620	00687889	1	3

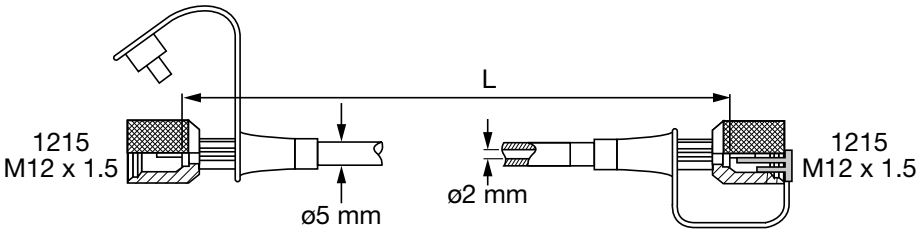
1215 Series
Test Points *(M12 x 1.5 Threads)*

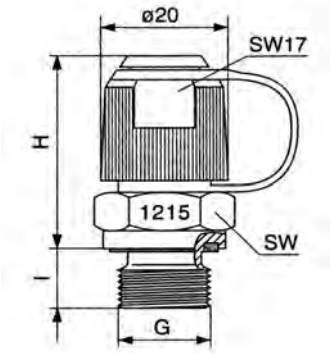
Standard design is zinc plated steel, buna seals, plastic cap and integrated safety device against vibration.

Test Hoses

L(in)	Model Code	Part No.
25	Test Hose 1215 25”	02701307
59	Test Hose 1215 59”	02701377

Dimensions





Thread (G)	p (max)	H	I	SW	Model Code	Part Number
ISO 228-G 1/8	400 bar (5800 psi)	33	8	14	*Test Point 1215 (G1/8) PC/NBR*	–
ISO 228-G 1/4	630 bar (9000 psi)	32	10	19	*Test Point 1215 (G1/4) PC/NBR*	–
1/8 NPTF	400 bar (5800 psi)	29	12	14	*Test Point 1215 (1/8 NPT) PC/NBR*	–
1/4 NPTF	630 bar (9000 psi)	29	15	14	Test Point 1215 (1/4 NPT) PC/NBR	02701305
7/16-20 UNF	630 bar (9000 psi)	32	9	17	Test Point 1215 (7/16-20 UNF) PC/NBR	02701293
9/16-18 UNF	630 bar (9000 psi)	32	10	19	Test Point 1215 (9/16-18 UNF) PC/NBR	02701335

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

Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

Gauges

2 1/2 inch face - 1/4”NPT Connection

Specifications

Accuracy: ±1.5% of span

Scale: PSI outside in black
BAR inside in red

Connection: 1/4” NPT male

Materials

Case: Stainless Steel

Ring: Polished SS, crimped

Wetted Parts: Copper Alloy

Window: Polycarbonate

Dial: White ABS

Pointer: Black Aluminum

Liquid Filling: Glycerine

Model Code	Part Number	Pressure Range	Connection - 1/4” NPT
HPG-63-1000-LM	02701547	0 to 1000 psi	Lower Mount (LM)
HPG-63-1500-LM	02701548	0 to 1500 psi	Lower Mount (LM)
HPG-63-2000-LM	02701549	0 to 2000 psi	Lower Mount (LM)
HPG-63-3000-LM	02701550	0 to 3000 psi	Lower Mount (LM)
HPG-63-5000-LM	02701551	0 to 5000 psi	Lower Mount (LM)
HPG-63-2000-CBM	02701552	0 to 2000 psi	Center Back Mount (CBM)

Split Flanges

SAE Code 61 & 62

front view

back view

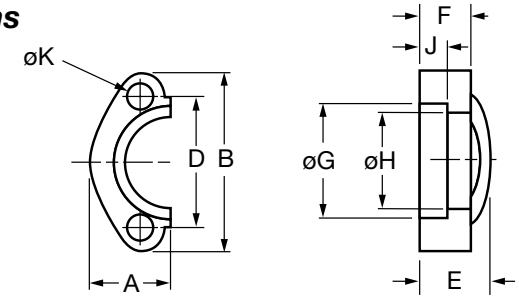
Materials

- Plated Carbon Steel
- Stainless Steel

Pressure Rating

- Code 61: 3000 psi
- Code 62: 5000 psi

Dimensions



Code 61 Split Flanges *(sold in pairs - each pair makes a single connection)*

Size	Part Number (Carbon Steel)	Part Number (Stainless Steel)	A	B	D	E	F	ØG	ØH	J	ØK
0.50	02701585	02701539	0.86	2.12	1.50	0.75	0.50	1.22	0.96	0.245	0.344
0.75	02055588	02701540	0.98	2.56	1.88	0.88	0.56	1.53	1.27	0.245	0.406
1.00	02055704	02700970	1.11	2.75	2.06	0.94	0.62	1.78	1.52	0.295	0.406
1.25	02055715	02701541	1.39	3.12	2.31	0.88	0.56	2.03	1.72	0.295	0.469
1.50	02055720	02700919	1.58	3.69	2.75	1.00	0.62	2.41	2.00	0.295	0.531
2.00	02055735	02701542	1.86	4.00	3.06	1.03	0.62	2.84	2.47	0.355	0.531

Code 62 Split Flanges *(sold in pairs - each pair makes a single connection)*

Size	Part Number (Carbon Steel)	Part Number (Stainless Steel)	A	B	D	E	F	ØG	ØH	J	ØK
0.50	02701585	02701537	0.89	2.22	1.59	0.88	0.62	1.28	0.97	0.285	0.344
0.75	02055882	02700540	1.14	2.81	2.00	1.12	0.75	1.66	1.28	0.325	0.406
1.00	02055883	02700916	1.33	3.19	2.25	1.31	0.94	1.91	1.53	0.355	0.469
1.25	02055889	02701538	1.48	3.75	2.63	1.50	1.06	2.16	1.75	0.385	0.531
1.50	02055890	02700544	1.83	4.44	3.13	1.69	1.19	2.53	2.03	0.475	0.656
2.00	02055891	02700847	2.20	5.25	3.81	2.06	1.44	3.16	2.66	0.475	0.781

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Dimensions are in inches.

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