



GS HYDRO RETAIN RING

Literature



Introduction:



Figure 1 Retain Ring

The retain ring system is used in a huge range of high pressure applications in a wide variety of industries ranging from pulp & paper, metals and mining, marine and offshore, sugar and testing. It is suitable to use in hydraulic system application, lubrication, hydrocarbon, high pressure air and water cleaning lines, mud cement as well as other pipeline systems where high system integrity, fast installation times and inherent cleanliness are important.

Features:

The retain ring system has a maximum allowable pressure that can withstand up to 420 bar in the piping system. The retain ring system can be used with working pressure as high as 690 bar under specific piping applications.

Extensive testing has shown that retain ring system application is used for high pressure piping systems with a wide range of different materials. The retain ring system includes a wide range of flanged types which are 3-way tees, elbows or threaded adaptors. A standard bonded seal is used whereas a fire-safe seal is used for process piping in hydraulic application.

Description	SAE 3000	SAE 6000	ISO 6164
Working Pressure (bar)	210 - 350	420	210-690
Pipe Size	26 to 97mm	26 to 66mm	60.3 to 355.6mm
Pipe Thickness	6 to 12mm	6 to 8.5mm	11.04 to 41.4mm
Flange Size	1/2" to 3"	1/2" to 2"	2" to 12"

Table 1: Retain Ring System Technical Data

Product Types	Materials
Pipe	Mild steel, aluminium/brass duplex, galvanised steel, copper-nickel, super duplex, titanium, 4130 (elongation above 20%)
Flange	Hot dip galvanized carbon steel, electric zined carbon steel, stainless steel or titanium
Seal	Viton, NBR
Retain Ring	Stainless steel

Table 2: Material grade

Pipe end preparation & assembly:

The retain ring system is installation flexible, inherently clean, highly reliable and cost-efficient. It is fast and easy to prefabricate, assemble and install. A groove is made on the pipe and the pipe end itself is machined when preparing a retain ring connection.

A retain ring is installed into the groove before the flanges are placed onto the pipe end connection. A seal is positioned in between the flanges and pipe ends for tightening purpose. Fabrication of groove is flexible and it can either be prefabricated in workshops or on site installation.



Figure 2 Size of Retain Ring

Operating principle of retain ring:

Retain ring holds the flanges to the pipe. Retain ring is a stainless steel ring or spring that sits in a machined groove on the pipe end connection.

The retain ring connection features are as follow:

- Pipe ends are pre-worked with groove available
- Between the pipe ends, there is a seal placing
- A flange is fitted onto the pipe end connection
- A flexible retain ring is stretched over and into the groove of connection
- The flange screws and washers are tightened

The pipe ends are pressed against the seal to each other during assembly and the tightening of bolts. The retain ring creates a tightness assembly while flanges and screws absorb the axial force and shock. While the retain ring and flange of the pipe is combined, it creates a stronger connection than pipe itself.

Retain ring dimensions:

Size	Part No	Pipe Size	S	D
1/2"	08	26 x 6	4	30
3/4"	12	36 x 8	4	39.3
1"	16	39 x 7.5	5	44
1 1/4"	20	46 x 8	5	51
1 1/2"	24	56 x 8.5	5	61
2"	32	66 x 8.5	5	71
2 1/2"	40	80 x 10	5	85
3"	48	97 x 12	6	103

Table 3: Metric Pipes

Size	Part No	S	D
1 1/2"	L24	4	64
2"	L32	4	74
2 1/2"	L40	4	85
3"	L48	4	103
4"	L64	4	130
5"	L80	4	156
6"	L96	4	186

Table 4: Drilled to 6162-1, SAE 50 Bar

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