



# Rapidrop Global Ltd

British Manufacturer of Fire Detection & Suppression Equipment

## Grooved Couplings





# Rapidrop Global Ltd

Rapidrop Global Limited is the leading UK manufacturer of fire sprinkler system products serving the needs of the fire detection and suppression industry. With a comprehensive product range Rapidrop has established a world-class reputation for quality and innovation delivering solutions in fire protection, safety systems and control solutions. The Rapidrop range includes products which have internationally recognised approvals and listings from FM/UL/VDS and LPCB.

Rapidrop's global reach provides a wealth of knowledge and experience in a range of international environments enabling us to provide tailored solutions and meet project requirements on time and on budget.

Rapidrop sprinkler equipment has been installed all around the world from London to New York to Paris, from South Africa to Dubai to Rio de Janeiro. Rapidrop have worldwide sales supported by a worldwide sales and distribution network.

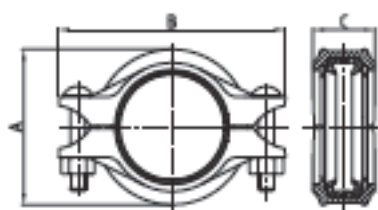
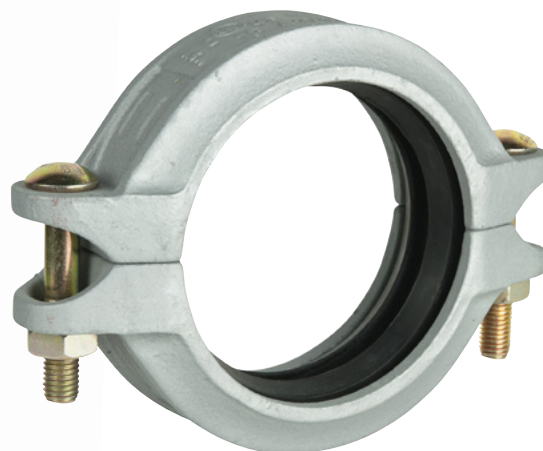
As part of Rapidrop's commitment to fire safety and protecting lives, Rapidrop invests in research and development conducted at its own state of the art test facilities, one of its kind in the UK. Dedicated to innovation, and reinforcing its position in the market place Rapidrop is focused on bringing new products to the market that makes our customers lives easier, safer and better.





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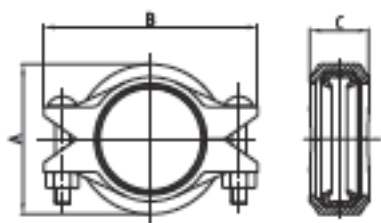
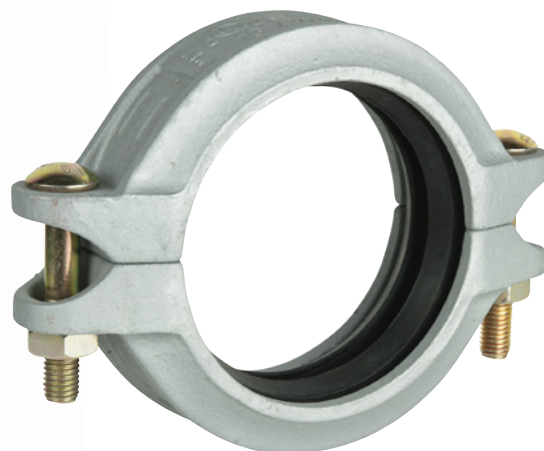
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Max End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size No.-Size mm
							A mm/in	B mm/in	C mm/in	
RD1G033	RD1G033G	25 1	33.7 1.327	500 3.45	3.0/680	0-1.6 0-0.06	59 2.33	100 3.94	44 1.74	2 - 3/8 x 55 2 - M10X57
RD1G042	RD1G042G	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 - 3/8 x 55 2 - M10X57
RD1G048	RD1G048G	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 - 3/8 x 55 2 - M10X57
RD1G060	RD1G060G	50 2	60.3 2.375	300 2.07	5.9/1330	0-3.2 0-0.13	85 3.35	131 5.16	45 1.78	2 - 3/8 x 55 2 - M10X57
RD1G076	RD1G076G	65 2½	76.1 3.000	300 2.07	9.4/2120	0-3.2 0-0.13	101 3.98	147 5.78	45 1.77	2 - 3/8 x 55 2 - M10X57
RD1GS089	RD1GS089G	80 3	88.9 3.500	300 2.07	12.8/2885	0-3.2 0-0.13	114 4.50	160 6.30	45 1.78	2 - 3/8 x 55 2 - M10X57
RD1GS114	RD1GS114G	100 4	114.3 4.500	300 2.07	21.2/4770	0-3.2 0-0.13	140 5.51	192 7.56	50 1.97	2 - 1/2 x 70 2 - M12X70
RD1G139	RD1G139G	125 5	139.7 5.500	450 3.10	47.5/10680	0-3.2 0-0.13	170 6.69	238 9.37	52 2.05	2 - 5/8 x 85 2 - M16X85
RD1G168	RD1G168G	150 6	168.3 6.625	300 2.07	46.0/10340	0-3.2 0-0.13	202.0 7.95	270 10.63	52 2.05	2 - 5/8 x 85 2 - M16X85
RD1G219	RD1G219G	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 - 3/4 x 115 2 - M20X115
RD1G273	RD1G273G	250 10	273.0 10.750	300 2.07	121.0/27210	0-3.2 0-0.13	327 12.88	420 16.54	63 2.48	2 - 7/8 x 125 2 - M22X140
RD1G323*	RD1G323G*	300 12	323.9 12.750	300 2.07	170.3/38280	0-3.2 0-0.13	378 14.88	466 18.35	63 2.48	2 - 7/8 x 125 2 - M22X140

\* Not VdS Approved



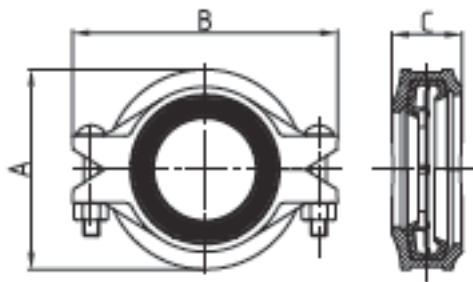
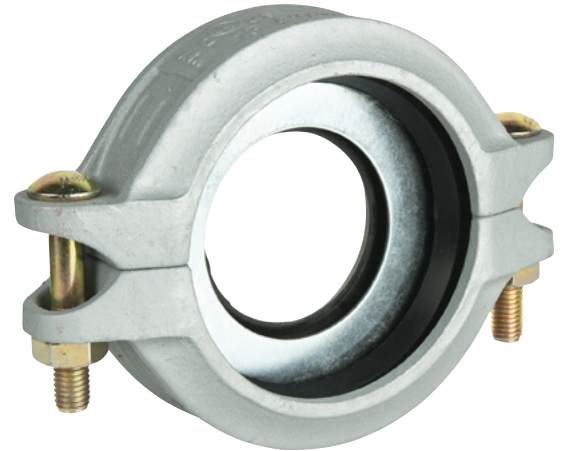


# Standard Flexible Coupling Model 1N



Model Number (Red Painted)	Model Number (Galvanised)	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 No.-Size mm
							A mm/in	B mm/in	C mm/in	
RD1N033	RD1N033G	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 x 55 2 - M10X57
RD1N042	RD1N042G	32 1¼	42.4 1.669	300 2.07	2.9/650	0-1.6 0-0.06	65 2.56	104 4.14	44 1.74	2 - 3/8 x 55 2 - M10X57
RD1N048	RD1N048G	40 1½	48.3 1.900	300 2.07	3.8/850	0-3.2 0-0.13	70 2.75	110 4.33	44 1.74	2 - 3/8 x 55 2 - M10X57
RD1N060	RD1N060G	50 2	60.3 2.375	300 2.07	5.9/1330	0-3.2 0-0.13	83 3.27	125 4.92	44 1.74	2 - 3/8 x 55 2 - M10X57
RD1N076	RD1N076G	65 2½	76.1 3.000	300 2.07	9.4/2120	0-3.2 0-0.13	100 3.94	145 5.71	45 1.78	2 - 3/8 x 55 2 - M10X57
RD1N089	RD1N089G	80 3	88.9 3.500	300 2.07	12.8/2885	0-3.2 0-0.13	115 4.53	160 6.30	45 1.78	2 - 1/2 x 70 2 - M12X70
RD1N114	RD1N114G	100 4	114.3 4.500	300 2.07	21.2/4770	0-3.2 0-0.13	145 5.71	198 7.80	50 1.97	2 - 1/2 x 70 2 - M12X70
RD1N139	RD1N139G	125 5	139.7 5.500	450 3.10	47.5/10680	0-3.2 0-0.13	169 6.65	230 9.06	52 2.05	2 - 5/8 x 85 2 - M16X85
RD1N168	RD1N168G	150 6	168.3 6.625	300 2.07	46.0/10340	0-3.2 0-0.13	200 7.87	265 10.43	52 2.05	2 - 5/8 x 85 2 - M16X85
RD1N219	RD1N219G	200 8	219.1 8.625	450 3.10	116.9/26280	0-3.2 0-0.13	258 10.24	350 13.78	60 2.37	2 - 3/4 x 115 2 - M20X115
RD1N273	RD1N273G	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 x 125 2 - M22X140
RD1N323*	RD1N323G*	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 x 125 2 - M22X140

\* Not VdS Approved



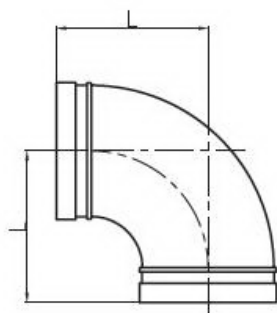
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Max End Load kN/Lbs	Pipe End Separation mm/in	Dimensions			Bolt Size No.-Size mm
							A mm/in	B mm/in	C mm/in	
RD1NR076060	RD1NR076060G	65 × 50 2½ × 2	76.1 × 60.3 3.000 × 2.375	300 2.07	9.4-2120	0-3.2 0-0.13	102 4.02	144 5.67	45 1.78	2 - 3/8 × 55 2 - M10X57
RD1NR089060	RD1NR089060G	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 - M12X70
RD1NR089076	RD1NR089076G	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 - M12X70
RD1NR114060	RD1NR114060G	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 - M12X70
RD1NR114076	RD1NR114076G	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 - M12X70
RD1NR114089	RD1NR114089G	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 - M12X70
RD1NR168089*	RD1NR168089G*	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 - M16X85
RD1NR168114	RD1NR168114G	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 - M16X85
RD1NR219168*	RD1NR219168G*	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 - M20X115

\* Not VdS Approved





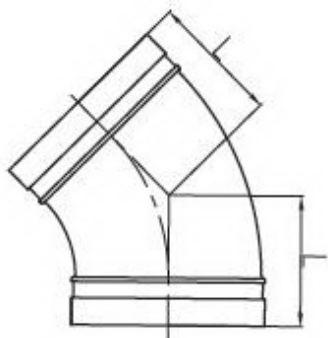
# 90° Elbow Model 90 & 90s



Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in
RD90L033	RD90L033G	25 1	33.7 1.315	500 3.45	57 2.24
RD90L042	RD90L042G	32 1¼	42.4 1.660	500 3.45	70 2.75
RD90L048	RD90L048G	40 1½	48.3 1.900	500 3.45	70 2.75
RD90S060	RD90S060G	50 2	60.3 2.375	300 2.07	70 2.75
RD90S076	RD90S076G	65 2½	76.1 3.000	300 2.07	76 3.00
RD90S089	RD90S089G	80 3	88.9 3.500	300 2.07	85.5 3.37
RD90S114	RD90S114G	100 4	114.3 4.500	300 2.07	101 3.98
RD90S139	RD90S139G	125 5	139.7 5.500	300 2.07	124 4.88
RD90S168	RD90S168G	150 6	168.3 6.625	500 3.45	140 5.50
RD90S219	RD90S219G	200 8	219.1 8.625	300 2.07	165 6.50
RD90L273	RD90L273G	250 10	273.0 10.750	500 3.45	229 9.00
RD90L323	RD90L323G	300 12	323.9 12.750	500 3.45	254 10.00



# 45° Elbow Model 120

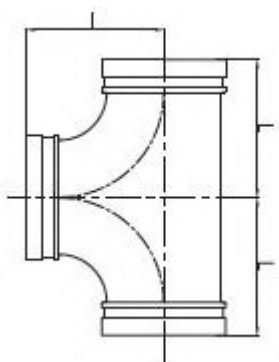


Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in
RD120L033	RD120L033G	25 1	33.7 1.315	500 3.45	44.5 1.75
RD120L042	RD120L042G	32 1¼	42.4 1.660	500 3.45	44.5 1.75
RD120L048	RD120L048G	40 1½	48.3 1.900	500 3.45	44.5 1.75
RD120L060	RD120L060G	50 2	60.3 2.375	500 3.45	51 2.00
RD120L076	RD120L076G	65 2½	76.1 3.000	500 3.45	57 2.24
RD120L089	RD120L089G	80 3	88.9 3.500	500 3.45	63.5 2.50
RD120L114	RD120L114G	100 4	114.3 4.500	500 3.45	76 3.00
RD120L139	RD120L139G	125 5	139.7 5.500	500 3.45	82.5 3.25
RD120L168	RD120L168G	150 6	168.3 6.625	500 3.45	89 3.50
RD120L219	RD120L219G	200 8	219.1 8.625	500 3.45	108 4.25
RD120L273	RD120L273G	250 10	273.0 10.750	500 3.45	120.5 4.75
RD120L323	RD120L323G	300 12	323.9 12.750	500 3.45	133 5.25

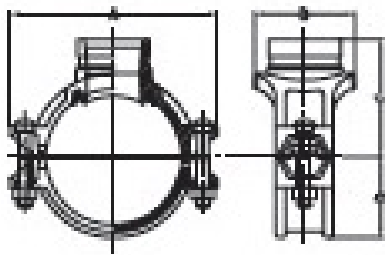




# Equal Tee Model 130 & 130s

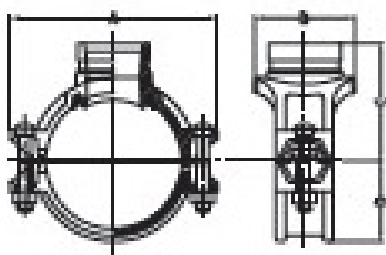
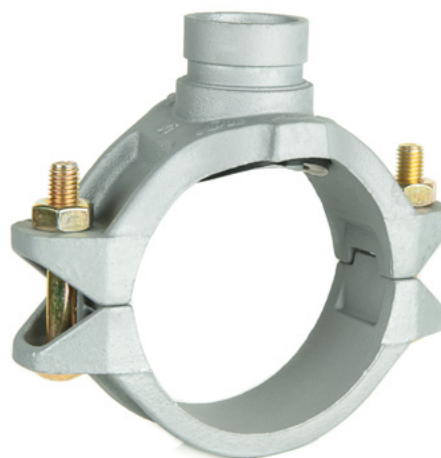


Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in
RD130L033	RD130L033G	25 1	33.7 1.315	500 3.45	57 2.24
RD130L042	RD130L042G	32 1¼	42.4 1.660	500 3.45	70 2.75
RD130L048	RD130L048G	40 1½	48.3 1.900	500 3.45	70 2.75
RD130S060	RD130S060G	50 2	60.3 2.375	300 2.07	70 2.75
RD130S076	RD130S076G	65 2½	76.1 3.000	300 2.07	76 3.00
RD130S089	RD130S089G	80 3	88.9 3.500	300 2.07	85.5 3.37
RD130S114	RD130S114G	100 4	114.3 4.500	300 2.07	101 3.98
RD130S139	RD130S139G	125 5	139.7 5.500	300 2.07	124 4.88
RD130S168	RD130S168G	150 6	168.3 6.625	300 2.07	140 5.50
RD130S219	RD130S219G	200 8	219.1 8.625	300 2.07	<b>175</b> <b>6.89</b>
RD130L273	RD130L273G	250 10	273.0 10.750	500 3.45	229 9.00
RD130L323	RD130L323G	300 12	323.9 12.750	500 3.45	254 10.00



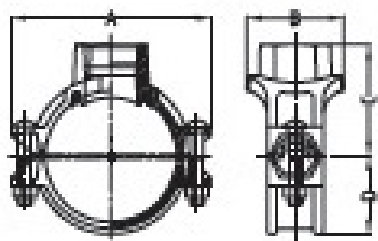
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size No.-Size mm
						A mm/in	B mm/in	C mm/in	D mm/in	
RD3G060042	RD3G060042G	50 x 32 2 x 1¼	60.3 x 42.4 2.375 x 1.660	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8 x 55 M10X57
RD3G060048	RD3G060048G	50 x 40 2 x 1½	60.3 x 48.3 2.375 x 1.900	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8 x 55 M10X57
RD3G076042	RD3G076042G	65 x 32 2½ x 1¼	76.1 x 42.4 3.000 x 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2 x 70 M12X70
RD3G076048	RD3G076048G	65 x 40 2½ x 1½	76.1 x 48.3 3.000 x 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2 x 70 M12X70
RD3G089042	RD3G089042G	80 x 32 3 x 1¼	88.9 x 42.4 3.500 x 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 x 75 M12X76
RD3G089048	RD3G089048G	80 x 40 3 x 1½	88.9 x 48.3 3.500 x 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 x 75 M12X76
RD3G089060	RD3G089060G	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	64 2.50	152 5.98	98 3.86	84.5 3.33	56.5 2.22	1/2 x 75 M12X76
RD3G114042	RD3G114042G	100 x 32 4 x 1¼	114.3 x 42.4 4.500 x 1.660	300 2.07	51 2.00	188 7.40	89 3.50	102 4.02	70 2.76	1/2 x 75 M12X76
RD3G114048	RD3G114048G	100 x 40 4 x 1½	114.3 x 48.3 4.500 x 1.900	300 2.07	51 2.00	188 7.40	89 3.50	102 4.02	70 2.76	1/2 x 75 M12X76
RD3G114060	RD3G114060G	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2 x 75 M12X76
RD3G114076	RD3G114076G	100 x 65 4 x 2½	114.3 x 76.1 4.500 x 3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2 x 75 M12X76
RD3G114089	RD3G114089G	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	300 2.07	89 3.5	188 7.40	125 5.03	102 4.02	70 2.76	1/2 x 75 M12X76





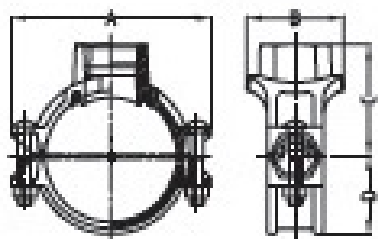
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size No.-Size mm
						A mm/in	B mm/in	C mm/in	D mm/in	
RD3G139060	RD3G139060G	125 × 50 5 × 2	139.7 × 60.3 5.500 × 2.375	300 2.07	64 2.5	221.5 8.72	112.5 4.43	118 4.65	84 3.31	5/8 × 85 M16X85
RD3G139076	RD3G139076G	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	84 3.31	5/8 × 85 M16X85
RD3G139089	RD3G139089G	125 × 80 5 × 3	139.7 × 88.9 5.500 × 3.500	300 2.07	89 3.5	221.5 8.72	132 5.20	118 4.65	84 3.31	5/8 × 85 M16X85
RD3G168042*	RD3G168042G*	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
RD3G168048	RD3G168048G	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
RD3G168060	RD3G168060G	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
RD3G168076	RD3G168076G	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
RD3G168089	RD3G168089G	150 × 80 6 × 3	168.3 × 88.9 6.625 × 3.500	300 2.07	89 3.50	247 9.72	160 6.30	141 5.55	98.5 3.88	5/8 × 105 M16X108
RD3G168114	RD3G168114G	150 × 100 6 × 4	168.3 × 114.3 6.625 × 4.500	300 2.07	114 4.50	247 9.72	156.5 6.16	138 5.43	98.5 3.88	5/8 × 105 M16X108
RD3G219076	RD3G219076G	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 6.22	125 4.92	3/4 × 115 M20X115
RD3G219089	RD3G219089G	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
RD3G219114	RD3G219114G	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

\* Not VdS Approved

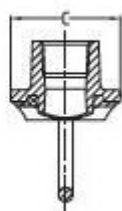
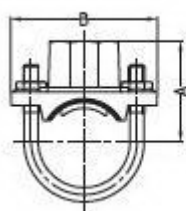


Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size No.-Size mm
						A mm/in	B mm/in	C mm/in	D mm/in	
RD3J060025	RD3J060025G	50 × 25 2 × 1	60.3 × 33.7 2.375 × 1.315	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8 × 55 M10X57
RD3J060032	RD3J060032G	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
RD3J060040	RD3J060040G	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
RD3J076032	RD3J076032G	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
RD3J076040	RD3J076040G	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	61.5 2.42	49.5 1.95	1/2 × 70 M12X70
RD3J089025	RD3J089025G	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
RD3J089032	RD3J089032G	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
RD3J089040	RD3J089040G	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
RD3J089050	RD3J089050G	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
RD3J114025	RD3J114025G	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
RD3J114032	RD3J114032G	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

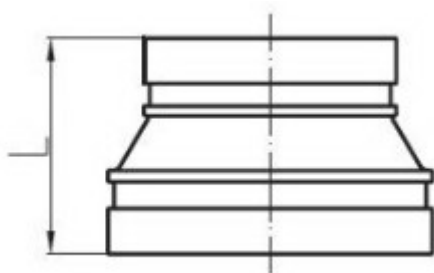




Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions				Bolt Size No.-Size mm
						A mm/in	B mm/in	C mm/in	D mm/in	
RD3J114040	RD3J114040G	100 × 40 4 × 1½	114.3 × 48.3 4.500 × 1.900	300 2.07	51 2.00	188 7.40	89 3.50	97 3.82	70 2.76	1/2 × 75 M10X76
RD3J114050	RD3J114050G	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 M10X76
RD3J114065	RD3J114065G	100 × 65 4 × 2½	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 M10X76
RD3J114080	RD3J114080G	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 M10X76
RD3J139042	RD3J139042G	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 × 105 M16X105
RD3J168032	RD3J168032G	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 M16X105
RD3J168040	RD3J168040G	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 M16X105
RD3J168050	RD3J168050G	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 M16X105
RD3J168065	RD3J168065G	150 × 65 6 × 2½	168.3 × 76.7 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 M16X105
RD3J168080G	RD3J168080G	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 M16X105
RD3J219050	RD3J219050G	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
RD3J219065	RD3J219065G	200 × 65 8 × 2½	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
RD3J219080	RD3J219080G	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



Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Hole Dia mm/in +1.6,0/+0.063,0	Working Pressure PSI/MPa	Dimensions			Bolt Size
					A mm/in	B mm/in	C mm/in	No.-Size mm
RD3L3215	RD3L3215G	32 x 15 1 1/4 x 1/2	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L3220	RD3L3220G	32 x 20 1 1/4 x 3/4	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L3225	RD3L3225G	32 x 25 1 1/4 x 1	30 1.18	300 2.07	57.7 2.27	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L4015	RD3L4015G	40 x 15 1 1/2 x 1/2	30 1.18	300 2.07	43 1.69	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L4020	RD3L4020G	40 x 20 1 1/2 x 3/4	30 1.18	300 2.07	51 2.0	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L4025	RD3L4025G	40 x 25 1 1/2 x 1	30 1.18	300 2.07	60.8 2.39	88.9 3.50	57.2 2.25	3/8 x 73 M10X73
RD3L5015	RD3L5015G	50 x 15 2 x 1/2	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8 x 90 M10X90
RD3L5020	RD3L5020G	50 x 20 2 x 3/4	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8 x 90 M10X90
RD3L5025	RD3L5025G	50 x 25 2 x 1	30 1.18	300 2.07	66.6 2.62	95.3 3.75	57.2 2.25	3/8 x 90 M10X90
RD3L7615	RD3L7615G	65 x 15 2 1/2 x 1/2	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.25	3/8 x 105 M10X105
RD3L7620	RD3L7620G	65 x 20 2 1/2 x 3/4	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.25	3/8 x 105 M10X105
RD3L7625	RD3L7625G	65 x 25 2 1/2 x 1	30 1.18	300 2.07	73.2 2.88	108.0 4.25	57.2 2.25	3/8 x 105 M10X105

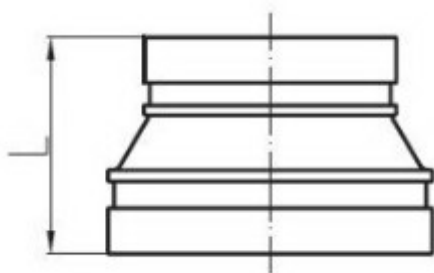


Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions mm/in
RD240G042033	RD240G042033G	32 x 25 1¼ x 1	42.4 x 33.7 1.660 x 1.315	500 3.45	64 2.50
RD240G048033	RD240G048033G	40 x 25 1½ x 1	48.3 x 33.7 1.900 x 1.315	500 3.45	64 2.50
RD240G048042	RD240G048042G	40 x 32 1½ x 1¼	48.3 x 42.4 1.900 x 1.660	500 3.45	64 2.50
RD240G060042	RD240G060042G	50 x 32 2 x 1¼	60.3 x 42.4 2.375 x 1.660	500 3.45	64 2.50
RD240G060048	RD240G060048G	50 x 40 2 x 1½	60.3 x 48.3 2.375 x 1.900	500 3.45	64 2.50
RD240G076048	RD240G076048G	65 x 40 2½ x 1½	76.1 x 48.3 3.000 x 1.900	500 3.45	64 2.50
RD240G076060	RD240G076060G	65 x 50 2½ x 2	76.1 x 60.3 3.000 x 2.375	500 3.45	64 2.50
RD240G089048	RD240G089048G	80 x 40 3 x 1½	88.9 x 48.3 3.500 x 1.900	500 3.45	64 2.50
RD240G089060	RD240G089060G	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	500 3.45	64 2.50
RD240G089076	RD240G089076G	80 x 65 3 x 2½	88.9 x 76.1 3.500 x 3.000	500 3.45	64 2.50
RD240G114048	RD240G114048G	100 x 40 4 x 1½	114.3 x 48.3 4.500 x 1.900	500 3.45	76 3.00
RD240G114060	RD240G114060G	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	500 3.45	76 3.00
RD240G114076	RD240G114076G	100 x 65 4 x 2½	114.3 x 76.1 4.500 x 3.000	500 3.45	76 3.00
RD240G114089	RD240G114089G	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	500 3.45	76 3.00





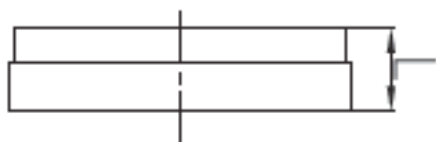
# Grooved Concentric Reducer Model 240



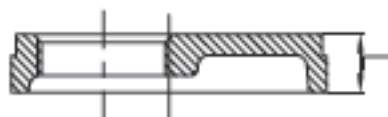
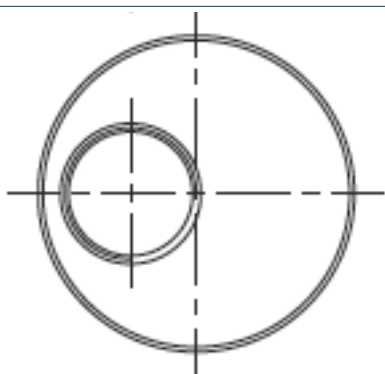
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions mm/in
RD240G139060	RD240G139060G	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	500 3.45	89 3.50
RD240G139076	RD240G139076G	125 x 65 5 x 2½	139.7 x 76.1 5.500 x 3.000	500 3.45	89 3.50
RD240G139089	RD240G139089G	125 x 80 5 x 3	139.7 x 88.9 5.500 x 3.500	500 3.45	89 3.50
RD240G139114	RD240G139114G	125 x 100 5 x 4	139.7 x 114.3 5.500 x 4.500	500 3.45	89 3.50
RD240G168089	RD240G168089G	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	500 3.45	102 4.00
RD240G168114	RD240G168114G	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	500 3.45	102 4.00
RD240G168139	RD240G168139G	150 x 125 6 x 5	168.3 x 139.7 6.625 x 5.500	500 3.45	102 4.00
RD240G219114	RD240G219114G	200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	500 3.45	127 5.00
RD240G219168	RD240G219168G	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	500 3.45	127 5.00
RD240G273168	RD240G273168G	250 x 150 10 x 6	273.0 x 168.3 10.750 x 6.625	300 2.07	152 6.00
RD240G273219	RD240G273219G	250 x 200 10 x 8	273.0 x 219.1 10.750 x 8.625	300 2.07	152 6.00



# End Cap Fig 300 Model 300



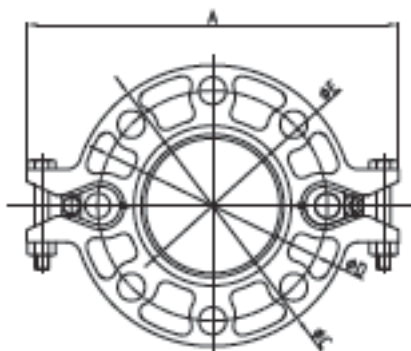
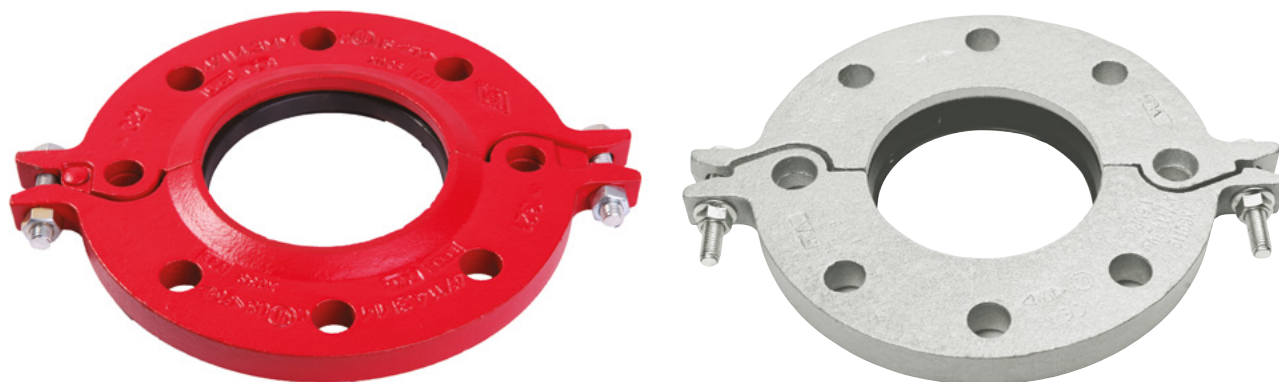
Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions mm/in
RD300P033	RD300P033G	25 1	33.7 1.315	500 3.45	22.1 0.87
RD300P042	RD300P042G	32 1¼	42.4 1.660	500 3.45	23.5 0.93
RD300P048	RD300P048G	40 1½	48.3 1.900	500 3.45	23.5 0.93
RD300P060	RD300P060G	50 2	60.3 2.375	500 3.45	23.5 0.93
RD300P076	RD300P076G	65 2½	76.1 3.000	500 3.45	24.5 0.96
RD300P089	RD300P089G	80 3	88.9 3.500	500 3.45	24 1.00
RD300P114	RD300P114G	100 4	114.3 4.500	500 3.45	27 1.06
RD300P139	RD300P139G	125 5	139.7 5.500	500 3.45	25.5 1.00
RD300P168	RD300P168G	150 6	168.3 6.625	500 3.45	24.5 0.97
RD300P219	RD300P219G	200 8	219.1 8.625	500 3.45	30.5 1.20
RD300P273	RD300P273G	250 10	273.9 10.750	500 3.45	32 1.26
RD300P323	RD300P323G	300 12	323.9 12.750	500 3.45	32 1.26



Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions mm/in
RD300PX089040	RD300PX089040G	80 x 40 3 x 1½	88.9 x 48.3 3.500 x 1.900	500 3.45	23.5 0.925
RD300PX089050	RD300PX089050G	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	500 3.45	23.5 0.925
RD300PX114040	RD300PX114040G	100 x 40 4 x 1½	114.3 x 48.3 4.500 x 1.900	500 3.45	25.4 1.00
RD300PX114050	RD300PX114050G	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	500 3.45	25.4 1.00
RD300PX139040	RD300PX139040G	125 x 40 5 x 1½	139.7 x 48.3 5.500 x 1.900	500 3.45	25.4 1.00
RD300PX139050	RD300PX139050G	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	500 3.45	25.4 1.00
RD300PX168040	RD300PX168040G	150 x 40 6 x 1½	168.3 x 48.3 6.625 x 1.900	500 3.45	25.4 1.00
RD300PX168050	RD300PX168050G	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	500 3.45	25.4 1.00
RD300PX219040	RD300PX219040G	200 x 40 8 x 1½	219.1 x 48.3 8.625 x 1.900	500 3.45	30.2 1.19
RD300PX219050	RD300PX219050G	200 x 50 8 x 2	219.1 x 60.3 8.625 x 2.375	500 3.45	30.2 1.19



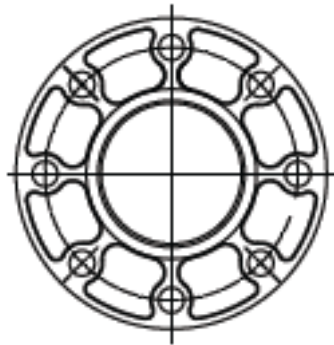
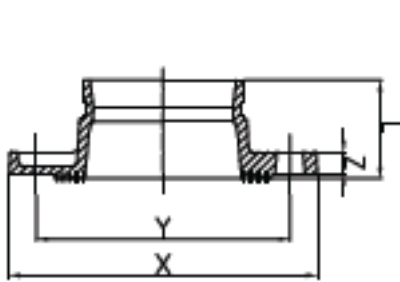
# Grooved Flange Model 321 PN16



Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt Size No.-Size mm
					A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	
RD321P048	RD321P048G	40 1½	48.3 1.900	225 1.6	195 7.68	18.5 0.73	150 5.90	110 4.33	45.4 1.78	2 - M10X50
RD321P060	RD321P060G	50 2	60.3 2.375	225 1.6	220 8.66	18.5 0.73	165 6.50	125 4.92	57.5 2.26	2 - M10X50
RD321P076	RD321P076G	65 76.1	76.1 3.000	225 1.6	235 9.25	18.5 0.73	185 7.28	145 5.71	72.7 2.86	2 - M10X50
RD321P089	RD321P089G	80 3	88.9 3.500	225 1.6	255 10.04	18.5 0.73	195 7.68	160 6.30	85.5 3.37	2 - M10X50
RD321P114	RD321P114G	100 4	114.3 4.500	225 1.6	279 10.98	18.5 0.73	224 8.82	180 7.09	110.5 4.35	2 - M10X50
RD321P139	RD321P139G	125 5	139.7 5.500	225 1.6	320 12.60	23 0.91	250 9.84	210 8.27	135.5 5.33	2 - M12X65
RD321P168	RD321P168G	150 6	168.3 6.625	225 1.6	346 13.62	24 0.94	280 11.00	240 9.95	164.3 6.47	2 - M12X65
RD321P219	RD321P219G	200 8	219.1 8.625	225 1.6	414.3 16.31	30 1.18	340 13.39	295 11.61	214.9 8.46	2 - 3/8 x 70 2 - M10X70
RD321P272	RD321P272G	250 10	273.0 10.750	225 1.6	480 18.90	25.5 1.00	405 15.94	355 13.98	268.9 10.59	2 - 3/8 x 70 2 - M10X70



# Grooved Adaptor Flange Model 321G PN16



Model Number (Red Painted)	Model Number (Galvanised)	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt Size No.-Size mm
					L mm/in	X mm/in	Y mm/in	Z mm/in	
RD321G060	RD321G060G	50 2	60.3 2.375	225 1.6	65 2.559	165 6.50	125 4.92	16 0.63	4 - M12
RD321G076	RD321G076G	65 2.559	76.1 3.000	225 1.6	65 2.559	185 7.28	145 5.70	16 0.63	4 - M12
RD321G089	RD321G089G	80 3	88.9 3.500	225 1.6	65 2.559	200 7.87	160 6.30	16 0.63	8 - M16
RD321G114	RD321G114G	100 4	114.3 4.500	225 1.6	70 2.756	220 8.66	180 7.09	16 0.63	8 - M16
RD321G168	RD321G168G	150 6	168.3 6.625	225 1.6	70 2.756	285 11.22	240 9.45	18 0.71	8 - M20
RD321G219	RD321G219G	200 8	219.1 8.625	225 1.6	80 3.150	340 13.39	295 11.61	19 0.75	12 - M20
RD321G273	RD321G273G	250 10	273.0 10.750	225 1.6	85 3.346	405 15.94	355 13.98	21 0.83	12 - M24



Model Number (Red Painted)	Gasket	Pipe O.D mm/in	Working Pressure PSI/MPa		Bolt Size
RD321P048	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 61 or cold +86°F (+30°C) and hot +180°F (+82°C) potable water service. Not recommended for petroleum service.	Black Green Strip
RD321P060	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
RD321P076	C	Silicone	-40~+177□ (-40~+350°F)	Recommended for high temperature dry air and some high temperature chemical products.	White

# Pressure Ratings and End Loads for Couplings on Steel Pipe



1G Rigid



1GS L/Duty



1N Reducing

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1G Rigid		1GS Rigid		1N Reducing	
				Roll Groove		Roll Groove		Roll Groove	
				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	33.8	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	20/300	5.9/1320	--	--	20/300	5.9/1330
		10	2.77	20/300	5.9/1320	--	--	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	20/300	9.4/2110	--	--	20/300	9.4/2120
		--	3.81	20/300	9.4/2110	--	--	20/300	9.4/2120
80	88.9	40	5.49	20/300	12.8/2890	20/300	12.8/2885	20/300	12.8/2885
		10	3.05	20/300	12.8/2890	20/300	12.8/2885	20/300	12.8/2885
100	114.3	40	6.02	20/300	21.2/4770	20/300	21.2/4770	20/300	21.2/4770
		10	3.05	20/300	21.2/4770	20/300	21.2/4770	20/300	21.2/4770
125	141.3	40	6.55	20/300	32.4/7300	20/300	32.4/7290	20/300	32.4/7290
		10	3.4	20/300	32.4/7300	20/300	32.4/7290	20/300	32.4/7290
150	165.1	--	6.35	20/300	44.3/9960	20/300	44.3/9960	20/300	44.3/9960
		--	5.08	20/300	44.3/9960	20/300	44.3/9960	20/300	44.3/9960
150	168.3	40	7.11	20/300	46.0/10350	20/300	46.0/10340	20/300	46.0/10340
		10	3.4	20/300	46.0/10350	20/300	46.0/10340	20/300	46.0/10340
200	219.1	40	8.18	31/450	116.9/26280	20/300	77.8/17500	--	--
		30	7.04	31/450	116.9/26280	20/300	77.8/17500	--	--
		10	4.77	20/300	77.8/17500	20/300	77.8/17500	--	--
250	273	40	9.27	20/300	121.0/27210	--	--	--	--
		30	7.8	20/300	121.0/27210	--	--	--	--
		10	4.77	20/300	121.0/27210	--	--	--	--
300	323.9	40	10.31	20/300	170.3/38280	--	--	--	--
		STD	9.53	20/300	170.3/38280	--	--	--	--
		30	6.35	20/300	170.3/38280	--	--	--	--
		10	4.77	20/300	170.3/38280	--	--	--	--



1N Flexible



321 Flange

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1N Flexible		321 Flange	
				Roll Groove		Roll Groove	
				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
25	33.7	40	33.8	35/500	3.0/680	--	--
		10	2.77	35/500	3.0/680	--	--
32	42.4	40	3.56	20/300	2.9/650	--	--
		10	2.77	20/300	2.9/650	--	--
40	48.3	40	3.56	20/300	3.8/850	16/225	3.2/710
		10	2.77	20/300	3.8/850	16/225	3.2/710
50	60.3	40	3.91	20/300	5.9/1320	16/225	4.4/1000
		10	2.77	20/300	5.9/1320	16/225	4.4/1000
65	73	40	5.16	20/300	8.7/1940	20/300	5.9/1330
		10	3.05	20/300	8.7/1940	20/300	5.9/1330
65	76.1	--	6.35	--	--	--	--
		--	5.08	20/300	9.4/2110	16/225	7.1/1590
		--	3.81	20/300	9.4/2110	16/225	7.1/1590
80	88.9	40	5.49	20/300	12.8/2890	16/225	9.6/2165
		10	3.05	20/300	12.8/2890	16/225	9.6/2165
100	114.3	40	6.02	20/300	21.2/4770	16/225	15.9/3580
		10	3.05	20/300	21.2/4770	16/225	15.9/3580
125	141.3	40	6.55	20/300	32.4/7300	20/300	31.3/7035
		10	3.4	20/300	32.4/7300	20/300	31.3/7035
150	165.1	--	6.35	20/300	44.3/9960	16/225	33.2/7460
		--	5.08	20/300	44.3/9960	16/225	33.2/7460
150	168.3	40	7.11	20/300	46.0/10350	16/225	34.5/7750
		10	3.4	20/300	46.0/10350	16/225	34.5/7750
200	219.1	40	8.18	31/450	116.9/26280	16/225	58.4/13140
		30	7.04	31/450	116.9/26280	16/225	58.4/13140
		10	3.76	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
		30	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





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

Remove 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

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



7 a. Assembly completed-Rigid Coupling

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



7 b. Assembly Completed Flexible Coupling

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.

## 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 Inch	Specified Bolt Torque	
	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.



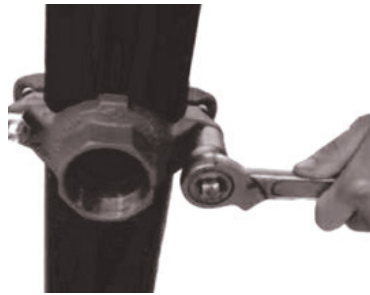
3. Gasket installation

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, insert 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 Inch	Specified Bolt Torque	
	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	-	-



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.



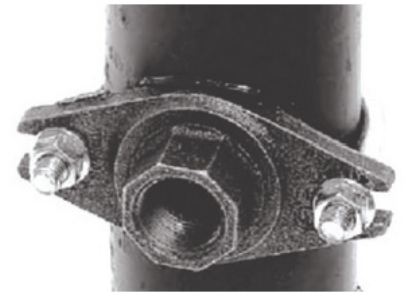
4. Alignment

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

Bolt Size	Specified Bolt Torque	
	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	-	-



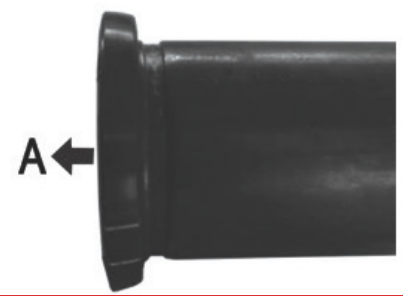
1. Pipe Preparation

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.



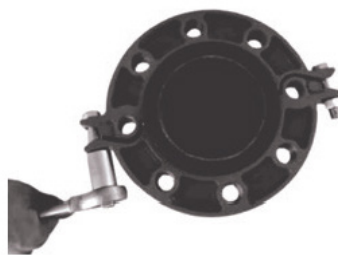
3. Gasket Installation

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



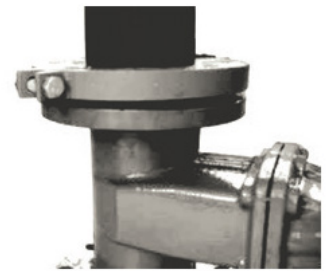
4. Housing Installation

Remove 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.

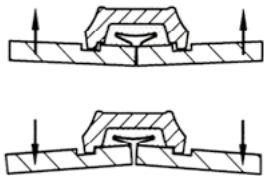
## Specified Bolt Torque

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



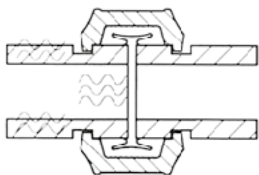
## Flexible Coupling

1. A flexible coupling accommodates pipe deflection and or non-alignment as below:  
If nominal diameter <DN200, deflection angle is  $\geq 1^\circ$ ; If nominal diameter  $\geq$ DN200, deflection angle is  $\geq 0.5^\circ$  but  $< 1^\circ$

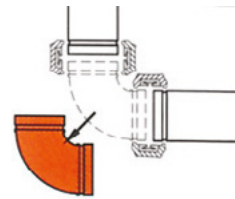


2. The C-shaped rubber gasket provides excellent self-sealing capabilities in both low and high pressure service as well as under certain vacuum conditions.

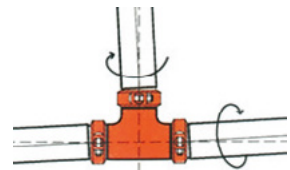
3. The design and construction of the coupling with elastomeric gaskets can provide significant noise and vibration absorption as well as seismic stress.



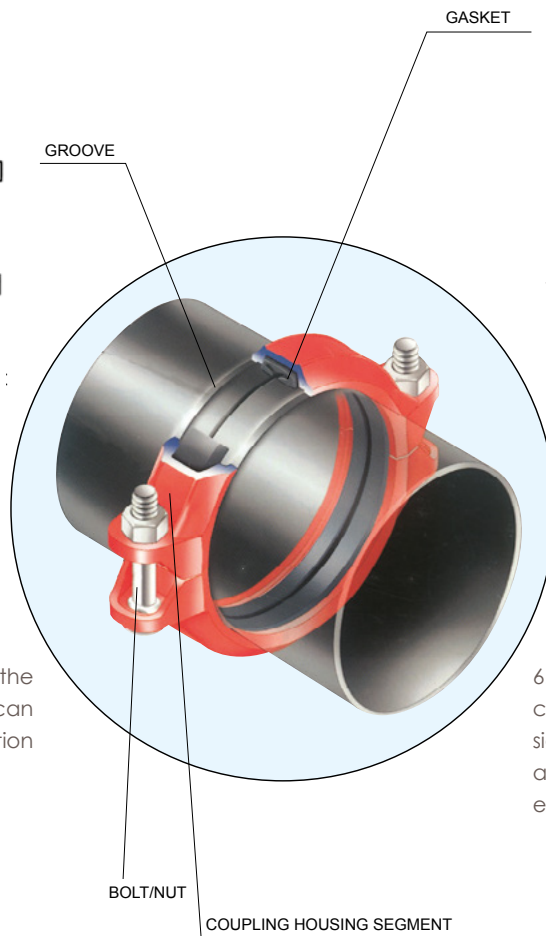
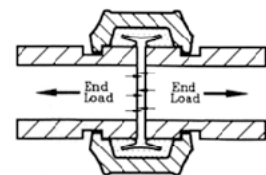
4. With the removal of just a few bolts you can easily access the system for cleaning, maintenance, changes or system expansion.



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



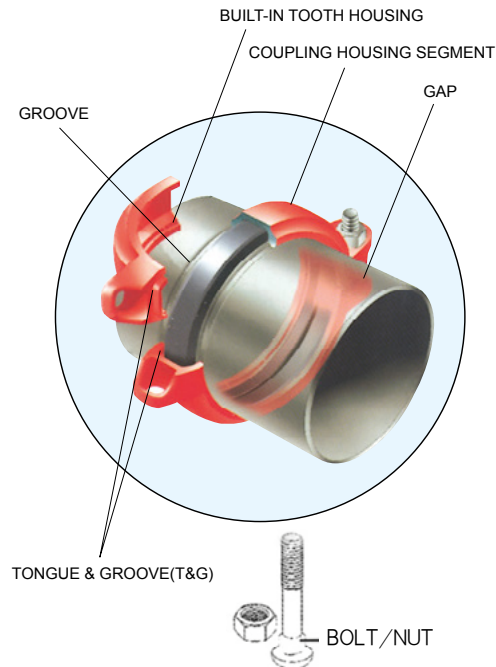
6. Coupling keys engage the full circumference of the grooves and provide significant pressure and end load restraint against pipe movement from internal and external forces.



## 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.

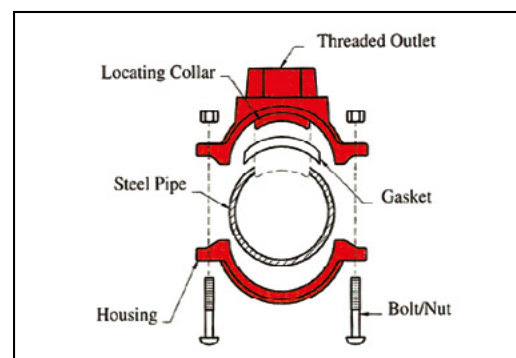


3. The T&G mechanism features a slight offset at the foot of the coupling halves which serve to protect the gasket from exposure.

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 bolt 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.



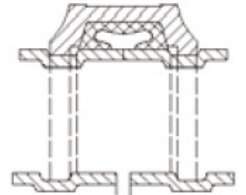
## Movement

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 - 32 mm)	1½ - 12 (40 - 300 mm)
Movement	0 - 4.0 mm	0 - 6.4 mm

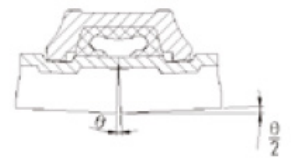


### 2. Angular Movement

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%



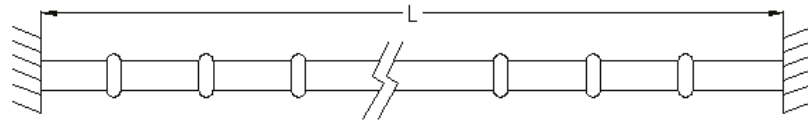
## Flexible Couplings: Linear Movement and Angular Movement

Size		Cut			Roll Groove		
		Linear Movement	Angular Movement		Linear Movement	Angular Movement	
Inch	mm	mm/in	mm/in	mm/in	mm/in	mm/in	mm/in
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°C
- Maximum working temperature = 55°C

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 (°C)	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

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

$\lambda$ : Thermal Expansion

$\alpha$ : 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 pressurization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

An alternative method of 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 movement 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

Install the riser with the pipe ends butted.

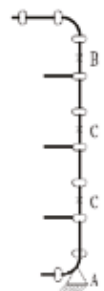
Locate an anchor at the base of the riser (A) to support the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to pre-vent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required. When the system is pressurized the pipe stack will "grow" due to pressure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predetermined (see Linear Movement). In this example the pipe length "L" at the top of the riser must be long enough to permit sufficient deflection (see Angular Movement) to accommodate the total movement "M" from both pressure thrust and thermal gradients.



### Risers with Branch Connections

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:

$$M = L \sin \theta$$

$$\theta = \sin^{-1} (G \div D)$$

$$M = (G \div D) \times L$$

Where:

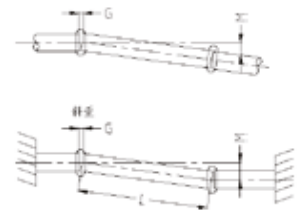
M = Misalignment (inches)

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

$\theta$  = 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.

$$R = L / (2 \times \sin(\theta/2))$$

$$L = 2 \times R \times \sin(\theta/2)$$

$$N = T / \theta$$

Where:

N = Number of Couplings

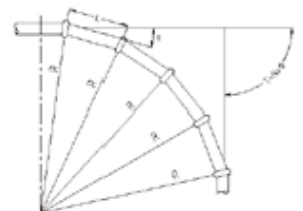
R = Radius of Curve (feet)

L = Pipe Length (feet)

$\theta$  = 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 addition to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

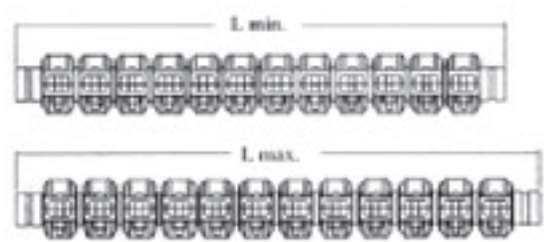
1. The weight of the pipe, couplings, fluid and pipe system components;
2. Reduce stresses at pipe joints; and
3. Permit required pipe system movement to relieve stress.

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

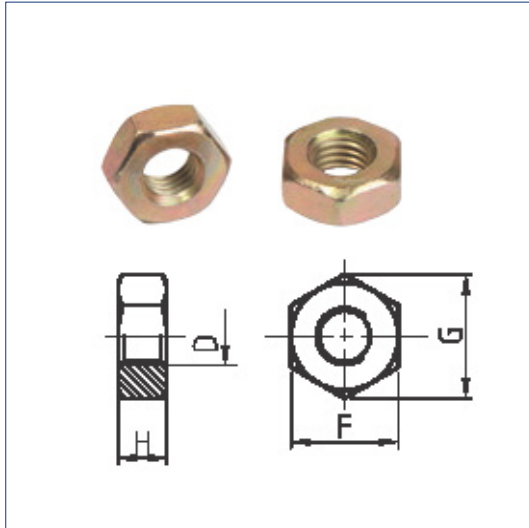
## Max. Span between Supports (steel pipe)

Nominal Size (mm)		15	20	25	32	40	50	70	80	100	125	150	200	250	300
Max. Span Between Supports (mm)	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



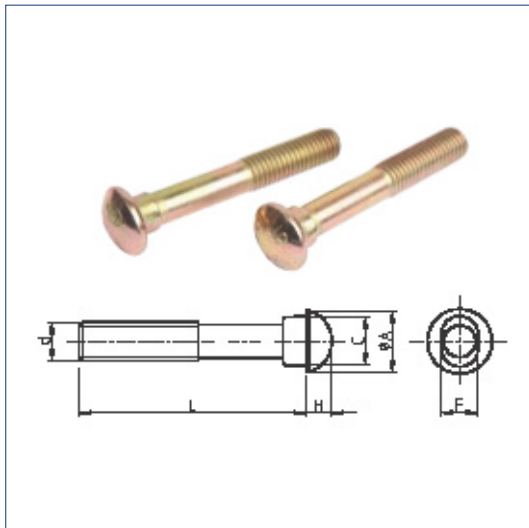
Nominal Size	Pipe O.D. (mm)	Maximum Allowable Movement (mm)	L min. (mm)	L max. (mm)	Number of Couplings	Filled With Water Pressure
1	33.7	45	617	662	10	300
1¼	42.4	45	617	662	10	300
1½	48.3	45	617	662	10	300
2	60.3	45	617	662	10	300
2½	73	45	617	662	10	300
76.1	76.1	45	617	662	10	300
3	88.9	45	617	662	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	591	550	7	300
6	168.3	52	591	643	7	300
8	219.1	52	591	643	7	300
10	273	52	591	643	7	300
12	323.9	52	591	643	7	300



## 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					
M16					
M20					
M22					



## 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					70/76/82/89/108
M16					
M20					
M22					

## 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 times 8"-10" 4 times ≥12" 3 times
3	Air Leakage Test	The coupling assembly shall be pressurized 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 5 minutes 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) <sup>1/2</sup> [76 - 84 L/min/(bar) <sup>1/2</sup> ]. 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 pressureless 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 pressurized 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 pressurized 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.



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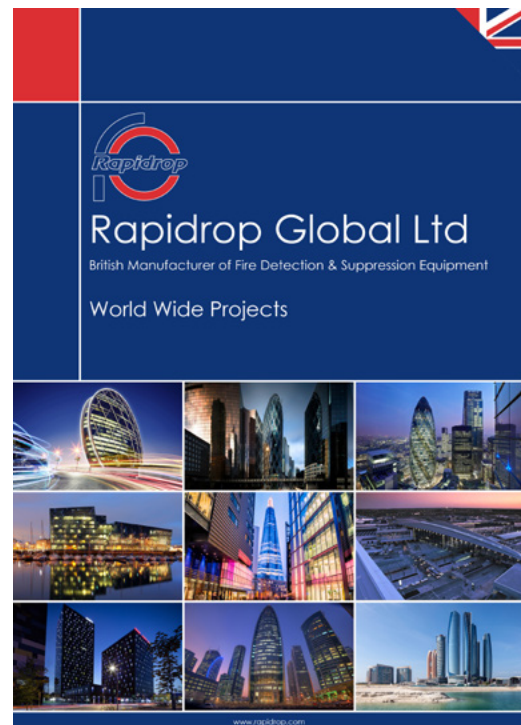
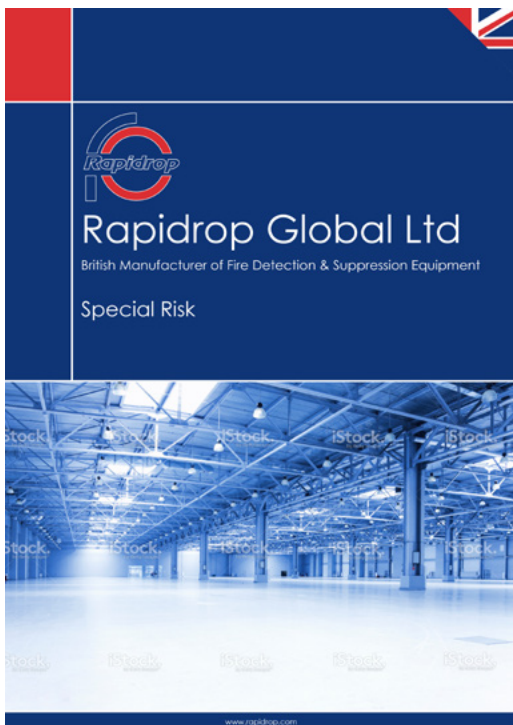
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