

# Close Coupled Instrument Mounting System - CCIMS®

Operation and Installation Instructions

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

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## CCIMS® Operation and Installation Instructions

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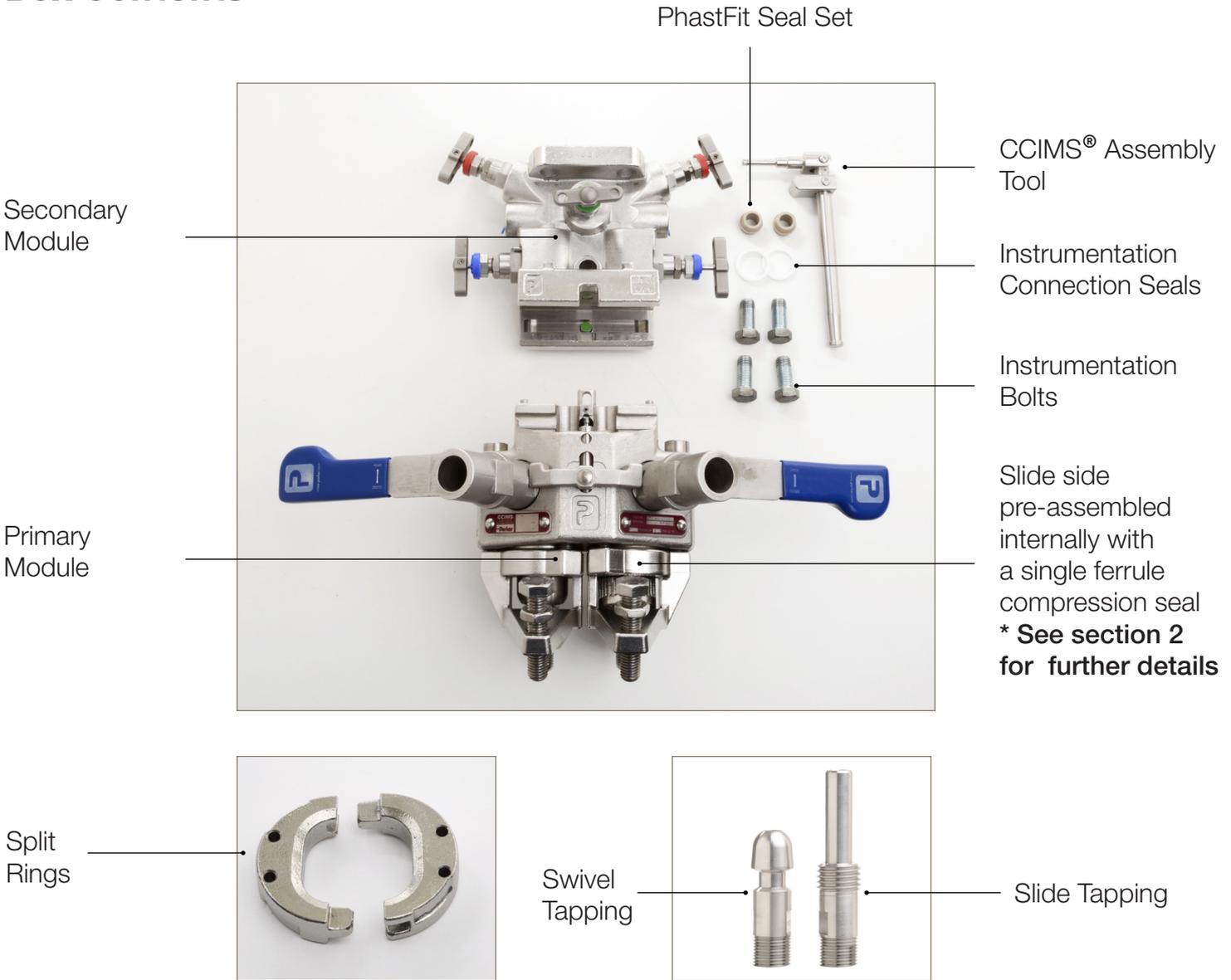
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# Box Contents



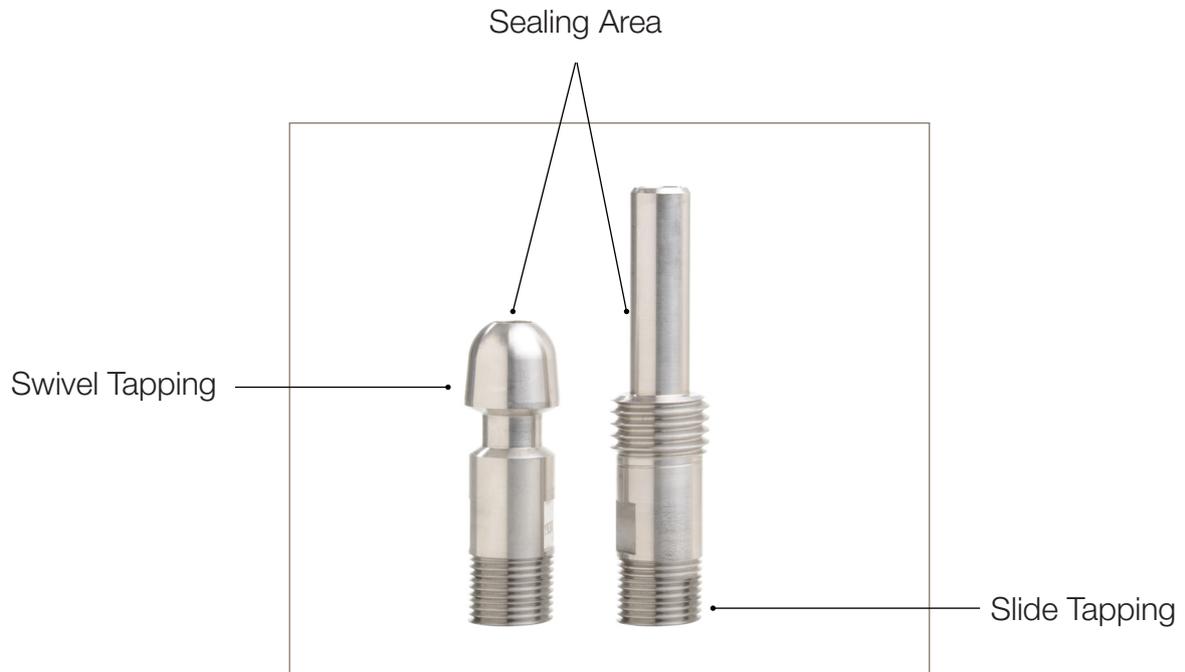
# Tooling Requirements (not supplied)



# Installation

## 1. Orifice Tapping Installation

Only required when mounting directly to the outside diameter (OD) of a flange



Ensure no damage or scratching occurs to sealing areas.

Positioning of the tappings should be planned to suit CCIMS final installation orientation.

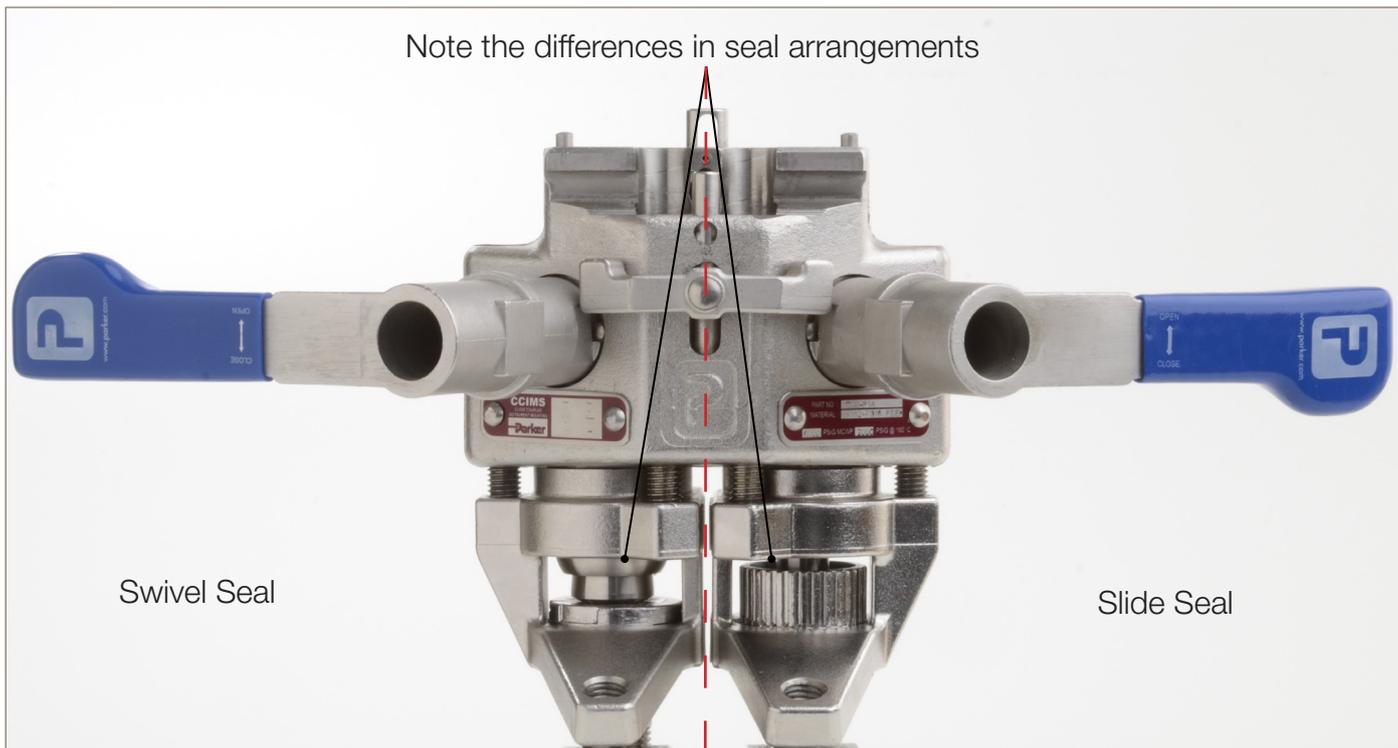
Secure tappings to flange. NPT or weld connection



## 2. Primary Module Installation

See section 7.0 for optional primary module installations

The primary module has two types of sealing arrangement, called the swivel seal and the slide seal as indicated below.



The primary module installation is split into two halves. The swivel side is completed first. The swivel seal is designed to overcome the axial and rotational tolerance build up of the flange arrangement. The slide seal is completed second. The slide seal is designed to overcome any height difference of the flange arrangement due to tolerance build up.

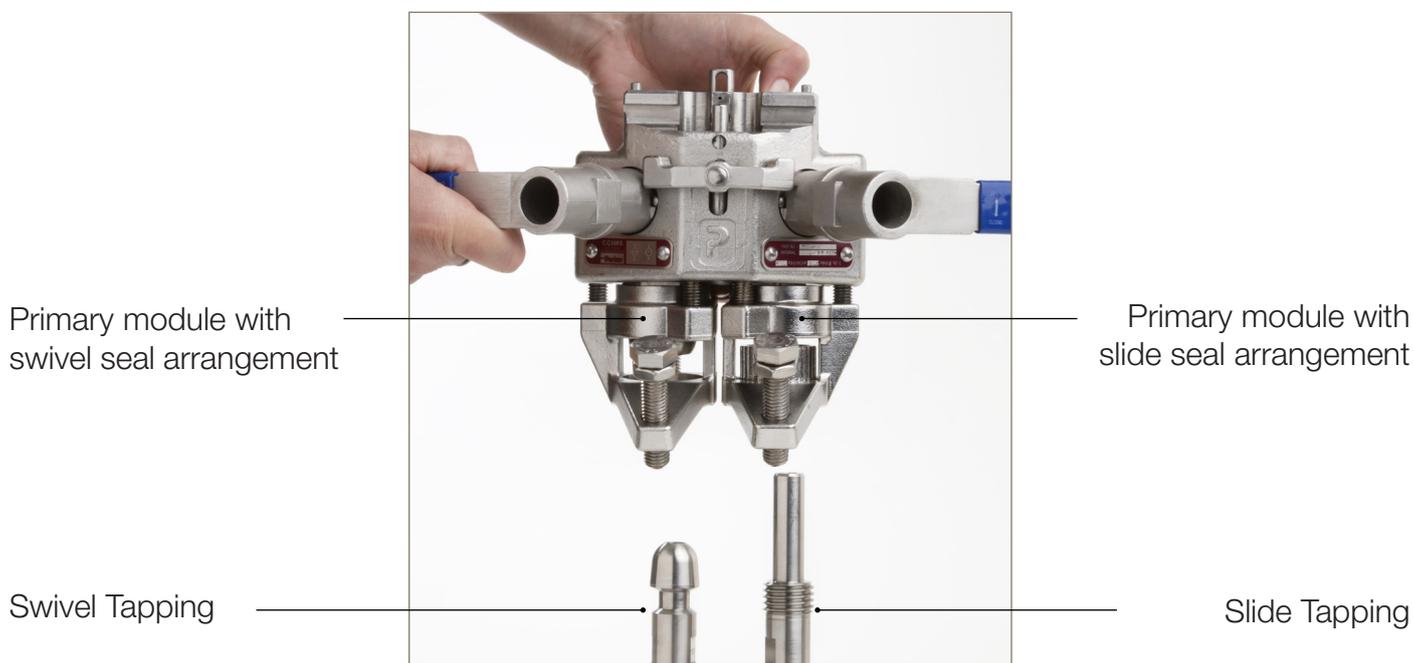
The following pages contain a step by step guide to the installation of the primary and secondary module. Each stage must be followed exactly and in the order that they are written. This is to ensure a pressure tight seal is created throughout the system.

## 2. Primary Module Installation - continued

**\*Prior to completing the following steps: Please ensure single ferrule is in position by looking down the bore of the slide side on the primary module. i.e. Continuous bore with no gaps should be visible.**

Align the primary module with the tappings.

Orientate the primary module so that the slide seal arrangement will engage with slide tapping, as shown.



Slide the primary module onto the tappings



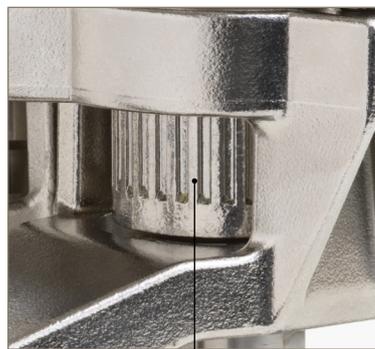
Final Installation position

## 2.1 Swivel Sealing Makeup



Engage the splined nut onto the thread by 1 - 2 rotations.

Ensure the plain nut section is fully visible.



Splined Nut



Plain Section Fully Visible



Ensure all support bolts are clear of the flange

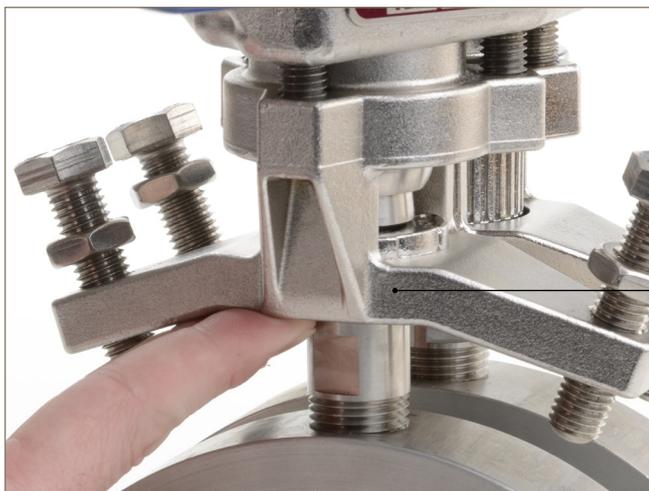


Align and engage the split rings around the swivel tapping collar (as shown)



Swivel Tapping Adapter (NPT version shown)

## 2.1 Swivel Sealing Makeup - continued

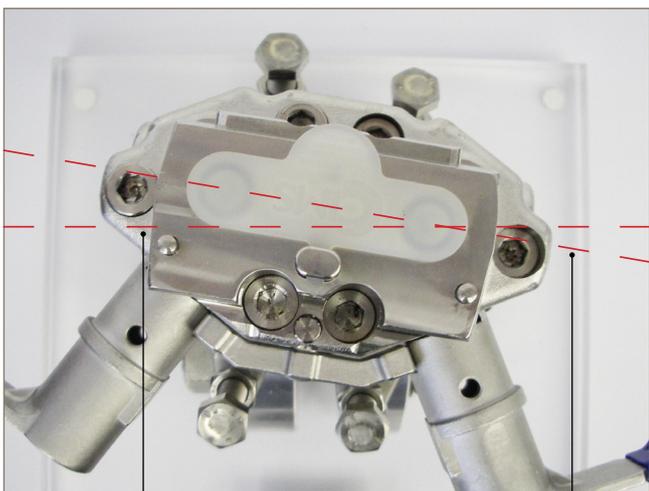


Foot

Lift the foot so the split rings are contained within the counter bore

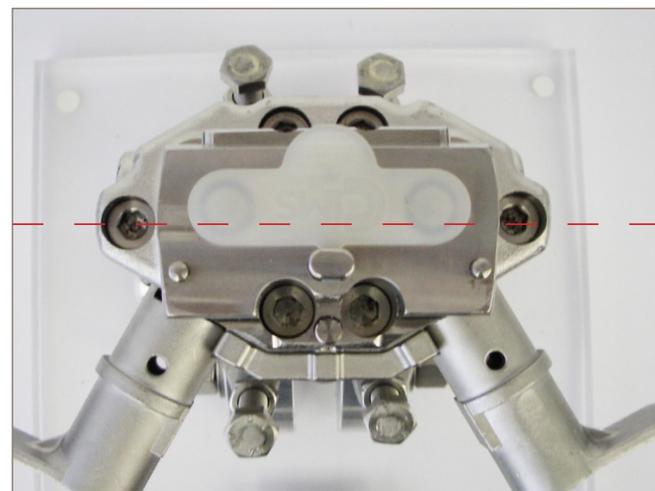


Holding the foot in position, tighten the swivel side retaining bolts (8mm socket cap head x 3) until finger tight i.e. zero torque / effort



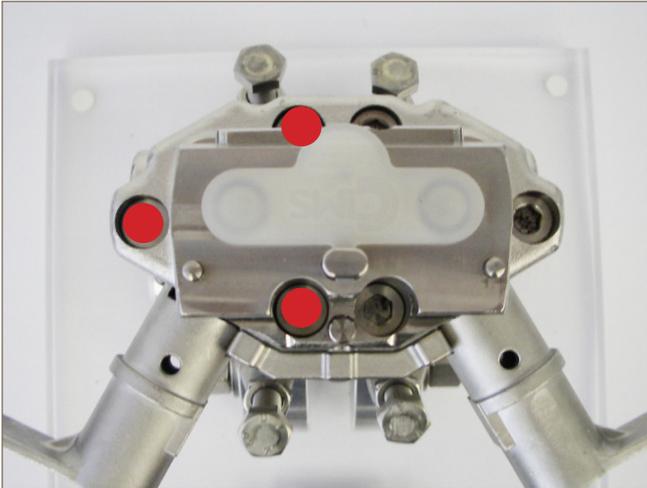
Flange centre line

CCIMS centre line



Align the primary module so that it is square to the flange

## 2.1 Swivel Sealing Makeup - continued



Using a torque wrench, tighten the 3 cap head bolts of the swivel seal. In a clockwise direction turn each bolt by 1/2 a rotation then move to the next bolt. Continue until a torque value of 51 N.M (450lb.in) is achieved



Hand tighten the flange mounting bolts onto the flange. At this stage ensure the lock nuts do not contact the foot



Using a torque wrench tighten the 2 flange mounting bolts (19mm (3/4") A/F Hex) to 33 N.M (300 lb.in). At this stage ensure the lock nuts do not contact the foot



Using 2 spanners tighten to lock nut (19mm (3/4") A/F Hex)

**The swivel sealing makeup is now complete**

## 2.2 Slide Sealing Makeup



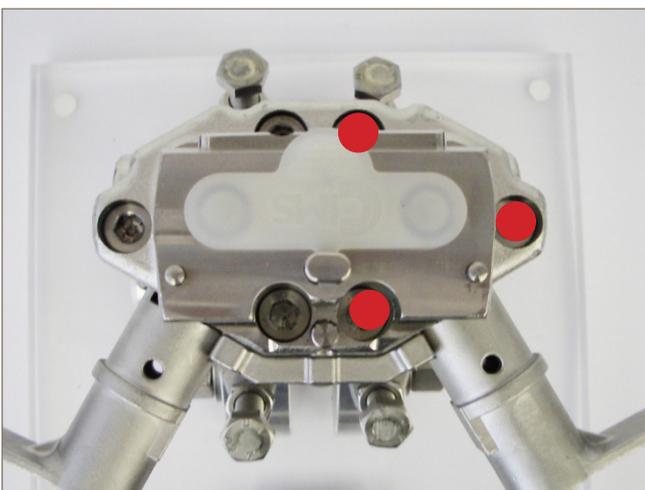
### Very important

Ensure the plain section of the splined nut is fully visible

Plain section



Tighten the slide side retaining bolts (8mm socket cap head x 3) until finger tight i.e. zero torque/effort



Using a torque wrench, tighten the 3 cap head bolts of the slide seal. In a clockwise direction turn each bolt by 1/2 a rotation then move to the next bolt. Continue until a torque value of 51 N.M (450lb.in) is achieved

## 2.2 Slide Sealing Makeup - continued



Plain Section Fully Visible



Hand tighten the splined nut until it contacts the bottom of the counter bore



Correct positioning of the nut is indicated when the plain section is no longer visible



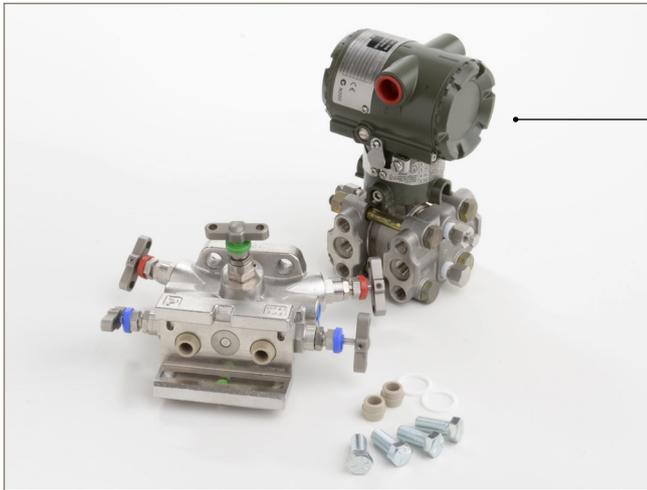
Using a torque wrench tighten the 2 flange mounting bolts (19mm (3/4") A/F Hex) to 33 N.M (300 lb.in). At this stage ensure the lock nuts do not contact the foot



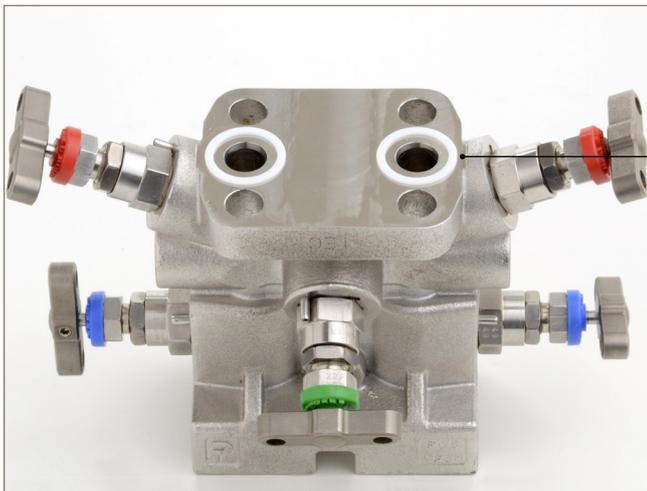
Using 2 spanners tighten to lock nut (19mm (3/4") A/F Hex)

**The slide sealing makeup is now complete**

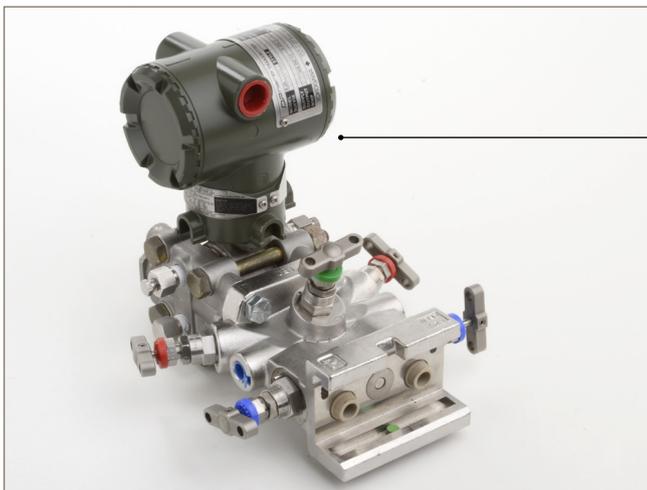
### 3.0 Secondary Module Instrumentation Mounting



Instrument

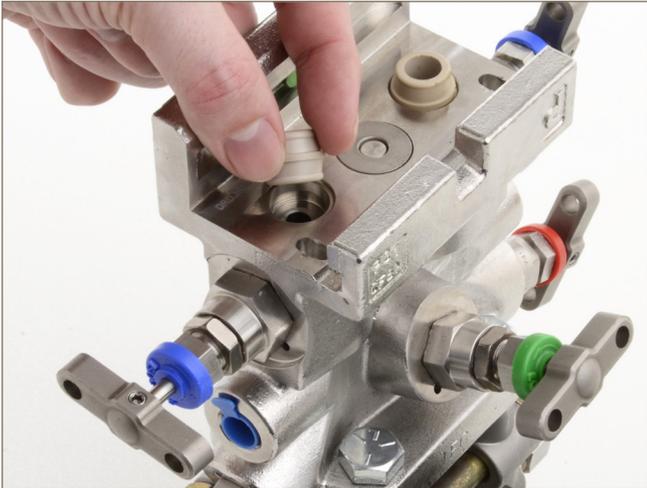


Fit instrument seals



Bolt instrument to secondary module in required position

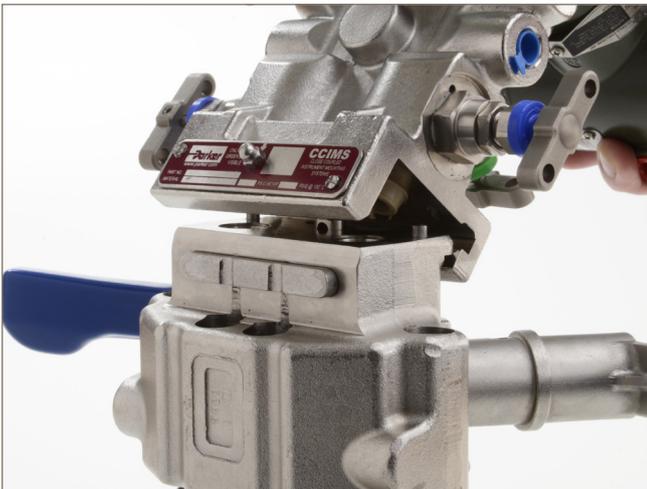
## 4.0 Secondary Module Installation



Fit the Phastfit seal into the seat. Press firmly until the seal is fully engaged

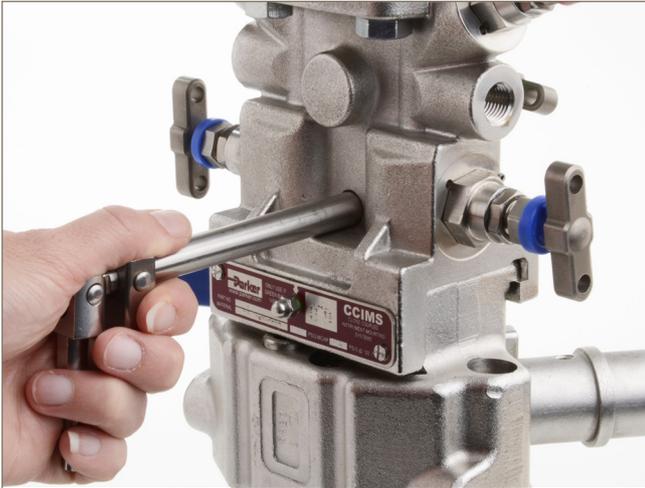


Fully engaged seal



Align and engage the secondary module with the primary

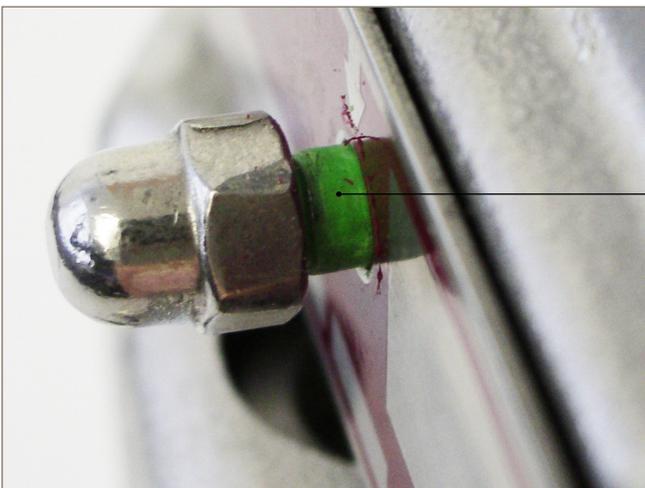
## 4.0 Secondary Module Instrumentation - continued



Insert the shaft end of the assembly tool into the secondary module assembly hole



Press down on the handle. The two modules are fully engaged when green safety indicator is deployed



Engagement indicator

**The installation of primary and secondary modules is now complete**

## 5.0 Secondary Module Change Out



Primary isolates open



Primary isolates closed

Close the primary isolate valves. The primary isolate interlock bar can now be engaged



Interlock bar



Assembly key hole

Pull the interlock bar back to expose the assembly key hole



CCIMS assembly tool

Pivot point

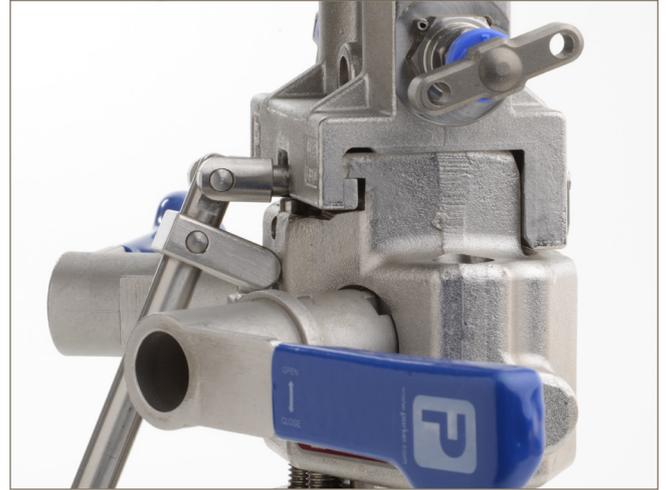
Orientate the key feature to suit the assembly key hole, fully insert the assembly tool into the key hole

Key feature

## 5.0 Secondary Module Change Out - continued



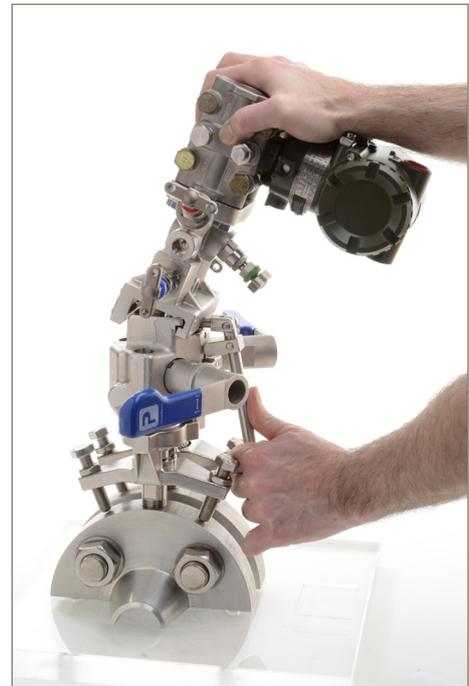
Insert the assembly tool fully into the assembly key hole



Turn the key ¼ turn (90 degrees) so that the pivot point rests on the primary module

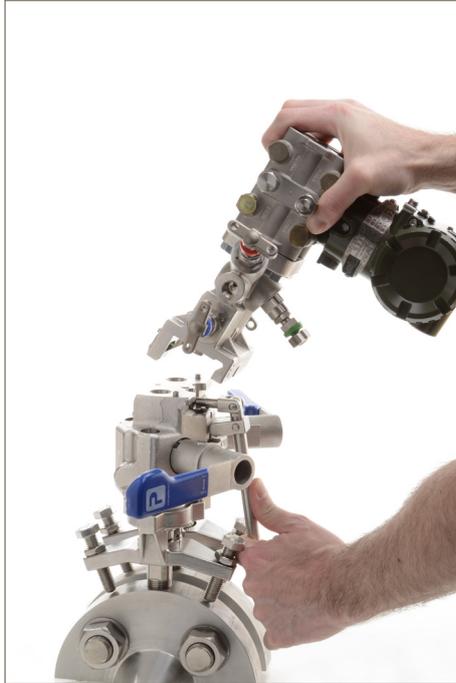


Holding the secondary module, depress the assembly tool handle to unlock the modules

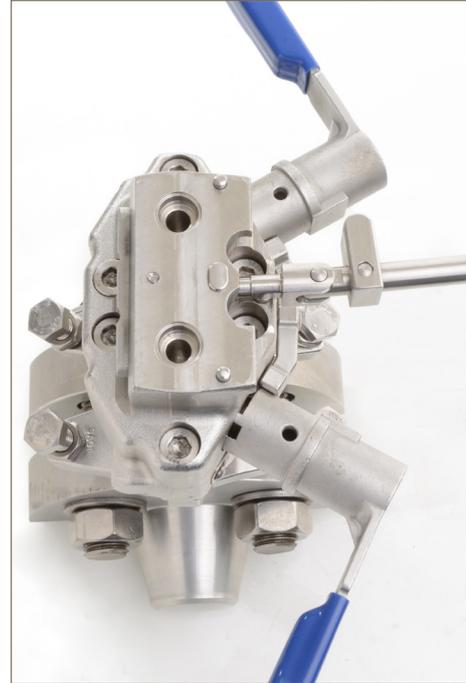


Pull the secondary module towards the tool. Then lift away from the primary module

## 5.0 Secondary Module Change Out - continued



Remove secondary module



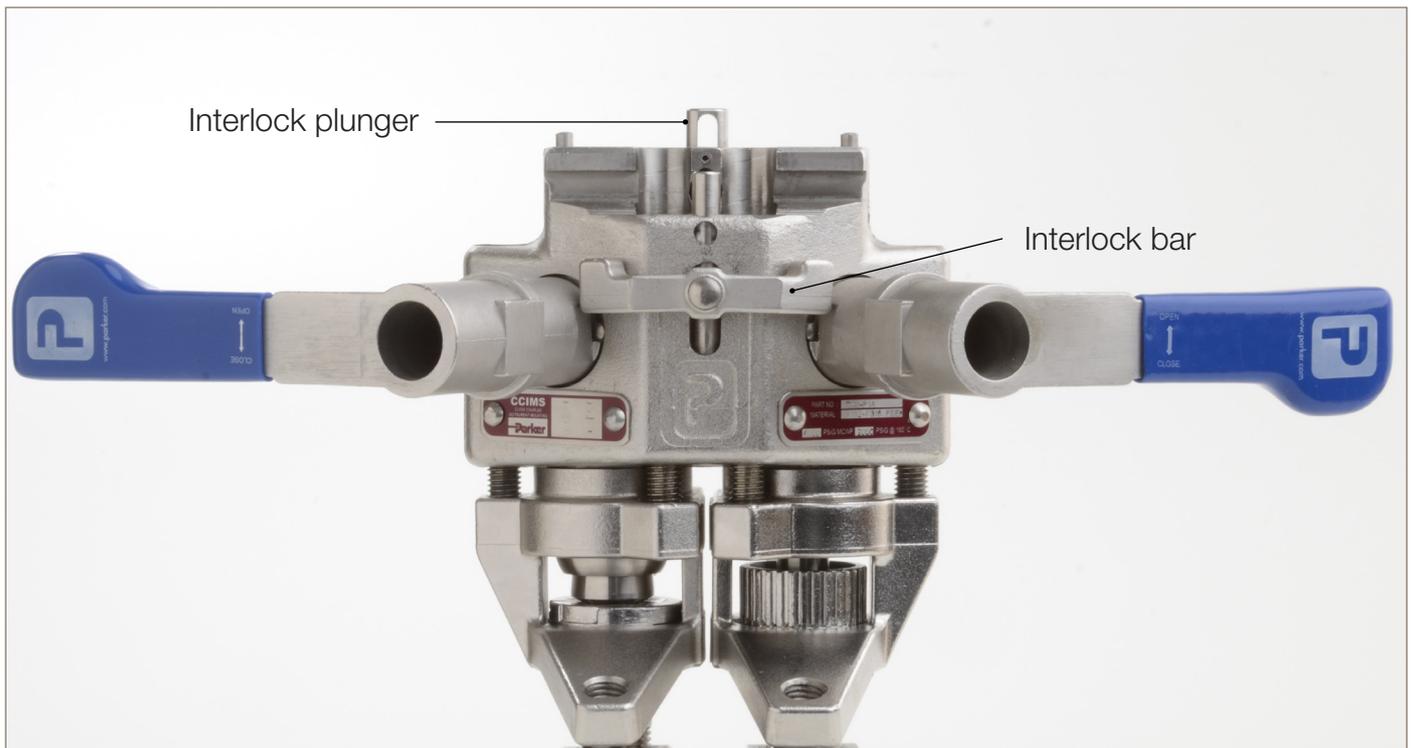
Rotate the assembly tool through 90 degrees and withdraw it from the key hole

The Phastfit seals must be replaced after a connection has been broken. Remove the seals from the module and discard. Care must be taken not to damage sealing surfaces. New seals should be replaced as per the 'Secondary Module Installation' section.



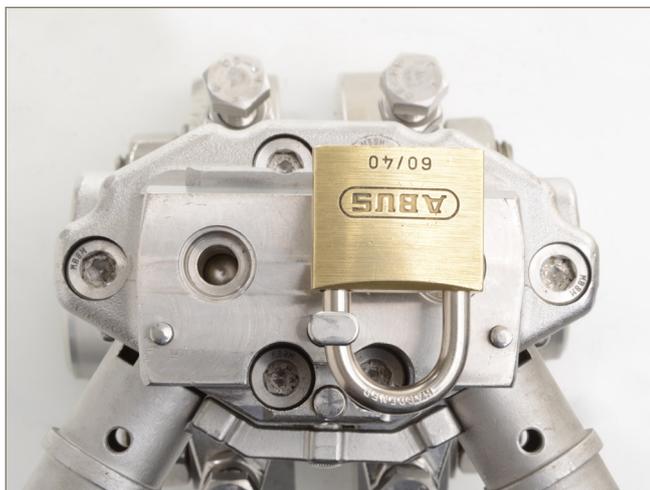
## 6.0 Secondary Module Interlocking Handle System Operation

When the secondary module is not connected, the interlocking system locks the primary module isolate valves in the closed position.



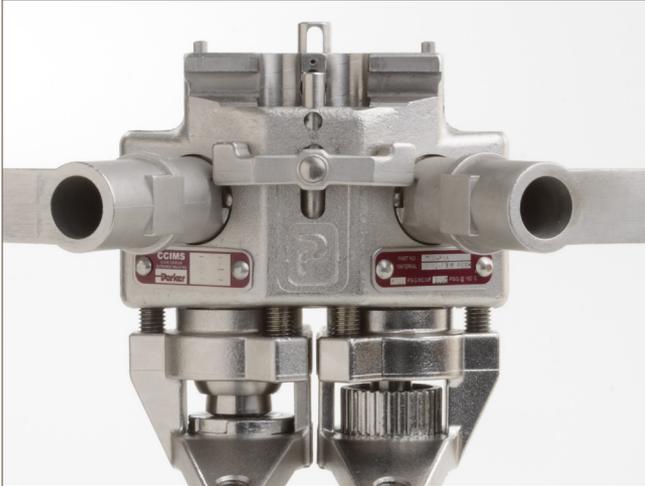
Here the interlock is engaged. The interlocking bar prevents the handles from being opened.

The interlock system should be secured if the secondary module is to be left off.



Padlock (not supplied) the interlock plunger

## 6.0 Secondary Module Interlocking Handle System Operation - continued



It is possible to disengage the interlock by pressing the interlock plunger. The interlock bar moves away from the valve handles and allows the valves to be operated.



To re-engage the interlock, press and hold both the interlock bar and plunger

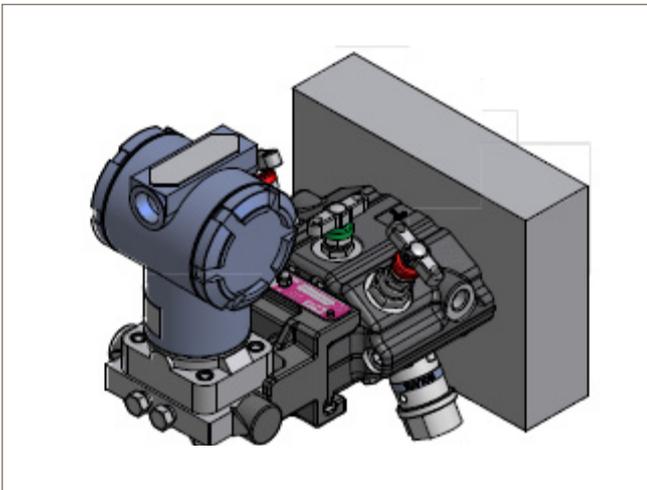


Release the interlock plunger while holding the bar. The interlock bar will latch into the engaged position

## 7.0 Optional Primary Module Installations

Due to the flexible design of the CCIMS there are many possible configurations that are not detailed in our catalogue. The majority of these options apply to the mounting of the primary module to the user's installation. Some common installation options are detailed below:

### 7.1 Primary module mounted to a flat surface (eg: ANSI or API flange, user specific surface)



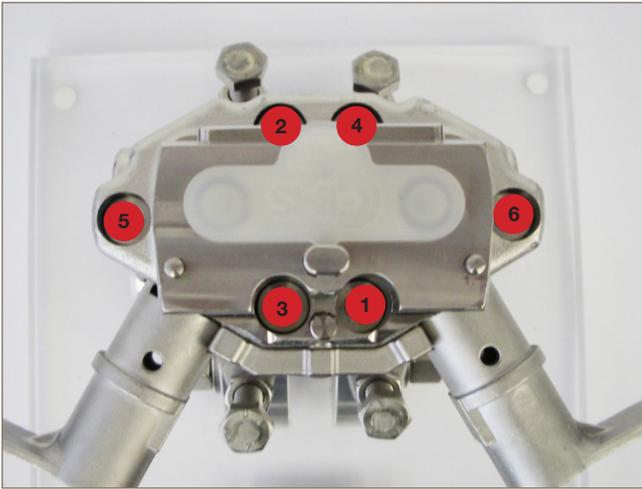
In these installations sections 1 & 2 of this manual are not specifically relevant, however they may be helpful to read in order to fully understand the basic principles of the design.

In these applications there are no orifice tappings or swivel & slide seals. However, there are 6 socket head cap screws (8mm socket required) that are used to hold & seal the primary module to the flat surface.

Prior to assembling install the 3 seals on each of the connectors, then carefully place this unit onto the prepared flat surface taking precautions to align to two parts correctly and to ensure that these seals are not damaged.

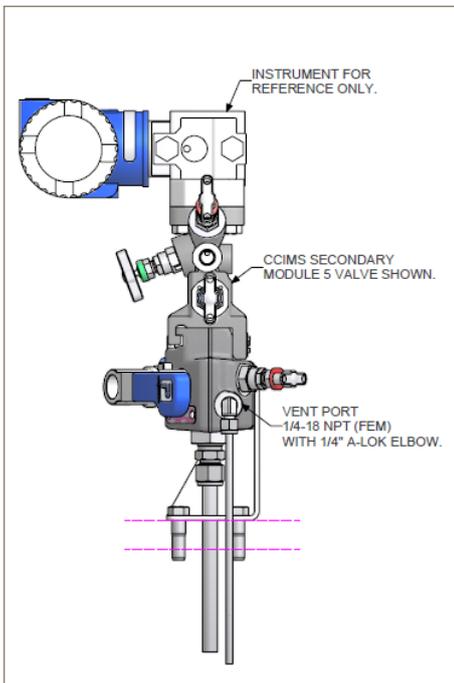


## 7.1 Primary module mounted to a flat surface - continued



The final procedure is to tighten the 6 socket head cap screws as evenly as possible. Screws should be tightened in a specific sequence (see picture) , however after achieving a hand tighten position each screw in turn should only be rotated half a turn before moving to the next in the sequence until the final torque of 17Nm (150 lb.in ) is achieved. Finally inspect the assembly to ensure metal to metal contact between the CCIMS primary module and the flat surface.

## 7.2 Primary module remotely mounted from the process



In these instances we offer female threaded connections (eg 1/2" NPT female) to connect to the process. Standard site installation practices should be employed for these connections, however, care must be taken to ensure that the CCIMS unit is adequately mounted / supported to eliminate stresses on the process connections.

## Piping & Pressure Codes

CCIMS has been designed to, and is in accordance with the following codes.

Code	Description
ASME VIII	(Design / Factor of safety)
ANSI / ASME B16.34	(Design/material)
ANSI / ASME B1.20.1	(NPT Threads)
BS 3643. pt 2	(Metric Threads)
ANSI / ASME B16.36	(Orifice Flange Connection)
API 607 / BS.6755 pt 2	(Fire safety – subject to specification)
IEC 61518	(Instrument connection)
MSS-SP-25	(Product Marking)
MSS-SP-99	(Instrument Valves)
ASME B36.10	(MSW pipe)

PED / CE Marking:

In accordance with Article 3 paragraph 3, of the Pressure Equipment Directive 97/23/EC, valves having a nominal size of DN25 (1") or less are manufactured in accordance with 'Sound Engineering Practice' and it is not permitted to CE mark items which fall into this category.

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