



February 2010

For the most current product/pricing information on Anvil products, please visit our website at www.anvilintl.com.



GRUVLOK

Mechanical Piping Products

BUILDING CONNECTIONS THAT LAST



BUILDING CONNECTIONS THAT LAST



For over 150 years, Anvil has worked diligently to build a strong, vibrant tradition of making connections — from pipe to pipe and people to people.

We pride ourselves in providing the finest-quality pipe products and services with integrity and dedication to superior customer service at all levels.



We provide expertise and product solutions for a wide range of applications, from plumbing, mechanical, HVAC, industrial and fire protection to mining, oil and gas. Our comprehensive line of products includes: grooved pipe couplings, grooved and plain-end fittings, valves, cast and malleable iron fittings, forged steel fittings, steel pipe nipples and couplings, pipe hangers and supports, channel and strut fittings, mining and oil field fittings, along with much more.

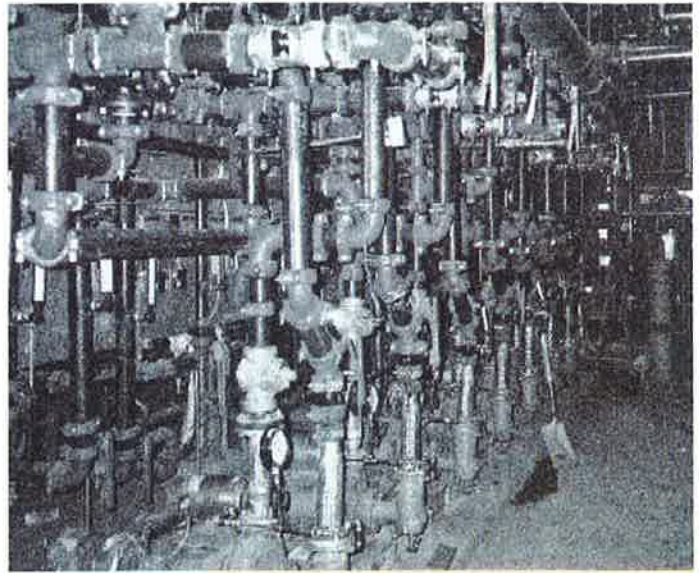


As an additional benefit to our customers, Anvil offers a complete and comprehensive Design Services Analysis for mechanical equipment rooms, to help you determine the most effective and cost-efficient piping solutions.

At Anvil, we believe that responsive and accessible customer support is what makes the difference between simply delivering products — and delivering solutions.

GRUVLOK

Mechanical Piping Products



Durable. Flexible. Safe. Easy to install. Easy to maintain. That's Anvil's Gruvlok® product line. Gruvlok gives your building the toughest, simplest, and most adaptable piping system possible.

Through a combination of roll-grooving and two-bolt coupling design, this innovative product line joins piping and other components into a single rugged yet flexible system. This makes Gruvlok products ideal for a variety of applications — particularly in tight spaces such as subfloors, UFAD systems, crawlspaces, trenches, and tunnels.

Gruvlok products eliminate the need for traditional expansion joints, allowing your system to expand and contract with your needs. With a Gruvlok union at every joint, you have the freedom to make on-site tweaks without altering the overall design of your system.

Maintenance is as simple and flexible as installation. Every component in a Gruvlok system is easily replaceable and easily accessed, so that you can make repairs without resorting to a total shut-down.

New 3-D CAD Library



Anvil's Gruvlok product line is now available in 3-D CAD Models, as well as the standard 2-D drawings, at www.anvilintl.com. Anvil also offers downloadable Master Format 3 Part Specifications.

Building Green with Anvil

Anvil manufactures an extensive line of products composed of 90% recycled materials, visit www.anvilintl.com for current certificates related to recycled material.

Products include:

- Gruvlok® Couplings, Fittings, and Flanges
- Anvil® Cast and Malleable Threaded Fittings
- Anvil Cast Iron Flanged Fittings
- Anvil Pipe Hangers and Supports
- Merit® Tee-Lets and Drop Nipples
- Beck Welded Pipe Nipples

PRODUCTS FOR GROOVED PIPING SYSTEM

The Gruvlok® System has been manufactured since the late 1960's. The Gruvlok product line has grown from standard couplings and fittings to today's extensive range of grooved product, plain-end product, butterfly valves, check valves, pump protection components, pipe preparation tools and various accessories.

Gruvlok is part of our overall commitment to provide today's piping industry with tomorrow's products.



For Listings/Approval Details and Limitations, visit our website @ www.anvilintl.com or contact an Anvil/AnvilStar Sales Representative.



Certified to
ANSI/NSF 61

ISO 9001:2008

INDUSTRY & GOVERNMENT STANDARDS & APPROVALS

ANSI	American National Standards Institute	FAA	Federal Aviation Administration: HVAC, Plumbing, Fire Protection	NY-BSA	New York Board of Standards and Appeals
API	American Petroleum Institute: API Std. 5L Sect. 7.5	FHA	Federal Housing Administration	NYC	New York City
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers	FM	Factory Mutual Engineering Corp.	TVA	Tennessee Valley Authority: Fire protection, storm drains
ASME	American Society of Mechanical Engineers: Power Piping, B 31.1; Chemical Plant and Petroleum Refinery Piping, B 31.3; Refrigeration Piping, B 31.5; Building Services Piping, B 31.9; Slurry Pipelines, B 31.11	GSA	General Services Administration: 15000 Series	UL	Underwriter's Laboratories, Inc.
ASTM	American Society of Testing and Materials: F 1476, F 1387	IAPMO	International Association of Plumbing & Mechanical Officials	ULC	Underwriter's Laboratories of Canada Bureau of Marine Inspection: Salt and fresh water, oil transfer Bureau of Public Roads: Div. of Bridges: Drain lines and bridge crossings Canadian Coast Guard U.S. Coast Guard – Approves each vessel individually
AWWA	American Water Works Association: C 606	LLOYD'S	Lloyd's Register of Shipping	USGBC	United States Green Building Council
BV	Bureau Veritas	LPC	Loss Prevention Council	VA	Veterans Affairs : 15000 Series
CDF	California State Fire Marshal	MEA	Materials & Equipment Acceptance	VdS	Verband der Sachversicherer e.V
COE	Corps of Engineers: CECS 15000	MIL	Military Specifications: MILP-10388 Fittings; MIL-C-10387 Couplings; MIL-P-11087A(CE) Steel Pipe, Grooved MIL-I-45208 Inspection Procedure		
CSA	Canadian Standards Association: B 242	NASA	National Aeronautics and Space Administration: 15000 Series		
DNV	Det Norske Veritas Hong Kong Fire Services Board New Zealand Insurance Council New Zealand Building Act, (1991)	NAVFAC	Naval Facilities Engineering Command: NFGS 15000 Series		
		NFPA	National Fire Protection Association		
		NIH	National Institute of Health (Dept. of Health) 15000 Series		
		NSF	NSF International		

Note: Please refer to product specific pages for exact listings and approvals related to a specific size for a specific product.

GRUVLOK® - THE ENGINEERED COUPLING

HOUSING (A) FLEXIBLE OR RIGID

The Gruzlok Coupling housing is designed to self-center around the pipe. The housing encircles and retains the gasket against the application of internal system pressure or vacuum.

The housing key sections fit into and engage the pipe-end grooves around the entire pipe circumference, thus restraining the pipe ends from separation due to the application of internal pressure.

Flexible Couplings provide designed-in clearances between the housing key sections and the pipe grooves to permit both angular and longitudinal movement of the pipe. Rigid couplings grip the pipe and lock the joint into position.

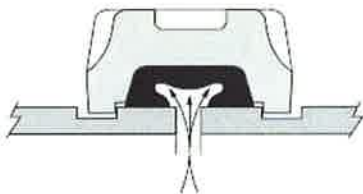
All housings are coated with paint for general service applications. The paint serves to provide protection against normal atmospheric corrosion. However, for couplings used in corrosive environments, hot-dip galvanizing, and stainless steel are available.

GASKET (B)

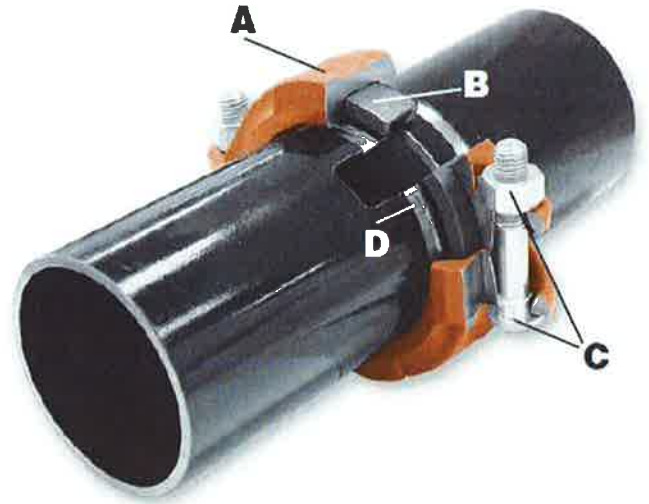
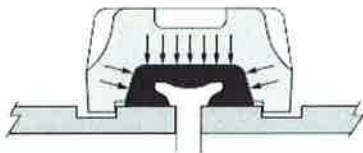
The unique single piece "C" style design of the gasket has been engineered to provide a pressure responsive, leak-tight seal in both pressure and vacuum applications without the aid of external forces. The "lips" of the gasket are molded so that upon installation onto the pipe ends they provide compression against the pipe surface to establish the leak-tight seal.

The gasket cavity functions as a "pressure reservoir". Pressure within the pipe system is applied to the internal surfaces of the gasket which increases the sealing force and enhances the leak-tight seal. In vacuum systems, non-pressure-responsive seals tend to "lift off" the pipe, producing leak paths. However, the Gruzlok gasket reacts to the negative pressure (higher outside atmospheric pressure) as to improve the sealing capability of the gasket.

Gasket Reaction to Pressure



Gasket Reaction to Vacuum



BOLTS AND NUTS (C)

Heat treated oval neck track head bolts serve to connect and secure the housing segments together. The oval neck design prevents turning of the bolt while tightening the hex nut with a single wrench. The bolt size and corresponding wrench (or socket) size for the hex nuts are shown in the chart below.

ANSI

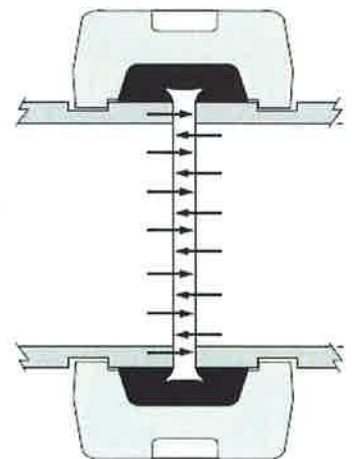
Bolt Size	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Wrench Size	11/16	7/8	1 1/16	1 1/4	1 7/16	1 5/8	2

METRIC

Bolt Size	M10	M12	M16	M20	M22
Wrench Size	16	22	24	30	34

GROOVED PIPE ENDS (D)

The ends of the pipe must have a groove in them which may be either cut grooved or roll grooved. The grooved pipe ends engage the coupling keys, thus, providing a self-restraining, mechanical joint capable of resisting the separation of the pipe ends due to the application of system pressure. The groove diameters must be dimensionally accurate to obtain the maximum benefit of the Gruzlok Coupling.



THE GRUVLOK® PIPING METHOD

Gruvlok couplings and grooved-end fittings are widely used for joining pipe in a wide variety of piping systems. Gruvlok couplings for grooved-end pipe are designed to provide a self-centering joint which accommodates the application of pressure, vacuum and other external forces, while limiting the burdensome need for special supports, expansion joints, etc.

The Gruvlok piping method offers many mechanical design features which benefit the design engineer, the contractor, and the end user. Utilization of the functional characteristics of the Gruvlok coupling will aid in pipe system design and must be considered for proper installation, assembly and performance.

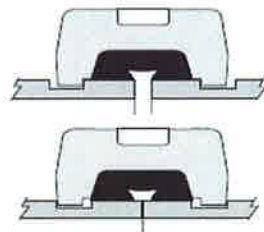
The design factors presented in the Gruvlok technical data section should always be referenced to when designing any grooved piping system to obtain the maximum benefit of the Gruvlok piping method.



GRUVLOK FEATURES

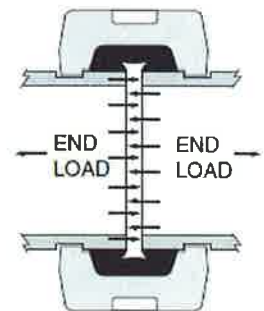
RIGIDITY OR FLEXIBILITY

Couplings are available where rigid connections are required. Couplings with flexible design allow for pipe expansion and contractions with temperature changes. The need for an expansion joint is minimized or eliminated.



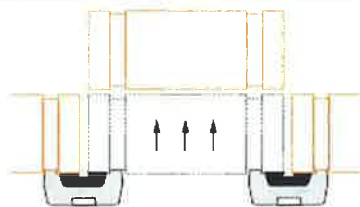
SELF RESTRAINED JOINT

The couplings engage the pipe around the entire circumference and restrain the pipe ends from separation due to pressure and other forces, up to the maximum coupling rated working pressure.



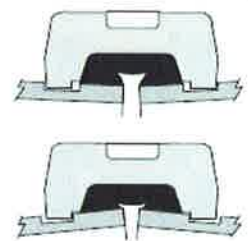
UNION AT EVERY JOINT

Gruvlok couplings can be disassembled easily permitting maintenance and servicing of the piping system. It will facilitate periodic rotation of pipe to distribute internal wear from slurries or other abrasive media.



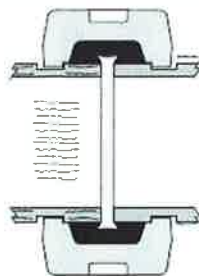
STRESS-FREE SYSTEM

Flexibility designed in the Gruvlok coupling absorbs and eliminates stress from settlement of buried pipe or those induced by seismic tremors.



MINIMIZES NOISE & VIBRATION

The resilient elastomeric gasket and pre-designed gap of the Gruvlok coupling help isolate and absorb noise and vibration, this minimizes vibration transmission.



ACCOMMODATES MISALIGNMENT AND JOINT DEFLECTION

The flexibility designed into the Gruvlok coupling will accommodate misalignments caused by imprecise location of pipe opening through walls and floors, will provide pitch for drainage piping systems and facilitate laying pipe on uneven terrain, thus permitting deflection in any direction.



GRUVLOK® COUPLINGS FOR GROOVED-END PIPE

Gruvlok couplings for grooved-end pipe are available in nominal pipe sizes 1" thru 30" and metric sizes. The variety of coupling designs provides a universal means for the connection for pipe, fittings, and pipe system components. The wide assortment of Gruvlok couplings and gaskets permit selection of the most suitable combination for a specific application, thus providing the most versatile and economical pipe system installation.



MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS

Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS

Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS

Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information

HOUSING

Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510

COATINGS

Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials

Properties as designated in accordance with ASTM D 2000

GRADE "E" EPDM (Green color code) NSF-61 Certified

-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalis solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)

-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Grade "O" Fluoro-Elastomer (Blue color code)

-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)

-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE

Standard C Style
Flush Gap (1" - 14") (25mm - 350mm)

LUBRICATION

Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE

Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

COUPLING DATA CHART NOTES

COUPLING DATA CHART NOTES														
Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from \varnothing		Coupling Dimensions			Coupling Bolts		Specified Torque		Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	Z	Qty.	Size	Min.	Max.	
in./DN(mm)	in./mm	PSI/bar	Lbs./kN	in./mm	Degrees	mm/m	in./mm	in./mm	in./mm		in./mm	Ft.-Lbs./N-m		Lbs./kg
1	2	3	4	5	6		7		8		9		10	

- 1** Gruvlok Couplings are identified by either the nominal ANSI pipe size in inches or pipe O.D. in millimeters (see column 2).
- 2** Nominal Outside Diameter of Pipe.
- 3** Maximum line pressure, including surge, to which a joint can be subjected. Working pressure ratings are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications. For Performance Data on other than standard wall pipe, refer to Technical data section.
NOTE: For one time field test only the maximum joint working pressure may be increased to 1.5 times the figure shown.
- 4** Maximum end load from all interior and/or exterior forces to which the joint can be subjected are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications.

- 5** Range of pipe end separation is the gap between the pipe ends due to assembly.
- 6** Maximum allowable angular deflection of pipe from centerline when using standard cut grooved steel pipe. For details see design factors in Gruvlok Technical data section.
- 7** "X", "Y", and "Z" are external dimensions for reference purposes only
- 8** The quantity of bolts equals the number of housing segments per coupling
- 9** Nuts must be tightened alternating and evenly to the specified bolt torque. See individual product installation instructions for additional important information.
- 10** Approximate weight for a fully assembled coupling with gasket, bolts, and nuts.

FIG. 7400E Rigidlite® Coupling



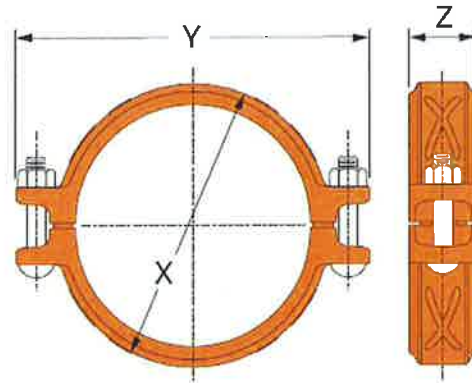
The Gruvlok® 7400E Rigid Coupling is our standard coupling and is designed for rigid piping applications. The 7400E is specially designed to provide a rigid, locked-in pipe connection to meet the specific demands of rigid design steel pipe.

Material Specifications:

- **Housing:**
Ductile Iron conforming to ASTM-A536, Grade 65-45-12
- **Coatings:**
Rust inhibiting lead-free paint
Color: Red (Standard)
Hot Dipped Zinc Galvanized (Optional)
For other coating requirements contact your Anvil Representative.
- **Metric Bolts and Heavy Hex Nuts:**
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.
- **Stainless Steel Bolts and Nuts:**
Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.
- **Lubrication:**
Standard Gruvlok
Gruvlok Xtreme™ required for dry pipe systems and freezer applications.
- **Gasket: Materials (Specify when ordering)**
Flush gap gasket available
Properties as designated by ASTM D-2000.

Grade "E" EPDM (Standard)
Green color code • NSF 61 Certified
Service Temperature Range: -40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Optional)
Orange color code
Service Temperature Range: -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.
- **Gasket Type: (Specify)**
Standard "C" Style
Flush Gap (1¼" - 8")



GRUVLOK® 7400E RIGID COUPLING

Nominal Size	Pipe O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Specified Torque		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size.	Min.	Max.	
<i>In./DN(mm)</i>	<i>In./mm</i>	<i>PSI/bar</i>	<i>Lbs./kN</i>	<i>In./mm</i>	<i>In./mm</i>	<i>In./mm</i>		<i>In./mm</i>	<i>Fl.-Lbs./N-M</i>		<i>Lbs./Kg</i>	
1¼ 32	1.660 42.2	300 20.7	649 2.89	0-0.06 0-1.5	2¼ 70	4¼ 117	1½ 48	2	¾ x 2 M10 x 50	30 40	45 60	1.5 0.7
1½ 40	1.900 48.3	300 20.7	851 3.78	0-0.06 0-1.5	2 ¹⁹ / ₁₆ 71	4¾ 124	1 ⁷ / ₈ 48	2	¾ x 2 M10 x 50	30 40	45 60	1.7 0.8
2 50	2.375 60.3	300 20.7	1,329 5.91	0-0.06 0-1.5	3½ 89	5 ⁵ / ₈ 137	2 51	2	¾ x 2¼ M10 x 57	30 40	45 60	1.9 0.9
2½ 65	2.875 73.0	300 20.7	1,948 8.66	0-0.06 0-1.5	4 102	6 152	2 51	2	¾ x 2½ M10 x 63	30 40	45 60	1.9 0.9
3 O.D. 76.1	2.996 76.1	300 20.7	2,115 9.41	0-0.06 0-1.5	4 ⁷ / ₈ 105	6 ¹ / ₈ 156	1 ⁷ / ₈ 48	2	¾ x 2½ M10 x 63	30 40	45 60	2.2 1.0
3 80	3.500 88.9	300 20.7	2,886 12.84	0-0.12 0-3.2	4¾ 121	6 ⁵ / ₈ 168	2 51	2	¾ x 2½ M10 x 63	30 40	45 60	2.4 1.1
4 100	4.500 114.3	300 20.7	4,771 21.22	0-0.12 0-3.2	5 ⁷ / ₈ 149	7 ³ / ₄ 197	2 ¹ / ₈ 54	2	¾ x 2½ M10 x 63	30 40	45 60	3.2 1.4
5½ O.D. 139.7	5.500 139.7	300 20.7	7,127 31.70	0-1¼ 0-6.4	6 ³ / ₄ 171	9 ³ / ₄ 235	2 51	2	½ x 3 M12 x 76	80 110	100 150	4.5 2.0
5 125	5.563 141.3	300 20.7	7,292 32.44	0-0.12 0-3.2	6 ¹⁵ / ₁₆ 176	9 ¹ / ₁₆ 230	2 ¹ / ₁₆ 52	2	½ x 3 M12 x 76	80 110	100 150	4.5 2.0
6½ O.D. 165.1	6.500 165.1	300 20.7	9,955 44.28	0-0.12 0-3.2	8 ³ / ₈ 207	10 ³ / ₈ 264	2 ¹ / ₈ 54	2	½ x 3 M12 x 76	80 110	100 150	5.8 2.6
6 150	6.625 168.3	300 20.7	10,341 46.00	0-0.12 0-3.2	8 ¹ / ₄ 210	10 ³ / ₈ 264	2 ¹ / ₈ 54	2	½ x 3 M12 x 76	80 110	100 150	5.8 2.6
8 200	8.625 219.1	300 20.7	17,528 77.97	0-0.12 0-3.2	10 ¹ / ₂ 267	13 ¹ / ₄ 337	2 ¹ / ₂ 64	2	5/8 x 3½ M16 x 89	100 130	130 175	10.8 4.9
10 250	10.750 273.1	300 20.7	27,229 121.12	0-0.12 0-3.2	13 331	16 ³ / ₄ 425	2 ⁵ / ₈ 67	2	7/8 x 5 M22 x 140	180 245	220 298	21.5 9.8
12 300	12.750 323.9	300 20.7	38,303 170.38	0-0.12 0-3.2	15 ³ / ₈ 391	19 ¹ / ₄ 489	2 ⁵ / ₈ 67	2	7/8 x 5½ M22 x 140	180 245	220 298	27.4 12.4

- Working pressure and/or end load are total allowable, based on standard weight steel pipe, roll or cut grooved.
 - One time field test pressure may be increased to 1.5 times the figures listed.
- Other sizes available, contact an Arvil Representative.

WARNING

For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok® Xtreme™ Lubricant is required.

Installation & Assembly – Gruvlok 7400E Coupling

The instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and to assure that the pipe ends are free of indentations and projections which would prevent proper sealing.

ALWAYS USE A GRUVLOK® LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the external surface of the gasket is essential to prevent pinching and possible damage to the gasket. For temperatures above 150°F (65°C) use Gruvlok® Xtreme Lubricant™ and lubricate all gasket surfaces, internal and external. See Gruvlok Lubricants in the Technical Data section of the Gruvlok catalog for additional important information.



1 Check and lubricate gasket
Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok Xtreme Lubricant to the outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.



2 Gasket installation
Slip the gasket over the one pipe, making sure the gasket lip does not overhang the pipe end.



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



4 Housings
Remove one nut and bolt 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, making sure the tongue and recess of each housing is properly mated. Re-insert the bolt and run-up both nuts finger tight.



5 Tighten nuts
Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.
Caution: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



6 Assembly is complete
Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

Specified Bolt Torque

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. **Caution:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

Caution: Proper torquing of coupling 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.

ANSI Specified Bolt Torque			Metric Specified Bolt Torque		
Bolt Size	Wrench Size	Specified Bolt Torque*	Bolt Size	Wrench Size	Specified Bolt Torque*
3/8"	1 1/16"	30-45	M10	16	40-60
1/2"	7/8"	80-100	M12	22	110-150
5/8"	1 1/16"	100-130	M16	24	135-175
7/8"	1 7/16"	180-220	M22	34	245-300

* Non-lubricated bolt torque

* Non-lubricated bolt torque

FIG. 7000E

Lightweight Flexible Coupling



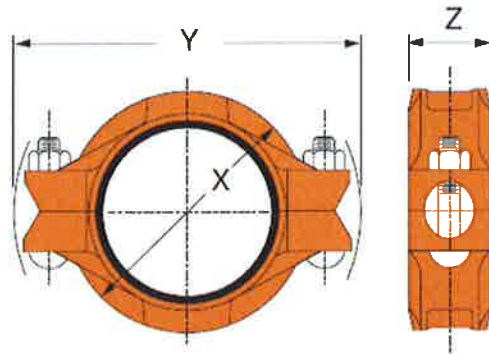
The Fig. 7000E Lightweight Flexible Coupling is designed for applications where system flexibility is desired. The Fig. 7000E Coupling is approximately 30% lighter in weight than the Fig. 7001E Coupling, and allows for working pressure ratings up to 600 psi (41.4 bar).

Material Specifications:

- **Housing:**
Ductile Iron conforming to ASTM-A536, Grade 65-45-12
- **Coatings:**
Rust inhibiting lead-free paint
Color: Red (Standard)
Hot Dipped Zinc Galvanized (Optional)
For other coating requirements contact your Anvil Representative.
- **Metric Bolts and Heavy Hex Nuts:**
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.
- **Stainless Steel Bolts and Nuts:**
Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.
- **Lubrication:**
Standard Gruvlok
Gruvlok Xtreme™ required for dry pipe systems and freezer applications.
- **Gasket: Materials (Specify when ordering)**
Flush gap gasket available
Properties as designated by ASTM D-2000.

Grade "E" EPDM (Standard)
Green color code • NSF 61 Certified
Service Temperature Range: -40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Optional)
Orange color code
Service Temperature Range: -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.
- **Gasket Type: (Specify)**
Standard "C" Style
Flush Gap (1/4" - 8")



GRUVLOK® 7000E LIGHTWEIGHT FLEXIBLE COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ϵ		Coupling Dimensions			Coupling Bolts		Specified Torque		Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	X	Qty.	Size	Min.	Max.	
<i>in./DN(mm)</i>	<i>in./mm</i>	<i>PSI/bar</i>	<i>Lbs./kN</i>	<i>in./mm</i>	<i>Degrees</i>	<i>mm/m</i>	<i>in./mm</i>	<i>in./mm</i>	<i>in./mm</i>		<i>in./mm</i>	<i>Ft.-Lbs./N-M</i>		<i>Lbs./Kg</i>
1	1.315	600	815	0-1/8	5° 26'	1.14	2 5/8	4 1/4	1 3/4	2	3/8 x 2 1/4	30	45	1.3
25	33.4	41.4	3.62	0-3.2		94.7	60	108	44		M10 x 57	40	60	0.6
1 1/4	1.660	600	1,299	0-1/8	4° 19'	0.90	2 3/4	4 3/8	1 3/4	2	3/8 x 2 1/4	30	45	1.4
32	42.2	41.4	5.78	0-3.2		75.3	70	111	44		M10 x 57	40	60	0.6
1 1/2	1.900	600	1,701	0-1/8	3° 46'	0.79	3	4 1/2	1 3/4	2	3/8 x 2 1/4	30	45	1.5
40	48.3	41.4	7.57	0-3.2		65.7	76	117	44		M10 x 57	40	60	0.7
2	2.375	600	2,658	0-1/8	3° 1'	0.63	3 1/2	5 1/2	1 3/4	2	3/8 x 2 1/4	30	45	1.7
50	60.3	41.4	11.82	0-3.2		52.6	89	140	44		M10 x 57	40	60	0.8
2 1/2	2.875	600	3,895	0-1/8	2° 29'	0.52	4	5 3/4	1 3/4	2	3/8 x 2 1/4	30	45	1.9
65	73.0	41.4	17.33	0-3.2		43.3	102	146	44		M10 x 57	40	60	0.9
3 O.D.	2.996	600	4,230	0-1/8	2° 23'	0.50	4	6 1/8	1 3/4	2	3/8 x 2 1/4	80	100	2.3
76.1	76.1	41.4	18.82	0-3.2		41.6	102	156	44		M10 x 57	110	150	1.0
3	3.500	600	5,773	0-1/8	2° 3'	0.43	4 5/8	6 3/4	1 3/4	2	1/2 x 2 3/4	80	100	2.9
80	88.9	41.4	25.68	0-3.2		35.8	117	171	44		M12 x 70	110	150	1.3
3 1/2	4.000	600	7,540	0-1/8	1° 48'	0.38	5 1/8	7 3/8	1 3/4	2	1/2 x 3	80	100	3.1
90	101.6	41.4	33.54	0-3.2		31.4	130	194	44		M12 x 76	110	150	1.4
4 1/4 O.D.	4.250	600	8,512	0-1/8	3° 22'	0.70	5 1/2	7 3/4	2	2	1/2 x 3	80	100	4.0
108.0	108.0	41.4	37.86	0-6.4		58.7	140	197	51		M12 x 76	110	150	1.8
4	4.500	600	9,543	0-1/8	3° 11'	0.67	5 3/8	8 1/8	2	2	1/2 x 3	80	100	4.6
100	114.3	41.4	42.45	0-6.4		55.5	149	206	51		M12 x 76	110	150	2.1
5 1/4 O.D.	5.236	500	10,766	0-1/8	2° 44'	0.57	6 1/2	9 1/8	2	2	5/8 x 3 1/2	100	130	5.7
133.0	133.0	34.5	47.89	0-6.4		47.7	165	232	51		M16 x 85	135	175	2.6
5 3/4 O.D.	5.500	500	11,879	0-1/8	2° 36'	0.54	6 3/4	9 3/8	2	2	5/8 x 3 1/2	100	130	6
139.7	139.7	34.5	52.84	0-6.4		45.4	171	238	51		M16 x 85	135	175	2.7
5	5.563	500	12,153	0-1/8	2° 35'	0.54	7	9 5/8	2	2	5/8 x 3 1/2	100	130	6.1
125	141.3	34.5	54.06	0-6.4		45.1	178	244	51		M16 x 85	135	175	2.8
6 1/4 O.D.	6.259	500	15,384	0-1/8	2° 17'	0.48	7 1/2	10 3/8	2	2	5/8 x 3 1/2	100	130	6.7
159.0	159.0	34.5	68.43	0-6.4		39.8	191	264	51		M16 x 85	135	175	3.0
6 3/4 O.D.	6.500	500	16,592	0-1/8	2° 12'	0.46	7 3/4	10 3/4	2	2	5/8 x 3 1/2	100	130	7.0
165.1	165.1	34.5	73.80	0-6.4		34.8	197	273	51		M16 x 85	135	175	3.2
6	6.625	500	17,236	0-1/8	2° 10'	0.45	8	11	2	2	5/8 x 3 1/2	100	130	8.1
150	168.3	34.5	76.67	0-6.4		37.8	203	279	51		M16 x 85	135	175	3.7
8	8.625	500	29,213	0-1/8	1° 40'	0.35	10	13 1/4	2 3/8	2	3/4 x 4 1/2	130	180	14.2
200	219.1	34.5	129.95	0-6.4		29.1	264	337	60		M20 x 110	175	245	6.4

Not for use in copper systems.

Installation & Assembly – Gruvlok 7000E Coupling

The instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and to assure that the pipe ends are free of indentations and projections which would prevent proper sealing.

ALWAYS USE A GRUVLOK® LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the external surface of the gasket is essential to prevent pinching and possible damage to the gasket. For temperatures above 150°F (65°C) use Gruvlok® Xtreme Lubricant™ and lubricate all gasket surfaces, internal and external. See Gruvlok Lubricants in the Technical Data section of the Gruvlok catalog for additional important information.



Step 1

1 Check and lubricate gasket
Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok Xtreme Lubricant to the outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.



Step 2

2 Gasket installation
Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.



Step 3

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



Step 4

4 Housings
With one nut unthreaded to the end of the bolt, unthread the other nut completely and swing the coupling housing halves over the gasket, making sure the housing keys engage the grooves. Insert the bolt and turn the nuts finger tight.



Step 5

5 Tighten nuts
Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

Caution: Uneven tightening may cause the gasket to pinch.



Step 6

6 Assembly is complete
Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

Specified Bolt Torque

Specified bolt torque is for the oval neck track bolts used on Gruvlok couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. **Caution:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

Caution: Proper torquing of coupling 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.

ANSI Specified Bolt Torque		
Bolt Size	Wrench Size	Specified Bolt Torque*
in.	in.	ft.-lbs
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180

* Non-lubricated bolt torque

Metric Specified Bolt Torque		
Bolt Size	Wrench Size	Specified Bolt Torque*
mm	mm	N-M
M10	16	40-60
M12	22	110-150
M16	24	135-175
M20	30	175-245

* Non-lubricated bolt torque

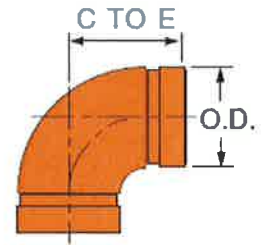


Figure 7450E Short Pattern 90° Elbow

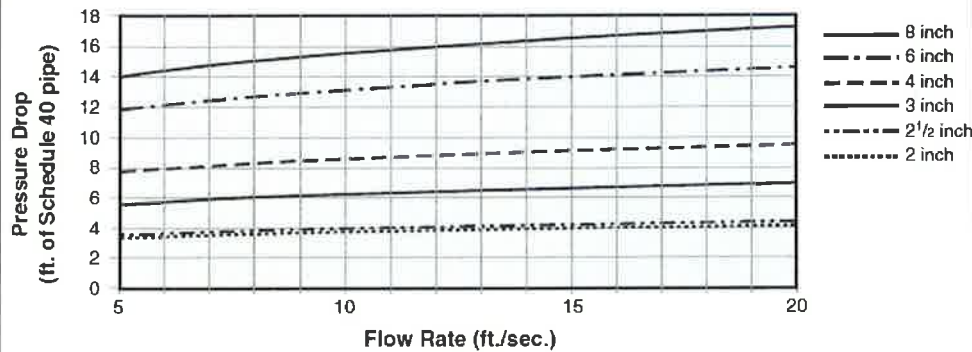
The Gruvlok® Fig. 7450E is a short pattern elbow specifically designed for use in fire protection applications where economy is a factor. All products are UL & ULC listed as well as FM approved. Maximum working pressure is 300 psi.

Material Specifications:

- Cast Fittings:**
 Ductile Iron conforming to ASTM A-536, Grade 65-45-12
- Coatings:**
 Rust inhibiting lead-free paint - Color: Red (Standard)
 Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
 For other coating requirements contact your Anvil Representative.



GRUVLOK® 7450E 90° ELBOW SHORT PATTERN FITTINGS – PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13. For Fig. 7450E 90° grooved end elbows use the value shown. Above values are shown for Schedule 40 pipe to be consistent with industry standards.

GRUVLOK® 7450E 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2	2.375	2¾	1.5
50	60.3	70	0.7
2½	2.875	3	2.1
65	73.0	76	1.0
3	3.500	3¾	3.6
80	88.9	86	1.6
4	4.500	4	5.8
100	114.3	102	2.6
6	6.625	5½	11.8
150	168.3	140	5.3
8	8.625	6¾	21.1
200	219.1	175	9.6

For additional sizes, contact your Anvil Representative.



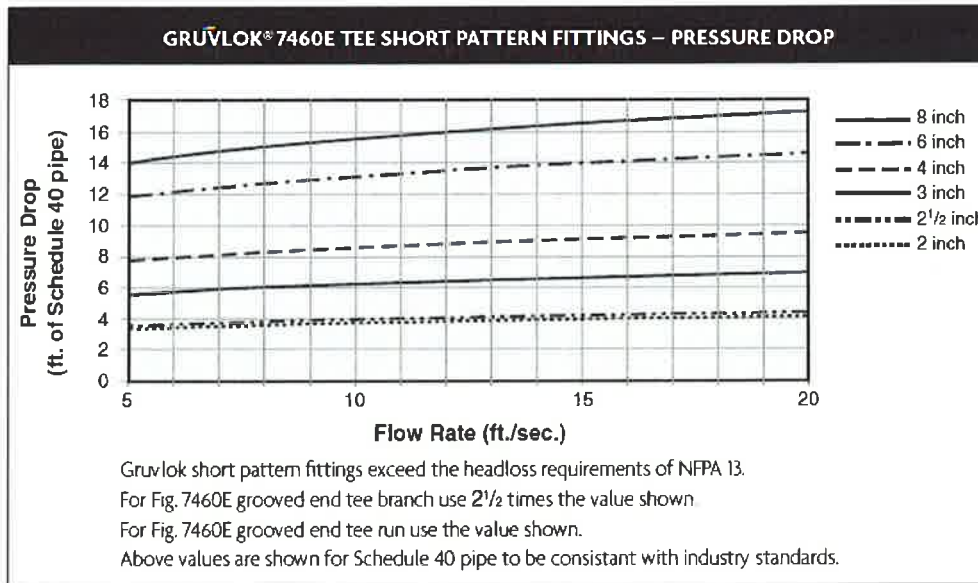
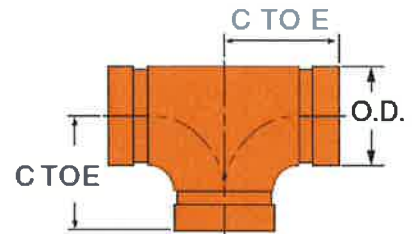
APPROVED
 For Listing/Approval Details and Limitations visit our website www.anvilintl.com or contact an Anvil®/AnvilStar™ Sales Representative

Figure 7460E Short Pattern Tee

The Gruvlok® Fig. 7460E is a short pattern tee specifically designed for use in fire protection applications where economy is a factor. All products are UL & ULC listed as well as FM approved. Maximum working pressure is 300 psi.

Material Specifications:

- **Cast Fittings:**
 Ductile Iron conforming to ASTM A-536.
- **Coatings:**
 Rust inhibiting lead-free paint - Color: Red (Standard)
 Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
 For other coating requirements contact your Anvil Representative.



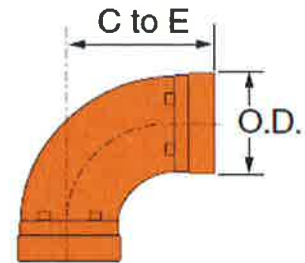
GRUVLOK® 7460E TEE			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2	2.375	2 3/4	2.9
50	60.3	70	1.3
2 1/2	2.875	3	4.6
65	73.0	76	2.1
3	3.500	3 3/4	6.9
80	88.9	96	3.1
4	4.500	4	10.9
100	114.3	102	4.9
6	6.625	5 1/2	25.0
150	168.3	140	11.3
8	8.625	6 1/2	42.1
200	219.1	175	19.1



Figure 7050E 90° Elbow

Material Specifications:

- **Cast Fittings:**
Ductile Iron conforming to ASTM A-536, Grade 65-45-12
- **Coatings:**
Rust inhibiting lead-free paint - Color: Red (Standard)
Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
For other coating requirements contact your Anvil Representative.



GRUVLOK® 7050E 90° ELBOW							
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg	In./DN(mm)	In./mm	In./mm	Lbs./Kg
1	1.315	2 1/4	0.6	6" O.D.	6.500	6 1/2	18.2
2 1/2	33.4	57	0.3	165.1	165.1	165	8.3
1 1/4	1.660	2 3/4	0.8	6	6.625	6 1/2	17.3
3/2	42.2	70	0.4	150	168.3	165	7.9
1 1/2	1.900	2 3/4	1.1	8	8.625	7 3/4	32.2
40	48.3	70	0.5	200	219.1	197	14.6
2	2.375	3 1/4	1.5	10	10.750	9	54.1
50	60.3	83	0.7	250	273.1	229	24.5
2 1/2	2.875	3 3/4	2.5	12	12.750	10	70.0
65	73.0	95	1.1	300	323.9	254	31.8
3 O.D.	2.986	3 3/4	2.9	14	14.000	21	169.0
76.1	76.1	95	1.3	350	355.6	533	76.7
3	3.500	4 1/4	4.2	16	16.000	24	222.0
80	88.9	108	1.9	400	406.3	610	100.7
4	4.500	5	6.7	18	18.000	27	280.0
100	114.3	127	3.0	450	457.2	686	127.0
5" O.D.	5.500	5 1/2	-	20	20.000	30	344.0
139.7	139.7	140	-	500	508.0	762	156.0
5	5.563	5 1/2	11.9	24	24.000	36	490.0
125	141.3	140	5.4	600	609.6	914	222.3

Sizes continue in next column

FIG. 7052

22 1/2° Elbow

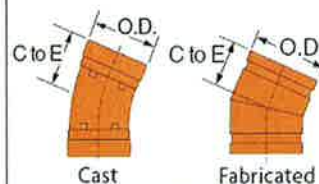


FIGURE 7052 22 1/2° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
3	3.500	2 1/4 C	3.2
80	88.9	57	1.5
4	4.500	2 3/4 C	5.3
100	114.3	62	2.4
6	6.625	3 1/4 C	8.2
150	168.3	70	3.7

FIG. 7053

11 1/4° Elbow

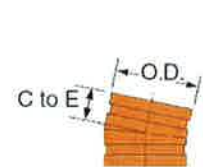


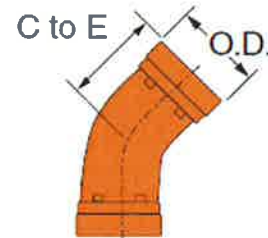
FIGURE 7053 11 1/4° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
3	3.500	1 1/2	2.0
80	88.9	38	0.9
4	4.500	1 3/4	3.3
100	114.3	44	1.5
6	6.625	2	6.5
150	168.3	51	2.9



Figure 7051E 45° Elbow

Material Specifications:

- **Cast Fittings:**
Ductile Iron conforming to ASTM A-536
- **Coatings:**
Rust inhibiting lead-free paint - Color: Red (Standard)
Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
For other coating requirements contact your Anvil Representative.



GRUVLOK® 7051E 45° ELBOW							
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
<i>in./DN(mm)</i>	<i>in./mm</i>	<i>in./mm</i>	<i>Lbs./Kg</i>	<i>in./DN(mm)</i>	<i>in./mm</i>	<i>in./mm</i>	<i>Lbs./Kg</i>
1	1.315	1 1/4	0.5	6" O.D.	6.500	3 1/2	8.3
25	33.4	44	0.2	165.1	165.1	89	3.8
1 1/4	1.660	1 3/4	0.8	6	6.625	3 1/2	11.6
32	42.2	44	0.3	150	168.3	89	5.2
1 1/2	1.900	1 3/4	0.9	8	8.625	4 1/4	17.9
40	48.3	44	0.4	200	219.1	108	5.1
2	2.375	2	1.0	10	10.750	4 3/4	30.0
50	60.3	51	0.4	250	273.1	121	13.6
2 1/2	2.875	2 1/4	1.8	12	12.750	5 1/4	40.4
65	73.0	57	0.8	300	323.9	133	19.3
3 O.D.	2.906	2 1/4	2.1	14	14.000	8 3/4	92.0
76.1	76.1	57	1.0	350	355.6	222	41.7
3	3.500	2 1/2	2.5	16	16.000	10	117.0
80	88.9	64	1.1	400	406.4	254	53.1
4	4.500	3	4.7	18	18.000	11 1/4	146.0
100	114.3	76	2.2	450	457.2	286	66.2
5 O.D.	5.500	3 1/2	—	20	20.000	12 1/2	179.0
139.7	139.7	83	—	500	508.0	317	81.2
5	5.563	3 3/4	11.6	24	24.000	15	255.0
125	141.3	83	5.2	600	609.6	391	115.7

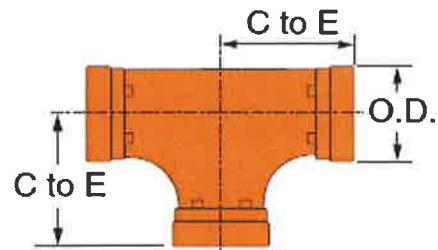
Sizes continue in next column



Figure 7060E Tee

Material Specifications:

- Cast Fittings:**
 Ductile Iron conforming to ASTM A-536, Grade 65-45-12
- Coatings:**
 Rust inhibiting lead-free paint - Color: Red (Standard)
 Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
 For other coating requirements contact your Anvil Representative.



GRUVLOK® 7060E TEE							
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
<i>in./DN(mm)</i>	<i>in./mm</i>	<i>in./mm</i>	<i>Lbs./Kg</i>	<i>in./DN(mm)</i>	<i>in./mm</i>	<i>in./mm</i>	<i>Lbs./Kg</i>
1	1.315	2¼	0.9	8" O.D.	6.500	6½	24.4
25	33.4	57	0.4	165.1	165.1	165	11.1
1¼	1.660	2¾	1.4	6	6.625	6½	25.3
32	42.2	69	0.7	150	168.3	165	11.5
1½	1.900	2¾	1.5	8	8.625	7¾	42.1
40	48.3	69	0.7	300	219.1	197	19.1
2	2.375	3¼	2.4	10	10.750	9	69.0
50	60.3	83	1.1	250	273.1	229	31.3
2½	2.875	3¾	3.6	12	12.750	10	91.0
65	73.0	95	1.6	300	323.9	254	41.3
3" O.D.	2.996	4	4.6	14	14.000	11	118.0
76.1	76.1	101	2.1	350	355.6	279	53.5
3	3.500	4¼	6.3	16	16.000	12	146.0
80	88.9	108	2.9	400	406.4	305	66.2
4	4.500	5	9.6	18	18.000	15½	218.0
100	114.3	127	4.4	450	457.2	394	98.9
5	5.563	5½	17.8	20	20.000	17¼	275.0
125	141.3	140	8.1	500	508.0	438	125
5" O.D.	5.500	5½	16.1	24	24.000	20	379.0
139.7	139.7	140	7.3	600	609.6	508	172

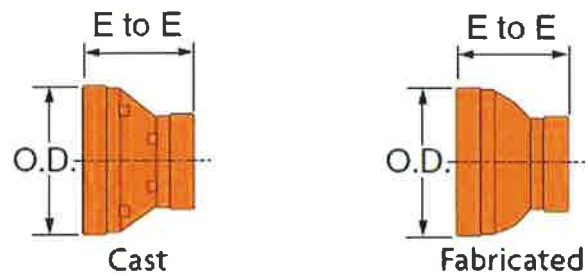
Sizes continue in next column



Figure 7072 Concentric Reducer

Material Specifications:

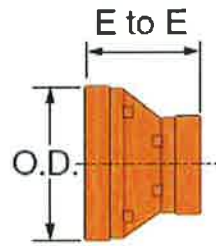
- **Cast Fittings:**
 Ductile Iron conforming to ASTM A-536
 Malleable Iron conforming to ASTM A-47
- **Fabricated Fittings:**
 1-10" Carbon steel, Schedule 40, conforming to ASTM A-53, Grade B.
 12" and above Carbon steel, Standard Wall, conforming to ASTM A-53, Grade B.
- **Coatings:**
 Rust inhibiting lead-free paint - Color: Red (Standard)
 Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
 For other coating requirements contact your Anvil Representative.



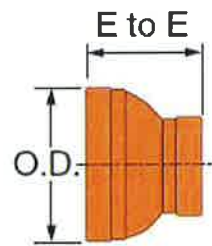
GRUVLOK® 7072 CONCENTRIC REDUCER (GROOVE X GROOVE)					
Nominal Size	End to End	Approx. Wt. Ea.	Nominal Size	End to End	Approx. Wt. Ea.
<i>In./DN(mm)</i>	<i>In./mm</i>	<i>Lbs/Kg</i>	<i>In./DN(mm)</i>	<i>In./mm</i>	<i>Lbs/Kg</i>
1¼ x 1 32 x 25	2½ 64	0.6 0.3	3 x 2* 80 x 50	2½ 64	1.4 0.6
1½ x 1 40 x 25	2½ 64	0.6 0.3	3 x 2½* 80 x 65	2½ 64	1.5 0.7
1½ x 1¼ 40 x 32	2½ 64	0.6 0.3	3½ x 3 90 x 80	3 76	1.8 0.8
2 x 1 50 x 25	2½ 64	0.8 0.4	4 x 1* 100 x 25	3 76	2.2 1.0
2 x 1¼* 50 x 32	2½ 64	1.3 0.6	4 x 1¼ 100 x 32	3 76	2.2 1.0
2 x 1½* 50 x 40	2½ 64	1.3 0.6	4 x 1½ 100 x 40	3 76	2.3 1.0
2½ x 1 65 x 25	2½ 64	1.0 0.5	4 x 2* 100 x 50	3 76	2.4 1.1
2½ x 1¼ 65 x 32	2½ 64	1.0 0.5	4 x 2½* 100 x 65	3 76	2.6 1.2
2½ x 1½ 65 x 40	2½ 64	1.3 0.6	4 x 3* 100 x 80	3 76	3.2 1.5
2½ x 2* 65 x 50	2½ 64	1.6 0.7	4 x 3½* 100 x 90	3 76	3.6 1.6
3 x 1 80 x 25	2½ 64	1.2 0.5	5 x 2 125 x 50	3½ 89	4.6 2.1w
3 x 1¼ 80 x 32	2½ 64	1.3 0.6	5 x 2½ 125 x 65	3½ 89	4.5 2.0
3 x 1½ 80 x 40	2½ 64	1.3 0.6			

Larger sizes on next page

• - Cast malleable or ductile iron, all others are fabricated steel.
 Other sizes available upon request.



Cast



Fabricated

GRUVLOK® 7072 CONCENTRIC REDUCER

Nominal Size	End to End	Approx. Wt. Ea.
<i>in./DN(mm)</i>	<i>in./mm</i>	<i>Lbs/Kg</i>
5 x 3	3½	4.4
125 x 80	89	2.0
5 x 4*	3½	4.5
125 x 100	89	2.0
6 x 1	4	6.8
150 x 25	102	3.1
6 x 1½	4	6.9
150 x 40	102	3.1
6 x 2*	4	6.0
150 x 50	102	2.7
6 x 2½	4	6.0
150 x 65	102	2.7
6 x 3*	4	5.4
150 x 80	102	2.4
6 x 4*	4	5.6
150 x 100	102	2.5
6 x 5*	4	6.0
150 x 125	102	2.7
8 x 3	5	12.0
200 x 80	127	5.5
8 x 4*	5	9.0
200 x 100	127	4.1
8 x 5	5	11.5
200 x 125	127	5.2
8 x 6*	5	10.6
200 x 150	127	4.8
10 x 4	6	20
250 x 100	152	9.1
10 x 5	6	20
250 x 125	152	9.1
10 x 6*	6	20
250 x 150	152	9.1
10 x 8	6	23.9
250 x 200	152	10.8
12 x 4	7	25
300 x 100	178	11.3
12 x 6	7	29
300 x 150	178	13.2
12 x 8	7	29
300 x 200	178	13.2
12 x 10	7	32.4
300 x 250	178	14.7
14 x 6	13	54.3
350 x 150	330	24.6

Nominal Size	End to End	Approx. Wt. Ea.
<i>in./DN(mm)</i>	<i>in./mm</i>	<i>Lbs/Kg</i>
14 x 8	13	54.5
350 x 200	330	24.7
14 x 10	13	55.7
350 x 250	330	25.3
14 x 12	13	57.3
350 x 300	330	26.0
16 x 8	14	65.4
400 x 200	356	29.7
16 x 10	14	66.7
400 x 250	356	30.3
16 x 12	14	68.1
400 x 300	356	30.9
16 x 14	14	71.0
400 x 350	356	32.2
18 x 10	15	82.3
450 x 250	381	37.3
18 x 12	15	83.6
450 x 300	381	37.9
18 x 14	15	86.2
450 x 350	381	39.1
18 x 16	15	87.2
450 x 400	381	39.6
20 x 10	20	123.0
500 x 250	508	55.8
20 x 12	20	125.0
500 x 300	508	56.7
20 x 14	20	129.0
500 x 350	508	58.5
20 x 16	20	131.0
500 x 400	508	59.4
20 x 18	20	133.0
500 x 450	508	60.3
24 x 10	20	147.0
600 x 250	508	66.7
24 x 12	20	149.0
600 x 300	508	67.6
24 x 14	20	152.0
600 x 350	508	68.9
24 x 16	20	153.0
600 x 400	508	69.4
24 x 18	20	154.0
600 x 450	508	69.9
24 x 20	20	155.0
600 x 500	508	70.3

* - Cast malleable or ductile iron, all others are fabricated steel.
Other sizes available upon request.



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

Figure 7045E Clamp-T® FPT Branch Outlet

The Gruvlok® Clamp-T® provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045E Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046E Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available in various sizes allowing greater versatility in piping design.

NOTE: Variable End Configurations are Possible —
Thd x Thd and Gr. x Thd.
Sizes — 2" x 1/2" through 8" x 4"

Material Specifications:

- Housing:**
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.
- Coatings:**
Rust inhibiting lead-free paint
Color: Red (Standard)
Hot Dipped Zinc Galvanized (Optional)
For other coating requirements contact your Anvil Representative.
- ANSI Bolts and Heavy Hex Nuts:**
Heat treated, oval-neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.
- U-Bolt:**
Cold drawn steel and zinc plated.
- Stainless Steel Bolts and Nuts:**
Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.

- Lubrication:**
Standard Gruvlok
Gruvlok Xtreme™ required for dry pipe systems and freezer applications.
- Gasket: Materials**
Properties as designated by ASTM D2000.
Grade "E" EPDM (Standard)
Green color code
Service Temperature Range:
-40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.
Grade "T" Nitrile (Optional)
Orange color code
Service Temperature Range:
-20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)		
Branch Size Inches	Fig. 7045 Threaded Branch	
	C.V. Value	Equiv. Pipe Length Feet
DN/mm		Meters
1/2	22	1.0
15	-	0.3
3/4	25	2.0
20	-	0.6
1	44	2.0
25	-	0.6
1 1/4	76	2.5
32	-	0.8
1 1/2	89	4.0
40	-	1.2
2	164	3.5
50	-	1.1
2 1/2	152	12.5
65	-	3.8
3	318	8.5
80	-	2.6
4	536	8.0
100	-	2.4

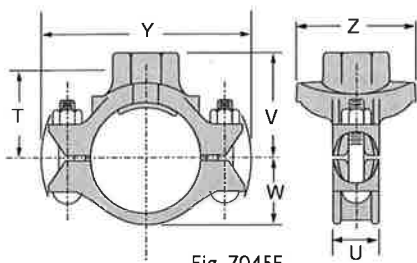


Fig. 7045E

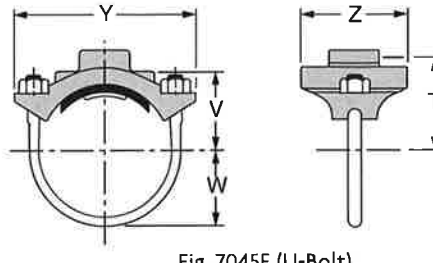


Fig. 7045E (U-Bolt)

GRUVLOK® 7045E-FPT BRANCH (TABLE CONTINUES TO NEXT PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
in./DN(mm)	in./mm	in./mm	in./mm	psi/bar	in./mm	in./mm	in./mm	in./mm	in./mm	in./mm	in./mm	FL-Lbs/N-M	Lbs./Kg	
2 x 1/2 50 x 15	2.375 x 0.840 60.3 x 21.3	1 1/2 38	1 5/8 41	500 34.5	2 1/16 56	9/16 14	2 5/8 67	1/2 12	5 1/2 140	3 76	1/2 U-Bolt -	30 40	2.3 1.0	
2 x 3/4 50 x 20	2.375 x 1.050 60.3 x 26.7	1 1/2 38	1 5/8 41	50 0 34.5	2 1/16 52	9/16 14	2 5/8 67	1 1/2 38	5 1/2 140	3 76	1/2 U-Bolt -	30 40	2.3 1.0	
2 x 1 50 x 25	2.375 x 1.315 60.3 x 33.7	1 1/2 38	1 5/8 41	500 34.5	1 15/16 51	9/16 14	2 5/8 67	1 1/2 38	5 1/2 140	3 76	1/2 U-Bolt -	30 40	2.6 1.2	
2 x 1 1/4 50 x 32	2.375 x 1.660 60.3 x 42.4	2 51	2 1/8 54	500 34.5	2 3/16 55	9/16 14	2 7/8 73	1 1/2 38	5 1/2 140	3 1/2 89	1/2 U-Bolt -	30 40	2.7 1.2	
2 x 1 1/2 50 x 40	2.375 x 1.900 60.3 x 48.3	2 51	2 1/8 54	500 34.5	2 3/16 55	9/16 14	2 7/8 73	1 1/2 38	7 178	3 1/2 89	1/2 U-Bolt -	30 40	2.5 1.1	
2 1/2 x 1/2 65 x 15	2.875 x 0.840 73.0 x 21.3	1 1/2 38	1 5/8 41	500 34.5	2 1/16 62	9/16 14	2 7/8 73	1 3/4 44	5 1/2 140	3 76	1/2 U-Bolt -	30 40	3.0 1.4	
2 1/2 x 3/4 65 x 20	2.875 x 1.050 73.0 x 26.7	1 1/2 38	1 5/8 41	500 34.5	2 5/16 59	9/16 14	2 7/8 73	1 3/4 44	5 1/2 140	3 76	1/2 U-Bolt -	30 40	2.9 1.3	
2 1/2 x 1 65 x 25	2.875 x 1.315 73.0 x 33.7	1 1/2 38	1 5/8 41	500 34.5	2 3/16 55	9/16 14	2 7/8 73	1 3/4 44	6 1/8 156	3 76	1/2 U-Bolt -	30 40	2.9 1.3	
2 1/2 x 1 1/4 65 x 32	2.875 x 1.660 73.0 x 42.4	2 51	2 1/8 54	500 34.5	2 1/16 62	9/16 14	3 1/8 79	1 3/4 44	6 1/8 156	3 3/8 86	1/2 U-Bolt -	30 40	3.4 1.5	
2 1/2 x 1 1/2 65 x 40	2.875 x 1.900 73.0 x 48.3	2 51	2 1/8 54	500 34.5	2 1/16 62	9/16 14	3 1/8 79	1 3/4 44	6 1/8 156	3 3/8 86	1/2 U-Bolt -	30 40	3.4 1.5	
3 x 1/2 80 x 15	3.500 x 0.840 88.9 x 21.3	1 1/2 38	1 5/8 41	500 34.5	2 9/16 65	9/16 14	3 76	2 1/8 54	7 178	3 3/4 95	1/2 U-Bolt -	30 40	2.8 1.2	
3 x 3/4 80 x 20	3.500 x 1.050 88.9 x 26.7	1 1/2 38	1 5/8 41	500 34.5	2 1/16 62	9/16 14	3 76	2 1/8 54	7 178	3 3/4 95	1/2 U-Bolt -	30 40	2.7 1.2	
3 x 1 80 x 25	3.500 x 1.315 88.9 x 33.7	1 1/2 38	1 5/8 41	500 34.5	2 5/16 59	9/16 14	3 76	2 1/8 54	7 178	3 3/4 95	1/2 U-Bolt -	30 40	2.7 1.2	
3 x 1 1/4 80 x 32	3.500 x 1.660 88.9 x 42.4	2 51	2 1/8 54	500 34.5	2 11/16 68	1 1/2 38	3 3/8 86	2 1/8 54	6 1/8 175	3 3/4 95	1/2 x 2 3/4 -	80 100	3.4 1.5	
3 x 1 1/2 80 x 40	3.500 x 1.900 88.9 x 48.3	2 51	2 1/8 54	500 34.5	2 11/16 68	1 1/2 38	3 3/8 86	2 1/8 54	6 1/8 175	3 3/4 95	1/2 x 2 3/4 -	80 100	4.4 2.0	
3 x 2 80 x 50	3.500 x 2.375 88.9 x 60.3	2 1/2 64	2 5/8 67	500 34.5	2 11/16 68	1 1/2 38	3 3/8 86	2 1/8 54	6 1/8 175	4 1/8 105	1/2 x 2 3/4 -	80 100	4.6 2.1	
4 x 1/2 100 x 15	4.500 x 0.840 114.3 x 21.3	1 1/2 38	1 5/8 41	500 34.5	3 1/16 76	9/16 14	3 1/2 89	2 3/8 67	7 3/4 197	3 3/4 95	1/2 U-Bolt -	30 40	2.9 1.3	
4 x 3/4 100 x 20	4.500 x 1.050 114.3 x 26.7	1 1/2 38	1 5/8 41	500 34.5	3 1/16 78	9/16 14	3 1/2 89	2 3/8 67	7 3/4 197	3 3/4 95	1/2 U-Bolt -	30 40	2.8 1.3	
4 x 1 100 x 25	4.500 x 1.315 114.3 x 33.7	1 1/2 38	1 5/8 41	500 34.5	2 3/16 73	9/16 14	3 1/2 89	2 3/8 67	7 3/4 197	3 3/4 95	1/2 U-Bolt -	30 40	2.7 1.2	
4 x 1 1/4 100 x 32	4.500 x 1.660 114.3 x 42.4	2 51	2 1/8 54	500 34.5	3 3/16 81	1 1/8 48	3 7/8 98	2 3/8 67	7 1/2 191	3 3/4 95	1/2 x 2 3/4 -	80 100	4.5 2.0	
4 x 1 1/2 100 x 40	4.500 x 1.900 114.3 x 48.3	2 51	2 1/8 54	500 34.5	3 3/16 81	1 1/8 48	3 7/8 98	2 3/8 67	7 1/2 191	3 3/4 95	1/2 x 2 3/4 -	80 100	4.6 2.1	
4 x 2 100 x 50	4.500 x 2.375 114.3 x 60.3	2 1/2 64	2 5/8 67	500 34.5	3 3/16 84	1 1/8 48	4 102	2 3/8 67	7 1/2 191	4 1/8 105	1/2 x 2 3/4 -	80 100	7.7 3.5	
4 x 2 1/2 100 x 65	4.500 x 2.875 114.3 x 73.0	2 3/4 70	2 7/8 73	500 34.5	3 11/16 78	1 1/8 48	4 102	2 3/8 67	7 1/2 191	4 3/8 111	1/2 x 2 3/4 -	80 100	5.2 2.4	
4 x 3 O.D. 100 x 80	4.500 x 2.996 114.3 x 76.1	2 3/4 70	2 7/8 73	500 34.5	3 76	1 1/8 48	4 102	2 3/8 67	7 1/2 191	4 3/8 111	1/2 x 2 3/4 -	80 100	5.2 2.4	
4 x 3 100 x 80	4.500 x 3.500 114.3 x 88.9	3 1/2 89	3 5/8 92	500 34.5	3 3/4 83	1 1/8 48	4 1/4 108	2 3/8 67	7 1/2 191	5 1/4 133	1/2 x 3 1/2 -	80 100	6.5 2.9	
5 x 1 1/4 125 x 32	5.563 x 1.660 141.3 x 42.4	2 51	2 1/8 54	500 34.5	3 11/16 94	1 1/8 48	4 3/8 111	3 1/4 83	9 1/8 232	3 3/4 95	5/8 x 3 1/4 -	100 130	5.4 2.4	
5 x 1 1/2 125 x 40	5.563 x 1.900 141.3 x 48.3	2 51	2 1/8 54	500 34.5	3 11/16 94	1 1/8 48	4 3/8 111	3 1/4 83	9 1/8 232	3 3/4 95	5/8 x 3 1/4 -	100 130	5.5 2.5	
5 x 2 125 x 50	5.563 x 2.375 141.3 x 60.3	2 1/2 64	2 5/8 67	500 34.5	3 13/16 97	1 1/8 48	4 1/2 114	3 1/4 83	9 1/8 232	4 1/8 105	5/8 x 3 1/4 -	100 130	5.7 2.6	
5 x 2 1/2 125 x 65	5.563 x 2.875 141.3 x 73.0	2 3/4 70	2 7/8 73	500 34.5	3 13/16 97	1 1/8 48	4 3/4 121	3 1/4 83	9 1/8 232	4 3/8 111	5/8 x 3 1/4 -	100 130	7.0 3.2	
5 x 3 O.D. 141.3 x 76.1	5.563 x 2.996 141.3 x 76.1	2 3/4 70	2 7/8 73	500 34.5	3 3/4 95	1 1/8 48	4 3/4 121	3 1/4 83	9 3/8 232	4 3/8 111	3/4 x 4 1/2 -	130 180	7.0 3.2	
5 x 3 125 x 80	5.563 x 3.500 141.3 x 88.9	3 1/2 89	3 5/8 92	500 34.5	4 102	1 1/8 48	5 127	3 1/4 83	9 1/8 232	5 1/4 133	5/8 x 3 1/4 -	100 130	8.7 3.9	
6 x 1 1/4 150 x 32	6.625 x 1.660 168.3 x 42.4	2 51	2 1/8 54	500 34.5	4 3/16 106	2 51	4 7/8 124	3 3/8 98	10 1/8 257	3 3/4 95	5/8 x 4 1/4 -	100 130	7.8 3.5	

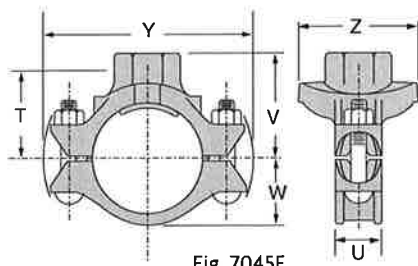


Fig. 7045E

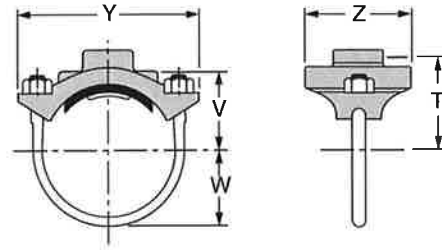


Fig. 7045E (U-Bolt)

GRUVLOK® 7045E-FPT BRANCH (CONTINUED FROM PREVIOUS PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
		in./mm	in./mm		in./mm	in./mm	in./mm	in./mm	in./mm	in./mm		in./mm	in./mm	
6 x 1½ 150 x 40	6.625 x 1.900 168.3 x 48.3	2 51	2½ 54	500 34.5	4¾ 106	2 51	4¾ 124	3¾ 98	10½ 257	3¾ 95	¾ x 4¼ -	100	130	7.8 3.5
6 x 2 150 x 50	6.625 x 2.375 168.3 x 60.3	2½ 64	2¾ 67	500 34.5	4¾ 106	2 51	4¾ 124	3¾ 98	10½ 257	4¼ 105	¾ x 4¼ -	100	130	7.8 3.5
6 x 2½ 150 x 65	6.625 x 2.875 168.3 x 73.0	2¾ 70	2¾ 73	500 34.5	4¾ 106	2 51	5½ 130	3¾ 98	10½ 257	4¾ 111	¾ x 4¼ -	100	130	8.4 3.8
6 x 3 O.D. 168.3 x 76.1	6.625 x 2.996 168.3 x 76.1	2¾ 70	2¾ 73	500 34.5	4¾ 105	2 51	5½ 130	3¾ 98	10½ 257	4¾ 111	¾ x 4¼ -	100	130	8.4 3.8
6 x 3 150 x 80	6.625 x 3.500 168.3 x 88.9	3½ 89	3¾ 92	500 34.5	4¾ 111	2 51	5½ 137	3¾ 98	10½ 257	5¼ 133	¾ x 4¼ -	100	130	9.6 4.4
6 x 4 150 x 100	6.625 x 4.500 168.3 x 114.3	4½ 114	4¾ 117	500 34.5	4¾ 111	2 51	5½ 140	3¾ 98	10½ 257	6½ 165	¾ x 4¼ -	100	130	10.5 4.8
8 x 2 200 x 50	8.625 x 2.750 219.1 x 70.0	2½ 64	2¾ 67	500 34.5	5¾ 132	2¼ 57	5½ 149	5 127	12¾ 324	4¾ 105	¾ x 4¼ -	130	180	11.3 5.1
8 x 2½ 200 x 65	8.625 x 2.875 219.1 x 73.0	2¾ 70	2¾ 73	500 34.5	5¾ 134	2¼ 57	6¼ 159	5 127	12¾ 324	4¾ 111	¾ x 4½ -	130	180	11.1 5.0
8 x 3 O.D. 219.1 x 76.1	8.625 x 2.996 219.1 x 76.1	2¾ 70	2¾ 73	500 34.5	5¼ 133	2¼ 57	6¼ 159	5 127	12¾ 324	4¾ 111	¾ x 4½ -	130	180	11.1 5.0
8 x 3 200 x 80	8.625 x 3.500 219.1 x 88.9	3½ 89	3¾ 92	500 34.5	5¾ 137	2¼ 57	6¾ 162	5 127	12¾ 324	5¼ 133	¾ x 4½ -	130	180	13.0 5.9
8 x 4 200 x 100	8.625 x 4.500 219.1 x 114.3	4½ 114	4¾ 117	500 34.5	5¾ 137	2¼ 57	6½ 165	5 127	12¾ 324	6½ 165	¾ x 4½ -	130	180	16.2 7.3

NOTE: 2½", 5" and 6" Nom. size run pipe may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe

▼ Based on use with standard wall pipe.

Not for use in copper systems.

Customer Service for Europe, Middle East, and Asia



ANVIL®
INTERNATIONAL
Building Connections That Last

Rick van Meesen, *Sales Director* • The Netherlands
Tel: +31 53 5725570 • Fax: +31 53 5725579
U.S. Customer Service Tel: +1 708 534 1414

ANVIL INTERNATIONAL WORLDWIDE CUSTOMER SERVICE CENTER
English and Spanish Speaking Service Center (Se habla Español)
Tel: +1 708 534 1414 • Fax: +1 708 534 5441 • www.anvilintl.com



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

Figure 7046E Clamp-T® Grooved Branch

The Gruvlok® Clamp-T® provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The

maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

Clamp-T cross connections are available in most sizes allowing greater versatility in piping design.

Material Specifications:

- Housing:**
 Ductile Iron conforming to ASTM-A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.
- Coatings:**
 Rust inhibiting lead-free paint
 Color: Red (Standard)
 Hot Dipped Zinc Galvanized (Optional)
 For other coating requirements contact your Anvil Representative.
- ANSI Bolts and Heavy Hex Nuts:**
 Heat treated, oval-neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.
- U-Bolt:**
 Cold drawn steel and zinc plated.
- Stainless Steel Bolts and Nuts:**
 Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.
- Lubrication:**
 Standard Gruvlok
 Gruvlok Xtreme™ required for dry pipe systems and freezer applications.

- Gasket: Materials (Specify when ordering)**
 Properties as designated by ASTM D2000.

Grade "E" EPDM (Standard)

Green color code

Service Temperature Range: -40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Optional)

Orange color code

Service Temperature Range: -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size	Fig. 7046 Grooved Branch	
	C.V. Value	Equiv. Pipe Length
In./DN/mm		FL/Meters
1 1/4	5.4	5.0
32		1.5
1 1/2	95	3.5
40		1.1
2	148	4.5
50		1.4
2 1/2	205	7.0
65		2.1
3	294	9.5
80		2.9
4	571	7.0
100		2.1

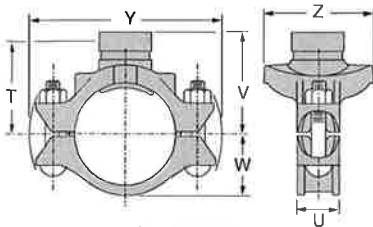


Fig. 7046E

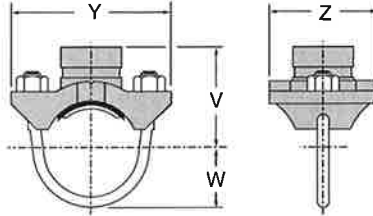


Fig. 7046E (U-Bolt)

WARNING
 For dry pipe systems and freezer applications lubrication of the gasket is required, Gruvlok® Xtreme™ Lubricant is required.

GRUVLOK® 7046E-GROOVED BRANCH

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions					Bolt Size	Specified Torque		Approx. Wt. Each
		Min. Diameter	Max. Diameter		U	V Grooved	W	Y	Z		Min.	Max.	
in./DN(mm)	in./mm	in./mm	in./mm	psi/bar	in./mm	in./mm	in./mm	in./mm	in./mm	in./mm	Ft.-Lbs/N-M		Lbs./Kg
2½ x 1¼• 65 x 32	2.875 x 1.660 73.0 x 42.4	2 51	2¼ 54	500 34.5	9/16 14	3¼ 79	1¼ 44	6¼ 156	3½ 89	½ U-Bolt	30	40	3.4 1.5
2½ x 1½ 65 x 40	2.875 x 1.900 73.0 x 48.3	2 51	2¼ 54	500 34.5	9/16 14	3½ 79	1¼ 44	6¼ 156	3½ 89	½ U-Bolt	30	40	3.4 1.5
3 x 1¼ 80 x 32	3.500 x 1.660 88.9 x 42.4	2 51	2¼ 54	500 34.5	1½ 38	3½ 89	2¼ 54	6¼ 175	3¾ 95	½ x 2¾	80	100	3.4 1.5
3 x 1½ 80 x 40	3.500 x 1.900 88.9 x 48.3	2 51	2¼ 54	500 34.5	1½ 38	3½ 89	2¼ 54	6¼ 175	3¾ 95	½ x 2¾	80	100	4.4 2.0
3 x 2 80 x 50	3.500 x 2.375 88.9 x 60.3	2½ 64	2¾ 67	500 34.5	1½ 38	3½ 89	2¼ 54	6¼ 175	4¼ 105	½ x 2¾	80	100	4.6 2.1
4 x 1¼ 100 x 32	4.500 x 1.660 114.3 x 42.4	2 51	2¼ 54	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	3¾ 95	½ x 2¾	80	100	4.2 1.9
4 x 1½ 100 x 40	4.500 x 1.900 114.3 x 48.3	2 51	2¼ 54	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	3¾ 95	½ x 2¾	80	100	4.3 2.0
4 x 2 100 x 50	4.500 x 2.375 114.3 x 60.3	2½ 64	2¾ 67	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	4¼ 105	½ x 2¾	80	100	4.6 2.1
4 x 2½ 100 x 65	4.500 x 2.875 114.3 x 73.0	2¾ 70	2¾ 73	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	4¾ 111	½ x 2¾	80	100	5.0 2.3
4 x 3 O.D. 114.3 x 76.1	4.500 x 2.996 114.3 x 76.1	2¾ 70	2¾ 73	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	4¾ 111	½ x 2¾	80	100	5.0 2.3
4 x 3 100 x 80	4.500 x 3.500 114.3 x 88.9	3½ 89	3¾ 92	500 34.5	1¾ 48	4 102	2½ 67	7¼ 191	5¼ 133	½ x 3½	80	100	5.6 2.5
5 x 1¼ 125 x 32	5.563 x 1.660 141.3 x 42.4	2 51	2¼ 54	500 34.5	1¾ 48	4¼ 108	3¼ 83	9¼ 232	3¾ 95	½ x 2¾	80	100	5.6 2.5
5 x 1½ 125 x 40	5.563 x 1.900 141.3 x 48.3	2 51	2¼ 54	500 34.5	1¾ 48	4¼ 108	3¼ 83	9¼ 232	3¾ 95	½ x 2¾	80	100	5.6 2.5
5 x 2 125 x 50	5.563 x 2.375 141.3 x 60.3	2½ 64	2¾ 67	500 34.5	1¾ 48	4¼ 108	3¼ 83	9¼ 232	4¼ 105	¾ x 3¼	100	130	5.5 2.5
5 x 2½ 125 x 65	5.563 x 2.875 141.3 x 73.0	2¾ 70	2¾ 73	500 34.5	1¾ 48	4¼ 108	3¼ 83	9¼ 232	4¾ 111	¾ x 3¼	100	130	5.8 2.6
5 x 3 125 x 80	5.563 x 3.500 141.3 x 88.9	3½ 89	3¾ 92	500 34.5	1¾ 48	4¾ 117	3¼ 83	9¼ 232	5¼ 133	¾ x 3¼	100	130	7.1 3.2
6 x 1½ 150 x 40	6.625 x 1.900 168.3 x 48.3	2 51	2¼ 54	500 34.5	2 51	5 127	3¾ 98	10¼ 257	3¾ 95	¾ x 4¼	100	130	7.2 3.3
6 x 2 150 x 50	6.625 x 2.375 168.3 x 60.3	2½ 64	2¾ 67	500 34.5	2 51	5 127	3¾ 98	10¼ 257	4¼ 105	¾ x 4¼	100	130	7.8 3.5
6 x 2½ 150 x 65	6.625 x 2.875 168.3 x 73.0	2¾ 70	2¾ 73	500 34.5	2 51	5¼ 130	3¾ 98	10¼ 257	4¾ 111	¾ x 4¼	100	130	7.6 3.4
6 x 3 O.D. 168.3 x 76.1	6.625 x 2.996 168.3 x 76.1	2¾ 70	2¾ 73	500 34.5	2 51	5¼ 130	3¾ 98	10¼ 257	4¾ 111	¾ x 4¼	100	130	7.6 3.4
6 x 3 150 x 80	6.625 x 3.500 168.3 x 88.9	3½ 89	3¾ 92	500 34.5	2 51	5¼ 130	3¾ 98	10¼ 257	5¼ 133	¾ x 4¼	100	130	8.0 3.6
6 x 4 150 x 100	6.625 x 4.500 168.3 x 114.3	4¼ 114	4¾ 117	500 34.5	2 51	5¼ 133	3¾ 98	10¼ 257	6¼ 165	¾ x 4¼	100	130	10.4 4.7
8 x 2 200 x 50	8.625 x 2.375 219.1 x 60.3	2½ 64	2¾ 67	500 34.5	2¼ 57	6¼ 156	5 127	12¾ 324	4¼ 108	¾ x 4½	130	180	10.4 4.7
8 x 2½ 200 x 65	8.625 x 2.875 219.1 x 73.0	2¾ 70	2¾ 73	500 34.5	2¼ 57	6¼ 156	5 127	12¾ 324	4¾ 111	¾ x 4½	130	180	10.6 4.8
8 x 3 200 x 80	8.625 x 3.500 219.1 x 88.9	3½ 89	3¾ 92	500 34.5	2¼ 57	6¼ 156	5 127	12¾ 324	5¼ 133	¾ x 4½	130	180	11.5 5.2
8 x 4 200 x 100	8.625 x 4.500 219.1 x 114.3	4¼ 114	4¾ 117	500 34.5	2¼ 57	6¼ 159	5 127	12¾ 324	6¼ 165	¾ x 4½	130	180	16.2 7.3

NOTE: 2 ½", 5" and 6" Nom. size run pipe may be used on 3" O.D., 5 ½" O.D. and 6 ½" O.D. pipe

▼ Based on use with standard wall pipe.

Not for use in copper systems.

• Cannot be used in cross configuration.

Customer Service for Europe, Middle East, and Asia



Rick van Meesen, Sales Director • The Netherlands
 Tel: +31 53 5725570 • Fax: +31 53 5725579
 U.S. Customer Service Tel: +1 708 534 1414

ANVIL INTERNATIONAL WORLDWIDE CUSTOMER SERVICE CENTER
English and Spanish Speaking Service Center (Se habla Español)
 Tel: +1 708 534 1414 • Fax: +1 708 534 5441 • www.anvilintl.com



Data Sheet
7047, 7048, 7049

Figure 7047, 7048, 7049 Clamp-T® Crosses



Fig. 7047



Fig. 7048



Fig. 7049

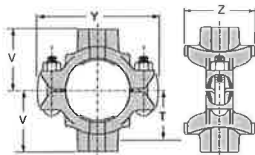


Fig. 7047
Thread x Thread

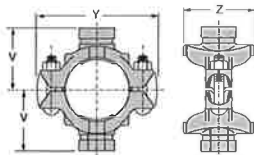


Fig. 7048
Groove x Groove

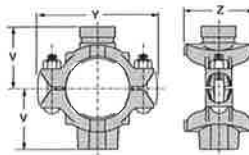


Fig. 7049
Groove x Thread

The Gruvlok® Clamp-T® provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available allowing greater versatility in piping design.

NOTE: 2½" x 1¼" Figure 7046 cannot be used in cross configuration.

Not for use in copper systems.



For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.



Fig. 7047 Cross – thread by thread
Configuration built from Clamp Tee Fig. 7045E + Fig. 7045E

Fig. 7048 Cross – groove by groove
Configuration built from Clamp Tee Fig. 7046E + Fig. 7046E

Fig. 7049 Cross – thread by groove
Configuration built from Clamp Tee Fig. 7045E + Fig. 7046E

Material Specifications:

- **Housing:**
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.
- **Coatings:**
Rust inhibiting lead-free paint
Color: Red (Standard)
Hot Dipped Zinc Galvanized (Optional)
For other coating requirements contact your Anvil Representative.
- **ANSI Bolts and Heavy Hex Nuts:**
Heat treated, oval-neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.
- **U-Bolt:**
Cold drawn steel and zinc plated.
- **Stainless Steel Bolts and Nuts:**
Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.
- **Lubrication:**
Standard Gruvlok
Gruvlok Xtreme™ required for dry pipe systems and freezer applications.
- **Gasket: Materials (Specify when ordering)**
Properties as designated by ASTM D2000.
 - Grade "E" EPDM (Standard)**
Green color code
Service Temperature Range: -40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.
 - Grade "T" Nitrile (Optional)**
Orange color code
Service Temperature Range: -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Customer Service for Europe, Middle East, and Asia



ANVIL
INTERNATIONAL
Building Connections That Last

Rick van Meesen, Sales Director • The Netherlands
Tel: +31 53 5725570 • Fax: +31 53 5725579
U.S. Customer Service Tel: +1 708 534 1414

ANVIL INTERNATIONAL WORLDWIDE CUSTOMER SERVICE CENTER
English and Spanish Speaking Service Center (Se habla Español)
Tel: +1 708 534 1414 • Fax: +1 708 534 5441 • www.anvilintl.com



Sizes 2" - 12"



Sizes 14" - 24"



APPROVED
For Listing/Approval Details and Limitations
visit our website www.anvilinc.com or contact
an Anvil/AnvilStar™ Sales Representative.

Figure 7012E Gruvlok® Flange

The Gruvlok® Fig. 7012E Flange allows direct connection of PN10/16 flanged components to a grooved piping system. The two interlocking halves of the 2" thru 12" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

The 14" thru 24" sizes of the Gruvlok Fig. 7012E Flange are cast in four segments. A sleek profile gasket design

allows quick and easy assembly of the Gruvlok Flange onto the pipe.

All Gruvlok Fig. 7012E Flanges have designed-in anti-rotation fins which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

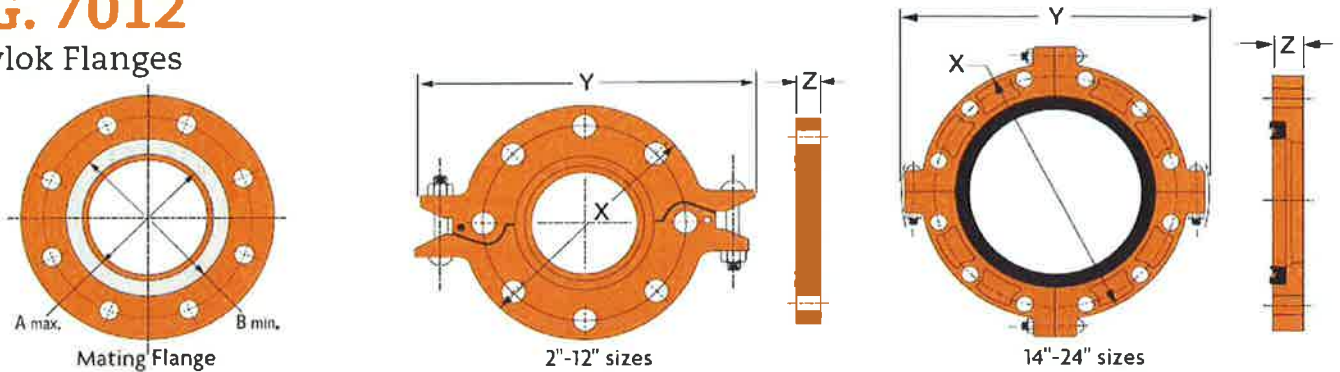
The Gruvlok Fig. 7012E Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces. In copper systems a phenolic adapter insert is required, in place of the steel adapter insert. (See Installation and Assembly Instructions Section or contact your Anvil Rep. for details.)

Material Specifications:

- **Housing:**
Ductile Iron conforming to ASTM-A536, Grade 65-45-12
- **Coatings:**
Rust inhibiting lead-free paint
Color: Orange (Standard), Red (Optional)
Hot Dipped Zinc Galvanized (Optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other coating requirements contact your Anvil Representative.
- **Latch Bolt/Nut (2" - 12"):**
Segment Bolt/Nut (14" - 24"):
Heat treated, zinc electroplated, carbon steel oval neck track bolts conforming to ASTM A 183 and zinc electroplated heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2.
- **Metric Bolts and Heavy Hex Nuts:**
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.
- **Stainless Steel Bolts and Nuts:**
Stainless steel bolts and nuts are also available. Contact your Anvil Representative for more information.
- **Lubrication:**
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")
- **Gasket: Materials (Specify when ordering)**
Properties as designated by ASTM D-2000.
Grade "E" EPDM
Green color code • NSF 61 Certified
Service Temperature Range: -40°F to +230°F (-40°C to +110°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.
Grade "T" Nitrile (Optional)
Orange color code
Service Temperature Range: -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum applications, air with oil vapors, vegetable and mineral oils.
NOT FOR USE IN HOT WATER.

FIG. 7012

Gruvlok Flanges



GRUVLOK 7012E FLANGE: ANSI CLASS 150 OR ISO PN10 OR PN16 BOLT PATTERNS

Nominal Size	O.D.	Max. Working Pressure ▼	Max. End Load ▼	Latch Bolt		Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.	
				Latch Bolt Size	Specified Torque		X	Y	Z	A Max.	B Min.	Mating Flange Bolts		Specified Torque		
					Min.	Max.						Qty. ANSI	Size (ANSI)	Min.		Max.
2	2.375	300	1,329	3/8 x 2 3/4	30	45	6 1/4	8 3/8	3/4	2 1/2	3 7/16	4	3/8 x 2 3/4	110	140	4.2
50	60.3	20.7	5.91	M10 x 70	40	60	159	213	19	60	87	4	M16 x 70	150	190	1.9
2 1/2	2.875	300	1,948	3/8 x 2 3/4	30	45	7	9 1/2	3/4	2 1/2	4	4	3/8 x 2 3/4	110	140	4.6
65	73.0	20.7	8.66	M10 x 70	40	60	178	241	19	73	102	-	M16 x 70	150	190	2.1
3 O.D.	2.996	300	2.115	-	30	45	7 1/4	9 3/4	3/4	3	4 1/2	-	-	110	140	4.8
76.1	76.1	20.7	9.41	M10 x 70	40	60	184	248	19	76	105	4	M16 x 70	150	190	2.2
3	3.500	300	2,886	3/8 x 2 3/4	30	45	7 1/8	10 1/2	3/4	3 1/2	4 5/16	4	3/8 x 2 3/4	110	140	6.0
88.9	88.9	20.7	12.84	M10 x 70	40	60	200	267	19	89	116	8	M16 x 70	150	190	2.7
4	4.500	300	4,771	3/8 x 2 3/4	30	45	9	11 1/2	3/4	4 1/2	5 5/16	8	3/8 x 2 3/4	110	140	6.3
100	114.3	20.7	21.22	M10 x 70	40	60	229	292	19	114	141	8	M16 x 70	150	190	2.9
5 1/2 O.D.	5.500	300	7.127	-	30	45	9 7/8	12 7/8	7/8	5 3/8	6 3/4	-	-	220	250	15.6
139.7	139.7	20.7	31.70	M10 x 70	40	60	251	327	22	141	171	8	M16 x 75	300	340	7.1
5	5.563	300	7,292	3/8 x 2 3/4	30	45	10	12 1/2	7/8	5 5/16	6 3/4	8	3/4 x 2 3/8	220	250	8.8
125	141.3	20.7	32.44	M10 x 70	40	60	254	318	22	141	171	-	-	300	340	4.0
6 1/2 O.D.	6.500	300	9.955	-	30	45	11 1/4	14	7/8	6 3/8	7 9/16	-	-	220	250	9.7
165.1	165.1	20.7	44.28	M10 x 70	40	60	286	356	22	168	198	8	M20 x 80	300	340	4.4
6	6.625	300	10,341	3/8 x 2 3/4	30	45	11	14	7/8	6 5/8	7 13/16	8	3/4 x 3 1/8	220	250	9.6
150	168.3	20.7	46.00	M10 x 70	40	60	279	356	22	168	198	8	M20 x 80	300	340	4.4
8	8.625	300	17,528	3/8 x 2 3/4	30	45	13 1/2	16 1/2	1	8 5/8	10	8	3/4 x 3 1/4	220	250	15.6
200	219.1	20.7	77.97	M10 x 70	40	60	343	419	25	219	254	8 (12)	M20 x 80	300	340	7.1
10	10.750	300	27,229	3/8 x 2 3/4	30	45	16	19	1	10 3/4	12 1/2	12	7/8 x 3 1/2	320	400	18.2
250	273.1	20.7	121.12	M10 x 70	40	60	406	483	25	273	308	12	M20 x 90	430	540	8.3
12	12.750	300	38,303	3/8 x 2 3/4	30	45	19	21 1/4	1 1/4	12 3/4	14 1/8	12	7/8 x 3 3/4	320	400	29.9
300	323.9	20.7	170.38	M10 x 70	40	60	483	552	32	324	359	12	-	430	540	13.6
12 (PN)	12.750	300	38.303	-	30	45	18 1/2	21 1/4	1	12 3/4	14 1/8	12	-	320	400	20.9
300	323.9	20.7	170.38	M10 x 70	40	60	460	540	25	324	359	12	M20 x 90 +	430	540	9.5
14	14.000	300	46,181	3/8 x 4 1/4	100	130	21	24	1 1/2	14	16	12	1 x 4 1/4	360	520	52.5
350	355.6	20.7	205.43	-	135	175	533	610	38	356	406	-	-	490	700	23.8
16	16.000	300	60,319	3/8 x 4 1/4	100	130	23 1/2	26 1/2	1 1/2	16	18	16	1 x 4 1/4	360	520	67.0
400	406.4	20.7	268.31	-	135	175	597	673	38	406	457	-	-	490	700	30.4
18	18.000	300	76,341	3/4 x 5	130	180	25	29	1 5/8	18	20	16	1 1/8 x 4 3/4	450	725	82.5
450	457.2	20.7	339.58	-	175	245	635	737	41	457	508	-	-	610	980	37.4
20	20.000	300	94,248	3/4 x 5	130	180	27 1/2	31 1/2	1 3/4	20	22	20	1 1/8 x 4 3/4	450	725	106.5
500	508.0	20.7	419.23	-	175	245	699	800	44	508	559	-	-	610	980	48.3
24	24.000	250	113,097	7/8 x 5 1/2	180	220	32	36 1/2	1 7/8	24	26	20	1 1/4 x 5 1/2	620	1,000	138.5
600	609.6	17.2	503.08	-	245	300	813	927	48	610	660	-	-	840	1,350	62.8

+ PN 16 uses M24 x 90 (PN) Dimensions for bolt circle PN 10 & 16 Flange.

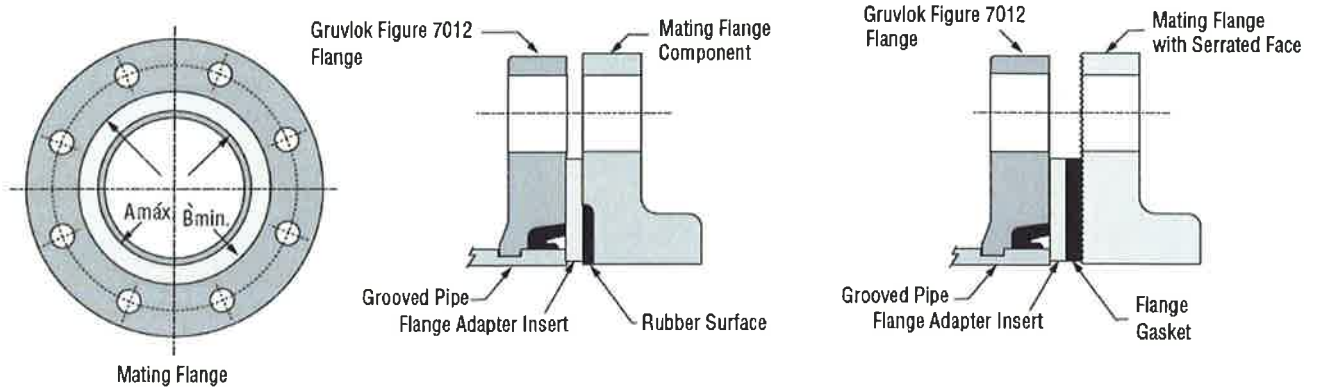
* Available in ANSI or metric bolt sizes only as indicated.

▼ Based on use with standard wall pipe.

The Gruvlok Flange bolt hole pattern conforms to ANSI Class 150 and Class 125 flanges.

To avoid interference issues, flanges cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve only.

Mating flange bolts must be at least Intermediate Strength Bolting per ASME B16.5. Bolts with material properties equal or greater than SAE J429 Grade 5 are acceptable.



- A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.
- B. Gruklok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.
- C. Do not use Gruklok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.
- D. Gruklok Flanges should not be used as anchor points for tierods across non-restrained joints.
- E. Fig. 7012E Gruklok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruklok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruklok Flange Adapter Insert is installed between the Gruklok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.
- F. Gruklok Flanges are not recommended for use against formed rubber flanges.
- G. Contact Gruklok for Di-Electric Flange connections.

Applications which require a Gruklok Flange Adapter Insert:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruklok Flange Adapter Insert between the valve and the Gruklok flange.
2. When mating to a rubber-faced metal flange, the Gruklok Flange Adapter Insert is placed between the Gruklok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruklok Flange Adapter Insert is placed between the Gruklok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.



Data Sheet 7074E

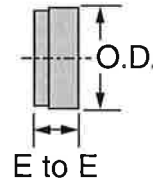


For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

Figure 7074E Cap

Material Specifications:

- Cast Fittings:**
Ductile Iron conforming to ASTM A-536
Malleable Iron conforming to ASTM A-47
- Fabricated Fittings:**
1-10" Carbon steel, Schedule 40, conforming to ASTM A-53, Grade B.
12" and above Carbon steel, Standard Wall, conforming to ASTM A-53, Grade B.
- Coatings:**
Rust inhibiting lead-free paint - Color: Red (Standard)
Hot Dipped Zinc Galvanized conforming to ASTM A-153 (Optional)
For other coating requirements contact your Anvil Representative.



GRUVLOK® 7074E CAP							
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg	In./DN(mm)	In./mm	In./mm	Lbs./Kg
1 •	1.315	1 1/4	.3	5 •	5.563	1 1/8	4.0
25	33.4	32	.1	125	141.3	29	1.8
1 1/4 •	1.660	1 1/4	0.4	8 1/4 O.D. *	6.259	1 1/2	5.1
32	42.2	32	0.2	159.0	159.0	29	2.3
1 1/2 •	1.900	1 1/4	0.5	6 1/2 O.D. *	6.500	1 1/2	6.0
40	48.3	32	0.2	165.1	165.1	29	2.7
2 •	2.375	1	0.5	6 •	6.625	1 1/8	6.0
50	60.3	25	0.2	150	168.3	33	2.7
2 1/2 •	2.875	1	0.7	8 •	8.625	1 1/2	12.5
65	73.0	25	0.3	200	219.1	38	5.7
3 O.D. *	2.996	1	0.8	10 •	10.750	1 1/2	21.9
76.1	76.1	25	0.4	250	273.1	38	9.9
3 •	3.500	1	1.1	12 •	12.750	1 1/2	33.8
80	88.9	25	0.5	300	323.9	38	15.3
3 1/2 •	4.000	1	1.4	14* 350	14.000 355.6	8 1/2 216	40 18.1
90	101.6	25	0.6	16* 400	16.000 406.4	9 229	45 20.4
4 1/4 O.D. *	4.250	1 1/8	2.0	18* 450	18.000 457.2	10 254	58 26.3
108.0	108.0	29	0.9	20* 500	20.000 508.0	11 279	79 35.8
4 •	4.500	1 1/8	2.8	24* 600	24.000 609.6	12 1/2 318	100 45.4
100	114.3	29	1.3				
5 1/4 O.D. *	5.236	1 1/2	3.2				
133.0	133.0	29	1.5				
5 1/2 O.D. *	5.500	1 1/2	4.0				
139.7	139.7	29	1.8				

Sizes continue in next column

* Machined Cap
• - Cast malleable or ductile iron, all others are fabricated steel.

Customer Service for Europe, Middle East, and Asia



Rick van Meesen, Sales Director • The Netherlands
Tel: +31 53 5725570 • Fax: +31 53 5725579
U.S. Customer Service Tel: +1 708 534 1414

ANVIL INTERNATIONAL WORLDWIDE CUSTOMER SERVICE CENTER
English and Spanish Speaking Service Center (Se habla Español)
Tel: +1 708 534 1414 • Fax: +1 708 534 5441 • www.anvilintl.com

GRUVLOK® LUBRICANTS

GRUVLOK® XTREME™ LUBRICANT

Gruvlok® Xtreme™ Lubricant has been developed for use with Gruvlok couplings in services where improved lubrication is beneficial. This lubricant has an operating temperature range from -65°F to 400°F (-53.8°C to 204°C), well exceeding the temperature range of Gruvlok gaskets. This lubricant is waterproof, thereby eliminating water wash-out and it will not dry out in the absence of water. There are five primary applications where the Xtreme Lubricant will provide increased benefits: low temperature applications below -20°F (-28.0°C), high temperature applications above 150°F (65.6°C), applications where increased pipe joint flexibility is needed, lubrication of gaskets in copper systems, and for the lubrication of gaskets on HDPE couplings. Since it is formulated from a non-hydro carbon base, it can be used with EPDM, Nitrile and Fluoroelastomer gasket materials. **It is not to be used with Silicone gaskets.**

- In low temperature applications the gasket will shrink, thereby lowering the sealing force on the gasket sealing lips. The temperature change will also force the gasket to slightly reposition itself. This will cause pipe end sealing surfaces, with small cuts or damage, to become more susceptible to leakage. Gruvlok Xtreme Lubricant will maintain its lubricating properties at lower temperatures allowing a properly lubricated pipe end and gasket (assembly) to reposition itself during temperature cycles.
- For high temperature service and copper systems, it is required that the gasket be lubricated not only on the outside, as with the normal installation of a Gruvlok gasket, but also on the inside. Lubrication on the inside of the gasket is easily accomplished by turning the gasket inside out and applying the lubricant. Gruvlok Xtreme Lubricant will maintain its lubricating properties at higher temperatures, allowing a properly lubricated pipe end and gasket assembly to re-position itself during temperature cycles. Lubrication of the pipe end and gasket will help the gasket to adjust into the proper sealing position during temperature cycles. The lubricant on the interior of the gasket will act to improve the chemical resistance of the gasket material by providing a thin lubricant barrier between the piping system fluid and the gasket surface. This is particularly important at higher temperatures where oxidizing agents in the piping system become more aggressive. **However, gasket chemical compatibility must still be considered.**
- The Gruvlok Xtreme Lubricant has been formulated from low viscosity, non-petroleum based oils to ease spreading of the lubricant. In applications where pipe movement is expected, proper lubrication of the gasket's exterior assists the gasket into the proper sealing position as pipe system movement occurs. This lubricating film enhances our flexible coupling gasket's ability to compensate for axial, transverse and rotational pipe movements.



- Gruvlok Xtreme Lubricant is the only Gruvlok lubricant that is to be used with Gruvlok couplings and gaskets in HDPE and copper piping systems. Its low temperature capability and lubricity ensure a highly reliable connection.

Gruvlok® Xtreme™ Lubricant is a Teflon® fortified white, tasteless and odorless grease made from Silicone Oil and other ingredients that are safe to ingest. It is sanctioned by the FDA under C.F.R. 21.172.878 & 21.177.1550 (Incidental Food Contact). It is NSF approved for use with potable water.

CAUTION: Silicone based lubricants are not allowed in some facilities. ®Teflon is a registered trademark of Dupont.

GRUVLOK® QUICK DRY LUBRICANT

Gruvlok® Quick Dry Lubricant is a fast drying lubricant that has been developed for applications where the piping system is exposed. The service temperature range for this lubricant is from 0° F to 150° F (-17.8°C to 65.6°C) and may be used with all Gruvlok gasket material grades. The lubricant is made from a water emulsion that is non-toxic, it will not impart taste or odor, and does not support bacterial growth. Gruvlok Quick Dry Lubricant is non-corrosive, non-flammable, and is NSF approved for use with potable water.

This lubricant is easy to apply by brush or hand, and it quickly dries to a thin film when in contact with air. It is water-soluble. The quick drying quality of the lubricant eliminates lubricant drips caused by over lubrication. If necessary, reapply lubricant prior to assembly. Do not thin or mix with solvents.

GRUVLOK® LUBRICANT

Gruvlok® Lubricant is the standard lubricant that has been provided for use with Gruvlok products for years. Gruvlok Lubricant is water soluble, non-toxic, non-corrosive, non-flammable, and will not impart taste or odor. It is NSF approved for use with potable water. This lubricant is acceptable for most applications, however, the Gruvlok Xtreme Lubricant and Gruvlok Quick Dry Lubricant are now available to improve the performance of the couplings and flanges in certain applications.

CAUTION: HDPE pipe requires the use of Gruvlok Xtreme Lubricant and should not be used with Gruvlok Lubricant.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an Impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling 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.

NOTE: Use specified bolt torque unless otherwise indicated on product installation pages.

ANSI SPECIFIED BOLT TORQUE			METRIC SPECIFIED BOLT TORQUE		
Bolt Size	Wrench Size	Specified Bolt Torque *	Bolt Size	Wrench Size	Specified Bolt Torque *
<i>In.</i>	<i>In.</i>	<i> Ft.-Lbs.</i>	<i>mm</i>	<i>mm</i>	<i>N-m</i>
3/8	1 1/16	30-45	M10	16	40-60
1/2	3/8	80-100	M12	22	110-150
5/8	1 1/16	100-130	M16	24	135-175
3/4	1/4	130-180	M20	30	175-245
7/8	1 1/16	180-220	M22	34	245-300
1	1 1/8	200-250	M24	36	270-340
1 1/8	1 3/16	225-275			
1 1/4	2	250-300			

* Non-lubricated bolt torques

* Non-lubricated bolt torques

DESIGN FACTORS

MOVEMENT:

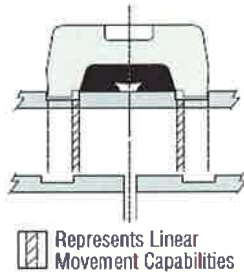
Each flexible design Gruvlok coupling can provide for pipe system movement up to the design maximum for the specific size and type coupling being utilized. Movement is possible in the Gruvlok coupling due

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.

LINEAR MOVEMENT:

FLEXIBLE COUPLING 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 Standard Gruvlok couplings is shown below:



LINEAR MOVEMENT		
Sizes	Roll Groove Pipe	Cut Groove Pipe
1" through 3 1/2"	1/16"	1/16"
4" through 24"	3/32"	3/16"

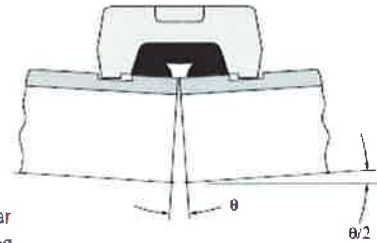
RIGID COUPLINGS

Gruvlok rigid couplings Fig. 7400, Fig. 7401 and Fig. 7004 HPR are designed to provide a joint with the attributes of a welded or flanged connection. Therefore, these joints would remain in strict alignment and would resist deflection and linear movement during service.

ANGULAR MOVEMENT:

FLEXIBLE COUPLING 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 Gruvlok 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

Sizes	ANGULAR MOVEMENT Design Factor	
	Roll Groove	Cut Groove
1" through 3 1/2"	Reduce 50%	Reduce 50%
4" through 24"	Reduce 50%	Reduce 25%

listed factors to account for pipe, groove and coupling tolerances.

FLEXIBLE COUPLINGS

Figs. 7000, 7001, 7003, 7010 are the flexible couplings provided in the Gruvlok product line. The following information on movement applies to these flexible couplings.

GRUVLOK GASKET-STYLES

Gruvlok offers a variety of pressure responsive gasket styles. Each serves a specific function while utilizing the same basic sealing concept. Proper installation of the gasket compresses the inclined gasket lips on the pipe O.D., forming a leaktight seal. This sealing action is reinforced when the gasket is encompassed and compressed by the coupling housings. The application of internal line pressure energizes the elastometric gasket and further enhances the gasket sealing action.



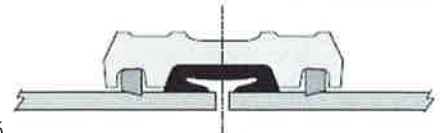
“C” STYLE

The “C” Style cross section configuration is the most widely used gasket. It is the gasket style provided as standard in many Gruvlok Couplings (Fig. 7000, 7001, 7003, 7004HPR, 7307, 7400 and 7401). Grade “E” and “T” are standard grades while other grades are available for special applications.



ROUGHNECK®

This “C” style gasket is similar in appearance and design to the Standard gasket but is only used with Fig. 7005 Roughneck Couplings and Fig. 7305 HDPE Couplings. The Roughneck gasket is wider, which allows for minor pipe end separation as line pressure sets the grippers into the plain end pipe.



END GUARD®

The projecting rib fits between the ends of lined pipe to prevent damage to unprotected pipe ends during coupling joint assembly.



The E.G. gasket is provided as standard with the Fig. 7004 E.G. Coupling.

Grade “E” and “T” gaskets are available.

FLUSH GAP®

Designed to prohibit contaminants from building up in the gasket cavity.

The centering rib fits flush over the gap between the two pipe ends thus closing off the gasket cavity. It can be used with Fig. 7000, 7001, 7003, 7004, 7400 and 7401 Couplings for many applications.

Recommended for use in dry fire protection systems. Not recommended for use at temperatures above 160°F.



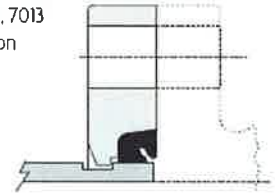
REDUCING COUPLING

The centering rib allows for pipe positioning and serves to keep the smaller pipe from telescoping during installation. Used only with the Fig. 7010 Reducing Coupling.



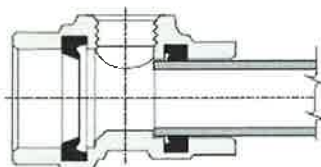
FLANGE

A specially designed gasket for the Fig. 7012, 7013 and 7312 Flange provides for a reliable seal on both the pipe and the mating flange.



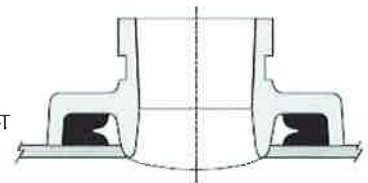
SOCK-IT®

Used in Sock-It fittings only, this pressure energized gasket provides a leak-tight seal on plain end seal pipe. Available in Grade “E” material only.



CLAMP-T®

These gaskets conform to the curved exterior of the pipe to provide a pressure responsive seal. This unique design is only used with Fig. 7045, 7046 Clamp-T and Fig. 7047, 7048, and 7049 Clamp-T Crosses.



GASKET GRADE INDEX & GASKET RECOMMENDATION



The lists are provided as an aid in selecting the optimum gasket grade for a specific application to assure the maximum service life.

The recommendations have been developed from current information supplied by manufacturers of the elastomers, technical publications, and industry applications. The information supplied should be considered as a basis for evaluation but not as a guarantee.

Selection of the optimum gasket grade for a specific service requires the consideration of many factors: primarily temperature, fluid concentration, and continuity of service. Unless otherwise noted, all gasket recommendations are based on 100°F (38°C) maximum temperature service condition. Where more than one gasket grade is shown, the preferred grade is listed first.

Combinations of fluids should be referred to a Gruklok Representative for an engineering evaluation and recommendation. In unusual or severe services, gasket materials should be subjected to simulated service conditions to determine the most suitable gasket grade.

Gasket recommendations apply only to Gruklok gaskets. Contact a Gruklok Representative for recommendations for services not listed. These listings do not apply to Gruklok Butterfly Valves.

All Gruklok products marked with UL/ULC Listed, FM approved VdS and/or LPC symbols are Listed/Approved with EPDM material. For other Listed/Approved materials, please contact a Gruklok Representative for more information.

GASKET GRADE INDEX

STANDARD GASKETS				
Grade	Temp. Range	Compound	Color Code	General Service Applications
E	-40°F to +230°F (-40°C to 110°C)	EPDM	Green	Water, dilute acids, alkalis, salts, and many chemical services not involving hydrocarbons, oils, or gases. Excellent oxidation resistance NOT FOR USE WITH HYDROCARBONS
T	-20°F to +180°F (-29°C to 82°C)	Nitrile (Buna-N)	Orange	Petroleum products, vegetable oils, mineral oils, and air contaminated with petroleum oils NOT FOR USE IN HOT WATER SERVICES

SPECIAL GASKETS				
Grade	Temp. Range	Compound	Color Code	General Service Applications
O	+20°F to +300°F (-20°C to 149°C)	Fluoro Elastomer	Blue	High temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated, hydrocarbons and lubricants
L	-40°F to +350°F (-40°C to 177°C)	Silicone	Red Gasket	Dry, hot air and some high temperature chemical services.
E Type A	-40°F to +150°F (-40°C to 66°C)	Pre-Lubricated	Violet	Wet & Dry (oil free air) Pipe in Fire Protection Systems. For dry pipe systems, Gruklok Xtreme™ Temperature Lubricant is required

GASKET RECOMMENDATION LISTING

WATER & AIR	
Service	Gasket Grade
Air, (no oil vapors) Temp. -40°F to 230°F (-40°C to 110°C)	E
Air, (no oil vapors) Temp. -40°F to 350°F (-40°C to 177°C)	L
Air, Oil vapor Temp. -20°F to 150°F (-29°C to 66°C)	T
Air, Oil vapor Temp. 20°F to 300°F (-7°C to 149°C)	O
Water, Temp to 150°F (66°C)	E/T
Water, Temp to 230°F (110°C)	E
Water, Acid Mine	E/T
Water, Chlorine	(E/O)
Water, Deionized	E/T
Water, Seawater	E/T
Water, Waste	E/T
Water, Lime	E/T

Where more than one gasket grade is shown the preferred gasket grade is listed first. Where the gasket grade is shown in parentheses, Contact a Gruklok Representative for an engineering evaluation and recommendation. Specify gasket grade when ordering. Use Gruklok lubricant on gasket. Check gasket color code to be certain it is recommended for the service intended.

PETROLEUM PRODUCTS	
Service	Gasket Grade
Crude Oil - Sour	T
Diesel Oil	T
Fuel Oil	T
Gasoline, Leaded	T
Gasoline, Unleaded*	(O)
Hydraulic Oil	T
JP-3, JP-4 and JP-5	T/O
JP-6, 100°F (38°C) Maximum Temp.	O
Kerosene	T
Lube Oil, to 150°F (66°C)	T
Motor Oil	T
Tar and Tar Oil	T
Transmission Fluid — Type A	O
Turbo Oil #15 Diester Lubricant	O

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions.

For services not listed, contact a Gruklok Representative for recommendation.

*Contact a Gruklok Representative for service evaluation.

VACUUM SERVICE

VACUUM SERVICE		
Size	Vacuum Level	Gasket Recommendation
1" - 6" (25 - 150mm)	0" - 29.92" Hg	Standard or Flush Gap
8" - 12" (200 - 300mm)	0" - 15 Hg	Standard or Flush Gap
1½" - 12" (40 - 200mm)	0" - 29.92 Hg	Flush Gap

LARGER SIZES: Contact a Gruklok Representative for more information.