



## Restriction Orifice Paddle Plates Single and Multi Hole

Restriction orifice plates are used as a means of controlling line pressure in systems using pressure critical components and are placed in-line using orifice flanges. By nature of their design, Restriction Orifice plates create a large differential pressure and in turn provide the required downstream pressure. The restriction orifice is calculated and designed taking into account the medium characteristics, the pressure loss and the process data.

ST-ROP-01

There are conditions that need to be considered to ensure a single plate will be sufficient for reaching the required pressure reduction;

**Noise** - An industry acceptable figure for the noise generated for a single hole restriction plate is <85dB. Noise levels can be further reduced by approximately 5 dB if a multi-hole plate is used. By increasing the number of bores in the plate the noise level generated by the restriction will be reduced.

The maximum acceptable noise level depends on the installation and service conditions. It is recommended that the upper limit for the noise level is defined by the health and safety requirements applicable to the plant (usually 85 dB(A) for continuous operation).

**Cavitation** - Thick Plate for cavitating flow. The only way to avoid the cavitation is to change the process parameters or to use thick single plates. Alternatively the use of several plates to reduce the pressure in several steps can be employed. The number of steps is related to the operating conditions of the plant.<sup>1</sup>

**Sonic flow and choke flow conditions** - Single plates are only acceptable for use if the maximum differential pressure generated to achieve pressure reduction do not induce sonic or choked flow conditions.

### FEATURES

- **FACING:** Raised Face 'RF', Ring Type Joint 'RTJ' or BX ring (API 6A) - serrated machined face to ASME B16.5
- **TAG, ANSI Class, Line Size, Bore, Material & Type** etched on upstream face of tab. Part number etched on downstream face of tab handle
- **PLATE THICKNESS:** This will be generated from our sizing calculation
- **Orifice bore/plate type :** Square edge concentric
- **MATERIALS:** Carbon Steel, Stainless Steel 304 & 316, Duplex, Super Duplex, Monel, Inconel
- **SIZES:** 0.5" to 24" (15DN to 600DN) - other sizes available upon request
- **ANSI CLASS:** 150-2500 ANSI & 4,000 to 10,000 PSI

### ORDERING INFORMATION

Part number format for ordering is as follows; TYPE-SIZE-ANSI-THK-BORE-MTL

Size	0.5" - 24" (other sizes available upon request)		
ANSI	150, 300, 600, 900, 1500 & 2500		
Orifice bore type	SQC = Square edge concentric, BI = Bidirectional, 1/4 = Quarter circle		
Bore	'd' dimension in inches (provided by customer or sized by calculation)		
MTL	<b>304</b> = 304 St.Steel	<b>D</b> = Duplex	<b>M</b> = Monel
	<b>316</b> = 316 St.Steel	<b>SD</b> = Super Duplex	<b>I</b> = Inconel

### WORKED EXAMPLES

ST-RFROP-4-900-0.250-0.5-316	RF Restriction Plate 4" 900 ANSI, 1/4" thick with 0.5" bore in 316 St.Steel
ST-RTJROP-6-1500-0.500-M-M	RTJ Restriction Plate 6" 1500 ANSI, 1/2" thick with multi hole bore in Monel

<sup>1</sup>In some cases one restriction plate is not adequate to reduce the pressure to the required output, so in these instances a set of plates are installed into a welded multi-step spool. See our Multi-plate spool Restriction orifice datasheet.