

ChlorFIT™ Schedule 80 Corzan® CPVC

Full Pressure Flange Kit Instructions

ChlorFIT Full Pressure Flange Kits are available in 2½"–6", and carry the same pressure rating as the pipe and solvent welded fittings. The maximum recommended continuous operating temperature for ChlorFIT in potable water applications is 160°F. ChlorFIT Full Pressure Flange kits, when installed against a second ChlorFIT full pressure flange, or a metal flange, will provide a full pressure rating of at least 100 psi at 160°F.

Temperature	73°	120°	140°	160°
Derating factor	1	0.65	0.5	0.4
2½"	420	273	210	168
3"	370	241	185	148
4"	320	208	160	128
6"	280	182	140	112

CAUTION

When a ChlorFIT Full Pressure Flange is installed against an appurtenance that includes an integrated gasket, the pressure rating is 150 psi at 73°F and 60 psi at 160°F.

Installers should study the following instructions and follow them in order to ensure satisfactory performance and enjoy the full benefits of the GF warranty.

General Notes

Before installing please inspect the contents of this package to ensure all components are included. All components should be visually inspected to ensure they are free of defects or physical damage. **DO NOT** install parts that are damaged or broken.

Kit Contents

- Two-piece Van Stone flange hub and ring
- 304 Stainless Steel backing ring
- Garlock STRESS SAVER® XP gasket
- 316 Stainless Steel bolt kit (factory lubed)

Tools Required

- Torque wrench (A calibrated torque wrench accurate to within ±1 ft-lb must be used.)
- Wrench (Never use an impact wrench to install a vinyl flange.)

Fastener Specifications

Hardware supplied should be sufficient for CPVC to CPVC or CPVC to metal flanged connections. Either the bolt or the nut, and preferably both, should be zinc plated to ensure minimal friction. If using stainless steel bolts and nuts, anti-seize lubricant must be used to prevent high friction and seizing. The following fastener combinations are acceptable:

- Zinc-on-zinc, with or without lube
- Zinc-on-stainless-steel, with or without lube
- Stainless-on-stainless, with lube only

Flange Bolt Specifications Table 2

Pipe size (inch)	No. of bolts	Length (inch)	Bolt size (inch) & type	Washer size (inch) & type
2½	4	4	⅝ UNC	⅝ SAE
3	4	4	⅝ UNC	⅝ SAE
4	8	4¼	⅝ UNC	⅝ SAE
6	8	4½	¾ UNC	¾ F436

Cadmium-plated fasteners are also acceptable with or without lubrication. Galvanized and carbon-steel fasteners are not recommended. Use a compatible ant-seizes lubricant to ensure smooth engagement and the ability to disassemble and reassemble the system easily.

CAUTION

The chemical compatibility of the anti-seize lubricant should be confirmed with the manufacturer prior to use with CPVC pipe and flanges. Certain types of lubricants can contain chemical additives that are incompatible with CPVC, and may result in failure if used.

Bolts must be long enough that two complete threads are exposed when the nut is tightened by hand.

A washer must be used under each bolt head and nut. The purpose of the washer is to distribute pressure over a wider area. Failure to use washers voids the GF Harvel warranty.

Note

If using anti-seize lubricant, apply the lubricant evenly to the bolt threads. Cover the bolt from its tip to the maximum extent to which the nut will be threaded.

Assembly of the Flange

Prior to cementing flange and pipe together, ensure that the metal backing ring is installed with the flange ring. If you fail to install the flange ring or SS backing ring prior to solvent welding the flange hub you will have to replace flange joint.

1. Solvent weld the assembled Van Stone Flange in accordance with solvent welding installation procedures detailed in the Engineering and Installation Guide; allow the joint to fully cure before installing the remaining components of the kit.

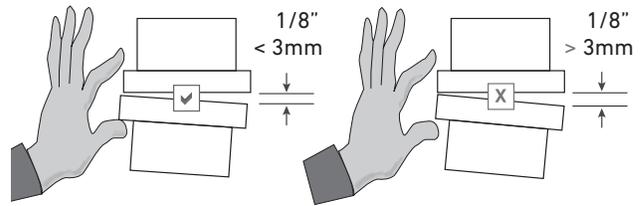
WARNING

The joint should not be disturbed immediately after the welding procedure until the initial set time has passed. Exact curing time is difficult to predict because it depends on variables such as temperature, humidity, and solvent cement integrity. Please refer to the solvent cement manufacturer's recommended guidelines for average joint set and cure times.

2. Before assembling the flange connection, be sure that the two flanges being joined are properly aligned. GF has developed a "pinch test" that allows the installer to assess system alignment quickly and easily with minimal tools.

First check the gap between the flange faces by pinching the two mating flange rings toward each other with one hand as shown. If the faces can be made to touch, then the gap between them is acceptable.

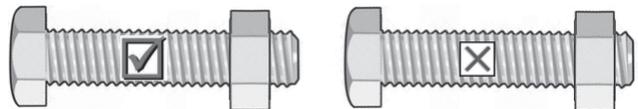
Check the angle between the flange faces. If the faces are completely flush when pinched together, then the alignment is perfect, and you may continue installation. Otherwise, pinch the faces together so that one side is touching, then measure the gap between the faces on the opposite side.



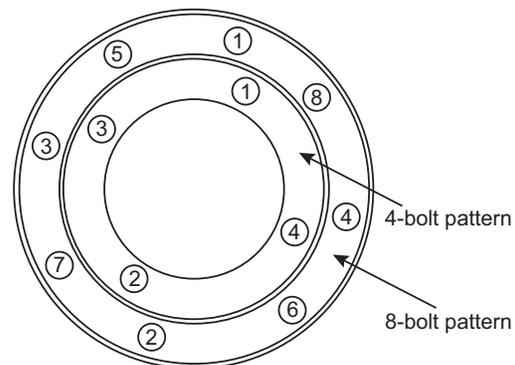
The gap should be no more than $\frac{1}{8}$ ". If the gap between the components cannot be closed by pinching them with one hand, refit the system with proper alignment before proceeding with the installation.

3. Align backing ring over the flange ring, ensuring that the bolt holes align and the label on the backing ring is facing outward. Center the gasket between the flange faces, ensuring again that the bolt holes are aligned.
4. Insert bolts through the matching holes of the backing rings, flange ring, and gasket. A flat washer should be installed beneath each nut and bolt head. Failure to use washers voids the GF warranty.
5. Tighten all nuts by hand in a star pattern. As you tighten each nut, the nuts on the other bolts will loosen slightly. Continue to hand tighten all of the nuts until none remain loose.

Now the flange assembly will remain in place as you prepare to fully tighten it. When hand-tightened, at least two threads beyond the nut should be exposed in order to ensure permanent engagement. If fewer than two threads are exposed, disassemble the flange and use longer bolts.



6. Tighten the nuts to the first specified torque values indicated in Table 3. A multi-step tightening process is recommended with each step requiring the installer to tighten the nuts in a star pattern.



When the bolts are tightened, a torque wrench should be placed over the nut (not on the bolt head). To ensure even distribution of stresses and a uniform seal, tighten the bolts to the first torque value in the sequence, using a star pattern, then repeat the star pattern while tightening to the next torque value, and so on up to the maximum torque value. The torque required on each bolt in order to achieve the best seal with minimal mechanical stress listed below.

Bolt Torque **Table 3**

Size (in)	Torque Sequence (ft-lb, lubed*)				Torque Sequence (ft-lb, unlubed**)			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
2½	14	27	45		18	36	60	
3	18	36	60		24	48	80	
4	18	36	60		24	48	80	
6	20	40	80	100	25	50	100	125

Note: Use only calibrated torque wrench

ChlorFIT flanges deform slightly under stress. Therefore, a final tightening after 24 hours is recommended when practical. If a flange leaks when pressure-tested, retighten the bolts to the full recommended torque and retest. DO NOT exceed the recommended torque before consulting an engineer or GF representative.

WARNING

Before re-torquing the bolts, ensure that the system is not pressurized. Failing to do so can result in failure of flange and can cause severe injury or death.

The torque values listed above are for flange-to-flange connections in which the full faces of the flanges are in contact. For other types of connections, such as between a flange and a butterfly valve, where the full face of the flange is not in contact with the mating component, less torque will be required. Do not apply the maximum listed torque to the bolts in such connections, which may cause deformation or cracking, since the flange is not fully supported by the mating component. Start with approximately two-thirds of the listed maximum torque and increase as necessary to make the system leak-free after pressure testing. Do not exceed the maximum torque values.

CAUTION

Flanges should not be used to support adjacent flanged components such as butterfly valves, ball valves or other appurtenances. All appurtenances should be supported independently. Failure to properly support all appurtenances can result in premature failure of the flange joint.

Flange Installation Tags

Best practices include tagging each flange assembly with:

- Installer’s initials
- Installation date

- Final torque value
- Confirmation of 24-hour torque check (“Y” or “N”)

A pre-printed sticker as shown below should be placed on each flange immediately after installation.

Ft. lbs. Torque

Date

Installer

24-hour Check

Experience has shown that installation tags speed up the process of resolving system leaks and product failures, improve communication between the installer contractor and distributor or manufacturer, highlight training opportunities, and promote worker diligence.

Joint Integrity Test

WARNING

Use of compressed air or gas in ChlorFIT Schedule 80 Corzan CPVC products can result in explosive failures and cause severe injury or death.

GF Piping Systems DOES NOT RECOMMEND the use of our ChlorFIT piping systems to transport or store compressed air or gases, or the testing of our ChlorFIT piping system with compressed air or gases in above or below ground locations.

The use of ChlorFIT piping systems in compressed air or gas systems automatically voids the GF warranty, and their use against our recommendation is entirely the responsibility and liability of the installer.

GF will not accept responsibility for damage or impairment from its products, or other consequential or incidental damages caused by misapplication, incorrect assembly, and/or exposure to harmful substances or conditions.

Pressure Test Procedure

The following is a general test procedure recommended for all GF plastic piping systems. It applies to most applications but certain applications may require additional consideration. For further questions regarding your application, please contact your GF representative.

1. All piping systems should be pressure tested prior to being put into operational service.
2. All pressure tests should be conducted in accordance with the appropriate building, plumbing, mechanical, and safety codes for the area where the system is being installed.
3. When testing plastic piping systems, all tests should be conducted hydrostatically and should not exceed the pressure rating of the lowest rated component in the piping system (valve, union or flange). Test the system at 150%

of the designed operational pressure. i.e. If the system is designed to operate at 80 PSI, then the test will be done at 120 PSI.

4. When hydrostatic pressure is introduced to the system, it should be done gradually through a low point in the piping system with care taken to eliminate any entrapped air by bleeding at high points within the system. This should be done in four stages, waiting ten minutes at each stage (adding $\frac{1}{4}$ the total desired pressure at each stage).

5. Allow one hour for system to stabilize after reaching desired pressure. After the hour, in case of pressure drop, increase pressure back to desired amount and hold for 30 minutes. If pressure drops by more than 6%, check system for leaks.

NOTE

If ambient temperature changes by more than 10°F (5°C) during the test, a retest may be necessary.

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