

## GRINNELL G-FIRE Figure 705 Grooved Flexible Coupling 1 to 12 Inch (DN25 to DN300)

### General Description

The GRINNELL G-FIRE Figure 705 Grooved Flexible Couplings, when properly installed, provide a dependable method of joining pipe, allowing for angular and linear deflection, thermal expansion and contraction, and misalignments of the pipe.

Figure 705 couplings are rated at pressures up to 300 psi (20,7 bar) depending on pipe size and wall thickness when used in fire protection service applications. (Refer to Table A.)

#### NOTICE

*The GRINNELL G-FIRE Figure 705 Grooved Flexible Coupling described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.*

*Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.*

*It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified to be compatible for the specific application. Always read and understand the installation instructions.*

*The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or sprinkler manufacturer with any questions.*

### Technical Data

#### Approvals

UL and ULC Listed  
FM Approved  
VdS Approved  
LPCB (Cert. Nos. 669a and 673a)

Refer to Table A for details

#### Sizes

1 to 12 Inch (DN25 to DN300)

#### Housing

Ductile Iron conforming to ASTM A536, Grade 65-45-12

#### Finish

- Orange, non-lead paint
- Red, non-lead paint
- Hot-dipped, Galvanized conforming to ASTM A153

#### Bolts/Nuts

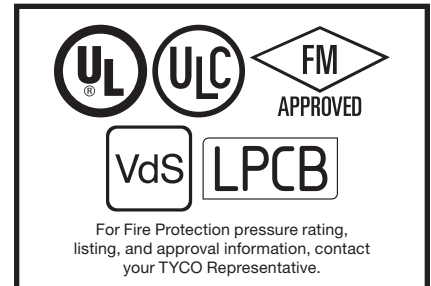
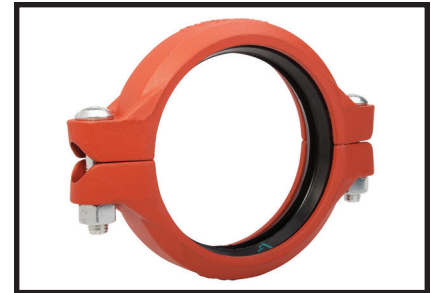
- ANSI:  
Carbon Steel oval neck track head bolts are heat-treated and conform to the physical properties of ASTM A183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi.

Carbon Steel heavy hex nuts conform to the physical properties of ASTM A183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B633.

Stainless Steel Bolts and Nuts are available upon request.

- Metric:  
Carbon Steel oval neck track head bolts (Gold color coded) are heat-treated and conform to the physical properties of ASTM F568M with a minimum tensile strength of 760 MPa.

Carbon Steel heavy hex nuts conform to the physical properties of ASTM A563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B633.



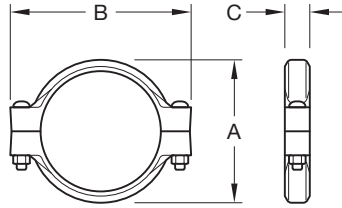
#### Gaskets

- Pre-lubricated Grade "A" EPDM, Violet color code, -30°F to 150°F (-34°C to 66°C)

*For dry and freezer systems, lubrication is required. Refer to Installation Manual IH-1000FP for details.*

- Tri-Seal Grade "E" EPDM, Green color code, -30°F to 230°F (-34°C to 110°C)

For proper gasket selection, refer to Technical Data Sheet TFP1895.



Nominal Pipe Size		Max. <sup>b</sup> Pressures psi (bar)	Max. <sup>b</sup> End Load Lbs. (kN)	Max. <sup>a, d</sup> End Gap Inches (mm)	Deflection <sup>d</sup>		Nominal Dimensions			Coupling Bolts		Approx. Weight Lbs. (kg)
ANSI Inches (DN)	O.D. Inches (mm)				Degrees per Coupling	Inches/Foot (mm/m)	A Inches (mm)	B Inches (mm)	C Inches (mm)	Qty.	Size <sup>c</sup> Inches (metric)	
1 (25)	1.315 (33,7)	300 (20,7)	407 (1,81)	0.13 (3,3)	5°30'	1.16 (96,7)	2.24 (56,9)	3.94 (100,1)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.3 (0,6)
1-1/4 (32)	1.660 (42,4)	300 (20,7)	649 (2,88)	0.13 (3,3)	4°19'	0.90 (75,0)	2.56 (65,0)	4.19 (106,4)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.5 (0,7)
1-1/2 (40)	1.900 (48,3)	300 (20,7)	850 (3,78)	0.13 (3,3)	3°46'	0.79 (65,8)	2.75 (69,9)	4.44 (112,8)	1.81 (46,0)	2	3/8 x 2-1/4 (M10 x 57)	1.6 (0,7)
2 (50)	2.375 (60,3)	300 (20,7)	1,328 (5,90)	0.13 (3,3)	3°1'	0.63 (52,5)	3.25 (82,6)	4.88 (124,0)	1.88 (47,8)	2	3/8 x 2-1/4 (M10 x 57)	1.7 (0,8)
2-1/2 (65)	2.875 (73,0)	300 (20,7)	1,947 (8,66)	0.13 (3,3)	2°29'	0.52 (43,3)	3.69 (93,7)	5.50 (139,7)	1.88 (47,8)	2	3/8 x 2-1/4 (M10 x 57)	2.0 (0,9)
76,1mm (65)	3.000 (76,1)	300 (20,7)	2,120 (9,43)	0.13 (3,3)	2°23'	0.50 (41,7)	4.00 (101,6)	5.75 (146,10)	1.88 (47,8)	2	(M12 x 76)	3.1 (1,4)
3 (80)	3.500 (88,9)	300 (20,7)	2,885 (12,83)	0.13 (3,3)	2°3'	0.43 (35,8)	4.38 (111,3)	6.50 (165,1)	1.88 (47,8)	2	1/2 x 3 (M12 x 76)	3.1 (1,4)
108,0mm (100)	4.250 (108,0)	300 (20,7)	4,256 (18,93)	0.25 (6,4)	3°22'	0.70 (58,3)	5.50 (139,7)	7.50 (190,5)	2.06 (52,3)	2	(M12 x 76)	4.2 (1,9)
4 (100)	4.500 (114,3)	300 (20,7)	4,769 (21,21)	0.25 (6,4)	3°11'	0.67 (55,8)	5.69 (144,5)	7.75 (196,9)	2.06 (52,3)	2	1/2 x 3 (M12 x 76)	4.0 (1,8)
133,0mm (125)	5.250 (133,0)	300 (20,7)	6,494 (28,88)	0.25 (6,4)	2°44'	0.56 (46,7)	6.56 (166,6)	9.50 (241,3)	2.06 (52,3)	2	(M16 x 83)	7.2 (3,3)
139,7mm (125)	5.500 (139,7)	300 (20,7)	7,127 (31,70)	0.25 (6,4)	2°36'	0.55 (45,5)	6.81 (173,0)	9.75 (247,7)	2.06 (52,3)	2	(M16 x 83)	7.2 (3,3)
5 (125)	5.563 (141,3)	300 (20,7)	7,288 (32,41)	0.25 (6,4)	2°35'	0.54 (45,0)	6.88 (174,8)	9.75 (247,7)	2.06 (52,3)	2	5/8 x 3-1/4 (M16 x 83)	7.1 (3,2)
159,0mm (150)	6.250 (159,0)	300 (20,7)	9,204 (40,93)	0.25 (6,4)	2°17'	0.48 (40,0)	7.56 (192,0)	10.31 (261,9)	2.06 (52,3)	2	(M16 x 83)	7.4 (3,4)
165,1mm (150)	6.500 (165,1)	300 (20,7)	9,950 (44,25)	0.25 (6,4)	2°12'	0.46 (38,3)	7.75 (196,9)	10.69 (271,5)	2.06 (52,3)	2	(M16 x 83)	7.1 (3,2)
6 (150)	6.625 (168,3)	300 (20,7)	10,336 (45,97)	0.25 (6,4)	2°10'	0.45 (37,5)	7.94 (201,7)	10.69 (271,5)	2.06 (52,3)	2	5/8 x 3-1/4 (M16 x 83)	7.1 (3,2)
8 (200)	8.625 (219,1)	300 (20,7)	17,519 (77,92)	0.25 (6,4)	1°40'	0.35 (29,2)	10.19 (258,8)	13.56 (344,4)	2.50 (63,5)	2	3/4 x 4-3/4 (M20 x 121)	14.5 (6,6)
10 <sup>e</sup> (250)	10.750 (273,0)	250 (17,2)	22,679 (100,8)	0.25 (6,4)	1°20'	0.28 (23,3)	12.69 (322,3)	16.38 (416,1)	2.63 (66,8)	2	1 x 6-1/2 (M24 x 165)	28.0 (12,7)
12 <sup>e</sup> (300)	12.750 (323,9)	250 (17,2)	31,903 (141,9)	0.25 (6,4)	1°7'	0.23 (19,2)	14.94 (379,5)	18.88 (479,6)	2.63 (66,8)	2	1 x 6-1/2 (M24 x 165)	36.5 (16,6)

- a. Maximum available gap between pipe ends. Minimum gap = 0.  
b. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative for details.  
c. Gold color coded metric bolts and nuts are available upon request.  
d. Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be 1/2 that of cut grooved.  
e. For 10 and 12 inch sizes where VdS Approval or LPCB Certification is required, refer to Figure 707, Technical Data Sheet TFP1840.

**FIGURE 1**  
**G-FIRE FIGURE 705 GROOVED FLEXIBLE COUPLING, 1 TO 12 INCH (DN25 TO DN300)**  
**NOMINAL DIMENSIONS**

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Schedule <sup>c</sup>	Pressure Rating psi (bar)		
		UL	ULC	FM
1 (33,7); 1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); 2-1/2 (73,0); 3 (88,9); 4 (114,3); 5 (141,3); 6 (168,3); 8 (219,1) <sup>a</sup>	10	300 (20,7)	300 (20,7)	300 (20,7)
	40	300 (20,7)	300 (20,7)	300 (20,7)
10 (273,0) <sup>a</sup>	10	250 (17,2)	250 (17,2)	300 (20,7)
	40	250 (17,2)	250 (17,2)	300 (20,7)
12 (323,9) <sup>b</sup>	10	250 (17,2)	250 (17,2)	250 (17,2)
	40	250 (17,2)	250 (17,2)	250 (17,2)

Pipe O.D. mm	Pipe Specification <sup>c</sup>	Pressure Rating psi (bar)	
		UL	FM
76,1	ISO 4200 Type D and E	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)
108,0; 133,0; 139,7; 159,0	ISO 4200 Type E	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)
165,1	2.5 mm Wall Thickness	300 (20,7)	-
	EN 10255 Heavy	-	300 (20,7)
	EN 10255 Medium	-	300 (20,7)

Pipe Sizes Nominal ANSI Inches (O.D. mm)	Pipe Specification <sup>d</sup>	Pressure Rating psi (bar)	
		LPCB	VdS
1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (165,1)	ISO 65 Medium	290 (20)	-
6 (168,3); 8 (219,1)	ISO 4200 Wall Thickness 5,4 mm	290 (20)	-
1-1/4 (42,4); 1-1/2 (48,3); 2 (60,3); — (76,1); 3 (88,9); 4 (114,3); — (139,7); 6 (168,3); 8 (219,1)	DIN 2448 or 2548	-	232 (16)

- a. For 8 and 10 inch sizes, minimum allowed pipe wall thickness is 0.188 inches  
b. For 12 Inch, Schedule 30 is minimum allowed pipe wall thickness by UL and ULC. 0.250 inch wall thickness is the minimum allowed by FM  
c. See Agency website for Listing/Approvals of other pipe specifications:  
UL Website - see Online Certificate Directory, [www.ul.com](http://www.ul.com)  
FM Global Website - [www.approvalguide.com](http://www.approvalguide.com)  
d. See Agency website for Listing/Approvals of other pipe specifications:  
LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, [www.redbooklive.com](http://www.redbooklive.com)  
VdS Website - see certifications, [www.vds.de](http://www.vds.de)

**TABLE A**  
**LISTED/APPROVED PRESSURE RATINGS**

## **Care and Maintenance**

The GRINNELL G-FIRE Figure 705 Grooved Flexible Coupling must be maintained in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

## **Limited Warranty**

For warranty terms and conditions, visit [www.tyco-fire.com](http://www.tyco-fire.com).

## **Ordering Procedure**

GRINNELL Products are available globally through a network of distribution centers. For the nearest distributor, visit [www.tyco-fire.com](http://www.tyco-fire.com). When placing an order, indicate the full product name.

Specify: G-FIRE Figure 705 Grooved Flexible Coupling, quantity, pipe size (Nominal ANSI or O.D.), finish (Orange, Red, or Galvanized), and type of gasket:

- Pre-lubricated Grade "A" EPDM
- Tri-Seal Grade "E" EPDM