

FIG. 7012

Gruvlok Flanges

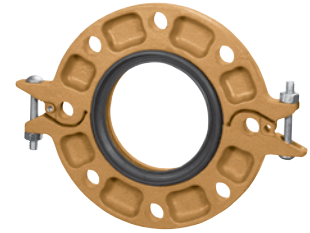


The Gruvlok® Fig. 7012 Flange allows direct connection of Class 125 or Class 150 flanged components to a grooved piping system. The two interlocking halves of the 2" thru 12" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the 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.

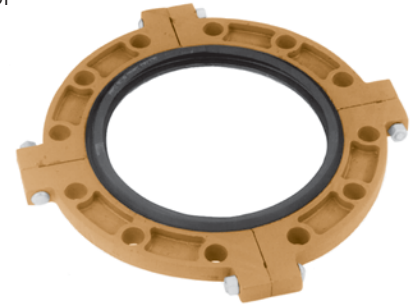
The 14" thru 24" sizes of the Gruvlok Fig. 7012 Flange are cast in four segments. A sleek profile gasket design allows quick and easy assembly of the Gruvlok Flange onto the pipe.

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

The Gruvlok Fig. 7012 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.)



Sizes 2" - 12"



Sizes 14" - 24"

MATERIAL SPECIFICATIONS

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 & 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.

HOUSING:

Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:

- ☐ Rust inhibiting paint – Color: ORANGE (standard), Red (optional)
- ☐ Hot Dipped Zinc Galvanized (optional)
- ☐ Other Colors Available (IE: RAL3000 and RAL9000)

For other Coating requirements contact an Anvil Representative.

GASKETS: Materials

Properties as designated in accordance with ASTM D 2000

- ☐ **Grade "E" EPDM** (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other 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.

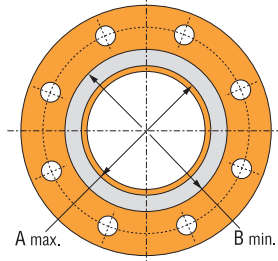
LUBRICATION:

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

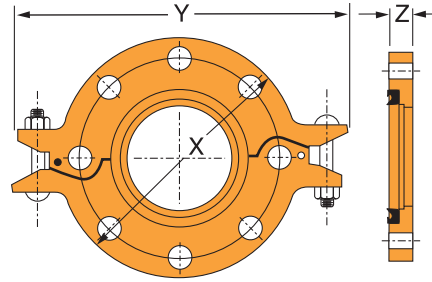
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Contractor:		<input type="checkbox"/> Not approved	
Engineer:		Remarks:	
Submittal Date:			
Notes 1:			
Notes 2:			

FIG. 7012

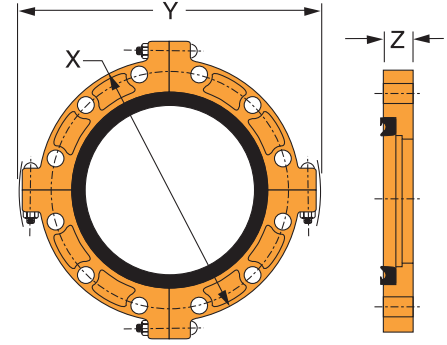
Gruvlok Flanges



Mating Flange



2"-12" sizes



14"-24" sizes

GRUVLOK FIGURE 7012 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		Bolt Circle Diameter	Bolt Hole Diameter	Specified Torque §		
					Min.	Max.						Qty. ANSI	Size (ANSI)			Min.	Max.	
In./DN(mm)	In./mm	PSI/bar	Lbs./kN	In./mm	Ft.-Lbs/N-m	In./mm	In./mm	In./mm	In./mm	In./mm	PN10 (16)	In. (ISO) mm	In./mm	In./mm	Ft.-Lbs/N-m	Lbs./Kg		
2	2.375	300	1,329	¾ x 2¾	30	45	6¼	8¾	¾	2¾	3⅞	4	⅝ x 2¾	4¾	¾	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	120.7	19.1	149	190	1.9
2½	2.875	300	1,948	¾ x 2¾	30	45	7	9½	¾	2⅞	4	4	⅝ x 2¾	5½	¾	110	140	4.6
65	73.0	20.7	8.66	M10 x 70	40	60	178	241	19	73	102	-	M16 x 70	139.7	19.1	149	190	2.1
3 O.D.	2.996	300	2,115	-	30	45	7¼	9¾	¾	3	4⅞	-	-	-	-	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	-	-	149	190	2.2
3	3.500	300	2,886	¾ x 2¾	30	45	7⅞	10½	¾	3½	4⅞	4	⅝ x 2¾	6	¾	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	152.4	19.1	149	190	2.7
4	4.500	300	4,771	¾ x 2¾	30	45	9	11½	¾	4½	5⅞	8	⅝ x 2¾	7½	¾	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	190.5	19.1	149	190	2.9
5½ O.D.	5.500	300	7,127	-	30	45	9⅞	12⅞	⅞	5⅞	6¾	-	-	-	-	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	-	-	298	339	7.1
5	5.563	300	7,292	¾ x 2¾	30	45	10	12½	⅞	5⅞	6¾	8	¾ x 2⅞	8½	⅞	220	250	8.8
125	141.3	20.7	32.44	M10 x 70	40	60	254	318	22	141	171	-	-	215.9	22.2	298	339	4.0
6½ O.D.	6.500	300	9,955	-	30	45	11¼	14	⅞	6⅝	7⅞	-	-	-	-	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	-	-	298	339	4.4
6	6.625	300	10,341	¾ x 2¾	30	45	11	14	⅞	6⅝	7⅞	8	¾ x 3⅞	9½	⅞	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	241.1	22.2	298	339	4.4
8	8.625	300	17,528	¾ x 2¾	30	45	13½	16½	1	8⅝	10	8	¾ x 3¼	11¾	⅞	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	298.5	22.2	298	339	7.1
10	10.750	300	27,229	¾ x 2¾	30	45	16	19	1	10¾	12⅞	12	⅞ x 3½	14¼	1	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	362.0	25.4	439	542	8.3
12	12.750	300	38,303	¾ x 2¾	30	45	19	21¾	1¼	12¾	14⅞	12	⅞ x 3¾	17	1	320	400	29.9
300	323.9	20.7	170.38	M10 x 70	40	60	483	552	32	324	359	12	-	431.8	25.4	439	542	13.6
12 (PN)	12.750	300	38,303	-	30	45	18⅞	21¼	1	12¾	14⅞	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 +	-	-	439	542	9.5
14	14.000	300	46,181	⅝ x 4¼	100	130	21	24	1½	14	16	12	1 x 4¼	18¾	1⅞	360	520	52.5
350	355.6	20.7	205.43	-	136	176	533	610	38	356	406	-	-	476.3	28.6	488	705	23.8
16	16.000	300	60,319	⅝ x 4¼	100	130	23½	26½	1½	16	18	16	1 x 4¼	21¼	1⅞	360	520	67.0
400	406.4	20.7	268.31	-	136	176	597	673	38	406	457	-	-	539.8	28.6	488	705	30.4
18	18.000	300	76,341	¾ x 5	130	180	25	29	1⅝	18	20	16	1⅞ x 4¾	22¾	1¼	450	725	82.5
450	457.2	20.7	339.58	-	176	244	635	737	41	457	508	-	-	577.9	31.8	610	983	37.4
20	20.000	300	94,248	¾ x 5	130	180	27½	31½	1¾	20	22	20	1⅞ x 4¾	25	1¼	450	725	106.5
500	508.0	20.7	419.23	-	176	244	699	800	44	508	559	-	-	635.0	31.8	610	983	48.3
24	24.000	250	113,097	⅞ x 5½	180	220	32	36½	1⅞	24	26	20	1¼ x 5½	29½	1⅞	620	1,000	138.5
600	609.6	17.2	503.08	-	244	298	813	927	48	610	660	-	-	749.3	34.92	841	1,356	62.8

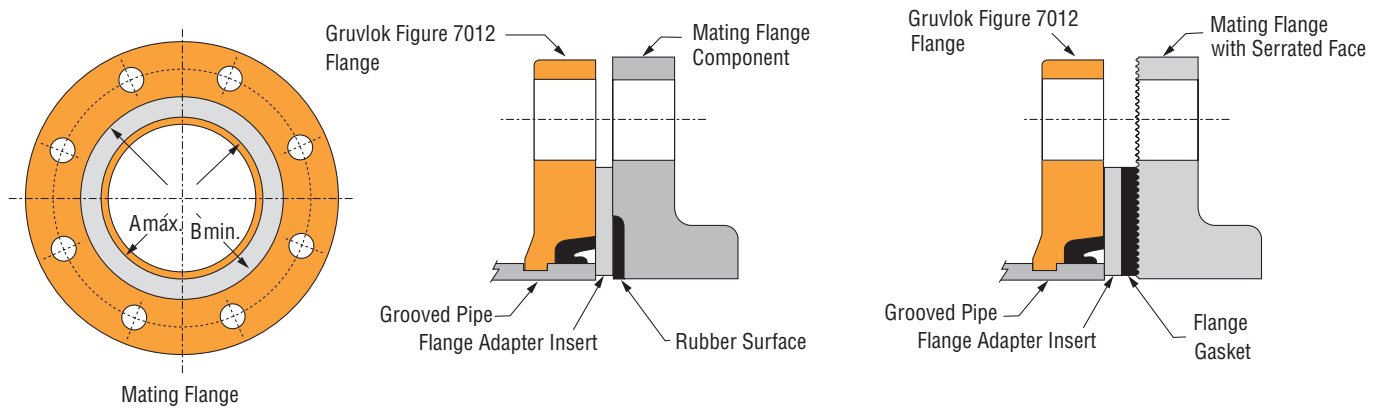
NOTES:

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.
Refer to Gruvlok Products Catalog or Anvil's web site for more information on installing this flange.

For additional details see "Coupling Data Chart Notes" on page 17.
+ 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.
§ - For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 164-166.

FIG. 7012

Gruvlok Flanges



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

Applications which require a Gruvlok Flange Adapter Insert (page 47):

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 Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok 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 Gruvlok Flange Adapter Insert is placed between the Gruvlok 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.

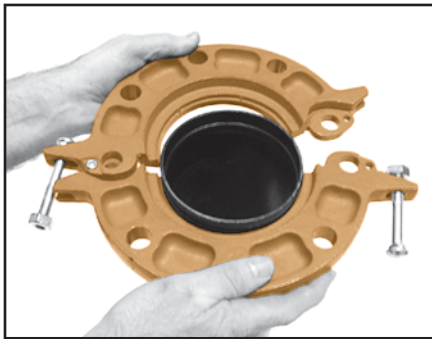
FIG. 7012

Gruvlok Flange (2"-12")

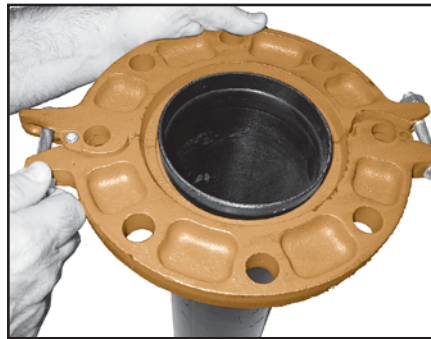
APPLICATIONS WHICH REQUIRE A GRUVLOK® FLANGE ADAPTER INSERT:

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 Gruvlok Flange Adapter Insert between the valve and the Gruvlok Flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok 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 Gruvlok Flange Adapter Insert is placed between the Gruvlok 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.

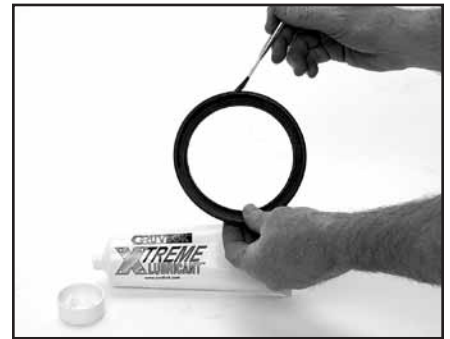
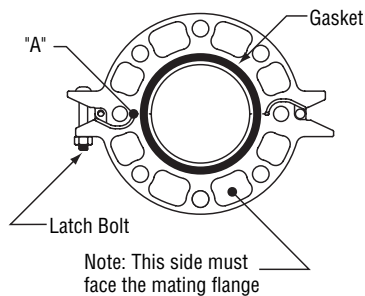
Check pipe end for proper grooved dimensions and to assure that the pipe end is free of indentations and projections that would prevent proper sealing of the Gruvlok flange gasket.



1 INSTALL HOUSINGS—On the side without the hinge pin, loosen the latch bolt nut to the end of the bolt thread. (It is not necessary to remove the nut from the latch bolt.) Swing the latch bolt out of the slot. Open the Gruvlok Flange and place around the grooved pipe end with the key section fitting into the groove. The flange gasket cavity must face the pipe end.



2 LATCH HOUSINGS—Place the latch bolt back into the slotted hole. Tighten the nut until there is a $\frac{1}{16}$ " gap between the flange halves at location "A". (See Figure below)



3 CHECK & LUBRICATE GASKET—Check the gasket to assure that it is properly suited for the intended service. Lubricate the entire exterior surface of the gasket, including the sealing lips, using the proper Gruvlok lubricant.

WARNING

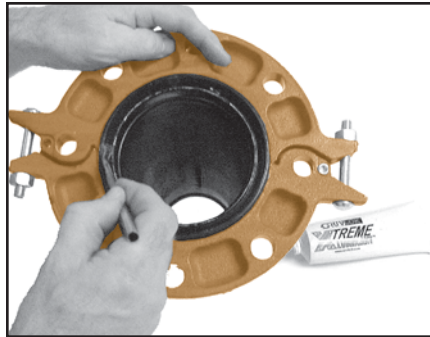
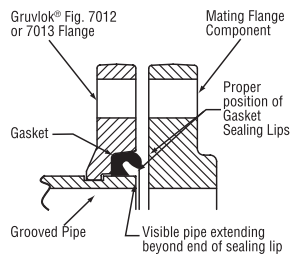
The Gruvlok Flange gasket must be inserted so that the sealing lips face toward the pipe end and the mating flange. The lip of the gasket, sealing on the pipe, should not extend beyond the pipe end. The pipe should extend out beyond the end of the sealing lip by approximately $\frac{1}{8}$ " on the 2"-6" sizes and $\frac{3}{16}$ " on the 8"-12" sizes.

FIG. 7012

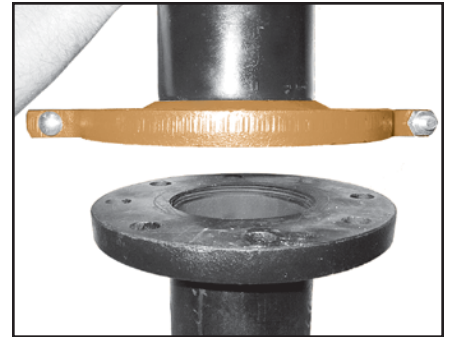
Gruvlok Flange (2"-12")



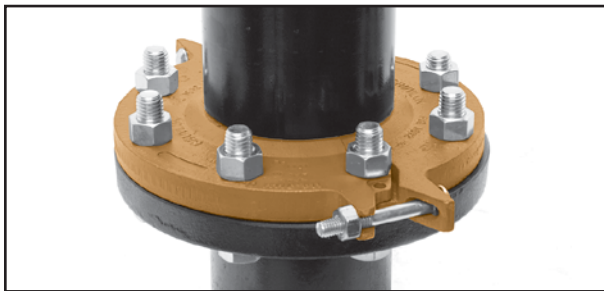
4 INSTALL GASKET—Stretch the Gruvlok gasket around the pipe end and then press the gasket into the cavity between the pipe O.D. and the flange. The gasket must be properly positioned as shown in the figure below.



5 LUBRICATE GASKET LIP—With the gasket in place apply lubricant to the exposed gasket tip, which will seal on the mating flange. **Tighten the nuts on the latch bolts alternately to the specified latch bolt torque. The flange housings must be in firm metal-to-metal contact.**



6 INSPECT MATING FLANGE—Verify that the mating flange face is hard, flat and smooth, free of indentations, which would prevent proper sealing of the Gruvlok Flange gasket. Assure the gasket is still in the proper position and align Gruvlok Flange bolt holes with the mating flange, pump, tank, etc., bolt holes.



7 INSTALL BOLTING—Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Continue this procedure until all bolt holes have been fitted. Tighten the nuts alternately and evenly so the flange faces remain parallel. All the bolts or studs must be torqued to the mating flange bolts specified torque. The flange faces should have metal-to-metal contact.



WARNING

It is important to line up the bolt holes before bringing the two flanges together. Sliding the flanges into place will dislodge the gasket and cause leakage to occur. When using a flange insert, it is important that the insert is properly aligned with the gasket prior to tightening the bolts.

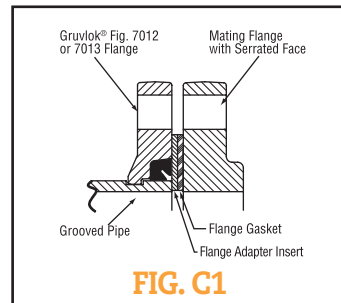


FIG. C1

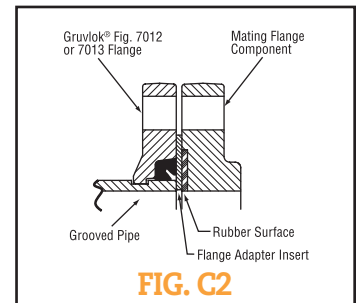


FIG. C2

NOTE: The Gruvlok Fig. 7012 Flange requires the use of a Flange Adapter Insert when used against rubber surfaces (Figure C1), serrated flange surfaces or mating flanges with inserts (Figure C2). The Flange Adapter Insert will be exposed to the fluids in the system. Ensure that the Insert is compatible with the fluids in the systems and with adjacent piping components.



WARNING

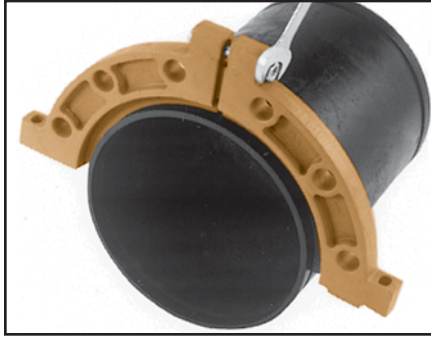
Do not use a steel Flange Adapter Insert in copper systems or in systems where galvanic corrosion is possible.

CAUTION: Proper torquing of flange 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.

FIG. 7012

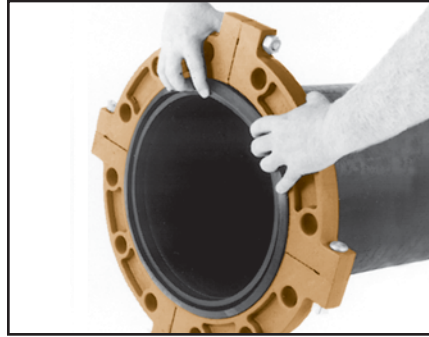
Gruvlok Flange (14"–24")

Gruvlok® Flanges of 14" size and larger are cast in four segments to ease handling during assembly. Figure 7012 Gruvlok Flanges should not be used with tie rods nor in a configuration with a wafer valve between two 7012 flanges.

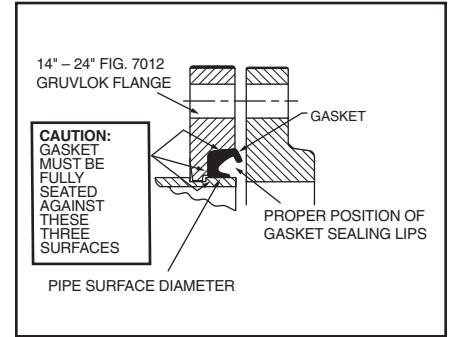


1 INSTALL HOUSING—Place each Gruvlok Flange segment around the grooved pipe with the key section fitting into the groove and the flange gasket cavity facing the pipe end. Loosely assemble the segments using the four segment-bolts-and-nuts. Alternately and equally tighten the latch bolts and nuts to the specified latch bolt torque. Bring the four flange segments into full, firm metal-to-metal contact.

NOTE: An alternative method of assembly is to loosely preassemble two segments into two equal halves of the flange leaving a small gap (approximately $\frac{1}{8}$ ") between the two segments of each flange-half. Place the flange halves around the pipe and complete the assembly as described in Step 1, above.

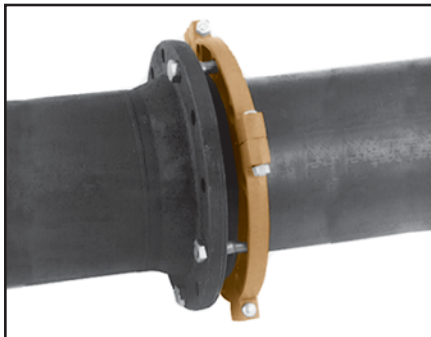


2 INSTALL GASKET—Check the gasket grade to verify that it is properly suited for the intended service. Lubricate the entire surface of the gasket and the flange cavity using the appropriate Gruvlok Lubricant. Place the Gruvlok Flange Gasket around the pipe end by pressing the gasket into the cavity between the pipe O.D. and flange recess. Move around the gasket in both directions until the gasket is fully seated in the flange gasket cavity.



3 GASKET POSITION—The correct position and relationship of the components of the Gruvlok Flange assembly is shown in the Figure above. The wide gasket lip must seal on the pipe surface diameter and the narrow gasket lip must face the mating flange. Be careful that foreign particles do not adhere to lubricated surfaces.

NOTE: Design of the Gruvlok Flange provides sealing only with the special Gruvlok Flange gasket. Only Gruvlok Flange gaskets may be used with Fig. 7012 flanges.

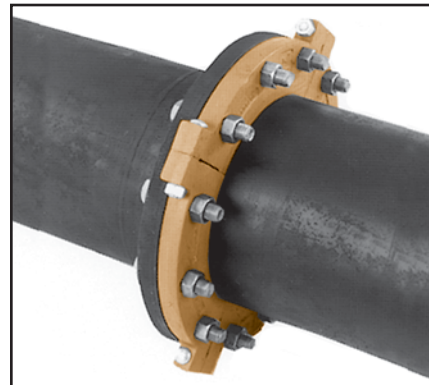


4 INSPECT & MATE FLANGE

Align the Gruvlok Flange bolt holes with mating flange bolt holes. Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Insert the

next bolt or stub opposite the first and again thread the nut on hand tight. Continue this procedure until all bolt holes have been fitted. Insertion of the flange bolts prior to contact of the flanges will help in the alignment of the flanges. Pull the two flanges into contact using care to assure that the gasket remains fully seated within the gasket cavity during assembly.

NOTE: Take care to assure that the gasket lip is not bent backwards and pinched between the two flanges.



5 INSTALL BOLTING

Tighten the nuts evenly to the specified mating face bolt torque so that the flange faces remain parallel and make firm even contact around the entire flange.

CAUTION: Proper torquing of flange 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.