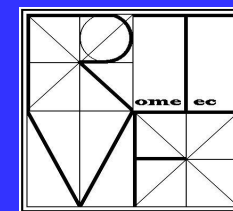


Isokinetic Sample Nozzle



Sentry-equipment



www.rometec.it

Overview

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Isokinetic Sampling Design

Isokinetic sampling nozzle is Ideal for not only saturated , superheated steam , but also water sampling in power plants. The nozzle is designed to meet the requirements of ASTM Standard D1066 and ASME PTC19.11.

Isokinetic sampling requires that the velocity of the fluid entering the sample nozzle port is exactly the same as the velocity of the streaming being sampled at the location of sample nozzle. The ratio of the port area to the pipe area should be equal to the ratio of the rate of sample flow to the rate of stream flow. Under this condition, the velocity of stream entering the sampling port will be that of the stream flowing in the pipe and will represent isokinetic flow.

The bore of the nozzle and the size of the port shall be in accordance with calculated data .

Each nozzle is designed with considerations of stresses from pressure, vibration, erosion, and strength of the attachment to the pipe.

Type and Materials

■ Type

The type of isokinetic nozzle and application of boss are decided in accordance with
1. fluid in the pipe 2. pipe size 3. wall thickness of the pipe 4. pressure and temperature of main pipe. For non isokinetic water sampling, 25.4mm OD nozzle with single 10mm ID ream bore, facing water flow at an angle of 45° could also be used.

■ Materials

A182 316SS is typically used to enhance the strength and material's resistance to corrosion and erosion, although the same material as pipe can be used as per ASTM code. Other materials are also available upon request. The maximum temperature in the process should also be considered.

The material of the boss/ transition stub selected and weld material used for the joint should be compatible with the process pipe material.

Isolation valves

All nozzles for sample pressure of 34.5bar and above are typically equipped with double isolation valves, 34.5bar below can be equipped with single isolation valve.

The valve is of a globe (needle where applicable) type with union bonnet design .
The valve is of 316 SUS body, rating temperature up to 450°F is of PTFE packing,
from 450°F is of graphite packing.

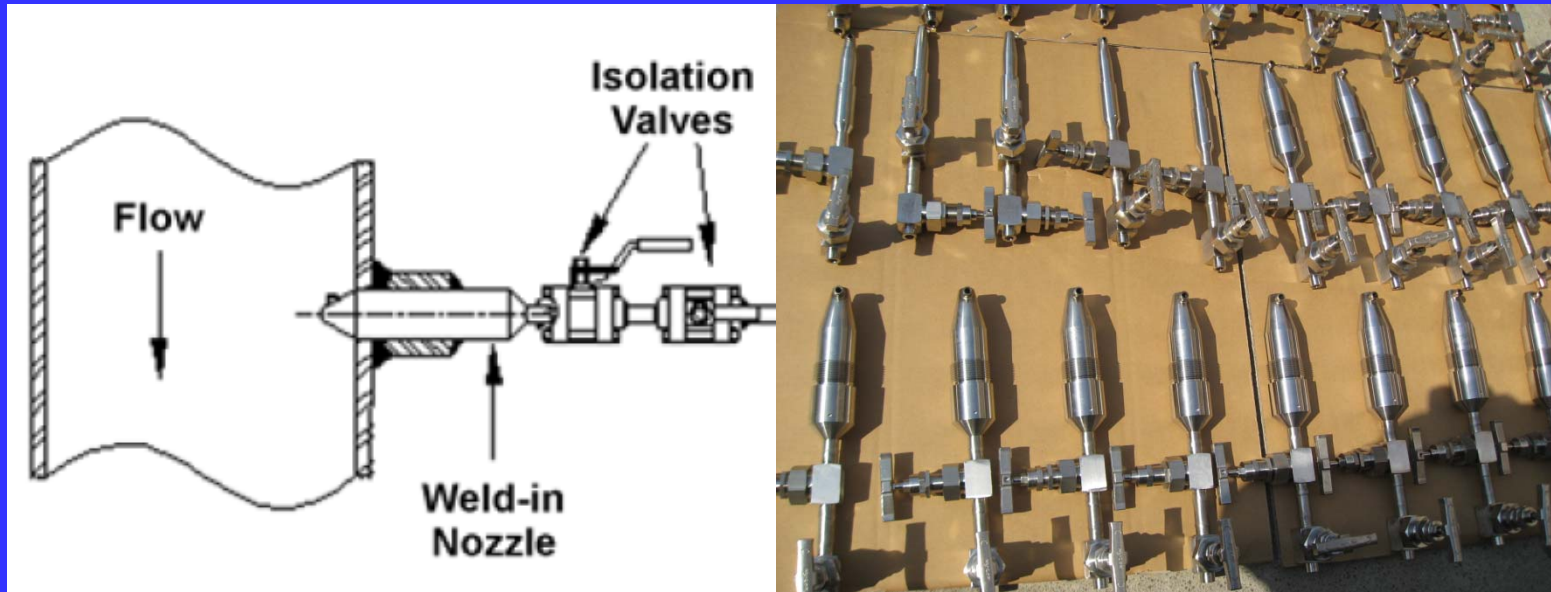
Working pressures up to 6,000 psig (410 bar) as a standard, up to 10,000 psig (689 bar)
for supercritical pressure application.

Various end connections (Pipe and Tube SW , FNPT ,etc) are available.

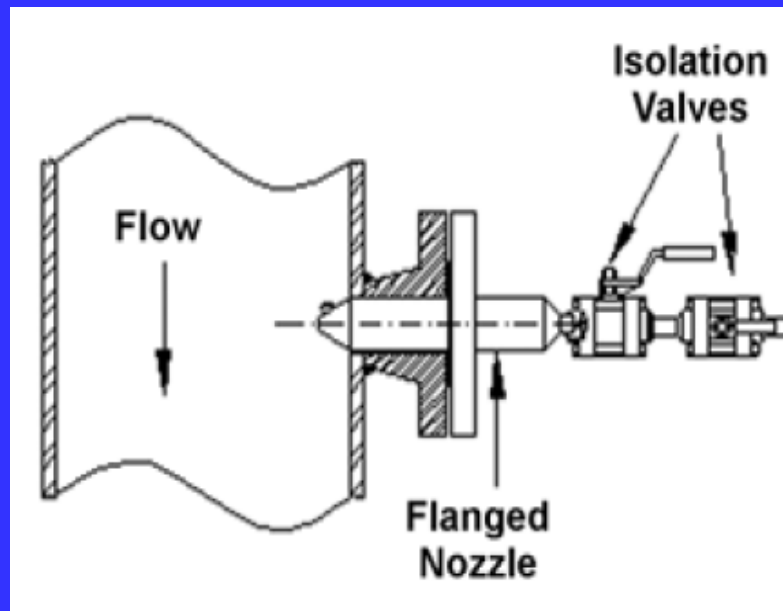
Double isolation valves are typically connected to the nozzle in series and at an
angle of 90° each other .

Installation and Operation

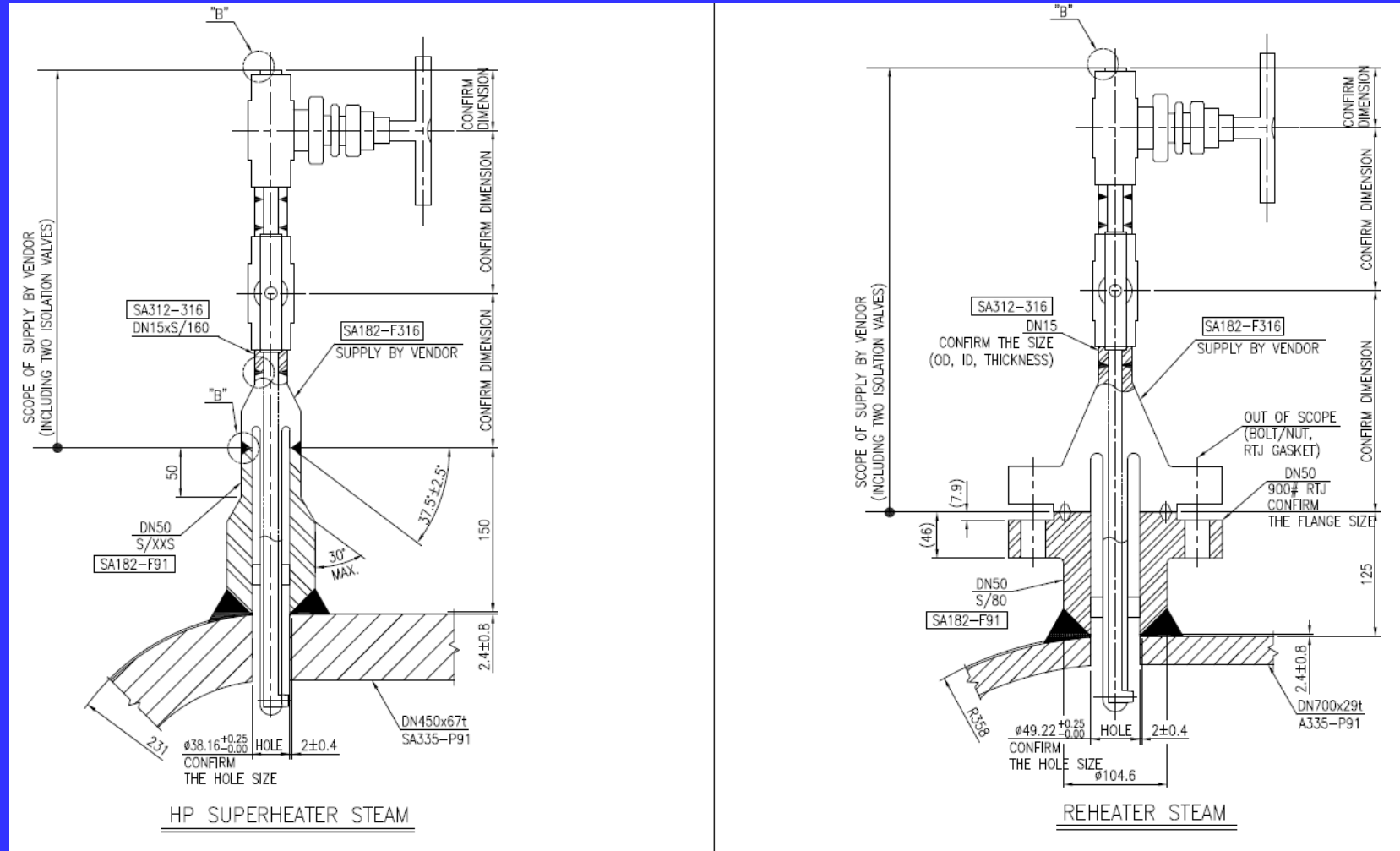
Weld in Style



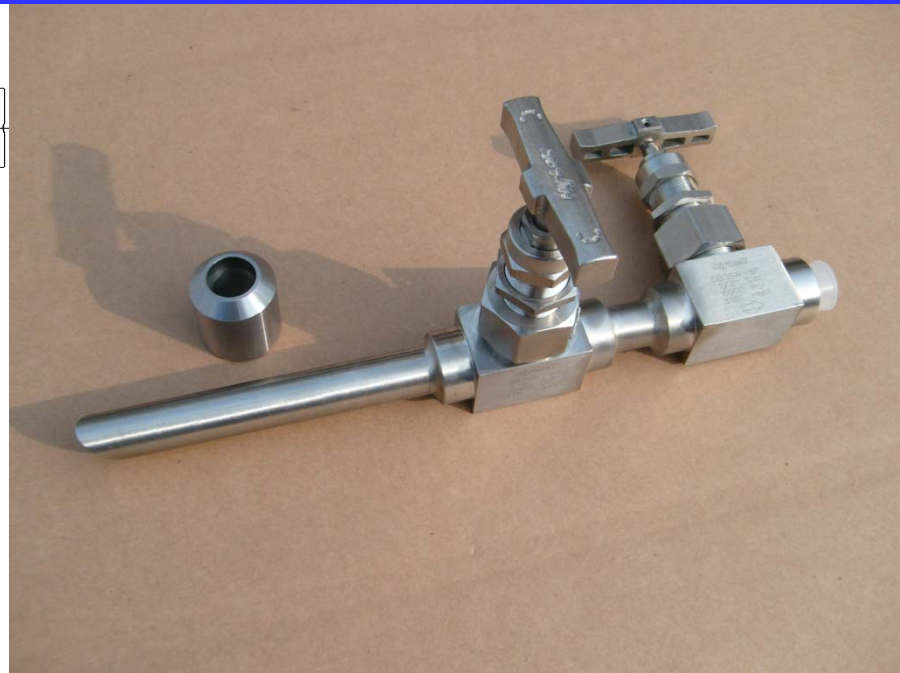
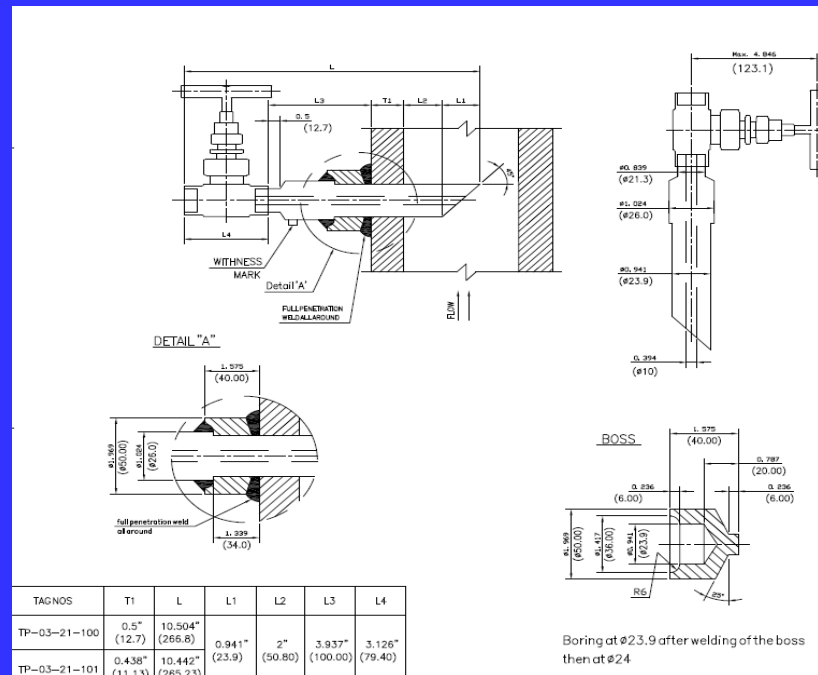
Flanged Style



Nozzle installation at Supercritical Pressure /Temperature area



Non Isokintic Water Sampling Nozzle

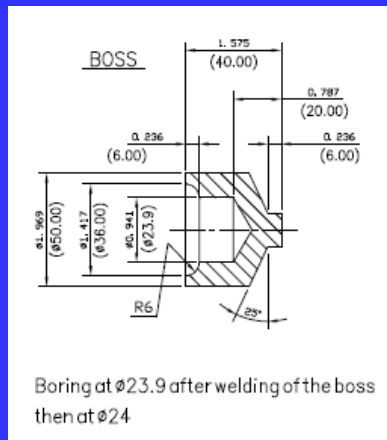


Experience

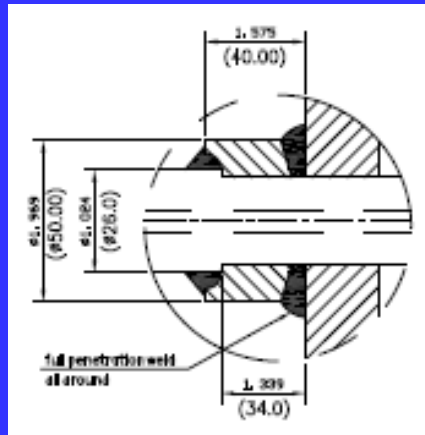
- 604 units since 2002
 - Single port isokinetic nozzle, Weld in and Flanged Style
 - Multi ports isokinetic nozzle, Weld in and Flanged Style
 - Non isokinetic nozzle for Water Sampling.
- ~90 % for international
Sweden, South Africa, Spain, Singapore, Indonesia, China,
Philippines, Saudi Arabia , Kuwait, Portugal and India.
- ~10 % for domestic

Ordering Information

1. Pressure, temperature, and mass flow rate of the sampled fluid
2. Pipe ID, wall thickness, material, insulation thickness
3. Desired sample rate (cc/min), Typically 1000 cc/min
4. Desired pipe attachment (weld, flange, etc.)



Boss attachment at weld in style,



Precut boss for weld in style

5. Nozzle material (A182-316 recommended)

Summary

- Isokinetic single port sampling nozzle is Ideal for not only saturated , superheated steam , but also water sampling in power plants.
- Non isokintic nozzle is only applicable to water sampling.
- The type of nozzle and application of boss are decided in accordance with 1. fluid in the pipe 2.pipe size.3. wall thickness of the pipe .4 pressure and temperature of main pipe.
- Ordering information is required for each different application.