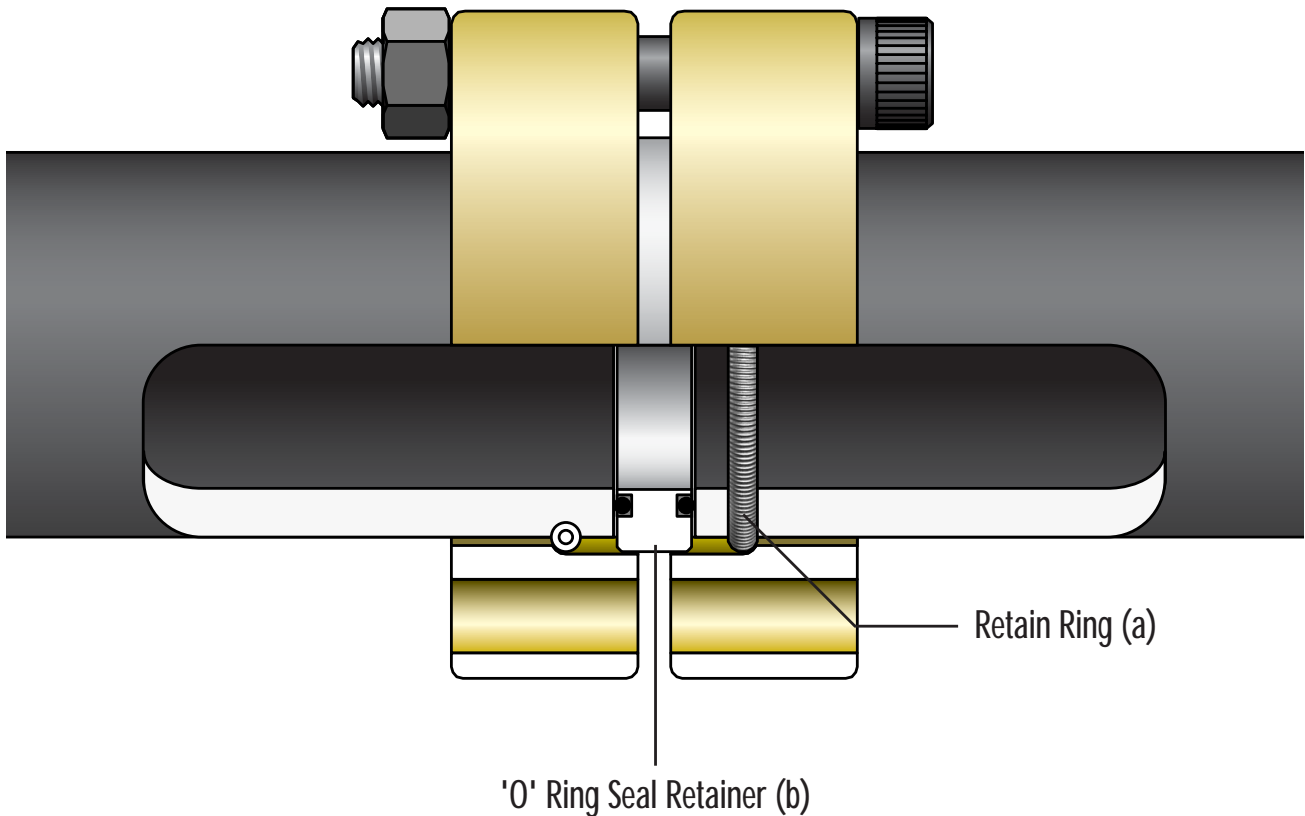


# Retain Ring System



The retain ring configuration uses heavy wall pipe and has a machined butt end face, along with an annular groove on the outside diameter.

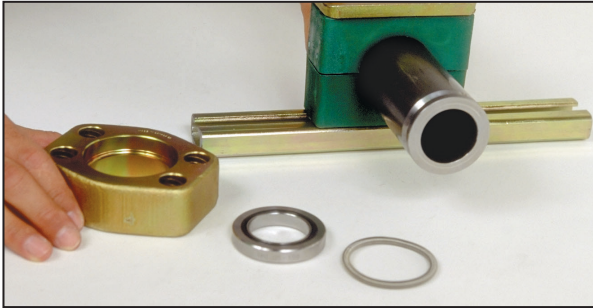
After machining, the flange is slipped onto the pipe and a retain ring (a) which consists of a segmented stainless steel ring bound by a spiral wound stainless steel spring is sprung over the pipe's outside diameter nesting in the annular groove. Bolting the flanges together draws them against the retain rings with the 'o'ring seal retainer (b) captive within the connection.

Pipe sizes 1 1/2" through 8" are available for use with retain ring flanges.

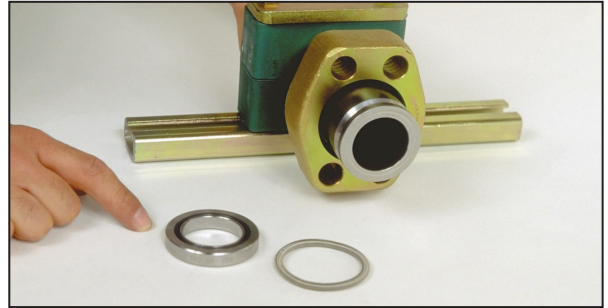
The standard connection styles offered conform to ISO 4-bolt flanges along with Tube-Mac® Industries 8-bolt proprietary flanges. Other flange patterns may also be available.

# TMI® Retain Ring Flange Connection Procedure

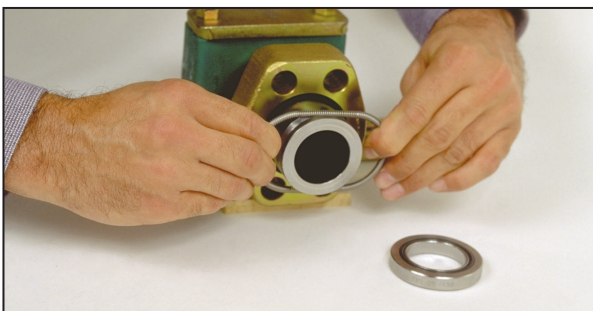
The retain ring flange connection consists of machined pipe, retain ring flanges, retain rings, 'o' ring seal retainer and bolting hardware.



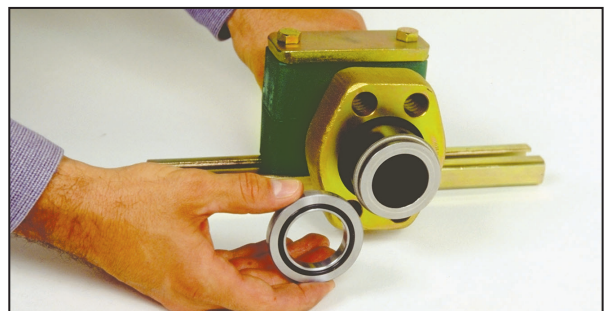
**Step 1:** Pipe supplied with butt end machined along with an annular groove on the outside diameter.



**Step 2:** Slip flange onto the pipe.



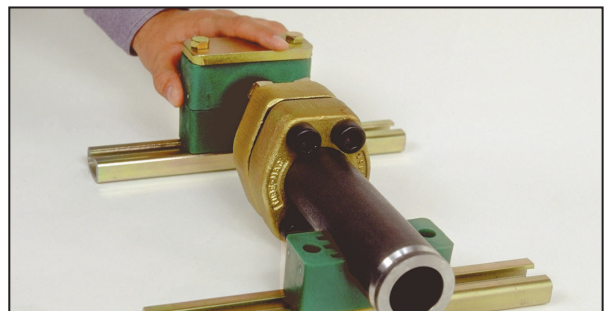
**Step 3:** Retain ring is sprung over the pipe's outside diameter nesting in the annular groove.



**Step 4:** Select the correct 'o' ring seal retainer style (reference pages C4 -C5). The 'o' ring provides a seal against the butt end of the pipe.

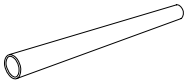
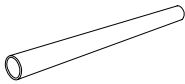
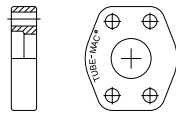
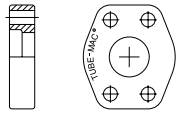
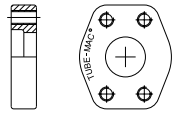
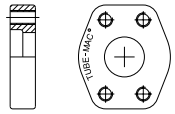
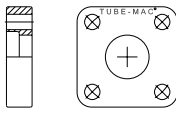
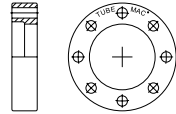
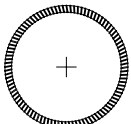
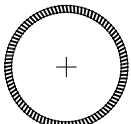
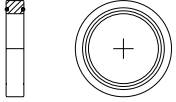
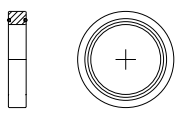
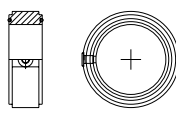
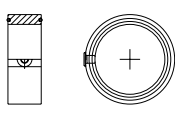
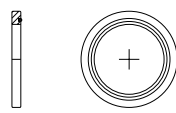
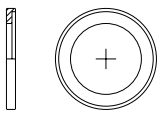
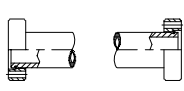
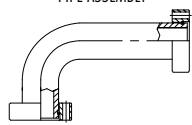
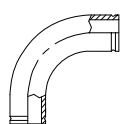
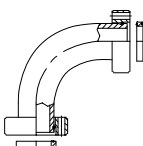
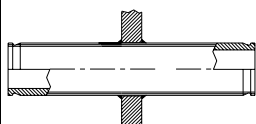
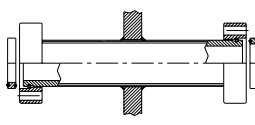


**Step 5:** Select the required bolting hardware from Section R of this catalogue. Carefully place the 'o' ring seal retainer in between the pipe ends. Slide the flanges forward and the 'o' ring seal retainer becomes captive within the flanges.



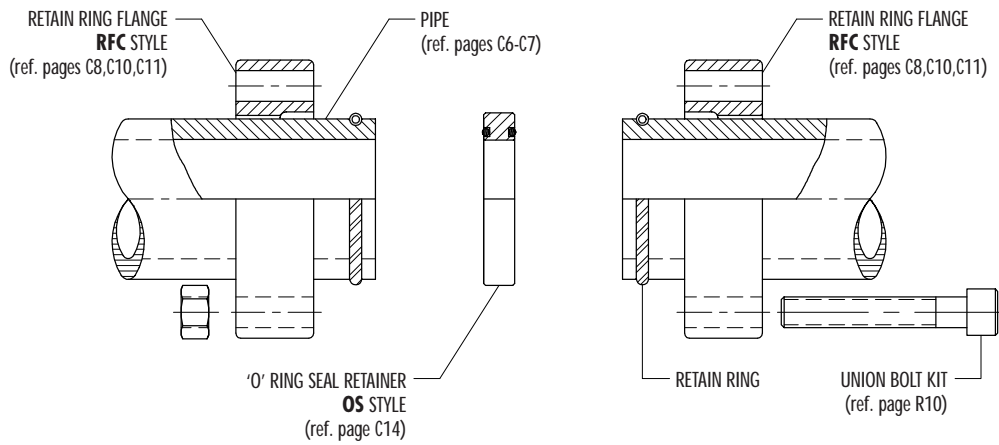
**Step 6:** Tighten bolts to the torque values specified. Always tighten bolts in a cross-over sequence and ensure that the flanges are parallel.

# Retain Ring System - Metric Visual Index

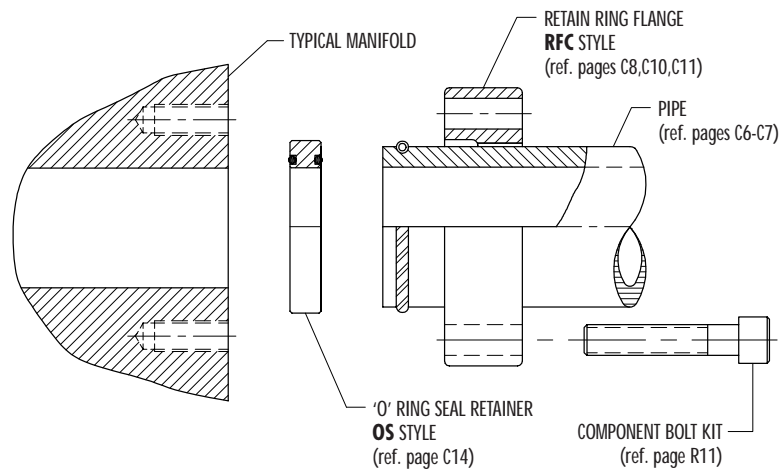
<p><b>PIPES</b></p>	<p><b>CARBON STEEL PIPE</b></p>  <p>1 1/2" - 8" <a href="#">Page C6</a></p>	<p><b>STAINLESS STEEL PIPE</b></p>  <p>4" - 8" <a href="#">Page C7</a></p>	<p><b>RETAIN RING FLANGES</b></p>	<p><b>RFC34</b> ISO 6162-1 WITH CLEARANCE HOLES</p>  <p>1/2" - 3" <a href="#">Page C8</a></p>
<p><b>RFC64</b> ISO 6162-2 WITH CLEARANCE HOLES</p>  <p>1/2" - 2" <a href="#">Page C8</a></p>	<p><b>RFTM34</b> ISO 6162-1 WITH TAPPED HOLES</p>  <p>1/2" - 3" <a href="#">Page C9</a></p>	<p><b>RFTM64</b> ISO 6162-2 WITH TAPPED HOLES</p>  <p>1/2" - 2" <a href="#">Page C9</a></p>	<p><b>RFC74</b> ISO 6164 WITH CLEARANCE HOLES</p>  <p>2 1/2" - 4" <a href="#">Page C10</a></p>	<p><b>RFAC48</b> TMI® 8-BOLT WITH CLEARANCE HOLES</p>  <p>5" - 8" <a href="#">Page C11</a></p>
<p><b>RETAIN RING</b></p>	<p><b>R</b></p>  <p>1/2" - 4" <a href="#">Page C13</a></p>	<p><b>RA</b></p>  <p>5" - 8" <a href="#">Page C13</a></p>	<p><b>'O' RING SEAL RETAINER</b></p>	<p><b>OS</b></p>  <p>1/2" - 4" <a href="#">Page C14</a></p>
<p><b>OSA</b></p>  <p>5" - 8" <a href="#">Page C14</a></p>	<p><b>OSPM</b></p>  <p>1/2" - 4" <a href="#">Page C15</a></p>	<p><b>OSAPM</b></p>  <p>5" - 8" <a href="#">Page C15</a></p>	<p><b>OSH</b></p>  <p>1/2" - 4" <a href="#">Page C16</a></p>	
<p><b>'O' RING CONNECTOR PLATE</b></p>	<p><b>OCP</b></p>  <p>1/2" - 4" <a href="#">Page C17</a></p>	<p><b>PIPE ASSEMBLIES</b></p>	<p><b>PAR</b> RETAIN RING FLANGE PIPE ASSEMBLY</p>  <p>1 1/2" - 8" <a href="#">Page C18-19</a></p>	<p><b>BPAR</b> RETAIN RING FLANGE BENT PIPE ASSEMBLY</p>  <p>1 1/2" - 8" <a href="#">Page C20-21</a></p>
<p><b>RETAIN RING FLANGE ELBOW</b></p>	<p><b>RFE</b> BODY ONLY</p>  <p>1 1/2" - 8" <a href="#">Page C22</a></p>	<p><b>A/RFE</b> ASSEMBLY</p>  <p>1 1/2" - 8" <a href="#">Page C23</a></p>		
<p><b>RETAIN RING BULKHEAD</b></p>	<p><b>RFBH</b> BODY ONLY</p>  <p>1/2" - 4" <a href="#">Page C24</a></p>	<p><b>A/RFBH</b> ASSEMBLY</p>  <p>1/2" - 4" <a href="#">Page C25</a></p>		

# Retain Ring Flange Connections - Heavy Wall Pipe

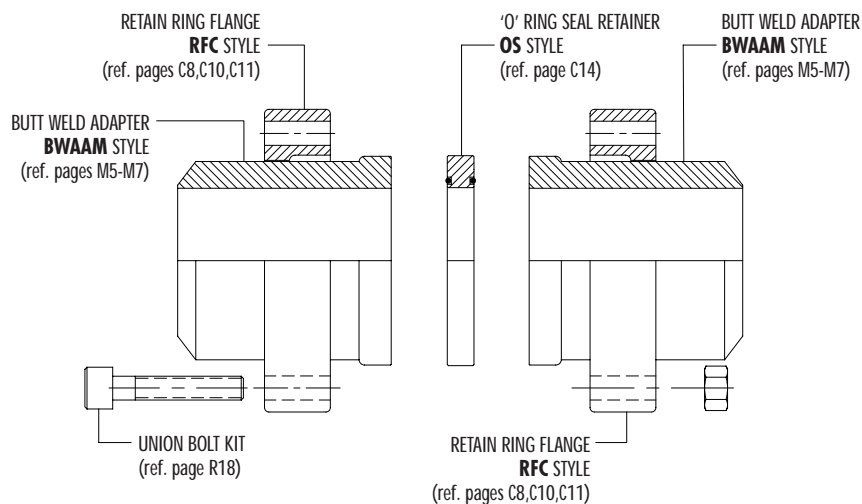
## Typical Pipe Union Connection



## Typical Pipe to Flat Face Connection

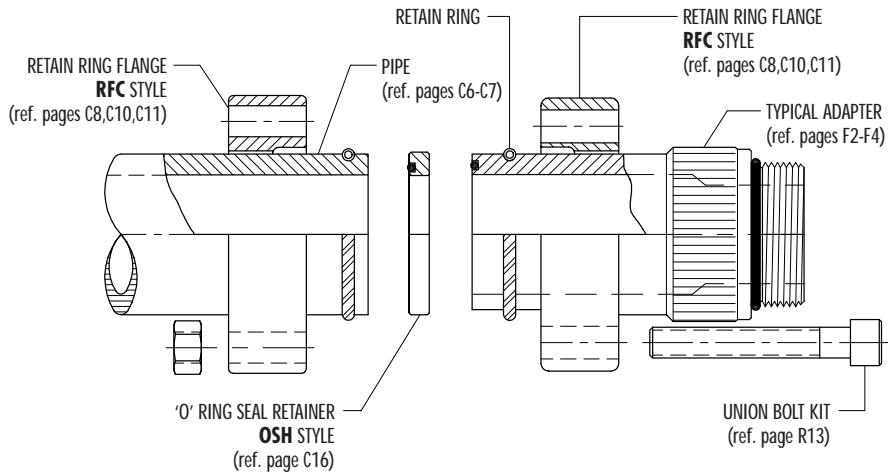


## Typical Butt Weld Adapter Union Connection

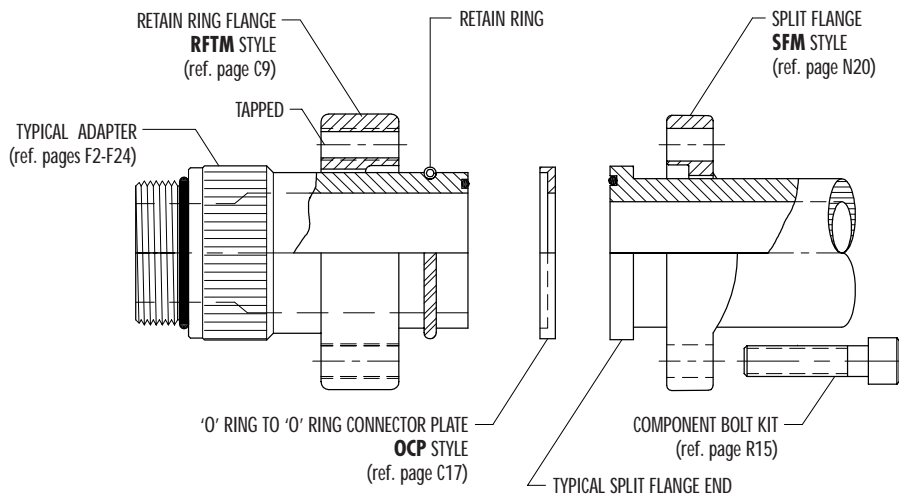


# Retain Ring Flange Connections - Heavy Wall Pipe

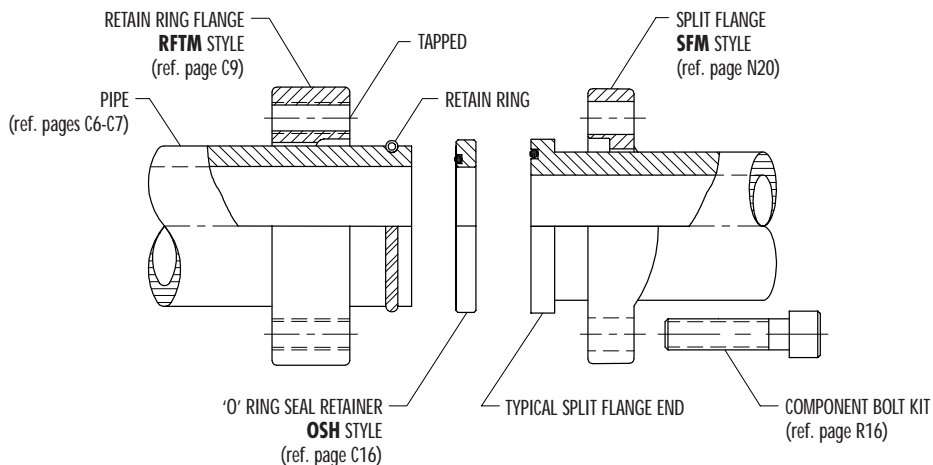
## Typical Pipe to 'O' Ring Face Retain Ring Component Connection



## Typical 'O' Ring Face Retain Ring Component to ISO 6162 Split Flange Connection

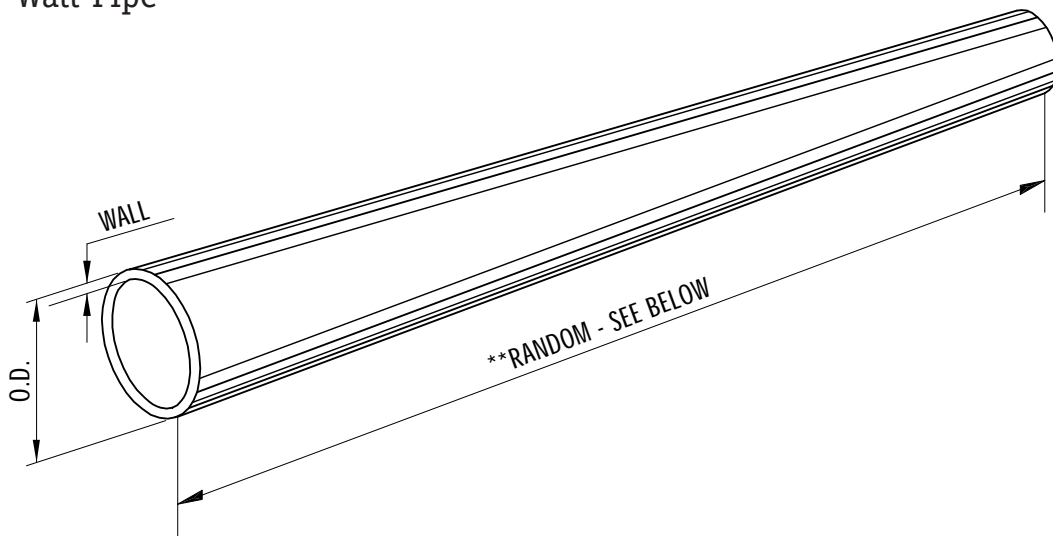


## Typical Pipe to ISO 6162 Split Flange Connection



# TMI<sup>®</sup> Carbon Steel Pipe - Metric Suitable for High Pressure Retain Ring

Heavy Wall Pipe



## TMP52CD

A519 - DIN 2391c St 52.4 NBK Phosphated High Quality Bendable Cold Drawn Seamless Carbon Steel

Nominal Size	Pipe Part No.	OD x Wall (mm)	Bore Dia. (mm)	WT. kgs/m	Working Pressure (bar)
1 1/2"	TMP52CD-56x150x**	56 x 8.5	39	10.00	420
2"	TMP52CD-66x200x**	66 x 8.5	49	12.10	420
2 1/2"	TMP52CD-80x250x**	80 x 10	60	17.35	400
3"	TMP52CD-97x300x**	97 x 12	73	25.25	400
4"	TMP52CD-115x400x**	115 x 15	85	37.15	400

\*\*INDICATE LENGTH (MILLIMETERS), AVAILABLE IN RANDOM LENGTHS UP TO 9 METERS

## TMP106HR

A106B - Cleaned Seamless Carbon Steel

Schedule XXS/160

Nominal Size	Pipe Part No.	OD x Wall (mm)	Bore Dia. (mm)	WT. kgs/m	Working Pressure (bar)
5"	TMP106HR-SCHXXS-500x**	141.3 x 19.1	103.20	57.40	275
6"	TMP106HR-SCHXXS-600x**	168.3 x 21.9	124.40	79.20	255
8"	TMP106HR-SCH160-800x**	219.1 x 23.0	173.05	111.25	240

• FOR SIZES 10" OR LARGER CONSULT FACTORY

\*\*INDICATE LENGTH (MILLIMETERS), AVAILABLE IN RANDOM LENGTHS UP TO 12 METERS

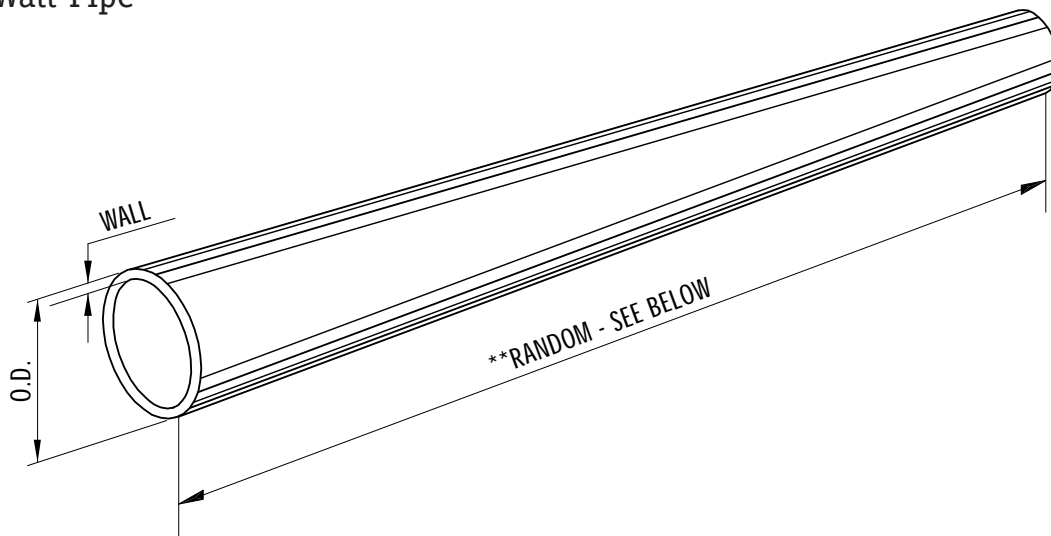
• TO ORDER A RETAIN RING FLANGE PIPE ASSEMBLY REFERENCE PAGE C18-C21

• MAXIMUM ALLOWABLE WORKING PRESSURES ARE BASED ON THE LOWER OF THE PIPE RATING PER ANSI B31.3 OR THE CONNECTION RATING

# TMI® Stainless Steel Pipe - Metric

## Suitable for High Pressure Retain Ring

Heavy Wall Pipe



## TMP304SS/316SS

A312 - Seamless Stainless Steel (supplied as dual certification ie. 304/304L or 316/316L)

### Schedule XXS/160

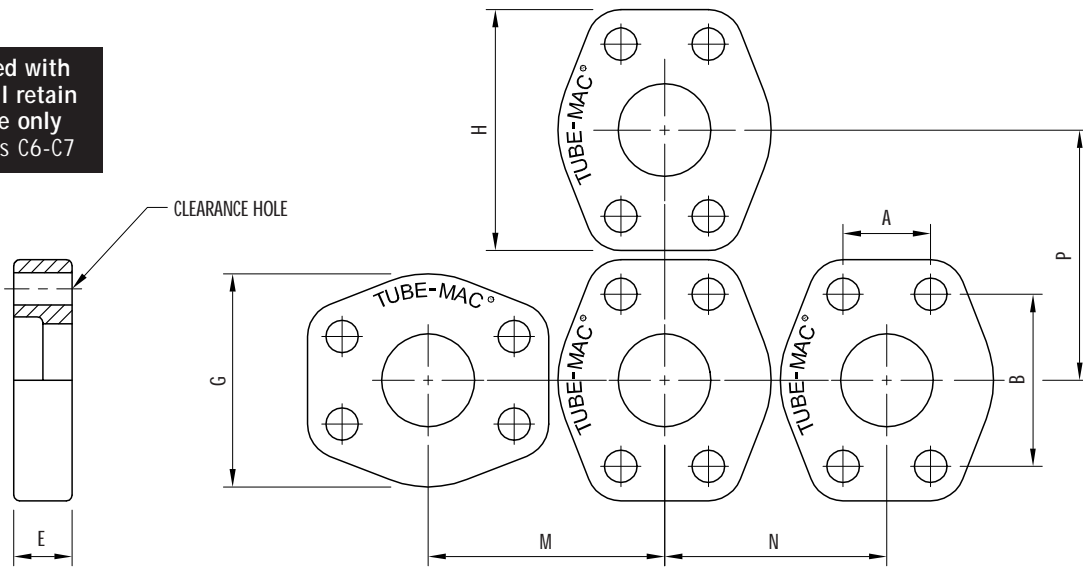
Nominal Size	304/304L Stainless Steel Pipe Part No.	316/316L Stainless Steel Pipe Part No.	OD x Wall (mm)	Bore Dia. (mm)	WT. kgs/m	Working Pressure (bar)
4"	TMP304SS-SCHXXS-400x**	TMP316SS-SCHXXS-400x**	114.3 x 17.1	80.06	41.05	400
5"	TMP304SS-SCHXXS-500x**	TMP316SS-SCHXXS-500x**	141.3 x 19.1	103.20	51.47	275
6"	TMP304SS-SCHXXS-600x**	TMP316SS-SCHXXS-600x**	168.3 x 21.9	124.40	79.25	255
8"	TMP304SS-SCH160-800x**	TMP316SS-SCH160-800x**	219.1 x 23.0	173.05	111.36	240

- FOR SIZES 10" OR LARGER CONSULT FACTORY
- \*\*INDICATE LENGTH (MILLIMETERS), AVAILABLE IN RANDOM LENGTHS UP TO 6 METERS
- TO ORDER A RETAIN RING FLANGE PIPE ASSEMBLY REFERENCE PAGE C18-C21
- MAXIMUM ALLOWABLE WORKING PRESSURES ARE BASED ON THE LOWER OF THE PIPE RATING PER ANSI B31.3 OR THE CARBON STEEL CONNECTION RATING
- FOR PIPING SYSTEMS CONSISTING OF ALL STAINLESS STEEL COMPONENTS, PRESSURE RATINGS WILL BE LESS THAN THAT SHOWN ABOVE (CONTACT FACTORY)

# Retain Ring Flanges - Metric

ISO - Flanges with Clearance Holes

To be used with heavy wall retain ring pipe only  
Ref. pages C6-C7



## RFC34 Retain Ring Flange - ISO 6162-1 With Clearance Holes

Standard Pressure Series 140-350 bar

Size (inch)	Flange Part No.	Dimensions (millimeters)								Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		A	B	G	H	M	N	P	E				
1/2"	RFC34-050	17.5	38.1	46.0	54.9	52.1	49.0	58.9	20.6	M8	0.18	350	20-25
3/4"	RFC34-075	22.4	47.8	52.3	65.0	61.0	55.1	68.1	20.8	M10	0.21	350	55-68
1"	RFC34-100	26.2	52.3	58.7	70.1	67.1	62.0	72.9	22.1	M10	0.26	350	55-68
1 1/4"	RFCM34-125	30.2	58.7	73.2	79.0	79.0	75.9	82.0	23.2	M10	0.36	275	55-68
1 1/2"	RFC34-150	35.8	69.9	82.6	93.0	90.9	85.1	96.0	26.9	M12	0.64	210	76-83
2"	RFC34-200	42.9	77.7	96.8	102.1	102.1	100.1	104.9	31.0	M12	0.91	210	110-125
2 1/2"	RFC34-250	50.8	88.9	108.7	114.0	114.0	111.0	117.1	35.6	M12	1.49	175	110-125
3"	RFC34-300	62.0	106.4	131.1	134.1	135.9	133.1	136.9	42.4	M16	2.35	140	150-165

## RFC64 Retain Ring Flange - ISO 6162-2 With Clearance Holes

High Pressure Series 420 bar

Size (inch)	Flange Part No.	Dimensions (millimeters)								Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		A	B	G	H	M	N	P	E				
1/2"	RFC64-050	18.3	40.4	47.8	56.4	55.9	53.1	58.9	20.6	M8	0.20	420	20-25
3/4"	RFC64-075	23.9	50.8	60.5	71.4	70.1	68.1	74.9	25.9	M10	0.38	420	55-68
1"	RFCM64-100	27.7	57.2	69.9	81.0	81.0	75.9	85.1	26.2	M12	0.51	420	110-125
1 1/4"	RFC64-125	31.8	66.8	77.7	95.3	90.9	83.1	99.1	31.8	M12	0.85	420	110-125
1 1/2"	RFC64-150	36.6	79.5	95.3	112.8	108.0	101.1	116.1	35.1	M16	1.43	420	150-165
2"	RFC64-200	44.5	96.8	114.3	133.4	128.0	94.5	136.9	42.7	M20	2.19	420	165-175

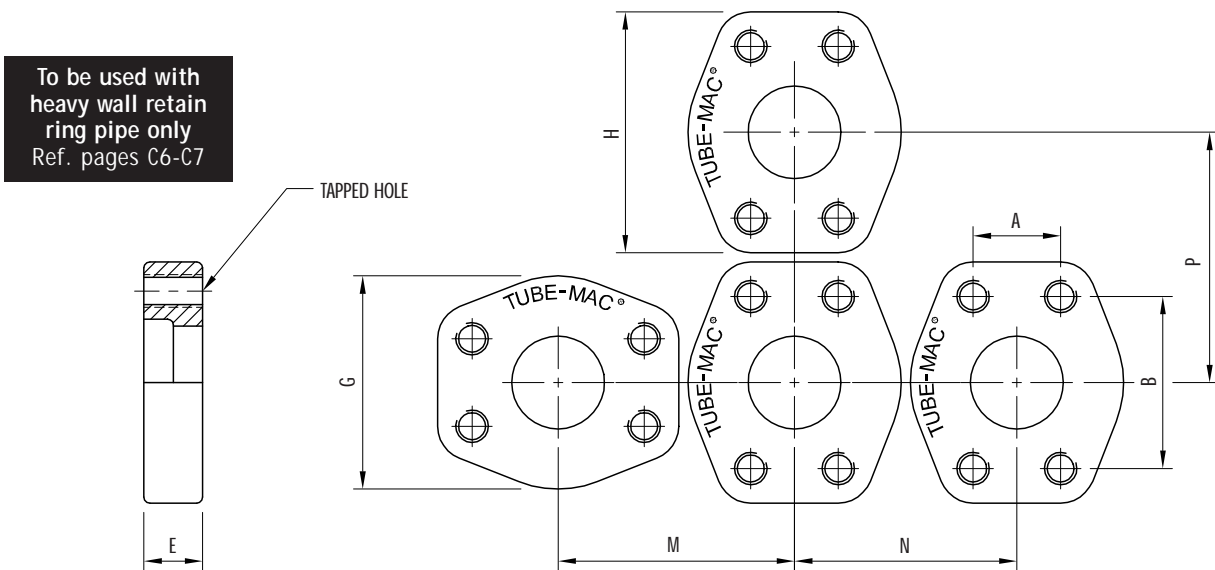
• FOR BOLT KITS - REFERENCE SECTION R

MATERIAL: FORGED CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)



# Retain Ring Flanges - Metric

ISO - Flanges with Tapped Holes



## RFTM34 Retain Ring Flange - ISO 6162-1 With Tapped Holes

Standard Pressure Series 140-350 bar

Size (inch)	Flange Part No.	Dimensions (millimeters)								Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		A	B	G	H	M	N	P	E				
1/2"	RFTM34-050	17.5	38.1	46.0	54.9	52.1	49.0	58.9	20.6	M8 x 1.25	0.20	350	20-25
3/4"	RFTM34-075	22.4	47.8	52.3	65.0	61.0	55.1	68.1	20.8	M10 x 1.50	0.28	350	55-68
1"	RFTM34-100	26.2	52.3	58.7	70.1	67.1	62.0	72.9	22.1	M10 x 1.50	0.34	350	55-68
1 1/4"	RFTM34-125	30.2	58.7	73.2	79.0	79.0	75.9	82.0	23.2	M10 x 1.50	0.52	275	55-68
1 1/2"	RFTM34-150	35.8	69.9	82.6	93.0	90.9	85.1	96.0	26.9	M12 x 1.75	0.98	210	76-83
2"	RFTM34-200	42.9	77.7	96.8	102.1	102.1	100.1	104.9	31.0	M12 x 1.75	1.20	210	110-125
2 1/2"	RFTM34-250	50.8	88.9	108.7	114.0	114.0	111.0	117.1	35.6	M12 x 1.75	1.70	175	110-125
3"	RFTM34-300	62.0	106.4	131.1	134.1	135.9	133.1	136.9	42.4	M16 x 2.00	2.77	140	150-165

## RFTM64 Retain Ring Flange - ISO 6162-2 With Tapped Holes

High Pressure Series 420 bar

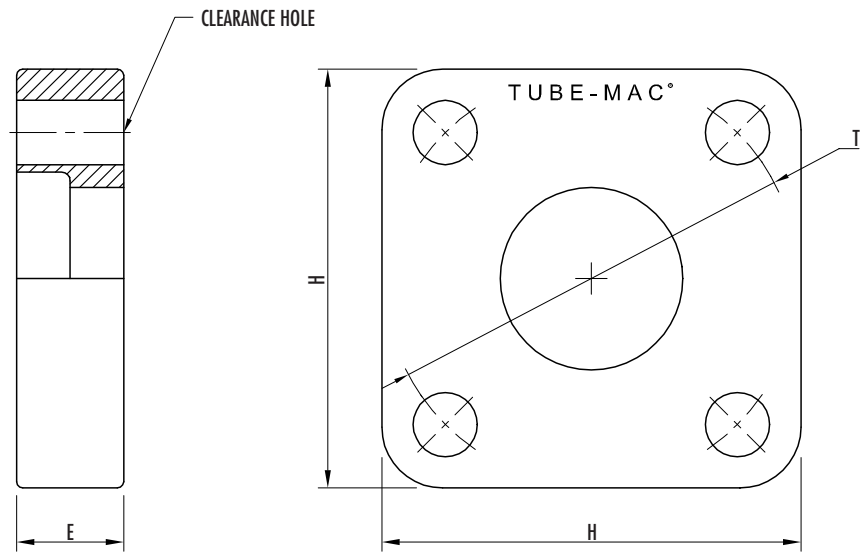
Size (inch)	Flange Part No.	Dimensions (millimeters)								Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		A	B	G	H	M	N	P	E				
1/2"	RFTM64-050	18.3	40.4	47.8	56.4	55.9	53.1	58.9	20.6	M8 x 1.25	0.24	420	20-25
3/4"	RFTM64-075	23.9	50.8	60.5	71.4	70.1	68.1	74.9	25.9	M10 x 1.50	0.36	420	55-68
1"	RFTM64-100	27.7	57.2	69.9	81.0	81.0	75.9	85.1	26.2	M12 x 1.75	0.40	420	110-125
1 1/4"	RFTM64-125	31.8	66.8	77.7	95.3	90.9	83.1	99.1	31.8	M12 x 1.75	0.99	420	110-125
1 1/2"	RFTM64-150	36.6	79.5	95.3	112.8	108.0	101.1	116.1	35.1	M16 x 2.00	1.44	420	150-165
2"	RFTM64-200	44.5	96.8	114.3	133.4	128.0	94.5	136.9	42.7	M20 x 2.50	2.32	420	165-175

MATERIAL: FORGED CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)

# Retain Ring Flanges - Metric

ISO 6164 - Flanges with Clearance Holes

To be used with heavy wall retain ring pipe only  
Ref. pages C6-C7



## RFC74 Retain Ring Flange - ISO 6164 With Clearance Holes

400 bar

Size (inch)	Flange Part No.	Dimensions (mm)			Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		T	H	E				
2 1/2"	RFC74-250	118.1	119.9	37.6	M20	2.18	400	165-175
3"	RFC74-300	145	150.1	43.9	M24	3.58	400	475-550
4"	RFC74-400	175.0	177.8	50.3	M30	6.55	400	665-730

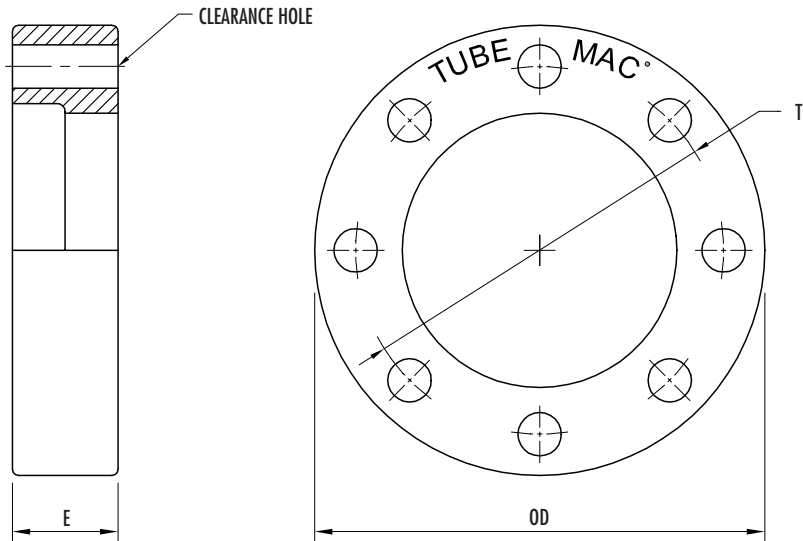
• FOR BOLT KITS - REFERENCE SECTION R

**MATERIAL:** CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)

# Retain Ring Flanges - Metric

TMI® 8-Bolt - Flanges with Clearance Holes

To be used with heavy wall retain ring pipe only  
Ref. pages C6-C7



## RFAC48 Retain Ring Flange - TMI® 8-Bolt With Clearance Holes

240-275 bar

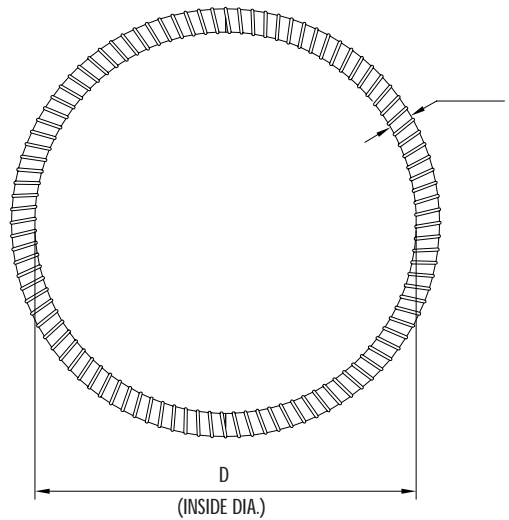
Size (inch)	Flange Part No.	Dimensions (mm)			Bolt Minimum 10.9	WT. kgs./pc	Working Pressure (bar)	Bolt Torque Nm
		T	OD	E				
5"	RFAC48-500	200.2	245.1	50.8	M24	9.48	275	475-550
6"	RFAC48-600	245.1	300.0	58.7	M24	20.11	255	475-550
8"	RFAC48-800	315.0	384.3	76.2	M36	39.57	240	1460-1595

- FOR SIZES 10" OR LARGER CONSULT FACTORY
- FOR BOLT KITS - REFERENCE SECTION R

MATERIAL: CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)



# Retain Ring - Metric



**R** Retain Ring - 1/2" - 4"

**RA** Retain Ring - 5" - 8"

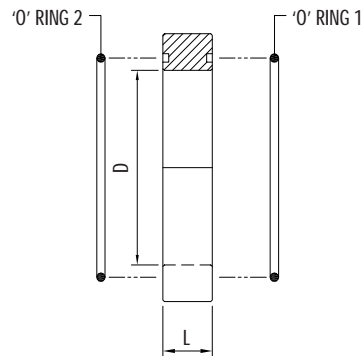
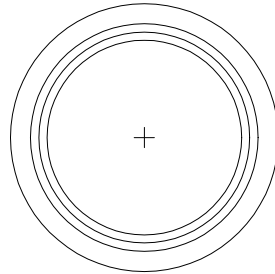
Size (inch)	Retain Ring Part No.	Dimensions (mm)		WT. kgs./pc
		D	t	
1/2"	R-050	21.6	4.1	0.005
3/4"	R-075	31.5	4.1	0.009
1"	R-100	33.5	5.1	0.014
1 1/4"	R-125	40.4	5.1	0.018
1 1/2"	R-150	50.5	5.1	0.023
2"	R-200	60.5	5.1	0.027
2 1/2"	R-250	74.4	5.1	0.032
3"	R-300	90.4	6.1	0.055
4"	R-400	106.4	7.9	0.123
5"	RA-500	132.8	7.9	0.155
6"	RA-600	157.7	9.9	0.291
8"	RA-800	206.5	11.9	0.536

• FOR SIZES 10" OR LARGER CONSULT FACTORY

MATERIAL: STAINLESS STEEL - AISI 302/304 SPRING TEMPER

# 'O' Ring Seal Retainer - Metric

OS/OSA



**OS** 'O' Ring Seal Retainer for Retain Ring Pipe - 1/2" - 4"

Complete with Nitrile 'O' Rings (Standard)

**OSA** 'O' Ring Seal Retainer for Retain Ring Pipe - 5" - 8"

Complete with Nitrile 'O' Rings (Standard)

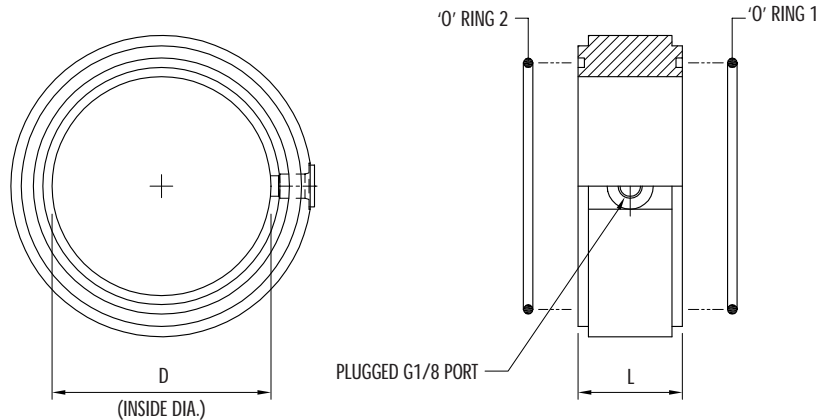
Size (inch)	Retainer Part No.	Dimensions (mm)		'O' Rings 1&2 (Nitrile) Part No.	WT. kgs./pc
		D	L		
1/2"	OS-050-*	14.0	12.7	OR*-3-909	0.04
3/4"	OS-075-*	20.1	12.7	OR*-3-913	0.06
1"	OS-100-*	23.1	12.7	OR*-3-916	0.07
1 1/4"	OS-125-*	30.0	12.7	OR*-3-918	0.09
1 1/2"	OS-150-*	39.1	12.7	OR*-3-924	0.11
2"	OS-200-*	49.0	12.7	OR*-3-928	0.13
2 1/2"	OS-250-*	59.9	25.4	OR*-2-232	0.24
3"	OS-300-*	73.2	25.4	OR*-2-237	0.35
4"	OS-400-*	85.1	25.4	OR*-2-241	0.55
5"	OSA-500-*	103.1	38.1	OR*-2-353	2.60
6"	OSA-600-*	124.5	38.1	OR*-2-359	3.09
8"	OSA-800-*	173.0	38.1	OR*-2-368	4.70

• FOR SIZES 10" OR LARGER CONSULT FACTORY

\* INSERT 'V' TO INDICATE OPTIONAL VITON 'O' RINGS

# 'O' Ring Seal Retainer - Metric

With Pilot Port



## OSPM 'O' Ring Seal Retainer with Pilot Port for Retain Ring Pipe - 1/2" - 4"

Complete with Nitrile 'O' Rings (Standard) and G1/8 Port (Plugged)

## OSAPM 'O' Ring Seal Retainer with Pilot Port for Retain Ring Pipe - 5" - 8"

Complete with Nitrile 'O' Rings (Standard) and G1/8 Port (Plugged)

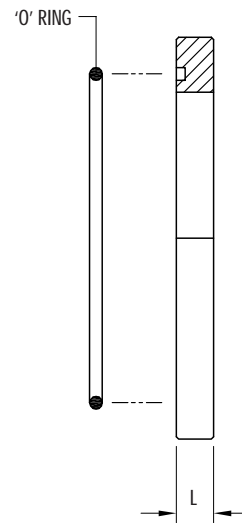
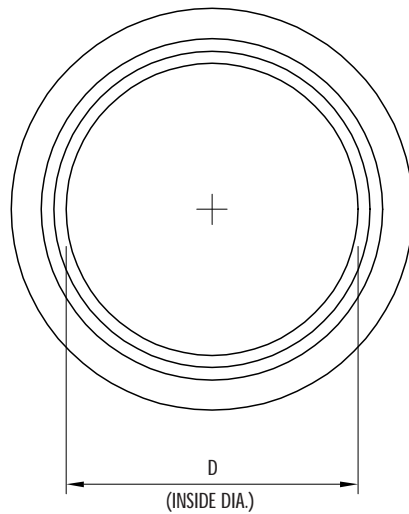
Size (inch)	Retainer Part No.	Dimensions (mm)		'O' Rings 1&2 (Nitrile) Part No.	WT. kgs./pc
		D	L		
1/2"	OSPM-050-*	14.0	38.1	OR*-3-909	0.19
3/4"	OSPM-075-*	20.1	38.1	OR*-3-913	0.30
1"	OSPM-100-*	23.1	38.1	OR*-3-916	0.37
1 1/4"	OSPM-125-*	30.0	38.1	OR*-3-918	0.43
1 1/2"	OSPM-150-*	39.1	38.1	OR*-3-924	0.57
2"	OSPM-200-*	49.0	38.1	OR*-3-928	0.70
2 1/2"	OSPM-250-*	59.9	38.1	OR*-2-232	0.90
3"	OSPM-300-*	73.2	38.1	OR*-2-237	1.27
4"	OSPM-400-*	85.1	38.1	OR*-2-241	2.82
5"	OSAPM-500-*	103.1	38.1	OR*-2-353	3.98
6"	OSAPM-600-*	124.5	38.1	OR*-2-359	5.74
8"	OSAPM-800-*	173.0	38.1	OR*-2-368	8.95

• FOR SIZES 10" OR LARGER CONSULT FACTORY

\* INSERT 'V' TO INDICATE OPTIONAL VITON 'O' RINGS

MATERIAL: CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)

# 'O' Ring Seal Retainer - Metric



## OSH 'O' Ring Seal Retainer for Retain Ring Pipe Complete with Nitrile 'O' Ring (Standard)

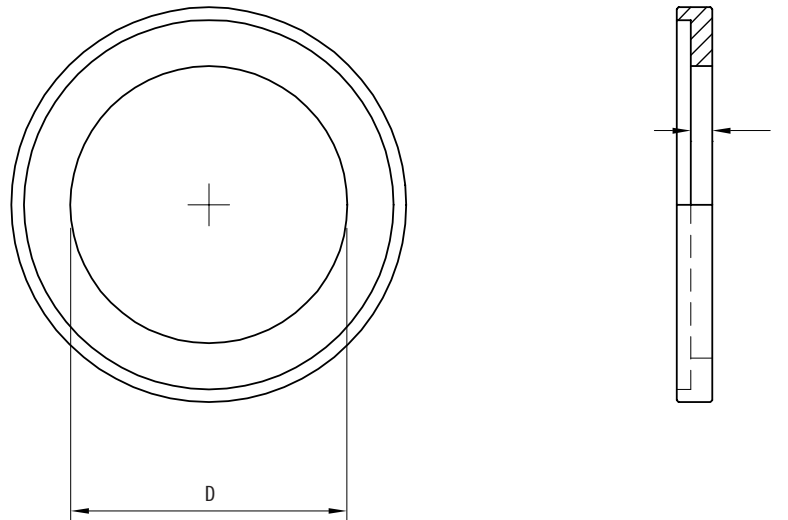
Size (inch)	Retainer Part No.	Dimensions (mm)		'O' Ring (Nitrile) Part No.	WT. kgs./pc
		D	L		
1/2"	OSH-050-*	14.0	6.4	OR*-3-909	0.02
3/4"	OSH-075-*	20.1	6.4	OR*-3-913	0.03
1"	OSH-100-*	23.1	6.4	OR*-3-916	0.04
1 1/4"	OSH-125-*	30.0	6.4	OR*-3-918	0.04
1 1/2"	OSH-150-*	39.1	6.4	OR*-3-924	0.05
2"	OSH-200-*	49.0	6.4	OR*-3-928	0.07
2 1/2"	OSH-250-*	59.9	12.7	OR*-2-232	0.12
3"	OSH-300-*	73.2	12.7	OR*-2-237	0.18
4"	OSH-400-*	85.1	12.7	OR*-2-241	0.27

\* INSERT 'V' TO INDICATE OPTIONAL VITON 'O' RING

**MATERIAL:** CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)



# 'O' Ring Connector Plate - Metric



## OCP 'O' Ring Connector Plate for Retain Ring Components

Size (inch)	Retainer Part No.	Dimensions (mm)		WT. kgs./pc
		D	L	
1/2"	OCP-050	12.7	3.3	0.02
3/4"	OCP-075	19.1	3.3	0.03
1"	OCP-100	23.9	3.3	0.03
1 1/4"	OCP-125	30.5	3.3	0.04
1 1/2"	OCP-150	38.1	3.3	0.05
2"	OCP-200	49.3	3.3	0.06
2 1/2"	OCP-250	59.9	3.3	0.08
3"	OCP-300	73.2	3.3	0.11
4"	OCP-400	85.1	3.3	0.15

**MATERIAL:** CARBON STEEL, YELLOW ZINC DICHROMATE PLATED, (STAINLESS STEEL AVAILABLE)

# Retain Ring Flange Pipe Assembly - Metric

## Heavy Wall Pipe

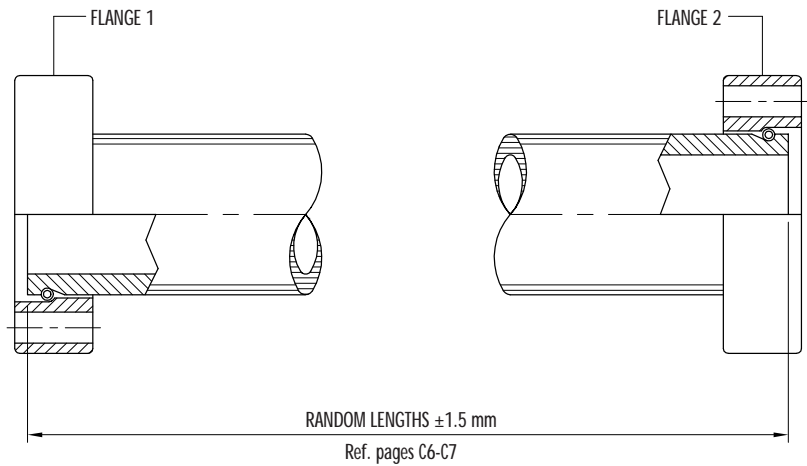
### Typical PAR Assembly

#### COMPLETE ASSEMBLY CONSISTS OF:

- ONE (1) LENGTH OF CLEAN PIPE (REF. PAGES C6-C7)
- TWO (2) RETAIN RING FLANGES (REF. PAGES C8-C12)
- TWO (2) RETAIN RINGS
- ENDS SEALED WITH 6 MIL HEAT SHRINK MATERIAL (56-97mm)
- ENDS SEALED WITH POSITIVE CLOSURE (115-219mm)

#### TO BE ORDERED SEPARATELY:

- 'O' RING SEAL RETAINER(S) (REF. PAGES C14-C16)



PART NO. (EXAMPLE): PAR/56 x 8.5 - FC34 - FC34 - 6000



# Retain Ring Flange Pipe Assembly - Metric

Complete Assembly Part Number

		Code	PAR /	Pipe Material	Pipe Size OD x Wall	Flange 1	Flange 2	Length	Options
<b>Pipe Assembly - Retain Ring</b>		<b>PAR</b>							
Pipe Material Carbon Steel (Standard)	No Designation Required								
Pipe Material ◆Stainless Steel (Optional) Ref. page (C7)	<b>TMP304SS</b>	304							
	<b>TMP316SS</b>	316							
<b>Pipe Size &amp; Wall</b> Ref. page (C6) Phosphated Cold Drawn Seamless Carbon Steel A519-DIN 2391c St. 52.4 NBK	<b>1 1/2"</b>	56x8.5							
	<b>2"</b>	66x8.5							
	<b>2 1/2"</b>	80x10							
	<b>3"</b>	97x12							
<b>Pipe Size &amp; Wall</b> Ref. page (C6) Cleaned Seamless Carbon Steel A106B	<b>4"</b>	115x15							
	<b>5"</b>	141x19							
	<b>6"</b>	168x22							
<b>Flange Type</b> Carbon Steel Yellow Zinc Dicromate Plated Ref. pages (C8-C12)	<b>RFC34</b> ISO 6162-1 W/Clearance Holes	<b>FC34</b>							
	<b>*RFTM34</b> ISO 6162-1 W/Tapped Holes	<b>FTM34</b>							
	<b>RFC64</b> ISO 6162-2 W/Clearance Holes	<b>FC64</b>							
	<b>*RFT64</b> SAE Code 62 W/Tapped Holes	<b>FT64</b>							
	<b>RFC74</b> ISO 6164 W/Clearance Holes	<b>FC74</b>							
	<b>RFAC48</b> TMI® 8-Bolt W/Clearance Holes	<b>FAC48</b>							
<b>Length</b>	Specify (mm)								
<b>Options</b>	<b>Painted (Specify)</b>	<b>P</b>							
◆ <b>Complete Stainless Steel Assembly:</b> (including flanges)		<b>SS</b>							

'O' Ring seal retainers are to be ordered separately (reference pages C14-C16)

◆ STAINLESS STEEL IS AVAILABLE (CONSULT FACTORY)

\* NORMALLY USED FOR CONNECTION TO SPLIT FLANGE TYPE ENDS

PART NO. (EXAMPLE): PAR/56 x 8.5 - FC34 - FC34 - 6000

- ASSEMBLY WORKING PRESSURE RATINGS ARE SUBJECT TO THE LESSER OF THE FLANGE OR PIPE RATINGS
- SEE REFERENCE PAGES INDICATED ABOVE FOR PRESSURE RATINGS
- FOR BOLT KITS - REFERENCE SECTION R



# Retain Ring Flange Bent Pipe Assembly - Metric

## Heavy Wall Pipe

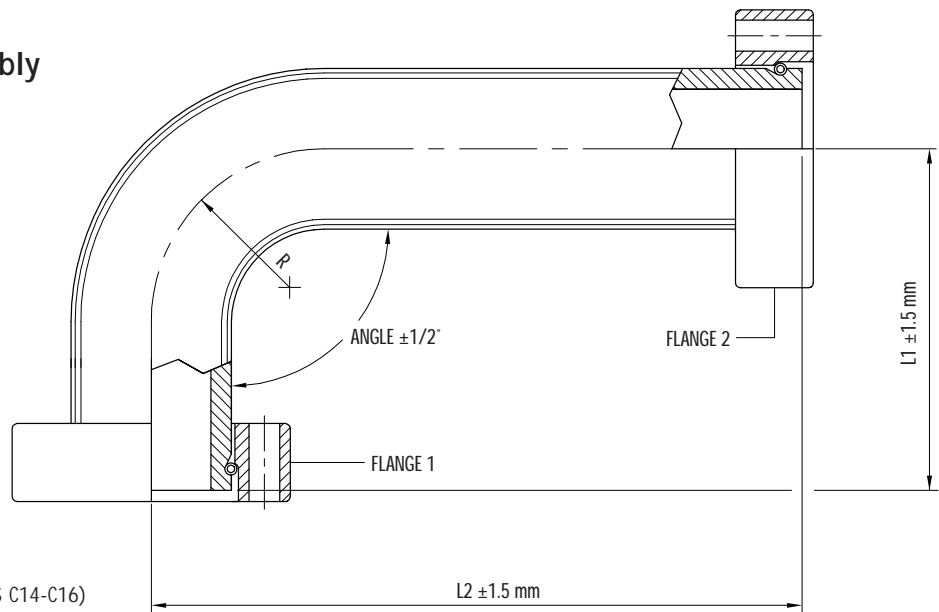
### Typical BPAR Assembly

#### COMPLETE ASSEMBLY CONSISTS OF:

- ONE (1) LENGTH OF BENT CLEAN PIPE (REF. PAGES C6-C7)
- TWO (2) RETAIN RING FLANGES (REF. PAGES C8-C12)
- TWO (2) RETAIN RINGS
- ENDS SEALED WITH 6 MIL HEAT SHRINK MATERIAL (56-97mm)
- ENDS SEALED WITH POSITIVE CLOSURE (115-219mm)

#### TO BE ORDERED SEPARATELY:

- 'O' RING SEAL RETAINER(S) (REF. PAGES C14-C16)



PART NO. (EXAMPLE): BPAR/56 x 8.5 - FC34 - FC34 - 230 - 90 - 130

Size	Dimensions (mm)	
	L(min)	R
1 1/2"	317.50	209.55
2"	355.60	241.30
2 1/2"	431.80	317.50
3"	508.00	381.00
4"	635.00	508.00
5"	635.00	508.00
6"	762.00	609.60
8"	1016.00	812.80



# Retain Ring Flange Bent Pipe Assembly - Metric

## Complete Assembly Part Number

		Code	BPAR	Pipe Material	Pipe Size OD x Wall	Flange 1	Flange 2	Length L1	Angle	Length L2	Options
<b>Bent Pipe Assembly - Retain Ring</b>		<b>BPAR</b>									
Pipe Material Carbon Steel (Standard)	No Designation Required										
Pipe Material ◆Stainless Steel (Optional) Ref. page (C7)	<b>TMP304SS</b>	304									
	<b>TMP316SS</b>	316									
<b>Pipe Size &amp; Wall</b> Ref. page (C6) Phosphated Cold Drawn Seamless Carbon Steel A519-DIN 2391c St. 52.4 NBK	<b>1 1/2"</b>	56x8.5									
	<b>2"</b>	66x8.5									
	<b>2 1/2"</b>	80x10									
	<b>3"</b>	97x12									
	<b>4"</b>	115x15									
<b>Pipe Size &amp; Wall</b> Ref. page (C6) Cleaned Seamless Carbon Steel A106B	<b>5"</b>	141x19									
	<b>6"</b>	168x22									
	<b>8"</b>	219x23									
<b>Flange Type</b>  Carbon Steel Yellow Zinc Dicromate Plated Ref. pages (C8-C12)	<b>RFC34</b> ISO 6162-1 W/Clearance Holes	<b>FC34</b>									
	<b>*RFTM34</b> ISO 6162-1 W/Tapped Holes	<b>FTM34</b>									
	<b>RFC64</b> ISO 6162-2 W/Clearance Holes	<b>FC64</b>									
	<b>*RFTM64</b> ISO 6162-2 W/Tapped Holes	<b>FTM64</b>									
	<b>RFC74</b> ISO 6164 W/Clearance Holes	<b>FC74</b>									
	<b>RFAC48</b> TM1® 8-Bolt W/Clearance Holes	<b>FAC48</b>									
<b>Length</b>	<b>L1</b>	Specify (mm)									
<b>Angle</b>	<b>Max. 90°</b>	Specify (°)									
<b>Length</b>	<b>L2</b>	Specify (mm)									
<b>Options</b>	<b>Painted (Specify)</b>	<b>P</b>									
◆ <b>Complete Stainless Steel Assembly:</b> (including flanges)		<b>SS</b>									

'O' Ring seal retainers are to be ordered separately (reference pages C14-C16)

◆ STAINLESS STEEL IS AVAILABLE (CONSULT FACTORY)

\* NORMALLY USED FOR CONNECTION TO SPLIT FLANGE TYPE ENDS

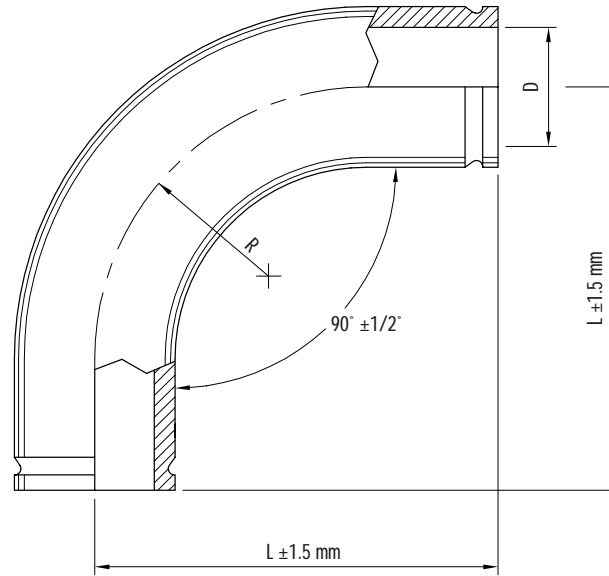
PART NO. (EXAMPLE): BPAR/56 x 8.5 - FC34 - FC34 - 5230 - 90 - 430

- ASSEMBLY WORKING PRESSURE RATINGS ARE SUBJECT TO THE LESSER OF THE FLANGE OR PIPE RATINGS
- SEE REFERENCE PAGES INDICATED ABOVE FOR PRESSURE RATINGS
- FOR BOLT KITS - REFERENCE SECTION R



# Retain Ring Flange Elbow - Metric

Long Radius Bent Elbow - Body Only



## RFE Retain Ring Flange Elbow - Body Only

Size	Body Only Part No.	Dimensions (mm)			WT. (Body Only) kgs./pc	Working Pressure (Body Only) (bar)
		L	R	D		
1 1/2"	RFE-150	317.50	209.55	39.12	5.23	420
2"	RFE-200	355.60	241.30	49.02	7.09	420
2 1/2"	RFE-250	431.80	317.50	59.94	12.12	400
3"	RFE-300	508.00	381.00	73.15	20.82	400
4"	RFE-400	635.00	508.00	85.09	37.96	400
5"	RFE-500	635.00	508.00	103.12	55.22	275
6"	RFE-600	762.00	609.60	124.46	93.78	255
8"	RFE-800	1016.00	812.80	172.97	177.88	240

- OTHER RADII AVAILABLE (CONSULT FACTORY)
- TO ORDER COMPLETE ASSEMBLY REFERENCE PAGE C23

**MATERIAL:** CARBON STEEL, (STAINLESS STEEL AVAILABLE - CONSULT FACTORY)

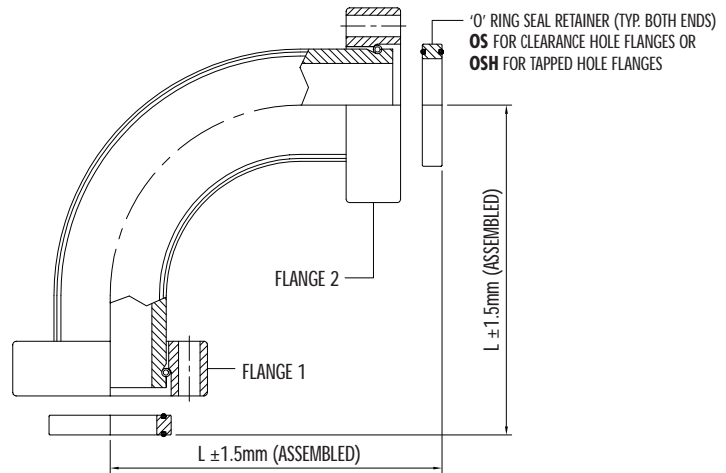
# Retain Ring Flange Elbow Assembly - Metric

Complete Assembly Part Number

## Typical A/RFE Assembly

COMPLETE ASSEMBLY CONSISTS OF:

- ONE (1) RETAIN RING FLANGE ELBOW BODY (REF. PAGE C22)
- TWO (2) RETAIN RING FLANGES (REF. PAGES C8-C12)
- TWO (2) RETAIN RINGS
- TWO (2) 'O' RING SEAL RETAINERS (REF. PAGES C14-C16)



Code		A	/	RFE	-	Body Material	-	Size	-	Flange 1	-	Flange 2	-	Options
<b>Assembly</b>		<b>A</b>												
<b>Retain Ring Flange Elbow</b>		<b>RFE</b>												
Body Material Carbon Steel (Standard)	No Designation Required													
Body Material Stainless Steel (Optional) Ref. page (C7)	<b>TMP304SS</b>	304												
	<b>TMP316SS</b>	316												
<b>Body Size</b>	<b>1 1/2"</b>	150												
	<b>2"</b>	200												
	<b>2 1/2"</b>	250												
	<b>3"</b>	300												
	<b>4"</b>	400												
	<b>5"</b>	500												
	<b>6"</b>	600												
	<b>8"</b>	800												
<b>Flange Type</b>	<b>RFC34</b> ISO 6162-1 W/Clearance Holes	<b>FC34</b>												
	<b>*RFTM34</b> ISO 6162-1 W/Tapped Holes	<b>FTM34</b>												
	<b>RFC64</b> ISO 6162-2 W/Clearance Holes	<b>FC64</b>												
	<b>*RFT64</b> ISO 6162-2 W/Tapped Holes	<b>FTM64</b>												
	<b>RFC74</b> ISO 6164 W/Clearance Holes	<b>FC74</b>												
	<b>RFAC48</b> TMI® 8-Bolt W/Clearance Holes	<b>FAC48</b>												
<b>Options</b>	<b>Viton</b>	<b>V</b>												
	<b>Painted (Specify)</b>	<b>P</b>												
♦ <b>Complete Stainless Steel Assembly:</b> (including flanges, 'O' Ring seal retainers)		<b>SS</b>												

L Dimension will vary if OSH 'O' Ring Seal Retainer is used.  
(reference page C16)

Size	Dimensions (mm)
	L (OS/OSA)
1 1/2"	330.20
2"	368.30
2 1/2"	457.20
3"	533.40
4"	660.40
5"	673.10
6"	800.10
8"	1054.10

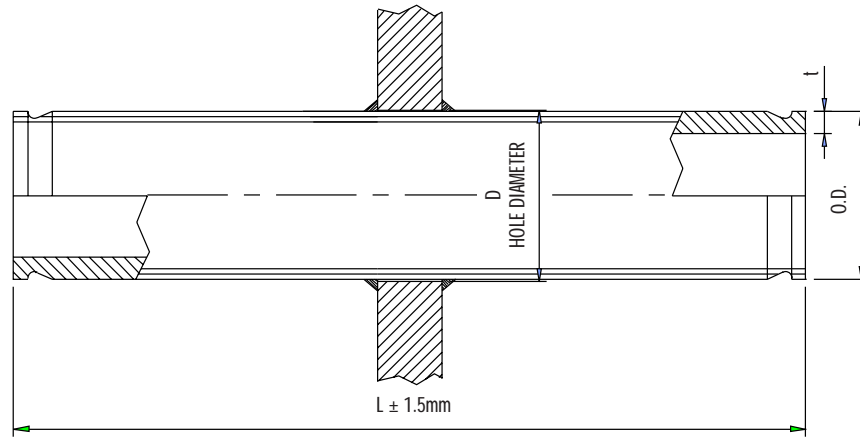
- ♦ STAINLESS STEEL IS AVAILABLE (CONSULT FACTORY)
- \* NORMALLY USED FOR CONNECTION TO SPLIT FLANGE TYPE ENDS (SUPPLIED WITH OSH STYLE 'O' RING SEAL RETAINER)

**PART NO. (EXAMPLE):**  
**A/RFE - 250 - FC34 - FC34**

- ASSEMBLY WORKING PRESSURE RATINGS ARE SUBJECT TO THE LESSER OF THE FLANGE OR BODY RATINGS
- SEE REFERENCE PAGE INDICATED ABOVE FOR PRESSURE RATINGS
- FOR BOLT KITS - REFERENCE SECTION R

# Retain Ring Flange Bulkhead - Metric

Bulkhead - Body Only



## RFBH Retain Ring Flange Bulkhead - Body Only

Size	Body Only Part No.	Dimensions (mm)			WT. (Body Only) kgs./pc	Working Pressure (Body Only) (bar)
		L	OD x t	D		
1/2"	RFBH-050	144.6	26 x 6	27	1.2	420
3/4"	RFBH-075	144.6	36 x 8	37	1.4	420
1"	RFBH-100	144.6	39 x 7.5	40	1.4	420
1 1/4"	RFBH-125	154.6	46 x 8.5	47	2.0	420
1 1/2"	RFBH-150	154.6	56 x 8.5	57	3.2	420
2"	RFBH-200	184.6	66 x 8.5	67	4.1	420
2 1/2"	RFBH-250	159.2	80 x 10	81	6.0	400
3"	RFBH-300	189.2	97 x 12	98	8.7	400
4"	RFBH-400	229.2	115 x 15	116	10.4	400





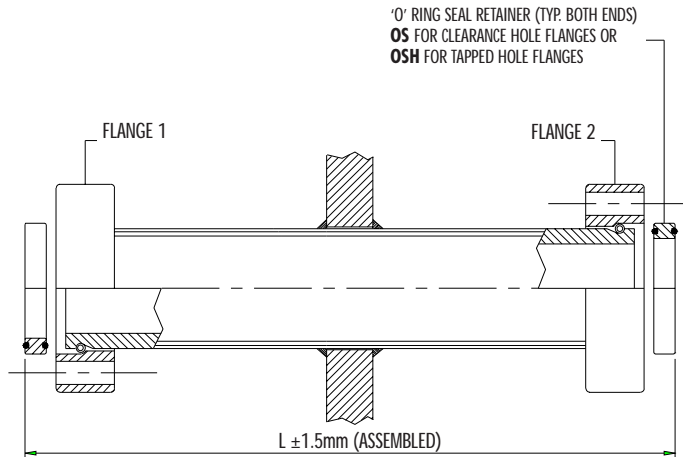
# Retain Ring Flange Bulkhead Assembly - Metric

## Complete Assembly Part Number

### Typical A/RFBH Assembly

COMPLETE ASSEMBLY CONSISTS OF:

- ONE (1) RETAIN RING FLANGE BULKHEAD BODY (REF. PAGE C24)
- TWO (2) RETAIN RING FLANGES (REF. PAGES C8-C10)
- TWO (2) RETAIN RINGS (REF. PAGE C13)
- TWO (2) 'O' RING SEAL RETAINERS (REF. PAGE C14)



Code		A	/	RFBH	-	Body Material	-	Size	-	Flange 1	-	Flange 2	-	Options
<b>Assembly</b>		<b>A</b>												
<b>Retain Ring Flange Bulkhead</b>		<b>RFBH</b>												
Body Material Carbon Steel (Standard)	No Designation Required													
Body Material Stainless Steel (Optional) Ref. page (C7)	<b>TMP304SS</b>	304												
	<b>TMP316SS</b>	316												
<b>Body Size</b>	<b>1/2"</b>	050												
	<b>3/4"</b>	075												
	<b>1"</b>	100												
	<b>1 1/4"</b>	125												
	<b>1 1/2"</b>	150												
	<b>2"</b>	200												
	<b>2 1/2"</b>	250												
	<b>3"</b>	300												
	<b>4"</b>	400												
<b>Flange Type</b>  Carbon Steel Yellow Zinc Dicromate Plated Ref. pages (C8-C10)	<b>RFC34</b> ISO 6162-1 W/Clearance Holes	<b>FC34</b>												
	<b>*RFTM34</b> ISO 6162-1 W/Tapped Holes	<b>FTM34</b>												
	<b>RFC64</b> ISO 6162-2 W/Clearance Holes	<b>FC64</b>												
	<b>*RFT64</b> ISO 6162-2 W/Tapped Holes	<b>FTM64</b>												
	<b>RFC74</b> ISO 6164 W/Clearance Holes	<b>FC74</b>												
<b>Options</b>	<b>Viton</b>	<b>V</b>												
	<b>Painted (Specify)</b>	<b>P</b>												
♦ <b>Complete Stainless Steel Assembly:</b> (including flanges, 'O' Ring seal retainers)		<b>SS</b>												

L Dimension will vary if OSH 'O' Ring Seal Retainer is used. (reference page C16)

Size	Dimensions (mm)
	L (OS/OSA)
1/2"	170
3/4"	170
1"	170
1 1/4"	180
1 1/2"	180
2"	210
2 1/2"	210
3"	240
4"	280

- ♦ STAINLESS STEEL IS AVAILABLE (CONSULT FACTORY)
  - \* NORMALLY USED FOR CONNECTION TO SPLIT FLANGE TYPE ENDS (SUPPLIED WITH OSH STYLE 'O' RING SEAL RETAINER)
- PART NO. (EXAMPLE):**  
**A/RFBH - 250 - FC34 - FC34**

- ASSEMBLY WORKING PRESSURE RATINGS ARE SUBJECT TO THE LESSER OF THE FLANGE OR BODY RATINGS
- SEE REFERENCE PAGE INDICATED ABOVE FOR PRESSURE RATINGS
- FOR BOLT KITS - REFERENCE SECTION R



