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# ***Choke Valves***



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## Introduction

**Quality** is our commitment, while competitive price and timely delivery is our promise.

**From** the beginning, the DHV name has become associated with quality in every step of our manufacturing process. For the past decades our customers worldwide have trusted us to provide them with consistent and reliable valve products in their most severe and critical service.

**We** at DHV are proud of our ability to meet the stringent requirements of Refining, Gas/Oil, Pipeline, Petrochemical and Power Plant.

**DHV** Choke Valves are designed, manufactured and tested to the latest manufacturing specifications of the American & International Standards Organizations. We welcome your challenges and look forward to serving your critical project needs.

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# DHV Figure Numbers

## Choke Valves

### Type

- 1 = Slab Gate Valves
- 2 = Expanding Gate Valves
- 3 = Needle Adjustable Choke
- 4 = External Sleeve Adjustable Choke
- 5 = Positive Choke
- 6 = Check Valves
- 7 = Mud Gate Valves
- 8 = Plug and Cage Choke Valves
- X = Special

### Pressure Class

- |               |             |
|---------------|-------------|
| 02 = 2000psi  | 53 = 300LB  |
| 03 = 3000psi  | 56 = 600LB  |
| 05 = 5000psi  | 58 = 800LB  |
| 10 = 10000psi | 59 = 900LB  |
| 20 = 20000psi | 65 = 1500LB |
| 51 = 150LB    | 75 = 2500LB |

### Code

W = Wellhead Valves

*4" Wellhead External Sleeve Adjustable Choke,  
900LB, EE Body Material, Class PSL-2, PR-2,  
V Temperature Rating, RF(B16.5) End*

# Example: 4" - W459E22VF

### Body Material

- A = AA
- B = BB
- C = CC
- D = DD
- E = EE
- F = FF
- H = HH

### Product Specification Level

- 1 = PSL1
- 2 = PSL2
- 3 = PSL3
- 4 = PSL4

### Temperature Rating

K, L, N, P, S, T, U, V, X, Y

### Performance Requirement Level

- 1 = PR1
- 2 = PR2

### End Connection

- F = RF (B16.5)
- J = RTJ (API 6A)
- R = RTJ (B16.5)
- T = Threaded End
- U = Union
- W = Welded End
- X = Special

## Description

DHV choke valves are designed to provide precise flow control throughout their entire operating range, and they are suitable for single or multi-phase liquid and gas service, such as: christmas trees, line heaters, manifold, water injection and gas lift, etc.

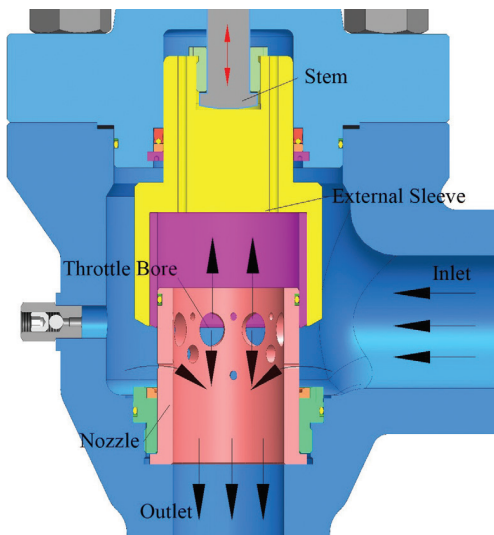
There are two main series of DHV choke valves: external sleeve choke valves and plug and cage choke valves, which are designed and manufactured to ISO, ANSI and API standards.

DHV choke valves are installed in some of the most severe and critical services by some of the world's leading oil and gas companies who demand reliability and excellent performance.

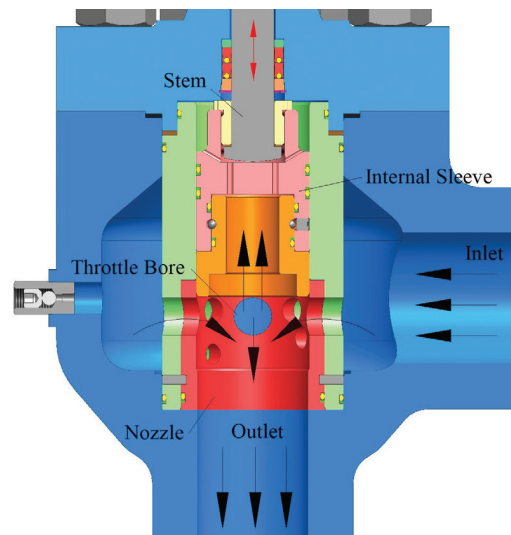


## Working principle

Medium flows from the choke valve inlet to the outlet through the orifice. When the internal or external sleeve is lifted upward by the handwheel or actuator, the orifice area and subsequent flow to the outlet increases. When lowered, the orifice area and flow to the outlet decreases.



*External Sleeve Choke Valve*



*Plug and Cage Choke Valve*



# Choke Valves

## Specification

Basic Design and Test	API 6A	ANSI
Body Type	Right Angle	
Size Range(in)	2-1/16, 2-9/16, 3-1/8, 4-1/16, 5-1/8, 7-1/16, 9, 11	2, 2-1/2, 3, 4, 6, 8, 10
Pressure Rating	2000, 3000, 5000, 6000, 10000 (Psi)	150, 300, 600, 900, 1500, 2500 (LB)
End Connection	Flanged End	Flanged End, Butt Welding End
Product Specification Levels	PSL1, PSL2, PSL3	
Performance Requirement Levels	PR1, PR2	
Temperature Ratings	K, L, N, P, S, T, U, V, X, Y	
Material Class	AA, BB, CC, DD, EE, FF	
Trim Style	External Sleeve, Plug and Cage, Multi-stage	
Flow Characteristic	Quick Opening, Linear, Equal Percentage	
Service	Injection Applications, Production Applications, Offshore Application, etc.	
Operation	<b>Manual Operation:</b> Handwheel, Gearbox <b>Actuated Operation:</b> Electric Actuator, Pneumatic Actuator, Hydraulic Actuator, etc.	

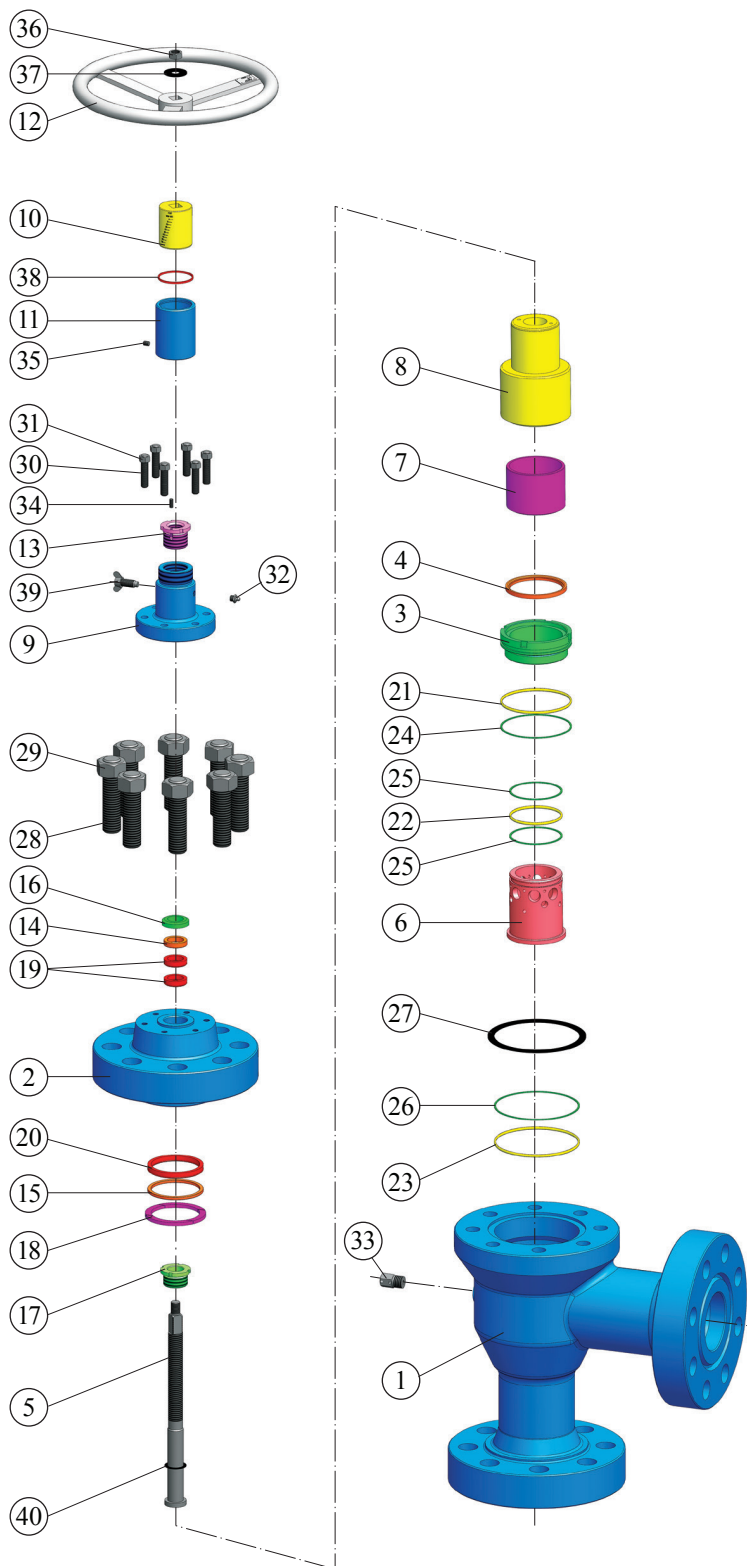
*Note: Fire safe and Low Fugitive Emission design are available upon request.*



### DHV Valve Group



# External Sleeve Choke Valves



## Material Specification

No.	Description	Material
1	Body	AS Page 13 "Material Options"
2	Bonnet	AS Page 13 "Material Options"
3	Seat	AS Page 13 "Material Options"
4	Seat Insert	PTFE / Cemented Carbide
5	Stem	AS Page 13 "Material Options"
6	Cage	AS Page 13 "Material Options"
7	External Sleeve Bushing	AS Page 13 "Material Options"
8	External Sleeve	AS Page 13 "Material Options"
9	Yoke	Carbon Steel / Alloy Steel
10	Indicator Cover	Stainless Steel
11	Stem Protector	Stainless Steel
12	Handwheel	Carbon Steel / Cast Iron
13	Stem Nut	A439 D2C/Aluminum Bronze
14	Packing Ring	Stainless Steel
15	Backing Ring	Stainless Steel
16	Packing Gland	Stainless Steel
17	Retainer Nut	Stainless Steel
18	Split Ring	Stainless Steel
19	Stem Seal	AS Page 13 "Material Options"
20	External Sleeve Seal	AS Page 13 "Material Options"
21	O-Ring	AS Page 13 "Material Options"
22	O-Ring	AS Page 13 "Material Options"
23	O-Ring	AS Page 13 "Material Options"
24	Back-up Ring	PTFE
25	Back-up Ring	PTFE
26	Back-up Ring	PTFE
27	Body / Bonnet Seal	AS Page 13 "Material Options"
28	Stud	A193 B7M / A320 L7M
29	Nut	A194 2HM / A194 7M
30	Stud	A193 B7M / A320 L7M
31	Nut	A194 2HM / A194 7M
32	Lubricator	Stainless Steel
33	Drain Fitting	Stainless Steel
34	Locking Screw	Stainless Steel
35	Locking Screw	Stainless Steel
36	Handwheel Nut	Stainless Steel
37	Washer	Stainless Steel
38	Environment Seal	PTFE
39	Stem Locking Device	Aluminum Bronze
40	Thrust Washer	Metal Backed PTFE

*Note: Materials listed are based on typical configurations, other materials can be provided upon request.*



# Plug and Cage Choke Valves

## Design Features

The plug and cage choke valves have a plug that throttles the flow on the inside diameter of the outer cage. This choke is used for high capacity applications. Because of its high capacity, the plug and cage choke valve is useful for both well start-up and well depletion production.

*All choke valves are available in manual operation or actuated operation.*



Bean size indicator cover

With bean size calibration on the indicator cover, the throttle bore area can be observed. (Cv value or percent open indicator cover also available.)

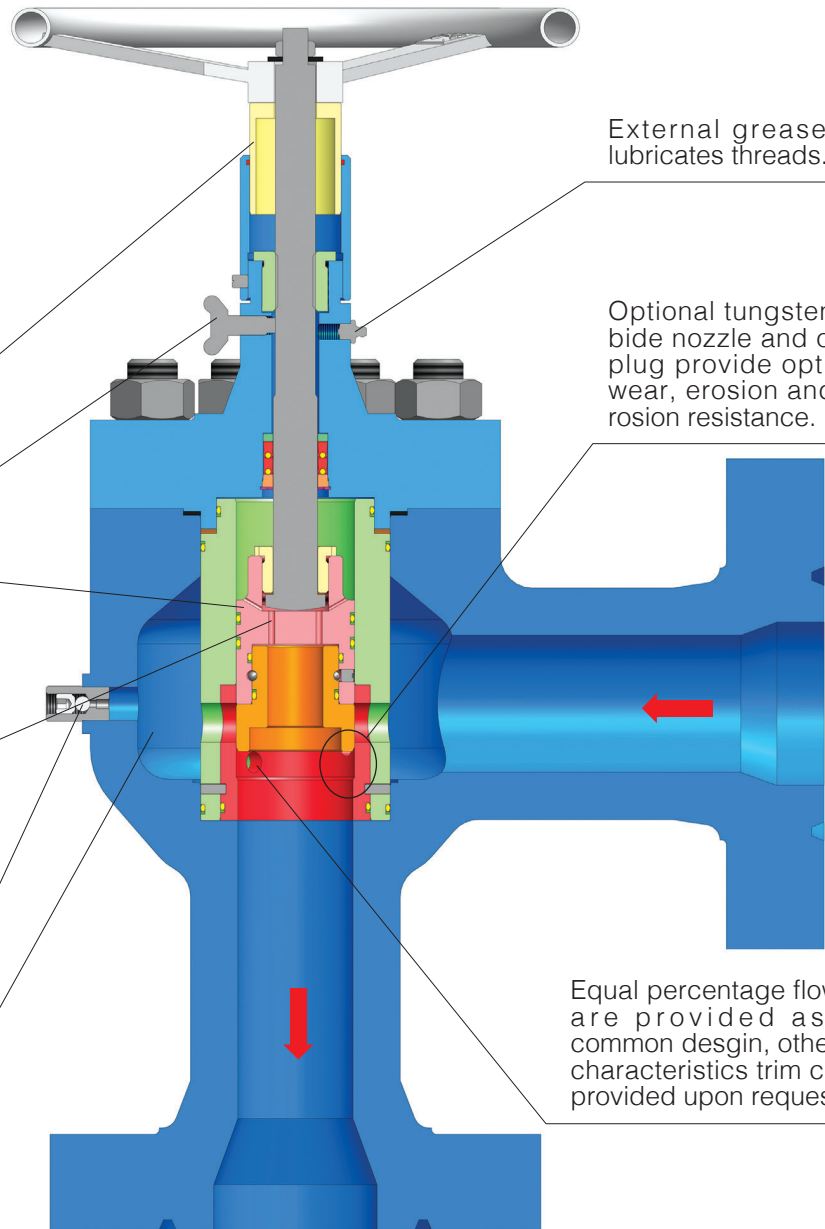
Locking screw that holds the stem in place to maintain flow rate.

Fully guided internal sleeve and orifice plug minimizes side loading and vibration of stem and trim.

Pressure-balanced ports minimize stem loads and actuator requirements.

Drain fitting vents pressure before disassembly.

Large annulus area reduces erosion due to velocity.



External grease port lubricates threads.

Optional tungsten carbide nozzle and orifice plug provide optimum wear, erosion and corrosion resistance.

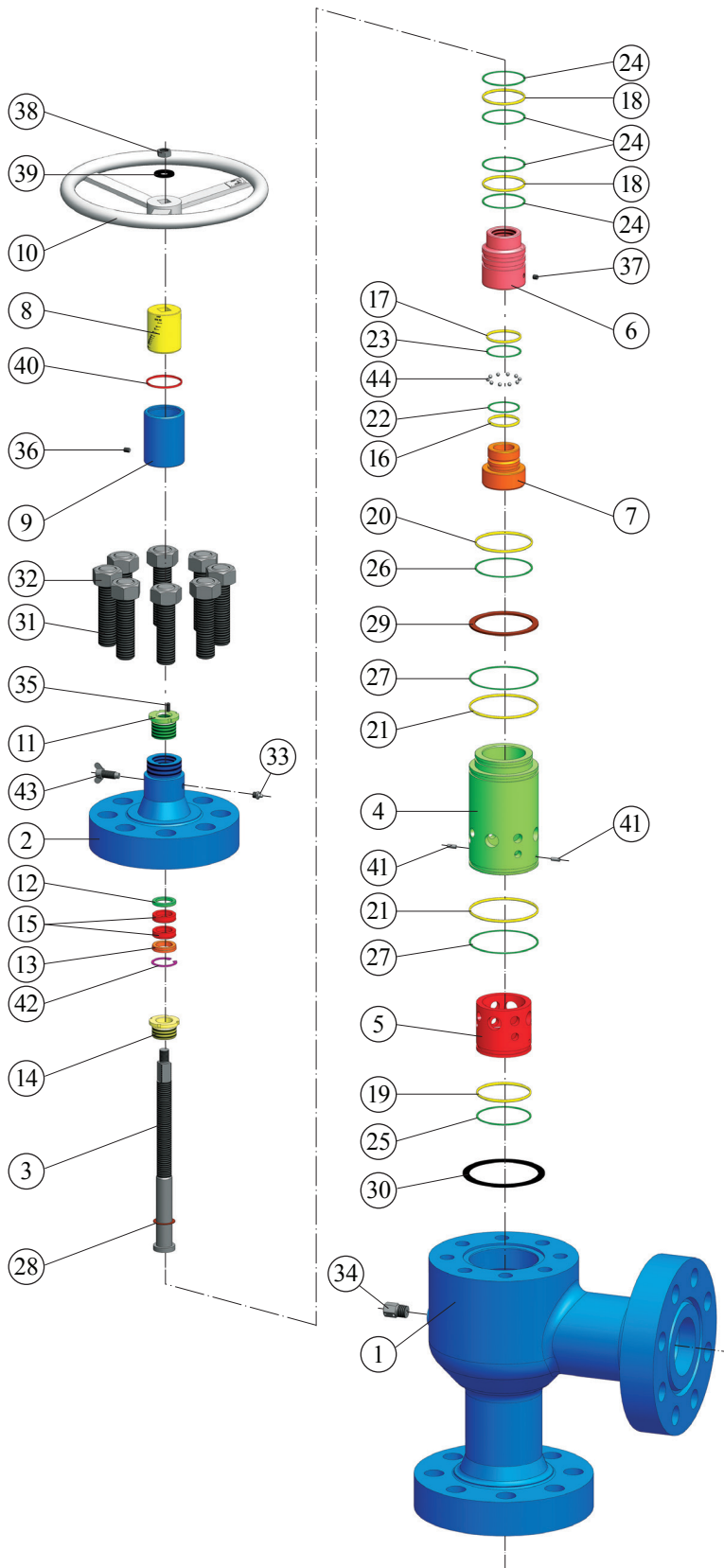
Equal percentage flow trim are provided as our common design, other flow characteristics trim can be provided upon request.

*Note: Illustration above is a typical design, actual valve may be different due to size and pressure class.*





# Plug and Cage Choke Valves



## Material Specification

No.	Description	Material
1	Body	AS Page 13 "Material Options"
2	Bonnet	AS Page 13 "Material Options"
3	Stem	AS Page 13 "Material Options"
4	Outer Cage	17-4PH
5	Nozzle	AS Page 13 "Material Options"
6	Internal Sleeve	AS Page 13 "Material Options"
7	Orifice Plug	AS Page 13 "Material Options"
8	Indicator Cover	Stainless Steel
9	Stem Protector	Stainless Steel
10	Handwheel	Carbon Steel / Cast Iron
11	Stem Nut	A439 D2C / Aluminum Bronze
12	Packing Ring	Stainless Steel
13	Backing Ring	Stainless Steel
14	Retainer Nut	Stainless Steel
15	Stem Seal	AS Page 13 "Material Options"
16	O-Ring	AS Page 13 "Material Options"
17	O-Ring	AS Page 13 "Material Options"
18	O-Ring	AS Page 13 "Material Options"
19	O-Ring	AS Page 13 "Material Options"
20	O-Ring	AS Page 13 "Material Options"
21	O-Ring	AS Page 13 "Material Options"
22	Back-up Ring	PTFE
23	Back-up Ring	PTFE
24	Back-up Ring	PTFE
25	Back-up Ring	PTFE
26	Back-up Ring	PTFE
27	Back-up Ring	PTFE
28	Thrust Washer	Metal Backed PTFE
29	Thrust Washer	PTFE
30	Body / Bonnet Seal	AS Page 13 "Material Options"
31	Stud	A193 B7M / A320 L7M
32	Nut	A194 2HM / A194 7M
33	Lubricator	Stainless Steel
34	Drain Fitting	Stainless Steel
35	Locking Screw	Stainless Steel
36	Locking Screw	Stainless Steel
37	Locking Screw	Stainless Steel
38	Handwheel Nut	Stainless Steel
39	Washer	Stainless Steel
40	Environment Seal	PTFE
41	Locking Pin	Stainless Steel
42	Snap Ring	Stainless Steel
43	Stem Locking Device	Aluminum Bronze
44	Steel Ball	Stainless Steel

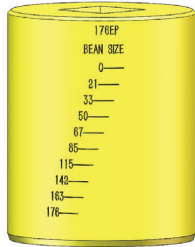
*Note: Materials listed are based on typical configurations, other materials can be provided upon request.*



# Needle Type Choke Valves

## Design Features

*All choke valves are available in manual operation or actuated operation.*



Bean size indicator cover

With bean size calibration on the indicator cover, the throttle bore area can be observed. (Cv value or percent open indicator cover also available.)

External grease port lubricates threads.

Dual body seal provides tight seal and fire-safe.

Self-energized Stem Packing provides tight seal and low emission.

Drain fitting vents pressure before disassembly.

Anti-rotation bar prevent the seat from loosening.

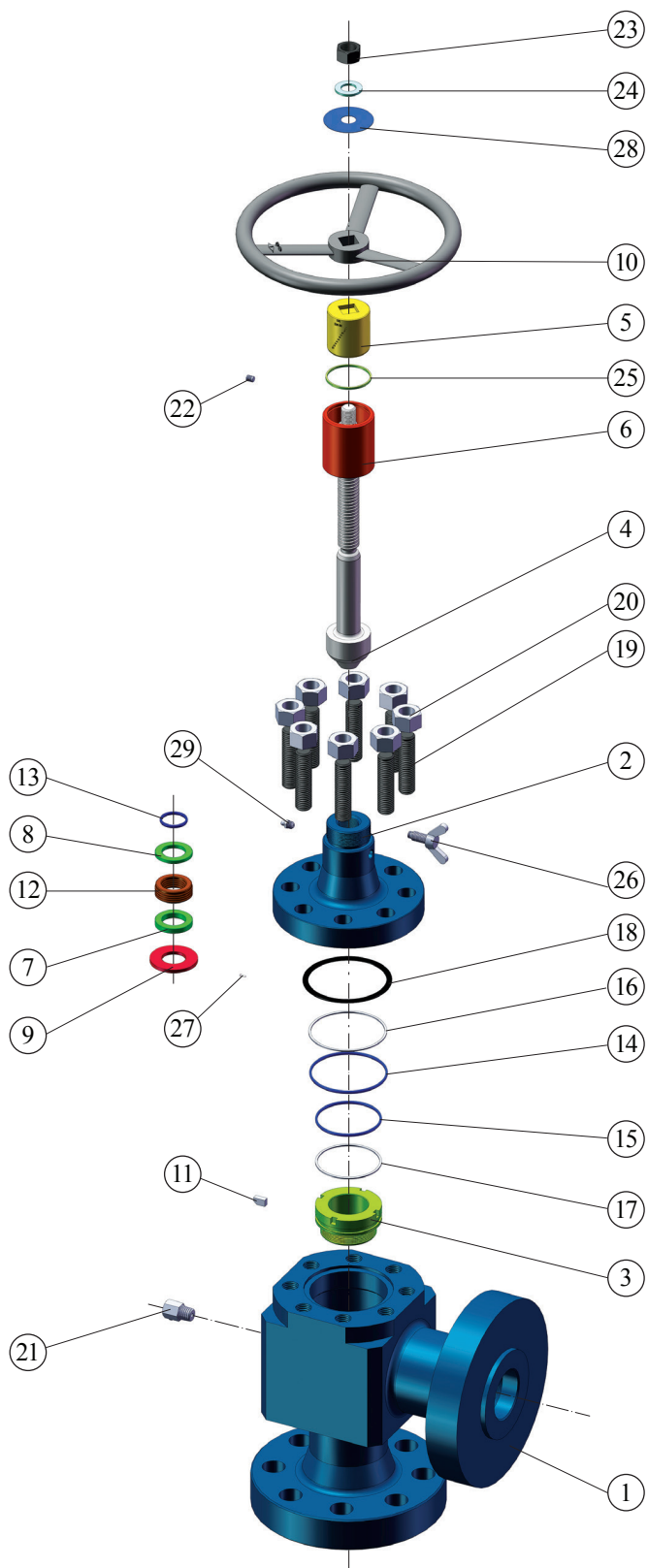
Metal to Metal seat surfaces provide extended Class V shut-off.

Locking screw that holds the stem in place to maintain flow rate.

Seat and Stem/Needle can be changed according to different flow characteristic.

*Note: Illustration above is a typical design, actual valve may be different due to size and pressure class.*

# Needle Type Choke Valves



## Material Specification

No.	Description	Material
1	Body	AS Page 13 "Material Options"
2	Bonnet	AS Page 13 "Material Options"
3	Seat	AS Page 13 "Material Options"
4	Stem	AS Page 13 "Material Options"
5	Indicator	Stainless Steel
6	Indicator Cover	Stainless Steel
7	Packing Ring	Stainless Steel
8	Packing Ring	Stainless Steel
9	Split Ring	Carbon Steel / Alloy Steel
10	Handwheel	Carbon Steel/Cast Iron
11	Anti-rotation Bar	Stainless Steel
12	Stem Seal	AS Page 13 "Material Options"
13	O-ring	AS Page 13 "Material Options"
14	O-ring	AS Page 13 "Material Options"
15	O-ring	AS Page 13 "Material Options"
16	Back-up Ring	PTFE
17	Back-up Ring	PTFE
18	Body/Bonnet Seal	AS Page 13 "Material Options"
19	Stud	A193 B7M/A320 L7M
20	Nut	A194 2HM/A194 7M
21	Drain Fitting	Stainless Steel
22	Locking Screw	Stainless Steel
23	Handwheel Nut	A194 2HM/A194 7M
24	Washer	Stainless Steel
25	Environment Seal	PTFE
26	Stem Locking Device	Aluminum Bronze
27	Nameplate	Stainless Steel
28	O/C Indication Plate	Stainless Steel
29	Grease Fitting	Stainless Steel

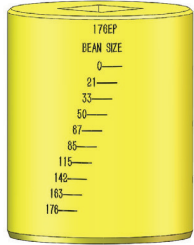
*Note: Materials listed are based on typical configurations, other materials can be provided upon request.*



# High Temperature Choke Valves

## Design Features

*All choke valves are available in manual operation or actuated operation.*



Bean size indicator cover

With bean size calibration on the indicator cover, the throttle bore area can be observed. (Cv value or percent open indicator cover also available.)

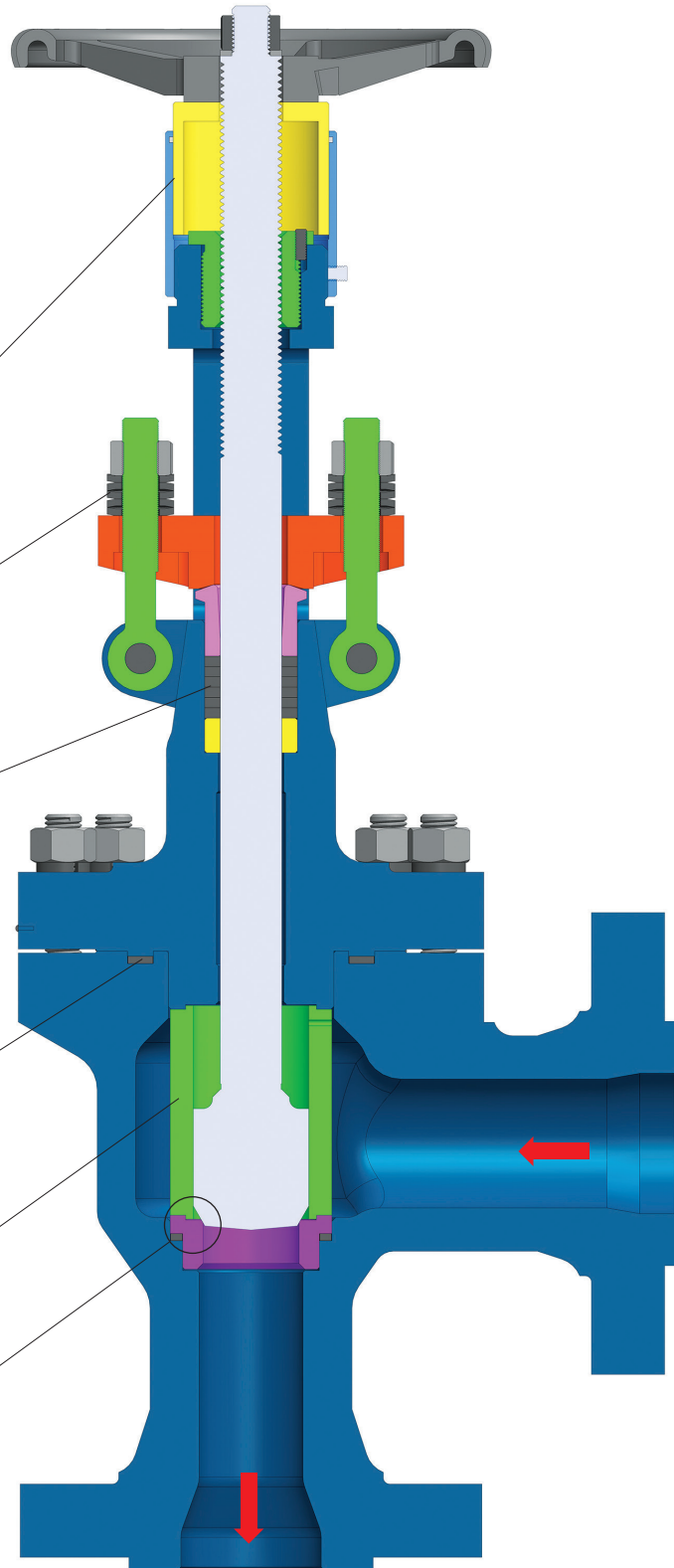
Live-loading keeps the stem tight for long periods of time without maintenance.

Graphite packing used and provides low emission in high temperature service.

S.P.W. gasket used in high temperature service.

Cage can be easily changed according to different flow characteristic; Also cage can eliminate internal threads for easy of servicing.

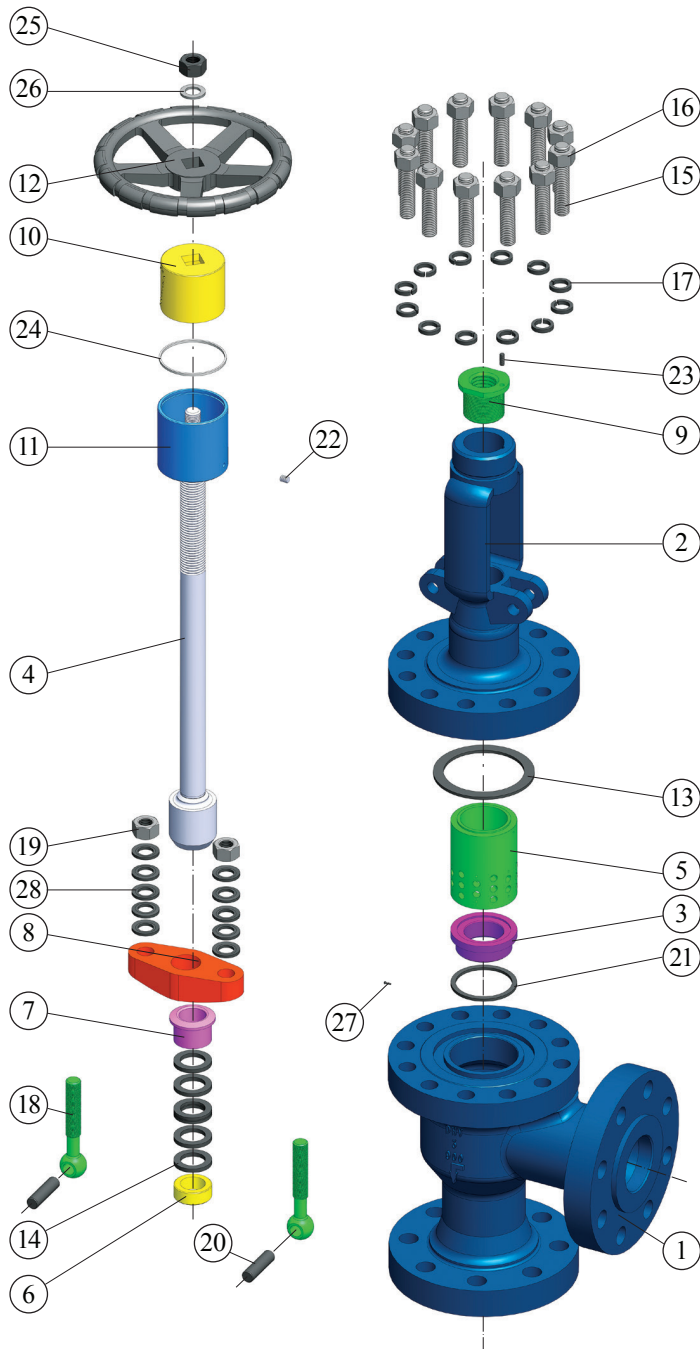
Metal to Metal seat surfaces provide extended Class V shut-off.



*Note: Illustration above is a typical design, actual valve may be different due to size and pressure class.*



# High Temperature Choke Valves



## Material Specification

No.	Description	Material
1	Body	AS Page 13 "Material Options"
2	Bonnet	AS Page 13 "Material Options"
3	Seat	AS Page 13 "Material Options"
4	Stem	AS Page 13 "Material Options"
5	Cage	AS Page 13 "Material Options"
6	Spacer Ring	Stainless Steel
7	Packing Gland	Stainless Steel
8	Gland Flange	Equal to body material
9	Stem Nut	A439 D2C / Aluminum Bronze
10	Indicator	Stainless Steel
11	Indicator Cover	Stainless Steel
12	Handwheel	Carbon Steel / Cast Iron
13	Body/Bonnet Seal	AS Page 13 "Material Options"
14	Stem Packing	Graphite
15	Stud	A193 B7M / A320 L7M
16	Nut	A194 2HM / A194 7M
17	Washer	Stainless Steel
18	Eyebolt	A193 B7M / A320 L7M
19	Nut	A194 2HM / A194 7M
20	Pin	Carbon Steel / Stainless Steel
21	Body/Seat Seal	AS Page 13 "Material Options"
22	Screw	Stainless Steel
23	Screw	Stainless Steel
24	Environment Seal	PTFE
25	Nut	A194 2HM / A194 7M
26	Washer	Stainless Steel
27	Nameplate	Stainless Steel
28	Disc Spring	17-7PH

*Note: Materials listed are based on typical configurations, other materials can be provided upon request.*





# DHV Choke Valve Design

## Material Options

Component	API 6A Materials Class	
	AA, BB, DD, EE	CC, FF
Body / Bonnet	AISI 4130, AISI 4140	A217 CA15, UNS S31803, A182 F6NM
Stem	UNS S17400, A182 F51 or Spray with Tungsten Carbide	UNS S17400, A182 F51
Nozzle / Cage	Tungsten Carbide, UNS S17400, Stellite	Tungsten Carbide, UNS S17400, Stellite
External Sleeve Bushing	Tungsten Carbide, UNS S17400, Stellite	Tungsten Carbide, UNS S17400, Stellite
External Sleeve/Internal Sleeve	UNS S17400, AISI 410	UNS S17400, AISI 410
Seat	UNS S17400, AISI 410 or Overlayed with Stellite	UNS S17400, AISI 410 or Overlayed with Stellite
Lip Seal	PTFE Elgiloy Spring, Viton	PTFE Elgiloy Spring, Viton
O-ring	Nitrile, Viton, Virgin PTFE	Nitrile, Viton, Virgin PTFE
Body / Bonnet Gasket	Spiral wound gasket	Spiral wound gasket

*Note: Materials listed are based on typical configurations, other materials can be provided upon request.*

## Actuator Options

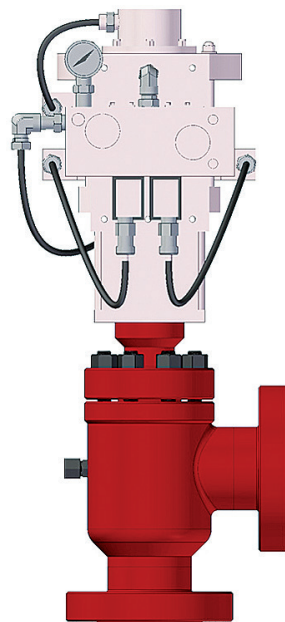
DHV choke valves are available in manual or actuated operation. A variety of actuators can be matched with DHV choke valves, including electric actuators, pneumatic actuators, hydraulic actuators, stepping actuators, and more.



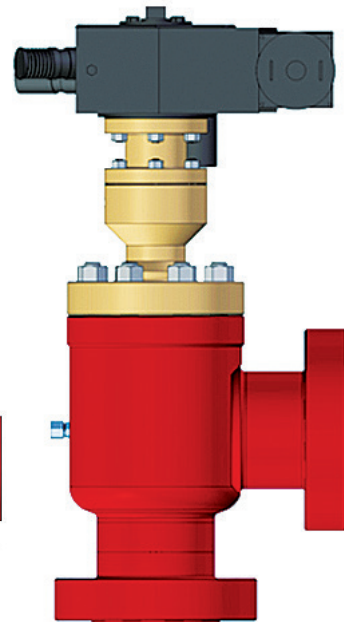
Diaphragm pneumatic actuator



Electric actuator



Hydraulic actuator

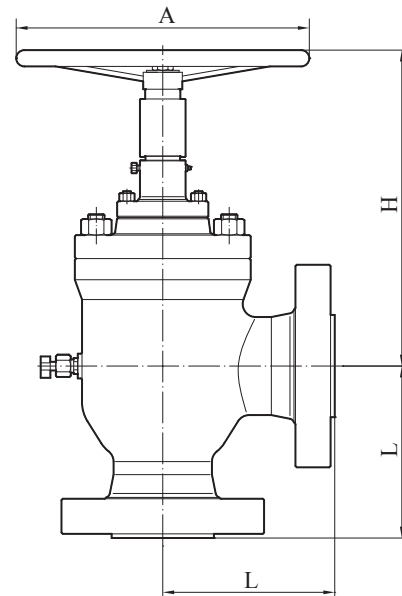


Stepping actuator



# DHV Choke Valve Design

## Dimension



NPS		H (External Sleeve Trim)				A	
		Close		Open			
B16.34	API 6A	in	mm	in	mm	in	mm
2	2-1/16	13.94	354	14.96	380	13.78	350
3	3-1/8	15.08	383	16.65	423	13.78	350
4	4-1/16	19.09	485	21.06	535	17.72	450
6	7-1/16	24.49	622	27.48	698	23.62	600

NPS	2 (2-1/16)		3 (3-1/8)		4 (4-1/16)		6 (7-1/16)	
	L		L		L		L	
	in	mm	in	mm	in	mm	in	mm
ANSI 150RF	7.00	178	7.25	184	8.25	210	10.00	254
ANSI 300RF	7.25	184	7.63	194	8.75	222	10.38	264
ANSI 600RF	7.63	194	8.25	210	9.50	242	11.38	289
ANSI 600RTJ	7.70	195.5	8.33	211.5	9.59	243.5	11.44	290.5
ANSI 900RF	8.75	222	8.75	222	10.00	254	12.25	311
ANSI 900RTJ	8.80	223.5	8.80	223.5	10.06	255.5	12.30	312.5
ANSI 1500RF	8.75	222	9.50	242	10.38	264	13.50	343
ANSI 1500RTJ	8.80	223.5	9.59	243.5	10.45	265.5	13.62	346
ANSI 2500RF	9.72	247	11.38	289	13.00	330	17.48	444
ANSI 2500RTJ	9.78	248.5	11.50	292	13.19	335	17.74	450.5
API 6B 2000PSI	7.70	195.5	8.33	211.5	9.59	243.5	11.44	290.5
API 6B 3000PSI	8.80	223.5	9.50	242	10.06	255.5	12.30	312.5
API 6B 5000PSI	8.80	223.5	9.59	243.5	13.19	335	13.62	346

Note: Data listed above is for reference only.

Note: Dimension " L " listed above are DHV standard dimensions, other dimensions are available upon request.



# DHV Choke Valve Design

**Nozzle Bean Size Selection Table**

Equivalent Orifice DIA. (Bean Size)		20	32	48	64	80	96	112	128	144	160
Orifice Area (in <sup>2</sup> )		0.077	0.196	0.442	0.785	1.227	1.767	2.405	3.142	3.976	4.909
C <sub>v</sub> Values*		1.5	3.9	8.8	15.7	24.5	35.3	48.1	62.8	79.5	98.2
2	2-1/16		*	*	*						
3	3-1/8			*	*	*	*	*			
4	4-1/16					*	*	*	*	*	*
6	7-1/16							*	*	*	*

Equivalent Orifice DIA. (Bean Size)		176	192	208	224	240	256	272	288	304
Orifice Area (in <sup>2</sup> )		5.94	7.069	8.296	9.621	11.045	12.57	14.186	15.9	17.72
C <sub>v</sub> Values*		118.8	141	166	192	221	251	284	318	354
2	2-1/16									
3	3-1/8									
4	4-1/16	*	*							
6	7-1/16	*	*	*	*	*	*	*	*	*

\*C<sub>v</sub> values listed above are the approximation for each bean size and may vary for different valve configurations.

## Trim Configuration

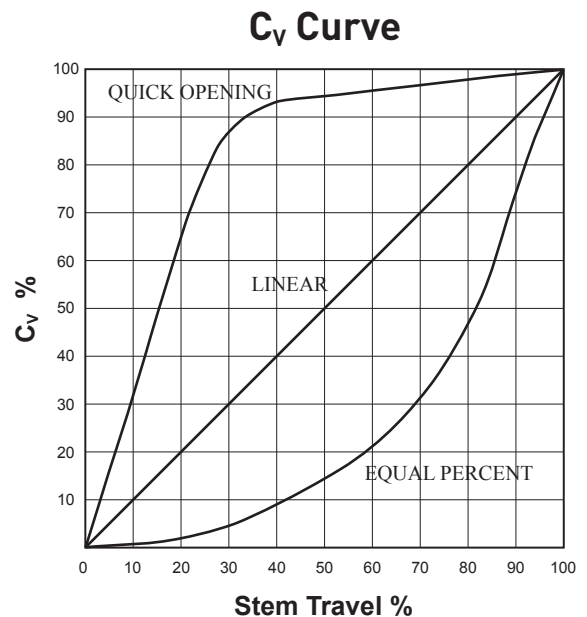
DHV can provide three basic types of flow characteristics through different trim design: quick opening, linear, and equal percentage. Details of these three flow characteristics are:

Controllability of a valve throughout its range is maximized with equal percent trim. This trim meets the precise control requirements at low set points, while still offering overall flow capacity.

The linear configuration provides good control in the upper range, however it can suffer from poor control in the lower range.

Quick opening trim is only suitable for use at the upper range of its travel.

DHV provides equal percentage flow characteristic trim by default. Other flow characteristics trim are available upon request.

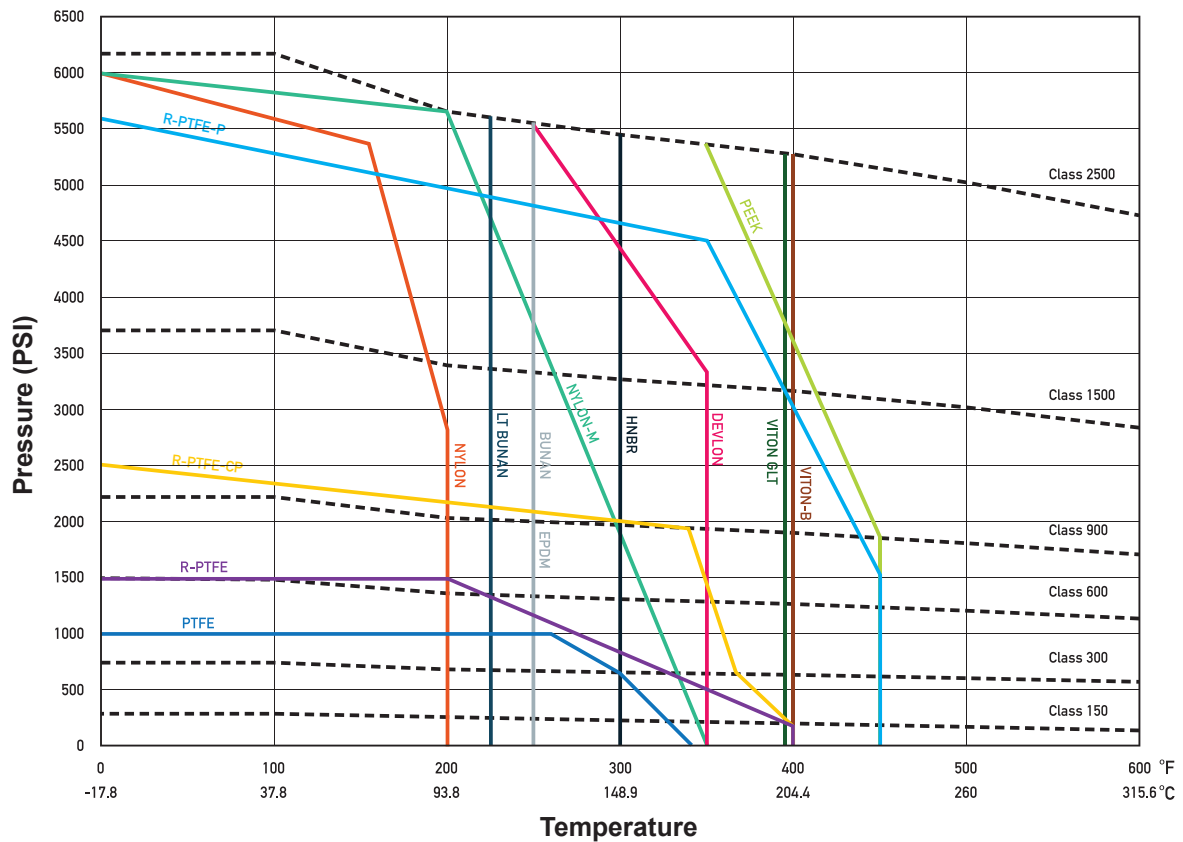






# Materials Pressure-Temperature Chart

**Pressure-Temperature Chart**



Note: R-PTFE-P = PEEK + PTFE R-PTFE-CP = PEEK + RPTFE  
Please consult with a DHV representative for further details.

## Low Temperature Limits

Body Material	°F	°C
WCB/WCC/A105	-20	-29
LCB/LCC/LF2	-50	-46
CF8M/F316	-320	-196
CF8/F304	-320	-196

O-Ring Material	°F	°C
VITON B	-20	-29
VITON GLT	-50	-46
BUNA N	-15	-26
EPDM	-60	-51
AFLAS	+32	0
HNBR (ED Resistant)	-50	-46

Seat Material	°F	°C
R-PTFE	-100	-73
R-PTFE-P	-100	-73
R-PTFE-CP	-100	-73
NYLON(PA12)	-50	-46
NYLON-M	-20	-29
PTFE	-100	-73
PEEK	-148	-100
DEVLON	-50	-46



# Terms & Conditions

## 1. DEFINITIONS

(a) "The CONTRACT" - The General Conditions of Orders together with COMPANY'S quote and any exhibits, attachments and other documents incorporated by reference.

(b) "The PRODUCT'S" - valves and related products and services as well as their packaging that form the subject-matter of the CONTRACT.

(c) "The COMPANY" - DHV Industries, Inc. or DHV Valve Company, Inc. or alternatively any affiliated company named in COMPANY'S quotation.

(d) "The CUSTOMER" - The individual, firm, partnership, company or other party with whom the Company contracts.

(e) "FORCE MAJEURE" - Any cause or circumstances (including but not limited to, act of God, fire, storm, flood, drought, earthquake, malicious damage, shortage of material, manufacturer's inability to provide the Product, embargo, riot, strike, look-out, trade dispute, civil disturbance, war, compliance with any law or government order, rule or direction or any other event or accident) beyond the reasonable and direct control of COMPANY.

## 2. SCOPE

(a) These General Conditions set out the standard terms on which the COMPANY supplies PRODUCTS to the CUSTOMER. Accordingly, these General Conditions apply to all quotations and sales unless otherwise agreed in writing.

(b) The legality, validity, and enforceability of other clauses in these General Conditions will not be affected if one of the clauses is, or becomes illegal, invalid, or unenforceable.

(c) We reserve the right to institute changes in material, design and specification without notice.

## 3. QUOTATIONS AND ORDERS

(a) Unless otherwise expressly stipulated, all of the COMPANY'S quotations and prices are subject to change without notice, and to availability. Prices are valid only for the duration indicated in the quotation and are subject to change without notice.

(b) Any written or oral purchase order received from the CUSTOMER by the COMPANY ("Order") shall be interpreted as a written acceptance of the COMPANY'S offer to sell, and shall be filled in accordance with the terms and conditions of the sale set forth herein. The terms and conditions of the Company's proposal (if at all any) shall prevail over any conflicting or different terms in CUSTOMER'S orders unless the CUSTOMER notifies the COMPANY in writing of its objections thereto within the earlier of the date of shipment of the Product or fifteen (15) days from receipt of COMPANY'S General Conditions. CUSTOMER'S standard terms of purchase will not be considered as a counter-offer to COMPANY'S terms and conditions of sale. The COMPANY will not be bound by conflicting purchasing conditions or reservations made by the CUSTOMER even if the COMPANY does not explicitly contradict the conditions or reservations.

(c) No order in pursuance of any quotation or otherwise shall be binding on the COMPANY unless and until such an order is accepted by the COMPANY. The COMPANY may reject any order in whole or part. A contract between the COMPANY and CUSTOMER is finalized once the COMPANY issues a telephonic, electronic, or written order confirmation to the CUSTOMER or ships the Product to the CUSTOMER. Except as otherwise specifically provided herein, the Order is the final and complete expression of the agreement between the parties, setting forth the entire agreement between the parties regarding this transaction and including all promises and representations both express and implied. Any matters not contained herein, or otherwise referenced or incorporated herein, are not part of the Order.

(d) Subject to the specific procedures for changes to the Order, none of the terms and conditions contained herein may be added to, modified, superseded, or otherwise altered except by a written instrument specifically referencing the affected provision of the Order signed by the President or Vice President of the COMPANY.

## 4. PRICES

(a) All prices shown are in U.S. dollars and are F.O.B. COMPANY'S shipping point, unless otherwise expressly agreed to by COMPANY.

(b) Prices exclude any duties, federal, state or local taxes or other government charges and delivery costs, which the CUSTOMER must pay unless the law specifically provides that the COMPANY must make such payment in which case the CUSTOMER shall reimburse the COMPANY for such payments as part of the purchase price. All prices include the COMPANY'S

standard packing, but not pallets or crating for export goods.

## 5. PAYMENTS AND LICENSES

(a) Payment must be made in the currency specified in COMPANY'S invoice.

(b) The CUSTOMER must pay the full invoice amount before the shipment from the date of the invoice unless otherwise agreed in writing. The COMPANY is entitled to charge interest on overdue payments at the greater of the following two rates: (a) 1.5% monthly or (b) 2% annually above the current monthly base rate of the COMPANY'S bank. In no event shall the interest rate be higher than the maximum rate permitted by applicable law.

(c) In addition to exercising its rights at common law or under statute, the COMPANY is entitled to terminate the CONTRACT by written notice to the CUSTOMER if the CUSTOMER is in material breach of its obligations under the CONTRACT or any other agreements with the COMPANY. The CUSTOMER is in material breach:

- If it fails to meet its liabilities when they fall due;
- If it seeks a composition with its creditors;
- If all or part of its property is subject to receivership; or
- If a petition for liquidation, winding-up or administration is filed in respect of the CUSTOMER.

(d) The CUSTOMER is not entitled to withhold, set off or deduct claims against the COMPANY from an amount that it owes the COMPANY under the CONTRACT or other agreement with the COMPANY.

(e) The COMPANY is obligated to deliver a PRODUCT only if the CUSTOMER has made due payment of all amounts that it owes to the COMPANY at the date of delivery under the CONTRACT or other agreement with the COMPANY. The COMPANY is entitled to suspend delivery of a PRODUCT if the CUSTOMER is in default without this affecting the COMPANY'S other rights under the CONTRACT or other agreement with the CUSTOMER. The COMPANY is not obligated to resume deliveries until the CUSTOMER has paid all overdue amounts, including all expenses and accrued interest.

(f) It is the CUSTOMER'S exclusive responsibility to obtain all licenses, exchange control documents and other consents needed for the import and use of the PRODUCTS as well as for payment of the PRODUCTS. The CUSTOMER will not be discharged from his obligations under these General Conditions because he fails to obtain a license or other consents.

## 6. DELIVERY AND FORCE MAJEURE

(a) While the COMPANY will endeavor to deliver the PRODUCTS by any date or within any period agreed upon, such dates and periods are estimates only given in good faith and the COMPANY will not be liable for any failure to deliver by such date or within such a period. Time for delivery shall not be of the essence of the CONTRACT.

(b) Should the COMPANY be delayed in or prevented from making the delivery of the PRODUCTS due to Force Majeure, the COMPANY may terminate the CONTRACT or suspend the Order without incurring any liability for any loss or damage arising there from, but without prejudice in any such case to rights accrued to the COMPANY for deliveries already made.

(c) Unless otherwise agreed to in writing by the COMPANY, the COMPANY shall deliver the PRODUCTS by the means most convenient to the COMPANY to the address or addresses specified by the CUSTOMER at the time of placing the Order or (in the event that the CUSTOMER fails so to specify an address) to an address at which the CUSTOMER resided or carries on business. The PRODUCTS are considered to be delivered when they are physically handed over to 1) the CUSTOMER, 2) the CUSTOMER'S agent or a person that the CUSTOMER has authorized to take delivery, or (3) the carrier, regardless of who pays shipping costs. The COMPANY shall be entitled to add to the contract price a reasonable charge for packaging, delivery and insurance. Off-loading will be at CUSTOMER'S expense.

(d) The CUSTOMER is obligated to pay all costs that the COMPANY incurs because of the CUSTOMER'S failure to take delivery either 1) on the date stated in the invoice or the COMPANY'S confirmation, or 2) when the PRODUCTS are ready, if the COMPANY has notified the CUSTOMER in writing of their readiness and the CUSTOMER has not taken delivery within seven days or any period to which the parties agree.

(e) If the COMPANY is responsible for delivery, the CUSTOMER must thoroughly inspect the PRODUCTS sent at the COMPANY'S risk. The CUSTOMER is to notify the COMPANY in writing immediately of loss, damage or shortage of PRODUCTS. If the CUSTOMER does not receive the PRODUCTS on the agreed date of delivery, it is to notify the COMPANY within 48 hours of the agreed date of delivery. The COMPANY disclaims all liability, and the CUSTOMER waives its rights of recovery, under this provision unless the CUSTOMER'S information is sufficient to



# Terms & Conditions

allow the COMPANY to make a valid claim against the carrier of the PRODUCTS for their loss or damage.

(f) If the CUSTOMER is responsible for delivery, the COMPANY will not be responsible for delays or failure to deliver by the carrier set up by the CUSTOMER or due to causes beyond the COMPANY control. Delivery of material to a common carrier shall be considered delivery to the Buyer. Claims for loss or any damage to material in transit shall be filed by the Buyer direct with the carrier. Claims for any shortage, corrections or deductions must be made in writing within 48 hours after receipt of goods.

## 7. PASSING OF RISK AND TITLE, CANCELLATION AND RETURNS

The COMPANY'S liability for the PRODUCTS passes from the COMPANY to the CUSTOMER on the earlier of the following two dates: 1) the date when the PRODUCTS are delivered to the CUSTOMER, the CUSTOMER'S agent, or a person that the CUSTOMER has authorized to accept delivery, or 2) the agreed date of delivery, if the CUSTOMER fails to take delivery as required.

(a) Under the CONTRACT.

(b) The COMPANY remains the owner of the PRODUCTS until it receives full payment for all PRODUCTS whether or not the PRODUCTS are delivered to the CUSTOMER. If the CUSTOMER sells the PRODUCTS to a third party before the COMPANY receives full payment, the proceeds of the sale shall first apply to pay all amounts due to the COMPANY. The COMPANY or its representative is entitled to recover or resell the PRODUCTS and to enter the CUSTOMER'S premises for that purpose, without this affecting its other rights; if the CUSTOMER has not paid the full purchase price or if insolvency proceedings are commenced against the CUSTOMER.

(c) Purchase Orders once placed by CUSTOMER and accepted by COMPANY can be cancelled only with COMPANY'S written consent and upon terms which will save COMPANY from loss. No PRODUCTS may be returned for credit or adjustment without written permission from COMPANY'S officer authorized to issue such permission.

(d) All sales are final. This means that the CUSTOMER is not entitled to credit for returned PRODUCTS whether or not the CUSTOMER has made a complaint or a claim. If the Company expressly agrees in writing that the COMPANY will credit the CUSTOMER for returned PRODUCTS, the CUSTOMER must return the PRODUCTS promptly, carriage-paid, and in the COMPANY'S opinion in good condition to receive the credit. If the COMPANY expressly agrees in writing that the CUSTOMER can return the PRODUCTS, cancel order or change order, the CUSTOMER will be charged for work performed, based on the following schedule. All freight for return or cancelled/changed goods shall be prepaid by CUSTOMER.

- Twenty Five (25%) percent of price on stock items.
- Fifty (50%) percent of price of stock items ordered in quantities which exceed normal inventory levels.
- Twenty Five (25%) percent of price prior to drawing submittal on made to order items.
- Forty (40%) percent on drawing approval, but prior to start of castings.
- Seventy (70%) percent during casting cycle, dependent on the state of completion.
- One Hundred (100%) percent on castings that are not standard materials used by COMPANY in daily sales; i.e. Stainless Steel, Duplex, Nickel, etc.
- Eighty (80%) during machining and assembly operations, this is dependent on the state of completion.
- One Hundred (100%) percent after final assembly and test.
- Special Product Orders: or non standard products are not subject to any schedule level of cancellation, except on such terms as COMPANY may specify on application only.

## 8. WARRANTY AND LIMITATIONS OF LIABILITY

(a) As to all PRODUCTS sold hereunder, the COMPANY expresses no warranties whatsoever but only assigns to CUSTOMER all transferable warranties and remedies granted by the manufacturer of such PRODUCTS to which COMPANY is entitled and CUSTOMER agrees to look solely to such manufacturers with regard to claims and remedies relating to such PRODUCTS. THE COMPANY SPECIFICALLY DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND SATISFACTORY QUALITY. THE COMPANY MAKES NO WARRANTIES AND REPRESENTATIONS, AS TO QUALITY, CAPABILITIES, OPERATIONS, NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS, PERFORMANCE AND SUITABILITY OF THE PRODUCTS.

(b) LIMITATION OF LIABILITY. CUSTOMER'S EXCLUSIVE REMEDY AGAINST COMPANY FOR DEFECTS IN THE PRODUCTS IS THE MANUFACTURER'S WARRANTY SET FORTH IN SECTION 8 (a). THE PARTIES AGREE THAT UNDER NO CIRCUMSTANCE SHALL THE

COMPANY HAVE ANY LIABILITY WHATSOEVER FOR ANY CLAIM ARISING FROM OR RELATING TO THE ORDERS OR THE PRODUCTS FOR AN AGGREGATE AMOUNT IN EXCESS OF THE INVOICED PRICE FOR THE PRODUCTS.

(c) The COMPANY shall not be liable for any damage resulting from delays, failure of the PRODUCTS, loss of profit or revenues, loss of time or loss of use, cost of capital, diminution of goodwill, or claims of CUSTOMER'S customers.

(d) IN NO CIRCUMSTANCES WILL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, PUNITIVE OR INDIRECT LOSS OR DAMAGE WHATSOEVER.

(e) The COMPANY is not liable if the CUSTOMER'S use of the PRODUCTS infringes on a third party's patent rights.

(f) Any exclusions or limitations of liability in this CONTRACT in favor of the COMPANY are agreed to be extended for the benefit of all COMPANY'S and/or individuals within the COMPANY'S group of COMPANIES. The CUSTOMER agrees in the appointment of the COMPANY as its agent or trustee solely for the extension of the benefit of the exclusions and limitations of liability. All duties, liabilities and obligations that would otherwise result from this agency are expressly excluded.

(g) The COMPANY warrants the PRODUCTS provided to the original CUSTOMER, not any third party, for a period of one year after date of shipment, that PRODUCTS will be free from defects in materials and workmanship under proper and normal installation and use. Any claim for defect goods should be by written notice to the COMPANY immediately upon discovery. NO warranty shall apply to PRODUCTS which has been modified or changed in design or function, misused, or improperly maintained. The COMPANY shall be able to inspect claimed defects at original CUSTOMER's facility to determine its obligation. Without written authorization of COMPANY, any repair labor or material is not allowed. No PRODUCTS may be returned without written permission from COMPANY.

## 9. SPECIFICATION, INSTRUCTIONS AND/OR DESIGN

If PRODUCTS are modified to a specification, instruction or design supplied by CUSTOMER or any third party on behalf of CUSTOMER, then:

(a) The suitability and accuracy of that specification, instruction and/or design will be CUSTOMER'S responsibility.

(b) The CUSTOMER will indemnify COMPANY against any infringement or alleged infringement of any third party's intellectual property rights including but not limited to patent, design right, registered design, trademark, trade name or copyright and any loss, damage or expense which it may incur by reason of any such infringement or alleged infringement in any county, and

(c) The CUSTOMER will indemnify COMPANY against any loss, damage or expense in respect of any liability arising in any country by reasons of the PRODUCTS being made to such specification, instruction or design.

## 10. CHOICE OF LAW AND JURISDICTION

(a) The laws of the State of California, including the Uniform Commercial Code, shall govern this CONTRACT. Jurisdiction and venue shall be the Superior Court of Kern County, Bakersfield, California. However, the CUSTOMER expressly agrees that the COMPANY may take action in another jurisdiction to obtain security for the COMPANY'S claims under the CONTRACT.

(b) The CONTRACT constitutes the entire agreement between the COMPANY and the CUSTOMER concerning the supply of the PRODUCTS. The CUSTOMER agrees that he has no other rights of recourse to the COMPANY other than those expressly stated in these General Conditions. The General Conditions apply whether or not the CUSTOMER has a cause of action because the COMPANY or its representative has acted negligently.

## 11. ATTORNEY'S FEES

In the event of any litigation or arbitration or any quasi-judicial or administrative proceeding involving the parties hereto to enforce any provision of this Agreement, to enforce any remedy available upon default hereunder, or seeking a declaration of the rights of either party hereunder, the prevailing party shall be entitled to recover from the other such attorney's fees and costs as may be reasonably incurred, including the costs of reasonable investigation, preparation and professional or expert consultation incurred by reason of such litigation, arbitration or proceeding. Sums actually expended in the prosecution or defense of any litigation, arbitration or proceeding within the meaning of the foregoing sentence shall be prima facie evidence of reasonable attorneys' fees, costs and disbursements.

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