Material Technical Submittal

Future Mechanics Trading Co.

Salah Ad Din Street, Malaz, Riyadh, Saudi Arabia P. O. Box 28027 Riyadh 11437.

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Original Catalog

MECH

MEIDE CASTING

JINAN MEIDE CASTING CO., LTD.

02-2018

More than 50 years of Foundry Experience

Company Profile

Jinan Meide Casting Co. Ltd. was established in 1961. In the past decades, Jinan Meide has seized each opportunity to consolidate its strength, and has finally developed into what it is today, a large-scale enterprise group with advanced technology, equipment and strong comprehensive strength, known for its complete range of products, large producing capacity, high quality and strong R&D strength. The company owns altogether one main factory, three branch factories, two independent accounting steel pipe companys, and a science & technology park.

The company is the well-known manufacturer in the fitting industry with the most complete range of products, supplying malleable iron fittings, grooved fittings, grooved couplings, valves, cast iron fittings, ductile iron fittings, steel pipe nipples and couplings, stainless steel nipples, brass pipe nipples, cast bronze fittings, steel pipes, pipe hangers and supports, electric fittings, etc.

Over 50 years, Jinan Meide has been a trusted name in piping solutions by offering high-quality products, service and support to the PVF industry continuously. We provide expertise and product solutions for a wide range of applications, plumbing, mechanical, industrial, air-conditioning and refrigeration, mining, oil, gas, fire protection, equipment and power system. Many of the company's application technology are advanced in the world, with more than 20 patents registered each year, and the company has presided over and participated in the drafting of many important national standards of the industry.

We organize the whole production process in accordance with ISO 9001 and ISO 14001. It has also the most complete certificates in the PVF industry, including UL/FM/NSF of US, CRN/cUL of Canada, DVGW/TUV/CE/VdS of Germany, BSI/LPCB of UK, SII of Israel, JIS of Japan, ABNT of Brazil, GOST-R of Russia, CNBOP of Poland, KS of South Korea, TSE of Turkey, PSB of Singapore, SIRIM of Malaysia, SABS of South Africa etc. The products are well distributed in more than 130 countries and regions.

As an industry leader and key high-tech enterprise of the national torch plan, the company attaches great importance to environmental protection, energy-saving and emission-reduction. US-EEC recognizes MECH brand malleable iron pipe fittings as "the product to promote for the technology exchange of environmental protection". Protecting the environment is the duty of the company.

Customer satisfaction has always been the company's top objective, and we constantly stick to the principle: to provide customers with a value-added solution rather than simply delivering products.

فيو-مك
Fu-Mech
MECH
MEIDE CASTING

Company History

1962
- Business Started from Grey Iron Pot

1970
- Malleable Iron Pipe Fittings

1987
- Export, Main Market: Southeast Asia

1990
- Conduit Body

1993
- Self Export, Developed US and European Market

1995
- Cast Iron Fittings

1997
- Steel Pipe Nipples
- Red Brass Pipe Nipples

1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997

- 1998 — Malleable Iron Pipe Clamps
- 1999 — Pipe Hangers and Brackets
- 2000 — Ductile Iron Grooved Fittings and Couplings, Ball Valves
- 2001 — Ductile Iron Pipe Fittings
- 2003 — Bronze Fittings
- 2007 — Electric Power Fittings
- 2011 — Hydraulic Control Valves
- 2012 — Extra-heavy Brass Pipe Nipples
- 2013 — Steel Pipes
- 2014 — "MECH" Malleable Iron Pipe Fittings

State of the Art Equipment

High precision equipment is quality assurance. Jinan Meide's 8 factories are all equipped with the most advanced facilities and equipment in the industry. The main production facilities include Sinto automatic molding line, Tokyu automatic molding line, Chinese 416 automatic vertical molding line, automatic molding sand mixers, cupola furnaces, electric furnaces, water-cooled longevous cupola furnaces, CNC vertical machining centers, CNC machines, NC vertical lathes, radial drills, Jinan Meide proprietary automatic machines, hot-dipped galvanization line, automatic box sealing line, stereoscopic warehouse and so on.

Pattern

Tokyu AMF-111055

Pouring

Core Making

Sand Mulling

Melting

DISA

Sinto FCMX

End Grinding Line

Painting

Threading, Air Pressure Test, and Anti-rust Treatment

Warehouse

Reliable Quality Assurance

Jinan Meide is honored as the National enterprise technical center and is capable and qualified to conduct full series of tests and inspections including chemical checking, etc.

Inspection facilities include: spectrometer, carbon sulfur analyzer, metallurgical microscope, tensile strength testing equipment, pressure testing equipment, adhesive force testing equipment, CMM, hardness tester, etc.

From incoming inspection to finished product, quality is checked and monitored in the whole process. Each step of the manufacturing process is carefully documented, regularly reviewed for revision control and updating standard. Quality procedures are constantly monitored and updated to assure that only the highest and most consistent quality products are supplied to our valued customers.

Metallurgical Microscope

Spectrometer

CMM

Projector

The Length of The Test Instrument

Roughness Tester

Carbon Sulfur Analyzer

Tensile Strength Testing Equipment

Sand Testing Instrument

Certificates

FM
APPROVED
Certificate of Compliance
FM Approvals

Zertifikat Certificate
Anerkennung
Approval

한국산업규격 표시인증서
한국표준협회장

LICENCE

CERTIFICATE OF LISTING

JIS
JIS MARK CERTIFICATE
Jinan Meide Casting Co., Ltd.

Ductile Iron Grooved Fittings and Couplings

1N
Standard Flexible Coupling

1N
Standard Flexible Coupling

1N
Standard Reducing Flexible Coupling

1NS
Light-duty Flexible Coupling

1NH
Heavy-duty Flexible Coupling

1G
Standard Rigid Coupling

1GS
Light-duty Rigid Coupling

1GK
Angle Pad Coupling

H305
HDPE Coupling

H307
HDPE Transition Coupling

90
90° Elbow

90C
90° Hydrant Elbow

90C
90° Drain Elbow

90R
90° Reducing Elbow

90S
Light-duty 90° Elbow

91R
90° END-ALL Elbow

105
11.25° Elbow

110
22.5° Elbow

120
45° Elbow

130
Tee

130C
Reducing tee

130D
Reducing tee

130S
Light-duty Tee

130R
Reducing Tee

130R
Reducing Tee

Material: ASTM A536, GRADE 65-45-12, QT450-10
Threads: ASME B1.20.1, ISO 7-1, GB 7306
Size Available: 1"-24"

Surface Treatment:
P: Painted E: Electroplated
B: Black S: Epoxy G: Hot-dip Galvanized

131R
Reducing Tee with Female Thread

131R
Reducing Tee with Female Thread

180
Cross

180R
Reducing Cross

181
Reducing Cross with Female Thread

3L
U-Bolt Mechanical Tee

3G
Mechanical Tee Grooved Outlet

3GS
Light-duty Mechanical Tee Grooved Outlet

3J
Mechanical Tee Threaded Outlet

3JS
Light-duty Mechanical Tee Threaded Outlet

4G
Mechanical Cross Grooved Outlet

4GS
Light-duty Mechanical Cross Grooved Outlet

4J
Mechanical Cross Threaded Outlet

4JS
Light-duty Mechanical Cross Threaded Outlet

230
Grooved Eccentric Reducer

230N
Grooved Eccentric Reducer with Female Thread

240
Grooved Concentric Reducer

240N
Grooved Concentric Reducer with Female Thread

240W
Grooved Concentric Reducer with Male Thread

300
Cap

300
Cap with Concentric Hole

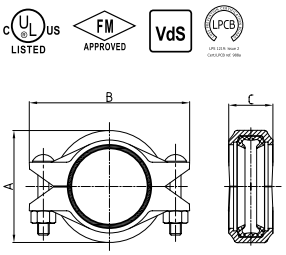
300PX
Cap with Eccentric Hole

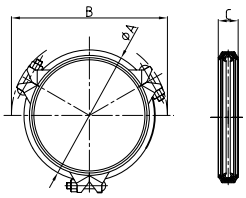
321
Grooved Flange

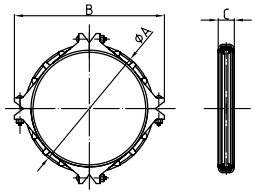
321G
Adaptor Flange

1N

Standard Flexible Coupling



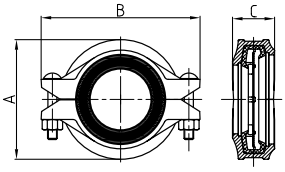




Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
25 1	33.7 1.327	500 3.45	3.0/680	0-1.6 0-0.06	55 2.16	92 3.62	42 1.65	2-3/8×55 2-M10×57	UL FM VdS LPCB
32 1¼	42.4 1.669	500 3.45	2.9/650	0-1.6 0-0.06	65 2.56	104 4.14	44 1.74	2-3/8×55 2-M10×57	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	3.8/850	0-3.2 0-0.13	70 2.75	110 4.33	44 1.74	2-3/8×55 2-M10×57	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	5.9/1330	0-3.2 0-0.13	83 3.27	125 4.92	44 1.74	2-3/8×55 2-M10×57	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	8.7/1950	0-3.2 0-0.13	96 3.78	143 5.63	45 1.78	2-3/8×55 2-M10×57	UL FM LPCB
65 2½	76.1 3.000	500 3.45	9.4/2120	0-3.2 0-0.13	100 3.94	145 5.71	45 1.78	2-3/8×55 2-M10×57	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	12.8/2885	0-3.2 0-0.13	115 4.53	160 6.30	45 1.78	2-1/2×70 2-M12×70	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	31.5/7100	0-3.2 0-0.13	138 5.43	190 7.48	50 1.97	2-1/2×70 2-M12×70	UL FM LPCB
100 4	114.3 4.500	500 3.45	21.2/4770	0-3.2 0-0.13	145 5.71	198 7.80	50 1.97	2-1/2×70 2-M12×70	UL FM VdS LPCB
125 5	133 5.250	300 2.07	28.7/6460	0-3.2 0-0.13	162 6.38	225 8.86	51.0 2.01	2-5/8×80 2-M16×85	UL FM LPCB
125 5	139.7 5.500	500 3.45	47.5/10680	0-3.2 0-0.13	169 6.65	230 9.06	52 2.05	2-5/8×80 2-M16×85	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	32.4/7290	0-3.2 0-0.13	170 6.69	232 9.13	51 2.01	2-5/8×80 2-M16×85	UL FM LPCB
150 6	159.0 6.250	300 2.07	41.0/9240	0-3.2 0-0.13	190 7.48	256 10.08	52 2.05	2-5/8×85 2-M16×85	UL FM LPCB
150 6	165.1 6.500	500 3.45	44.3/9960	0-3.2 0-0.13	196 7.72	260 10.24	52 2.05	2-5/8×85 2-M16×85	UL FM LPCB
150 6	168.3 6.625	500 3.45	46.0/10340	0-3.2 0-0.13	200 7.87	265 10.43	52 2.05	2-5/8×85 2-M16×85	UL FM VdS LPCB
200 8	216.3 8.516	300 2.07	116.9/26280	0-3.2 0-0.13	254 10.00	320 12.60	59 2.32	2-5/8×85 2-M16×85	UL FM
200 8	219.1 8.625	450 3.10	116.9/26280	0-3.2 0-0.13	258 10.24	342 13.46	60 2.37	2-3/4×115 2-M20×115	UL FM VdS LPCB
250 10	267.4 10.528	300 2.07	121.0/27210	0-3.2 0-0.13	308.5 12.15	403 15.87	64 2.52	2-3/4×115 2-M20×115	UL FM
250 10	273.0 10.750	300 2.07	121.0/27210	0-3.2 0-0.13	337 13.27	406 16.00	65 2.56	2-7/8×140 2-M22×140	UL FM VdS
300 12	318.5 12.539	300 2.07	170.3/38280	0-3.2 0-0.13	363 14.29	460 18.11	63 2.48	2-7/8×140 2-M22×140	UL FM
300 12	323.9 12.750	300 2.07	170.3/38280	0-3.2 0-0.13	378 14.96	465 18.31	65 2.56	2-7/8×140 2-M22×140	UL FM
350 14	355.6 14.000	300 2.07	205.5/46220	0-3.2 0-0.13	402 15.83	493 19.41	72 2.83	3-7/8×140 3-M22×140	——
350 14	377.0 14.843	225 1.6	178.5/40160	0-3.2 0-0.13	428 16.85	520 20.45	72 2.85	3-7/8X140 3-M22X140	——
400 16	406.4 16.000	300 2.07	268.4/60370	0-3.2 0-0.13	458 18.03	547 21.54	72 2.85	3-7/8×140 3-M22×140	——
400 16	426.0 16.772	225 1.6	227.9/51270	0-3.2 0-0.13	476 18.74	566 22.28	73 2.87	3-7/8X140 3-M22X140	——
450 18	457.2 18.000	300 2.07	262.5/59060	0-3.2 0-0.13	505 19.88	598 23.54	78 3.07	3-7/8×140 3-M22×140	——
500 20	508.0 20.000	300 2.07	324.1/72910	0-3.2 0-0.13	550 21.65	648 25.51	78 3.07	4-7/8×140 4-M22×140	——
600 24	609.6 24.000	300 2.07	466.7/104990	0-3.2 0-0.13	662 26.06	774 30.47	78 3.07	4-1X140	——

1N

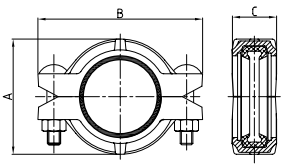
Standard Reducing Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
50×40 2×1½	60.3×48.3 2.375×1.900	300 2.07	5.9/1330	0-3.2 0-0.13	86 3.39	125 4.93	44 1.74	2-3/8×55 2-M10×57	UL FM LPCB
65×25 2½×1	73.0×33.7 2.875×1.327	300 2.07	8.7/1950	0-3.2 0-0.13	100 3.94	138 5.44	45 1.78	2-3/8×55 2-M10×57	UL FM
65×50 2½×2	73.0×60.3 2.875×2.375	300 2.07	8.7/1950	0-3.2 0-0.13	100 3.94	138 5.43	45 1.78	2-3/8×55 2-M10×57	UL FM LPCB
65×25 2½×1	76.1×33.7 3.000×1.327	300 2.07	9.4/2120	0-3.2 0-0.13	102 4.02	140 5.51	45 1.78	2-3/8×55 2-M10×57	UL FM
65×40 2½×1½	76.1×48.3 3.000×1.900	300 2.07	9.4/2120	0-3.2 0-0.13	102 4.02	140 5.51	45 1.78	2-3/8×55 2-M10×57	UL FM LPCB
65×50 2½×2	76.1×60.3 3.000×2.375	300 2.07	9.4/2120	0-3.2 0-0.13	102 4.02	144 5.67	45 1.78	2-3/8×55 2-M10×57	UL FM VdS LPCB
80×25 3×1	88.9×33.7 3.500×1.327	300 2.07	12.8/2885	0-3.2 0-0.13	115 4.53	168 6.61	46 1.81	2-1/2×70 2-M12×70	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	300 2.07	12.8/2885	0-3.2 0-0.13	115 4.53	168 6.61	46 1.81	2-1/2×70 2-M12×70	UL FM VdS LPCB
80×65 3×2½	88.9×73.0 3.500×2.875	300 2.07	12.8/2885	0-3.2 0-0.13	115 4.53	168 6.61	46 1.81	2-1/2×70 2-M12×70	UL FM LPCB
80×65 3×2½	88.9×76.1 3.500×3.000	300 2.07	12.8/2885	0-3.2 0-0.13	115 4.53	172 6.77	46 1.81	2-1/2×70 2-M12×70	UL FM VdS LPCB
100×25 4×1	114.3×33.7 4.500×1.327	300 2.07	21.2/4770	0-3.2 0-0.13	144 5.67	198 7.80	50 1.97	2-1/2×70 2-M12×70	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	21.2/4770	0-3.2 0-0.13	144 5.67	198 7.80	50 1.97	2-1/2×70 2-M12×70	UL FM VdS LPCB
100×65 4×2½	114.3×73.0 4.500×2.875	300 2.07	21.2/4770	0-3.2 0-0.13	144 5.67	198 7.80	50 1.97	2-1/2×70 2-M12×70	UL FM LPCB
100×65 4×2½	114.3×76.1 4.500×3.000	300 2.07	21.2/4770	0-3.2 0-0.13	144 5.67	202 7.95	50 1.97	2-1/2×70 2-M12×70	UL FM VdS LPCB
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	21.2/4770	0-3.2 0-0.13	148 5.83	198 7.80	50 1.97	2-1/2×70 2-M12×70	UL FM VdS LPCB
150 X 80 6×3	165.1×88.9 6.500×3.500	300 2.07	44.3/9960	0-3.2 0-0.13	200 7.87	260 10.24	51 2.01	2-3/4×115 2-M20×115	——
150×100 6×4	165.1×114.3 6.500×4.500	300 2.07	44.3/9960	0-3.2 0-0.13	197 7.75	260 10.24	51 2.01	2-5/8×85 2-M16×85	UL FM LPCB
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	46.0/10340	0-3.2 0-0.13	200 7.87	268 10.55	51 2.01	2-5/8×85 2-M16×85	UL FM
150×100 6×4	168.3×114.3 6.625×4.500	300 2.07	46.0/10340	0-3.2 0-0.13	202.5 7.97	268 10.55	52.5 2.07	2-5/8×85 2-M16×85	UL FM VdS LPCB
150×150 6×6	168.3×165.1 6.625×6.500	300 2.07	46.0/10340	0-3.2 0-0.13	204 8.031	268 10.551	52.5 2.066	2-5/8×85 2-M16×85	——
200×150 8×6	219.1×165.1 8.625×6.500	300 2.07	77.8/17500	0-3.2 0-0.13	257 10.12	335 13.19	60 2.36	2-3/4×115 2-M20×115	UL FM LPCB
200×150 8×6	219.1×168.3 8.625×6.625	300 2.07	77.8/17500	0-3.2 0-0.13	260 10.24	338 13.31	60 2.36	2-3/4×115 2-M20×115	UL FM LPCB

1NH

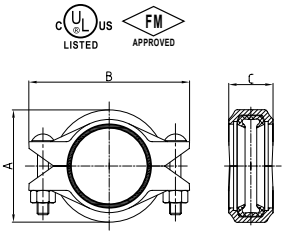
Heavy-duty Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
50 2	60.3 2.375	750 5.17	14.8/3320	0-3.2 0-0.13	90 3.54	134 5.28	45 1.77	2-1/2X75 2-M12X76	UL FM
65 2½	73.0 2.875	750 5.17	21.6/4860	0-3.2 0-0.13	100 3.94	150 5.91	45 1.77	2-1/2X75 2-M12X76	UL FM
65 2½	76.1 3.000	750 5.17	23.5/5280	0-3.2 0-0.13	102 4.02	154 6.06	45 1.77	2-1/2X75 2-M12X76	UL FM
80 3	88.9 3.500	750 5.17	32.1/7210	0-3.2 0-0.13	121 4.76	172 6.78	45 1.77	2-1/2X75 2-M12X76	UL FM
100 4	114.3 4.500	750 5.17	53.0/11900	0-3.2 0-0.13	151 5.95	214 8.43	50 1.97	2-5/8X85 2-M16X85	UL FM
125 5	141.3 5.563	750 5.17	81.0/18200	0-3.2 0-0.13	180 7.09	248 9.76	51 2.00	2-3/4X115 2-M20X115	UL FM
150 6	165.1 6.500	750 5.17	110.6/24800	0-3.2 0-0.13	205 8.07	278 10.95	51 2.00	2-3/4X115 2-M20X115	UL FM
150 6	168.3 6.625	750 5.17	115.0/25800	0-3.2 0-0.13	208 8.20	284 11.18	51 2.00	2-3/4X115 2-M20X115	UL FM
200 8	219.1 8.625	750 5.17	194.8/43800	0-3.2 0-0.13	268 10.56	354 13.94	61 2.40	2-7/8X140 2-M22X140	UL FM

1NS

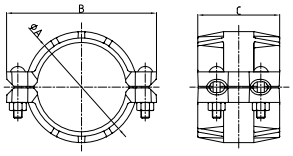
Light-duty Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
100 4	114.3 4.500	300 2.07	21.2/4770	0-3.2 0-0.13	139 5.47	182 7.16	50 1.97	2-3/8X55 2-M10X57	UL FM
125 5	139.7 5.500	450 3.10	47.5/10680	0-3.2 0-0.13	168 6.61	228 8.98	51 2.01	2-5/8X80 2-M16X85	UL FM
165 6	165.1 6.500	300 2.07	44.3/9960	0-3.2 0-0.13	192 7.56	244 9.61	51 2.01	2-1/2X75 2-M12X76	UL FM
165 6	168.3 6.625	300 2.07	46.0/10340	0-3.2 0-0.13	200 7.87	266 10.47	52 2.05	2-5/8X85 2-M16X85	UL FM
250 10	273.0 10.750	300 2.07	121.0/27210	0-3.2 0-0.13	320 12.60	398.0 15.67	64 2.52	2-3/4X120 2-M20X115	UL FM

H305

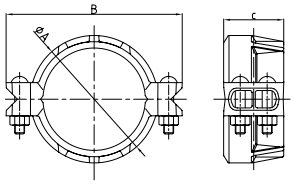
HDPE Coupling



Nominal Size mm/in	Pipe O.D mm/in	Dimensions			Bolt Size
		A mm/in	B mm/in	C mm/in	No.-Size mm
50 2	60.3 2.375	86.5 3.406	133 5.24	116 4.567	4-1/2X70
80 3	88.9 3.5	118 4.65	165 6.5	116 4.567	4-1/2X75
100 4	114.3 4.5	148 5.827	202 7.953	146 5.75	4-1/2X75
150 6	168.3 6.625	203 7.99	273 10.75	149 5.87	4-5/8X85
200 8	219.1 8.625	263 10.35	333 13.11	152 5.98	4-5/8X85
250 10	273.0 10.75	321 12.65	399 15.709	165 6.496	4-3/4X120
300 12	323.9 12.75	372 14.656	452 17.795	185 7.28	4-3/4X120

H307

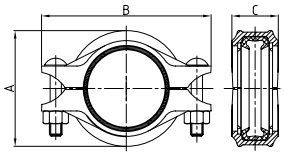
HDPE Transition Coupling

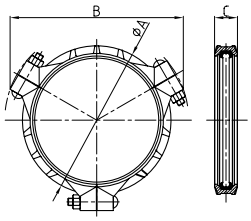


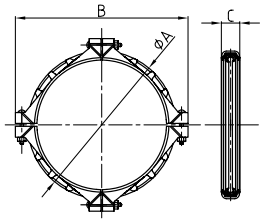
Nominal Size mm/in	Pipe O.D mm/in	Dimensions			Bolt Size
		A mm/in	B mm/in	C mm/in	No.-Size mm
50 2	60.3 2.375	86.5 3.406	147 5.787	79 3.11	4-1/2X70
80 3	88.9 3.5	116 4.567	176 6.929	79 3.11	4-1/2X75
100 4	114.3 4.5	148 5.827	209 8.228	95 3.75	4-1/2X75
150 6	168.3 6.625	202 7.95	280 11.02	95 3.74	4-5/8X85
200 8	219.1 8.625	264 10.39	342 13.46	107.5 4.23	4-5/8X85
250 10	273.0 10.75	321 12.65	424 16.693	127 5	4-3/4X120
300 12	323.9 12.75	372 14.656	483 19.016	127 5	4-3/4X120

1G

Standard Rigid Coupling



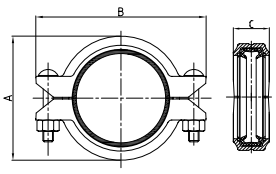




Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
25 1	33.7 1.327	500 3.45	3.0/680	0-1.6 0-0.06	59 2.33	100 3.94	44 1.74	2-3/8X55 2-M10X57	UL FM VdS LPCB
32 1¼	42.4 1.669	500 3.45	4.8/1080	0-1.6 0-0.06	66 2.60	109.5 4.31	45 1.78	2-3/8X55 2-M10X57	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	6.3/1420	0-3.2 0-0.13	72 2.84	115 4.53	45 1.78	2-3/8X55 2-M10X57	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	9.8/2210	0-3.2 0-0.13	85 3.35	131 5.16	45 1.78	2-3/8X55 2-M10X57	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	14.4/3240	0-3.2 0-0.13	98 3.86	145 5.71	45 1.78	2-3/8X55 2-M10X57	UL FM LPCB
65 2½	76.1 3.000	500 3.45	15.7/3520	0-3.2 0-0.13	101 3.98	147 5.78	45 1.77	2-3/8X55 2-M10X57	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	21.4/4810	0-3.2 0-0.13	115.0 4.53	170 6.69	46 1.82	2-1/2X70 2-M12X70	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	31.5/7100	0-3.2 0-0.13	140 5.51	197 7.76	52 2.05	2-1/2X70 2-M12X70	UL FM LPCB
100 4	114.3 4.500	500 3.45	35.4/7960	0-3.2 0-0.13	146 5.75	200 7.88	52 2.05	2-1/2X70 2-M12X70	UL FM VdS LPCB
125 5	133 5.250	300 2.07	47.9/10700	0-3.2 0-0.13	165 6.50	232 9.13	52 2.05	2-5/8X85 2-M16X85	UL FM LPCB
125 5	139.7 5.500	500 3.45	52.9/11800	0-3.2 0-0.13	170 6.69	238 9.37	52 2.05	2-5/8X85 2-M16X85	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	54.1/12100	0-3.2 0-0.13	172 6.77	236.5 9.31	52 2.05	2-5/8X85 2-M16X85	UL FM LPCB
150 6	159.0 6.250	300 2.07	68.5/15400	0-3.2 0-0.13	190 7.48	258 10.16	52 2.05	2-5/8X85 2-M16X85	UL FM LPCB
150 6	165.1 6.500	500 3.45	73.8/16610	0-3.2 0-0.13	198 7.80	266 10.47	52 2.05	2-5/8X85 2-M16X85	UL FM LPCB
150 6	168.3 6.625	500 3.45	76.7/17260	0-3.2 0-0.13	202.0 7.95	270 10.63	52 2.05	2-5/8X85 2-M16X85	UL FM VdS LPCB
200 8	219.1 8.625	450 3.10	116.9/26280	0-3.2 0-0.13	260.0 10.24	346 13.625	62 2.44	2-3/4X115 2-M20X115	UL FM VdS LPCB
250A 10	267.4 10.528	300 2.07	116/26130	0-3.2 0-0.13	318 12.52	396 15.60	63 2.48	2-3/4X120 2-M20X115	UL FM
250 10	273.0 10.750	400 2.8	163.8/36800	0-3.2 0-0.13	327 12.88	420 16.54	63 2.48	2-7/8X125 2-M22X125	UL FM VdS
300A 12	318.5 12.539	300 2.07	164.8/37080	0-3.2 0-0.13	364 14.33	456 17.95	63 2.48	2-7/8X140 2-M22X140	UL FM
300 12	323.9 12.750	400 2.8	230.6/51880	0-3.2 0-0.13	378 14.88	466 18.35	63 2.48	2-7/8X140 2-M22X140	UL FM
350 14	355.6 14.000	300 2.07	205.5/46220	0-3.2 0-0.13	415 16.34	510 20.08	72 2.84	3-7/8X140 3-M22X140	UL FM
400 16	406.4 16.000	300 2.07	268.4/60370	0-3.2 0-0.13	468 18.43	575 22.64	72 2.84	3-7/8X140 3-M22X140	UL FM
450 18	457.2 18.000	225 1.6	262.5/59060	0-3.2 0-0.13	508 20	608 23.94	78 3.07	3-7/8X140 3-M22X140	——
500 20	508.0 20.0	225 1.6	324.1/72910	0-3.2 0-0.13	563 22.17	660 25.98	78 3.07	4-7/8X140 4-M22X140	——
600 24	609.6 24.000	225 1.6	466.7/104990	0-3.2 0-0.13	668 26.30	772 30.40	78 3.07	4-1X140	——

1GS

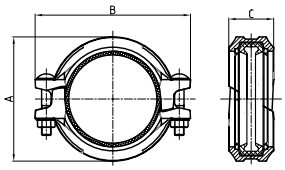
Light-duty Rigid Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
80 3	88.9 3.500	350 2.41	15.0/3360	0-3.2 0-0.13	114 4.50	160 6.30	45 1.78	2-3/8X55 2-M10X57	UL FM VdS LPCB
100 4	108.0 4.250	300 2.07	18.9/4260	0-3.2 0-0.13	135 5.30	185 7.28	50 1.97	2-1/2X70 2-M12X70	UL FM LPCB
100 4	114.3 4.500	350 2.41	24.7/5560	0-3.2 0-0.13	140 5.51	192 7.56	50 1.97	2-1/2X70 2-M12X70	UL FM VdS LPCB
125 5	139.7 5.500	350 2.41	36.9/8300	0-3.2 0-0.13	168 6.62	225 8.86	50 1.97	2-1/2X75 2-M12X76	UL FM LPCB
125 5	141.3 5.563	350 2.41	37.8/8490	0-3.2 0-0.13	170 6.69	225 8.86	50 1.97	2-1/2X75 2-M12X76	U L FM LPCB
150 6	159.0 6.250	300 2.07	41.0/9240	0-3.2 0-0.13	190 7.48	252 9.92	50 1.97	2-5/8X80 2-M16X85	UL FM LPCB
150 6	165.1 6.500	350 2.41	51.6/11600	0-3.2 0-0.13	195 7.68	250 9.84	50 1.97	2-1/2X75 2-M12X76	UL FM LPCB
150 6	168.3 6.625	350 2.41	53.6/12000	0-3.2 0-0.13	200 7.87	255 10.04	50 1.97	2-1/2X75 2-M12X76	UL FM LPCB
200A 8	216.3 8.516	300 2.07	76.0/17100	0-3.2 0-0.13	255 10.04	320 12.60	58 2.28	2-5/8X85 2-M16X85	UL FM
200 8	219.1 8.625	350 2.41	90.8/20430	0-3.2 0-0.13	255 10.05	324 12.76	58 2.28	2-5/8X85 2-M16X85	UL FM LPCB
250 10	273.0 10.750	300 2.07	121.0/27210	0-3.2 0-0.13	318 12.52	410 16.14	63 2.48	2-3/4X120 2-M20X115	UL FM

1GK

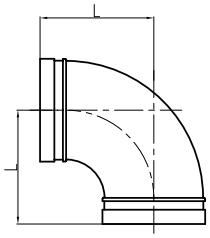
Angle Pad Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max. End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size	Certificate
					A mm/in	B mm/in	C mm/in	No.-Size mm	
32 1¼	42.4 1.669	500 3.45	4.8/1080	0-1.6 0-0.06	64 2.52	99 3.90	46.5 1.83	2-M10X55	UL FM
40 1½	48.3 1.900	500 3.45	6.3/1420	0-3.2 0-0.13	70 2.76	105 4.13	46.5 1.83	2-M10X55	UL FM
50 2	60.3 2.375	500 3.45	9.8/2210	0-3.2 0-0.13	85 3.35	121 4.76	46.5 1.83	2-M10X55	UL FM
65 2½	73.0 2.875	300 2.07	8.7/1950	0-3.2 0-0.13	99 3.90	134 5.28	47.5 1.87	2-M10X63	UL FM
65 2½	76.1 3.000	500 3.45	9.4/2120	0-3.2 0-0.13	102 4.02	137 5.39	47.5 1.87	2-M10X63	UL FM
80 3	88.9 3.500	500 3.45	12.8/2885	0-3.2 0-0.13	115 4.53	150 5.91	47.5 1.87	2-M10X60	UL FM
100 4	114.3 4.500	500 3.45	21.2/4770	0-3.2 0-0.13	142 5.59	180 7.09	52 2.05	2-M10X65	UL FM
125 5	139.7 5.500	300 2.07	31.7/7130	0-3.2 0-0.13	171 6.73	214 8.43	52.5 2.07	2-M12X75	UL FM
150 6	165.1 6.500	300 2.07	44.3/9960	0-3.2 0-0.13	198 7.80	242 9.53	52.5 2.07	2-M12X75	UL FM
150 6	168.3 6.625	300 2.07	46.0/10340	0-3.2 0-0.13	201 7.91	245 9.65	52.5 2.07	2-M12X75	UL FM
200 8	219.1 8.625	300 2.07	77.8/17500	0-3.2 0-0.13	258 10.16	331 13.03	63.5 2.50	2-M20X110	UL FM
250 10	273.0 10.750	300 2.07	121.0/27210	0-3.2 0-0.13	321 12.64	406 15.98	64.5 2.54	2-M22X140	——

90

90° Elbow

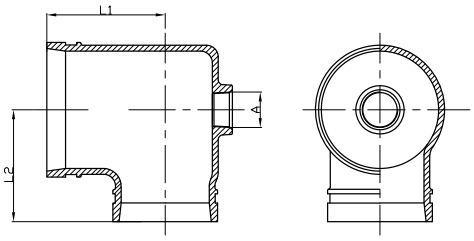


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	57 2.24	UL FM VdS LPCB
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	82.5 3.25	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	95 3.74	UL FM
65 2½	76.1 3.000	500 3.45	95 3.74	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	108 4.25	UL FM VdS LPCB
100 4	114.3 4.500	500 3.45	127 5.00	UL FM VdS LPCB
125 5	133.0 5.250	500 3.45	122 4.80	UL FM
125 5	139.7 5.500	500 3.45	140 5.50	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	165 6.50	UL FM LPCB
150 6	168.3 6.625	500 3.45	165 6.50	UL FM VdS LPCB
200 8	219.1 8.625	500 3.45	197 7.75	UL FM VdS LPCB
250 10	267.4 10.528	300 2.07	229 9.00	UL FM
250 10	273.0 10.750	300 2.07	229 9.00	UL FM VdS
300 12	318.5 12.539	300 2.07	254 10.00	UL FM
300 12	323.9 12.750	300 2.07	254 10.00	UL FM VdS
350 14	355.6 14.000	300 2.07	280 11.02	——
350 14	377.0 14.84	300 2.07	279 10.98	——
400 16	406.4 16.000	300 2.07	305 12.00	——
400 16	426.0 16.77	300 2.07	305 12.00	——
450 18	457.2 18.000	300 2.07	394 15.50	——
450 18	480.0 18.90	300 2.07	335 13.19	——
500 20	508.0 20.000	300 2.07	438 17.25	——
600 24	609.6 24.000	300 2.07	508 20.00	——

90C

90° Hydrant Elbow

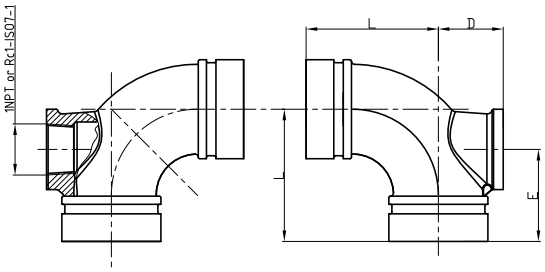
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Certificate
			A	L 1 mm/in	L 2 mm/in	
100X80X25 4X3X1	114.3X88.9X33.7 4.500X3.500X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	102 4.016	95 3.74	UL FM
150x80X25 6X3X1	165.1X88.9X33.7 6.500X3.500X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	130 5.118	130 5.118	UL FM



90C

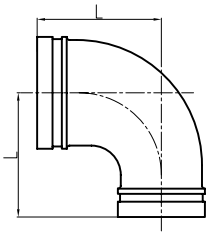
90° Drain Elbow

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Certificate
			L mm/in	D mm/in	E mm/in	
50 2	60.3 2.375	300 2.07	82.5 3.248	57 2.244	40 1.575	——
65 21/2	73 2.875	300 2.07	95 3.74	70 2.756	43 1.693	——
80 3	88.9 3.500	300 2.07	108 4.25	70 2.756	53 2.087	——
100 4	114.3 4.5	300 2.07	127 5	70 2.756	66 2.598	——
150 6	168.3 6.625	300 2.07	165 6.496	70 2.756	93 3.661	——
200 8	219.1 8.625	300 2.07	197 7.756	70 2.756	126 4.961	——



90R

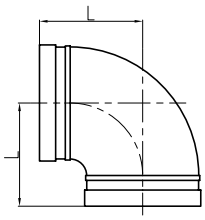
90° Reducing Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
80X65 3X2$^1/_2$	88.9X76.1 3.500X3.000	500 3.45	108 4.25	UL FM
100X65 4X2$^1/_2$	114.3X76.1 4.500X3.000	500 3.45	127 5.00	UL FM
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	127 5.00	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	165 6.50	UL FM
150X100 6X4	168.3X114.3 6.625X4.500	500 3.45	165 6.50	UL FM

90S

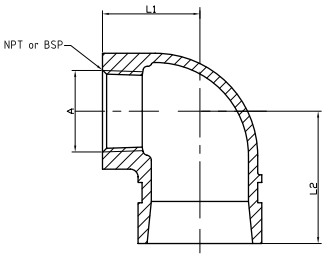
Light-duty 90° Elbow

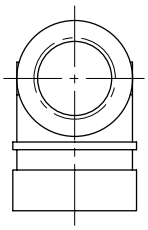


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50 2	60.3 2.375	300 2.07	70 2.75	UL FM VdS LPCB
65 2½	73.0 2.875	300 2.07	76 3.00	UL FM
65 2½	76.1 3.000	300 2.07	76 3.00	UL FM VdS LPCB
80 3	88.9 3.500	300 2.07	85.5 3.37	UL FM VdS LPCB
100 4	108.0 4.500	500 3.45	101 3.98	UL FM
100 4	114.3 4.500	365 2.52	101 3.98	UL FM VdS LPCB
125 5	139.7 5.500	300 2.07	124 4.88	UL FM VdS LPCB
150 6	159.0 6.500	300 2.07	140 5.50	UL FM
150 6	165.1 6.500	365 2.52	140 5.50	UL FM LPCB
150 6	168.3 6.625	300 2.07	140 5.50	UL FM VdS LPCB
200 8	216.3 8.625	300 2.07	175 6.89	UL FM
200 8	219.1 8.625	300 2.07	165 6.50	UL FM VdS LPCB

91R

90° END-ALL Elbow

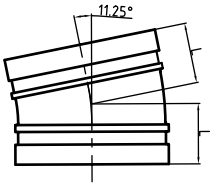




Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Certificate
			A (NPT/BSP)	L1 mm/in	L2 mm/in	
32X15 11/4X1/2	42.4X21.3 1.660X0.825	300 2.07	1/2	35.1 1.382	44.5 1.752	——
32X20 11/4X3/4	42.4X26.9 1.660X1.050	300 2.07	3/4	34.9 1.374	47.6 1.874	——
32X25 11/4X1	42.4X33.7 1.660X1.315	300 2.07	1	38.1 1.5	51.6 2.031	——
40X15 11/2X1/2	48.3X21.3 1.900X0.825	300 2.07	1/2	34.9 1.374	44.5 1.752	——
40X20 11/2X3/4	48.3X26.9 1.900X1.050	300 2.07	3/4	34.9 1.374	47.6 1.874	——
40X25 11/2X1	48.3X33.7 1.900X1.315	300 2.07	1	38.1 1.5	51.6 2.031	——
50X15 2X1/2	60.3X21.3 2.375X0.825	300 2.07	1/2	41.4 1.63	44.5 1.752	——
50X20 2X3/4	60.3X26.9 2.375X1.050	300 2.07	3/4	41.3 1.626	47.6 1.874	——
50X25 2X1	60.3X33.7 2.375X1.315	300 2.07	1	44.5 1.752	51.6 2.031	——
65X15 21/2X1/2	73.0X21.3 2.875X0.825	300 2.07	1/2	46 1.811	44.5 1.752	——
65X20 21/2X3/4	73.0X26.9 2.875X1.050	300 2.07	3/4	46 1.811	47.6 1.874	——
65X25 21/2X1	73.0X33.7 2.875X1.315	300 2.07	1	49.2 1.937	51.6 2.031	——
80X20 3X3/4	88.9X26.9 3.500X1.050	300 2.07	3/4	60.3 2.374	52.4 2.063	——
80X25 3X1	88.9X33.7 3.500X1.315	300 2.07	1	63.5 2.5	52.4 2.063	——

105

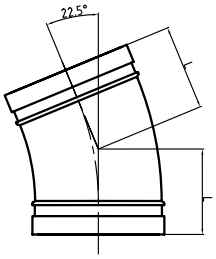
11.25° Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 $1^1/_4$	42.4 1.660	500 3.45	35 1.38	UL FM
40 $1^1/_2$	48.3 1.900	500 3.45	35 1.38	UL FM
50 2	60.3 2.375	500 3.45	35 1.38	UL FM VdS LPCB
65 $2^1/_2$	73.0 2.875	500 3.45	38 1.506	UL FM
65 $2^1/_2$	76.1 3.000	500 3.45	38 1.506	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	38 1.50	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	44 1.73	UL FM
100 4	114.3 4.500	500 3.45	44 1.73	UL FM VdS LPCB
125 5	139.7 5.500	500 3.45	51 2.00	UL FM VdS LPCB
150 6	159.0 6.250	500 3.45	51 2.00	UL FM
150 6	165.1 6.500	500 3.45	51 2.00	UL FM LPCB
150 6	168.3 6.625	500 3.45	51 2.00	UL FM VdS
200 8	219.1 8.625	500 3.45	51 2.00	UL FM VdS LPCB

110

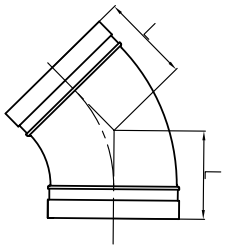
22.5° Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 1¼	42.4 1.660	500 3.45	45 1.77	UL FM
40 1½	48.3 1.900	500 3.45	45 1.77	UL FM
50 2	60.3 2.375	500 3.45	48 1.89	UL FM
65 2½	73.0 2.875	500 3.45	51 2.00	UL FM
65 2½	76.1 3.000	500 3.45	51 2.00	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	57 2.24	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	73 2.87	UL FM
100 4	114.3 4.500	500 3.45	73 2.87	UL FM VdS LPCB
125 5	139.7 5.500	500 3.45	73 2.87	UL FM VdS LPCB
150 6	159.0 6.250	500 3.45	79 3.11	UL FM
150 6	165.1 6.500	500 3.45	79 3.11	UL FM LPCB
150 6	168.3 6.625	500 3.45	79 3.11	UL FM VdS
200 8	219.1 8.625	500 3.45	98 3.86	UL FM VdS LPCB

120

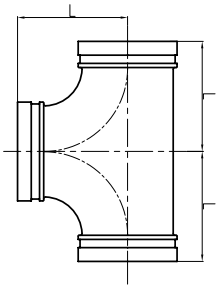
45° Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	44.5 1.75	UL FM VdS LPCB
32 1¼	42.4 1.660	500 3.45	44.5 1.75	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	44.5 1.75	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	51 2.00	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	57 2.24	UL FM
65 2½	76.1 3.000	500 3.45	57 2.24	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	63.5 2.50	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	76 3.00	UL FM
100 4	114.3 4.500	500 3.45	76 3.00	UL FM VdS LPCB
125 5	133.0 5.250	500 3.45	82.5 3.25	——
125 5	139.7 5.500	500 3.45	82.5 3.25	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	82.5 3.25	UL FM
150 6	159.0 6.250	500 3.45	89 3.50	UL FM
150 6	165.1 6.500	500 3.45	89 3.50	UL FM LPCB
150 6	168.3 6.625	500 3.45	89 3.50	UL FM VdS LPCB
200 8	216.3 8.516	500 3.45	108 4.25	UL FM
200 8	219.1 8.625	500 3.45	108 4.25	UL FM VdS LPCB
250 10	267.4 10.528	300 2.07	120.5 4.75	UL FM
250 10	273.0 10.750	500 3.45	120.5 4.75	UL FM VdS
300 12	318.5 12.750	300 2.07	133 5.25	UL FM
300 12	323.9 12.750	500 3.45	133 5.25	UL FM VdS
350 14	377 14.843	300 2.07	122 4.80	——
350 14	355.6 14.000	300 2.07	152 6.00	——
400 16	406.4 16.000	300 2.07	184 7.25	——
450 18	457.2 18.000	300 2.07	203 8.00	——
500 20	508.0 20.000	300 2.07	229 9.00	——
600 24	609.6 24.000	300 2.07	280 11.00	——

130

Tee

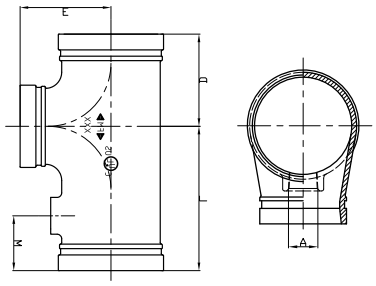


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	57 2.24	UL FM VdS LPCB
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	82.5 3.25	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	95 3.74	UL FM
65 2½	76.1 3.000	500 3.45	95 3.74	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	108 4.25	UL FM VdS LPCB
100 4	114.3 4.500	500 3.45	127 5.00	UL FM VdS LPCB
125 5	133.0 5.250	500 3.45	122 4.80	UL FM
125 5	139.7 5.500	500 3.45	140 5.50	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	165 6.50	UL FM LPCB
150 6	168.3 6.625	500 3.45	165 6.50	UL FM VdS LPCB
200 8	219.1 8.625	500 3.45	197 7.75	UL FM VdS LPCB
250 10	267.4 10.528	500 3.45	229 9.00	UL FM
250 10	273.0 10.750	500 3.45	229 9.00	UL FM VdS
300 12	318.5 12.539	500 3.45	254 10.00	——
300 12	323.9 12.750	500 3.45	254 10.00	UL FM VdS
350 14	355.6 14.000	300 2.07	280 11.02	——
350 14	377.0 14.84	300 2.07	279 10.98	——
400 16	406.4 16.000	300 2.07	305 12.00	——
400 16	426.0 16.77	300 2.07	285 11.22	——
450 18	457.2 18.000	300 2.07	342 13.46	——
450 18	480.0 18.90	300 2.07	335 13.19	——
500 20	508.0 20.000	300 2.07	438 17.25	——
600 24	609.6 24.000	300 2.07	508 20.00	——

130C

Reducing tee

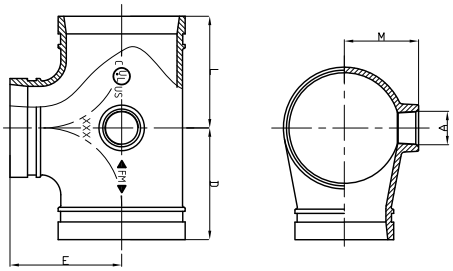
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Certificate
			A	L mm/in	D mm/in	E mm/in	M mm/in	
100X80X25 4X3X1	114.3X88.9X33.7 4.5X3.5X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	160 6.3	102 4.02	102 4.02	60 2.36	UL FM
150X80X25 6X3X1	165.1X88.9X33.7 6.5X3.5X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	165 6.5	130 5.12	130 5.12	60 2.36	UL FM



130D

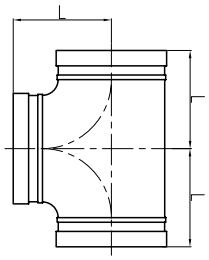
Reducing tee

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Certificate
			A	L mm/in	D mm/in	E mm/in	M mm/in	
100X80X25 4X3X1	114.3X88.9X33.7 4.5X3.5X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	102 4.02	102 4.02	102 4.02	67 2.638	UL FM
150X80X25 6X3X1	165.1X88.9X33.7 6.5X3.5X1.327	300 2.07	1-11.5NPT Rp1-ISO7/1	130 5.12	130 5.12	130 5.12	91 3.58	UL FM



130S

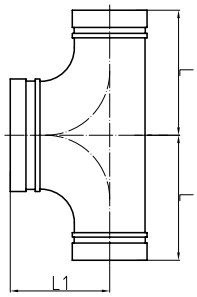
Light-duty Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50 2	60.3 2.375	300 2.07	70 2.75	UL FM VdS LPCB
65 2½	73.0 2.875	300 2.07	76 3.00	UL FM
65 2½	76.1 3.000	300 2.07	76 3.00	UL FM VdS LPCB
80 3	88.9 3.500	300 2.07	85.5 3.37	UL FM VdS LPCB
100 4	108.0 4.500	500 3.45	101 3.98	UL FM
100 4	114.3 4.500	300 2.07	101 3.98	UL FM VdS LPCB
125 5	139.7 5.500	300 2.07	124 4.88	UL FM VdS LPCB
150 6	159.0 6.500	300 2.07	140 5.50	UL FM
150 6	165.1 6.500	300 2.07	140 5.50	UL FM LPCB
150 6	168.3 6.625	300 2.07	140 5.50	UL FM VdS LPCB
200 8	216.3 8.625	300 2.07	175 6.89	UL FM
200 8	219.1 8.625	300 2.07	175 6.89	UL FM VdS LPCB

130R

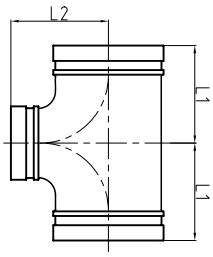
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Dimensions L 1 mm/in	Certificate
65×65×80 2½×2½×3	76.1×76.1×88.9 3.000×3.000×3.500	500 3.45	108 4.25	95 3.74	——
65×65×100 2½×2½×4	76.1×76.1×114.3 3.000×3.000×4.500	500 3.45	127 5.00	102 4.02	——
80×80×100 3×3×4	88.9×88.9×114 3.500×3.500×4.500	500 3.45	127 5.00	102 4.02	——

130R

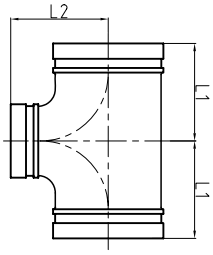
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
50×25 2×1	60.3×33.7 2.375×1.315	500 3.45	70 2.75	70 2.75	UL FM VdS LPCB
50×40 2×1½	60.3×48.3 2.375×1.900	500 3.45	70 2.75	70 2.75	UL FM VdS LPCB
65×40 2½×1½	73.0×48.3 2.875×1.900	500 3.45	76 3.00	76 3.00	UL FM
65×50 2½×2	73.0×60.3 2.875×2.375	500 3.45	69 2.72	76 3.00	UL FM
65×32 2½×1¼	76.1×42.4 3.000×1.660	500 3.45	76 3.00	76 3.00	UL FM
65×40 2½×1½	76.1×48.3 3.000×1.900	500 3.45	76 3.00	76 3.00	UL FM VdS LPCB
65×50 2½×2	76.1×60.3 3.000×2.375	500 3.45	69 2.72	76 3.00	UL FM VdS LPCB
80×32 3×1	88.9×33.7 3.500×1.315	500 3.45	108 4.25	108 4.25	UL FM VdS LPCB
80×32 3×1¼	88.9×42.4 3.500×1.660	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×40 3×1½	88.9×48.3 3.500×1.900	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS LPCB
80×50 3×2	88.9×60.3 3.500×2.375	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS LPCB
80×65 3×2½	88.9×73.0 3.500×2.875	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×65 3×2½	88.9×76.1 3.500×3.000	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS LPCB
100×50 4×2	108.0×60.3 4.250×2.375	500 3.45	101 3.98	101 3.98	UL FM
100×80 4×3	108.0×88.9 4.250×3.500	500 3.45	101 3.98	101 3.98	UL FM
100×25 4×1	114.3×33.7 4.500×1.315	500 3.45	101 3.98	101 3.98	UL FM VdS LPCB
100×40 4×1½	114.3×48.3 4.500×1.900	500 3.45	101 3.98	101 3.98	UL FM VdS LPCB
100×50 4×2	114.3×60.3 4.500×2.375	500 3.45	101 3.98	101 3.98	UL FM VdS LPCB
100×65 4×2½	114.3×73.0 4.500×2.875	500 3.45	101 3.98	101 3.98	UL FM
100×65 4×2½	114.3×76.1 4.500×3.000	500 3.45	101 3.98	101 3.98	UL FM VdS LPCB
100×80 4×3	114.3×88.9 4.500×3.500	500 3.45	101 3.98	101 3.98	UL FM VdS LPCB
125×50 5×2	133.0×60.3 5.250×2.375	500 3.45	124 4.88	124 4.88	UL FM
125×65 5×2½	133.0×76.1 5.250×3.000	500 3.45	124 4.88	124 4.88	UL FM
125×100 5×4	133.0×108.0 5.250×4.250	500 3.45	124 4.88	124 4.88	UL FM
125×100 5×4	133.0×114.3 5.250×4.500	500 3.45	124 4.88	124 4.88	UL FM
125×40 5×1½	139.7×48.3 5.500×1.900	500 3.45	124 4.88	124 4.88	UL FM
125×50 5×2	139.7×60.3 5.500×2.375	500 3.45	124 4.88	124 4.88	UL FM
125×65 5×2½	139.7×76.1 5.500×3.000	500 3.45	124 4.88	124 4.88	UL FM
125×80 5×3	139.7×88.9 5.500×3.500	500 3.45	124 4.88	124 4.88	UL FM
125×100 5×4	139.7×114.3 5.500×4.500	500 3.45	124 4.88	124 4.88	UL FM VdS LPCB
125×50 5×2	141.3×60.3 5.563×2.375	500 3.45	124 4.88	124 4.88	UL FM
125×80 5×3	141.3×88.9 5.563×3.500	500 3.45	124 4.88	124 4.88	UL FM
125×100 5×4	141.3×114.3 5.563×4.500	500 3.45	124 4.88	124 4.88	UL FM
150×60 6×2	159.0×60.3 6.250×2.375	500 3.45	140 5.50	140 5.50	UL FM
150×65 6X2½	159.0×76.1 6.250×3.000	500 3.45	140 5.50	140 5.50	UL FM
150×80 6×3	159.0×88.9 6.250×3.500	500 3.45	140 5.50	140 5.50	UL FM
150×100 6×4	159.0×108.0 6.250×4.250	500 3.45	140 5.50	140 5.50	UL FM
150×100 6×4	159.0×114.3 6.250×4.500	500 3.45	140 5.50	140 5.50	UL FM

130R

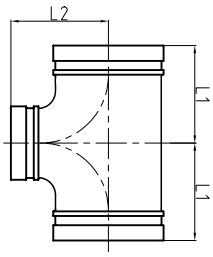
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
150×125 6×5	159.0×133.0 6.250×5.250	500 3.45	140 5.50	140 5.50	UL FM
150×50 6×2	165.1×60.3 6.500×2.375	300 2.07	140 5.50	140 5.50	UL FM
150×65 6×2½	165.1×76.1 6.500×3.000	300 2.07	140 5.50	140 5.50	UL FM
150×80 6×3	165.1×88.9 6.500×3.500	300 2.07	140 5.50	140 5.50	UL FM LPCB
150×100 6×4	165.1×114.3 6.500×4.500	300 2.07	140 5.50	140 5.50	UL FM LPCB
150×125 6×5	165.1×139.7 6.500×5.500	300 2.07	140 5.50	140 5.50	UL FM LPCB
165×133	165.1×133.0 6.500×5.250	300	140 5.50	140 5.50	UL
150×50 6×2□	168.3×60.3 6.625×2.375	500 3.45	140 5.50	140 5.50	UL FM VdS LPCB
150×65 6×2½	168.3×73.0 6.625×2.875	500 3.45	140 5.50	140 5.50	UL FM
150×65 6×2½	168.3×76.1 6.625×3.000	500 3.45	140 5.50	140 5.50	UL FM VdS LPCB
150×80 6×3	168.3×88.9 6.625×3.500	500 3.45	140 5.50	140 5.50	UL FM VdS LPCB
150×100 6×4	168.3×114.3 6.625×4.500	500 3.45	140 5.50	140 5.50	UL FM VdS LPCB
150×125 6×5	168.3×139.7 6.625×5.500	300 2.07	140 5.50	140 5.50	UL FM VdS LPCB
150×125 6×5	168.3×141.3 6.625×5.563	300 2.07	140 5.50	140 5.50	UL FM
200×100 8×4	216.3×114.3 8.516×4.500	300 2.07	175 6.89	175 6.89	——
200×150 8×6	216.3×165.1 8.516×6.500	300 2.07	175 6.89	175 6.89	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	500 3.45	175 6.89	175 6.89	UL FM VdS LPCB
200×65 8×2½	219.1×76.1 8.625×3.000	300 2.07	175 6.89	175 6.89	UL FM
200×80 8×3	219.1×88.9 8.625×3.500	500 3.45	175 6.89	175 6.89	UL FM VdS LPCB
200×100 8×4	219.1×108.0 8.625×4.250	500 3.45	175 6.89	175 6.89	UL FM
200×100 8×4	219.1×114.3 8.625×4.500	500 3.45	175 6.89	175 6.89	UL FM VdS LPCB
200×125 8×5	219.1×133.0 8.625×5.250	300 2.07	175 6.89	175 6.89	UL FM
200×125 8×5	219.1×139.7 8.625×5.500	300 2.07	175 6.89	175 6.89	UL FM
200×150 8×6	219.1×159.0 8.625×6.250	300 2.07	175 6.89	175 6.89	UL FM
200×150 8×6	219.1×165.1 8.625×6.500	300 2.07	175 6.89	175 6.89	UL FM
200×150 8×6	219.1×168.3 8.625×6.625	500 3.45	175 6.89	175 6.89	UL FM VdS LPCB
250×150 10×6	273.0×159.0 10.750×6.250	500 3.45	229 9.00	229 9.00	UL FM
250×150 10×6	273.0×165.1 10.750×6.500	300 2.07	229 9.00	229 9.00	UL FM
250×150 10×6	273.0×168.3 10.750×6.625	300 2.07	229 9.00	229 9.00	UL FM VdS
250×200 10×8	273.0×219.1 10.750×8.625	300 2.07	229 9.00	229 9.00	UL FM VdS
300×150 12×6	323.9×165.1 12.750×6.500	300 2.07	254 10	254 10	UL FM
300×150 12×6	323.9×168.3 12.750×6.625	300 2.07	254 10	254 10	——
300×200 12×8	323.9×219.1 12.750×8.625	300 2.07	254 10	254 10	UL FM VdS
300×250 12×10	323.9×273.0 12.750×10.750	300 2.07	254 10	254 10	UL FM VdS
450×300 18×12	480.0×323.9 18.897×12.750	300 2.07	335 13.188	335 13.188	——
450×350 18×14	480.0×377.0 18.897×14.840	300 2.07	335 13.188	335 13.188	——

130R

Reducing Tee

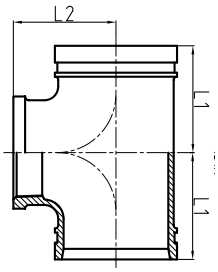


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
350×150 14×6	355.6×168.3 14.000×6.625	300 2.07	279 10.98	238 9.37	—
350×200 14×8	355.6×219.1 14.00×8.625	300 2.07	280 11.02	280 11.02	—
350×250 14×10	355.6×273.0 14.000×10.750	300 2.07	279 10.98	257 10.12	—
350×300 14×12	355.6×323.9 14.000×12.750	300 2.07	279 10.98	270 10.63	—
350×125 14×5	377.0×133.0 14.840×5.250	300 2.07	240 9.45	265 10.43	—
350×150 14×6	377.0×159.0 14.840×6.250	300 2.07	240 9.45	265 10.43	—
350×200 14×8	377.0×219.1 14.840×8.625	300 2.07	240 9.45	265 10.43	—
350×250 14×10	377.0×273.0 14.840×10.750	300 2.07	240 9.45	265 10.43	—
350×300 14×12	377.0×323.9 14.840×12.750	300 2.07	240 9.45	265 10.43	—
400×150 16×6	406.4×168.3 16.000×6.625	300 2.07	305 12.01	264 10.39	—
400×200 16×8	406.4×219.1 16.000×8.625	300 2.07	305 12.01	273 10.75	—
400×250 16×10	406.4×273.0 16.000×10.750	300 2.07	305 12.01	283 11.14	—
400×300 16×12	406.4×323.9 16.000×12.750	300 2.07	305 12.01	295 11.61	—
400×350 16×14	406.4×355.6 16.000×14.000	300 2.07	305 12.01	305 12.01	—
400×125 16×5	426.0×133.0 16.772×5.250	300 2.07	260 10.24	285 11.22	—
400×150 16×6	426.0×159.0 16.772×6.250	300 2.07	260 10.24	285 11.22	—
400×200 16×8	426.0×219.1 16.772×8.625	300 2.07	260 10.24	285 11.22	—
400×250 16×10	426.0×273.0 16.772×10.750	300 2.07	260 10.24	285 11.22	—
400×300 16×12	426.0×323.9 16.772×12.750	300 2.07	260 10.24	285 11.22	—
450×150 18×6	457.2×168.3 18.000×6.625	300 2.07	343 13.50	298 11.73	—
450×200 18×8	457.2×219.1 18.000×8.625	300 2.07	343 13.50	298 11.73	—
450×250 18×10	457.2×273.0 18.000×10.750	300 2.07	343 13.50	308 12.13	—
450×300 18×12	457.2×323.9 18.000×12.750	300 2.07	343 13.50	321 12.64	—
450×350 18×14	457.2×355.6 18.000×14.000	300 2.07	343 13.50	330 12.99	—
450×400 18×16	457.2×406.4 18.000×16.000	300 2.07	343 13.50	330 12.99	—
500×150 20×6	508.0×168.3 20.000×6.625	300 2.07	381 15.00	324 12.76	—
500×200 20×8	508.0×219.1 20.000×8.625	300 2.07	381 15.00	324 12.76	—
500×250 20×10	508.0×273.0 20.000×10.750	300 2.07	381 15.00	333 13.11	—
500×300 20×12	508.0×323.9 20.000×12.750	300 2.07	381 15.00	346 13.62	—
500×350 20×14	508.0×355.6 20.000×14.000	300 2.07	381 15.00	356 14.02	—
500×400 20×16	508.0×406.4 20.000×16.000	300 2.07	381 15.00	356 14.02	—
500×450 20×18	508.0×457.2 20.000×18.000	300 2.07	381 15.00	368 14.49	—
600×150 24×6	609.6×168.3 24.000×6.625	300 2.07	432 17.01	384 15.12	—
600×200 24×8	609.6×219.1 24.000×8.625	300 2.07	432 17.01	384 15.12	—
600×250 24×10	609.6×273.0 24.000×10.750	300 2.07	432 17.01	384 15.12	—
600×300 24×12	609.6×323.9 24.000×12.750	300 2.07	432 17.01	397 15.63	—
600×350 24×14	609.6×355.6 24.000×14.000	300 2.07	432 17.01	406 15.98	—
600×400 24×16	609.6×406.4 24.000×16.000	300 2.07	432 17.01	406 15.98	—
600×450 24×18	609.6×457.2 24.000×18.000	300 2.07	432 17.01	419 16.50	—
600×500 24×20	609.6×508.0 24.000×20.000	300 2.07	432 17.01	432 17.01	—

Segmental sizes are made of carbon steel pipe or fabricated from wrought carbon steel. Contact manufacturer for details.

131R

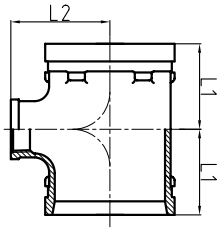
Reducing Tee with Female Thread



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
50×25 2×1	60.3×33.7 2.375×1.315	500 3.45	70 2.75	70 2.75	UL FM
50×32 2×1¼	60.3×42.4 2.375×1.660	500 3.45	70 2.75	70 2.75	——
50×40 2×1½	60.3×48.3 2.375×1.900	500 3.45	70 2.75	70 2.75	UL FM
50×50×65 2×2×2½	60.3×60.3×76.1 2.375×2.375×3.000	300 2.07	66 2.59	76 2.99	
50×50×80 2×2×3	60.3×60.3×88.9 2.375×2.375×3.500	300 2.07	70 2.755	80 3.149	
65×25 2½×1	73.0×33.7 2.875×1.315	500 3.45	76 3.00	76 3.00	UL FM
65×40 2½×1½	73.0×48.3 2.875×1.900	300 2.07	76 3.00	76 3.00	——
65×32 2½×1¼	73.0×42.4 2.875×1.660	500 3.45	76 3.00	76 3.00	UL FM
65×25 2½×1	76.1×33.7 3.000×1.315	500 3.45	76 3.00	76 3.00	UL FM
65×32 2½×1¼	76.1×42.4 3.000×1.660	500 3.45	76 3.00	76 3.00	UL FM
65×40 2½×1½	76.1×48.3 3.000×1.900	500 3.45	76 3.00	76 3.00	UL FM
65×50 2½×2	76.1×60.3 3.000×2.375	500 3.45	76 3.00	76 3.00	UL FM
80×25 3×1	88.9×33.7 3.500×1.315	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×32 3×1¼	88.9×42.4 3.500×1.660	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×40 3×1½	88.9×48.3 3.500×1.900	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	500 3.45	85.5 3.37	85.5 3.37	UL FM
80×65 3×2½	88.9×76.1 3.500×3.000	500 3.45	85.5 3.37	85.5 3.37	UL FM
100×65 4×2½	108.0×76.1 4.250×3.000	300 2.07	100 3.94	96 3.78	UL FM
100×80 4×3	108.0×88.9 4.250×3.500	300 2.07	100 3.94	96 3.78	UL FM
100×65 4×2½	114.3×76.1 4.500×3.000	300 2.07	100 3.94	96 3.78	UL FM
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	100 3.94	96 3.78	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	175 6.89	175 6.89	FM
200×65 8×2½	219.1×76.1 8.625×3.000	300 2.07	175 6.89	175 6.89	FM
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	175 6.89	175 6.89	FM

131R

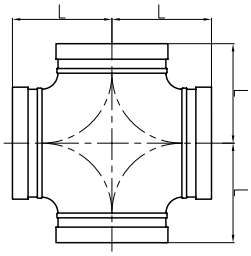
Reducing Tee with Female Thread



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	76 2.99	88 3.47	UL FM
100×32 4×1¼	114.3×42.4 4.500×1.660	300 2.07	76 2.99	88 3.47	UL FM
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	85 3.35	91 3.58	UL FM
100×50 4×2	108.0×60.3 4.250×2.375	300 2.07	85 3.35	91 3.58	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	85 3.35	91 3.58	UL FM
125×50 5×2	133.0×60.3 5.250×2.375	300 2.07	86 3.39	106 4.17	UL FM
125×65 5×2½	133.0×76.1 5.250×3.000	300 2.07	102 4.02	111 4.37	UL FM
125×80 5×3	133.0×88.9 5.250×3.500	300 2.07	102 4.02	111 4.37	UL FM
125×25 5×1	139.7×33.7 5.500×1.315	300 2.07	78 3.07	103 4.06	UL FM
125×32 5×1¼	139.7×42.4 5.500×1.660	300 2.07	78 3.07	103 4.06	UL FM
125×40 5×1½	139.7×48.3 5.500×1.900	300 2.07	86 3.39	106 4.17	UL FM
125×50 5×2	139.7×60.3 5.500×2.375	300 2.07	86 3.39	106 4.17	UL FM
125×65 5×2½	139.7×76.1 5.500×3.000	300 2.07	102 4.02	111 4.37	UL FM
125×80 5×3	139.7×88.9 5.500×3.500	300 2.07	102 4.02	111 4.37	UL FM
150×60 6×2	159.0×60.3 6.250×2.375	300 2.07	92 3.62	124 4.88	UL FM
150×65 6×2½	159.0×76.1 6.250×3.000	300 2.07	107 4.21	129 5.08	UL FM
150×80 6×3	159.0×88.9 6.25×03.500	300 2.07	107 4.21	129 5.08	UL FM
150×25 6×1	165.1×33.7 6.500×1.315	300 2.07	83 3.27	121 4.76	UL FM
150×32 6×1¼	165.1×42.4 6.500×1.660	300 2.07	83 3.27	121 4.76	UL FM
150×40 6×1½	165.1×48.3 6.500×1.900	300 2.07	92 3.62	124 4.88	UL FM
150×50 6×2	165.1×60.3 6.500×2.375	300 2.07	92 3.62	124 4.88	UL FM
150×65 6×2½	165.1×76.1 6.500×3.000	300 2.07	107 4.21	129 5.08	UL FM
150×80 6×3	165.1×88.9 6.500×3.500	300 2.07	107 4.21	129 5.08	UL FM
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	92 3.62	124 4.88	UL FM
150×65 6×2½	168.3×76.1 6.625×3.000	300 2.07	107 4.21	129 5.08	UL FM
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	107 4.21	129 5.08	——

180

Cross

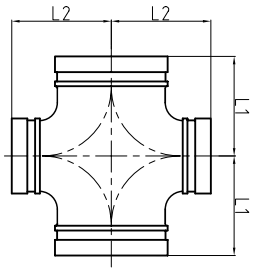


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	70 2.75	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	76 3.00	UL FM
65 2½	76.1 3.000	500 3.45	76 3.00	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	85.5 3.37	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	101 3.98	UL FM
100 4	114.3 4.500	500 3.45	101 3.98	UL FM VdS LPCB
125 5	139.7 5.500	500 3.45	124 4.88	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	124 4.88	UL FM
150 6	159.0 6.250	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	140 5.50	UL FM LPCB
150 6	168.3 6.625	500 3.45	140 5.50	UL FM VdS LPCB
200 8	219.1 8.625	500 3.45	175 6.89	UL FM VdS LPCB
250 10	273.0 10.750	500 3.45	229 9.00	UL FM VdS
300 12	323.9 12.750	500 3.45	254 10.00	UL FM VdS
350 14	355.6 14.000	300 2.07	279 10.98	——
350 14	377.0 14.84	300 2.07	279 10.98	——
400 16	406.4 16.000	300 2.07	305 12.01	——
450 18	457.2 18.000	300 2.07	343 13.5	——
500 20	508.0 20.000	300 2.07	381 15.00	——
600 24	609.6 24.000	300 2.07	432 17.01	——

Segmental sizes are made of carbon steel pipe or fabricated from wrought carbon steel. Contact manufacturer for details.

180R

Reducing Cross



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
65×50 2½×2	76.1×60.3 3.000×2.375	500 3.45	76 3.00	76 3.00	——
80×50 3×2	88.9×60.3 3.500×2.375	500 3.45	85.5 3.37	85.5 3.37	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	500 3.45	101 3.98	101 3.98	UL FM
100×80 4×3	114.3×88.9 4.500×3.500	500 3.45	101 3.98	101 3.98	UL FM
125×100 5×4	139.7×114.3 5.500×4.500	500 3.45	124 4.88	124 4.88	UL FM
159×108	159.0×108.0 6.250×4.250	500 3.45	124 4.88	124 5.50	UL FM
150×50 6×2	165.1×60.3 6.500×2.375	500 3.45	140 5.50	140 5.50	UL FM
150×65 6×2½	165.1×76.1 6.500×3.000	500 3.45	140 5.50	140 5.50	UL FM
150×80 6×3	165.1×88.9 6.500×3.500	500 3.45	140 5.50	140 5.50	UL FM
150×100 6×4	165.1×114.3 6.500×4.500	500 3.45	140 5.50	140 5.50	UL FM
150×50 6×2	168×60.3 6.625×2.375	500 3.45	140 5.50	140 5.50	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	500 3.45	197 7.75	197 7.75	UL FM
200×100 8×4	219.1×114.3 8.625×4.500	500 3.45	175 6.89	175 6.89	UL FM
200×125 8×5	219.1×139.7 8.625×5.500	300 2.07	175 6.89	175 6.89	UL FM
200×150 8×6	219.1×159.0 8.625×6.250	300 2.07	175 6.89	175 6.89	UL FM
200×150 8×6	219.1×165.1 8.625×6.500	300 2.07	175 6.89	175 6.89	UL FM

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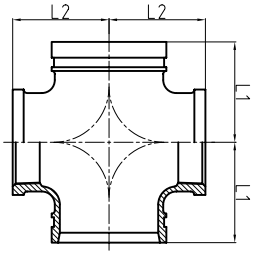
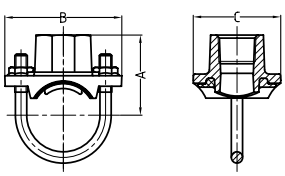
Reducing Cross with Female Thread



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L 1 mm/in	Dimensions L 2 mm/in	Certificate
65×50 2½×2	76.1×60.3 3.000×2.375	300 2.07	76 3.00	76 3.00	——
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	108 4.25	108 4.25	——
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	85.5 3.37	85.5 3.37	——
80×50 3×2	88.9×60.3 3.500×2.375	300 2.07	85.5 3.37	85.5 3.37	——
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	76 2.99	88 3.47	UL FM
100×32 4×1¼	114.3×42.4 4.500×1.660	300 2.07	76 2.99	88 3.47	UL FM
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	85 3.35	91 3.58	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	85 3.35	91 3.58	UL FM
100×65 4×2½	114.3×76.1 4.500×3.000	300 2.07	101 3.98	96 3.78	——
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	101 3.98	96 3.78	——
150×32 6×1¼	165.1×42.4 6.500×1.660	300 2.07	92 3.62	124 4.88	——
150×40 6×1½	165.1×48.3 6.500×1.900	300 2.07	92 3.62	124 4.88	——
150×50 6×2	165.1×60.3 6.500×2.375	300 2.07	92 3.62	124 4.88	UL FM
150×65 6×2½	165.1X 76.1 6.500×3.000	300 2.07	140 5.50	140 5.50	——
150×80 6×3	165.1×88.9 6.500×3.500	300 2.07	140 5.50	140 5.50	——
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	175 6.89	175 6.89	——

3L

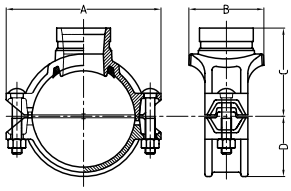
U-Bolt Mechanical Tee



Nominal Size mm/in	Hole Dia mm/in +1.6,0/+0.063,0	Working Pressure PSI/MPa	Dimensions			U Bolt Size mm/in	Certificate
			A mm/in	B mm/in	C mm/in		
32X15 1¼X1/2	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
32X20 1¼X3/4	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
32X25 1¼X1	30 1.18	300 2.07	57.7 2.27	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
40X15 1½X1/2	30 1.18	300 2.07	57.7 2.27	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
40X20 1½X3/4	30 1.18	300 2.07	57.7 2.27	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
40X25 1½X1	30 1.18	300 2.07	60.8 2.39	88.9 3.50	57.2 2.25	3/8X73 M10X73	UL FM VdS
50X15 2X1/2	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8X90 M10X90	UL FM VdS
50X20 2X3/4	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8X90 M10X90	UL FM VdS
50X25 2X1	30 1.18	300 2.07	66.6 2.62	95.3 3.75	57.2 2.25	3/8X90 M10X90	UL FM VdS
50X32 2X11/4	45 1.75	300 2.07	66.6 2.62	4.72 120	3.00 76	1/2X52	——
65X15 2½X1/2	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105 M10X105	UL FM
65X20 2½X3/4	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105 M10X105	UL FM
65X25 2½X1	30 1.18	300 2.07	73.2 2.88	108.0 4.25	57.2 2.25	3/8X105 M10X105	UL FM
65X15 76.1X1/2	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105 M10X105	UL FM VdS
65X20 76.1X3/4	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105 M10X105	UL FM VdS
65X25 76.1X1	30 1.18	300 2.07	73.2 2.88	108.0 4.25	57.2 2.25	3/8X105 M10X105	UL FM VdS
80X25 88.9X1	38 1.5	300 2.07	79 3.11	145 5.70	73 2.87	1/2X58	UL FM VdS

3G

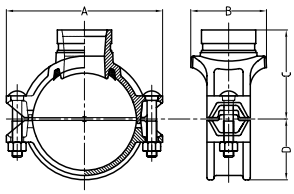
Mechanical Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
50×32 2×1¼	60.3×42.4 2.375×1.660	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8×55 M10X57	UL FM VdS
50×40 2×1½	60.3×48.3 2.375×1.900	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8×55 M10X57	UL FM VdS
65×25 2½×1	73.0×33.7 2.875×1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	49 1.93	1/2×70 M12X70	——
65×32 2½×1¼	73.0×42.4 2.875×1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49 1.93	1/2×70 M12X70	UL FM
65×40 2½×1½	73.0×48.3 2.875×1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49 1.93	1/2×70 M12X70	UL FM
65×25 76.1×1	76.1×33.7 3.000×1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×32 76.1×1¼	76.1×42.4 3.000×1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×40 76.1×1½	76.1×48.3 3.000×1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2×70 M12X70	UL FM VdS
80×25 3×1	88.9×33.7 3.500×1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	84.5 3.33	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×50 3×2	88.9×60.3 3.500×2.375	300 2.07	64 2.50	152 5.98	98 3.86	84.5 3.33	56.5 2.22	1/2×75 M12X76	UL FM VdS
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	188 7.40	78.4 3.09	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS
100×32 4×1¼	114.3X42.4 4.500×1.660	300 2.07	51 2.00	188 7.40	89 3.50	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	188 7.40	89 3.50	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.5	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS
100×65 4×2½	114.3×73.0 4.500×2.875	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2×75 M12X76	UL FM
100×65 4×76.1	114.3×76.1 4.500×3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2×75 M12X76	VdS LPCB
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	89 3.50	188 7.40	128 5.03	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS LPCB
125×32 139.7×1¼	139.7×42.4 5.500×1.660	300 2.07	51 2.00	221.5 8.72	95 3.74	118 4.65	84 3.31	5/8×85 M16X85	UL FM
125×40 139.7×1½	139.7×48.3 5.500×1.900	300 2.07	51 2.00	221.5 8.72	95 3.74	118 4.65	84 3.31	5/8×85 M16X85	UL FM
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.5	221.5 8.72	112.5 4.43	118 4.65	84 3.31	5/8×85 M16X85	UL FM VdS
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	118 4.65	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
125×80 139.7×3	139.7×88.9 5.500×3.500	300 2.07	89 3.50	221.5 8.720	132 5.20	118 4.65	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
125×100 139.7×4	139.7×114.3 5.500×4.500	300 2.07	114 4.50	221.5 8.720	160 6.30	125 4.92	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
150×50 159.0×2	159.1×60.3 6.250×2.375	300 2.07	64 2.5	244 9.60	112.5 4.43	125 4.92	94 3.70	5/8×105 M16X108	——
150×100 159.0×108.0	159.1×108.0 6.250×4.250	300 2.07	114 4.50	244 9.60	154 6.06	133 5.24	94 3.70	5/8×105 M16X108	UL FM
150×100 159.0×4	159.1×114.3 6.250×4.500	300 2.07	114 4.50	244 9.60	159 6.26	125 4.92	94 3.70	5/8×105 M16X108	UL FM
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.5	244 9.60	112.5 4.43	127 5.00	97.5 3.84	5/8×105 M16X108	UL FM
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	130 5.12	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×80 6½O.D×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	244 9.60	132 5.20	130 5.12	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×100 6½O.D×4	165.1×114.3 6.500×4.500	300 2.07	114 4.50	244 9.60	154 6.06	135 5.32	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	247 9.72	95 3.74	128 5.04	98.5 3.88	5/8×105 M16X108	UL FM VdS
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.5	247 9.72	114 4.49	134 5.28	98.5 3.88	5/8×105 M16X108	UL FM VdS

3G

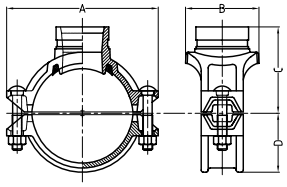
Mechanical Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	247 9.72	112.5 4.43	135 5.32	98.5 3.88	5/8×105 M16X108	UL FM
150×65 6×2½	168.3×76.1 6.625×3.000	300 2.07	70 2.75	247 9.72	112.5 4.43	135 5.32	98.5 3.88	5/8×105 M16X108	VdS LPCB
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	247 9.72	132 5.20	136.5 5.37	98.5 3.88	5/8×105 M16X108	UL FM VdS LPCB
150×100 6×4	168.3×114.3 6.625×4.500	300 2.07	114 4.50	247 9.72	160 6.30	138 5.43	98.5 3.88	5/8×105 M16X108	UL FM VdS LPCB
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.5	320 12.60	118 4.65	158 6.22	125 4.92	3/4×115 M20X115	UL FM VdS
200×65 8×76.1	216.3×76.1 8.516×3.000	300 2.07	70 2.75	315 12.40	117 4.61	157 6.18	122 4.80	3/4×115 M20X115	——
200×65 8×21/2	219.1×73.0 8.625×2.875	300 2.07	70 2.75	320 12.60	118 4.65	158 6.22	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	320 12.60	118 4.65	158 6.22	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	320 12.60	136.5 5.37	161 6.34	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
200×100 8×4	219.1×108.0 8.625×4.250	300 2.07	114 4.50	320 12.60	162 6.38	161 6.34	125 4.92	3/4×115 M20X115	UL FM
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	320 12.60	162 6.38	161 6.34	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
250×65 10×2½	273.0×76.1 10.75×3.000	300 2.07	70 2.75	376 14.80	118 4.65	189 7.44	155 6.10	3/4×120 M20X115	——
250×80 10×3	273.0×88.9 10.75×3.500	300 2.07	89 3.50	376 14.80	136.5 5.37	189 7.44	155 6.10	3/4×120 M20X115	——
250×100 10×4	273.0×108 10.75×4.250	300 2.07	114 4.50	376 14.80	164 6.46	189 7.44	155 6.10	3/4×120 M20X115	UL FM
250×100 10×4	273.0×114.3 10.75×4.500	300 2.07	114 4.50	376 14.80	164 6.46	189 7.44	155 6.10	3/4×120 M20X115	UL FM VdS

3GS

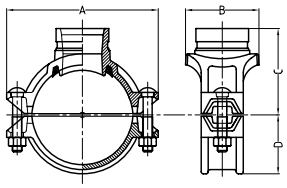
Light-duty Mechanical Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
80×25 3×1	88.9×33.7 3.500×1.315	365 2.52	38 1.50	150 5.91	71.0 2.80	84 3.31	55.5 2.19	1/2×75 M12X76	UL FM
80×32 3×1¼	88.9×42.4 3.500×1.660	365 2.52	51 2.00	150 5.91	84.5 3.33	84 3.31	55.5 2.19	1/2×75 M12X76	UL FM
80×40 3×1½	88.9×48.3 3.500×1.900	365 2.52	51 2.00	150 5.91	84.5 3.33	84 3.31	55.5 2.19	1/2×75 M12X76	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	365 2.52	64 2.50	150 5.91	98 3.86	84 3.31	55.5 2.19	1/2×75 M12X76	UL FM
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	178 7.01	88 3.46	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×65 4×2½	114.3×73.0 4.500×2.875	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×65 4×76.1	114.3×76.1 4.500×3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	89 3.50	178 7.01	124 4.88	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM

3GS

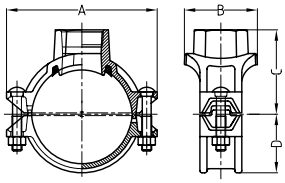
Light-duty Mechanical Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
125×80 133.0×3	133.0×88.9 5.250×3.500	300 2.07	89 3.50	203 7.99	132 5.12	110 4.33	77.5 3.05	5/8×85 M16X85	UL FM
125×32 139.7×11/4	139.7×42.4 5.500×1.660	300 2.07	51 2.00	210 8.27	91 3.58	113 4.45	82 3.23	5/8×85 M16X85	UL FM
125×40 139.7×11/2	139.7×48.3 5.500×1.900	300 2.07	51 2.00	210 8.27	91 3.58	113 4.45	82 3.23	5/8×85 M16X85	UL FM
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.50	210 8.27	110 4.33	113 4.45	82 3.23	5/8×85 M16X85	UL FM
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	210 8.27	110 4.33	113 4.45	82 3.23	5/8×85 M16X85	UL FM
125×80 139.7×3	139.7×88.9 5.500×3.500	300 2.07	89 3.50	210 8.27	130 5.12	113 4.45	82 3.23	5/8×85 M16X85	UL FM
125×6 139.7×4	139.7×114.3 5.500×4.500	175 1.21	114 4.50	210 8.27	153 6.02	115 4.52	82 3.23	5/8×85 M16X85	UL FM
150×65 159.0×76.1	159.1×76.1 6.250×3.000	300 2.07	70 2.75	227 8.94	110 4.33	122.5 4.83	91 3.58	5/8×105 M16X108	UL FM
150×80 159.0×88.9	159.1×88.9 6.250×3.500	300 2.07	89 3.50	227 8.94	130 5.11	122.5 4.83	91 3.58	5/8×105 M16X108	UL FM
150×100 159.0×108.0	159.1×108.0 6.250×4.250	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	91 3.58	5/8×105 M16X108	UL FM
150×100 159.0×4	159.1×114.3 6.250×4.500	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	91 3.58	5/8×105 M16X108	UL FM
150×32 165.1×11/4	165.1×42.4 6.500×1.900	300 2.07	51 2.00	235 9.25	92.5 3.64	124.5 4.90	94.5 3.72	5/8×105 M16X108	UL FM
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.50	235 9.25	110 4.33	124.5 4.90	94.5 3.72	5/8×105 M16X108	UL FM
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	235 9.25	110 4.33	124.5 4.90	94.5 3.72	5/8×105 M16X108	UL FM
150×80 165.1×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	235 9.25	130 5.12	124.5 4.90	94.5 3.72	5/8×105 M16X108	UL FM
150×100 165.1×4	165.1×108 6.500×4.250	300 2.07	114 4.50	235 9.25	155 6.10	126 4.96	94.5 3.72	5/8×105 M16X108	——
150×100 165.1×4	165.1×114.3 6.500×4.500	300 2.07	114 4.50	235 9.25	155 6.10	126 4.96	94.5 3.72	5/8×105 M16X108	UL FM
150×32 6×1¼	168.3×42.4 6.500×1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.50	240 9.45	110 4.33	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	240 9.45	110 4.33	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×65 6×76.1	168.3×76.1 6.625×3	300 2.07	70 2.75	240 9.45	110 4.33	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	240 9.45	130 5.12	126 4.96	96.5 3.80	5/8×105 M16X108	UL FM
150×100 6×4	168.3×114.3 6.625×4.500	300 2.07	114 4.50	240 9.45	155 6.10	128 5.04	96.5 3.80	5/8×105 M16X108	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.50	300 11.81	117 4.60	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×65 8×2½	219.1×73 8.625×2.875	300 2.07	70 2.75	300 11.81	117 4.60	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	300 11.81	117 4.60	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	300 11.81	135.5 5.33	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	300 11.81	164 6.46	160 6.30	123 4.84	5/8×105 M16X108	UL FM

3J

Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
25X10 1X3/8	33.7X17.2 1.315X0.677	300 2.07	23.5 0.92	86 3.38	46 1.81	26 1.02	24.5 0.96	M8X30	——
25X15 1X1/2	33.7X21.3 1.315X0.825	300 2.07	23.5 0.92	86 3.38	46 1.81	26 1.02	24.5 0.96	M8X30	VdS
25X20 1X3/4	33.7X26.9 1.315X1.050	300 2.07	23.5 0.92	86 3.38	52 2.05	41 1.61	24.5 0.96	M8X30	VdS
25X25 1X1	33.7X33.7 1.315X1.315	300 2.07	23.5 0.92	86 3.38	57 2.24	45 1.77	24.5 0.96	M8X30	VdS
32X10 11/4X3/8	42.4X17.2 1.660X0.677	300 2.07	30 1.18	95.5 3.76	53 2.09	32 1.26	29 1.14	M10X35	——
32X15 11/4X1/2	42.4X21.3 1.660X0.825	300 2.07	30 1.18	95.5 3.76	57 2.24	32 1.26	29 1.14	M10X35	VdS
32X20 11/4X3/4	42.4X26.9 1.660X1.050	300 2.07	30 1.18	95.5 3.76	57 2.24	44 1.73	29 1.14	M10X35	VdS
32X25 11/4X1	42.4X33.7 1.660X1.315	300 2.07	30 1.18	95.5 3.76	57 2.24	53 2.09	29 1.14	M10X35	VdS
40X10 11/2X3/8	48.3X17.2 1.900X0.677	300 2.07	30 1.18	101.5 3.99	53 2.09	34 1.34	32.5 1.28	M10X35	——
40X15 11/2X1/2	48.3X21.3 1.900X0.825	300 2.07	30 1.18	101.5 3.99	57 2.24	35.5 1.40	32.5 1.28	M10X35	VdS
40X20 11/2X3/4	48.3X26.9 1.900X1.050	300 2.07	30 1.18	101.5 3.99	57 2.24	47.5 1.87	32.5 1.28	M10X35	VdS
40X25 11/2X1	48.3X33.7 1.900X1.315	300 2.07	30 1.18	101.5 3.99	57 2.24	56 2.20	32.5 1.28	M10X35	VdS
50×10 2×3/8	60.3×17.2 2.375×0.677	300 2.07	38 1.50	116 4.57	68 2.68	44 1.73	39 1.54	3/8×55 M10X57	——
50×15 2×½	60.3×21.3 2.375×0.825	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8×55 M10X57	UL FM VdS
50×20 2×¾	60.3×26.9 2.375×1.050	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8×55 M10X57	UL FM VdS
50×25 2×1	60.3×33.7 2.375×1.315	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8×55 M10X57	UL FM VdS
50×32 2×1¼	60.3×42.4 2.375×1.660	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	39 1.54	3/8×55 M10X57	UL FM VdS
50×40 2×1½	60.3×48.3 2.375×1.900	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	39 1.54	3/8×55 M10X57	UL FM VdS
65×15 2½×½	73.0×21.3 2.875×0.825	300 2.07	38 1.50	137 5.39	71 2.76	68 2.67	49 1.93	1/2×70 M12X70	UL FM
65×20 2½×¾	73.0×26.9 2.875×1.050	300 2.07	38 1.50	137 5.39	71 2.76	68 2.67	49 1.93	1/2×70 M12X70	UL FM
65×25 2½×1	73.0×33.7 2.875×1.315	300 2.07	38 1.50	137 5.39	71 2.76	70 2.75	49 1.93	1/2×70 M12X70	UL FM
65×32 2½×1¼	73.0×42.4 2.875×1.660	300 2.07	51 2.00	137 5.397	84.5 3.33	73 2.87	49 1.93	1/2×70 M12X70	UL FM
65×40 2½×1½	73.0×48.3 2.875×1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	73 2.87	49 1.93	1/2×70 M12X70	UL FM
65×15 76.1×½	76.1×21.3 3.000×0.825	300 2.07	38 1.50	137 5.39	71 2.80	61.5 2.42	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×20 76.1×¾	76.1×26.9 3.000×1.050	300 2.07	38 1.50	137 5.39	71 2.80	68 2.67	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×25 76.1×1	76.1×33.7 3.000×1.315	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×32 76.1×1¼	76.1×42.4 3.000×1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2×70 M12X70	UL FM VdS
65×40 76.1×1½	76.1×48.3 3.000×1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2×70 M12X70	UL FM VdS
80×15 3×½	88.9×21.3 3.500×0.825	300 2.07	38 1.50	152 5.98	72.5 2.85	71.5 2.81	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×20 3×¾	88.9×26.9 3.500×1.050	300 2.07	38 1.50	152 5.98	72.5 2.85	71.5 2.81	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×25 3×1	88.9×33.7 3.500×1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	56.5 2.22	1/2×75 M12X76	UL FM VdS
80×50 3×2	88.9×60.3 3.500×2.375	300 2.07	64 2.50	152 5.98	98 3.86	80 3.15	56.5 2.22	1/2×75 M12X76	UL FM VdS

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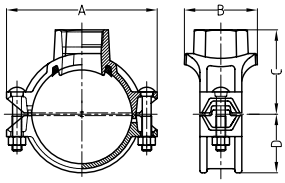
Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
100×15 108.0×1/2	108.1×21.3 4.250×0.825	300 2.07	38 1.50	172 6.77	78.5 3.09	87 3.43	64.5 2.54	1/2×75 M12X76	UL FM
100×20 108.0×3/4	108.1×26.9 4.250×1.050	300 2.07	38 1.50	172 6.77	78.5 3.09	87 3.43	64.5 2.54	1/2×75 M12X76	UL FM
100×25 108.0×1	108.1×33.7 4.250×1.315	300 2.07	38 1.50	172 6.77	78.5 3.09	87 3.43	64.5 2.54	1/2×75 M12X76	UL FM
100×32 108.0×1¼	108.1×42.4 4.250×1.660	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	64.5 2.54	1/2×75 M12X76	UL FM
100×40 108.0×1½	108.0×48.3 4.250×1.900	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	64.5 2.54	1/2×75 M12X76	UL FM
100×50 108.0×2	108.0×60.3 4.250×2.375	300 2.07	64 2.50	172 6.77	106.5 4.19	92 3.62	64.5 2.54	1/2×75 M12X76	UL FM
100×65 108.0×76.1	108.0×76.1 4.250×3.000	300 2.07	70 2.75	172 6.77	106.5 4.19	100 3.94	64.5 2.54	1/2×75 M12X76	UL FM
100×15 4×½	114.3×21.3 4.500×0.825	300 2.07	38 1.50	188 7.40	78.5 3.09	90 3.54	70 2.76	1/2×75 M12X76	UL FM VdS
100×20 4×¾	114.3×26.9 4.500×1.050	300 2.07	38 1.50	188 7.40	78.5 3.09	90 3.54	70 2.76	1/2×75 M12X76	UL FM VdS
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	188 7.40	78.5 3.09	93 3.66	70 2.76	1/2×75 M12X76	UL FM VdS
100×32 4×1¼	114.3×42.4 4.500×1.660	300 2.07	51 2.00	188 7.40	89 3.50	95 3.74	70 2.76	1/2×75 M12X76	UL FM VdS
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	188 7.40	89 3.50	97 3.82	70 2.76	1/2×75 M12X76	UL FM VdS
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	100 3.94	70 2.76	1/2×75 M12X76	UL FM VdS
100×65 4×2½	114.3×73.0 4.500×2.875	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2×7 M12X765	UL FM
100×65 4×76.1	114.3×76.1 4.500×3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS LPCB
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	89 3.50	188 7.40	128 5.039	102 4.02	70 2.76	1/2×75 M12X76	UL FM VdS LPCB
125×32 133.0×1.25	133.0×42.4 5.250×1.660	300 2.07	51 2.00	209 8.23	93 3.66	105 4.13	77 3.03	5/8×85 M16X85	UL FM
125×40 133.0×1½	133.0×48.3 5.250×1.900	300 2.07	51 2.00	209 8.23	93 3.66	105 4.13	77 3.03	5/8×85 M16X85	UL FM
125×50 133.0×2	133.0×60.3 5.250×2.375	300 2.07	64 2.50	209 8.23	112.5 4.43	110 4.33	77 3.03	5/8×85 M16X85	UL FM
125×15 139.7×1/2	139.7×21.3 5.500×0.825	300 2.07	38 1.50	221.5 8.72	78 3.07	110 4.33	84 3.31	5/8×85 M16X85	UL FM VdS
125×20 139.7×3/4	139.7×26.9 5.500×1.050	300 2.07	38 1.50	221.5 8.72	78 3.07	110 4.33	84 3.31	5/8×85 M16X85	UL FM VdS
125×25 139.7×1	139.7×33.7 5.500×1.315	300 2.07	38 1.50	221.5 8.72	78 3.07	110 4.33	84 3.31	5/8×85 M16X85	UL FM VdS
125×32 139.7×1¼	139.7×42.4 5.500×1.660	300 2.07	51 2.00	221.5 8.72	95 3.74	112 4.41	84 3.31	5/8×85 M16X85	UL FM VdS
125×40 139.7×1½	139.7×48.3 5.500×1.900	300 2.07	51 2.00	221.5 8.72	95 3.74	112 4.41	84 3.31	5/8×85 M16X85	UL FM VdS
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.50	221.5 8.72	112.5 4.43	115 4.53	84 3.31	5/8×85 M16X85	UL FM VdS
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	115 4.53	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
125×80 139.7×3	139.7×88.9 5.500×3.500	300 2.07	89 3.50	221.5 8.72	132 5.20	120 4.72	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
125×100 139.7×4	139.7×114.3 5.500×4.500	300 2.07	114 4.50	221.5 8.72	156 6.30	125 4.92	84 3.31	5/8×85 M16X85	UL FM VdS LPCB
150×15 159.0×1/2	159.0×21.3 6.250×0.825	300 2.07	38 1.50	244 9.60	78 3.07	116 4.57	94 3.70	5/8×105 M16X108	UL FM
150×25 159.0×1	159.0×33.7 6.250×1.315	300 2.07	38 1.50	244 9.60	78 3.07	116 4.57	94 3.70	5/8×105 M16X108	UL FM
150×32 159.0×1¼	159.0×42.4 6.250×1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	94 3.70	5/8×105 M16X108	UL FM
150×40 159.0×1½	159.0×48.3 6.250×1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	94 3.70	5/8×105 M16X108	UL FM

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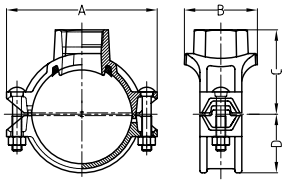
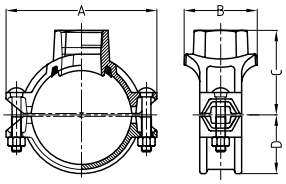
Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
150×50 159.0×2	159.0×60.3 6.250×2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	125 4.92	94 3.70	5/8×105 M16X108	UL FM
150×65 159.0×76.1	159.0×76.1 6.250×3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	125 4.92	94 3.70	5/8×105 M16X108	UL FM
150×80 159.0×3	159.0×88.9 6.250×3.500	300 2.07	89 3.50	244 9.60	133 5.20	125 4.92	94 3.70	5/8×105 M16X108	UL FM
150×100 159.0×4	159.1×114.3 6.250×4.500	175 1.20	114 4.50	244 9.60	156.5 6.16	130 5.12	94 3.70	5/8×105 M16X108	UL FM
150×15 165.1×½	165.1×21.3 6.500×0.825	300 2.07	38 1.50	244 9.60	78 3.07	110 4.33	97.5 3.84	5/8×105 M16X108	UL FM
125×20 165.1×¾	165.1×26.9 6.500×1.050	300 2.07	38 1.50	244 9.60	78 3.07	110 4.33	97.5 3.84	5/8×105 M16X108	UL FM
150×25 165.1×1	165.1×33.7 6.500×1.315	300 2.07	38 1.50	244 9.60	78 3.07	118 4.65	97.5 3.84	5/8×105 M16X108	UL FM
150×32 165.1×1¼	165.1×42.4 6.500×1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	97.5 3.84	5/8×105 M16X108	UL FM
150×40 165.1×1½	165.1×48.3 6.500×1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	97.5 3.84	5/8×105 M16X108	UL FM
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	128.5 5.43	97.5 3.84	5/8×105 M16X108	UL FM
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	128.5 5.43	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×80 165.1×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	244 9.60	132 5.20	128.5 5.06	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×100 165.1×4	165.1×114.3 6.500×4.500	225 1.6	114 4.50	244 9.60	154 6.18	135 5.32	97.5 3.84	5/8×105 M16X108	UL FM LPCB
150×32 6×1¼	168.3×42.4 6.500×1.660	300 2.07	51 2.00	247 9.72	95 3.74	122 4.80	98.5 3.88	5/8×105 M16X108	UL FM VdS
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	247 9.72	95 3.74	122 4.80	98.5 3.88	5/8×105 M16X108	UL FM VdS
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.50	247 9.72	112.5 4.43	132 5.20	98.5 3.88	5/8×105 M16X108	UL FM VdS
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	247 9.72	112.5 4.43	132 5.20	98.5 3.88	5/8×105 M16X108	UL FM
150×65 6×76.1	168.3×76.1 6.625×3.000	300 2.07	70 2.75	247 9.72	112.5 4.43	132 5.20	98.5 3.88	5/8×105 M16X108	UL FM VdS LPCB
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	247 9.72	132 5.20	140 5.51	98.5 3.88	5/8×105 M16X108	UL FM VdS LPCB
150×100 6×4	168.3×114.3 6.625×4.500	300 2.07	114 4.50	247 9.72	160 6.30	140 5.51	98.5 3.88	5/8×105 M16X108	UL FM VdS LPCB
200×25 8×1	219.1×33.7 8.625×1.315	300 2.07	38 1.50	320 12.60	79.5 3.13	150 5.91	125 4.92	3/4×115 M20X115	UL FM VdS
200×32 8×1¼	219.1×42.4 8.625×1.660	300 2.07	51 2.00	320 12.60	96.5 3.80	150 5.91	125 4.92	3/4×115 M20X115	UL FM VdS
200×40 8×1½	219.1×48.3 8.625×1.900	300 2.07	51 2.00	320 12.60	96.5 3.80	150 5.91	125 4.92	3/4×115 M20X115	UL FM VdS
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.50	320 12.60	117 4.61	160 6.30	125 4.92	3/4×115 M20X115	UL FM VdS
200×65 8×2½	219.1×73.0 8.625×2.875	300 2.07	70 2.75	320 12.60	118 4.65	160 6.30	125 4.92	3/4×115 M20X115	UL FM
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	320 12.60	118 4.65	160 6.30	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	320 12.60	136.5 5.37	160 6.30	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	320 12.60	164 6.46	160 6.30	125 4.92	3/4×115 M20X115	UL FM VdS LPCB
250×40 10×1½	273.0×48.3 10.750×1.900	300 2.07	51 2.00	376 14.80	95.5 3.76	180 7.09	155 6.10	3/4×120 M20X115	UL FM
250×50 10×2	273.0×60.3 10.750×2.375	300 2.07	64 2.50	376 14.80	118 4.65	185 7.28	155 6.10	3/4×120 M20X115	UL FM VdS
250×65 10×76.1	273.0×76.1 10.750×3.000	300 2.07	70 2.75	376 14.80	118 4.65	190 7.48	155 6.10	3/4×120 M20X115	UL FM VdS
250×80 10×3	273.0×88.9 10.750×3.500	300 2.07	89 3.50	376 14.80	136.5 5.37	190 7.48	155 6.10	3/4×120 M20X115	UL FM VdS
250×100 10×4	273.0×114.3 10.750×4.500	300 2.07	114 4.50	376 14.80	164 6.46	190 7.48	155 6.10	3/4×120 M20X115	UL FM VdS

3JS

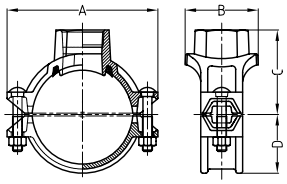
Light-duty Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
80×15 3×½	88.9×21.3 3.500×0.825	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	55.5 2.19	1/2×75 M12X76	UL FM
80×20 3×¾	88.9×26.9 3.500×1.050	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	55.5 2.19	1/2×75 M12X76	UL FM
80×25 3×1	88.9×33.7 3.500×1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	71.0 2.80	55.5 2.19	1/2×75 M12X76	UL FM
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	55.5 2.19	1/2×75 M12X76	UL FM
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	55.5 2.19	1/2×75 M12X76	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	300 2.07	64 2.50	150 5.91	98 3.86	77 3.03	55.5 2.19	1/2×75 M12X76	UL FM
100×15 108.0×½	108.1×21.3 4.250×0.825	300 2.07	38 1.50	172 6.77	77.5 3.05	85 3.35	64.5 2.54	1/2×75 M12X76	UL FM
100×25 108.0×1	108.1×33.7 4.250×1.315	300 2.07	38 1.50	172 6.77	77.5 3.05	85 3.35	64.5 2.54	1/2×75 M12X76	UL FM
100×32 108.0×1¼	108.1×42.4 4.250×1.660	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	64.5 2.54	1/2×75 M12X76	UL FM
100×40 108.0×1½	108.0×48.3 4.250×1.900	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	64.5 2.54	1/2×75 M12X76	UL FM
100×50 108.0×2	108.0×60.3 4.250×2.375	300 2.07	64 2.50	172 6.77	103.5 4.19	90.5 3.56	64.5 2.54	1/2×75 M12X76	UL FM
100×65 108.0×76.1	108.0×76.1 4.250×3.000	300 2.07	70 2.75	172 6.77	103.5 4.07	97.5 3.84	64.5 2.54	1/2×75 M12X76	UL FM
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	89.5 3.52	67.5 2.66	1/2×75 M12X76	UL FM
100×32 4×1¼	114.3×42.4 4.500×1.660	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	67.5 2.66	1/2×75 M12X76	UL FM
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	67.5 2.66	1/2×75 M12X76	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	92 3.62	67.5 2.66	1/2×75 M12X76	UL FM
100×65 4×2½	114.3×73.0 4.500×2.875	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×65 4×76.1	114.3×76.1 4.500×3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
100×80 4×3	114.3×88.9 4.500×3.500	300 2.07	89 3.50	178 7.01	124 4.88	98 3.86	67.5 2.66	1/2×75 M12X76	UL FM
125×25 133.0×1	133.0×33.7 5.250×1.315	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	77.5 3.05	5/8×85 M16X85	UL FM
125×32 133.0×1.25	133.0×42.4 5.250×1.660	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	77.5 3.05	5/8×85 M16X85	UL FM
125×40 133.0×1½	133.0×48.3 5.250×1.900	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	77.5 3.05	5/8×85 M16X85	UL FM
125×50 133.0×2	133.0×60.3 5.250×2.375	300 2.07	64 2.50	203 7.99	110 4.33	105 4.13	77.5 3.05	5/8×85 M16X85	UL FM
125×65 133.0×76.1	133.0×76.1 5.250×3.000	300 2.07	70 2.75	203 7.99	110 4.33	113 4.45	77.5 3.05	5/8×85 M16X85	UL FM
125×80 133.0×3	133.0×88.9 5.250×3.500	300 2.07	89 3.50	203 7.99	132 5.12	110 4.33	77.5 3.05	5/8×85 M16X85	UL FM
125×25 139.7×1	139.7×33.7 5.500×1.315	300 2.07	38 1.50	210 8.27	77 3.03	100 3.94	82 3.23	5/8×85 M16X85	UL FM
125×32 139.7×1¼	139.7×42.4 5.500×1.660	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	82 3.23	5/8×85 M16X85	UL FM
125×40 139.7×1½	139.7×48.3 5.500×1.900	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	82 3.23	5/8×85 M16X85	UL FM
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.50	210 8.27	110 4.33	108 4.25	82 3.23	5/8×85 M16X85	UL FM
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	210 8.27	110 4.33	115 4.53	82 3.23	5/8×85 M16X85	UL FM
125×80 139.7×3	139.7×88.9 5.500×3.500	300 2.07	89 3.50	210 8.27	130 5.12	115 4.53	82 3.23	5/8×85 M16X85	UL FM
125×100 139.7×4	139.7×114.3 5.500×4.500	300 2.07	114 4.50	210 8.27	153 6.02	118 4.65	82 3.23	5/8×85 M16X85	UL FM

3JS

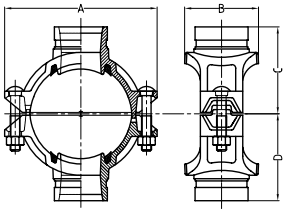
Light-duty Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in	Certificate
				A mm/in	B mm/in	C mm/in	D mm/in		
150×25 159.0×1	159.0×33.7 6.250×1.315	300 2.07	38 1.50	227 8.94	77 3.03	110 4.33	91 3.58	5/8×85 M16X85	UL FM
150×32 159.0×1¼	159.0×42.4 6.250×1.660	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	91 3.58	5/8×105 M16X108	UL FM
150×40 159.0×1½	159.0×48.3 6.250×1.900	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	91 3.58	5/8×105 M16X108	UL FM
150×50 159.0×2	159.0×60.3 6.250×2.375	300 2.07	64 2.50	227 8.94	110 4.33	116.5 4.59	91 3.58	5/8×105 M16X108	UL FM
150×65 159.0×76.1	159.0×76.1 6.250×3.000	300 2.07	70 2.75	227 8.94	110 4.33	121.5 4.78	91 3.58	5/8×105 M16X108	UL FM
150×80 159.0×3	159.0×88.9 6.250×3.500	300 2.07	89 3.50	227 8.94	130 5.12	123.5 4.86	91 3.58	5/8×105 M16X108	UL FM
150×100 159.0×4	159.1×114.3 6.250×4.500	300 2.07	114 4.50	227 8.94	155 6.10	127 5.00	91 3.58	5/8×105 M16X108	UL FM
150×15 165.1×½	165.1×21.3 6.500×0.825	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8×105 M16X108	UL FM
125×20 165.1×¾	165.1×26.9 6.500×1.050	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8×105 M16X108	UL FM
150×25 165.1×1	165.1×33.7 6.500×1.315	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8×105 M16X108	UL FM
150×32 165.1×1¼	165.1×42.4 6.500×1.660	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	94.5 3.72	5/8×105 M16X108	UL FM
150×40 165.1×1½	165.1×48.3 6.500×1.900	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	94.5 3.72	5/8×105 M16X108	UL FM
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.50	235 9.25	110 4.33	120 4.72	94.5 3.72	5/8×105 M16X108	UL FM
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	235 9.25	110 4.33	125 4.92	94.5 3.72	5/8×105 M16X108	UL FM
150×80 165.1×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	235 9.25	130 5.12	125 4.92	94.5 3.72	5/8×105 M16X108	UL FM
150×100 165.1×4	165.1×114.3 6.500×4.500	300 2.07	114 4.50	240 9.45	155 6.10	130 5.12	94.5 3.72	5/8×105 M16X108	UL FM
150×25 6×1	168.3×33.7 6.500×1.315	300 2.07	38 1.50	240 9.45	77 3.03	115 4.53	96.5 3.80	5/8×105 M16X108	UL FM
150×32 6×1¼	168.3×42.4 6.500×1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	96.5 3.80	5/8×105 M16X108	UL FM
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	96.5 3.80	5/8×105 M16X108	UL FM
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.50	240 9.45	110 4.33	121 4.76	96.5 3.80	5/8×105 M16X108	UL FM
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	240 9.45	110 4.33	127 5.00	96.5 3.80	5/8×105 M16X108	UL FM
150×65 6×2½	168.3×76.0 6.625×3.000	300 2.07	70 2.75	240 9.45	110 4.33	127 5.00	96.5 3.80	5/8×105 M16X108	——
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	240 9.45	130 5.12	127 5.00	96.5 3.80	5/8×105 M16X108	UL FM
150×100 6×4	168.3×114.3 6.625×4.500	300 2.07	114 4.50	240 9.45	155 6.10	130 5.12	96.5 3.80	5/8×105 M16X108	UL FM
200×25 8×1	219.0×33.7 8.625×1.315	300 2.07	38 1.50	300 11.81	78 3.07	140 5.51	123 4.84	5/8×105 M16X108	UL FM
200×32 8×1¼	219.1×42.4 8.625×1.660	300 2.07	51 2.00	300 11.81	96.5 3.80	140 5.51	123 4.84	5/8×105 M16X108	UL FM
200×40 8×1½	219.1×48.3 8.625×1.900	300 2.07	51 2.00	300 11.81	96.5 3.80	143 5.63	123 4.84	5/8×105 M16X108	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.50	300 11.81	117 4.61	149 5.87	123 4.84	5/8×105 M16X108	UL FM
200×65 8×2½	219.1×73.0 8.625×2.875	300 2.07	70 2.75	300 11.81	117 4.61	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	300 11.81	117 4.61	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	123 4.84	5/8×105 M16X108	UL FM
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	300 11.81	164 6.45	160 6.30	123 4.84	5/8×105 M16X108	UL FM

4G

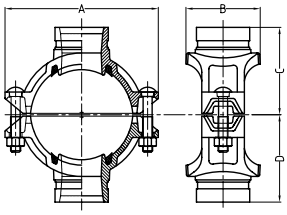
Mechanical Cross Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
65×32 2½×1¼	73.0×42.4 2.875×1.669	300 2.07	51 2	144 5.67	84.5 3.33	75 2.95	75 2.95	1/2×70 M12X70
65×25 2½×1	76.1×33.7 3.000×1.327	300 2.07	38 1.5	137 5.39	71 2.8	78 3.07	78 3.07	1/2×70 M12X70
65×32 2½×1¼	76.1×42.4 3.000×1.669	300 2.07	51 2	137 5.39	84.5 3.33	78 3.07	78 3.07	1/2×70 M12X70
80×25 3×1	88.9×33.7 3.500×1.327	300 2.07	38 1.5	152 5.98	72.5 2.85	84.5 3.33	84.5 3.33	1/2×75 M12X76
80×32 3×1¼	88.9×42.4 3.500×1.669	300 2.07	51 2	152 5.98	85.5 3.37	84.5 3.33	84.5 3.33	1/2×75 M12X76
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2	152 5.98	85.5 3.37	84.5 3.33	84.5 3.33	1/2×75 M12X76
100×25 4×1	114.3×33.7 4.500×1.327	300 2.07	38 1.5	188 7.4	78.4 3.09	102 4.02	102 4.02	1/2×75 M12X76
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2	188 7.4	89 3.5	102 4.02	102 4.02	1/2×75 M12X76
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.5	188 7.4	104.5 4.11	102 4.02	102 4.02	1/2×75 M12X76
125×50 5×2	139.7×60.3 5.500×2.375	300 2.07	64 2.5	221.5 8.72	112.5 4.43	118 4.65	118 4.65	5/8X85 M16X85
125×65 5×2½	139.7×76.1 5.500×3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	118 4.65	118 4.65	5/8X85 M16X85
150×50 6×2	165.1×60.3 6.500×2.375	300 2.07	64 2.5	244 9.6	112.5 4.43	127 5	127 5	5/8X85 M16X85
150×65 6×2½	165.1×76.1 6.500×3.000	300 2.07	70 2.75	244 9.6	112.5 4.43	127 5	127 5	5/8X105 M16X108
150×80 6×3	165.1×88.9 6.500×3.500	300 2.07	89 3.5	244 9.6	132 5.2	141 5.55	141 5.55	5/8X105 M16X108
150×40 6×1½	168.3×48.3 6.625×1.900	300 2.07	51 2	247 9.72	95 3.74	128 5.04	128 5.04	5/8X105 M16X108
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.5	247 9.72	114 4.49	134 5.28	134 5.28	5/8X105 M16X108
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	247 9.72	115 4.53	134 5.28	134 5.28	5/8X105 M16X108
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.5	247 9.72	132 5.2	141 5.55	141 5.55	5/8X105 M16X108
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.5	320 12.6	118 4.65	158 6.22	158 6.22	3/4X115 M20X115
200×65 8×2½	219.1×76.1 8.625×3.000	300 2.07	70 2.75	320 12.6	118 4.65	158 6.22	158 6.22	3/4X115 M20X115
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.5	320 12.6	136.5 5.37	161 6.34	161 6.34	3/4X115 M20X115
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.5	320 12.6	162 6.38	161 6.34	161 6.34	3/4X115 M20X115
250×65 10×2½	273.0×76.1 10.750×3.000	300 2.07	70 2.75	376 14.8	118 4.65	189 7.44	189 7.44	3/4X120 M20X115
250×80 10×3	273.0×88.9 10.750×3.500	300 2.07	89 3.5	376 14.8	136.5 5.37	189 7.44	189 7.44	3/4X120 M20X115
250×100 10×4	273.0×114.3 10.750×4.500	300 2.07	114 4.5	376 14.8	164 6.46	189 7.44	189 7.44	3/4X120 M20X115

4GS

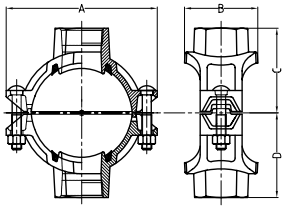
Light-duty Mechanical Cross Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
80×25 3×1	88.9×33.7 3.500×1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	84 3.31	84 3.31	1/2×70 M12X76
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	84 3.31	1/2×70 M12X76
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	84 3.31	1/2×70 M12X76
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	98 3.86	98 3.86	1/2×70 M12X76
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	178 7.01	88 3.46	98 3.86	98 3.86	1/2×70 M12X76
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	98 3.86	98 3.86	1/2×70 M12X76
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.50	210 8.27	110 4.33	113 4.45	113 4.45	5/8×85 M16X85
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	210 8.27	110 4.33	113 4.45	113 4.45	5/8×85 M16X85
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.50	235 9.25	110 4.33	124.5 4.90	124.5 4.90	5/8×105 M16X108
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	235 9.25	110 4.33	124.5 4.90	124.5 4.90	5/8×105 M16X108
150×80 165.1×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	235 9.25	130 5.12	124.5 4.90	124.5 4.90	5/8×105 M16X108
150×32 6×1¼	168.3×42.4 6.500×1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	126 4.96	5/8×105 M16X108
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	126 4.96	5/8×105 M16X108
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.50	240 9.45	110 4.33	126 4.96	126 4.96	5/8×105 M16X108
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	240 9.45	110 4.33	126 4.96	126 4.96	5/8×105 M16X108
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	240 9.45	130 5.12	126 4.96	126 4.96	5/8×105 M16X108
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.50	300 11.81	115 4.53	155 6.10	155 6.10	5/8×105 M16X108
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	155 6.10	5/8×105 M16X108
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	155 6.10	5/8×105 M16X108
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	160 6.30	5/8×105 M16X108

4J

Mechanical Cross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
65×20 2½×¾	73.0×26.9 2.875×1.050	300 2.07	38 1.50	137 5.39	71 2.80	68 2.68	68 2.68	1/2×70 M12X70
65×25 2½×1	73.0×33.7 2.875×1.315	300 2.07	38 1.50	137 5.39	71 2.80	70 2.76	70 2.76	1/2×70 M12X70
65×32 2½×1¼	73.0×42.4 2.875×1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	73 2.87	73 2.87	1/2×70 M12X70
65×15 2½×½	76.1×21.3 3.000×0.825	300 2.07	38 1.5	137 5.39	71 2.8	61.5 2.42	61.5 2.42	1/2X70 M12X70
65×20 2½×¾	76.1×26.9 3.000×1.059	300 2.07	38 1.5	137 5.39	71 2.8	75 3.05	75 3.05	1/2X70 M12X70
65×25 2½×1	76.1×33.7 3.000×1.327	300 2.07	38 1.5	137 5.39	71 2.8	75 3.05	75 3.05	1/2X70 M12X70
65×32 2½×1¼	76.1×42.4 3.000×1.669	300 2.07	51 2	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2X70 M12X70
80×15 3×½	88.9×21.3 3.500×0.825	300 2.07	38 1.5	152 5.98	72.5 2.85	71.5 2.81	71.5 2.81	1/2X75 M12X76
80X20 3×¾	88.9×26.9 3.500×1.059	300 2.07	38 1.5	152 5.98	72.5 2.85	71.5 2.81	71.5 2.81	1/2X75 M12X76
80×25 3×1	88.9×33.7 3.500×1.327	300 2.07	38 1.5	152 5.98	72.5 2.85	80 3.15	80 3.15	1/2X75 M12X76
80×32 3×1¼	88.9×42.4 3.500×1.669	300 2.07	51 2	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2X75 M12X76
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2X75 M12X76
100×32 108.0×1¼	108.1×42.4 4.250×1.660	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	87 3.43	1/2×75 M12X76
100×40 108.0×1½	108.0×48.3 4.250×1.900	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	87 3.43	1/2×75 M12X76
100×50 108.0×2	108.0×60.3 4.250×2.375	300 2.07	64 2.50	172 6.77	106.5 4.19	92 3.62	92 3.62	1/2×75 M12X76
100×15 4×½	114.3×21.3 4.500×0.825	300 2.07	38 1.5	188 7.4	78.5 3.09	90 3.54	90 3.54	1/2X75 M12X76
100×20 4×¾	114.3×26.9 4.500×1.059	300 2.07	38 1.5	188 7.4	78.5 3.09	90 3.54	90 3.54	1/2X75 M12X76
100×25 4×1	114.3×33.7 4.500×1.327	300 2.07	38 1.5	188 7.4	78.5 3.09	93 3.66	93 3.66	1/2X75 M12X76
100×32 4×1¼	114.3×42.4 4.500×1.669	300 2.07	51 2	188 7.4	89 3.5	95 3.74	95 3.74	1/2X75 M12X76
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2	188 7.4	89 3.5	97 3.82	97 3.82	1/2X75 M12X76
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.5	188 7.4	104.5 4.11	100 3.94	100 3.94	1/2X75\ M12X76
125×50 133.0×2	133.0×60.3 5.250×2.375	300 2.07	64 2.50	209 8.23	112.5 4.43	110 4.33	110 4.33	5/8×85 M16X85
125×25 5×1	139.7×33.7 5.500×1.327	300 2.07	38 1.5	221.5 8.72	78 3.07	110 4.33	110 4.33	5/8X85 M16X85
125×32 5×1¼	139.7×42.4 5.500×1.669	300 2.07	51 2	221.5 8.72	95 3.74	112 4.41	112 4.41	5/8X85 M16X85
125×40 5×1½	139.7×48.3 5.500×1.900	300 2.07	51 2	221.5 8.72	95 3.74	112 4.41	112 4.41	5/8X85 M16X85
125×50 5×2	139.7×60.3 5.500×2.375	300 2.07	64 2.5	221.5 8.72	112.5 4.43	115 4.53	115 4.53	5/8X85 M16X85
125×65 5×2½	139.7×76.1 5.500×3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	115 4.53	115 4.53	5/8X85 M16X85
150×32 159.0×1¼	159.0×42.4 6.250×1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	118 4.65	5/8×105 M16X108

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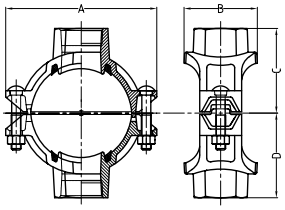
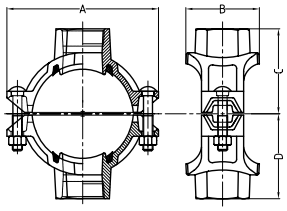
Mechanical Cross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
150×40 159.0×1½	159.0×48.3 6.250×1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	118 4.65	5/8×105 M16X108
150×50 159.0×2	159.0×60.3 6.250×2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	125 4.92	125 4.92	5/8×105 M16X108
150×65 159.0×76.1	159.0×76.1 6.250×3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	125 4.92	125 4.92	5/8×105 M16X108
150×15 6×½	165.1×21.3 6.500×0.825	300 2.07	38 1.5	244 9.6	78 3.07	110 4.33	110 4.33	5/8X105 M16X108
150×20 6×¾	165.1×26.9 6.500×1.059	300 2.07	38 1.5	244 9.6	78 3.07	110 4.33	110 4.33	5/8X105 M16X108
150×25 6×1	165.1×33.7 6.500×1.327	300 2.07	38 1.5	244 9.6	78 3.07	118 4.65	118 4.65	5/8X105 M16X108
150×32 6×1¼	165.1×42.4 6.500×1.669	300 2.07	51 2	244 9.6	93 3.66	118 4.65	118 4.65	5/8X105 M16X108
150×40 6×1½	165.1×48.3 6.500×1.900	300 2.07	51 2	244 9.6	93 3.66	118 4.65	118 4.65	5/8X105 M16X108
150×50 6×2	165.1×60.3 6.500×2.375	300 2.07	64 2.5	244 9.6	112.5 4.43	128.5 5.43	128.5 5.43	5/8X105 M16X108
150×65 6×2½	165.1×76.1 6.500×3.000	300 2.07	70 2.75	244 9.6	112.5 4.43	128.5 5.43	128.5 5.43	5/8X105 M16X108
150×80 6×3	165.1×88.9 6.500×3.500	300 2.07	89 3.5	244 9.6	132 5.2	128.5 5.06	128.5 5.06	5/8X105 M16X108
150×32 6×1¼	168.3×42.4 6.500×1.669	300 2.07	51 2	247 9.72	95 3.74	130 5.12	130 5.12	5/8X105 M16X108
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2	247 9.72	95 3.74	122 4.8	122 4.8	5/8X105 M16X108
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.5	247 9.72	112.5 4.43	132 5.2	132 5.2	5/8X105 M16X108
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	247 9.72	112.5 4.43	132 5.2	132 5.2	5/8X105 M16X108
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.5	247 9.72	132 5.2	140 5.51	140 5.51	5/8X105 M16X108
200×25 8×1	219.0×33.7 8.625×1.327	300 2.07	38 1.5	320 12.60	79.5 3.13	150 5.91	150 5.91	3/4X115 M20X115
200×32 8×1¼	219.1×42.4 8.625×1.669	300 2.07	51 2	320 12.60	96.5 3.8	150 5.91	150 5.91	3/4X115 M20X115
200×40 8×1½	219.1×48.3 8.625×1.900	300 2.07	51 2	320 12.60	96.5 3.8	150 5.91	150 5.91	3/4X115 M20X115
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.5	320 12.60	117 4.61	160 6.3	160 6.3	3/4X115 M20X115
200×65 8×2½	219.1×76.1 8.625×3.000	300 2.07	70 2.75	320 12.60	118 4.65	158.5 6.24	158.5 6.24	3/4X115 M20X115
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.5	320 12.60	136.5 5.37	160 6.3	160 6.3	3/4X115 M20X115
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.5	320 12.60	164 6.46	160 6.3	160 6.3	3/4X115 M20X115
250×40 10×1½	273.0×48.3 10.750×1.900	300 2.07	51 2	376 14.8	95.5 3.76	180 7.09	180 7.09	3/4X120 M20X115
250×50 10×2	273.0×60.3 10.750×2.375	300 2.07	64 2.5	376 14.8	118 4.65	185 7.28	185 7.28	3/4X120 M20X115
250×65 10×2½	273.0×76.1 10.750×3.000	300 2.07	70 2.75	376 14.8	118 4.65	190 7.48	190 7.48	3/4X120 M20X115
250×80 10×3	273.0×88.9 10.750×3.500	300 2.07	89 3.5	376 14.8	136.5 5.37	190 7.48	190 7.48	3/4X120 M20X115
250×100 10×4	273.0×114.3 10.750×4.500	300 2.07	114 4.5	376 14.8	164 6.46	190 7.48	190 7.48	3/4X120 M20X115

4JS

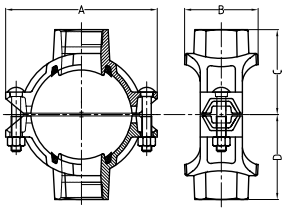
Light-duty Mechanical Cross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensionsmm/in				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
80×15 3×½	88.9×21.3 3.500×0.825	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	68 2.68	1/2×75 M12X76
80×20 3×¾	88.9×26.9 3.500×1.050	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	68 2.68	1/2×75 M12X76
80×25 3×1	88.9×33.7 3.500×1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	71.0 2.80	71.0 2.80	1/2×75 M12X76
80×32 3×1¼	88.9×42.4 3.500×1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	74 2.91	1/2×75 M12X76
80×40 3×1½	88.9×48.3 3.500×1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	74 2.91	1/2×75 M12X76
100×25 108.0×1	108.1×33.7 4.250×1.315	300 2.07	38 1.50	172 6.77	77.5 3.05	85 3.35	85 3.35	1/2×75 M12X76
100×32 108.0×1¼	108.1×42.4 4.250×1.660	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	85 3.35	1/2×75 M12X76
100×40 108.0×1½	108.0×48.3 4.250×1.900	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	85 3.35	1/2×75 M12X76
100×50 108.0×2	108.0×60.3 4.250×2.375	300 2.07	64 2.50	172 6.77	103.5 4.19	89 3.50	89 3.50	1/2×75 M12X76
100×15 4×½	114.3×21.3 4.500×0.825	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2×75 M12X76
100×20 4×¾	114.3×26.9 4.500×1.050	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2×75 M12X76
100×25 4×1	114.3×33.7 4.500×1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2×75 M12X76
100×32 4×1¼	114.3×42.4 4.500×1.660	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	89.5 3.53	1/2×75 M12X76
100×40 4×1½	114.3×48.3 4.500×1.900	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	89.5 3.53	1/2×75 M12X76
100×50 4×2	114.3×60.3 4.500×2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	92 3.62	92 3.62	1/2×75 M12X76
125×25 133.0×1	133.0×33.7 5.250×1.315	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	98 3.86	5/8×85 M16X85
125×32 133.0×1.25	133.0×42.4 5.250×1.660	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	102 4.01	5/8×85 M16X85
125×40 133.0×1½	133.0×48.3 5.250×1.900	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	102 4.01	5/8×85 M16X85
125×50 133.0×2	133.0×60.3 5.250×2.375	300 2.07	64 2.50	203 7.99	110 4.33	105 4.13	105 4.13	5/8×85 M16X85
125×65 133.0×76.1	133.0×76.1 5.250×3.000	300 2.07	70 2.75	203 7.99	110 4.33	110 4.33	110 4.33	5/8×85 M16X85
125×25 139.7×1	139.7×33.7 5.500×1.315	300 2.07	38 1.50	210 8.27	77 3.03	100 3.94	100 3.94	5/8×85 M16X85
125×32 139.7×1¼	139.7×42.4 5.500×1.660	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	105 4.13	5/8×85 M16X85
125×40 139.7×1½	139.7×48.3 5.500×1.900	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	105 4.13	5/8×85 M16X85
125×50 139.7×2	139.7×60.3 5.500×2.375	300 2.07	64 2.50	210 8.27	110 4.33	108 4.25	108 4.25	5/8×85 M16X85
125×65 139.7×76.1	139.7×76.1 5.500×3.000	300 2.07	70 2.75	210 8.27	110 4.33	115 4.53	115 4.53	5/8×85 M16X85
150×25 159.0×1	159.0×33.7 6.250×1.315	300 2.07	38 1.50	227 8.94	77 3.03	110 4.33	110 4.33	5/8×85 M16X85

4JS

Light-duty Mechanical Cross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensionsmm/in				Bolt Size mm/in
				A mm/in	B mm/in	C mm/in	D mm/in	
150×32 159.0×1¼	159.0×42.4 6.250×1.660	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	112 4.41	5/8×85 M16X85
150×40 159.0×1½	159.0×48.3 6.250×1.900	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	112 4.41	5/8×105 M16X108
150×50 159.0×2	159.0×60.3 6.250×2.375	300 2.07	64 2.50	227 8.94	110 4.33	116.5 4.59	116.5 4.59	5/8×105 M16X108
150×65 159.0×76.1	159.0×76.1 6.250×3.000	300 2.07	70 2.75	227 8.94	110 4.33	121.5 4.78	121.5 4.78	5/8×105 M16X108
150×80 159.0×3	159.0×88.9 6.250×3.500	300 2.07	89 3.50	227 8.94	130 5.12	123.5 4.86	123.5 4.86	5/8×105 M16X108
150×15 165.1×½	165.1×21.3 6.500×0.825	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8×105 M16X108
125×20 165.1×¾	165.1×26.9 6.500×1.050	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8×105 M16X108
150×25 165.1×1	165.1×33.7 6.500×1.315	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8×105 M16X108
150×32 165.1×1¼	165.1×42.4 6.500×1.660	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8×105 M16X108
150×40 165.1×1½	165.1×48.3 6.500×1.900	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8×105 M16X108
150×50 165.1×2	165.1×60.3 6.500×2.375	300 2.07	64 2.50	235 9.25	110 4.33	120 4.72	120 4.72	5/8×105 M16X108
150×65 165.1×76.1	165.1×76.1 6.500×3.000	300 2.07	70 2.75	235 9.25	110 4.33	125 4.92	125 4.92	5/8×105 M16X108
150×80 165.1×3	165.1×88.9 6.500×3.500	300 2.07	89 3.50	235 9.25	130 5.12	125 4.92	125 4.92	5/8×105 M16X108
150×25 6×1	168.3×33.7 6.500×1.315	300 2.07	38 1.50	240 9.45	77 3.03	115 4.53	115 4.53	5/8×105 M16X108
150×32 6×1¼	168.3×42.4 6.500×1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	115 4.53	5/8×105 M16X108
150×40 6×1½	168.3×48.3 6.500×1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	115 4.53	5/8×105 M16X108
150×50 6×2	168.3×60.3 6.625×2.375	300 2.07	64 2.50	240 9.45	110 4.33	121 4.76	121 4.76	5/8×105 M16X108
150×65 6×2½	168.3×73.0 6.625×2.875	300 2.07	70 2.75	240 9.45	110 4.33	127 5.00	127 5.00	5/8×105 M16X108
150×80 6×3	168.3×88.9 6.625×3.500	300 2.07	89 3.50	240 9.45	130 5.12	127 5.00	127 5.00	5/8×105 M16X108
200×25 8×1	219.0×33.7 8.625×1.315	300 2.07	38 1.50	300 11.81	78 3.07	140 5.51	140 5.51	5/8×105 M16X108
200×32 8×1¼	219.1×42.4 8.625×1.660	300 2.07	51 2.00	300 11.81	93 3.66	140 5.51	140 5.51	5/8×105 M16X108
200×40 8×1½	219.1×48.3 8.625×1.900	300 2.07	51 2.00	300 11.81	93 3.66	143 5.63	143 5.63	5/8×105 M16X108
200×50 8×2	219.1×60.3 8.625×2.375	300 2.07	64 2.50	300 11.81	115 4.53	149 5.87	149 5.87	5/8×105 M16X108
200×65 8×76.1	219.1×76.1 8.625×3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	155 6.10	5/8×105 M16X108
200×80 8×3	219.1×88.9 8.625×3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	155 6.10	5/8×105 M16X108
200×100 8×4	219.1×114.3 8.625×4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	160 6.30	5/8×105 M16X108

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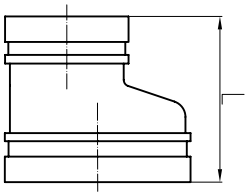
Grooved Eccentric Reducer



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
40X32 $1^1/_2$X$1^1/_4$	48.3X42.4 1.900X1.660	500 3.45	89 3.50	——
50X40 2X$1^1/_2$	60.3X48.3 2.375X1.900	500 3.45	89 3.50	——
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	89 3.50	UL FM
100X65 4X2$^1/_2$	108.0X76.1 4.250X3.000	500 3.45	102 4.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	102 4.00	UL FM
100X50 4X2	114.3X60.3 4.500X2.000	500 3.45	102 4.00	UL FM
100X65 4X21/2	114.3X76.1 4.500X3.000	300 2.07	102 4.00	UL FM
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	102 4.00	UL FM
125X100 5X4	139.7X114.3 5.500X4.500	300 2.07	127 5.00	UL FM
150X100 6X4	159.0X108.0 6.250X4.250	300 2.07	140 5.50	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	300 2.07	140 5.50	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	300 2.07	140 5.50	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	300 2.07	140 5.50	UL FM
150X125 6X5	165.1X139.7 6.500X5.500	300 2.07	140 5.50	UL FM
150X80 6X3	168.3X88.9 6.625X3.500	300 2.07	140 5.50	UL FM
150X100 6X4	168.3X114.3 6.625X4.500	300 2.07	140 5.50	UL FM
150X125 6X5	168.3X139.7 6.625X5.500	300 2.07	140 5.50	UL FM
200X100 8X4	219.1X114.3 8.625X4.500	300 2.07	215 8.50	UL FM
200X100 8X6	219.1X165.1 8.625X6.50	300 2.07	215 8.50	——
200X100 8X6	219.1X168.3 8.625X6.625	300 2.07	215 8.50	——
200X100 10X8	273.0X219.1 10.750X8.625	300 2.07	215 8.50	UL FM
350X150 14X6	355.6X168.3 14.000X6.625	300 2.07	330 12.99	——
350X200 14X8	355.6X219.1 14.000X8.625	300 2.07	330 12.99	——
350X250 14X10	355.6X273.0 14.000X10.750	300 2.07	330 12.99	——
350X300 14X12	355.6X323.9 14.000X12.750	300 2.07	330 12.99	——
400X200 16X8	406.4X219.1 16.000X8.625	300 2.07	356 14.02	——
400X250 16X10	406.4X273.0 16.000X10.750	300 2.07	356 14.02	——
400X300 16X12	406.4X323.9 16.000X12.750	300 2.07	356 14.02	——
400X350 16X14	406.4X355.6 16.000X14.000	300 2.07	356 14.02	——
450X150 18X6	457.2X168.3 18.000X6.625	300 2.07	381 15.00	——
450X250 18X10	457.2X273.0 18.000X10.750	300 2.07	381 15.00	——
450X300 18X12	457.2X323.9 18.000X12.750	300 2.07	381 15.00	——
450X350 18X14	457.2X355.6 18.000X14.000	300 2.07	381 15.00	——
450X400 18X16	457.2X406.4 18.000X16.000	300 2.07	381 15.00	——

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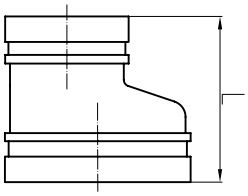
Grooved Eccentric Reducer

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
500X300 20X12	508.0X323.9 20.000X12.750	300 2.07	508 20.00	——
500X350 20X14	508.0X355.6 20.000X14.000	300 2.07	508 20.00	——
500X400 20X16	508.0X406.4 20.000X16.000	300 2.07	508 20.00	——
500X450 20X18	508.0X457.2 20.000X18.000	300 2.07	508 20.00	——
600X400 24X16	609.6X406.4 24.000X16.000	300 2.07	508 20.00	——
600X450 24X18	609.6X457.2 24.000X18.000	300 2.07	508 20.00	——
600X500 24X20	609.6X508.0 24.000X20.000	300 2.07	508 20.00	——

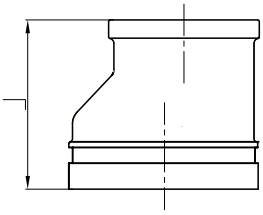
Segmental sizes are made of carbon steel pipe or fabricated from wrought carbon steel. Contact manufacturer for details.



230N

Grooved Eccentric Reducer with Female Thread

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
100X65 4X2$^{1}/_{2}$	114.3X76.1 4.500X3.000	300 2.07	102 4.00	UL FM
125X80 5X3	139.7X88.9 5.500X3.500	300 2.07	127 5.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	300 2.07	140 5.50	UL FM



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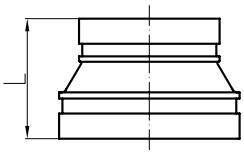
Grooved Concentric Reducer



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32X25 1 1/4X1	42.4X33.7 1.660X1.315	500 3.45	64 2.50	UL FM VdS LPCB
40X25 1½X1	48.3X33.7 1.900X1.315	500 3.45	64 2.50	UL FM VdS LPCB
40X32 1½X1¼	48.3X42.4 1.900X1.660	500 3.45	64 2.50	UL FM VdS LPCB
50X25 2X1	60.3X33.7 2.375X1.315	500 3.45	64 2.50	UL FM VdS LPCB
50X32 2X1¼	60.3X42.4 2.375X1.660	500 3.45	64 2.50	UL FM VdS LPCB
50X40 2X1½	60.3X48.3 2.375X1.900	500 3.45	64 2.50	UL FM VdS LPCB
65X25 2½X1	73.0x33.7 2.875X1.315	500 3.45	64 2.50	UL FM
65X32 2½X1¼	73.0X42.4 2.875X1.660	500 3.45	64 2.50	UL FM
65X40 2½X1½	73.0X48.3 2.875X1.900	500 3.45	64 2.50	UL FM
65X50 2½X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X25 2½X1	76.1 X33.7 3.000X1.315	500 3.45	64 2.50	——
65X32 2½X1¼	76.1X42.4 3.000X1.660	500 3.45	64 2.50	UL FM VdS LPCB
65X40 2½X1½	76.1X48.3 3.000X1.900	500 3.45	64 2.50	UL FM VdS LPCB
65X50 2½X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM VdS LPCB
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM VdS
80X32 3X1¼	88.9X42.4 3.500X1.660	500 3.45	64 2.50	UL FM
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	64 2.50	UL FM VdS
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	64 2.50	UL FM VdS LPCB
80X65 3X2½	88.9X73.0 3.500X2.875	500 3.45	64 2.50	UL FM
80X65 3X2½	88.9X76.1 3.500X3.000	500 3.45	64 2.50	UL FM VdS LPCB
100X50 4X2	108.0X60.3 4.250X2.375	500 3.45	76 3.00	UL FM
100X65 4X2½	108.0X73.0 4.250X2.875	500 3.45	76 3.00	UL FM
100X65 4X2½	108.0X76.1 4.250X3.000	500 3.45	76 3.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	76 3.00	UL FM
100X32 4X1¼	114.3X42.4 4.500X1.660	500 3.45	76 3.00	UL FM VdS
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	76 3.00	UL FM VdS LPCB
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM VdS LPCB
100X65 4X2½	114.3X73.0 4.500X2.875	500 3.45	76 3.00	UL FM
100X65 4X2½	114.3X76.1 4.500X3.000	500 3.45	76 3.00	UL FM VdS LPCB
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	76 3.00	UL FM VdS LPCB
125X100 5X4	133.0X108.0 5.250X4.250	500 3.45	89 3.50	UL FM
125X100 15X4	133.0X114.3 5.250X4.500	500 3.45	89 3.50	UL FM
125X50 5X2	139.7X60.3 5.500X2.375	500 3.45	89 3.50	UL FM
125X65 5X2½	139.7X76.1 5.500X3.000	500 3.45	89 3.50	UL FM VdS
125X80 5X3	139.7X88.9 5.500X3.500	500 3.45	89 3.50	UL FM VdS

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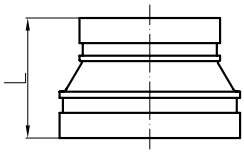
Grooved Concentric Reducer



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
125X100 5X4	139.7X114.3 5.500X4.500	500 3.45	89 3.50	UL FM VdS LPCB
125X65 5X2½	141.3X73.0 5.563X2.875	500 3.45	89 3.50	UL FM
125X80 5X3	141.3X88.9 5.563X3.500	500 3.45	89 3.50	UL FM
125X100 5X4	141.3X114.3 5.563X4.500	500 3.45	89 3.50	UL FM
150X50 6X2	159.0X60.3 6.250X2.375	500 3.45	102 4.00	UL FM
150X65 159.0X2½	159.0X76.1 6.250X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	159.0X88.9 6.250X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X108 6.250X4.250	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	500 3.45	102 4.00	UL FM
150X125 6X5	159.0X133.0 6.250X5.250	500 3.45	102 4.00	UL FM
150X50 6X2	165.1X60.3 6.500X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	165.1X76.1 6.500X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	102 4.00	UL FM LPCB
150X100 6X4	165.1X108.0 6.500X4.250	500 3.45	102 4.00	——
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	102 4.00	UL FM LPCB
150X125 6X5	165.1X139.7 6.500X5.500	500 3.45	102 4.00	UL FM LPCB
150X125 6X5	165.1X141.3 6.500X5.563	500 3.45	102 4.00	——
150X50 6X2	168.3X60.3 6.625X2.375	500 3.45	102 4.00	UL FM VdS
150X65 6X2½	168.3X73.0 6.625X2.875	500 3.45	102 4.00	UL FM
150X65 6X2½	168.3X76.1 6.625X3.000	500 3.45	102 4.00	UL FM VdS
150X80 6X3	168.3X88.9 6.625X3.500	500 3.45	102 4.00	UL FM VdS
150X100 6X4	168.3X114.3 6.625X4.500	500 3.45	102 4.00	UL FM VdS LPCB
150X125 6X5	168.3X139.7 6.625X5.500	500 3.45	102 4.00	UL FM VdS LPCB
150X125 6X5	168.3X141.3 6.625X5.563	500 3.45	102 4.00	UL FM
200X100 8X4	216.3X114.3 8.516X4.500	500 3.45	127 5.00	UL FM
200X150 8X6	216.3X165.1 8.516X6.500	500 3.45	127 5.00	UL FM
200X65 8X2½	219.1X73.0 8.625X2.875	500 3.45	127 5.00	UL FM
200X80 8X3	219.1X88.9 8.625X3.500	500 3.45	127 5.00	UL FM VdS LPCB
200X100 8X4	219.1X108.0 8.625X4.250	500 3.45	127 5.00	UL FM
200X100 8X4	219.1X114.3 8.625X4.500	500 3.45	127 5.00	UL FM VdS LPCB
200X125 8X5	219.1X139.7 8.625X5.500	500 3.45	127 5.00	UL FM VdS LPCB
200X125 8X5	219.1X141.3 8.625X5.563	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X159.0 8.625X6.250	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X165.1 8.625X6.500	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X168.3 8.625X6.625	500 3.45	127 5.00	UL FM VdS LPCB

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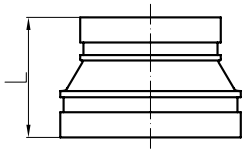
Grooved Concentric Reducer

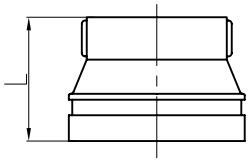


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
250X150 10X6	273.0X159.0 10.750X6.250	500 3.45	152 6.00	UL FM
250X150 10X6	273.0X165.1 10.750X6.500	500 3.45	152 6.00	UL FM
250X150 10X6	273.0X168.3 10.750X6.625	500 3.45	152 6.00	UL FM VdS
250X200 10X8	273.0X219.1 10.750X8.625	500 3.45	152 6.00	UL FM VdS
300X200 12X8	323.9X219.1 12.750X8.625	500 3.45	178 7.00	UL FM VdS
300X250 12X10	323.9X273.0 12.750X10.750	500 3.45	178 7.00	UL FM VdS
350X125 14X5	377.0X133.0 14.850X5.250	300 2.07	127 5.00	——
350X150 14X6	377.0X159.0 14.850X6.250	300 2.07	127 5.00	——
350X150 14X6	355.6X168.3 14.000X6.625	300 2.07	330 12.99	——
350X200 14X8	355.6X219.1 14.000X8.625	300 2.07	203 7.99	——
350X250 14X10	355.6X273.0 14.000X10.750	300 2.07	203 7.99	——
350X300 14X12	355.6X323.9 14.000X12.750	300 2.07	203 7.99	——
400X200 16X8	406.4X219.1 16.000X8.625	300 2.07	229 9.00	——
400X250 16X10	406.4X273.0 16.000X10.750	300 2.07	229 9.00	——
400X300 16X12	406.4X323.9 16.000X12.750	300 2.07	229 9.00	——
400X350 16X14	406.4X355.6 16.000X14.000	300 2.07	229 9.00	——
450X150 18X6	457.2X168.3 18.000X6.625	300 2.07	381 15.00	——
450X250 18X10	457.2X273.0 18.000X10.750	300 2.07	381 15.00	——
450X300 18X12	457.2X323.9 18.000X12.750	300 2.07	241 9.50	——
450X350 18X14	457.2X355.6 18.000X14.000	300 2.07	241 9.50	——
450X400 18X16	457.2X406.4 18.000X16.000	300 2.07	241 9.50	——
500X200 20X8	530.0X219.1 20.866X8.625	300 2.07	135 5.31	——
500X300 20X12	508.0X323.9 20.000X12.750	300 2.07	254 10.00	——
500X350 20X14	508.0X355.6 20.000X14.000	300 2.07	254 10.00	——
500X400 20X16	508.0X406.4 20.000X16.000	300 2.07	254 10.00	——
500X450 20X18	508.0X457.2 20.000X18.000	300 2.07	254 10.00	——
600X400 24X16	609.6X406.4 24.000X16.000	300 2.07	305 12.00	——
600X450 24X18	609.6X457.2 24.000X18.000	300 2.07	305 12.00	——
600X500 24X20	609.6X508.0 24.000X20.000	300 2.07	305 12.00	——

Segmental sizes are made of carbon steel pipe or fabricated from wrought carbon steel. Contact manufacturer for details.

240N

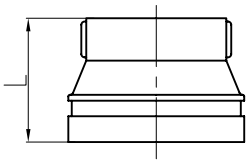
Grooved Concentric Reducer with Female Thread



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50X15 2X1/2	60.3X21.3 2.375X0.825	500 3.45	64 2.50	VdS
50X20 2X3/4	60.3X26.9 2.375X1.05	500 3.45	64 2.50	UL FM VdS LPCB
50X25 2X1	60.3X33.7 2.375X1.315	500 3.45	64 2.50	UL FM VdS LPCB
50X32 2X1¼	60.3X42.4 2.375X1.660	500 3.45	64 2.50	UL FM VdS LPCB
50X40 2X1½	60.3X48.3 2.375X1.900	500 3.45	64 2.50	UL FM VdS LPCB
65X25 2½X1	73.0X33.7 2.875X1.315	500 3.45	64 2.50	UL FM
65X25 2½X1¼	73.0X42.4 2.875X1.660	500 3.45	64 2.50	UL FM
65X40 2½X1½	73.0X48.3 2.875X1.900	500 3.45	64 2.50	UL FM
65X50 2½X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X15 2½X1/2	76.1X21.3 3.000X0.825	500 3.45	64 2.50	UL FM VdS
65X20 2½X3/4	76.1X26.9 3.000X1.05	500 3.45	64 2.50	UL FM VdS
65X25 2½X1	76.1X33.7 3.000X1.315	500 3.45	64 2.50	UL FM VdS
65X32 2½X1¼	76.1X42.4 3.000X1.660	500 3.45	64 2.50	UL FM VdS LPCB
65X40 2½X1½	76.1X48.3 3.000X1.900	500 3.45	64 2.50	FM VdS LPCB
65X50 2½X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM VdS LPCB
80X15 3X1/2	88.9X21.3 3.500X0.825	500 3.45	64 2.50	VdS
80X20 3X3/4	88.9X26.9 3.500X1.05	500 3.45	64 2.50	UL FM VdS
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM VdS
80X32 3X1¼	88.9X42.4 3.500X1.660	500 3.45	64 2.50	VdS
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	64 2.50	UL FM VdS
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	64 2.50	UL FM VdS LPCB
80X65 3X2½	88.9X73.0 3.500X2.875	500 3.45	64 2.50	UL FM
80X65 3X2½	88.9X76.1 3.500X3.000	500 3.45	64 2.50	UL FM VdS LPCB
100X25 4X1	108.0X33.7 4.250X1.315	500 3.45	76 3.00	UL FM
100X32 4X1¼	108.0X42.4 4.250X1.660	500 3.45	76 3.00	UL FM
100X40 4X1½	108.0X48.3 4.250X1.900	500 3.45	76 3.00	UL FM
100X50 4X2	108.0X60.3 4.250X2.375	500 3.45	76 3.00	UL FM
100X65 4X2½	108.0X76.1 4.250X3.000	500 3.45	76 3.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	76 3.00	UL FM
100X15 4X1/2	114.3X21.3 4.500X0.825	500 3.45	76 3.00	UL FM VdS
100X20 4X3/4	114.3X26.9 4.500X1.05	500 3.45	76 3.00	UL FM VdS
100X25 4X1	114.3X33.7 4.500X1.315	500 3.45	76 3.00	UL FM VdS
100X32 4X1¼	114.3X42.4 4.500X1.660	500 3.45	76 3.00	UL FM VdS
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	76 3.00	UL FM VdS LPCB
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM VdS LPCB
100X65 4X2½	114.3X73.0 4.500X2.875	500 3.45	76 3.00	UL FM
100X65 4X2½	114.3X76.1 4.500X3.000	500 3.45	76 3.00	UL FM VdS LPCB
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	76 3.00	UL FM VdS LPCB
125X40 5X1½	133.0X48.3 5.250X1.900	500 3.45	89 3.50	UL FM

240N

Grooved Concentric Reducer with Female Thread

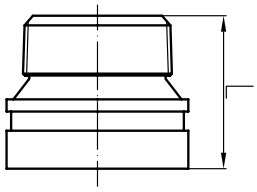


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
125X40 5X2	133.0X60.3 5.250X2.375	500 3.45	89 3.50	——
125X65 5X2½	133.0X76.1 5.250X3.000	500 3.45	89 3.50	UL FM
125X65 5X3	133.0X88.9 5.250X3.500	500 3.45	89 3.50	——
125X25 5X1	139.7X33.7 5.500X1.315	500 3.45	89 3.50	UL FM VdS
125X32 5X1¼	139.7X42.4 5.500X1.660	500 3.45	89 3.50	UL FM VdS
125X40 5X1½	139.7X48.3 5.500X1.900	500 3.45	89 3.50	UL FM VdS
125X50 5X2	139.7X60.3 5.500X2.375	500 3.45	89 3.50	UL FM VdS
125X65 5X2½	139.7X76.1 5.500X3.000	500 3.45	89 3.50	UL FM VdS
125X80 5X3	139.7X88.9 5.500X3.500	500 3.45	89 3.50	UL FM VdS
125X100 5X4	139.7X114.3 5.500X4.500	500 3.45	89 3.50	UL FM VdS LPCB
125X100 5X4	141.3X114.3 5.563X4.500	500 3.45	89 3.50	UL FM
150X20 6X3/4	159.0X26.9 6.250X1.05	500 3.45	102 4.00	UL FM
150X25 6X1	159.0X33.7 6.250X1.315	500 3.45	102 4.00	UL FM
150X32 6X1¼	159.0X42.4 6.250X1.660	500 3.45	102 4.00	UL FM
150X40 6X1½	159.0X48.3 6.250X1.900	500 3.45	102 4.00	UL FM
150X50 6X2	159.0X60.3 6.250X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	159.0X76.1 6.250X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	159.0X88.9 6.250X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	500 3.45	102 4.00	UL FM
150X15 6X1/2	165.1X21.3 6.500X0.825	500 3.45	102 4.00	UL FM
150X20 6X3/4	165.1X26.9 6.500X1.05	500 3.45	102 4.00	UL FM
150X25 6X1	165.1X33.7 6.500X1.315	500 3.45	102 4.00	UL FM
150X32 6X1¼	165.1X42.4 6.500X1.660	500 3.45	102 4.00	UL FM
150X40 6X1½	165.1X48.3 6.500X1.900	500 3.45	102 4.00	UL FM
150X50 6X2	165.1X60.3 6.500X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	165.1X76.1 6.500X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	102 4.00	UL FM LPCB
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	102 4.00	UL FM
150X25 6X1	168.3X33.7 6.625X1.315	500 3.45	102 4.00	UL FM
150X50 6X2	168.3X60.3 6.625X2.375	500 3.45	102 4.00	UL FM VdS
200X40 8X1½	219.1X48.3 8.625X1.900	500 3.45	127 5.00	UL FM
200X50 8X2	219.1X60.3 8.625X2.375	500 3.45	127 5.00	UL FM VdS
200X65 8X2½	219.1X76.1 8.625X3.000	500 3.45	127 5.00	UL FM VdS
200X80 8X3	219.1X88.9 8.625X3.500	500 3.45	127 5.00	UL FM VdS LPCB
200X100 8X4	219.1X114.3 8.625X4.500	500 3.45	127 5.00	UL FM

240W

Grooved Concentric Reducer with Male Thread

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
65X50 $2^1/_2$X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X50 $2^1/_2$X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM



300

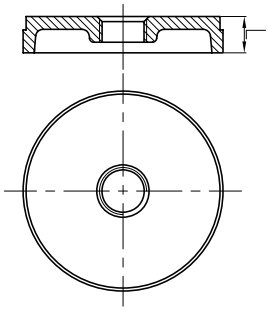
Cap

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	22.1 0.87	UL FM VdS LPCB
32 1¼	42.4 1.660	500 3.45	23.5 0.93	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	23.5 0.93	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	23.5 0.93	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	23.5 0.93	UL FM
65 2½	76.1 3.000	500 3.45	24.5 0.96	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	24 0.94	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	27 1.06	UL FM
100 4	114.3 4.500	500 3.45	27 1.06	UL FM VdS LPCB
25 5	133.0 5.250	500 3.45	25.5 1.00	UL FM
125 5	139.7 5.500	500 3.45	25.5 1.00	UL FM VdS LPCB
125 5	141.3 5.563	500 3.45	25.5 1.00	UL FM
150 6	159.0 6.250	500 3.45	27 1.06	UL FM
150 6	165.1 6.500	500 3.45	27 1.06	UL FM LPCB
150 6	168.3 6.625	500 3.45	24.5 0.97	UL FM VdS LPCB
200 8	216.3 8.516	500 3.45	30 1.18	UL FM
200 8	219.1 8.625	500 3.45	30 1.18	UL FM VdS LPCB
250 10	273.0 10.750	500 3.45	32 1.26	UL FM VdS LPCB
300 12	323.9 12.750	500 3.45	32 1.26	UL FM VdS
350 14	355.6 14.000	300 2.07	165 6.50	——
400 16	406.4 16.000	300 2.07	178 7.00	——
450 18	457.2 18.000	300 2.07	203 8.00	——
500 20	508.0 20.000	300 2.07	229 9.00	——
600 24	609.6 24.000	300 2.07	267 10.50	——

Segmental sizes are made of carbon steel pipe or fabricated from wrought carbon steel. Contact manufacturer for details.

300

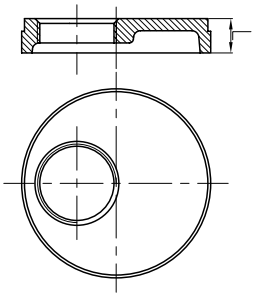
Cap with Concentric Hole



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50X25 2X1	60.3X33.7 2.375X1.315	500 3.45	23.5 0.93	——
65X25 2½×1	76.1X33.7 3.000X1.315	500 3.45	24.5 0.96	——
65×40 2½×1½	76.1×48.3 3.000×1.900	500 3.45	23.5 0.925	UL FM
65X50 2½×2	76.1X60.3 3.000X2.375	500 3.45	24 0.94	——
80X15 3X1/2	88.9X21.3 3.500X0.825	500 3.45	25.4 1.00	UL FM
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	24 0.94	UL FM
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	23.5 0.925	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	500 3.45	23.5 0.925	UL FM
100×15 4×1/2	114.3×21.3 4.500×0.825	500 3.45	27.0 1.06	UL FM
100×25 4×1	114.3×33.7 4.500×1.315	500 3.45	27.0 1.06	UL FM
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	25.4 1.00	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	500 3.45	25.4 1.00	——
125×50 5×2	139.7×60.3 5.500×2.375	500 3.45	27 1.06	UL FM
150×15 6×1/2	165.1×21.3 6.500×0.825	500 3.45	27 1.06	UL FM
150×25 6×1	165.1×33.7 6.500×1.315	500 3.45	27 1.06	UL FM
150×50 6×2	165.1×60.3 6.500×2.375	500 3.45	27 1.06	UL FM
150X40 6X11/2	168.3x48.3 6.625X1.900	500 3.45	27 1.06	——
150×50 6×2	168.3×60.3 6.625×2.375	500 3.45	27 1.06	——
200X25 8X1	219.1X33.7 8.625X1.315	500 3.45	30 1.18	——

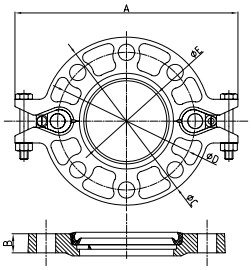
300PX

Cap with Eccentric Hole



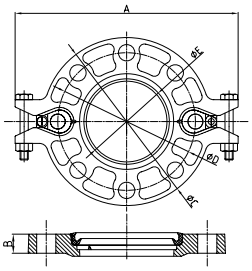
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
65X25 21/2X1	76.1X33.7 3000X1.315	500 3.45	23.5 0.925	——
65X40 21/2X11/2	76.1X48.3 3.000X1.900	500 3.45	23.5 0.925	——
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	23.5 0.925	——
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	23.5 0.925	UL FM
80×50 3×2	88.9×60.3 3.500×2.375	500 3.45	23.5 0.925	UL FM
100X25 4X1	114.3X33.7 4.500X1.315	500 3.45	27 1.06	——
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	25.4 1.00	UL FM
100×50 4×2	114.3×60.3 4.500×2.375	500 3.45	25.4 1.00	UL FM
125×40 5×1½	139.7×48.3 5.500×1.900	500 3.45	25.4 1.00	UL FM
125×50 5×2	139.7×60.3 5.500×2.375	500 3.45	25.4 1.00	UL FM
150×40 6×1½	165.1×48.3 6.500×1.900	500 3.45	25.4 1.00	UL FM
150×40 6×1½	168.3×48.3 6.625×1.900	500 3.45	25.4 1.00	UL FM
150×50 6×2	168.3X60.3 6.625X2.375	500 3.45	25.4 1.00	UL FM
200×40 8×1½	219.1×48.3 8.625×1.900	500 3.45	30.2 1.19	UL FM
200×50 8×2	219.1×60.3 8.625×2.375	500 3.45	30.2 1.19	UL FM

321
PN16
Grooved Flange



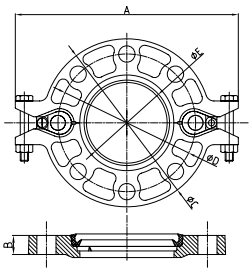
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
40 1½	48.3 1.900	300 2.07	195 7.68	18.5 0.73	150 5.90	110 4.33	45.4 1.78	2-M10X50	4-M16	UL FM VdS
50 2	60.3 2.375	300 2.07	220 8.66	18.5 0.73	165 6.50	125 4.92	57.5 2.26	2-M10X50	4-M16	UL FM VdS
65 76.1	76.1 3.000	300 2.07	235 9.25	18.5 0.73	185 7.28	145 5.71	72.7 2.86	2-M10X50	4-M16	UL FM VdS
80 3	88.9 3.500	300 2.07	255 10.04	18.5 0.73	195 7.68	160 6.30	85.5 3.37	2-M10X50	8-M16	UL FM VdS
100 108.0	108.0 4.250	300 2.07	279 10.98	18.5 0.73	220 8.66	180 7.09	104.5 4.11	2-M10X50	8-M16	UL FM
100 4	114.3 4.500	300 2.07	279 10.98	18.5 0.73	224 8.82	180 7.09	110.5 4.35	2-M10X50	8-M16	UL FM VdS
125 5	133.0 5.250	300 2.07	312 12.28	21.5 0.85	250 9.84	210 8.27	129.2 5.08	2-M12X65	8-M16	UL FM
125 5	139.7 5.500	300 2.07	320 12.60	23 0.91	250 9.84	210 8.27	135.5 5.33	2-M12X65	8-M16	UL FM
150 6	159.0 6.25	300 2.07	346 13.62	21.5 0.85	280 11.00	240 9.45	154.8 6.10	2-M12X65	8-M20	UL FM
150 6	165.1 6.500	300 2.07	346 13.62	21.5 0.85	280 11.00	240 9.45	160.8 6.33	2-M12X65	8-M20	UL FM
150 6	168.3 6.625	300 2.07	346 13.62	24 0.94	280 11.00	240 9.45	164.3 6.47	2-M12X65	8-M20	UL FM
200 8	219.1 8.625	300 2.07	414.3 16.31	30 1.18	340 13.39	295 11.61	214.9 8.46	2-3/8X70 2-M10X70	12-M20	UL FM VdS
250 10	273.0 10.750	300 2.07	480 18.90	25.5 1.00	405 15.94	355 13.98	268.9 10.59	2-3/8X70 2-M10X70	12-M24	UL FM VdS
300 12	323.9 12.750	300 2.07	530.5 20.88	25.5 1.00	460 18.11	410 16.14	318.9 12.56	2-3/8X70 2-M10X70	12-M24	UL FM
350 14	355.6 12.750	300 2.07	580 22.83	30 1.18	520 20.47	470 18.50	350.6 13.80	——	16-M24	——
400 16	406.4 16.000	300 2.07	630 24.80	32 1.26	580 22.83	525 20.67	401.5 15.81	——	16-M27	——
450 18	457.2 18.000	300 2.07	693 27.28	36 1.42	640 25.20	585 23.03	452.2 17.80	——	20-M27	——
500 20	508.0 20.000	300 2.07	770 30.31	36 1.42	715 28.15	650 25.59	503 19.80	——	20-M30	——
600 24	609.6 24.000	300 2.07	895 35.24	40 1.57	840 33.07	770 30.31	601.6 23.69	——	20-M33	——

321H
PN25
Grooved Flange



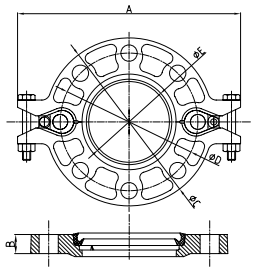
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
100 108.0	108.0 4.250	362 2.5	290 11.41	21.5 0.85	230 9.06	190 7.48	104.5 4.11	2-M10X50	8-M20	UL FM
150 165.1	165.1 6.500	362 2.5	365 14.37	21.5 0.85	300 11.80	250 9.84	160.8 6.33	2-M12X65	8-M24	UL FM

321A
ANSI 125/150
Grooved Flange



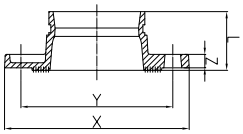
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
50 2	60.3 2.375	300 2.07	206 8.11	19 0.75	152 5.98	121 4.76	57.5 2.26	2-M10X50	4-5/8	UL FM
65 2½	73.0 2.875	300 2.07	230 9.05	19 0.75	178 7.00	140 5.51	69.8 2.74	2-M10X50	4-5/8	UL FM
65 2½	76.1 3.000	300 2.07	230 9.05	19 0.75	178 7.00	140 5.51	72.7 2.86	2-M10X50	4-5/8	——
80 3	88.9 3.500	300 2.07	246 9.68	19 0.75	191 7.52	152 5.98	85.5 3.37	2-M10X50	4-5/8	UL FM
100 4	114.3 4.500	300 2.07	280 11.02	19 0.75	229 9.00	191 7.52	110.5 4.35	2-M12X55	8-5/8	UL FM
125 5	141.3 5.563	300 2.07	320 12.60	22 0.87	254 10.00	216 8.50	137.4 5.41	2-M12X65	8-3/4	UL FM
150 6	168.3 6.625	300 2.07	346 13.62	24 0.94	280 11.00	241.3 9.50	164.3 6.47	2-M12X65	8-3/4	UL FM
200 8	219.1 8.625	300 2.07	414.3 16.31	30 1.18	341.4 13.44	298.5 11.75	214.9 8.46	2-3/8X70 2-M10X70	8-3/4	UL FM
250 10	273.0 10.750	300 2.07	481.2 18.94	30.3 1.19	405.6 15.97	361.95 14.25	268.9 10.59	2-3/8X70 2-M10X70	12-7/8	UL FM
300 12	323.9 12.750	300 2.07	553.3 21.78	30.4 1.20	482.6 19.00	431.8 17.00	318.9 12.56	2-3/8X70 2-M10X70	12-7/8	UL FM
350 14	355.6 12.750	300 2.0	590 23.22	37 1.44	535 21.00	476.3 18.75	350.6 13.80	——	12-1	——
400 16	406.4 16.000	300 2.0	650 25.59	37 1.44	595 23.50	539.8 21.25	401.5 15.81	——	16-1	——
450 18	457.2 18.000	300 2.0	690 27.17	40 1.56	635 25.80	577.8 22.75	452.2 17.80	——	16-11/8	——
500 20	508.0 20.000	300 2.0	765 30.12	43 1.69	700 27.50	635 25.00	503 19.80	——	20-11/8	——
600 24	609.6 24.000	300 2.0	875 34.45	49 1.94	815 32.00	749.3 29.50	601.6 23.69	——	20-11/4	——

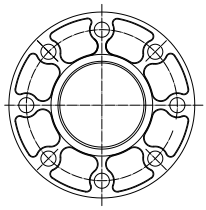
321E
BS.TABLE'E'
Grooved Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
50 2	60.3 2.375	300 2.07	211 8.31	18.5 0.73	150 5.91	114 4.49	57.5 2.26	2-M10X50	4-M16	——
80 3	88.9 3.500	300 2.07	241 9.49	18.5 0.73	185 7.28	146 5.75	85.5 3.37	2-M10X50	4-M16	——
100 4	114.3 4.500	300 2.07	270 10.63	18.5 0.73	216 8.50	178 7.00	110.5 4.35	2-M10X50	8-M16	——
150 6	165.1 6.500	300 2.07	346 13.62	21.5 0.85	280 11.02	235 9.25	160.8 6.33	2-M12X65	8-M20	——
200 8	219.1 8.625	300 2.07	408 16.06	24 0.94	335 13.19	292 11.50	214.9 8.46	2-3/8X70	8-M20	——
250 10	273.0 14.000	200 1.4	480 18.90	25.5 1.00	406 16.00	356 14.00	268.9 10.59	——	12-3/4	——
300 12	323.9 10.750	200 1.4	530.5 20.88	25.5 1.00	457 18.00	406 16.00	318.9 12.56	——	12-7/8	——
350 14	355.6 12.750	200 1.4	580 22.83	32 1.26	527 20.75	470 18.50	350.6 13.80	——	12-7/8	——
400 16	406.4 16.000	200 1.4	630 24.80	32 1.26	578 22.76	521 20.51	401.5 15.81	——	12-7/8	——
450 18	457.2 18.000	200 1.4	693 27.28	36 1.42	641 25.24	584 23.00	452.2 17.80	——	16-7/8	——
500 20	508.0 20.000	200 1.4	770 30.31	38 1.50	705 27.76	641 25.24	503 19.80	——	16-7/8	——
600 24	609.6 24.000	200 1.4	880 34.65	42 1.65	826 32.52	756 29.76	601.6 23.69	——	16-11/8	——

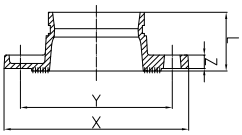
321G
PN16
Adaptor Flange

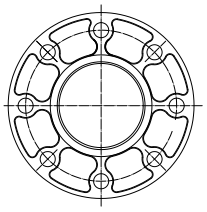




Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
25 1	33.7 1.327	300 2.0	60.5 2.382	115 4.53	85 3.35	16 0.63	4-M12	UL FM VdS LPCB
32 1¼	42.4 1.669	300 2.0	60.5 2.382	140 5.51	100 3.94	16 0.63	4-M16	UL FM VdS LPCB
40 1½	48.3 1.902	300 2.0	60.5 2.382	150 6.91	110 4.33	16 0.63	4-M16	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	65 2.559	165 6.50	125 4.92	16 0.63	4-M16	UL FM VdS LPCB
65 21/2	73.0 2.875	500 3.45	65 2.559	165 6.50	125 4.92	16 0.63	4-M16	UL FM
65 76.1	76.1 3.000	500 3.45	65 2.559	185 7.28	145 5.70	16 0.63	4-M16	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	65 2.559	200 7.87	160 6.30	16 0.63	8-M16	UL FM VdS LPCB
100 108.0	108.0 4.250	300 2.0	70 2.756	220 8.66	180 7.09	16 0.63	8-M16	UL FM
100 4	114.3 4.500	300 2.0	70 2.756	220 8.66	180 7.09	16 0.63	8-M16	UL FM VdS LPCB
125 133.0	133 5.250	300 2.0	70 2.756	250 9.84	210 8.27	18 0.71	8-M16	UL FM
125 139.7	139.7 5.500	300 2.0	70 2.756	250 9.84	210 8.27	18 0.71	8-M16	UL FM VdS LPCB
150 159.1	159.0 6.250	500 3.45	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM
150 165.1	165.1 6.500	500 3.45	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM LPCB
150 6	168.3 6.625	500 3.45	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM VdS LPCB
200 8	219.1 8.625	300 2.0	80 3.150	340 13.39	295 11.61	19 0.75	12-M20	UL FM VdS LPCB
250 10	273.0 10.750	300 2.0	85 3.346	405 15.94	355 13.98	21 0.83	12-M24	UL FM VdS
300 12	323.9 12.750	225 1.6	90 3.543	460 18.11	410 16.14	24 0.94	12-M24	UL FM VdS
350 14	377.0 14.843	225 1.6	100 3.937	520 20.47	470 18.50	25 1.00	16-M24	UL FM
400 16	426.0 16.772	225 1.6	110 4.331	580 22.83	525 20.67	27 1.06	16-M27	UL FM
450 18	480 18.897	225 1.6	115 4.528	640 25.196	585 23.03	20 0.787	20-M27	——

321GH
PN25
Adaptor Flange



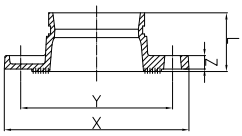


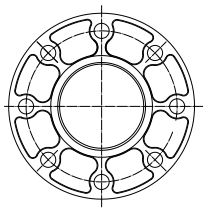
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
100 108.0	108.0 4.250	362 2.5	70 2.756	230 9.05	190 7.48	18 0.71	8-M20	UL FM
100 4	114.3 4.500	362 2.5	70 2.756	235 9.25	190 7.48	16 0.63	8-M20	UL FM
150 159.0	159.0 6.250	362 2.5	70 2.756	300 11.80	250 9.85	20 0.79	8-M24	UL FM
150 165.1	165.1 6.500	362 2.5	70 2.756	300 11.80	250 9.84	18 0.71	8-M24	UL FM
200 8	219.1 8.625	362 2.5	80 3.150	360 14.17	310 12.20	19 0.75	12-M24	UL FM

321GA

ANSI 125/150

Adaptor Flange
Class 125/150



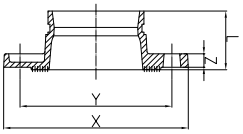


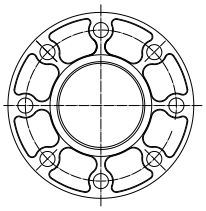
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
50 2	60.3 2.375	300 2.07	65 2.559	152 6.0	120.5 4.74	16 0.63	4-5/8	UL FM
65 2½	73.0 2.875	300 2.07	65 2.559	185 7.28	139.7 5.50	16 0.63	4-5/8	UL FM
80 3	88.9 3.500	300 2.07	65 2.559	200 7.87	152.4 6.00	16 0.63	8-5/8	UL FM
100 4	114.3 4.500	300 2.07	70 2.756	229 9.01	190.5 7.50	16 0.63	8-5/8	UL FM
150 6	168.3 6.625	300 2.07	70 2.756	282 11.10	241.3 9.50	18 0.71	8-3/4	UL FM
200 8	219.1 8.625	300 2.07	75 2.953	340 13.39	298.5 11.75	19 0.75	8-3/4	UL FM
250 10	273.0 10.75	300 2.07	85 3.35	406 15.98	362 14.25	21 0.826	12-7/8	UL FM
350 14	355.6 12.750	300 2.0	127 5.00	535 21.00	476.3 18.75	37 1.44	12-1	——
400 16	406.4 16.000	300 2.0	127 5.00	595 23.50	539.8 21.25	37 1.44	16-1	——
450 18	457.2 18.000	300 2.0	140 5.50	642 25.28	577.8 22.75	40 1.56	16-11/8	——
500 20	508.0 20.000	300 2.0	152 6.00	700 27.50	635 25.00	43 1.69	20-11/8	——
600 24	609.6 24.000	300 2.0	152 6.00	815 32.00	749.3 29.50	49 1.94	20-11/4	——

321GL

PN10

Adaptor Flange

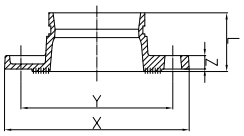


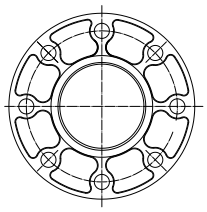


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
200 8	219.1 8.625	145 1.0	75 2.95	340 13.39	295 11.61	19 0.75	8-M20	UL FM
250 10	273.0 10.750	145 1.0	85 3.346	405 15.94	350 13.78	21 0.83	12-M20	UL FM
300 12	323.9 12.750	145 1.0	90 3.543	460 18.11	400 15.75	24 0.94	12-M20	UL FM

321G
BS.TABLE 'E'
Adaptor Flange

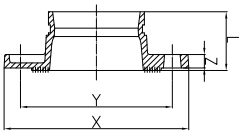
FM APPROVED

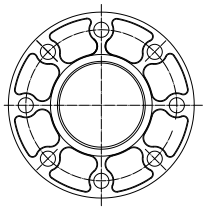




Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
65 76.1	76.1 3.000	225 1.6	70 2.756	165 6.50	127 5.00	16 0.63	4-M16	——
80 3	88.9 3.500	225 1.6	70 2.756	184 7.24	146 5.75	16 0.63	4-M16	——
100 4	114.3 4.500	225 1.6	70 2.756	216 8.50	178 7.00	16 0.63	8-M16	FM
150 165.1	165.1 6.500	225 1.6	70 2.756	280 11.02	235 9.25	21 0.71	8-M20	FM
200 8	219.1 8.625	225 1.6	102 4.02	337 13.27	292 11.50	19 0.75	8-M20	——
250 10	273.0 10.75	225 1.6	85 3.35	405 15.94	356 14.02	25 0.98	12-M20	——
300 12	323.9 10.750	200 1.4	102 4.02	457 18.00	406 16.00	25.5 1.00	12-7/8	——
350 14	355.6 12.750	200 1.4	127 5.00	527 20.75	470 18.50	32 1.26	12-7/8	——
400 16	406.4 16.000	200 1.4	127 5.00	578 22.76	521 20.51	32 1.26	12-7/8	——
450 18	457.2 18.000	200 1.4	140 5.50	641 25.24	584 23.00	36 1.42	16-7/8	——

321GJ
JIS 10K
Adaptor Flange

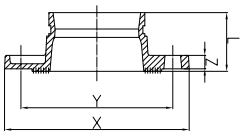


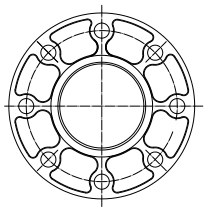


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
65 2½	76.3 3.00	145 1.0	65 2.559	175 6.89	140 5.51	18 0.71	4-M16	——
80 3	89.1 3.50	145 1.0	65 2.559	185 7.28	150 5.91	18 0.71	8- M16	——
100 4	114.3 4.50	145 1.0	70 2.756	210 8.27	175 6.89	18 0.71	8- M16	——
125 5	139.8 5.50	145 1.0	70 2.756	250 9.84	210 8.27	20 0.79	8-M20	——
150 6	165.2 6.50	145 1.0	70 2.756	280 11.02	240 9.45	20 0.79	8- M20	——

321GJ
JIS 16K
Adaptor Flange

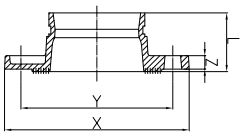
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
80 3	88.9 3.500	225 1.6	65 2.559	200 7.87	160 6.30	17 0.67	8-M20	——
100 4	114.3 4.500	225 1.6	70 2.756	225 8.86	185 7.28	19 0.75	8-M20	——
150 165.1	165.1 6.500	225 1.6	70 2.756	305 12.00	260 10.236	21 0.827	12-M22	——

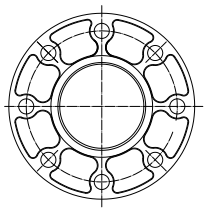




321GJ
JIS 20K
Adaptor Flange

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut	Certificate
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-SIZE mm	
100 4	114.3 4.500	300 2.0	70 2.756	225 8.86	185 7.28	19 0.75	8-M20	——
150 165.1	165.1 6.500	300 2.0	70 2.756	305 12.00	260 10.236	21 0.827	12-M22	——

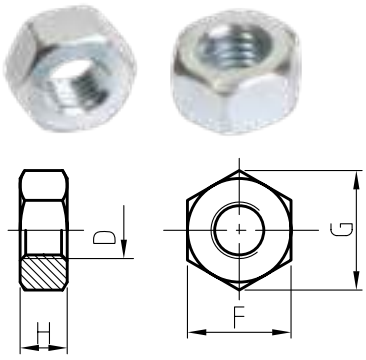




Gasket Data

Gasket	Name	Temperature Range	General Service Recommendations	Color Mark
E	EPDM	-34~+110℃ (-30~+230°F)	Recommended for hot water service within the specified temperature range plus a variety of dilute acids,oil-free air and many chemical services.UL classified in accordance with ANSI/NSF 61or cold+86°F(+30°)and hot +180°F(+82℃) potable water service.Not recommended for petroleum service.	Black Green Strip
D	NBR	-29~+82℃ (-20~+180°F)	Recommended for petroleum products, air with oil vapors,vegetable and mineral oils within the specified temperature range.Not recommended for hot water services.	Orange Strip
S	Silicone	-40~+177℃ (-40~+350°F)	Recommended for high temperature dry air and some high temperature chemical products.	White

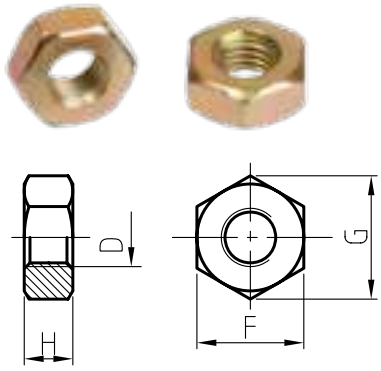
ANSI Heavy Hex Nut



1. Material: SAE J995 2.
2.Thread: ANSI B 1.1-1982, class 2B.
3.Surface Treatment: Zinc electroplated per ASTM B633 CLASS FE/ZN5 TYPE III, thickness ≥5μm per class SC1.

d	F		G		H	
	Min	Max	Min	Max	Min	Max
3/8-16UNC	16.99	17.47	19.38	20.17	8.66	9.57
1/2-13UNC	21.59	22.22	24.61	25.65	11.78	12.80
5/8-11UNC	26.19	26.97	29.85	31.16	14.90	16.02
3/4-10UNC	30.78	31.75	35.10	36.65	18.03	19.25
7/8-9UNC	35.41	36.53	40.36	42.16	21.16	22.48

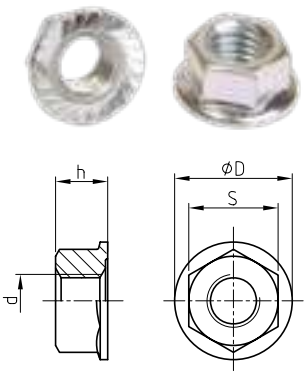
Metric Heavy Hex Nut



1.Material: ISO 898-2:1992 \ GB/T3098.2-2000 Class 8.
2.Thread: ISO 261, tolerance 6h for M10& M12, 7h for M16 and above.
3.Surface Treatment: Zinc Electroplated followed by a yellow chromate dip per ISO 2081 FE/ZN5, ISO4520 CLASS 1A.

d	F		G	H	
	Min	Max	Min	Min	Max
M10	15.73	16.0	17.7	8.0	8.4
M12	21.16	22.0	23.9	9.34	10.0
M16	23.16	24.0	26.17	14.1	15.9
M20	29.16	30.0	32.95	16.9	19.0
M22	33.0	34.0	37.29	18.1	20.2

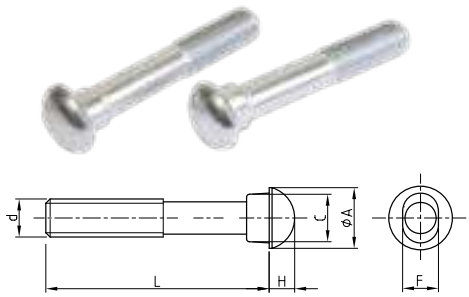
Hexagon Flange Nut



Dimension according to DIN6923.

d	S		D	h	
	Min	Max	Max	Min	Max
M8	12.3	13	17.9	7.6	8
M10	14.73	15.0	21.8	9.64	10
M12	17.73	18.0	26.0	11.57	12.0

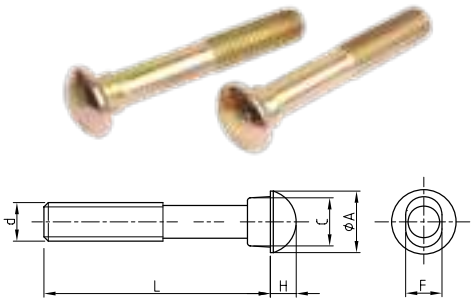
ANSI Oval Neck Track Bolt



1.Material: SAE J429 5.
2.Thread: UNC thread per ANSI B 1.1 Class 2A.
3.Surface Treatment: Silver chromate electroplated per ASTM B633 CLASS FE/ZN5 TYPE III, thickness ≥5μm per class SC1.

d	A	C	F	H	L
3/8-16UNC	19	13.9	9.50	6.0	55/70
1/2-13UNC	22.5	16	12.70	8.0	70/75
5/8-11UNC	27.4	19.8	15.90	10.0	80/85/105
3/4-10UNC	32.5	26.2	19.05	12.0	115/120
7/8-9UNC	37.7	28.8	22.20	14.0	125/140

Metric Oval Neck Track Bolt

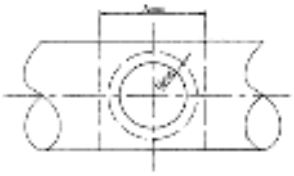


1.Material: ISO 898-1:1992 \ GB/T3098.1-2000 Class 8.8.
2.Thread: ISO metric thread per ISO 261, tolerance 6h.
3.Surface Treatment: Yellow chromate electroplated per ISO 2081 FE/ZN5, ISO4520 CLASS 1A.

d	A	C	F	H	L
M10	18.5	13.5	9.5	5	50/57/63/70/89
M12	23.5	17.5	12.3	8	70/76/82/89/108
M16	29.5	20.5	15.7	10	85/89/95/108
M20	38	27	18.3	12.5	110/115
M22	42.2	31	21.4	14	125/140/150

Hole Diameter of pipe

Hole-cutting Machine

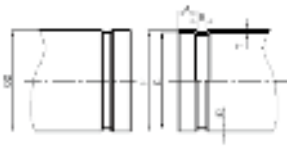


Run Nominal Sine mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in	Run Nominal Size mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in	Run Nominal Size mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in
25 1"/33.7	10 3/8	23.5 0.925 A89	80 3"/88.9	15 1/2	38 1.50 A89	150 159.0 165.1 6"/168.3	15 1/2	38 1.50 A89
	15 1/2			20 3/4			20 3/4	
	20 3/4			25 1			25 1	
	25 1			32 11/4	51 2.00 A102		32 11/4	51 2.00 A102
32 11/4"/42.4	10 3/8	30 1.18 A89		40 11/2			40 11/2	
	15 1/2			50 2	64 2.50 A114		50 2	64 2.50 A114
	20 3/4		100 108.0 4"/114.3	15 1/2	38 1.50 A89		65 21/2/76	70 2.75 A120
	25 1			20 3/4			80 3	89 3.50 A140
40 11/2"/48.3	10 3/8	30 1.18 A89		25 1			100 108.0/4	114 4.50 A165
	15 1/2			32 11/4	51 2.00 A102	200 8"/219.1 250 10"/273.0	25 1	38 1.50 A89
	20 3/4			40 11/2			32 11/4	51 2.00 A102
	25 1			50 2	64 2.50 A114		40 11/2	
50 2"/60.3	15 1/2	38 1.50 A89		65 21/2/76	70 2.75 A120		50 2	64 2.50 A114
	20 3/4			80 3	89 3.50 A140		65 21/2/76	70 2.75 A120
	25 1		125 133.0 139.7 5"/141.3	15 1/2	38 1.50 A89		80 3	89 3.50 A140
	32 11/4	45 1.75 A102		20 3/4			100 108.0/4	114 4.50 A165
	40 11/2			25 1				
65 21/2"/73.0 76.1	15 1/2	38 1.50 A89		32 11/4	51 2.00 A102			
	20 3/4			40 11/2				
	25 1			50 2	64 2.50 A114			
	32 11/4	51 2.00 A102		65 21/2/76	70 2.75 A120			
	40 11/2			80 3	89 3.50 A140			

The outside surface of the pie within 16mm from the hole must be clean and smooth.

Roll Groove Dimensions

Roll Grooving Machine



Nominal Size mm/in	Pipe OD			Gasket seat A ±0.76/±0.03 mm/in	Groove Width B ±0.76/±0.03 mm/in	Groove Dia C		Groove Depth D(ref) mm/in	MaxAllow Flare Dia F mm/in	Min.Allow wall thickness T mm/in
	Basic mm/in	Tolerence mm/in				Basic mm/in	Tolerence mm/in			
25 1	33.7 1.327	+0.41 +0.016	-0.68 -0.026	15.88 0.625	7.14 0.281	30.23 1.190	-0.38 -0.015	1.60 0.063	34.5 1.358	1.8 0.071
32 11/4	42.4 1.669	+0.50 0.020	-0.60 -0.023	15.88 0.625	7.14 0.281	38.99 1.535	-0.38 -0.015	1.60 0.063	43.3 1.705	1.8 0.071
40 11/2	48.3 1.900	+0.44 0.017	-0.52 -0.020	15.88 0.625	7.14 0.281	45.09 1.775	-0.38 -0.015	1.60 0.063	49.4 1.945	1.8 0.071
50 2	60.3 2.375	+0.61 +0.024	-0.61 -0.024	15.88 0.625	8.74 0.344	57.15 2.250	-0.38 -0.015	1.60 0.063	62.2 2.449	1.8 0.071
65 2-1/2	73.0 2.875	+0.74 +0.029	-0.74 -0.029	15.88 0.625	8.74 0.344	69.09 2.720	-0.46 -0.018	1.98 0.078	75.2 2.961	2.3 0.091
65 2½	76.1 3.000	+0.76 +0.030	-0.76 -0.030	15.88 0.625	8.74 0.344	72.26 2.845	-0.46 -0.018	1.99 0.078	77.7 3.059	2.3 0.091
80 3	88.9 3.500	+0.89 +0.035	-0.79 -0.031	15.88 0.625	8.74 0.344	84.94 3.344	-0.46 -0.018	1.98 0.078	90.6 3.567	2.3 0.091
100 4	108.0 4.250	+1.07 +0.042	-0.79 -0.031	15.88 0.625	8.74 0.344	103.73 4.084	-0.51 -0.020	2.11 0.083	109.7 4.319	2.3 0.091
100 4	114.3 4.500	+1.14 +0.045	-0.79 -0.031	15.88 0.625	8.74 0.344	110.08 4.334	-0.51 -0.020	2.11 0.083	116.2 4.575	2.3 0.091
125 5	133.0 5.250	+1.32 +0.052	-0.79 -0.031	15.88 0.625	8.74 0.344	129.13 5.084	-0.51 -0.020	2.11 0.083	134.9 5.311	2.9 0.114
125 5	139.7 5.500	+1.40 +0.055	-0.79 -0.031	15.88 0.625	8.74 0.344	135.48 5.334	-0.51 -0.020	2.11 0.083	141.7 5.579	2.9 0.114
125 5	141.3 5.563	+1.42 +0.056	-0.79 -0.031	15.88 0.625	8.74 0.344	137.03 5.395	-0.56 -0.022	2.13 0.084	143.5 5.650	2.9 0.114
150 6	159.0 6.250	+1.60 +0.063	-0.79 -0.031	15.88 0.625	8.74 0.344	154.50 6.083	-0.56 -0.022	2.16 0.085	161.0 6.339	2.9 0.114
150 6	165.1 6.500	+1.60 +0.063	-0.79 -0.031	15.88 0.625	8.74 0.344	160.8 6.330	-0.56 -0.022	2.16 0.085	167.1 6.579	2.9 0.114
150 6	168.3 6.625	+1.60 +0.063	-0.79 -0.031	15.88 0.625	8.74 0.344	163.96 6.455	-0.56 -0.022	2.16 0.085	170.7 6.720	2.9 0.114
200A 8	216.3 8.516	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	211.60 8.331	-0.64 -0.025	2.35 0.093	219.8 8.653	2.9 0.114
200 8	219.1 8.625	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	214.40 8.441	-0.64 -0.025	2.34 0.092	221.5 8.720	2.9 0.114
250A 10	267.4 10.528	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	262.60 10.339	-0.69 -0.027	2.40 0.095	270.9 10.665	3.6 0.142
250 10	273.0 10.750	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	268.28 10.562	-0.69 -0.027	2.39 0.094	275.4 10.842	3.6 0.142
300A 12	318.5 12.539	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	312.90 12.319	-0.76 -0.030	2.77 0.109	322.0 12.677	4.0 0.158
300 12	323.9 12.750	+1.60 +0.063	-0.79 -0.031	19.05 0.750	11.91 0.469	318.29 12.531	-0.76 -0.030	2.77 0.109	326.2 12.842	4.0 0.158
350 14	355.6 14.000	+1.60 +0.063	-0.79 -0.031	23.83 0.938	11.91 0.469	350.04 13.781	-0.76 -0.030	2.77 0.109	359.7 14.16	4.0 0.158
350 14	377.0 14.842	+1.60 +0.063	-0.79 -0.031	23.83 0.938	11.91 0.469	371.44 14.623	-0.76 -0.030	2.77 0.109	379.5 14.941	4.5 0.177
400 16	406.4 16.000	+1.60 +0.063	-0.79 -0.031	23.83 0.938	11.91 0.469	400.84 15.781	-0.76 -0.030	2.77 0.109	410.5 16.16	4.2 0.165
400 16	426.0 16.772	+1.60 +0.063	-0.79 -0.031	23.83 0.938	11.91 0.469	420.46 16.553	-0.76 -0.030	2.77 0.109	428.5 16.870	4.5 0.177
450 18	457.2 18.000	+1.60 +0.063	-0.79 -0.031	25.40 1.000	11.91 0.469	451.64 17.781	-0.76 -0.030	2.77 0.109	461.3 18.16	4.2 0.165
450 18	480 18.897	+1.60 +0.063	-0.79 -0.031	25.40 1.000	11.91 0.469	469 18.465	-0.76 -0.030	5.50 0.216	484.1 19.06	4.2 0.165
500 20	508.0 20.000	+1.60 +0.063	-0.79 -0.031	25.40 1.000	11.91 0.469	502.44 19.781	-0.76 -0.030	2.77 0.109	512.1 20.16	4.8 0.188
500 20	530 20.866	+1.60 +0.063	-0.79 -0.031	25.40 1.000	11.91 0.469	522 20.55	-0.76 -0.030	4.0 0.157	535.1 21.067	5.0 0.197
600 24	609.6 24.000	+1.60 +0.063	-0.79 -0.031	25.40 1.000	12.7 0.500	600.9 23.656	0.76 -0.030	4.35 0.172	614.7 24.20	4.8 0.188
600 24	630 24.803	+1.60 +0.063	-0.79 -0.031	25.40 1.000	12.7 0.500	620.9 24.445	0.76 -0.030	4.55 0.179	635.1 25.00	4.8 0.188

Pressure Ratings and End Loads for Mech Couplings on Steel Pipe

1G Rigid

1GS L/Duty Rigid

1N Reducing

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1G		1GS		1NR	
				Roll Grooved		Roll Grooved		Roll Grooved	
				Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load
DN/in	mm	(Sch)	mm	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs
25	33.7	40	3.38	35/500	3.0/680	--	--	20/300	1.8/410
		10	2.77	35/500	3.0/680	--	--	20/300	1.8/410
32	42.4	40	3.56	35/500	4.8/1080	--	--	20/300	2.9/650
		10	2.77	35/500	4.8/1080	--	--	20/300	2.9/650
40	48.3	40	3.68	35/500	6.3/1420	--	--	20/300	3.8/850
		10	2.77	35/500	6.3/1420	--	--	20/300	3.8/850
50	60.3	40	3.91	35/500	9.8/2210	--	--	20/300	5.9/1330
		10	2.77	35/500	9.8/2210	--	--	20/300	5.9/1330
65	73	40	5.16	35/500	14.4/3240	--	--	20/300	8.7/1950
		10	3.05	35/500	14.4/3240	--	--	20/300	8.7/1950
65	76.1	--	6.35	--	--	--	--	--	--
		--	5.08	35/500	15.7/3520	--	--	20/300	9.4/2120
		--	3.81	35/500	15.7/3520	--	--	20/300	9.4/2120
80	88.9	40	5.49	35/500	21.4/4810	24/350	15.0/3360	20/300	12.8/2885
		10	3.05	35/500	21.4/4810	24/350	15.0/3360	20/300	12.8/2885
100	114.3	40	6.02	35/500	35.4/7960	24/350	24.7/5560	20/300	21.2/4770
		10	3.05	35/500	35.4/7960	24/350	24.7/5560	20/300	21.2/4770
125	141.3	40	6.55	35/500	54.1/12100	24/350	37.8/8490	20/300	32.4/7290
		10	3.4	35/500	54.1/12100	24/350	37.8/8490	20/300	32.4/7290
150	165.1	--	6.35	35/500	73.8/16610	24/350	51.6/11600	20/300	44.3/9960
		--	5.08	35/500	73.8/16610	24/350	51.6/11600	20/300	44.3/9960
150	168.3	40	7.11	35/500	76.7/17260	24/350	53.6/12000	20/300	46.0/10340
		10	3.4	35/500	76.7/17260	24/350	53.6/12000	20/300	46.0/10340
200	219.1	40	8.18	31/450	116.9/26280	24/350	90.8/20430	--	--
		30	7.04	31/450	116.9/26280	24/350	90.8/20430	--	--
		10	4.77	20/300	77.8/17500	24/350	90.8/20430	--	--
250	273	40	9.27	28/400	163.8/36800	--	--	--	--
		30	7.8	20/300	121.0/27210	--	--	--	--
		10	4.77	20/300	121.0/27210	--	--	--	--
300	323.9	40	10.31	28/400	230.6/51880	--	--	--	--
		STD	9.53	20/300	170.3/38280	--	--	--	--
		30	6.35	20/300	170.3/38280	--	--	--	--
		10	4.77	20/300	170.3/38280	--	--	--	--

Pressure Ratings and End Loads for Mech Couplings on Steel Pipe

1N Flexible

1NH Heavy Duty Flexible

321 Flange

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1N		1NH		321	
				Roll Grooved		Roll Grooved		Roll Grooved	
				Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load
DN/in	mm	(Sch)	mm	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs
25	33.7	40	3.38	35/500	3.0/680	--	--	--	--
		10	2.77	35/500	3.0/680	--	--	--	--
32	42.4	40	3.56	35/500	4.8/1080	--	--	--	--
		10	2.77	35/500	4.8/1080	--	--	--	--
40	48.3	40	3.56	35/500	6.3/1420	--	--	16/225	3.2/710
		10	2.77	35/500	6.3/1420	--	--	16/225	3.2/710
50	60.3	40	3.91	35/500	9.8/2210	52/750	14.8/3320	16/225	4.4/1000
		10	2.77	35/500	9.8/2210	35/500	9.8/2210	16/225	4.4/1000
65	73	40	5.16	35/500	14.4/3240	52/750	21.6/4860	20/300	5.9/1330
		10	3.05	35/500	14.4/3240	35/500	14.4/3240	20/300	5.9/1330
65	76.1	--	6.35	--	--	--	--	--	--
		--	5.08	35/500	15.7/3520	52/750	23.5/5280	16/225	7.1/1590
		--	3.81	35/500	15.7/3520	35/500	15.7/3530	16/225	7.1/1590
80	88.9	40	5.49	35/500	21.4/4810	52/750	32.1/7210	16/225	9.6/2165
		10	3.05	35/500	21.4/4810	35/500	21.4/4800	16/225	9.6/2165
100	114.3	40	6.02	35/500	35.4/7960	52/750	53.0/11900	16/225	15.9/3580
		10	3.05	35/500	35.4/7960	35/500	35.4/7950	16/225	15.9/3580
125	141.3	40	6.55	35/500	54.1/12100	52/750	81.0/18200	20/300	31.3/7035
		10	3.4	35/500	54.1/12100	31/450	48.6/10930	20/300	31.3/7035
150	165.1	--	6.35	35/500	73.8/16610	52/750	110.6/24800	16/225	33.2/7460
		--	5.08	35/500	73.8/16610	31/450	66.4/14930	16/225	33.2/7460
150	168.3	40	7.11	35/500	76.7/17260	52/750	115.0/25800	16/225	34.5/7750
		10	3.4	35/500	76.7/17260	31/450	68.9/15500	16/225	34.5/7750
200	219.1	40	8.18	31/450	116.9/26280	52/750	194.8/43800	16/225	58.4/13140
		30	7.04	31/450	116.9/26280	35/500	130.0/29250	16/225	58.4/13140
		10	3.76	20/300	77.8/17500	20/300	77.8/17500	16/225	58.4/13140
250	273	40	9.27	20/300	121.0/27210	--	--	16/225	90.8/20410
		30	6.35	20/300	121.0/27210	--	--	16/225	90.8/20410
		10	4.19	20/300	121.0/27210	--	--	16/225	90.8/20410
300	323.9	40	10.31	20/300	170.3/38280	--	--	16/225	127.7/28710
		STD	9.53	20/300	170.3/38280	--	--	16/225	127.7/28710
		20	6.35	20/300	170.3/38280	--	--	16/225	127.7/28710
		10	4.57	20/300	170.3/38280	--	--	16/225	127.7/28710

Installation Instruction For Rigid & Flexible Coupling

1.Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.

2.Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.

3.Gasket installation

Slip the gasket over one pipe, making sure the gasket lip does not over-hang the pipe end.

4.Alignment

After aligning two pipe ends together, pull the gasket into position, centering between the grooves on each pipe. The gasket should not extend into the groove on either pipe.

5.Housing installation

Romove one bolt&nut and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes. Re-insert the bolt and connect two housings.

6.Tighten nuts

Firstly hand tighten nuts and make sure oval neck bolt completely fits into bolt hole. Then securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.

7 a.Assembly completed- Rigid Coupling

For Rigid Coupling, keep the gaps at bolt pads evenly spaced. Gaskets can't be seen visually.

7 b. Assembly completed- Flexible Coupling

For Flexible Coupling, two housings should be iron to iron connected. Gaskets can't be seen visually.

Caution
Proper torquing of bolts is required to obtain specified performance. - Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation. - Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque		
ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N.m
3/8	30-45	40-60
1/2	80-100	110-135
5/8	100-130	135-175
3/4	130-180	175-245
7/8	180-240	245-325

Installation Instruction For Threaded & Grooved Mechanical Tee

1.Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.

2.Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.

3.Gasket installation

Insert the gasket into outlet housing making sure the tab in the gasket line up with the tab recesses in the housing. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.

4.Alignment

Align the strap around the pipe, inser the bolts and tighten the nuts finger tight.

5.Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.

6.Assembly completed

There should be even gaps on two sides between upper and lower housings.

Caution
Proper torquing of bolts is required to obtain specified performance. - Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation. - Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque		
ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N.m
3/8	30-45	40-60
1/2	80-100	110-135
5/8	100-130	135-175
3/4	——	——
7/8	——	——

Installation Instruction For U-Bolt Mechanical Tee

1.Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.

2.Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.

3.Gasket installation

Insert the gasket into outlet housing properly. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.

4.Alignment

Attach the U-bolt from the other side and tighten the nuts finger tight.

5.Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.

6.Assembly completed

Assembly completed.

Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N.m
3/8	20-30	30-40
1/2	80-100	110-135
5/8	100-130	135-175
3/4	——	——
7/8	——	——

Installation Instruction For Grooved Flange

1.Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.

2.Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.

3.Gasket installation

Slip the gasket over pipe end, with the gasket opening side towards "A". Make sure the gasket sealing lip is even with pipe end.

4.Housing installation

Romove bolts and nuts, place two housings over the gasket, making sure the housing keys fit into the pipe grooves. Re-insert the bolts and hand tighten the nuts.

5.Tighten nuts

Securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.

6.Connect mating flange

Align flange bolt holes with mating flange (or valve) bolt holes. Insert a standard flange bolt through bolt hole and hand tighten a nut. Insert another bolt opposite the first and hand tighten a nut. Continue this until all bolt holes are fitted. Tighten nuts evenly to specified bolt torque, so flange faces remain parallel. Assembly completed.

Caution

Proper torquing of bolts is required to obtain specified performance.

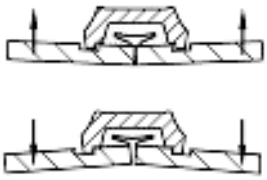
- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N.m
M10	30-45	40-60
M12	80-100	110-135
M16	——	——
M20	——	——
M22	——	——
M24	——	——

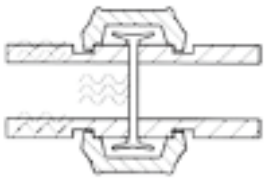
Flexible Coupling

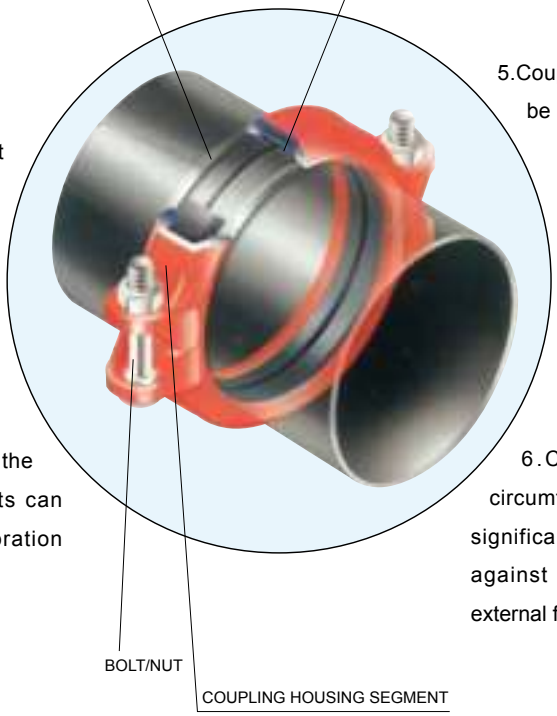
1.A flexible coupling accommodates pipe deflection and or non-alignment as below: If nominal diameter <DN200, deflection angle is ≥1°; If nominal diameter ≥DN200, deflection angle is ≥0.5°but <1°.



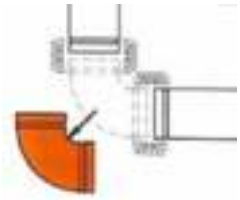
2.The C-shaped rubber gasket provides excellent self-sealing capabilities in both low and high pressure service as well as under certain vacuum conditions.

3.The design and construction of the coupling with elastomeric gaskets can provide significant noise and vibration absorption as well as seismic stress.

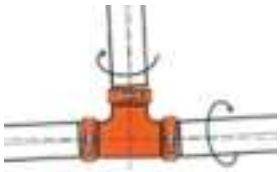




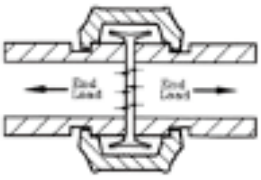
4.With the removal of just a few bolts you can easily access the system for cleaning, maintenance, changes or system expansion.



5.Coupling are non-directive and pipe can be rotated 360°during installation.



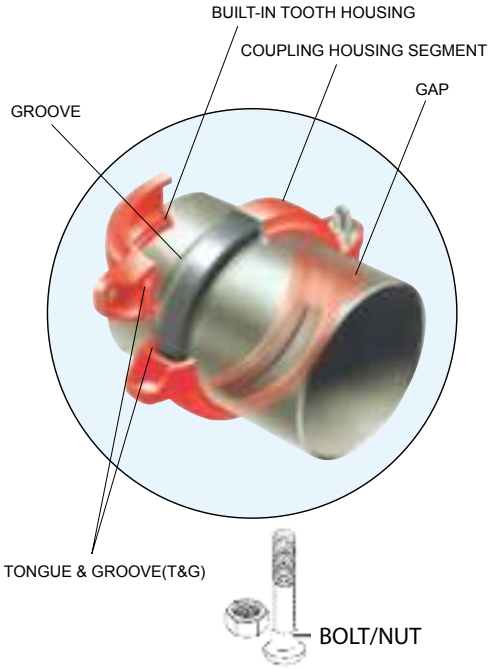
6.Coupling keys engage the full circumference of the grooves and provide significant pressure and end load restraint against pipe movement from internal and external forces.



Rigid Coupling

1.The T&G mechanism in combination with a slightly shortened key diameter provides a mechanical and frictional interlock resulting in a rigid joint which reduces undesired angular movement.

2.The built-in teeth on the coupling grip the groove shoulder and serve to reduce linear movement.

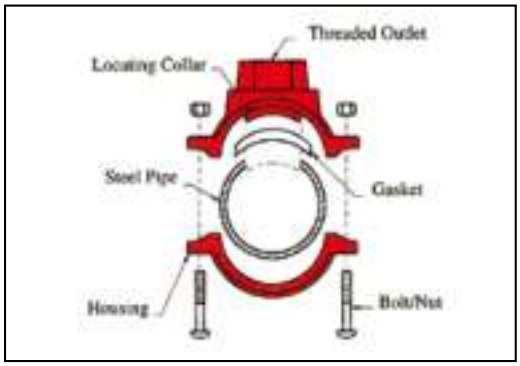


3.The T&G mechanism features a slight offset at the foot of the coupling halves which serve to protect the gasket from exposure.

4.With the T&G style coupling no metal-to-metal contact of the bolt pads is required. You will normally see a 1/16”-1/8”(1.6mm to 3.2mm) gap between the bold pads when installed.

Mechanical Tee Connection

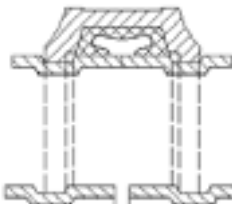
The Mechanical Tee (3J, 3G, 3L) provide for a fast and easy grooved or threaded branch outlet and eliminate the need for welding or the use of a reducing tee and couplings. Simply cut a hole to the specified size at the expected location and fasten the mechanical tee to the pipe with the nuts and bolts provided. As the housing bolts are tightened, the pressure responsive gasket forms a leak-tight seal.



Movement

Each flexible design coupling can provide for pipe system movement up to the design maximum for the specific size and type coupling being utilized. Movement is possible in the coupling due to two factors: (1) designed-in clearance between the key of the coupling and the groove diameter and groove width, and (2) the gap between pipe ends joined by the coupling.

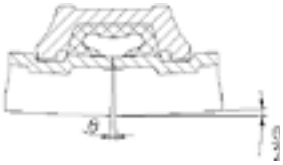
1.Linear Movement



Linear movement is accommodated within the coupling by allowing the pipe ends to move together or apart in response to pressure thrusts and temperature changes. The available linear movement provided by couplings is shown below:

size	1-1¼（25-32MM）	1½-12（40-300MM）
movement	0-4.0MM	0-6.4MM

2.Angular Movement



Designed-in clearances allow limited deflection of the pipe joint within the coupling, without introducing eccentric loads into the coupling joint.

The maximum available angular movement of coupling joints is shown in the performance data for each coupling type. The amount of angular flexibility varies for each coupling size and type. For design purposes the published figures should be reduced by the below listed factors to account for pipe, groove and coupling tolerances.

size	1-3(IN)	4-12(IN)
Design factor	Reduce to 50%	Reduce to 75%

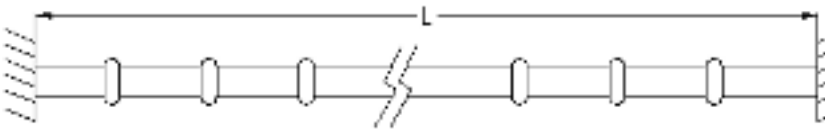
Flexible Couplings: Linear Movement and Angular Movement

Size		Cut			Roll Groove		
		Linear Movement	Angular Movement		Linear Movement	Angular Movement	
Inch	mm	mm	Degree	mm/m	mm	Degree	mm/m
1	33.7	2	2°-45'	48	1	1°-22'	24
1 1/4	42.4	2	2°-10'	38	1	1°-05'	19
1 1/2	48.3	3.2	1°-54'	33	1.6	0°-57'	16.5
2	60.3	3.2	1°-31'	26	1.6	0°-45'	13
2 1/2	73	3.2	1°-27'	25	1.6	0°-43'	12.5
2 1/2	76.1	3.2	1°-12'	21	1.6	0°-36'	10.5
3	88.9	3.2	1°-02'	18	1.6	0°-31'	9
4	108	3.2	1°-51'	32	1.6	0°-55'	16
4	114.3	3.2	1°-36'	28	1.6	0°-48'	14
5	133	3.2	1°-41'	30	1.6	0°-50'	15
5	139.7	3.2	1°-19'	23	1.6	0°-37'	11.5
5	141.3	3.2	1°-03'	18	1.6	0°-30'	9
6	159	3.2	1°-18'	23	1.6	0°-39'	11.5
6	165.1	3.2	1°-05'	20	1.6	0°-35'	10
6	168.3	3.2	1°-05'	19	1.6	0°-32'	9.5
8	219.1	3.2	0°-50'	15	1.6	0°-25'	7.5
10	273	3.2	0°-40'	12	1.6	0°-20'	6
12	323.9	3.2	0°-34'	10	1.6	0°-18'	5

Movement -Application

• Thermal stress

Thermal stress is caused by changes in temperature, resulting in either expansion or contraction. When designing a system you must allow for this thermal movement. To determine the appropriate number of flexible couplings to allow for this thermal movement please refer to the following.



Example:

- 4” straight steel pipe, 30m long
- Anchored on both ends
- Minimum temperature (during installation) = 5℃
- Maximum working temperature = 55℃

From the thermal expansion table, we know the overall pipeline length will increase by 18mm (0.71”). You can also use Formula 1 or Table 3 to find the amount of thermal expansion. We want to know the number of couplings that are required to address this thermal movement problem.

The allowed movement of a 4” flexible coupling is :

Movement range x Adjustment = Allowed movement

4.3mm x 75% = 3.2mm

The appropriate number of coupling is:

Thermal expansion / Allowed movement = Number of couplings

18mm / 3.2mm = 5.6

Conclusion:

The appropriate number of coupling is 6.

• Thermal Expansion

Temperature difference (℃)	Pipe length (m)					
	1	5	10	20	30	40
	Thermal Expansion(mm)					
1	0.012	0.06	0.12	0.24	0.36	0.48
5	0.06	0.3	0.6	1.2	1.8	2.4
10	0.12	0.6	1.2	2.4	3.6	4.8
20	0.24	1.2	2.4	4.8	7.2	9.6
30	0.36	1.8	3.6	7.2	11	15
40	0.48	2.4	4.8	9.6	14	20
50	0.6	3	6	12	18	24
60	0.72	3.6	7.2	14	22	29
70	0.84	4.2	8.4	17	25	34
80	0.96	4.8	9.6	19	29	39

Thermal Expansion Formula 1

$\lambda=\alpha\times L\times T$

λ: Thermal Expansion

α: Linear Expansion coefficient for steel

L: Pipe length

T: Temperature difference

Riser Design

Risers assembled with Flexible couplings are generally installed in either of two ways. In the most common method, the pipe ends are butted together within the coupling joint. Note that when installing risers, the gasket is first placed onto the lower pipe and rolled back away from the pipe end prior to positioning the upper pipe. Anchoring of the riser may be done prior to pressur-ization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

An alternative method or riser installation is to place a metal spacer of a predetermined thickness, between the pipe ends when an additional length of pipe is added to the riser stack. The upper pipe length is anchored, the spacer removed and the coupling is then installed. This method creates a predetermined gap at each pipe joint which can be utilized in pipe systems where thermal move-ment is anticipated and in systems with rigid (threaded, welded, flanged) branch connections where shear forces due to pressure thrust could damage the rigid connections.

The following examples illustrate methods of installing commonly encountered riser designs.

- **Risers without Branch Connections**

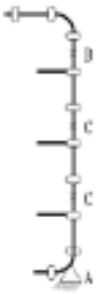
Picture 1

Install the riser with the pipe ends butted.

Locate an anchor at the base of the riser (A) to support the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to pre-vent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required.

When the system is pressurized the pipe stack will “grow” due to pres-sure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predeter-mined (see Linear Movement). In this example the pipe length “L” at the top of the riser must be long enough to permit sufficient deflec-tion (see Angular Movement) to accommodate the total movement “M” from both pressure thrust and thermal gradients.

- **Risers with Branch Connections**



Picture 2

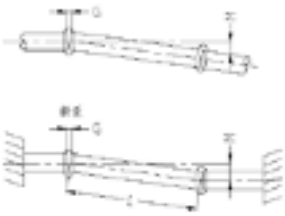
Install the riser with the predetermined gap method. Anchor the pipe at or near the base with a pressure thrust anchor “A” capable of supporting the full pressure thrust, weight of pipe and the fluid column. Anchor at “B” with an anchor capable of withstanding full pressure thrust at the top of the riser plus weight of pipe column. Place intermediate anchors “C” as shown, between anchors “A” and “B”. Also place intermediate clamps at every other pipe length as a minimum.

When this system is pressurized, the pipe movement due to pressure thrust will be strained and there will be no shear forces acting at the branch connections.

• Misalignment & Deflections

The angular movement capability of the flexible coupling permits the assembly of pipe joints where the piping is not properly aligned . At least two couplings are required to provide for lateral pipe misalignment . Deflection (longitudinal misalignment) may be accommodated within a single coupling as long as the angle of deflection does not exceed the value shown in the coupling performance data for the particular size and coupling type .

A pipe joint that utilizes the angular deflection capability of the coupling will react to pressure and thermal forces dependent upon the manner in which it is restrained . An unrestrained joint will react to these forces by straightening, thus reducing, if not eliminating, the deflection at the joint . If joint deflection has been designed into the pipe layout and must be maintained, then sufficient anchors must be provided to resist the lateral forces and hold the joint in the deflected condition .



The amount of deflection from pipe run centerline can be calculated utilizing the following equations:

M=L Sinθ

θ=Sin-1（G÷D）

M=（G÷D）×L

Where:

M = Misalignment (inches)

G = Maximum Allowable Pipe End Movement (Inches) as shown under “Performance Data” (Value to be reduced by Design Factor)

θ = Maximum Deflection (Degrees) from centerline as shown under “Performance Data” (Value to be reduced by Design Factor)

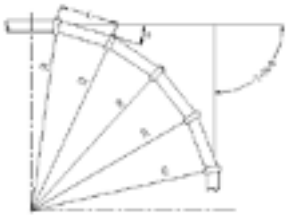
D = Pipe Outside Diameter (Inches)

L = Pipe Length (Inches)

• Curve Layout

Utilizing the angular deflection at each coupling joint curves may be laid out using straight pipe lengths and Couplings.

This example shows how to calculate the curve radius, required pipe lengths, and number of required couplings.



R = L / (2 x Sin(θ/2))

L = 2 x R x Sin(θ/2)

N = T / θ

WHERE:

N = Number of Couplings

R = Radius of Curve (feet)

L = Pipe Length (feet)

θ= Deflection from centerline (Degrees) of each Coupling

(See coupling performance data, value to be reduced by Design Factor)

T = Total Angular Deflection of all Couplings.

Anchoring and Supports

When designing the hangers, supports and anchors for a grooved end pipe system, the piping designer must consider certain unique characteristics of the grooved type coupling in additional to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

1)the weight of the pipe, couplings, fluid and pipe system components;

2)reduce stresses at pipe joints; and

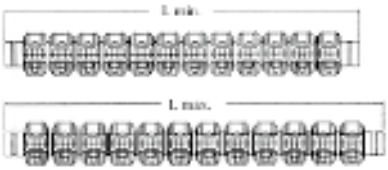
3)permit required pipe system movement to relieve stress.

The following chart shows the maximum span between pipe hangers, supports and anchors.

Max. Span between Supports (steel pipe)

Nominal Size (mm)		15	20	25	32	40	50	70	80	100	125	150	200	250	300
Max. Span Between Supports (m)	Insulating Pipe	2	2.5	2.5	2.5	3	3	4	4	4.5	6	7	7	8	8.5
	Non-insulating Pipe	2.5	3	3.5	4	4.5	5	6	6	6.5	7	8	9.5	11	12

Movement capability of couplings-expansion and contraction joints



Nominal Size	Pipe O.D. (mm)	Maximum Allowable Movement (mm)	L min. (mm)	L max. (mm)	Number of Couplings	Filled With Water Pressure
1	33.7	45	617	662	10	300
1¼	42.4	45	617	662	10	300
1½	48.3	45	617	662	10	300
2	60.3	45	617	662	10	300
2½	73.0	45	617	662	10	300
76.1	76.1	45	617	662	10	300
3	88.9	45	617	662	10	300
4	114.3	47	503	550	7	300
139.7	139.7	47	503	550	7	300
5	141.3	47	503	550	7	300
165.1	165.1	52	503	550	7	300
6	168.3	52	591	643	7	300
8	219.1	52	591	643	7	300
10	273.0	52	591	643	7	300
12	323.9	52	591	643	7	300

Engineering Test

No.	Item	Standard Requirements
1	Vacuum Test	Grooved couplings, grooved reducing couplings, grooved split flanges, mechanical tees, and plain end couplings shall be able to withstand the effects of vacuum conditions encountered when sprinkler systems are drained. Samples of each nominal size and style of gasketed coupling and fitting shall be subjected to an internal vacuum of 25 inHg (85 kPa) for a duration of 5 minutes. Following the vacuum test, the test assembly shall be pneumatically pressurized from zero to 50 psi (345 kPa) while submerged in a water bath. There shall be no leakage or permanent deformation as a result of this test.
2	Hydrostatic Strength Test	All items shall be able to withstand an internal hydrostatic pressure equal to three-five times the rated working pressure without cracking, rupture, or permanent distortion. . The test shall be conducted for a duration of 1 minute. (Test Size ≤6″, Five time; 8″-10″, 4time; ≥12″, 3times;
3	Air Leakage Test	The coupling assembly shall be pressurised with air to 3 bar +0.5/-0 bar. The assembly shall be immersed in water to establish that there is no visible leakage
4	Moment Test	The moment resistance shall be demonstrated while the test assembly is internally pressurized to the rated working pressure. Then a force was applied to the test assembly. There shall be no leakage, cracking, or fitting or coupling pull-off as a result of this test.
5	Hot Gasket Test	Standard gaskets shall be assembled to short lengths of pipe, and subjected to 275°F (135°C) for a duration of 45 days. After exposure, the test assembly shall be submerged in a water bath and subjected to an air under water leakage test from zero to 50 psi (0 to 345 kPa) in order to evaluate for leakage. After the air under water testing is completed, the test assembly shall be disassembled and the gasket shall not crack when squeezed together from any two diametrically opposite points, or twisted into a figure-eight shape. The gasket shall then be visually inspected for signs of cracking, tearing, or excessive degradation as a result of this test.
6	Cold Gasket Test	The low temperature exposure shall consist of -40 °F (-40 °C) air exposure for 4 days. After exposure, the assembly while submerged in -40 °F (-40 °C) antifreeze, shall be pneumatically pressurized from 0 to 50 psi (0 - 345 kPa). No leakage shall occur. The assembly shall then be allowed to warm to ambient temperature and then be disassembled. The gasket, after removal from the assembly, shall not crack when squeezed together from any two diametrically opposite points, or twisted into a figure eight shape.
7	Flame test	The test shall be conducted in a room free from air draught., The test joint is mounted, U-bent on the test apparatus and filled with water. The angle corresponds to the angle documented as a result of the test Subsequently the test joint is drained. The fuel pan is placed centrally below the pipe joint Fuel is filled into the pan and the fuel is ignited, Burning time 5 min for nominal diameters < DN 100; 8 min for nominal diameters ≥ DN 100 For reducer couplings the dimension of the smaller nominal diameter shall apply for the determination of the burning time. The flame shall be extinguished immediately once the burning time has expired (5 min or 8 min) and the test joint shall be cooled down. For cooling the test joint is immediately sprayed with water until steam formation is no longer visible, but at least for 3 min. The test joint is then filled completely with water and exposed to a test pressure which corresponds to the maximum permissible pressure and is checked visibly for leaks. Water may leak in form of drops, however, not in form of flowing water or a water spray. The test joint is then pressure relieved (force and internal pressure).
8	Cycling Pressure Resistance (Water Hammer Test)	Prior to the cycling, assemblies shall be subjected to a hydrostatic strength test to the rated working pressure, 175 psi (1205 kPa) minimum, for a duration of 5 minutes. Without leakage or cracking. Assemblies shall then be subjected to 20,000 cycles from zero pressure to the rated working pressure, 175 psi (1205 kPa) minimum. After cycling, the test assembly shall be tested Hydrostatic Strength and maintain 5minutes without leakage and cracking.

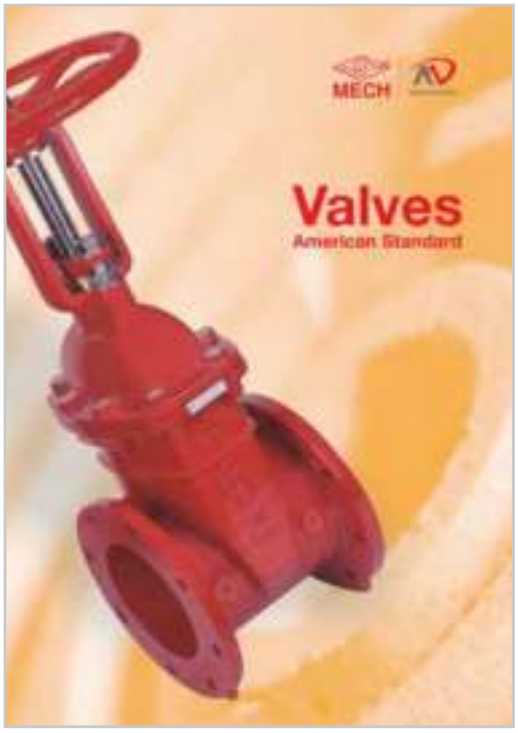
Engineering Test

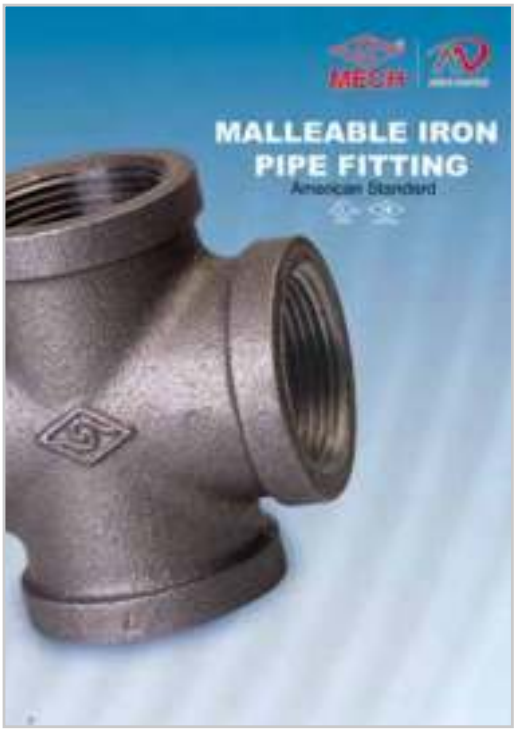
No.	Item	Standard Requirements
9	Friction Loss Determination	The construction and installation of the coupling or fitting shall be such that obstruction to the passage of water through the coupling or fitting body is minimal. The loss in pressure through the coupling or fitting shall not exceed 5.0 psi (35 kPa) at a flow producing a velocity of 20 ft/s (6.1 m/s) in Schedule 40 steel pipe of the same nominal diameter as the coupling or fitting.
10	Leakage Test - Assembly without Gasket	Leakage from a gasket-less coupling assembly or fitting shall not exceed that of an operating sprinkler head whose discharge coefficient (K-factor) is 5.3 to 5.8 gal/min(psi)1/2 [76 - 84 L/min/(bar)1/2].This test is for nominal pipe sizes normally associated with over-head piping, less than or equal to 12 in. NPS (300 mm).
11	Torsion test	This test relates to pipe joints ≤ DN 40 only. The test joint is filled with water and exposed once to the maximum permissible pressure and is then pressure relieved again. Subsequently the test joint is fixed on one pipe end and an increasing torque is applied to the other pipe end. At the pressure-less test joint the pipe joint shall be able to transmit a torque of up to 80 Nm from one pipe end to the other pipe end without any torsion of the pipe ends against each other.
12	Flexibility Test for Flexible Fittings	With the assembly pressurized to its rated pressure, a bending moment is to be applied to deflect the joint to the maximum angle specified by the manufacturer, while not less than 1 degree for nominal pipe diameters less than 8 inches (203.2 mm) or 0.5 degrees for 8 inches (203.2 mm) and larger. Observations are to be made for leakage or pipe damage.
13	Seismic Evaluation	In order to evaluate the use of grooved couplings in Earthquake zones 50 through 500 years, test assemblies utilizing flexible couplings and short lengths of steel pipe, in the same nominal size, will be subjected to cyclic testing. The test will deflect the assembly to the manufacturer's maximum recommended angle in the forward and reverse direction for a total 15 cycles with the internal pressure equal to the rated working pressure. There shall be no leakage, cracking, or rupture as a result of this test.
14	Lateral Displacement	The coupling shall not leak during any of the tests, within the manufacturer's stated limitations for angular deflection or lateral displacement of associated pipework.
15	Hydrostatic fluctuation pressure test	The coupling assembly shall be pressurised with water to a gauge pressure of 10 bar ±1 bar for 2min, +30s/-0s to establish a datum. The assembly shall then be drained before being subjected to the greatest vacuum attainable to a maximum of 600mm a/mercury or –0.8bar +0bar/-0.1 bar for 2min +30s/-0s, and allowed to return to atmospheric pressure in not less than 5s. The assembly shall then be pressurised with water to 10 bar ±1bar for 2 min +30s/-0s. The assembly shall be examined for leakage throughout the test. The relative movement of each pipe shall be recorded at the greatest vacuum and at each pressure. There shall be no leakage.
16	Fire Test	If a gasketed pipe coupling or fitting employs non-ferrous materials for its substantial structural components, or if in the judgment of FM Approvals, the design is otherwise suspect with respect to fire resistance, a fire test shall be conducted. A representative size assembled joint without a gasket shall be exposed to a 1000 °F (538 °C) fire environment for 5 minutes. The assembly shall be dry for the duration of this exposure. Immediately after the exposure, a water flow shall be introduced through the joint and sustained until the assembly is cool to the touch. No cracking or distortion of any component of the coupling or fitting shall occur. The coupling or fitting shall then be disassembled and the gasket installed. After reassembly, the joint shall be hydrostatically tested, as described in to the hydrostatic test.

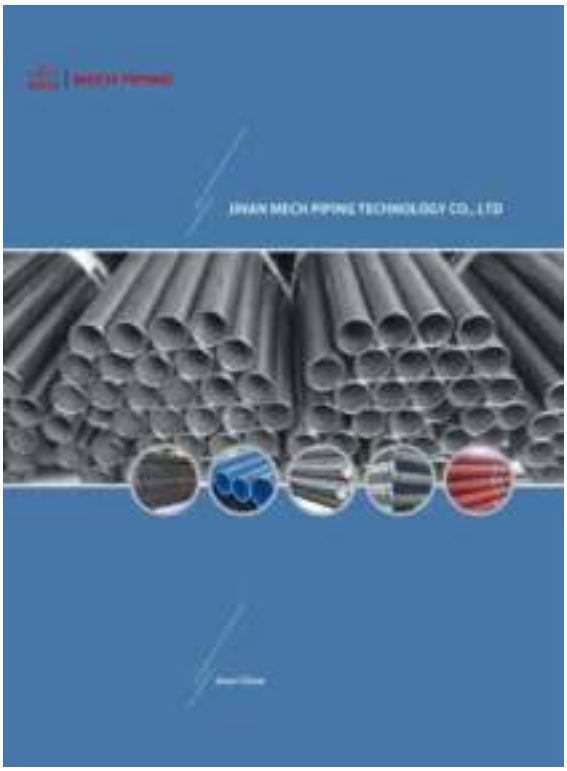
NOTE:

NOTE:

MECH FLOW SUPPLIES







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APPROVALS

Project Reference List

SN	Project Name	Country	Materials
1	World Trade Center	USA	fittings
2	30 St. Mary Axe	England	fittings
3	Kop Van Zuid Rotterdam	Netherlands	fittings
4	De Rotterdam	Netherlands	fittings
5	Istanbul Spine Tower	Turkey	fittings
6	Bursa Alligator Arena Stadium	Turkey	fittings
7	Indira Gandhi International	India	fittings
8	IGI Airport	India	fittings
9	Colombo South Port	Sri Lanka	fittings
10	Singapore Maina Bay	Singapore	fittings
11	Resorts World Sentosa	Singapore	fittings
12	The Golden Gate Bridge	USA	fittings
13	Swan Lake Water Park	The Republic of Belarus	fittings
14	Minsk-Arena	The Republic of Belarus	fittings
15	Victoria Olympus Hotel	The Republic of Belarus	fittings
16	Torre Colpatria	Colombia	fittings
17	EI Dorado International Airport	Colombia	fittings
18	Maracana Stadium	Brazil	fittings
19	Carrefour	Egypt	fittings
20	Egypt's Red Sea Hotel	Egypt	fittings
21	Table Bay Hotel	South Africa	fittings
22	Durban Stadium	South Africa	fittings
23	Burj Khalifa Tower	Dubai	fittings
24	Westfield's Sydney	Sydney	fittings
25	Sydney Cricket Ground	Sydney	fittings
26	Guangzhou International Finance Center	China	fittings
27	MixC Chengdu	China	fittings
28	Ping An International Convention Center	China	fittings
29	China National Convention Center	China	fittings
30	Dalian Wanda Center	China	fittings
31	New Century Plaza Tower A	China	fittings
32	Sheraton Guiyang Hotel	China	fittings
33	Shanghai Tower	China	fittings
34	Jinan Greenland Center	China	fittings

地址：中国济南市平阴县城南门路3号 250400 电话(Tel): 008653187879384
ADDRESS:No. 3 Nanmen Road, Pingyin, Jinan, China 250400 传真(Fax): 008653187879387

JINAN MEIDE CASTING CO., LTD.
Address: No.3 Nanmen Road Pingyin, Jinan, China 250400
Phone: (86)531 87879384
Fax: (86)531 87879387
Email: info@meide-casting.com
Http://www.meide-casting.com

JINAN MEIDE CASTING CO., LTD.

JINAN MEIDE CASTING CO., LTD.

USA
World Trade Center

ENGLAND
30 St. Mary Axe

NETHERLANDS
- Kop Van Zuid Rotterdam
- De Rotterdam

TURKEY
Istanbul Spine Tower

TURKEY
Bursa Alligator Arena stadium

INDIA
Indira Gandhi International (IGI) Airport

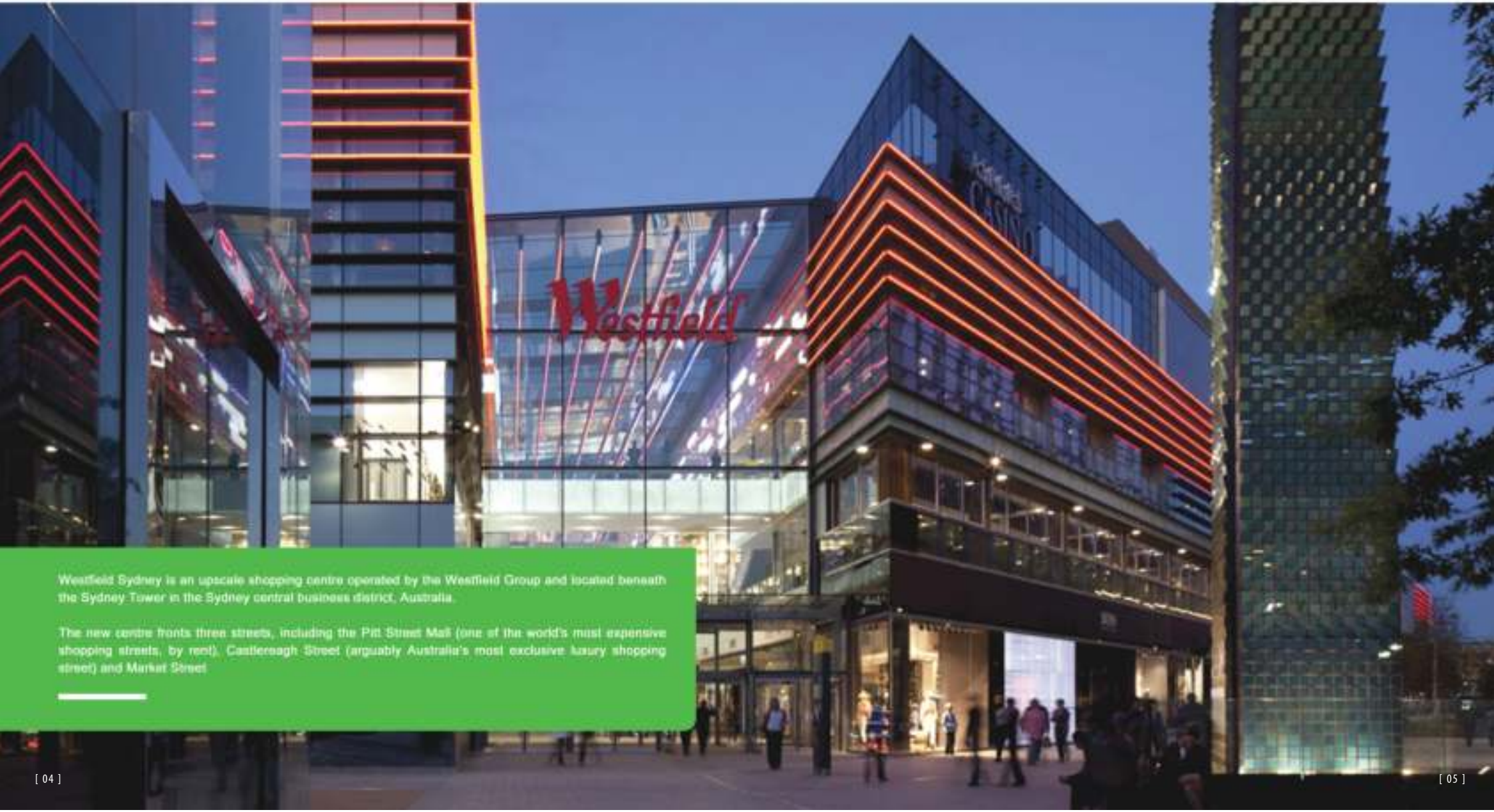
SRI LANKA
Colombo South Port, Sri Lanka

SINGAPORE
- Singapore Marina Bay
- Resorts World Sentosa

SYDNEY

WESTFIELD' SSYDNEY

AUSTRALIA



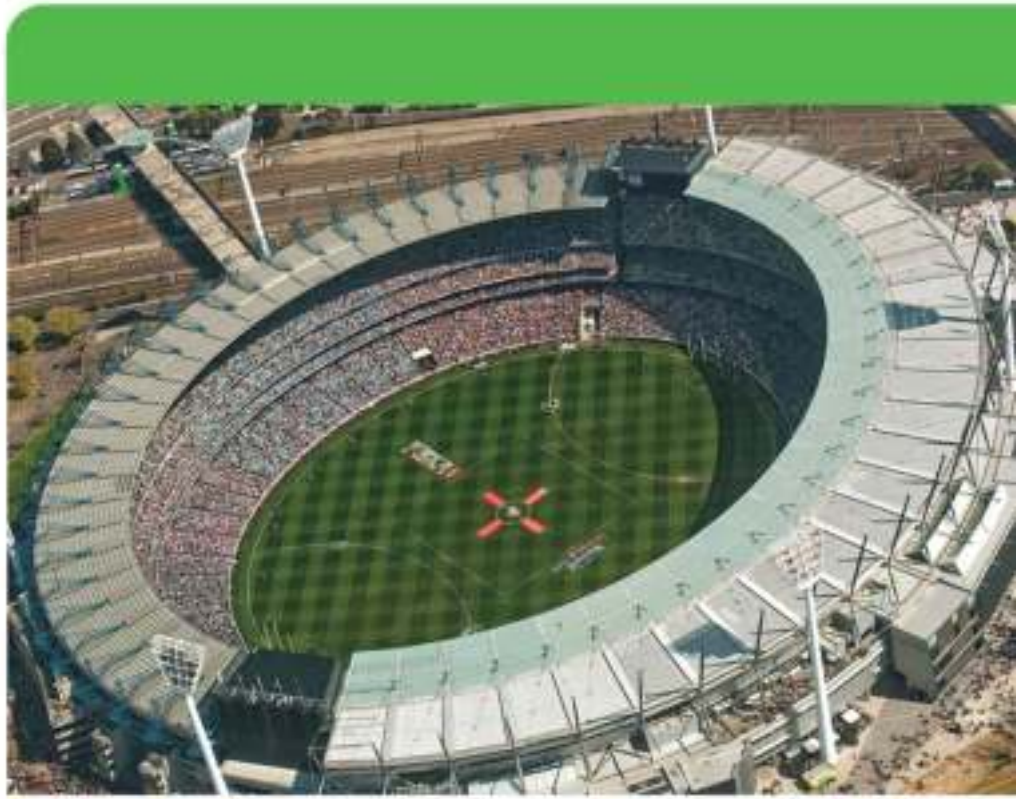
Westfield Sydney is an upscale shopping centre operated by the Westfield Group and located beneath the Sydney Tower in the Sydney central business district, Australia.

The new centre fronts three streets, including the Pitt Street Mall (one of the world's most expensive shopping streets, by rent), Castlereagh Street (arguably Australia's most exclusive luxury shopping street) and Market Street

SYDNEY

SYDNEY CRICKET GROUND

AUSTRALIA



The Sydney Cricket Ground (SCG) is a sports stadium in Sydney, Australia. It is used for Test cricket, One Day International cricket, Twenty20 cricket and Australian rules football, as well some rugby league football and rugby union matches. It is the home ground for the New South Wales Blues cricket team and the Sydney Swans of the Australian Football League. Until the 40,000 seat Football Stadium was opened in 1988, the Sydney Cricket ground was the major rugby league venue in Sydney.

Burj Khalifa Tower

DUBAI

The Dubai Tower is known as the world's tallest building. It is situated in the city of Dubai. The tower has a height of 828m (2,716ft) high, far taller than the previous record holder, Taipei 101. It has 160 floors and the world's tallest service lift. The world's highest observation deck is on the 124th floor. The ruler of Dubai described the tower as "the tallest building ever created by the hand of man".

NEW DELHI

INDIRA GANDHI INTERNATIONAL (IGI) AIRPORT

INDIA

This is the unique airport that serves the city of New Delhi and is also known by Indira Gandhi International Airport (IGI Airport). The airport has been growing a lot during the past decade and it's passenger traffic has been doubled since 2007. There are plans to continue to expand the airport if the traffic continues to grow. The airport is the busiest airport of India and is located in Palam, 16km from New Delhi city centre.

BURSA
ALLIGATOR ARENA STADIUM

TURKEY

Timsah Arena is a stadium that is currently under construction in Bursa, Turkey. It opened to public in 2014 and had a capacity of 43,877 spectators. It will be the new home of Bursaspor of the Süper Lig. It will replace the club's current home, Bursa Atatürk Stadium.

ISTANBUL
SPINE TOWER

TURKEY

Spine Tower located at Istanbul-Maslak is started in 2010 and developed for high-end flat offices and luxury residences. For the first time in Turkey, high-strength C80 grace concrete is used in this project.

30 St. Mary Axe

ENGLAND

30 St Mary Axe is a commercial skyscraper in London's primary financial district, the City of London. It was completed in December 2003 and opened in April 2004. With 41 storeys, it is 180 meters tall and stands on the former site of the Baltic Exchange. The building has become an iconic symbol of London and is one of the city's most widely recognized examples of contemporary architecture.

ROTTERDAM

KOP VAN ZUID ROTTERDAM

NETHERLANDS

Attractive city KvZ forms one of a number of 'flagship projects' aimed attransforming Rotterdam (which are well-covered in books published to commemoratethe city's award of Cultural Capital of Europe, and City of Architecture);

Kop van Zuid is a new neighborhood of Rotterdam, Netherlands, located on the south bank of the Nieuwe Maas opposite the center of town. The district is relatively young and includes the Wilhelmina Pier and the V bounded by Rose Street / railway line between themselves and the Rotterdam-Dordrecht Hilledijk / Hill Street / Rijnhaven other.

ROTTERDAM
DE ROTTERDAM

NETHERLANDS

De Rotterdam is a building on the Wilhelminapier in Rotterdam, designed by Rem Koolhaas in 1998. The complex is located between the KPN Tower and Rotterdam Cruise Terminal and was finalized at the end of 2013. On 21 November 2013, the municipality of Rotterdam, as the largest user, received the keys. The design provides space for offices,

COLOMBO
COLOMBO SOUTH PORT

SRI LANKA

The Port of Colombo (known as Port of Kolomlota in the early 14th Century Kotte Kingdom) is the largest and busiest port in Sri Lanka as well as in South Asia. Located in Colombo, on the southwestern shores on the Kelani River, it serves as an important terminal in Asia due to its strategic location in the Indian Ocean.

In 2008, the port commenced a large-scale expansion project at a cost of US$1.2 billion, which is expected dramatically increase the port's capacity and capabilities.[7] The project, which is headed by the Sri Lanka Ports Authority and built by the Hyundai Engineering & Construction Company, is expected to be completed by 11 April 2012.

SENTOSA
SINGAPORE MAINA BAY

SINGAPORE

Marina Bay is a bay near Central Area in the southern part of Singapore, and lies to the east of the Downtown Core. Marina Bay is set to be a 24/7 destination with endless opportunities for people to "explore new living and lifestyle options, exchange new ideas and information for business, and be entertained by rich leisure and cultural experiences". It is here where the most innovative facilities and infrastructure such as the underground "Common Services Tunnel" are built and where mega activities take place

SENTOSA

RESORTS WORLD SENTOSA

SINGAPORE

Resorts World Sentosa is an integrated resort on the island of Sentosa, off the southern coast of Singapore. The key attractions include one of Singapore's two casinos, a Universal Studios theme park and Marine Life Park, which includes the world's largest oceanarium.

Cenovus Energy

Canada

Cenovus Energy is a Canadian oil company. They're committed to applying fresh, progressive thinking to safety and responsibly unlock energy resources the world needs. Their operations include oil sands projects in northern Alberta, which use specialized methods to drill and pump the oil to the surface. As well, they have established natural gas and oil production in Alberta and Saskatchewan. They also have 50 percent ownership in two U.S. Refineries.

Canada Natural Resources Limited

Canada

CNRL is an oil and gas exploration, development and production company with its corporate head office in Calgary, Alberta. Along with its core area Western Canadian Sedimentary Basin, CNRL also has North Sea and offshore West Africa fields. CNRL is one of the largest independent crude oil and natural gas producers in the world, with its head office in Calgary, and operations focused in the Western Canadian Sedimentary Basin, the North Sea and offshore West Africa.

World Trade Center

USA

The World Trade Center had a total of seven buildings, but the most notable were the main two towers, each 110 stories tall, stood over 1350 feet high, and occupied about one acre of the total 16 acres of the site's land.

The Golden Gate Bridge

USA

The Golden Gate Bridge has been called one of the world's most beautiful bridges. It is also one of the most visited places in the world. Experts say about 9 million people visit the bridge each year. They say more than 1,000 million vehicles have used the bridge since it opened almost 70 years ago. The bridge has always been painted the color called "International Orange". The Golden Gate Bridge opened in 1937.It extends 1,280 meters across the water. It was the largest suspension bridge in the world until 1964.

Durban Stadium

SOUTH AFRICA

The Durban Stadium is a multi-use stadium. It was one of the host stadiums for the 2010 FIFA World Cup. The stadium had a capacity of 62,760[1] during the World Cup and currently has a capacity of 54,000. The stadium is adjacent to the Kings Park Stadium, in the Kings Park Sporting Precinct, and the Durban street circuit used for the A1GP World Cup of Motorsport. It includes a sports institute, and a transmodal transport station.

Table Bay Hotel

SOUTH AFRICA

The Table Bay Hotel is the ultimate in 5 star luxury accommodation when looking for Cape Town hotels. This sophisticated Sun International property was opened in May 1997 by none other than iconic former South African president, Nelson Mandela. One of the Leading Hotels of the World, the Table Bay Hotel in Cape Town is set on the historic Victoria & Alfred Waterfront. This luxury Cape Town hotel has been created, not only as a tribute to the world-famous bay, but also to set its own standards in international service, cuisine and luxury.

Egypt's red sea hotel

EGYPT

All accommodation provides luxury bathrooms, fully equipped kitchenettes, terraces and balconies with a sea, swimming pool or mountain view. The location of Hotel offers a tranquil and peaceful environment for you to relax and soak up the wonderful sunshine, culture and experience. They are dedicated to providing you with a highly personalized service and quality care, and assure you of our best attention always.

Carrefour

EGYPT

Carrefour is one of the largest hypermarket chains in the world, the fourth largest retail group in the world in terms of revenue, and the third in profit. Carrefour operates mainly in Europe, Argentina, Bahrain, Brazil, China, but also has shops in North Africa and other parts of Asia, with most stores being of smaller size than hypermarket or even supermarket. Previously the company head office was in Levallois-Perret, also in Greater Paris.

Maracana stadium

BRAZIL

The Maracanã Stadium is a football stadium in Rio de Janeiro, Brazil. It was opened in 1950 to host the FIFA World Cup, and was the main venue of the 2007 Pan American Games, hosting the football tournament and the opening and closing ceremonies. The Maracanã was partially rebuilt in preparation for the 2013 FIFA Confederations Cup, and the 2014 World Cup, where the final of the latter competition was held. It will also be the venue for the opening and closing ceremonies of the 2016 Summer Olympics and Paralympics.

El Dorado International Airport

COLOMBIA

El Dorado is the most important airport in Colombia, accounting for 48% of the total air traffic in the country. It handles all domestic and international flights into Bogotá and has the world's third-largest landing field (6.9 square kilometres (1,700 acres) of land). El Dorado is located about 15 kilometres (9.3 mi) west of the city center; Avenida El Dorado (26 street) provides passengers access to downtown.

Torre Colpatria (Colpatria Tower)

COLOMBIA

Torre Colpatria (Colpatria Tower) is a 50-story skyscraper located at the downtown area in Bogotá, Colombia. It is the second tallest building in the country and the fifth-tallest in South America. It was constructed from 1978 to 1979, and has a total height of 196 metres (643 ft). The main headquarters of Colpatria Bank are located in the building, and also a great number of other banks and financial corporations have offices in it.

Guangzhou International Finance Center

CHINA

Guangzhou International Finance Centre or Guangzhou West Tower, is a 103-storey, 438.6 m (1,439 ft) skyscraper at Zhujiang Avenue West in the Tianhe District of Guangzhou, Guangdong, China. The building was topped out at the end of 2008. It is a part of the Guangzhou Twin Towers.

Ping An International Finance Centre

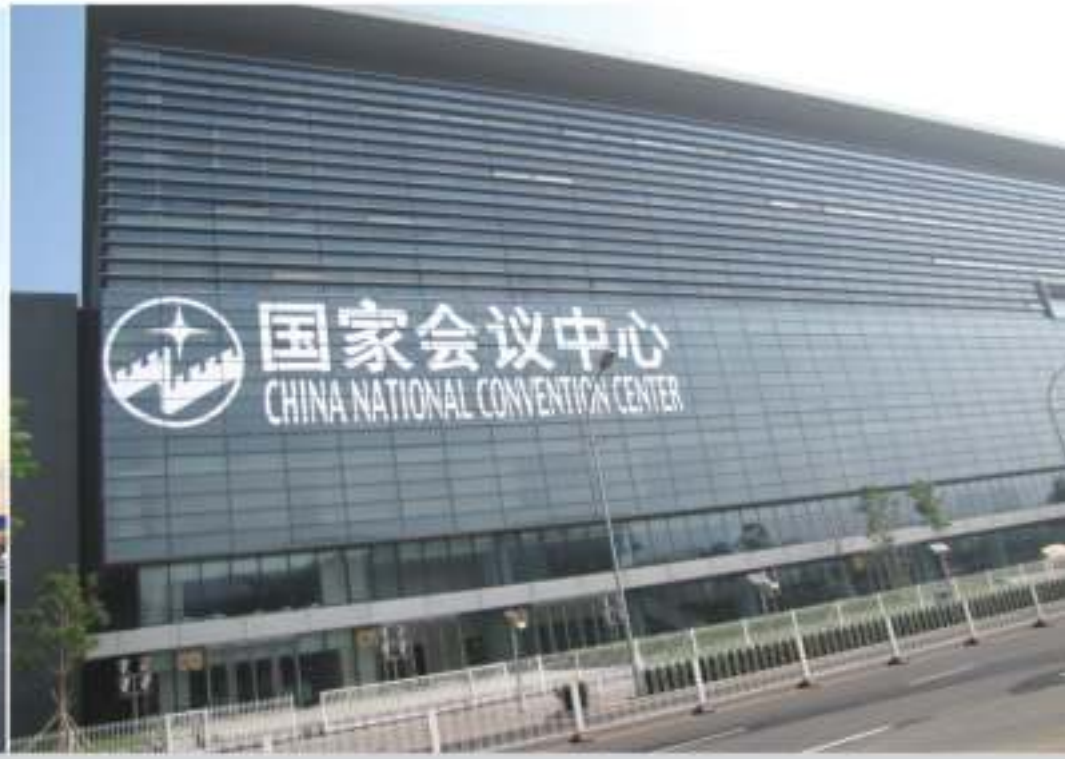
CHINA

Ping An International Finance Centre (also known as Ping An IFC) is a 115-story megatall skyscraper under construction in Shenzhen, Guangdong province, China. The building was commissioned by Ping An Insurance, and designed by the American architectural firm Kohn Pedersen Fox Associates. It is expected to be completed in 2016, and will at that time be the 4th tallest building in the world

China National Convention Center

CHINA

The China National Convention Center, sometimes known as the Olympic Green Convention Centerin a new convention center located in the Olympic Green in Beijing. It was designed by RMJM and was used for the 2008 Summer Olympics. It covers an area of 270,000 square metres. It is one of the principal buildings of the Olympic Green.



Dalian Wanda Center

CHINA

The Dalian Wanda Center boasts a total area of 480,000m2, composed of 5 ultra-high-rise buildings, each about 200m tall. The Center includes the super five-star Conrad Hotel and the five-star Wanda Hilton Hotel, as well as an international top-class office building, and top-class luxury residence. The buildings in one fell swoop raised Dalian to the world-class level in terms of offices.

Sheraton Guiyang Hotel

CHINA

Boasting one of Guiyang's finest addresses on Zhong Hua Nan Road in the central business district, the Sheraton Guiyang Hotel is a luxuriously beautiful hotel in the heart of the city. The hotel features 335 spacious guest rooms, including 39 suites and one Presidential Suite. All guest rooms are decorated with a residential contemporary feel.

Shanghai Tower

CHINA

The Shanghai Tower is a megatall skyscraper under construction in Lujiazui, Pudong, Shanghai. Designed by Gensler and owned by a consortium of Chinese state-owned companies, it is the latest of a group of three adjacent supertall buildings in Pudong, the other two being the Jin Mao Tower and the Shanghai World Financial Center. The building stands approximately 632 metres high and has 128 stories, with a total floor area of 380,000 m2. Its tiered construction, designed for high energy efficiency and sustainability, provides multiple separate zones for office, retail and leisure use.

Jinan Greenland Center

CHINA

Jinan Greenland Center is located in Jinan, Shandong Province, China. Jinan Greenland Center is 300 meters high, making it the tallest building in Jinan, Jinan Greenland Center will be opened in 2015, and it will attract many first well-known brands.

Company Profile

Jinan Meide Casting Co. Ltd. was established in 1962. In the past decades, Jinan Meide has seized each opportunity to consolidate its strength, and has finally developed into what it is today, a large-scale enterprise group with advanced technology, equipment and strong comprehensive strength, known for its complete range of products, large producing capacity, high quality and strong R&D strength. The company owns altogether one main factory, three branch factories, two independent accounting steel pipe companys, and a science & technology park.

The company is the largest manufacturer in the fitting industry with the most complete range of products, supplying malleable iron fittings, grooved fittings, grooved couplings, valves, cast iron fittings, ductile iron fittings, steel pipe nipples and couplings, stainless steel nipples, brass pipe nipples, cast bronze fittings, steel pipes, pipe hangers and supports, electric fittings, etc.

Over 50 years, Jinan Meide has been a trusted name in piping solutions by offering high-quality products, service and support to the PVF industry continuously. We provide expertise and product solutions for a wide range of applications, plumbing, mechanical, industrial, air-conditioning and refrigeration, mining, oil, gas, fire protection, equipment and power system. Many of the company's application technology are advanced in the world, with more than 20 patents registered each year, and the company has presided over and participated in the drafting of many important national standards of the industry.

We organize the whole production process in accordance with ISO 9001 and ISO 14001. It has also the most complete certificates in the PVF industry, including UL/FM/NSF of US, CRN/cUL of Canada, DVGW/TüV/VdS of Germany, BSI/LPCB of UK, SII of Israel, JIS of Japan, ABNT of Brazil, GOST-R of Russia, CNBOP of Poland, KS of South Korea, TSE of Turkey, PSB of Singapore, SIRIM of Malaysia, SABS of South Africa, CE/PED of Europe etc. The products are well distributed in more than 130 countries and regions.

As an industry leader and key high-tech enterprise of the national torch plan, the company attaches great importance to environmental protection, energy-saving and emission-reduction. US-EEC recognizes MECH brand malleable iron pipe fittings as "the product to promote for the technology exchange of environmental protection". Protecting the environment is the duty of the company.

Customer satisfaction has always been the company's top objective, and we constantly stick to the principle: to provide customers with a value-added solution rather than simply delivering products.

RECEIVED
16 SEP 2014
BY

KING ABDULLAH SPORTS CITY - SPORTS HALL & ATHLETICS STADIUM

CONTRACT NO. 6600029843

Saudi Aramco — HYUNDAI

Technical Material Submittal

Part:	[x] SH-Sports Hall	[x] AS- Athletics Stadium	[x] EX-External Works
	[ ] ST-Structural Work	[ ] AR-Architectural Works	[x] ME-Mechanical & Electrical Works
Trade:	[ ] CS-Civil Work	[ ] PM-Project Management	[x] O-Others

Inspection Level Required: N [✓] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ]

Subject: GROOVED FITTINGS FOR HVAC SYSTEM

Brief Description: GROOVED FITTINGS FOR HVAC SYSTEM

9Com No.	6000000194	MPR No.	PO No.

Manufacturers (Aramco Vendor ID): MECH/CPS

Supplier - ID Number: FUTURE MECHANICS TRADING EST

Attachment:

NAME:	Raja AbdulSaboor	POSITION:Proc Q/C Supervisor	DATE: 14/9/14	SIGNATURE:
NAME:	Haitham Moustafa	POSITION:Proc-Manager	DATE: 15/09/2014	SIGNATURE:
NAME:	M.Al.Omari	POSITION: .PM	DATE: 15/09/2014	SIGNATURE:

Company's Response: HESC to comply with all relevant standards

HYUNDAI
HES - 001
21 SEP 2014
RECEIVED

3:05 pm

Attchment:

DOCUMENT'S STATUS

ACCEPTED (ACC)	[✓]	TO RESUBMIT (TRS)	[ ]
ACCEPTED WITH COMMENTS (AWC)	[✓]	REJECTED (REJ)	[ ]

NAME: Mudar Albayat	POSITION: PE	DATE: 9/20/14	SIGNATURE:	
NAME:	POSITION: VID Rep	DATE:	SIGNATURE:	

DOCUMENT CODE

KASC SH SUB VDT 0761

Revision No. 0

HYUNDAI-ELSEIF CONSORTIUM

KING ABDULLAH SPORTS CITY
Sports Hall and Athletics Stadium Project
CONTRACT NO. 6600029843(IK) & 6600029598(OOK)

DOCUMENT / DRAWING TRANSMITTAL

To : Mr. Fahad Abdulwahed / Project Manager of SAUDI ARAMCO

Date : 14 (Day) 01 (Mon) 2014 (Year)

Our Corres. No. : KASC-SH-INK/SAC-T 2741

S/N	Document / Drawing No.	Rev.	Sht/Vol	Description / Title	Purpose	Remaks
1	KASC-SH-SUB-VDT-0761	0		TECHNICAL MATERIAL SUBMITTAL OF GROOVED FITTINGS FOR HVAC SYSTEM BY FUTURE MECHANICS TRADING EST MANUFACTURER MECH/CPS "	IFA	

Distributed to

	Attn.	CC	Encl. Copy	Elec. File
ARAMCO / IK, Site	X		2	1
ARAMCO / OOK, Seoul		X	C/O	
HES / IK, Site				
HES / OOK, Seoul				

Purpose
- IFI : Issued for Information
- IFR : Issued for Review
- IFA : Issued for Approval
- IFC : Issued for Construction
- IAB : Issued for As-Built
- IFD : Issued for Final Document

P. S. C/O : cover only

16 SEP 2014

BY

Please return above mentioned documents with comments/approved by 28 (Day) 09 (Mon) 2014 (Year)

Sender's Signature

Yong Nam Park / Project Director

Please acknowledge receipt by return of signed and dated duplicate copy.

Receipt Acknowledgement

وكالة الوزارة للتخطيط و التطوير الأمني
وزارة الداخلية

ALL SITES (ZFP)	رقم الموقع Site No	تقـــــديم مـــــواد	8486	رقم المشروع Project No
PT- 1 TO 10 & 16 19	رقم النموذج Prototype No	Materials Submittal	KAP-01	اسم المشروع Project Name

رقم التقديم السابق Pre. Sub. No :	DOC/P00/SO/MAT/MEC/1008-00	رقم التقديم Sub. No :	☑ تقديم جديد New Sub
تاريخ التقديم السابق Pre. Sub. Date :	19-10-2014	تاريخ التقديم Sub. Date :	☐ إعادة تقديم Resubmittal

☑ اعتماد Approval	☑ ملاحظات Comments	☐ معلومات Information		غاية التقديم Purpose
☐ أخرى Other	☐ كهرباء Elec	☐ صحي PLUM	☐ تكييف HVAC	☐ انشائي STR	☐ معماري Arch	☐ مدني Civil	التخصص Dept.
☐ حسابات Calculation	☐ معلومات فنية Tech. Info	☑ عينة Sample	☐ شهادة Certificate	☐ مخطط Drawing	☑ كتالوج Catalog	المرفقات Attach.

Material / Equipment مادة / معدة

م Ser	اسم و رقم و وصف المادة Material Name, No. & Description	المصدر Source	المصنع / المورد Factory / Supplier	مواصفات قطاع Section	مرجع الاعتماد Measurements Ref	App Status
1	Lock fittings for fire fitghing system (GROOVED)	Jinan Meide Casting Co.	(FU-MECH)	15300(ZFP)		B
2						
3						
4						

Contractor Project Manager	مدير المشروع / المقاول	يتعهد المقاول بأن التقديم ملتزم التزاماً تاماً بالمخططات ومواصفات العقد عدا ما يذكر لاحقاً Contractor warrant that the submission is fully committed to the drawings and specifications of the contract, except as mentioned later	ملاحظات واستثناءات المقاول Contractor Comments
Name :Moetaz Ibrahim	الاسم	- Technical Data 4 Copies + Cd	
Signature	التوقيع	- All samples are available in the Showroom.	
Date :19/10/2014	التاريخ		

Consultant Recommendations توصيات الاستشاري

Approval of materials does not relieve the Contractor of its contractual obligations اعتماد المواد لا يعني المقاول من التزاماته التعاقدية

* تعتمد الوصلات المقدمة (وصلات اقفال ميكانيكية) ماركة Jinan Meide صناعة الصين توريد مؤسسة مستقبل الميكانيكا
* تستخدم لجميع نماذج زهير فايز لتمديدات مياه مكافحة الحريق (جميع الأقطار).
* ضرورة أن تكون جميع القطع تحمل علامة UL وعلامة FM بارزة على جسم القطعة
* جميع القطع يجب أن تكون خالية من العيوب أو الصدأ مع مراعاة جودة الدهان.
* يستخدم معها مانع تسرب EPDM درجة E "كود لوني أخضر"
* ضرورة مراعاة معدلات الضغط لجميع القطع ومناسبتها لضغط الاختبار وضغط التشغيل.

PGM مدير المشروع	Tech. Off. Manager مدير المكتب الفني	Dept. Manager رئيس القسم	Resp. Engineer المهندس المختص
الاسم Name :	الاسم Name :	الاسم Name : ابراهيم الشحات	الاسم Name :
الوظيفة Role :	الوظيفة Role :	الوظيفة Role : SME	الوظيفة Role :
التوقيع Signature :	التوقيع Signature :	التوقيع Signature :	التوقيع Signature :
التاريخ Date :	التاريخ Date :	التاريخ Date : 28/10/014	التاريخ Date :

2014 10/28

Consultant Approval Status حالة الاعتماد للاستشاري

Not Specify غير محدد E	يعاد بعد تلافي الملاحظات C Incorporate Comments & Resubmit	يعتمد Approved A	
	مرفوض Rejected D	يعتمد بملاحظات بدون إعادة تقديم Approved With Comments	

صادر Out	وارد In
التوقيع Signature:	التوقيع Signature:
التاريخ Date:	التاريخ Date:

ختم الاستشاري Consultant Stamp

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19 OCT 2014

40002625

R-in-473

11/3/2014

Kingdom of Saudi Arabia
Security Planning and Development Agency - KAP4 Project

Ministry of Interior | PROGER Engineering & Management | Al Rashid Trading & Contracting

Project Name:	Directorate of Border Guard (Riyadh -barsh)	Submittal No.	Rev.
Project No.:	1400	KAP4 - MAT - 105 - MB xx - ME - 0013	0
To:	Project Manager - Proger Head Office	Date: 10-Mar-2014	

Document / Material / Sub-Contractor / Supplier Submittal

Discipline: (ME) ☐ Document ■ Material ☐ Sub-Contractor ☐ Supplier / Manufacturer

Attachments: ■ Sample ■ Catalogue / Manuals ■ Compliance Cert. ☐ Manufacturer Data & Specification ☐ Drawings ☐ Procedures ☐ Spare Parts List ☐ Calculation Sheet ☐ Others/Specify ( )

Submitted for: ■ Approval ☐ Information ☐ Review & Comment ☐ As Requested

Copies	Document; Material / Manufacturer Supplier Sub-contractor Identification	Description	Reference Specs #
3	Grooved "Fitting" from 2 1/2"	Grooved fitting ASTM A536 inside building (Chilled water system) UL,FM	15510
3	Grooved "Fitting" from 2 1/2"	Grooved fitting ASTM A536 inside building (Chilled water system) UL,FM	15510
3	Grooved "Fitting" from 2 1/2"	Grooved fitting ASTM A536 inside building (Chilled water system) UL,FM	15510

Manufacturer's; Supplier's Data:	Supplier - 1	Supplier - 2	Supplier - 3
Name:	Protection Shield EST.	World contracting	Engineering supplier
Address:	P.O. Box: 246926 riyadh – 11312	P.O. Box: 4358 riyadh – 31952	P.O. Box: 246926 riyadh – 11312
Phone:	4773938	4664566	4773938
Fax:	4792888	4603205	4792888
Other Information	National-India	Mech -china (UL,FM)	National-India

To be used for: Directorate of Border Guard (Riyadh -barsh)

Engr.Mohammed Al Jedia
Deputy General Manager
For Contractor: (Name / Title / Signature / Stamp)

Engineer's Rep. to enter Action Codes; Remarks and return to Contractor.

Remarks:

As per attached comments and action

Comments or comments made relative to submittals during the review do not relieve the contractor from full compliance with the requirements of the contract documents, dimensions, selecting fabrication processes and techniques of construction, coordinating the work with that of other trades, and performing the work in a safe and satisfactory manner and complying with all quantities and conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for the product specifications. The check is only for general review.

Action:
- [A] APPROVED AS SUBMITTED
- [B] APPROVED AS NOTED
- [C] REVISE AND RESUBMIT
- [D] REJECTED
- [E] FOR INFORMATION ONLY
- [F] RECEIVED, NO ACTION TAKEN

For Engineer's rep.
Review By:
Name: Signature: Date: 4/3

Supervisor/Manager:
Name / Title Signature / Stamp Date 25/04/2014

Distribution:

CI "Civil", ST "Structural", AR "Architectural", ME "Mechanical", EL "Electrical", DOC "Document", MAT "Materials", SUB "Sub-contractor", MAN "Supplier/Manufacturer"

TYPSA
CONSULTING ENGINEERS & ARCHITECTS

مهندسون استشاريون ومعماريون

Al-Jouf University
Kingdom of Saudi Arabia

جامعة الجوف
المملكة العربية السعودية

Ref: AJU_T-LU_M-T01_2013007

رقم: AJU_T-LU_M-T01_2013007

Date 30.01.1435 H = 04.12.2013 G

التاريخ: ١٤٣٥/١/٣٠هـ - ٢٠١٣/١٢/٤ م

Attn: University Projects Department

السادة إدارة المشاريع – جامعة الجوف

Subject: Black steel pipes and fittings and pipe hangers material approval / Community college for boys (T01)

الموضوع: اعتماد مواد أنابيب الصلب الاسود ومستلزماتها وعلاقات الانابيب
كلية المجتمع للطلاب (T01)

Dear Sirs,

السلام عليكم و رحمة الله و بركاته،،

With reference to the above mentioned subject and to the contractor request to approve BLACK STEEL PIPES AND FITTINGS AND PIPE HANGERS MATERIAL, we here to inform you that we do not have any objection to approve the MATERIAL as follows:

بالإشارة الى الموضوع اعلاه والى طلب المقاول لاعتماد مواد أنابيب الصلب الاسود ومستلزماتها وعلاقات الانابيب، نرجو التكرم بالعلم أنه لا يوجد لدينا اعتراض على اعتماد المواد المذكورة أعلاه من المواد حسب ما يلي:

-BLACK STEEL SEAMLESS PIPE, ASTM A53 Sch40 (INTERPIPE).
-DUCTILE IRON GROOVED FITTINGS (MECH).
-MALLEABLE IRON THREADED FITTINGS (HITACHI).
-IRON PIPE SWIVEL RING 300 SERIES & STANDARD DUTY CLEVIS HANGER 404 SERIES (GLOBE).
(SUPPLIER SAMARA)

-انابيب صلب بدون لحام غير ملحومة، طراز ASTM A53 Sch40 توريد شركة (عطية الحديد)
-مستلزمات محززة من حديد الدكتايل، توريد شركة (ميك).
-مستلزمات مسننة من الحديد المرن، توريد شركة (هيتاشي).
-حلقات ربط لأنابيب الحديد سلسلة ٣٠٠ & علاقات مواسير سلسلة ٤٠٤ (طراز غلوب) (توريد شركة سمارا)

For your kind approval.
Best regards,

في انتظار التكرم بالموافقة.
وتفضلوا بقبول وافر التحية والاحترام،،،

مدير مشاريع تيبسا
TYPSA Project Manager

RAFAEL-MATEOS BEREZ
رفائيل ماتيوس بيريث

TYPSA SAUDI ARABIA

Attachments.: Related Documents.

المرفقات: الوثائق ذات الصلة.

AL-JOUF UNIVERSITY

TYPSA
CONSULTING ENGINEERS & ARCHITECTS

Contract: **Q02.- SCIENCE AND ARTS COLLEGE**
Contractor: **A.S. ALSAYED**

To: The Project Manager.

Ref.: AJU_Q-LC_M-Q02_2014029

Date: 25/12/1435 H
19/10/2014 G

SUBJECT: Grooved fittings. Supplier and material approval

With reference to the above mentioned subject and your Grooved fittings Supplier and material approval request, we hereby inform you that the supplier and the material have been approved as follows, provided that the supplied material shall conform to the submitted samples and comply with the technical specifications and bill of quantities, with installation in accordance to the approved drawings:

- UL/FM GROOVED FITTINGS, 300 PSI, LEDE (AL SAYED CENTER).
- UL/FM GROOVED FITTINGS, 300 PSI, WEIFANG 100TONG (SUPPLIER SAUD AWAD AL-HARBI EST.).
- UL/FM GROOVED FITTINGS, 300 PSI, MECH (SUPPLIER FUTURE MECHANICS TRADING EST.).

Best Regards,

TYPSA
SAUDI ARABIA
PROJECT SUPERVISION

Daniel Martin
Head of Mechanical Dept.

مشروع مكتب الضمان الاجتماعي بالرياض	رقم المشروع :	1431/61
المجموعة الاستشارية الهندسية (سي.إن.جي)		مؤسسة مجال الانجاز للمقاولات
المجموعة الإستشارية الهندسية CONSULATING ENGINEERING GROUP	وزارة الشؤون الاجتماعية	مجال
هاتف : 4654406 فاكس : 4654151		هاتف : 4781181 فاكس : 4785200

REQUEST FOR SAMPLE APPROVAL — اعتماد مواد

رقم التقديم : 164	Submittal No.	التاريخ: 14/07/1435	Date:	نوع العينه ميكانيكا	S. Type
رقم البند: (14-4)		وصف العينه:		اسم الشركة:	
مكان الاستخدام: اعمال مقاومة الحريق		GROOVE FITTINGS		1-MECH ✓	
وصف البند حسب العقد: SPEC AS PER CONTRACT: تأمين شبكة مقاومة الحريق من الحديد الاسود المغطى مشمول جدول 40 والسعر يشمل كافة الانابيب والقطع والوصلات والكلبات وجميع الاعمال اللازمة لاتمام العمل طبقا لمتطلبات المعايير القياسية الامريكية				2-DUCCO ✗	
				3-LEDE ✗	

توقيع و ختم المقاول: ملاحظات المقاول ان وجدت : Contractor's Comments

المهندس المختص: محمد عفيفي

التوقيع:

التاريخ: 14/07/1435

الختم: مؤسسة مجال الإنجاز للمقاولات

ملاحظات و توقيع و ختم الاستشاري: Consultant's Stamp & Comments

☐ التوصية بالموافقه

☐ موافقة مع ملاحظات

☐ مرفوض و يعاد للمقاول

المهندس المختص: م/ عبد الله السيدان

التوقيع:

التاريخ: 14/7/1435 هـ

منسق المشروعات: م/ عبد الله السيدان

التوقيع:

التاريخ: 14/7/1435 هـ

استلمت الرد : م المقاول : التوقيع: التاريخ:

قرار وزارة الشؤون الاجتماعية: Decision of Ministry

☐ موافق ☐ مرفوض ☐ موافق مع ملاحظات

يعتمد قطع الاتصال المواسير ماركة (MECH) طبقا للمرسومة عاليه مع الالتزام بالمواصفات الفنية والاتفاق المطلوب مع توزيع الاعمال للاعداد وتمويل التوريد

منسق المشاريع : المهندس: عبد الله خالد الحسين

التوقيع:

التاريخ: ١٤٣٥/٧/٢٤ هـ

رئيس قسم الأشراف: المهندس: سلمان الشبيلي

التوقيع:

التاريخ:

مدير إدارة المشروعات : المهندس عمل بن رجاء المسردي

ملاحظات هامه : 1 : يعبأ النموذج بالكمبيوتر بالألوان من قبل المقاول 2 : يرفق مع النموذج صورة شهادات إنجاز من المقاول لمشاريع مماثله

3 : لا يستلم النموذج من المقاول حتى يتم إستيفاء كافة البيانات و المرفقات و تطابق مع متطلبات المشروع المطلوبه قبل الرفع للوزاره

4 : لا يترتب على هذا الإعتماد أي إلتزامات مالية على الوزاره تجاه مقاول الباطن

DAMAC

SAHAMA STRUCTURAL ENGINEERS

DOCUMENT SUBMITTAL SHEET #	1202DF/TR0749

Project Name	DAMAC ESCLUSIVA , RIYADH , KSA	Project No.	1202DF
		Date	27-08-2014

Submittal No.:	MT-FF-18	Revision:	00
Submittal Title:	GROOVED FITTINGS		

ITEM NO.	DWGS. SPECS BOQ REF.	DESCRIPTION	TYPE	COPIES	REMARKS
1		GROOVED FITTINGS	MD SM	3 + CD	

TYPE: SD= Shop Drawings, SM= Sample, GT= Guarantee, MD= Manufacturer's Data, CT= Certificates, TT= Test Results, OT= Other

Supplier / Manufacturer: FUTURE MECHANIC/ MECH

We certify that the documents / materials submitted herewith have been reviewed in detail and are in strict conformance with the contract drawings and specifications except as otherwise stated.

Contractor Name: HARAMAIN GATE ENGR.KHALIL (MEP MANAGER)	Signature:	Rcv'd By:	
	26-08-2014	Date:	

Design Consultant Review Comments

- All fire fighting grooved fitting should be UL stamped.
- Included ferrous housing section, EPDM-rubber gasket and bolts and nuts

Consultant Decision

- [ ] Approved
- [x] Approved As Noted
- [ ] Not Approved
- [ ] Not Required

Design Consultant (Name): for	Signature: Hay Sobhy	Rcv'd By:	
		Date:	
		Date:	

Corrections or comments made relative to submittals during this review do not relieve the contractor from compliance with the requirements of The Contract. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of other trades and performing his work in a safe and satisfactory manner.

Copy to:

RECEIVED
27 AUG 2014
SSE 1:35 pm

30.8.14
7:28

Project: Novotel Hotel

Client:	Consultant:	Contractor:
سالم بابقى SALIM BABGI	الخشيتان مقدمون استشاريون OTAMIAN CONSULTING ENGINEERS	

DOCUMENT SUBMITTAL FORM

Purpose of Submittal: ☐ For Information ■ For Approval ☐ For Construction/ Fabrication

Discipline:
☐ Civil ☐ Architecture ☐ Structure ■ Mechanical ☐ Electrical
■ Refrigeration ☐ Conveying ☐ Landscape ☐ Plumbing ☐ Process

■ New Submittal ☐ Resubmittal	Submittal No.: MECH.-030 Prev. Submittal No.: _____	Date of Submittal: 3/9/2014 Date of Receive: _____	Subcontractor:

Information submitted attached	■	Operation & Maintenance Manual	☐	Test Results	☐
Certificates	☐	Spare Parts List	☐	Calculations Report	☐
Technical Brochure	☐	As-Built Drawings	☐	Proposals	☐
Manufacturer's Data & Spec	☐	Warranty	☐	Other (specify)	☐
Sample	■	Materials	☐		

MATERIAL / EQUIPMENT **Note:** Please use the attachment in case items are more than the provided space

Item	Document Number	Description	Revision #	Approval Code
1	MECH.-030	GROOVED FITTING (CPS) GROOVED FITTING (MECH)		B

Contractor's Remark & Exceptions **Reply required by:** **Copy to:**

Main Contractor: _____

		Info	Action
Transmitted by Contractor's PM **Name : M. ABO ELMAWAHB** **& signature** **Date: 3/9/2014**	**Recv'd by:** **Date:**		B

Consultant's Comments: لا مانع من توريد GROOVED FITTING من احدى الشركتين CPS & MECH على أن يكون المنتج UL listed FM Approved ولا يقل ضغط التشغيل للمنتج المورد عن 300 PSI

CONSULTANT ACTION	For OCE:	Client Approval:	Received by:
A Approved as submitted B Approved as noted Resubmission not required C Approved as noted Resubmission required D Disapproved E No action Taken	Name: M.A. ANSARI Position: P.M Signature: [signature] Date: [illegible]	Name: _____ Position: _____ Signature: _____ Date:	Name: _____ Position: _____ Signature: _____ Date:

مؤسسة خادم الحرمين الشريفين
الملك عبدالله بن عبد العزيز الدولية للأعمال الإنسانية
KING ABDULLAH INTERNATIONAL FOUNDATION FOR HUMANITARIAN ACTIVITIES

KING ABDULLAH FOUNDATION PROJECT

CLIENT REPR.	CONSULTANT	CONSTRUCTION MANAGER	CONTRACTOR
KA	DIYAR	Turner	Saudi Binladin Group

SUBMITTAL FOR APPROVAL OF MATERIALS

Project Name : King Abdullah Foundation Project (KAFP)
Contract No. : P-1350
Region :
Employer's Name: KAPH
Engineer / Consultant's Name: Saudi Diyar

Contractor : Saudi Binladin Group
Submittal No. : MAT-GEN-MP0038
Title : Fire Fighting Pipe Fittings
Rev. No. : 00 No of Copies: 3
Date : 03/11/2013

TO: OWNER REPRESENTATIVE
We request the Owner Representative's approval on the following Materials

1- MATERIAL DESCRIPTION (One item on this form) Type of Material : Plumbing
Fire Fighting Pipe Fittings

Area of Application : As per attached list (section no-6)
Drawings Ref. :
Specification :
Enclosures : Submittal + Sample
BOQ Ref No. : Not Available
Standards :
Document No. : US-KAFP-MS-PL-0060

Attach all relevant technical literature marked to identify relevant description, current test certificates, samples as appropriate

2- MANUFACTURER / SUPPLIER
Company Name : FU MEOH
Address : P.O.Box 28027 Riyadh 11437 KSA
Local Agent : FUTURE MECHANICS TRADING EST.
BY : UNISTAR
☐ Listed in Approved Project Vendor's List

3- DELIVERY STATUS
Country of Origin : China
Availability : 0
Delivery Program :
Delivery Duration :
Estimated Date of Arrival on Site :
Date of Material Required on Site :
Latest Date for order :

We certify that the above submitted items have been reviewed in detail and are correct and in strict conformity with the contract drawings and specifications except as they will supply the submitted items in full conformity with timely delivery otherwise stated and also that the material sources indicated above have been reviewed in detail and that

FOR: THE CONTRACTOR
Doc. Control Dept. : 05/11/13
QA/QC Dept. :
Technical Manager: 5-11-13
Chief Project Coordinator:
Project Manager: 11-6-13

CONSULTANT'S COMMENTS : All Fire Fighting pipe Fittings shall be UL and FM approved.

RECEIVED P-1350
12 NOV 2013
S.B.G-ABCD

12/11/13

ACTION CODE
☐ A Approved As Submitted ☑ B Approved as Noted ☐ C Revise and Resubmit
☐ D Disapproved - Resubbmited ☐ E Receipt Acknowledged

TO: THE CONTRACTOR
Approval shall not relieve the Contractor of its obligations and liabilities under the contract or constitue authorization of any change to Contract Documents, and therefore, shall not imply any recognition whatsoever of additional time or cost to the contract.

FOR : SDC Project Manager:
Name:
Date:
Signature: For 12/11/13

MOI Acknowledgment Reference No

المملكة العربية السعودية
وزارة الصحـــة
ادارة المشاريع و الصيانة
بصحة الجوف

وزارة الصحة
Ministry of Health

طلب الموافقة على عينة
REQUEST FOR SAMPLE APPROVAL

المشروع : إنشاء وتجهيز وتأثيث المختبر الإقليمي وبنك الدم ومركز السموم

الاستشاري : مكتب فهد المدلج للإستشارات الهندسية

المقاول : شركة الحـــريتي للتجارة والمقاولات

رقم المشروع :	PROJECT NO	29/4/324	
رقم التقديم :	SUBM. NO	(R-M-M048)	
تاريخ التقديم :	DATE :	3/22/2014	

طلب جديد	NEW ✓	اعادة تقديم	RESU ○
المرفقات : ATTACH	كتالوج		

نوع العينة S. TYPE	Pipe Fittings	اسم العينة S.NAME	كتالوج
مكان الاستخدام LOCATION	المبنى الرئيسي - غرفة الطلمبات	الكمية QUANTITY	1
بلد المنشأ ORIGIN	Pretoria - CHINA		

الوكيل:	agent :		
ص. ب:	p.O.Box :		
هاتف :	tel :		
فاكس:	fax :		
العنوان:	add :		
المصنع:	Factory :	Mech	
ص. ب:	p.O.Box :		
هاتف :	tel :	012-653-8520	
فاكس :	fax :		
العنوان :	add :		

مواصفات البند حسب العقد : spec. As per contract :
حسب المواصفات والعقد

المواصفات المقترحة للبند : proposed spec. For the item :
حسب المواصفات والعقد

توقيع و ختم المقاول
الاسم : ميسلة محمد التوقيع : التاريخ :
contractor's stamp & sig :
الختم : شركة الحريتي

ملاحظات و توصيات المهندس المختص للاستشاري :
○ الموصية بالموافقة ○ الموصية بالموافقة مع ملاحظات

توصي بالموافقة على عينة (Mech) من نوع (Pipe Fittings) وفق NFPA ومتطلبات الموقع ومواصفات المشروع وكذلك مواصفات الكتالوج وجميع الكميات والمتطلبات وتعليمات الجهة المشرفة

الاسم : م/ رامي كاسر التوقيع :
الاسم : م/ صبحي ابو الليل التوقيع : التاريخ : ٢٠١٤/٤/٢٢م الختم :

ملاحظات و توصيات المهندس المختص بالإدارة :
○ الموصية بالموافقة ○ الموصية بالموافقة مع ملاحظات ○ مرفوض بسبب

لا مانع من موافقة (Mech) من نوع (Pipe Fittings) وفق الكود المعمول NFPA والمواصفات وجميع الكميات وتعليمات الجهة المشرفة

الاسم : م/ التوقيع :
الاسم : م/ محمود ابو الليل التوقيع : التاريخ : / / 200م الختم :

قرار وزارة الصحة : Decision of MOH :

لجنة الاعتمادات

مدير الموقع
م / محمود رشدي قليم

يعتمد
مدير إدارة المشاريع
المهندس / عماد خليل الوكاد

يعتمد
مساعد المدير العام للمشاريع والشئون الهندسية
المهندس / شريدة فرحان الشريدة

○ موافق : Approved
○ مرفوض : Rejected
○ موافق مع ملاحظات : Approved as per noted

أمانة جازان - مشروع مركز الامير سلطان الحضاري

شركة الفقاس للتجارة و للمقاولات

شركة اد للهندسة

AD Engineering Co.

أمانة منطقة جازان

طلب إعتماد مواد
REQUEST FOR MATERIAL APPROVAL

رقم المشروع PROJECT No.	Prince Sultan Center	Date التاريخ	Submittal Status حالة التقديم
رقم التقديم SUBMITTAL No.	M - 088 - MATERIALS	HIJRI هجري 13/6/1435	■ New جديد
نوعية المخطط Drawing type	معماري ☐ Arch; انشائي ☐ Structure; كهرباء ☐ Elect; ميكانيك ■ Mech.	GREGORIAN ميلادي 2014-04-13	☐ Re-Submittal إعادة تقديم

مسلسل Ser	No رقم	TITLE عنوان	Checking code رمز التدقيق A	B	C	D
		FIRE FIGHTING GROOVED FITTINGS				
A		MECH (Catalouge)	✓			
B		SHURJOINT (Catalouge)	No Action			
C		NATIONAL FITTINGS (Catalouge)	No Action			
D		LEDE (Catalouge)	No Action			

آد للهندسة
حمود السالمي وشركاه
الاشراف - مشروع
Approved
AD Engineering Co
H AL SALMI & PARTNERS
Supervision - Project

ملاحظات المقاول CONTRACTOR'S REMARKS	التاريخ DATE	توقيع المقاول CONTRACTOR'S SIGN.
	HIJRI هجري 13/6/1435	شركة الفقاس للمقاولات التجارية AF س ت ٥٩٠٠٠٠٧٨١٥
	GREGORIAN ميلادي 2014-04-13	

CONSULTANT'S COMMENTS ملاحظات الاستشاري

Mech Grooved fitting is approved

Submittal return code رمز التدقيق			التاريخ DATE	توقيع الاستشاري CONSULTANT'S SIGN.
معتمد	A	APPROVED	HIJRI هجري	Engineer
معتمد مع ملاحظات	B	APPROVED AS NOTED		
اعادة التقديم	C	RESUBMIT	GREGORIAN ميلادي	Proj. manager 14/4/14
غير مقبول	D	DISAPPROVED		

أمانة جازان - مشروع مبنى أمانة جازان

مؤسسة حسن هادي عبدالله
HASSAN HADI ABDULLAH EST

شركة اد للهندسة
AD Engineering Co.

طلب اعتماد مواد

رقم المشروع PROJECT No.		Date تاريخ	Submittal Status حالة التقديم
رقم التقديم SUBMITTAL No.	E09/04/2014	HIJRI هجري: 09/06/1435	■ New جديد
Attention To/For	معماري Arch ☐ · انشائي Structure ☐ · كهرباء Elect ☐ · ميكانيك Mech. ■	GREGORIAN ميلادي: 09/04/2014	☐ Re-Submittal إعادة تقديم

مسلسل Ser.	رقم البند	عنوان بعينة SUMPLES TITLE	Checking code رمز التدقيق A	B	C	D
		اعتماد مواد اطفاء الحريق				
1		كتالوجات المواسير : انتربايب	✓			
2		قطع التوصيل المسننه : هيتاشي	✓			
3		قطع التوصيل لنظام :FM200 : بوتويل	✓			
4		صناديق الحريق: سفيكو.		✓		
5		طفايات الحريق: سفيكو.	✓			
6		وحدات التحكم:	.			
.		محابس السكينة OS&Y: مولر	✓			
.		محبس الانذار: بوتر	✓			
.		محبس الاختبار: AGF	✓			
.		عداد الضغط : AGF	✓			
7		محبس عدم الرجوع : مولر	✓			
8		FIKE: FM200		✓		
9		حنفيات الحريق: AVK.	✓			
10		محابس حنفيات الحريق : AVK	✓			
11		رشاشات الحريق : تايكو .	✓			
12		GROOVE FITTING : MECH.	✓			

ملاحظات المقاول CONTRACTOR'S REMARKS	التاريخ DATE	توقيع المقاول CONTRACTOR'S SIGN
	HIJRI هجري: 09/06/1435	المهندس : خالد الجندي
	GREGORIAN ميلادي: 09/04/2013	

CONSULTANT'S COMMENTS ملاحظات الاستشاري

See attached for approvals
Approved code (B) as shown
Good material submittal appreciate. thank you.

Submittal return code رمز التدقيق		التاريخ DATE	توقيع الاستشاري CONSULTANT'S SIGN
معتمد A APPROVED		HIJRI هجري	Engineer
معتمد مع ملاحظات B APPROVED AS NOTED		GREGORIAN ميلادي	Proj. manager
اعادة التقديم C RESUBMIT			13/4/14
غير مقبول D DISAPPROVED			

RECEIVED

NUAB 1500

Submittal No. : E09/04/2014 (Fire Fighting Materials)

Date: : 09/04/2014

1). Inter pipe black steel seamless is approved – ASTM –A53 .

2). Hitachi Malleable iron pipe fittings is approved.

3). Bath well high pressure pipe fittings 3000 lbs is approved for FM200.

4). Sffeco fire extinguishers is approved.

5). Sffeco fire hose cabinets rubber hose – recessed type – stainless steel with glass panel is approved (shall be submitted separately)-Sffeco fire extinguisher is approved.

6). Mueller OS & Y gate valve is approved.

7). Potter Alarm switch vane type waterflow alarm switch with retarded V SRF is approved.

8). AGF test and drain valve is approved.

9). AGF pressure gauge is approved.

10). Mueller check valve is approved.

11). Fike clean agent FM200 UL-FM of USA is approved.

12). AVK fire hydrants 27/00 is approved – AVK gate valve 45/4x is approved.

13). Tyco sprinklers is approved, type and finish shall be selected and approved .

14). Mech. groove fittings and joint FM-UL-ASTM A536 is approved.

13/4/14

Eng. Mohd. Abbas Hariri

Residence Engineer

المراعي
Almarai

MATERIAL APPROVAL REQUEST

Project: ALMARAI RABIGH SALES DEPOT	Request No: FF-MT-002
	Previous Submittal No.
Owner: Almarai Company	Date: 27-10-2013

TO : ALMARAI COMPANY
ATTENTION : MOHAMMAD IQBAL / KESHAVAN SHANMUGAM
FROM : HASHEM CONTRACTING CO.
SUBJECT :

SUBMITTAL TYPE: ☐ Arch ☐ Struct ☐ HVAC ☐ Plumb ■ F.F ☐ Elect ☐ Other

Dear sir,
We hereby submit the following for your review approval:

Item	DESCRIPTION	REMARKS
1	Fittings	
	2.1 (Groove) Pipe Size for: 2-1/2" & above- MECH	
	2.2 (Thread) Pipe Size for:-2" & less- HITACHI	

Manufacturer :	MECH and Hitachi
Sample :	
Location:	All Buildings
Ref.Drawing / Spec:	

REVIEW COMMENTS	Approved	Resubmit	Disapproved
	✓		

Submitted By:
Signature
Name Arch. Maher Azzam
Date 27-10-2013

Received/Checked by:
Signature
Name 31/11/2013
Date Abdul.

موبايلي mobily

COMMITCO FOR CONSTRUCTION

East Consulting Engineering Center

مركز الشرق للاستشارات الهندسية

Riyadh 11441 P.O. Box 5573 Tel. 4772215 Fax. 4777145

الرياض 11441 ص.ب 5573 هاتف 4772215 فاكس 4777145

نموذج اعتماد الموردين والمصنوعات والمقاولين الباطن

DRAWINGS/MATERIAL / SUPPLIERS & SUBCONTRACTOR APPROVAL SHEET

Client : العميل ETIHAD ETISALAT CO. MOBILY P.O. Box ص.ب : Tel. هاتف Fax فاكس	طلب اعتماد للتقديمات Submittals Approval Request	Contractor المقاول COMMITCO FOR CONSTRUCTION P.O. Box: 406 ص.ب Tel. 2752194 هاتف Fax 2750897 فاكس

Project: Mobily technical building, Al-Hasa, K.S.A. المشروع

Material descript. وصف المواد	CHILLED WATER PIPES FITTING AND VALVES FIRE FIGHTING PIPES FITTING					
تاريخ التقديم Submittal date	04-01-14 (day/month/year) يوم/شهر/سنة		[X] New submittal تقديم جديد		[ ] Re-submittal اعادة التقديم	
رقم التقديم Submittal No.	MTBH-CFC-M-01-055					
رمز التقديم Submittal code	[ ] C - Civil مدني	[X] M-Mech ميكانيكي	[ ] E-Elec كهربائي	A-Architect معماري	[ ] G-General عام	
مستندات العقد Relevant Contract Document	BOQ : MAIN BUILDING					
اسم المادة Name of material : النوع/اللون Type / colour : Producer المنتج	JINAN MEIDE CASTING CO., LTD					
المعلومات الفنية Tech Information						
المرفقات Enclosures	Sample [ ] عينة Catalogue [X] كتالوج Description [ ] وصف			Drawing [ ] مخطط Precual [ ]		
مكان استعمال المادة Location of mater. application						
ملاحظات Comments	- pipe 50 mm and smaller to be threaded, pipe longer than 50 mm to be grooved fitting. - provide sample material. - Actual selection and sizes refer to Approved shop drawing - The UL and FM Approved.					
التقديم Submittal is	[A] Approved as submitted يعتمد حسب التقديم [B] Approved as noted يعتمد حسب الملاحظات [C] Disapproved. Resubmittal is required مرفوض ويجب اعادة تقديم الملاحظات [D] On hold مرفوض [E] Rejected. Submit others مرفوض وتقدم جهات اخرى [F] Returned without action مردود دون اجراء					
Submittal follow up inform. معلومات متابعة التقديم	Client العميل Approved by : الاعتماد بواسطة Name : الاسم Sign & stamp. التوقيع والختم Date : التاريخ		Consultant الاستشاري Checked by تمت المراجعة بواسطة Name : الاسم Sign & Stamp التوقيع والختم Date : التاريخ		For Contractor المقاول Submitted by التقديم بواسطة Name : الاسم Sign & Stamp : التوقيع والختم Date : التاريخ 04/01/14	

MATERIAL SUBMITTAL

Project Name	EDAFAH SUITES HOTEL	FORM NO.	SPML-KSA005-F-01
		PROJECT NO.	KSA-005

REF:	SPML-KSA-005-TS-043	REV:	00
DATE:	07-12-2013	SPEC NO:	

STRUCTURAL [ ] ARCHITECTURAL [ ] MECHANICAL [X] ELECTRICAL [ ] OTHERS [ ]

S.NO	DESCRIPTION	MANUFACTURER	SUPPLIER	CATELOGUE/SAMPLE	CODE
1.	Groove Joints	MECH	Fu-Mech	Yes	

Contractor		Project Management Consultant		
Name: Ahmed M. Elsheikh	Signature:	Received By: ALAN JOHNSTON	Date: 7/12/13	Signature:

CONSULTANT'S RESPONSE

Remarks:

1- Groove joint UL-listed - FM approval, is approved.
2- CDD approval must achieve.

Status:

[ ] Approved [ok] Approved as noted [ ] Revise & Resubmit

[ ] Rejected [ ] No Action

Consultant	Engineer: Khaled Abu Laban	Signature:	Date: 11/12/2013
	Project Manager:	Signature:	Date:
Client	Received By:	Signature:	Date:

Copy To:
Head Office [ ] Consultant [ ] QS [ ] Others [ ]

Sheet No. 1 of 1

VANDERWEIL

Submittal

Title: GROOVED END FITTING FOR FIRE PROTECTION SYSTEM

Project #: 27047.40
Project Name: KAUST CMOR MEP Reviews HAPCO

RGV Ref. #: 96047
Submittal #:
External #: CMOR-MEP_21-037
Spec Division:

To: Yulia Burakova
R.G. Vanderweil
274 Summer Street

Boston, MA 02210

From: Yulia Burakova
R.G. Vanderweil
274 Summer Street

Boston, MA 02210

Delivery Method: FTP Link
Tracking #:

Description: Product Data

Date In: 8/26/2013 12:00:00 AM
Date Out: 8/28/2013 12:00:00 AM

Stamp: Approved: Final unrestricted release. The Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance. This action only applies when there are no marks on the submittal.

Comments:

1	Hani Mardini	This submittal response only applies to KAUST CMOR MEP package.

REQUEST FOR TECHNICAL SUBMITTAL APPROVAL

ارامكو السعودية
Saudi Aramco

TO:	Saudi Aramco KAUST Campus Division KAUST & THUWAL PROJECTS DEPARTMENT Room No-14, Bldg- 103, SAPMT Site Office Thuwal Jeddah, Saudi Arabia	BI/JO No.	25-00002-00006
		CONTRACT No.	6600028705
ATTN:	Mr. Abdulrazag A Hasani, Sr. Project Engineer	PROJECT TITLE	CMOR/LSS
CC:	Mr. Ather A Sultan Mr. Zahrul H Mujib	LOCATION	KAUST, THUWAL, JEDDAH, SAUDI ARABIA
FORM:	HAPCO Jabeer Street, behind Pizza Hut,Al Malaz P.O. Box: 3488, Riyadh: 11471, Kingdom of Saudi Arabia Tel. No.: +966 -1- 4770080 Fax No.: +966 -1- 4770141	Package	

No of Copies: 3

SPEC REF: 21 10 00

DIV No: 21

SECTION No:

DRAWING REFERENCES:
-

APPLICABLE SAMSS/INSP
-

SAES
-

SUBMITTAL CODE
- A ☐ Architectural
- C ☐ Civil
- S ☐ Structural
- M ■ Mechanical
- E ☐ Electrical
- I ☐ Instrumentation
- O ☐ Others

New Submittal ■ Re-Submittal ☐	SUBMITTAL NO.	DATE	REVISION NO	LEVEL OF INSPECTION	175 Form No	DUMMY P.O.NO	HOK Project Specification No
	21-037	22-Aug-23	0	N/I	N/A	-	

SN	BRIEF DESCRIPTION QTY & ISSUE UNIT	CCC/9COM	MFTR.NAME / PLANT I.D. NO/ ADDRES	LOCAL VEBDIR REP. ADDRESS & I.D. NO	(FOR SAUDI ARAMCO USE ONLY) REVIEW/COMMENTS/APPROVAL/ACTION
1	GROOVED END FITTINGS FOR FIRE PROTECTION SYSTEM		MECH	Future Mechanics Trading Est. P.O. Box 28027- Riyadh 11471, K.S.A. Tel. +966 11 478 4242, Fax: +966 11 472 9591	☐ No Objection ☐ No Objection as noted ☐ Correct & Resubmit ☐ Rejected Approval is only for general conformance with the contract documents. Such review does not relieve the contractor for its responsibility under the terms of the Contract nor authorized additional compensation.

Reviewed by:	Reviewed by:	Approved by:	Approved by:	Approved by:
Mohammed Ghazi HAPCO Procurement Engineer	Arman Magalang HAPCO QA/QC Manager	Amin Musleh /Kamal Haddad HAPCO Project Director	Manasan, Jose B Project Material Specialist	Abdulrazag A Hasani, Sr. Project Engineer
Date	Date	Date	Approved by: Ather A Sultan Project Engineer	

☒ Approved ☐ Approved as Noted – Resubmit Record Copy ☐ Approved as Noted ☐ Rejected	Project # 27047.40 Submittal # 21-037
This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations. Approval of a specific item shall not include approval of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.	
Date 28/08/2013 By JC R.G. Vanderweil Engineers, LLP	

COMMONWEALTH OF MASSACHUSETTS
DEMETRI TSATSARONES
FIRE PROTECTION
No. 41472
REGISTERED PROFESSIONAL ENGINEER

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 STEEL PIPE AND FITTINGS

A. Threaded-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795M, ASTM A123M hot-dip galvanized where indicated and with factory- or field-formed threaded ends.

1. Malleable-Iron Threaded Fittings: ASME B16.3.

2. Gray-Iron Threaded Fittings: ASME B16.4.

3. Steel Threaded Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, seamless steel pipe. ASTN A123M hot-dip galvanized where indicated. Include ends matching joining method.

4. Steel Threaded Couplings: ASTM A 865, ASTM A123M hot-dip galvanized where indicated.

B. Plain-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795.

1. Steel Welding Fittings: ASTM A 234/A 234M, and ASME B16.9 or ASME B16.11.

2. Steel Flanges and Flanged Fittings: ASME B16.5.

C. Grooved-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795 with factory- or field-formed, square-cut- or roll grooved ends. ASTM A123M hot-dip galvanized where indicated.

1. Grooved-Joint Piping Systems:

a. Manufacturers:

(1). Anvil International, Inc.
(2). National Fittings, Inc.
(3). Victaulic Co. of America.
(4). Ward Manufacturing.

b. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.

c. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves, rubber gasket listed for use with housing, and steel bolts and nuts. Flexible type may be utilized for concealed and non-finished area applications where required for seismic accommodation.

2.3 CORROSION RESISTANT EPOXY EXTERIOR COATING FIRE SPRINKLER AND STANDPIPE SYSTEM MATERIALS:

A. Pipe: Comply with "Steel Pipe and Fittings" as specified in this section except as modified herein.

B. Fittings: Comply with "Steel Pipe and Fittings" as specified in this section except as modified herein.

A-IN-1652

Kingdom of Saudi Arabia
Security Planning and Development Agency - KAP4 Project

PROGER

Ministry of Interior	PROGER Engineering & Management	Al Arrab Contracting Co Ltd

Project Name:	General Directorate for Special Security Forces	Submittal No.	Rev.
Project No.:	117	KAP4 - MAT - 117 - BXXX - ME - 0079	0
To:	PROJECT DIRECTOR - PROGER HEAD OFFICE	Date: 17-Dec-2014	Contractor's

Document / Material Submittal

For No of Submittal(1 to5), submittal No(s) written(0063,0064,0065,0079 and 0082)

Discipline: [ ] Civil [ ] Arch [ ] Struc [x] Mech [ ] Elec

Submitted For: [x] Approval [ ] Information [ ] Review [ ] Site Use

Attachments: [ ] Sample [ ] Catalogue / Manuals [ ] Compliance Cert. [ ] Manufacturer Data & Specification [ ] Drawings/sketch [ ] Procedures [ ] Spare Parts List [ ] Calculation Sheet [ ] Others/Specify (Prequalification)

Item Description	No. Submittals	5
FIRE FIGHTING SYSTEM	Submittal No.	4 of 5

Copies	Document; Material Description	Reference Specs #
1	FIRE FIGHTING SYSTEM GROOVED FITTINGS	15300
		Reference BOQ #
		15300.001

Supplier Data

Name:	FUTURE MECHANICS TRADING EST
Address:	RIYADH - 0114764242

Manufacturer Data

Name:	MECH
Address:	CHINA
Samples	Grooved Fittings
Samples Description	
Remarks:	

To be used for:
MB, GH, KD, WO1, CW, WO2, WO3, WO4, WB, MO, GA11, GA12, GA13
SB11, SB12, UB, GA, MV, ER11,ER12, ER21, ER22, ER31,ER32, SP, PS

Engr. Farhan H. Al-Shammari
Program Director

For Contractor: (Name / Title / Signature / Stamp)

Engineer's Rep. to enter Action Codes, Remarks and return to Contractor.

Remarks: 1. All Ductile Iron fittings shall be UL & FM approved with pressure responsive Gasket, and shall be compatible with pipe size and according with ASTM standard.
2. Provide an original third party test report,Original origin and warranty certificates.
3. Provide Mill Certificate showing that Materials are manufactured to best quality and compliance with required standards.
4. Follow strictly Project Specification and Manufacturer recommendation during installation.

LH

Action: [A] APPROVED AS SUBMITTED [B] APPROVED AS NOTED [C] REVISE AND RESUBMIT [D] REJECTED [E] FOR INFORMATION

For Engineer's rep. Review By:			Supervisor/Manager:		
Engr. A Desdoki		24-dec-2014	Engr. F Dahlanki		24-DEC-2014
Name:	Signature:	Date:	Name / Title	Signature / Stamp	Date

CI "Civil", ST "Structure", AR "Architecture", ME "Mechanical", EL "Electrical", DOC "Document", MAT "Materials", SUB "Sub-contractor", SUP "Supplier", MAN "Manufacturer"

Uploaded in PCM

24-12-14

Kg:23Models 06 Documents/Materials Submittal

KINGDOM OF SAUDI ARABIA
Technical and Vocational Training Corporation
(224)العينات

المملكة العربية السعودية
المؤسسة العامة للتدريب التقني والمهني
الادارة العامة للمباني (٢٢٤)

الرقم : ٤٢/ ١٢١٦١٣ التاريخ : ٩/ ٨/ ١٤٣٥هـ المشفوعات :

اعتماد عينات

اسم المشروع : إنشاء مبنى التدريب الالكتروني بالكلية التقنية بتبوك

المادة المقدمة : رشاشات وعلاقات مواسير الحريق

اسم المورد/المصنع : GLOBE – MECH – WEICCO

المكرمين / مكتب اد للهندسة المحترمين

ص ب : ٩٣١٥٥ الرياض : ١١٦٧٣ فاكس :٢٠٥٩٧٧٧

بالإشارة لخطابكم رقم (٤٥/ش ٢٦) بتاريخ ١٤٣٥/٧/٢هـ

بخصوص تقديمكم المواد أعلاه

نفيدكم بالتالي :

❖- لامانع من اعتماد اكسسوارات شبكة الحريق على النحو التالي :-

المادة المقدمة	الموديل	ملاحظات
رشاشات الحريق GLOBE	G L 5651	١- ان تكون جميع مكونات المرشات معتمدة من UL/FM ٢- تكون المرشات باللون الاحمر لجميع المساحات وباللون الاخضر لمنطقة المطابخ
علاقات المواسير MECH	.....	تقديم مايفيد حصول المنتج على UL/FM
حوامل المواسير WEICOO	.....	يعاد التقديم مع ارفاق كتالوج للمادة المقدمة

- يلزم تنفيذ اعمال مكافحة الحريق من قبل شركة متخصصة وتقديمها للاعتماد ولن يعتد بها الخطاب مالك يتم ذلك ويتحمل الاستشاري كامل المسئولية في حال التنفيذ بالموقع .
- التوريد والتنفيذ حسب متطلبات الدفاع المدني والمخططات المعتمدة ومواصفات المشروع وجداول الكميات و NFPA .
- تقديم باقي مكونات شبكة الحريق للاعتماد قبل التوريد والتنفيذ .
- على الاستشاري تحديد جميع الموديلات المقدمة مع كتابتها في الخطاب المقدم للمؤسسة العامة للتدريب التقني والمهني مع التأكد من المكونات الداخليه للمعاملة قبل رفعها الينا .

وتقبلوا تحياتي ...

نائب رئيس لجنة العينات

فهد بن حمد العقيل

المقاول	المالك	الاستشاري
شركة انواركو للصيانه والمقاولات	شركه العنايه المبتكره	دار ليمار للانشاء والاعمار المحدوده

المشروع : عيادات الورود

طلب اعتماد

التاريخ : DEC-2014- 17

طلب اعتماد رقم :1

المرفقات: عينات قطع توصل سمن وجروف ماركه MECH& BMI

العمل المتعين التحقق منه

اعتماد ☑ | القسم : معماري ☐ ميكانيكا ☑

إعادة اعتماد: ☐ | مساحي ☐ كهرباء ☐

طلب الاعتماد السابق رقم : | إنشائي ☐ أخرى ☐

م	عدد النسخ	رقم اللوحه	اسم اللوحه	كود الاعتماد
1	1	1	عينات شركة المستقبل	
2				
3				

المقاول : شركه انواركو | مدير المشروع / م محمود ابوزيد التوقيع: | الاستشاري م/ علاء تكريتي التوقيع :

تم الفحص بواسطة :

- ☐ معماري
- ☐ مدني
- ☐ إنشائي
- ☐ كهرباء
- ☑ ميكانيكا
- ☐ مساحي
- ☐ مواد
- ☐ أخرى

ملاحظات الاستشاري :

تحتوي مراعاة المواصفات الفنية وتقديم عينات وسبل التوريد

كود الاعتماد:

- A ☐ يعتمد
- B ☑ يعتمد مع ملاحظات
- C ☐ غير معتمد

مشرف المشروع م/ محمد عبدي

التاريخ

استلام من طرف المقاول

التوقيع: م/ محمود ابوزيد

التاريخ 17/12/2014

استلام من طرف الاستشاري

التوقيع: م/ علاء تكريتي

التاريخ 17/12/2014

شركة انواركو للصيانة والمقاولات
قسم إدارة المشاريع
ت: ٠١١٢٨٦٦٦١٢
تحويلة: ١٠٤

Contractor:	Project:	Consultant:	MEP Contractor:	Submittal No.:
EFCO EARTH FOUNDATION COMPANY	Al Ghadeer Hotel AL GHADEER HOTEL	CONSOLIDATED CONSULTANTS CONSOLIDATED CONSULTANTS	East Prince Contracting EAST PRINCE CONTRACTING	MAT-FF-20-00 Date: 21/02/2015

SUBMITTAL OF MATERIALS

1. MATERIAL DESCRIPTION: Ductile Iron Grooved Fittings for Fire Fighting & HVAC System

Type of Document:-
Catalogue, with product description, approvals, licenses & legal documents

Area of Application: All Project
Drawing Ref. :
Specification Ref. : 15310

Attached all relevant technical literature marked to identify relevant description, current Test Certificates, samples as appropriate.

2. MANUFACTURER/SUPPLIER :
Company Name : Jinan Melde Casting Co.
Address : Riyadh, KSA
Local Agent : Future Mechanics Trading Est.

3. DELIVERY :
Country of Origin : China

Delivery : Ex-works/ Total Duration
Estimated Time of Arrival on Site
Program : Date Material Required on Site
Latest Date for Order

We certify that the above submitted items have been reviewed in detail and are correct and in strict conformity with the contract drawings and specifications except as otherwise stated; also that the material sources indicated above have been reviewed in detail and that they will supply the submitted items in conformity with the above and deliver same timely.

Submitted by :
Sr. Mechanical Engineer (East Prince): Signature:
Technical Office Manager : Signature: eng: Amr Ghazal
Project Manager : Signature:

4. ENGINEER's COMMENT: Code (B)

- The supplied materials must be satisfaged the specs. section no: 15310
- All fittings shall be UL & FM approved
- Provide orginal country of origin and warranty certificates
- Provide samples for the materials.

Signature: DATE 22/2/2015

Engineer Stamp

22/2/2015

فرحات للاستشارات الهندسية
FARHAT URBAN CONSULTANTS

اسم المشروع / كلية طب الاسنان بابين – جامعة جازان
الموضوع بخصوص /اعتماد قطع حديد لشبكة مكافحة الحريق (grooved fittings)
تحريرا في :- ٢٢/٦/٢٠١٥م

سعادة الدكتور /المشرف العام على إدارة المشاريع – جامعة جازان المحترم

عناية المهندس / محمد حكمي المحترم

تحيه طيبه وبعد ،،،،

بالاشاره الى الموضوع عاليه وبالاشاره إلى خطاب المقاول رقم (JZ-DC-H-001) بتاريخ ١٩/٦/٢٠١٥م والمتضمن طلبه اعتماد مورد لقطع حديد شبكة مكافحة الحريق (Grooved fittings) وبدراسة ملفات الموردين (عدد ٣) المقدمين من قبل المقاول وهم

١- شركة عالم المقاولات المصنع (SPT)
٢- المؤسسة الشاملة المتطورة للتوريدات الصناعية المصنع (Docco)
٣- مؤسسة مستقبل الميكانيكا للتجارة المصنع (MECH)

نحيط سعادتكم علما بانه بعد مراجعة ملفات الموردين عاليه نرى الاتى :-

أ- اعتماد مؤسسة مستقبل الميكانيكا للتجارة المصنع (MECH) كتفضيل اول
ب- اعتماد شركة عالم المقاولات المصنع (SPT) كتفضيل ثاني

مع الالتزام بالاتي :-

١- تقديم عينات للاعتماد قبل التوريد وشهادة بلد المنشأ والاختبارات على ان لا يقل ضغط التشغيل للقطع عن 300 PSI
٢- ان تكون علامة UL /FM بارز على جسم القطع ويجب استخدام مانع تسرب EPDM درجة E كود لونى اخضر

ونرفع الأمر لسيادتكم لاستكمال إجراءات الاعتماد والتوجيه بما ترونه مناسب ،

وتفضلوا بقبول تحياتى ،،،،،

مهندس الميكانيكا الاستشاري
23/6/2015
م/ جابر سليم ضاحى

مدير المشروع الاستشاري
٢٢/٦/٢٠١٥
م/ إبراهيم القزاز

المرفقات : الملفات التاهيليه والسير الذاتية لعدد (٣)موردين
صوره من خطاب المقاول

هاتف: ٤٧٦١٣٤٤
فاكس: ٤٧٦٣٣٩٦
كلية
جازان

المملكة العربية السعودية
وزارة الشؤون البلدية و القروية
أمانة منطقة القصيم
أمانة منطقة القصيم

الموضوع : اعتماد م

إدارة المشاريع الخاصة

المشروع : توريد وتركيب نظام إطفاء الرش الآلي بمركز الملك خالد الحضاري

السادة / شركة اليوسف للسلامة وانذار الحريق

السلام عليكم ورحمة الله وبركاته ....

إشارة إلى مشروع توريد وتركيب نظام الرش الآلى لاطفاء الحريق بمركز الملك خالد الحضارى رقم ١٩/٠٨/٠٠١/٠٦٠٧/٩٩/٠١/٤ مقاولتكم وإلى خطابكم رقم ١٥/٠١١ بتاريخ ١٤٣٦/١٠/٥هـ بخصوص التقديم الفني لإعتماد مكونات شبكة الأطفاء للمشروع:

حيث قامت اللجنة بدراسة التقديم الفني للمواد المقدمة من قبل المقاول وتم الإتفاق على إعتماد :

١- محبس الأختبار والتفريغ انتاج شركة AFG حسب الأقطار بالمخططات .
٢- صندوق الحريق صناعة شركة SFFECO موديل اس اف ٦٠٠ اس .
٣- شركة BELDEN لتوريد كابلات نظام الأنذار المبكر للحريق
٤- IRON PIPE FITTINGS إنتاج شركة MECH .
٥- GROOVED FITTINGS إنتاج شركة MECH .

ورفض المواد التالية مع إعادة التقديم الفنى لكل من :-

١- وصلة الدفاع المدنى
٢- Air Release valve

ويلزم إرفاق الكاتلوجات وإعادة التقديم الفني للمواد الأتية :

١- مواسير UPVC SCH٨٠
٢- ارمتكس
٣- قفيد هنقر

.... و السلام عليكم ورحمة الله وبركاته ....

مدير إدارة المشاريع الخاصة

١٠/١٩

عبدالسلام بن صالح العميم

المملكة العربية السعودية
وزارة المالية
مصلحة الجمارك العامة
الشؤون الفنية والمعلومات
الإدارة الهندسية / الإشراف ومتابعة تنفيذ المشاريع

www.customs.gov.sa

رقم الصادر ٢٠٢٤٢
تاريخ الصادر ١٤٣٦/٠٣/٢٩
المرفقات بدون

سجل الجمارك ٧٠٠٠٨٧٤٣١٨

(١٨٤)

الموضوع: مشروع مبنى النافذة الواحدة بجمرك الرياض

عاجل يرسل بالجهاز ٠١/٤٨٢٥٩٨٩

السادة مكتب الفوز للاستشارات الهندسية
ص . ب (٥٥٥٣٤) الرياض (١١٥٤٤)

السلام عليكم ورحمة الله وبركاته ...

إشارة إلى خطابكم رقم ٢٠١٥/١٥ وتاريخ ١٤٣٦/٠٣/٢١هـ والمبنى على خطاب المقاول رقم ٤٣٥/م ح/٢٠١٥ وتاريخ ١٤٣٦/٣/١٤هـ والمتضمن طلب اعتماد مواد نظام مكافحة الحريق لمشروع مبنى النافذة الواحدة بجمرك الرياض- الميناء الجاف وحيث تمت مراجعة الكتالوجات الخاصة بنظام الحريق(المرفقه بخطابكم) من قبل المختصين بالإدارة الهندسية وتبين مناسبة اعتماد الآتي :-

م	العينة	الشركة المعتمدة	ملاحظات
١	مواسير الحريق	SSP	
٢	نظام التوصيل	BENKAN-MECH	
٣	رشاشات الحريق	GLOBE	
٤	صناديق وطفايات الحريق	SFFECO- MODEL SF 600S عاطس	
٥	نظام الغاز FM200	SFFECO	
٦	وصلة الدفاع المدني	LIFECO	
٧	مجموعة وحدات تحكم الرشاشات		
-	GATE VALVE	MULLER	
-	CHECK VALVE	UNTTED BRASS	
-	FLOW SWETCH	POTTER	
-	TAMPER SWETCH	POTTER	
-	PRESSURE GAUGE	AGF	
-	TEST AND DRAIN	AGF	

عليه...نأمل العمل سريعاً على إكمال اللازم على أن يكون التنفيذ طبقاً للمواصفات الفنية وجداول الكميات وأصول الصناعة عند التركيب وحسب تعليمات المهندس المشرف على المشروع بالموقع واشتراطات الدفاع المدني... وتقبلوا تحياتنا .

مدير عام الإدارة الهندسية المكلف

م/ياسر بن سرور البلال

٢٣٧

FARE CONSTRUCTION

E

MATERIAL SUBMITTAL FORM

Project : **Kaleej Mall**

Subject : Fire Fighting Grooved Fittings, Threaded Fittings

Discipline:

☐ Arch ☐ Civil ☒ Mech ☐ Elect. ☐ Gen.

Specs Code & Ref:	BOQ Code Ref	Drawing Ref		
			☒ New Submittal ☐ Re-Submittal	Ref. Submittal # 12 1st Sumittal Date: Previous Sub Date: Present Sub. Date: 10/9/2015

Manufacturer

Name : MECH
Address :
Phone :
Fax :

Supplier/ Agent

Name : DOMATHAH CO. (Sub-contractor)
Address :
Phone :
Fax :

Information attached and Submitted:

Certificates	☐	Operation & Maintenance & Manual	☐
Technical Brochure	☒	Spare Parts	☐
Manufacturer's Data & Specs	☒	As Built Drawings	☐
Shop Drawings	☐	Warranty	☐
Samples	☐	Others (specify)	

Initiator Comments:

These materials will be supplied by our sub contractor.

☐ see attachment

Technical Department Comments: JINAN Fitting for threaded connection and Grooved to be all UL-FM approved as submitted.

☐ see attachment

Designers Comments:

☐ see attachment

Status:

A ☐ Approved B ☑ Approved as Noted C ☐ Revised and Re-submit D ☐ Rejected E ☐ No Action

	Sign and Date	Initiator	Technical Department	Designers
Arch ☐		Name :	Name : Nazeem A	Name
Civil ☐				
Mech ☒		Sign :	Sign :	Sign
Elec ☐				
		Date : 10-Sep-15	Date : 14-9-15	Date

10/9/2015

PROCUREMENT
14 SEP 2015
RECEIVED

Frank 14/09/15

Domathah For Trading & MEP Contracting	FARE Construction Member of Fawaz Alhokair	
SUBMITTAL FORM NO.:12	**Al-Khaleej Mall Project**	PROJECT REF. :

SUBMITTAL FORM (MATERIALS)

SUBJECT: **FIREFIGHTING MATERIALS SUBMITTAL**

Discipline: ✓ Mech. O Elect. O HVAC

Specs. Code	B.O.Q Code Ref.: 15C(7)	Submittal:	
		✓ New submittal	1st sub date: ..... Present sub date: **10 .Sep. 2015**
		O Re-submitted	Previous sub date: .....

ITEM #	DOCUMENT NUMBER	TITLE	REV	APPROVED CODE	SUBMITTAL SCHEDULED DATE
2	MECH-001	Firefighting Grooved Fitttings - MECH	Rev.00		
3	MECH-001	Firefighting Threaded Fitttings - MECH	Rev.00		

Contractor's Comments:

See Attachment ✓

Note: **This review does not relieve the contractor of his responsibilities under the terms of the contract nor authorize additional compensation.**

Contractor Signature : Eng. Ali Hamza Date: 10/09/2015

Consultant's Comments:

See Attachment O

Status Code:	A ☐ Approved	B ☐ Approved as noted	C ☐ Revise and submit.	D ☐ Rejected	E ☐ No Action

Sign & Date	Consultant		
O Mech	Sign: ___		
O Elect.	Date: ___		
O HVAC			

Consultant:	Owner :	Contractor :	
TALAL TAHER TTC CONSULTING ENGINEERS & ARCHITE RIYADH TEL. 4728612 - 4729594 FAX. 4 EMAIL: genmail@ttc-engdev.com Talal Taher Consulting Engrs & Archt. Riyadh, KSA	unicharm Project: Construction of Industrial Complex Unicharm Gulf Hygienic Industry Ltd. Al Kharj Rd. Riyadh, KSA	Methaq Contracting Co. Methaq Contracting Co Riyadh, KSA	Sodee MEP Riyadh, KSA

SHOP DRAWING/METERIAL SUBMITTAL FOR APPROVAL

REF. NO M E C H 3 6 Date : 1 2 1 0 2 0 1 5 ■ New Submittal ☐ Resubmittal

☐ Architectural ☐ Electrical ☐ Civil ☐ Furniture/Equipment
☐ Structural ■ Mechanical ☐ Interior Design ☐ Others

Specs. No.
Dwg. No

Description	Manufacturer / Supplier	No. of catalogue/Sample/Drgs	Code
1. MATERIALS SAMPLES OF FIRE FIGHITNG SYSTEM/ FACTORY BUILDING . → 1 FIRE FIGHTING MECHANICAL FITTING (MECH) / FU-MECH **********			A B C D

■ Catalogue ☐ Drawings ☐ Sample ■ Certificate ☐ Calculation ■ Document

Having checked this submittal, we certify that it confirms to the requirments of the contract document in all respects except as otherwise indicated herein.

Project Manager / QA/QC Head ENGR. SOBHY ABBAS
Methaq Contracting Co.

Received by :

Name : غالب Date : ١٥/١٠/١٢ Signature :

Remarks / Comments :

مع التركيب وفقه أصول الصناعة

Status A Approved ☐ C Rectify as noted resubmit ☐ N No Action
B Approved as noted ☐ D Disapproved

CONSULTANT (Talal Taher Consulting Engineers and Architects):

17-10-2015

Date | Name & Signature of Engineer | Project Manager

RETURNED TO CONTRACTOR: (Methaq Contracting Co.)
Received By:

Date | Name & Signature of Engineer | Project Manager

Consultant	Ministry of Health	JV – Sharqawi Co. & Hail Company
المختص The Specialist	وزارة الصحة	شركة الشرقاوي Sharqawi Co. شركة ميفت Hail Company

PROJECT No.
PROJECT NAME: KING FAHAD CENTRAL HOSPITAL – JAZAN

LOCATION: JAZAN SAUDI ARABIA

PAGE 01 of 01

DOCUMENT TRANSMITTAL / SUBMITTAL

المستندات المقدمة

Ref. No : رقم :

Submittal No : BL023SR – M – 028R3

Date : 09-09-2015 تاريخ :

☐ New Submittal ■ Re – Submittal

DISCIPLINE:
☐ CIVIL ☐ ARCHITECTURAL ☐ STRUCTURAL ☐ HVAC ■ PLUMBING ☐ ELECTRICAL ☐ MEDICAL EQUIP

ENCLOSURES مرفقات

Drawings	مخططات	☐ Sample	عينة ☐	Test Data	☐	بيان اختبار
Material Submittal	مواد	■ Sketch	مخطط ☐	Schedules	☐	جداول
Catalogs	كتالوج	☐		Report	☐	تقارير
Mfg. Cert	[illegible]	☐		Clarifications	☐	توضيحات
Specifications	مواصفات	☐		Others	☐	اخرى

Items # رقم البند	Drwg. No. رقم المخطط / Specs. No رقم المواصفة	Rev. رقم المراجعة	Description بيان	No. of Cop عدد النسخ	Act. Code رمز القرار
			FIRE FIGHTING TECHNICAL SUBMITTAL AL - ALAMEYA		
	MANUFACTURE	CERTIFICATE	MATERIAL	2	B
1	MECH	UL/FM	GATE VALVE & SWING VALVE OS & Y VALVE		
2	RECOMB	UL/FM	GROOVED FITTING		
3	MECH	UL/FM	THREADED FITTING		

Specification & B.O.Q ☐ As Per Attached

Location / Use

These submitted documents are in strict conformity with the design drawings & the specifications minor deviations are indicated in the submitted documents. All aspects of associated works have been considered and coordinated.

الوثائق المقدمة مطابقة للتصاميم المعتمدة وهي الاشارة الى اي اختلافات بها مع الاخذ في الاعتبار التنسيق بين جميع التخصصات المشتركة بالاعمال

Disciplined by (Contractor)	Project Manager - Contractor
Name: Engr. Muheet – Ur - Rehman	Name: Engr. Hamada Hamedy
Signature & Date:	Signature & Date:

Consultant Review & Comments:
SUBMIT SAMPLES FOR MOH FINAL APPROVAL

10/9/15

Project Manager - Consultant

Signature & Date

Approved by (MOH) قرار وزارة الصحة

لا مانع من الاعتماد حسب المواصفات والشروط وحسب تعليمات الاستشاري والالتزام بتعليمات الدفاع المدني

Signature & Date

Action Codes: رمز القرار

(A) Approved (موافق) (B) Approved as noted (موافق بالمطلوب) (C) Revised & Re - Submit (معدل و مقدم ثانية) (D) Rejected (مرفوض)

Rcd. 17/09/15

TO:	MINISTRY OF DEFENSE MEDICAL SERVICES DIRECTORATE ENGINEERING WORKS DEPARTMENT PROJECT SECTION	PROJECT NO	9/4/78	FROM (CONTRACTOR):
		PROJECT NAME:	CONSTRUCTION OF MEDICAL CENTER AFH JAZZAN	

CONTRACT No.:	28/1433/8/ /23	FIRST SUBMISION ☑	TRANSMITTAL No.:	DATE	SHOP DRAWINGS / MATERIAL SUBMITTAL NO
SPECIFICATION No.:		RE-SUBMISION ☐	PREVIOUS TRANS.No.:	12/11/15	MT/MECH/ 037

1. WE TRANSMIT FOR APPROVAL THE FOLLOWING ITEMS:

ITEM No.	DESCRIPTION OF ITEM SUBMITTED	MANUFACTURER OR CONTRACTOR CATALOG CUT DRAWING OR BROCHURE NUMBER	No. OF COPIES	SPECIFICATION PARAGRAPH NUMBER	DRAWING SHEET PLATE OR TITLE NUMBER	ACTION CODE
	APPRVAL OF MANUFACTRUER / SUPPLER OF FIREFIGHTING VALVES, GROOVE FITTINGS , MALLEABLE FITTINGS					
	MANUFACTURER / SUPPLIER	COMPANY PROFILE + DATASHEET	9	15,365		B
1	FUTURE TECHNICS TRADING EST / A.S.ALSAYED & PARTNERS CONTRACTING CO	SAMPLES	6			B
	P.O.BOX 28027 RIYADH 11437					
	TEL +966 114784242					
	FAX +966 114729595					

2. REMARKS:

The manufacturer is offering better delivery of Tanks which meets the Project Delivery Schedule

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with all the requirements of the contract except as otherwise stated herein.

NAME, TITLE AND SIGNATURE OF CONTRACTOR	DATE
ENGR. DIAA BADAHA , CENTRAL PROJECTS MANAGER	12/11/15

3. ENCLOSURE RETURNED:

NAME, TITLE & SIGNATURE OF APPROVING AUTHORITY	DATE
CAPT.ENGR. HAMED BIN SALEH AL ROBIAN, PROJECT ENGINEER	12/11/15

ACTION CODES: THE FOLLOWING CODES ARE GIVEN TO ITEMS SUBMITTED:

A = APPROVED AS SUBMITTED

B = APPROVED EXCEPT AS NOTED ON SUBMITTED ITEM. RESUBMISSION NOT REQUIRED

C = APPROVED EXCEPT AS NOTED ON SUBMITTED ITEM. REFER TO ATTACHED SHEET. RESUBMISSION REQUIRED (Provisional approval/confirmation is not required to proceed).

D = WILL BE RETURNED BY SEPARATE CORRESPONDENCE

E = DISAPPROVED, SEE ATTACHED SHEET

F = SEE COMMENTS ON ATTACHED SHEET

G = RETURNED WITHOUT ACTION. SEE ATTACHED SHEET

KINGDOM OF SAUDI ARABIA MINISTRY OF DEFENSE MEDICAL SERVICES DIRECTORATE ENGINEERING WORKS DEPARTMENT PROJECT SECTION	PROJECT NO:	9 / 4 / 78		TO: CONTRACTOR الحسين مؤسسة خالد صالح الحسين للمقاولات K-AL-HUSSEIN CONT. EST.	
	PROJECT NAME:	CONSTRUCTION OF MEDICAL CENTER - AFH - JAZZAN			
	SUBMITTAL NO.:	MT/MECH/037	1ST	CONTRACT. NO.	29/1433/8/B/23

ENGINEERING REVIEW COMMENTS — DATE: 18/11/2015

ITEM No.	DRAWING / MATERIAL TITLE	COMMENTS	ACTION CODE
1	PREQUALIFICATION OF MANUFACTURER / SUPPLIER FOR FIRE FIGHTING VALVES, GROOVE FITTINGS, MALLEABLE FITTINGS *(Company Profile / Data Sheet / Samples)* *Manufacturer / Supplier:* FUTURE MECHANICS TRADING EST. / A.S. ALSAYED & PARTNERS CONTRACTING CO.	MECHANICAL: Engr. Shaik Muhammad Zubair 18/11/15 1. **FUTURE MECHANICS TRADING EST** approved as manufacturer/supplier for fire fighting valves, groove fittings & malleable fittings only for this project, hence submitted company profile/data sheet and sample board is approved as submitted. 2. Refer to approved layouts, boq and specifications for size, type and other details. 3. Jobs to be carried out as per NFPA standards as per approved shop drawings/specifications/boq. ARCHITECTURAL: No comment. CIVIL/STRUCTURAL: No comment. ELECTRICAL: No comment. COMMUNICATION: No comment.	"6"

LEAD ENGINEER	HOU TECHNICAL REVIEW	HOU PROJECT COORDINATION	PROJECT OFFICER / ENGINEER	HEAD OF SUBMITTAL & APPROVAL SECTION
Signature & Date 18/11/15	Arch. Nisar Dastgir Signature & Date 18/11/15	Engr. Afaq Mohd. Khan Signature & Date 18/11/15	Capt. Engr. Hamad Saleh Al Roblan Signature & Date 18/11/15	Engr. Mishal Saad Al-Hameed Signature & Date 18/11/15

شركة الاتحاد الهندسي السعودية
خطيب و علمي
Saudi Consolidated Engineering Company
Khatib & Alami
License No. 323/22/72 رقم الرخصة ٣٢٣/١٢/٧٢

Our Ref. RM-2015-L0230 الرقم :

Date 1437/02/05هـ
2015/11/17م التاريخ :

السادة :- شركة سيركون للمقاولات العامة المحترمين

عناية المهندس :- ماجد أبو جراد (مدير المشروع) المحترم

المشروع :- مشروع اسكان رماح - منطقة الرياض

الموضوع :- اعتماد عينة قطع التوصيل لزوم مواسير حديد سوداء مجلفن لنظام مكافحة الحريق

تحية طيبة وبعد ،،،

إشارة إلى الموضوع أعلاه و خطابكم رقم سيركون / 117 / 15 / 543 وتاريخ 2015/11/15م والمستلم بتاريخ 2015/11/15م بخصوص اعتماد عينة قطع التوصيل لزوم مواسير حديد سوداء مجلفن لنظام مكافحة الحريق ؛ نفيدكم باعتماد العينة المذكورة كود (B) مع مراعاة الملاحظات المدونة في نموذج التقديم .

ملاحظة : تم الإعتماد من الإستشاري مع حق الوزارة بتعديل أي مما سبق حسب الحاجة والرؤية الفنية شرط الا يتعارض ذلك مع الشروط الخاصة والعامة للعقود .

Vichar
Fah

مع خالص التحية،،،

مدير المشروع

م/ عامر عرنوس

شركة الإتحاد الهندسي السعودية
(خطيب و علمي)
مشروع إسكان رماح

المرفقات : أصل نموذج التقديم

المالك: | المقاول: سيركون CERCON

رقم المشروع: 1224 | الموقع: رماح

اسم المشروع: البنية التحتية لسكان رماح

تقـــــديم مواد

☑ تقديم جديد | رقم التقديم: MAT-CV 498 | رقم التقديم السابق:

☐ إعادة تقديم | تاريخ التقديم: 15/11/2015 | تاريخ التقديم السابق:

حالة التقديم: ☐ معلومات ☐ ملاحظات ☐ اعتماد

التخصص: ☐ مدني ☐ معماري ☐ الشاطئ ☐ تكييف ☐ صحي ☐ كهرباء ☑ أخرى

مرفقات: ☐ تقرير ☐ مخطط ☐ شهادة ☑ عينة ☐ مطبوعات فنية ☐ حسابات

مسائل / معدات

م	مادة	المصدر	المصنع/المورد	مواصفات قطاع	حالة الاعتماد
1	FITTINGS FOR FIRE FIGHTING: -Elbows -Tees -socket -victaulic couplings Rigid	MECH	FH-MECH	FIRE PROTECTION	(B)

ملاحظات المقاول

استشارات

مدير المشروع / المقاول

الاسم: م/ [illegible] أبو [illegible]

التوقيع:

التاريخ:

توصيات الاستشاري

تعتمد العينات كود (B) على أن يتم التوريد حسب المعتمد وحسب متطلبات التنفيذ في الموقع.

16/11/2015

مثل الاستشاري

الاسم: سيركون | التوقيع:

الوظيفة: سيركون | التاريخ: 11/11

مثل المالك

الاسم: | التوقيع:

الوظيفة: | التاريخ:

حالة الاعتماد

☐ A معتمد | ☐ L يعتمد بملاحظات مع إعادة تقديم | ☐ F غير معتمد

☐ B يعتمد بملاحظات دون إعادة تقديم | ☐ D مرفوض

وارد	التوقيع	مصادر	التوقيع
	التاريخ		التاريخ

28.07.2015

RECEIVED

طلب الموافقه على مصنع / شركه / مورد

APPLLACATION FOR SUPPLIERSAPPROVAL

M. O. H — وزارة الصحة

PROJECTS & MAIN. DEPT. EASTREN PROVINCE — المشاريع والصيانة – صحة الشرقية

اسم المشروع : انشاء مبنى طب الاسنان التخصصى بالقطيف (سعة ٥٠ عياده)				REQUESTNO . رقم الطلب M.E.9	
الاستشاري :مكتب الفوز للاستشارات		المقاول : مؤسسة أحمد محمد فلقى		DATE OF SUB. تاريخ تقديم العينه 28/7 /2015 م 11/ 10 /1436 هـ	
				تقديم رقم (١)	إعادة تقديم رقم ( )
مواصفات فنيه		موردين	عينات	رسومات تنفيذيه	نوع التقديم
Location مكان الاعتماد		S.TYPE: نوع الاعتماد:			
		fitting for fire fighting system (grooved)			
المبنى الرئيسى					
المملكه العربيه السعوديه	بلد المنشا (Origin)	S. Name	أسماء المصانع / الشركات / الموردين		
		1-NATIONAL 2-SHIELD 3- MECH			
مواصفات البند حسب العقد (SPEC . AS PER.CONSTRACT					
المواصفات المقترحه للبند(Proposed SPEC for item) باب (١٥) الاعمال / قسم (١٥١١)		Contractor name & signature: اسم وتوقيع المقاول Techinal.eng project manger م. محمد راغب م.شريف عمران			
Consaltant Engineers comments ملاحظات المهندس الاستشاري					
لا مانع من أعتماد نوعية NATIONAL كأختيار أول ونوعية MECH كأختيار ثاني					
M.O.H Engineers comments ملاحظات مهندسي الصحه					
يجب ملاحظة تطابق الابعاد مع المواسير المعتمدة في نظام الحريق					
DICISION OF M.O.H. قرار وزارة الصحه					
Approved				موافق	
Rejected				مرفوض	
Postponed				مؤجل	
مدير المشاريع بصحة الشرقية مهندس / ناصر أبو سرور				المهندس المشرف مهندس /	

CONSULTANT / الاستشاري: ARCHEN	المالك: وزارة الداخلية - إدارة الوزارة للتخطيط والتطوير الأمني	CONTRACTOR / المقاول: مجمع الشرق للمقاولات العامة المحدودة - HCIS - الرياض

PROJECT NO / رقم المشروع	PROJECT NAME اسم المشروع	HCIS - مبنى برنامج التطوير الفني	
Work Package / حزمة الأعمال		Area	Riyadh
Location/الموقع	Diplomatic Quarter	Discipline	

MATERIAL SUBMITTAL / تقديم مواد

Ref. No / رقم المرجع	HCIS-MT-ME-009-5			Rev. No.	00
Sub. To / الى التقديم	ARCHEN	Date / التاريخ	28-Jan-16	Contract No/ رقم العقد	

Material Description (One Item only per each form) / (وصف المواد (مادة واحدة لكل نموذج)

PAINTED GROOVED & GASKETED FITTINGS – "MECH"
To be used for fire hose cabinets and sprinkler system piping.
Pipe size≤50mm

☐ As Specification / حسب المواصفات
☐ Alternative/بدل

Drawing Ref / مرجع الخطط		B.O.Q Ref No / المرجع في جدول الكميات	
Specification Ref / مرجع المواصفات	15300 clause 2.1	Standards, BS, DIN / المعايير	UL,FM

(Attach all relevant technical literature marked to identify descriptions, current test certificate, sample etc.)
(أرفق كافة الوثائق الفنية لإيضاح الوصف و شهادات الاختبارات و العينات و غيرها)

MANUFACTURE / SUPPLIER / المصنع / المورد

Company Name / اسم الشركة : MECH	Local Manufactured / مصنع محلي : .....
	C.C.A.S.G Manufactured مصنع خليجي : .....
Address / العنوان : KSA	Production Period / مدة الانتاج: .....
	Delivery Ex-Works / تسليم الاصل السابقة : .....
	Total Delivery Time / مجموع الوقت للتسليم : .....
Local Agent / الوكيل المحلي : FU-MECH	Overland / الشحن البري : .....
	Sea Freight / الشحن البحري : .....
	Total Freight / مجموع مدة الشحن : .....
Programmed Date material required on site: التاريخ المبرمج للمادة لتتواجد بالموقع:	Expected date of arrival on site: التاريخ المتوقع للمادة لتتواجد بالموقع:

Contractor's Authorized Manager توقيع المدير المخول من قبل المقاول	Name/ الاسم : ENG. SOUHEIL KASSAB	SIGNATURE/التوقيع :
	Position الوظيفة : PROJECT MANAGER	DATE/التاريخ :

Consultant's Comments / ملاحظات الاستشاري :
(An approval does not relieve the Contractor of his obligations under the Contract and he shall be liable for all acts, defaults and negligence by the subcontractor/ الاعتماد لا يعفي المقاول من التزاماته بموجب العقد وسوف يكون مسؤولا عن جميع الأعمال والأخطاء والإهمال من قبل المقاول من الباطن)

Approval is subject to the following:-
- Provide compliance certificate with SASO standards.
- All supplied material should be UL, FM.
- Provide samples complying with the specs.

9-2-2016.

Status / الحالة	A - APPROVED معتمد	B - APPROVED AS NOTED معتمد بملاحظات	C - REVISE & RESUBMIT اعادة تقديم بملاحظات	D - REJECTED مرفوض
	☐	☑	☐	☐

Consultant's Representative ممثل الاستشاري	Consultant Project Manager مدير المشروع من قبل الاستشاري
Name / الاسم: Emad Anwar	Name/ الاسم : ENG. ESSAM EMARA
SIGNATURE / التوقيع :	SIGNATURE / التوقيع :
DATE/التاريخ : 9/2/2016	DATE/التاريخ : 10/2/2016

INCOMING / وارد	OUTGOING / صادر
DATE/ التاريخ : ARCHEN RECEIVED HCIS Project 01 FEB 2016 H/3:05	DATE / التاريخ : ARCHEN ISSUED 10 FEB 2016 H/8:46

شركة أفراس للتجارة والمقاولات	جامعة جازان	مركز تصاميم وبنيان للاستشارات الهندسية

SUBMITTAL FORM

مشروع كلية التربية للأقسام الأدبية - مجمع كليات البنات - صبيا

SABIA رقم المشروع	**MATERIAL FIRE FIGHTING(SYSTEM** طلب اعتماد مواد تركيب نظام مكافحة الحريق			
Raf & Code Specs.	B.O.Q Code Ref.	Drawing No. رقم المخطط	Submittal No. رقم الطلب	1
Copy No. عدد النسخ			Data Received تاريخ التقديم	23/1/2015
			Data Returned تاريخ الرد	

Contractor: المقاول							
Address العنوان	Riyadh (Head Office) الرياض						
Applicator:				Supplier: المورد			
Location: الموقع				Manufacturer: المصنع			
Address: العنوان				Address: العنوان			
Phone: التليفون				Phone: التليفون			
Fax: فاكس		Telex: تيليكس		Fax: فاكس		Telex: تيليكس	

Information Submitted and attached: تصنيف البيانات المقدمة والمرفقة

Work Sheet بيانات أعمال		Technical Data: بيانات فنية	
Company Profile ملف تعريف للشركة		Data Sheet: لوحة بيانات	
Pre-Qualifications		AS Built Drawing: المخططات الموقعية	
Sample عينات		Quotation: عرض أسعار	
Shop Drawings مخططات الورشة		BOQ: حصر كميات	
Method of Statement طريقة العمل		Partition Details:	

Contoractor's Comments: ملاحظات المقاول

	Signature التوقيع	Proj. Manager مدير المشروع
	٢٣/١/٢٠١٦	Eng.Waleed Al-Yousif

Consultant Comment's ملاحظات الاستشاري

لا مانع من الأعلى ... يتم وضع عينة لكل صنف من غرفة العينات

شركة أفراس للتجارة والمقاولات مشروع كليات البنات بصبيا

Status: حالة الطلب		Discipline		Sign & Date التوقيع والتاريخ	Resident Engineer المهندس المشرف
A- Approved معتمد			ARCH معماري		Sign التوقيع
B-Approved As noted معتمد مع ملاحظات			CIVIL انشائي		
C-Revise & Submit يعدل ويعاد التقديم			MECH ميكانيكي	٢٠/١/٢٠١٦	
D-Rejected مرفوض			ELECT كهرباء		
			HVAC		Date التاريخ
			LS		

مؤسسة ثبات التقنية للمقاولات

STCO STABLE TECH. CO.
ELECTROMECHANICAL SYSTEMS LOW CURRENT SYSTEMS

ت	البيان	الماركة	الموديل
1	صندوق خرطوم أطفاء حريق	HEBA	MO - V
2	صندوق طفاية حريق	HEBA	
3	طفاية حريق بودرة 6 كجم	HEBA	
4	طفاية حريق ثاني أكسيد الكربون 6كجم	HEBA	
5	صمام OS&Y مع صمام عدم رجوع	MUELLER	R2365-6305
6	وصلة الدفاع المدني SIAMESE CONNECTION	Giacomini	A95
7	LANDING VALVE 2.5"	Giacomini	A56
8	صمام بوابي OS&Y	MUELLER	R-2365-6
9	صمام عدم رجوع نوع SWING	Rapidrop	305
10	صمام أختبار تصريف	AGF	1000
11	SUPERVISORY SWITCH	POTTER	OSYSU-1
12	WATER FLOW SWITCH	POTTER	VSR
13	عداد قياس ضغط	AGF	7500
14	رشاش Recessed sidewall extended coverage quick response	GLOBE	GL5628
15	رشاش Recessed pendent quick response	GLOBE	GL5601
16	أنابيب الحديد الأسود الغير ملحوم sch . 40	INTERPIPE	
17	قطع تركيب المواسير المسننة والجروفد	MECH	
18	أنابيب بلاستيكية (UPVC CLASS 5	SAPPCO	

٢٠/١/٢٠١٦م

الإستشاري :

المقاول :

البوانـــي
AL BAWANI

المركز الوطني للمعلومات التربوية
بمقر الوزارة الجديد بالرياض

المالك :

وكالة الوزارة للمباني

To :

MATERIAL SUBMITTA

تقديم مواد

FROM:
AL BAWANI

SUBMITTAL NO. :	MS-M-06	NEW SUBMITTAL ■	RE SUBMITTAL ☐	REV. No. : 0	
TRANSMITTAL FOR :	SAMPLES ■	SPECIFICATIONS ☐	MANUFACTURER / SUPPLIER DETAILS ■	CATALOGUES ■	OTHERS : ☐
CATEGORY	AR ☐ ST ☐ CE ☐	EL ☐	ME ■ LA ☐	DATE : 23/8/2015	3/12/2015

ITEM NO.	DESCRIPTION	PRIORITY	MANUFACTURER / SUPPLIER	SPEC. REF.	B.O.Q REF.
1	Groved fittings for sizes 2.5 and above for cooling 7 fire fighting systems	1	Jad riyadh (national groved)	16060	div 16
		2	Pan Gulf (shurjoint)		
		3	Jinan MEIDE		

البوانـــي
AL BAWANI

A = APPROVED B = APPROVED AS NOTED C = NOT APPROVED, RESUBMIT E = REJECTED F = NO ACTION

ENGINEER COMMENTS :

[illegible]

الاستشاري

RECEIVED
03 DEC 2015

RECEIVED
03 DEC 2015

REF IN :

REF OUT :

See Attachment ☐

KAU - New Item Approval Supplier's Detail Report

Sno.	Description Materials	Supplier / Manufacterer Name	Brand Name	Spec. No.	Phone No.	Email
ARCHITECTURAL						
١	Toilet Cubicles	PAMAS EST.		١٠١٦٦A	٠١٢-٦٦١٣١٥١	Pamasjeddah@gmail.com
٢	Raised Access Floor	Chbib Trading	Avayo			
٣	Bathroom Fittings	Tarik Mohammed Binladen (TMB) Est.	Torneiras Roriz S. A.		٠١٢-٦٦٥٥ ٨٣٩	Khalid.tmb.est@gmail.com
٤	marble/stone/granite	Saudi Marmo	Granite / Bianco / Ruweida / Hibuscus		٠١١٤٣٨٨٤٧٦	m.fahim@Saudimarmo.com
٥	Insulation Material,	International Building Construction Co	Isonaturelle		٠١٢-٦٠٦٢٢٢٠	halghamdi@ibcest.com
٦	ALL TYPE OF PAINTS	ARABIAN BUILDING CHEMICALS FACTORY	Rose		٠١٢-٦٧٠٧٧٠٠	amoudi@babader.com
CIVIL						
٧	Plain Neoprene Bearing Pads	BASF The Chemical Company	BASF		٠١٢ ٦٦٣٥٠١٩	mohammed.rushdy@basf.com
ELECTRICAL						
٨	Cabling.	Abdullah Faisal Alamoudi Establishment	Norden		٠١٢-٦٩١٠٠٢٥	alrayan@afaest.com
٩	ADVANCE PARKING MANAGEMENT SYSTEM , PARKING GUIDANCE & OCCUPANCY SYSTEM, PARKING SECURITY CONTROL SYSTEM, ACCESS CONTROL SYSTEM	IDEX Services	Scheidt & Bachmann, Circontrol, Nedap		٠١٢-٦٦٥٣٦٧	m.khalil@idex.com.sa
١٠	Lighting Fixtures	Huda Lighting Trading Est.	JCC - Leviton		٠١٢-٢٣٤٩٩١١	rami@hudalighting.com
١١	MV Switchgear & MCC, LV Switchgear, Panelboard & MCC, BMS, Low Current, CCTV, Access Control & Fire Alarm System.	Saudi United for Mechanical Electrical and electronic Industries (ECO)	Schneider Electric, EATON, TAVREDA, CYLON, PELCO		٠١١-٤٧٩٣٧٤٩	rami-alamr@eco.com.sa
١٢	MCC Panels	Sela For Power, Automation & Safety Systems – SELA-PASS	Schneider / Siemens / ABB		٠١٢-٦٩١٥٧٧٧	automation٦@selanet.com
١٣	Panel Boards	Saudi Company For Lighting Fixture (SACLF)	SIEMENS		٠١٢-٦٣٧٤٣٩١	Karim.sheref٦٠١٠@gmail.com
MECHANICAL						
١٤	UL/FM Fire Pumps	Arabian Air Conditioning Co. Ltd.	Armstrong		١٢-٩٢٠٠٠٩٤٤٣	nabeel.siddiqui@carrier.utc.com
١٥	Round Diffuser - Square Diffuser - Fire Damper - Louver - Gravity Shutter	Rabie Al-Takyeef Factory			٠١٢-٦٣٩٤٣٠٠	hjuda@rabie-ac.com
١٦	Grooved Fittings , Valves & Threaded Fittings (BMI Fittings)	Future Mechanics Trading Est. (Fu-Mech)	MECH (Jinan Meide Casting Co.)		٠١١-٤٧٨٤٢٤٢	Amin@fu-mech.com
١٧	PREFABRICATED HVAC RECTANGULAR, ROUND & SPIRAL DUCTS	ELECTROMECHANICAL & TECHNICAL ASSOCIATES AL FANEYAH (ETA)	ETA		٠١٢٦٠٨٨٠٠٠	mdvarisshah@gmail.com
١٨	Package units, Fan Coil Units	Al Salem Johnson Controls	Johnson Controls		٠١٢-٦٩٩٠٩٩٩	Mohd.Bdair@jci.com

Project: GENERAL AUDITING BUREAU - SAKAKA - AL JAWF

Client:	Consultant:	Contractor:
ديوان المراقبة العامة GENERAL AUDITING BUREAU	العطيشان مهندسون استشاريون AL-OTAISHAN CONSULTING ENGINEERS	شركة الحريتي للتجارة والمقاولات AL-HORAITY CO

MATERIAL SUBMITTAL اعتماد المواد

Purpose of submittal: ■ For Approval ■ للموافقة طلب الأعتماد :

إنشاء : ديوان المراقبة العامة - سكاكا - منطقة الجوف

☐ Civil مدني	☐ Architect معماري ☐ Elevators مصاعد	☐ Structure إنشائي ☐ Landscap موقع عام	■ Mechanical ميكانيكي ☐ Plumbing صحي	Electrical كهرباء ☐ Other اخرى
Attachments المرفقات	☐ Technical Brochure صور فنية ☐ Compliance Sheet	■ Catalouge كتالوج ☐ Manuf. Data & Specs	☐ Specifications مواصفات	☐ Sample عينات

Submittal NO: 3 رقم النموذج : ■ New submittal تقديم جديد ■ Date of Submittal : 5-5-2015 تاريخ التقديم :

Re-Submittal No : رقم النموذج المعاد : ☐ Re-submittal إعادة تقديم ☐ Date of Receive : تاريخ إعادة التقديم :

Contract Document Refrences: مرجع للمقاول :

Specification Ref : مرجع المواصفات: BOQ Refr : مرجع جدول الكميات:

Material/Equipment المواد

Item بند	Description الوصف	Manufacturer/Supplier المصنع/المورد	Origin المصدر	Approval Code سلطة الأعتماد
1	GROOVED PIPES FITTINGS	MECK	CHINA	
		DUCO	CHINA	
		SHIELD	UK	B
	THREADED PIPE FITTINGS	MECK	CHINA	B
		BKL	THAILAND	
		HITACHI	JABAN	B

Contractor's Remarks & Explanations: ملاحظات المقاول:

Transmitted By contractor's Project Manager مدير المشروع		Received By : استلام :	
Name :	الاسم :	Name :	الاسم :
Signature :	التوقيع :	Signature :	التوقيع :
Date :	التاريخ :	Date :	التاريخ :

Consultant's Comments: ملاحظات وتوصيات الإستشاري

- يجب تقديم شركة UL/FM - shield
- -- -- شركة MECK - UL/FM
- -- -- شركة HiTachi ST3.0

كأختيار ثاني ويتم التركيب طبقا للمخططات المعتمده وتعليمات الشركة الصانعه

10/5/2015

Received By :	
Name :	الاسم :
Signature	التوقيع :
Date :	التاريخ :

☐ Approved as Submitted	الموافقة على الطلب	For OCE :	العطيشان مهندسون استشاريون :
☐ Approved as noted Resubmission not require	الموافقة على الطلب مع ملاحظات بدون إعادة تقديم	Name :	الاسم :
☐ Approved As noted Resubmission reqired	الموافقة على الطلب مع ملاحظات مع إعادة تقديم	Position :	المنصب الوظيفي :
☐ Disapproved	مرفوض	signature :	التوقيع :
☐ NO action Taken	بدون رد فعل	Date:	التاريخ :

Received By: Code No. 38817 Date 6.5.15 Time 09:00 Action By: Nabil

6/5/15

Client Manager	Project Manager	Owner:	Consultant	Contractor
Asala Holdings	Projacs	Asala Holdings Co., Ltd Project: RIYADH PARK - MEP	Projacs	Al Aman

SUBMITTAL

Contractor Name: **Al Aman Modern Energy Company**

Submittal : 1029-MS-M053 Date : 04-May-16

Rev: 3 Package:

		DELIVERY	REMARKS
To: PROJACS		Courier	[ ] SHOP DRAWING
		Recipient Messenger	[X] SAMPLE
From: AL AMAN CO.	Signature:	Other	[X] MANUFACTURER'S DATA
FOR CM USE ONLY:		Arch [ ] Str. [ ] Elec. [ ] Mech. [■]	[X] CERTIFICATES
Rec'd from Contr.: / /	Sign :		[X] GUARANTEES
Out to Client : / /	Client [ ]	Out to Engrs: / /	[X] OTHER
In from Client / /		In from Engrs: / /	
Out to Contractor: / /			

Rec.	Qty	Dwg. / Spec. Reference	Description	Remark	Code Submittal	Code Action
	3 FOLDER/ DISTRIBUTION	DIVISION 21,22,23 Alternative	Grooved Fitting (MECHANICAL TEE) ONLY. Manufacturer:MECH SUPPLIER: FU-MECH			B
			Guarantee Certificate for Ten Years and Stamped from the Chamber of Commerce.			

08/05/2016

DISTRIBUTION

PROJACS INTERNATIONAL

CC:	ACT	COM	INF
PM			
CM			
QS			
PLAN			
ARCH			
STRU			
MECH	✓		
ELEC			

Remarks:

* THE GROOVED FITTING (MECHANICAL TEE) ONLY FROM "MECH" IS ACCEPTABLE WITH TEN YEAR GUARANTEE
* AL-AMAN IS REQUESTED FOR IS NOT AVAILABLE FROM APPROVED MANUFACTURER
* IF ANY DEFECT IN MATERIAL THE APPROVAL CONSIDRING AS REJECT AND REPLACE WITHOUT ANY ADDITIONAL COST & TIME.
* COMPLY THE PROJECT SPECIFICATION WITHOUT ANY EXCEPTION.

Engineer's Signature Reviewer's Signature Title Signature

[A] Approved [B] Approved As Noted [C] Resubmit As Noted [D] Rejected [E] For Information

Approval, corrections or comments made relative to documents during the review do not relieve the Contractor from compliance with the requirements of the drawings or specifications. This check is only for review of general performance with the design concept of the project and general compliance with the information given in the Contract documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating the work with that of other trades, and performing the work in a safe, timely, and satisfactory manner.

Distribution: CLIENT [ ] CONSULTANT [ ] CONTRACTOR [ ]

Contractor's Signature :

Received For :

Date :

05 MAY 2016 PROJACS

Client Manager	Project Manager	Owner	Consultant	Contractor
Asala Holdings	Projacs	Asala Holdings Project: Al Khair Mall - Riyadh	Projacs	Al Aman

SAMPLE TAG

Contractor: **AL AMAN MODERN ENERGY CO., LTD.**		Package: MATERIALS SUBMITTAL
Transmittal: **1029-MS-M053**	2	Date: 04-05-2016

Sample Description

Grooved Fitting
Manufacturer:MECH
SUPPLIER: FU-MECH

Specification Reference: DIVISION 21-22-23

Contractor Signature:

- [ ] **A** - **APPROVED**
- [x] **B** - **APPROVED AS NOTED**
- [ ] **C** - **RESUBMIT AS NOTED**
- [ ] **D** - **REJECTED**
- [ ] **E** - **FOR INFORMATION**

Consultant

RECEIVED
05 MAY 2016
PROJACS

08/05/16

for PM (Projacs)

COMMENT:- APPROVAL ONLY FOR MECHANICAL TEE

KING ABDULLAH FINANCIAL DISTRICT

REQUEST FOR ALTERNATIVE OR SUBSTITUTION (RAM)

Contract No:C15B1 | Work Package No:C15B1

To: ZUHAIR FAYEZ PARTNERSHIP Attn: ENGR. ASHRAF SAREE Contractor: CCE

RAM No: MTS-DC2-HV-009A Rev: 00 Date: 12-NOV-2015

This Submittal will not be reviewed unless the Contractor complies with the minimum submittal requirements of Comparison sheets, product data, cost comparison etc.

PROPOSED ALTERNATIVE OR SUBSTITUTION:

☐ PRODUCT ☐ METHOD OF FABRICATION ☐ METHOD OF INSTALLATION

SPECIFIED PRODUCT Chilled water system Grooved Fittings

PROPOSED PRODUCT Chilled water system Grooved Fittings

SPEC. SECTION No ..... PAGE No .....Bill -01 ARTICLE No DIV.16.....

SPECIFIED MANUFACTURER ...MECH

PROPOSED MANUFACTURER ...Future Mechanics Trading Est.....

BRIEF PRODUCT DESCRIPTION Chilled water system Grooved Fittings

REASON FOR PROPOSED ALTERNATIVE OR SUBSTITUTION — ???

COST AND TIME SAVINGS

COST NO ☐ YES ☐ AMOUNT (SAR) (DEDUCTION).....

TIME NO ☐ YES ☐ DAYS .....

THE CONTRACTOR CERTIFIES AND UNDERTAKES THAT:

- Same warranty maintenance service and replacement parts will be furnished for proposed alternative as for specified product.
- Cost data as stated above is complete. Claims for additional costs or time related to accepted alternative or substitution which may subsequently become apparent are to be waived. Other costs to other disciplines and/or contractors shall be borne by the Contractor.
- Proposed alternative or substitution does not affect dimensions and functional clearances.
- The cost for all changes to design, including architectural or engineering design, detailing, and construction cost including authorities approvals, caused by the requested alternative or substitution shall be fully the responsibility of the contractor at no cost to the employer.
- THE CONTRACTOR FURTHER ACKNOWLEDGES THAT APPROVAL FOR ALTERNATIVE/SUBSTITUTION DOES NOT WAIVE HIS OBLIGATIONS TO THE EMPLOYER AS PER THE CONDITIONS OF CONTRACT

CONTRACTOR'S REP GEORGE NAIR ..... DATE/TIME 12 NOV 15

RECEIVED BY CONSULTANT ..... DATE/TIME .....

REVIEW AND ACTION BY THE CONSULTANT & PM/CM

☐ Approved ☐ Not Approved ☑ Approved as Noted ☐ Incomplete Data/Resubmit

CONSULTANT'S COMMENTS:

Resident Engineer ..... DATE/TIME.....

PM/CM'S COMMENTS:

PM/CM..... DATE/TIME.....

NOTE: THIS APPROVAL DOES NOT ENTAIL ANY ADDITIONAL COST OR TIME

DATA CENTERS
KAFD SITE
Contracting & Construction Enterprises Ltd.

ATTACHED TO 3117

5

KING ABDULLAH FINANCIAL DISTRICT

DOCUMENT REVIEW FORM	
Contract No: B24	Work Package No: C15B1

Submittal Ref. No: MTS-DC2-HV-009 A	Rev. No.: 00	DR No.: 1
Submittal Date: 3 December 2015		DR Date: 7 December 2015
Submittal Title: Chilled Water System Grooved Fittings For External		MECH- China/FMTE-Riyadh

Review/Comments:

1. First Grooved Fittings is already approved to Shurejoint.
2. This submittal is alternative without any reason.
3. This approval is limited for Underground External Chilled Water for Grooved Fittings sizes 300 and 350 dia. only.
4. This approval is limited to Flexible Coupling, Reducing Flexible Coupling, Rigid Coupling, 45° Elbow, Tee, Grooved Concentric Reducer, Grooved Flange, Adaptor Flange only.
5. This approval is alternative only, priority should be given to Shurejoint to have uniformity of material.
6. Factory test certificate shall be submitted upon delivery of material on site.
7. Submit certificate of origin, shipment certificate and warranty certificate along with the delivery of material in site.
8. Specify warranty period.

Result of Review:

The above comments shall be complied - Code "B"

Signature:	Date: 7 December 2015
A. S. Lumalang Sr. Mech. Engineer	

Document No: PP-DC-12-FM Rev.1

ATTACHED TO 311

6

FYI
submittal ←
date is 12-Nov-15
apl 3-Dec-15

KING ABDULLAH FINANCIAL DISTRICT

MATERIAL SUBMITTAL FORM

Contract No: C15B1	Work Package: C15B1
Title: Chilled water system Grooved Fittings	Submittal No: MTS-DC2-HV-009A Rev:00
To: ZUHAIR FAYEZ PARTNERSHIP	Submittal Package: DOCUMENTS
From: CONTRACTING & CONSTRUCTION ENT.LTD	Date: 12-Nov-2015 No. of Copies: 03
Attn.: ENGR. Ashraf Saree	Submitted for: ☐ Approval ☐ Information ☐ Coordination

1. MATERIAL DESCRIPTION

Material Status: ☐ Specified ☒ Alternative
Drawing Ref.: HVAC Drawings
Discipline: HVAC
Specification: 15890
Parcel No.:6.40 & 6.41Building: DATA CENTER 1&2
BOQ Ref. No.: Bill # 01, Div. 15B
Enclosures: ☒ Production Verification ☒ Catalogue ☒ Sample ☐ Comparison Sheet ☐ List of Suppliers ☐ Other:

2. MANUFACTURER/SUPPLIER

Company Name: MECH ???
Address: ???
Local Agent: Future Mechanics Trading Est.
KOOWEIT ????

3. DELIVERY

Country of Origin: China
Availability: ☐ Locally Available ☒ Imported
Delivery Program-
Ex-Work Total Duration :
Latest Date of Order :
Date Material Required on Site :
Estimated Date for Arrival on Site :

We certify that the above submitted items have been reviewed in detail and are correct and in strict conformity with the contract drawings and specifications except otherwise stated; also that the material sources indicated above have been reviewed and that they will supply the submitted items in full conformity with timely delivery.

DATA CENTERS
KAFD SITE
Contracting & Construction Enterprises Ltd

For the Contractor-
Name: ENGR. GEORGES NASR
PROJECT DIRECTOR
Signature: Date: 12 NOV-15

4. ENGINEER'S COMMENTS

SEE COMMENTS ON THE ATTACHED SHEET

Name: A. LUMALANZ Signature: Date: 7-12-15

ACTION CODE
A ☐ Approved
B ☒ Approved As Noted
C ☐ Revise – Resubmit
D ☐ Rejected – Resubmit
E ☐ Receipt Acknowledged

5. PM/CM REVIEW

Name: Signature: Date:

6. OWNER'S COMMENTS (Optional)

Name: Signature: Date:

Approval shall not relieve the Contractor of its obligations and liabilities under the Contract or constitute authorization of any change to Contract Documents, and therefore, shall not imply any recognition whatsoever of additional time or cost to the Contract.

Distribution				To Contractor
Owner	PM/CM	Engineer	Contractor	Received For:
☐	☐	☐	☐	Date: / /

Document No: PP-DC-09-FM Rev.1

ATTACHED TO 31

4

KING ABDULLAH FINANCIAL DISTRICT

REQUEST FOR ALTERNATIVE OR SUBSTITUTION (RAM)

Contract No:C15B1 | Work Package No:C15B1

To: ZUHAIR FAYEZ PARTNERSHIP Attn: ENGR. ASHRAF SAREE Contractor: CCE

RAM No: MTS-DC2-HV-009A Rev: 00 Date: 12-NOV-2015

This Submittal will not be reviewed unless the Contractor complies with the minimum submittal requirements of Comparison sheets, product data, cost comparison etc.

PROPOSED ALTERNATIVE OR SUBSTITUTION:

☐ PRODUCT ☐ METHOD OF FABRICATION ☐ METHOD OF INSTALLATION

SPECIFIED PRODUCT Chilled water system Grooved Fittings

PROPOSED PRODUCT Chilled water system Grooved Fittings

SPEC. SECTION No ..... PAGE No .....Bill -01 ARTICLE No DIV.16.....

SPECIFIED MANUFACTURER ...MECH

PROPOSED MANUFACTURER ...Future Mechanics Trading Est.....

BRIEF PRODUCT DESCRIPTION Chilled water system Grooved Fittings

REASON FOR PROPOSED ALTERNATIVE OR SUBSTITUTION — ???

COST AND TIME SAVINGS

COST NO ☐ YES ☐ AMOUNT (SAR) (DEDUCTION).....

TIME NO ☐ YES ☐ DAYS .....

THE CONTRACTOR CERTIFIES AND UNDERTAKES THAT:

- Same warranty maintenance service and replacement parts will be furnished for proposed alternative as for specified product.
- Cost data as stated above is complete. Claims for additional costs or time related to accepted alternative or substitution which may subsequently become apparent are to be waived. Other costs to other disciplines and/or contractors shall be borne by the Contractor.
- Proposed alternative or substitution does not affect dimensions and functional clearances.
- The cost for all changes to design, including architectural or engineering design, detailing, and construction cost including authorities approvals, caused by the requested alternative or substitution shall be fully the responsibility of the contractor at no cost to the employer.
- THE CONTRACTOR FURTHER ACKNOWLEDGES THAT APPROVAL FOR ALTERNATIVE/SUBSTITUTION DOES NOT WAIVE HIS OBLIGATIONS TO THE EMPLOYER AS PER THE CONDITIONS OF CONTRACT

CONTRACTOR'S REP GEORGE NAIR ..... DATE/TIME 12 NOV 15

RECEIVED BY CONSULTANT ..... DATE/TIME .....

REVIEW AND ACTION BY THE CONSULTANT & PM/CM

☐ Approved ☐ Not Approved ☑ Approved as Noted ☐ Incomplete Data/Resubmit

CONSULTANT'S COMMENTS:

Resident Engineer ..... DATE/TIME.....

PM/CM'S COMMENTS:

PM/CM..... DATE/TIME.....

NOTE: THIS APPROVAL DOES NOT ENTAIL ANY ADDITIONAL COST OR TIME

DATA CENTERS
KAFD SITE
Contracting & Construction Enterprises Ltd.

ATTACHED TO 3117

5

KING ABDULLAH FINANCIAL DISTRICT

DOCUMENT REVIEW FORM	
Contract No: B24	Work Package No: C15B1

Submittal Ref. No: MTS-DC2-HV-009 A	Rev. No.: 00	DR No.: 1
Submittal Date: 3 December 2015		DR Date: 7 December 2015
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5. This approval is alternative only, priority should be given to Shurejoint to have uniformity of material.
6. Factory test certificate shall be submitted upon delivery of material on site.
7. Submit certificate of origin, shipment certificate and warranty certificate along with the delivery of material in site.
8. Specify warranty period.

Result of Review:

The above comments shall be complied - Code "B"

Signature:	Date: 7 December 2015
A. S. Lumalang Sr. Mech. Engineer	

Document No: PP-DC-12-FM Rev.1

ATTACHED TO 311

6

SAMARA

Date : [illegible]
No. : [illegible]

السادة: مكتب [illegible] الطاهر للاستشارات الهندسية

عناية المهندس: أحمد الحداد

المشروع: [illegible] تعبئة المياه الصحية المحدودة ... الوسيم توسعة 2016

الموضوع: طلب اعتماد Mech Grooved Fitting

السلام عليكم ورحمة الله وبركاته... وبعد

بالإشارة إلى الموضوع أعلاه، يرجى التكرم من سيادتكم اعتماد Grooved Fitting ماركة Mech لأعمال الحريق بتوسعة 2016 حيث أنه حاصل على اعتمادات UL، FM، VDS.

مرفق طيه الآتي ذكره:

1. الكتالوج الخاص بالمواد المراد اعتمادها
2. شهادة اختبار
3. شهادة [illegible]
4. لوحة [illegible]

[illegible] بقبول وافر الاحترام والتقدير.

مهندس تنفيذ
م. أحمد فوزي

Document	**DOCUMENT SUBMISSION FORM**		
Project Name	SASO test centre	Project Contractor	Kingdom Design
Project Number	Riyadh 01	Project Consultant	DAR AL RIYADH
Programme Manager		Document Reference No:	DSF-ME -101

DOCUMENT ISSUED BY		DOCUMENT RECEIVED BY	
Issued by	MR MAGDY ARAFAT	Received By	MR ESAM GAWISH
Position / Company	PROJECY MANAGER KINGDOM DESIGN CONSTRUCTION CO.	Position / Company	CONSTRUCTION MANAGER DAR AL RIYADH
Signature	For	Signature	
Date	31/08/2016 Time 11:00 am	Date	Time

DOCUMENT SUBMISSION TYPE (Tick relevant Box)

As Built	** Material Sample		Bill of Quantities
Certificate	Manual		Schedule
Drawing	Pre-qualification		Shop Drawing
Engineering Calculation	Procedure/Methodology		Bank Warranty
Job Order	** Product Data		Letter
Report	Test Report		Other

PURPOSE FOR DOCUMENT SUBMISSION

FOR INFORMATION	REVIEW & APPROVAL	AS REQUESTED	Other (As Above)	DATE RESPONSE REQUIRED BY (Insert Date)

SUBMITTED DOCUMENTS REFERENCE NUMBERS

#	Document Reference No.	Document Description	Rev.	Hard Copy	Soft Copy
		PLEAS FIND HERIN , CATALOGUE , PRODUCT DATA AND MATERIAL SAMPLE FOR DUCTIL IRON GROOVED FITTING		**	
1		JINAN MEIJE CASTING CO. LTD			
2					
3					
4					

To continue Use "Submittal Continuation Form" (MOD-DCC-10-2002)

APPROVAL STATUS

APPROVED AS SUBMITTED (APP)	APPROVED AS NOTED (APN)	REJECTED / RE-SUBMIT (RRS)
	✓	

COMMENTS

* JINAN GROOVED FITTING IS APPROVED FOR ABOVE 2" PIPE SIZE.
* Submit warranty, manufacture test and country of origin certificate with material delivery at site.

RESPONSE ISSUED BY		RESPONSE RECEIVED BY	
Issued By	M. Adel	Received By	
Position / Company	Mech Engr	Position / Company	

06/09/2016

JINAN RIYADH

To continue Use "Submittal Continuation Form" (MOD-DCC-10-2002)

ACTION	MODON APPROVAL (Required)	OBJECT
A ☐ APPROVED	Approved By	
B ☑ APPROVED AS NOTED	Position / Company	
C ☐ REVISE AND RESUBMIT		
D ☐ REJECTED		
E ☐ NO ACTION		

Received By: _____

Date: _____

Material Submittal Form

Received by MHA	01/10/16

From Contractor	Hashem Contracting & Trading Co.	Material submittal no.	MT-FF-006
Contract no.	1817 – SCFHS - ABHA	Date	14-8-2016
To Consultant	MOHAMED HARASANI- Architects MHA	Approved Subcontractor	SAMARA Security Co.
Material Description One item only per Form (system)	Fire Fighting System-Grooved Type Ductile Iron Pipe Fittings, for Pipe sizes 2.5 Ø inches and above	As per specification	
		Alternative	
Drawing reference	P3B4, P308	BOQ reference no.	Division-15-Mechanical Works Sub division 15310,
Specification reference	DIVISION 15, SECTION 15310 PART 2-2.02	Standards,	NFPA 13 UL/FM

Manufacturer/Supplier

Manufacturer	Jinan Meide Casting Co. Ltd (Mech)	Supplier	SAMARA Security Co / Future Mechanics Trading Est. (Fu-Mech)
Address	Pingyin Industrial Park, Meigui Zone,Jinan,China,250400	Address	Salah Ad Din Al Ayyubi Rd Malaz, Riyadh
Date material required on site		Expected date of arrival at site	
Contractor's name	M/S HASHEM CORP.	Date	14-08-16
Signature			
Contractor's Remarks	Submittal Content X 1. Compliance Sheet. XX 2. Previous Approval. 3. Technical Catalog. XX 4. Sample Board XXXX (No samples) XX UL "B"		

MHA Consultant comments

Approved with condition

*JMC fittings (Grooved) are Approved for 2.5" and above pipe size. Carved UL stamp is must on each fitting.

* Follow Noted comments

* Submit Full compliance sheet for Final Approval

* Submit UL certificate & carved UL stamp must be on each fitting

Status code	☐ 1 - Approved ☑ 2 - Approved with comments ☐ 3 - Not Approved. Revise & Re-submit ☐ 4 - Rejected as comments		
MHA Project Manager Signature	MHA PM / Arch. Tarek Ziad	Date	08/10/16 06/10/2016
Received by Hashem Co.		Date	08/10/16

مشروع:مركز الاميرة سارة بنت احمد السديري لابحاث المراة

PROJECT: PRINCESS SARAH BINT AHMED AL SUDAIRY CENTER FOR FEMININE RESEARCH

CONTRACTOR: طوارف TAWAREF

OWNER: الهيئة العليا لتطوير مدينة الرياض

CONSULTANT: دار العمران للاستشارات الهندسية
مخططون • معماريون • مهندسون
DAR AL-OMRAN CONSULTANTS
Planners • Architects • Engineers

MATERIAL SUBMITTAL

AR		ME	X	CV		LA		Submittal No.	M	S	M	0	1	0	REV.	0	0
ST		EE		QS		OT		Date:28/08/2016			Contract No. P1214						

To: Engr. Abdullah Ibrahim Al Kuwaiz
M/S Alriyadh Development Authority.
P.O.BOX : 94501
Riyadh -11614

FROM: Engr.Sherif Rashad
Company Name: TAWAREF CONTRACTING COMPANY LTD Riyadh-Malaz 60th St.Group Princess Bander Bin Saud
P.O.BOX 888/code 11371 KSA

S.No.	Specifications	Description	Manufacturer	Approval Code
1	15310	GROOVED &THREADED FITTING FOR FIRE FIGHTING SYSTEM	MECH	A
2	15312	SUPPORTS ,HANGERS & BRACKETS FOR FIRE FIGHTING SYSTEM	DUTECH PIPE SUPPORTS	C

Contractor's Remarks:

Engr. Sherif Rashad (outgoing)
Signature:
Date:28/08/2016

Engr. Mohammed Barakat (Incoming)
Signature:
Date: 28/08/2016
28/8/2016

Owner / Consultant Comments:

For hangers & supports, we require the to use CLEVIS HANGER WITH RUBBER. (Resubmit). (Page 5) and split clamp with Rubber. (page 6)
29/8/2016
31/8/2016

For ADA (SMT):
Signature:
Date: 5/9/2016

ACTION CODE:

A = Approved
B = Approved as Noted
C = Approved As Noted-Resubmit
D = Disapproved
N = No Action
F = Retained for Info.

RECEIVED 28 AUG 2016

05 SEP 2016

Ref. In:
Ref. Out:

Project No.: B-1012-S E10056-0100S	Employer: HYPER BANDA	Request No. RFI-M-0454-C
Engineer: ARKAL FOR CONSULTING ENGINEERING	Contractor: GHEMD ALMOHANNAD	Date 6/6/2016

Request For Inspection

We request your attendance to inspect the following works :

1. **Type** : Infrastructure ☐ Electrical ☑ Mechanical Installations

Recheck of mechanical for fire fighting & fire detection system at prodution lines and materail stores Area as Per Attached Sketch

2. **Inspection Tme** :	10.00AM	**Date** :	12/20/2016	
3. **Location**: BURAYDAH		Road	h	Drawings No. as per attached drawings

4. **Inspection** : ○ First ○ Second ◉ Third

5. **Purpose of Inspection** :

1. Electrical
- ☐ Setting out
- ☐ Furniture Elect. Culvert
- ☐ MV Cables
- ☐ Street Lighting Cables
- ☐ Street Lighting Poles
- ☐ Telephone Duct Bank
- ☐ TV Cables
- ☐ Light Fittings
- ☐ Sub-Stations
- ☐ Civil Works & Finishings

2. Mechanical
- ☑ Mechanical Installations
- ☑ Pumping Stations
- ☑ Civil Works & Finishings

Others (specify) MECH - Gate Valves OS&Y Size 4", 6", 8"

Particular Details Alarm check valve size 6", 4" MECH

Ground Fitting 3", 4", 6" LL-FM

Submitted by : _____ Signature _____

6. **Inspection Report** :		**Signature**
☐ Surveyor		
☐ Elect. Eng.	لا مانع من الاعتماد مع الالتزام بالمواصفات	
☐ Mech. Eng.	ولوائح الدفاع المدني والـ NFPA	
☐ Civil Eng.		
☐		

Date/Time of Inspection : / / :

7. Engineer's Representative Comments:

The works are : ☑ Approved ☐ Approved as Noted ☐ Rejected

Signature _____ Date : / /

ATTACH ALL RELEVANT PARTICULAR TEST FORMS

Approval shall not relieve Contractor of his liabilities under the Contract or constitute authorization of any change to Contract Documents.

S-PRC-SS-02(F31) REV 0

الاستشاري
مكتب المهندس عبدالرزاق حكيم
ABDULRAZAK HAKEEM
CONSULTING ENGINEERS

0021

الجمعية الخيرية لتحفيظ القرآن الكريم بالمدينة المنورة

المجمع التربوي لتحفيظ القرآن الكريم

طلب اعتماد مواد

AL-Ambat
Engineering Contracting Est.

الرقم : ( )	التاريخ : / /	اليوم :
☐ تقديم : جديد		☐ تقديم : اعادة

☐ انشائي ☐ معماري ☐ كهرباء ☐ ميكانيك ☐ مساحه

☐ كتالوج ☐ CD ☐ عينات ☐ اخرى ☐

رقم البند	وصف البند	المرجع	المواصفات	الكميات	الرسومات	المصنع	عدد النسخ

المعماري	انشائي	كهرباء	ميكانيك	مساحة
م/	م/	م/	م/	م/
التوقيع	التوقيع	التوقيع	التوقيع	التوقيع

مدير المشروع المقاول م/ التاريخ : / / التوقيع:

خاص بالاستشاري	استلمت الاصل	التاريخ: / /	التوقيع:

جهات التنسيق

☐ انشائي ☐ معماري ☐ كهرباء ☐ ميكانيك ☐ مساحه

قرار الاستشاري		ملاحظات الاستشاري
(A)	يعتمد	
(B)	يعتمد طبقا للملاحظات المذكوره	
(C)	تراجع الملاحظات ويعاد التقديم	
(D)	مرفوض راجع الملاحظات	

المعماري	انشائي	كهرباء	ميكانيك	مساحة
م/	م/	م/	م/	م/
التوقيع	التوقيع	التوقيع	التوقيع	التوقيع

مدير المشروع الاستشاري م/ التاريخ : / / التوقيع:

اعيد الطلب للمقاول في الساعة التاريخ : / / التوقيع: .....

SMC

المركز المعماري
ARCH CENTRE
ARTAR

RECEIVED

DOCUMENT SUBMITTAL FORM (DS)

Project Name: Specialized Medical Center 2 (SMC 2)

TITLE:	CHILLED WATER SYSTEM	**SUBMITTAL NO:**	SMC2-DS-ME-SMP-053
TO:	PM./ Eed Shiha	**REVISION NO.**	1
FROM:	PM./ Amir Albrazi	**DATE:**	11/05/2017
ATTN:	Eng. Mohammad Iqbal	**Prepared by**	Eng. Anas Alyaseen

TYPE OF SUBMITTAL

- ☐ SD - Shop Drawings
- ☐ SCE - Programme / Schedule
- ☐ ITP - Inspection & Test Plan
- ☐ MST - Method Statement
- ☐ MPD - Materials & Product Data
- ☐ MI – Monthly Invoices
- ☐ SU – Survey Drawings
- ☒ SMP - Samples
- ☐ CAL - Calculations
- ☐ CL –Claims
- ☐ PR – Project Reports
- ☐ RMB – Re-Measured BOQ
- ☐ QS – Quantity Survey
- ☐ PQD - Pre-Qualification
- ☐ OMM - Operating & Maintenance Manuals
- ☐ QPP - Quality Plans & Procedures
- ☐ CER - Certification, Verification
- ☐ PBW - Bonds, Guarantees, Warranties
- ☐ ABD - As Built Drawings
- ☐ OTH -Others ()

SUBMITTAL DISCIPLINE & DESCRIPTION

☐ MD-Medical ☐ SE-Structural ☒ AR-Architectural ☐ EL-Electrical ☒ME-Mechanical ☐ GE-General

SPECIFICATION / & BOQ REF.

S/N	Item description	Reference from BOQ, Specification or drawing	Code (Action)	Comments / Remarks
1	Chilled water Fitting Groove Type 2.5" and larger MECH (CHINA)	BOQ 23.1	B	• Refer to remarks on Sub. # MPD 092 • Code B, approved as noted • Installation as per manuf/spec • Refer to approved Shop Dwg.
2	Chilled water Fitting Groove Type 2.5" and larger NATIONAL (INDIA)	BOQ 23.1	D	

13/05/17

SUBMITTED FOR

☒ A-Approval ☐ R-Review & Comments ☐ Q-As Requested ☐ I-Information / Records Only ☐ N-Action ☐ O-Others

Submitted By Contractor's PM.: Amir Albrazi **Signature:**

SUPERVISION CONSULTANT'S COMMENTS

A-Approved; (B)-Approved As Noted, Work May Proceed – Incorporate Comments & Resubmit Within ____ Days; C- Approved With Comments, Work May NOT Proceed, Revise & Resubmit; D- Rejected

N-Noted; R –Reviewed As Compliant; S- Reviewed As Noted, Incorporate Comments; T- Reviewed With Comments, Revise & Resubmit

Name: PM/ Eed Shiha Signature: Date: 13 / 05 / 2017

Approval by the Supervision Consultant (Engineer) shall not relieve the Contractor from his obligations to perform the work in accordance with the Contract Documents, Requirement of Safety, and Local Authorities regulations.

DATE RECEIVED: DATE RETURNED:

أمانة المنطقة الشرقية
رقم المعاملة ٣٩٠٥٣١٢٣
تاريخ المعاملة ١٤٣٩/٠٧/٠٣
المرفقات: بدون
WWW.EAMANA.GOV.SA

المملكة العربية السعودية
وزارة الشئون البلدية والقروية
أمانة المنطقة الشرقية

وكالة التعمير و المشاريع

الإدارة العامة للجودة

الموضوع: بخصوص إعتماد مؤسستكم

السادة/ مؤسسة مستقبل الميكانيكا للتجارة **المحترمين**

ص ب : الرياض ت: ٠١١٤٧٨٤٢٤٢ فاكس: ٠١١٤٧٢٩٥٩٥

السلام عليكم ورحمة الله وبركاته،،،

إلحاقاً إلى خطابنا رقم ١٤٣٩/٣٩٠٣١٣٧١ بتاريخ ١٤٣٩/٠٦/١٨هـ بخصوص إعتماد مؤسستكم لتوريد مواد لمشاريع أمانة المنطقة الشرقية،وإلى زيارة المنشأة للتأكد من الجودة ومطابقة المواصفات والتي تمت بتاريخ ١٤٣٩/٠٦/٢٠ هـ وحيث تم إستكمال المستندات المطلوبة للتأهيل.

لذا، نفيدكم بأنه لا مانع لدينا من إعتماد مؤسستكم لتوريد المواد التالية :

م	المنتج	المصدر
١	وصلات الجروف من نوع MECH	مصنع شركة JINAN MEDIDE CASTING CO.,LTD-الصين
٢	وصلات حديدية مسننة من نوع MECH	مصنع شركة JINAN MEDIDE CASTING CO.,LTD-الصين
٣	محابس من نوع MECH	مصنع شركة JINAN MEDIDE CASTING CO.,LTD-الصين
٤	وصلة رشاش الحريق المرنة من نوع Realflex	مصنع شركةJINAN MEDIDE CASTING CO.,LTD-الصين
٥	رشاشات إطفاء الحريق	مصنع شركةDUYAR -تركيا
٦	محابس	مصنع شركةDUYAR -تركيا

لمشاريع أمانة المنطقة الشرقية بحسب إجراءات الجودة المُتبعة لديكم ويمكن التنسيق بين المقاولين والشركة على أن يقوم المقاولون بتقديم المنتجات المذكورة أعلاه حسب توافقها مع المواصفات لكل مشروع وهذا الإعتماد لمدة **سنتين** من تاريخه كما يحق للأمانة إلغاء الإعتماد في حالة مخالفة الشروط والمواصفات الفنية.

ولكم تحياتي،،،

مدير عام الجودة

م / خالد بن ناصر السويدان

TEST CERTIFICATE

BUREAU VERITAS
Certification

JINAN MEIDE CASTING CO., LTD.

MEIDE SCIENCE AND TECHNOLOGY PARK, PINGYIN INDUSTRIAL PARK, JINAN
SHANDONG PROVINCE CHINA

Unified social credit code: 91370124613225093N

Bureau Veritas Certification Holding SAS certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

DESIGN AND PRODUCTION OF PLUMBING CONNECTERS, VALVES AND RELEVANT ACCESSORIES, DUCTILE IRON GROOVED FITTINGS AND COUPLINGS, FLEXIBLE SPRINKLER HOSE WITH THREADEDEND FITTINGS, MALLEABLE IRON & DUCTILE IRON INSULATOR CAPS & POWER LINES CASTINGS, VALVES FOR SPRINKLERS SYSTEM

Original cycle start date:	**10-01-1997**
Expiry date of previous cycle:	**NA**
Certification / Recertification audit date:	**NA**
Certification / Recertification cycle start date:	**17-01-2021**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **29-05-2024**

Certificate No. : **CNBJ322301-A** Version: **No.1**, Revision date: **17-01-2021**

Signed on behalf of BVCH SAS

ANAB ACCREDITED MANAGEMENT SYSTEMS CERTIFICATION BODY

Certification body address: 8 cours du Triangle, Puteaux 92800, France
Local office address: F22, Tower B, Beijing Global Trade Center, 36 North Third Ring Road East, Dongcheng District, Beijing, China, 100013

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call: (+86 10 59653663)
Certified organisation has to accept and pass regular surveillance audits, then this certificate can be continuously valid. Information of this certificate may be obtained by visiting CNCA website: (www.cnca.gov.cn)

Bureau Veritas Certification

JINAN MEIDE CASTING CO., LTD.

MEIDE SCIENCE AND TECHNOLOGY PARK,
PINGYIN INDUSTRIAL PARK, JINAN SHANDONG PROVINCE, CHINA

Unified social credit code:91370124613225383N

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

DESIGN AND PRODUCTION OF PLUMBING CONNECTERS , VALVES AND RELEVANT ACCESSORIES , DUCTILE IRON GROOVED FITTINGS AND COUPLINGS , FLEXIBLE SPRINKLER HOSE WITH THREADEDEND FITTINGS , MALLEABLE IRON & DUCTILE IRON INSULATOR CAPS & POWER LINES CASTINGS , VALVES FOR SPRINKLERS SYSTEM

Original cycle start date:	10-01-1997
Expiry date of previous cycle:	NA
Certification / Recertification Audit date:	NA
Certification/Recertification Cycle Start Date:	17-01-2021
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	29-05-2024

Certificate No.: CN034460 Version: 1 Issue Date: 17-01-2021

UKAS MANAGEMENT SYSTEMS

0008

Certification Body Address: 5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom

Local Office: F22, Tower B, Beijing Global Trade Center, 36 North Third Ring Road East, Dongcheng District, Beijing, China 100013

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: +86 10 59663888

Certified organisation has to accept and pass regular surveillance audits, then this certificate can be continuously valid. Information of this certificate may be obtained by visiting CNCA website (www.cnca.gov.cn).

BUREAU VERITAS
Certification

JINAN MEIDE CASTING CO., LTD.

MEIDE SCIENCE AND TECHNOLOGY PARK, PINGYIN INDUSTRIAL PARK, JINAN
SHANDONG PROVINCE, CHINA

Unified social credit code: 91370124613225093N

Bureau Veritas Certification Holding SAS certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 14001:2015

Scope of certification

DESIGN AND PRODUCTION OF PLUMBING CONNECTERS, VALVES AND RELEVANT ACCESSORIES, DUCTILE IRON GROOVED FITTINGS AND COUPLINGS, FLEXIBLE SPRINKLER HOSE WITH THREADEDEND FITTINGS, MALLEABLE IRON & DUCTILE IRON INSULATOR CAPS & POWER LINES CASTINGS, VALVES FOR SPRINKLERS SYSTEM

Original cycle start date:	**07-07-2010**
Expiry date of previous cycle:	**NA**
Certification / Recertification audit date:	**NA**
Certification / Recertification cycle start date:	**17-01-2021**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **10-03-2024**

Certificate No. : **CNBJ322300-A** Version: **No.1**. Revision date: **17-01-2021**

Signed on behalf of BVCH SAS

ANAB ACCREDITED
MANAGEMENT SYSTEMS CERTIFICATION BODY

Certification body address: 8 cours du Triangle, Puteaux 92800, France
Local office address: F22, Tower B, Beijing Global Trade Center, 36 North Third Ring Road East, Dongcheng District, Beijing, China, 100013

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call: (+86 10 59693685)
Certified organisation has to accept and pass regular surveillance audits, then this certificate can be continuously valid. Information of this certificate may be obtained by visiting CNCA web site (www.cnca.gov.cn).

Bureau Veritas Certification

JINAN MEIDE CASTING CO., LTD.

MEIDE SCIENCE AND TECHNOLOGY PARK,
PINGYIN INDUSTRIAL PARK, JINAN SHANDONG PROVINCE, CHINA

Unified social credit code:91370124613225093X

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 45001:2018

Scope of certification

DESIGN AND PRODUCTION OF PLUMBING CONNECTERS , VALVES AND RELEVANT ACCESSORIES , DUCTILE IRON GROOVED FITTINGS AND COUPLINGS , FLEXIBLE SPRINKLER HOSE WITH THREADEDEND FITTINGS , MALLEABLE IRON & DUCTILE IRON INSULATOR CAPS & POWER LINES CASTINGS , VALVES FOR SPRINKLERS SYSTEM

Original cycle start date:	07-01-2019*
Expiry date of previous cycle:	NA
Certification / Recertification Audit date:	NA
Certification/Recertification Cycle Start Date:	07-01-2019
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	06-01-2022

Certificate No. CN034458 Version 2 Issue Date: 17-01-2021

Previous Certificate No.: CNBJ321684-UK

UKAS MANAGEMENT SYSTEMS

0008

Certification Body Address: 5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom

Local Office: F22, Tower B, Beijing Global Trade Center, 36 North Third Ring Road East, Dongcheng District, Beijing, China, 100013

*OHSAS 18001: 2007 Original Cycle Start Date:07-01-2018

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: +86 10 59683888

Certified organisation has to accept and pass regular surveillance audits, then this certificate can be continuously valid. Information of this certificate may be obtained by visiting CNCA website (www.cnca.gov.cn).

FM APPROVED

Certificate of Compliance

Ductile Iron Grooved Fittings and Couplings

The following equipment is FM Approved when manufactured by:

Jinan Meide Casting Co., Ltd.
No. 3 Nanmen Road
Pingyin, Jinan 250400
P.R. China

FIGURE 90, 90S, 90R, 105, 110 AND 120 ELBOWS
FIGURE 130, 130S, 130R, 131 AND 131R TEES
FIGURE 180, 180R AND 181R CROSSES
FIGURE 230, 230N, 240, 240N AND 240W REDUCING COUPLINGS
FIGURE 300 END CAPS
FIGURE 1G, 1GS, 1N AND 1NH COUPLINGS
FIGURE 3G, 3L AND 3J MECHANICAL TEES
FIGURE 321 SPLIT FLANGES AND 321G ADATER FLANGES
IN VARIOUS SIZES

FM Approvals confirms that these items have been found to comply with the following standard:

FM Approval Standard 1920 for "Pipe Couplings and Fittings for Aboveground Fire Protection Systems" dated November 2007

The products shown above have been evaluated under the following Approval projects:

Project Identifier	Date of Approval
3032877	May 5, 2009

Richard B. Dunne, Manager, Hydraulics Group

May 5, 2009
Date

FM Approvals®
Member of the FM Global Group

ONLINE CERTIFICATIONS DIRECTORY

VIZM.EX6464
Fittings, Rubber Gasketed

Page Bottom

Fittings, Rubber Gasketed

See General Information for Fittings, Rubber Gasketed

JINAN MEIDE CASTING CO LTD
3 NANMEN RD
PINGYIN
JINAN, SHANDONG 250400 CHINA

EX6464

Coupling

Model	Groove Type	Pipe	Size (in.)	Rated Pressure (psig)
1G	Rolled	10	1-1/4, 1-1/2, 2-1/2	500
1G	Rolled	10	2, 3, 4, 5, 6	300
1G	Rolled	10	8	450
1G	Rolled	10	10, 12	300
1G	Rolled	1387-10	3 OD, 6-1/2 OD	300
1G	Rolled	1387-M	5-1/2 OD	450
1G	Rolled, Cut	40	1-1/4, 1-1/2	500
1G	Rolled, Cut	40	2, 2-1/2, 3, 4, 5, 6	300
1G	Rolled, Cut	40	8	450
1G	Rolled, Cut	40	10, 12	300
1G	Rolled, Cut	1387-40	3 OD, 6-1/2 OD	300
1G	Rolled, Cut	1387-H	5-1/2 OD	450
1G	Rolled, Cut	4200	33.7 / 3.2mm, 108.0 / 4.0mm	500
1G	Rolled, Cut	4200	133.0 / 5.4mm, 159.0 / 4.0mm	300
1G	Rolled, Cut	3454-20	267.4 / 6.4mm, 318.5 / 6.4mm	225
1G	Rolled, Cut	4200	355.6 / 6.3mm, 406.4 / 6.3mm	175
1GS	Rolled	10	4	365
1GS	Rolled	10	3, 6, 8	300
1GS	Rolled	40	3, 4, 6, 8	300
1GS	Rolled	1387-M	3 OD, 5-1/2 OD, 6-1/2 OD	300
1GS	Rolled	1387-H	3 OD, 5-1/2 OD, 6-1/2 OD	300
1GS	Rolled, Cut	4200	108.0 / 4.0mm, 141.3 / 6.3mm, 159.0 / 4.0mm	300
1GS	Rolled, Cut	3454-20	216.3 / 6.4mm	300
1GK	Rolled, Cut	4200 E	1-1/4, 1-1/2, 2	500
1GK	Rolled, Cut	4200 E	3, 4	300
1GK	Rolled, Cut	4200 E	76.1mm	300
1GK	Rolled, Cut	4200 D	139.7mm	300

1GK	Rolled, Cut	1387-M	165.1mm	300
1GK	Rolled, Cut	3454-20	216.3mm	300
R10	Rolled, Cut	3452-SPP SGP	2, 76.1mm, 3, 4, 139.7mm, 165.1mm, 216.3mm, 267.4mm, 318.5mm	300
R20	Rolled, Cut	3454-40	2, 76.1mm, 3, 4, 139.7mm, 165.1mm, 216.3mm, 267.4mm, 318.5mm	500

Flexible coupling

Model	Groove Type	Pipe	Size (in.)	Rated Pressure (psig)
1N	Rolled	10	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6	300
1N	Rolled	10	8	450
1N	Rolled	1387-10	3 OD, 6-1/2 OD	300
1N	Rolled	1387-M	5-1/2 OD	450
1N	Rolled	1387-M, 10	2-1/2 x 2; 3 OD x 1-1/2, 2; 3 x 2, 2-1/2, 3 OD; 4 x 2, 2-1/2, 3 OD, 3; 6-1/2 OD x 4; 6 x 4; 8 x 6-1/2 OD, 6	300
1N	Rolled, Cut	40	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6	300
1N	Rolled, Cut	40	8	450
1N	Rolled, Cut	1387-40	3 OD, 6-1/2 OD	300
1N	Rolled, Cut	1387-H	5-1/2 OD	450
1N	Rolled, Cut	1387-H, 40	2-1/2 x 2; 3 OD x 1-1/2, 2; 3 x 2, 2-1/2, 3 OD; 4 x 2, 2-1/2, 3 OD, 3; 6-1/2 OD x 4; 6 x 4; 8 x 6-1/2 OD, 6	300
1N	Rolled, Cut	4200	33.7 / 3.2mm, 108.0 / 4.0mm	500
1N	Rolled, Cut	4200	133.0 / 5.4mm, 159.0 / 4.0mm	300
1N	Rolled, Cut	4200	60.3 / 3.2 x 48.3 / 4.0mm; 73.0 / 3.2 x 33.7 / 3.2mm; 76.1 / 3.6 x 33.7 / 3.2mm; 88.9 / 3.2 x 33.7 / 3.2mm; 114.3 / 3.6 x 33.7 / 3.2mm; 168.3 / 4.0 x 88.9 / 3.2mm	300
1N	Rolled, Cut	4200	273.0 / 6.3mm, 323.9 / 6.3mm	225
F1	Rolled, Cut	3452-SPP SGP	216.3mm, 267.4mm, 318.5mm	300
1NH	Rolled, Cut	4200	60.3 / 3.2mm, 73.0 / 3.2mm, 76.1 / 3.6mm, 88.9 / 3.2mm, 114.3 / 3.6mm, 141.3 / 6.3mm	500
1NH	Rolled, Cut	4200	168.3 / 4.0mm, 219.1 / 5.0mm	300
1NH	Rolled, Cut	1387 M	165.1 / 5.0mm	300

Flange adapter

Model	Groove Type	Pipe	Size (in.)	Rated Pressure (psig)
321	Rolled	10	2, 2-1/2, 3, 4, 5, 6, 8	300
321	Rolled	1387-10	3OD, 6-1/2 OD	300
321	Rolled	10	10, 12	225
321	Rolled, Cut	40	2, 2-1/2, 3, 4, 5, 6, 8	300
321	Rolled, Cut	1387-40	3OD, 6-1/2 OD	300
321	Rolled, Cut	40	10, 12	225
321	Rolled, Cut	4200	48.3 / 4.0mm, 108.0 / 3.6mm	300
321	Rolled, Cut	4200	133.0 / 3.2mm, 139.7 / 3.6mm, 159.0 / 4.5mm	225
321A	Rolled	10	2, 2-1/2, 3, 4	300
321A	Rolled, Cut	4200	219.1 / 5.0mm, 273.0 / 6.3mm, 323.9 / 6.3mm	175
321AS	Rolled	10	2, 2-1/2, 3	300
321AS	Rolled	10	4, 5	225
321H	Rolled, Cut	1387-M	165.1mm	225
321HS	Rolled, Cut	4200	108.0 / 3.6mm	365
321HS	Rolled, Cut	1387-M	165.1mm	225
321S	Rolled	10	1-1/2, 2, 3, 4	300
321S	Rolled	10	6	225
321S	Rolled, Cut	4200	76.1 / 2.9mm, 108.0 / 3.6mm, 133.0 / 3.2mm	300
321S	Rolled, Cut	4200	139.7 / 3.6mm, 159.0 / 4.5mm	225
321S	Rolled, Cut	1387-M	165.1mm	225

Side outlet

Model	Outlet Type	Pipe	Size (in.)	Rated Pressure (psig)
3G	Grooved	10, 40	2 x 1-1/4, 1-1/2;	300
			2-1/2 x 1-1/4, 1-1/2;	
			3 x 1-1/4, 1-1/2, 2;	
			4 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			5 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	
3G	Grooved	1387-M, 1387-H	3 OD x 1-1/4, 1-1/2;	300
			5-1/2 OD x 2, 2-1/2, 3;	
			6-1/2 OD x 2, 2-1/2, 3	
3G	Grooved	10	3 x 1;	300
			4 x 1;	
			8 x 2, 2-1/2, 76.1mm, 3, 108.0mm, 4	
3G	Grooved	4200	76.1 / 3.6 x 33.7 / 3.2mm;	300
			133.0 / 3.2mm x 88.9mm;	
			139.7 / 3.6mm x 42.4mm, 48.3mm;	
			273.0 / 6.3 x 108.0 / 4.0mm, 114.3 / 3.6mm	

3G	Grooved	4200	139.7 / 3.6mm x 114.3mm;	175
			159.0 / 4.5mm x 108.0mm, 114.3mm	
3G	Grooved	1387-M	165.1 x 114.3mm	225
3GS	Grooved	10	3 x 1, 1-1/4, 1-1/2, 2;	300
			4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3;	
			8 x 2, 2-1/2, 76.1mm, 3, 108.0mm, 4	
3GS	Grooved	10	6 x 4	225
3GS	Grooved	4200	133.0 / 3.2mm x 88.9mm;	300
			139.7 / 3.6mm x 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm	
3GS	Grooved	4200	139.7 / 3.6mm x 114.3mm;	175
			159.0 / 4.5mm x 108.0mm, 114.3mm	
3GS	Grooved	1387-M	165.1 x 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm	300
3GS	Grooved	1387-M	165.1 x 108.0mm, 114.3mm	225
3J	Threaded	10, 40	2 x 1, 1-1/4, 1-1/2;	300
			2-1/2 x 1, 1-1/4, 1-1/2;	
			3 x 1, 1-1/4, 1-1/2, 2;	
			4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			5 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	
3J	Threaded	1387-M, 1387-H	3 OD x 1, 1-1/4, 1-1/2;	300
			5-1/2 OD x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6-1/2 OD x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	
3J	Threaded	10	3 x 1/2, 3/4;	300
			4 x 1/2, 3/4;	
			8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3, 4	
3J	Threaded	4200	273.0 / 6.3 x 114.3 / 3.6mm	225
3J	Threaded	4200	139.7 / 3.6mm x 114.3mm;	175
			159.0 / 4.5mm x 114.3mm	
3J	Threaded	4200	60.3 / 3.2 x 21.3 / 2.8mm, 26.9 / 2.9mm;	300
			73.0 / 3.2 x 21.3 / 2.8mm, 26.9 / 2.9mm;	
			76.1 / 3.6 x 21.3 / 2.8mm, 26.9 / 2.9mm;	
			108.0 / 3.6mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm;	
			133.0 / 3.2mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
			139.7 / 3.6mm x 21.3mm, 26.9mm;	
			159.0 / 4.5mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
			273.0 x 48.3 / 4.0mm, 60.3 / 3.2mm, 76.1 / 3.6mm, 88.9 / 3.2mm	
3J	Threaded	1387-M	165.1 x 21.3mm, 26.9mm	300
3J	Threaded	1387-M	165.1 x 114.3mm	225

3JS	Threaded	10	3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2;	300
			4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3;	
			6 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3;	
			8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 76.1mm, 3, 4	
3JS	Threaded	10	6 x 4	225
3JS	Threaded	4200	108.0 / 3.6mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm;	300
			133.0 / 3.2mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
			139.7 / 3.6mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
			159.0 / 4.5mm x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm	
3JS	Threaded	4200	139.7 / 3.6mm x 114.3mm;	175
			159.0 / 4.5mm x 114.3mm	
3JS	Threaded	1387-M	165.1 x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm	300
3JS	Threaded	1387-M	165.1 x 114.3mm	225
3L	Threaded	4200	42.4 / 3.6 x 21.3 / 2.8mm, 26.9 / 2.9mm, 33.7 / 3.2mm;	300
			48.3 / 4.0 x 21.3 / 2.8mm, 26.9 / 2.9mm, 33.7 / 3.2mm;	
			60.3 / 3.2 x 21.3 / 2.8mm, 26.9 / 2.9mm, 33.7 / 3.2mm;	
			73.0 / 3.2 x 21.3 / 2.8mm, 26.9 / 2.9mm, 33.7 / 3.2mm;	
			76.1 / 3.6 x 21.3 / 2.8mm, 26.9 / 2.9mm, 33.7 / 3.2mm;	
			88.9 / 3.2 x 33.7 / 3.2mm	
4G	Grooved	10, 40	2 x 1-1/4, 1-1/2;	300
			2-1/2 x 1-1/4, 1-1/2;	
			3 x 1-1/4, 1-1/2, 2;	
			4 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			5 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	
4G	Grooved	1387-M, 1387-H	3 OD x 1-1/4, 1-1/2;	300
			5-1/2 OD x 2, 2-1/2, 3;	
			6-1/2 OD x 2, 2-1/2, 3	
4J	Threaded	10, 40	2 x 1, 1-1/4, 1-1/2;	300
			2-1/2 x 1, 1-1/4, 1-1/2;	
			3 x 1, 1-1/4, 1-1/2, 2;	
			4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			5 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	
4J	Threaded	1387-M, 1387-H	3 OD x 1, 1-1/4, 1-1/2;	300
			5-1/2 OD x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6-1/2 OD x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	
4JG	Threaded and	10, 40	2 x 1-1/4, 1-1/2;	300

	Grooved			
			2-1/2 x 1-1/4, 1-1/2;	
			3 x 1-1/4, 1-1/2, 2;	
			4 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			5 x 1-1/4, 1-1/2, 2, 2-1/2, 3;	
			6 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	
4JG	Threaded and Grooved	1387-M, 1387-H	3 OD x 1-1/4, 1-1/2;	300
			5-1/2 OD x 2, 2-1/2, 3;	
			6-1/2 OD x 2, 2-1/2, 3	

The fittings are suitable for use in dry pipe systems for temperatures to -40 F with the exception of Model 1GK.

Model 3J, 3JS and 3L in the 1/2 in. and 3/4 in. nominal outlet sizes are intended for direct connection to sprinklers.

Models 3J, 3JS and 4J in the 1 in. nominal outlet sizes are intended for direct connection to sprinklers.

Models 3G, 3GS, 3J, 3JS, 3L, 4G, 4J and 4JG in the 1 in. and larger nominal outlet sizes are intended for connection to system piping.

10 refers to Schedule 10 steel pipe in accordance with NFPA 13.

40 refers to Schedule 40 steel pipe in accordance with NFPA 13.

1387-10 refers to BS 1387 Schedule 10 steel pipe

1387-40 refers to BS 1387 Schedule 40 steel pipe

1387-M refers to BS 1387 medium steel pipe

1387-H refers to BS 1387 heavy steel pipe

4200 refers to ISO 4200 Group 1 steel pipe

4200 D refers to ISO 4200 Group 1 Type D steel pipe

4200 E refers to ISO 4200 Group 1 Type E steel pipe

3454-20 refers to JIS G3454 Schedule 20 steel pipe

3452-SPP SGP refers to JIS G3452 steel pipe.

3454-40 refers to JIS G3452 Schedule 40 steel pipe.

Trademark and/or Tradename:

Last Updated on 2014-11-03

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ONLINE CERTIFICATIONS DIRECTORY

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Fittings, Grooved and Plain End

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Fittings, Grooved and Plain End

See General Information for Fittings, Grooved and Plain End

JINAN MEIDE CASTING CO LTD EX6097
3 NANMEN RD
PINGYIN
JINAN, SHANDONG 250400 CHINA

The following fittings are intended for use with Listed Jinan Meide (EX6464) rubber gasketed fittings.

Grooved

Model	Type	Size In.	Rated Pressure (psig)
90	90 Degree Elbow	1-1/4, 1-1/2, 2, 2-1/2, 3 OD, 3, 4, 5, 5-1/2 OD, 6, 6-1/2 OD, 8	500
90	90 Degree Elbow	33.7mm, 76.1mm	500
90	90 Degree Elbow	133.0mm, 267.4mm, 318.5mm	300
90	90 Degree Elbow	10	300
90	90 Degree Elbow	12	225
90C	90 Degree Elbow	114.3mm x 88.9mm x 33.7mm, 165.1mm x 88.9mm x 33.7mm	300
90S	90 Degree Short Elbow	2, 2-1/2, 3 OD, 3, 4, 5-1/2 OD, 6, 6-1/2 OD, 8	300
90S	90 Degree Short Elbow	108.0mm	500
90S	90 Degree Short Elbow	159.0mm, 216.3mm	300
90S	90 Degree Short Elbow	114.3mm, 165.1mm	365
90S	90 Degree Short Elbow	159.0mm, 216.3mm	300
90R	90 Degree Reducing Elbow	88.9 x 76.1mm;	300
		114.3 x 76.1mm, 88.9mm;	
		165.1 x 114.3mm;	
		168.3 x 114.3mm	
105	11.25 Degree Elbow	42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm	500
105	11.25 Degree Elbow	108.0mm, 114.3mm, 139.7mm, 159.0mm, 165.1mm, 168.3mm, 219.1mm	300
110	22.5 Degree Elbow	42.4mm, 48.3mm, 60.3mm, 73.0mm, 76.1mm, 88.9mm	500
110	22.5 Degree Elbow	108.0mm, 114.3mm, 139.7mm, 159.0mm, 165.1mm, 168.3mm, 219.1mm	300
120	45 Degree Elbow	1-1/4, 1-1/2, 2, 2-1/2, 3 OD, 3, 4, 5, 6, 6-1/2 OD, 8, 10, 12	500
120	45 Degree Elbow	33.7mm	500
120	45 Degree Elbow	108.0mm, 139.7mm, 159.0mm, 216.3mm, 267.4mm, 318.5mm	300
130	Tee	1-1/4, 1-1/2, 2, 2-1/2, 3 OD, 3, 4, 5, 6, 6-1/2 OD, 8, 10, 12	500
130	Reducing Tee	2 x 1-1/2;	500
		3 x 1, 1-1/2, 2, 2-1/2;	

		4 x 1, 2, 2-1/2, 3;	
		5 x 2, 3, 4;	
		6 x 2, 2-1/2, 3, 4, 5;	
		8 x 2, 3, 4, 5, 6	
130	Reducing Tee	60.3 x 33.7mm, 48.3mm	500
		73.0 x 48.3mm, 60.3mm;	
		76.1 x 42.4mm, 48.3mm, 60.3mm;	
		88.9 x 42.4mm, 48.3mm, 60.3mm, 73.0mm	
130	Reducing Tee	114.3 x 33.7mm, 60.3mm, 73.0mm, 88.9mm;	365
		141.3 x 88.9mm, 114.3mm;	
		168.3 x 60.3mm, 73.0mm, 88.9mm, 114.3mm, 141.3mm	
130	Reducing Tee	88.9 x 76.1mm;	300
		108.0 x 60.3mm, 73.0mm, 88.9mm;	
		114.3 x 48.3mm, 76.1mm;	
		133.0 x 60.3mm, 76.1mm, 108.0mm, 114.3mm;	
		139.7 x 48.3mm, 60.3mm, 76.1mm, 88.9mm, 114.3mm;	
		159.0 x 60.3mm, 76.1mm, 88.9mm, 108.0mm, 114.3mm, 133.0mm;	
		165.1 x 60.3mm, 76.1mm, 88.9mm, 114.3mm, 133.0mm, 139.7mm, 159.0mm;	
		168.3 x 76.1mm, 139.7mm;	
		216.3 x 165.1mm;	
		219.1 x 60.3mm, 76.1mm, 88.9mm, 108.0mm, 114.3mm, 133.0mm, 139.7mm, 141.3mm, 159.0mm, 165.1mm; 168.3mm	
		273.0 x 165.1mm, 168.3mm, 219.1mm;	
		323.9 x 165.1mm, 219.1mm, 273.0mm	
130C	Reducing Tee, Grooved	114.3mm x 88.9mm x 33.7mm, 165.1mm x 88.9mm x 33.7mm	300
130D	Reducing Tee, Grooved	114.3mm x 88.9mm x 33.7mm, 165.1mm x 88.9mm x 33.7mm	300
130S	Short Tee	2, 2-1/2, 3 OD, 3, 4, 5-1/2 OD, 6, 6-1/2 OD, 8	300
130S	Short Tee	108.0mm	500
130S	Short Tee	114.3mm, 165.1mm	365
130S	Short Tee	159.0mm, 216.3mm	300
131	Tee	88.9mm, 114.3mm, 168.3mm	300
131	Reducing Tee	60.3 x 33.7mm, 48.3mm;	500
		73.0 x 33.7mm, 42.4mm;	
		76.1 x 33.7mm, 42.4mm, 48.3mm, 60.3mm;	
		88.9 x 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm	
131	Reducing Tee	108.0 x 60.3mm, 76.1mm, 88.9mm;	300
		114.3 x 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
		133.0 x 60.3mm, 76.1mm, 88.9mm;	
		139.7 x 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm;	
		159.0 x 60.3mm, 76.1mm, 88.9mm;	
		165.1 x 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm, 114.3mm;	

		168.3 x 60.3mm, 76.1mm, 88.9mm	
180	Cross	1-1/4, 1-1/2, 2, 2-1/2, 3 OD, 3, 4, 5, 6, 6-1/2 OD, 8, 10, 12	500
180	Cross	60.3mm, 73.0mm, 76.1mm, 88.9mm, 114.3mm, 141.3mm, 165.1mm	365
180	Cross	108.0mm, 139.7mm, 159.0mm, 168.3mm, 219.1mm	300
180	Reducing Cross	88.9 x 60.3mm	500
180	Reducing Cross	114.3 x 60.3mm, 88.9mm;	300
		139.7 x 114.3mm;	
		159.0 x 108.0mm;	
		165.1 x 60.3mm, 76.1mm, 88.9mm, 114.3mm;	
		219.1 x 60.3mm, 114.3mm, 139.7mm, 159.0mm, 165.1mm	
181	181 Cross	114.3 x 33.7mm, 42.4mm, 48.3mm, 60.3mm;	300
		165.1 x 60.3mm	
230	Grooved Eccentric Reducer	88.9 x 60.3mm;	500
		108.0 x 76.1mm, 88.9mm;	
		114.3 x 60.3mm, 88.9mm	
230	Grooved Eccentric Reducer	114.3 x 76.1mm;	300
		139.7 x 114.3mm;	
		159.0 x 108.0mm, 114.3mm;	
		165.1 x 88.9mm, 114.3mm, 139.7mm;	
		168.3 x 88.9mm, 114.3mm, 139.7mm;	
		219.1 x 114.3mm, 168.3mm;	
		273.1 x 219.1mm	
230N	Grooved Eccentric Reducer With Male Thread	108.0 x 76.1mm	500
230N	Grooved Eccentric Reducer With Male Thread	114.3 x 76.1mm;	300
		139.7 x 88.9mm;	
		165.1 x 88.9mm	
240	Grooved Concentric Reducer	2 x 3/4, 1, 1-1/4, 1-1/2;	500
		2-1/2 x 1, 1-1/4, 1-1/2, 2;	
		3 x 3/4, 1, 1-1/2, 2, 2-1/2;	
		4 x 1, 1-1/2, 2, 2-1/2, 3;	
		5 x 3, 4;	
		6 x 1, 2, 2-1/2, 3, 4, 5;	
		8 x 2-1/2, 3, 4, 5, 6	
240	Grooved Concentric Reducer	42.4 x 33.7mm;	500
		48.3 x 33.7mm, 42.4mm;	
		76.1 x 42.4mm, 48.3mm, 60.3mm;	
		88.9 x 76.1mm;	
		108.0 x 60.3mm, 73.0mm	
240	Grooved Concentric Reducer	88.9 x 42.4mm;	365

		133.0 x 108.0mm, 114.3mm;	
		139.7 x 60.3mm;	
		141.3 x 88.9mm, 114.3mm	
240	Grooved Concentric Reducer	108.0 x 76.1mm;	300
		114.3 x 42.4mm, 76.1mm;	
		139.7 x 76.1mm, 88.9mm, 114.3mm;	
		141.3 x 73.0mm;	
		159.0 x 60.3mm, 76.1mm, 88.9mm, 108.0mm, 114.3mm, 133.0mm;	
		165.1 x 60.3mm, 76.1mm, 88.9mm, 114.3mm, 139.7mm;	
		168.3 x 76.1mm, 139.7mm;	
		216.3 x 114.3mm, 165.1mm;	
		219.1 x 108.0mm, 139.7mm, 159.0mm, 165.1mm;	
		273.0 x 159.0mm, 165.1mm, 168.3mm, 219.1mm;	
		323.9 x 219.1mm, 273.0mm	
240N	Concentric Reducer - FNPT	2 x 3/4, 1, 1-1/4, 1-1/2;	500
		2-1/2 x 1, 1-1/4, 1-1/2, 2;	
		3 x 3/4, 1, 1-1/2, 2, 2-1/2;	
		4 x 1, 1-1/2, 2, 2-1/2, 3;	
		5 x 3, 4;	
		6 x 1, 2, 2-1/2, 3, 4, 5;	
		8 x 2-1/2, 3, 4, 5, 6	
240N	Concentric Reducer With Female Thread	76.1 x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm	500
240N	Concentric Reducer With Female Thread	88.9 x 21.3mm;	365
		133.0 x 48.3mm, 76.1mm;	
		139.7 x 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm, 114.3mm;	
		141.3 x 88.9mm, 114.3mm	
240N	Concentric Reducer With Female Thread	88.9 x 42.4mm, 76.1mm;	300
		108.0 x 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1 mm, 88.9mm;	
		114.3 x 21.3 mm, 26.9mm, 42.4mm, 76.1 mm;	
		159.0 x 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 88.9mm, 114.3mm;	
		165.1 x 21.3mm, 26.9mm, 33.7mm, 42.4mm, 48.3mm, 60.3mm, 76.1mm, 88.9mm, 114.3mm;	
		219.1 x 48.3mm, 60.3mm, 76.1mm	
240W	Concentric Reducer - MNPT	2 x 3/4, 1, 1-1/4, 1-1/2;	500
		2-1/2 x 1, 1-1/4, 1-1/2, 2;	
		3 x 3/4, 1, 1-1/2, 2, 2-1/2;	
		4 x 1, 1-1/2, 2, 2-1/2, 3;	
		5 x 3, 4;	

		6 x 1, 2, 2-1/2, 3, 4, 5;	
		8 x 2-1/2, 3, 4, 5, 6	
240W	Concentric Reducer - MNPT	76.1 x 60.3mm	500
300	Cap	1-1/4, 1-1/2, 2, 2-1/2, 3 OD, 3, 4, 5, 5-1/2 OD, 6, 6-1/2 OD, 8, 10, 12	500
300	Cap	33.7mm	500
300	Cap	108.0mm, 133.0mm, 139.7mm, 159.0mm, 216.3mm	300
300	Cap	76.1 x 48.3mm	500
300	Cap	88.9 x 60.3mm;	365
		114.3 x 60.3mm;	
		139.7 x 60.3mm;	
		165.1 x 60.3mm	
300	Cap	88.9 x 21.3mm, 33,7mm, 48.3mm;	300
		114.3 x 21.3mm, 33.7mm, 48.3mm;	
		165.1 x 21.3mm, 33.7mm;	
		168.3 x 48.3mm	
300PX	Cap	88.9 x 48.3mm, 60.3mm;	365
		114.3 x 48.3mm, 60.3mm;	
		139.7 x 48.3mm, 60.3mm;	
		165.1 x 48.3mm;	
		168.3 x 48.3mm, 60.3mm	
300PX	Cap	219.1 x 48.3mm, 60.3mm	300
321G	Flange Adapter	2, 2-1/2, 3 OD, 3, 4, 5, 6, 6-1/2 OD, 8	300
321G	Flange Adapter	10, 12	225
321G	Flange Adapter	33.7mm, 42.4mm, 48.3mm, 60.3mm, 73.0mm, 76.1mm, 88.9mm, 108.0mm, 114.3mm, 133.0mm, 139.7mm, 141.3mm, 159.0mm, 165.1mm, 168.3mm	300
321G	Flange Adapter	219.1mm, 273.1mm, 323.9mm	225
321GH	Flange Adapter	108.0mm, 159.0mm	300
321GL	Flange Adapter	219.1mm, 273.0mm	225

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Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in feed mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction tanks, in new connections to existing feed mains and in air or water fire service lines subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated pressures are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for some couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Grooves should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, the manufacturer's recommendations and requirements are to be followed.

Grooved Couplings, Reducing-Flexible

These couplings join pipe, valves or fittings having different nominal pipe diameters.

Model 1N

Product Designation	*Nominal Pipe Size, in.*	*Pipe Ends*	*Remarks*	*Max Working Pressure, psi (kPa)*
1N	2 x 1 1⁄2 2 1⁄2 x 1, 2 3 x 1, 2, 2 1⁄2 4 x 1, 2 4 x 2 1⁄2, 3 6 x 3, 4 8 x 6	Cut Groove Rolled Groove	a, b, c, d	300 (2070)
	76.1 x 33.7, 1 1⁄2, 2 3 x 76.1 4 x 76.1 165 x 4 8 x 165	Cut Groove Rolled Groove	a, b, c, d	300 (2070)

Remarks:
a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller – Schedule 40; 8 in. NPS and larger – Schedule 30.
b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller – Schedule 10S; 8 in. NPS and larger 0.188 in. (5 mm) wall.
c. Approved when supplied with EPDM gasket.
d. Approved for use with GB/T3092 regular and extra heavy pipe, ISO 4200, and BS 1387 medium and heavy pipe.

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No
Listing Country:	China
Certification Type:	FM Approved

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Pipe Fittings

These fittings are suitable for interconnecting piping, valves and other components in both wet and dry automatic sprinkler systems. Installation should be according to applicable sprinkler system fabrication rules. These rules limit the minimum size of sprinkler piping to 1 in., nominal. FM Approved pipe fittings of smaller sizes are intended for use as valve trim, gauge connections, and for other peripheral service. The water flow path of the sprinkler system cannot be designed using smaller sizes than 1 in., nominal. Unless otherwise noted in the listing, these fittings have 175 psi (1205 kPa) rated working pressure.

Threaded connections on fittings can be made to FM Approved threadable thinwall pipe or to Schedule 40 pipe. Refer to the "Steel Pipe" listings for a summary of the various types of FM Approved steel pipe suitable for threading or grooving."

The fittings manufacturer's installation instructions must be observed in all cases. When connections are made to FM Approved pipe, the pipe manufacturer's installation instructions must also be followed.

Unless otherwise stated below, the maximum ambient temperature to which these fittings should be subjected is 225°F (107°C).

Pipe Fittings

Jinan Meide, Pipe Fittings

Product Designation	*Fitting Description*	*End Connection*	*Nominal Pipe Size, in.*	*Max Working Pressure, psi (kPa)*	*Rema*
1#	90° Bend	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
1A	90° Bend Short	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 4	500 (3445)	a
2#	90° Bend	Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
2A	90° Bend Short	Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
3#	90° Bend	Male BSP	1/2, 3/4, 1, 1-1/3, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
40	45° Bend	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/3, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP X Female BSP	6	300 (2070)	a
41	45° Bend	Female BSP	1/2, 3/4, 1, 1-1/3, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
85	Crossover	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
90	90° Elbow	Grooved	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	500 (3450)	a
			76, 139.7, 165 mm	500 (3445)	a
			1 76, 133 mm	500 (3445)	b
			267.4, 318.5 mm	300 (2070)	b

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		NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
90C	90° Reducing Elbow	Grooved	114.3 x 88.9 x 33.7 mm 165.1 x 88.9 x 33.7 mm	300 (2070)	b
90R	90° Reducing Elbow	NPT	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/4 x 3/8, 1/2, 3/4 1-1/4 x 3/8, 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	a
		BSP	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/4 x 3/8, 1/2, 3/4 1-1/4 x 3/8, 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	a
			6 x 4	300 (2070)	a
		Grooved	6 x 4 88.9 x 76.1 mm 114.3 x 76.1 mm 165.1 x 114.3 mm	500 (3445)	b
90S	90° Short Radius Elbow	Grooved	2, 2-1/2, 3, 4, 6, 8 76, 139.1, 165mm	300 (2070)	a
			108, 159, 216.3 mm	300 (2070)	b
			114, 165 mm	365 (2510)	b
92	90° Street Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
92R	90° Reducing Street Elbow	BSP	3/4 x 1/2 1 x 3/4	500 (3445)	a

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95	Union Elbow, Flat Seat without gasket	Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
96	Union Elbow, Conical Joint Iron to Iron	Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
97	Union Elbow, Flat Seat without gasket	Male BSP X Female BSP	1-1/2	500 (3445)	a
98	Union Elbow, Conical Joint Iron to Iron	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
105	11.25° Elbow	Grooved	1-1/4, 1-1/2, 2, 3, 4, 6 76.1, 108, 139.7, 159, 165.1 mm	500 (3445)	b
		Grooved	8	300 (2070)	b
110	22.5° Elbow	Grooved	1-1/4, 1-1/2, 2, 3, 4, 6 73, 76.1, 108, 139.7, 159, 165.1 mm	500 (3445)	b
		Grooved	8	300 (2070)	b
120	45° Elbow	Grooved	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 165 mm	500 (3450)	a
			1 108, 139.7, 159 mm	500 (3445)	b
			216.3, 267.4, 318.5 mm	300 (2070)	b
		NPT	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
121	45° Street Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a
130	Equal Tee	Grooved	1-1/4, 1-1/2,, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76/1. 165 mm	500 (3450)	a
			1 76, 133, 139.7 mm	500 (3445)	b
			267.4 mm	300 (2070)	b
		NPT	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a

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			5, 6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-12, 2 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
130C	Reducing Tee	Grooved	114.3 x 88.9 x 33.7 mm 165.1 x 88.9 x 33.7 mm	300 (2070)	b
130D	Reducing Tee	Grooved	114.3 x 88.9 x 33.7 mm 165.1 x 88.9 x 33.7 mm	300 (2070)	b
		Grooved	2 x 1-1/2 3 x 1, 1-1/2, 2, 2-1/2 4 x 1, 2, 2-1/2, 3 5 x 2, 3, 4 6 x 2, 2-1/2, 3, 4, 5 8 x 2, 3, 4, 5, 6	500 (3450)	a
			2 x 1 2-1/2 x 1-1/2, 2 3 x 1-1/4 4 x 1-1/2 60 x 48 mm 76.1 x 42.4, 48.3, 60.3 mm 88.9 x 48, 60, 73, 76.1 mm 108 x 60.3, 73, 88.9 mm 114.3 x 34, 60, 73, 76.1, 88.9 mm 133 x 60.3, 76.1, 108, 114.3 mm 139.7 x 48.3, 60.3, 76.1, 88.9, 114.3 141 x 114.3 mm 159 x 60.3, 76.1, 88.9, 114.3, 133 mm 168 x 60, 73, 89, 114, 141 mm	500 (3445)	b
			10 x 6, 8 12 x 8, 10 165.1 x 60.3, 76.1, 88.9, 114.3, 133, 139.7, 159 mm 168.3 x 76.1, 139.7 mm 216.3 x 165.1 mm 219.1 x 60, 76.1, 89, 108, 114.3, 133, 139.7, 141.3, 159, 165.1, 168 mm 273 x 165.1 mm 323.9 x 165.1 mm	300 (2070)	b
		NPT	1/2 x 1/2 x 1/4, 3/8 1/2 x 1/4 x 1/2 1/2 x 3/8 x 1/2 3/4 x 3/4 x 1/4, 3/8, 1/2 3/4 x 1/2 x 1/2 x 3/4 1 x 1 x 1/4, 3/8, 1/2, 3/4 1 x 1/2 x 1/2, 3/4, 1 1 x 3/4 x 1/2, 3/4, 1 1-1/4 x 1/2 x 1/2, 3/4, 1, 1-1/4 1-1/4 x 3/4 x 3/4, 1, 1-1/4 1-1/4 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/4 x 1-1/4 x 3/8, 1/2, 3/4, 1 1-1/2 x 1/2 x 3/4, 1-1/2 1-1/2 x 3/4 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/2 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/2 x 1-1/4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 1-1/2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2 x 2 2 x 3/4 x 2 2 x 1 x 1, 1-1/2, 2	500 (3445)	a

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130R	Reducing Tee		2 x 1-1/4 x 1, 1-1/4, 1-1/2, 2 2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 2 x 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1-1/2 x 2, 2-1/2 2-1/2 x 2 x 2, 2-1/2 2-1/2 x 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 3 x 2 x 2, 3 3 x 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3		
		BSP	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/4, 3/8, 1/2, 3/4 1-1/4 x 3/8, 1/2, 3/4, 1 1-1/2 x 3/8, 1/2, 3/4, 1, 1-1/4 2 x 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 3/4, 1/2, 1, 1-1/4, 1-1/2, 2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 1/2 x 1/2 x 3/4, 1 3/4 x 3/4 x 1, 1-1/4 1 x 1 x 1-1/4 x 1-1/2, 2, 2-1/2 1-1/4 x 1-1/4 x 1-1/2, 2 1-1/2 x 1-1/2 x 2, 2-1/2 2 x 2 x 2-1/2 2-1/2 x 2-1/2 x 3, 4 3/4, 1 x 1/2 x 1/2 1-1/4, 1-1/2 x 3/4 x 3/4 1-1/4 x 1/2 x 1/2 1-1/4 , 1-1/2, 2 x 1 x 1 1-1/2, 2 x 1-1/4 x 1-1/4 2 x 1-1/2 x 1-1/2 2-1/2, 3 x 2 x 2 3/4 x 1/2 x 3/4 1 x 1/2 x 1, 1 x 3/4 x 1, 1 x 1/4 x 1 1-1/4 x 1/2 x 1-1/4, 1-1/4, 1-1/4 x 3/4 x 1-1/4, 1-1/4 x 1 x 1-1/4 1-1/2 x 1/2 x 1-1/2, 1-1/2 x 3/4 x 1-1/2, 1-1/2 x 1 x 1-1/2, 1-1/2 x 1-1/4 x 1-1/2 2 x 1/2 x 2, 2 x 3/4 x 2, 2 x 1 x 2, 2 x 1-1/4 x 2, 2 x 1-1/2 x 2 2-1/2 x 1-1/2 x 2-1/2, 2-1/2 x 2 x 2-1/2 3/4 x 1/2 x 1, 1 x 1/2 x 3/4, 1 x 3/4 x 1/2 1-1/4 x 1/2 x 3/4, 1 1-1/4 x 3/4 x 1/2, 1 1-1/4 x 1 x 1/2, 3/4 1-1/2 x 3/4 x 1, 1-1/4 1-1/2 x 1 x 1/2, 1-1/4 1-1/2 x 1-1/4 x 1/2, 3/4, 2 2 x 1 x 1-1/2 2 x 1-1/4 x 1, 1-1/22 x 1-1/2 x 3/4, 1, 1-1/4 2-1/2 x 2 x 1/2, 1, 1-1/4	500 (3445)	a
			6 x 2, 3, 4	300 (2070)	a
	Bullhead Tee	NPT	3/8 x 3/8 x 1/2 1/2 x 1/2 x 3/4, 1 3/4 x 3/4 x 1 1 x 1 x 1-1/4, 1-1/2, 2 1-1/4 x 1-1/4 x 1-1/2, 2 1-1/2 x 1-1/2 x 2 2 x 2 x 2-1/2	500 (3445)	a
			2, 2-1/2, 3, 4, 6, 8 76, 139.7, 165 mm	300 (2070)	a

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130S	Short Radius Tee	Grooved	108, 159, 216.3 mm	300 (2070)	b
			114, 165 mm	365 (2510)	b
131	Equal Tee	Grooved	3, 4, 6	300 (2070)	b
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
131R	Reducing Tee	Grooved	2 x 1, 1-1/2 2-1/2 x 1, 1-1/4, 3 x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 3 6 x 2, 3 8 x 2, 3, 4 76.1 x 33.7, 42.4, 48.3, 60.3 mm 88.9 x 76.1 mm 108 x 60.3, 76.1, 88.9 mm 114.3 x 76.1 mm 133 x 60.3, 76.1, 88.9 mm 139.7 x 33.7, 42.4, 48.3, 60.3, 76.1, 88.9 mm 159 x 60.3, 76.1, 88.9 mm 165.1 x 33.7, 42.4, 48.3, 60.3, 76.1, 88.9, 114.3 mm 168.3 x 76.1 mm 219.1 x 76.1 mm	300 (2070)	b
134	Service Tee	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
134R	Service Tee Reducing	BSP	2 x 1-1/2 2-1/2 x 2 3 x 2-1/2	500 (3445)	a
165	Lateral Y Branch	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
180	Equal Cross	Grooved	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 165 mm	500 (3445)	a
			60, 73, 76, 89, 108, 114, 139.7, 141, 159, 165, 168 mm	500 (3445)	b
			219 mm	300 (2070)	b
		NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a

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180R	Reducing Cross	Grooved	3 x 2 4 x 2, 3 8 x 2, 4 139.7 x 114.3 mm 159 x 114.3 mm 165.1 x 60.3, 76.1, 88.9, 114.3 mm	500 (3445)	b
			219.1, 139.7, 159, 165.1 mm	300 (2070)	b
		NPT	3/4 x 1/2 1 x 3/4 1-1/4 x 3/4, 1 1-1/2 x 3/4, 1, 1-1/4 2 x 3/4, 1, 1-1/4, 1-1/2 2 x 1/2 x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 2-1/2, 3	500 (3445)	a
		BSP	3/4 x 1/2 1-1/2 x 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 3/4, 1, 1-1/4, 1-1/2 2 x 1/2 x 1, 1-1/4, 1-1/2, 2 3 x 3/4, 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	a
181R	Reducing Cross	Grooved	4 x 1, 1-1/4, 1-1/2, 2 165.1 x 60.3 mm	300 (2070)	b
220	Coupling	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
230	Eccentric Reducer	Grooved	4 x 2, 3 6 x 3, 4 8 x 4 88.9 x 60.3 mm 108 x 76.1, 88.9 mm 114.3 x 76.1 mm 139.7 x 114.3 mm 159 x 108, 114.3 mm 165.1 x 88.9, 114.3, 139.7 mm 168.3 x 139.7 mm	300 (2070)	b
			219 x 168 mm 273 x 219 mm	365 (2510)	b
230N	Eccentric Reducer	Grooved x Female NPT	108 x 76.1 mm 114.3 x 76.1 mm 139.7 x 88.9 mm 165.1 x 88.9 mm	300 (2070)	b
240	Reducing Socket	NPT	1/2 x 3/8 3/4 x 3/8, 1/2 1 x 3/8, 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, -1/2 2-1/2 x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2 4 x 2, 3	500 (3445)	a

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		BSP	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/4, 3/8, 1/2, 3/4 1-1/4 x 1/4, 3/8, 1/2, 3/4, 1 1-1/2 x /4, 3/8, 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2	500 (3445)	a
240	Concentric Reducer	Grooved	2 x 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 3 x 3/4, 1, 1-1/2, 2, 2-1/1 4 x 1, 1-1/2, 2, 2-1/2, 3 5 x 3, 4 6 x 1, 2, 2-1/2, 3, 4, 5 8 x 2-1/2, 3, 4, 5, 6	500 (3450)	a
	Concentric Reducer	Grooved	1-1/4 x 1 1-1/2 x 1, 1-1/2 4 x 1-1/4 5 x 2-1/2 76 x 42, 48, 60 mm 89 x 42, 76 mm 108 x 60.3, 73, 76 mm 114.3 x 76.1 mm 133 x 108, 114.3 mm 139.7 x 60.3, 76.1, 88.9, 114.3 mm 141 x 89, 114 mm 159 x 60.3, 76.1, 88.9, 108, 114.3, 133 mm 165.1 x 60.3, 76.1, 88.9, 114.3, 139.7 mm 168.3 x 76.1, 139.7 mm	500 (3450)	b
			216.3 x 114.3, 165.1 mm 219.1 x 108, 139.7, 159, 165.1 mm 273 x 159, 165.1, 168.3, 219.1 mm 322.9 x 219.1, 273 mm	300 (2070)	b
240N	Concentric Reducer	Grooved x Female NPT	2 x 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 3 x 3/4, 1, 1-1/2, 2, 2-1/2 4 x 1, 1-1/2, 2, 2-1/2, 3 5 x 3, 4 6 x 2, 2-1/2, 3, 4, 5 8 x 2-1/2, 3, 4, 5, 6	500 (3450)	a
			4 x 1/2, 3/4, 1-1/2 8 x 1-1/2, 2 76 x 21, 27, 34, 42, 48, 60 mm 89 x 21, 76 mm 108 x 34, 42, 48, 60, 76, 89 mm 114 x 76 mm 133 x 48, 76 mm 139.7 x 27, 34, 42, 48, 60, 76, 89, 114 mm 141.3 x 89, 114 mm 159 x 27, 34, 42, 48, 60, 89, 114 mm 165 x 21, 27, 34, 42, 48, 60, 76, 89, 114 mm 219 x 76 mm	500 (3450)	b
240W	Concentric Reducer	Grooved x NPT	2 x 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 3 x 3/4, 1, 1-1/2, 2, 2-1/2 4 x 1, 1-1/2, 2, 2-1/2, 3 5 x 3, 4 6 x 2, 2-1/2, 3, 4, 5 8 x 2-1/2, 3, 4, 5, 6	500 (3450)	a

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			76 x 60 mm	500 (3450)	b
241	Bushing	NPT	1/2 x 1/4, 3/8 3/4 x 3/8, 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 3/8, 1/2, 3/4, 1, 1-1/4 2 x 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 3-1/2 x 2-1/2, 3 4 x 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2	500 (3445)	a
			5 x 2, 3, 4 6 x 2, 2-1/2, 3, 3-1/2, 4, 5	300 (2070)	a
		BSP	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/4, 3/8, 1/2, 3/4 1-1/4 x 1/4, 3/8, 1/2, 3/4, 1 1-1/2 x 1/4, 3/8, 1/2, 3/4, 1, 1-1/4 2 x 1/4, 3/8, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1-1/2, 2 3 x 2, 2-1/2 3-1/2 x 3 4 x 3/4, 1, 1-1/4, 1-1/2, 3	500 (3445)	a
			5 x 3, 4 6 x 2, 2-1/2, 5	300 (2070)	a
241D	Bushing	BSP	2 x 1/2, 3/4 2-1/2 x 1, 1-1/4 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2 4 x 2, 2-1/2	500 (3445)	a
			6 x 3, 4	300 (2070)	a
245	Hex Nipple Reducing	BSP	1/2 x 1/4, 3/8 3/4 x 1/4, 3/8, 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2 3 x 1-1/2, 2, 2-1/2 4 x 2, 4 x 2-1/2, 4 x 3	500 (3445)	a
246	Extension Reducing	Male BSP X Female BSP	1/2 x 1/4, 3/8 3/4 x 3/8, 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2, 3/4, 1, 1-1/4 2 x 1, 1-1/4, 1-1/2	500 (3445)	a
270	Socket	BSP Parallel Threads	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
271	Socket	BSP Right and Left Threads	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
		NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2	500 (3445)	a

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280	Hex Nipple	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
291	Plug, Sq. Hd.	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
291-4	Plug, Cross Slotted	NPT	4	500 (3445)	a
			5, 6	300 (2070)	a
291N	Plug, Sq. Socket	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	a
291S	Plug, Solid Sq.	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
300	End Cap	Grooved	1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 165 mm	500 (3450)	a
			1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 89, 114, 140, 165 mm	500 (3450)	b
		NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			5, 6	300 (2070)	a
300PX	End Cap with BSP threaded outlet	Grooved x BSP	89 x 48, 60 mm 114 x 48, 60 mm 140 x 48, 60 mm 165 x 48 mm 168 x 48, 60 mm	500 (3445)	b
			219 x 48, 60 mm	300 (2070)	b
310	Locknut	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
312	Backnut	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 4	500 (3445)	a
321	Flange Adapter	Flanged x NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a

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321-4	Flange Adapter	Flanged x BSP	1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
321-6	Flange Adapter	Flanged x BSP	1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
			6	300 (2070)	a
321G	Flange Adapter	Flanged x Grooved	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 165 mm	500 (3450)	a
			1, 1-1/4, 1-1/2, 10, 12 108, 133, 139.7, 159 mm	300 (2070)	a
			60, 73, 76.1, 89, 114 mm	365 (2510)	b
			139.7, 141.3, 165, 168, 219, 273, 324 mm	225 (1550)	b
321H	Flange Adapter	Flanged x BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	a
321N	Flange Adapter	Flanged x BSP	2	500 (3450)	a
321P	Flange Adapter	Flanged x BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	a
			5, 6	300 (2070)	a
321PW	Flange Adapter	Flanged x BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	a
			5, 6	300 (2070)	a
321TD	Flange Adapter	Flanged x BSP	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	a
			6	300 (2070)	a
321W	Flange Adapter	Flanged x BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	a
330	Union Flat Seat without gasket	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
331	Union Flat Seat without gasket	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
340	Union Conical Joint Iron to Iron	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
340F	Union Nut	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
341	Union Conical Joint Iron to Iron	Male BSP X Female BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a

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342	Union Conical Joint Brass to Iron	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
526	Extension	BSP	1/2	500 (3445)	a
529	Extension	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3445)	a
529A	Extension Long	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
529X	Extension Short	BSP	1/2	500 (3445)	a
1090	90° Elbow Plain	BSP	1/2, 3/4, 1, 1-1/4, 2	500 (3445)	a
1130	Equal Tee Plain	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
1220	Socket Plain	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	a
1221	Side Outlet Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3445)	a
		BSP	1/2, 3/4, 1, 1-1/4, 2	500 (3445)	a
1223	Side Outlet Tee	BSP	1/2, 3/4, 1	500 (3445)	a
Steel Merchant Socket	Socket	BSP	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	d
			4, 5, 6	300 (2070)	d
		NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	500 (3445)	d
			4, 5, 6	300 (2070)	d

Remarks:
a. Malleable Iron Fittings
b. Ductile Iron Fittings
c. Cast Iron Fittings
d. Steel Fittings

Product Designation	*Fitting Description*	*End Connection*	*Nominal Pipe Size, in.*	*Max Working Pressure, psi (kPa)*	*Rema*
35C	Cap	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2	500 (3450)	b
35CP	Straight Coupling	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2	500 (3450)	b
35E	90° Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	b

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35F	45° Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2	500 (3450)	b
35HB	Bushings	NPT	1 x 1/2, 3/4 1-1/4 x 3/4, 1 1-1/2 x 1, 1-1/4 2 x 1, 1-1/4, 1-1/2	500 (3450)	b
35RC	Concentric Reducer	NPT	1 x 1/2, 3/4 1-1/4 x 3/4, 1 1-1/2 x 1, 1-1/4 2 x 1, 1-1/4, 1-1/2	500 (3450)	b
35RE	90° Reducing Elbow	NPT	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1-1/2, 2 3 x 3/4	500 (3450)	b
35RT	Reducing Tee	NPT	3/4 x 3/4 x 1/2, 1 3/4 x 1/2 x 3/4, 1/2 1 x 1 x 1/2, 3/4, 1-1/4, 1-1/2 1 x 3/4 x 3/4, 1 1 x 1/2 x 1 1-1/4 x 1-1/4 x 1/2, 3/4, 1, 1-1/2, 2 1-1/4 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/4 x 3/4 x 1-1/4 1-1/4 x 1/2 x 1-1/4 1 x 1/2 x 1-1/2 x 1/2, 3/4, 1, 1-1/3, 1-1/2, 2 1-1/2 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/2 x 3/4 x 1-1/4, 1-1/2 1-1/2 x 1/2 x 1-1/4, 1-1/2 2 x 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2-1/2 2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 2 x 1-1/4 x 2 2 x 1 x 2 2-1/2 x 2-1/2 x 3/4, 1, 1-1/4, 1-1/2 2, 3	500 (3450)	b
35RX	Reducing Cross	NPT	1-1/4 x 1 1-1/2 x 1 2 x 1	500 (3450)	b
35SP	Square Head Pipe Plug	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2	500 (3450)	b
35T	Equal Tee	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	500 (3450)	b
35U	Union	NPT	1, 1-1/4, 1-1/2, 2	500 (3450)	b
35X	Cross	NPT	1, 1-1/4, 1-1/2, 2	500 (3450)	b
37E	90° Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	300 (2070)	c
37F	45° Elbow	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	300 (2070)	c
37RC	Concentric Reducer	NPT	1 x 1/2, 3/4 1-1/4 x 1 2 x 3/4, 1	300 (2070)	c

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37RE	90° Reducing Elbow	NPT	3/4 x 1/2 1 x 1/2, 3/4 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 3/4, 1, 1-1/4, 1-1/2, 2 3 x 2	300 (2070)	c
37RT	Reducing Tee	NPT	3/4 x 3/4 x 1 1 x 1/2 x 1/2, 3/4, 1 1 x 3/4 x 1/2, 3/4, 1 1 x 1 x 1/2, 3/4, 1-1/4, 1-1/2 1 x 1-1/4 x 1 1-1/4 x 1-1/4 x 1/2, 3/4, 1, 1-1/2, 2 1-1/4 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2 1-1/4 x 3/4 x 1-1/4 1-1/4 x 1/2 x 1-1/4 1-1/2 x 1-1/2 x 1/2, 3/4, 1, 1, 1-1/4, 2 1-1/2 x 1-1/4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 1-1/2 x 1 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 1-1/2 x 3/4 x 1-1/4, 1-1/2 1-1/2 x 1/2 x 1-1/4, 1-1/2 2 x 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 2 x 1-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2 2 x 1-1/4 x 1/2, 1, 1-1/4, 1-1/2, 2 2 x 1 x 3/4, 1, 1-1/4, 1-1/2, 2 2 x 1/2 x 2 2 x 2 x 2-1/2 2-1/2 x 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 2 x 1-1/4 x 2-1/2 2 x 1 x 2-1/2 2 x 3/4 x 2-1/2 2-1/2 x 1/2 x 2, 2-1/2 3 x 3 x 1-1/4, 1-1/2, 2	300 (2070)	c
37T	Equal Tee	NPT	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	300 (2070)	c

Remarks:
a. Malleable Iron Fittings
b. Ductile Iron Fittings
c. Cast Iron Fittings

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No
Listing Country:	China
Certification Type:	FM Approved

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Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in feed mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction tanks, in new connections to existing feed mains and in air or water fire service lines subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated pressures are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for some couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Grooves should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, the manufacturer's recommendations and requirements are to be followed.

Grooved Split Flanges-Flexible

Split Flanged-These fittings join pipe, valves or fittings having equal diameters.

321, 321S, 321HS

Product Designation	*Fitting Description*	*Nominal Pipe Size, in.*	*Remarks*	*Max Rated Pressure, psi (kPa)*
321	Split Flange	1 1/2, 2, 2 1⁄2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139, 159, 165 mm	a, b, c, d, e	300 (2070)
321S	Split Flange	48, 60, 76, 89, 108, 114 mm	a, b, c, d, e	365 (2510)
		133, 140, 159, 165, 168 mm	a, b, c, d, e	225 (1550)
321HS	Split Flange	108 mm	a, b, c, e, f	365 (2510)
		165 mm	a, b, c, e, f	225 (1550)

Remarks:

a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller - Schedule 40; 8 in. NPS and larger - Schedule 30.
b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller - Schedule 10S; 8 in. NPS and larger 0.188 in. (5 mm) wall.
c. Approved when supplied with EPDM gasket.
d. Approved when supplied with an ISO PN10 bolt pattern.
e. Approved when used with GB/T3092 regular and extra heavy pipe, ISO 4200, and BS 1387 Medium and Heavy pipe.
f. Approved when supplied with an ISO PN25 bolt pattern.

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No
Listing Country:	China

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Certification Type:	FM Approved

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Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in feed mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction tanks, in new connections to existing feed mains and in air or water fire service lines subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated pressures are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for some couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Grooves should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, the manufacturer's recommendations and requirements are to be followed.

Grooved Couplings, Standard-Flexible

These couplings join pipe, valves or fittings having equal nominal-sized diameters.

Model 1NH

	Rated Working Pressures for Model 1NH Flexible Coupling by Pipe [a, b, c]																
	Nominal Pipe Size																
Pipe Description	***1 (33.7)***	***1-1/4 (42.7)***	***1-1/2 (48.3)***	***2 (60.3)***	***2-1/2 (73.1)***	***(76.1)***	***3 (88.9)***	***(108)***	***4 (114.3)***	***(133)***	***(139.7)***	***5 (141.3)***	***(159)***	***(165.1)***	***6 (168.3)***	***(216.3)***	***8 (219.1)***
Schedule 40, Cut Groove				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
Schedule 40, Roll Groove				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
Schedule 30, Cut Groove																	500 (3450)
Schedule 30, Rolled Groove				500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)			500 (3450)		500 (3450)	500 (3450)		500 (3450)
Thinwall Pipes, Rolled Groove																	
Schedule 10, Rolled Groove				500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)			500 (3450)		500 (3450)	500 (3450)		
0.188" Wall, Rolled Groove																	500 (3450)
Schedule 10, Swage Groove																	
Lightwall Pipes, Rolled Groove																	

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Lightwall Pipes, Swage Groove																	
Schedule 5 Pipe, Rolled Groove																	
EN 10220 (ISO 4200), Cut Groove																	
Thickness F				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
Thickness G				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
EN 10220 (ISO 4200), Rolled Groove																	
Thickness D									500 (3450)			500 (3450)		500 (3450)	500 (3450)		
Thickness E				500 (3450)			500 (3450)		500 (3450)			500 (3450)		500 (3450)	500 (3450)		500 (3450)
Thickness F				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
Thickness G				750 (5170)	750 (5170)	750 (5170)	750 (5170)		750 (5170)			750 (5170)		750 (5170)	750 (5170)		750 (5170)
EN 10255 (BS 1387) Medium, Rolled Groove				500 (3450)		500 (3450)	500 (3450)		500 (3450)					500 (3450)			
EN 10255 (BS 1387) Heavy, Rolled Groove				750 (5170)		500 (3450)	500 (3450)		500 (3450)					500 (3450)			
Chinese Standard GB/T 3092 Regular, Rolled Groove				500 (3450)		500 (3450)	500 (3450)		500 (3450)					500 (3450)			
Chinese Standard GB/T 3092 Extra Heavy, Rolled Groove				750 (5170)		500 (3450)	500 (3450)		500 (3450)					500 (3450)			

Remarks:
a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30
b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8, 10 or 12 inch - 0.188 inch (4.78 mm) wall
c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant or dry lubricant

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No

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Listing Country:	China
Certification Type:	FM Approved

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Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in feed mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction ta in new connections to existing feed mains and in air or water fire service lines subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated pressures are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for s couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Grooves should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, the manufacturer's recommendations and requirements are to be followed.

Grooved Couplings, Standard-Flexible

These couplings join pipe, valves or fittings having equal nominal-sized diameters.

Model 1N

	Rated Working Pressures for Model 1N Flexible Coupling by Pipe a, b, c																	
	Nominal Pipe Size																	
Pipe Description	***1 (33.7)***	***1-1/4 (42.7)***	***1-1/2 (48.3)***	***2 (60.3)***	***2-1/2 (73.1)***	***(76.1)***	***3 (88.9)***	***(108)***	***4 (114.3)***	***(133)***	***(139.7)***	***5 (141.3)***	***(159)***	***(165.1)***	***6 (168.3)***	***(216.3)***	***8 (219.1)***	***(267)***
Schedule 40, Cut Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)	
Schedule 40, Roll Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)	
Schedule 30, Cut Groove																	300 (2070)	
Schedule 30, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)	
Thinwall Pipes, Rolled Groove																		
Schedule 10, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)			
0.188" Wall, Rolled Groove																	300 (2070)	
Schedule 10, Swage Groove																		
Lightwall Pipes, Rolled Groove																		
Lightwall Pipes, Swage Groove																		
Schedule 5 Pipe, Rolled Groove																		
EN 10220 (ISO 4200), Cut Groove																		
Thickness F		500 (3450)		500 (3450)	500 (3450)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)		300 (2070)	

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10 (273)	***(318)***	***12 (323.9)***
300 (2070)		300 (2070)
300 (2070)		300 (2070)
300 (2070)		300 (2070)
300 (2070)		300 (2070)
300 (2070)		300 (2070)
300 (2070)		300 (2070)

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Thickness G	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)		300 (2070)	
EN 10220 (ISO 4200), Rolled Groove																		
Thickness D								300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)			
Thickness E				500 (3450)			500 (3450)	300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)		300 (2070)	
Thickness F	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)		300 (2070)	
Thickness G	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	300 (2070)	500 (3450)	500 (3450)	300 (2070)	500 (3450)	500 (3450)		300 (2070)	
EN 10255 (BS 1387) Medium, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)	500 (3450)		500 (3450)		500 (3450)			500 (3450)				
EN 10255 (BS 1387) Heavy, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)	500 (3450)		500 (3450)		500 (3450)			500 (3450)				
Chinese Standard GB/T 3091, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	300 (2070)	500 (3450)		300 (2070)		500 (3450)		300 (2070)	
JIS G3452, Cut Groove																300 (2070)		300 (2070)
JIS G3452, Rolled Groove																300 (2070)		300 (2070)

Remarks:
a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30
b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8, 10 or 12 inch - 0.188 inch (4.78 mm) wall
c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant or dry lubricant

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No
Listing Country:	China
Certification Type:	FM Approved

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300 (2070)		300 (2070)
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Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in fe mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction tanks, in new connections to existing feed mains and in air or water fire service line subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated press are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for some couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Gro should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, manufacturer's recommendations and requirements are to be followed.

Grooved Couplings, Standard-Rigid

These couplings join pipe, valves or fittings having equal diameters.

1G

	Rated Working Pressures for Model 1G Rigid Coupling by Pipe [a, b, c]																						
	Nominal Pipe Size																						
Pipe Description	***1 (33.7)***	***1-1/4 (42.7)***	***1-1/2 (48.3)***	***2 (60.3)***	***2-1/2 (73.1)***	***(76.1)***	***3 (88.9)***	***(108)***	***4 (114.3)***	***(133)***	***(139.7)***	***5 (141.3)***	***(159)***	***(165.1)***	***6 (168.3)***	***(216.3)***	***8 (219.1)***	***(267)***	***10 (273)***	***(318)***	***12 (323.9)***	***(356)***	***(377)***
Schedule 40, Cut Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 40, Roll Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)		300 (2070)		300 (2070)		
Schedule 30, Cut Groove																	300 (2070)		300 (2070)		300 (2070)		
Schedule 30, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)		300 (2070)		300 (2070)		300 (2070)		
Thinwall Pipes, Rolled Groove																							
Schedule 10, Rolled Groove	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)	500 (3450)		500 (3450)		500 (3450)	500 (3450)		500 (3450)	500 (3450)								
0.188" Wall, Rolled Groove																	300 (2070)		300 (2070)		300 (2070)		
Schedule 10, Swage Groove																							
Lightwall Pipes, Rolled Groove																							
Lightwall Pipes, Swage Groove																							
Schedule 5 Pipe, Rolled Groove																							
EN 10220 (ISO 4200), Cut Groove																							
Thickness F		500 (3445)		500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		
Thickness G	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		
EN 10220 (ISO 4200), Rolled Groove																							
Thickness D								300 (2070)	500 (3445)		500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		
Thickness E				500 (3445)			500 (3445)	300 (2070)	500 (3445)		500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		
Thickness F	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)		500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		
Thickness G	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)		500 (3445)	500 (3445)	300 (2070)	500 (3445)	500 (3445)	300 (2070)	300 (2070)		300 (2070)		300 (2070)		

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(406)	***(426)***
300 (2070)	300 (2070)

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EN 10255 (BS 1387) Medium, Rolled Groove	500 (3445)	500 (3445)	500 (3445)	500 (3445)		500 (3445)	500 (3445)		500 (3445)		500 (3445)			500 (3445)									
EN 10255 (BS 1387) Heavy, Rolled Groove	500 (3445)	500 (3445)	500 (3445)	500 (3445)		500 (3445)	500 (3445)		500 (3445)		500 (3445)			500 (3445)									
Chinese Standard GB/T 3092, Regular Rolled Groove	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)		500 (3445)	500 (3445)		500 (3445)	500 (3445)		300 (2070)		300 (2070)		300 (2070)		
Chinese Standard GB/T 3092, Extra Heavy Rolled Groove	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	500 (3445)	300 (2070)	500 (3445)		500 (3445)	500 (3445)		500 (3445)	500 (3445)		300 (2070)		300 (2070)		300 (2070)		

Remarks:
a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30
b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8, 10 or 12 inch - 0.188 inch (4.78 mm) wall
c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant or dry lubricant

Company Name:	Jinan Meide Casting Co Ltd
Company Address:	No. 3 Nanmen Road, Pingyin Jinan 250400 Shandong, P. R. China 250400
Company Website:	http://meide-casting.com
New/Updated Product Listing:	No
Listing Country:	China
Certification Type:	FM Approved

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MILL TEST REPORT

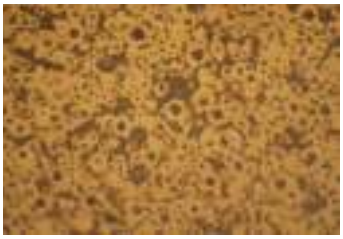
DATE: 2012.08.25

DESCRIPTION OF GOODS: DUCTILE IRON GROOVED FITTINGS

Metal part: Ductile iron according to ASTM A536 G65-45-12

CHEMICAL PROPERTIES					PHYSICAL PROPERTIES		
C	Si	Mn	P	S	TENSILE STRENGTH	ELONGATION	YIELD STRENGTH
3.4-3.9%	2.7-3.2%	≤0.25%	≤0.06%	≤0.025%	450Mpa	>12%	>250N/㎜ 2

Metallografical structure:



Rubber

Material Class: EPDM

Chemical composition: EPDM 25.9%; Inorganic fillings: 63.1%; Addings: 11%

Mechanical properties: Tensile Strength MPa: ≥10.3

Elongation at Break%: ≥300

Hardness shore A: 60±5

Bolts and Nuts

Material class: Steel according to A 183

Chemical composition:

Bolt: Carbon, 0.3% min; Phosphorus, max, 0.04%; Sulfur, 0.06%

Nut: Carbon, 0.4-0.55%; Phosphorus, max, 0.04%; Sulfur, 0.06%

Mechanical properties: Tensile strength, PSI 110,000 min

Yield point, PSI, 80,000 MIN

Elongation in 2 in. or 50 mm, 12% min

Paint

Type (RAL): RED ACRYLIC ENAMEL

Chemical composition: acrylic resin,68%;Toluidine red,8%;titanium dioxide,3.5%;barium sulfate,8%;audiliary,0.8%;sylene,11.7%

Galvanization

Chemical composition:

Testing items	Tolerance	Testing results %	
		Min	Max
Al	≤ 0,1%	0.0606	0.0618
Sb	≤ 0,01%	0.00248	0.00263
As	≤ 0,02%	0.0028	0.0031
Bi	≤ 0,01%	0.0001	0.0001
Cd	≤ 0,01%	0.0001	0.0001
Cu	≤ 0,1%	0.02	0.0147
Pb	≤ 1,6%	0.025	0.0276
Sn	≤ 0,1%	0.0001	0.0001

Zinc Layer:

TESTING ITEMS	TESTING RESULTS	
	MIN	MAX
THICKNESS	67	94

Jinan Meide Casting Co., Ltd

Authorized Signature

地址：中国济南市平阴县城南门路3号 邮编：250400
ADDRESS:No. 3 Nanmen Road, Pingyin, Jinan, China POST CODE:250400
电话(Tel): 0086 531 87879384 87896706 87885060传真(Fax): 0086 531 7879387

Loss Prevention Certification Board

LPCB

This is to certify

Jinan Meide Casting Co. Ltd
No 3 Nanmen Road, Pingyin, Jinan, China

is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix.

Jinan Meide Pipe Couplings
(refer to attached appendix for details)

which have complied with the requirements of the following:

LPS 1219 – Specification for Pipe Couplings
(refer to attached appendix for LPS 1219 issue status)

Certificate No. 988a Issue No. 01

Date of Issue 01 July 2010

This certificate is valid until withdrawn by LPCB.
To check the validity and the authenticity of this certificate please visit our website www.RedBookLive.com or contact us.

Signed on behalf of LPCB

B W Lywood

LPCB UKAS

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LPCB

APPENDIX TO CERTIFICATE NO. 988a

Jinan Meide Casting Co. Ltd

Pipe couplings, LPS 1219: Issue 3

Product Name	Nominal size (mm)	Pipe outside diameter (mm)	Pipe ends (mm)	Gasket type	Max. working pressure (bar)	LPCB Ref. No.
Fig IN Flexible Coupling	25	33.7	R&C	EPDM	25	988a/01
	32	42.4	R&C	EPDM	25	
	40	48.3	R&C	EPDM	25	
	50	60.3	R&C	EPDM	25	
	65	73.0	R&C	EPDM	25	
	65	76.1	R&C	EPDM	25	
	80	88.9	R&C	EDPM	25	
	100	108.0	R&C	EPDM	25	
	100	114.3	R&C	EPDM	25	
	125	133.0	R&C	EPDM	25	
	125	139.7	R&C	EPDM	25	
	125	141.3	R&C	EPDM	25	
	150	159.0	R&C	EPDM	25	
	150	165.1	R&C	EPDM	25	
	150	168.3	R&C	EPDM	25	
	200	219.1	R&C	EPDM	25	

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Product Name	Nominal size (mm)	Pipe outside diameter (mm)	Pipe ends (mm)	Gasket type	Max. working pressure (bar)	LPCB Ref. No.
Fig IG	25	33.7	R&C	EPDM	25	988a/02
Rigid	32	42.4	R&C	EPDM	25	
Coupling	40	48.3	R&C	EPDM	25	
	50	60.3	R&C	EPDM	25	
	65	73.0	R&C	EPDM	25	
	65	76.1	R&C	EPDM	25	
	80	88.9	R&C	EDPM	25	
	100	108.0	R&C	EPDM	25	
	100	114.3	R&C	EPDM	25	
	125	133.0	R&C	EPDM	25	
	125	139.7	R&C	EPDM	25	
	125	141.3	R&C	EPDM	25	
	150	159.0	R&C	EPDM	25	
	150	165.1	R&C	EPDM	25	
	150	168.3	R&C	EPDM	25	
	200	219.1	R&C	EPDM	25	

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Pipe couplings, LPS 1219: Issue 3

Product Name	Nominal size (mm)	Pipe outside diameter (mm)	Pipe ends (mm)	Gasket type	Max. working pressure (bar)	LPCB Ref. No.
Fig IN	50x32	60.3x42.4	R&C	EPDM	16	988a/03
Reducing	50x40	60.3x48.3	R&C	EPDM	16	
Flexible	65x50	73.0x60.3	R&C	EPDM	16	
Coupling	65x40	76.1x48.3	R&C	EPDM	16	
	65x50	76.1x60.3	R&C	EPDM	16	
	80x50	88.9x60.3	R&C	EPDM	16	
	80x60	88.9x73.0	R&C	EPDM	16	
	80x65	88.9x76.1	R&C	EPDM	16	
	100x50	114.3x60.3	R&C	EPDM	16	
	100x60	114.3x73.0	R&C	EPDM	16	
	100x65	114.3x76.1	R&C	EPDM	16	
	100x80	114.3x88.9	R&C	EPDM	16	
	150x100	165.1x114.3	R&C	EPDM	16	
	150x100	168.3x114.3	R&C	EPDM	16	
	200x150	219.1x165.1	R&C	EPDM	16	
	200x150	219.1x168.3	R&C	EPDM	16	

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Pipe couplings, LPS 1219: Issue 3

Product Name	Nominal size (mm)	Pipe outside diameter (mm)	Pipe ends (mm)	Gasket type	Max. working pressure (bar)	LPCB Ref. No.
Fig IGS	65	76.1	R&C	EPDM	16	988a/04
Light Duty	80	88.9	R&C	EDPM	16	
Rigid	100	108.0	R&C	EPDM	16	
Coupling	100	114.3	R&C	EPDM	16	
	125	139.7	R&C	EPDM	16	
	125	141.3	R&C	EPDM	16	
	150	159.0	R&C	EPDM	16	
	150	165.1	R&C	EPDM	16	
	150	168.3	R&C	EPDM	16	
	200	219.1	R&C	EPDM	16	

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CERTIFICATE OF ORIGIN

ORIGINAL

1. Exporter
JINAN MEIDE CASTING CO., LTD.
MEIDE TECHNOPARK, INDUSTRIAL PARK, PINGYIN, JINAN,
SHANDONG, CHINA
***

Serial No. CCPIT499 2200961274
Certificate No. 22C3700B2199/00102

CERTIFICATE OF ORIGIN
OF
THE PEOPLE'S REPUBLIC OF CHINA

2. Consignee
FUTURE MECHANICS TRADING COMPANY KINGDOM OF SAUDI ARABIA
RIYADH
AL-MALAZ AREA
SALAH ALDEEN ALAYOBI STR.
TEL: 00966 11 4784242 FAX: 00966 11 4729595
MOBILE : 00966 555 111 416

3. Means of transport and route
FROM QINGDAO CHINA TO RIYADH DRY PORT, SAUDI ARABIA BY SEA

5. For certifying authority use only
CHINA COUNCIL FOR THE PROMOTION OF INTERNATIONAL TRADE IS CHINA CHAMBER OF INTERNATIONAL COMMERCE

4. Country / region of destination
SAUDI ARABIA

VERIFY URL:HTTP://CHECK.CCPITECO.NET/

6. Marks and numbers	7. Number and kind of packages; description of goods	8. H.S.Code	9. Quantity G. WEIGHT	10. Number and date of invoices
N/M	FORTY EIGHT (48) PLTS OF DUCTILE IRON FITTINGS DUCTILE IRON GROOVED FITTING AS PER PO#GGLX10012022 ***	730711	29444KGS	MD2201651 MAR.16,2022

11. Declaration by the exporter
The undersigned hereby declares that the above details and statements are correct, that all the goods were produced in China and that they comply with the Rules of Origin of the People's Republic of China.

JINAN MEIDE CASTING CO., LTD. 济南美德铸造有限公司

JINAN CHINA MAR.16,2022

Place and date, signature and stamp of authorized signatory

12. Certification
It is hereby certified that the declaration by the exporter is correct.

中国国际贸易促进委员会
单据证明专用章
(鲁)
CHINA COUNCIL FOR THE PROMOTION OF INTERNATIONAL TRADE
(SHAN DONG)

ADDRESS: NO. [illegible] JINGSI ROAD, [illegible] SHANDONG
FAX:0086-531-86168[illegible] TEL:0086-531-86168379

JINAN CHINA MAR.16,2022

Place and date, signature and stamp of certifying authority

COMPANY PROFILE

OVERVIEW:

Future Mechanics Trading Co.

Fu-Mech company was established in the beginning of 2010 in Riyadh, Saudi Arabia, specialized in supplying fittings and valves and mechanical materials and fire protection equipment as well as the fire fighting system accessories for new projects and renovations.

Our highly skilled engineers and technical team can provide technical support through studying specifications design, selection and recommendations, as well as we have a mechanical department to handle our products for the projects and a showroom for retail sales.

❖ CORE VALUES:

Customer oriented, quality focused, thriving through innovations, achieving win-win through cooperation, Our success is derived from customer satisfaction through:

- ❖ High quality products.
- ❖ Delivery time commitment.
- ❖ Good stock quantities.

❖ MISSION STATEMENT:

To provide safe and reliable products and complete solutions to customers in the field of firefighting across the Kingdom of Saudi Arabia.

❖ ENTERPRISE VISION:

To be a modern enterprise with organic growth where the employees enjoy their work and are admired.

OUR MAIN SCOPE OF SUPPLY:

1. MECH Ductile iron Grooved fittings:

Ductile iron grooved piping system is reliable and is faster to install than welding, threading or flanging, resulting in lowest installed cost. It can be adopted to suit standard pipe with cut grooves or standard and light wall pipe with rolled grooves. We are the exclusive agent of the **MECH** brand ductile iron grooved fittings which has the UL/FM certificates.

2. MECH Malleable iron threaded fittings:

Threaded black steel fittings connect to black steel and black iron pipe for transporting gas and water, protecting electrical wiring, or delivering high-pressure steam and air. Uncoated black steel and iron fittings, also called black malleable iron fittings, are made from corrosion-resistant ungalvanized steel with a scaly, dark-colored iron oxide coating. These fittings are used in piping systems to change direction or connect to equipment or devices. Threaded fittings twist onto pipe using various male and female thread connections including NPT (National Pipe Thread) or BSPT (British Standard Pipe Taper). Threaded fittings come in a variety of sizes and shapes. We are the exclusive agent for **MECH** brand name of Malleable Cast Iron threaded fittings which has the UL/FM certificates.

3. MECH Valves:

The valve is mainly used to connect and cut off the medium in the pipeline by rotating the stem. Its transmission thread is inside the body cavity, which can save installation space. We are the exclusive agent for the **MECH** brand of ductile iron valves for firefighting & waterworks purposes which has the UL/FM certificates.

4. MECH Brass Valves:

Brass Valves are used in Residential and Commercial Plumbing, Water Well, HVAC and many other applications. Basically, as long as there are no high corrosive properties in what is going through the valves, generally speaking, Brass is a great material to utilize. which can save installation space. We are the exclusive agent for the **MECH** brand of brass valves for waterworks purposes.

5. MECH Flexible Hose for Sprinkler Connection:

The SS Flexible Hose sprinkler is intended to connect the branch line to the sprinkler head by utilizing a flexible stainless steel hose assembly and steel bracket assembly. We are the exclusive agent for **MECH** brand name of SS Flexible hose for sprinkler connection Unbraided and Braided which has the UL/FM certificates.

6. MECH Malleable iron Pipe Clamps:

Pipe Clamp fittings can be used for a multitude of uses, the more typical uses being safety barriers and hand railing systems, but on the flip side they are also used for furniture, decoration, sculptures, frameworks, greenhouses, play parks, trolley bays, multi gyms, pull up bars, and more.

7. Fire Systems Products:

We are the exclusive agent of DUYAR brand manufactured in Turkey:

I. DUYAR Sprinklers.

Duyar sprinkler is easy to use and extremely safe. Sprinkler is placed on the specially designed piping system such that iscovers the area requiring protection. One of the most significant components of the stuffing, the fluid in the glass tube expands and goes off due to the temperature generated by fire. Because the ambient temperature exceeds the maximum expected ambient temperature by 30°C during fire, the maximum ambient temperature of the sprinkler should be chosen to be at temperatures above 30°C. Once the glass tube of the sprinkler above the fire, the water under pressure hits the deflect and sprayed over fire. Only the sprinkler heating up during fire goes off, thereby releasing water.

II. DUYAR Test & drain valve.

It is used to conduct testing and maintenance on sprinkler systems. With the orifice in different sizes inside, it creates a flow equivalent to the flow passing along one sprinkler only and enables tests of alarm devices on the lines for checking purposes in the case of sprinkler water flow. The orifice diameters of the smallest sprinkler and the test drain valve in the system should be equal. It is also used as a drain valve to discharge water in the piping by changing the position of the valve. There is a sight glass to observe the flow.

III. DUYAR Wet alarm check valve.

The DUYAR wet alarm valve is designed for applications where the water is unlikely to freeze. The water staying pressurized in the pipes is released over the fire area after the sprinkler is activated due to fire. The pressurized water system is not only feed contionuously, but also fills in the retard chamber. After the chamber is filled, the pressure switch on the chamber is actuated. The pressure switch sends the alarm information to the fire warning system or the automation system. After the pressure switch is actuated, the water is delivered to the water-motor gong and releases a mechanical alarm.

Commercial Documents

رؤية VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

وزارة التجارة
Ministry of Commerce

الرقم: ١٠١٠٢٨١٢٥٩
التاريخ: ١٤٣١/٠٢/١٨ هـ

شهادة تسجيل الشركة

الرقم الموحد للمنشأة: ٧٠٠٢٩٩٤٥٥١ الاسم التجاري للشركة: شركة مستقبل الميكانيكا للتجارة

نوعها: ذات مسئولية محدودة مختلطة جنسيتها: سعودى

مدة الشركة: ٩٩ سنة تبدأ من: ١٤٤٣/٠٥/٢٤ هـ وتنتهي في: ١٥٤٥/٠٦/٠٨ هـ

مركزها الرئيسي: ٢٨٦٥، شارع صلاح الدين الأيوبي ، الملز، ٨٣٤٦

ص ب: الرمز البريدي: ١٢٨٤١ هاتف: ٤٧٨٤٢٤٢

النشاط: للاطلاع على بيانات الأنشطة الرجاء مسح الرمز التجاري

رأس المال: ٥٠٠٠٠٠٠ ريال سعودي

المديرون: ١ زاهر مجدي عبدالكريم موسى ٢

٣ ٤

٥ ٦

٧ ٨

٩ ١

١١ ١٢

١٣ ١٤

١٥ ١٦

١٧ ١٨

سلطات المدير/المديرون: حسب ما نص عليه عقد الشركة

يشهد مكتب السجل التجاري بمدينة: الرياض بأنه تم تسجيل الشركة المذكورة أعلاه بمدينة: الرياض

وتنتهي صلاحية الشهادة في: ١٤٤٤/٠٥/٢٤ هـ بموجب الإيصال رقم: ٤٣٦٧٨٩١ وتاريخ: ١٤٤١/٠٢/١١ هـ

مدير السجل التجاري للشركات: عبد المحسن بن ابراهيم الحماد

التوقيع:

يمكنك التحقق من صحة هذه الشهادة بالدخول على http://v.mci.gov.sa To Verify the information of this certificate visit

وزارة الاستثمار
Ministry of Investment

ترخيص استثمار تجاري
Trading Investment License

رقم المنشأة	(672301)		
رقم الترخيص	(104074305117019)		
تاريخ الإصدار	تاريخ الإنتهاء		
1443/05/04 هـ	1444/05/03 هـ		
2021/12/09 م	2022/11/27 م		117019

المركز الرئيسي

حالة الترخيص: جديد

اسم الترخيص: شركة مستقبل الميكانيكا للتجارة

الكيان القانوني: شركة ذات مسؤولية محدودة

الموقع: الرياض

رأس المال: (5,000,000) ريال سعودي

ص.ب: 28027 الرمز البريدي: 11437 الهاتف: +966555111416 الفاكس: +966

اسم صاحب/ أصحاب الترخيص	رقم المستثمر	الجنسية	الحصة
زاهر موسى مجدي عبدالكريم ZAHER MAJDI ABDULKARIM MOUSA	717166	فلسطين	95%
سعود سعدالدين زغلول محمد MOHAMMED SAADALDEEN ZAGHLUL SAUD	717167	المملكة العربية السعودية	5%

النشاط:

465963:البيع بالجملة لأجهزة ومعدات ومواد الوقاية والحماية من الحريق

الترخيص الاستثماري يقتصر على تصحيح السجل التجاري رقم1010281259 وتاريخ1431/2/18 هـ وفروعه المرخصه والخاص بالطلب رقم 10168 بمنصة تصحيح الأوضاع

تلتزم المنشأة بتدريب 15 % من السعوديين وعدم فتح أكثر من محل في الحي الواحد.

عنه خالد علي الشدي
تاريخ التوقيع : 1443/05/04

تاريخ الطباعة 1443/05/07 هـ وزير الاستثمار خالد بن عبدالعزيز الفالح

1 - 1 يمكنك التحقق من صحة وصلاحية الشهادة عبر زيارة الرابط
https://eservices.sagia.gov.sa/verify على موقع وزارة الاستثمار.

شهـادة اشتراك
Membership Certificate

غرفة الرياض
Riyadh Chamber

Membership No. :	226846	226846	رقم العضوية الموحد :
Date of Issue:	03/02/2010	2010/02/03	تاريخ الاصدار:
Membership Class :	First	الاولى	درجة العضوية :

Riyadh Chamber Certifies

تشهد الغرفة التجارية الصناعية بالرياض بأن

MOSTAGHBAL MEKANAKA TRADING,CO

شركة مستقبل الميكانيكا للتجارة

Commercial Registration No.	1010281259	1010281259	مقيدة بالسجل التجاري / الترخيص رقم :
Certificate Expires on	15/08/2024	2024/08/15	ينتهي سريان هذه الشهادة في

- يلزم التحقق من الوثيقة عبر الرابط https://mybusiness.chamber.sa ، أو تطبيق (سند) للأجهزة المحمولة أو الرقم الموحد دون ادنى مسؤولية على الغرفة عن محتوى الوثيقة.
- تعد هذه الورقة من الوثائق الالكترونية لغرفة الرياض، ويمنع تعديلها اول محاولة العبث بها وتصبح لاغية حال محاولة تعديلها وتعرض صاحبها للملاحقة القانونية.

الخدمات الإلكترونية
E-SERVICES
الخدمات الإلكترونية لغرفة الرياض - بوابة أعمالي © E-Services Riyadh Chamber
920004565

أمانة منطقة الرياض

بلدي balady

رخصة نشاط تجاري
Commercial Activity Licence

شركة مستقبل الميكانيكا للتجارة

License Expiry Date	تاريخ نهاية الترخيص	License Number	رقم الرخصة الموحد
1444/04/19		40102425006	

Owner's Name	اسم المالك
شركة مستقبل الميكانيكا للتجارة	

Owner's ID	رقم هوية المالك
7002994551 - 1010281259	

ISIC Classification	التصنيف الصناعي القياسي الدولي (نشاط إيزك)
تركيب الادوات الصحية وصيانتها واصلاحها	

Detailed Activity	النشاط التفصيلي
تركيب الادوات الصحية وصيانتها واصلاحها	

Sub-Municipality	البلدية	Municipality	الأمانة
بلدية الملز		أمانة منطقة الرياض	

Street	الشارع	District	الحي
عطية الفداني		الملز	

Shop's Sign's Area	مساحة اللوحات الإجمالية		Shop's Total Area	مساحة المحل الإجمالية
0 متر مربع اعلاني	23 متر مربع إرشادي	موقع المحل	224 متر مربع	

للاطلاع على الأنشطة الاضافية وتفاصيل الرخصة يرجى مسح رمز الاستجابة السريع Code QR

Permit Expiry Date	تاريخ انتهاء التصريح	Permit Number	رقم التصريح	Permits	التصاريح

المؤسسة العامة للتأمينات الاجتماعية
General Organization for Social Insurance

التاريخ ١٤٤٣/٠٧/٠٩
الموافق ١٠/٠٢/٢٠٢٢
رمز الشهادة ٤٤٠٤٩٩٧٧

شهادة

إسم المنشأة : **شركة مستقبل الميكانيكا للتجارة**

الرياض
السعودية
رقم الإشتراك : ٦٢٧٥٩٠٩٦٢
رقم السجل التجاري: ١٠١٠٢٨١٢٥٩ **مصدره :**

	رقما	كتابة
عدد المشتركين السعوديين	٨	**ثمانية مشتركين**
عدد المشتركين غير السعوديين	٢٤	**أربعه و عشرون مشتركا**
المجموع	٣٢	**اثنان و ثلاثون مشتركا**

تشهد المؤسسة العامة للتأمينات الإجتماعية بأن المنشأة المذكورة أعلاه قد أوفت بإلتزاماتها تجاه المؤسسة وفق البيانات المقدمة منها حتى تاريخ إصدار هذه الشهادة ، والتي تم منحها لتقديمها لأية جهة تطلبها ، وهي صالحة لجميع الأغراض التي نص عليها نظام التأمينات الإجتماعية في المادة (١٩/٦) منه.

هذه الشهادة سارية المفعول حتى ١٤٤٣/٠٨/٠٨ هـ.

يلزم التحقق من صحة وصلاحية الشهادة عبر زيارة الرابط أدناه في الموقع الإلكتروني للمؤسسة العامة للتأمينات الإجتماعية **أو** **عن طريق استخدام الرمز المعرف التالي :**

www.gosi.gov.sa/vc

(الشهادة معتمدة من صاحب الصلاحية ولا تحتاج إلى توقيع أو ختم)

www.gosi.gov.sa
800 1243344

تعد هذه الشهادة من الوثائق الالكترونية الحكومية الرسمية ، ويحظر قطعيا تقليدها أو إدخال أي تعديلات عليها سواء بالإضافة أو الحذف أو التغيير في بياناتها أو غير ذلك من انواع التعديل ، وتعد الشهادة لاغية إذا شابها شيء من ذلك ، كما تعرض صاحبها للملاحقة النظامية أمام الجهات المختصة بالإضافة إلى مايفرضه نظام التأمينات الاجتماعية من عقوبات ، ولايجوز تداول الشهادة إلا في الأغراض التي أصدرت لأجلها وفقا لأحكام نظام التأمينات الاجتماعية ، والمؤسسة العامة للتأمينات الاجتماعية غير مسؤوله عن أي آثار أخرى مترتبة قبل الغير عن الشهادة وغير مسؤولة عن أي عملية تزوير أو تعديل تتم على البيانات الواردة فيها .

GOSI
التأمينات الإلكترونية
بإمكانك من مكانك

100221050465589

تاريخ الإصدار: 2022/02/10
الرقم المميز: 3111812831

الهيئة العامة للزكاة والدخل
General Authority of Zakat & Tax

ضريبة القيمة المضافة
VAT

شهادة تسجيل في ضريبة القيمة المضافة
VAT Registration Certificate

تشهد الهيئة العامة للزكاة والدخل بأن المكلف أدناه مسجل في ضريبة القيمة المضافة بتاريخ 2022/02/10

Hereby, The General Authority of Zakat & Tax (GAZT) certifies that the taxpayer below is VAT registered on 10/02/2022

Taxpayer Name:	شركة مستقبل الميكانيكا للتجارة	**اسم المكلف:**
VAT Registration Number:	311181283100003	**رقم التسجيل الضريبي:**
Effective Registration Date:	2022/03/01	**تاريخ نفاذ التسجيل:**
Taxpayer Address:	الرياض،الملز،صلاح الدين الأيوبي ،28027	**عنوان المكلف:**

كمكلف مسجل في ضريبة القيمة المضافة، لا يجوز لك تحصيل ضريبة القيمة المضافة من عملائك قبل تاريخ نفاذ التسجيل بالضريبة. في حال تبين غير ذلك، ستقوم الهيئة العامة للزكاة والدخل بتنفيذ الغرامات المستحقة

هذه الوثيقة مرسلة من النظام الآلي ولا تحتاج إلى توقيع

– الهيئة العامة للزكاة والدخل –

100221050465589

تاريخ الإصدار: 2022/02/10

الرقم المميز: 3111812831

الهيئة العامة للزكاة والدخل

General Authority of Zakat & Tax

ضريبة القيمة المضافة

VAT

Taxpayer Name:	شركة مستقبل الميكانيكا للتجارة	**اسم المكلف:**
CR / License / Contract No.:	1010281259	**رقم السجل/الرخصة/العقد:**
Tax Period:	ربع سنوي-Quarterly	**الفترة الضريبية:**
First Filing due date:	2022/04/30	**تاريخ استحقاق أول إقرار ضريبي:**

كمكلف مسجل في ضريبة القيمة المضافة، لا يجوز لك تحصيل ضريبة القيمة المضافة من عملائك قبل تاريخ نفاذ التسجيل بالضريبة. في حال تبين غير ذلك، ستقوم الهيئة العامة للزكاة والدخل بتنفيذ الغرامات المستحقة

هذه الوثيقة مرسلة من النظام الآلي ولا تحتاج إلى توقيع

- الهيئة العامة للزكاة والدخل -

وزارة العمل
والتنمية الاجتماعية
المملكة العربية السعودية

VISION رؤية 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

شهادة سعودة

تاريخ الإصدار : ١٤٤٣/٠٧/١٨

تاريخ صلاحية الشهادة : ١٤٤٣/١٠/١٨

رقم الشهادة : ٢٠٠٠٢٢٠٢٢٧٥٠

اسم المنشأة: **شركة مستقبل الميكانيكا للتجارة**

رقم الملف: **٢٣٩٧٧٩٩-١**

سجل تجاري: **١٠١٠٢٨١٢٥٩**

الصادر من: **الرياض**

تشهد وزارة العمل والتنمية الاجتماعية بأن المنشأة المذكورة أعلاه حققت نسب التوطين المطلوبة منها.. وتم منحها هذه الشهادة حسب طلبها

(الشهادة معتمدة من صاحب الصلاحية ولا تحتاج إلى توقيع أو ختم)

تنبيهات:

١ - يمكن التحقق من صحة وصلاحية الشهادة عبر زيارة الرابط:

٢ - في حال اكتشاف أي عملية تزوير في الشهادة المقدمة نرجو التبليغ عن ذلك بخطاب رسمي لأقرب مكتب عمل.

العنـوان الـوطني
NATIONAL ADDRESS

Proof Number	1013863721	رقم الإثبات
Original Date	17/2/2022	تاريخ الإصدار
Expiration Date	8/16/2022	تاريخ الانتهاء

إثبات عنوان
Address Proof

Address Holder Details — بيانات صاحب العنوان

Name	شركة مستقبل الميكانيكا للتجارة	الاسم
Customer Acc.	5 9 7 3 0 8 7 2 9	رقم الحساب
Reg. Date	13/2/2014	تاريخ التسجيل

Address Details — تفاصيل العنوان

Short Address	R E M A 2 8 6 5	العنوان المختصر
Building No. / Street	2 8 6 5 — Salah Al Din Al Ayoubi Rd	رقم المبنى / الشارع — 2 8 6 5 — طريق صلاح الدين الايوبي
Secondary No. / District	8 3 4 6 — Al Malaz Dist.	الرقم الفرعي / الحي — 8 3 4 6 — حي الملز
Postal Code	1 2 8 4 1	الرمزي البريدي — 1 2 8 4 1
City	RIYADH	المدينة — الرياض
	Kingdom of Saudi Arabia	المملكة العربية السعودية

To Verify للتحقق
https://proof.address.gov.sa/VerifyProofNA.aspx

تم إصدار هذا الإثبات إلكترونيا ولا يتطلب التوقيع عليه

تم إصدار هذا الإثبات بناء على طلب الموضح أعلاه، ويحظر قطعيا تقليده أو إدخال أي تعديلات عليه سواء بالإضافة أو الحذف، ويعد الإثبات لاغيا إذا شابه شيء من ذلك، كما يعرض صاحبه للمساءلةالقانونية.

This proof has been issued electronically and does not require a signature

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