FLANGES

The most common method of jointing pipes together is a bolted flanged joint. The flanges used are subject to the same criteria as the pipes themselves, i.e.:-

SAFETY, to withstand the temperature and pressure in the system and also to be able to withstand the nature of the chemical.

COST to be strong enough for the duty, but not over specified, as this is a waste of money.

Flange details are compiled into tables, or flange standards and must be consulted to ensure the correct flange in being selected. Some of the information which can be found on these tables is shown in Fig. 10.

FLANGE STANDARDS

There are three main flange standards which can still be found around:-

B.S. 10
B.S.1560
B.S. 4504

B.S.10

This is the old British standard and no longer in common use, although they can still be found on older types of equipment, so a stock is held.

These flanges are classified as table D, E, H, J and S. The safe working pressure increases as the letter of the alphabet increases i.e. a table "S" flange would be rated higher than a table "E" flange. Specimens from these tables can be seen in Fig. 11.

B.S. 1560

This is a fairly new standard, based on the AMERICAM ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE) or ASA (AMERICAN STANDARDS AUTHORITY). These flanges are classified by the pressure rating, such a class 150 or class 300, where the number represents the pressure rating in P.S.I.

The class i.e. 300 and the nominal bore i.e. 2" for which the flanges is suited can be found stamped on the side of the flange. These flanges are in common use of all plants replacing the B.S. 10 system. Specimens from these tables can be seen in Fig. 12.

B.S. 4504

This is the British Metric Flange system and is not as common as the ASA system, being found mainly on metric equipment. This is known as the P.N. series because they are classified in ratings such as P.N. 10 and P.N. 16 (where the P.N. stands for nominal pressure and the number is the pressure rating in bars).

e.g.

P.N. 10	if P.N. = 15

Then

P.N. 10	would be rated as 150 psi

Specimens from these tables can be seen in Fig. 13.

FLANGE TYPES

There are various types of flanges in use in I.C.I. the following are the more common types to be found on the plants.

a) SCREWED FLANGE

This type is convenient and easy to use, but is not recommended foe use with high pressures.

ADVANTAGES:- a) Correct alignment unnecessary
b) Welding eliminated

DISADVANTAGES:- a) More expensive
b) Only suitable for light non hazardous duties
c) Thread causes sealing problems

Specification 04 2521 shown in Fig. 14

SLIP ON WELDED FLANGES

The most common type in use and can have either a flat joint face (for lower pressures) or a raised joint face. As the name suggests, the flange is bored out to slip onto the pipe for welding.

ADVANTAGES:- a) Can be made from plate material

DISADVANTAGES:- a) Requires two welds to attach it to the pipe.
b) Need correct alignment before welding.
c) Weld spatter must be removed from the joint face.

Specification 04 2522 shown in Fig. 15.

SLIP ON HUB TYPE

Another very common flange except it has a hub on the back of the flange to give greater strength. This forged flange is normally found in the ASA ratings and tends to be more expensive.

Apart from this it has the same ADVANTAGES and DISADVANTAGES as the previous flange.

Specification 04 2616 seen in Fig. 16.

ADVANTAGES a) Requires only one weld to attatch the flange to pipe
b) Provides greater strength.

DISADVANTAGES a) Again needs to be correctly aligned
b) Expensive

Specification 04 2218 Fig 17

BACKING FLANGES

These can be used to reduce the cost of an expensive pipeline by making use of a carbon steel plate backing flange instead of a conventional welded flange. Examples of this can be seen in Fig 18.

Loose Backing Flange - Flared Type

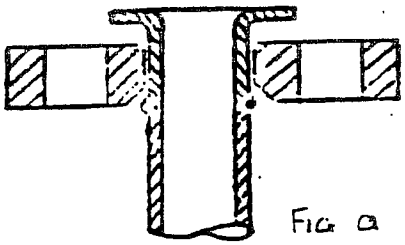


Fig a

S.S. Pipe, Galvanised M S Flange

Becoming more common because of the cost savings which can be made.

Advantages 1) Economic to use
2) Correct alignment unnecessary
3) Only one weld needed.

Disadvantages
1) Only suitable for light duties.

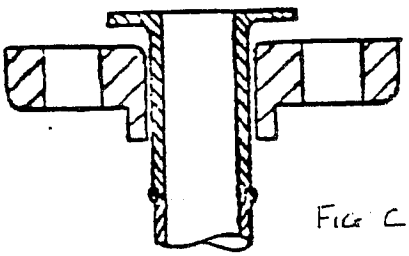


Fig c

S S Pipe, M S Flange

Similar to Fig. a but uncommon because only made to ASA sizes.

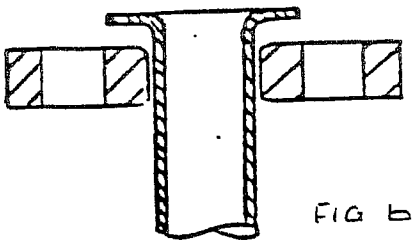


Fig b

M S Pipe, M S Flange

Used very infrequently because mild steel pipe has to have high aluminium content in order to be swaged easily, and only made to ASA standard.

Advantages 1) Correct alignment unnecessary.
2) No welds needed.

Disadvantages
1) Only suitable for light duties (non-hazardous)

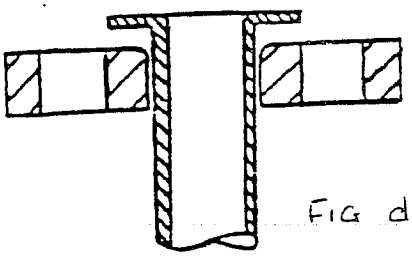


Fig d.

Aluminium Pipe, M S or 18/8/Ti Flange

Similar to Fig. b Used where the piping material is unsuitable as a flange.

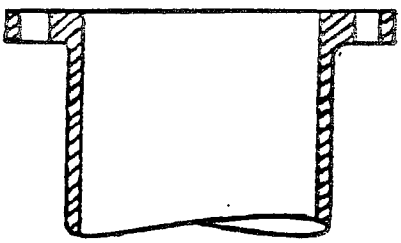
Fig 18.

As we can see, the flange itself is lose and free to rotate on the pipe, therefore it does not need to be aligned before assembly. Also, as the flange itself does not come into contact with the product, then it can made of a cheaper product that it meets the standards for the temperature and pressure.

Specification NW 04 2354 Fig 19

FLANGES INTEGERAL WITH PIPE

Flanges Integral with Pipe



Mainly used on cast iron and steel piping (drains etc) where welding is not practicable.

Advantages 1 Welding eliminated.

Disadvantages 1 Expensive
2 Damaged flanges cannot be repaired.
3 Mainly suitable for light duties.

JACKETED PIPEWORK

On some plants, there may be a need to maintain the temperature of the product, either hot or cold, while it is travelling through the pipework. The most efficient method of doing this is by using jacketed pipework. This consists of a pipeline fabricated in the conventional manner, through which the product travels, with a larger pipe welded around the outside of the product pipe, creating a space for either steam or a coolant.

These jackets have small pipes welded to them so they can be interconnected, this provides a passage for the steam or coolant to travel from pipe to pipe, keeping the whole system at a constant temperature.

An arrangement of a steam jacketed pipe system may be seen in Fig 20.

The details of the fabrication and welding can be seen in Fig 21.

With all pipeline fabrication, the standards and specifications for a particular job must be obtained from the standards books; and clear and precise instructions given to the fabrication shop who are making the pipes.

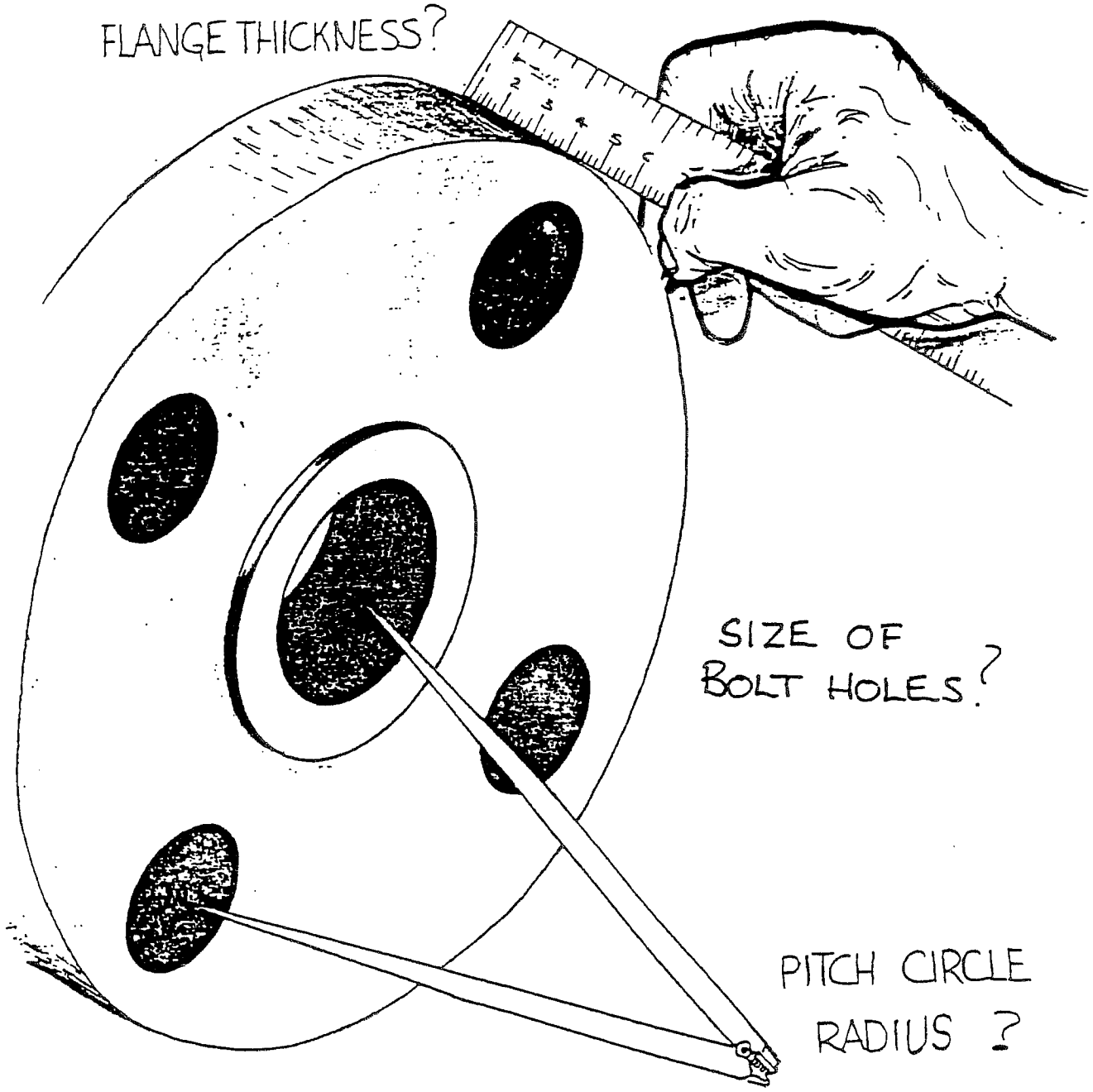
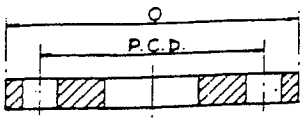

FLANGE THICKNESS?
SIZE OF BOLT HOLES?
PITCH CIRCLE RADIUS ?
NUMBER OF BOLTS?
DIAMETER OF FLANGE?
NOMINAL BORE ?

FIG 10

FLANGE DRILLING
B.S.10 TABLE D



ALL DIMENSIONS IN INCHES

NOM. SIZE	O	BOLT HOLES		
		No.	DIA.	P.C.D.
½	3¾	4	9/16	2 5/8
¾	4	4	9/16	2 7/8
1	4½	4	9/16	3¼
1¼	4¾	4	9/16	3 7/16
1½	5¼	4	9/16	3 7/8
2	6	4	11/16	4½
3	7¼	4	11/16	5¾
4	8½	4	11/16	7
5	10	8	11/16	8¼
6	11	8	11/16	9¼
8	13¼	8	11/16	11½
9	14½	8	11/16	12¾
10	16	8	7/8	14
12	18	12	7/8	16
14	20¾	12	1	18½
15	21¾	12	1	19½
16	22¾	12	1	20½
18	25¼	12	1	23
20	27¾	16	1	25¼
21	29	16	1	26½
24	32½	16	1 1/8	29¾

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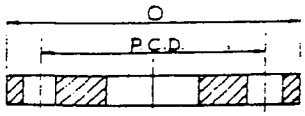
FLANGE DRILLING
B.S.10 TABLE E



ALL DIMENSIONS IN INCHES

NOM. SIZE	O	BOLT HOLES		
		No.	DIA.	P.C.D.
½	3¾	4	9/16	2 5/8
¾	4	4	9/16	2 7/8
1	4½	4	9/16	3¼
1¼	4¾	4	9/16	3 7/16
1½	5¼	4	9/16	3 7/8
2	6	4	11/16	4½
3	7¼	4	11/16	5¾
4	8½	8	11/16	7
5	10	8	11/16	8¼
6	11	8	7/8	9¼
8	13¼	8	7/8	11½
9	14½	12	7/8	12¾
10	16	12	7/8	14
12	18	12	1	16
14	20¾	12	1	18½
15	21¾	12	1	19½
16	22¾	12	1	20½
18	25¼	16	1	23
20	27¾	16	1	25¼
21	29	16	1 1/8	26½
24	32½	16	1¼	29¾

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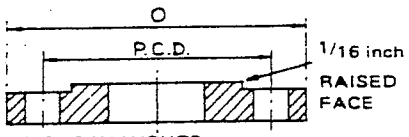
FLANGE DRILLING
B.S.10 TABLE H



ALL DIMENSIONS IN INCHES

NOM. SIZE	O	BOLT HOLES		
		No.	DIA.	P.C.D.
½	4½	4	11/16	3¼
¾	4½	4	11/16	3¼
1	4¾	4	11/16	3 7/16
1¼	5¼	4	11/16	3 7/8
1½	5½	4	11/16	4 1/8
2	6½	4	11/16	5
3	8	8	11/16	6½
4	9	8	11/16	7½
6	12	12	7/8	10¼
8	14½	12	7/8	12¾
10	17	12	1	15
12	19¼	16	1	17¼
14	21¾	16	1 1/8	19½
16	24	20	1 1/8	21¾
18	26½	20	1¼	24
20	29	24	1¼	26½
21	30	24	1¼	27½
24	33½	24	1 3/8	30¾

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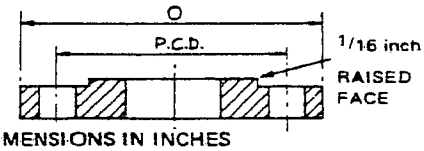
FLANGE DRILLING
B.S.10 TABLE J



ALL DIMENSIONS IN INCHES

NOM. SIZE	O	BOLT HOLES		
		No.	DIA.	P.C.D.
½	4½	4	11/16	3¼
¾	4½	4	11/16	3¼
1	4¾	4	11/16	3 7/16
1¼	5¼	4	11/16	3 7/8
1½	5½	4	11/16	4 1/8
2	6½	4	7/8	5
3	8	8	7/8	6½
4	9	8	7/8	7½
6	12	12	1	10¼
8	14½	12	1	12¾
10	17	12	1 1/8	15
12	19¼	16	1 1/8	17¼
14	21¾	16	1¼	19½
16	24	20	1¼	21¾
18	26½	20	1 3/8	24
20	29	24	1 3/8	26½
21	30	24	1 3/8	27½
24	33½	24	1½	30¾

DPU 3070/1

FIG. 11

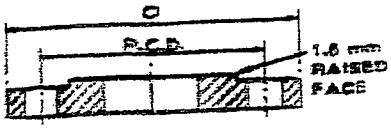
FLANGE DRILLING
B.S. 4504 P.N 16

* IN THE FLANGES OF C.I. PIPES BOLT HOLES ARE LARGER THAN SHOWN TO PROVIDE GREATER CLEARANCE FOR BOLTS

NOM. SIZE mm	O mm	F mm	BOLT HOLES No.	* DIA mm	P.C.D. mm
15	95	2	4	14	65
20	105	2	4	14	75
25	115	2	4	14	85
32	140	2	4	18	100
40	150	3	4	18	110
50	165	3	4	18	125
80	200	3	8	18	160
100	220	3	8	18	180
150	285	3	8	22	240
200	340	3	12	22	295
250	405	3	12	26	355
300	460	4	12	26	410
350	520	4	16	26	470
400	580	4	16	30	525
450	640	4	20	30	585
500	715	4	20	33	650
600	840	5	20	36	770

DPU 3071/1

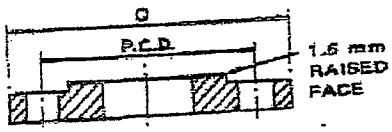
FLANGE DRILLING
B.S. 1560 CLASS 150



NOM SIZE in	O mm	BOLT HOLES No.	DIA. in	DIA. mm	P.C.D. mm
½	89	4	5/8	15.9	60.3
¾	98	4	5/8	15.9	69.8
1	108	4	5/8	15.9	79.4
1¼	117	4	5/8	15.9	88.9
1½	127	4	5/8	15.9	98.4
2	152	4	¾	19	120.6
3	190	4	¾	19	152.4
4	229	8	¾	19	190.5
6	279	8	7/8	22.2	241.3
8	343	8	7/8	22.2	295.4
10	406	12	1	25.4	362
12	483	12	1	25.4	431.8
14	533	12	1 1/8	28.6	476.2
16	597	16	1 1/8	28.6	539.8
18	635	16	1¼	31.8	577.8
20	698	20	1¼	31.8	635
24	813	20	1 3/8	34.9	749.3

DPU 3071

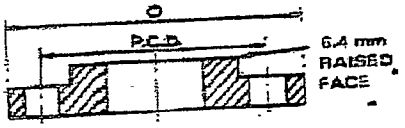
FLANGE DRILLING
B.S. 1560 CLASS 300



NOM SIZE in	O mm	BOLT HOLES No.	DIA. in	DIA. mm	P.C.D. mm
½	95	4	5/8	15.9	66.7
¾	117	4	¾	19	82.6
1	124	4	¾	19	88.9
1¼	133	4	¾	19	98.4
1½	156	4	7/8	22.2	114.3
2	165	8	¾	19	127
3	210	8	7/8	22.2	168.3
4	254	8	7/8	22.2	200
6	318	12	7/8	22.2	269.9
8	381	12	1	25.4	330.2
10	444	16	1 1/8	28.6	387.4
12	521	16	1¼	31.8	450.8
14	584	20	1¼	31.8	514.4
16	648	20	1 3/8	34.9	571.5
18	711	24	1 3/8	34.9	628.6
20	775	24	1 3/8	34.9	685.8
24	914	24	1 5/8	41.3	812.8

DPU 3071

FLANGE DRILLING
B.S. 1560 CLASS 600



NOM. SIZE in	O mm	BOLT HOLES No.	DIA. in	DIA. mm	P.C.D. mm
½	95	4	5/8	15.9	66.7
¾	117	4	¾	19	82.6
1	124	4	¾	19	88.9
1¼	133	4	¾	19	98.4
1½	156	4	7/8	22.2	114.3
2	165	8	¾	19	127
3	210	8	7/8	22.2	168.3
4	273	8	1	25.4	215.9
6	356	12	1 1/8	28.6	292.1
8	419	12	1¼	31.8	349.2
10	508	16	1 3/8	34.9	431.8
12	559	20	1 3/8	34.9	489
14	603	20	1½	38.1	527
16	686	20	1 5/8	41.3	603.2
18	743	20	1¾	44.4	654
20	813	24	1¾	44.4	723.9
24	940	24	2	50.8	838.2

DPU 3071/1

FLANGED PIPE JOINTS

Carbon Steel

SCREWED FLANGES TO BS 21 TAPER

BS 1560:PART 2 **CLASS 150** **MAX TEMP 260°C**

ICI REFERENCE	
04	2521
PAGE 1 OF 1	
ICI ISSUE NO 2	DATE MAR 1977
DIV ISSUE NO	DATE

GENERAL REFERENCES		BOLTING	USE CARBON STEEL BOLTS AND NUTS TO 08 0286
CARBON STEEL PIPE, API 5L GRADE B	04 1646		
PERMISSIBLE WORKING PRESSURES FOR SCREWED PIPE JOINTS	04 1605	FLANGE	04 1 974 (BLANK 04 2079)

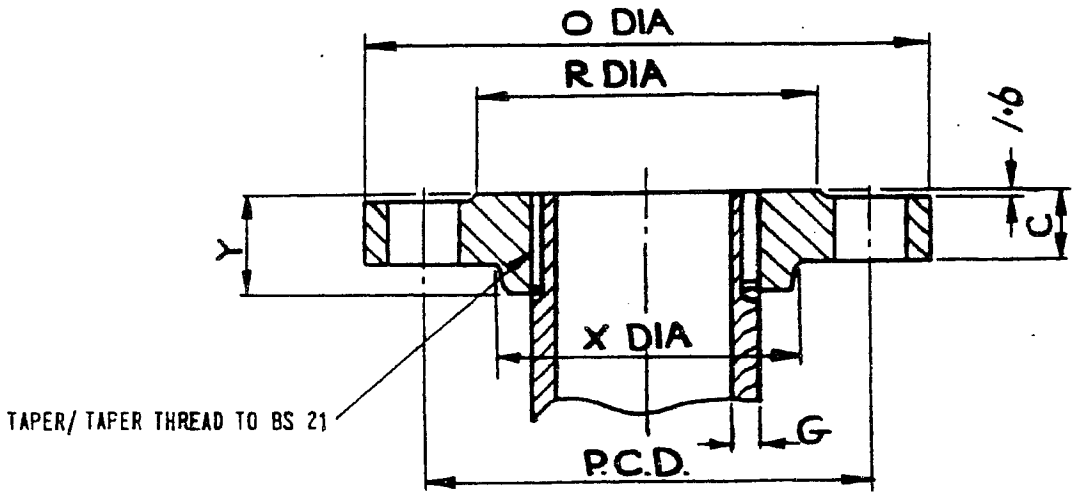
MAXIMUM NON-SHOCK SERVICE PRESSURE/TEMPERATURE RATING
(TAPER/TAPER THREADS TO BS 21)

PIPE NOM SIZE	TEMP °C	0 TO 38	50	75	100	125	150	175	200	225	250	260
½ - 1	PRESSURE bar	19	18.3	17.3	16.3							
1½		17.2	17.2	17.2	16.3	15.4	14.5	13.5	12.6	11.7	10.7	10.3
2		12.5	12.5	12.5	12.5							

PIPE SPECIFICATION

API 5L GRADE B - SEAMLESS OR ELECTRIC-WELD*

* ELECTRIC-WELD PIPE FROM ICI APPROVED MANUFACTURERS ONLY. SEE 04 1646



DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

PIPE				FLANGE DIMENSIONS									BOLTING		
									BOLT HOLES					LENGTH	
NOM SIZE in	OD	BS 1600 SCHD NO	G	O	C	Y	X	R	NO	DIA in	DIA mm	PCD	DIA in	BOLT in	BOLT mm
½	21.3	80	3.73	89	11.1	16	30	35	4	⅝	15.9	60.3	½	1¾	44
¾	26.7		3.91	98	12.7	16	38	43	4	⅝	15.9	69.8	½	1¾	51
1	33.4		4.55	108	14.3	17	49	51	4	⅝	15.9	79.4	½	2	51
1½	48.3		5.08	127	17.5	22	65	73	4	⅝	15.9	98.4	½	2¼	57
2	60.3	40	3.91	152	19	25	78	92	4	¾	19	120.6	⅝	2½	70

FIG 14.

CARBON STEEL PIPING SYSTEMS
CLASS 150
FLANGED PIPE JOINTS
SLIP-ON-WELDING

MAXIMUM WORKING TEMPERATURE 400 °C

ICI REFERENCE	
04	2522
PAGE 1 OF 1	
ICI ISSUE NO 4	DATE MAR 1984
DIV ISSUE NO	DATE

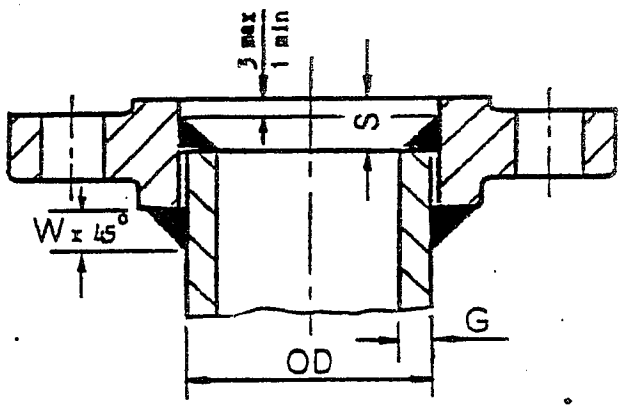
GENERAL REFERENCES		COMPONENT STANDARDS:	
DESIGN INFORMATION	04 1609	PIPE	04 1646
		SLIP-ON-WELDING FLANGE	04 2232

MAXIMUM NON-SHOCK SERVICE PRESSURE/TEMPERATURE RATING TO ANSI B16.5 (MATERIAL GROUP 1.1)

TEMP °C	0 to 38	50	100	150	200	250	300	350	375	400
PRESSURE bar gauge	19.6	19.2	17.7	15.8	14	12.1	10.2	8.4	7.4	6.5

THE DESIGN FEATURES OF THIS FLANGED PIPE JOINT SATISFY THE REQUIREMENTS OF ANSI B31.3. FOR LIMITATIONS ON ITS USE SEE 04 1609

ATTACHMENT OF FLANGE TO PIPE SHALL BE IN ACCORDANCE WITH ICI SPECIFICATION B125 OR B120 AS APPROPRIATE



DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

PIPE				W	S	BOLTING					
								LENGTH			
NOM SIZE in	OD	SCHEDULE NO	G			NO	DIA in	BOLT in		STUD-BOLT in	
* ¾	21.3	80	3.73	6	6.5	4	½	1½	44	2½	57
* 1	26.7		3.91	6	7	4	½	1½	44	2½	57
* 1	33.4		4.55	7	7.5	4	½	2	51	2½	64
*1½	48.3		5.08	8	8	4	½	2½	57	2½	70
2	60.3	40	3.91	6	7	4	⅝	2½	64	3	76
3	88.9		5.49	8	8.5	4	⅝	2½	70	3½	89
4	114.3		6.02	9	9	8	⅝	2½	70	3½	89
6	168.3		7.11	10	10	8	¾	3	76	3½	95
8	219.1	30	7.04	10	10	8	¾	3½	83	4	102
10	273.1		7.8	11	11	12	⅞	3½	89	4½	114
12	323.9		8.38	12	11.5	12	⅞	3½	95	4½	114
14	355.6		9.53	14	12.5	12	1	4	102	5	127
16	406.4		9.53	14	12.5	16	1	4½	108	5½	133
18	457	STD WALL	9.53	14	12.5	16	1¼	4½	114	5½	146
20	508	20	9.53	14	12.5	20	1¼	5	127	6	152
24	610		9.53	14	12.5	20	1¼	5½	140	6½	165

* See 04 1609 Cl. 5.3 before selecting slip-on-welding flanges for these sizes

FIG 15.

CARBON STEEL PIPING SYSTEMS
CLASS 150
FLANGED PIPE JOINTS
WELDING-NECK

MAXIMUM WORKING TEMPERATURE 400 °C

ICI REFERENCE	
04	2616
PAGE 1 OF 1	
ICI ISSUE NO 4	DATE MAR 1984
DIV ISSUE NO	DATE

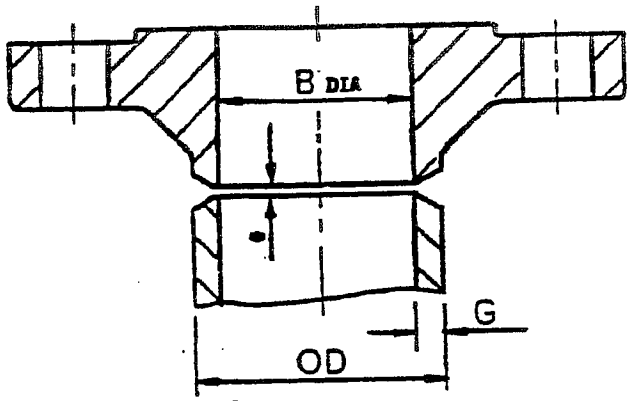
GENERAL REFERENCES		COMPONENT STANDARDS:	
DESIGN INFORMATION	04 1609	PIPE	04 1646
		WELDING-NECK FLANGE	04 2212

MAXIMUM NON-SHOCK SERVICE PRESSURE/TEMPERATURE RATING TO ANSI 316.5 (MATERIAL GROUP 1.1)

TEMP °C	0 to 38	50	100	150	200	250	300	350	375	400
PRESSURE bar gauge	19.6	19.2	17.7	15.8	14	12.1	10.2	8.4	7.4	6.5

THE DESIGN FEATURES OF THIS FLANGED PIPE JOINT SATISFY THE REQUIREMENTS OF ANSI B31.3.
FOR LIMITATIONS ON ITS USE SEE 04 1609

ATTACHMENT OF FLANGE TO PIPE SHALL BE IN ACCORDANCE WITH ICI SPECIFICATION B125 OR B120 AS APPROPRIATE



*ROOT GAP VARIES ACCORDING TO WELDING PROCESS AND MAY BE UP TO 3 mm

DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

PIPE					BOLTING					
							LENGTH			
							BOLT		STUD-BOLT	
NOM SIZE in	OD	SCHEDULE NO	G	B	NO	DIA in	in		in	
¼	21.3	80	3.73	13.8	4	½	1¾	44	2¼	57
¾	26.7		3.91	18.9	4	½	1¾	44	2¼	57
1	33.4		4.55	24.3	4	½	2	51	2½	64
1¼	48.3		5.08	38.1	4	½	2¼	57	2½	70
2	60.3	40	3.91	52.5	4	⅝	2½	64	3	76
3	88.9		5.49	77.9	4	⅝	2¾	70	3½	89
4	114.3		6.02	102.3	8	⅝	2¾	70	3½	89
6	168.3		7.11	154.1	8	¾	3	76	3¾	95
8	219.1	30	7.04	205	8	¾	3¼	83	4	102
10	273.1		7.8	257.5	12	⅞	3½	89	4½	114
12	323.9		8.38	307.1	12	⅞	3¾	95	4½	114
14	355.6		9.53	336.6	12	1	4	102	5	127
16	406.4		9.53	387.4	16	1	4¼	108	5¼	133
18	457	STD WALL	9.53	438	16	1¼	4½	114	5¼	146
20	508	20	9.53	489	20	1¼	5	127	6	152
24	610		9.53	591	20	1¼	5½	140	6½	165

FIG 16.

CARBON STEEL PIPING SYSTEMS
CLASS 600
WELDING-NECK FLANGES

ICI REFERENCE **04 2218**

PAGE 1 OF 2

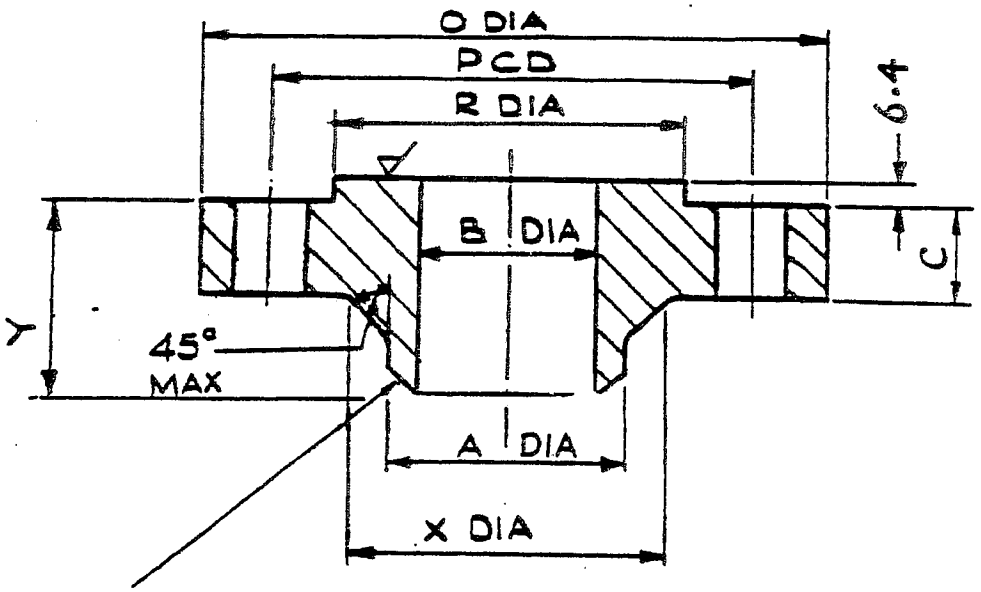
ICI ISSUE NO 3 DATE MAR 1984

DIV ISSUE NO DATE

GENERAL REFERENCES
DESIGN INFORMATION 04 1609

SPECIFICATION ANSI B16.5
MATERIAL TO ASTM A105 WITH THE ADDITIONAL REQUIREMENTS AS SPECIFIED ON PAGE 2 OF THIS STANDARD

FLANGES COMPLYING WITH THE INCH DIMENSIONS GIVEN IN ANSI B16.5 FOR CLASS 600 MEET THE REQUIREMENTS OF THIS STANDARD EXCEPT FOR THE DIAMETER OF THE BORE 'B'



WELDING END PREPARATION IN ACCORDANCE WITH ANSI B16.5

∇ GROOVED FINISH IN ACCORDANCE WITH ICI STANDARD 04 0510

FIG 17.

DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

PIPE			FLANGE											ICI CODE No
NOM SIZE in	OD	SCHED NO	O	C	Y	A	B*	R	X	APPROX WEIGHT kg	BOLT HOLES NO	BOLT HOLES DIA in	BOLT HOLES DIA	BOLT HOLES PCD	
½	21.3	80	95	14.3	52	21.3	13.8	35	38	0.9	4	½	15.9	66.7	
¾	26.7		117	15.2	57	26.7	18.9	43	48	1.8	4	¾	19	82.6	
1	33.4		124	17.5	62	33.4	24.3	51	54	1.8	4	¾	19	88.9	
1½	48.3		156	22.2	70	48.3	38.1	73	70	3.6	4	⅞	22.2	114.3	
2	60.3		165	25.4	73	60.3	49.2	92	84	5.4	8	¾	19	127	
3	88.9		210	31.8	83	88.9	73.7	127	117	10.4	8	⅞	22.2	168.3	
4	114.3		273	38.1	102	114.3	97.2	157	152	19	8	1	25.4	215.9	
6	168.3	CALCULATE TO SUIT CONDITIONS	356	47.6	117	168.3	TO BE BORED TO SUIT PIPE THICKNESS	216	222	36.7	12	1⅛	28.6	292.1	
8	219.1		419	55.6	133	219.1		270	273	54.4	12	1¼	31.8	349.2	
10	273.1		508	63.5	152	273.1		324	343	86.1	16	1⅜	34.9	431.8	
12	323.9		559	66.7	156	323.9		381	400	102	20	1⅜	34.9	489	
14	355.6		603	69.8	165	355.6		413	432	127	20	1½	38.1	527	
16	406.4		686	76.2	178	406.4		470	495	177	20	1⅝	41.3	603.2	
18	457		743	82.6	184	457		533	546	215.5	20	1¾	44.4	654	
20	508		813	88.9	190	508		584	610	267.6	24	1¾	44.4	723.9	
24	610		940	101.6	203	610		692	718	376.5	24	2	50.8	838.2	

* APPLICABLE ONLY WHEN USED WITH THE PIPE THICKNESSES LISTED

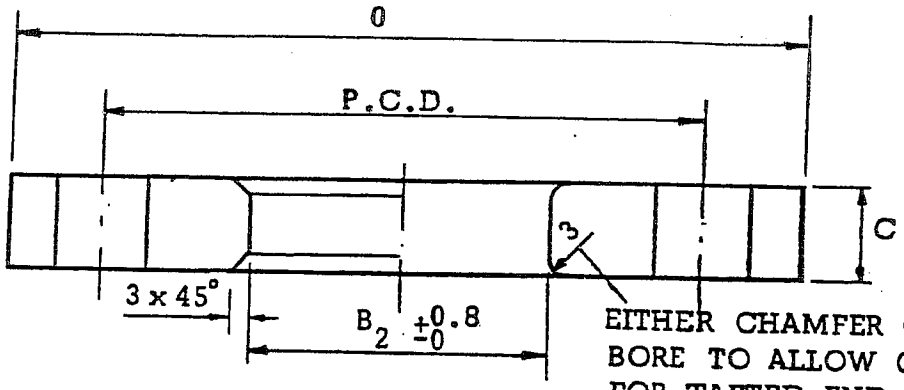
PIPE FLANGES, BACKING TYPE
GALVANIZED CARBON STEEL
DRILLING TO BS 1560 CLASS 300

ICI REFERENCE
NW 04 2354

PAGE 1 OF 1
ICI ISSUE NO DATE
DIV ISSUE NO 1 DATE JUN 75

SPECIFICATIONS:
MATERIAL - CARBON STEEL PLATE TO BS 1501 - 151 GRADE 23A OR 26A OR BS 4360 GRADE 43A.
GALVANIZING: BS 729 TABLE 1

FLANGES BURNT OR OTHERWISE CUT FROM ROLLED PLATE.
BOLT HOLES DRILLED TO JIGS OR TEMPLATES.
PITCH CIRCLE CONCENTRIC WITH THE BORE WITHIN LIMITS OF ±0.8
AFTER MACHINING, HOT-DIP GALVANIZE TO A MINIMUM COATING THICKNESS OF 85 μm.



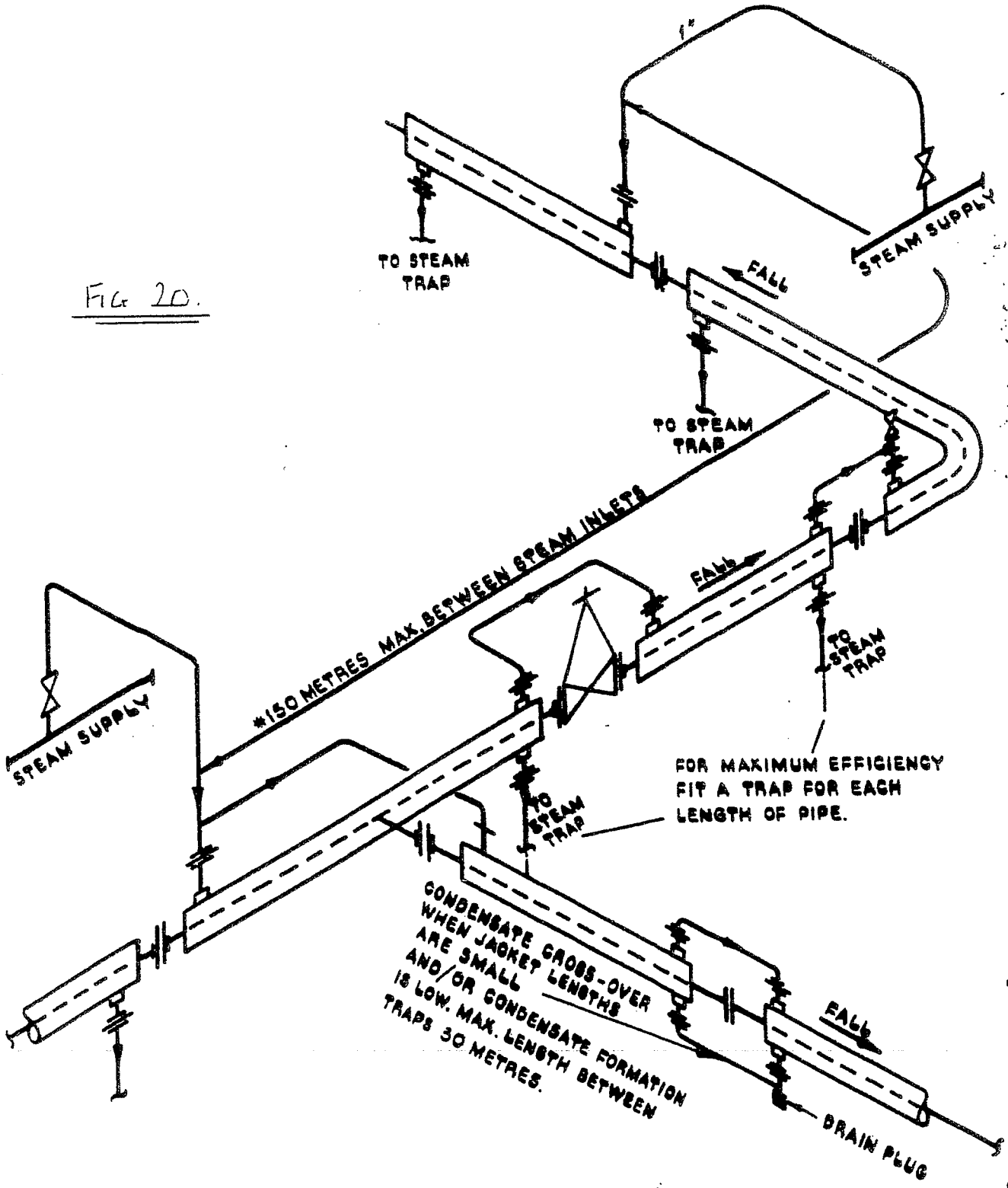
DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

NOMINAL PIPE SIZE (inches)	O	C	B_2	BOLT HOLES				CODE NUMBER
				P.C.D.	NO.	DIA.		
						in.	mm	
1	124	20	35	88.9	4	$\frac{3}{4}$	19	
$1\frac{1}{2}$	156	20	50	114.3	4	$\frac{7}{8}$	22.2	
2	165	25	62.5	127	8	$\frac{3}{4}$	19	
3	210	30	91.5	168.3	8	$\frac{7}{8}$	22.2	
4	254	30	117	200	8	$\frac{7}{8}$	22.2	
6	318	35	171	269.9	12	$\frac{7}{8}$	22.2	

NOTE: THESE FLANGES ARE ONLY FOR USE WITH AUSTENITIC Cr.Ni. STAINLESS STEEL TAFTED END PIPES TO CONNECT WITH CONTROL VALVES HAVING CLASS 300 FLANGED ENDS AND FASTENED WITH UNC HEAVY BLACK BOLTS TO BS 1769, IN PIPELINES RATED TO CLASS 150 WITH A MAXIMUM TEMPERATURE OF 260° C.

Fig. 19

Fig 20.



MINIMUM FALL 25 mm. IN 6 METRES.
ALL LOW POINTS TRAPPED, INCLUDING LOW POINTS BETWEEN EXPANSION LOOPS.
ALL HIGH POINTS TO BE VENTED.
GROUPED TRAPPING MUST BE AVOIDED i.e. ONE TRAP TO SERVE ONE DRAIN.

TYPICAL ARRANGEMENT OF STEAM JACKETED PIPE.

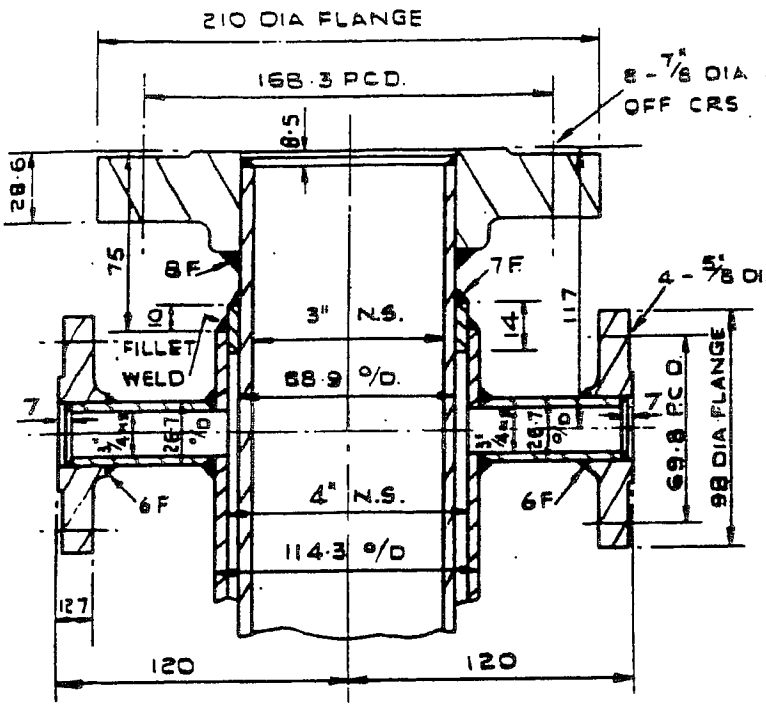
PIPES - JACKETED - CARBON STEEL
FLANGED CLASS 150 AND CLASS 300

ICI REFERENCE	
04	3130

ICI ISSUE NO 2 DATE MAR 1977
H DIV ISSUE NO. 2 DATE SEPT 1977

3" N.S. PRODUCT PIPE

CLASS 300 FLANGES



	N.S. in	THK mm	BS 1600 PT 2 SCHEDULE No
PRODUCT PIPES	3	5·49	40
	4	6·02	
JACKET PIPES	3/4	3·91	80
	4	6·02	40
	5	6·55	

MATERIAL - API 5L GRADE B SEAMLESS OR ELECTRIC-WELD*

ALL DIMENSIONS IN MILLIMETRES EXCEPT NOM. SIZES AND BOLT HOLES IN FLANGES WHICH ARE IN INCHES.

ALL FLANGES TO BS 1560 PT. 2.
SLIP-ON-WELDING.
PRODUCT PIPES CLASS 300
JACKET PIPES CLASS 150

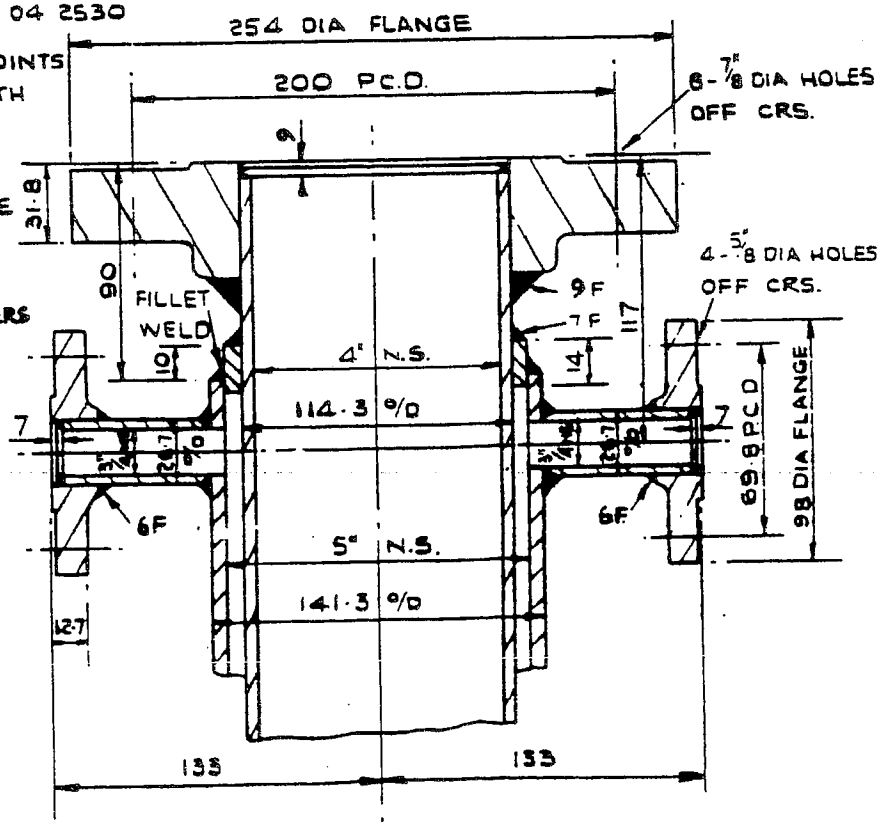
CLASS 300 FLANGED PIPE JOINTS TO BE ACCORDANCE WITH 04 2530

CLASS 150 FLANGED PIPE JOINTS TO BE IN ACCORDANCE WITH 04 2522

BRANCH ATTACHMENTS TO BE FULL PENETRATION SET-ON TYPE. ALL FILLET WELDS AT 45°

*ELECTRIC-WELD PIPE FROM ICI APPROVED MANUFACTURERS ONLY. SEE 04 1646.

FABRICATION TO BE IN ACCORDANCE WITH ICI SPEC. B125. CLASSIFICATION TO BE SPECIFIED.



4" N.S. PRODUCT PIPE

CLASS 300 FLANGES

Fig 21.