

Seeking a Great Name in Valve Technology

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Butterfly 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 Butterfly 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

Butterfly Valves

Pressure Class

- 1 = Class 150
- 2 = Class 300
- 3 = Class 600
- 4 = PN 6
- 5 = PN 10
- 6 = PN 16
- 7 = PN 25
- 8 = PN 40

Type

- 1 = Concentric Butterfly Valves
- 2 = Double Offset Butterfly Valves
- 3 = Tripple Offset Butterfly Valves

Code

- WB = Butterfly Valves

Body Material

- 0 = ASTM A216 WCB
- 1 = ASTM A216 WCC
- 2 = ASTM A352 LCB
- 3 = ASTM A352 LCC
- 4 = ASTM A351 CF8M
- 5 = ASTM A351 CF8
- 6 = ASTM A351 CF3M
- 7 = ASTM A351 CF3
- 8 = ASTM A890 4A
- X = Special

End Connections

- F = Raised Face Flanged End
- P = Plain Flat Face Flanged End
- R = Ring Type Joint End
- B = Buttwelding End
- W = Wafer Type
- L = Lug Type
- D = Double Flange Type
- X = Other Type End Connection

Example: 8" - WB110W31-GO

Trim Material

- 1 = 410SS
- 2 = 304SS
- 3 = 316SS
- 4 = Duplex S.S.
- 5 = Super Duplex S.S.
- 6 = Cast Iron
- 7 = Ductile Iron
- 8 = Monel
- 9 = Bronze
- X = Special

Seat Material

- 1 = EPDM
- 2 = VITON
- 3 = NBR
- 4 = PTFE
- 5 = NEOPRENE
- 6 = HYPALON
- 7 = Stainless+PTFE
- 8 = Stainless+Graphite
- 9 = Metal Seated
- X = Special

Operator

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

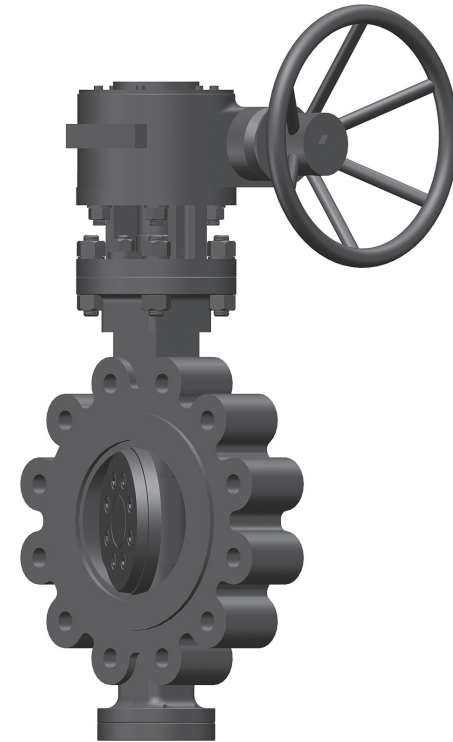
8" Concentric Butterfly Valve, Class 150, WCB body & bonnet, Wafer Type, with 316ss Trim, EPDM seat, Gear Operated.



Triple Offset Butterfly Valve

Applicable Standards

Basic Design:	API 609, EN 593
Face to Face:	ASME B16.10, API 609, EN 558
Flange End:	ASME B16.5 (up to 24"), ASME B16.47 series A or B (26" and above) EN 1092
Test and Inspection:	API 598, EN 12266
Fire-safe Test:	API 607
Fugitive Emission Test:	ISO 15848-2
Type Testing for FE:	ISO 15848-1, API 641
Manufacturing to NACE latest version on request	



Specifications

Size Range:	2" ~ 42"
Pressure Range:	150LB ~ 600LB
End Connection:	Double Flange / Lug / Wafer / Butt-Weld
Bore:	Full bore
Operation:	Manual operation, Actuated operation
Material:	Body: Carbon steel, Stainless steel, etc. Disc: Carbon steel, Stainless steel, etc. Seat: Metal to Metal, Metal+Graphite

Note: Additional sizes and pressure classes are available upon request.



Triple Offset Butterfly Valve

Design Features

Triple Offset Butterfly Valve

Yoke designed as per ISO 5211 to allow for the easy installation of gear box and actuators.

API 622 packing is provided to ensure excellent low emission performance.

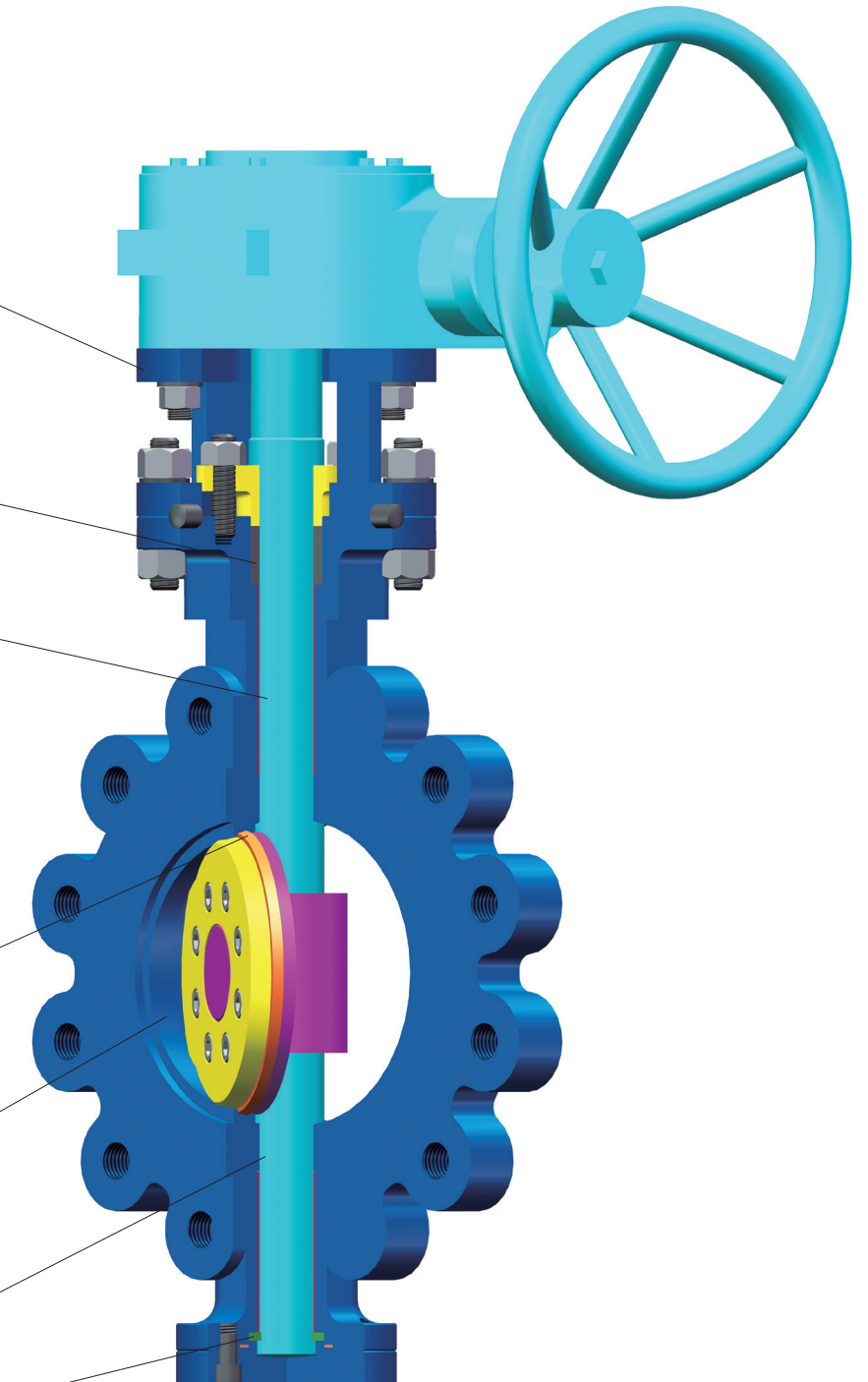
Upper extended bearing design reduces shaft friction to achieve lower torque.

Laminated Seal:
Replaceable graphite & stainless steel assures zero leakage. Easy seal ring maintenance and replacement.

Hard-faced integral seat provides long life and reduces maintenance frequency.

Lower extended bearing design reduces shaft friction to achieve lower torque.

Shaft retainer for blow out protection.



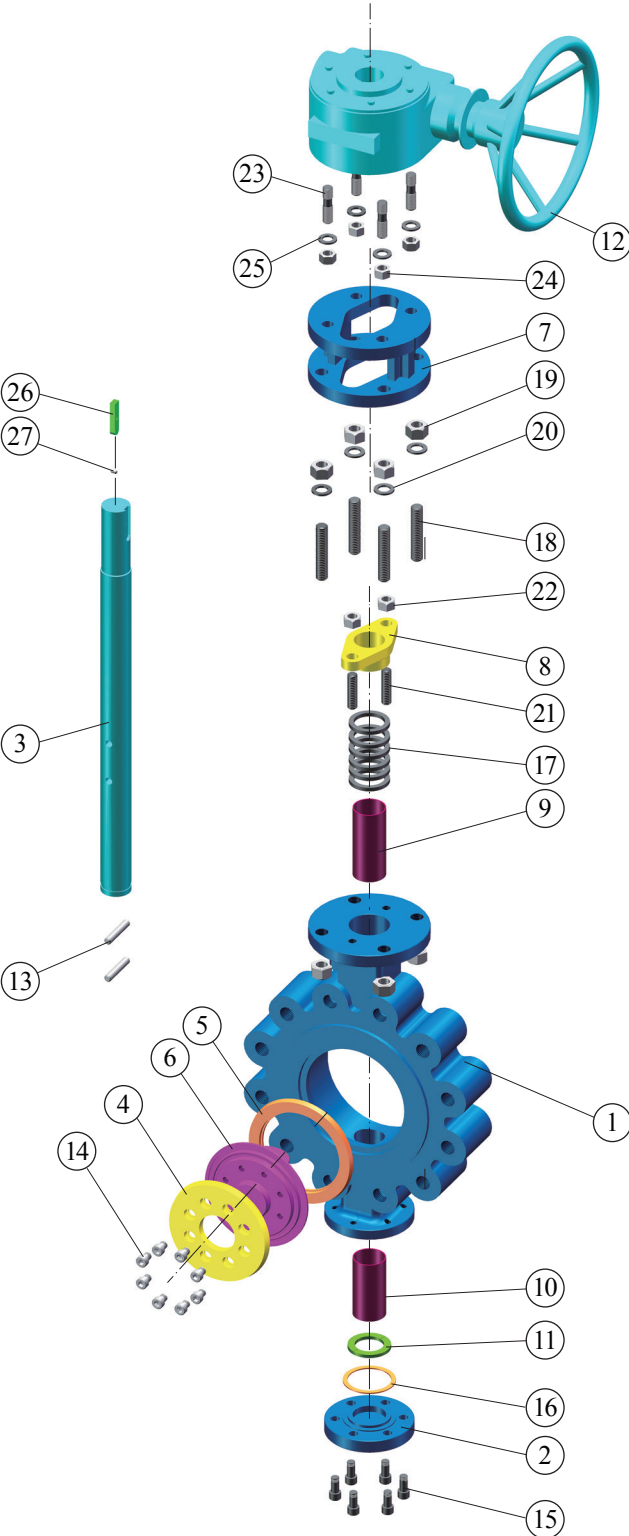


Triple Offset Butterfly Valve

Material List

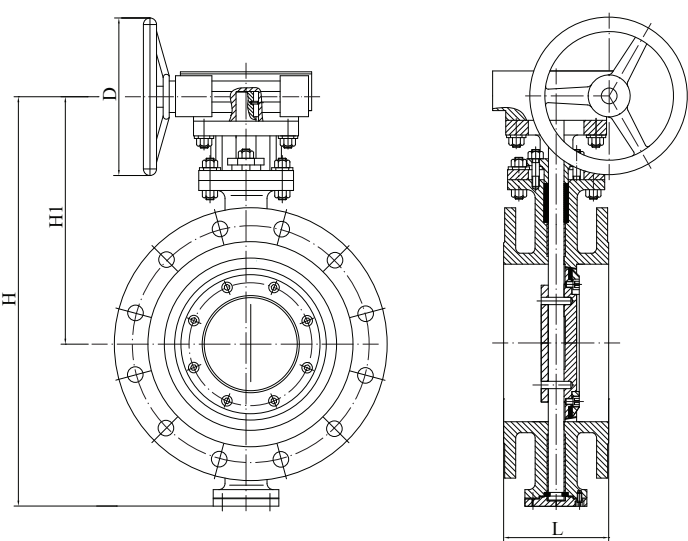
Material Specification		
No.	Description	Material
1	Body	ASTM A216 WCB
2	End cover	ASTM A105
3	Stem	ASTM A182 F316
4	Ring Retainer	ASTM A105
5	Seal ring	LAMINATED 316+FLEXIBLE GRAPHITE
6	Disc	ASTM A216 WCB
7	Yoke	ASTM A216 WCB
8	Packing Gland	ASTM A216 WCB
9	Bushing	316 NITRIED
10	Bushing	316 NITRIED
11	Split Collar	ASTM A276 410
12	Gear	ASTM A216 WCB
13	Straight Pin	STAINLESS STEEL
14	Hex Screw	STAINLESS STEEL
15	Hex Screw	STAINLESS STEEL
16	Spiral Wound Gasket	316+FLEXIBLE GRAPHITE
17	Packing	FLEXIBLE GRAPHITE
18	Bolt	ASTM A193 B7
19	Nut	ASTM A194 2H
20	Flat Washer	CARBON STEEL
21	Bolt	ASTM A193 B7
22	Nut	ASTM A194 2H
23	Bolt	ASTM A193 B7
24	Nut	ASTM A194 2H
25	Flat Washer	CARBON STEEL
26	Key	CARBON STEEL
27	Straight Pin	STAINLESS STEEL

General Note: Materials shown in the table are typical configurations, a variety of other material configurations are available according to customer requirements. Please consult a DHV representative for further details.



Triple Offset Butterfly Valve

Flanged Type Dimensions



150LB																	
Description			Valve Size														
			3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
F - F Dimension L	Short Pattern	mm	114	127	140	152	165	178	190	216	222	229	267	292	908	318	330
		in	4.49	5.00	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51	11.50	35.75	12.52	12.99
	Long Pattern	mm	203	229	267	292	330	356	381	406	432	457	508	610	610	660	711
in		7.99	9.02	10.51	11.50	12.99	14.02	15.00	15.98	17.01	17.99	20.00	24.02	24.02	25.98	27.99	
Height	H	mm	472	520	653	773	880	989	1044	1142	1228	1337	1554	1456	1541	1611	1743
		in	18.58	20.47	25.71	30.43	34.65	38.94	41.10	44.96	48.35	52.64	61.18	57.32	60.67	63.43	68.62
	H1	mm	350	388	475	565	640	71	780	826	887	959	1100	956	991	1036	1103
in		13.78	15.28	18.70	22.24	25.20	2.80	30.71	32.52	34.92	37.76	43.31	37.64	39.02	40.79	43.43	
Handwheel Dia	D	mm	203	203	305	460	460	810	356	457	810	762	762	315	400	400	400
		in	7.99	7.99	12.01	18.11	18.11	31.89	14.02	17.99	31.89	30.00	30.00	12.40	15.75	15.75	15.75
Weight		Kg	15.4	23	33	50	73	108	143	186	234	277	408	653	816	914	1157
		lb	34.0	50.7	72.8	110.2	160.9	238.1	315.3	410.1	515.9	610.7	899.5	1439.6	1799.0	2015.0	2550.7

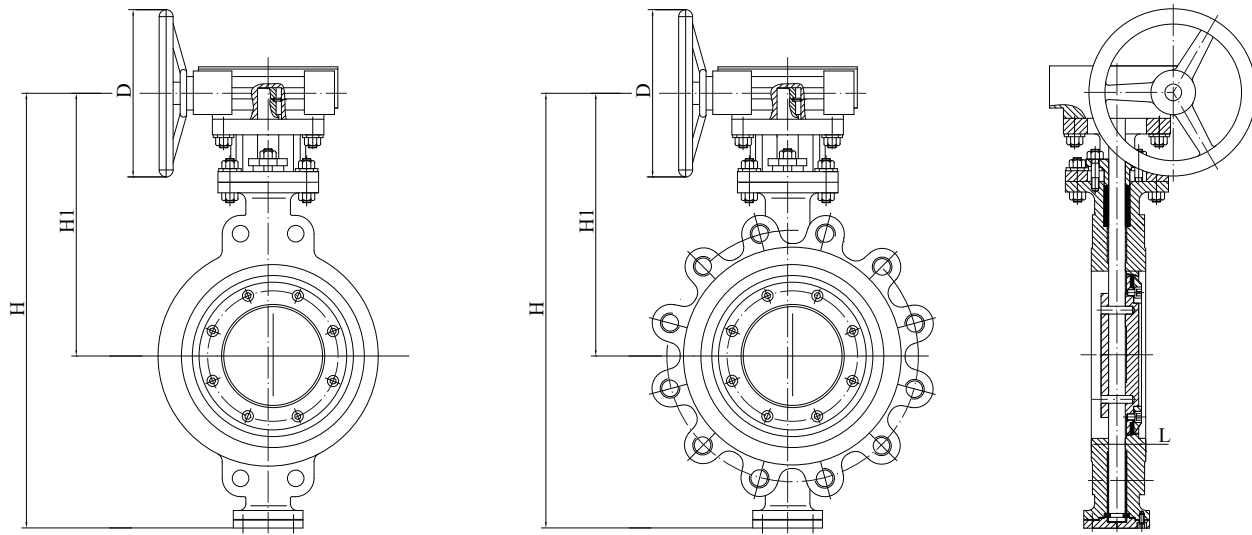
300LB																	
Description			Valve Size														
			3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
F - F Dimension L	Short Pattern	mm	180	190	210	230	250	270	290	310	330	350	390	-	-	-	-
		in	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.20	12.99	13.78	15.35	-	-	-	-
	Long Pattern	mm	282	305	403	419	457	502	762	838	914	991	1143	-	-	-	-
in		11.10	12.01	15.87	16.50	17.99	19.76	30.00	32.99	35.98	39.02	45.00	-	-	-	-	
Height	H	mm	378	421	543	628	855	812	885.00	951	1106	1308	1445	1495	1535	1575	1605
		in	14.88	16.57	21.38	24.72	33.66	31.97	34.84	37.44	43.54	51.50	56.89	58.86	60.43	62.01	63.19
	H1	mm	253	274	351	392	480	515	555	690	636	685	934	1039	1060	1120	1190
in		9.96	10.79	13.82	15.43	18.90	20.28	21.85	27.17	25.04	26.97	36.77	40.91	41.73	44.09	46.85	
Handwheel Dia	D	mm	152	305	305	305	610	610	610	356	356	356	688	686	686	686	686
		in	5.98	12.01	12.01	12.01	24.02	24.02	24.02	14.02	14.02	14.02	27.09	27.01	27.01	27.01	27.01
Weight		Kg	29	39	54	84	118	170	231	299	390	499	726	1360	1429	1757	2223
		lb	63.9	86.0	119.0	185.2	260.1	374.8	509.3	659.2	859.8	1100.1	1600.5	2998.3	3150.4	3873.5	4900.8

600LB												
Description			Valve Size									
			4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
F - F Dimension	L	mm	190	210	230	250	270	290	310	330	350	390
		in	7.48	8.27	9.06	9.84	10.63	11.42	12.20	12.99	13.78	15.35
Height	H	mm	520	635	700	975	1115	1145	1195	1315	1475	1635
		in	20.47	25.00	27.56	38.39	43.90	45.08	47.05	51.77	58.07	64.37
	H1	mm	340	400	440	660	755	770	780	855	975	1075
in		13.39	15.75	17.32	25.98	29.72	30.31	30.71	33.66	38.39	42.32	
Handwheel Dia	D	mm	300	500	600	600	700	750	750	750	750	750
		in	11.81	19.69	23.62	23.62	27.56	29.53	29.53	29.53	29.53	29.53
Weight		Kg	77	141	203	335	440	570	695	1055	1261	1640
		lb	169.8	310.8	447.5	738.5	970.0	1256.6	1532.2	2325.9	2780.0	3615.5



Triple Offset Butterfly Valve

Wafer / Lug Type Dimensions



150LB													
Description			Valve Size										
F - F Dimension	L	mm	48	57	58	64	71	81	92	102	114	127	154
		in	1.89	2.24	2.28	2.52	2.80	3.19	3.62	4.02	4.49	5.00	6.06
Height	H	mm	320	342	415	510	567	665	739	825	910	990	1210
		in	12.60	13.46	16.34	20.08	22.32	26.18	29.09	32.48	35.83	38.98	47.64
	H1	mm	185	195	243	263	295	342	385	430	469	500	618
		in	7.28	7.68	9.57	10.35	11.61	13.46	15.16	16.93	18.46	19.69	24.33
Handwheel Dia	D	mm	160	160	300	400	400	600	600	600	800	800	800
		in	6.30	6.30	11.81	15.75	15.75	23.62	23.62	23.62	31.50	31.50	31.50
Weight	Wafer	Kg	9	11	17	25	40	61	82	123	150	204	300
		lb	19.8	24.3	37.5	55.1	88.2	134.5	180.8	271.2	330.7	449.7	661.4
	Lug	Kg	9	14	20	31	49	79	107	150	182	253	398
		lb	19.8	30.9	44.1	68.3	108.0	174.2	235.9	330.7	401.2	557.8	877.4

300LB													
Description			Valve Size										
F - F Dimension	L	mm	48	54	59	73	83	92	117	133	149	159	181
		in	1.89	2.13	2.32	2.87	3.27	3.62	4.61	5.24	5.87	6.26	7.13
Height	H	mm	320	342	415	510	567	665	739	825	910	990	1210
		in	12.60	13.46	16.34	20.08	22.32	26.18	29.09	32.48	35.83	38.98	47.64
	H1	mm	185	195	243	263	295	342	385	430	469	500	618
		in	7.28	7.68	9.57	10.35	11.61	13.46	15.16	16.93	18.46	19.69	24.33
Handwheel Dia	D	mm	160	160	300	400	400	600	600	600	800	800	800
		in	6.30	6.30	11.81	15.75	15.75	23.62	23.62	23.62	31.50	31.50	31.50
Weight	Wafer	Kg	13.5	18	28	49	68	109	186	264	297	363	454
		lb	29.8	39.7	61.7	108.0	149.9	240.3	410.1	582.0	654.8	800.3	1000.9
	Lug	Kg	15.5	21	34	60	88	117	207	308	408	468	748
		lb	34.2	46.3	75.0	132.3	194.0	257.9	456.4	679.0	899.5	1031.8	1649.0

600LB											
Description			Valve Size								
F - F Dimension	L	mm	64	78	102	117	140	155	178	200	232
		in	2.52	3.07	4.02	4.61	5.51	6.10	7.01	7.87	9.13
Height	H	mm	520	635	700	975	1115	1145	1195	1315	1635
		in	20.47	25.00	27.56	38.39	43.90	45.08	47.05	51.77	64.37
	H1	mm	340	400	440	660	755	770	780	855	1075
		in	13.39	15.75	17.32	25.98	29.72	30.31	30.71	33.66	42.32
Handwheel Dia	D	mm	300	500	600	600	700	750	750	750	750
		in	11.81	19.69	23.62	23.62	27.56	29.53	29.53	29.53	29.53
Weight	Wafer	Kg	40	81	113	186	275	318	430	555	990
		lb	88.2	178.6	249.1	410.1	606.3	701.1	948.0	1223.6	2182.6
	Lug	Kg	50	91	142	235	347	518	630	833	1381
		lb	110.2	200.6	313.1	518.1	765.0	1142.0	1388.9	1836.4	3044.6



Double Offset Butterfly Valve

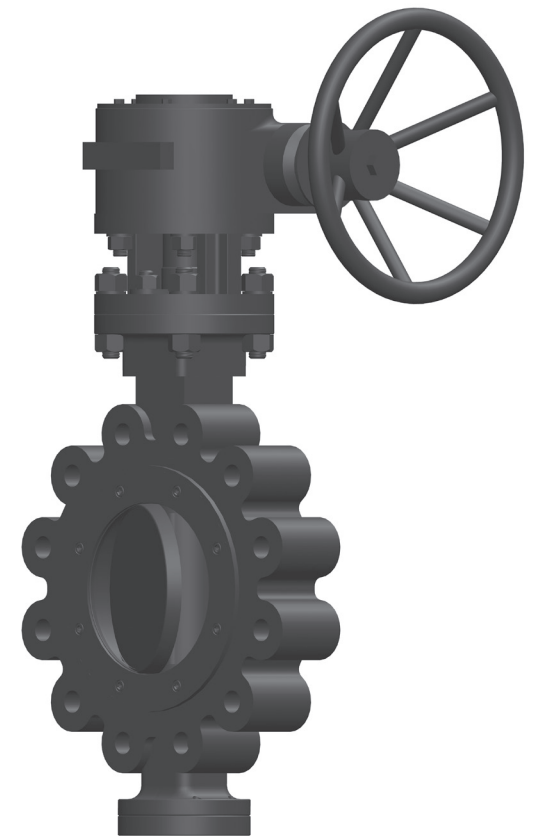
Applicable Standards

- Basic Design: **API 609, EN 593**
- Face to Face: **ASME B16.10, API 609, EN 558**
- Flange End: **ASME B16.5 (up to 24"),**
ASME B16.47 series A or B
(26" and above)
EN 1092
- Test and Inspection: **API 598, EN 12266**
- Fire-safe Test: **API 607**
- Fugitive Emission Test: **ISO 15848-2**
- Type Testing for FE: **ISO 15848-1, API 641**
- Manufacturing to NACE latest version on request

Specifications

- Size Range: **2" ~ 48"**
- Pressure Range: **150LB ~ 600LB**
- End Connection: **Double Flange / Lug / Wafer**
- Bore: **Full bore**
- Operation: **Manual operation, Actuated operation**
- Material: **Body: Carbon steel, Stainless steel, etc.**
Disc: Carbon steel, Stainless steel, etc.
Seat: Rubber, PTFE, etc

Note: Additional sizes and pressure classes are available upon request.





Double Offset Butterfly Valve

Design Features

Double Offset Butterfly Valve

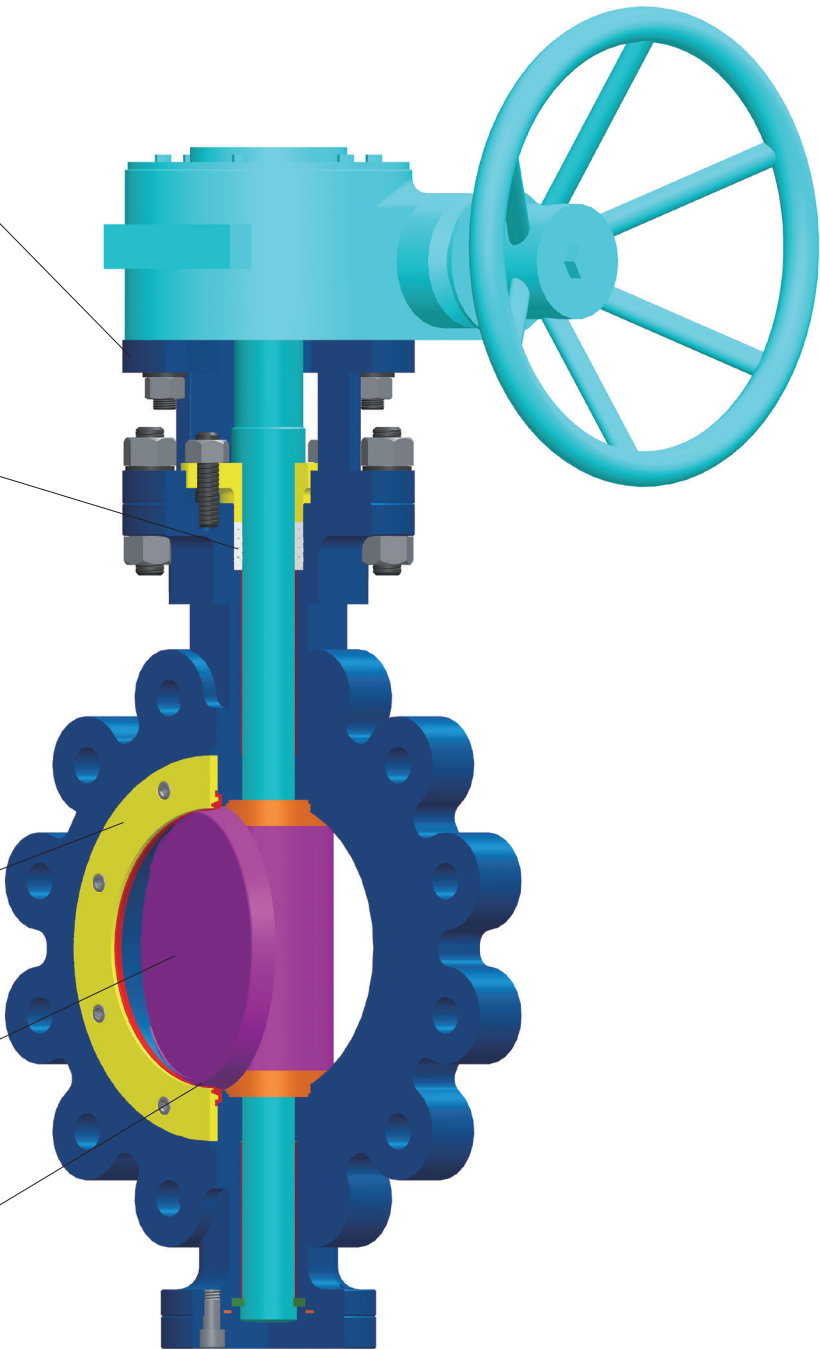
Yoke designed as per ISO 5211 to allow for the easy installation of gear box and actuators.

Standard PTFE V-packing is provided. API 622 packing is available when low emission conditions are required.

Bi-directional sealing performance. Removable seat for easy maintenance.

Double offset design minimizes seat wear and provides lower operating torque.

Sealing performance is obtained through positive mechanical torque, and does not rely on line pressure.



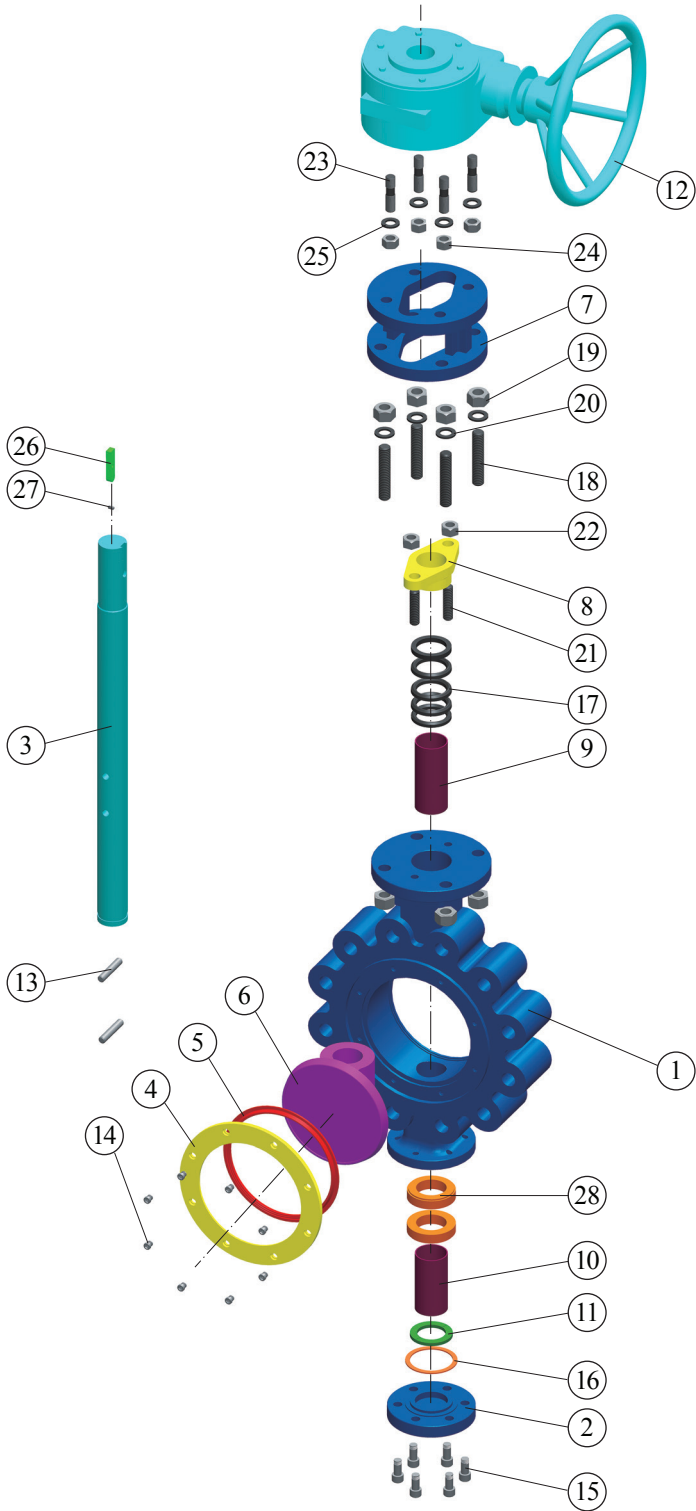
Double Offset Butterfly Valve

Material List

Material Specification

No.	Description	Material
1	Body	ASTM A216 WCB
2	End cover	ASTM A105
3	Stem	ASTM A182 F316
4	Disc	ASTM A216 WCB
5	Seal ring	PTFE
6	Pressure ring	STAINLESS STEEL
7	Yoke	ASTM A216 WCB
8	Packing Gland	ASTM A216 WCB
9	Bushing	316 NITRIED
10	Bushing	316 NITRIED
11	Split Collar	ASTM A276 410
12	Gear	ASTM A216 WCB
13	Straight Pin	STAINLESS STEEL
14	Hex,-socket Screw	STAINLESS STEEL
15	Hex,-socket Screw	STAINLESS STEEL
16	Spiral Wound Gasket	316+FLEXIBLE GRAPHITE
17	Packing	FLEXIBLE GRAPHITE
18	Bolt	ASTM A193 B7
19	Nut	ASTM A194 2H
20	Flat Washer	CARBON STEEL
21	Bolt	ASTM A193 B7
22	Nut	ASTM A194 2H
23	Bolt	ASTM A193 B7
24	Nut	ASTM A194 2H
25	Flat Washer	CARBON STEEL
26	Key	CARBON STEEL
27	Pin	STAINLESS STEEL
28	Washer	STAINLESS STEEL

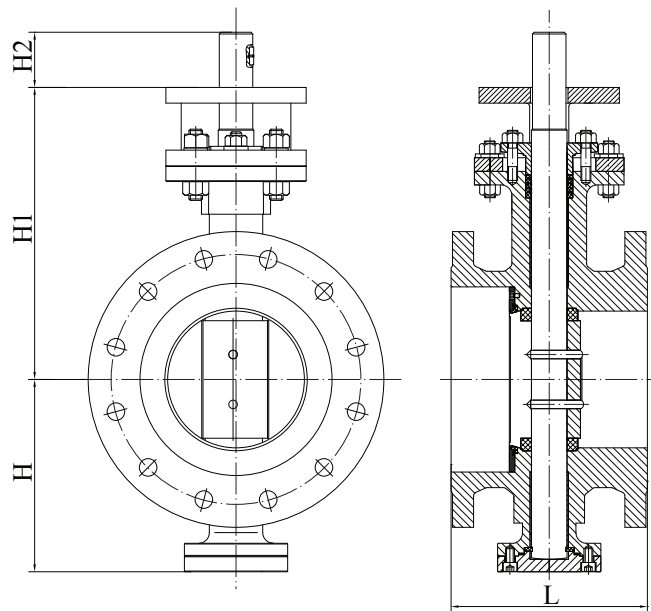
General Note: Materials shown in the table are typical configurations, a variety of other material configurations are available according to customer requirements. Please consult a DHV representative for further details.





Double Offset Butterfly Valve

Flanged Type Dimensions



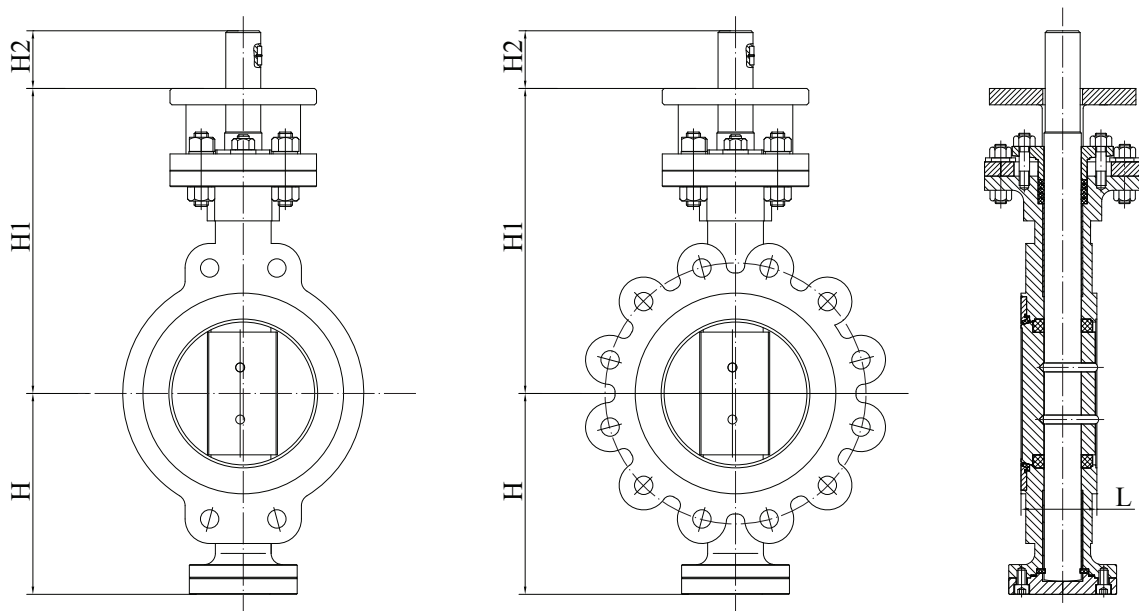
150LB		Valve Size																	
Description		Valve Size																	
F - F Dimension	L	mm	108	114	127	140	140	152	165	178	190	216	222	229	267	292	318	318	330
		in	4.25	4.49	5.00	5.51	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51	11.50	12.52	12.52	12.99
Height	H	mm	82	90	105	120	135	193	255	290	300	335	375	395	470	480	515	540	610
		in	3.23	3.54	4.13	4.72	5.31	7.60	10.04	11.42	11.81	13.19	14.76	15.55	18.50	18.90	20.28	21.26	24.02
	H1	mm	163	175	203	235	250	295	340	370	523	555	625	678	775	940	990	1010	1110
		in	6.42	6.89	7.99	9.25	9.84	11.61	13.39	14.57	20.59	21.85	24.61	26.69	30.51	37.01	38.98	39.76	43.70
	H2	mm	40	50	50	45	40	60	60	60	80	90	90	90	90	105	105	120	125
		in	1.57	1.97	1.97	1.77	1.57	2.36	2.36	2.36	3.15	3.54	3.54	3.54	3.54	4.13	4.13	4.72	4.92
Weight		Kg	8	11	15	20	22	55	80	135	150	215	310	385	550	580	800	930	1145
		lb	17.6	24.3	33.1	44.1	48.5	121.3	176.4	297.6	330.7	474.0	683.4	848.8	1212.5	1278.7	1763.7	2050.3	2524.3

300LB														600LB					
Description		Valve Size												Valve Size					
F - F Dimension	L	mm	108	114	127	140	140	152	165	178	190	216	222	229	267	180	190	210	230
		in	4.25	4.49	5.00	5.51	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51	7.09	7.48	8.27	9.06
Height	H	mm	82	100	113	130	150	235	290	308	350	365	418	430	505	100	125	165	255
		in	3.23	3.94	4.45	5.12	5.91	9.25	11.42	12.13	13.78	14.37	16.46	16.93	19.88	3.94	4.92	6.50	10.04
	H1	mm	160	189	231	259	276	340	415	459	600	791	808	789	869	300	345	475	650
		in	6.30	7.44	9.09	10.20	10.87	13.39	16.34	18.07	23.62	31.14	31.81	31.06	34.21	11.81	13.58	18.70	25.59
	H2	mm	40	50	50	45	40	60	60	60	80	90	90	90	90	65	65	90	100
		in	1.57	1.97	1.97	1.77	1.57	2.36	2.36	2.36	3.15	3.54	3.54	3.54	3.54	2.56	2.56	3.54	4.72
Weight		Kg	14	18	20	28	35	62	74	110	260	331	530	675	1121	23	44	108	220
		lb	30.9	39.7	44.1	61.7	77.2	136.7	163.1	242.5	573.2	729.7	1168.4	1488.1	2471.4	50.7	97.0	238.1	485.0



Double Offset Butterfly Valve

Flanged Type Dimensions



150LB		Valve Size																	
Description		Valve Size																	
F - F Dimension	L	mm	43	48	54	57	57	64	71	81	92	102	114	127	154	165	190	216	254
		in	1.69	1.89	2.13	2.24	2.24	2.52	2.80	3.19	3.62	4.02	4.49	5.00	6.06	6.50	7.48	7.99	10.00
Height	H	mm	82	90	105	120	135	193	255	290	300	335	375	395	470	480	515	540	610
		in	3.23	3.54	4.13	4.72	5.31	7.60	10.04	11.42	11.81	13.19	14.76	15.55	18.50	18.90	20.28	21.26	24.02
	H1	mm	163	175	203	235	250	295	340	370	523	555	625	678	775	940	990	1010	1110
		in	6.42	6.89	7.99	9.25	9.84	11.61	13.39	14.57	20.59	21.85	24.61	26.69	30.51	37.01	38.98	39.76	43.70
	H2	mm	40	50	50	45	40	60	60	60	80	90	90	90	90	105	105	120	125
		in	1.57	1.97	1.97	1.77	1.57	2.36	2.36	2.36	3.15	3.54	3.54	3.54	3.54	4.13	4.13	4.72	4.92
Weight	Wafer	Kg	5	7	11	15	15	24	40	50	80	103	150	190	285	340	505	590	1840
		lb	11.0	15.4	24.3	33.1	33.1	52.9	88.2	110.2	176.4	227.1	330.7	418.9	628.3	749.6	1113.3	1300.7	4056.5
	Lug	Kg	7	10	11	15	15	30	45	71	100	146	190	145	375	485	655	750	1840
		lb	15.4	22.0	24.3	33.1	33.1	66.1	99.2	156.5	220.5	321.9	418.9	319.7	826.7	1069.2	1444.0	1653.5	4056.5

300LB														600LB					
Description		Valve Size												Valve Size					
F - F Dimension	L	mm	43	48	54	59	59	73	83	92	117	133	149	159	181	54	64	78	102
		in	1.69	1.89	2.13	2.32	2.32	2.87	3.27	3.62	4.61	5.24	5.87	6.26	7.13	2.13	2.52	3.07	4.02
Height	H	mm	82	100	110	130	150	235	290	305	350	370	415	425	500	100	125	165	255
		in	3.23	3.94	4.33	5.12	5.91	9.25	11.42	12.01	13.78	14.57	16.34	16.73	19.69	3.94	4.92	6.50	10.04
	H1	mm	163	190	205	235	250	320	395	455	650	765	775	845	965	300	345	475	650
		in	6.42	7.48	8.07	9.25	9.84	12.60	15.55	17.91	25.59	30.12	30.51	33.27	37.99	11.81	13.58	18.70	25.59
	H2	mm	40	50	50	45	40	60	60	60	80	90	90	90	90	65	65	90	100
		in	1.57	1.97	1.97	1.77	1.57	2.36	2.36	2.36	3.15	3.54	3.54	3.54	3.54	2.56	2.56	3.54	4.72
Weight	Wafer	Kg	7	10	12	14	18	35	40	43	125	139	252	284	509	10	20	49	165
		lb	15.4	22.0	26.5	30.9	39.7	77.2	88.2	94.8	275.6	306.4	555.6	626.1	1122.1	22.0	44.1	108.0	363.8
	Lug	Kg	11	13	17	20	23	45	50	73	190	240	390	490	830	15	35	71	215
		lb	24.3	28.7	37.5	44.1	50.7	99.2	110.2	160.9	418.9	529.1	859.8	1080.3	1829.8	33.1	77.2	156.5	474.0



Concentric Butterfly Valve

Applicable Standards

Basic Design: **API 609, EN 593, GB/T 12238**
Face to Face: **ASME B16.10, EN 558, GB/T 12221**
Flange End: **ASME B16.5 (up to 24"),**
ASME B16.47 series A or B
(26" and above)
EN 1092, GB/T 9124
Test and Inspection: **API 598, EN 12266, GB/T 13927**
Fire-safe Test: **API 607**
Manufacturing to NACE latest version on request



Specifications

Size Range: **2" ~ 80"**
Pressure Range: **PN6 / PN10 / PN16 / PN25, 125LB / 150LB**
End Connection: **Double Flange / Lug / Wafer**
Bore: **Full bore**
Operation: **Manual operation, Actuated operation**
Material: **Body: Cast Iron, Ductile Iron,**
Carbon steel, Stainless steel, etc.
Disc: Cast Iron, Ductile Iron, Carbon steel, Stainless steel, etc.
Seat: EPDM, NBR, PTFE, VITON, SILICON

Note: Additional sizes and pressure classes are available upon request.



Concentric Butterfly Valve

Design Features

Concentric Butterfly Valve

The indicator plate has multiple opening angles ranging to 90 degrees, which is convenient to locate the gate.

Top flange as per ISO 5211 to allow for the easy installation of gear box and actuators.

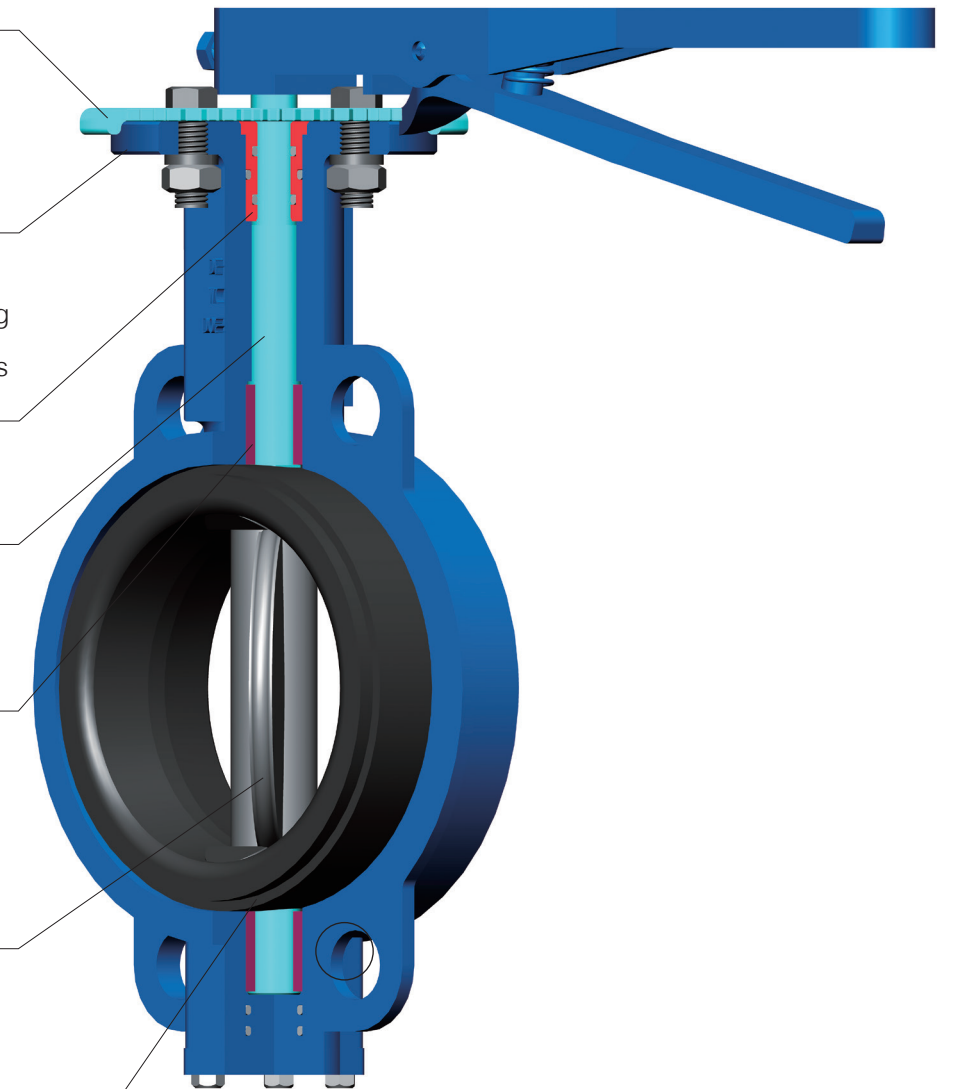
O-rings provide positive stem sealing performance.
Note: Alternative packing solutions available.

Dual stem design reduces valve operating torque.

Upper and lower bearings minimize operating torque.

The semi-circular butterfly plate design reduces operating torque and promotes extended service life.

The seal ring is supported to achieve disassembly and prevent leakage of the seal ring. The seal ring extends to the end of the body and is installed without additional gaskets.





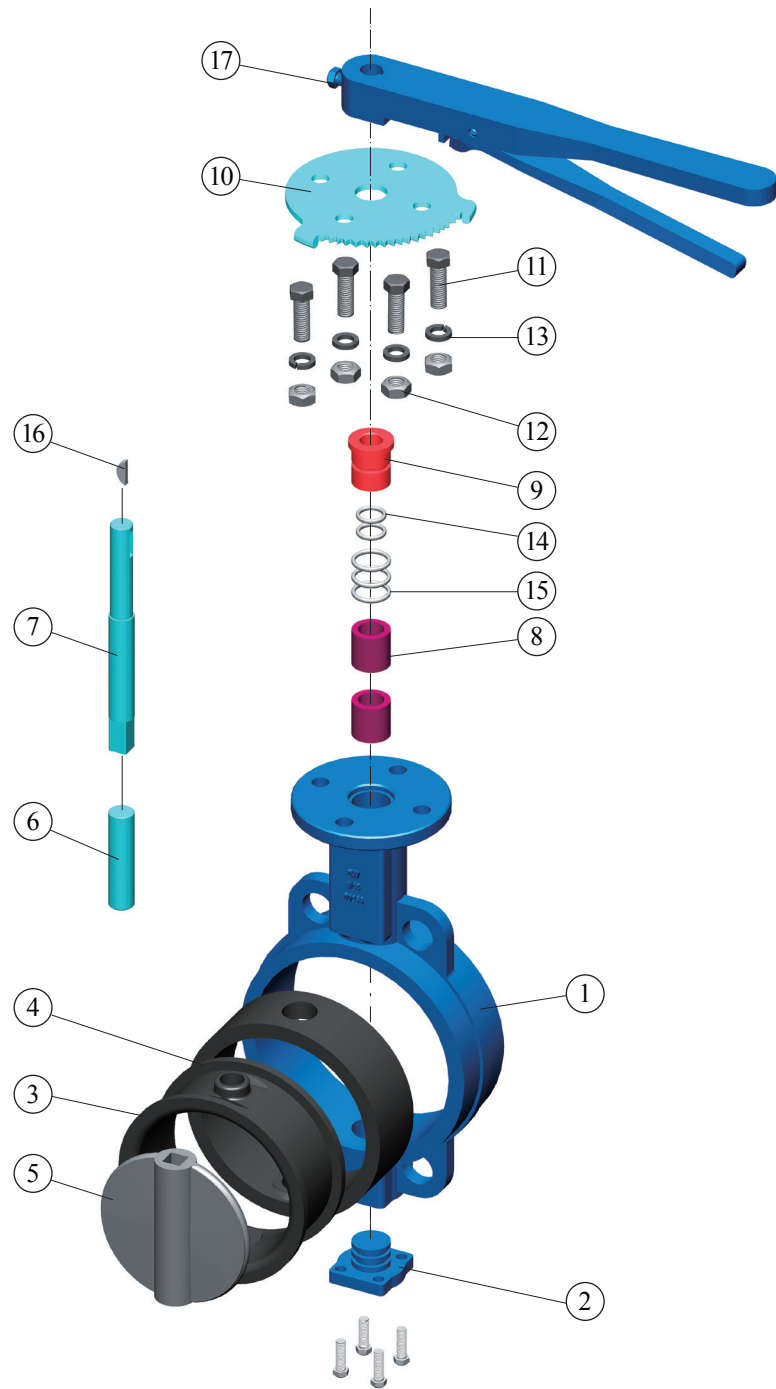
Concentric Butterfly Valve

Material List

Material Specification

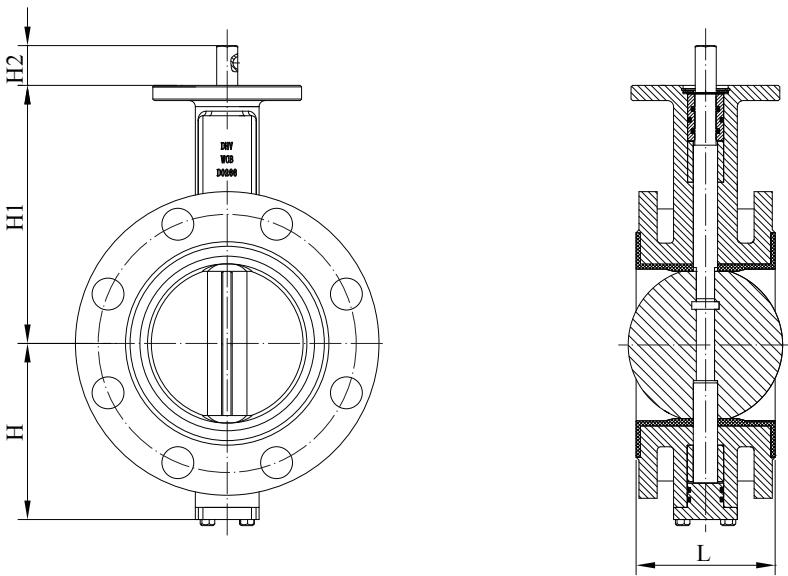
No.	Description	Material
1	Body	ASTM A216 WCB
2	End Plate	ASTM A216 WCB
3	Seat Ring	NBR
4	Support Ring	PHENOLIC ALDEHYDE
5	Disc	ASTM A216 WCB
6	Lower Stem	ASTM A182 F316
7	Upper Stem	ASTM A182 F316
8	Bushing	STAINLESS STEEL
9	Gland	STAINLESS STEEL
10	Indicate Plate	STAINLESS STEEL
11	Bolt	ASTM A193 B7
12	Nut	ASTM A194 2H
13	Washer	CARBON STEEL
14	O-Ring	NBR
15	O-Ring	NBR
16	Key	CARBON STEEL
17	Lever	ASTM A126 B

General Note: Materials shown in the table are typical configurations, a variety of other material configurations are available according to customer requirements. Please consult a DHV representative for further details.



Concentric Butterfly Valve

Flanged Type Dimensions



PN10 / PN16

Description			Valve Size																		
			2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"	48"
F - F Dimension	L	mm	108	112	114	127	140	140	152	165	178	190	216	222	229	267	292	318	330	410	470
		in	4.25	4.41	4.49	5.00	5.51	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51	11.50	12.52	12.99	16.14	18.50
Height	H	mm	83	93	100	114	125	143	170	198	223	279	300	345	355	410	500	550	625	690	800
		in	3.27	3.66	3.94	4.49	4.92	5.63	6.69	7.80	8.78	10.98	11.81	13.58	13.98	16.14	19.69	21.65	24.61	27.17	31.50
	H1	mm	120	130	145	155	170	190	205	235	280	310	340	375	430	500	560	620	685	735	917
		in	4.72	5.12	5.71	6.10	6.69	7.48	8.07	9.25	11.02	12.20	13.39	14.76	16.93	19.69	22.05	24.41	26.97	28.94	36.10
	H2	mm	32	32	32	32	32	32	40	40	40	45	51.2	51.2	64.2	70.2	80	80	118	142	154
		in	1.26	1.26	1.26	1.26	1.26	1.26	1.57	1.57	1.57	1.77	2.02	2.02	2.53	2.76	3.15	3.15	4.65	5.59	6.06
Weight		Kg	8	10	11	14	18	22	35	51	67	107	139	190	232	350	-	-	-	-	-
		lb	17.6	22.0	24.3	30.9	39.7	48.5	77.2	112.4	147.7	235.9	306.4	418.9	511.5	771.6	-	-	-	-	-

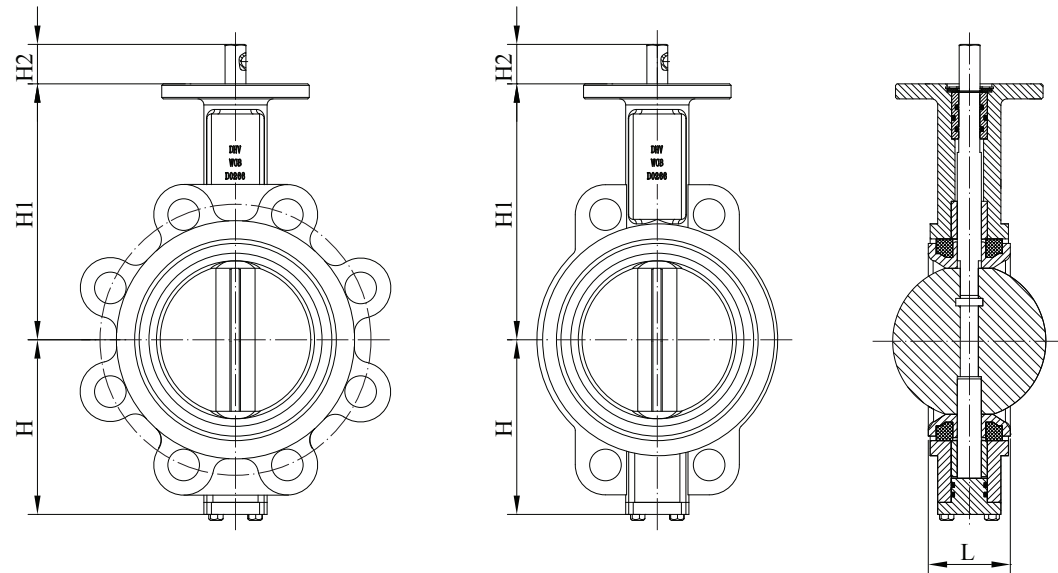
150LB

Description			Valve Size																		
			2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"	48"
F - F Dimension	L	mm	108	112	114	127	140	140	152	165	178	190	216	222	229	267	292	318	330	410	470
		in	4.25	4.41	4.49	5.00	5.51	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51	11.50	12.52	12.99	16.14	18.50
Height	H	mm	75	90	95	115	127.5	140	172.5	202.5	243.5	267.5	300	345	380	445	490	541	617	677	790
		in	2.95	3.54	3.74	4.53	5.02	5.51	6.79	7.97	9.59	10.53	11.81	13.58	14.96	17.52	19.29	21.30	24.29	26.65	31.10
	H1	mm	120	127.5	135	162	190	200	230	255	290	330	360	385	430	495	540	590	670	735	845
		in	4.72	5.02	5.31	6.38	7.48	7.87	9.06	10.04	11.42	12.99	14.17	15.16	16.93	19.49	21.26	23.23	26.38	28.94	33.27
	H2	mm	40	40	40	40	40	45	45	60	60	80	80	95	95	95	100	125	125	125	150
		in	1.57	1.57	1.57	1.57	1.57	1.77	1.77	2.36	2.36	3.15	3.15	3.74	3.74	3.74	3.94	4.92	4.92	4.92	5.91
Weight		Kg	7.5	10	11	14	18	22	35	51	80	129	167	228	278	420	530	-	-	-	-
		lb	16.5	22.0	24.3	30.9	39.7	48.5	77.2	112.4	176.4	284.4	368.2	502.6	612.9	925.9	1168.4	-	-	-	-



Concentric Butterfly Valve

Wafer / Lug Type Dimensions



PN16 / Class 150 — Lug Type																					
Description			Valve Size																		
			2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"	48"
F - F Dimension	L	mm	43	46	46	52	56	56	60	68	78	78	102	114	127	154	165	190	203	216	254
		in	1.69	1.81	1.81	2.05	2.20	2.20	2.36	2.68	3.07	3.07	4.02	4.49	5.00	6.06	6.50	7.48	7.99	8.50	10.00
Height	H	mm	82	88	97	114	127	140	174	200	224	257	290	325	380	428	470	530	590	655	745
		in	3.23	3.46	3.82	4.49	5.00	5.51	6.85	7.87	8.82	10.12	11.42	12.80	14.96	16.85	18.50	20.87	23.23	25.79	29.33
	H1	mm	133	144	148	168	182	205	244	232	260	293	330	510	565	595	680	735	815	885	950
		in	5.24	5.67	5.83	6.61	7.17	8.07	9.61	9.13	10.24	11.54	12.99	20.08	22.24	23.43	26.77	28.94	32.09	34.84	37.40
	H2	mm	40	40	40	40	40	45	45	60	60	80	80	95	95	95	100	125	125	125	150
		in	1.57	1.57	1.57	1.57	1.57	1.77	1.77	2.36	2.36	3.15	3.15	3.74	3.74	3.74	3.94	4.92	4.92	4.92	5.91
Weight		Kg	2.5	3	3.5	5	7	8	13	21	33	42	63	81	130	192	-	-	-	-	-
		lb	5.5	6.6	7.7	11.0	15.4	17.6	28.7	46.3	72.8	92.6	138.9	178.6	286.6	423.3	-	-	-	-	-

PN16 / Class 150 — Wafer Type																					
Description			Valve Size																		
			2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"	48"
F - F Dimension	L	mm	43	46	46	52	56	56	60	68	78	78	102	114	127	154	165	190	203	216	254
		in	1.69	1.81	1.81	2.05	2.20	2.20	2.36	2.68	3.07	3.07	4.02	4.49	5.00	6.06	6.50	7.48	7.99	8.50	10.00
Height	H	mm	68	88	100	114	127	140	165	200	240	265	317	342	372	439	470	530	590	655	745
		in	2.68	3.46	3.94	4.49	5.00	5.51	6.50	7.87	9.45	10.43	12.48	13.46	14.65	17.28	18.50	20.87	23.23	25.79	29.33
	H1	mm	110	167	156	168	182	205	245	232	290	330	360	507	575	605	680	735	815	885	950
		in	4.33	6.57	6.14	6.61	7.17	8.07	9.65	9.13	11.42	12.99	14.17	19.96	22.64	23.82	1.00	28.94	32.09	34.84	37.40
	H2	mm	40	40	40	40	40	45	45	60	60	80	80	95	95	95	100	125	125	125	150
		in	1.57	1.57	1.57	1.57	1.57	1.77	1.77	2.36	2.36	3.15	3.15	3.74	3.74	3.74	3.94	4.92	4.92	4.92	5.91
Weight		Kg	4	4.5	5	9	11	16	23	38	47	69	112	139	221	305	-	-	-	-	-
		lb	8.8	9.9	11.0	19.8	24.3	35.3	50.7	83.8	103.6	152.1	246.9	306.4	487.2	672.4	-	-	-	-	-



Operators

DHV butterfly valves are available in a variety of manual and actuated operator configurations. These options include: gearboxes, electric actuators, pneumatic actuators, hydraulic actuators, and more.



Handle



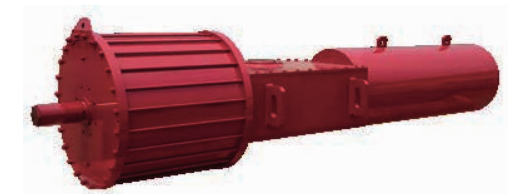
Gearbox



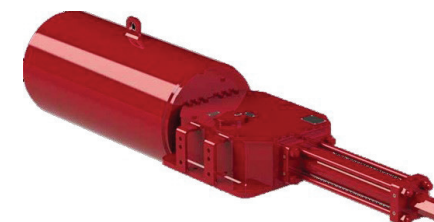
Electric Actuator



Electric Actuator with Gearbox



Pneumatic Actuator



Hydraulic Actuator



Gas-over-oil Actuator



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.