

Seeking a Great Name in Valve Technology

Please visit our DHV website: www.dhvindustries.com or www.dhvvalve.com for a copy of our API 6D monogram certificate. Customer and Project referrals are available upon request. For certified data and current specifications, please contact us or your local DHV agent. Information provided in this catalog is for general purposes only.

DHV reserves the right to discontinue the manufacture or change and modify our design and construction of any DHV product, in due course of our manufacturing procedure without incurring any obligation to accept for credit, to replace or furnish or install such changes or modifications on products previously or subsequently sold.



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Your local DHV agent

***Rising Stem
Ball 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** Ball 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

Ball Valves

Type

1 = Floating Ball Split Body, Full Bore	C3 = Trunnion Ball Valve, Fully Welded, Two-Piece Body, Full Bore
2 = Floating Ball Split Body, Reduced Bore	C4 = Trunnion Ball Valve, Fully Welded, Two-Piece Body, Reduced Bore
3 = Trunnion Ball Two-Piece Body, Full Bore	C5 = Trunnion Ball Valve, Fully Welded, Three-Piece Body, Full Bore
4 = Trunnion Ball Two-Piece Body, Reduced Bore	C6 = Trunnion Ball Valve, Fully Welded, Three-Piece Body, Reduced Bore
5 = Trunnion Ball Three-Piece Body, Full Bore	D = Rising Stem Ball Valves, Full Bore
6 = Trunnion Ball Three-Piece Body, Reduced Bore	E = Rising Stem Ball Valves, Reduced Bore
7 = Floating Ball One-Piece Body, Reduced Bore	X = Special
8 = Small size Floating Ball valve. see*	
9 = Top Entry Trunnion Ball Valves	
0 = Three Way Ball Valves	

Note: *For valve bore type note designated, For valve bore type not designated, add R for reduce bore, F for full bore. 8R is reduce bore small size ball valve, 8F is full bore small size ball valve.

Code

B = Ball Valves
L = Cryogenic Ball Valves
M = Metal-to-Metal Seat Ball Valves

Pressure Class

15 = Class 150
30 = Class 300
60 = Class 600
80 = Class 800
90 = Class 900
150 = Class 1500
250 = Class 2500
100=1000 WOG
200=2000 WOG
300=3000 WOG
500=5000 WOG
600=6000 WOG
1000=10000 WOG

Body Material

0 = ASTM A216 WCB
1 = ASTM A105
2 = ASTM A352 LCB
3 = ASTM A350 LF2
4 = ASTM A351 CF8M
5 = ASTM A182 F316
6 = ASTM A351 CF8
7 = ASTM A182 F304
8 = ASTM A890 4A
9 = ASTM A182 F51
A = ASTM A352 LCC
B = Inconel
C = Monel
D = Super Duplex S.S.
E = ASTM A240 UNS N08926
F = ASTM A216 WCC
X = Special

10" Rising Stem Ball Valves, Full Bore, Class 600LB, ASTM A216 WCC Body & Adapter Raised Face Flanged End, with 13Cr / F6 Trim and Nylon+Viton / Graphite Seat and Seal, Gear Operated, Inconel 625 Overlay, Block and Bleed.

Example: 10"-BD60FF43-GO-I-BB

End Connections

F = Raised Face Flanged End
R = Ring Type Joint Flanged End
P = Plain Flat Face Flanged End
B = Butt-welded End
T = Threaded End
S = Socked-Welded End
X = Other Type End Connection
G = Grayloc Hub End
U = Pup Piece End

Trim Material

1 = C.S. + ENP	B = S.S.+ HCr
2 = 304SS	C = Super Duplex S.S.
3 = 316SS	D = S.S.+ T.C
4 = 13Cr / F6	E = C.S.+ T.C
5 = Duplex S.S.	F = C.S.+ Ni
6 = Monel	G = C.S.+ HCr
7 = Inconel	H = C.S.+ CCC
8 = B16	I = S.S.+ CCC
9 = B62	X = Special
A = S.S.+ Ni	

Seat Material

1 = PTFE
2 = R-PTFE
3 = NYLON
4 = VITON
5 = DEVLON
6 = NBR
7 = PEEK (HT4)
8 = Ni
9 = STL
A = CCC
B = T.C
M = NYLON-M
C = PCTFE
P = PAI
X = Special

Operator

NONE = Lever or Handwheel Operator
CO = Chain Wheel Operator
GO = Gear Operator
BS = Bare Stem
EM = Electric Motor Operator
PA = Pneumatic Actuator
HA = Hydraulic Actuator
PH = Pneumatic-Hydraulic Actuator

Internal Coating

None = No Coating
P=Plasite 7159
E = Enduro Bond
I = Inconel 625 Overlay
N = Inconel 825 Overlay
D = Duplex SS Overlay

Seat Function

None = Self Relieving Seat
SPE = Single Piston Effect
DIB-1 = DPE x DPE
DIB-2 = SPE x DPE
BB = Block and Bleed
DPE = Double Piston Effect



Design Features

Dual Stem Guides: The symmetrically arranged valve stem guide groove and guide pins prevent unbalanced force during the movement of the valve stem and assist in the rapid lifting and rotation of the valve stem.

Position Indicator: Indicates the open or closed state of the valve.

Lockable handwheel design.

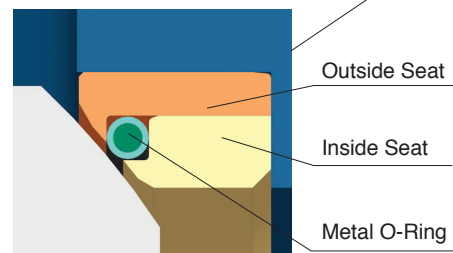
OS & Y bonnet design is a standard design that provides the potential for packing adjustment or emergency installation of packing under pressure.

Mechanical Closure: During the downward stroke of the valve stem, the S-shaped guide rail and the wedge-shaped surface at the bottom of the valve stem enables the valve core to rotate around the trunnion center and positions it against the valve seat, pressing the valve seat to form a tight seal. The valve stem threads hold the position and provide positive downward pressure ensuring the valve core has a tight mechanical seal and will not move due to fluid pressure fluctuations and flow direction changes.

Top entry design offers easy on-line inspection and maintenance.

The valve body is integrally cast, and the wall thickness conforms to ASME B16.34

Metal Seat: Three-piece seat configuration (As Figure), composed of inside ring and outside ring and metal O-ring. The inside ring and outside ring provide support for the metal O-ring and are inserted into the valve body through interference fit. The metal sealing valve seat is only an example. Non-metal sealing valve seat and BB valve seat can be provided upon request.



Outside Seat

Inside Seat

Metal O-Ring

Wear Resistant Hard Facing on Core: The core sealing face features a hard, polished material that endures difficult applications, without affecting sealing.

Fugitive Emission Packing



Friction Free Opening and Closing: The cam structure at the bottom of the valve stem enables the valve core to separate from the seat before rotating. The relative position of the valve core and the valve seat as shown as figure, eliminates contact and friction between the valve seat and the core avoiding damage to the sealing surface caused by friction and extending the service life of the valve core and the valve seat. This solves the friction problem that traditional ball valves, gate valves, and butterfly valves can experience at the seat during the process of opening and closing. Elimination of friction between the valve core and the valve seat enables the operating torque of the valve to be reduced.

Single Seat Design: The single seat can seal in both directions. Compared to a double-seat valve, it can avoid pressure build-up between the valve seats.

Downstream drain or blowdown is provided as standard.

Self-Cleaning: When the valve stem is raised, the valve core tilts away from the valve seat, creating a small gap allowing the medium to flow around the entire valve, cleaning the core and sealing surface.



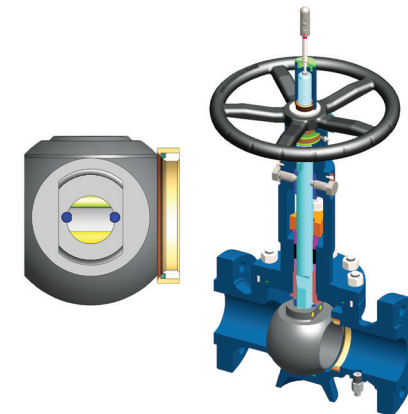
Operating Principle

Introduction

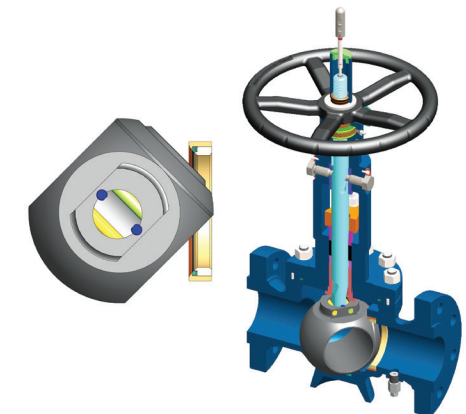
The DHV Rising Stem Ball Valve is a trunnion mounted design. Because of its unique structural design, the valve core and the sealing surface of the valve seat do not contact during the opening and closing process. Wear to the valve seat sealing surface is reduced, the thrust and torque during valve operation is reduced, and the service life of the valve is prolonged. The DHV rising stem ball valve has a self-cleaning function on the valve seat sealing surface. When the valve stem is raised, the valve core is separated from the valve seat allowing the medium to clean the sealing surface of the valve core and the valve seat. Based on these characteristics, the DHV rising stem ball valve is especially suitable for high temperature and cycling service.

Operating Principle

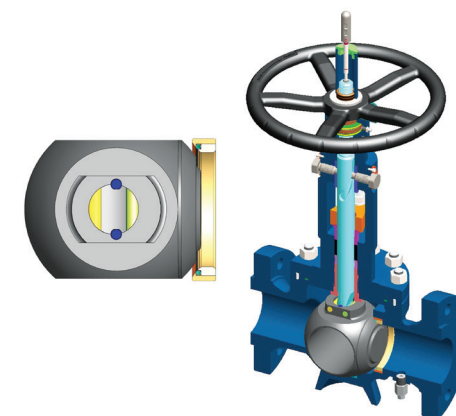
1. From the opening position, turn the handwheel in the clockwise direction, the stem will begin to lower.



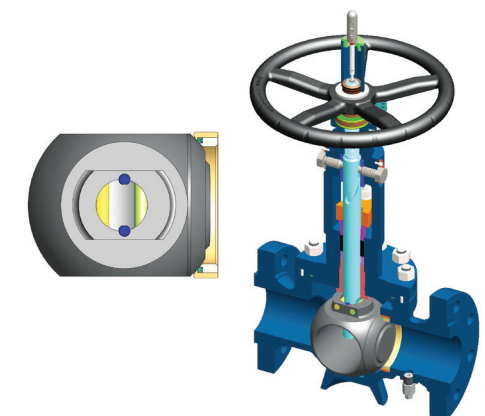
2. As the stem lowers, the precision spiral grooves in the stem moves against the fixed guide pin, which causes the stem and core to rotate clockwise.



3. When the core has turned 90° the stem stops rotating and continues to lower with its linear movement. During the rotation, the core does not come in contact with the seat.



4. The remaining turns of the handwheel causes stem to mechanically wedge the core against the seat producing a tight seal by the cam structure at the bottom of the stem.



5. When the valve is opened, the process is reversed.



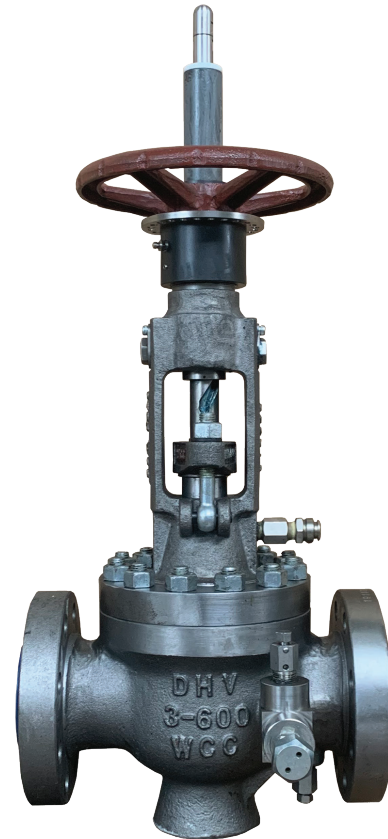
Applicable Standards & Specifications

Applicable Standards

- Basic Design: **API 6D, ASME B16.34**
Face to Face: **ASME B16.10 or DHV Standard**
Flange End: **ASME B16.5, ASME B16.47**
Butt Welding End: **ASME B16.25**
Test and Inspection: **API 598, API 6D, FCI 70-2**
Fire-safe Test: **API 607 or API 6FA**
Fugitive Emission Test: **ISO 15848 - 2**
Type Testing for FE: **ISO 15848 - 1**

Manufacturing to NACE latest version on request
CSA Z245.15 latest version compliance is available

*Note: Zero leakage as per API 6D hydrotest classification on primary seat only.
Supplemental low pressure gas tests are also available.*



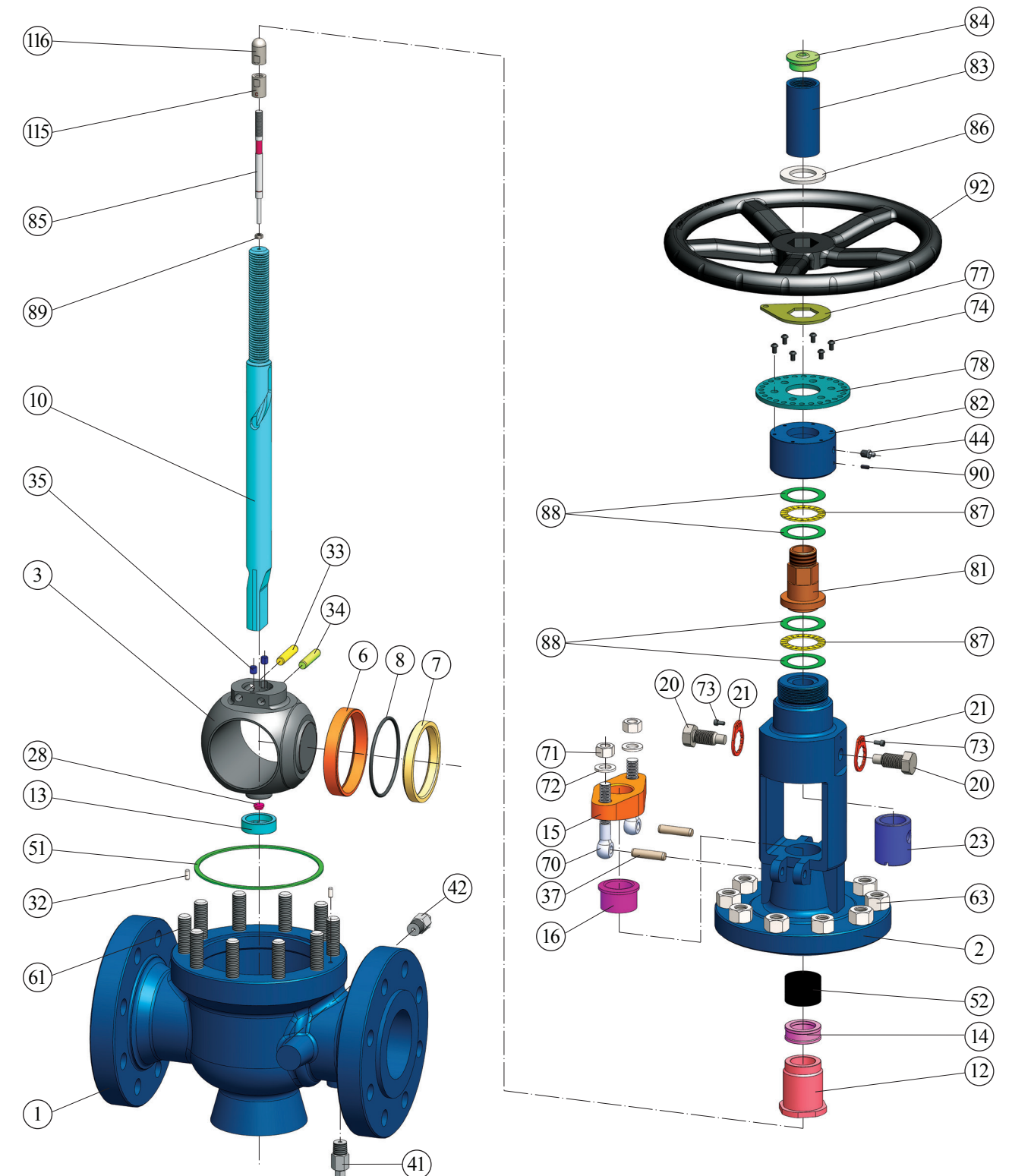
Specifications

- Size Range: **1" ~ 24"**
Pressure Range: **150LB ~ 2500LB**
End Connection: **Flanged End / Butt Welding End**
Bore: **Full Bore**
Seat Style: **Soft Seat, Metal To Metal Seat, BB Seat**
Operation: **Manual Operation, Actuated Operation**
Material: **Body: Carbon Steel, Stainless Steel, Duplex Stainless Steel, Etc.**
Trim: Stainless Steel, Duplex Stainless Steel, High Nickel Alloys And Other Special Materials, Etc.



Valve Details and Materials

One-Piece Stem, 8" and Below (excluding 8" 2500LB)





Valve Details and Materials

One-Piece Stem, 8" and Below (excluding 8" 2500LB)

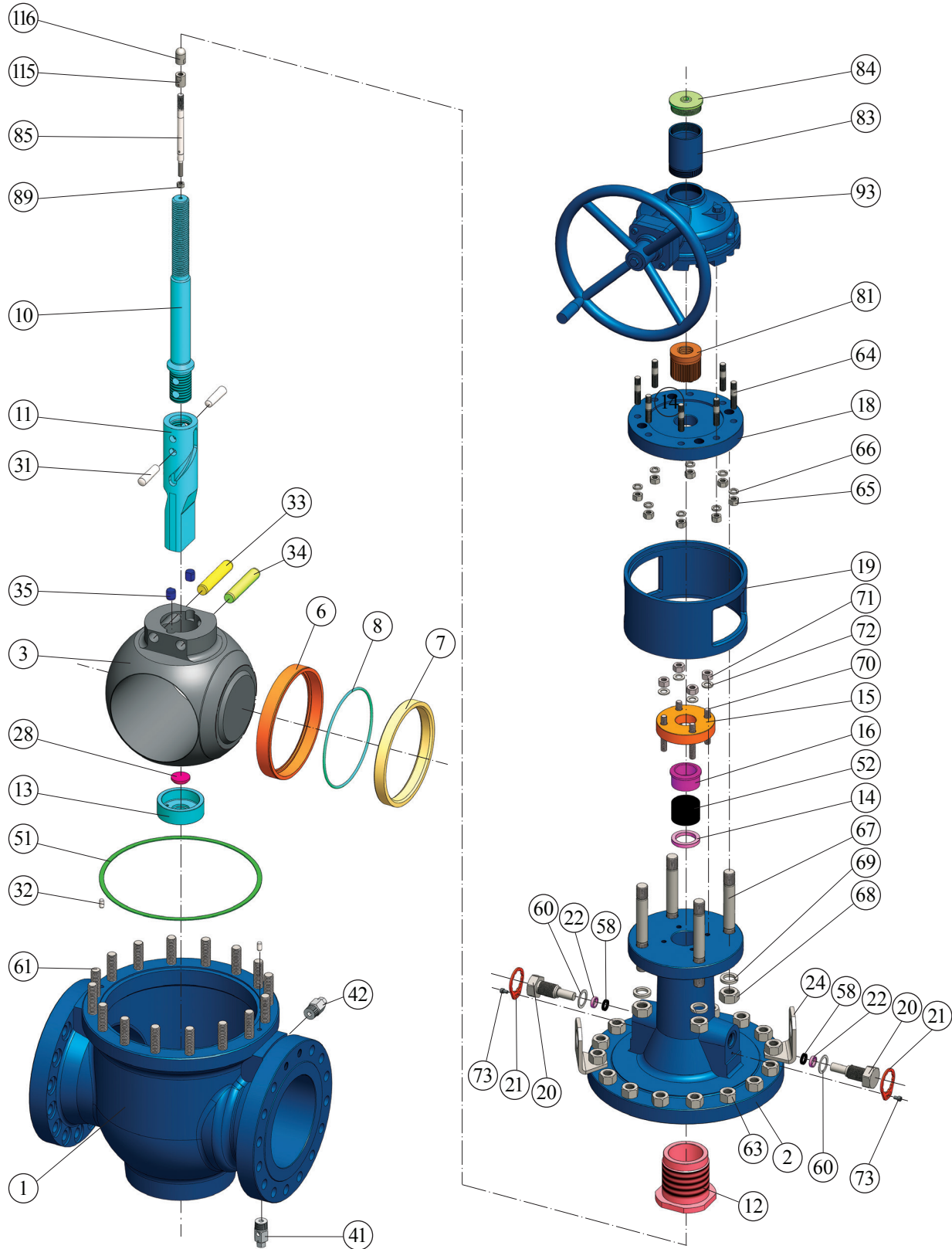
Material Specification				Material Specification			
No.	Description	Carbon Steel	Stainless Steel	No.	Description	Carbon Steel	Stainless Steel
1	Body	A216 WCC	A351 CF8M	51	Gasket	Metal & Flexible Graphite	
2	Bonnet	A216 WCC	A351 CF8M	52	Packing	Graphite	
3	Core	A182 F6a+Stellite	A182 F316+Stellite	61	Stud	A193 B7	A193 B8M
6	Outside Seat	A182 F6a	A182 F316	63	Nut	A194 2H	A194 8M
7	Inside Seat	A182 F6a	A182 F316	70	Eyebolt	A193 B7	A193 B8M
8	Seat Insert	Alloy Steel		71	Nut	A194 2H	A194 8M
10	Stem	A638 Gr660		72	Plain Washer	Carbon Steel	Stainless Steel
12	Bonnet Bushing	A479 410	INCONEL X-718	73	Inner Hex Bolt	A193 B7	A193 B8M
13	Trunnion Bushing	Stainless Steel		74	Screw	Stainless Steel	
14	Packing Ring	A276 420	A182 F316	77	Locking Plate	Stainless Steel	
15	Packing Gland Retainer	A216 WCC	A351 CF8M	78	Locking Dish	Stainless Steel	
16	Packing Gland	A276 420	A182 F316	81	Drive Nut	Ductile Iron	Alloy Steel
20	Stem Guide	Alloy Steel		82	Bonnet Nut	Carbon Steel	Stainless Steel
21	Locking Ring	316SS		83	Stem Protector	Carbon Steel	
23	Stem Bushing	Stainless Steel		84	Rod Seal	Plastic	
28	Trunnion Pad	Stainless Steel		85	Position Indicator Rod	Stainless Steel	
32	Alignment Pin	A193 B7	A182 F316	86	Washer	Carbon Steel	Stainless Steel
33	Core Pin	A276 410	INCONEL X-718	87	Bearing	Carbon Steel	Alloy Steel
34	Core Pin	A276 410	INCONEL X-718	88	Thrust Washer	Carbon Steel	Alloy Steel
35	Support Pin	A276 410	A182 F316	89	Nut	A194 2H	A194 8M
37	Pin	A276 410	A182 F316	90	Screw	Stainless Steel	
41	Drain Fitting	Assembly		92	Handwheel	Ductile Iron	
42	Drain Fitting	Assembly		115	Position Indicator Bushing	Stainless Steel	
44	Lube Fitting	Stainless Steel		116	Locking Nut	Stainless Steel	

Note: Materials shown in the table are only typical configurations, other materials can be provided upon request.



Valve Details and Materials

Two-Piece Stem, 10" and Above





Valve Details and Materials

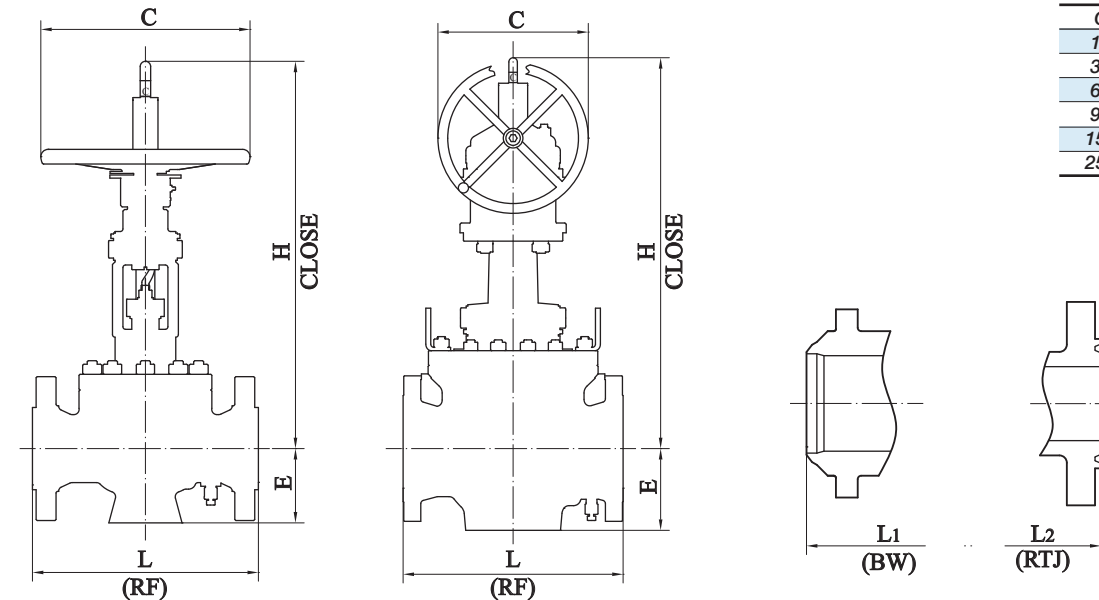
Two-Piece Stem, 10" and Above

Material Specification				Material Specification			
No.	Description	Carbon Steel	Stainless Steel	No.	Description	Carbon Steel	Stainless Steel
1	Body	A216 WCC	A351 CF8M	42	Drain Fitting	Assembly	
2	Bonnet	A216 WCC	A351 CF8M	51	Gasket	Metal & Flexible Graphite	
3	Core	A182 F6a+Stellite	A182 F316+Stellite	52	Packing	Graphite	
6	Outside Seat	A182 F6a	A182 F316	58	Packing	Graphite	
7	Inside Seat	A182 F6a	A182 F316	60	Metal Gasket	316SS	
8	Seat Insert	Alloy Steel		61	Stud	A193 B7	A193 B8M
10	Stem	A638 Gr660		63	Nut	A194 2H	A194 8M
11	Cam Stem	A638 Gr660		64	Stud	A193 B7	A193 B8M
12	Bonnet Bushing	A479 410	INCONEL X-718	65	Nut	A194 2H	A194 8M
13	Trunnion Bushing	Stainless Steel		66	Washer	Carbon Steel	Stainless Steel
14	Packing Ring	A276 420	A182 F316	67	Stud	A193 B7	A193 B8M
15	Packing Gland Retainer	A105	A182 F316	68	Nut	A194 2H	A194 8M
16	Packing Gland	A276 420	A182 F316	69	Washer	Carbon Steel	Stainless Steel
18	Plate	A105	A182 F316	70	Stud	A193 B7	A193 B8M
19	Retainer	Carbon Steel	Stainless Steel	71	Nut	A194 2H	A194 8M
20	Stem Guide	Alloy Steel		72	Plain Washer	Carbon Steel	Stainless Steel
21	Locking Ring	316SS		73	Inner Hex Bolt	A193 B7	A193 B8M
22	Metal Ring	A276 420	A182 F316	81	Drive Nut	Ductile Iron	Alloy Steel
24	Lifting Lug	Carbon Steel	Stainless Steel	83	Stem Protector	Carbon Steel	
28	Trunnion Pad	Stainless Steel		84	Rod Seal	Plastic	
31	Support Pin	A276 410	A182 F316	85	Position Indicator Rod	Stainless Steel	
32	Alignment Pin	A193 B7	A182 F316	89	Nut	A194 2H	A194 8M
33	Core Pin	A276 410	INCONEL X-718	93	Gear Box	Carbon Steel	
34	Core Pin	A276 410	INCONEL X-718	115	Position Indicator Bushing	Stainless Steel	
35	Support Pin	A276 410	A182 F316	116	Locking Nut	Stainless Steel	
41	Drain Fitting	Assembly					

Note: Materials shown in the table are only typical configurations, other materials can be provided upon request.



Dimensions



Class	Handwheel	Gear
150LB	≤ 8"	≥ 10"
300LB	≤ 6"	≥ 8"
600LB	≤ 4"	≥ 6"
900LB	≤ 3"	≥ 4"
1500LB	1"	≥ 2"
2500LB	1"	≥ 2"

150LB									
Description		Valve Size							
		2"	3"	4"	6"	8"	10"	12"	16"
Flanged End L	in	7.00	8.00	12.00	15.88	18.00	26.50	30.00	35.50
	mm	178	203	305	403	457	673	762	902
Weld End L ₁	in	8.50	11.63	14.50	20.00	23.38	26.50	30.00	39.00
	mm	216	295	368	508	594	673	762	991
Height H	in	20.53	26.38	27.17	34.33	39.06	47.05	51.30	74.80
	mm	521.5	670	690	872	992	1195	1303	1900
Handwheel Dia C	in	7.87	7.87	9.84	15.75	19.69	18.11	24.02	24.02
	mm	200	200	250	400	500	460	610	610
Height E	in	3.54	3.94	5.16	5.91	7.28	9.84	11.10	13.39
	mm	90	100	131	150	185	250	282	340
Weight	Kg	27	37	87	193	279	590	945	1670

300LB									
Description		Valve Size							
		1"	2"	3"	4"	6"	8"	10"	16"
Flanged End L	in	8.50	8.50	11.13	12.00	15.88	19.75	26.50	35.50
	mm	216	216	283	305	403	502	673	902
Weld End L ₁	in	-	8.50	11.63	14.50	20.00	23.38	26.50	39.00
	mm	-	216	295	368	508	594	673	991
Height H	in	16.93	20.53	26.38	27.17	34.33	35.12	47.05	58.98
	mm	430	521.5	670	690	872	892	1195	1498
Handwheel Dia C	in	7.87	7.87	7.87	9.84	15.75	18.11	18.11	27.56
	mm	200	200	200	250	400	460	460	700
Height E	in	2.64	3.86	4.33	5.16	6.50	7.87	9.84	11.02
	mm	67	98	110	131	165	200	250	280
Weight	Kg	24	36	46	96	203	310	618	1740



1500LB										2500LB					
Description		Valve Size								Valve Size					
		1"	2"	3"	4"	6"	8"	10"	12"	1"	2"	3"	4"	6"	8"
Flanged End L	in	10	14.50	18.50	21.50	27.75	32.75	39.00	44.50	-	17.75	22.75	26.50	36.00	40.25
	mm	254	368	470	546	705	832	991	1130	-	451	578	673	914	1022
Weld End L1	in	-	14.50	18.50	21.50	27.75	32.75	39.00	44.50	-	-	-	-	-	-
	mm	-	368	470	546	705	832	991	1130	-	-	-	-	-	-
RTJ L2	in	10	14.63	18.63	21.63	28.00	33.13	39.38	45.13	17.76	17.88	23.00	26.88	36.50	40.88
	mm	254	371	473	549	711	841	1000	1146	451	454	584	683	927	1038
Height H	in	20.08	24.25	28.15	39.33	44.88	63.78	67.32	84.72	23.31	22.44	31.30	32.99	54.96	69.61
	mm	510	616	715	999	1140	1620	1710	2152	592	570	795	838	1396	1768
Handwheel Dia C	in	7.87	12.20	18.11	18.11	24.02	27.56	27.56	27.56	11.81	12.20	18.11	24.02	27.56	27.56
	mm	200	310	460	460	610	700	700	700	300	310	460	610	700	700
Height E	in	3.35	4.49	5.51	6.38	8.11	9.96	12.01	13.98	3.54	5.04	6.42	7.40	9.96	11.22
	mm	85	114	140	162	206	253	305	355	90	128	163	188	253	285
Weight	Kg	31	70	153	290	724	1237	1872	2857	100	112	177	398	1065	1931

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Low Temperature Limits

Body Material	°F	°C	Seat Material	°F	°C
WCB/WCC/A105	-20	-29	R-PTFE	-100	-73
LCB/LCC/LF2	-50	-46	R-PTFE-P	-100	-73
CF8M/F316	-320	-196	R-PTFE-CP	-100	-73
CF8/F304	-320	-196	NYLON(PA12)	-50	-46
			NYLON-M	-20	-29
O-Ring Material	°F	°C	PTFE	-100	-73
VITON B	-20	-29	PEEK	-148	-100
VITON GLT	-50	-46	DEVLON	-50	-46
BUNA N	-15	-26			
EPDM	-60	-51			
AFLAS	+32	0			
HNBR (ED Resistant)	-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



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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.