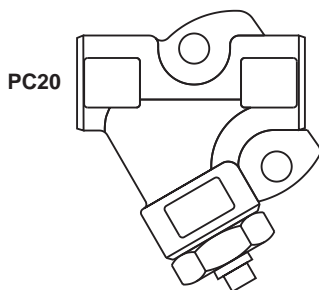
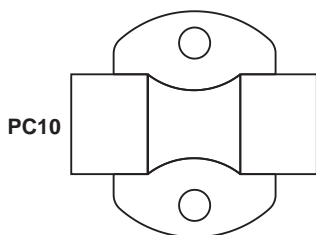


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**PC10, PC20, IPC20 and IPC21**  
**Pipeline Connectors**  
**Installation and Maintenance Instructions**

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- 1. General  
safety information*
- 2. Description*
- 3. Installation*
- 4. Welding of pipeline  
connector*
- 5. Maintenance*
- 6. Available spares*

# 1. General safety information

Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person (see Section 11 of the attached Supplementary Safety Information) 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.

## Isolation

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

## Pressure

Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Do not assume that the system is depressurised even when a pressure gauge indicates zero.

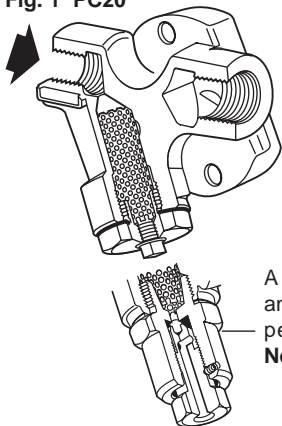
## Temperature

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

## Disposal

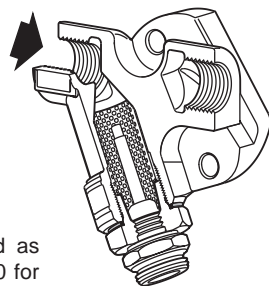
The product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.

Fig. 1 PC20



**Note:** The integral sensor is supplied as standard with the IPC20 and IPC21 but can be retrofitted to existing PC20 connectors as long as a blowdown valve is not fitted.

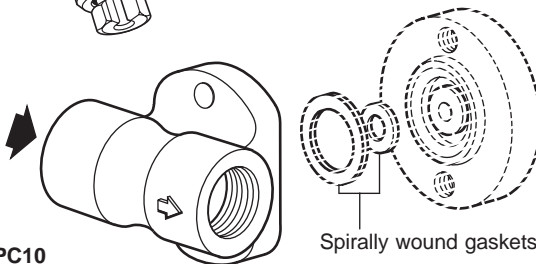
Fig. 2 IPC20 and IPC21



A **blowdown valve** can be supplied as an optional extra for use on the PC20 for periodically removing pipeline debris.

**Note:** Not available on IPC20 or IPC21.

Fig. 3 PC10



Swivel connector steam trap  
e.g. Spirax Sarco UBP, UTD,  
UIB, etc

Spirally wound gaskets

# 2. Description

## 2.1 Description

The PC and IPC pipeline connectors are designed for use with swivel connector steam traps. The principle is that the pipeline connector can be fitted into the pipeline, either horizontally or vertically. The steam trap can be fitted afterwards to the connector and can be rotated through 360° to ensure that the trap is in the horizontal plane. The PC20, IPC20 and IPC21 have an integral strainer screen. For available trap types see separate literature.

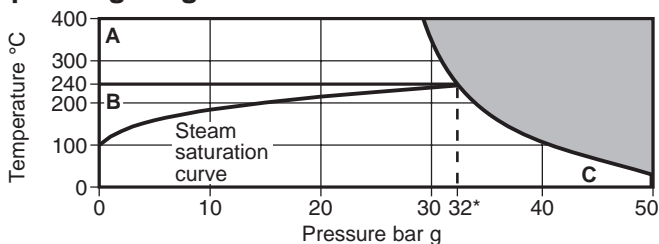
### 2.1.1 Nomenclature

<b>PC10</b>	- The PC10 is an austenitic stainless steel pipeline connector. ANSI Class 300. <b>For use with all pipeline connector traps</b> (see TI-P128-10).
<b>PC20</b>	- The PC20 is an austenitic stainless steel pipeline connector with an integral strainer. <b>For use with all pipeline connector traps</b> (see TI-P128-15).
<b>IPC20</b>	- The IPC20 is an austenitic stainless steel pipeline connector with an integral strainer and sensor, for monitoring trap operation. <b>For use with UTD and UBP traps only</b> (see TI-P128-17).
<b>IPC21</b>	- The IPC21 is an austenitic stainless steel pipeline connector with an integral strainer and sensor, for monitoring trap operation. <b>For use with UIB and UFT traps only</b> (see TI-P128-17).

## 2.2 Limiting conditions

Body design condition		ANSI Class 300 (PN50)	
PMA - Maximum allowable pressure		50 bar g	(722 psi g)
TMA - Maximum allowable temperature	<b>PC10 and PC20</b>	400°C	(752°F)
	<b>IPC20 and IPC21</b>	240°C	(464°F)
PMO - Maximum operating pressure		32 bar g	(464 psi g)
TMO - Maximum operating temperature	<b>PC10 and PC20</b>	400°C	(752°F)
	<b>IPC20 and IPC21</b>	240°C	(464°F)
Designed for a maximum cold hydraulic test pressure of:		76 bar g	(1098 psi g)

## 2.3 Operating range



 The product must not be used in this region.

\* PMO Maximum operating pressure recommended for saturated steam service.

**A - C** PC10 and PC20

**B - C** IPC20 and IPC21

### 3. Installation

**Note: Please read 'General safety information, Section 1, before commissioning**

There are two criteria which must be satisfied to ensure that the swivel connector trap will operate correctly and ensure effective condensate removal:

- The PC and IPC should be installed with flow in the direction of the arrow.
- The PC20 can be fitted in a horizontal or vertical lines so long as the steam trap fitted is installed in the correct plane.
- The IPC20 and IPC21 must be fitted in a horizontal line with the sensor at the bottom.
- The connection face for the swivel connector steam trap must always be in the vertical plane.

After installation it is recommended that the pipeline connector is insulated to minimise radiated heat losses and to protect personnel from burns risk.

**Note:** some trap types should not be insulated.

The PC / IPC and trap are joined by a high integrity spirally wound gasketed joint. It is important that no damage is caused, e.g. by weld, weld splatter, knocks, etc. to the trap gasket face.

Hence care must be taken when installing the PC / IPC into the pipework. It is recommended that the trap is installed immediately the PC / IPC is in the pipework. Alternatively, the trap can be joined to the PC prior to installation.

### 4. Welding of pipeline connector

#### Welding into pipeline of socket weld variants

A universal weld procedure covering the requirements of different national and international standards and practices is difficult to provide - specifically regarding the welding procedure, welding conditions (run number, consumable size, current, voltage, polarity), storage of consumables and make/type of consumables due to the abundance of appropriate consumable suppliers. Therefore, this is only advice based on British standards to be used for guidance on the essential requirements of welding socket weld pipeline connectors into the pipeline.

This will allow a user to select an appropriate weld procedure from those available to that user.

**This advice is not intended to be a substitute for a weld procedure: it is for guidance only.**

**The welding of DN15, 20 and 25 socket weld PC10, PC20, IPC20 and IPC21 pipeline connectors to 15, 20 and 25 mm Schedule 80 pipe**

#### Parent material(s)

##### Description

**PC / IPC** - Austenitic stainless steel with minimum tensile strength up to and including 485 N/mm<sup>2</sup>

**Pipe** - Carbon steel with minimum tensile

##### Specification(s)

ASTM A351 CF8 - PC / IPC

ASTM A106 Gr B - pipe

##### Material group(s)

R - PC / IPC

A1 - Pipe

#### Parent material(s) dimensions

	DN15		DN20		DN25	
	PC / IPC	Pipe	PC / IPC	Pipe	PC / IPC	Pipe
Thickness (mm)	8.85	3.73	5.50	3.91	5.0	4.55
O/D (mm)	39.00	21.30	39.00	26.70	45.0	33.40

Pipe is to BS 1600 Schedule 80

#### Joint type

Socket joint to ANSI B 16.11 Class 3000 lb (This is equivalent to BS 3799) strength up to and including 430 N/mm<sup>2</sup>

## Welding process(es)

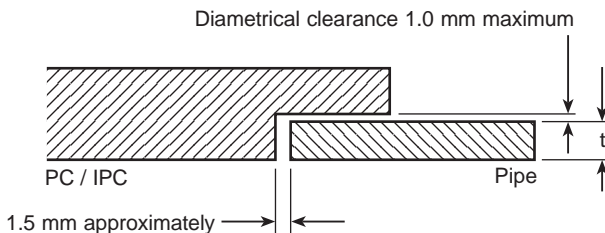
Manual Metal Arc (MMA)

## Welding position(s)

All: site welded

## Weld preparation

### Dimensioned sketch



Ref.- BS 2633 : 1987 : Section 3.1 and Fig. 9

## Welding consumables

### Filler material:-

Composition - Low C: 23% Cr: 12% Ni:

Specification - BS 2926: 1984: 23-12 L BR

### Shielding gas/flux:

Not applicable

## Method of preparation and cleaning

**Socket** : As supplied and wire brushed.

**Pipe** : Mechanically cut and wire brushed.

## Additional information

1. Fit-up using tack welds.

## Parent material temperature

### Preheat temperature

Only required when ambient is below 5°C then 'warm to touch'

### Interpass temperature

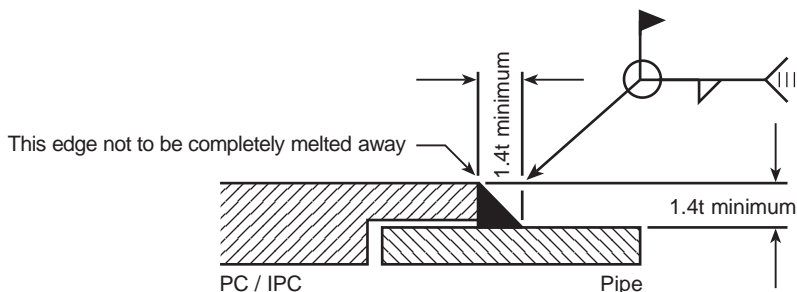
Not applicable

## Post-weld heat treatment

None required

## Run sequence and completed weld dimensions

### Sketch



Ref.- BS 806 : 1990 : Section 4 : Clause 4.7.3

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## 5. Maintenance

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**Note:** Before actioning any maintenance programme observe the 'Safety information' in Section 1.

### 5.1 Introduction

All work must be carried out by a suitably competent person. Before starting work ensure that suitable tools are available. Use only Spirax Sarco replacement parts.

### 5.2 Maintenance

Maintenance can be completed with the connector in the pipeline, once the safety procedures have been observed. It is recommended that new gaskets and spares are used whenever maintenance is undertaken. Ensure that the correct tools and necessary protective equipment are used at all times. When maintenance is complete open isolation valves slowly and check for leaks.

#### How to replace the strainer screen

Before starting make sure the pipeline connector is isolated from mains pressure (both steam and condensate) and any residual pressure is vented to atmosphere. Allow to cool before commencing work.

Remove the strainer cap (or blowdown valve) and separate it from the strainer screen. Once the screen has been cleared or replaced, place it in the recess of the cap with the cap gasket in place and insert into the body. Loosely tighten to ensure the screen and gasket locate correctly. Tighten to the recommended tightening torque. Always use new gaskets.

#### How to blowdown the strainer screen

Periodic blowdown will remove most debris within the strainer screen. Larger debris may require the whole screen to be removed as detailed above. Loosen the small retaining screw by half a turn. Open the valve screw slowly anticlockwise until condensate is discharged.

**Note:** Ensure that the discharge from the blowdown valve blows to a safe place. After a few seconds close the valve screw and tighten to the recommended tightening torque.

At no time must the small locking screw be removed. Always use the correct protective equipment and tools during this procedure.

#### How to replace or clean the sensor

Before starting make sure the pipeline connector is isolated from mains pressure (both steam and condensate) and any residual pressure is vented to atmosphere. Allow to cool before commencing work.

If a waterlogging sensor is fitted, it will be necessary to disconnect the wiring at the terminal block. Remove the sensor from the adaptor. This can be done in line so long as the adaptor is securely held in place. Clean the sensor insulation. If pitting of the insulation occurs, a new sensor should be fitted. Clean or replace the strainer screen (whichever action is appropriate for the condition of the screen). Replace the new sensor and screw into the adaptor, ensuring the gasket and strainer screen are centralised. Tighten to the recommended tightening torque. Reconnect the waterlogging sensor as described in IM-P087-34.

## 6. Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

### Available spares

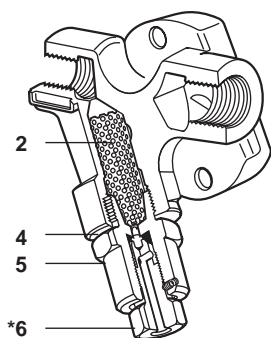
Blowdown valve and gasket		4, 5
Strainer screen and gasket		2, 4
Integral sensor and gasket	SS1 for use with IPC20	8, 9
	SSL1 for use with IPC21	8, 9
	WLS1 with diode for use with IPC20	8, 9
	WLS1 with diode for use with IPC21	8, 9

### How to order spares

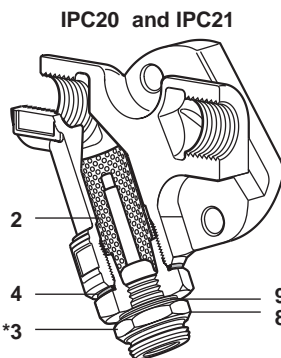
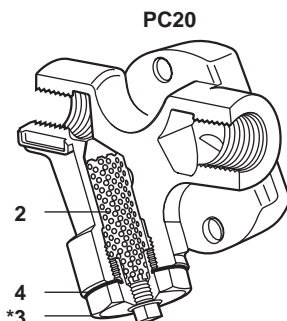
Always order spares using the description given in the column headed 'Available spares' and state model number.

**Example:** 1 - strainer screen and gasket for ½" PC20 connector.

A **blowdown valve**, item 4, can be supplied as an optional extra for use on the PC20 for periodically removing pipeline debris.





**PC20 with blowdown valve**



**\* Note:** Items 3 and 6 are not available spares.

### Recommended tightening torques

Item		or mm		N m
3	32 A/F		M28 x 1.5P	170 - 190
5	32 A/F		M28 x 1.5P	170 - 190
6	19 A/F			45 - 50
8	24 A/F			50 - 55

