



# STRONG WATERWORKS ENGINEERING CO.,LTD.

## บริษัท สตรอง วิศวกรรมการประปา จำกัด

สำนักงาน 59/162 ถนนนิมิตรใหม่ แขวงสามวา เขตคลองสามวา กรุงเทพฯ 10510 โทร.02-987-9790-1 โทรสาร. 02-987-9792

โรงงาน 3/19-20 หมู่ 13 แขวงลำลูกกา เขตลำลูกกา จังหวัดปทุมธานี 12150 E-mail:sww2002us@yahoo.com



### STANDARD FOR GREY IRON PIPE FITTINGS FOR WATER PRESSURE LINES

(STANDARD SPECIFICATION OF CAST IRON AND MILD STEEL FOR AC, PVC, PE, GS, SP, PIPES.)

(STANDARD SPECIFICATION OF CAST IRON GATE VALVE AND CAST IRON FITTINGS)



ISO 9001:2000  
AJAT07/Q2178



ISO 9001:2000  
AJAT07/11722



ผลิต-จำหน่าย อุปกรณ์ประปาเหล็กหล่อตามมาตรฐาน มอก.918-2535,256-2540,382-2531,383-2529,1368-2539

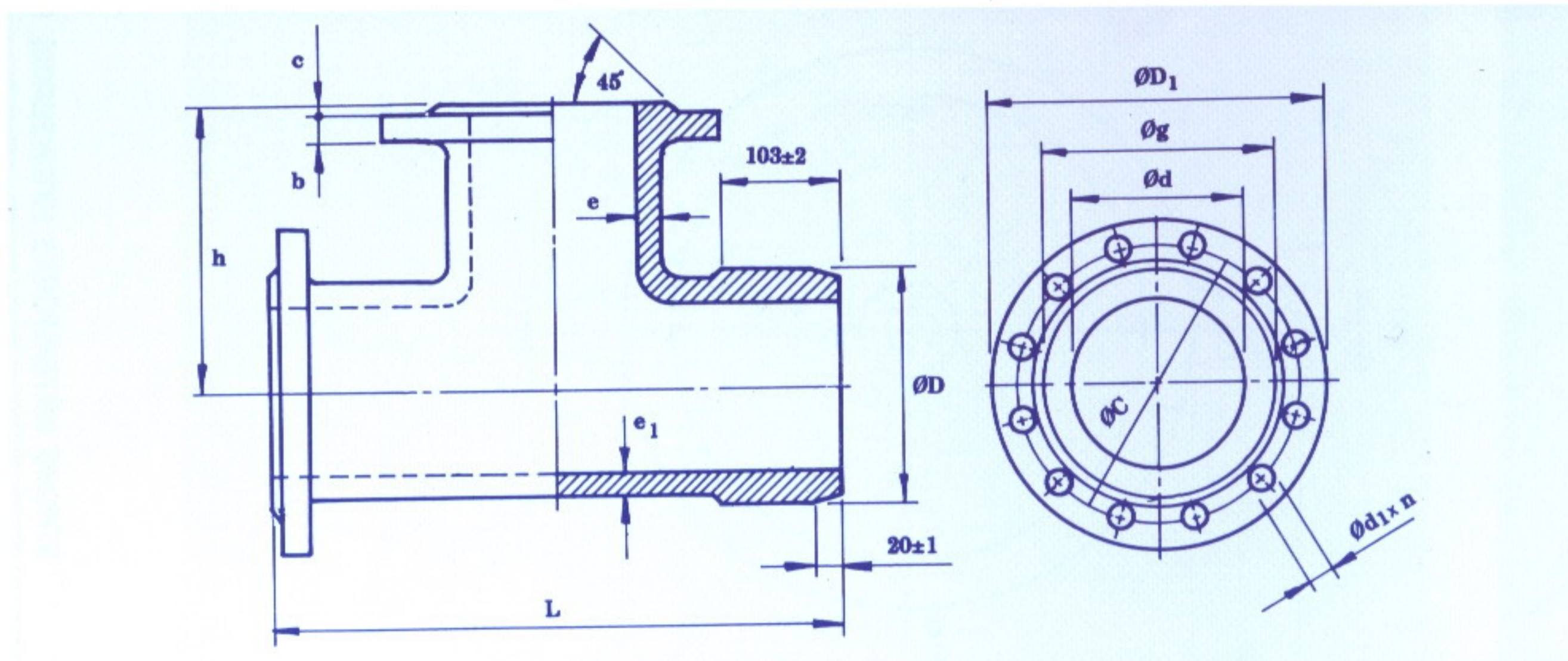


มาตรฐานการประปาส่วนภูมิภาค (PWA)



อุปกรณ์ท่อ/ข้อต่อเหล็กกล้าเชื่อมด้วยไฟฟ้าสำหรับงานชลประทาน

# CAST IRON TEES WITH FLANGE BRANCH AND SINGLE FLANGE MAIN



BODY				BRANCH												
DN	D	e <sub>1</sub>	L	DN	D <sub>1</sub>	C	g	b	C	d <sub>1</sub>	n	e	h			
100	120	±0.6	10.5	400	80	200	160	±1.5	133	21	+4.5	1-3	19	4	10.5	190
					100	220	180	±1.5	153	22	+4.5	1-3	19	8	10.5	200
150	176	±0.6	11.7	500	80	200	160	±1.5	133	21	+4.5	1-3	19	4	11.7	215
					100	220	180	±1.5	153	22	+4.5	1-3	19	8	11.7	225
					150	285	240	±1.5	209	23	+4.5	1-3	23	8	11.7	250
200	234	±0.6	12.8	600	80	200	160	±1.5	133	21	+4.5	1-3	19	4	12.8	240
					100	220	180	±1.5	153	22	+4.5	1-3	19	8	12.8	250
					150	285	240	±1.5	209	23	+4.5	1-3	23	8	12.8	275
					200	340	295	±1.5	264	24.5	+4.5	1-3	23	8	12.8	300
250	288	±0.6	14.0	700	80	200	160	±1.5	133	21	+4.5	1-3	19	4	13	265
					100	220	180	±1.5	153	22	+4.5	1-3	19	8	13.5	275
					150	285	240	±1.5	209	23	+4.5	1-3	23	8	14	300
					200	340	295	±1.5	264	24.5	+4.5	1-3	23	8	14	325
					250	395	350	±1.5	319	26	+4.5	1-3	23	12	14	350
300	344	±0.6	15.2	800	80	200	160	±1.5	133	21	+4.5	1-3	19	4	13	290
					100	220	180	±1.5	153	22	+4.5	1-3	19	8	13.5	300
					150	285	240	±1.5	209	23	+4.5	1-3	23	8	15	325
					200	340	295	±1.5	264	24.5	+4.5	1-3	23	8	15.2	350
					250	395	350	±1.5	319	26	+4.5	1-3	23	12	15.2	375
					300	445	400	±1.5	367	27.5	+4.5	1-4	23	12	15.2	400
400	460	±0.8	17.5	900	200	340	295	±1.5	264	24.5	+4.5	1-3	23	8	16.5	350
					250	395	350	±1.5	319	26	+4.5	1-3	23	12	17.5	350
					300	445	400	±1.5	367	27.5	+4.5	1-4	23	12	17.5	450
					400	565	515	±2.0	477	30	+4.5	1-4	28	16	17.5	450
500	580	±0.8	19.8	1000	250	395	350	±1.5	319	26	+4.5	1-3	23	12	18	400
					300	445	400	±1.5	367	27.5	+4.5	1-4	23	12	19.5	500
					400	565	515	±2.0	477	30	+4.5	1-4	28	16	19.8	500
					500	670	620	±2.0	582	33	+6.5	1-4	28	20	19.8	500
600	694	±1.0	22.2	1100	300	445	400	±1.5	367	27.5	+4.5	1-4	23	12	19.5	550
					400	565	515	±2.0	477	30	+4.5	1-4	28	16	22.2	550
					500	670	620	±2.0	582	33	+6.5	1-4	28	20	22.2	550
					600	780	725	±2.0	682	36	+6.5	1-5	31	20	22.2	550

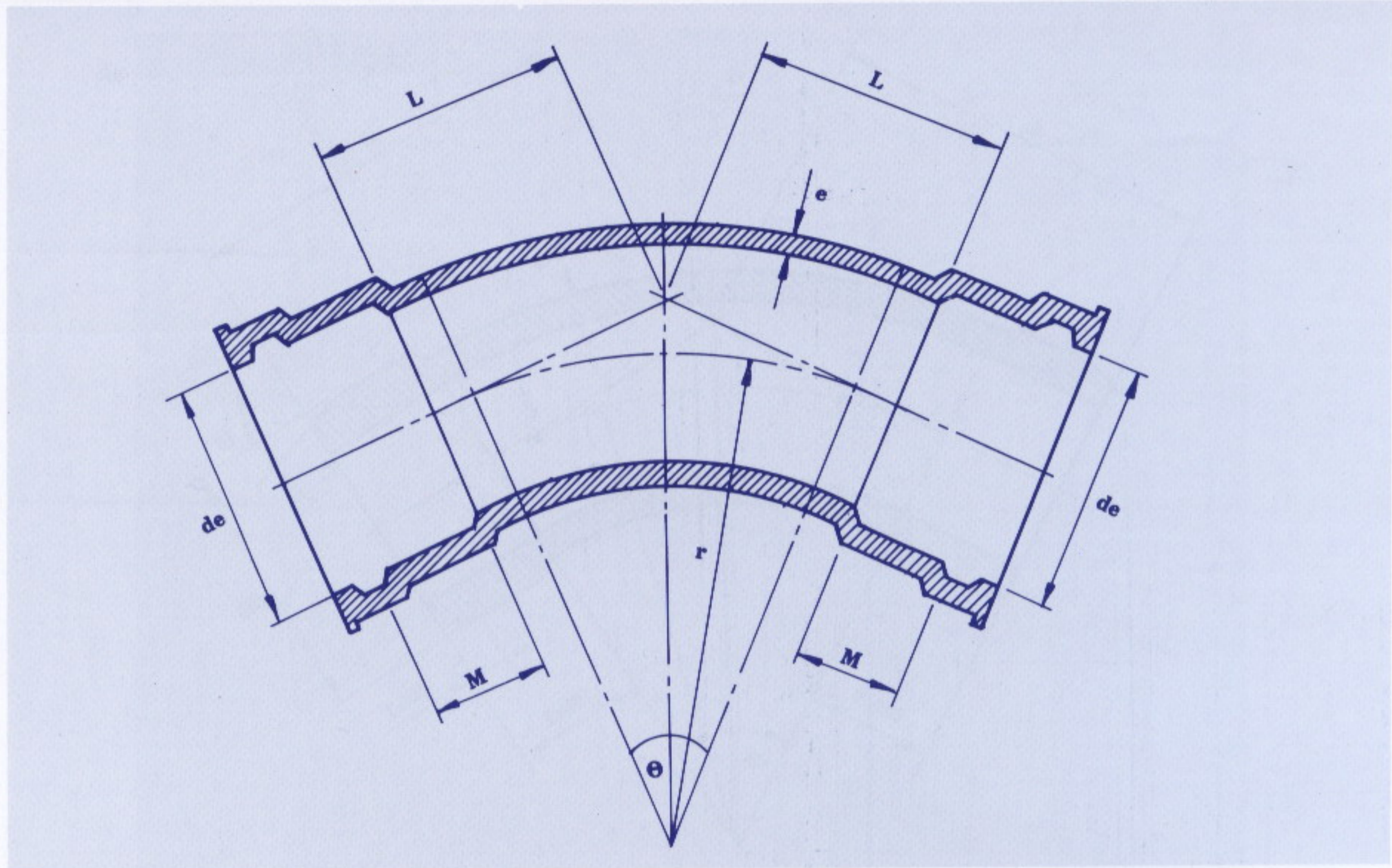
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- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992





# CAST IRON BENDS

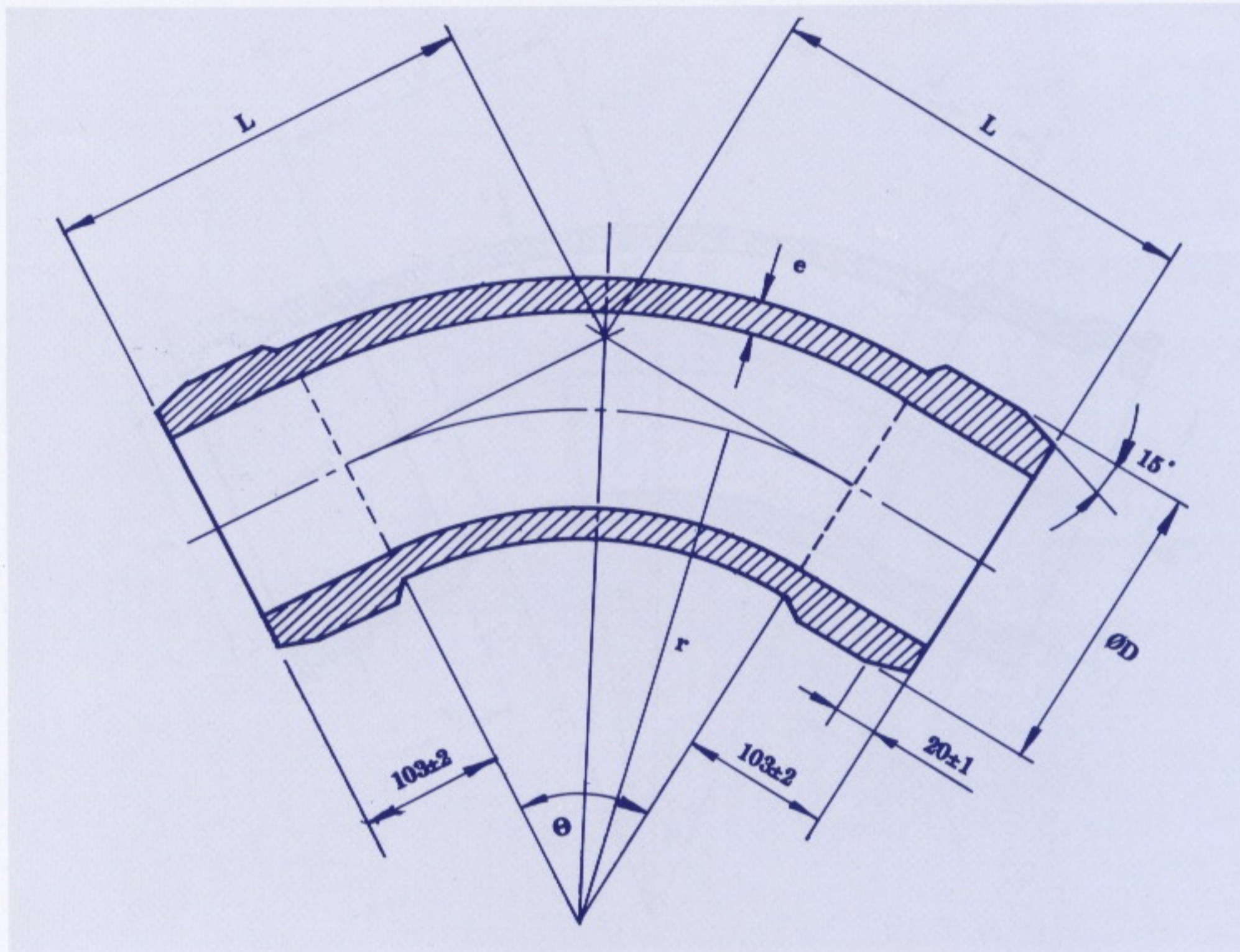


BEND°	DN	e	r	L	d <sub>e</sub>		M
					min	max	min
22 1/2	100	10.5	300	105	114.5	117	50
	150	11.7	350	120	165.7	169	61
	200	12.8	400	135	216.9	220	72
	250	14.0	450	150	268.1	271	84
	300	15.2	500	164	319.3	322	84
	400	17.5	600	194	421.7	425	98
	500	19.8	700	224	522.1	525	113
	600	22.2	800	254	633.8	635	129
45	100	10.5	300	169	114.5	117	50
	150	11.7	350	195	165.7	169	61
	200	12.8	400	221	216.9	220	72
	250	14.0	450	246	268.1	271	84
	300	15.2	500	272	319.3	322	84
	400	17.5	600	324	421.7	425	98
	500	19.8	700	375	522.1	525	113
	600	22.2	800	426	633.8	635	129
90	100	10.5	155	200	114.5	117	50
	150	11.7	200	250	165.7	169	61
	200	12.8	245	300	216.9	220	72
	250	14.0	290	350	268.1	271	84
	300	15.2	335	400	319.3	322	84
	400	17.5	-	-	421.7	425	98
	500	19.8	-	-	522.1	525	113
	600	22.2	-	-	633.8	635	129

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# CAST IRON BOTH PLAIN ENDS

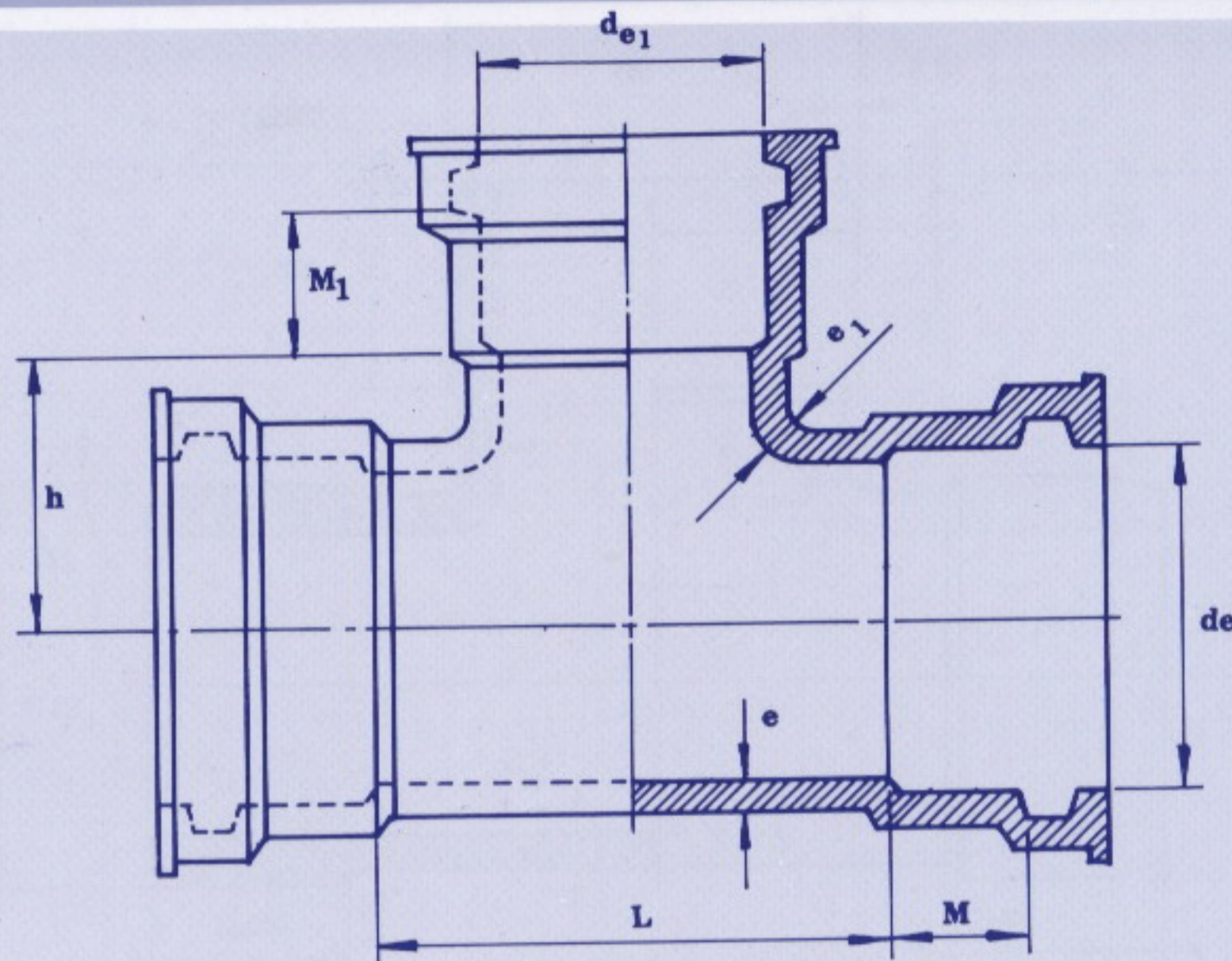


BEND °	DN	e	L	r	ØD
22 1/2	80	10.0	215	580	98
	100	10.5	220	600	120
	150	11.7	233	650	176
	200	12.8	243	700	234
	250	14.0	253	750	288
	300	15.2	263	800	344
	400	17.5	283	900	460
	500	19.8	303	1000	580
	600	22.2	343	1200	694
45	80	10.0	240	331	98
	100	10.5	258	374	120
	150	11.7	303	483	176
	200	12.8	348	591	234
	250	14.0	393	700	288
	300	15.2	438	809	344
	400	17.5	352	600	460
	500	19.8	393	700	580
	600	22.2	434	800	694
90	80	10.0	240	137	98
	100	10.5	258	155	120
	150	11.7	303	200	176
	200	12.8	348	245	234
	250	14.0	393	290	288
	300	15.2	438	335	344
	400	17.5	528	425	460
	500	19.8	618	515	580
	600	22.2	708	605	694

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# CAST IRON TEES

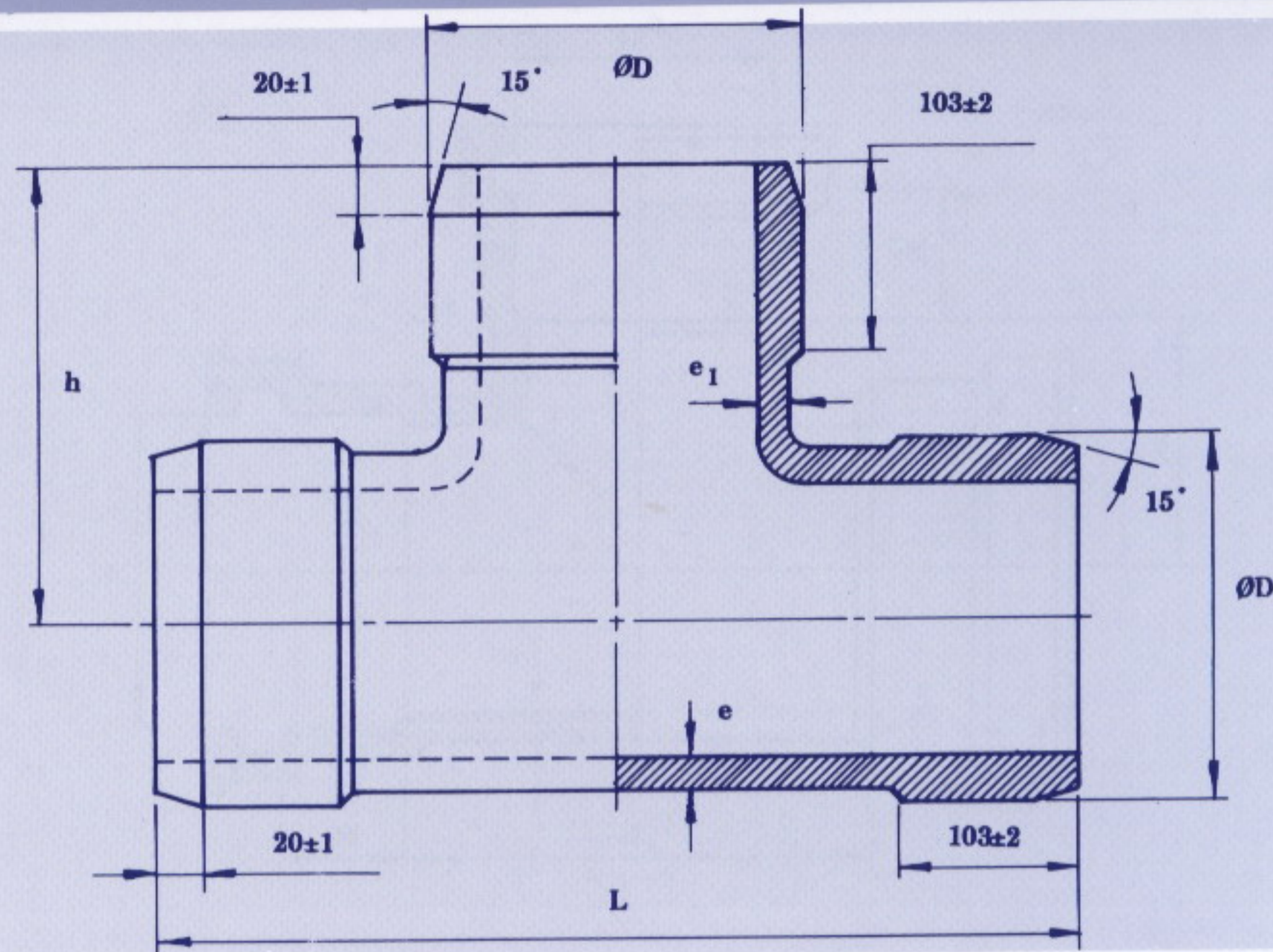


DN	BODY					DN	REDUCE				
	min $d_e$	max	L	M min	e		min $d_e$	max	$M_1$	$e_1$	h
100	114.5	117	240	50	10.5	80	89.5	92	44	10.5	116
						100	114.5	117	50	10.5	120
150	165.7	169	310	61	11.7	80	89.5	92	44	11.7	141
						100	114.5	117	50	11.7	145
						150	165.7	169	61	11.7	155
200	216.9	220	380	72	12.8	80	89.5	92	44	12.8	166
						100	114.5	117	50	12.8	170
						150	165.7	169	61	12.8	180
						200	216.9	220	72	12.8	190
250	268.1	271	450	84	14.0	80	89.5	92	44	13.0	191
						100	114.5	117	50	13.5	195
						150	165.7	169	61	14.0	205
						200	216.9	220	72	14.0	215
						250	268.1	271	84	14.0	225
300	319.3	322	520	84	15.2	80	89.5	92	44	13.0	216
						100	114.5	117	50	13.5	220
						150	165.7	169	61	15.0	230
						200	216.9	220	72	15.2	240
						250	268.1	271	84	15.2	250
						300	319.3	322	84	15.2	260
400	421.7	425	660	98	17.5	200	216.9	220	72	16.5	290
						250	268.1	271	84	17.5	300
						300	319.3	322	84	17.5	310
						400	421.7	425	98	17.5	330
500	522.1	525	800	113	19.8	250	268.1	271	84	18.0	350
						300	319.3	322	84	19.5	360
						400	421.7	425	98	19.5	380
						500	522.1	525	113	19.8	400
600	633.8	635	940	129	22.2	300	319.3	322	84	19.5	410
						400	421.7	425	98	22.2	430
						500	522.1	525	113	22.2	450
						600	633.8	635	129	22.2	470

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# CAST IRON ALL PLAIN END TEES

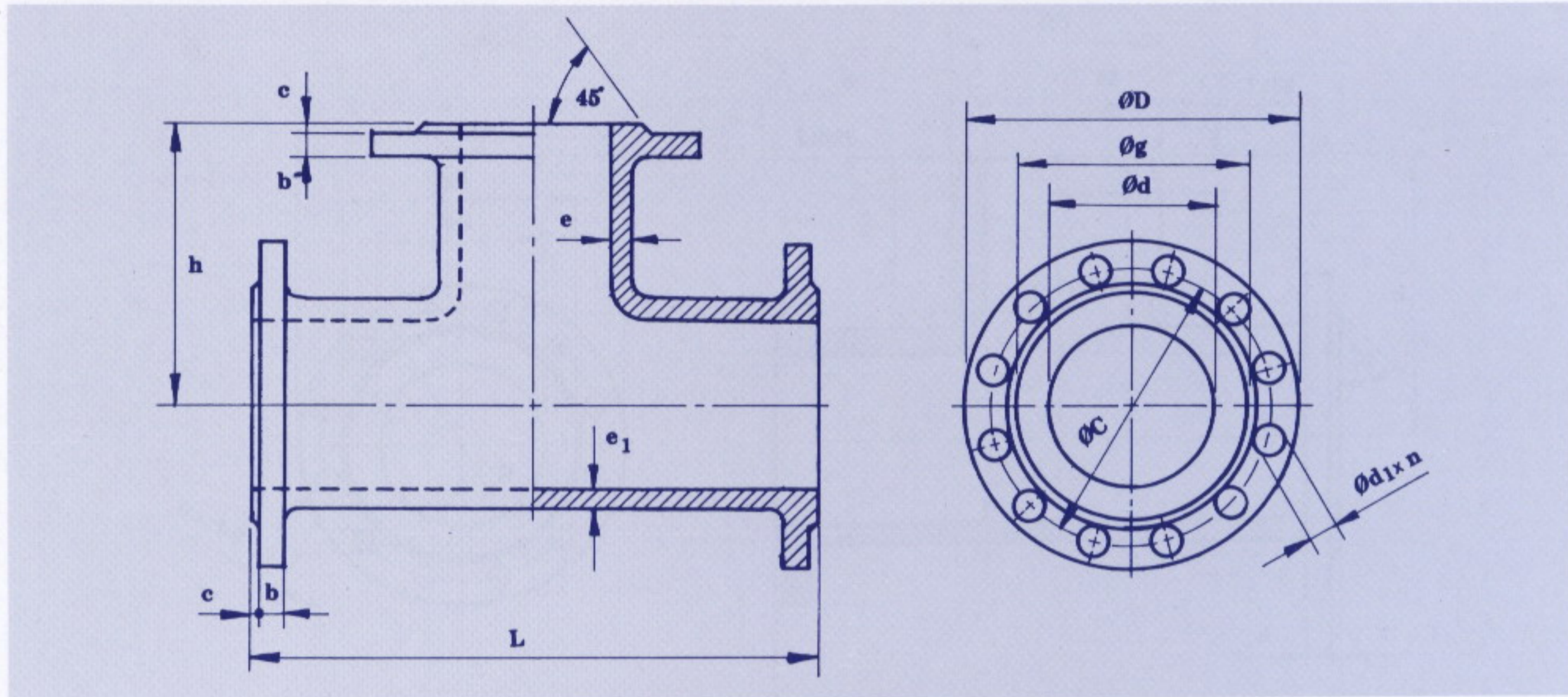


BODY				REDUCE				
DN	ØD	e	L	DN	ØD	h	e1	
100	120	± 0.6	400	80	98	± 0.6	190	10.5
				100	120	± 0.6	200	10.5
150	176	± 0.6	500	80	98	± 0.6	215	11.7
				100	120	± 0.6	225	11.7
				150	176	± 0.6	250	11.7
200	234	± 0.6	600	80	98	± 0.6	240	12.8
				100	120	± 0.6	250	12.8
				150	176	± 0.6	275	12.8
				200	234	± 0.6	300	12.8
250	288	± 0.6	700	80	98	± 0.6	265	13.0
				100	120	± 0.6	275	13.5
				150	176	± 0.6	300	14.0
				200	234	± 0.6	325	14.0
				250	288	± 0.6	350	14.0
300	344	± 0.6	800	80	98	± 0.6	290	13.0
				100	120	± 0.6	300	13.5
				150	176	± 0.6	325	15.0
				200	234	± 0.6	350	15.2
				250	288	± 0.6	375	15.2
				300	344	± 0.6	400	15.2
400	460	± 0.8	900	200	234	± 0.6	350	16.5
				250	288	± 0.6	350	17.5
				300	344	± 0.6	450	17.5
				400	460	± 0.8	450	17.5
500	580	± 0.8	1000	250	288	± 0.6	400	18.0
				300	344	± 0.6	500	19.5
				400	460	± 0.8	500	19.8
				500	580	± 0.8	500	19.8
600	694	± 1.0	1100	300	344	± 0.6	550	19.5
				400	460	± 0.8	550	22.2
				500	580	± 0.8	550	22.2
				600	694	± 1.0	550	22.2

- NOTES**
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# CAST IRON ALL FLANGE TEES



BODY										BRANCH									
DN	D	C	g	b	c	d <sub>1</sub>	n	L	e <sub>1</sub>	DN	D	C	g	b	c	d <sub>1</sub>	n	e	h
100	220	180	153	22.0	1-3	19	8	400	105	80	200	160	133	21	1-3	19	4	10.5	190
										100	220	180	153	22	1-3	19	8	10.5	200
150	285	240	209	23.0	1-3	23	8	500	117	80	200	160	133	21	1-3	19	4	11.7	215
										100	220	180	153	22	1-3	19	8	11.7	225
										150	285	240	209	23	1-3	23	8	11.7	250
200	340	295	264	24.5	1-3	23	8	600	128	80	200	160	133	21	1-3	19	4	12.8	240
										100	220	180	153	22	1-3	19	8	12.8	250
										150	285	240	209	23	1-3	23	8	12.8	275
										200	340	295	264	24.5	1-3	23	8	12.8	300
250	395	350	319	26.0	1-3	23	12	700	140	80	200	160	133	21	1-3	19	4	13.0	265
										100	220	180	153	22	1-3	19	8	13.5	275
										150	285	240	209	23	1-3	23	8	14.0	300
										200	340	295	264	24.5	1-3	23	8	14.0	325
										250	395	350	319	26	1-3	23	12	14.0	350
300	445	400	367	27.5	1-4	23	12	800	152	80	200	160	133	21	1-3	19	4	13.0	290
										100	220	180	153	22	1-3	19	8	13.5	300
										150	285	240	209	23	1-3	23	8	15.0	325
										200	340	295	264	24.5	1-3	23	8	15.2	350
										250	395	350	319	26	1-3	23	12	15.2	375
										300	445	400	367	27.5	1-4	23	12	15.2	400
400	565	515	477	30.0	1-4	28	16	900	175	200	340	295	264	24.5	1-3	23	8	16.5	350
										250	395	350	319	26	1-3	23	12	17.5	350
										300	445	400	367	27.5	1-4	23	12	17.5	450
										400	565	515	477	30	1-4	28	16	17.5	450
500	670	620	582	33.0	1-4	28	20	1000	198	250	395	350	319	26	1-3	23	12	18.0	400
										300	445	400	367	27.5	1-4	23	12	19.5	500
										400	565	515	477	30	1-4	28	16	19.8	500
										500	670	620	582	33	1-4	28	20	19.8	500
600	780	725	682	36.0	1-5	31	20	1100	222	300	445	400	367	27.5	1-4	23	12	19.5	550
										400	565	515	477	30	1-4	28	16	22.2	550
										500	670	620	582	33	1-4	28	20	22.2	550
										600	780	725	682	36	1-5	31	20	22.2	550

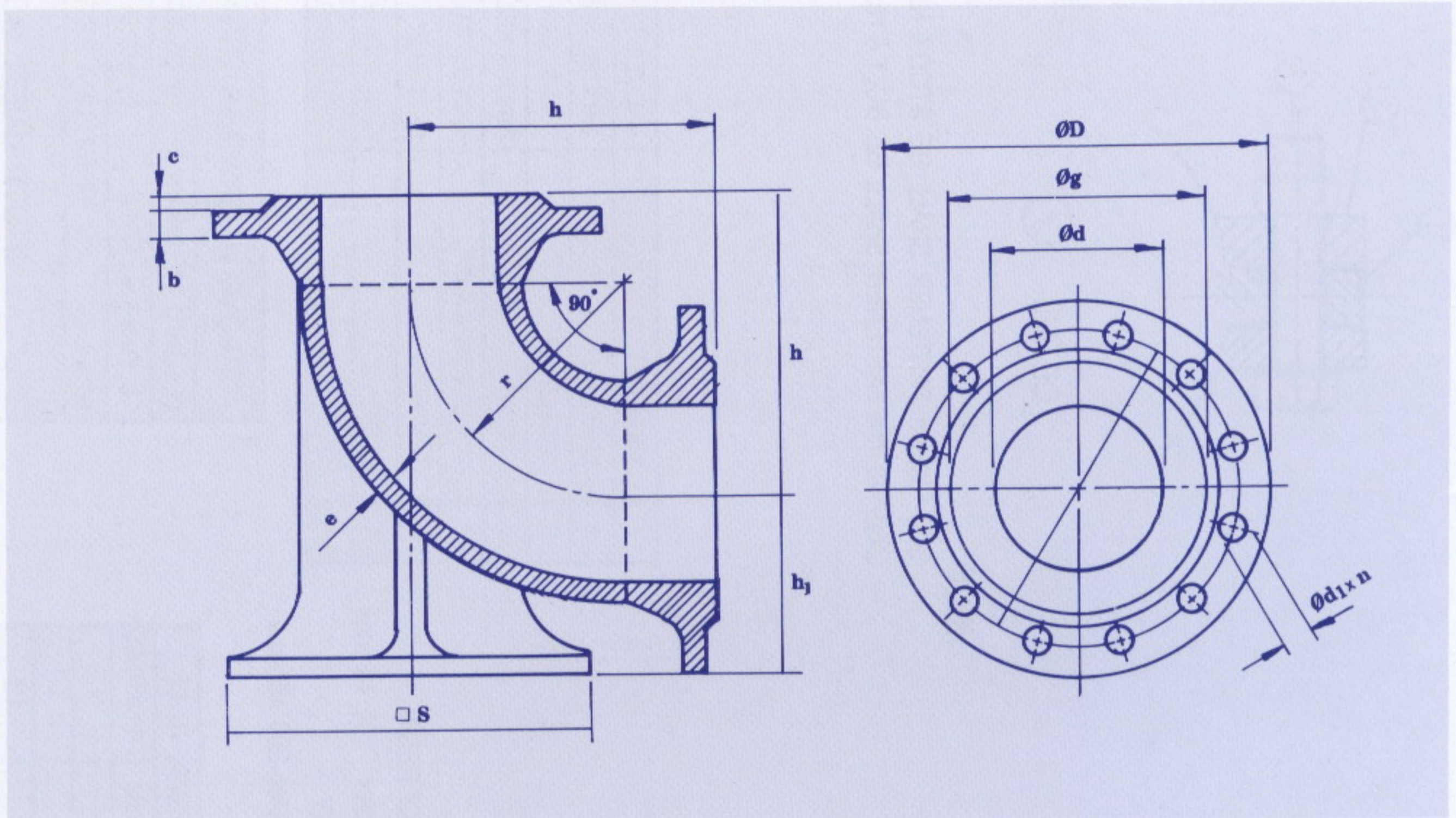
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## NOTES

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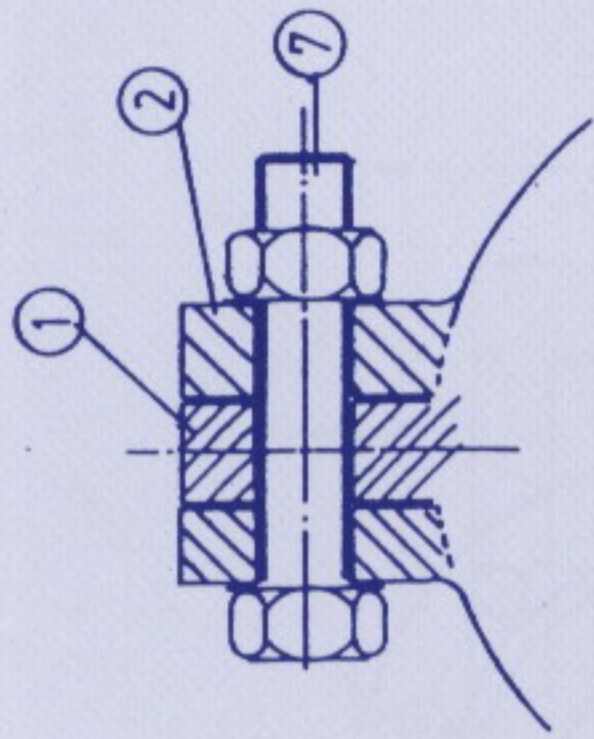
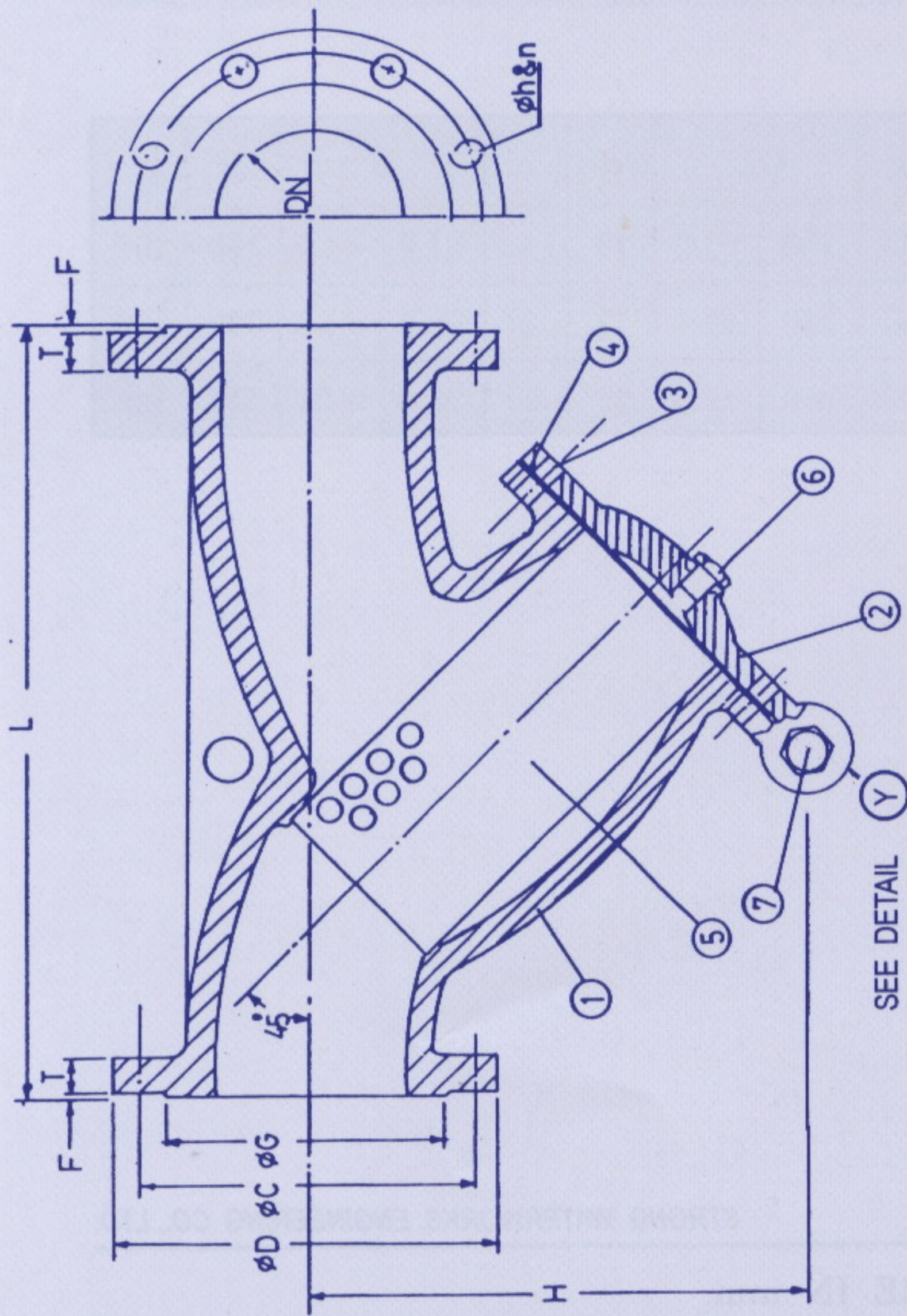
# CAST IRON DUCKFOOT BENDS



DN	e	r	S	c	ØD	Øg	ØC	Ød <sub>1</sub>	n	b	h	h <sub>1</sub>			
80	10.0	137	180	1-3	200	±2	133	160	±1.5	19	4	21.0	+4.5	180	108
100	10.5	155	200	1-3	220	±2	153	180	±1.5	19	8	22.0	+4.5	200	120
150	11.7	200	250	1-3	285	±2	209	240	±1.5	23	8	23.0	+4.5	250	150

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DETAIL (Y)

**NOTE**

Ø50-150 mm. FASTENER SHALL BE STUD & NUT  
 Ø50-150 mm. FASTENER SHALL BE BOLT & NUT

DN	STANDARD FLANGE PN.10										DRAIN PLUG	
	M.M.	Inch	D <sup>o</sup>	C <sup>o</sup>	G <sup>o</sup>	h <sup>o</sup>	n	T	F	H		L
50	2	2	165	125	102	19	4	18	3	168	250	1/2"
65	2 1/2	2 1/2	185	145	117	19	4	21	3	212	285	1/2"
80	3	3	200	160	133	19	4	21	3	242	315	1/2"
100	4	4	220	180	153	19	8	22	3	284	370	1/2"
125	5	5	250	210	171	19	8	22	3	325	420	1/2"
150	6	6	285	240	209	23	8	23	3	370	490	1/2"
200	8	8	340	295	264	23	8	24.5	3	440	570	3/4"
250	10	10	395	350	319	23	12	26	3	515	680	3/4"
300	12	12	445	400	367	23	12	27.5	3	600	800	1"
400	16	16	565	515	477	28	16	30	4	775	770	2 1/2"
500	20	20	670	620	582	28	20	33	4	850	1050	2 1/2"

**COATING**

**INTERIOR** NON-TOXIC EPOXY RESIN  
 NOT LESS THAN 100 Microns

**EXTERIOR** COAL TAR EPOXY  
 NOT LESS THAN 200 Microns

SCREEN DIMENSION (M.M)	
DN	Dia of holes THICKNESS
50-125	1.6 1
150-200	3.2 1
250-400	9.5 1.5
500	12.7 1.5

NO.	PARTS	MATERIAL	STANDARD	QTY
7	HINGE PIN	GALVZED STEEL	TIS.171	1
6	DRAIN PLUG	GALVZED STEEL	TIS.171	1
5	SCREEN	SUS 304		1
4	GASKET	RUBBER NBR	BS 2494	1
3	COVER BOLT & NUT	GALVZED STEEL	TIS.171	1 set
2	COVER	CAST IRON	TIS.256-2540	1
1	BODY	CAST IRON	TIS.256-2540	1

STRONG WATERWORKS ENGINEERING CO., LTD.

DESIGNED BY **S. Pong.** DRAWN BY KOT C CHECKED BY PASUT P APPROVED BY TAMANOON T

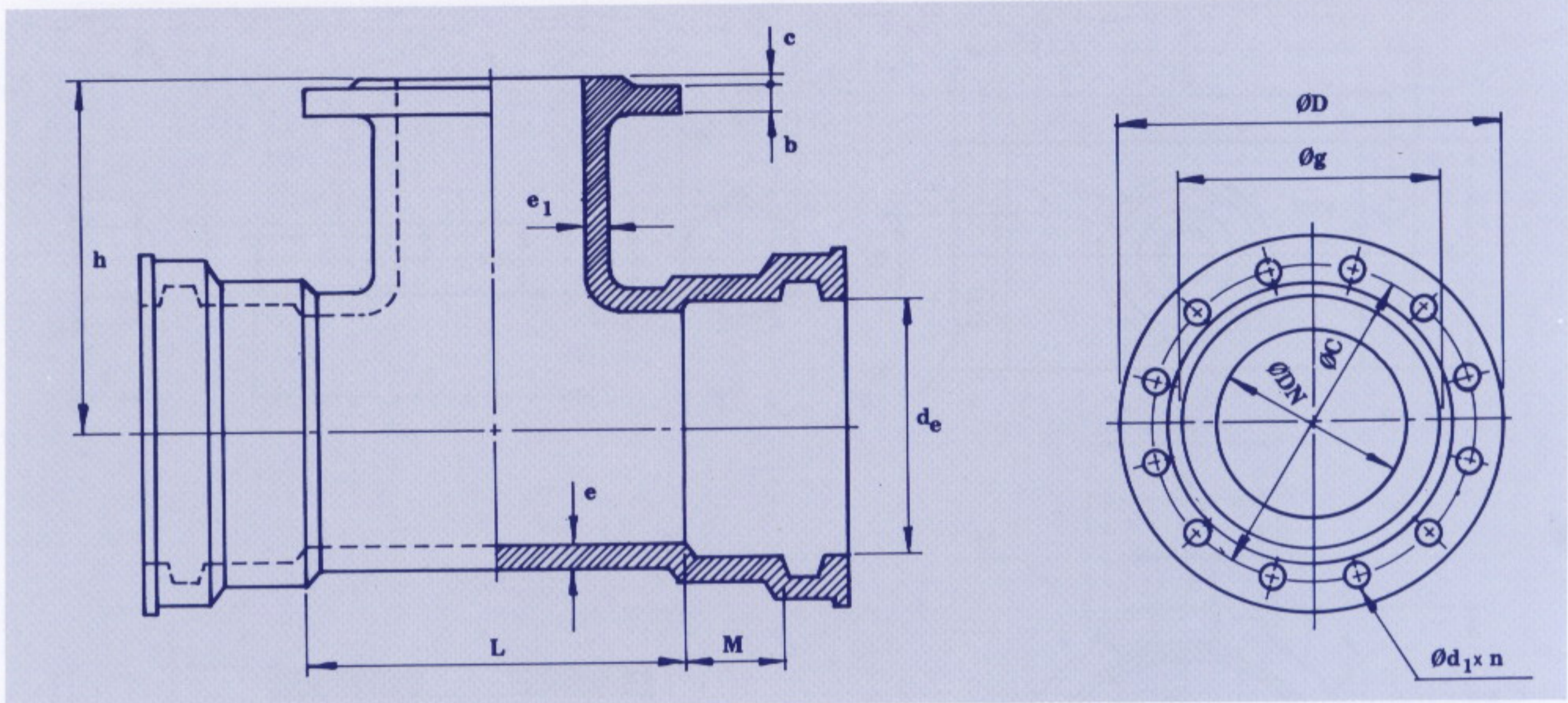
Scale: DRAWN DATE 7.12.2001

Y-STRAINER Ø50 - 500 MM.

TYPE

DRAWING NO. YS - 001

# CAST IRON TEES WITH FLANGED BRANCH

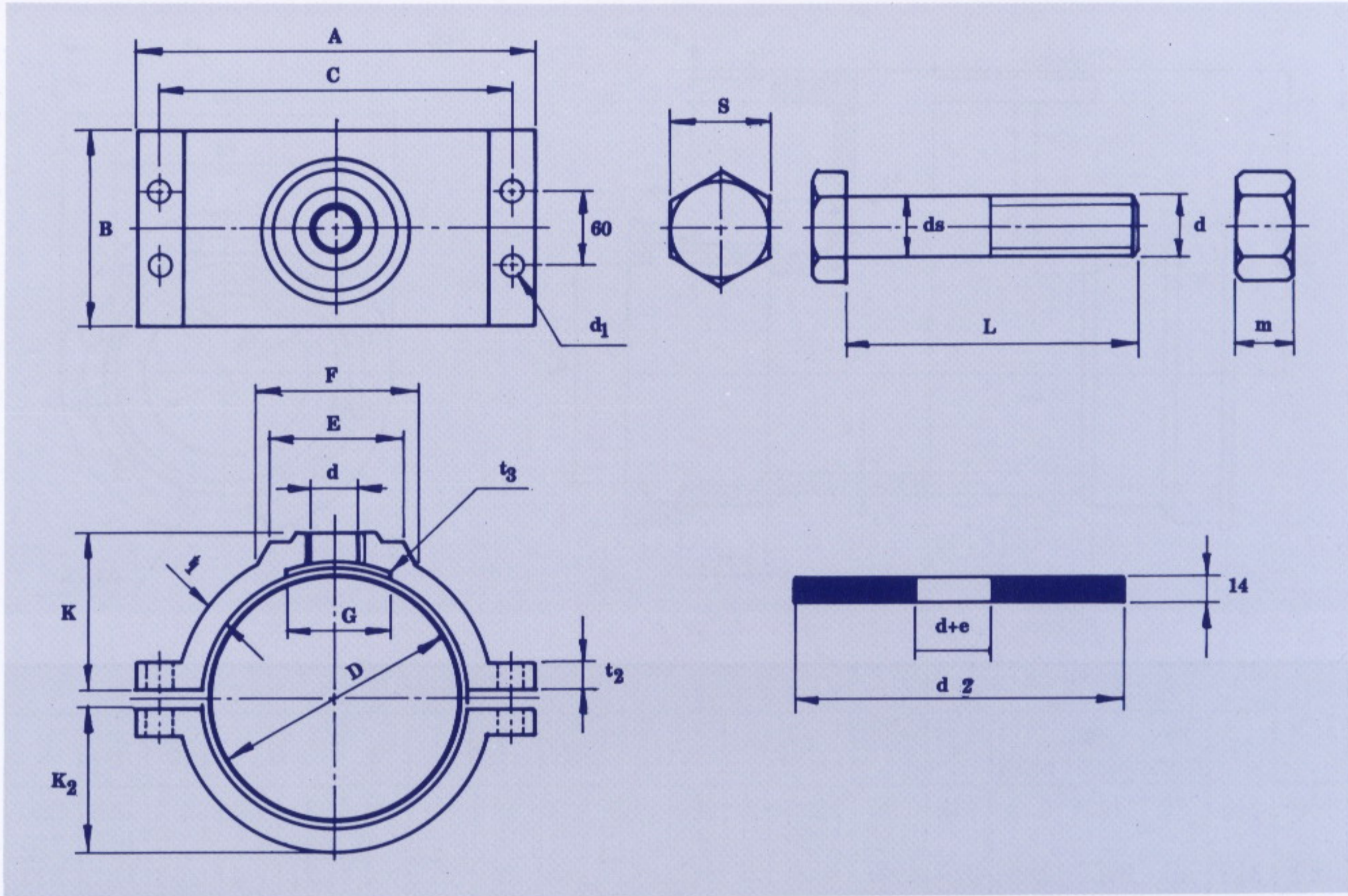


DN	BODY					DN	BRANCH												
	L	M <sub>min</sub>	d <sub>e</sub> <sub>min</sub>	d <sub>e</sub> <sub>max</sub>	e		D	C	g	d	n	b	c	e <sub>1</sub>	h				
100	240	50	114.5	117	105	80	200 ± 2	160 ± 1.5	133	19		4	21	+ 4.5	1-3	10.5	200		
						100	220 ± 2	180 ± 1.5	153	19	8	22	+ 4.5	1-3	10.5	200			
150	310	61	165.7	169	117	80	200 ± 2	160 ± 1.5	133	19		4	21	+ 4.5	1-3	11.7	225		
						100	220 ± 2	180 ± 1.5	153	19	8	22	+ 4.5	1-3	11.7	225			
						150	285 ± 2	240 ± 1.5	209	23	8	23	+ 4.5	1-3	11.7	225			
200	380	72	216.9	220	128	80	200 ± 2	160 ± 1.5	133	19		4	21	+ 4.5	1-3	12.8	250		
						100	220 ± 2	180 ± 1.5	153	19	8	22	+ 4.5	1-3	12.8	250			
						150	285 ± 2	240 ± 1.5	209	23	8	23	+ 4.5	1-3	12.8	250			
						200	340 ± 3	295 ± 1.5	264	23	8	24.5	+ 4.5	1-3	12.8	250			
250	450	84	268.1	271	140	80	200 ± 2	160 ± 1.5	133	19		4	21	+ 4.5	1-3	13.0	275		
						100	220 ± 2	180 ± 1.5	153	19	8	22	+ 4.5	1-3	13.5	275			
						150	285 ± 2	240 ± 1.5	209	23	8	23	+ 4.5	1-3	14.0	275			
						200	340 ± 3	295 ± 1.5	264	23	8	24.5	+ 4.5	1-3	14.0	275			
						250	395 ± 3	350 ± 1.5	319	23	12	26	+ 4.5	1-3	14.0	275			
300	520	84	319.3	322	152	80	200 ± 2	160 ± 1.5	133	19		4	21	+ 4.5	1-3	13.0	300		
						100	220 ± 2	180 ± 1.5	153	19	8	22	+ 4.5	1-3	13.5	300			
						150	285 ± 2	240 ± 1.5	209	23	+ 1	8	23	+ 4.5	1-3	15.0	300		
						200	340 ± 3	295 ± 1.5	264	23	8	24.5	+ 4.5	1-3	15.2	300			
						250	395 ± 3	350 ± 1.5	319	23	12	26	+ 4.5	1-3	15.2	300			
						300	445 ± 5	400 ± 1.5	367	23	12	27.5	+ 4.5	1-4	15.2	400			
400	660	98	421.7	425	175	200	340 ± 3	295 ± 1.5	264	23		8	24.5	+ 4.5	1-3	16.5	350		
						250	395 ± 3	350 ± 1.5	319	23	12	26	+ 4.5	1-3	17.5	350			
						300	445 ± 5	400 ± 1.5	367	23	12	27.5	+ 4.5	1-4	17.5	450			
						400	565 ± 5	515 ± 2	477	28	16	30	+ 4.5	1-4	17.5	450			
500	800	113	522.1	525	198	250	395 ± 3	350 ± 1.5	319	23		12	26	+ 4.5	1-3	18.0	400		
						300	445 ± 5	400 ± 1.5	367	23	12	27.5	+ 4.5	1-4	19.5	500			
						400	565 ± 5	515 ± 2	477	28	16	30	+ 4.5	1-4	19.8	500			
						500	670 ± 5	620 ± 2	582	28	20	33	+ 6.5	1-4	19.8	500			
600	940	129	633.8	635	222	300	445 ± 5	400 ± 1.5	367	23		12	27.5	+ 4.5	1-4	19.5	550		
						400	565 ± 5	515 ± 2	477	28	16	30	+ 4.5	1-4	22.2	550			
						500	670 ± 5	620 ± 2	582	28	20	33	+ 6.5	1-4	22.2	550			
						600	780 ± 5	725 ± 2	682	31	20	36	+ 6.5	1-5	22.2	550			

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

# CAST IRON SERVICE CLAMP FOR P.V.C PIPE



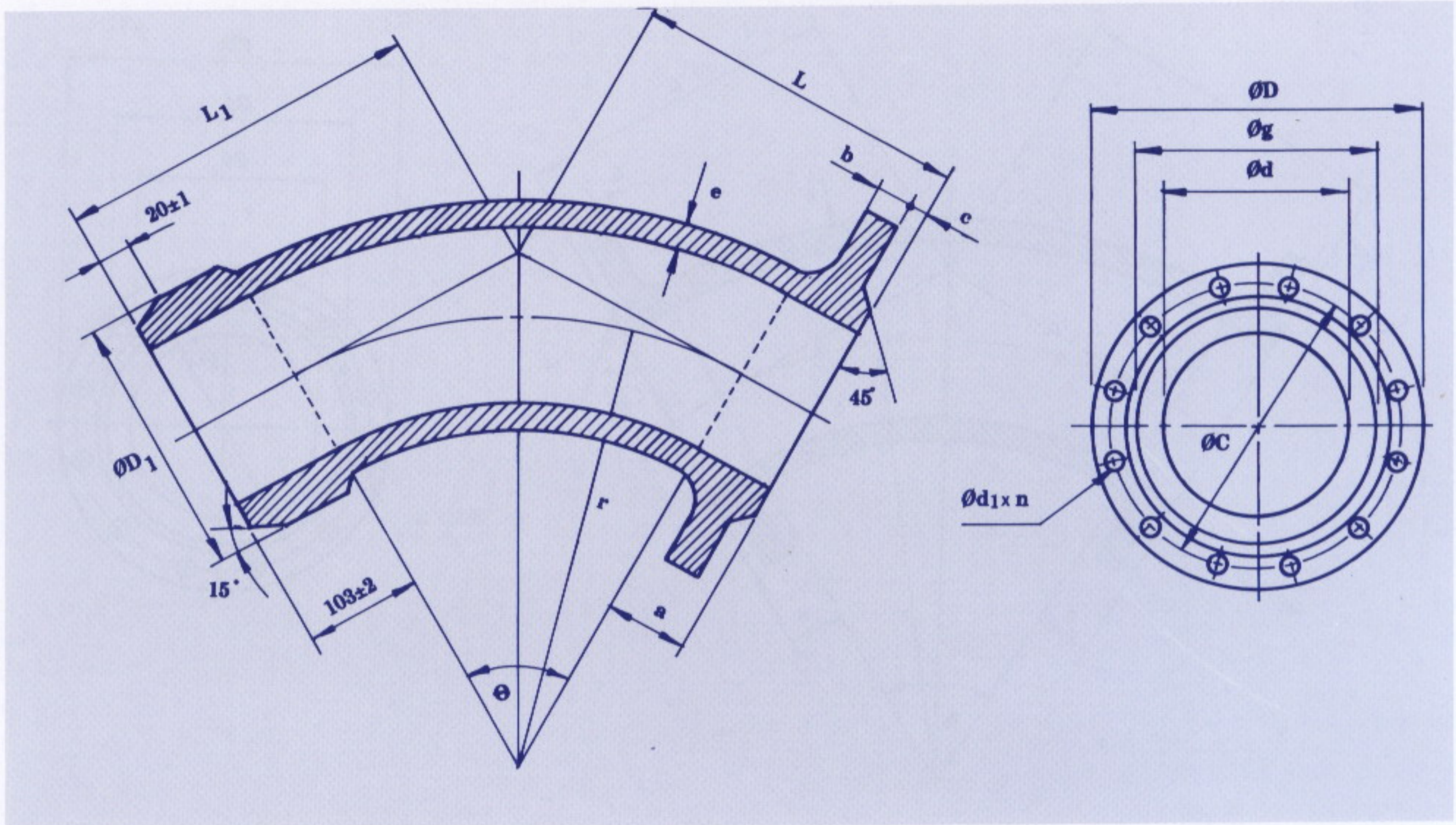
DN	DIMENSIONS																	
	DI	d	A	B	C	d <sub>1</sub>	BOLT & NUT	E	F	G	H	H <sub>1</sub>	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	t <sub>4</sub>	d <sub>2</sub>	e
100	118	1/2" - 1 1/8"	220	120	180	19	M. 16	90	110	90	73.8	85.0	10.5	20	2.5	6	90	1/4"
150	169	1/2" - 2 1/8"	285	150	240	23	M. 20	100	120	100	106.2	91.7	11.7	20	3.0	8	100	1/2"
200	220	1/2" - 2 1/8"	340	150	295	23	M. 20	100	120	100	131.7	118.3	12.8	20	3.0	8	100	1/2"
250	271	1/2" - 2 1/8"	395	150	350	23	M. 20	100	120	100	157.2	145.0	14.0	20	3.0	8	100	1/2"
300	322	1/2" - 2 1/8"	445	150	400	23	M. 20	100	120	100	182.7	171.7	15.2	20	3.0	8	100	1/2"

BOLT & NUT (d)	L (min)	ds		M		S
		max	min	max	min	
M. 16	75	16.70	15.30	13.55	12.45	24-0.84
M. 20	80	20.84	19.16	16.55	15.45	30-0.84

STRONG WATERWORKS ENGINEERING CO., LTD.

**NOTE.** ALL DIMENSIONS ARE IN mm.

# CAST IRON FLANGED AND PLAIN ENDS

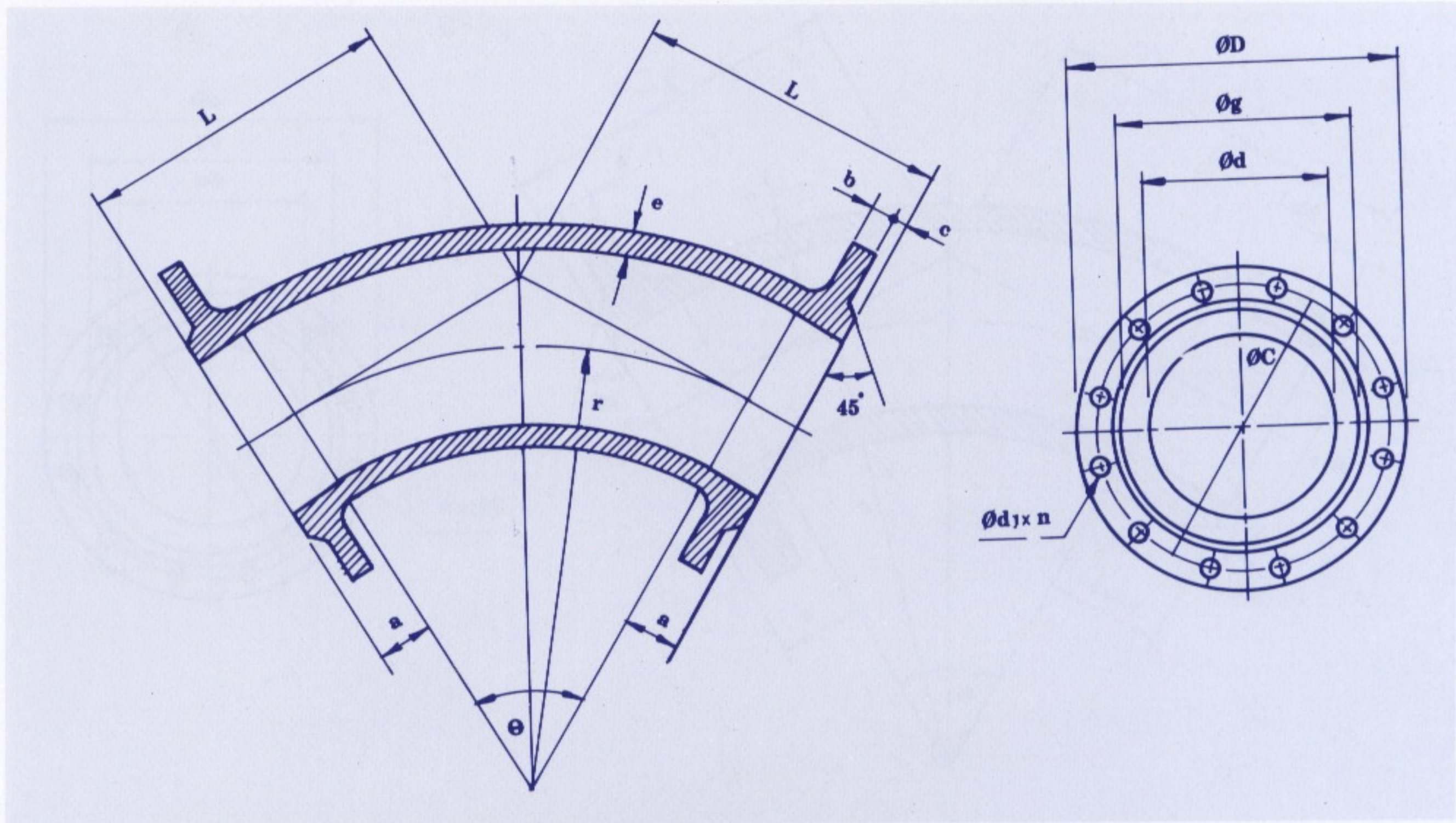


BEND °	DN	e	r	a	L	L <sub>1</sub>	ØD <sub>1</sub>	b	c	ØD	Øg	Ød	ØC	Ød <sub>1</sub>	n
22 1/2	80	10.0	580	43	155	215	98	21.0	1-3	200	133	80	160	19	4
	100	10.5	600	45	162	220	120	22.0	1-3	220	153	100	180	19	8
	150	11.7	650	50	180	233	176	23.0	1-3	285	209	150	240	23	8
	200	12.8	700	55	195	243	234	24.5	1-3	340	264	200	295	23	8
	250	14.0	750	60	210	253	288	26.0	1-3	395	319	250	350	23	12
	300	15.2	800	65	225	263	344	27.5	1-4	445	367	300	400	23	12
	400	17.5	900	75	255	283	460	30.0	1-4	565	477	400	515	28	16
	500	19.8	1000	85	285	303	580	33.0	1-4	670	582	500	620	28	20
	600	22.2	1200	95	335	343	694	36.0	1-5	780	682	600	725	31	20
45	80	10.0	331	43	180	240	98	21.0	1-3	200	133	80	160	19	4
	100	10.5	374	45	200	258	120	22.0	1-3	220	153	100	180	19	8
	150	11.7	483	50	250	303	176	23.0	1-3	285	209	150	240	23	8
	200	12.8	591	55	300	348	234	24.5	1-3	340	264	200	295	23	8
	250	14.0	700	60	350	393	288	26.0	1-3	395	319	250	350	23	12
	300	15.2	809	65	400	438	344	27.5	1-4	445	367	300	400	23	12
	400	17.5	600	75	324	352	460	30.0	1-4	565	477	400	515	28	16
	500	19.8	700	85	375	393	580	33.0	1-4	670	582	500	620	28	20
	600	22.2	800	95	426	434	694	36.0	1-5	780	682	600	725	31	20
90	80	10.0	137	43	180	240	98	21.0	1-3	200	133	80	160	19	4
	100	10.5	155	45	200	258	120	22.0	1-3	220	153	100	180	19	8
	150	11.7	200	50	250	303	176	23.0	1-3	285	209	150	240	23	8
	200	12.8	245	55	300	348	234	24.5	1-3	340	264	200	295	23	8
	250	14.0	290	60	350	393	288	26.0	1-3	395	319	250	350	23	12
	300	15.2	335	65	400	438	344	27.5	1-4	445	367	300	400	23	12
	400	17.5	425	75	500	528	460	30.0	1-4	565	477	400	515	28	16
	500	19.8	515	85	600	618	580	33.0	1-4	670	582	500	620	28	20
	600	22.2	605	95	700	708	694	36.0	1-5	780	682	600	725	31	20

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

# CAST IRON DOUBLE FLANGE ENDS

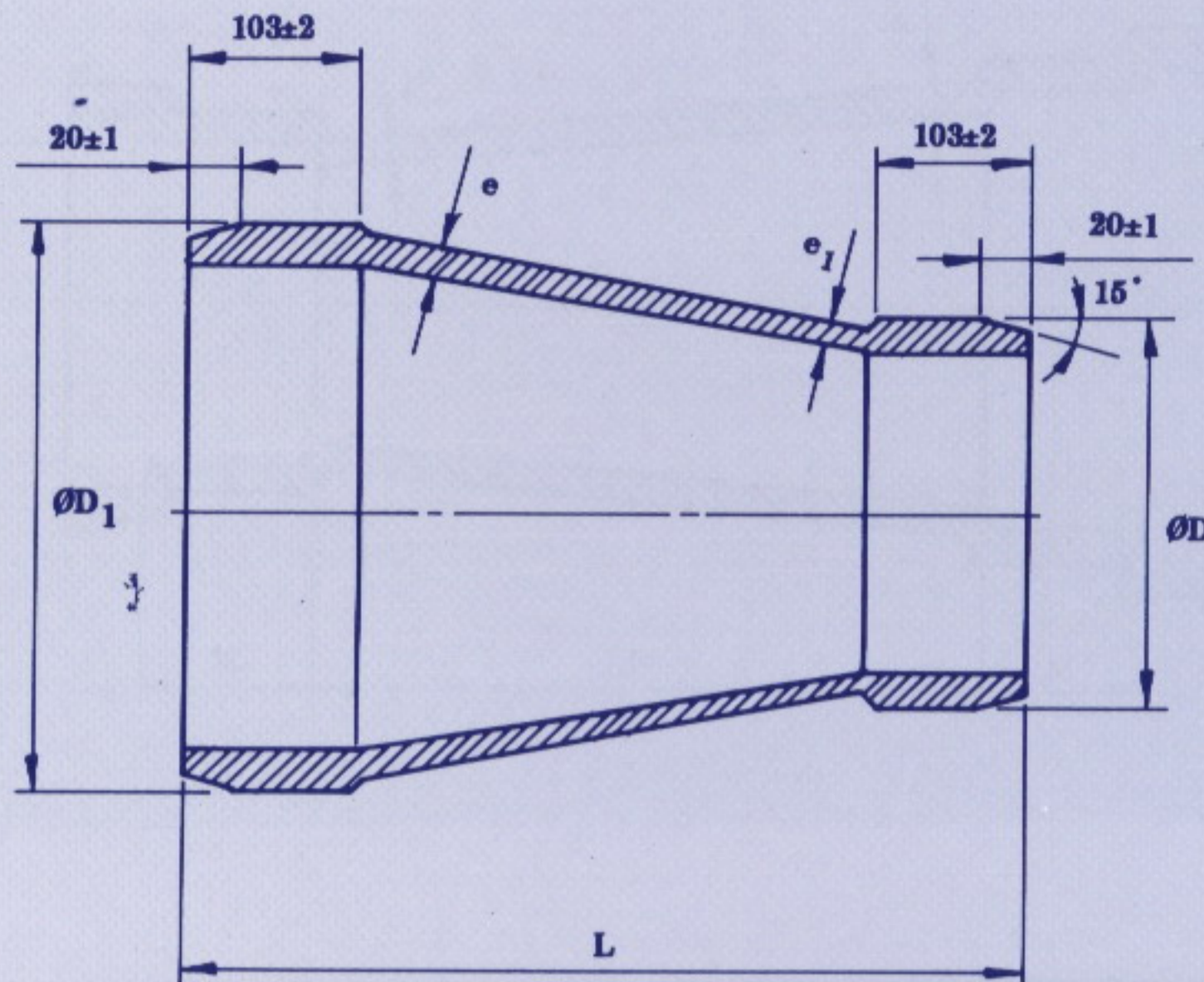


BEND°	DN	e	r	a	L	b	c	ØD	Øg	Ød	ØC	Ød <sub>1</sub>	n
22 1/2	80	10.0	580	43	155	21.0	1-3	200	133	80	160	19	4
	100	10.5	600	45	162	22.0	1-3	220	153	100	180	19	8
	150	11.7	650	50	180	23.0	1-3	285	209	150	240	23	8
	200	12.8	700	55	195	24.5	1-3	340	264	200	295	23	8
	250	14.0	750	60	210	26.0	1-3	395	319	250	350	23	12
	300	15.2	800	65	225	27.5	1-4	445	367	300	400	23	12
	400	17.5	900	75	255	30.0	1-4	565	477	400	515	28	16
	500	19.8	1000	85	285	33.0	1-4	670	582	500	620	28	20
600	22.2	1200	95	335	36.0	1-5	780	682	600	725	31	20	
45	80	10.0	331	43	180	21.0	1-3	200	133	180	160	19	4
	100	10.5	374	45	200	22.0	1-3	220	153	100	180	19	8
	150	11.7	483	50	250	23.0	1-3	285	209	150	240	23	8
	200	12.8	591	55	300	24.5	1-3	340	264	200	295	23	8
	250	14.0	700	60	350	26.0	1-3	395	319	250	350	23	12
	300	15.2	809	65	400	27.5	1-4	445	367	300	400	23	12
	400	17.5	600	75	324	30.0	1-4	565	477	400	515	28	16
	500	19.8	700	85	375	33.0	1-4	670	582	500	620	28	20
600	22.2	800	95	426	36.0	1-5	780	682	600	725	31	20	
90	80	10.0	137	43	180	21.0	1-3	200	133	80	160	19	4
	100	10.5	155	45	200	22.0	1-3	220	153	100	180	19	8
	150	11.7	200	50	250	23.0	1-3	285	209	150	240	23	8
	200	12.8	245	55	300	24.5	1-3	340	264	200	295	23	8
	250	14.0	290	60	350	26.0	1-3	395	319	250	350	23	12
	300	15.2	335	65	400	27.5	1-4	445	367	300	400	23	12
	400	17.5	425	75	500	30.0	1-4	565	477	400	515	28	16
	500	19.8	515	85	600	33.0	1-4	670	582	500	620	28	20
600	22.2	605	95	700	36.0	1-5	780	682	600	725	31	20	

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
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# CAST IRON PLAIN ENDS REDUCERS



NON REDUCE				REDUCE				
DN	e	ØD <sub>1</sub>		DN	e <sub>1</sub>	ØD		L
100	10.5	120	± 0.6	80	10.0	98	± 0.6	318
150	11.7	176	± 0.6	80	10.0	98	± 0.6	513
				100	10.5	120	± 0.6	511
200	12.8	234	± 0.6	100	10.5	120	± 0.6	506
				150	11.7	176	± 0.6	501
250	14.0	288	± 0.6	100	10.5	120	± 0.6	501
				150	11.7	176	± 0.6	496
				200	12.8	234	± 0.6	491
300	15.2	344	± 0.6	150	11.7	176	± 0.6	491
				200	12.8	234	± 0.6	486
				250	14.0	288	± 0.6	481
400	17.5	460	± 0.8	200	12.8	234	± 0.6	676
				250	14.0	288	± 0.6	671
				300	15.2	344	± 0.6	666
500	19.8	580	± 0.8	250	14.0	288	± 0.6	661
				300	15.2	344	± 0.6	656
				400	17.5	460	± 0.8	646
600	22.2	694	± 1.0	300	15.2	344	± 0.6	646
				400	17.5	460	± 0.8	636
				500	19.8	580	± 0.8	626

STRONG WATERWORKS ENGINEERING CO., LTD.

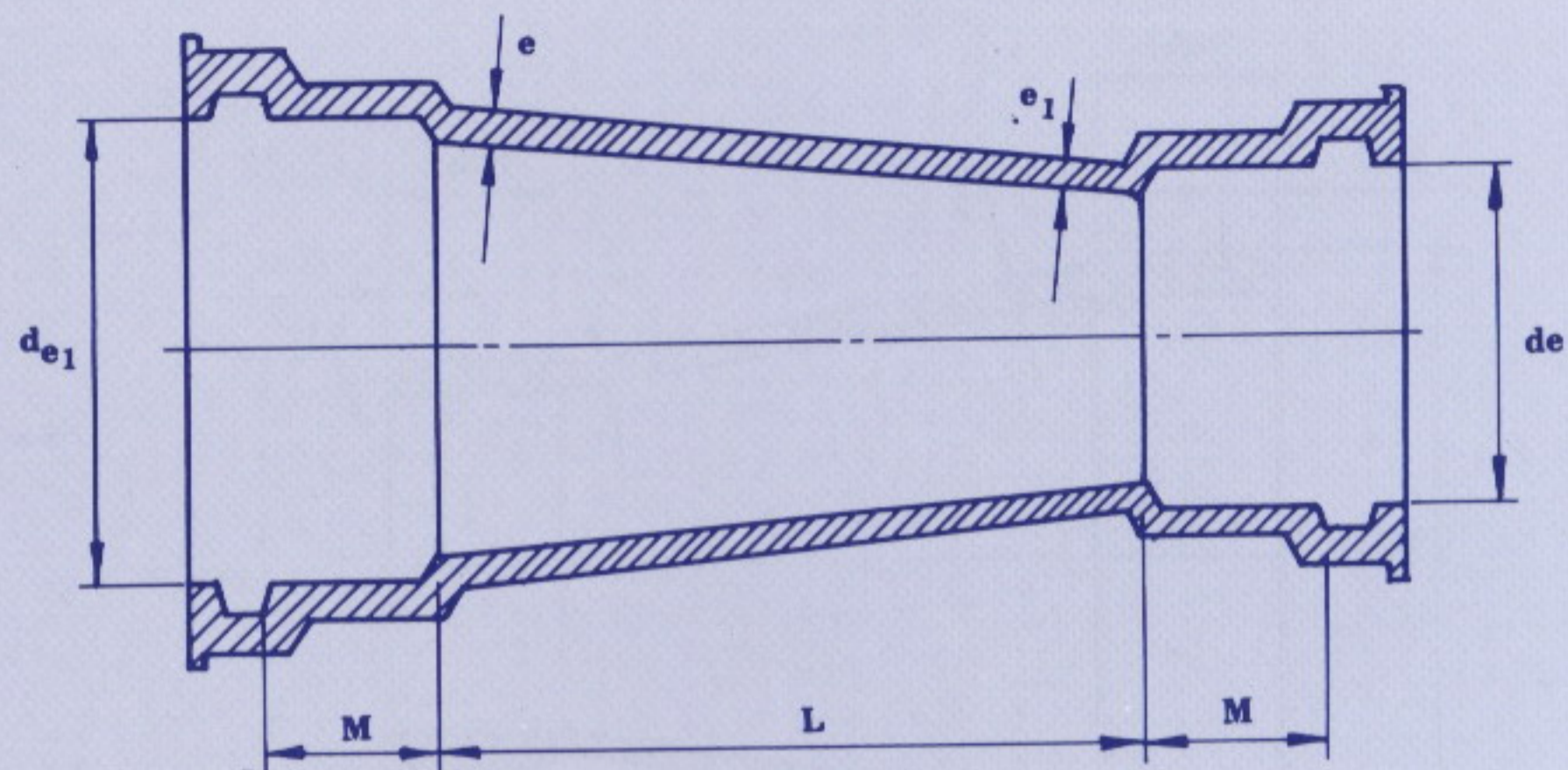
STRONG WATERWORKS ENGINEERING CO., LTD.

## NOTES

1. ALL DIMENSIONS ARE IN mm.
2. TOLERANCES CONFORM TO T.I.S. 918-1992



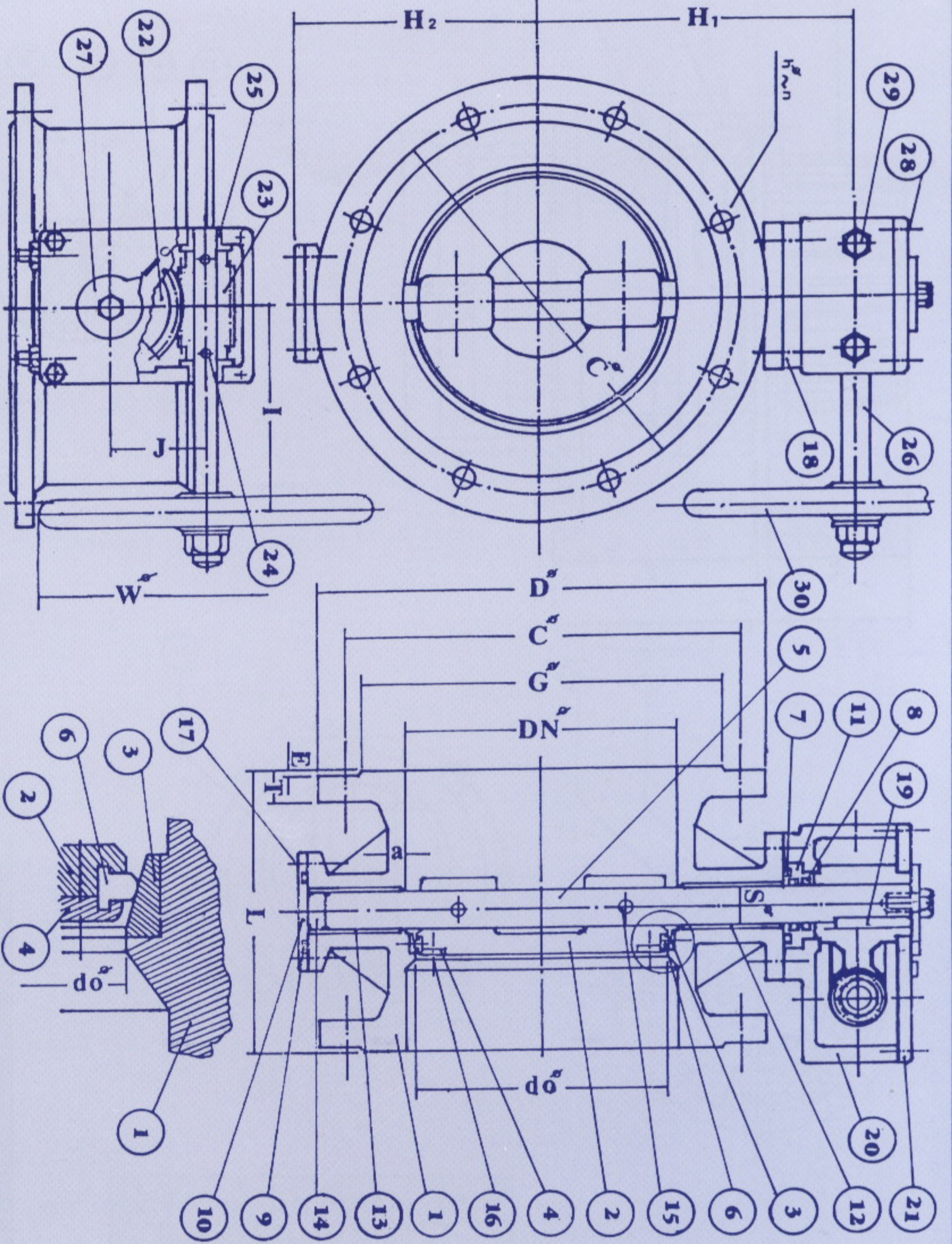
# CAST IRON REDUCERS WITH 2 BELL ENDS



NON REDUCE					REDUCE					
DN	e	d e 1		M min	DN	e <sub>1</sub>	d e		M min	L
		min	max				min	max		
100	10.5	114.5	117	50	80	10.0	89.5	92	44	200
150	11.7	165.7	169	61	80	10.0	89.5	92	44	400
200	12.8	216.9	220	72	100	10.5	114.5	117	50	400
					150	11.7	165.7	169	61	400
250	14.0	268.1	271	84	100	10.5	114.5	117	50	400
					150	11.7	165.7	169	61	400
					200	12.8	216.9	220	72	400
300	15.2	319.3	322	84	150	11.7	165.7	169	61	400
					200	12.8	216.9	220	72	400
					250	14.0	268.1	271	84	400
400	17.5	421.7	425	98	200	12.8	216.9	220	72	600
					250	14.0	268.1	271	84	600
					300	15.2	319.3	322	84	600
500	19.8	522.1	525	113	250	14.0	268.1	271	84	600
					300	15.2	319.3	322	84	600
					400	17.5	421.7	425	98	600
600	22.2	633.8	635	129	300	15.2	319.3	322	84	600
					400	17.5	421.7	425	98	600
					500	19.8	522.1	525	113	600

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992



DN °	SIZE	L		D °	G °	C °	T	E °	h °	n	H1	H2	I	J	S °	W °	a	do °	MAX. TORQUE		᠑ᠠᠠᠨᠠᠭᠤᠯᠠ
		SHORT	LONG																N-M	Kg-M	
80	114	180	200	133	160	22	3	18	8	168	116	132	65	13	201	10	74	26	2.65	7.5	
100	127	190	220	158	180	24	3	18	8	188	188	132	65	16	201	11	94	49	5	7.5	
150	140	210	285	212	240	26	3	22	8	225	225	132	65	26	201	11	144	123	12.84	7.5	
200	152	230	340	268	295	26	3	22	8	243	243	132	65	29	201	12	180	238	24.26	7.5	
250	165	250	395	320	350	28	3	22	12	279	279	212	87	35	281	14	230	434	44.24	10	
300	178	270	445	370	400	29	4	22	12	301	245	212	87	39	281	15	280	692	70.54	10	

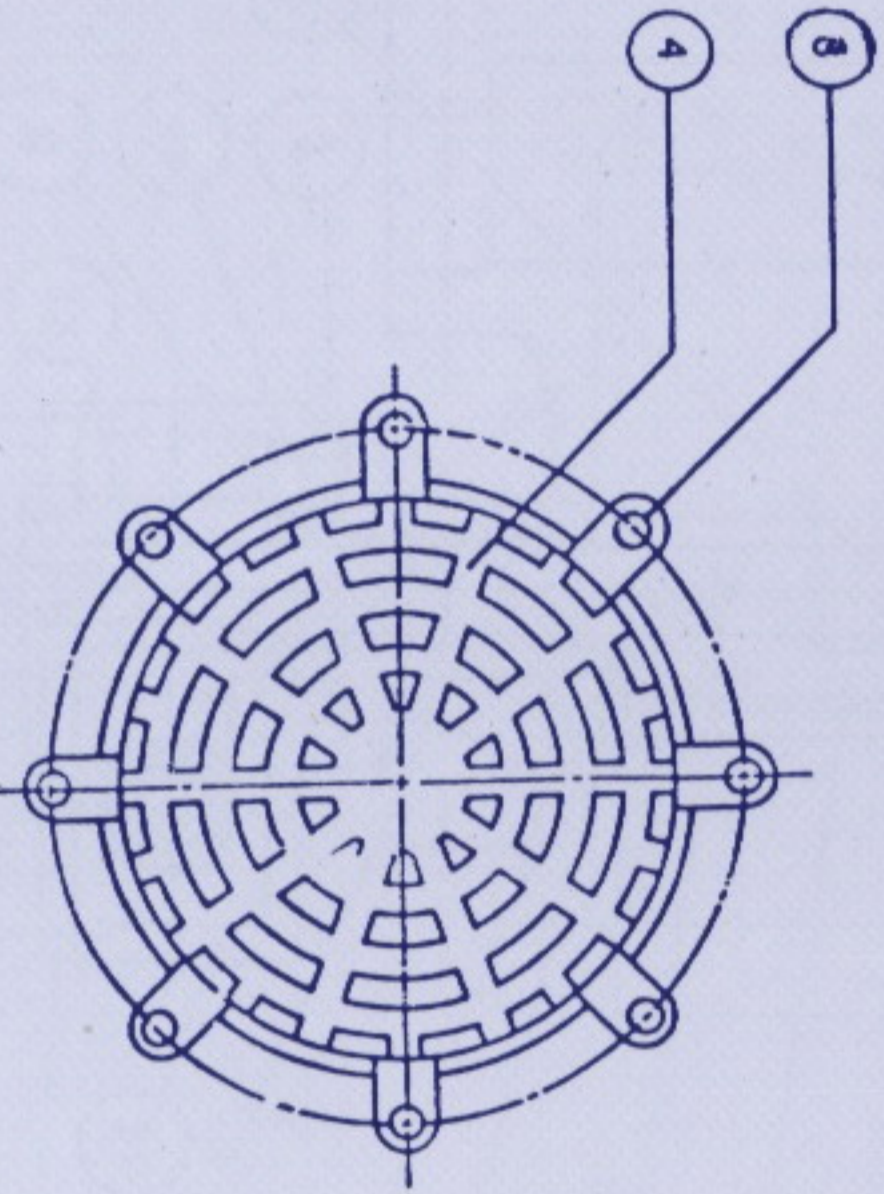
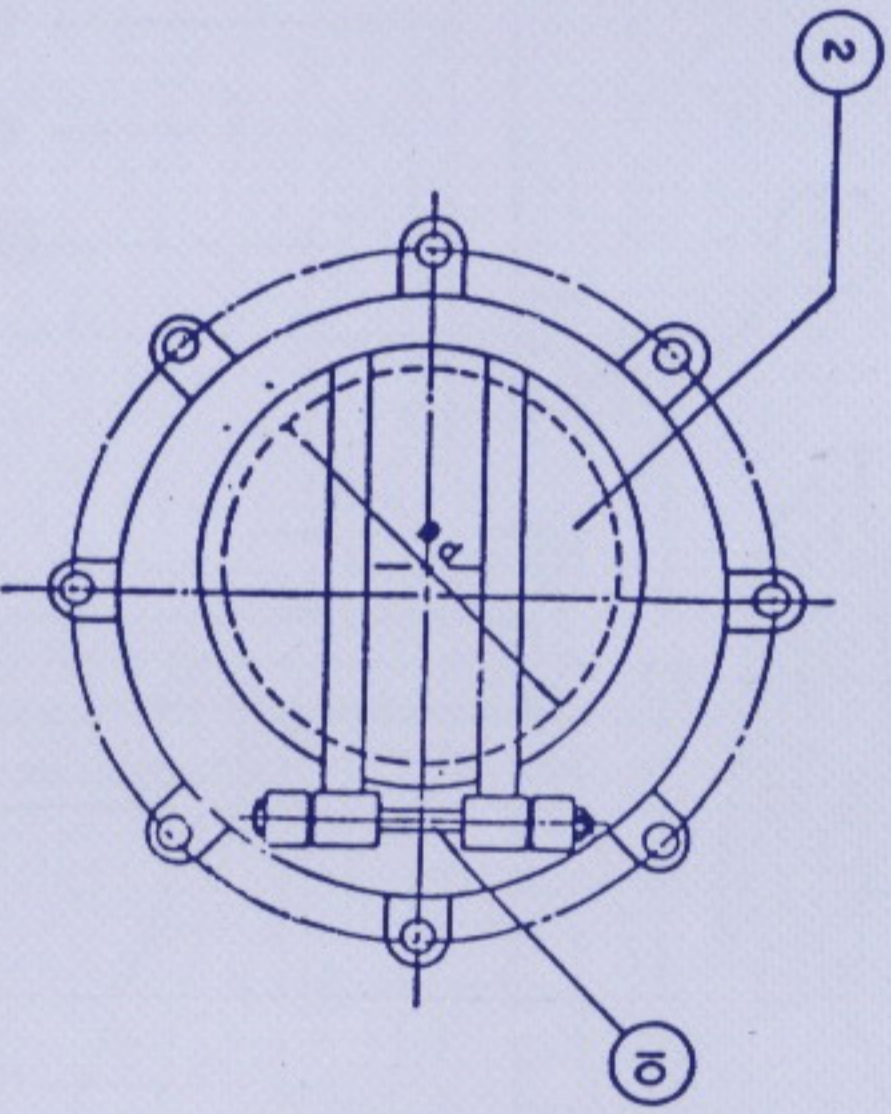
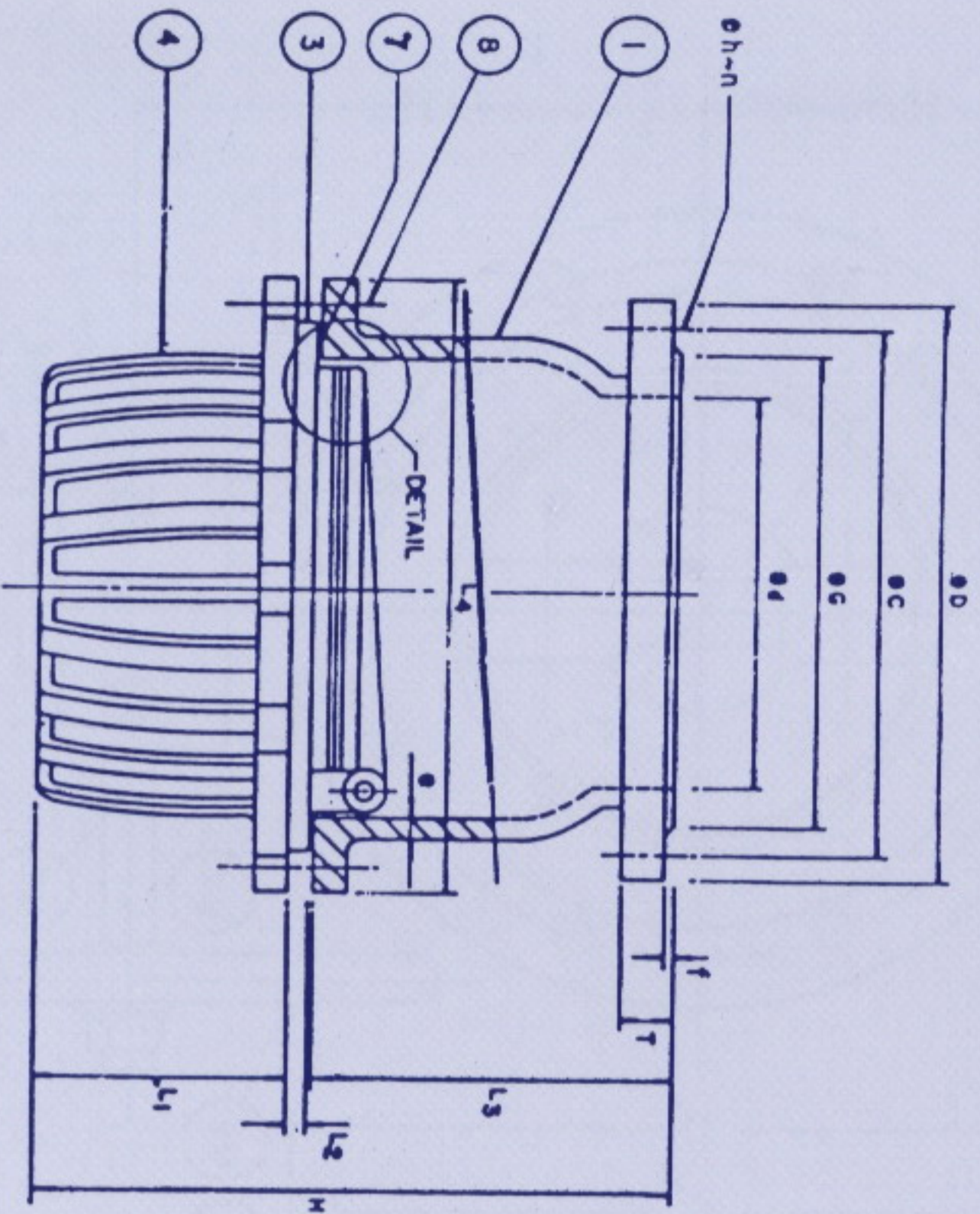
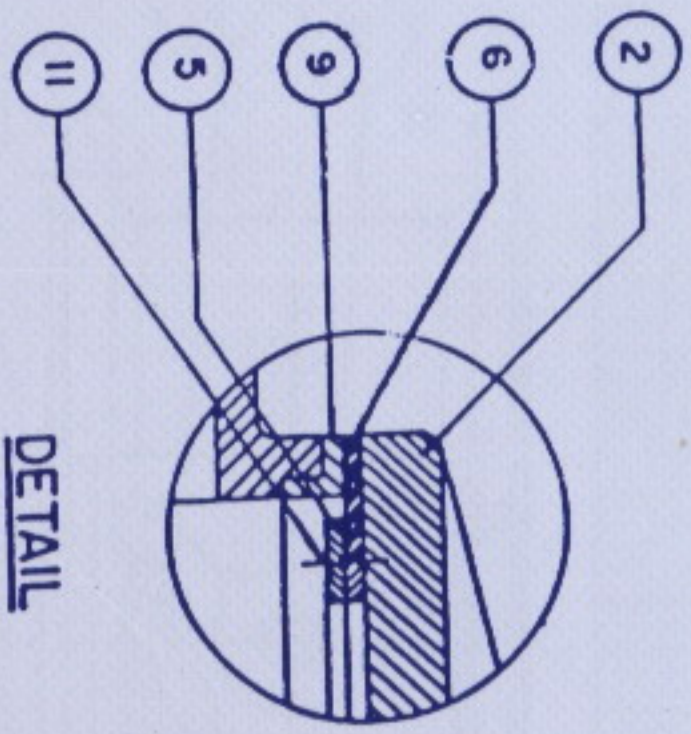
30	HAND WHEEL	CASH IRON	TIS. 382	1
29	ADJUST BOLT. NUT	STEEL	TIS. 171	2 SET
28	COVER GEAR BOLT	STEEL	TIS. 382	4
27	INDICATOR	CAST IRON	TIS. 382	1
26	HAND WHEEL SHAFT	STEEL	SCC 5	1
25	BODY GEAR BUSH	BRONZE	TIS. 382	2
24	ROLL PIN	STEEL	SCC 5	2
23	WORM	DUCTILE IRON	TIS. 537	1
22	WORM GEAR	DUCTILE IRON	TIS. 537	1
21	COVER GEAR	CAST IRON	TIS. 382	1
20	BODY GEAR	CAST IRON	TIS. 382	1
19	KEY	STEEL	SCC 5	1
18	UPPER BOLT	STEEL	TIS. 171	4
17	END PLATE BOLT	STEEL	TIS. 171	4
16	DISC BOLT	STAINLESS		1 SET
15	PIN	STAINLESS		2
14	STEM PLATE	BRONZE		1
13	LOWER BUSHING	BRONZE	TIS. 382	1
12	UPPER BUSHING	BRONZE		1
11	GLAND	BRONZE		1
10	END PLATE	CAST IRON		1
9	O-RING C	RUBBER NBR		1
8	O-RING B	RUBBER NBR	BS 2494	2
7	O-RING A	RUBBER NBR		1
6	DISC SEAT	RUBBER NBR		1
5	SHAFT	STAINLESS		1
4	DISC RING	BRONZE		1
3	BODY RING	BRONZE	TIS. 382	1
2	DISC	CAST IRON		1
1	BODY	CAST IRON		1

NO	PARTS	MATERIALS	SPEC.	Q'TY
HYDROSTATIC TEST VALVE SHELL 20 Kg/Cm <sup>2</sup>				
HYDROSTATIC TEST VALVE SEAT 10 Kg/Cm <sup>2</sup>				
HYDROSTATIC TEST BACK SEAT 10 Kg/Cm <sup>2</sup>				
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	
S. Pongy	KOTT.W.	Bassuayin	R.S.	
SCALE		DRAWN DATE: 16/12/01	ISSUE DATE 5/1/02	
STRONG WATERWORKS ENGINEERING CO., LTD.				
TIS. 382-2531				
BUTTERFLY VALVE SIZE 80-300 MM.				
TYPE	BY	DRAWING NO. SWWW/02		

**MARKING**  
 PWA  
 SWW  
 DN.....MM.  
 PN.10  
 NO...../200.....

**COATING**  
 INTERIOR LIQUID EPOXY 100 MICRONS.  
 EXTERIOR COAL TAR EPOXY 200 MICRONS.

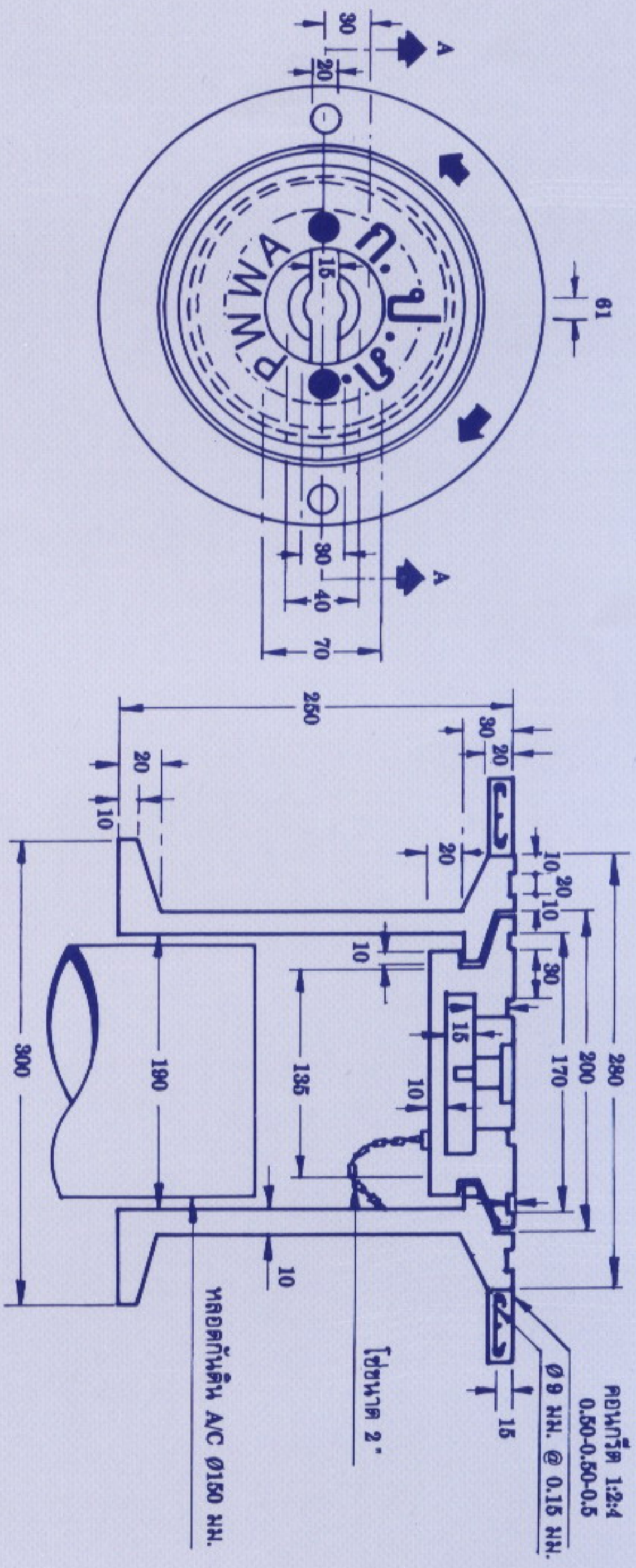
SIDE	d $\varnothing$ mm	H mm.	e mm.	L <sub>1</sub> mm.	L <sub>2</sub> mm.	L <sub>3</sub> mm.	L <sub>4</sub> mm.	FLANGE						
								$\varnothing$ D	$\varnothing$ C	$\varnothing$ G	$\varnothing$ h	n	T	f
400		817	22	325	40	450	726	565	515	477	28	16	32	4
300		630	19	250	30	340	580	445	400	367	23	12	28	4
250		551	17	228	25	290	479	395	350	319	23	12	28	3
200		446	15	178	20	240	413	340	295	264	23	8	26	3
150		340	13	128	16	190	336	285	240	209	23	8	26	3
100		251	11	93	12	140	254	220	180	153	19	8	24	3



ITEM	DESCRIPTION	MATERIAL	STANDARD
11	SEAT HOLDER BOLT	STAINLESS STEEL	TIS.383-2529
10	HINGE PIN	STAINLESS STEEL	TIS.383-2529
9	BODY SEAT RING	BRONZE	TIS.383-2529
8	BODY BOLT & NUT	GALVANIZED STEEL	TIS.171-2530
7	GASKET	RUBBER (NBR)	BS 2494
6	DISC SEAT RING	RUBBER (NBR)	BS 2494
5	SEAT HOLDER	CAST IRON	TIS.383-2529
4	STRAINER	CAST IRON	TIS.383-2529
3	PLATE SEAT	CAST IRON	TIS.383-2529
2	DISC	CAST IRON	TIS.383-2529
1	BODY	CAST IRON	TIS.383-2529

TEST PRESSURE	
HYDRO SHELL TEST	20 Kg/cm <sup>2</sup>
HYDRO SEAT TEST	10 Kg/cm <sup>2</sup>
HYDRO BACK SEAT TEST	10 Kg/cm <sup>2</sup>

STRONG WATERWORKS ENGINEERING CO., LTD.			
FOOT VALVE SIZE $\varnothing$ 100 - 400 MM.			
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
S. Pong.	KOTT.W.	Dammav	K.S.
SCALE :	DRAWN DATE 3.10.44		

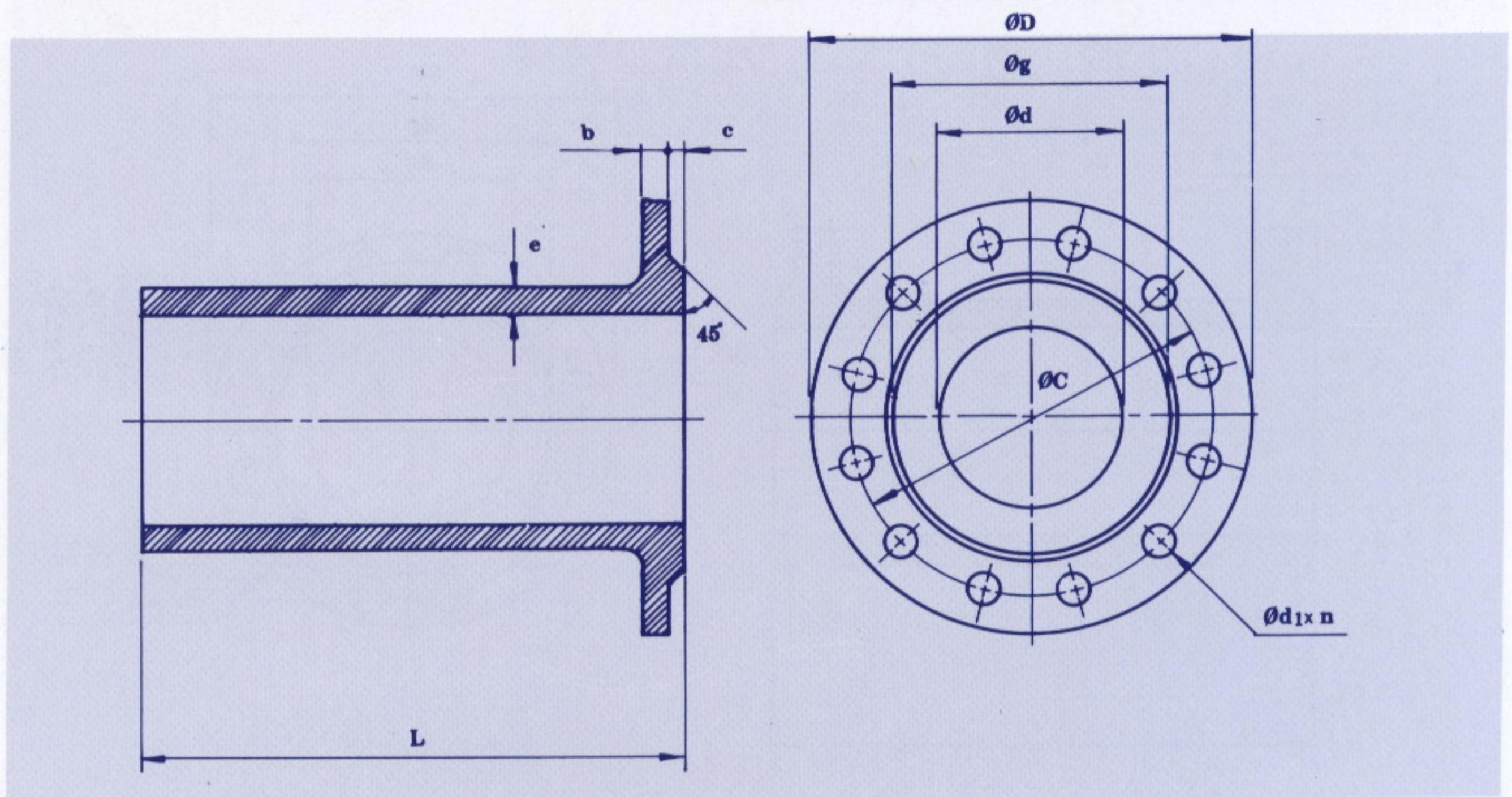


แบบผาครอบประตุน้ำ

รูปตัด A-A

แบบมาตรฐานการติดตั้งประตุน้ำชนิดไต้ดิน

# FLANGED SPIGOTS

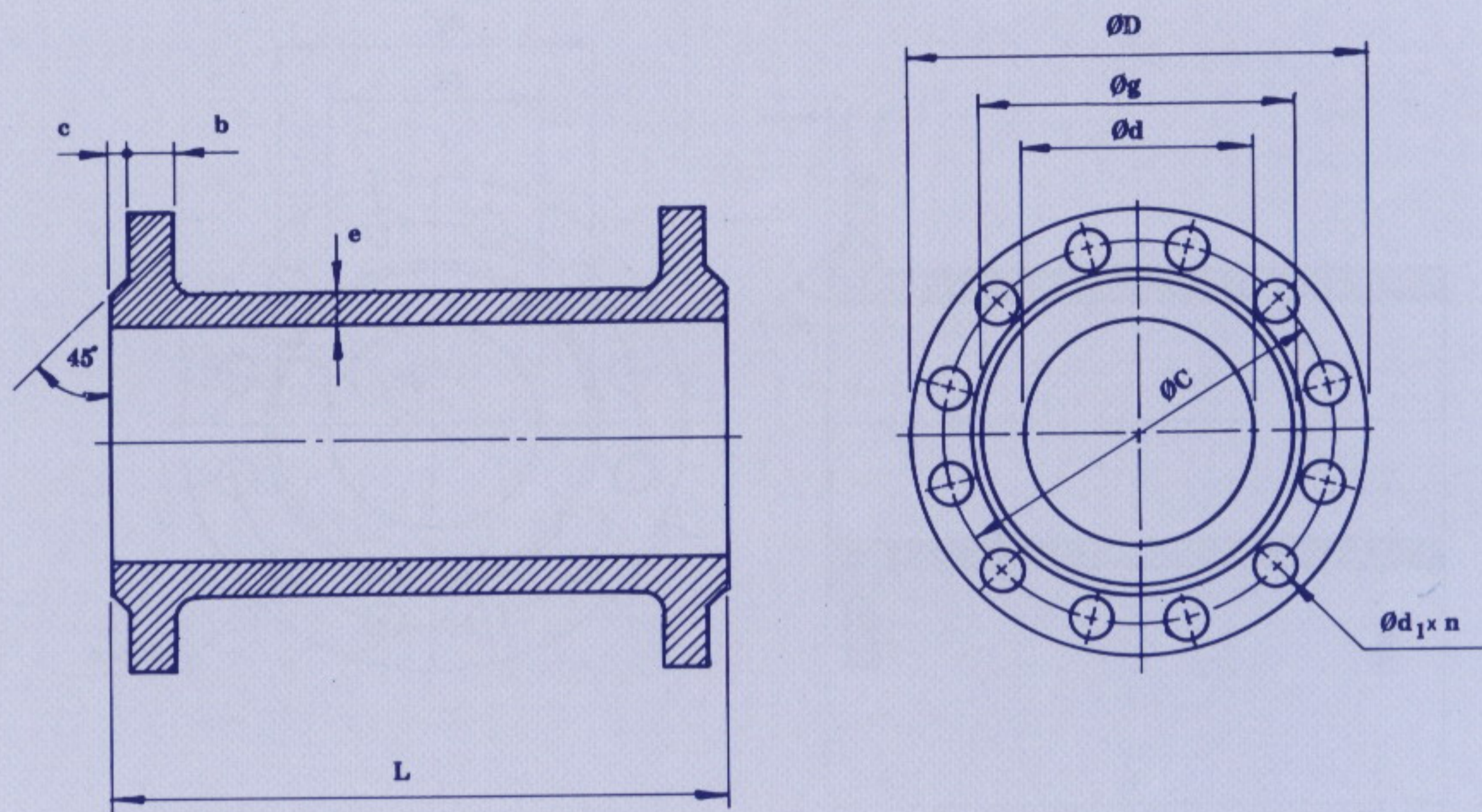


DN	e	L	ØD	Øg	ØC	Ød <sub>1</sub>	n	b	c
80	10.0	400	200 ±2	133	160 ±1.5	19	4	21.0 +4.5	1-3
100	10.5	400	220 ±2	153	180 ±1.5	19	8	22.0 +4.5	1-3
150	11.7	400	285 ±2	209	240 ±1.5	23	8	23.0 +4.5	1-3
200	12.8	500	340 ±3	264	295 ±1.5	23	8	24.5 +4.5	1-3
250	14.0	500	395 ±3	319	350 ±1.5	23	12	26.0 +4.5	1-3
300	15.2	500	445 ±5	367	400 ±1.5	23	12	27.5 +4.5	1-4
400	17.5	500	565 ±5	477	515 ±2.0	28	16	30.0 +4.5	1-4
500	19.8	500	670 ±5	582	620 ±2.0	28	20	33.0 +6.5	1-4
600	22.2	600	780 ±5	682	725 ±2.0	31	20	36.0 +6.5	1-5

## NOTES

1. ALL DIMENSIONS ARE IN mm.
2. TOLERANCES CONFORM TO T.I.S. 918-1992
3. FOR PVC PIPE

# CAST IRON DOUBLE FLANGES

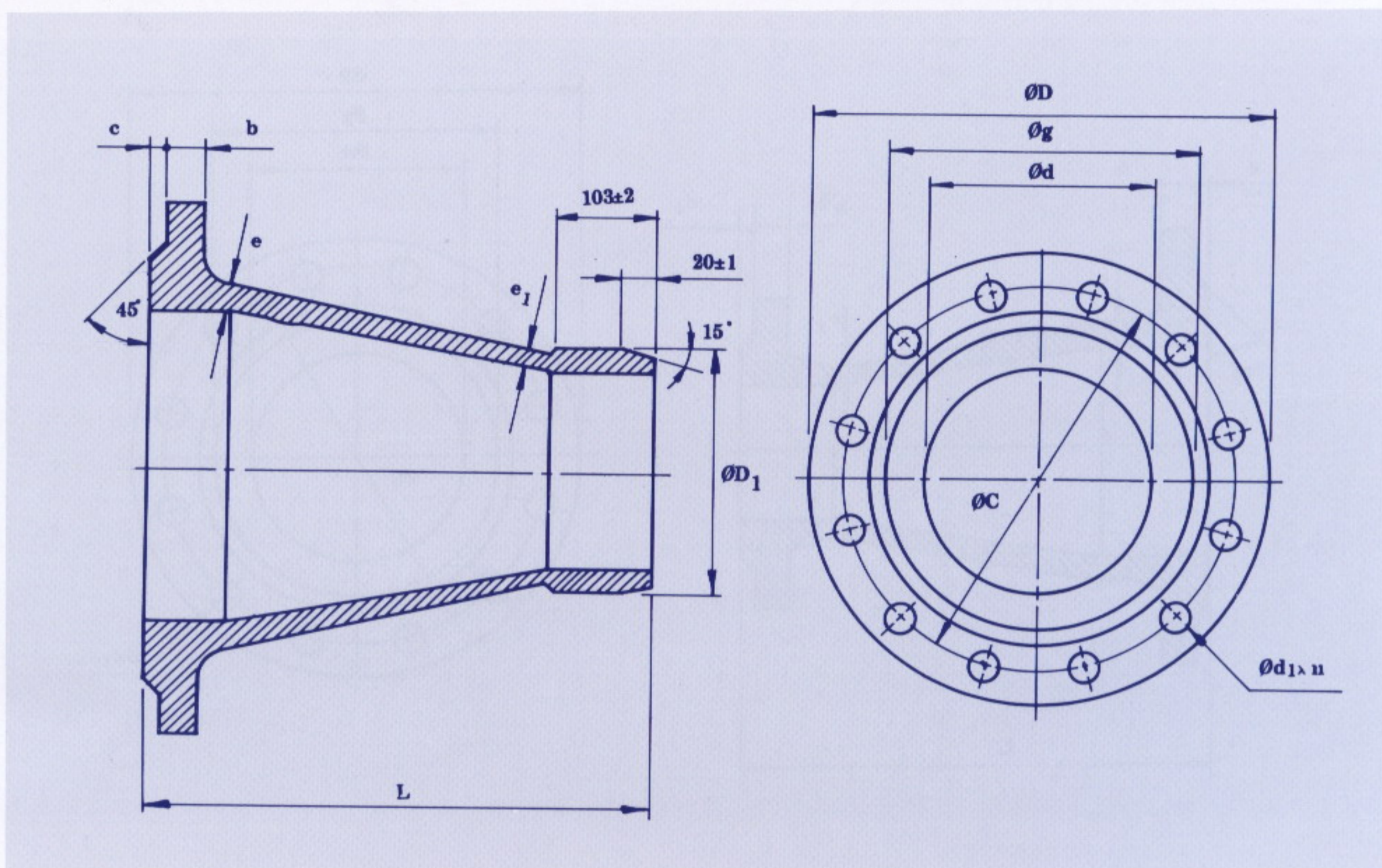


DN	e	L	ØD	Øg	ØC	Ød <sub>1</sub>	n	b	c
80	10.0	400	200 ±2	133	160 ±1.5	19	4	21.0 +4.5	1-3
100	10.5	400	220 ±2	153	180 ±1.5	19	8	22.0 +4.5	1-3
150	11.7	400	285 ±2	209	240 ±1.5	23	8	23.0 +4.5	1-3
200	12.8	500	340 ±3	264	295 ±1.5	23	8	24.5 +4.5	1-3
250	14.0	500	395 ±3	319	350 ±1.5	23	12	26.0 +4.5	1-3
300	15.2	500	445 ±5	367	400 ±1.5	23	12	27.5 +4.5	1-4
400	17.5	500	565 ±5	477	515 ±2.0	28	16	30.0 +4.5	1-4
500	19.8	500	670 ±5	582	620 ±2.0	28	20	33.0 +6.5	1-4
600	22.2	600	780 ±5	682	725 ±2.0	31	20	36.0 +6.5	1-5

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

# CAST IRON REDUCERS WITH FLANGE AT LARGER ENDS



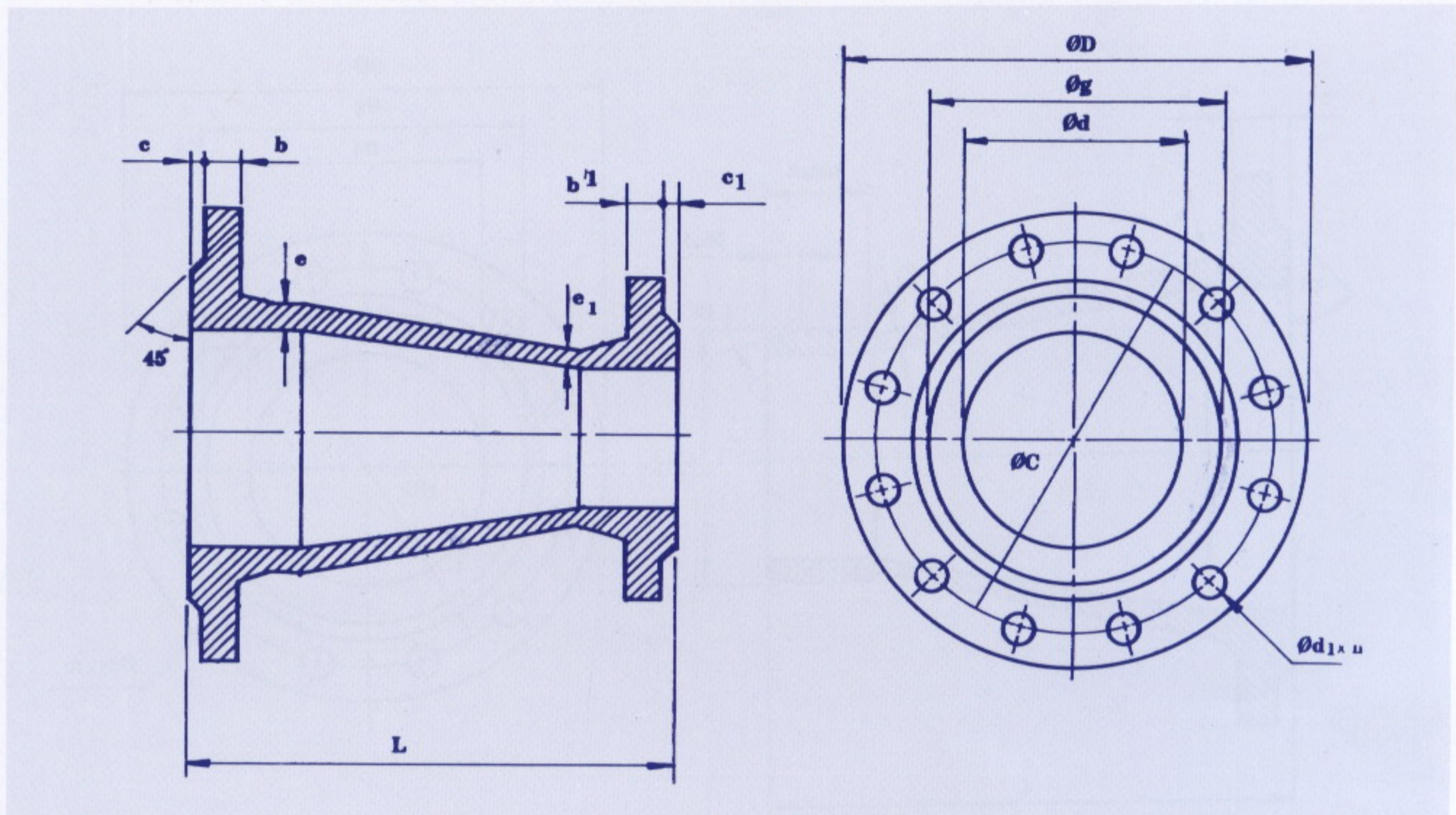
NON REDUCE									REDUCE			
DN	e	ØD	Øg	ØC	Ød <sub>1</sub>	n	b	c	DN	e <sub>1</sub>	L	ØD <sub>1</sub>
100	10.5	220	153	180	19	8	22.0	1-3	80	10.0	260	98
150	11.7	285	209	240	23	8	23.0	1-3	80	10.0	460	98
									100	10.5	458	120
200	12.8	340	264	295	23	8	24.5	1-3	100	10.5	458	120
									150	11.7	453	176
250	14.0	395	319	350	23	12	26.0	1-3	100	10.5	458	120
									150	11.7	453	176
									200	12.8	448	234
300	15.2	445	367	400	23	12	27.5	1-4	150	11.7	453	176
									200	12.8	448	234
									250	14.0	443	288
400	17.5	565	477	515	28	16	30.0	1-4	200	12.8	648	234
									250	14.0	643	288
									300	15.2	638	344
500	19.8	670	582	620	28	20	33.0	1-4	250	14.0	643	288
									300	15.2	638	344
									400	17.5	628	460
600	22.2	780	682	725	31	20	36.0	1-5	300	15.2	638	344
									400	17.5	628	460
									500	19.8	618	580

STRONG WATERWORKS ENGINEERING CO., LTD.

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

# CAST IRON DOUBLE FLANGED END REDUCERS



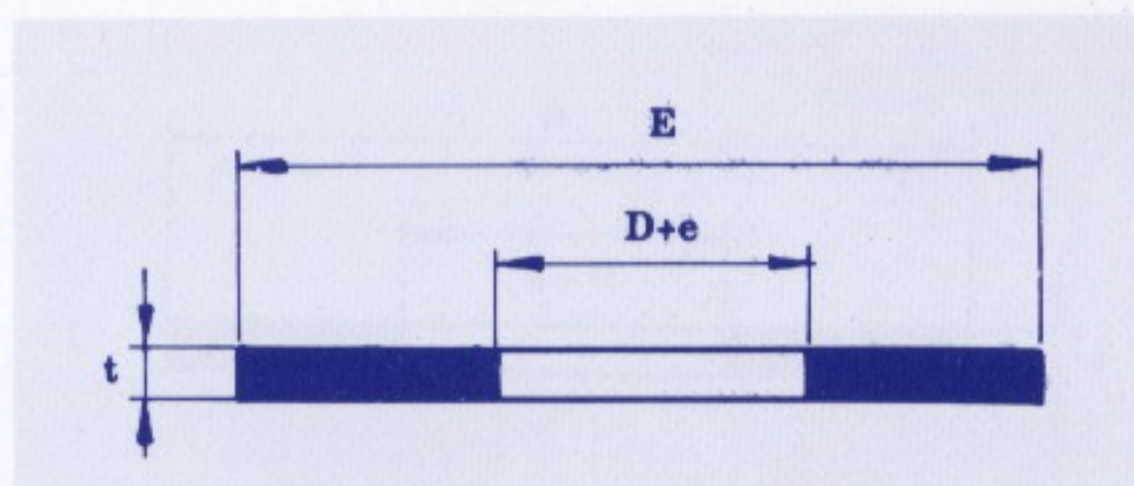
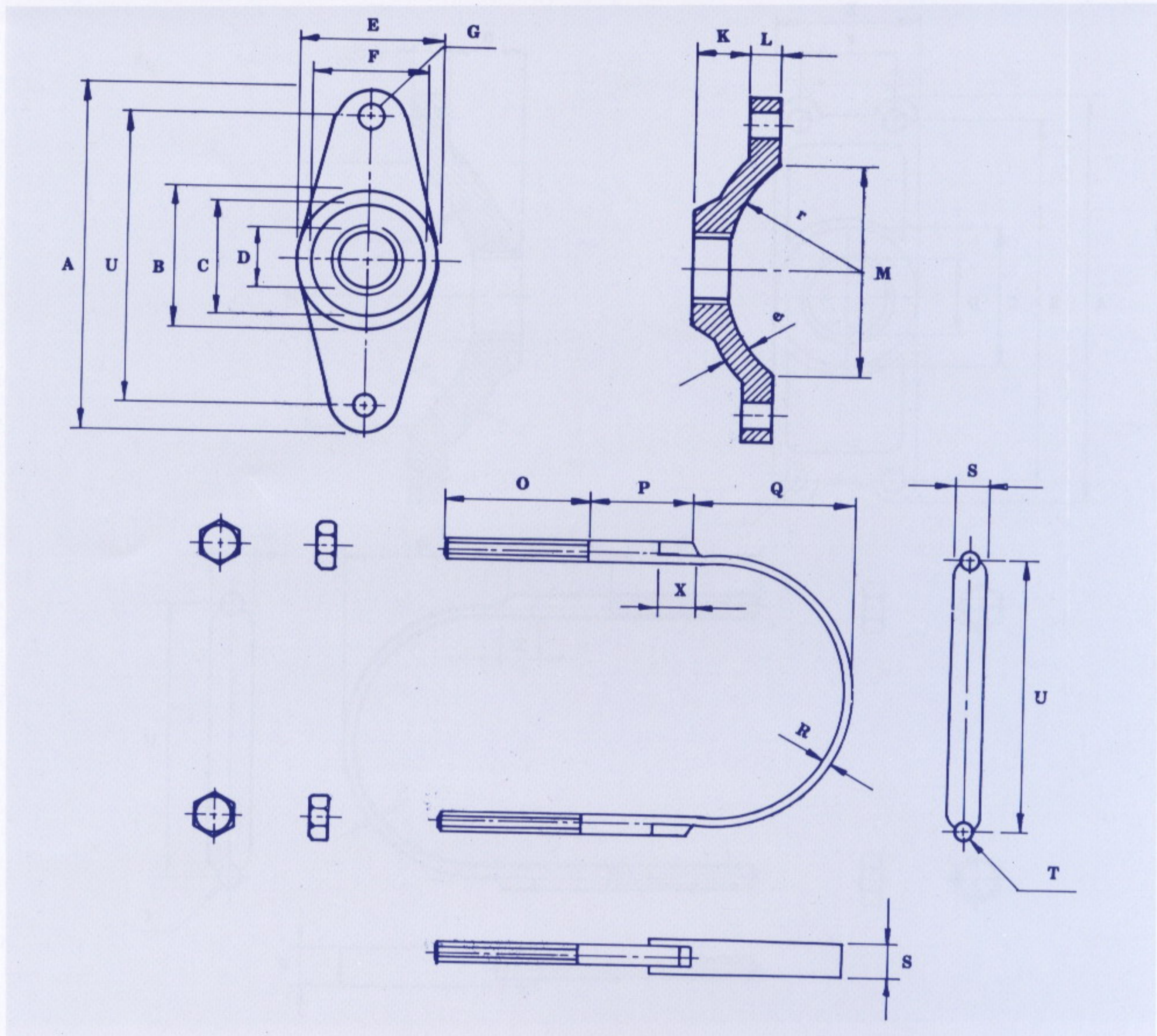
NON REDUCE									REDUCE									
DN	e	ØD	Øg	ØC	Ød <sub>1</sub>	n	b	c	DN	e <sub>1</sub>	ØD <sub>1</sub>	Øg <sub>1</sub>	ØC <sub>1</sub>	Ød <sub>2</sub>	n <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	L
100	10.5	220	153	180	19	8	22.0	1-3	80	10.0	200	133	160	19	4	21.0	1-3	200
150	11.7	285	209	240	23	8	23.0	1-3	80	10.0	200	133	160	19	4	21.0	1-3	400
									100	10.5	220	153	180	19	8	22.0	1-3	400
200	12.8	340	264	295	23	8	24.5	1-3	100	10.5	220	153	180	19	8	22.0	1-3	400
									150	11.7	285	209	240	23	8	23.0	1-3	400
250	14.0	395	319	350	23	12	26.0	1-3	100	10.5	220	153	180	19	8	22.0	1-3	400
									150	11.7	285	209	240	23	8	23.0	1-3	400
									200	12.8	340	264	295	23	8	24.5	1-3	400
300	15.2	445	367	400	23	12	27.5	1-4	150	11.7	285	209	240	23	8	23.0	1-3	400
									200	12.8	340	264	295	23	8	24.5	1-3	400
									250	14.0	395	319	350	23	12	26.0	1-3	400
400	17.5	565	477	515	28	16	30.0	1-4	200	12.8	340	264	295	23	8	24.5	1-3	600
									250	14.0	395	319	350	23	12	26.0	1-3	600
									300	15.2	445	367	400	23	12	27.5	1-4	600
500	19.8	670	582	620	28	20	33.0	1-4	250	14.0	395	319	350	23	12	26.0	1-4	600
									300	15.2	445	367	400	23	12	27.5	1-4	600
									400	17.5	565	477	515	28	16	30.0	1-4	600
600	22.2	780	682	725	31	20	36.0	1-5	300	15.2	445	367	400	23	12	27.5	1-4	600
									400	17.5	565	477	515	28	16	30.0	1-4	600
									500	19.8	670	582	620	28	20	33.0	1-4	600

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992



# CAST IRON SERVICE CLAMPS FOR A.C.



DN	GASKET			
	D	e	t	E
100	1/2" - 1 1/2"	1/4"	6-8	90
150	1/2" - 2 1/2"	1/2"	8-10	100

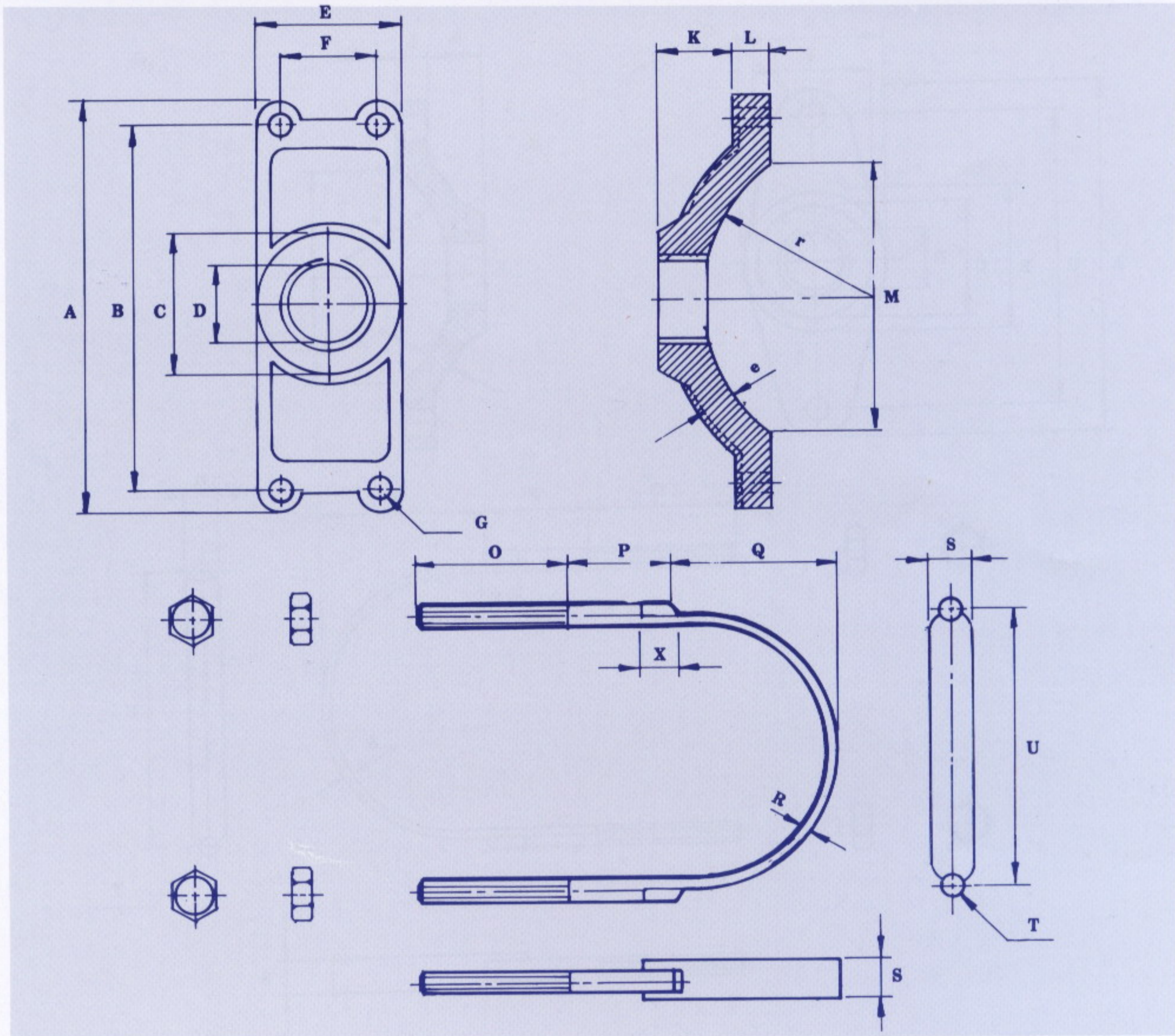
DN	DIMENSIONS																			
	A	B	C	D	E	F	G	H	K	L	M	e	O	P	Q	R	S	T	U	X
100	200	90	80	1/2" - 1 1/2"	90	80	18	45	30	30	105	30	60	40	70	5	25	16	150	15
150	262	100	85	1/2" - 2 1/2"	100	85	22	50	36	30	150	30	60	50	100	5	25	20	220	20

STRONG WATERWORKS ENGINEERING CO., LTD.

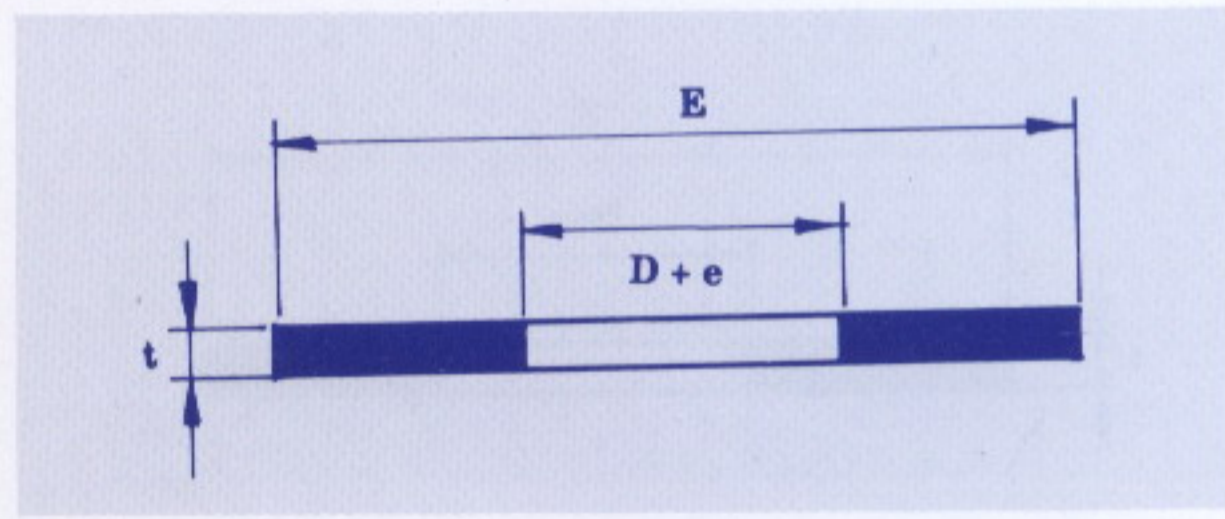
STRONG WATERWORKS ENGINEERING CO., LTD.

**NOTE.** ALL DIMENSIONS ARE IN mm.

# CAST IRON SERVICE CLAMPS FOR A.C.



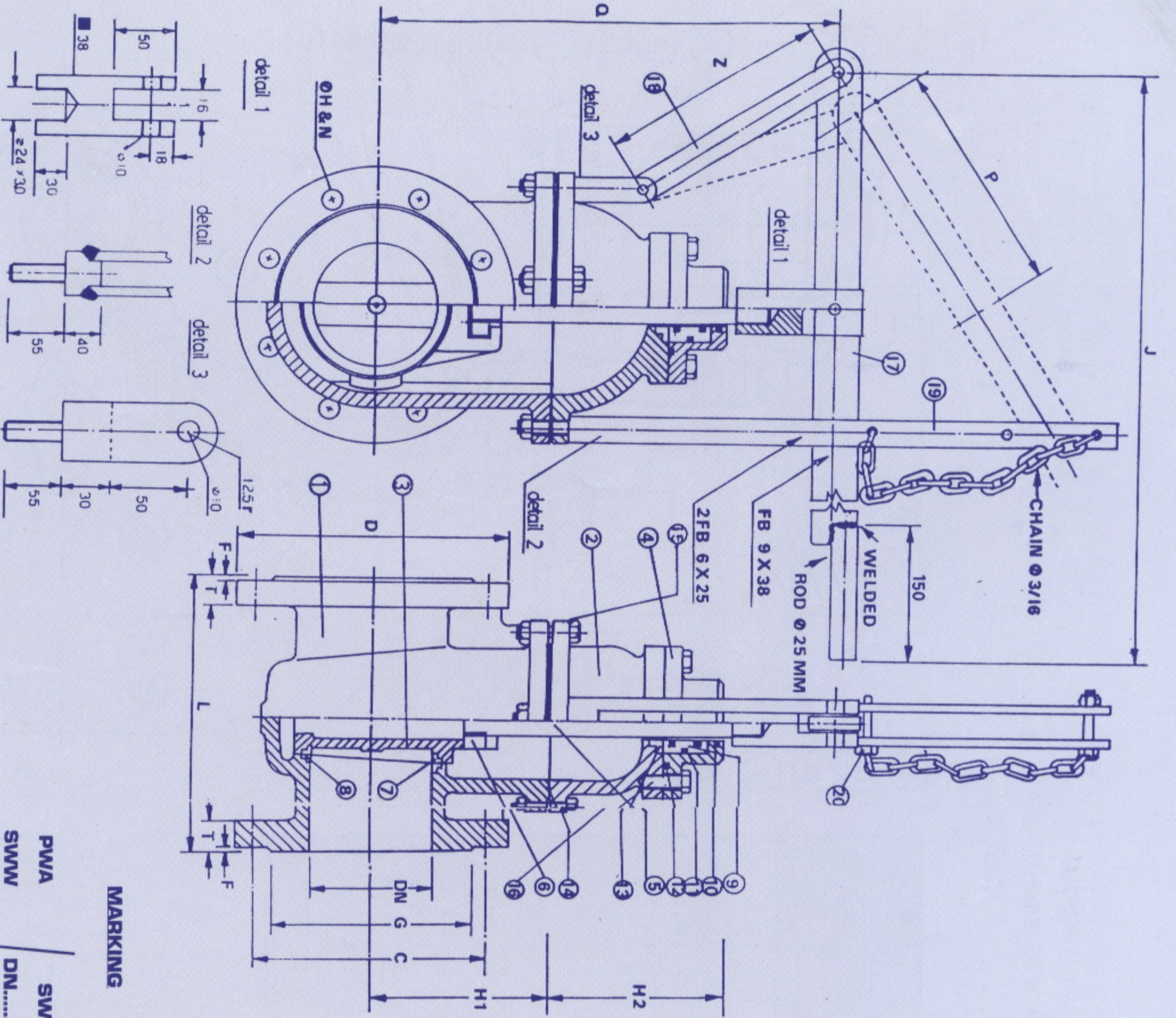
DN	GASKET			
	D	e	t	E
100	1/2" - 1 1/2"	1/4"	6 - 8	90
150	1/2" - 2 1/2"	1/2"	8-10	100
300				



DN	DIMENSIONS																			
	A	B	C	D	E	F	G	H	K	L	M	e	O	P	Q	R	S	T	U	X
200	312	100	85	1/2" - 2 1/2"	100	58	22	35	60	40	190	35	60	80	130	5	35	20	270	20
250	366	100	85	1/2" - 2 1/2"	100	58	22	35	70	40	230	35	65	90	160	5	35	20	324	20
300	422	100	85	1/2" - 2 1/2"	100	58	22	35	80	40	280	35	70	100	190	5	35	20	380	20

STRONG WATERWORKS ENGINEERING CO., LTD.

**NOTE.** DIMENSIONS ARE IN mm.



**MARKING**

PW/A SWW  
 SWW DN.....MM  
 PN.10

SWW DN.....MM  
 PN.10  
 LOT NO.  
 SERIAL NO.  
 CASTED DATE

**COATING**

INTERIOR  
 NON TOXIC EPOXY  
 RESIN NOT LESS  
 THAN 100 Microns

EXTERIOR  
 COAL TAR EPOXY  
 NOT LESS THAN  
 200 Microns

CHEMICAL COMPOSITION															
MATERIAL	MA	Mn	Si	Cr	Cu	Sn	Pb	Fe	Zn	As					
CAST IRON															
BRONZE															
BRASS															
MECHANICAL PROPERTY															
MATERIAL	ULTIMATE TENSILE STRENGTH min(MP)	YIELD STRENGTH min(MP)	ELONGATION min (%)	HARDNESS max HB											
CAST IRON	210			230											
BRONZE	210	95	15												
BRASS	380	170	15												
DIMENSIONS (MM.)															
SIZE	DN	G	C	D	L	T	F	ØH	N	H1	H2	Q	Z	P	J
100	156	180	220	229	25	3	19	8	8	147	145	360	188	195	600
150	211	240	285	267	26	3	23	8	8	190	190	450	271	278	900

NO.	PARTS	MATERILA	STANDARD	QTY
20	PIN	STEEL		1
19	HOLDER	STEEL		1
18	SWING ARM	STEEL		1
17	LEVER ARM	STEEL		1
16	STUFFING BOX BOLT	STEEL		4
15	BONNET BOLT	STEEL		6
14	BONNET GASKET	RUBBER	BS 2494	1
13	BONNET BUSH	BRONZE	BS 2494	1
12	O-RING C	BRONZE	BS 2494	1
11	O-RING B	BRONZE	BS 2494	1
10	O-RING A	RUBBER	BS 2494	3
9	GLAND	BRONZE	TIS.256-2540	1
8	BODY RING	BRONZE	TIS.256-2540	2
7	DISC RING	BRONZE	TIS.256-2540	2
6	STEM NUT	BRONZE	TIS.256-2540	1
5	STEM	SUS.	TIS.256-2540	1
4	STUFFING BOX	CAST IRON	TIS.256-2540	1
3	DISC	CAST IRON	TIS.256-2540	1
2	BONNET	CAST IRON	TIS.256-2540	1
1	BODY	CAST IRON	TIS.256-2540	1

HYDRO SHELL 20 KG/CM<sup>2</sup>  
 HYDROS VALVE SEAT 10 KG/CM<sup>2</sup>

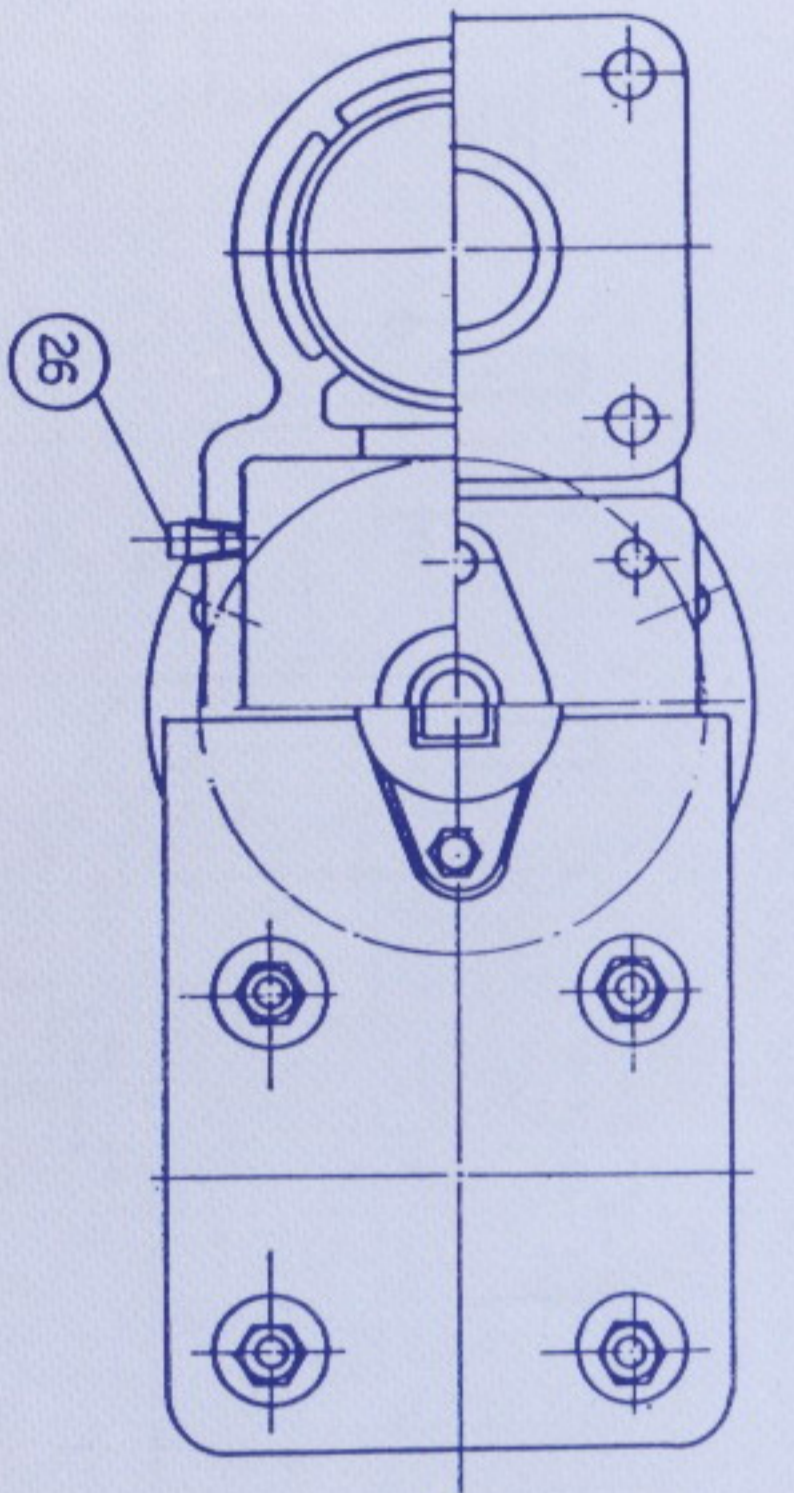
STRONG WATERWORKS ENGINEERING CO., LTD.

DESIGNED BY PRAYAD S  
 DRAWN BY KOTT C  
 CHECKED BY PASUT P  
 APPROVED BY TAMANOON T

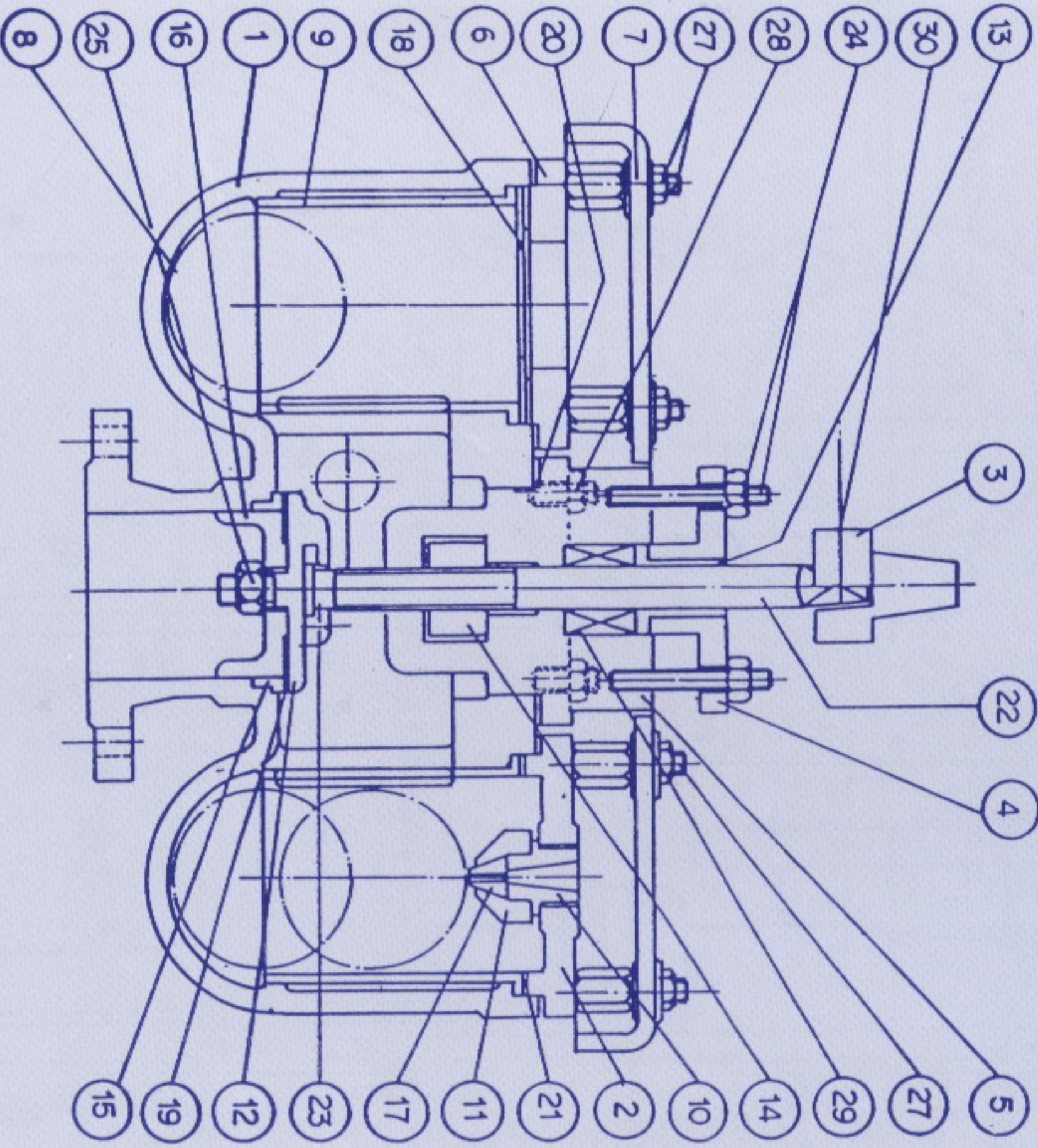
SCALE: DRAWN DATE 14.12.2001

CAST IRON GATE VALVE SIZE 100 - 150MM.

DRAWING NO. GV - 001



**MARKING**  
 PWA  
 SWW  
 DN.....MM  
 PN10  
 NO/200.....



TIS.256-2540						
CHEMICAL COMPOSITION						
MATERIAL	Mn max.	Si max.	Cr	Ni	Cu	Sn
CAST IRON	-	-	-	-	-	-
STAINLESS STEEL	2.0	2.0	17.0 TO 21.0	8.0 TO 12.0	-	-
BRONZE	-	-	-	82.0 TO 87.0	4.0 TO 6.0	4.0 TO 6.0
BRASS	-	-	-	56.0 TO 64.0	-	0.5 TO 3.5
MECHANICAL PROPERTIES						
MATERIAL	ULTIMATE TENSILE STRENGTH min (MP)	YIELD STRENGTH min (MP)	ELONGATION min %	HARDNESS max. (HB)		
CAST IRON	210	-	-	-		
STAINLESS STEEL	510	205	30	-		
BRONZE	210	95	15	230		
BRASS	380	170	10	-		

**COATING**  
 INTERIOR LIQUID EPOXY 100 MICRONS  
 EXTERIOR COAL-TAR EPOXY 200 MICRONS

NO.	PARTS	MATERIAL	STANDARD	QTY
30	CAP BOLT	STEEL	TIS.171 Q1.6	
29	PACKING			
28	STUFFING BOX STUD NUT	SUS	TIS.256-2540	
27	COVER STUD AND NUT	SUS	TIS.256-2540	
26	PLUG	BRASS	TIS.256-2540	
25	MAIN VALVE SEAT NUT	BRASS	TIS.256-2540	
24	GLAND STUD AND NUT	BRASS	TIS.256-2540	
23	SPLIT PIN	BRASS	TIS.256-2540	
22	STEM	SUS	TIS.256-2540	
21	PLATE VALVE GASKET	RUBBER	BS.2494	
20	STUFFING BOX GASKET	RUBBER	BS.2494	
19	MAIN VALVE SEAT	RUBBER	BS.2494	
18	PLATE VALVE SEAT	RUBBER	BS.2494	
17	CONICAL SEAT	RUBBER	BS.2494	
16	MAIN VALVE GUIDE	BRONZE	TIS.256-2540	
15	MAIN VALVE SEAT RING	BRONZE	TIS.256-2540	
14	STEM NUT	BRONZE	TIS.256-2540	
13	GLAND BUSHING	BRONZE	TIS.256-2540	
12	MAIN DISC	BRONZE	TIS.256-2540	
11	SEAT HOLDER NUT	BRONZE	TIS.256-2540	
10	VALVE SEAT HOLDER	BRONZE	TIS.256-2540	
9	FLOAT VALVE GUIDE	PLASTIC ABS		
8	FLOAT VALVE	PLASTIC ABS		
7	COVER	CAST IRON		
6	PLATE VALVE SEAT COVER	CAST IRON	TIS.256-2540	
5	STUFFING BOX	CAST IRON	TIS.256-2540	
4	GLAND FLANGE	CAST IRON	TIS.256-2540	
3	CAP	CAST IRON	TIS.256-2540	
2	BONNET	CAST IRON	TIS.256-2540	
1	VALVE BODY	CAST IRON	TIS.256-2540	

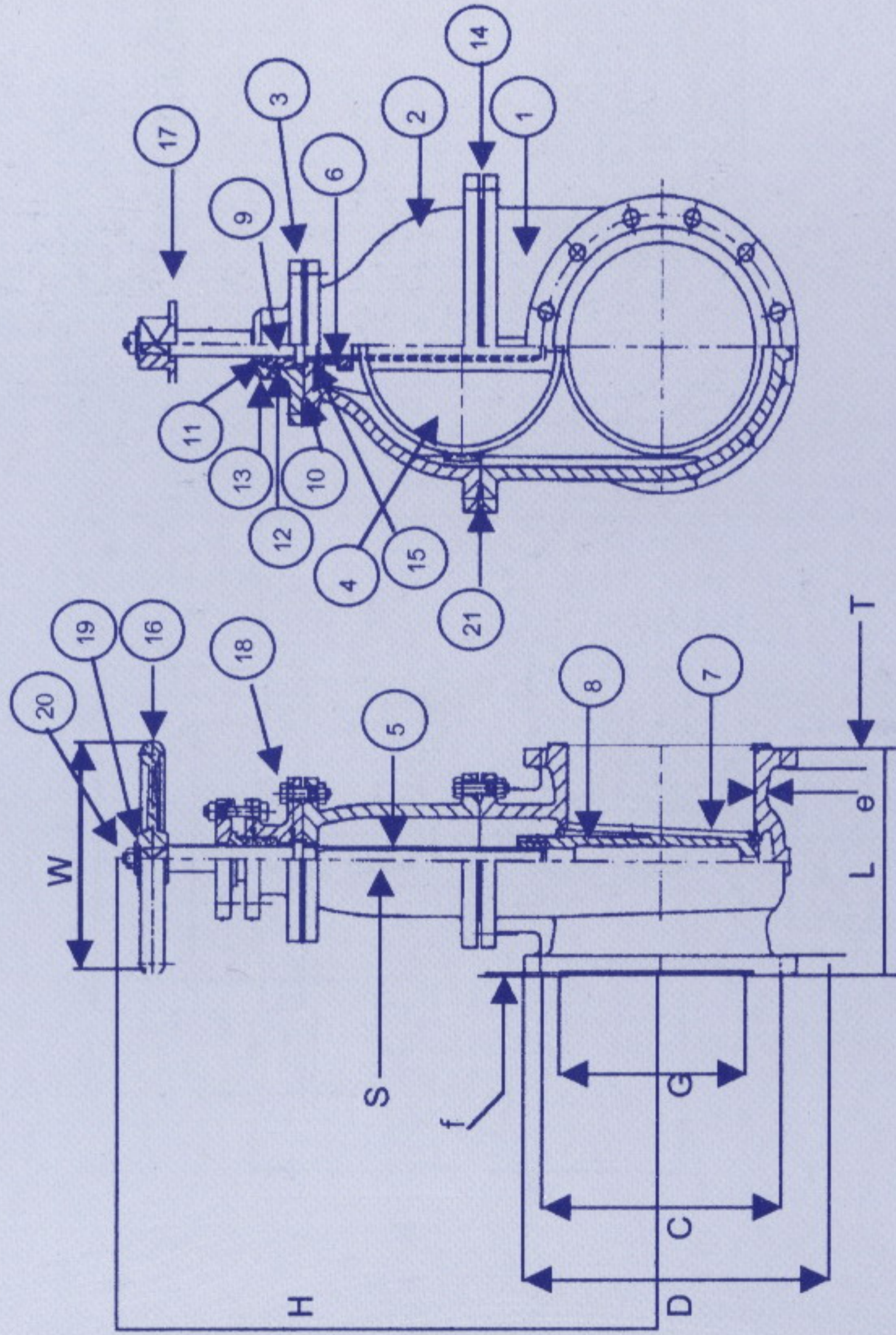
HYDRO SHELL TEST 20 Kg/cm<sup>2</sup>  
 HYDRO VALVE SEAT TEST 10 Kg/cm<sup>2</sup>  
 WORKING PRESSURE 10 Kg/cm<sup>2</sup>

STRONG WATERWORKS ENGINEERING CO., LTD.

DESIGNED BY	DRAWN BY	APPROVED BY	CHECKED BY
	S. Pong	KOTT.W.	BS.

SCALE: DRAWN DATE

TYPE DA DOUBLE AIR VALVE SIZE 50-100MM. DRAWING No. DA - 002



**MARKING**

PWA

SWW

DN.....MM.

PN.10

..... TURNS

DATE.....

**COATING**

INTERIOR LIQUID EPOXY 100 MICRONS.

EXTERIOR COAL TAR EPOXY 200 MICRONS.

**DIMENSION (MM.)**

DN	L	ØD	ØC	ØG	h	n	T	f	e	Øs	H	W
100	229	220	180	156	19	8	24	3	10	22	355	250
150	267	285	240	211	23	8	26	3	11	26	447	300
200	292	340	295	266	23	8	26	3	13	26	533	350
250	330	395	350	319	23	12	28	3	16	29	673	400
300	356	445	400	370	23	12	28	4	17	30	752	400

**PRESSURE TEST**

HYDRO SHELL TEST 20 Kg/cm<sup>2</sup>

HYDRO SEAT TEST 10 Kg/cm<sup>2</sup>

HYDRO BACK SEAT TEST 10 Kg/cm<sup>2</sup>

AIR SEAT TEST

STEAM C

WORKING PRESSURE 10 Kg/cm<sup>2</sup>

TIS.256-2540

**Chemical Composition**

**Material**

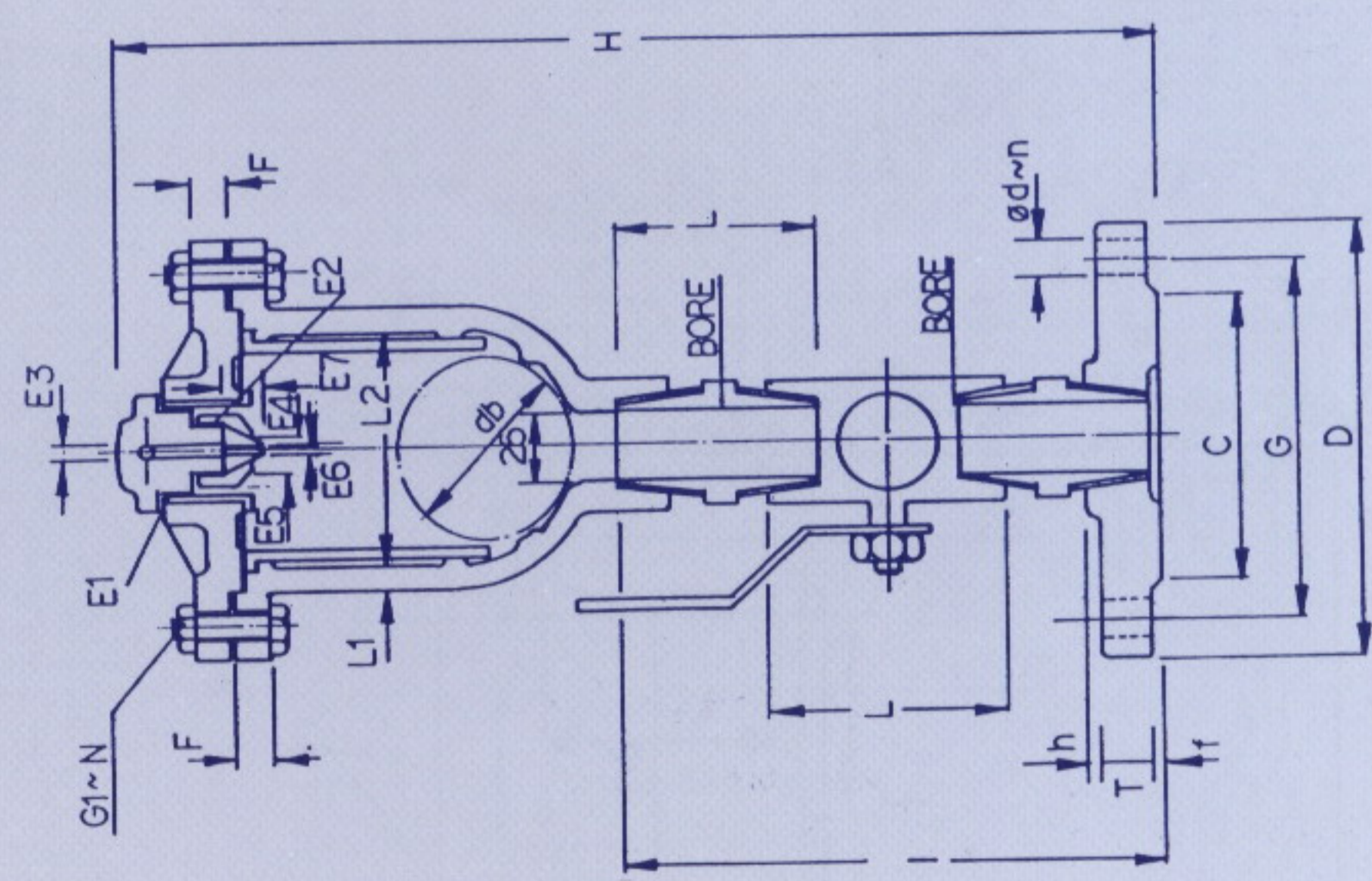
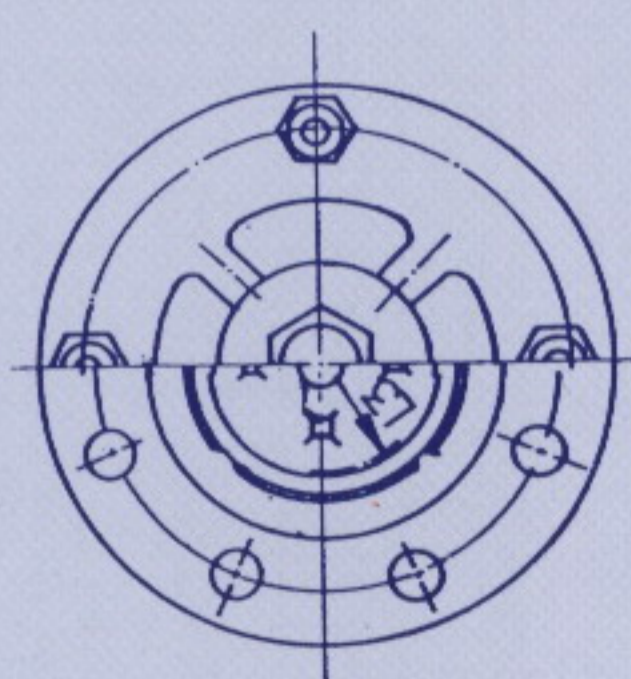
Material	Cast iron	Bronze	Mn	Si	Cr	Ni	Cu	Sn	Pb	Fe	Zn
Cast iron	-	-	-	-	-	-	82.0-87.0	4.0 - 6.0	4.0 - 6.0	-	4.0 - 7.0

**Mechanical Property**

Cast Iron	Bronze	ultimate tensile strength mm (mpa)	yield strength mm(mpa)	elongation mm %	hardness (max) Hb
210	210	95	15	230	

No	PARTS	MATERIAL	SPECIFICATION QTY
21	BONNET BOLT & NUT	MILD STEEL	
20	HAND WHEEL NUT	MILD STEEL	TIS.256-2540 1
19	HAND WHEEL WASHER	MILD STEEL	1
18	STUFFING BOX BOLT	MILD STEEL	4
17	OPERATING NUT	CAST IRON	TIS.256-2540 1
16	HAND WHEEL	CAST IRON	1
15	BONNET BUSHING	BRONZE	1
14	BONNET GASKET	RUBBER (NR)	1
13	O-RING B	RUBBER(NBR)	1
12	O-RING C	RUBBER(NBR)	1
11	O-RING B	RUBBER(NBR)	2
10	O-RING A	RUBBER(NBR)	1
9	GLAND	BRONZE	TIS.256-2540 1
8	DISC SEAT RING	BRONZE	2
7	BODY SEAT RING	BRONZE	2
6	STEM NUT	BRONZE	1
5	STEM	BRASS	1
4	DISC	CAST IRON	1
3	STUFFING BOX	CAST IRON	1
2	BONNET	CAST IRON	1
21	BODY	CAST IRON	1

STRONG WATERWORKS ENGINEERING CO., LTD.			
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
TAMANU	KOT.C	PASUT.P	PASUT.P
SCALE		DRAWING DATE 5 1 2002	
GATE VALVE SIZE 80-300			
TYPE GV	DRAWING No. L-001 GVF		



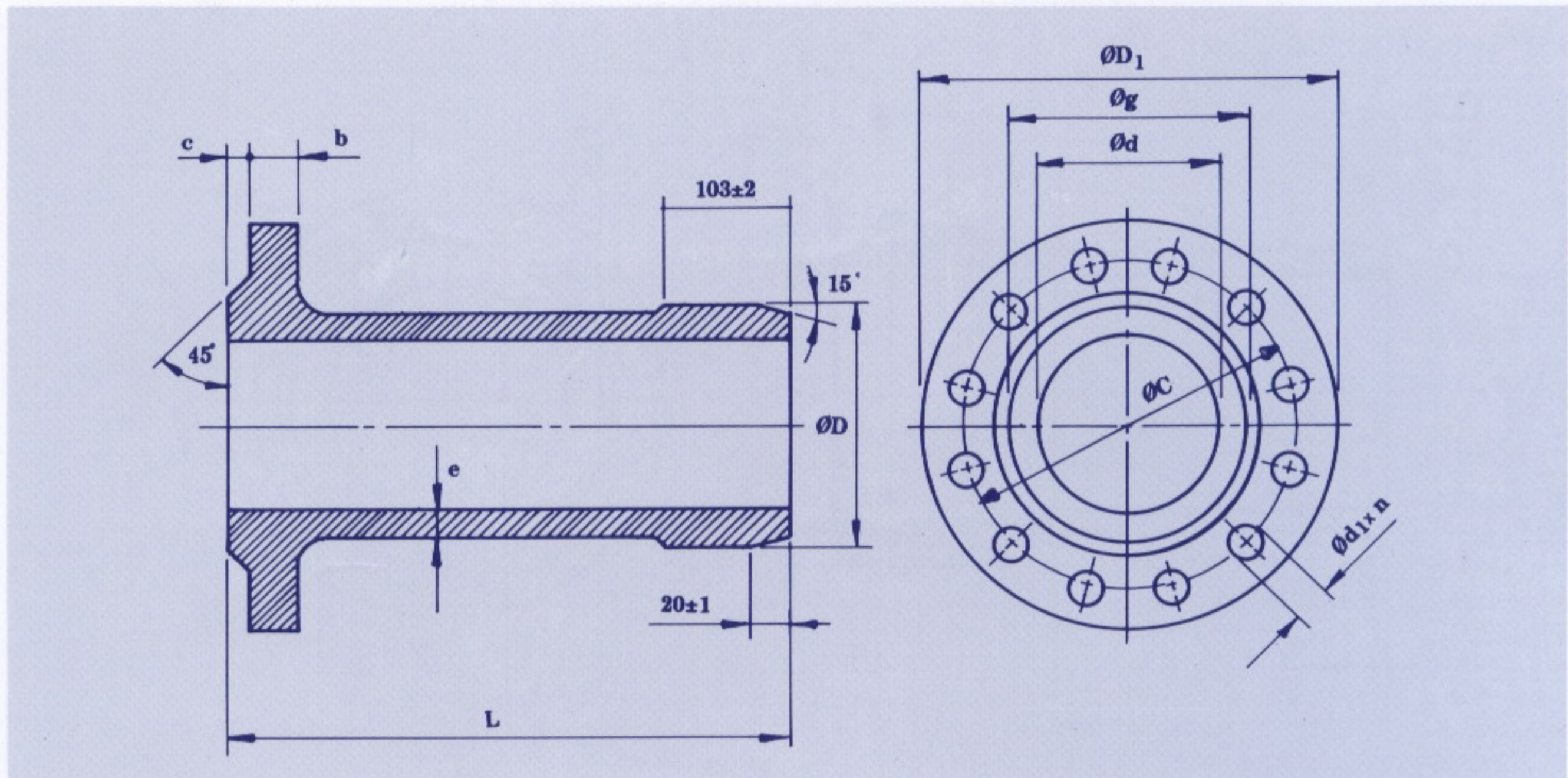
I	NIPPLE		BALL VALVE		VALVE SEAT HOLDER		
	L	BORE	L	BORE	SCREW PORTION E1	SCREW PORTION E2	E3
152	52	25	65	25	M42 x 3	M24 x 2	6

CONICAL VALVE SEAT				BONNET BOLT		BODY		FLANGE				FLOAT VALVE							
E4	E5	E6	E7	F	G1	N	L1	L2	L3	T	f	G	C	D	h	$\phi d \sim n$	BOLT DIA.	db	
10	20	2.2	16		M.12	4	10	110	92	22	3	153	180	220	12	19	8	16	90 ± 02

ALL DIMENSIONS ARE IN MILLIMETRES

STRONG WATERWORKS ENGINEERING CO., LTD.			
DESIGNED BY	DRAWN BY	APPROVED BY	CHECKED BY
S. Pong.	KOTT.W.	<i>[Signature]</i>	<i>[Signature]</i>
SCALE		DRAWN DATE	
SINGLE AIR VALVE SIZE 25 MM			
TYPE SA	DRAWING NO		SA-02

# CAST IRON FLANGED SPIGOTS

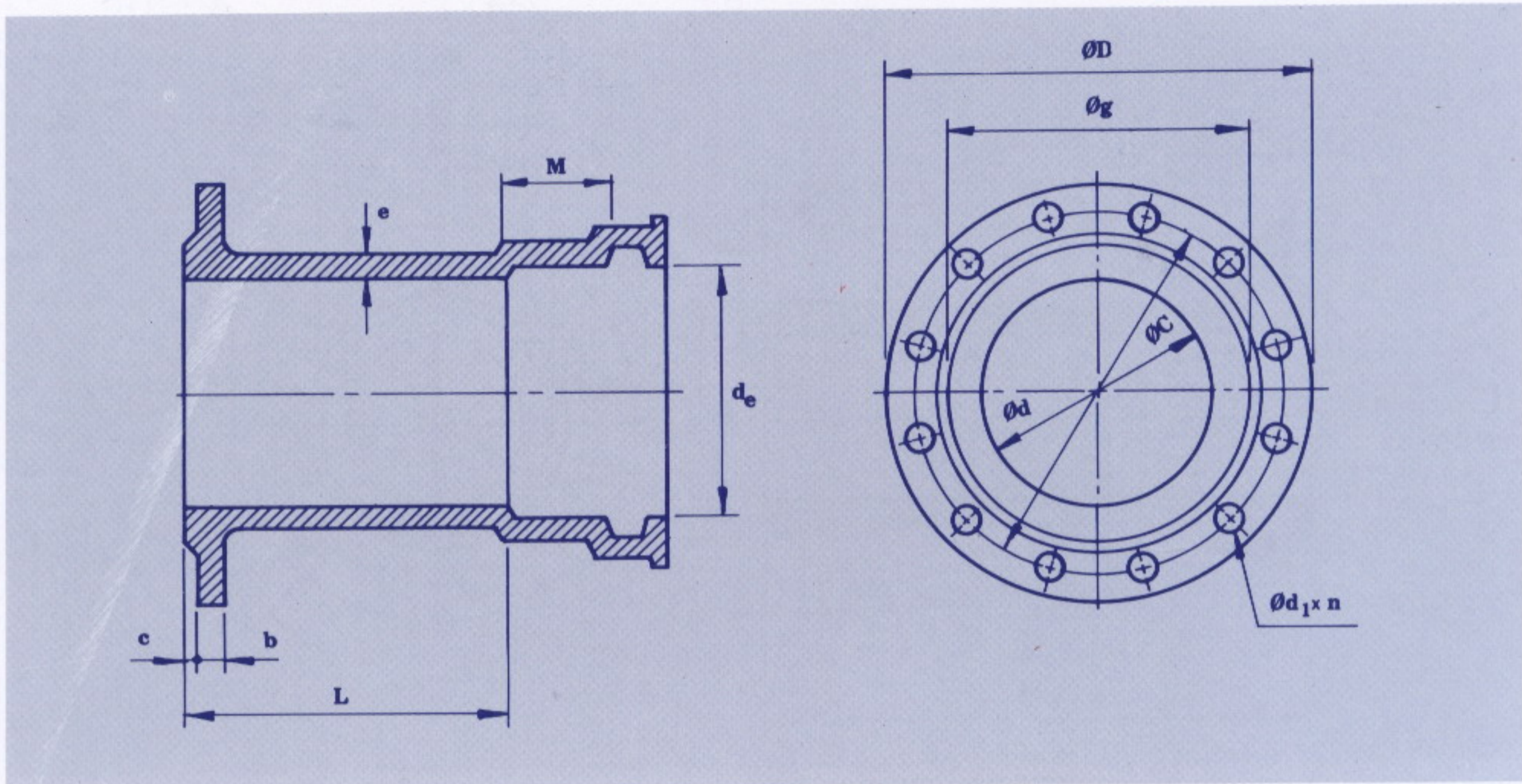


DN	e	L	ØD	ØD <sub>1</sub>	Øg	ØC	Ød <sub>1</sub>	n	b	c
80	10.0	400	98 ±0.6	200 ±2	133	160 ±1.5	19	4	21.0 +4.5	1-3
100	10.5	400	120 ±0.6	220 ±2	153	180 ±1.5	19	8	22.0 +4.5	1-3
150	11.7	400	176 ±0.6	285 ±2	209	240 ±1.5	23	8	23.0 +4.5	1-3
200	12.8	500	234 ±0.6	340 ±3	264	295 ±1.5	23	8	24.5 +4.5	1-3
250	14.0	500	288 ±0.6	395 ±3	319	350 ±1.5	23	12	26.0 +4.5	1-3
300	15.2	500	344 ±0.6	445 ±5	367	400 ±1.5	23	12	27.5 +4.5	1-4
400	17.5	500	460 ±0.8	565 ±5	477	515 ±2.0	28	16	30.0 +4.5	1-4
500	19.8	500	580 ±0.8	670 ±5	582	620 ±2.0	28	20	33.0 +6.5	1-4
600	22.2	600	694 ±1.0	780 ±5	682	725 ±2.0	31	20	36.0 +6.5	1-5

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992
  3. FOR AC. PIPE

# CAST IRON FLANGED SPIGOT WITH BELL END



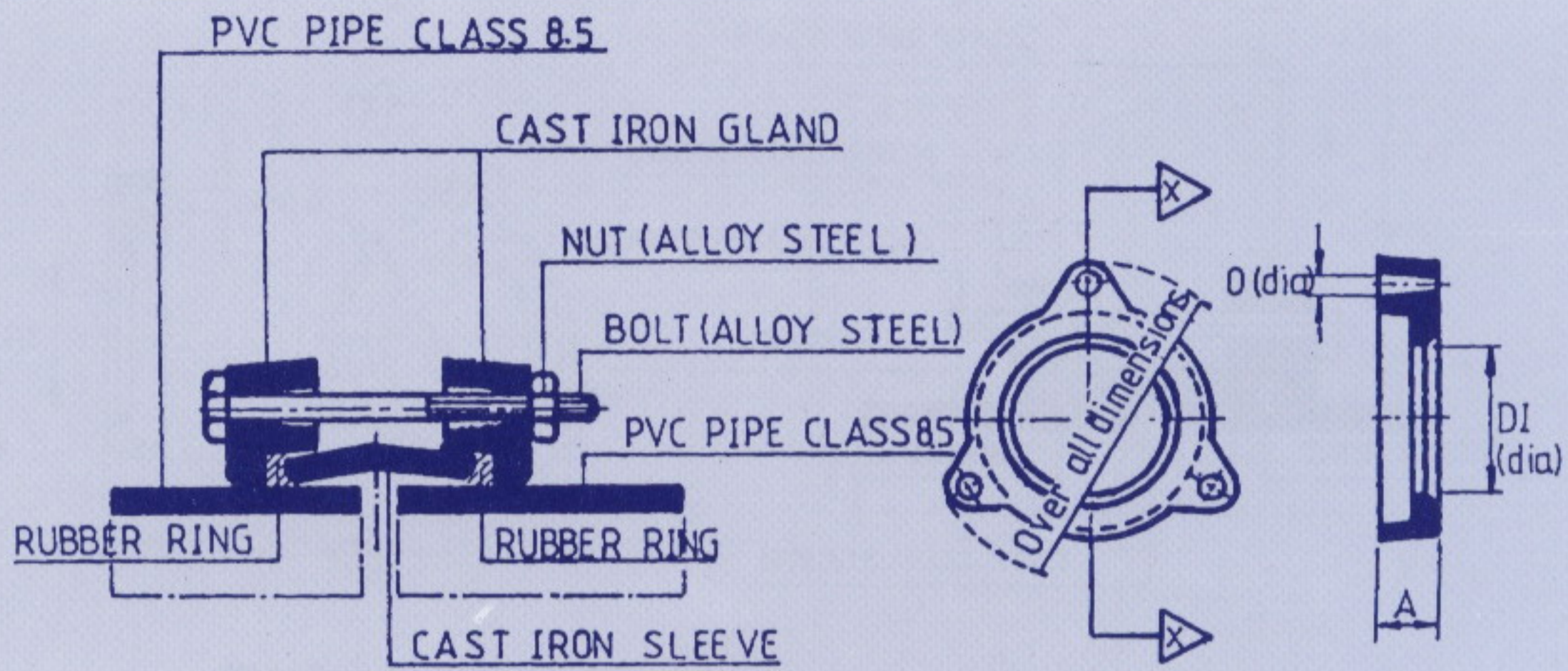
DN	$d_e$		$M$	L	$\varnothing D$	$\varnothing g$	$\varnothing C$	$\varnothing d_1$	n	b	c	e
	min	max	min									
80	89.5	92	44	150	200 ±2	133	160 ±1.5	19	4	21.0 +4.5	1-3	10.0
100	114.5	117	50	150	220 ±2	153	180 ±1.5	19	8	22.0 +4.5	1-3	10.5
150	165.7	169	61	150	285 ±2	209	240 ±1.5	23	8	23.0 +4.5	1-3	11.7
200	216.9	220	72	150	340 ±3	264	295 ±1.5	23	8	24.5 +4.5	1-3	12.8
250	268.1	271	84	300	395 ±3	319	350 ±1.5	23	12	26.0 +4.5	1-3	14.0
300	319.3	322	84	300	445 ±5	367	400 ±1.5	23	12	27.5 +4.5	1-4	15.2
400	421.7	425	98	300	565 ±5	477	515 ±2.0	28	16	30.0 +4.5	1-4	17.5
500	522.1	525	113	300	670 ±5	582	620 ±2.0	28	20	33.0 +6.5	1-4	19.8
600	633.8	635	129	300	780 ±5	682	725 ±2.0	31	20	36.0 +6.5	1-5	22.2

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

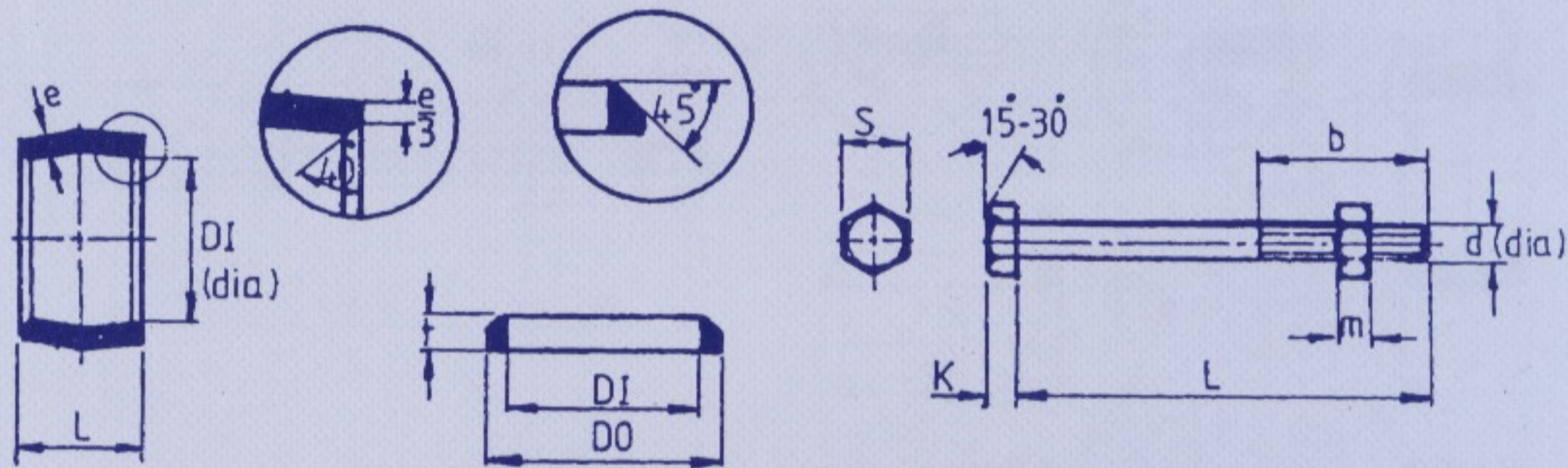


# GIBAULT FOR PVC PIPE



**GIBAULT**

**GLAND**



**SLEEVE**

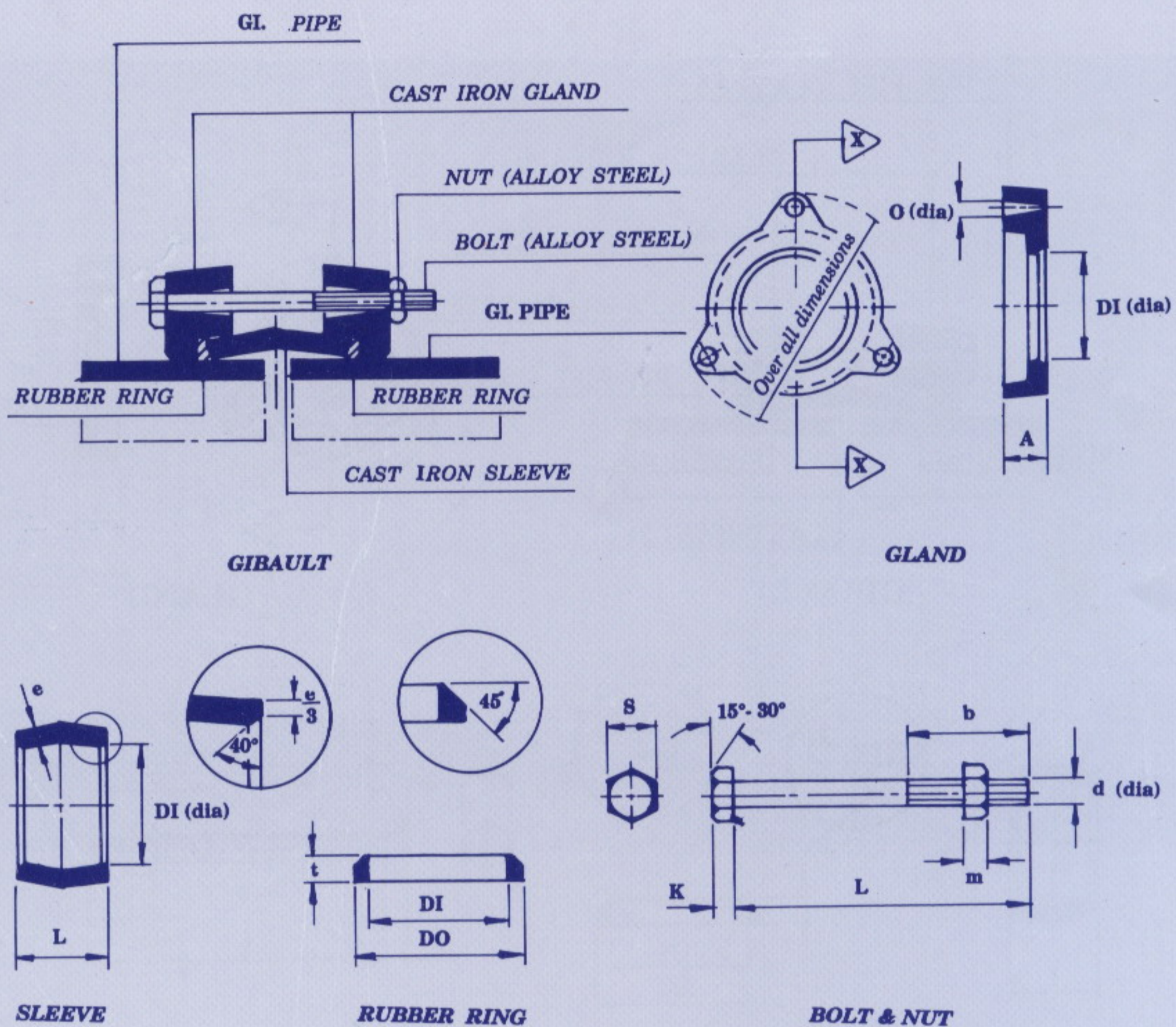
**RUBBER RING**

**BOLT & NUT**

DN	DI	GLAND			SLEEVE			RUBBER RING			BOLT & NUT							
		L	A	No.	D	e	L	DI	DO	t	d	L	b	No.	m		k	s
															max	min		
100	118	225	36	3	17.0	10.5	80	109	131	22	14.0	155	65	3	11.55	10.45	9.0±0.45	20.16-21.0
150	170	290	42	3	19.0	11.7	90	157	181	24	16.0	165	65	3	13.55	12.45	10.0±0.45	23.16-24.0
200	221	352	52	4	19.0	12.8	100	206	231	26	16.0	190	80	4	13.55	12.45	10.0±0.45	23.16-24.0
250	272	410	52	4	19.0	14.0	100	253	281	28	16.0	190	80	4	13.55	12.45	10.0±0.45	23.16-24.0
300	323	470	52	4	19.0	15.2	100	302	331	30	16.0	190	80	4	13.55	12.45	10.0±0.45	23.16-24.0

**NOTES** 1. ALL DIMENSIONS ARE IN mm.  
2. TOLERANCES CONFORM TO T.I.S. 918-2535

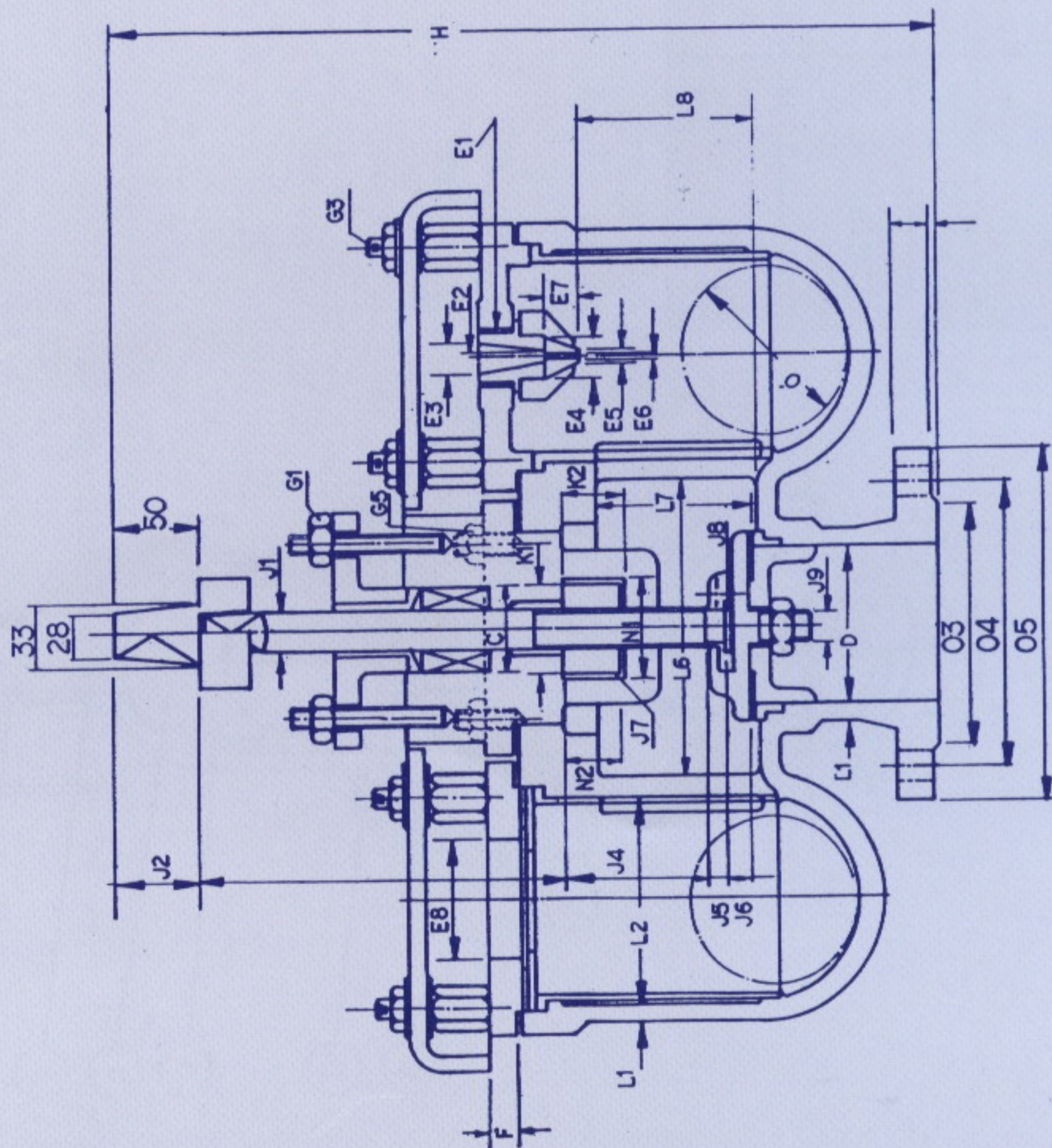
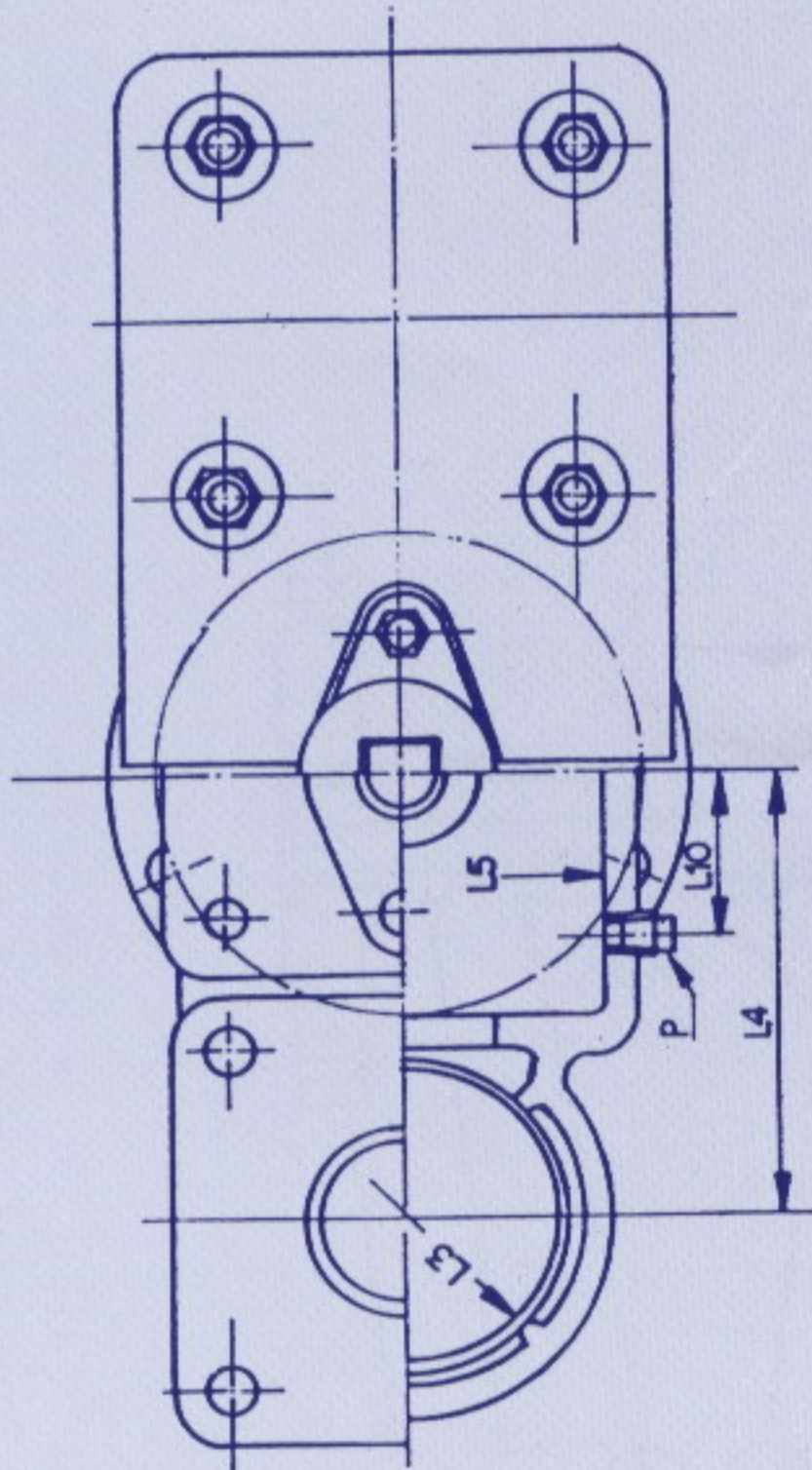
# GIBAULT FOR GI. PIPE



DN	DI	GLAND				SLEEVE RUBBER RING					BOLT & NUT							
		L	A	No.	D	e	L	DI	DO	t	d	L	b	No.	m max min		k	s
40	52	158	33	2	17.0	10.0	65	45	65	20	14.0	140	55	2	11.55	10.45	9.0 ± 0.45	20.16-21.0
50	64	172	33	2	17.0	10.0	65	56	76	20	14.0	140	55	2	11.55	10.45	9.0 ± 0.45	20.16-21.0
65	80	184	33	2	17.0	10.0	70	71	91	20	14.0	140	55	2	11.55	10.45	9.0 ± 0.45	20.16-21.0
80	93	196	33	3	17.0	10.0	70	83	103	20	14.0	140	55	3	11.55	10.45	9.0 ± 0.45	20.16-21.0
100	118	220	36	3	17.0	10.5	80	106	128	22	14.0	155	65	3	11.55	10.45	9.0 ± 0.45	20.16-21.0
125	144	244	36	3	19.0	10.5	80	130	152	22	16.0	155	65	3	13.55	12.45	10.0 ± 0.45	23.16-24.0
150	169	286	42	3	19.0	11.7	90	154	178	24	16.0	165	65	3	13.55	12.45	10.0 ± 0.45	23.16-24.0

STRONG WATERWORKS ENGINEERING CO., LTD.

- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992



PART SYMBOL	GLAND BUSHING	VALVE SEAT HOLDER		CONICAL VALVE SEAT					PLATE VALVE SEAT	COVER PLATE	GLAND BOLT AND NUT	
		SCREW PORTION	E1 DESIGNATION	E2	E3	E4	E5	E6			E7	E8
NOMINAL DIA.	C											
50	42	M.24 x 2	7	14	20	10	2.2-0.2	16	68	18	M.12	2
75	44	M.28 x 2	8	15	22	11	2.5-0.3	18	70	19	M.12	2
100	50	M.30 x 2	9	16	24	12	2.8-0.3	20	78	19	M.12	2

PART SYMBOL	BONNET BOLT AND NUT	STUFFING BOX		STEM										STEMNUT		VALVE BODY							
		DESIGNATION	No.	G3	G5	No.	J1	J2	J3	J4	J5	J6	J7 DESIGNATION	J8	J9 DESIGNATION	K1	K2	D	L1	L2	L3	L4	
NOMINAL DIA.																							
50	M.16	8	M.16	4	20	40	135	59	12	8	TW28	30	M.12	42	27	50	11	115	97±0.2	145			
75	M.16	8	M.16	4	24	40	145	73	13	9	TW22	36	M.16	50	31	75	11	122	102±0.2	157			
100	M.16	8	M.16	4	28	45	185	90	14	10	TW28	42	M.20	58	36	100	12	132	112±0.2	173			

PART SYMBOL	VALVE BODY	STUFFING BOX					FLANGE					FLOAT VALVE PLUG	HEIGHT										
		L5	L6	L7	L8	L9	L10	N1	N2	01	02			03	04	05	06-holes	H					
NOMINAL DIA.																							
50	100	135	75	77	105	45	44	29	21	3	156	180	220	19~8	90 ± 0.2	PT.1/2	435						
75	114	168	80	92	95	55	52	33	21	3	156	180	220	19~8	100 ± 0.2	PT.1/2	450						
100	154	190	110	142	90	65	60	38	21	3	156	180	220	19~8	110 ± 0.2	PT.1/2	520						

**STRONG WATERWORKS ENGINEERING CO., LTD.**

DESIGNED BY **S. Pong.** DRAWN BY **KOTT.W.** APPROVED BY **S. Pong.** CHECKED BY **S. Pong.**

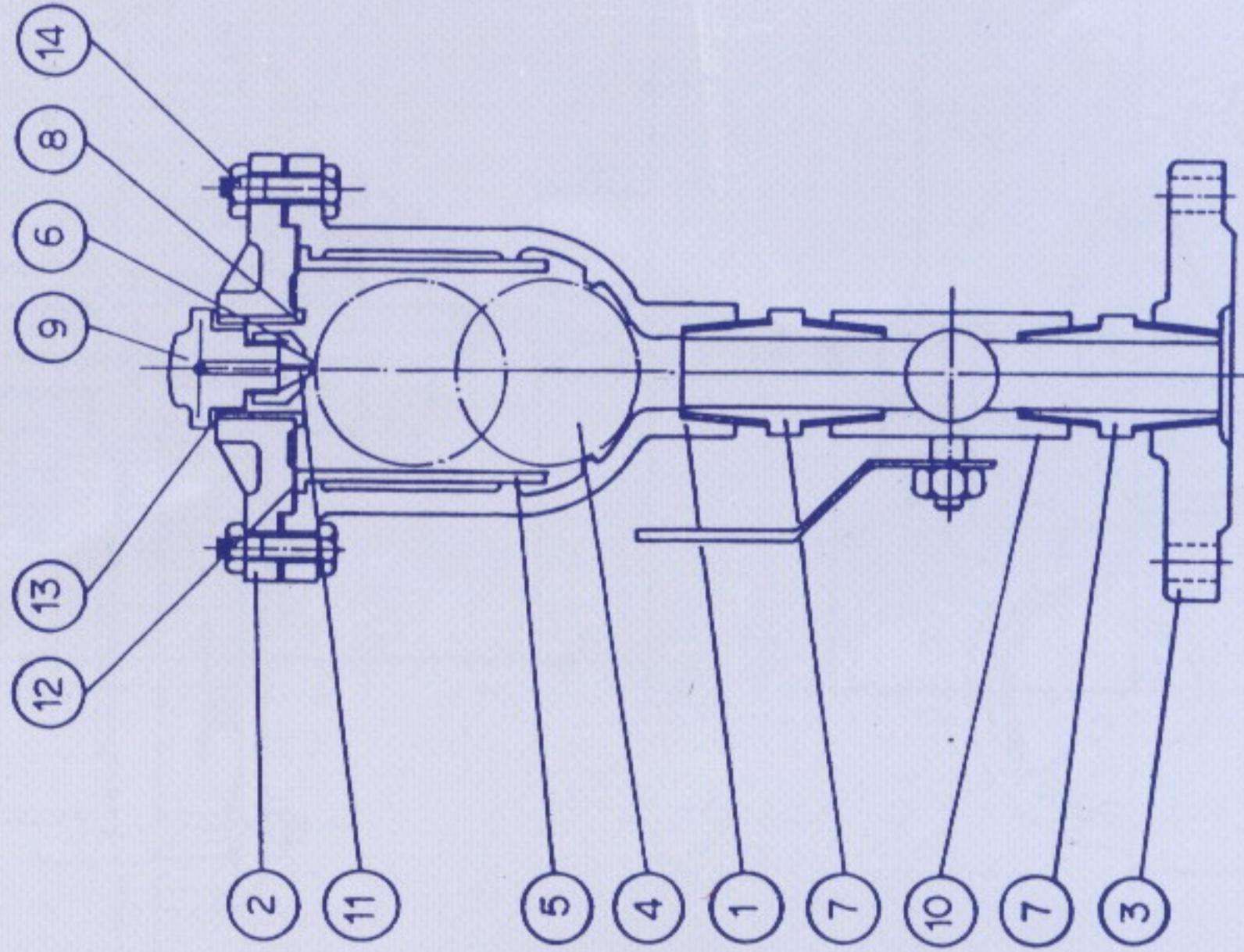
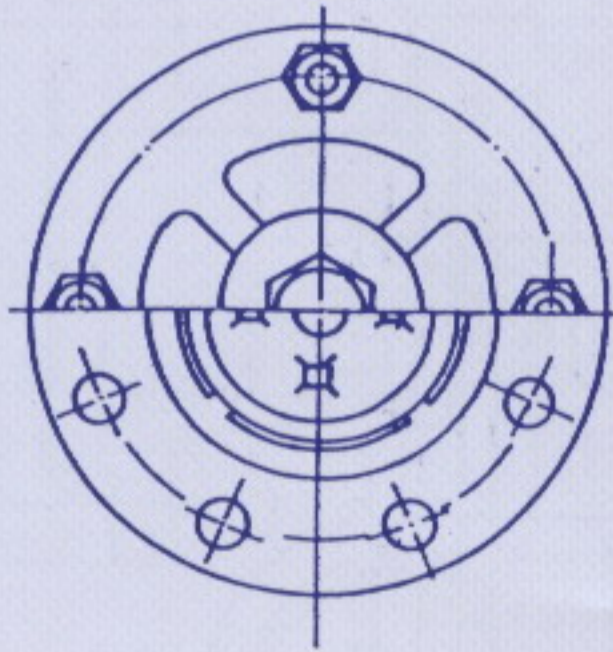
SCALE \_\_\_\_\_ DRAWN DATE \_\_\_\_\_

**DOUBLE AIR VALVE Ø50 - 100 MM.**

TYPE DA DRAWING NO. DA - 001

TIS. 256-2540

MATERIAL	CHEMICAL COMPOSITION										MECHANICAL PROPERTIES			
	Mn Max	Si Max	Cr	Ni	Cu	Sn	PB	Fe	Zn	ULTIMATE TENSILE STRENGTH min (MPa)	YIELD STRENGTH min (MPa)	ELONGATION min %	HARDNESS max (HB)	
CAST IRON	-	-	-	-	-	-	-	-	-	210	-	-	230	
STAINLESS STELL	2.	2.	17.0 t 21.0	8.0 t 12.0	82.0 t 87.0	4.0 t 6.0	4.0 t 6.0	4.0 t 7.0	510	205	30	-		
BRONZE	-	-	-	-	-	-	-	-	210	95	15	-		



**MARKING**

SWW  
PWA  
DN25MM.  
PN.10  
...../...../200.....

NO.	PARTS	MATERIAL	SUS	TIS.256-2540	QTY
14	BONNET BOLT NUT			TIS.256-2540	1 set
13	VALVE SEAT GASKET	RUBBER	RUBBER	BS.2494	1
12	BONNET GASKET	RUBBER	RUBBER	BS.2494	1
11	CONICAL VALVE SEAT	RUBBER	RUBBER	BS.2494	1
10	BALL VALVE				1
9	VALVE SEAT HOLDER	BRONZE	BRONZE	TIS.256-2540	1
8	BUSHING			TIS.256-2540	1
7	NIPPLE or SHORT PIPE	GALV STEEL			2
6	SEAT HOLDER NUT	BRONZE	BRONZE	TIS.256-2540	
5	FLOAT VALVE GUIDE	PLASTIC	PLASTIC		1
4	FLOAT VALVE	PLASTIC	PLASTIC		1
3	FLANGE	CAST IRON	CAST IRON	TIS.256-2540	1
2	BONNET	CAST IRON	CAST IRON	TIS.256-2540	1
1	BODY	CAST IRON	CAST IRON	TIS.256-2540	1

HYDROSTATIC SHEEL TEST 20 Kg/cm<sup>2</sup>  
 HYDROSTATIC VALVE SEAT TEST 10 Kg/cm<sup>2</sup>  
 WORKING PRESSURE 10 Kg<sup>2</sup>/cm<sup>2</sup>

STRONG WATERWORKS ENGINEERING CO., LTD.

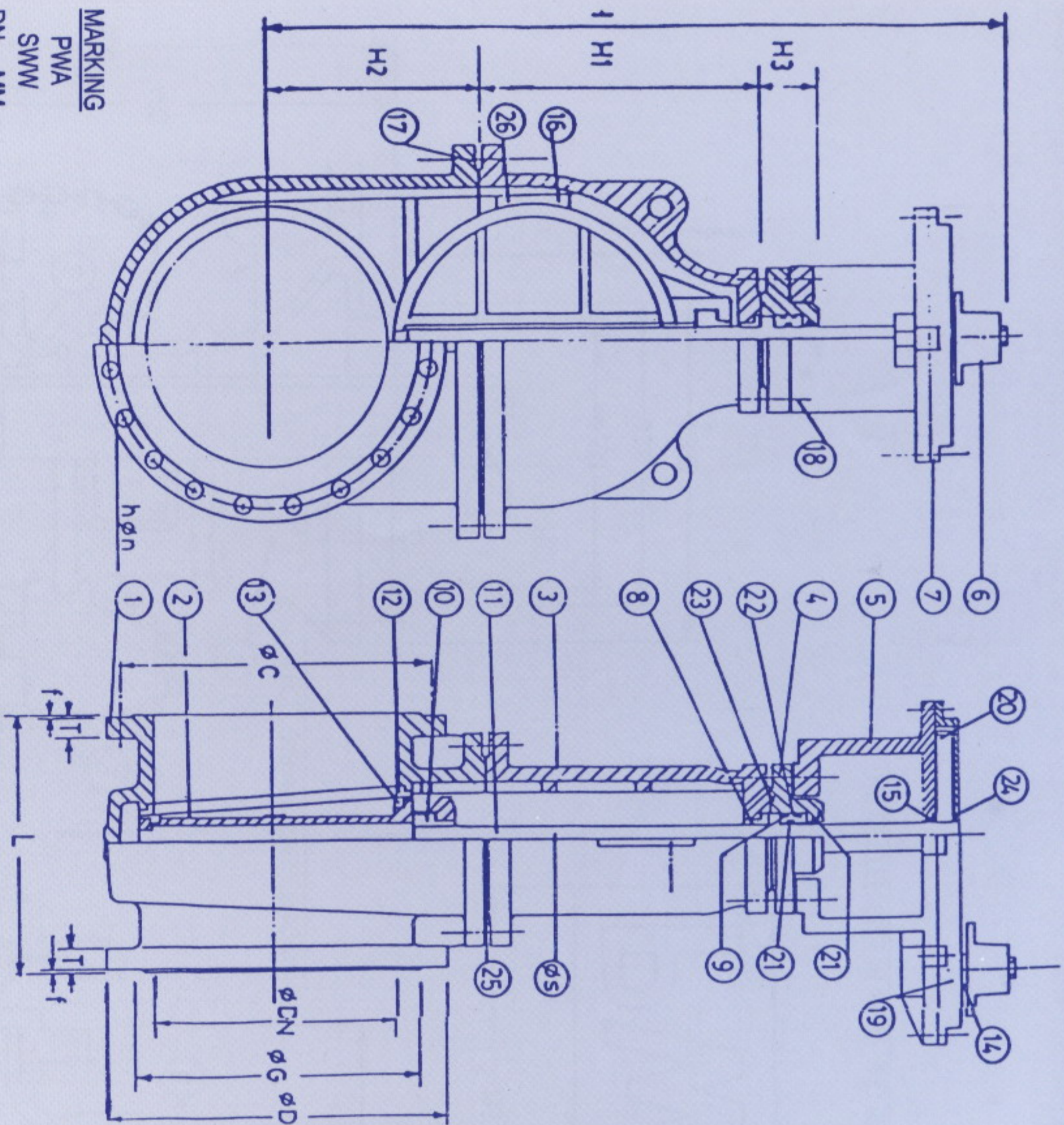
DESIGNED BY	DRAWN BY	APPROVED BY	CHECKED BY
S. Pong.	KOTT.W.	<i>[Signature]</i>	<i>[Signature]</i>

SCALE \_\_\_\_\_ DRAWN DATE \_\_\_\_\_

SINGLE AIR VALVE SIZE 25 MM.

TYPE SA \_\_\_\_\_ DRAWING No. SA - 01

**COATING**  
 INTERIOR LIQUID EPOXY 100 MICRONS.  
 EXTERIOR COAL TAR EPOXY 200 MICRONS.



MARKING  
PWA  
SWW  
DN...MM.  
PN.10  
.....TURNS  
DATE.....

COATING  
INTERIOR LIQUID EPOXY 100 MICRONS.  
EXTERIOR COAL TAR EPOXY 200 MICRONS.

SIZE	DN	L	DIMENSION (MM.)						GEAR RATIO 2 : 1						
			ØD	ØC	ØG	h	n	T	F	a	Øs	H	H1	H2	H3
400	406	406	565	515	480	28	16	32	4	22	37	1163	345	440	90
500	457	457	670	620	582	28	20	34	4	25	45	1358	463	520	90
600	508	508	780	725	682	31	20	36	5	27	50	1820	900	545	90

TIS.256-2540		Chemical Composition	
Material		Bronze	
Cast iron	Cast iron	Mn	-
		Si	-
		Cr	-
		Ni	-
		Cu	82.0-87.0
		Sn	4.0 - 6.0
		Pb	4.0 - 6.0
		Fe	-
		Zn	4.0 - 7.0

Mechanical Property	
Cast Iron	ultimate tensile strength
210	210
95	yield strength
-	elongation
15	hardness
230	Hb

NO.	PARTS	MATERIAL	STANDARD	QTY
26	DISC GUIDE BOLT	SUS	TIS.256-2540	2 set
25	BONNET GASKET	RUBBER NBR	BS2494	1
24	O-RING D (UNDER GROUND)	RUBBER NBR	BS2494	4
23	O-RING C	RUBBER NBR	BS2494	2
22	O-RING B	RUBBER NBR	BS2494	2
21	O-RING A	RUBBER NBR	BS2494	1
20	SPUR GEAR Zg	STEEL	TIS.171	1
19	SPUR GEAR Z1	STEEL	TIS.171	1
18	STUFFING BOX BOLT & NUT	STEEL	TIS.171	1 set
17	BODY BOLT & NUT	STEEL	TIS.171	1 set
16	DISC GUIDE	BRONZE	TIS.256-2540	2
15	Zg BUSHING	BRONZE	TIS.256-2540	2
14	Z1 BUSHING	BRONZE	TIS.256-2540	2
13	DISC SEAT RING	BRONZE	TIS.256-2540	2
12	BODY SEAT RING	BRONZE	TIS.256-2540	2
11	STEM	BRONZE	TIS.256-2540	1
10	STEM NUT	(BRASS)	TIS.256-2540	1
9	GLAND	BRONZE	TIS.256-2540	1
8	BONNET BUSHING	BRONZE	TIS.256-2540	1
7	GEAR CASE	CAST IRON	TIS.256-2540	1
6	OPERATING NUT	CAST IRON	TIS.256-2540	1
5	STAND	CAST IRON	TIS.256-2540	1
4	STUFFING BOX	CAST IRON	TIS.256-2540	1
3	BONNET	CAST IRON	TIS.256-2540	1
2	DISC	CAST IRON	TIS.256-2540	1
1	BODY	CAST IRON	TIS.256-2540	1

STRONG WATERWORKS ENGINEERING CO., LTD.

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
TAMANU	KOT.C	PASUT.P	PASUT.P

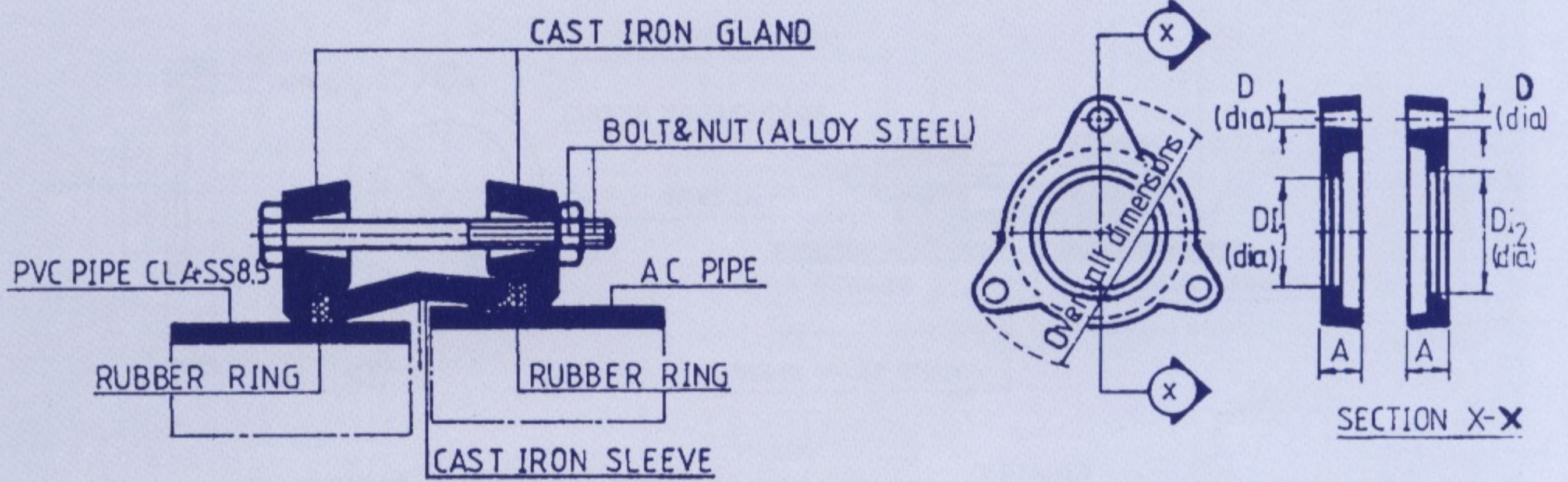
SCALE DRAWING DATE 5 1 2002

GATE VALVE SIZE 400-600

TYPE GV DRAWING No. G 002

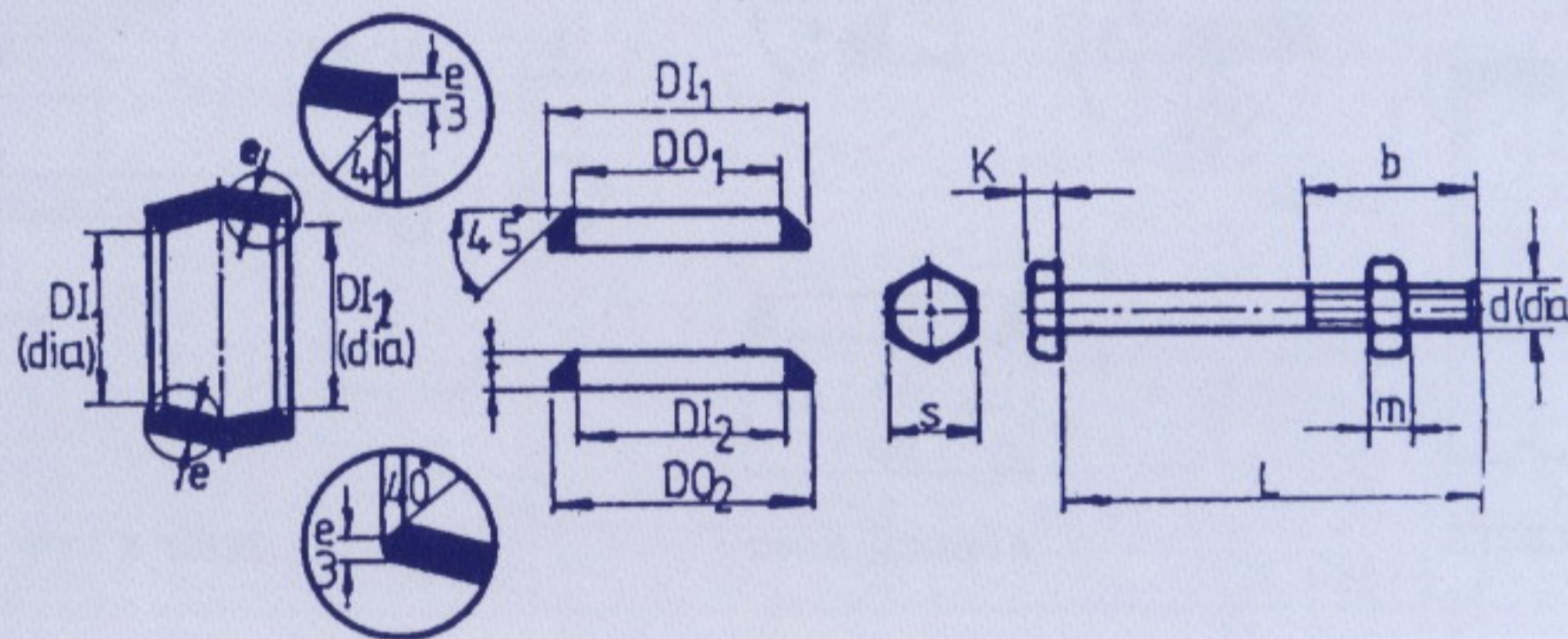
PRESSURE TEST	20 Kg/cm <sup>2</sup>
HYDRO SHELL TEST	10 Kg/cm <sup>2</sup>
HYDRO SEAT TEST	10 Kg/cm <sup>2</sup>
HYDRO BACK SEAT TEST	10 Kg/cm <sup>2</sup>
AIR SEAT TEST	
STEAM C	
WORKING PRESSURE	10 Kg/cm <sup>2</sup>

# GIBAULT FOR AC.-PVC. PIPE



GIBAULT

GLAND



SLEEVE

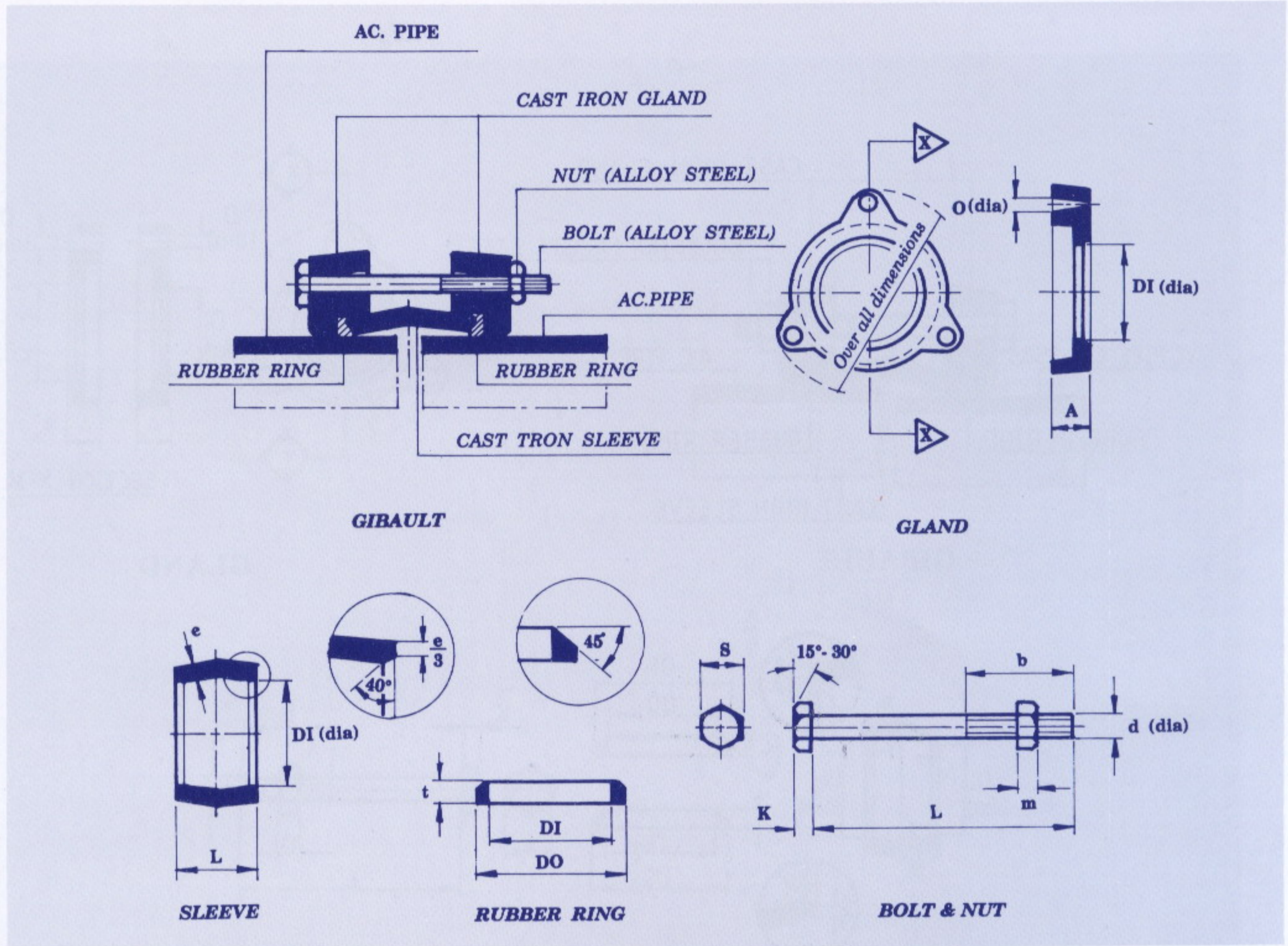
RUBBER RING

BOLT & NUT

DN	DI <sub>1</sub>	DI <sub>2</sub>	GLAND				SLEEVE		RUBBER RING					BOLT & NUT							
			L	A	No.	D	e	L	DI <sub>1</sub>	DO <sub>1</sub>	DI <sub>2</sub>	DO <sub>2</sub>	t	d	L	b	No.	k	m		s
																			max	min	
100	118	128	225	36	3	17.0	10.5	80	109	131	116	138	22	14.0	155	65	3	9.0±0.45	11.55	10.45	20.16-21.0
150	170	183	290	42	3	19.0	11.7	90	157	181	170	194	24	16.0	165	65	3	10.0±0.45	13.55	12.45	23.16-24.0
200	221	242	352	52	4	19.0	12.8	100	205	231	226	252	26	16.0	190	80	4	10.0±0.45	13.55	12.45	23.16-24.0
250	272	296	410	52	4	19.0	14.0	100	253	281	279	307	28	16.0	190	80	4	10.0±0.45	13.55	12.45	23.16-24.0
300	323	354	470	52	4	19.0	15.2	100	302	331	334	364	30	16.0	190	80	4	10.0±0.45	13.55	12.45	23.16-24.0

**NOTES** 1. ALL DIMENSIONS ARE IN mm.  
2. TOLERANCES CONFORM TO T.I.S. 918-2535

# GIBAULT FOR AC. PIPE

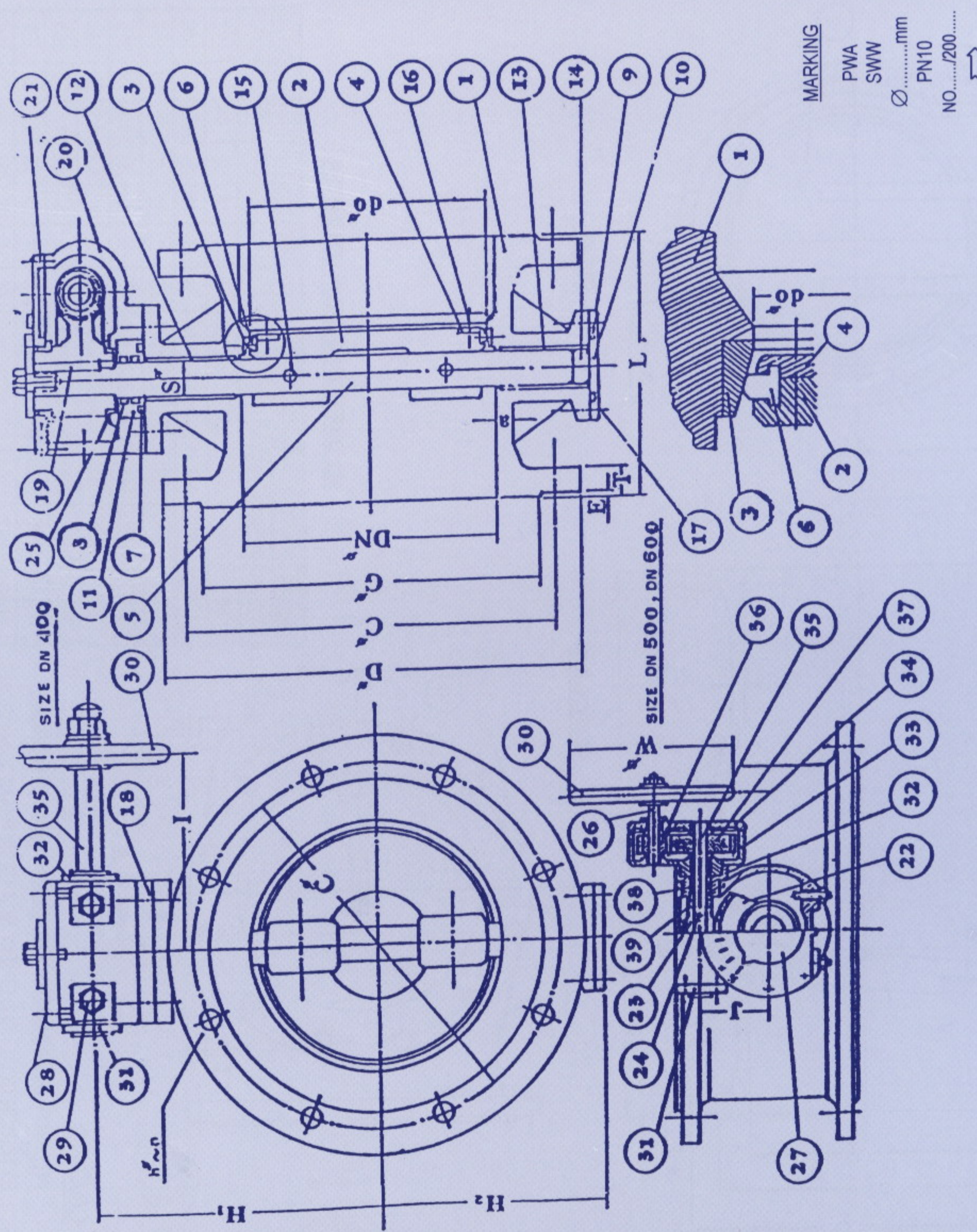


DN	DI		GLAND				SLEEVE		RUBBER RING			BOLT & NUT							
			L	A	No.	D	e	L	DI	DO	t	d	L	b	No.	m		k	s
																max	min		
80	102		196	33	3	17.0	10.0	80	95	115	20	14.0	155	65	3	11.55	10.45	9.0 ± 0.45	20.16-21.0
100	127		225	36	3	17.0	10.5	80	116	138	22	14.0	155	65	3	11.55	10.45	9.0 ± 0.45	20.16-21.0
150	183	+ 2	290	42	3	19.0	11.7	90	170	194	24	16.0	165	65	3	13.55	12.45	10.0 ± 0.45	23.16-24.0
200	241	0	352	52	4	19.0	12.8	100	226	252	26	16.0	190	80	4	13.55	12.45	10.0 ± 0.45	23.16-24.0
250	295		410	52	4	19.0	14.0	100	279	307	28	16.0	190	80	4	13.55	12.45	10.0 ± 0.45	23.16-24.0
300	353		470	52	4	19.0	15.2	100	334	364	30	16.0	190	80	4	13.55	12.45	10.0 ± 0.45	23.16-24.0
400	469	+ 3	590	52	6	19.0	17.5	100	446	480	35	16.0	210	80	6	13.55	12.45	10.0 ± 0.45	23.16-24.0
500	590	0	718	58	6	19.0	19.8	110	562	602	40	16.0	210	80	6	13.55	12.45	10.0 ± 0.45	23.16-24.0
600	705	+ 4	829	62	8	19.0	22.2	120	672	718	45	16.0	230	85	8	13.55	12.45	10.0 ± 0.45	23.16-24.0

STRONG WATERWORKS ENGINEERING CO., LTD.

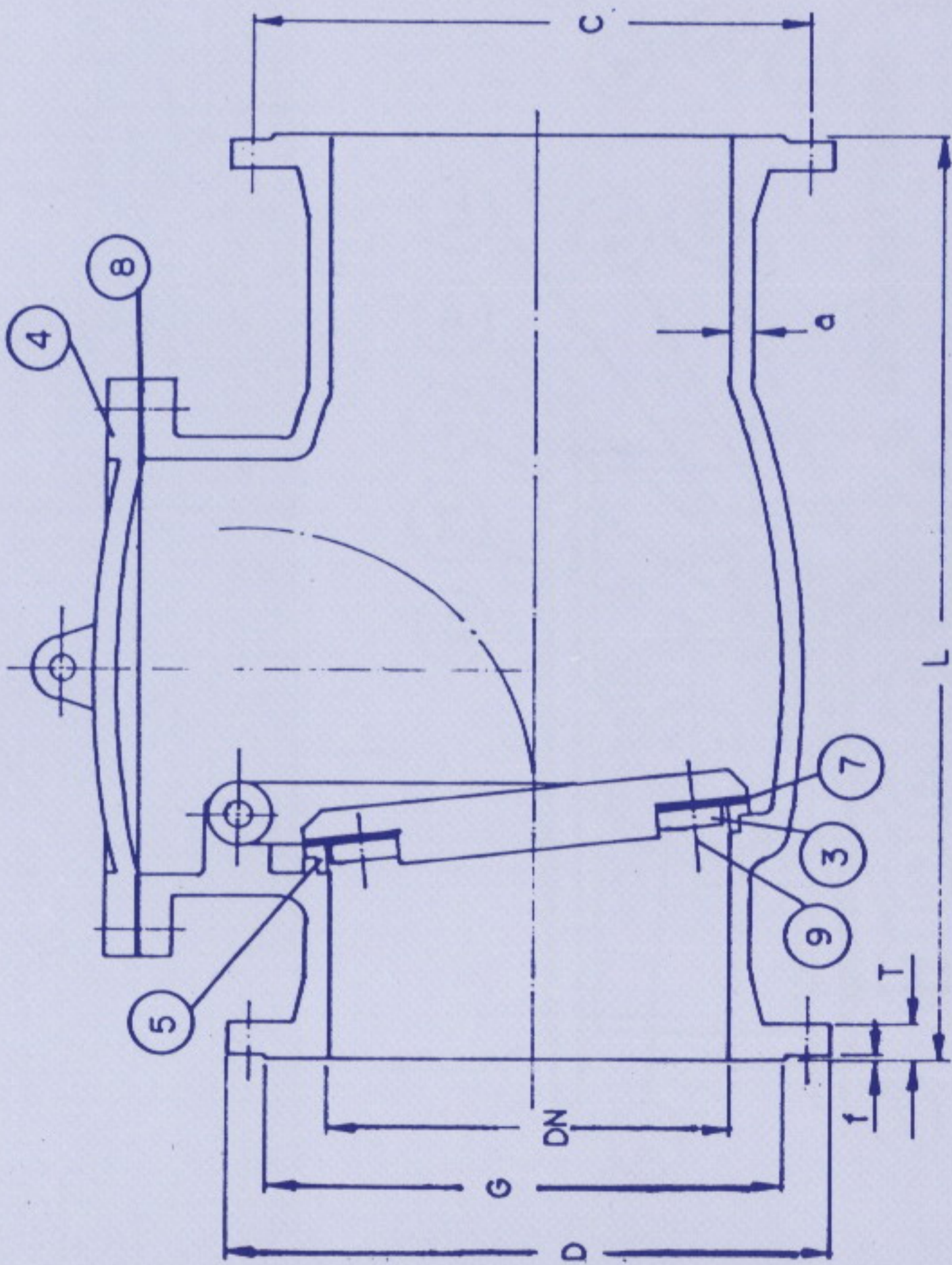
- NOTES**
1. ALL DIMENSIONS ARE IN mm.
  2. TOLERANCES CONFORM TO T.I.S. 918-1992

39	THRUST BEARING	STEEL	SKF	2
38	GEAR BUSHING	BRONZE	TIS.382	6
37	SPUR GEAR	STEEL	S C C 5	1
36	SPUR PINION	STEEL	S C C 5	1
35	DRIVE SHAFT	STEEL	S C C 5	1
34	SPUR GEAR COVER	CAST IRON		1
33	SPUR GEAR CASE	CAST IRON		1
32	FRONT PLATE GEAR	CAST IRON	TIS.382	1
31	END PLATE GEAR	CAST IRON		1
30	HAND WHEEL	CAST IRON		1
29	ADJUST BOLT NUT	STEEL	TIS.171	2 SET
28	COVER GEAR BOLT	STEEL		
27	INDICATOR	CAST IRON	TIS.382	7
26	HAND WHEEL SHAFT	STEEL	S C C 5	1
25	WORM GEAR BUSH	BRONZE	TIS.382	2
24	ROLL PIN	STEEL	S C C 5	2
23	WORM	DUCTILE IRON	TIS.537	1
22	WORM GEAR	DUCTILE IRON		1
21	COVER GEAR	CAST IRON	TIS.382	1
20	BODY GEAR	CAST IRON		1
19	KEY	STEEL	S C C 5	1
18	UPPER BOLT	STEEL	TIS.171	1
17	END PLATE BOLT	STEEL		1 SET
16	DISC BOLT	STAINLESS		1 SET
15	PIN	STAINLESS		2
14	STEMPLATE	BRONZE		1
13	LOWER BUSHING	BRONZE		1
12	UPPER BUSHING	BRONZE		1
11	GLAND	BRONZE		1
10	END PLATE	CAST IRON		1
9	O-RING C	RUBBER NBR		1
8	O-RING B	RUBBER NBR	BS.2494	2
7	O-RING A	RUBBER NBR		1
6	DISC SEAT	RUBBER NBR		1
5	SHAFT	STAINLESS		1
4	DISC RING	BRONZE		1
3	BODY RING	BRONZE	TIS.382	1
2	DISC	CAST IRON		1
1	BODY	CAST IRON		1
NO.	PARTS	MATERIAL	SPEC	QTY
HYDROSTATIC TEST VALVE SHELL				20 Kg/cm <sup>2</sup>
HYDROSTATIC TEST VALVE SEAT				10 Kg/cm <sup>2</sup>
HYDROSTATIC TEST BACKSET				10 Kg/cm <sup>2</sup>
STRONG WATERWORKS ENGINEERING CO., LTD.				
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	
P.YAD.S.	KOTT.W.	สมชาย	KS.	
TIS.382-2531				
BUTTERFLY VALVE SIZE 400-600				



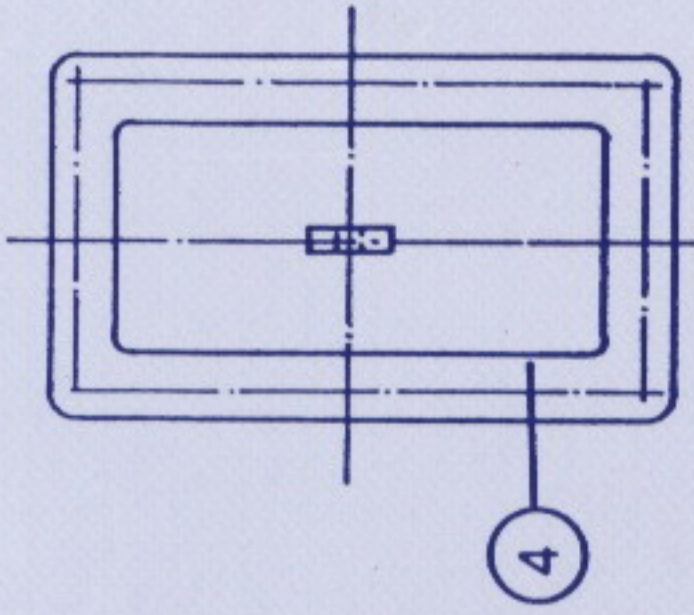
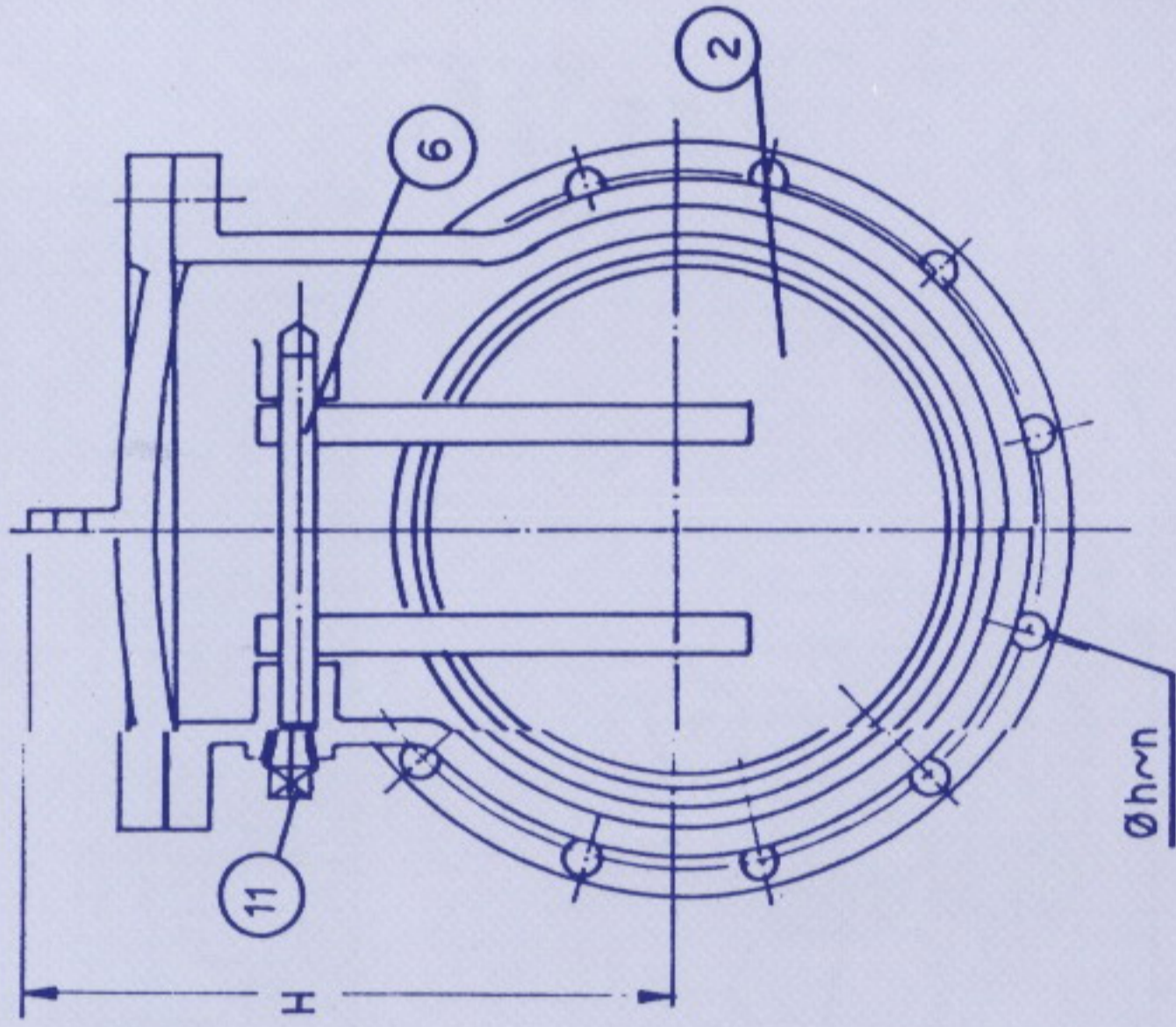
DN	L		E	T	C	G	D	G	C	S	W	a	do	MAX. TORQUE		จำนวนรอบ
	SHORT	LONG												N - M	Kg - M	
400	216	310	4	32	515	482	565	482	515	32	280	17	375	1393	142	16.5
500	229	350	4	34	620	586	670	586	620	34	280	21	475	2747	280	33
600	267	390	5	36	725	685	780	685	725	36	484	24	575	4748	484	33





SECTION B-B

SECTION A-A



FOR SIZE Ø400 - 600

ALL DIMENSIONS ARE IN MILLIMETER

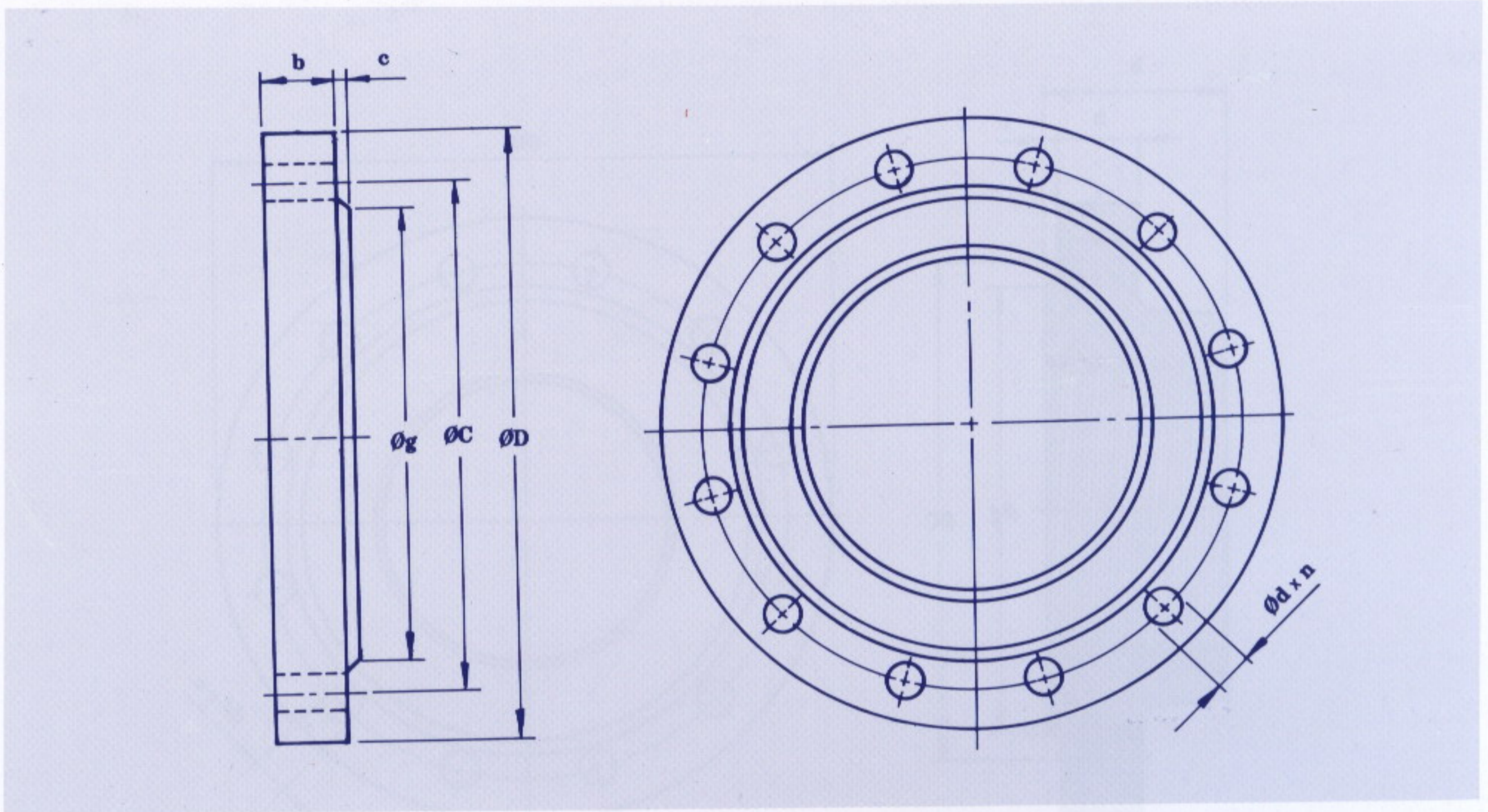
DN	L		D	G	C	T	f	h	n	a	s	H
	SHORT	LONG										
80	241	310	200	133	160	22	3	18	8	9	8	122
100	292	350	220	158	180	24	3	18	8	10	12	146
150	356	480	285	212	240	26	3	22	8	11	12	177
200	495	600	340	268	295	26	3	22	8	13	19	215
250	622	730	395	320	350	28	3	22	12	16	25	250
300	698	850	445	370	400	29	4	22	12	17	25	285
400	914	1100	565	482	515	32	4	26	16	22	32	368
500	1067	1250	670	586	620	34	4	26	20	25	38	409
600	1219	1450	780	685	725	36	5	30	20	27	38	459

**COATING**

INTERIOR LIQUID EPOXY NOT LESS THAN 100 MICRONS.  
EXTERIOR COAL-TAR EPOXY NOT LESS THAN 200 MICRONS.

NO.	PARTS	MATERIALS	SPEC	QTY
12	BY-PASS UNIT	-	-	1 SET
11	PLUG	-	-	1
10	COVER BOLT NUT	STEEL	TIS.171	1 SET
9	SEAT BOLT	STEEL	TIS.171	1 SET
8	COVER GASKET	RUBBER NBR	BS.2494	1
7	DISC SEAT	RUBBER NBR	BS.2494	1
6	HINGE PIN	STAINLESS	TIS.383	1
5	BODY RING	BRONZE	TIS.383	1
4	COVER	CAST IRON	TIS.383	1
3	SEAT HOLDER	CAST IRON	TIS.383	1
2	DISC	CAST IRON	TIS.383	1
1	BODY	CAST IRON	TIS.383	1
HYDROSTATIC TEST VALVE SHELL 20 KG/CM <sup>2</sup>				
HYDROSTATIC TEST VALVE SHELL 20 KG/CM <sup>2</sup>				
STRONG WATERWORKS ENGINEERING CO., LTD.				
DESIGNED BY	DRAWN BY	APPROVED BY	CHECKED BY	
S. Pong	koTT. w.	Disaliny		
Scale -		DRAWN DATE 15.12.2001		
TIS.383				
CHECK VALVE SIZE 80 - 600				
TYPE CV	DRAWING No. CV 001			

# CAST IRON BLANK FLANGES

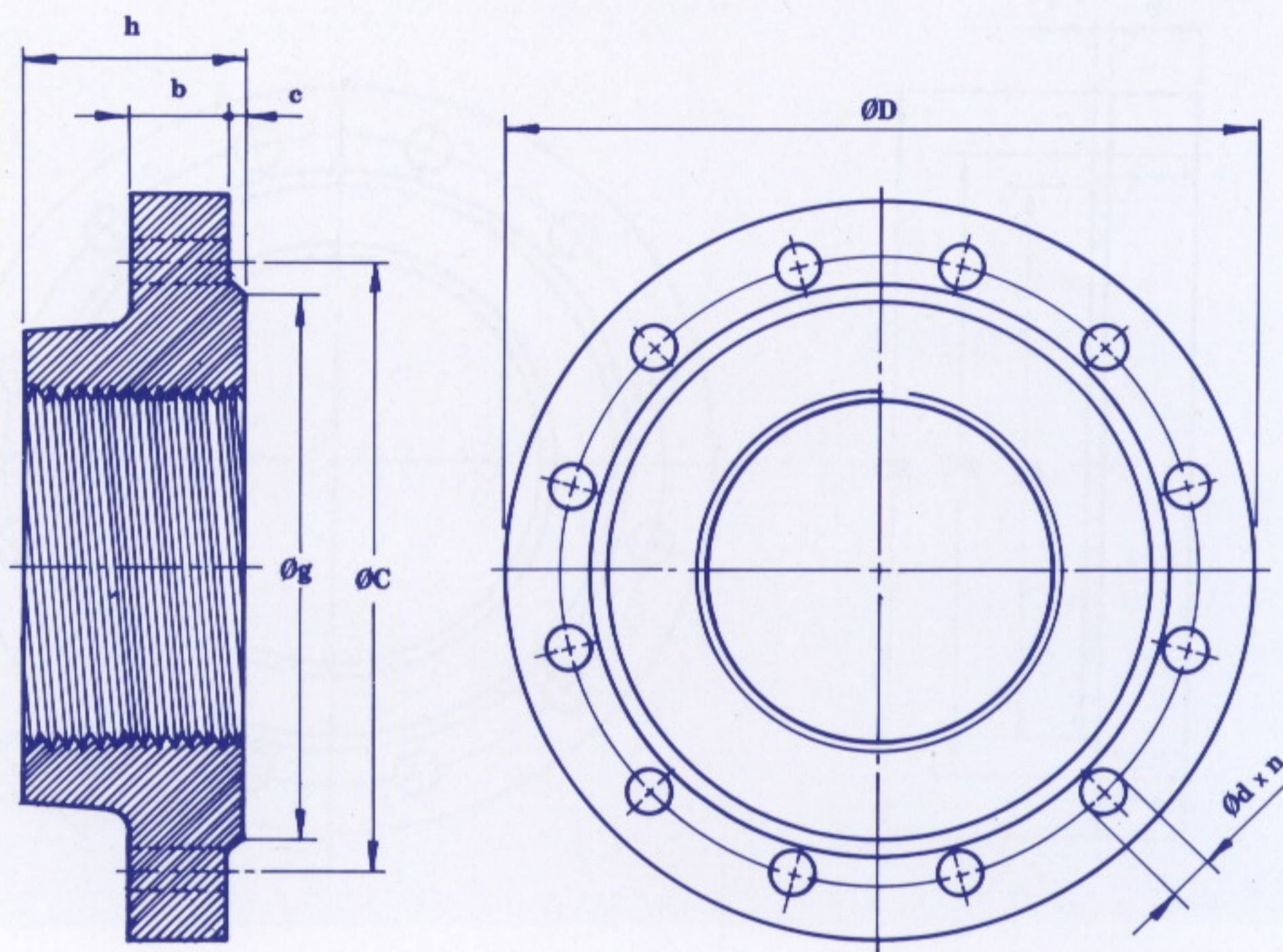


DN	DIMENSIONS										
	D		C		g	b		c	Ød		n
80	200	±2	160	± 1.5	133	21	+ 4.5	1-3	19	+ 1	4
100	220	±2	180	± 1.5	153	22	+ 4.5	1-3	19	+ 1	8
150	285	±2	240	± 1.5	209	23	+ 4.5	1-3	23	+ 1	8
200	340	±3	295	± 1.5	264	24.5	+ 4.5	1-3	23	+ 1	8
250	395	±3	350	± 1.5	319	26	+ 4.5	1-4	23	+ 1	12
300	445	±5	400	± 1.5	367	27.5	+ 4.5	1-4	23	+ 1	12
400	565	±5	515	± 2	477	30	+ 4.5	1-4	28	+ 1	16
500	670	±5	620	± 2	582	33	+ 6.5	1-4	28	+ 1	20
600	780	±5	720	± 2	682	36	+ 6.5	1-5	31	+ 1	20

STRONG WATERWORKS ENGINEERING CO., LTD.

**NOTES** 1. ALL DIMENSIONS ARE IN mm.

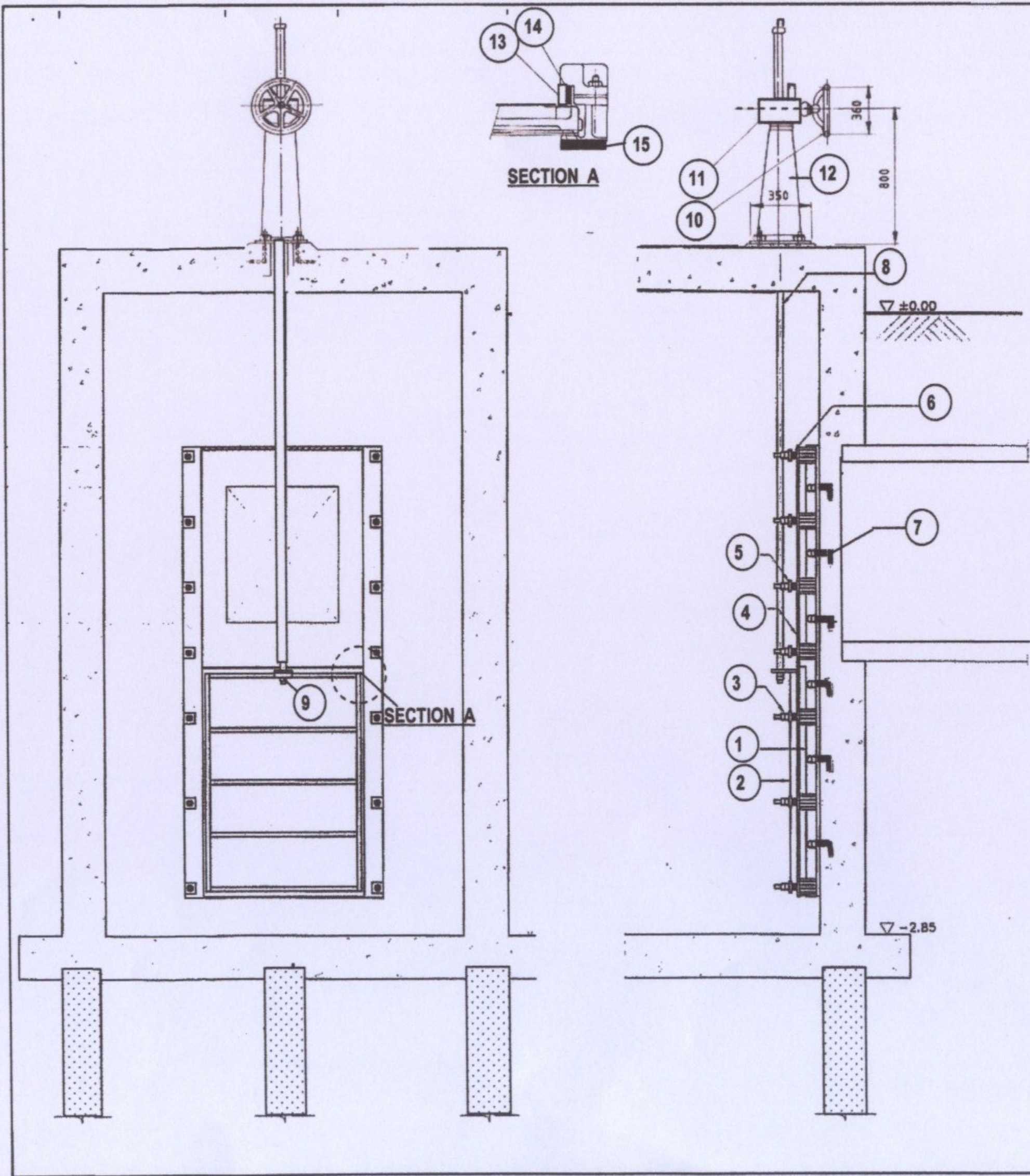
# CAST IRON FLANGES



DN	DIMENSIONS											
	ØD		C		g	b		c	d		n	h
80	200	±2	160	± 1.5	133	21	+ 4.5	1-3	19	+ 1	4	34
100	220	±2	180	± 1.5	153	22	+ 4.5	1-3	19	+ 1	8	40
150	285	±2	240	± 1.5	209	23	+ 4.5	1-3	23	+ 1	8	45
200	340	±3	295	± 1.5	264	24.5	+ 4.5	1-3	23	+ 1	8	-
250	395	±3	350	± 1.5	319	26	+ 4.5	1-4	23	+ 1	12	-
300	445	±5	400	± 1.5	367	27.5	+ 4.5	1-4	23	+ 1	12	-
400	565	±5	515	± 2	477	30	+ 4.5	1-4	28	+ 1	16	-
500	670	±5	620	± 2	582	33	+ 6.5	1-4	28	+ 1	20	-
600	780	±5	725	± 2	682	36	+ 6.5	1-5	31	+ 1	20	-





STRONG WATERWORKS ENGINEERING CO., LTD.

**NOTES** 1. ALL DIMENSIONS ARE IN mm.



15	FRAM SEAT	RUBBER FORM	-----	1 SET
14	DOOR SEAT	RUBBER FORM	-----	1 SET
13	BAR PLATE B	STAINLESS	TIS.382-1988	4
12	STAND	CAST IRON	TIS.918-1992	1
11	GEAR OPERATOR	CAST IRON	TIS.918-1992	1
10	HAND WHEEL	CAST IRON	TIS.918-1992	1
9	STEM NUT A,B	STAINLESS	TIS.382-1988	1
8	STEM	STAINLESS	TIS.382-1988	1
7	L BOLT	STAINLESS	TIS.382-1988	14
6	SPRING	STAINLESS	TIS.382-1988	14
5	COVER PLATE	STAINLESS	TIS.382-1988	1 SET
4	BAR PLATE A	STAINLESS	TIS.382-1988	2
3	BOLTS/HEX/LOCK NUTS	STAINLESS	TIS.382-1988	1 SET
2	SLIDE	STAINLESS	TIS.382-1988	1
1	FRAM	STAINLESS	TIS.382-1988	1
NO.	PARTS	MATERIAL	SPEC	Q'TY

WORKING PRESSURE - Kg/cm<sup>2</sup>





**STRONG WATERWORKS ENGINEERING CO.,LTD.**

DRAWN BY:	CHECKED BY:	APPROVED BY:
Wongkot	Teianchai	TAMANOON

SCALE: ---- DRAWN DATE: 18.10.2005

**SLIDE GATE (GEAR OPERATOR)**  
**With Rectangular Apertures**

TYPE:SA DRAWING NO: SWW-SA-115/01



ไปชลบุรี

ไปบางปะอิน

ถนนวิภาวดีรังสิต



สนามบินดอนเมือง

สนามกีฬาสุวามิเถย์

พลาซ่าออร์ปาร์ครังสิต

ถนนพหลโยธิน

สี่แยก

ถนนวงแหวนรอบนอก

ถนนเชียงคา

เส้นทางสุขุมวิท

ถนนสุขุมวิท 1

ถนนรังสิต

คาร์พ

ไร่ใหม่

ถนนสุขุมวิท 3

สวนเกษตรอินทรีย์

ถนนนิมิตตราใหม่



ปั๊มน้ำ

ถนนคลองเจ็ด

วิศวกรบริหารธุรกิจ

ถนนรังสิต - นครนายก

บริษัท สตรอง วิศวกรรม การประปา จำกัด  
STRONG WATERWORKS ENGINEERING CO.,LTD.  
โรงงาน : 3/19-20 หมู่ 13 แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10150  
โทร. 02-987-9790-2 โทรสาร. 02-987-9792  
สำนักงาน : 59/162 หมู่ 5 ถนนนิมิตรใหม่ แขวงบางนา เขตคลองเตย กรุงเทพฯ 10510  
E-mail : sww2002us@yahoo.com