SIERRA
Engineering & Manufacturing

3100 - 3300 - 4300 METAL SEATED GATE VALVE

3100/3300/4300

METAL SEATED GATE VALVE

SIERRA Model 3100 – 3300 - 4300 is a ductile iron full bore double – flanged metal – seated gate valve designed to comply with ISO 5996 and BS 5163 for water, wastewater, irrigation and sewage applications.

SCOPE OF SUPPLY & DESIGN STANDARDS

RANGE OF SIZES:	DN50 - DN1000
PRESSURE RATINGS:	PN10, PN16, PN25
TEMPERATURE RANGE:	-10°C TO +80°C
DESIGN AND TYPE TO:	ISO 5996 BS5163
FACE-TO-FACE DIMENSIONS:	ISO5752, ISO5996
FLANGE DIMENSIONS:	EN1092-2 (DIN2501)
HYDROSTATIC TESTING:	BS EN 122266-2 , ISO5208
TYPE TESTING TO:	EN1074 - 1&2

3100/3300/4300 MODEL FIELDS OF APPLICATIONS

- Potable and raw water
- Firefighting systems
- Irrigation systems
- waster water systems
- Sewage systems

3100/3300/4300 MODEL ADVANTAGES

- They can be long body oval type series 4300 or short flat type 3100 & 3300 series.
- The Gate valves are available with Non-Rising Stem (NRS) or outside stem & yoke (OS&Y).
- They can be equipped for manual operation by tee cap or handwheel.
- They can also be supplied to order with gearbox or electrical actuator

DESIGN FEATUREES AND BENEFITS

1 - STEM DESIGN

Non-Rising Stem (NRS)

- This design is used where insufficient space above the valve restricts the stem from moving upwards
- Because the stem does not move upward, it cannot be used to determine whether the valve is opened or closed.
- The major disadvantage of NRS design is that the fluid flow through the valve wets the stem thread, making them subject to corrosion and erosion and thus possible failure.
- NRS is not recommended for sewage applications.

2 - OUTSIDE STEM AND YOKE (OS&Y)

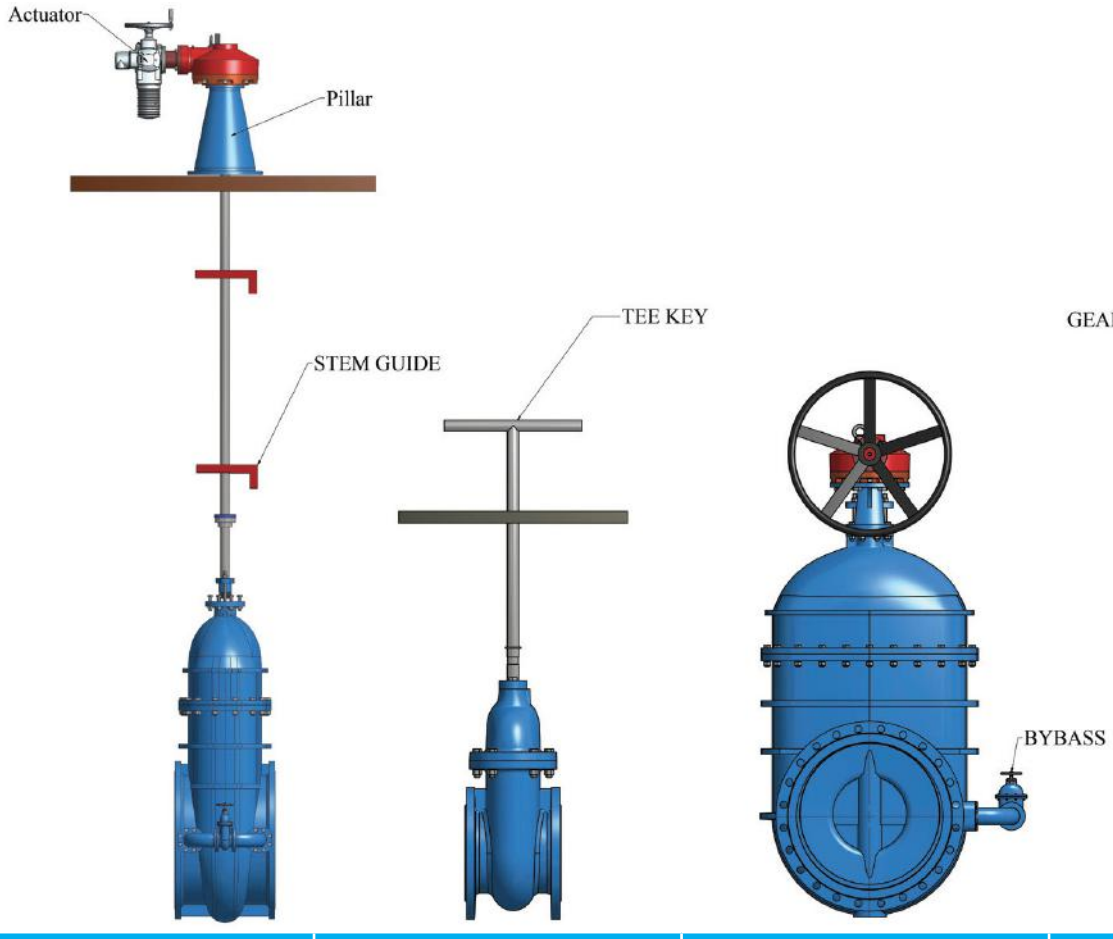
- This design can be used where there is sufficient space above the valve in the pumping station.
- This design prevents thread wetting because the threaded portion of the stem is outside the valve.
- The position of the gate within the valve is easily determined from the position of the top of the stem.
- OS&Y is recommended for sewage and industrial applications.

3 - WEDGE DESIGN

Flexible Wedge/Drop Tight Shut Off

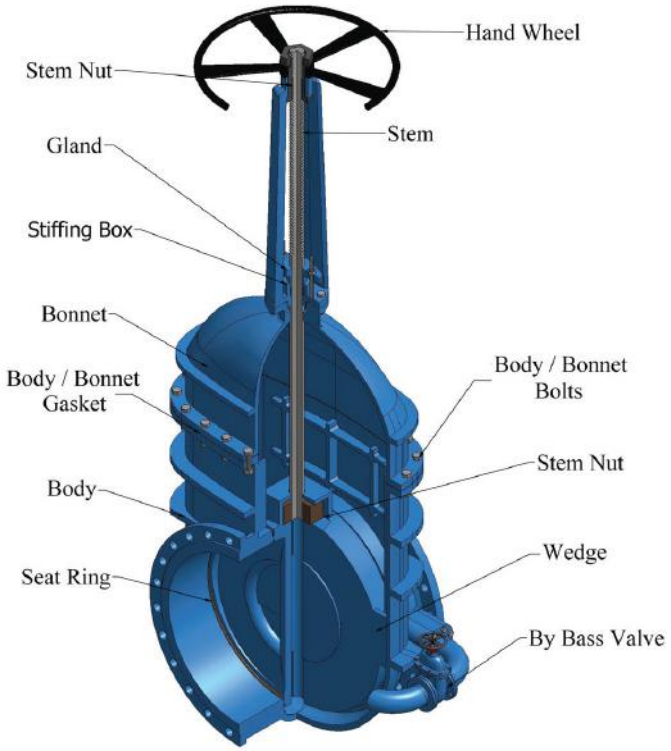
Our special wedge design allows the seating surfaces of the wedge to move independently and adopt to minor inaccuracies in seating surface angles and movement of the seats owing to pipeline loads or thermal expansion of the piping system. Thereby ensuring drop tight shut off

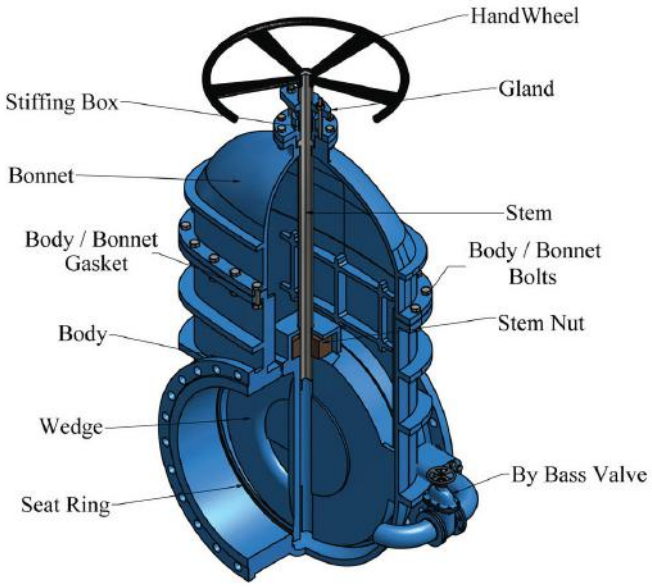
GATE VALVE SELECTION



GCF SERIES	SERIES 3100	SERIES 3300	SERIES 4300
Available Sizes	DN 100 & DN 150	From DN 80 to DN 900	From DN 400 to DN 1800
International Standard	ISO 5752 Series 14	ISO 5996 Short Series	ISO 5996 Long Series
	DN 3352 Series F4	ISO 5752 Series 3 , BS 5163	ISO 5752 series 15
Commercial Name	Flat Type	Short Bed Type	Long Bed or Oval Type
Application	Water, Sewage and industrial Applications		
Max. working pressure	10 bars for DN 80-150	10-16 bar for DN ≤ 600	10-16 bar
	6 bars for DN 200 – 300	8 bar for DN 700-800	for all DN Sizes
	4 bars for DN 350 – 500	6 bar for DN 900	
	2.5 bar for DN 600		
Operation	Manual with hand wheel	Manual with hand wheel	Manual with hand wheel
	Manual with Gear Box	Manual with Gear Box	Manual with Gear Box
	Electrically Operated	Electrically Operated	Electrically Operated
	Pneumatically operated		
Special Requirements	Extension Spindle	Extension Spindle	Extension Spindle
	T-Key	By-Bass valve (From DN400)	By-Bass valve (From DN400)
	Air vent	Drain plug	Drain plug
		Air vent	Air vent
		Lifting eyes	Lifting eyes

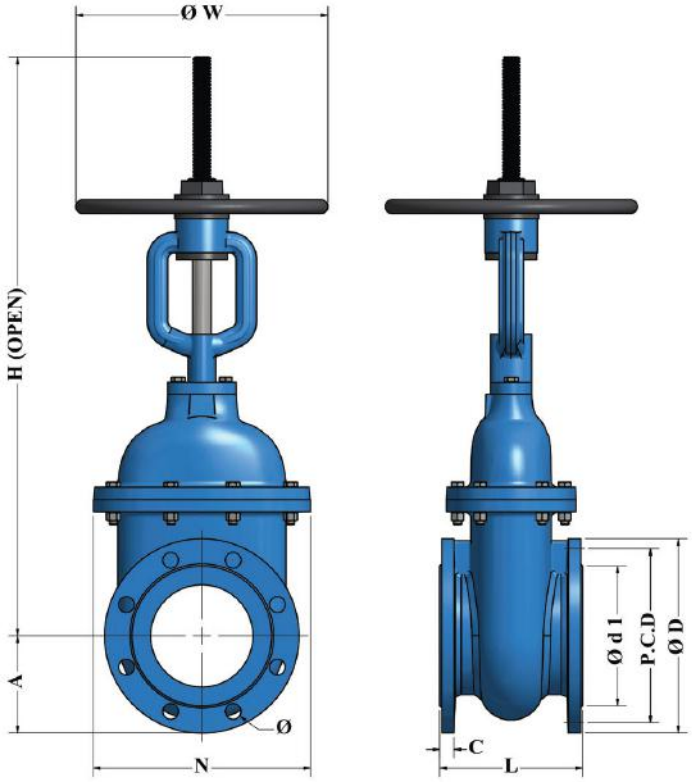
MATERIAL STANDARDS (DN50 : DN1000)



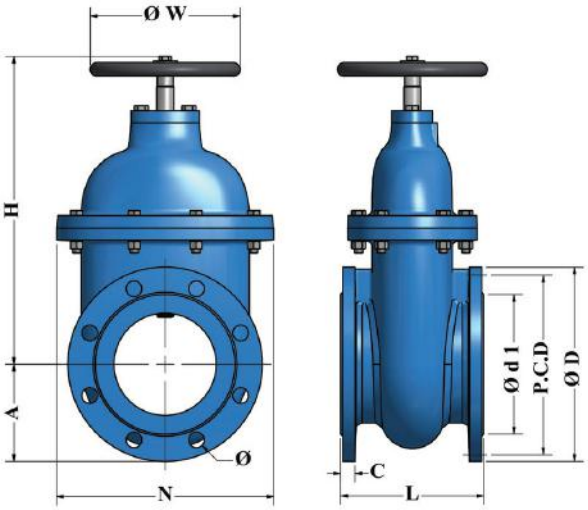


Part Name	Material	Standard	Remarks
Body, Bonnet, Wedge, Stuffing box and Yoke	Ductile Iron A	ISO 1083 grade 500-7	Equivalent to DIN 1693 (GGG 50), EN GJS-500-7 and ASTM A536-80 GRADE 70-50-05
	Ductile Iron B	ISO 1083 grade 400-15	Equivalent to GGG 40, EN GJS-400-15 and BS2789:1985 GRADE 400/7
	Ductile Iron C	BS2789:1985 (GRADE 400/12)	ASTM536-80 GRADE60-40-18
	Gray Cast Iron	GG25	BS1452:1990, ASTM48-76 GRADE40B
Body and Wedge Seat Rings	Leaded Gun Metal	LG2	BS1400:1961, LG2-C, ASTM B143-1961G1A
	Hight Tensile Bronze		BS2874CZ116
	Commercial Brass		
Stem	Martensitic Stainless Steel	X20CR13	BS420S37, ASTM276-1967GRADE420
	Austenitic Stainless Steel	S.S 304 or S.S 316	BS304S15, ASTM276-1967GRADE304
Stem Nut	Leaded Gun Metal	LG2	BS1400:1961, LG2-C, ASTM B143-1961G1A
	Hight Tensile Bronze		BS2874CZ116
Body Bonnet Bolts & Nuts	Galvanized Steel	Grade 4.6 and 8.8	BS970-1955EN3D
	Austenitic Stainless Steel	S.S 304 and S.S 316	BS304S15, ASTM276-1967GRADE304
Hand Wheel	Ductile Iron A	ISO 1083 grade 500-7	Equivalent to DIN 1693 (GGG 50), EN GJS-500-7 and ASTM A536-80 GRADE 70-50-05
	Fabricated Steel	St 37	BS970-1955EN3D
Sealing	EPDM		
Packing	PTFE		

DIMENSION TABLE FOR PN10 FOR 3100 METAL SEATED GATE VALVES



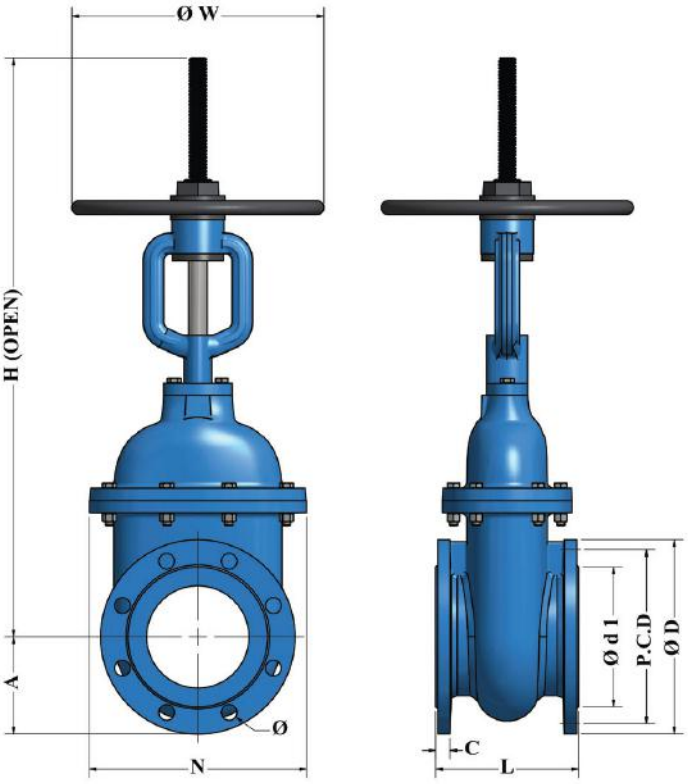
OS&Y



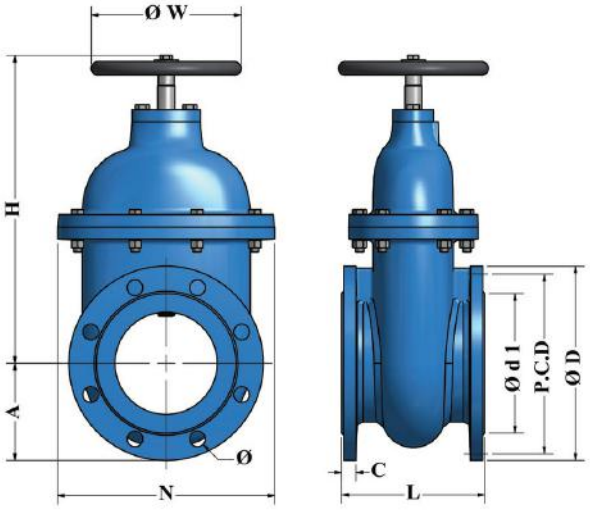
NRS

DN	L	A	N	W	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
80	180	100	250	180	310	520	200	132	19	160	19	8	M16
100	190	110	260	180	350	650	220	156	19	180	19	8	M16
150	210	150	320	200	460	850	285	211	19	240	23	8	M20
200	230	170	390	200	510	960	340	266	20	295	23	8	M20
250	250	200	450	350	650	1000	400	319	22	355	23	12	M20
300	270	230	500	350	715	1115	455	370	24.5	410	23	12	M20
350	290	260	570	500	1400	1950	505	429	24.5	470	23	16	M20
400	310	290	630	500	1500	2100	565	480	24.5	525	28	16	M24
450	330	320	690	600	1600	2500	615	530	26.5	585	28	20	M24
500	350	360	765	600	1800	2600	670	582	26.5	650	28	20	M24
600	390	420	890	600	2000	3000	780	682	30	770	31	20	M27

DIMENSION TABLE FOR PN16 FOR 3100 METAL SEATED GATE VALVES



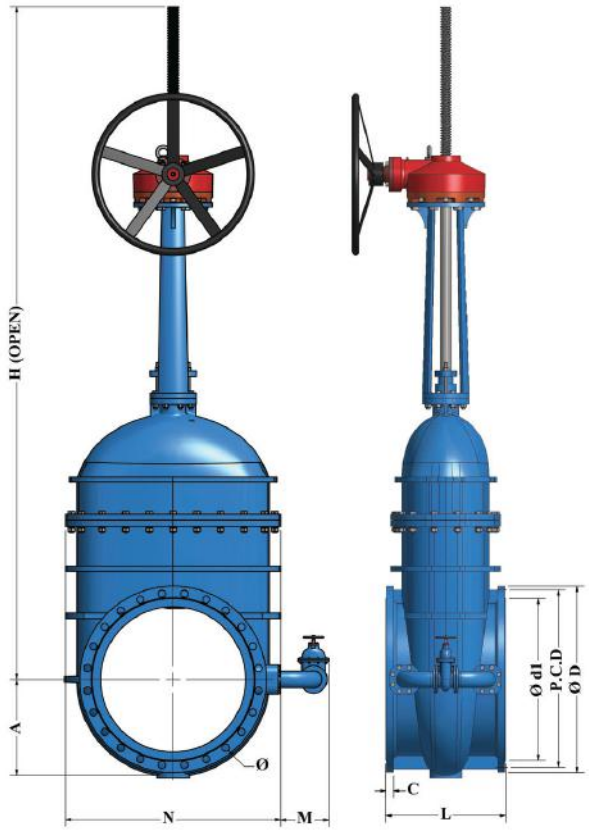
OS&Y



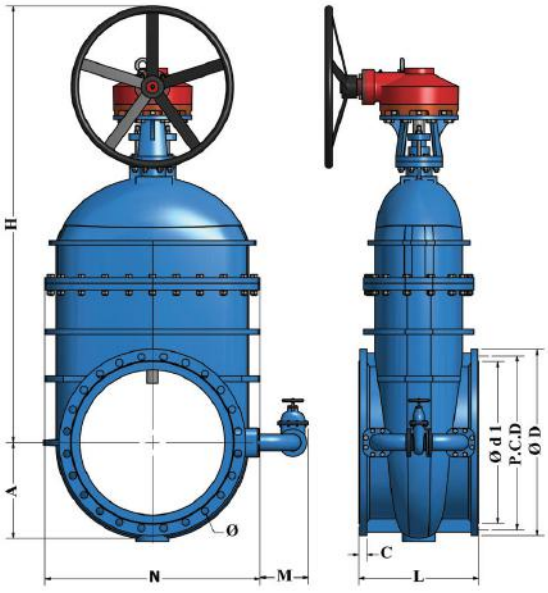
NRS

DN	L	A	N	W	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
80	180	100	250	180	310	520	200	132	19	160	19	8	M16
100	190	110	260	180	350	650	220	156	19	180	19	8	M16
150	210	150	320	200	460	850	285	211	19	240	23	8	M20
200	230	170	390	200	510	960	340	266	20	295	23	12	M20
250	250	200	450	350	650	1000	400	319	22	355	28	12	M24
300	270	230	500	350	715	1115	455	370	24.5	410	28	12	M24
350	290	260	570	500	1400	1950	520	429	26.5	470	28	16	M24
400	310	290	630	500	1500	2100	580	480	28	525	31	16	M27
450	330	320	690	600	1600	2500	640	548	34.5	585	31	20	M27
500	350	360	765	600	1800	2600	715	609	31.5	650	34	20	M30
600	390	420	890	600	2000	3000	840	720	36	770	27	20	M33

DIMENSION TABLE FOR PN10 FOR 3300 METAL SEATED GATE VALVES



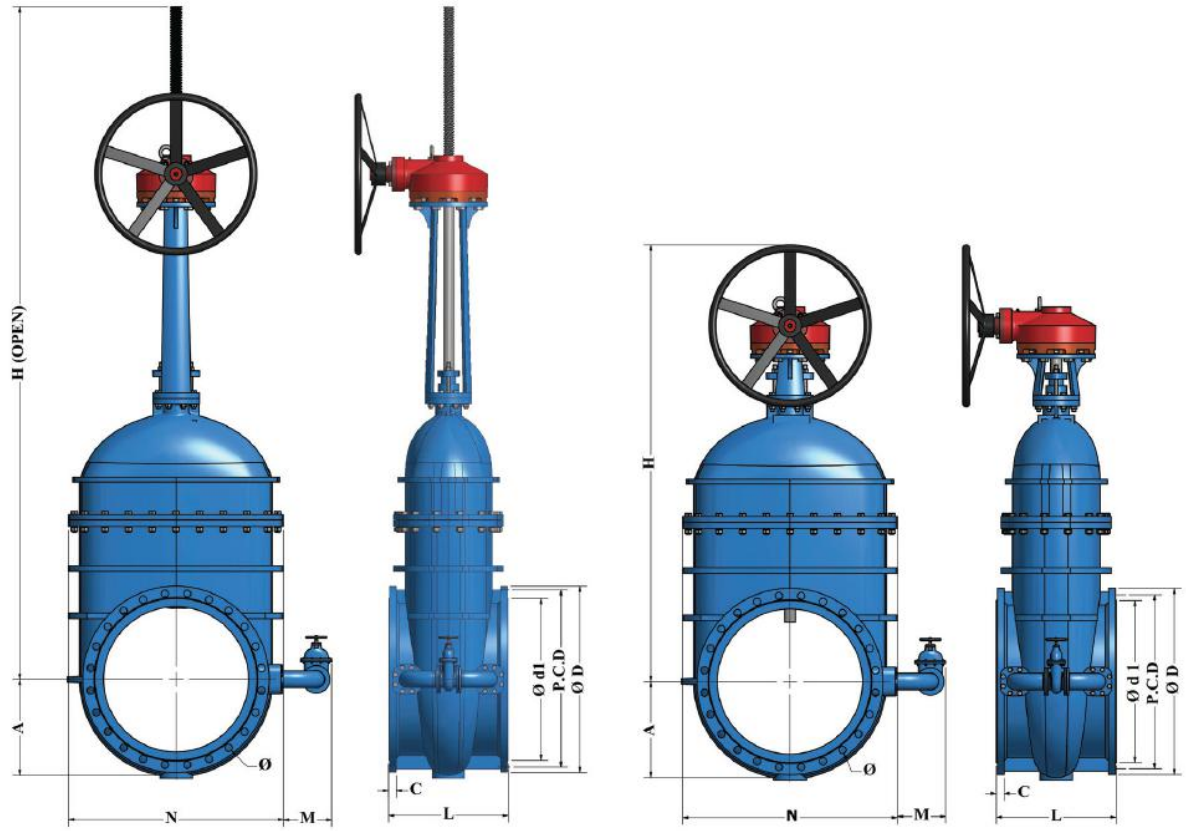
OS&Y



NRS

DN	L	A	N	M	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
50	178	93	200	-	275	405	165	99	19	125	19	4	M16
65	190	98	206	-	320	415	186	118	19	140	19	4	M16
80	203	100	250	-	345	550	200	132	19	160	19	8	M16
100	229	110	270	-	360	660	220	156	19	180	19	8	M16
150	267	150	330	-	460	840	285	211	19	240	23	8	M20
200	292	190	410	-	700	1200	340	266	20	295	23	8	M20
250	330	220	480	-	800	1320	400	319	22	355	23	12	M20
300	356	230	520	-	850	1450	455	370	24.5	410	23	12	M20
350	381	300	620	250	1350	1900	505	429	24.5	470	23	16	M20
400	406	350	680	300	1500	2000	565	480	24.5	525	28	16	M24
450	432	400	820	300	1650	2300	615	530	26.5	585	28	20	M24
500	457	400	900	300	1750	2400	670	582	26.5	650	28	20	M24
600	508	500	1000	300	2000	3200	780	682	30	770	31	20	M27
700	610	520	1100	350	2200	3500	895	794	32.5	840	31	24	M27
800	660	540	1250	350	2500	4200	1015	901	35	950	34	24	M30

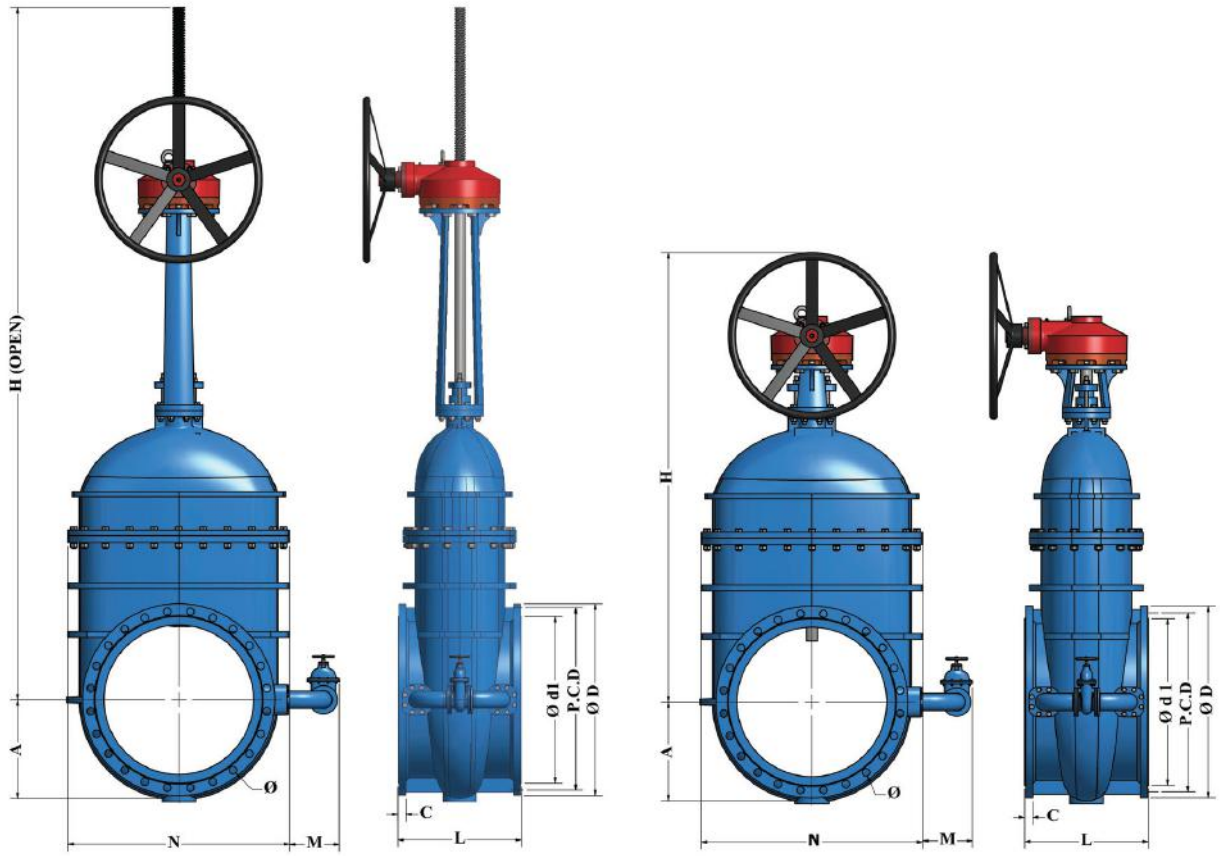
DIMENSION TABLE FOR PN16 FOR 3300 METAL SEATED GATE VALVES



OS&Y **NRS**

DN	L	A	N	M	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
50	178	93	200	-	275	405	165	99	19	125	19	4	M16
65	190	98	206	-	320	415	186	118	19	140	19	4	M16
80	203	100	250	-	345	550	200	132	19	160	19	8	M16
100	229	110	270	-	360	660	220	156	19	180	19	8	M16
150	267	150	330	-	460	840	285	211	19	240	23	8	M20
200	292	190	410	-	700	1200	340	266	20	295	23	12	M20
250	330	220	480	-	800	1320	400	319	22	355	28	12	M24
300	356	230	520	-	850	1450	455	370	24.5	410	28	12	M24
350	381	300	620	250	1350	1900	520	429	26.5	470	28	16	M24
400	406	350	680	300	1500	2000	580	480	28	525	31	16	M27
450	432	400	820	300	1650	2300	640	548	34.5	585	31	20	M27
500	457	400	900	300	1750	2400	715	609	31.5	650	34	20	M30
600	508	500	1000	300	2000	3200	840	720	36	770	27	20	M33
700	610	520	1100	350	2200	3500	910	794	39.5	840	37	24	M33
800	660	540	1250	350	2500	4200	1025	901	43	950	40	24	M36

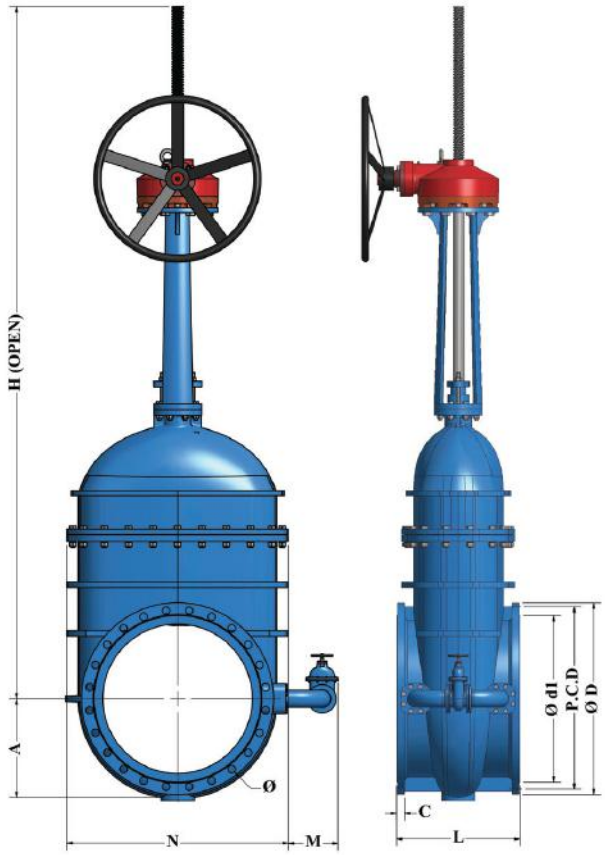
DIMENSION TABLE FOR PN10 FOR 4300 METAL SEATED GATE VALVES



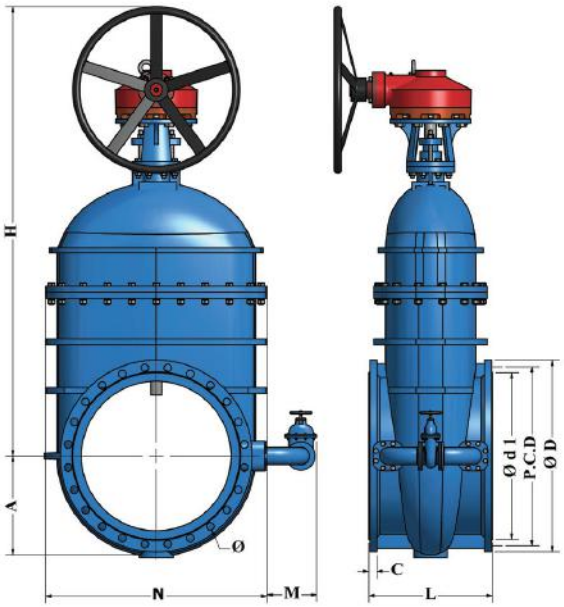
OS&Y NRS

DN	L	A	N	M	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
400	600	450	780	300	1500	2100	565	480	24.5	515	28	16	M24
450	650	480	840	300	1600	2500	615	530	26.5	565	28	20	M24
500	700	520	920	300	1800	2600	670	582	26.5	620	28	20	M24
600	800	580	1050	300	2000	3000	780	682	30	725	31	20	M27
700	900	600	1110	400	2100	3500	895	794	32.5	840	31	24	M27
800	1000	660	1300	400	2400	4100	1015	901	35	950	34	24	M30
900	1100	720	1400	400	3000	4500	1115	1001	37.5	1050	34	28	M30
1000	1200	780	1500	400	3100	4600	1230	1112	40	1160	37	28	M33

DIMENSION TABLE FOR PN16 FOR 4300 METAL SEATED GATE VALVES



OS&Y



NRS

DN	L	A	N	M	MAX. HEIGHT		PN10 BAR FLANGS DIMENSIONS						
					H (NRS)	H (OPEN) OS & Y	ØD	Ød1	C	PCD	Hole (Ø)	NO.	BOLT SIZE
400	600	450	780	300	1500	2100	580	480	28	525	31	16	M27
450	650	480	840	300	1600	2500	640	548	34.5	585	31	20	M27
500	700	520	920	300	1800	2600	715	609	31.5	650	34	20	M30
600	800	580	1050	300	2000	3000	840	720	36	770	27	20	M33
700	900	600	1110	400	2100	3500	910	794	39.5	840	37	24	M33
800	1000	660	1300	400	2400	4100	1025	901	43	950	40	24	M36
900	1100	720	1400	400	3000	4500	1125	1001	46.5	1050	40	28	M36
1000	1200	780	1500	400	3100	4600	1255	1112	50	1170	43	28	M39

HYDRAULIC TESTING FOR DIFFERENT

SIERRA valves go through hydraulic test according to ISO 5208 leakage rate A and EN 122661-. A comparison in the following table shows the different leakage rates for different valve classifications

LEAKAGE RATES

Test Fluid	Unit Leakage Rate	Rate A	Rate B	Rate C	Rate D
Liquid	Mm3/sec	No Leakage	0.01 X DN	0.03 x DN	0.1 X DN

SHELL AND CLOSURE TEST

- Shell test pressure shall be 1.5 x CWP (cold working pressure)
- Closure / Disc pressure shall be 1.1 x CWP
- Visually detectable leakage from any external surface of the shell not be permitted.
- Visually detectable leakage from the disc in the closed position during the duration of test shall not be permitted.

Valve Size	Shell (sec)	Closure (sec)
65 ≤ DN ≥ 150	60	60
200 ≤ DN ≥ 300	120	120
DN ≥ 350	300	120

SIERRA Model 3100 – 3300 - 4300 is a ductile iron full bore double – flanged metal – seated gate valve designed to comply with ISO 5996 and BS 5163 for water, wastewater, irrigation and sewage applications.

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3100-3300-4300 METAL SEATED GATE VALVE