

FMC Measurement Solutions Flow Nozzles and Flow Nozzle Sections are manufactured in accordance with the latest A.S.M.E. codes. This assures maximum accuracy for the user. Laboratory flow calibrations are available when required.

Benefits of Flow Nozzles

- Flow capacity is approximately 60% greater than an orifice plate with the same beta ratios.
- Sustains accuracy over longer period of time than an orifice plate.
- Less subject to damming effect of solids or foreign matter in flow than the orifice plate.
- Provides a smaller beta ratio than an orifice plate for the same flow and differential pressure requirements, thereby permitting use of shorter lengths of upstream and downstream pipe for an approved installation.
- Better wear qualities than orifice plate.
- Can be used in piping systems where flange connections are not desired or not acceptable.
- Same flow capacity as venturi tube at less cost.
- More accuracy in high velocity flows than orifice plate.

Flow Nozzle Types

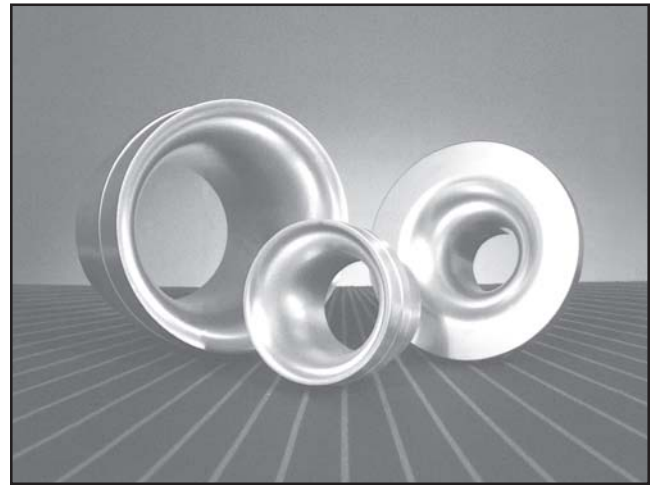
- Flange
- Weld-in
- Weld-ring
- Throat tap
- Specials

Ordering Information

Please specify the following when ordering:

- Type
- Line Size
- Pipe, Nominal I.D. or Schedule
- Throat I.D. or Beta Ratio Required¹
- Material Required
- Any Special Requirements

¹ If throat is to be calculated by FMC Measurement Solutions please give complete flow data for the fluid and flowing conditions.



Flow Nozzles

Materials of Construction

- Carbon Steel
- 304 SS
- 316 SS
- Chrome Moly, and Others

Type "F1" Flange Type Nozzle

FMC Measurement Solutions flange type flow nozzle for insertion between flanges is shown in Figure 1. This type is most commonly used with pipe wall taps located at one diameter upstream and one-half diameter downstream. Nozzle is centered in pipeline within required tolerances by shoulder behind nozzle flange. Designed in accordance with A.S.M.E. specifications for flow nozzles. Nozzle flange normally furnished for insertion between raised face flanges. May be furnished for other flange facings such as ring joint tongue and groove or male-female, upon specification.

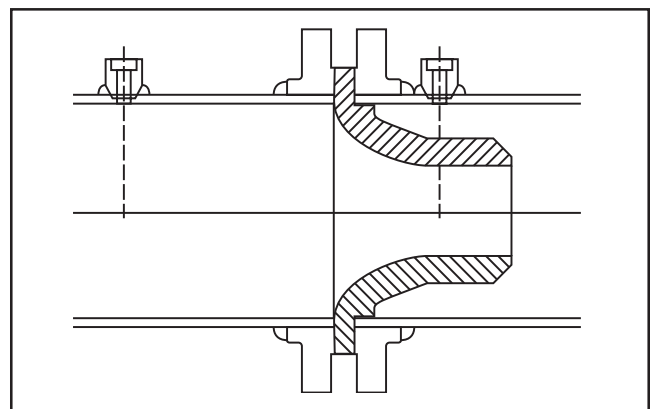


Figure 1

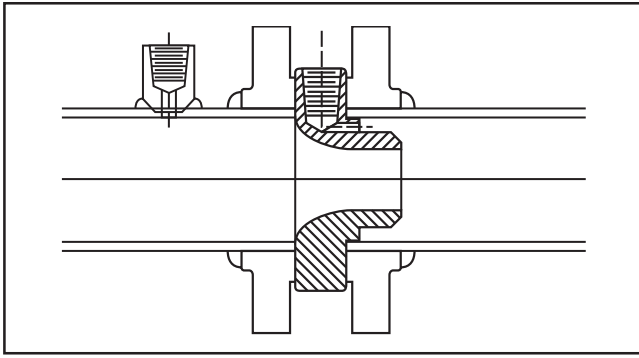


Figure 2

Type "F2" Flange Type Nozzle With Tap

FMC Measurement Solutions flange type flow nozzle with downstream tap in nozzle flange is shown in Figure 2. This type is basically the same as type "F1" except for the tap location. It is used mostly in small sizes where the downstream pipe wall tap locates in an undesirable place such as on or too close to pipe weld, etc. Designed in accordance with A.S.M.E. specifications for flow nozzles. Normally furnished for insertion between raised face flanges but may be furnished for other flange facings upon specification.

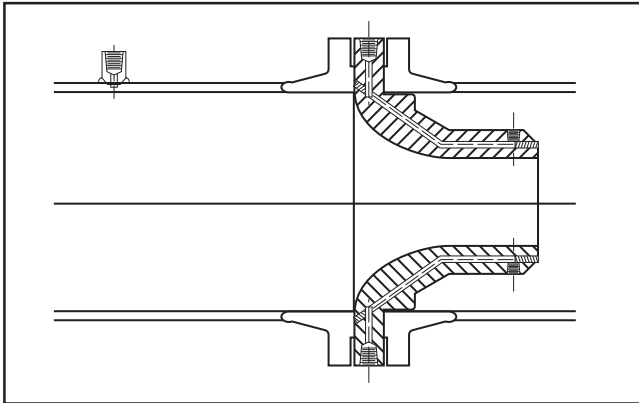


Figure 3

Type "F3" Flange Type Throat Tap Nozzle

FMC Measurement Solutions flange type throat tap flow nozzle as shown in Figure 3 is used when extreme accuracy and repeatability are required. In most cases, this type of nozzle is purchased with a complete flow section and is laboratory flow calibrated (see Figures 4 and 5). They are manufactured in strict accordance with A.S.M.E. power test code.

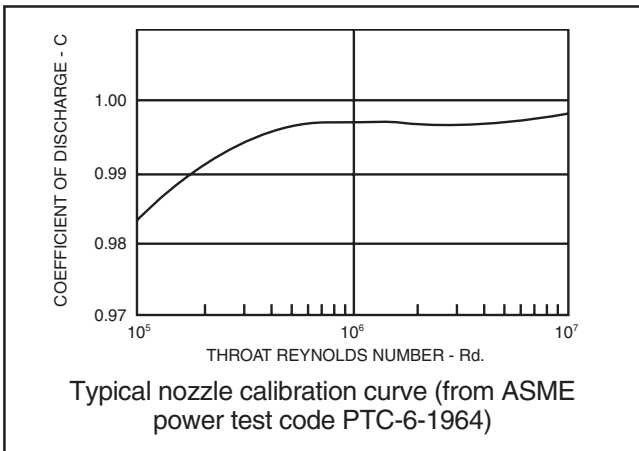


Figure 4

Type "W1" Weld-in Type Nozzle

FMC Measurement Solutions weld-in type flow nozzle for welding directly into flow section is shown in Figure 6. This type is used where flanges are not readily acceptable, such as high temperature and pressure applications. These are used most frequently in power plant installations, feed water, etc. Complete flow nozzle flow sections (see Figure 9) are available with this type and are designed and fabricated in strict accordance with applicable A.S.M.E. specifications.

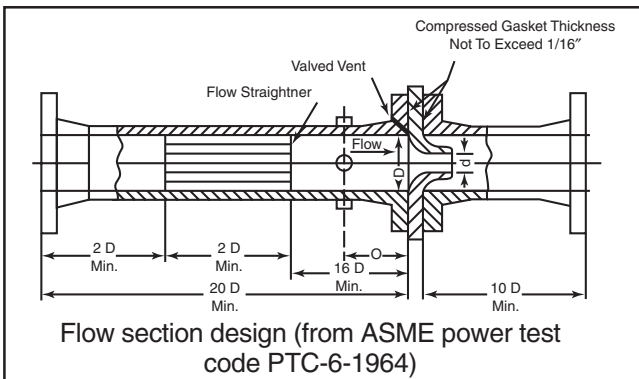


Figure 5

Type "W2" Weld-ring Type Nozzle

FMC Measurement Solutions weld-ring type flow nozzle for welding and pinning into flow section is shown in Figure 7. This type nozzle is basically the same as type "W1" except for the way it is secured in the pipe. The pinning process eliminates welding or dissimilar materials as the ring, pins and pipe are of compatible metals.

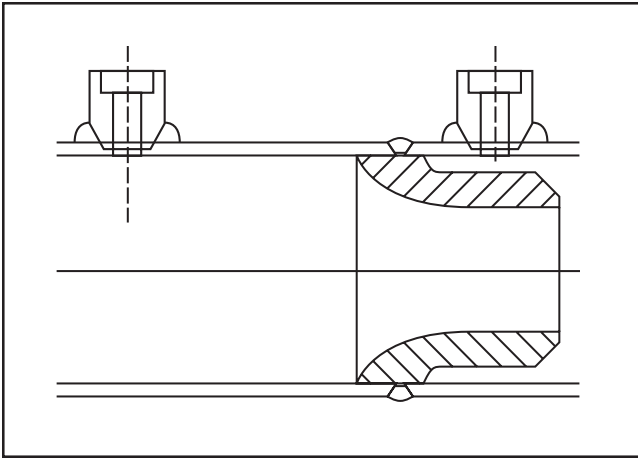


Figure 6

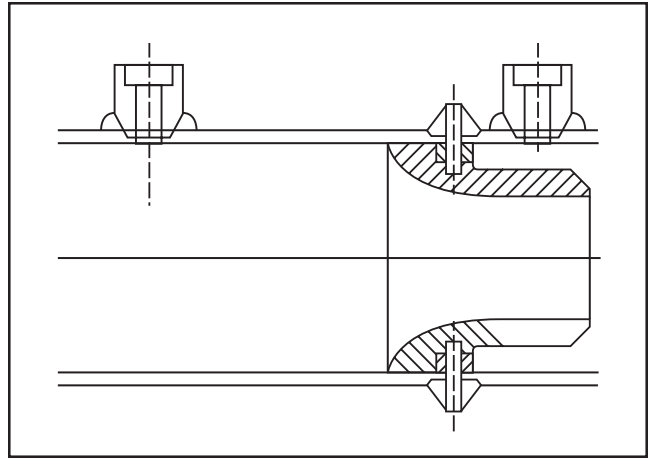


Figure 7

Complete Flow Nozzle Flow Sections

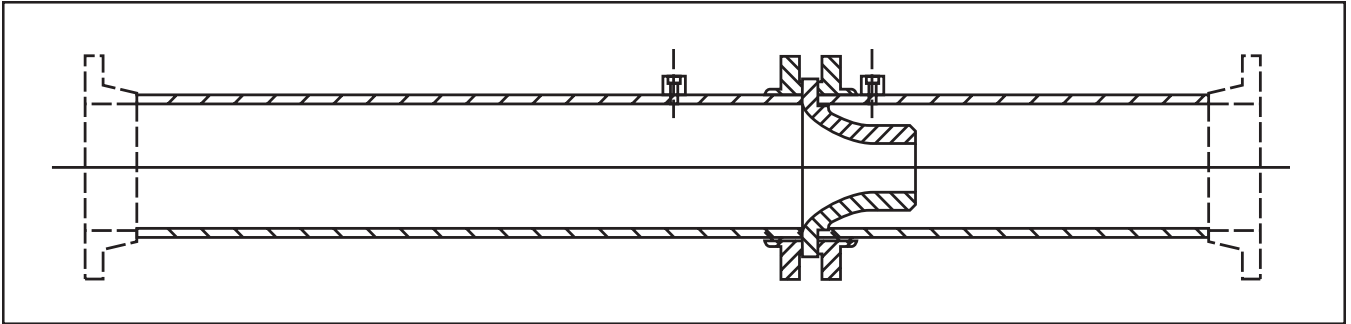


Figure 8 – Flow section with flange type flow nozzle

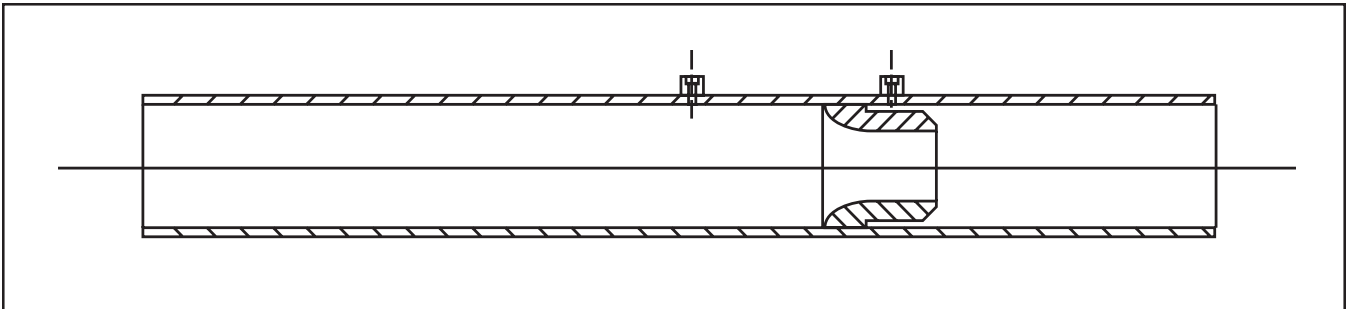


Figure 9 – Flow section with weld-in type flow nozzle

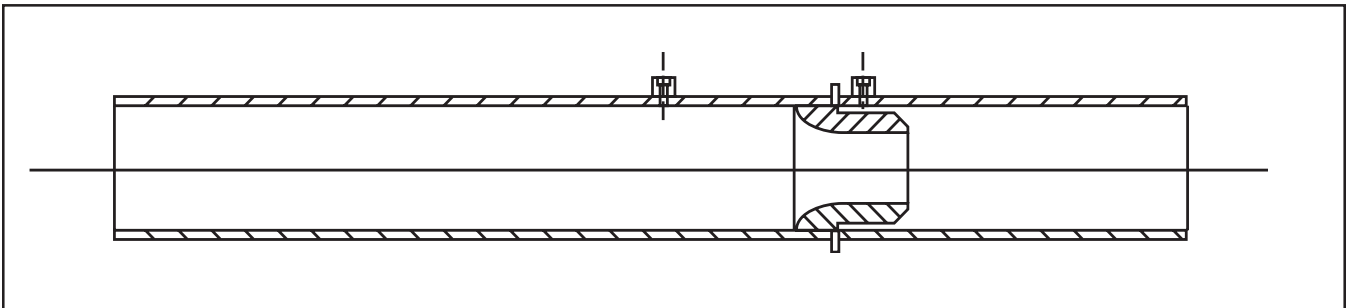


Figure 10 – Flow section with weld-ring flow nozzle

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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