



Reliable®

TECHNOLOGY • QUALITY • SERVICE

Reliable: For over 90 years Reliable has been dedicated to the fire protection industry and is one of the world's largest producers of automatic fire sprinklers and sprinkler system control equipment.

History: Reliable was founded in 1920 by Frank J. Fee, Frank J. Fee, Jr., succeeded his father as company President in 1945, and his son, Frank J. Fee III, served as President from 1976 through 2015. In July 2015, Kevin T. Fee was named President. This puts Reliable today in its fourth generation of Fee family leadership. As part of senior management with Frank J. Fee III are his two brothers, Kevin T. Fee, President, and Michael R. Fee, Executive Vice President. The family-run company also has many employees who have served in excess of 25 years, enhancing its team-family tradition.

Product Offerings: Reliable is a manufacturer of automatic fire sprinklers, valves and accessory products, and a major distributor of sprinkler system components. In the sprinkler area Reliable produces both of the industry's two basic types - the solder type and the frangible bulb - for virtually every type of building applications. Reliable also produces a broad range of valves including alarm, dry, deluge, pre-action, and check valve that control water flow to sprinkler systems and actuate alarm signaling.

The Reliable Mission: Three goals are at the heart of the mission that the Fee family established long ago: first to be the leading worldwide manufacturer of innovative, quality-oriented fire sprinklers and systems devices; second, to be a leading supplier of fire sprinkler system components; and third, to be the leader in providing the highest level of operational excellence in customer service, exceeding all customer expectations. It is this mission that propels Reliable through the 21st Century and beyond in its service to the fire sprinkler industry.



Approvals, Certifications, Codes, Listings, Specifications & Association Memberships

This catalog features our full line of **RASCO** grooved and hole-cut piping components for the fire protection industry.

















Engineering & Design: **RASCO** products are engineered and designed to meet and exceed the most current specifications, codes and standards, including ASTM, ANSI, AWWA, ISO, UL, FM, VdS, LPCB, NFPA, etc.

Production: **RASCO** products are produced in ISO certified facilities using the finest equipment including Disamatic® moulding machines to produce precision castings. Injection moulding machines produce high grade EPDM gaskets.

Materials: **RASCO** products are produced using the highest quality materials. **All fittings and couplings are produced from ductile iron conforming to ISO 1083 Gr.**

400-15 or ASTM A536 Gr. 65-45-12. Track bolts conform to ISO 898-1 class 8.8 or ASTM A183 Gr. B or higher and are heat treated and zinc plated. Gaskets are supplied in high grade “E” EPDM which are designed to meet and exceed the requirements of ASTM D2000 and AWWA C606.

Approvals, Listings, Certifications & Memberships: **RASCO** grooved piping components are produced in ISO 9001 certified facilities and are listed and approved by independent agencies including UL, cUL, FM, VdS and LPCB. Reliable is also an active member of numerous industry organizations including: IFSA (International Fire Sprinkler Association), AFSA (American Fire Sprinkler Association), NFSA (National Fire Sprinkler Association), CASA (Canadian Automatic Fire Sprinkler Association) and NFPA (National Fire Protection Association).

	AFSA American Fire Sprinkler Association		ISO International Organization for Standardization
	ANSI American National Standards Institute		LPCB Loss Prevention Certification Board
	AWWA American Water Works Association		NFPA National Fire Protection Association
	ASTM American Society of Testing and Materials		NFSA National Fire Sprinkler Association
	CASA Canadian Automatic Sprinkler Association		SFPE Society of Fire Protection Engineers
	EFSN European Fire Sprinkler Network		cULus Underwriters Laboratories
	FM Factory Mutual Research Corp.		UL Underwriters Laboratories
	IFSA International Fire Sprinkler Association		VdS VdS Schadenverhuetung

Data Chart Notes

- ▶ **1 Nominal Size: RASCO** couplings and fittings are identified by the nominal diameter of pipe (DN) in millimeters or the nominal IPS pipe size in inches.
- ▶ **2 Pipe O.D.:** Actual outside diameter of pipe in millimeters.
- ▶ **3 Maximum Working Pressure:** Maximum working pressures listed are CWP (cold water pressure) or maximum allowed working pressure within the service temperature range of the gasket used in the coupling in Bar. These ratings may occasionally differ from maximum working pressures listed and/or approved by the various approval bodies as testing conditions and test pipes differ. Contact Reliable for further details.

Nominal Size mm/in	Pipe O.D. mm	Max. Working Pressure Bar	Max. End Load kN	Axial Displacement mm	Deflection		Dimensions			Bolts Size mm	Weight Kgs	Box Q'ty	
					Deg. Per Coupling (°)	Per Pipe mm/m	X mm	Y mm	Z mm			Carton pc.	Crate pc.
1	2	3	4	5	6		7			8	9	10	

- ▶ **4 Maximum End Load:** Maximum end loads listed are total of internal and external forces to which the joint can be subjected, based on standard wall or sch. 40 steel pipe, cut or roll-grooved to ISO/FDIS 6182-12 Table 1 or ANSI/AWWA C606-04.
- ▶ **5 Axial Displacement:** Designed range of the gap between pipe ends based on roll grooved pipe.
- ▶ **6 Deflection:** Maximum allowable deflection of pipe from centerline when the joint is used with cut or roll-grooved steel pipe under no internal pressure.
- ▶ **7 Dimensions:** "X", "Y", "Z" and so on are external dimensions for reference purpose only in millimeters.
- ▶ **8 Bolt Size:** Unless otherwise specified, the bolt size and length are shown in millimeters.
- ▶ **9 Approximate Weight:** Weight of a coupling complete with gasket, bolts and nuts or of a fitting in kilograms.
- ▶ **10 Box Quantity:** Box quantities of cartons and crates in pieces.

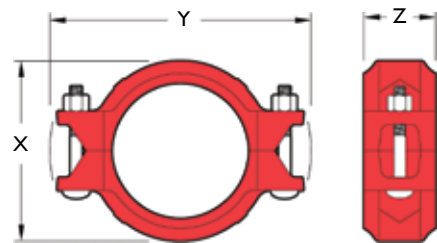


Rigid Coupling



Use the Model RRC when a rigid coupling is required for fire protection applications. The tongue and groove design and built-in gripping teeth provide a secure and rigid joint that eliminates undesired flex.

Model RRC Rigid Coupling



Model RRC Rigid Coupling

Nominal Size mm/in	Pipe O.D. mm	Max. Working Pressure Bar	Max. End Load kN	Axial Displacement mm	Dimensions			Bolts Size mm	Weight Kgs	Box Q'ty	
					X mm	Y mm	Z mm			Ctn pc.	Crate pc.
32 / 1-1/4	42.2	20	2.80	0~1.6	65	102	45	M10 X 45	0.6	50	1200
40 / 1-1/2	48.3	20	3.66	0~1.6	71	108	45	M10 X 55	0.6	45	1080
50 / 2	60.3	20	5.71	0~1.6	83	124	45	M10 X 55	0.7	36	864
65 / 2-1/2	73.0	20	8.37	0~1.6	98	127	45	M10 X 55	0.8	25	600
65 / 2-1/2	76.1	20	9.09	0~1.6	102	140	45	M10 X 55	0.8	25	600
80 / 3	88.9	20	12.41	0~1.6	114	151	45	M10 X 70	1.2	20	480
100 / 4	114.3	20	20.51	0~3.2	143	184	51	M10 X 70	1.7	12	380
125 / 5	139.7	20	30.64	0~3.2	172	225	51	M12 X 75	2.1	10	250
150 / 6	165.1	20	42.80	0~3.2	197	252	51	M12 X 75	2.4	7	180
150 / 6	168.3	20	44.47	0~3.2	200	255	51	M12 X 75	2.7	7	180
200 / 8	219.1	20	75.37	0~3.2	258	355	61	M16 X 90	4.4	---	90

Model RRC-V Heavy Duty Rigid Coupling

200 / 8	219.1	20	75.37	0~3.2	261	339	63	M20 X 120	7.2	---	80
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For one time field test only the maximum joint working pressure may be increased 1.5 times the figures shown.

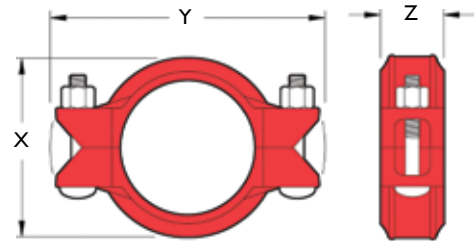
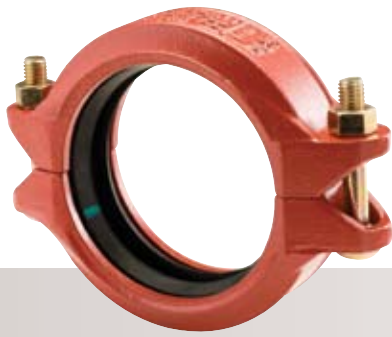


Flexible Coupling

Use the Model RFC when a flexible coupling is required on fire protection applications. The RFC allows for controlled flexibility and can help to protect a system from expansion, contraction, deflection and seismic events.

The deflection/angular movement shown below represents couplings installed on roll grooved pipe.

Model RFC Flexible Coupling



Model RFC Flexible Coupling

Nominal Size mm/in	Pipe O.D. mm	Max. Working Pressure Bar	Max. End Load kN	Axial Displacement mm	Deflection		Dimensions			Bolts Size mm	Weight Kgs	Box Q'ty	
					Deg. Per Coupling (°)	Per Pipe mm / m	X mm	Y mm	Z mm			Ctn pc.	Crate pc.
25 / 1	33.7	35	3.1	1.6	5° - 30'	96	57	100	46	M10 X 45	0.6	30	1440
32 / 1-1/4	42.2	35	4.9	1.6	4° - 20'	76	66	103	46	M10 X 55	0.7	50	1200
40 / 1-1/2	48.3	35	6.4	1.6	3° - 48'	66	72	108	46	M10 X 55	0.7	40	960
50 / 2	60.3	35	10.0	1.6	3° - 01'	53	84	129	48	M10 X 55	0.8	30	720
65 / 2-1/2	73.0	35	14.6	1.6	2° - 30'	44	99	142	48	M10 X 55	0.9	24	576
65 / 2-1/2	76.1	35	15.9	1.6	2° - 24'	42	102	147	48	M10 X 55	1.0	24	576
80 / 3	88.9	35	21.7	1.6	2° - 04'	36	116	169	48	M12 X 75	1.3	20	550
100 / 4	114.3	35	35.9	3.2	3° - 12'	55	145	197	52	M12 X 75	1.9	12	350
125 / 5	139.7	30	46.0	3.2	2° - 37'	46	170	233	52	M16 X 90	2.6	7	230
150 / 6	165.1	30	64.2	3.2	2° - 14'	39	196	261	54	M16 X 90	3.1	6	170
150 / 6	168.3	30	66.7	3.2	2° - 10'	38	200	268	62	M16 X 90	3.2	6	170
200 / 8	219.1	30	113.0	3.2	1° - 40'	28	260	350	64	M16 X 90	5.8	---	80
Model RFC-V Heavy Duty Flexible Coupling													
200 / 8	219.1	30	113.0	3.2	1° - 40'	29	266	343	63	M20 X 120	7.5	---	80

For one time field test only the maximum joint working pressure may be increased 1.5 times the figures shown.



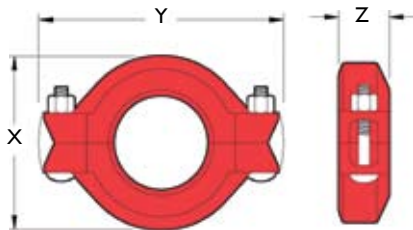
Reducing Coupling



The Model RRDC is used for making direct reductions on fire protection piping systems. The RRDC gasket is designed for easy installation and to prevent smaller pipe from telescoping into larger pipe during vertical installations.

Model RRDC Reducing Coupling

The Model RRDC coupling should not be used in conjunction with Model RCAP End Caps, as the end cap could be sucked into the piping during the draining of the system.



Model RRDC Reducing Coupling

Nominal Size mm/in	Pipe O.D. mm	Max. Working Pressure Bar	Max. End Load kN	Axial Displacement mm	Deflection		Dimensions			Bolts Size mm	Weight Kgs	Box Q'ty	
					Deg. Per Coupling (°)	Per Pipe mm/m	X mm	Y mm	Z mm			Ctn pc.	Crate pc.
50 X 40 / 2 X 1-1/2	60.3 X 48.3	24	4.40	0 ~ 3.2	3° - 02'	26	85	122	48	M10 X 55	0.9	30	720
65 X 50 / 2-1/2 X 2	73.0 X 60.3	24	6.85	0 ~ 3.2	2° - 30'	22	96	144	48	M10 X 55	1.2	25	600
65 X 50 / 2-1/2 X 2	76.1 X 60.3	24	6.85	0 ~ 3.2	2° - 24'	21	102	138	48	M10 X 55	1.2	25	600
80 X 50 / 3 X 2	88.9 X 60.3	24	6.85	0 ~ 3.2	2° - 04'	18	116	168	48	M12 X 75	1.5	20	480
80 X 65 / 3 X 2-1/2	88.9 X 73.0	24	10.04	0 ~ 3.2	2° - 04'	18	116	168	48	M12 X 75	1.7	20	480
80 X 65 / 3 X 2-1/2	88.9 X 76.1	24	10.91	0 ~ 3.2	2° - 04'	18	116	168	48	M12 X 75	1.7	20	480
100 X 50 / 4 X 2	114.3 X 60.3	24	6.85	0 ~ 4.8	2° - 24'	21	146	198	52	M12 X 75	2.4	12	330
100 X 65 / 4 X 2-1/2	114.3 X 73.0	24	10.04	0 ~ 4.8	2° - 24'	21	146	198	52	M12 X 75	2.6	12	330
100 X 65 / 4 X 2-1/2	114.3 X 76.1	24	10.91	0 ~ 4.8	2° - 24'	21	146	198	52	M12 X 75	2.6	10	330
100 X 80 / 4 X 3	114.3 X 88.9	24	14.89	0 ~ 4.8	2° - 24'	21	146	198	52	M12 X 75	2.4	10	330
150 X 100 / 6 X 4	165.1 X 114.3	24	24.61	0 ~ 6.4	2° - 14'	20	202	269	52	M16 X 90	4.5	6	170
200 X 150 / 8 X 6	219.1 X 165.1	24	51.35	0 ~ 6.4	1° - 40'	15	260	334	57	M20 X 120	7.6	---	80
200 X 150 / 8 X 6	219.1 X 168.3	24	53.36	0 ~ 6.4	1° - 40'	15	260	334	57	M20 X 120	7.6	---	80

For one time field test only the maximum joint working pressure may be increased 1.5 times the figures shown.

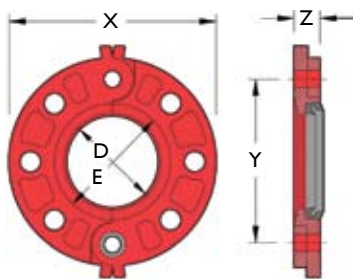


Flange Adaptor

The Model RFA Flange Adaptor allows for a direct transition from a grooved fire protection piping system to a flanged system or component. The RFA is supplied complete with gasket as well as a bolt & nut to connect the flange segments.

Use only the factory supplied bolt for connecting the flange segments. The use of other bolts could lead to joint failure. When connecting the RFA to components with serrated surfaces the use of a sandwich plate is required. The RFA is not recommended for use with wafer or lug style butterfly or check valves.

Model RFA Flange Adaptor



Model RFA Flange Adaptor PN 10 / PN16

Nominal Size	Pipe O.D.	Max. Working Pressure	Max. End Load	Dimensions			Sealing Surface		Bolts Size	Weight	Box Qty Crate	
				X	Y	Z	D	E				
mm/in	mm	Bar	kN	mm	mm	mm	mm	mm	mm	No.	Kgs	pc.
50 / 2	60.3	16	4.6	165	125	22	60	87	M16	4	2.3	300
65 / 2-1/2	76.1	16	7.3	185	145	22	76	105	M16	4	2.8	260
80 / 3	88.9	16	9.9	200	160	24	89	116	M16	8	3.4	240
100 / 4	114.3	16	16.4	220	180	24	114	141	M16	8	3.6	220
150 / 6	165.1	16	34.2	285	240	24	165	195	M20	8	4.6	135
150 / 6	168.3	16	35.6	285	240	24	165	195	M20	8	4.6	135
200 / 8	219.1	16	60.3	340	295	24	219	254	M20	12	8.4	90

For one time field test only the maximum joint working pressure may be increased 1.5 times the figures shown.

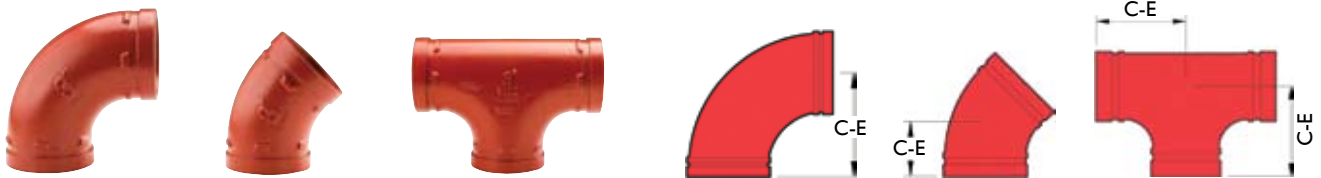


Grooved Fittings



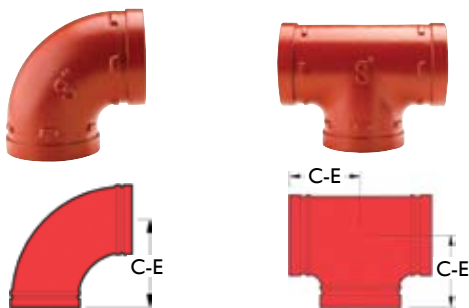
RASCO offers a variety of grooved fittings to meet your fire protection piping requirements. All grooved fittings are cast from ductile iron conforming to ISO 1083 Gr. 400-15 or ASTM A536 Gr. 65-45-12.

Model RE90 Standard 90° Elbow
RE45 Standard 45° Elbow
RST Standard Tee



Model RE90 / RE45 / RST Standard Elbows / Tee

Nominal Pipe Size	Pipe O.D.	RE90 Std. 90° Elbows				RE45 Std. 45° Elbows				RST Std. Tee			
		C-E	Weight	Ctn	Crate	C-E	Weight	Ctn	Crate	C-E	Weight	Ctn	Crate
mm/in	mm	mm	Kgs	pc.	pc.	mm	Kgs	pc.	pc.	mm	Kgs	pc.	pc.
32 / 1-1/4	42.2	70	0.5	48	1152	45	0.3	96	2304	70	0.7	36	864
40 / 1-1/2	48.3	70	0.7	48	1152	45	0.4	80	1920	70	0.9	24	576
50 / 2	60.3	83	0.9	24	576	51	0.7	32	768	83	1.3	14	336
65 / 2-1/2	73.0	95	1.2	12	288	57	0.9	18	432	95	2.2	8	192
65 / 2-1/2	76.1	95	1.4	12	288	57	1.0	18	432	95	2.3	8	192
80 / 3	88.9	108	2.1	9	270	64	1.3	14	390	108	3.1	6	160
100 / 4	114.3	127	2.8	5	135	76	2.0	6	230	127	4.6	3	90
125 / 5	139.7	140	5.0	3	80	83	3.5	4	100	140	6.5	---	52
150 / 6	165.1	165	5.7	---	60	89	4.4	---	72	165	8.5	---	28
150 / 6	168.3	165	6.4	---	60	89	4.4	---	72	165	10.0	---	12
200 / 8	219.1	197	12.5	---	24	108	9.0	---	45	197	20.0	---	---



Model RES90 Short Pattern 90° Elbow
RTS Short Pattern Straight Tee

Model RES90 / RTS Short Pattern Elbow / Tee

Nominal Pipe Size	Pipe O.D.	RES90 Short Pattern 90° Elbow				RTS Short Pattern Straight Tee			
		C-E (mm)	Kgs	Ctn (pc.)	Crate (pc.)	C-E (mm)	Kgs	Ctn (pc.)	Crate (pc.)
50 / 2	60.3	70	0.7	30	720	70	1.0	20	480
65 / 2-1/2	73.0	76	0.9	15	360	76	1.3	10	240
65 / 2-1/2	76.1	76	0.9	15	360	76	1.3	10	240
80 / 3	88.9	86	1.4	12	300	86	2.0	8	215
100 / 4	114.3	102	1.7	6	175	102	3.6	5	120
125 / 5	139.7	124	3.5	---	92	124	4.6	---	64
150 / 6	165.1	140	5.5	---	60	140	8.6	---	38
150 / 6	168.3	140	5.5	---	60	140	8.6	---	38
200 / 8	219.1	176	11.0	---	28	176	16	---	16

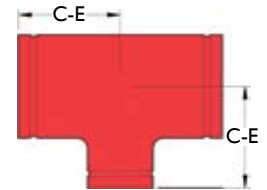


Model RRTG Reducing Tee, Grooved



Model RRTG Reducing Tee, Grooved

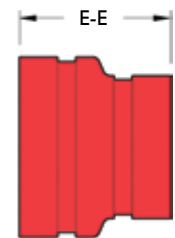
Nominal Pipe Size mm/in	Pipe O.D. mm	RRTG Red.Tee		Box Q'ty
		C-E mm	Weight Kgs	Crate pc.
100 X 100 X 65 / 4 X 4 X 2-1/2	114.3 X 114.3 X 73.0	127	4.3	98
100 X 100 X 65 / 4 X 4 X 2-1/2	114.3 X 114.3 X 76.1	127	4.3	98
100 X 100 X 80 / 4 X 4 X 3	114.3 X 114.3 X 88.9	127	4.5	98
150 X 150 X 65 / 6 X 6 X 2-1/2	168.3 X 168.3 X 73.0	165	8.5	38
150 X 150 X 65 / 6 X 6 X 2-1/2	165.1 X 165.1 X 76.1	165	8.5	38
150 X 150 X 80 / 6 X 6 X 3	165.1 X 165.1 X 88.9	165	9.2	38
150 X 150 X 80 / 6 X 6 X 3	168.3 X 168.3 X 88.9	165	8.8	38
200 X 200 X 100 / 8 X 8 X 4	219.1 X 219.1 X 114.3	197	20.0	15
200 X 200 X 150 / 8 X 8 X 6	219.1 X 219.1 X 165.1	197	21.0	15
200 X 200 X 150 / 8 X 8 X 6	219.1 X 219.1 X 168.3	197	21.0	15



Model RCR Concentric Reducer

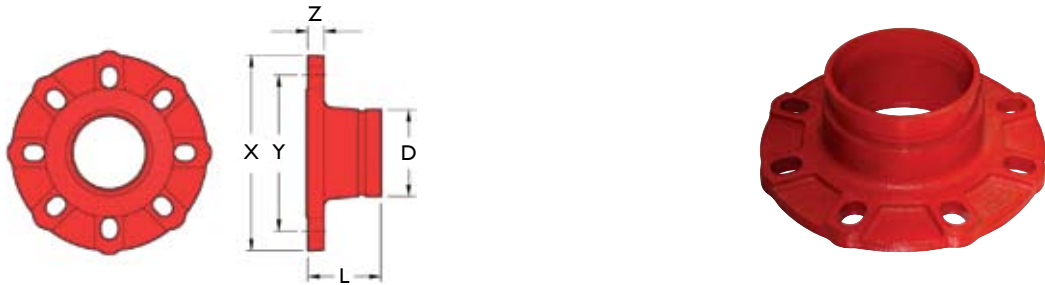
Model RCR Concentric Reducer

Nominal Pipe Size mm/in	Pipe O.D. mm	RCR Concentric Reducer		Box Q'ty	
		E-E mm	Weight Kgs	Ctn pc.	Crate pc.
65 X 50 / 2.5 X 2	73.0 X 60.3	64	0.5	45	1080
65 X 50 / 2.5 X 2	76.1 X 60.3	64	0.5	45	1080
80 X 50 / 3 X 2	88.9 X 60.3	64	0.6	48	1440
80 X 65 / 3 X 2-1/2	88.9 X 73.0	64	0.6	36	1060
80 X 65 / 3 X 2-1/2	88.9 X 76.1	64	0.6	36	1060
100 X 50 / 4 X 2	114.3 X 60.3	76	1.1	24	800
100 X 65 / 4 X 2-1/2	114.3 X 73.0	76	1.0	24	800
100 X 65 / 4 X 2-1/2	114.3 X 76.1	76	1.0	24	800
100 X 80 / 4 X 3	114.3 X 88.9	76	1.0	24	800
125 X 100 / 5 X 4	139.7 X 114.3	89	2.0	12	300
150 X 50 / 6 X 2	165.1 X 60.3	102	1.9	6	280
150 X 65 / 6 X 2-1/2	165.1 X 76.1	102	1.9	6	280
150 X 80 / 6 X 3	165.1 X 88.9	102	2.0	6	280
150 X 100 / 6 X 4	165.1 X 114.3	102	2.1	6	280
150 X 50 / 6 X 2	168.3 X 60.3	102	1.9	6	280
150 X 65 / 6 X 2-1/2	168.3 X 73.0	102	1.9	6	280
150 X 65 / 6 X 2-1/2	168.3 X 76.1	102	1.9	6	280
150 X 80 / 6 X 3	168.3 X 88.9	102	2.0	6	280
150 X 100 / 6 X 4	168.3 X 114.3	102	2.1	6	280
200 X 80 / 8 X 3	219.1 X 88.9	127	5.0	---	135
200 X 100 / 8 X 4	219.1 X 114.3	127	5.1	---	135
200 X 150 / 8 X 6	219.1 X 165.1	127	5.2	---	135
200 X 150 / 8 X 6	219.1 X 168.3	127	5.2	---	135





Model RUFA Universal Flange Adaptor



Model RUFA Universal Flange Adaptor

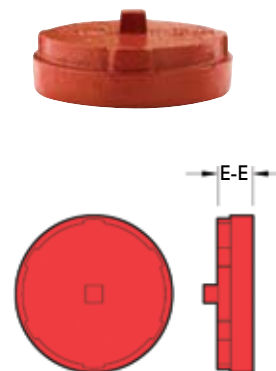
Nominal Size mm/in	Pipe O.D. D mm	L mm	X mm	Y: Flange Drilling			Z mm	Bolts		Weight Kgs	Box Q'ty Crate pc.
				ANSI 125 / 150 mm	PN 10, 16 mm	BS 10 Table E mm		Dia. mm	No.		
50 / 2	60.3	64	165	121	125	---	16	M16	4	2.3	250
65 / 2-1/2	73.0	70	185	140	145	---	16	M16	4	2.9	180
65 / 2-1/2	76.1	70	185	140	145	---	16	M16	4	2.9	180
80 / 3	88.9	70	200	152	160	---	16	M16	8	3.4	150
100 / 4	114.3	76	229	191	180	178	16	M16	8	3.9	120
125 / 5	139.7	76	250	216	210	210	22	M16 M20 (ANSI)	8	6.0	100
150 / 6	165.1	76	291	241	240	235	24	M20	8	6.3	85
150 / 6	168.3	89	291	241	240	---	24	M20	8	6.3	85
200 / 8	219.1	102	343	298	295	292	29	M20	8 12 (PN16)	13.7	35

Model RCAP Grooved Cap



Model RCAP Grooved Cap

Nominal Size mm/in	Pipe O.D. mm	RCAP Grooved Cap		Box Q'ty	
		E-E (mm)	Kgs	Ctn (pc.)	Crate (pc.)
32 / 1-1/4	42.2	25	0.2	150	7200
40 / 1-1/2	48.3	25	0.2	110	5280
50 / 2	60.3	25	0.3	75	3600
65 / 2-1/2	73.0	25	0.4	50	2400
65 / 2-1/2	76.1	25	0.4	50	2400
80 / 3	88.9	25	0.7	40	1920
100 / 4	114.3	25	1.0	20	960
125 / 5	139.7	25	1.7	15	720
150 / 6	165.1	25	3.0	10	480
150 / 6	168.3	25	3.0	10	480
200 / 8	219.1	30	5.5	10	280



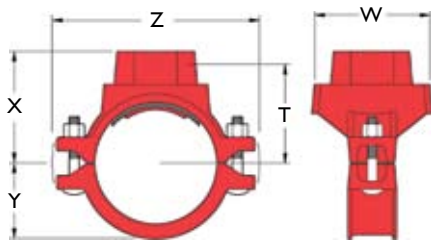
Mechanical Tees

The Model RMTT, RMTG and RMTU Mechanical Tees allow for a fast and easy threaded or grooved branch outlet and eliminates the need for welding or use of a reducing tee and couplings. Simply cut the specified hole at the desired location on the centerline of the pipe and install the mechanical tee with the gasket, bolts and nuts provided.



Model RMTT Threaded Mechanical Tee

Model RMTT Mechanical Tees provide a fast and easy mid-point threaded branch outlet.



Model RMTT Threaded Mechanical Tee

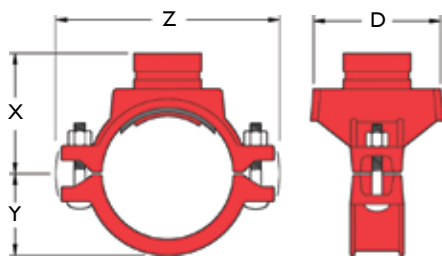
Nominal Size Run x Branch mm/in	Hole Dia. +3.2, -0 mm	Dimensions					Bolts Size mm	Weight Kgs	Box Q'ty	
		T*	X	Y	Z	W			Ctn pc.	Crate pc.
65 X 32 / 2-1/2 X 1-1/4	51	61	79	48	146	82	M12 X 75	1.6	14	336
65 X 40 / 2-1/2 X 1-1/2	51	61	79	48	146	82	M12 X 75	1.6	14	336
80 X 32 / 3 X 1-1/4	51	71	89	56	160	88	M12 X 75	1.9	10	330
80 X 40 / 3 X 1-1/2	51	71	89	56	160	88	M12 X 75	2.0	10	330
80 X 50 / 3 X 2	64	72	91	56	160	101	M12 X 75	2.3	8	300
100 X 32 / 4 X 1-1/4	51	81	99	72	190	85	M12 X 75	2.2	8	300
100 X 40 / 4 X 1-1/2	51	81	99	72	190	85	M12 X 75	2.3	8	300
100 X 50 / 4 X 2	64	86	105	72	190	101	M12 X 75	2.7	6	260
100 X 65 / 4 X 2-1/2	70	82	111	72	190	112	M12 X 75	3.3	5	200
100 X 80 / 4 X 3	89	82	112	72	190	136	M16 X 90	5.6	3	150
150 X 32 / 6 X 1-1/4	51	109	127	98	256	93	M16 X 135	4.4	4	140
150 X 40 / 6 X 1-1/2	51	109	127	98	256	93	M16 X 135	4.4	4	140
150 X 50 / 6 X 2	64	113	132	98	256	101	M16 X 135	4.8	4	110
150 X 65 / 6 X 2-1/2	70	111	140	98	256	118	M16 X 135	5.4	3	110
150 X 80 / 6 X 3	89	110	140	98	256	137	M16 X 135	6.0	2	110
150 X 100 / 6 X 4	114	107	140	98	256	164	M16 X 135	6.6	2	80

*T: Take-out (Center of run to end of pipe to be engaged)



Model RMTG Grooved Mechanical Tee

Model RMTG Mechanical Tees provide a fast and easy mid-point grooved-end branch outlet.



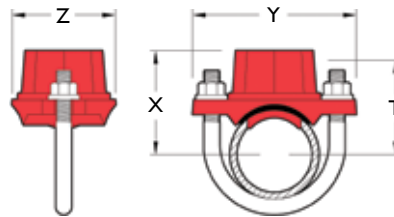
Model RMTG Grooved Mechanical Tee

Nominal Size mm/in	Pipe O.D. mm	Hole Dia. +3.2, -0 mm	Dimensions				Bolts Size mm	Weight Kgs	Box Q'ty	
			X mm	Y mm	Z mm	D mm			Ctn pc.	Crate pc.
80 X 40 / 3 X 1-1/2	88.9 X 48.3	51	89	56	160	88	M12 X 75	1.9	10	330
80 X 50 / 3 X 2	88.9 X 60.3	64	91	56	160	101	M12 X 75	2.2	8	300
100 X 40 / 4 X 1-1/2	114.3 X 48.3	51	99	72	190	85	M12 X 75	2.2	8	300
100 X 50 / 4 X 2	114.3 X 60.3	64	105	72	190	101	M12 X 75	2.7	6	260
100 X 65 / 4 X 2-1/2	114.3 X 73.0	70	111	72	190	112	M12 X 75	3.0	5	200
100 X 65 / 4 X 2-1/2	114.3 X 76.1	70	111	72	190	112	M12 X 75	3.0	5	200
100 X 80 / 4 X 3	114.3 X 88.9	89	112	72	190	136	M16 X 90	5.2	3	150
150 X 50 / 6 X 2	165.1/168.3 X 60.3	64	132	98	256	101	M16 X 135	4.8	4	140
150 X 65 / 6 X 2-1/2	165.1/168.3 X 73.0	70	140	98	256	118	M16 X 135	5.5	3	110
150 X 65 / 6 X 2-1/2	165.1/168.3 X 76.1	70	140	98	256	118	M16 X 135	5.5	3	110
150 X 80 / 6 X 3	165.1/168.3 X 88.9	89	140	98	256	137	M16 X 135	5.6	2	110
150 X 100 / 6 X 4	165.1/168.3 X 114.3	114	140	98	256	164	M16 X 135	7.0	2	80



Model RMTU U-Bolt Sprinkler Mechanical Tee

The Model RMTU U-Bolt Sprinkler Mechanical Tee is designed for making direct outlet connections to sprinkler heads, drop nipples, flex connectors and gauges.



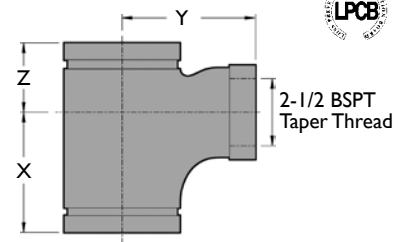
Model RMTU U-Bolt Sprinkler Mechanical Tee

Nominal Size mm/in	Hole Dia. +1.6, -0 mm	Dimensions			Take-Out T* mm	Bolts Size in	Bolt Torque N-m	Weight Kgs	Box Q'ty	
		X mm	Y mm	Z mm					Ctn pc.	Crate pc.
32 X 15 / 1-1/4 X 1/2	30	53	89	56	35	3/8 UNC	20-30	0.4	65	1560
32 X 20 / 1-1/4 X 3/4	30	53	89	56	35	3/8 UNC	20-30	0.4	65	1560
32 X 25 / 1-1/4 X 1	30	56	89	56	38	3/8 UNC	20-30	0.4	65	1560
40 X 15 / 1-1/2 X 1/2	30	55	89	56	35	3/8 UNC	20-30	0.4	65	1560
40 X 20 / 1-1/2 X 3/4	30	55	89	56	35	3/8 UNC	20-30	0.4	65	1560
40 X 25 / 1-1/2 X 1	30	58	89	56	38	3/8 UNC	20-30	0.4	65	1560
50 X 15 / 2 X 1/2	30	64	98	56	42	3/8 UNC	20-30	0.4	65	1560
50 X 20 / 2 X 3/4	30	64	98	56	42	3/8 UNC	20-30	0.4	65	1560
50 X 25 / 2 X 1	30	67	98	56	45	3/8 UNC	20-30	0.4	65	1560
65 X 15 / 2-1/2 X 1/2	30	69	111	56	51	3/8 UNC	20-30	0.4	55	1320
65 X 20 / 2-1/2 X 3/4	30	69	111	56	51	3/8 UNC	20-30	0.4	55	1320
65 X 25 / 2-1/2 X 1	30	72	111	56	54	3/8 UNC	20-30	0.5	55	1320

*T: Take-out (Center of run to end of pipe to be engaged)

Model RPT Pitcher Tee

The Model RPT pitcher tee provides a quick and easy connection and transition from a grooved riser system to a threaded hydrant valve outlet.



Model RPT Pitcher Tee

Nominal Pipe Size mm/in	Pipe O.D. mm	Hydrant Outlet ---	Dimensions			Approx. Weight Kgs	Box Q'ty Crate pc.
			X mm	Y mm	Z mm		
100 X 100 X 65 / 4 X 4 X 2-1/2	114.3 X 114.3 X 76.1	BSPT	121	133	69	3.4	130



Flow Data / Frictional Resistance

(Expressed as equivalent length of straight pipe)

The values listed in this table express the frictional resistance of representative **RASCO** fittings as equivalent meters of straight pipe. For the branch of a tee that is reduced in size, use the value that corresponds to the branch size. For example, the branch value of a 4" x 4" x 2" tee is 2.6 meters.

FLOW DATA (For Elbows & Tees)

Nominal Size mm/in	Pipe O.D. mm	Elbows			Tees			
		RE90 90° Std. Radius meters	RES90 90° Short Pattern meters	RE45 45° Std. Radius meters	RST Tee		RTS Short Pattern Tee	
					Branch meters	Run meters	Branch meters	Run meters
32 / 1-1/4	42.2	0.5	0.2	---	1.1	0.4	---	---
40 / 1-1/2	48.3	0.7	0.3	---	1.7	0.5	---	---
50 / 2	60.3	1.1	0.5	1.1	2.6	1.1	2.6	1.1
65 / 2-1/2	73.0	1.3	0.7	0.6	3.1	1.3	3.3	1.3
65 / 2-1/2	76.1	1.3	0.7	1.3	3.3	1.3	3.3	1.3
80 / 3	88.9	1.5	0.8	1.5	4.0	1.5	4.0	1.5
100 / 4	114.3	2.1	1.0	2.1	4.9	2.1	4.9	2.1
125 / 5	139.7	2.6	1.3	2.6	6.4	2.6	6.4	2.6
150 / 6	168.3	3.0	1.5	3.0	7.6	3.0	7.6	3.0
150 / 6	165.1	3.0	1.5	2.9	7.6	3.0	7.6	3.0
200 / 8	219.1	4.0	1.5	4.0	10.1	4.0	10.1	3.0

RASCO fittings exceed the head loss requirement of NFPA 13.

FLOW DATA (For Mechanical Tees)

Outlet Size mm/in	Pipe O.D. mm	RMTT Threaded Outlet meters	RMTG Grooved Outlet meters
32 / 1-1/4	42.2	1.8	1.8
40 / 1-1/2	48.3	2.4	2.4
50 / 2	60.3	9.0	9.0
65 / 2-1/2	73.0	4.6	4.6
65 / 2-1/2	76.1	4.6	4.6
80 / 3	88.9	4.9	4.9
100 / 4	114.3	5.2	5.2

Meters of Schedule 40 steel outlet pipe with a Hazen-Williams coefficient of friction value of 120.

Installation and Assembly Notes

Pipe End Preparation

RASCO grooved products require a roll or cut groove to be applied to the pipe ends being connected. All pipe ends should be square and roll or cut grooves must conform to the applicable groove specification, such as the most current version of ISO/FDIS 6182-12 or ANSI/AWWA C606. Before installing any components make sure that they are the correct size and inspect the pipe ends to make sure that the gasket seating area is free from any dirt, rust, scale, loose paint, indentations and or roll marks that could affect the sealing capacity of the gasket.

Gaskets & Lubricant

RASCO grooved products are supplied standard with high grade “E” EPDM gaskets which are recommended for wet and dry (oil-free air) fire protection services at ambient temperatures. For dry pipe, freezer and service subject to vacuum services greater than 10 inHg absolute (254 mmHg absolute) we recommend the use of rigid couplings and Gap End Seal gaskets. Check to make sure the gasket is properly lubricated prior to assembly. Use an EPDM compatible (non-oil based) lubricant for general fire protection services. A thin coat should be applied to the gasket lips and exterior and or the coupling housings. For dry pipe systems and freezer applications use a petroleum free silicone based lubricant.

Bolts and Nuts

RASCO couplings are supplied complete with factory supplied bolts and nuts. Always use the factory supplied bolts and nuts for installation and assembly of couplings. The below table list recommended bolt torque ranges for the proper installation of factory supplied bolts and nuts. Do not exceed the listed torque values by more than 25%, as excessive torque can lead joint failure and or personal injury and property damage. Always tighten nuts evenly and equally by alternating sides to prevent the pinching of the gasket. A pinched gasket can result in an immediate or delayed leak.

Recommended Bolt Torque

Bolts Size		Torque	
mm	in	N-m	Lbs-ft
M10	3/8	20-30	15-22
M12	1/2	40-68	30-50
M16	5/8	80-120	60-90
M20	3/4	100-235	74-170

Metal-to-metal Contact

RASCO grooved couplings are designed so that the coupling bolt pads will make metal-to-metal contact when installed properly. In most applications proper installation can be achieved with torque values lower than those listed above. For couplings listed in this catalog a torque wrench is usually not required. After achieving metal-to-metal contact, tighten nuts by another one quarter turn to make sure the bolts and nuts are secure.

If bolt pad gaps are evident after installation, disassemble and reinstall the coupling after confirming:

- That the coupling, pipe and or component being connected are the correct size.
- That the coupling keys are fully engaged in the grooves of the pipe and or component.
- That gasket is properly lubricated and not being pinched.
- That the groove dimensions conform to the applicable groove specifications.
- That the pipe end flare is within the specification tolerance.

Hole-cut Mechanical Tees

Before installing a mechanical tee a hole must be cut or drilled on the centerline of the pipe to be mounted. Take care to always cut or drill the correct size hole as shown in this catalog. After the hole has been cut all rough edges must be removed and the area within 16mm (5/8”) surrounding the hole should be clean, smooth and free from any indentations and or projections that could affect the proper seating of the gasket and housing.

Working Pressure

Pressure ratings shown are CWP (cold water pressure) or the maximum working pressure for the service temperature of the gasket listed. This rating may differ from the working pressure listed by UL, FM, VdS or LPCB, as test conditions and test pipe schedules vary. The maximum joint working pressure may be increased by 1.5 times the working pressures shown for a one time field test only.

Warning / Caution

Always depressurize and drain the piping system before attempting to install, remove adjust, maintain or repair any **RASCO** grooved or hole-cut piping components.



Roll Grooved-end Dimensional Specifications

Per ISO/FDIS 6182-12 Table I
& ANSI/AWWA C606 Table 5

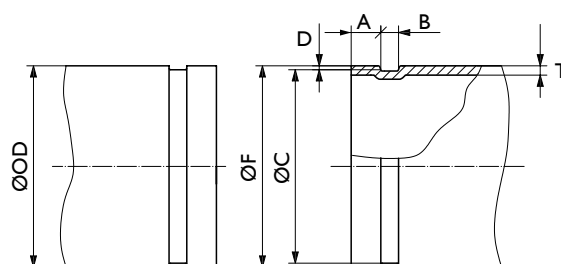


Figure 1 — Roll grooved-end dimensional reference points

Roll Grooved-end Dimensional Specifications

Dimensions in millimeters

Pipe or tube			Dimensional specifications ^a						
Nominal Size	Outside diameter (O.D.)		Gasket seat A ±0.76	Groove width B ±0.76	Grooved diameter C		Groove depth D ^b	Wall Thickness T Min. allow.	Flare F Max. Dia.
	Actual size	Tolerance			Actual size	Tolerance			
25	33.7	+0.41 -0.68	15.88	7.14	30.23	0 -0.38	1.70	1.8	34.5
32	42.4	+0.50 -0.60	15.88	7.14	38.99	0 -0.38	1.70	1.8	43.3
40	48.3	+0.44 -0.52	15.88	7.14	45.09	0 -0.38	1.60	1.8	49.4
50	60.3	±0.61	15.88	8.74	57.15	0 -0.38	1.60	1.8	62.2
65	73.0	±0.74	15.88	8.74	69.09	0 -0.46	1.98	2.3	75.2
65	76.1	+0.89 -0.79	15.88	8.74	72.26	0 -0.46	1.93	2.3	77.7
80	88.9	+1.14 -0.79	15.88	8.74	84.94	0 -0.51	1.98	2.3	90.6
100	114.3	+1.40 -0.79	15.88	8.74	110.08	0 -0.51	2.11	2.3	116.2
125	139.7	+1.42 -0.79	15.88	8.74	135.48	0 -0.56	2.11	2.9	141.7
125	141.3	+1.60 -0.79	15.88	8.74	137.03	0 -0.56	2.13	2.9	143.5
150	165.1	+1.60 -0.79	15.88	8.74	160.90	0 -0.56	2.16	2.9	167.1
150	168.3	+1.60 -0.79	15.88	8.74	163.96	0 -0.64	2.16	2.9	170.7
200	219.1	+1.60 -0.79	19.05	11.91	214.40	0 -0.64	2.34	2.9	221.5

^a See Figure 1 for dimensional diagram.

^b Dimension for reference only, groove diameter is determined by C.

Terms & Conditions

PRICE TERMS

All prices are ex works Reliable stocking location or shipping point. Our responsibility, as shipper, ends upon delivery to and receipt by a common carrier.

PRICE CHANGES

Prices are subject to change without prior notice.

CREDIT TERMS

Upon establishment and continuation of satisfactory financial status, our standard terms are: 4% Cash discount for payment received within (25) days from date of invoice (D.O.I. Net 60). Delinquent accounts are subject to 1-1/2% monthly (18% annual rate) service charge. The above discounts apply to material only (freight or tax excluded).

MINIMUM BILLING CHARGE

US\$50.00 or local currency equivalent.

SHIPPING METHOD

The buyer shall designate the shipment method common carrier(s) on his purchase order. Whenever this information is not furnished, it is understood that we shall make this selection at the Buyers risk and expense.

PARTIAL SHIPMENTS

Unless specifically indicated in writing on the buyers purchase order, we reserve the right to make partial shipments.

GUARANTEE

We guarantee our products solely to direct purchasers from us and subject to the limitation herein after set forth in this paragraph for one year from the date of shipment when such products are applied to the use for which they are designed and manufactured. We limit our guarantee to extending credit for defective products at the invoice price. In no case will we

allow charges for labor, consequential expenses or damage incurred as a result of defective products. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS TO USE FOR PRODUCTS OTHER THAN AS STATED ABOVE.

DESIGNS

Subject to change without notice.

CLAIMS

No claims are allowed unless made within ten (10) days of receipt of invoice. Damage or shortage claims should be filed with the delivery carrier.

RETURN OF GOODS

A return authorization number has to be obtained from Reliable and clearly marked on all correspondence and cartons being returned. No credit will be granted for goods returned without our permission. Request for permission to return goods should include date and number of our invoice covering your original purchase. A charge of 20% will be made to cover cost of handling, incoming inspection and retesting. Transportation charges must be prepaid. In the case of special or made-to-order goods, credit will only be issued if and when the goods can be resold.

SPECIAL GOODS

Orders covering special or made-to-order goods are not subject to cancellation except in writing and upon agreement to make payment for work already performed.

SPECIAL PACKAGING & HANDLING

Goods requiring special packaging and handling are subject to an extra charge.

WEIGHTS & DIMENSIONS

Shipping weights and dimensions are approximate and in no sense guaranteed.