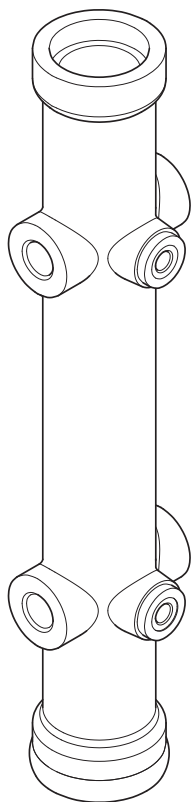


MSC-210 Long Pitch Manifold for Condensate Collection

Installation and Maintenance Instructions



1. Safety information
2. General product information
3. Installation
4. Commissioning
5. Maintenance
6. Spare parts

1. Safety information

Safe operation of this product can only be guaranteed if it is properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11) 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.

This product complies with the requirements of the Indian Boiler Regulation, 1950.

- i) This product has been specifically designed for use on steam, air or condensate/water.
- ii) 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 over temperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- iii) Determine the correct installation situation and direction of fluid flow.
- iv) 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 minimise them.
- v) Remove protection covers from all connections, 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

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.8 Temperature

Allow time for temperature to normalise after isolation to avoid the danger of burns.

1.9 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.10 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.

1.11 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.

1.12 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. This includes following safe manual handling procedures. The weight is indicated on the package.

1.13 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 800 °F (427 °C). Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.14 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.

1.15 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.

1.16 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

A range of forged carbon steel compact manifolds for steam condensate collection duty. It is a component designed for use on manifold systems for ease of assembly of screwed PC3000 and PC4000 pipeline connectors.

Certification

This product complies with the requirements of the Indian Boiler Regulation, 1950.

Note: All certification/inspection requirements must be stated at the time of order placement.

Optional extras

The following are available at extra cost:

- Mounting kit comprising of studs, spacers and nuts.

2.2 Available types, sizes and pipe connections

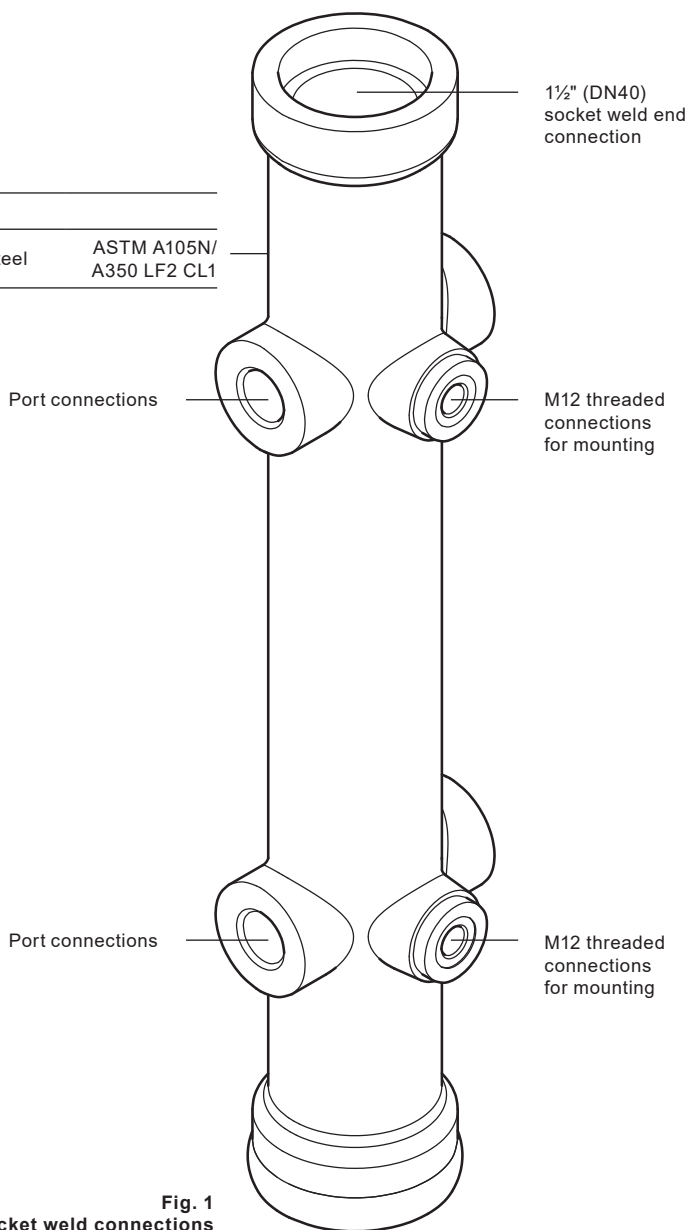
The **MSC-210 with 8" (210mm) pitch** manifold is available with the following port connections.

½" screwed NPT, ¾" screwed NPT, ½" socket weld and ¾" socket weld to ASME B16.11 Class 3000 ports are available as standard.

The condensate return connection is 1½" (DN40) socket weld to ASME B 16.11 Class 3000 as standard.

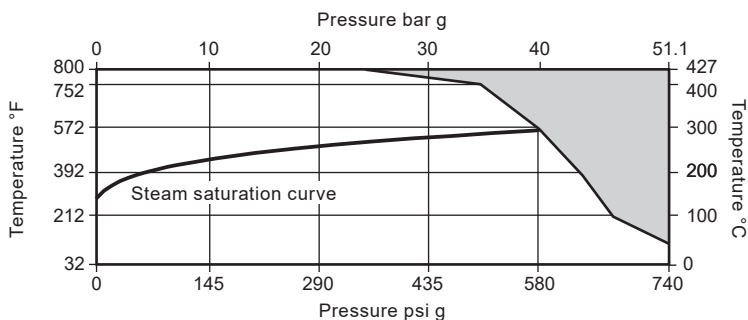
2.3 Materials

No.	Part	Material
1	Body	Carbon steel
		ASTM A105N/ A350 LF2 CL1



MSC-210 Long Pitch Manifold for Condensate Collection

2.4 Pressure/temperature limits



The product **must not** be used in this region.

Body design conditions		ASME B16.5 Class 300	
PMA	Maximum allowable pressure	740 psig @ 100 °F	(51.1 bar g @ 38 °C)
TMA	Maximum allowable temperature	800 °F @ 410 psi g	(427 °C @ 28.3 bar g)
Minimum allowable temperature		-51 °F	(-46 °C)
PMO	Maximum operating pressure	740 psi g @ 100 °F	(51.1 bar g @ 38 °C)
TMO	Maximum operating temperature	800 °F @ 410 psi g	(427 °C @ 28.3 bar g)
Maximum operating pressure for saturated steam service		605 psi g	(41.7 bar g)
Minimum operating temperature		32 °F	(0 °C)
Note: For lower operating temperatures consult Spirax Sarco			
Designed for a maximum cold hydraulic test pressure of		1109.5 psi g	(76.5 bar g)

3. Installation

Note: Before taking action on any installation, observe the 'Safety information' in Section 1.

3.1 Installation checklist

Referring to the Installation and Maintenance Instruction, product markings and Technical Information Sheet, check that the product is suitable for the intended installation:

- Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent over pressurisation.
- Remove protective covers from all connections.
- The manifold is designed for vertical installation with the condensate outlet at the top. The bottom of the manifold should be fitted with a stop valve for blowdown purposes. Again, we recommend that a diffuser is fitted.

Note: If a blowdown valve is fitted and condensate is discharged to atmosphere ensure it is to a safe place, the discharging fluid may be at a temperature of 212 °F (100 °C).

3.2 General information

The manifold has been designed for vertical installation. The back is provided with threaded connections M12 for attaching to a supporting structure.

The manifold is generally conveniently attached to the structural steelwork supporting the plant.

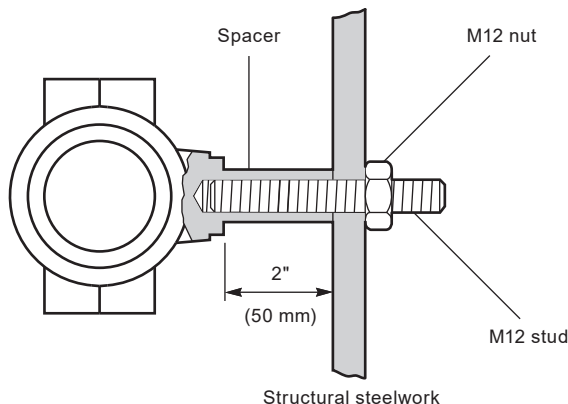
For ease of insulation it is recommended that spacers are fitted to give the manifold a stand-off of at least 2" (50 mm). Failure to do this will impact the ability to insulate it properly.

For convenience the following set of mounting kit is available:

- A single set comprising 2 off each stud, nut and spacer suitable for installing one MSC04 or MSC-210.

After installation it is recommended that the manifold is insulated to minimise heat losses and to protect personnel from burn risks.

Fig. 2
Installation view from above



3.3 Pipeline welding and further fabrication

The manifold may be modified at the 1½" (DN40) socket weld end connections.

Any weld modification should be performed or arranged locally by a Spirax Sarco Operating Company and relevant welding process approvals will be required locally. The welding must be in accordance with our latest Weld Procedures and associated documentation. Copies are available, if required, on request and should be approved before any orders are placed. The design of fabricated manifolds will be the responsibility of the local Spirax Sarco Operating company.

After fabricating assemblies, the local Spirax Sarco Operating Company will become responsible for correctly designating a design rating and marking appropriately.

Any welding that is not being carried out by Spirax Sarco or their sub-vendors, will remain the full responsibility of the customer, user or their own appointed contractors/sub-vendors.

To extend the manifold to have 8 or 12 port connections, the 1½" (DN40) socket weld ends can be modified to create butt welding ends in accordance with ASME B16.25-2017. See Figure 3 below detailing the correct weld bevel details.

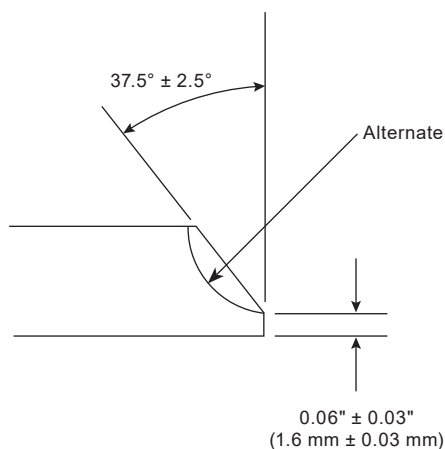


Fig. 3
Weld bevel details for GTAW root pass
(wall thickness over 0.12" (3 mm) to 0.38" (10 mm) inclusive)

The port connections may also be modified by a Spirax Sarco Operating Company to form the required connection.

Following any further fabrication, the assembly should be cleared of any debris and plastic protective plugs should all be fitted on the 1½" (DN40) socket weld end connections and the port connections prior to shipping.

4. Commissioning

After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices. Open isolating valves slowly to ensure correct operation. Check there are no leaks.

5. Maintenance

If applicable, please refer to ancillary product data sheets.

6. Spare parts

The spare parts available are detailed below.

Available spares

Mounting kit (See below) - A single set comprising 2 off each stud, nut and spacer suitable for installing one MSC-210

How to order spares

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

Example: 1 off Spirax Sarco MSC-210 steam condensate collection manifold, with 8" (210mm) pitch, Dual Certified ASTM A105N/A350LF2 forged carbon steel body with 4 x ¾" socket weld connections to ASME B 16.11 Class 3000. Complete with EN 10204 3.1 certification.

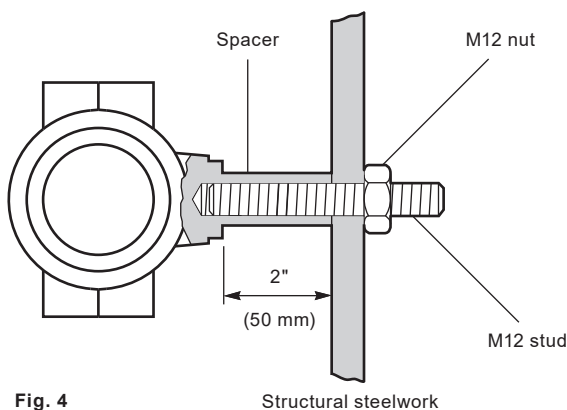


Fig. 4