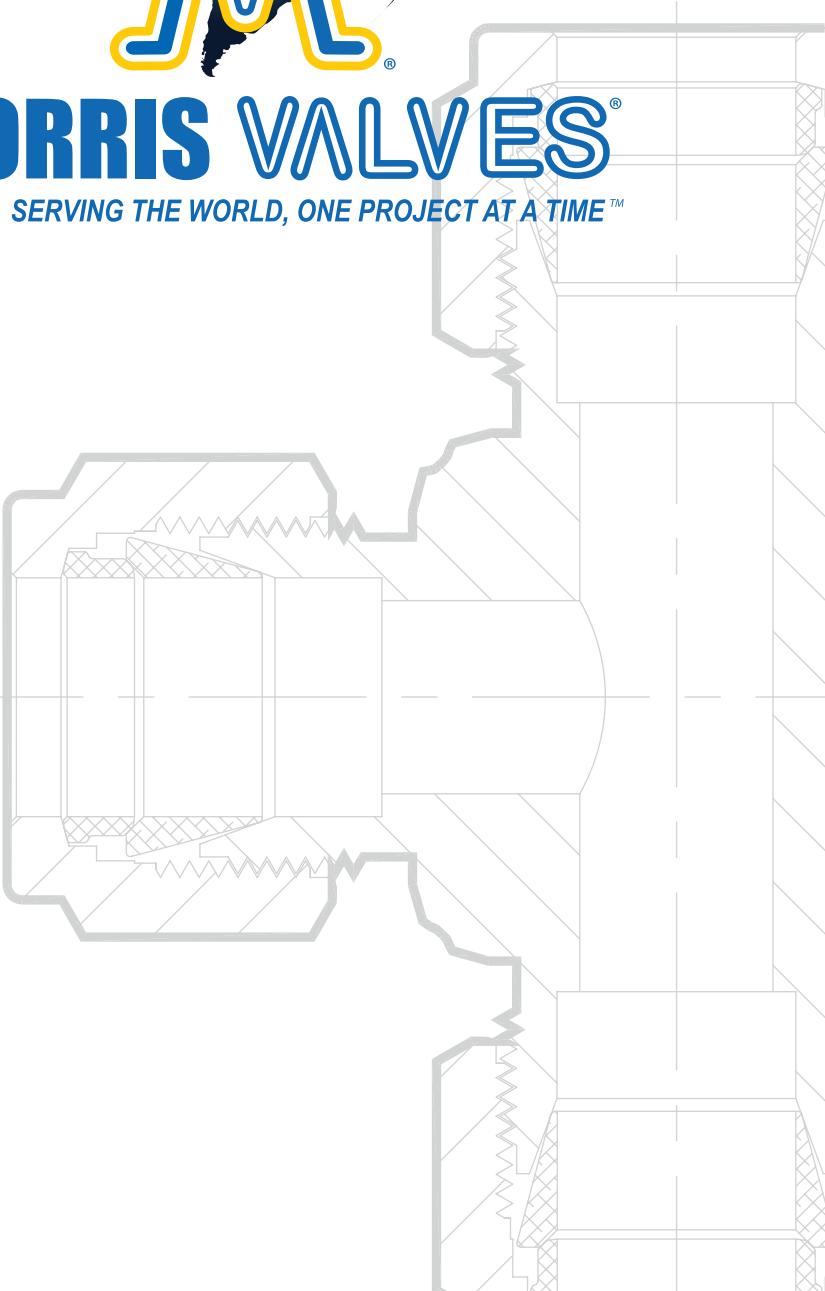




MORRIS VALVES®

SERVING THE WORLD, ONE PROJECT AT A TIME™



TUBE FITTINGS

www.morrisvalve.com



In 1984, our journey into the business of repairing valves and industrial instrumentation began. That journey has led us to represent and service well known American brands and companies. In early 2000, our experience and growing passion for the valve industry encouraged our decision to launch our own brand, Morris Valves. Starting with the highly requested Ball Valves, the brand has been based on the principal of quality and performance to match our customers' needs. Our high standards of production later lead us to incorporate other models such as Gate Valve and Check Valves to our production. These additions were carefully selected to match our Standard of Quality. Our success has been driven by our belief of "Tradition with Quality" in everything we do. Our products are developed with that belief which drives our growth and guides the service we provide to our customers.

Contacts

Address: 6803 Theall Rd Building B, Houston, Tx 77066

Telephone: +1 (832) 666-5576

Cel: +1 (832) 983-0744

Email: sales@morrisvalve.com



Vision

Our vision is to be amongst the leading corporations in the supply of goods and services related to valves, their components and industrial equipment in general. We want to conquer new markets in conformity with international standards and remain committed to customer satisfaction, the welfare of our company and the sustainability our planet.

Mision

Our mission is to use our highly trained, highly focused, and extremely motivated staff to work with manufacturers who value quality and have the vision for new development and product applications to ensure the timely provision of goods and services related to valves, their components and industrial equipment in general. We maintain a rigorous standard of customer satisfaction, which will provide for the welfare of the company, the welfare of the countries we serve, and most importantly the sustainability of the planet.

"Serving the world, one project at a time"

United States of America

United States Patent and Trademark Office



Reg. No. 4,840,307

MORRIS VALVES, INC. (FLORIDA CORPORATION)
5590 N.W. 84TH AVE.

Registered Oct. 27, 2015

MIAMI, FL 33166

Int. Cl.: 6

FOR: METAL PIPES AND METAL FITTINGS THEREFOR; METAL TUBES AND METAL FITTINGS THEREFOR, IN CLASS 6 (U.S. CLS. 2, 12, 13, 14, 23, 25 AND 50).

TRADEMARK

FIRST USE 2-11-2015; IN COMMERCE 2-11-2015.

PRINCIPAL REGISTER

OWNER OF U.S. REG. NO. 4,241,186.

THE COLOR(S) YELLOW, WHITE, AND BLUE IS/ARE CLAIMED AS A FEATURE OF THE MARK.

THE MARK CONSISTS OF A STYLIZED WHITE LETTER "V" WITH A BLUE OUTLINE INSIDE OF A STYLIZED LETTER "M" IN BLUE OUTLINED WITH YELLOW. THE BACKGROUND OF THE MARK IS WHITE.

SER. NO. 86-543,795, FILED 2-24-2015.

MARCIE MILONE, EXAMINING ATTORNEY



Nicelle K. Lee

Director of the United States
Patent and Trademark Office



MORRIS VALVES®
SERVING THE WORLD, ONE PROJECT AT A TIME™

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Index Over View

A. Tube x Tube (Unions)

- a. Union = **UF Type**
- b. UnionReducerFractional= **URF**
- c. UnionElbowFractional = **UEF**
- d. UnionElbowReducerFractional = **UERF**
- e. UnionTeeFractional = **UTF**
- f. Union Tee – Reducer Fractional = **UTRF**
 - i.All 3 different
 - ii. 2 Similar to A different run Y Fractional = **UTRYF**
 - iii. 2 Similar to A different run X Fractional = **UTRXF**
 - iv. 2 Similar to A different Branch Fractional= **UTRBF**
- g. Union Cross Fractional = **UCF**

B. Tube x Female Pipe Thread (Connectors)

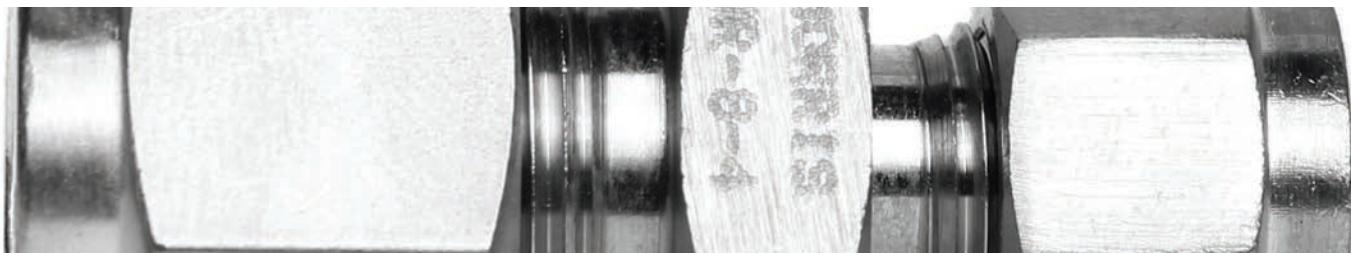
- a. Female connector = **FC**
- b. Female elbow = **FE**
- c. Female run Tee = **FRT**
- d. Female branch Tee = **FBT**

C. Tube x Male Pipe Thread (Connectors)

- a. Male connector = **MC**
- b. Male elbow, 90 ° = **ME,90 °**
- c. Male elbow, 45 ° = **ME, 45 °**
- d. Male run Tee = **MRT**
- e. Male branch Tee = **MBT**

D. Precision Pipe Fittings

- a. Hex Long Nipple = **HLN**
- b. Hex Coupling = **HC**
- c. Pipe Female: **PF**
- d. Pipe Female Cross = **PFC**
- e. Pipe Female Tee = **PFT**



Features

- Double ferrule tubing fittings, used for Hi pressure applications.

Consisting of (04) four pieces fitting:

1. The Nut
2. The Back Ferrule
3. The Front Ferrule
4. The Body

When installed, it becomes a (05) five piece connections with the addition of the tubing; providing a solid Leak Free Joint.

- All in Stainless Steel, INTERNALLY SILVER PLATED PROTECTED to prevent galling of threads. Protective Caps prevent damage to exposed threads

- Monel, Hastelloy, Inconel are available; also in NACE Standards.
- Easy to install, no special tools are required.
- Reusable several times and can withstand heavy impulse and vibration both in vacuum and pressure systems.
- The sequential action of the twin ferrule, overcomes variations in the wall thickness, hardness and dimensional tolerance of the tubes. This way proper ferrule compensates for most of the variables which lead to failure in other fittings.
- Used in tubing systems in Instrumentation of Hydraulic & Pneumatic applications in all process industries. The range includes Double Ferrule (SWAGELOCK TYPE)

Tests

o Proof Pressure Test.

Subjected to a pressure of 1.5 times the maximum working pressure of the fittings applied at the rate of 200 kg/cm² per minute and maintained at the final pressure for five minutes without leak.

o Test Assemblies.

Successfully completing Proof Pressure Test above, are dis-assembled and assembled (25) twenty five times after which they must pass the Proof Pressure Test.

o Minimum Hydraulic Burst Pressure.

Apply hydraulic pressure to the Test Assembly up to a maximum of (04) four times the working pressure at the rate, not exceeding 200kg/cm² per minute and maintain for (05) five minutes without leak.

o Minimum Static Vacuum Test Hydraulic Impulse Vibration Test.

Test assemblies satisfactorily proof pressure tested are subjected to negative pressure up to 700 mbar and then isolated from the vacuum pump. The assembly must maintain the vacuum for (15) fifteen minutes. The assemblies are suitably decreased before the test and total exhausted volume should not exceed 20% of the total assembly volume. This test can also be given at two temperatures for cryogenic applications.

o Hydraulic Impulse Vibration Test.

Test Assemblies suitably proof pressure tested are connected to a hydraulic pressure impulse and vibration test bench and subjected simultaneously to Pressure Impulses at 30 to 40 cycles per minute and vibration in two mutually perpendicular planes at 1,300 to 2,820 cycles per minute for a minimum of 5 x 106 pressure impulses and 20 x 105 vibration cycles. The method of choosing the displacement and the cycles is outlined in the Standards mentioned. The only permissible retightening is allowed after the first 1,000 pressure impulses to allow for bedding-in. When subjected to the test described this coupling should not leak in the assembly. Couplings that fail shall be examined for signs of cracking due to fatigue stress.

The above tests have been specified in the Testing Standard ASTM-F 1387-99. Some customers working with high temperatures have specified a temperature cycling test which requires test assemblies to be subjected to suitable temperature cycles and then subjected to the Proof Pressure Test without leakage. Other customers working with gases have specified a helium leak test with leak rates not exceeding 2x10⁻⁶ STD. CC/SEC.

All these tests at their recognized laboratories to satisfy all customers' technical requirements.

We eliminate hazardous leaks in instrumentation; process, pneumatic, hydraulic, gas and other applicable tubing system which could otherwise turn out to be costly to the installation.

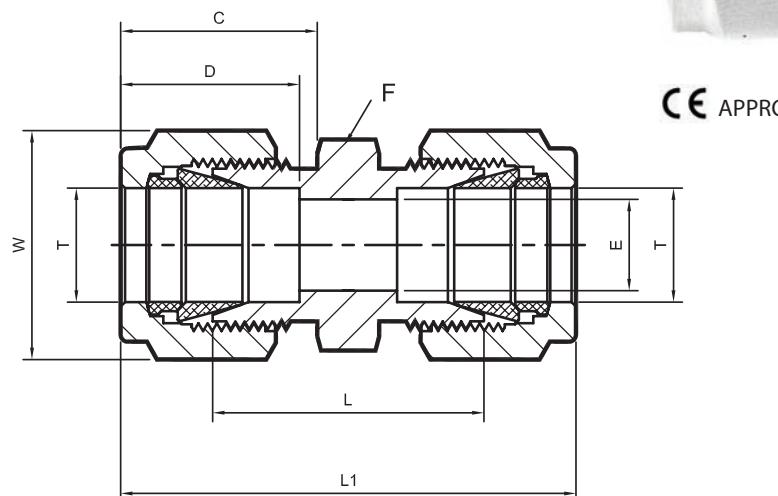


UNION FRACTIONAL

UF TYPE

* END: Fractional tube (OD)

SIZE: 1/16 " – 1 "



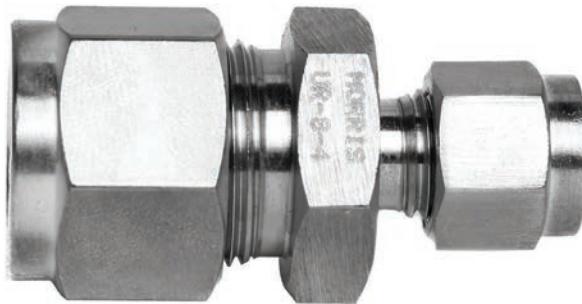
Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Body Hex F	C	ØE	D	Nut Hex W	L	L1
UF - 1	-100-6	1SC1	1/16	7/16	0.43	0.05	0.34	7/16	0.69	0.99
UF - 2	-200-6	2SC2	1/8	7/16	0.60	0.09	0.50	7/16	0.88	1.40
UF - 3	-300-6	3SC3	3/16	7/16	0.63	0.12	0.54	7/16	0.95	1.47
UF - 4	-400-6	4SC4	1/4	7/16	0.70	0.19	0.60	9/16	1.03	1.61
UF - 5	-500-6	5SC5	5/16	5/8	0.73	0.25	0.64	5/8	1.11	1.69
UF - 6	-600-6	6SC6	3/8	11/16	0.76	0.28	0.66	11/16	1.19	1.77
UF - 8	-810-6	8SC8	1/2	7/8	0.86	0.41	0.90	7/8	1.22	2.02
UF - 10	-1010-6	10SC10	5/8	1	0.86	0.50	0.96	1	1.25	2.05
UF - 12	-1210-6	12SC12	3/4	1-1/8	0.86	0.62	0.96	1-1/8	1.31	2.11
UF - 14	-1410-6	14SC14	7/8	1-1/4	0.86	0.72	1.02	1-1/4	1.37	2.17
UF - 16	-1610-6	16SC16	1	1-1/2	1.04	0.88	1.23	1-1/2	1.59	2.55

NOTES:

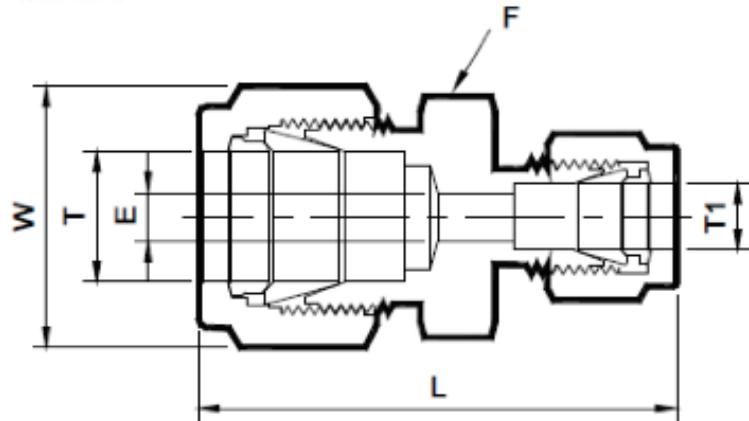
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- Dimension "L1 & D" is shown in the finger-tight position.
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URF TYPE



APPROVED



* END: Fractional tube (OD)

SIZE: 1/16" – 1"

Part Number	Equivalent P/N	Equivalent P/N 2	Tube OD ØT (INCHES)	Tube OD ØT1 (INCHES)	Body Hex								BODY HEX F	Nut Hex W	Nut Hex W1
					F	ØE	D	C	D1	C1	L	L1			
URF - 1-2	-200-6-1	2RU1	1/8	1/16"	1/16	0.05	0.50	0.60	0.34	0.34	0.43	0.81	5/16	1.22	7/16
URF - 3-1	-300-6-1	3RU1	3/16	1/16"	1/16	0.05	0.54	0.63	0.34	0.34	0.43	0.86	5/16	1.27	7/16
URF - 3-2	-300-6-2	3RU2	3/16	1/8"	1/8	0.09	0.54	0.63	0.50	0.50	0.6	0.92	7/16	1.44	7/16
URF - 4-1	-400-6-1	4RU1	1/4	1/16"	1/16	0.05	0.60	0.70	0.34	0.34	0.43	0.91	5/16	1.35	7/16
URF - 4-2	-400-6-2	4RU2	1/4	1/8"	1/8	0.09	0.60	0.70	0.50	0.50	0.6	0.97	7/16	1.52	7/16
URF - 4-3	-400-6-3	4RU3	1/4	3/16"	3/16	0.12	0.60	0.70	0.54	0.54	0.63	1	1/2	1.55	7/16
URF - 5-2	-500-6-2	5RU2	5/16	1/8"	1/8	0.09	0.64	0.73	0.50	0.50	0.6	1.01	7/16	1.56	9/16
URF - 5-4	-500-6-4	5RU4	5/16	1/4"	1/4	0.19	0.64	0.73	0.60	0.60	0.7	1.08	9/16	1.66	9/16
URF - 6-1	-600-6-1	6RU1	3/8	1/16"	1/16	0.05	0.66	0.76	0.34	0.34	0.43	1	5/16	1.44	5/8
URF - 6-2	-600-6-2	6RU2	3/8	1/8"	1/8	0.09	0.66	0.76	0.50	0.50	0.6	1.06	7/16	1.61	5/8
URF - 6-4	-600-6-4	6RU4	3/8	1/4"	1/4	0.19	0.66	0.76	0.60	0.60	0.7	1.12	9/16	1.70	5/8
URF - 6-5	-600-6-5	6RU5	3/8	5/16"	5/16	0.25	0.66	0.76	0.64	0.64	0.73	1.16	5/8	1.74	5/8
URF - 8-2	-810-6-2	8RU2	1/2	1/8"	1/8	0.09	0.90	0.86	0.50	0.50	0.6	1.12	7/16	1.78	7/8
URF - 8-4	-810-6-4	8RU4	1/2	1/4"	1/4	0.19	0.90	0.86	0.60	0.60	0.7	1.16	9/16	1.85	7/8
URF - 8-6	-810-6-6	8RU6	1/2	3/8"	3/8	0.28	0.90	0.86	0.66	0.66	0.76	1.22	11/16	1.91	7/8
URF - 10-6	-1010-6-6	10RU6	5/8	3/8"	3/8	0.28	0.96	0.86	0.66	0.66	0.76	1.25	11/16	1.94	1
URF - 10-8	-1010-6-8	10RU8	5/8	1/2"	1/2	0.41	0.96	0.86	0.90	0.90	0.86	1.25	7/8	2.05	1
URF - 12-4	-1210-6-4	12RU4	3/4	1/4"	1/4	0.19	0.96	0.86	0.60	0.60	0.7	1.25	9/16	1.94	1-1/8
URF - 12-6	-1210-6-6	12RU6	3/4	3/8"	3/8	0.28	0.96	0.86	0.66	0.66	0.76	1.31	11/16	2.00	1-1/8
URF - 12-8	-1210-6-8	12RU8	3/4	1/2"	1/2	0.41	0.96	0.86	0.90	0.90	0.86	1.31	7/8	2.11	1-1/8
URF - 12-10	-1210-6-10	12RU10	3/4	5/8"	5/8	0.50	0.96	0.86	0.96	0.96	0.86	1.31	1	2.11	1-1/8
URF - 16-8	-1610-6-8	16RU8	1	1/2"	1/2	0.41	1.23	1.04	0.90	0.86	1.5	7/8	2.38	1-1/2	1-1/2
URF - 16-12	-1210-6-12	16RU12	1	3/4"	3/4	0.62	1.23	1.04	0.96	0.86	1.5	1-1/8	2.38	1-1/2	1-1/2

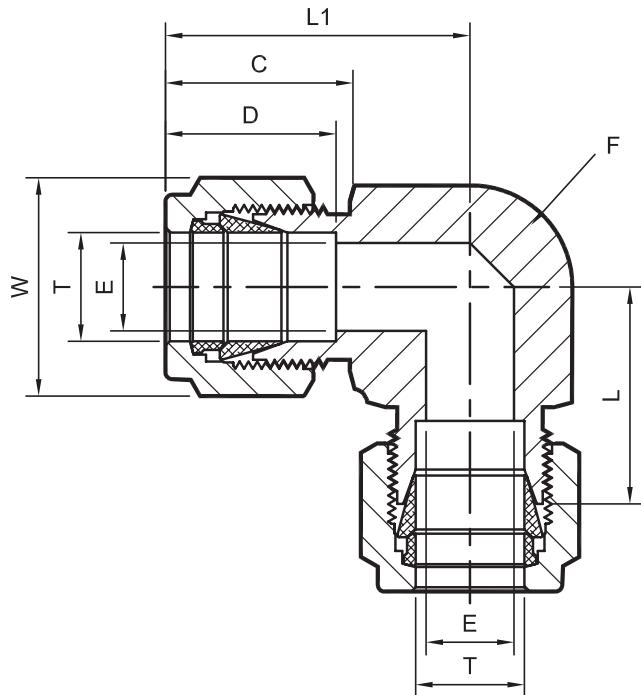
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UEF TYPE

* END: Fractional tube (OD)

SIZE: 1/16 " – 1 "



CE APPROVED

Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Body Hex F	C	ØE	D	Nut Hex W	L	L1
UEF - 1	-100-9	1EE1	1/16	1/2	0.43	0.05	0.34	5/16	0.55	0.70
UEF - 2	-200-9	2EE2	1/8	1/2	0.60	0.09	0.50	7/16	0.62	0.88
UEF - 3	-300-9	3EE3	3/16	1/2	0.63	0.12	0.54	1/2	0.74	1.00
UEF - 4	-400-9	4EE4	1/4	9/16	0.70	0.19	0.60	9/16	0.77	1.06
UEF - 5	-500-9	5EE5	5/16	9/16	0.73	0.25	0.64	5/8	0.84	1.13
UEF - 6	-600-9	6EE6	3/8	11/16	0.76	0.28	0.66	11/16	0.91	1.20
UEF - 8	-810-9	8EE8	1/2	13/16	0.86	0.41	0.90	7/8	1.02	1.42
UEF - 10	-1010-9	10EE10	5/8	7/8	0.86	0.50	0.96	1	1.10	1.50
UEF - 12	-1210-9	12EE12	3/4	1-1/16	0.86	0.62	0.96	1-1/8	1.17	1.57
UEF - 14	-1410-9	14EE14	7/8	1-3/8	0.86	0.72	1.02	1-1/4	1.36	1.76
UEF - 16	-1610-9	16EE16	1	1-3/8	1.04	0.88	1.23	1-1/2	1.45	1.93

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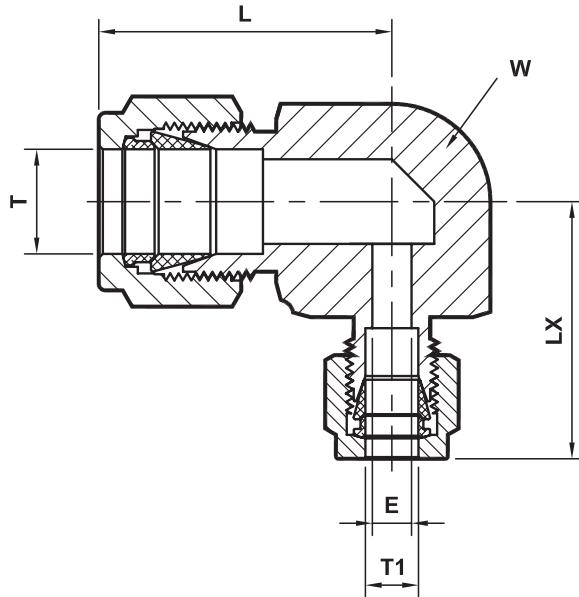
UERF TYPE



APPROVED

* END: Fractional tube (OD)

SIZE: 1/8 " – 1"



Part Number	Equivalent P/N	Tube OD ØT (INCHES)	Tube OD ØT1 (INCHES)	ØE	D	C	L	LX	Body Hex F	Nut Hex W	Nut Hex W1
UERF - 3 - 2	3-2ELZ	3/16	1/8	0.09	0.54	0.63	0.96	0.92	1/2	1/2	7/16
UERF - 4 - 2	4-2ELZ	1/4	1/8	0.09	0.6	0.7	1.06	0.96	9/16	9/16	7/16
UERF - 5 - 2	5-2ELZ	5/16	1/8	0.09	0.64	0.73	1.17	1.04	9/16	5/8	7/16
UERF - 5 - 4	5-4ELZ	5/16	1/4	0.19	0.64	0.73	1.17	1.14	9/16	5/8	9/16
UERF - 6 - 2	6-2ELZ	3/8	1/8	0.09	0.66	0.76	1.20	1.04	11/16	11/16	7/16
UERF - 6 - 4	6-4ELZ	3/8	1/4	0.19	0.66	0.76	1.20	1.09	11/16	11/16	9/16
UERF - 8 - 4	8-4ELZ	1/2	1/4	0.19	0.9	0.86	1.42	1.25	13/16	7/8	9/16
UERF - 8 - 5	8-5ELZ	1/2	5/16	0.25	0.9	0.86	1.42	1.28	13/16	7/8	5/8
UERF - 8 - 6	8-6ELZ	1/2	3/8	0.28	0.9	0.86	1.42	1.31	13/16	7/8	11/16
UERF - 10 - 6	10-6ELZ	5/8	3/8	0.28	0.96	0.86	1.43	1.32	7/8	1	11/16
UERF - 10 - 8	10-8ELZ	5/8	1/2	0.41	0.96	0.86	1.43	1.43	7/8	1	7/8
UERF - 12 - 4	12-4ELZ	3/4	1/4	0.19	0.96	0.86	1.56	1.38	1-1/16	1.1/8	9/16
UERF - 12 - 6	12-6ELZ	3/4	3/8	0.28	0.96	0.86	1.56	1.45	1-1/16	1.1/8	11/16
UERF - 12 - 8	12-8ELZ	3/4	1/2	0.41	0.96	0.86	1.56	1.56	1-1/16	1.1/8	7/8
UERF - 14 - 4	14-4ELZ	7/8	1/4	0.19	1.02	0.86	1.76	1.51	1-1/4	1.1/4	9/16
UERF - 16 - 8	16-8ELZ	1	1/2	0.41	1.23	1.04	1.94	1.62	1.3/8	1.1/2	7/8
UERF - 16 - 12	16-12ELZ	1	3/4	0.62	1.23	1.04	1.94	1.76	1-3/8	1.1/2	1.1/8

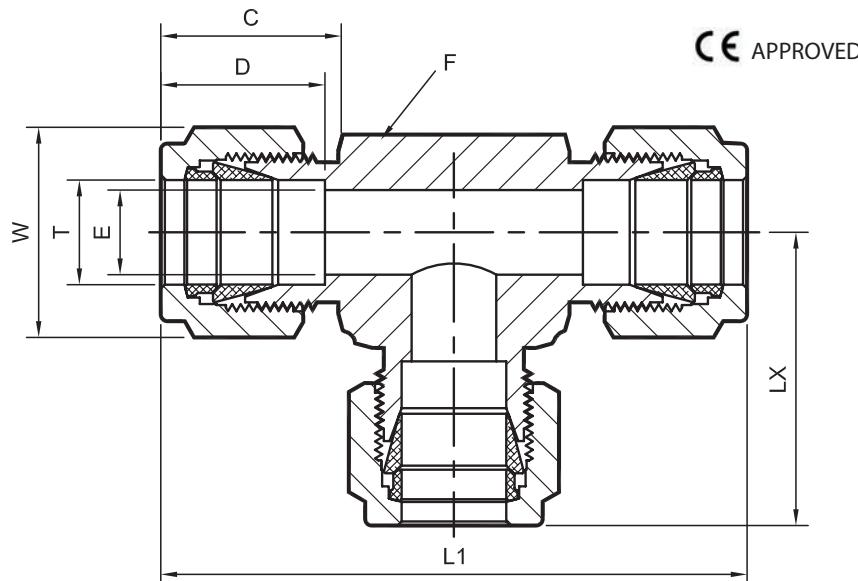
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UTF TYPE

* END: Fractional tube (OD)

SIZE: 1/16 " – 1"



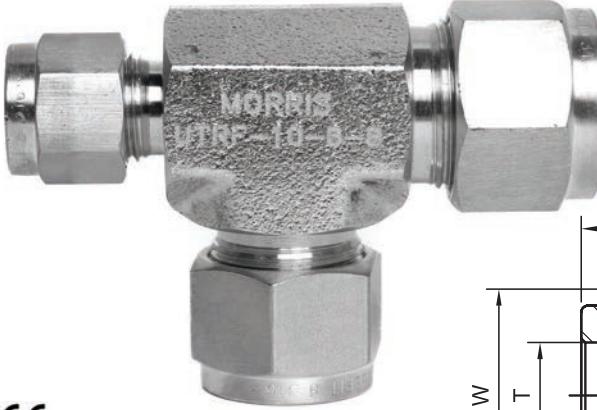
Part Number	Equivalent P/N 1	Equivalent P/N 2	LX	Tube OD ØT1 (INCHES)	Body Hex			Nut Hex		
					ØE	F	C	D	W	L1
UTF - 1	-100-3	1ET1	0.70	1/16	0.05	0.54	0.43	0.34	5/16	1.40
UTF - 2	-200-3	2ET2	0.88	1/8	0.09	0.6	0.60	0.50	7/16	1.76
UTF - 3	-300-3	3ET3	0.96	3/16	0.12	0.64	0.63	0.54	0.5	1.92
UTF - 4	-400-3	4ET4	1.06	1/4	0.19	0.64	0.70	0.60	9/16	2.12
UTF - 5	-500-3	5ET5	1.17	5/16	0.25	0.66	0.73	0.64	5/8	2.34
UTF - 6	-600-3	6ET6	1.20	3/8	0.28	0.66	0.76	0.66	0.6875	2.40
UTF - 8	-810-3	8ET8	1.42	1/2	0.41	0.9	0.86	0.90	7/8	2.84
UTF - 10	-1010-3	10ET10	1.53	5/8	0.50	0.9	0.86	0.96	1	3.06
UTF - 12	-1210-3	12ET12	1.57	3/4	0.62	0.9	0.86	0.96	1-1/8	3.14
UTF - 14	-1410-3	14ET14	1.76	7/8	0.72	0.96	0.86	1.02	1-1/4	3.52
UTF - 16	-1610-3	16ET16	1.93	1	0.88	0.96	1.04	1.23	1-1/2	3.86

NOTES:

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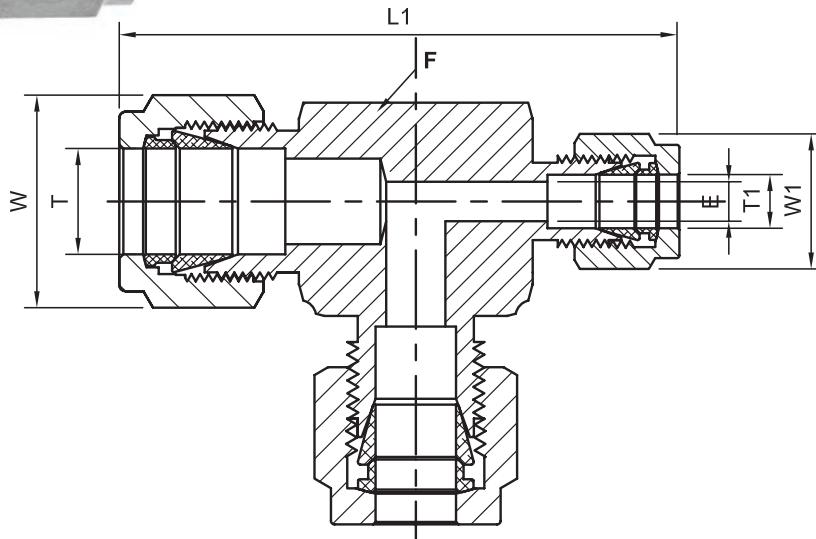
UTRF TYPE



CE APPROVED

* END: Fractional tube (OD)

SIZE: 3/8 " – 1 "



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Tube OD ØT (INCHES)	Tube OD ØT (INCHES)	ØE	D	C	LY	L1	LX	Body Hex F	Nut Hex W	Nut Hex W2	Nut Hex W1
UTRF - 10-6-8	-200-6-1	2RU1	5/8	3/8	1/2	0.28	0.96	3.06	1.53	3.06	1.13	1	1	11/16	7/8
UTRF - 10-8-6	-300-6-1	3RU1	5/8	1/2	3/8	0.28	0.96	2.75	1.32	2.75	1.03	1	1	7/8	11/16
UTRF - 12-6-8	-300-6-2	3RU2	3/4	3/8	1/2	0.28	0.96	3.14	1.57	3.14	1.17	1-1/16	1-1/8	11/16	7/8
UTRF - 12-6-10	-400-6-1	4RU1	3/4	3/8	5/8	0.28	0.96	3.12	1.56	3.12	1.16	1-1/16	1-1/8	11/16	1
UTRF - 12-8-10	-400-6-2	4RU2	3/4	1/2	5/8	0.41	0.96	3.12	1.56	3.12	1.16	1-1/16	1-1/8	7/8	1
UTRF - 14-12-8	-400-6-3	4RU3	7/8	3/4	1/2	0.41	1.02	3.52	1.76	3.52	1.36	1-3/8	1-1/4	1-1/8	7/8
UTRF - 14-6-10	-500-6-2	5RU2	7/8	3/8	5/8	0.28	1.02	3.52	1.76	3.52	1.36	1-3/8	1-1/4	11/16	1
UTRF - 14-6-12	-500-6-4	5RU4	7/8	3/8	3/4	0.28	1.02	3.52	1.76	3.52	1.36	1-3/8	1-1/4	11/16	1-1/8
UTRF - 14-8-12	-600-6-1	6RU1	7/8	1/2	3/4	0.41	1.02	3.52	1.76	3.52	1.36	1-3/8	1-1/4	7/8	1-1/8
UTRF - 16-4-8	-600-6-2	6RU2	1	1/4	1/2	0.19	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	9/16	7/8
UTRF - 16-6-8	-600-6-4	6RU4	1	3/8	1/2	0.28	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	11/16	7/8
UTRF - 16-6-10	-600-6-5	6RU5	1	3/8	5/8	0.28	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	11/16	1
UTRF - 16-6-12	-810-6-2	8RU2	1	3/8	3/4	0.28	1.23	3.69	1.76	3.69	1.36	1-3/8	1-1/2	11/16	1-1/8
UTRF - 16-8-12	-810-6-4	8RU4	1	1/2	3/4	0.41	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	7/8	1-1/8
UTRF - 16-10-12	-810-6-6	8RU6	1	5/8	3/4	0.50	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	1	1-1/8
UTRF - 16-4-14	-1010-6-6	10RU6	1	1/4	7/8	0.19	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	9/16	1-1/4
UTRF - 16-6-14	-1010-6-8	10RU8	1	3/8	7/8	0.28	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	11/16	1-1/4
UTRF - 16-8-14	-1210-6-4	12RU4	1	1/2	7/8	0.41	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	7/8	1-1/4
UTRF - 16-12-14	-1210-6-6	12RU6	1	3/4	7/8	0.62	1.23	3.70	1.76	3.70	1.36	1-3/8	1-1/2	1-1/8	1-1/4

NOTES:

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UNION TEE, REDUCER FRACTIONAL
(Two similar to a different run – Y)

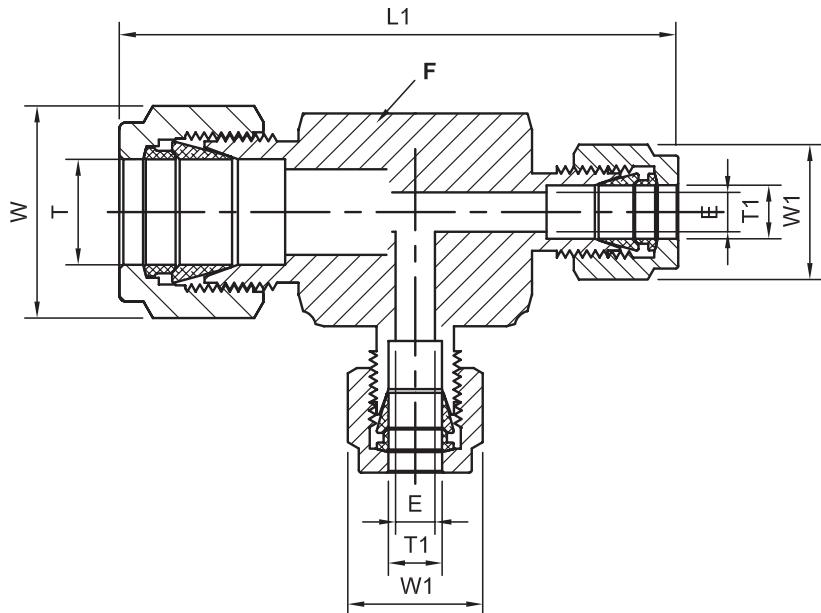
UTRYF TYPE

* END: Fractional tube (OD)

SIZE: 1/4 " – 1/2 "



CE APPROVED



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Tube OD ØT1 (INCHES)	ØE	D	C	L1	LX	Body Hex F	Nut Hex W	Nut Hex W1
UTRYF - 6-4-4	- 600-3-4-3	6-4-4 JIZ	3/8	1/4	0.19	0.66	0.76	2.34	1.14	13/16	11/16	9/16
UTRYF - 8-4-4	- 810-3-4-4	8-4-4 JIZ	1/2	1/4	0.19	0.90	0.86	2.67	1.25	13/16	7/8	9/16
UTRYF - 8-6-6	- 810-3-6-6	8-6-6 JIZ	1/2	3/8	0.28	0.90	0.86	2.73	1.31	13/16	7/8	11/16
UTRYF - 10-6-6	- 810-3-6-7	10-6-6 JIZ	5/8	3/8	0.28	0.96	0.86	2.95	1.42	1	1	11/16
UTRYF - 10-8-8	- 1210-3-8-8	12-8-8 JIZ	5/8	1/2	0.41	0.96	0.86	2.86	1.43	1	1	7/8
UTRYF - 12-6-6	- 1210-3-10-10	12-10-10 JIZ	3/4	3/8	0.28	0.96	0.86	3.03	1.46	1-1/16	1-1/8	11/16
UTRYF - 14-12-12	- 1610-3-14-14	16-14-14 JIZ	7/8	3/4	0.62	1.02	0.86	3.52	1.76	1-3/8	1-1/4	1-1/8
UTRYF - 16-6-6	- 1610-3-8-8	16-8-8 JIZ	1	3/8	0.28	1.23	1.04	3.59	1.65	1-3/8	1-1/2	11/16
UTRYF - 16-8-8	- 1610-3-6-6	16-6-6 JIZ	1	1/2	0.41	1.23	1.04	3.70	1.76	1-3/8	1-1/2	7/8
UTRYF - 6-4-4	- 600-3-4-3	6-4-4 JIZ	3/8	1/4	0.19	0.66	0.76	2.34	1.14	13/16	11/16	9/16
UTRYF - 8-4-4	- 810-3-4-4	8-4-4 JIZ	1/2	1/4	0.19	0.90	0.86	2.67	1.25	13/16	7/8	9/16

NOTES:

- The "E" dimension is the minimum opening.
- Dimension "L1& D" is shown in the finger-tight position.
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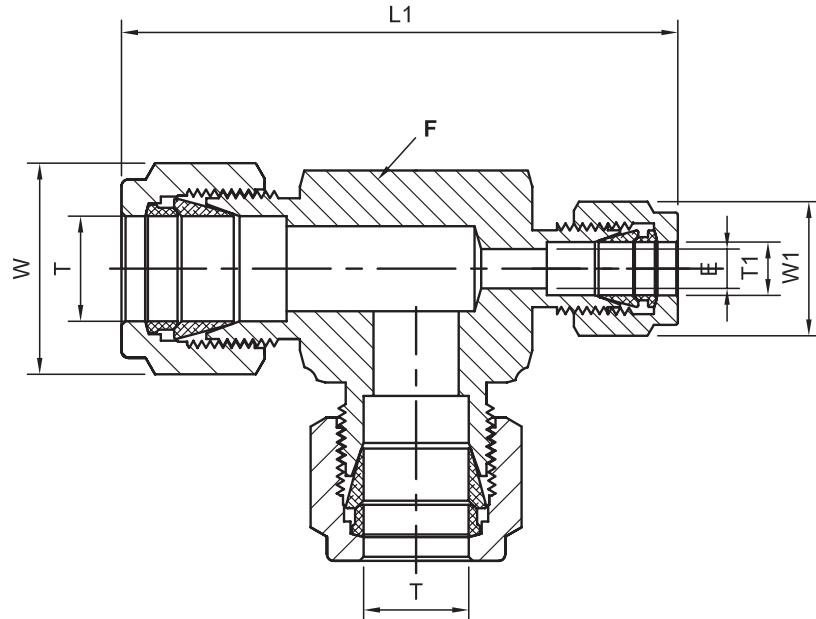
UTRXF TYPE



* END: Fractional tube (OD)

SIZE: 1/4 " – 1 "

CE APPROVED



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Tube OD ØT1 (INCHES)	ØE	D	C	L1	LY	LX	Body Hex F	Nut Hex W	Nut Hex W1
UTRXF-6-4-6	-600-3-4-6	6-4-6 JIZ	3/8	1/4	0.19	0.66	0.76	2.34	1.2	0.85	13/16	11/16	9/16
UTRXF-8-4-8	-810-3-4-8	8-4-8 JIZ	1/2	1/4	0.19	0.90	0.86	2.73	1.42	1.31	13/16	7/8	9/16
UTRXF-8-6-8	-810-3-6-8	8-6-8 JIZ	1/2	3/8	0.28	0.90	0.86	2.67	1.42	1.25	13/16	7/8	11/16
UTRXF-16-8-16	-1610-3-8-16	16-8-16 JIZ	1	1/2	0.41	1.23	1.04	3.7	1.94	1.76	1-3/8	1-1/2	7/8
UTRXF-16-12-16	-1610-3-12-16	16-12-16 JIZ	1	3/4	0.62	1.23	1.04	3.7	1.94	1.76	1-3/8	1-1/2	1-1/8

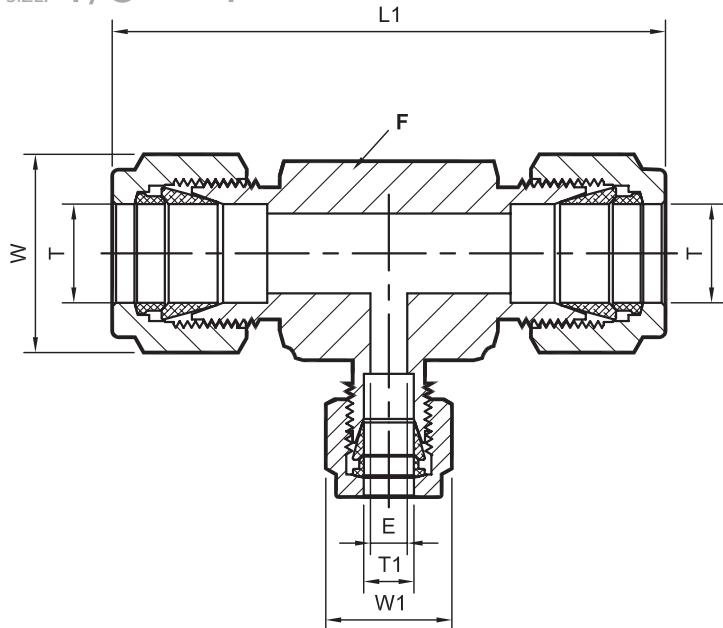
NOTES:

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UTRBF TYPE

* END: Fractional tube (OD)

SIZE: 1/8 " – 1"



CE APPROVED

Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	Tube OD ØT1 (INCHES)	ØE	D	C	L1	LX	Body Hex F	Nut Hex W	Nut Hex W1
UTRBF-4-2-4	-400-3-4-2	4-4-2 JLZ	1/4	1/8	0.09	0.60	0.70	2.10	0.70	9/16	9/16	7/16
UTRBF-6-6-4	-600-3-6-4	6-6-4 JLZ	3/8	1/4	0.19	0.66	0.76	2.40	0.85	13/16	11/16	9/16
UTRBF-8-8-4	-810-3-8-4	8-8-4 JLZ	1/2	1/4	0.19	0.90	0.86	2.84	0.96	13/16	7/8	9/16
UTRBF-8-8-6	-810-3-8-6	8-8-6 JLZ	1/2	3/8	0.28	0.90	0.86	2.84	1.02	13/16	7/8	11/16
UTRBF-10-10-6	-1010-3-10-6	10-10-6 JLZ	5/8	3/8	0.28	0.96	0.86	3.06	1.13	1	1	11/16
UTRBF-10-10-8	-1010-3-10-8	10-10-8 JLZ	5/8	1/2	0.41	0.96	0.86	2.86	1.03	1	1	7/8
UTRBF-12-12-4	-1210-3-12-4	12-12-4 JLZ	3/4	1/4	0.19	0.96	0.86	3.12	1.09	1-1/16	1-1/8	9/16
UTRBF-12-12-6	-1210-3-12-6	12-12-6 JLZ	3/4	3/8	0.28	0.96	0.86	3.14	1.17	1-1/16	1-1/8	11/16
UTRBF-12-12-8	-1210-3-12-8	12-12-8 JLZ	3/4	1/2	0.41	0.96	0.86	3.14	1.17	1-1/16	1-1/8	7/8
UTRBF-12-12-10	-1210-3-12-10	12-12-10 JLZ	3/4	5/8	0.50	0.96	0.86	3.12	1.16	1-1/16	1-1/8	1
UTRBF-14-14-4	-1410-3-14-4	14-14-4 JLZ	7/8	1/4	0.19	1.02	0.86	3.52	1.30	1-3/8	1-1/4	9/16
UTRBF-14-14-6	-1410-3-14-6	14-14-6 JLZ	7/8	3/8	0.28	1.02	0.86	3.52	1.36	1-3/8	1-1/2	11/16
UTRBF-16-16-4	-1610-3-16-4	16-16-4 JLZ	1	1	0.88	1.23	1.04	3.88	1.30	1-3/8	1-1/2	1-1/2
UTRBF-16-16-6	-1610-3-16-6	16-16-6 JLZ	1	3/8	0.28	1.23	1.04	3.86	1.36	1-3/8	1-1/2	1-1/16
UTRBF-16-16-8	-1610-3-16-8	16-16-8 JLZ	1	1/2	0.41	1.23	1.04	3.86	1.36	1-3/8	1-1/2	7/8
UTRBF-16-16-10	-1610-3-16-4	16-16-10 JLZ	1	1/4	0.19	1.23	1.04	3.88	1.36	1-3/8	1-1/2	9/16
UTRBF-16-16-12	-1610-3-16-12	16-16-12 JLZ	1	3/4	0.62	1.23	1.04	3.86	1.36	1-3/8	1-1/2	1-1/8
UTRBF-16-16-14	-1610-3-16-14	16-16-14 JLZ	1	7/8	0.72	1.23	1.04	3.7	1.76	1-3/8	1-1/2	1-1/4

NOTES:

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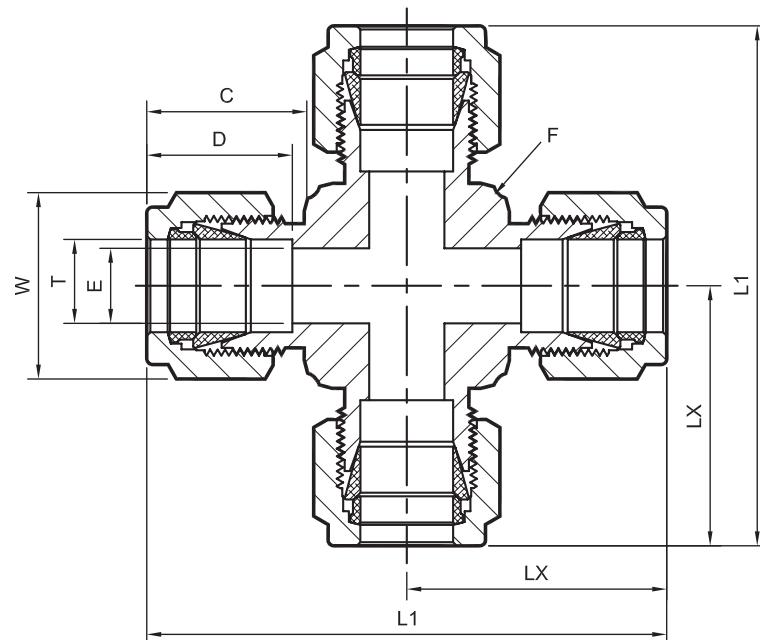
UCF TYPE



APPROVED

* END: Fractional tube (OD)

SIZE: 1/8 " – 1"



Part Number	Equivalent P/N 1	Equivalent P/N 2	LX	Tube OD ØT (INCHES)	ØE	Body Hex F	C	L	D	Nut Hex W	L1
UCF - 2	-200-4	2ECR2	0.62	1/8	0.09	7/16	0.60	1.24	0.50	7/16	1.76
UCF - 3	-300-4	3ECR3	0.66	3/16	0.12	7/16	0.86	1.38	0.54	7/16	1.92
UCF - 4	-400-4	4ECR4	0.77	1/4	0.19	9/16	0.70	1.54	0.60	9/16	2.12
UCF - 5	-500-4	5ECR5	0.88	5/16	0.25	5/8	0.73	1.76	0.64	5/8	2.34
UCF - 6	-600-4	6ECR6	0.91	3/8	0.28	13/16	0.76	1.82	0.66	11/16	2.40
UCF - 8	-810-4	8ECR8	1.02	1/2	0.41	13/16	0.86	2.04	0.90	7/8	2.84
UCF - 10	-1010-4	10ECR10	1.03	5/8	0.50	1.00	0.86	2.06	0.96	1.00	2.86
UCF - 12	-1210-4	12ECR12	1.17	3/4	0.62	1-1/16	0.86	2.34	0.96	1-1/8	3.14
UCF - 14	-1410-4	14ECR14	1.36	7/8	0.72	1-3/8	0.86	2.72	1.02	1-1/4	3.52
UCF - 16	-1610-4	16ECR16	1.45	1	0.88	1-3/8	1.04	2.90	1.23	1-1/2	3.86

NOTES:

1. The "E" dimension is the minimum opening.
2. Dimension "L1 & D" is shown in the finger-tight position.
3. Dimensions are for reference only and are subject to change.
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FEMALE CONNECTOR

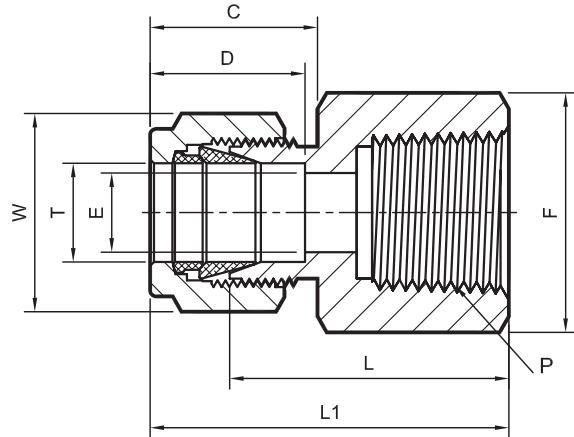
FC TYPE

* END: Fractional tube x NPTF

SIZE: 1/16 " – 1"



APPROVED



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LX	Body Hex F	Nut Hex W
FC-1-1	-100-7-1	1FSC1N	1/16	1/16	0.05	0.34	0.43	0.93	0.78	7/16	7/16
FC-1-2	-100-7-2	1FSC2N	1/16	1/8	0.05	0.34	0.43	0.96	0.81	9/16	7/16
FC-2-2	-200-7-2	2FSC2N	1/8	1/8	0.09	0.50	0.60	1.13	0.87	9/16	7/16
FC-2-4	-200-7-4	2FSC4N	1/8	1/4	0.09	0.50	0.60	1.32	1.06	3/4	7/16
FC-3-2	-300-7-2	3FSC2N	3/16	1/8	0.12	0.54	0.63	1.17	0.91	9/16	7/16
FC-3-4	-300-7-4	3FSC4N	3/16	1/4	0.12	0.54	0.64	1.35	1.09	3/4	1/2
FC-4-2	-400-7-2	4FSC2N	1/4	1/8	0.19	0.60	0.70	1.23	0.94	9/16	9/16
FC-4-4	-400-7-4	4FSC4N	1/4	1/4	0.19	0.60	0.70	1.41	1.12	3/4	9/16
FC-4-6	-400-7-6	4FSC6N	1/4	3/8	0.19	0.60	0.70	1.48	1.19	7/8	9/16
FC-4-8	-400-7-8	4FSC8N	1/4	1/2	0.19	0.60	0.70	1.67	1.38	1-1/16	9/16
FC-5-2	-500-7-2	5FSC2N	5/16	1/8	0.25	0.64	0.73	1.26	0.97	9/16	5/8
FC-5-4	-500-7-4	5FSC4N	5/16	1/4	0.25	0.64	0.73	1.45	1.16	3/4	5/8
FC-5-6	-500-7-6	5FSC6N	5/16	3/8	0.25	0.64	0.73	1.45	1.00	7/8	5/8
FC-6-2	-600-7-2	6FSC2N	3/8	1/8	0.28	0.66	0.76	1.29	1	5/8	11/16
FC-6-4	-600-7-4	6FSC4N	3/8	1/4	0.28	0.66	0.76	1.48	1.19	3/4	11/16
FC-6-6	-600-7-6	6FSC6N	3/8	3/8	0.28	0.66	0.76	1.54	1.25	7/8	11/16
FC-6-8	-600-7-8	6FSC8N	3/8	1/2	0.28	0.66	0.76	1.73	1.44	1-1/16	11/16
FC-6-12	-600-7-12	6FSC12N	3/8	3/4	0.28	0.66	0.76	1.88	1.59	1-5/16	11/16
FC-8-4	-810-7-4	8FSC4N	1/2	1/4	0.41	0.90	0.86	1.59	1.19	13/16	7/8
FC-8-6	-810-7-6	8FSC6N	1/2	3/8	0.41	0.90	0.86	1.65	1.25	7/8	7/8
FC-8-8	-810-7-8	8FSC8N	1/2	1/2	0.41	0.90	0.86	1.84	1.44	1-1/16	7/8
FC-8-12	-810-7-12	8FSC12N	1/2	3/4	0.41	0.90	0.86	1.90	1.5	1-5/16	7/8
FC-10-6	-1010-7-6	10FSC6N	5/8	3/8	0.50	0.96	0.86	1.65	1.25	15/16	1
FC-10-8	-1010-7-8	10FSC8N	5/8	1/2	0.50	0.96	0.86	1.84	1.44	1-1/16	1
FC-10-12	-1010-7-12	10FSC12N	5/8	3/4	0.50	0.96	0.86	1.90	1.5	1-5/16	1
FC-12-8	-1210-7-8	12FSC8N	3/4	1/2	0.62	0.96	0.86	1.84	1.44	1-1/16	1-1/8
FC-12-12	-1210-7-12	12FSC12N	3/4	3/4	0.62	0.96	0.86	1.90	1.5	1-5/16	1-1/8
FC-14-12	-1410-7-12	14FSC12N	7/8	3/4	0.72	1.02	0.86	1.96	1.56	1-5/16	1-1/4
FC-16-12	-1610-7-12	16FSC12N	1	3/4	0.88	1.23	1.04	2.10	1.62	1-3/8	1-1/2
FC-16-16	-1610-7-16	16FSC16N	1	1	0.88	1.23	1.04	2.45	1.97	1-5/8	1-1/2

NOTES:

- The "E" dimension is the minimum opening.
- Dimension "L1,C, D" is shown in the finger-tight position.
- NPT thread as per ANSI B1.20.1.

4. Dimensions are for reference only and are subject to change.

5. All part numbers are proprietary of their respective owners

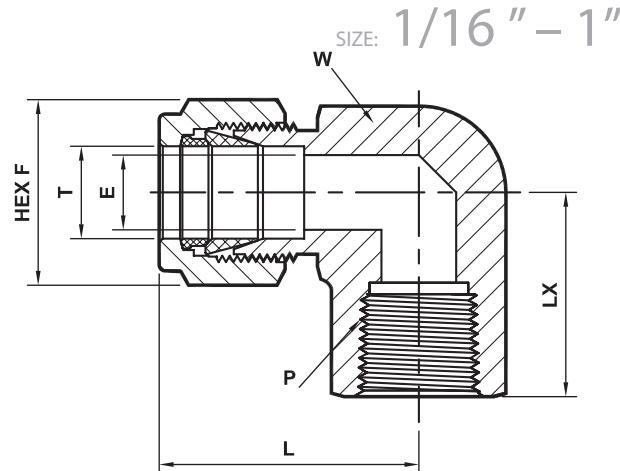


FE TYPE



APPROVED

* END: Fractional tube x NPTF



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LX	Body Hex F	Nut Hex W
FE-1-1	-100-8-1	1FEL1N	1/16	1/16	0.05	0.50	0.60	0.71	0.56	9/16	9/16
FE-1-2	-100-8-2	1FEL2N	1/16	1/8	0.05	0.50	0.60	0.81	0.66	9/16	9/16
FE-2-2	-200-8-2	2FEL2N	1/8	1/8	0.09	0.50	0.60	0.97	0.75	9/16	7/16
FE-2-4	-200-8-4	2FEL4N	1/8	1/4	0.09	0.50	0.60	1.08	0.88	11/16	7/16
FE-3-2	-300-8-2	3FEL2N	3/16	1/8	0.12	0.54	0.63	1.00	0.75	9/16	9/16
FE-4-2	-400-8-2	4FEL2N	1/4	1/8	0.19	0.60	0.70	1.06	0.75	9/16	9/16
FE-4-4	-400-8-4	4FEL4N	1/4	1/4	0.19	0.60	0.70	1.17	0.88	7/8	9/16
FE-4-6	-400-8-6	4FEL6N	1/4	3/8	0.19	0.60	0.70	1.25	0.88	7/8	9/16
FE-4-8	-400-8-8	4FEL8N	1/4	1/2	0.19	0.60	0.70	1.36	1.12	1-1/16	9/16
FE-5-2	-500-8-2	5FEL2N	5/16	1/8	0.25	0.64	0.73	1.13	0.75	9/16	5/8
FE-5-4	-500-8-4	5FEL4N	5/16	1/4	0.25	0.64	0.73	1.20	0.88	13/16	5/8
FE-6-2	-600-8-2	6FEL2N	3/8	1/8	0.28	0.66	0.76	1.20	0.75	7/8	11/16
FE-6-4	-600-8-4	6FEL4N	3/8	1/4	0.28	0.66	0.76	1.23	0.88	7/8	11/16
FE-6-6	-600-8-6	6FEL6N	3/8	3/8	0.28	0.66	0.76	1.31	0.88	7/8	11/16
FE-6-8	-600-8-8	6FEL8N	3/8	1/2	0.28	0.66	0.76	1.42	1.12	1-1/16	11/16
FE-8-4	-810-8-4	8FEL4N	1/2	1/4	0.41	0.90	0.86	1.42	0.88	13/16	7/8
FE-8-6	-810-8-6	8FEL6N	1/2	3/8	0.41	0.90	0.86	1.42	0.88	13/16	7/8
FE-8-8	-810-8-8	8FEL8N	1/2	1/2	0.41	0.90	0.86	1.53	1.12	1-1/16	718
FE-10-6	-1010-8-6	10FEL6N	5/8	3/8	0.50	0.96	0.86	1.50	0.88	15/16	1
FE-10-8	-1010-8-8	10FEL8N	5/8	1/2	0.50	0.96	0.86	1.57	1.12	1-1/16	1
FE-12-8	-1210-8-8	12FEL8N	3/4	1/2	0.62	0.96	0.86	1.57	1.12	1-1/16	1-1/8
FE-12-12	-1210-8-12	12FEL12N	3/4	3/4	0.62	0.96	0.86	1.76	1.25	1-3/8	1-1/8
FE-14-12	-1410-8-12	14FEL12N	7/8	3/4	0.72	1.02	0000	1.76	1.25	1-3/8	1-1/4
FE-16-12	-1610-8-12	16FEL12N	1	3/4	0.88	1.23	1.04	1.93	1.25	1-3/8	1-1/2
FE-16-16	-1610-8-16	16FEL16N	1	1	0.88	1.23	1.04	2.11	1.50	1-11/16	1-1/2

NOTES:

- The "E" dimension is the minimum opening.
- Dimension "L1,C,D" is shown in the finger-tight position.
- NPT thread as per ANSI B1.20.1.

4. Dimensions are for reference only and are subject to change.

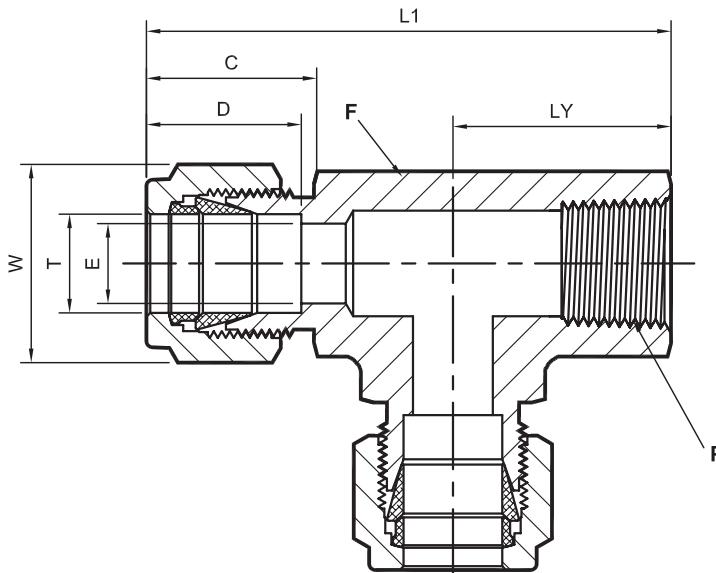
5. All part numbers are proprietary of their respective owners



FRT TYPE

* END: Fractional tube x NPTF

SIZE: 1/8 " – 1"



CE APPROVED

Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LY	Body Hex F	Nut Hex W
FRT-2-2	-100-8-1	1FEL1N	1/8	1/8	0.09	0.50	0.60	1.72	0.75	9/16	7/16
FRT-3-2	-100-8-2	1FEL2N	3/16	1/8	0.09	0.50	0.60	1.76	0.75	9/16	7/16
FRT-4-2	-200-8-2	2FEL2N	1/4	1/8	0.19	0.60	0.70	1.81	0.75	9/16	9/16
FRT-4-4	-200-8-4	2FEL4N	1/4	1/4	0.19	0.60	0.70	2.05	0.88	11/16	9/16
FRT-5-2	-300-8-2	3FEL2N	5/16	1/8	0.19	0.60	0.60	1.92	0.75	5/8	5/8
FRT-6-4	-400-8-2	4FEL2N	3/8	1/4	0.28	0.66	0.76	2.11	0.88	13/16	13/16
FRT-8-4	-400-8-4	4FEL4N	1/2	1/4	0.19	0.60	0.70	2.56	1.13	7/8	7/8
FRT-8-6	-400-8-6	4FEL6N	1/2	3/8	0.41	0.90	0.86	2.30	0.88	7/8	7/8
FRT-8-8	-400-8-8	4FEL8N	1/2	1/2	0.41	0.90	0.86	2.69	1.12	1-1/16	7/8
FRT-10-8	-500-8-2	5FEL2N	5/8	1/2	0.41	0.90	0.86	2.66	1.13	1-1/16	1.00
FRT-12-12	-500-8-4	5FEL4N	3/4	3/4	0.62	0.96	0.86	3.01	1.25	1-3/8	1-1/8
FRT-14-8	-600-8-2	6FEL2N	7/8	1/2	0.41	0.90	0.86	3.01	1.25	1-3/8	1-1/4
FRT-14-12	-600-8-4	6FEL4N	7/8	3/4	0.62	0.96	0.86	3.01	1.25	1-3/8	1-1/4
FRT-16-12	-600-8-6	6FEL6N	1	3/4	0.88	1.23	1.04	3.18	1.25	1-3/8	1-1/2
FRT-16-16	-600-8-8	6FEL8N	1	1	0.88	1.23	1.04	3.61	1.50	1-11/16	1-1/2

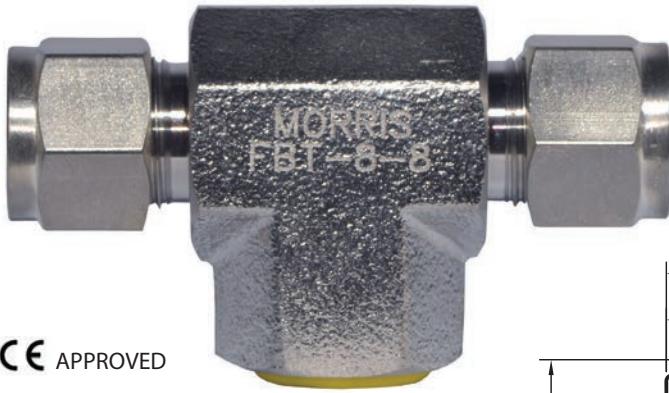
NOTES:

- The "E" dimension is the minimum opening.
- Dimension "L1,C,D" is shown in the finger-tight position.
- NPT thread as per ANSI B1.20.1.

- Dimensions are for reference only and are subject to change.
- All part numbers are proprietary of their respective owners



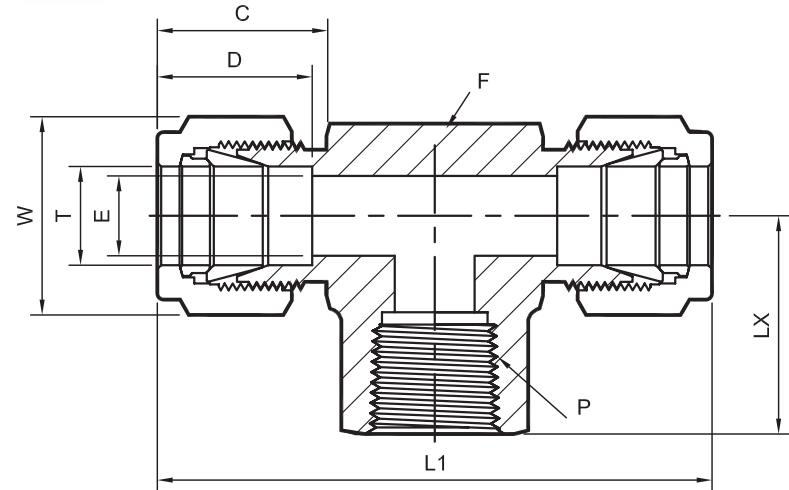
FBT TYPE



APPROVED

* END: Fractional tube x NPTF

SIZE: 1/8 " – 1 "



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LY	Body Hex F	Nut Hex W
FBT-2-2	-200-3-2TTF	2FBT2N	1/8	1/8	0.09	0.50	0.60	1.94	0.75	9/16	7/16
FBT-3-2	-300-3-2TTF	3FBT2N	3/16	1/8	0.09	0.50	0.60	2.02	0.75	9/16	7/16
FBT-4-2	-400-3-2TTF	4FBT2N	1/4	1/8	0.19	0.60	0.70	2.12	0.75	9/16	9/16
FBT-4-4	-400-3-4TTF	4FBT4N	1/4	1/4	0.19	0.60	0.70	2.34	0.88	11/16	9/16
FBT-5-2	-500-3-2TTF	5FBT2N	5/16	1/8	0.25	0.64	0.76	2.34	0.75	5/8	5/8
FBT-6-4	-600-3-4TTF	6FBT4N	3/8	1/4	0.28	0.66	0.76	2.46	0.88	13/16	11/16
FBT-6-6	-600-3-6TTF	6FBT6N	3/8	3/8	0.28	0.66	0.76	2.62	0.88	13/16	11/16
FBT-6-8	-600-3-8TTF	6FBT8N	3/8	1/2	0.28	0.66	0.76	2.84	1.12	1-1/16	11/16
FBT-8-4	-810-3-4TTF	8FBT4N	1/2	1/4	0.41	0.90	0.86	2.84	0.88	13/16	7/8
FBT-8-6	-810-3-6TTF	8FBT6N	1/2	3/8	0.41	0.90	0.86	2.84	0.88	13/16	7/8
FBT-8-8	-810-3-8TTF	8FBT8N	1/2	1/2	0.41	0.90	0.86	3.06	1.12	1-1/16	7/8
FBT-10-8	-1010-3-8TTF	10FBT8N	5/8	1/2	0.50	0.96	0.86	3.06	1.12	1-1/16	1
FBT-12-12	-1210-3-12TTF	12FBT12N	3/4	3/4	0.62	0.96	0.86	3.52	1.25	1-3/8	1-1/8
FBT-14-12	-1410-3-12TTF	14FBT12N	7/8	3/4	0.72	1.02	0.86	3.52	1.25	1-3/8	1-1/4
FBT-16-12	-1610-3-12TTF	16FBT12N	1	3/4	0.88	1.23	1.04	3.86	1.25	1-3/8	1-1/2
FBT-16-16	-1610-3-16TTF	16FBT16N	1	1	0.88	1.23	1.04	4.22	1.50	1-11/16	1-1/2

NOTES:

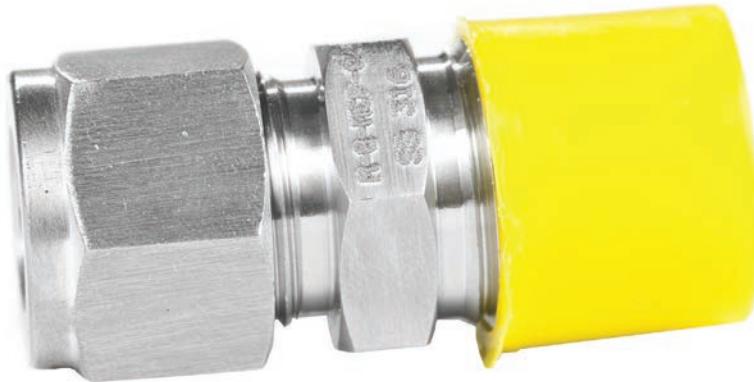
- The "E" dimension is the minimum opening.
- Dimension "L1,C, D" is shown in the finger-tight position.
- NPT thread as per ANSI B1.20.1.
- Dimensions are for reference only and are subject to change.
- All part numbers are proprietary of their respective owners

MALE CONNECTOR

MC TYPE

* END: Fractional tube x NPTF

SIZE: 1/16 " – 2"



APPROVED

Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LY	Body Hex F	Nut Hex W
MC-1-1	-100-1-1	1MSC1N	1/16	1/16	0.05	0.34	0.43	0.94	0.79	7/16	7/16
MC-1-2	-100-1-2	1MSC2N	1/16	1/8	0.05	0.34	0.43	1.03	0.88	7/16	7/16
MC-1-4	-100-1-4	1MSC4N	1/16	1/4	0.05	0.34	0.43	1.22	1.07	9/16	7/16
MC-2-1	-200-1-1	2MSC1N	1/8	1/16	0.09	0.05	0.60	1.17	0.91	7/16	7/16
MC-2-2	-200-1-2	2MSC2N	1/8	1/8	0.09	0.50	0.60	1.94	0.75	9/16	7/16
MC-2-2	-200-1-4	2MSC4N	1/8	1/4	0.09	0.05	0.60	1.40	1.14	9/16	7/16
MC-2-6	-200-1-6	2MSC6N	1/8	3/8	0.09	0.05	0.60	1.41	1.15	11/16	7/16
MC-2-4	-200-1-8	2MSC8N	1/8	1/2	0.09	0.05	0.60	1.66	1.40	7/8	7/16
MC-3-1	-300-1-1	3MSC1N	3/16	1/16	0.12	0.05	0.64	1.23	0.97	7/16	7/16
MC-3-2	-300-1-2	3MSC2N	3/16	1/8	0.12	0.54	0.63	1.23	0.97	9/16	7/16
MC-3-4	-300-1-4	3MSC4N	3/16	1/4	0.12	0.54	0.63	1.43	1.17	9/16	9/16
MC-4-1	-400-1-1	4MSC1N	1/4	1/16	0.12	0.60	0.70	1.29	1.00	9/16	9/16
MC-4-2	-400-1-2	4MSC2N	1/4	1/8	0.19	0.60	0.70	1.29	1.00	9/16	9/16
MC-4-4	-400-1-4	4MSC4N	1/4	1/4	0.19	0.60	0.70	1.49	1.20	9/16	9/16
MC-4-6	-400-1-6	4MSC6N	1/4	3/8	0.19	0.60	0.70	1.51	1.22	11/16	9/16
MC-4-8	-400-1-8	4MSC8N	1/4	1/2	0.19	0.60	0.70	1.76	1.47	7/8	9/16
MC-4-12	-400-1-12	4MSC12N	1/4	3/4	0.19	0.60	0.70	1.82	1.53	1-1/16	9/16
MC-5-2	-500-1-2	5MSC2N	5/16	1/8	0.19	0.64	0.73	1.34	1.05	9/16	5/8
MC-5-4	-500-1-4	5MSC4N	5/16	1/4	0.25	0.64	0.73	1.52	1.23	9/16	5/8
MC-5-6	-500-1-6	5MSC6N	5/16	3/8	0.25	0.64	0.73	1.54	1.50	11/16	5/8
MC-5-8	-500-1-8	5MSC8N	5/16	1/2	0.25	0.60	0.73	1.79	1.25	7/8	5/8

NOTES:

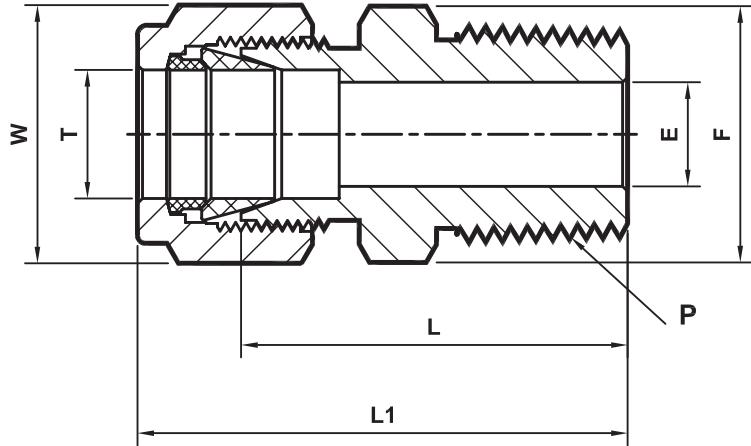
- * The "E" dimension is the minimum opening.
- * Dimension "L1,D,D1" is shown in the finger-tight position.
- * NPT thread as per ANSI B1.20.1.



MC TYPE

* END: Fractional tube x NPTF

SIZE: 1/16 " – 2"

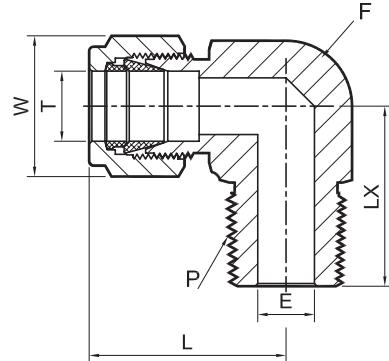


Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	ØE	D	C	L1	LY	Body Hex F	Nut Hex W
MC-6-2	-600-1-2	6MSC2N	3/8	1/8	0.19	0.66	0.76	1.39	1.10	5/8	11/16
MC-6-4	-600-1-4	6MSC4N	3/8	1/4	0.28	0.66	0.76	1.57	1.28	5/8	11/16
MC-6-6	-600-1-6	6MSC6N	3/8	3/8	0.28	0.66	0.76	1.57	1.28	11/16	11/16
MC-6-8	-600-1-8	6MSC8N	3/8	1/2	0.28	0.66	0.76	1.82	1.53	7/8	11/16
MC-6-12	-600-1-12	6MSC12N	3/8	3/4	0.28	0.66	0.76	1.88	1.59	1-1/16	11/16
MC-8-2	-810-1-2	8MSC2N	1/2	1/8	0.19	0.90	0.86	1.53	1.13	7/8	7/8
MC-8-4	-810-1-4	8MSC4N	1/2	1/4	0.28	0.90	0.86	1.71	1.31	7/8	7/8
MC-8-6	-810-1-6	8MSC6N	1/2	3/8	0.38	0.90	0.86	1.71	1.31	7/8	7/8
MC-8-8	-810-1-8	8MSC8N	1/2	1/2	0.41	0.90	0.86	1.93	1.53	7/8	7/8
MC-8-12	-810-1-12	8MSC12N	1/2	3/4	0.41	0.90	0.86	1.99	1.53	7/8	7/8
MC-10-6	-1010-1-6	10MSC6N	5/8	3/8	0.38	0.96	0.86	1.34	1.74	1	1
MC-10-8	-1010-1-8	10MSC8N	5/8	1/2	0.47	0.96	0.86	1.93	1.53	1-1/16	1
MC-10-12	-1010-1-12	10MSC12N	5/8	3/4	0.50	0.96	0.86	1.99	1.59	1-1/16	1
MC-12-8	-1210-1-8	12MSC8N	3/4	1/2	0.47	0.96	0.86	1.99	1.59	1-1/16	1-1/8
MC-12-12	-1210-1-12	12MSC12N	3/4	3/4	0.62	0.96	0.86	1.99	1.59	1-1/16	1-1/8
MC-12-16	-1210-1-16	12MSC16N	3/4	1	0.62	0.96	0.86	2.25	1.85	1-3/8	1-1/8
MC-14-12	-1410-1-12	14MSC12N	7/8	3/4	0.62	1.02	0.86	1.99	1.59	1-3/16	1-1/4
MC-14-16	-1410-1-16	14MSC16N	7/8	1	0.72	1.02	0.86	2.25	1.85	1-3/8	1-1/4
MC-16-8	-1610-1-8	16MSC8N	1	1/2	0.47	1.23	1.04	2.26	1.78	1-3/8	1-1/2
MC-16-12	-1610-1-12	16MSC12N	1	3/4	0.62	1.23	1.04	2.26	1.78	1-3/8	1-1/2
MC-16-16	-1610-1-16	16MSC16N	1	1	0.88	1.23	1.04	2.45	1.97	1-3/8	1-1/2
MC-20-16	-2000-1-16	20MSC16N	1 - 1/4	1	0.88	1.62	1.53	2.17	3.04	1.3/4	1.7/8
MC-20-20	-2000-1-20	20MSC20N	1 - 1/4	1 - 1/4	1.09	1.62	1.53	2.17	3.04	1.3/4	1.7/8
MC-24-24	-2400-1-24	24MSC24N	1 - 1/2	1 - 1/2	1.34	1.97	1.78	2.43	3.5	2.1/8	2.1/4
MC-32-32	-3200-1-32	32MSC32N	2	2	1.81	2.66	2.47	3	4.47	2.3/4	3

ME TYPE

* END: Fractional tube x NPT(M)

SIZE: 1/16 " – 1"



CE APPROVED

Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)		NPT FEMALE PIPE SIZE P	ØE	Body Hex F		D	Nut Hex	
			LX				C	W		L1	
ME-1-1	- 100-2-1	1MSEL1N	0.70	1/16	1/16	0.05	7/16	0.43	0.34	7/16	0.75
ME-1-2	- 100-2-2	1MSEL2N	0.70	1/16	1/8	0.05	7/16	0.43	0.34	7/16	0.75
ME-2-1	-200-2-1	2MSEL1N	0.70	1/8	1/16	0.09	7/16	0.60	0.50	7/16	0.93
ME-2-2	-200-2-2	2MSEL2N	0.70	1/8	1/8	0.09	7/16	0.60	0.50	7/16	0.93
ME-2-4	-200-2-4	2MSEL4N	0.92	1/8	1/4	0.09	9/16	0.60	0.50	7/16	0.97
ME-3-2	- 300-2-2	3MSEL2N	0.74	3/16	1/8	0.12	9/16	0.63	0.54	7/16	1.00
ME-3-4	- 300-2-4	3MSEL4N	0.92	3/16	1/4	0.12	9/16	0.63	0.54	7/16	1.00
ME-4-1	- 400-2-1	4MSEL1N	0.74	1/4	1/16	0.12	9/16	0.70	0.60	9/16	1.06
ME-4-2	- 400-2-2	4MSEL2N	0.74	1/4	1/8	0.19	9/16	0.70	0.60	9/16	1.06
ME-4-4	- 400-2-4	4MSEL4N	0.92	1/4	1/4	0.19	9/16	0.70	0.60	9/16	1.06
ME-4-6	- 400-2-6	4MSEL6N	1.03	1/4	3/8	0.19	13/16	0.70	0.60	9/16	1.17
ME-4-8	- 400-2-8	4MSEL8N	1.30	1/4	1/2	0.19	13/16	0.70	0.60	9/16	1.25
ME-5-2	-500-2-2	5MSEL2N	0.78	5/16	1/8	0.19	9/16	0.73	0.64	5/8	1.13
ME-5-4	-500-2-4	5MSEL4N	0.96	5/16	1/4	0.25	9/16	0.73	0.64	5/8	1.13
ME-5-6	-500-2-6	5MSEL6N	1.03	5/16	3/8	0.25	13/16	0.73	0.64	5/8	1.20
ME-6-2	-600-2-2	6MSEL2N	0.82	3/8	1/8	0.19	13/16	0.76	0.66	11/16	1.20
ME-6-4	-600-2-4	6MSEL4N	1.00	3/8	1/4	0.28	13/16	0.76	0.66	11/16	1.20
ME-6-6	-600-2-6	6MSEL6N	1.03	3/8	3/8	0.28	13/16	0.76	0.66	11/16	1.23
ME-6-8	-600-2-8	6MSEL8N	1.30	3/8	1/2	0.28	7/8	0.76	0.66	11/16	1.31
ME-6-12	-600-2-12	6MSEL12N	1.45	3/8	3/4	0.28	1-1/16	0.76	0.66	11/16	1.46
ME-8-4	-810-2-4	8MSEL4N	1.11	1/2	1/4	0.28	7/8	0.86	0.90	7/8	1.42
ME-8-6	-810-2-6	8MSEL6N	1.11	1/2	3/8	0.38	7/8	0.86	0.90	7/8	1.42
ME-8-8	-810-2-8	8MSEL8N	1.30	1/2	1/2	0.41	7/8	0.86	0.90	7/8	1.42
ME-8-12	-810-2-12	8MSEL12N	1.45	1/2	3/4	0.41	1-1/16	0.86	0.90	7/8	1.57
ME-10-6	-1010-2-6	10MSEL6N	1.19	5/8	3/8	0.38	1-1/16	0.86	0.96	1	1.50
ME-10-8	-1010-2-8	10MSEL8N	1.19	5/8	1/2	0.47	1-1/16	0.86	0.96	1	1.50
ME-10-12	-1010-2-12	10MSEL12N	1.45	5/8	3/4	0.50	1-1/16	0.86	0.96	1	1.57
ME-12-8	-1210-2-8	12MSEL8N	1.45	3/4	1/2	0.47	1-1/16	0.86	0.96	1-1/8	1.57
ME-12-12	-1210-2-12	12MSEL12N	1.45	3/4	3/4	0.62	1-1/16	0.86	0.96	1-1/8	1.57
ME-14-12	-1410-2-12	14MSEL12N	1.64	7/8	3/4	0.62	1-1/4	0.86	1.02	1-1/4	1.76
ME-16-12	-1610-2-12	16MSEL12N	1.64	1	3/4	0.62	1-3/8	1.04	1.23	1-1/2	1.93
ME-16-16	-1610-2-16	16MSEL16N	1.83	1	1	0.62	1-3/8	1.04	1.23	1-1/2	1.93

NOTES:

- The "E" dimension is the minimum opening.
- Dimension "L1, D,D1" is shown in the finger-tight position.
- NPT thread as per ANSI B1.20.1.

4. Dimensions are for reference only and are subject to change.

5. All part numbers are proprietary of their respective owners



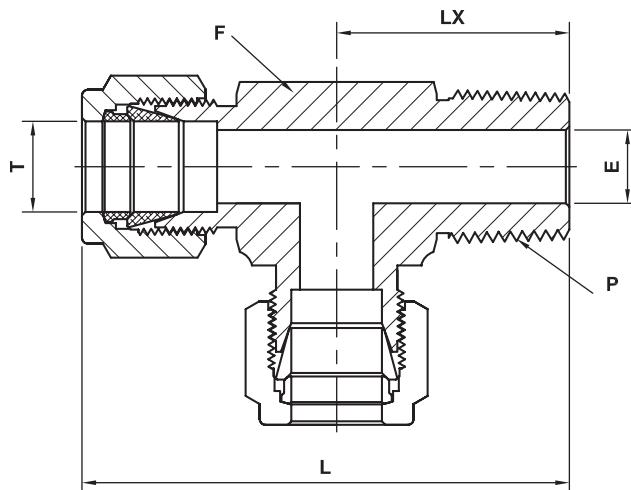
MRT TYPE



APPROVED

* END: Fractional tube x NPTF

SIZE: 1/8 " – 1 "



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	Body Hex F	C	ØE	D	LX	LY	Nut Hex W	L1
MRT-2-2	-20-3-2TMT	2MRT2N	1/8	1/8	9/16	0.60	0.09	0.50	0.93	0.70	7/16	1.63
MRT-2-4	-200-3-4TMT	2MRT4N	1/8	1/4	9/16	0.60	0.09	0.50	0.97	0.92	7/16	1.89
MRT-3-2	-300-3-2TMT	3MRT2N	3/16	1/8	9/16	0.63	0.12	0.54	0.96	0.70	7/16	1.66
MRT-4-2	-400-3-2TMT	4MRT2N	1/4	1/8	9/16	0.70	0.19	0.60	1.06	0.74	9/16	1.80
MRT-4-4	-400-3-4TMT	4MRT4N	1/4	1/4	9/16	0.70	0.19	0.60	1.06	0.92	9/16	1.98
MRT-5-2	-500-3-2TMT	5MRT2N	5/16	1/8	5/8	0.73	0.19	0.64	1.17	0.82	5/8	1.99
MRT-5-4	-500-3-4TMT	5MRT4N	5/16	1/4	5/8	0.73	0.25	0.64	1.17	1.01	5/8	2.18
MRT-6-4	-600-3-2TMT	6MRT4N	3/8	1/4	5/8	0.76	0.28	0.66	1.2	1.00	11/16	2.20
MRT-6-6	-600-3-6TMT	6MRT6N	3/8	3/8	13/16	0.76	0.28	0.66	1.31	1.11	11/16	2.42
MRT-8-6	-810-3-6TMT	8MRT6N	1/2	3/8	13/16	0.86	0.38	0.90	1.42	1.11	7/8	2.53
MRT-8-8	-810-3-8TMT	8MRT8N	1/2	1/2	7/8	0.86	0.41	0.90	1.42	1.30	7/8	2.72
MRT-10-8	-1010-3-8TMT	10MRT8N	5/8	1/2	15/16	0.86	0.47	0.96	1.5	1.38	1	2.88
MRT-12-12	-1210-3-12TMT	12MRT12N	3/4	3/4	1-1/16	0.86	0.62	0.96	1.57	1.45	1-1/8	3.02
MRT-14-12	-14103-12TMT	14MRT12N	7/8	3/4	1-3/8	0.86	0.62	1.02	1.76	1.50	1-1/4	3.26
MRT-16-12	-1610-3-12TMT	16MRT12N	1	3/4	1-3/8	1.04	0.62	1.23	1.94	1.66	1-1/2	3.60
MRT-16-16	-1610-3-16TMT	16MRT16N	1	1	1-3/8	1.04	0.88	1.23	1.94	1.84	1-1/2	3.78

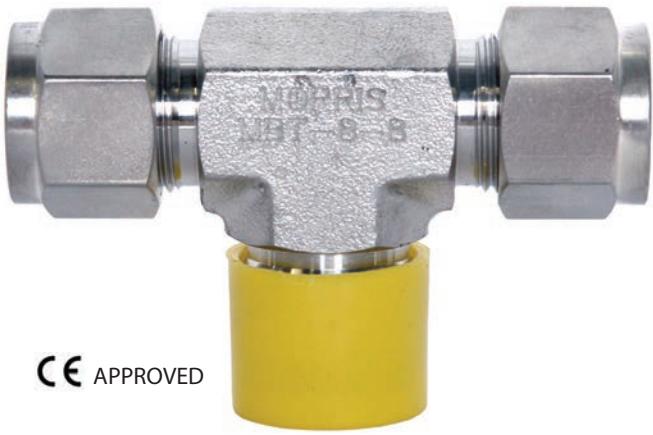
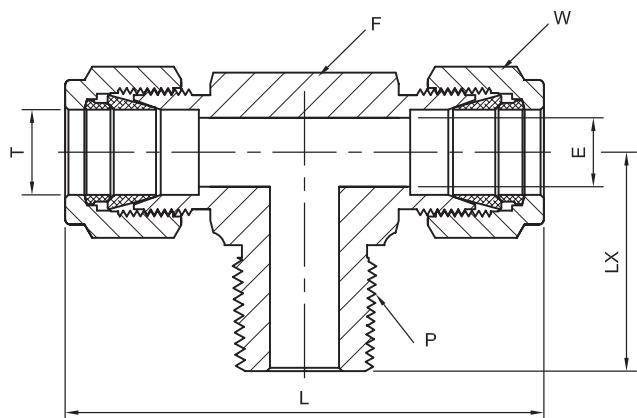
NOTES:

1. The "E" dimension is the minimum opening.
2. Dimension "L1, D,D1" is shown in the finger-tight position.
3. NPT thread as per ANSI B1.20.1.
4. Dimensions are for reference only and are subject to change.
5. All part numbers are proprietary of their respective owners

MBT TYPE

* END: Fractional tube x NPT(M)

SIZE: 1/8 " – 1"



Part Number	Equivalent P/N 1	Equivalent P/N 2	Tube OD ØT (INCHES)	NPT FEMALE PIPE SIZE P	Body Hex F	Nut Hex					
						C	ØE	D	LX	W	L1
MBT-2-4	-200-3-4TTM	2MBT4N	1/8	1/4	9/16	0.60	0.09	0.50	0.92	7/16	1.94
MBT-3-2	-300-3-2TTM	3MBT2N	3/16	1/8	9/16	0.63	0.12	0.54	0.70	7/16	1.92
MBT-4-2	-400-3-2TTM	4MBT2N	1/4	1/8	9/16	0.70	0.19	0.60	0.74	9/16	2.12
MBT-4-4	-400-3-4TTM	4MBT4N	1/4	1/4	9/16	0.70	0.19	0.60	0.92	9/16	2.12
MBT-5-2	-500-3-2TTM	5MBT2N	5/16	1/8	9/16	0.73	0.19	0.64	0.82	5/8	2.34
MBT-5-4	-500-3-4TTM	5MBT4N	5/16	1/4	9/16	0.73	0.19	0.64	1.01	5/8	2.34
MBT-6-4	-600-3-4TTM	6MBT4N	3/8	1/4	13/16	0.86	0.28	0.66	1.00	11/16	2.40
MBT-6-6	-600-3-6TTM	6MBT6N	3/8	3/8	13/16	0.76	0.28	0.66	1.11	11/16	2.62
MBT-8-6	-810-3-8TTM	8MBT6N	1/2	3/8	13/16	0.86	0.38	0.90	1.11	7/8	2.84
MBT-8-8	-810-3-8TTM	8MBT8N	1/2	1/2	13/16	0.86	0.41	0.90	1.30	7/8	2.84
MBT-10-8	-1010-3-8TTM	10MBT8N	5/8	1/2	1	0.86	0.47	0.96	1.41	1	3.06
MBT-12-12	-1210-3-12TTM	12MBT12N	3/4	3/4	1-1/16	0.86	0.62	0.96	1.45	1-1/8	3.14
MBT-14-12	-1410-3-12TTM	14MBT12N	7/8	3/4	1-3/8	0.86	0.62	1.02	1.50	1-1/4-	3.52
MBT-16-12	-1610-3-12TTM	16MBT12N	1	3/4	1-3/8	1.04	0.62	1.23	1.66	1-1/2	3.88
MBT-16-16	-1610-3-16TTM	16MBT16N	1	1	1-3/8	1.04	0.88	1.23	1.84	1-1/2	3.88

NOTES:

1. The "E" dimension is the minimum opening.
2. Dimension "L1, C & D" is shown in the finger-tight position.
3. NPT thread as per ANSI B1.20.1.

4. Dimensions are for reference only and are subject to change.
5. All part numbers are proprietary of their respective owners



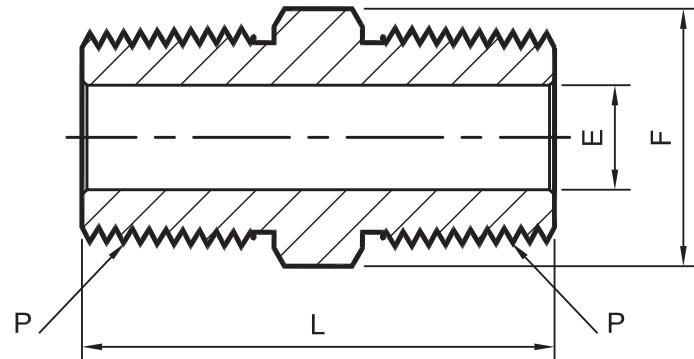
HLN TYPE



* END: Fractional tube x NPTF

SIZE: 1/16 " – 1"

CE APPROVED



Part Number	Equivalent P/N 1	Equivalent P/N 1	NPT FEMALE PIPE SIZE P	Body Hex F	ØE	L	LY
HLN - 1	-200-4	1 – 1 MHLN	1/16	7/16	0.12	XL	7/16
HLN - 2	-2-HLN-	2 – 2 MHLN	1/8	7/16	0.19	XL	7/16
HLN - 4	-4-HLN-	4 – 4 MHLN	1/4	9/16	0.28	XL	9/16
HLN - 6	-6-6HLN	6 – 6 MHLN	3/8	23/32	0.38	XL	23/32
HLN - 8	-8-HLN	8 – 8 MHLN	1/2	7/8	0.47	XL	7/8
HLN - 12			3/4	1 – 1/16	0.62	XL	1 – 1/16
HLN - 16			1	1 – 3/8	0.88	XL	1 – 3/8

NOTES:

1. The "E" dimension is the minimum opening.
2. Dimensions are for reference only and are subject to change.
3. NPT thread as per ANSI B1.20.1.
4. All part numbers are proprietary of their respective owners

HEX COUPLING

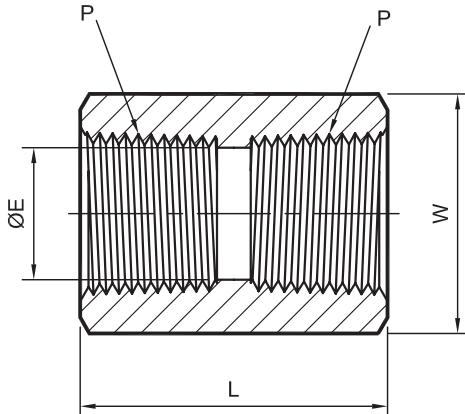
HC TYPE

* END: NPT(F) x NPT(F)

SIZE: 1/16 " – 2"



APPROVED



Part Number	Equivalent P/N 1	Equivalent P/N 1	NPT FEMALE PIPE SIZE P	Body Hex F	ØE	L
HC - 1		1-1FHC	1/16	1/2	0.25	0.75
HC - 2	SS - 2 - HCG	2-2FHC	1/8	9/16	0.34	0.81
HC - 4	SS - 4 - HCG	4-4FHC	1/4	3/4	0.45	1.19
HC - 6	SS - 6 - HCG	6-6FHC	3/8	7/5	0.59	1.31
HC - 8	SS - 8 - HCG	8-8FHC	1/2	1-1/16	0.73	1.56
HC - 12	SS - 12 - HG	12-12FHC	3/4	1-1/4	0.94	1.62
HC - 16	SS - 16 - HCG	16-16FHC	1	1-5/8	1.17	2
HC - 20	SS - 20 - HCG	20-20FHC	1-1/4	2-1/8	1.5	2.38
HC - 24	SS - 24 - HCG	24-24FHC	1-1/2	2-3/8	1.73	2.62
HC - 32	SS - 32 - HCG		2	2-7/8	2.22	2.62

NOTES:

- The "E" dimension is the minimum opening.
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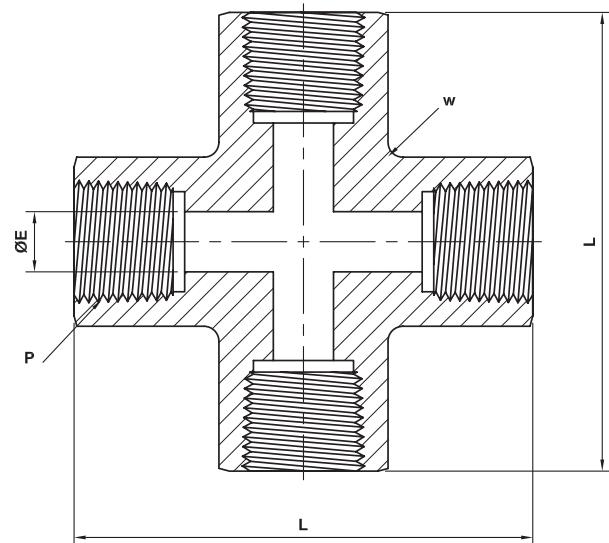
PFC TYPE



APPROVED

* END: NPT(F) x 4 SIDES

SIZE: 1/16 " – 1"



Part Number	Equivalent P/N 1	Equivalent P/N 1	NPT FEMALE PIPE SIZE P	Body Hex F	ØE	L
PFC - 1		1FX	1/16	19/32	0.24	1.70
PFC - 2	-2-CS	2FX	1/8	19/32	0.34	1.70
PFC - 4	-4-CS	4FX	1/4	13/16	0.45	1.96
PFC - 6	-6-CS	6PX	3/8	7/8	0.57	2.44
PFC - 8	-8-CS	8FX	1/2	1-1/16	0.71	2.36
PFC - 12	-12-CS	12FX	3/4	1-1/4	0.91	2.68
PFC - 16	-16-CS	19FX	1	1-13/16	1.15	3.62

NOTES:

1. The " E " dimension is the minimum opening.
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3. NPT thread as per ANSI B1.20.1.
4. All part numbers are proprietary of their respective owners

PIPE FEMALE TEE

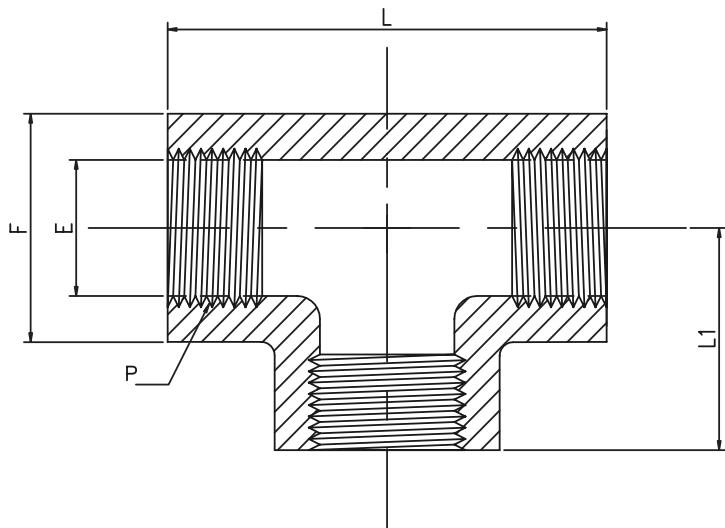
PFT TYPE

* END: NPT(F) x 3 SIDES

SIZE: 1/16 " – 1"



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Part Number	Equivalent P/N 1	Equivalent P/N 2	NPT FEMALE PIPE SIZE P	Body Hex F	ØE	L	L1
PFC - 1		1-1-1FT	1/16"	19/32	0.24	1.70	0.85
PFC - 2	-2-T	2-2-2FT	1/8"	19/32	0.34	1.70	0.85
PFC - 4	-4-T	4-4-4FT	1/4"	13/16	0.45	1.96	0.98
PFC - 6	-6-T	6-6-6FT	3/8"	7/8	0.57	2.44	1.22
PFC - 8	-8-T	8-8-8FT	1/2"	1-1/16	0.71	2.36	1.18
PFC - 12	-12-T	12-12-12FT	3/4"	1-1/4	0.91	2.68	1.34
PFC - 16	-16-T	16-16-16FT	1"	1-13/16	1.15	3.62	1.81

NOTES:

1. The "E" dimension is the minimum opening.
2. Dimensions are for reference only and are subject to change.
3. NPT thread as per ANSI B1.20.1.
4. All part numbers are proprietary of their respective owners





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