

**HYDAC** | **INTERNATIONAL**



# Hydraulic Accessories

Valves, Clamps & Reservoir Accessories





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.

## Overview

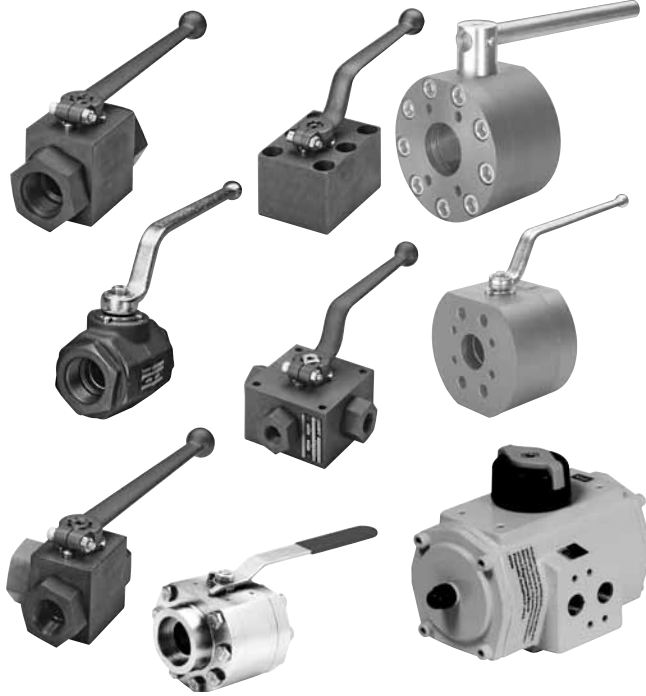
### Standard Solutions

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

#### High Pressure Ball Valves

(see pages 3 - 28)

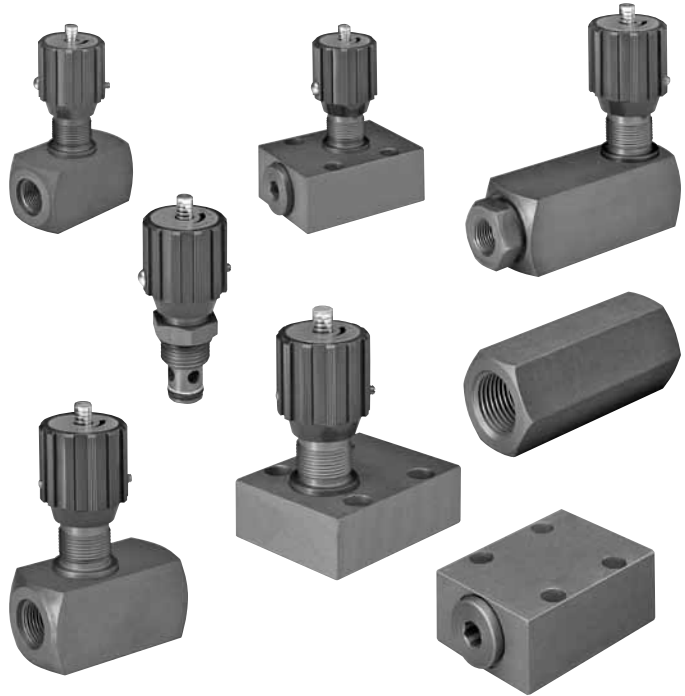
Nominal sizes from 1/4" to 2"



#### 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

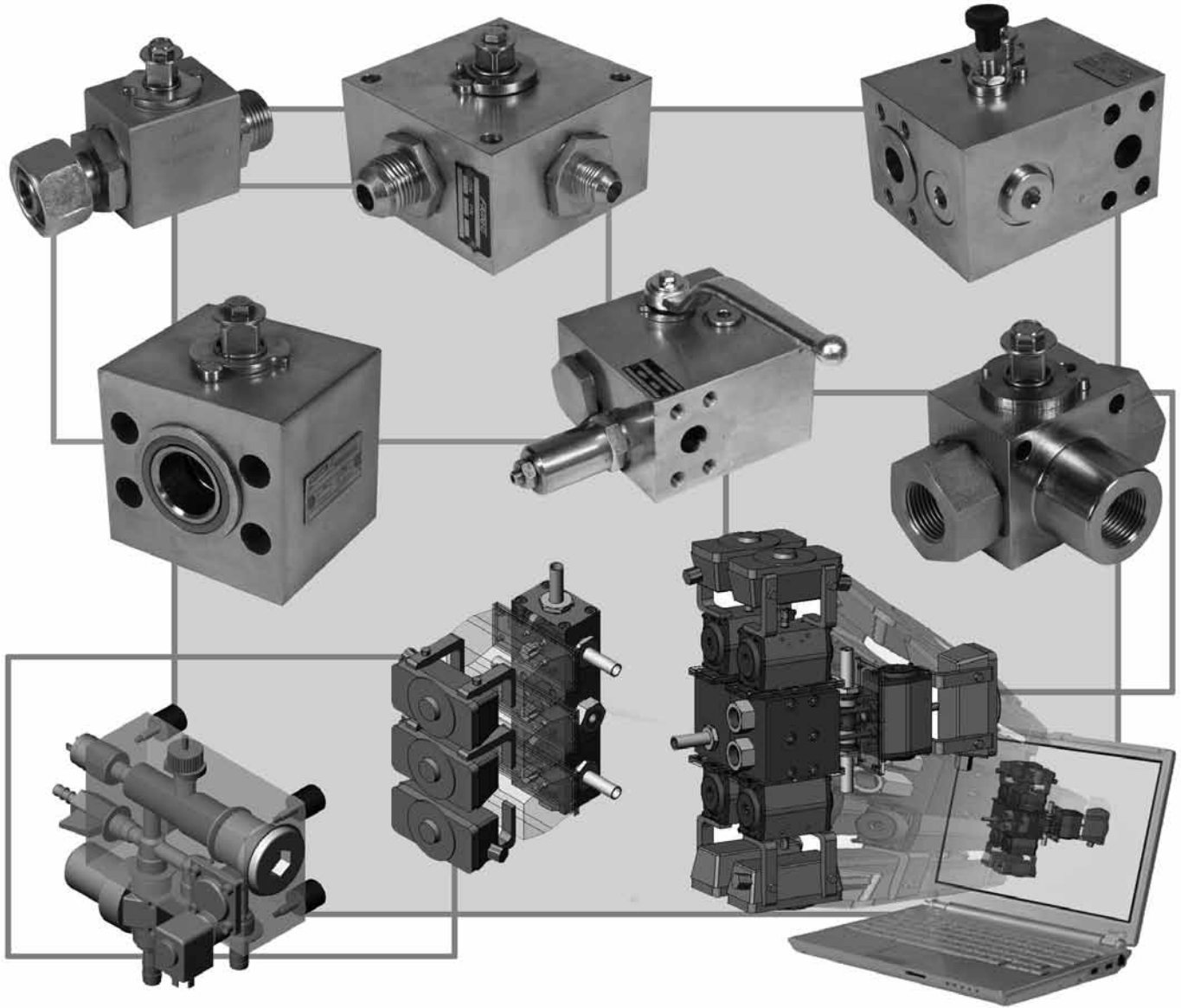
(see pages 56 - 70)

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

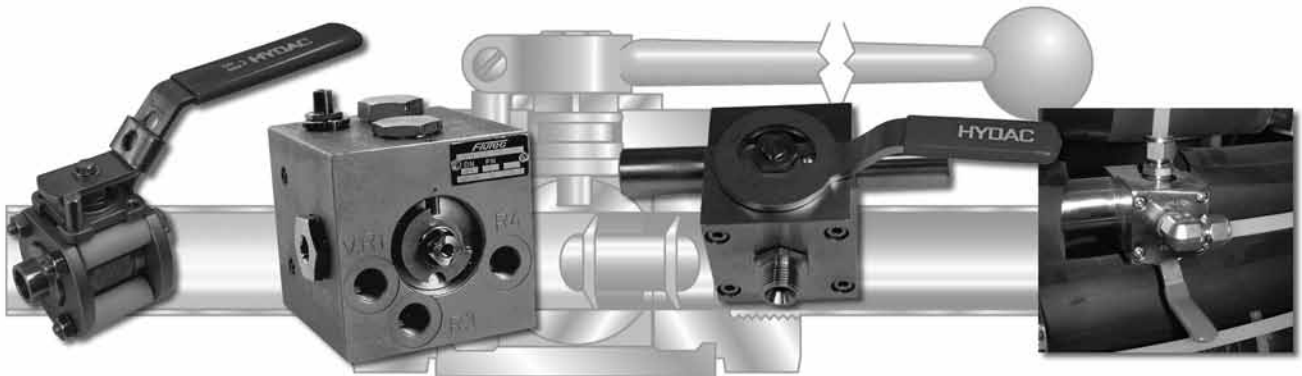


## Custom Solutions

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"



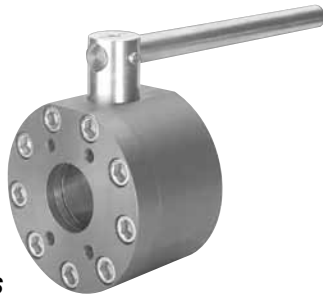
### Direct Mount SAE Flange

**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

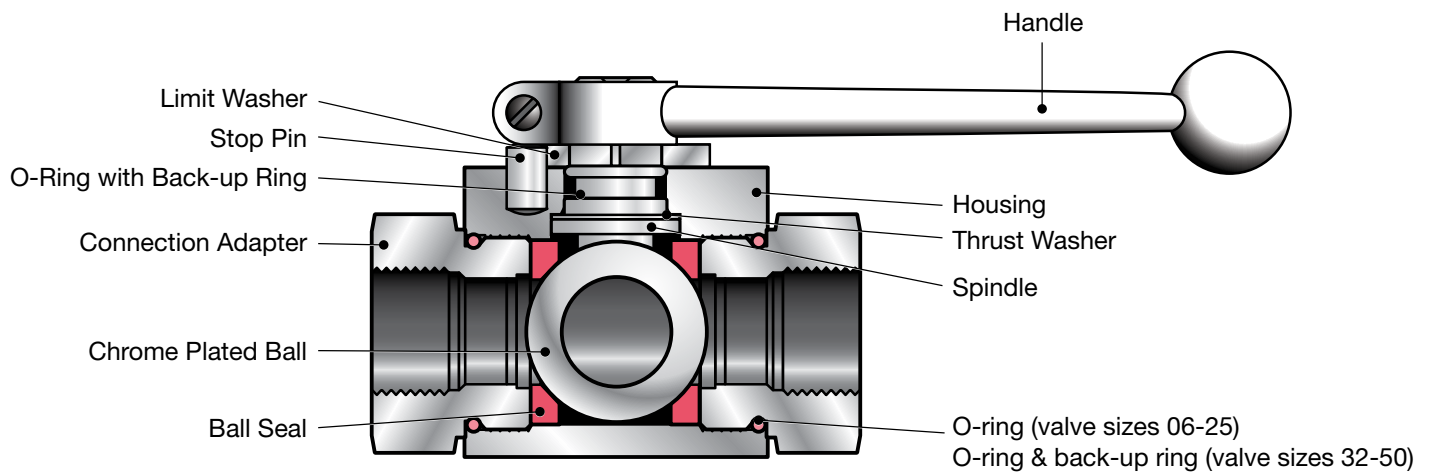


### 3 Piece Ball Valves

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



## 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

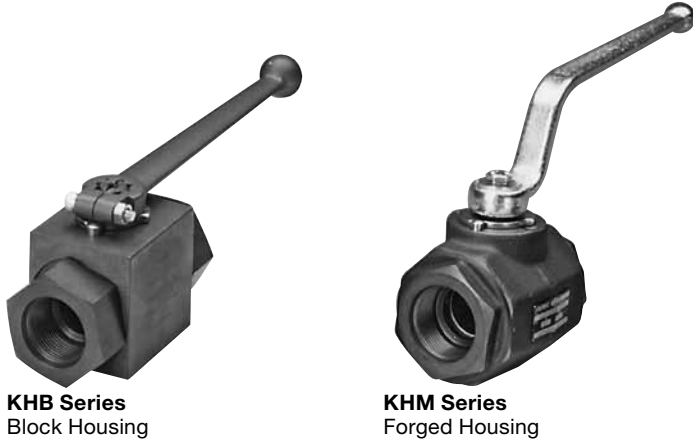
- Full passage for unrestricted flow of medium
- Floating ball provides positive seal
- Direction of flow indicated by milled slot in control spindle
- Valve positioning controlled by a stop pin and limit washer
- Fluoroelastomer O-rings (*standard*)
- Phosphate coated carbon steel valve body (*standard*)

### 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



### 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       |              | NPT       |         |
|----------|-----------|--------------|-----------|---------|
|          | Tube Size | Thread Size  | Pipe Size | 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

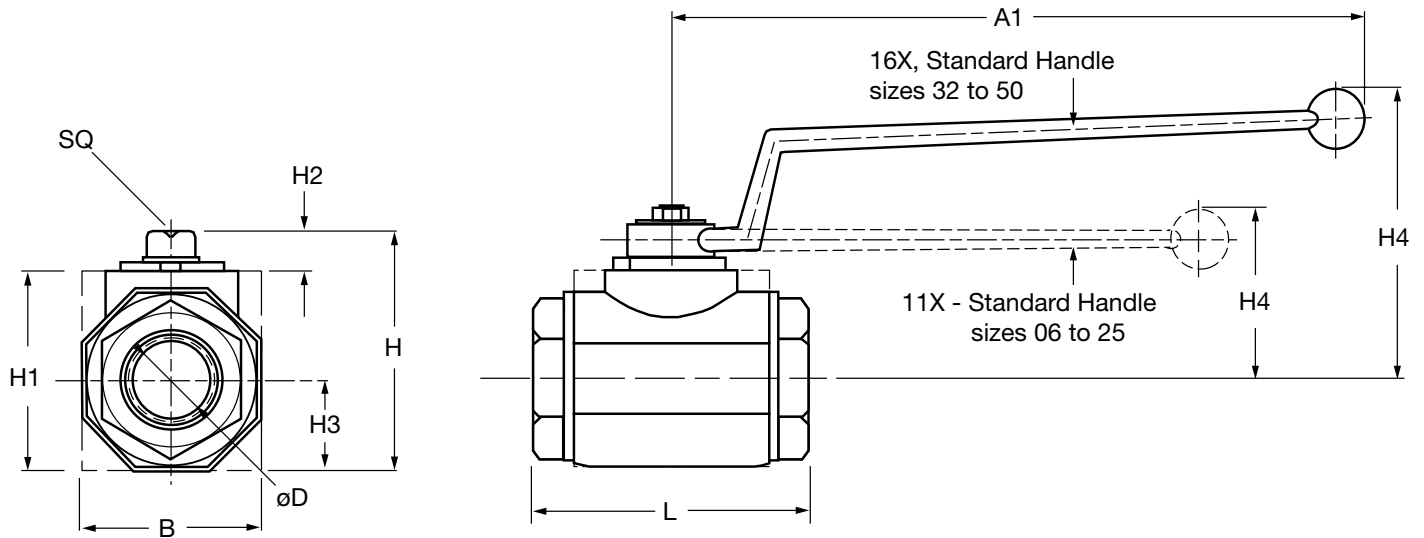
- L = Locking Device (*see page 21 to order locking device separately*)
- LS = Locking Device with 5 amp Limit Switch, Available for sizes 20-50 (Not available with PTFE Spindle Seals)**

*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*

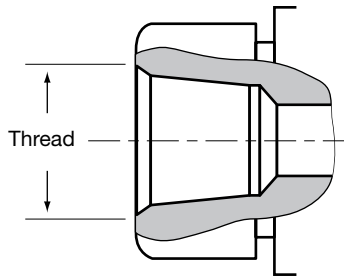


# High Pressure Ball Valves | HYDAC

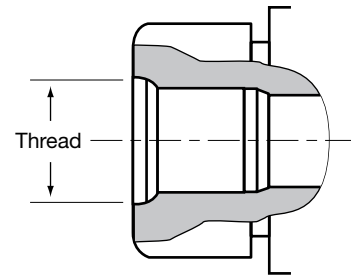
## Dimensions



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

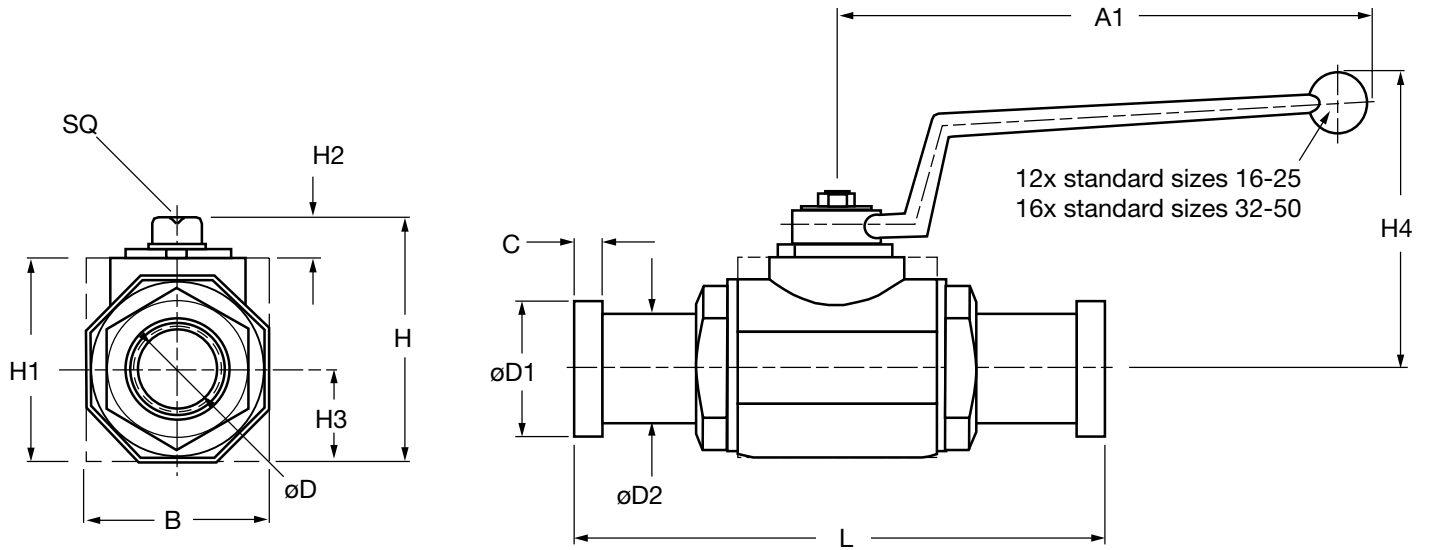
- 09X = Without Handle, Sizes 16-50
- 12X = Offset Aluminum, Sizes 16-25
- 16X = Offset Steel, Sizes 32-50

#### 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*

## Dimensions



For dimensional information on flanges, see page 151

### SAE Code 61 [...F3]

| Model     | max. psi* | Size   | A1             | B             | C             | $\phi D$     | $\phi D1$       | $\phi D2$      | H               | H1              | H2           | H3             | H4            | L               | SQ           | Weight        |
|-----------|-----------|--------|----------------|---------------|---------------|--------------|-----------------|----------------|-----------------|-----------------|--------------|----------------|---------------|-----------------|--------------|---------------|
| KHB-16 F3 | 5000      | 1/2"   | 6.42<br>(163)  | 1.50<br>(38)  | 0.27<br>(6.8) | 0.51<br>(13) | 1.19<br>(30.2)  | 0.94<br>(24)   | 2.44<br>(62)    | 1.77<br>(45)    | 0.43<br>(11) | 0.75<br>(19)   | 3.27<br>(83)  | 5.94<br>(151)   | 0.47<br>(12) | 2.4<br>(1.1)  |
| KHB-20 F3 | 5000      | 3/4"   | 7.20<br>(183)  | 1.89<br>(48)  | 0.27<br>(6.8) | 0.75<br>(19) | 1.50<br>(38.1)  | 1.24<br>(31.5) | 2.95<br>(75)    | 2.24<br>(57)    | 0.43<br>(11) | 0.96<br>(24.5) | 3.62<br>(92)  | 6.69<br>(170)   | 0.55<br>(14) | 4.0<br>(1.8)  |
| KHB-25 F3 | 5000      | 1"     | 7.20<br>(183)  | 2.24<br>(57)  | 0.31<br>(8)   | 0.98<br>(25) | 1.75<br>(44.45) | 1.50<br>(38)   | 3.23<br>(82)    | 2.52<br>(64)    | 0.43<br>(11) | 1.12<br>(28.5) | 3.74<br>(95)  | 6.95<br>(176.5) | 0.55<br>(14) | 5.1<br>(2.3)  |
| KHM-32 F3 | 4000      | 1-1/4" | 12.01<br>(305) | 2.95<br>(75)  | 0.31<br>(8)   | 1.18<br>(30) | 2.00<br>(50.8)  | 1.69<br>(43)   | 4.06<br>(103)   | 3.35<br>(85)    | 0.47<br>(12) | 1.48<br>(37.5) | 5.94<br>(151) | 7.54<br>(191.4) | 0.67<br>(17) | 9.0<br>(4.1)  |
| KHM-40 F3 | 3000      | 1-1/2" | 12.01<br>(305) | 3.35<br>(85)  | 0.31<br>(8)   | 1.50<br>(38) | 2.38<br>(60.35) | 1.97<br>(50)   | 4.49<br>(114)   | 3.78<br>(96)    | 0.47<br>(12) | 1.67<br>(42.5) | 6.18<br>(157) | 9.09<br>(231)   | 0.67<br>(17) | 13.1<br>(5.9) |
| KHM-50 F3 | 3000      | 2"     | 12.01<br>(305) | 4.13<br>(105) | 0.38<br>(9.6) | 1.89<br>(48) | 2.81<br>(71.4)  | 2.44<br>(62)   | 5.18<br>(131.5) | 4.43<br>(112.5) | 0.47<br>(12) | 2.07<br>(52.5) | 6.46<br>(164) | 9.21<br>(234)   | 0.67<br>(17) | 19.2<br>(8.7) |

### SAE Code 62 [...F6]

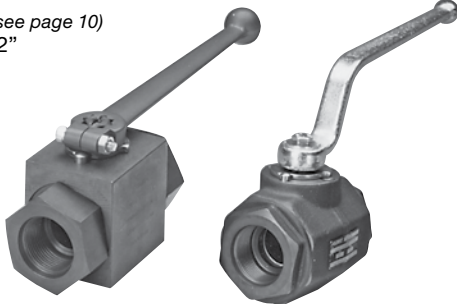
| Model     | max. psi* | Size   | A1             | B             | C              | $\phi D$     | $\phi D1$      | $\phi D2$    | H               | H1              | H2           | H3             | H4            | L               | SQ           | Weight         |
|-----------|-----------|--------|----------------|---------------|----------------|--------------|----------------|--------------|-----------------|-----------------|--------------|----------------|---------------|-----------------|--------------|----------------|
| KHB-16 F6 | 5800      | 1/2"   | 6.41<br>(163)  | 1.50<br>(38)  | 0.31<br>(7.8)  | 0.51<br>(13) | 1.25<br>(31.8) | 0.94<br>(24) | 2.44<br>(62)    | 1.77<br>(45)    | 0.43<br>(11) | 0.75<br>(19)   | 3.27<br>(83)  | 5.94<br>(151)   | 0.47<br>(12) | 2.4<br>(1.1)   |
| KHB-20 F6 | 5000      | 3/4"   | 7.20<br>(183)  | 1.89<br>(48)  | 0.35<br>(8.8)  | 0.75<br>(19) | 1.63<br>(41.3) | 1.26<br>(32) | 2.95<br>(75)    | 2.24<br>(57)    | 0.43<br>(11) | 0.96<br>(24.5) | 3.62<br>(92)  | 6.69<br>(170)   | 0.55<br>(14) | 4.0<br>(1.8)   |
| KHB-25 F6 | 5000      | 1"     | 7.20<br>(183)  | 2.24<br>(57)  | 0.37<br>(9.5)  | 0.98<br>(25) | 1.87<br>(47.6) | 1.50<br>(38) | 3.23<br>(82)    | 2.52<br>(64)    | 0.43<br>(11) | 1.12<br>(28.5) | 3.72<br>(95)  | 7.81<br>(198.5) | 0.55<br>(14) | 5.4<br>(2.4)   |
| KHM-32 F6 | 5000      | 1-1/4" | 12.01<br>(305) | 2.95<br>(75)  | 0.41<br>(10.3) | 1.18<br>(30) | 2.13<br>(54)   | 1.73<br>(44) | 4.06<br>(103)   | 3.35<br>(85)    | 0.47<br>(12) | 1.48<br>(37.5) | 5.94<br>(151) | 8.80<br>(223.4) | 0.67<br>(17) | 10.6<br>(4.8)  |
| KHM-40 F6 | 5000      | 1-1/2" | 12.01<br>(305) | 3.35<br>(85)  | 0.50<br>(12.6) | 1.50<br>(38) | 2.50<br>(63.5) | 2.01<br>(51) | 4.49<br>(114)   | 3.78<br>(96)    | 0.47<br>(12) | 1.67<br>(42.5) | 6.18<br>(157) | 11.06<br>(281)  | 0.67<br>(17) | 15.4<br>(7.0)  |
| KHM-50 F6 | 5000      | 2"     | 12.01<br>(305) | 4.13<br>(105) | 0.50<br>(12.6) | 1.89<br>(48) | 3.13<br>(79.4) | 2.64<br>(67) | 5.18<br>(131.5) | 4.43<br>(112.5) | 0.47<br>(12) | 2.07<br>(52.5) | 6.46<br>(164) | 12.40<br>(315)  | 0.67<br>(17) | 22.5<br>(10.2) |

## 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"



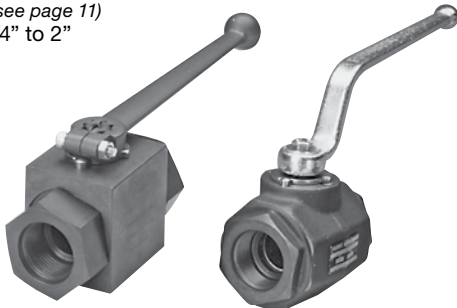
### 2-way Stainless Steel Ball Valves

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



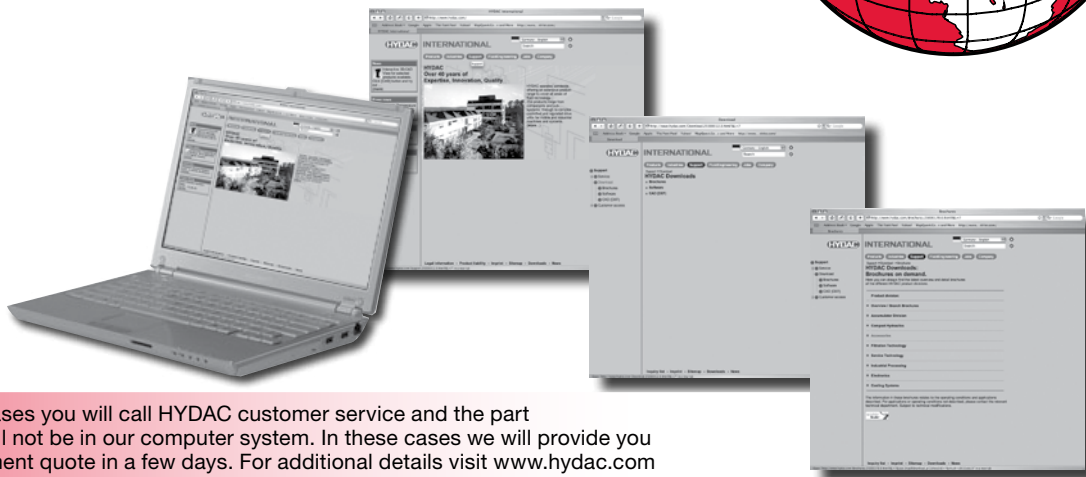
### 2-way Ball Valves with Steel Ball Seals

**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](http://www.hydac.com) and click on support, downloads, brochures, Accessories and check out the literature.

## KHB & KHM Series 2-way Ball Valves with BSPP Threads



**KHB Series**  
Block Housing

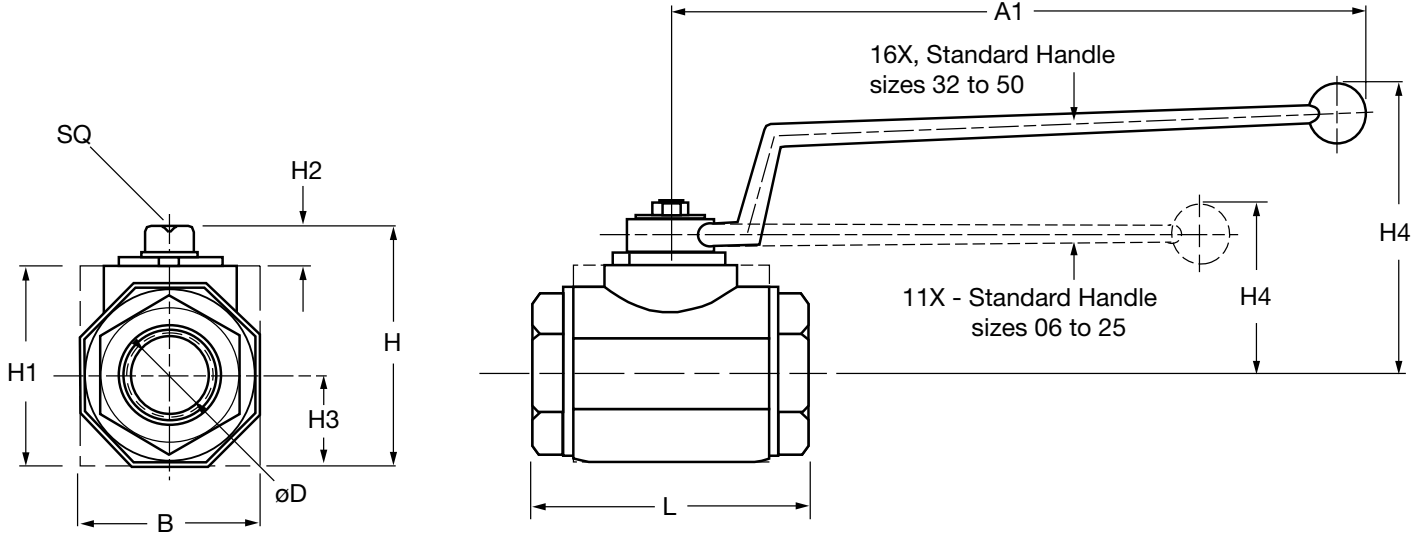


**KHM Series**  
Forged Housing

### 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         |
|---|----------|---------|----------------|---------------|--------------|-----------------|-----------------|---------------|----------------|---------------|---------------|--------------|----------------|
| <b>KHB-G1/8-1112-11X-G</b><br><b>02079550</b> | 7250     | G1/8"   | 5.91<br>(150)  | 0.98<br>(25)  | 0.24<br>(6)  | 1.89<br>(48)    | 1.38<br>(35)    | 0.28<br>(7)   | 0.51<br>(13)   | 1.65<br>(42)  | 2.72<br>(69)  | 0.35<br>(9)  | 0.66<br>(0.3)  |
| KHB-G1/4-1112-11X-G<br>02079551               | 7250     | G1/4"   | 5.91<br>(150)  | 0.98<br>(25)  | 0.24<br>(6)  | 1.89<br>(48)    | 1.38<br>(35)    | 0.28<br>(7)   | 0.51<br>(13)   | 1.65<br>(42)  | 2.72<br>(69)  | 0.35<br>(9)  | 0.66<br>(0.3)  |
| KHB-G3/8-1112-11X-G<br>02079552               | 7250     | G3/8"   | 5.91<br>(150)  | 1.26<br>(32)  | 0.39<br>(10) | 2.09<br>(53)    | 1.57<br>(40)    | 0.33<br>(8.5) | 0.67<br>(17)   | 1.69<br>(43)  | 2.83<br>(72)  | 0.35<br>(9)  | 1.10<br>(0.5)  |
| KHB-G1/2-1112-11X-G<br>02079553               | 5800     | G1/2"   | 6.88<br>(175)  | 1.50<br>(38)  | 0.63<br>(16) | 2.48<br>(63)    | 1.77<br>(45)    | 0.43<br>(11)  | 0.75<br>(19)   | 2.01<br>(51)  | 3.27<br>(83)  | 47<br>(12)   | 1.65<br>(0.75) |
| KHB-G3/4-1112-11X-G<br>02079554               | 5000     | G3/4"   | 7.88<br>(200)  | 1.89<br>(48)  | 0.79<br>(20) | 2.95<br>(75)    | 2.24<br>(57)    | 0.43<br>(11)  | 0.96<br>(24.5) | 2.28<br>(58)  | 3.74<br>(95)  | 0.55<br>(14) | 2.87<br>(1.3)  |
| KHB-G1-1112-11X-G<br>02079555                 | 5000     | G1"     | 7.88<br>(200)  | 2.24<br>(57)  | 0.98<br>(25) | 3.23<br>(82)    | 2.52<br>(64)    | 0.43<br>(11)  | 1.12<br>(28.5) | 2.40<br>(61)  | 4.45<br>(113) | 0.55<br>(14) | 4.41<br>(2.0)  |
| KHM-G11/4-1112-16X<br>02079556                | 5000     | G1-1/4" | 12.00<br>(305) | 2.95<br>(75)  | 1.18<br>(30) | 4.06<br>(103)   | 3.35<br>(85)    | 0.47<br>(12)  | 1.48<br>(37.5) | 5.94<br>(151) | 4.33<br>(110) | 0.67<br>(17) | 6.84<br>(3.1)  |
| KHM-G11/2-1112-16X<br>02079557                | 5000     | G1-1/2" | 12.00<br>(305) | 3.35<br>(85)  | 1.50<br>(38) | 4.49<br>(114)   | 3.78<br>(96)    | 0.47<br>(12)  | 1.67<br>(42.5) | 6.18<br>(157) | 5.12<br>(130) | 0.67<br>(17) | 9.70<br>(4.4)  |
| KHM-G2-1112-16X<br>02079558                   | 5000     | G2"     | 12.00<br>(305) | 4.13<br>(105) | 1.89<br>(48) | 5.18<br>(131.5) | 4.43<br>(112.5) | 0.47<br>(12)  | 2.07<br>(52.5) | 6.46<br>(164) | 5.51<br>(140) | 0.67<br>(17) | 14.55<br>(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

#### 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)

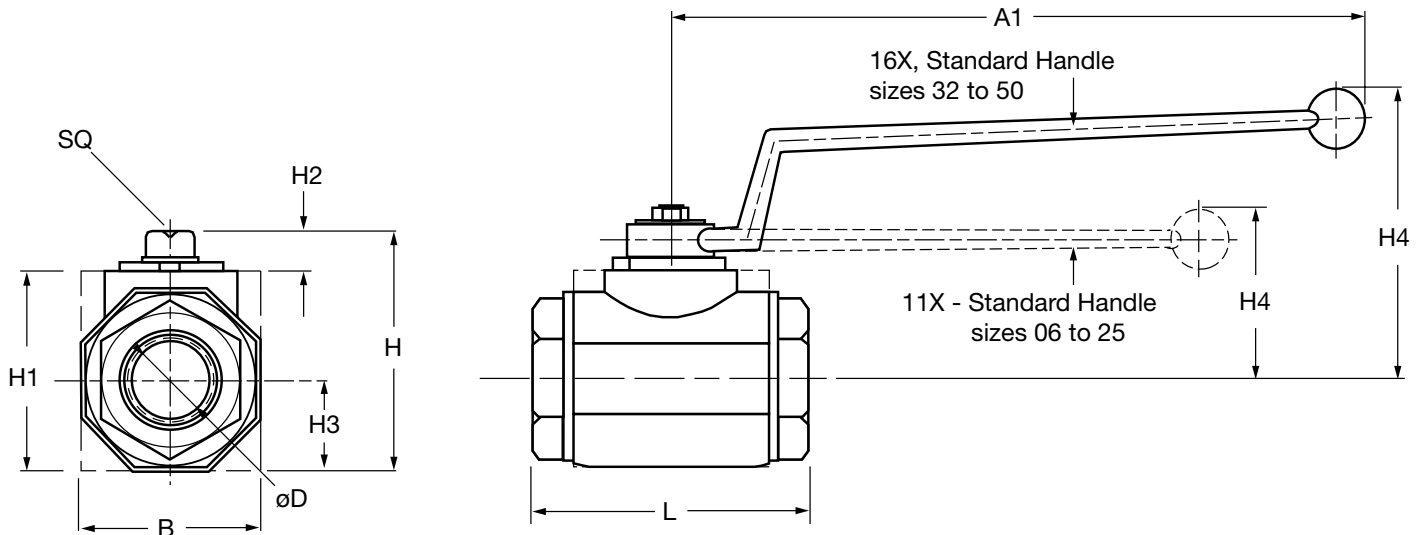


**KHB Series**  
Block Housing



**KHM Series**  
Forged Housing

#### 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<br>03203692 | 7250     | 1/4"       | 5.91<br>(150)  | 0.98<br>(25)  | 0.24<br>(6)  | 1.89<br>(48)    | 1.38<br>(35)    | 0.28<br>(7)   | 0.51<br>(13)   | 1.65<br>(42)  | 2.72<br>(69)  | 0.35<br>(9)  | 0.66<br>(0.3)  |
| KHB-10NPT-111114-11X-G-SF<br>03203716 | 7250     | 3/8"       | 5.91<br>(150)  | 1.26<br>(32)  | 0.39<br>(10) | 2.09<br>(53)    | 1.57<br>(40)    | 0.33<br>(8.5) | 0.67<br>(17)   | 1.69<br>(43)  | 2.83<br>(72)  | 0.35<br>(9)  | 1.10<br>(0.5)  |
| KHB-16NPT-111114-11X-G-SF<br>03203717 | 5800     | 1/2"       | 6.88<br>(175)  | 1.50<br>(38)  | 0.63<br>(16) | 2.48<br>(63)    | 1.77<br>(45)    | 0.43<br>(11)  | 0.75<br>(19)   | 2.01<br>(51)  | 3.27<br>(83)  | 47<br>(12)   | 1.65<br>(0.75) |
| KHB-20NPT-111114-11X-G-SF<br>03203718 | 5000     | 3/4"       | 7.88<br>(200)  | 1.89<br>(48)  | 0.79<br>(20) | 2.95<br>(75)    | 2.24<br>(57)    | 0.43<br>(11)  | 0.96<br>(24.5) | 2.28<br>(58)  | 3.74<br>(95)  | 0.55<br>(14) | 2.87<br>(1.3)  |
| KHB-25NPT-111114-11X-G-SF<br>03203719 | 5000     | 1"         | 7.88<br>(200)  | 2.24<br>(57)  | 0.98<br>(25) | 3.23<br>(82)    | 2.52<br>(64)    | 0.43<br>(11)  | 1.12<br>(28.5) | 2.40<br>(61)  | 4.45<br>(113) | 0.55<br>(14) | 4.41<br>(2.0)  |
| KHM-32NPT-111114-16X-G-SF<br>03203720 | 5000     | 1 1/4"     | 12.00<br>(305) | 2.95<br>(75)  | 1.18<br>(30) | 4.06<br>(103)   | 3.35<br>(85)    | 0.47<br>(12)  | 1.48<br>(37.5) | 5.94<br>(151) | 4.33<br>(110) | 0.67<br>(17) | 6.84<br>(3.1)  |
| KHM-40NPT-111114-16X-G-SF<br>03203721 | 5000     | 1 1/2"     | 12.00<br>(305) | 3.35<br>(85)  | 1.50<br>(38) | 4.49<br>(114)   | 3.78<br>(96)    | 0.47<br>(12)  | 1.67<br>(42.5) | 6.18<br>(157) | 5.12<br>(130) | 0.67<br>(17) | 9.70<br>(4.4)  |
| KHM-50NPT-111114-16X-G-SF<br>03203722 | 5000     | 2"         | 12.00<br>(305) | 4.13<br>(105) | 1.89<br>(48) | 5.18<br>(131.5) | 4.43<br>(112.5) | 0.47<br>(12)  | 2.07<br>(52.5) | 6.46<br>(164) | 5.51<br>(140) | 0.67<br>(17) | 14.55<br>(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

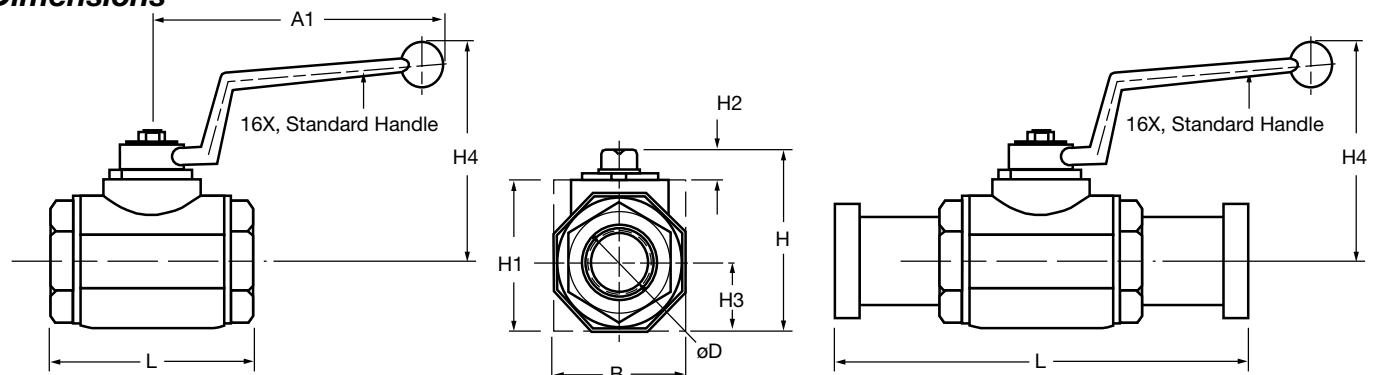
## KHM Series 2-way Stainless Steel Ball Valves



### 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  
Fluorocarbon (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<br>(1/4")   | 1/4" NPT             | <b>KHM-06NPT-3314-16X</b> | <b>02078586</b> | 7250         | 101                       | 28  | 6  | 49  | 37  | 8  | 14 | 54  | 69    |
|                   | SAE-4                | <b>KHM-06SAE-3314-16X</b> | <b>02078587</b> | 7250         | 101                       | 28  | 6  | 49  | 37  | 8  | 14 | 54  | 69    |
| DN 10<br>(3/8")   | 3/8" NPT             | <b>KHM-10NPT-3314-16X</b> | <b>02078588</b> | 7250         | 101                       | 36  | 10 | 53  | 41  | 8  | 18 | 54  | 72    |
|                   | SAE-6                | <b>KHM-10SAE-3314-16X</b> | <b>02077119</b> | 7250         | 101                       | 36  | 10 | 53  | 41  | 8  | 18 | 54  | 72    |
| DN 16<br>(1/2")   | 1/2" NPT             | KHM-16NPT-3314-16X        | 02078589        | 5800         | 175                       | 46  | 16 | 66  | 49  | 8  | 23 | 91  | 83    |
|                   | SAE-8                | <b>KHM-16SAE-3314-16X</b> | <b>02066415</b> | 5800         | 175                       | 46  | 16 | 66  | 49  | 11 | 23 | 91  | 83    |
|                   | 1/2" code 61         | <b>KHM-16F3-3314X-16X</b> | <b>02077118</b> | 5000         | 175                       | 46  | 16 | 66  | 49  | 11 | 23 | 91  | 150.8 |
|                   | 1/2" code 62         | <b>KHM-16F6-3314X-16X</b> | <b>02078590</b> | 5800         | 175                       | 46  | 16 | 66  | 49  | 11 | 23 | 91  | 150.8 |
| DN 20<br>(3/4")   | 3/4" NPT             | KHM-20NPT-3314-16X        | 02066406        | 5000         | 175                       | 56  | 20 | 78  | 60  | 12 | 28 | 98  | 95    |
|                   | SAE-12               | <b>KHM-20SAE-3314-16X</b> | <b>02078591</b> | 5000         | 175                       | 56  | 20 | 78  | 60  | 12 | 28 | 98  | 95    |
|                   | 3/4" code 61         | <b>KHM-20F3-3314X-16X</b> | <b>02078592</b> | 5000         | 175                       | 56  | 20 | 78  | 60  | 12 | 28 | 98  | 169.8 |
|                   | 3/4" code 62         | <b>KHM-20F6-3314X-16X</b> | <b>02068045</b> | 5000         | 175                       | 56  | 20 | 78  | 60  | 12 | 28 | 98  | 169.8 |
| DN 25<br>(1")     | 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" code 61           | <b>KHM-25F3-3314X-16X</b> | <b>02070901</b> | 5000         | 175                       | 65  | 25 | 83  | 66  | 12 | 30 | 101 | 176.5 |
|                   | 1" code 62           | <b>KHM-25F6-3314X-16X</b> | <b>02073032</b> | 5000         | 175                       | 65  | 25 | 83  | 66  | 12 | 30 | 101 | 198.5 |
| DN 32<br>(1-1/4") | 1-1/4" NPT           | <b>KHM-32NPT-3314-16X</b> | <b>02062809</b> | 5000         | 306                       | 78  | 30 | 104 | 86  | 12 | 39 | 151 | 110   |
|                   | SAE-20               | <b>KHM-32SAE-3314-16X</b> | <b>02078359</b> | 5000         | 306                       | 78  | 30 | 104 | 86  | 12 | 39 | 151 | 110   |
|                   | 1-1/4" code 61       | <b>KHM-32F3-3314X-16X</b> | <b>02077117</b> | 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<br>(1-1/2") | 1-1/2" NPT           | <b>KHM-40NPT-3314-16X</b> | <b>02062807</b> | 5000         | 306                       | 91  | 38 | 117 | 99  | 12 | 46 | 157 | 130   |
|                   | SAE-24               | <b>KHM-40SAE-3314-16X</b> | <b>02070209</b> | 5000         | 306                       | 91  | 38 | 117 | 99  | 12 | 46 | 157 | 130   |
|                   | 1-1/2" code 61       | <b>KHM-40F3-3314X-16X</b> | <b>02069236</b> | 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<br>(2")     | 2" NPT               | <b>KHM-50NPT-3314-16X</b> | <b>02065778</b> | 5000         | 306                       | 109 | 48 | 133 | 115 | 12 | 55 | 164 | 140   |
|                   | SAE-32               | <b>KHM-50SAE-3314-16X</b> | <b>02078596</b> | 5000         | 306                       | 109 | 48 | 133 | 115 | 12 | 55 | 164 | 140   |
|                   | 2" code 61           | <b>KHM-50F3-3314X-16X</b> | <b>02078597</b> | 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*

## 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 | 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"  |
| 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

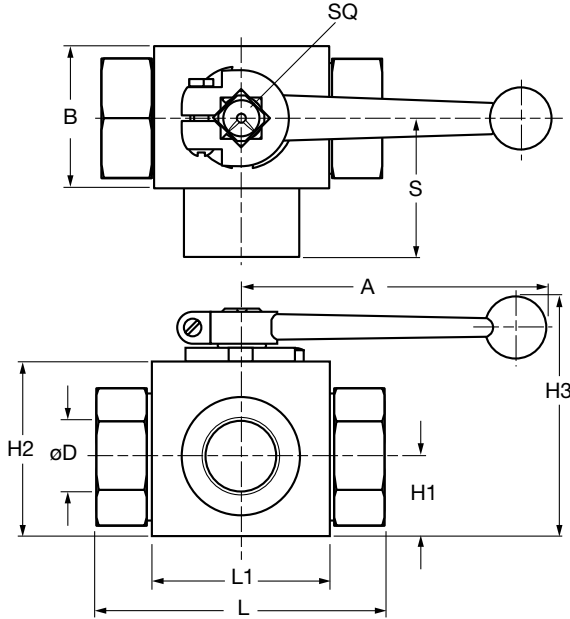
#### Locking Device Option

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)

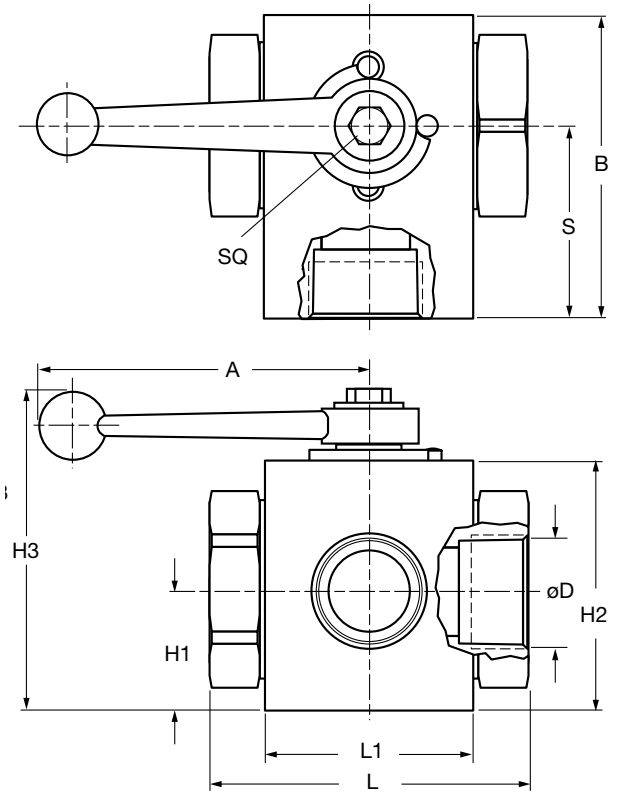
*Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability  
Not all combinations are available*



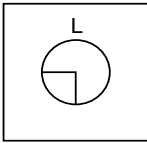
## Dimensions Sizes 06 - 25



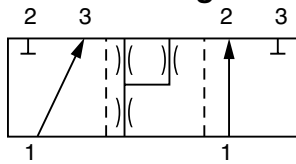
## Sizes 32 - 50



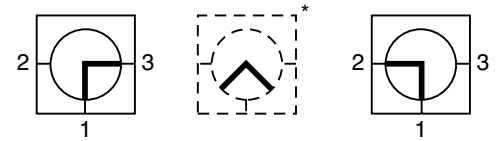
## Ball Drilling



## Function Diagrams



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

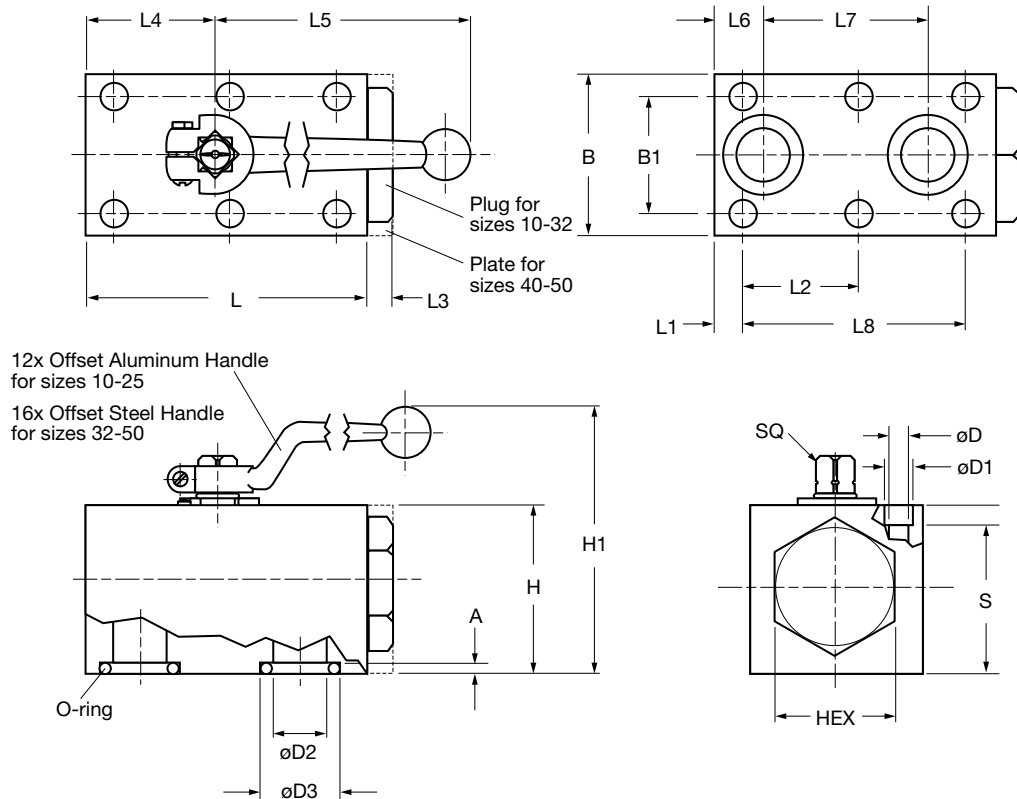


At intermediate position flow will not be completely shut off.  
Notes: Valve is not designed to be used as a flow control valve. Valve should not be left in an intermediate position to avoid seal damage.

| 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  | 1.02    | 0.24 | 0.51   | 1.26   | 1.65  | 2.72  | 1.46  | 0.35 | 1.36   | 0.88   |
| KHB3K-06NPT... | 1/4" NPT      |           | (150) | (26)    | (6)  | (13)   | (32)   | (42)  | (69)  | (37)  | (9)  | (34.5) | (0.4)  |
| KHB3K-10SAE... | 9/16"-18 UNF  | 7250      | 5.90  | 1.26    | 0.39 | 0.67   | 1.57   | 1.69  | 2.83  | 1.65  | 0.35 | 1.42   | 1.32   |
| KHB3K-10NPT... | 3/8" NPT      |           | (150) | (32)    | (10) | (17)   | (40)   | (47)  | (72)  | (42)  | (9)  | (36)   | (0.6)  |
| KHB3K-16SAE... | 3/4"-16 UNF   | 5800      | 6.89  | 1.50    | 0.63 | 0.75   | 1.77   | 2.01  | 3.27  | 1.85  | 0.47 | 1.64   | 1.76   |
| KHB3K-16NPT... | 1/2" NPT      |           | (175) | (38)    | (16) | (19)   | (45)   | (51)  | (83)  | (47)  | (12) | (41.5) | (0.8)  |
| KHB3K-20SAE... | 1-1/16"-12 UN | 4500      | 7.87  | 1.93    | 0.79 | 1.08   | 2.36   | 2.28  | 3.74  | 2.36  | 0.55 | 1.87   | 3.31   |
| KHB3K-20NPT... | 3/4" NPT      |           | (200) | (49)    | (20) | (27.5) | (60)   | (58)  | (95)  | (60)  | (14) | (47.5) | (1.5)  |
| KHB3K-25SAE... | 1-5/16"-12 UN | 4500      | 7.87  | 2.28    | 0.98 | 1.16   | 2.56   | 2.40  | 4.45  | 2.56  | 0.55 | 2.22   | 4.85   |
| KHB3K-25NPT... | 1" NPT        |           | (200) | (58)    | (25) | (29.5) | (65)   | (61)  | (113) | (65)  | (14) | (56.5) | (2.2)  |
| KHB3K-32SAE... | 1-5/8"-12 UNF | 5000      | 9.00  | 4.35    | 1.18 | 1.70   | 3.54   | 5.47  | 4.53  | 2.99  | 0.67 | 2.76   | 7.7    |
| KHB3K-32NPT... | 1-1/4" NPT    |           | (228) | (110.5) | (30) | (43.3) | (90.0) | (139) | (115) | (76)  | (17) | (70)   | (3.5)  |
| KHB3K-40SAE... | 1-7/8"-12 UN  | 5000      | 9.00  | 4.69    | 1.38 | 1.71   | 3.79   | 5.71  | 5.31  | 3.35  | 0.67 | 2.95   | 11     |
| KHB3K-40NPT... | 1-1/2" NPT    |           | (228) | (119)   | (35) | (43.5) | (96.2) | (145) | (135) | (85)  | (17) | (75)   | (5)    |
| KHB3K-50SAE... | 2-1/2"-12 UN  | 5000      | 9.00  | 5.73    | 1.73 | 2.35   | 4.72   | 6.02  | 5.91  | 4.72  | 0.67 | 3.35   | 16.5   |
| KHB3K-50NPT... | 2" NPT        |           | (228) | (145.5) | (44) | (59.8) | (120)  | (153) | (150) | (120) | (17) | (85)   | (7.5)  |



## Dimensions



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

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

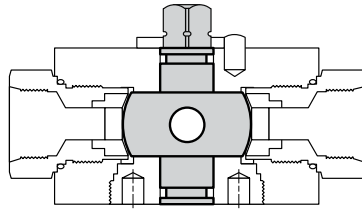
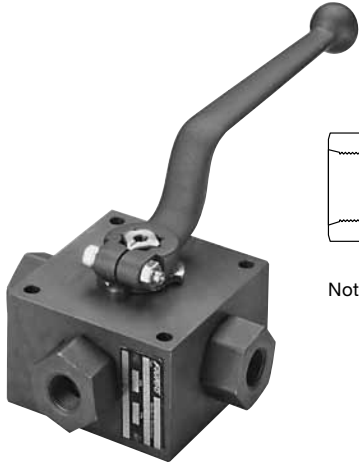
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs./(kg.)

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  |              | NPT       |         |
|----------|------|--------------|-----------|---------|
|          | Tube | Thread       | 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** \_\_\_\_\_

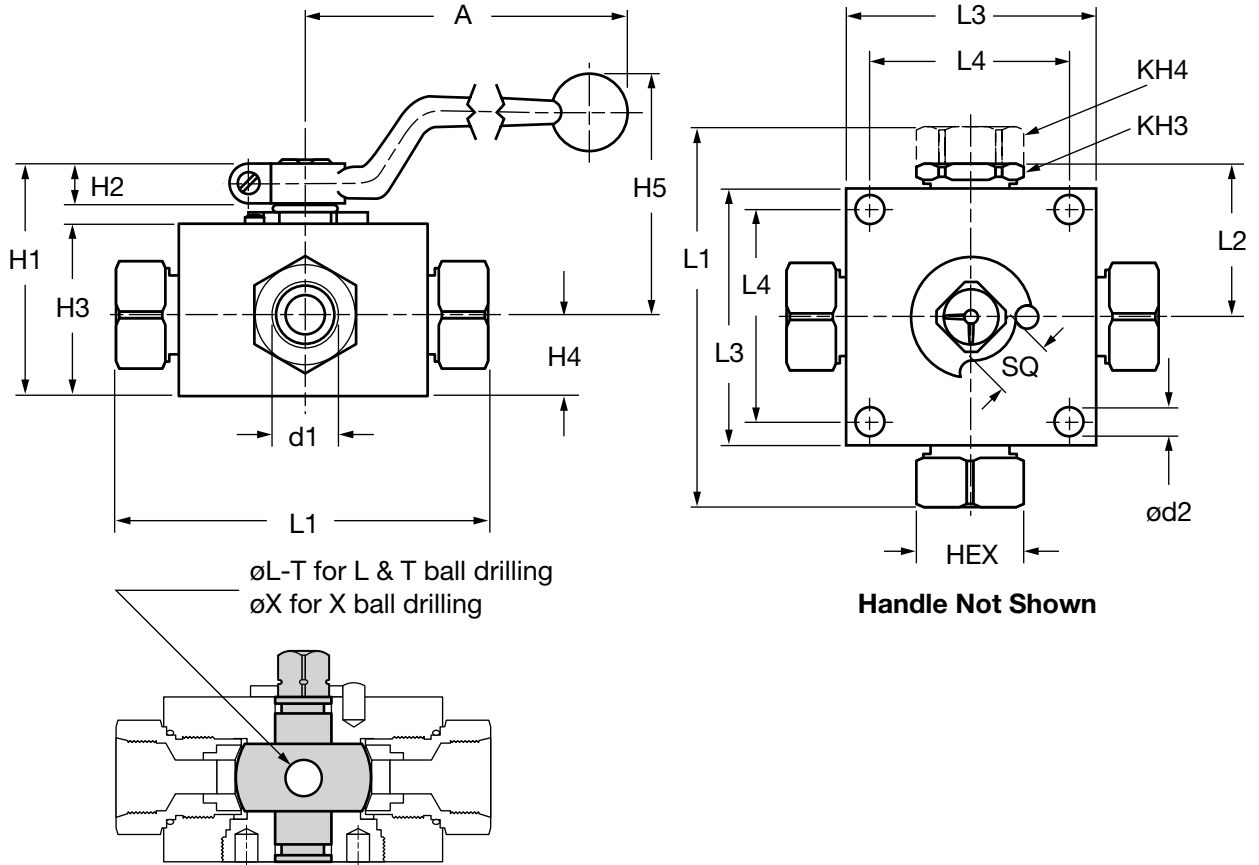
09x = Without Handle  
12x = Offset Aluminum (*standard*)

**Locking Device Option** \_\_\_\_\_

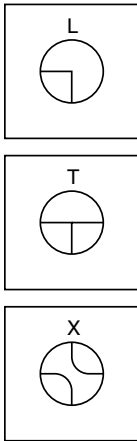
L = Locking Device (*see page 21 to order locking device separately*)

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

## Dimensions

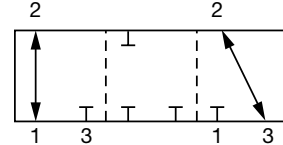


## Ball Drilling

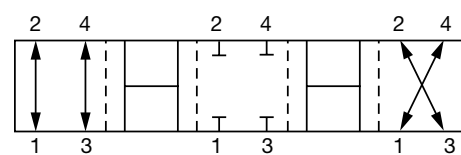


## Function Diagrams

### 3-Way Ball Valve L-Bore



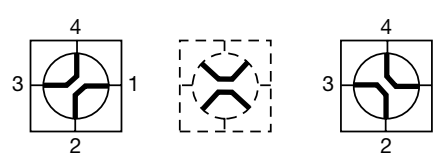
### 4-Way Ball Valve X-Bore



### 90° Switch



### 90° Switch



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

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

## Ball Valve Actuators Pneumatic Operation



### Description

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

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

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

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

### 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

### 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

### 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)

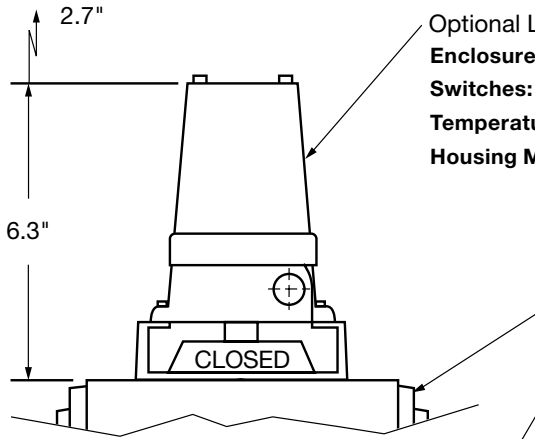
|  |                 |  |          |
|--|-----------------|--|----------|
| <b>Limit Switch Box (2 SPDT switches)</b>                  |                 |  |          |
| ACTUATOR LIMIT SWITCH HDN/2                                |                 |  | 02700282 |
| <b>Limit Switch Mounting Kit (for EDA-12)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

<sup>(1)</sup> See pages 39 - 40 for information on solenoid valves.

## Dimensions

Clearance Required  
to Remove Cover



Optional Limit Switch

**Enclosure:** NEMA 4, includes 2 SPDT switches plus visual indicator.

**Switches:** up to 250 V AC or DC. Contacts: N/O and N/C

**Temperature:** -4° to 175°F

**Housing Material:** Aluminum housing, polyurethane finish.

Actuator

**Operating Pressure:** 120 psi max.

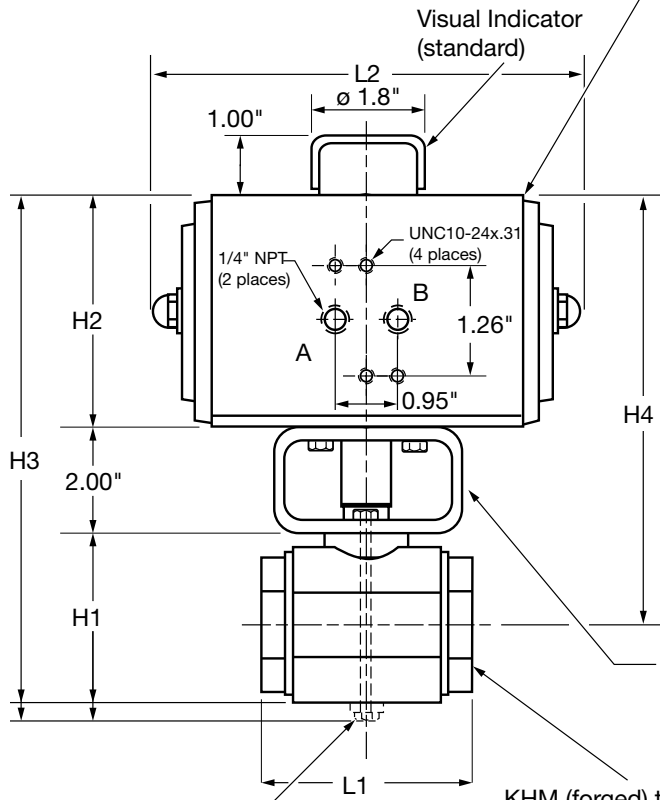
**Rotation:** 90° Pressurize port "A" for counter-clockwise rotation (*opening the valve*)

**Temperature:** -4° to 175°F

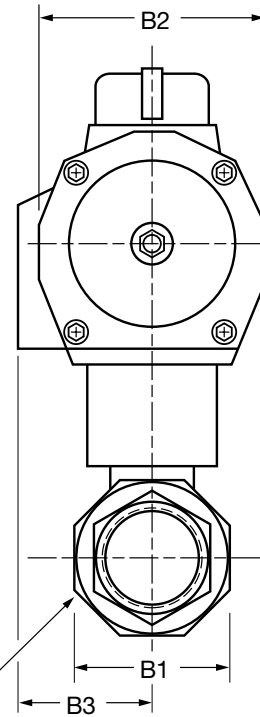
**Materials:** Aluminum housing and shaft, polyurethane finish.

**Service Life:** up to one million cycles

**Mounting:** Bottom flange and square drive to ISO 5211  
Top and solenoid flange to VDE-VDI 3845 NAMUR



Visual Indicator  
(standard)



Mounting Kit

KHM (forged) type valve shown

Tie Bar Design

Used With: KHB & KHB3K sizes -06, -10, -16, -20, -25

| 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



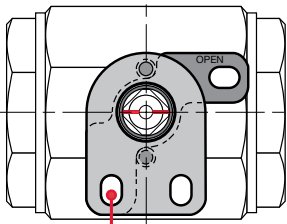
### Description

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.

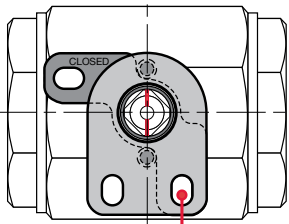
**Material note:** All lock plates and lock bars are made of Zinc plated Steel.

### Operation

**KHM...**  
(forged valve bodies)

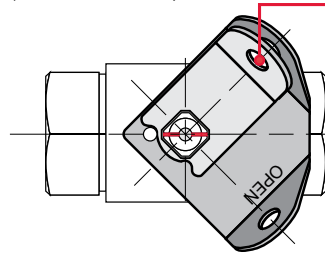


Apply Pad Lock (not supplied) here to lock in OPEN Position

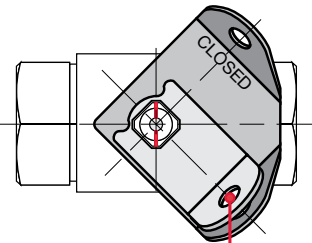


Apply Pad Lock (not supplied) here to lock in CLOSED Position

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

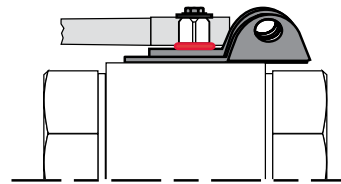
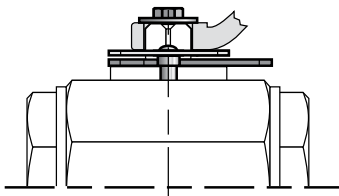


Apply Pad Lock (not supplied) here to lock in OPEN Position



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

### Installation



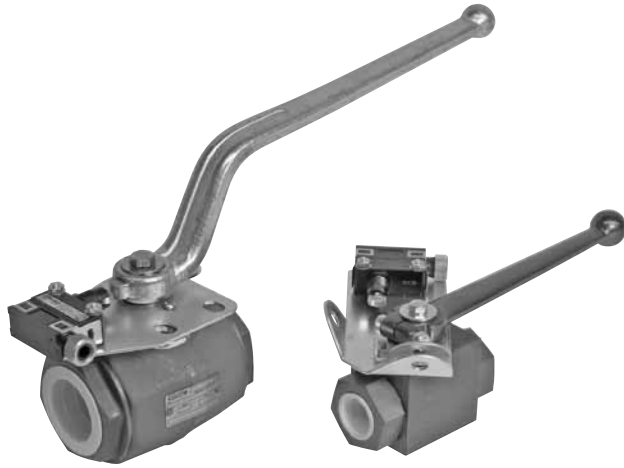
### Ordering

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

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



## Ball Valve Locking Devices with Limit Switches



### Description:

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

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

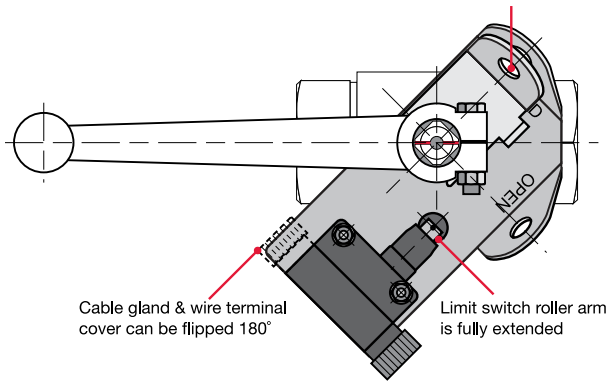
### Ordering:

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

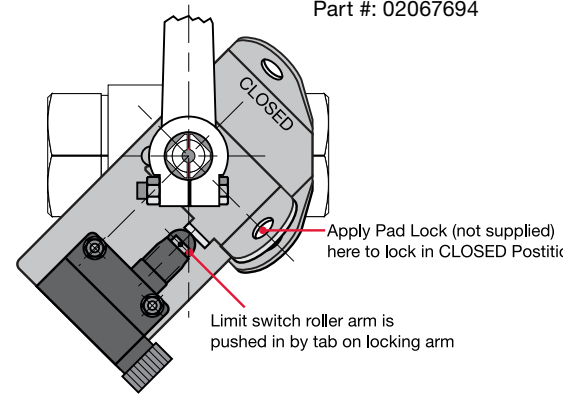
### Operation

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

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

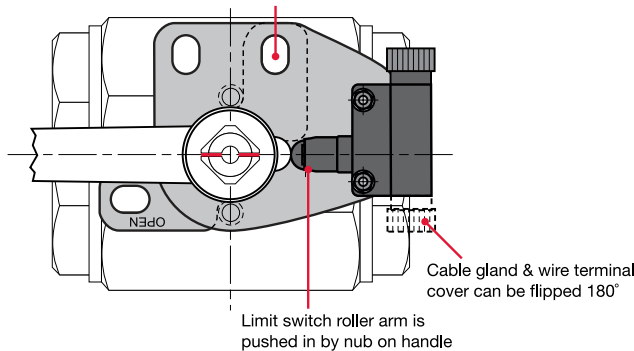


**Valve Retrofit kit**  
Part #: 02067694

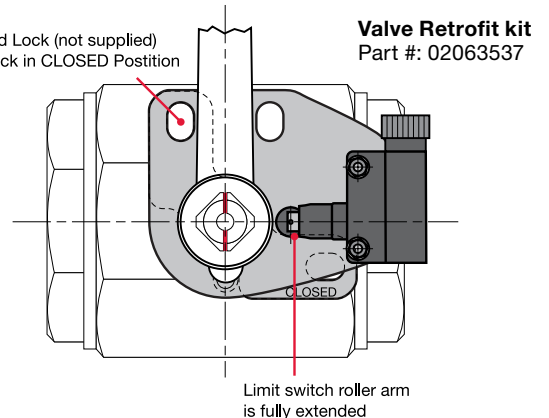


**KHM...** (forged valve bodies, sizes 32 through 50)

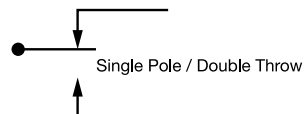
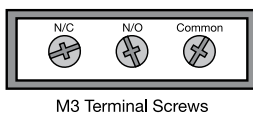
Apply Pad Lock (not supplied) here to lock in OPEN Position



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



### Wiring Details

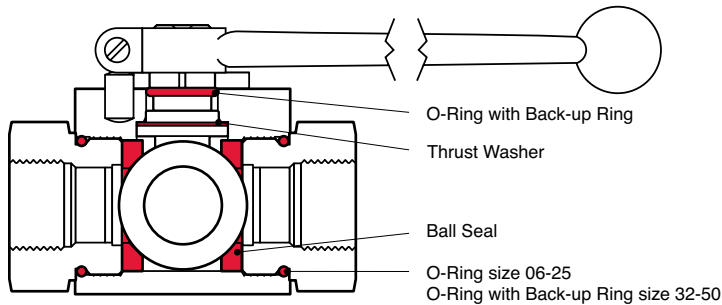


### Electrical Specifications

- 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](http://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

## 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

|  |  |
|--|--|
| <b>Housing</b>   |  |
| <b>Block Type (KHB)</b>  | Carbon Steel ( <i>standard</i> ) 14°F Min temp                                 |
| <b>Forged Type (KHM)</b>   | Forged Steel ( <i>standard</i> ) 14°F Min temp                                 |
|  | Stainless Steel ( <i>optional</i> ) -40°F Min temp                             |
| <b>Coatings</b>  | Standard Models Phosphate Coated<br>( <i>Others available on Request</i> )     |
| <b>Ball</b>  | Chrome Plated Steel ( <i>standard</i> )<br>Stainless Steel ( <i>optional</i> ) |
| <b>Spindle</b>   | Zinc Plated Steel ( <i>standard</i> )<br>Stainless Steel ( <i>optional</i> )   |
| <b>Handles (see above)</b>   |  |
| <b>11X</b>   | Straight Aluminum, Red Anodized  |
| <b>12X</b>   | Offset Aluminum, Red Anodized  |
| <b>16X</b>   | Offset Steel, Galvanized   |
| <b>Ball Seal</b>   |  |
| <b>Polyacetal (POM)</b> Standard for Hydraulic Oils, Water Glycol<br>Maximum Pressure: to 7250 psi (500 bar)<br>Temperature Range: -22° to 212°F (-30° to 100°C)   |  |
| <b>PTFE</b> For Corrosive Media<br>Maximum Pressure: to 1500 psi (100 bar)<br>Temperature Range: -328° to 212°F (-200° to 100°C)<br><b>Temperature to 392°F (200°C) at reduced Pressure</b><br>(see chart at right for pressure-temperature profile)   |  |
| <b>NBR</b> For Gaseous Media<br>Maximum Pressure: to 1500 psi (100 bar)<br>Temperature Range: -13° to 212°F (-25° to 100°C)<br>(see chart at right for pressure-temperature profile)   |  |
| <b>PEEK</b> High Temperature Seal<br>Maximum Pressure: to 7250 psi (500 bar)<br>Temperature Range: -238° to 212°F (-150° to 100°C)<br><b>Better high temperature profile than PTFE</b><br><b>Temperature to 482°F (250°C) at reduced Pressure</b><br>(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)

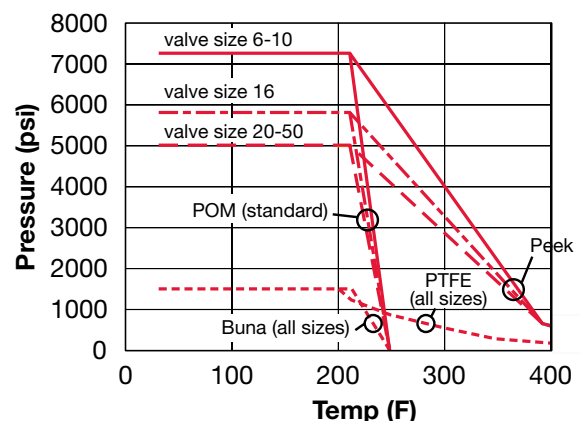
Temperature Range: -58° to 300°F (-50° to 150°C)

### 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"



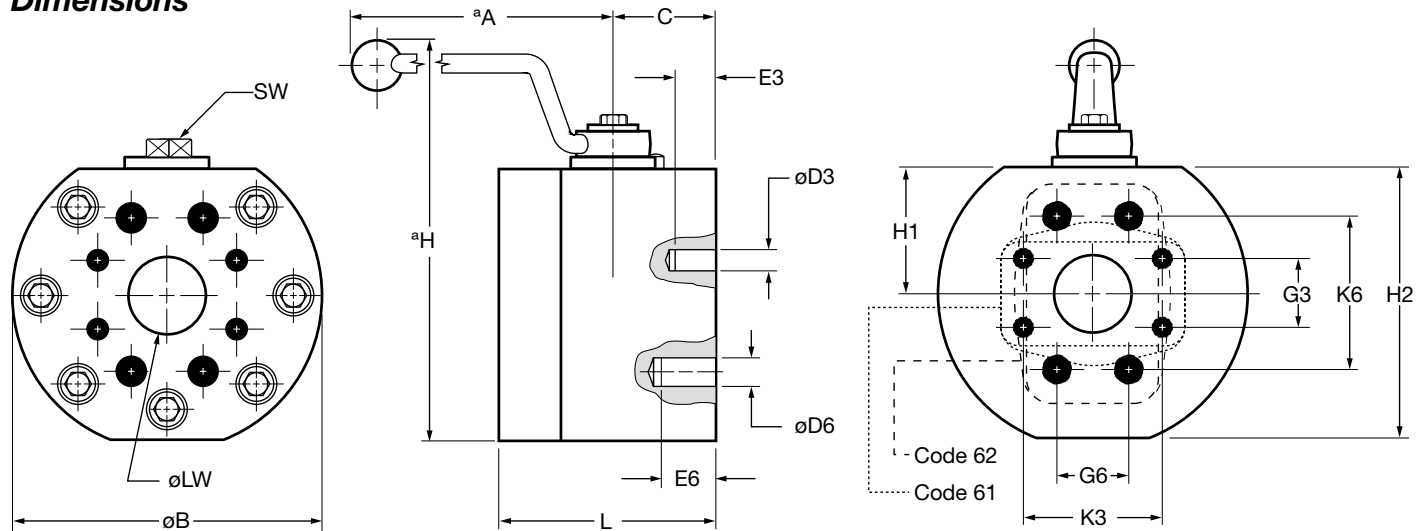
### Features

- 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)
- 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*

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



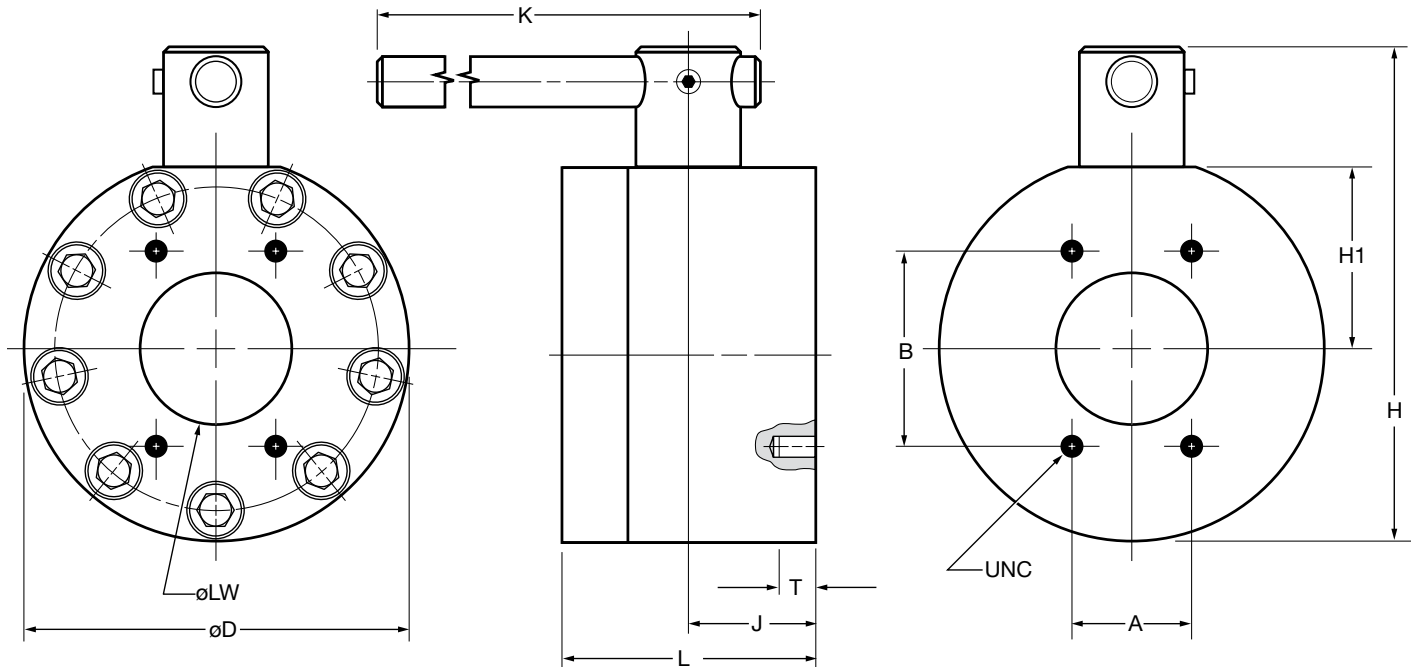
### Features

- 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*

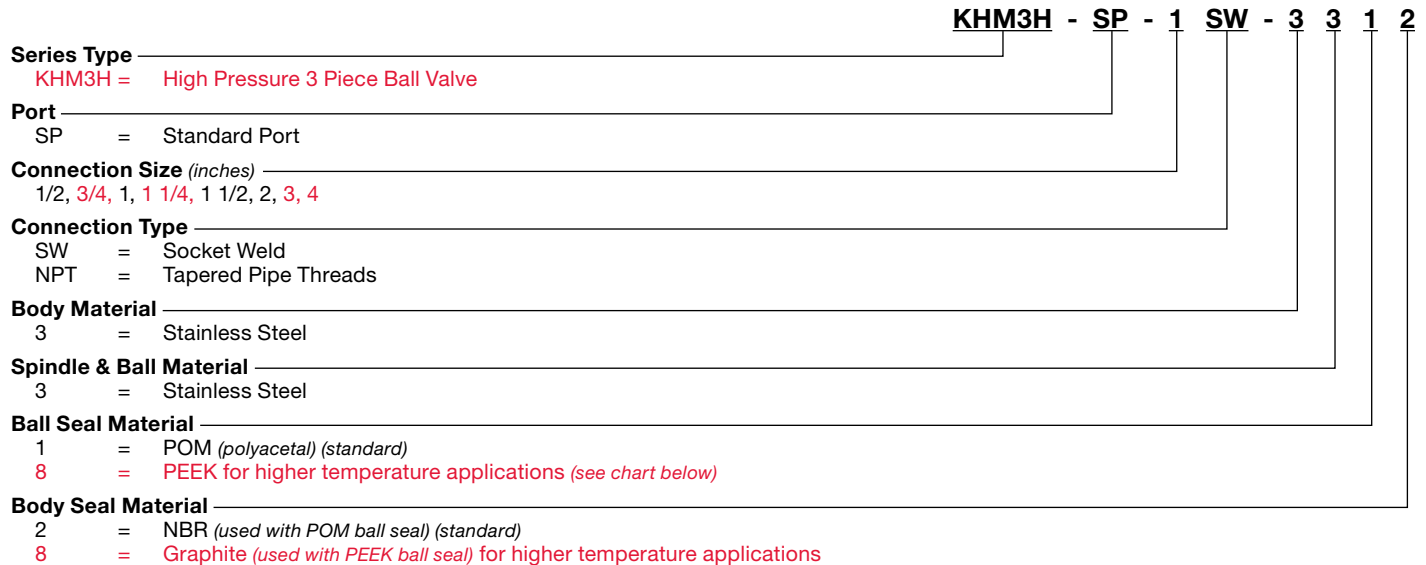
## KHM3H Series 3 Piece Ball Valve



### Specifications

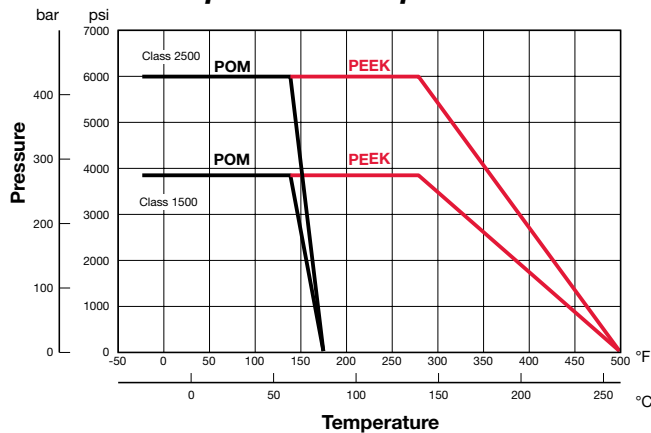
- 1/2" - 4" Standard Port
  - 1/2" - 2" Class 2500 ANSI (up to 6000 psi)
  - 3" - 4" Class 1500 ANSI (up to 3800 psi)
  - Blow-out proof stem
  - Handle operated or actuated
  - Applications - Offshore, Oil & Gas, Chemical, Petrochemical, Refining, Energy
  - Media - Liquid or Gas
  - Material - Stainless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

### Model Code

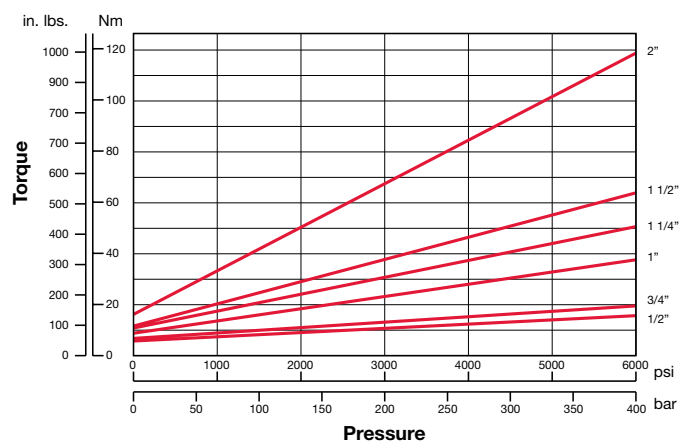


Model Codes containing selections listed in RED are non-standard items – Minimum quantities may apply – Contact HYDAC for information and availability  
 Not all combinations are available

### Pressure/Temperature Graph

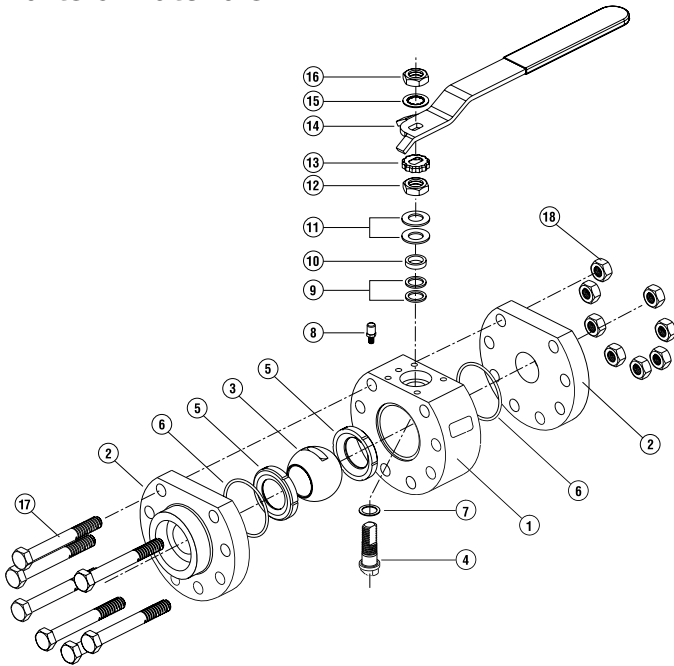


### Torque/Pressure Graph



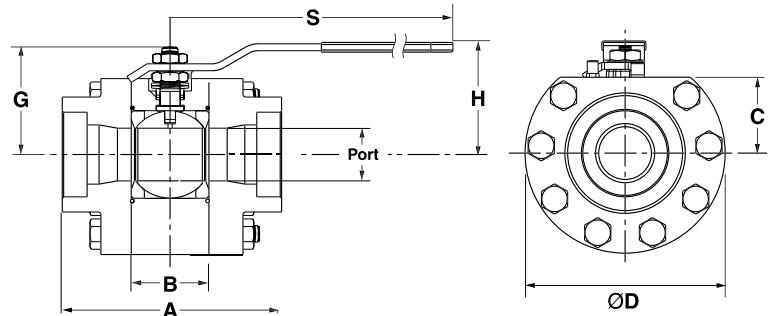
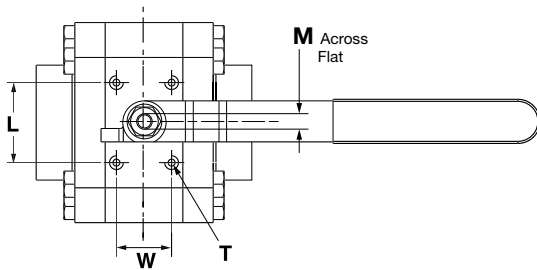
# High Pressure Ball Valves | HYDAC

## Parts & Materials

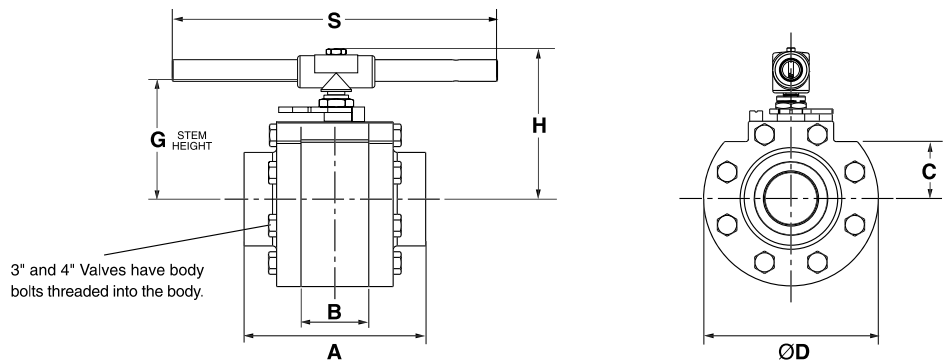
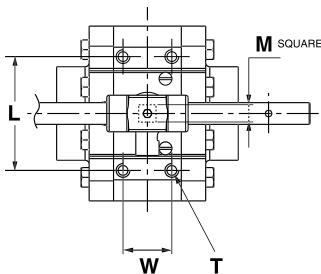


| Item | Description      | Material                               |
|------|------------------|--|
| 1    | Body             | Stainless Steel 316                    |
| 2    | End Connector    | Stainless Steel 316                    |
| 3    | Ball             | Stainless Steel 316 (17-4PH 1/2"-3/4") |
| 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.

### Low Pressure Ball Valves

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



### 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.

### 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"



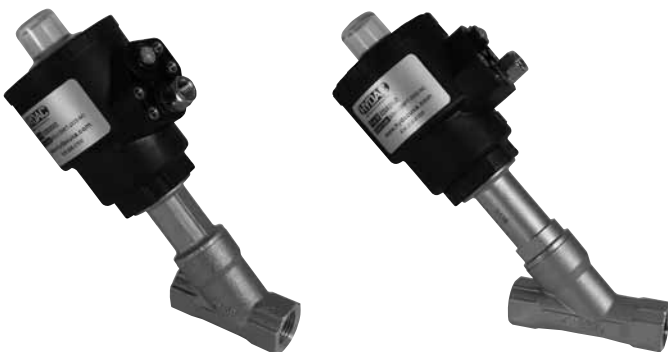
### Automated 3 Piece Ball Valves

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



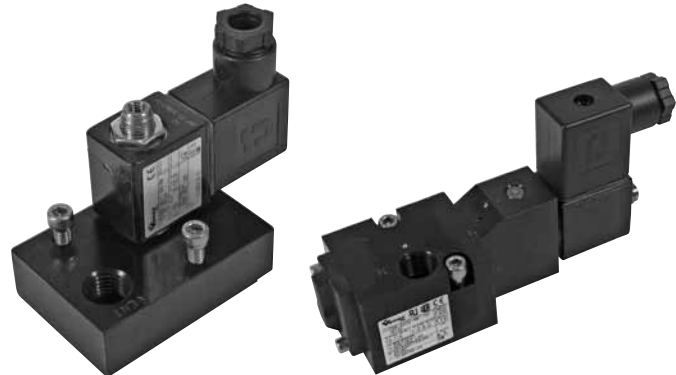
### Angle Seat Valves

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



### Solenoid Valves

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





## 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

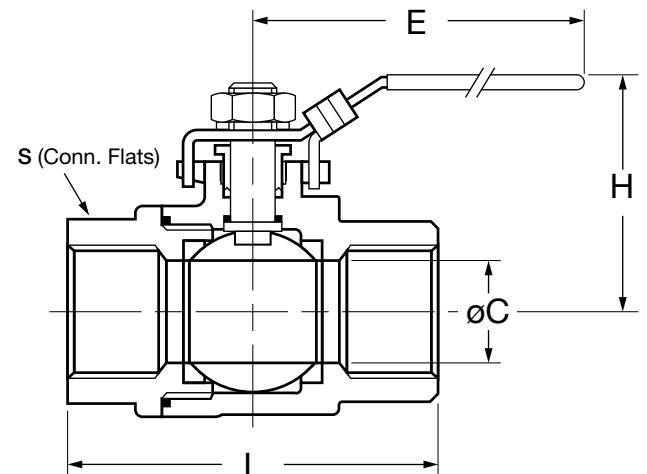
#### Max. Pressure:

- 1000 psig (up to 100°F)
- 2000 psig available (Contact HYDAC for details)

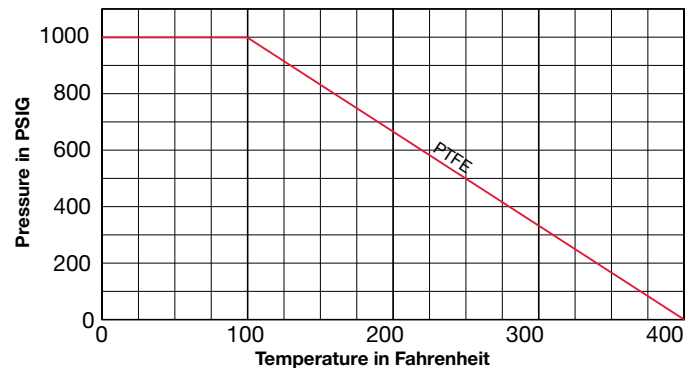
### End Connections

- 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

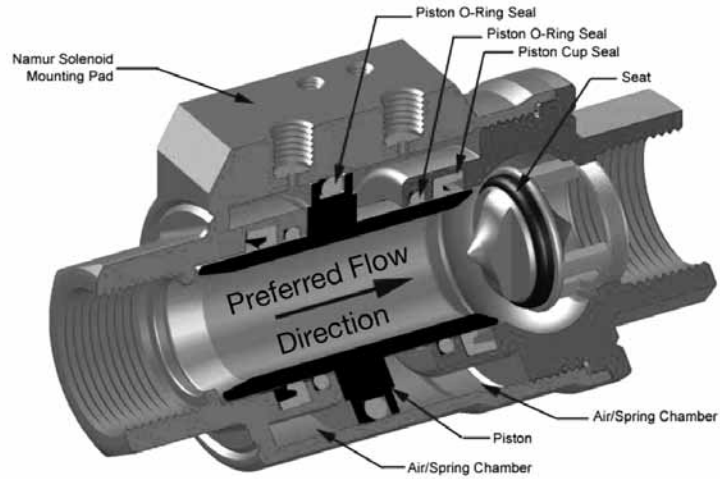
Note: see page 39 - 40 for information on solenoid valves

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

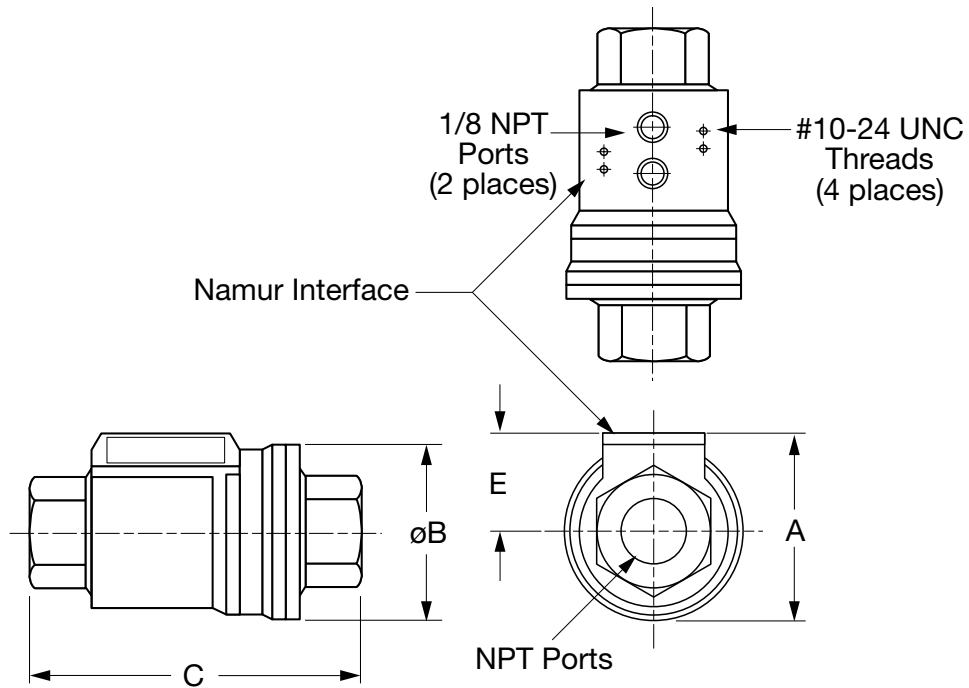
### Stroke Time (based on 80 psi actuating pressure)

| 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       |

## 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

### 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                  |

### 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

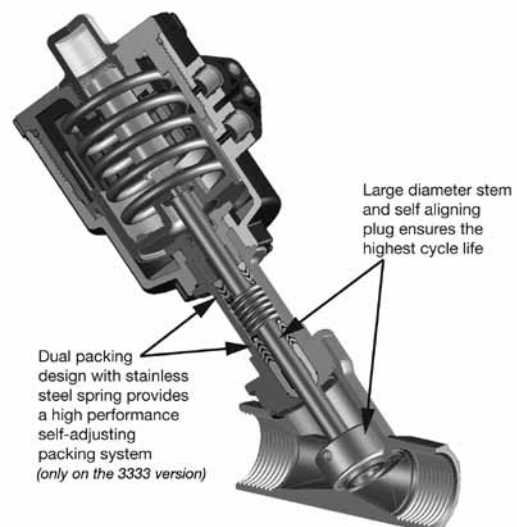
### Model Code

|                                       |   |
|---------------------------------------|---|
| <b>ASV - 1 NPT - 3333 - DA - 24DC</b> |   |
| <b>Series</b>                         | ASV = Angle Seat Valve  |
| <b>Port Size (NPT)</b>                | 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"  |
| <b>Materials</b>                      | 2333 = Bronze body & SS plug, PTFE seats & seals<br>3333 = 316SS body & plug, PTFE seats & seals                          |
| <b>Function</b>                       | NC = Spring return, normally closed<br>DA = Double acting   |
| <b>Solenoid Valve Options</b>         | (omit) = No solenoid valve included<br>24VDC = 24 VDC solenoid valve included<br>120VAC = 120 VAC solenoid valve included |

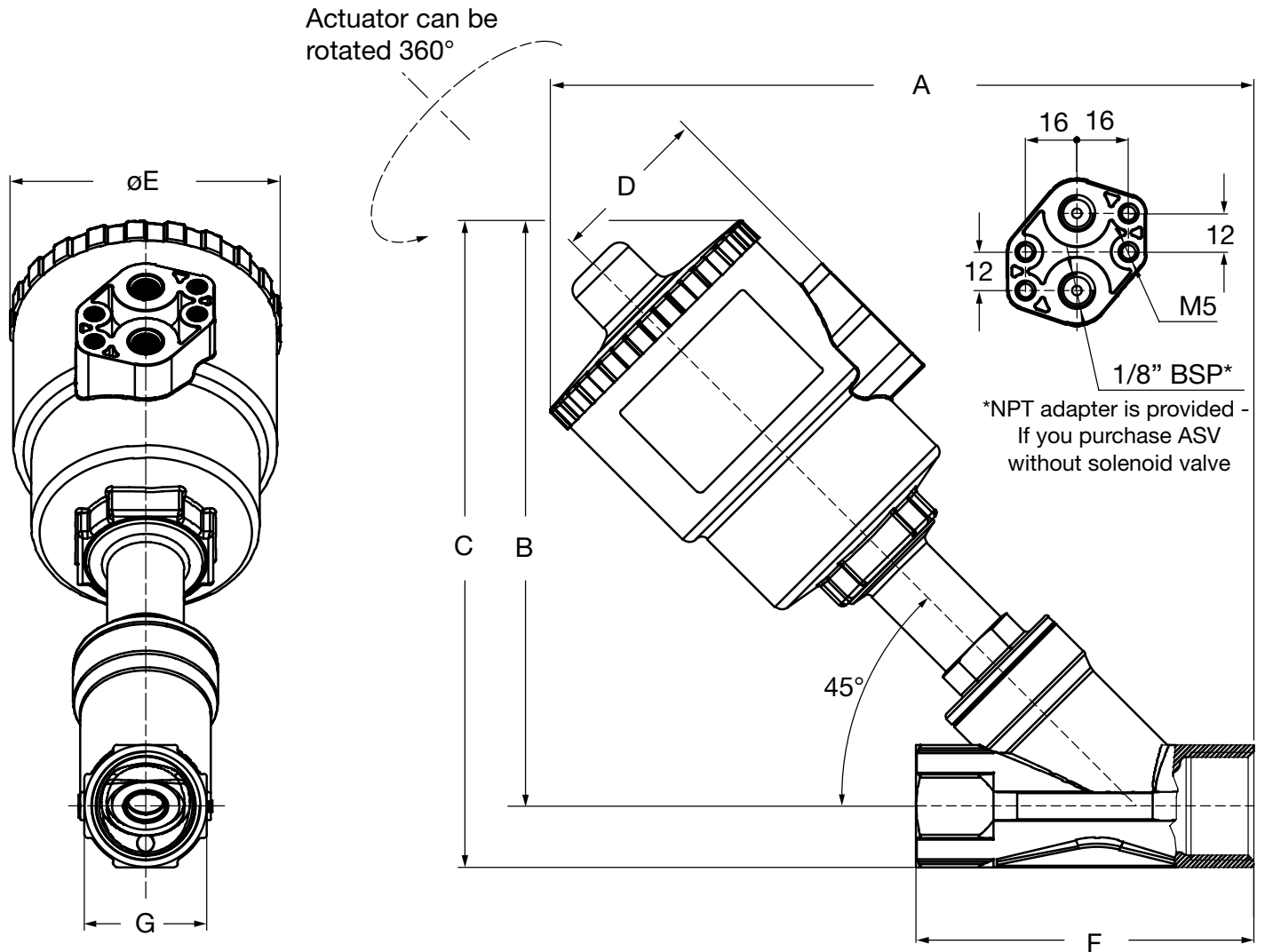
Note: see page 39 - 40 for information on solenoid valves

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

### Cutaway View



## Dimensions



| Type  | NPT Port Size | CV | ASV...3333 (316 SS) |       |       |      |          |      |      | ASV...2333 (Bronze) |       |       |      |          |      |      | Wgt  |
|-------|---------------|----|---------------------|-------|-------|------|----------|------|------|---------------------|-------|-------|------|----------|------|------|------|
|       |               |    | A                   | B     | C     | D    | $\phi E$ | F    | G    | A                   | B     | C     | D    | $\phi E$ | 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

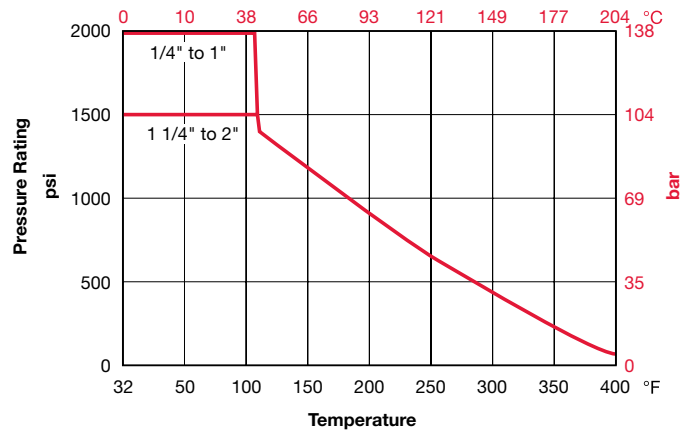
### Actuators

- 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

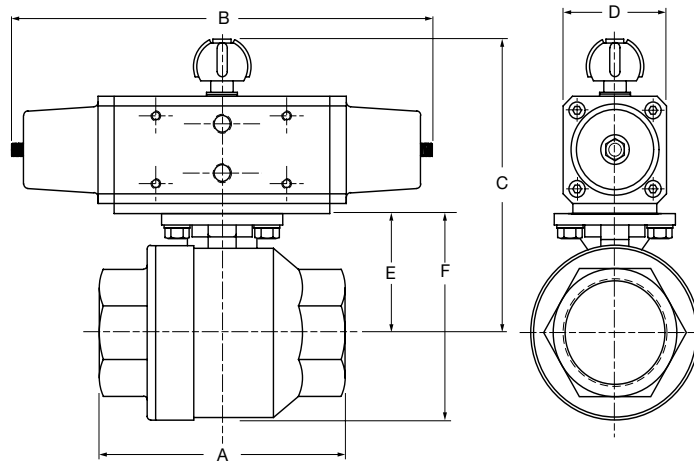
Note: see page 39 - 40 for information on solenoid valves

Contact HYDAC for more information on electric actuators.

### Pressure Vs. Temperature Chart

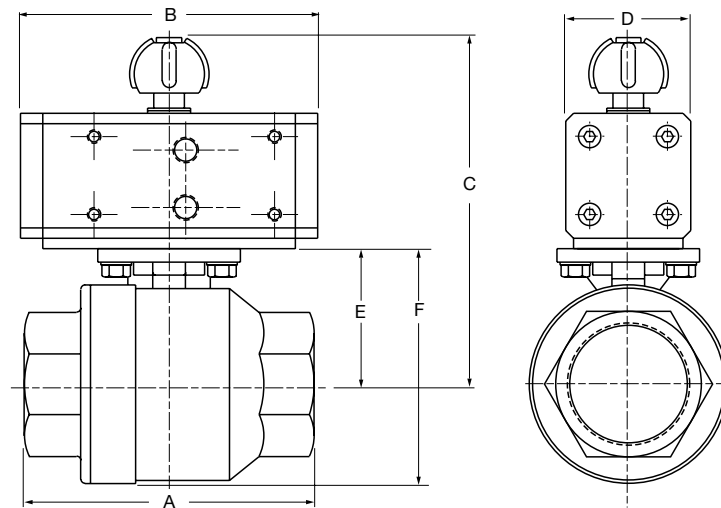


## Dimensions with normally closed spring return pneumatic actuator (NPT threaded end connection, 2 pc. body)



| 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*)

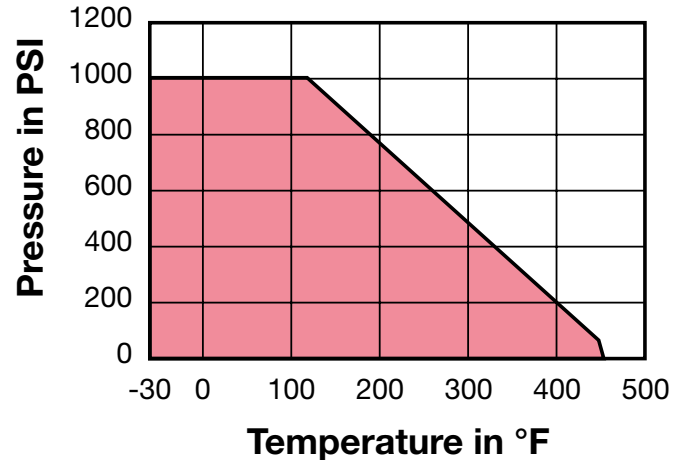
### Actuators

- 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

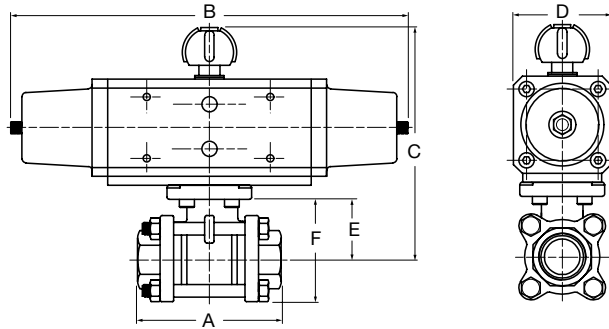
Contact HYDAC for more information on electric actuators.

### Pressure Vs. Temperature Chart



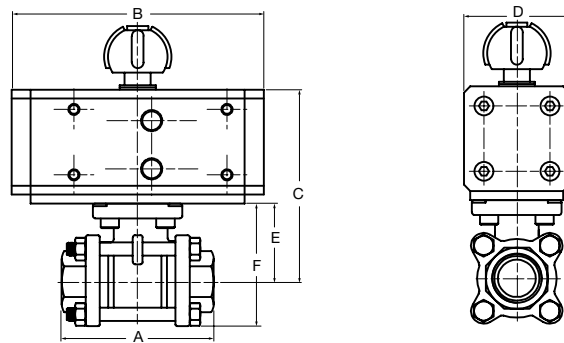


## Dimensions with normally closed spring return pneumatic actuator



| 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<br>02083039   | KHM3L-1/4SW-3333-NC<br>02083042   |
| 13  | 3/8"   | 2.56 | 8.62  | 4.85 | 2.15 | 1.65 | 2.60 | 4.3  | KHM3L-3/8NPT-3333-NC<br>02083045   | KHM3L-3/8SW-3333-NC<br>02083048   |
| 23  | 1/2"   | 2.95 | 8.62  | 4.85 | 2.15 | 1.65 | 2.60 | 4.3  | KHM3L-1/2NPT-3333-NC<br>02083051   | KHM3L-1/2SW-3333-NC<br>02083054   |
| 70  | 3/4"   | 3.15 | 9.36  | 5.36 | 2.54 | 1.77 | 2.75 | 6.2  | KHM3L-3/4NPT-3333-NC<br>02083057   | KHM3L-3/4SW-3333-NC<br>02083060   |
| 116 | 1"     | 3.54 | 11.47 | 5.99 | 2.81 | 2.05 | 3.32 | 8.4  | KHM3L-1NPT-3333-NC<br>02083063     | KHM3L-1SW-3333-NC<br>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<br>02083069 | KHM3L-1 1/4SW-3333-NC<br>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<br>02083075 | KHM3L-1 1/2SW-3333-NC<br>02083078 |
| 325 | 2"     | 5.51 | 13.92 | 8.10 | 3.51 | 3.07 | 4.85 | 20.1 | KHM3L-2NPT-3333-NC<br>02083081     | KHM3L-2SW-3333-NC<br>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<br>02083040   | KHM3L-1/4SW-3333-DA<br>02083043   |
| 13  | 3/8"   | 2.56 | 5.07 | 4.85 | 2.15 | 1.65 | 2.60 | 3.5  | KHM3L-3/8NPT-3333-DA<br>02083046   | KHM3L-3/8SW-3333-DA<br>02083049   |
| 23  | 1/2"   | 2.95 | 5.07 | 4.85 | 2.15 | 1.65 | 2.60 | 3.6  | KHM3L-1/2NPT-3333-DA<br>02083052   | KHM3L-1/2SW-3333-DA<br>02083055   |
| 70  | 3/4"   | 3.15 | 5.07 | 4.97 | 2.15 | 1.77 | 2.75 | 3.9  | KHM3L-3/4NPT-3333-DA<br>02083058   | KHM3L-3/4SW-3333-DA<br>02083061   |
| 116 | 1"     | 3.54 | 5.62 | 5.48 | 2.34 | 2.05 | 3.32 | 5.9  | KHM3L-1NPT-3333-DA<br>02083064     | KHM3L-1SW-3333-DA<br>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<br>02083070 | KHM3L-1 1/4SW-3333-DA<br>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<br>02083076 | KHM3L-1 1/2SW-3333-DA<br>02083079 |
| 325 | 2"     | 5.51 | 6.59 | 7.01 | 2.81 | 3.07 | 4.85 | 13.5 | KHM3L-2NPT-3333-DA<br>02083082     | KHM3L-2SW-3333-DA<br>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*

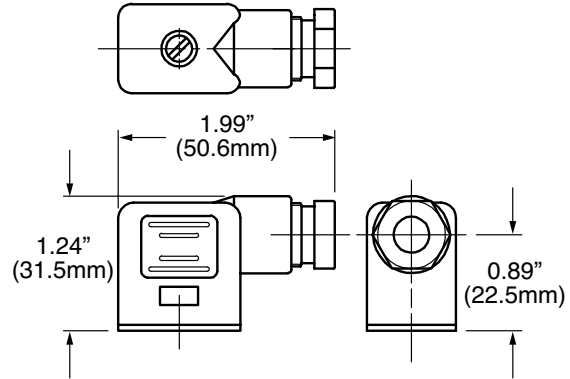
## Solenoid Valves Namur 3-way and 4-way

### 3-Way



### Connector

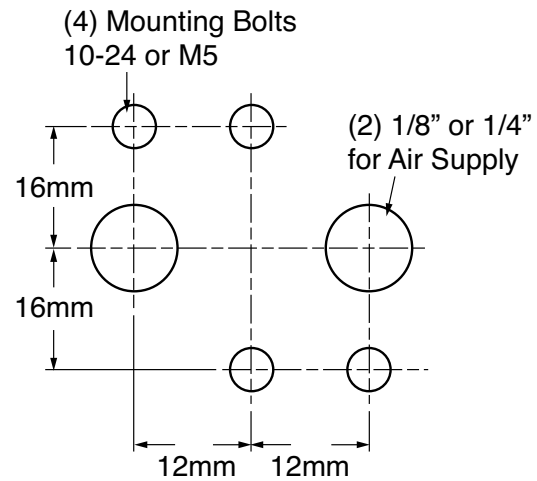
Water tight, NEMA 4/4X, mini-DIN, Cord Grip PG9 connection



### 4-Way



### Namur Pattern

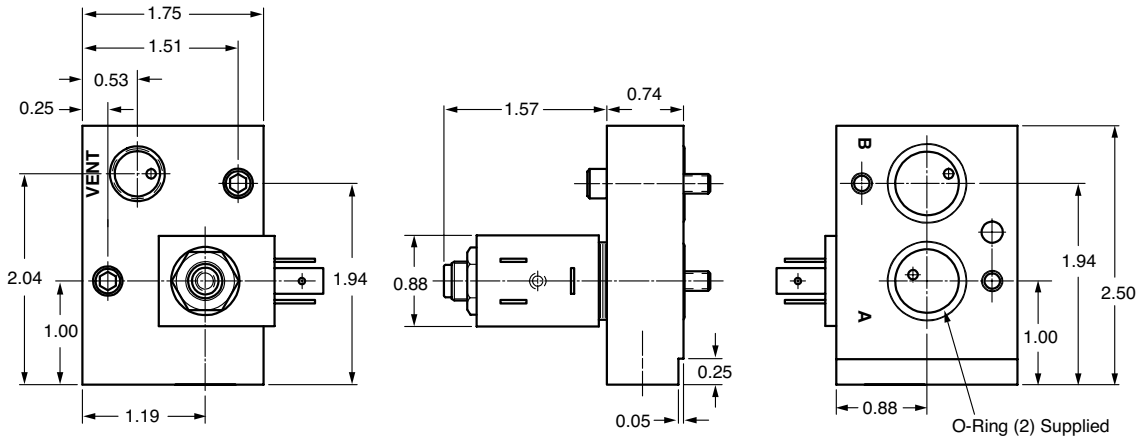


| Model Code                                     | Use With                          | Connectors                | Nominal Coil Power                | Part Number |
|--|-----------------------------------|---------------------------|-----------------------------------|-------------|
| Solenoid Valve Namur, 3-way, 24 VDC, Mini DIN  | NO / NC valves with Spring Return | Mini-DIN<br>Cord Grip PG9 | AC = 8.5 watts<br>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    |

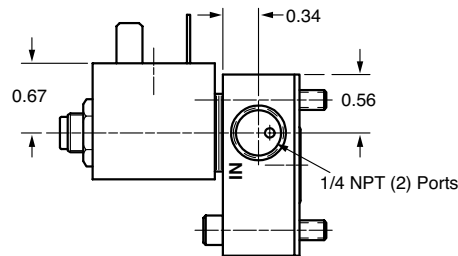
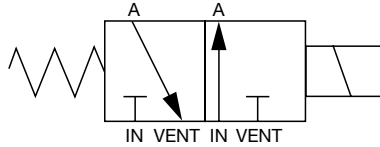
## Dimensions

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

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

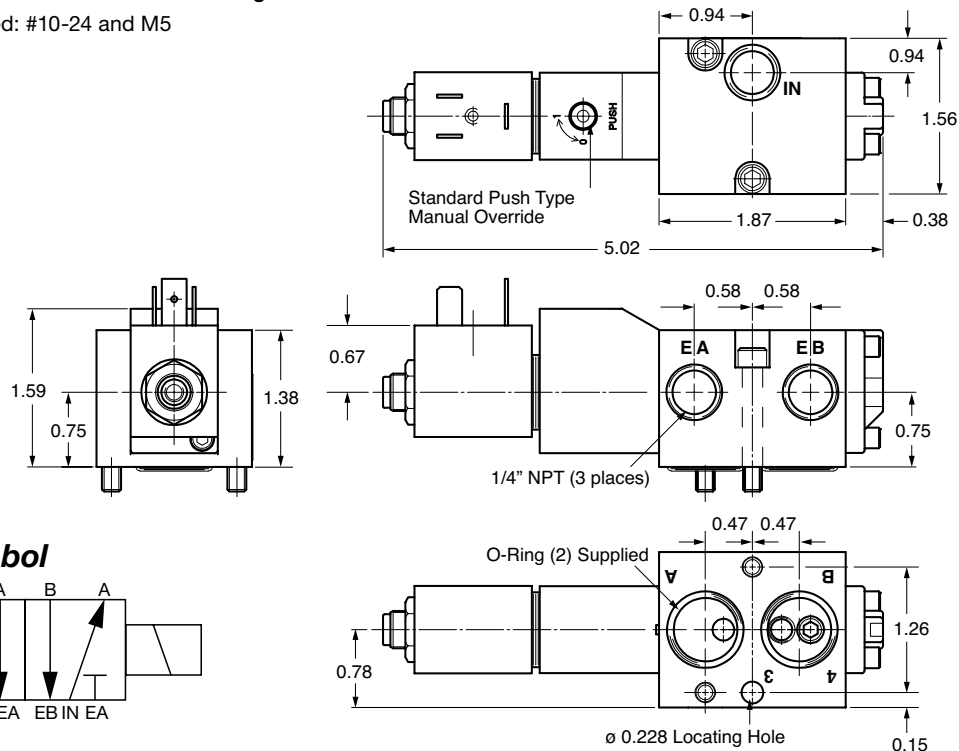


### Hydraulic Symbol

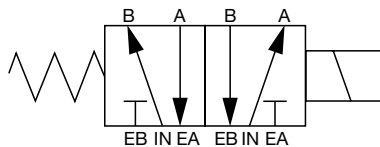


### 4-way Solenoid Valve used with Double Acting Valves

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



### Hydraulic Symbol

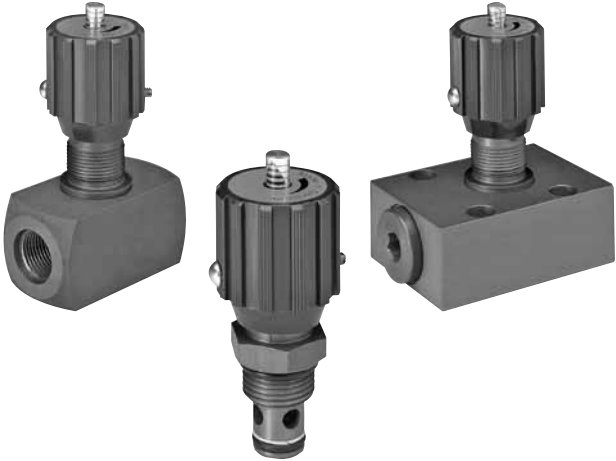


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches

## Overview

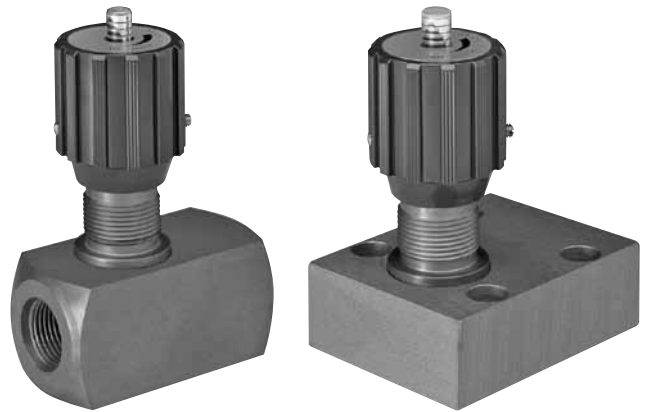
### Needle Valves

DV, DVE & DVP Series (see page 43)



### Flow Control Valves

DRV & DRVP Series (see page 47)



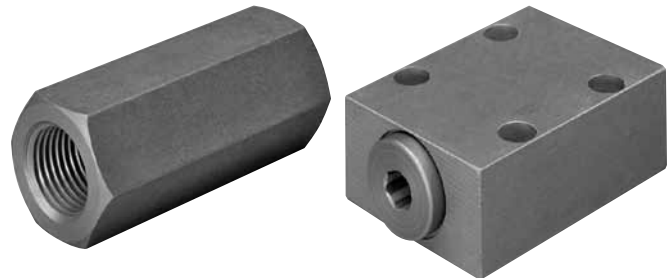
### Pressure Compensated Flow Control Valves

SRVR Series (see page 51)



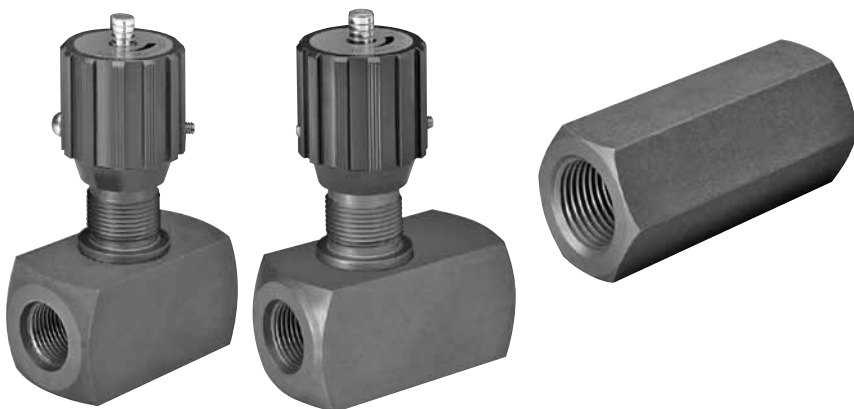
### Check Valves

RV & RVP Series (see page 53)

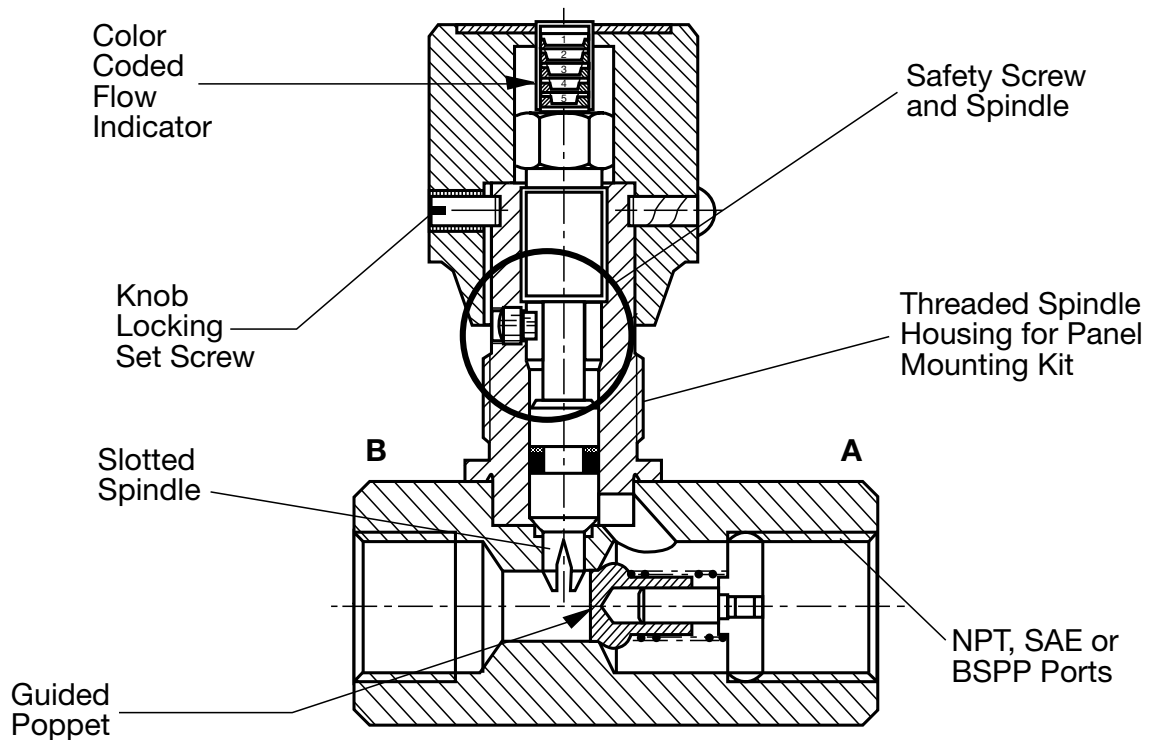


### Stainless Steel Flow Control Valves

DV, DRV & RV Series (see page 55)



## 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

## DV, DVE, & DVP Series Needle Valves



**DV Series**  
Inline Mounting



**DVP Series**  
Manifold Mounting

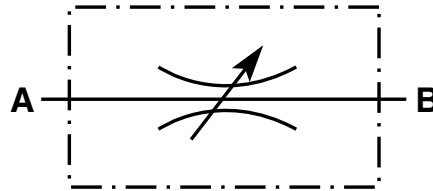


**DVE Series**  
Cartridge Valve

### 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  | SAE (DV only) | Thread Size  | NPTF (DV Only) | Pipe OD | BSPP (DV Only) |
|-----------|---------------|--------------|----------------|---------|----------------|
| Nom. Size | Tube Size     |              | Pipe Size      |         | 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

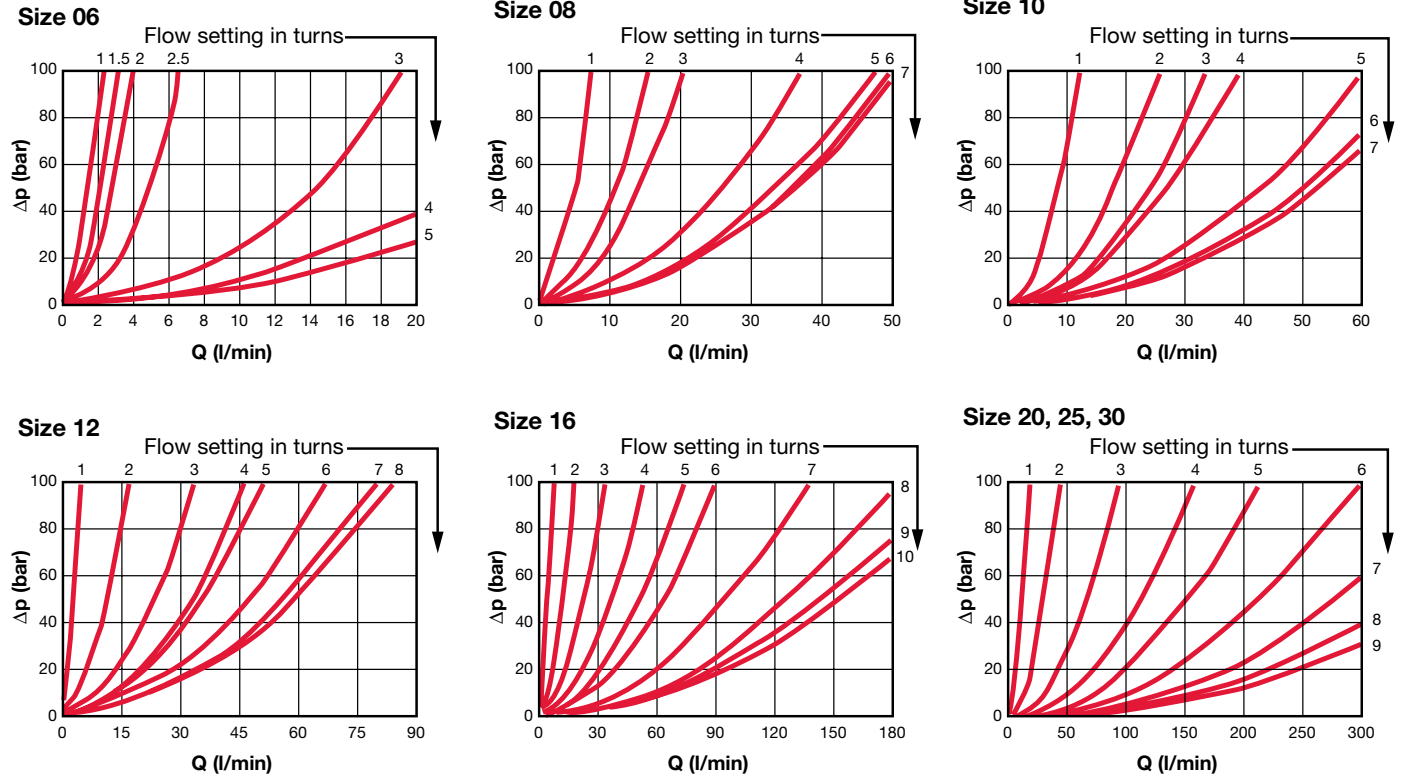
- S = Panel Mounting Kit (not available in sizes 20, 25, 30)

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

## Pressure Drop Curves

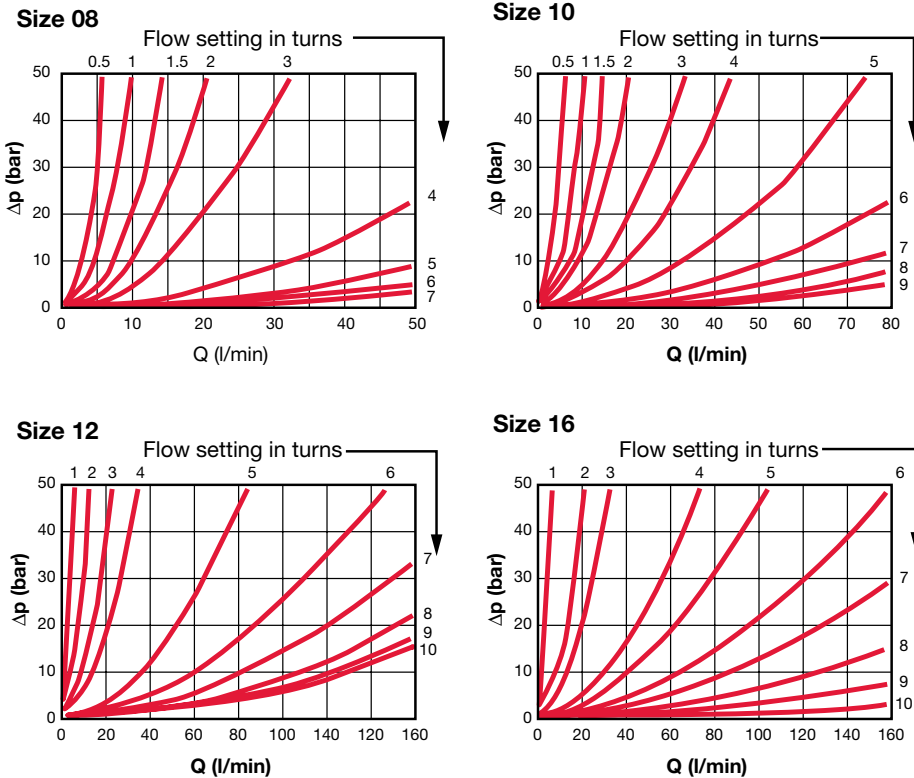
DV, DVP, DRV, DRVP Series

Flow Direction: A to B / Throttled Flow



## DVE Cartridge Flow Control Valves

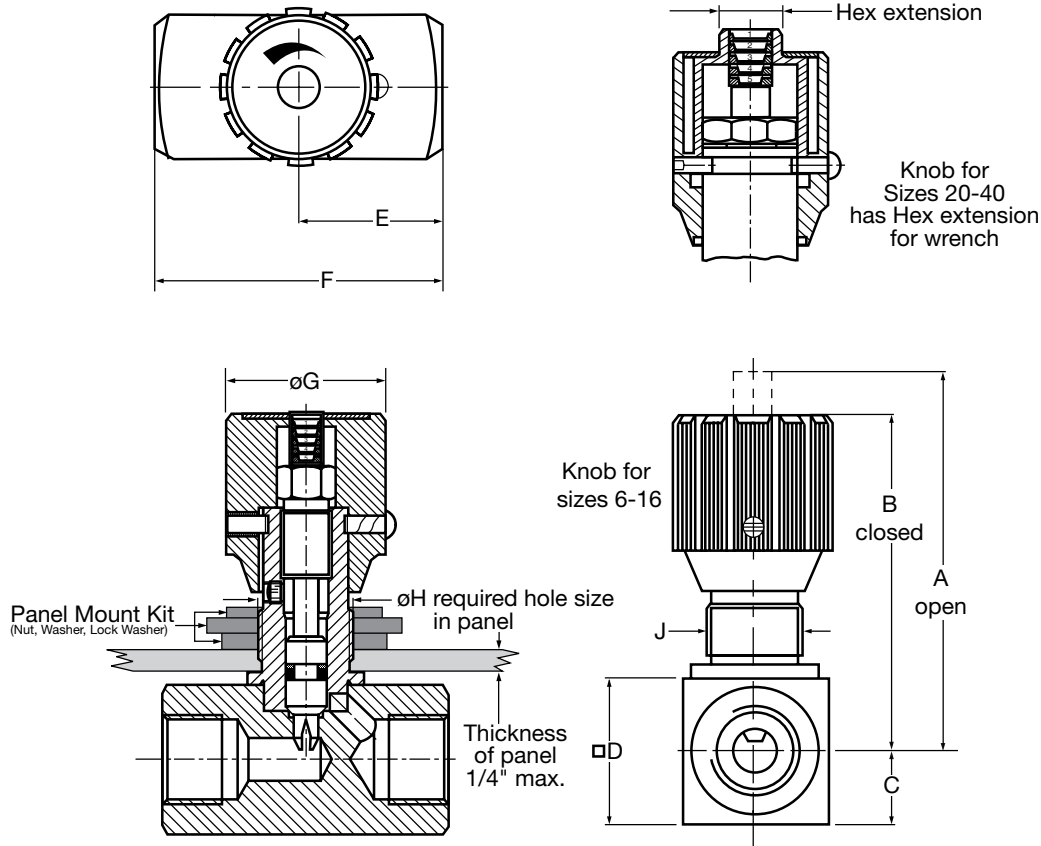
Flow Direction: A to B / Throttled Flow



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

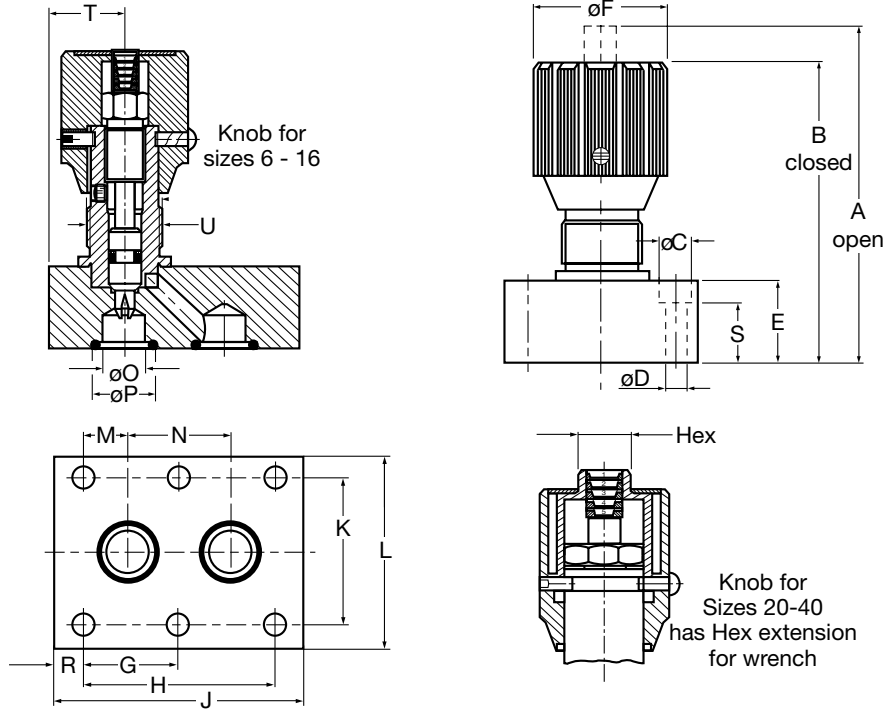
Dimensions are in inches/(mm) and lbs./kg.

\*Dependent upon valve and seal materials selected.



## Dimensions

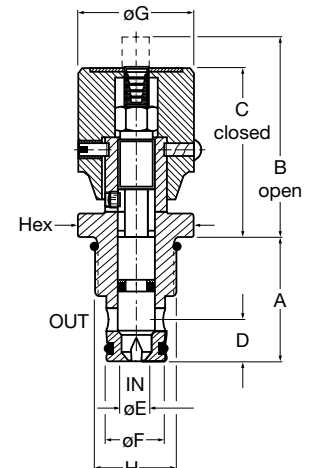
### DVP Manifold Mount Needle Valve



| Model Code | Nom. Size | A             | B             | øC          | øD            | E            | øF           | G <sup>(1)</sup> | H                | J              | K               | L              | M               | N               | øO              | øP              | R               | S            | T              | U <sup>(2)</sup> | Hex         | Wt.           |
|------------|-----------|---------------|---------------|-------------|---------------|--------------|--------------|------------------|------------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|----------------|------------------|-------------|---------------|
| DVP-06     | 1/8"      | 2.48<br>(63)  | 2.28<br>(58)  | .43<br>(11) | .26<br>(6.6)  | .63<br>(16)  | .94<br>(24)  | -                | .748<br>(19)     | 1.38<br>(35)   | 1.112<br>(28.5) | 1.63<br>(41.5) | 0.059<br>(1.5)  | .630<br>(16)    | 0.197<br>(5)    | 0.382<br>(9.7)  | 0.315<br>(8)    | 0.35<br>(9)  | 0.37<br>(9.5)  | Pg 7<br>thread   | -           | 0.44<br>(0.2) |
| DVP-08     | 1/4"      | 3.11<br>(79)  | 2.83<br>(72)  | .43<br>(11) | .26<br>(6.6)  | .79<br>(20)  | 1.14<br>(29) | -                | 1.378<br>(35)    | 1.87<br>(47.5) | 1.319<br>(33.5) | 1.81<br>(46)   | 0.177<br>(4.5)  | 1.004<br>(25.5) | 0.276<br>(7)    | 0.500<br>(12.7) | 0.256<br>(6.5)  | 0.51<br>(13) | 0.47<br>(12)   | Pg 11<br>thread  | -           | 0.88<br>(0.4) |
| DVP-10     | 3/8"      | 3.31<br>(84)  | 3.03<br>(77)  | .43<br>(11) | .26<br>(6.6)  | .98<br>(25)  | 1.14<br>(29) | -                | 1.319<br>(33.5)  | 2.01<br>(51)   | 1.496<br>(38)   | 2.01<br>(51)   | 0.165<br>(4.2)  | 1.004<br>(25.5) | 0.394<br>(10)   | 0.614<br>(15.6) | 0.335<br>(8.5)  | 0.71<br>(18) | 0.55<br>(14)   | Pg 11<br>thread  | -           | 1.3<br>(0.6)  |
| DVP-12     | 1/2"      | 3.90<br>(99)  | 3.50<br>(89)  | .43<br>(11) | .26<br>(6.6)  | .98<br>(25)  | 1.50<br>(38) | -                | 1.496<br>(38)    | 2.95<br>(75)   | 1.752<br>(44.5) | 2.26<br>(57.5) | 0.157<br>(4.0)  | 1.181<br>(30)   | 0.512<br>(13)   | 0.732<br>(18.6) | 0.728<br>(18.5) | 0.71<br>(18) | 0.89<br>(22.5) | Pg 16<br>thread  | -           | 2.2<br>(1.0)  |
| DVP-16     | 3/4"      | 4.45<br>(113) | 4.05<br>(103) | .55<br>(14) | .35<br>(9.0)  | 1.18<br>(30) | 1.50<br>(38) | 1.496<br>(38)    | 2.992<br>(76)    | 3.68<br>(93.5) | 2.126<br>(54)   | 2.76<br>(70)   | 0.433<br>(11)   | 2.126<br>(54)   | 0.669<br>(17)   | 0.965<br>(24.5) | 0.335<br>(8.5)  | 0.83<br>(21) | 0.77<br>(19.5) | Pg 16<br>thread  | -           | 3.7<br>(1.7)  |
| DVP-20     | 1"        | 6.5<br>(165)  | 5.83<br>(148) | .55<br>(14) | .35<br>(9.0)  | 1.77<br>(45) | 1.98<br>(49) | 1.870<br>(47.5)  | 3.740<br>(95)    | 4.37<br>(111)  | 2.362<br>(60)   | 3.01<br>(76.5) | 0.753<br>(19.1) | 2.244<br>(57)   | 0.866<br>(22)   | 1.201<br>(30.5) | 0.315<br>(8)    | 1.42<br>(36) | 1.24<br>(31.5) | Pg 29<br>thread  | 3/4<br>(19) | 8.0<br>(3.6)  |
| DVP-25     | 1 1/4"    | 6.5<br>(165)  | 5.83<br>(148) | .71<br>(18) | .45<br>(11.5) | 1.77<br>(45) | 1.93<br>(49) | 2.362<br>(60)    | 4.744<br>(120.5) | 5.63<br>(143)  | 2.992<br>(76)   | 3.94<br>(100)  | 0.819<br>(20.8) | 3.130<br>(79.5) | 1.122<br>(28.5) | 1.472<br>(37.4) | 0.433<br>(11)   | 1.34<br>(34) | 1.81<br>(46)   | Pg 29<br>thread  | 3/4<br>(19) | 12.1<br>(5.5) |
| DVP-30     | 1 1/2"    | 6.69<br>(170) | 6.02<br>(153) | .79<br>(20) | .55<br>(14)   | 1.97<br>(50) | 1.93<br>(49) | 2.815<br>(71.5)  | 5.630<br>(143)   | 6.73<br>(171)  | 3.622<br>(92)   | 4.53<br>(115)  | 0.937<br>(23.8) | 3.740<br>(95)   | 1.378<br>(35)   | 1.709<br>(43.4) | .591<br>(15)    | 1.46<br>(37) | 1.53<br>(39)   | Pg 29<br>thread  | 3/4<br>(19) | 16.6<br>(7.5) |

### DVE Cartridge Valve

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

## DRV & DRVP Series Flow Control Valves



DRV Series  
Inline Mounting

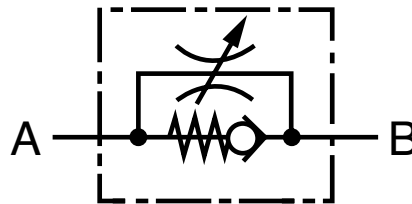


DRVP Series  
Manifold Mounting

### 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<br>(DRV + DRVP) | SAE (DRV only)<br>Tube Size | Thread Size  | NPTF (DRV Only)<br>Pipe Size | Pipe OD | BSPP (DRV Only)<br>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

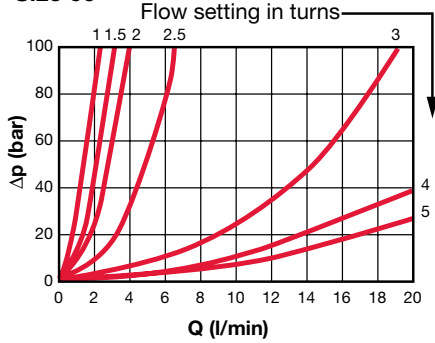
- S = Panel Mounting Kit (not available in sizes 20, 25, 30)

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

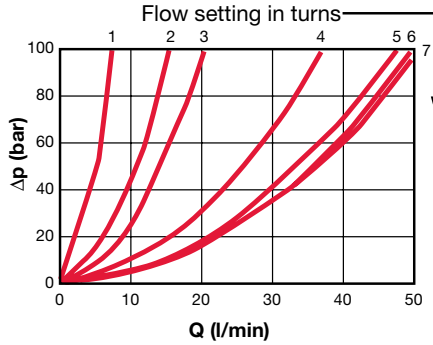
## Pressure Drop Curves

Flow Direction: A to B / Throttled Flow

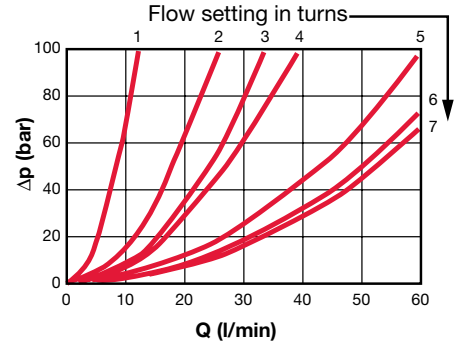
**Size 06**



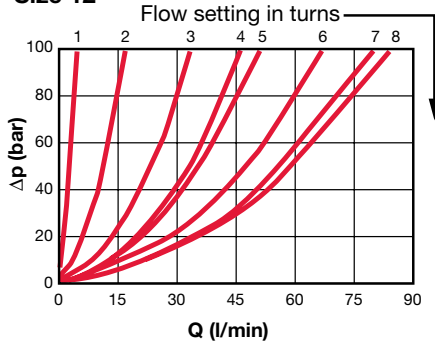
**Size 08**



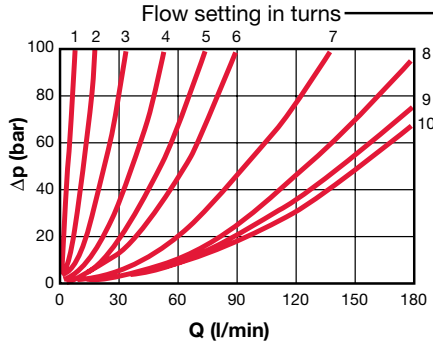
**Size 10**



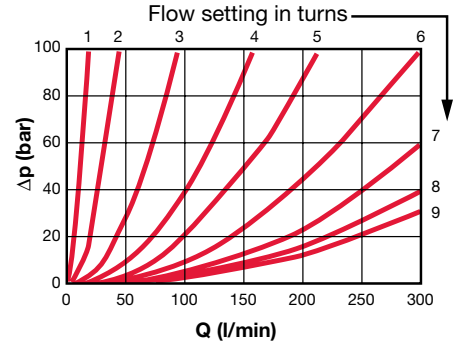
**Size 12**



**Size 16**

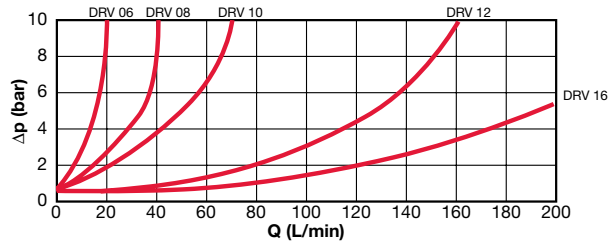


**Size 20, 25, 30**

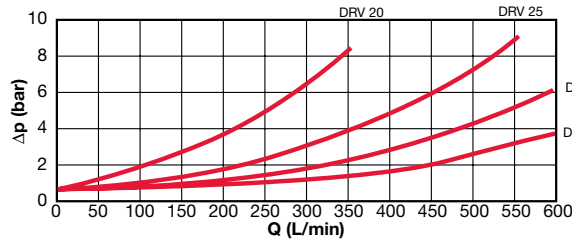


Flow Direction: B to A / Free Flow Through Check Valve

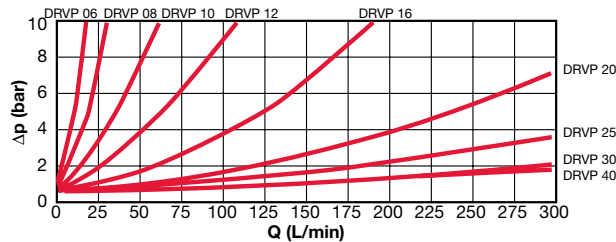
**DRV-06-01.X to DRV-16-01.X**



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



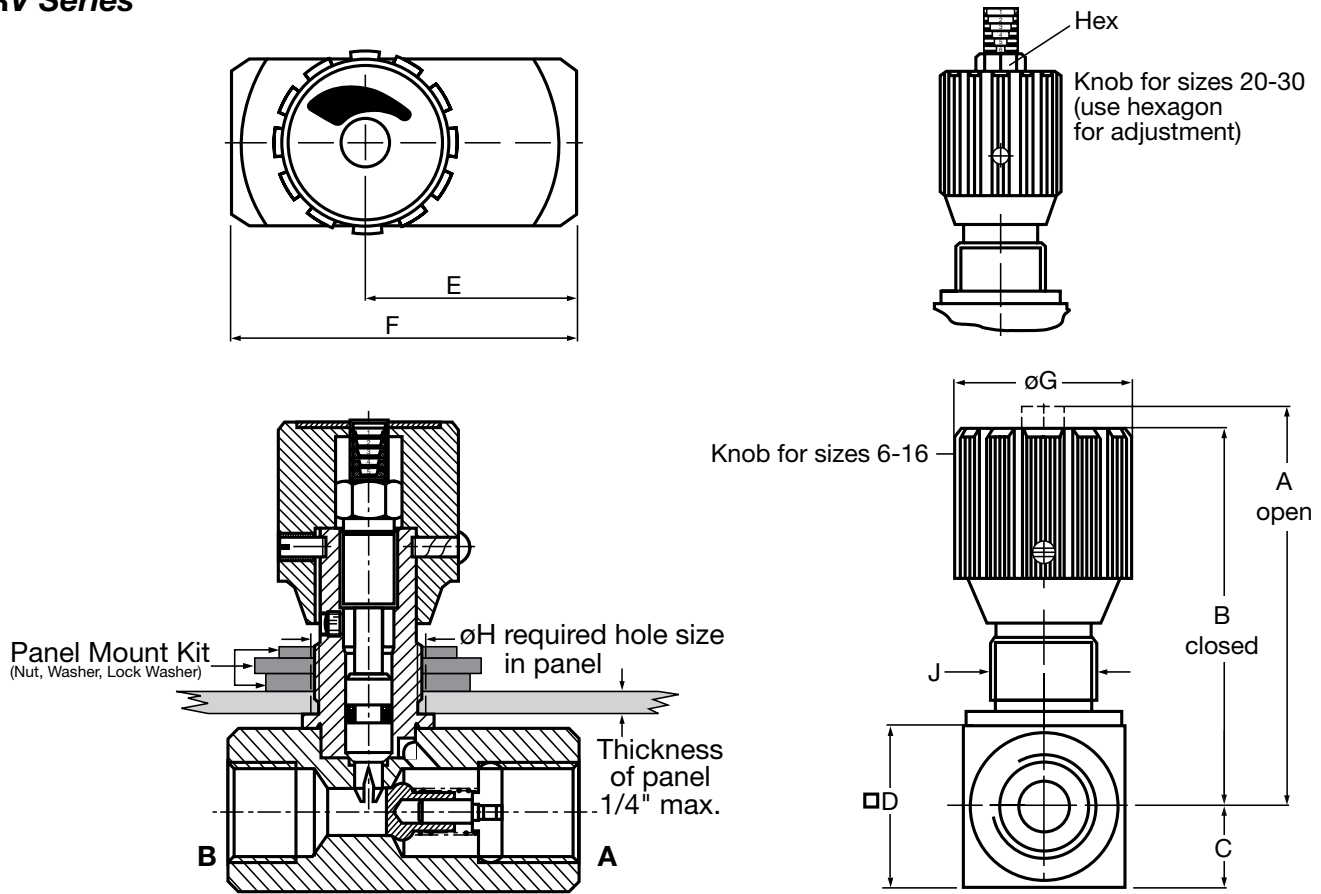
**DRVP-06-01.X to DRVP-40-01.X**



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 <sup>1)</sup> 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    |

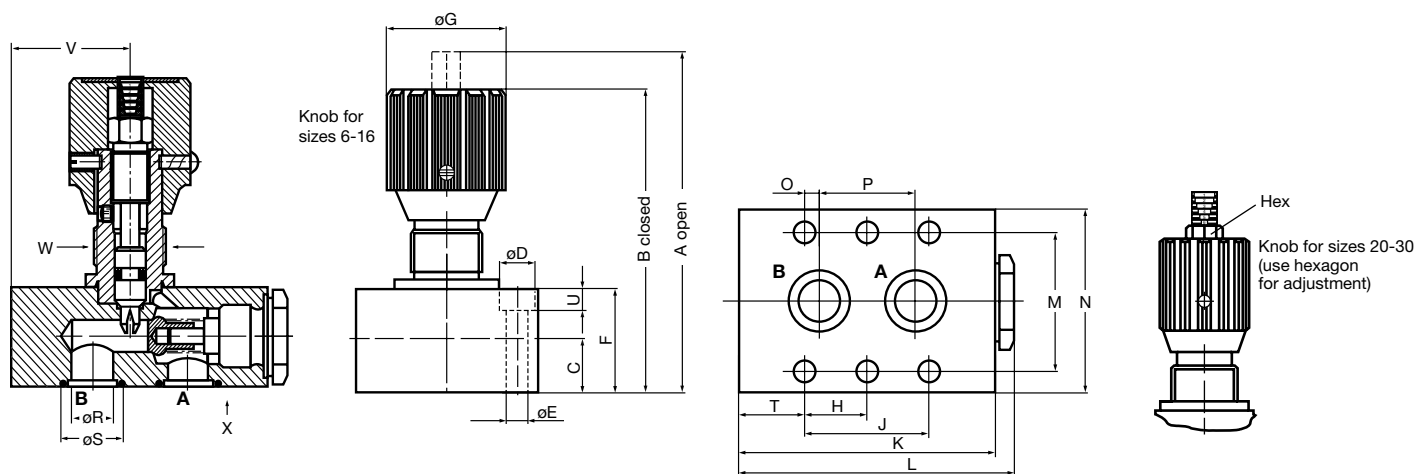
<sup>1)</sup> Pg style thread per DIN 40430

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.)

## Dimensions

### DRVP Series



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

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

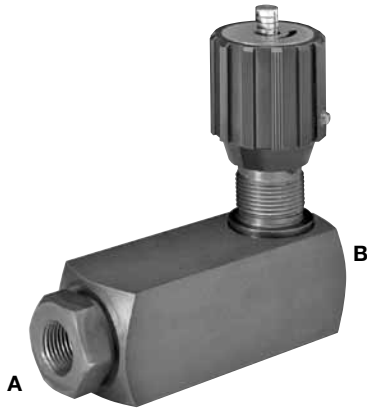
1) Only 4 mounting holes are used on sizes 06, 08, 10, & 12

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.)

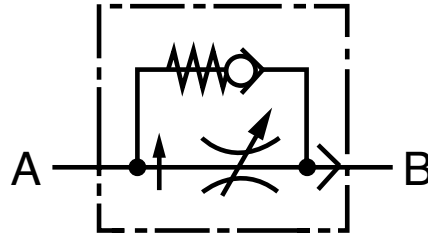
## SRVR Series Pressure Compensated Flow Control Valves



### 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



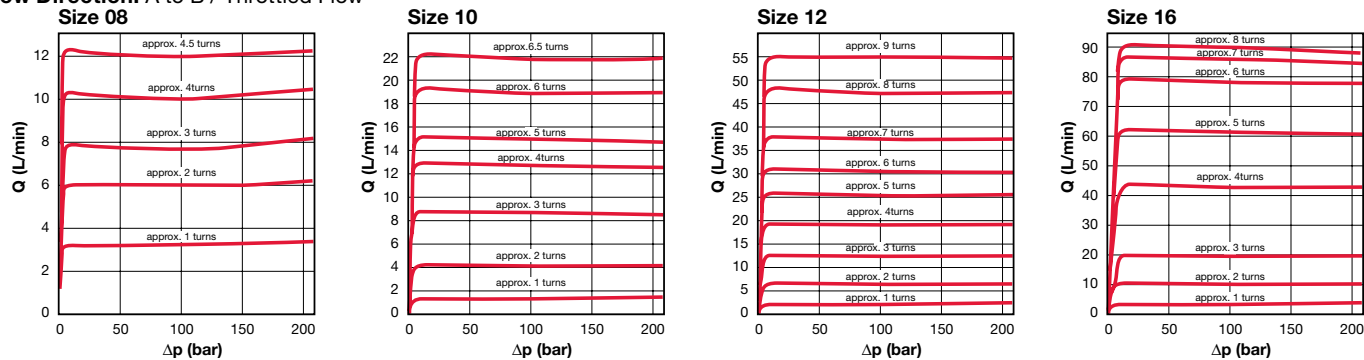
### Model Code

|  |  |                |             |             |             |               |            |
|--|--|----------------|-------------|-------------|-------------|---------------|------------|
|  |  |                | <b>SRVR</b> | <b>- 08</b> | <b>- 01</b> | <b>.X / 5</b> | <b>- S</b> |
| <b>Pressure Compensated Flow Control Valve</b> | _____  |                |             |             |             |               |            |
| SRVR =   | Flow Control Valve (with internal check valve) |                |             |             |             |               |            |
| <b>Nominal Size</b>                            | _____  |                |             |             |             |               |            |
|  | <b>NPTF Only</b>                               |                |             |             |             |               |            |
|  | <b>Pipe Size</b>                               | <b>Pipe OD</b> |             |             |             |               |            |
| 08 =   | 1/4"   | 0.540"         |             |             |             |               |            |
| 10 =   | 3/8"   | 0.675"         |             |             |             |               |            |
| 12 =   | 1/2"   | 0.840"         |             |             |             |               |            |
| 16 =   | 3/4"   | 1.050"         |             |             |             |               |            |
| <b>Housing Material</b>                        | _____  |                |             |             |             |               |            |
| 01 =   | Carbon Steel                                   |                |             |             |             |               |            |
| <b>Modification Number</b>                     | _____  |                |             |             |             |               |            |
| <b>Port Configuration</b>                      | _____  |                |             |             |             |               |            |
| 0 =  | BSPP to DIN 3852, Part 2 -X                    |                |             |             |             |               |            |
| 5 =  | NPTF (ANSI B1.20.3)                            |                |             |             |             |               |            |
| <b>Supplementary Details</b>                   | _____  |                |             |             |             |               |            |
| S =  | Panel Mounting Kit                             |                |             |             |             |               |            |

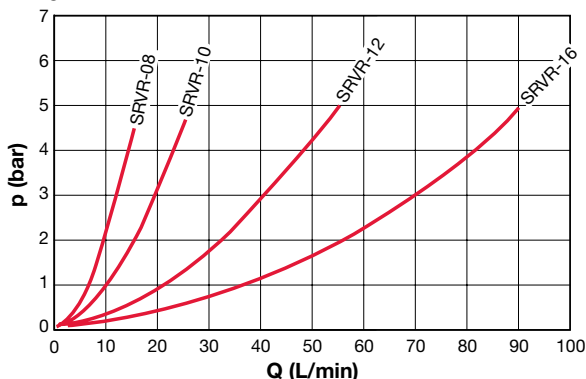
Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability  
Not all combinations are available

## Pressure Drop Curves

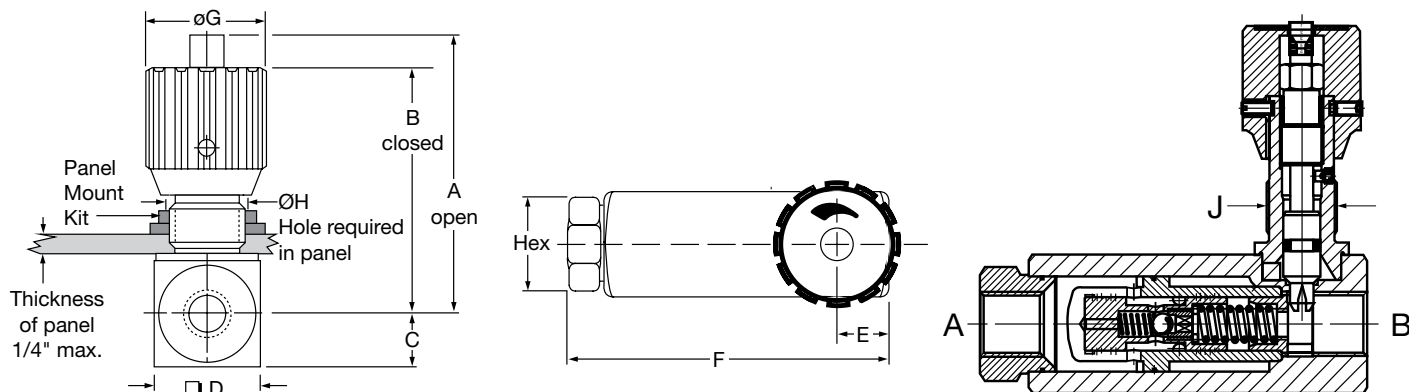
Flow Direction: A to B / Throttled Flow



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



## Dimensions



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

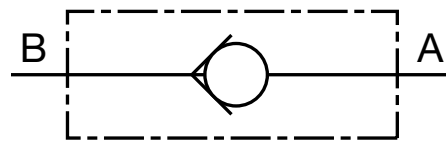


**RVP Series**  
Manifold Mounting

### 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

|                               |  |                    |                                    |                                      |
|-------------------------------|--|--------------------|------------------------------------|--------------------------------------|
|                               |  |                    | <b>RV - 06 - 01 .X / 5 - 25</b>    |                                      |
| <b>Check Valve</b>            |  |                    |                                    |                                      |
| RV =                          | Inline Mounting  |                    |                                    |                                      |
| RVP =                         | Manifold Mounting  |                    |                                    |                                      |
| <b>Nominal Sizes</b>          |  |                    |                                    |                                      |
| <b>Nom Size</b><br>(RV + RVP) | <b>SAE (RV Only)</b><br>Tube Size                            | <b>Thread Size</b> | <b>NPTF (RV Only)</b><br>Pipe Size | <b>Pipe OD</b>                       |
| 06 =                          | -2   | 5/16-24 UNF        | 1/8"                               | 0.405"                               |
| 08 =                          | -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"                               |
| 16 =                          | -12  | 1-1/16-12 UN       | 3/4"                               | 1.050"                               |
| 20 =                          | -16  | 1-5/16-12 UN       | 1"                                 | 1.315"                               |
| 25 =                          | -20  | 1-5/8-12 UN        | 1-1/4"                             | 1.660"                               |
| 30 =                          | -24  | 1-7/8-12 UN        | 1-1/2"                             | 1.900"                               |
| 40 =                          | -32  | 2-1/2-12 UN        | 2"                                 | 2.375"                               |
|                               |  |                    |                                    | <b>BSPP (RV Only)</b><br>Thread Size |
|                               |  |                    |                                    | G1/8                                 |
|                               |  |                    |                                    | G1/4                                 |
|                               |  |                    |                                    | G3/8                                 |
|                               |  |                    |                                    | G1/2                                 |
|                               |  |                    |                                    | G3/4                                 |
|                               |  |                    |                                    | G1                                   |
|                               |  |                    |                                    | G1 1/4                               |
|                               |  |                    |                                    | G1 1/2                               |
|                               |  |                    |                                    | G2                                   |
| <b>Housing Material</b>       |  |                    |                                    |                                      |
| 01 =                          | Carbon Steel   |                    |                                    |                                      |
| <b>Modification Number</b>    |  |                    |                                    |                                      |
| <b>Port Configuration</b>     |  |                    |                                    |                                      |
| (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 |                    |                                    |                                      |
| <b>Cracking Pressure</b>      |  |                    |                                    |                                      |
| (omit) =                      | 7 psi (standard)   |                    |                                    |                                      |
| 25 =                          | 25 psi   |                    |                                    |                                      |
| 65 =                          | 65 psi   |                    |                                    |                                      |

Note: Not recommended for high-cycle applications!

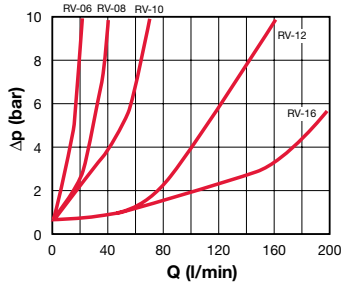
Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability  
Not all combinations are available



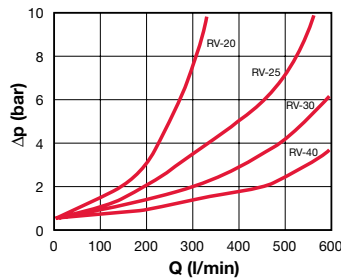
## Pressure Drop Curves

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

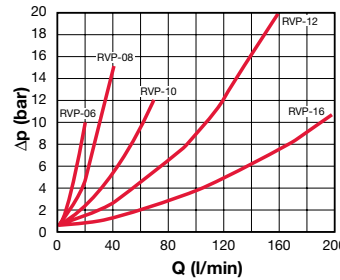
RV-06... to RV-16...



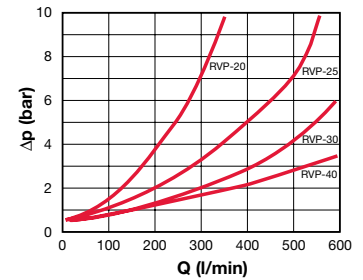
RV-20... to RV-40...



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



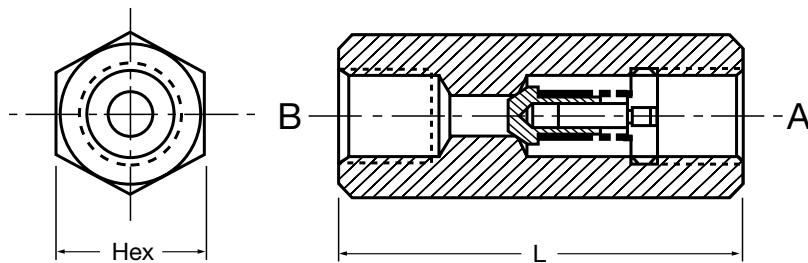
RVP-20... to RVP-40...



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 |              | Hex          | L          | Weight     |
|------------|-----------|--------------|--------------|------------|------------|
|            | NPT       | SAE          |              |            |            |
| 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 <sup>1)</sup> | 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).

## DV, DRV, & RV Series

**Stainless Steel Flow Control Valves - Available with BSPP Ports**



**DV Series**  
In-line Mounting  
Needle Valves



**DRV Series**  
In-line Mounting  
Flow Control Valves



**RV Series**  
In-line Mounting  
Check valves

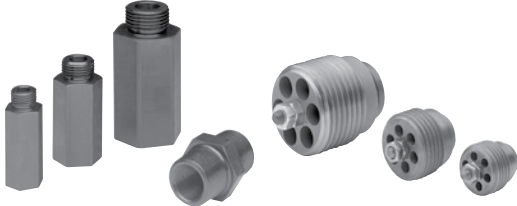
| Model Code    | Part Number | Dimensions                              |
|---------------|-------------|---|
| RV-06-30.X/0  | 00705859    | Same as Standard Product<br>See Page 53 |
| RV-08-30.X/0  | 00705861    |   |
| RV-10-30.X/0  | 00705863    |   |
| RV-12-30.X/0  | 00705865    |   |
| RV-16-30.X/0  | 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    |   |
| 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<br>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*

## Overview

### Hose Break Valves

RB Series & RBE Series (see pages 57 - 60)



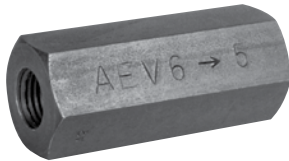
### Shuttle Valves

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)

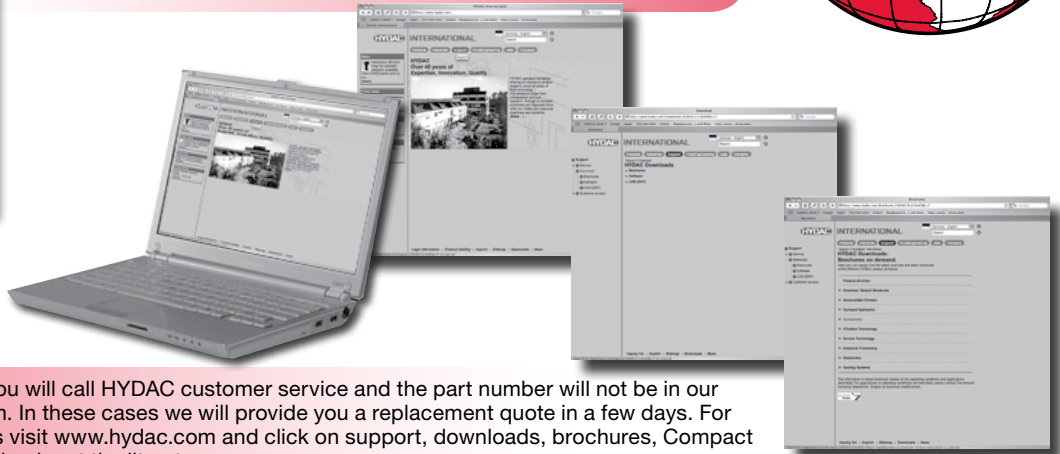


## Global Replacement Business

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](http://www.hydac.com) and click on support, downloads, brochures, Compact Hydraulics and check out the literature.

## RB Series Hose Break Valves



**RB...**  
Housing Valves

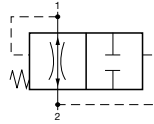
**RBE...**  
Cartridge Valves

### 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

### Hydraulic Symbol



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

### 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<sup>3</sup> / 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<br>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   | Cartridge Valve in Housings | NPT Port                 | NPT Male Connector           | NPT 3/8 or NPT 1/2  | -          | NPT 1         |
| XX   | Cartridge Valve in Housings | SAE Straight Thread Port | SAE Straight Thread Port     | -   | -          | SAE 1 1/16-12 |
| CC   | Cartridge Valve in Housings | NPT Male Connector       | NPT Male Connector           | -   | NPT 3/4    | -             |

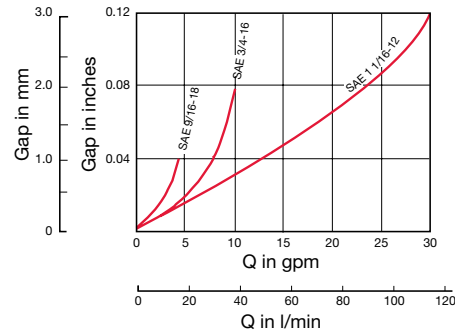
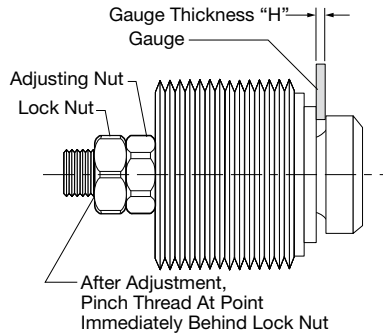
| Closing Flow Rate (min - max)<br>(from 2 to 1)  | GPM  | 1-4  | 1.6-12 | 6.5-32 |
|---|--|------|--------|--------|
|   | L/min  | 4-15 | 6-45   | 25-120 |
| To avoid the activation of hose break valves on flow surges, the closing flow rate should be at least 20% above the normal flow rate. | Valves 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. |      |        |        |

## 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.

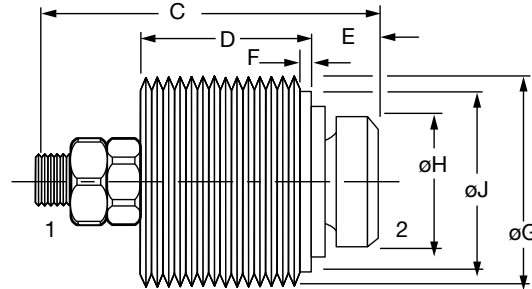
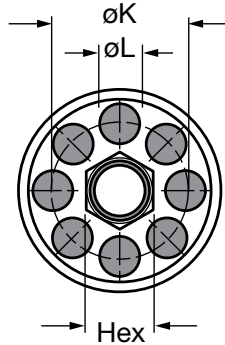


The adjustment curves are valid for cartridge RBE...and for all housing valves RB... in accordance with "Type and Size Codes" charts on previous page. For model RB... the cartridge must be removed from the housing for adjustment.

See special tool for installation and removal on page 60.

## Dimensions

### Cartridges

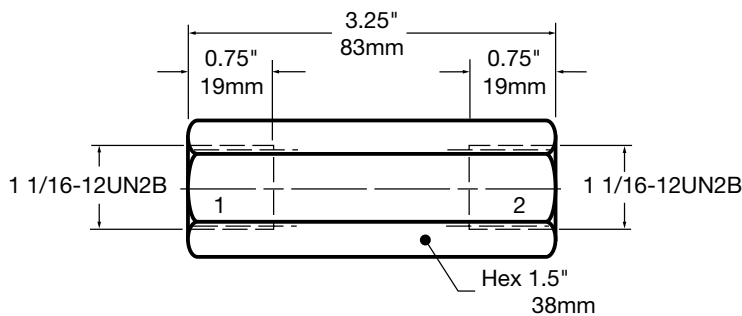


| Valve Type     | C             | D               | E              | F             | øG              | øH             | øJ              | øK            | øL             | Hex            |
|----------------|---------------|-----------------|----------------|---------------|-----------------|----------------|-----------------|---------------|----------------|----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

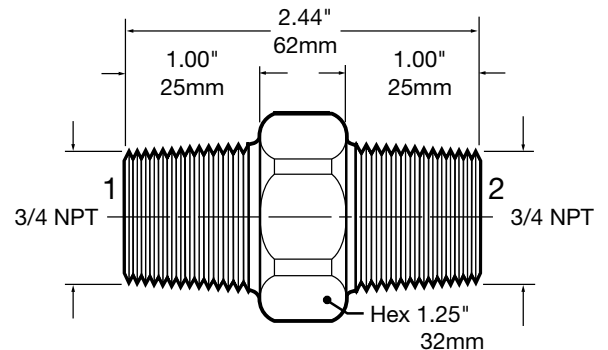
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions are in inches/(mm) and lbs./(kg.)

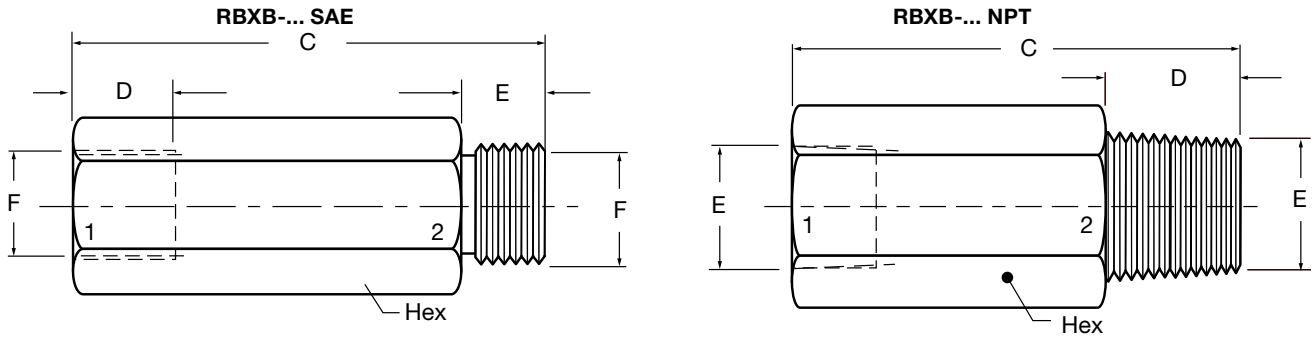
### RBXX-SAE 1-1/16-12



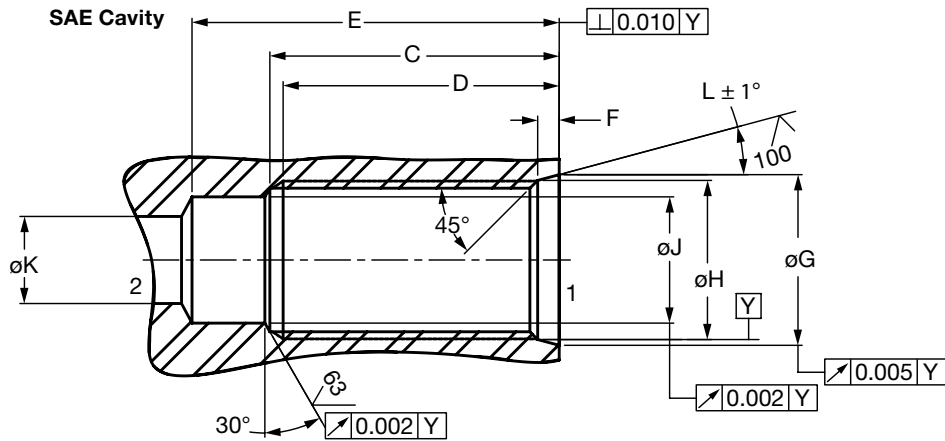
### RBCC-NPT 3/4 Housing Valve



## Dimensions



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



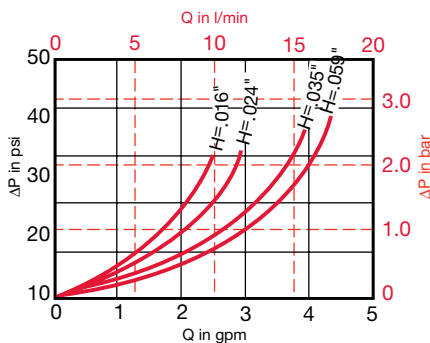
| Housing Type   | C     | D     | E    | F     | øG    | øH              | øJ    | øK Min | L   |
|----------------|-------|-------|------|-------|-------|-----------------|-------|--------|-----|
| RBE-SAE 9/16   | 1.250 | 1.188 | 1.56 | 0.106 | 0.618 | 9/16"-18UNF-2B  | 0.435 | 0.297  | 12° |
| RBE-SAE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

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.

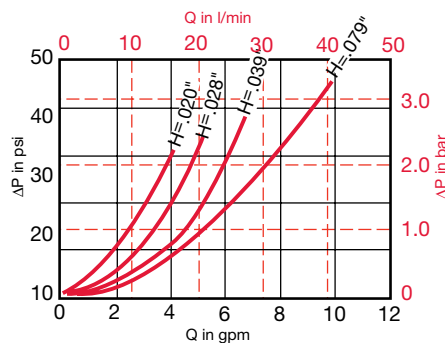
## Nominal Flow Curves

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.

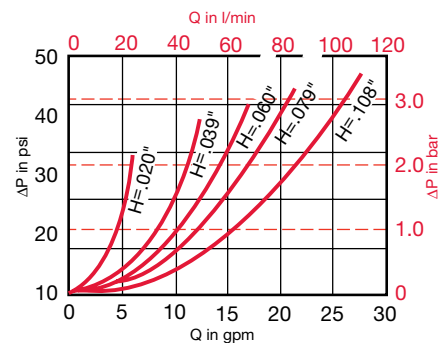
RBE-SAE 9/16 - 18



RBE-SAE 3/4 - 16



RBE-SAE 1-1/16 - 12



## Engineering Data

|                                   |  |  |
|-----------------------------------|--|--|
| <b>Design</b>                     | Flat Seat Valve  |  |
| <b>Mounting Method</b>            | RBE  | Cartridge  |
|                                   | RB..   | Housing Valve for In-line Installation                             |
| <b>Connection</b>                 | Refer to charts on page 37                                   |  |
| <b>Mounting Position</b>          | Optional   |  |
| <b>Direction of Flow</b>          | 1 to 2   | Free Flow  |
|                                   | 2 to 1   | Free Flow; valve automatically closes if flow exceeds preset level |
| <b>Fluid</b>                      | General purpose hydraulic oil. Consult HYDAC for other media |  |
| <b>Operating Pressure Ratings</b> | P Max:   | 5000 psi (350 bar)   |
|                                   | P Min:   | 145 psi / 10 bar   |
| <b>Fluid Temperature Range</b>    | -4° to 176°F (-20° to 80°C)                                  |  |

## Weights

|                         |             |
|-------------------------|-------------|
| <b>RBE</b>              | <b>lbs.</b> |
| SAE 9/16-18             | 0.02        |
| SAE 3/4-16              | 0.04        |
| SAE 1 1/16-12           | 0.13        |
| <b>RBXB</b>             | <b>lbs.</b> |
| SAE 9/16-18<br>3/8 NPTF | 0.17        |
| SAE 3/4-16<br>1/2 NPTF  | 0.24        |
| SAE 1 1/16-12<br>1 NPTF | 0.88        |
| <b>RBXX</b>             | <b>lbs.</b> |
| SAE 1 1/16-12           | 0.92        |
| <b>RBCC</b>             | <b>lbs.</b> |
| 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?

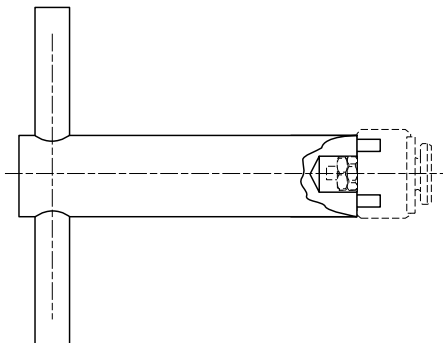
The hose break valve is designed to only be closed in an emergency situation. These valves should not be cycled (opened and closed) with the system. Cycling the valve and/or excessive vibrations will lead to premature failure of the valve components.

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



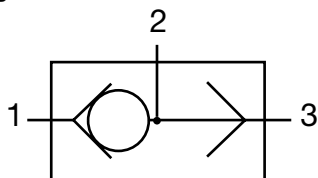
### Model Code

WVE-1/2-20UNF-0

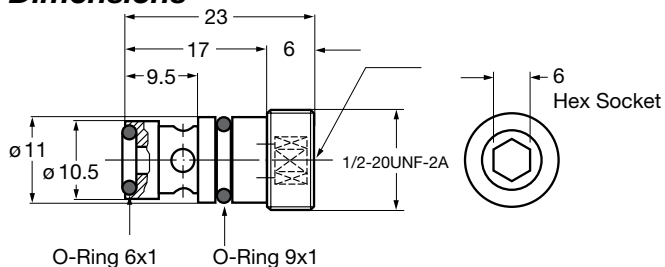
### Part Number

00710128

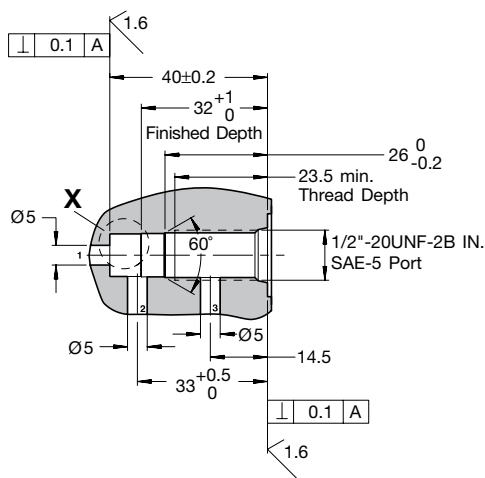
### Hydraulic Symbol



### Dimensions



### Cavity Diagram



### 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)

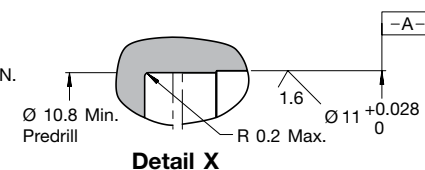
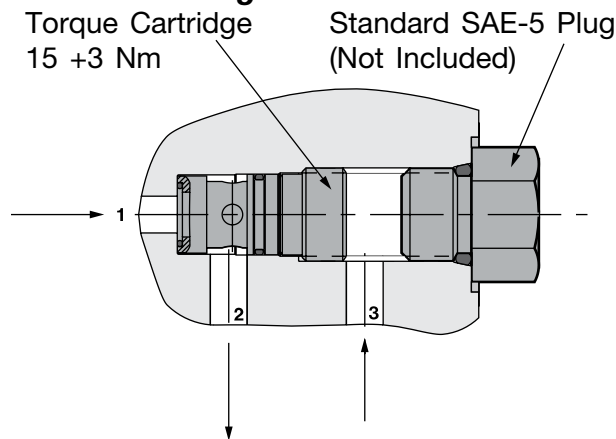
#### Cross-Over Effect on Shut-off

- negligible

#### Flow Rate

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

### Installation Diagram



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



## AEV Series Automatic Air Vent Valves



### Model Code

AEV - 6 / 5

### Part Number

00230223

### 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.

### 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.

### Technical Data

#### Operating Pressure Range

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

#### Material

- Carbon Steel

#### Operating Flow Range

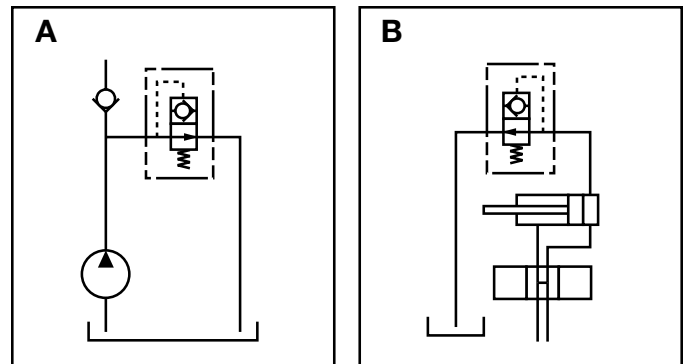
- Q min 0.25 gpm (1 l/min)
- Q max 15 gpm (57 l/min)

to achieve higher flow rates, parallel connection is possible

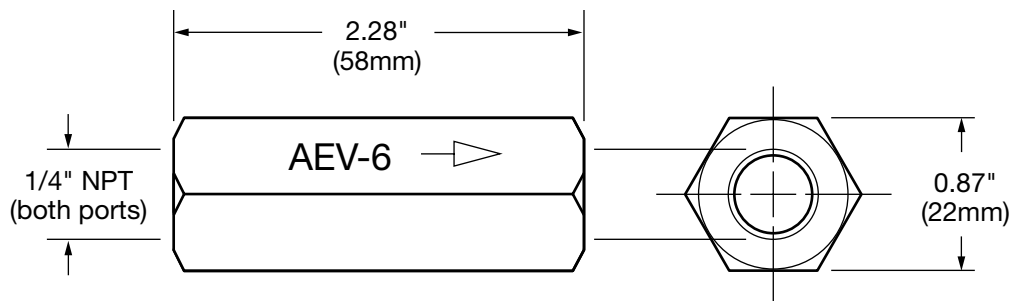
### Mounting Positions

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)

## 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 mm<sup>2</sup>/s to 420 mm<sup>2</sup>/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

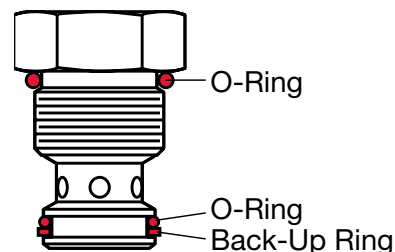
#### Includes

2 O-rings

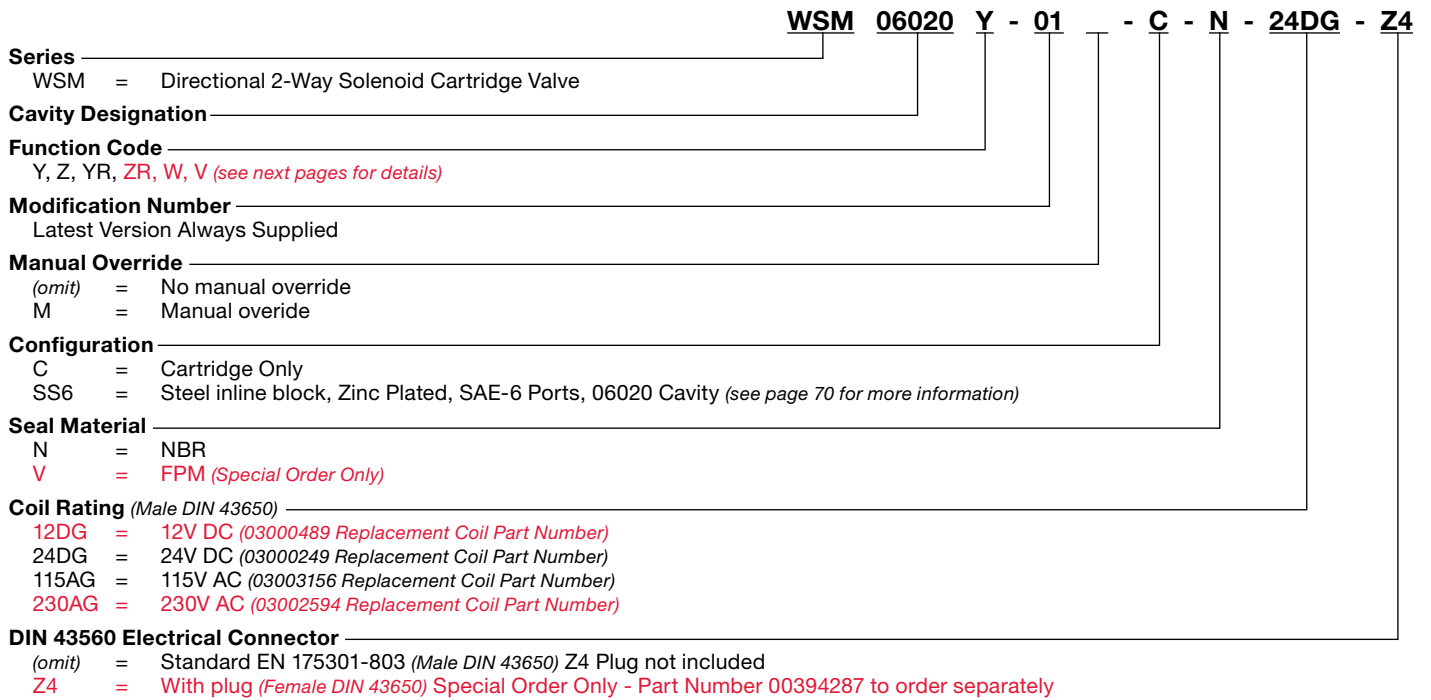
1 Back-up Ring

**NBR:** Part #03119017

**FPM:** Part #02083918

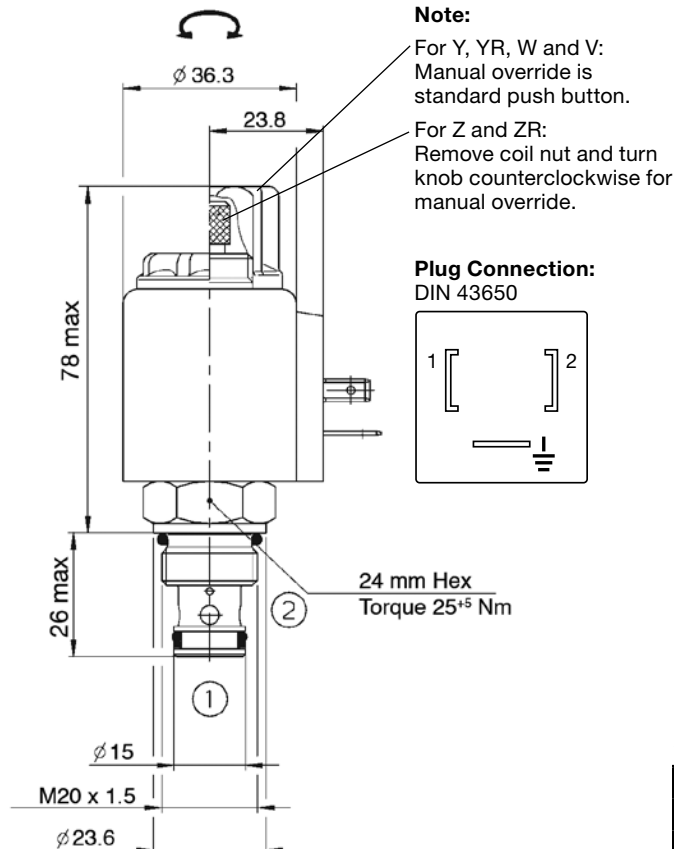


## Model Code

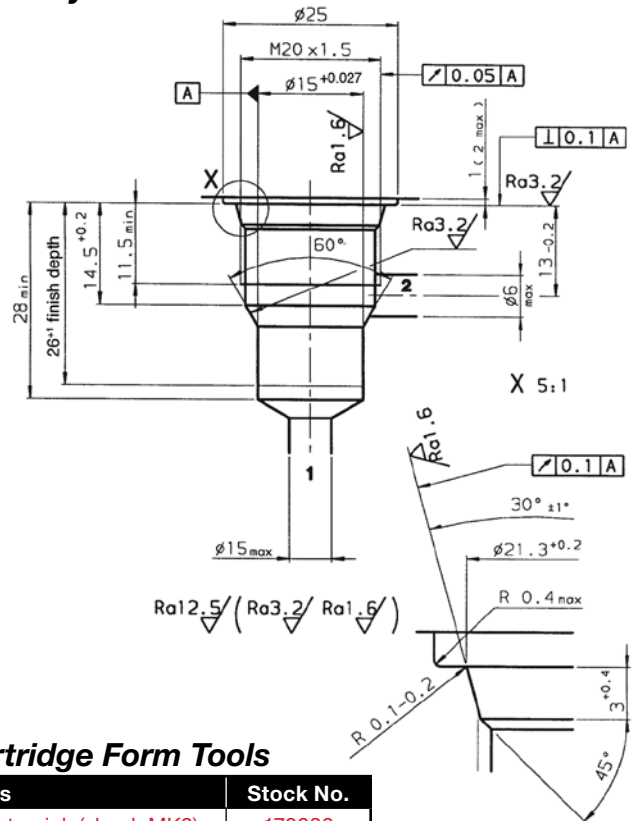


Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability  
Not all combinations are available

## Dimensions



## Cavity 06020



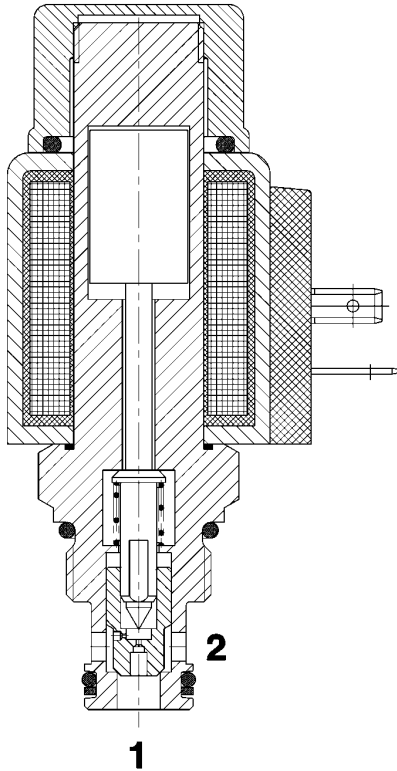
## Cartridge Form Tools

| 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

## WSM06020Y-01

Normally open, Uni-Directional

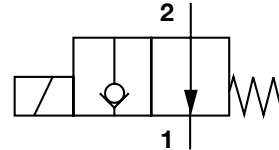


When the solenoid coil is not energized there is free flow through the valve from port 2 to port 1. Flow from port 1 to port 2 is severely restricted in this mode. When the solenoid coil is energized the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve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

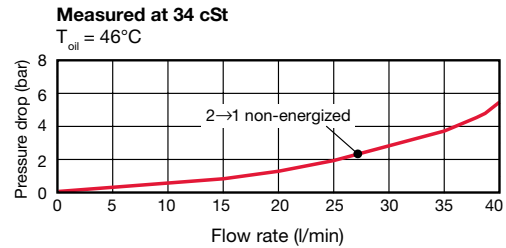
### Switch Time

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

### Hydraulic Symbol

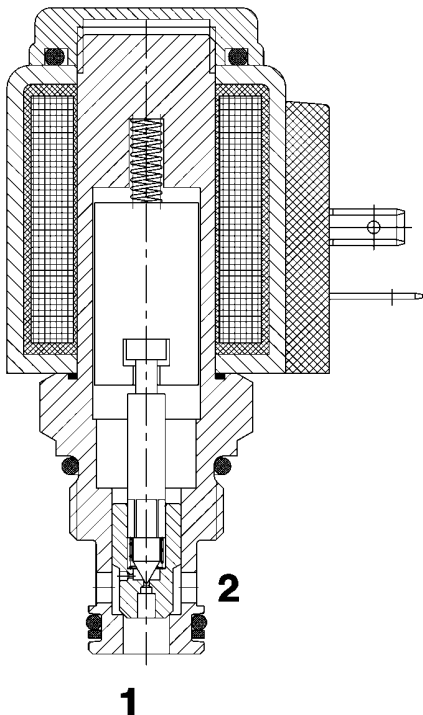


### Pressure Drop



## WSM06020Z-01

Normally closed, Uni-Directional

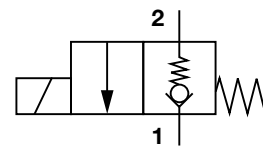


When the solenoid coil is not energized the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve. The valve spool opens at a differential pressure of approx. 1.5 bar (check function). When the solenoid coil is energized, there is free flow through the valve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

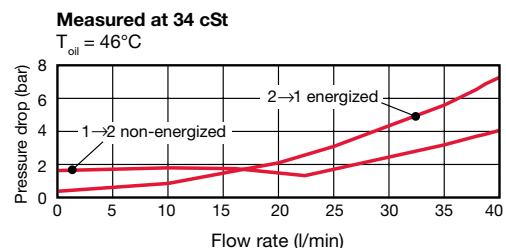
### Switch Time

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.

## WSM06020YR-01

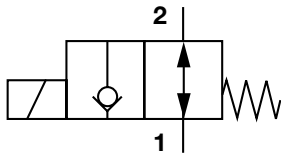
Normally open, with reverse flow

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 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).

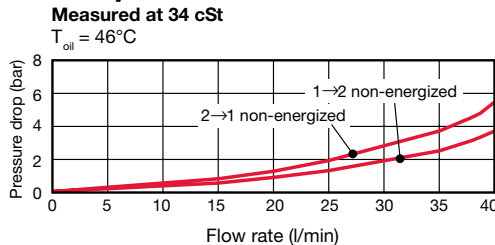
### Switch Time

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

### Hydraulic Symbol



### Pressure Drop



## WSM06020V-01

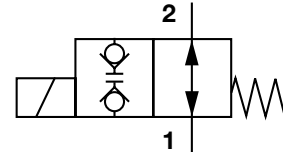
Normally open, Bi-directional

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.

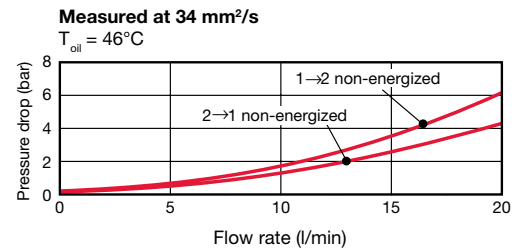
### Switch Time

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

### Hydraulic Symbol



### Pressure Drop



## WSM06020ZR-01

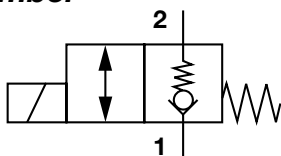
Normally closed, with reverse flow

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.

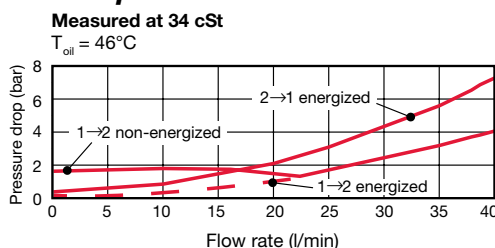
### Switch Time

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

### Hydraulic Symbol



### Pressure Drop



## WSM06020W-01

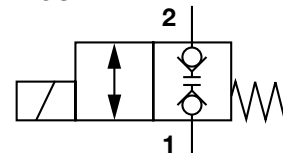
Normally closed, Bi-directional

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.

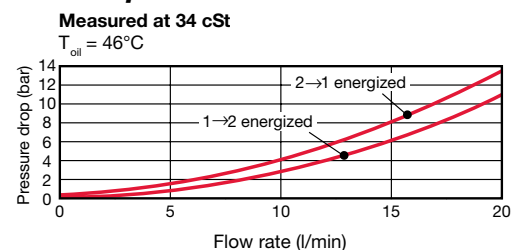
### Switch Time

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



### Specifications

#### Maximum Operating Pressure

7,000 psi (500 bar)  
 $P1 \geq P2 \geq P3$

#### 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

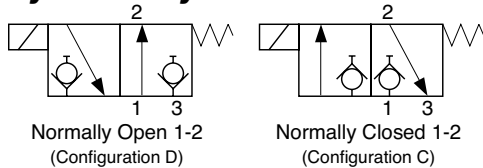
#### Switch Time

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

### 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



#### Connections

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

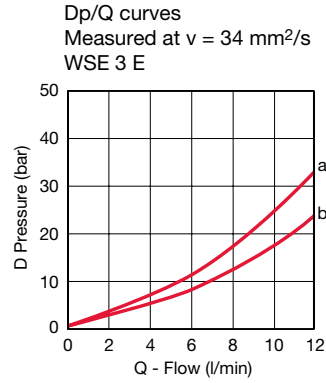
### Model Code

|  |  |
|--|--|
| <p><b>Directional Control Valve</b> ————— <u>WSE</u></p> <p><b>Size</b> ————— <u>3</u></p> <p><b>Type of Connection</b> ————— <u>E</u></p> <p><b>Type</b> ————— <u>0</u></p> <p><b>Configuration</b> ————— <u>C</u></p> <p><b>Modification Number</b> (latest version always supplied) ————— <u>. X /</u></p> <p><b>Solenoid</b> ————— <u>G12 - Z4</u></p> <p><b>Electrical Connections</b> ————— <u>- 1/4 NPT</u></p> <p><b>Line Body</b> —————</p> <p>(omit) = None (if E was chosen in Type of Connection above)</p> <p>SAE-4 = SAE 4 (if R was chosen in Type of Connection above)</p> | <p><b>3</b> = 3 gpm (12 l/min)</p> <p><b>E</b> = Cartridge Valve Only</p> <p><b>R</b> = Valve with Line Body</p> <p><b>C</b> = Normally Closed Port 1-2</p> <p><b>D</b> = Normally Open Port 1-2</p> <p><b>G12</b> = 12 VDC (Replacement Coil Kit - P/N 00715001 - Coil Kit G12-Z4)</p> <p><b>G24</b> = 24 VDC (Replacement Coil Kit - P/N 00715003 - Coil Kit G24-Z4)</p> <p><b>W110</b> = 110 VAC (Replacement Coil Kit - P/N 00715033 - Coil Kit W110-ZW4)</p> <p><b>W230</b> = 230 VAC (Replacement Coil Kit - P/N 00715037 - Coil Kit W230-ZW4)</p> <p><b>Z4</b> = DIN 43650 Connector (standard)</p> |
|--|--|

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

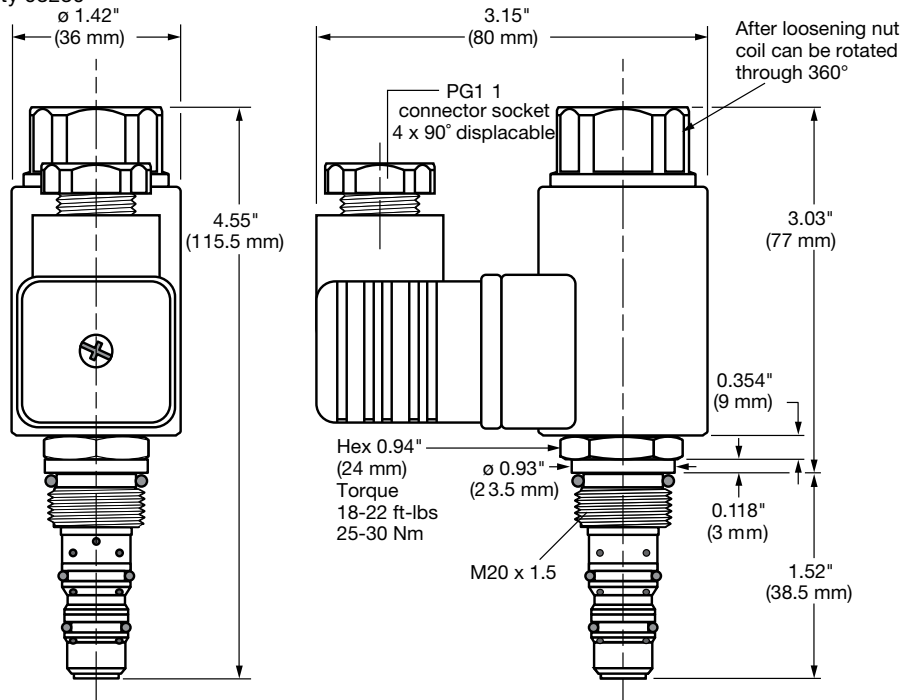
## Pressure Drop vs. Flow

| 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     |

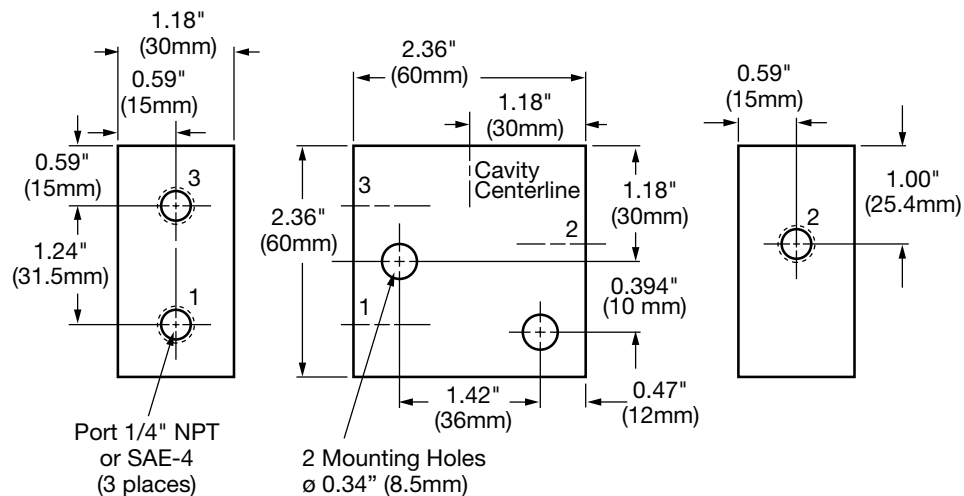


## Dimensions

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

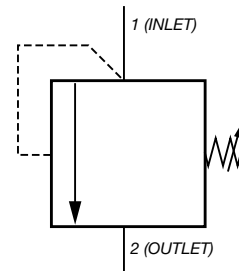
#### Cavity

06020 Cavity (see page 64 for more information)

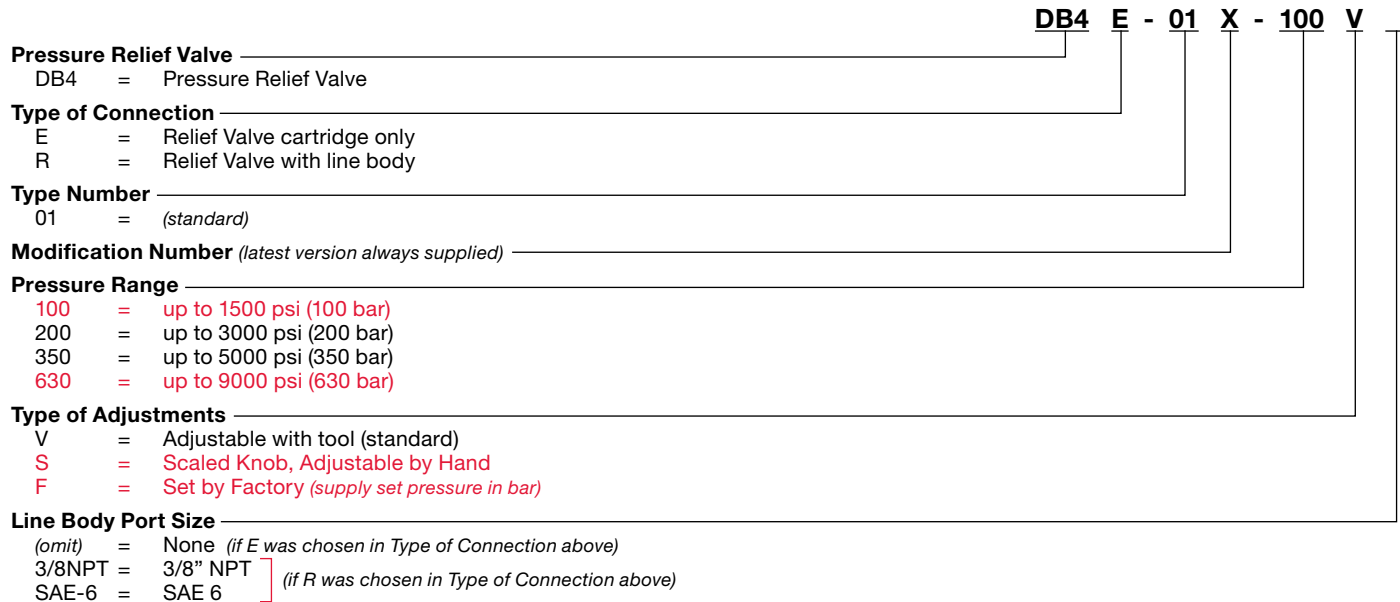
### Features

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

### Hydraulic Symbol



### Model Code

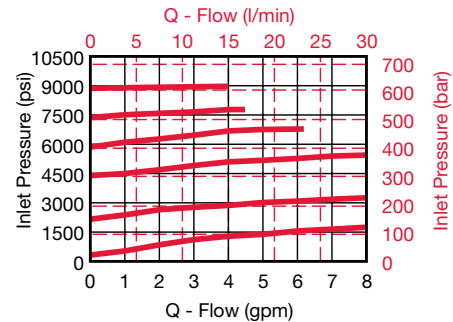
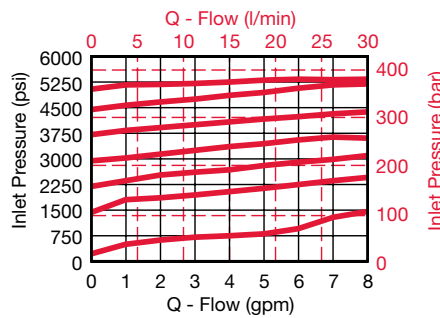
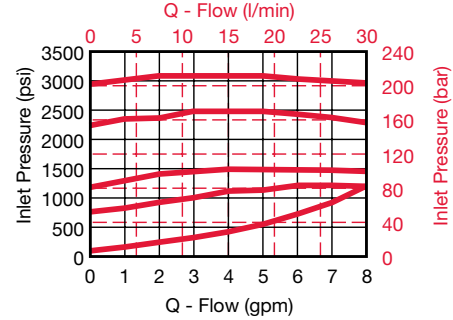
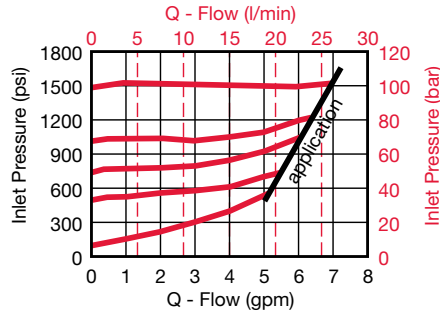


Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability  
Not all combinations are available



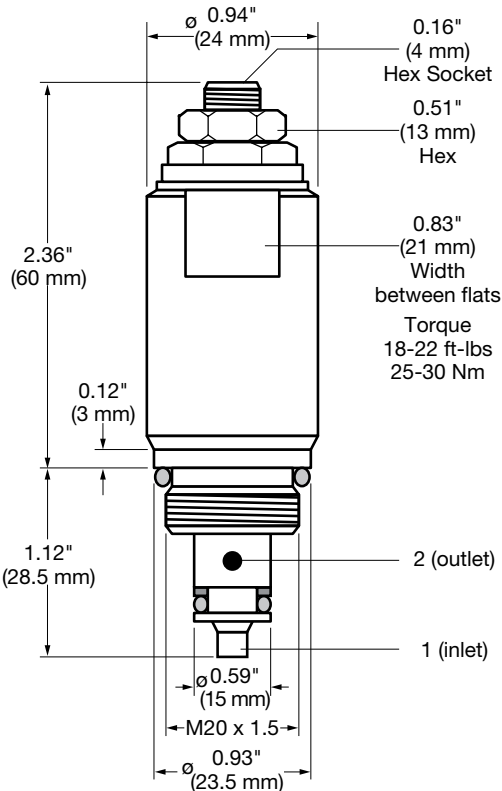
## Adjustment Curves for Nominal Flow Rates

Viscosity = 170 SUS @ 120°F

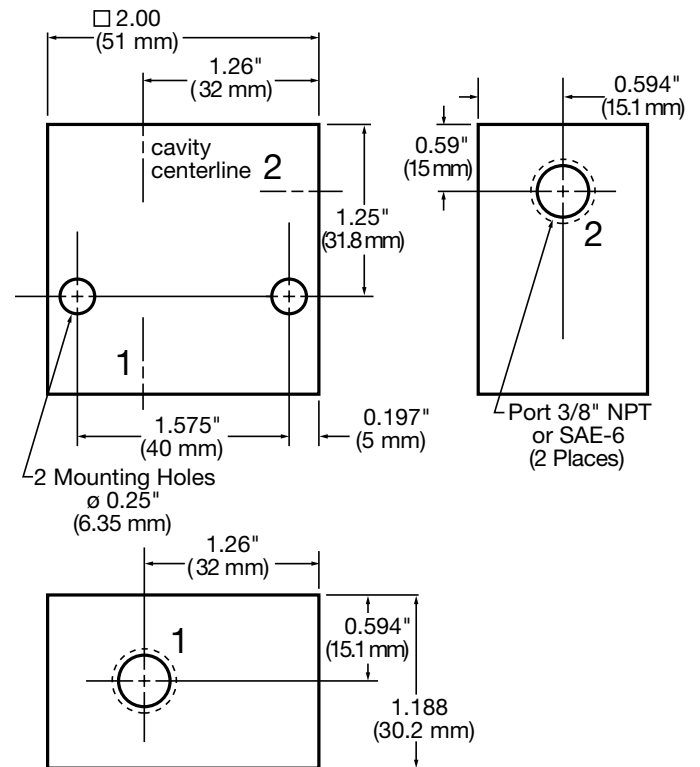


## Dimensions

### 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:

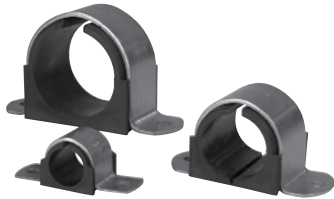
#### DIN 3015 Clamps

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



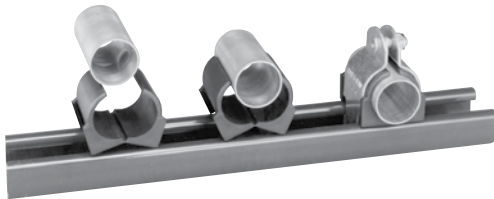
#### Flat Cushion Clamps

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



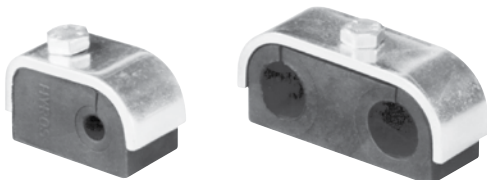
#### Cushion Clamps

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.



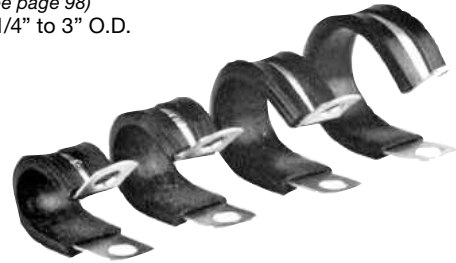
#### Oval Clamps

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.



#### Clamp Sample Kit

P/N 00265928

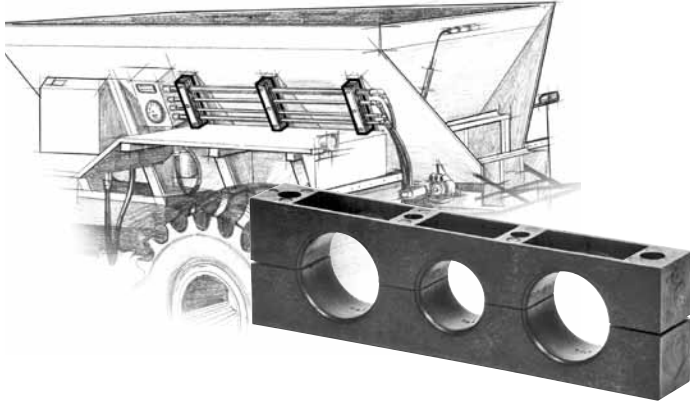


## Custom Solutions

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**.

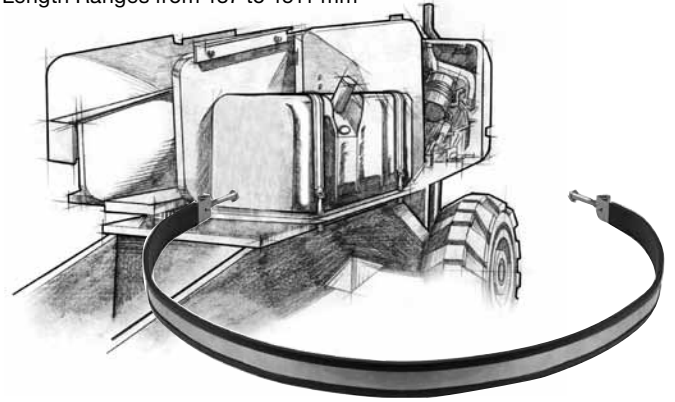
### Series Strip Clamps

**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



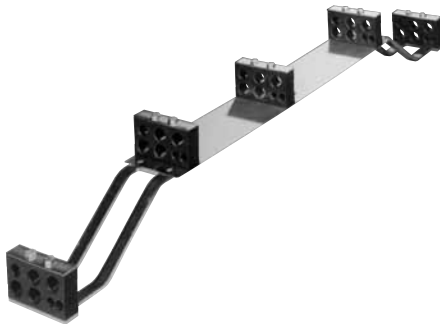
### Series Strip Clamp & Custom Bracketry



### Custom Molded Hose Bundle



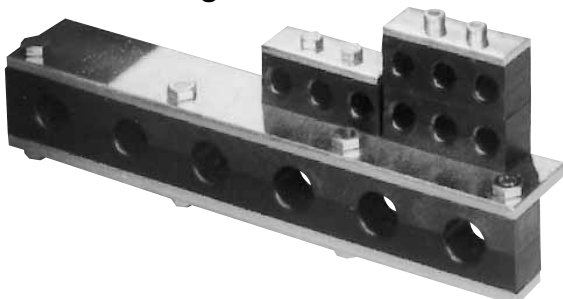
### Stacking Series Strip Run



### Cylinder / Tube Clamp



### Series Strip Clamp & Custom Mounting Plates



## 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

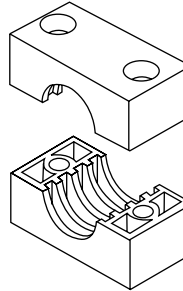
#### HRES – Heavy Duty w/ Rubber Insert (see pages 83 - 84)



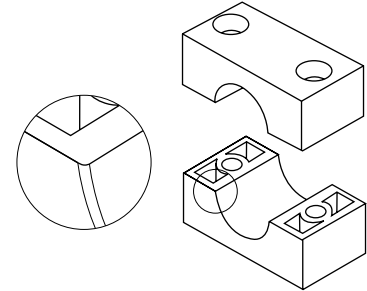
- Heavy duty available to 5 1/4" bore diameter
- Provide for greater noise reduction and resistance to axial movement

### 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



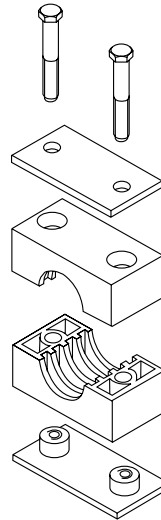
**Ribbed Bore**  
(standard)



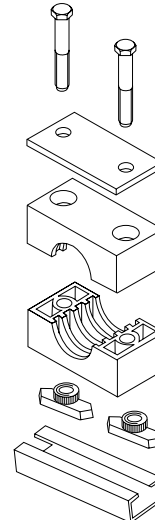
**Smooth Bore**  
smooth surface and chamfered edge  
prevent chaffing of hose (special)

### Arrangements

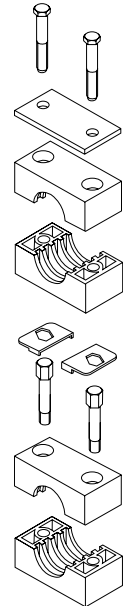
Various arrangements are available in each series.



**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.

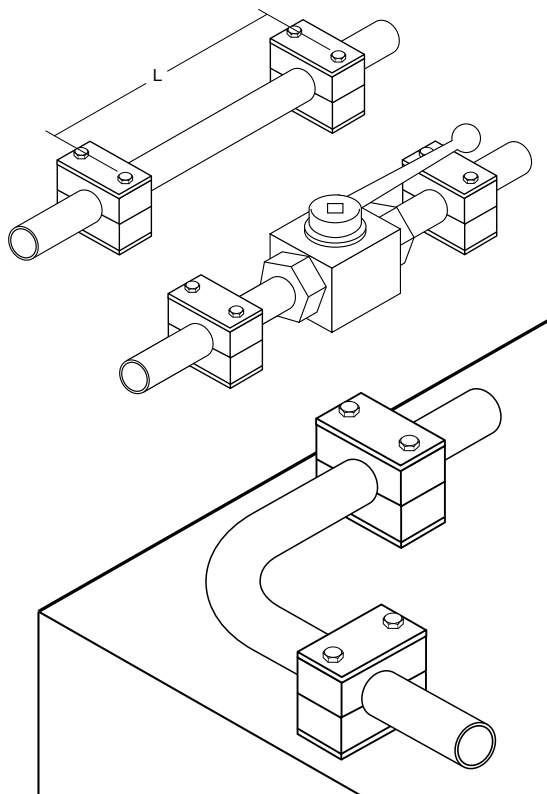
### Ordering

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

## 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

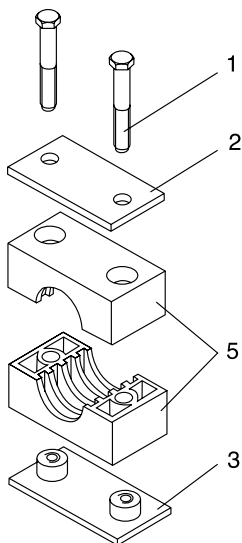
| Series           | Size       | Thread  | PP     | PA  | AL  |
|------------------|------------|---------|--------|-----|-----|
| HRL (Std. Duty)  | 0 to 6     | 1/4-20  | 8      | 10  | 12  |
| HRS (Heavy Duty) | 1 & 2      | 3/8-16  | 12     | 20  | 30  |
|                  | 3          | 3/8-16  | 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)

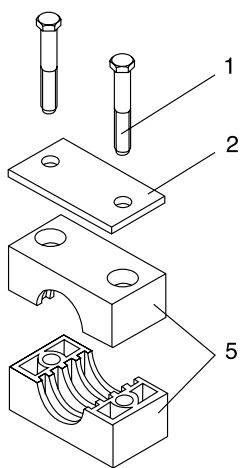
| Properties                           | Polypropylene PP  | Polyamide PA  | Aluminum AL  |
|--------------------------------------|---|---|--|
| <b>Mechanical Properties</b>         |   |   |  |
| Tensile Strength                     | 4200 psi  | 7800-11500 psi  | -  |
| Flexural Yield Strength              | 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 x 10 <sup>6</sup> - 11.1 x 10 <sup>6</sup> psi   |
| <b>Thermal Properties</b>            |   |   |  |
| Continuous Service Temperature Range | -22° to 194°F<br>-30° to 90°C   | -40° to 284°F<br>-40° to 140°C  | -67° to 500°F<br>-55° to 260°C   |
| <b>Electrical Properties</b>         |   |   |  |
| Volume Resistivity                   | 10 <sup>15</sup> Ohm-cm   | 10 <sup>15</sup> Ohm-cm   | -  |
| <b>Chemical Properties</b>           |   |   |  |
| 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. |

## HRL Series Standard Duty Clamps



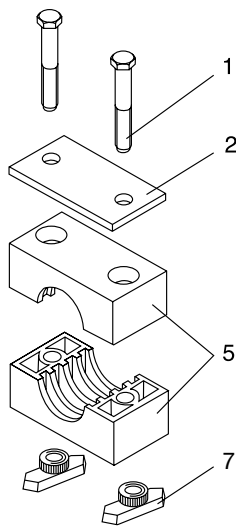
**A**

Single Clamp with  
Weld Plate



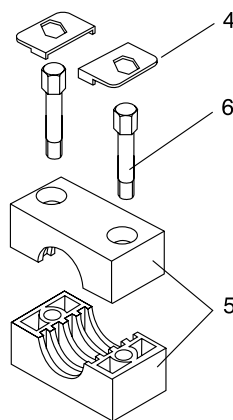
**A1**

Single Clamp without  
Weld Plate



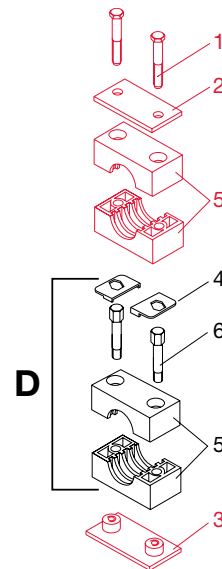
**A1TM**

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

**Series** \_\_\_\_\_ **HRL** 2 **A** 12.7 **PP** \_\_\_\_\_ **UNC**

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)

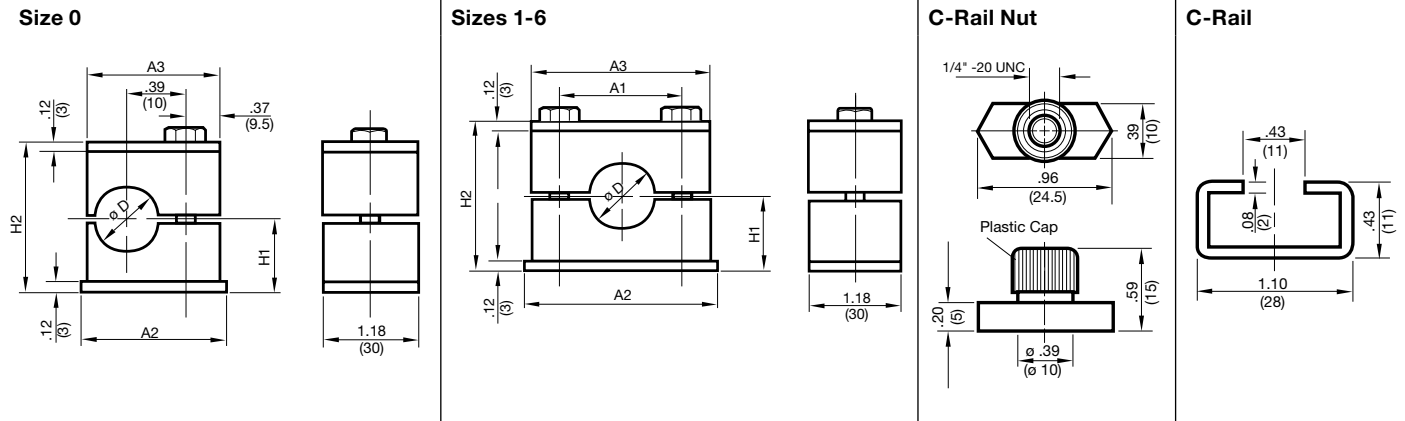
**Metal Component Material** \_\_\_\_\_  
 (omit) = Carbon Steel  
 A2 = 304 Stainless Steel  
 A4 = 316 Stainless Steel

**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.

## Dimensions

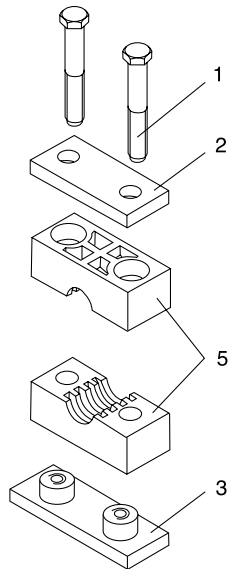


**Table A**

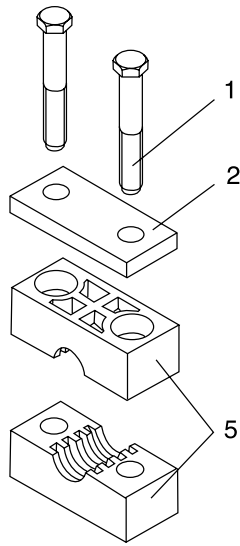
| Size | øD Bore Size |      | Recommended Nominal Size |        | A1         | A2        | A3            | H1          | H2         | Bolt Size Arrangement       | Weight      |             |
|------|--------------|------|--------------------------|--------|------------|-----------|---------------|-------------|------------|-----------------------------|-------------|-------------|
|      | 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<br>(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<br>(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<br>(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"   |            |           |               |             |            |                             |             |             |
| 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<br>(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 | —                        | —      |            |           |               |             |            |                             |             |             |
| 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<br>(M6 x 45) | 0.33 (0.15) | 0.27 (0.12) |
|      | 1.10         | 28.0 | —                        | —      |            |           |               |             |            |                             |             |             |
|      | 1.18         | 30.0 | —                        | —      |            |           |               |             |            |                             |             |             |
|      | 1.26         | 32.0 | 1-1/4"                   | —      |            |           |               |             |            |                             |             |             |
| 5    | 1.33         | 33.7 | —                        | 1"     | 2.05 (52)  | 2.83 (72) | 2.75 (70)     | 1.26 (32)   | 2.52 (64)  | 1/4-20 x 2-1/2<br>(M6 x 60) | 0.42 (0.19) | 0.31 (0.14) |
|      | 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<br>(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).

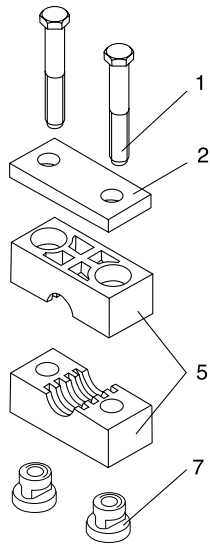
## HRS Series Heavy Duty Clamps



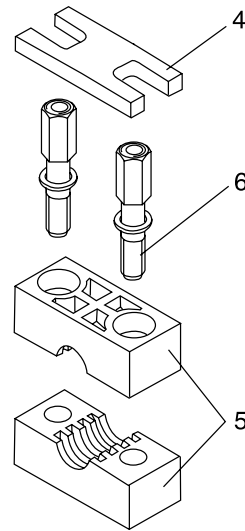
**S**  
Single Clamp  
with Weld Plate



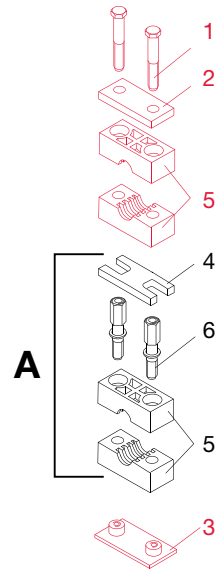
**S1**  
Single Clamp  
without Weld Plate



**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

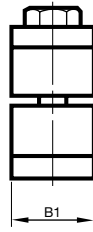
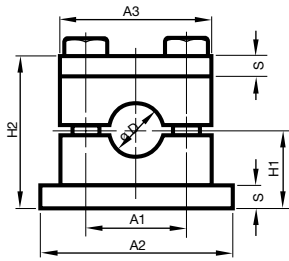
|   |     |   |   |      |    |     |
|---|-----|---|---|------|----|-----|
| Series  | HRS | 1 | S | 12.7 | PP | UNC |
| HRS = Heavy duty single clamp with ribbed bore    |     |   |   |      |    |     |
| HRGS = Heavy duty single clamp with smooth bore   |     |   |   |      |    |     |
| Size Family                                       |     |   |   |      |    |     |
| 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.

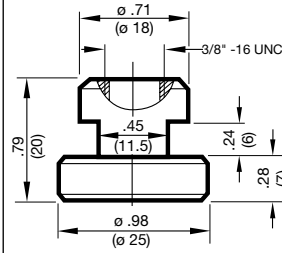


## Dimensions

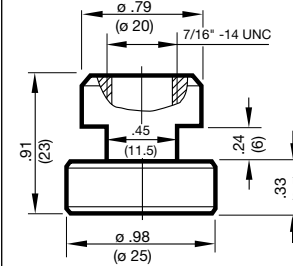
### All Sizes



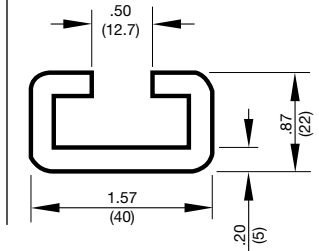
### C-Rail Nut (sizes 1-3)



### C-Rail Nut (size 4)



### C-Rail (all sizes)



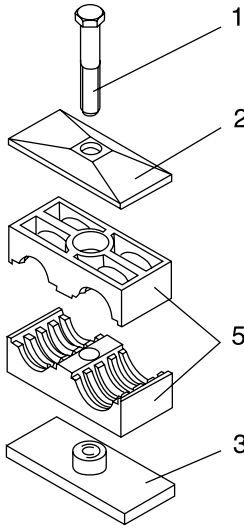
**Table B**

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

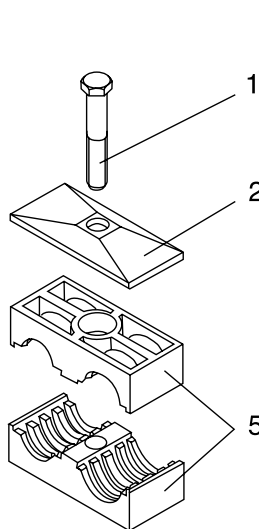
Note: Other bore diameters are available — Consult factory for details.

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).

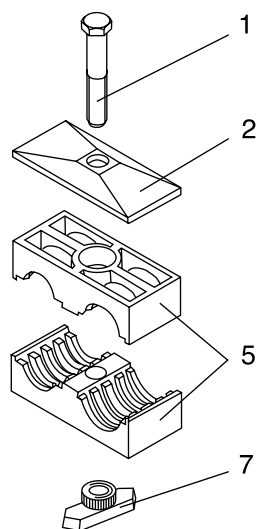
## HRZ Series Twin Clamps



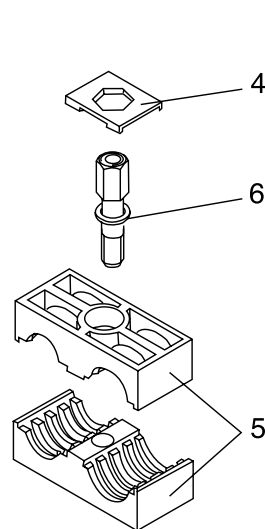
**A**  
Twin Clamp  
with Weld Plate



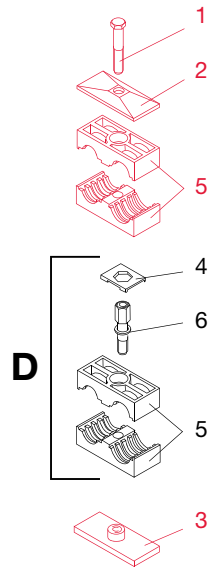
**A1**  
Twin Clamp  
without Weld Plate



**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

Series HRZ 1 A 9.5 - 9.5 PP UNC

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) 9.5 - 9.5  
 (refer to table C on next page)

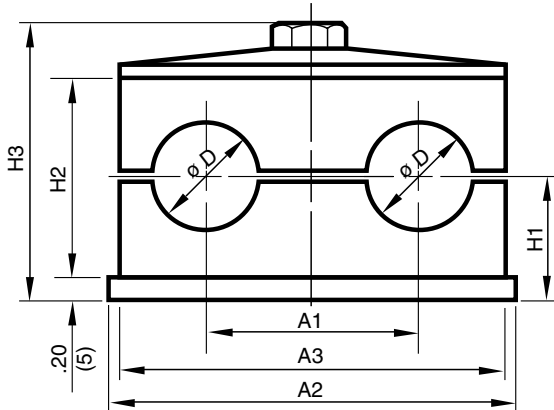
Clamp Material  
 PP = Polypropylene  
 PA = Polyamide

Thread Type  
 UNC = Standard  
 M = Metric

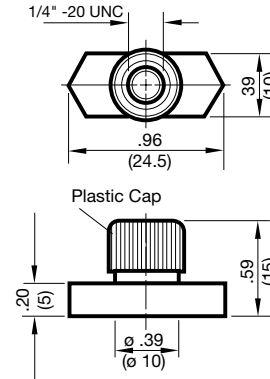
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.  
 Not all combinations are available.

## Dimensions

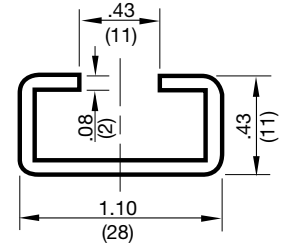
### All Sizes



### C-Rail Nut



### C-Rail



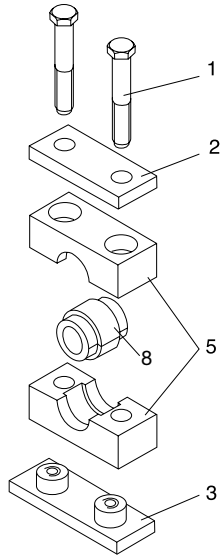
**Table C**

| 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<br>(20) | 1.46<br>(37)  | 1.42<br>(36)  | 0.73<br>(18.5) | 1.06<br>(27) | 1.69<br>(43)   | 1/4-20 x 1-1/2<br>(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"   |              |               |               |                |              |                |                              |
| 2    | 0.47         | 12.0 | -                        | -      | 1.14<br>(29) | 2.17<br>(55)  | 2.09<br>(53)  | 0.71<br>(18)   | 1.02<br>(26) | 1.71<br>(43.5) | 5/16-18 x 1-1/4<br>(M8 x 35) |
|      | 0.50         | 12.7 | 1/2"                     | -      |              |               |               |                |              |                |                              |
|      | 0.54         | 13.7 | -                        | 1/4"   |              |               |               |                |              |                |                              |
|      | 0.55         | 14.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 0.59         | 15.0 | -                        | -      |              |               |               |                |              |                |                              |
| 3    | 0.63         | 16.0 | 5/8"                     | -      | 1.42<br>(36) | 2.76<br>(70)  | 2.64<br>(67)  | 0.93<br>(23.5) | 1.46<br>(37) | 2.15<br>(54.5) | 5/16-18 x 1-3/4<br>(M8 x 45) |
|      | 0.67         | 17.1 | -                        | 3/8"   |              |               |               |                |              |                |                              |
|      | 0.75         | 19.0 | 3/4"                     | -      |              |               |               |                |              |                |                              |
|      | 0.79         | 20.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 0.84         | 21.3 | -                        | 1/2"   |              |               |               |                |              |                |                              |
|      | 0.87         | 22.0 | 7/8"                     | -      |              |               |               |                |              |                |                              |
| 4    | 0.91         | 23.0 | -                        | -      | 1.77<br>(45) | 3.35<br>(85)  | 3.23<br>(82)  | 1.02<br>(26)   | 1.65<br>(42) | 2.34<br>(59.5) | 5/16-18 x 2<br>(M8 x 50)     |
|      | 0.98         | 25.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 1.00         | 25.4 | 1"                       | -      |              |               |               |                |              |                |                              |
| 5    | 1.05         | 26.7 | -                        | 3/4"   | 2.20<br>(56) | 4.33<br>(110) | 4.17<br>(106) | 1.26<br>(32)   | 2.13<br>(54) | 2.81<br>(71.5) | 5/16-18 x 2-1/2<br>(M8 x 60) |
|      | 1.10         | 28.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 1.18         | 30.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 1.26         | 32.0 | 1-1/4"                   | -      |              |               |               |                |              |                |                              |
|      | 1.33         | 33.7 | -                        | 1"     |              |               |               |                |              |                |                              |
|      | 1.38         | 35.0 | -                        | -      |              |               |               |                |              |                |                              |
| 5    | 1.50         | 38.0 | 1-1/2"                   | -      | 2.20<br>(56) | 4.33<br>(110) | 4.17<br>(106) | 1.26<br>(32)   | 2.13<br>(54) | 2.81<br>(71.5) | 5/16-18 x 2-1/2<br>(M8 x 60) |
|      | 1.65         | 40.0 | -                        | -      |              |               |               |                |              |                |                              |
|      | 1.65         | 42.0 | -                        | 1-1/4" |              |               |               |                |              |                |                              |

Note: Other bore diameters are available — Consult factory for details.

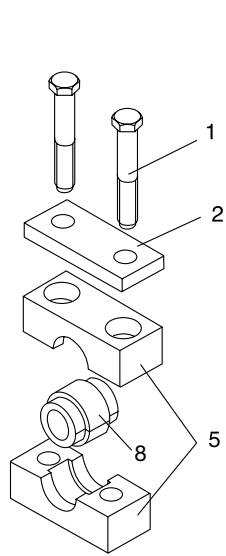
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs/(kg).

## HREL Series Standard Duty Clamps with Rubber Inserts



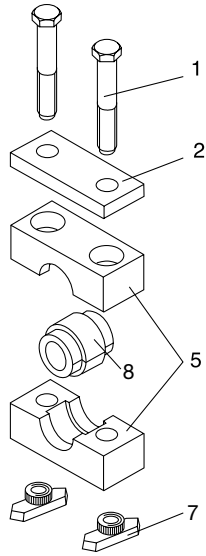
**A**

Single Clamp  
with Weld Plate



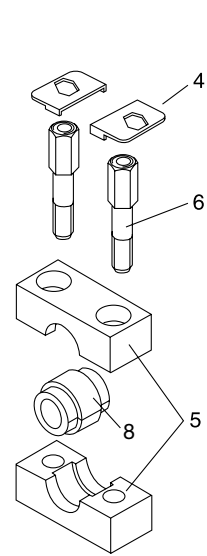
**A1**

Single Clamp  
without Weld Plate



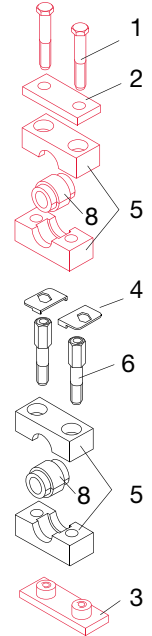
**A1TM**

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

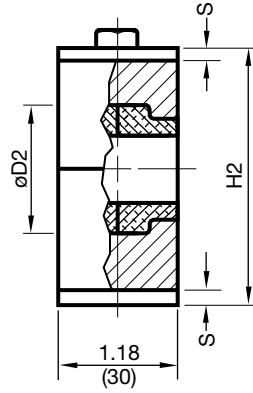
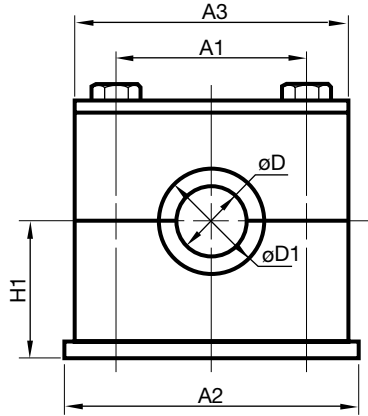
Metal Components Materials \_\_\_\_\_  
 (omit) = Carbon Steel  
 A2 = 304 Stainless Steel  
 A4 = 316 Stainless Steel

Thread Type \_\_\_\_\_  
 UNC = Standard  
 M = Metric

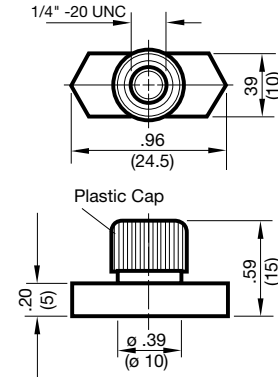
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.  
Not all combinations are available.

## Dimensions

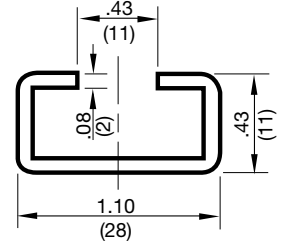
### All Sizes



### C-Rail Nut



### C-Rail



**Table D**

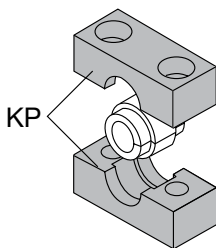
| Clamp Size | EE-Rubber Insert |              | Recommended Nominal Size |       |           |          |          | øD1            | øD2          | H1              | H2           | A1           | A2           | A3           | S            | Bolt Size                          |
|------------|------------------|--------------|--------------------------|-------|-----------|----------|----------|----------------|--------------|-----------------|--------------|--------------|--------------|--------------|--------------|------------------------------------|
|            | Size             | Bore Size øD | Tube O.D.                | Pipe  | Hose O.D. |          |          |                |              |                 |              |              |              |              |              |                                    |
|            |                  | in           | mm                       |       |           | Min (in) | Max (in) |                |              |                 |              |              |              |              |              |                                    |
| 4          | 2/4 L            | 0.24         | 6                        | -     | -         | 0.22     | 0.24     | 1.00<br>(25.5) | 1.22<br>(31) | 0.925<br>(23.5) | 1.85<br>(47) | 1.57<br>(40) | 2.32<br>(59) | 2.24<br>(57) | 0.118<br>(3) | 1/4-20 x 1 3/4<br><i>(M6 x 45)</i> |
|            |                  | 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<br>(39)   | 1.81<br>(46) | 1.40<br>(35.5)  | 2.80<br>(71) | 2.60<br>(66) | 3.46<br>(88) | 3.39<br>(86) | 0.118<br>(3) | 1/4-20x2 3/4<br><i>(M6 x 70)</i>   |
|            |                  | 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



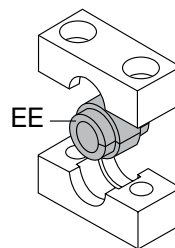
Series **HREL 4 KP PP**

Size 4, 6 (refer to table above)

Clamp Pair

Clamp Material  
 PP = Polypropylene  
 PA = Polyamide

EE = Rubber Insert (Santoprene TPE 73)



Series\* **HRES 2/4 L EE 12**

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

Rubber Insert

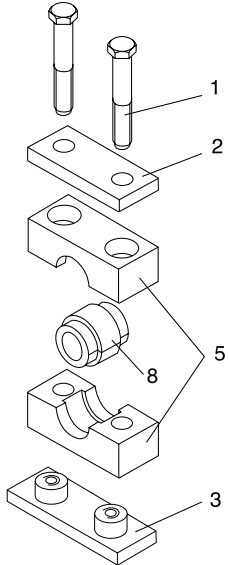
Bore Size (in mm)  
 (refer to table above)

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

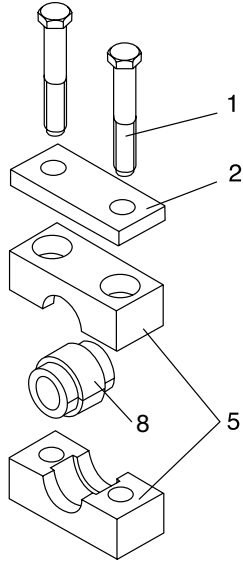
Note: All other components for these clamps are the same as for HRL series standard duty single clamps. Refer to page 87 for details.

\* HREL series use the same rubber inserts as the HRES series, therefore the model code for them is HRES.

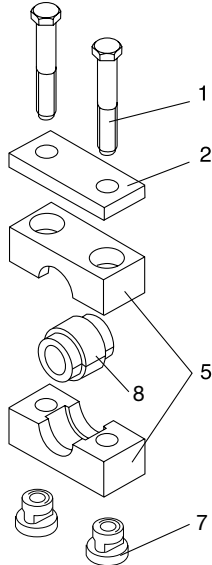
## HRES Series Heavy Duty Clamps with Rubber Inserts



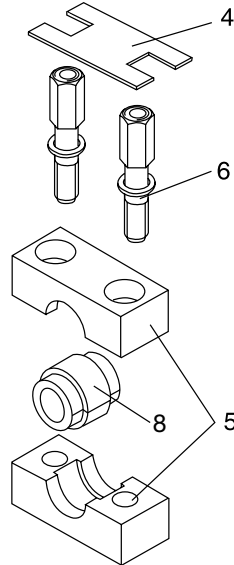
**S**  
Single Clamp  
with Weld Plate



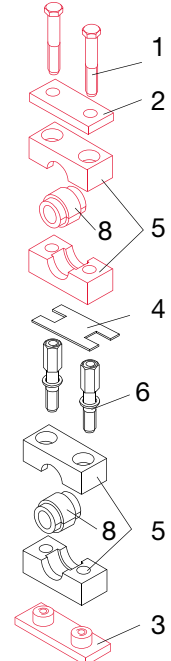
**S1**  
Single Clamp  
without Weld Plate



**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

**Series** \_\_\_\_\_ **HRES**

**Size Family** \_\_\_\_\_ **4**  
2 to 7 (refer to table E on next page)

**Arrangement** \_\_\_\_\_ **S**  
**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)** \_\_\_\_\_ **35**  
(refer to table E on next page)

**Clamp Material** \_\_\_\_\_ **PP**  
**PP** = Polypropylene  
**PA** = Polyamide

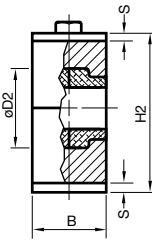
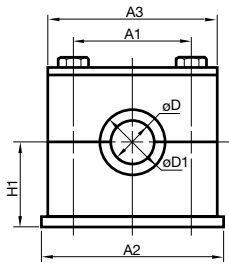
**Metal Component Material** \_\_\_\_\_ **UNC**  
**(omit)** = Carbon Steel  
**A4** = 316 Stainless Steel

**Thread Type** \_\_\_\_\_ **UNC**  
**UNC** = Standard  
**M** = Metric

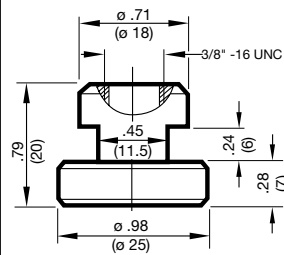
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.  
Not all combinations are available.

## Dimensions

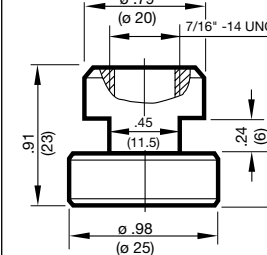
### All Sizes



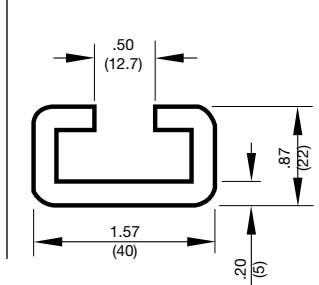
### C-Rail Nut (sizes 1-3)



### C-Rail Nut (size 4)



### C-Rail (all sizes)



**Table E**

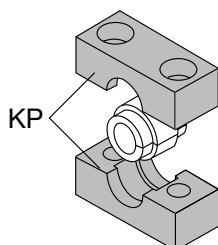
| Clamp Size | EE-Rubber Insert |              | Recommended Nominal Size |        |           |          |          | øD1            | øD2           | B            | H1              | H2            | A1            | A2             | A3            | S            | Bolt Size                   |      |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

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

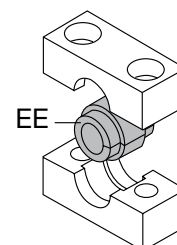
KP = Clamp Pair



**HRES 3 KP PP**

Series — HRES  
 Size — 3 (2 to 7 refer to table above)  
 Clamp Pair — KP  
 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 — HRES  
 Size — 3/6 L (2/4 L to 7 refer to table above)  
 Rubber Insert — EE  
 Bore Size (in mm) — 26.9 (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.  
 \* HREL series use the same rubber inserts as the HRES series, therefore the model code for them is HRES.

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)

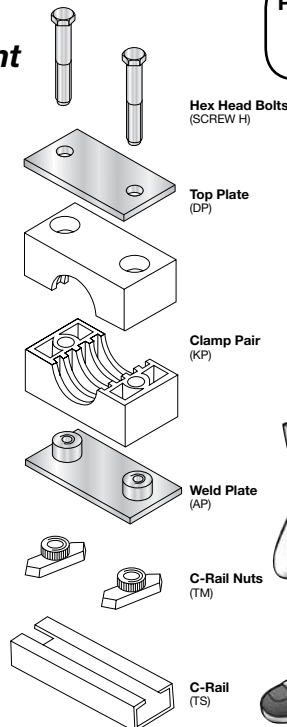
- Available from stock
- UNC bolts

#### 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   |
|---|-----------------------------|---|
| <b>Arrangements (complete with PP clamp pair)</b> |                             |   |
| 1   | HRL 1 A XX PP A4 UNC        | <b>XX = bore diameter</b><br>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        |   |
| <b>Weld Plates</b>                                |                             |   |
| 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  |
| <b>Top Plates</b>                                 |                             |   |
| 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  |
| <b>Ext Hex Screws</b>                             |                             |   |
| 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   |
|---|-----------------------------|---|
| <b>Arrangements (complete with PP clamp pair)</b> |                             |   |
| 1   | HRS 1 S XX PP A4 UNC        | <b>XX = bore diameter</b><br>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        |   |
| <b>Weld Plates</b>                                |                             |   |
| 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  |
| <b>Top Plates</b>                                 |                             |   |
| 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  |
| <b>Ext Hex Screws</b>                             |                             |   |
| 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.



## HRL Standard Duty

304 stainless steel (A2) metal components

| Size  | Model Code                  | Part Number   |
|---|-----------------------------|---|
| <b>Arrangements</b> (complete with PP clamp pair) |                             |   |
| 1   | HRL 1 A XX PP A2 UNC        | <b>XX = bore diameter</b><br>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        |   |
| <b>Weld Plates</b>                                |                             |   |
| 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  |
| <b>Top Plates</b>                                 |                             |   |
| 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  |
| <b>Ext Hex Screws</b> (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  |
| <b>HRL C-Rail</b>                                 |                             |   |
| 1   | HRL TS 28 x 11 A4 2M        | 00261229  |
| <b>HRL C-Rail Nuts</b>                            |                             |   |
| 1   | HRL 0-6 TM 1/4 UNC A4       | 03035720  |

## 316 stainless steel (A4) metal components

| Size  | Model Code         | Part Number   |
|---|--------------------|---|
| <b>Arrangements</b> (complete with PP clamp pair) |                    |   |
| 1   | HRL 1 A XX PP A4 M | <b>XX = bore diameter</b><br>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 |   |
| <b>Weld Plates</b>                                |                    |   |
| 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  |
| <b>Top Plates</b>                                 |                    |   |
| 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  |
| <b>Hex Head Bolts</b>                             |                    |   |
| 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

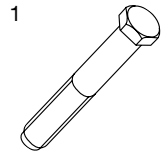
| Size  | Model Code         | Part Number   |
|---|--------------------|---|
| <b>Arrangements</b> (complete with PP clamp pair) |                    |   |
| 1   | HRS 1 S XX PP A4 M | <b>XX = bore diameter</b><br>A unique part number exists for each individual clamp bore diameter. A complete model 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 |   |
| <b>Weld Plates</b>                                |                    |   |
| 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  |
| <b>Top Plates</b>                                 |                    |   |
| 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  |
| <b>Hex Head Bolts</b>                             |                    |   |
| 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  |
| <b>HRS C-Rail</b>                                 |                    |   |
| 1   | HRS TS 40X22 A4 2M | 00263359  |
| <b>HRS C-Rail Nuts</b>                            |                    |   |
| 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

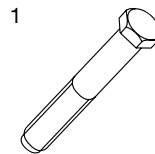
All metal components are carbon steel. For stainless steel metal components please refer to page 85 - 86.  
**ST** = Carbon Steel, **BL** = Phosphate coated, **ZN** = Zinc Plated



UNC Threads

#### UNC Hex Head Bolts

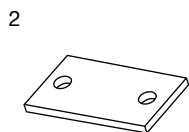
| Size | Model Code                  |
|------|-----------------------------|
| 0    | SCREW H 1/4 - 20 x 1.25 GR2 |
| 1    | SCREW H 1/4 - 20 x 1.25 GR2 |
| 2    | SCREW H 1/4 - 20 x 1.50 GR2 |
| 3    | SCREW H 1/4 - 20 x 1.50 GR2 |
| 4    | SCREW H 1/4 - 20 x 1.75 GR2 |
| 5    | SCREW H 1/4 - 20 x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



Metric Threads

#### Metric Hex Head Bolts

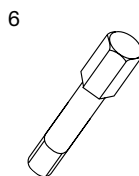
| Size | Model Code            |
|------|-----------------------|
| 0    | SCREW H M6 X 30 - 8.8 |
| 1    | SCREW H M6 X 30 - 8.8 |
| 2    | SCREW H M6 X 35 - 8.8 |
| 3    | SCREW H M6 X 40 - 8.8 |
| 4    | SCREW H M6 X 45 - 8.8 |
| 5    | SCREW H M6 X 60 - 8.8 |
| 6    | SCREW H M6 X 70 - 8.8 |



2

#### DP = Top Plate

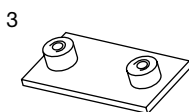
| Size | Model Code     |
|------|----------------|
| 0    | HRL 0 DP ST ZN |
| 1    | HRL 1 DP ST ZN |
| 2    | HRL 2 DP ST ZN |
| 3    | HRL 3 DP ST ZN |
| 4    | HRL 4 DP ST ZN |
| 5    | HRL 5 DP ST ZN |
| 6    | HRL 6 DP ST ZN |



UNC Threads

#### AF = Stacking Bolt

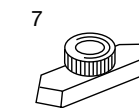
| Size | Model Code      |
|------|-----------------|
| 1    | HRL 1 AF ST UNC |
| 2    | HRL 2 AF ST UNC |
| 3    | HRL 3 AF ST UNC |
| 4    | HRL 4 AF ST UNC |
| 5    | HRL 5 AF ST UNC |
| 6    | HRL 6 AF ST UNC |



3

#### AP = Weld Plate

| 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 |



7

#### TM = C-Rail Nut

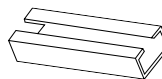
| Size  | Model Code               |
|-------|--------------------------|
| 0 - 6 | HRL 0-6 TM1/4 ST UNC KAP |
| 0 - 6 | HRL 0-6 TM ST ZN KAP     |



4

#### SIP = Safety Plate

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



#### TS = C-Rail

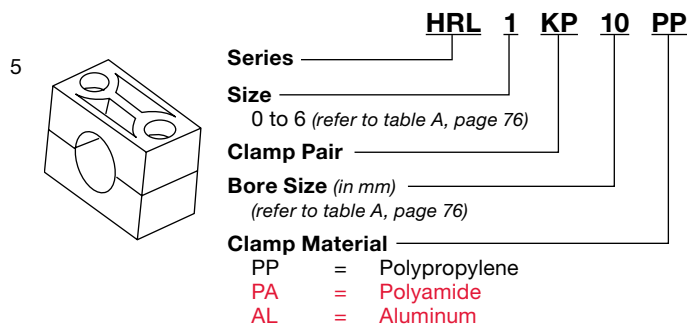
| Size | Model code            |
|------|-----------------------|
| 39"  | HRL TS 28x11 ST BL 1M |
| 78"  | HRL TS 28x11 ST BL 2M |

#### Parts Legend

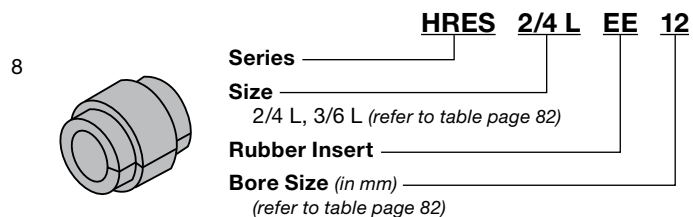
|                 |                 |
|-----------------|-----------------|
| 1 Hex Head Bolt | 5 Clamp Pair    |
| 2 Top Plate     | 6 Stacking Bolt |
| 3 Weld Plate    | 7 C-Rail Nut    |
| 4 Safety Plate  | 8 Rubber Insert |

### Model Code

KP = Clamp Pair



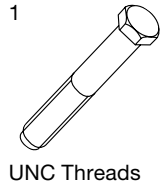
EE = Rubber Insert (Santoprene TPE 73)



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.

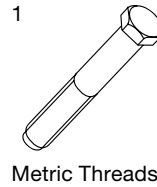
## HRS Series Parts

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



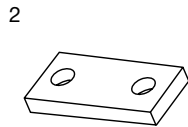
### UNC Hex Head Bolts

| 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)     |



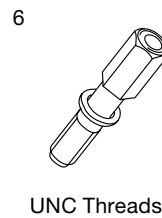
### Metric Hex Head Bolts

| 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 |



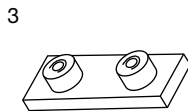
### DP = Top Plate

| 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 |



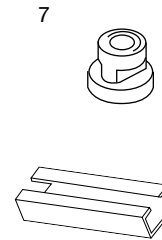
### AF = Stacking Bolt w/ Washer

| 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 |



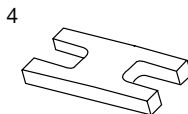
### AP = Weld Plate

| 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 |



### TM = C-Rail Nut

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



### SIP = Safety Plate

| 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 |

### TS = C-Rail

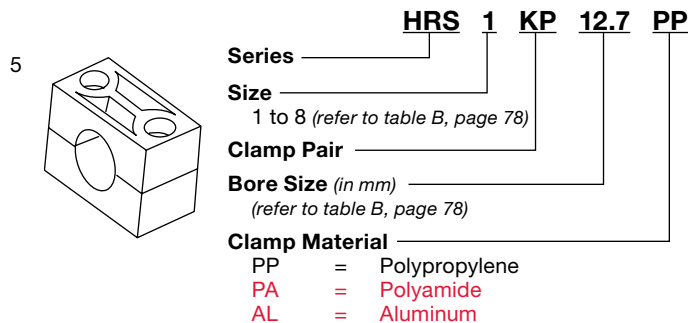
| Size | Model Code            |
|------|-----------------------|
| 39"  | HRS TS 40x22 ST BL 1M |
| 78"  | HRS TS 40x22 ST BL 2M |

### Parts Legend

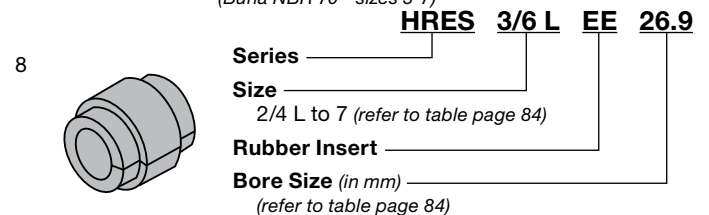
|                 |                 |
|-----------------|-----------------|
| 1 Hex Head Bolt | 5 Clamp Pair    |
| 2 Top Plate     | 6 Stacking Bolt |
| 3 Weld Plate    | 7 C-Rail Nut    |
| 4 Safety Plate  | 8 Rubber Insert |

### Model Code

KP = Clamp Pair

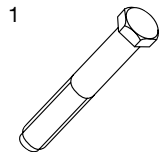


EE = Rubber Insert (Santoprene TPE 73 - sizes 2-4)  
(Buna NBR 70 - sizes 5-7)



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.

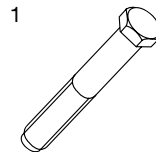
## HRZ Series Parts



UNC Threads

### UNC Hex Head Bolts

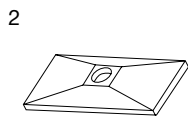
| Size | Model Code                   |
|------|------------------------------|
| 1    | SCREW H 1/4 - 20 x 1.5 GR2   |
| 2    | SCREW H 5/16 - 18 x 1.25 GR2 |
| 3    | SCREW H 5/16 - 18 x 1.75 GR2 |
| 4    | SCREW H 5/16 - 18 x 2.00 GR2 |
| 5    | SCREW H 5/16 - 18 x 2.50 GR2 |



Metric Threads

### Metric Hex Head Bolts

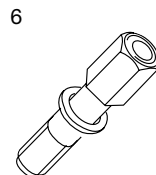
| Size | Model Code                     |
|------|--------------------------------|
| 1    | SCREW H M6x35 MM - 8.8 DIN 933 |
| 2    | SCREW H M8x35 MM - 8.8 DIN 933 |
| 3    | SCREW H M8x45 MM - 8.8 DIN 933 |
| 4    | SCREW H M8x50 MM - 8.8 DIN 933 |
| 5    | SCREW H M8x60 MM - 8.8 DIN 933 |



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 |

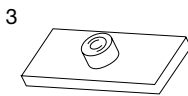


6

UNC Threads

### AF = Stacking Bolt w/ Washer

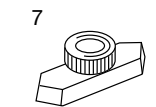
| Size | Model Code      |
|------|-----------------|
| 1    | HRZ 1 AF ST UNC |
| 2    | HRZ 2 AF ST UNC |
| 3    | HRZ 3 AF ST UNC |
| 4    | HRZ 4 AF ST UNC |
| 5    | HRZ 5 AF ST UNC |



3

### AP = Weld Plate

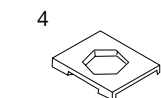
| Size | Model Code                   |
|------|------------------------------|
| 1    | HRZ 1 AP ST UNC BL Anti-Turn |
| 2    | HRZ 2 AP ST UNC BL Anti-Turn |
| 3    | HRZ 3 AP ST UNC BL Anti-Turn |
| 4    | HRZ 4 AP ST UNC BL           |
| 5    | HRZ 5 AP ST UNC BL           |



7

### TM = C-Rail Nut

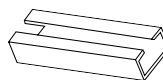
| Size | Model Code                   |
|------|------------------------------|
| 1    | HRZ 1 TM1/4 ST UNC KAP       |
| 2-5  | HRZ 2/5 TM5/16 ST UNC O-Ring |



4

### SIP = Safety Plate

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



### TS = C-Rail

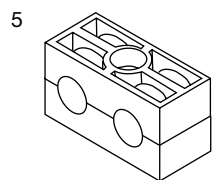
| Size | Model Code            |
|------|-----------------------|
| 39"  | HRL TS 28x11 ST BL 1M |
| 78"  | HRL TS 28x11 ST BL 2M |

#### Parts Legend

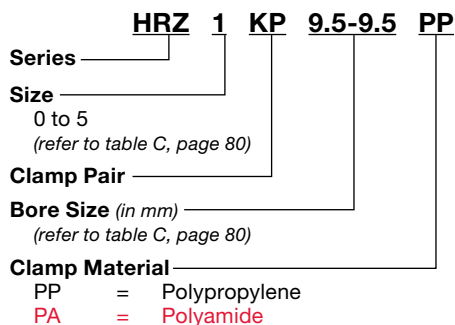
|                 |                 |
|-----------------|-----------------|
| 1 Hex Head Bolt | 5 Clamp Pair    |
| 2 Top Plate     | 6 Stacking Bolt |
| 3 Weld Plate    | 7 C-Rail Nut    |
| 4 Safety Plate  |                 |

### Model Code

KP = Clamp Pair



5

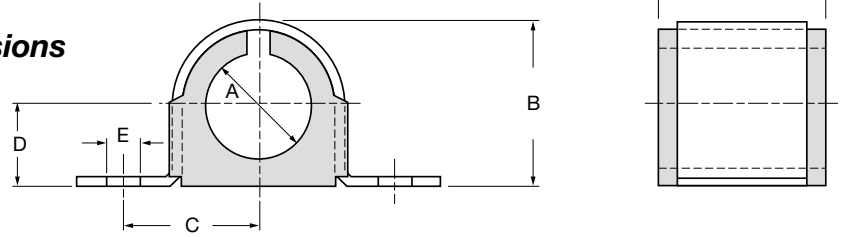


Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability.  
 Not all combinations are available.

## HOM Series



### Dimensions



### 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.

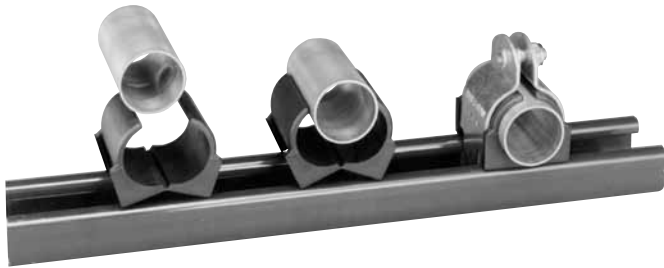
\*Note: Fasteners not provided.

| 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    | 1/4"                       | -                 | -         | 0.25" | 0.48" | 0.60" | 0.22" | 0.26" | 0.78" |
| 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    | 3/8"                       | 1/4"              | -         | 0.37" | 0.62" | 0.66" | 0.31" | 0.26" | 0.81" |
| 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    | 1/2"                       | 3/8"              | 1/4"      | 0.50" | 0.81" | 0.83" | 0.40" | 0.26" | 0.98" |
| 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    | 5/8"                       | 1/2"              | 3/8"      | 0.62" | 0.93" | 0.85" | 0.46" | 0.26" | 0.98" |
| 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    | 3/4"                       | 5/8"              | -         | 0.75" | 1.02" | 0.90" | 0.50" | 0.26" | 0.98" |
| 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    | 7/8"                       | 3/4"              | 1/2"      | 0.87" | 1.12" | 1.03" | 0.53" | 0.26" | 0.98" |
| HOM 1T                 | 02080753    | 1"                         | -                 | -         | 1.00" | 1.24" | 1.04" | 0.59" | 0.26" | 0.98" |
| HOM 1T A2              | 02080774    | 1"                         | -                 | -         | 1.00" | 1.24" | 1.04" | 0.59" | 0.26" | 0.98" |
| HOM 3/4P               | 02080754    | -                          | -                 | 3/4"      | 1.05" | 1.40" | 1.11" | 0.70" | 0.26" | 0.98" |
| HOM 3/4P A2            | 02080775    | -                          | -                 | 3/4"      | 1.05" | 1.40" | 1.11" | 0.70" | 0.26" | 0.98" |
| 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    | 1 1/8"                     | 1"                | -         | 1.12" | 1.40" | 1.17" | 0.70" | 0.26" | 0.98" |
| HOM 1 1/4T             | 02080756    | 1 1/4"                     | -                 | -         | 1.25" | 1.60" | 1.20" | 0.77" | 0.26" | 1.56" |
| HOM 1 1/4T A2          | 02080777    | 1 1/4"                     | -                 | -         | 1.25" | 1.60" | 1.20" | 0.77" | 0.26" | 1.56" |
| HOM 1P                 | 02080757    | -                          | -                 | 1"        | 1.31" | 1.71" | 1.28" | 0.81" | 0.26" | 1.56" |
| HOM 1P A2              | 02080778    | -                          | -                 | 1"        | 1.31" | 1.71" | 1.28" | 0.81" | 0.26" | 1.56" |
| 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    | 1 3/8"                     | 1 1/4"            | -         | 1.37" | 1.71" | 1.28" | 0.83" | 0.26" | 1.56" |
| 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    | 1 1/2"                     | -                 | -         | 1.50" | 1.85" | 1.36" | 0.90" | 0.26" | 1.56" |
| 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    | 1 5/8"                     | 1 1/2"            | -         | 1.62" | 1.95" | 1.43" | 0.96" | 0.26" | 1.56" |
| 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    | -                          | -                 | 1 1/4"    | 1.66" | 2.12" | 1.55" | 0.99" | 0.34" | 1.56" |
| 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    | 1 3/4"                     | -                 | -         | 1.75" | 2.12" | 1.55" | 1.02" | 0.34" | 1.56" |
| 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    | 1 7/8"                     | -                 | 1 1/2"    | 1.87" | 2.25" | 1.64" | 1.09" | 0.34" | 1.56" |
| HOM 2T                 | 02080764    | 2"                         | -                 | -         | 2.00" | 2.38" | 1.69" | 1.15" | 0.34" | 1.56" |
| HOM 2T A2              | 02080785    | 2"                         | -                 | -         | 2.00" | 2.38" | 1.69" | 1.15" | 0.34" | 1.56" |
| 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    | 2 1/8"                     | -                 | -         | 2.12" | 2.62" | 1.86" | 1.27" | 0.34" | 1.56" |
| 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    | 2 3/8"                     | -                 | 2"        | 2.37" | 2.88" | 1.94" | 1.41" | 0.34" | 1.56" |
| HOM 5 1/8T             | 02080767    | 5 1/8"                     | 5"                | -         | 5.12" | 5.82" | 3.55" | 2.84" | 0.43" | 1.56" |

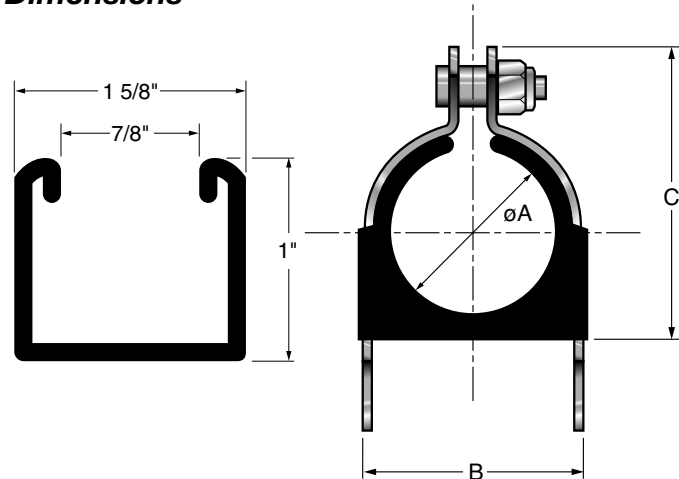
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs./(kg).

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

## 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 electrochromate 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               |                              | Nom. Pipe Size in. | Dimensions   |       |       | Part No.        |
|--------------------|---------------------------|------------------------------|--------------------|--------------|-------|-------|-----------------|
|                    | Copper & Steel Tubing in. | Copper Water Pipe (nom.) in. |                    | $\phi A$ in. | B in. | C in. |                 |
| <i>CUSH 1/4T</i>   | 1/4                       |                              |                    | 0.25         | 0.62  | 0.98  | <i>02073330</i> |
| 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        |
| <i>CUSH 3/8P</i>   |                           |                              | 3/8                | 0.67         | 1.13  | 1.54  | <i>02073362</i> |
| CUSH 3/4T          | 3/4                       | 5/8                          |                    | 0.75         | 1.20  | 1.68  | 02073334        |
| <i>CUSH 1/2P</i>   |                           |                              | 1/2                | 0.84         | 1.29  | 1.82  | <i>02073363</i> |
| 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        |
| <i>CUSH 1-1/8T</i> | 1 1/8                     | 1                            |                    | 1.12         | 1.57  | 2.08  | <i>02073337</i> |
| CUSH 1-1/4T        | 1 1/4                     |                              |                    | 1.25         | 1.70  | 2.21  | 02073338        |
| CUSH 1P            |                           |                              | 1                  | 1.31         | 1.76  | 2.34  | 02073365        |
| <i>CUSH 1-3/8T</i> | 1 3/8                     | 1 1/4                        |                    | 1.37         | 1.82  | 2.34  | <i>02073339</i> |
| 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        |
| <i>CUSH 1-7/8T</i> | 1 7/8                     |                              |                    | 1.87         | 2.32  | 2.86  | <i>02073343</i> |
| CUSH 1-1/2P        |                           |                              | 1 1/2              | 1.90         | 2.35  | 2.86  | 02073367        |
| CUSH 2T            | 2                         |                              |                    | 2.00         | 2.45  | 3.04  | 02073344        |
| <i>CUSH 2-1/8T</i> | 2 1/8                     |                              |                    | 2.12         | 2.57  | 3.23  | <i>02073345</i> |
| CUSH 2-3/8T        | 2 3/8                     |                              |                    | 2.37         | 2.82  | 3.67  | 02073346        |
| CUSH 2P            |                           |                              | 2                  | 2.37         | 2.82  | 3.67  | 02073368        |
| <i>CUSH 2-5/8T</i> | 2 5/8                     |                              |                    | 2.62         | 3.07  | 3.92  | <i>02073348</i> |
| CUSH 2-1/2P        |                           |                              | 2 1/2              | 2.87         | 3.32  | 4.17  | 02073369        |
| <i>CUSH 3-1/8T</i> | 3 1/8                     |                              |                    | 3.12         | 3.57  | 4.42  | <i>02073351</i> |
| <i>CUSH 3P</i>     |                           |                              | 3                  | 3.50         | 3.95  | 4.79  | <i>02073370</i> |
| <i>CUSH 4P</i>     |                           |                              | 4                  | 4.50         | 4.95  | 5.95  | <i>02073372</i> |
| <i>CUSH 5P</i>     |                           |                              | 5                  | 5.56         | 6.01  | 6.92  | <i>02073373</i> |
| <i>CUSH 6P</i>     |                           |                              | 6                  | 6.62         | 7.07  | 8.23  | <i>02073374</i> |

**Tube Series:** T = with Controlled Squeeze Shoulder Bolt (sizes 1 3/8" and smaller)

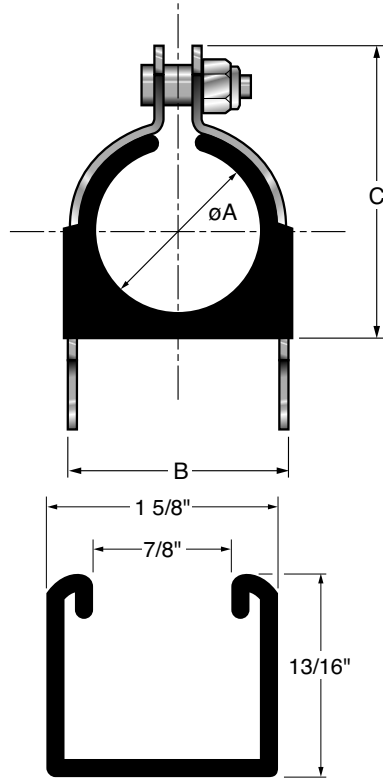
**Pipe Series:** P = without Controlled Squeeze Bolt

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

## 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            |
|------------------------|----------|----------------|--------------|--------------|--------------|
| <i>CUSH 1/4T A2</i>    | 02080701 | <i>1/4"</i>    | <i>0.25"</i> | <i>0.62"</i> | <i>0.98"</i> |
| <i>CUSH 3/8T A2</i>    | 02080702 | <i>3/8"</i>    | <i>0.37"</i> | <i>0.82"</i> | <i>1.13"</i> |
| 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"        |
| <i>CUSH 7/8T A2</i>    | 02080706 | <i>7/8"</i>    | <i>0.87"</i> | <i>1.31"</i> | <i>1.82"</i> |
| <i>CUSH 1T A2</i>      | 02080707 | <i>1"</i>      | <i>1.00"</i> | <i>1.44"</i> | <i>1.95"</i> |
| CUSH 1 1/8T A2         | 02080708 | 1 1/8"         | 1.12"        | 1.57"        | 2.08"        |
| <i>CUSH 1 1/4T A2</i>  | 02080709 | <i>1 1/4"</i>  | <i>1.25"</i> | <i>1.70"</i> | <i>2.21"</i> |
| <i>CUSH 1 3/8T A2</i>  | 02080710 | <i>1 3/8"</i>  | <i>1.37"</i> | <i>1.82"</i> | <i>2.34"</i> |
| <i>CUSH 1 1/2T A2</i>  | 02080711 | <i>1 1/2"</i>  | <i>1.50"</i> | <i>1.95"</i> | <i>2.47"</i> |
| <i>CUSH 1 5/8T A2</i>  | 02080712 | <i>1 5/8"</i>  | <i>1.62"</i> | <i>2.07"</i> | <i>2.60"</i> |
| <i>CUSH 1 3/4T A2</i>  | 02080713 | <i>1 3/4"</i>  | <i>1.75"</i> | <i>2.20"</i> | <i>2.73"</i> |
| <i>CUSH 1 7/8T A2</i>  | 02080714 | <i>1 7/8"</i>  | <i>1.87"</i> | <i>2.32"</i> | <i>2.86"</i> |
| CUSH 2T A2             | 02080715 | 2"             | 2.00"        | 2.45"        | 3.04"        |
| <i>CUSH 2 1/8T A2</i>  | 02080716 | <i>2 1/8"</i>  | <i>2.12"</i> | <i>2.57"</i> | <i>3.23"</i> |
| <i>CUSH 2 1/4T A2</i>  | 02080717 | <i>2 1/4"</i>  | <i>2.37"</i> | <i>2.82"</i> | <i>3.67"</i> |
| <i>CUSH 2 3/8T A2</i>  | 02080718 | <i>2 3/8"</i>  | <i>2.37"</i> | <i>2.82"</i> | <i>3.67"</i> |
| <i>CUSH 2 1/2T A2</i>  | 02080719 | <i>2 1/2"</i>  | <i>2.50"</i> | <i>2.94"</i> | <i>3.79"</i> |
| <i>CUSH 2 5/8T A2</i>  | 02080720 | <i>2 5/8"</i>  | <i>2.62"</i> | <i>3.07"</i> | <i>3.92"</i> |
| <i>CUSH 2 7/8T A2</i>  | 02080721 | <i>2 7/8"</i>  | <i>2.87"</i> | <i>3.32"</i> | <i>4.17"</i> |
| <i>CUSH 3T A2</i>      | 02080722 | <i>3"</i>      | <i>3.00"</i> | <i>3.57"</i> | <i>4.42"</i> |
| <i>CUSH 3 1/8T A2</i>  | 02080723 | <i>3 1/8"</i>  | <i>3.12"</i> | <i>3.57"</i> | <i>4.42"</i> |
| <i>CUSH 3 5/16T A2</i> | 02080724 | <i>3 5/16"</i> | <i>3.31"</i> | <i>3.96"</i> | <i>4.75"</i> |
| <i>CUSH 3 1/2T A2</i>  | 02080725 | <i>3 1/2"</i>  | <i>3.50"</i> | <i>3.95"</i> | <i>4.79"</i> |
| <i>CUSH 3 5/8T A2</i>  | 02080726 | <i>3 5/8"</i>  | <i>3.62"</i> | <i>4.20"</i> | <i>5.11"</i> |
| <i>CUSH 4T A2</i>      | 02080727 | <i>4"</i>      | <i>4.00"</i> | <i>4.45"</i> | <i>5.11"</i> |
| <i>CUSH 4 1/8T A2</i>  | 02080728 | <i>4 1/8"</i>  | <i>4.12"</i> | <i>4.57"</i> | <i>5.54"</i> |
| <i>CUSH 4 1/2T A2</i>  | 02080729 | <i>4 1/2"</i>  | <i>4.50"</i> | <i>4.95"</i> | <i>5.92"</i> |
| <i>CUSH 5 1/8T A2</i>  | 02080730 | <i>5 1/8"</i>  | <i>5.12"</i> | <i>5.57"</i> | <i>6.54"</i> |
| <i>CUSH 6T A2</i>      | 02080731 | <i>6"</i>      | <i>6.12"</i> | <i>6.57"</i> | <i>7.54"</i> |
| <i>CUSH 6 1/8T A2</i>  | 02080732 | <i>6 1/8"</i>  | <i>6.12"</i> | <i>6.57"</i> | <i>7.54"</i> |
| <i>CUSH 1/4P A2</i>    | 02080733 | <i>1/4"</i>    | <i>0.54"</i> | <i>0.98"</i> | <i>1.34"</i> |
| <i>CUSH 3/8P A2</i>    | 02080734 | <i>3/8"</i>    | <i>0.67"</i> | <i>1.13"</i> | <i>1.54"</i> |
| <i>CUSH 1/2P A2</i>    | 02080735 | <i>1/2"</i>    | <i>0.84"</i> | <i>1.29"</i> | <i>1.82"</i> |
| <i>CUSH 3/4P A2</i>    | 02080736 | <i>3/4"</i>    | <i>1.05"</i> | <i>1.57"</i> | <i>2.08"</i> |
| <i>CUSH 1P A2</i>      | 02080737 | <i>1"</i>      | <i>1.31"</i> | <i>1.76"</i> | <i>2.34"</i> |
| <i>CUSH 1 1/4P A2</i>  | 02080738 | <i>1 1/4"</i>  | <i>1.66"</i> | <i>2.17"</i> | <i>2.73"</i> |
| <i>CUSH 1 1/2P A2</i>  | 02080739 | <i>1 1/2"</i>  | <i>1.90"</i> | <i>2.35"</i> | <i>2.86"</i> |
| <i>CUSH 2P A2</i>      | 02080740 | <i>2"</i>      | <i>2.37"</i> | <i>2.82"</i> | <i>3.67"</i> |
| <i>CUSH 2 1/2P A2</i>  | 02080741 | <i>2 1/2"</i>  | <i>2.87"</i> | <i>3.32"</i> | <i>4.17"</i> |
| <i>CUSH 3P A2</i>      | 02080742 | <i>3"</i>      | <i>3.50"</i> | <i>3.95"</i> | <i>4.79"</i> |
| <i>CUSH 3 1/2P A2</i>  | 02080743 | <i>3 1/2"</i>  | <i>4.00"</i> | <i>4.45"</i> | <i>5.11"</i> |
| <i>CUSH 4P A2</i>      | 02080744 | <i>4"</i>      | <i>4.50"</i> | <i>4.95"</i> | <i>5.92"</i> |
| <i>CUSH 5P A2</i>      | 02080745 | <i>5"</i>      | <i>5.56"</i> | <i>6.01"</i> | <i>6.92"</i> |
| <i>CUSH 6P A2</i>      | 02080746 | <i>6"</i>      | <i>6.62"</i> | <i>7.07"</i> | <i>8.23"</i> |

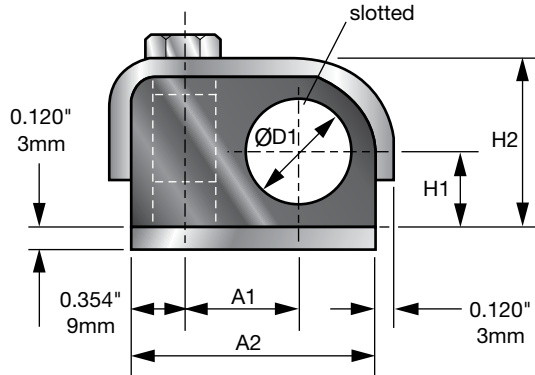
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches/(mm) and lbs./kg.

## HRBGS Series Buegu Clamps



### Dimensions

Size: 0A & 0B



### 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

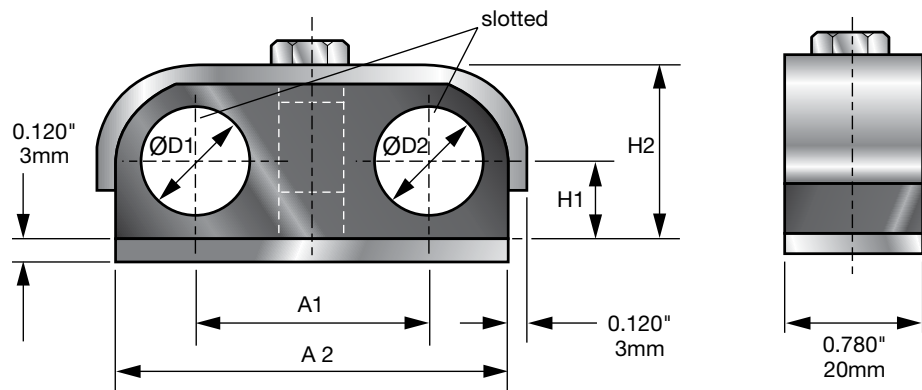
### Materials

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

### Temp Specifications

- -40° to 257°F (-40° to 125°C)

Size: 1 and 2



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



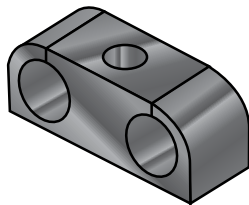
## Buegu Clamp Parts



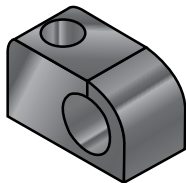
Hex Head Bolt



BUE = Stirrup



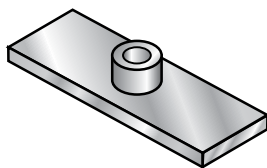
Size 1,2



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 <sup>1</sup> |      |       |      | GT = Clamp Body Model Code  | Part No.        |
|------------|----------------------------|------|-------|------|-----------------------------|-----------------|
|            | øD1                        |      | øD2   |      |                             |                 |
|            | in                         | mm   | in    | mm   |                             |                 |
| 0A         | 0.250                      | 6.4  | -     | -    | <i>HRBGS 0A GT 6.4</i>      | <i>00268169</i> |
|            | 0.375                      | 9.5  | -     | -    | HRBGS 0A GT 9.5             | 00268170        |
|            | 0.394                      | 10.0 | -     | -    | <i>HRBGS 0A GT 10.0</i>     | <i>00263296</i> |
| 0B         | 0.500                      | 12.7 | -     | -    | <i>HRBGS 0B GT 12.7</i>     | <i>00268171</i> |
|            | 0.540                      | 13.7 | -     | -    | <i>HRBGS 0B GT 13.7</i>     | <i>00268172</i> |
|            | 0.625                      | 16.0 | -     | -    | <i>HRBGS 0B GT 16.0</i>     | <i>00263298</i> |
|            | 0.675                      | 17.1 | -     | -    | <i>HRBGS 0B GT 17.1</i>     | <i>00268173</i> |
|            | 0.750                      | 19.0 | -     | -    | <i>HRBGS 0B GT 19.0</i>     | <i>00264713</i> |
| 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 | <i>HRBGS 1 GT 12.7-12.7</i> | <i>00264011</i> |
| 2          | 0.630                      | 16.0 | 0.625 | 16.0 | HRBGS 2 GT 16-16            | 00263304        |
|            | 0.675                      | 17.1 | 0.675 | 17.1 | <i>HRBGS 2 GT 17.1-17.1</i> | <i>00268176</i> |
|            | 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 |                             |                 |
|---|-----------------------------|-----------------|
| Sizes                                   | Model Code                  | Part Number     |
| 0A                                      | <i>HRBGS 0A/1 HUE 18 ZN</i> | <i>00263310</i> |
| 0B                                      | HRBGS 0B/2 HUE 22 ZN        | 00263311        |
| 1                                       | <i>HRBGS 0A/1 HUE 18 ZN</i> | <i>00263310</i> |
| 2                                       | HRBGS 0B/2 HUE 22 ZN        | 00263311        |

| AP = Weld Plate |                               |                 |
|-----------------|-------------------------------|-----------------|
| Sizes           | Model Code                    | Part Number     |
| 0A              | <i>HRBGS 0A AP ST M BL VS</i> | <i>03280090</i> |
| 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        |

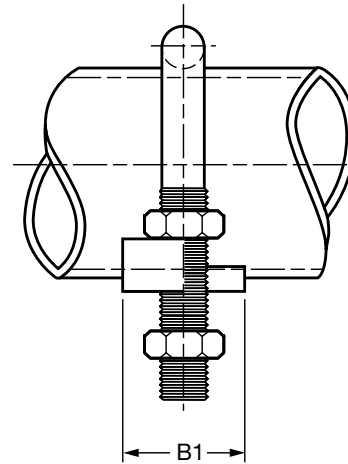
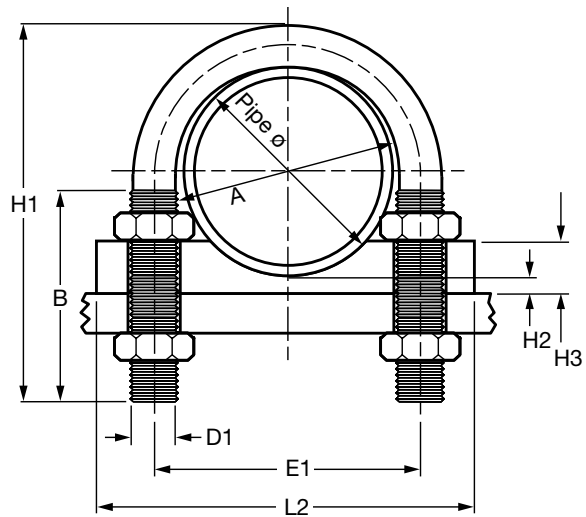
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Not all combinations are available

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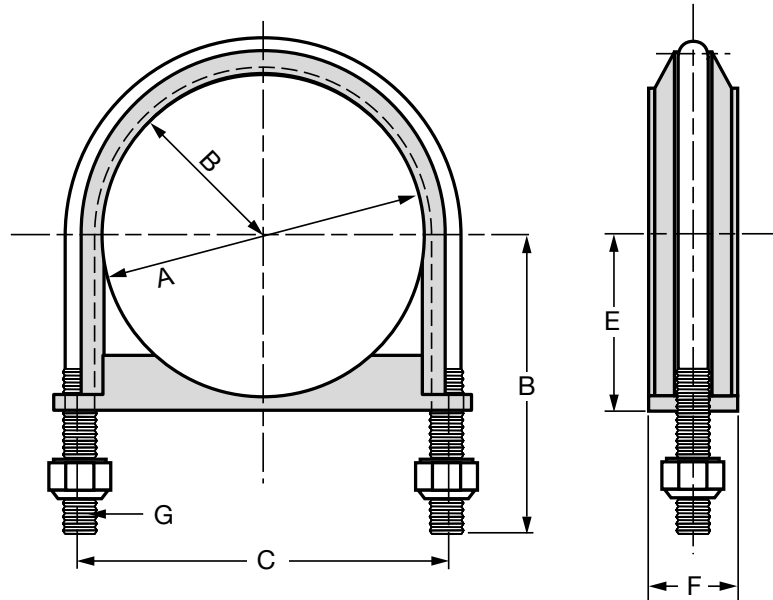
Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability

Not all combinations are available

## HUB Series



## Dimensions



### 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

| 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        |
| <i>HUB 1/2P A4</i>   | <i>02080803</i> |               |               |              |               |              |              |              |            |                      |
| 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        |
| <i>HUB 3/4P A4</i>   | <i>02080804</i> |               |               |              |               |              |              |              |            |                      |
| HUB 1P               | 02080790        | 1"            | 1.31"         | 1.02"        | 2.05"         | 1.70"        | 0.91"        | 0.68"        | 1/4        | 1/4-20 UNC-2B        |
| <i>HUB 1P A4</i>     | <i>02080805</i> |               |               |              |               |              |              |              |            |                      |
| 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        |
| <i>HUB 1 1/4P A4</i> | <i>02080806</i> |               |               |              |               |              |              |              |            |                      |
| 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        |
| <i>HUB 1 1/2P A4</i> | <i>02080807</i> |               |               |              |               |              |              |              |            |                      |
| HUB 2P               | 02080793        | 2"            | 2.37"         | 1.67"        | 3.35"         | 2.50"        | 1.45"        | 1.24"        | 3/8        | 3/8-16 UNC-2B        |
| <i>HUB 2P A4</i>     | <i>02080808</i> |               |               |              |               |              |              |              |            |                      |
| <i>HUB 2 1/2P</i>    | <i>02080794</i> | <i>2 1/2"</i> | <i>2.87"</i>  | <i>1.95"</i> | <i>3.90"</i>  | <i>3.00"</i> | <i>1.69"</i> | <i>1.24"</i> | <i>1/2</i> | <i>1/2-13 UNC-2B</i> |
| <i>HUB 2 1/2P A4</i> | <i>02080809</i> |               |               |              |               |              |              |              |            |                      |
| HUB 3P               | 02080795        | 3"            | 3.50"         | 2.27"        | 4.55"         | 3.30"        | 2.00"        | 1.24"        | 1/2        | 1/2-13 UNC-2B        |
| <i>HUB 3P A4</i>     | <i>02080810</i> |               |               |              |               |              |              |              |            |                      |
| <i>HUB 3 1/2P</i>    | <i>02080796</i> | <i>3 1/2"</i> | <i>4.00"</i>  | <i>2.52"</i> | <i>5.05"</i>  | <i>3.70"</i> | <i>2.25"</i> | <i>1.24"</i> | <i>1/2</i> | <i>1/2-13 UNC-2B</i> |
| <i>HUB 3 1/2P A4</i> | <i>02080811</i> |               |               |              |               |              |              |              |            |                      |
| HUB 4P               | 02080797        | 4"            | 4.50"         | 2.75"        | 5.50"         | 3.90"        | 2.50"        | 1.24"        | 1/2        | 1/2-13 UNC-2B        |
| <i>HUB 4P A4</i>     | <i>02080812</i> |               |               |              |               |              |              |              |            |                      |
| HUB 5P               | 02080798        | 5"            | 5.56"         | 3.25"        | 6.56"         | 4.50"        | 3.03"        | 1.24"        | 1/2        | 1/2-13 UNC-2B        |
| <i>HUB 5P A4</i>     | <i>02080813</i> |               |               |              |               |              |              |              |            |                      |
| HUB 6P               | 02080799        | 6"            | 6.62"         | 3.87"        | 7.75"         | 5.40"        | 3.56"        | 1.44"        | 5/8        | 5/8-11 UNC-2B        |
| <i>HUB 6P A4</i>     | <i>02080814</i> |               |               |              |               |              |              |              |            |                      |
| <i>HUB 8P</i>        | <i>02080800</i> | <i>8"</i>     | <i>8.82"</i>  | <i>4.85"</i> | <i>9.82"</i>  | <i>6.40"</i> | <i>4.56"</i> | <i>1.44"</i> | <i>5/8</i> | <i>5/8-11 UNC-2B</i> |
| <i>HUB 8P A4</i>     | <i>02080815</i> |               |               |              |               |              |              |              |            |                      |
| <i>HUB 10P</i>       | <i>02080801</i> | <i>10"</i>    | <i>10.75"</i> | <i>6.08"</i> | <i>12.16"</i> | <i>7.70"</i> | <i>5.68"</i> | <i>1.65"</i> | <i>3/4</i> | <i>3/4-10 UNC-2B</i> |
| <i>HUB 10P A4</i>    | <i>02080816</i> |               |               |              |               |              |              |              |            |                      |
| <i>HUB 12P</i>       | <i>02080802</i> | <i>12"</i>    | <i>12.75"</i> | <i>7.13"</i> | <i>14.25"</i> | <i>8.70"</i> | <i>6.68"</i> | <i>1.65"</i> | <i>3/4</i> | <i>3/4-10 UNC-2B</i> |
| <i>HUB 12P A4</i>    | <i>02080817</i> |               |               |              |               |              |              |              |            |                      |

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*

## 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

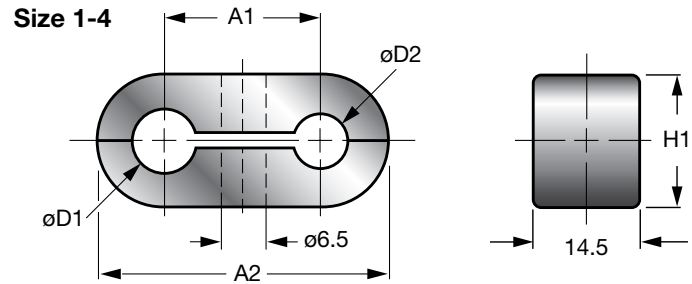
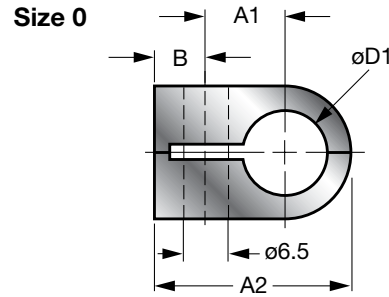
### Materials

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

### Temp Specifications

-22° to 194°F (-30° to 90°C)

### Dimensions



| Model Code                      | Part No.        | Size | Tube Size | Pipe Size | A1 | A2   | B   | $\phi D1^*$ & $\phi D2^*$ | $\phi D1^*$ & $\phi D2^*$ | H1   |
|---------------------------------|-----------------|------|-----------|-----------|----|------|-----|---------------------------|---------------------------|------|
| <i>HROS 0a KP 6.0 PP</i>        | <i>00264377</i> | 0A   | -         | -         | 9  | 22.8 | 7   | 6.0                       | 6 to 8                    | 13.5 |
| <i>HROS 0a KP 6.4 PP</i>        | <i>00267926</i> |      | 1/4"      | -         |    |      |     | 6.4                       |                           |      |
| <i>HROS 0a KP 8 PP</i>          | <i>00266455</i> |      | 5/16"     | -         |    |      |     | 8.0                       |                           |      |
| <i>HROS 0b KP 8 PP</i>          | <i>00267982</i> | 0B   | 5/16"     | -         | 11 | 27.2 | 7   | 8.0                       | 8 to 12.7                 | 18.5 |
| <i>HROS 0b KP 9.5 PP</i>        | <i>00267981</i> |      | 3/8"      | -         |    |      |     | 9.5                       |                           |      |
| <i>HROS 0b KP 12.7 PP</i>       | <i>00267931</i> |      | 1/2"      | -         |    |      |     | 12.7                      |                           |      |
| <i>HROS 0c KP 10 PP</i>         | <i>00267993</i> | 0C   | -         | 1/8"      | 15 | 33.5 | 6.7 | 10                        | 10 to 16                  | 23.6 |
| <i>HROS 0c KP 12.7 PP</i>       | <i>00267991</i> |      | 1/2"      | -         |    |      |     | 12.7                      |                           |      |
| <i>HROS 0c KP 16 PP</i>         | <i>00264380</i> |      | 5/8"      | -         |    |      |     | 16                        |                           |      |
| <i>HROS 0d KP 14 PP</i>         | <i>00268008</i> | 0D   | -         | -         | 19 | 40   | 5.7 | 14                        | 14 to 25.4                | 30.6 |
| <i>HROS 0d KP 16 PP</i>         | <i>00268004</i> |      | 5/8"      | 3/8"      |    |      |     | 16                        |                           |      |
| <i>HROS 0d KP 19 PP</i>         | <i>00267999</i> |      | 3/4"      | 1/2"      |    |      |     | 19                        |                           |      |
| <i>HROS 0d KP 25.4 PP</i>       | <i>00268217</i> |      | 1"        | -         |    |      |     | 25.4                      |                           |      |
| <i>HROS 1 KP 6 - 6 PP</i>       | <i>00268231</i> | 1    | -         | -         | 18 | 32   | N/A | 6-6                       | 6 to 8                    | 13.5 |
| <i>HROS 1 KP 6.4 - 6.4 PP</i>   | <i>00268230</i> |      | 1/4"      | -         |    |      |     | 6.4-6.4                   |                           |      |
| <i>HROS 1 KP 8 - 8 PP</i>       | <i>00268229</i> |      | 5/16"     | -         |    |      |     | 8-8                       |                           |      |
| <i>HROS 2 KP 8 - 8 PP</i>       | <i>00268236</i> | 2    | 5/16"     | -         | 22 | 40.5 | N/A | 8-8                       | 8 to 12.7                 | 18.5 |
| <i>HROS 2 KP 9.5 - 9.5 PP</i>   | <i>00268237</i> |      | 3/8"      | -         |    |      |     | 9.5-9.5                   |                           |      |
| <i>HROS 2 KP 12.7 - 12.7 PP</i> | <i>00268241</i> |      | 1/2"      | -         |    |      |     | 12.7-12.7                 |                           |      |
| <i>HROS 3 KP 10 - 10 PP</i>     | <i>00268250</i> | 3    | -         | 1/8"      | 30 | 53.6 | N/A | 10-10                     | 10 to 16                  | 23.6 |
| <i>HROS 3 KP 12.7 - 12.7 PP</i> | <i>00268253</i> |      | 1/2"      | -         |    |      |     | 12.7-12.7                 |                           |      |
| <i>HROS 3 KP 16 - 16 PP</i>     | <i>00268257</i> |      | 5/8"      | -         |    |      |     | 16-16                     |                           |      |
| <i>HROS 4 KP 14 - 14 PP</i>     | <i>00268270</i> | 4    | -         | -         | 38 | 68.3 | N/A | 14-14                     | 14 to 25.4                | 30.6 |
| <i>HROS 4 KP 16 - 16 PP</i>     | <i>00268272</i> |      | 5/8"      | 3/8"      |    |      |     | 16-16                     |                           |      |
| <i>HROS 4 KP 19 - 19 PP</i>     | <i>00268275</i> |      | 3/4"      | 1/2"      |    |      |     | 19-19                     |                           |      |
| <i>HROS 4 KP 25.4 - 25.4 PP</i> | <i>00268280</i> |      | 1"        | -         |    |      |     | 25.4-25.4                 |                           |      |

\*D1 and D2 may be different bore sizes. Dimensions listed are standard.

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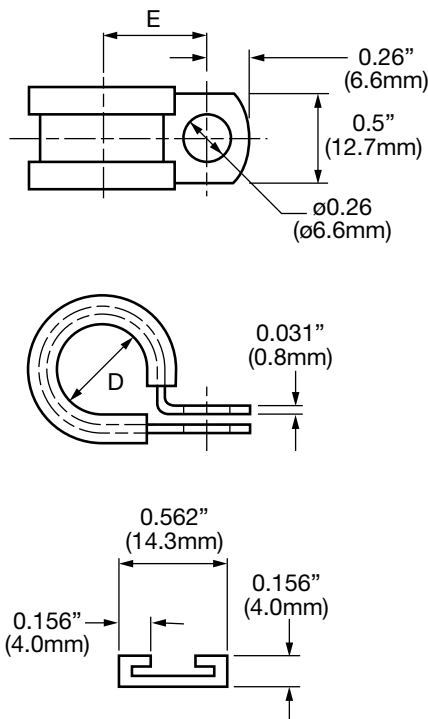
*Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability*

*Not all combinations are available*

## HSPN Series



### Dimensions



### Description

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

### Features

HSPN clamps provide electrical insulation and vibration absorption.

### 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

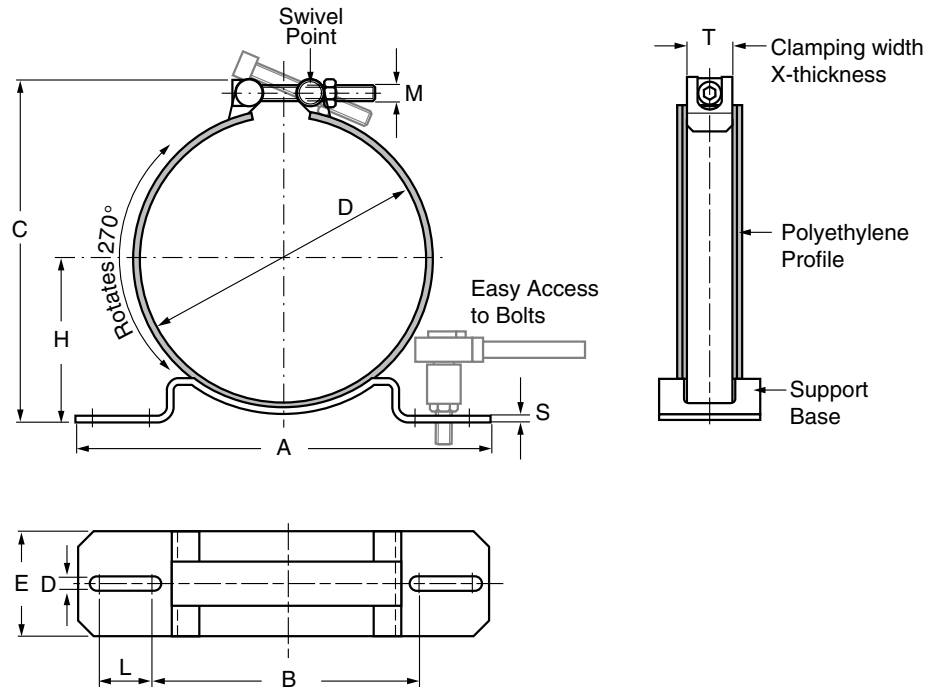
| Model Code | Part No. | Holding Dia. D | E               |
|------------|----------|----------------|-----------------|
| HSPN-3     | 02080818 | 3/16" (4.8)    | 3/8" (9.5)      |
| HSPN-4     | 02080819 | 1/4" (6.4)     | 13/32" (10.3)   |
| HSPN-4 A2  | 02080844 |                |                 |
| 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) |

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

## 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

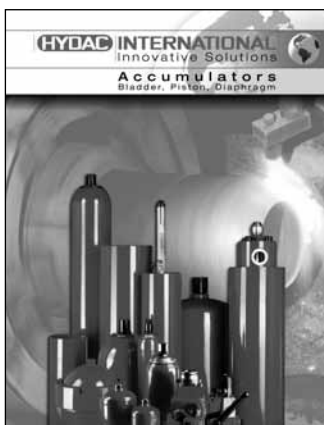
### Materials

| 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



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

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

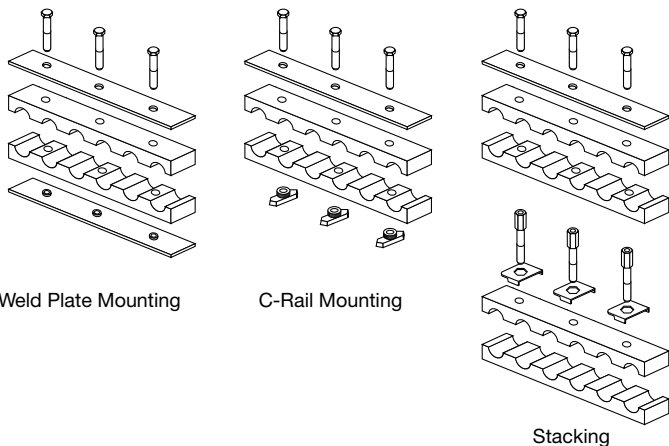
## HRRL & HRRLE Series Series Strip Clamps

### 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

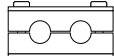
C-Rail Mounting

Stacking

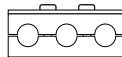
### Number of Lines & Bolts

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

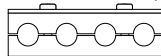
2 Lines / 2 Bolts (HRRL...2 X.../2...)



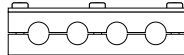
3 Lines / 2 Bolts (HRRL...3 X.../2...)



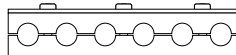
4 Lines / 2 Bolts (HRRL...4 X.../2...)



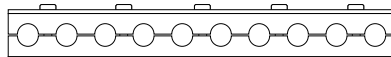
4 Lines / 3 Bolts (HRRL...4 X.../3...)



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

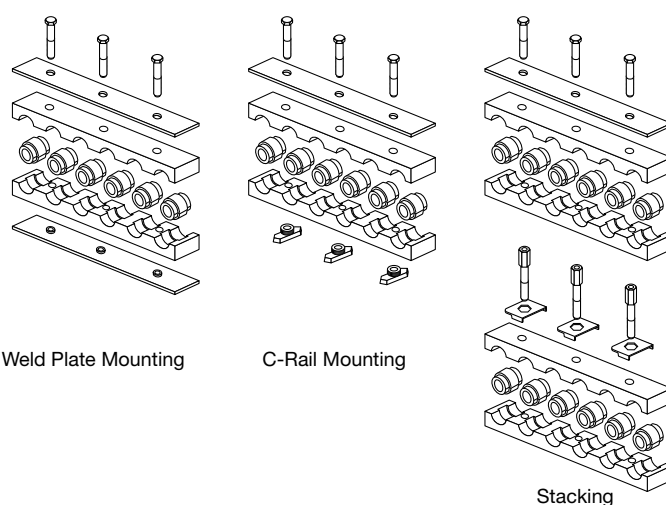


10 Lines / 5 Bolts (HRRL...10 X.../5...)



### Arrangements

**HRRLE Series: Heavy Duty with Rubber Inserts**



Weld Plate Mounting

C-Rail Mounting

Stacking

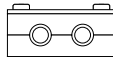
### Number of Lines & Bolts

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

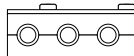
2 Lines / 1 Bolt (HRRLE...2 X.../1...)



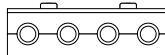
2 Lines / 2 Bolts (HRRLE...2 X.../2...)



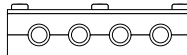
3 Lines / 2 Bolts (HRRLE...3 X.../2...)



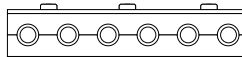
4 Lines / 2 Bolts (HRRLE...4 X.../2...)



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



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



Check out my  
Sizing Program at  
[www.hydacusa.com](http://www.hydacusa.com)



### Series Strip Program

Now ordering a Series Strip Clamp has become easier than ever before. Click on [www.hydacusa.com](http://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

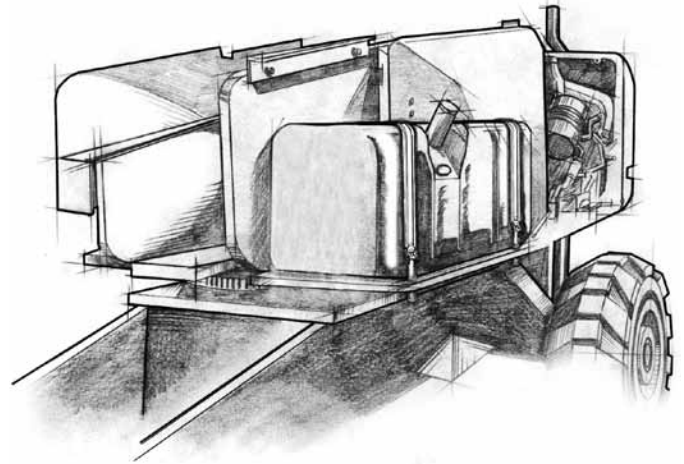
Series Strip Clamps are a custom product which must be quoted on an individual project basis. As with DIN 3015 Clamps, the Series Strip Clamps can be ordered as complete arrangements or as individual components. Series Strip Clamps are available with differing bore sizes. Contact **HYDAC** at **1.877.GO.HYDAC**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



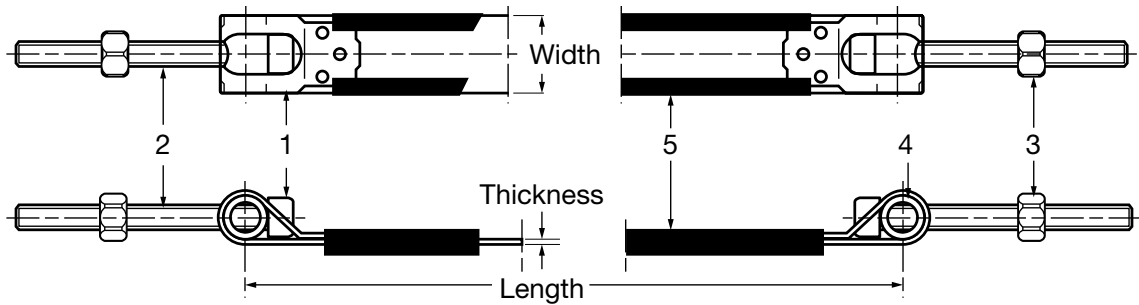
## Band Straps

### Description

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

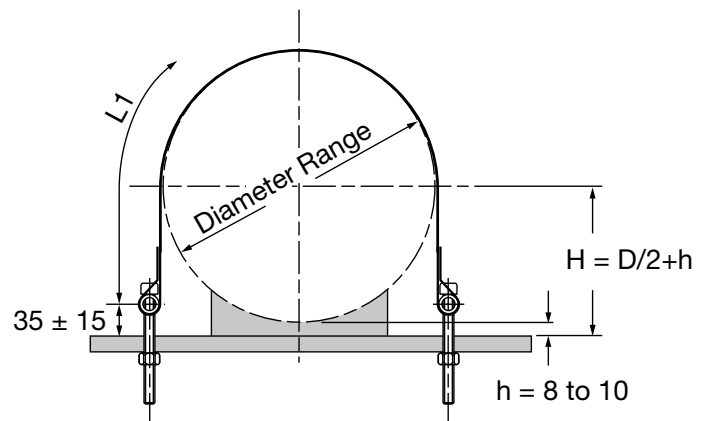


| Item | Description/Material   |
|------|--|
| 1    | Clamping Band, Stainless Steel   |
| 2    | Metric Zinc-Plated Steel Socket Head Bolts (Note: other bolt and connection styles are available based on customer's specifications) |
| 3    | Nuts, Zinc Plated Steel  |
| 4    | Swivel Sleeve, Zinc Plated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

## 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 ingress of airborne contamination and moisture, therefore increasing the efficiency and reliability of the system.

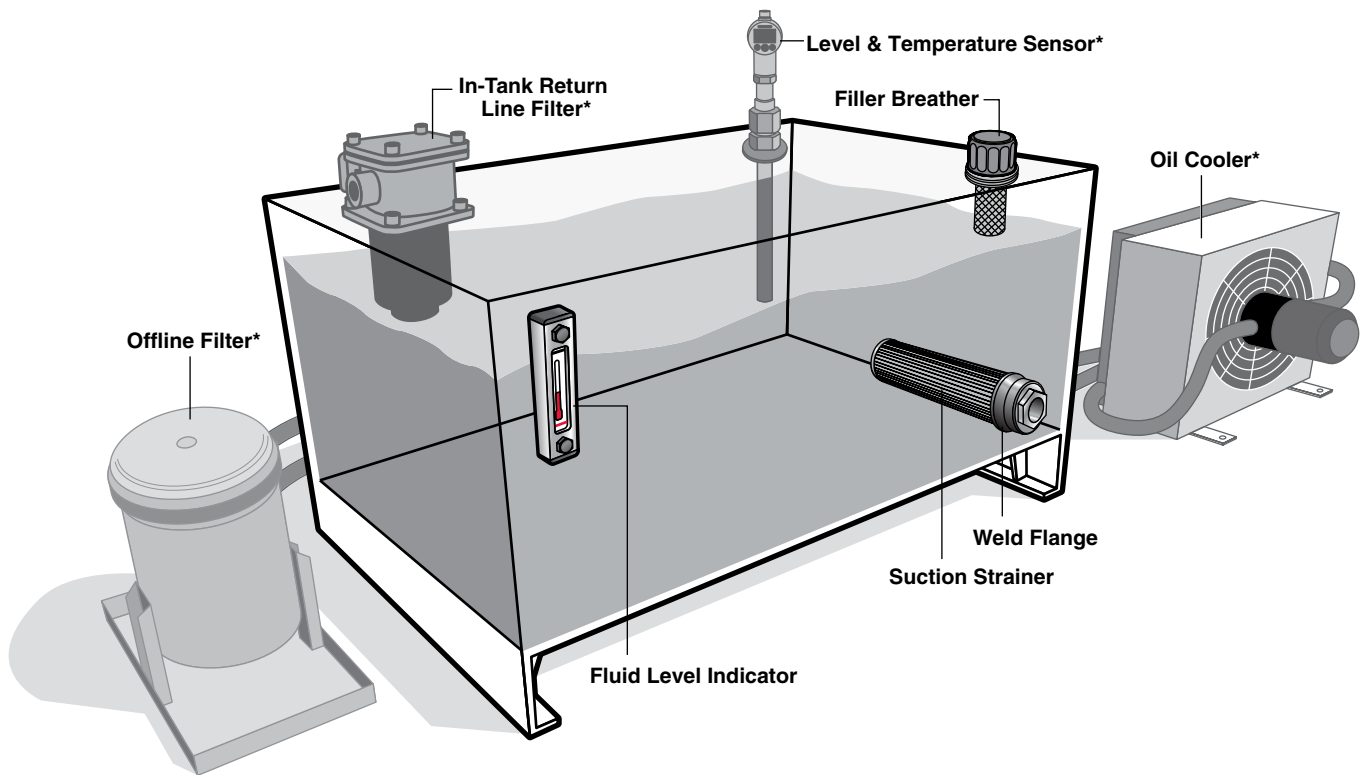
The addition of new oil to a reservoir is yet another opportunity for contaminant to enter the system. Sometimes large contaminant, which will undoubtedly cause catastrophic damage to the pump. HYDAC filler breathers will ensure that large contaminant do not enter the tank during filling, and suction 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

## 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



## 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.



## Gauge Isolators

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



## Gauges

**HPG Series** (see page 151)



## Split Flanges

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



## Overview Breather & Filler Breather Product Range



### Model

| Technical Details  | BF10                        | ELF10           | BF4                   | ELF4                  | BF30                               | ELF30                 | BF3                          | ELF3                  | BF7                   |
|--|-----------------------------|-----------------|-----------------------|-----------------------|------------------------------------|-----------------------|------------------------------|-----------------------|-----------------------|
| <b>GPM (cfm)<br/>(at <math>\Delta p = 0.01</math> bar)</b> | 53 (7)                      | 53 (7)          | 33 (4.4)              | 33 (4.4)              | 105 (14)                           | 105 (14)              | 105 (14)                     | 105 (14)              | 260 (35)              |
| <b>GPM (cfm)<br/>(at <math>\Delta p = 0.04</math> bar)</b> | 100 (13)                    | 100 (13)        | 90 (12)               | 90 (12)               | 230 (31)                           | 230 (31)              | 230 (31)                     | 230 (31)              | 475 (63)              |
| <b>Cap Material</b>  | Polyamide                   | Polyamide       | Steel                 | Steel                 | Polyamide                          | Polyamide             | Steel                        | Steel                 | Polyamide             |
| <b>Strainer Material</b>                                   | N/A                         | Polyamide       | N/A                   | Polyamide             | N/A                                | Polyamide             | N/A                          | Polyamide             | N/A                   |
| <b>Replaceable Element</b>                                 | No                          | No              | No                    | No                    | No                                 | No                    | No                           | No                    | Yes                   |
| <b>Connection Type</b>                                     | Threaded                    | Flanged         | Threaded              | Flanged               | Threaded                           | Flanged               | Threaded                     | Flanged               | Threaded              |
| <b>Connection Size(s)</b>                                  | 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  |
| <b>Element Media</b>                                       | 3 $\mu$ m paper             | 3 $\mu$ m paper | 3 or 10 $\mu$ m paper | 3 or 10 $\mu$ m paper | 3 or 10 $\mu$ m paper              | 3 or 10 $\mu$ m paper | 3 or 10 $\mu$ m paper        | 3 or 10 $\mu$ m paper | 3 or 10 $\mu$ m paper |

### Options

|                           |          |          |     |     |          |          |          |          |          |
|---------------------------|----------|----------|-----|-----|----------|----------|----------|----------|----------|
| <b>Clogging Indicator</b> | N/A      | N/A      | N/A | N/A | N/A      | N/A      | N/A      | N/A      | Optional |
| <b>Relief Valve</b>       | Optional | Optional | N/A | N/A | Optional | Optional | Optional | Optional | N/A      |
| <b>Antisplash</b>         | Optional | Optional | N/A | N/A | Optional | Optional | N/A      | N/A      | Optional |
| <b>Dipstick</b>           | 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  $p = 0.01$  bar but in optimal conditions you may size the breathers at up to  $p = 0.04$  bar (Call HYDAC if you have any questions).

See other Breather options available on page 107.



## 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 $\mu\text{m}$ paper | 3 or 10 $\mu\text{m}$ paper | 3 or 10 $\mu\text{m}$ paper |

| Technical Details                                       | BF5                         | ELF5                        | BF52                        | ELF52                       | BF8                             | BF9                        |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------------------|----------------------------|
| <b>GPM (cfm)</b><br>(at $v = 20 \text{ m/s}$ )          | 690 (92)                    | 690 (92)                    | 950 (127)                   | 950 (127)                   | 1450 (193)                      | 2550 (340)                 |
| <b>GPM (cfm)</b><br>(at $\Delta p = 0.01 \text{ bar}$ ) | 790 (105)                   | 790 (105)                   | 1320 (176)                  | 1320 (176)                  | 2640 (352)                      | 3960 (528)                 |
| <b>Cap Material</b>                                     | Steel                       | Steel                       | Steel                       | Steel                       | Steel                           | Steel                      |
| <b>Strainer Material</b>                                | N/A                         | Steel                       | N/A                         | Steel                       | N/A                             | N/A                        |
| <b>Replaceable Element</b>                              | Yes                         | Yes                         | Yes                         | Yes                         | Yes                             | Yes                        |
| <b>Connection Type</b>                                  | Threaded                    | Flanged                     | Threaded                    | Flanged                     | Flanged                         | Flanged                    |
| <b>Connection Size(s)</b>                               | 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        |
| <b>Element Media</b>                                    | 3 or 10 $\mu\text{m}$ paper | 3 or 10 $\mu\text{m}$ paper | 3 or 10 $\mu\text{m}$ paper | 3 or 10 $\mu\text{m}$ paper | 1 or 2 $\mu\text{m}$ betamicron | 2 $\mu\text{m}$ betamicron |

## Options

|          |          |          |
|----------|----------|----------|
| Optional | Optional | Optional |
| N/A      | N/A      | N/A      |
| Optional | N/A      | N/A      |
| N/A      | N/A      | N/A      |

|                           |          |     |     |     |          |          |
|---------------------------|----------|-----|-----|-----|----------|----------|
| <b>Clogging Indicator</b> | N/A      | N/A | N/A | N/A | Optional | Optional |
| <b>Relief Valve</b>       | Optional | N/A | N/A | N/A | N/A      | N/A      |
| <b>Antisplash</b>         | N/A      | N/A | N/A | N/A | N/A      | N/A      |
| <b>Dipstick</b>           | 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  $v = 20 \text{ m/s}$  but in optimal conditions you may size the breathers at up to  $\Delta p = 0.01 \text{ bar}$  (Call HYDAC if you have any questions).

See other Breather options available on page 107.

## **BL Series** (pages 119-120)



### **Specifications:**

- Maximum flow rate: 110 SCFM/850 GPM
- 3 or 10 micron
- Steel Canister
- 10 micron Betamicon®
- 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)

## Breathers & Filler Breather Technical Overview

### Importance of Breathers

Breathers are an 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

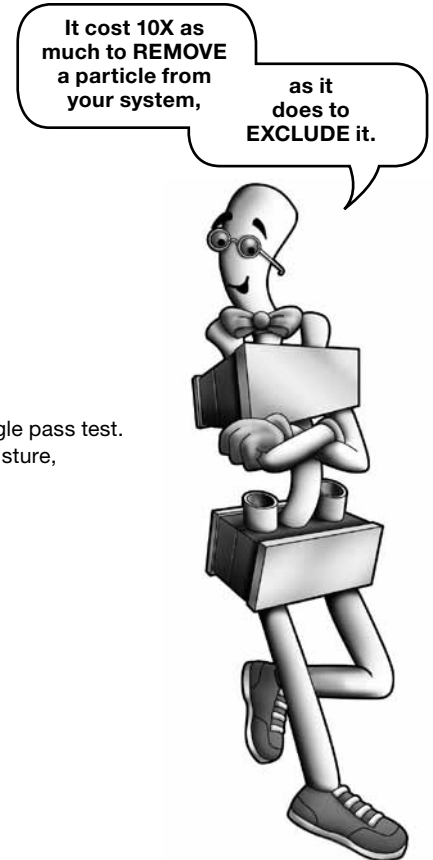
HYDAC Breathers use HIGH quality filtration.

- 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.

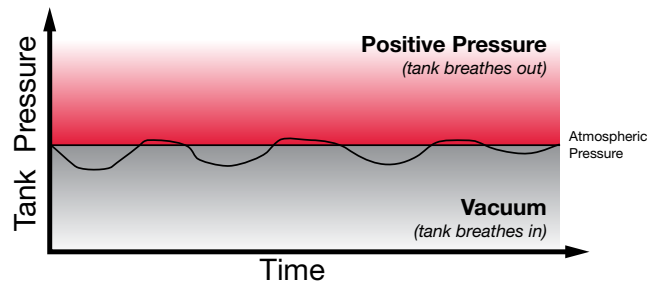
### Pressurized Breathers

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

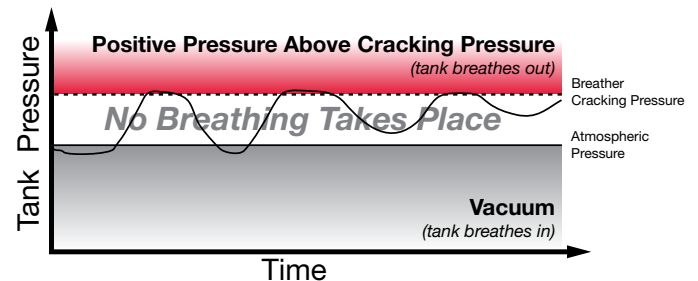


**When fluid level rises**, the tank pressure rises and air is immediately expelled through the breather whenever positive pressure exists.

**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.

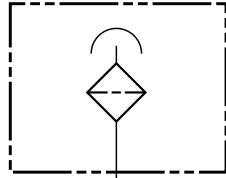
**When fluid level lowers**, the tank pressure drops until a vacuum is created at which point, air will be drawn in through the breather.

**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.**

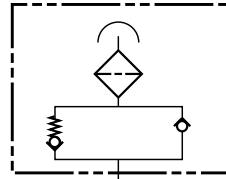
## BF...3 & BF...4 Series



### 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

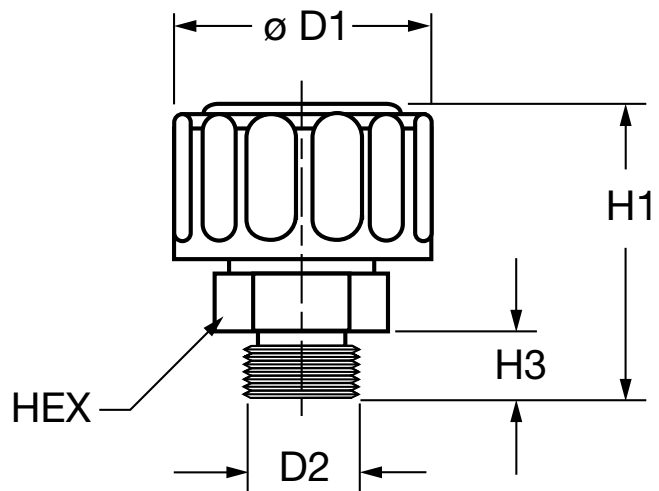
### Model Code

|                                   |                        |                                      |   |              |  |                       |             |          |
|-----------------------------------|------------------------|--------------------------------------|---|--------------|--|-----------------------|-------------|----------|
|                                   | <b>BF</b>              | <b>P</b>                             | <b>3</b>  | <b>G</b>     | <b>10</b>  | <b>W</b>              | <b>1.0</b>  | <b>/</b> |
| <b>Filter Type</b>                | BF = Breather          |                                      |   |              |  |                       |             |          |
| <b>Filter Element Material</b>    |                        | P = Phenolic Resin Impregnated Paper |   |              |  |                       |             |          |
| <b>Size</b>                       |                        |                                      | 3 = 31 scfm (230 gpm) max.<br>4 = 12 scfm (90 gpm) max. |              |  |                       |             |          |
| <b>Type of Connection</b>         |                        |                                      |   | G = Threaded |  |                       |             |          |
| <b>Filtration Rating (micron)</b> |                        |                                      |   |              | 3 = 3µm Air Filtration<br>10 = 10µm Air Filtration |                       |             |          |
| <b>Gauge Options</b>              |                        |                                      |   |              |  | W = Without Indicator |             |          |
| <b>Modification Number</b>        |                        |                                      |   |              |  |                       |             |          |
|                                   | <b>Connection Type</b> |                                      |   |              |  |                       |             |          |
|                                   | G (BSPP)               |                                      |   |              |  |                       |             |          |
|                                   |                        | Thread                               | Rel. Press.   |              | N (NPT)  | Thread                | 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                                | -   |              | -  | -                     |             |          |
| <b>Supplementary Details</b>      |                        |                                      |   |              |  |                       |             |          |
| (omit)                            |                        |                                      |   |              |  |                       |             |          |
| 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



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

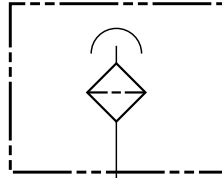
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm) and lbs./(kg.)



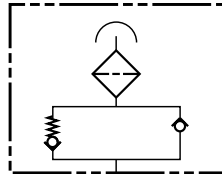
## BF...10 Series



### 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  $\mu$ m
- 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

|                                      |                        |          |           |            |          |          |            |          |               |
|--------------------------------------|------------------------|----------|-----------|------------|----------|----------|------------|----------|---------------|
|                                      | <b>BF</b>              | <b>P</b> | <b>10</b> | <b>G</b>   | <b>3</b> | <b>W</b> | <b>1.0</b> | <b>/</b> | <b>-RV0.4</b> |
| <b>Filter Type</b>                   | _____                  |          |           |            |          |          |            |          |               |
| BF = Breather                        |                        |          |           |            |          |          |            |          |               |
| <b>Filter Element Material</b>       | _____                  |          |           |            |          |          |            |          |               |
| P = Phenolic Resin Impregnated Paper |                        |          |           |            |          |          |            |          |               |
| <b>Size</b>                          | _____                  |          |           |            |          |          |            |          |               |
| 10                                   |                        |          |           |            |          |          |            |          |               |
| <b>Type of Connection</b>            | _____                  |          |           |            |          |          |            |          |               |
| G = BSPP                             |                        |          |           |            |          |          |            |          |               |
| N = NPT                              |                        |          |           |            |          |          |            |          |               |
| U = SAE                              |                        |          |           |            |          |          |            |          |               |
| M = Metric threads                   |                        |          |           |            |          |          |            |          |               |
| <b>Filtration Rating (micron)</b>    | _____                  |          |           |            |          |          |            |          |               |
| 3 = 3 $\mu$ m Air Filtration         |                        |          |           |            |          |          |            |          |               |
| <b>Gauge Option</b>                  | _____                  |          |           |            |          |          |            |          |               |
| W = Without Indicator                |                        |          |           |            |          |          |            |          |               |
| <b>Modification Number</b>           | _____                  |          |           |            |          |          |            |          |               |
|                                      | <b>Connection Type</b> |          |           |            |          |          |            |          |               |
|                                      | 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   | -         |            |          |          |            |          |               |

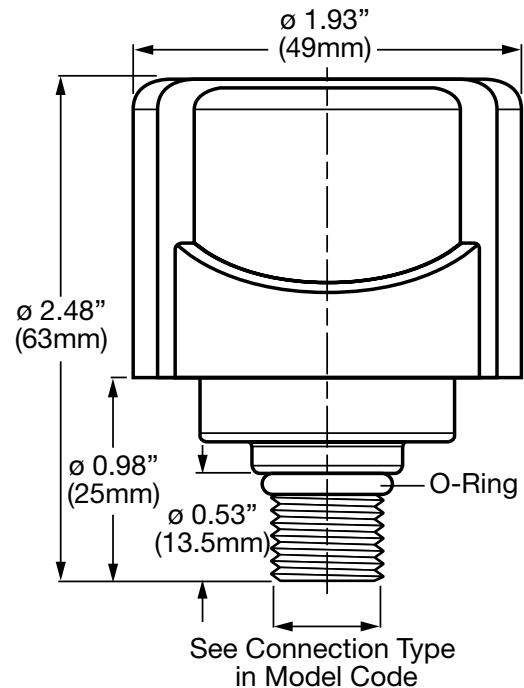
### Options

- (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

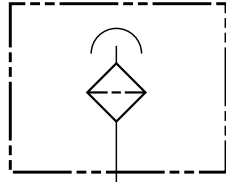


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm) and lbs./(kg.)

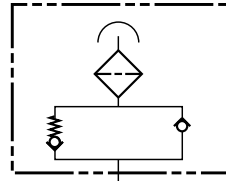
## BF...30 Series



### Hydraulic Symbols



standard

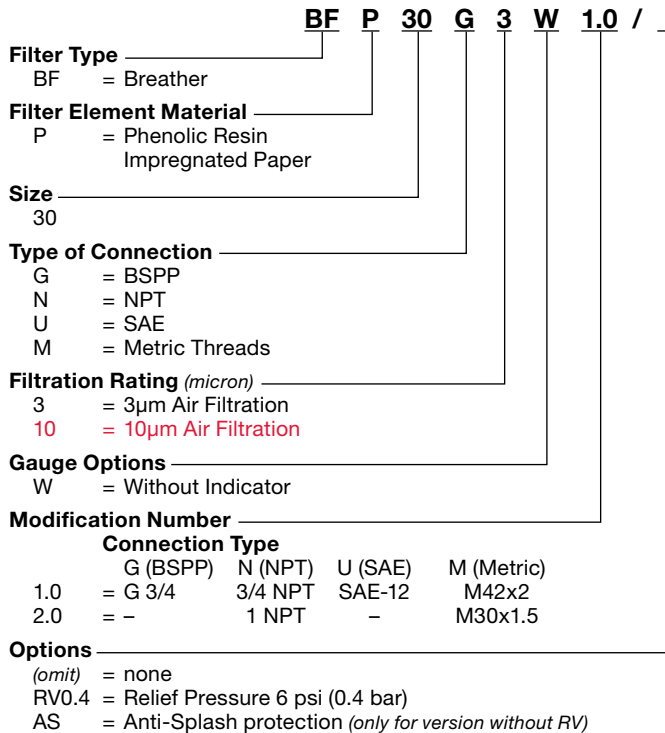


with relief valve

### 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

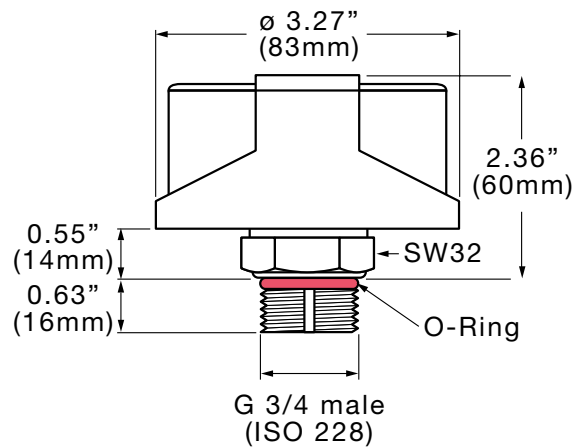


*Model Codes containing selections listed in RED italics are non-standard items – Minimum quantities will apply*

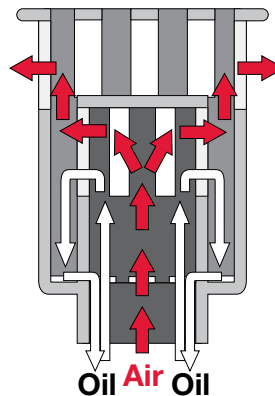
*Contact HYDAC for information and availability*

*Not all combinations are available*

### Dimensions



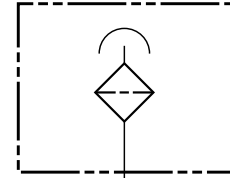
### Anti-Splash



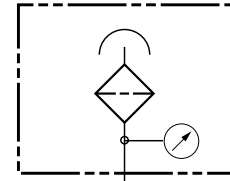
## BF...7 Series



### Hydraulic Symbols



standard

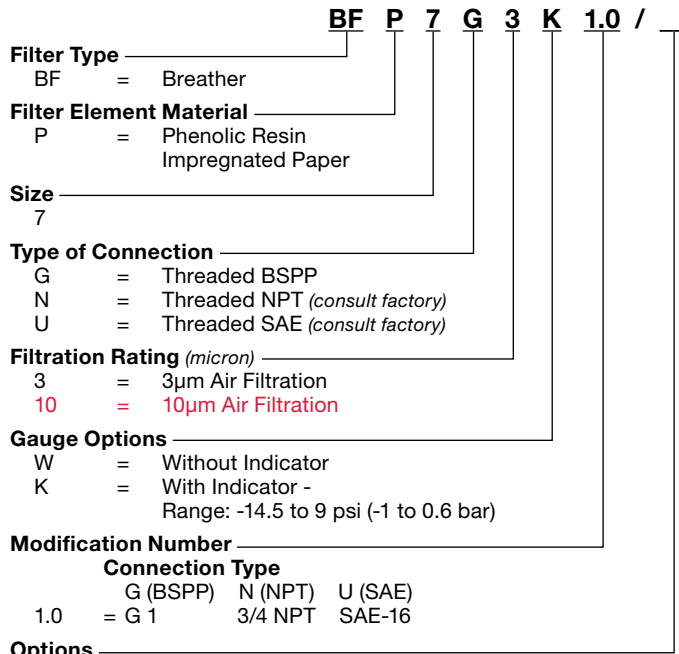


with indicator

### 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)

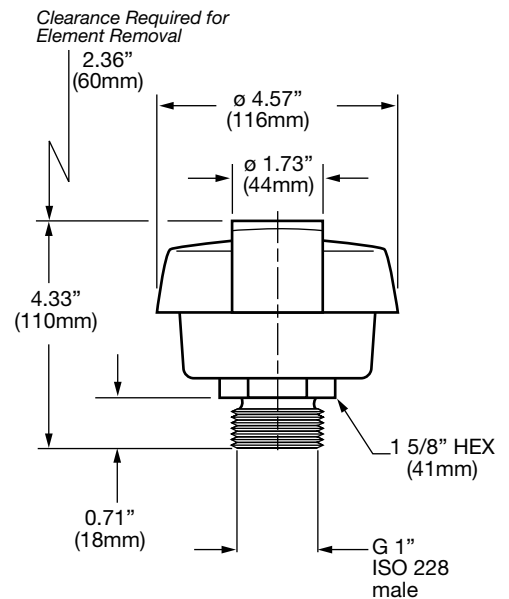
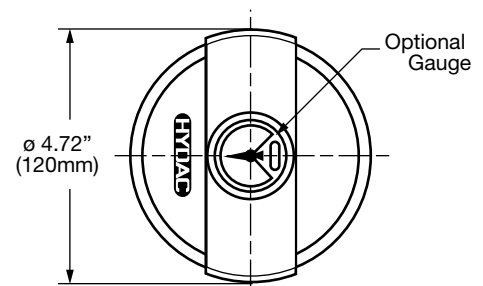
### Model Code



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



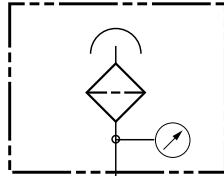
| Micron | Model Code | Part No. |
|--------|------------|----------|
| 3      | 0007L003P  | 00310948 |
| 10     | 0007L010P  | 00310485 |

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

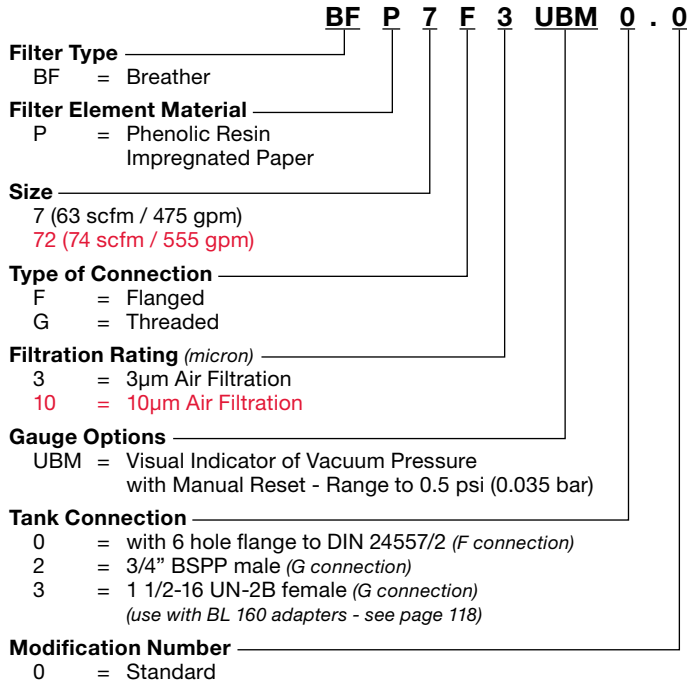


with indicator

### 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

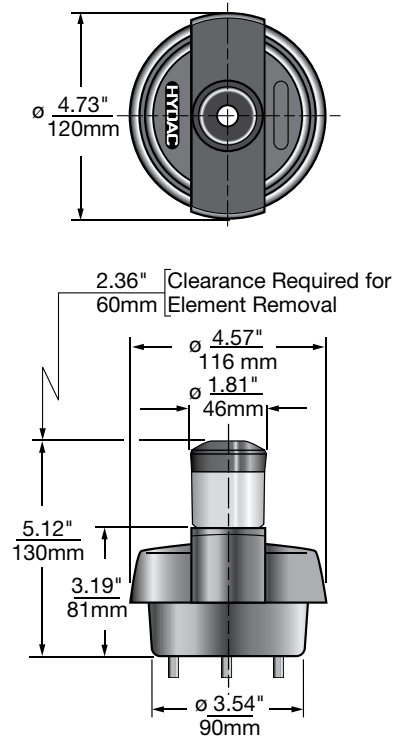


Model Codes containing selections listed in RED italics are non-standard items - Minimum quantities will apply  
Contact HYDAC for information and availability

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

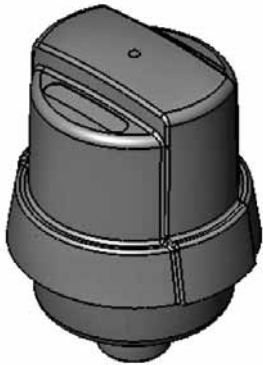
### Part Number

01279244

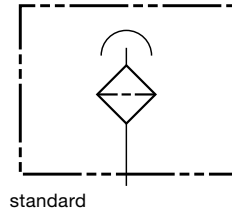


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm) and lbs./(kg.)

## BF...72 Series



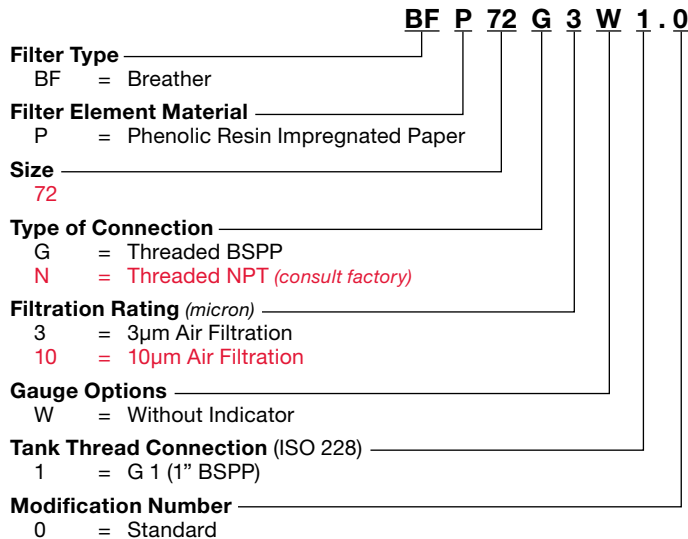
### Hydraulic Symbols



### 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)

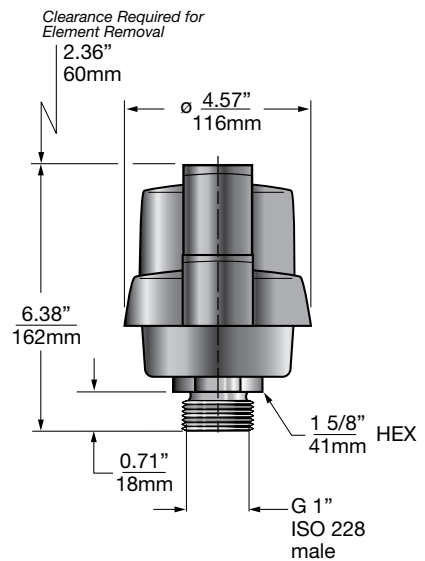
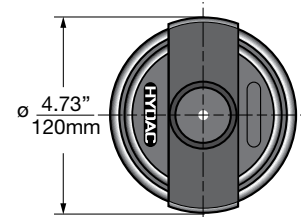
### Model Code



*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



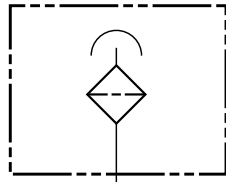
| Micron | Model Code | Part No. |
|--------|------------|----------|
| 3      | 0072L003P  | 03269023 |
| 10     | 0072L010P  | 03190037 |

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.)

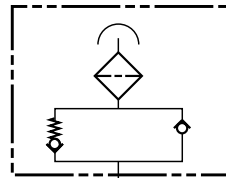
## BF...5 Series



### Hydraulic Symbols



standard

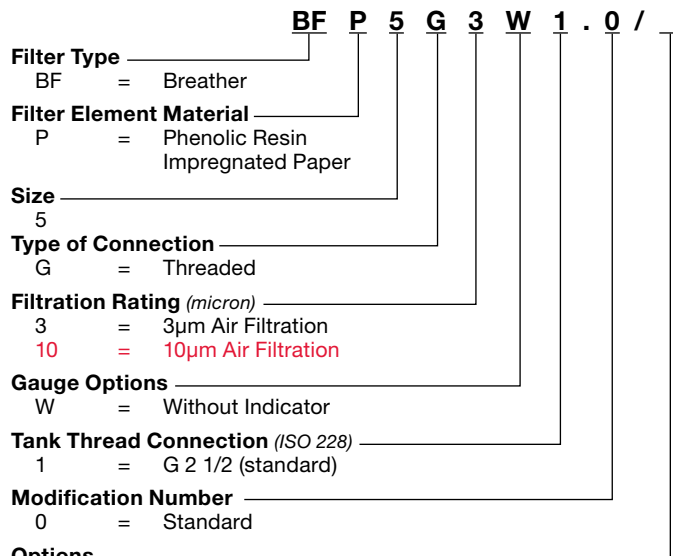


with relief valve

### 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

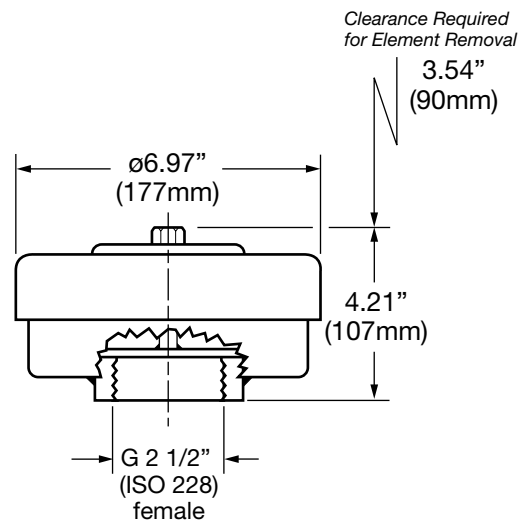
### Model Code



*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



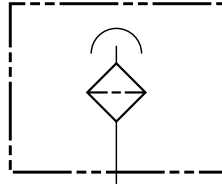
| Micron | Model Code | Part No. |
|--------|------------|----------|
| 3      | 0005L003P  | 00309450 |
| 10     | 0005L010P  | 00306097 |

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.)

## BF...52 Series



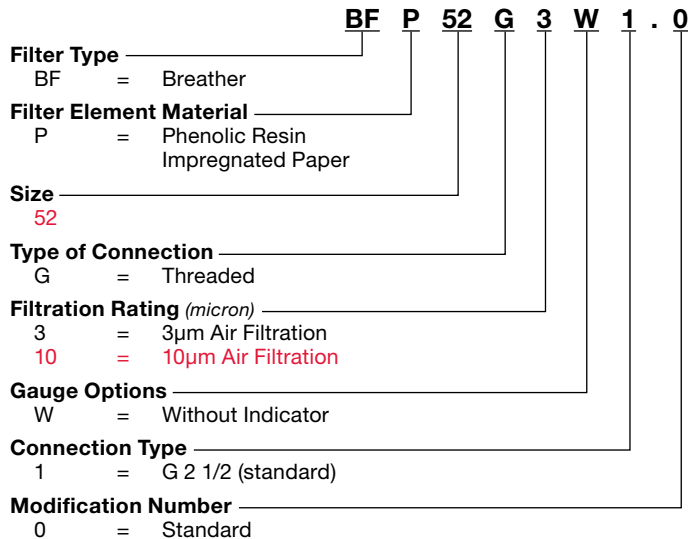
### Hydraulic Symbols



### 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

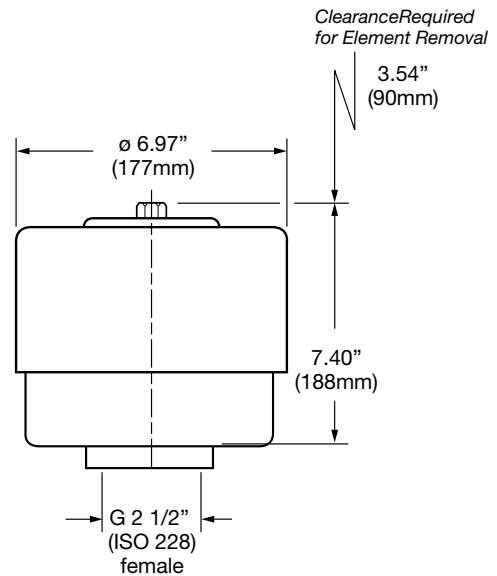
### Model Code



*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



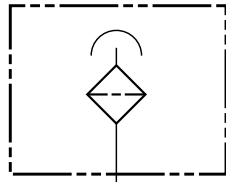
| Micron | Model Code | Part No. | Qty Req. |
|--------|------------|----------|----------|
| 3      | 0005L003P  | 00309450 | 2        |
| 10     | 0005L010P  | 00306097 | 2        |

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.)

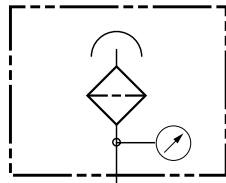
## BF...8 Series



### Hydraulic Symbols



standard

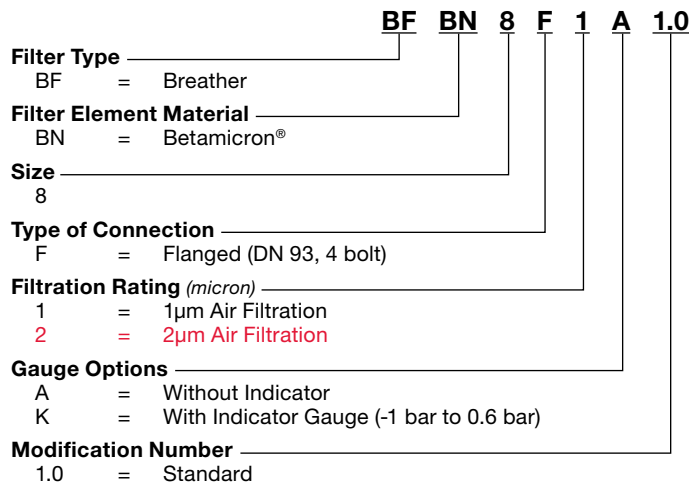


with indicator

### 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

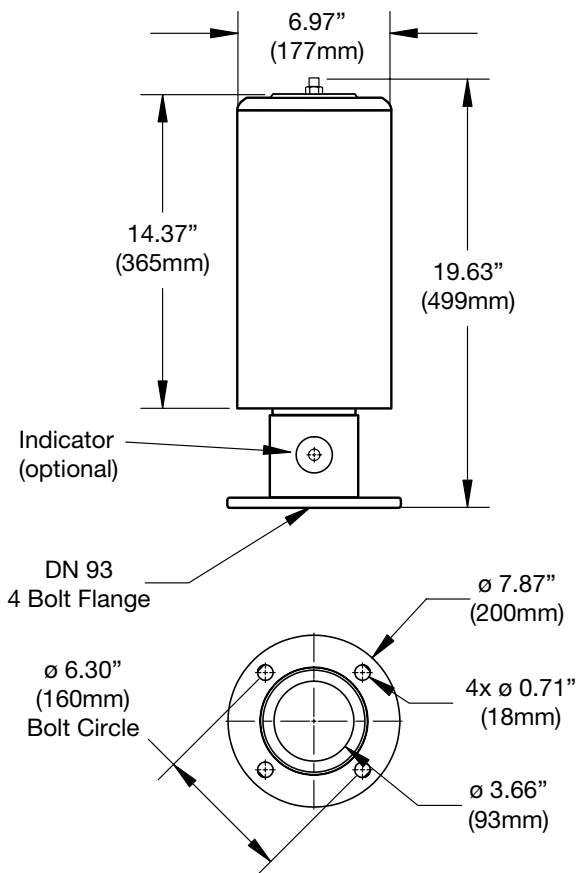
### Model Code



*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 |

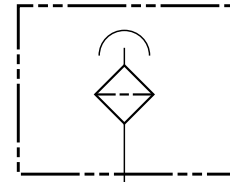
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm) and lbs./(kg.)



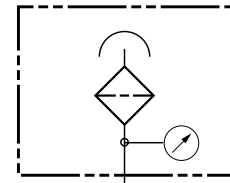
## BF...9 Series Breathers with Oil Mist Trap



### Hydraulic Symbols



standard



with indicator

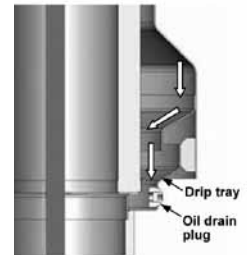
### Specifications

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

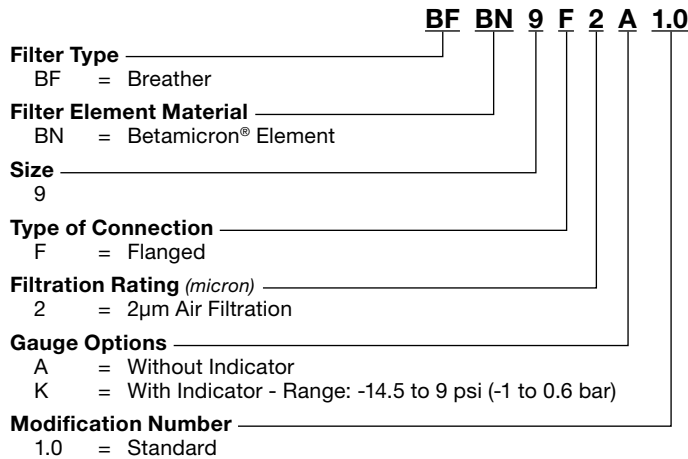
### Oil Mist Trap

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.



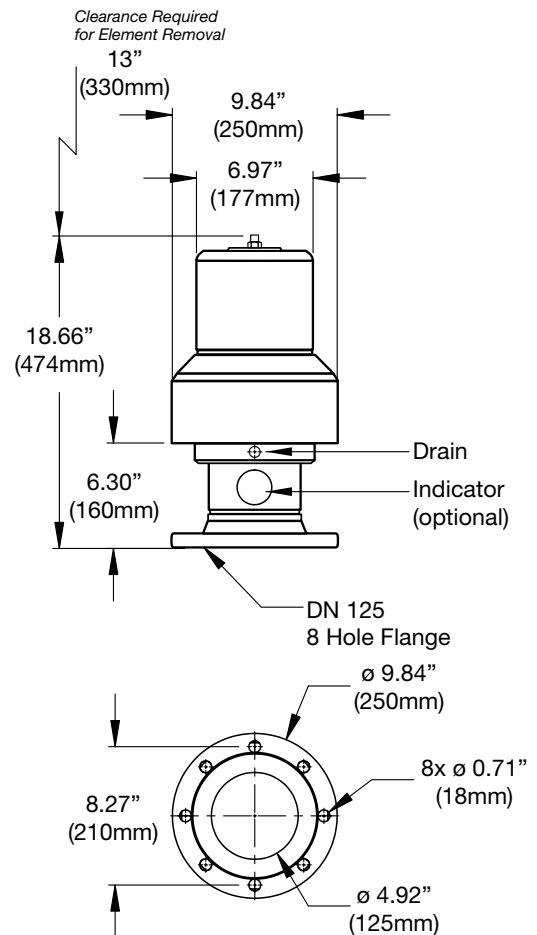
### Model Code



*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



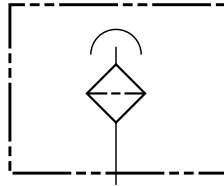
| Micron | Model Code | Part No. |
|--------|------------|----------|
| 2      | 0009L002BN | 01287471 |

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



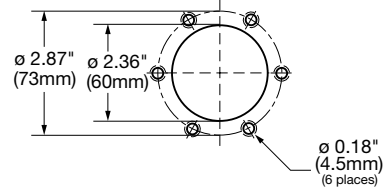
### Hydraulic Symbols



### 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

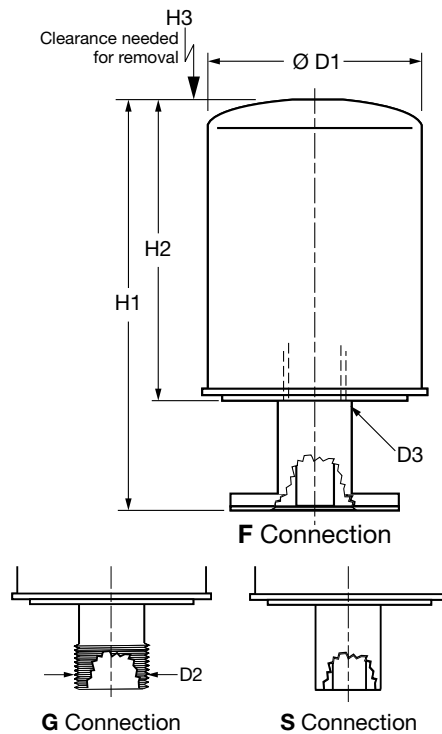
#### Type Number

- | 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)

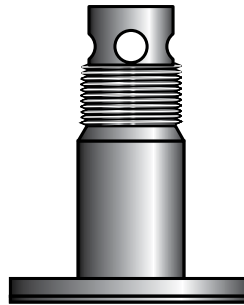
## Breather Components

### Replacement Elements



| Size | 10 micron Paper        | 3 micron Paper         | 10 micron Betamicon®    | 3 micron BLT Desiccant |
|------|------------------------|------------------------|-------------------------|------------------------|
| 80   | 0080MA010P<br>02058058 | 0080MA003P<br>02058079 | 0080MA010BN<br>02059424 | N/A                    |
| 160  | 0160MA010P<br>02058116 | 0160MA003P<br>02058114 | 0160MA010BN<br>02059436 | 0160MU003M<br>01265765 |
| 180  | 0180MA010P<br>02058121 | 0180MA003P<br>02057912 | 0180MA010BN<br>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<br>02064393        | N/A  | N/A                                     |
| 160<br>180 | ADAPTER BL 160/180 G 1 1/4" NPT NBR<br>02064394 | ADAPTER BL 160/180 F (PHOS)<br>00407646 (w/out Gasket)<br>02073864 (w/ Gasket) | ADAPTER BL 160/180 S (PHOS)<br>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)

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

## BD Series Drymicron



### 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!

### 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.

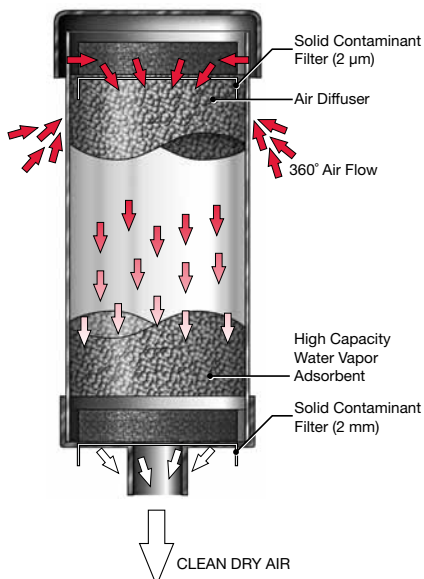
#### Color Indicator

- 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.



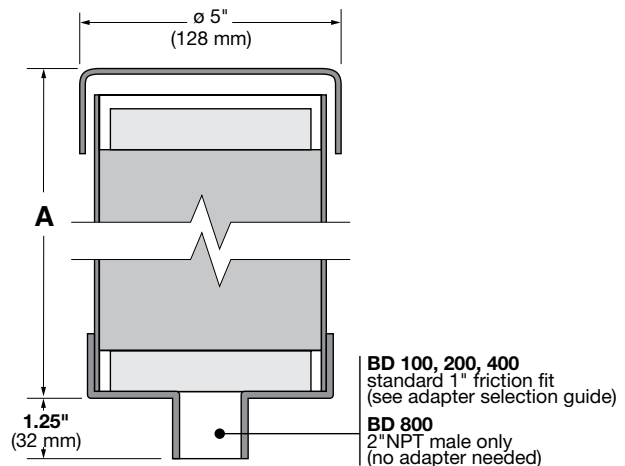
### Advantages

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)

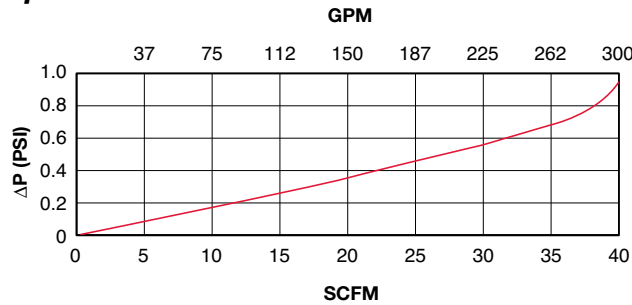
| Model Code       | Part No. | Height (A) | Weight    | Max. H <sub>2</sub> O Capacity lbs (ltr) |
|------------------|----------|------------|-----------|--|
| BD 100 X 2 W 0.0 | 02074253 | 3.5 (90)   | 1.3 (0.6) | 0.2 (0.1)                                |
| BD 200 X 2 W 0.0 | 02074254 | 5 (128)    | 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.)

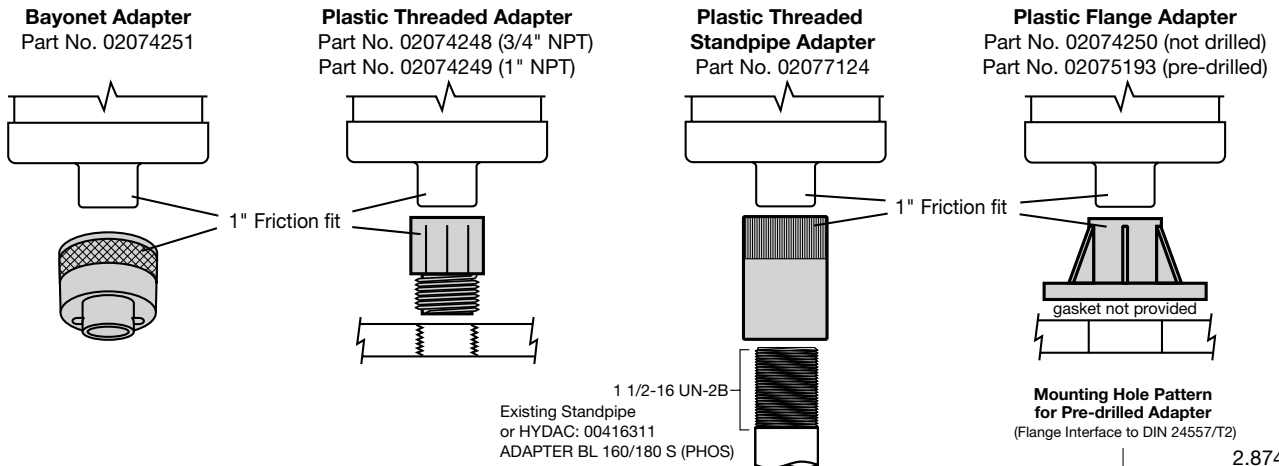
## Product Specifications

| 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 <sup>2</sup> / 133 cm <sup>2</sup>   |
| Operating Temperature Range                 |            | -26° to 200°F (-32° to 93°C)   |
| Silica Gel:                                 | Adsorption | Up to 40% of its weight of water   |
| Chemical Resistance                         |            | Resistant to alkalis, hydrocarbons, non-oxidizing acids, salt water, and mineral or synthetic oils |

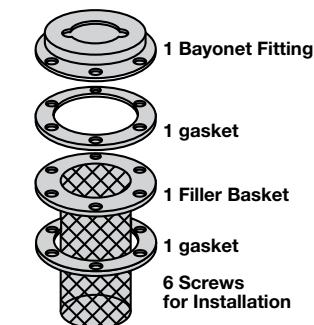
## Flow Rate vs Pressure Drop



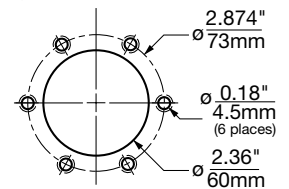
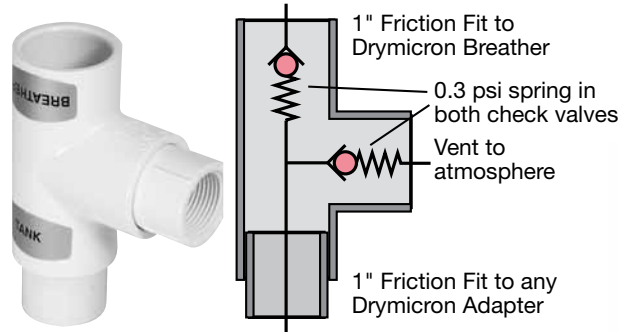
## Adapters Selection Guide (adapters sold separately - Note: no adapter needed for BD 800)



## Bayonet Flange Kit with 3.5" Steel Basket



## Plastic Bypass Adapter



**Plastic Adapter**  
Part No. 02081637

## BD 900 Series Designed for high airflow requirements



**DRYMICRONS help stop oil contamination and protect your expensive equipment!**

### Description

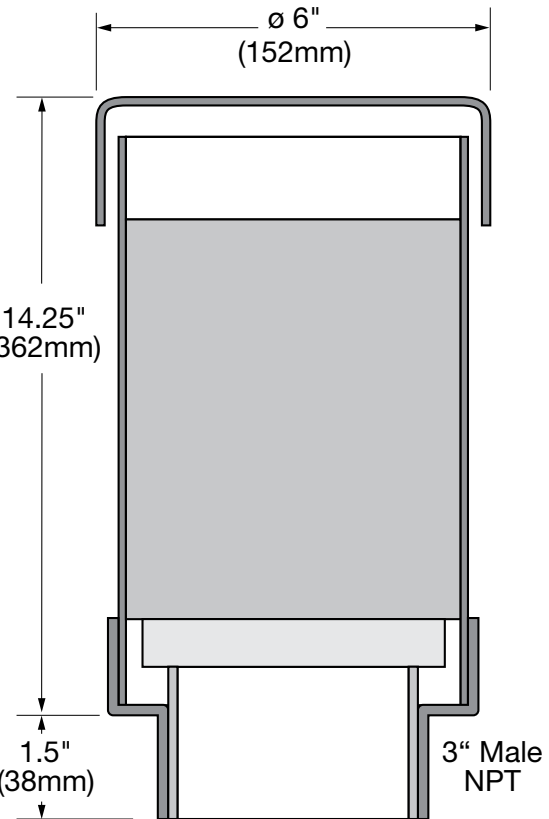
A disposable desiccant cartridge screws into the top cap assembly for economical replacement when the breather has reached the end of its useful life. The BD 900 is designed for applications with airflow requirements up to 250 scfm (1875 gpm). Operating at this flow rate produces a pressure drop of less 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) |

## 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

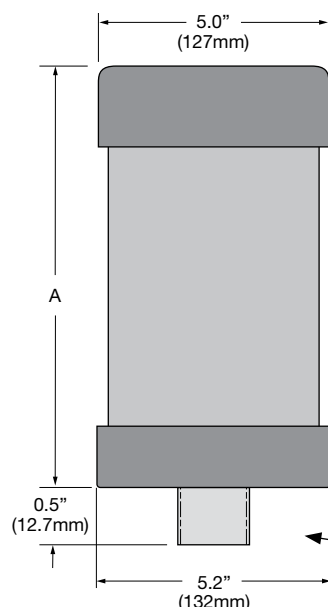
### Components



Replacement Cartridge

Re-usable Bottom Cap

### Dimensions



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

**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.



Complete Assembly

Cartridge

Cap

### Features

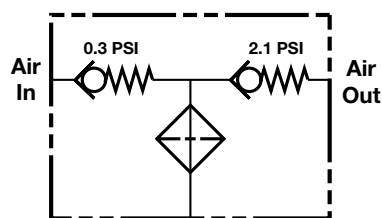
#### Two check valves

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

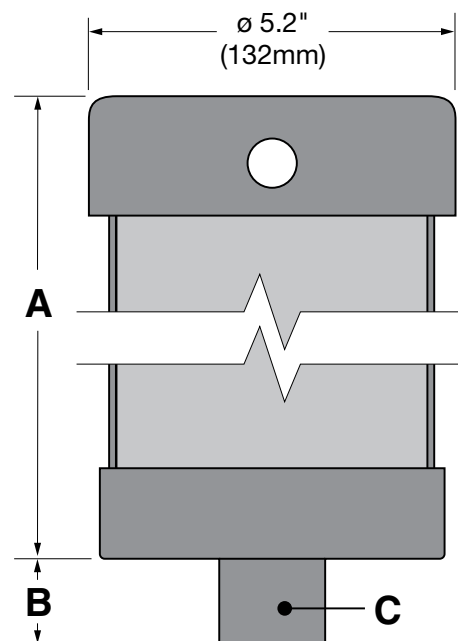
### Benefits

- 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       | H2O 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)



## 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.

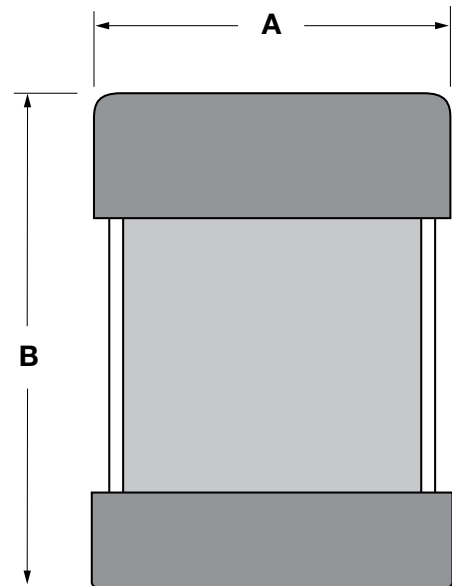
### Features

- 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

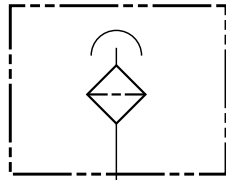
| Model             | H <sub>2</sub> O Capacity<br>lbs (ltr) | Part Number | A     | B     | Weight<br>(lbs) |
|-------------------|--|-------------|-------|-------|-----------------|
| BDZ 015 G 2 W 1.0 | 0.032 (0.015)                          | 02080980    | 2.00" | 2.25" | 0.19            |
| BDZ 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

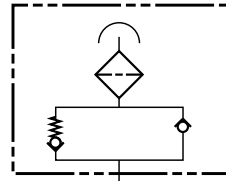
## ELF...3 & ELF...4 Series Filler Breathers



### 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)

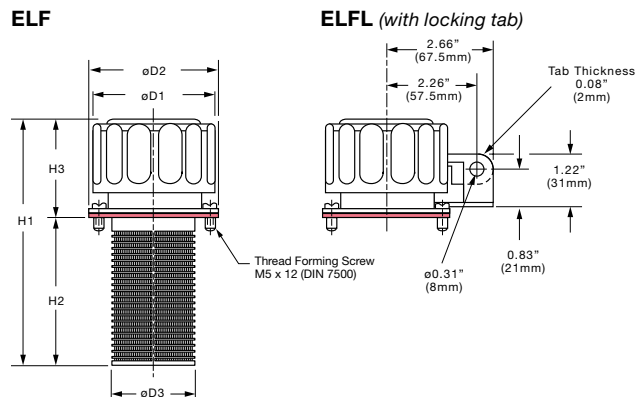
**Modification Number**  
 .0 = Standard

**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  
 SO169H8 = 8 inch plated steel filler basket (ELFP3 only)

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

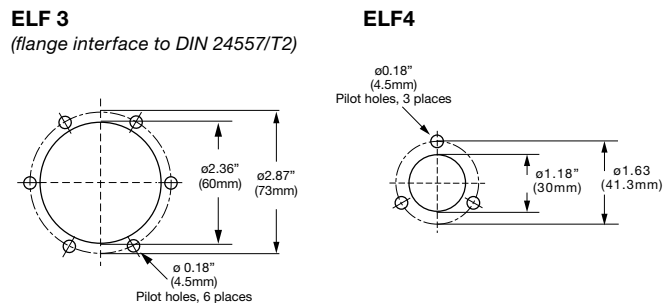
Not all combinations are available

### Dimensions



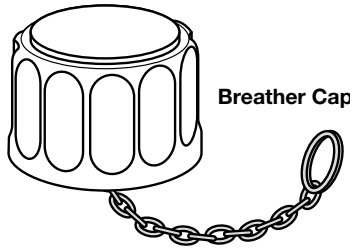
| Size  | ø D1            | ø D2            | ø D3            | H1               | H2                | H3                |
|-------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|
| ELF 3 | 2.99"<br>(76mm) | 3.27"<br>(83mm) | 2.05"<br>(52mm)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

### Mounting Hole Patterns



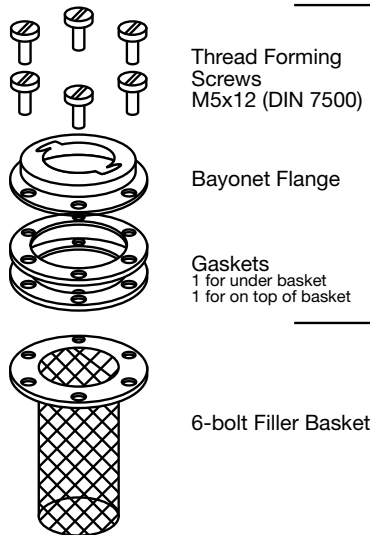
## ELF 3 Series Filler Breather Parts

### 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

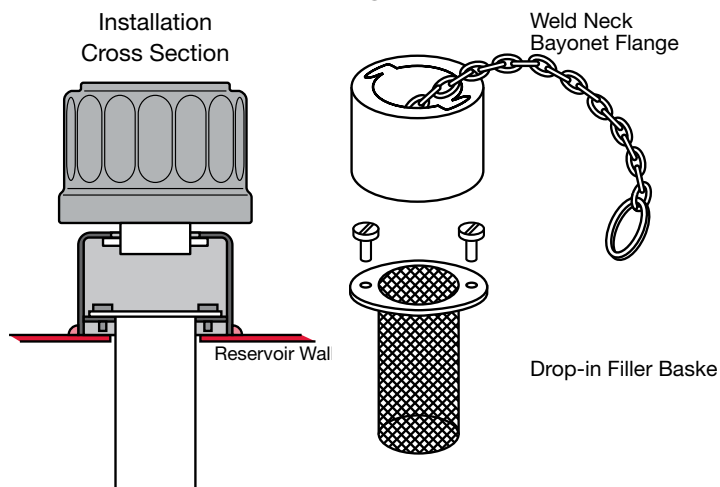


| Part               | Model Code                   | Part No. |
|--------------------|------------------------------|----------|
| Bayonet Flange Kit | ELF3 BAYONET FLANGE KIT ASSY | 00002680 |

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

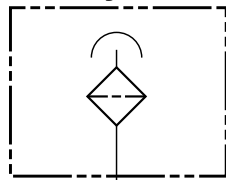


| Part             | Model Code              | Part No. |
|------------------|-------------------------|----------|
| Weld Neck        | ELF3 WELD NECK W/CHAIN  | 02080126 |
| Drop-in Strainer | ELF3 WELD NECK STRAINER | 02078939 |

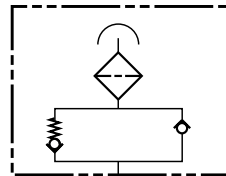
## ELF...10 Series Filler Breathers



### 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  $\mu$ m
- 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 = 3 $\mu$ m 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)

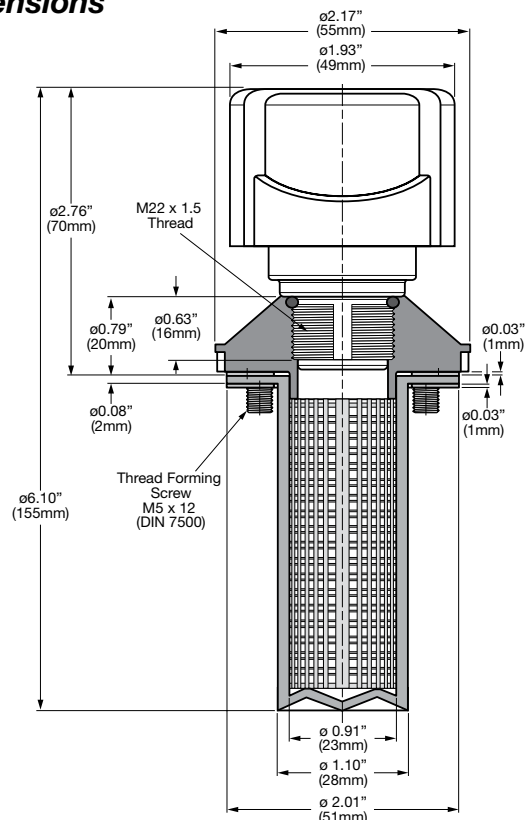
**RV0.7** = Relief Pressure, 10 psi (0.7 bar)

**AS** = Anti-splash protection (*only for version without RV*)

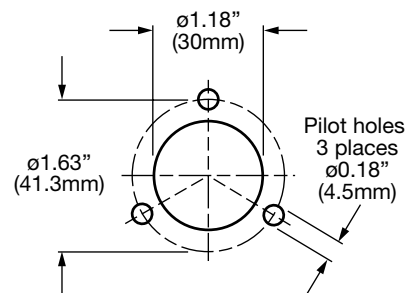
*Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply  
Contact HYDAC for information and availability*

*Not all combinations are available*

### Dimensions



### Mounting Hole Pattern



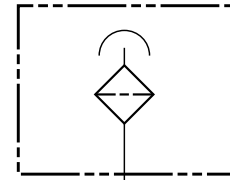
### Replacement Cap Only (with M22x1.5 thread)

| 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 |

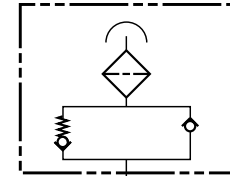
## ELF...30 Series Filler Breathers



### Hydraulic Symbols



standard

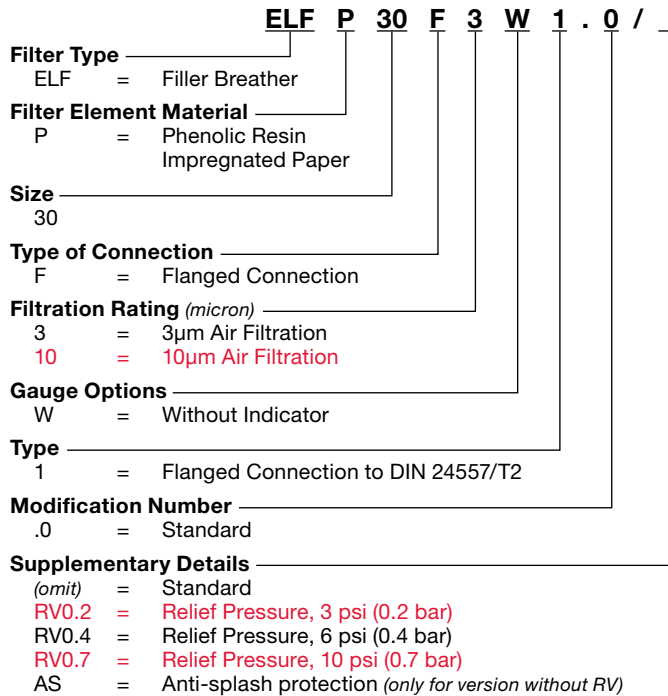


with relief valve

### 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

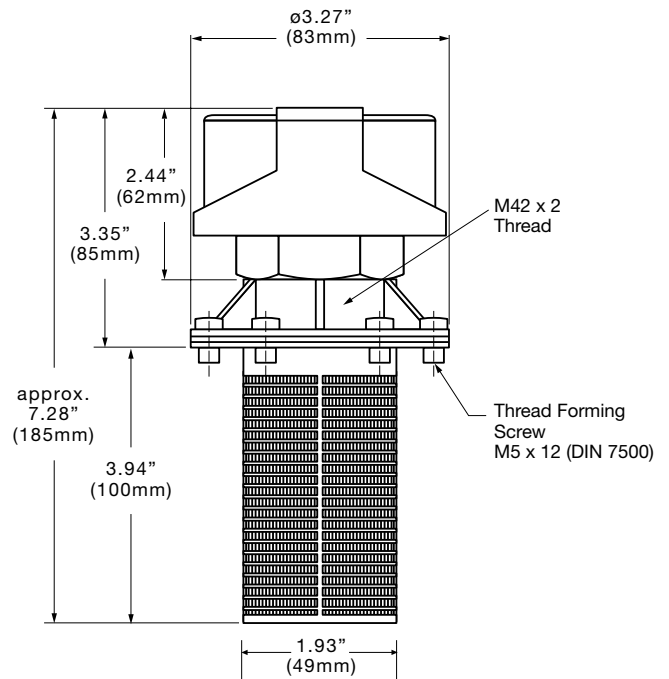
### Model Code



*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*

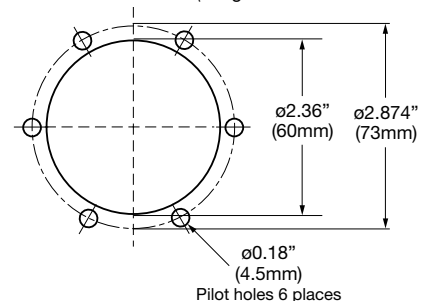
### Dimensions



### 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 |

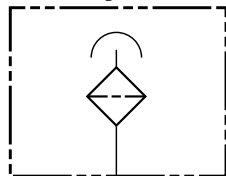
### Mounting Hole Pattern (flange interface to DIN 24557/T2)



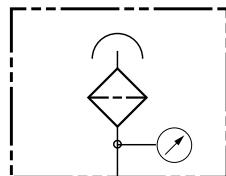
## ELF...7 Series Filler Breathers



### Hydraulic Symbols



without indicator

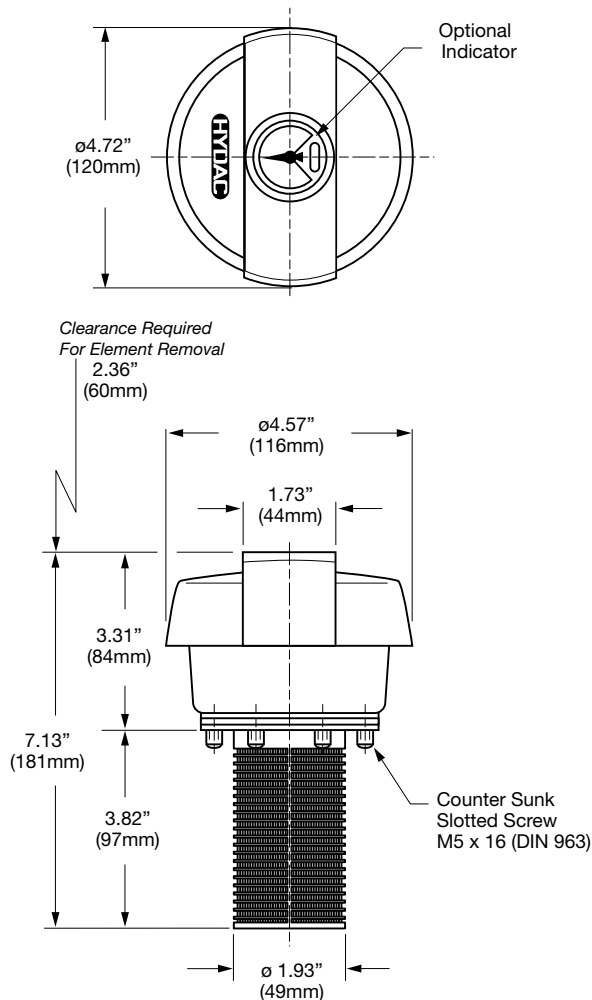


with indicator

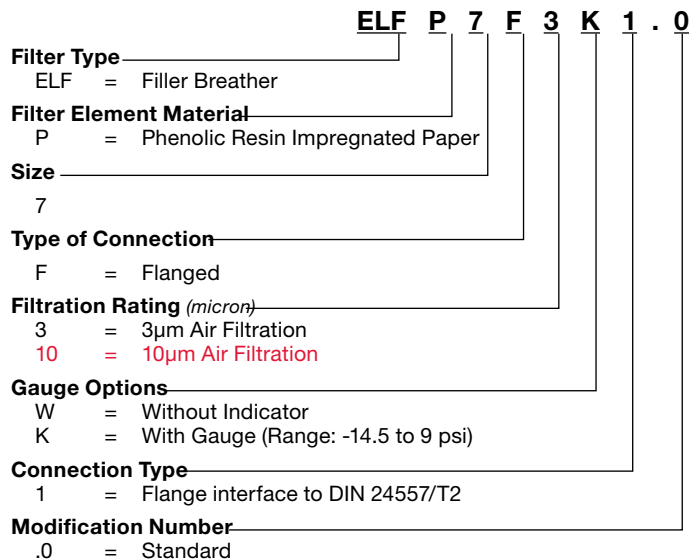
### Specifications

- 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)

### Dimensions



### Model Code



*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*

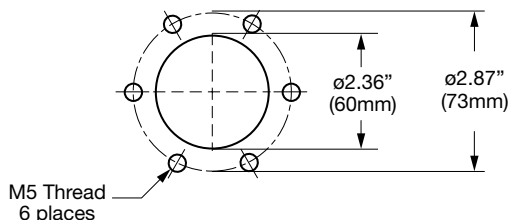
### Replacement Elements



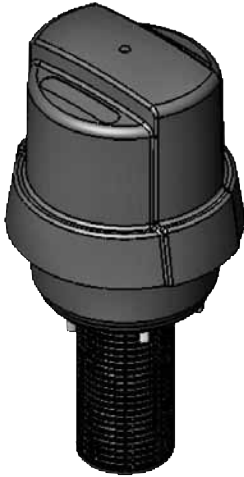
| Micron | Model Code | Part No. |
|--------|------------|----------|
| 3      | 0007L003P  | 00310948 |
| 10     | 0007L010P  | 00310485 |

### Mounting Hole Pattern

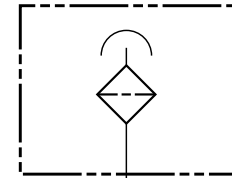
(flange interface to DIN 24557/T2)



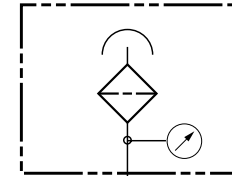
## ELF...72 Series Filler Breathers



### Hydraulic Symbols



without indicator

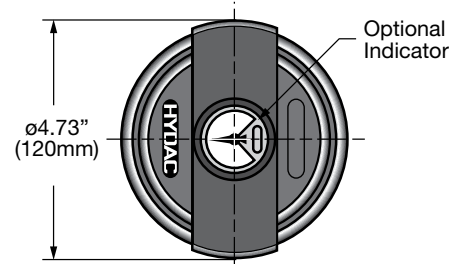


with indicator

### 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)

### Dimensions



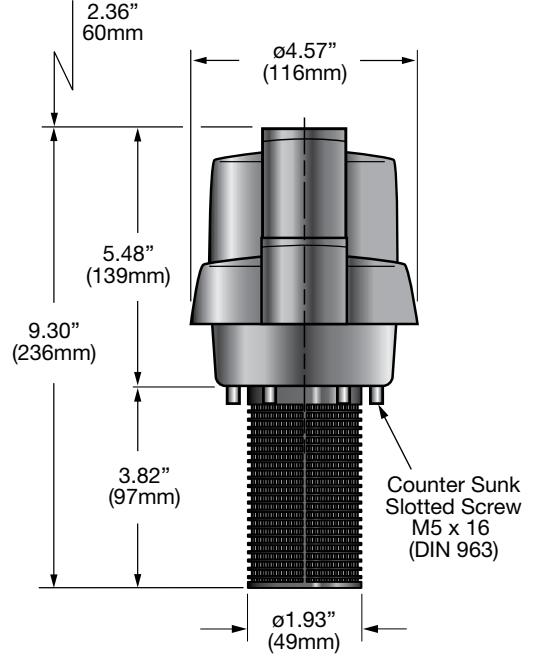
### Model Code

|  |            |          |           |          |          |          |            |
|--|------------|----------|-----------|----------|----------|----------|------------|
|  | <b>ELF</b> | <b>P</b> | <b>72</b> | <b>F</b> | <b>3</b> | <b>W</b> | <b>1.0</b> |
| <b>Filter Type</b>                     | _____      |          |           |          |          |          |            |
| ELF = Filler Breather                  |            |          |           |          |          |          |            |
| <b>Filter Element Material</b>         | _____      |          |           |          |          |          |            |
| P = Phenolic Resin Impregnated Paper   |            |          |           |          |          |          |            |
| <b>Size</b>                            | _____      |          |           |          |          |          |            |
| 72                                     |            |          |           |          |          |          |            |
| <b>Type of Connection</b>              | _____      |          |           |          |          |          |            |
| F = Flanged                            |            |          |           |          |          |          |            |
| <b>Filtration Rating (micron)</b>      | _____      |          |           |          |          |          |            |
| 3 = 3µm Air Filtration                 |            |          |           |          |          |          |            |
| 10 = 10µm Air Filtration               |            |          |           |          |          |          |            |
| <b>Gauge Options</b>                   | _____      |          |           |          |          |          |            |
| W = Without Indicator                  |            |          |           |          |          |          |            |
| K = With Gauge (Range: -14.5 to 9 psi) |            |          |           |          |          |          |            |
| <b>Connection Type</b>                 | _____      |          |           |          |          |          |            |
| 1 = Flange interface to DIN 24557/T2   |            |          |           |          |          |          |            |
| <b>Modification Number</b>             | _____      |          |           |          |          |          |            |
| .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

Clearance Required for Element Removal



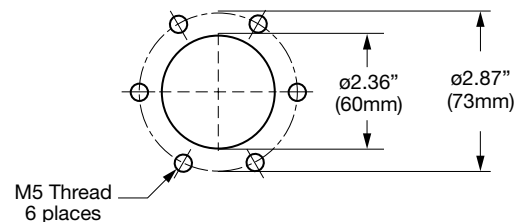
### Replacement Elements



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

### Mounting Hole Pattern

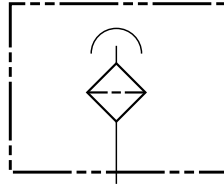
(flange interface to DIN 24557/T2)



## ELF...5 Series Filler Breathers



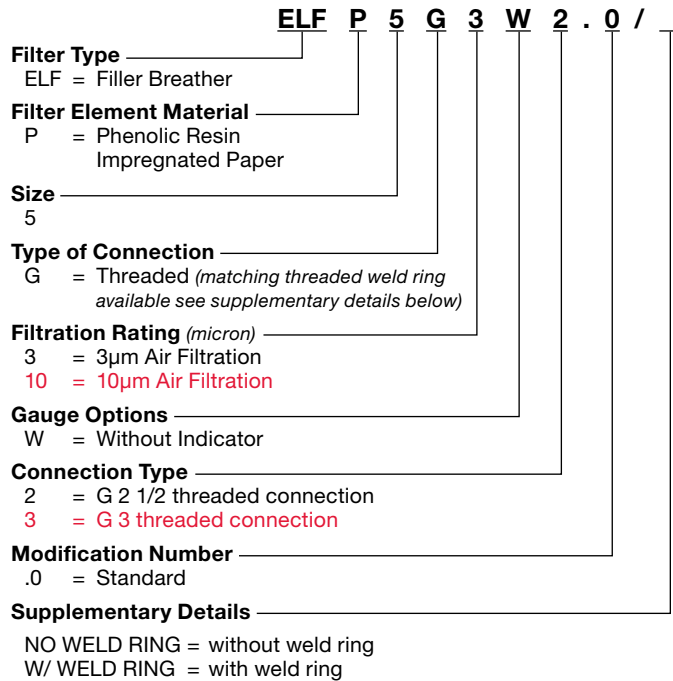
### Hydraulic Symbols



### 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



*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*

### Replacement Elements



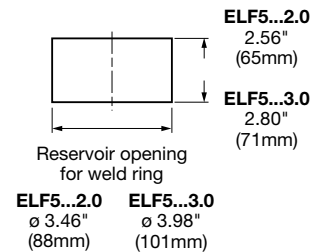
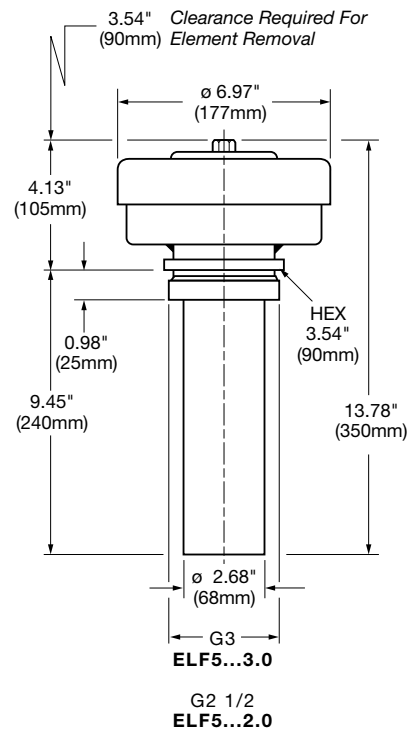
| Micron | Model Code | Part No. | Qty Req. |
|--------|------------|----------|----------|
| 3      | 0005L003P  | 00309450 | 1        |
| 10     | 0005L010P  | 00306097 | 1        |

### 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



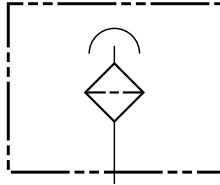
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm)



## ELF...52 Series Filler Breathers



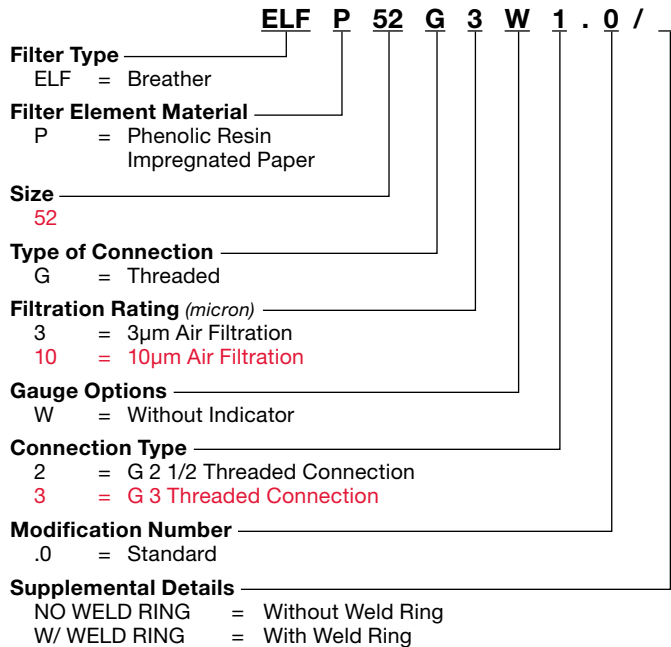
### Hydraulic Symbols



### 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



*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*

### Replacement Elements



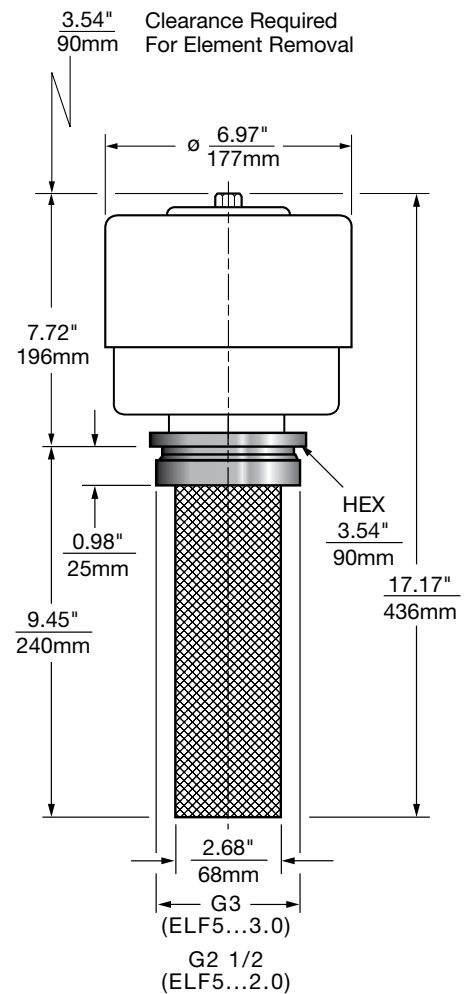
| Micron | Model Code | Part No. | Qty Req. |
|--------|------------|----------|----------|
| 3      | 0005L003P  | 00309450 | 2        |
| 10     | 0005L010P  | 00306097 | 2        |

### 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

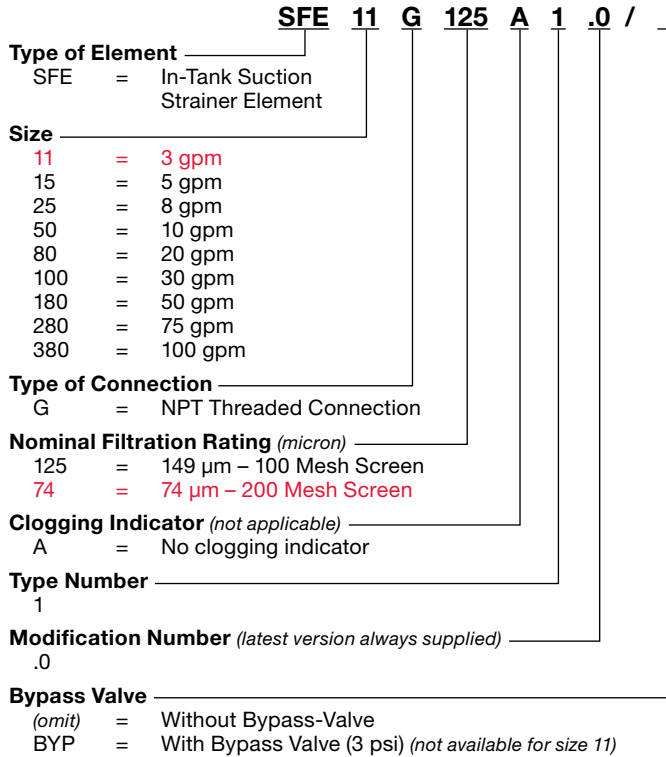


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm)

## SFE Series In-Tank Suction Strainer Element



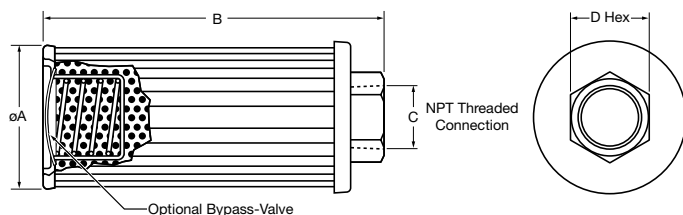
### Model Code



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

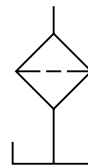
#### Pressure Drop vs. Flow:

- 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.

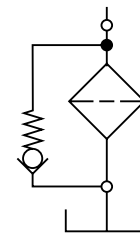
#### Temperature:

- 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.

## MSS Series Magnetic Suction Separators



### Description

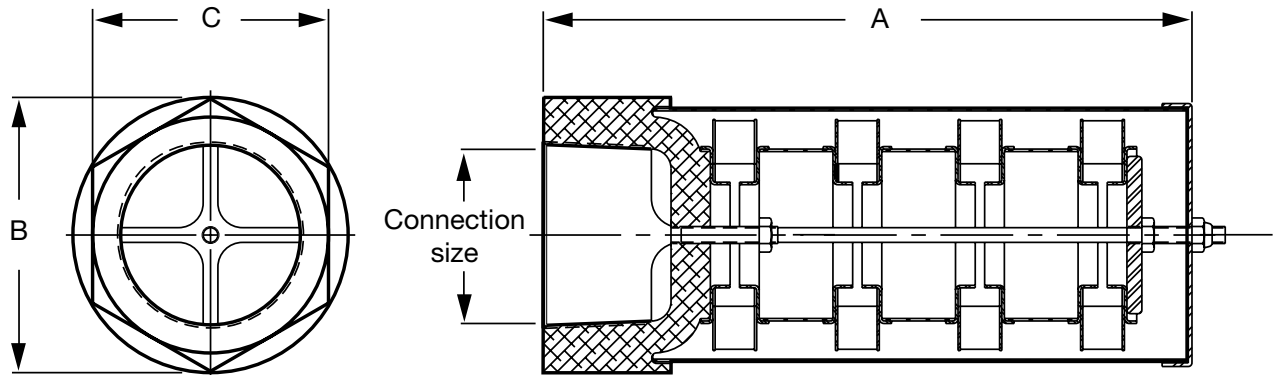
With the use of HYDAC's Magnetic Suction Separators, suction line filtration is provided without starving the pump. They offer unique protection for pumps from all sizes of ferrous particles, some of which have the potential of destroying a pump in a single pass. Large ceramic magnets are spaced along 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

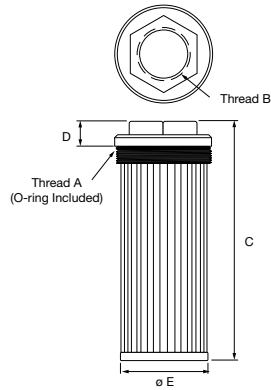


| Model Number | Part No. | Connection Size | Max. Flow gpm (lpm) | Δ psi at Max. gpm | Dimensions  |            |             |
|--------------|----------|-----------------|---------------------|-------------------|-------------|------------|-------------|
|              |          |                 |                     |                   | 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.

## HTMS Series Tank Mounted Suction Strainer Elements SAE O-ring

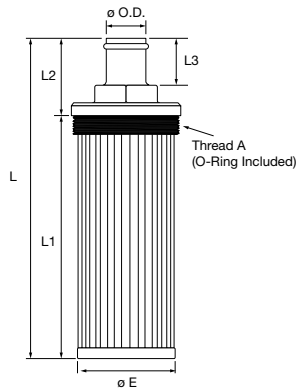


### Model Code

|               |       |                      |                       |           |            |
|---------------|-------|----------------------|-----------------------|-----------|------------|
|               |       | <b>HTMS</b>          | <b>SAE</b>            | <b>16</b> | <b>100</b> |
| 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

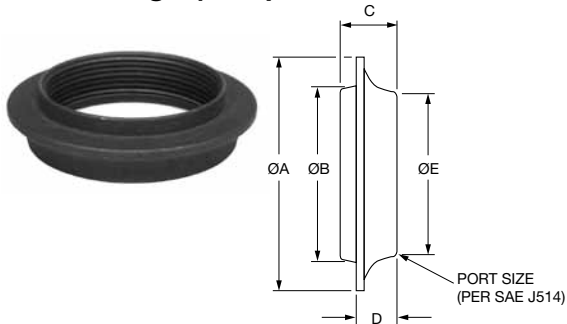


### Model Code

|                       |       |                      |                       |               |            |
|-----------------------|-------|----------------------|-----------------------|---------------|------------|
|                       |       | <b>HTMS</b>          | <b>HB</b>             | <b>1/1.25</b> | <b>100</b> |
| Series                | _____ | _____                | _____                 | _____         | _____      |
| Connection Type       | _____ | _____                | _____                 | _____         | _____      |
| Connection / Hex Size | _____ | _____                | _____                 | _____         | _____      |
| Mesh                  | _____ | _____                | _____                 | _____         | _____      |
|                       | 100   | =                    | 100 Mesh (149 micron) |               |            |
| Options               | _____ | _____                | _____                 | _____         | _____      |
| (omit)                | =     | Standard (no bypass) |                       |               |            |
| RV3                   | =     | 3 psi Bypass Valve   |                       |               |            |

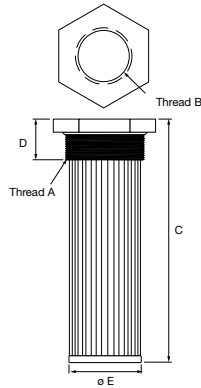
| Model Code                | Part No. | Thread A  | ø O.D. | Hex Size | GPM* | Dimensions |       |       |       |       |
|---------------------------|----------|-----------|--------|----------|------|------------|-------|-------|-------|-------|
|                           |          |           |        |          |      | 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" |

## NPT



### Model Code

Series \_\_\_\_\_ **HTMS** **NPT** **1/2** **100**

Thread Type \_\_\_\_\_

Thread B Size \_\_\_\_\_

Mesh \_\_\_\_\_  
100 Mesh (149 micron)

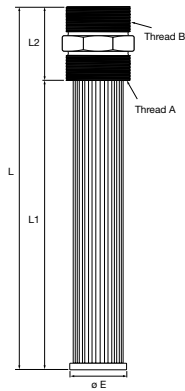
Options \_\_\_\_\_

(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

Series \_\_\_\_\_ **HTMS** **NPTM** **2** **100**

Thread Type \_\_\_\_\_

Thread B Size \_\_\_\_\_

Mesh Size \_\_\_\_\_  
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)

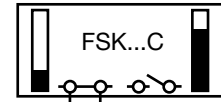
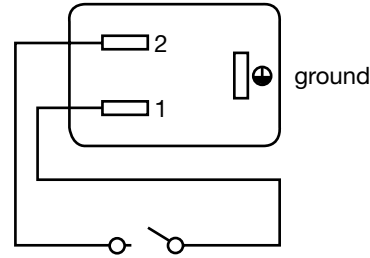
\*Flow ratings listed are nominal flow ratings for typical applications. High viscosity, low temperature applications may require a strainer with a higher flow rating. Consult HYDAC Engineering for more information.

## FSK Series with Electric Level Switch



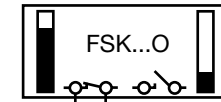
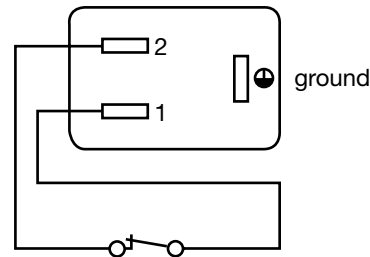
### Electric Level Switch

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

### Model Code

FSK - 127 - 2 . 4 / 0 / / 12

|                                     |  |
|-------------------------------------|--|
| <b>Fluid Level Indicator</b>        | FSK = Electrical and visual level indicator  |
| <b>Size (Mounting Hole Centers)</b> | 127 = 5 inches<br>176 = 7 inches<br>254 = 10 inches<br>381 = 15 inches   |
| <b>Seals</b>                        | 2 = Fluorocarbon   |
| <b>Modification Number</b>          | 4 = FSK (Determined by Manufacturer)   |
| <b>Electrical Switch</b>            | C = Open at Normal Level<br>O = Closed at Normal Level   |
| <b>Thermometer</b>                  | (omit) = No Thermometer (standard)<br>FT 100 = Probe Thermometer (100mm-3.94"LG)<br>FT 200 = Probe Thermometer (200mm-7.87"LG)<br>FT 300 = Probe Thermometer (300mm-11.87"LG)<br>TS... = Thermo Switch (see chart on page 141) |
| <b>Hex Head Bolt</b>                | 12 = M12 x 1.75 Bolt   |
| <b>Sight Tube</b>                   | (omit) = Polyamide construction<br>(not suitable for water glycols or high water based fluids)<br>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

### Electrical Specifications

#### Contact Ratings

- Max. 8W

#### Maximum Voltage

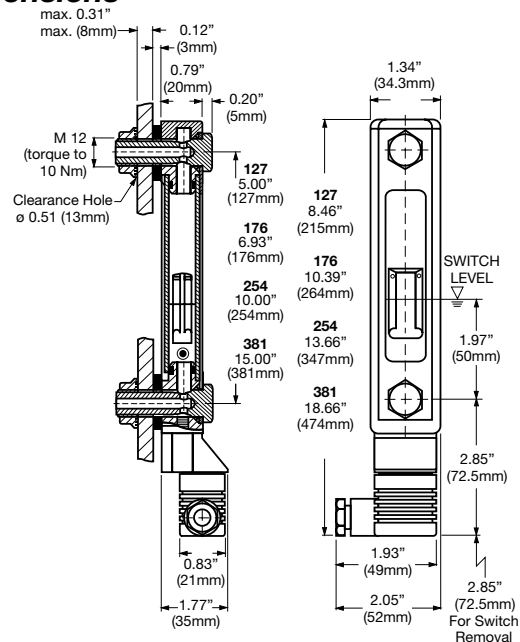
- 50V AC or DC

#### 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).

## 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

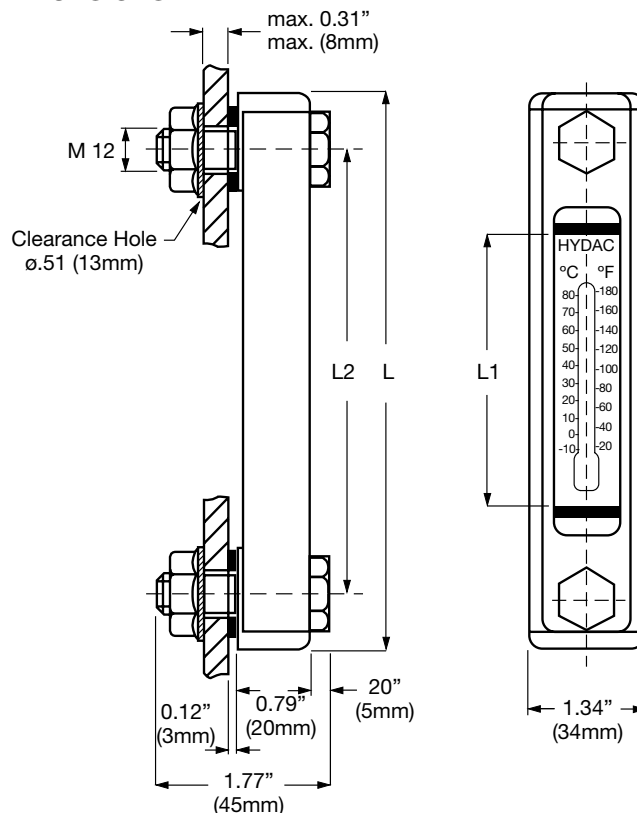
#### Sight Tube Material

(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

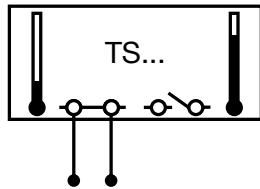
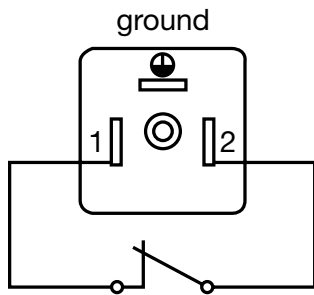


| Size | L                 | L1                | L2                |
|------|-------------------|-------------------|-------------------|
| 76   | 4.25"<br>(108mm)  | 1.46"<br>(37mm)   | 2.99"<br>(76mm)   |
| 127  | 6.26"<br>(159mm)  | 2.99"<br>(76mm)   | 5.00"<br>(127mm)  |
| 176  | 8.19"<br>(208mm)  | 4.92"<br>(125mm)  | 6.93"<br>(176mm)  |
| 254  | 11.26"<br>(286mm) | 7.99"<br>(203mm)  | 10.00"<br>(254mm) |
| 381  | 16.26"<br>(413mm) | 12.99"<br>(330mm) | 15.00"<br>(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

- $\pm 10^\circ\text{F}$

#### Hysteresis

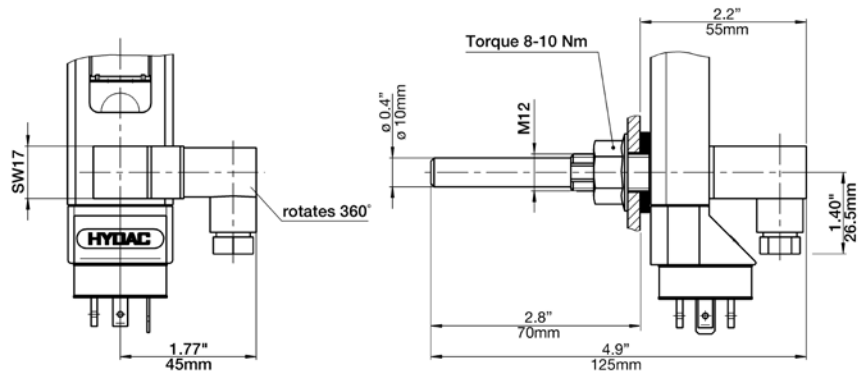
- TS 60/70 27°F (15°C)
- TS 80 36°F (20°C)

### 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

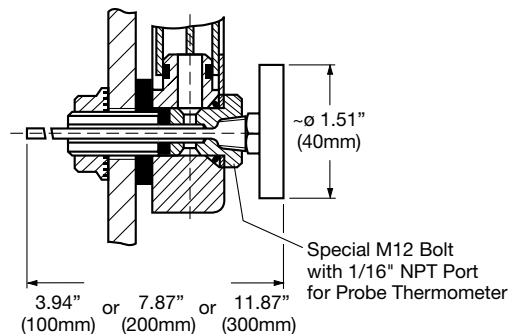
- Analog dial type thermometer for visual temperature indication

#### 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            |



## Technical Data

|                          |   |
|--------------------------|---|
| <b>Material</b>          |   |
| Housing                  | Anodized Aluminum or ABS Plastic                              |
| Sight Tube               | Polyamide or Glass  |
| Seals                    | Fluorocarbon, NBR   |
| Nuts / Bolts             | Steel, Zinc plated  |
| <b>Fluid Temperature</b> | -4° to 176°F (-20° to 80°C)                                   |
| <b>Maximum Pressure</b>  | 14.5 PSI (1 BAR)  |
| <b>Thermometer Range</b> |   |
| 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)                                    |
| <b>Bolting Torque</b>    | 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

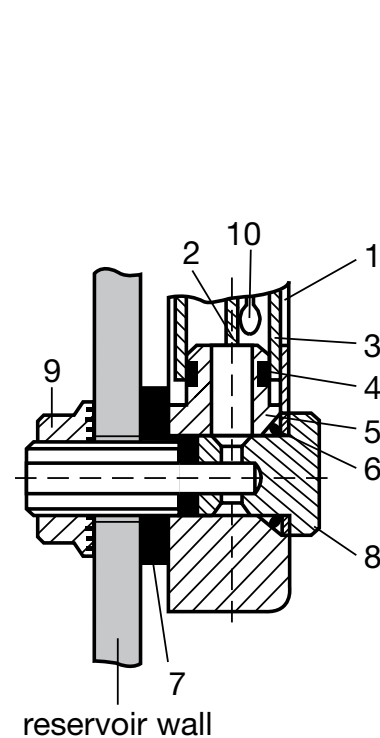
## Component Parts

| Item | Description                           | Part No.              | Quantity |     |   |
|------|---------------------------------------|-----------------------|----------|-----|---|
|      |                                       |                       | FSA      | FSK |   |
| 1    | Housing                               | -                     | 1        | 1   |   |
| 2    | Name Plate                            | -                     | 1        | -   |   |
| 3    | Tube                                  | -                     | 1        | 1   |   |
| 4*   | O-ring<br>13X2.5                      | FPM-70 (Fluorocarbon) | 00601916 | 2   | 2 |
|      |                                       | NBR-70 (Buna)         | 00601047 | 2   | 2 |
| 5    | Tube Connector                        | -                     | 2        | 2   |   |
| 6*   | O-ring<br>12.3X2.4                    | FPM-70 (Fluorocarbon) | 00601531 | 2   | 2 |
|      |                                       | NBR-70 (Buna)         | 00601045 | 2   | 2 |
| 7*   | Washer<br>FSA/FSK                     | FPM (Fluorocarbon)    | 22183158 | 2   | 2 |
|      |                                       | NBR (Buna)            | 00271948 | 2   | 2 |
| 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   |   |

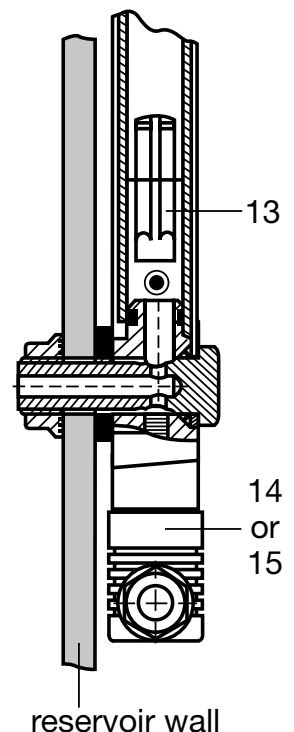
\* items may be purchased individually.

*Items listed in RED are not sold as spare parts.*

### FSA & FSK



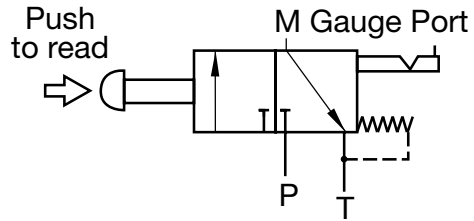
### FSK Only



## MA Series Single Gauge Isolator



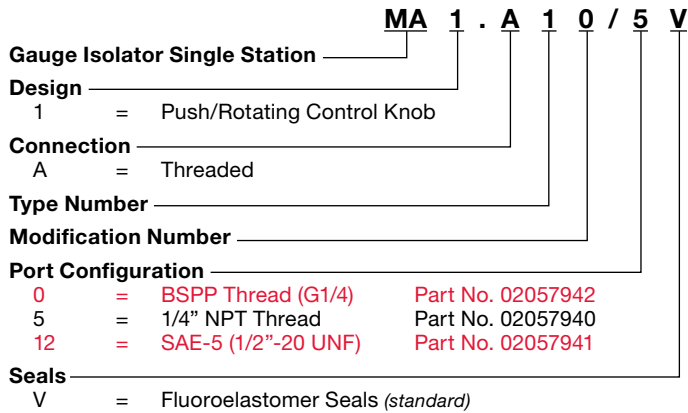
### Hydraulic Symbol



### 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



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

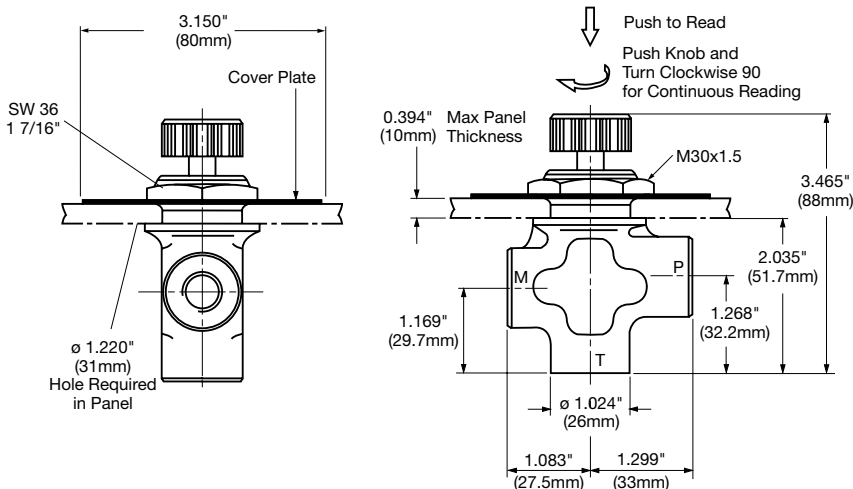
#### Operating Pressure

- P max. 5075 psi/350 bar (*T-Port max. 145 psi/10 bar*)

#### Temperature Range

- -4° to 176°F (-20° to 80°C)

### Dimensions

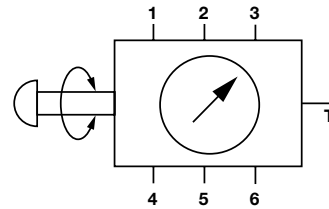


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.  
Dimensions are in inches/(mm) and lbs./(kg.)

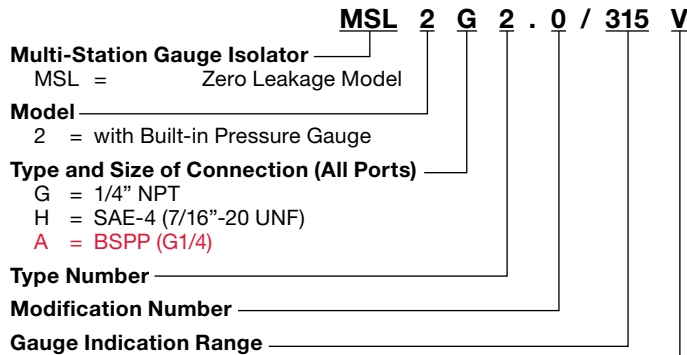
## MSL Series

### Zero Leakage Multi-Station Gauge Isolators with Integral Gauge

#### Hydraulic Symbol



#### Model Code



| Size | Operating Pressure Zone<br><i>(Black Scale)</i> | Over Pressure Zone<br><i>(Red Scale)</i> |
|------|---|--|
| 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)          |

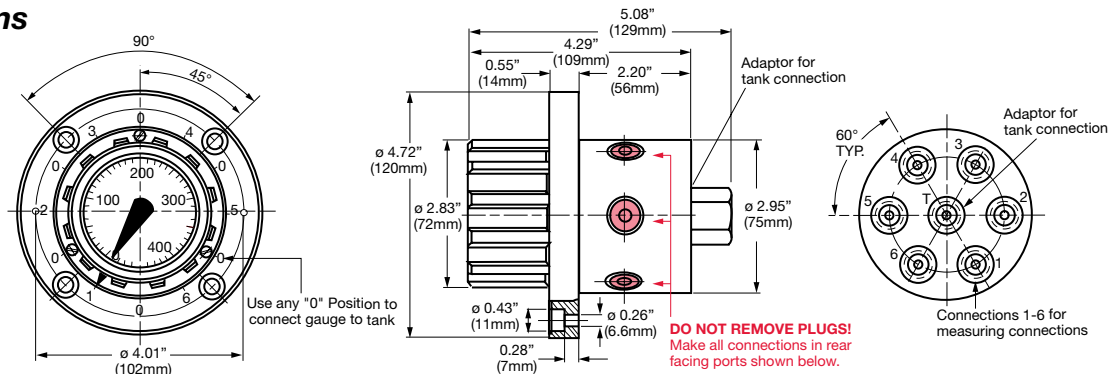
#### Supplementary Details

- (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

#### 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.)

#### 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)

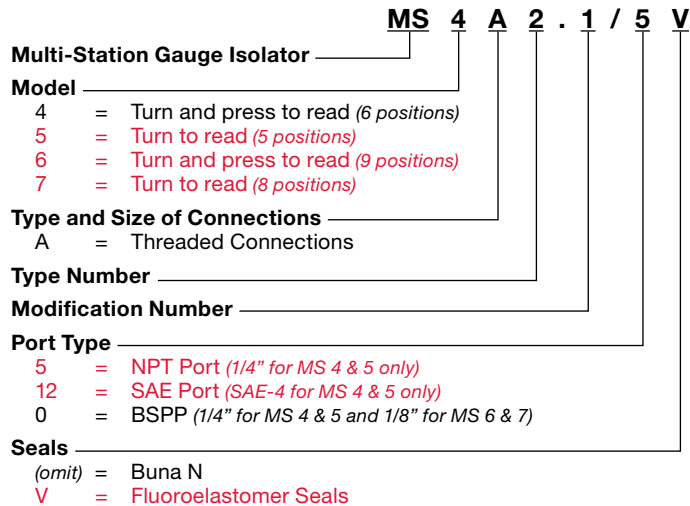
##### Gauge Accuracy

- 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.

## MS Series Multi-Station Gauge Isolators



### Model Code



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

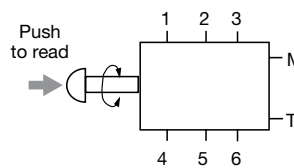
#### Fluid Temperature Range

- 5° to 160°F (-20° to 70°C)

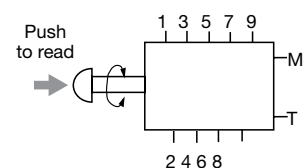
### Hydraulic Symbol

M = Gauge (measuring) connection  
T = Tank connection  
L = Leakage connection

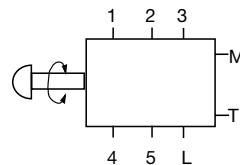
#### Type MS 4



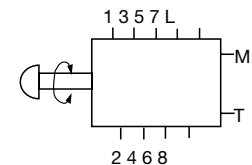
#### Type MS 6



#### Type MS 5

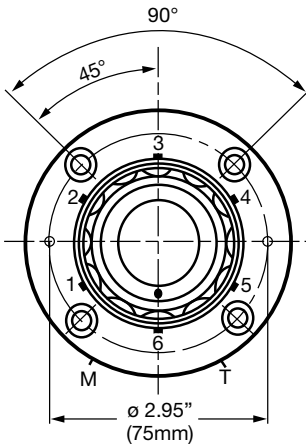


#### Type MS 7



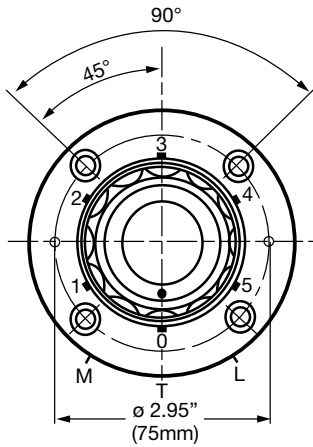
## Dimensions

### Type MS 4

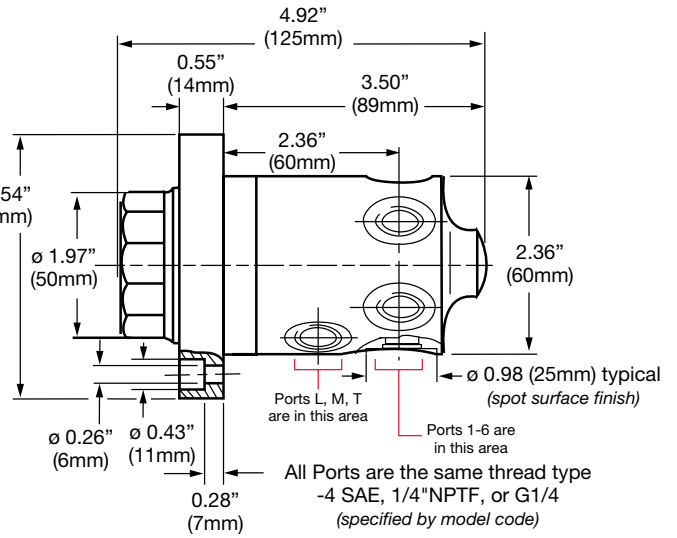


Push to read pressure,  
release to connect  
gauge back to tank

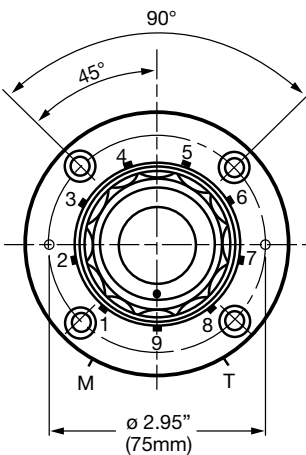
### Type MS 5



Turn to "0" position  
to connect  
gauge back to tank

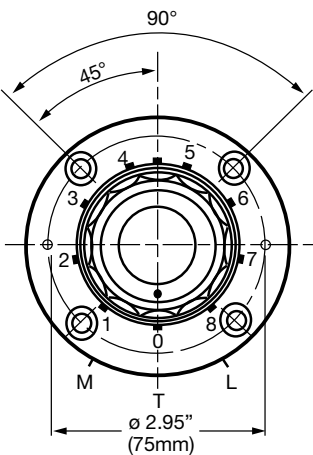


### Type MS 6

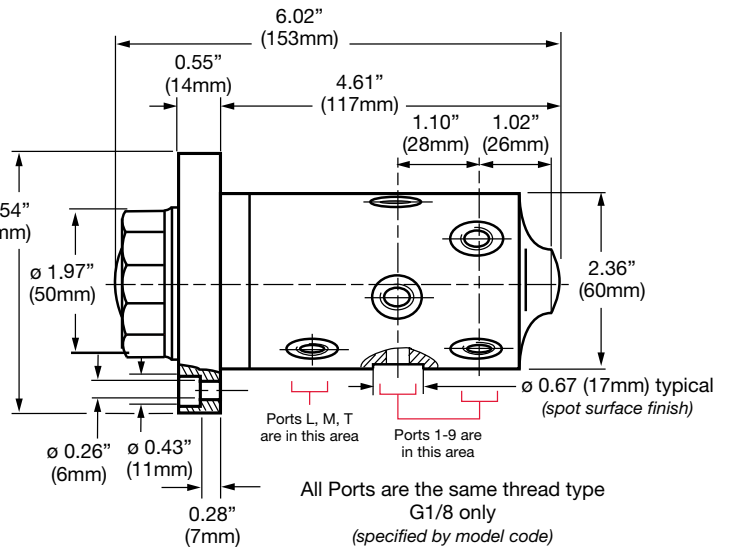


Push to read pressure,  
release to connect  
gauge back to tank

### 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.)

## 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)*

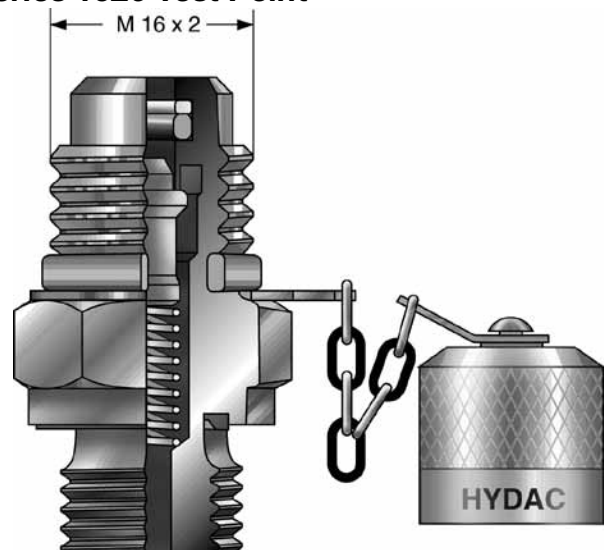
#### Temperature Range

- 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

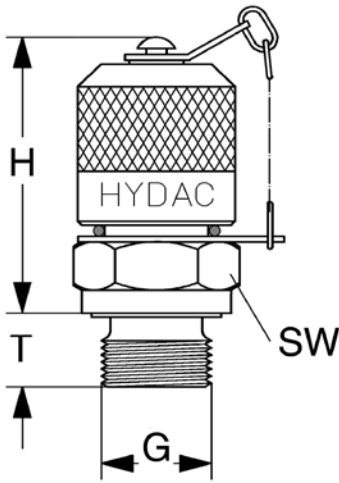


**Guided Piston Design**

## 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 |

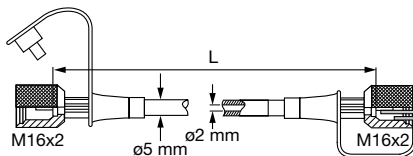
### Stainless Steel Test Points (Fluorelastomer Seals)

| 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    | 06032633 |
| 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

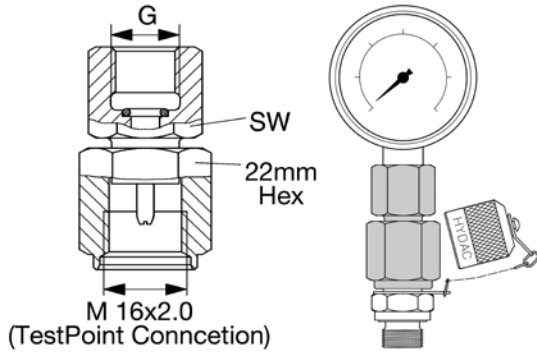
| Operating Temp. | Factor | Max. Pressure |
|-----------------|--------|---------------|
| 122°F (50°C)    | 100%   | 9000 psi      |
| 176°F (80°C)    | 86%    | 7740 psi      |
| 212°F (100°C)   | 77%    | 6930 psi      |

### 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



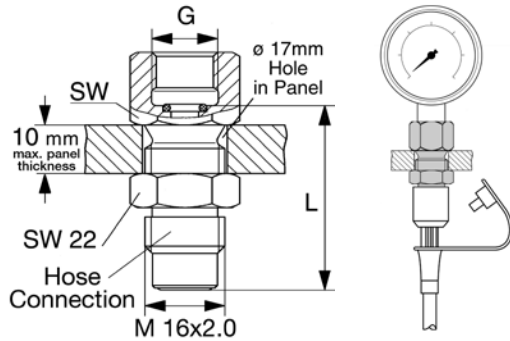
### Test DGA 1620 (thread G)

| 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)

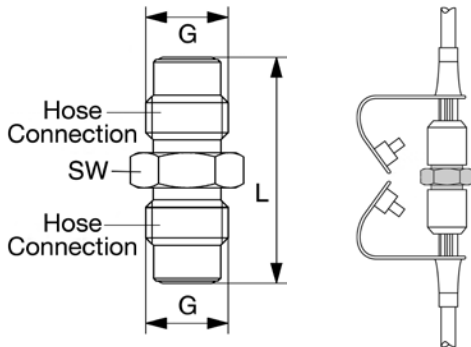


| Thread G      | Pmax               | L    | SW | Part No. |
|---------------|--------------------|------|----|----------|
| ISO 228-G 1/4 | 9000 psi (630 bar) | 38.5 | 19 | 06003822 |
| ISO 228-G 1/2 | 9000 psi (630 bar) | 39.5 | 27 | 06003823 |
| 1/4 NPT       | 9000 psi (630 bar) | 38.5 | 19 | 06003768 |

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)

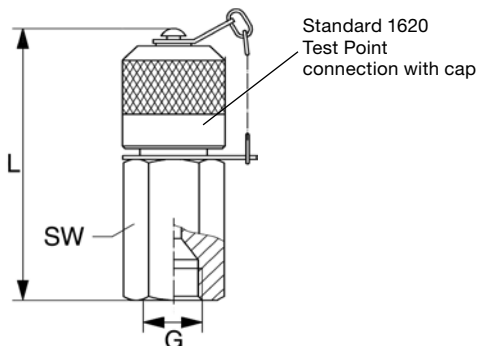


| Thread G | Pmax               | L  | SW | Part No. |
|----------|--------------------|----|----|----------|
| M 16x2.0 | 9000 psi (630 bar) | 42 | 22 | 00687889 |

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



## 1620 Series Test Point Kits

3 Gauge Kit



5 Gauge Kit



| Model Code                            | Part Number     | 3 Gauge Quantity | 5 Gauge Quantity |
|---------------------------------------|-----------------|------------------|------------------|
| <b>Test Point Kit 1620 3 Gauge</b>    | <b>02081635</b> | -                | -                |
| <b>Test Point Kit 1620 5 Gauge</b>    | <b>02081636</b> | -                | -                |
| 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                |

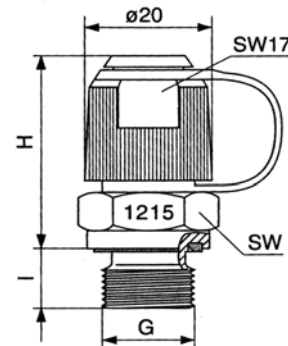
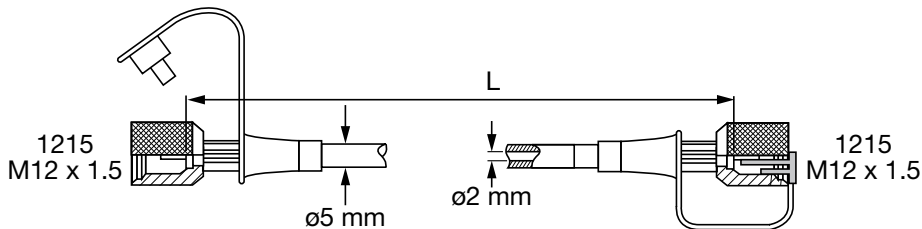
## 1215 Series Test Points (M12 x 1.5 Threads)

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 | <i>Test Point 1215 (G1/8) PC/NBR</i>    | -           |
| ISO 228-G 1/4 | 630 bar (9000 psi) | 32 | 10 | 19 | <i>Test Point 1215 (G1/4) PC/NBR</i>    | -           |
| 1/8 NPTF      | 400 bar (5800 psi) | 29 | 12 | 14 | <i>Test Point 1215 (1/8 NPT) PC/NBR</i> | -           |
| 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

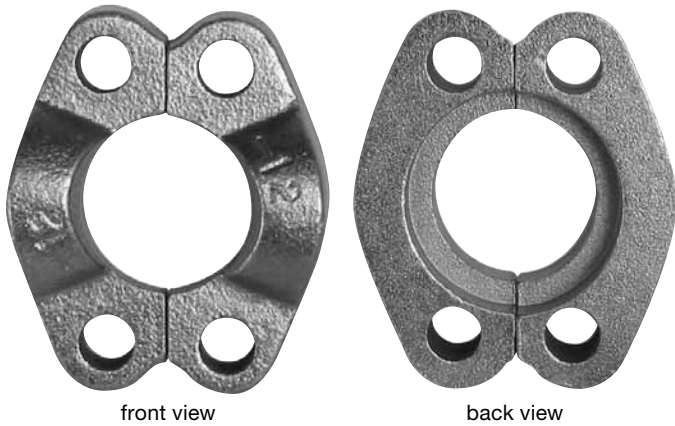
#### Materials

**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

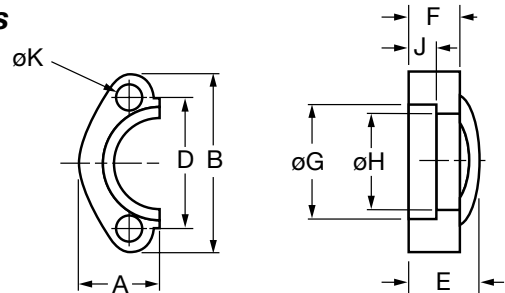
#### Materials

- 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 |

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

# Mounting SOLUTIONS

Standard & Custom



**HYDAC Clamps currently service applications, worldwide, including:**

- Wind Energy
- Mobile Equipment
- Heavy Industry Equipment
- Transportation Equipment
- Petro-Chemical
- Gas and Mining
- Off-Shore
- Railways

**HYDAC's Family of Clamp Products Includes:**

- DIN 3015 (STD, HVY, & TWIN)
- Series Strip
- Cushion
- Buegu
- Oval
- U-Bolt
- U-Bolt w/ Cushion
- Quick Release Swivel
- Band Straps for Cylinder / Tube
- Custom Moldings
- Custom Mounting Solutions

**To ensure customer satisfaction, HYDAC provides unparalleled services:**

- Quality Products
- Timely Deliveries
- Years of Experience
- World Class Customer Service & Support



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**Accumulators**

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