

Instrumentation Pipe Fittings



1CLN
Close Nipple

83



1FMA
Female to Male
Adapter

83



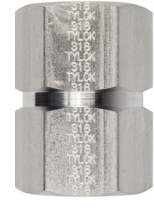
1FPC
Female
Pipe Cap

83



1FPRU
Female Pipe
Reducer Union

83



1FPU
Female
Pipe Union

84



1HLN
Hex
Long Nipple

84



1HN
Hex Nipple

84



1HRN
Hex
Reducing Nipple

85



1MPP
Male Pipe
Plug

85



1RAFM
Reducer Adapter -
Female to Male

85



1RBMF
Reducer Bushing -
Male to Female

86



2FF
Female Pipe
Elbow

86



2FM
Female - Male
Pipe Elbow

86



2FMR
Female - Male
Reducer Pipe Elbow

87



2MM
Male Pipe
Elbow

87



3FFF
All Female
Pipe Elbow

87



3FFM
Pipe Tee - Female -
Female - Male

88



3FMF
Pipe Tee - Female -
Male - Female

88



3MMM
All Male
Pipe Tee

88



4FPCR
Female Pipe Cross

88

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 purchase 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

How to Order

Tylok Instrumentation Pipe Fittings are ordered as listed in this catalog by inserting the material code before the part number.

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.

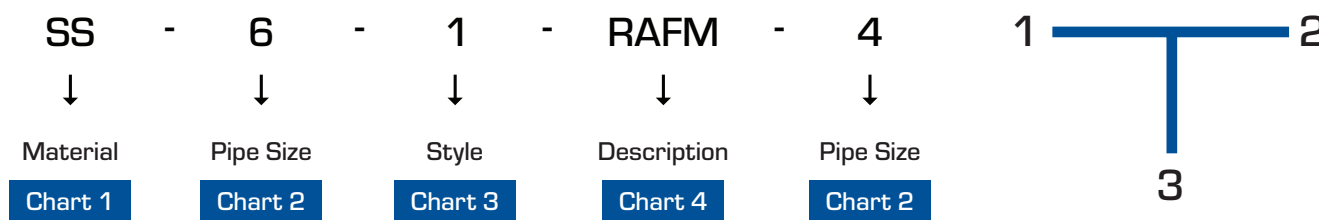


Chart 1- Material	
	Brass
	Steel
	Stainless Steel

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

Chart 2- Pipe Size		
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	10-11 1/2	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

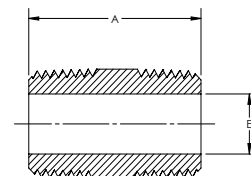
Chart 4- Description	
2FF	Female Pipe Elbow
2FM	Female-Male Pipe Elbow
2FMR	Female-Male Reducer Pipe Elbow
2MM	Male Pipe Elbow
3FFF	All Female Pipe Tee
3FMF	Pipe Tee-Female-Male-Female
3MMM	All Male Pipe Tee
4FPCR	Female Pipe Cross
1MDF	Mud Dauber Fitting

1CLN, 1FMA, 1FPC, 1FPRU

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

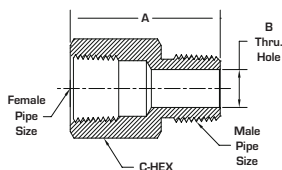
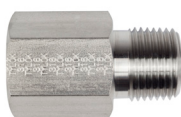
1CLN

Close Nipple



1FMA

Female to Male Adapter

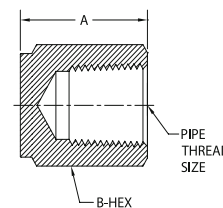


Part No.	Interchanges With	Female Pipe Size	Male Pipe Size	A	B Thru Hole	C Hex
2-1FMA	2-A	1/8	1/8	1.062	.187	9/16
4-1FMA	4-A	1/4	1/4	1.375	.281	3/4
6-1FMA	6-A	3/8	3/8	1.562	.375	7/8
8-1FMA	8-A	1/2	1/2	1.906	.468	1-1/16
12-1FMA	12-A	3/4	3/4	1.937	.625	1-5/16
16-1FMA	16-A	1	1	2.281	.875	1-5/8

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

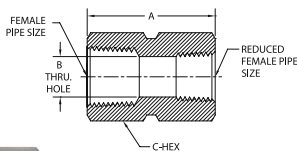
1FPC

Female Pipe Cap



1FPRU

Female Pipe Reducer Union



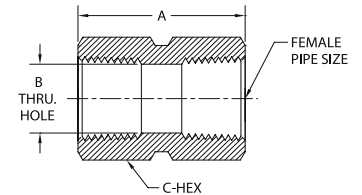
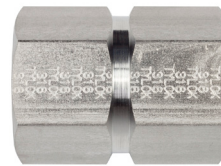
Part No.	Interchanges With	Female Pipe Size	Reduced Female Pipe Size	A	B Thru Hole	C Hex
4-1FPRU-2	4-HRCG-2	1/8	1/8	1.062	.187	9/16
6-1FPRU-4	6-HRCG-4	1/4	1/4	1.375	.281	3/4
8-1FPRU-2	8-HRCG-2	3/8	3/8	1.562	.375	7/8
8-1FPRU-4	8-HRCG-4	1/2	1/2	1.906	.468	1-1/16
8-1FPRU-6	8-HRCG-6	3/4	3/4	1.937	.625	1-5/16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

1FPU, 1HLN, 1HN

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

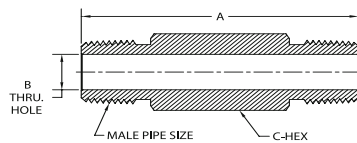
1FPU

Female Pipe Union



1HLN

Hex Long Nipple

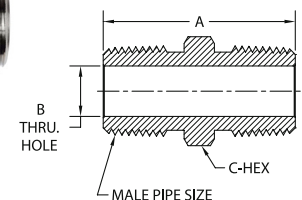
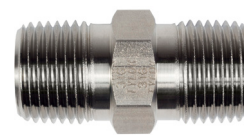


Part No.	Interchanges With	Male Pipe Size	A	B Thru Hole	C Hex
2-1HLN	2-1HLN- 2.00	1/8	* Made to Order Specify Size	.187	7/16
4-1HLN	4-1HLN- 2.00	1/4		.281	9/16
6-1HLN	6-1HLN- 2.00	3/8		.3751	1/16
8-1HLN	8-1HLN- 2.00	1/2		.468	7/8
12-1HLN	12-1HLN- 2.00	3/4		.625	1-1/16
16-1HLN	16-1HLN- 2.00	1		.875	1-3/8

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

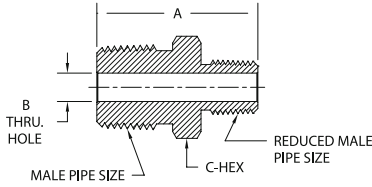
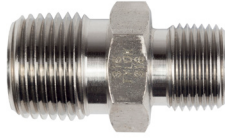
1HN

Hex Nipple



1HRN

Hex Reducing Nipple

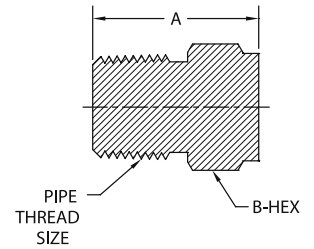
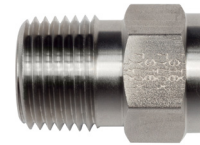


Part No.	Interchanges With	Male Pipe Size	Reduced Male Pipe Size	A	B Thru Hole	C Hex
2-1HRN-1	2-HRN-1	1/8	1/16	1.000	.125	7/16
4-1HRN-2	4-HRN-2	1/4	1/8	1.187	.187	9/16
6-1HRN-2	6-HRN-2	3/8	1/8	1.218	.1871	1/16
6-1HRN-4	6-HRN-4	3/8	1/4	1.406	.281	11/16
8-1HRN-2	8-HRN-2	1/2	1/8	1.406	.187	7/8
8-1HRN-4	8-HRN-4	1/2	1/4	1.593	.281	7/8
8-1HRN-6	8-HRN-6	1/2	3/8	1.625	.375	7/8
12-1HRN-4	12-HRN-4	3/4	1/4	1.625	.281	1-1/16
12-1HRN-8	12-HRN-8	3/4	1/2	1.812	.468	1-1/16
16-1HRN-4	16-HRN-4	1	1/4	1.906	.281	1-3/8
16-1HRN-8	16-HRN-8	1	1/2	2.093	.468	1-3/8
16-1HRN-12	16-HRN-12	1	3/4	2.093	.625	1-3/8

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

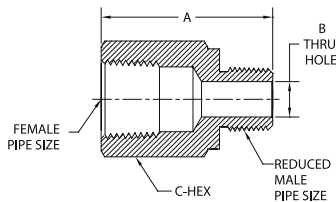
1MPP

Male Pipe Plug



1RAFM

Reducer Adapter - Male to Female



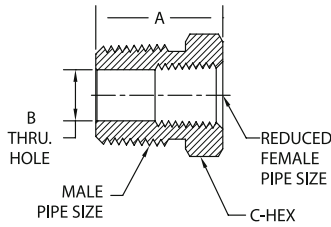
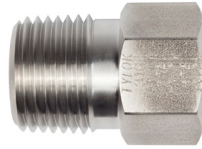
Part No.	Interchanges With	Female Pipe Size	Reduced Male Pipe Size	A	B Thru Hole	C Hex
2-1RAFM-1	2-RA-1	1/8	1/16	1.093	.125	9/16
4-1RAFM-2	4-RA-2	1/4	1/8	1.250	.187	3/4
6-1RAFM-2	6-RA-2	3/8	1/8	1.437	.187	7/8
6-1RAFM-4	6-RA-4	3/8	1/4	1.562	.281	7/8
8-1RAFM-2	8-RA-2	1/2	1/8	1.687	.187	1-1/16
8-1RAFM-4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

1RBMF, 2FF, 2FM

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

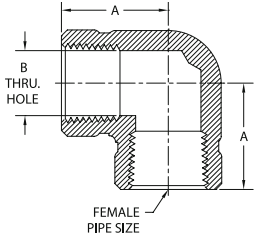
1RBMF

Reducer Bushing-
Male to Female



2FF

Female Pipe Elbow

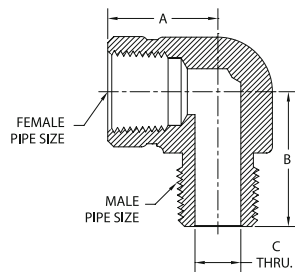


Part No.	Interchanges With	Female Pipe Size	A	B Thru Hole
2-2FF-2	2-E	1/8	.843	.328
4-2FF-4	4-E	1/4	.968	.421
6-2FF-6	6-E	3/8	1.000	.562
8-2FF-8	8-E	1/2	1.125	.687
12-2FF-12	12-E	3/4	1.437	.890

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

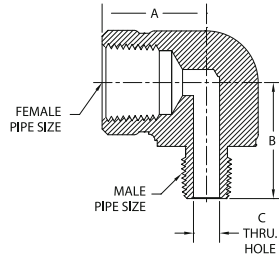
2FM

Female-Male Pipe Elbow



2FMR

Female-Male Reducer Pipe Elbow

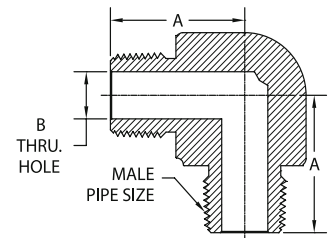
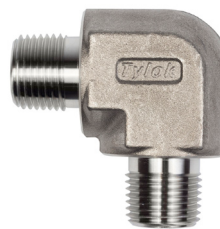


Part No.	Interchanges With	Female Pipe Size	Male Pipe Size	A	B	C Thru Hole
2-2FMR-1	2-RSE-1	1/8	1/16	.750	.750	.125
4-2FMR-2	4-RSE-2	1/4	1/8	.843	.937	.187
6-2FMR-4	6-RSE-4	3/8	1/4	1.062	1.062	.281
8-2FMR-4	8-RSE-4	1/2	1/4	1.125	1.250	.281
8-2FMR-6	8-RSE-6	1/2	3/8	1.125	1.250	.375

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

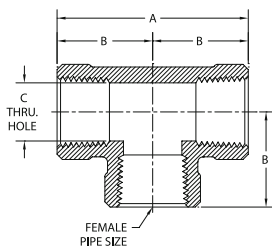
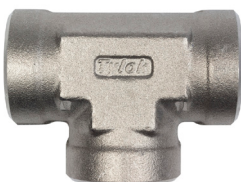
2MM

Male Pipe Elbow



3FFF

All Female Pipe Tee



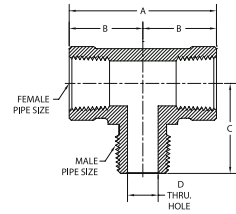
Part No.	Interchanges With	Female Pipe Size	A	B	C Thru Hole
2-3FFF-2	2-T	1/8	1.687	.843	.328
4-3FFF-4	4-T	1/4	1.687	.843	.421
6-3FFF-6	6-T	3/8	2.000	1.000	.562
8-3FFF-8	8-T	1/2	2.625	1.125	.687
12-3FFF-12	12-T	3/4	1.125	1.312	.890
16-3FFF-16	16-T	1	3.250	1.625	.125

3FFM, 3FMF, 3MMM, 4FPCR

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

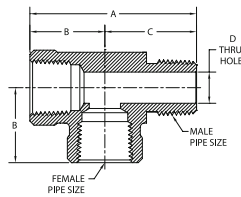
3FFM

Pipe Tee Female - Female - Male



3FMF

Pipe Tee - Female - Male - Female

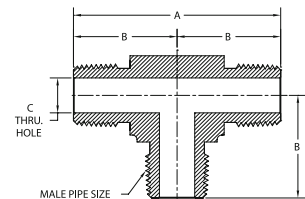
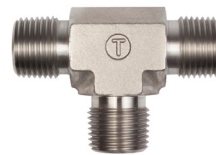


Part No.	Interchanges With	Pipe Size	A	B	C	D Thru Hole
2-3FMF-2	2-ST	1/8	1.687	.843	.843	.187
4-3FMF-4	4-ST	1/4	1.890	.843	1.046	.281
6-3FMF-6	6-ST	3/8	2.125	1.000	1.125	.375
8-3FMF-8	8-ST	1/2	2.500	1.125	1.375	.468
12-3FMF-12	12-ST	3/4	2.937	1.437	1.500	.625

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

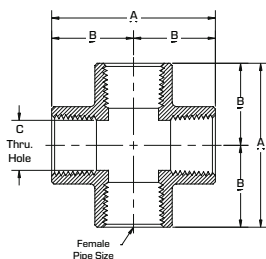
3MMM

All Male Pipe Tee



4FPCR

Female Pipe Cross



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

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.O.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

THERMOCOUPLE BORE THROUGH

Sizes	De-Rating Factor
1/2" & Smaller	0.75
Over 1/2" up to & including 3/4"	0.50
Larger than 3/4"	0.25

NOTE: Multiply tube pressure rating (see Suggested Allowable Working Pressure tables) by de-rating factor to determine safe working pressure.

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 (-198°C to 538°C) **Brass:** -40°F to 375°F (-40°C to 204°C) **Steel:** -20°F to 400°F (-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 ASTM B453	ASTM B283
Stainless Steel	ASTM A276 ASTM A479 ASME SA-479 Type 316-SS	ASTM A182 ASME SA-182 Type 316-SS
Steel	ASTM A108	

* Reference Tubing Selection & Preparation