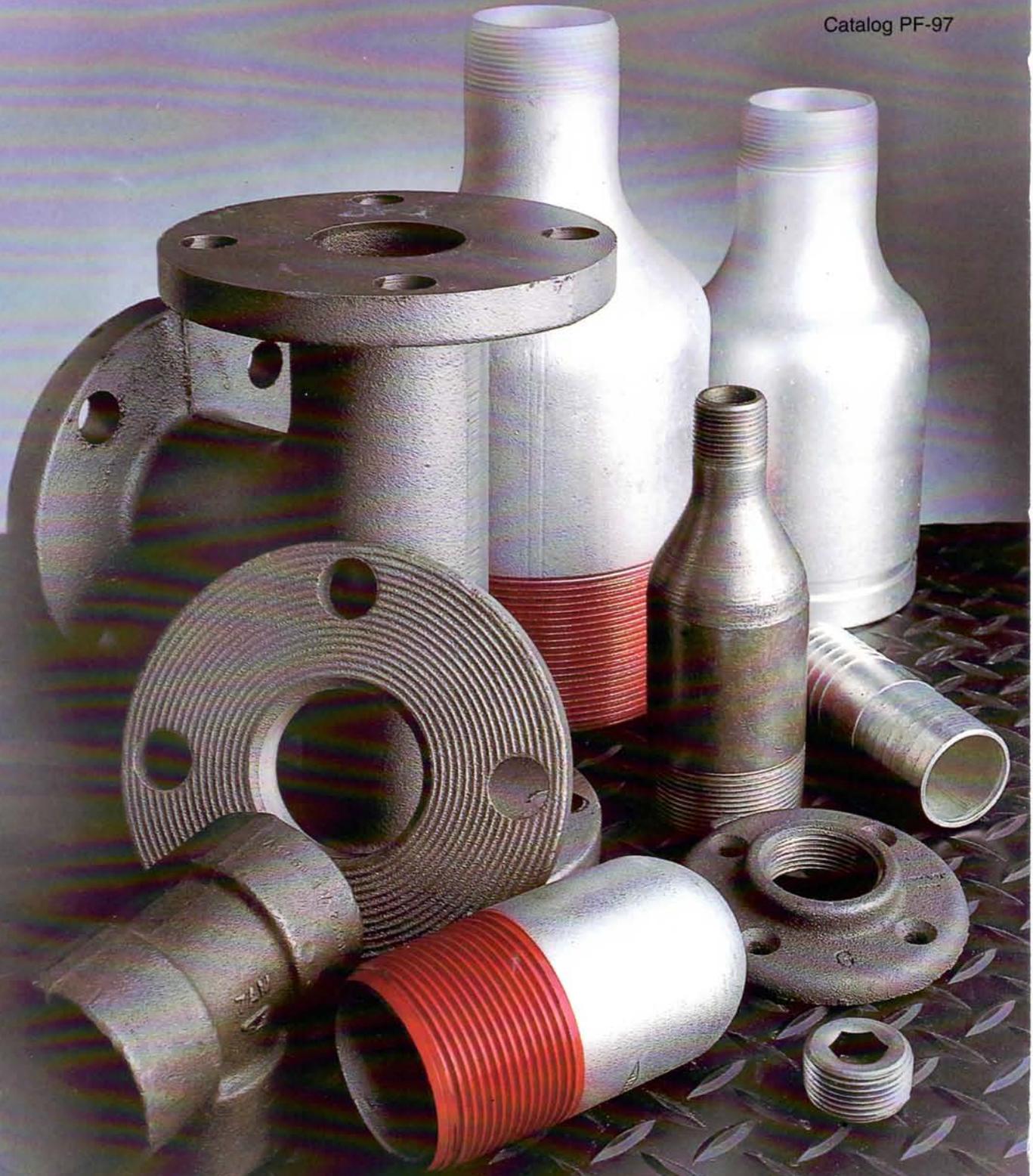




# Grinnell®

Catalog PF-97



*Pipe Fittings* STEEL • CAST IRON • MALLEABLE

A **tyco** INTERNATIONAL LTD. COMPANY

# PIPE FITTINGS

## Catalog PF-97

Grinnell is the leading manufacturer and distributor of iron pipe fittings in North America and have produced cast iron screwed pressure and drainage fittings and cast iron flanged fittings since the early 1900's. The company has produced malleable iron pipe fittings for several decades.

Forgings for our Anvil Forged Steel Fittings are produced in our own forging facility. Steel forging bars used to produce our forgings are sourced only from local steel mills who have a long standing reputation for supplying consistently high quality steels to Anvil specifications.

Grinnell fittings may be found on most piping systems throughout the United States and Canada. This popularity is due to the company's reputation for producing high quality products combined with a nationwide distribution system.

Grinnell pipe fittings are manufactured to conform with applicable standards and this conformance is rigorously monitored by the Grinnell Quality Department.

### WARNING

Pipe fittings included in this catalog are intended for installation and service as described herein.

We are aware that these pipe fittings have been used successfully for purposes other than for which they were designed, and we also know that on occasion these products have failed when so misused. Examples of misapplication which can result in failure and in personal or property damage include: overtightening; using too much torque in "making on"; reusing fittings which may have been damaged in removing; tightening in-line under pressure causing possible damage to the threads and weakening the joint; using fittings in load bearing structures such as handrails; using plain, untested or drainage fittings in pressure applications; using pressure fittings in systems beyond the listed pressure and/or temperature limitations.

Our customers should exercise care to use these products properly so as to avoid any possible on-the-job accident.

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Grinnell Corporation Exeter, NH

Sales Offices and Warehouses on back cover



The trusted "G" you'll see on every Grinnell product and package. No other supplier can offer you what it represents. Look for it. Depend on it.



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# SWAGE NIPPLES, BULL PLUGS, OIL COUNTRY FITTINGS, COUPLINGS, STAINLESS SWAGES

## MANUFACTURING SPECIFICATION

J.B. Smith, manufactures swage nipples and bull plugs in accordance with A234 and MSS-SP-95, from A-106 Grade B seamless pipe and A-1000 series, low to medium carbon, fine grain, cold drawn bar stock, and heat treated to these specifications. The chemical and physical properties of the raw material fall within the ranges listed below.

## TRACEABILITY

All raw material purchased by J.B. Smith, is fully traceable to the mill source. A three digit letter code appears on all Smith products made since the institution of this program. As a result, mill test reports are now available at any time on products so coded. See **EXTRAS** for MTR charges.

## PRESSURE RATINGS

Due to the wide variation in service conditions, temperature, vibrations, etc., J.B. Smith Mfg. can make no recommendations as to allowable working pressure of swage nipples and bull plugs. There are a number of working pressure formulas from which the end user may choose to determine the required wall thickness of the piping system. It is our responsibility only to furnish a fitting with end dimensions equal to those of the pipe size and schedule ordered.

## MATERIAL CERTIFICATION – CARBON STEEL

J.B. Smith, certifies that the material used to manufacture line pipe sizes of swage nipples and bull plugs has been processed and heat treated to comply with all requirements of ASTM A234-90a and the chemical and physical properties of the raw material fall within the ranges listed below.

ASTM SPEC.	MARKING SYMBOL	COMPOSITION					MINIMUM		MAX.
		C	Mn	P	Su	Si	Tensile	Yield	HBn
A234	WPB s9 <sup>a</sup>	.30	0.29-1.06	.050	.058	.10	60,000	35,000	197
		MAX		MAX	MAX	MIN	PSI	PSI	
							415 MPa	240 MPa	

### MARKING

All J.B. Smith, fittings are permanently marked as follows:

Manufacturer's Symbol



Material Specification WPB S9 (Line Pipe Sizes)  
J-55, N80, 4140, etc. (Oil Country Sizes)

Raw Material Code Each part is die stamped with a three letter code identifying the raw material type, details of purchase and steel mill test report.

Heat Treatment When marked WPB S9, an acceptable heat treatment is understood to have been performed.  
All oil country sizes formed from pipe have been normalized but are unmarked to avoid confusion with the symbol N-80.  
Fittings cold or hot formed from pipe and 8620 fittings bear an additional two letter code indicating the hour and day the part received final heat treatment.

Label information Size and Wall Thickness.

### THREADING

Line pipe, tubing and casing are in conformance with API 5B.

### COATINGS

Zinc Electroplate – ASTM. A164  
Type RS

Paint (Beveled Ends)

### WELD BEVELS

Weld Bevels are machined as per ASME B-16.9



## **Grinnell/J.B. Smith Well-Connected**

Grinnell is proud to announce that J.B. Smith has joined the Grinnell family of companies. J.B. Smith oil country tubular fittings, swages and bull plugs add an important dimension to the industry's leading line of Flow-Control products already offered by Grinnell.

Like all Grinnell companies, J.B. Smith is a respected name and its products are well known for high quality and consistency. Now we can meet our customers needs more comprehensively than ever.

### **Full Traceability**

All J.B. Smith swages, bull plugs, tubing and casing nipples, and chambers are traceable to the original mill test report. To ensure traceability, all fittings are steel stamped as follows:

### **Material Specification**

WPB S9 (Line Pipe Only)  
J-55, N80 etc.

### **Raw Material Code**

Each is stamped with a three letter code for identifying raw material type, details of purchase and mill test report.

### **Heat Treatment**

When marked WPB S9, an acceptable heat treatment is understood to have been performed. Fittings, cold or hot formed from pipe, bear an additional two letter code for final heat treatment traceability.

All J.B. Smith product conforms to the following specifications, including ISO 9000 certification.

API 5B –  
*Threading*

API 5CT – License  
*End Finishings*

ASME B16.9 –  
*Weld Bevels*

MSS-SP-95  
*Swages and Bull Plugs*

ASTM A23-90A –  
*Heat Treatment, Raw Materials*

ASTM A164 Type RS –  
*Zinc Electroplate*

CHARPY IMPACT  
*As Required*

NACE – MR-01-75  
*As Required*

DNV –  
*As Required*

## LINE PIPE SWAGES

- Size range 1/8 NPS / 6 DN - 8 NPS / 200 DN
- Manufactured from A106 Grade B seamless pipe or cold drawn bar which is heat treated in accordance with ASTM A234
- Choice of raw material dependent upon size and reduction.
- Available standard, extra heavy, double extra heavy or schedule 160
- End finishes available: current API threads, beveled, square cut (for socket-weld), or grooved
- Available concentric and eccentric.

### concentric swage nipples



pipe		API or O.D.		reduced to		length		standard weight		extra heavy weight		dbl. ex. & 160 weight	
NPS	DN	in	mm	NPS	DN	in	mm	lb	kg	lb	kg	lb	kg
1/4	8	0.540	15	1/8	6	2 1/4	57	-	-	-	-	.25	.11
3/8	10	0.675	15	1/8	6	2 1/2	63	-	-	.25	.11	.38	.17
				1/4	8	2 1/2	63	-	-	.25	.11	.38	.17
1/2	15	0.840	20	1/8	6	2 3/4	70	-	-	.33	.15	.50	.23
				1/4 and 3/8	8 and 10	2 3/4	70	-	-	.33	.15	.50	.23
3/4	20	1.050	25	1/8	6	3	76	-	-	.50	.23	.75	.34
				1/4 and 3/8	8 and 10	3	76	-	-	.50	.23	.75	.34
				1/2	15	3	76	-	-	.50	.23	.75	.34
1	25	1.315	35	1/8	6	3 1/2	88	-	-	.66	.30	1.00	.45
				1/4 and 3/8	8 and 10	3 1/2	88	-	-	.66	.30	1.00	.45
				1/2 and 3/4	15 and 20	3 1/2	88	-	-	.66	.30	1.00	.45
1 1/4	32	1.660	40	1/4 and 3/8	8 and 10	4	102	-	-	1.00	.45	1.50	.68
				1/2 and 3/4	15 and 20	4	102	-	-	1.00	.45	1.50	.68
				1	25	4	102	-	-	1.00	.45	1.50	.68
1 1/2	40	1.900	50	1/4 and 3/8	8 and 10	4 1/2	114	-	-	1.17	.53	2.00	.91
				1/2 and 3/4	15 and 20	4 1/2	114	-	-	1.17	.53	2.00	.91
				1	25	4 1/2	114	-	-	1.17	.53	2.00	.91
				1 1/4	32	4 1/2	114	-	-	1.17	.53	2.00	.91
2	50	2 3/8	60	1/4 and 3/8	8 and 10	6 1/2	165	-	-	3.00	1.36	4.25	1.93
				1/2 and 3/4	15 and 20	6 1/2	165	-	-	3.00	1.36	4.25	1.93
				1	25	6 1/2	165	2.00	.90	2.33	1.06	4.25	1.93
				1 1/4	32	6 1/2	165	2.00	.90	2.33	1.06	4.25	1.93
				1 1/2	40	6 1/2	165	2.00	.90	2.33	1.06	4.25	1.93
2 1/2	65	2 7/8	75	1/2 and 3/4	15 and 20	7	178	-	-	3.50	1.60	8.00	3.64
				1	25	7	178	3.00	1.36	3.50	1.60	8.00	3.64
				1 1/4	32	7	178	3.00	1.36	3.50	1.60	8.00	3.64
				1 1/2	40	7	178	3.00	1.36	3.50	1.60	8.00	3.64
				2	50	7	178	3.00	1.36	3.50	1.60	8.00	3.64
3	80	3 1/2	90	1/2 and 3/4	15 and 20	8	203	-	-	6.00	2.73	11.00	5.00
				1	25	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				1 1/4	32	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				1 1/2	40	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				2 and 2 1/2	50 and 65	8	203	4.50	2.00	6.00	2.73	11.00	5.00

See pf-3 for certification of raw material and marking.  
Select sizes of 1 NPS/25 DN and smaller swages in  
EX and 160 weights available in A106.

All sizes on this page have been processed in a manner strictly conforming to the requirements of ASTM A234 from material fully meeting all requirements of that specification. The correct marking for swage nipples to denote conformance with this specification is "WPB S-9." All sizes 1 NPS / 25 DN and smaller will be made from hex barstock. Most sizes 1 1/4 NPS / 32 DN and larger will be made from pipe, and where pipe is not a practical raw material, round barstock will be used. No sacrifice of properties will result from such practice.

# CARBON STEEL Swage Nipples



## concentric swage nipples



pipe		size				length		standard weight		extra heavy weight		dbl. ex. & 160 weight	
		API or O.D.		reduced to									
		NPS	DN	in	mm								
3 1/2	90	4	100	1/2 thru 1 1/2	15 thru 40	8	203	5.50	2.50	7.50	3.40	13.50	6.14
				2 thru 3	50 thru 80	8	203	5.50	2.50	7.50	3.40	13.50	6.14
4	100	4 1/2	115	1/2 and 3/4	15 and 20	9	229	-	-	10.00	4.50	18.00	8.20
				1	25	9	229	7.50	3.40	10.00	4.50	18.00	8.20
				1 1/4 and 1 1/2	32 and 40	9	229	7.50	3.40	10.00	4.50	18.00	8.20
				2	50	9	229	7.50	3.40	10.00	4.50	18.00	8.20
				2 1/2	65	9	229	7.50	3.40	10.00	4.50	18.00	8.20
				3 and 3 1/2	80 and 90	9	229	7.50	3.40	10.00	4.50	18.00	8.20
5	125	5 5/16	140	1 thru 1 1/2	25 thru 40	11	279	11.50	5.23	17.00	7.73	33.00	15.00
				2 and 2 1/2	50 and 65	11	279	11.50	5.23	17.00	7.73	33.00	15.00
				3 and 3 1/2	80 and 90	11	279	11.50	5.23	17.00	7.73	33.00	15.00
				4	100	11	279	11.50	5.23	17.00	7.73	33.00	15.00
6	150	6 5/8	170	1 thru 1 1/2	25 thru 40	12	305	17.00	7.73	25.00	11.40	46.00	21.00
				2 and 2 1/2	50 and 65	12	305	17.00	7.73	25.00	11.40	46.00	21.00
				3 and 3 1/2	80 and 90	12	305	17.00	7.73	25.00	11.40	46.00	21.00
				4	100	12	305	17.00	7.73	25.00	11.40	46.00	21.00
				5	125	12	305	17.00	7.73	25.00	11.40	46.00	21.00
8	200	8 5/8	220	2 thru 3	50 thru 80	13	330	29.00	13.20	44.00	20.00	78.00	36.00
				4 and 5	100 and 125	13	330	29.00	13.20	44.00	20.00	78.00	36.00
				6	150	13	330	29.00	13.20	44.00	20.00	78.00	36.00

See pf-3 for certification of raw material.

**eccentric  
swage nipples**



pipe		size				length		standard weight		extra heavy weight		dbl. ex. & 160 weight	
		API or O.D.		reduced to									
		NPS	DN	in	mm								
1/4	8	0.540	15	1/8	6	2 1/4	57	-	-	-	-	.25	.11
3/8	10	0.675	15	1/8	6	2 1/2	63	-	-	.25	.11	.38	.17
				1/4	8	2 1/2	63	-	-	.25	.11	.38	.17
1/2	15	0.840	20	1/4 and 3/8	8 and 10	2 3/4	70	-	-	.33	.15	.50	.23
3/4	20	1.050	25	1/4 and 3/8	8 and 10	3	76	-	-	.50	.23	.75	.34
				1/2	15	3	76	-	-	.50	.23	.75	.34
1	25	1.315	35	1/4 and 3/8	8 and 10	3 1/2	88	-	-	.66	.30	1.00	.45
				1/2 and 3/4	15 and 20	3 1/2	88	-	-	.60	.30	1.00	.45
1 1/4	32	1.660	40	1/2 and 3/4	15 and 20	4	102	-	-	1.00	.45	1.50	.68
				1	25	4	102	-	-	1.00	.45	1.50	.68
1 1/2	40	1.900	50	1/2 and 3/4	15 and 20	4 1/2	114	-	-	1.17	.53	2.00	.90
				1	25	4 1/2	114	-	-	1.17	.53	2.00	.90
				1 1/4	32	4 1/2	114	-	-	1.17	.53	2.00	.90
2	50	2 3/8	60	1/4 and 3/8	8 and 10	6 1/2	165	-	-	3.00	1.36	4.25	2.00
				1/2 and 3/4	15 and 20	6 1/2	165	-	-	3.00	1.36	4.25	2.00
				1	25	6 1/2	165	2.00	.90	2.33	1.06	4.25	2.00
				1 1/4	32	6 1/2	165	2.00	.90	2.33	1.06	4.25	2.00
				1 1/2	40	6 1/2	165	2.00	.90	2.33	1.06	4.25	2.00
2 1/2	65	2 7/8	75	1	25	7	178	-	-	3.50	1.60	8.00	3.60
				1 1/4	32	7	178	3.00	1.40	3.50	1.60	8.00	3.60
				1 1/2	40	7	178	3.00	1.40	3.50	1.60	8.00	3.60
				2	50	7	178	-	-	3.50	1.60	8.00	3.60
3	80	3 1/2	90	1/2 and 3/4	15 and 20	8	203	-	-	6.00	2.73	11.00	5.00
				1	25	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				1 1/4	32	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				1 1/2	40	8	203	4.50	2.00	6.00	2.73	11.00	5.00
				2 and 2 1/2	50 and 65	8	203	4.50	2.00	6.00	2.73	11.00	5.00
3 1/2	90	4	100	All reductions	All reductions	8	203	5.50	2.50	7.50	3.40	13.50	6.00
4	100	4 1/2	115	1	25	9	229	7.50	3.40	10.00	4.50	18.00	8.00
				1 1/4 and 1 1/2	32 and 40	9	229	7.50	3.40	10.00	4.50	18.00	8.00
				2	50	9	229	7.50	3.40	10.00	4.50	18.00	8.00
				2 1/2	65	9	229	7.50	3.40	10.00	4.50	18.00	8.00
				3 and 3 1/2	80 and 90	9	229	7.50	3.40	10.00	4.50	18.00	8.00

See pf-3 for certification of raw material and marking.  
SIZES NOT SHOWN - PRICES ON APPLICATION.

# STAINLESS STEEL

## Stainless Swages



A Grinnell COMPANY

(type will go in opposite corner of logo when page number is determined)

### stainless & alloy steel swage nipples S/40 304



size		length		size		length	
NPS	DN	in	mm	NPS	DN	in	mm
1/4 x 1/8	8 x 6	2 1/4	57	2 x 1	50 x 25	6 1/2	165
3/8 x 1/4	10 x 8	2 1/2	64	2 x 1 1/4	50 x 32	6 1/2	165
1/2 x 1/4	15 x 8	2 3/4	70	2 x 1 1/2	50 x 40	6 1/2	165
1/2 x 3/8	15 x 10	2 3/4	70	2 1/2 x 1	65 x 25	7	178
3/4 x 1/4	20 x 8	3	76	2 1/2 x 1 1/4	65 x 32	7	178
3/4 x 3/8	20 x 10	3	76	2 1/2 x 1 1/2	65 x 40	7	178
3/4 x 1/2	20 x 15	3	76	2 1/2 x 2	65 x 50	7	178
1 x 1/4	25 x 8	3 1/2	89	3 x 1	80 x 25	8	203
1 x 1/2	25 x 15	3 1/2	89	3 x 1 1/4	80 x 32	8	203
1 x 3/4	25 x 20	3 1/2	89	3 x 1 1/2	80 x 40	8	203
1 1/4 x 1/2	32 x 15	4	102	3 x 2	80 x 50	8	203
1 1/4 x 3/4	32 x 20	4	102	3 x 2 1/2	80 x 65	8	203
1 1/4 x 1	32 x 25	4	102	4 x 1	100 x 25	9	229
1 1/2 x 1/2	40 x 15	4 1/2	114	4 x 1 1/4	100 x 32	9	229
1 1/2 x 3/4	40 x 20	4 1/2	114	4 x 1 1/2	100 x 40	9	229
1 1/2 x 1	40 x 25	4 1/2	114	4 x 2	100 x 50	9	229
1 1/2 x 1 1/4	40 x 32	4 1/2	114	4 x 2 1/2	100 x 65	9	229
2 x 1/2	50 x 15	6 1/2	165	4 x 3	100 x 80	9	229
2 x 3/4	50 x 20	6 1/2	165	4 x 3 1/2	100 x 90	9	229

Other types and sizes available on application.  
For other alloy raw material, Consult factory.  
Mill test reports furnished upon request only.

**Options:**

- E.L.C. Grades of Stainless
- Eccentrics

- Schedule 10 - 80
- Schedule 160 & XX

### stainless & alloy steel swage nipples S/40 316



size		length		size		length	
NPS	DN	in	mm	NPS	DN	in	mm
1/4 x 1/8	8 x 6	2 1/4	57	2 x 1	50 x 25	6 1/2	165
3/8 x 1/4	10 x 8	2 1/2	64	2 x 1 1/4	50 x 32	6 1/2	165
1/2 x 1/4	15 x 8	2 3/4	70	2 x 1 1/2	50 x 40	6 1/2	165
1/2 x 3/8	15 x 10	2 3/4	70	2 1/2 x 1	65 x 25	7	178
3/4 x 1/4	20 x 8	3	76	2 1/2 x 1 1/4	65 x 32	7	178
3/4 x 3/8	20 x 8	3	76	2 1/2 x 1 1/2	65 x 40	7	178
3/4 x 1/2	20 x 8	3	76	2 1/2 x 2	65 x 50	7	178
1 x 1/4	25 x 8	3 1/2	89	3 x 1	80 x 25	8	203
1 x 1/2	25 x 15	3 1/2	89	3 x 1 1/4	80 x 32	8	203
1 x 3/4	25 x 20	3 1/2	89	3 x 1 1/2	80 x 40	8	203
1 1/4 x 1/2	32 x 15	4	102	3 x 2	80 x 50	8	203
1 1/4 x 3/4	32 x 20	4	102	3 x 2 1/2	80 x 65	8	203
1 1/4 x 1	32 x 25	4	102	4 x 1	100 x 25	9	229
1 1/2 x 1/2	40 x 15	4 1/2	114	4 x 1 1/4	100 x 32	9	229
1 1/2 x 3/4	40 x 20	4 1/2	114	4 x 1 1/2	100 x 40	9	229
1 1/2 x 1	40 x 25	4 1/2	114	4 x 2	100 x 50	9	229
1 1/2 x 1 1/4	40 x 32	4 1/2	114	4 x 2 1/2	100 x 65	9	229
2 x 1/2	50 x 15	6 1/2	165	4 x 3	100 x 80	9	229
2 x 3/4	50 x 20	6 1/2	165	4 x 3 1/2	100 x 90	9	229

Other types and sizes available on application.  
For other alloy raw material, Consult factory.  
Mill test reports furnished upon request only.

**Options:**

- E.L.C. Grades of Stainless
- Eccentrics

- Schedule 10 - 80
- Schedule 160 & XX

## LINE PIPE BULL PLUGS

- Nominal Pipe Size range 1/8 - 8 / 6 - 200 DN
- Nominal Pipe Size 2 / 50 DN and smaller bull plugs manufactured out of cold drawn bar which is heat treated in accordance with ASTM A234
- Nominal Pipe Size 2 1/2 - 8 / 65 - 200 DN bull plugs manufactured out of A106 Grade B seamless pipe

using J.B. Smith's unique spinning process which insures uniform wall thickness

- Bull plugs available in standard, extra heavy, double extra heavy, schedule 160 or solid
- All Smith bull plugs can be tapped
- End finishes available: current API threads, beveled for weld, square cut (socket weld) or grooved

### carbon steel bull plugs



pipe		size		length		standard weight		extra heavy weight		solid weight		dbl. ex. & 160 weight	
NPS	DN	in	mm	in	mm	lb	kg	lb	kg	lb	kg	lb	kg
1/8	6	0.405	10	2	50	-	-	.10	.05	.20	.01	.40	.2
1/4	8	0.540	15	2	50	-	-	.11	.05	.20	.01	.40	.2
3/8	10	0.675	15	2 1/4	57	-	-	.14	.06	.33	.15	.28	.13
1/2	15	0.840	20	2 1/2	63	-	-	.33	.15	.50	.23	.50	.23
3/4	20	1.050	25	2 3/4	70	-	-	.50	.23	.80	.36	.75	.34
1	25	1.315	35	3	76	-	-	.66	.30	1.38	.63	1.00	.45
1 1/4	32	1.660	40	3 1/4	83	-	-	1.00	.45	2.25	1.00	1.50	.7
1 1/2	40	1.900	50	3 1/2	89	-	-	1.17	.53	3.00	1.40	2.00	.9
2	50	2 3/8	60	4	102	2.25	1.0	2.50	1.14	5.00	2.25	3.50	1.6
2 1/2	65	2 7/8	75	5	127	3.00	1.4	3.50	1.59	-	-	8.00	3.6
3	80	3 1/2	90	6	152	4.50	2.0	6.00	2.73	-	-	11.00	5.0
3 1/2	90	4	100	6 1/2	165	5.50	2.5	7.50	3.41	-	-	13.50	6.0
4	100	4 1/2	115	7	178	7.50	3.4	10.00	4.55	-	-	18.00	8.0
5	125	5 1/16	140	8 1/2	216	12.50	5.7	17.00	7.73	-	-	33.00	15.0
6	150	6 5/8	170	10	254	17.00	7.7	25.00	11.36	-	-	46.00	21.0
8	200	8 5/8	220	11	279	29.00	13.0	44.00	20.00	-	-	78.00	35.0

### solid refinery plugs black (non-plated) carbon steel



size		length	
NPS	DN	in	mm
1/8	6	3	76
1/4	8	3	76
3/8	10	3	76
1/2	15	3	76
3/4	20	3	76
1	25	3	76
1 1/4	32	3	76
1 1/2	40	3	76
2	50	3	76

Smith solid black refinery plugs have been especially designed for refinery use. The body length leaves sufficient length for easy wrench application.

Material conforms to ASTM A 234 Grade WPB.

# OIL COUNTRY FITTINGS

## Current API Thread Standards.



current API thread standards

size		O.D.		pipe	tubing & casing	size		O.D.		pipe	tubing & casing
NPS	DN	in	mm			NPS	DN	in	mm		
3/4	20	1.050	25	14	-	-	-	5	125	-	8 Rd.
3/4 EUE	20	1.050	25	-	10 Rd.	-	-	5 1/2	140	-	8 Rd.
1	25	1.315	35	11 1/2	10 Rd.	5	125	5 5/8	140	8V	-
1 EUE	25	1.315	35	-	10 Rd.	-	-	6	150	-	8 Rd.
1 1/4	32	1.660	40	11 1/2	10 Rd.	6	150	6 5/8	170	8V	8 Rd.
1 1/4 EUE	32	1.660	40	-	10 Rd.	-	-	7	180	-	8 Rd.
1 1/2	40	1.900	50	11 1/2	10 Rd.	-	-	7 7/8	195	-	8 Rd.
1 1/2 EUE	40	1.900	50	-	10 Rd.	8	200	8 5/8	220	8V	8 Rd.
2	50	2 3/8	60	11 1/2	10 Rd.	-	-	9 5/8	245	-	8 Rd.
2 EUE	50	2 3/8	60	-	8 Rd.	10	250	10 3/4	275	8V	8 Rd.
2 1/2	65	2 7/8	75	8V	10 Rd.	-	-	11 3/4	300	-	8 Rd.
2 1/2 EUE	65	2 7/8	75	-	8 Rd.	12	300	12 3/4	325	8V	-
3	80	3 1/2	90	8V	10 Rd.	-	-	13 3/8	340	-	8 Rd.
3 EUE	80	3 1/2	90	-	8 Rd.	-	-	14	355	8V	-
3 1/2	90	4	100	8V	8 Rd.	-	-	16	405	8V	8 Rd.
3 1/2 EUE	90	4	100	8V	8 Rd.	-	-	18	455	8V	-
4	100	4 1/2	115	8V	8 Rd.	-	-	20	510	8V	8 Rd.
4 EUE	100	4 1/2	115	-	8 Rd.	-	-	-	-	-	-

**TUBING SWAGES**

■ Nominal Sizes 1 – 3½ / 25 – 90 DN upset and non-upset ends tubing swages available with any combination of current API threads (8 round, 10 round, 11½v, 8v, etc.) and are stock items in J-55, K-55, N-80 and L-80

- Wall thicknesses available are standard through double extra heavy
- For different grades of material (stainless, brass, etc.) and different threads, consult factory
- Thread types are color-coded for easy identification

large end upset  
reduced to  
regular or upset

swage nipples  
oil country



Size		Pipe O.D.		reduced to		length		standard weight each		extra heavy weight each		double extra heavy weight each	
NPS	DN	in	mm	NPS	DN	in	mm	lb	kg	lb	kg	lb	kg
1	25	1.315	35	¾	20	3½	89	.66	.3	.66	.3	-	-
1¼	32	1.660	40	¾-1	20-25	4	102	1.00	.45	1.00	.45	-	-
1½	40	1.900	50	¾-1¼	20-32	4½	114	1.25	.6	1.25	.6	-	-
2	50	2½	60	¼-½-¾	8-15-20	8	203	2.50	1.1	4.00	1.8	6.00	2.7
				1-1¼-1½	25-32-40	8	203	2.50	1.1	4.00	1.8	6.00	2.7
				2½ O.D.	52	8	203	2.50	1.1	4.00	1.8	6.00	2.7
2½	65	2½	75	1-1¼-1½	25-32-40	8	203	5.00	2.2	6.00	2.7	10.00	4.5
				2	50	8	203	6.00	2.7	6.00	2.7	10.00	4.5
3	80	3½	90	1-¼-1½	32-40	8	203	7.50	3.4	9.00	4.0	14.00	6.4
				2-2½	50-65	8	203	7.50	3.4	9.00	4.0	14.00	6.4
4	100	4½	114	1-¼-1½	25-32-40	9	229	11.00	5.0	14.00	6.4	23.00	10.5
				2-2½	50-65	9	229	11.00	5.0	14.00	6.4	23.00	10.5
				3-3½	80-90	9	229	11.00	5.0	14.00	6.4	23.00	10.5

large end non-upset  
reduced to upset

swage nipples  
oil country



Size		Pipe O.D.		reduced to		length		standard weight each		extra heavy weight each		double extra heavy weight each	
NPS	DN	in	mm	NPS	DN	in	mm	lb	kg	lb	kg	lb	kg
1	25	1.315	35	¾	20	3½	89	.66	.3	.66	.3	-	-
1¼	32	1.660	40	¾-1	20-25	4	102	1.00	.45	1.00	.45	-	-
1½	40	1.900	50	¾-1¼	20-32	4½	114	1.25	.6	1.25	.6	-	-
2	50	2½	60	¾	20	6½	165	2.50	1.1	3.50	1.6	5.00	2.3
				1-1¼-1½	25-32-40	6½	165	2.50	1.1	3.50	1.6	5.00	2.3
2½	65	2½	75	1-1¼-1½	25-32-40	7	178	4.00	1.8	6.00	2.7	9.00	4.0
				2	50	7	178	4.00	1.8	6.00	2.7	9.00	4.0
3	80	3½	90	1-1¼-1½	25-32-40	8	203	6.00	2.7	9.00	4.0	12.00	5.4
				2-2½	50-65	8	203	6.00	2.7	9.00	4.0	12.00	5.4
4	100	4½	114	1-1¼-1½	25-32-40	9	229	8.00	2.7	12.00	5.4	20.00	9.0
				2-2½	50-65	9	229	8.00	2.7	12.00	5.4	20.00	9.0
				3-3½	80-90	9	229	8.00	2.7	12.00	5.4	20.00	9.0
		5½	140	2-3	50-80	11	279	12.50	5.7	17.00	7.7	33.00	15.0
		7	175	2-3	50-80	12	305	17.00	7.7	25.00	11.4	50.00	23.0

Swage Nipples non-upset on large end are made from J-55, K-55, N-80 or the most appropriate material available.  
Swage Nipples upset on large end are made from J-55 unless otherwise specified.

# OIL COUNTRY FITTINGS

Tubing Swages  
Casing Swages



swage nipples  
oil country  
tubing & casing  
non EUE ends



pipe		O.D.		size		length		std. weight each		xh weight each		xxh weight each			
		NPS	DN	in	mm	reduced to		in	mm	lb	kg	lb	kg	lb	kg
						NPS	DN								
1	25	1.315	35	1/4 - 3/4	8 - 20	3 1/2	88	.66	.3	.66	.3	1.00	.45		
1 1/4	32	1.660	40	1/4 - 1/2	8 - 15	4	102	1.00	.45	1.00	.45	1.50	.68		
				3/4 & 1	20 & 25	4	102	1.00	.45	1.00	.45	1.50	.68		
1 1/2	40	1.900	50	1/4 - 3/4	8 - 20	4 1/2	114	1.17	.53	-	-	2.00	.9		
				1 & 1 1/4	25 & 32	4 1/2	114	1.17	.53	1.00	.45	2.00	.9		
2	50	2 3/8	60	1/4 - 3/4	8 - 20	6 1/2	165	2.50	1.12	3.00	1.4	4.25	1.9		
				1 - 2 O.D.	25 - 50 O.D.	6 1/2	165	2.00	.9	2.33	1.0	4.25	1.9		
2 1/2	65	2 7/8	75	1/4 - 3/4	8 - 20	7	178	3.00	1.4	3.50	1.6	8.00	3.6		
				1 - 1 1/2	25 - 40	7	178	3.00	1.4	3.50	1.6	8.00	3.6		
				2 & 2 1/16	50 & 52	7	178	3.00	1.4	3.50	1.6	8.00	3.6		
3	80	3 1/2	90	1 - 1 1/2	25 - 40	8	203	4.50	2.0	6.00	2.7	11.00	5		
				2 & 2 1/2	50 & 65	8	203	4.50	2.0	6.00	2.7	11.00	5		
4	100	4 1/2	114	1 - 1 1/2	25 - 40	9	229	7.00	3.2	10.00	4.5	18.00	8		
				2 - 4 O.D.	50 - 100 O.D.	9	229	7.50	3.2	10.00	4.5	18.00	8		
		5	130	1 - 1 1/2	25 - 40	10	254	9.50	4.3	15.00	6.8	24.00	11		
				2 - 4 1/2 O.D.	50 - 114 O.D.	10	254	9.50	4.3	15.00	6.8	24.00	11		
		5 1/2	140	1 - 1 1/2	25 - 40	11	279	12.50	5.7	17.00	7.7	33.00	15		
				2 & 2 1/2	50 & 65	11	279	12.50	5.7	17.00	7.7	33.00	15		
				3 - 5 O.D.	80 - 125 O.D.	11	279	12.50	5.7	17.00	7.7	33.00	15		
		6 1/8	170	1 - 1 1/2	25 - 40	12	305	17.00	7.7	25.00	11.4	46.00	21		
				2 & 2 1/2	50 & 65	12	305	17.00	7.7	25.00	11.4	46.00	21		
				3 - 4 O.D.	80 - 100 O.D.	12	305	17.00	7.7	25.00	11.4	46.00	21		
				4 - 6 O.D.	100 - 150 O.D.	12	305	17.00	7.7	25.00	11.4	46.00	21		
		7	180	1 - 1 1/2	25 - 40	12	305	17.00	7.7	25.00	11.4	-	-		
				2 - 2 1/2	50 - 65	12	305	17.00	7.7	25.00	11.4	-	-		
				3 - 5 O.D.	80 - 125 O.D.	12	305	17.00	7.7	25.00	11.4	-	-		
				5 1/2 O.D. & 6 O.D.	140 O.D. & 150 O.D.	12	305	17.00	7.7	25.00	11.4	-	-		
		7 1/8	195	2 - 3	50 - 80	13	330	24.00	11.0	32.00	14.5	-	-		
				4 O.D. - 6 O.D.	100 O.D. - 150 O.D.	13	330	24.00	11.0	32.00	14.5	-	-		
				6 1/8 O.D. - 7 O.D.	168 O.D. - 178 O.D.	13	330	24.00	11.0	32.00	14.5	-	-		
		8 1/8	220	2 - 3	50 - 80	13	330	29.00	13.0	44.00	20.0	-	-		
				4 - 6 O.D.	100 - 150 O.D.	13	330	29.00	13.0	44.00	20.0	-	-		
				6 1/8 O.D. & 7 1/8 O.D.	168 O.D. & 194 O.D.	13	330	29.00	13.0	44.00	20.0	-	-		
		9 1/8	245	2 - 3	50 - 80	14	356	38.00	17.3	48.00	22.0	-	-		
				4 - 6 O.D.	100 - 150 O.D.	14	356	38.00	17.3	48.00	22.0	-	-		
				6 1/8 O.D. & 8 1/8 O.D.	168 O.D. & 194 O.D.	14	356	38.00	17.3	48.00	22.0	-	-		
		10 3/8	275	2 - 3	50 - 80	15	381	48.00	22.0	68.00	31.0	-	-		
				4 - 6 O.D.	100 - 150 O.D.	15	381	48.00	22.0	68.00	31.0	-	-		
				6 1/8 O.D. - 7 1/8 O.D.	168 O.D. - 194 O.D.	15	381	48.00	22.0	68.00	31.0	-	-		
				8 1/8 O.D. & 9 1/8 O.D.	219 O.D. & 245 O.D.	15	381	48.00	22.0	68.00	31.0	-	-		

- All swage nipples on this page are made from J-55, K-55, N-80 or the most appropriate material available
- Casing threads (8 Rd.) on one end with any thread or finish (beveled) on the other end
- Also includes casing sizes where no thread is specified

**CASING BULL PLUGS**

- 4½" / 114 mm O.D. - 13 ⅝" / 340 mm O.D. casing bull plugs available with all current API threads or beveled for welding
- Casing bull plugs available in standard, extra heavy or double extra heavy, and are manufactured from J-55, K-55, N-80 or L-80

tubing	size											
	pipe		API or O.D.		length		standard weight		extra heavy weight		dbl. ex. heavy & 160 weight	
	NPS	DN	in	mm	in	mm	lb	kg	lb	kg	lb	kg
<b>bull plugs</b> 	¾ EUE	20			3	76	1.50	.68	.50	.23	—	—
	1	25	1.315	35	3	76	1.50	.68	.66	.3	—	—
	1 EUE	25			3	76	1.50	.68	—	—	—	—
	1¼	32	1.660	40	3¼	83	1.50	.68	1.00	.45	—	—
	1¼ EUE	32			3¼	83	1.50	.68	—	—	—	—
	1½	40	1.900	50	3½	89	1.50	.68	1.06	.48	—	—
	1½ EUE	40			3½	89	2.00	.9	2.25	1.0	—	—
	2	50	2¾	60	4	102	2.00	.9	3.00	1.4	4.25	1.9
	2 EUE	50			5	127	3.50	1.6	4.00	1.8	9.00	4.0
	2½	65	2¾	75	5	127	3.00	1.4	3.50	1.6	8.00	3.6
	2½ EUE	65			5½	140	4.25	1.9	6.00	2.7	14.00	6.4
	3	80	3½	90	6	153	4.50	1.9	5.00	2.3	11.00	5.0
	3 EUE	80			6½	165	10.00	4.5	15.00	7.0	25.00	11.4
casing	API or O.D.		length		standard weight		extra heavy weight		dbl. ex. heavy & 160 weight			
	in	mm	in	mm	lb	kg	lb	kg	lb	kg		
<b>bull plugs</b> 	4½	113	7	178	7.50	3.4	10.00	4.5	18.00	8.2		
	5	127	8	203	9.50	4.3	15.00	6.8	24.00	11.0		
	5½	140	8½	216	12.50	5.7	17.00	7.7	33.00	15.0		
	6¾	168	10	254	17.00	7.7	25.00	11.4	46.00	21.0		
	7	175	10	254	17.00	7.7	25.00	11.4	50.00	23.0		
	7¾	194	11	279	24.00	11.0	32.00	14.5	53.00	24.0		
	8¾	219	11	279	29.00	13.0	44.00	20.0	78.00	35.0		

**ADAPTER NIPPLES**

- J.B. Smith manufactures a full line of adapter nipples in sizes 1 NPS / 25 DN through 8 NPS / 200 DN from seamless A106 pipe

- Adapter Nipples available in threaded, beveled, grooved and virtually all combinations of these end connections

**bell nipples**

O.D. Size		weight	
NPS	DN	lb	kg
4½	113	4.5	2
5½	140	9	4
7	175	13.2	6
8¾	219	15	7

- Nipples manufactured in schedule 40, schedule 80, schedule 160 and double extra heavy wall thickness

- Full Traceability and mill certification available upon request at time of order

**adapter nipples**

Size		weight		Size		weight	
NPS	DN	lb/ft	kg/M	NPS	DN	lb/ft	kg/M
¾	20	—	—	4	100	10.79	16.14
1	25	—	—	5	125	14.62	21.88
1¼	32	—	—	6	150	18.97	28.38
1½	40	—	—	8	200	28.55	42.74
2	50	3.65	5.48	10	250	40.48	60.59
2½	65	5.79	8.68	12	300	49.56	74.18
3	80	7.58	11.35				

**seamless schedule 40**

Std. bull plugs listed above are made from J-55 (or better). Such items in XH and XXH are made from J-55, K-55, N-80 or the most appropriate material available.

# OIL COUNTRY FITTINGS

## Tubing Nipples



### TUBING NIPPLES

- Nominal Pipe Size 1 – 3½ / 25 – 90 DN upset and non-upset ends
- Lengths are 4" – 18"
- Tubing nipples available with any combination of current API threads (8 round, 10 round, 11½v, etc.) and are stock items in J-55, K-55, N-80 and L-80
- Wall thicknesses available: standard through double extra heavy
- For a different grade of material (stainless, brass, etc.) and different threads, consult factory

tubing nipples standard weight	Size		End Connection	
	NPS	DN		
	1	25	Upset A.P.I. Thds: One or Both Ends	
	1	25	Non-upset (Regular)	
	1¼	32	Upset A.P.I. Thds: One or Both Ends	
	1¼	32	Non-upset (Regular)	
	1½	40	Upset A.P.I. Thds: One or Both Ends	
	1½	40	Non-upset (Regular)	
	2	50	Upset A.P.I. Thds: One or Both Ends	
	2	50	Non-upset (Regular)	
	2½	65	Upset A.P.I. Thds: One or Both Ends	
	2½	65	Non-upset (Regular)	
	3	80	Upset A.P.I. Thds: One or Both Ends	
	3	80	Non-upset (Regular)	
	4	100	Upset A.P.I. Thds: One or Both Ends	
	4	100	Non-upset (Regular)	
	tubing nipples extra heavy weight  	1	25	Upset A.P.I. Thds: One or Both Ends
		1	25	Non-upset (Regular)
1¼		32	Upset A.P.I. Thds: One or Both Ends	
1¼		32	Non-upset (Regular)	
1½		40	Upset A.P.I. Thds: One or Both Ends	
1½		40	Non-upset (Regular)	
2		50	Upset A.P.I. Thds: One or Both Ends	
2		50	Non-upset (Regular)	
2½		65	Upset A.P.I. Thds: One or Both Ends	
2½		65	Non-upset (Regular)	
3		80	Upset A.P.I. Thds: One or Both Ends	
3		80	Non-upset (Regular)	
4		100	Upset A.P.I. Thds: One or Both Ends	
4		100	Non-upset (Regular)	

### OIL COUNTRY CASING NIPPLES



size O.D.		weight		steel grade	size O.D.		weight		steel grade
NPS	DN	lb/ft	kg/M		NPS	DN	lb/ft	kg/M	
4½	114	10.50	15.70	K	8⅝	219	24.00	35.94	K
		11.60	17.36	K-N-P			32.00	47.88	K
5	125	11.50	17.36	K	9⅝	245	36.00	53.89	K-N
		13.00	19.47	K			44.00	65.87	N-P
		15.00	22.44	K-N-P			49.00	73.36	N-P
		18.00	26.93	N-P			36.00	53.89	K
5½	140	14.00	20.96	K	10¾	273	40.50	60.62	K
		15.50	23.20	K			45.50	68.11	K
		17.00	25.44	K-N-P			55.50	83.06	N-P
		20.00	29.93	N-P			60.00	89.83	K
6⅝	168	20.00	29.93	K	11¾	298	60.00	89.83	K
		24.00	35.94	K-N-P			54.50	81.58	K
		28.00	41.91	N-P			61.00	91.31	K
7	175	20.00	29.93	K	13⅝	340	68.00	101.77	K
		23.00	34.42	K-N			72.00	107.78	K
		26.00	38.91	K-N-P					
		29.00	43.40	N-P					
7⅝	194	26.40	39.50	K-N	16	400	75.00	112.27	K
		29.70	44.45	N-P			84.00	125.73	K

# OIL COUNTRY COUPLINGS

## Casing Couplings



api casing couplings  
short thread



	Casing O.D.		weight per 100		length of round thd. coupling	
	NPS	DN	lb	kg	in	mm
	4½	114	805	366	6¼	159
	5	125	1018	463	6½	165
	5½	140	1144	520	6¾	171
	6⅝	168	1997	908	7¼	184
	7	175	1834	834	7¼	184
	7⅝	194	2693	1224	7½	191
	8⅝	219	3558	1617	7¾	197
	9⅝	244	3951	1796	7¾	197
	10¾	273	4553	2070	8	203
	11¾	298	–	–	8	203
	13⅜	340	5623	2556	8	203
	16	400	7898	3590	9	229
	20	500	9500	4318	9	229

api casing couplings  
long thread



	Casing O.D.		weight per 100		length of coupling	
	NPS	DN	lb	kg	in	mm
	4½	114	907	413	7	178
	5	125	1256	571	7¾	197
	5½	140	1403	638	8	203
	6⅝	168	1829	832	8¾	222
	7	175	2367	1076	9	229
	7⅝	194	3423	1556	9¼	235
	8⅝	219	4748	2158	10	254
	9⅝	244	5577	2535	10½	267
	10¾	273	6202	2819	10½	267
	13⅜	340	7663	3483	10½	267



Like all Grinnell companies, Anvil is a respected name and its products are well-regarded for high quality and consistency. Together, we meet our customers' needs more comprehensively than ever.

Anvil Forged Steel Pipe Fittings add an important dimension to the industry-leading line of flow control products already offered by Grinnell.

**Materials**

The steel for Anvil Forged Carbon Steel Fittings consists of forgings, bars, seamless pipe or tubes which conform to the requirements for melting process, chemical composition and mechanical properties of ASTM A105.

**Design Basis**

ASME B16.11 - Forged fittings, socket welding and threaded

**Dimensions**

ASME B16.11, unless otherwise noted

**Threads**

ASME 1.20.1

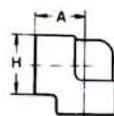


**Forged Steel Fittings  
CLASS 2000  
THREADED**



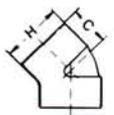
NPS DN	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
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### 90° ELBOWS: fig. 2101



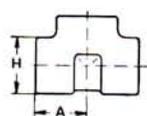
A	in	0.97*	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	3.00	3.38	4.19
	mm	25	25	25	28	33	38	44	51	60	76	86	106
H	in	1.00*	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.62	4.31	5.75
	mm	25	25	25	33	38	46	56	62	75	92	109	146
App. Wt./100 pcs.	lb	31	31	31	50	69	113	158	200	350	650	1100	2275
	kg	14	14	14	22	31	51	72	91	159	295	500	1034

### 45° ELBOWS: fig. 2102



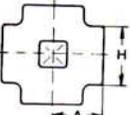
C	in	0.75*	0.75*	0.75	0.88	1.00	1.12	1.31	1.38	1.69	2.06	2.50	3.12
	mm	19	19	19	22	25	28	33	35	43	52	64	79
H	in	1.00*	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.62	4.31	5.75
	mm	25	25	25	33	38	46	56	62	75	92	109	146
App. Wt./100 pcs.	lb	25	25	25	44	63	94	138	163	269	775	1131	1913
	kg	11	11	11	22	29	43	63	74	122	352	514	870

### TEES: fig. 2103



A	in	0.97*	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	3.00	3.38	4.19
	mm	25	25	25	28	33	38	44	51	60	76	86	106
H	in	1.00*	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.62	4.31	5.75
	mm	25	25	25	33	38	46	56	62	75	92	109	146
App. Wt./100 pcs.	lb	31	31	31	69	94	144	200	275	463	869	1319	2725
	kg	14	14	14	31	43	65	91	125	210	395	600	1239

### CROSSES: fig. 2104



A	in	0.97*	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	3.00	3.38	4.19
	mm	25	25	25	28	33	38	44	51	60	76	86	106
H	in	1.00*	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.62	4.31	5.75
	mm	25	25	25	33	38	46	56	62	75	92	109	146
App. Wt./100 pcs.	lb	50	50	50	88	113	169	250	319	525	1644	1950	3269
	kg	23	23	23	40	51	77	114	145	239	747	886	1486

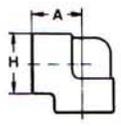
\*Larger than ASME B16.11 dimension.

**Forged Steel Fittings  
CLASS 3000  
THREADED**



NPS DN	1/8 6	1/4 8	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100
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**90° ELBOWS: fig. 2111**



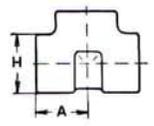
A	in	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.50
	mm	25	25	28	33	38	44	51	60	64	83	95	114
H	in	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	6.00
	mm	25	25	33	38	46	56	62	75	84	102	121	152
App. Wt./100 pcs.	lb	38	38	63	88	138	225	260	490	519	1050	1444	3038
	kg	17	17	29	40	63	102	118	223	236	477	656	1381

**45° ELBOWS: fig. 2112**



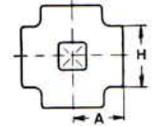
C	in	0.75*	0.75	0.88	1.00	1.12	1.31	1.38	1.69	1.72	2.06	2.50	3.12
	mm	19	19	22	25	28	33	35	43	44	52	64	79
H	in	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	6.00
	mm	25	25	33	38	46	56	62	75	84	102	121	152
App. Wt./100 pcs.	lb	25	25	52	68	119	188	213	400	440	738	1178	1906
	kg	12	12	24	31	54	86	97	182	200	336	536	867

**TEES: fig. 2114**



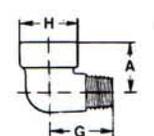
A	in	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.50
	mm	25	25	28	33	38	44	51	60	64	83	95	114
H	in	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	6.00
	mm	25	25	33	38	46	56	62	75	84	102	121	152
Approx. Wt./100 pcs.	lb	38	38	81	119	188	310	350	640	686	1313	2038	3950
	kg	17	17	37	54	86	141	159	291	312	587	927	1796

**CROSSES: fig. 2115**



A	in	0.97*	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.50
	mm	25	25	28	33	38	44	51	60	64	83	95	114
H	in	1.00*	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	6.00
	mm	25	25	33	38	46	56	62	75	84	102	121	152
App. Wt./100 pcs.	lb	38	38	100	150	250	356	413	650	813	1675	1975	3200
	kg	17	17	46	69	114	162	188	296	370	762	898	1455

**STREET ELBOWS: fig. 2113**



A	in	0.97	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.50
	mm	25	25	28	33	38	44	51	60	64	83	95	114
G	in	1.25	1.25	1.50	1.69	1.94	2.31	2.69	2.81	3.38	-	-	-
	mm	32	32	38	43	48	59	68	71	86	-	-	-
H	in	1.00	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	6.00
	mm	25	25	33	38	46	56	62	75	84	102	121	152
App. Wt./100 pcs.	lb	25	25	38	55	88	144	250	425	519	-	-	-
	kg	12	12	17	25	40	66	114	194	236	-	-	-

\*Larger than ASME B16.11 dimension.

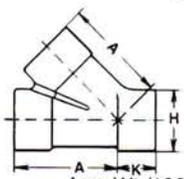


## Forged Steel Fittings CLASS 3000 THREADED



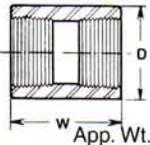
NPS DN	1/8 6	1/4 8	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100
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### LATERALS: fig. 2116



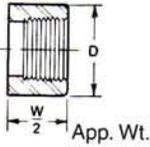
A	in	—	1.88	2.12	2.56	3.00	3.50	3.94	4.75	—	—	—	—
	mm	—	48	54	65	76	89	100	121	—	—	—	—
H	in	—	1.06	1.31	1.50	1.81	2.19	2.44	2.97	—	—	—	—
	mm	—	27	33	38	46	56	62	75	—	—	—	—
K	in	—	0.81	0.88	1.00	1.12	1.31	1.44	1.68	—	—	—	—
	mm	—	21	22	25	28	33	37	43	—	—	—	—
App. Wt./100 pcs.	lb	—	—	—	175	275	463	550	1081	—	—	—	—
	kg	—	—	—	80	125	211	250	492	—	—	—	—

### COUPLINGS: fig. 2117



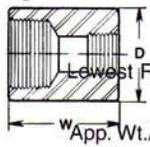
D	in	0.75*	0.75	0.88	1.12	1.38	1.75	2.25	2.50	3.00	3.62	4.25	5.50
	mm	19	19	22	28	35	44	57	64	76	92	108	140
W	in	1.25	1.38	1.50	1.88	2.00	2.38	2.62	3.12	3.38	3.62	4.25	4.75
	mm	32	35	38	48	51	60	67	79	86	92	108	121
App. Wt./100 pcs.	lb	12	10	13	29	42	84	156	211	300	460	650	1225
	kg	6	5	6	13	19	38	71	96	136	209	296	557

### HALF COUPLINGS: fig. 2119



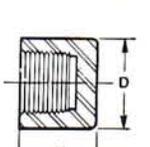
D	in	0.75*	0.75	0.88	1.12	1.38	1.75	2.25	2.50	3.00	3.62	4.25	5.50
	mm	19	19	22	28	35	44	57	64	76	92	108	140
W/2	in	0.62	0.69	0.75	0.94	1.00	1.19	1.31	1.56	1.69	1.81	2.13	2.38
	mm	16	18	19	24	25	30	33	40	43	46	54	60
App. Wt./100 pcs.	lb	5	4	6	13	18	38	72	99	139	215	306	580
	kg	2.3	2	3	6	8	17	33	45	63	98	139	264

### REDUCING COUPLINGS: fig. 2118



D	in	0.75*	0.75	0.88	1.12	1.38	1.75	2.25	2.50	3.00	3.62	4.25	5.50
	mm	19	19	22	28	35	44	57	64	76	92	108	140
W	in	—	1.38	1.50	1.88	2.00	2.38	2.62	3.12	3.38	3.62	4.25	4.75
	mm	—	35	38	48	51	60	67	79	86	92	108	121
Lowest Reduction	NPS	—	1/8	1/8	1/8	1/8	1/8	1/4	1/4	1/4	3/4	3/4	1 1/2
	DN	—	6	6	6	6	6	8	8	8	20	20	40
App. Wt./100 pcs.	lb	—	10	13	29	42	84	156	211	300	460	650	1225
	kg	—	5	6	13	19	38	71	96	136	209	296	557

### PIPE CAPS: fig. 2120



D	in	0.75*	0.75	0.88	1.12	1.38	1.75	2.25	2.50	3.00	3.62	4.25	5.50
	mm	19	19	22	28	35	44	57	64	76	92	108	140
P	in	0.75	1.00	1.00	1.25	1.44	1.62	1.75	1.75	1.88	2.38	2.56	2.69
	mm	19	25	25	32	37	41	44	44	48	60	65	68
App. Wt./100 pcs.	lb	6	9	13	25	41	75	125	150	260	500	850	1300
	kg	3	4	6	14	19	34	57	68	118	228	387	591

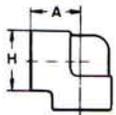
\*Larger than ASME B16.11 dimension.

**Forged Steel Fittings  
CLASS 6000  
THREADED**



NPS DN	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
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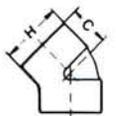
**90° ELBOWS: fig. 2131**



App. Wt./100 pcs.

A	in	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.19	4.50
	mm	25	28	33	38	44	51	60	64	83	95	106	114
H	in	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	5.75	6.00
	mm	25	33	38	46	56	62	75	84	102	121	146	152
	lb	25	63	106	163	250	325	650	725	1325	2088	3456	-
	kg	11	29	48	74	114	148	296	330	602	949	1771	-

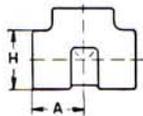
**45° ELBOWS: fig. 2132**



App. Wt./100 pcs.

C	in	0.75	0.88	1.00	1.12	1.31	1.38	1.69	1.72	2.06	2.50	3.12	3.12
	mm	19	22	25	28	33	35	43	44	52	64	79	79
H	in	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	5.75	6.00
	mm	25	33	38	46	56	62	75	84	102	121	146	152
	lb	25	59	88	144	219	269	469	575	950	1500	3056	-
	kg	11	27	40	66	100	123	214	262	432	682	1389	-

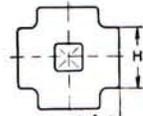
**TEES: fig. 2134**



App. Wt./100 pcs.

A	in	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.19	4.50
	mm	25	28	33	38	44	51	60	64	83	95	106	114
H	in	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	5.75	6.00
	mm	25	33	38	46	56	62	75	84	102	121	146	152
	lb	50	100	138	213	363	463	763	963	1888	2806	4563	-
	kg	23	46	63	97	165	211	347	438	858	1276	2074	-

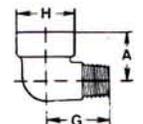
**CROSSES: fig. 2135**



App. Wt./100 pcs.

A	in	0.97	1.12	1.31	1.50	1.75	2.00	2.38	2.50	3.25	3.75	4.19	-
	mm	25	28	33	38	44	51	60	64	83	95	106	-
H	in	1.00	1.31	1.50	1.81	2.19	2.44	2.97	3.31	4.00	4.75	5.75	-
	mm	25	33	38	46	56	62	75	84	102	121	146	-
	lb	56	119	150	275	431	563	1075	1150	2219	2750	5400	-
	kg	26	54	68	125	196	256	489	523	1009	1250	2955	-

**STREET ELBOWS: fig. 2133**



App. Wt./100 pcs.

A	in	-	1.00	1.12	1.38	1.75	2.00	2.12	2.50	-	-	-	-
	mm	-	25	28	35	44	51	54	64	-	-	-	-
G	in	-	1.50	1.63	1.88	2.25	2.62	2.81	3.31	-	-	-	-
	mm	-	38	41	48	57	67	71	84	-	-	-	-
H	in	-	1.25	1.50	1.75	2.00	2.44	2.75	3.31	-	-	-	-
	mm	-	32	38	44	51	62	70	84	-	-	-	-
	lb	-	37	45	100	162	250	368	644	-	-	-	-
	kg	-	17	21	46	74	114	168	293	-	-	-	-

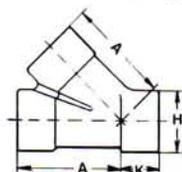


## Forged Steel Fittings CLASS 6000 THREADED



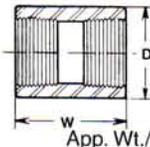
NPS	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
DN	6	8	10	15	20	25	32	40	50	65	80	100

### LATERALS: fig. 2136



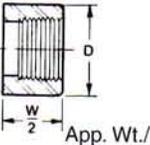
A	in	-	-	2.56	3.00	3.56	4.00	4.75	-	-	-	-
	mm	-	-	65	76	90	102	121	-	-	-	-
H	in	-	-	1.50	1.81	2.19	2.44	2.88	-	-	-	-
	mm	-	-	38	46	56	62	73	-	-	-	-
K	in	-	-	1.00	1.25	1.38	1.50	1.75	-	-	-	-
	mm	-	-	25	32	35	38	44	-	-	-	-
App. Wt./100 pcs.	lb	-	-	237	325	548	732	1232	-	-	-	-
	kg	-	-	108	148	249	333	560	-	-	-	-

### COUPLINGS: fig. 2137



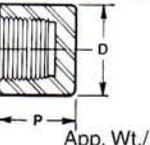
D	in	0.88	1.00	1.25	1.50	1.75	2.25	2.50	3.00	3.62	4.25	5.00	6.25
	mm	22	25	32	38	44	57	64	76	92	108	127	159
W	in	1.25	1.38	1.50	1.88	2.00	2.38	2.62	3.12	3.38	3.62	4.25	4.75
	mm	32	35	38	48	51	60	67	79	86	92	108	121
App. Wt./100 pcs.	lb	18	23	40	69	95	192	230	375	537	890	1345	2425
	kg	8	11	18	32	44	88	105	171	244	405	612	1103

### HALF COUPLINGS: fig. 2141



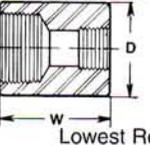
D	in	0.88	1.00	1.25	1.50	1.75	2.25	2.50	3.00	3.62	4.25	5.00	6.25
	mm	22	25	32	38	44	57	64	76	92	108	127	159
W/2	in	0.62	0.69	0.75	0.94	1.00	1.19	1.31	1.56	1.69	1.81	2.13	2.38
	mm	16	18	19	24	25	30	33	40	43	46	54	60
App. Wt./100 pcs.	lb	8	10	18	33	45	86	110	180	260	430	650	1180
	kg	4	5	8	15	21	39	50	82	119	196	296	537

### PIPE CAPS: fig. 2143



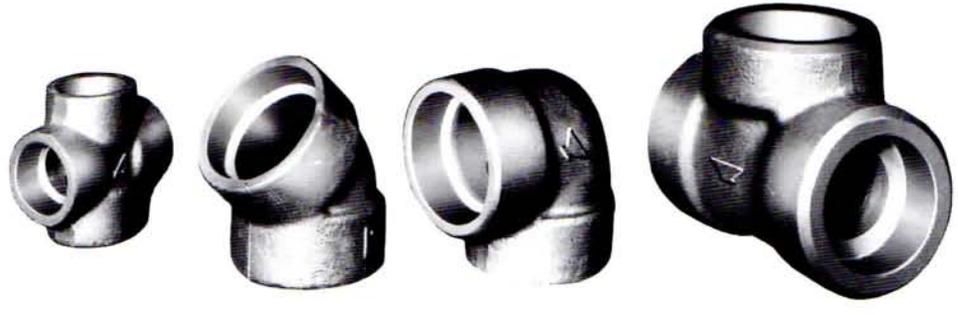
D	in	0.88	1.00	1.25	1.50	1.75	2.25	2.50	3.00	3.62	4.25	5.00	6.25
	mm	22	25	32	38	44	57	64	76	92	108	127	159
P	in	-	1.06	1.06	1.31	1.50	1.69	1.81	1.88	2.00	2.50	2.69	2.94
	mm	-	27	27	33	38	43	46	48	51	64	68	75
App. Wt./100 pcs.	lb	15	18	25	56	75	140	220	290	520	660	960	1700
	kg	7	8	12	26	34	64	100	132	237	300	437	773

### REDUCING COUPLINGS: fig. 2138



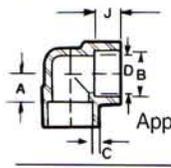
D	in	-	1.00	1.25	1.50	1.75	2.25	2.50	3.00	3.62	4.25	5.00	6.25
	mm	-	25	32	38	44	57	64	76	92	108	127	159
W	in	-	1.38	1.50	1.88	2.00	2.38	2.62	3.12	3.38	3.62	4.25	4.75
	mm	-	35	38	48	51	60	67	79	86	92	108	121
Lowest Reduction	NPS	-	1/8	1/8	1/8	1/4	1/4	1/2	3/4	3/4	1 1/4	1 1/2	2
	DN	-	6	6	6	8	8	15	20	20	32	40	50
App. Wt./100 pcs.	lb	-	23	40	69	95	192	230	375	537	890	1345	2425
	kg	-	11	18	32	44	88	105	171	244	405	612	1103

**Forged Steel Fittings  
CLASS 3000  
SOCKET-WELDING**



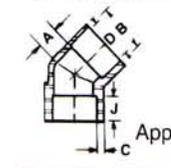
	NPS DN	1/8 6	1/4 8	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100
<b>COMMON DIMENSIONS</b>	B (Socket Dia.)	in. .420/ .440	.555/ .575	.690/ .710	.855/ .875	1.065/ 1.085	1.330/ 1.350	1.675/ 1.695	1.915/ 1.935	2.406/ 2.426	2.906/ 2.931	3.535/ 3.560	4.545/ 4.570
		mm 10.67/ 11.18	14.10/ 14.61	17.53/ 18.03	21.72/ 22.23	27.05/ 27.56	33.78/ 34.29	42.55/ 43.05	48.64/ 49.15	61.11/ 61.62	73.81/ 74.45	89.79/ 90.42	115.44/ 116.08
	C (Min.)	in 0.13	0.13	0.14	0.16	0.17	0.20	0.21	0.22	0.24	0.30	0.33	0.37
		mm 3.30	3.30	3.56	4.06	4.32	5.08	5.33	5.59	6.10	7.62	8.38	9.40
	D (Bore Dia.)	in .239/ .299	.334/ .394	.463/ .523	.592/ .562	.794/ .854	1.019/ 1.079	1.350/ 1.410	1.580/ 1.640	2.037/ 2.097	2.409/ 2.529	3.008/ 3.128	3.966/ 4.086
	mm 6.07/ 7.59	8.48/ 10.00	11.76/ 13.28	15.04/ 16.56	21.07/ 21.69	25.88/ 27.40	34.29/ 35.81	40.13/ 41.66	51.74/ 53.26	61.19/ 64.24	76.40/ 79.45	100.74/ 103.78	
J (Min. Socket Depth)	in 0.38	0.38	0.38	0.38	0.50	0.50	0.50	0.50	0.50	0.62	0.62	0.62	0.75
	mm 9.65	9.65	9.65	9.65	12.70	12.70	12.70	12.70	12.70	15.75	15.75	15.75	19.05

**90° ELBOWS: fig. 2150**



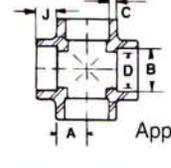
A (Nominal)	in	0.44	0.44	0.53	0.62	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.62
	mm	11	11	13	16	19	22	27	32	38	41	57	67
App. Wt./100 pcs.	lb	13	13	25	50	69	106	163	213	290	638	1088	2369
	kg	6	6	12	23	32	48	74	97	132	290	495	1077

**45° ELBOWS: fig. 2151**



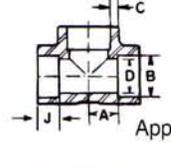
A (Nominal)	in	0.31	0.31	0.31	0.44	0.50	0.56	0.69	0.81	1.00	1.12	1.25	1.62
	mm	8	8	8	11	13	14	18	21	25	28	32	41
App. Wt./100 pcs.	lb	13	13	19	38	50	88	125	163	269	675	1050	1819
	kg	6	6	9	17	23	40	57	74	123	307	478	827

**CROSSES: fig. 2153**



A	in	0.44	0.44	0.53	0.62	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.62
	mm	11	11	13	16	19	22	27	32	38	41	57	67
App. Wt./100 pcs.	lb	25	25	34	69	88	144	213	263	444	888	1369	2844
	kg	12	12	16	32	44	66	97	120	202	404	623	1293

**TEE: fig. 2152**

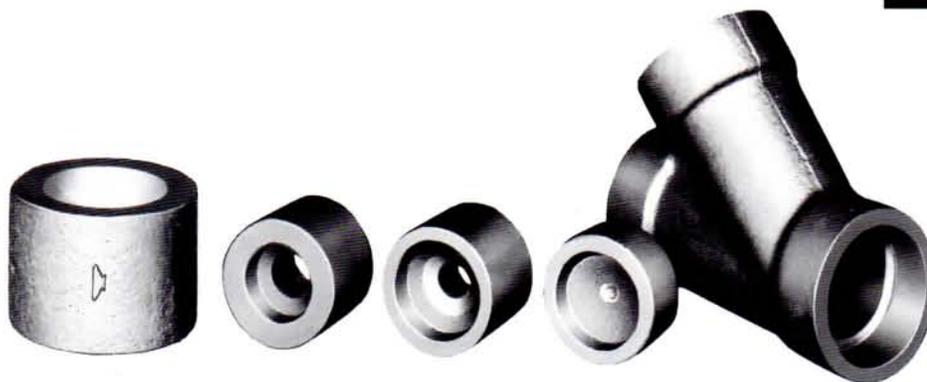


A	in	0.44	0.44	0.53	0.62	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.62
	mm	11	11	13	16	19	22	27	32	38	41	57	67
App. Wt./100 pcs.	lb	25	31	31	81	113	156	244	325	550	1581	2019	3150
	kg	12	14	14	37	52	71	111	148	250	719	918	1432

When the pipe is seated against the bottom of the socket prior to welding, to prevent possible cracking of the fillet welds, it is recommended that the pipe be withdrawn approximately 1/16 in. / 1.6 mm away from contact with the bottom of the socket before starting the weld.

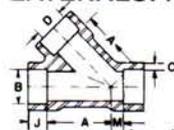


**Forged Steel Fittings  
CLASS 3000  
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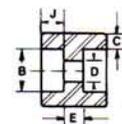
		NPS	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
		DN	6	8	10	15	20	25	32	40	50	65	80	100
<b>COMMON DIMENSIONS</b>	B (Socket Dia.)	in	.420/ .440	.555/ .575	.690/ .710	.855/ .875	1.065/ 1.085	1.330/ 1.350	1.675/ 1.695	1.915/ 1.935	2.406 2.426	2.906/ 2.931	3.535/ 3.560	4.545/ 4.570
		mm	.10/6 11	14.1/ 14.6	17.53/ 18.03	21.72/ 22.23	27.05/ 27.56	33.78/ 34.29	42.55/ 43.05	48.64/ 49.15	61.11/ 61.62	73.81/ 74.45	89.79/ 90.42	115.44/ 116.08
	C (Min.)	in	0.13	0.13	0.14	0.16	0.17	0.20	0.21	0.22	0.24	0.30	0.33	0.37
		mm	3.30	3.30	3.56	4.06	4.32	5.08	5.33	5.59	6.10	7.62	8.38	9.40
D (Bore Dia.)	in	.239/ .299	.334/ .394	.463/ .523	.592/ .652	.794/ .854	1.019/ 1.079	1.350/ 1.410	1.580/ 1.640	2.037/ 2.097	2.409/ 2.529	3.008/ 3.128	3.966/ 4.086	
	mm	6.07/ 7.59	8.48/ 10.00	11.76/ 13.28	15.04/ 16.56	21.07/ 21.69	25.88/ 27.40	34.29/ 35.81	40.18/ 41.66	51.74/ 53.26	61.19/ 64.24	76.40/ 79.45	100.74/ 103.78	
J (Min. Socket Depth)	in	0.38	0.38	0.38	0.38	0.50	0.50	0.50	0.50	0.50	0.62	0.62	0.75	
	mm	9.65	9.65	9.65	9.65	12.70	12.70	12.70	12.70	12.70	15.75	15.75	19.05	

**LATERALS: fig. 2158**



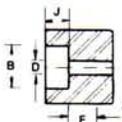
A (Nominal)	in	-	-	-	1.63	2.00	2.38	2.81	3.19	3.88	-	-	-
	mm	-	-	-	41	51	60	71	81	99	-	-	-
M	in	-	-	-	.38	.44	.50	.63	.69	.81	-	-	-
	mm	-	-	-	10	11	13	16	18	21	-	-	-
App. Wt./100 pcs.	lb	-	-	-	100	175	238	375	500	775	-	-	-
	kg	-	-	-	46	80	109	171	228	353	-	-	-

**COUPLINGS: fig. 2154**



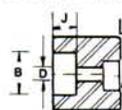
E	in	0.25	0.25	0.25	0.38	0.38	0.50	0.50	0.50	0.75	0.75	0.75	0.75
	mm	6	6	6	10	10	13	13	13	19	19	19	19
App. Wt./100 pcs.	lb	10	12	20	23	39	68	84	93	161	237	313	507
	kg	5	6	9	11	18	31	38	43	74	108	143	231

**HALF COUPLINGS: fig. 2155**



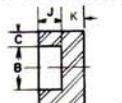
F	in	0.62	0.62	0.69	0.88	0.94	1.12	1.19	1.25	1.62	1.69	1.75	1.88
	mm	16	16	18	22	24	28	30	32	41	43	45	48
App. Wt./100 pcs.	lb	11	14	24	31	47	84	112	132	218	341	486	749
	kg	5	7	11	14	22	38	51	60	99	155	221	341

**REDUCING COUPLINGS: fig. 2156**



E	in	-	0.25	0.25	0.38	0.38	0.50	0.50	0.50	0.75	0.75	0.75	0.75
	mm	-	6	6	10	10	13	13	13	19	19	19	19
Lowest Reduction	NPS	-	1/8	1/8	1/8	1/8	1/8	1/4	1/4	1/2	1/2	1 1/2	2
	DN	-	6	6	6	6	6	8	8	15	15	40	50
App. Wt./100 pcs.	lb	-	12	20	23	39	68	84	93	161	237	313	507
	kg	-	6	10	11	18	31	38	43	74	108	143	231

**PIPE CAPS: fig. 2157**



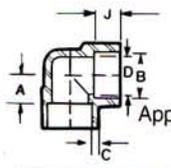
K Min.	in	0.19	0.19	0.19	0.25	0.25	0.38	0.38	0.44	0.50	0.62	0.75	0.88
	mm	5	5	5	6	6	10	10	11	13	16	19	22
App. Wt./100 pcs.	lb	6	9	17	22	35	60	93	115	192	280	475	844
	kg	3	4	8	10	16	28	43	53	88	128	216	384

**Forged Steel Fittings  
CLASS 6000  
SOCKET-WELDING**



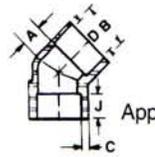
NPS DN		1/8 6	1/4 8	3/8 10	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100	
<b>COMMON DIMENSIONS</b>	B (Socket Dia.)	in	.420/ .440	.555/ .575	.690/ .710	.855/ .875	1.065/ 1.085	1.330/ 1.350	1.675/ 1.695	1.915/ 1.935	2.406/ 2.426	2.906/ 2.931	3.535/ 3.560	4.545/ 4.570
		mm	10.67/ 11.18	14.10/ 14.61	17.53/ 18.03	21.72/ 22.23	27.05/ 27.56	33.78/ 34.29	42.55/ 43.05	48.64/ 49.15	61.11/ 61.62	73.81/ 74.45	89.79/ 90.42	115.44/ 116.08
	C (Min.)	in	0.14	0.16	0.17	0.20	0.24	0.27	0.27	0.31	0.37	0.41	0.48	0.58
		mm	3.56	4.06	4.32	5.08	6.10	6.86	6.86	7.87	9.40	10.41	12.19	14.73
	D (Bore Dia.)	in	.126/ .189	.220/ .280	.329/ .389	.434/ .494	.582/ .642	.785/ 845	1.130/ 1.190	1.308/ 1.368	1.657/ 1.717	2.065/ 2.185	2.564/ 2.684	3.378/ 3.498
		mm	3.20/ 4.80	5.59/ 7.11	8.36/ 9.88	11.03/ 12.55	14.78/ 16.31	19.94/ 21.46	28.70/ 30.23	33.22/ 34.77	42.01/ 43.61	52.45/ 55.50	65.13/ 68.17	85.80/ 88.85
J (Min. Socket Depth)	in	0.38	0.38	0.38	0.38	0.50	0.50	0.50	0.50	0.62	0.62	0.62	0.75	
	mm	9.65	9.65	9.65	9.65	12.70	12.70	12.70	12.70	15.75	15.75	15.75	19.05	

**90° ELBOWS: fig. 2170**



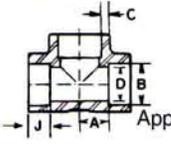
A (Nominal)	in	0.44	0.53	0.62	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.50	2.62
	mm	11	13	16	19	22	27	32	38	41	57	64	67
App. Wt./100 pcs.	lb	-	-	-	88	144	250	325	531	638	1200	1938	3638
	kg	-	-	-	40	66	114	148	242	290	546	881	1654

**45° ELBOWS: fig. 2171**



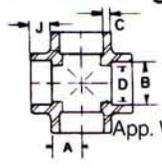
A	in	0.31	0.31	0.44	0.50	0.56	0.69	0.81	1.00	1.12	1.25	1.38	1.58
	mm	8	8	11	13	14	18	21	25	28	32	35	40
App. Wt./100 pcs.	lb	-	-	-	69	131	200	263	475	588	713	1231	2700
	kg	-	-	-	32	60	91	120	216	268	324	560	1228

**TEE: fig. 2172**



A	in	-	-	-	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.50	2.62
	mm	-	-	-	19	22	27	32	38	41	57	64	67
App. Wt./100 pcs.	lb	-	-	-	106	206	338	431	781	869	1663	2381	4532
	kg	-	-	-	49	94	154	196	355	395	756	1083	2060

**CROSSES: fig. 2173**



A	in	-	-	-	0.75	0.88	1.06	1.25	1.50	1.62	2.25	2.50	2.62
	mm	-	-	-	19	22	27	32	38	41	57	64	67
App. Wt./100 pcs.	lb	-	-	-	125	250	400	513	900	950	1988	2950	4150
	kg	-	-	-	57	114	182	234	409	432	904	1341	1887

When the pipe is seated against the bottom of the socket prior to welding, to prevent possible cracking of the fillet welds, it is recommended that the pipe be withdrawn approximately 1/16 in / 1.6 mm away from contact with the bottom of the socket before starting the weld.

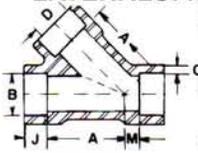


**Forged Steel Fittings  
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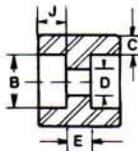
		NPS DN	1/2 15	3/4 20	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100
<b>COMMON DIMENSIONS</b>	B (Socket Dia.)	in	.855/ .875	1.065/ 1.085	1.330/ 1.350	1.675/ 1.695	1.915/ 1.935	2.406/ 2.426	2.906/ 2.931	3.535/ 3.560	4.545/ 4.570
		mm	21.72/ 22.23	27.05/ 27.56	33.78/ 34.29	42.55/ 43.05	48.64/ 49.15	61.11/ 61.62	73.81/ 74.48	89.79/ 90.42	115.44/ 116.08
	C (Min.)	in	0.20	0.24	0.27	0.27	0.31	0.37	0.41	0.48	0.58
		mm	5.08	6.10	6.86	6.86	7.87	9.40	10.41	12.19	14.73
D (Bore Dia.)	in	.434/ .494	.582/ .642	.785/ .845	1.130/ 1.190	1.308/ 1.368	1.657/ 1.717	2.065/ 2.185	2.564/ 2.684	3.378/ 3.498	
	mm	11.02/ 12.55	14.78/ 16.31	19.94/ 21.46	28.70/ 30.23	33.22/ 34.75	42.09/ 43.61	52.45/ 55.50	65.13/ 68.17	85.80/ 88.85	
J (Min. Socket Depth)	in	0.38	0.50	0.50	0.50	0.50	0.62	0.62	0.62	0.75	
	mm	9.65	12.70	12.70	12.70	12.70	15.75	15.75	15.75	19.05	

**LATERALS: fig. 2178**



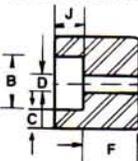
A	in	2.00	2.38	2.81	3.19	3.88	-	-	-	-
	mm	51	60	71	81	99	-	-	-	-
M	in	0.44	0.50	0.63	0.69 <sup>a</sup>	0.81	-	-	-	-
	mm	11	13	16	18	21	-	-	-	-
App. Wt./100 pcs.	lb	250	325	538	675	1281	-	-	-	-
	kg	114	148	245	307	583	-	-	-	-

**COUPLINGS: fig. 2174**



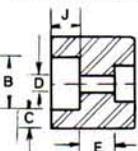
E	in	0.38	0.38	0.50	0.50	0.50	0.75	0.75	0.75	0.75
	mm	10	10	13	13	13	19	19	19	19
App. Wt./100 pcs.	lb	46	74	136	144	222	415	533	675	1181
	kg	21	34	62	66	101	189	243	307	537

**HALF COUPLINGS: fig. 2175**



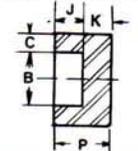
F	in	0.88	0.94	1.12	1.19	1.25	1.62	1.69	1.75	1.88
	mm	22	24	28	30	32	41	43	45	48
App. Wt./100 pcs.	lb	54	80	136	171	262	477	652	872	1429
	kg	26	37	62	78	119	217	297	394	650

**REDUCING COUPLINGS: fig. 2176**



E	in	-	0.38	0.50	0.50	0.50	0.75	0.75	0.75	0.75
	mm	-	10	13	13	13	19	19	19	19
Lowest Reduction	NPS	-	3/8	3/8	1/2	1/2	3/4	1 1/4	1 1/2	2
	DN	-	10	10	15	15	20	32	40	50
App. Wt./100 pcs.	lb	-	74	136	144	222	415	533	695	1181
	kg	-	34	62	66	101	189	243	316	537

**PIPE CAPS: FIG. 2177**



K (Min.)	in	0.31	0.31	0.44	0.44	0.50	0.62	0.75	0.88	1.12
	mm	8	8	11	11	13	16	19	22	28
App. Wt./100 pcs.	lb	41	57	117	142	217	366	494	766	1453
	kg	19	26	54	65	99	167	225	348	661

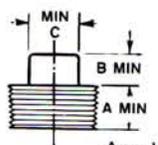
**Forged Steel Fittings**



Anvil High Pressure Plugs and Bushings satisfy the requirement of ASME B16.11 Class 2000, 3000 and 6000.

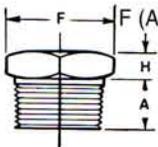
NPS DN	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
	6	8	10	15	20	25	32	40	50	65	80	100

**PLUGS SQUARE HEAD: fig. 2122**



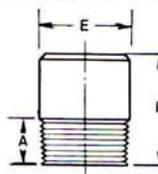
A	in	0.38	0.44	0.50	0.56	0.62	0.75	0.81	0.81	0.88	1.06	1.12	1.25
	mm	10	11	13	14	16	19	21	21	22	27	28	32
B	in	0.25	0.25	0.31	0.38	0.44	0.50	0.56	0.62	0.69	0.75	0.81	1.00
	mm	6	6	8	10	11	13	14	16	18	19	21	25
C	in	0.28	0.38	0.44	0.56	0.62	0.81	0.94	1.12	1.31	1.50	1.69	2.50
	mm	7	10	11	14	16	21	24	28	33	38	43	64
App. Wt./100 pcs.	lb	2	2	5	10	18	35	59	85	140	225	287	719
	kg	1	1	3	5	8	16	27	39	64	103	131	327

**HEX HEAD: fig. 2142**



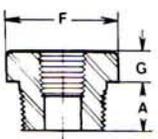
F (Across Flats)	in	0.44	0.62	0.69	0.88	1.06	1.38	1.75	2.00	2.50	3.00	3.50	4.62
	mm	11	16	18	22	27	35	45	51	64	76	89	117
A	in	0.38	0.44	0.50	0.56	0.62	0.75	0.81	0.81	0.88	1.06	1.12	1.25
	mm	10	11	13	14	16	19	21	21	22	27	28	32
H	in	0.25	0.25	0.31	0.31	0.38	0.38	0.56	0.62	0.69	0.75	0.81	1.00
	mm	6	6	8	8	10	10	14	16	18	19	21	25
App. Wt./100 pcs.	lb	3	6	10	17	32	48	95	136	225	388	588	1300
	kg	2	3	5	8	15	22	44	62	103	177	268	591

**ROUND HEAD: fig. 2121**



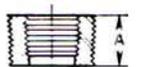
A	in	0.38	0.44	0.50	0.56	0.62	0.75	0.81	0.81	0.88	1.06	1.12	1.25
	mm	10	11	13	14	16	19	21	21	22	27	28	32
D	in	1.38	1.62	1.62	1.75	1.75	2.00	2.00	2.00	2.50	2.75	2.75	3.00
	mm	35	41	41	45	45	51	51	51	64	70	70	76
E	in	0.41	0.53	0.69	0.84	1.06	1.31	1.69	1.91	2.38	2.88	3.50	4.50
	mm	10	13	18	21	27	33	43	49	60	73	88	114
App. Wt./100 pcs.	lb	13	13	18	25	38	75	113	156	300	475	763	1288
	kg	6	6	8	12	18	34	52	71	137	216	347	586

**BUSHINGS HEX HEAD: fig. 2139**



A	in	—	0.44	0.50	0.56	0.62	0.75	0.81	0.81	0.88	1.06	1.12	1.25
	mm	—	11	13	14	16	19	21	21	22	27	28	32
F	in	—	0.62	0.69	0.88	1.06	1.38	1.75	2.00	2.50	3.00	3.50	4.62
	mm	—	16	18	22	27	35	45	51	64	76	89	117
G	in	—	0.12	0.16	0.19	0.22	0.25	0.28	0.31	0.34	0.38	0.41	0.50
	mm	—	3	4	5	6	6	7	8	9	10	10	13
Lowest Reduction	NPS	—	1/8	1/8	1/8	1/8	1/8	1/8	1/4	1/4	1/2	1/2	11/2
	DN	—	6	6	6	6	6	6	8	8	15	15	40
App. Wt./100 pcs.	lb	—	2	5	6	13	19	39	68	163	238	350	831
	kg	—	1	3	3	6	9	18	31	74	108	159	378

**FLUSH: fig. 2140**



A	in	—	0.44	0.50	0.56	0.62	0.75	0.81	0.81	0.88	1.06	1.12	1.25
	mm	—	11	12	14	16	19	21	21	22	27	28	32
Lowest Reduction	NPS	—	1/8	1/8	1/8	1/8	1/8	1/8	1/4	1/4	3/4	1	1 1/2
	DN	—	6	6	6	6	6	6	8	8	20	25	40
App. Wt./100 pcs.	lb	—	2	5	6	13	13	13	19	38	63	100	200
	kg	—	1	3	3	6	6	6	9	18	29	46	91

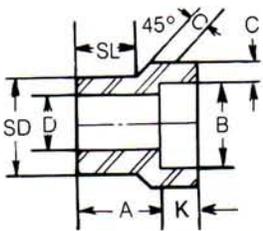
Note: Plugs and bushings are not identified by Pressure Class. They may be used for ratings up to Pressure Class 6000 (per ASME B16.11).

# SOCKET-WELDING REDUCER INSERTS

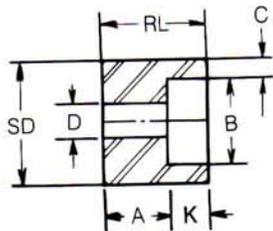
Grinnell



**Forged Steel Fittings**



TYPE 1 REDUCER INSERT  
fig. 2159



TYPE 2 REDUCER INSERT  
fig. 2179

Reducer inserts comply with MSS Standard SP-79. They enable standard socket welding fittings to be used for making any combination of pipe line reductions quickly and economically. Socket-welding reducer inserts serve the same purpose as threaded reducing bushings with threaded fittings.

Size	SOCKET		SHANK		CLASS 3000 - For use with Schedule 40 and 80 Pipe							CLASS 6000 - For use With Schedule 160 Pipe						
	Dia. B	Depth Min. K	Dia. SD	Type A	D	C Min.	SL	RL Min.	Type	A	D	C Min.	SL	RL Min.				
	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
3/8 x 1/4	10 x 8	0.56 14	0.38 10	0.68 17	1	.75 19	.36 9	.149 4	.56 14	- -	1	.81 21	.25 6	.181 5	.62 16	- -	- -	- -
1/2 x 3/8	15 x 10	0.70 18	0.38 10	0.84 21	1	.81 21	.49 12	.158 4	.62 16	- -	1	.88 22	.36 9	.198 5	.62 16	- -	- -	- -
	x 1/4	x 8	0.56 14	0.38 10	0.84 21	1	.81 21	.36 9	.149 4	.62 16	- -	1	.81 21	.25 6	.181 5	.62 16	- -	- -
3/4 x 1/2	20 x 15	0.86 22	0.38 10	1.05 27	1	.88 22	.62 16	.184 5	.69 18	- -	1	1.00 25	.46 12	.235 6	.75 19	- -	- -	- -
	x 3/8	x 10	0.70 18	0.38 10	1.05 27	2	.62 16	.49 12	.158 4	- -	1.06 27	1	.88 22	.36 9	.198 5	.75 19	- -	- -
	x 1/4	x 8	0.56 14	0.38 10	1.05 27	2	.69 18	.36 9	.149 4	- -	1.06 27	2	.88 22	.25 6	.181 5	- -	- -	1.26 32
1 x 3/4	25 x 20	1.07 27	0.50 13	1.31 33	1	.94 24	.82 21	.193 5	.75 19	- -	1	1.12 28	.61 15	.274 7	.81 21	- -	- -	- -
	x 1/2	x 15	0.86 22	0.38 10	1.31 33	2	.62 16	.62 16	.184 5	- -	1.12 28	1	1.12 28	.46 12	.235 6	.81 21	- -	- -
	x 3/8	x 10	0.70 18	0.38 10	1.31 33	2	.69 18	.49 12	.158 4	- -	1.12 28	2	.88 22	.36 9	.198 5	- -	- -	1.31 33
	x 1/4	x 8	0.56 14	0.38 10	1.31 33	2	.75 19	.36 9	.149 4	- -	1.12 28	2	.94 24	.25 6	.181 5	- -	- -	1.31 33
1 1/4 x 1	32 x 25	1.33 34	0.50 13	1.66 42	1	1.00 25	1.05 27	.224 6	.81 21	- -	1	1.19 30	.81 21	.312 8	.88 22	- -	- -	- -
	x 3/4	x 20	1.07 27	0.50 13	1.66 42	2	.69 18	.82 21	.193 5	- -	1.25 32	2	.81 21	.61 15	.274 7	- -	- -	1.37 35
	x 1/2	x 15	0.86 22	0.38 10	1.66 42	2	.75 19	.62 16	.184 5	- -	1.25 32	2	.88 22	.46 12	.235 6	- -	- -	1.37 35
	x 3/8	x 10	0.70 18	0.38 10	1.66 42	2	.81 21	.49 12	.158 4	- -	1.25 32	2	.94 24	.36 9	.198 5	- -	- -	1.37 35
	x 1/4	x 8	0.50 13	0.38 10	1.66 42	2	.88 22	.36 9	.149 4	- -	1.25 32	2	1.00 25	.25 6	.181 5	- -	- -	1.37 35
1 1/2 x 1 1/4	40 x 32	1.68 43	0.50 13	1.90 48	1	1.12 28	1.38 35	.239 6	.88 22	- -	1	1.38 35	1.16 29	.312 8	1.00 25	- -	- -	- -
	x 1	x 25	1.34 34	0.50 13	1.90 48	2	.69 18	1.05 27	.224 6	- -	1.31 33	1	1.12 28	.81 21	.312 8	1.00 25	- -	- -
	x 3/4	x 20	1.07 27	0.50 13	1.90 48	2	.75 19	.82 21	.193 5	- -	1.31 33	2	1.00 25	.61 15	.274 7	- -	- -	1.56 40
	x 1/2	x 15	0.86 22	0.38 10	1.90 48	2	.81 21	.62 16	.184 5	- -	1.31 33	2	1.06 27	.46 12	.235 6	- -	- -	1.56 40
	x 3/8	x 10	0.70 18	0.38 10	1.90 48	2	.88 22	.49 12	.158 4	- -	1.31 33	2	1.12 28	.36 9	.198 5	- -	- -	1.56 40
2 x 1 1/2	50 x 40	1.92 49	0.50 13	2.38 60	1	1.25 32	1.61 41	.250 6	1.00 25	- -	1	1.81 46	1.34 34	.351 9	1.13 28	- -	- -	- -
	x 1 1/4	x 32	1.68 43	0.50 13	2.38 60	2	.81 21	1.38 35	.239 6	- -	1.50 38	2	.94 24	1.16 29	.312 8	- -	- -	1.62 41
	x 1	x 25	1.34 34	0.50 13	2.38 60	2	.88 22	1.05 27	.224 6	- -	1.50 38	2	1.00 25	.82 21	.312 8	- -	- -	1.62 41
	x 3/4	x 20	1.07 27	0.50 13	2.38 60	2	.94 24	.82 21	.193 5	- -	1.50 38	2	1.06 27	.61 15	.274 7	- -	- -	1.62 41
	x 1/2	x 15	0.86 22	0.38 10	2.38 60	2	1.00 25	.62 16	.184 5	- -	1.50 38	2	1.12 28	.46 12	.235 6	- -	- -	1.62 41
2 1/2 x 2	65 x 50	2.41 61	0.62 16	2.88 73	1	1.81 46	2.07 53	.273 7	1.50 38	- -	1	1.68 43	1.69 43	.430 11	1.25 -	- -	- -	- -
	x 1 1/2	x 40	1.92 49	0.50 13	2.88 73	2	1.38 35	1.61 41	.250 6	- -	2.12 54	- -	- -	- -	- -	- -	- -	- -
	x 1 1/4	x 32	1.68 43	0.50 13	2.88 73	2	1.44 37	1.38 35	.239 6	- -	2.12 54	- -	- -	- -	- -	- -	- -	- -
	x 1	x 25	1.34 34	0.50 13	2.88 73	2	1.50 38	1.05 27	.226 6	- -	2.12 54	- -	- -	- -	- -	- -	- -	- -
	x 3/4	x 20	1.07 27	0.50 13	2.88 73	2	1.56 40	.82 21	.193 5	- -	2.12 54	- -	- -	- -	- -	- -	- -	- -
3 x 2 1/2	80 x 65	2.91 74	0.62 16	3.50 89	1	1.50 38	2.47 63	.345 9	1.25 32	- -	- -	- -	- -	- -	- -	- -	- -	- -
	x 2	x 50	2.41 61	0.62 16	3.50 89	2	1.00 25	2.07 53	.273 7	- -	1.87 47	- -	- -	- -	- -	- -	- -	- -
	x 1 1/2	x 40	1.92 49	0.50 13	3.50 89	2	1.12 28	1.61 41	.250 6	- -	1.87 47	- -	- -	- -	- -	- -	- -	- -
	x 1 1/4	x 32	1.68 43	0.50 13	3.50 89	2	1.19 30	1.38 35	.239 6	- -	1.87 47	- -	- -	- -	- -	- -	- -	- -
	x 1	x 25	1.34 34	0.50 13	3.50 89	2	1.25 32	1.05 27	.224 6	- -	1.87 47	- -	- -	- -	- -	- -	- -	- -

To minimize the possibility of cracking of the fillet welds, it is recommended that the shank portion of the reducer be withdrawn approximately 1/16 in. (1.6 mm) away from the contact with the bottom of the socket before starting the weld. Likewise, the pipe is to be kept away from contacting the bottom of the reducer socket before welding.



## RUN SIZE CONSOLIDATION

Anvilets are manufactured to cover as many run sizes as possible per outlet size. The range of run sizes is based on a maximum gap of 1/16" between the fitting and the pipe (on the largest size of run pipe shown on the fitting). The following chart shows the range of run pipe sizes per outlet size.

### STANDARD, EXTRA STRONG and CLASS 3000 FITTINGS

For outlet sizes 5 to 36 NPS/ 125 DN to 900 DN, order for specific run pipe size.

NPS	DN	Nominal Run Pipe Size			NPS	DN	Nominal Run Pipe Size			NPS	DN	Nominal Run Pipe Size			
		NPS	DN	NPS			DN	NPS	DN			NPS	DN	NPS	DN
1/2	6	3/8 x 3/8	10 x 6	2 1/2-1 1/4 x 1/2	1 1/2	40	1 1/2 x 1 1/2	40 x 40	6-5 x 1 1/2	150-125	x 40	1 1/2 x 1 1/2	40 x 40	6-5 x 1 1/2	150-125
		1/2 x 1/2	15 x 6	36-3 x 1/2			2 x 1 1/2	50 x 40	12-8 x 1 1/2			300-200			
		1-3/4 x 1/2	25-20 x 6	900-80 x 6			2 1/2 x 1 1/2	65 x 40	24-14 x 1 1/2			600-350			
3/4	8	3/8 x 1/4	10 x 8	2 1/2-1 1/4 x 1/4	2	50	2 x 2	50 x 50	5 x 2	125 x 50	150 x 50	2 1/2 x 2	65 x 50	6 x 2	250-200 x 50
		1/2 x 1/4	15 x 8	36-3 x 1/4			3 x 2	80 x 50	10-8 x 2			450-300 x 50			
		1-3/4 x 1/4	25-20 x 8	900-80 x 8			4-3 1/2 x 1 1/2	100-90 x 40	36-26 x 1 1/2			900-650 x 40			
1	10	1/2 x 3/8	15 x 10	2 1/2-1 1/4 x 3/8	2 1/2	65	2 1/2 x 2 1/2	65 x 65	6 x 2 1/2	150 x 65	200 x 65	3 x 2 1/2	80 x 65	8 x 2 1/2	300-250 x 65
		3/4 x 1/2	20 x 15	8-3 x 1/2			4 x 2 1/2	100 x 65	12-10 x 2 1/2			450-350 x 65			
		1 x 1/2	25 x 15	36-10 x 1/2			5 x 2 1/2	125 x 65	36-20 x 2 1/2			900-500 x 65			
1 1/2	15	1 1/2-1 1/4 x 1/2	40-32 x 15	65-50 x 15	3	80	3 x 3	80 x 80	8 x 3	200 x 80	250 x 80	3 1/2 x 3	90 x 80	10 x 3	350-300 x 80
		3/4 x 3/4	20 x 20	5-3 x 3/4			4 x 3	100 x 80	14-12 x 3			500-400 x 80			
		1 x 3/4	25 x 20	12-6 x 3/4			5 x 3	125 x 80	20-16 x 3			900-600 x 80			
2	20	1 1/2-1 1/4 x 3/4	40-32 x 20	36-14 x 3/4	3 1/2	90	3 1/2 x 3 1/2	90 x 90	10 x 3 1/2	250 x 90	350-300 x 90	4 x 3 1/2	100 x 90	14-12 x 3 1/2	350-300 x 90
		2 1/2-2 x 3/4	65-50 x 20	900-350 x 20			5 x 3 1/2	125 x 90	20-16 x 3 1/2			500-400 x 90			
		1 x 1	25 x 25	3 1/2-3 x 1			6 x 3 1/2	150 x 90	36-24 x 3 1/2			900-600 x 90			
3	25	1 1/4 x 1	32 x 25	5-4 x 1	4	100	4 x 4	100 x 100	10 x 4	250 x 100	350-300 x 100	2 x 1	40 x 25	10-6 x 1	250-150 x 25
		1 1/2 x 1	40 x 25	10-6 x 1			5 x 4	125 x 100	14-12 x 4			500-400 x 100			
		2 x 1	50 x 25	36-12 x 1			6 x 4	150 x 100	20-16 x 4			900-600 x 100			
4	30	2 1/2 x 1	65 x 25	900-300 x 25	4 1/2	125	8 x 4	200 x 100	36-24 x 4	900-600 x 100	900-600 x 100	2 1/2 x 1 1/4	32 x 32	5-4 x 1 1/4	125-100 x 32
		1 1/2 x 1 1/4	40 x 32	8-6 x 1 1/4			5 x 4	125 x 100	14-12 x 4			350-300 x 100			
		2 x 1 1/4	50 x 32	18-10 x 1 1/4			6 x 4	150 x 100	20-16 x 4			500-400 x 100			
6	40	2 1/2 x 1 1/4	65 x 32	36-20 x 1 1/4	6	150	8 x 4	200 x 100	36-24 x 4	900-600 x 100	900-600 x 100	3 1/2-3 x 1 1/4	90-80 x 32	36-20 x 1 1/4	900-500 x 32
		3 1/2-3 x 1 1/4	90-80 x 32	900-500 x 32			8 x 4	200 x 100	36-24 x 4			900-600 x 100			

### CLASS 6000 FITTINGS

For outlet sizes 2 1/2 to 12 NPS/ 65 to 300 DN, order for specific run pipe size.

NPS	DN	Nominal Run Pipe Size		Nominal Run Pipe Size	
		NPS	DN	NPS	DN
1/2	15	1-3/4 x 1/2	25-20 x 15		
		2-1 1/4 x 1/2	50-32 x 15		
		6-2 1/2 x 1/2	150-65 x 15		
3/4	20	36-8 x 1/2	900-200 x 15		
		1 x 3/4	25 x 20		
		2 1/2-1 1/4 x 3/4	65 x 32 x 20		
1	25	10-3 x 3/4	250-80 x 20		
		36-12 x 3/4	900-300 x 20		
		1 1/2-1 1/4 x 1	40-32 x 25		
1 1/4	32	2 1/2-2 x 1	65-50 x 25		
		10-3 x 1	250-80 x 25		
		36-12 x 1	900-300 x 25		
1 1/2	40	1 1/2 x 1 1/4	40 x 32	36-10 x 1 1/4	900-250 x 32
		2 1/2-2 x 1 1/4	65-50 x 32		
		3 1/2-3 x 1 1/4	90-80 x 32		
2	50	8-4 x 1 1/4	200-100 x 32		
		2 x 1 1/2	50 x 40	8-6 x 1 1/2	200-150 x 40
		2 1/2 x 1 1/2	65 x 40	18-10 x 1 1/2	450-250 x 40
3	60	3 1/2-3 x 1 1/2	90-80 x 40	36-20 x 1 1/2	900-500 x 40
		5-4 x 1 1/2	125-100 x 40		
		2 1/2 x 2	65 x 50	6 x 2	150 x 50
4	70	3 x 2	80 x 50	10-8 x 2	250-200 x 50
		4 x 2	100 x 50	20-12 x 2	500-300 x 50
		5 x 2	125 x 50	36-24 x 2	900-600 x 50

### SCH. 160 & XXS

For outlet sizes 2 1/2 to 12 NPS / 65 DN to 300 DN, order for specific run pipe size.

NPS	DN	Nominal Run Pipe Size			NPS	DN	Nominal Run Pipe Size			NPS	DN	Nominal Run Pipe Size			
		NPS	DN	NPS			DN	NPS	DN			NPS	DN		
1/2	15	1/2 x 1/2	15 x 15		1	25	1 x 1	25 x 25		1 1/2	40	1 1/2 x 1 1/2	40 x 40	20-10 x 1 1/2	500-250 x 40
		1 1/4-3/4 x 1/2	32-20 x 15				2 1/2-2 x 1 1/2	65-50 x 40	22 x 1 1/2			550 x 40			
		36-1 1/2 x 1/2	900-40 x 15				10-3 x 1	250-80 x 25	36-24 x 1 1/2			900-600 x 40			
3/4	20	1-3/4 x 3/4	25-20 x 20		1 1/4	32	1 1/2-1 1/4 x 1 1/4	40-32 x 32		2	50	3 1/2-3 x 1 1/2	90-80 x 40	8-6 x 2	200-150 x 50
		2-1 1/4 x 3/4	50-32 x 20				2 1/2 x 1 1/4	65-50 x 32	18-10 x 2			450-250 x 50			
		6-2 1/2 x 3/4	150-65 x 20				10-3 x 1 1/4	250-80 x 32	36-20 x 2			900-500 x 50			
1	25	36-8 x 3/4	900-200 x 20		2 1/2	65	36-12 x 1 1/4	900-300 x 32		3	70	5-4 x 2	125-100 x 50		

**Example: 12-8 x 1 1/2 NPS / 300-200 DN x 40 DN**

- 12 NPS / 300 DN** — is the largest run pipe size for which the fitting is applicable.
- 8 NPS / 200 DN** — is the smallest run pipe size for which the fitting is applicable.
- 1 1/2 NPS / 90 DN** — is the outlet (branch) size.

**Note:**

Clearly specify the schedules or weights of the branch and run pipe if they differ.

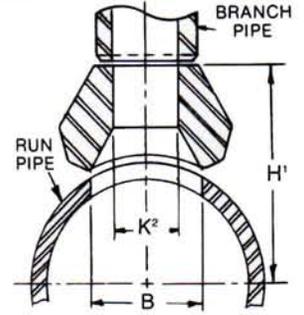
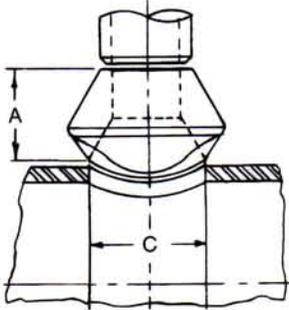
**Example:**

3 NPS / 80 DN Sch. 80 x 1 1/2 NPS / 40 DN Sch 40 BW Anvilet

# Full and Reducing Sizes Standard and Extra Strong



## Butt Weld Anvilets



**NOTES:**

<sup>1</sup> See Page Pf-32/33 for H dimensions.

<sup>2</sup> Diameter K of Anvilet bore is the same as the inside diameter of the branch pipe of matching weight or schedule.

Outlet Size				STANDARD								EXTRA STRONG							
NPS		Nominal Run Pipe Size DN		A		B		C		Approx Weight		A		B		C		Approx. Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	in	mm	in	mm	in	mm	lb	kg
1/2	15	1/2	15	3/4	19	5/8	16	1 1/8	24	.16	.07	3/4	19	5/8	16	1 1/8	24	.17	.08
1/2	15	3/4 - 36	20 - 900	3/4	19	1 1/8	24	1 1/8	24	.17	.08	3/4	19	1 1/8	24	1 1/8	24	.19	.09
3/4	20	3/4	20	7/8	22	1 3/8	21	1 3/8	30	.25	.11	7/8	22	1 3/8	21	1 3/8	30	.26	.12
3/4	20	1 - 36	25 - 900	7/8	22	1 3/8	30	1 3/8	30	.26	.12	7/8	22	1 3/8	30	1 3/8	30	.3	.14
1	25	1	25	1 1/8	27	1 1/2	26	1 7/8	37	.42	.23	1 1/8	27	1 1/2	26	1 7/8	37	.44	.20
1	25	1 1/4 - 36	32 - 900	1 1/8	27	1 7/8	37	1 7/8	37	.5	.23	1 1/8	27	1 7/8	37	1 7/8	37	.53	.24
1 1/4	32	1 1/4	32	1 1/4	32	1 3/4	35	1 3/4	44	.75	.34	1 1/4	32	1 3/4	35	1 3/4	44	.77	.35
1 1/4	32	1 1/2 - 36	40 - 900	1 1/4	32	1 3/4	44	1 3/4	44	.82	.37	1 1/4	32	1 3/4	44	1 3/4	44	.88	.40
1 1/2	40	1 1/2	40	1 3/8	33	1 3/8	41	2	51	.85	.39	1 3/8	33	1 3/8	41	2	51	.9	.41
1 1/2	40	2 - 36	50 - 900	1 3/8	33	2	51	2	51	1.2	.55	1 3/8	33	2	50	2	51	1.3	.59
2	50	2	50	1 1/2	38	2 1/8	52	2 3/8	65	1.6	.73	1 1/2	38	2 1/8	52	2 3/8	65	1.7	.77
2	50	2 1/2 - 36	65 - 900	1 1/2	38	2 3/8	65	2 3/8	65	1.9	.86	1 1/2	38	2 3/8	65	2 3/8	65	1.8	.82
2 1/2	65	2 1/2	65	1 3/4	41	2 7/8	62	3	76	2.4	1.09	1 3/4	41	2 7/8	62	3	76	2.6	1.18
2 1/2	65	3 - 36	80 - 900	1 3/4	41	3	76	3	76	2.7	1.23	1 3/4	41	3	76	3	76	2.7	1.23
3	80	3	80	1 3/4	44	3 1/8	78	3 1/8	92	3.8	1.73	1 3/4	44	3 1/8	78	3 1/8	92	4.3	1.95
3	80	3 1/2 - 36	90 - 900	1 3/4	44	3 1/8	92	3 1/8	92	4.2	1.91	1 3/4	44	3 1/8	92	3 1/8	92	4.2	1.91
3 1/2	90	3 1/2	90	2	50	3 3/8	90	4	102	5.0	2.27	2	51	3 3/8	90	4	102	5.1	2.32
3 1/2	90	4 - 36	100 - 900	1 7/8	48	4	102	4	102	5.5	2.50	1 7/8	48	4	102	4	102	5.6	2.55
4	100	4	100	2	50	4 3/4	102	4 3/4	90	7.6	3.45	2	51	4	102	4 3/4	90	7.5	3.41
4	100	5 - 36	125 - 900	2	50	4 3/4	90	4 3/4	90	7.1	3.23	2	51	4 3/4	120	4 3/4	90	7.0	3.18
5	125	5	125	2 1/8	53	5 1/8	129	5 1/8	146	8.5	3.86	2 1/8	52	5 1/8	129	5 1/8	146	7.5	3.41
5	125	6 - 36	150 - 900	2 1/4	57	—	—	5 1/8	141	10.3	4.68	2 1/4	57	—	—	5 1/8	141	10.4	4.73
6	150	6	150	2 3/8	60	6 1/8	154	6 1/8	169	14	6.36	2 3/8	60	6 1/8	154	6 1/8	169	15	6.82
6	150	8 - 36	200 - 900	2 3/8	60	—	—	6 1/8	169	12	5.45	2 3/8	60	—	—	6 1/8	169	23	10.45
8	200	8	200	2 3/4	70	7 1/8	201	8 1/8	220	28	12.73	2 3/8	68	7 3/8	194	8 1/8	220	32	14.55
8	200	10 - 36	250 - 900	2 3/4	70	—	—	8 1/8	220	23	10.45	2 3/8	68	—	—	8 1/8	220	37	16.82
10	250	10	250	3 1/8	78	10	254	10 1/8	275	39	17.73	3 1/8	78	9 3/8	248	10 1/8	275	46	20.91
10	250	12 - 36	300 - 900	3 1/8	78	—	—	10 1/8	275	36	17.37	3 1/8	78	—	—	10 1/8	275	46	20.91
12	300	12	300	3 3/8	85	12	305	12 1/8	326	65	29.55	3 3/8	85	11 3/4	298	13	330	61	27.73
12	300	14 - 36	350 - 900	3 3/8	85	—	—	12 1/8	326	59	26.82	4 1/8	104	—	—	12 1/2	318	61	27.73
14	350	14	350	3 1/2	89	13 1/4	336	14 1/8	358	70	31.82	4 1/8	104	13	330	14 1/8	364	75	34.09
14	350	16 - 36	400 - 900	3 1/2	89	—	—	14 1/8	358	66	30.00	4 1/8	104	—	—	13 1/2	351	70	31.82
16	400	16	400	3 7/8	92	15 1/4	386	16 1/8	408	92	41.82	4 1/8	113	15	381	16 1/2	419	115	52.27
16	400	18 - 36	450 - 900	3 7/8	92	—	—	16 1/8	408	75	34.09	4 1/8	106	—	—	15 3/8	403	102	46.36
18	450	18	450	4 1/8	104	17 1/4	438	18 3/8	473	125	56.82	4 1/8	119	17	432	18 3/8	473	130	59.09
18	450	20 - 36	500 - 900	4 1/8	96	—	—	18 3/8	459	97	44.09	4 3/8	112	—	—	17 1/2	455	130	59.09
20	500	20	500	4 3/8	116	19 1/4	489	20 1/8	510	175	79.55	5	127	19	483	20 3/8	528	187	85.00
20	500	24 - 36	600 - 900	4	102	—	—	20	508	118	53.64	4 1/8	119	—	—	20 1/8	510	158	71.82
24	600	24	600	5 3/8	135	23 1/4	590	25 3/8	638	280	127.27	5 1/2	140	23	584	25 3/8	638	316	143.64
24	600	26 - 36	650 - 900	4 3/4	116	—	—	24 3/8	615	220	100.00	5 1/2	140	—	—	24 3/8	615	290	131.82

Each outlet size of the reducing Anvilets listed above is supplied in several different ranges of run pipe size. Please refer to the run pipe sizes chart on page pf-30

**STANDARD WEIGHT:** Standard weight butt weld Anvilets are used with all sizes of Standard pipe or Sch. 40 pipe, up to and including 10 NPS / 250 DN. These Anvilets may be used in conjunction with Sch. 40 and 2000 lb. fittings. Sch. 40 butt weld Anvilets of outlet size 24 NPS / 600 DN and over are available upon request.

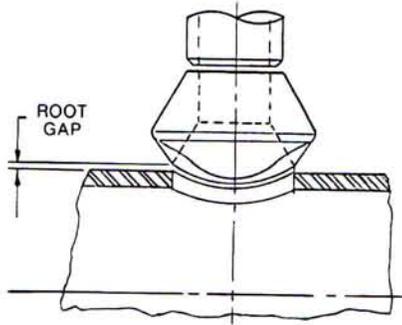
**EXTRA STRONG:** Extra Strong butt weld Anvilets are used with all sizes of XS pipe and are used with Sch. 80 pipe up to and including sizes 8 NPS / 200 DN. These Anvilets may be used in conjunction with Sch. 80 and 3000 lb. fittings. Sch. 80 butt weld Anvilets of outlet size 24 NPS / 600 DN and over are available upon request.

# Butt Weld Anvils



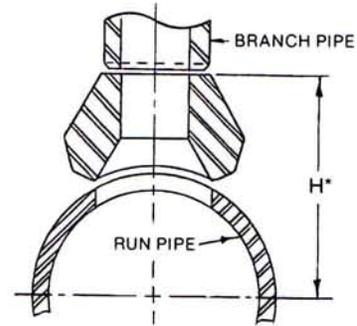
# Dimension 'H'\*

(Measurements shown in U.S. Dimensions)



\* Dimension 'H' is the distance in inches from the centre of the run pipe to the face of the Anvil. The weld or root gap is not included in the 'H' dimension below.

Dimension 'H' is also indicated on the diagrams shown on pages pf-31 and pf-34.



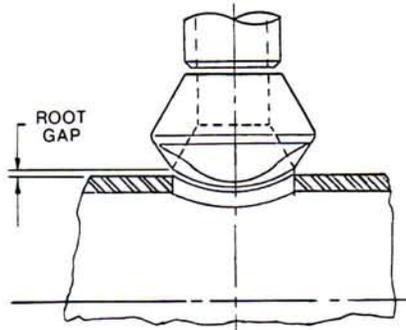
Nominal Run Pipe Size NPS	Pipe Weight or Schedule Number	in	OUTLET SIZES(NPS)																							
			1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24	
3/8	STD & XS	in	1	1																						
1/2	STD & XS	in	1 1/16	1 1/16	1 3/16	1 3/16																				
	S 160 & XXS	in				1 1/2																				
3/4	STD & XS	in	1 3/16	1 3/16	1 1/4	1 1/4	1 7/16																			
	S 160 & XXS	in				1 5/8	1 3/4																			
1	STD & XS	in	1 5/16	1 5/16	1 3/8	1 3/8	1 1/2	1 11/16																		
	S 160 & XXS	in				1 3/4	1 7/8	2 1/8																		
1 1/4	STD & XS	in	1 7/16	1 7/16	1 9/16	1 9/16	1 11/16	1 7/8	2 1/16																	
	S 160 & XXS	in				1 5/8	2 1/16	2 5/16	2 9/16																	
1 1/2	STD & XS	in	1 9/16	1 9/16	1 11/16	1 11/16	1 13/16	2	2 3/16	2 1/4																
	S 160 & XXS	in				2 1/16	2 3/16	2 7/16	2 11/16	2 5/8																
2	STD & XS	in	1 13/16	1 13/16	1 5/8	1 5/8	2 1/8	2 1/4	2 7/16	2 1/2	1 11/16															
	S 160 & XXS	in				2 5/16	2 7/16	2 11/16	2 5/8	3 3/16	3 3/8															
2 1/2	STD & XS	in	2 1/16	2 1/16	2 3/16	2 3/16	2 5/16	2 1/2	2 11/16	2 3/4	2 5/8	3 1/16														
	S 160 & XXS	in				2 9/16	2 11/16	2 15/16	3 3/16	3 7/16	3 5/8	3 7/8														
3	STD & XS	in	2 3/8	2 3/8	2 1/2	2 1/2	2 5/8	2 13/16	3	3 1/16	3 1/4	3 3/8	3 1/2													
	S 160 & XXS	in				3	3 1/4	3 1/2	3 3/4	3 3/4	3 5/8	4 1/8	4 3/8													
3 1/2	STD & XS	in	2 5/8	2 5/8	2 3/4	2 3/4	2 7/8	3 1/16	3 1/4	3 5/16	3 1/2	3 5/8	3 3/4	3 7/8												
	S 160 & XXS	in			3	3	3 1/8	3 5/16	3 1/2	3 9/16	3 3/4	3 7/8	4	4 1/8	4 1/4											
4	STD & XS	in	2 7/8	2 7/8	3	3	3 1/8	3 5/16	3 1/2	3 9/16	3 3/4	3 7/8	4	4 1/8	4 1/4	5 9/16										
	S 160 & XXS	in				3 3/8	3 1/2	3 3/4	4	4 1/4	4 7/16	4 11/16	5 1/8	—	5 9/16											
5	STD & XS	in	3 7/16	3 7/16	3 9/16	3 9/16	3 11/16	3 7/8	4 1/16	4 1/8	4 5/16	4 7/16	4 9/16	4 11/16	4 13/16	5 1/16										
	S 160 & XXS	in				3 15/16	4 1/16	4 5/16	4 9/16	4 13/16	5	5 1/4	5 11/16	—	6 1/8	6 1/2										
6	STD	in	3 15/16	3 15/16	4 1/16	4 1/16	4 3/16	4 9/16	4 5/8	4 13/16	4 15/16	5 1/16	5 3/16	5 5/16	5 9/16	5 11/16										
	XS	in	3 15/16	3 15/16	4 1/16	4 1/16	4 3/16	4 9/16	4 5/8	4 13/16	4 15/16	5 1/16	5 3/16	5 5/16	5 9/16	5 11/16	6 3/8									
8	STD	in	4 15/16	4 15/16	5 1/16	5 1/16	5 3/16	5 3/8	5 9/16	5 5/8	5 13/16	5 15/16	6 1/16	6 3/16	6 5/16	6 9/16	6 11/16	7 1/16								
	XS	in	4 15/16	4 15/16	5 1/16	5 1/16	5 3/16	5 3/8	5 9/16	5 5/8	5 13/16	5 15/16	6 1/16	6 3/16	6 5/16	6 9/16	6 11/16	7 3/8	8 3/16							
10	STD	in	6	6	6 1/8	6 1/8	6 1/4	6 7/16	6 5/8	6 11/16	6 7/8	7	7 1/8	7 1/4	7 3/8	7 5/8	7 7/8	8 1/8	8 7/16							
	XS	in	6	6	6 1/8	6 1/8	6 1/4	6 7/16	6 5/8	6 11/16	6 7/8	7	7 1/8	7 1/4	7 3/8	7 5/8	7 7/8	8 1/8	8 7/16	9 1/4	9 1/8					
12	STD	in	7	7	7 1/8	7 1/8	7 1/4	7 7/16	7 5/8	7 11/16	7 7/8	8	8 1/8	8 1/4	8 3/8	8 5/8	8 7/8	9 1/8	9 7/16	9 3/4						
	XS	in	7	7	7 1/8	7 1/8	7 1/4	7 7/16	7 5/8	7 11/16	7 7/8	8	8 1/8	8 1/4	8 3/8	8 5/8	8 7/8	9 1/8	9 7/16	10 1/4	10 1/16	10 5/16	10 1/2			
14	STD	in	7 5/8	7 5/8	7 3/4	7 3/4	7 7/8	8 1/16	8 1/4	8 5/16	8 1/2	8 5/8	8 3/4	8 7/8	9	9 1/4	9 3/8	9 3/4	10 1/16	10 3/8	10 1/2	11 1/8				
	XS	in	7 5/8	7 5/8	7 3/4	7 3/4	7 7/8	8 1/16	8 1/4	8 5/16	8 1/2	8 5/8	8 3/4	8 7/8	9	9 1/4	10 1/16	10 7/8	10 11/16	11 1/16	11 1/2	11 11/16	11 13/16			
16	STD	in	8 5/8	8 5/8	8 3/4	8 3/4	8 7/8	9 1/16	9 1/4	9 5/16	9 1/2	9 5/8	9 3/4	9 7/8	10	10 1/4	10 3/8	10 3/4	11 1/16	11 3/8	11 1/2	11 5/8	12 1/16			
	XS	in	8 5/8	8 5/8	8 3/4	8 3/4	8 7/8	9 1/16	9 1/4	9 5/16	9 1/2	9 5/8	9 3/4	9 7/8	10	10 1/4	11 1/16	11 7/8	11 11/16	12 1/16	12 1/2	12 5/16	13 3/16	13 11/16		
18	STD	in	9 5/8	9 5/8	9 3/4	9 3/4	9 7/8	10 1/16	10 1/4	10 5/16	10 1/2	10 5/8	10 3/4	10 7/8	11	11 1/4	11 3/8	11 3/4	12 1/16	12 3/8	12 5/16	13 3/16	13 11/16	14 5/8		
	XS	in	9 5/8	9 5/8	9 3/4	9 3/4	9 7/8	10 1/16	10 1/4	10 5/16	10 1/2	10 5/8	10 3/4	10 7/8	11	11 1/4	12 1/16	12 7/8	12 11/16	13 1/16	13 3/2	13 11/16	13 13/16	14 5/8	15	
20	STD	in	10 5/8	10 5/8	10 3/4	10 3/4	10 7/8	11 1/16	11 1/4	11 5/16	11 1/2	11 5/8	11 3/4	11 7/8	12	12 1/4	12 3/8	12 3/4	13 1/16	13 3/8	13 5/16	14 3/16	14 3/8	15	17 3/8	
	XS	in	10 5/8	10 5/8	10 3/4	10 3/4	10 7/8	11 1/16	11 1/4	11 5/16	11 1/2	11 5/8	11 3/4	11 7/8	12	12 1/4	13 1/16	13 3/8	13 5/16	14 1/16	14 3/8	15 1/2	15 11/16	15 13/16	16	17 3/8
24	STD	in	12 5/8	12 5/8	12 3/4	12 3/4	12 7/8	13 1/16	13 1/4	13 5/16	13 1/2	13 5/8	13 3/4	13 7/8	14	14 1/4	14 3/8	14 3/4	15 1/16	15 3/8	15 5/16	16 3/16	16 3/8	16 11/16	17 1/2	
	XS	in	12 5/8	12 5/8	12 3/4	12 3/4	12 7/8	13 1/16	13 1/4	13 5/16	13 1/2	13 5/8	13 3/4	13 7/8	14	14 1/4	15 1/16	15 7/8	15 11/16	16 1/16	16 3/8	16 5/8	16 11/16	17 1/2		

# Dimension 'H'\*

(Measurements shown in SI Dimensions)

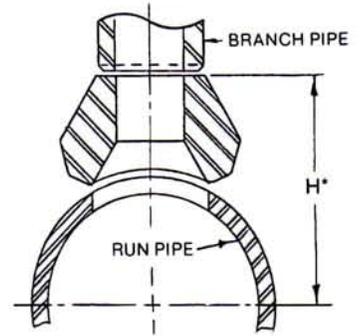


## Buttweld Anvilets



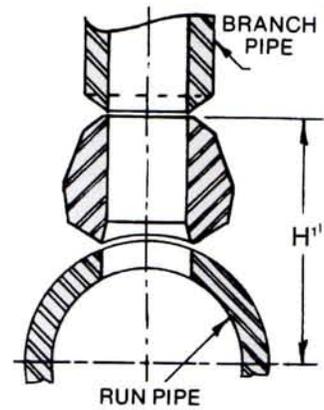
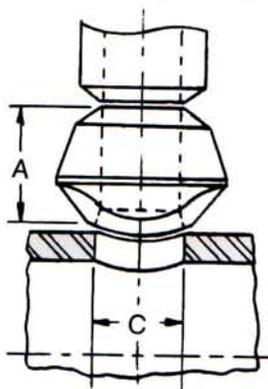
\* Dimension 'H' is the distance in millimeters from the centre of the run pipe to the face of the Anvillet. The weld or root gap is not included in the 'H' dimension below.

Dimension 'H' is also indicated on the diagrams shown on pages pf-31 and pf-34.



Nominal Run Pipe Size DN	Pipe Weight or Schedule Number	mm	OUTLET SIZES(DN)																							
			6	8	10	15	20	25	32	40	50	65	80	89	100	125	150	200	250	300	350	400	450	500	600	
10	STD & XS	mm	25	25																						
	STD & XS	mm	27	29	30	30																				
15	S 160 & XXS	mm																								
	STD & XS	mm	30	30	32	32	37																			
20	S 160 & XXS	mm																								
	STD & XS	mm																								
25	STD & XS	mm	33	33	35	35	38	43																		
	S 160 & XXS	mm																								
32	STD & XS	mm	37	37	40	40	43	48	52																	
	S 160 & XXS	mm																								
40	STD & XS	mm	40	40	43	43	46	51	56	57																
	S 160 & XXS	mm																								
50	STD & XS	mm	46	46	49	49	52	57	62	64	43															
	S 160 & XXS	mm																								
65	STD & XS	mm	54	54	56	56	59	64	68	70	75	78														
	S 160 & XXS	mm																								
80	STD & XS	mm	60	60	64	64	67	71	76	78	83	86	89													
	S 160 & XXS	mm																								
89	STD & XS	mm	67	67	70	70	73	78	83	84	89	92	95	98												
	STD & XS	mm	73	73	76	76	79	84	89	90	95	98	102	105	108											
100	S 160 & XXS	mm																								
	STD & XS	mm	87	87	90	90	94	98	103	105	110	113	116	119	122	129										
125	S 160 & XXS	mm																								
	STD & XS	mm																								
150	STD	mm	100	100	103	103	106	111	116	117	122	125	129	132	135	141	144									
	XS	mm	100	100	103	103	106	111	116	117	122	125	129	132	135	141	162									
200	S 160 & XXS	mm																								
	STD	mm	125	125	129	129	132	137	141	143	148	151	154	157	160	167	170	179								
250	XS	mm	125	125	129	129	132	137	141	143	148	151	154	157	160	167	187	208								
	STD	mm	152	152	156	156	159	164	168	170	175	178	181	184	187	194	197	206	214							
300	XS	mm	152	152	156	156	159	164	168	170	175	178	181	184	187	194	214	235	232							
	STD	mm	178	178	181	181	184	189	194	195	200	203	206	210	213	219	222	232	240	248						
350	XS	mm	178	178	181	181	184	189	194	195	200	203	206	210	213	219	240	260	256	262						
	STD	mm	194	194	197	197	200	205	210	211	216	219	222	225	229	235	238	248	256	264	267					
400	XS	mm	194	194	197	197	200	205	210	211	216	219	222	225	229	235	256	276	271	281	283					
	STD	mm	219	219	222	222	225	230	235	237	241	244	248	251	254	260	264	273	281	289	292	297				
450	XS	mm	219	219	222	222	225	230	235	237	241	244	248	251	254	260	281	302	297	306	303	316				
	STD	mm	244	244	248	248	251	256	260	262	267	270	273	276	279	286	289	298	306	314	318	322	332	332	332	
500	XS	mm	244	244	248	248	251	256	260	262	267	270	273	276	279	286	306	327	322	332	329	335	348	348	348	
	STD	mm	270	270	273	273	276	281	286	287	292	295	298	302	305	311	391	324	332	340	343	348	351	371	371	
600	XS	mm	270	270	273	273	276	281	286	287	292	295	298	302	305	311	332	352	348	357	354	360	365	381	381	
	STD	mm	321	321	324	324	327	332	337	338	343	346	349	352	356	362	365	375	383	391	394	398	402	406	441	
600	XS	mm	321	321	324	324	327	332	337	338	343	346	349	352	356	362	383	403	398	408	405	411	416	424	445	

**Buttweld Anvilets**



NOTE:  
¹ See pf-32 or pf 33 for H dimensions.

**SCHEDULE 160 and Double EXTRA STRONG**

Outlet Size		A		C		Approx. Weight		Outlet Size		A		C		Approx. Weight	
NPS	DN	in	mm	in	mm	lb	kg	NPS	DN	in	mm	in	mm	lb	kg
½	15	1½	28	9/16	14	.25	.12	3	80	2¾	73	2¾	73	6.32	2.87
¾	20	1¼	32	¾	19	.71	.33	4	100	3⅝	84	3⅝	97	10.50	4.77
1	25	1½	32	1	25	.83	.38	5	125	3⅞	92	4⅜	122	14.25	6.48
1¼	32	1¾	44	1⅝	33	1.25	.57	6	150	4½	103	5¼	145	29.50	13.41
1½	40	2	50	1½	38	1.75	.80								
2	50	2⅜	56	1⅞	43	2.13	.97								
2½	65	2⅞	62	2⅞	54	3.38	1.54								

The reducing Anvilets listed above for outlet sizes ½ -2 NPS / 15-50 DN are supplied in several different ranges of run pipe size for each outlet size. Please refer to run pipe size chart on page pf-30.

Schedule 160 and Double Extra Strong buttweld Anvilets may be used in conjunction with Class 6000 fittings.

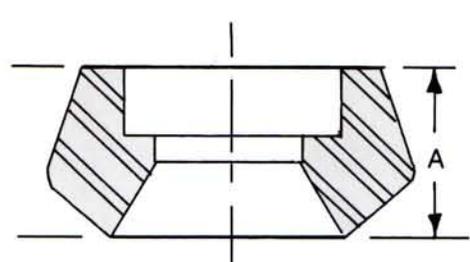
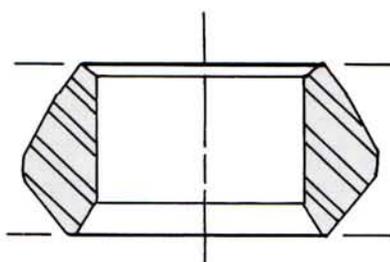
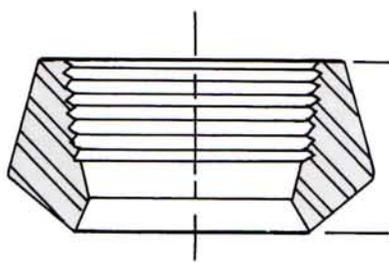
**FLAT ANVILETS**

Class 3000 Threaded, Buttweld & Socket Weld

THREADED

BUTTWELD

SOCKET-WELD



Size		A		Approx. Weight		Size		A		Approx. Weight	
NPS	DN	in	mm	lb	kg	NPS	DN	in	mm	lb	kg
¼	8	11/16	17	.11	.05	2	50	1½	44	1.8	1.23
⅜	10	13/16	21	.2	.10	2½	65	1¾		2.7	
½	15	1	25	.3	.14				25		1.50
¾	20	1⅛	27	.4	.18						
1	25	1½	33	.7	.32	3	80	2		3.3	
1¼	32	1⅞	34	.9	.41				38		.82
1½	40	2	35	1.2	.55						

Flat Anvilets are designed to facilitate welding to a flat surface for the installation of branch pipes or fittings.

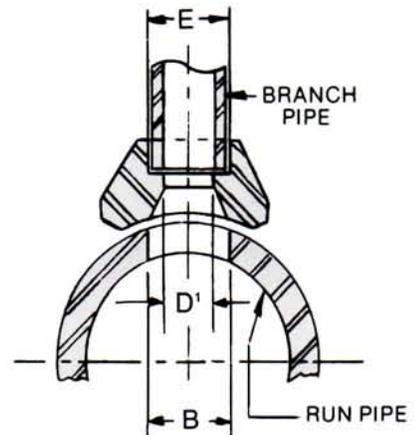
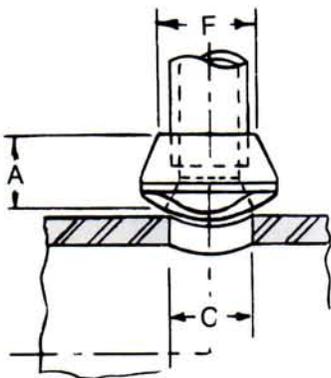
Class 6000 flat Anvilets are available on application.

# Full and Reducing Sizes Class 3000 and 6000

Grinnell



## Socket-Weld Anvilets



### CLASS 3000 REDUCING and FULL SIZES

Outlet Size		Nominal Run Pipe Size		A		B		C		D <sup>1</sup>		E		F		Approx. Weight	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	±.03 in	±.762 mm	+01 -00 in	±.254 -00 mm	in	mm	lb	kg
1/2	15	1/2	15	1	25	5/8	16	15/16	24	.622	16	.855	22	1/4	32	.2	.09
1/2	15	3/4 - 36	20 - 900	1	25	15/16	24	15/16	24	.622	16	.855	22	1/4	32	.35	.16
3/4	20	3/4	20	1 1/16	27	13/16	21	1 3/16	30	.824	21	1.065	27	1 7/16	37	.27	.12
3/4	20	1 - 36	25 - 900	1 1/16	27	1 3/16	30	1 3/16	30	.824	21	1.065	27	1 7/16	37	.4	.18
1	25	1	25	1 5/16	33	1 1/16	27	1 7/16	37	1.049	27	1.330	34	1 13/16	46	.6	.27
1	25	1 1/4 - 36	32 - 900	1 5/16	33	1 7/16	37	1 7/16	37	1.049	27	1.330	34	1 13/16	46	.8	.37
1 1/4	32	1 1/4	32	1 5/16	33	1 3/8	35	1 3/4	44	1.380	35	1.675	43	2 3/16	56	.8	.37
1 1/4	32	1 1/2 - 36	40 - 900	1 5/16	33	1 3/4	44	1 3/4	44	1.380	35	1.675	43	2 3/16	56	1.1	.50
1 1/2	40	1 1/2	40	1 3/8	35	1 3/8	41	2	50	1.610	41	1.915	49	2 7/16	62	1.2	.55
1 1/2	40	2 - 36	50 - 900	1 3/8	35	2	50	2	50	1.610	41	1.915	49	2 7/16	62	1.5	.68
2	50	2	50	1 1/2	38	2 1/16	52	2 3/16	64	2.067	53	2.406	61	2 5/16	74	1.8	.82
2	50	2 1/2 - 36	65 - 900	1 1/2	38	2 3/16	64	2 3/16	64	2.067	53	2.406	61	2 5/16	74	2.0	.91
2 1/2	65	2 1/2	65	1 5/8	40	2 1/2	64	3	75	2.469	63	2.906	74	3 3/16	87	2.5	1.14
2 1/2	65	3 - 36	80 - 900	1 5/8	40	3	75	3	75	2.469	63	2.906	74	3 3/16	87	3.0	1.36
3	80	3	80	1 3/4	44	3 1/16	78	3 11/16	92	3.068	78	3.535	90	4 1/8	104	3.8	1.73
3	80	3 1/2 - 36	90 - 900	1 3/4	44	3 11/16	92	3 11/16	92	3.068	78	3.535	90	4 1/8	104	4.2	1.91
3 1/2	90	3 1/2	90	2 1/8	54	3 3/8	64	4	100	3.548	90	4.040	103	4 13/16	122	4.3	1.95
3 1/2	90	4 - 36	100 - 900	2 1/8	54	4	100	4	100	3.548	90	4.040	103	4 13/16	122	4.3	1.95
4	100	4	100	1 7/8	48	4 1/16	102	4 3/4	120	4.026	102	4.545	115	5 1/8	128	7.2	3.27
4	100	5 - 36	125 - 900	1 7/8	48	4 3/4	120	4 3/4	120	4.026	102	4.545	115	5 1/8	128	8.0	3.64

### CLASS 6000 REDUCING SIZES (Full sizes not available)

Outlet Size		Nominal Run Pipe Size		A		C		D		E		F		Approx. Weight	
NPS	DN	NPS	DN	in	mm	in	mm	±.03 in	±.762 mm	+01 -00 in	+01 -00 mm	in	mm	lb	kg
1/2	15	3/4 - 36	20 - 900	1 1/4	32	3/4	19	.464	12	.855	22	1 5/16	40	.58	.26
3/4	20	1 - 36	25 - 900	1 7/16	37	1	25	.612	16	1.065	27	1 25/32	45	.9	.41
1	25	1 1/4 - 36	32 - 900	1 5/16	40	1 5/16	33	.815	21	1.330	34	2 1/4	57	1.8	.82
1 1/4	32	1 1/2 - 36	40 - 900	1 3/8	41	1 1/2	38	1.160	29	1.675	43	2 3/16	64	2.6	1.18
1 1/2	40	2 - 36	50 - 900	1 11/16	43	1 5/16	49	1.338	34	1.915	49	3	75	3.0	1.36
2	50	2 1/2 - 36	65 - 900	2 1/16	52	2 3/4	69	1.687	43	2.406	61	3 5/8	90	5.8	2.64

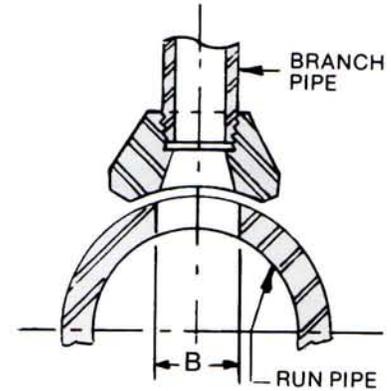
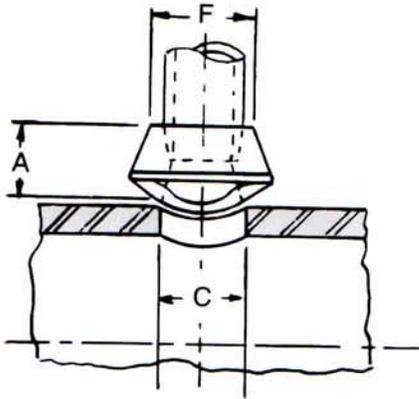
Each outlet size of the reducing Anvilets listed above is supplied in several different D's of run pipe size. Please refer to the run pipe sizes chart on pf - 30.

**NOTE:** <sup>1</sup> Tolerance on sizes 2 1/2 NPS / 65 DN and larger is ±.06. **CLASS 3000** socket weld Anvilets may be used with Std. and XS pipe. **CLASS 6000** socket weld Anvilets may be used with Sch. 160 and XXS pipe.

# Threaded Anvilets



# Full and Reducing Sizes Class 3000 and 6000



## CLASS 3000 REDUCING and FULL SIZES

Outlet Size	Nominal Run Pipe Size		A		B		C		F		Approx. Weight		
	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb
1/2	15	1/2	15	1	25	5/8	16	15/16	24	1 1/4	32	0.2	0.09
1/2	15	3/4 - 36	20 - 900	1	25	15/16	24	15/16	24	1 1/4	32	0.3	0.14
3/4	20	3/4	20	1 1/16	27	13/16	21	1 3/16	30	1 7/16	37	0.35	0.16
3/4	20	1 - 36	25 - 900	1 1/16	27	1 3/16	30	1 3/16	30	1 7/16	37	0.42	0.19
1	25	1	25	1 5/16	33	1 1/16	27	1 7/16	37	1 13/16	46	0.6	0.27
1	25	1 1/4 - 36	32 - 900	1 5/16	33	1 7/16	37	1 7/16	37	1 13/16	46	0.8	0.36
1 1/4	32	1 1/4	32	1 5/16	33	1 3/8	35	1 3/4	44	2 3/16	56	0.85	0.39
1 1/4	32	1 1/2 - 36	40 - 900	1 5/16	33	1 3/4	44	1 3/4	44	2 3/16	56	1.2	0.55
1 1/2	40	1 1/2	40	1 3/8	35	1 5/8	41	2	50	2 7/16	62	1.3	0.59
1 1/2	40	2 - 36	50 - 900	1 3/8	35	2	50	2	50	2 7/16	62	1.6	0.73
2	50	2	50	1 1/2	38	2 1/16	59	2 9/16	64	2 15/16	74	1.7	0.77
2	50	2 1/2 - 36	65 - 900	1 1/2	38	2 9/16	64	2 9/16	64	2 15/16	74	2.2	1.00
2 1/2	65	2 1/2	65	1 13/16	46	2 1/2	63	3	75	3 7/16	87	2.5	1.14
2 1/2	65	3 - 36	80 - 900	1 13/16	46	3	75	3	75	3 7/16	87	3.0	1.36
3	80	3	80	2	50	3 1/16	78	3 11/16	92	4 1/8	103	4.3	1.95
3	80	3 1/2 - 36	90 - 900	2	50	3 11/16	92	3 11/16	92	4 1/8	103	4.4	2.00
3 1/2	90	3 1/2	90	2 1/8	54	3 9/16	64	4	100	4 13/16	122	4.5	2.05
3 1/2	90	4 - 36	100 - 900	2 1/8	54	4	100	4	100	4 13/16	122	5.6	2.55
4	100	4	100	2 1/4	57	4 1/16	103	4 3/4	120	5 1/8	128	7.3	3.32
4	100	5 - 30	125 - 750	2 1/4	57	4 3/4	120	4 3/4	120	5 1/8	128	8.3	3.77

## CLASS 6000 REDUCING SIZES (Full sizes not available)

Outlet Size	Nominal Run Pipe Size		A		B		C		F		Approx. Weight		
	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb
1/2	15	3/4 - 36	20 - 900	1 1/4	32	3/4	19	3/4	19	1 9/16	40	0.6	0.27
3/4	20	1 - 36	25 - 900	1 7/16	37	1	25	1	25	1 13/16	46	0.9	0.41
1	25	1 1/4 - 36	32 - 900	1 9/16	40	1 5/16	33	1 5/16	33	2 1/4	57	2.0	0.91
1 1/4	32	1 1/2 - 36	40 - 900	1 9/16	40	1 1/2	38	1 1/2	38	2 9/16	64	3.0	1.36
1 1/2	40	2 - 36	50 - 900	1 11/16	43	1 15/16	49	1 15/16	49	3	75	3.2	1.45
2	50	2 1/2 - 36	65 - 900	2 1/16	52	2 3/4	69	2 3/4	69	3 5/8	90	6.0	2.73

Each outlet size of the reducing Anvilets listed above is supplied in several different ranges of run pipe size. Please refer - the run pipe sizes chart on page pf - 30.

CLASS 6000 threaded Anvilets are manufactured only in the sizes shown and may be used with Sch. 160 and XXS pipe.

CLASS 3000 threaded Anvilets may be used with Standard and XS pipe.

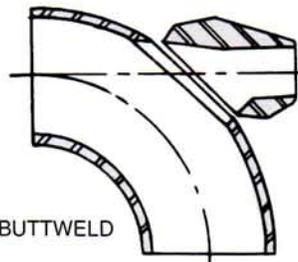
# Class 3000 and 6000

**Grinnell**

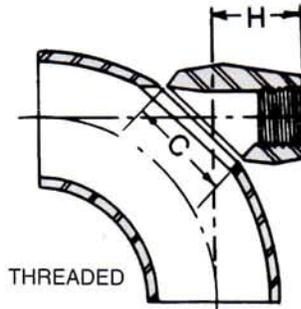
## Buttweld, Threaded and Socket-Weld



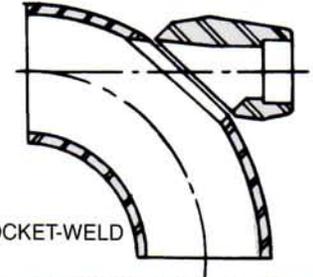
**Elbow Anvilets**



BUTTWELD



THREADED



SOCKET-WELD

### CLASS 3000 THREADED and SOCKET-WELD/STANDARD and XS BUTTWELD

NPS	Outlet Size DN	Nominal Elbow Size		C		H		Approx. Weight	
		NPS	DN	in	mm	in	mm	lb	kg
1/4	8	36-1 1/4	900-32	1 1/2	38	1 19/32	40	.5	.23
3/8	10	36-1 1/4	900-32	1 1/2	38	1 19/32	40	.5	.23
1/2	15	36-1 1/4	900-32	1 1/2	38	1 19/32	40	.65	.30
3/4	20	36-1 1/4	900-32	1 23/32	45	1 7/8	48	.75	.34
1	25	36-2	900-50	2 1/8	54	2 3/16	55	1.15	.52
1 1/4	32	36-2	900-50	1 21/32	42	2 3/8	60	1.90	.86
1 1/2	40	36-2	900-50	3	75	2 5/8	67	2.65	1.20
2	50	36-3	900-80	4 1/8	103	3 3/16	80	5.25	2.39

### STANDARD and XS BUTTWELD, ONLY

NPS	DN		in	mm	in	mm	lb	kg
2 1/2	65	As specified	4 3/16	105	3 1/4	82	5.5	2.50
3	80	As specified	4 15/16	125	3 13/16	96	6.25	2.84
4	100	As specified	6 7/16	162	4 1/2	114	11.75	5.34
6	150	As specified	9	225	6 3/16	80	28.0	12.73

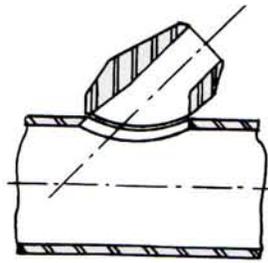
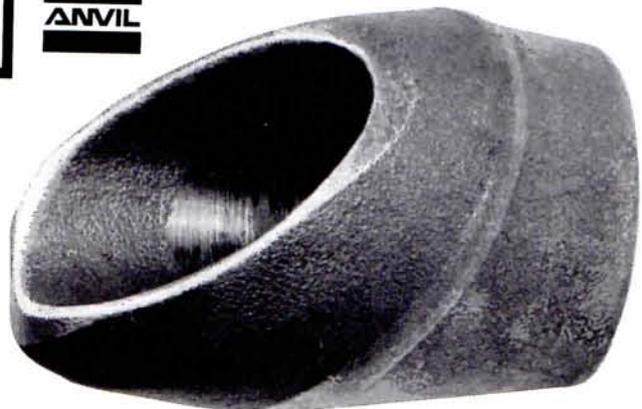
### CLASS 6000 THREADED and SOCKET-WELD/SCH. 160 and XXS BUTTWELD

NPS	DN	NPS	DN	in	mm	in	mm	lb	kg
1/4	8	36-1 1/4	900-32	1 3/8	35	1 19/32	40	.75	.34
3/8	10	36-1 1/4	900-32	1 3/8	35	1 19/32	40	.75	.34
1/2	15	36-1 1/4	900-32	1 23/32	45	1 7/8	48	.85	.39
3/4	20	36-2	900-50	2 1/8	54	2 3/16	55	1.25	.57
1	25	36-2	900-50	2 21/32	42	2 3/8	60	2.2	1.00
1 1/4	32	36-2	900-50	3	75	2 5/8	67	3.9	1.77
1 1/2	40	36-3	900-80	4 1/8	103	3 3/16	80	6.2	2.82

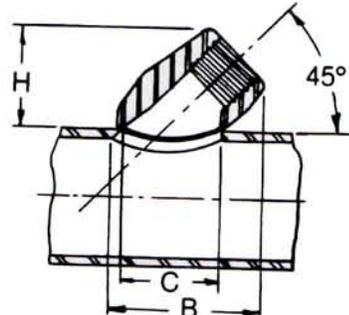
Elbow Anvilets are welded to 90° long radius elbows as branch connections for pipes and fittings. They are also used as pipe hanger or support bosses.

Buttweld, Threaded and Socket-Weld

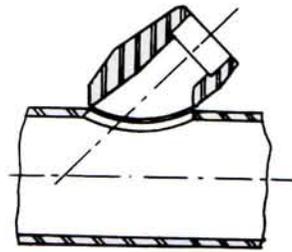
**Lateral Anvilets**



BUTTWELD



THREADED



SOCKET WELD

Lateral Anvilets provide a strong, readily attached 45° lateral outlet connection.

**CLASS 3000 THREADED and SOCKET-WELD/STANDARD and XS BUTTWELD**

Outlet Size		Nominal Run Pipe Size		H		B		C		Approx. Weight	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	lb	kg
1/4	8	2 1/2-1 1/4/12-3	65-32/300-80	1 1/2	38	2 1/4	57	1 7/16	37	.50	.23
3/8	10	2 1/2-1 1/4/12-3	65-32/300-80	1 1/2	38	2 1/4	57	1 7/16	37	.50	.23
1/2	15	2 1/2-1 1/4/12-3	65-32/300-80	1 1/2	38	2 1/4	57	1 7/16	37	.65	.30
3/4	20	1 1/2-1 1/4/5-2/12-6	40-32/125-50/300-150	1 3/16	46	2 3/4	70	1 23/32	44	.75	.34
1	25	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 1/8	54	3 1/4	83	2 1/8	54	1.15	.52
1 1/4	32	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 9/16	65	3 13/16	97	2 21/32	68	1.90	.86
1 1/2	40	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 3/4	70	4 1/4	108	3	76	2.65	1.20
2	50	5-4/8-6/12-10	125-100/200-150/300-250	3 3/8	86	5 3/8	137	4 1/8	105	5.25	2.30

**CLASS 6000 THREADED and SOCKET-WELD/SCH. 160 and XXS BUTTWELD**

NPS	DN	NPS	DN	in	mm	in	mm	in	mm	lb	kg
1/4	8	2 1/2-1 1/4/12-3	65-32/300-80	1 1/2	38	2 1/4	57	1 3/8	35	.75	.34
3/8	10	2 1/2-1 1/4/12-3	65-32/300-80	1 1/2	38	2 1/4	57	1 3/8	35	.75	.34
1/2	15	1 1/2-1 1/4/5-2/12-6	40-32/125-50/300-150	1 13/16	46	2 3/4	70	1 23/32	44	.85	.39
3/4	20	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 1/8	54	3 1/4	83	2 1/8	54	1.25	.57
1	25	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 9/16	65	3 13/16	97	2 21/32	68	2.20	1.00
1 1/4	32	2 1/2-2 1/5-3/12-6	65-50/125-80/300-150	2 3/4	70	4 1/4	108	3	76	2.90	1.32
1 1/2	40	5-4/8-6/12-10	125-100/200-150/300-250	3 3/8	86	5 3/8	137	4 1/8	105	6.15	2.80

## Steel Pipe Nipples ASTM A733

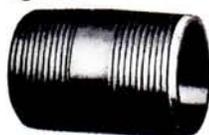
standard, *black*: fig. 339

standard, *galvanized*: fig. 343

extra strong, *black or galvanized*: fig. 338



close



short or long

**locknut nipple**

standard: fig. 341



Locknut nipples are available in standard weight sizes 1½ - 4 NPS / 40 - 100 DN diameter, in eight inch / 203 mm lengths, black or galvanized, and threaded on one end only in NPSL straight pipe thread. Total thread length is six inches / 154 mm (plain end reamed).

**tank nipple**

standard: fig. 341-A



Tank nipples are available in standard weight sizes ¼ - 3 NPS / 8 - 80 DN in six inch / 154 mm length only, black or galvanized. They have NPT thread on one end, and NPT thread running into NPSL thread on the other (Total length: four inches / 102 mm).

Unless otherwise specified welded nipples ASTM A 53 are furnished on orders for steel nipples in standard and extra strong sizes ½ - 8 NPS / 6 - 200 DN.

Welded steel nipples (A 53 Type F or Type E) are available in standard and extra strong sizes ½ - 8 NPS / 6 - 200 DN, right hand threads, black or galvanized.

Seamless steel pressure tube nipples (ASTM A 106 Grade B) are available in standard and extra strong sizes ½ - 8 NPS / 6 - 200 DN with right hand threads, black only.

Seamless steel pressure tube: seamless red brass nipples (ASTM B 43).

Right and left steel nipples are available in standard weight sizes ¼ - 2 NPS / 8 - 50 DN, in 4 inch / 102 mm length only, black only. (Prices on application).

Nipples are available from stock in ½ - 8 NPS / 6 - 200 DN diameter, close to 12 NPS / 300 DN in length. Sizes 13 - 24 NPS / 330 - 600 DN (Prices on application).

Steel pipe nipples meet Federal Specification WWN 351.

### IDENTIFICATION

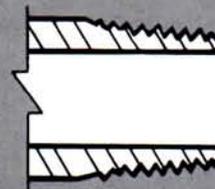
Where possible, each seamless pipe nipple is identified with the following:

- A trade mark
- Seamless designation "SMLS"
- Pipe schedule STD, XS, SCH 160 and XXS
- Material designation A106 B



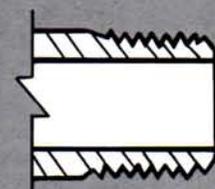
### END FINISHES

#### Standard Finish

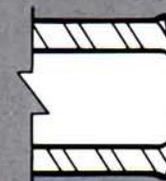


**Tapered Pipe Thread (NPT)**  
Furnished unless special finish requested.

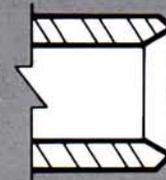
#### Special Finishes



**Straight Pipe Thread**



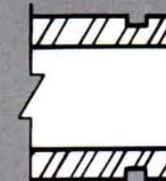
**Roller Cut**  
Furnished when specified on order. (Not deburred.)



**Reamed and Chamfered**  
Ends sq. cut and bevelled on O.D. at 35° ± 10° to axis. Inside burrs removed.



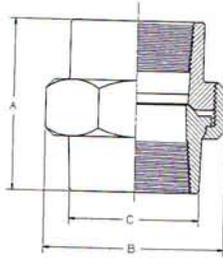
**Square Cut**  
Ends square cut to central axis - all burrs removed.



**Grooved**

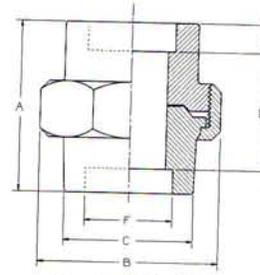
# Forged Steel Unions

Class 3000 threaded fig. 2125  
 Class 3000 socket-weld fig. 2126  
 Class 6000 threaded fig. 2127  
 Class 6000 socket-weld fig. 2128



Threaded

Manufactured to MSS standard practice SP83  
 (Class 6000 by method of MSS SP83)



Socket-Weld

CLASS 3000															
SIZE		A		B		C*		D		E		F		WEIGHT PER UNION	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1/8	6	1 1/16	43	1 31/64	38	53/64	21	25/32	20	7/16	11	.420	11	.38	.17
1/4	8	1 1/16	43	1 31/64	38	53/64	21	25/32	20	7/16	11	.555	14	.36	.16
3/8	10	1 27/32	47	1 11/16	43	1	25	31/32	25	7/16	11	.690	18	.50	.23
1/2	15	2	50	1 15/16	49	1 1/16	30	1 3/32	27	7/16	11	.855	22	.695	.32
3/4	20	2 5/16	58	2 3/8	60	1 15/32	37	1 1/2	29	9/16	14	1.065	27	1.175	.53
1	25	2 7/16	62	2 25/32	71	1 25/32	45	1 1/8	35	9/16	14	1.330	34	1.64	.75
1 1/4	32	2 7/8	73	3 23/64	85	2 7/32	56	1 45/64	43	9/16	14	1.675	43	2.59	1.18
1 1/2	40	3	76	3 23/32	85	2 25/64	65	1 7/8	48	9/16	14	1.915	49	3.41	1.55
2	50	3 1/2	89	4 27/64	113	3 1/16	78	2 1/16	52	1 1/16	17	2.406	61	5.12	2.33
2 1/2	65	4 1/4	106	5 15/64	131	3 3/16	90	2 3/8	60	7/8	22	2.906	74	8.75	3.98
3	80	4 7/8	113	6 5/32	155	4 3/32	109	2 7/16	62	1	25	3.535	90	12.625	5.74

CLASS 6000															
SIZE		A		B		C		D		E		F		WEIGHT PER UNION	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1/8	6	1 11/16	43	1 31/64	38	53/64	21	25/32	20	7/16	11	.420	11	.50	.22
1/4	8	1 27/32	47	1 11/16	43	1	25	31/32	25	7/16	11	.555	14	.56	.25
3/8	10	2	50	1 15/16	49	1 1/16	30	1 3/32	27	7/16	11	.690	18	.75	.34
1/2	15	2 5/16	58	2 3/8	60	1 15/32	37	1 1/2	29	9/16	14	.855	22	1.25	.57
3/4	20	2 7/16	62	2 25/32	71	1 25/32	45	1 3/8	35	9/16	14	1.065	27	1.75	.80
1	25	2 7/8	73	3 23/64	85	2 7/32	56	1 45/64	43	9/16	14	1.330	34	3.0	1.36
1 1/4	32	3	76	3 23/32	95	2 35/64	65	1 7/8	48	9/16	14	1.675	43	3.75	1.70
1 1/2	40	3 1/2	89	4 27/64	113	3 1/16	78	2 1/16	52	1 1/16	22	1.915	49	6.0	2.73
2	50	4 1/8	103	5 15/64	131	3 3/16	90	2 3/8	60	7/8	22	2.406	61	10.5	4.77

\*"C" dimension measures across octagon corners or across the diameter as applicable. The 2 1/2 NPS / 65 DN and 3 NPS / 80 DN - 3000 and 2 NPS / 50 DN - 6000 sizes have octagonal male and female ends; the other sizes are round.

## Lug Nut Unions

Lug Nut Unions have with modified Stub-Acme threads and are ideal for applications requiring rapid assembly and/or breakdown.

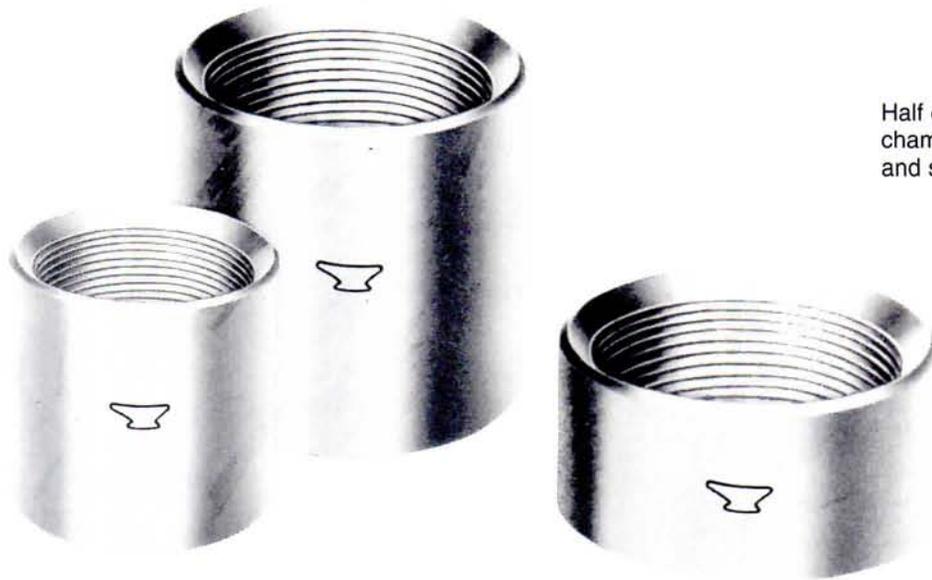
Other features of the Lug Nut Union include:

- 3000 psi NSCPW
- Threaded and socket-weld ends
- Seating characteristics of AAR unions
- Available in sizes 3/8 - 4 NPS / 10 - 100 DN
- Twin lugs in sizes up to 3/4 NPS / 20 DN
- Tri-lug design in sizes from 1 - 4 NPS / 25 - 100 DN
- Plated lug nut

SIZE		A	
NPS	DN	in	mm
3/8	10	1.950	50
1/2	15	2.065	52
3/4	20	2.375	60
1	25	2.580	66
1 1/4	32	2.950	75
1 1/2	40	3.115	79
2	50	3.575	91
2 1/2	65	4.200	107
3	80	4.475	114
4	100	8.500	216



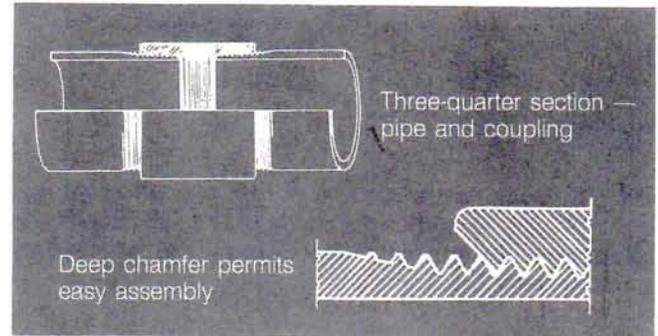
## Standard Steel Merchant Couplings



Half couplings are chamfered on one end and squared on the other.

**Fig. 336**

- Manufactured in accordance with ASTM specification A865.
- Merchant couplings in sizes 1/8 NPS / 6 DN through 2 NPS / 50 DN are normally supplied straight tapped. Sizes 2 1/2 NPS / 65 DN and larger are taper tapped.
- Taper tapped standard merchant couplings in sizes 1/8 NPS / 6 DN through 2 NPS / 50 DN are available upon request.
- API line pipe couplings are used in all sizes over 6 NPS / 150 DN.
- Couplings from 1/8 NPS / 6 DN through 2 NPS / 50 DN are dipped in rust preventative.
- Couplings 2 1/2 NPS / 65 DN and larger are phosphated.
- Galvanized full couplings are also available.



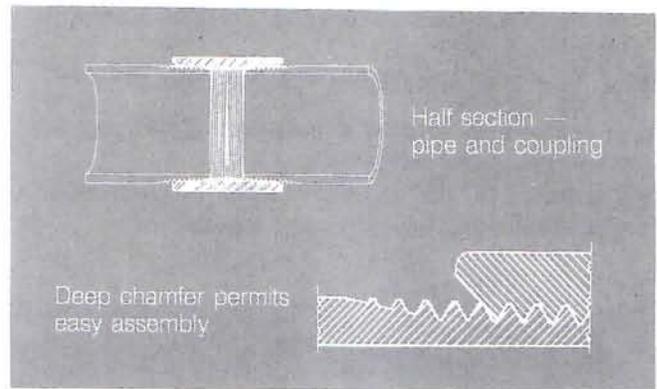
Size	Outside Diameter (Coupling)		Length				Threads per Inch	Approx. Weight per 100 Pieces				Carton Quantity (Full Couplings)			
	NPS	DN	in	mm	Full in	Full mm		Half in	Half mm	Full lb	Full kg	Half lb	Half kg	Full	Half
1/8	6	.563	15	15	13/16	21	11/32	9	27	3	2	1 1/4	1	100	100
1/4	8	.719	20	20	1 3/16	30	17/32	13	18	7 1/4	4	3 1/4	1	100	100
3/8	10	.875	20	20	1 3/16	30	17/32	13	18	9 1/2	5	4 1/4	2	100	100
1/2	15	1.063	25	25	1 9/16	40	22/32	18	14	17 1/2	8	8	4	100	100
3/4	20	1.313	35	35	1 5/8	41	3/4	19	14	26	12	12	5	50	100
1	25	1.576	40	40	2	50	1 15/16	24	11 1/2	42	19	20	9	30	75
1 1/4	32	1.900	50	50	2 1/16	52	3 1/32	25	11 1/2	50	23	23 1/2	11	25	100
1 1/2	40	2.200	55	55	2 1/16	52	3 1/32	25	11 1/2	67	30	31 1/2	14	25	75
2	50	2.750	70	70	2 1/8	54	1	25	11 1/2	103	47	48 1/2	22	20	50
2 1/2	65	3.250	85	85	3 1/8	54	1 1/2	38	8	216	98	103 1/2	47	—	—
3	80	4.000	100	100	3 1/4	82	1 9/16	40	8	347	158	167	76	—	—
3 1/2	90	4.625	115	115	3 3/8	85	1 5/8	41	8	519	236	254	115	—	—
4	100	5.000	125	125	3 1/2	89	1 11/16	43	8	488	222	235	107	—	—
5	125	6.296	160	160	3 3/4	95	1 3/4	44	8	875	398	420	191	—	—
6	150	7.390	190	190	4	100	1 7/8	48	8	1188	540	550	250	—	—

# Standard Right & Left Steel Couplings



**Fig. 346**

The left hand threaded end of all right and left couplings is knurled for identification. All sizes of right and left couplings are taper tapped 3/4" per foot on the diameter and all are dipped in rust preventative.



NPS	Size	DN	Outside Diameter (Coupling)		Length		Approx. Weight per 100 Pieces	
			in	mm	in	mm	lb	kg
1/8	6		.563	15	13/16	21	3	2
1/4	8		.719	20	13/16	30	7 1/4	4
3/8	10		.875	20	13/16	30	9 1/2	5
1/2	15		1.063	25	1 9/16	40	17 1/2	8
3/4	20		1.313	35	1 5/8	41	26	12
1	25		1.576	40	2	50	42	19
1 1/4	32		1.900	50	2 1/16	52	50	23
1 1/2	40		2.200	55	2 1/16	52	67	30
2	50		2.750	70	2 1/8	54	103	47
2 1/2	65		3.250	85	3 1/8	78	216	98
3	80		4.000	100	3 1/4	83	347	158



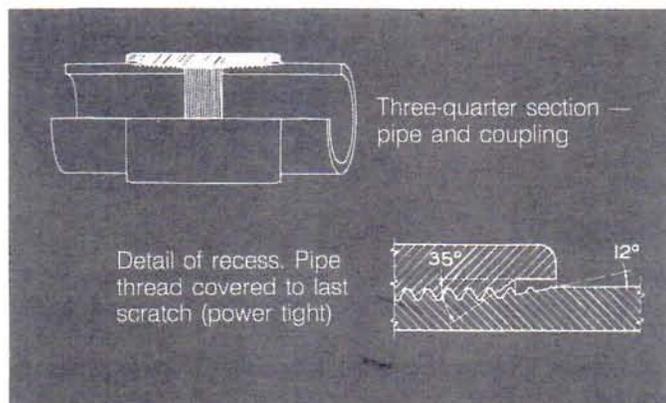
**Extra Strong  
Steel Couplings**



Half couplings are chamfered on one end and squared on the other.

**Fig. 337**

- Manufactured in accordance with ASTM Specification A865.
- All sizes are taper tapped.
- Non-recessed couplings will be supplied for sizes under 6 NPS / 150 DN unless otherwise specified.
- Couplings above 6 NPS / 150 DN will be supplied recessed only.
- Extra strong recessed couplings can be supplied in sizes under 6 NPS / 150 DN.
- Couplings 1/8 - 1 1/2 NPS / 6 - 40 DN are dipped in rust preventative.
- Couplings 2 NPS / 50 DN and larger are phosphated.
- Galvanized full couplings are also available.



NPS	Size	Outside Diameter (Coupling)		Length				Approx. Weight per 100 Pieces				Carton Quantity			
		DN	in	mm	Full		Half	Recessed		Non-Recessed		Full	Half		
					in	mm		lb	kg	lb	kg			lb	kg
1/8	6	.563	15	1 1/16	27	15/32	12	4	2	4	2	2	1	100	100
1/4	8	.719	20	1 5/8	41	3/4	19	9 1/2	5	10 1/2	5	5	2	100	100
3/8	10	.875	20	1 5/8	41	3/4	19	13	6	14 1/4	7	6 1/2	3	100	100
1/2	15	1.063	25	2 1/8	54	1	25	24	11	26	12	12 1/4	6	50	100
3/4	20	1.313	35	2 1/8	54	1	25	35	16	38	17	17	7	50	100
1	25	1.576	40	2 5/8	67	1 1/4	32	51	23	82	37	38 1/2	18	25	50
1 1/4	32	2.054	50	2 3/4	69	1 5/16	33	101	46	108	49	50	23	25	70
1 1/2	40	2.200	55	2 3/4	69	1 5/16	33	88	40	97 1/2	44	49	22	20	55
2	50	2.875	75	2 7/8	73	1 3/8	35	184	84	195	84	95	43	15	35
2 1/2	65	3.375	85	4 1/8	103	2	50	327	149	363	165	175	80	-	-
3	80	4.000	100	4 1/4	106	2 1/16	52	425	193	469	213	230	105	-	-
3 1/2	90	4.625	115	4 3/8	111	2 1/8	54	581	264	653	297	319	145	-	-
4	100	5.200	130	4 1/2	114	2 3/16	55	787	358	859	390	391	178	-	-
5	125	6.296	160	4 5/8	117	2 1/4	57	1000	455	1097	499	550	250	-	-
6	150	7.390	190	4 7/8	123	2 3/8	60	1381	628	1494	679	706	321	-	-
8	200	9.625	245	5 1/4	132	2 9/16	64	2318	1054	-	-	-	-	-	-
10	250	11.750	300	5 3/4	145	2 13/16	71	3155	1434	-	-	-	-	-	-
12	300	14.000	355	6 1/8	154	3	76	4927	2240	-	-	-	-	-	-

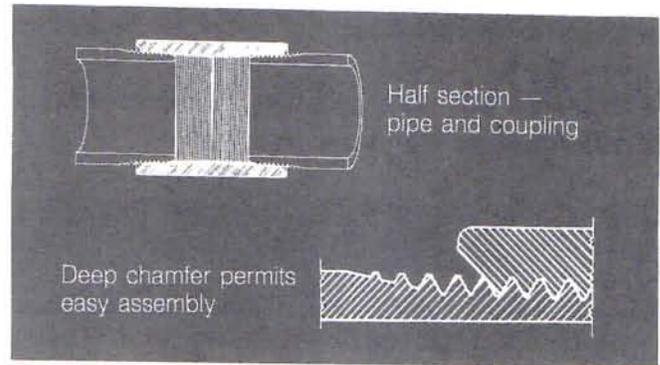
**Extra Strong  
Right & Left  
Steel Couplings**



**Fig. 347**

The left hand threaded end of all right and left couplings is knurled for identification, and all are dipped in rust preventative.

Extra strong recessed right and left couplings are available on request.



NPS	Size	DN	Outside Diameter (Coupling)		Length		Approx. Weight per 100 Pieces	
			in	mm	in	mm	lb	kg
1/8	6		.563	15	1 1/16	27	4	1
1/4	8		.719	20	1 5/8	41	10 1/2	5
3/8	10		.875	20	1 5/8	41	14 1/4	7
1/2	15		1.063	25	2 1/8	53	26	12
3/4	20		1.313	35	2 1/8	53	38	17
1	25		1.660	40	2 5/8	66	82	37
1 1/4	32		2.054	50	2 3/4	70	108	49
1 1/2	40		2.200	55	2 3/4	70	97 1/2	44
2	50		2.875	75	2 7/8	73	195	89
2 1/2	65		3.375	85	4 1/8	103	363	165
3	80		4.000	100	4 1/4	106	469	213



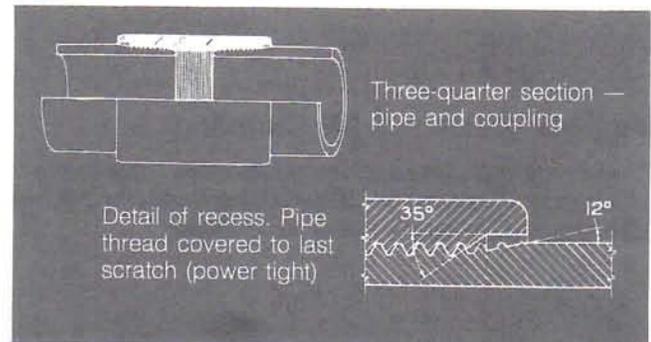
**A P I Line  
Pipe Couplings**



**Fig. 348**

These couplings are manufactured in accordance with American Petroleum Institute Specification 5L. All sizes are taper tapped  $\frac{3}{4}$ " / 19 mm per foot on the diameter.

Line pipe couplings in sizes  $\frac{1}{8}$  -  $1\frac{1}{2}$  NPS / 6 - 40 DN are dipped in rust preventative. Couplings in sizes 2 NPS / 50 DN and larger are phosphated.



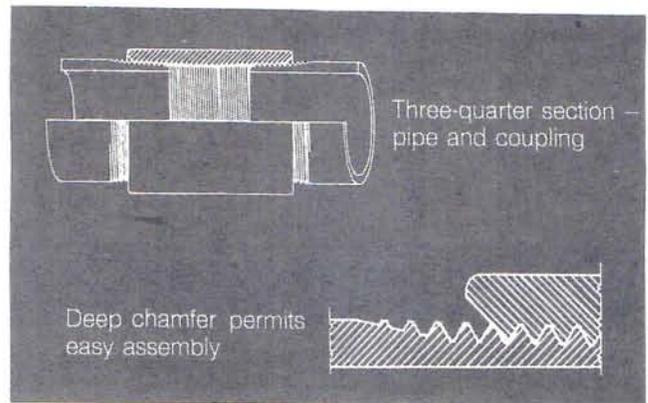
NPS	Size	DN	Outside Diameter (Coupling)		Length		Approx. Weight per 100 Pieces		Carton Quantity
			in	mm	in	mm	lb	kg	
$\frac{1}{8}$	6		.563	15	$1\frac{1}{16}$	27	4	1	100
$\frac{1}{4}$	8		.719	20	$1\frac{5}{8}$	41	9 $\frac{1}{2}$	4	100
$\frac{3}{8}$	10		.875	20	$1\frac{5}{8}$	41	13	5	100
$\frac{1}{2}$	15		1.063	25	$2\frac{1}{8}$	53	24	11	50
$\frac{3}{4}$	20		1.313	35	$2\frac{1}{8}$	53	35	16	50
1	25		1.576	40	$2\frac{5}{8}$	66	51	23	25
$1\frac{1}{4}$	32		2.054	50	$2\frac{3}{4}$	70	101	46	25
$1\frac{1}{2}$	40		2.200	55	$2\frac{3}{4}$	70	88	40	20
2	50		2.875	75	$2\frac{7}{8}$	73	184	83	15
$2\frac{1}{2}$	65		3.375	85	$4\frac{1}{8}$	103	327	149	—
3	80		4.000	100	$4\frac{1}{4}$	106	425	193	—
$3\frac{1}{2}$	90		4.625	115	$4\frac{3}{8}$	112	581	264	—
4	100		5.200	135	$4\frac{1}{2}$	114	787	358	—
5	125		6.296	160	$4\frac{5}{8}$	116	1000	455	—
6	150		7.390	190	$4\frac{7}{8}$	122	1381	628	—
8	200		9.625	245	$5\frac{1}{4}$	133	2318	1054	—
10	250		11.750	300	$5\frac{3}{4}$	146	3155	1434	—
12	300		14.000	355	$6\frac{1}{8}$	155	4927	2240	—

# AAR Class 300/PN50 Steel Couplings



**Fig. 349 for steel AAR Coupling**

These couplings conform to the specifications of the Association of American Railroads. All sizes are taper tapped  $\frac{3}{4}$ " per foot on diameter and are dipped in rust preventative.



NPS	Size	DN	Outside Diameter (Coupling)		Length		Approx. Weight per 100 Pieces	
			in	mm	in	mm	lb	kg
$\frac{1}{4}$	8		.719	20	$1\frac{5}{8}$	41	9	4
$\frac{3}{8}$	10		.875	20	$1\frac{5}{8}$	41	14	7
$\frac{1}{2}$	15		1.063	25	$2\frac{1}{8}$	53	25	11
$\frac{3}{4}$	20		1.313	35	$2\frac{1}{8}$	53	36	16
1	25		1.576	40	$2\frac{5}{8}$	66	74	33
$1\frac{1}{4}$	32		2.054	50	$2\frac{3}{4}$	70	108	49
$1\frac{1}{2}$	40		2.200	55	$2\frac{3}{4}$	70	95	43
2	50		2.875	75	$2\frac{7}{8}$	73	201	91
$2\frac{1}{2}$	65		3.375	85	$4\frac{1}{8}$	103	353	160
3	80		4.000	100	$4\frac{1}{4}$	106	461	210



## Plugs & Bushings Merchant Steel



### SOLID SQUARE HEAD PLUGS

Nominal Pipe Size	Overall Plug Length (Minimum)	Width Across Flats (Nominal)		Threads per inch	Approx. Weight per 100 Pieces		Carton Contents	
		in	mm		lb	kg		
1/8	6	.625	16	7/32	7	2	1	100
1/4	8	.687	17	3/8	10	2	1	100
3/8	10	.812	21	7/16	11	5	3	100
1/2	15	.937	24	9/16	14	10	4	100
3/4	20	1.062	27	5/8	16	18	9	50
1	25	1.125	29	13/16	21	35	16	25

### HEXAGON BUSHINGS

Nominal Pipe Size	Overall Length	Width Across Flats		Approx. Weight per 100 Pieces	Carton Contents			
		in	mm			lb	kg	
1/4 x 1/8	8 x 6	.625	16	.625	16	2	1	100
3/8 x 1/4	10 x 8	.750	19	.687	17	4	2	100
3/8 x 1/8	10 x 6	.750	19	.687	17	5	3	100
1/2 x 3/8	15 x 10	.875	22	.875	22	6	3	100
1/2 x 1/4	15 x 8	.875	22	.875	22	9	4	100
1/2 x 1/8	15 x 6	.875	22	.875	22	10	5	100
3/4 x 1/2	20 x 15	1.000	25	1.062	27	11	5	100
3/4 x 3/8	20 x 10	1.000	25	1.062	27	15	7	100
3/4 x 1/4	20 x 8	1.000	25	1.062	27	18	8	100
3/4 x 1/8	20 x 6	1.000	25	1.062	27	20	9	100
1 x 3/4	25 x 20	1.062	27	1.375		18	8	50
1 x 1/2	25 x 15	1.062	27	1.375		27	12	50
1 x 3/8	25 x 10	1.062	27	1.375		32	15	50
1 x 1/4	25 x 8	1.062	27	1.375		35	16	50
1 x 1/8	25 x 6	1.062	27	1.375		42	19	50

### SOLID HEXAGON HEAD PLUGS

Nominal Pipe Size	Overall Plug Length (Minimum)	Width Across Flats (Nominal)		Threads per inch	Approx. Weight per 100 Pieces		Carton Contents	
		in	mm		lb	kg		
1/8	6	0.56	14	7/16	11	3	2	100
1/4	8	0.75	19	9/16	14	6	3	100
3/8	10	0.78	20	11/16	17	10	5	100
1/2	15	0.97	25	7/8	22	17	8	100
3/4	20	1.06	27	1 1/16	27	32	15	50

All sizes taper tapped 3/4" per foot on diameter. FINISH OR COATING: Black, dipped in rust resistant; Galvanized, zinc plated (inside and out). For sizes 1 1/4 / 32 DN and larger, see page pf-26.

### COUNTERSUNK PLUGS (Hex and Square Socket)

Nominal Pipe Size	Thread Length (Min.)	Size of Socket (Min.)				Metal Thickness Bottom Countersink (Min.)	Threads per inch	Approx. Weight per 100 Pcs.		Carton Contents		
		Square		Hex				lb	kg			
		in	mm	in	mm							
1/8	6	.37	—	—	3/16	5	.06	1.52	27	1	1	100
1/4	8	.44	1/4	6	1/4	6	.09	2.29	18	1	1	100
3/8	10	.48	5/16	8	5/16	8	.13	3.30	18	4	2	100
1/2	15	.56	3/8	10	3/8	10	.16	4.06	14	6	3	100
3/4	20	.63	1/2	13	9/16	14	.18	4.57	14	11	5	50
1	25	.75	1/2	13	5/8	16	.20	5.08	11 1/2	21	10	75
1 1/4	32	.80	3/4	19	3/4	19	.22	5.59	11 1/2	34	16	50
1 1/2	40	.83	3/4	19	1	25	.24	6.10	11 1/2	52	24	25
2	50	.88	7/8	22	1	25	.26	6.60	11 1/2	85	37	20

•1/8 NPS / 6 DN not available in square socket. All sizes taper tapped — 3/4" per foot on diameter. FINISH OR COATING: Black, dipped in rust resistant; Galvanized, zinc-plated (inside and out).

# Steel Fittings For Plastic Pipe



## MALE ADAPTER

Nominal Pipe Size		Length		No. of Serrations	Approx. Weight per 100 Pieces	
NPS	DN	in	mm		lb	kg
½	15	3	76	7	15	7
¾	20	3½	80	7	22	10
1	25	3¾	83	7	34	16
1¼	32	3½	89	7	52	24
1½	40	4	102	7	69	32
2	50	4	102	7	94	43
2½	65	5¾	146	8	190	87
3	80	6	152	8	280	128
4	100	7¼	184	8	470	214

## INSERT COUPLING

Nominal Pipe Size		Overall Length		No. of Serrations	Approx. Weight per 100 Pieces	
NPS	DN	in	mm		lb	kg
½	15	3¾	86	7	12	6
¾	20	3¾	86	7	18	8
1	25	3¾	92	7	35	16
1¼	32	3¾	92	7	45	21
1½	40	4¼	108	7	67	31
2	50	4¼	108	7	80	37
2½	65	7	178	8	220	100
3	80	7	178	8	325	148
4	100	8¾	222	8	550	250



## WELL SEAL ELL

Nominal Pipe Size		Approx. Weight per 100 Pieces	
NPS	DN	lb	kg
¾	20	110	50
1	25	170	78
1¼	32	290	132
1½	40	380	173

## VENTURI MALE ADAPTER

Nominal Pipe Size	Length, overall, for each size: 6", 8", 10", 12"								
	6 NPS / 150 DN		8 NPS / 200 DN		10 NPS / 250 DN		12 NPS / 300 DN		
NPS	DN	lb	kg	lb	kg	lb	kg	lb	kg
¾ x	20x	60	28	80	37	100	46	120	55
1 x	25x	78	36	104	48	130	59	156	71
1¼ x	32x	102	47	136	62	170	78	204	93
1½ x	40x	120	55	160	73	200	91	240	109
2 x	50x	180	82	240	109	300	137	360	164

SPECIALS — For fittings not shown - Price on Application.



## for FAST, ECONOMICAL hose connections & repairs



Combination  
Nipples



Hose  
Menders

size		length		no. of serrations	approx. weight per 100/pcs.	
NPS	DN	in	mm		lb	kg
1/2	15	3/4	83	7	24.0	11
3/4	20	3 <sup>9</sup> / <sub>16</sub>	91	7	57.0	26
1	25	3 <sup>11</sup> / <sub>16</sub>	94	7	57.0	26
1 <sup>1</sup> / <sub>4</sub>	32	3 <sup>7</sup> / <sub>8</sub>	98	7	79.0	36
1 <sup>1</sup> / <sub>2</sub>	40	4 <sup>1</sup> / <sub>16</sub>	103	7	129.0	59
2	50	4 <sup>3</sup> / <sub>8</sub>	111	7	202.0	92

- Precision engineered and machined to assure accurate sizing and secure attachment to industrial hose with either bolt clamps or metal brands.
- Durable, steel construction will stand up to heavy industrial and mining applications.

### COMBINATION NIPPLES

Designed for easy adaption to straight-end industrial hose to NPT threaded fittings on pumps, strainers, valves etc. May also be attached to other lengths of hose by means of a swivel female coupling.

Can be used for most suction and discharge applications where moderated pressures are encountered. Plated nipples are recommended where corrosion is encountered (i.e. sea water.)

*Available in plated or unplated steel  
Nominal Pipe Sizes 1/2 - 6 / 15 - 150 DN*

### HOSE MENDERS

Ideal for fast, lasting, on the spot repairs of damaged hoses or for joining lengths of hose without the bulk of swivel fittings.

Can help minimize hose wastage when used to adapt short or odd lengths of hose to meet specific needs.

*Available in plated or unplated steel  
Nominal Pipe Sizes 1/2 - 6 / 15 - 150 DN*

**malleable iron**

**class 150/PN 20, (standard)**

pressure ratings, psi { saturated steam: 150  
liquid & gas at 150° F: 300

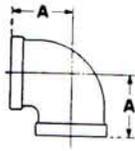
pressure ratings, bar { saturated steam: 10.34  
liquid & gas 65°C: 20.68

Grinnell Class 150/PN 20 (Standard Weight) Malleable Iron Fittings conform to American National Standard ASME B 16.3.

Grinnell standard weight banded pattern fittings in this catalog, sizes 1/8 NPS/6DN to 6NPS/150DN inclusive, are included in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

**elbows**

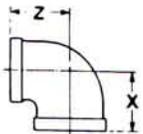
**90° elbow  
fig. 1101**



A: center to end

size				wtg. (approx.) each				size				wtg. (approx.) each			
NPS	DN	A		black		galvanized		NPS	DN	A		black		galvanized	
		in	mm	lb	kg	lb	kg			in	mm	lb	kg	lb	kg
1/8	6	11/16	17	.06	.03	.07	.04	2	50	2 1/4	56	2.06	.94	2.01	.92
1/4	8	13/16	21	.11	.05	.12	.06	2 1/2	65	2 11/16	67	3.54	1.61	3.64	1.66
3/8	10	15/16	24	.17	.08	.17	.08	3	80	3 1/16	77	5.20	2.37	5.35	2.44
1/2	15	1 1/8	28	.26	.12	.27	.13	3 1/2	90	3 7/16	87	7.10	3.23	7.19	3.27
3/4	20	1 5/16	33	.38	.18	.43	.20	4	100	3 3/16	96	8.95	4.07	9.37	4.26
1	25	1 1/2	38	.63	.29	.65	.30	5	125	4 1/2	113	13.90	6.32	14.50	6.59
1 1/4	32	1 3/4	44	.96	.44	.94	.43	6	150	5 1/8	128	23.00	10.46	23.50	10.69
1 1/2	40	1 15/16	49	1.30	.59	1.34	.61								

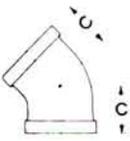
**reducing elbow  
fig. 1101R**



X and Z: center to end

size				X		Z		weight (approx.) each, lb./kg.			
NPS	DN	NPS	DN	in		mm		black		galvanized	
				lb	kg	lb	kg				
1/4	8	1/8	6	3/4	19	3/4	19	.10	.05	.10	.05
3/8	10	1/4	8	7/8	22	15/16	24	.14	.07	.15	.07
		3/8	6	13/16	21	7/8	22	.12	.06	.13	.06
1/2	15	3/8	10	1 1/16	27	1 1/16	27	.21	.10	.22	.10
		1/4	8	1	25	1	25	.19	.09	.20	.09
3/4	20	1/2	15	1 3/16	30	1 1/4	32	.39	.18	.40	.19
		3/8	10	1 1/8	28	1 1/8	28	.29	.14	.30	.14
		1/4	8	1 1/8	28	1 1/8	28	.26	.12	.28	.13
1	25	3/4	20	1 3/8	35	1 7/16	37	.55	.25	.58	.27
		1/2	15	1 1/4	32	1 3/8	35	.46	.21	.47	.22
		3/8	10	1 3/16	30	1 1/4	32	.41	.19	.42	.19
1 1/4	32	1	25	1 9/16	40	1 11/16	43	.86	.39	.90	.41
		3/4	20	1 7/16	36	1 5/8	41	.71	.33	.73	.34
		1/2	15	1 3/8	35	1 9/16	39	.62	.29	.64	.29
1 1/2	40	1 1/4	32	1 13/16	46	1 7/8	48	1.17	.54	1.18	.54
		1	25	1 5/8	41	1 13/16	46	1.00	.46	1.05	.48
		3/4	20	1 1/2	38	1 3/4	44	.83	.38	.85	.39
2	50	1 1/2	40	2	50	2 1/8	54	1.75	.80	1.78	.81
		1 1/4	32	1 7/8	48	2 1/8	54	1.53	.70	1.55	.71
		1	25	1 3/4	44	2	50	1.35	.62	1.45	.66
		3/4	20	1 5/8	41	2	50	1.30	.59	1.32	.60
2 1/2	65	2	50	2 7/16	61	2 5/8	66	3.00	1.37	3.00	1.37
		1 1/2	40	2 3/16	55	2 1/2	63	2.32	1.06	2.55	1.16
3	80	2 1/2	65	2 13/16	71	3	75	4.00	1.82	4.05	1.84
		2	50	2 9/16	64	2 15/16	74	3.75	1.71	3.91	1.78
4	100	3	80	3 5/16	84	3 5/8	92	7.87	3.58	7.95	3.62

**45° elbow: fig. 1102**



C: center to end

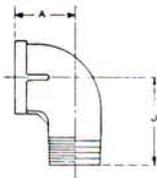
size				wtg. (approx.) each, lb./kg.				size				wtg. (approx.) each, lb./kg.			
NPS	DN	C		black		galvanized		NPS	DN	C		black		galvanized	
		in	mm	lb	kg	lb	kg			in	mm	lb	kg	lb	kg
1/8	6	11/16	17	.06	.03	.08	.04	2	50	1 11/16	43	1.71	.78	1.85	.84
1/4	8	3/4	19	.11	.05	.11	.05	2 1/2	65	1 15/16	49	2.78	1.27	2.90	1.32
3/8	10	13/16	21	.16	.08	.18	.09	3	80	2 3/16	55	4.48	2.04	4.58	2.09
1/2	15	7/8	22	.21	.10	.24	.11	3 1/2	90	2 3/8	60	5.92	2.69	6.01*	2.74
3/4	20	1	25	.37	.17	.39	.18	4	100	2 5/8	67	7.20	3.28	7.35	3.34
1	25	1 1/8	28	.54	.25	.57	.26	5	125	3 1/16	78	11.46	5.21	11.75	5.34
1 1/4	32	1 5/16	33	.86	.39	.87	.40	6	150	3 7/16	87	17.24	7.84	17.65	8.03
1 1/2	40	1 7/16	37	1.13	.52	1.17	.54								

\* MADE TO ORDER IF QUANTITIES WARRANT.

malleable iron, (class 150/PN 20)

## elbows, con'd

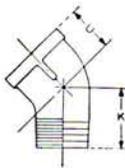
90° street elbow  
straight: fig. 1103  
reducing: fig. 1103R



A: center to end  
J: center to male end

first size mentioned  
denotes female end

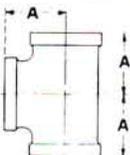
45° street elbow  
fig. 1104



C: center to end  
K: center to male end

## tees

straight tee  
fig. 1105



A: center to end

size		A		J		weight (approx.) each			
						black		galvanized	
NPS	DN	in	mm	in	mm	lb	kg	lb	kg
1/8	6	11/16	17	1	25	.06	.03	.06	.03
1/4	8	13/16	21	1 3/16	30	.11	.05	.12	.06
3/8	10	15/16	24	1 7/16	37	.17	.08	.18	.08
1/2	15	1 1/8	29	1 5/8	41	.24	.11	.26	.12
3/4	20	1 5/16	33	1 7/8	47	.41	.19	.42	.19
1	25	1 1/2	38	2 1/8	53	.62	.29	.64	.29
1 1/4	32	1 3/4	44	2 7/16	61	1.10	.50	1.14	.52
1 1/2	40	1 15/16	49	2 1 1/16	67	1.44	.66	1.55	.71
2	50	2 1/4	56	3 1/4	81	2.85	1.30	2.73	1.24
2 1/2	65	2 11/16	68	3 7/8	97	4.00	1.82	4.05	1.84
3	80	3 1/16	77	4 1/2	114	6.06	2.76	6.26	2.85
4	100	3 13/16	96	5 1 1/16	144	9.87	4.49	11.07	5.04
1/2 X 3/8	15 X 10	1 1/16	27	1 9/16	39	.23	.11	.25	.12
3/4 X 1/2	20 X 15	1 3/16	30	1 3/4	44	.32	.15	.36	.17
1 X 3/4	25 X 20	1 3/8	35	2 1/16	52	.54	.25	.56	.26
1 1/4 X 1	32 X 25	1 9/16	39	2 5/16	58	.86	.39	.89	.41
X 3/4	X 20	1 7/16	36	2 1/4	56	.75	.34	.77	.35
1 1/2 X 1 1/4	40 X 32	1 13/16	46	2 9/16	65	1.18	.54	1.31	.60
X 1	X 25	1 5/8	41	2 1/2	63	1.08	.49	1.11*	.51*
2 X 1 1/2	50 X 40	2	50	2 15/16	74	1.85	.84	1.88	.86

size		C		K		weight (approx.) each			
						black		galvanized	
NPS	DN	in	mm	in	mm	lb	kg	lb	kg
1/8	6	11/16	17	7/8	22	.06	.03	.07	.04
1/4	8	3/4	19	15/16	24	.10	.05	.11	.05
3/8	10	13/16	21	1	25	.14	.07	.14	.07
1/2	15	7/8	22	1 1/8	28	.20	.09	.21	.10
3/4	20	1	25	1 5/16	33	.33	.15	.34	.16
1	25	1 1/8	28	1 7/16	36	.52	.24	.53	.24
1 1/4	32	1 5/16	33	1 1 1/16	42	.84	.39	.87	.40
1 1/2	40	1 7/16	37	1 7/8	48	1.21	.55	1.27	.58
2	50	1 1 1/16	43	2 1/4	57	1.94	.89	1.95	.89

size		A		weight (approx.) each			
				black		galvanized	
NPS	DN	in	mm	lb	kg	lb	kg
1/8	6	11/16	17	.09	.04	.10	.05
1/4	8	13/16	21	.15	.07	.16	.08
3/8	10	15/16	24	.23	.11	.24	.11
1/2	15	1 1/8	28	.36	.17	.37	.17
3/4	20	1 5/16	33	.56	.26	.58	.27
1	25	1 1/2	38	.90	.41	.92	.42
1 1/4	32	1 3/4	44	1.31	.60	1.35	.62
1 1/2	40	1 15/16	49	1.73	.79	1.79	.82
2	50	2 1/4	57	2.52	1.15	2.80	1.28
2 1/2	65	2 11/16	68	4.90	2.23	5.02	2.29
3	80	3 1/16	78	7.12	3.24	7.25	3.30
3 1/2	90	3 7/16	87	9.00	4.09	9.40*	4.28
4	100	3 13/16	97	11.31	5.14	12.30	5.59
5	125	4 1/2	113	19.42	8.83	19.51	8.87
6	150	5 1/8	128	25.50	11.59	29.90	13.59

\* MADE TO ORDER IF QUANTITIES WARRANT.

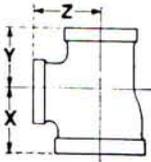
malleable iron, (class 150/PN 20)

pressure ratings, psi { saturated steam: 150  
liquid & gas at 150° F: 300

pressure ratings, bar { saturated steam: 10.34  
liquid & gas at 65° C: 20.68

tees, cont'd

reducing tee, fig. 1105R



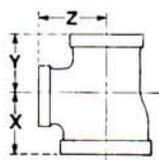
X, Y, Z: center to end

NPS	DN	size				X		Y		Z		weight (approx.) each					
		NPS	DN	NPS	DN	in	mm	in	mm	in	mm	black		galvanized			
		lb	kg	lb	kg	lb	kg	lb	kg								
1/4	8	1/4	8	1/8	6	3/4	19	3/4	19	3/4	19	.13	.06	.14	.07		
1/8	6	1/8	6	1/4	8	3/4	19	3/4	19	3/4	19	.12	.06	.14	.07		
3/8	10	3/8	10	1/4	8	7/8	22	7/8	22	15/16	24	.21	.10	.22	.10		
		1/4	8	1/4	8	15/16	24	15/16	24	15/16	24	.21	.10	.22	.10		
1/4	8	1/4	8	3/8	10	7/8	22	13/16	24	15/16	24	.19	.09	.20	.09		
1/2	15	1/2	15	3/8	10	1 1/16	27	1 1/16	27	1 1/16	26	.30	.14	.32	.15		
		1/4	8	1/4	8	1	25	1	25	1	25	.27	.13	.29	.14		
		3/8	10	1/2	15	1 1/8	28	1 1/16	27	1 1/8	28	.33	.15	.33	.15		
3/8	10	3/8	10	3/8	10	1 1/16	27	1	25	1 1/16	27	.28	.13	.29	.14		
		1/4	8	1/2	15	1 1/8	28	1	25	1 1/8	28	.29	.14	.29	.14		
3/4	20	3/4	20	1/2	15	1 3/16	30	1 3/16	30	1 1/4	32	.46	.21	.49	.23		
		3/8	10	3/8	10	1 1/8	28	1 1/8	28	1 1/8	28	.42	.19	.46*	.21		
		1/4	8	1 1/16	27	1 1/16	27	1 1/8	28	.38	.18	.40	.19				
		1/2	15	3/4	20	1 5/16	33	1 1/4	32	1 5/16	33	.51	.24	.51	.24		
3/8	10	3/8	10	1/2	15	1 3/16	30	1 1/8	28	1 1/4	32	.43	.20	.47	.22		
		3/8	10	3/4	20	1 5/16	33	1 1/8	28	1 5/16	33	.46	.21	.48	.22		
1/4	8	1/4	8	3/4	20	1 5/16	33	1 1/8	28	1 5/16	33	.45	.21	.46	.21		
		3/8	10	3/4	20	1 5/16	33	1 1/8	28	1 5/16	33	.45	.21	.46	.21		
1/2	15	1/2	15	3/4	20	1 1/4	32	1 1/4	32	1 3/16	30	.43	.20	.45	.21		
1	25	1	25	3/4	20	1 3/8	35	1 3/8	35	1 7/16	37	.82	.38	.84	.39		
				1/2	15	1 1/4	32	1 1/4	32	1 3/8	35	1 7/16	37	.70	.32	.74	.34
				3/8	10	1 3/16	30	1 3/16	30	1 1/4	32	.60	.28	.63	.29		
				1/4	8	1 1/8	28	1 1/8	28	1 1/4	32	.55	.25	.55	.25		
	3/4	20	3/4	20	1	25	1 1/2	38	1 7/16	37	1 1/2	38	.78	.36	.81	.37	
					3/4	20	1 3/8	35	1 5/16	33	1 7/16	37	.73	.34	.75	.34	
					1/2	15	1 1/4	32	1 3/16	30	1 3/8	35	.59	.27	.62	.29	
					1/2	15	1	25	1 1/2	38	1 3/8	35	1 1/2	38	.76	.35	.73
1/4	8	1	25	1 1/2	38	1 5/16	33	1 1/2	38	.69	.32	.71	.33				
				3/4	20	1 3/8	35	1 3/8	35	1 1/4	32	.62	.29	.66	.30		
1/2	15	1/2	15	1	25	1 3/8	35	1 3/8	35	1 1/4	32	.55	.25	.57	.26		
1 1/4	32	1 1/4	32	1	25	1 9/16	40	1 9/16	40	1 11/16	42	1.18	.54	1.22	.56		
				3/4	20	1 7/16	37	1 7/16	37	1 5/8	41	1.06	.49	1.10	.50		
				1/2	15	1 3/8	35	1 3/8	35	1 9/16	40	.98	.45	.98	.45		
				3/8	10	1 1/4	32	1 1/4	32	1 7/16	37	.86	.39	.89	.41		
	1	25	1	25	1 1/4	32	1 3/4	44	1 11/16	43	1 3/4	44	1.13	.52	1.19	.54	
					1	25	1 9/16	40	1 1/2	38	1 11/16	42	1.11	.51	1.13	.52	
					3/4	20	1 7/16	37	1 3/8	35	1 5/8	41	.87	.40	.92	.42	
					1/2	15	1 3/8	35	1 1/4	32	1 9/16	40	.76	.35	.79	.36	
3/4	20	3/4	20	1 1/4	32	1 3/4	44	1 5/8	41	1 3/4	44	1.09	.50	1.10	.50		
				1	25	1 9/16	40	1 7/16	37	1 11/16	42	.96	.44	.88	.40		
1/2	15	1/2	15	3/4	20	1 7/16	37	1 5/16	33	1 5/8	41	.86	.39	.86	.39		
				1/4	8	1 1/4	32	1 3/4	44	1 9/16	40	1 3/4	44	1.04	.48	1.07	.49
1	25	1	25	1 1/4	32	1 11/16	43	1 11/16	43	1 9/16	40	.87	.40	.94	.43		
3/4	20	3/4	20	1 1/4	32	1 11/16	43	1 11/16	43	1 9/16	40	.92	.42	.97	.44		
1 1/2	40	1 1/2	40	1 1/4	32	1 13/16	46	1 13/16	46	1 7/8	47	1.45	.66	1.47	.67		
				1	25	1 5/8	41	1 5/8	41	1 13/16	46	1.44	.66	1.49	.68		
				3/4	20	1 1/2	38	1 1/2	38	1 3/4	44	1.29	.59	1.40	.64		
				1/2	15	1 7/16	37	1 7/16	37	1 11/16	42	1.19	.54	1.25	.57		
	1 1/4	32	1 1/4	32	1 1/2	40	1 5/16	49	1 7/8	47	1 15/16	49	1.50	.69	1.55	.71	
					1 1/4	32	1 13/16	46	1 3/4	44	1 7/8	47	1.52	.69	1.42	.65	
					1	25	1 5/8	41	1 9/16	40	1 13/16	46	1.26	.58	1.27	.58	
					3/4	20	1 1/2	38	1 7/16	37	1 3/4	44	1.08	.49	1.10	.50	
1/2	15	1/2	15	1 1/2	40	1 7/16	37	1 3/8	35	1 11/16	42	1.03	.47	1.10	.50		

\* MADE TO ORDER IF QUANTITIES WARRANT.

tees (continued)

reducing tee  
fig. 1105R

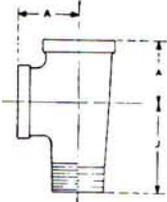


X, Y, Z: center to end

		size				X		Y		Z		weight (approx.) each					
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	lb	kg	lb	kg		
1 1/2	40	1	25	1 1/2	40	1 5/16	49	1 13/16	46	1 5/16	49	1.50	.69	1.54	.70		
				1 1/4	32	1 3/16	46	1 11/16	42	1 7/8	47	1.30	.59	1.44	.66		
				1	25	1 5/8	41	1 1/2	38	1 3/16	46	1.15	.53	1.18	.54		
				3/4	20	1 1/2	40	1 5/16	49	1 3/4	44	1 5/16	49	1.41	.64	1.56	.71
		3/4	20	3/4	20	1 1/2	38	1 5/16	33	1 3/4	44	1.00	.46	1.03	.47		
		1/2	15	1 1/2	40	1 5/16	49	1 11/16	42	1 5/16	49	1.35	.62	1.42	.65		
1 1/4	32	1 1/4	32	1 1/2	40	1 7/8	47	1 7/8	47	1 13/16	46	1.45	.66	1.40	.64		
1	25	1	25	1 1/2	40	1 13/16	46	1 13/16	46	1 3/8	31	1.19	.54	1.24	.57		
2	50	2	50	1 1/2	40	2	50	2	50	2 3/16	55	2.55	1.16	2.65	1.21		
				1 1/4	32	1 7/8	47	1 7/8	47	2 1/8	53	2.35	1.07	2.55	1.16		
				1	25	1 3/4	44	1 3/4	44	2	50	1.79	.82	2.00	.91		
				3/4	20	1 5/8	41	1 5/8	41	2	50	1.87	.85	1.90	.87		
				1/2	15	1 1/2	38	1 1/2	38	1 7/8	47	1.65	.75	1.70	.78		
				1 1/2	40	2 1/4	57	2 3/16	55	2 1/4	57	2.24	1.02	2.39	1.09		
				1 1/2	40	2	50	1 13/16	49	2 3/16	55	1.95	.89	1.95	.89		
				1 1/4	32	1 7/8	47	1 13/16	46	2 1/8	53	1.76	.80	1.83	.84		
				1	25	1 3/4	44	1 5/8	41	2	50	1.58	.72	1.61	.74		
				1 1/4	32	2	50	2 1/4	57	2 1/8	53	2 1/4	56	2.20	1.00	2.25	1.03
		1 1/2	40	2	50	2	50	1 7/8	47	2 3/16	55	1.85	.84	2.00	.91		
		1 1/4	32	1 7/8	47	1 3/4	44	2 1/8	53	2 1/8	53	1.72	.79	1.79	.82		
		1	25	2	50	2 1/4	57	2	50	2 1/4	57	2.14	.98	2.28	1.04		
		3/4	20	2	50	2 1/4	57	1 5/16	49	2 1/4	57	2.00	.91	1.97	.90		
		1/2	15	2	50	2 1/4	57	1 7/8	47	2 1/4	57	2.14	.98	2.25	1.03		
1 1/2	40	1 1/2	40			2 3/16	55	2 3/16	55	2	50	1.86	.85	2.01	.92		
1 1/4	32	1 1/4	32	2	50	2 1/8	53	2 1/8	53	1 7/8	47	1.70	.78	1.82	.83		
1	25	1	25			2	50	2	50	1 3/4	44	1.63	.74	1.63	.74		
2 1/2	65	2 1/2	65	2	50	2 5/8	60	2 5/8	60	2 5/8	66	3.65	1.66	3.75	1.71		
				1 1/2	40	2 3/16	55	2 3/16	55	2 1/2	63	3.46	1.58	3.57	1.63		
				1 1/4	32	2 1/16	52	2 1/16	52	2 7/16	61	3.34	1.52	3.47	1.58		
				1	25	1 7/8	47	1 7/8	47	2 3/8	60	2.85	1.30	3.00	1.37		
				3/4	20	1 3/4	44	1 3/4	44	2 5/16	58	2.82	1.29	2.80	1.28		
				2	50	2 1/2	65	2 11/16	68	2 5/8	66	2 11/16	68	3.65	1.66	4.10	1.87
				2	50	2 3/8	60	2 1/4	57	2 5/8	66	3.28	1.49	3.32	1.51		
		1 1/2	40	2 1/2	65	2 11/16	68	2 1/2	63	2 11/16	68	3.80	1.73	3.80	1.73		
		2	50	2 3/8	60	2 3/16	55	2 5/8	66	3.43	1.56	3.51	1.60				
2	50	2	50	2 1/2	65	2 5/8	66	2 5/8	66	2 3/8	60	3.50	1.59	3.59	1.64		
				2 1/4	60	2 1/2	63	2 1/2	63	2 7/8	73	5.79	2.64	5.81	2.64		
		3	80	1 1/2	40	2 5/16	58	2 5/16	58	2 13/16	71	5.11	2.33	5.26	2.39		
				1 1/4	32	2 3/16	30	2 3/16	55	2 3/4	69	4.68	2.33	4.67	2.13		
				1	25	2	50	2	50	2 5/8	66	4.15	1.89	4.36	1.99		
				3/4	20	1 7/8	47	1 7/8	47	2 5/8	66	4.02	1.83	4.22	1.92		
				2 1/2	65	2 1/2	65	2 13/16	71	2 11/16	67	3	75	5.80	2.64	5.91	2.69
				2	50	2 1/2	63	2 3/8	60	2 7/8	72	4.80	2.19	4.85	2.21		
		2	50	3	80	3 1/8	78	2 7/8	72	3 1/8	78	6.07	2.76	6.53	2.97		
		2	50	2 1/2	63	2 1/4	57	2 7/8	72	4.10	1.87	4.30	1.96				
2 1/2	65	2 1/2	65	3	80	3	75	3	75	2 13/16	71	5.82	2.65	6.00	2.73		
4	100	4	100	3	80	3 5/16	83	3 5/16	83	3 5/8	91	11.02	5.01	11.30	5.14		
				2 1/2	65	3 1/16	77	3 1/16	77	3 1/2	88	9.80	4.46	9.25	4.21		
				2	50	2 3/4	69	2 3/4	69	3 7/16	86	8.39	3.82	8.80	4.00		
				1 1/2	40	2 1/2	63	2 1/2	63	3 5/16	83	7.47	3.40	7.86	3.58		
				3	80	4	100	3 13/16	71	3 5/8	91	3 13/16	96	11.80	5.37	11.00	5.00

tees (continued)

street or service tee  
straight: fig. 1106  
reducing: fig. 1106R

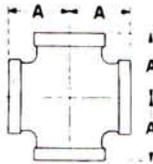


A: center to end  
J: center to male end  
to be read as follows:  
female run, male run, outlet

size		A		J		weight (approx.) each							
NPS	DN	in	mm	in	mm	black		galvanized					
						lb	kg	lb	kg				
1/4	8	13/16	21	13/16	30	.15	.07	.16	.08				
3/8	10	15/16	24	17/16	37	.24	.11	.26	.12				
1/2	15	1 1/8	28	1 5/8	41	.34	.16	.34	.16				
3/4	20	1 5/16	33	1 7/8	47	.54	.25	.63	.29				
1	25	1 1/2	38	2 1/8	53	.96	.44	.99	.45				
1 1/4	32	1 3/4	44	2 7/16	61	1.38	.63	1.49	.68				
1 1/2	40	1 15/16	49	2 11/16	68	1.93	.88	2.00	.91				
2	50	2 1/4	56	3 1/4	82	3.16	1.44	3.20	1.46				
run						outlet		wt. (approx.) each					
size		A		J		A		black					
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	lb	kg		
1 1/4	32	1	25	1 1/4	32	1 3/4	44	2 5/16	58	1 3/4	44	1.32	.60
2	50	1 1/2	40	2	50	2 1/4	56	2 15/16	74	2 1/4	56	2.65	1.21

**CROSS**

fig. 1107

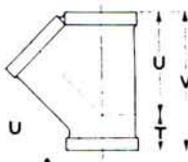


A: center to end

size		A		weight (approx.) each			
NPS	DN	in	mm	black		galvanized	
				lb	kg	lb	kg
1/8	6	1 1/16	17	.12	.06	.13	.06
1/4	8	1 3/16	21	.18	.09	.19	.09
3/8	10	1 5/16	24	.27	.13	.27	.13
1/2	15	1 1/8	28	.41	.19	.43	.20
3/4	20	1 5/16	33	.69	.32	.68	.31
1	25	1 1/2	38	1.12	.51	1.14	.52
1 1/4	32	1 3/4	44	1.44	.66	1.56	.71
1 1/2	40	1 15/16	49	1.98	.90	2.05	.94
2	50	2 1/4	57	3.30	1.50	3.29	1.50
2 1/2	65	2 11/16	67	5.90	2.69	5.75	2.62
3	80	3 1/16	77	7.93	3.61	8.10	3.69
4	100	3 13/16	96	13.50	6.14	13.91	6.33

**lateral**

45° Y-branch or lateral: fig. 1108



T, U: center to end  
V: end to end

size		T		U		V		weight (approx.) each			
NPS	DN	in	mm	in	mm	in	mm	black		galvanized	
								lb	kg	lb	kg
3/8	10	1/2	13	1 7/16	37	1 5/16	49	.27	.13	.29	.14
1/2	15	5/8	16	1 11/16	43	2 5/16	58	.37	.17	.39	.18
3/4	20	3/4	19	2 1/16	52	2 13/16	51	.62	.29	.65	.30
1	25	7/8	22	2 7/16	61	3 5/16	83	.86	.39	.93	.43
1 1/4	32	1	25	2 15/16	74	3 9/16	100	1.63	.74	1.62	.74
1 1/2	40	1 1/8	28	3 1/4	83	4 3/8	110	2.00	.91	2.06	.94
2	50	1 1/4	31	3 15/16	100	5 3/16	130	3.05	1.39	3.26	1.49
2 1/2	65	1 1/2	38	4 3/4	119	6 1/4	156	5.86	2.67	6.06	2.76
3	80	1 11/16	43	5 9/16	139	7 1/4	181	9.30	4.23	9.40	4.28
4	100	2	50	7	175	9	225	15.70	7.14	15.85	7.21

malleable iron, (class 150/PN 20)

## couplings

	size		W		weight (approx.) each			
					black		galvanized	
	NPS	DN	in	mm	lb	kg	lb	kg
<b>right hand</b> <b>fig. 1121</b>    W: end to end	1/8	6	15/16	24	.06	.03	.06	.03
	1/4	8	1 1/16	27	.09	.04	.09	.04
	3/8	10	1 3/16	30	.13	.06	.13	.06
	1/2	15	1 5/16	33	.20	.10	.21	.10
	3/4	20	1 1/2	38	.29	.14	.31	.14
	1	25	1 11/16	43	.48	.22	.49	.23
	1 1/4	32	1 15/16	49	.74	.34	.76	.35
	1 1/2	40	2 1/8	54	1.00	.46	1.00	.46
	2	50	2 1/2	63	1.45	.66	1.55	.71
	2 1/2	65	2 7/8	73	2.40	1.09	2.45	1.12
	3	80	3 3/16	81	3.30	1.50	3.39	1.54
	4	100	3 11/16	94	5.65	2.57	5.73	2.61

## reducer

fig. 1125

	size				M		weight (approx.) each			
	NPS	DN	NPS	DN	in	mm	black		galvanized	
							lb	kg	lb	kg
  M: end to end	1/4	8	1/8	6	1	25	.07	.04	.08	.04
	3/8	10	1/4	8	1 1/8	29	.11	.05	.12	.06
	1/2	15	3/8	10	1 1/4	32	.16	.08	.18	.09
	3/4	20	1/2	15	1 7/16	37	.26	.12	.28	.13
			3/8	10	.25	.12	.26	.12		
			1/4	8	.22	.10	.23	.11		
	1	25	3/8	10	.24	.10	.25	.11		
			1/2	15	.42	.19	.44	.20		
			1/4	8	.39	.18	.41	.20		
	1 1/4	32	3/8	10	1 11/16	37	.35	.16	.38	.18
			1/2	15	.35	.16	.37	.18		
			1/4	8	.68	.31	.70	.32		
	1 1/2	40	1	25	2 1/16	52	.64	.29	.65	.30
			3/4	20	.60	.28	.63	.29		
			1/2	15	.90	.41	.93	.42		
	2	50	1 1/4	32	2 5/16	58	.90	.41	.91	.42
			1	25	.88	.40	.90	.41		
			3/4	20	.77	.35	.80	.37		
	2 1/2	65	1 1/2	40	2 13/16	71	1.55	.71	1.57	.72
			1 1/4	32			1.53	.71	1.53	.70
			1	25			1.40	.64	1.40	.64
	3	80	3/4	20	1.34	.61	1.34	.61		
			1/2	15	1.15	.53	1.20	.55		
			2	50	2.50	1.14	2.56	1.17		
1 1/2			40	2.09	.95	2.11	.96			
1 1/4			32	2.09	.95	2.14	.98			
3 1/2	90	1	25	2.12	.97	2.20	1.00			
		2 1/2	65	3.31	1.51	3.40	1.55			
		2	50	3.23	1.47	3.38	1.54			
		1 1/2	40	3.30	1.50	3.47	1.58			
4	100	1 1/4	32	3 1/16	93	3.22	1.47	3.05	1.39	
		1	25	3.16	1.44	3.24	1.48			
		3 1/2	90	4.99	2.27	5.15	2.34			
		2 1/2	65	4.72	2.15	4.80*	2.19			
5	125	2	50	4	100	4.32	1.97	4.40*	2.00	
		3 1/2	90	6.30	2.86	6.45	2.94			
		3	80	6.55	2.98	6.62	3.01			
		2 1/2	65	5.93	2.70	5.95	2.71			
6	150	2	50	4 3/8	110	5.10	2.32	5.00	2.28	
		1 1/2	40	4.90	2.23	5.00	2.28			
		4	100	9.57	4.35	9.20	4.19			
6	150	4	100	4 9/16	115	10.30	4.69	10.70	4.87	

\*MADE TO ORDER IF QUANTITIES WARRANT.

malleable iron, (class 150/PN 20)

pressure ratings, psi { saturated steam: 150  
liquid & gas at 150° F : 300

pressure ratings, bar { saturated steam: 10.3  
liquid & gas at 65° C : 20.6

return bends

open pattern, r.h.  
fig. 1119



return bends	size		center to center		weight (approx.) each			
	NPS	DN	in	mm	black		galvanized	
					lb	kg	lb	kg
	½	15	1½	38	.36	.17	.36*	.17
	¾	20	2	50	.64	.29	.68*	.31
	1	25	2½	63	1.10	.50	1.15	.53
	1¼	32	3	75	1.77	.81	1.90*	.87
	1½	40	3½	88	2.55	1.16	2.70*	1.23
	2	50	4	100	4.00	1.82	4.25	1.94

cap

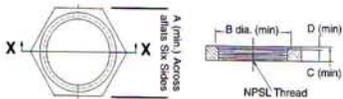
fig. 1124



fig. 1124	size		weight (approx.) each				size		weight (approx.) each			
	NPS	DN	black		galv.		NPS	DN	black		galv.	
			lb	kg	lb	kg			lb	kg	lb	kg
	½	6	.03	.02	.04	.02	2	50	1.13	.52	1.20	.55
	¾	8	.06	.03	.06	.03	2½	65	1.75	.80	1.80	.82
	¾	10	.09	.04	.10	.05	3	80	2.59	1.18	2.75	1.25
	1	15	.12	.06	.12	.06	3½	90	3.16	1.44	3.24	1.48
	1	20	.22	.10	.20	.09	4	100	4.54	2.07	4.61	2.10
	1	25	.38	.18	.38	.18	5	125	6.44	2.93	6.89	3.14
	1½	32	.58	.27	.61	.28	6	150	10.00	4.55	9.98	4.54
	1½	40	.73	.34	.75	.34						

hex locknut

fig. 1134



For nominal sizes larger than 2 / 50 DN, see cast iron standard.

fig. 1134	size		A	B	C	D	weight (approx.) each				size		A	B	C	D	weight (approx.) each												
	NPS	DN	(min)	(min)	(min)	(min)	black		galv.		NPS	DN	(min)	(min)	(min)	(min)	black		galv.										
			in	mm	in	mm	in	mm	in	mm			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm					
	½	6	.690	17.5	.500	12.7	.190	4.8	.040	1.0	.04	.02	.04	.02	1	25	1.750	44.5	1.500	38.1	.380	9.7	.060	1.5	.14	.07	.16	.08	
	¾	8	.840	21.3	.660	16.8	.250	6.4	.060	1.5	.02	.01	.03	.02	1¼	32	2.100	53.3	1.860	47.2	.420	10.7	.060	1.5	.21	.10	.19	.09	
	¾	10	1.000	25.4	.770	19.6	.280	7.1	.060	1.5	.04	.02	.04	.02	1½	40	2.350	59.7	2.120	53.8	.470	11.9	.060	1.5	.24	.11	.25	.12	
	1	15	1.180	30.0	.970	24.6	.310	7.9	.060	1.5	.06	.03	.06	.03	2	50	2.880	73.1	2.630	66.8	.530	13.5	.090	2.3	.40	.19	.47	.22	
	1	20	1.430	36.3	1.230	31.2	.340	8.6	.060	1.5	.12	.06	.13	.06															

floor flange

fig. 1190



fig. 1190	size		diam. of flange		diam. of bolt circle		no. of holes	diam. of holes		wgt. (approx.) each			
	NPS	DN	in	mm	in	mm		in	mm	black		galv.	
										lb	kg	lb	kg
	¼	8	2¾	55	1¾	47.5	4	¼	6	.27	.13	.43	.20
	¾	10	3	75	2	51.0	4	¼	6	.33	.15	.48	.22
	½	15	3½	90	2½	63.5	4	¼	6	.56	.26	.60	.28
	¾	20	3½	90	2½	63.5	4	¼	6	.60	.28	.58	.27
	1	25	4	100	3	76.0	4	¼	6	.85	.39	.88	.40
	1¼	32	4	100	3	76.0	4	¼	6	.90	.41	.90	.41
	1½	40	4½	115	3½	89.0	4	⅝	8	1.20	.55	1.25	.57
	2	50	5½	140	4¼	114.5	4	⅝	8	2.03	.93	2.05	.94

◇ cast iron

• 1/8, 1/4, 3/8 NPS/6, 8, 10 DN, made in steel

\* MADE TO ORDER IF QUANTITIES WARRANT

plain fittings

**Not to be used for pressure service**

side outlet elbow  
fig. 1109



size		weight (approx.) each			
NPS	DN	black		galvanized	
		lb	kg	lb	kg
<b>side outlet elbow: fig. 1109</b>					
½	15	.31	.14	.31	.14
¾	20	.44	.20	.51	.24
1	25	.74	.34	.76	.35
1¼	32	1.17	.54	1.17	.54
1½	40	1.40	.64	1.55	.71
2	50	2.37	1.08	2.37	1.08

side outlet tee  
fig. 1113



<b>side outlet tee: fig. 1113</b>					
¾	20	.56*	.26	.60*	.28
1	25	.91*	.42	.90*	.42
1¼	32	1.30*	.59	1.28*	.59
1½	40	1.65*	.75	1.28*	.59
2	50	2.79*	1.27	2.80*	1.28

waste nut  
fig. 1133



extension piece  
fig. 1137



<b>waste nut: fig. 1133</b>					<b>extension piece: fig. 1137</b>					
size		weight (approx.) each			size		weight (approx.) each			
NPS	DN	black		kg	NPS	DN	black		kg	
		lb	kg				lb	kg		
¾	10	.08*	.04		¾	10	.10*	.05	.10*	.05
½	15	.12*	.05		½	15	.14	.07	.16	.07
¾	20	.15*	.07		¾	20	.26	.12	.26	.12
1	25	.19*	.09		1	25	.42	.19	.41	.19

\* MADE TO ORDER IF QUANTITIES WARRANT.

**malleable iron**

**class 300/PN 50  
(extra heavy)**

pressure ratings, bar

steam at 285° C:  
liquid & gas at 65° C:  
8 to 25 DN: 138  
32 to 50 DN: 103  
65 to 100 DN: 68.9  
125 to 150 DN: 55.2

pressure ratings, psi

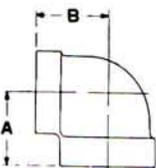
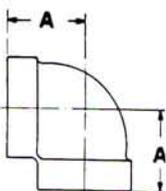
steam at 550° F: 300  
liquid & gas at 150° F:  
1/4 to 1 NPS: 2000  
1 1/4 to 2 NPS: 1500  
2 1/2 to 4 NPS: 1000  
5 & 6 NPS: 800

Grinnell Class 300/PN50 (extra heavy) fittings conform to American National Standard ASME B16.3 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Grinnell extra heavy banded pattern fittings in this catalog, sizes 1/4 to 6 NPS / 8 to 150 DN, are included in the "List of Inspected Fire Protection Equipment and Materials" issued by Underwriters' Laboratories.

**elbows**

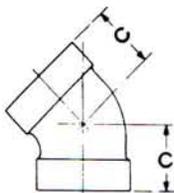
**90° elbow**  
straight: fig. 1161  
reducing: fig. 1161R



size		A		weight (approx.) each				size		A		weight (approx.) each			
NPS	DN	in	mm	black		galv.		NPS	DN	in	mm	black		galv.	
				lb	kg	lb	kg					lb	kg	lb	kg
1/4	8	1 5/16	24	.20	.09	.20	.09	1 1/2	40	2 1/8	53	2.46	1.12	2.57	1.17
3/8	10	1 1/16	27	.29	.14	.32	.15	2	50	2 1/2	63	4.17	1.90	4.27	1.94
1/2	15	1 1/4	32	.47	.22	.48	.22	2 1/2	65	2 15/16	74	5.30	2.41	5.93	2.70
3/4	20	1 7/16	37	.66	.30	.68	.31	3	80	3 3/8	85	9.65	4.39	9.75	4.44
1	25	1 5/8	41	1.16	.53	1.19	.54	4	100	4 1/2	114	16.00	7.28	16.25	7.39
1 1/4	32	1 15/16	49	1.88	.86	1.93	.88	6	150	6 1/4	156	41.87*	19.04	43.21*	19.64

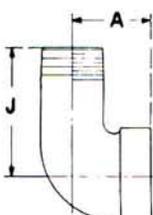
size		A		B		weight (approx.) each					
NPS	DN	NPS	DN	in	mm	in	mm	black		galv.	
								lb	kg	lb	kg
3/8	10	1/4	8	1	25	1	25	.26	.12	.27*	.13
1/2	15	3/8	10	1 3/16	30	1 3/16	30	.41*	.19	.43*	.20
3/4	20	1/2	15	1 5/16	33	1 3/8	35	.62	.29	.67*	.31
1	25	3/4	20	1 1/2	38	1 1/2	38	1.00	.46	1.02*	.47
1 1/4	32	1 3/4	25	1 3/4	44	1 13/16	46	1.60	.73	1.62*	.74
1 1/2	40	2	25	2	46	2 1/16	50	2.15	.98	2.18	.98
2	50	2 1/4	40	2 1/4	57	2 3/8	60	3.30	1.50	3.30	1.50
2 1/2	65	2 1/2	50	2 1/2	67	2 3/4	69	5.65*	2.57		
3	80	3 1/2	65	3 1/2	77	3 5/8	83	8.00	3.64		

**45° elbow: fig. 1162**



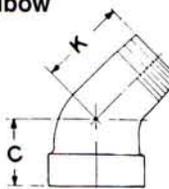
size		C		weight (approx.) each				size		C		weight (approx.) each			
NPS	DN	in	mm	black		galv.		NPS	DN	in	mm	black		galv.	
				lb	kg	lb	kg					lb	kg	lb	kg
1/4	8	1 3/16	21	.19	.09	.20	.09	1 1/2	40	1 11/16	43	2.15	.98	2.28	1.04
3/8	10	7/8	22	.28	.13	.29	.14	2	50	2	50	3.40	1.55	3.50	1.59
1/2	15	1	25	.43	.20	.44	.20	2 1/2	65	2 1/4	57	5.51	2.51	5.59	2.54
3/4	20	1 1/8	28	.66	.30	.68	.31	3	80	2 1/2	63	8.10	3.69	8.50	3.87
1	25	1 1/16	33	1.00	.46	1.01	.46	4	100	2 3/8	71	13.41	6.10	13.79	6.27
1 1/4	32	1 1/2	38	1.67	.76	1.70	.78	6	150	3 1/2	88	29.50*	13.41	30.89*	14.04

**90° street elbow ▲  
fig. 1170**



size		A		J		weight (approx.) each				size		A		J		weight (approx.) each			
NPS	DN	in	mm	in	mm	black		galv.		NPS	DN	in	mm	in	mm	black		galv.	
						lb	kg	lb	kg							lb	kg	lb	kg
1/4	8	1 5/16	24	1 7/16	36	.17	.08	.18	.09	1 1/4	32	1 15/16	49	2 7/8	72	1.60	.73	1.61	.74
3/8	10	1 1/16	27	1 5/8	41	.26	.12	.27	.13	1 1/2	40	2 1/8	53	3 3/8	78	2.20	1.00	2.25	1.03
1/2	15	1 1/4	32	2	50	.40	.19	.42	.19	2	50	2 1/2	63	3 11/16	92	3.56	1.62	3.75	1.71
3/4	20	1 7/16	36	2 3/16	55	.68	.31	.71	.33	2 1/2	65	2 15/16	74	4 1/2	114	6.03	2.74	6.21*	2.83
1	25	1 5/8	41	2 9/16	64	1.06	.49	1.10	.50	3	80	3 3/8	85	5 1/8	128	9.55	4.34	9.88	4.49

**45° street elbow  
fig. 1160**



size		C		K		weight (approx.) each				size		C		K		weight (approx.) each			
NPS	DN	in	mm	in	mm	black		galv.		NPS	DN	in	mm	in	mm	black		galv.	
						lb	kg	lb	kg							lb	kg	lb	kg
1/2	15	1	25	1 3/8	35	.36	.17			1 1/4	32	1 1/2	38	2 1/8	53	1.52	.69		
3/4	20	1 1/8	28	1 9/16	40	.54	.25			1 1/2	40	1 11/16	42	2 5/16	58	2.06	.94		
1	25	1 1/16	33	1 13/16	46	.85	.39			2	50	2	50	2 11/16	67	3.34	1.52		

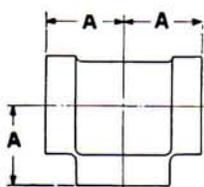
▲ Gas or liquid rating for street elbows only: 500 psi at 150°F/34.5 bar at 65°C.

\* MADE TO ORDER IF QUANTITIES WARRANT.

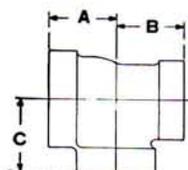
malleable iron, (class 300/PN 50)

## tees

straight tee  
fig. 1164



reducing tee  
fig. 1164R



size		center to end A		weight (approx.) each				size		center to end A		weight (approx.) each			
NPS	DN	in	mm	lb	kg	lb	kg	NPS	DN	in	mm	lb	kg	lb	kg
1/4	8	15/16	24	.27	.13	.30	.14	1 1/2	40	2 1/8	53	3.40	1.55	3.49	1.59
3/8	10	1 1/16	27	.42	.19	.43	.20	2	50	2 1/2	63	5.20	2.37	5.40	2.46
1/2	15	1 1/4	31	.65	.30	.69	.32	2 1/2	65	2 5/16	74	7.96	3.62	8.04	3.66
3/4	20	1 7/16	36	1.07	.49	1.10	.50	3	80	3 3/8	85	12.56	5.71	12.75	5.80
1	25	1 5/8	41	1.63	.74	1.65	.75	4	100	4 1/2	113	23.86	10.85	24.05	10.94
1 1/4	32	1 5/16	49	2.53	1.15	2.59	1.18								
size		center to end A		center to end B		center to end C		size		center to end A		weight (approx.) each			
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	lb	kg	lb	kg
3/8	10	3/8	10	1/4	8	1	25	1	25	1	25	.37	.17	—	—
1/2	15	1/2	15	3/8	10	1 3/16	30	1 3/16	30	1 3/16	30	.61	.28	.63*	.29
		3/8	10	1/2	15	1 1/4	32	1 3/16	30	1 1/4	32	.58*	.27	—	—
3/4	20	3/4	20	1/2	15	1 5/16	33	1 5/16	33	1 3/8	35	.90	.41	.88	.40
				3/8	10	1 1/4	32	1 1/4	32	1 5/16	33	.80	.37	.80	.37
				1/4	8	1 3/16	30	1 3/16	30	1 1/4	32	.76	.35	.80	.37
1/2	15	1/2	15	3/4	20	1 7/16	35	1 3/8	35	1 7/16	37	.93	.43	—	—
				1/2	15	1 5/16	33	1 1/4	32	1 3/8	35	.78	.36	—	—
1	25	1	25	3/4	20	1 1/2	38	1 1/2	38	1 9/16	40	1.33	.61	1.43	.65
				1/2	15	1 7/16	35	1 7/16	35	1 1/2	38	1.26	.58	1.29	.59
				3/8	10	1 5/16	33	1 5/16	33	1 7/16	35	1.18*	.54	—	—
				1/4	8	1 1/4	32	1 1/4	32	1 3/8	35	1.09	.50	—	—
				3/4	20	1	25	1 5/8	41	1 9/16	39	1 5/8	41	1.38	.63
3/4	20	3/4	20	1 1/2	38	1 7/16	35	1 9/16	39	1.27*	.58	—	—		
1/2	15	1	25	1 5/8	41	1 1/2	38	1 5/8	41	1.36	.62	—	—		
3/4	20	3/4	20	1	25	1 9/16	39	1 9/16	39	1 1/2	38	1.25*	.57	—	—
1 1/4	32	1 1/4	32	1	25	1 3/4	44	1 3/4	44	1 13/16	46	2.10	.96	2.13	.97
				3/4	20	1 5/8	41	1 5/8	41	1 3/4	44	1.90	.87	1.99	.91
				1/2	15	1 1/2	38	1 1/2	38	1 1 1/16	42	1.70	.78	1.88	.86
				3/8	10	1 7/16	36	1 7/16	36	1 5/8	41	1.70*	.78	—	—
1	25	1	25	1 1/4	32	1 5/16	49	1 13/16	46	1 5/16	49	2.23*	1.02	—	—
				1	25	1 3/4	44	1 5/8	41	1 13/16	46	1.92	.88	—	—
3/4	20	1 1/4	32	1 5/16	49	1 3/4	44	1 5/16	49	2.20*	1.00	—	—		
1 1/2	40	1 1/2	40	1 1/4	32	2	50	2	50	2 1/16	52	3.05	1.39	3.12	1.42
				1	25	1 13/16	46	1 13/16	46	2	50	2.60	1.19	2.70	1.23
				3/4	20	1 1 1/16	42	1 1 1/16	42	1 7/8	47	2.46	1.12	2.47	1.13
				1/2	15	1 5/8	41	1 5/8	41	1 13/16	46	2.27	1.04	2.32	1.06
1 1/4	32	1 1/2	40	2 5/8	53	2 1/16	52	2 1/8	53	3.12*	1.42	—	—		
2	50	2	50	1 1/2	40	2 1/4	57	2 1/4	57	2 3/8	60	4.60	2.09	4.70	2.14
				1 1/4	32	2 1/8	53	2 1/8	53	2 5/16	58	4.21	1.92	4.40	2.00
				1	25	2	50	2	50	2 1/4	57	3.97	1.81	4.00	1.82
				3/4	20	1 13/16	26	1 13/16	46	2 1/8	53	3.56	1.62	3.60	1.64
				1/2	15	1 3/4	44	1 3/4	44	2 1/16	52	3.35	1.53	3.54	1.61
1 1/2	40	2	50	2 1/2	63	2 3/8	60	2 1/2	63	4.50	2.05	—	—		
2 1/2	65	2 1/2	65	2	50	2 1 1/16	67	2 1 1/16	67	2 3/4	69	7.59*	3.45	7.50*	3.41
				1 1/2	40	2 7/16	61	2 7/16	61	2 5/8	66	6.35	2.89	6.60	3.00
2	50	2 1/2	65	2 5/16	74	2 3/4	69	2 5/16	74	7.40*	3.37	—	—		
3	80	3	80	2	50	2 13/16	71	2 13/16	71	3 1/8	78	9.60	4.37	10.10	4.59
				2 1/2	65	3	80	3 3/8	85	3 5/16	83	3 3/8	85	11.80*	5.37

\* MADE TO ORDER IF QUANTITIES WARRANT

malleable iron, (class 300/PN 50)

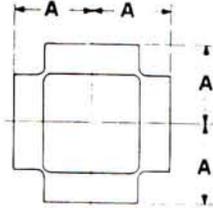
pressure ratings, psi  
 steam at 550° F: 300  
 liquid & gas at 150° F:  
 1/4 to 1 NPS: 2000  
 1 1/4 to 2 NPS: 1500  
 2 1/2 to 4 NPS: 1000  
 5 and 6 NPS: 800

pressure ratings, bar  
 steam at 285° C: 20.7  
 liquid & gas at 65° C:  
 8 to 25 DN: 138  
 32 to 50 DN: 103  
 65 to 100 DN: 68.9  
 125 to 150 DN: 55.2



cross

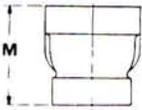
fig. 1165



size		center to end A		weight (approx.) each				size		center to end A		weight (approx.) each			
NPS	DN	in	mm	black		galvanized		NPS	DN	in	mm	black		galvanized	
				lb	kg	lb	kg					lb	kg	lb	kg
1/4	8	15/16	24	.35	.16	.36	.17	1	25	1 5/8	41	1.90	.87	2.02	.92
3/8	10	1 1/16	27	.46	.21	.53*	.24	1 1/4	32	1 15/16	49	3.23	1.47	3.28*	1.49
1/2	15	1 1/4	32	.83	.38	.86*	.39	1 1/2	40	2 1/8	53	4.20	1.91	4.35	1.98
3/4	20	1 7/16	36	1.25	.57	1.32	.60	2	50	2 1/2	63	6.40	2.91	6.60	3.00

reducer

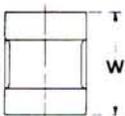
fig. 1167



size				end to end M		weight (approx.) each				size				end to end		weight (approx.) each					
NPS	DN	NPS	DN	in	mm	black		galv.		NPS	DN	NPS	DN	in	mm	black		galv.			
						lb	kg	lb	kg							lb	kg	lb	kg		
3/8	10	1/4	8	1 1/8	36	.21	.10	.22	.10	1 1/2	40	3/4	20	2 1/8	68	1.57	.72	1.60	.73		
1/2	15	3/8	10	1 1/8	42	.34	.16	.36	.17	2	50	1/2	15	2 1/8	68	1.51	.69	1.54	.70		
3/4	20	1/2	15	1 1/4	44	.50	.23	.52	.24			1 1/4	32	3/8	20	3 1/8	80	2.72	1.24	2.88	1.31
		3/4	10	1 1/4	44	.47	.22	.48	.22			1	25	3/8	20	3 1/8	80	2.53	1.15	2.58	1.18
1	25	3/4	8	1 1/4	44	.46	.21	.49	.23	3/4	20	3/8	20	3 1/8	80	2.44	1.11	2.50	1.14		
		1/2	15	2	50	.79	.36	.82	.38	1/2	15	3/8	20	3 1/8	80	2.39	1.09	2.40	1.09		
		3/8	10	2	50	.71	.33	.75	.34	2 1/2	65	2	50	3 1/8	92	4.32	1.97	4.54	2.07		
1 1/4	32	1	25	2 1/8	60	1.29	.59	1.25	.57	3	80	2 1/2	65	4 1/8	102	6.45	2.94	6.60	3.00		
		3/4	20	2 1/8	60	1.16	.53	1.22	.56			2	50	4 1/8	102	5.75	2.62	5.50	2.50		
		1/2	15	2 1/8	60	1.12	.51	1.14	.52			1 1/2	40	4 1/8	102	5.79	2.64	5.87	2.67		
1 1/2	40	3/4	25	2 3/8	60	1.29	.59	1.25	.57	4	100	3	80	4 1/8	112	10.00	4.55	10.60	4.82		
		1/2	15	2 3/8	60	1.16	.53	1.22	.56			2 1/2	65	4 1/8	112	9.70*	4.41	9.85*	4.48		
1 1/2	40	1	25	2 3/8	60	1.62	.74	1.70	.78	2	50	4 1/8	112	9.50	4.32	9.60	4.37				

coupling

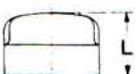
fig. 1166



size		end to end W		weight (approx.) each				size		end to end W		weight (approx.) each			
NPS	DN	NPS	DN	black		galvanized		NPS	DN	in	mm	black		galvanized	
				lb	kg	lb	kg					lb	kg	lb	kg
1/4	8	1 3/8	35	.17	.08	.18	.09	1 1/4	32	2 7/8	72	1.64	.75	1.67	.76
3/8	10	1 5/8	41	.26	.12	.27	.13	1 1/2	40	2 7/8	72	2.04	.93	2.08	.95
1/2	15	1 7/8	47	.42	.19	.43	.20	2	50	3 5/8	91	3.24	1.48	3.30	1.50
3/4	20	2 1/8	53	.65	.30	.68	.31	2 1/2	65	4 1/8	103	5.45	2.48	5.65	2.57
1	25	2 3/8	60	.99	.45	1.03	.47	3	80	4 1/8	103	7.30	3.32	7.40	3.37

cap

fig. 1163



size		height L		weight (approx.) each				size		height L		weight (approx.) each			
NPS	DN	in	mm	black		galvanized		NPS	DN	in	mm	black		galvanized	
				lb	kg	lb	kg					lb	kg	lb	kg
1/4	8	25/32	20	.10	.05	.11	.05	1 1/4	32	1 3/8	35	.94	.43	.95	.44
3/8	10	13/16	21	.15	.07	.15	.07	1 1/2	40	1 7/16	37	1.18	.54	1.32	.60
1/2	15	1	25	.23	.10	.24	.10	2	50	1 11/16	43	1.94	.89	1.96	.89
3/4	20	1 1/16	27	.35	.16	.36	.17	2 1/2	65	2 1/16	52	3.32	1.51	3.35	1.53
1	25	1 1/4	32	.58	.27	.58	.27	3	80	2 3/16	55	4.71	2.14	4.80	2.19

\* MADE TO ORDER IF QUANTITIES WARRANT

## malleable iron unions

## Class 150/PN20; 250; 300/PN 50

Grinnell Malleable Iron Unions conform to ASME B 16.39 and are in compliance with the requirements of the AAR (1994 AAR Manual of Standards and Practices).

Dimensions conform to ASME B 16.3 for Class 150/PN20 and 250 Unions.

COPPER OR COPPER ALLOY - TO - IRON	size		end to end		weight (approx.) each			
	NPS	DN	in	mm	black		galvanized	
					lb	kg	lb	kg
<b>class 150/PN20 union</b> <b>fig. 463</b>  150 lb. wsp/10.3 bar 300 lb. wog/20.7 bar non-shock  	1/8	6	1 5/16	33	.15	.07	.15	.07
	1/4 †	8	1 13/16	46	.46	.21	.47	.21
	3/8 †	10	1 13/16	46	.42	.20	.43	.20
	1/2 †	15	1 15/16	49	.44	.20	.45	.20
	3/4 †	20	2 1/16	52	.60	.27	.63	.29
	3/4 x 1/2 †	20 X 15	2 1/16	52	.55	.25	.59	.27
	1 †	25	2 7/16	62	.91	.42	.94	.43
	1 1/4 †	32	2 5/8	67	1.45	.66	1.45	.66
	1 1/2 †	40	2 3/4	70	1.69	.77	1.72	.79
	2 †	50	2 15/16	75	2.46	1.12	2.44	1.10
2 1/2 †	65	3 5/8	92	3.60	1.64	3.70	1.69	
3 †	80	3 3/4	95	4.95	2.25	4.98	2.27	
†UL Listed								
<b>class 250 union</b> <b>fig. 554</b>  250 lb. wsp/17.2 bar 500 lb. wog/34.5 bar non-shock  	1/8	6	1 5/16	33	.14	.07	.14*	.07
	1/4 †	8	1 13/16	46	.46	.21	.47	.21
	3/8 †	10	1 13/16	46	.42	.19	.43	.20
	1/2 †	15	2 1/16	52	.53	.25	.54	.25
	3/4 †	20	2 1/4	57	.80	.37	.82	.38
	1 †	25	2 9/16	65	1.28	.59	1.30	.60
	1 1/4 †	32	2 3/4	70	1.63	.75	1.65	.75
	1 1/2 †	40	3	76	2.06	.94	2.10	.96
	2 †	50	3 3/8	86	3.48	1.59	3.49	1.59
	2 1/2 †	65	3 7/8	98	5.30	2.41	5.38	2.45
3 †	80	4 1/4	108	7.60	3.46	7.76	3.53	
4 †	100	4 7/8	124	17.50	7.96	17.86	8.12	
†UL Listed								
<b>class 300/PN50 union</b> <b>fig. 459</b>  300 lb. wsp/20.7 bar 600 lb. wog/41.4 bar non-shock  	1/8	6	1 5/16	33	.14	.07	.14	.07
	1/4	8	1 13/16	46	.47	.21	.48	.22
	3/8	10	1 13/16	46	.43	.20	.44	.20
	1/2	15	2 1/16	52	.53	.25	.55	.25
	3/4	20	2 1/4	57	.80	.37	.82	.38
	1	25	2 9/16	65	1.27	.58	1.30	.60
	1 1/4	32	2 3/4	70	1.63	.75	1.72	.79
	1 1/2	40	3	76	2.13	.97	2.20	1.00
	2	50	3 3/8	86	3.46	1.58	3.47	1.58
	2 1/2	65	3 7/8	98	5.05	2.30	5.45	2.48
3	80	4 1/4	108	7.66	3.49	7.73	3.52	
4	100	4 7/8	124	17.70	8.05	17.83	8.11	
<b>class 300/PN50 union</b> <b>male and female</b> <b>fig. 551</b>  300 lb. wsp/20.7 bar 600 lb. wog/41.4 bar non-shock  	1/2	15	3	75	.62	.29	.62	.29
	3/4	20	3 9/16	80	.92	.42	.96	.44
	1	25	3 5/8	92	1.54	.70	1.50	.69
	1 1/2	40	4 1/4	108	2.60	1.19	2.73	1.25
	2	50	4 5/8	116	2.41	1.10	4.21	1.92

\*MADE TO ORDER IF QUANTITIES WARRANT.

**malleable iron unions**

Copper or Copper Alloy - To - Iron	size		center to end				weight (approx.) each			
			elbow		union		black		galvanized	
	NPS	DN	in	mm	in	mm	lb	kg	lb	kg
class 300/PN50 90° elbow female union fig. 552 	3/8	10	1 1/16	27	2 1/16	52	.51	.24	.53	.24
	1/2	15	1 1/4	32	2 5/16	58	.79	.36	.81	.37
	3/4	20	1 7/16	36	2 3/4	69	1.24	.57	1.26	.58
	1	25	1 5/8	41	3	75	1.88	.86	1.99*	.91

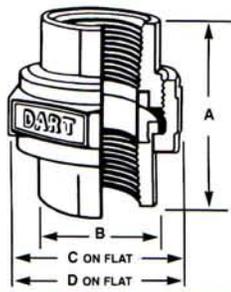
all iron union class 300/PN50 fig. J-3 	size		end to end		weight (approx.) each			
					black		galvanized	
	NPS	DN	in	mm	lb	kg	lb	kg
1/8	6	1 1/2	38	.18*	.09	.19	.09	
1/4	8	1 5/8	41	.28*	.13	.29	.14	
3/8	10	1 13/16	46	.36*	.17	.37*	.17	
1/2	15	2 1/8	54	.56*	.26	.57	.26	
3/4	20	2 7/16	62	.84*	.39	.87	.40	
1	25	2 3/4	70	1.27*	.58	1.31	.60	
1 1/4	32	3	75	2.04*	.93	2.10	.96	
1 1/2	40	3 3/16	81	2.74*	1.25	2.82	1.29	
2	50	3 1/2	88	4.16*	1.89	4.28	1.95	
2 1/2	65	3 11/16	92	6.00*	2.73	6.18*	2.81	
3	80	3 5/8	100	7.60*	3.46	7.83	3.56	

- Bronze Seat Ball Joint, with extra wide seating surfaces.
- Bronze Seat, on both sides of the joint. Resists corrosion.
- True bearing surfaces, unlike ordinary union seats.
- Bodies and nuts are high test air-refined malleable iron - generally superior to mild steel in most services.
- Can be repeatedly installed and removed.
- Straight way through. No cored parts to hold liquid or sediment.
- Extra heavy shoulder on swivel end and in the nut to stand pipe strains, vibration, and wrench abuse.

3/8 - 2NPS/10-50 DN – 300 lb/20.7 bar steam working pressure at 450°F/232°C.  
 3/8 - 2NPS/10-50 DN – 600 lb/41.4 bar cold water, gas, or oil pressure - non-shock.

**Dart Union Bronze to  
Bronze Seat Union  
fig. 0832**

Meets ASME B16.39  
The standard union for  
most installations



size		Weights											
		A		B		C		D		black		galvanized	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg
3/8	10	1- 3/4	44	1 5/16	24	1- 1/2	38	1- 3/4	44	0.41	.19	0.43	.20
1/2	15	2- 1/8	54	1- 1/8	29	1- 3/16	30	2	51	0.58	.26	0.61	.28
3/4	20	2- 5/16	59	1- 3/8	35	2- 3/16	56	2- 1/2	64	0.82	.37	0.86	.39
1	25	2- 5/8	67	1- 11/16	43	2- 9/16	65	3	76	1.31	.59	1.37	.62
1- 1/4	32	2- 13/16	71	2- 1/16	52	3- 1/16	78	3- 1/2	89	1.91	.87	2.03	.92
1- 1/2	40	3	76	2- 3/16	56	3- 3/8	86	4	102	2.32	1.05	2.44	1.11
2	50	3- 5/8	92	2- 7/8	73	4- 1/16	103	4- 5/8	117	4.00	1.81	4.20	1.91

\*MADE TO ORDER IF QUANTITIES WARRANT

## cast iron threaded

class 125, (standard)

pressure ratings, psi { saturated steam: 125  
liquid & gas at 150° F: 175

pressure ratings, bar { saturated steam: 8.6  
liquid & gas at 65° C: 12.1

Grinnell standard and extra heavy cast iron threaded fittings are manufactured in accordance with ASME B16.4 (except plugs and bushings, ASME B16.14). Dimensions also conform to Federal specifications, WW-P-501 (except plugs and bushings WW-P-471).

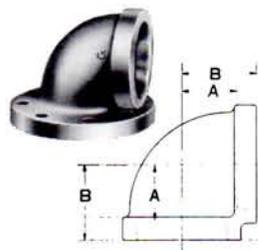
Grinnell standard and extra heavy fittings in this section, sizes 1/4 NPS/8 DN - 12 NPS/300 DN, are included in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

### elbows

90° elbow  
straight: fig. 351



flanged and threaded  
fig. 371•



A: center to end of pipe  
B: center to face of fitting

45° elbow: fig. 356



flanged and threaded  
fig. 372



A: center to end of pipe  
B: center to face of fitting

	size		A		B		weight (approx.) each					
							fig. 351 black		fig. 351 galv.		fig. 371 black	
	NPS	DN	in	mm	in	mm	lb	kg	lb	kg	lb	kg
90° elbow straight: fig. 351	1/4	8	1/2	13	13/16	21	.16	.08	.17	.08	—	—
	3/8	10	9/16	14	15/16	24	.25	.12	.26	.12	—	—
	1/2	15	11/16	17	1 1/8	29	.40	.19	.41	.19	—	—
	3/4	20	13/16	21	1 5/16	33	.60	.28	.61	.28	—	—
	1	25	15/16	24	1 1/2	38	.92	.42	.95	.44	—	—
	1 1/4	32	1 1/8	29	1 3/4	44	1.44	.66	1.46	.67	—	—
	1 1/2	40	1 5/16	33	1 15/16	49	1.95	.89	2.00	.91	—	—
	2	50	1 9/16	40	2 1/4	57	3.13	1.43	3.21	1.46	—	—
	2 1/2	65	1 13/16	46	2 11/16	68	4.94	2.25	5.13	2.34	10.22	4.65
	3	80	2 3/16	56	3 1/8	79	7.21	3.28	7.40	3.37	13.25	6.03
	4	100	2 11/16	68	3 13/16	97	12.17	5.54	12.67	5.76	21.56	9.80
	5	125	3 5/16	84	4 1/2	114	21.46	9.76	—	—	28.13	12.79
	6	150	3 7/8	98	5 1/8	130	31.33	14.24	33.33	15.15	40.50	18.41
	8	200	5 3/16	132	6 9/16	167	64.56	29.35	67.14	30.52	80.06	36.39

•Nominal Pipe Sizes of 4/100 DN and larger have two holes tapped for stud or tap bolts.

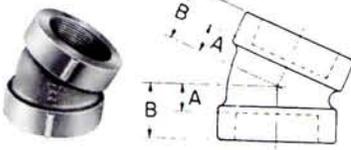
	size		A		B		weight (approx.) each					
							fig. 356				fig. 372	
	NPS	DN	in	mm	in	mm	black		galv.		black	
45° elbow: fig. 356	1/4	8	7/16	11	3/4	19	.16	.08	.17	.08	—	—
	3/8	10	7/16	11	13/16	21	.23	.11	—	—	—	—
	1/2	15	7/16	11	7/8	22	.37	.17	.38	.17	—	—
	3/4	20	1/2	13	1	25	.55	.25	.56	.26	—	—
	1*	25	9/16	14	1 1/8	29	.83	.38	.88	.40	—	—
	1 1/4	32	5/8	16	1 1/4	32	1.33	.61	1.36	.62	—	—
	1 1/2	40	13/16	21	1 7/16	37	1.79	.82	1.83	.84	—	—
	2	50	1	25	1 11/16	43	2.89	1.32	2.96	1.35	—	—
	2 1/2	65	1 1/16	27	1 15/16	49	4.29	1.95	4.35	1.98	—	—
	3	80	1 3/16	30	2 3/16	56	6.44	2.93	6.65	3.03	—	—
	3 1/2	90	1 3/8	35	2 3/8	60	8.42	3.83	—	—	—	—
	4	100	1 9/16	40	2 5/8	67	10.64	4.84	11.22	5.10	19.88	9.04
	5	125	1 7/8	48	3 1/16	78	16.96	7.71	17.38	7.90	—	—
	6	150	2 3/16	56	3 7/16	87	26.02	11.83	26.19	11.91	35.31	16.05
	8	200	2 7/8	73	4 1/4	108	50.17	22.81	52.00	23.64	64.41	29.28

\*1 NPS/25 DN size available in 1 NPS/25 DN x 1/2 NPS/15 DN reducing size, black or galvanized.

cast iron threaded, (class 125)

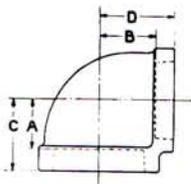
elbows (cont'd)

22½° elbow  
fig. 356A



size		A		B		weight (approx.) each			
NPS	DN	in	mm	in	mm	black		galv.	
						lb.	kg	lb.	kg
¾	20	¾	10	7/8	22	.52	.24	•	•
1	25	7/16	11	1	25	.80	.37	•	•
1¼	32	½	13	1½	29	1.40	.64	•	•
1½	40	5/8	16	1¼	32	1.64	.75	•	•
2	50	¾	19	17/16	37	2.50	1.14	•	•
2½	65	¾	19	15/8	41	3.95	1.80	•	•

90° elbow  
reducing: fig. 352



size				A		B		C		D		weight (approx.) each black	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
½	15	¾	10	5/8	16	11/16	17	1 1/16	27	1 1/16	27	.34	.16
		¼	8	5/8	16	¾	19	1 1/16	27	1 1/16	27	.40	.19
¾	20	½	15	1 1/16	17	13/16	21	1 3/16	30	1 ¼	32	.51	.24
1	25	¾	20	13/16	21	15/16	24	1 3/8	35	1 7/16	37	.76	.35
		½	15	1 1/16	17	15/16	24	1 ¼	32	1 3/8	35	.67	.31
1¼	32	1	25	15/16	24	1 1/8	29	1 9/16	40	1 11/16	43	1.21	.55
		¾	20	13/16	21	1 1/8	29	1 7/16	37	1 5/8	41	1.02	.47
		½	15	1 1/16	17	1 1/16	27	1 5/16	33	1 ½	38	1.07	.49
1½	40	1¼	32	13/16	30	1 ¼	32	1 13/16	46	1 7/8	48	1.74	.80
		1	25	1	25	1 ¼	32	1 5/8	41	1 13/16	46	1.44	.66
		¾	20	7/8	22	1 5/16	49	1 ½	38	1 13/16	46	1.55	.71
		½	15	¾	19	1 ¼	32	1 3/8	35	1 5/8	41	1.53	.70
2	50	1½	40	15/16	33	1 ½	38	2	51	2 1/8	54	2.59	1.18
		1¼	32	13/16	30	1 7/16	37	1 7/8	48	2 1/16	52	2.33	1.06
		1	25	1 1/16	27	1 7/16	37	1 ¾	44	2	51	2.08	.95
		¾	20	15/16	24	1 ½	38	1 5/8	41	2	51	2.20	1.00
2½	65	½	15	13/16	21	1 7/16	37	1 ½	38	1 3/8	35	2.22	1.01
		2	50	1 9/16	40	1 7/8	48	2 7/16	62	2 9/16	65	4.01	1.83
		1½	40	15/16	33	1 13/16	46	2 3/16	56	2 7/16	62	3.68	1.68
		1¼	32	13/16	30	1 ¾	44	2 1/16	52	2 3/8	60	3.41	1.55
3	80	1	25	1	25	1 ¾	44	1 15/16	49	2 5/16	59	2.93	1.34
		2½	65	1 7/8	48	2 3/16	56	2 13/16	71	3 1/16	78	6.44	2.93
		2	50	1 5/8	41	2 ¼	57	2 9/16	65	2 15/16	75	5.35	2.44
		1½	40	1 5/8	41	2 5/16	59	2 9/16	65	2 15/16	75	5.65	2.57
3½	90	1¼	32	1 5/8	41	2 5/16	59	2 9/16	65	2 15/16	75	5.98	2.71
		3	80	2 3/16	56	2 7/16	62	3 3/16	81	3 3/8	86	8.95	4.07
		2½	65	2 7/16	62	2 11/16	68	3 ½	89	3 11/16	94	11.89	5.40
		2	50	2 3/16	56	2 11/16	68	3 ¼	83	3 5/8	92	10.63	4.84
4	100	1½	40	2 3/16	56	2 ¾	70	3 ¼	83	3 5/8	92	11.27	5.12
		1	25	2 3/16	56	2 15/16	75	3 ¼	83	3 5/8	92	11.89	5.40
		¾	20	2 15/16	59	2 15/16	75	3 ¼	83	3 5/8	92	11.89	5.40
5	125	¾	20	2 13/16	71	3 5/16	84	4	102	4 3/8	111	16.47	7.49
		2½	65	2 13/16	71	3 7/16	87	4	102	4 3/8	111	19.00	8.64
		2	50	2 13/16	71	3 ½	89	4	102	4 3/8	111	19.88	9.04
6	150	1¼	32	3 3/8	86	3 13/16	97	4 5/8	117	5	127	26.66	12.12
		1	25	2 13/16	71	3 7/8	98	4 1/16	103	4 15/16	125	23.53	10.70
		¾	20	2 5/16	59	3 3/16	97	3 9/16	90	4 13/16	122	19.43	8.84
8	200	6	150	4 3/16	106	5 1/8	130	5 9/16	141	6 3/8	162	51.11	23.24

A, B:  
center to end of pipe

C, D:  
center to face of fitting

• Not stocked

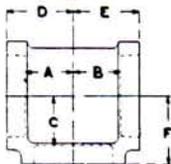
cast iron threaded, (class 125)

pressure ratings, psi { saturated steam: 125  
liquid & gas at 150° F: 175

pressure ratings, bar { saturated steam: 8.6  
liquid & gas at 65° C: 12.1

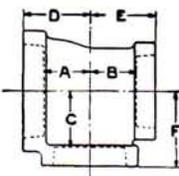
## tees

straight tee  
fig. 358



A, B, C: center to end of pipe  
D, E, F: center to face of fitting

reducing tee  
fig. 359



A, B, C:  
center to end of pipe

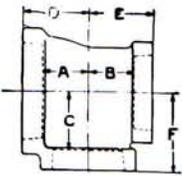
D, E, F:  
center to face of fitting

size		A		B		C		D		E		F		wt. (approx.)									
														each									
														black		galvanized							
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg						
1/4	8	1/2	13	1/2	13	1/2	13	13/16	5	13/16	5	13/16	5	.22	.10	.23	.10						
	10	5/8	16	5/8	16	15/16	16	1	25	1	25	1	25	.35	.16	.36	.17						
	15	11/8	17	11/8	17	11/8	17	1 1/8	29	1 1/8	29	1 1/8	29	.56	.25	.58	.27						
3/4	20	13/16	21	13/16	21	13/16	21	1 5/16	33	1 5/16	33	1 5/16	33	.84	.39	.85	.39						
	25	1 5/16	24	1 5/16	24	1 5/16	24	1 1/2	38	1 1/2	38	1 1/2	38	1.25	.57	1.31	.60						
	32	1 7/8	29	1 7/8	29	1 7/8	29	1 3/4	44	1 3/4	44	1 3/4	44	2.03	.93	2.07	.94						
1	40	1 5/8	33	1 5/8	33	1 5/8	33	1 15/16	49	1 15/16	49	1 15/16	49	2.70	1.22	2.72	1.23						
	50	1 7/8	40	1 7/8	40	1 7/8	40	2 1/4	57	2 1/4	57	2 1/4	57	4.23	1.93	4.33	1.97						
	65	1 15/16	46	1 15/16	46	1 15/16	46	2 11/16	68	2 11/16	68	2 11/16	68	6.67	3.04	6.79	3.09						
2	80	2 1/8	56	2 1/8	56	2 1/8	56	3 1/8	79	3 1/8	79	3 1/8	79	10.00	4.55	10.16	4.62						
	90	2 1/4	62	2 1/4	62	2 1/4	62	3 3/8	87	3 3/8	87	3 3/8	87	13.29	6.05	13.82	6.29						
	100	2 3/8	68	2 3/8	68	2 3/8	68	3 3/4	95	3 3/4	95	3 3/4	95	16.33	7.43	16.99	7.73						
3	125	3 1/8	84	3 1/8	84	3 1/8	84	4 1/2	114	4 1/2	114	4 1/2	114	27.33	12.43	27.67	9.85						
	150	3 3/8	98	3 3/8	98	3 3/8	98	5 1/8	130	5 1/8	130	5 1/8	130	40.85	18.57	41.40	18.82						
	200	5 3/8	132	5 3/8	132	5 3/8	132	6 7/8	167	6 7/8	167	6 7/8	167	79.00	35.90	81.25	36.94						
1/2	15	1/2	15	3/8	10	1 1/16	17	1 1/16	17	3/4	19	1 1/8	29	1 1/8	29	1 1/8	29	.57	.25	-	-		
				1/4	8	1 1/16	17	1 1/16	17	13/16	21	1 1/8	29	1 1/8	29	1 1/8	29	.57	.25	-	-		
3/4	20	3/4	20	1/2	15	1 1/16	17	1 1/16	17	13/16	21	1 3/16	30	1 3/16	30	1 1/4	32	.76	.35	-	-		
				3/8	10	1 1/16	17	1 1/16	17	15/16	24	1 3/16	30	1 3/16	30	1 1/4	32	.75	.35	-	-		
				1/4	8	9/16	14	9/16	14	7/8	22	1 1/8	27	1 1/8	27	1 3/8	30	.62	.29	-	-		
		1/2	15	1 3/16	21	1 3/16	21	1 3/16	21	1 5/16	33	1 1/4	32	1 5/16	33	.75	.34	-	-				
1/2	15	1/2	15	3/8	10	1 1/16	17	1 1/16	17	13/16	21	1 3/16	30	1 1/8	29	1 1/4	32	.64	.29	-	-		
				1/4	8	1 1/16	17	1 1/16	17	13/16	21	1 3/16	30	1 1/8	29	1 1/4	32	.64	.29	-	-		
1	25	1	25	3/4	20	1 3/16	21	1 3/16	21	1 1/8	17	1 1/4	32	1 1/4	32	1 3/8	30	.68	.31	-	-		
				1/2	15	1 3/16	21	1 3/16	21	1 5/16	24	1 3/8	35	1 3/8	35	1 1/16	37	1.11	.51	-	-		
				1/4	8	1 1/16	17	1 1/16	17	1 1/8	29	1 1/4	32	1 1/4	32	1 3/8	35	1.01	.46	1.03	.47		
		3/4	20	1 5/16	24	1 5/16	24	1 5/16	24	1 1/2	38	1 1/16	37	1 1/2	38	1.13	.52	-	-				
		1/2	15	1 3/16	21	1 3/16	21	1 5/16	24	1 3/8	35	1 5/16	33	1 1/16	37	1.00	.46	-	-				
		1/4	8	1 1/16	17	1 1/16	17	1 5/16	24	1 1/4	32	1 3/16	30	1 3/8	35	.89	.41	-	-				
3/4	20	3/4	20	1	25	1 5/16	24	1 5/16	24	1 3/8	35	1 1/4	32	1 3/8	35	1.08	.49	-	-				
				3/4	20	1 3/16	21	1 3/16	21	1 5/16	24	1 3/8	35	1 1/4	32	1 3/8	35	.90	.41	-	-		
1/2	15	1/2	15	1	25	1 1/16	17	1 1/16	17	1 3/4	19	1 5/16	24	1 1/4	32	1 3/16	38	1.08	.49	-	-		
				3/4	20	1 1/16	17	1 1/16	17	1 5/16	24	1 1/4	32	1 3/16	38	1 3/8	35	.90	.41	-	-		
1 1/4	32	1 1/4	32	1	25	1 5/16	24	1 5/16	24	1 1/8	29	1 1/16	40	1 1/16	40	1 1/16	43	1.73	.79	-	-		
				3/4	20	1 3/16	21	1 3/16	21	1 1/8	29	1 1/16	37	1 1/16	37	1 5/8	41	1.57	.72	-	-		
				1/2	15	1 1/16	17	1 1/16	17	1 1/8	29	1 1/16	33	1 1/16	33	1 1/16	40	1.47	.67	-	-		
		1	25	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 11/16	43	1 3/4	44	1.79	.82	-	-		
				1	25	1 5/16	24	1 5/16	24	1 1/8	29	1 1/16	40	1 1/16	40	1 1/16	43	1.53	.70	1.56	.71		
				3/4	20	1 3/16	21	1 3/16	21	1 1/8	29	1 1/16	37	1 3/8	35	1 5/8	41	1.36	.62	-	-		
		3/4	20	3/4	20	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 1/8	41	1 3/4	44	1.73	.79	-	-
						1	25	1 5/16	24	1 5/16	24	1 1/8	29	1 1/16	40	1 1/16	37	1 1/16	43	1.43	.65	-	-
						3/4	20	1 3/16	21	1 3/16	21	1 1/8	29	1 1/16	37	1 5/8	33	1 5/8	41	1.27	.58	-	-
		1/2	15	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	29	1 3/4	44	1 1/8	40	1 3/4	44	1.64	.75	-	-		
						1	25	1 5/16	24	1 5/16	24	1 1/8	29	1 1/16	40	1 3/8	35	1 1/16	43	1.38	.63	-	-
		1/2	15	1/2	15	1 3/8	21	1 3/8	21	1 1/8	29	1 7/8	37	1 5/8	33	1 5/8	41	1.00	.46	-	-		
1	25					1 1/16	17	1 1/16	17	1 1/8	29	1 1/16	33	1 1/16	33	1 1/16	40	1.49	.68	-	-		

cast iron threaded, (class 125)

tees (cont'd)

reducing tee  
fig. 359



A, B, C:  
center to end of pipe

D, E, F:  
center to face of fitting

		size				A		B		C		D		E		F		wt. (approx.) each					
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg		
1/2	40	1/2	40	1/4	32	1 1/16	30	1 1/16	30	1/4	32	1 13/16	46	1 13/16	46	1 7/8	48	2.44	1.11	-	-		
				3/4	20	7/8	22	7/8	22	1/4	32	1 1/2	38	1 1/2	38	1 3/4	44	2.13	.97	2.17	.99		
				1	25	1 1/8	25	1 1/8	25	1 1/4	32	1 7/8	41	1 7/8	41	1 13/16	46	1.95	.89	-	-		
				1 1/2	15	1 3/4	21	1 3/4	21	1 1/4	32	1 7/8	41	1 7/8	41	1 11/16	43	1.84	.84	-	-		
		1/4	32	1/2	40	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	47	1 7/8	48	1 15/16	49	2.50	1.14	-	-
				3/4	20	7/8	22	7/8	22	1/4	32	1 1/2	38	1 1/2	38	1 3/4	44	2.28	1.04	-	-		
				1	25	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	46	1 3/4	44	1.97	.90	2.05	.94		
				1 1/2	15	1 3/4	21	1 3/4	21	1 1/4	32	1 7/8	41	1 7/8	41	1 11/16	43	1.67	.76	1.73	.79		
		1	25	1/2	40	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	47	1 7/8	48	1 15/16	49	2.29	1.04	-	-
				3/4	20	7/8	22	7/8	22	1/4	32	1 1/2	38	1 1/2	38	1 3/4	44	2.08	.95	-	-		
				1	25	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	46	1 3/4	44	1.72	.79	-	-		
				1 1/2	15	1 3/4	21	1 3/4	21	1 1/4	32	1 7/8	41	1 7/8	41	1 11/16	43	1.70	.78	-	-		
		3/4	20	1/2	40	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	47	1 7/8	48	1 15/16	49	2.18	.99	-	-
				1	25	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	46	1 3/4	44	1.93	.88	-	-		
		1/2	15	1/2	40	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	47	1 7/8	48	1 15/16	49	2.14	.98	-	-
				1	25	1 1/8	33	1 1/4	32	1 1/8	29	1/4	32	1 15/16	46	1 3/4	44	1.84	.84	-	-		
		1/4	32	1/4	32	1 1/2	40	1 1/4	32	1 1/4	32	1 3/8	30	1 7/8	48	1 7/8	48	1 13/16	46	2.29	1.04	-	-
				1	25	1 1/2	40	1 1/4	32	1 1/4	32	1 3/8	30	1 7/8	48	1 13/16	46	1 13/16	46	2.07	.94	-	-
		1	25	1/4	32	1 1/2	40	1 1/4	32	1 1/4	32	1	25	1 13/16	46	1 13/16	46	1 5/8	41	1.84	.84	-	-
				1	25	1 1/2	40	1 1/4	32	1 1/4	32	1	25	1 13/16	46	1 13/16	46	1 5/8	41	1.84	.84	-	-
		2	50	2	50	1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2	51	2 1/2	54	3.59	1.64	3.74	1.70
						1	25	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2	51	2 1/2	54	3.38	1.54	-	-
						3/4	20	7/8	22	7/8	22	1 1/2	38	2	51	2	51	2 1/2	54	3.05	1.39	3.14	1.43
						1/2	15	1 3/8	21	1 3/8	21	1 1/2	38	2	51	2	51	2 1/2	54	2.86	1.30	-	-
1 1/2	40			2	50	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.70	1.69	-	-
				1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.24	1.48	-	-		
				1	25	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.98	1.36	-	-		
				3/4	20	7/8	22	7/8	22	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.66	1.21	-	-		
1	25			2	50	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.46	1.58	-	-
				1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.85	1.30	-	-		
				1	25	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.94	1.34	-	-		
				3/4	20	7/8	22	7/8	22	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.70	1.23	-	-		
3/4	20			2	50	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.31	1.51	-	-
				1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.40	1.55	-	-		
				1	25	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.50	1.14	-	-		
				3/4	20	7/8	22	7/8	22	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.50	1.14	-	-		
1/2	15			2	50	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	3.30	1.50	-	-
				1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2	51	2 1/2	54	2 1/2	54	2.95	1.34	-	-		
1 1/2	40			1 1/2	40	1 1/2	40	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	2	51	3.23	1.47	-	-
				1 1/4	32	1 1/2	40	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	2	51	3.07	1.40	-	-
				1 1/4	32	1	25	2	50	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2	51	2.91	1.33	-	-
				1 1/4	32	1 1/4	32	1 1/2	40	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	2.81	1.28	-	-
				1 1/4	32	1	25	1 1/2	40	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2	51	2.66	1.21	-	-
				1	25	1	25	1 1/2	40	1 1/2	38	1 1/2	38	1 1/2	38	2 1/2	54	2	51	2.70	1.23	-	-
2 1/2	65	2 1/2	65	1 1/2	40	1 1/8	33	1 1/8	33	1 1/2	38	2 1/2	54	2 1/2	54	2 1/2	54	6.58	2.68	6.02	2.74		
				1 1/4	32	1 1/8	33	1 1/8	33	1 1/2	38	2 1/2	54	2 1/2	54	2 1/2	54	5.14	2.34	-	-		
				1	25	1	25	1	25	1	25	1 3/4	44	1 1/2	44	1 1/2	44	4.48	2.04	-	-		
				3/4	20	7/8	22	7/8	22	1 3/4	44	1 1/2	44	1 1/2	44	1 1/2	44	4.29	1.95	-	-		
		2	50	1 1/2	40	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2 1/2	54	2 1/2	54	2 1/2	54	6.00	2.73	-	-
				1 1/4	32	1 1/8	33	1 1/8	33	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	5.17	2.35	-	-		
				1 1/4	32	1 1/4	32	1 1/2	40	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	6.2	4.42	2.01	-		
				1	25	1	25	1 1/2	40	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	3.92	1.79	-	-		
		1 1/2	40	1 1/2	40	1 1/8	33	1 1/2	38	1 1/8	33	1 1/2	38	2 1/2	54	2 1/2	54	2 1/2	54	3.62	1.65	-	-
				1 1/4	32	1 1/8	33	1 1/8	33	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	3.57	1.63	-	-		
				1 1/4	32	1 1/4	32	1 1/2	40	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	3.62	1.65	-	-		
				1	25	1 1/4	32	1 1/2	40	1 1/2	38	1 1/2	38	2 1/2	54	2 1/2	54	3.57	1.63	-	-		

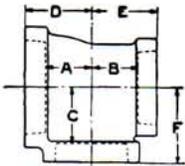
cast iron threaded, (class 125)

pressure ratings, psi { saturated steam: 125  
liquid & gas at 150° F: 175

pressure ratings; bar { saturated steam: 8.6  
liquid & gas at 65° C: 12.1

## tees (cont'd)

reducing tee  
fig. 359



A, B, C:  
center to end of pipe

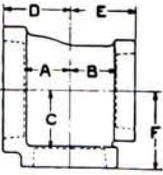
D, E, F:  
center to face of fitting

		size				A		B		C		D		E		F		wgt (approx.) each					
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg		
2 1/2	65	1 1/2	40	2 1/2	65	1 3/16	46	1 3/16	46	1 3/16	46	2 1/16	68	2 1/16	62	2 1/16	68	5.82	2.65	-	-		
				2	50	1 7/8	40	1 1/2	40	1 7/8	48	2 7/16	62	2 7/8	54	2 7/8	65	4.85	2.21	-	-		
				1 1/2	40	1 5/8	33	1 5/8	33	1 3/8	46	2 3/16	56	1 5/8	49	2 7/8	62	4.23	1.93	-	-		
		1 1/4	32	2 1/2	65	1 3/16	46	1 3/4	44	1 3/16	46	2 1/16	68	2 3/8	60	2 1/16	68	5.40	2.46	-	-		
				2	50	1 7/8	40	1 1/2	40	1 7/8	48	2 7/16	62	2 7/8	54	2 7/8	65	4.96	2.26	-	-		
				1 1/2	40	1 5/8	33	1 5/8	33	1 3/8	46	2 3/16	56	1 5/8	49	2 7/8	62	4.28	1.95	-	-		
		1	25	2 1/2	65	1 3/16	46	1 3/4	44	1 3/16	46	2 1/16	68	2 5/8	59	2 1/16	68	5.36	2.44	-	-		
				2	50	1 7/8	40	1 7/8	40	1 7/8	48	2 7/16	62	2 7/8	54	2 7/8	65	5.03	2.29	-	-		
		3/4	20	2 1/2	65	1 3/16	46	1 3/4	44	1 3/16	46	2 1/16	68	2 1/4	57	2 1/16	68	5.10	5.31	-	-		
				2	50	1 7/8	40	1 1/2	40	1 3/8	43	1 7/8	48	2 7/16	62	2 7/8	65	5.29	2.41	-	-		
		1/2	15	2 1/2	65	1 3/16	46	1 3/16	46	1 3/16	46	2 1/16	68	2 1/4	57	2 1/16	68	5.20	2.37	-	-		
				2	50	1 7/8	40	1 1/2	40	1 3/8	43	1 7/8	48	2 7/16	62	2 7/8	65	5.29	2.41	-	-		
		2	50	2	50			1 7/8	48	1 7/8	48	1 3/8	40	2 3/16	65	2 3/8	65	2 7/16	62	5.17	2.35	5.38	2.45
		2	50	1 1/2	40			1 7/8	48	1 5/8	49	1 3/8	40	2 3/16	65	2 3/8	65	2 7/16	62	5.46	2.49	-	-
		2	50	1 1/4	32	2 1/2	65	1 7/8	48	1 3/4	44	1 3/8	40	2 3/16	65	2 3/8	60	2 7/16	62	4.54	2.07	-	-
		2	50	1	25			1 7/8	48	1 3/8	46	1 3/8	40	2 3/16	65	2 3/8	60	2 7/16	62	4.88	2.22	-	-
1 1/2	40	1 1/2	40			1 3/8	46	1 3/8	46	1 3/8	33	2 1/16	62	2 3/16	62	2 3/16	56	4.15	1.89	-	-		
3	80	3	80	2 1/2	65	1 7/8	48	1 7/8	48	2 1/8	54	2 13/16	71	2 13/16	71	3 1/8	78	8.92	4.06	8.96	4.08		
				2	50	1 3/4	40	1 3/4	40	2 3/16	56	2 3/16	65	2 3/16	65	2 3/8	75	7.75	3.53	7.83	3.56		
				1 1/2	40	1 3/8	35	1 3/8	35	2 3/16	56	2 3/16	59	2 3/16	59	2 3/8	75	7.10	3.23	7.27	3.31		
				1 1/4	32	1 1/4	32	1 1/4	32	2 1/8	54	2 3/16	56	2 3/16	56	2 3/4	70	6.75	3.07	-	-		
				1	25	1	25	1	25	2 1/8	54	2 1/8	52	2 1/8	52	2 1/16	68	6.27	2.85	6.54	2.98		
				3/4	20	1 5/8	24	1 5/8	24	2 1/8	54	1 7/8	48	1 7/8	48	2 5/8	67	6.06	2.76	6.17	2.81		
				1/2	15	1 5/8	24	1 5/8	24	2 3/16	56	1 7/8	48	1 7/8	48	2 5/8	67	6.08	2.76	6.17	2.81		
				2 1/2	65	3	80	2 1/8	54	2 1/8	54	2 1/8	54	3 1/8	79	3 1/8	78	3 1/8	79	9.13	4.15	-	-
		2 1/2	65	3	80	2 1/8	54	1 3/4	48	1 3/4	46	2 1/8	54	2 13/16	71	2 13/16	68	3 1/8	78	7.66	3.49	-	-
				2	50	1 3/4	40	1 1/2	40	2 3/16	56	2 3/16	65	2 3/16	62	2 3/8	75	6.81	3.10	-	-		
				1 1/2	40	1 3/8	35	1 5/8	33	2 3/16	56	2 3/16	59	2 3/16	56	2 3/8	75	6.23	2.84	6.33	2.88		
				1 1/4	32	1 1/4	32	1 3/8	30	2 1/8	54	2 3/16	56	2 1/8	52	2 3/4	70	5.92	2.69	-	-		
				1	25	1	25	1 5/8	24	2 1/8	54	2 1/8	52	1 5/8	49	2 1/16	68	5.51	2.51	-	-		
				2	50	3	80	2 1/8	54	2 3/16	56	2 1/8	54	3 1/8	79	2 15/16	75	3 1/8	79	8.79	4.00	-	-
						2 1/2	65	1 7/8	48	1 5/8	33	2 1/8	54	2 13/16	71	2 3/16	65	3 1/8	78	7.10	3.23	-	-
						2	50	1 3/4	40	1 3/8	40	2 3/16	56	2 3/16	65	2 1/4	57	2 15/16	75	7.29	3.32	-	-
	1 1/2	40	1 3/8			35	1 1/2	40	2 3/16	56	2 3/16	59	2 3/16	56	2 3/8	71	6.83	3.11	-	-			
	1 1/2	40	3	80	2 1/8	54	2 3/16	56	2 1/8	54	3 1/8	79	2 13/16	71	3 1/8	79	8.13	3.70	-	-			
			2 1/2	65	1 7/8	48	1 7/8	48	2 1/8	54	2 13/16	71	2 3/16	65	3 1/8	78	7.67	3.49	-	-			
	1 1/4	32	3	80	2 1/8	54	2 1/8	54	2 1/8	54	3 1/8	79	2 13/16	71	3 1/8	79	8.46	3.85	-	-			
			1	25	3	80	2 1/8	54	2 1/8	54	2 1/8	54	3 1/8	79	2 11/16	68	3 1/8	79	8.30	3.78	-	-	
	3/4	20	3	80	2 1/8	54	2 1/8	54	2 1/8	54	3 1/8	79	2 11/16	68	3 1/8	79	8.25	3.75	-	-			
			1/2	15	3	80	2 1/8	54	2 1/4	57	2 1/8	54	3 1/8	79	2 11/16	68	3 1/8	79	7.60	3.46	-	-	
	3 1/2	90	3 1/2	90	3	80	2 3/16	56	2 3/16	56	2 3/8	60	3 3/16	81	3 3/16	81	3 3/8	86	12.00	5.46	-	-	
					2 1/2	65	1 5/8	48	1 5/8	49	2 3/8	60	2 7/8	73	2 7/8	73	3 3/16	84	10.95	4.98	-	-	
					2	50	1 3/4	41	1 3/4	41	2 7/16	62	2 3/8	67	2 3/8	67	3 3/16	81	9.94	4.52	-	-	
					1 1/2	40	1 3/8	35	1 3/8	35	2 7/16	62	2 3/8	60	2 3/8	60	3 1/8	78	8.87	4.04	-	-	
					1 1/4	32	1 1/4	32	1 1/4	32	2 3/8	60	2 1/4	57	2 1/4	57	3	76	8.63	3.93	-	-	
					1	25	1 1/8	27	1 1/8	27	2 3/8	60	2 1/8	54	2 1/8	54	2 1/16	75	8.00	3.64	-	-	
			3	80	3 1/2	90	2 7/16	62	2 3/8	60	2 7/16	62	3 7/16	87	3 7/16	87	3 7/16	87	13.95	6.34	-	-	
					3	80	2 3/16	56	2 1/8	54	2 3/8	60	3 3/16	81	3 3/8	79	3 3/8	86	11.33	5.15	-	-	
					2 1/2	65	1 5/8	49	1 7/8	48	2 3/8	60	2 7/8	73	2 3/16	71	3 3/16	84	10.00	4.55	-	-	
2					50	1 3/4	41	1 3/4	40	2 7/16	62	2 3/8	67	2 3/8	65	3 3/16	81	8.66	3.94	-	-		
1 1/2					40	1 3/8	35	1 3/8	35	2 7/16	62	2 3/8	60	2 3/8	59	3 1/8	78	8.33	3.79	-	-		
2 1/2					65	3 1/2	90	2 7/16	87	2 3/8	60	2 7/16	62	3 7/16	87	3 7/16	84	3 7/16	87	12.56	5.71	-	-
2 1/2		65	2 1/2	65	1 5/8	49	1 5/8	33	2 3/8	60	2 7/8	73	2 13/16	71	3 3/16	84	10.69	4.86	-	-			
			3	80	2 3/16	55	2 1/8	52	2 3/8	60	3 3/16	80	3	75	3 3/16	84	11.77	5.35	-	-			
			2	50	3 1/2	90	2 7/16	87	2 7/16	62	2 7/16	62	3 7/16	87	3 3/16	84	3 7/16	87	12.93	5.88	-	-	

cast iron threaded, (class 125)

tees (cont'd)

reducing tee  
fig. 359



A, B, C:  
center to end of pipe

D, E, F:  
center to face of fitting

		size						A	B	C	D	E	F	wgt (approx.) each									
		NPS	DN	NPS	DN	NPS	DN							in	mm	in	mm	in	mm	in	mm	lb	kg
4	100	3 1/2	90	1 1/4	32	3	80	2 3/8	56	2 1/2	64	2 3/8	60	3 1/8	81	3 1/8	79	3 3/8	86	12.54	5.70	-	-
		3	80	3	80	3 1/2	90	2 3/8	60	2 3/8	60	2 3/8	56	3 3/8	86	3 3/8	86	3 3/8	81	11.10	5.05	-	-
						3	80	2 1/4	57	2 1/4	57	2 1/8	68	3 1/4	83	3 1/4	83	3 3/8	92	14.12	6.42	14.69	6.68
						2 1/2	65	2	51	2	51	2 3/8	67	2 3/8	75	2 3/8	75	3 3/8	90	12.85	5.84	12.96	5.89
						2	50	1 1/2	43	1 1/8	43	2 3/4	70	2 1/8	68	2 1/8	68	3 1/2	89	11.63	5.29	11.73	5.34
						1 1/2	40	1 1/8	37	1 1/8	37	2 1/2	68	2 1/2	62	2 1/8	62	3 1/2	84	10.75	4.89	11.18	5.09
						1 1/4	32	1 3/8	33	1 3/8	33	2 3/8	67	2 3/8	59	2 3/8	59	3 3/8	84	10.38	4.71	10.54	4.79
						1	25	1 3/8	30	1 3/8	30	2 3/4	70	2 3/8	59	2 3/8	59	3 3/8	84	10.40	4.72	10.81	4.92
						3/4	20	1 1/4	32	1 1/4	32	2 13/16	56	2 3/8	59	2 3/8	59	3 3/8	84	10.58	4.81	-	-
						4	100	2 3/8	70	2 1/8	68	2 3/4	70	3 3/8	95	3 3/8	95	3 3/4	95	17.23	7.84	-	-
				3 1/2	90	2 1/2	64	2 1/8	62	2 1/8	68	3 1/2	89	3 1/8	87	3 1/8	94	14.38	6.54	-	-		
				3	80	2 1/4	57	2 3/8	56	2 1/8	68	3 1/4	83	3 1/4	83	3 3/8	92	14.63	6.65	-	-		
				2 1/2	65	2	51	1 3/8	49	2 3/8	67	3	76	2 3/8	73	3 3/8	90	11.84	5.39	-	-		
				2	50	1 1/2	43	1 3/8	41	2 3/4	70	2 1/8	68	2 3/8	67	3 1/2	89	10.90	4.96	-	-		
				1 1/2	40	1 1/8	37	1 3/8	35	2 1/8	68	2 3/8	62	2 3/8	60	3 3/8	84	10.09	4.59	-	-		
				4	100	2 3/8	70	2 1/8	68	2 3/4	70	3 3/8	95	3 3/8	92	3 3/4	95	15.04	6.84	-	-		
				3	80	2 1/4	57	2 1/8	54	2 1/8	68	3 1/4	83	3 1/8	79	3 3/8	92	12.50	5.69	-	-		
				2 1/2	65	1 7/8	48	1 7/8	48	2 3/8	67	2 13/16	75	2 13/16	71	3 3/8	90	11.25	5.12	-	-		
				2	50	1 1/2	43	1 3/8	40	2 3/4	70	2 1/8	68	2 3/8	65	3 1/2	89	10.21	4.64	10.67	4.85		
				1 1/2	40	1 1/8	37	1 1/8	37	2 1/8	68	2 3/8	62	2 3/8	60	3 3/8	84	10.20	4.63	-	-		
				1 1/4	32	1 3/8	33	1 3/8	49	2 3/8	67	2 3/8	59	2 1/4	57	3 3/8	84	9.70	4.41	-	-		
				4	100	2 3/8	70	2 3/8	70	2 3/4	70	3 3/8	95	3 3/8	92	3 3/4	95	15.75	7.16	-	-		
				3	80	2 1/4	57	2 1/8	54	2 1/8	68	3 1/4	83	3 1/8	79	3 3/8	92	13.06	5.94	-	-		
				2 1/2	65	1 7/8	48	1 3/8	46	2 3/8	67	2 13/16	75	2 13/16	71	3 3/8	90	11.78	5.36	-	-		
				4	100	2 3/8	70	2 3/8	70	2 3/4	70	3 3/8	95	3 3/8	92	3 3/4	95	13.19	6.00	-	-		
				3	80	2 1/4	57	2 1/8	62	2 1/8	68	3 1/4	83	3 1/8	79	3 3/8	92	13.44	6.11	-	-		
				2 1/2	65	1 7/8	48	1 7/8	48	2 3/8	67	2 13/16	75	2 13/16	71	3 3/8	90	11.60	5.28	-	-		
				2	50	1 1/2	43	1 7/8	48	2 3/4	70	2 1/8	68	2 3/8	65	3 1/2	89	11.34	5.16	-	-		
				1 1/2	40	1 1/8	37	1 3/8	48	2 3/8	67	2 3/8	62	2 3/8	60	3 3/8	84	10.20	4.63	-	-		
				1 1/4	32	1 3/8	33	1 3/8	49	2 3/8	67	2 3/8	59	2 1/4	57	3 3/8	84	9.70	4.41	-	-		
				1	25	1 3/8	30	1 3/8	75	2 3/8	70	3 3/8	95	3 1/2	89	3 3/8	95	13.52	6.15	-	-		
				3/4	20	1 1/4	32	1 1/4	76	2 3/8	70	3 3/8	95	3 1/2	89	3 3/8	95	13.20	6.00	-	-		
3 1/2	90	3 1/2	90			2 1/8	68	2 1/8	68	2 1/2	64	3 1/8	94	3 1/8	94	3 1/2	89	14.25	6.48	-	-		
3 1/2	90	3	80			2 1/8	68	2 1/8	68	2 1/2	64	3 1/8	94	3 1/8	94	3 1/2	89	15.23	6.93	-	-		
3 1/2	90	2 1/2	65			2 1/8	68	2 3/8	67	2 1/2	64	3 1/8	94	3 1/8	94	3 1/2	89	15.27	6.94	-	-		
3	80	3	80	4	100	2 1/8	68	2 1/8	68	2 3/8	62	3 1/8	94	3 1/8	94	3 1/2	89	12.80	5.82	-	-		
2 1/2	65	2 1/2	65			2 3/4	70	2 13/16	71	2 3/8	62	3 1/8	94	3 1/8	94	3 1/2	89	14.03	6.38	-	-		
2	50	2	50			3	76	3	76	2 3/8	62	3 1/8	94	3 1/8	94	3 1/2	89	16.07	7.31	-	-		
				5	125	2 13/16	71	2 13/16	71	3 3/8	86	4	102	4	102	4 3/8	111	23.83	10.84	-	-		
				3	80	2 3/8	59	2 3/8	59	3 1/4	83	3 1/2	89	3 1/2	89	4 1/4	108	20.00	9.09	-	-		
				2 1/2	65	2 1/8	52	2 1/8	52	3 3/8	86	3 3/8	81	3 3/8	81	4 1/4	108	18.84	8.57	-	-		
				2	50	1 3/4	44	1 3/4	44	3 1/2	87	2 3/8	75	2 3/8	71	4 3/8	105	17.43	7.93	17.84	8.11		
				1 1/2	40	1 3/8	40	1 3/8	40	3 3/8	84	2 1/8	68	2 1/8	68	4	102	16.21	7.37	-	-		
				5	125	3 3/8	84	3 3/8	86	3 3/8	84	4 1/2	114	4 3/8	111	4 3/8	114	26.33	11.97	-	-		
				4	100	2 3/8	71	2 3/4	70	3 3/8	86	4	102	3 3/4	95	4 3/8	111	20.58	9.36	-	-		
				3	80	2 3/8	59	2 3/8	62	3 1/4	83	3 1/2	89	3 1/2	89	4 1/4	108	24.05	10.94	-	-		
				2 1/2	65	2 1/8	52	2	51	3 3/8	81	3 3/8	81	3 3/8	81	4 1/4	108	21.81	9.92	-	-		
				3 1/2	90	4	100	2 3/8	71	2 1/8	68	3 3/8	86	4	102	3 3/4	95	4 3/8	111	22.76	10.35	-	-
				3	80	2 3/8	59	2 1/2	64	3 1/4	83	3 1/2	89	3 1/2	89	4 1/4	108	23.22	10.56	-	-		
				3	80	4	100	2 3/8	71	2 13/16	71	3 3/8	86	4	102	3 3/4	95	4 3/8	111	23.53	10.70	-	-
				2 1/2	65	5	125	3 3/8	84	3 3/8	86	3 3/8	84	4 1/2	114	4 3/4	108	4 1/2	114	22.12	10.06	-	-
				2	50	5	125	3 3/8	84	3 3/8	90	3 3/8	84	4 1/2	114	4 3/4	108	4 1/2	114	22.41	10.19	-	-
4	100	4	100	5	125	3 3/8	86	3 3/8	86	2 3/8	71	4 3/8	111	4 3/8	111	4	102	20.88	9.49	-	-		
4	100	3 1/2	90			3 3/8	86	3 3/8	84	2 3/8	71	4 3/8	111	4 3/8	111	4	102	20.57	9.35	-	-		

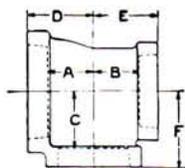
pressure ratings, psi { saturated steam: 125  
liquid & gas at 150° F: 175

pressure ratings, bar { saturated steam: 8.6  
liquid & gas at 65° C: 12.1

cast iron threaded, (class 125)

tees (cont'd)

reducing tee  
fig. 359



A, B, C:  
center to end of pipe

D, E, F:  
center to face of fitting

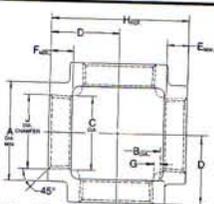
NPS		DN		size		A		B		C		D		E		F		wgt (approx.)					
																		each					
																		black		galv.			
lb	kg	lb	kg																				
4	100	2½	65			3½	86	3½	89	2½	71	4½	111	4½	111	4	102	22.37	10.17	-	-		
3½	90	3½	90	5	125	3½	84	3½	84	2½	65	4½	110	4½	110	3¾	95	19.66	8.94	-	-		
3½	90	3	80			3½	84	3½	84	2½	65	4½	110	4½	110	3¾	95	20.28	9.22	-	-		
3	80	3	80			3½	86	3½	84	2½	65	4½	110	4½	110	3¾	95	20.25	9.22	-	-		
6	150	6	150	5	125	3½	86	3½	86	3½	97	4½	117	4½	117	5	127	37.00	16.82	-	-		
				4	100	2½	73	2½	73	3½	98	4½	103	4½	103	4½	103	4½	125	32.44	14.75	33.74	15.34
				3	80	2½	60	2½	60	3½	97	3½	90	3½	90	4½	122	27.46	12.49	28.56	12.99		
				2½	65	2	51	2	51	3½	97	3½	83	3½	83	4½	121	25.67	11.67	27.00	12.28		
				2	50	1½	46	1½	46	3½	98	3	76	3	76	4½	117	24.65	11.21	-	-		
				1½	32	1½	35	1½	35	3½	97	2½	67	2½	67	4½	113	22.36	10.17	-	-		
		5	125	3½	90			3½	98	3½	100	3½	98	5½	130	5½	130	5½	130	43.31	19.69	-	-
		1½	40	1½	41	1½	40	3½	98	2½	70	2½	70	4½	114	4½	114	4½	122	30.34	13.79	-	-
		6	150	6	150	3½	98	3½	98	3½	98	5½	130	4½	125	5½	130	34.22	15.56	-	-		
		4	100	4	100	2½	73	2½	73	3½	98	4½	103	4	102	4½	125	30.00	13.64	-	-		
		3	80	2½	65	2½	65	3½	98	3½	98	3½	90	3½	90	4½	122	31.75	14.44	-	-		
		3½	90	6	150	3½	98	3½	98	3½	98	5½	130	4½	125	5½	130	35.31	16.05	-	-		
		3	80	4	100	2½	71	3	76	3½	98	4½	103	4	102	4½	125	32.25	14.66	-	-		
		2½	65	6	150	3½	98	3½	98	3½	98	5½	130	4½	119	5½	130	34.57	15.72	-	-		
2	50	6	150	3½	98	4	102	3½	98	5½	130	4½	119	5½	130	35.21	16.01	-	-				
1½	40	6	150	3½	98	4½	103	3½	98	5½	130	4½	119	5½	130	34.67	15.76	-	-				
5	125	5	125			3½	97	3½	97	3½	86	5	127	5	127	4½	117	32.91	14.96	-	-		
5	125	4	100			3½	97	3½	98	3½	86	5	127	5	127	4½	117	33.51	15.24	-	-		
5	125	3½	90	6	150	3½	97	4	102	3½	86	5	127	5	127	4½	117	29.26	13.30	-	-		
5	125	3	80			3½	97	4½	103	3½	86	5	127	5	127	4½	117	31.13	14.15	-	-		
4	100	4	100			3½	98	3½	98	2½	73	4½	125	4½	125	4½	103	26.36	11.99	-	-		
8	200	8	200	6	150	4½	106	4½	106	5½	130	5½	141	5½	141	6½	162	66.22	30.10	-	-		
				5	125	4½	106	4½	106	5½	132	5½	141	5½	141	6½	162	67.81	30.83	-	-		
				4	100	3½	79	3½	79	5½	130	4½	114	4½	114	6½	156	53.62	24.38	-	-		
				3½	90	3½	79	3½	79	5½	130	4½	114	4½	114	6½	156	54.21	24.64	-	-		
				3	80	3½	79	3½	79	5½	130	4½	114	4½	114	6½	156	54.97	24.99	-	-		
				2½	65	2½	59	2½	59	5½	129	3½	94	3½	94	6	152	45.23	20.56	-	-		
		2	50	2½	52	2½	52	5½	130	3½	87	3½	87	5½	149	44.49	20.23	-	-				
		6	150	8	200	5½	132	5½	130	5½	132	6½	167	6½	167	6½	167	6½	167	91.50	41.59	-	-
		6	150	6	150	4½	106	4½	110	5½	130	5½	141	5½	141	6½	162	73.72	33.51	-	-		
		5	125	4½	106	4½	110	5½	132	5½	141	5½	141	5½	141	6½	162	76.60	34.82	-	-		
		5	125	5	125	4½	106	4½	111	5½	132	5½	141	5½	141	6½	162	77.58	35.27	-	-		
		4	100	8	200	5½	132	5½	140	5½	132	6½	167	6½	167	6½	167	6½	167	67.00	30.46	-	-
		2	50	8	200	5½	132	5½	149	5½	132	6½	167	6½	167	6½	167	6½	167	64.00	29.09	-	-
		6	150	6	150			5½	130	5½	130	4½	106	6½	162	6½	162	5½	141	58.05	26.39	-	-
6	150	5	125	8	200	5½	130	5½	132	4½	106	6½	162	6½	162	5½	141	65.79	29.91	-	-		
5	125	5	125			5½	132	5½	132	4½	106	6½	162	6½	162	5½	141	67.92	30.88	-	-		

cast iron threaded, (class 125)

pressure ratings, psi { saturated steam: 125  
liquid & gas at 150° F: 175  
pressure ratings, bar { saturated steam: 8.6  
liquid & gas at 65° C: 12.1

**crosses**

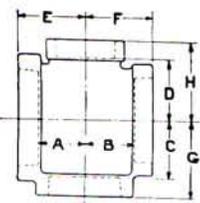
**straight cross  
fig. 360**



A, B, C, D: center to end of pipe  
E, F, G, H: center to face of fitting

size	size										wgt (approx.)				
	NPS		DN		A, B		C, D		E, F		G, H		each		
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	
1/2	15	3/8	14	3/8	14	1 1/8	21	1 1/8	21	1 1/8	21	1 1/8	21	2.80	1.28
3/4	20	1 1/8	21	1 1/8	21	1 1/8	21	1 1/8	21	1 1/8	21	1 1/8	21	1.03	.47
1	25	1 1/2	24	1 1/2	24	1 1/2	24	1 1/2	24	1 1/2	24	1 1/2	24	1.59	.73
1 1/4	32	1 3/4	29	1 3/4	29	1 3/4	29	1 3/4	29	1 3/4	29	1 3/4	29	2.42	1.10
1 1/2	40	2	33	2	33	2	33	2	33	2	33	2	33	3.21	1.46
2	50	2 1/2	40	2 1/2	40	2 1/2	40	2 1/2	40	2 1/2	40	2 1/2	40	5.08	2.31
2 1/2	65	3	46	3	46	3	46	3	46	3	46	3	46	8.07	3.67
3	80	3 1/2	56	3 1/2	56	3 1/2	56	3 1/2	56	3 1/2	56	3 1/2	56	11.84	5.39
4	100	4	70	4	70	4	70	4	70	4	70	4	70	19.63	8.93
5	125	4 1/2	84	4 1/2	84	4 1/2	84	4 1/2	84	4 1/2	84	4 1/2	84	31.16	14.17
6	150	5	98	5	98	5	98	5	98	5	98	5	98	47.67	21.67

**reducing cross  
fig. 361**



A, B, C, D:  
center to end of pipe

E, F, G, H:  
center to face of fitting

Reducing Crosses  
are read thus:

2 NPS / 50 DN

3 NPS / 80 DN — 2 1/2 NPS / 65 DN

1 1/4 NPS / 32 DN

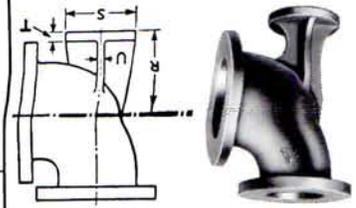
3 x 2 1/2 x 2 x 1 1/4 NPS  
80 x 65 x 50 x 32 DN

size	size																wgt (approx.)						
	NPS		DN		NPS		DN		A		B		C		D		E, F		G, H		each		
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	
1	25	1	25	3/4	20	3/4	20	1 1/8	21	1 1/8	21	1 1/8	24	1 1/8	24	1 1/8	35	1 1/8	37	1.30	.59		
1 1/4	32	1 1/4	32	1	25	1	25	1 1/8	24	1 1/8	24	1 1/8	29	1 1/8	29	1 1/8	40	1 1/8	43	2.04	.93		
1 1/2	40	1 1/2	40	1 1/4	32	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	35	1 1/8	35	1 1/8	46	1 1/8	48	3.95	1.80		
				1 1/4	32	1	25	1 1/8	29	1 1/8	29	1 1/8	33	1 1/8	46	1 1/8	48	3.90	1.78				
				1	25	1	25	1	25	1	25	1 1/4	32	1 1/4	32	1 1/8	41	1 1/8	46	2.51	1.14		
2	50	2	50	1 1/2	40	1 1/2	40	1 1/8	32	1 1/8	32	1 1/8	37	1 1/8	37	2	51	2 1/8	54	4.08	1.86		
				1 1/4	32	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	37	1 1/8	37	1 1/8	48	2 1/8	54	4.00	1.82		
				1	25	1	25	1 1/8	27	1 1/8	27	1 1/8	37	1 1/8	37	1 1/8	44	2	51	3.22	1.47		
2 1/2	65	2 1/2	65	1 1/4	32	1 1/4	32	1 1/8	30	1 1/8	30	1 1/2	38	1 1/2	38	1 1/8	48	2 1/8	52	4.18	1.90		
				1 1/4	32	1	25	1 1/8	29	1 1/8	30	1 1/2	38	1 1/8	37	1 1/8	48	2 1/8	54	4.25	1.94		
				1	25	1	25	1 1/8	29	1 1/8	29	1 1/2	37	1 1/8	37	1 1/8	44	2	51	3.57	1.63		
3	80	3	80	2	50	2	50	1 1/8	40	1 1/8	40	1 1/2	49	1 1/2	49	2 1/8	62	2 1/8	65	6.82	3.10		
				1 1/2	40	1 1/2	40	1 1/4	32	1 1/4	32	1 1/8	48	1 1/8	48	2 1/8	56	2 1/8	62	5.68	2.59		
				1 1/2	40	1 1/4	32	1 1/4	32	1 1/4	32	1 1/8	46	1 1/8	46	2 1/8	56	2 1/8	62	5.56	2.53		
				1 1/4	32	1 1/4	32	1 1/8	29	1 1/8	29	1 1/8	46	1 1/8	46	2 1/8	52	2 1/8	60	5.26	2.39		
				1 1/4	32	1	25	1 1/8	30	1 1/8	30	1 1/4	44	1 1/8	46	2 1/8	52	2 1/8	60	5.39	2.45		
				1	25	1	25	1	25	1	25	1	25	1 1/8	46	1 1/8	46	1 1/2	49	2 1/8	59	5.06	2.30
3	80	3	80	2	50	2	50	1 1/2	38	1 1/4	32	1 1/8	48	1 1/8	48	2 1/8	62	2 1/8	65	7.23	3.29		
				1 1/2	40	1 1/2	40	1 1/4	32	1 1/8	33	1 1/8	48	1 1/8	48	2 1/8	56	2 1/8	62	6.13	2.79		
				1 1/4	32	1 1/4	32	1 1/8	29	1 1/8	30	1 1/8	46	1 1/8	46	2 1/8	52	2 1/8	60	5.88	2.68		
				1 1/4	32	1	25	1 1/8	29	1 1/8	30	1 1/8	46	1 1/8	46	2 1/8	52	2 1/8	60	5.86	2.68		
				1	25	1	25	1	25	1 1/8	27	1 1/8	46	1 1/8	46	1 1/2	49	2 1/8	59	5.11	2.33		
				1 1/2	40	1 1/2	40	1	25	1 1/8	33	1 1/8	40	1 1/8	48	1 1/8	46	2 1/8	56	2 1/8	62	6.51	2.96
3 1/2	90	3 1/2	90	2 1/2	65	2 1/2	65	1 1/8	48	1 1/8	48	2 1/8	56	2 1/8	56	2 1/8	71	3 1/8	78	9.96	4.53		
				2	50	2	50	1 1/8	41	1 1/8	41	2 1/8	56	2 1/8	56	2 1/8	65	2 1/8	75	8.85	4.03		
				2	50	1 1/2	40	1 1/8	41	1 1/8	41	2 1/8	56	2 1/8	56	2 1/8	65	2 1/8	75	9.25	4.21		
				1 1/2	40	1 1/2	40	1 1/8	35	1 1/8	35	2 1/8	56	2 1/8	56	2 1/8	59	2 1/8	71	7.91	3.60		
				1 1/2	40	1 1/4	32	1 1/8	35	1 1/8	35	2 1/8	56	2 1/8	56	2 1/8	59	2 1/8	71	7.92	3.60		
				1 1/4	32	1 1/4	32	1 1/8	30	1 1/8	30	2 1/8	54	2 1/8	54	2 1/8	56	2 1/8	70	7.21	3.28		
3 1/2	90	3	80	2	50	2	50	1 1/8	41	1 1/8	43	2 1/4	57	2 1/4	57	2 1/8	65	2 1/8	75	9.62	4.38		
				2	50	1 1/4	32	1 1/8	41	1 1/8	43	2 1/4	57	2 1/8	59	2 1/8	65	2 1/8	75	10.03	4.56		
				1 1/2	40	1 1/2	40	1 1/8	35	1 1/8	37	2 1/8	56	2 1/8	56	2 1/8	59	2 1/8	71	8.37	3.81		
				1	25	1	25	1 1/8	27	1 1/8	29	2 1/8	54	2 1/8	54	2 1/8	52	2 1/8	68	7.47	3.40		
				3 1/2	90	1 1/2	40	1 1/4	32	1 1/8	35	1 1/8	35	2 1/8	62	2 1/8	62	2 1/8	60	3 1/8	78	9.75	4.44
				1 1/4	32	1 1/4	32	1 1/4	32	1 1/4	32	1 1/4	32	2 1/8	60	2 1/8	60	2 1/4	57	3	76	9.09	4.14
3 1/2	90	3	80	2 1/2	65	2 1/2	65	1 1/8	48	1 1/8	49	2 1/8	62	2 1/8	73	2 1/8	73	3 1/8	84	13.07	5.94		
				1 1/2	40	1 1/2	40	1 1/8	35	1 1/8	37	2 1/8	62	2 1/8	62	2 1/8	60	3 1/8	78	10.28	4.68		



cast iron flanged, (class 125)

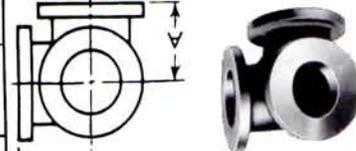
NPS	DN	size	base to center to		diameter of round base		thickness of base		thickness of ribs		size of supporting pipe for base		weight (approx) each
			R	S	T	U	V	W	X	Y			
3	80	4 7/8	123	125	15	15	1/2	13	2	2	50	36	16.37
4	100	5 1/2	138	150	16	16	1/2	13	2	2	50	59	26.82
5	125	6 1/8	157	175	18	18	5/8	16	2	2	63	76	34.55
6	150	7	175	175	18	18	5/8	16	2	2	63	110	50.00
8	200	8 3/8	210	225	24	24	7/8	23	4	4	100	158	71.82
10	250	9 3/4	245	225	24	24	7/8	23	4	4	100	224	101.82
12	300	11 1/4	282	275	25	25	1	25	6	6	150	324	147.28



base elbow: fig. 805

Bases, when drilled, should be drilled to the template of the flange of the supporting pipe size. Size of base determined by size of largest opening of fitting. Bases will be furnished not faced and not drilled unless otherwise specified. When ordered faced, dimensions "R" and "T" will be slightly less than shown in table.

NPS	DN	size	A		diameter of flange		thickness of flange		wall thickness		weight (approx) each
			A	AA	mm	in	mm	in	mm	in	
4	100	6 1/2	163	225	24	24	1/2	13	13	59	26.82
5	125	7 1/2	188	250	24	24	1/2	13	13	74	33.64
6	150	8	200	275	25	25	5/8	15	15	96	43.64
8	200	9	225	340	29	29	3/4	16	16	150	68.19
10	250	11	275	400	30	30	3/4	20	20	240	109.09
12	300	12	300	475	32	32	1 1/8	21	21	340	154.55

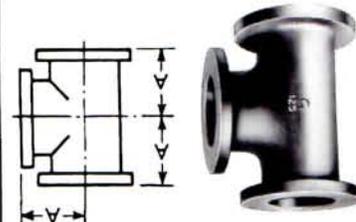


side outlet elbow: fig. 808

A: center to face

tees

NPS	DN	size	A		AA		diameter of flange		thickness of flange		wall thickness		weight (approx) each
			A	AA	mm	in	mm	in	mm	in	mm	in	
1 1/2	40	4	100	200	125	125	5/8	14	14	15	8	6.82	
2	50	4 1/2	114	225	150	150	5/8	16	16	21	8	9.55	
2 1/2	65	5	125	250	175	175	1 1/8	17	17	30	8	13.64	
3	80	5 1/2	140	275	170	170	3/4	19	19	37	10	16.82	
4	100	6 1/8	165	325	225	225	1 1/8	24	24	64	13	29.09	
5	125	7 1/8	188	375	250	250	1 5/16	24	24	81	13	36.82	
6	150	8	200	400	275	275	1	25	25	105	14	47.73	
8	200	9	225	450	340	340	1 1/8	29	29	165	16	75.00	
10	250	11	275	550	400	400	1 3/8	30	30	270	19	122.73	
12	300	12	300	600	475	475	1 1/2	32	32	380	21	172.73	



straight tee: fig. 811

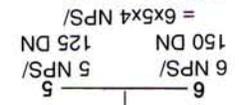
A: center to face  
AA: face to face

NPS	DN	size	2 1/2		3		4		6		8		weight (approx.) each
			mm	in	mm	in	mm	in	mm	in	mm	in	
2 1/2	65	2 1/2	50	28	50	28	12.73	15.00	15.91	15.91	35	35	36.37
3	80	2 1/2	50	33	65	35	15.00	15.00	15.91	15.91	35	35	36.37
4	100	3	65	33	80	35	15.00	15.00	15.91	15.91	35	35	36.37
6	150	4	100	50	100	34	14.55	15.91	15.91	34	34	32.28	
8	200	5	125	57	125	32	12.73	15.91	15.91	32	32	32.28	
10	250	6	150	57	150	32	12.73	15.91	15.91	32	32	32.28	
12	300	8	200	56	200	32	12.73	15.91	15.91	32	32	32.28	
14	350	10	250	56	250	32	12.73	15.91	15.91	32	32	32.28	
16	400	12	300	56	300	32	12.73	15.91	15.91	32	32	32.28	
18	450	14	350	56	350	32	12.73	15.91	15.91	32	32	32.28	
20	500	16	400	56	400	32	12.73	15.91	15.91	32	32	32.28	
24	600	20	500	56	500	32	12.73	15.91	15.91	32	32	32.28	
28	700	24	600	56	600	32	12.73	15.91	15.91	32	32	32.28	
30	750	26	650	56	650	32	12.73	15.91	15.91	32	32	32.28	
36	900	32	800	56	800	32	12.73	15.91	15.91	32	32	32.28	
40	1000	36	900	56	900	32	12.73	15.91	15.91	32	32	32.28	
48	1200	44	1100	56	1100	32	12.73	15.91	15.91	32	32	32.28	
60	1500	54	1400	56	1400	32	12.73	15.91	15.91	32	32	32.28	
72	1800	66	1700	56	1700	32	12.73	15.91	15.91	32	32	32.28	
84	2100	78	2000	56	2000	32	12.73	15.91	15.91	32	32	32.28	
96	2400	90	2300	56	2300	32	12.73	15.91	15.91	32	32	32.28	
108	2700	102	2600	56	2600	32	12.73	15.91	15.91	32	32	32.28	
120	3000	114	2900	56	2900	32	12.73	15.91	15.91	32	32	32.28	

In describing tees, the run is first named, then the outlet, thus: 4 NPS/100 DN reducing tee. Dimensions for reducing tees for sizes listed 16 NPS / 400 DN and smaller have same center to face dimension as straight size fittings corresponding to the largest opening. Dimensions of sizes not listed furnished on request.



reducing tee: fig. 812

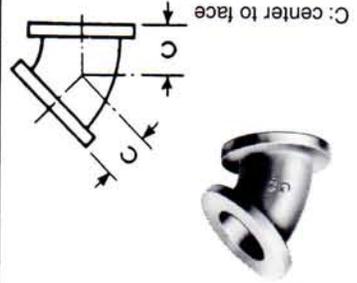


cast iron flanged, (class 125)

pressure ratings, bar  
 saturated steam: 25 to 300 DN : 8.6  
 350 to 600 DN: 6.9  
 liquid & gas at 65° C : 12  
 25 to 300 DN : 12  
 350 to 600 DN: 6.9  
 liquid & gas at 150° F: 1 to 12 NPS: 125  
 14 to 24 NPS: 100  
 saturated steam: 1 to 12 NPS: 125  
 liquid & gas at 150° F: 1 to 12 NPS: 175

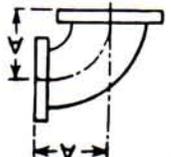
elbows (continued)		size		diameter of flange		thickness of flange (min.)		wall thickness		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg

45° straight elbow fig. 802



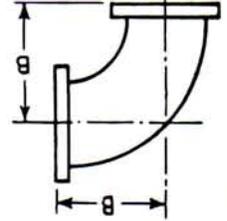
size		A		size		NPS		DN		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
1 1/2	40	2 1/2	63	5	125	5/8	16	5/8	14	8	3.64
2	50	2 1/2	63	6	150	5/8	16	5/8	16	12	5.46
2 1/2	65	3	76	7	175	1 1/8	17	5/8	8	17	7.73
3	80	3	76	7 1/2	190	3/4	19	3/4	10	20	9.09
3 1/2	90	3 1/2	89	8 1/2	215	13/16	21	7/8	11	27	12.28
4	100	4	100	9	225	15/16	24	1/2	13	36	16.37
5	125	4 1/2	114	10	250	1 1/8	24	1/2	13	45	20.46
6	150	5	125	11	275	1	25	9/16	14	60	27.28
8	200	5 1/2	140	13 1/2	340	1 1/8	29	5/8	16	94	42.73
10	250	6 1/2	165	16	400	1 3/8	30	3/4	19	145	65.91
12	300	7 1/2	188	19	475	1 1/2	32	13/16	21	220	100.00

taper reducing elbow fig. 803



size		A		size		NPS		DN		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
2 1/2	65	2	50	5	125	5/8	16	5/8	8	16	7.28
3	80	2 1/2	63	5 1/2	140	3/4	19	3/4	10	23	10.46
4	100	3	76	6 1/2	165	7/8	21	7/8	11	25	11.34
5	125	3 1/2	89	7 1/2	188	1	25	1	11	28	12.73
6	150	4	100	8	200	1 1/8	29	1 1/8	15	33	15.00
8	200	5 1/2	140	11 1/2	290	1 3/8	34	1 3/8	16	36	16.37
10	250	6 1/2	165	13 1/2	340	1 1/2	38	1 1/2	18	40	18.19
12	300	7 1/2	188	15 1/2	390	1 5/8	41	1 5/8	20	45	20.46

long radius elbow straight: fig. 804 reducing: fig. 804R



size		B		size		NPS		DN		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
2	50	6 1/2	163	6	150	5/8	16	5/8	8	16	7.28
2 1/2	65	7	175	7	175	3/4	18	3/4	8	16	7.28
3	80	7 1/2	194	7 1/2	190	3/4	18	3/4	10	23	10.46
4	100	9	225	9	225	15/16	24	1/2	13	28	12.73
5	125	10 1/2	267	10	250	1 1/8	29	1 1/8	15	33	15.00
6	150	11 1/2	288	11	275	1 1/8	29	1 1/8	16	36	16.37
8	200	14	350	13 1/2	340	1 3/8	34	1 3/8	19	43	19.51
10	250	16 1/2	413	16	400	1 5/8	41	1 5/8	21	47	21.37
12	300	19	475	19	475	1 7/8	48	1 7/8	24	54	24.46

straight: fig. 804 reducing: fig. 804R



size		B		size		NPS		DN		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
2	50	6 1/2	163	6	150	5/8	16	5/8	8	16	7.28
2 1/2	65	7	175	7	175	3/4	18	3/4	8	16	7.28
3	80	7 1/2	194	7 1/2	190	3/4	18	3/4	10	23	10.46
4	100	9	225	9	225	15/16	24	1/2	13	28	12.73
5	125	10 1/2	267	10	250	1 1/8	29	1 1/8	15	33	15.00
6	150	11 1/2	288	11	275	1 1/8	29	1 1/8	16	36	16.37
8	200	14	350	13 1/2	340	1 3/8	34	1 3/8	19	43	19.51
10	250	16 1/2	413	16	400	1 5/8	41	1 5/8	21	47	21.37
12	300	19	475	19	475	1 7/8	48	1 7/8	24	54	24.46

B: center to face

See notes page pt-85.



90° straight elbow  
fig. 801

elbows		size		A		flange diameter of		thickness of flange (min.)		wall thickness*		wgt/ (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
1 1/2	40	4	100	5	125	5	125	9/16	14	5/16	8	9	4
2	50	4 1/2	114	6	150	6	150	5/8	16	5/16	8	14	6
2 1/2	65	5	125	7	175	7	175	11/16	17	5/16	8	19	9
3	80	5 1/2	138	7 1/2	188	7 1/2	188	3/4	19	3/8	10	24	11
3 1/2	90	6	150	8 1/2	213	8 1/2	213	13/16	21	7/16	11	31	14
4	100	6 1/2	163	9	225	9	225	15/16	24	1/2	13	41	19

NPS	DN	in	mm	in	mm	in	mm
18	450	12	305	13	330	15 1/2	394
20	500	14	356	14	356	17	432
24	600	16	406	15	381	19	483

**Reducing Tees and Reducing Crosses**  
 All tees, crosses and laterals reducing on the run only have the same center-to-face and face-to-face dimensions as a straight fitting of the size of the largest opening. Sizes 16 NPS/400 DN and smaller reducing on the outlet have same dimensions as a straight fitting of the size of the largest opening.

**Standard reducing elbows carry the same dimensions center-to-face as regular elbows of largest straight size.**  
 Sizes (18, 20 and 24 NPS/450, 500, 600 DN) reducing on the outlet in the following sizes are to short body pattern and are to the dimensions shown as follows:  
 All tees, crosses and laterals reducing on the run only have the same center-to-face and face-to-face dimensions as a straight fitting of the size of the largest opening.

**sizes**  
 Size of all fittings scheduled indicates nominal inside diameter of ports.

**coating**  
 Flanged fittings are available both black and galvanized. Consult a Grinnell representative for available sizes.

**specifications**  
 Grinnell fittings in this section, up to 16 NPS/400 DN inclusive, are included in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

**ASME B 16.1.**  
 All Standard or "Class 125" Cast Iron Flanged Fittings in sizes listed are made to ASME and are marked 125 for pipe sizes 12 NPS/300 DN and smaller; 100 for pipe sizes 14 NPS/350 DN and larger; and have plain faces. Unless otherwise specified, cast iron flanges and fittings are drilled and faced in accordance with ASME B 16.1.

**specifications**  
 All Standard or "Class 125" Cast Iron Flanged Fittings in sizes listed are made to ASME and are marked 125 for pipe sizes 12 NPS/300 DN and smaller; 100 for pipe sizes 14 NPS/350 DN and larger; and have plain faces. Unless otherwise specified, cast iron flanges and fittings are drilled and faced in accordance with ASME B 16.1.

**specifications**  
 All Standard or "Class 125" Cast Iron Flanged Fittings in sizes listed are made to ASME and are marked 125 for pipe sizes 12 NPS/300 DN and smaller; 100 for pipe sizes 14 NPS/350 DN and larger; and have plain faces. Unless otherwise specified, cast iron flanges and fittings are drilled and faced in accordance with ASME B 16.1.

cast iron flanged

class 125, (standard)

**tolerances**  
 An inspection limit of plus or minus 1/32 inch/.8 mm shall be allowed on all center to contact surface dimensions for sizes up to and including 10 NPS/250 DN; plus or minus 1/16 inch/1.6 mm on sizes larger than 10 NPS/250 DN; plus or minus 1/8 inch/3 mm on sizes larger than 10 NPS/250 DN.  
 The largest opening in the fitting governs the tolerance to be applied to all openings.  
 Patterns are designed to produce castings having nesses of the castings at no point shall be less than 87.5% of the dimensions given.

**dimensions**  
 Bolt holes, for bolts smaller than 1 3/4 inches/45 mm in diameter are drilled 1/8 inch/.8 mm larger than bolt diameter; for bolts 1 3/4 inch/45 mm and larger, bolt holes are 1/4 inch/6 mm larger than bolt diameter. Bolt holes straddle the center line. Bolt holes are spot faced on order only.

**dimensions**  
 Bolt holes, for bolts smaller than 1 3/4 inches/45 mm in diameter are drilled 1/8 inch/.8 mm larger than bolt diameter; for bolts 1 3/4 inch/45 mm and larger, bolt holes are 1/4 inch/6 mm larger than bolt diameter. Bolt holes straddle the center line. Bolt holes are spot faced on order only.

**dimensions**  
 To order reducing companion flanges, specify threaded or reduced size first, then the outside diameter of flange wanted. For instance, if a reducing flange is required to connect a 5-inch pipe to an 8-inch flanged valve or fitting having a 1 3/2-inch o.d. flange, order: 5 x 1 3/2-inch standard reducing flange.

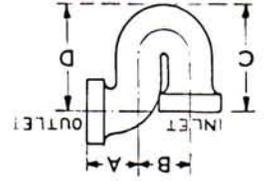
All Reducing Fittings in the sizes 18, 20 and 24 NPS/450, 500, 600 DN can also be supplied to Straight Size dimensions if specified. Prices on application.

Reducing Laterals	NPS	DN	in	mm	in	mm	in	mm
Center to Center	18	450	8	203	25	635	1	25
Center to Face	18	450	10	254	27	686	1	25
Face to Face	18	450	10	254	27	686	1	25
Face to Run	18	450	10	254	27	686	1	25
Run to Run	18	450	10	254	27	686	1	25
Branch to Center	18	450	10	254	27	686	1	25
Branch to Face	18	450	10	254	27	686	1	25
Branch to Run	18	450	10	254	27	686	1	25
Branch to Branch	18	450	10	254	27	686	1	25

**pressure ratings, psi**  
 saturated steam: 1 to 12 NPS: 100  
 14 to 24 NPS: 100  
 liquid & gas at 150° F: 1 to 12 NPS: 175

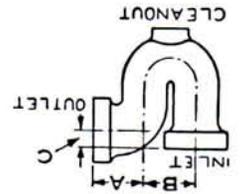
**pressure ratings, bar**  
 saturated steam: 25 to 300 DN: 8.6  
 350 to 600 DN: 6.9  
 liquid & gas at 65° C: 25 to 300 DN: 12.1

- Cleanout plug not included
- Outlets tapped, pitched 1/4 inch to the foot



bath P-trap: fig. 754 ●

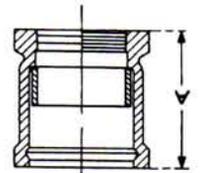
NPS	DN	size	A		B		C		D		water seal		weight (approx.) each		
			in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	black
2	50	2 1/2	63	2 1/8	71	5 5/16	135	5 5/16	135	2	51	6.25	2.84	—	—
1 1/2	40	2 1/2	54	2 1/8	60	4 3/8	111	4 3/8	117	2	51	3.87	1.76	—	—



P-trap: fig. 752 ●

NPS	DN	size	A		B		C		clean out	water seal		weight (approx.) each				
			in	mm	in	mm	in	mm		in	mm	lb	kg	black	galvanized	
1 1/2	40	2 1/2	54	2 1/8	57	7 1/8	22	—	1	25	2	51	4.69	2.13	—	—
2	50	2 1/2	65	2 3/8	70	7 1/8	22	—	1	25	2	51	7.18	3.26	7.31	3.32
3	80	3 3/8	86	3 3/8	95	1 1/8	30	—	1 1/2	32	2 1/2	63	16.87	7.67	17.52	7.96
4	100	4 1/4	108	4 1/8	127	1 1/2	38	—	2	51	2 1/2	63	30.57	13.90	31.87	14.49

- Not stocked
- + Size 4 inch only furnished with loose ring on request



tucker connection fig. 744+

NPS	DN	size	A		lb	kg	weight (approx.) each	
			in	mm			black	galvanized
1 1/2	40	4	—	102	4.04	1.89	—	—
2	50	4 1/2	—	114	5.40	2.45	5.62	2.55
3	80	4 3/4	—	121	9.33	4.24	—	—
4	100	6 1/8	—	173	20.00	9.10	—	—

Y-branches (continued)

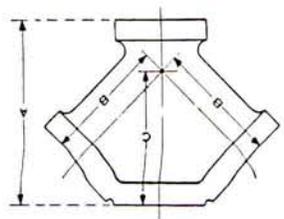


fig. 736  
45° double Y-branch

NPS	DN	size	A			B			C			weight (approx.) each	
			in	mm	in	mm	in	mm	in	mm	lb	kg	
1½	40		5½	140	3½	92	3½	92	5.09	2.31	—	—	

coupling

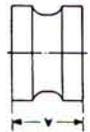


fig. 753

NPS	DN	size	A	weight (approx.) each	
				lb	kg
1½	40		3	1.75	.79

Y-branches		90° long turn Y-branch		90° reducing long turn Y-branch		45° Y-branch		45° reducing Y-branch													
NPS	DN	size	A	B	C	NPS	DN	size	A	B	C	NPS	DN	size	A	B	C	weight (approx.) each	black	galvanized	
																					in
4	100	13	330	9%	251	7%	191	2%	60	33.14	15.06	—	—	—	—	—	—	—	—	—	—
3	80	9%	251	7%	191	2%	60	33.14	15.06	—	—	—	—	—	—	—	—	—	—	—	—
2	50	7	178	5%	133	1%	44	6.69	3.04	6.74	3.06	—	—	—	—	—	—	—	—	—	—
1½	40	5%	137	4%	105	1%	32	4.43	2.01	—	—	—	—	—	—	—	—	—	—	—	—
4	100	10%	276	7½%	195	7½%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—
3	80	9	229	6%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—	—	—
2	50	6½	165	4%	111	4%	111	5.56	2.53	5.71	2.60	—	—	—	—	—	—	—	—	—	—
1½	40	5½	140	3%	92	3%	92	4.03	1.83	4.11	1.87	—	—	—	—	—	—	—	—	—	—
4	100	10%	276	7½%	195	7½%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—
3	80	9	229	6%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—	—	—
2	50	6½	165	4%	111	4%	111	5.56	2.53	5.71	2.60	—	—	—	—	—	—	—	—	—	—
1½	40	5½	140	3%	92	3%	92	4.03	1.83	4.11	1.87	—	—	—	—	—	—	—	—	—	—
4	100	10%	276	7½%	195	7½%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—
3	80	9	229	6%	157	6%	157	12.00	5.46	13.06	5.94	11.26	—	—	—	—	—	—	—	—	—
2	50	6½	165	4%	111	4%	111	5.56	2.53	5.71	2.60	—	—	—	—	—	—	—	—	—	—
1½	40	5½	140	3%	92	3%	92	4.03	1.83	4.11	1.87	—	—	—	—	—	—	—	—	—	—

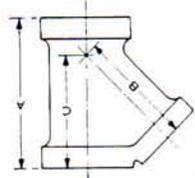


fig. 735▲

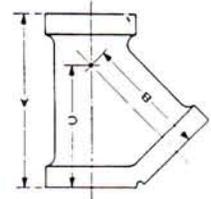


fig. 734

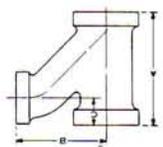


fig. 731◇

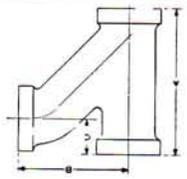


fig. 730◇

▲ Inlet is smallest opening  
◇ Inlets tapped, pitched 1/4 inch to the foot

sanitary tees		90° short turn		90° reducing short turn		90° double short turn		90° reducing double short turn													
NPS		NPS		NPS		NPS		NPS													
size		size		size		size		size													
DN		DN		DN		DN		DN													
in		in		in		in		in													
mm		mm		mm		mm		mm													
in		in		in		in		in													
mm		mm		mm		mm		mm													
lb		lb		lb		lb		lb													
kg		kg		kg		kg		kg													
galvanized		black		black		black		black													
weight (approx.) each		weight (approx.) each		weight (approx.) each		weight (approx.) each		weight (approx.) each													
1 1/2	40	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2	50	4 1/2	108	5	127	2 1/2	64	4.54	2.07	4.64	2.11
2	50	5 3/8	132	3 3/8	78	3 3/8	78	3 3/8	78	2	50	4 1/2	108	5 3/8	132	3 3/8	78	6.08	2.76	—	—
3	60	7 1/4	184	4 1/4	108	4 1/4	108	2 15/16	75	2	50	5 3/8	132	3 3/8	78	3 3/8	78	4.33	1.97	—	—
4	100	8 3/4	222	5 3/8	132	5 3/8	132	2 15/16	75	2 1/2	68	2 15/16	75	2 15/16	75	2 15/16	75	4.80	2.18	—	—
1 1/2	40	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2 1/2	68	2 1/2	68	2 1/2	68	2 1/2	68	4.16	1.89	4.30	1.95
2	50	5 3/8	132	3 3/8	78	3 3/8	78	3 3/8	78	2	50	5 3/8	132	3 3/8	78	3 3/8	78	4.80	2.18	—	—
2	50	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2	50	4 1/2	108	2 1/2	69	2 1/2	69	4.33	1.97	—	—
2	50	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2	50	4 1/2	108	2 1/2	69	2 1/2	69	4.33	1.97	—	—
2	50	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2	50	4 1/2	108	2 1/2	69	2 1/2	69	4.33	1.97	—	—
2	50	4 1/2	108	2 1/2	69	2 1/2	69	2 1/2	69	2	50	4 1/2	108	2 1/2	69	2 1/2	69	4.33	1.97	—	—

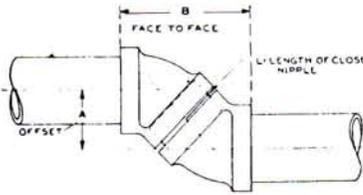
∠ Inlets tapped, pitched 1/4 inch to the foot

# Grinnell

## cast iron drainage

### elbows (continued)

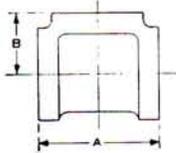
shortest offset and face to face obtainable with use of close nipple



size		length close nipple		60° short, fig. 703				60° long, fig. 704				45° short, fig. 705				45° long, fig. 706			
				A		B		A		B		A		B		A		B	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1¼	32	1½	41	3	76	4½	124	3¼	94	6½	156	2½	54	4¼	121	2¾	70	6¼	159
1½	40	1¾	44	3½	89	5½	140	4¾	106	6½	176	2¾	60	5¼	133	3	76	6¾	171
2	50	2	51	4½	105	6½	165	4¾	124	7½	202	2¾	71	6¾	157	3¾	92	8½	206
2½	65	2½	63	4¾	125	7½	200	5½	129	8¾	217	3¼	83	7½	179	4¾	106	9½	241
3	80	2¾	67	5¾	141	9	229	5¾	146	9¾	246	3¾	90	7¾	202	4¾	117	10½	267
4	100	2¾	73	6½	165	10½	267	7¾	183	12¾	310	4¼	108	9½	241	5½	140	12½	318
5	125	3	76	7¼	184	11¾	303	—	—	—	—	4¾	121	10¾	276	6¼	159	14½	368
6	150	3¾	79	7¾	200	13¾	332	—	—	—	—	5¾	135	12¾	308	7¾	187	17½	435
8	200	3½	89	9¾	238	16¾	411	—	—	—	—	6¾	167	15	381	9	229	—	—
10	250	3¾	98	—	—	—	—	—	—	—	—	7¾	202	18¾	465	—	—	—	—
size		length close nipple		22½° fig. 707				11¼° fig. 708				5½° fig. 709							
				A		B		A		B		A		B					
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1¼	32	1½	41	1	25	4¼	119	½	13	4¾	116	¼	6	5¼	129	—	—	—	—
1½	40	1¾	44	1½	29	5¼	133	¾	16	5¾	138	⅝	8	5¾	146	—	—	—	—
2	50	2	51	1¾	35	6¾	156	⅞	17	6¾	154	¾	10	6¾	168	—	—	—	—
2½	65	2½	63	1¾	41	7¾	187	⅞	21	7¾	181	¾	10	7¾	183	—	—	—	—
3	80	2¾	67	1¾	46	8¾	211	¾	22	7¾	200	¾	11	7¾	195	—	—	—	—
4	100	2¾	73	2½	52	9¾	243	⅞	24	8¾	219	¾	11	8¾	208	—	—	—	—
5	125	3	76	2¼	57	10¾	271	1	25	9¾	241	¾	11	8¾	219	—	—	—	—
6	150	3¾	79	2½	63	11¾	302	1¼	27	10	254	½	13	9¾	243	—	—	—	—
8	200	3½	89	3	76	14¾	367	1¼	32	11¾	295	⅞	14	10¾	273	—	—	—	—
10	250	3¾	98	3¾	92	17¾	437	1¾	37	13¾	337	—	—	—	—	—	—	—	—

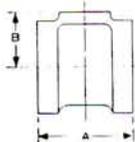
### tees

tee: fig. 722◊



size		A		B		weight (approx.) each			
						black		galvanized	
NPS	DN	in	mm	in	mm	lb	kg	lb	kg
1½	40	3¾	98	1½	49	2.59	1.18	2.69	1.22
2	50	4½	114	2¼	57	4.66	2.12	4.85	2.20

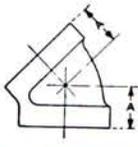
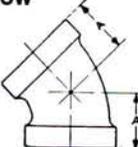
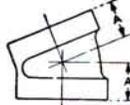
reducing tee fig. 723◊

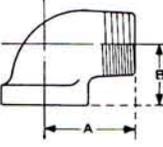
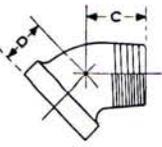


size		A		B		weight (approx.) each							
						black		galvanized					
NPS	DN	NPS	DN	NPS	DN	in	mm	lb	kg	lb	kg		
2	50	2	50	1½	40	4¼	103	2¾	57	3.77	1.71	—	—

◊ Inlets tapped, pitched 1/4 inch to the foot  
Inlets of reducing fittings are always the smallest openings

cast iron drainage

elbows (continued)	size		A		weight (approx.) each			
	NPS	DN	in	mm	black		galvanized	
					lb	kg	lb	kg
<b>45° short turn elbow</b> fig. 705 	1¼	32	1⅝	33	—	—	1.39	.63
	1½	40	1⅞	37	1.71	.78	1.75	.80
	2	50	1⅞	43	2.79	1.27	2.88	1.31
	3	80	2⅞	56	6.31	2.87	6.46	2.94
	4	100	2⅞	67	11.44	5.2	11.89	5.40
	6	150	3⅞	87	27.58	12.54	—	—
<b>45° long turn elbow</b> fig. 706 	1½	40	1⅞	48	2.14	.98	2.35	1.07
	3	80	2⅞	75	7.44	3.38	—	—
<b>22½° elbow: fig. 707</b> 	1½	40	1¼	32	1.65	.75	—	—
	2	50	1⅞	37	3.08	1.4	3.15	1.43

	size		A		weight (approx.) each					
	NPS	DN	in	mm	black		galvanized			
					lb	kg	lb	kg		
<b>11¼° elbow: fig. 708</b> 	1½	40	1¼	32	1.81	.83	—	—		
	2	50	1⅞	35	2.69	1.23	—	—		
<b>90° street elbow</b> fig. 718◇ 	size		A		B		weight (approx.) each			
	NPS	DN	in	mm	in	mm	black		galvanized	
							lb	kg	lb	kg
1½	40	3	76	1⅞	48	2.05	.93	2.10	.95	
2	50	3¼	83	2⅞	56	—	—	3.19	1.45	
<b>45° street elbow</b> fig. 719 	size		C		D		weight (approx.) each			
	NPS	DN	in	mm	in	mm	black		galvanized	
							lb	kg	lb	kg
1½	40	2	51	1¼	32	1.64	.75	1.65	.75	
2	50	2¼	57	1⅞	43	2.67	1.21	2.71	1.23	

◇ Inlets tapped, pitched ¼ inch to the foot. Inlets of reducing fittings are always the smallest openings.

cast iron threaded, (class 125)

**crosses (cont'd)**

**reducing cross  
fig. 361**

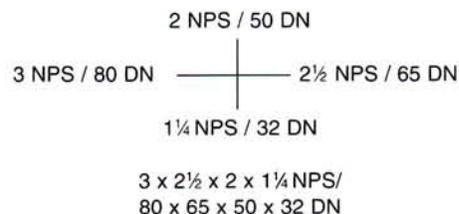


A, B, C, D:  
center to end of pipe

E, F, G, H:  
center to face of fitting

		size								A		B		C		D		E, F		G, H		wgt (approx.) each black	
		NPS	DN	NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
4	100	4	100	3½	90	3½	90	2 11/16	68	2 11/16	68	2¾	70	2¾	70	3¾	95	3¾	95	3¾	95	21.44	9.75
				3	80	3	80	2 3/8	56	2 3/8	56	2 11/16	68	2 11/16	68	3¼	83	3¾	92	15.51	7.05		
				2½	65	2½	65	2	51	2	51	2 11/16	68	2 11/16	68	2 5/8	75	3¾	90	14.07	6.40		
				2½	65	2	50	1 7/8	48	1 7/8	48	2 11/16	68	2 7/8	73	2 11/16	75	3¾	90	14.88	6.77		
				2½	65	1½	40	2	51	2	51	2 7/8	73	2 11/16	68	2 11/16	75	3¾	90	14.38	6.54		
				4	100	22	550	1 11/16	42	1 11/16	42	2 11/16	68	2 11/16	68	2¾	70	3 7/8	87	12.00	5.46		
				1½	40	1½	40	1¾	35	1¾	35	2 11/16	68	2 11/16	68	2 7/8	73	3 7/8	84	11.82	5.38		
				1¼	32	1¼	32	1¼	32	1¼	32	2 11/16	68	2 11/16	68	2 5/8	59	3 7/8	84	10.75	4.89		
		1	25	1	25	1¼	32	1¼	32	2¾	70	2¾	70	2 5/8	59	3 7/8	84	11.09	5.04				
		3½	90	1¼	32	1¼	32	1¼	32	1 5/8	33	2 11/16	68	2 11/16	68	2 5/8	59	3 7/8	84	11.47	5.22		
		3	80	2	50	2	50	1 5/8	41	1 11/16	43	2 11/16	71	2 11/16	71	2 11/16	68	3½	89	13.50	6.14		
		1½	40	1½	40	1¾	35	1 7/8	37	2 11/16	68	2 5/8	67	2 7/8	62	3 7/8	84	13.50	6.14				
5	125	5	125	3	80	3	80	2 5/8	59	2 5/8	59	3 5/8	84	3 5/8	84	3½	89	4 5/8	110	22.91	10.42		
				2	50	2	50	1¾	44	1¾	44	3 7/8	87	3 7/8	87	2 11/16	75	4 1/8	105	18.25	8.30		
		4	100	2½	65	2	50	2	51	2 1/8	54	3 5/8	84	3 5/8	90	3 7/8	81	4¼	108	22.47	10.22		
				1½	40	1½	40	1½	38	1 5/8	41	3 3/8	86	3 3/8	86	2 11/16	68	4	102	18.81	8.55		
6	150	6	150	5	125	5	125	3 3/8	86	3 3/8	86	3 13/16	97	3 13/16	97	4 5/8	117	5	127	39.25	17.84		
				4	100	4	100	2 13/16	71	2 13/16	71	3 7/8	98	3 7/8	98	4 1/8	103	4 13/16	125	33.40	15.19		
				2½	65	2½	65	2	51	2	51	3 7/8	98	3 7/8	98	3¼	83	4¾	121	26.44	12.02		
				1¼	32	1¼	32	1¾	35	1¾	35	3 13/16	97	3 13/16	97	2 5/8	67	4 7/8	113	22.88	10.40		
		5	125	3	80	3	80	2 5/8	59	2 5/8	60	3 7/8	98	3 7/8	98	3 7/8	90	4 13/16	122	32.88	14.95		
				2	50	2	50	1¾	44	1 13/16	46	3 13/16	100	3 13/16	100	3	76	4 5/8	117	28.44	12.93		
				1½	40	1½	40	1½	38	1 5/8	40	3 7/8	98	3 7/8	98	2¾	70	4½	114	25.75	11.71		
				5	125	5	125	4 3/8	106	4 3/8	106	5 1/8	132	5 1/8	132	5 1/8	141	6 3/8	162	80.44	36.57		
4	100	4	100	3 3/8	79	3 3/8	79	5 1/8	129	5 1/8	129	4½	114	6 1/8	156	55.56	25.26						

Reducing crosses  
are read thus:



lateral	size		A		B		C		D		weight (approx.) each black	
	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
	fig. 373											
	3/4	20	1/4	6	1 3/4	44	3/4	19	2 1/4	56	1.00	.46
	1	25	3/16	5	2 3/16	55	3/4	19	2 3/4	69	1.62	.74
	1 1/4	32	3/8	10	2 5/8	66	1	25	3 1/4	81	2.63	1.20
	1 1/2	40	7/16	11	3 3/16	80	1 1/16	27	3 13/16	96	3.57	1.63
	2	50	9/16	14	3 13/16	96	1 1/4	31	4 1/2	114	5.75	2.62
	2 1/2	65	5/8	16	4 5/16	108	1 1/2	38	5 3/16	130	8.99	4.09
	3	80	13/16	21	5 3/16	130	1 3/4	44	6 1/8	153	13.54	6.16
	4	100	1 1/16	52	6 9/16	164	2 1/8	53	7 5/8	191	21.30	9.69

A, B: end of pipe  
C, D: center to face of fitting

return bends

close pattern, r.h. fig. 375	size		center to center				weight (approx.) each black			
	NPS	DN	close fig. 375		open fig. 376		close		open	
			in	mm	in	mm	lb	kg	lb	kg
	1/2	15	1 1/4	31	—	—	.65	.30	—	—
	3/4	20	—	—	1 7/8	48	1.10	.50	.98	.45
	1	25	—	—	2 1/2	63	1.71	.78	1.48	.68
	1 1/4	32	2 1/4	57	3	75	2.39	1.09	2.41	1.10
	1 1/2	40	2 1/2	63	3 1/2	88	3.46	1.58	3.33	1.52

special wide pattern fig. 377	size		center to center		weight (approx.) each			
	NPS	DN	in	mm	black		galvanized	
					lb	kg	lb	kg
	1	25	4	100	2.20	1.00	•	•
	1 1/4	32	4	100	3.50	1.59	•	•
	1 1/4	32	6	150	3.74	1.70	•	•

flange union

gasket type fig. 487	size		diam. of flanges		no. of bolts	weight (approx.) each			
	NPS	DN	in	mm		black		galvanized	
						lb	kg	lb	kg
	1/2	15	2 15/16	75	3	1.75	.80	1.80	.82
	3/4	20	3	75	3	2.00	.91	2.05	.94
	1	25	3 1/4	80	3	2.25	1.03	2.30	1.05
	1 1/4	32	4 3/16	105	4	4.75	2.16	4.85	2.21
	1 1/2	40	4 3/8	110	4	5.00	2.28	5.10	2.32
	2	50	5	125	4	6.50	2.96	6.65	3.03
	2 1/2	65	5 5/8	140	4	8.50	3.87	8.65	3.94
	3	80	6 3/8	160	4	11.00	5.00	11.20	5.09
	3 1/2	90	6 7/8	170	4	12.75	5.80	13.00	5.91
	4	100	7 11/16	190	5	18.00	8.19	18.50	8.41
	5	125	8 15/16	225	5	22.00	10.00	22.75	10.34
	6	150	10 1/4	255	6	30.00	13.64	31.00	14.09
	8	200	12 15/16	325	8	51.00	23.19	52.50	23.87

Assembled with gaskets

• Not stocked

cast iron threaded, (class 125)

## coupling

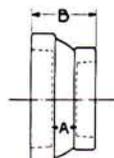
hex coupling  
fig. 366



size		across flats		B		C		weight (approx.) each			
		A						black		galvanized	
NPS	DN	in	mm	in	mm	in	mm	lb	kg	lb	kg
1	25	1 <sup>15</sup> / <sub>16</sub>	49	1 <sup>11</sup> / <sub>16</sub>	43	<sup>9</sup> / <sub>16</sub>	14	.82	.37	—	—

## reducers

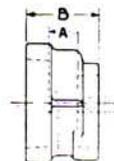
concentric reducer  
fig. 367



A: end to end of pipe  
B: face to face of fitting  
□ hex end

size				A		B <sup>ⓐ</sup>		weight (approx.) each		size				A		B <sup>ⓐ</sup>		weight (approx.) each	
								black	kg									black	kg
NPS	DN	NPS	DN	in	mm	in	mm	lb	kg	NPS	DN	NPS	DN	in	mm	in	mm	lb	kg
<sup>3</sup> / <sub>4</sub>	20	<sup>1</sup> / <sub>2</sub>	15	<sup>5</sup> / <sub>8</sub>	16	1 <sup>3</sup> / <sub>8</sub>	40	.40	.19	2 <sup>1</sup> / <sub>2</sub>	65	2	50	1	25	2 <sup>9</sup> / <sub>16</sub>	65	2.98	1.36
												1 <sup>1</sup> / <sub>2</sub>	40	<sup>3</sup> / <sub>4</sub>	19	2	51		
1	25	□ <sup>3</sup> / <sub>4</sub> □ <sup>1</sup> / <sub>2</sub>	20 15	<sup>7</sup> / <sub>16</sub> 1 <sup>1</sup> / <sub>16</sub>	11 17	1 <sup>1</sup> / <sub>2</sub> 1 <sup>11</sup> / <sub>16</sub>	38 43	.63 .54	.29 .25	3	80	2 <sup>1</sup> / <sub>2</sub>	65	<sup>15</sup> / <sub>16</sub>	24	2 <sup>13</sup> / <sub>16</sub>	71	4.40	2.00
		1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	25 20 15	<sup>15</sup> / <sub>16</sub> 1 <sup>9</sup> / <sub>16</sub>	24 25 14	2 <sup>1</sup> / <sub>2</sub> 2 <sup>1</sup> / <sub>2</sub> 1 <sup>5</sup> / <sub>8</sub>	54 54 41	1.07 1.07 .84	.49 .49 .39			2	50	1 <sup>1</sup> / <sub>16</sub>	27	2 <sup>3</sup> / <sub>4</sub>	70		
1 <sup>1</sup> / <sub>4</sub>	32									4	100	3	80	1 <sup>1</sup> / <sub>8</sub>	27	3 <sup>1</sup> / <sub>8</sub>	79	7.01	3.19
		1 <sup>1</sup> / <sub>4</sub> 1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	32 25 20 15	1 <sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub>	25 13 13 13	2 <sup>1</sup> / <sub>4</sub> 1 <sup>3</sup> / <sub>4</sub> 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>2</sub>	57 44 41 41	1.45 1.50 1.20 1.00	.66 .69 .55 .46			2 <sup>1</sup> / <sub>2</sub>	65	1 <sup>3</sup> / <sub>8</sub>	30	3 <sup>1</sup> / <sub>8</sub>	79		
1 <sup>1</sup> / <sub>2</sub>	40									5	125	4	100	1 <sup>1</sup> / <sub>8</sub>	27	3 <sup>5</sup> / <sub>16</sub>	84	10.48	4.77
		1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>4</sub> <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	40 32 20 15	<sup>7</sup> / <sub>8</sub> <sup>13</sup> / <sub>16</sub> <sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub>	22 21 13 13	2 <sup>3</sup> / <sub>16</sub> 2 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>2</sub>	56 54 41 41	1.98 1.78 1.20 1.00	.90 .81 .84 .87 .91			6	150	1 <sup>1</sup> / <sub>8</sub>	29	3 <sup>9</sup> / <sub>16</sub>	90		
2	50									8	200	6	150	1 <sup>1</sup> / <sub>4</sub>	32	3 <sup>7</sup> / <sub>8</sub>	98	29.10	13.23
		1 <sup>1</sup> / <sub>2</sub> 1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	40 25 20 15	<sup>7</sup> / <sub>8</sub> <sup>13</sup> / <sub>16</sub> <sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub>	22 21 13 13	2 <sup>3</sup> / <sub>16</sub> 2 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>2</sub>	56 54 41 41	1.98 1.78 1.20 1.00	.90 .81 .84 .87 .91			4	100	1 <sup>1</sup> / <sub>8</sub>	27	3 <sup>5</sup> / <sub>16</sub>	84		

eccentric reducer  
fig. 368



A: end to end of pipe  
B: face to face of fitting

size				A		B <sup>ⓐ</sup>		weight (approx.) each			
								black		galvanized	
NPS	DN	NPS	DN	in	mm	in	mm	lb	kg	lb	kg
<sup>3</sup> / <sub>4</sub>	20	<sup>1</sup> / <sub>2</sub>	15	<sup>9</sup> / <sub>16</sub>	14	1 <sup>1</sup> / <sub>2</sub>	38	.45	.20	—	—
1	25	<sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	20 15	<sup>7</sup> / <sub>16</sub> <sup>1</sup> / <sub>2</sub>	11 13	1 <sup>1</sup> / <sub>2</sub> 1 <sup>7</sup> / <sub>16</sub>	38 37	.61 .57	.28 .26	●	●
1 <sup>1</sup> / <sub>4</sub>	32	1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	25 20 15	<sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub> <sup>9</sup> / <sub>16</sub>	13 13 14	1 <sup>11</sup> / <sub>16</sub> 1 <sup>1</sup> / <sub>2</sub> 1 <sup>5</sup> / <sub>8</sub>	43 41 41	1.00 .90 1.00	.46 .41 .46	●	●
1 <sup>1</sup> / <sub>2</sub>	40	1 <sup>1</sup> / <sub>4</sub> 1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	32 25 20 15	<sup>5</sup> / <sub>8</sub> <sup>9</sup> / <sub>16</sub> <sup>1</sup> / <sub>2</sub> <sup>1</sup> / <sub>2</sub>	16 14 14 17	1 <sup>1</sup> / <sub>8</sub> 1 <sup>3</sup> / <sub>4</sub> 1 <sup>11</sup> / <sub>16</sub> 1 <sup>3</sup> / <sub>4</sub>	48 44 43 44	1.26 1.21 1.17 1.11	.58 .55 .54 .51	●	●
2	50	1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>4</sub> 1 <sup>3</sup> / <sub>4</sub> <sup>1</sup> / <sub>2</sub>	40 32 25 20 15	<sup>7</sup> / <sub>8</sub> <sup>13</sup> / <sub>16</sub> <sup>1</sup> / <sub>2</sub> <sup>3</sup> / <sub>4</sub> <sup>3</sup> / <sub>4</sub>	22 21 17 19 19	2 <sup>3</sup> / <sub>16</sub> 2 <sup>1</sup> / <sub>2</sub> 2 <sup>1</sup> / <sub>16</sub> 2 1 <sup>15</sup> / <sub>16</sub>	56 54 52 51 49	1.93 1.87 1.86 1.83 1.80	.88 .85 .85 .84 .82	●	●
2 <sup>1</sup> / <sub>2</sub>	65	2 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>4</sub> 1	50 40 32 25	1 <sup>7</sup> / <sub>8</sub> <sup>7</sup> / <sub>8</sub> <sup>13</sup> / <sub>16</sub>	25 22 22 21	2 <sup>9</sup> / <sub>16</sub> 2 <sup>3</sup> / <sub>8</sub> 2 <sup>3</sup> / <sub>8</sub> 2 <sup>1</sup> / <sub>4</sub>	65 60 60 57	2.95 2.94 2.80 2.74	1.34 1.34 1.28 1.25	●	●
3	80	2 <sup>1</sup> / <sub>2</sub> 2 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>4</sub> 1	65 50 40 32 25	<sup>15</sup> / <sub>16</sub> 1 <sup>1</sup> / <sub>8</sub> <sup>15</sup> / <sub>16</sub> <sup>15</sup> / <sub>16</sub> <sup>7</sup> / <sub>8</sub>	24 27 24 24 22	2 <sup>13</sup> / <sub>16</sub> 2 <sup>1</sup> / <sub>4</sub> 2 <sup>9</sup> / <sub>16</sub> 2 <sup>9</sup> / <sub>16</sub> 2 <sup>7</sup> / <sub>16</sub>	71 70 65 65 62	4.80 4.61 4.16 3.80 3.95	2.18 2.10 1.89 1.73 1.80	●	●
3 <sup>1</sup> / <sub>2</sub>	90	3 2	80 50	<sup>15</sup> / <sub>16</sub> 1 <sup>1</sup> / <sub>8</sub>	24 27	2 <sup>15</sup> / <sub>16</sub> 2 <sup>3</sup> / <sub>4</sub>	75 70	6.04 5.23	2.75 2.38	●	●
4	100	3 2 <sup>1</sup> / <sub>2</sub> 2 1 <sup>1</sup> / <sub>2</sub> 1 <sup>1</sup> / <sub>4</sub> 1	80 65 50 40 32 25	1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub> 1 <sup>3</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub>	27 29 30 29 27 27	3 <sup>1</sup> / <sub>8</sub> 3 <sup>1</sup> / <sub>16</sub> 2 <sup>15</sup> / <sub>16</sub> 2 <sup>13</sup> / <sub>16</sub> 2 <sup>3</sup> / <sub>4</sub> 2 <sup>1</sup> / <sub>16</sub>	79 78 75 71 70 68	7.64 7.26 6.91 6.61 6.58 6.83	3.48 3.30 3.14 3.01 2.99 3.11	●	●
5	125	4 3 2 <sup>1</sup> / <sub>2</sub>	100 80 65	1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub>	27 27 29	3 <sup>5</sup> / <sub>16</sub> 3 <sup>1</sup> / <sub>4</sub> 3 <sup>9</sup> / <sub>16</sub>	84 83 81	11.19 11.44 11.38	5.09 5.20 5.18	●	●
6	150	5 4 3	125 100 80	1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub> 1 <sup>1</sup> / <sub>8</sub>	29 29 27	3 <sup>9</sup> / <sub>16</sub> 3 <sup>7</sup> / <sub>16</sub> 3 <sup>5</sup> / <sub>16</sub>	90 87 84	18.00 15.36 14.66	8.19 2.44 6.67	●	●
8	200	6 5	150 125	1 <sup>1</sup> / <sub>4</sub> 1 <sup>5</sup> / <sub>16</sub>	32 33	3 <sup>7</sup> / <sub>8</sub> 3 <sup>3</sup> / <sub>4</sub>	98 95	28.04 28.14	12.75 12.79	●	●

ⓐ Dimension "B" does not conform to ASME Standard.

● Not stacked

**bushing**

**hex bushing  
fig. 383**



	size				weight each				size				weight each				
	NPS	DN	NPS	DN	black		galv.		NPS	DN	NPS	DN	black		galv.		
					lb	kg	lb	kg					lb	kg	lb	kg	
hex bushing fig. 383	¼	8	¼	6	.021*	.01	.022	.01	3½	90	3	80	1.96	.89	1.98	.90	
	⅜	10	¼	8	.038	.02	.039	.02			2½	65	2.56	1.17	2.61	1.19	
			⅜	6	.045	.02	.047	.03			□ 2	50	2.42	1.10	2.48	1.13	
	½	15	¾	10	.050	.03	.053	.03			□ 1½	90	2.32	1.06	2.38	1.09	
			¾	8	.070	.04	.073	.04			□ 1¼	32	2.54	1.16	2.64	1.20	
			¾	6	.060	.03	.062	.03		□ 1	25	2.65	1.21	2.75	1.25		
	¾	20	½	15	.103	.05	.105	.05		4	100	3½	90	2.50	1.14	2.58	1.18
			¾	10	.119	.06	.121	.06				3	80	3.15	1.44	3.21	1.46
			¾	8	.100	.05	.105	.05				□ 2½	65	3.29	1.50	3.33	1.52
	1	25	¾	6	.090	.04	.093	.05				□ 2	50	3.11	1.42	3.24	1.48
			¾	20	.170	.08	.174	.08				□ 1½	40	3.44	1.57	3.50	1.59
			¾	15	.215	.10	.220	.10		□ 1¼	32	3.54	1.61	3.60	1.64		
			¾	10	.182	.09	.188	.09		□ 1	25	3.59	1.64	3.63	1.65		
	1½	32	¾	8	.290	.14	.300	.14		5	125	4	100	3.94	1.79	4.10	1.87
			¾	25	.296	.14	.302	.14				3½	90	4.00	1.82	4.30	1.96
¾			20	.385	.18	.393	.18	□ 3	80			4.83	2.20	4.93	2.24		
¾			15	.300	.14	.305	.14	□ 2½	65			4.87	2.22	5.06	2.30		
1½	40	¾	10	.290	.14	.295	.14	□ 2	50			5.12	2.33	5.24	2.39		
		¾	8	.290	.14	.300	.14	6	150	5	125	5.24	2.39	5.45	2.48		
		1	25	.296	.14	.302	.14			□ 4	100	6.83	3.11	7.11	3.24		
		1	20	.327	.15	.334	.16			□ 3½	90	7.13	3.24	7.40	3.37		
1	15	.500	.23	.520	.24	□ 3	80			7.75	3.53	8.06	3.67				
2	50	1	10	.470	.22	.500	.23			□ 2½	65	7.72	3.51	7.78	3.54		
		1	8	.470	.22	.490	.23	□ 2	50	8.00	3.64	8.32	3.79				
		1½	40	.667	.31	.680	.31	8	200	6	150	13.19	6.00	13.5	6.14		
		1½	32	.810	.37	.830	.38			□ 5	125	13.65	6.21	14.0	6.37		
		1½	25	.730	.34	.760	.35			□ 4	100	13.93	6.34	15.0	6.82		
1½	20	.710	.33	.750	.34	□ 3	80			15.50	7.05	15.8	7.19				
1½	15	.770	.35	.780	.36	10	250			8	200	22.0	10.00	—	—		
2	50	.920	.42	.950	.44			□ 6	150	24.5	11.14	—	—				
2	40	1.290	.59	1.340	.61			□ 5	125	—	—	—	—				
2	32	1.240	.57	1.250	.57			□ 4	100	27.5	12.50	—	—				
2	25	1.160	.53	1.230	.56			12	300	10	250	32.5	14.78	33.0	15.00		
2½	65	1.250	.57	1.290	.59	4	100			—	—	—	—				
2½	50	1.280	.59	—	—	3	80			2½	65	.970	.44	1.020	.47		
2½	40	1.290	.59	1.340	.61					2	50	1.330	.61	1.380	.63		
2½	32	1.240	.57	1.250	.57					1½	40	1.500	.69	1.560	.71		
2½	25	1.160	.53	1.230	.56			1¼	32	1.540	.70	•	•				
2½	20	1.250	.57	1.290	.59			3½	90	2½	65	1.760	.80	—	—		
3	80	1.63	.74	1.66	.76	4	100			3	80	1.920	.88	1.960	.89		
3	50	1.90	.87	1.94	.89					2½	65	2.550	1.16	2.650	1.21		
3	40	1.79	.82	1.83	.84					2	50	2.700	1.23	2.820	1.29		
3	32	1.77	.81	1.80	.82					6	150	5	125	3.620	1.65C	3.790	1.72
3	25	1.90	.87	1.92	.88			4	100			5.820	2.65	6.050	2.75		
3	20	1.92	.88	1.95	.89	3	80	6.900	3.14			•	•				
3	15	1.93	.88	2.01	.92	face bushing fig. 385	2	50	1½			40	.345	.16	.350	.16	
¾	10	¾	8	.015*	.01				.015*			.01	1¼	32	.540	.25	.549
		¾	6	.015*	.01				.015*	.01	1	25	.525	.24	.535	.25	
½	15	¾	10	.030*	.02		.030	.02	¾	15	.695*	.32	.703*	.32			
		¾	8	.040*	.02		.040*	.02	2½	65	2	50	.615	.28	.620	.29	
¾	20	½	15	.055	.03	.055	.03	1½			40	.850	.39	.870*	.40		
		¾	10	.065	.03	.065	.03	1¼			32	.935	.43	.960*	.44		
1	25	¾	20	.085	.04	.090	.04	3	80	2½	65	.970	.44	1.020	.47		
		¾	15	.120	.06	.125	.06			2	50	1.330	.61	1.380	.63		
1½	32	1	25	.160	.08	.165	.08			1½	40	1.500	.69	1.560	.71		
		¾	20	.268	.13	.273*	.13	1¼	32	1.540	.70	•	•				
1½	40	1	15	.245	.12	.250*	.12	3½	90	2½	65	1.760	.80	—	—		
		¾	10	.145	.07	.150	.07			4	100	3	80	1.920	.88	1.960	.89
		¾	8	.339	.16	.346	.16					2½	65	2.550	1.16	2.650	1.21
¾	6	.391	.18	.398	.18	2	50	2.700	1.23			2.820	1.29				
¾	20	½	15	.320	.15	.330	.15	6	150	5	125	3.620	1.65C	3.790	1.72		
		¾	10	.320	.15	.330	.15			4	100	5.820	2.65	6.050	2.75		
¾	10	¾	8	.015*	.01	.015*	.01	3	80	6.900	3.14	•	•				
		¾	6	.015*	.01	.015*	.01	2	50	—	—	—	—				

● Not stocked    □ Inside hex    \* MADE TO ORDER IF QUANTITIES WARRANT

Note: Hexagon head or octagon head bushings size 2½ NPS / 65 DN and smaller reducing one size may be made either of malleable iron, ductile iron or steel. Other sizes may be made either of cast iron, ductile iron, malleable iron or steel. Face bushings sizes 2½ NPS / 65 DN and smaller may be made either of malleable iron, ductile iron or steel. Face bushings 3 NPS / 80 DN and larger reducing one size may be made either of malleable iron, ductile iron or steel. Face bushings 3 NPS / 80 DN and larger reducing two sizes or more may be made either of cast or malleable iron, ductile iron, or steel.

cast iron threaded, (class 125)

plugs	size		weight (approx.) each (cored) fig. 387				weight (approx.) each (solid) fig. 388			
			black		galvanized		black		galvanized	
	NPS	DN	lb	kg	lb	kg	lb	kg	lb	kg
square head plugs cored: fig. 387 ■ 	1/2	15	—	—	—	—	.100	.05	.104	.05
	3/4	20	.132	.06	.135	.07	.169	.08	.175	.08
	1	25	.250	.12	.281	.13	.320	.15	.333	.16
	1 1/4	32	.391	.18	.407	.19	.531	.25	.546	.25
	1 1/2	40	.500	.23	.515	.24	.760	.35	.770	.35
solid: fig. 388 	2	50	.815	.37	.833	.38	1.230	.56	1.250	.57
	2 1/2	65	1.320	.60	1.340	.61	2.000	.91	2.080	.95
	3	80	1.870	.85	1.910	.87	3.180	1.45	3.310	1.51
	3 1/2	90	2.500	1.14	2.600●	1.19	4.380	1.99	●	●
	4	100	4.000	1.82	4.000	1.82	—	—	—	—

bar plugs cored: fig. 389 solid: fig. 380 	size		cored: fig. 389				solid: fig. 380				size		countersunk: fig. 390									
			wgt (approx.) each				wgt (approx.) each						wgt (approx.) each									
	NPS	DN	black		galv.		black		galv.		NPS	DN	black		galv.							
			lb	kg	lb	kg	lb	kg	lb	kg			lb	kg								
countersunk: fig. 390 △ 	4	100	3.82	1.74	3.97	1.81	5.68	2.59	●	●	1/2	15	.050	.03	.053	.03						
																	3/4	20	.090	.04	.100	.05
																	1	25	.195	.09	.200	.09
	5	125	6.50	2.96	6.83	3.11	9.60	4.37	●	●	1 1/4	32	.320	.15	.340	.16						
																	1 1/2	40	.470	.22	.480	.22
																	2	50	.840	.39	1.3	.59
	6	150	9.94	4.52	10.34	4.70	14.78	6.72	●	●	2 1/2	65	1.400	.64	2.0	.91						
																	3	80	2.250	1.03	3.0	1.37
3 1/2																	90	3.020	1.38	—	—	
8	200	20.26	9.21	21.00	9.55	●	●	●	●	4	100	3.760	1.71	3.9	1.78							

cap fig. 381 	size		weight (approx.) each			
			black		galvanized	
	NPS	DN	lb	kg	lb	kg
	2 1/2	65	2.55	1.16	—	—
	3	80	4.10	1.87	—	—
	4	100	6.40	2.91	—	—
	5	125	10.70	4.87	—	—
	6	150	14.20	6.46	14.60	6.64
	8	200	27.23	12.38	28.35	12.89

locknut fig. 370 	size		A (min)		B (min)		C (min)		D (min)		weight (approx.) each																
			black		galvanized		black		galvanized		weight (approx.) each																
	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg													
2 1/2	65	3.500	88.9	3.180	80.8	.590	15.0	.090	2.3	1.13	.52	1.16	.53														
														3	80	4.270	108.5	3.840	97.5	.670	17.0	.090	2.3	1.60	.73	1.70	.78
														4	100	5.380	136.7	5.000	127.0	.800	20.3	.130	3.3	3.50	1.59	—	—

floor flange fig. 1006 bolt holes cored 	size		diam. of flange		no. of holes	diam. of holes		weight (approx.) each				size		diam. of flange		no. of holes	diam. of holes		weight (approx.) each																								
			black			galv.		black		galv.				black			galv.		weight (approx.) each																								
	NPS	DN	in	mm	in	mm	lb	kg	lb	kg	NPS	DN	in	mm	in	mm	lb	kg	lb	kg	lb	kg																					
	1/4	8	2 1/8	70	4	1/4	7	.39	.18	.40	.19	1	25	4	100	4	1/4	7	1.13	.52	1.14	.52																					
3/8																							10	3	75	4	1/4	7	.43	.20	.45	.21	1 1/4	32	4	100	4	1/4	7	1.14	.52	1.15	.53
1/2																							15	3 1/2	90	4	1/4	7	.73	.34	.74	.34	1 1/2	40	4 1/2	115	4	3/8	8	1.55	.71	1.56	.71
3/4																							20	3 1/2	90	4	1/4	7	.80	.37	.81	.37	2	50	5 1/2	140	4	3/8	8	2.40	1.09	2.43	1.11

● Not stocked  
 ■ 1/8, 1/4, 3/8 NPS / 6, 8, 10 DN plugs furnished in steel  
 △ 1/2 and 3/4 NPS / 15 and 20 DN countersunk plugs furnished in malleable iron

**cast iron threaded class 250, (extra heavy®)**

pressure ratings, psi { saturated steam: 250  
liquid & gas at 150° F: 400

pressure ratings, bar { saturated steam: 17.2  
liquid & gas at 65° C: 28

**elbows**

	size		A		B		weight (approx.) each black	
	NPS	DN	in	mm	in	mm	lb	kg
<b>90° elbow: fig. 421</b>	1/4	8	5/8	16	15/16	24	.37	.17
	3/8	10	11/16	17	1 1/16	27	.50	.23
	1/2	15	1 3/16	21	1 1/4	32	.75	.34
	3/4	20	1 5/16	24	1 7/16	37	1.13	.55
	1	25	1 7/16	27	1 9/16	41	1.79	.82
	1 1/4	32	1 9/16	33	1 15/16	49	3.00	1.37
	1 1/2	40	1 1/2	38	2 1/8	54	4.05	1.84
	2	50	1 13/16	46	2 1/2	63	6.76	3.08
	2 1/2	65	2	51	2 5/8	75	10.56	4.80
	3	80	2 3/8	60	3 3/8	86	15.25	6.94
3 1/2	90	2 3/4	70	3 3/4	95	20.20	9.19	
4	100	3 1/8	77	4 1/8	105	26.15	11.89	
8	200	5 5/8	141	7	175	122.00	55.46	
<b>45° elbow: fig. 424</b>	1/2	15	3/16	14	1	25	.66	.30
	3/4	20	5/8	16	1 1/8	29	1.04	.48
	1	25	3/4	20	1 5/16	33	1.56	.71
	1 1/4	32	7/8	22	1 1/2	38	2.70	1.23
	1 1/2	40	1 1/16	27	1 11/16	43	3.55	1.62
	2	50	1 5/16	33	2	51	6.07	2.76
	2 1/2	65	1 5/16	33	2 1/4	57	9.79	4.45
	3	80	1 9/16	40	2 1/2	63	13.83	6.29
	4	100	1 3/4	44	2 13/16	71	22.60	10.28
	6	150	2 1/4	57	3 1/2	88	50.20	22.82

**tees**

	size		A, B, C		D, E, F		weight (approx.) each black	
	NPS	DN	in	mm	in	mm	lb	kg
<b>straight tee: fig. 425</b>	1/4	8	5/8	16	15/16	24	.47	.22
	3/8	10	11/16	17	1 1/16	27	.70	.32
	1/2	15	3/4	19	1 1/4	32	1.20	.55
	3/4	20	7/8	22	1 7/16	37	1.57	.72
	1	25	1	25	1 5/8	41	2.43	1.11
	1 1/4	32	1 1/8	30	1 15/16	49	3.94	1.79
	1 1/2	40	1 1/16	37	2 1/8	54	5.31	2.42
	2	50	1 3/4	44	2 1/2	63	9.01	4.10
	2 1/2	65	1 15/16	49	2 5/8	75	14.23	6.47
	3	80	2 5/16	58	3 3/8	86	20.95	9.53
4	100	2 15/16	75	4 1/8	105	33.98	15.45	
6	150	4 1/8	104	5 5/8	141	79.00	35.91	
8	200	5 5/16	135	7	175	145.00	65.91	

**reducing tee: fig. 426**

	size						A		B		C		D		E		F		wgt (approx.) each black			
	NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg		
	<b>reducing tee: fig. 426</b>	3/4	20	3/4	20	1/2	15	3/4	19	3/4	19	7/8	22	1 1/16	33	1 1/8	33	1 3/8	35	1.37	.63	
1		25	1	25	3/4	20	7/8	22	7/8	22	1	25	1 1/2	38	1 1/2	38	1 9/16	40	2.19	1.00		
						1/2	15	3/4	19	3/4	19	1	25	1 3/8	35	1 3/8	35	1 1/2	38	2.03	.93	
1 1/4		32	1 1/4	32	1	25	1 1/16	27	1 1/16	27	1 1/8	30	1 3/4	44	1 3/4	44	1 9/16	46	3.49	1.59		
					3/4	20	1 5/16	24	1 5/16	24	1 1/8	29	1 5/8	41	1 5/8	41	1 1/16	43	3.21	1.46		
1 1/2		40	1 1/2	40	1 1/4	32	1 5/16	33	1 5/16	33	1 3/8	35	2	51	2	51	2 1/8	52	4.98	2.27		
					1	25	1 1/8	29	1 1/8	29	1 1/8	33	1 13/16	46	1 13/16	46	1 9/16	48	4.26	1.94		
2		50	2	50	3/4	20	1	25	1	25	1 1/4	32	1 1/2	38	2	51	2	51	2 1/2	54	6.57	2.99
					1 1/4	32	1 3/8	35	1 3/8	35	1 9/16	48	2 3/16	55	2 3/16	53	2 1/4	57	7.11	3.24		
					1	25	1 1/4	32	1 1/4	32	1 1/2	38	2	51	2	51	2 1/2	54	6.57	2.99		
					3/4	20	1 1/8	29	1 1/8	29	1 1/16	37	1 7/8	47	1 7/8	47	2	51	6.24	2.84		

• Not stocked

■ For manufacturing standards see pf-63

pf-76

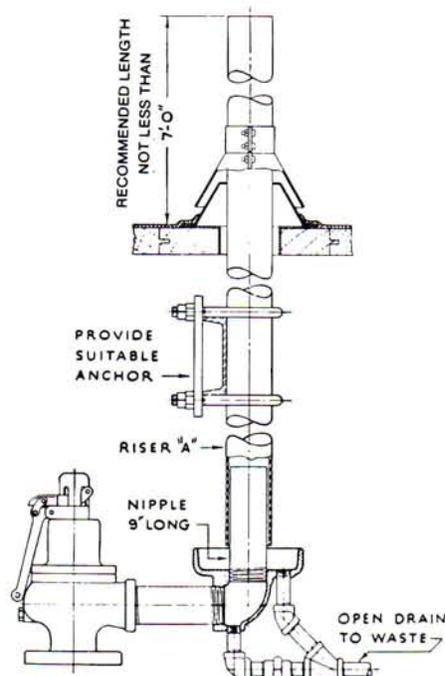
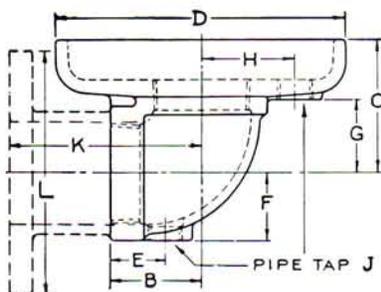
## cast iron threaded safety valve discharge elbow



### Dimensions

threaded inlet  
cast iron: fig. 1538

flanged inlet  
cast iron: fig. 1538F



elbow pipe size		riser pipe size		B		C		D		E		F	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm
2½	65	3½	90	2½	68	4½	110	8½	216	1½	41	1½	49
3	80	4	100	3½	79	4¾	124	9½	241	1½	41	2½	59
3½	90	5	125	3¾	87	5½	135	10¼	260	1¾	44	2½	67
4	100	5	125	3¾	95	5¾	146	11	279	1¾	44	2½	75
5	125	6	150	4½	114	6¾	171	12½	318	1¾	48	3¾	90
6	150	8	200	5½	130	7¾	194	13¾	349	2	51	4¾	106
8	200	10	250	6¾	167	8¾	217	17	432	2½	60	5¾	137

elbow pipe size		riser pipe size		G		H		J		K		L	
NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm
2½	65	3½	90	2½	54	2¾	70	¾	19	—	—	—	—
3	80	4	100	2¾	65	3½	79	¾	19	—	—	—	—
3½	90	5	125	2¾	73	3¾	87	¾	19	—	—	—	—
4	100	5	125	3¾	81	3¾	95	¾	19	—	—	—	—
5	125	6	150	3½	100	4¾	111	¾	19	—	—	—	—
6	150	8	200	4¾	116	5	127	¾	19	—	—	—	—
8	200	10	250	5½	151	6¾	162	1	25	10¾	273	13½	343

### Weight (each)

elbow pipe size		threaded inlet iron, fig. 1538		flanged inlet iron, fig. 1538F	
NPS	DN	lb	kg	lb	kg
2½	65	12.00	5	—	—
3	80	15.00	7	—	—
3½	90	24.00	11	—	—
4	100	27.00	12	—	—
5	125	40.00	18	—	—
6	150	53.00	24	—	—
8	200	104.00	47	140.00	148.00

Following are the advantages of Grinnell safety valve discharge elbow for piping connections to safety valves when attached to boilers, etc.:

- Drip pan for removing condensate and rain water cast integral with elbow
- Strains on safety valve minimized
- Pipe tap J is standard

With multiple pop safety valve, leakage of vapor at any discharge elbow indicates valve in operation.

Steel elbows and flanged elbows furnished on order.

- Elbows with flanged inlet in sizes smaller than 8 NPS/200 DN can be furnished by using the threaded discharge elbow, pipe nipple and forged carbon steel companion flanges.

# cast iron drainage

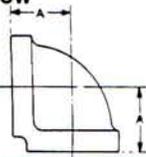
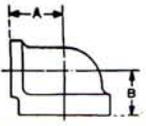
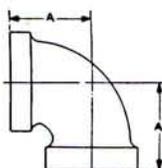
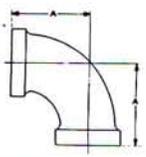
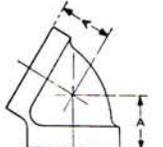
Grinnell drainage fittings have sufficient sweep to allow free unobstructed flow. As shown in the sectional view, they are made with a shoulder of the same diameter as the inside of the pipe. Thus, continuous passage is created when the pipe is screwed to the shoulder. There is no place for solid matter to collect and clog in the pipe. Also, Grinnell drainage fittings are recessed and threaded for wrought pipe.

Coated drainage fittings are available in baked, dipped enamel finish and in hot dipped, galvanized finish (in sizes listed). Uncoated or plain drainage fittings are made to order.

90° type drainage fittings are normally tapped with pitch of 1/4 inch to the foot. (The symbol ◊ beside the figure number indicates that the inlet is tapped pitched.)

UNPITCHED drainage fittings of the 90° types are made to order only.

Note: The smallest opening of fittings are always the inlets.

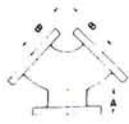
elbows	size		A		weight (approx.) each							
	NPS	DN	in	mm	black		galvanized					
					lb	kg	lb	kg				
<b>90° short turn elbow</b> fig. 701◊ 	1 1/4	32	1 3/4	44	1.60	.73	1.66	.75				
	1 1/2	40	1 5/8	49	1.91	.87	1.99	.90				
	2	50	2 1/4	57	3.04	1.38	3.16	1.44				
	3	80	3 1/16	78	7.09	3.22	7.17	3.26				
	4	100	3 3/16	97	13.69	6.22	13.94	6.34				
	5	125	4 1/2	114	20.35	9.25	—	—				
6	150	5 1/2	130	32.53	14.79	—	—					
<b>90° reducing short turn elbow: fig. 701R◊</b> 	size				A		B		weight (approx.) each			
	NPS	DN	NPS	DN	in	mm	in	mm	black		galvanized	
									lb	kg	lb	kg
1 1/2	40	1 1/4	32	1 7/8	48	1 3/16	46	1.69	.77	—	—	
2	50	1 1/2	40	2 1/8	54	2	51	2.49	1.32	—	—	
<b>90° long turn elbow</b> fig. 702◊ 	size		A		weight (approx.) each							
	NPS	DN	in	mm	black		galvanized					
					lb	kg	lb	kg				
	1 1/2	40	2 1/2	63	2.24	1.02	2.32	1.06				
	2	50	3 1/16	78	3.61	1.64	3.76	1.71				
3	80	4 1/4	108	9.04	4.11	—	—					
4	100	5 3/16	132	16.40	7.46	—	—					
<b>90° extra long turn elbow: fig. 702A◊</b> 	1 1/2	40	3 1/2	89	2.62	1.19	—	—				
	2	50	4	102	4.54	2.07	—	—				
<b>60° short turn elbow</b> fig. 703 	1 1/2	40	1 3/4	44	2.34	1.06	—	—				

◊ Inlet tapped, pitched 1/4 inch to the foot

cast iron flanged, (class 125)

true Y

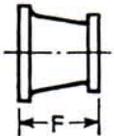
fig. 810



size		A		B		diameter of flange		thickness of flange (min.)		wall thickness*		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
4	100	3	75	6½	163	9	225	15/16	24	½	13	60	27.28
6	150	3½	88	8	200	11	275	1	25	5/8	15	101	45.91
8	200	4½	113	9	225	13½	340	1½	29	5/8	16	154	70.00

reducers

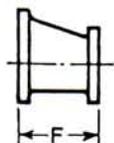
concentric reducer  
fig. 825



F: face to face

size				F		weight (approx.) each		size				F		weight (approx.) each	
NPS	DN	NPS	DN	in	mm	lb	kg	NPS	DN	NPS	DN	in	mm	lb	kg
2	50	1½	40	5½	140	12	5.46	8	200	6	150	11	275	77	35.00
2½	65	2	50	5½	140	14	6.37			5	125			71	32.28
		1½	40	5½	140	12	5.46			4	100			66	30.00
3	80	2½	65	6	150	19	8.64	10	250	8	200	12	300	120	54.55
		2	50			16	7.28			6	150			100	45.46
		1½	40			14	6.37			5	125			90	40.91
4	100	3½	90	7	175	31	14.09			4	100			85	38.64
		3	80			28	12.73			8	200			180	81.82
5	125	2½	65	8	200	26	11.82			12	300			10	250
		2	50			24	10.91	8	200			140	63.64		
6	150	4	100	9	225	39	17.73	6	150			180	81.82		
		3	80			32	14.55	10	250	180	81.82				
		2½	65			31	14.09	8	200	155	70.46				
		2	50			34	15.46	6	150	140	63.64				

eccentric reducer  
fig. 826



F: face to face

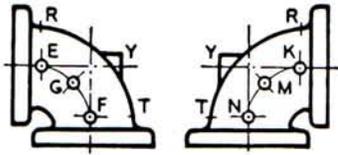
size				F		weight (approx.) each	
NPS	DN	NPS	DN	in	mm	lb	kg
3	80	2½	65	6	150	22	10.00
		2	50			16	7.28
4	100	3	80	7	175	28	12.73
		2½	65			28	12.73
		2	50			28	12.73
5	125	4	100	8	200	39	17.73
6	150	5	125	9	225	51	23.19
		4	100			50	22.73
		3	80			47	21.37
8	200	6	150	11	275	77	35.00
		5	125			76	34.55
		4	100			71	32.28
10	250	8	200	12	300	120	54.55
		6	150			107	48.64
12	300	10	250	14	350	180	81.82
		8	200			155	70.46

**cast iron flanged**

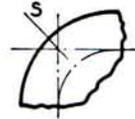
*class 125 (standard) and class 250 (extra heavy)*

**method of designating location of tapped holes for drains when specified**

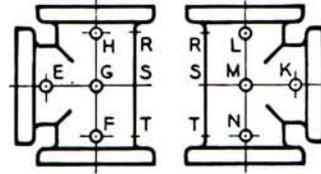
Class 125 (standard) and Class 250 (extra heavy)



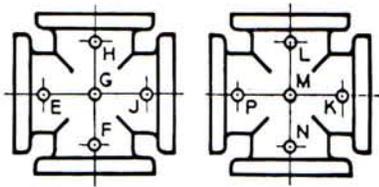
90° elbow (straight size)



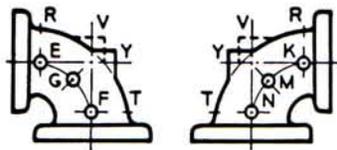
90° elbow



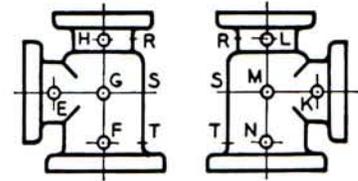
tee (straight size)



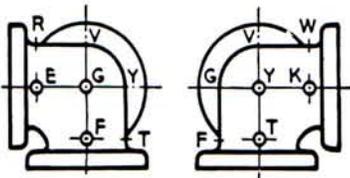
cross (straight size)



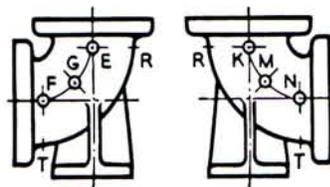
90° elbow (reducing size)



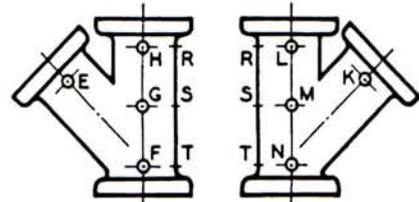
tee (reducing size)



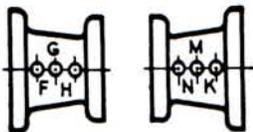
front view side view  
side outlet elbow (straight size)



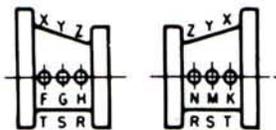
90° base elbow



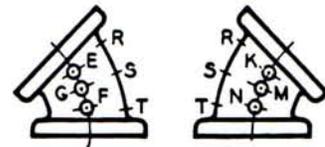
45° lateral (straight size)



concentric reducer



eccentric reducer



45° elbow

■ NOTE: These sketches show two views of the same fitting and represent fittings with symmetrical shapes except for the side outlet elbow (straight sizes).

## cast iron flanged

## class 250 (extra heavy)

pressure ratings, psi { saturated steam: 250  
(sizes thru 12 NPS) { liquid & gas at 150° F: 400

pressure ratings, bar { saturated steam: 17.2  
(sizes thru 300 DN) { liquid & gas at 65° C: 28

### specifications

All Extra Heavy or "Class 250" cast iron flanged fittings in sizes listed are made to ASME B16.1, are marked "250". All Class 250 Cast Iron flange fittings are faced and drilled to ASME B 16.1, unless otherwise specified.

Grinnell fittings' sizes 1 NPS / 25 DN to 10 NPS / 250 DN shown in this section are included in the "List of Inspected Fire Protection Equipment and Materials" issued by the Underwriters' Laboratories, Inc.

### sizes

To avoid delay in shipment, where other than sizes given are ordered, we carry in stock reducing flanges, the use of which, in connection with straight or reducing fittings carried in stock, enable us to fill orders promptly for reducing sizes where specifications will permit reduction made in this manner. The reducing flanges furnished are the same thickness as the regular companion flange of the corresponding outside diameter and will be drilled to the template corresponding to the outside diameter unless otherwise ordered. For fittings reduced in this manner, please specify "reduce by flanges if necessary."

To order reducing companion flanges, specify threaded or reduced size first and follow with outside diameter. For instance, if a reducing flange is required to connect a 4-inch pipe to a 6-inch valve or fitting having a 12½" / 320 mm flange, order a 4 NPS / 100 DN x 12½ NPS / 320 DN reducing flange.

### coating

Flanged fittings are available in both black and galvanized. Consult a Grinnell representative for available sizes.

### dimensions

All Extra Heavy or "Class 250" cast iron flanged fittings have a raised face (for gaskets) 1/16-inch / 1.6-mm high inside of bolt holes. For bolts 1½-inch / 28.6-mm smaller, the bolt hole is drilled 1/8-inch / 3.2-mm larger than the diameter of bolt. Bolt holes straddle the center line and the steel bolts with square heads and hex nuts are recommended.

Reducing elbows have same center to face dimensions as regular elbows of the largest straight size.

Reducing tees NPS 16 / 400 DN and smaller have same the center-to-face and face-to-face dimensions as a straight fitting of the size of the largest opening. Dimensions for larger sizes furnished upon request.

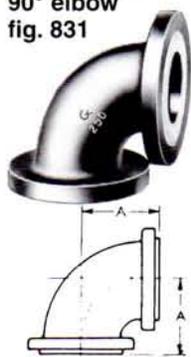
### tolerances

Inspection limit of plus or minus 1/32-inch / .8 mm is allowed on all center to contact surface dimensions for sizes up to and including 10 NPS / 250 DN and plus or minus 1/16 inch / 1.6 mm on sizes larger than 10 NPS / 250 DN. Inspection limit of plus or minus 1/16 inch / 1.6 mm is allowed on all contact surface to contact surface dimensions for sizes up to and including 10 NPS / 250 DN and plus or minus 1/8 inch / 3.2 mm on sizes larger than 10 NPS / 250 DN.

■ **NOTE:** Patterns are designed to produce castings having the wall thicknesses given in the tables. The wall thicknesses of the castings at no point shall be less than 87.5% of the dimensions given.

### elbows

90° elbow  
fig. 831



A: center to face

	size		A		diameter of flange		thickness of flange		diameter of raised face		wall thickness of body		weight (approx.) each	
	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
2	50	5	125	6½	165	7/8	22	4 <sup>3</sup> / <sub>16</sub>	106	7/16	11	20	9.09	
2½	65	5½	140	7½	190	1	25	4 <sup>15</sup> / <sub>16</sub>	125	½	13	30	13.64	
3	80	6	150	8¼	205	1½	29	5 <sup>11</sup> / <sub>16</sub>	144	9/16	14	40	18.19	
4	100	7	175	10	250	1¼	32	6 <sup>15</sup> / <sub>16</sub>	176	5/8	16	65	29.55	
5	125	8	200	11	275	1¾	35	8 <sup>5</sup> / <sub>16</sub>	208	11/16	17	87	39.55	
6	150	8½	213	12½	315	1 <sup>7</sup> / <sub>16</sub>	37	9 <sup>11</sup> / <sub>16</sub>	242	¾	19	115	52.20	
8	200	10	250	15	375	1 <sup>5</sup> / <sub>8</sub>	41	11 <sup>15</sup> / <sub>16</sub>	299	1 <sup>3</sup> / <sub>16</sub>	21	185	84.09	
10	250	11½	288	17½	440	1 <sup>7</sup> / <sub>8</sub>	48	14 <sup>1</sup> / <sub>16</sub>	352	1 <sup>5</sup> / <sub>16</sub>	24	290	131.82	
12	300	13	325	20½	515	2	51	16 <sup>7</sup> / <sub>16</sub>	411	1	25	410	186.30	

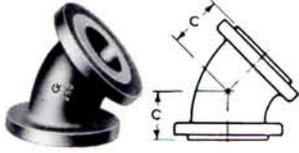
cast iron flanged, (class 250)

pressure ratings, psi { saturated steam: 250  
(sizes thru 12 NPS) { liquid & gas at 150° F: 400

pressure ratings, bar { saturated steam: 17.2  
(sizes thru 300 DN) { liquid & gas at 65° C: 28

elbows (continued)

45° elbow  
fig. 832



size		C		diameter of flange		thickness of flange (min.)		diameter of raised face		wall thickness of body (min.) <sup>a</sup>		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
2	50	3	76	6½	165	7/8	22	4¾	106	7/8	11	18	8.19
2½	65	3½	89	7½	190	1	25	4½	125	½	13	28	12.73
3	80	3½	89	8¼	205	1½	29	5½	144	9/16	14	35	15.91
4	100	4½	114	10	250	1¼	32	6½	176	5/8	16	58	26.37
5	125	5	125	11	275	1¼	32	8½	208	11/16	17	76	34.55
6	150	5½	140	12½	315	17/16	37	9½	242	¾	19	105	47.73
8	200	6	150	15	375	1½	41	11½	299	13/16	21	155	70.46
10	250	7	175	17½	435	17/8	48	14½	352	15/16	24	240	109.09
12	300	8	200	20½	515	2	50	16½	418	1	25	340	154.55

C: center to face

taper reducing elbow: fig. 833

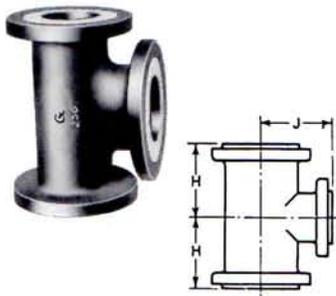


size				A		weight (approx.) each		size				A		weight (approx.) each	
NPS	DN	NPS	DN	in	mm	lb	kg	NPS	DN	NPS	DN	in	mm	lb	kg
4	100	3	80			52	23.64	6	150	5	125			100	45.46
		2½	65	7	175					4	100	8½	213	93	42.28
5	125	4	100			78	35.46	8	200	6	150			155	70.46
		3	80	8	200					5	125	10	250	140	63.64
						65	29.55	10	250	8	200			240	109.09
										6	150	11½	288	210	95.46

A: center to face

tees

straight: fig. 841



size		min. inside diameter of fitting		J		HH		diameter of flange		thick. of flange (min.)		diameter of raised face		wall thick. of body (min.) <sup>a</sup>		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
2	50	2	51	5	125	10	250	6½	165	7/8	22	4¾	106	7/8	11	32	14.55
2½	65	2½	63	5½	140	11	275	7½	190	1	25	4½	125	½	13	46	20.91
3	80	3	76	6	150	12	300	8¼	210	1½	29	5½	144	9/16	14	58	26.37
4	100	4	100	7	175	14	350	10	250	1¼	32	6½	176	5/8	16	99	45.00
5	125	5	125	8	200	16	400	11	275	1½	35	8½	211	11/16	17	135	61.37
6	150	6	150	8½	216	17	425	12½	315	17/16	37	9½	242	¾	19	180	81.82
8	200	8	200	10	250	20	500	15	375	1½	41	11½	299	13/16	21	280	127.28
10	250	10	250	11½	288	23	575	17½	435	17/8	48	14½	352	15/16	24	430	195.46
12	300	12	300	13	325	26	650	20½	515	2	51	16½	411	1	25	620	281.82

J: center to face

HH: face to face

■ See note page pf-91.

## cast iron flanged, (class 250)

### tees (continued)

tee, reducing on run or outlet: fig. 842



In describing tees, the run is first named, then the outlet, thus:

2 NPS / 50 DN

10 NPS / 250 DN

8 NPS / 200 DN

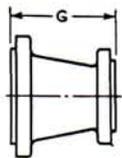
= 10 X 8 X 6 NPS /  
250 X 200 X 150 DN

Dimensions for reducing tees for sizes listed 16 NPS / 400 DN and smaller have same center to face dimension as straight size fittings corresponding to the largest opening. Dimensions of sizes not listed furnished on request.

	size, reducing						wgt (approx.) each		size, reducing						wgt (approx.) each	
	NPS	DN	NPS	DN	NPS	DN	lb	kg	NPS	DN	NPS	DN	NPS	DN	lb	kg
	3	80	3	80	2½	65	55	25.00	6	150	6	150	4	100	160	72.73
					2	50	50	22.73					3	80	148	67.28
	4	100	4	100	3	80	84	38.19	8	200	8	200	6	150	257	116.82
					2½	65	83	37.73					4	100	229	104.09
					2	50	77	35.00								
	5	125	5	125	4	100	125	56.82	10	250	10	250	8	200	376	170.91
													6	150	369	167.73

### reducer

concentric reducer  
fig. 855



G: face to face

	size				G		wgt (approx.) each		size				G		wgt (approx.) each									
	NPS	DN	NPS	DN	in	mm	lb	kg	NPS	DN	NPS	DN	in	mm	lb	kg								
	2½	65	2	50	5½	140	24	10.91	6	150	5	125	9	225	85	38.64								
											4	100					77	35.00						
											3	80					67	30.46						
	3	80	2	50	6	150	29	13.19	8	200	2½	65	11	275	130	59.09								
											2	50					25	11.37	5	125	115	52.28		
											2	50					36	16.37	4	100	105	47.73		
	4	100	3	80	7	175	44	20.00	10	250	8	200	12	300	190	86.37								
																	2½	65	54	24.55	6	150	170	77.28
																	2	50	50	22.73				
	5	125	4	100	8	200	63	28.64	10	250	8	200	12	300	190	86.37								
																	3	80	54	24.55				
																	2½	65	50	22.73				

Drilling templates are in multiples of four so that fittings may face in any quarter. Bolt holes straddle center line.

■ See note page pf-91.

**iron flanges** class 125, (standard)

pressure ratings, psi	saturated steam:	1 to 12 NPS:	125
		14 to 24 NPS:	100
pressure ratings, bar	liquid & gas at 150° F:	1 to 12 NPS:	175
		14 to 24 NPS:	150
pressure ratings, bar	saturated steam:	25 - 300 DN:	8.6
		350 - 600 DN:	6.9
pressure ratings, bar	liquid & gas at 65° C:	25 - 300 DN:	12
		350 - 600 DN:	10.3

Class 125 (standard) iron flanges are manufactured to American National Standard ASME B16.1. Malleable iron flanges are manufactured to ASTM A197.

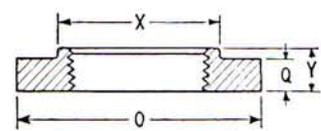
**companion flange**

cast iron: fig. 1011  
malleable: fig. 1035

showing hub



showing plain face



□ CI only.

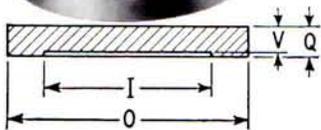
pipe size		diam. of flange O		flange thickness (min.) Q		diam. of hub (min.) X		length through hub* (min.) Y		weight (approx.) each			
NPS	DN	in	mm	in	mm	in	mm	in	mm	cast iron*		malleable	
										lb	kg	lb	kg
□ ¾	20	3¾	100	7/16	11	1¾	44	5/8	16	1.50	.69	—	—
□ 1	25	4¼	110	7/16	11	1½	49	11/16	17	1.75	.80	—	—
□ 1¼	32	4½	115	½	13	2¾	59	13/16	21	2.00	.91	—	—
1½	40	5	130	9/16	14	2¾	65	7/8	22	2.25	1.03	2.25	1.03
2	50	6	150	5/8	16	3½	78	1	25	4.00	1.82	4.00	1.82
2½	65	7	175	11/16	17	3¾	90	1½	29	6.00	2.73	6.00	2.73
3	80	7½	190	¾	19	4¼	108	13/16	30	7.63	3.47	7.63	3.47
□ 3½	90	8½	215	13/16	21	4½	122	1¼	32	9.00	4.09	—	—
4	100	9	225	15/16	24	5¾	135	19/16	33	11.75	5.34	11.75	5.34
5	125	10	250	15/16	24	6¾	164	17/16	37	14.00	6.37	14.00	6.37
6	150	11	275	1	25	7¾	192	19/16	40	16.50	7.50	16.50	7.50
8	200	13½	340	1½	29	9½	242	1¾	44	26.00	11.82	26.00	11.82
□ 10	250	16	400	13/16	30	11½	299	115/16	49	37.75	17.16	—	—
□ 12	300	19	475	1¼	32	14½	352	23/16	56	50.50	22.96	—	—
□ 14 O.D.	350	21	525	1¾	35	15½	391	2¼	57	80.00	36.37	—	—
□ 16 O.D.	400	23½	590	17/16	37	17½	445	2½	63	100.00	45.46	—	—
□ 18 O.D.	450	25	625	19/16	40	19½	491	211/16	68	106.00	48.19	—	—
□ 20 O.D.	500	27½	690	111/16	43	21¼	541	2½	73	128.00	58.19	—	—
□ 24 O.D.	600	32	800	1¾	48	26	650	3¼	83	202.00	91.82	—	—

When ordering companion flanges always give outside diameter as well as nominal pipe size.

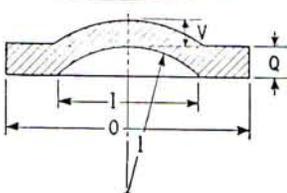
**blind flange**

cast iron: fig. 1018

10 x 16 NPS / 250 x 400 DN and smaller



12 x 19 NPS / 300 x 480 DN and larger



pipe size		diam. of flange O		flange thickness (min.) Q		wall thick. V		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	cast iron*	
								lb	kg
1	25	4¼	108	7/16	11	3/8	10	2.00	.91
1¼	32	4½	117	½	13	7/16	11	2.25	1.03
1½	40	5	125	9/16	14	½	13	3.75	1.71
2	50	6	150	5/8	16	9/16	14	4.00	1.82
2½	65	7	175	11/16	17	5/8	16	6.75	3.07
3	80	7½	191	¾	19	11/16	17	8.00	3.64
3½	90	8½	216	13/16	21	¾	19	11.00	5.00
4	100	9	225	15/16	24	7/8	22	14.00	6.37
5	125	10	250	15/16	24	7/8	22	18.00	8.19
6	150	11	275	1	25	15/16	24	23.00	10.46
8	200	13½	343	1½	28	11/16	27	40.00	18.19
10	250	16	400	13/16	30	1½	29	59.00	26.82
12	300	19	475	1¼	32	13/16	21	88.00	40.00
14 O.D.	350	21	525	1¾	35	7/8	22	115.00	52.28
16 O.D.	400	23½	588	17/16	37	1	25	160.00	72.73
18 O.D.	450	25	625	19/16	40	11/16	27	190.00	86.37
20 O.D.	500	27½	688	111/16	43	1½	29	250.00	113.64
24 O.D.	600	32	800	1¾	48	1¼	32	370.00	168.19

All standard blind flanges sizes 12 NPS / 300 DN (19 inch / 475 mm O.D.) and larger must be dished with inside radius equal to the port diameter.

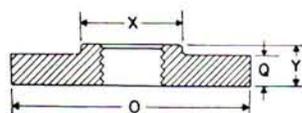
When ordering blind flanges always give outside diameter.

★ All Class 125 cast iron standard flanges have a flat face.

## flanges, gaskets

### reducing companion flange

cast iron: fig. 1016



To order reducing companion flanges, specify threaded or reduced size first, then the outside diameter of desired flange. For instance, if a reducing flange is required to connect a 5 NPS / 125 DN pipe to an 8 NPS / 200 DN valve or fitting having a 13½ inch / 345 O.D. flange, order 5 NPS / 125 DN x 13½ inch / 345 mm reducing flange.

pipe size		diam. of flange O		flange thickness (min.) Q		diam. of hub (min.) X		length thru hub★(min.) Y		weight (approx.) each	
NPS	DN	in	mm	in	mm	in	mm	in	mm	cast iron	
										lb	kg
1	25	5	125	9/16	14	1 15/16	49	1 1/16	17	2.75▲	1.25
1 1/4	32					2 5/16	59	1 3/16	21	2.50▲	1.14
1	25	6	150	5/8	16	1 15/16	49	1 1/16	17	5.00▲	2.28
1 1/4	32					2 5/16	59	1 3/16	21	4.75▲	2.16
1 1/2	40					2 7/16	65	7/8	22	4.50▲	2.05
1 1/2	40	7	175	1 1/16	17	2 9/16	65	7/8	22	7.00▲	3.19
2	50					3 1/16	78	1	25	6.75▲	3.07
1	25	7 1/2	190	3/4	19	1 15/16	49	1 3/16	21	9.00	4.09
1 1/2	40					2 9/16	65	7/8	22	8.75▲	3.98
2	50					3 1/16	78	1	25	8.50▲	3.87
2 1/2	65					3 3/16	90	1 1/8	29	8.00▲	3.64
3	80					4 1/4	108	1 3/16	30	10.00	4.55
1 1/2	40	9	225	15/16	24	2 9/16	65	1	25	14.75▲	6.71
2	50					3 1/16	78	1	25	14.00▲	6.37
2 1/2	65					3 3/16	90	1 1/8	29	13.50▲	6.14
3	80					4 1/4	108	1 3/16	30	12.75▲	5.80
3 1/2	90					4 13/16	106	1 1/4	32	12.00	5.46
3	80	10	250	15/16	24	4 1/4	108	1 3/16	30	17.00▲	7.73
4	100					5 5/16	135	1 5/16	33	16.00▲	7.28
1 1/2	40	11	275	1	25	2 9/16	65	1 1/16	27	27.00	12.28
2	50					3 1/16	78	1 1/16	27	26.00▲	11.82
2 1/2	65					3 3/16	90	1 1/8	29	25.00	11.37
3	80					4 1/4	108	1 3/16	30	23.00▲	10.46
4	100					5 5/16	135	1 5/16	33	21.00▲	9.55
5	125					6 7/16	164	1 7/16	37	19.00▲	8.64
3	80	13 1/2	345	1 1/8	29	4 1/4	108	1 3/16	30	44.00	20.00
4	100					5 5/16	135	1 5/16	33	40.00	20.00
5	125					6 7/16	164	1 7/16	37	37.00▲	16.82
6	150	16	400	1 3/16	30	7 9/16	192	1 9/16	40	53.00▲	24.09
8	200					9 11/16	246	1 3/4	44	50.00▲	22.73
6	150	19	475	1 1/4	32	7 9/16	192	1 9/16	40	88.00	40.00
8	200					9 11/16	242	1 3/4	44	81.00	36.82
10	250					11 15/16	299	1 15/16	49	72.00	32.73

### Class 125 cast iron flanges threaded for cast iron pipe figs. 1010T



Flanges drilled to ASME B16.1 Class 125  
Flanges furnished threaded, drilled and faced.

size		flange O.D.		C. I. Pipe O.D.		flange thickness		length thru hub		weight (each)			
NPS	DN	in	mm	in	mm	in	mm	in	mm	faced		not faced	
										lb	kg	lb	kg
3	80	7 1/2	190	3.96	101	3/4	19	1 1/4	44	7.5	3.41	8.0	3.64
4	100	9	225	4.80	122	15/16	24	1 15/16	49	13.0	5.91	13.8	6.28
6	150	11	275	6.90	175	1	25	2 3/16	56	17.2	7.82	18.5	8.41
8	200	13 1/2	345	9.05	230	1 1/8	29	2 7/16	62	29.0	13.19	30.1	13.69
10	250	16	400	11.10	282	1 3/16	30	2 1/2	63	42.0	19.09	43.5	19.78
12	300	19	475	13.20	335	1 1/4	32	2 13/16	71	60.0	27.28	62.0	28.19
14	350	21	525	15.30	389	1 3/16	30	3	76	73.6	33.46	75.6	34.37
16	400	23 1/2	590	17.40	442	1 1/4	32	3 1/4	83	101.5	46.14	104.0	47.28
18	450	25	625	19.50	495	1 3/8	35	3 7/32	90	104.0	47.28	107.0	48.64
20	500	27 1/2	690	21.60	549	1 1/2	38	3 3/4	95	129.0	58.64	132.5	60.23
24	600	32	800	25.80	655	1 11/16	43	4 5/32	106	178.0	80.91	181.5	82.50

### all-purpose asbestos gaskets



full face



ring

Compressed Asbestos Sheet Packing is a single-formula material suitable for a wide range of temperature-pressure combinations. It is used for sealing water, steam, all oils, gases, alkalis, acids, refrigerants and hydrocarbons. Available in eight gauges: 1/100, 1/64, 1/32, 1/16, 3/32, 1/8, 3/16, and 1/4 inch.

★ All Class 125 cast iron standard flanges have a flat face.  
▲ Stocked galvanized.

pipe size		diameter of flange		thickness of flange (min.)		diameter of bolt circle		no. of bolts	diameter of bolt holes		diameter of bolts		length of bolts		I.D. of gasket		O.D. of ring gasket		O.D. of full face gasket		
NPS	DN	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
¾	20	3¾	100	7/16	11	2¾	69	4	5/8	16	½	13	1¾	45	1½	27	2¼	57	3¾	98	
1	25	4¼	110	7/16	11	3¾	79	4	5/8	16	½	13	1¾	45	1½	33	2½	67	4¼	108	
1¼	32	4½	115	½	13	3½	89	4	5/8	16	½	13	2	50	1 <sup>21</sup> / <sub>32</sub>	42	3	76	4½	117	
1½	40	5	125	9/16	14	3¾	98	4	5/8	16	½	13	2	50	1 <sup>29</sup> / <sub>32</sub>	48	3¾	86	5	127	
2	50	6	150	5/8	16	4¾	121	4	¾	19	5/8	16	2¼	60	2¾	60	4½	105	6	152	
2½	65	7	180	11/16	17	5½	140	4	¾	19	5/8	16	2½	65	2¾	73	4¾	124	7	178	
3	80	7½	190	¾	19	6	152	4	¾	19	5/8	16	2½	65	3½	89	5¾	137	7½	191	
3½	90	8½	215	13/16	21	7	178	8	¾	19	5/8	16	2¾	70	4	102	6¾	162	8½	216	
4	100	9	230	15/16	24	7½	191	8	¾	19	5/8	16	3	75	4½	114	6¾	175	9	229	
5	125	10	255	15/16	24	8½	216	8	7/8	22	¾	19	3	75	5½	141	7¾	197	10	254	
6	150	11	280	1	25	9½	241	8	7/8	22	¾	19	3¼	85	6½	168	8¾	222	11	279	
8	200	13½	345	1½	29	11¾	298	8	7/8	22	¾	19	3½	90	8½	219	11	279	13½	343	
10	250	16	405	1¾	30	14¼	362	12	1	25	7/8	22	3¾	95	10¾	273	13¾	340	16	406	
12	300	19	485	1¼	32	17	432	12	1	25	7/8	22	3¾	95	12¾	324	16½	410	19	483	
14QD.	350	21	535	1¾	35	18¾	476	12	1½	29	1	25	4¼	110	14	356	17¾	451	21	533	
16QD.	400	23½	600	1¾	37	21¼	540	16	1½	29	1	25	4½	115	16	408	20¼	514	23½	597	
18QD.	450	25	635	1¾	40	22¾	578	16	1¼	32	1½	29	4¾	120	18	457	21½	549	25	635	
20QD.	500	27½	700	111/16	43	25	635	20	1¼	32	1½	29	5	125	20	508	23¾	606	27½	699	
24QD.	600	32	815	1¾	48	29½	749	20	1¾	35	1¼	32	5½	140	24	610	28¼	718	32	813	

Drilling templates are in multiples of four, so that fittings may be made to face in any quarter. Bolt holes straddle the center line.

templates for drilling extra heavy flanged fittings

pipe size		diameter of flange		thickness of flange (min.)		diameter of raised face		diameter of bolt circle	no. of bolts	diameter of bolt holes		diameter bolts		length of bolts		I.D. of gasket		O.D. of ring gasket		
NPS	DN	in	mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in	mm	in	mm
1	25	4¾	125	11/16	17	211/16	68	3½	89	4	¾	19	5/8	16	2½	65	1½	33	2¾	73
1¼	32	5¼	135	¾	19	31/16	78	3¾	98	4	¾	19	5/8	16	2½	65	1 <sup>21</sup> / <sub>32</sub>	42	3¼	83
1½	40	6½	155	13/16	21	39/16	90	4½	114	4	7/8	22	¾	19	2¾	70	1 <sup>29</sup> / <sub>32</sub>	48	3¾	95
2	50	6½	165	7/8	22	43/16	106	5	127	8	¾	19	5/8	16	2¾	70	2¾	60	4¾	111
2½	65	7½	190	1	25	415/16	125	5½	149	8	7/8	22	¾	19	3¼	85	2¾	73	5½	130
3	80	8¼	210	1½	29	511/16	144	6½	168	8	7/8	22	¾	19	3½	90	3½	89	5¾	149
3½	90	9	230	1¾	30	65/16	160	7¼	184	8	7/8	22	¾	19	3½	90	4	102	6½	165
4	100	10	255	1¼	32	615/16	176	7¾	200	8	7/8	22	¾	19	3¾	95	4½	114	7½	181
5	125	11	280	1¾	35	85/16	211	9¼	235	8	7/8	22	¾	19	4	100	5½	141	8½	216
6	150	12½	320	17/16	37	911/16	246	10½	270	12	7/8	22	¾	19	4	100	6½	168	9¾	251
8	200	15	380	1¾	41	1115/16	303	13	330	12	1	25	7/8	22	4½	115	8½	219	12½	308
10	250	17½	445	1¾	48	141/16	357	15¼	387	16	1½	29	1	25	5¼	135	10¾	273	14¼	362
12	300	20½	520	2	51	167/16	418	17¾	451	16	1¼	32	1½	29	5½	140	12¾	324	16½	422

Drilling templates are in multiples of four, so that fittings may be made to face in any quarter. Bolt holes straddle the center line.

machine bolts



When ordering, specify bolt size and length required. Bolts are furnished in sizes ¼" / 6 mm, 5/16" / 8 mm, ¾" / 10 mm, 7/16" / 11 mm, 1" / 25 mm, 1½" / 29 mm, 1¼" / 32 mm, in varying lengths. Lengths of bolts are measured from under head to extreme point.

## iron flanges

## class 250, (extra heavy)

pressure ratings, psi { saturated steam: 1 to 12 inch: 250  
liquid & gas at 150° F: 1 to 12 inch: 400

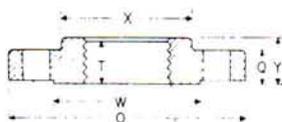
pressure ratings, bar { saturated steam: 25 to 300 DN: 17.2  
liquid & gas at 65°C: 25 to 300 DN: 428

Class 250 (extra heavy) iron flanges are manufactured to American National Standard: dimensions, ASME B16.1; threads ASME B1.20.1;

### companion flange

cast iron: fig. 1025

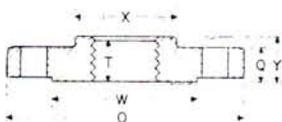
showing raised face



pipe size	diam. of flange O		thick. of flange (min.) Q		diam. of hub (min.) X		length through hub* (min.) Y		length of threads (min.) T		diam. of raised face W		weight (approx.) each cast iron		
	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg.	
	1/4	32	5 1/4	133	3/4	19	2 1/2	63	1	25	0.76	19	3 1/16	78	3.75
1/2	40	6 1/8	156	13/16	21	2 3/4	70	1 1/8	29	0.87	22	3 9/16	90	5.75	2.62
2	50	6 1/2	165	7/8	22	3 5/16	84	1 1/4	32	1.00	25	4 3/16	106	6.50	2.96
2 1/2	65	7 1/2	188	1	25	3 15/16	100	1 7/16	37	1.14	29	4 15/16	125	9.50	4.32
3	80	8 1/4	210	1 1/8	29	4 5/8	117	1 9/16	40	1.20	30	5 1/16	144	12.33	5.61
3 1/2	90	9	225	1 3/16	30	5 1/4	133	1 5/8	41	1.25	32	6 5/16	160	16.00	7.28
4	100	10	250	1 1/4	32	5 3/4	146	1 3/4	44	1.30	33	6 5/16	176	20.00	9.09
5	125	11	275	1 3/8	35	7	178	1 7/8	48	1.41	36	8 5/16	211	24.00*	10.91
6	150	12 1/2	313	1 7/16	37	8 1/8	206	1 15/16	49	1.51	38	9 1/16	246	32.00*	14.55
8	200	15	375	1 5/8	41	10 1/4	260	2 3/16	56	1.71	43	11 15/16	299	51.00	23.19
10	250	17 1/2	438	1 7/8	48	12 5/8	320	2 3/8	60	1.92	49	14 1/16	357	77.00	35.00
12	300	20 1/2	513	2	50	14 3/4	375	2 9/16	65	2.12	54	16 7/16	418	103.00	46.82

### red. companion flange

cast iron: fig. 1030 Δ



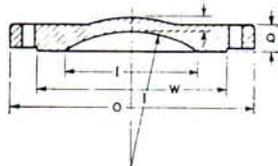
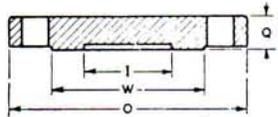
pipe size	diameter of flange O		thickness of flange (min.) Q		length through hub* (min.) Y		length of threads (min.) T		diameter of raised face W		weight (approx.) each cast iron		
	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	lb
2	50	8 1/4	210	1 1/8	29	1 1/4	32	1.00	25	5 11/16	144	14.25	6.48
2 1/2	65	8 1/4	210	1 1/8	29	1 7/16	37	1.14	29	5 11/16	144	13.50	6.14
3	80	10	254	1 1/4	32	1 9/16	40	1.20	30	6 15/16	176	22.75	10.34
4	100	11	279	1 3/8	35	1 3/4	44	1.30	33	8 5/16	211	30.00	13.64
4	100	12 1/2	338	1 7/16	37	1 3/4	44	1.30	33	9 11/16	246	39.50	17.96
5	125	12 1/2	338	1 7/16	37	1 7/8	48	1.41	36	9 11/16	246	36.00	16.37
6	150	15	375	1 5/8	41	1 15/16	49	1.51	38	11 15/16	299	59.00	26.82

To order reducing companion flanges, specify threaded or reduced size first, then the outside diameter of flange wanted. For instance, if a reducing flange is required to connect a 4 inch pipe to a 6 inch valve or fitting having a 12 1/2 inch O.D. flange, order 4 x 12 1/2 inch reducing flange.

### blind flange

cast iron: fig. 1021

8 x 15 inches and smaller



10 x 17 1/2 inches and larger

pipe size	diameter of flange O		diameter of port I		thickness of flange (min.) Q		metal thickness (min.) V		weight (approx.) each cast iron			
	NPS	DN	in	mm	in	mm	in	mm	in	mm	lb	kg
1	25	4 7/8	122	1	25	1 1/16	17	....	....	4.0	1.82	
1 1/2	40	6 1/8	153	1 1/2	38	1 3/16	21	....	....	5.25	2.39	
2	50	6 1/2	163	2	50	7/8	22	....	....	7.00	3.19	
2 1/2	65	7 1/2	188	2 1/2	63	1	25	....	....	11.00	5.00	
3	80	8 1/4	206	3	75	1 1/8	28	....	....	14.00	6.37	
3 1/2	90	9	225	3 1/2	88	1 3/16	30	....	....	19.00	8.64	
4	100	10	250	4	100	1 1/4	32	....	....	23.00	10.46	
5	125	11	275	5	125	1 3/8	35	....	....	31.00	14.09	
6	150	12 1/2	338	6	150	1 7/16	36	....	....	42.00	19.09	
8	200	15	375	8	200	1 5/8	41	....	....	70.00	31.82	
10	250	17 1/2	438	10	250	1 7/8	47	....	15/16	24	104.00	47.28
12	300	20 1/2	513	12	300	2	50	1	25	145.00	65.91	

Blind flanges sizes 10 inch (17 1/2 inch O.D.) and larger must be dished, with inside radius equal to the port diameter.

Δ Available black only.

\* All class 250 cast iron standard flanges have a 1/16 inch raised face, which is included in the minimum thickness of flange dimensions.

▪ Stocked galvanized.

**stamped steel hinged**

with springs  
for copper tube: fig. 1  
for pipe: fig. 10



with set screw  
for copper tube: fig. 2  
for pipe: fig. 13



with springs and  
exposed rivet hinge  
for pipe: fig. 20



size	to fit copper tube						to fit pipe size				fig. 20			
	DN		outside dia.		weight per doz.		outside dia.		weight per doz.		outside dia.		weight per doz.	
	NPS	DN	in	mm	lb	kg	in	mm	lb	kg	in	mm	lb	kg
1/4	8	2 1/8 □	55	.88 □	.40	2 3/16	55	.69	.32	—	—	—	—	
3/8	10	2 1/8	55	.69	.32	2 1/2	65	.81	.37	2 1/2	65	.88	.40	
1/2	15	2 7/16	60	.81	.37	2 5/8	65	.94	.43	2 5/8	65	.88	.40	
3/4	20	2 21/32	70	.94	.43	2 27/32	70	1.00	.45	2 27/32	70	.94	.43	
1	25	2 27/32	70	1.06	.48	3 3/32	85	1.38	.63	3 3/32	85	1.25	.57	
1 1/4	32	3 3/32	85	1.38	.63	3 5/8	90	1.63	.74	3 5/8	90	1.38	.63	
1 1/2	40	3 5/8	90	1.63	.74	3 15/16	100	1.69	.77	3 15/16	100	1.63	.74	
2	50	4 3/16	105	2.13	.97	4 3/8	110	2.25	1.02	4 9/16	110	2.25	1.02	
2 1/2	65	4 7/8	125	2.75	1.25	5 7/32	135	2.88	1.31	5 1/4	135	2.81	1.28	
3	80	5 3/16	135	2.81	1.28	5 29/32	150	3.38	1.54	5 7/8	150	3.31	1.50	
3 1/2	90	—	—	—	—	6 9/16	165	4.00	1.82	6 9/16	165	4.06	1.85	
4	100	—	—	—	—	7 3/16	185	4.56	2.07	7 3/16	185	4.38	1.99	
5	125	—	—	—	—	8 7/8	225	9.00	4.09	—	—	—	—	
6	150	—	—	—	—	10	255	10.50	4.77	—	—	—	—	

□ 1/4 inch for copper tube made only in fig. 2.

**cartons**

**malleable iron fittings**  
standard (black or galvanized)

size		master containers			cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
NPS	DN		lb	kg			lb	kg

**90° elbow: fig. 1101** (page pf-50)

★ 1/8	6	105	7	3.20	3	35	2.1	0.95
★ 1/4	8	75	9	4.09	3	25	2.8	1.27
★ 3/8	10	40	7	3.18	2	20	3.4	1.55
1/2	15	200	52	23.64	4	50	13.0	5.91
3/4	20	140	53	24.09	4	35	13.3	6.05
1	25	80	51	23.18	4	20	12.6	5.73
1 1/4	32	48	46	20.90	4	12	11.5	5.23
1 1/2	40	32	42	19.09	4	8	10.4	4.73
2	50	20	41	18.64	2	10	20.6	9.36

**90° elbow reducing: fig. 1101R** (page pf-50)

★ 1/4 x 1/8	8x6	100	10	4.55	2	50	5.0	2.28
★ 3/8 x 1/4	10x8	50	7	3.18	2	25	3.5	1.59
★ 3/8 x 1/8	10x6	75	9	4.09	3	25	3.0	1.36
1/2 x 3/8	15x10	300	63	28.69	4	75	15.8	7.18
★ 1/2 x 1/4	15x15	30	6	2.73	2	15	2.9	1.32
3/4 x 1/2	20x20	180	71	32.27	4	45	17.6	8.0
3/4 x 3/8	20x10	160	47	21.36	8	20	5.8	2.64
★ 3/4 x 1/4	20x8	24	6	2.73	2	12	3.1	1.41
1 x 3/4	25x20	80	44	20.0	4	20	11.0	5.0
1 x 1/2	25x15	100	46	20.9	4	25	11.5	5.23
1 x 3/8	25x10	120	49	22.27	8	15	6.2	2.82
1 1/4 x 1	32x25	60	52	23.64	4	15	12.9	5.86
1 1/4 x 3/4	32x20	60	43	19.55	4	15	10.7	4.86
1 1/4 x 1/2	32x15	80	50	22.73	4	20	12.4	5.64
1 1/2 x 1 1/4	40x32	32	38	17.27	4	8	9.4	4.27
1 1/2 x 1	40x25	48	48	21.82	4	12	12.0	5.45
1 1/2 x 3/4	40x20	48	40	18.18	4	12	10.0	4.55
2x1 1/2	50x40	24	42	19.09	2	12	21.0	9.55
2x1 1/4	50x32	24	37	16.82	2	12	18.4	8.36
2x1	50x25	30	41	18.64	2	15	20.3	9.23
2x3/4	50x20	24	31	14.09	4	6	7.8	3.56

**45° elbow: fig. 1102** (page pf-50)

★ 1/8	6	150	9	4.09	3	50	3.0	1.36
★ 1/4	8	70	8	3.64	2	35	3.9	1.77
★ 3/8	10	40	7	3.18	2	20	3.2	1.45
1/2	15	300	63	28.63	4	75	15.8	7.18
3/4	20	160	59	26.82	4	40	14.8	6.73
1	25	100	54	24.55	4	25	13.5	6.14
1 1/4	32	60	52	23.64	4	15	12.9	5.86
1 1/2	40	32	36	16.86	4	8	9.0	4.09
2	50	24	43	19.55	4	6	10.7	4.86

**90° street elbow: fig. 1103** (page pf-51)

★ 1/8	6	120	8	3.64	3	40	2.4	1.09
★ 1/4	8	90	10	4.55	3	30	3.3	1.5
★ 3/8	10	40	7	3.18	2	20	3.4	1.55
1/2	15	300	72	32.73	4	75	18.0	8.18
3/4	20	160	66	30.0	4	40	16.4	7.45
1	25	60	38	17.27	4	15	9.3	4.23
1 1/4	32	40	44	20.0	4	10	11.0	5.0
1 1/2	40	32	46	20.9	4	8	11.5	5.23
2	50	20	57	25.90	2	10	28.5	12.95

size		master containers			cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
NPS	DN		lb	kg			lb	kg

**90° street elbow, reducing: fig. 1103R** (page pf-51)

1/2x3/8	15x10	280	65	29.55	8	35	8.1	3.68
3/4x1/2	20x15	200	64	29.09	8	25	8.0	3.64
1x3/4	25x20	100	54	24.55	4	25	13.5	6.14
1 1/4x1	32x25	60	52	23.64	4	15	12.9	5.86
1 1/4x3/4	32x20	60	45	20.45	4	15	11.3	5.14
1 1/2x1 1/4	40x32	40	48	21.82	2	20	23.6	10.73
1 1/2x1	40x25	40	43	19.55	4	10	10.8	4.91
1 1/2x3/4	40x20	40	39	17.73	4	10	9.6	4.86
2 x 1 1/2	50x40	24	45	20.45	2	12	22.2	10.89

**45° street elbow: fig. 1104** (page pf-51)

★ 1/8	6	150	9	4.09	3	50	3.0	1.37
★ 1/4	8	100	10	4.55	2	50	5.0	2.27
★ 3/8	10	50	7	3.18	2	25	3.5	1.59
1/2	15	300	60	27.27	4	75	15.0	6.82
3/4	20	160	53	24.09	4	40	13.2	6
1	25	100	52	23.64	4	25	13.0	5.91
1 1/4	32	60	51	23.18	4	15	12.6	5.73
1 1/2	40	40	49	22.27	4	10	12.1	5.5
2	50	24	47	21.36	2	12	23.3	10.59

**plain side outlet elbow: fig. 1109** (page pf-57)

1/2	15	160	50	22.73	8	20	6.2	2.82
3/4	20	80	35	15.90	4	20	8.8	4
1	25	60	45	20.45	4	15	11.1	5.05
1 1/4	32	30	35	15.90	2	15	17.6	8
1 1/2	40	24	34	15.45	2	12	16.8	7.64
2	50	16	38	17.27	4	4	9.5	4.32

**tee: fig. 1105** (page pf-51)

★ 1/8	6	75	7	3.18	3	25	2.3	1.05
★ 1/4	8	40	6	2.73	2	20	3.0	1.36
★ 3/8	10	30	7	3.18	2	15	3.5	1.59
1/2	15	160	58	26.36	4	40	14.4	6.55
3/4	20	80	45	20.45	4	20	11.2	5.09
1	25	48	44	20	4	12	10.8	4.91
1 1/4	32	32	42	19.09	4	8	10.5	4.77
1 1/2	40	20	35	15.91	4	5	8.7	3.95
2	50	20	51	23.18	2	10	25.2	11.45

**tee, reducing: fig. 1105R** (page pf-52 & 53)

★ 1/4x1/4x1/8	8x8x6	50	7	3.18	2	25	3.3	1.5
★ 1/8x1/8x1/4	6x6x8	50	6	2.73	2	25	3.0	1.36
★ 3/8x3/8x1/4	10x10x8	30	7	3.18	2	15	3.2	1.45
★ 3/8x1/4x3/8	10x8x10	30	7	3.18	2	15	3.2	1.45
★ 3/8x1/4x1/4	10x8x8	30	6	2.73	2	15	2.9	1.32
★ 1/4x1/4x3/8	8x8x10	30	6	2.73	2	15	2.9	1.32
1/2x1/2x3/8	15x15x10	200	60	27.27	8	25	7.5	3.41
★ 1/2x1/2x1/4	15x15x8	20	6	2.73	2	10	2.7	1.23

▲ Weights are for black fittings.  
★ MATERIAL BAGGED INSTEAD OF INNER CARTON.

**cartons**

**malleable iron fittings (continued)**

standard (black or galvanized)

size		master containers				cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲		
NPS	DN		lb	kg			lb	kg	
<b>tee, reducing: fig. 1105R (page pf-52 &amp; 53)</b>									
★ 1/2x3/4x1/2	15x10x15	20	7	3.19	2	10	3.3	1.5	
★ 1/2x3/4x3/8	15x10x10	20	6	2.73	2	10	2.8	1.27	
★ 1/2x1/2x1/2	15x8x15	20	6	2.73	2	10	2.9	1.32	
★ 3/8x3/4x1/2	10x10x15	20	6	2.73	2	10	2.6	1.18	
3/4x3/4x1/2	20x20x15	80	37	16.82	4	20	9.2	4.18	
3/4x3/4x3/8	20x20x10	120	51	23.18	4	30	12.6	5.73	
3/4x3/4x1/4	20x20x8	140	54	24.55	4	35	13.3	6.05	
3/4x1/2x3/8	20x15x20	80	41	18.64	4	20	10.2	4.63	
3/4x1/2x1/2	20x15x15	140	61	27.73	4	35	15.1	6.86	
3/4x3/8x3/8	20x10x20	100	46	20.9	4	25	11.5	5.23	
3/4x3/8x3/4	20x10x10	140	51	23.18	4	35	12.6	5.73	
3/4x1/4x3/4	20x8x20	120	54	24.55	4	30	13.5	6.14	
1/2x1/2x3/8	15x15x20	120	52	23.64	4	30	12.9	5.86	
1x1x3/8	25x25x20	60	50	22.73	4	15	12.3	5.59	
1x1x1/2	25x25x15	60	42	19.09	4	15	10.5	4.77	
1x1x3/4	25x25x10	80	48	21.82	4	20	12.0	5.45	
1x1x1/4	25x25x8	80	44	20.0	4	20	11.0	5.0	
1x3/4x1	25x20x25	60	47	21.36	4	15	11.7	5.32	
1x3/4x3/4	25x20x20	60	44	20.0	4	15	11.0	5.0	
1x3/4x1/2	25x20x15	80	48	21.82	4	20	11.8	5.36	
1x1/2x1	25x15x25	60	46	20.9	4	15	11.4	5.18	
1x1/2x3/4	25x15x20	80	45	20.45	4	20	11.2	5.09	
1x1/2x1/2	25x15x15	100	55	25.0	4	25	13.8	6.27	
1x1/4x1	25x8x25	60	42	19.09	4	15	10.4	4.73	
3/4x3/4x1	20x20x25	60	37	16.82	4	15	9.3	4.23	
1/2x1/2x1	15x15x25	100	55	25.0	4	25	13.8	6.27	
1 1/4x1 1/4x1	32x32x25	40	47	21.36	2	20	23.6	10.72	
1 1/4x1 1/4x3/4	32x32x20	32	34	15.45	4	8	8.5	3.86	
1 1/4x1 1/4x1/2	32x32x15	40	40	18.18	4	10	9.8	4.45	
1 1/4x1 1/4x3/8	32x32x10	40	35	15.90	4	10	8.6	3.91	
1 1/4x1x1 1/4	32x25x32	24	27	12.27	4	6	6.8	3.09	
1 1/4x1x1	32x25x25	40	45	20.45	4	10	11.1	5.05	
1 1/4x1x3/4	32x25x20	40	35	15.90	4	10	8.7	3.95	
1 1/4x1x1/2	32x25x15	60	46	20.90	4	15	11.4	5.18	
1 1/4x3/4x1 1/4	32x20x32	24	25	11.36	4	6	6.2	2.82	
1 1/4x3/4x1	32x20x25	40	37	16.82	4	10	9.1	4.14	
1 1/4x3/4x3/4	32x20x20	40	35	15.91	4	10	8.6	3.91	
1 1/4x1/2x1 1/4	32x15x32	24	25	11.36	4	6	6.2	2.82	
1 1/4x1/2x1	32x15x25	40	35	15.90	4	10	8.7	3.95	
1x1x1 1/4	25x25x32	40	37	16.82	4	10	9.2	4.18	
3/4x3/4x1 1/4	20x20x32	40	36	16.36	4	10	9.0	4.09	
1 1/2x1 1/2x1 1/4	40x40x32	24	35	15.91	4	6	8.7	3.95	
1 1/2x1 1/2x1	40x40x25	24	35	15.91	4	6	8.6	3.91	
1 1/2x1 1/2x3/4	40x40x20	24	31	14.09	4	6	7.7	3.5	
1 1/2x1 1/2x1/2	40x40x15	32	38	17.27	4	8	9.5	4.22	
1 1/2x1 1/4x1 1/2	40x32x40	24	36	16.36	2	12	18.0	8.18	
1 1/2x1 1/4x1 1/4	40x32x32	24	37	16.82	2	12	18.2	8.27	
1 1/2x1 1/4x1	40x32x25	32	41	18.64	4	8	10.1	4.59	
1 1/2x1 1/4x3/4	40x32x20	32	35	15.91	4	8	8.6	3.91	
1 1/2x1 1/4x1/2	40x32x15	40	42	19.09	4	10	10.3	4.68	
1 1/2x1x1 1/2	40x25x40	30	45	20.45	2	15	22.5	10.23	
1 1/2x1x1 1/4	40x25x32	30	39	17.73	2	15	19.5	8.86	
1 1/2x1x1	40x25x25	32	37	16.82	4	8	9.2	4.18	
1 1/2x3/4x1 1/2	40x20x40	30	43	19.54	2	15	21.2	9.63	
1 1/2x1/2x1 1/2	40x15x40	30	40	18.18	2	15	20.0	9.09	
1 1/2x1 1/4x1 1/2	32x32x40	30	44	20.0	2	15	21.8	9.91	

▲ Weights are for black fittings.

★ MATERIAL BAGGED INSTEAD OF INNER CARTON.

size		master containers				cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲		
NPS	DN		lb	kg			lb	kg	
<b>tee, reducing: fig. 1105R (continued)</b>									
1x1x1 1/2	25x25x40	32	38	17.27	4	8	9.5	4.32	
2x2x1 1/2	50x50x40	20	51	23.18	2	10	25.5	11.59	
2x2x1 1/4	50x50x32	20	47	21.32	2	10	23.5	10.68	
2x2x1	50x50x25	24	42	19.09	2	12	21.1	9.59	
2x2x3/4	50x50x20	24	45	20.45	2	12	22.4	10.18	
2x2x1/2	50x50x15	30	50	22.73	2	15	24.8	11.27	
2x1 1/2x2	50x40x50	16	36	16.36	2	8	17.9	8.14	
2x1 1/2x1 1/2	50x40x40	20	39	17.73	2	10	19.5	8.86	
2x1 1/2x1 1/4	50x40x32	20	36	16.36	2	10	17.6	8.0	
2x1 1/2x1	50x40x25	24	38	17.27	2	12	19.0	8.64	
2x1 1/4x2	50x32x50	20	44	20.00	2	10	22.0	10.0	
2x1 1/4x1 1/2	50x32x40	20	37	16.82	2	10	18.5	8.41	
2x1 1/4x1 1/4	50x32x32	20	35	15.90	2	10	17.2	7.82	
2x1x2	50x25x50	20	43	19.55	2	10	21.4	9.73	
2x3/4x2	50x20x50	20	40	18.18	2	10	20.0	9.09	
2x1/2x2	50x15x50	20	43	19.55	2	10	21.4	9.73	
1 1/2x1 1/2x2	40x40x50	24	45	20.45	2	12	22.3	10.14	
1 1/4x1 1/4x2	32x32x50	24	41	18.64	2	12	20.4	9.27	
1x1x2	25x25x50	24	39	17.73	2	12	19.6	8.91	

**street tee: fig. 1106 (page pf-54)**

★ 1/4	8	50	8	3.64	2	25	3.8	1.73
★ 3/8	10	24	6	2.73	2	12	2.9	1.32
1/2	15	120	41	18.64	8	15	5.1	2.32
3/4	20	60	33	15.00	4	15	8.1	3.68
1	25	40	39	17.73	4	10	9.6	4.36
1 1/4	32	24	33	15.00	4	6	8.3	3.77
1 1/2	40	24	47	21.36	2	12	23.2	10.55
2	50	16	51	23.18	2	8	25.3	11.5

**street tee, reducing: fig. 1106R (page pf-54)**

1 1/4x1x1 1/4	32x25x32	32	42	19.09	4	8	10.6	4.82
2x1 1/2x2	50x40x50	18	48	21.82	2	9	23.9	10.86

**plain side outlet tee: fig. 1113 (page pf-57)**

POA 3/8	10	200	50	22.73	8	25	6.0	2.73
1/2	15	120	44	20.00	4	30	10.8	4.91
3/4	20	80	45	20.45	4	20	11.2	5.09
1	25	40	37	16.82	4	10	9.1	4.14
1 1/4	32	24	32	14.55	2	12	15.6	7.09
1 1/2	40	20	33	15.00	2	10	16.5	7.50
2	50	10	45	20.45	4	5	11.2	5.09

**cross: fig. 1107 (page pf-54)**

★ 1/8	6	50	6	2.73	2	25	3.0	1.36
★ 1/4	8	30	6	2.73	2	15	2.7	1.23
3/8	10	160	43	19.55	8	20	5.4	2.45
1/2	15	120	50	22.73	4	30	12.3	5.59
3/4	20	60	42	19.09	4	15	10.4	4.73

**cartons**

**malleable iron fittings (continued)**  
**standard (black or galvanized)**

size		master containers			cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
NPS	DN		lb	kg			lb	kg

**cross: fig. 1107 (continued)**

1	25	40	45	20.45	4	10	11.2	5.09
1¼	32	30	44	20.0	2	15	21.6	9.82
1½	40	20	40	18.18	2	10	19.8	9.0
2	50	16	53	24.09	2	8	26.4	12.0

**Y-branch: fig. 1108 (page pf-54)**

★ ¾	10	24	7	3.18	2	12	3.2	1.45
½	15	140	52	23.64	4	35	13.0	5.91
¾	20	80	50	22.73	4	20	12.4	5.64
1	25	40	35	15.90	4	10	8.6	3.91
1¼	32	24	39	17.73	4	6	9.8	4.45
1½	40	20	40	18.18	2	10	20.0	9.09
2	50	12	37	16.82	2	6	18.3	8.32

**open pattern return bend: fig. 1119 (page pf-56)**

½	15	160	58	26.36	8	20	7.2	3.27
¾	20	80	52	23.64	4	20	12.8	5.82
1	25	40	44	20.0	4	10	11.0	5.0
1¼	32	24	43	19.55	2	12	21.2	9.64
1½	40	20	51	23.18	2	10	25.5	11.59
2	50	12	48	21.82	2	6	24.0	10.90

**coupling: fig. 1121 (page pf-55)**

★ ½	6	160	10	4.55	4	40	2.4	1.09
★ ¼	8	105	10	4.55	3	35	3.2	1.45
★ ¾	10	60	8	3.64	2	30	3.9	1.77
★ ½	15	40	8	3.64	2	20	4.0	1.82
¾	20	240	70	31.82	4	60	17.4	7.90
1	25	100	48	21.82	4	25	12.0	5.45
1¼	32	60	45	20.45	4	15	11.1	5.05
1½	40	40	40	18.18	4	10	10.0	4.55
2	50	20	29	13.18	4	5	7.3	3.32

▲ Weights are for black fittings.

★ MATERIAL BAGGED INSTEAD OF INNER CARTON.

size		master containers			cartons			
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
NPS	DN		lb	kg			lb	kg

**reducer: fig. 1125 (page pf-55)**

★ ¼ x ½	8 x 6	100	7	3.18	4	25	1.8	.82
★ ¾ x ¼	10 x 8	75	9	4.09	3	25	2.8	1.27
★ ¾ x ½	10 x 6	90	10	4.55	3	30	3.3	1.5
★ ½ x ¾	15 x 10	50	8	3.64	2	25	4.0	1.82
★ ½ x ¼	15 x 8	50	8	3.64	2	25	3.8	1.73
★ ½ x ½	15 x 6	40	6	2.73	2	20	2.8	1.27
¾ x ½	20 x 15	240	63	28.64	4	60	15.6	7.09
¾ x ¾	20 x 10	200	50	22.73	4	50	12.5	5.68
★ ¾ x ¼	20 x 8	24	6	2.73	2	12	2.6	1.18
¾ x ½	20 x 6	160	39	17.73	8	20	4.8	2.18
1 x ¾	25 x 20	140	59	26.82	4	35	14.7	6.68
1 x ½	25 x 15	180	71	32.37	4	45	17.6	8.0
1 x ¾	25 x 10	160	56	25.45	8	20	7.0	3.18
1 x ¼	25 x 8	160	56	25.45	8	20	7.0	3.18
1¼ x 1	32 x 25	80	55	25.0	4	20	13.6	6.18
1¼ x ¾	32 x 20	80	52	23.64	4	20	12.8	5.82
1¼ x ½	32 x 15	60	36	16.36	4	15	9.0	4.09
1½ x 1¼	40 x 32	40	36	16.36	4	10	9.0	4.09
1½ x 1	40 x 25	60	54	25.55	4	15	13.5	6.14
1½ x ¾	40 x 20	60	53	24.09	4	15	13.2	6.0
1½ x ½	40 x 15	60	46	20.9	4	15	11.6	5.27
2 x 1½	50 x 40	20	31	14.09	4	5	7.8	3.55
2 x 1¼	50 x 32	20	31	14.09	4	5	7.7	3.5
2 x 1	50 x 25	20	28	12.73	4	5	7.0	3.18
2 x ¾	50 x 20	20	27	12.27	4	5	6.7	3.05
2 x ½	50 x 15	40	46	20.90	4	10	11.5	5.23

**extension piece: fig. 1137 (page pf-57)**

★ ¾	10	50	5	2.27	2	25	2.5	1.14
★ ½	15	40	6	2.72	2	20	2.8	1.27
¾	20	240	63	28.64	4	60	15.6	7.09
1	25	120	51	23.18	4	30	12.6	5.73

**bushing face: fig. 385 (page pf-74)**

★POA ¼ x ½	8 x 6	2700	33	15.0	18	150	1.7	.77
★POA ¾ x ¼	10 x 8	1600	28	12.73	8	200	3.4	1.55
POA ½ x ¾	15 x 10	1200	40	18.18	8	150	4.8	2.18
★POA ½ x ¼	15 x 8	800	41	18.64	8	100	5.0	2.27
¾ x ½	20 x 15	800	48	21.82	8	100	6.0	2.73
¾ x ¾	20 x 10	800	64	29.09	8	100	8.0	3.64
1 x ¾	25 x 20	400	40	18.18	8	50	5.0	2.27
1 x ½	25 x 15	400	64	29.09	8	50	8.0	3.64
1¼ x 1	32 x 25	280	54	24.55	8	35	6.7	3.05
1¼ x ¾	32 x 20	240	65	29.55	8	30	8.1	3.68
1¼ x ½	32 x 15	240	72	32.73	8	30	9.0	4.09
1½ x 1¼	40 x 32	200	32	14.55	4	50	8.0	3.64

**malleable iron fittings (continued)**

standard (black or galvanized)

size		master containers				cartons		
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
			lb	kg			lb	kg
NPS	DN							
<b>bushing, face: 385 (continued)</b>								
1½ x 1	40 x 25	200	66	30	8	25	8.3	3.77
1½ x ¾	40 x 20	160	63	28.64	8	20	7.8	3.55
1½ x ½	40 x 15	160	64	29.09	8	20	8.0	3.64
2 x 1½	50 x 40	120	48	21.82	4	30	12.0	5.45
2 x 1¼	50 x 32	100	53	24.09	4	25	13.3	6.05
2 x 1	50 x 25	100	65	29.55	4	25	16.3	7.41
POA 2 x ½	50 x 15	100	69	31.36	4	25	17.3	7.86
2½ x 2	65 x 50	60	37	16.82	4	15	9.2	4.18
2½ x 1½	65 x 40	60	56	25.45	4	15	14.0	6.36
2½ x 1¼	65 x 32	60	66	30	4	15	16.5	7.5

**bushing, hex: fig. 383 (page pf-74)**

★POA ¼ x ½	8 x 6	800	17	7.73	8	100	2.1	.95
POA ¾ x ½	10 x 6	800	36	16.36	8	100	4.5	2.05
★POA ¾ x ¼	10 x 8	800	30	13.64	8	100	3.8	1.73
POA ½ x ¾	15 x 10	800	40	18.18	8	100	5.0	2.27
★POA ½ x ¼	15 x 8	800	56	25.45	8	100	7.0	3.18
POA ½ x ½	15 x 6	800	48	21.82	8	100	6.0	2.73
★¾ x ½	20 x 15	75	7	3.18	3	25	2.3	1.15
★¾ x ¾	20 x 10	75	9	4.09	3	25	2.8	1.27
★¾ x ¼	20 x 8	75	9	4.09	3	25	3.0	1.36
★¾ x ½	20 x 6	80	10	4.55	2	40	4.8	2.18
1 x ¾	25 x 20	200	34	15.45	4	50	8.5	3.86
1 x ½	25 x 15	200	40	18.18	4	50	10.0	4.55
★1 x ¾	25 x 10	50	9	4.09	2	25	4.5	2.05
★1 x ¼	25 x 8	50	9	4.09	2	25	4.5	2.05
★1 x ½	25 x 6	50	12	5.45	2	25	6.0	2.73
1¼ x 1	32 x 25	200	60	27.27	4	50	15.0	6.82
1¼ x ¾	32 x 20	140	55	25.0	4	35	13.7	6.23
1¼ x ½	32 x 15	140	48	21.82	4	35	11.9	5.41
1¼ x ¾	32 x 10	200	54	24.55	8	25	6.8	3.09
1¼ x ¼	32 x 8	160	53	24.09	8	20	6.6	3.0
1½ x 1¼	40 x 32	120	36	16.36	4	30	9.0	4.09
c 1½ x 1	40 x 25	100	53	24.09	4	25	13.3	6.05
c 1½ x ¾	40 x 20	100	51	23.18	4	25	12.7	5.77
c 1½ x ½	40 x 15	100	48	21.82	4	25	12.0	5.45
c 1½ x ¼	40 x 8	100	52	23.64	4	25	13.0	5.91
c 1½ x ¾	40 x 10	100	52	23.64	4	25	13.0	5.91
2 x 1½	50 x 40	80	52	23.64	4	20	12.8	5.82
c 2 x ¼	50 x 8	60	50	22.73	4	15	12.5	5.68
c 2 x ¾	50 x 10	60	50	22.73	4	15	12.5	5.68
2½ x 2	65 x 50	40	41	18.64	4	10	10.2	4.64

c = cast iron

**cap: fig. 1124 (page pf-56)**

½	15	300	36	16.36	4	75	9.0	4.09
¾	20	240	53	24.09	4	60	13.2	6.0
1	25	140	54	24.55	4	35	13.3	6.05
1¼	32	100	58	26.36	4	25	14.5	6.59
1½	40	80	59	26.82	4	20	14.6	6.64
2	50	48	54	25.55	4	12	13.6	6.18

▲ Weights are for black fittings.

★ MATERIAL BAGGED INSTEAD OF INNER CARTON.

size		master containers				cartons		
		no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲	
			lb	kg			lb	kg
NPS	DN							
<b>plug, countersunk: fig. 390 (page pf-75)</b>								
★ ½	15	200	10	4.55	2	100	5.0	2.27
★ ¾	20	100	11	5.0	2	50	5.5	2.5
c 1	25	240	69	31.36	4	60	17.0	7.72
c 1¼	32	120	40	18.18	4	30	10.0	4.55
c 1½	40	100	50	22.73	4	25	12.5	5.68
c 2	50	80	53	24.09	4	15	13.0	5.91

**plug, square head: fig. 387 (page pf-75)**

s• ⅛	6	800	15	6.82	8	100	1.9	.86
s• ¼	8	800	31	14.09	8	100	3.9	1.77
s• ⅜	10	800	50	22.73	8	100	6.1	2.77
s• ½	15	400	43	19.55	4	150	10.7	4.86
s• ¾	20	400	58	26.36	8	50	7.3	3.32
c 1	25	240	65	29.55	4	60	16.3	7.41
c 1¼	32	120	52	23.64	4	30	13.0	5.91
c 1½	40	100	61	27.73	2	25	15.3	6.95
c 2	50	60	55	25.00	4	15	13.7	6.23

s = steel; c = cast iron; • = solid

**plug, square head (solid): fig. 388 (page pf-75)**

c ¾	20	480	54	24.55	4	120	13.5	6.14
c 1	25	240	78	35.45	4	60	19.5	8.86
c 1¼	32	120	65	29.55	4	30	16.0	7.27
c 1½	40	100	78	35.45	4	25	19.5	8.86
c 2	50	60	78	35.45	4	15	19.5	8.86

**locknut, hex: fig. 1134 (page pf-56)**

★ ⅛	6	200	8	3.64	4	50	2.0	.91
★ ¼	8	200	4	1.82	4	50	2.0	.91
★ ⅜	10	200	8	3.64	4	50	2.0	.91
★ ½	15	150	9	4.09	3	50	3.0	1.36
★ ¾	20	100	12	5.45	2	50	6.0	2.73
★ 1	25	50	7	3.18	2	25	3.5	1.59
1¼	32	200	42	19.09	8	25	5.3	2.41
1½	40	120	29	13.18	8	15	3.6	1.64
2	50	100	40	18.18	4	25	10.0	4.55

**waste nut, oval: fig. 1133 (page pf-57)**

★ ¼	8	150	8	3.64	3	50	2.5	1.14
★ ⅜	10	150	12	5.45	3	50	4.0	1.82
★ ½	15	100	12	5.45	2	50	6.0	2.73
★ ¾	20	50	8	3.64	2	25	3.8	1.73
POA 1	25	280	53	24.09	8	35	6.7	3.05
POA 1¼	32	100	40	18.18	4	25	10.0	4.55
POA 1½	40	100	54	24.55	4	25	13.5	6.14
POA 2	50	80	54	24.55	4	20	13.4	6.09

## cartons

### malleable iron fittings (continued) extra heavy (black or galvanized)

size	master containers				cartons			
	no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲		
		lb	kg			lb	kg	
NPS	DN							

**floor flange: fig. 1190 (page pf-56)**

c ¼	8	200	74	33.64	8	25	9.0	4.09
c ¾	10	200	83	37.73	8	25	10.2	4.64
½	15	120	68	30.91	4	30	16.8	7.64
¾	20	80	48	21.82	4	20	12.0	5.46
1	25	60	51	23.18	4	15	12.8	5.82
1¼	32	50	45	20.45	2	25	22.5	10.23
1½	40	40	48	21.82	4	10	12.0	5.46
2	50	30	61	27.73	2	15	30.5	13.87

c = cast iron

### 90° elbow: fig. 1161 (page pf-58)

★ ¼	8	40	8	3.64	2	20	4.0	1.82
★ ¾	10	30	9	4.09	2	15	4.4	2.00
½	15	160	75	34.09	4	40	18.8	8.55
¾	20	80	53	24.09	4	20	13.2	6.00
1	25	60	70	31.82	4	15	17.4	7.91

### 45° elbow: fig. 1162 (page pf-58)

★ ¼	8	50	10	4.55	2	25	4.8	2.19
★ ¾	10	30	9	4.09	2	15	4.2	1.91
★ ½	15	20	9	4.09	2	10	4.3	1.96
¾	20	96	63	28.64	8	12	7.9	3.59
1	25	60	60	27.27	4	15	15.0	6.82

### 90° street elbow: fig. 1170 (page pf-58)

★ ¼	8	60	11	5.00	2	30	5.1	2.32
★ ¾	10	30	8	4.63	2	15	3.9	1.78
½	15	160	64	29.09	8	20	8.0	3.64
¾	20	100	68	30.91	4	25	17.0	7.73
1	25	60	64	29.09	4	15	15.9	7.23

### 45° street elbow: fig. 1160 (page pf-58)

★ ½	15	24	9	4.09	2	12	4.3	1.96
¾	20	120	65	29.54	4	30	16.2	7.37
1	25	60	51	23.18	4	15	12.8	5.82
1¼	32	40	60	27.27	4	10	15.0	6.82
1½	40	24	50	22.73	4	6	12.4	5.64
2	50	16	54	24.54	2	8	26.7	12.14

### tee: fig. 1164 (page pf-59)

★ ¼	8	30	9	4.09	2	15	4.1	1.87
★ ¾	10	20	9	4.09	2	10	4.2	1.91
½	15	100	65	29.54	4	25	16.3	7.41
¾	20	60	65	29.54	4	15	16.1	7.32
1	25	40	65	30.00	4	10	16.3	7.41

### cap: fig. 1163 (page pf-60)

★ ¼	8	120	12	5.45	3	40	4.0	1.82
★ ¾	10	75	12	5.45	3	25	3.8	1.73
★ ½	15	30	7	3.18	2	15	3.5	1.59
★ ¾	20	24	9	4.09	2	12	4.2	1.91
1	25	120	70	31.82	8	15	8.7	3.95
1¼	32	80	76	34.55	8	10	9.4	4.27
1½	40	40	47	21.36	8	5	5.9	2.68
2	50	32	62	28.18	4	8	15.5	7.04

### M.I. unions copper or copper alloy-to-iron ground joint (black or galvanized)

size	master containers				cartons			
	no. of pieces	weight ▲		no. of cartons or bags	no. of pieces	weight ▲		
		lb	kg			lb	kg	
NPS	DN							

**coupling: fig. 1166 (page pf-60)**

★ ¼	8	60	10	4.55	2	30	5.1	2.31
★ ¾	10	20	6	2.73	2	10	2.6	1.18
★ ½	15	20	9	4.09	2	10	4.2	1.90
¾	20	96	63	28.64	8	12	7.8	3.55
1	25	64	64	29.09	8	8	7.9	3.59

### 150 lb. union: fig. 463 (page pf-61)

★* ½	6	75	12	5.45	3	25	3.8	1.73
¼	8	160	72	32.73	4	40	18.0	8.18
¾	10	160	67	30.45	4	40	16.8	7.64
½	15	160	71	32.27	4	40	17.6	8.00
¾	20	120	72	32.73	4	30	18.0	8.18
¾x½	20x15	120	66	30.00	4	30	16.5	7.50
1	25	60	55	25.00	4	15	13.7	6.23
1¼	32	32	47	21.36	4	8	11.6	5.27
1½	40	30	51	23.18	2	15	25.4	11.55
2	50	24	59	26.82	2	12	29.5	13.41

### 250 lb. union: fig. 554 (page pf-61)

★ ½	6	75	11	5.00	3	25	3.5	1.59
¼	8	160	72	32.73	4	40	18.0	8.18
¾	10	200	74	33.64	8	25	9.3	4.23
½	15	120	64	29.09	4	30	15.9	7.23
¾	20	80	64	29.09	4	20	16.0	7.27
1	25	40	52	23.64	2	20	25.6	11.64
1¼	32	30	49	22.27	2	15	24.5	11.14
1½	40	30	62	28.18	2	15	30.9	14.05
2	50	9	32	14.55	1	9	31.3	14.23

### 300 lb. union: fig. 459 (page pf-61)

★ ½	6	75	11	5.00	3	25	3.5	1.59
¼	8	160	72	32.73	4	40	18.0	8.18
¾	10	200	86	39.09	8	25	10.8	4.91
½	15	120	64	29.09	8	15	8.0	3.64
¾	20	80	64	29.09	4	20	16.0	7.27
1	25	40	51	23.18	4	10	12.7	5.77
1¼	32	40	65	29.55	2	20	32.6	14.82
1½	40	24	51	23.18	2	12	25.6	11.64
2	50	18	63	28.64	2	9	31.1	14.14

### 300 lb. AAR union: fig. 571 (page pf-61)

½	15	120	70	31.82	8	15	8.7	3.95
¾	20	60	62	28.18	2	30	30.9	14.05
1	25	40	59	26.82	4	10	14.7	6.68
1¼	32	24	53	24.09	2	12	26.5	12.05
1½	40	24	67	30.45	2	12	33.2	15.09
2	50	18	79	35.91	2	9	39.3	17.86

\* 300 lb. union furnished (fig. 459)

▲ Weights are for black fittings.

★ MATERIAL BAGGED INSTEAD OF INNER CARTON.

**palletted malleable iron fittings**

size		cartons			pallets				
		no. of pieces	wt. per carton		no. of cartons	no. of pieces	weight		
NPS	DN		lb	kg			lb	kg	

**90° elbow: fig. 1101** (page pf-50)

½	15	200	51	23.18	27	5400	1377	626	
¾	20	140	58	26.36	27	3780	1566	712	
1	25	80	53	24.09	27	2160	1431	650	
1¼	32	60	61	27.73	27	1620	1647	749	
1½	40	32	45	20.45	27	864	1215	552	
2	50	20	43	19.55	27	540	1161	528	

**90° elbow: fig. 1101R** (page pf-50)

¾ x ½	20 x 15	120	45	20.45	27	3240	1215	552	
1 x ¾	25 x 20	80	43	19.55	27	2160	1161	528	

**45° elbow: fig. 1102** (page pf-50)

1	25	100	59	26.82	27	2700	1593	724	
1½	40	48	60	27.27	27	1296	1620	736	
2	50	32	63	28.64	27	864	1701	773	

**90° street elbow: fig. 1103** (page pf-51)

½	15	200	55	25.00	27	5400	1485	675	
¾	20	160	69	31.36	27	4320	1863	847	
1¼	32	60	66	30.00	27	1620	1782	810	
1½	40	48	72	32.73	27	1296	1944	884	
2	50	24	60	27.27	27	648	1620	736	

**tee: fig. 1105** (page pf-51)

½	15	160	61	27.73	27	4320	1647	749	
¾	20	105	67	30.45	27	2835	1809	822	
1¼	32	45	65	29.55	27	1215	1755	798	
1½	40	30	58	26.36	27	810	1566	712	
2	50	20	58	26.36	27	540	1566	712	

size		cartons			pallets				
		no. of pieces	wt. per carton		no. of cartons	no. of pieces	weight		
NPS	DN		lb	kg			lb	kg	

**tee, reducing: fig. 1105R** (page pf-52)

¾ x ¾ x ½	20x20x15	105	53	24.09	27	2835	1431	650	
¾ x ½ x ½	20x15x15	140	66	30.00	27	3780	1782	810	

**reducer: fig. 1125** (page pf-55)

¾ x ½	20 x 15	200	55	25.00	27	5400	1485	675	
1 x ¾	25 x 20	100	44	20.00	27	2700	1188	540	
2 x 1½	50 x 40	30	49	22.27	27	810	1323	601	

**bushing, hex: fig. 383** (page pf-74)

1 x ¾	25 x 20	200	44	20.00	27	5400	1180	536	
1¼ x 1	32 x 25	200	62	28.18	27	5400	1674	761	
2 x 1½	50 x 40	80	56	25.45	27	2160	1512	687	

**cap: fig. 1124** (page pf-56)

½	15	200	31	14.09	27	5400	837	380	
¾	20	160	35	15.91	27	4320	945	430	
1	25	100	36	16.36	27	2700	972	442	
1¼	32	100	58	26.36	27	2700	1566	712	
1½	40	80	58	26.36	27	2160	1566	712	
2	50	60	61	27.73	27	1782	1647	749	

**150 lb. union: fig. 463** (page pf-61)

½	15	160	66	30.00	27	4320	1782	810	
¾	20	120	67	30.45	27	3240	1809	822	
1	25	72	60	27.27	27	1944	1620	736	
1¼	32	48	66	30.00	27	1295	1782	810	
1½	40	36	57	25.91	27	972	1539	700	
2	50	24	60	27.27	27	648	1620	736	

## cartons

### cast iron fittings standard (black only)

size		no. of pieces	cartons		pallets	
			lb	kg	no. of cartons	no. of pieces
NPS	DN					
<b>90° elbow: fig. 351</b> (page pf-63)						
½	15	150	60	27.27	39	5850
¾	20	100	60	27.27	39	3900
1	25	55	51	23.18	39	2145
1¼	32	30	44	20.00	39	1170
1½	40	20	39	17.73	39	780
2	50	20	63	28.64	20	400

<b>reducing elbow: fig. 352</b> (page pf-64)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
¾x½	20x15	120	62	28.18	39	4680
1x¾	25x20	70	54	24.55	39	2730
1x½	25x15	85	57	25.91	39	3315
1¼x1	32x25	40	49	22.27	39	1560
1¼x¾	32x20	50	51	23.18	39	1950
1¼x½	32x15	55	59	26.82	39	2145
1½x1¼	40x32	25	44	20.00	39	975
1½x1	40x25	30	44	20.00	39	1170
2x1½	50x40	25	65	29.55	20	500
2x1¼	50x32	25	59	26.82	20	500

<b>45° elbow: fig. 356</b> (page pf-63)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
½	15	150	56	25.45	39	5850
¾	20	100	55	25.00	39	3900
1	25	60	50	22.73	39	2340
1¼	32	35	47	21.36	39	1365
1½	40	25	45	20.45	39	975
2	50	20	58	26.36	20	400

<b>tee: fig. 358</b> (page pf-65)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
½	15	100	56	25.45	39	3900
¾	20	60	51	23.18	39	2340
1	25	35	44	20.00	39	1365
1¼	32	20	41	18.64	39	780
1½	40	20	54	24.55	20	400
2	50	10	43	19.55	20	200

<b>reducing tee: fig. 359</b> (page pf-65-69)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
¾x¾x½	20x20x15	70	54	24.55	39	2730
1x¾x¾	25x20x20	50	50	22.73	39	1950
1x½x1	25x15x25	45	49	22.27	39	1755
1x1x¾	25x25x20	45	50	22.73	39	900
1x1x½	25x25x15	50	51	23.18	39	1950
1¼x1¼x1	32x32x25	25	44	20.00	39	500
1¼x1¼x¾	32x32x20	25	40	18.18	39	975
1¼x1¼x½	32x32x15	30	45	20.45	39	1170
1¼x1x1	32x25x25	25	39	17.73	39	975
1¼x1x¾	32x25x20	30	41	18.64	39	1170

size		no. of pieces	cartons		pallets	
			lb	kg	no. of cartons	no. of pieces
NPS	DN					
<b>reducing tee: fig. 359</b> (continued)						
1¼x1 x ½	32x25x15	35	45	20.46	39	1365
1¼x¾ x 1¼	32x20x32	25	44	20.00	39	975
1¼x½ x 1¼	32x15x32	25	41	18.64	39	975
1½x1½ x 1¼	40x40x32	25	61	27.73	20	500
1½x1½ x 1	40x40x25	30	64	29.09	20	600
1½x1½ x ¾	40x40x20	20	39	17.73	39	780
1½x1½ x ½	40x40x15	20	37	16.82	39	780
1½x1¼ x 1¼	40x32x32	25	57	25.91	20	500
1½x1¼ x 1	40x32x25	20	40	18.18	39	780
1½x1¼ x ¾	40x32x20	20	36	16.36	39	780
1½x1¼ x ½	40x32x15	25	42	19.09	39	975
1½x½ x 1½	40x15x40	20	43	19.55	39	400
2x2 x 1½	50x50x40	15	53	24.09	20	300
2x2 x 1¼	50x50x32	15	51	23.18	20	300
2x2 x 1	50x50x25	15	46	20.91	20	300
2x2 x ¾	50x50x20	20	58	26.36	20	400
2x2 x ½	50x50x15	20	54	24.55	20	400
2x1½ x 2	50x40x50	15	56	25.45	20	300
2x1½ x 1½	50x40x40	15	49	22.27	20	300
2x1½ x 1	50x40x25	20	54	24.55	20	400
2x1½ x ¾	50x40x15	25	59	26.82	20	500
2x1¼ x 2	50x32x50	15	56	25.45	20	300
2x1 x 2	50x25x50	15	52	23.64	20	300
2x¾ x 2	50x20x50	15	50	22.73	20	300
2x1½ x 2	50x40x50	10	33	15.00	39	390

<b>reducer: fig. 367</b> (page pf-73)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
1x½	25x15	100	54	24.55	39	3900

<b>floor flange: fig. 1006 (galvanized)</b> (page pf-54)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
½	15	90	61	27.73	39	3590
¾	20	90	67	30.45	39	3510
1	25	60	67	30.45	39	2340
1¼	32	50	56	25.45	39	1950
1½	40	35	52	23.64	39	1365

<b>floor flange: fig. 1006 (black)</b> (page pf-54)						
size	no. of pieces	lb	kg	no. of cartons	no. of pieces	
½	15	90	61	27.73	39	3510
¾	20	90	67	30.45	39	3510
1	25	60	67	30.45	39	2340
1¼	32	50	56	25.45	39	1950
1½	40	35	52	23.64	39	1365

steel pipe nipples

diameter		length		pieces per inner	weight per inner		pieces per master	weight per master		pieces per inner	weight per inner		pieces per master	weight per master									
NPS	DN	NPS	DN		lb	kg		lb	kg		NPS	DN		NPS	DN	lb	kg	lb	kg				
1/4	32	Close	Close	25	3.5	1.59	-	-	-	2 1/2	65	Close	Close	25	22	10.00	-	-	-				
		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-		
		2	50	25	5.5	2.50	-	-	-			-	-	-	-	-	-	-	-	-	-	-	
		2 1/2	65	25	7.0	3.18	-	-	-			-	-	-	-	-	-	-	-	-	-	-	
		3	80	25	9.0	4.09	-	-	-			-	-	-	3	80	25	25.25	11.48	-	-	-	-
		3 1/2	90	25	11.0	5.00	-	-	-			-	-	-	3 1/2	90	25	33.5	15.23	-	-	-	-
		4	100	25	12.75	5.80	-	-	-			-	-	-	4	100	25	37.0	16.82	-	-	-	-
		4 1/2	114	25	14.5	6.59	-	-	-			-	-	-	4 1/2	114	20	37.6	15.27	-	-	-	-
		5	125	25	16.25	7.39	-	-	-			-	-	-	5	125	20	39.0	17.73	-	-	-	-
		5 1/2	140	25	17.75	8.07	-	-	-			-	-	-	5 1/2	140	15	32.7	14.86	-	-	-	-
		6	150	25	20.0	9.09	-	-	-			-	-	-	6	150	15	37.8	17.18	-	-	-	-
		7	175	25	22.5	10.23	-	-	-			-	-	-	7	175	10	30.7	13.95	-	-	-	-
		8	200	25	27.0	12.27	-	-	-			-	-	-	8	200	10	35.10	15.95	-	-	-	-
9	225	25	30.0	13.64	-	-	-	-	-	-	9	225	10	39.0	17.73	-	-	-	-				
10	250	10	13.8	6.27	-	-	-	-	-	-	10	250	5	22.55	10.25	-	-	-	-				
11	279	10	14.6	6.64	-	-	-	-	-	-	11	279	5	24.1	10.95	-	-	-	-				
12	300	10	16.0	7.27	-	-	-	-	-	-	12	300	5	27.5	12.50	-	-	-	-				
1/2	40	Close	Close	25	7.75	3.52	-	-	-	3	80	Close	Close	25	30.50	13.86	-	-	-				
		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-			
		2	50	25	9.25	4.20	-	-	-			-	-	-	-	-	-	-	-	-	-		
		2 1/2	65	25	11.5	5.23	-	-	-			-	-	-	-	-	-	-	-	-	-		
		3	80	25	14.5	6.59	-	-	-			-	-	-	3	80	25	33.50	15.23	-	-	-	-
		3 1/2	90	25	17.5	7.95	-	-	-			-	-	-	3 1/2	90	20	34.0	15.45	-	-	-	-
		4	100	25	20.0	9.09	-	-	-			-	-	-	4	100	20	39.60	18.00	-	-	-	-
		4 1/2	114	25	21.75	9.89	-	-	-			-	-	-	4 1/2	114	15	32.70	14.86	-	-	-	-
		5	125	25	24.75	11.25	-	-	-			-	-	-	5	125	10	26.50	12.05	-	-	-	-
		5 1/2	140	25	27.5	12.50	-	-	-			-	-	-	5 1/2	140	10	29.60	13.45	-	-	-	-
		6	150	25	30.75	13.98	-	-	-			-	-	-	6	150	10	34.0	15.45	-	-	-	-
		7	175	25	35.25	16.02	-	-	-			-	-	-	7	175	10	38.60	17.55	-	-	-	-
		8	200	25	16.1	7.32	-	-	-			-	-	-	8	200	5	22.70	10.32	-	-	-	-
9	225	10	19.3	8.77	-	-	-	-	-	-	9	225	5	26.25	11.93	-	-	-	-				
10	250	10	21.3	9.68	-	-	-	-	-	-	10	250	5	28.55	12.98	-	-	-	-				
11	279	10	22.8	10.36	-	-	-	-	-	-	11	279	5	32.30	14.68	-	-	-	-				
12	300	10	25.7	11.68	-	-	-	-	-	-	12	300	5	34.45	15.66	-	-	-	-				
2	50	Close	Close	25	11.5	5.23	-	-	-	2	50	Close	Close	25	11.5	5.23	-	-	-				
		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-			
		2 1/2	65	25	15.5	7.05	-	-	-			-	-	-	-	-	-	-	-	-			
		3	80	25	20.0	9.09	-	-	-			-	-	-	-	-	-	-	-	-	-		
		3 1/2	90	25	23.5	10.68	-	-	-			-	-	-	-	-	-	-	-	-	-		
		4	100	25	27.25	12.38	-	-	-			-	-	-	-	-	-	-	-	-	-		
		4 1/2	114	25	30.5	13.86	-	-	-			-	-	-	-	-	-	-	-	-	-		
		5	125	25	34.5	15.68	-	-	-			-	-	-	-	-	-	-	-	-	-		
		5 1/2	140	25	39.5	17.95	-	-	-			-	-	-	-	-	-	-	-	-	-		
		6	150	20	34.0	15.45	-	-	-			-	-	-	-	-	-	-	-	-	-		
		7	175	20	39.6	18.00	-	-	-			-	-	-	-	-	-	-	-	-	-		
		8	200	10	22.6	10.27	-	-	-			-	-	-	-	-	-	-	-	-	-		
		9	225	10	25.9	11.77	-	-	-			-	-	-	-	-	-	-	-	-	-		
10	250	10	29.9	13.59	-	-	-	-	-	-	-	-	-	-	-	-	-						
11	279	10	32.4	14.73	-	-	-	-	-	-	-	-	-	-	-	-	-						
12	300	10	34.8	15.82	-	-	-	-	-	-	-	-	-	-	-	-	-						

**cartons**

**master containers for "25 packs"  
steel pipe nipples in "25" packs"**

*standard+ welded steel (black and galvanized▲) • sizes 1/8 to 3 NPS / 6 to 80 DN+*

*schedule 40 seamless steel pressure pipe (black only) • sizes 1/8 to 1 1/2 NPS / 6 to 40 DN△*

*schedule 40 seamless steel pipe (black only) • sizes 2 to 3 NPS / 50 to 80 DN△*

diameter		length		pieces per inner	weight per inner		pieces per master	weight per master		diameter		length		pieces per inner	weight per inner		pieces per master	weight per master	
NPS	DN	NPS	DN		lb	kg		lb	kg	NPS	DN	NPS	DN		lb	kg		lb	kg
1/8	6	Close	Close	25	.5	.23	450	9.0	4.09	1/2	15	Close	Close	25	1.5	.68	450	27	12.27
		1 1/2	40	25	.75	.34	450	13.5	6.14			1 1/2	40	25	2.0	.91	200	16	7.27
		2	50	25	1.0	.45	450	18.0	8.18			2	50	25	2.75	1.25	200	22	10.00
		2 1/2	65	25	1.25	.57	450	22.5	10.23			2 1/2	65	25	3.5	1.59	200	28	12.73
		3	80	25	1.5	.68	450	27.0	12.27			3	80	25	4.5	2.05	200	36	16.36
		3 1/2	90	25	1.75	.80	450	31.5	14.32			3 1/2	90	25	5.5	2.50	-	-	-
		4	100	25	2.0	.91	450	36.0	16.36			4	100	25	6.25	2.84	-	-	-
		4 1/2	115	25	2.25	1.02	200	18.0	8.18			4 1/2	115	25	7.25	3.30	-	-	-
		5	125	25	2.5	1.14	200	20.0	9.09			5	125	25	8.0	3.64	-	-	-
		5 1/2	140	25	2.75	1.25	200	22.0	10.00			5 1/2	140	25	9.25	4.20	-	-	-
		6	150	25	3.0	1.36	200	24.0	10.91			6	150	25	9.75	4.43	-	-	-
		7	175	25	3.5	1.59	-	-	-			7	175	25	11.5	5.23	-	-	-
8	200	25	4.0	1.82	-	-	-	8	200	25	13.0	5.91	-	-	-				
9	225	25	4.5	2.05	-	-	-	9	225	25	15.5	7.05	-	-	-				
10	250	25	5.0	2.27	-	-	-	10	250	25	16.5	7.50	-	-	-				
11	280	25	5.5	2.50	-	-	-	11	280	25	18.5	8.41	-	-	-				
12	300	25	6.0	2.73	-	-	-	12	300	25	20.0	9.09	-	-	-				
1/4	8	Close	Close	25	.5	.23	450	9	4.09	3/4	20	Close	Close	25	2.5	1.14	200	20	9.09
		1 1/2	40	25	1.0	.45	450	18	8.18			1 1/2	40	25	2.75	1.25	200	22	10.00
		2	50	25	1.5	.68	450	27	12.27			2	50	25	4.0	1.82	200	32	14.55
		2 1/2	65	25	2.0	.91	450	36	16.36			2 1/2	65	25	5.0	2.27	-	-	-
		3	80	25	2.5	1.14	400	40	18.18			3	80	25	6.25	2.84	-	-	-
		3 1/2	90	25	3.0	1.36	325	39	17.73			3 1/2	90	25	7.75	3.52	-	-	-
		4	100	25	3.25	1.48	300	39	17.73			4	100	25	8.75	3.98	-	-	-
		4 1/2	115	25	3.75	1.70	200	30	13.64			4 1/2	115	25	9.75	4.43	-	-	-
		5	125	25	4.25	1.93	200	34	15.45			5	125	25	11.5	5.23	-	-	-
		5 1/2	140	25	4.5	2.05	200	36	16.36			5 1/2	140	25	12.0	5.45	-	-	-
		6	150	25	5.0	2.27	200	40	18.18			6	150	25	14.0	6.36	-	-	-
		7	175	25	6.0	2.73	-	-	-			7	175	25	15.5	7.05	-	-	-
8	200	25	7.0	3.18	-	-	-	8	200	25	17.75	8.07	-	-	-				
9	225	25	7.75	3.52	-	-	-	9	225	25	20.5	9.32	-	-	-				
10	250	25	8.5	3.86	-	-	-	10	250	25	22.25	10.11	-	-	-				
11	280	25	9.5	4.32	-	-	-	11	280	25	25.0	11.36	-	-	-				
12	300	25	10.25	4.66	-	-	-	12	300	25	28.0	12.73	-	-	-				
3/8	10	Close	Close	25	1.0	.45	450	18	8.18	1	25	Close	Close	25	3.5	1.59	200	28	12.73
		1 1/2	40	25	1.5	.68	450	27	12.27			-	-	-	-	-	-	-	
		2	50	25	2.0	.91	450	36	16.36			2	50	25	5.5	2.50	175	38.5	17.50
		2 1/2	65	25	2.5	1.14	400	40	18.18			2 1/2	65	25	7.0	3.18	-	-	-
		3	80	25	3.25	1.48	200	26	11.82			3	80	25	9.0	4.09	-	-	-
		3 1/2	90	25	3.75	1.70	200	30	13.64			3 1/2	90	25	11.0	5.00	-	-	-
		4	100	25	4.5	2.05	200	36	16.36			4	100	25	12.75	5.80	-	-	-
		4 1/2	115	25	5.0	2.27	200	40	18.18			4 1/2	115	25	14.5	6.59	-	-	-
		5	125	25	5.5	2.50	175	38.5	17.50			5	125	25	16.25	7.39	-	-	-
		5 1/2	140	25	6.0	2.73	150	36	16.36			5 1/2	140	25	17.75	8.07	-	-	-
		6	150	25	6.5	2.95	175	39	17.73			6	150	25	20.0	9.09	-	-	-
		7	175	25	8.25	3.75	-	-	-			7	175	25	22.5	10.23	-	-	-
8	200	25	8.75	3.98	-	-	-	8	200	25	27.0	12.27	-	-	-				
9	225	25	9.75	4.43	-	-	-	9	225	25	30.0	13.64	-	-	-				
10	250	25	12.0	5.45	-	-	-	10	250	25	34.5	15.68	-	-	-				
11	280	25	12.25	5.57	-	-	-	11	280	25	36.5	16.59	-	-	-				
12	300	25	13.5	6.14	-	-	-	12	300	25	40.0	18.18	-	-	-				

**cartons**

**master containers for "25 packs"  
steel pipe nipples in "25" packs"**

diameter		length		pieces per inner	weight per inner		pieces per master	weight per master		diameter		length		pieces per inner	weight per inner		pieces per master	weight per master				
NPS	DN	NPS	DN		lb	kg		lb	kg	NPS	DN	NPS	DN		lb	kg		lb	kg			
1/4	32	Close	Close	25	3.5	1.59	-	-	-	2 1/2	65	Close	Close	25	22	10.00	-	-	-			
		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	
		2	50	25	5.5	2.50	-	-	-			-	-	-	-	-	-	-	-	-	-	-
		2 1/2	65	25	7.0	3.18	-	-	-			-	-	-	-	-	-	-	-	-	-	-
		3	80	25	9.0	4.09	-	-	-			-	3	80	25	25.25	11.48	-	-	-	-	-
		3 1/2	90	25	11.0	5.00	-	-	-			-	3 1/2	90	25	33.5	15.23	-	-	-	-	-
		4	100	25	12.75	5.80	-	-	-			-	4	100	25	37.0	16.82	-	-	-	-	-
		4 1/2	114	25	14.5	6.59	-	-	-			-	4 1/2	114	20	33.6	15.27	-	-	-	-	-
		5	125	25	16.25	7.39	-	-	-			-	5	125	20	39.0	17.73	-	-	-	-	-
		5 1/2	140	25	17.75	8.07	-	-	-			-	5 1/2	140	15	32.7	14.86	-	-	-	-	-
		6	150	25	20.0	9.09	-	-	-			-	6	150	15	37.8	17.18	-	-	-	-	-
		7	175	25	22.5	10.23	-	-	-			-	7	175	10	30.7	13.95	-	-	-	-	-
		8	200	25	27.0	12.27	-	-	-			-	8	200	10	35.10	15.95	-	-	-	-	-
9	225	25	30.0	13.64	-	-	-	-	9	225	10	39.0	17.73	-	-	-	-	-				
10	250	10	13.8	6.27	-	-	-	-	10	250	5	22.55	10.25	-	-	-	-	-				
11	279	10	14.6	6.64	-	-	-	-	11	279	5	24.1	10.95	-	-	-	-	-				
12	300	10	16.0	7.27	-	-	-	-	12	300	5	27.5	12.50	-	-	-	-	-				
1/2	40	Close	Close	25	7.75	3.52	-	-	-	3	80	Close	Close	25	30.50	13.86	-	-	-			
		-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-		
		2	50	25	9.25	4.20	-	-	-			-	-	-	-	-	-	-	-	-		
		2 1/2	65	25	11.5	5.23	-	-	-			-	-	-	-	-	-	-	-	-	-	
		3	80	25	14.5	6.59	-	-	-			3	80	25	33.50	15.23	-	-	-	-	-	
		3 1/2	90	25	17.5	7.95	-	-	-			3 1/2	90	20	34.0	15.45	-	-	-	-	-	
		4	100	25	20.0	9.09	-	-	-			4	100	20	39.60	18.00	-	-	-	-	-	
		4 1/2	114	25	21.75	9.89	-	-	-			4 1/2	114	15	32.70	14.86	-	-	-	-	-	
		5	125	25	24.75	11.25	-	-	-			5	125	10	26.50	12.05	-	-	-	-	-	
		5 1/2	140	25	27.5	12.50	-	-	-			5 1/2	140	10	29.60	13.45	-	-	-	-	-	
		6	150	25	30.75	13.98	-	-	-			6	150	10	34.0	15.45	-	-	-	-	-	
		7	175	25	35.25	16.02	-	-	-			7	175	10	38.60	17.55	-	-	-	-	-	
		8	200	25	16.1	7.32	-	-	-			8	200	5	22.70	10.32	-	-	-	-	-	
9	225	10	19.3	8.77	-	-	-	9	225	5	26.25	11.93	-	-	-	-	-					
10	250	10	21.3	9.68	-	-	-	10	250	5	28.55	12.98	-	-	-	-	-					
11	279	10	22.8	10.36	-	-	-	11	279	5	32.30	14.68	-	-	-	-	-					
12	300	10	25.7	11.68	-	-	-	12	300	5	34.45	15.66	-	-	-	-	-					
2	50	Close	Close	25	11.5	5.23	-	-	-	-	-	-	-	-	-	-	-	-				
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		2 1/2	65	25	15.5	7.05	-	-	-	-	-	-	-	-	-	-	-	-				
		3	80	25	20.0	9.09	-	-	-	-	-	-	-	-	-	-	-	-				
		3 1/2	90	25	23.5	10.68	-	-	-	-	-	-	-	-	-	-	-	-				
		4	100	25	27.25	12.38	-	-	-	-	-	-	-	-	-	-	-	-				
		4 1/2	114	25	30.5	13.86	-	-	-	-	-	-	-	-	-	-	-	-				
		5	125	25	34.5	15.68	-	-	-	-	-	-	-	-	-	-	-	-				
		5 1/2	140	25	39.5	17.95	-	-	-	-	-	-	-	-	-	-	-	-				
		6	150	20	34.0	15.45	-	-	-	-	-	-	-	-	-	-	-	-				
		7	175	20	39.6	18.00	-	-	-	-	-	-	-	-	-	-	-	-				
		8	200	10	22.6	10.27	-	-	-	-	-	-	-	-	-	-	-	-				
		9	225	10	25.9	11.77	-	-	-	-	-	-	-	-	-	-	-	-				
10	250	10	29.9	13.59	-	-	-	-	-	-	-	-	-	-	-	-						
11	279	10	32.4	14.73	-	-	-	-	-	-	-	-	-	-	-	-						
12	300	10	34.8	15.82	-	-	-	-	-	-	-	-	-	-	-	-						

**cartons**

**master containers for "25 packs"  
steel pipe nipples in "25" packs"**

*extra strong<sup>+</sup> welded steel (black and galvanized<sup>▲</sup>) • sizes 1/8 to 3 NPS / 6 to 80 DN <sup>+</sup>*

*schedule 80 seamless steel pressure pipe (black only) • sizes 1/8 to 1 1/2 NPS / 6 to 40 DN <sup>Δ</sup>*

*schedule 80 seamless steel pipe (black only) • sizes 2 to 3 NPS / 50 to 80 DN <sup>Δ</sup>*

diameter		length		pieces per inner	weight per inner		pieces per master	weight ▲ per master		diameter		length		pieces per inner	weight per inner		pieces per master	weight ▲ per master	
NPS	DN	NPS	DN		lb	kg		lb	kg	NPS	DN	NPS	DN		lb	kg		lb	kg
1/8	6	Close	Close	25	.5	.23	450	9	4.09	1/2	15	Close	Close	25	2.0	.91	450	36	16.36
		1 1/2	40	25	1.0	.45	450	18	8.18			1 1/2	40	25	3.0	1.36	200	24	10.91
		2	50	25	1.25	.57	450	22.5	10.23			2	50	25	4.0	1.82	200	32	14.55
		2 1/2	65	25	1.5	.68	450	27	12.27			2 1/2	65	25	4.25	1.93	200	34	15.45
		3	80	25	2.0	.91	450	36	16.36			3	80	25	5.0	2.28	200	40	18.18
		3 1/2	90	25	2.25	1.02	200	38.25	17.39			3 1/2	90	25	7.25	3.30	-	-	-
		4	100	25	2.5	1.14	200	40	18.18			4	100	25	8.5	3.86	-	-	-
		4 1/2	114	25	3.0	1.36	200	24	10.91			4 1/2	114	25	9.5	4.32	-	-	-
		5	125	25	3.25	1.48	200	26	11.82			5	125	25	10.5	4.77	-	-	-
		5 1/2	140	25	3.5	1.59	200	28	12.73			5 1/2	140	25	12.0	5.45	-	-	-
		6	150	25	4.0	1.82	200	32	14.55			6	150	25	13.0	5.91	-	-	-
		7	175	25	4.5	2.05	-	-	-			7	175	25	15.25	6.93	-	-	-
8	200	25	5.25	2.39	-	-	-	8	200	25	17.5	7.95	-	-	-				
9	225	25	5.75	2.61	-	-	-	9	225	25	19.75	8.98	-	-	-				
10	250	25	6.5	2.95	-	-	-	10	250	25	22.0	10.0	-	-	-				
11	279	25	7.0	3.18	-	-	-	11	279	25	24.5	11.14	-	-	-				
12	300	25	7.75	3.52	-	-	-	12	300	25	26.75	12.16	-	-	-				
1/4	8	Close	Close	25	1.0	.45	450	18	8.18	3/4	20	Close	Close	25	3.5	1.59	200	28	12.73
		1 1/2	40	25	1.5	.68	450	27	12.27			1 1/2	40	25	3.75	1.70	200	30	13.64
		2	50	25	2.0	.91	450	36	16.36			2	50	25	5.0	2.27	200	40	18.18
		2 1/2	65	25	2.5	1.14	200	40	18.18			2 1/2	65	25	6.75	3.07	-	-	-
		3	80	25	3.25	1.48	200	39	17.73			3	80	25	8.25	3.75	-	-	-
		3 1/2	90	25	3.75	1.70	200	37.5	17.05			3 1/2	90	25	9.5	4.32	-	-	-
		4	100	25	4.5	2.05	200	36	16.36			4	100	25	11.25	5.11	-	-	-
		4 1/2	114	25	5.0	2.27	-	-	-			4 1/2	114	25	12.75	5.80	-	-	-
		5	125	25	5.5	2.5	-	-	-			5	125	25	14.5	6.59	-	-	-
		5 1/2	140	25	6.25	2.84	-	-	-			5 1/2	140	25	16.0	7.27	-	-	-
		6	150	25	7.0	3.18	-	-	-			6	150	25	17.0	7.73	-	-	-
		7	175	25	8.0	3.64	-	-	-			7	175	25	20.5	9.32	-	-	-
8	200	25	8.75	3.98	-	-	-	8	200	25	23.5	10.68	-	-	-				
9	225	25	10.0	4.55	-	-	-	9	225	25	26.75	12.16	-	-	-				
10	250	25	11.0	5.0	-	-	-	10	250	25	30.25	13.75	-	-	-				
11	279	25	12.0	5.45	-	-	-	11	279	25	32.75	14.89	-	-	-				
12	300	25	13.25	6.03	-	-	-	12	300	25	36.0	16.36	-	-	-				
3/8	10	Close	Close	25	1.25	.57	450	22.5	10.23	1	25	Close	Close	25	3.5	1.59	200	28	12.73
		1 1/2	40	25	2.0	.91	450	36	16.36			-	-	-	-	-	-	-	
		2	50	25	3.0	1.36	200	39	17.73			2	50	25	5.5	2.50	-	-	-
		2 1/2	65	25	3.5	1.59	200	38.5	17.50			2 1/2	65	25	7.0	3.18	-	-	-
		3	80	25	4.5	2.05	200	36	16.36			3	80	25	9.0	4.09	-	-	-
		3 1/2	90	25	5.25	2.39	-	-	-			3 1/2	90	25	11.0	5.00	-	-	-
		4	100	25	6.0	2.73	-	-	-			4	100	25	12.75	5.80	-	-	-
		4 1/2	114	25	6.5	2.95	-	-	-			4 1/2	114	25	14.5	6.59	-	-	-
		5	125	25	7.25	3.30	-	-	-			5	125	25	16.25	7.39	-	-	-
		5 1/2	140	25	8.0	3.64	-	-	-			5 1/2	140	25	17.75	8.07	-	-	-
		6	150	25	8.75	3.98	-	-	-			6	150	25	20.0	9.09	-	-	-
		7	175	25	10.5	4.77	-	-	-			7	175	25	22.5	10.23	-	-	-
8	200	25	12.0	5.45	-	-	-	8	200	25	27.0	12.27	-	-	-				
9	225	25	13.5	6.14	-	-	-	9	225	25	30.0	13.64	-	-	-				
10	250	25	15.0	6.82	-	-	-	10	250	25	34.5	15.68	-	-	-				
11	279	25	16.5	7.5	-	-	-	11	279	25	36.5	16.59	-	-	-				
12	300	25	18.0	8.18	-	-	-	12	300	25	40.0	18.18	-	-	-				

master containers for "25 packs"  
steel pipe nipples in "25" packs

diameter		length		pieces per inner	weight ▲ per inner		pieces per master	weight ▲ per master	
NPS	DN	NPS	DN		lb	kg		lb	kg
1/4	32	Close	Close	25	8.0	3.64	-	-	-
		2	50	25	10.75	4.89	-	-	-
		2 1/2	65	25	13.75	6.25	-	-	-
		3	80	25	16.0	7.27	-	-	-
		3 1/2	90	25	13.75	6.25	-	-	-
		4	100	25	22.5	10.23	-	-	-
		4 1/2	114	25	26.0	11.82	-	-	-
		5	125	25	29.0	13.18	-	-	-
		5 1/2	140	25	31.0	14.09	-	-	-
		6	150	25	34.5	15.68	-	-	-
		7	175	25	40.5	18.41	-	-	-
		8	200	15	28.20	12.82	-	-	-
		9	225	15	31.80	14.45	-	-	-
10	250	10	23.8	10.82	-	-	-		
11	279	10	26.2	11.91	-	-	-		
12	300	10	28.8	13.55	-	-	-		
1/2	40	Close	Close	25	11.25	5.11	-	-	-
		2	50	25	12.5	5.68	-	-	-
		2 1/2	65	25	16.25	7.39	-	-	-
		3	80	25	19.75	8.98	-	-	-
		3 1/2	90	25	24.5	11.14	-	-	-
		4	100	25	27.5	12.50	-	-	-
		4 1/2	114	25	31.5	14.32	-	-	-
		5	125	25	34.5	15.68	-	-	-
		5 1/2	140	25	38.0	17.27	-	-	-
		6	150	20	33.4	15.18	-	-	-
		7	175	20	39.4	17.91	-	-	-
		8	200	10	22.7	10.32	-	-	-
		9	225	10	25.7	11.68	-	-	-
10	250	10	28.7	13.05	-	-	-		
11	279	10	31.8	14.45	-	-	-		
12	300	10	34.8	15.82	-	-	-		
3/4	50	Close	Close	25	18.5	8.41	-	-	-
		2 1/2	65	25	23.0	10.45	-	-	-
		3	80	25	27.0	12.27	-	-	-
		3 1/2	90	25	33.5	15.23	-	-	-
		4	100	25	38.5	17.50	-	-	-
		4 1/2	114	20	35.2	16.00	-	-	-
		5	125	20	38.8	17.64	-	-	-
		5 1/2	140	10	21.7	9.86	-	-	-
		6	150	10	23.6	10.73	-	-	-
		7	175	10	27.2	12.36	-	-	-
		8	200	10	31.4	14.27	-	-	-
		9	225	10	35.5	16.14	-	-	-
		10	250	10	39.7	18.05	-	-	-
11	279	5	21.95	9.98	-	-	-		
12	300	5	24.05	10.93	-	-	-		
2 1/2	65	Close	Close	25	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		3	80	25	-	-	-	-	-
		3 1/2	90	15	-	-	-	-	-
		4	100	15	-	-	-	-	-
		4 1/2	114	15	-	-	-	-	-
		5	125	10	-	-	-	-	-
		5 1/2	140	10	-	-	-	-	-
		6	150	10	-	-	-	-	-
		7	175	5	-	-	-	-	-
		8	200	5	-	-	-	-	-
		9	225	5	-	-	-	-	-
10	250	5	-	-	-	-	-		
11	279	5	-	-	-	-	-		
12	300	5	-	-	-	-	-		
3	80	Close	Close	25	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		3	80	25	-	-	-	-	-
		3 1/2	90	20	-	-	-	-	-
		4	100	20	-	-	-	-	-
		4 1/2	114	15	-	-	-	-	-
		5	125	10	-	-	-	-	-
		5 1/2	140	10	-	-	-	-	-
		6	150	10	-	-	-	-	-
		7	175	10	-	-	-	-	-
		8	200	5	-	-	-	-	-
		9	225	5	-	-	-	-	-
10	250	5	-	-	-	-	-		
11	279	5	-	-	-	-	-		
12	300	5	-	-	-	-	-		

Notes:

- Some lengths of 2, 2 1/2 and 3 NPS / 50, 65 and 80 DN nipples are packed less than 25 pieces to a carton as indicated under "no. of pieces."
- ▲ Weights shown are for black nipples.
- △ Schedule 40 and 80 nipples cartoned only in lengths close to 6-inch.
- + Extra Strong galvanized welded nipples cartoned only in pipe sizes 1/2 - 2 NPS / 15 - 50 DN and lengths close to 6 NPS / 150 DN.

**nipple assortments**

standard welded nipples only • (black and galvanized)

single packs

length		pieces 1/2 (11)	3/4 (11)		1 (10)		1 1/4 (10)		1 1/2 (10)		2 (9)		2 1/2 (8)		3 (8)		4 (6)		
NPS	DN																		
close	close	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1 1/2	40	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2 1/2	65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	80	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3 1/2	90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4	100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4 1/2	115	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5	125	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5 1/2	140	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6	150	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
assortment weight:		lb 2.64	kg 1.20	lb 3.32	kg 1.51	lb 4.46	kg 2.03	lb 6.0	kg 2.73	lb 7.41	kg 3.37	lb 9.79	kg 4.45	lb 13.26	kg 6.03	lb 15.80	kg 7.18	lb 22.10	kg 10.05

assorted cartons

size		total pieces:	weight		close	number of pieces each for size																							
NPS	DN		lb	kg		NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN	NPS	DN				
1/2	15	25	4.60	2.09	4	1/2	40	2	50	2 1/2	65	3	80	3 1/2	90	4	100	4 1/2	114	5	125	5 1/2	140	6	150				
1/2	15	66	14.60	6.64	6	3	3	3	3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2				
1/2	15	100	17.80	8.09	20	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
3/4	20	25	6.00	2.73	6	-	4	3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1				
3/4	20	66	20.40	9.27	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
3/4	20	100	22.70	10.32	25	-	20	10	10	10	5	10	5	5	5	5	5	5	5	5	5	5	5	5	5				
1	25	25	9.80	4.45	5	-	5	3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1				
1	25	60	27.30	12.41	6	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
1	25	75	28.10	12.77	15	-	12	5	12	3	12	3	5	3	5	3	5	3	5	3	5	3	5	3	5				
1 1/4	32	25	13.20	6.00	6	-	4	3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1				
1 1/4	32	60	37.80	17.18	6	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
1 1/2	40	25	15.70	7.14	6	-	4	3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1				
1 1/2	40	50	37.50	17.05	5	-	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5				
2	50	36	39.16	17.80	4	-	-	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				

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# Standards and Specifications

	DIMENSIONS	MATERIAL	GALVANIZING	THREAD	PRESSURE RATING	FEDERAL/ OTHER
<b>M.I. Fittings</b>						
Class 150/PN 20	ASME B16.3•	ASTM A-197	ASTM A-153	ASME B.1.20.1+	ASME B16.3•	ASME B16.3**
Class 300/PN 50	ASME B16.3•	ASTM A-197	ASTM A-153	ASME B.1.20.1+	ASME B16.3•	
<b>M.I. Unions</b>						
Class 150/PN 20	ASME B16.39•	ASTM A-197	ASTM A-153	ASME B.1.20.1+	ASME B16.39•	ASME B16.39***
Class 250	ASME B16.39•	ASTM A-197	ASTM A-153	ASME B.1.20.1+	ASME B16.39•	
Class 300/PN 50	ASME B16.39•	ASTM A-197	ASTM A-153	ASME B.1.20.1+	ASME B16.39•	
<b>Cast Iron Threaded Fittings</b>						
Class 125	ASME B16.4•	ASTM A-126 (A)	ASTM A-153	ASME B.1.20.1+	ASME B16.4•	ASME B16.4■
Class 250	ASME B16.4•	ASTM A-126 (A)	ASTM A-153	ASME B.1.20.1+	ASME B16.4•	ASME B16.4■
<b>C. I. Plugs and Bushings</b>						
	ASME B16.14•	ASTM A-126 (A)	ASTM A-153	ASME B.1.20.1+	ASME B16.4•	WW-P-471
<b>C. I. Drainage Threaded Fittings</b>						
	ASME B16.12•	ASTM A-126 (A)	ASTM A-153	ASME B.1.20.1+	ASME B16.12•	
<b>C. I. Flanges and Flanged Fittings</b>						
Class 125 (1"-12")	ASME B16.1•	ASTM A-126 (A) or (B)	ASTM A-153	ASME B.1.20.1+	ASME B16.1•	ASME B16.1•
Class 125 (14"-up)	ASME B16.1•	ASTM A-126 (B)	ASTM A-153	ASME B.1.20.1+	ASME B16.1•	ASME B16.1•
Class 250 (1"-12")	ASME B16.1•	ASTM A-126 (A) or (B)	ASTM A-153	ASME B.1.20.1+	ASME B16.1•	ASME B16.1•
Class 250 (14"-up)	ASME B16.1•	ASTM A-126 (B)	ASTM A-153	ASME B.1.20.1+	ASME B16.1•	ASME B16.1•
<b>Forged Steel Threaded Fittings</b>						
Class 2000, 3000, 6000	ASME B16.11•	ASTM A105, A182 A350		ASME B.1.20.1+	ASME B16.11•	
<b>Pipe Nipples</b>						
	ASTM A733			ASME B.1.20.1+ *		
Steel Pipe						
Welded		ASTM A 53 Type F or Type E				
Seamless (High Temp.)		ASTM A 106 Gr. B				
Brass		ASTM B 43				

\*The Standard

• an American National Standard (ANSI)

+ASME B1.20.1 was ANSI B2.1

■Formerly WW-P-501

\*\*Formerly WW-P-521

\*\*\*Formerly WW-U-531

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1. **CONTROLLING PROVISIONS:** These terms and conditions shall control with respect to any purchase order or sale of Seller's products. No waiver, alteration or modification of these terms and conditions whether on Buyer's purchase order or otherwise shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of Seller.
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5. **RETURNS:** Seller cannot accept return of any products unless its written permission has been first obtained, in which case same will be credited subject to the following: (a) All material returned must, on its arrival at Seller's plant, be found to be in first-class condition; if not, cost of putting in saleable condition will be deducted from credit memoranda. (b) A handling charge deduction of twenty percent (20%) will be made from all credit memoranda issued for material returned. (c) Transportation charges, if not prepaid, will be deducted from credit memoranda.
6. **SHIPMENTS:** All products sent out will be carefully examined, counted and packed. The cost of any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of a shipment. Claims for products damaged or lost in transit should be made on the carrier, as Seller's responsibility ceases, and title passes, on delivery to the carrier.
7. **SPECIAL PRODUCTS:** Orders covering special or non-standard products are not subject to cancellation except on such terms as Seller may specify on application.
8. **PRICES AND DESIGNS:** Prices and designs are subject to change without notice. All prices are F.O.B. Point of Shipment, unless otherwise stated.
9. **TAXES:** The amount of any sales, excise or other taxes, if any, applicable to the products covered by this order, shall be added to the purchase price and shall be paid by Buyer unless Buyer provides Seller with an exemption certificate acceptable to the taxing authorities.
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11. **MINIMUM INVOICE:** \$25.00 plus transportation.
12. **TERMS:** Cash, net 30 days unless otherwise specified.

---

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The Grinnell TOTAL PIPING PACKAGE is stocked close to you at one of the Grinnell branches or their stocking distributors

### ● FITTINGS

Cast iron, screwed, flanged/drainage  
Malleable iron, screwed/unions  
Cast brass, solder joint/threaded  
Wrot copper, solder joint  
Plastic, ABS & PVC for DWV  
Forged steel  
Steel pipe couplings  
Mechanical joint  
Oil country fittings

### ● VALVES

Series 8000 Butterfly  
Ball, metal & plastic  
Diaphragm  
Forged steel Anvil & Smith  
Fluoroseal Plug  
Bronze & iron, gate, globe, check  
Detector check  
Knife gate  
Hersey® backflow prevention devices  
Sampling valves  
Oil Field valves

### ● GEM FIRE PROTECTION PRODUCTS

### ● STEEL PIPE NIPPLES

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