

# Installation Instructions:

Sanbra Fyffe **Irish Instantor**<sup>®</sup> compression fittings are available as standard in sizes from ½" to 2" and 8mm to 54mm. Compression larger size fittings from 2 ½" to 4" are also available on request, prices on application. Instantor<sup>®</sup> fittings are WRAS approved and NSAI certified to IS EN 1254-2 Copper and copper alloys, Plumbing fittings – Part 2: fittings with compression ends for use with copper tubes. The fittings described in IS EN 1254-2 are for use in conjunction with copper pipe specified in IS EN 1057:1996 'Copper and Copper Alloys' – Seamless round copper tubes for water and gas in sanitary and heating applications.



The simple principle of the Irish Instantor<sup>®</sup> joint is shown above. The olive is compressed between two differing tapers, the one in the body having a sharper angle than that in the nut, and by virtue of these differing angles, the olive is gripped on a larger area in the body removing any tendency for the pipe to turn when tightening the nut. When tightening, the ring changes form and makes a perfect two-point seal, at the same time causing two slight indentations in the pipe, giving a grip capable of withstanding pressures far greater than experienced in normal use.

Note: Compression fittings (Type A) below 18mm, may require internal support when used with annealed tube (i.e. soft copper R220) and the manufacturers/distributors advice should be sought. Internal pipe support should always be used with Instantor Pex pipe  $\frac{1}{2}$ ,"  $\frac{3}{4}$ ," and 1".

# **To form a compression joint:** (General – see page 3 for details)

Ensure PPE and safety precautions are undertaken- i.e. depressurise the system and remove/isolated pumps and other potential hazards before commencing work.

Ensure that the fitting is the correct dimension for the tube being installed. Cut the Tube to length with a suitable cutting tool, ensuring that the end is cut square and free from Burr's. Check to make sure that the pipe is not deformed, scored, or damaged before proceeding.

Loosen the compression nut/olive and insert the pipe into the fitting ensuring that the tube is firmly 'home' against the tube stop within the fittings bore and that the olive is positioned correctly. Alternatively, the compression nut and olive can be removed and slid onto the pipe first and then inserting the pipe into the fitting, ensuring that it is 'home.'

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Tighten the nut first by hand until it is too difficult to continue and then tighten the nut to a minimum of one half-turn more with the aid of a wrench. The fitting should then be tested: if slight weeping is observed, tighten the fitting gradually to a maximum of one full turn until the weeping stops. NOTE: In the case of larger sized fittings, e.g. 2", to achieve full compression a minimum of ¾ turn of wrench to a maximum of 1.5 turns will be required. *See below Table 3* for details.

In cases where installation in a high-pressure system >10 Bar, additional sealing elements may be used such as jointing compound or PTFE tape (see [**C**] below). However, it is important to note, that Sanbra Fyffe does not recommend the use of PTFE under normal operating system pressures, See tables below for guidelines on allowable pressure/temperatures.

	Maximum pressure from nominal diameters bar		
Maximum temperature °C	From 6mm up to and including 54mm	Over 54mm up to and including 108mm	
30	16	10	
65	10	6	
110	6	4	
120	5	3	

Table 2: Maximum temperature and pressures for Instantor<sup>®</sup> Lever Action Ball Valves: up to 28mm.

Maximum Temperature °C	Maximum Pressure in Bar	
30	25	
65	10	
85	3	

NOTE 1: Intermediate pressure ratings shall be determined by interpolation.

NOTE 2: Certain designs of compression fittings are suitable for use at temperature/pressure ratings outside those given in this table. For such applications the advice of the manufacturer should be sought.

NOTE 3: Over tightening of the product will not produce a better joint and may lead to problems in service.

NOTE 4: The integrity of the compression fitting is determined by the olive, which is easily prone to damage. Thus, care should be taken when handling and tightening the fitting, although if the olive is damaged it is easily replaced.

NOTE 5: Handling, transportation, and storage – Transport and Handle with care, storing in a dry location.

NOTE 6: Application- Domestic, Commercial, Industrial, Hot & cold-water services, heating Installations, fuel services, Low pressure gas pipework.

NOTE 7: Compression is a Mechanical Seal.

Below are the maximum recommended values (Never exceed these) – a slight variation will occur due to pipe wall tolerances and torque wrench tolerances. For larger diameter fittings (>35mm) lubricant Oil may be used on the threads to assist with achieving compression. For slight weeps a suitable jointing compound should be used.

# Table 3: Maximum Assembly Valves

Dimension – Standard	Torque Value in Nm		Tightening compression fitting by turns
Compression fittings	(+/- 5Nm)		(after fully hand tightening)
	Fittings	LABV's with	
		sealing putty	
8mm	15		1 ¼ turn
10mm	18		1 ¼ turn
12mm	20		1 ¼ turn
½" & 15mm	40	40	½ to 1 turn
¾″ & 22mm	45	55	½ to 1 turn
1″ & 28mm	55	75	¾ to 1 turn
1 ¼" & 35mm	110		¾ to 1 ½ turn
1 ½" & 42mm	150		¾ to 1 ½ turn
2" & 54mm	270		¾ to 1 ½ turn

## [A] Preparation:

1. Ensure that the fitting is the correct size for the tube being used.

2. Cut tube to length. Using a tube/rotary cutter.

3. All burrs and sharp edges should be removed. De-burr the pipe with tool or fine file.

4. If tube ends have become distorted, restore tube to correct outside diameter for sockets length.

5. Clean tube ends, if required clean tube ends to depth of socket with scotch Brite paper/pad or similar (dragon mech/paper etc. Do not use standard steel wool)

#### [B] Installation:

1. For fittings with abutment (tube stop) only, the insertion depth shall be marked on the tube.

2. Where possible without removing the compression nut or ring, insert the tube into the fittings socket. Push as far as any internal stop or insertion mark will allow. Alternatively, remove the nut and olive, place onto the tube then insert tube into the fitting. add jointing compound if required evenly over the olive and reassembly the nut and olive back on to the tube and fitting

3. Tighten the compression nut onto the fitting, by hand as far as possible, mark the position of the nut in relation to the fittings body and then by use of tools to the details in Table 3. Either manually by counting turns or by the specified torque valve.

4. The compression ring should grip the tube and prevent any rotation.

5. Tightening beyond this may lead to problems in service.

6. To reduce the assembly torque and minimize the risk of damage to the fitting, a lubricant may be applied to the threads. Make sure that the lubricant is compatible with the application (hygienic, corrosion, environment etc.)

7. In case of high-pressure testing, it is recommended to use a suitable sealant to ensure a sound joint, particularly if there is any degree of scoring in the area where the seal is to be made or if, after assembly, the joint leaks slightly.

#### [C] Sealant/jointing compound: (if applicable) 1. Liquid thread sealant: (for threaded joints)

Apply the sealant on the threads that are close to the fittings end. While screwing in the fitting, the sealant will be spread over the whole thread. Screw the male and female parts firmly together. Wipe of any excessive sealant, allow joint to dry untouched and unpressurised according to manufacturer instructions.

## **2. PTFE Tape** (for threaded joints)

PTFE tape should be applied by winding the tape firmly in a clockwise direction (when looking at the fittings end) for right-handed threads and an anti-clockwise direction for left-handed threads. The full thread length should be covered equally. While assembling the joint it should not be screwed backwards, this can cause the PTFE tape to loosen and leaks may develop. In this case new tape should be applied. Screw male and female part firmly together.

## 3. Hemp (for threaded joints)

Ensure the hemp is dry before use. A hemp sealing is made by winding a long, thin string of hemp fibre firmly over the threads. Wind in a clockwise direction for right-hand threads and anti-clockwise for left-handed threads. The full thread length should be covered equally with hemp. It is permitted to use more than one string on one thread. However, too much hemp will prevent contact between the internal and external threads which will impair tightness. After applying the hemp, sealing paste can be used to smooth the hemp fibre. After the joint is screwed in firmly together, excess fibre on the outside of the joint can be removed.

#### 4. Jointing compound/Sealing Putty (compression joints)

When assembling the compression fittings, a jointing compound may be used to assist with achieving the seal. This is usually due to scratches or scores present on the tube, or when operating higher than normal working pressures (>10Bar) and/or (product testing procedures). The compound/ putty should be applied evenly over the top of the Olive/ring: First Insert the tube into the fitting, loosen the compression nut and slide backwards away from the fitting. With the olive/ring exposed apply the jointing compound evenly over the top of olive. Slide the nut back towards the fitting and assemble, tighten the nut by hand as much as possible then proceed with Installation instruction in point **[B]** above. Confirm that the jointing compound used is suitable for the application and adheres to local regulations. Example: Permitted/approved on potable water.

<u>NB</u>: PRODUCTS PRODUCED FROM BRASS ARE NOT SUITABLE FOR USE UNDERGROUND. ONLY GUNMETAL FITTINGS SHOULD BE USED FOR THIS PURPOSE.

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