

TRIPLE ECCENTRIC METAL-SEATED
Butt-Weld (Series LTW) and Flanged Type (Series LTF)



Specification

Description : GVC LNG Triple Eccentric Metal Seated Cryogenic butterfly valve suitable for bi-directional flow and bubble tight shut-off at full rated pressure with extended bonnet according to BS 6364, Direct Mount ISO table, adjustable gland packing, one-piece blow-out proof stem, pinned disc and metal seat.

Numbering System : Series LTW : Cryogenic BUTT-WELD type Triple Eccentric Metal Seated Butterfly Valve
Series LTF : Cryogenic FLANGED type Triple Eccentric Metal Seated Butterfly Valve



BUTT-WELD
Series LTW



FLANGED
Series LTF

Maintenance access : Series LTB ; Side entry design with inspection & maintenance cover for in-line inspection & maintenance access.
Series LTF ; Side entry design, inspection & maintenance access by removal of up- or downstream piping.

Standards : Design and testing in accordance with API 609, API 598 and BS 6364 Valves for Cryogenic Service. Fire Safe approved in accordance with API 607

Testing : All cryogenic valves are tested in the fully equipped cryogenic in-house testing facilities.

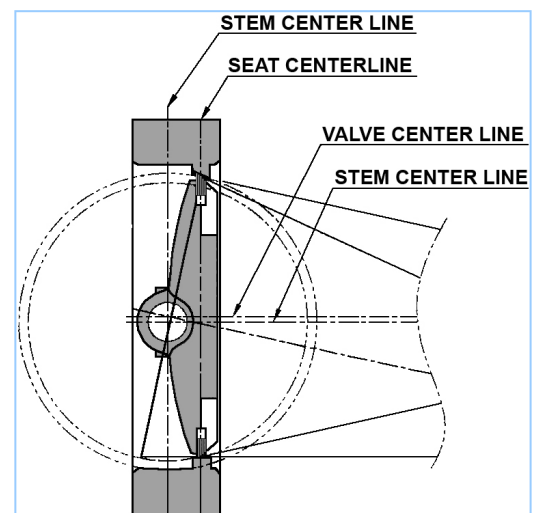
Materials : Stainless Steel 316, 316L, others on request.

Production Range : Size : DN 100 - DN 2000 (4" - 80")
Working Pressure : Up to 250 Bar (3625 PSI)
Working Temperature : -196°C to + 815°C

Pressure Classes : ANSI/ASME 150 LBS, 300 LBS, 600 LBS, 900 LBS and 1500 LBS. Others on request.

Options : A lantern ring in the gland packing is optionally available

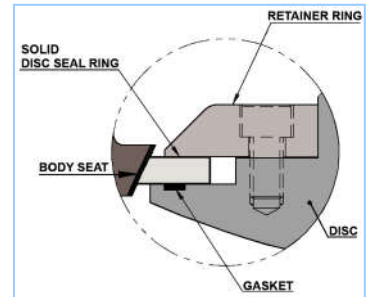
Sealing Design : Product Group L LNG triple eccentric metal seated cryogenic butterfly valves provide bi-directional bubble tight shut-off using triple eccentric disc geometry. The valve stem is off-set against the seat and the center line of the valve body. The seat edges are machined with a continuously changing slope from an angle on top of the oval seat ring to an angle at the opposite side. This geometry ensures that the seat ring stays clear of the seat until the final shut-off position which results in long seat life.



Specification

Seat Configuration : Metal to Metal seat

Product Group L LNG metal seated butterfly valves have a very simple seat construction (see drawing). Various metal seals are available to comply with each temperature and pressure service application. Solid metal seals are used for cryogenic service, the seal leakage meets API 598 or API 6D (Bi-directional Bubble tight shut-off). Solid metal seated valves can be operated in a temperature range of -253°C to +815°C. Valves for cryogenic applications are executed with extended bonnets.



Cryogenic LNG Butterfly Valve



Solid Metal Disc Seat

Certification : CE/PED, ABS Design Assessment, ABS and LRS type approvals, marine class society certified foundries and materials, Fire Safe approved in accordance with API 607, BS 6364 cryogenic testing (See photo's below and on next page). Please consult us for further information.



Operation : ISO 5211 top flange for direct mount of;

- Manual Worm Gear
- Single or Double acting Pneumatic actuator
- Electric actuator
- Single or Double acting Hydraulic actuator

General Application : LNG Triple Eccentric Metal Seated Cryogenic butterfly valve are designed for use in cryogenic (low temperature) applications. They are suitable for bi-directional flow and provide bubble tight shut-off at full rated pressure and cryogenic temperatures. The butt-weld type is executed with an Inspection and maintenance cover for in-line access.

Typical Applications :

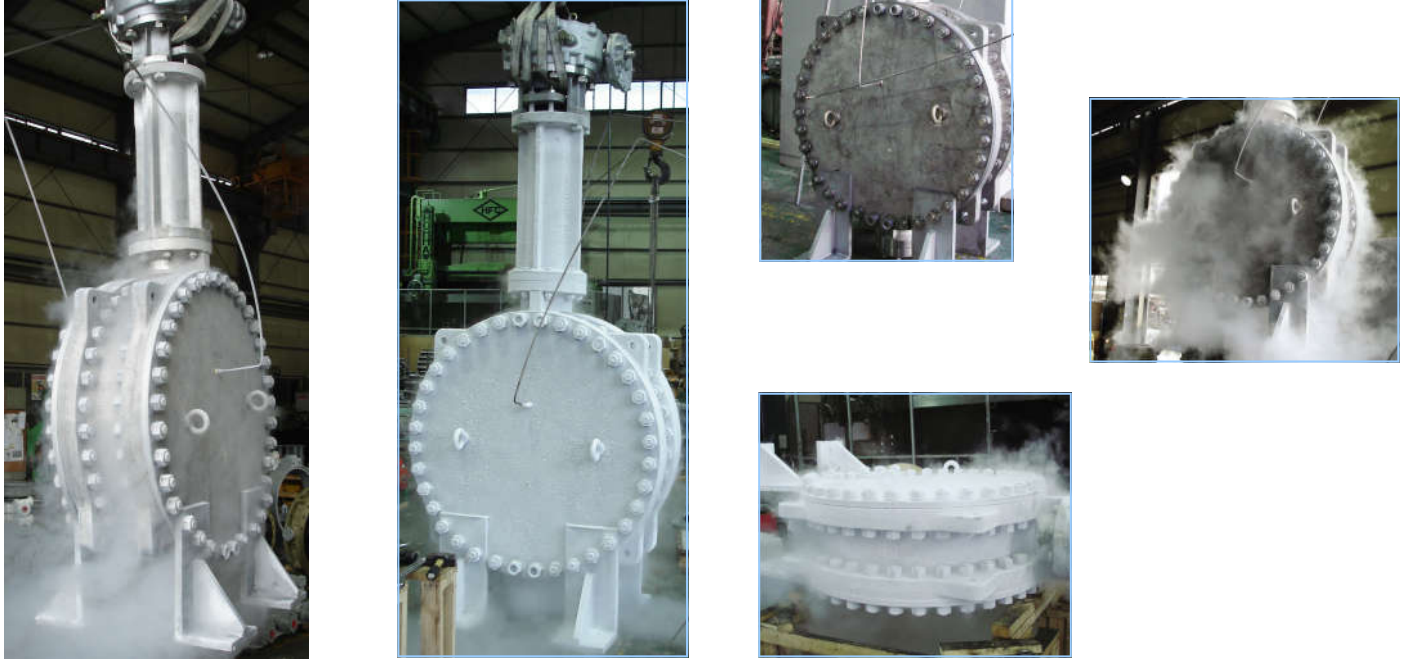
- Liquefied Gas Carriers (Propane, Butane, Acetylene, Ethylene etc.)
- LNG Carriers (See Photo)
- LNG Receiving Terminals
- LNG re-gasification units
- LNG liquefaction units
- LNG peak shaving plants
- Other Cryogenic Services (Liquefied Oxygen Plants [-160°C])
- On board of FSRU's, FLNG's, VLGC's etc.



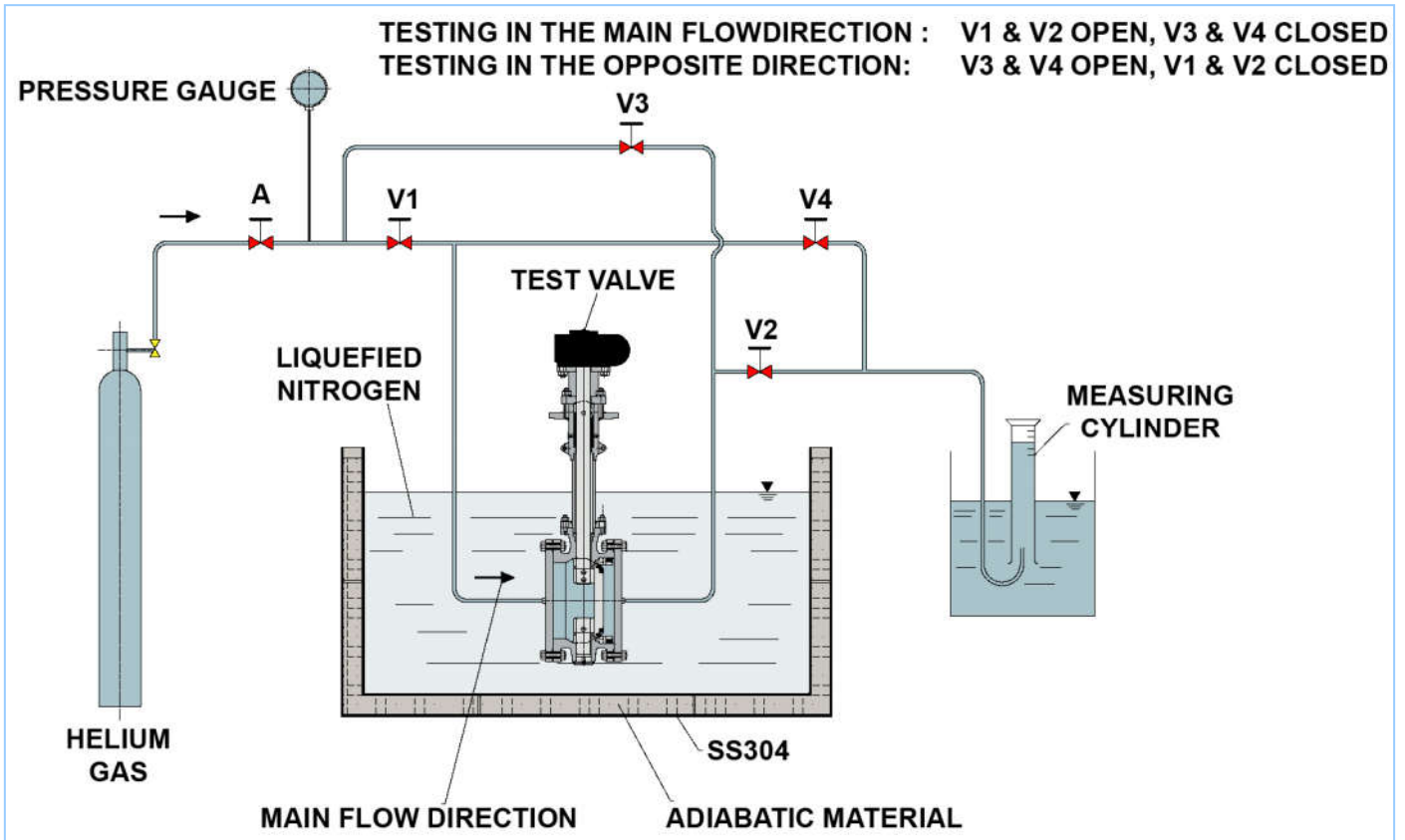
Cryogenic Testing in accordance with BS 6364

Testing : All cryogenic valves are tested in accordance with BS 6364 in the fully equipped in-house cryogenic testing facilities. Below Photo's show a Series LNF under cryogenic testing. Below you can find a simplified sketch showing the in-house cryogenic testing facilities

Series LNF under Cryogenic Testing



In-house cryogenic testing facilities



Series



BUTT-WELD
Series LTW

Size Range : DN 100 - DN 2000 (4" - 80")

Pressure Classes : ANSI/ASME 150 LBS, 300 LBS, 600 LBS, 900 LBS and 1500 LBS

- Butt-weld end connections
- Side entry
- Extended Cryogenic Bonnet (BS 6364)
- One piece blow-out proof stem
- With an Inspection and maintenance cover for in-line access
- Direct mount ISO table, no additional brackets required
- Adjustable gland packing, can be adjusted without removal of the actuator



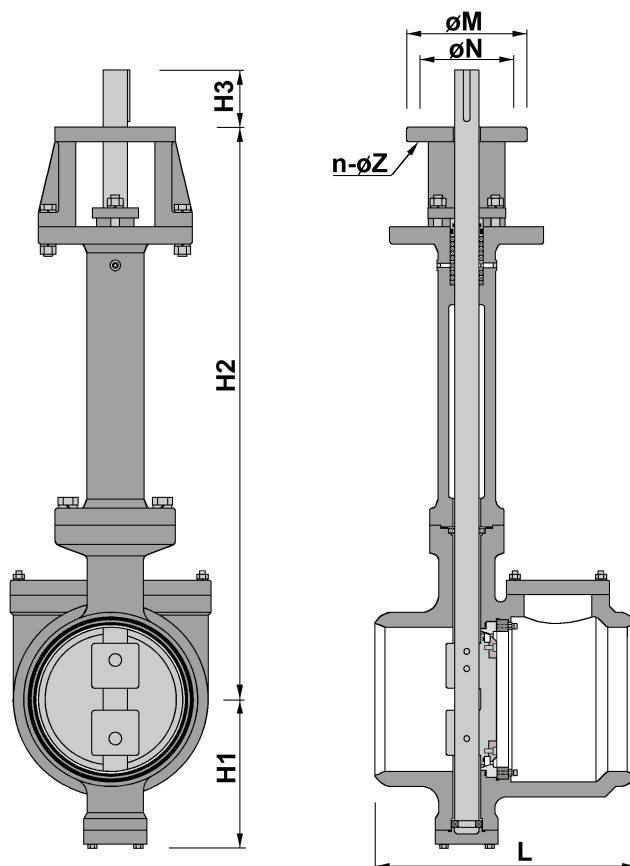
FLANGED
Series LTF

Size Range : DN 100 - DN 2000 (4" - 80")

Pressure Classes : ANSI/ASME 150 LBS, 300 LBS, 600 LBS, 900 LBS and 1500 LBS

- Flanged end connections
- Side entry
- Extended Cryogenic Bonnet (BS 6364)
- One piece blow-out proof stem
- Direct mount ISO table, no additional brackets required
- Adjustable gland packing, can be adjusted without removal of the actuator

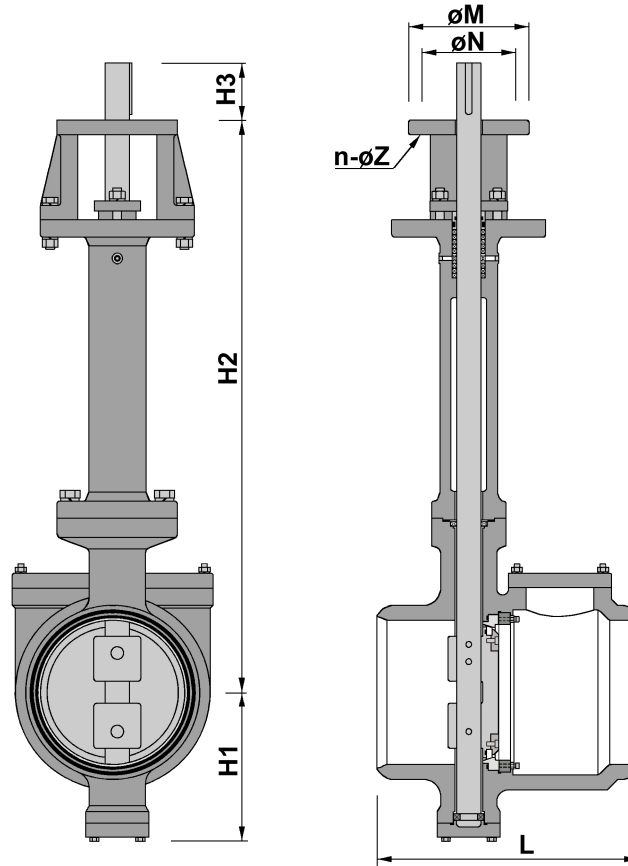
Series LTW Class 150# Butt-Weld Type DN 100 (4") - 2000 (80")



Dimensions DN 100 (4") - 2000 (80") **ANSI 150** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211				WEIGHT APPROX. (Kg)
Inch	DN					TYPE	øN	øM	n-øz	
4"	100	305	150	900	60	F10	102	125	4 - 12	52.5
6"	150	403	180	900	60	F10	102	125	4 - 12	73.1
8"	200	410	205	950	100	F16	165	210	4 - 23	91.7
10"	250	455	260	1000	100	F16	165	210	4 - 23	144
12"	300	480	295	1095	100	F16	165	210	4 - 23	184
14"	350	530	325	1140	100	F16	165	210	4 - 23	237
16"	400	555	350	1180	100	F25	254	300	8 - 19	309
18"	450	590	390	1220	100	F25	254	300	8 - 19	386
20"	500	625	435	1280	100	F25	254	300	8 - 19	536
24"	600	680	479	1485	150	F35	356	415	8 - 33	836
26"	650	750	530	1485	150	F35	356	415	8 - 33	958
28"	700	750	555	1510	150	F35	356	415	8 - 33	1360
30"	750	830	580	1550	180	F40	406	475	8 - 39	1650
32"	800	830	600	1570	180	F40	406	475	8 - 39	2070
36"	900	1000	700	1660	180	F40	406	475	8 - 39	2700
40"	1000	1200	770	1750	180	F40	406	475	8 - 39	3665
42"	1050	1200	830	1940	180	F40	406	475	8 - 39	4245
48"	1200	1300	910	2040	220	F48	483	560	12 - 39	5480
54"	1350	1400	1000	2365	220	F48	483	560	12 - 39	7784
60"	1500	1600	1100	2450	270	F60	603	685	20 - 39	10350
66"	1650	1800	1200	2550	270	F60	603	685	20 - 39	11100
72"	1800	2000	1350	2600	270	F60	603	685	20 - 39	12820
80"	2000	2300	1600	2800	400	F80	800	1000	20 - 45	15850

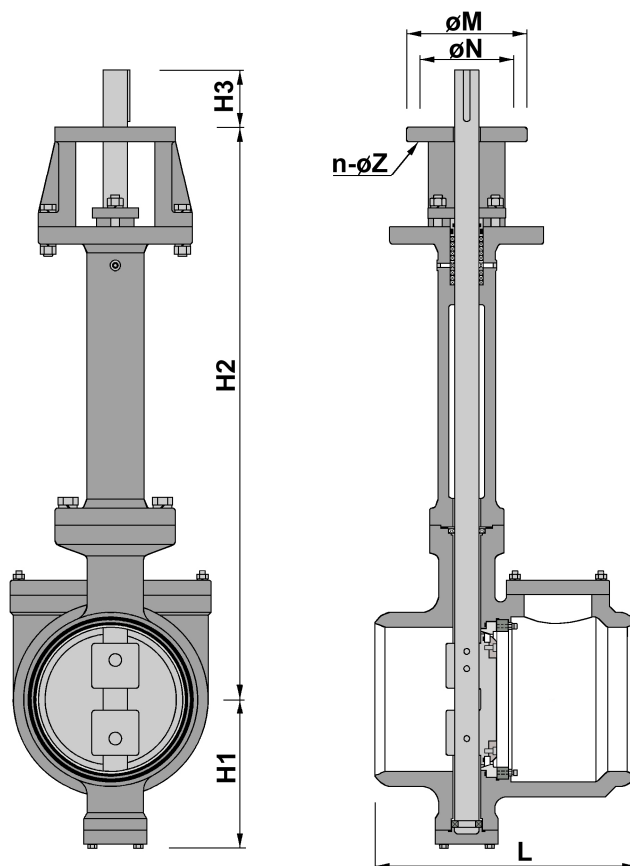
Series LTW Class 300# Butt-Weld Type DN 100 (4") - 2000 (80")



Dimensions DN 100 (4") - 2000 (80") ANSI 300 [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211				WEIGHT APPROX. (Kg)
Inch	DN					TYPE	øN	øM	n-øz	
4"	100	305	170	900	60	F10	102	125	4 - 12	57.0
6"	150	403	200	900	60	F10	102	125	4 - 12	80.0
8"	200	410	225	950	100	F16	165	210	4 - 23	101
10"	250	455	280	1000	100	F16	165	210	4 - 23	158
12"	300	480	306	1095	100	F25	254	300	8 - 19	201
14"	350	530	350	1140	100	F25	254	300	8 - 19	260
16"	400	555	390	1180	100	F35	356	415	8 - 33	335
18"	450	590	430	1220	100	F35	356	415	8 - 33	423
20"	500	625	468	1280	100	F35	356	415	8 - 33	575
24"	600	680	560	1485	150	F40	406	475	8 - 39	868
26"	650	750	585	1485	150	F40	406	475	8 - 39	1004
28"	700	750	615	1510	150	F48	483	560	12 - 39	1426
30"	750	830	660	1550	180	F48	483	560	12 - 39	1732
32"	800	830	715	1570	180	F48	483	560	12 - 39	2383
36"	900	1000	800	1660	180	F48	483	560	12 - 39	4142
40"	1000	1200	860	1750	180	F48	483	560	12 - 39	5590
42"	1050	1200	950	1940	180	F60	603	685	20 - 39	6454
48"	1200	1300	1000	2040	220	F60	603	685	20 - 39	8551
54"	1350	1400	1100	2365	220	F60	603	685	20 - 39	11928
60"	1500	1600	1200	2450	270	F60	603	685	20 - 39	16457
66"	1650	1800	1300	2550	270	F60	603	685	20 - 39	16800
72"	1800	2000	1500	2600	270	F80	800	1000	20 - 45	18600
80"	2000	2300	1750	2800	400	F80	800	1000	20 - 45	23350

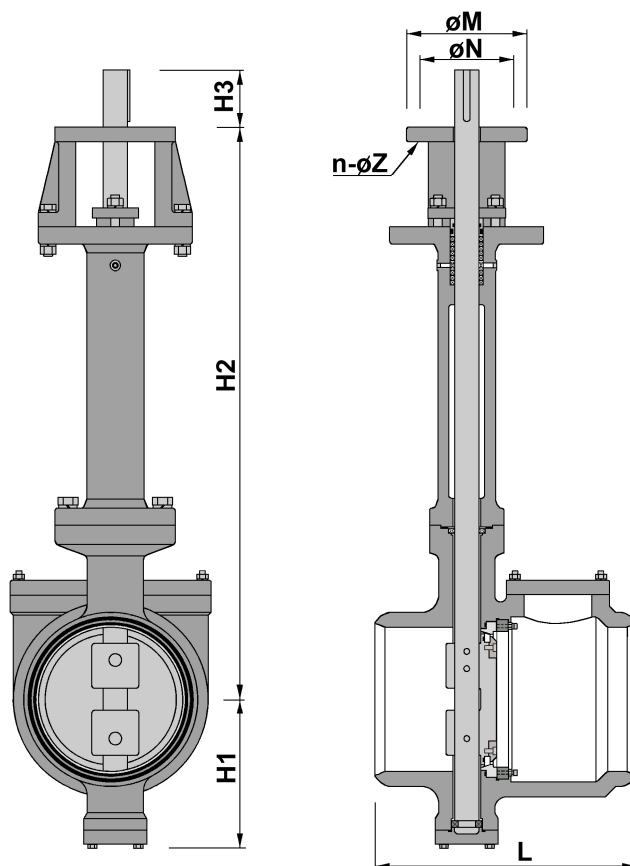
Series LTW Class 600# Butt-Weld Type DN 100 (4") - 1500 (60")



Dimensions DN 100 (4") - 1500 (60") **ANSI 600** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øZ
4"	100	405	230	970	100	F16	165	210	4 - 23
6"	150	503	295	970	100	F16	165	210	4 - 23
8"	200	510	325	1020	100	F25	254	300	8 - 19
10"	250	555	370	1070	120	F30	298	350	8 - 23
12"	300	580	400	1165	150	F35	356	415	8 - 33
14"	350	630	440	1210	150	F35	356	415	8 - 33
16"	400	655	480	1250	150	F35	356	415	8 - 33
18"	450	690	535	1290	150	F35	356	415	8 - 33
20"	500	725	570	1350	150	F35	356	415	8 - 33
24"	600	780	620	1555	220	F48	483	560	12 - 39
28"	700	850	680	1580	220	F48	483	560	12 - 39
30"	750	930	710	1620	220	F48	483	560	12 - 39
32"	800	930	770	1640	260	F60	603	685	20 - 39
36"	900	1300	830	1730	260	F60	603	685	20 - 39
40"	1000	1300	900	1820	280	F60	603	685	20 - 39
48"	1200	1500	1120	2110	330	F60	603	685	20 - 39
52"	1300	1600	1220	2335	350	F60	603	685	20 - 39
54"	1350	1650	1270	2435	380	F80	800	1000	20 - 45
56"	1400	1700	1350	2485	380	F80	800	1000	20 - 45
60"	1500	1800	1490	2520	420	F80	800	1000	20 - 45

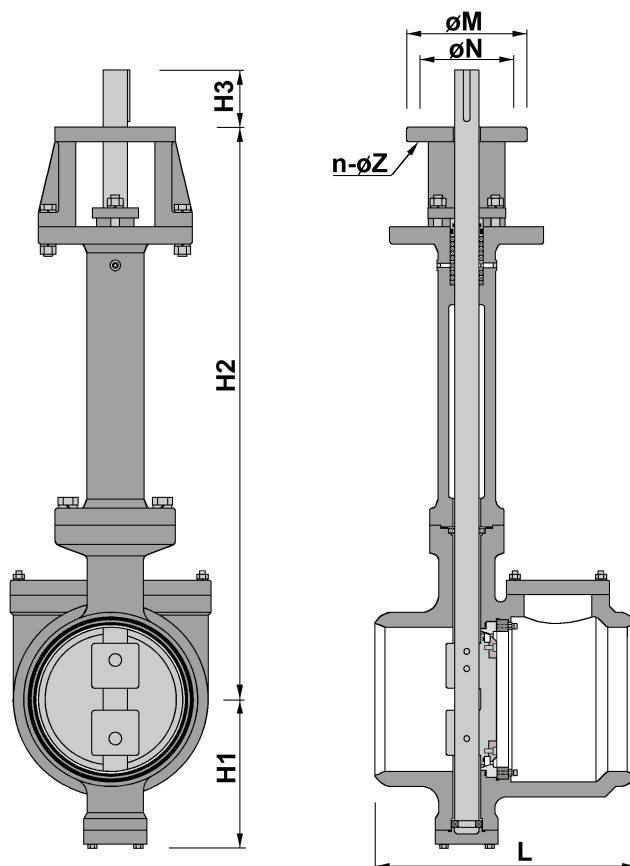
Series LTW Class 900# Butt-Weld Type DN 100 (4") - 1000 (40")



Dimensions DN 100 (4") - 1000 (40") **ANSI 900** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øz
4"	100	455	230	1020	100	F25	254	300	8 - 19
8"	200	560	330	1070	100	F25	254	300	8 - 19
10"	250	605	400	1120	120	F30	298	350	8 - 23
12"	300	640	450	1220	150	F35	356	415	8 - 33
14"	350	690	480	1260	180	F40	406	475	8 - 39
16"	400	720	530	1300	180	F40	406	475	8 - 39
18"	450	750	590	1350	180	F40	406	475	8 - 39
20"	500	790	610	1400	220	F48	483	560	12 - 39
24"	600	840	620	1600	220	F48	483	560	12 - 39
28"	700	910	775	1680	330	F60	603	685	20 - 39
30"	750	990	800	1720	330	F60	603	685	20 - 39
32"	800	1000	870	1750	330	F60	603	685	20 - 39
36"	900	1380	900	1830	380	F80	800	1000	20 - 45
40"	1000	1380	980	1920	380	F80	800	1000	20 - 45

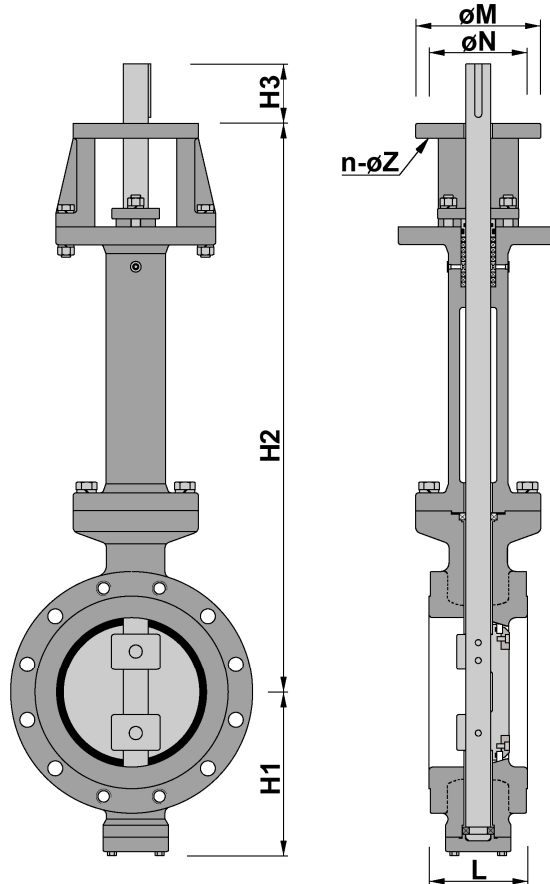
Series LTW Class 1500# Butt-Weld Type DN 100 (4") - 600 (24")



Dimensions DN 100 (4") - 600 (24") **ANSI 1500** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øz
4"	100	500	240	1040	100	F25	254	300	8 - 19
8"	200	600	345	1090	100	F25	254	300	8 - 19
10"	250	660	470	1180	120	F30	298	350	8 - 23
12"	300	700	500	1270	150	F35	356	415	8 - 33
14"	350	770	565	1330	180	F40	406	475	8 - 39
16"	400	820	610	1380	180	F48	483	560	12 - 39
18"	450	850	660	1420	180	F48	483	560	12 - 39
20"	500	890	730	1480	220	F60	603	685	20 - 39
24"	600	940	850	1680	220	F60	603	685	20 - 39

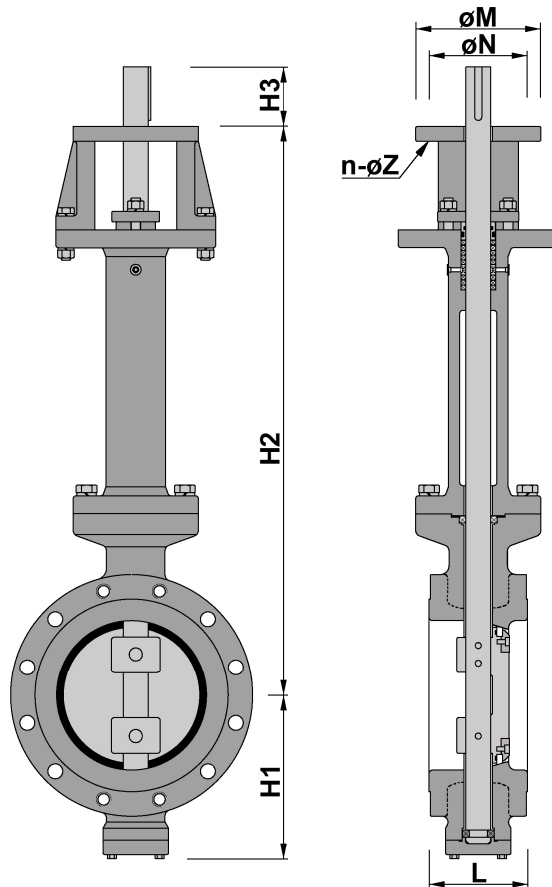
Series LTF Class 150# Flanged Type DN 100 (4") - 2000 (80")



Dimensions DN 100 (4") - 2000 (80") ANSI 150 [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211				WEIGHT APPROX. (Kg)
Inch	DN					TYPE	øN	øM	n-øz	
4"	100	127	161	900	60	F10	102	125	4 - 12	47.5
6"	150	140	203	900	60	F10	102	125	4 - 12	52.0
8"	200	152	230	950	100	F16	165	210	4 - 23	71.0
10"	250	165	274	1000	100	F16	165	210	4 - 23	88.5
12"	300	178	300	1095	100	F16	165	210	4 - 23	139
14"	350	190	345	1140	100	F16	165	210	4 - 23	178
16"	400	216	380	1180	100	F25	254	300	8 - 19	230
18"	450	222	407	1220	100	F25	254	300	8 - 19	286
20"	500	229	445	1280	100	F25	254	300	8 - 19	375
24"	600	267	519	1485	150	F35	356	415	8 - 33	571
26"	650	292	570	1485	150	F35	356	415	8 - 33	820
28"	700	292	590	1510	150	F35	356	415	8 - 33	1170
30"	750	318	625	1550	180	F40	406	475	8 - 39	1360
32"	800	318	645	1570	180	F40	406	475	8 - 39	1650
36"	900	330	780	1660	180	F40	406	475	8 - 39	2400
40"	1000	410	820	1750	180	F40	406	475	8 - 39	3065
42"	1050	410	910	1940	180	F40	406	475	8 - 39	3675
48"	1200	470	960	2040	220	F48	483	560	12 - 39	4780
54"	1350	470	1045	2365	220	F48	483	560	12 - 39	7074
60"	1500	530	1150	2450	270	F60	603	685	20 - 39	9555
66"	1650	600	1250	2550	270	F60	603	685	20 - 39	10300
72"	1800	670	1400	2600	270	F60	603	685	20 - 39	12000
80"	2000	760	1650	2800	400	F80	800	1000	20 - 45	15000

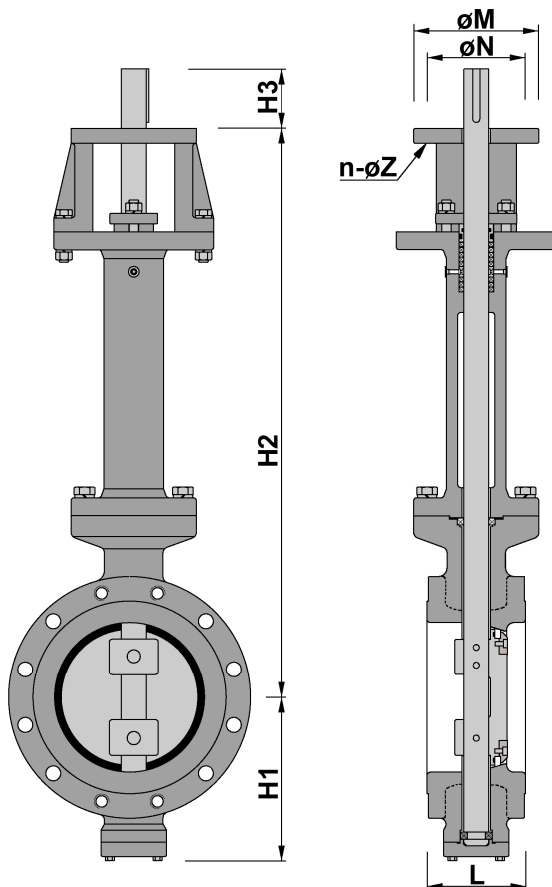
Series LTF Class 300# Flanged Type DN 100 (4") - 2000 (80")



Dimensions DN 100 (4") - 2000 (80") ANSI 300 [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211				WEIGHT APPROX. (Kg)
Inch	DN					TYPE	øN	øM	n-øz	
4"	100	190	176	900	60	F10	102	125	4 - 12	56.1
6"	150	210	223	900	60	F10	102	125	4 - 12	78.1
8"	200	230	250	950	100	F16	165	210	4 - 23	97.9
10"	250	250	310	1000	100	F16	165	210	4 - 23	153
12"	300	270	340	1095	100	F25	254	300	8 - 19	195
14"	350	290	380	1140	100	F25	254	300	8 - 19	236
16"	400	310	425	1180	100	F35	356	415	8 - 33	328
18"	450	330	445	1220	100	F35	356	415	8 - 33	412
20"	500	350	480	1280	100	F35	356	415	8 - 33	570
24"	600	390	570	1485	150	F40	406	475	8 - 39	890
26"	650	410	605	1485	150	F40	406	475	8 - 39	1003
28"	700	430	635	1510	150	F48	483	560	12 - 39	1452
30"	750	450	680	1550	180	F48	483	560	12 - 39	1724
32"	800	470	730	1570	180	F48	483	560	12 - 39	2371
36"	900	510	820	1660	180	F48	483	560	12 - 39	3510
40"	1000	550	860	1750	180	F48	483	560	12 - 39	4475
42"	1050	570	950	1940	180	F60	603	685	20 - 39	5286
48"	1200	630	1000	2040	220	F60	603	685	20 - 39	7155
54"	1350	670	1100	2365	220	F60	603	685	20 - 39	10073
60"	1500	790	1200	2450	270	F60	603	685	20 - 39	14770
66"	1650	790	1300	2550	270	F60	603	685	20 - 39	15450
72"	1800	870	1500	2600	270	F80	800	1000	20 - 45	17400
80"	2000	950	1750	2800	400	F80	800	1000	20 - 45	22200

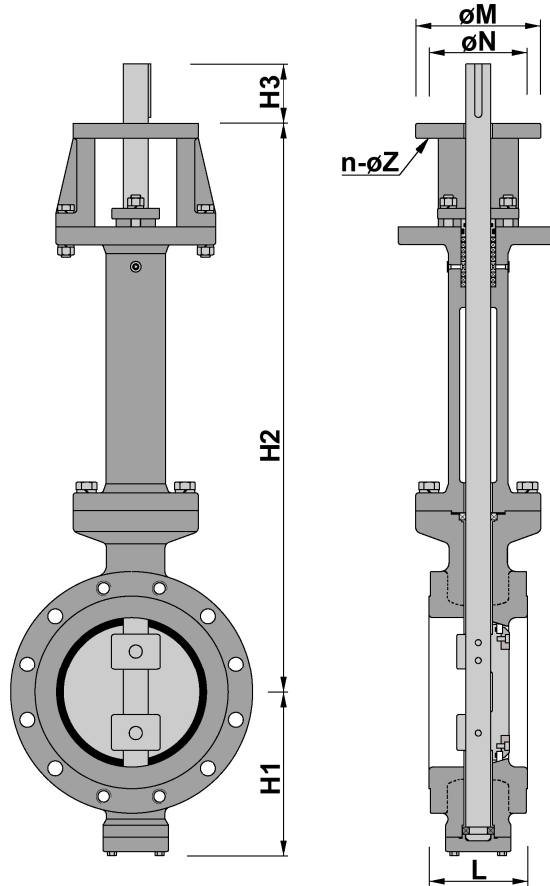
Series LTF Class 600# Flanged Type DN 100 (4") - 1500 (60")



Dimensions DN 100 (4") - 1500 (60") **ANSI 600** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øZ
4"	100	190	230	970	100	F16	165	210	4 - 23
6"	150	210	295	970	100	F16	165	210	4 - 23
8"	200	230	325	1020	100	F25	254	300	8 - 19
10"	250	250	370	1070	120	F30	298	350	8 - 23
12"	300	270	400	1165	150	F35	356	415	8 - 33
14"	350	290	440	1210	150	F35	356	415	8 - 33
16"	400	310	480	1250	150	F35	356	415	8 - 33
18"	450	330	535	1290	150	F35	356	415	8 - 33
20"	500	350	570	1350	150	F35	356	415	8 - 33
24"	600	390	620	1555	220	F48	483	560	12 - 39
28"	700	610	680	1580	220	F48	483	560	12 - 39
30"	750	610	710	1620	220	F48	483	560	12 - 39
32"	800	660	770	1640	260	F60	603	685	20 - 39
36"	900	711	830	1730	260	F60	603	685	20 - 39
40"	1000	811	900	1820	280	F60	603	685	20 - 39
48"	1200	900	1120	2110	330	F60	603	685	20 - 39
52"	1300	960	1220	2335	350	F60	603	685	20 - 39
54"	1350	980	1270	2435	380	F80	800	1000	20 - 45
56"	1400	1020	1350	2485	380	F80	800	1000	20 - 45
60"	1500	1080	1490	2520	420	F80	800	1000	20 - 45

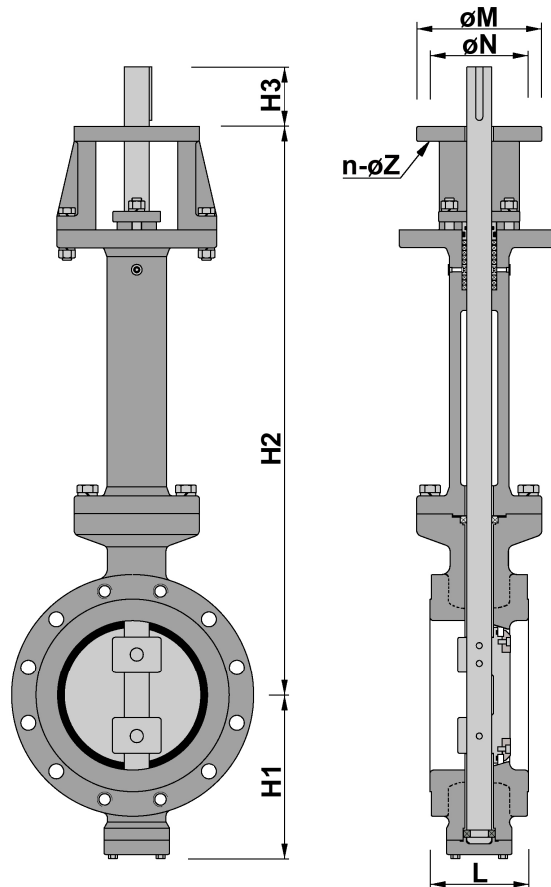
Series LTF Class 900# Flanged Type DN 100 (4") - 1000 (40")



Dimensions DN 100 (4") - 1000 (40") **ANSI 900** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øZ
4"	100	200	230	1020	100	F25	254	300	8 - 19
8"	200	310	330	1070	100	F25	254	300	8 - 19
10"	250	350	400	1120	120	F30	298	350	8 - 23
12"	300	380	450	1220	150	F35	356	415	8 - 33
14"	350	400	480	1260	180	F40	406	475	8 - 39
16"	400	410	530	1300	180	F40	406	475	8 - 39
18"	450	460	590	1350	180	F40	406	475	8 - 39
20"	500	490	610	1400	220	F48	483	560	12 - 39
24"	600	620	620	1600	220	F48	483	560	12 - 39
28"	700	650	775	1680	330	F60	603	685	20 - 39
30"	750	700	800	1720	330	F60	603	685	20 - 39
32"	800	750	870	1750	330	F60	603	685	20 - 39
36"	900	850	900	1830	380	F80	800	1000	20 - 45
40"	1000	950	980	1920	380	F80	800	1000	20 - 45

Series LTF Class 1500# Flanged Type DN 100 (4") - 600 (24")



Dimensions DN 100 (4") - 600 (24") **ANSI 1500** [mm]

SIZE		L	H1	H2	H3	TOP FLANGE ISO 5211			
Inch	DN					TYPE	øN	øM	n-øZ
4"	100	260	240	1040	100	F25	254	300	8 - 19
8"	200	380	345	1090	100	F25	254	300	8 - 19
10"	250	460	470	1180	120	F30	298	350	8 - 23
12"	300	540	500	1270	150	F35	356	415	8 - 33
14"	350	581	565	1330	180	F40	406	475	8 - 39
16"	400	640	610	1380	180	F48	483	560	12 - 39
18"	450	710	660	1420	180	F48	483	560	12 - 39
20"	500	780	730	1480	220	F60	603	685	20 - 39
24"	600	890	850	1680	220	F60	603	685	20 - 39

Product Group C
Concentric Rubber Lined Butterfly Valves



Product Group O
*Double Eccentric Replaceable Seat Ring
Type Butterfly Valves (Cargo Oil)*



Product Group H, F and M
High Performance Butterfly Valves



Product Group T
Triple Eccentric Metal Seated Butterfly Valves



Product Group E
Disc Seated Butterfly Valves



Product Group L
*Cryogenic Butterfly Valves (LPG, LNG)
Ball, Gate, Globe and Check Valves*



Product Group D
Damper Butterfly Valves

