

# Instrumentation Pipe Fittings



**1CLN**  
Close Nipple

69



**1FMA**  
Female to Male  
Adapter

69



**1FPC**  
Female  
Pipe Cap

69



**1FPRU**  
Female Pipe  
Reducer Union

69



**1FPU**  
Female  
Pipe Union

70



**1HLN**  
Hex  
Long Nipple

70



**1HN**  
Hex Nipple

70



**1HRN**  
Hex  
Reducing Nipple

71



**1MPP**  
Male Pipe  
Plug

71



**1RAFM**  
Reducer Adapter -  
Female to Male

71



**1RBMF**  
Reducer Bushing -  
Male to Female

72



**2FF**  
Female Pipe  
Elbow

72



**2FM**  
Female - Male  
Pipe Elbow

72



**2FMR**  
Female - Male  
Reducer Pipe Elbow

73



**2MM**  
Male Pipe  
Elbow

73



**3FFF**  
All Female  
Pipe Elbow

73



**3FFM**  
Pipe Tee - Female -  
Female - Male

74



**3FMF**  
Pipe Tee - Female -  
Male - Female

74



**3MMM**  
All Male  
Pipe Tee

74



**4FPCR**  
Female Pipe Cross

74

## Instrumentation Pipe Fittings

Tylok Instrumentation Pipe Fittings are offered in popular configurations such as reducing adapters, reducing bushings, pipe unions, elbows, tees, crosses, etc.

Fittings are manufactured to the same high quality standards as other Tylok Fittings. Each fitting is thoroughly cleaned to eliminate system contamination and features an attractive surface finish to enhance the appearance of modern scientific instrumentation and equipment.

Fittings are manufactured from materials meeting applicable ASTM or ASME specifications, with pipe threads which meet or exceed ANSI/ASME B1.20.1 requirements. Strict quality controls procedures are followed throughout production.

Pipe thread connections are very common in today's industry. They are relatively easy to work with because of the common sizes and dimensions throughout manufacturing. It is important to use a thread sealant.

These products range from pipe "dopes" to Teflon tape, all of which can be purchased through your local Tylok Distributor.

## Design/Features

Tylok Instrumentation Pipe Fittings are manufactured to the same high quality standards as other Tylok Fittings. Each fitting is thoroughly cleaned to eliminate system contamination and features an attractive surface finish to enhance the appearance of modern scientific instrumentation and equipment.

## Technical Support & Training

Tylok Instrumentation Inc. ensures all of its Distributors are trained on the proper installation of fittings and valves. Tylok Distributors are trained to provide the technical support you deserve. Additionally, our Distributors will help in finding solutions for specific applications. Contact your local Tylok Distributor for further information.

## Quality Management System

SAI Global has registered Tylok International's Quality Management System to ISO 9001. The quality system complies with the international standard ISO 9001 and its technical equivalent, ANSI/ISO/ASQ 9001. Tylok strives to continuously improve the effectiveness of the Quality Management System.



ISO 9001

# Pipe Fittings

Tylok Instrumentation Pipe Fittings can be identified through the part number as to material, pipe size, configuration, and thread connection. The part number describes a complete fitting. The size nomenclature to describe a tee fitting is from left (1) to right (2) and down (3).

Special Configurations available upon request.

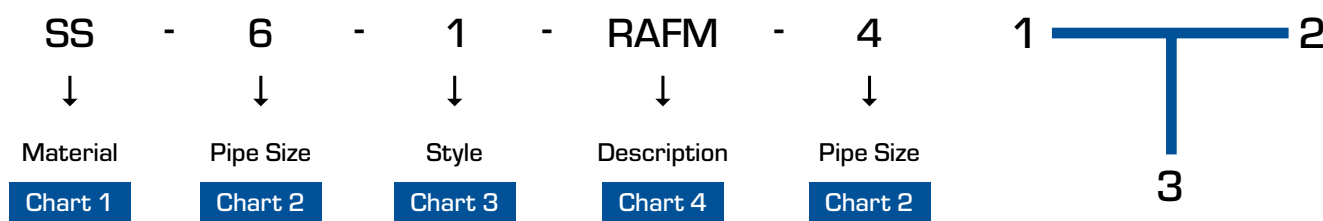


Chart 1- Material	
	Brass
	Steel
	Stainless Steel

Chart 3- Style	
1	Straight
2	Elbow
3	Tee
4	Cross

Designator	Pipe Thread (NPT)	Pipe Thread BSPP/BSPT
1	1/16-27	1/16-28
2	1/8-27	1/8-28
3	-	-
4	1/4-18	1/4-19
5	-	-
6	3/8-18	3/8-19
8	1/2-14	1/2-14
10	-	-
12	3/4-14	3/4-14
14	-	-
16	10-111/2	10-11

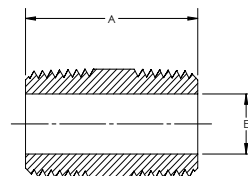
Chart 4- Description	
1FMA	Female to Male Adapter
1FPC	Female Pipe Cap
1FPRU	Female Pipe Reducer Union
1HLN	Hex Long Nipple
1HN	Hex Nipple
1HRN	Hex Reducing Nipple
1MPP	Male Pipe Plug
1RAFM	Reducer Adapter-Female to Male
1RBMF	Reducer Bushing-Male to Female

Chart 4- Description	
2FF	Female Pipe Elbow
2FM	Female-Male Pipe Elbow
2FMR	Female-Male Reducer Pipe Elbow
2MM	Male Pipe Elbow
3FFF	All Female Pipe Tee
3FMF	Pipe Tee-Female-Male-Female
3MMM	All Male Pipe Tee
4FPCR	Female Pipe Cross
1MDF	Mud Dauber Fitting

Part No.	Male Pipe Size	A	E Thru Hole
2-1CLN	1/8	0.75	0.19
4-1CLN	1/4	1.13	0.28
6-1CLN	3/8	1.13	0.38
8-1CLN	1/2	1.5	0.47
12-1CLN	3/4	1.5	0.63
16-1CLN	1	1.88	0.88

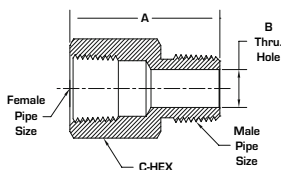
## 1CLN

Close Nipple



## 1FMA

Female to Male Adapter

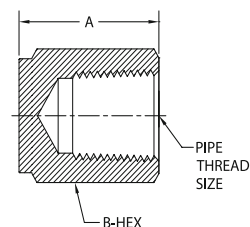


Part No.	Female Pipe Size	Male Pipe Size	A	B Thru Hole	C Hex
2-1FMA	1/8	1/8	1.062	.187	9/16
4-1FMA	1/4	1/4	1.375	.281	3/4
6-1FMA	3/8	3/8	1.562	.375	7/8
8-1FMA	1/2	1/2	1.906	.468	1-1/16
12-1FMA	3/4	3/4	1.937	.625	1-5/16
16-1FMA	1	1	2.281	.875	1-5/8

Part No.	Pipe Thread Size	A	B Hex
2-1FPC	1/8	.750	9/16
4-1FPC	1/4	.906	3/4
6-1FPC	3/8	1.031	7/8
8-1FPC	1/2	1.343	1-1/16
12-1FPC	3/4	1.437	1-5/16
16-1FPC	1	1.625	1-5/8

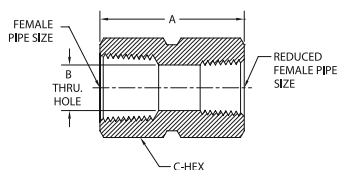
## 1FPC

Female Pipe Cap



## 1FPRU

Female Pipe Reducer Union



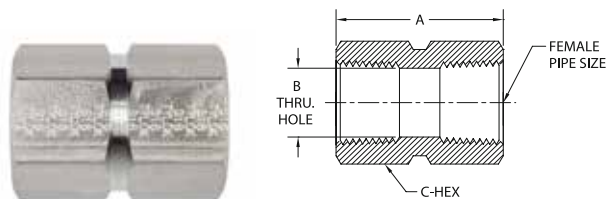
Part No.	Female Pipe Size	Reduced Female Pipe Size	A	B Thru Hole	C Hex
4-1FPRU-2	1/8	1/8	1.062	.187	9/16
6-1FPRU-4	1/4	1/4	1.375	.281	3/4
8-1FPRU-2	3/8	3/8	1.562	.375	7/8
8-1FPRU-4	1/2	1/2	1.906	.468	1-1/16
8-1FPRU-6	3/4	3/4	1.937	.625	1-5/16
12-1FPRU-4	1	1	2.281	.875	1-5/8
12-1FPRU-8	1/2	1/2	1.906	.468	1-1/16
16-1FPRU-8	3/4	3/4	1.937	.625	1-5/16
16-1FPRU-12	1	1	2.281	.875	1-5/8

# 1FPU, 1HLN, 1HN

Part No.	Female Pipe Size	A	B Thru Hole	C Hex
2-1FPU	1/8	.812	.328	9/16
4-1FPU	1/4	1.187	.421	3/4
6-1FPU	3/8	1.312	.562	7/8
8-1FPU	1/2	1.625	.687	1-1/16
12-1FPU	3/4	1.687	.890	1-5/16
16-1FPU	1	2.000	1.125	1-5/8

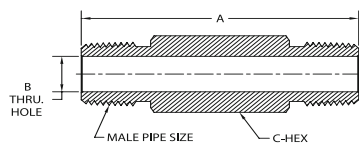
## 1FPU

### Female Pipe Union



## 1HLN

### Hex Long Nipple

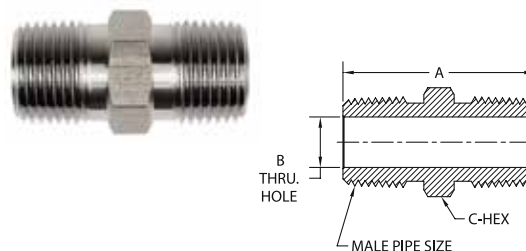


Part No.	Male Pipe Size	A	B Thru Hole	C Hex
2-1HLN	1/8	* Made to Order Specify Size	.187	7/16
4-1HLN	1/4		.281	9/16
6-1HLN	3/8		.3751	1/16
8-1HLN	1/2		.468	7/8
12-1HLN	3/4		.625	1-1/16
16-1HLN	1		.875	1-3/8

Part No.	Male Pipe Size	A	B Thru Hole	C Hex
1-1HN	1/16	1.01	.125	3/8
2-1HN	1/8	1.01	.187	7/16
4-1HN	1/4	1.40	.281	9/16
6-1HN	3/8	1.43	.375	11/16
8-1HN	1/2	1.84	.468	7/8
12-1HN	3/4	1.84	.625	1-1/16
16-1HN	1	2.32	.875	1-3/8

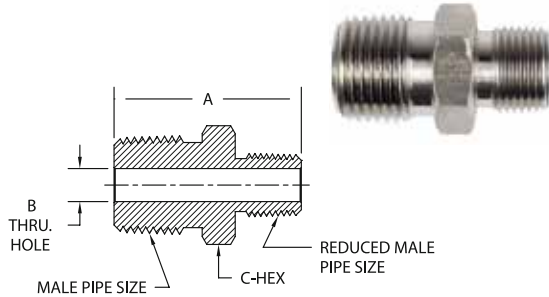
## 1HN

### Hex Nipple



## 1HRN

### Hex Reducing Nipple

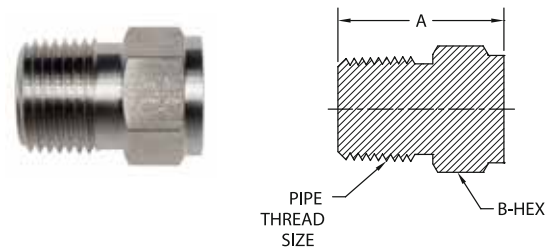


Part No.	Male Pipe Size	Reduced Male Pipe Size	A	B Thru Hole	C Hex
2-1HRN-1	1/8	1/16	1.000	.125	7/16
4-1HRN-2	1/4	1/8	1.187	.187	9/16
6-1HRN-2	3/8	1/8	1.218	.187	1/16
6-1HRN-4	3/8	1/4	1.406	.281	11/16
8-1HRN-2	1/2	1/8	1.406	.187	7/8
8-1HRN-4	1/2	1/4	1.593	.281	7/8
8-1HRN-6	1/2	3/8	1.625	.375	7/8
12-1HRN-4	3/4	1/4	1.625	.281	1-1/16
12-1HRN-8	3/4	1/2	1.812	.468	1-1/16
16-1HRN-4	1	1/4	1.906	.281	1-3/8
16-1HRN-8	1	1/2	2.093	.468	1-3/8
16-1HRN-12	1	3/4	2.093	.625	1-3/8

Part No.	Pipe Thread Size	A	B Hex
1-1MPP	1/16	.750	3/8
2-1MPP	1/8	.750	7/16
4-1MPP	1/4	1.000	9/16
6-1MPP	3/8	1.000	11/16
8-1MPP	1/2	1.312	7/8
12-1MPP	3/4	1.375	1-1/16
16-1MPP	1	1.500	1-3/8

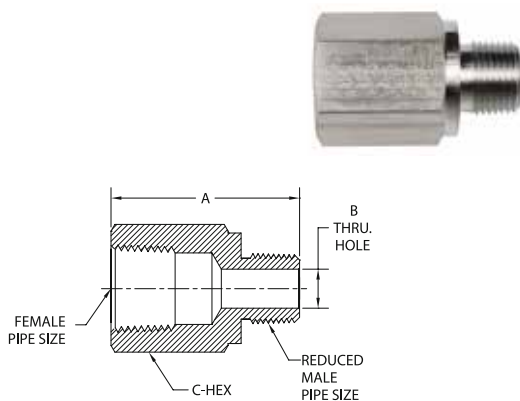
## 1MPP

### Male Pipe Plug



## 1RAFM

### Reducer Adapter- Male to Female



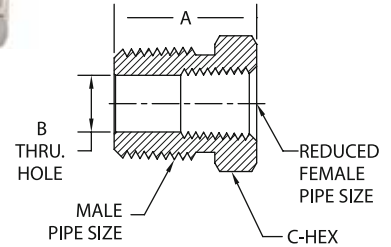
Part No.	Female Pipe Size	Reduced Male Pipe Size	A	B Thru Hole	C Hex
2-1RAFM-1	1/8	1/16	1.093	.125	9/16
4-1RAFM-2	1/4	1/8	1.250	.187	3/4
6-1RAFM-2	3/8	1/8	1.437	.187	7/8
6-1RAFM-4	3/8	1/4	1.562	.281	7/8
8-1RAFM-2	1/2	1/8	1.687	.187	1-1/16
8-1RAFM-4	1/2	1/4	1.812	.281	1-1/16
8-1RAFM-6	1/2	3/8	1.812	.375	1-1/16
12-1RAFM-4	3/4	1/4	1.968	.281	1-5/16
12-1RAFM-6	3/4	3/8	1.968	.375	1-5/16
12-1RAFM-8	3/4	1/2	2.062	.468	1-5/16
16-1RAFM-4	1	1/4	2.125	.281	1-5/8
16-1RAFM-8	1	1/2	2.250	.468	1-5/8
16-1RAFM-12	1	3/4	2.250	.625	1-5/8

# 1RBMF, 2FF, 2FM

Part No.	Male Pipe Size	Reduced Female Pipe Size	A	B Thru Hole	C Hex
2-1RBMF-1	1/8	1/16	1.000	.187	7/16
4-1RBMF-2	1/4	1/8	1.000	.281	9/16
6-1RBMF-2	3/8	1/8	.843	.328	11/16
6-1RBMF-4	3/8	1/4	1.125	.375	3/4
8-1RBMF-2	1/2	1/8	1.062	.328	7/8
8-1RBMF-4	1/2	1/4	1.062	.421	7/8
8-1RBMF-6	1/2	3/8	1.312	.468	7/8
12-1RBMF-4	3/4	1/4	1.062	.421	1-1/16
12-1RBMF-6	3/4	3/8	1.062	.562	1-1/16
12-1RBMF-8	3/4	1/2	1.562	.625	1-1/16
16-1RBMF-4	1	1/4	1.343	.421	1-3/8
16-1RBMF-6	1	3/8	1.343	.562	1-3/8
16-1RBMF-8	1	1/2	1.343	.687	1-3/8
16-1RBMF-12	1	3/4	1.750	.875	1-3/8

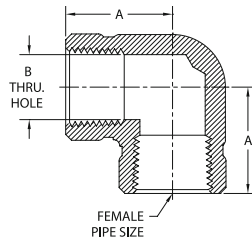
## 1RBMF

### Reducer Bushing- Male to Female



## 2FF

### Female Pipe Elbow

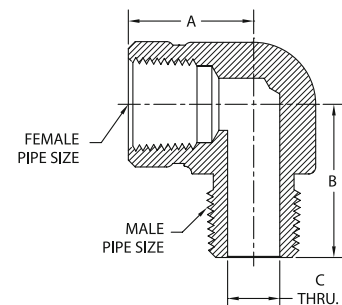


Part No.	Female Pipe Size	A	B Thru Hole
2-2FF-2	1/8	.843	.328
4-2FF-4	1/4	.968	.421
6-2FF-6	3/8	1.000	.562
8-2FF-8	1/2	1.125	.687
12-2FF-12	3/4	1.437	.890

Part No.	Pipe Size	A	B	C Thru Hole
1-2FM-1	1/16	.750	.718	.125
2-2FM-2	1/8	.843	.843	.187
4-2FM-4	1/4	.843	1.093	.281
6-2FM-6	3/8	1.000	1.125	.375
8-2FM-8	1/2	1.125	1.375	.468
12-2FM-12	3/4	1.437	1.562	.625
16-2FM-16	1	1.906	1.906	.875

## 2FM

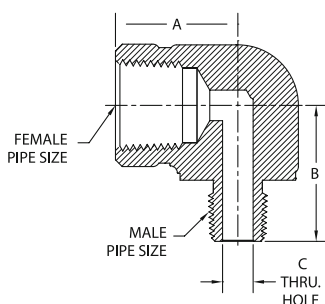
### Female-Male Pipe Elbow





## 2FMR

### Female-Male Reducer Pipe Elbow

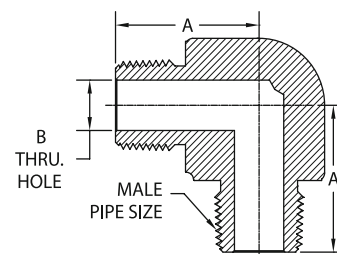


Part No.	Female Pipe Size	Male Pipe Size	A	B	C Thru Hole
2-2FMR-1	1/8	1/16	.750	.750	.125
4-2FMR-2	1/4	1/8	.843	.937	.187
6-2FMR-4	3/8	1/4	1.062	1.062	.281
8-2FMR-4	1/2	1/4	1.125	1.250	.281
8-2FMR-6	1/2	3/8	1.125	1.250	.375

Part No.	Male Pipe Size	A	B Thru Hole
2-2MM-2	1/8	.843	.328
4-2MM-4	1/4	.968	.421
6-2MM-6	3/8	1.000	.562
8-2MM-8	1/2	1.125	.687
12-2MM-12	3/4	1.437	.890
16-2MM-16	3/4	1.437	.890

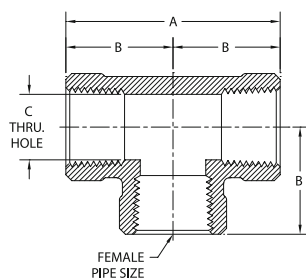
## 2MM

### Male Pipe Elbow



## 3FFF

### All Female Pipe Tee



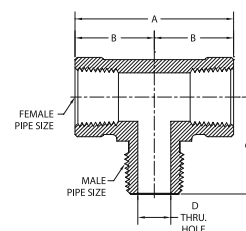
Part No.	Female Pipe Size	A	B	C Thru Hole
2-3FFF-2	1/8	1.687	.843	.328
4-3FFF-4	1/4	1.687	.843	.421
6-3FFF-6	3/8	2.000	1.000	.562
8-3FFF-8	1/2	2.625	1.125	.687
12-3FFF-12	3/4	1.125	1.312	.890
16-3FFF-16	1	3.250	1.6251	.125

# 3FFM, 3FMF, 3MMM, 4FPCR

Part No.	Pipe Size	A	B	C	D Thru Hole
2-3FFM-2	1/8	1.687	.843	.843	.187
4-3FFM-4	1/4	1.875	.937	1.000	.281
6-3FFM-6	3/8	2.000	1.000	1.125	.375
8-3FFM-8	1/2	2.250	1.125	1.375	.468
12-3FFM-12	3/4	2.750	1.375	1.625	.625

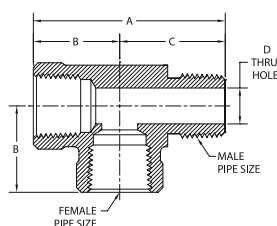
## 3FFM

### Pipe Tee Female - Female - Male



## 3FMF

### Pipe Tee - Female - Male - Female

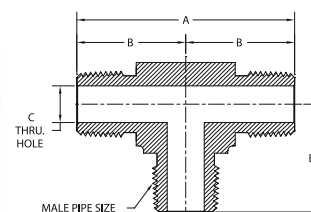


Part No.	Pipe Size	A	B	C	D Thru Hole
2-3FMF-2	1/8	1.687	.843	.843	.187
4-3FMF-4	1/4	1.890	.843	1.046	.281
6-3FMF-6	3/8	2.125	1.000	1.125	.375
8-3FMF-8	1/2	2.500	1.125	1.375	.468
12-3FMF-12	3/4	2.937	1.437	1.500	.625

Part No.	Female Pipe Size	A	B	C Thru Hole
2-3MMM-2	1/8	1.437	.718	.187
4-3MMM-4	1/4	1.875	.937	.281
6-3MMM-6	3/8	2.000	1.000	.375
8-3MMM-8	1/2	2.750	1.375	.468
12-3MMM-12	3/4	2.750	1.375	.625

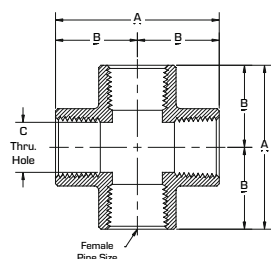
## 3MMM

### All Male Pipe Tee



## 4FPCR

### Female Pipe Cross



Part No.	Female Pipe Size	A	B	C Thru Hole
2-4FPCR	1/8	1.687	.843	.328
4-4FPCR	1/4	1.687	.843	.421
6-4FPCR	3/8	2.125	1.062	.562
8-4FPCR	1/2	2.250	1.125	.687
12-4FPCR	3/4	2.875	1.437	.890
16-4FPCR	1	3.250	1.625	1.125

## PIPE THREAD SPECIFICATIONS

Tylok Pipe Fittings are manufactured from materials meeting applicable ASTM or ASME specifications, with pipe threads which meet or exceed ANSI B1.20.1 requirements. Strict quality control procedures are followed throughout production to provide the finest possible product.

**Materials: Brass • 316 Stainless Steel • Steel**

These charts are to be used as a guide only and are based on normal wall thicknesses, used for the various sizes. These ratings may vary widely from effects such as the proper use of sealants, size of stock, temperature, corrosion factors, etc. Therefore, Tylok International, Inc. assumes no responsibility for its accuracy in any individual design.

Pressure ratings for Tylok tube fittings that have differing end connection styles shall use the lowest of the pressure rating.

Suggested Maximum Operating Pressures for Pipe Threads (psig)				
NPT Size	316 SS & Carbon Steel		Brass	
	Male	Female	Male	Female
1/16"	11000	6700	5500	3300
1/8"	10000	6500	5000	3200
1/4"	8000	6600	4000	3300
3/8"	7800	5300	3900	2600
1/2"	7700	4900	3800	2400
3/4"	7300	4600	3600	2300
1"	5300	4400	2600	2200

Tylok Instrumentation Fittings are rated at the following temperatures:	
316 Stainless	-325°F to 1000°F [-198°C to 648°C]
Brass	-40°F to 400°F [-40°C to 204°C]
Steel	-65°F to 375°F [-54°C to 190°C]

Consideration should be given to maximize temperature ratings if fittings and/or tubing are coated or plated.

## TUBE PRESSURE DE-RATING FACTORS ELEVATED TEMPERATURES

The table lists de-rating factors that must be considered in applications above that of ambient temperatures.

### Example:

Type 316 Stainless Steel 1/4" O.D.x.0.49" wall at 800°F is 7,500 PSI x .79 = 5,925 psig.

Therefore, the suggested allowable working pressure for 316 Stainless Steel (1/4" O.D. with .049" tube wall) at 800°F is 5,925 psig.

Temperatures		Tubing Material		
°F	°C	Carbon	304 SS	316 SS
200	93	0.95	1.00	1.00
300	149	0.90	1.00	1.00
400	204	0.87 *	0.93	0.96
500	260		0.87	0.89
600	316		0.82	0.85
700	371		0.8	0.81
800	427		0.76	0.79
900	482		0.73	0.77
1000	538		0.69	0.76

\* Based on 375°F (190°C) max

Temperatures		Tubing Material
°F	°C	Copper
100	38	1.00
150	66	0.85
200	93	0.80
250	121	0.80
300	149	0.78
350	177	0.66
400	204	0.50

## Temperature Ratings

Tylok Instrumentation Pipe Fittings are rated at the following temperatures:

**316 Stainless:** -325°F to 1000°F    **Brass:** -40°F to 375°F    **Steel:** -20°F to 400°F  
 [-198°C to 538°C]                      [-40°C to 204°C]                      [-28°C to 204°C]

**Note:** Consideration should be given to maximum temperature ratings and/or tubing are coated or plated

## Heat Traceability

Tylok Instrumentation Pipe Fittings are completely heat code traceable back to the original mill heat from which it was made. Starting with the original billet, the mill creates a certificate which completely describes the chemical & physical makeup. The material certifications can be provided when calling Tylok and giving the heat code stamp marked on the part itself, along with the part number.

## Raw Material Specifications

Fitting Material	Bar Stock	Forging
Brass	ASTM-B16 Alloy 360 ASTM-B453 Alloy 345	ASTM-B124 Alloy 377
Stainless Steel	ASTM-A276 ASME-SA-479 Type 316-SS	ASME-SA-182 Type 316-SS
Steel	ASTM-A108	-