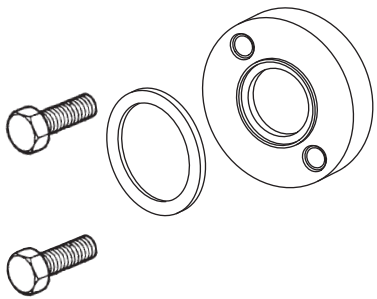
IM-P229-01-US
Issue 1

Blind Flange for Hydrostatic Testing of Universal Pipeline Connectors

Installation and Maintenance Instructions



1. Safety information
2. General product information
3. Installation
4. Depressurization of pipework
5. Available spares

1. Safety information

Safe operation of these products can only be guaranteed if they are properly installed, commissioned, used, and maintained by qualified personnel (see Section 1.12) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

1.1 Intended use

Referring to the Installation and Maintenance Instructions, product markings and Technical Information Sheet, check that the product is suitable for the intended use/application.

i) **Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.**

ii) **Determine the correct installation situation and direction of fluid flow.**

iii) **Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimize them.**

iv) **Remove protection covers from all connections and protective film from all nameplates, where appropriate, before installation on steam or other high temperature applications.**

1.2 Access

Ensure safe access and if necessary, a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.3 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.4 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.5 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g., tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g., during welding), excessive noise, moving machinery.

1.6 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g., closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk? Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are opened and closed progressively to avoid system shocks.

1.7 Pressure systems

Before attempting any maintenance of pipeline connectors, ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting any maintenance program. This is easily achieved by use of the Spirax Sarco depressurization valves fitted to the assembly (see Section 1.7.1 below and Section 6). Do not assume that the system is depressurized even when a pressure gauge indicates zero.

1.7.1 Blowdown and depressurization valves

Blowdown and depressurization valves are generally used to depressurize a system/vessel prior to maintenance or removal. Do not assume that the system has depressurized even if a pressure gauge indicates zero. Consider the direction of the depressurized flow and ensure that this will not cause a hazard to yourself or others.

1.8 Temperature

Allow time for temperature to normalize after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.

1.9 Isolation

Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include isolation of vents, protective devices or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.10 Tools and consumables

Before operating valves ensure that you have the correct tools available. Please see reference table for relevant tooling and the correct torque settings prior to attempting and maintenance.

1.11 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high/low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.12 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions. Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.
Post 'warning notices' if necessary.

1.13 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying, or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.14 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature may reach temperatures in excess of 425 °C (797 °F).

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.15 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.16 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable, and no ecological hazard is anticipated with its disposal providing due care is taken.

1.17 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety, or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

2. General product information

2.1 Description

The Blind Flange is supplied with three (3) gaskets and two connector bolts.

Operation

The Blind Flange is intended for use with the Universal Pipeline Connectors listed below, in place of steam traps, during hydrostatic system testing.

- PC10(HP) and PC20 Universal Pipeline Connectors
- IPC20 and IPC21 Pipeline Connectors with Integral Spiratec Sensors
- STS17.2 Stainless Steel Compact Pipeline Connector Steam Trapping Station
- USTS II Universal Steam Trap Station
- PC3000 and PC3001 Pipeline Connectors
- PC4000 and PC4001 Pipeline Connectors

2.2 Pressure/temperature limits (ISO 6552)

Notes:
- The maximum operating limits of the complete assembly will be dictated by the pipeline connector of choice.
- Reference component specific technical information sheets for its 'Pressure/temperature limits.'

Designed for a maximum cold hydraulic test pressure of: 150 bar g *(2175 psi g)*

Notes
- Test pressure may be limited by other system components.

3. Installation

Note: Please read 'Safety information', Section 1, before commissioning.

3.1 The pipeline connector shall be installed with the mating flange face in a vertical plane. The flow direction as indicated by the arrow on the connector body can be horizontal (either direction), vertical, or inclined.

3.2 Ensure that there is sufficient access to the pipeline connector handwheel(s), or installed isolation valves, to allow for proper operation. After hydrostatic testing it is recommended that the pipeline connector is insulated to minimize radiated heat losses and to protect personnel from burn risk.

3.3 The pipeline connector and blind flange are joined by a high integrity gasketed joint. It is important that no damage is caused, e.g., by weld, weld splatter, knocks, etc., to the flange gasket face. Hence, care must be taken when installing the pipeline connector into the pipework. It is recommended that the blind flange is installed immediately once the pipeline connector is in the pipework. Alternatively, the blind flange can be joined to the pipeline connector prior to installation.

3.4 Refer to Section 4 for removal of installed steam traps.

3.5 Remove protection covers from all connections, where appropriate, before installation on steam or other high temperature applications.

3.6 Ensure that the gasket and gasket seating surface are clean and undamaged and that the transfer holes are free of obstructions. Place the spiral-wound gasket onto the blind flange body. Place the blind flange against the connector face.

3.7 Ensuring the new connector screws, supplied with the blind flange are used, apply a suitable anti-seize thread lubricant to the threads of the connector screws (3). Tighten the screws finger tight until the mating gasket faces are in parallel, intimate contact. Tighten the screws evenly and gradually to the recommended torque value (see Table 1).

3.8 Open isolation valves slowly until normal operating conditions are achieved.

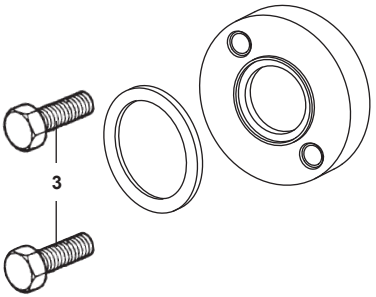


Table 1 Recommended tightening torques

Item	Part	or mm	N m	(lbf ft)
3	Connector bolts	9/16" A/F	30 - 35	(22 - 26)

4. Depressurization of pipework

4.1 Operation of line drainage and depressurization valves (if applicable):

The line drains and depressurization valves are fitted to the PC300_/PC400_ series of pipeline connectors to provide safe and reliable venting/bypassing of the steam trap.

BDV1 Normally fitted to upstream drains and/or downstream test connections. (BDV2's can be fitted if a piped discharge is required).

BDV2 Always fitted to upstream trap vent connections, to ensure a safe downward discharge.

For further details on the operation of BDV valves see TI-P600-01 and IM-P600-02.

Note: It is important to ensure that the discharge from all pressurized systems is directed to a safe position and that correct safety precautions are taken when operating the valves. (See Section 1,'Safety information').

4.2 To remove/replace a steam trap fitted to: PC3000 and PC3001 pipeline connectors:

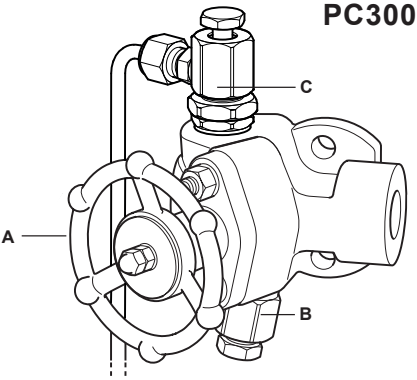
- Close the upstream isolation valve (A).
- Open the line drain valve (B) to keep the steam line drained.
- If fitted on a system which does not discharge directly to atmosphere, ensure that any downstream pressure is isolated and depressurized before continuing. A PC400_connector should be considered.
- If fitted, open the trap vent valve (C) to relieve pressure.
- After removal of the plastic protector (on new traps) replace the steam trap and tighten the bolts to the recommended torque value (refer to Table 1).
- Close the blowdown/line drain valves (B) and (C) and then slowly open valve (A) checking for leaks.
- If no leaks are detected open valve (A) completely.

A. Upstream isolation

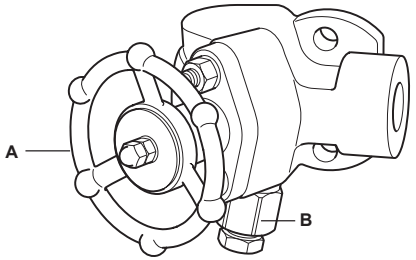
B. Upstream line drain (with integral strainer)

C. Steam trap vent

PC3001



PC3000



4.3 To remove/replace a steam trap fitted to:

PC4000 and PC4001 pipeline connectors:

- Close the upstream and downstream isolation valves (A) and (D).
- Open the line drain valve (B) to keep the upstream line drained.
- If fitted open the trap vent valve (C) and trap test valve (E) to relieve pressure.
- After removal of the plastic protector (on new traps), replace the steam trap ensuring the gasket and gasket faces are clean, tighten the bolts to the recommended torque value (refer to Table 1).
- Close valves (C) and (E) and the close line drain valve (B).
- Open valve (D) fully, then slowly open valve (A) checking for leaks.
- If no leaks are detected open valve (A) completely.

A. Upstream isolation

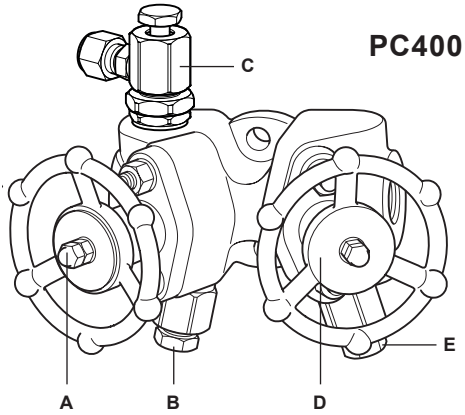
B. Upstream line drain (with integral strainer)

C. Steam trap vent

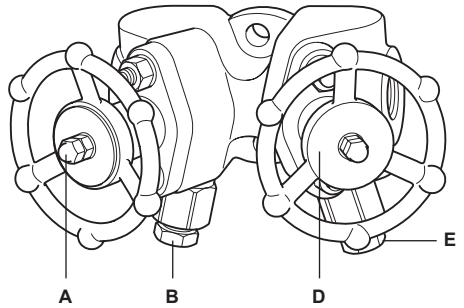
D. Downstream isolation

E. Downstream trap test

PC4001



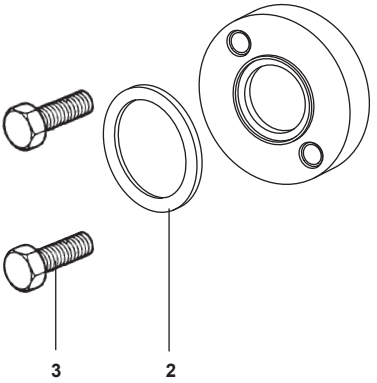
PC4000



5. Available spares

Available spares

Spirally wound outer gasket	**2**
Connector bolts	**3**



How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state type and size of equipment.

Example: 1 off Spirally Wound Outer Gasket for a Spriax Sarco Blind Flange for use with Universal Steam Trap Connectors during hydrostatic testing.