



TO MARK PROGRESS

**LADISH**

*Controlled Quality*

**FITTINGS**

CATALOG NO. 55

SEAMLESS  
WELDING  
FITTINGS

FORGED  
STEEL  
FLANGES

LARGE  
DIAMETER  
FLANGES

LONG  
WELDING  
NECKS

FORGED  
STEEL  
FITTINGS



**1** SEAMLESS WELDING FITTINGS

**2** FORGED STEEL FLANGES

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

**4** FORGED STEEL FITTINGS

**5** STAINLESS AND ALLOY FITTINGS

**6** ENGINEERING AND TECHNICAL DATA

**7** GENERAL INDEX AND PART NUMBERS

**LADISH**  
*Controlled Quality*  
**FORGED STEEL FITTINGS**



TO MARK PROGRESS



# LADISH

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## HOW TO ORDER LADISH FORGED FITTINGS

### EXAMPLE OF INFORMATION REQUESTED

QUANTITY	NOMINAL PIPE SIZE	PRESSURE RATING	DESCRIPTION ▲	MATERIAL SPECIFICATION*	PART NO.
15	1½"	2000 lb.	Screwed Tees	ASTM A105 Grade II	241
10	1"	6000 lb.	90° ⊗ Screwed Street Elbows	ASTM A182 F-5	664
8	1"x1½" +	3000 lb.	90° ⊗ Screwed Reducing Elbows	ASTM A182 F-2	381
4	3"x2" +	6000 lb.	Hexagon Bushings	AISI Type 430	600
5	4"	6000 lb.	Square Head Plugs	ASTM A105 Grade II	309
6	2"x1" +	6000 lb.	Screwed Reducing Couplings	ASTM A182 F8c	667
8	3"	4000 lb.	45° ⊗ Socket Welding Elbows	AISI 2317	1462
3	¾"	6000 lb.	Socket Welding Couplings	ASTM A105 Grade II	1666
7	2"x1" +	Schedule 40	Socket Welding Reducer Inserts	ASTM A105 Grade II	1250

### NOTES

- \* Always specify material by standard, grade, and symbol. See pages 229-236 and 243.
  - + Always specify size of reduced outlet.
  - ⊗ Always specify degree of elbows.
  - ▲ Always specify whether screwed or socket welding type.
- When shipment is made, a shipping notice is forwarded to the destination of the shipment. For this reason correct post office address should be given.
- "Delivery required BY . . . . . ." This information proves helpful to Ladish Co. in processing orders in accord with your requirements.
- If order is based on Ladish quotation, quotation number should be made part of the order.
- Orders should be placed with an Authorized Ladish Co. Distributor. His ample stock means prompt service.

Always Supply Complete Information on Order



TO MARK PROGRESS

# LADISH

## FORGED STEEL FITTINGS PICTORIAL INDEX

90° ELBOW



45° ELBOW



TEE



CROSS



STREET ELBOW



LATERAL



HEXAGON BUSHING



FLUSH BUSHING



ROUND HEAD PLUG



HEXAGON HEAD PLUG



SQUARE HEAD PLUG



COUPLING



REDUCER



HALF COUPLING



CAP



90° ELBOW



45° ELBOW



TEE



CROSS



LATERAL



COUPLING



REDUCER



CAP



TYPE 1



TYPE 2



TYPE 3



SOCKET WELDING REDUCER INSERTS

S  
C  
R  
E  
W  
E  
D  
  
F  
I  
T  
T  
I  
N  
G  
S

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S  
O  
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Always Supply Complete

Information on Order

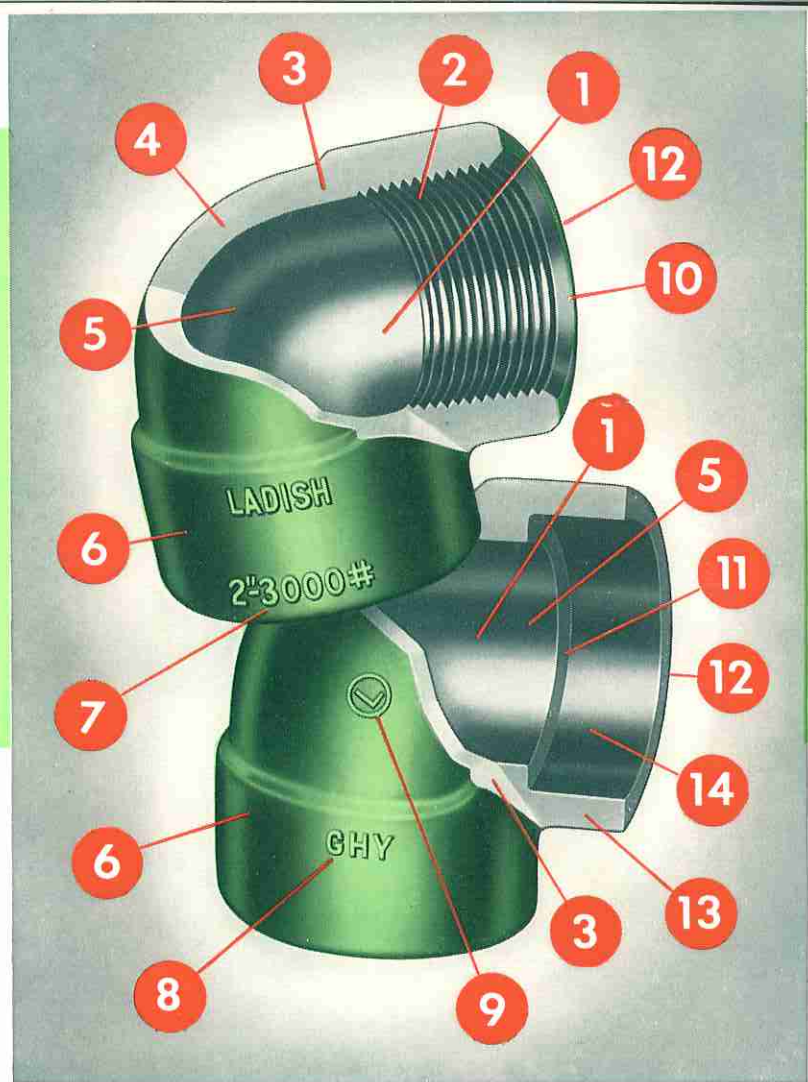


TO MARK PROGRESS

# IMPORTANT FEATURES

## OF LADISH FORGED STEEL FITTINGS

- 1 BORED FROM SOLID DROP FORGINGS**  
Forged solid and then machined, Ladish forged fittings provide to a maximum degree those favorable metal qualities obtainable only from the drop forging process.
- 2 SHARP, CLEAN THREADS**  
Accurately cut to exacting tolerances and carefully gauged in inspection, the true, clean threads of Ladish fittings assure tight joints and simplified piping makeup.
- 3 COMPACTED GRAIN STRUCTURE**  
Dense, homogeneous grain of forging quality bars is further refined by the forging process to increase ultimate strength and yield point.
- 4 UNIFORM WALL THICKNESS**  
Accurate forging dies and machining fixtures combine with gauge-ground drill points and precision taps to assure uniform walls.
- 5 SMOOTH INTERIOR SURFACES**  
Carefully machined, clear, clean bores reduce turbulence and friction, minimizing resistance to flow.
- 6 WIDE REINFORCING BANDS**  
Extra strength at stress points is provided in Ladish design by wide reinforcing bands.
- 7 PERMANENT IDENTIFICATION**  
Nominal pipe size, pressure rating, trademark and heat code of the material from which it was forged are permanently marked on every Ladish fitting.
- 8 HEAT CODE PROTECTION**  
Certified metallurgical reports, always available by referring to the heat code on every fitting, give complete data on chemical composition and physical properties . . . proving exact compliance with applicable material specifications.

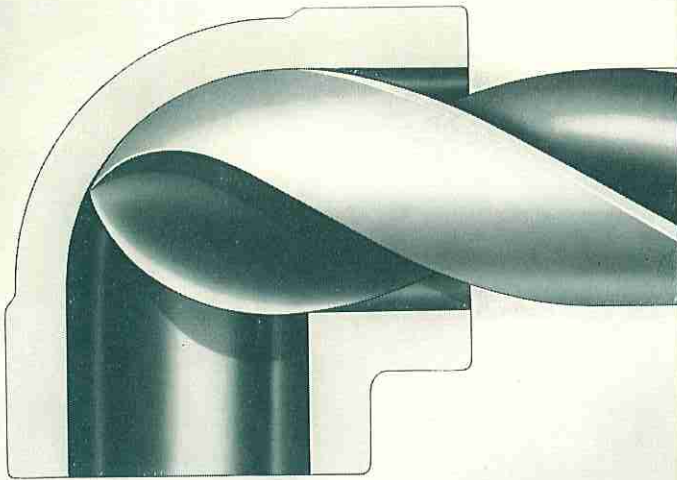


- 9 CONTROLLED QUALITY**  
Ladish Controlled Quality . . . the result of unsurpassed metallurgical, engineering and manufacturing controls . . . gives users extra assurance of dependable performance.
- 10 THREAD CHAMFER**  
Thread chamfer affords ample protection to threads and promotes easy engagement with pipe for time-saving assembly.
- 11 DEEP, TRUE WELDING SOCKETS**  
Sockets are accurately bored to provide proper slip fit and to align inner surfaces with pipe.
- 12 GEOMETRIC ACCURACY**  
True angular relationships between outlets facilitate rapid, economical piping makeup.
- 13 FULL THICKNESS SOCKET WALLS**  
Meeting requirements of ASA Specifications, full socket wall thickness on all Ladish fittings provide the necessary factor of safety at the welds.
- 14 RAPID, ACCURATE MAKEUP**  
Makeup is simplified as pipe ends slip readily into Socket Ends and require no other support; joints are practically self-aligning and there is no necessity for tack welding or clamping prior to welding.

# DESIGNED

FOR LONG *trouble-free* OPERATION

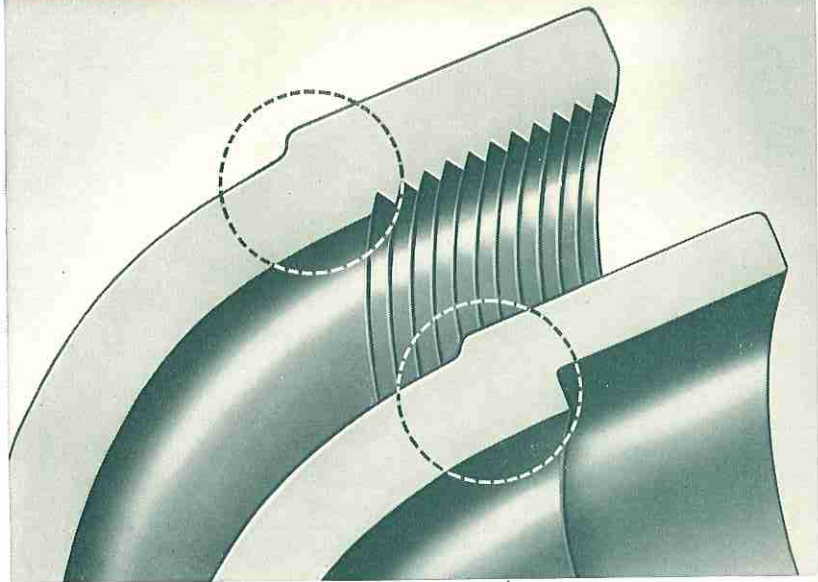
## UNIFORM WALL THICKNESS



Maximum safety and long service are provided in Ladish designs by manufacturing procedures which assure uniform walls. Drill points are gauge-ground to contours paralleling fitting radii and are carefully jugged to the center of the bore. Walls of uniform thickness without interruptions are thus assured when the opposing bore is completed.

On installations requiring streamline flow, the pipe is butted against the socket shoulder. . . . Since the fittings have the same inside diameter as the pipe with which they are used, unobstructed flow is assured.

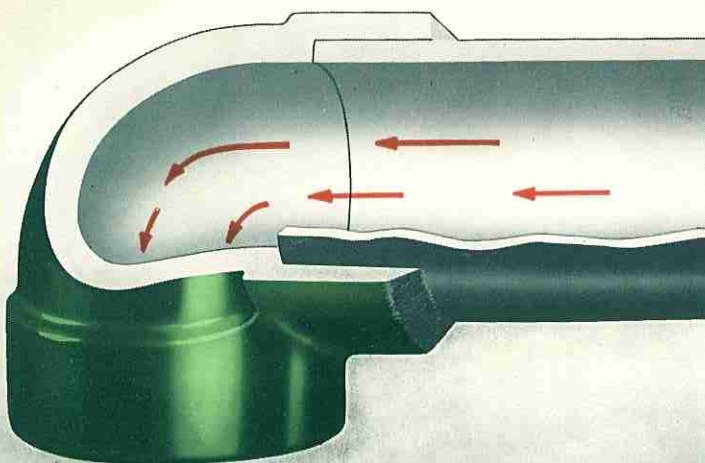
## DEEP REINFORCING BANDS



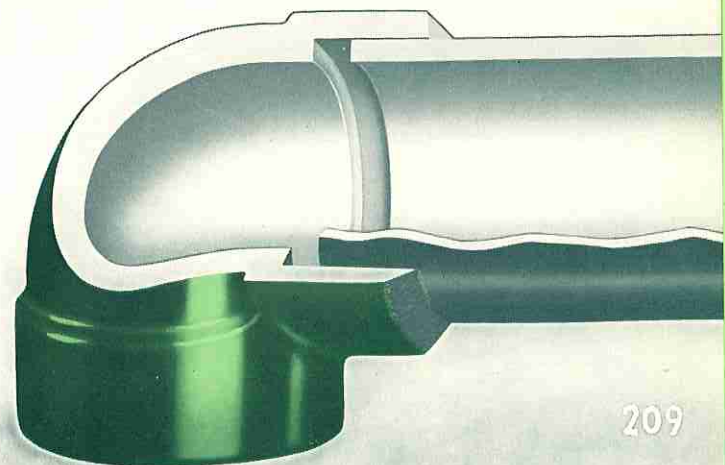
Extending well beyond the last thread or end of socket, deep reinforcing bands provide ample surface for wrench grip and add materially to the ability of Ladish fittings to resist stresses and strains. This increased strength also improves ability to withstand shock load.

On installations that do not require streamline flow, the deep sockets simplify the erection of piping by eliminating the necessity of cutting the pipe to exact lengths.

## STREAMLINED FLOW DESIGN

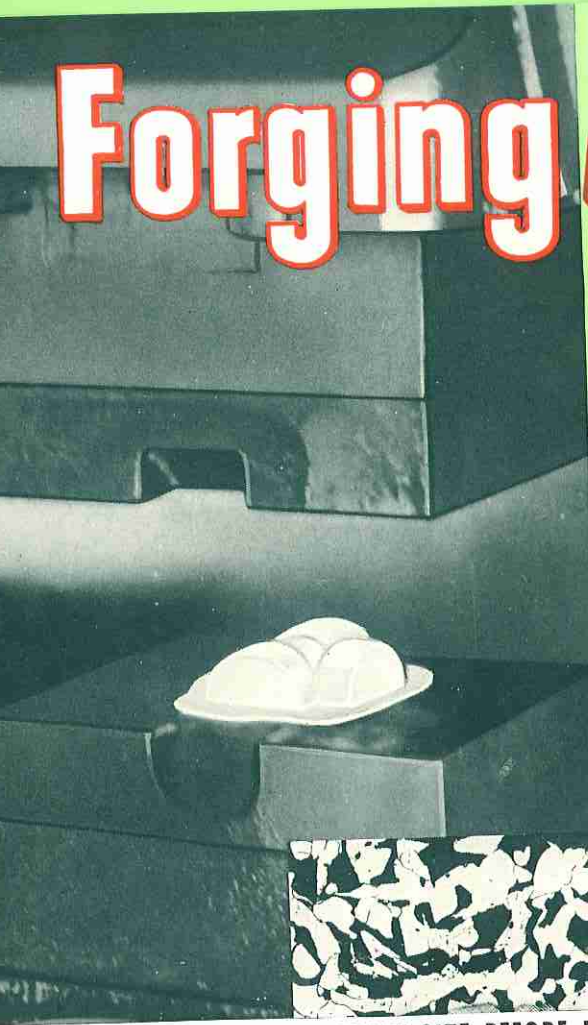


## SIMPLIFIED ERECTION



# Forging Adds Strength

## ASSURING MAXIMUM SERVICE LIFE UNDER ALL OPERATING CONDITIONS



GRAIN SIZE BEFORE FORGING



GRAIN SIZE AFTER FORGING

Specific refinement of grain structure developing maximum metal quality is shown in these photo-micrographs.

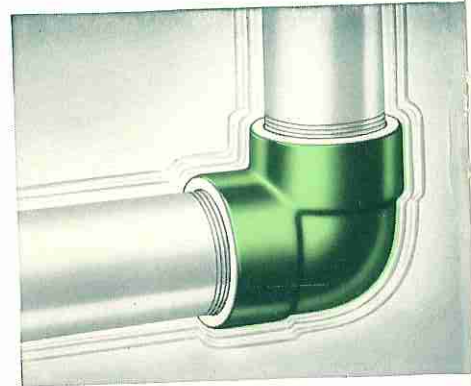
● Ladish Forged Steel Fittings give users added assurance of dependability because hot working of metal in the forging process refines the structure of metal and develops the greater strength and toughness necessary to withstand extremes in operating conditions.

### IMPROVED PHYSICAL PROPERTIES BETTER RESIST SHOCKS, STRAINS AND STRESSES

Drop forging continues the improvement of all physical properties inherent in the original "forging quality" billets from which Ladish fittings are made. By controlling hammer impact on the hot, plastic metal while confined in closed dies, both grain and fibre structure are refined to develop tensile and torsional strength, toughness and fatigue endurance. Improvement in metal quality by forging is imperative where fittings must stand up under the severe and highly complex stresses and strains resulting from the elevated temperatures and pressures of modern piping systems.

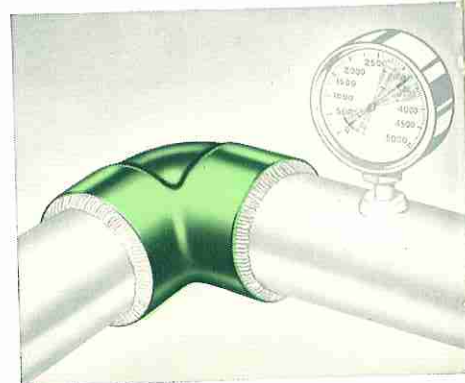
### HIGHER FATIGUE STRENGTH RESISTS VIBRATION STRAINS

Hot working of metal by drop forging works the grain fibres, inherent in the metal from which Ladish fittings are produced, into a compact mass of strength and toughness. This compacting or refining of grain structure improves physical properties including the ability to resist longer alternate stress and load cycles characteristic of vibration.



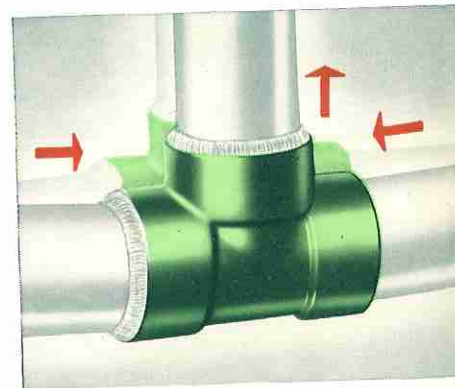
### IMPROVED DYNAMIC STRENGTH RESISTS HYDRAULIC SHOCKS

Another important benefit resulting from the improvement in physical properties by drop forging is the improved ability of Ladish fittings to resist hydraulic shocks. In refining grain size and properly directing the elongated fibres . . . dynamic strength and toughness of Ladish fittings is increased to withstand the sudden concentration of impact stress resulting from hydraulic shock.



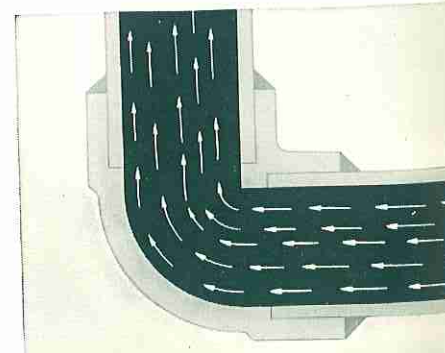
### GREATER TOUGHNESS COMBATS EXPANSION AND CONTRACTION

Toughness or the ductile quality of metal is vital in fittings subjected to the strains of expansion and contraction. Intensified at temperature extremes and concentrated where piping changes direction, such strains are resisted by the superior toughness of Ladish forged fittings.



### FINER GRAIN RETARDS ATTACK FROM EROSION OR CORROSION

The dense, homogeneous grain structure imparted to Ladish fittings by the forging process improves corrosion resistance. Wear from eroding materials flowing through fittings is also materially retarded.

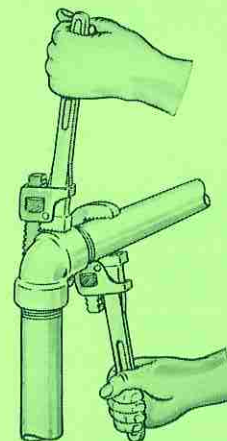




Every Ladish Forged Steel Screwed Fitting is produced to rigid manufacturing standards and complies with ASME specifications, as well as ASA Thread Standards B2.1-1945 for taper pipe threads. There is no specific ASA standard covering Forged Steel Screwed Fittings.

## LADISH *Screwed* FITTINGS

Ladish Forged Steel Screwed Fittings are designed for use in oil refineries, chemical and power plants, ammonia and hydraulic service and other installations where severe pressure-temperature operating conditions are encountered or where erosive or corrosive conditions make it necessary to utilize the inherent advantages of a forged steel fitting with the flexibility of a threaded connection.





# 2000 POUND FORGED STEEL SCREWED FITTINGS

For Steam, Water, Oil, Oil Vapor, Gas or Air  
ASTM A105—Grade II



90° Elbow  
Part No. 240



45° Elbow  
Part No. 242



Tee  
Part No. 241



Cross  
Part No. 243



Lateral  
Part No. 245

NOMINAL PIPE SIZE		1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
<b>90° ELBOW PART NO. 240</b>													
	DIMENSION A	1 3/16	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	APPROX. WT.	1/4	1/4	5/16	9/16	1 1/16	1 1/8	1 11/16	2 1/4	3 1/2	6 1/2	10 1/2	22 3/4
	LIST PRICE	PRICES ON APPLICATION											
<b>45° ELBOW PART NO. 242</b>													
	DIMENSION A	1 1/16	1 1/16	3/4	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	2 1/16	2 1/2	3 1/8
	DIMENSION B	1 5/16	1 5/16	1 1/16	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	APPROX. WT.	1/8	1/8	1/4	7/16	5/8	1 5/16	1 3/8	1 5/8	2 11/16	7 3/4	11 5/16	19 1/8
	LIST PRICE	PRICES ON APPLICATION											
<b>TEE PART NO. 241</b>													
	DIMENSION A	1 3/16	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	APPROX. WT.	1/4	1/4	5/16	9/16	1 5/16	1 7/16	2	2 3/4	4 5/8	8 11/16	13 3/16	27 1/4
	LIST PRICE	PRICES ON APPLICATION											
<b>CROSS PART NO. 243</b>													
	DIMENSION A	3 1/32	3 1/32	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3 1/4	3 3/8	4 3/16
	DIMENSION B	1	1	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	APPROX. WT.	1/2	1/2	1/2	7/8	1 1/8	1 11/16	2 1/2	3 3/16	5 1/4	16 7/16	19 1/2	32 11/16
	LIST PRICE	PRICES ON APPLICATION											
<b>LATERAL PART NO. 245</b>													
	DIMENSION B		1 3/16	1	1 1/4	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32			
	DIMENSION C		2 5/16	2 11/16	3	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16			
	DIMENSION D		1 5/8	1 7/8	2 1/8	2 9/16	3	3 1/2	3 5/16	4 3/4			
	APPROX. WT.		1/4	5/8	1	1 3/4	2 3/8	3	4 1/8	6 5/8			
	LIST PRICE	PRICES ON APPLICATION											

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

Reducing fittings can be furnished by boring and tapping straight-size blanks.  
Pressure-Temperature Ratings—page 269.  
Thread standards—page 246.

# 3000 POUND FORGED STEEL SCREWED FITTINGS

For Steam, Water, Oil, Oil Vapor, Gas or Air  
ASTM A105—Grade II



90° Elbow  
Part No. 380



45° Elbow  
Part No. 382



Tee  
Part No. 381



Cross  
Part No. 383



Street Elbow  
Part No. 384



Lateral  
Part No. 385

NOMINAL PIPE SIZE		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	
<b>90° ELBOW PART NO. 380</b>															
	DIMENSION A	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4	4 1/2	4 1/2	
	DIMENSION B	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4	6	6	
	APPROX. WT.	1/4	3/8	5/8	1 5/16	1 3/8	2 1/4	2 3/4	3 1/2	5 7/16	10 1 1/16	14 7/16	38 1/4	30 3/8	
	LIST PRICE	PRICES ON APPLICATION													
<b>45° ELBOW PART NO. 382</b>															
	DIMENSION A	1 1/16	3/4	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	1 23/32	2 1/16	2 1/2	3 1/8	3 1/8	
	DIMENSION B	1 5/16	1 1/16	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8	5 3/4	5 3/4	
	APPROX. WT.	1/4	1/4	1/2	3/4	1 3/16	1 7/8	2 1/8	3	4 1/4	7 3/8	10 1/2	24 3/4	19 1/16	
	LIST PRICE	PRICES ON APPLICATION													
<b>TEE PART NO. 381</b>															
	DIMENSION A	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4	4 1/2	4 1/2	
	DIMENSION B	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4	6	6	
	APPROX. WT.	1/4	3/8	1 3/16	1 3/16	1 7/8	2 1/2	3 1/8	5	6 3/4	13 1/8	20 3/8	47 1/2	39 1/2	
	LIST PRICE	PRICES ON APPLICATION													
<b>CROSS PART NO. 383</b>															
	DIMENSION A	3 1/32	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/8	4 3/16	4 3/16	
	DIMENSION B	1	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8	5 3/4	5 3/4	
	APPROX. WT.	7/16	3/8	1	1 1/2	2 1/2	3 9/16	4 1/8	6 1/2	8 1/8	16 3/4	19 3/4	39	32	
	LIST PRICE	PRICES ON APPLICATION													
<b>STREET ELBOW PART NO. 384</b>															
	DIMENSION B	1 1/16	1 1/16	1 1/4	1 1/2	1 3/4	2	2 7/16	2 3/4	3 5/16					
	DIMENSION C	7/8	7/8	1	1 1/8	1 3/8	1 3/4	2	2 1/8	2 1/2					
	DIMENSION D	1 1/4	1 1/4	1 1/2	1 5/8	1 7/8	2 1/4	2 5/8	2 13/16	3 5/16					
	APPROX. WT.	1/4	1/4	3/8	1/2	7/8	1 7/16	2 1/4	3	5 3/16					
LIST PRICE	PRICES ON APPLICATION														
<b>LATERAL PART NO. 385</b>															
	DIMENSION B		1	1 1/4	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32						
	DIMENSION C		2 1 1/16	3	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16						
	DIMENSION D		1 7/8	2 1/8	2 9/16	3	3 1/2	3 5/16	4 3/4						
	APPROX. WT.		5/8	1 5/16	1 3/4	2 3/4	4 5/8	5 1/2	10 13/16						
LIST PRICE	PRICES ON APPLICATION														

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

Reducing fittings can be furnished by boring and tapping straight-size blanks.

Pressure-Temperature Ratings—page 269.

Thread standards—page 246.

# 6000 POUND FORGED STEEL SCREWED FITTINGS

For Steam, Water, Oil, Oil Vapor, Gas or Air  
ASTM A-105—Grade II



90° Elbow  
Part No. 660



45° Elbow  
Part No. 662



Tee  
Part No. 661



Cross  
Part No. 663



Street Elbow  
Part No. 664



Lateral  
Part No. 665

NOMINAL PIPE SIZE		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
<b>90° ELBOW PART NO. 660</b>													
	DIMENSION A	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4	4 3/16	4 1/2
	DIMENSION B	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4	5 3/4	6
	APPROX. WT.	1/4	5/8	1 1/16	1 5/8	2 5/8	3 1/2	6 3/4	7 1/2	13 7/16	20 7/8	34 9/16	38
	LIST PRICE	PRICES ON APPLICATION											
<b>45° ELBOW PART NO. 662</b>													
	DIMENSION A	3/4	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	1 23/32	2 1/16	2 1/2	3 1/8	3 1/8
	DIMENSION B	1 1/16	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8	5 3/4	5 3/4
	APPROX. WT.	1/4	9/16	1/2	1 7/16	2 3/16	2 11/16	4 1/16	5 3/4	9 1/2	15	30 9/16	29
	LIST PRICE	PRICES ON APPLICATION											
<b>TEE PART NO. 661</b>													
	DIMENSION A	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4	4 3/16	4 1/2
	DIMENSION B	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4	5 3/4	6
	APPROX. WT.	1/2	1	1 3/8	2 1/8	3 5/8	4 5/8	7 5/8	9 5/8	18 7/8	28 1/16	45 5/8	50
	LIST PRICE	PRICES ON APPLICATION											
<b>CROSS PART NO. 663</b>													
	DIMENSION A	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/8	4 3/16	4 3/16
	DIMENSION B	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8	5 3/4	5 3/4
	APPROX. WT.	9/16	1 3/16	1 1/2	2 3/4	4 5/16	5 5/8	10 3/4	11 1/2	22 3/16	27 1/2	54	43 1/2
	LIST PRICE	PRICES ON APPLICATION											
<b>STREET ELBOW PART NO. 664</b>													
	DIMENSION B		1 1/4	1 1/2	1 3/4	2	2 7/16	2 3/4	3 5/16				
	DIMENSION C		1	1 1/8	1 3/8	1 3/4	2	2 1/8	2 1/2				
	DIMENSION D		1 1/2	1 5/8	1 7/8	2 1/4	2 5/8	2 13/16	3 5/16				
	APPROX. WT.		3/8	7/16	1	1 5/8	2 1/2	3 11/16	6 7/16				
	LIST PRICE	PRICES ON APPLICATION											
<b>LATERAL PART NO. 665</b>													
	DIMENSION B			1 1/2	1 13/16	2 3/16	2 7/16	2 31/32					
	DIMENSION C			3 9/16	4 1/8	4 13/16	5 3/8	6 7/16					
	DIMENSION D			2 9/16	3	3 1/2	3 15/16	4 3/4					
	APPROX. WT.			2 3/8	3 1/4	5 7/16	7 3/16	12 5/16					
	LIST PRICE	PRICES ON APPLICATION											

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

Reducing fittings can be furnished by boring and tapping straight-size blanks.  
Pressure-Temperature Ratings—page 269.  
Thread standards—page 246.

# STEEL SCREWED BUSHINGS AND PLUGS

MACHINED FROM SOLID STEEL OR FORGINGS

ASTM A105—Grade II



Hexagon Bushing  
Part No. 600

Flush Bushing  
Part No. 601

Round Head Plug  
Part No. 308

Hexagon Head Plug  
Part No. 602

Square Head Plug  
Part No. 309

NOMINAL PIPE SIZE		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		
<b>HEXAGON BUSHING PART NO. 600</b>																
	6000	DIMENSION A	1/2	9/16	9/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/4	1 3/8	1 1/2		
		DIMENSION B	5/8	1 1/16	7/8	1 1/16	1 7/16	1 13/16	2	2 1/2	3	3 1/2	4 1/8	4 5/8		
		DIMENSION C	1/8	3/16	3/16	1/4	1/4	3/8	3/8	7/16	1/2	1/2	1/2	5/8		
		APPROX. WT.	1/16	1/16	1/16	1/8	3/16	3/8	1 1/16	1 5/8	2 3/8	3 1/2	5 1/2	8 5/16		
		LB.	PRICES ON APPLICATION													
		REDUCTION	SIZE OF REDUCED OUTLET MUST BE SPECIFIED													
<b>FLUSH BUSHING PART NO. 601</b>																
	6000	DIMENSION A	7/16	7/16	1/2	9/16	5/8	1 1/16	3/4	1 3/16	1 5/16	1 1/8	1 1/8	1 1/4		
		APPROX. WT.	1/16	1/16	1/16	1/8	1/8	3/16	3/8	5/8	1	1 1/8	2			
		LB.	PRICES ON APPLICATION													
		REDUCTION	SIZE OF REDUCED OUTLET MUST BE SPECIFIED													
<b>ROUND HEAD PLUG PART NO. 308</b>																
	3000	DIMENSION A	1 3/8	1 5/8	1 5/8	1 3/4	1 3/4	2	2	2	2 1/2	2 3/4	2 3/4	3	3	
		DIMENSION B	7/16	9/16	1 1/16	7/8	1 1/8	1 3/8	1 1 1/16	2	2 1/2	3	3 5/8	4 1/8	4 5/8	
		APPROX. WT.	1/8	1/8	3/16	1/4	3/8	3/4	1 1/8	1 9/16	3	4 3/4	7 5/8	10	12 7/8	
		LB.	PRICES ON APPLICATION													
<b>HEXAGON HEAD PLUG PART NO. 602</b>																
	6000	DIMENSION A	9/16	5/8	1 1/16	3/4	1 5/16	1	1	1	1 1/16	1 5/16	1 3/8	1 7/16	1 1/2	
		DIMENSION B	7/16	5/8	1 1/16	7/8	1 1/16	1 7/16	1 13/16	2	2 1/2	3	3 1/2	4 1/8	4 5/8	
		DIMENSION C	1/4	1/4	5/16	5/16	3/8	3/8	9/16	5/8	1 1/16	3/4	1 3/16	7/8	1 1/4	
		APPROX. WT.	1/16	1/16	1/8	3/16	5/16	1/2	1 1/8	1 3/8	2 1/4	3 3/8	5 7/8	9 1/2	13	
		LB.	PRICES ON APPLICATION													
<b>SQUARE HEAD PLUG PART NO. 309</b>																
	3000	DIMENSION A	3/8	7/16	1/2	9/16	5/8	3/4	1 3/16	1 3/16	7/8	1 1/16	1 1/8	1 3/16	1 1/2	
		DIMENSION B	9/32	3/8	7/16	9/16	5/8	1 3/16	1 5/16	1 1/8	1 5/16	1 1/2	1 1 1/16	1 7/8	2 1/2	
		DIMENSION C	1/4	1/4	5/16	3/8	9/16	5/8	1 1/16	2 5/32	2 7/32	1 5/16	1	1 1/16	1 1/4	
		APPROX. WT.	1/64	1/32	1/16	1/8	3/16	5/16	9/16	7/8	1 1/2	2 1/4	2 7/8	4 3/16	7 3/16	
		LB.	PRICES ON APPLICATION													

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

Reducing fittings can be furnished by boring and tapping straight-size blanks.  
Pressure-Temperature Ratings—page 269.  
Thread standards—page 246.

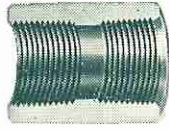
# STEEL SCREWED COUPLINGS, REDUCERS AND CAPS

MACHINED FROM SOLID STEEL OR FORGINGS

ASTM A105—Grade II



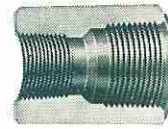
Coupling



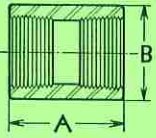
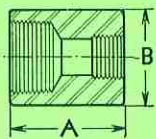
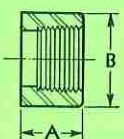
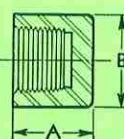
Reducer



Half Coupling



Cap

NOMINAL PIPE SIZE		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		
<b>COUPLINGS AND REDUCERS</b>																
 <b>COUPLING</b> Part No. 386 3000 LB. Part No. 666 6000 LB.	3000 LB.	DIMENSION A	1 1/4	1 3/8	1 1/2	1 7/8	2	2 3/8	2 5/8	3 1/8	3 3/8	3 5/8	4 1/4	4 1/2	4 3/4	
		DIMENSION B	3/4	3/4	7/8	1 1/8	1 3/8	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	4 3/4	5 1/2	
		APPROX. WT.	1/8	1/8	1/4	1/4	7/16	5/8	1 1/16	2 3/16	3 1/8	4	6 3/4		16 3/4	
		LIST PRICE	PRICES ON APPLICATION													
		DIMENSION A	1 1/4	1 3/8	1 1/2	1 7/8	2	2 3/8	2 5/8	3 1/8	3 3/8	3 5/8	4 1/4	4 1/2	4 3/4	
 <b>REDUCER</b> Part No. 387 3000 LB. Part No. 667 6000 LB.	6000 LB.	DIMENSION A	1 1/4	1 3/8	1 1/2	1 7/8	2	2 3/8	2 5/8	3 1/8	3 3/8	3 5/8	4 1/4	4 1/2	4 3/4	
		DIMENSION B	7/8	1	1 1/4	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	5	5 3/4	6 1/4	
		APPROX. WT.	3/16	3/16	1/4	1/2	1	2 1/8	2 3/8	4 3/8	7 3/4	10 3/4	13 1/2		24 1/2	
		LIST PRICE	PRICES ON APPLICATION													
		REDUCERS ONLY	SIZE OF REDUCED OUTLET MUST BE SPECIFIED													
<b>HALF COUPLINGS</b>																
 Part No. 388 3000 LB. Part No. 668 6000 LB.	3000 LB.	DIMENSION A	5/8	1 1/16	3/4	15/16	1	1 3/16	1 5/16	1 9/16	1 11/16	1 13/16	2 1/8	2 1/4	2 3/8	
		DIMENSION B	3/4	3/4	7/8	1 1/8	1 3/8	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	4 3/4	5 1/2	
		APPROX. WT.	1/16	1/16	3/16	3/16	1/4	5/16	3/4	1 1/8	1 9/16	2	3 3/8		8 3/8	
		LIST PRICE	PRICES ON APPLICATION													
		DIMENSION A	5/8	1 1/16	3/4	15/16	1	1 3/16	1 5/16	1 9/16	1 11/16	1 13/16	2 1/8	2 1/4	2 3/8	
 Part No. 389	3000 LB.	DIMENSION A	3/4	1	1	1 1/4	1 7/16	1 5/8	1 3/4	1 3/4	1 7/8	2 3/8	2 9/16	2 5/8	2 11/16	
		DIMENSION B	3/4	3/4	7/8	1 1/8	1 3/8	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	4 3/4	5 1/2	
		APPROX. WT.	1/32	1/16	1/8	1/4	5/16	1/2	1	1 5/8	3 1/8	5	8 1/2	11	14	
		LIST PRICE	PRICES ON APPLICATION													
		DIMENSION A	3/4	1	1	1 1/4	1 7/16	1 5/8	1 3/4	1 3/4	1 7/8	2 3/8	2 9/16	2 5/8	2 11/16	

Dimensions in inches. Weights in pounds.  
 For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

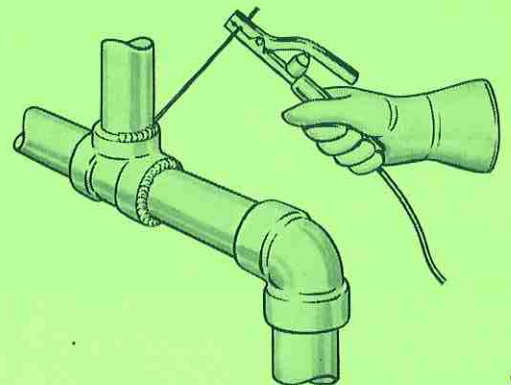
Pressure-Temperature Ratings—page 269.  
 Thread standards—page 246.



Ladish Forged Steel Socket Welding Fittings are produced to rigid manufacturing standards and comply with ASA B16.11-1946 and the applicable requirements of ASME and ASTM specifications.

## LADISH *Socket Welding* FITTINGS

Ladish Forged Steel Socket Welding Fittings are used in power plants, oil refineries, chemical plants, ammonia and hydraulic service and other installations where extremes in pressure, temperature, shock and vibration necessitate a permanent pipe connection that will overcome the difficulties of a mechanical joint.



# 2000 POUND FORGED STEEL SOCKET WELDING FITTINGS

FOR USE WITH SCHEDULE 40 STANDARD WEIGHT PIPE

For Steam, Water, Oil, Oil Vapor, Gas or Air

ASTM A105—Grade II



90° Elbow  
Part No. 1240



45° Elbow  
Part No. 1242



Tee  
Part No. 1241



Cross  
Part No. 1243



Lateral  
Part No. 1245

NOMINAL PIPE SIZE		1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
DIMENSION C COMMON TO ALL FITTINGS		.420	.555	.690	.855	1.065	1.330	1.675	1.915	2.406	2.906	3.535	4.545
<b>90° ELBOW PART NO. 1240</b>													
	DIMENSION A	1 3/16	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	DIMENSION D	3/8	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 3/8	1 1/8	1 9/16
	DIMENSION E	7/16	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	1/8	1/8	1/4	1/2	1 1/16	1 5/16	1 9/16	1 7/8	3 1/4	5 7/8	10 1/4	20 3/4
	LIST PRICE	PRICES ON APPLICATION											
<b>45° ELBOW PART NO. 1242</b>													
	DIMENSION A	1 1/16	1 1/16	3/4	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	2 1/16	2 1/2	3 1/8
	DIMENSION B	1 5/16	1 5/16	1 1/16	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	DIMENSION D	3/8	3/8	7/16	7/16	1/2	9/16	5/8	1 7/32	1 1/16	1 5/16	1 1/4	1 1/2
	DIMENSION E	5/16	5/16	5/16	7/16	1/2	9/16	1 1/16	1 3/16	1	1 1/8	1 1/4	1 5/8
	APPROX. WT.	1/8	1/8	3/16	3/8	1/2	7/8	1 1/4	1 5/8	2 11/16	6 3/4	10 1/2	18 3/16
	LIST PRICE	PRICES ON APPLICATION											
<b>TEE PART NO. 1241</b>													
	DIMENSION A	1 3/16	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	DIMENSION D	3/8	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 3/8	1 1/8	1 9/16
	DIMENSION E	7/16	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	1/4	1/4	5/16	5/8	7/8	1 3/8	2	2 1/2	3 3/4	8 3/8	12 1/2	27
	LIST PRICE	PRICES ON APPLICATION											
<b>CROSS PART NO. 1243</b>													
	DIMENSION A	3 1/32	3 1/32	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3 1/4	3 3/8	4 3/16
	DIMENSION B	1	1	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	DIMENSION D	1 7/32	1 7/32	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 5/8	1 1/8	1 9/16
	DIMENSION E	7/16	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	1/4	1/4	3/8	1 3/16	1 1/8	1 1/2	2 1/4	3 1/16	5 1/8	18	23	40
	LIST PRICE	PRICES ON APPLICATION											
<b>LATERAL PART NO. 1245</b>													
	DIMENSION A	1 5/8	1 7/8	2 1/8	2 9/16	3	3 1/2	3 15/16	4 3/4				
	DIMENSION B	1 3/16	1	1 1/4	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32				
	DIMENSION D	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8				
	DIMENSION E	2 5/16	2 11/16	3	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16				
	APPROX. WT.	1/4	5/8	1	1 3/4	2 3/8	3 3/4	4 1/8	6 7/8				
	LIST PRICE	PRICES ON APPLICATION											

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.  
Pressure-Temperature Ratings—page 269.

Reducing fittings can be furnished by boring straight-line blanks.  
Diameter of fitting bore is equal to the I.D. of Schedule 40 Standard Weight pipe.

# 3000 POUND FORGED STEEL SOCKET WELDING FITTINGS

FOR USE WITH SCHEDULE 80—EXTRA STRONG PIPE

For Steam, Water, Oil, Oil Vapor, Gas or Air

ASTM A105—Grade II



90° Elbow  
Part No. 1380



45° Elbow  
Part No. 1382



Tee  
Part No. 1381



Cross  
Part No. 1383



Lateral  
Part No. 1385

NOMINAL PIPE SIZE	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	
<b>DIMENSION C COMMON TO ALL FITTINGS</b>	.555	.690	.855	1.065	1.330	1.675	1.915	2.406	2.906	3.535	4.545	
<b>90° ELBOW PART NO. 1380</b>												
	DIMENSION A	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	DIMENSION D	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 3/8	1 1/8	1 9/16
	DIMENSION E	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	1/8	1/4	1/2	1 1/16	1 1/16	1 5/8	2 1/8	3 9/16	6 3/8	10 7/8	23 11/16
	LIST PRICE	PRICES ON APPLICATION										
<b>45° ELBOW PART NO. 1382</b>												
	DIMENSION A	1 1/16	3/4	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	2 1/16	2 1/2	3 1/8
	DIMENSION B	1 5/16	1 1/16	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	DIMENSION D	3/8	7/16	7/16	1/2	9/16	5/8	1 7/32	1 1/16	1 5/16	1 1/4	1 1/2
	DIMENSION E	5/16	5/16	7/16	1/2	9/16	1 1/16	1 3/16	1	1 1/8	1 1/4	1 5/8
	APPROX. WT.	1/8	3/16	7/16	1/2	7/8	1 5/16	1 3/4	2 7/8	7 3/8	11 1/2	19 3/4
	LIST PRICE	PRICES ON APPLICATION										
<b>TEE PART NO. 1381</b>												
	DIMENSION A	1 3/16	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3	3 3/8	4 3/16
	DIMENSION B	7/8	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/8	4 5/16	5 3/4
	DIMENSION D	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 3/8	1 1/8	1 9/16
	DIMENSION E	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	1/4	5/16	1 1/16	7/8	1 7/16	2 1/8	2 7/16	4 7/16	8 7/8	13 11/16	28 7/16
	LIST PRICE	PRICES ON APPLICATION										
<b>CROSS PART NO. 1383</b>												
	DIMENSION A	3 1/32	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	3 1/4	3 3/8	4 3/16
	DIMENSION B	1	1	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	4	4 5/8	5 3/4
	DIMENSION D	1 7/32	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1 5/8	1 1/8	1 9/16
	DIMENSION E	7/16	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 5/8
	APPROX. WT.	5/16	5/16	1 3/16	1 1/8	1 9/16	2 7/16	3 1/4	5 1/2	15 13/16	20 3/16	31 1/2
	LIST PRICE	PRICES ON APPLICATION										
<b>LATERAL PART NO. 1385</b>												
	DIMENSION A	1 5/8	1 7/8	2 1/8	2 9/16	3	3 1/2	3 15/16	4 3/4			
	DIMENSION B	1 3/16	1	1 1/4	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32			
	DIMENSION D	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8			
	DIMENSION E	2 5/16	2 11/16	3	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16			
	APPROX. WT.	1/4	5/8	1	1 3/4	2 3/8	3 3/4	5	7 3/4			
	LIST PRICE	PRICES ON APPLICATION										

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243. Pressure-Temperature Ratings—page 269.

Reducing fittings can be furnished by boring straight-line blanks. Diameter of fitting bore is equal to the I.D. of Schedule 80 Extra Strong pipe.



# 4000 POUND FORGED STEEL SOCKET WELDING FITTINGS

FOR USE WITH SCHEDULE 160 PIPE

For Steam, Water, Oil, Oil Vapor, Gas or Air

ASTM A105—Grade II



90° Elbow  
Part No. 1460



45° Elbow  
Part No. 1462



Tee  
Part No. 1461



Cross  
Part No. 1463



Lateral  
Part No. 1465

NOMINAL PIPE SIZE	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
DIMENSION C COMMON TO ALL FITTINGS	.855	1.065	1.330	1.675	1.915	2.406	2.906	3.535	4.545
<b>90° ELBOW PART NO. 1460</b>									
	DIMENSION A	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4
	DIMENSION B	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4
	DIMENSION D	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/4
	DIMENSION E	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 1/2
	APPROX. WT.	1 5/16	1 7/16	2 1/4	3 3/16	5 1/4	6 11/16	11 7/8	19 1/4
LIST PRICE	PRICES ON APPLICATION								
<b>45° ELBOW PART NO. 1462</b>									
	DIMENSION A	1	1 1/8	1 5/16	1 11/32	1 11/16	1 23/32	2 1/16	2 1/2
	DIMENSION B	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8
	DIMENSION D	1/2	9/16	5/8	1 7/32	1 1/16	1 9/32	1 3/16	1 1/8
	DIMENSION E	1/2	9/16	1 1/16	1 3/16	1	1 1/8	1 1/4	1 3/8
	APPROX. WT.	7/8	1 5/16	2 1/16	2 1/2	4 5/16	4 13/16	9 5/8	14 1/4
LIST PRICE	PRICES ON APPLICATION								
<b>TEE PART NO. 1461</b>									
	DIMENSION A	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4
	DIMENSION B	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4
	DIMENSION D	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/4
	DIMENSION E	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 1/2
	APPROX. WT.	1 3/8	2	3 5/16	3 3/4	6 1/2	7 7/8	16 5/8	23 1/2
LIST PRICE	PRICES ON APPLICATION								
<b>CROSS PART NO. 1463</b>									
	DIMENSION A	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/8
	DIMENSION B	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8
	DIMENSION D	9/16	5/8	1 1/16	3/4	7/8	7/8	1	7/8
	DIMENSION E	3/4	7/8	1 1/16	1 1/4	1 1/2	1 5/8	2 1/4	2 1/2
	APPROX. WT.	1 1/2	2 1/2	4 1/8	5 1/4	8 3/4	9 7/16	20 1/4	27
LIST PRICE	PRICES ON APPLICATION								
<b>LATERAL PART NO. 1465</b>									
	DIMENSION A	2 9/16	3	3 1/2	3 5/16	4 3/4			
	DIMENSION B	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32			
	DIMENSION D	9/16	5/8	1 1/16	3/4	7/8			
	DIMENSION E	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16			
	APPROX. WT.	2	3 1/16	5 1/8	6 1/4	11 5/16			
LIST PRICE	PRICES ON APPLICATION								

Dimensions in inches. Weights in pounds.

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

Reducing fittings can be furnished by boring straight-line blanks. Pressure-Temperature Ratings—page 269.

Diameter of fitting bore is equal to the I.D. of Schedule 160 pipe.

# 6000 POUND FORGED STEEL SOCKET WELDING FITTINGS

FOR USE WITH DOUBLE EXTRA STRONG PIPE

For Steam, Water, Oil, Oil Vapor, Gas or Air

ASTM A105—Grade II



90° Elbow  
Part No. 1660



45° Elbow  
Part No. 1662



Tee  
Part No. 1661



Cross  
Part No. 1663



Lateral  
Part No. 1665

NOMINAL PIPE SIZE	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
DIMENSION C COMMON TO ALL FITTINGS	.690	.855	1.065	1.330	1.675	1.915	2.406	2.906	3.535	4.545
<b>90° ELBOW PART NO. 1660</b>										
	DIMENSION A	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4
	DIMENSION B	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4
	DIMENSION D	1 9/32	1 1/16	3/4	7/8	1 5/16	1 1/8	1	1 1/2	1 5/8
	DIMENSION E	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 3/4	2 1/8
	APPROX. WT.	1 1/2	7/8	1 1/16	2 1/2	3 1/4	5 5/16	6 3/8	12	19 3/4
	LIST PRICE	PRICES ON APPLICATION								
<b>45° ELBOW PART NO. 1662</b>										
	DIMENSION A	7/8	1	1 1/8	1 5/16	1 11/32	1 11/16	1 23/32	2 1/16	2 1/2
	DIMENSION B	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8
	DIMENSION D	1/2	5/8	1 1/16	1 3/16	2 3/32	1 3/32	2 7/32	1 1/16	1 1/4
	DIMENSION E	3/8	3/8	7/16	1/2	5/8	1 9/32	7/8	1	1 1/4
	APPROX. WT.	9/16	1 1/16	1 5/16	2	2 5/8	4 3/4	5 7/8	7 7/8	12 5/16
	LIST PRICE	PRICES ON APPLICATION								
<b>TEE PART NO. 1661</b>										
	DIMENSION A	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/4
	DIMENSION B	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 3/4
	DIMENSION D	1 9/32	1 1/16	3/4	7/8	1 5/16	1 1/8	1	1 1/2	1 5/8
	DIMENSION E	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 3/4	2 1/8
	APPROX. WT.	1	1 1/16	2 1/16	3 3/8	4 5/16	7 13/16	8 1 1/16	16 5/8	23 13/16
	LIST PRICE	PRICES ON APPLICATION								
<b>CROSS PART NO. 1663</b>										
	DIMENSION A	1 1/8	1 5/16	1 1/2	1 3/4	2	2 3/8	2 1/2	3 1/4	3 3/8
	DIMENSION B	1 5/16	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32	3 5/16	4	4 5/8
	DIMENSION D	1 9/32	1 1/16	3/4	7/8	1 5/16	1 1/8	1	1 1/2	1 1/4
	DIMENSION E	1 7/32	5/8	3/4	7/8	1 1/16	1 1/4	1 1/2	1 3/4	2 1/8
	APPROX. WT.	1	1 1/4	2 1/2	4	5 1/8	9	9 1/2	19 7/8	29 1/2
	LIST PRICE	PRICES ON APPLICATION								
<b>LATERAL PART NO. 1665</b>										
	DIMENSION A	2 1/8	2 9/16	3	3 1/2	3 5/16	4 3/4			
	DIMENSION B	1 1/4	1 1/2	1 13/16	2 3/16	2 7/16	2 31/32			
	DIMENSION D	1 9/32	1 1/16	3/4	7/8	1 5/16	1 1/8			
	DIMENSION E	3	3 9/16	4 1/8	4 13/16	5 3/8	6 7/16			
	APPROX. WT.	1 7/16	2 1/2	3 1/4	5 3/8	6 3/4	12 13/16			
	LIST PRICE	PRICES ON APPLICATION								

Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243. Pressure-Temperature Ratings—page 269.

Reducing fittings can be furnished by boring straight-line blanks. Diameter of fitting bore is equal to the I.D. of Double Extra Strong pipe.

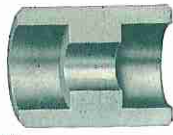
# STEEL SOCKET WELDING COUPLINGS, REDUCERS AND CAPS

FOR USE WITH SCHEDULES 40, 80, 160 AND DOUBLE EXTRA STRONG PIPE

ASTM A105—Grade II



Coupling



Reducer



Cap

NOMINAL PIPE SIZE		1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	
DIMENSION C COMMON TO ALL FITTINGS		.420	.555	.690	.855	1.065	1.330	1.675	1.915	2.406	2.906	3.535	4.545	
<b>COUPLINGS AND REDUCERS</b>														
<p><b>COUPLING</b> Part No. 1246 2000 LB. Part No. 1386 3000 LB. Part No. 1466 4000 LB. Part No. 1666 6000 LB.</p>	2000 LB.	DIMENSION A	1	1	1 1/8	1 3/8	1 1/2	1 3/4	1 7/8	2	2 1/2	2 1/2	2 3/4	3
		DIMENSION B	3/4	3/4	1	1 1/4	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/8	5 1/4
		DIMENSION D	3/8	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8
		APPROX. WT.	1/8	1/8	1/8	3/16	5/16	9/16	1 3/16	1	2	2 5/8	3 7/8	6 5/8
	LIST PRICE PRICES ON APPLICATION													
	3000 LB.	DIMENSION A		1	1 1/8	1 3/8	1 1/2	1 3/4	1 7/8	2	2 1/2	2 1/2	2 3/4	3
		DIMENSION B		7/8	1	1 1/4	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	5 1/2
		DIMENSION D		3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8
		APPROX. WT.		1/8	3/16	1/4	3/8	3/4	1 1/8	1 5/16	2	3 1/4	4 9/16	8 5/8
	LIST PRICE PRICES ON APPLICATION													
4000 LB.	DIMENSION A				1 3/8	1 1/2	1 3/4	1 7/8	2	2 1/2	2 1/2	2 3/4	3	
	DIMENSION B				1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/8	4 5/8	6	
	DIMENSION D				1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8	
	APPROX. WT.				3/8	9/16	1	1 7/16	2	3 3/8	5 1/2	6 5/8	13 1/8	
LIST PRICE PRICES ON APPLICATION														
6000 LB.	DIMENSION A				1 1/8	1 3/8	1 1/2	1 3/4	1 7/8	2	2 1/2	2 1/2	2 3/4	3
	DIMENSION B				1 5/16	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	5	6 1/4
	DIMENSION D				7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1	1 1/8	
	APPROX. WT.				3/8	1/2	3/4	1 9/16	1 13/16	3	4 3/4	6 5/16	9	15 5/8
LIST PRICE PRICES ON APPLICATION														
REDUCERS ONLY SIZE OF REDUCED OUTLET MUST BE SPECIFIED														
<b>CAPS</b>														
<p><b>CAP</b> Part No. 1249 2000 LB. Part No. 1389 3000 LB. Part No. 1469 4000 LB. Part No. 1669 6000 LB.</p>	2000 LB.	DIMENSION A	5/8	5/8	1 1/16	3/4	1 3/16	1	1 1/16	1 3/16	1 3/8	1 1/2	1 5/8	1 7/8
		DIMENSION B	3/4	3/4	1	1 1/4	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/8	5 1/4
		DIMENSION D	3/8	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8
		APPROX. WT.	1/16	1/16	1/8	3/16	5/16	3/8	1 3/16	1 1/8	1 11/16	3	3 5/8	6 11/16
	LIST PRICE PRICES ON APPLICATION													
	3000 LB.	DIMENSION A		1 1/16	3/4	7/8	1	1 1/16	1 3/16	1 1/4	1 1/2	1 1/2	1 3/4	1 7/8
		DIMENSION B		7/8	1	1 1/4	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	5 1/2
		DIMENSION D		3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8
		APPROX. WT.		1/8	3/16	1/4	3/8	7/16	1 5/16	1 3/16	2	3	4 5/8	8 1/2
	LIST PRICE PRICES ON APPLICATION													
4000 LB.	DIMENSION A				7/8	1 5/16	1 1/8	1 3/16	1 3/8	1 1/2	1 5/8	1 3/4	2	
	DIMENSION B				1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/8	4 5/8	6	
	DIMENSION D				1/2	9/16	5/8	1 1/16	3/4	7/8	7/8	1	1 1/8	
	APPROX. WT.				3/8	1/2	1 1/8	1 1/8	2 1/4	3 1/2	5 5/8	6	13 1/2	
LIST PRICE PRICES ON APPLICATION														
6000 LB.	DIMENSION A				1 5/16	1	1 1/16	1 1/4	1 5/16	1 3/8	1 5/8	1 7/8	2 1/8	
	DIMENSION B				1 5/16	1 1/2	1 3/4	2 1/4	2 1/2	3	3 5/8	4 1/4	5	6 1/4
	DIMENSION D				7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1	1 1/8	
	APPROX. WT.				3/8	3/8	5/8	1 3/16	1 3/8	2 1/4	2 7/8	6 3/8	7 5/16	13 1/4
LIST PRICE PRICES ON APPLICATION														

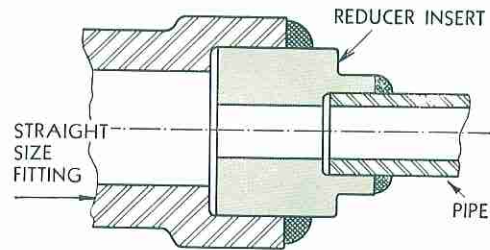
Dimensions in inches. Weights in pounds.  
For information on stainless steel, alloy steel and non-ferrous metal fittings, refer to pages 225-236. Material Specifications—page 243.

Sleeve-Type Couplings and Half Couplings having same overall length as Couplings are also available.  
Pressure-Temperature Ratings—page 269.

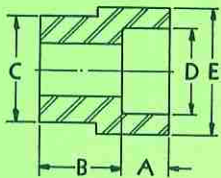
# SOCKET WELDING REDUCER INSERTS

ASTM A105—Grade II

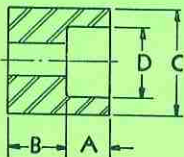
The purpose of Ladish Socket Welding Reducer Inserts is to avoid the delays and extra costs that naturally occur in producing regular Socket Welding Fittings with reduced outlets. Designed for use with straight size fittings, Reducer Inserts serve the same purpose as threaded bushings used with Screwed fittings. The drawing at right illustrates the simplicity of their application.



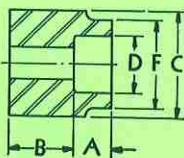
**REDUCER INSERTS**  
 Part No. 1250 Sch. 40 Pipe  
 Part No. 1390 Sch. 80 Pipe  
 Part No. 1470 Sch. 160 Pipe



TYPE 1



TYPE 2

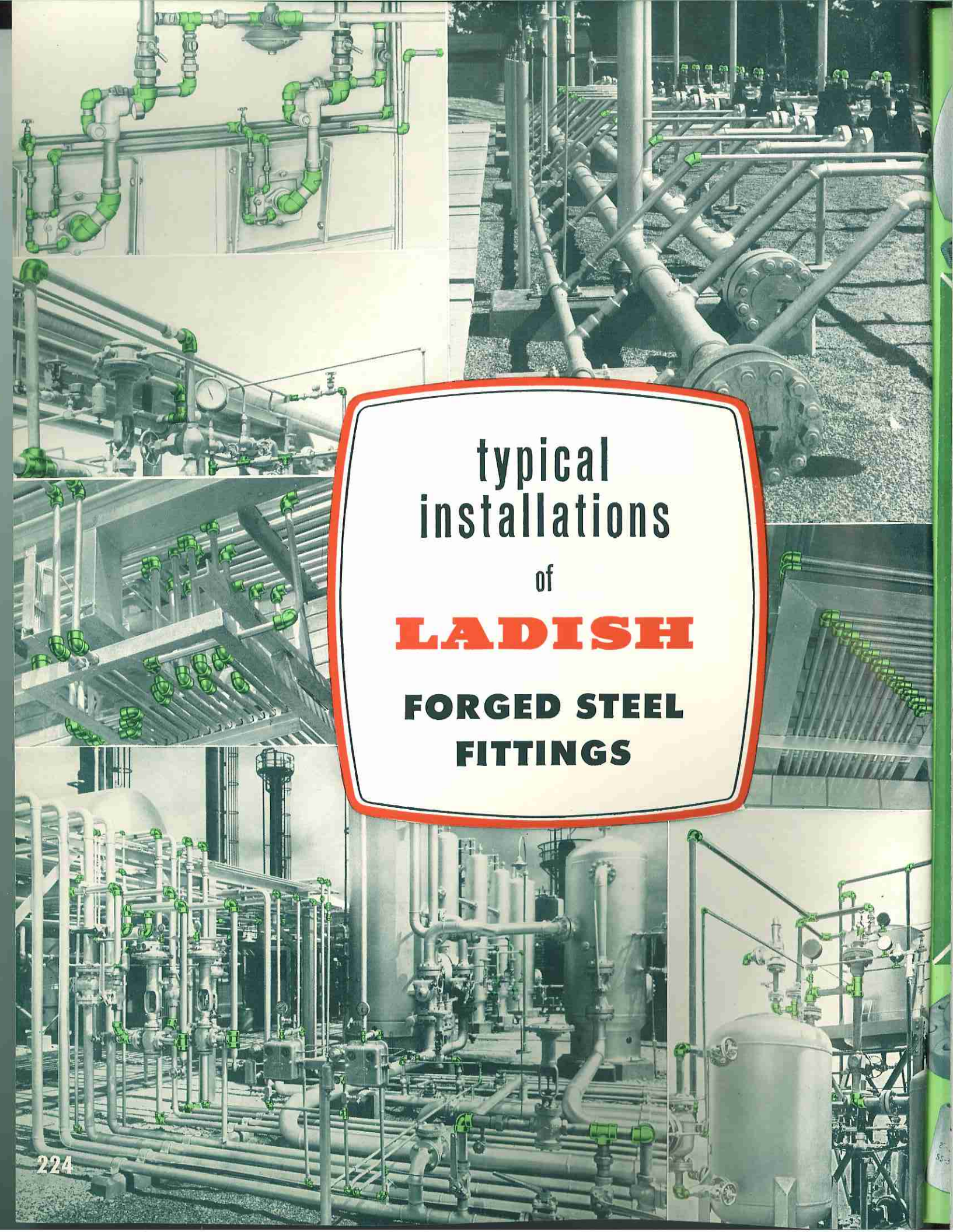


TYPE 3

SIZE INCHES	DIAM. C	DIAM. D	FOR USE WITH SCHEDULES 40 AND 80 PIPE							FOR USE WITH SCHEDULE 160 PIPE			
			INSERT TYPE	DIMENSIONS				INSERT TYPE	DIMENSIONS				
				A	B	E	F		A	B	E	F	
1/2 x 3/8	.850	.690	1	7/16	15/16	1			1	1/2	1 1/16	1 1/8	
1/2 x 1/4	.850	.555	2	3/8	5/8				2	7/16	1 1/16		
1/2 x 1/8	.850	.420	3	3/8	5/8			1 1/16	3	7/16	1 1/16		3/4
3/4 x 1/2	1.060	.855	1	1/2	1	1 1/4			1	9/16	1 3/16	1 3/8	
3/4 x 3/8	1.060	.690	2	7/16	9/16				2	1/2	3/4		
3/4 x 1/4	1.060	.555	3	3/8	5/8			7/8	2	7/16	1 3/16		
3/4 x 1/8	1.060	.420	3	3/8	5/8			7/8	3	7/16	1 3/16		7/8
1 x 3/4	1.325	1.065	1	9/16	15/16	1 1/2			1	5/8	1 1/2	1 5/8	
1 x 1/2	1.325	.855	2	1/2	13/16				2	9/16	1 1/4		
1 x 3/8	1.325	.690	3	7/16	7/8			1	3	1/2	1		1 1/8
1 x 1/4	1.325	.555	3	3/8	15/16			1	3	7/16	1 1/16		1 1/8
1 1/4 x 1	1.670	1.330	1	5/8	1 1/16	1 3/4			1	1 1/16	1 9/16	2	
1 1/4 x 3/4	1.670	1.065	2	9/16	13/16				2	5/8	1 1/4		
1 1/4 x 1/2	1.670	.855	3	1/2	7/8			1 1/4	3	9/16	1 3/16		1 3/8
1 1/2 x 1 1/4	1.910	1.675	1	1 1/16	1 3/16	2 1/8			1	3/4	1 1 3/16	2 5/16	
1 1/2 x 1	1.910	1.330	2	5/8	13/16				2	1 1/16	1 7/16		
1 1/2 x 3/4	1.910	1.065	3	9/16	7/8			1 1/2	3	5/8	1 3/8		1 5/8
1 1/2 x 1/2	1.910	.855	3	1/2	15/16			1 1/4	3	9/16	1 7/16		1 3/8
2 x 1 1/2	2.400	1.915	2	3/4	13/16				1	7/8	1 5/8	2 5/8	
2 x 1 1/4	2.400	1.675	3	1 1/16	7/8			2 1/8	2	3/4	1 5/16		2
2 x 1	2.400	1.330	3	5/8	15/16			1 3/4	3	1 1/16	1 5/16		2
2 x 3/4	2.400	1.065	3	9/16	1			1 1/2	3	5/8	1 3/8		1 5/8
2 x 1/2	2.400	.855	3	1/2	1 1/16			1 1/4	3	9/16	1 7/16		1 3/8
2 1/2 x 2	2.900	2.406	1	7/8	1 15/16	3			1	7/8	1 15/16	3 1/8	
2 1/2 x 1 1/2	2.900	1.915	3	3/4	1 3/4			2 1/2	3	7/8	1 9/16		2 5/8
2 1/2 x 1 1/4	2.900	1.675	3	1 1/16	1 13/16			2 1/8	3	3/4	1 9/16		2 5/16
2 1/2 x 1	2.900	1.330	3	5/8	1 3/4			1 3/4	3	1 1/16	1 5/8		2
3 x 2 1/2	3.530	2.906	1	7/8	1 13/16	3 5/8			1	7/8	2 1/4	3 7/8	
3 x 2	3.530	2.406	3	7/8	1 5/8			3	3	7/8	1 7/8		3 5/16
3 x 1 1/2	3.530	1.915	3	3/4	1 9/16			2 1/2	3	7/8	1 7/8		2 5/8
3 x 1 1/4	3.530	1.675	3	1 1/16	1 9/16			2 1/8	3	3/4	1 7/8		2 5/16
3 x 1	3.530	1.330	3	5/8	1 1/2			1 3/4	3	1 1/16	1 13/16		2
4 x 3	4.530	3.535	3	1 1/8	2 1/8			4 5/16	1	1 1/8	2 1/2	4 5/8	
4 x 2 1/2	4.530	2.906	3	1 5/16	2 1/16			3 5/8	3	7/8	2 1/16		3 7/8
4 x 2	4.530	2.406	3	7/8	2 1/8			3	3	7/8	2 1/16		3 5/16
4 x 1 1/2	4.530	1.915	3	3/4	2 1/8			2 1/2	3	7/8	1 7/8		2 5/8
4 x 1 1/4	4.530	1.675	3	1 1/16	2 1/16			2 1/8	3	3/4	2		2 5/16
4 x 1	4.530	1.330	3	5/8	1 7/8			1 3/4	3	1 1/16	1 7/8		2

PRICES ON APPLICATION

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



typical  
installations

of

**LADISH**

**FORGED STEEL  
FITTINGS**



**TO MARK PROGRESS**

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