TO MARK PROGRESS

LADISH

Controlled Quality

FITTINGS

CATALOG NO. 55

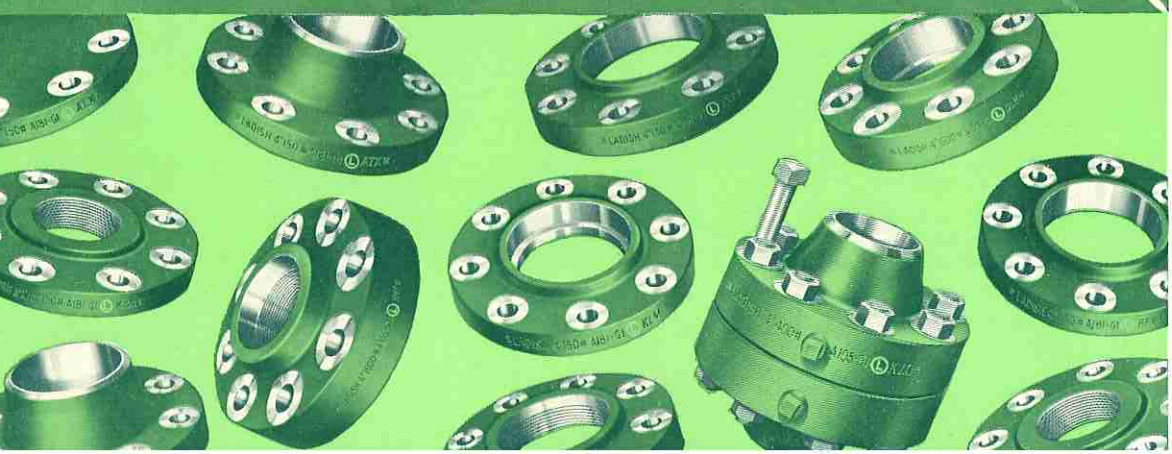
SEAMLESS WELDING FITTINGS	FORGED STEEL FLANGES	LARGE DIAMETER FLANGES	LONG WELDING NECKS	FORGED STEEL FITTINGS

LADISH

Controlled Quality

FORGED STEEL FLANGES

TO MARK PROGRESS



1 SEAMLESS WELDING FITTINGS

2 FORGED STEEL FLANGES

3 LARGE O. D. & TEMA FLANGES, LONG NECKS, ROLLED RINGS

4 FORGED STEEL FITTINGS

5 STAINLESS AND ALLOY FITTINGS

6 ENGINEERING AND TECHNICAL DATA

7 GENERAL INDEX AND PART NUMBERS

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LADISH

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HOW TO ORDER LADISH FORGED FLANGES

EXAMPLE OF INFORMATION REQUESTED

QUANTITY	NOMINAL PIPE SIZE	PRESSURE RATING	DESCRIPTION◐	MATERIAL SPECIFICATION*	PART NO.
10	6"	300 lb.	Welding Neck Flanges, Std. Bore •	ASTM A181 Grade I	30
5	8"	600 lb.	Slip-on Flanges	ASTM A182 F-22	61
3	5"	150 lb.	Lap Joint Flanges	ASTM A182 F8c	18
6	2"	150 lb.	Threaded Flanges	ASTM B221 3SO	17
8	10"	150 lb.	Blind Flanges	ASTM A182 F5	19
4	4"	300 lb.	Socket Welding Flanges, Std. Bore •	ASTM A181 Grade II	35
5 Pair	6"	300 lb.	Slip-on Orifice Flanges, Complete †	AISI 2317	O-31
9	32"	400 lb.	Pipe Line Welding Neck Flanges, 32.20" Bore •	ASTM A105 Grade II	334
6	3"x11"▲	150 lb.	Slip-on Reducing Flanges	ASTM A182 F8m	R-16
7	8"		Slip-on Oil Pipe Line Gate Valve Flanges ■	ASTM A181 Grade I	

NOTES

* Always specify material by standard, grade and symbol. See pages 229-236 and 243.

• Unless otherwise specified, Welding Neck, Socket Welding and Pipe Line Flanges will be furnished with bore as cataloged. Bore to be specified by the purchaser where none is cataloged.

† Can be supplied less bolts, nuts and gaskets, if so specified.

▲ Always specify O.D. of reducing flange to which the flange will mate.

■ Always specify make and Part No. of valve to which flange is to be attached.

◐ All flanges, except lap joint flanges, will be furnished with a raised face unless otherwise specified.

When shipment is made, a shipping notice is forwarded to the destination of the shipment. For this reason correct post office address should be given. "Delivery required BY....." This information proves helpful to Ladish Co. in processing orders in accord with your requirements.

If order is based on Ladish quotation, quotation number should be made part of the order.

Orders should be placed with your Authorized Ladish Co. Distributor. His ample stocks mean prompt service.

Always Supply Complete Information on Order

TO MARK PROGRESS

LADISH

FORGED STEEL FLANGE PICTORIAL INDEX

WELDING NECK

SLIP-ON

DESCRIPTION & RATING	PAGE NO.
WELDING NECK	
150 lb.	102
300 lb.	103
400 lb.	104
600 lb.	105
900 lb.	106
1500 lb.	107
2500 lb.	108
SLIP-ON	
150 lb.	110
300 lb.	111
400 lb.	112
600 lb.	113
900 lb.	114
1500 lb.	115
2500 lb.	116

LAP JOINT

THREADED

DESCRIPTION & RATING	PAGE NO.
LAP JOINT	
150 lb.	118
300 lb.	119
400 lb.	120
600 lb.	121
900 lb.	122
1500 lb.	123
2500 lb.	124
THREADED	
150 lb.	126
300 lb.	127
400 lb.	128
600 lb.	129
900 lb.	130
1500 lb.	131
2500 lb.	132

BLIND

SOCKET-TYPE

BLIND	
150 lb.	134
300 lb.	135
400 lb.	136
600 lb.	137
900 lb.	138
1500 lb.	139
2500 lb.	140
SOCKET-TYPE	
150 lb.	142
300 lb.	143
600 lb.	144
1500 lb.	144

SLIP-ON ORIFICE

THREADED ORIFICE

SLIP-ON ORIFICE	
300 lb.	146
THREADED ORIFICE	
300 lb.	147
400 lb.	148
600 lb.	148
900 lb.	149
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WELDING NECK ORIFICE

WELDING NECK PIPE LINE

WELDING NECK ORIFICE	
300 lb.	150
Ring Joint	
300 lb.	151
400 lb.	152
600 lb.	152
900 lb.	153
1500 lb.	153
WELDING NECK PIPE LINE	
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400 lb.	and
600 lb.	155

SLIP-ON PIPE LINE

WELDING NECK REDUCING

SLIP-ON PIPE LINE	
300 lb.	154
400 lb.	and
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WELDING NECK REDUCING	
150 lb.	
300 lb.	
400 lb.	156
600 lb.	and
900 lb.	157
1500 lb.	
2500 lb.	

SLIP-ON REDUCING

THREADED REDUCING

SLIP-ON AND THREADED REDUCING	
150 lb.	
300 lb.	
400 lb.	156
600 lb.	and
900 lb.	157
1500 lb.	
2500 lb.	

NON-STANDARD GATE VALVE FLANGES

RING JOINT

NON-STANDARD GATE VALVE FLANGES	
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RING JOINT	
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600 lb.	and
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1500 lb.	
2500 lb.	

Always Give Complete Information on Order

TO MARK PROGRESS

IMPORTANT OPERATING ADVANTAGES of LADISH FORGED STEEL FLANGES

1 HEAT CODE PROTECTION

In proof of compliance with all applicable material specifications, the heat code makes available at any time certified metallurgical reports giving complete chemical composition and physical properties of any Ladish flange.

2 MAXIMUM FILLET RADII

To further increase hub strength, maximum fillet radii are maintained without impairing wrench head clearance.

3 FULL FLANGE THICKNESS

ASA flange thickness specifications are strictly adhered to assuring ample strength to withstand the strain of alloy bolting materials.

4 ACCURATE BOLT HOLE LOCATION

Simultaneous drilling of holes on multi-spindle machines and use of precision indexing drill jigs effectively prevent mismatching.

5 SPOT OR BACK FACING

Accurate machining which does not remove any metal from minimum flange thickness provides true spot or back faced surfaces for square seating of bolt heads and nuts.

6 GEOMETRIC ACCURACY

Use of modern machines and fixtures accurately locates bore at exactly right angles to gasket face and concentric thereto.

7 MACHINED WELDING BEVELS

Accurately machined bevels and square lands align easily and assure full-circle contact with pipe and thus also facilitate the making of fast, sound welds.

8 SMOOTH, ACCURATE BORES

Resistance to flow is reduced to a minimum by smooth, accurate bores.

9 STRONG, FULL-SIZED HUBS

Maximum strength at point of greatest stress is assured by full-sized hubs which meet all ASA diameter and height specifications. Welding necks have section reduced to nominal pipe size to improve weld by reducing heat dissipation and to improve stress distribution when in use.

10 SHARP, CLEAN THREADING

Held uniformly within tolerances, clean-cut threads of Ladish flanges assure tight joints.

11 TRUE FACES, PROPERLY FINISHED

Available in all American Standard facings and commonly used finishes, Ladish flange faces are carefully machined to provide maximum contact area with gasket.

12 REFINED GRAIN STRUCTURE

Dense, homogeneous grain of selected billets is further refined by advanced forging methods under rigid laboratory control, assuring maximum dynamic strength and toughness with minimized distortion and brittleness over extreme range of temperatures.

13 CONTROLLED GRAIN FLOW

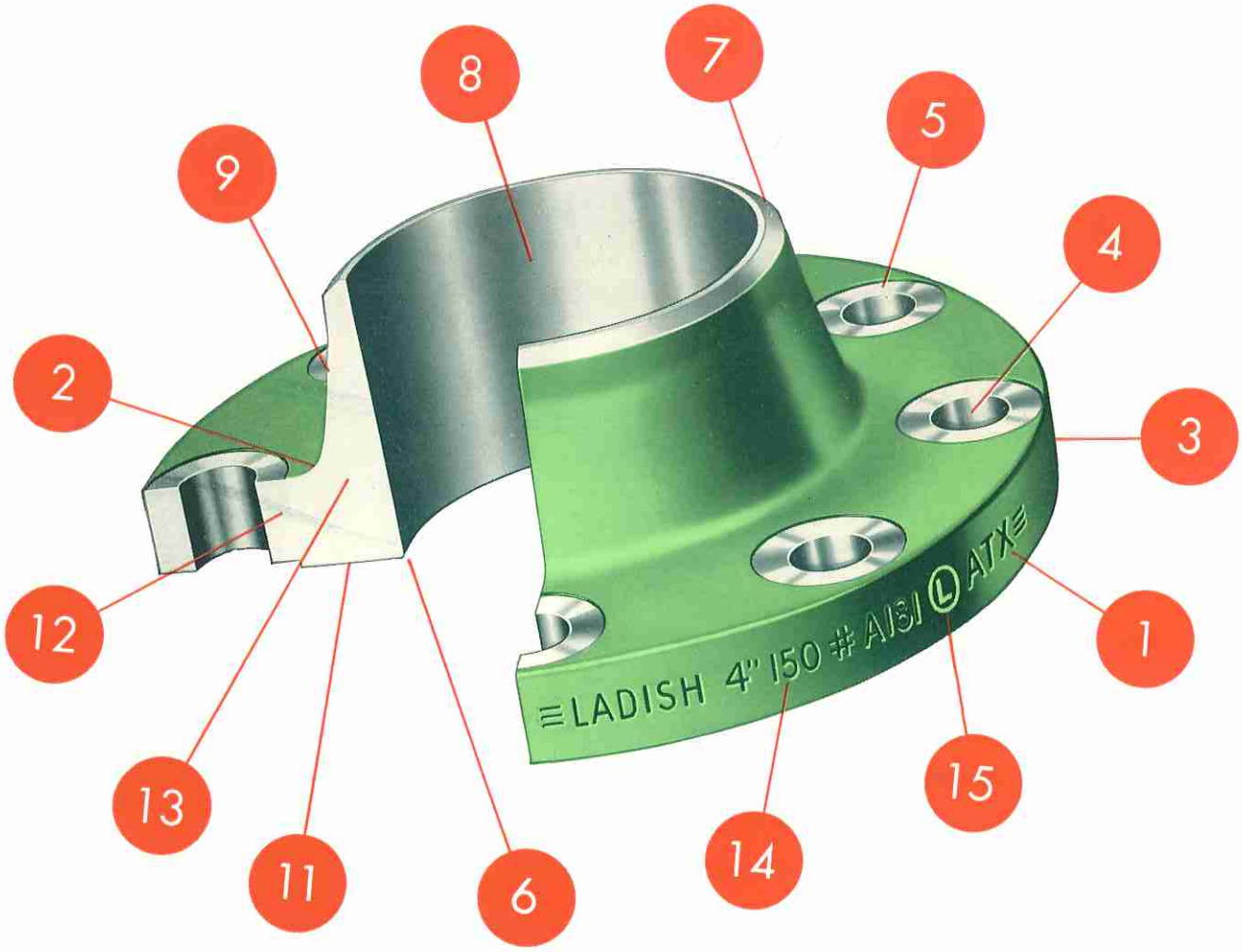
Forging in properly designed closed impression dies controls flow lines to increase strength in areas subjected to greatest strains and stresses.

14 PERMANENT IDENTIFICATION

Marked on every Ladish flange is complete data on nominal pipe size, pressure rating, steel specification, trademark and heat code of the steel from which it was forged.

15 CONTROLLED QUALITY

The result of unsurpassed metallurgical, engineering and inspection controls, Ladish Controlled Quality fittings are permanently marked with the Ladish trademark as evidence of conformity to the high standards of Ladish quality.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≡LADISH 4" 150 # AISI L ATX≡
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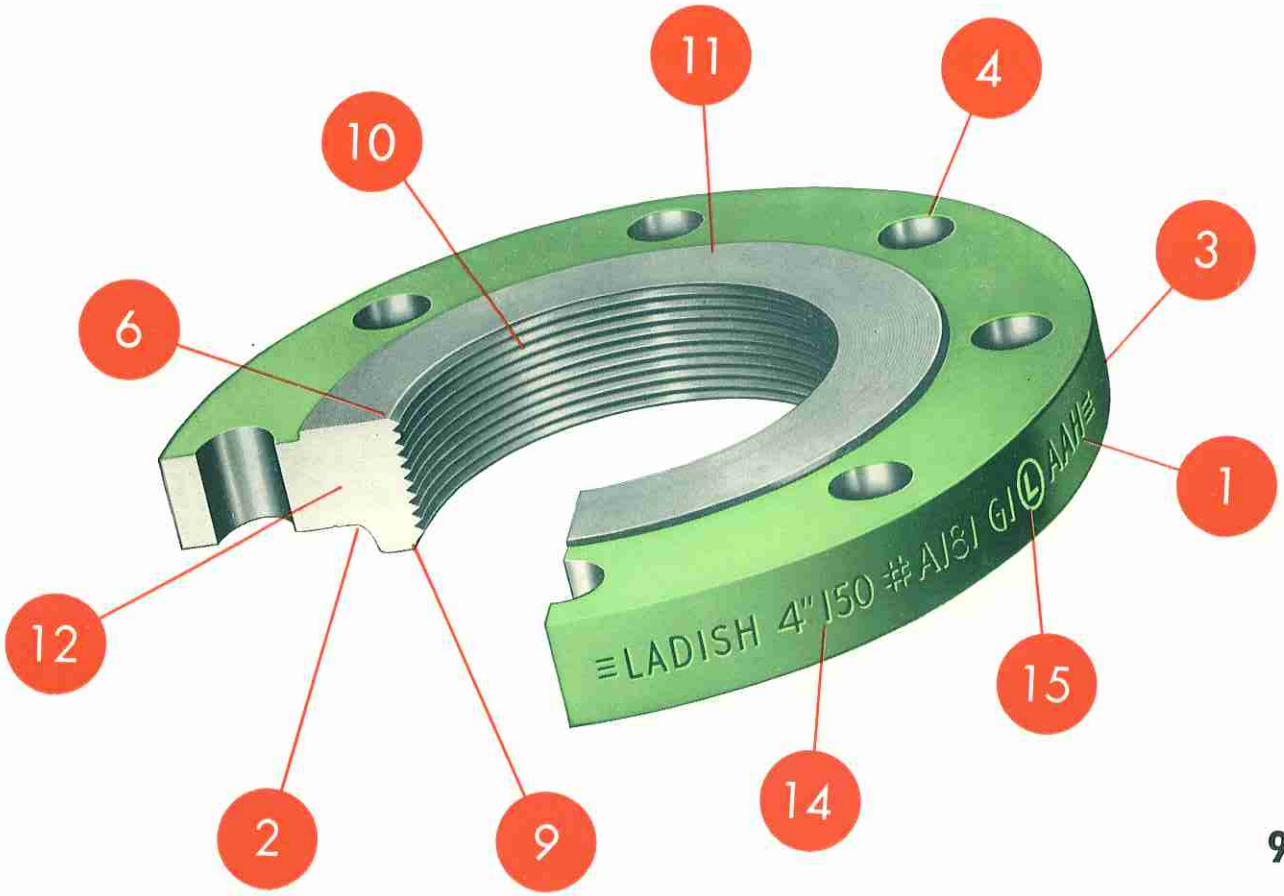
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12
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14
2
9

Design Factors..

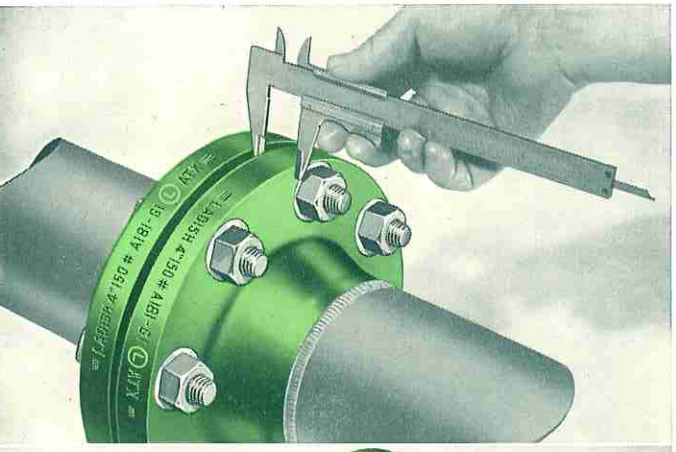
SCIENTIFIC CONTROL OF GRAIN FLOW GIVES ADDED RESISTANCE TO LOADS AND WORKING STRESS

Skillful design of forging dies assures Ladish flanges of proper grain flow pattern to develop maximum strength. Hot, plastic metal . . . confined in closed impression dies . . . is directed to align fibre structure correctly to provide an optimum of strength and toughness at points where stress concentrations are most intense. The illustration at the right is a macro-etched section of a Ladish forged flange. It shows how the grain structure and fibre-like flow line formation of the metal have been refined and directed to obtain uniformly high metal quality.

FULL COMPLIANCE WITH ASA DIMENSIONS FOR HUB LENGTH AND DIAMETER ASSURES AMPLE STRENGTH TO WITHSTAND SHOCKS, STRAINS AND STRESSES

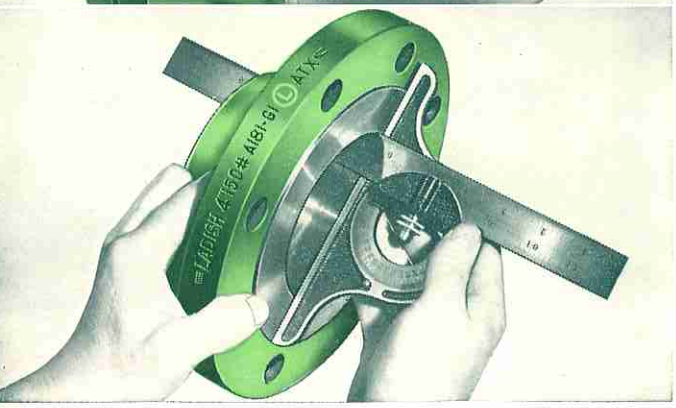
All Ladish flange designs strictly adhere to the requirements of American Standards Association governing diameter and length of hub sections. This assures maximum strength in this area where load and stress are most severe. Adequate metal here helps to distribute stresses more evenly over the entire flange design, adding materially to safety and assuring uninterrupted service.

WHICH INCREASE SERVICE LIFE OF LADISH FORGED STEEL FLANGES



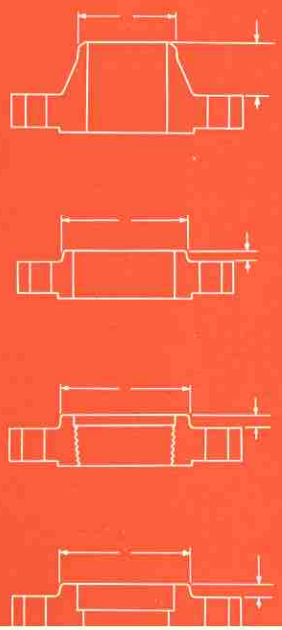
FULL ASA FLANGE THICKNESS SAFEGUARDS AGAINST FACE DISTORTION UNDER EXTREME LOAD OR STRESS

Strict compliance with ASA specifications covering flange thickness minimizes the effects of the stresses and strains which may result from the use of alloy bolting materials. Similar adherence to standards provisions for bolt hole spacings and diameter of bolt circles equalizes gasket contact at all points on its surface and controls the yielding of the gasket to form a sound, trouble-free joint.



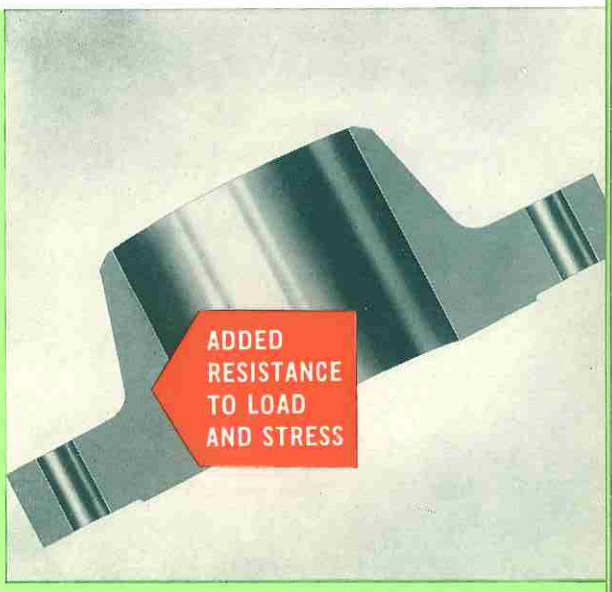
CLOSE TOLERANCE MACHINING HOLDS GASKET SURFACES OF LADISH FLANGES AT RIGHT ANGLE AND CONCENTRIC TO BORE

Geometric accuracy . . . true squareness and concentricity of flange face, bolt holes and lands of welding bevels with the bore . . . facilitates alignment of Ladish flanges and assures that gasket faces draw up uniformly. Consistently leak-proof joints are thus assured as bolting stress is evenly distributed providing reduced installation and maintenance costs.

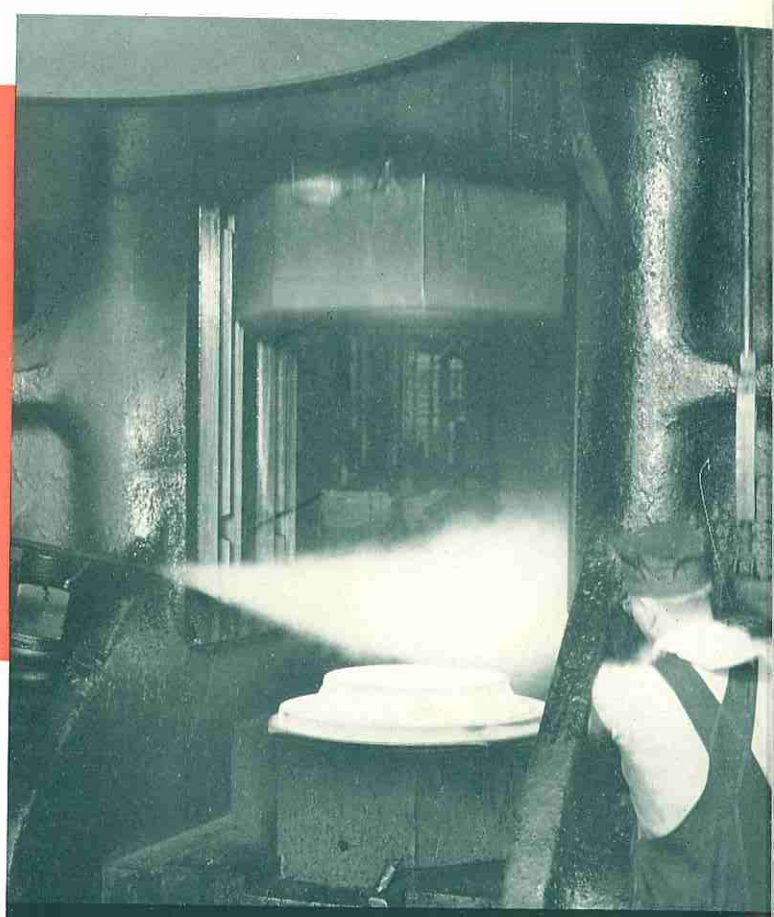


MAXIMUM RADII OF HUB FILLETS IMPROVE ULTIMATE STRENGTH AT POINTS OF LOAD CONCENTRATION

Hub fillet radii form another example of important design factors incorporated in Ladish flanges which make for added strength and dependability. On all flange types these radii are as large as possible consistent with the unrestricted use of wrenches on bolt heads and nuts. The strength in the entire hub section is thus increased, further adding resistance to load and stress and minimizing possibility of flange face distortion.



Improved Metal Properties



Developed By Advanced Ladish Forging Techniques *Assure* DEPENDABLE PERFORMANCE

- MAXIMUM STRENGTH AND TOUGHNESS
- INCREASED RESISTANCE TO FATIGUE
- ABILITY TO WITHSTAND SHOCK LOAD
- GREATER FREEDOM FROM POROSITY

COARSER GRAIN SIZE OF BILLET BEFORE FORGING | FINE, COMPACT GRAIN OF LADISH FORGED FLANGES

COMPACTING AND REFINING METAL GRAIN STRUCTURE DEVELOPS OPTIMUM STRENGTH

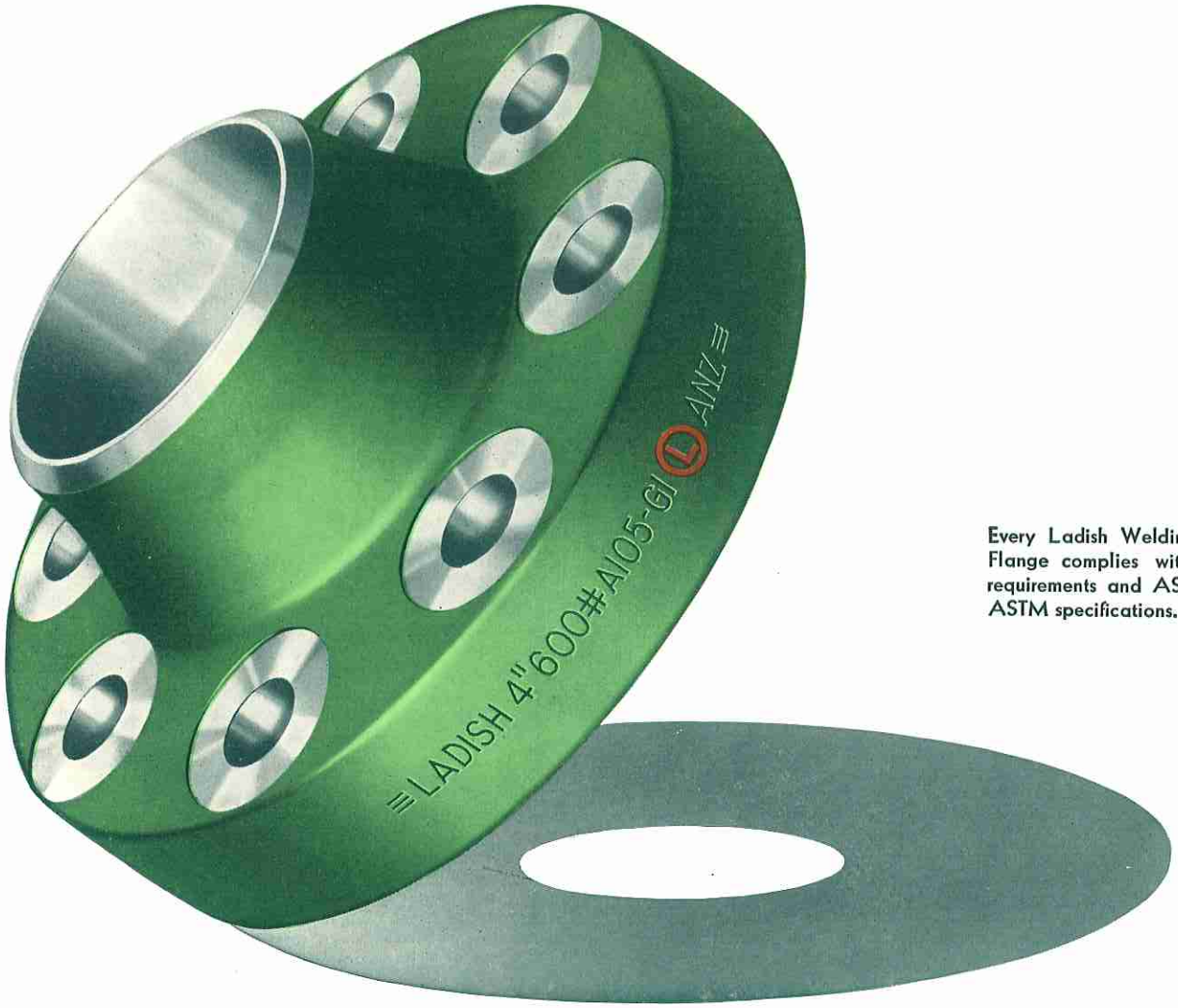
The broad range of Ladish facilities permits the use of the forging equipment best suited to compact properly the fibre structure of the metal to improve strength and toughness. After "forging quality" billets have undergone rigid metallurgical tests for soundness, purity and further compliance with customer and Ladish material specifications, the grain of these billets is refined by plastic working under controlled hammer impact, developing to the maximum many physical properties inherent in the metal. A high degree of structural uniformity of metal is assured by the metallurgical safeguards of Ladish Controlled Quality. Dependability and long service are also assured by the improvement in metal soundness which results from fine homogeneous grain structure consistently maintained in Ladish fittings.

FINE GRAIN INCREASES ABILITY TO RESIST WIDE EXTREMES IN OPERATING TEMPERATURE

The high dynamic strength and toughness of Ladish flanges provides added assurance of maximum safety and reliable performance over a wide range of operating conditions . . . varying from extremely high temperatures to sub-zero conditions. This is verified by notch sensitivity tests, one of the many steps in Ladish Controlled Quality.

DENSE, HOMOGENEOUS METAL STRUCTURE PRECLUDES POROSITY OR HIDDEN DEFECTS

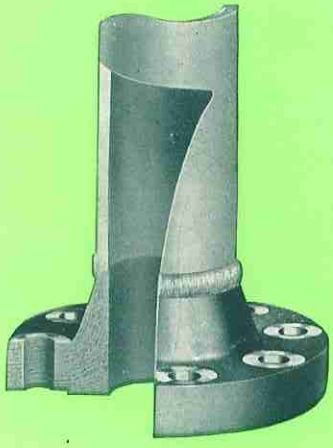
Soundness of metal structure . . . forms one of the most important benefits to be derived from the advanced forging techniques used in the production of Ladish flanges. Thorough compacting of the fibre-like structure of metal is accomplished in the forging process.



Every Ladish Welding Neck Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Welding Neck* FLANGES

Ladish Forged Steel Welding Neck Flanges are forged under exacting metallurgical control, accurately machined to full dimensions and carefully designed so as to insure maximum performance qualities.



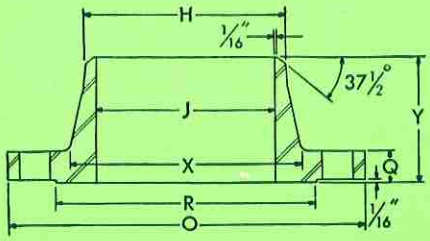
150 lb. WELDING NECK FLANGES

ASA B16.5-1953 ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS● 1/16" RAISED FACE	LGTH. OF STUD BOLTS● RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 1/2	7/16	1 3/8	1 3/16	.84	1 7/8	.62	4	1/2	2 3/8	2 1/4	.....	2	PRICES ON APPLICATION
3/4	3 7/8	1/2	1 11/16	1 1/2	1.05	2 1/16	.82	4	1/2	2 3/4	2 1/4	.....	2	
1	4 1/4	9/16	2	1 15/16	1.32	2 3/16	1.05	4	1/2	3 1/8	2 1/2	3	2 1/2	
1 1/4	4 5/8	5/8	2 1/2	2 5/16	1.66	2 1/4	1.38	4	1/2	3 1/2	2 1/2	3 1/4	2 1/2	
1 1/2	5	11/16	2 7/8	2 9/16	1.90	2 7/16	1.61	4	1/2	3 7/8	2 3/4	3 1/4	4	
2	6	3/4	3 5/8	3 1/16	2.38	2 1/2	2.07	4	5/8	4 3/4	3 1/4	3 3/4	6	
2 1/2	7	7/8	4 1/8	3 9/16	2.88	2 3/4	2.47	4	5/8	5 1/2	3 1/2	4	10	
3	7 1/2	15/16	5	4 1/4	3.50	2 3/4	3.07	4	5/8	6	3 1/2	4 1/4	11 1/2	
3 1/2	8 1/2	15/16	5 1/2	4 13/16	4.00	2 13/16	3.55	8	5/8	7	3 1/2	4 1/4	12	
4	9	15/16	6 3/16	5 5/16	4.50	3	4.03	8	5/8	7 1/2	3 1/2	4 1/4	16 1/2	
5	10	15/16	7 5/16	6 7/16	5.56	3 1/2	5.05	8	3/4	8 1/2	3 3/4	4 1/2	21	
6	11	1	8 1/2	7 9/16	6.63	3 1/2	6.07	8	3/4	9 1/2	4	4 1/2	26	
8	13 1/2	1 1/8	10 5/8	9 11/16	8.63	4	7.98	8	3/4	11 3/4	4 1/4	4 3/4	42	
10	16	1 3/16	12 3/4	12	10.75	4	10.02	12	7/8	14 1/4	4 3/4	5 1/4	54	
12	19	1 1/4	15	14 3/8	12.75	4 1/2	12.00	12	7/8	17	4 3/4	5 1/2	88	
14	21	1 3/8	16 1/4	15 3/4	14.00	5	13.25	12	1	18 3/4	5 1/4	6	114	
16	23 1/2	1 7/16	18 1/2	18	16.00	5	15.25	16	1	21 1/4	5 1/2	6	142	
18	25	1 9/16	21	19 7/8	18.00	5 1/2	17.25	16	1 1/8	22 3/4	6	6 1/2	165	
20	27 1/2	1 11/16	23	22	20.00	5 11/16	19.25	20	1 1/8	25	6 1/4	7	197	
24	32	1 7/8	27 1/4	26 1/8	24.00	6	23.25	20	1 1/4	29 1/2	7	7 3/4	268	

150 lb. WELDING NECK FLANGES

Part No. 15



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

- Welding bevel detail corresponds to that shown on page 239.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

◆ Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Standard Weight pipe as listed in American Standard B36.10.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

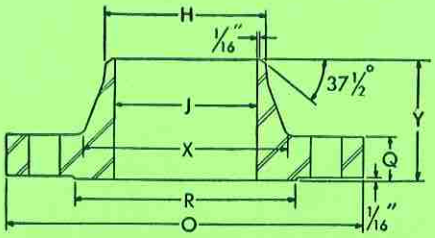
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A181—GRADE I✪

300 lb. WELDING NECK FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS● 1/16" RAISED FACE	LGTH. OF STUD BOLTS● RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	.84	2 1/16	.62	4	1/2	2 5/8	2 1/2	3	2	
3/4	4 5/8	5/8	1 11/16	1 7/8	1.05	2 1/4	.82	4	5/8	3 1/4	3	3 1/4	3	
1	4 7/8	11/16	2	2 1/8	1.32	2 7/16	1.05	4	5/8	3 1/2	3	3 1/4	4	
1 1/4	5 1/4	3/4	2 1/2	2 1/2	1.66	2 9/16	1.38	4	5/8	3 7/8	3 1/4	3 3/4	5	
1 1/2	6 1/8	13/16	2 7/8	2 3/4	1.90	2 11/16	1.61	4	3/4	4 1/2	3 1/2	4	7	
2	6 1/2	7/8	3 5/8	3 5/16	2.38	2 3/4	2.07	8	5/8	5	3 1/2	4 1/4	8	
2 1/2	7 1/2	1	4 1/8	3 15/16	2.88	3	2.47	8	3/4	5 7/8	4	4 3/4	12	
3	8 1/4	1 1/8	5	4 5/8	3.50	3 1/8	3.07	8	3/4	6 5/8	4 1/4	5	18	PRICES
3 1/2	9	1 3/16	5 1/2	5 1/4	4.00	3 3/16	3.55	8	3/4	7 1/4	4 1/4	5 1/4	20	
4	10	1 1/4	6 3/16	5 3/4	4.50	3 3/8	4.03	8	3/4	7 7/8	4 1/2	5 1/4	26 1/2	ON
5	11	1 3/8	7 5/16	7	5.56	3 7/8	5.05	8	3/4	9 1/4	4 3/4	5 1/2	36	APPLI-
6	12 1/2	1 7/16	8 1/2	8 1/8	6.63	3 7/8	6.07	12	3/4	10 5/8	4 3/4	5 3/4	45	
8	15	1 5/8	10 5/8	10 1/4	8.63	4 3/8	7.98	12	7/8	13	5 1/2	6 1/4	69	CATION
10	17 1/2	1 7/8	12 3/4	12 5/8	10.75	4 5/8	10.02	16	1	15 1/4	6 1/4	7 1/4	100	
12	20 1/2	2	15	14 3/4	12.75	5 1/8	12.00	16	1 1/8	17 3/4	6 3/4	7 1/2	142	
14	23	2 1/8	16 1/4	16 3/4	14.00	5 5/8	13.25	20	1 1/8	20 1/4	7	7 3/4	206	
16	25 1/2	2 1/4	18 1/2	19	16.00	5 3/4	15.25	20	1 1/4	22 1/2	7 1/2	8 1/2	249	
18	28	2 3/8	21	21	18.00	6 1/4	17.25	24	1 1/4	24 3/4	7 3/4	8 3/4	306	
20	30 1/2	2 1/2	23	23 1/8	20.00	6 3/8	19.25	24	1 1/4	27	8 1/4	9 1/4	369	
24	36	2 3/4	27 1/4	27 5/8	24.00	6 5/8	23.25	24	1 1/2	32	9 1/4	10 1/4	519	



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—page 160-161.

Welding bevel detail corresponds to that shown on page 239.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

◆ Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Standard Weight pipe as listed in American Standard B36.10.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. WELDING NECK FLANGES

Part No. 30

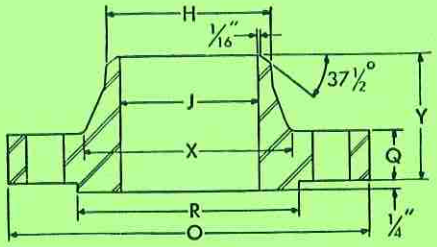
400 lb. WELDING NECK FLANGES

ASA B16.5-1953 ASTM A105—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J◆	DRILLING TEMPLATE: NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS●: 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	3 3/4	9/16	1 3/8	1 1/2	.84	2 1/16	.55	4	1/2	2 5/8	3	2 3/4	3	3	PRICES ON APPLICATION
‡ 3/4	4 5/8	5/8	1 11/16	1 7/8	1.05	2 1/4	.74	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3 1/2	
‡1	4 7/8	11/16	2	2 1/8	1.32	2 7/16	.96	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	4	
‡1 1/4	5 1/4	13/16	2 1/2	2 1/2	1.66	2 5/8	1.28	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	5 1/2	
‡1 1/2	6 1/8	7/8	2 7/8	2 3/4	1.90	2 3/4	1.50	4	3/4	4 1/2	4 1/4	4	4 1/4	8	
‡2	6 1/2	1	3 5/8	3 5/16	2.38	2 7/8	1.94	8	5/8	5	4 1/4	4	4 1/2	10	
‡2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	2.88	3 1/8	2.32	8	3/4	5 7/8	4 3/4	4 1/2	5	14	
‡3	8 1/4	1 1/4	5	4 5/8	3.50	3 1/4	2.90	8	3/4	6 5/8	5	4 3/4	5 1/4	18	
‡3 1/2	9	1 3/8	5 1/2	5 1/4	4.00	3 3/8	3.36	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	26	
4	10	1 3/8	6 3/16	5 3/4	4.50	3 1/2	3.83	8	7/8	7 7/8	5 1/2	5 1/4	5 3/4	30	
5	11	1 1/2	7 5/16	7	5.56	4	4.81	8	7/8	9 1/4	5 3/4	5 1/2	6	39	
6	12 1/2	1 5/8	8 1/2	8 1/8	6.63	4 1/16	5.76	12	7/8	10 5/8	6	5 3/4	6 1/4	49	
8	15	1 7/8	10 5/8	10 1/4	8.63	4 5/8	7.63	12	1	13	6 3/4	6 1/2	7	78	
10	17 1/2	2 1/8	12 3/4	12 5/8	10.75	4 7/8	9.75	16	1 1/8	15 1/4	7 1/2	7 1/4	7 3/4	110	
12	20 1/2	2 1/4	15	14 3/4	12.75	5 3/8	11.75	16	1 1/4	17 3/4	8	7 3/4	8 1/2	160	
14	23	2 3/8	16 1/4	16 3/4	14.00	5 7/8	13.00	20	1 1/4	20 1/4	8 1/4	8	8 3/4	233	
16	25 1/2	2 1/2	18 1/2	19	16.00	6	15.00	20	1 3/8	22 1/2	8 3/4	8 1/2	9 1/4	294	
18	28	2 5/8	21	21	18.00	6 1/2	17.00	24	1 3/8	24 3/4	9	8 3/4	9 1/2	360	
20	30 1/2	2 3/4	23	23 1/8	20.00	6 5/8	19.00	24	1 1/2	27	9 3/4	9 1/2	10 1/4	445	
24	36	3	27 1/4	27 5/8	24.00	6 7/8	23.00	24	1 3/4	32	10 3/4	10 1/2	11 1/4	640	

400 lb. WELDING NECK FLANGES

Part No. 40



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

Welding bevel detail corresponds to that shown on page 239.

★ The 1/4" raised face is not included in Thickness "Q" nor Length "Y."

◆ Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Extra Strong pipe as listed in American Standard B36.10.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 600-lb. flanges.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

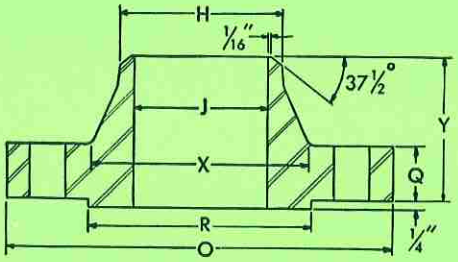
✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE I✪

600 lb. WELDING NECK FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J◆	DRILLING TEMPLATE: NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS●: 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	.84	2 1/16	.55	4	1/2	2 5/8	3	2 3/4	3	3	
3/4	4 5/8	5/8	1 11/16	1 7/8	1.05	2 1/4	.74	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3 1/2	
1	4 7/8	11/16	2	2 1/8	1.32	2 7/16	.96	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	4	
1 1/4	5 1/4	13/16	2 1/2	2 1/2	1.66	2 5/8	1.28	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	5 1/2	
1 1/2	6 1/8	7/8	2 7/8	2 3/4	1.90	2 3/4	1.50	4	3/4	4 1/2	4 1/4	4	4 1/4	8	
2	6 1/2	1	3 5/8	3 5/16	2.38	2 7/8	1.94	8	5/8	5	4 1/4	4	4 1/2	10	
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	2.88	3 1/8	2.32	8	3/4	5 7/8	4 3/4	4 1/2	5	14	
3	8 1/4	1 1/4	5	4 5/8	3.50	3 1/4	2.90	8	3/4	6 5/8	5	4 3/4	5 1/4	18	PRICES
3 1/2	9	1 3/8	5 1/2	5 1/4	4.00	3 3/8	3.36	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	26	
4	10 3/4	1 1/2	6 3/16	6	4.50	4	3.83	8	7/8	8 1/2	5 3/4	5 1/2	6	37	ON
5	13	1 3/4	7 5/16	7 7/16	5.56	4 1/2	4.81	8	1	10 1/2	6 1/2	6 1/4	6 3/4	68	APPLI-
6	14	1 7/8	8 1/2	8 3/4	6.63	4 5/8	5.76	12	1	11 1/2	6 3/4	6 1/2	7	73	
8	16 1/2	2 3/16	10 5/8	10 3/4	8.63	5 1/4	7.63	12	1 1/8	13 3/4	7 3/4	7 1/2	8	112	CATION
10	20	2 1/2	12 3/4	13 1/2	10.75	6	9.75	16	1 1/4	17	8 1/2	8 1/4	8 3/4	189	
12	22	2 5/8	15	15 3/4	12.75	6 1/8	11.75	20	1 1/4	19 1/4	8 3/4	8 1/2	9	226	
14	23 3/4	2 3/4	16 1/4	17	14.00	6 1/2	As	20	1 3/8	20 3/4	9 1/4	9	9 1/2	347	
16	27	3	18 1/2	19 1/2	16.00	7	Speci-	20	1 1/2	23 3/4	10	9 3/4	10 1/4	481	
18	29 1/4	3 1/4	21	21 1/2	18.00	7 1/4	fied by	20	1 5/8	25 3/4	10 3/4	10 1/2	11	555	
20	32	3 1/2	23	24	20.00	7 1/2	Pur-	24	1 5/8	28 1/2	11 1/2	11 1/4	11 3/4	690	
24	37	4	27 1/4	28 1/4	24.00	8	chaser	24	1 7/8	33	13	12 3/4	13 1/2	977	



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

Welding bevel detail corresponds to that shown on page 239.

★ The 1/4" raised face is not included in Thickness "Q" nor length "Y."

◆ Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Extra Strong pipe as listed in American Standard B36.10.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

600 lb. WELDING NECK FLANGES

Part No. 60

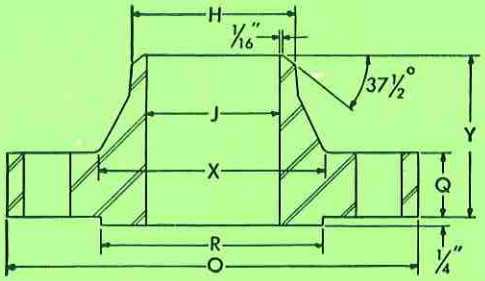
900 lb. WELDING NECK FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J	DRILLING TEMPLATE NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	4 3/4	7/8	1 3/8	1 1/2	.84	2 3/8	As Specified by Purchaser	4	3/4	3 1/4	4 1/4	4	4 1/4	7	PRICES ON APPLICATION
‡ 3/4	5 1/8	1	1 11/16	1 3/4	1.05	2 3/4		4	3/4	3 1/2	4 1/2	4 1/4	4 1/2	7	
‡1	5 7/8	1 1/8	2	2 1/16	1.32	2 7/8		4	7/8	4	5	4 3/4	5	8 1/2	
‡1 1/4	6 1/4	1 1/8	2 1/2	2 1/2	1.66	2 7/8		4	7/8	4 3/8	5	4 3/4	5	10	
‡1 1/2	7	1 1/4	2 7/8	2 3/4	1.90	3 1/4		4	1	4 7/8	5 1/2	5 1/4	5 1/2	14	
‡2	8 1/2	1 1/2	3 5/8	4 1/8	2.38	4		8	7/8	6 1/2	5 3/4	5 1/2	6	24	
‡2 1/2	9 5/8	1 5/8	4 1/8	4 7/8	2.88	4 1/8		8	1	7 1/2	6 1/4	6	6 1/2	36	
3	9 1/2	1 1/2	5	5	3.50	4		8	7/8	7 1/2	5 3/4	5 1/2	6	29	
4	11 1/2	1 3/4	6 3/16	6 1/4	4.50	4 1/2		8	1 1/8	9 1/4	6 3/4	6 1/2	7	51	
5	13 3/4	2	7 5/16	7 1/2	5.56	5		8	1 1/4	11	7 1/2	7 1/4	7 3/4	86	
6	15	2 3/16	8 1/2	9 1/4	6.63	5 1/2		12	1 1/8	12 1/2	7 3/4	7 1/2	8	110	
8	18 1/2	2 1/2	10 5/8	11 3/4	8.63	6 3/8		12	1 3/8	15 1/2	8 3/4	8 1/2	9	187	
10	21 1/2	2 3/4	12 3/4	14 1/2	10.75	7 1/4		16	1 3/8	18 1/2	9 1/4	9	9 1/2	268	
12	24	3 1/8	15	16 1/2	12.75	7 7/8		20	1 3/8	21	10	9 3/4	10 1/4	372	
14	25 1/4	3 3/8	16 1/4	17 3/4	14.00	8 3/8		20	1 1/2	22	10 3/4	10 1/2	11 1/4	562	
16	27 3/4	3 1/2	18 1/2	20	16.00	8 1/2		20	1 5/8	24 1/4	11 1/4	11	11 3/4	685	
18	31	4	21	22 1/4	18.00	9		20	1 7/8	27	13	12 3/4	13 1/2	924	
20	33 3/4	4 1/4	23	24 1/2	20.00	9 3/4		20	2	29 1/2	13 3/4	13 1/2	14 1/2	1164	
24	41	5 1/2	27 1/4	29 1/2	24.00	11 1/2		20	2 1/2	35 1/2	17 1/4	17	18 1/4	2107	

900 lb. WELDING NECK FLANGES

Part No. 90



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

Welding bevel detail corresponds to that shown on page 239.

★ The 1/4" raised face is not included in Thickness "Q" nor Length "Y." Minimum bores to which these flanges are regularly furnished are found on page 166.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 1500-lb. flanges.

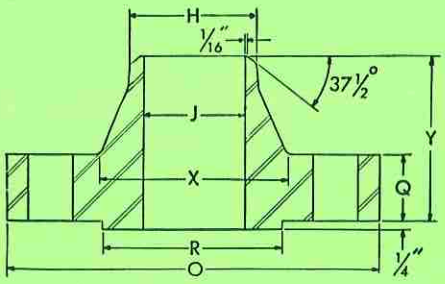
Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE II

1500 lb. WELDING NECK FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y★	DIAM. OF BORE J	DRILLING TEMPLATE: NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● ¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	4¾	⅞	1⅜	1½	.84	2⅜	As Specified by Purchaser	4	¾	3¼	4¼	4	4¼	7	PRICES ON APPLICATION
¾	5⅛	1	1 11/16	1¾	1.05	2¾		4	¾	3½	4½	4¼	4½	7	
1	5⅞	1⅛	2	2 1/16	1.32	2⅞		4	⅞	4	5	4¾	5	8½	
1¼	6¼	1⅛	2½	2½	1.66	2⅞		4	⅞	4⅜	5	4¾	5	10	
1½	7	1¼	2⅞	2¾	1.90	3¼		4	1	4⅞	5½	5¼	5½	14	
2	8½	1½	3⅝	4⅛	2.38	4		8	⅞	6½	5¾	5½	6	24	
2½	9⅝	1⅝	4⅛	4⅞	2.88	4⅛		8	1	7½	6¼	6	6½	36	
3	10½	1⅞	5	5¼	3.50	4⅝		8	1⅛	8	7	6¾	7¼	48	
4	12¼	2⅛	6 3/16	6⅜	4.50	4⅞		8	1¼	9½	7¾	7½	8	69	
5	14¾	2⅞	7 5/16	7¾	5.56	6⅛		8	1½	11½	9¾	9½	10	132	
6	15½	3¼	8½	9	6.63	6¾		12	1⅜	12½	10¼	10	10¾	164	
8	19	3⅝	10⅝	11½	8.63	8⅜		12	1⅝	15½	11½	11¼	12	273	
10	23	4¼	12¾	14½	10.75	10		12	1⅞	19	13½	13¼	13¾	454	
12	26½	4⅞	15	17¾	12.75	11⅛		16	2	22½	15	14¾	15¾	690	
14	29½	5¼	16¼	19½	14.00	11¾		16	2¼	25	16¼	16	17¼	Wts. on Application	
16	32½	5¾	18½	21¾	16.00	12¼		16	2½	27¾	17¾	17½	19		
18	36	6⅜	21	23½	18.00	12⅞		16	2¾	30½	19½	19¼	20¾		
20	38¾	7	23	25¼	20.00	14		16	3	32¾	21½	21¼	22¾		
24	46	8	27¼	30	24.00	16		16	3½	39	24¼	24	26		



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

Welding bevel detail corresponds to that shown on page 239.

★ The ¼" raised face is not included in Thickness "Q" nor Length "Y." Minimum bores to which these flanges are regularly furnished are found on page 166.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

1500 lb. WELDING NECK FLANGES

Part No. 150

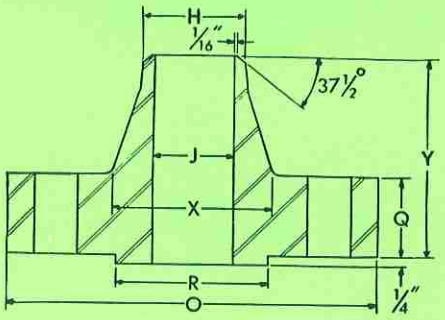
2500 lb. WELDING NECK FLANGE

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	MIN. DIAM. OF HUB AT POINT OF WELDING H	LENGTH THRU HUB Y*	DIAM. OF BORE J	DRILLING TEMPLATE: NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS• 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	5 1/4	1 3/16	1 3/8	1 11/16	.84	2 7/8		4	3/4	3 1/2	4 3/4	4 1/2	4 3/4	8	
3/4	5 1/2	1 1/4	1 11/16	2	1.05	3 1/8		4	3/4	3 3/4	5	4 3/4	5	9	
1	6 1/4	1 3/8	2	2 1/4	1.32	3 1/2		4	7/8	4 1/4	5 1/2	5 1/4	5 1/2	13	
1 1/4	7 1/4	1 1/2	2 1/2	2 7/8	1.66	3 3/4	As	4	1	5 1/8	6	5 3/4	6 1/4	20	
1 1/2	8	1 3/4	2 7/8	3 1/8	1.90	4 3/8		4	1 1/8	5 3/4	6 3/4	6 1/2	7	28	
2	9 1/4	2	3 5/8	3 3/4	2.38	5	Speci-	8	1	6 3/4	7	6 3/4	7 1/4	42	PRICES
2 1/2	10 1/2	2 1/4	4 1/8	4 1/2	2.88	5 5/8		8	1 1/8	7 3/4	7 3/4	7 1/2	8	52	ON
3	12	2 5/8	5	5 1/4	3.50	6 5/8	fied by	8	1 1/4	9	8 3/4	8 1/2	9 1/4	94	APPLI-
4	14	3	6 3/16	6 1/2	4.50	7 1/2		8	1 1/2	10 3/4	10	9 3/4	10 1/2	146	CATION
5	16 1/2	3 5/8	7 5/16	8	5.56	9	Pur-	8	1 3/4	12 3/4	12	11 3/4	12 1/2	244	
6	19	4 1/4	8 1/2	9 1/4	6.63	10 3/4		8	2	14 1/2	13 3/4	13 1/2	14 1/4	378	
8	21 3/4	5	10 5/8	12	8.63	12 1/2	chaser	12	2	17 1/4	15 1/4	15	16	576	
10	26 1/2	6 1/2	12 3/4	14 3/4	10.75	16 1/2		12	2 1/2	21 1/4	19 1/4	19	20 1/4	1068	
12	30	7 1/4	15	17 3/8	12.75	18 1/4		12	2 3/4	24 3/8	21 1/4	21	22 1/4	1608	

2500 lb. WELDING NECK FLANGES

Part No. 250



All dimensions given in inches. Flanges are furnished bored, faced, chamfered, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

Welding bevel detail corresponds to that shown on page 239.

* The 1/4" raised face is not included in Thickness "Q" nor Length "Y." Minimum bores to which these flanges are regularly furnished are found on page 166.

\+ Bolt holes are 1/8" larger than bolt diameters.

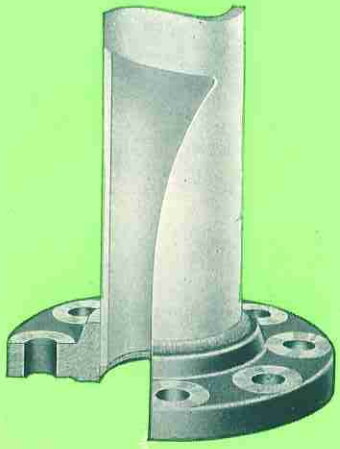
• These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

Every Ladish Slip-On Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Slip-On* FLANGES

Ladish Forged Steel Slip-on Flanges are forged under exacting metallurgical control, accurately machined to full dimensions and carefully designed so as to insure maximum performance qualities.

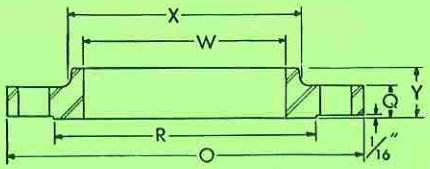


150 lb. SLIP-ON FLANGES

ASA B16.5-1953 ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF BORE W	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS● 1/16" RAISED FACE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 1/2	7/16	1 3/8	1 3/16	5/8	.88	4	1/2	2 3/8	2 1/4	.....	1	PRICES ON APPLICATION
3/4	3 7/8	1/2	1 11/16	1 1/2	5/8	1.09	4	1/2	2 3/4	2 1/4	.....	1 1/2	
1	4 1/4	9/16	2	1 15/16	11/16	1.36	4	1/2	3 1/8	2 1/2	3	2	
1 1/4	4 5/8	5/8	2 1/2	2 5/16	1 3/16	1.70	4	1/2	3 1/2	2 1/2	3 1/4	2 1/2	
1 1/2	5	11/16	2 7/8	2 9/16	7/8	1.95	4	1/2	3 7/8	2 3/4	3 1/4	3	
2	6	3/4	3 5/8	3 1/16	1	2.44	4	5/8	4 3/4	3 1/4	3 3/4	5	
2 1/2	7	7/8	4 1/8	3 9/16	1 1/8	2.94	4	5/8	5 1/2	3 1/2	4	8	
3	7 1/2	15/16	5	4 1/4	1 3/16	3.57	4	5/8	6	3 1/2	4 1/4	9	
3 1/2	8 1/2	15/16	5 1/2	4 13/16	1 1/4	4.07	8	5/8	7	3 1/2	4 1/4	11	
4	9	15/16	6 3/16	5 5/16	1 5/16	4.57	8	5/8	7 1/2	3 1/2	4 1/4	13	
5	10	15/16	7 5/16	6 7/16	1 7/16	5.66	8	3/4	8 1/2	3 3/4	4 1/2	15	
6	11	1	8 1/2	7 9/16	1 9/16	6.72	8	3/4	9 1/2	4	4 1/2	17	
8	13 1/2	1 1/8	10 5/8	9 11/16	1 3/4	8.72	8	3/4	11 3/4	4 1/4	4 3/4	28	
10	16	1 3/16	12 3/4	12	1 15/16	10.88	12	7/8	14 1/4	4 3/4	5 1/4	40	
12	19	1 1/4	15	14 3/8	2 3/16	12.88	12	7/8	17	4 3/4	5 1/2	61	
14	21	1 3/8	16 1/4	15 3/4	2 1/4	14.14	12	1	18 3/4	5 1/4	6	83	
16	23 1/2	1 7/16	18 1/2	18	2 1/2	16.16	16	1	21 1/4	5 1/2	6	106	
18	25	1 9/16	21	19 7/8	2 11/16	18.18	16	1 1/8	22 3/4	6	6 1/2	109	
20	27 1/2	1 11/16	23	22	2 7/8	20.20	20	1 1/8	25	6 1/4	7	148	
24	32	1 7/8	27 1/4	26 1/8	3 1/4	24.25	20	1 1/4	29 1/2	7	7 3/4	204	

150 lb.
SLIP-ON FLANGES
Part No. 16



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The 1/16" raised face is included in Thickness "Q" and Length "Y."

\+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

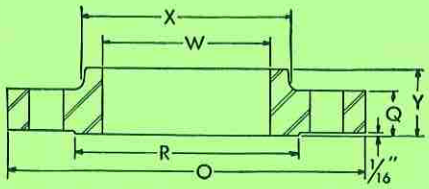
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A181—GRADE I✪

300 lb. SLIP-ON FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF BORE W	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS• 1/16" RAISED FACE	LGTH. OF STUD BOLTS• RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.88	4	1/2	2 5/8	2 1/2	3	1 1/2	
3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.09	4	5/8	3 1/4	3	3 1/4	2 1/2	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.36	4	5/8	3 1/2	3	3 1/4	3	
1 1/4	5 1/4	3/4	2 1/2	2 1/2	1 1/16	1.70	4	5/8	3 7/8	3 1/4	3 3/4	4 1/2	
1 1/2	6 1/8	13/16	2 7/8	2 3/4	1 3/16	1.95	4	3/4	4 1/2	3 1/2	4	6 1/2	
2	6 1/2	7/8	3 5/8	3 5/16	1 5/16	2.44	8	5/8	5	3 1/2	4 1/4	7	
2 1/2	7 1/2	1	4 1/8	3 15/16	1 1/2	2.94	8	3/4	5 7/8	4	4 3/4	10	
3	8 1/4	1 1/8	5	4 5/8	1 11/16	3.57	8	3/4	6 5/8	4 1/4	5	13	PRICES
3 1/2	9	1 3/16	5 1/2	5 1/4	1 3/4	4.07	8	3/4	7 1/4	4 1/4	5 1/4	16	
4	10	1 1/4	6 3/16	5 3/4	1 7/8	4.57	8	3/4	7 7/8	4 1/2	5 1/4	23 1/2	ON
5	11	1 3/8	7 5/16	7	2	5.66	8	3/4	9 1/4	4 3/4	5 1/2	29	APPLI-
6	12 1/2	1 7/16	8 1/2	8 1/8	2 1/16	6.72	12	3/4	10 5/8	4 3/4	5 3/4	36	
8	15	1 5/8	10 5/8	10 1/4	2 7/16	8.72	12	7/8	13	5 1/2	6 1/4	56	CATION
10	17 1/2	1 7/8	12 3/4	12 5/8	2 5/8	10.88	16	1	15 1/4	6 1/4	7 1/4	77	
12	20 1/2	2	15	14 3/4	2 7/8	12.88	16	1 1/8	17 3/4	6 3/4	7 1/2	113	
14	23	2 1/8	16 1/4	16 3/4	3	14.14	20	1 1/8	20 1/4	7	7 3/4	159	
16	25 1/2	2 1/4	18 1/2	19	3 1/4	16.16	20	1 1/4	22 1/2	7 1/2	8 1/2	210	
18	28	2 3/8	21	21	3 1/2	18.18	24	1 1/4	24 3/4	7 3/4	8 3/4	253	
20	30 1/2	2 1/2	23	23 1/8	3 3/4	20.20	24	1 1/4	27	8 1/4	9 1/4	307	
24	36	2 3/4	27 1/4	27 5/8	4 3/16	24.25	24	1 1/2	32	9 1/4	10 1/4	490	



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The 1/16" raised face is included in Thickness "Q" and Length "Y."

\+ Bolt holes are 1/8" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb.
SLIP-ON FLANGES

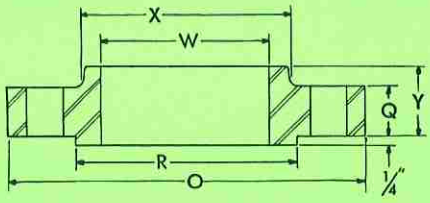
Part No. 31

400 lb. SLIP-ON FLANGES

ASA B16.5-1953 ASTM A105—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF BORE W	DRILLING TEMPLATE: NO. OF HOLES	DRILLING TEMPLATE: DIAM. OF BOLTS+	DRILLING TEMPLATE: DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS●: 1/4" RAISED FACE	LENGTH OF STUD BOLTS●: MALE & FEMALE AND TONGUE & GROOVE	LENGTH OF STUD BOLTS●: RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.88	4	1/2	2 5/8	3	2 3/4	3	2	PRICES ON APPLICATION
‡ 3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.09	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3	
‡1	4 7/8	11/16	2	2 1/8	1 1/16	1.36	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	3 1/2	
‡1 1/4	5 1/4	13/16	2 1/2	2 1/2	1 1/8	1.70	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	4 1/2	
‡1 1/2	6 1/8	7/8	2 7/8	2 3/4	1 1/4	1.95	4	3/4	4 1/2	4 1/4	4	4 1/4	6 1/2	
‡2	6 1/2	1	3 5/8	3 5/16	1 7/16	2.44	8	5/8	5	4 1/4	4	4 1/2	8	
‡2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	1 5/8	2.94	8	3/4	5 7/8	4 3/4	4 1/2	5	12	
‡3	8 1/4	1 1/4	5	4 5/8	1 13/16	3.57	8	3/4	6 5/8	5	4 3/4	5 1/4	15	
‡3 1/2	9	1 3/8	5 1/2	5 1/4	1 15/16	4.07	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	21	
4	10	1 3/8	6 3/16	5 3/4	2	4.57	8	7/8	7 7/8	5 1/2	5 1/4	5 3/4	24	
5	11	1 1/2	7 5/16	7	2 1/8	5.66	8	7/8	9 1/4	5 3/4	5 1/2	6	31	
6	12 1/2	1 5/8	8 1/2	8 1/8	2 1/4	6.72	12	7/8	10 5/8	6	5 3/4	6 1/4	39	
8	15	1 7/8	10 5/8	10 1/4	2 11/16	8.72	12	1	13	6 3/4	6 1/2	7	63	
10	17 1/2	2 1/8	12 3/4	12 5/8	2 7/8	10.88	16	1 1/8	15 1/4	7 1/2	7 1/4	7 3/4	91	
12	20 1/2	2 1/4	15	14 3/4	3 1/8	12.88	16	1 1/4	17 3/4	8	7 3/4	8 1/2	129	
14	23	2 3/8	16 1/4	16 3/4	3 5/16	14.14	20	1 1/4	20 1/4	8 1/4	8	8 3/4	191	
16	25 1/2	2 1/2	18 1/2	19	3 11/16	16.16	20	1 3/8	22 1/2	8 3/4	8 1/2	9 1/4	253	
18	28	2 5/8	21	21	3 7/8	18.18	24	1 3/8	24 3/4	9	8 3/4	9 1/2	310	
20	30 1/2	2 3/4	23	23 1/8	4	20.20	24	1 1/2	27	9 3/4	9 1/2	10 1/4	378	
24	36	3	27 1/4	27 5/8	4 1/2	24.25	24	1 3/4	32	10 3/4	10 1/2	11 1/4	539	

400 lb.
SLIP-ON FLANGES
Part No. 41



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q" nor Length "Y."

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 600-lb. flanges.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

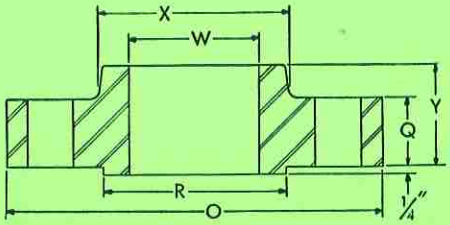
✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASTM A105—GRADE I✪ ASA B16.5-1953

600 lb. SLIP-ON FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF BORE W	DRILLING TEMPLATE: NO. OF HOLES	DRILLING TEMPLATE: DIAM. OF BOLTS+	DRILLING TEMPLATE: DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	LENGTH OF STUD BOLTS● MALE & FEMALE AND TONGUE & GROOVE	LENGTH OF STUD BOLTS● RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.88	4	1/2	2 5/8	3	2 3/4	3	2	PRICES ON APPLICATION
3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.09	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.36	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	3 1/2	
1 1/4	5 1/4	13/16	2 1/2	2 1/2	1 1/8	1.70	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	4 1/2	
1 1/2	6 1/8	7/8	2 7/8	2 3/4	1 1/4	1.95	4	3/4	4 1/2	4 1/4	4	4 1/4	6 1/2	
2	6 1/2	1	3 5/8	3 5/16	1 7/16	2.44	8	5/8	5	4 1/4	4	4 1/2	8	
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	1 5/8	2.94	8	3/4	5 7/8	4 3/4	4 1/2	5	12	
3	8 1/4	1 1/4	5	4 5/8	1 13/16	3.57	8	3/4	6 5/8	5	4 3/4	5 1/4	15	
3 1/2	9	1 3/8	5 1/2	5 1/4	1 15/16	4.07	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	21	
4	10 3/4	1 1/2	6 3/16	6	2 1/8	4.57	8	7/8	8 1/2	5 3/4	5 1/2	6	33	
5	13	1 3/4	7 5/16	7 7/16	2 3/8	5.66	8	1	10 1/2	6 1/2	6 1/4	6 3/4	63	
6	14	1 7/8	8 1/2	8 3/4	2 5/8	6.72	12	1	11 1/2	6 3/4	6 1/2	7	80	
8	16 1/2	2 3/16	10 5/8	10 3/4	3	8.72	12	1 1/8	13 3/4	7 3/4	7 1/2	8	97	
10	20	2 1/2	12 3/4	13 1/2	3 3/8	10.88	16	1 1/4	17	8 1/2	8 1/4	8 3/4	177	
12	22	2 5/8	15	15 3/4	3 5/8	12.88	20	1 1/4	19 1/4	8 3/4	8 1/2	9	215	
14	23 3/4	2 3/4	16 1/4	17	3 11/16	14.14	20	1 3/8	20 3/4	9 1/4	9	9 1/2	259	
16	27	3	18 1/2	19 1/2	4 3/16	16.16	20	1 1/2	23 3/4	10	9 3/4	10 1/4	366	
18	29 1/4	3 1/4	21	21 1/2	4 5/8	18.18	20	1 5/8	25 3/4	10 3/4	10 1/2	11	476	
20	32	3 1/2	23	24	5	20.20	24	1 5/8	28 1/2	11 1/2	11 1/4	11 3/4	612	
24	37	4	27 1/4	28 1/4	5 1/2	24.25	24	1 7/8	33	13	12 3/4	13 1/2	876	



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q" nor Length "Y."

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

600 lb. SLIP-ON FLANGES

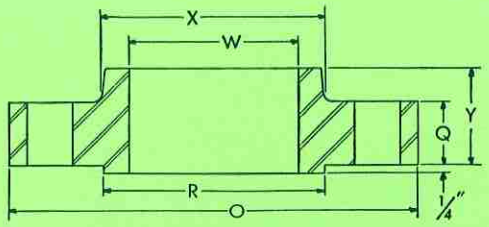
Part No. 61

900 lb. SLIP-ON FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF BORE W	DRILLING TEMPLATE NO. OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS• 1/4" RAISED FACE	LENGTH OF STUD BOLTS• MALE & FEMALE AND TONGUE & GROOVE	LENGTH OF STUD BOLTS• RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	4 3/4	7/8	1 3/8	1 1/2	1 1/4	.88	4	3/4	3 1/4	4 1/4	4	4 1/4	6	PRICES ON APPLICATION
‡ 3/4	5 1/8	1	1 11/16	1 3/4	1 3/8	1.09	4	3/4	3 1/2	4 1/2	4 1/4	4 1/2	6	
‡1	5 7/8	1 1/8	2	2 1/16	1 5/8	1.36	4	7/8	4	5	4 3/4	5	7 1/2	
‡1 1/4	6 1/4	1 1/8	2 1/2	2 1/2	1 5/8	1.70	4	7/8	4 3/8	5	4 3/4	5	10	
‡1 1/2	7	1 1/4	2 7/8	2 3/4	1 3/4	1.95	4	1	4 7/8	5 1/2	5 1/4	5 1/2	14	
‡2	8 1/2	1 1/2	3 5/8	4 1/8	2 1/4	2.44	8	7/8	6 1/2	5 3/4	5 1/2	6	22	
‡2 1/2	9 5/8	1 5/8	4 1/8	4 7/8	2 1/2	2.94	8	1	7 1/2	6 1/4	6	6 1/2	36	
3	9 1/2	1 1/2	5	5	2 1/8	3.57	8	7/8	7 1/2	5 3/4	5 1/2	6	31	
4	11 1/2	1 3/4	6 3/16	6 1/4	2 3/4	4.57	8	1 1/8	9 1/4	6 3/4	6 1/2	7	53	
5	13 3/4	2	7 5/16	7 1/2	3 1/8	5.66	8	1 1/4	11	7 1/2	7 1/4	7 3/4	83	
6	15	2 3/16	8 1/2	9 1/4	3 3/8	6.72	12	1 1/8	12 1/2	7 3/4	7 1/2	8	108	
8	18 1/2	2 1/2	10 5/8	11 3/4	4	8.72	12	1 3/8	15 1/2	8 3/4	8 1/2	9	172	
10	21 1/2	2 3/4	12 3/4	14 1/2	4 1/4	10.88	16	1 3/8	18 1/2	9 1/4	9	9 1/2	245	
12	24	3 1/8	15	16 1/2	4 5/8	12.88	20	1 3/8	21	10	9 3/4	10 1/4	326	
14	25 1/4	3 3/8	16 1/4	17 3/4	5 1/8	14.14	20	1 1/2	22	10 3/4	10 1/2	11 1/4	380	
16	27 3/4	3 1/2	18 1/2	20	5 1/4	16.16	20	1 5/8	24 1/4	11 1/4	11	11 3/4	459	
18	31	4	21	22 1/4	6	18.18	20	1 7/8	27	13	12 3/4	13 1/2	647	
20	33 3/4	4 1/4	23	24 1/2	6 1/4	20.20	20	2	29 1/2	13 3/4	13 1/2	14 1/2	792	
24	41	5 1/2	27 1/4	29 1/2	8	24.25	20	2 1/2	35 1/2	17 1/4	17	18 1/4	1480	

900 lb.
SLIP-ON FLANGES
Part No. 91



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The 1/4" raised face is not included in Thickness "Q" nor Length "Y."

\+ Bolt holes are 1/8" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 1500-lb. flanges.

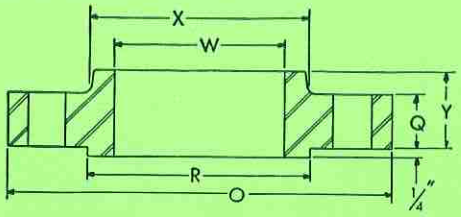
Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASTM A105—GRADE II
American Standard General Dimensions*

1500 lb. SLIP-ON FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF BORE W	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● ¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	4¾	⅞	1⅜	1½	1¼	.88	4	¾	3¼	4¼	4	4¼	6	PRICES ON APPLICATION
¾	5⅛	1	1 11/16	1¾	1⅜	1.09	4	¾	3½	4½	4¼	4½	6	
1	5⅞	1⅛	2	2 1/16	1⅝	1.36	4	⅞	4	5	4¾	5	7½	
1¼	6¼	1⅛	2½	2½	1⅝	1.70	4	⅞	4⅜	5	4¾	5	10	
1½	7	1¼	2⅞	2¾	1¾	1.95	4	1	4⅞	5½	5¼	5½	14	
2	8½	1½	3⅝	4⅛	2¼	2.44	8	⅞	6½	5¾	5½	6	22	
2½	9⅝	1⅝	4⅛	4⅞	2½	2.94	8	1	7½	6¼	6	6½	36	
3	10½	1⅞	5	5¼	2⅞	3.57	8	1⅛	8	7	6¾	7¼	48	
4	12¼	2⅛	6 3/16	6⅜	3 9/16	4.57	8	1¼	9½	7¾	7½	8	73	
5	14¾	2⅞	7 5/16	7¾	4⅛	5.66	8	1½	11½	9¾	9½	10	132	
6	15½	3¼	8½	9	4 11/16	6.72	12	1⅜	12½	10¼	10	10¾	164	
8	19	3⅝	10⅝	11½	5⅝	8.72	12	1⅝	15½	11½	11¼	12	258	
10	23	4¼	12¾	14½	6¼	10.88	12	1⅞	19	13½	13¼	13¾	436	
12	26½	4⅞	15	17¾	7⅛	12.88	16	2	22½	15	14¾	15¾	667	
14	29½	5¼	16¼	19½	.....	14.14	16	2¼	25	16¼	16	17¼	Wts. on Application	
16	32½	5¾	18½	21¾	.....	16.16	16	2½	27¾	17¾	17½	19		
18	36	6⅜	21	23½	.....	18.18	16	2¾	30½	19½	19¼	20¾		
20	38¾	7	23	25¼	.....	20.20	16	3	32¾	21½	21¼	22¾		
24	46	8	27¼	30	.....	24.25	16	3½	39	24¼	24	26		



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The ¼" raised face is not included in Thickness "Q" nor Length "Y."

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

* The ASA B16.5-1953 Standard does not contemplate the use of Slip-on flanges at pressures above 900 pounds (750° F.).

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

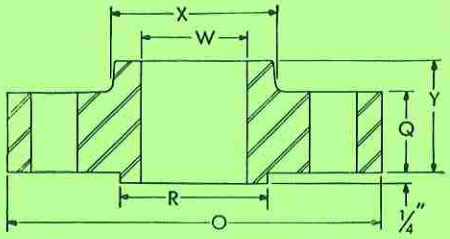
1500 lb.
SLIP-ON FLANGES
Part No. 151

2500 lb. SLIP-ON FLANGES

ASTM A105—GRADE II
American Standard General Dimensions*

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF BORE W	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS• ¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	5¼	1 3/16	1⅜	1 11/16	1 9/16	.88	4	¾	3½	4¾	4½	4¾	7	PRICES ON APPLICATION
¾	5½	1¼	1 11/16	2	1 11/16	1.09	4	¾	3¾	5	4¾	5	9	
1	6¼	1⅜	2	2¼	1⅞	1.36	4	⅞	4¼	5½	5¼	5½	12	
1¼	7¼	1½	2½	2⅞	2 1/16	1.70	4	1	5⅛	6	5¾	6¼	18	
1½	8	1¾	2⅞	3⅛	2⅜	1.95	4	1⅛	5¾	6¾	6½	7	25	
2	9¼	2	3⅝	3¾	2¾	2.44	8	1	6¾	7	6¾	7¼	38	
2½	10½	2¼	4⅛	4½	3⅛	2.94	8	1⅛	7¾	7¾	7½	8	55	
3	12	2⅝	5	5¼	3⅝	3.57	8	1¼	9	8¾	8½	9¼	83	
4	14	3	6 3/16	6½	4¼	4.57	8	1½	10¾	10	9¾	10½	127	
5	16½	3⅝	7 5/16	8	5⅛	5.66	8	1¾	12¾	12	11¾	12½	210	
6	19	4¼	8½	9¼	6	6.72	8	2	14½	13¾	13½	14¼	323	
8	21¾	5	10⅝	12	7	8.72	12	2	17¼	15¼	15	16	485	
10	26½	6½	12¾	14¾	9	10.88	12	2½	21¼	19¼	19	20¼	925	
12	30	7¼	15	17⅜	10	12.88	12	2¾	24⅜	21¼	21	22¼	1300	

2500 lb.
SLIP-ON FLANGES
Part No. 251



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The ¼" raised face is not included in Thickness "Q" nor Length "Y."

\+ Bolt holes are ⅛" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown.

* The ASA B16.5-1953 Standard does not contemplate the use of Slip-on flanges at pressures above 900 pounds (750° F.).

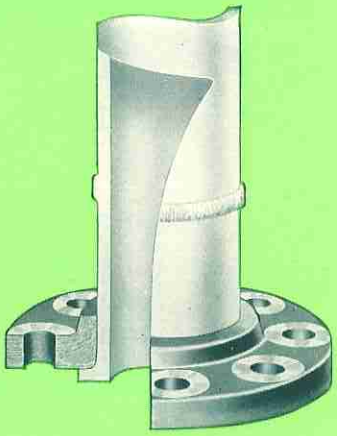
Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

Every Ladish Lap Joint Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Lap Joint* FLANGES

Ladish Forged Steel Lap Joint Flanges are forged under exacting metallurgical control, accurately machined to full dimensions and carefully designed so as to insure maximum performance qualities.



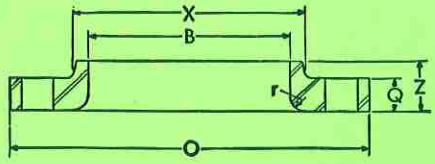
150 lb. LAP JOINT FLANGES

ASA B16.5-1953 ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	3½	7/16	1 3/16	⅝	.90	⅛	4	½	2⅜	2¼	1	PRICES ON APPLICATION
¾	3⅞	½	1½	⅝	1.11	⅛	4	½	2¾	2¼	1½	
1	4¼	9/16	1 15/16	11/16	1.38	⅛	4	½	3⅛	2½	2	
1¼	4⅝	⅝	2 5/16	1 3/16	1.72	3/16	4	½	3½	2½	2½	
1½	5	11/16	2 9/16	⅞	1.97	¼	4	½	3⅞	2¾	3	
2	6	¾	3 1/16	1	2.46	5/16	4	⅝	4¾	3¼	5	
2½	7	⅞	3 9/16	1⅛	2.97	5/16	4	⅝	5½	3½	8	
3	7½	15/16	4¼	1 3/16	3.60	⅜	4	⅝	6	3½	9	
3½	8½	15/16	4 13/16	1¼	4.10	⅜	8	⅝	7	3½	11	
4	9	15/16	5 5/16	1 5/16	4.60	7/16	8	⅝	7½	3½	12	
5	10	15/16	6 7/16	1 7/16	5.69	7/16	8	¾	8½	3¾	13	
6	11	1	7 9/16	1 9/16	6.75	½	8	¾	9½	4	18	
8	13½	1⅛	9 11/16	1¾	8.75	½	8	¾	11¾	4¼	28	
10	16	1 3/16	12	1 15/16	10.92	½	12	⅞	14¼	4¾	36	
12	19	1¼	14⅜	2 3/16	12.92	½	12	⅞	17	4¾	60	
14	21	1⅜	15¾	3⅛	14.18	½	12	1	18¾	5¼	77	
16	23½	1 7/16	18	3 7/16	16.19	½	16	1	21¼	5½	104	
18	25	1 9/16	19⅞	3 13/16	18.20	½	16	1⅛	22¾	6	146	
20	27½	1 11/16	22	4 1/16	20.25	½	20	1⅛	25	6¼	159	
24	32	1⅞	26⅛	4⅜	24.25	½	20	1¼	29½	7	195	

150 lb. LAP JOINT FLANGES

Part No. 18



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

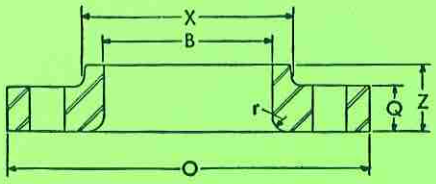
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A181—GRADE I✪

300 lb. LAP JOINT FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	3¾	9/16	1½	⅞	.90	⅛	4	½	2⅝	2½	1½	PRICES ON APPLICATION
¾	4⅝	⅝	1⅞	1	1.11	⅛	4	⅝	3¼	3	2½	
1	4⅞	11/16	2⅛	1 1/16	1.38	⅛	4	⅝	3½	3	3	
1¼	5¼	¾	2½	1 1/16	1.72	3/16	4	⅝	3⅞	3¼	4½	
1½	6⅛	13/16	2¾	1 3/16	1.97	¼	4	¾	4½	3½	6½	
2	6½	⅞	3 5/16	1 5/16	2.46	5/16	8	⅝	5	3½	7	
2½	7½	1	3 15/16	1½	2.97	5/16	8	¾	5⅞	4	10	
3	8¼	1⅛	4⅝	1 11/16	3.60	⅜	8	¾	6⅝	4¼	14½	
3½	9	1 3/16	5¼	1¾	4.10	⅜	8	¾	7¼	4¼	16	
4	10	1¼	5¾	1⅞	4.60	7/16	8	¾	7⅞	4½	24	
5	11	1⅜	7	2	5.69	7/16	8	¾	9¼	4¾	26	
6	12½	1 7/16	8⅛	2 1/16	6.75	½	12	¾	10⅝	4¾	38	
8	15	1⅝	10¼	2 7/16	8.75	½	12	⅞	13	5½	55	
10	17½	1⅞	12⅝	3¾	10.92	½	16	1	15¼	6¼	88	
12	20½	2	14¾	4	12.92	½	16	1⅛	17¾	6¾	139	
14	23	2⅛	16¾	4⅜	14.18	½	20	1⅛	20¼	7	184	
16	25½	2¼	19	4¾	16.19	½	20	1¼	22½	7½	234	
18	28	2⅜	21	5⅛	18.20	½	24	1¼	24¾	7¾	305	
20	30½	2½	23⅛	5½	20.25	½	24	1¼	27	8¼	375	
24	36	2¾	27⅝	6	24.25	½	24	1½	32	9¼	530	



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. LAP JOINT FLANGES

Part No. 33

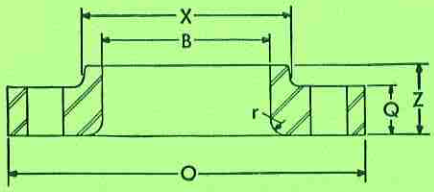
400 lb. LAP JOINT FLANGES

ASA B16.5-1953 ASTM A105—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ ½	3¾	9/16	1½	⅞	.90	⅛	4	½	2⅝	2½	2	PRICES ON APPLICATION
‡ ¾	4⅝	⅝	1⅞	1	1.11	⅛	4	⅝	3¼	3	3	
‡1	4⅞	11/16	2⅛	1 1/16	1.38	⅛	4	⅝	3½	3	3½	
‡1¼	5¼	13/16	2½	1⅛	1.72	3/16	4	⅝	3⅞	3¼	4½	
‡1½	6⅛	⅞	2¾	1¼	1.97	¼	4	¾	4½	3¾	6½	
‡2	6½	1	3 5/16	1 7/16	2.46	5/16	8	⅝	5	3¾	8	
‡2½	7½	1⅛	3 15/16	1⅝	2.97	5/16	8	¾	5⅞	4¼	11	
‡3	8¼	1¼	4⅝	1 13/16	3.60	⅜	8	¾	6⅝	4½	14	
‡3½	9	1⅜	5¼	1 15/16	4.10	⅜	8	⅞	7¼	5	20	
4	10	1⅜	5¾	2	4.60	7/16	8	⅞	7⅞	5	22	
5	11	1½	7	2⅛	5.69	7/16	8	⅞	9¼	5¼	29	
6	12½	1⅝	8⅛	2¼	6.75	½	12	⅞	10⅝	5½	37	
8	15	1⅞	10¼	2 11/16	8.75	½	12	1	13	6¼	59	
10	17½	2⅛	12⅝	4	10.92	½	16	1⅛	15¼	7	95	
12	20½	2¼	14¾	4¼	12.92	½	16	1¼	17¾	7½	152	
14	23	2⅜	16¾	4⅝	14.18	½	20	1¼	20¼	7¾	210	
16	25½	2½	19	5	16.19	½	20	1⅜	22½	8¼	280	
18	28	2⅝	21	5⅜	18.20	½	24	1⅜	24¾	8½	345	
20	30½	2¾	23⅛	5¾	20.25	½	24	1½	27	9¼	420	
24	36	3	27⅝	6¼	24.25	½	24	1¾	32	10¼	615	

400 lb. LAP JOINT FLANGES

Part No. 43



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 600-lb. flanges.

Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

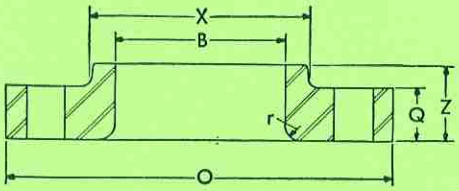
✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE I✪

600 lb. LAP JOINT FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	3¾	9/16	1½	⅞	.90	⅛	4	½	2⅝	2½	2	PRICES ON APPLICATION
¾	4⅝	⅝	1⅞	1	1.11	⅛	4	⅝	3¼	3	3	
1	4⅞	11/16	2⅛	1 1/16	1.38	⅛	4	⅝	3½	3	3½	
1¼	5¼	13/16	2½	1⅛	1.72	3/16	4	⅝	3⅞	3¼	4½	
1½	6⅛	⅞	2¾	1¼	1.97	¼	4	¾	4½	3¾	6½	
2	6½	1	3 5/16	1 7/16	2.46	5/16	8	⅝	5	3¾	8	
2½	7½	1⅛	3 15/16	1⅝	2.97	5/16	8	¾	5⅞	4¼	11	
3	8¼	1¼	4⅝	1 13/16	3.60	⅜	8	¾	6⅝	4½	14	
3½	9	1⅜	5¼	1 15/16	4.10	⅜	8	⅞	7¼	5	20	
4	10¾	1½	6	2⅛	4.60	7/16	8	⅞	8½	5¼	31	
5	13	1¾	7 7/16	2⅜	5.69	7/16	8	1	10½	6	63	
6	14	1⅞	8¾	2⅝	6.75	½	12	1	11½	6¼	78	
8	16½	2 3/16	10¾	3	8.75	½	12	1⅛	13¾	7¼	112	
10	20	2½	13½	4⅜	10.92	½	16	1¼	17	8	195	
12	22	2⅝	15¾	4⅝	12.92	½	20	1¼	19¼	8¼	240	
14	23¾	2¾	17	5	14.18	½	20	1⅜	20¾	8¾	290	
16	27	3	19½	5½	16.19	½	20	1½	23¾	9½	400	
18	29¼	3¼	21½	6	18.20	½	20	1⅝	25¾	10¼	469	
20	32	3½	24	6½	20.25	½	24	1⅝	28½	11	604	
24	37	4	28¼	7¼	24.25	½	24	1⅞	33	12½	866	



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

600 lb. LAP JOINT FLANGES

Part No. 63

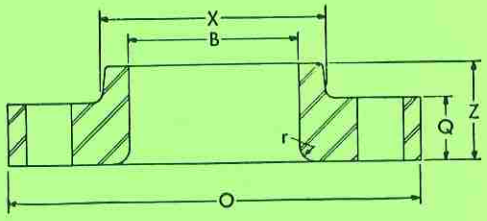
900 lb. LAP JOINT FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡1½	4¾	⅞	1½	1¼	.90	⅛	4	¾	3¼	3¾	6	PRICES ON APPLICATION
‡¾	5⅛	1	1¾	1⅜	1.11	⅛	4	¾	3½	4	6	
‡1	5⅞	1⅛	2 1/16	1⅝	1.38	⅛	4	⅞	4	4½	7½	
‡1¼	6¼	1⅛	2½	1⅝	1.72	3/16	4	⅞	4⅜	4½	10	
‡1½	7	1¼	2¾	1¾	1.97	¼	4	1	4⅞	5	14	
‡2	8½	1½	4⅛	2¼	2.46	5/16	8	⅞	6½	5¼	21	
‡2½	9⅝	1⅝	4⅞	2½	2.97	5/16	8	1	7½	5¾	29	
3	9½	1½	5	2⅛	3.60	⅜	8	⅞	7½	5¼	25	
4	11½	1¾	6¼	2¾	4.60	7/16	8	1⅛	9¼	6¼	51	
5	13¾	2	7½	3⅛	5.69	7/16	8	1¼	11	7	81	
6	15	2 3/16	9¼	3⅜	6.75	½	12	1⅛	12½	7¼	105	
8	18½	2½	11¾	4½	8.75	½	12	1⅜	15½	8¼	188	
10	21½	2¾	14½	5	10.92	½	16	1⅜	18½	8¾	277	
12	24	3⅛	16½	5⅝	12.92	½	20	1⅜	21	9½	371	
14	25¼	3⅜	17¾	6⅛	14.18	½	20	1½	22	10¼	397	
16	27¾	3½	20	6½	16.19	½	20	1⅝	24¼	10¾	488	
18	31	4	22¼	7½	18.20	½	20	1⅞	27	12½	670	
20	33¾	4¼	24½	8¼	20.25	½	20	2	29½	13¼	868	
24	41	5½	29½	10½	24.25	½	20	2½	35½	16¾	1659	

900 lb. LAP JOINT FLANGES

Part No. 93



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 1500-lb. flanges.

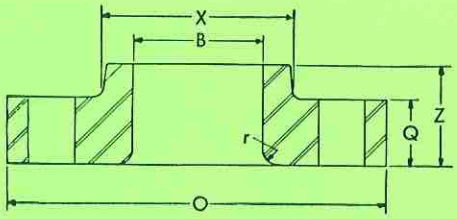
Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE II

1500 lb. LAP JOINT FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS•	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	4¾	⅞	1½	1¼	.90	⅛	4	¾	3¼	3¾	6	PRICES ON APPLICATION
¾	5⅛	1	1¾	1⅜	1.11	⅛	4	¾	3½	4	6	
1	5⅞	1⅛	2 1/16	1⅝	1.38	⅛	4	⅞	4	4½	7½	
1¼	6¼	1⅛	2½	1⅝	1.72	3/16	4	⅞	4⅜	4½	10	
1½	7	1¼	2¾	1¾	1.97	¼	4	1	4⅞	5	14	
2	8½	1½	4⅛	2¼	2.46	5/16	8	⅞	6½	5¼	21	
2½	9⅝	1⅝	4⅞	2½	2.97	5/16	8	1	7½	5¾	29	
3	10½	1⅞	5¼	2⅞	3.60	⅜	8	1⅛	8	6½	38	
4	12¼	2⅛	6⅜	3 9/16	4.60	7/16	8	1¼	9½	7¼	75	
5	14¾	2⅞	7¾	4⅛	5.69	7/16	8	1½	11½	9¼	138	
6	15½	3¼	9	4 11/16	6.75	½	12	1⅜	12½	9¾	170	
8	19	3⅝	11½	5⅝	8.75	½	12	1⅝	15½	11	286	
10	23	4¼	14½	7	10.92	½	12	1⅞	19	13	485	
12	26½	4⅞	17¾	8⅝	12.92	½	16	2	22½	14½	749	
14	29½	5¼	19½	9½	14.18	½	16	2¼	25	15¾	Wts. on Application	
16	32½	5¾	21¾	10¼	16.19	½	16	2½	27¾	17¼		
18	36	6⅜	23½	10⅞	18.20	½	16	2¾	30½	19		
20	38¾	7	25¼	11½	20.25	½	16	3	32¾	20¾		
24	46	8	30	13	24.25	½	16	3½	39	23¾		



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown.

Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

1500 lb. LAP JOINT FLANGES

Part No. 153

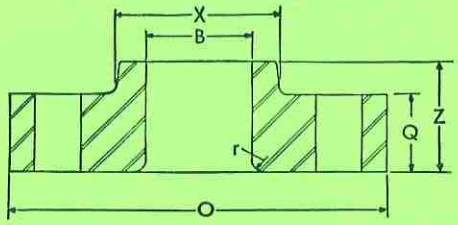
2500 lb. LAP JOINT FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF HUB AT BASE X	LENGTH THRU HUB Z	DIAM. OF BORE B	RADIUS r	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS+	DRILLING TEMPLATE DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE LENGTH OF STUD BOLTS●	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	5¼	1 3/16	1 11/16	1 9/16	.90	⅛	4	¾	3½	4¼	7	PRICES ON APPLICATION
¾	5½	1¼	2	1 11/16	1.11	⅛	4	¾	3¾	4½	8	
1	6¼	1⅜	2¼	1⅞	1.38	⅛	4	⅞	4¼	5	12	
1¼	7¼	1½	2⅞	2 1/16	1.72	3/16	4	1	5⅛	5½	17	
1½	8	1¾	3⅛	2⅜	1.97	¼	4	1⅛	5¾	6¼	24	
2	9¼	2	3¾	2¾	2.46	5/16	8	1	6¾	6½	37	
2½	10½	2¼	4½	3⅛	2.97	5/16	8	1⅛	7¾	7¼	53	
3	12	2⅝	5¼	3⅝	3.60	⅜	8	1¼	9	8¼	80	
4	14	3	6½	4¼	4.60	7/16	8	1½	10¾	9½	122	
5	16½	3⅝	8	5⅛	5.69	7/16	8	1¾	12¾	11½	204	
6	19	4¼	9¼	6	6.75	½	8	2	14½	13¼	314	
8	21¾	5	12	7	8.75	½	12	2	17¼	14¾	471	
10	26½	6½	14¾	9	10.92	½	12	2½	21¼	18¾	897	
12	30	7¼	17⅜	10	12.92	½	12	2¾	24⅜	20¾	1262	

2500 lb. LAP JOINT FLANGES

Part No. 253



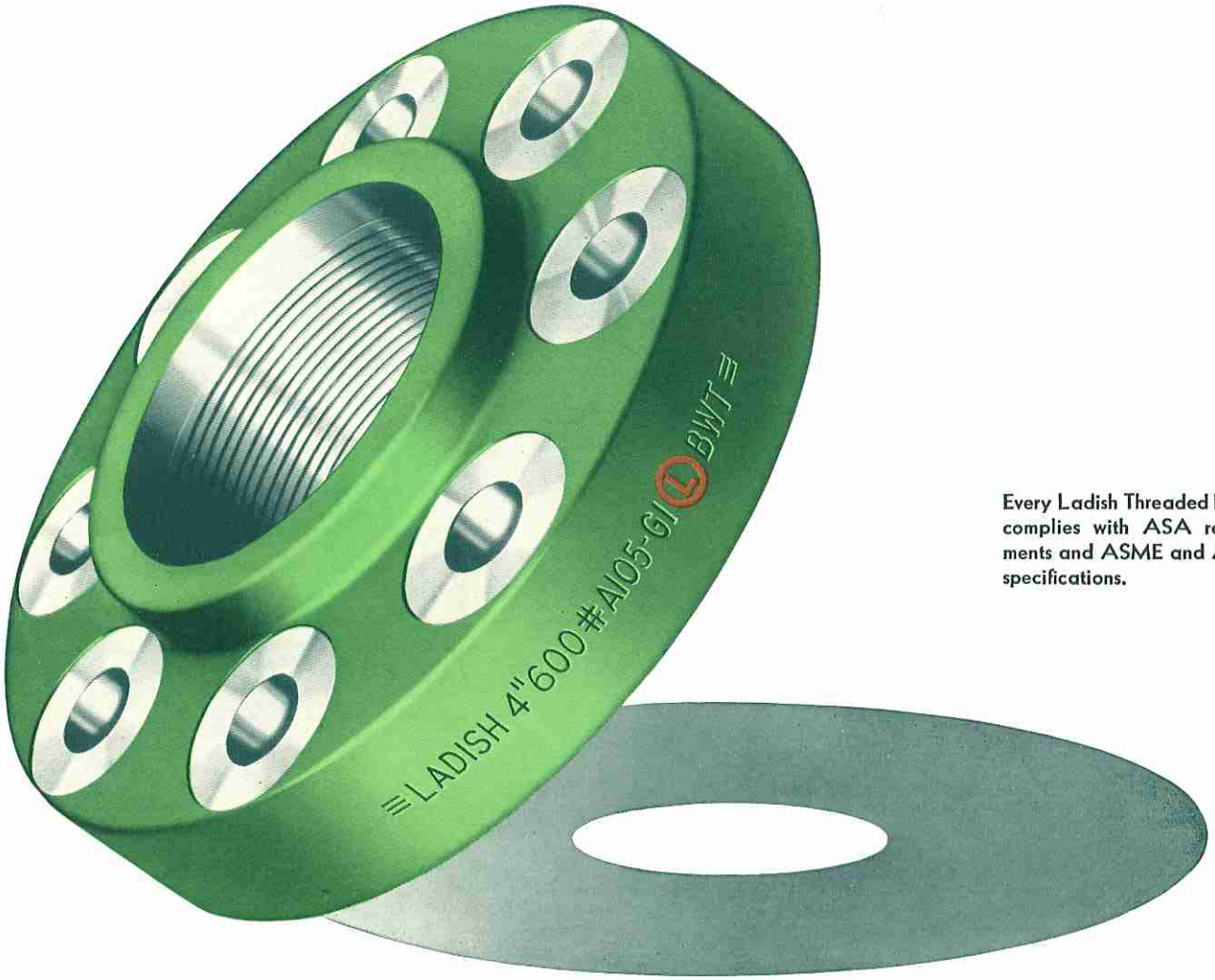
All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced.

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

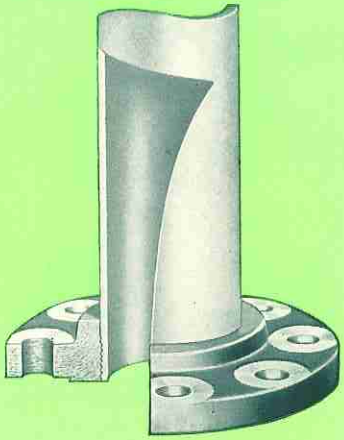
For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.



Every Ladish Threaded Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Threaded* FLANGES

Ladish Forged Steel Threaded Flanges are adaptable for quick assembly and disassembly. Flanges are carefully gauged for thread contour, size, length and lead to assure easy, low-cost installation. The thread and face are machined with specially designed equipment, assuring an exact 90° angle of thread to face. The sharp clean cut threads comply with the exacting API tolerances.



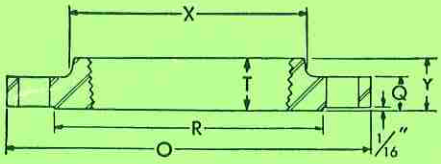
150 lb. THREADED FLANGES

ASA B16.5-1953 ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF COUNTER BORE	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS● 1/16" RAISED FACE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 1/2	7/16	1 3/8	1 3/16	5/8	NO Counter Bore Required on 150-lb. Threaded Flanges	5/8	4	1/2	2 3/8	2 1/4	.....	1	PRICES ON APPLICATION
3/4	3 7/8	1/2	1 11/16	1 1/2	5/8		5/8	4	1/2	2 3/4	2 1/4	.....	1 1/2	
1	4 1/4	9/16	2	1 15/16	11/16		11/16	4	1/2	3 1/8	2 1/2	3	2	
1 1/4	4 5/8	5/8	2 1/2	2 5/16	13/16		13/16	4	1/2	3 1/2	2 1/2	3 1/4	2 1/2	
1 1/2	5	11/16	2 7/8	2 9/16	7/8		7/8	4	1/2	3 7/8	2 3/4	3 1/4	3	
2	6	3/4	3 5/8	3 1/16	1		1	4	5/8	4 3/4	3 1/4	3 3/4	5	
2 1/2	7	7/8	4 1/8	3 9/16	1 1/8		1 1/8	4	5/8	5 1/2	3 1/2	4	8	
3	7 1/2	15/16	5	4 1/4	1 3/16		1 3/16	4	5/8	6	3 1/2	4 1/4	10	
3 1/2	8 1/2	15/16	5 1/2	4 13/16	1 1/4		1 1/4	8	5/8	7	3 1/2	4 1/4	12	
4	9	15/16	6 3/16	5 5/16	1 5/16		1 5/16	8	5/8	7 1/2	3 1/2	4 1/4	13	
5	10	15/16	7 5/16	6 7/16	1 7/16		1 7/16	8	3/4	8 1/2	3 3/4	4 1/2	15	
6	11	1	8 1/2	7 9/16	1 9/16		1 9/16	8	3/4	9 1/2	4	4 1/2	19 1/2	
8	13 1/2	1 1/8	10 5/8	9 11/16	1 3/4		1 3/4	8	3/4	11 3/4	4 1/4	4 3/4	30	
10	16	1 3/16	12 3/4	12	1 15/16		1 15/16	12	7/8	14 1/4	4 3/4	5 1/4	41	
12	19	1 1/4	15	14 3/8	2 3/16		2 3/16	12	7/8	17	4 3/4	5 1/2	65	
14	21	1 3/8	16 1/4	15 3/4	2 1/4		2 1/4	12	1	18 3/4	5 1/4	6	85	
16	23 1/2	1 7/16	18 1/2	18	2 1/2		2 1/2	16	1	21 1/4	5 1/2	6	93	
18	25	1 9/16	21	19 7/8	2 11/16		2 11/16	16	1 1/8	22 3/4	6	6 1/2	120	
20	27 1/2	1 11/16	23	22	2 7/8		2 7/8	20	1 1/8	25	6 1/4	7	155	
24	32	1 7/8	27 1/4	26 1/8	3 1/4		3 1/4	20	1 1/4	29 1/2	7	7 3/4	210	

150 lb. THREADED FLANGES

Part No. 17



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

◆ Thread length for 150-lb. flanges accommodates both American Standard Pipe Threads (ASA B2.1) and API Line Pipe Threads (API-6A). Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

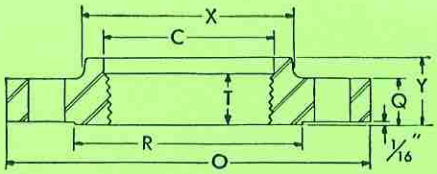
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A181—GRADE I✪

300 lb. THREADED FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LGTH. OF STUD BOLTS● 1/16" RAISED FACE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.93	5/8	4	1/2	2 5/8	2 1/2	3	1 1/2	PRICES ON APPLICATION
3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.14	5/8	4	5/8	3 1/4	3	3 1/4	2 1/2	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.41	11/16	4	5/8	3 1/2	3	3 1/4	3	
1 1/4	5 1/4	3/4	2 1/2	2 1/2	1 1/16	1.75	13/16	4	5/8	3 7/8	3 1/4	3 3/4	4 1/2	
1 1/2	6 1/8	13/16	2 7/8	2 3/4	1 3/16	1.99	7/8	4	3/4	4 1/2	3 1/2	4	6 1/2	
2	6 1/2	7/8	3 5/8	3 5/16	1 5/16	2.50	1 1/8	8	5/8	5	3 1/2	4 1/4	7	
2 1/2	7 1/2	1	4 1/8	3 15/16	1 1/2	3.00	1 1/4	8	3/4	5 7/8	4	4 3/4	10	
3	8 1/4	1 1/8	5	4 5/8	1 11/16	3.63	1 1/4	8	3/4	6 5/8	4 1/4	5	14	
3 1/2	9	1 3/16	5 1/2	5 1/4	1 3/4	4.13	1 7/16	8	3/4	7 1/4	4 1/4	5 1/4	16	
4	10	1 1/4	6 3/16	5 3/4	1 7/8	4.63	1 7/16	8	3/4	7 7/8	4 1/2	5 1/4	24	
5	11	1 3/8	7 5/16	7	2	5.69	1 11/16	8	3/4	9 1/4	4 3/4	5 1/2	31	
6	12 1/2	1 7/16	8 1/2	8 1/8	2 1/16	6.75	1 13/16	12	3/4	10 5/8	4 3/4	5 3/4	36	
8	15	1 5/8	10 5/8	10 1/4	2 7/16	8.75	2	12	7/8	13	5 1/2	6 1/4	56	
10	17 1/2	1 7/8	12 3/4	12 5/8	2 5/8	10.88	2 3/16	16	1	15 1/4	6 1/4	7 1/4	80	
12	20 1/2	2	15	14 3/4	2 7/8	12.94	2 3/8	16	1 1/8	17 3/4	6 3/4	7 1/2	110	
14	23	2 1/8	16 1/4	16 3/4	3	14.19	2 1/2	20	1 1/8	20 1/4	7	7 3/4	164	
16	25 1/2	2 1/4	18 1/2	19	3 1/4	16.19	2 11/16	20	1 1/4	22 1/2	7 1/2	8 1/2	220	
18	28	2 3/8	21	21	3 1/2	18.19	2 3/4	24	1 1/4	24 3/4	7 3/4	8 3/4	280	
20	30 1/2	2 1/2	23	23 1/8	3 3/4	20.19	2 7/8	24	1 1/4	27	8 1/4	9 1/4	325	
24	36	2 3/4	27 1/4	27 5/8	4 3/16	24.19	3 1/4	24	1 1/2	32	9 1/4	10 1/4	490	



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The 1/16" raised face is included in Thickness "Q" and Length "Y."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. THREADED FLANGES

Part No. 32

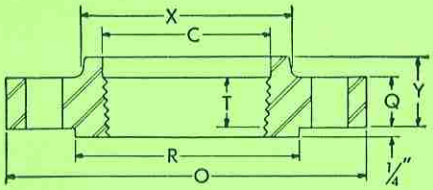
400 lb. THREADED FLANGES

ASA B16.5-1953 ASTM A105—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.93	5/8	4	1/2	2 5/8	3	2 3/4	3	2	
‡ 3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.14	5/8	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3	
‡1	4 7/8	11/16	2	2 1/8	1 1/16	1.41	11/16	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	3 1/2	
‡1 1/4	5 1/4	13/16	2 1/2	2 1/2	1 1/8	1.75	13/16	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	4 1/2	
‡1 1/2	6 1/8	7/8	2 7/8	2 3/4	1 1/4	1.99	7/8	4	3/4	4 1/2	4 1/4	4	4 1/4	6 1/2	
‡2	6 1/2	1	3 5/8	3 5/16	1 7/16	2.50	1 1/8	8	5/8	5	4 1/4	4	4 1/2	8	
‡2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	1 5/8	3.00	1 1/4	8	3/4	5 7/8	4 3/4	4 1/2	5	12	
‡3	8 1/4	1 1/4	5	4 5/8	1 13/16	3.63	1 3/8	8	3/4	6 5/8	5	4 3/4	5 1/4	15	PRICES
3 1/2	9	1 3/8	5 1/2	5 1/4	1 15/16	4.13	1 9/16	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	21	
4	10	1 3/8	6 3/16	5 3/4	2	4.63	1 7/16	8	7/8	7 7/8	5 1/2	5 1/4	5 3/4	24	ON
5	11	1 1/2	7 5/16	7	2 1/8	5.69	1 11/16	8	7/8	9 1/4	5 3/4	5 1/2	6	31	APPLI-
6	12 1/2	1 5/8	8 1/2	8 1/8	2 1/4	6.75	1 13/16	12	7/8	10 5/8	6	5 3/4	6 1/4	39	
8	15	1 7/8	10 5/8	10 1/4	2 11/16	8.75	2	12	1	13	6 3/4	6 1/2	7	63	CATION
10	17 1/2	2 1/8	12 3/4	12 5/8	2 7/8	10.88	2 3/16	16	1 1/8	15 1/4	7 1/2	7 1/4	7 3/4	91	
12	20 1/2	2 1/4	15	14 3/4	3 1/8	12.94	2 3/8	16	1 1/4	17 3/4	8	7 3/4	8 1/2	129	
14	23	2 3/8	16 1/4	16 3/4	3 5/16	14.19	2 1/2	20	1 1/4	20 1/4	8 1/4	8	8 3/4	191	
16	25 1/2	2 1/2	18 1/2	19	3 11/16	16.19	2 11/16	20	1 3/8	22 1/2	8 3/4	8 1/2	9 1/4	253	
18	28	2 5/8	21	21	3 7/8	18.19	2 3/4	24	1 3/8	24 3/4	9	8 3/4	9 1/2	310	
20	30 1/2	2 3/4	23	23 1/8	4	20.19	2 7/8	24	1 1/2	27	9 3/4	9 1/2	10 1/4	378	
24	36	3	27 1/4	27 5/8	4 1/2	24.19	3 1/4	24	1 3/4	32	10 3/4	10 1/2	11 1/4	539	

400 lb. THREADED FLANGES

Part No. 42



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q," Length "Y" nor Thread Length "T."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 600-lb. flanges.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

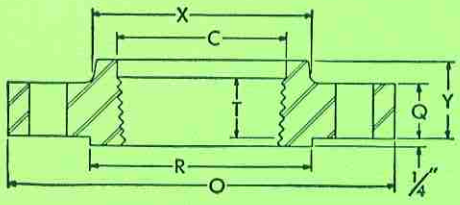
✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE I✪

600 lb. THREADED FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.93	5/8	4	1/2	2 5/8	3	2 3/4	3	2	
3/4	4 5/8	5/8	1 11/16	1 7/8	1	1.14	5/8	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.41	11/16	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	3 1/2	
1 1/4	5 1/4	13/16	2 1/2	2 1/2	1 1/8	1.75	13/16	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	4 1/2	
1 1/2	6 1/8	7/8	2 7/8	2 3/4	1 1/4	1.99	7/8	4	3/4	4 1/2	4 1/4	4	4 1/4	6 1/2	
2	6 1/2	1	3 5/8	3 5/16	1 7/16	2.50	1 1/8	8	5/8	5	4 1/4	4	4 1/2	8	
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	1 5/8	3.00	1 1/4	8	3/4	5 7/8	4 3/4	4 1/2	5	12	
3	8 1/4	1 1/4	5	4 5/8	1 13/16	3.63	1 3/8	8	3/4	6 5/8	5	4 3/4	5 1/4	15	PRICES
3 1/2	9	1 3/8	5 1/2	5 1/4	1 15/16	4.13	1 9/16	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	21	
4	10 3/4	1 1/2	6 3/16	6	2 1/8	4.63	1 5/8	8	7/8	8 1/2	5 3/4	5 1/2	6	33	ON
5	13	1 3/4	7 5/16	7 7/16	2 3/8	5.69	1 7/8	8	1	10 1/2	6 1/2	6 1/4	6 3/4	63	APPLI-
6	14	1 7/8	8 1/2	8 3/4	2 5/8	6.75	2	12	1	11 1/2	6 3/4	6 1/2	7	80	
8	16 1/2	2 3/16	10 5/8	10 3/4	3	8.75	2 1/4	12	1 1/8	13 3/4	7 3/4	7 1/2	8	97	CATION
10	20	2 1/2	12 3/4	13 1/2	3 3/8	10.88	2 9/16	16	1 1/4	17	8 1/2	8 1/4	8 3/4	177	
12	22	2 5/8	15	15 3/4	3 5/8	12.94	2 3/4	20	1 1/4	19 1/4	8 3/4	8 1/2	9	215	
14	23 3/4	2 3/4	16 1/4	17	3 11/16	14.19	2 7/8	20	1 3/8	20 3/4	9 1/4	9	9 1/2	259	
16	27	3	18 1/2	19 1/2	4 3/16	16.19	3 1/16	20	1 1/2	23 3/4	10	9 3/4	10 1/4	366	
18	29 1/4	3 1/4	21	21 1/2	4 5/8	18.19	3 1/8	20	1 5/8	25 3/4	10 3/4	10 1/2	11	476	
20	32	3 1/2	23	24	5	20.19	3 1/4	24	1 5/8	28 1/2	11 1/2	11 1/4	11 3/4	612	
24	37	4	27 1/4	28 1/4	5 1/2	24.19	3 5/8	24	1 7/8	33	13	12 3/4	13 1/2	876	



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q," Length "Y" nor Thread Length "T."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

600 lb. THREADED FLANGES

Part No. 62

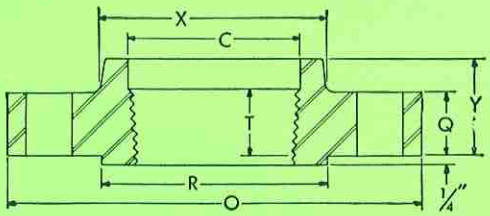
900 lb. THREADED FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y*	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	4 3/4	7/8	1 3/8	1 1/2	1 1/4	.93	7/8	4	3/4	3 1/4	4 1/4	4	4 1/4	6	PRICES ON APPLICATION
‡ 3/4	5 1/8	1	1 11/16	1 3/4	1 3/8	1.14	1	4	3/4	3 1/2	4 1/2	4 1/4	4 1/2	6	
‡1	5 7/8	1 1/8	2	2 1/16	1 5/8	1.41	1 1/8	4	7/8	4	5	4 3/4	5	7 1/2	
‡1 1/4	6 1/4	1 1/8	2 1/2	2 1/2	1 5/8	1.75	1 3/16	4	7/8	4 3/8	5	4 3/4	5	10	
‡1 1/2	7	1 1/4	2 7/8	2 3/4	1 3/4	1.99	1 1/4	4	1	4 7/8	5 1/2	5 1/4	5 1/2	14	
‡2	8 1/2	1 1/2	3 5/8	4 1/8	2 1/4	2.50	1 1/2	8	7/8	6 1/2	5 3/4	5 1/2	6	22	
‡2 1/2	9 5/8	1 5/8	4 1/8	4 7/8	2 1/2	3.00	1 7/8	8	1	7 1/2	6 1/4	6	6 1/2	36	
3	9 1/2	1 1/2	5	5	2 1/8	3.63	1 5/8	8	7/8	7 1/2	5 3/4	5 1/2	6	31	
4	11 1/2	1 3/4	6 3/16	6 1/4	2 3/4	4.63	1 7/8	8	1 1/8	9 1/4	6 3/4	6 1/2	7	53	
5	13 3/4	2	7 5/16	7 1/2	3 1/8	5.69	2 1/8	8	1 1/4	11	7 1/2	7 1/4	7 3/4	83	
6	15	2 3/16	8 1/2	9 1/4	3 3/8	6.75	2 1/4	12	1 1/8	12 1/2	7 3/4	7 1/2	8	108	
8	18 1/2	2 1/2	10 5/8	11 3/4	4	8.75	2 1/2	12	1 3/8	15 1/2	8 3/4	8 1/2	9	172	
10	21 1/2	2 3/4	12 3/4	14 1/2	4 1/4	10.88	2 13/16	16	1 3/8	18 1/2	9 1/4	9	9 1/2	245	
12	24	3 1/8	15	16 1/2	4 5/8	12.94	3	20	1 3/8	21	10	9 3/4	10 1/4	326	
14	25 1/4	3 3/8	16 1/4	17 3/4	5 1/8	14.19	3 1/4	20	1 1/2	22	10 3/4	10 1/2	11 1/4	380	
16	27 3/4	3 1/2	18 1/2	20	5 1/4	16.19	3 3/8	20	1 5/8	24 1/4	11 1/4	11	11 3/4	459	
18	31	4	21	22 1/4	6	18.19	3 1/2	20	1 7/8	27	13	12 3/4	13 1/2	647	
20	33 3/4	4 1/4	23	24 1/2	6 1/4	20.19	3 5/8	20	2	29 1/2	13 3/4	13 1/2	14 1/2	792	
24	41	5 1/2	27 1/4	29 1/2	8	24.19	4	20	2 1/2	35 1/2	17 1/4	17	18 1/4	1480	

900 lb. THREADED FLANGES

Part No. 92



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The 1/4" raised face is not included in Thickness "Q," Length "Y" nor Thread Length "T."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

\+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 1500-lb. flanges.

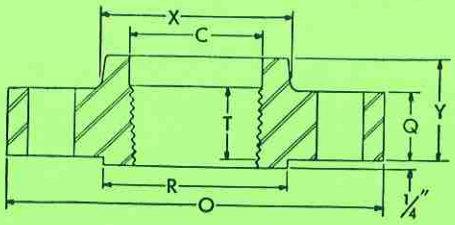
Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE II

1500 lb. THREADED FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	4 3/4	7/8	1 3/8	1 1/2	1 1/4	.93	7/8	4	3/4	3 1/4	4 1/4	4	4 1/4	6	
3/4	5 1/8	1	1 11/16	1 3/4	1 3/8	1.14	1	4	3/4	3 1/2	4 1/2	4 1/4	4 1/2	6	
1	5 7/8	1 1/8	2	2 1/16	1 5/8	1.41	1 1/8	4	7/8	4	5	4 3/4	5	7 1/2	
1 1/4	6 1/4	1 1/8	2 1/2	2 1/2	1 5/8	1.75	1 3/16	4	7/8	4 3/8	5	4 3/4	5	10	
1 1/2	7	1 1/4	2 7/8	2 3/4	1 3/4	1.99	1 1/4	4	1	4 7/8	5 1/2	5 1/4	5 1/2	14	
2	8 1/2	1 1/2	3 5/8	4 1/8	2 1/4	2.50	1 1/2	8	7/8	6 1/2	5 3/4	5 1/2	6	22	PRICES
2 1/2	9 5/8	1 5/8	4 1/8	4 7/8	2 1/2	3.00	1 7/8	8	1	7 1/2	6 1/4	6	6 1/2	36	ON
3	10 1/2	1 7/8	5	5 1/4	2 7/8	3.63	2	8	1 1/8	8	7	6 3/4	7 1/4	48	APPLI-
4	12 1/4	2 1/8	6 3/16	6 3/8	3 9/16	4.63	2 1/4	8	1 1/4	9 1/2	7 3/4	7 1/2	8	73	CATION
5	14 3/4	2 7/8	7 5/16	7 3/4	4 1/8	5.69	2 1/2	8	1 1/2	11 1/2	9 3/4	9 1/2	10	132	
6	15 1/2	3 1/4	8 1/2	9	4 11/16	6.75	2 3/4	12	1 3/8	12 1/2	10 1/4	10	10 3/4	164	
8	19	3 5/8	10 5/8	11 1/2	5 5/8	8.75	3	12	1 5/8	15 1/2	11 1/2	11 1/4	12	258	
10	23	4 1/4	12 3/4	14 1/2	6 1/4	10.88	3 5/16	12	1 7/8	19	13 1/2	13 1/4	13 3/4	436	
12	26 1/2	4 7/8	15	17 3/4	7 1/8	12.94	3 5/8	16	2	22 1/2	15	14 3/4	15 3/4	667	



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q," Length "Y" nor Thread Length "T."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

1500 lb. THREADED FLANGES

Part No. 152

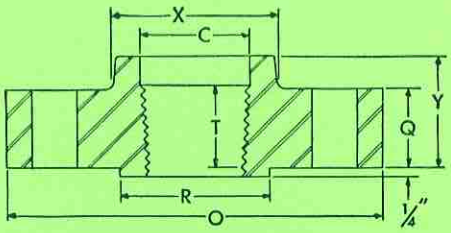
2500 lb. THREADED FLANGES

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	LENGTH THRU HUB Y★	DIAM. OF COUNTER BORE C	MINIMUM THREAD LENGTH T◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	5 1/4	1 3/16	1 3/8	1 11/16	1 9/16	.93	1 1/8	4	3/4	3 1/2	4 3/4	4 1/2	4 3/4	7	
3/4	5 1/2	1 1/4	1 11/16	2	1 11/16	1.14	1 1/4	4	3/4	3 3/4	5	4 3/4	5	9	
1	6 1/4	1 3/8	2	2 1/4	1 7/8	1.41	1 3/8	4	7/8	4 1/4	5 1/2	5 1/4	5 1/2	12	
1 1/4	7 1/4	1 1/2	2 1/2	2 7/8	2 1/16	1.75	1 1/2	4	1	5 1/8	6	5 3/4	6 1/4	18	
1 1/2	8	1 3/4	2 7/8	3 1/8	2 3/8	1.99	1 3/4	4	1 1/8	5 3/4	6 3/4	6 1/2	7	25	
2	9 1/4	2	3 5/8	3 3/4	2 3/4	2.50	2	8	1	6 3/4	7	6 3/4	7 1/4	38	PRICES
2 1/2	10 1/2	2 1/4	4 1/8	4 1/2	3 1/8	3.00	2 1/4	8	1 1/8	7 3/4	7 3/4	7 1/2	8	55	ON
3	12	2 5/8	5	5 1/4	3 5/8	3.63	2 1/2	8	1 1/4	9	8 3/4	8 1/2	9 1/4	83	APPLI-
4	14	3	6 3/16	6 1/2	4 1/4	4.63	2 3/4	8	1 1/2	10 3/4	10	9 3/4	10 1/2	127	CATION
5	16 1/2	3 5/8	7 5/16	8	5 1/8	5.69	3	8	1 3/4	12 3/4	12	11 3/4	12 1/2	210	
6	19	4 1/4	8 1/2	9 1/4	6	6.75	3 1/4	8	2	14 1/2	13 3/4	13 1/2	14 1/4	323	
8	21 3/4	5	10 5/8	12	7	8.75	3 3/4	12	2	17 1/4	15 1/4	15	16	485	
10	26 1/2	6 1/2	12 3/4	14 3/4	9	10.88	4 1/4	12	2 1/2	21 1/4	19 1/4	19	20 1/4	925	
12	30	7 1/4	15	17 3/8	10	12.94	4 3/4	12	2 3/4	24 3/8	21 1/4	21	22 1/4	1300	

2500 lb. THREADED FLANGES

Part No. 252



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

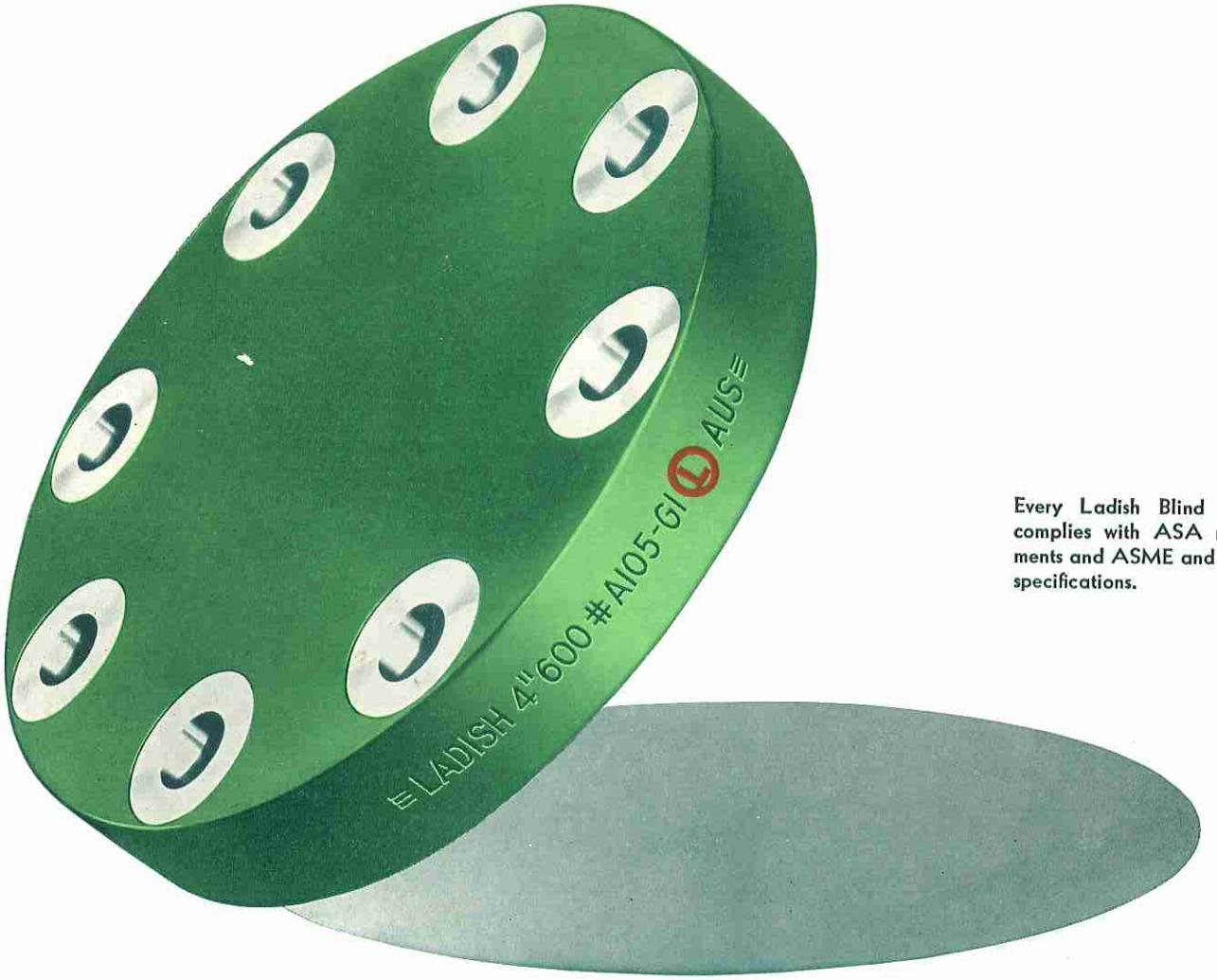
★ The 1/4" raised face is not included in Thickness "Q," Length "Y" nor Thread Length "T."

◆ Thread lengths are proportionately longer than required for API Line Pipe Threads (API-6A) and American Standard Pipe Threads (B2.1) and satisfy the general requirements for longer threads for the higher pressures. Thread details—pages 165 and 246.

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

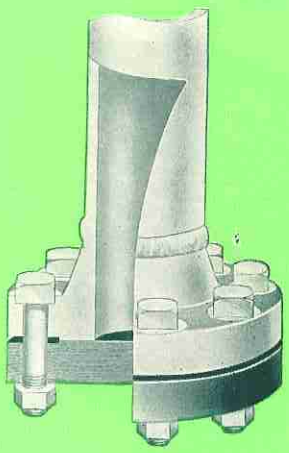
For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.



Every Ladish Blind Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Blind* FLANGES

Ladish Forged Steel Blind Flanges are carefully die forged from upset billets so that the grain flow is such as to give maximum strength.



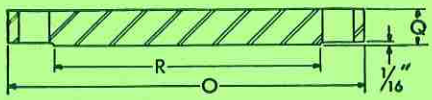
150 lb. BLIND FLANGES*

ASA B16.5-1953 ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q★	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE: NUMBER OF HOLES	DRILLING TEMPLATE: DIAM. OF BOLTS+	DRILLING TEMPLATE: DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/16" RAISED FACE	LENGTH OF STUD BOLTS● RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 1/2	7/16	1 3/8	4	1/2	2 3/8	2 1/4	. . .	2	PRICES ON APPLICATION
3/4	3 7/8	1/2	1 11/16	4	1/2	2 3/4	2 1/4	. . .	2	
1	4 1/4	9/16	2	4	1/2	3 1/8	2 1/2	3	2	
1 1/4	4 5/8	5/8	2 1/2	4	1/2	3 1/2	2 1/2	3 1/4	3	
1 1/2	5	11/16	2 7/8	4	1/2	3 7/8	2 3/4	3 1/4	3	
2	6	3/4	3 5/8	4	5/8	4 3/4	3 1/4	3 3/4	4	
2 1/2	7	7/8	4 1/8	4	5/8	5 1/2	3 1/2	4	7	
3	7 1/2	15/16	5	4	5/8	6	3 1/2	4 1/4	9	
3 1/2	8 1/2	15/16	5 1/2	8	5/8	7	3 1/2	4 1/4	13	
4	9	15/16	6 3/16	8	5/8	7 1/2	3 1/2	4 1/4	17	
5	10	15/16	7 5/16	8	3/4	8 1/2	3 3/4	4 1/2	20	
6	11	1	8 1/2	8	3/4	9 1/2	4	4 1/2	27	
8	13 1/2	1 1/8	10 5/8	8	3/4	11 3/4	4 1/4	4 3/4	47	
10	16	1 3/16	12 3/4	12	7/8	14 1/4	4 3/4	5 1/4	67	
12	19	1 1/4	15	12	7/8	17	4 3/4	5 1/2	123	
14	21	1 3/8	16 1/4	12	1	18 3/4	5 1/4	6	139	
16	23 1/2	1 7/16	18 1/2	16	1	21 1/4	5 1/2	6	187	
18	25	1 9/16	21	16	1 1/8	22 3/4	6	6 1/2	217	
20	27 1/2	1 11/16	23	20	1 1/8	25	6 1/4	7	283	
24	32	1 7/8	27 1/4	20	1 1/4	29 1/2	7	7 3/4	415	

150 lb. BLIND FLANGES

Part No. 19



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/16" raised face is included in Thickness "Q."

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

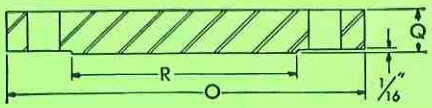
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A181—GRADE I✪

300 lb. BLIND FLANGES*

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q★	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE: NUMBER OF HOLES	DRILLING TEMPLATE: DIAM. OF BOLTS+	DRILLING TEMPLATE: DIAM. OF BOLT CIRCLE	DRILLING TEMPLATE: LENGTH OF STUD BOLTS● 1/16" RAISED FACE	DRILLING TEMPLATE: LENGTH OF STUD BOLTS● RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
1/2	3 3/4	9/16	1 3/8	4	1/2	2 5/8	2 1/2	3	2	PRICES ON APPLICATION
3/4	4 5/8	5/8	1 11/16	4	5/8	3 1/4	3	3 1/4	3	
1	4 7/8	11/16	2	4	5/8	3 1/2	3	3 1/4	4	
1 1/4	5 1/4	3/4	2 1/2	4	5/8	3 7/8	3 1/4	3 3/4	6	
1 1/2	6 1/8	13/16	2 7/8	4	3/4	4 1/2	3 1/2	4	7	
2	6 1/2	7/8	3 5/8	8	5/8	5	3 1/2	4 1/4	8	
2 1/2	7 1/2	1	4 1/8	8	3/4	5 7/8	4	4 3/4	12	
3	8 1/4	1 1/8	5	8	3/4	6 5/8	4 1/4	5	16	
3 1/2	9	1 3/16	5 1/2	8	3/4	7 1/4	4 1/4	5 1/4	21	
4	10	1 1/4	6 3/16	8	3/4	7 7/8	4 1/2	5 1/4	28	
5	11	1 3/8	7 5/16	8	3/4	9 1/4	4 3/4	5 1/2	37	
6	12 1/2	1 7/16	8 1/2	12	3/4	10 5/8	4 3/4	5 3/4	48	
8	15	1 5/8	10 5/8	12	7/8	13	5 1/2	6 1/4	79	
10	17 1/2	1 7/8	12 3/4	16	1	15 1/4	6 1/4	7 1/4	122	
12	20 1/2	2	15	16	1 1/8	17 3/4	6 3/4	7 1/2	183	
14	23	2 1/8	16 1/4	20	1 1/8	20 1/4	7	7 3/4	241	
16	25 1/2	2 1/4	18 1/2	20	1 1/4	22 1/2	7 1/2	8 1/2	315	
18	28	2 3/8	21	24	1 1/4	24 3/4	7 3/4	8 3/4	414	
20	30 1/2	2 1/2	23	24	1 1/4	27	8 1/4	9 1/4	515	
24	36	2 3/4	27 1/4	24	1 1/2	32	9 1/4	10 1/4	800	



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/16" raised face is included in Thickness "Q."

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb.
BLIND FLANGES
Part No. 34

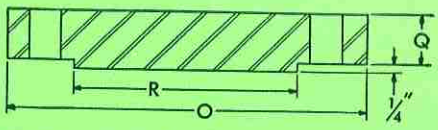
400 lb. BLIND FLANGES*

ASA B16.5-1953 ASTM A105—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS● 1/4" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
‡ 1/2	3 3/4	9/16	1 3/8	4	1/2	2 5/8	3	2 3/4	3	2	PRICES ON APPLICATION
‡ 3/4	4 5/8	5/8	1 11/16	4	5/8	3 1/4	3 1/2	3 1/4	3 1/2	3	
‡ 1	4 7/8	11/16	2	4	5/8	3 1/2	3 1/2	3 1/4	3 1/2	4	
‡ 1 1/4	5 1/4	13/16	2 1/2	4	5/8	3 7/8	3 3/4	3 1/2	3 3/4	6	
‡ 1 1/2	6 1/8	7/8	2 7/8	4	3/4	4 1/2	4 1/4	4	4 1/4	8	
‡ 2	6 1/2	1	3 5/8	8	5/8	5	4 1/4	4	4 1/2	10	
‡ 2 1/2	7 1/2	1 1/8	4 1/8	8	3/4	5 7/8	4 3/4	4 1/2	5	15	
‡ 3	8 1/4	1 1/4	5	8	3/4	6 5/8	5	4 3/4	5 1/4	20	
‡ 3 1/2	9	1 3/8	5 1/2	8	7/8	7 1/4	5 1/2	5 1/4	5 3/4	29	
4	10	1 3/8	6 3/16	8	7/8	7 7/8	5 1/2	5 1/4	5 3/4	33	
5	11	1 1/2	7 5/16	8	7/8	9 1/4	5 3/4	5 1/2	6	44	
6	12 1/2	1 5/8	8 1/2	12	7/8	10 5/8	6	5 3/4	6 1/4	61	
8	15	1 7/8	10 5/8	12	1	13	6 3/4	6 1/2	7	100	
10	17 1/2	2 1/8	12 3/4	16	1 1/8	15 1/4	7 1/2	7 1/4	7 3/4	155	
12	20 1/2	2 1/4	15	16	1 1/4	17 3/4	8	7 3/4	8 1/2	226	
14	23	2 3/8	16 1/4	20	1 1/4	20 1/4	8 1/4	8	8 3/4	310	
16	25 1/2	2 1/2	18 1/2	20	1 3/8	22 1/2	8 3/4	8 1/2	9 1/4	398	
18	28	2 5/8	21	24	1 3/8	24 3/4	9	8 3/4	9 1/2	502	
20	30 1/2	2 3/4	23	24	1 1/2	27	9 3/4	9 1/2	10 1/4	621	
24	36	3	27 1/4	24	1 3/4	32	10 3/4	10 1/2	11 1/4	936	

400 lb. BLIND FLANGES

Part No. 44



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q."

+ Bolt holes are 1/8" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 600-lb. flanges.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

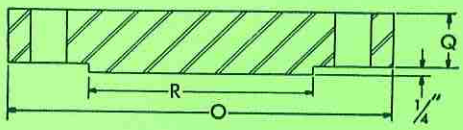
✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE I✪

600 lb. BLIND FLANGES*

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q★	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE: NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS●: ¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT	APPROX. WEIGHT IN POUNDS	LIST PRICE
½	3¾	9/16	1⅜	4	½	2⅝	3	2¾	3	2	PRICES ON APPLICATION
¾	4⅝	⅝	1 11/16	4	⅝	3¼	3½	3¼	3½	3	
1	4⅞	11/16	2	4	⅝	3½	3½	3¼	3½	4	
1¼	5¼	13/16	2½	4	⅝	3⅞	3¾	3½	3¾	6	
1½	6⅛	⅞	2⅞	4	¾	4½	4¼	4	4¼	8	
2	6½	1	3⅝	8	⅝	5	4¼	4	4½	10	
2½	7½	1⅛	4⅛	8	¾	5⅞	4¾	4½	5	15	
3	8¼	1¼	5	8	¾	6⅝	5	4¾	5¼	20	
3½	9	1⅜	5½	8	⅞	7¼	5½	5¼	5¾	29	
4	10¾	1½	6 3/16	8	⅞	8½	5¾	5½	6	41	
5	13	1¾	7 5/16	8	1	10½	6½	6¼	6¾	68	
6	14	1⅞	8½	12	1	11½	6¾	6½	7	86	
8	16½	2 3/16	10⅝	12	1⅛	13¾	7¾	7½	8	139	
10	20	2½	12¾	16	1¼	17	8½	8¼	8¾	231	
12	22	2⅝	15	20	1¼	19¼	8¾	8½	9	295	
14	23¾	2¾	16¼	20	1⅜	20¾	9¼	9	9½	378	
16	27	3	18½	20	1½	23¾	10	9¾	10¼	527	
18	29¼	3¼	21	20	1⅝	25¾	10¾	10½	11	665	
20	32	3½	23	24	1⅝	28½	11½	11¼	11¾	855	
24	37	4	27¼	24	1⅞	33	13	12¾	13½	1175	



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The ¼" raised face is not included in Thickness "Q."

+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

600 lb.
BLIND FLANGES
Part No. 64

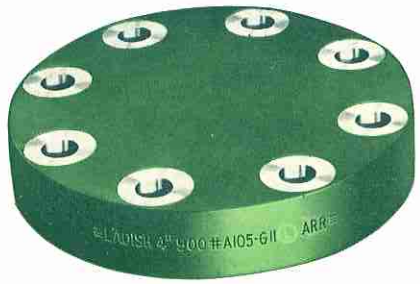
900 lb. BLIND FLANGES*

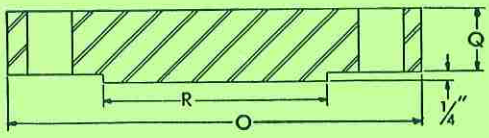
ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE						APPROX. WEIGHT IN POUNDS	LIST PRICE
				NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS•				
							¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT		
‡ ½	4¾	⅞	1⅜	4	¾	3¼	4¼	4	4¼	4	PRICES ON APPLICATION
‡ ¾	5⅛	1	1 11/16	4	¾	3½	4½	4¼	4½	6	
‡ 1	5⅞	1⅛	2	4	⅞	4	5	4¾	5	9	
‡ 1¼	6¼	1⅛	2½	4	⅞	4⅜	5	4¾	5	10	
‡ 1½	7	1¼	2⅞	4	1	4⅞	5½	5¼	5½	14	
‡ 2	8½	1½	3⅝	8	⅞	6½	5¾	5½	6	25	
‡ 2½	9⅝	1⅝	4⅛	8	1	7½	6¼	6	6½	35	
3	9½	1½	5	8	⅞	7½	5¾	5½	6	32	
4	11½	1¾	6 3/16	8	1⅛	9¼	6¾	6½	7	54	
5	13¾	2	7 5/16	8	1¼	11	7½	7¼	7¾	87	
6	15	2 3/16	8½	12	1⅛	12½	7¾	7½	8	113	
8	18½	2½	10⅝	12	1⅜	15½	8¾	8½	9	197	
10	21½	2¾	12¾	16	1⅜	18½	9¼	9	9½	290	
12	24	3⅛	15	20	1⅜	21	10	9¾	10¼	413	
14	25¼	3⅜	16¼	20	1½	22	10¾	10½	11¼	494	
16	27¾	3½	18½	20	1⅝	24¼	11¼	11	11¾	619	
18	31	4	21	20	1⅞	27	13	12¾	13½	880	
20	33¾	4¼	23	20	2	29½	13¾	13½	14½	1107	
24	41	5½	27¼	20	2½	35½	17¼	17	18¼	2099	

900 lb. BLIND FLANGES

Part No. 94





All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The ¼" raised face is not included in Thickness "Q."

\+ Bolt holes are ⅛" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown.

‡ These dimensions are the same as for 1500-lb. flanges.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number.

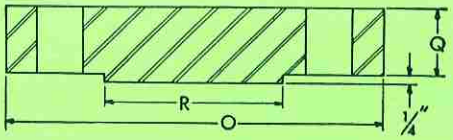
Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASA B16.5-1953 ASTM A105—GRADE II

1500 lb. BLIND FLANGES*

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE						APPROX. WEIGHT IN POUNDS	LIST PRICE
				NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	LENGTH OF STUD BOLTS•				
							¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT		
½	4¾	⅞	1⅜	4	¾	3¼	4¼	4	4¼	4	PRICES ON APPLICATION
¾	5⅛	1	1 11/16	4	¾	3½	4½	4¼	4½	6	
1	5⅞	1⅛	2	4	⅞	4	5	4¾	5	9	
1¼	6¼	1⅛	2½	4	⅞	4⅜	5	4¾	5	10	
1½	7	1¼	2⅞	4	1	4⅞	5½	5¼	5½	14	
2	8½	1½	3⅝	8	⅞	6½	5¾	5½	6	25	
2½	9⅝	1⅝	4⅛	8	1	7½	6¼	6	6½	35	
3	10½	1⅞	5	8	1⅛	8	7	6¾	7¼	48	
4	12¼	2⅛	6 3/16	8	1¼	9½	7¾	7½	8	73	
5	14¾	2⅞	7 5/16	8	1½	11½	9¾	9½	10	142	
6	15½	3¼	8½	12	1⅜	12½	10¼	10	10¾	159	
8	19	3⅝	10⅝	12	1⅝	15½	11½	11¼	12	302	
10	23	4¼	12¾	12	1⅞	19	13½	13¼	13¾	507	
12	26½	4⅞	15	16	2	22½	15	14¾	15¾	775	
14	29½	5¼	16¼	16	2¼	25	16¼	16	17¼	Wts. on Application	
16	32½	5¾	18½	16	2½	27¾	17¾	17½	19		
18	36	6⅜	21	16	2¾	30½	19½	19¼	20¾		
20	38¾	7	23	16	3	32¾	21½	21¼	22¾		
24	46	8	27¼	16	3½	39	24¼	24	26		



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The ¼" raised face is not included in Thickness "Q."

\+ Bolt holes are ⅛" larger than bolt diameters.

• These lengths include thickness of two nuts but not height of crown.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

1500 lb. BLIND FLANGES

Part No. 154

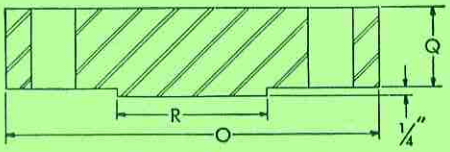
2500 lb. BLIND FLANGES*

ASA B16.5-1953 ASTM A105—GRADE II

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICK. OF FLANGE Q*	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE			LENGTH OF STUD BOLTS●			APPROX. WEIGHT IN POUNDS	LIST PRICE
				NUMBER OF HOLES	DIAM. OF BOLTS+	DIAM. OF BOLT CIRCLE	¼" RAISED FACE	MALE & FEMALE AND TONGUE & GROOVE	RING JOINT		
½	5¼	1 3/16	1⅜	4	¾	3½	4¾	4½	4¾	7	PRICES ON APPLICATION
¾	5½	1¼	1 11/16	4	¾	3¾	5	4¾	5	10	
1	6¼	1⅜	2	4	⅞	4¼	5½	5¼	5½	12	
1¼	7¼	1½	2½	4	1	5⅛	6	5¾	6¼	18	
1½	8	1¾	2⅞	4	1⅛	5¾	6¾	6½	7	25	
2	9¼	2	3⅝	8	1	6¾	7	6¾	7¼	39	
2½	10½	2¼	4⅛	8	1⅛	7¾	7¾	7½	8	56	
3	12	2⅝	5	8	1¼	9	8¾	8½	9¼	86	
4	14	3	6 3/16	8	1½	10¾	10	9¾	10½	133	
5	16½	3⅝	7 5/16	8	1¾	12¾	12	11¾	12½	223	
6	19	4¼	8½	8	2	14½	13¾	13½	14¼	345	
8	21¾	5	10⅝	12	2	17¼	15¼	15	16	533	
10	26½	6½	12¾	12	2½	21¼	19¼	19	20¼	1025	
12	30	7¼	15	12	2¾	24⅜	21¼	21	22¼	1464	

2500 lb.
BLIND FLANGES

Part No. 254



All dimensions given in inches. Flanges are furnished faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

* The ¼" raised face is not included in Thickness "Q."

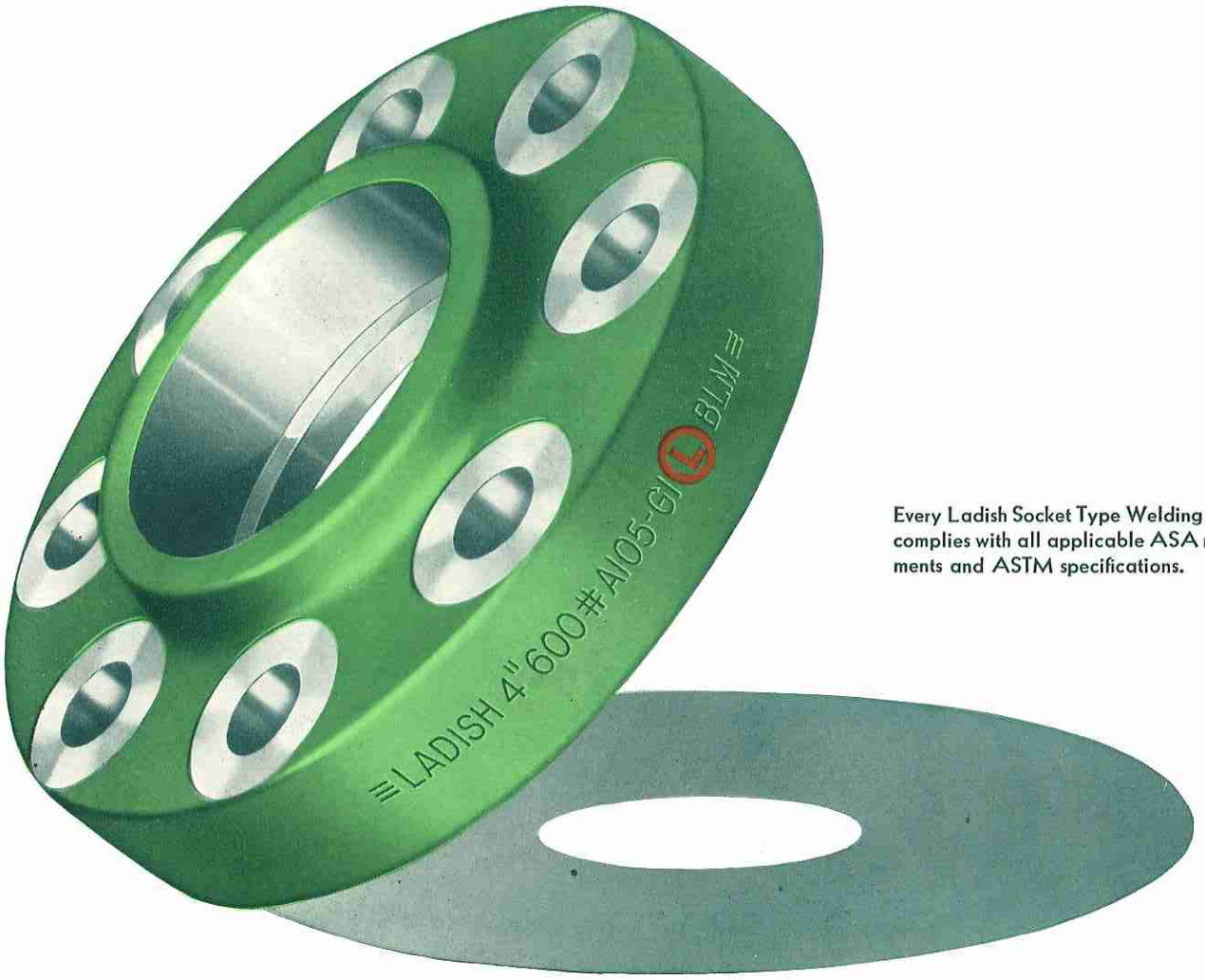
\+ Bolt holes are ⅛" larger than bolt diameters.

● These lengths include thickness of two nuts but not height of crown.

* When ordering specify nominal pipe size or "O" dimension in inches indicating which is being used, pressure rating of flange and part number.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

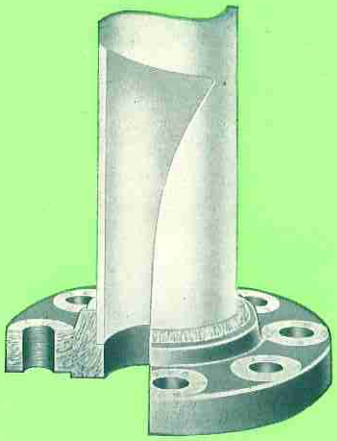
For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.



Every Ladish Socket Type Welding Flange complies with all applicable ASA requirements and ASTM specifications.

LADISH *Socket Type Welding* FLANGES

Ladish Forged Steel Socket Type Welding Flanges are forged under exacting metallurgical control, accurately machined to full dimensions, and carefully designed so as to insure maximum performance qualities.

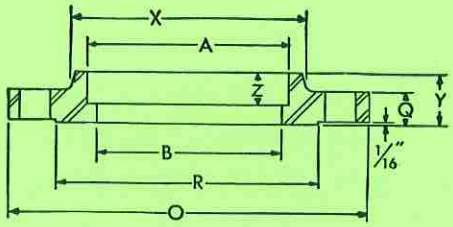


150 lb. SOCKET TYPE WELDING FLANGES ASA B16.5-1953* ASTM A181—GRADE I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE MINIMUM Q★	OUTSIDE DIAMETER OF RAISED FACE R	DIAMETER OF HUB AT BASE X	LENGTH THROUGH HUB Y★	DIAMETER OF BORE B	DIAMETER OF SOCKET A	DEPTH OF SOCKET Z	APPROX. WEIGHT IN POUNDS	LIST PRICE EACH
1/4	3 1/2	7/16	1 3/8	1 3/16	5/8	.364	.580	3/8	1	
3/8	3 1/2	7/16	1 3/8	1 3/16	5/8	.493	.715	3/8	1	
1/2	3 1/2	7/16	1 3/8	1 3/16	5/8	.622	.88	3/8	2	
3/4	3 7/8	1/2	1 11/16	1 1/2	5/8	.824	1.09	7/16	2	
1	4 1/4	9/16	2	1 15/16	11/16	1.049	1.36	1/2	2	
1 1/4	4 5/8	5/8	2 1/2	2 5/16	1 3/16	1.380	1.70	9/16	3	
1 1/2	5	11/16	2 7/8	2 9/16	7/8	1.610	1.95	5/8	3	
2	6	3/4	3 5/8	3 1/16	1	2.067	2.44	11/16	5	
2 1/2	7	7/8	4 1/8	3 9/16	1 1/8	2.469	2.94	3/4	7	PRICES
3	7 1/2	15/16	5	4 1/4	1 3/16	3.068	3.57	1 3/16	8	
3 1/2	8 1/2	15/16	5 1/2	4 13/16	1 1/4	3.548	4.07	7/8	11	ON
4	9	15/16	6 3/16	5 5/16	1 5/16	4.026	4.56	15/16	13	
5	10	15/16	7 5/16	6 7/16	1 7/16	5.047	5.66	15/16	15	APPLI-
6	11	1	8 1/2	7 9/16	1 9/16	6.065	6.72	1 1/16	19	CATION
8	13 1/2	1 1/8	10 5/8	9 11/16	1 3/4	7.981	8.72	1 1/4	30	
10	16	1 3/16	12 3/4	12	1 15/16	10.020	10.88	1 5/16	43	
12	19	1 1/4	15	14 3/8	2 3/16	12.000	12.88	1 9/16	64	
14	21	1 3/8	16 1/4	15 3/4	2 1/4	13.250	14.19	1 5/8	85	
16	23 1/2	1 7/16	18 1/2	18	2 1/2	15.250	16.19	1 3/4	93	
18	25	1 9/16	21	19 7/8	2 11/16	17.250	18.19	1 15/16	120	
20	27 1/2	1 11/16	23	22	2 7/8	19.250	20.19	2 1/8	155	
24	32	1 7/8	27 1/4	26 1/8	3 1/4	23.250	24.19	2 1/2	210	

150 lb. SOCKET TYPE WELDING FLANGES

Part No. 20



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y." Flanges are drilled the same as ASA 150-lb. flanges.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

* Sizes 1/2" through 3" are included in ASA B16.5-1953. Dimensions for all other sizes except for the bore dimension are the same as ASA Slip-on flanges.

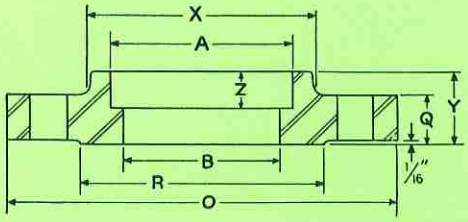
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

ASTM A181—GRADE I ✪ ASA B16.5-1953*

300 lb. SOCKET TYPE WELDING FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE MINIMUM Q★	OUTSIDE DIAMETER OF RAISED FACE R	DIAMETER OF HUB AT BASE X	LENGTH THROUGH HUB Y★	DIAMETER OF BORE B	DIAMETER OF SOCKET A	DEPTH OF SOCKET Z	APPROX. WEIGHT IN POUNDS	LIST PRICE EACH
1/4	3 3/4	9/16	1 3/8	1 1/2	7/8	.364	.580	3/8	1	
3/8	3 3/4	9/16	1 3/8	1 1/2	7/8	.493	.715	3/8	1	
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.622	.88	3/8	3	
3/4	4 5/8	5/8	1 11/16	1 7/8	1	.824	1.09	7/16	3	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.049	1.36	1/2	3	PRICES
1 1/4	5 1/4	3/4	2 1/2	2 1/2	1 1/16	1.380	1.70	9/16	4	ON
1 1/2	6 1/8	13/16	2 7/8	2 3/4	1 3/16	1.610	1.95	5/8	6	APPLI-
2	6 1/2	7/8	3 5/8	3 5/16	1 5/16	2.067	2.44	11/16	7	CATION
2 1/2	7 1/2	1	4 1/8	3 15/16	1 1/2	2.469	2.94	3/4	10	
3	8 1/4	1 1/8	5	4 5/8	1 11/16	3.068	3.57	13/16	13	
3 1/2	9	1 3/16	5 1/2	5 1/4	1 3/4	3.548	4.07	7/8	17	
4	10	1 1/4	6 3/16	5 3/4	1 7/8	4.026	4.56	15/16	22	



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y." Flanges are drilled the same as ASA 300-lb. flanges.

Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

* Sizes 1/2" through 3" are included in ASA B16.5-1953. Dimensions for all other sizes except for the bore dimension are the same as ASA Slip-on flanges.

✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. SOCKET TYPE WELDING FLANGES

Part No. 35

600 lb. SOCKET TYPE WELDING FLANGES

ASA B16.5-1953* ASTM A105—Grade I✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE MINIMUM Q★	OUTSIDE DIAMETER OF RAISED FACE R	DIAMETER OF HUB AT BASE X	LENGTH THROUGH HUB Y★	DIAMETER OF BORE B	DIAMETER OF SOCKET A	DEPTH OF SOCKET Z	APPROX. WEIGHT IN POUNDS	LIST PRICE EACH
1/4	3 3/4	9/16	1 3/8	1 1/2	7/8	.364	.58	3/8	1	PRICES ON APPLICATION
3/8	3 3/4	9/16	1 3/8	1 1/2	7/8	.493	.71	3/8	1	
1/2	3 3/4	9/16	1 3/8	1 1/2	7/8	.622	.88	3/8	3	
3/4	4 5/8	5/8	1 11/16	1 7/8	1	.824	1.09	7/16	3	
1	4 7/8	11/16	2	2 1/8	1 1/16	1.049	1.36	1/2	4	
1 1/4	5 1/4	13/16	2 1/2	2 1/2	1 1/8	1.380	1.70	9/16	6	
1 1/2	6 1/8	7/8	2 7/8	2 3/4	1 1/4	1.610	1.95	5/8	7	
2	6 1/2	1	3 5/8	3 5/16	1 7/16	2.067	2.44	11/16	9	
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	1 5/8	2.469	2.94	3/4	13	
3	8 1/4	1 1/4	5	4 5/8	1 13/16	3.068	3.57	13/16	16	
3 1/2	9	1 3/8	5 1/2	5 1/4	1 15/16	3.548	4.07	7/8	21	

1500 lb. SOCKET TYPE WELDING FLANGES

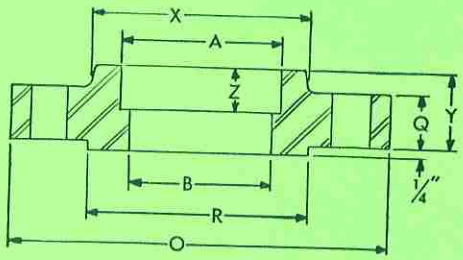
ASA B16.5-1953 ASTM A105—Grade II

1/2	4 3/4	7/8	1 3/8	1 1/2	1 1/4	As Specified by Purchaser	.88	3/8	6 1/4	PRICES ON APPLICATION
3/4	5 1/8	1	1 11/16	1 3/4	1 3/8		1.09	7/16	6 1/4	
1	5 7/8	1 1/8	2	2 1/16	1 5/8		1.36	1/2	8	
1 1/4	6 1/4	1 1/8	2 1/2	2 1/2	1 5/8		1.70	9/16	11	
1 1/2	7	1 1/4	2 7/8	2 3/4	1 3/4		1.95	5/8	15	
2	8 1/2	1 1/2	3 5/8	4 1/8	2 1/4		2.44	11/16	24	
2 1/2	9 5/8	1 5/8	4 1/8	4 7/8	2 1/2		2.94	3/4	38	

600-1500 lb. SOCKET TYPE WELDING FLANGES

600 lb. Part No. 65

1500 lb. Part No. 155



All dimensions given in inches. Flanges are furnished bored, faced, drilled, and spot faced or back faced. Standard Flange Facings—pages 160-161.

★ The 1/4" raised face is not included in Thickness "Q" nor Length "Y." Flanges are drilled the same as ASA flanges of the same pressure rating. Ring Type Joint details—pages 162-164. Dimensional Tolerances—page 240. Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

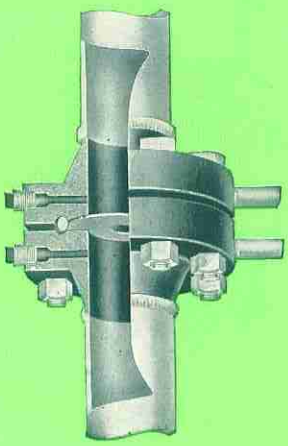
* Sizes 1/2" through 3" are included in ASA B16.5-1953. Dimensions for all other sizes except for the bore dimension are the same as ASA Slip-on Flanges.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

Every Ladish Orifice Flange complies with ASA requirements and ASME and ASTM specifications.

LADISH *Orifice* FLANGES

Ladish Forged Steel Orifice Flanges are available in a wide range of standard sizes and weights in Welding Neck, Slip-On and Threaded Types. Orifice Flanges are designed for use in operations where accurate flow measurements are necessary.



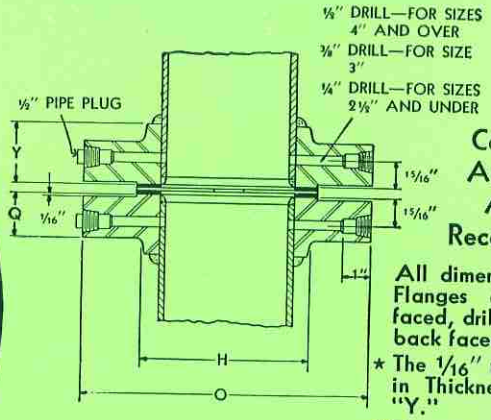
300 lb. SLIP-ON ORIFICE FLANGES

FORGED STEEL ASTM A105*✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MINIMUM FLANGE THICKNESS Q★	DIAMETER OF RAISED FACE	DIAMETER OF HUB AT BASE H	LENGTH THROUGH HUB Y★	BORE	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS	DIAM. OF HOLES	LENGTH OF BOLTS	BOLT CIRCLE	DEPTH OF JACK-SCREW SLOT	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
1	4 7/8	1 1/2	2 13/16	2 1/8	1 7/8	1 3/8	4	5/8	11/16	4	3 1/2	3/8	15	PRICES ON APPLICATION
1 1/4	5 1/4	1 1/2	3 3/16	2 1/2	1 13/16	1 23/32	4	5/8	11/16	4	3 7/8	3/8	17	
1 1/2	6 1/8	1 1/2	3 11/16	2 3/4	1 7/8	1 31/32	4	3/4	13/16	4 1/4	4 1/2	1/2	19	
2	6 1/2	1 1/2	4 5/16	3 5/16	1 15/16	2 7/16	8	5/8	11/16	4	5	3/8	23	
2 1/2	7 1/2	1 1/2	5 1/16	3 15/16	2	2 15/16	8	3/4	13/16	4 1/4	5 7/8	1/2	31	
3	8 1/4	1 1/2	5 13/16	4 5/8	2 1/16	3 9/16	8	3/4	13/16	4 1/4	6 5/8	1/2	39	
4	10	1 1/2	7 1/16	5 3/4	2 1/8	4 9/16	8	3/4	13/16	4 1/4	7 7/8	1/2	60	
5	11	1 1/2	8 3/8	7	2 1/8	5 21/32	8	3/4	7/8	4 1/4	9 1/4	1/2	70	
6	12 1/2	1 1/2	9 3/4	8 1/8	2 1/8	6 23/32	12	3/4	7/8	4 1/4	10 5/8	1/2	100	
8	15	1 5/8	12	10 1/4	2 7/16	8 23/32	12	7/8	1	4 1/2	13	5/8	134	
10	17 1/2	1 7/8	14 1/8	12 5/8	2 5/8	10 7/8	16	1	1 1/8	5 1/4	15 1/4	3/4	196	
12	20 1/2	2	16 1/2	14 3/4	2 7/8	12 7/8	16	1 1/8	1 1/4	5 1/2	17 3/4	7/8	281	
14	23	2 1/8	19	16 3/4	3	14 3/16	20	1 1/8	1 1/4	5 3/4	20 1/4	7/8	380	
16	25 1/2	2 1/4	21 1/8	19	3 1/4	16 3/16	20	1 1/4	1 3/8	6 1/4	22 1/2	1	620	
18	28	2 3/8	23 3/8	21	3 1/2	18 3/16	24	1 1/4	1 3/8	6 1/2	24 3/4	1	691	
20	30 1/2	2 1/2	25 5/8	23 1/8	3 3/4	20 3/16	24	1 1/4	1 3/8	6 3/4	27	1	781	
24	36	2 3/4	30 3/8	27 5/8	4 3/16	24 3/16	24	1 1/2	1 5/8	7 1/2	32	1 1/4	1201	

300 lb. SLIP-ON ORIFICE FLANGES

Part No. 0-31



Conforming to American Gas Association Recommendations

All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

* Flanges conforming with Grade I are carried in stock.

Unions are furnished with carbon steel square-headed bolts with semi-finished American Standard heavy hexagonal nuts and two Goodyearite or equal gaskets.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.

Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

FORGED STEEL ASTM A105*✪

300 lb. THREADED ORIFICE FLANGES

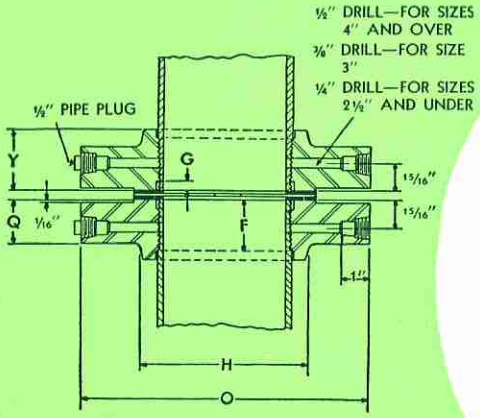
NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MIN. FLANGE THICKNESS Q★	DIAMETER OF RAISED FACE	DIAMETER OF HUB AT BASE H	LENGTH THROUGH HUB Y★	HEIGHT TO COUNTER BORE F	FACE COUNTER BORE HEIGHT G	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	LENGTH OF BOLTS	BOLT CIRCLE	DEPTH OF JACK-SCREW SLOT	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
1	4 7/8	1 1/2	2 13/16	2 1/8	1 7/8	1 1/2	13/16	4	11/16	5/8	4	3 1/2	3/8	15	
1 1/4	5 1/4	1 1/2	3 3/16	2 1/2	1 13/16	1 1/2	3/4	4	11/16	5/8	4	3 7/8	3/8	17	
1 1/2	6 1/8	1 1/2	3 11/16	2 3/4	1 7/8	1 1/2	5/8	4	13/16	3/4	4 1/4	4 1/2	1/2	19	
2	6 1/2	1 1/2	4 5/16	3 5/16	1 15/16	1 1/2	1/2	8	11/16	5/8	4	5	3/8	23	
2 1/2	7 1/2	1 1/2	5 1/16	3 15/16	2	1 3/4	1/2	8	13/16	3/4	4 1/4	5 7/8	1/2	31	
3	8 1/4	1 1/2	5 13/16	4 5/8	2 1/16	1 3/4	1/2	8	13/16	3/4	4 1/4	6 5/8	1/2	39	
4	10	1 1/2	7 1/16	5 3/4	2 1/8	1 3/4	7/16	8	13/16	3/4	4 1/4	7 7/8	1/2	60	PRICES
5	11	1 1/2	8 3/8	7	2 1/8	1 3/4	5/16	8	7/8	3/4	4 1/4	9 1/4	1/2	70	ON
6	12 1/2	1 1/2	9 3/4	8 1/8	2 1/8	1 3/4	1/4	12	7/8	3/4	4 1/4	10 5/8	1/2	100	
8	15	1 5/8	12	10 1/4	2 7/16	2	....	12	1	7/8	4 1/2	13	5/8	134	APPLI-
10	17 1/2	1 7/8	14 1/8	12 5/8	2 5/8	2 3/16	....	16	1 1/8	1	5 1/4	15 1/4	3/4	196	CATION
12	20 1/2	2	16 1/2	14 3/4	2 7/8	2 3/8	....	16	1 1/4	1 1/8	5 1/2	17 3/4	7/8	281	
14	23	2 1/8	19	16 3/4	3	2 1/2	....	20	1 1/4	1 1/8	5 3/4	20 1/4	7/8	380	
16	25 1/2	2 1/4	21 1/8	19	3 1/4	2 11/16	....	20	1 3/8	1 1/4	6 1/4	22 1/2	1	620	
18	28	2 3/8	23 3/8	21	3 1/2	2 3/4	....	24	1 3/8	1 1/4	6 1/2	24 3/4	1	691	
20	30 1/2	2 1/2	25 5/8	23 1/8	3 3/4	2 7/8	....	24	1 3/8	1 1/4	6 3/4	27	1	781	
24	36	2 3/4	30 3/8	27 5/8	4 3/16	3 1/4	....	24	1 5/8	1 1/2	7 1/2	32	1 1/4	1201	

Conforming to American Gas Association Recommendations

All dimensions given in inches. Flanges are furnished faced, drilled and spot faced or back faced.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

* Flanges conforming with Grade I are carried in stock.



Unions are furnished with carbon steel square-headed bolts with semi-finished American Standard heavy hexagonal nuts and two Goodyearite or equal gaskets.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.

The AGA requires pipe to be threaded so that the end is not more than 3/16" from face of flange.

Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. Threaded ORIFICE FLANGES

Part No. 0-32

400 lb. THREADED ORIFICE FLANGES

FORGED STEEL ASTM A105*✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MIN. FLANGE THICKNESS Q*	DIAMETER OF RAISED FACE	DIAMETER OF HUB AT BASE H	LENGTH THROUGH HUB Y*	HEIGHT TO COUNTER BORE A	DRILLING TEMPLATE NO. OF HOLES	DRILLING TEMPLATE DIAM. OF HOLES	DRILLING TEMPLATE DIAM. OF STUDS	DRILLING TEMPLATE LENGTH OF STUDS	DRILLING TEMPLATE BOLT CIRCLE	DEPTH OF JACK-SCREW SLOT	JACK-SCREWS	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
			Sizes 3" and smaller are furnished the same as 300 lb. Unions excepting that alloy studs and two carbon steel jack screws are included.												PRICES ON APPLICATION
4	10	1 3/8	6 3/16	5 3/4	2	1 11/16	8	1	7/8	5 1/2	7 7/8	1/4	3/4x3	64	
5	11	1 1/2	7 5/16	7	2 1/8	1 15/16	8	1	7/8	5 3/4	9 1/4	1/4	3/4x3	77	
6	12 1/2	1 5/8	8 1/2	8 1/8	2 1/4	2 1/16	12	1	7/8	6	10 5/8	3/8	1x3 1/2	110	
8	15	1 7/8	10 5/8	10 1/4	2 11/16	2 1/4	12	1 1/8	1	6 3/4	13	3/8	1x3 1/2	169	
10	17 1/2	2 1/8	12 3/4	12 5/8	2 7/8	2 7/16	16	1 1/4	1 1/8	7 1/2	15 1/4	1/2	1x4	239	
12	20 1/2	2 1/4	15	14 3/4	3 1/8	2 5/8	16	1 3/8	1 1/4	8	17 3/4	5/8	1x4	333	

600 lb. THREADED ORIFICE FLANGES

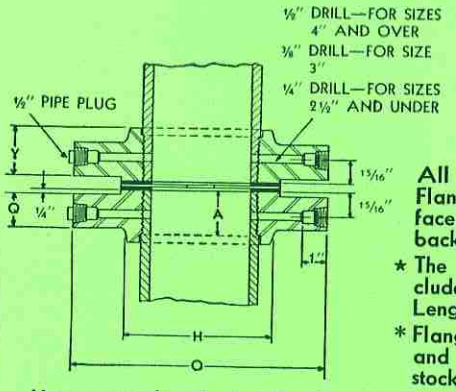
FORGED STEEL ASTM A105*✪

			Sizes 3" and smaller are furnished the same as 300 lb. Unions excepting that alloy studs and two carbon steel jack screws are included.												PRICES ON APPLICATION
4	10 3/4	1 1/2	6 3/16	6	2 1/8	1 7/8	8	1	7/8	5 3/4	8 1/2	1/4	3/4x3	89	
5	13	1 3/4	7 5/16	7 7/16	2 3/8	2 1/8	8	1 1/8	1	6 1/2	10 1/2	1/4	3/4x3 1/2	147	
6	14	1 7/8	8 1/2	8 3/4	2 5/8	2 1/4	12	1 1/8	1	6 3/4	11 1/2	1/2	1x3 1/2	193	
8	16 1/2	2 3/16	10 5/8	10 3/4	3	2 1/2	12	1 1/4	1 1/8	7 5/8	13 3/4	1/2	1x4	274	
10	20	2 1/2	12 3/4	13 1/2	3 3/8	2 13/16	16	1 3/8	1 1/4	8 1/2	17	1/2	1x4	430	
12	22	2 5/8	15	15 3/4	3 5/8	3	20	1 3/8	1 1/4	9	19 1/4	1/2	1x4 1/2	531	

400 lb. and 600 lb. Threaded ORIFICE FLANGES

400 lb. Part No. 0-42

600 lb. Part No. 0-62



All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

* The 1/4" raised face is not included in Thickness "Q" nor Length "Y."

* Flanges conforming with Grade I and Grade II are carried in stock.

Unions are furnished with alloy steel studs per ASTM Specification A193-47T, Grade B7, with semi-finished carbon steel American Standard heavy hexagonal nuts per ASTM Specification A194-46, Class 2H, and two Goodyearite or equal gaskets.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.

The AGA requires pipe to be threaded so that the end is not more than 3/16" from face of flange.

Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

FORGED STEEL ASTM A105*✪

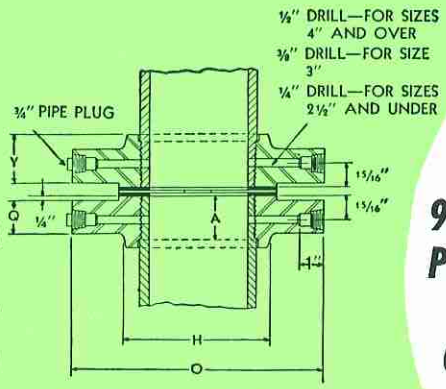
900 lb. THREADED ORIFICE FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MIN. FLANGE THICKNESS Q★	DIAMETER OF RAISED FACE	DIAMETER OF HUB AT BASE H	LENGTH THROUGH HUB Y★	HEIGHT TO COUNTER BORE A	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF HOLES	DIAM. OF STUDS	LENGTH OF STUDS	BOLT CIRCLE	DEPTH OF JACK-SCREW SLOT	JACK-SCREWS	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
For sizes 2½" and smaller, use 1500 lb. standard.															PRICES ON APPLICATION
3	9½	1½	5	5	2⅛	1⅞	8	1	⅞	5¾	7½	¼	¾x3½	77	
4	11½	1¾	6 3/16	6¼	2¾	2⅛	8	1¼	1⅛	7	9¼	¼	¾x3½	133	
5	13¾	2	7 5/16	7½	3⅛	2⅜	8	1⅜	1¼	7½	11	¼	¾x3½	201	
6	15	2 3/16	8½	9¼	3⅜	2½	12	1¼	1⅛	7⅝	12½	½	1x4½	259	
8	18½	2½	10⅝	11¾	4	2¾	12	1½	1⅜	8¾	15½	½	1x4½	415	
10	21½	2¾	12¾	14½	4¼	3 1/16	16	1½	1⅜	9¼	18½	½	1x4½	588	
12	24	3⅛	15	16½	4⅝	3¼	20	1½	1⅜	10	21	½	1x4½	780	

FORGED STEEL ASTM A105*✪

1500 lb. THREADED ORIFICE FLANGES

1	5⅞	1⅜	2	2 1/16	1⅞	1½	4	1	⅞	5½	4	¼	⅝x3	26	PRICES ON APPLICATION
1¼	6¼	1⅜	2½	2½	1⅞	1½	4	1	⅞	5½	4⅜	¼	⅝x3	30	
1½	7	1⅜	2⅞	2¾	1⅞	1½	4	1⅛	1	5¾	4⅞	¼	⅝x3	45	
2	8½	1½	3⅝	4⅛	2¼	1¾	8	1	⅞	5¾	6½	¼	⅝x3	65	
2½	9⅝	1⅝	4⅛	4⅞	2½	2⅛	8	1⅛	1	6¼	7½	¼	⅝x3	98	
3	10½	1⅞	5	5¼	2⅞	2¼	8	1¼	1⅛	7	8	¼	¾x4½	123	
4	12¼	2⅛	6 3/16	6⅜	3 9/16	2½	8	1⅜	1¼	7¾	9½	¼	¾x4½	182	
5	14¾	2⅞	7 5/16	7¾	4⅛	2¾	8	1⅝	1½	9¾	11½	¼	¾x4½	326	
6	15½	3¼	8½	9	4 11/16	3	12	1½	1⅜	10¼	12½	½	1x6½	407	
8	19	3⅝	10⅝	11½	5⅝	3¼	12	1¾	1⅝	11½	15½	½	1x6½	645	
10	23	4¼	12¾	14½	6¼	3 9/16	12	2	1⅞	13¼	19	½	1x6½	1063	
12	26½	4⅞	15	17¾	7⅛	3⅞	16	2⅛	2	14¾	22½	½	1x6½	1660	



All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

★ The ¼" raised face is not included in Thickness "Q" nor Length "Y."

* Flanges conforming with Grade II are carried in stock.

Unions are furnished with alloy steel studs per ASTM Specification A193-47T, Grade B7, with semi-finished carbon steel American Standard heavy hexagonal nuts per ASTM Specification A194-46, Class 2H.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.

The AGA requires pipe to be threaded so that the end is not more than 3/16" from face of flange.

Pressure-Temperature Ratings—pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

900 lb. and 1500 lb. Threaded ORIFICE FLANGES

900 lb. Part No. 0-92

1500 lb. Part No. 0-152

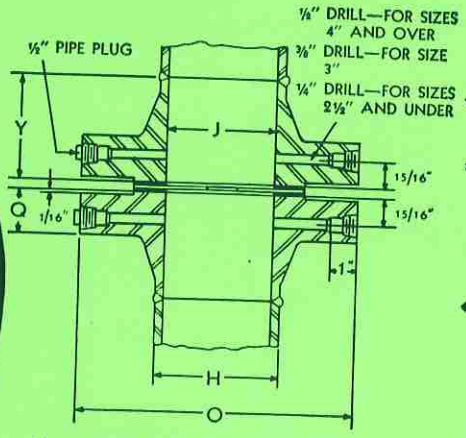
300 lb. WELDING NECK ORIFICE FLANGES

FORGED STEEL ASTM A105*✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MINIMUM FLANGE THICKNESS Q ★	DIAMETER OF RAISED FACE	DIAM. OF HUB AT POINT OF WELDING H	LENGTH THROUGH HUB Y ★	DIAMETER OF BORE J ◆	DRILLING TEMPLATE NO. OF HOLES	DIAM. OF BOLTS	DIAM. OF HOLES	LENGTH OF BOLTS	BOLT CIRCLE	DEPTH OF JACK-SCREW SLOTS	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
1	4 7/8	1 1/2	2 13/16	1.32	3 1/4	1.049	4	5/8	11/16	4	3 1/2	3/8	18	
1 1/4	5 1/4	1 1/2	3 3/16	1.66	3 5/16	1.380	4	5/8	11/16	4	3 7/8	3/8	20	
1 1/2	6 1/8	1 1/2	3 11/16	1.90	3 3/8	1.610	4	3/4	13/16	4 1/4	4 1/2	1/2	25	
2	6 1/2	1 1/2	4 5/16	2.38	3 3/8	2.067	8	5/8	11/16	4	5	3/8	27	
2 1/2	7 1/2	1 1/2	5 1/16	2.88	3 1/2	2.469	8	3/4	13/16	4 1/4	5 7/8	1/2	35	
3	8 1/4	1 1/2	5 13/16	3.50	3 1/2	3.068	8	3/4	13/16	4 1/4	6 5/8	1/2	43	
4	10	1 1/2	7 1/16	4.50	3 5/8	4.026	8	3/4	13/16	4 1/4	7 7/8	1/2	66	PRICES
5	11	1 1/2	8 3/8	5.56	4	5.047	8	3/4	7/8	4 1/4	9 1/4	1/2	78	ON
6	12 1/2	1 1/2	9 3/4	6.63	3 15/16	6.065	12	3/4	7/8	4 1/4	10 5/8	1/2	106	APPLI-
8	15	1 5/8	12	8.63	4 3/8	7.981	12	7/8	1	4 1/2	13	5/8	152	CATION
10	17 1/2	1 7/8	14 1/8	10.75	4 5/8	10.020	16	1	1 1/8	5 1/4	15 1/4	3/4	216	
12	20 1/2	2	16 1/2	12.75	5 1/8	12.000	16	1 1/8	1 1/4	5 1/2	17 3/4	7/8	327	
14	23	2 1/8	19	14.00	5 5/8	13.250	20	1 1/8	1 1/4	5 3/4	20 1/4	7/8	448	
16	25 1/2	2 1/4	21 1/8	16.00	5 3/4	15.25	20	1 1/4	1 3/8	6 1/4	22 1/2	1	596	
18	28	2 3/8	23 3/8	18.00	6 1/4	17.25	24	1 1/4	1 3/8	6 1/2	24 3/4	1	741	
20	30 1/2	2 1/2	25 5/8	20.00	6 3/8	19.25	24	1 1/4	1 3/8	6 3/4	27	1	887	
24	36	2 3/4	30 3/8	24.00	6 5/8	23.25	24	1 1/2	1 5/8	7 1/2	32	1 1/4	1311	

300 lb. WELDING NECK ORIFICE FLANGES

Part No. 0-30



All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

★ The 1/16" raised face is included in Thickness "Q" and Length "Y."

* Flanges conforming with Grade I are carried in stock.

Welding bevel detail corresponds with that shown on page 239.

◆ Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Standard Weight pipe as listed in American Standard B36.10.

Unions are furnished with carbon steel square-headed bolts with semi-finished American Standard heavy hexagonal nuts and two Goodyearite or equal gaskets.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105—Grade II. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

FORGED STEEL ASTM A105*✪

300 lb. WELDING NECK ORIFICE FLANGES
with Ring Type Joint†

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MINIMUM FLANGE THICKNESS Q	DIAM. OF HUB AT POINT OF WELDING H	LENGTH THROUGH HUB Y	DIAMETER OF BORE J•	PITCH DIAM. OF RING AND GROOVE P	DRILLING TEMPLATE NO. OF HOLES	DRILLING TEMPLATE DIAM. OF BOLTS	DRILLING TEMPLATE DIAM. OF HOLES	DRILLING TEMPLATE LENGTH OF BOLTS	DRILLING TEMPLATE BOLT CIRCLE	DEPTH OF JACK-SCREW SLOT	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
1	4 7/8	1 1/4	1.32	3	1.049	2	4	5/8	11/16	4 3/4	3 1/2	1/4	15	
1 1/4	5 1/4	1 1/4	1.66	3 1/16	1.380	2 3/8	4	5/8	11/16	4 3/4	3 7/8	1/4	17	
1 1/2	6 1/8	1 1/4	1.90	3 1/8	1.610	2 11/16	4	3/4	13/16	4 3/4	4 1/2	1/4	25	
2	6 1/2	1 1/4	2.38	3 1/8	2.067	3 1/4	8	5/8	11/16	4 3/4	5	1/4	30	
2 1/2	7 1/2	1 1/4	2.88	3 1/4	2.469	4	8	3/4	13/16	5	5 7/8	1/4	46	
3	8 1/4	1 1/4	3.50	3 1/4	3.068	4 7/8	8	3/4	13/16	5	6 5/8	1/4	56	
4	10	1 1/4	4.50	3 3/8	4.026	5 7/8	8	3/4	13/16	5	7 7/8	1/4	65	PRICES
5	11	1 3/8	5.56	3 7/8	5.047	7 1/8	8	3/4	7/8	5 1/4	9 1/4	1/4	101	ON
6	12 1/2	1 7/16	6.63	3 7/8	6.065	8 5/16	12	3/4	7/8	5 1/4	10 5/8	1/4	107	APPLI-
8	15	1 5/8	8.63	4 3/8	7.981	10 5/8	12	7/8	1	5 3/4	13	3/8	169	CATION
10	17 1/2	1 7/8	10.75	4 5/8	10.020	12 3/4	16	1	1 1/8	6 1/2	15 1/4	1/2	319	
12	20 1/2	2	12.75	5 1/8	12.000	15	16	1 1/8	1 1/4	6 3/4	17 3/4	5/8	444	
14	23	2 1/8	14.00	5 5/8	13.250	16 1/2	20	1 1/8	1 1/4	7	20 1/4	5/8	512	
16	25 1/2	2 1/4	16.00	5 3/4	15.250	18 1/2	20	1 1/4	1 3/8	7 1/2	22 1/2	3/4	672	
18	28	2 3/8	18.00	6 1/4	17.250	21	24	1 1/4	1 3/8	7 3/4	24 3/4	3/4	831	
20	30 1/2	2 1/2	20.00	6 3/8	19.250	23	24	1 1/4	1 3/8	8	27	3/4	991	
24	36	2 3/4	24.00	6 5/8	23.250	27 1/4	24	1 1/2	1 5/8	9	32	1	1451	

All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

* Flanges conforming with Grade I are carried in stock.

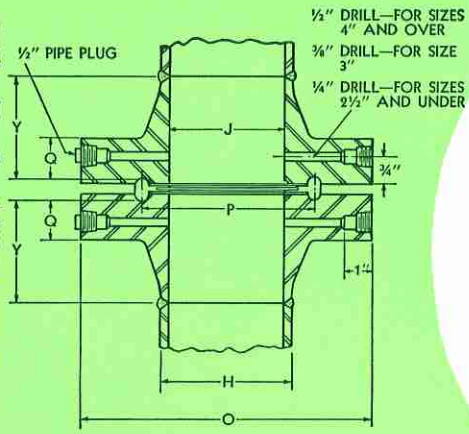
Welding bevel detail corresponds to that shown on page 239.

• Unless otherwise ordered, flanges are bored to these dimensions which correspond to the I.D. of Standard Weight pipe as listed in American Standard B36.10.

Unions are furnished with carbon steel square-headed bolts with semi-finished American Standard heavy hexagonal nuts.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.



† A combination ring joint gasket and orifice plate is used with this type joint (Ladish does not supply). Ring Type Joint details—pages 162-164.

On Ring Joint Flanges having a depth of groove 3/8" and less, the distance from the center line of the tap hole to the flange face is 3/4". When the depth of groove exceeds 7/16", special arrangements are necessary.

✪ Same as ASME Boiler Construction Code SA-105. Also furnished in A105-Grade II. Pressure-Temperature Ratings—pages 263-268.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

300 lb. WELDING NECK ORIFICE FLANGES

Ring Type Joint†

Part No. OJ-30

400 lb. WELDING NECK ORIFICE FLANGES
with Ring Type Joint†

FORGED STEEL ASTM A105*✪

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MINIMUM FLANGE THICKNESS Q	DIAM. OF HUB AT POINT OF WELDING H	LENGTH THROUGH HUB Y	PITCH DIAM. OF RING AND GROOVE P	DRILLING TEMPLATE NO. OF HOLES	DRILLING TEMPLATE DIAM. OF STUDS	DRILLING TEMPLATE DIAM. OF HOLES	DRILLING TEMPLATE LENGTH OF STUDS	DRILLING TEMPLATE STUD CIRCLE	DEPTH OF JACK-SCREW SLOT	JACK-SCREWS	JACK-SCREW HOLE SIZE	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
Sizes 3" and smaller are furnished the same as 300 lb. Unions excepting that alloy studs and two carbon steel jackscrews are furnished.															
4	10	1 3/8	4.50	3 1/2	5 7/8	8	7/8	1	6	7 7/8	3/8	3/4x4	7/8	65	PRICES ON APPLICATION
5	11	1 1/2	5.56	4	7 1/8	8	7/8	1	6 1/4	9 1/4	3/8	3/4x4	7/8	101	
6	12 1/2	1 5/8	6.63	4 1/16	8 5/16	12	7/8	1	6 1/2	10 5/8	3/8	3/4x4	7/8	107	
8	15	1 7/8	8.63	4 5/8	10 5/8	12	1	1 1/8	7 1/4	13	5/8	1x5	1 1/8	169	
10	17 1/2	2 1/8	10.75	4 7/8	12 3/4	16	1 1/8	1 1/4	8	15 1/4	5/8	1x5	1 1/8	319	
12	20 1/2	2 1/4	12.75	5 3/8	15	16	1 1/4	1 3/8	8 1/2	17 3/4	5/8	1x5	1 1/8	444	

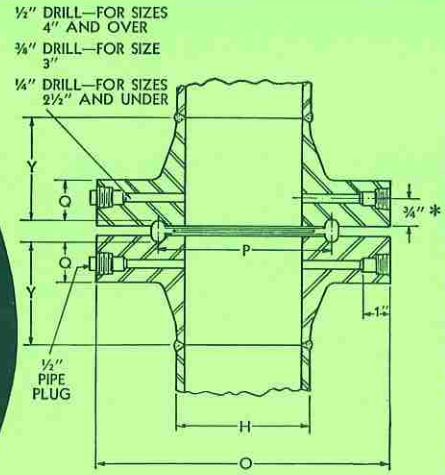
600 lb. WELDING NECK ORIFICE FLANGES
with Ring Type Joint†

1	4 7/8	1 1/4	1.32	3	2	4	5/8	3/4	5 1/4	3 1/2	1/4	5/8x3	3/4	15	PRICES ON APPLICATION
1 1/4	5 1/4	1 1/4	1.66	3 1/16	2 3/8	4	5/8	3/4	5 1/4	3 7/8	1/4	5/8x3	3/4	17	
1 1/2	6 1/8	1 1/4	1.90	3 1/8	2 11/16	4	3/4	7/8	5 1/2	4 1/2	1/4	5/8x3	3/4	25	
2	6 1/2	1 1/4	2.38	3 1/8	3 1/4	8	5/8	3/4	5 1/4	5	1/4	5/8x3	3/4	30	
2 1/2	7 1/2	1 1/4	2.88	3 1/4	4	8	3/4	7/8	5 1/2	5 7/8	1/4	5/8x3	3/4	46	
3	8 1/4	1 1/4	3.50	3 1/4	4 7/8	8	3/4	7/8	5 1/2	6 5/8	3/8	3/4x4	7/8	56	
4	10 3/4	1 1/2	4.50	4	5 7/8	8	7/8	1	6 1/4	8 1/2	3/8	3/4x4	7/8	99	
5	13	1 3/4	5.56	4 1/2	7 1/8	8	1	1 1/8	7	10 1/2	3/8	3/4x4	7/8	158	
6	14	1 7/8	6.63	4 5/8	8 5/16	12	1	1 1/8	7 1/4	11 1/2	5/8	1x5	1 1/8	197	
8	16 1/2	2 3/16	8.63	5 1/4	10 5/8	12	1 1/8	1 1/4	8 1/4	13 3/4	5/8	1x5	1 1/8	284	
10	20	2 1/2	10.75	6	12 3/4	16	1 1/4	1 3/8	9	17	5/8	1x5	1 1/8	472	
12	22	2 5/8	12.75	6 1/8	15	20	1 1/4	1 3/8	9 1/4	19 1/4	5/8	1x5	1 1/8	571	

400-600 lb. WELDING NECK ORIFICE FLANGES

Part Nos. OJ-40 and OJ-60

Ring Type Joint†



All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

* Flanges conforming with Grades I and II are carried in stock.

Welding bevel detail corresponds to that shown on page 239.

Unions are furnished with alloy steel studs per ASTM Specification A193-47T, Grade B7, with semi-finished carbon steel American Standard heavy hexagonal nuts per ASTM Specification A194-46, Class 2H.

Two extra bolts with hexagon nuts are furnished as jackscrews.

† A combination ring joint gasket and orifice plate is used with this type joint (Ladish does not supply). Unions also available with 1/4" raised face.

Ring Type Joint details—pages 162-164. Pressure-Temperature Ratings—pages 263-268. Tapped openings are provided with pipe plugs.

✪ Same as ASME Boiler Construction Code SA-105.

On Ring Joint Flanges having a depth of groove 3/8" and less, the distance from the center line of the tap hole to the flange is 3/4". When the depth of groove exceeds 7/16", special arrangements are necessary.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

FORGED STEEL ASTM A105*✪

900 lb. WELDING NECK ORIFICE FLANGES
with Ring Type Joint†

NOMINAL PIPE SIZE	OUTSIDE DIAMETER O	MINIMUM FLANGE THICKNESS Q	DIAM. OF HUB AT POINT OF WELDING H	LENGTH THROUGH HUB Y	PITCH DIAM. OF RING AND GROOVE P	DRILLING TEMPLATE NO. OF HOLES	DRILLING TEMPLATE DIAM. OF STUDS	DRILLING TEMPLATE DIAM. OF HOLES	DRILLING TEMPLATE LENGTH OF STUDS	DRILLING TEMPLATE STUD CIRCLE	DEPTH OF JACK-SCREW SLOT	JACK-SCREWS	JACK-SCREW HOLE SIZE	APPROX. WEIGHT PER UNION POUNDS	LIST PRICE PER UNION
For sizes 2½" and smaller, use 1500-lb. Standard															
3	9½	1½	3.50	4	4⅞	8	⅞	1	6¼	7½	⅜	¾x3½	⅞	79	PRICES
4	11½	1¾	4.50	4½	5⅞	8	1⅛	1¼	7¼	9¼	⅜	¾x3½	⅞	113	ON
5	13¾	2	5.56	5	7⅛	8	1¼	1⅜	8	11	⅜	¾x3½	⅞	215	
6	15	2 3/16	6.63	5½	8 5/16	12	1⅛	1¼	8¼	12½	⅝	1x4½	1⅛	270	APPLI-
8	18½	2½	8.63	6⅜	10⅝	12	1⅜	1½	9¼	15½	⅝	1x4½	1⅛	464	
10	21½	2¾	10.75	7¼	12¾	16	1⅜	1½	9¾	18½	⅝	1x4½	1⅛	661	CATION
12	24	3⅓	12.75	7⅞	15	20	1⅜	1½	10¾	21	⅝	1x4½	1⅛	907	

1500 lb. WELDING NECK ORIFICE FLANGES
with Ring Type Joint†

1	5⅞	1¼	1.32	3	2	4	⅞	1	5¾	4	¼	⅝x3	¾	25	
1¼	6¼	1¼	1.66	3	2⅜	4	⅞	1	5¾	4⅜	¼	⅝x3	¾	25	
1½	7	1¼	1.90	3¼	2 11/16	4	1	1⅛	6	4⅞	¼	⅝x3	¾	38	
2	8½	1½	2.38	4	3¾	8	⅞	1	6¼	6½	¼	⅝x3	¾	65	PRICES
2½	9⅝	1⅝	2.88	4⅛	4¼	8	1	1⅛	6¾	7½	¼	⅝x3	¾	94	
3	10½	1⅞	3.50	4⅝	5⅜	8	1⅛	1¼	7½	8	⅜	¾x4½	⅞	128	ON
4	12¼	2⅛	4.50	4⅞	6⅜	8	1¼	1⅜	8¼	9½	⅜	¾x4½	⅞	190	
5	14¾	2⅞	5.56	6⅛	7⅝	8	1½	1⅝	10¼	11½	⅜	¾x4½	⅞	244	APPLI-
6	15½	3¼	6.63	6¾	8 5/16	12	1⅜	1½	11	12½	⅝	1x6½	1⅛	424	
8	19	3⅝	8.63	8⅜	10⅝	12	1⅝	1¾	12½	15½	⅝	1x6½	1⅛	715	CATION
10	23	4¼	10.75	10	12¾	12	1⅞	2	14¼	19	⅝	1x6½	1⅛	1143	
12	26½	4⅞	12.75	11⅛	15	16	2	2⅛	16	22½	⅝	1x6½	1⅛	1790	

All dimensions given in inches. Flanges are furnished bored, faced, drilled and spot faced or back faced.

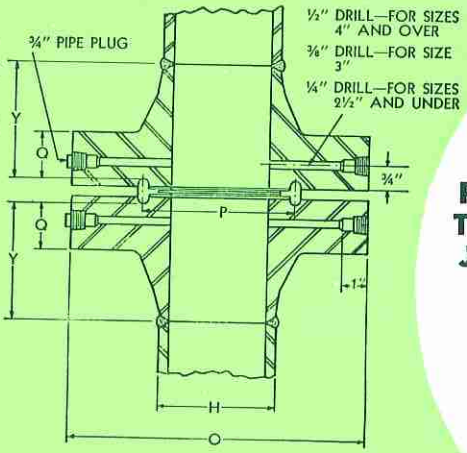
* Flanges conforming with Grade II are carried in stock.

Welding bevel detail corresponds to that shown on page 239.

Unions are furnished with alloy steel studs per ASTM Specification A193-47T, Grade B7, with semi-finished carbon steel American Standard heavy hexagonal nuts per ASTM Specification A194-46, Class 2H.

Two extra bolts with hexagon nuts are furnished as jackscrews.

Tapped openings are provided with pipe plugs.



† A combination ring joint gasket and orifice plate is used with this type joint. (Ladish does not supply.)

Unions are also available with ¼" raised face.

Ring Type Joint details—pages 162-164. Pressure-Temperature Ratings pages 263-268.

✪ Same as ASME Boiler Construction Code SA-105.

On Ring Joint Flanges having a depth of groove ⅜" and less, the distance from the center line of the tap hole to the flange face is ¾". When the depth of groove exceeds 7/16", special arrangements are necessary.

For information on stainless steel, alloy steel and non-ferrous metal flanges, refer to pages 225-236. Material Specifications—page 243.

900-1500 lb. WELDING NECK ORIFICE FLANGES

Ring Type Joint†

Part Nos. OJ-90 and OJ-150

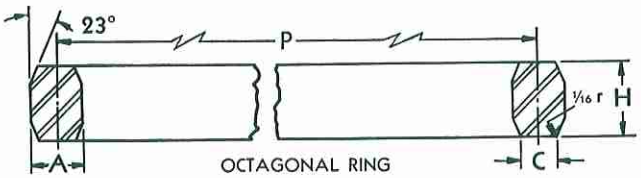
PIPE LINE FLANGES

Data on Pipe Line Flanges has been developed and published by the Manufacturers Standardization Society to meet the need for steel pipe flanges for pipe line use in sizes larger than those covered by American Standard B16.5. The information that appears on pages 154 and 155 has been abstracted from MSS Standard Practice SP-44 which covers steel Pipe Line Flanges.

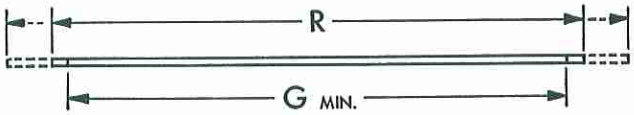
While these Pipe Line Flanges, which range in size from 26 through 36 inches in increments of 2 inches, are designated by customary American Standard classes of 300, 400 and 600 pound primary rating, their use is almost entirely confined to cross country transmission pipe lines at atmospheric temperatures.

They are intended primarily for attachment to thin wall, high strength cold worked pipe, but are equally adaptable for other uses. Bolt circles, etc., have been selected to accommodate integral construction on valve bodies and pipe line apparatus.

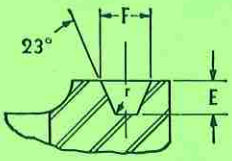
Small ends of Welding Neck Flange Hubs are thicker than the matching pipe. Additional thickness has been added to the hub O.D. to insure that the stresses at the small end of the hub will not be excessive.

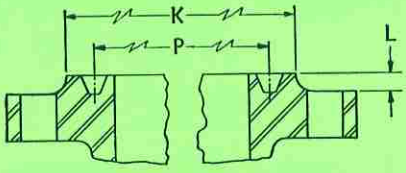


OCTAGONAL RING



NOMINAL PIPE SIZE	RING JOINT GASKET DIMENSIONS*					1/16" SHEET GASKET DIMENSIONS				NOMINAL PIPE SIZE
	RING NUMBER	PITCH DIAMETER P	WIDTH OF RING A	HEIGHT OF RING H	WIDTH OF FLAT C	OUTSIDE DIAMETER GASKET R◆	INSIDE DIAMETER GASKET G MIN. 300 LB.	400 LB.	600 LB.	
26	R93	29½	¾	15/16	.485	29½	27⅝	27	26⅝	26
28	R94	31½	¾	15/16	.485	31½	29½	28⅞	28⅜	28
30	R95	33¾	¾	15/16	.485	33¾	31⅝	30⅞	30⅜	30
32	R96	36	⅞	1 1/16	.583	36	33¾	33	32½	32
34	R97	38	⅞	1 1/16	.583	38	35⅝	34⅞	34¼	34
36	R98	40¼	⅞	1 1/16	.583	40¼	37⅝	36⅞	36¼	36





300, 400 AND 600 LB. RING JOINT FACING DIMENSIONS					
NOMINAL PIPE SIZE	RING NUMBER	PITCH DIAMETER P	WIDTH OF GROOVE F	DEPTH OF GROOVE E†	FACING DIAMETER K
26	R93	29½	25/32	½	31⅞
28	R94	31½	25/32	½	33⅞
30	R95	33¾	25/32	½	36⅛
32	R96	36	29/32	9/16	38¾
34	R97	38	29/32	9/16	40¾
36	R98	40¼	29/32	9/16	43

PRIMARY SERVICE RATING	MAX. ALLOWABLE WORKING PRESSURES (PSI) AT ATMOS. TEMP.	
	RAISED FACE	RING JOINT
300 lb.	600 lb.	720 lb.
400 lb.	800 lb.	960 lb.
600 lb.	1200 lb.	1440 lb.

◆ Outside diameter R may be made to fit the inside diameter of the bolts to act as a locating device when making a joint in the field, however, in no case should the contact area of the gasket be increased by changing the diameter of the raised face on the flange.

* For machining tolerances of ring joint gasket dimensions, see American Standard B16.20.

These flanges have been designed primarily for use at their cold ratings which conform to the American Standard B16.5 ratings at 100° F. However, when employed with gaskets shown above, these flanges are capable of being utilized at the adjusted pressure temperature ratings established for flanges of comparable material and facing in American Standard B16.5.

† Raised face "L" is equal to the groove dimension "E" but is not subject to the tolerance for "E."

MSS SP-44 ASTM A105—Grade II

300 lb. PIPE LINE FLANGES

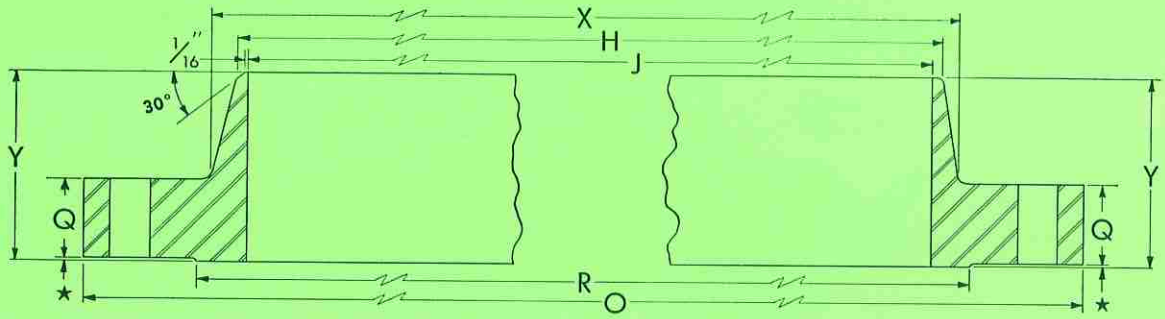
NOMINAL PIPE SIZE	OUTSIDE DIAM. OF FLANGE O	THICKNESS OF FLANGE Q★	DIAM. OF RAISED FACE R	DIAM. OF HUB AT BASE X	DIAM. OF HUB AT SMALL END		LENGTH THRU HUB Y★	DIAM. OF BORE		DRILLING TEMPLATE			APPROX. WEIGHT IN POUNDS		LIST PRICE
					WELDING NECK H	SLIP-ON H		WELDING NECK J	SLIP-ON J	NUMBER OF BOLT HOLES	DIAM. OF BOLTS +	DIAM. OF BOLT CIRCLE	WELDING NECK	SLIP-ON	
26	38¼	3⅛	29½	28⅜	26¼	27 1/16	7¼	As Specified by Purchaser	26¼	28	1⅝	34½	587	544	PRICES ON APPLICATION
28	40¾	3⅜	31½	30½	28¼	29⅛	7¾		28¼	28	1⅝	37	709	662	
30	43	3⅝	33¾	32 9/16	30¼	31 3/16	8¼		30¼	28	1¾	39¼	826	773	
32	45¼	3⅞	36	34 11/16	32¼	33¼	8¾		32¼	28	1⅞	41½	948	889	
34	47½	4	38	36⅞	34 5/16	35 5/16	9⅛		34¼	28	1⅞	43½	1079	999	
36	50	4⅛	40¼	39	36 5/16	37⅜	9½		36¼	32	2	46	1198	1117	

400 lb. PIPE LINE FLANGES

26	38¼	3½	29½	28⅝	26 5/16	27 5/16	7⅝	As Specified by Purchaser	26¼	28	1¾	34½	674	620	PRICES ON APPLICATION
28	40¾	3¾	31½	30 13/16	28 5/16	29⅜	8⅛		28¼	28	1⅞	37	806	740	
30	43	4	33¾	32 15/16	30 5/16	31½	8⅝		30¼	28	2	39¼	927	856	
32	45¼	4¼	36	35	32⅜	33 9/16	9⅛		32¼	28	2	41½	1066	977	
34	47½	4⅜	38	37 3/16	34⅜	35⅝	9½		34¼	28	2	43½	1208	1105	
36	50	4½	40¼	39⅜	36 7/16	37¾	9⅞		36¼	32	2	46	1366	1248	

600 lb. PIPE LINE FLANGES

26	40	4¼	29½	29 7/16	26 7/16	27 13/16	8¾	As Specified by Purchaser	26¼	28	1⅞	36	976	894	PRICES ON APPLICATION
28	42¼	4⅜	31½	31⅝	28½	29 15/16	9¼		28¼	28	2	38	1107	1010	
30	44½	4½	33¾	33 15/16	30½	32 1/16	9¾		30¼	28	2	40¼	1251	1137	
32	47	4⅝	36	36⅛	32½	34 3/16	10¼		32¼	28	2¼	42½	1427	1297	
34	49	4¾	38	38 5/16	34 9/16	36 5/16	10⅝		34¼	28	2¼	44½	1582	1431	
36	51¾	4⅞	40¼	40⅝	36 9/16	38 7/16	11⅛		36¼	28	2½	47	1795	1631	



WELDING NECK

Part Nos. 330, 334 and 338

SLIP-ON

Part Nos. 331, 335 and 339

All dimensions given in inches.

★ The 1/16" raised face is included in 300 lb. dimensions, the ¼" raised face is not included in 400 and 600 lb. dimensions.

Small ends of Welding Neck flange hubs are thicker than matching pipe. Additional thickness has been added to the hub O.D. to insure that stresses at small end of the hub will not be excessive.

Ring joint grooves are in addition to the "Q" dimension for the 300, 400 and 600 pound flanges.

+ Bolt holes are ⅛" larger than bolt diameters.

Dimensional Tolerances—page 239.

Hub taper of Slip-On flanges may be continuous as shown or a compound taper at our option.

Heat-treated carbon steel bolt studs are to be used for 300 and 400 lb. flanges and alloy steel bolt studs for 600 lb. flanges.

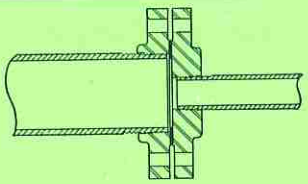
REDUCING FLANGES

Threaded, Slip-On and Welding Neck†

150 lb. and 300 lb.* ASTM A181—Grade I ✪✪
400 lb. and 600 lb.* ASTM A105—Grade I ✪
900 lb. and up* ASTM A105—Grade II

	DESCRIPTION OF FLANGE FROM WHICH REDUCTION IS BEING MADE									
	NOM. FLANGE SIZE	OUTSIDE DIAMETER OF FLANGE FROM WHICH REDUCTION IS BEING MADE							SMALLEST SIZE BORE OR TAPPING REQUIRING HUB FLANGE‡	LIST PRICE
		150 lb. STANDARD	300 lb. STANDARD	400 lb.♦ STANDARD	600 lb.♦ STANDARD	900 lb.♦ STANDARD	1500 lb.♦ STANDARD	2500 lb. STANDARD		
NOMINAL PIPE SIZE TO WHICH REDUCTION IS TO BE MADE TO BE SPECIFIED BY PURCHASER	¾	3⅞	4⅝	4⅝	4⅝	5⅛	5⅛	5½	½	PRICES ON APPLI-CATION
	1	4¼	4⅞	4⅞	4⅞	5⅞	5⅞	6¼	½	
	1¼	4⅝	5¼	5¼	5¼	6¼	6¼	7¼	½	
	1½	5	6⅛	6⅛	6⅛	7	7	8	½	
	2	6	6½	6½	6½	8½	8½	9¼	1	
	2½	7	7½	7½	7½	9⅝	9⅝	10½	1¼	
	3	7½	8¼	8¼	8¼	9½	10½	12	1¼	
	3½	8½	9	9	9	. . .	. . .	. . .	1½	
	4	9	10	10	10¾	11½	12¼	14	1½	
	5	10	11	11	13	13¾	14¾	16½	1½	
	6	11	12½	12½	14	15	15½	19	2½	
	8	13½	15	15	16½	18½	19	21¾	3	
	10	16	17½	17½	20	21½	23	26½	3½	
	12	19	20½	20½	22	24	26½	30	3½	
	14	21	23	23	23¾	25¼	. . .	. . .	3½	
	16	23½	25½	25½	27	27¾	. . .	. . .	4	
	18	25	28	28	29¼	31	. . .	. . .	4	
	20	27½	30½	30½	32	33¾	. . .	. . .	4	
	24	32	36	36	37	41	. . .	. . .	4	

REDUCING FLANGES



In ordering Reducing Flanges, specify (1) nominal pipe size of the tapping or bore to which the reduction is being made, (2) the outside diameter of the flange from which the reduction is being made and (3) pressure rating. EXAMPLE: A 300 lb. Reducing Flange for reducing from a 6″ to a 3″ nominal pipe size should be designated as a 3″ x 12½″—300 lb. Reducing Flange. (See Example on Page 157.) Whether Threaded, Slip-On, or Welding Neck type is desired must also be specified.

For dimensions not given, refer to Standard Flange listing pages.

♦ 400 and 600 lb. dimensions are identical for sizes 3½″ and smaller; 900 and 1500 lb. dimensions are identical for sizes 2½″ and smaller.

‡ For reductions to sizes smaller than shown, blind flanges are tapped or bored for specified nominal pipe size.

* 150 lb. through 600 lb. flanges of Grade I material carried in stock, 900 lb. through 2500 lb. flanges of Grade II material carried in stock.

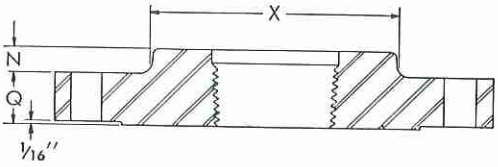
† Reducing Welding Neck Flanges are not stocked but are available on special order.

Standard Facing details—pages 160-161.

✪✪ Same as ASME Boiler Construction Code SA181.

✪ Same as ASME Boiler Construction Code SA105.

REDUCING FLANGES

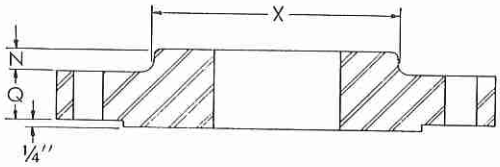


DIMENSIONAL CHARACTERISTICS OF THREADED AND SLIP-ON TYPES

HUB—For hub diameter (X) and height of hub above the back of the flange (N) refer to the standard flange listing page of the same type and pressure and use the dimensions of a flange *one nominal pipe size smaller* than the nominal pipe size from which the reduction is being made except for Reducing Welding Neck Flanges, see paragraph below.

FLANGE O.D., DRILLING TEMPLATE AND THICKNESS—Outside diameter, drilling template and flange thickness Q (see note on FACINGS) agree with the dimensions of a standard flange of the nominal pipe size from which the reduction is being made.

FACING—Facing dimensions also agree with the dimensions of a standard flange of the nominal pipe size from which the reduction is being made.

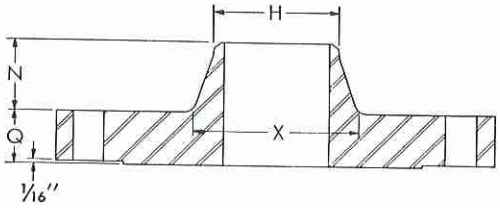


150 lb. and 300 lb. forged steel Threaded, Slip-On, Welding Neck and Blind flanges are furnished with American Standard 1/16" *raised face which is included in flange thickness* Q. 400 lb., 600 lb., 900 lb., 1500 lb. and 2500 lb. flanges are furnished with American Standard 1/4" *raised face which is not included in flange thickness* (Q). Other facings are available, refer to pages 160 and 161.

BORE OR TAPPING—The bore or tapping is machined to accept a pipe of the nominal pipe size to which the reduction is being made. For reduction to sizes smaller than shown, BLIND FLANGES are tapped or bored to specified nominal pipe size.

EXAMPLE:

A 300 lb. threaded flange used in reducing from a 6" to 3" nominal pipe size should be specified as a 3" x 12½"—300 lb. Threaded Reducing Flange, Part No. R32. It would have the following dimensional characteristics:



Diameter of Hub (X)—7".

Height of Hub (N)—⅝". (Y minus Q—See note on FACINGS).

Hub dimensions are those of a 5", 300 lb. Standard flange.

Outside Diameter—12½".

Thickness (Q)—1 7/16".

Raised face—1/16".

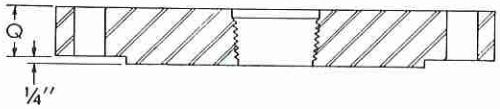
O.D., Flange Thickness Q., Raised Face and Drilling Template are those of a 6", 300 lb. Standard flange.

Tapping—3" I.P.S.

Flange is tapped to the nominal pipe size to which reduction is being made.

DIMENSIONAL CHARACTERISTICS OF WELDING NECK TYPES

On Reducing Welding Neck Flanges, which are made only on special order, the hub dimensions agree with the hub dimensions of standard flanges of the size to which reduction is being made. Other flange dimensions including the drilling template agree with the standard dimensions of the size from which the reduction is being made.



For dimensions not given, see standard flange listing tables of the same type and pressure rating.

Threads conform to the American Standard for Taper Pipe Threads (ASA B2.1). The notch of the American Standard Taper working plug gauge shall come flush with the intersection of the chamfer and the pitch line of the thread with a manufacturing tolerance of one turn plus or minus.

Counterbore: 150 lb. Threaded flanges do not have a counterbore. Flanges for 300 lb. and higher pressures have a depth of counterbore of ¼ inch for tappings 2 inch and smaller and ⅜ inch for tappings 2½ inch and larger. The diameter of counterbore is the same as that given in the listing tables of the Threaded Flange in the corresponding pressure rating.

Minimum effective thread length is at least equal to dimension "T" in the respective tables for the corresponding tapping but does not necessarily extend to the face of the flange.

Eccentric reducing flanges also available. Information on request.

REDUCING FLANGES

PART NUMBERS

	Welding Neck	Slip-On	Threaded
150 lb.	R-15	R-16	R-17
300 lb.	R-30	R-31	R-32
400 lb.	R-40	R-41	R-42
600 lb.	R-60	R-61	R-62
900 lb.	R-90	R-91	R-92
1500 lb.	R-150	R-151	R-152
2500 lb.	R-250	R-251	R-252

WELDING NECK FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF RAISED FACE R	DIAMETER OF BORE J	LENGTH THROUGH HUB Y	DIAMETER OF HUB AT BASE X	DIAMETER OF HUB AT POINT OF WELDING H	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAMETER OF BOLTS+	DRILLING TEMPLATE DIAMETER OF BOLT CIRCLE	LIST PRICE
2	7	15/16	4 3/4	2.067	2 13/16	3 5/16	2 3/8	5	5/8	5 5/8	PRICES ON APPLICATION
2 1/2	7 1/2	1	5	2.469	3	3 15/16	2 7/8	6	5/8	5 7/8	
3	9	1 3/16	6 1/2	3.068	3 3/16	4 5/8	3 1/2	6	5/8	7 3/8	
4	10	1 1/4	7	4.026	3 3/8	5 3/4	4 1/2	6	3/4	8	
6	12	1 5/8	9 3/16	6.065	4 1/16	8 1/8	6 5/8	6	7/8	10 5/16	
8	15	2	11 5/8	7.981	4 3/4	10 1/4	8 5/8	8	1	12 7/8	
10	19 1/2	2 5/8	15 7/16	10.020	5 3/8	13 1/2	10 3/4	9	1 1/4	16 15/16	
12	24	2 1/2	19 1/2	12.000	5 5/8	14 3/4	12 3/4	16	1 1/4	21	

SLIP-ON FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF RAISED FACE R	DIAMETER OF BORE W	LENGTH THROUGH HUB Y	DIAMETER OF HUB AT BASE X	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAMETER OF BOLTS+	DRILLING TEMPLATE DIAMETER OF BOLT CIRCLE	LIST PRICE
2	7	15/16	4 3/4	2.44	1 3/8	3 5/16	5	5/8	5 5/8	PRICES ON APPLICATION
2 1/2	7 1/2	1	5	2.94	1 1/2	3 15/16	6	5/8	5 7/8	
3	9	1 3/16	6 1/2	3.56	1 3/4	4 5/8	6	5/8	7 3/8	
4	10	1 1/4	7	4.56	1 7/8	5 3/4	6	3/4	8	
6	12	1 5/8	9 3/16	6.72	2 1/4	8 1/8	6	7/8	10 5/16	
8	15	2	11 5/8	8.72	2 13/16	10 1/4	8	1	12 7/8	
10	19 1/2	2 5/8	15 7/16	10.88	3 3/8	13 1/2	9	1 1/4	16 15/16	
12	24	2 1/2	19 1/2	12.88	3 3/8	14 3/4	16	1 1/4	21	

Welding Neck, Slip-On, Threaded and Blind Flanges to Match

NON-STANDARD† OIL PIPE LINE GATE VALVES

For 800 lb. C.W.P. or 1600 lb. Test

ASTM A181 - Grade I✪

† Ludlow No. 8.

The 1/16" raised face is included in Thickness "Q" and Length "Y."

Unless otherwise specified, flanges are furnished with 1/16" raised phono-serrated faces extending to within 1/16" of bolt holes.

+ Bolt holes are 1/8" larger than bolt diameter.

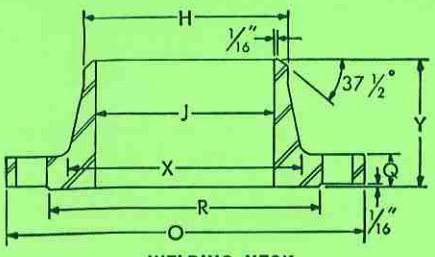
✪ Same as ASME Boiler Construction Code SA-181. Also furnished in A181—Grade II and A105—Grades I and II.

THREADED FLANGES

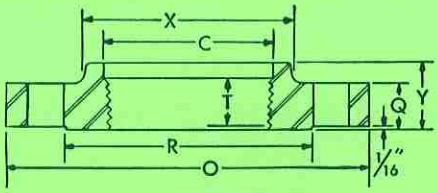
NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF RAISED FACE R	DIAMETER OF COUNTER BORE C	LENGTH THROUGH HUB Y	THREAD LENGTH T	DIAMETER OF HUB AT BASE X	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAMETER OF BOLTS+	DRILLING TEMPLATE DIAMETER OF BOLT CIRCLE	LIST PRICE
2	7	15/16	4 3/4	2.50	1 3/8	1 1/8	3 5/16	5	5/8	5 5/8	PRICES ON APPLICATION
2 1/2	7 1/2	1	5	3.00	1 1/2	1 1/4	3 15/16	6	5/8	5 7/8	
3	9	1 3/16	6 1/2	3.63	1 3/4	1 1/4	4 5/8	6	5/8	7 3/8	
4	10	1 1/4	7	4.63	1 7/8	1 7/16	5 3/4	6	3/4	8	
6	12	1 5/8	9 3/16	6.75	2 1/4	1 13/16	8 1/8	6	7/8	10 5/16	
8	15	2	11 5/8	8.75	2 13/16	2	10 1/4	8	1	12 7/8	
10	19 1/2	2 5/8	15 7/16	10.88	3 3/8	2 3/16	13 1/2	9	1 1/4	16 15/16	
12	24	2 1/2	19 1/2	12.94	3 3/8	2 3/8	14 3/4	16	1 1/4	21	

BLIND FLANGES

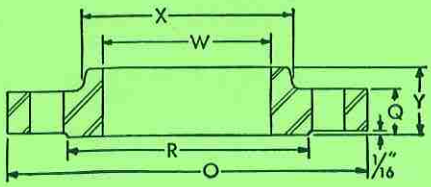
NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE O	THICKNESS OF FLANGE Q	DIAMETER OF RAISED FACE R	DRILLING TEMPLATE NUMBER OF HOLES	DRILLING TEMPLATE DIAMETER OF BOLTS+	DRILLING TEMPLATE DIAMETER OF BOLT CIRCLE	LIST PRICE
2	7	15/16	4 3/4	5	5/8	5 5/8	PRICES ON APPLICATION
2 1/2	7 1/2	1	5	6	5/8	5 7/8	
3	9	1 3/16	6 1/2	6	5/8	7 3/8	
4	10	1 1/4	7	6	3/4	8	
6	12	1 5/8	9 3/16	6	7/8	10 5/16	
8	15	2	11 5/8	8	1	12 7/8	
10	19 1/2	2 5/8	15 7/16	9	1 1/4	16 15/16	
12	24	2 1/2	19 1/2	16	1 1/4	21	



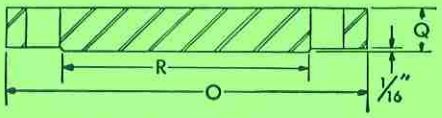
WELDING NECK



THREADED



SLIP-ON



BLIND

AMERICAN STANDARD FLANGE FACINGS

NOMINAL PIPE SIZE	OUTSIDE DIAMETER+			I. D. OF LARGE AND SMALL TONGUE+*	OUTSIDE DIAMETER+			I. D. OF LARGE AND SMALL GROOVE●*	HEIGHT		DEPTH OF GROOVE OR FEMALE
	RAISED FACE, LAPPED, LARGE MALE AND LARGE TONGUE* R	SMALL MALE●* S	SMALL TONGUE* T	U	LARGE FEMALE AND LARGE GROOVE* W	SMALL FEMALE●* X	SMALL GROOVE* Y	Z	RAISED FACE 150 AND 300-LB. ST'DS★	RAISED FACE, LARGE AND SMALL MALE AND TONGUE 400-2500-LB. ST'DS◆	
1/2	1 3/8	23/32	1 3/8	1	1 7/16	25/32	1 7/16	15/16	1/16	1/4	3/16
3/4	1 11/16	15/16	1 11/16	1 5/16	1 3/4	1	1 3/4	1 1/4	1/16	1/4	3/16
1	2	1 3/16	1 7/8	1 1/2	2 1/16	1 1/4	1 15/16	1 7/16	1/16	1/4	3/16
1 1/4	2 1/2	1 1/2	2 1/4	1 7/8	2 9/16	1 9/16	2 5/16	1 13/16	1/16	1/4	3/16
1 1/2	2 7/8	1 3/4	2 1/2	2 1/8	2 15/16	1 13/16	2 9/16	2 1/16	1/16	1/4	3/16
2	3 5/8	2 1/4	3 1/4	2 7/8	3 11/16	2 5/16	3 5/16	2 13/16	1/16	1/4	3/16
2 1/2	4 1/8	2 11/16	3 3/4	3 3/8	4 3/16	2 3/4	3 13/16	3 5/16	1/16	1/4	3/16
3	5	3 5/16	4 5/8	4 1/4	5 1/16	3 3/8	4 11/16	4 3/16	1/16	1/4	3/16
3 1/2	5 1/2	3 13/16	5 1/8	4 3/4	5 9/16	3 7/8	5 3/16	4 11/16	1/16	1/4	3/16
4	6 3/16	4 5/16	5 11/16	5 3/16	6 1/4	4 3/8	5 3/4	5 1/8	1/16	1/4	3/16
5	7 5/16	5 3/8	6 13/16	6 5/16	7 3/8	5 7/16	6 7/8	6 1/4	1/16	1/4	3/16
6	8 1/2	6 3/8	8	7 1/2	8 9/16	6 7/16	8 1/16	7 7/16	1/16	1/4	3/16
8	10 5/8	8 3/8	10	9 3/8	10 11/16	8 7/16	10 1/16	9 5/16	1/16	1/4	3/16
10	12 3/4	10 1/2	12	11 1/4	12 13/16	10 9/16	12 1/16	11 3/16	1/16	1/4	3/16
12	15	12 1/2	14 1/4	13 1/2	15 1/16	12 9/16	14 5/16	13 7/16	1/16	1/4	3/16
14	16 1/4	13 3/4	15 1/2	14 3/4	16 5/16	13 13/16	15 9/16	14 11/16	1/16	1/4	3/16
16	18 1/2	15 3/4	17 5/8	16 3/4	18 9/16	15 13/16	17 11/16	16 11/16	1/16	1/4	3/16
18	21	17 3/4	20 1/8	19 1/4	21 1/16	17 13/16	20 3/16	19 3/16	1/16	1/4	3/16
20	23	19 3/4	22	21	23 1/16	19 13/16	22 1/16	20 15/16	1/16	1/4	3/16
24	27 1/4	23 3/4	26 1/4	25 1/4	27 5/16	23 13/16	26 5/16	25 3/16	1/16	1/4	3/16

AMERICAN STANDARD FLANGE FACINGS

The table above gives facing dimensions in accordance with ASA Standard B16.5-1953 for 150, 300, 400, 600, 900, 1500, and 2500-Pound American Standard Flanges.

The facings are shown on the opposite page. Complete ring joint facing dimensions for all Standards are given on pages 162 and 163.

All dimensions given in inches.

★ Regular facing for 150 and 300-lb. steel flanged fittings and companion flange standards is a 1/16" raised face included in the minimum flange thickness. A 1/16" raised face may be supplied also on the 400, 600, 900, 1500 and 2500-lb. flanges, but it must be added to the minimum thickness.

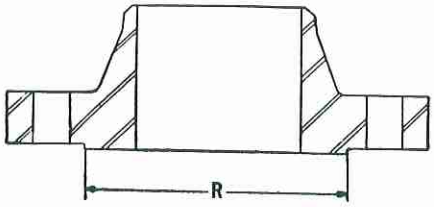
◆ Regular facing for 400, 600, 900, 1500 and 2500-lb. flange standards is a 1/4" raised face not included in minimum thickness dimensions.

+ A tolerance of ±1/64" is allowed on the inside and outside diameter of all facings.

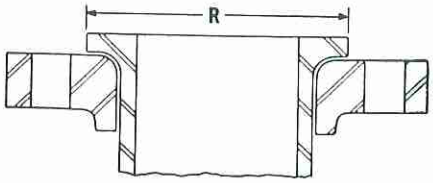
● For small male and female joints these dimensions should be used with care to insure that pipe used is thick enough to provide sufficient bearing surface to prevent crushing of gasket. The dimensions apply particularly on lines where the joint is made on the end of the pipe. Threaded companion flanges for small male and female joints are furnished with plain face and are threaded with American Standard Locknut Thread.

* Gasket for male and female, and tongue and groove joints shall cover the bottom of the recess with minimum clearances, taking into account the 1/64" tolerance mentioned above.

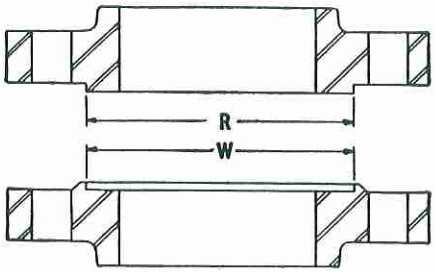
AMERICAN STANDARD FLANGE FACINGS



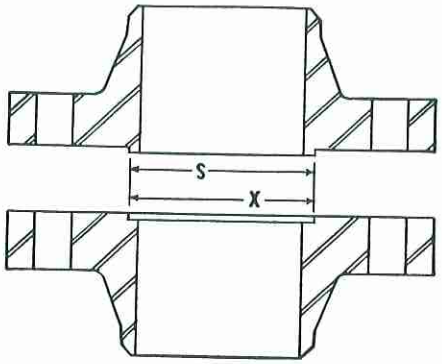
RAISED FACE



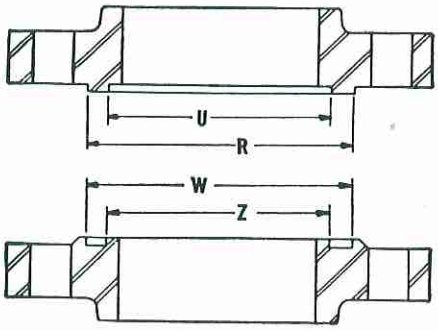
LAPPED JOINT



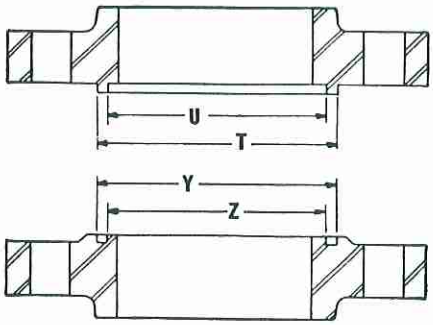
LARGE MALE AND FEMALE



SMALL MALE AND FEMALE

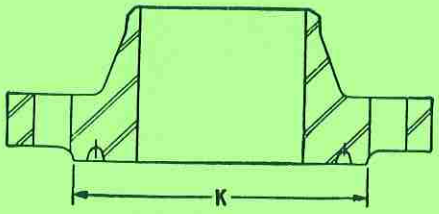


LARGE TONGUE AND GROOVE

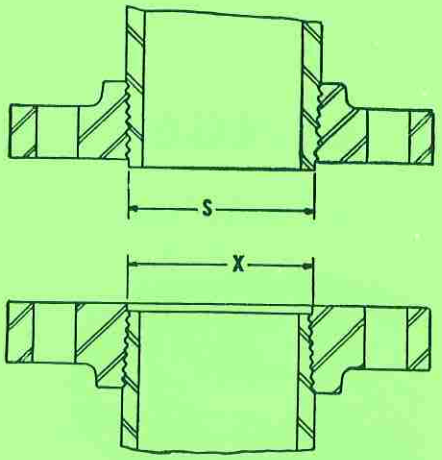


SMALL TONGUE AND GROOVE

FLAT FACE



RING JOINT



SMALL MALE AND FEMALE

See pages 162 and 163 for "K" dimensions.

RING NUMBERS FOR RING JOINT FLANGES

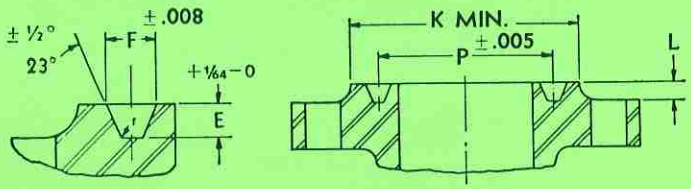
NOMINAL PIPE SIZE	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
150 LB.	...	...	R15	R17	R19	R22	R25	R29	R33	R36	R40	R43	R48	R52	R56	R59	R64	R68	R72	R76
*300 LB.-400 LB.-600 LB.	R11	R13	R16	R18	R20	R23	R26	R31	R34	R37	R41	R45	R49	R53	R57	R61	R65	R69	R73	R77
900 LB.	...	...	...	...	...	...	...	R31	...	R37	R41	R45	R49	R53	R57	R62	R66	R70	R74	R78
1500 LB.	R12	R14	R16	R18	R20	R24	R27	R35	...	R39	R44	R46	R50	R54	R58	R63	R67	R71	R75	R79
2500 LB.	R13	R16	R18	R21	R23	R26	R28	R32	...	R38	R42	R47	R51	R55	R60	...	...	...	...	...

RING JOINT FLANGE FACING DIMENSIONS

RING NUMBER	PITCH DIAM. P	WIDTH OF GROOVE F	DEPTH OF GROOVE E # ◆	150 LB. RAISED FACE DIAM. K	150 LB. SPACE BETWEEN FLANGES X	*300 LB. — 400 LB. — 600 LB. RAISED FACE DIAM. K	SPACE BETWEEN FLANGES X 300 LB.	SPACE BETWEEN FLANGES X 400 LB.	SPACE BETWEEN FLANGES X 600 LB.	900 LB. RAISED FACE DIAM. K	900 LB. SPACE BETWEEN FLANGES X	1500 LB. RAISED FACE DIAM. K	1500 LB. SPACE BETWEEN FLANGES X	2500 LB. RAISED FACE DIAM. K	2500 LB. SPACE BETWEEN FLANGES X	RING NUMBER
R11	1 11/32	9/32	7/32	....	....	2	1/8	....	1/8	....	....	....	....	....	....	R11
R12	1 9/16	11/32	1/4	....	....	....	....	....	....	....	....	2 3/8	5/32	....	....	R12
R13	1 11/16	11/32	1/4	....	....	2 1/2	5/32	....	5/32	....	....	....	....	2 9/16	5/32	R13
R14	1 3/4	11/32	1/4	....	....	....	....	....	....	....	....	2 5/8	5/32	....	....	R14
R15	1 7/8	11/32	1/4	2 1/2	5/32	....	....	....	....	....	....	....	....	....	....	R15
R16	2	11/32	1/4	....	....	2 3/4	5/32	....	5/32	....	....	2 13/16	5/32	2 7/8	5/32	R16
R17	2 1/4	11/32	1/4	2 7/8	5/32	....	....	....	....	....	....	....	....	....	....	R17
R18	2 3/8	11/32	1/4	....	....	3 1/8	5/32	....	5/32	....	....	3 3/16	5/32	3 1/4	5/32	R18
R19	2 9/16	11/32	1/4	3 1/4	5/32	....	....	....	....	....	....	....	....	....	....	R19
R20	2 11/16	11/32	1/4	....	....	3 9/16	5/32	....	5/32	....	....	3 5/8	5/32	....	....	R20
R21	2 27/32	15/32	5/16	....	....	....	....	....	....	....	....	....	....	4	1/8	R21
R22	3 1/4	11/32	1/4	4	5/32	....	....	....	....	....	....	....	....	....	....	R22
R23	3 1/4	15/32	5/16	....	....	4 1/4	7/32	....	3/16	....	....	....	....	4 1/2	1/8	R23
R24	3 3/4	15/32	5/16	....	....	....	....	....	....	....	....	4 7/8	1/8	....	....	R24
R25	4	11/32	1/4	4 3/4	5/32	....	....	....	....	....	....	....	....	....	....	R25
R26	4	15/32	5/16	....	....	5	7/32	....	3/16	....	....	....	....	5 1/4	1/8	R26
R27	4 1/4	15/32	5/16	....	....	....	....	....	....	....	....	5 3/8	1/8	....	....	R27
R28	4 3/8	17/32	3/8	....	....	....	....	....	....	....	....	....	....	5 7/8	1/8	R28
R29	4 1/2	11/32	1/4	5 1/4	5/32	....	....	....	....	....	....	....	....	....	....	R29

RING JOINT FLANGE

FACING DIMENSIONS



All dimensions given in inches.

Regularly cataloged flanges, except Lap Joint, can be furnished with Ring Joint facing. Flanges with Octagonal grooves will be supplied since Oval grooves are no longer standard. Either Oval or Octagonal rings can be used with flanges having Octagonal grooves, but Oval rings must be used with flanges having Oval grooves.

Columns "X" show approximate distance between the faces of two Ring Joint flanges, when ring is compressed.

For information on Orifice Flanges with ring joint facings, see pages 151-153.

The maximum corner radius "r" is 1/32" for groove widths of 15/32" and smaller, 1/16" for groove widths from 17/32" through 29/32" and 3/32" for groove widths larger than 1".

* The dimension of rings and grooves of Ring Joint Flanges rated at 300, 400 and 600 lbs. are identical.

\# Raised face "L" is equal to the groove dimension "E" but is not subject to the tolerance for "E."

◆ Depth of groove is added to the minimum flange thickness.

RING JOINT FLANGE FACING DIMENSIONS (Cont.)

RING NUMBER	PITCH DIAM. P	WIDTH OF GROOVE F	DEPTH OF GROOVE E # ◆	150 LB. RAISED FACE DIAM. K	150 LB. SPACE BETWEEN FLANGES X	*300 LB.—400 LB.—600 LB. RAISED FACE DIAM. K	SPACE BETWEEN FLANGES X 300 LB.	SPACE BETWEEN FLANGES X 400 LB.	SPACE BETWEEN FLANGES X 600 LB.	900 LB. RAISED FACE DIAM. K	900 LB. SPACE BETWEEN FLANGES X	1500 LB. RAISED FACE DIAM. K	1500 LB. SPACE BETWEEN FLANGES X	2500 LB. RAISED FACE DIAM. K	2500 LB. SPACE BETWEEN FLANGES X	RING NUMBER
R30†	4 5/8†	15/32	5/16	....	....	....	....	....	....	....	....	....	....	....	....	R30†
R31†	4 7/8†	15/32	5/16	....	....	5 3/4	7/32	....	3/16	6 1/8	5/32	....	....	....	....	R31†
R32	5	17/32	3/8	....	....	....	....	....	....	....	....	....	....	6 5/8	1/8	R32
R33	5 3/16	11/32	1/4	6 1/16	5/32	....	....	....	....	....	....	....	....	....	....	R33
R34	5 3/16	15/32	5/16	....	....	6 1/4	7/32	....	3/16	....	....	....	....	....	....	R34
R35	5 3/8	15/32	5/16	....	....	....	....	....	....	....	....	6 5/8	1/8	....	....	R35
R36	5 7/8	11/32	1/4	6 3/4	5/32	....	....	....	....	....	....	....	....	....	....	R36
R37	5 7/8	15/32	5/16	....	....	6 7/8	7/32	7/32	3/16	7 1/8	5/32	....	....	....	....	R37
R38	6 3/16	21/32	7/16	....	....	....	....	....	....	....	....	....	....	8	5/32	R38
R39	6 3/8	15/32	5/16	....	....	....	....	....	....	....	....	7 5/8	1/8	....	....	R39
R40	6 3/4	11/32	1/4	7 5/8	5/32	....	....	....	....	....	....	....	....	....	....	R40
R41	7 1/8	15/32	5/16	....	....	8 1/4	7/32	7/32	3/16	8 1/2	5/32	....	....	....	....	R41
R42	7 1/2	25/32	1/2	....	....	....	....	....	....	....	....	....	....	9 1/2	5/32	R42
R43	7 5/8	11/32	1/4	8 5/8	5/32	....	....	....	....	....	....	....	....	....	....	R43
R44	7 5/8	15/32	5/16	....	....	....	....	....	....	....	....	9	1/8	....	....	R44
R45	8 5/16	15/32	5/16	....	....	9 1/2	7/32	7/32	3/16	9 1/2	5/32	....	....	....	....	R45
R46	8 5/16	17/32	3/8	....	....	....	....	....	....	....	....	9 3/4	1/8	....	....	R46
R47	9	25/32	1/2	....	....	....	....	....	....	....	....	....	....	11	5/32	R47
R48	9 3/4	11/32	1/4	10 3/4	5/32	....	....	....	....	....	....	....	....	....	....	R48
R49	10 5/8	15/32	5/16	....	....	11 7/8	7/32	7/32	3/16	12 1/8	5/32	....	....	....	....	R49
R50	10 5/8	21/32	7/16	....	....	....	....	....	....	....	....	12 1/2	5/32	....	....	R50
R51	11	29/32	9/16	....	....	....	....	....	....	....	....	....	....	13 3/8	3/16	R51
R52	12	11/32	1/4	13	5/32	....	....	....	....	....	....	....	....	....	....	R52
R53	12 3/4	15/32	5/16	....	....	14	7/32	7/32	3/16	14 1/4	5/32	....	....	....	....	R53
R54	12 3/4	21/32	7/16	....	....	....	....	....	....	....	....	14 5/8	5/32	....	....	R54
R55	13 1/2	1 3/16	11/16	....	....	....	....	....	....	....	....	....	....	16 3/4	1/4	R55
R56	15	11/32	1/4	16	5/32	....	....	....	....	....	....	....	....	....	....	R56
R57	15	15/32	5/16	....	....	16 1/4	7/32	7/32	3/16	16 1/2	5/32	....	....	....	....	R57
R58	15	29/32	9/16	....	....	....	....	....	....	....	....	17 1/4	3/16	....	....	R58
R59	15 5/8	11/32	1/4	16 3/4	1/8	....	....	....	....	....	....	....	....	....	....	R59
R60	16	1 5/16	11/16	....	....	....	....	....	....	....	....	....	....	19 1/2	5/16	R60
R61	16 1/2	15/32	5/16	....	....	18	7/32	7/32	3/16	....	....	....	....	....	....	R61
R62	16 1/2	21/32	7/16	....	....	....	....	....	....	18 3/8	5/32	....	....	....	....	R62
R63	16 1/2	1 1/16	5/8	....	....	....	....	....	....	....	....	19 1/4	7/32	....	....	R63
R64	17 7/8	11/32	1/4	19	1/8	....	....	....	....	....	....	....	....	....	....	R64
R65	18 1/2	15/32	5/16	....	....	20	7/32	7/32	3/16	....	....	....	....	....	....	R65
R66	18 1/2	21/32	7/16	....	....	....	....	....	....	20 5/8	5/32	....	....	....	....	R66
R67	18 1/2	1 3/16	11/16	....	....	....	....	....	....	....	....	21 1/2	5/16	....	....	R67
R68	20 3/8	11/32	1/4	21 1/2	1/8	....	....	....	....	....	....	....	....	....	....	R68
R69	21	15/32	5/16	....	....	22 5/8	7/32	7/32	3/16	....	....	....	....	....	....	R69
R70	21	25/32	1/2	....	....	....	....	....	....	23 3/8	3/16	....	....	....	....	R70
R71	21	1 3/16	11/16	....	....	....	....	....	....	....	....	24 1/8	5/16	....	....	R71
R72	22	11/32	1/4	23 1/2	1/8	....	....	....	....	....	....	....	....	....	....	R72
R73	23	17/32	3/8	....	....	25	7/32	7/32	3/16	....	....	....	....	....	....	R73
R74	23	25/32	1/2	....	....	....	....	....	....	25 1/2	3/16	....	....	....	....	R74
R75	23	1 5/16	11/16	....	....	....	....	....	....	....	....	26 1/2	3/8	....	....	R75
R76	26 1/2	11/32	1/4	28	1/8	....	....	....	....	....	....	....	....	....	....	R76
R77	27 1/4	21/32	7/16	....	....	29 1/2	1/4	1/4	7/32	....	....	....	....	....	....	R77
R78	27 1/4	1 1/16	5/8	....	....	....	....	....	....	30 3/8	7/32	....	....	....	....	R78
R79	27 1/4	1 7/16	1 3/16	....	....	....	....	....	....	....	....	31 1/4	7/16	....	....	R79

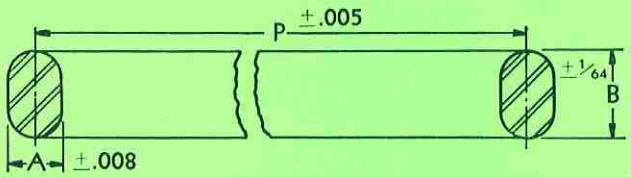
See other notes on opposite page.

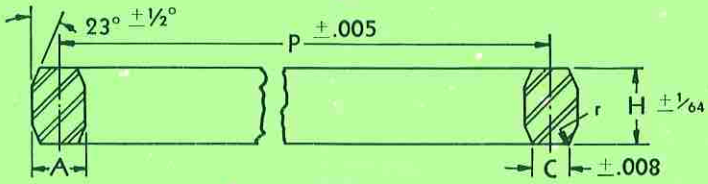
†For ring joints in the Lap Joint Stub Ends used with 3" 300 and 600 pound Lap Joint flanges, pitch diameter of ring should be 4 5/8" instead of 4 7/8" and the ring number R30 instead of R31.

DIMENSIONS OF RING JOINT GASKETS

RING NUMBER	PITCH DIAM. P	WIDTH OF RING A	HEIGHT OF RING		WIDTH OF FLAT ON OCTAGONAL RING C
			OVAL B	OCTAGONAL H	
R11	1 11/32	1/4	7/16	3/8	0.170
R12	1 9/16	5/16	9/16	1/2	0.206
R13	1 11/16	5/16	9/16	1/2	0.206
R14	1 3/4	5/16	9/16	1/2	0.206
R15	1 7/8	5/16	9/16	1/2	0.206
R16	2	5/16	9/16	1/2	0.206
R17	2 1/4	5/16	9/16	1/2	0.206
R18	2 3/8	5/16	9/16	1/2	0.206
R19	2 9/16	5/16	9/16	1/2	0.206
R20	2 11/16	5/16	9/16	1/2	0.206
R21	2 27/32	7/16	11/16	5/8	0.305
R22	3 1/4	5/16	9/16	1/2	0.206
R23	3 1/4	7/16	11/16	5/8	0.305
R24	3 3/4	7/16	11/16	5/8	0.305
R25	4	5/16	9/16	1/2	0.206
R26	4	7/16	11/16	5/8	0.305
R27	4 1/4	7/16	11/16	5/8	0.305
R28	4 3/8	1/2	3/4	11/16	0.341
R29	4 1/2	5/16	9/16	1/2	0.206
R30	4 5/8	7/16	11/16	5/8	0.305
R31	4 7/8	7/16	11/16	5/8	0.305
R32	5	1/2	3/4	11/16	0.341
R33	5 3/16	5/16	9/16	1/2	0.206
R34	5 3/16	7/16	11/16	5/8	0.305
R35	5 3/8	7/16	11/16	5/8	0.305
R36	5 7/8	5/16	9/16	1/2	0.206
R37	5 7/8	7/16	11/16	5/8	0.305
R38	6 3/16	5/8	7/8	13/16	0.413
R39	6 3/8	7/16	11/16	5/8	0.305
R40	6 3/4	5/16	9/16	1/2	0.206
R41	7 1/8	7/16	11/16	5/8	0.305
R42	7 1/2	3/4	1	15/16	0.485
R43	7 5/8	5/16	9/16	1/2	0.206
R44	7 5/8	7/16	11/16	5/8	0.305
R45	8 5/16	7/16	11/16	5/8	0.305

RING NUMBER	PITCH DIAM. P	WIDTH OF RING A	HEIGHT OF RING		WIDTH OF FLAT ON OCTAGONAL RING C
			OVAL B	OCTAGONAL H	
R46	8 5/16	1/2	3/4	11/16	0.341
R47	9	3/4	1	15/16	0.485
R48	9 3/4	5/16	9/16	1/2	0.206
R49	10 5/8	7/16	11/16	5/8	0.305
R50	10 5/8	5/8	7/8	13/16	0.413
R51	11	7/8	1 1/8	1 1/16	0.583
R52	12	5/16	9/16	1/2	0.206
R53	12 3/4	7/16	11/16	5/8	0.305
R54	12 3/4	5/8	7/8	13/16	0.413
R55	13 1/2	1 1/8	1 7/16	1 3/8	0.780
R56	15	5/16	9/16	1/2	0.206
R57	15	7/16	11/16	5/8	0.305
R58	15	7/8	1 1/8	1 1/16	0.583
R59	15 5/8	5/16	9/16	1/2	0.206
R60	16	1 1/4	1 9/16	1 1/2	0.879
R61	16 1/2	7/16	11/16	5/8	0.305
R62	16 1/2	5/8	7/8	13/16	0.413
R63	16 1/2	1	1 5/16	1 1/4	0.681
R64	17 7/8	5/16	9/16	1/2	0.206
R65	18 1/2	7/16	11/16	5/8	0.305
R66	18 1/2	5/8	7/8	13/16	0.413
R67	18 1/2	1 1/8	1 7/16	1 3/8	0.780
R68	20 3/8	5/16	9/16	1/2	0.206
R69	21	7/16	11/16	5/8	0.305
R70	21	3/4	1	15/16	0.485
R71	21	1 1/8	1 7/16	1 3/8	0.780
R72	22	5/16	9/16	1/2	0.206
R73	23	1/2	3/4	11/16	0.341
R74	23	3/4	1	15/16	0.485
R75	23	1 1/4	1 9/16	1 1/2	0.879
R76	26 1/2	5/16	9/16	1/2	0.206
R77	27 1/4	5/8	7/8	13/16	0.413
R78	27 1/4	1	1 5/16	1 1/4	0.681
R79	27 1/4	1 3/8	1 3/4	1 5/8	0.977
R80	24 1/4	5/16		1/2	0.206

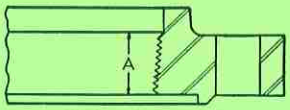




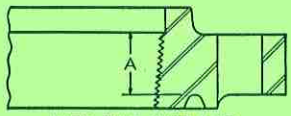
The corner radius "r" is 1/16" for ring widths 7/8 inch and smaller and 3/32" for ring widths 1 inch and larger. The tolerance for these dimensions is ± 1/64".

Either Oval or Octagonal rings are suitable for use with Octagonal grooves which are standard. Oval rings are required for Oval grooves which are no longer standard.

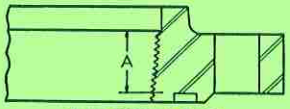
THREADING PRACTICE FOR AMERICAN STANDARD FLANGES



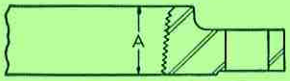
WITH FEMALE FACE



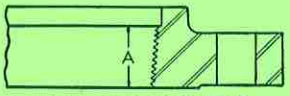
WITH RING JOINT FACE



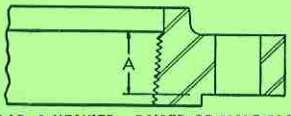
WITH GROOVE FACE



150 LB.—1/16" RAISED FACE



300 LB.—1/16" RAISED FACE

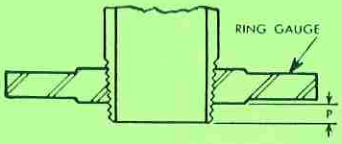


400 LB. & HEAVIER—RAISED OR MALE FACE

NOMINAL PIPE SIZE	MINIMUM THREAD LENGTH—INCHES "A"						
	150 LB.	300 LB.	400 LB.	600 LB.	900 LB.	1500 LB.	2500 LB.
1/2	5/8	5/8	5/8	5/8	7/8	7/8	1 1/8
3/4	5/8	5/8	5/8	5/8	1	1	1 1/4
1	11/16	11/16	11/16	11/16	1 1/8	1 1/8	1 3/8
1 1/4	13/16	13/16	13/16	13/16	13/16	13/16	1 1/2
1 1/2	7/8	7/8	7/8	7/8	1 1/4	1 1/4	1 3/4
2	1	1 1/8	1 1/8	1 1/8	1 1/2	1 1/2	2
2 1/2	1 1/8	1 1/4	1 1/4	1 1/4	1 7/8	1 7/8	2 1/4
3	13/16	1 1/4	1 3/8	1 3/8	1 5/8	2	2 1/2
3 1/2	1 1/4	17/16	19/16	19/16	. . .	. . .	. . .
4	15/16	17/16	17/16	1 5/8	1 7/8	2 1/4	2 3/4
5	17/16	111/16	111/16	1 7/8	2 1/8	2 1/2	3
6	19/16	113/16	113/16	2	2 1/4	2 3/4	3 1/4
8	1 3/4	2	2	2 1/4	2 1/2	3	3 3/4
10	115/16	2 3/16	2 3/16	29/16	213/16	3 5/16	4 1/4
12	2 3/16	2 3/8	2 3/8	2 3/4	3	3 5/8	4 3/4
14	2 1/4	2 1/2	2 1/2	2 7/8	3 1/4	. . .	. . .
16	2 1/2	211/16	211/16	3 1/16	3 3/8	. . .	. . .
18	211/16	2 3/4	2 3/4	3 1/8	3 1/2	. . .	. . .
20	2 7/8	2 7/8	2 7/8	3 1/4	3 5/8	. . .	. . .
24	3 1/4	3 1/4	3 1/4	3 5/8	4	. . .	. . .

Flanges shall be tapped with American Standard Taper Pipe Threads in accordance with ASA Standard B2.1 (Page 246) but shall have longer thread lengths in proportion to the flange thickness for high pressure-temperature services. Pitch diameter E_1, at intersection of chamfer cone, and pitch diameter of thread cone are maintained. Gauging notch of the plug gauge should come flush at this point with a manufacturing tolerance of ± one turn. Pitch diameter at small end of thread E_0, is made proportionately smaller in flanges.

THREADING PIPE FOR ASA THREADED STEEL FLANGES



In order to bring the end of the threaded pipe reasonably close to the face of the flange it becomes necessary, because of the increased thread length of the flange, to add additional threads to the small end of standard pipe thread. As a result the pitch diameter (E_0, Page 246) becomes proportionately smaller than that of the standard pipe thread. This table supplies the additional length in inches to the nearest fraction of an inch of threaded pipe that should extend beyond the small end of the ring gauge.

NOMINAL PIPE SIZE	PROJECTION OF THREADED PIPE THROUGH RING GAUGE—INCHES—P						
	150 LB.	300 LB.	400 LB.	600 LB.	900 LB.	1500 LB.	2500 LB.
1/2	*	*	. . .	*	. . .	1/4	1/2
3/4	*	*	. . .	*	. . .	23/64	1/2
1	*	*	. . .	*	. . .	7/16	21/32
1 1/4	*	*	. . .	*	. . .	7/16	21/32
1 1/2	*	*	. . .	*	. . .	7/16	21/32
2	*	*	. . .	*	. . .	7/16	21/32
2 1/2	*	*	. . .	*	. . .	5/8	1
3	*	*	. . .	1/8	3/8	3/4	1 1/4
3 1/2	*	*	. . .	1/8	. . .	. . .	. . . .
4	*	*	*	3/16	7/16	13/16	1 5/16
5	*	*	*	3/16	7/16	13/16	1 5/16
6	*	*	*	3/16	7/16	15/16	1 7/16
8	*	*	*	1/4	1/2	1	1 3/4
10	*	*	*	3/8	5/8	1 1/8	2
12	*	*	*	3/8	5/8	1 1/4	2 3/8
14	*	*	*	3/8	3/4	. . .	. . . .
16	*	*	*	3/8	3/4	. . .	. . . .
18	*	*	*	3/8	3/4	. . .	. . . .
20	*	*	*	3/8	3/4	. . .	. . . .
24	*	*	*	3/8	3/4	. . .	. . . .

*Regular American Standard pipe thread is used for this size.

WELDING NECK FLANGES

NOMINAL PIPE SIZE	PIPE INSIDE DIAMETER			FLANGE MINIMUM BORES					
	STANDARD	EXTRA STRONG	DOUBLE EXTRA STRONG	150 LB.	300 LB.	400 LB.	600 LB.	900 LB.	1500 LB.
½	.622	.546	.252	*	*	*	*	*	*
¾	.824	.742	.434	*	*	*	*	*	*
1	1.049	.957	.599	*	*	*	*	*	*
1¼	1.380	1.278	.896	*	*	*	*	*	*
1½	1.610	1.500	1.100	*	*	*	*	*	*
2	2.067	1.939	1.503	1.50	1.81	1.53	1.53	*	*
2½	2.469	2.323	1.771	2.21	2.21	2.21	2.21	*	*
3	3.068	2.900	2.300	2.80	2.80	2.21	2.21	2.21	2.15
3½	3.548	3.364	2.728	3.30	3.34	3.34	3.34	.....	.....
4	4.026	3.826	3.152	3.78	3.75	3.75	3.37	3.12	3.09
5	5.047	4.813	4.063	4.75	4.75	4.75	4.31	4.00	3.93
6	6.065	5.761	4.897	5.71	5.65	5.65	4.78	4.78	4.78
8	7.981	7.625	6.875	7.59	7.40	7.40	6.81	6.81	6.81
10	10.020	9.750	.....	9.43	9.43	9.43	9.00	8.34	8.15
12	12.000	11.750	.....	11.34	11.25	11.25	10.62	10.12	10.12
14	13.250	13.000	.....	12.78	12.71	12.71	12.50	12.50	12.50
16	15.250	15.000	.....	14.71	14.69	14.50	14.19	14.50	14.50
18	17.250	17.000	.....	17.00	16.88	16.50	16.50	16.50	16.50
20	19.250	19.000	.....	19.00	18.81	18.50	18.37	18.50	18.50
24	23.250	23.000	.....	23.00	22.88	22.50	22.50	22.50	22.50

MINIMUM FINISHED BORES

WELDING NECK FLANGES

These are minimum dimensions to which stock forgings can be machined.

Flanges with bore smaller than shown above can be furnished on request.

* These flanges are forged solid.

SLIP-ON, LOW HUB AND LAPPED FLANGES

NOMINAL PIPE SIZE	OUTSIDE DIAMETERS OF PIPE	FLANGE MINIMUM BORES					
		150 LB.	300 LB.	400 LB.	600 LB.	900 LB.	1500 LB.
½	.850	*	*	*	*	*	*
¾	1.050	*	*	*	*	*	*
1	1.315	*	*	*	*	*	*
1¼	1.660	1.34	1.40	1.40	1.40	1.40	1.40
1½	1.900	1.68	1.68	1.68	1.68	1.68	1.68
2	2.375	2.18	2.18	2.18	2.18	1.87	1.87
2½	2.875	2.62	2.65	2.65	2.65	2.21	2.21
3	3.500	3.18	3.18	3.18	3.18	2.96	3.00
3½	4.000	3.68	3.68	3.43	3.68	.....	.....
4	4.500	4.18	4.18	4.18	3.87	3.93	4.00
5	5.563	5.25	5.21	5.21	5.25	5.25	4.71
6	6.625	6.28	6.31	6.31	6.31	6.31	6.46
8	8.625	8.31	8.00	8.00	8.37	8.56	8.37
10	10.750	10.40	10.40	10.40	10.40	9.00	9.00
12	12.750	12.46	12.40	12.40	12.43	11.00	11.00
14	14.000	13.53	13.62	13.00	13.00	13.00	13.00
16	16.000	15.62	15.00	15.00	15.00	15.00	15.00
18	18.000	17.00	17.00	17.00	17.00	17.00	17.00
20	20.000	19.00	19.00	19.00	19.00	19.00	19.00
24	24.000	23.00	23.00	23.00	23.00	23.00	23.00

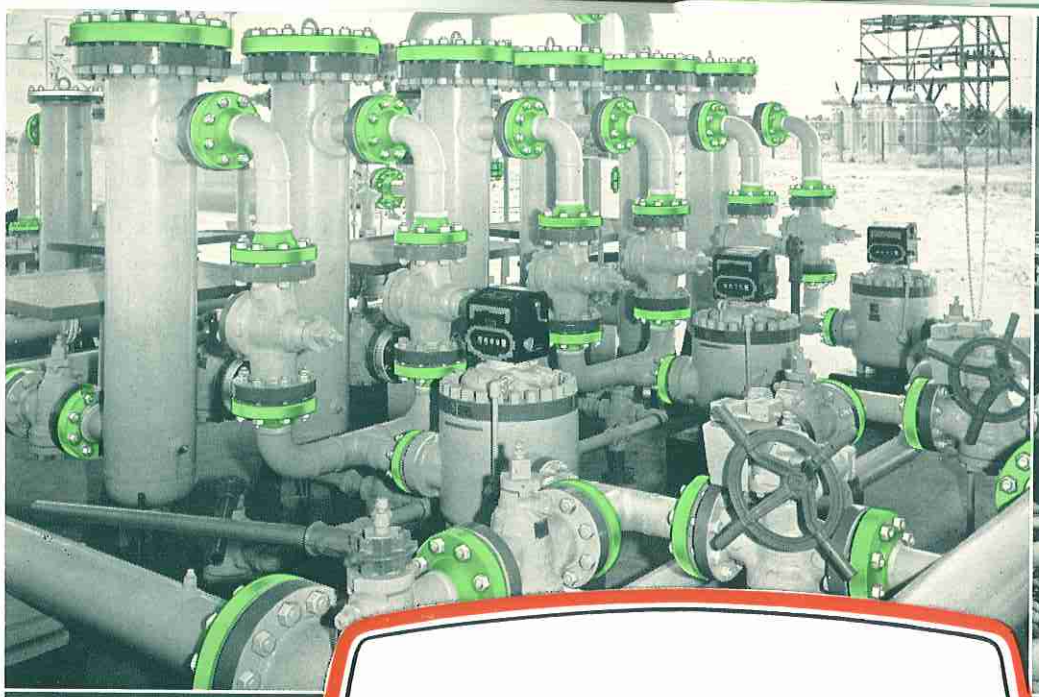
These are minimum dimensions to which stock forgings can be machined.

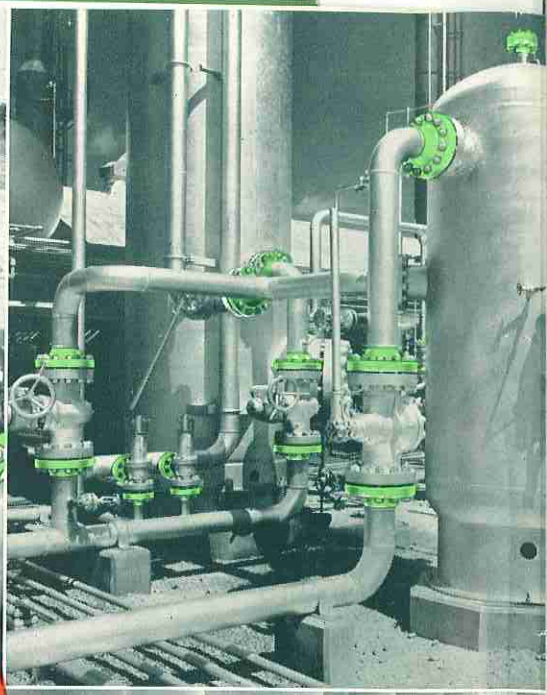
Flanges with bore smaller than shown above can be furnished on request.

* These flanges are forged solid.

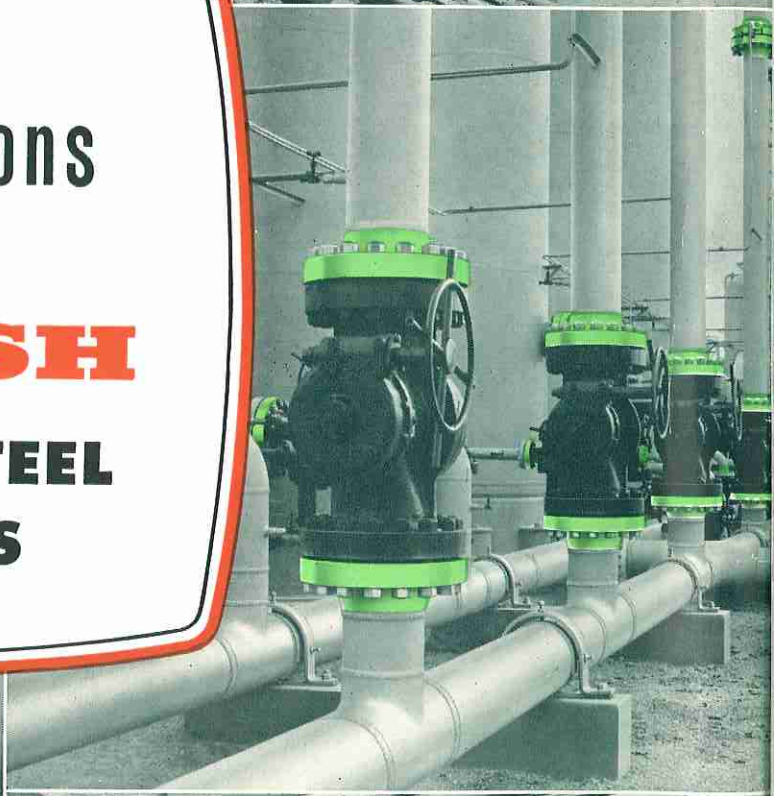
MINIMUM FINISHED BORES

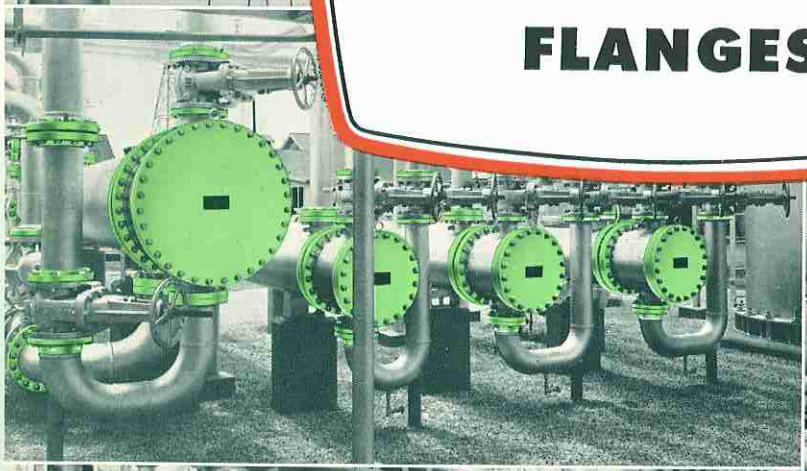
SLIP-ON, LOW HUB AND LAPPED FLANGES

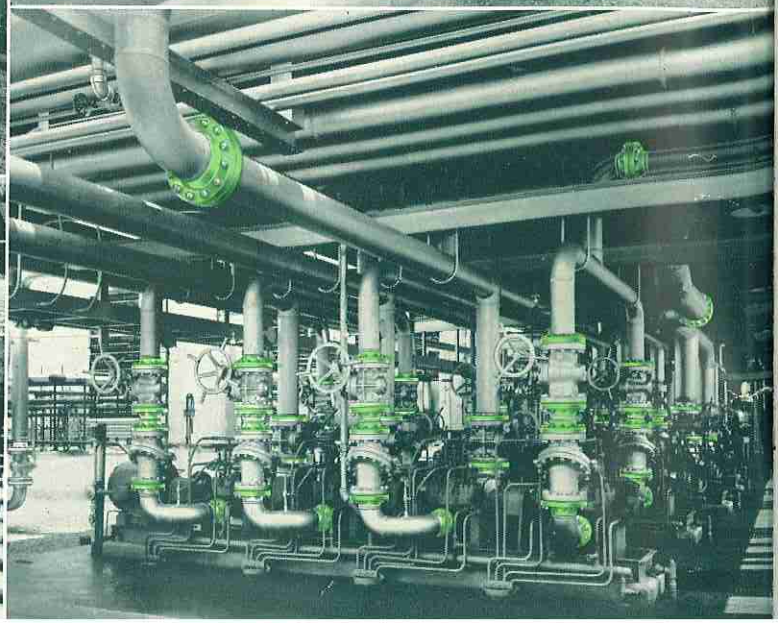


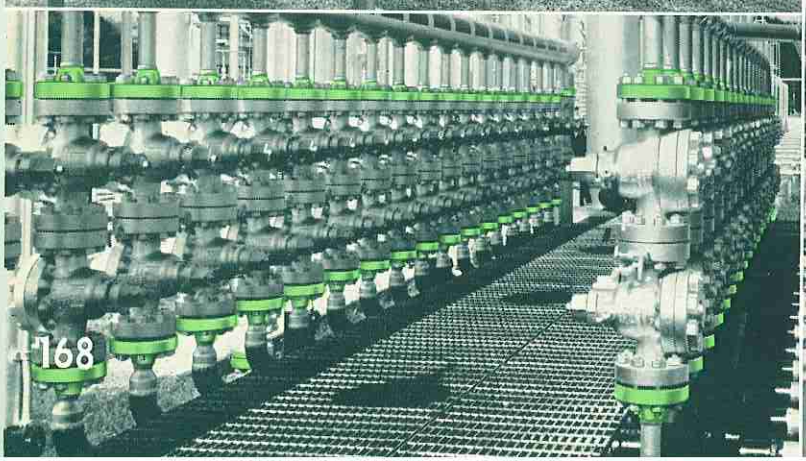


typical installations of LADISH FORGED STEEL FLANGES









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