

WARREN MORRISON UK LTD



PTFE BUTTERFLY VALVE
TP SERIES

Warren-Morrison Valves

Established in 1949 in the United Kingdom, Warren-Morrison UK Ltd. has been manufacturing its own unique range of industrial valves and actuators for over 75 years. Benefitting from our own internal rubber mould department, machine shop and development and test facilities, we maintain total control over production and quality through continuous 'in process inspection'. Our dedication towards future development has continued to ensure our market position as a select industrial valve and accessories manufacturer and supplier.

Warren-Morrison Butterfly Valves:

The Warren-Morrison TP Series PTFE Butterfly Valve is a well-engineered valve to suit various industries and applications from oil and gas, water treatment, HVAC, petrochemical, power and others. Designed with a replaceable seat and dry shaft to meet fully rated PN 16 up to and including 6", PN 10 for sizes up to and including 16", and PN 6 for sizes up to and including 24". TP series butterfly valves are tested for Zero leakage bubble tight shut off.

Butterfly Valve Features:

- Dry shaft design for sizes up to 24". For larger sizes consult factory.
- Extended body neck allows for ease of insulation material if required.
- Advanced bushing to achieve low torque to suit smaller sizes of actuators.
- Bi-directional for all sizes up to 24".
- End of service applications possible.
- Designed to meet ISO 5211 for direct mounting of actuators and gearboxes.
- Different Materials for body/disc/stem and seat to suit a wide range of industries.
- Various paint options available upon request.
- Compatibility to International Standards.

Body. Double piece body with integral actuator mounting flange to ISO 5211 standard.

Wafer type design with multi-drilled holes which fits between PN10, PN16 and ASME 150 flanges with ease.

Lugged and Flanged designs drilled to PN 10 or PN 16 or ASME 150.

Seat. The resilient seats are field replaceable and available in a variety of soft materials such as PTFE/ FEP/ PFA. The unique seat design protects the entire internal valve body from the media, allowing cost effective selection of valve body and shaft materials. The moulded-in seat flange ring completely eliminates the need for any additional flange gaskets during valve installation.

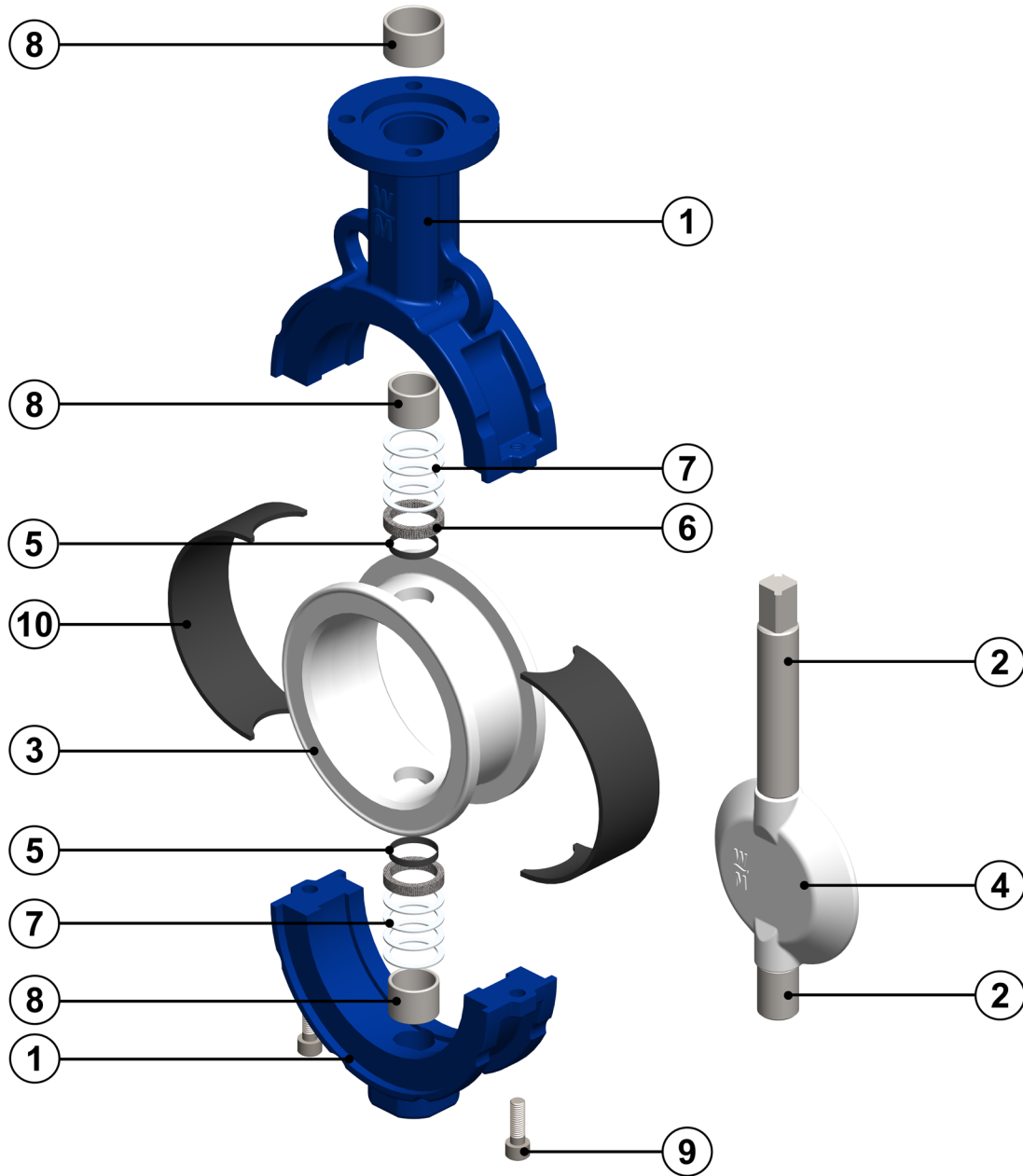
Disc. The disc is machined to reduce the friction with the seat to provide a longer life expectancy of the seat as well as reducing the torque of the valve. The disc is machined internally to suit the shaft. The disc can come with different varieties of material both lined with PTFE/ FEP/ PFA and unlined.

Stem. Dual piece shaft design to enhance the strength and reduce the torque. No holding screws or pins between the disc and the shaft. Stem is machined matching the internal of the disc to secure continuous operation.

O-ring stem seal arrangement. Warren-Morrison TP series butterfly valves are designed for longer life span and reliability. Considering these factors, the butterfly valves employ a highly sophisticated O-ring seal arrangement. These seals are completely engineered in-house to ensure continuous and reliable performance. In regular valves, wear and tear causes the possibility of leakage through the stem. The primary function of the seal is to prevent leakage propagating from the stem.

Advanced bushing design. To eliminate the effect of side thrusts, the stem is properly supported by our advanced bushing design. This acts as a controlled location guide for the proper operation of the valve. Support is provided throughout the full rotation of the valve and actuator side thrusts to minimise wear and tear.

Exploded Drawing



Parts List

Sl. No.	Description	Sl. No.	Description
1	Body	6	Stem Seal
2	Shaft	7	Thrust Washer
3	Seat	8	Bushing
4	Disc	9	Bolt
5*	O-ring	10	Spacer

* For 2.5" and above

Operator Combination Offered

The Warren-Morrison TP series valves are offered with a wide range of operators for all types of industrial applications:

- Manual hand lever.
- Gear operated hand wheel (with chain drive option if required).
- Pneumatic single acting spring return actuator, fail open, fail close.
- Pneumatic double acting actuator.
- Electric actuator.



Valve with electric actuator



Valve with lever

Temperature of Seat Material

Seat Material	Temperature Limits	
	Lower	Higher
PFA	-40 °C	180 °C
PTFE	-40 °C	160 °C
FEP	0 °C	100 °C

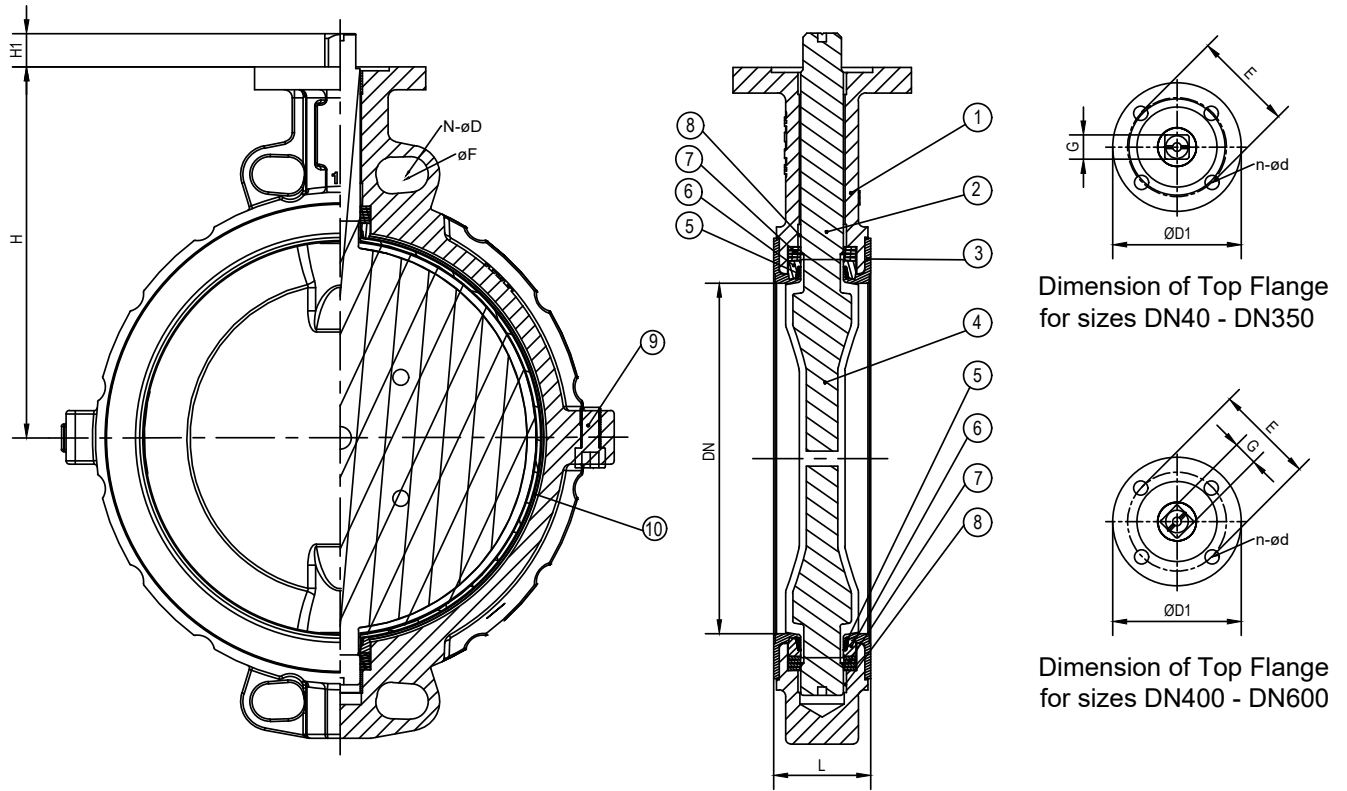
Seating Unseating Torque (N-m) for TP Series Valves

Size		Unlined Disc Pressure Drop (N-m)				Lined Disc Pressure Drop (N-m)			
IN	mm	16 Bar	10 Bar	6 Bar	0 Bar	16 Bar	10 Bar	6 Bar	0 Bar
1.5"	40	35	34	34	33	31	30	30	29
2"	50	49	47	47	46	35	34	34	33
2.5"	65	48	47	47	45	42	41	41	39
3"	80	56	54	54	53	45	44	44	43
4"	100	82	80	80	77	57	55	55	53
5"	125	120	116	116	113	80	77	77	75
6"	150	165	160	160	155	102	99	99	96
8"	200		298	298	280		239	239	224
10"	250		390	390	366		341	341	320
12"	300		589	589	554		477	477	449
14"	350		809	809	761		568	568	534
16"	400		1259	1259	1183		909	909	854
18"	450			1468	1380			1363	1282
20"	500			1835	1725			1818	1709
24"	600			2527	2375			2211	2079

Cv Values for TP Series Valves

Size		Flow in Gpm @ 1 psi Pressure Drop @ Various Disc Angles								
IN	DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
1.5"	40	0	5	10	21	37	55	80	104	116
2"	50	0	7	15	31	54	82	118	151	172
2.5"	65	0	12	27	58	99	152	218	281	319
3"	80	0	19	42	91	157	238	338	420	491
4"	100	0	28	67	132	225	355	535	674	813
5"	125	0	50	107	214	330	589	835	1055	1314
6"	150	0	81	175	316	530	865	1281	1636	2005
8"	200	0	119	287	579	990	1470	2260	3001	3798
10"	250	0	239	477	967	1580	2192	3295	4969	6140
12"	300	0	328	646	1231	2127	3296	4904	7371	8916
14"	350	0	489	922	1647	2512	4020	6350	10020	12225
16"	400	0	713	1378	2070	3426	5914	9157	12932	15868
18"	450	0	911	1719	3055	5274	8561	12601	16779	20408
20"	500	0	1217	2214	4072	7311	11136	16124	21261	24595
24"	600	0	1459	3233	6285	11156	17065	24733	31875	36836

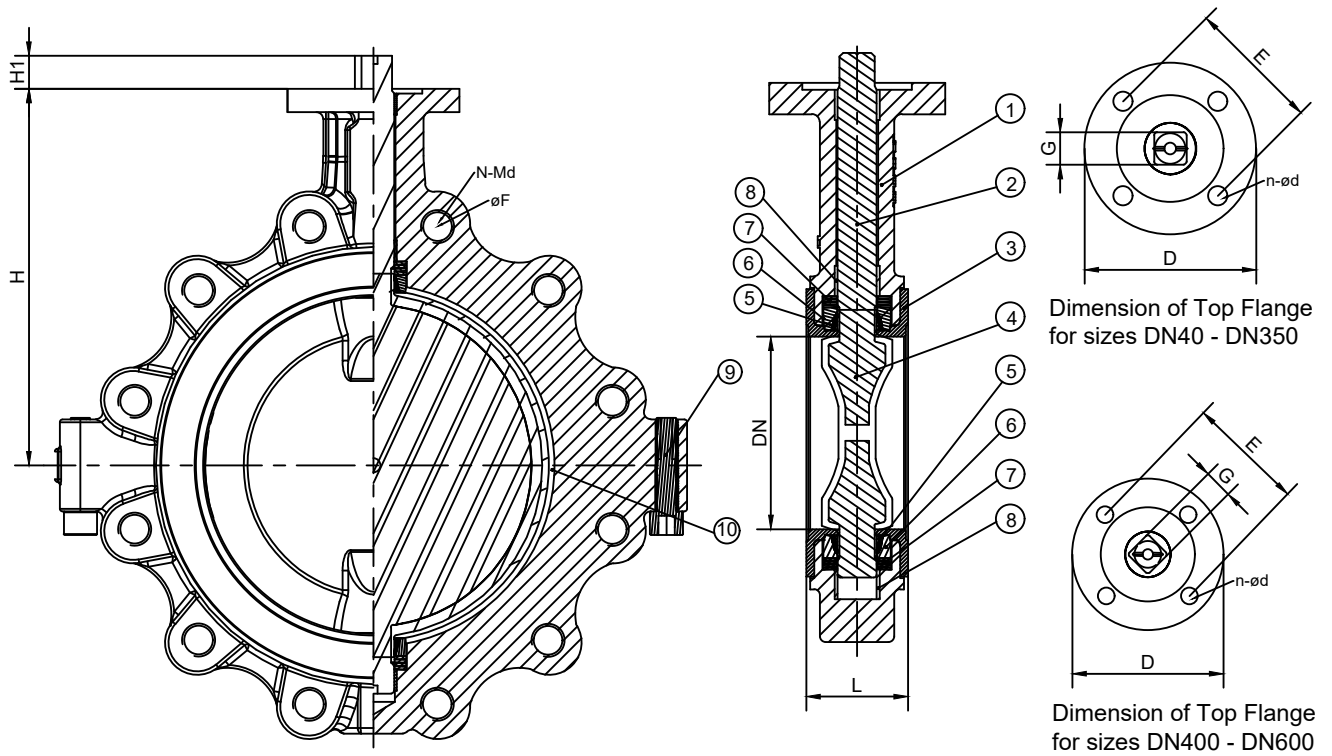
Dimensions and Weight



Size		L	H	ANSI 150		PN10		PN16		G	H1	n-ød	E	øD1	Weight (Kg)
IN	DN			øF	N-øD	øF	N-øD	øF	N-øD						
1.5"	40	33	114.50	98.50	4 - 15	110	4 - 18	110	4 - 18	11	13	4 - 8	50	65	3
2"	50	43	134.50	120.50	4 - 19	125	4 - 18	125	4 - 18	11	13	4 - 8	50	65	4
2.5"	65	46	149	139.50	4 - 19	145	8 - 18	145	8 - 18	11	13	4 - 8	50	65	4
3"	80	46	156	152.50	4 - 19	160	8 - 18	160	8 - 18	11	13	4 - 8	50	65	5
4"	100	52	179	190.50	8 - 19	180	8 - 18	180	8 - 18	14	16	4 - 10	70	90	7
5"	125	56	194	216	8 - 23	210	8 - 18	210	8 - 18	17	19	4 - 10	70	90	9
6"	150	56	209	241.50	8 - 23	240	8 - 23	240	8 - 23	17	19	4 - 10	70	90	12
8"	200	60	237.50	298.50	8 - 23	295	8 - 23	295	12 - 23	22	24	4 - 12	102	125	20
10"	250	68	275	362	12 - 25	350	12 - 23	355	12 - 26	22	24	4 - 12	102	125	29
12"	300	78	300	432	12 - 25	400	12 - 23	410	12 - 26	27	29	4 - 14	125	150	38
14"	350	78	325	476	12 - 29	460	16 - 23	470	16 - 26	27	29	4 - 14	125	150	68
16"	400	102	365	540	16 - 29	515	16 - 27	525	16 - 30	36	38	4 - 18	140	175	83
18"	450	114	400	578	16 - 32	565	20 - 27	585	20 - 30	36	38	4 - 18	140	175	98
20"	500	127	445	635	20 - 33	620	20 - 27	650	20 - 33	36	38	4 - 18	165	210	115
24"	600	154	509	749.50	20 - 36	725	20 - 30	770	20 - 36	46	48	4 - 22	165	210	169

Slight variations in weight based on different material combinations

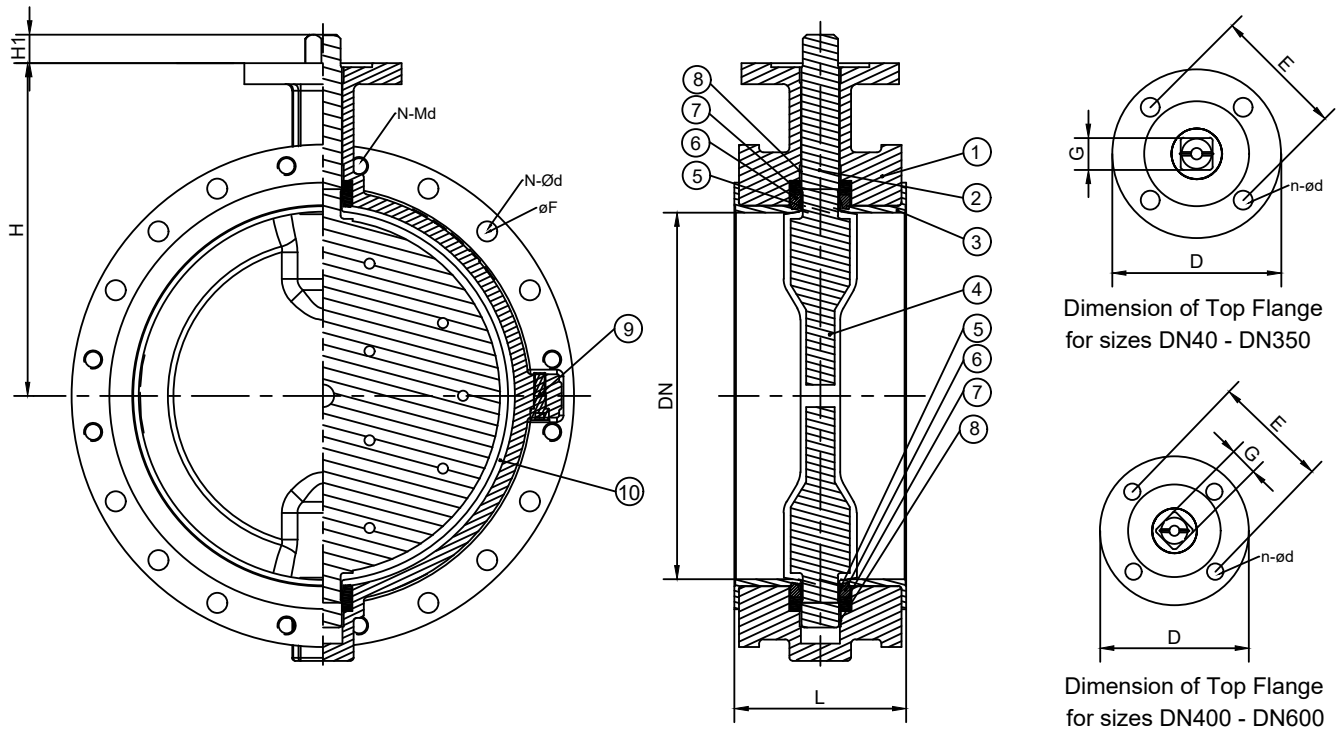
Dimensions and Weight



Size		L	H	ANSI 150		PN10		PN16		G	H1	n-ød	E	D	Weight (Kg)
IN	DN			øF	N-Md	øF	N-Md	øF	N-Md						
1.5"	40	33	114.50	98.50	4-1/2"-13	110	4-M16	110	4-M16	11	13	4 - 8	50	65	4
2"	50	43	134.50	120.50	4-5/8"-11	125	4-M16	125	4-M16	11	13	4 - 8	50	65	6
2.5"	65	46	149	139.50	4-5/8"-11	145	8-M16	145	8-M16	11	13	4 - 8	50	65	7
3"	80	46	156	152.50	4-5/8"-11	160	8-M16	160	8-M16	11	13	4 - 8	50	65	8
4"	100	52	179	190.50	8-5/8"-11	180	8-M16	180	8-M16	14	16	4 - 10	70	90	10
5"	125	56	194	216	8-3/4"-10	210	8-M16	210	8-M16	17	19	4 - 10	70	90	13
6"	150	56	209	241.50	8-3/4"-10	240	8-M20	240	8-M20	17	19	4 - 10	70	90	17
8"	200	60	237.50	298.50	8-3/4"-10	295	8-M20	295	12-M20	22	24	4 - 12	102	125	21
10"	250	68	275	362	12-7/8"-9	350	12-M20	355	12-M24	22	24	4 - 12	102	125	33
12"	300	78	300	432	12-7/8"-9	400	12-M20	410	12-M24	27	29	4 - 14	125	150	43
14"	350	78	325	476	12-1"-8	460	16-M20	470	16-M24	27	29	4 - 14	125	150	104
16"	400	102	365	540	16-1"-8	515	16-M24	525	16-M27	36	38	4 - 18	140	175	121
18"	450	114	400	578	16-1 1/8"-8	565	20-M24	585	20-M27	36	38	4 - 18	140	175	164
20"	500	127	444	635	20-1 1/8"-8	620	20-M24	650	20-M30	36	38	4 - 22	165	210	190
24"	600	154	510	749.50	20-1 1/4"-8	725	20-M27	770	20-M33	46	48	4 - 22	165	210	290

Slight variations in weight based on different material combinations

Dimensions and Weight



Size		L	H	ANSI 150			PN1 0			PN16			G	H1	n-ød	E	D	Weight (Kg)
IN	DN			øF	N-øD	N-Md	øF	N-øD	N-Md	øF	N-øD	N-Md						
1.5"	40	106	114.50	98.50	4 - 16	-	110	4 - 18	-	110	4 - 18	-	11	13	4 - 8	50	65	12
2"	50	108	134.50	120.50	4 - 18	-	125	4 - 18	-	125	4 - 18	-	11	13	4 - 8	50	65	19
2.5"	65	112	149	139.50	4 - 19	-	145	8 - 18	-	145	8 - 18	-	11	13	4 - 8	50	65	23
3"	80	114	156	152.50	4 - 19	-	160	8 - 18	-	160	8 - 18	-	11	13	4 - 8	50	65	29
4"	100	127	179	190.50	8 - 19	-	180	8 - 18	-	180	8 - 18	-	14	16	4 - 10	70	90	36
5"	125	140	194	216	8 - 23	-	210	8 - 18	-	210	8 - 18	-	17	19	4 - 10	70	90	42
6"	150	140	209	241.50	8 - 23	-	240	8 - 23	-	240	8 - 23	-	17	19	4 - 10	70	90	61
8"	200	152	237.50	298.50	8 - 22	-	295	8 - 23	-	295	8 - 23	4-M20	22	24	4 - 12	102	125	78
10"	250	165	275	362	12 - 26	-	350	12 - 23	-	355	12 - 27	-	22	24	4 - 12	102	125	106
12"	300	178	300	432	12 - 26	-	400	12 - 23	-	410	12 - 27	-	27	29	4 - 14	125	150	128
14"	350	190	325	476	12 - 30	-	460	12 - 23	4-M20	470	12 - 27	4-M24	27	29	4 - 14	125	150	199
16"	400	216	365	540	12 - 30	4-1"-8	515	12 - 27	4-M24	525	12 - 30	4-M27	36	38	4 - 18	140	175	240
18"	450	222	400	578	8 - 33	8-1 1/8"-8	565	12 - 27	8-M24	585	12 - 30	8-M27	22	24	4 - 12	102	125	347
20"	500	229	444	635	12 - 33	8-1 1/8"-8	620	12 - 27	8-M24	650	12 - 33	8-M30	22	24	4 - 12	102	125	439
24"	600	267	510	749.50	12 - 36	8-1 1/4"-8	725	12 - 30	8-M27	770	12 - 36	8-M33	27	29	4 - 14	125	150	559

Slight variations in weight based on different material combinations



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