Spring Loaded Variable Area Steam Meter

Description

The SPIRAX SARCO Steam Meter consists of four basic parts.

1. M111 Transducer. This is installed in the steam line at the point where the steam flow is to be measured. (See TIS 8.100). It is supplied complete with a 6.5 feet length of 8 core heat resistant cable for connection to the M322 Conditioning Unit.
2. Pressure Transmitter. This provides a 4-20 mA analog signal to the M322 Conditioning Unit proportional to line pressure for superheated steam applications.
3. M322 Conditioning Unit. The function of this unit is to accept flow rate and temperature signals from the M111 Transducer and pressure signals from the Pressure Transmitter and convert them to digital form for transmission to the M210G Computer.
4. M210G Flow Computer. This accepts signals from the M322 Conditioning Unit, processes and displays them. The keypad enables the user to select the parameters to be viewed as well as allowing access to the numerous facilities available. (See TIS 8.102).

Note: Wiring between Computer, Pressure Transmitter and Conditioning Unit to be provided by user/installer. The SPIRAX SARCO Steam Meter is designed for use on dry saturated and superheated steam only. Flow rates are based on a max. flow velocity of 115ft/s. Correct installation is important if accurate and reliable flow metering is to be achieved. Full Installation Instructions are supplied with each unit. Basic essentials of good installation are shown overleaf. Commissioning and Operating Instructions are also available for each unit.

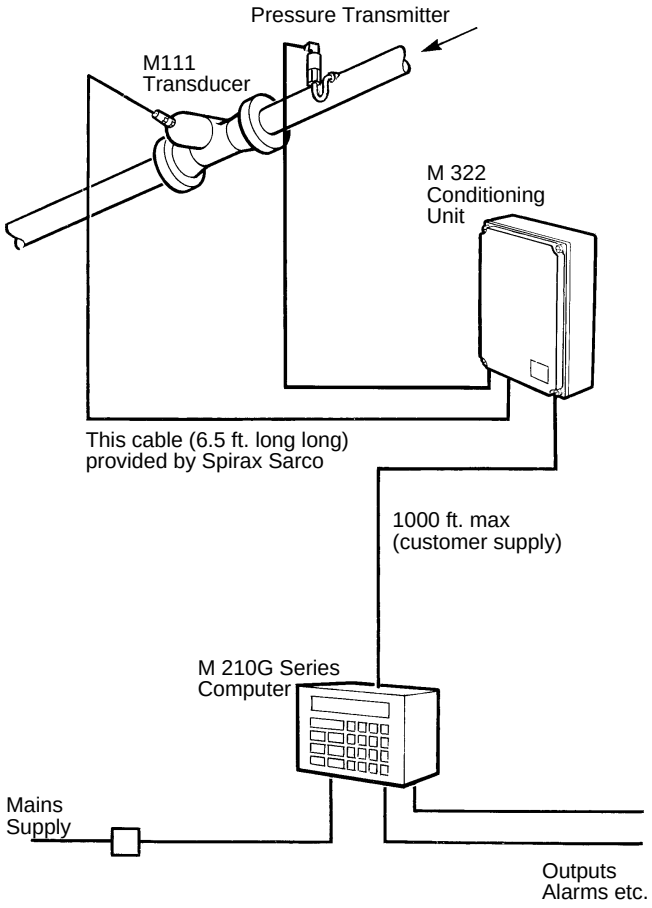
Performance

Accuracy:	± 2% of measured flow (± 1% of FSD at 50% flow)	
Repeatability:	± 0.2%	
Turndown:	Maximum intermittent turndown	40:1
	Average continuous turndown	25:1*

* For continuous operation, a velocity of 115ft/s should not be exceeded to prevent the risk of pipeline erosion.

Electrical wiring

All electrical wiring must be carried out to the appropriate standards.



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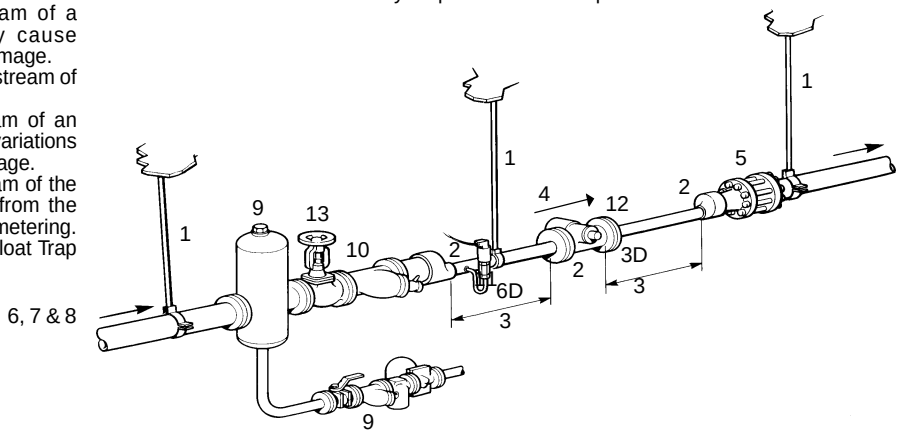
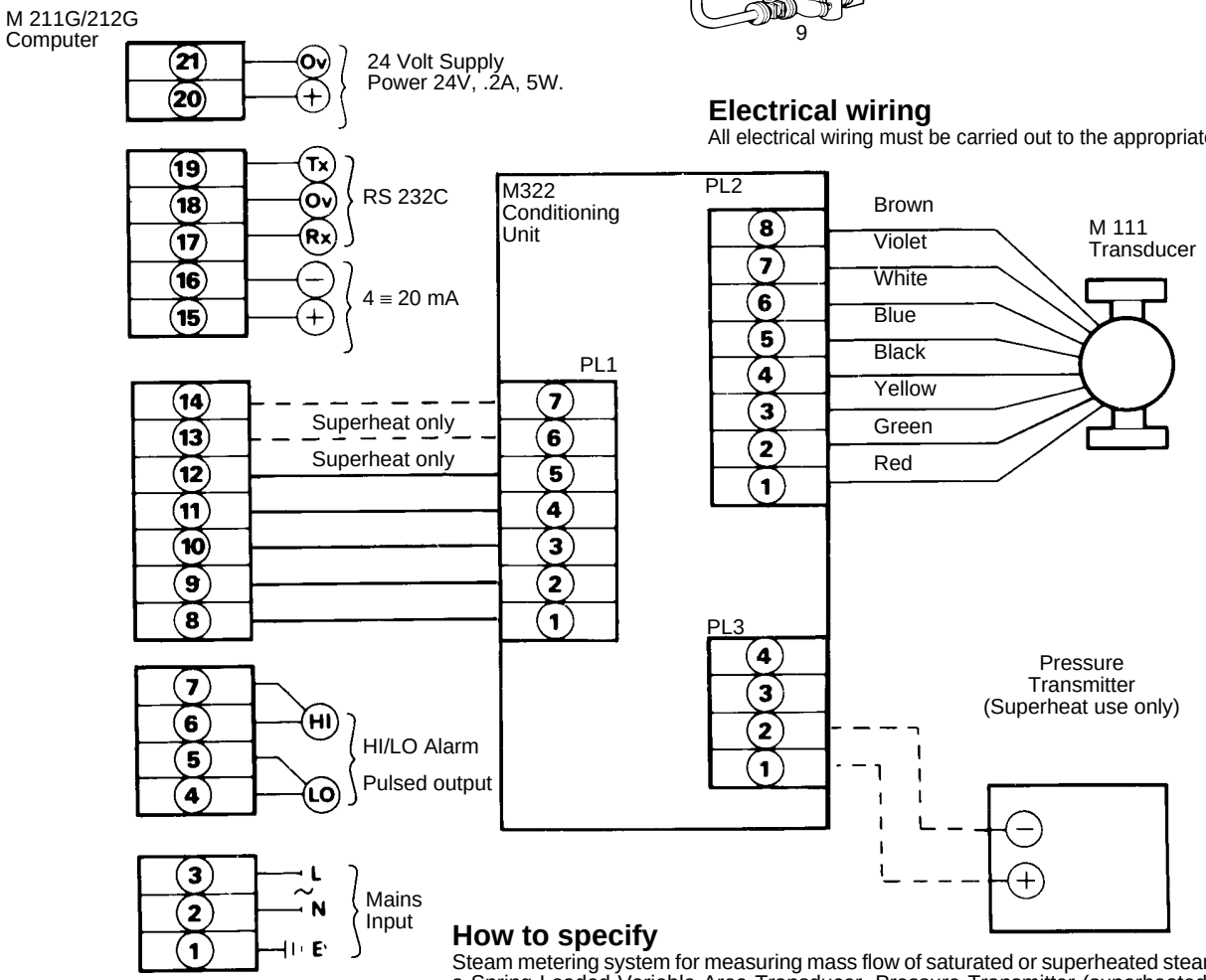
Installation points to watch

1. Ensure all pipework is adequately supported and properly aligned. This will prevent waterlogging during shutdown periods and possible problems on start up.
2. Size the Transducer on capacity rather than line size. Where a pipe size reduction is necessary, use eccentric reducing sockets.
3. The minimum recommended lengths of straight pipe are 6D upstream and 3D downstream.
4. Take care to observe the correct direction of flow as denoted by the arrow on the Transducer body.
5. It is advisable to fit a Check Valve downstream of the Transducer to avoid possible damage by reverse flow. At least 3 pipe diameters should remain between the Transducer and the Check Valve.
6. Do not install the Transducer downstream of a Pressure Reducing Valve as this may cause inaccuracies and/or possible Transducer damage.
7. Similarly, do not install the Transducer downstream of a partially open Stop Valve.
8. Avoid installing the Transducer downstream of an actuated valve which could cause rapid flow variations which, in turn, could cause Transducer damage.
9. A Separator should always be fitted upstream of the Transducer to remove entrained moisture from the steam. Dry steam is required for accurate metering. The Separator should be drained using a Float Trap set.
10. A full line size Strainer with 100 mesh stainless steel screen may be fitted to prevent dirt and scale reaching the Transducer. This is especially advisable on old or dirty systems where dirt or corrosion is present.
11. Ensure gasket faces do not protrude into the pipeline.
12. Insulation of the Transducer is not recommended, especially the domed cover.
13. A Bellows Sealed Stop Valve may be fitted upstream of the Transducer.
14. It should be remembered that good drainage is always necessary even with superheated steam systems where significant condensate loads may be present on start up.





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How to specify

Steam metering system for measuring mass flow of saturated or superheated steam comprising a Spring Loaded Variable Area Transducer, Pressure Transmitter (superheated applications only) local signal Conditioning Unit and Flow Computer. The system shall have density and dryness fraction compensation and be capable of display in energy units. System outputs should be 4-20mA (rate of flow), pulsed output (totalized flow) and RS232C interface.

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