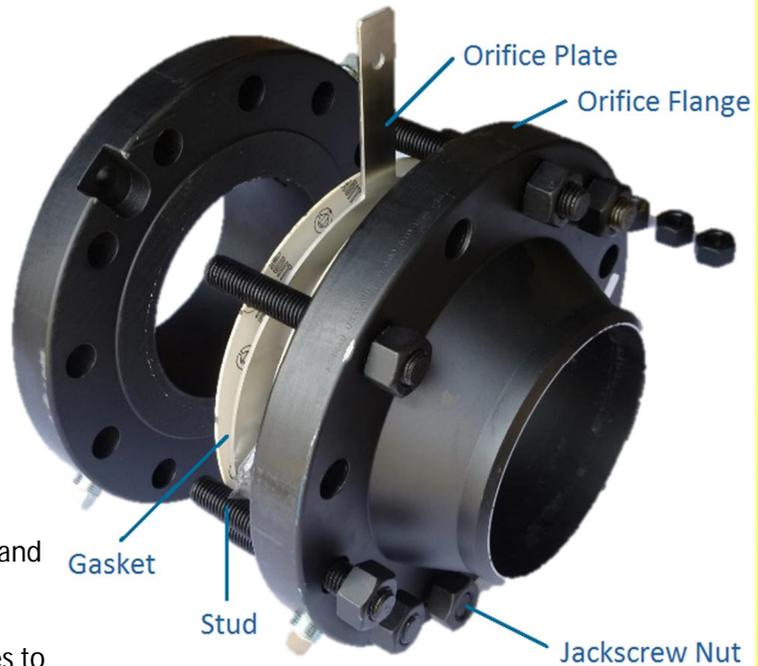


# Orifice Plate Manual

## INSTALLATION

### Prior to Installation

1. Determine the proper placement by ensuring adequate straight run.
2. Determine the proper orientation.
3. Weld the flange union. Ensure that the orifice flange is the correct size and rating.
4. Make certain that the flange taps are aligned and level.
5. Weld the orifice flanges to the pipe.
6. To avoid serious burns allow the orifice flanges to cool before installing the orifice plate.



ORIFICE PLATE & FLANGE UNION  
COMPONENTS



### General Installation Instructions

1. Ensure that the pipeline is not under pressure and has been properly drained or purged as required.
2. Loosen all studs and nuts.
3. Remove the studs in one half of the flange union.
4. Spread flange union by turning jackscrews clockwise.
5. Install new plate or remove existing plate for replacement or for inspection.  
**Make certain that the Bevelled Side is toward downstream.**
6. Install new gaskets when installing plate. It is recommended to install new gaskets each time orifice flange union is separated.
7. Release the flange union by turning Jackscrews counter clockwise.
8. Replace studs.
9. Tighten studs in a star pattern starting with two studs opposite

## Orifice plate and flowmeters

**Correct installation is crucial to accurate metering:** Almost all flowmeters need certain lengths of straight, uninterrupted pipe upstream and downstream of the flowmeter itself, and orifice plates are no exception. As the performance of orifice plates is based on theoretical predictions, the installation is very important.



$$\beta = \frac{d}{D} \text{ (orifice diameter mm)}$$

$$D \text{ ( pipe diameter mm)}$$

$d$	Bore diameter
$D$	Pipe diameter
$\beta$	Diameter (beta) ratio

Most of the results are available for beta ratio 0.3 to 0.7.

Higher beta ratio needs longer straight length.

Using ISO 5167 standard, the recommended minimum lengths are shown here.

Minimum number of pipeline diameters required upstream of orifice plate

$\beta$	<0.20	0.40	0.50	0.60	0.67	0.75
A	12	12	12	14	18	24
B	10	10	18	30	44	44
C	19	44	44	44	44	44
E	3	3	19	29	36	44
F	6	16	22	42	44	44

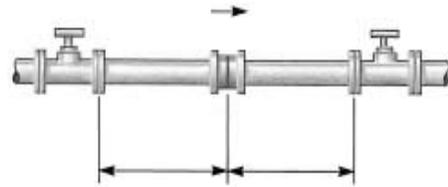


Figure 1) A: Fully open gate valves

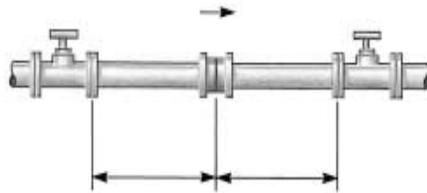


Figure 2) A: Fully open ball valve

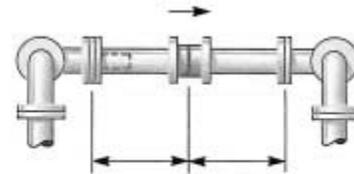


Figure 3) B: Two bends at right angles with flow conditioner

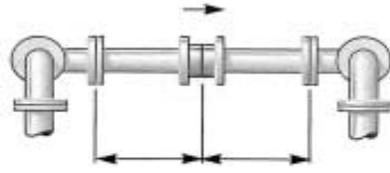


Figure 4) C: Two bends at right angles

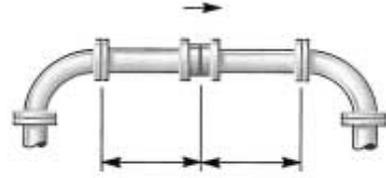


Figure 5) F: Right angle bends

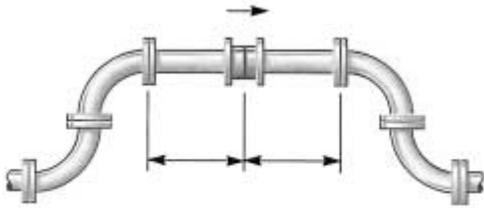


Figure 6) B: Two right angle bends in same plane

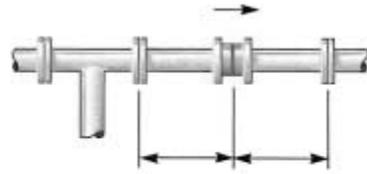


Figure 7) E: Branches

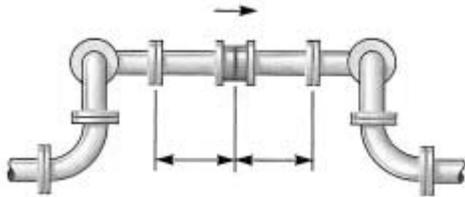
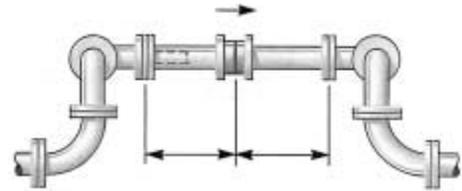


Figure 8) C: Three bends at right angles



9) B: Three bends at right angles with flow conditioner