Mann Tek

Sweden

Swivels

Swivel Joints

Product Information

Art. No: XB08 Version: 1601

Swivels

Swivel Joints are used in the industry wherever a movable pipe-connection system between two equipment parts is needed. Avoiding one of the biggest causes of premature hose failure. Torque stress is the largest single cause of PTFE and Stainless steel convoluted hose failure.

The swivel joints are designed for slow rotary motions under the influence of high internal pressures and/or external stress such as traction and bending forces.

With an appropriate combination of swivel joints nearly all movements from the simple rotation or swivelling motion up to motional actions in space can be realized.

Table of content

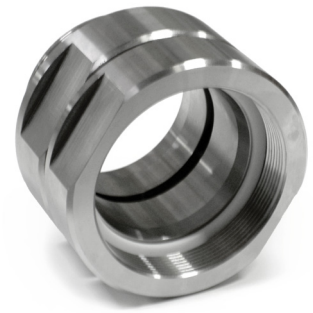
Hose Swivels - single ball bearing

Use of Hose Swivels

The use of hose swivel avoids torsion of hose assemblies, i.e. in filling machines, and improves the handling and coupling of nozzles for refuelling of petroleum based products and chemicals.

Applications

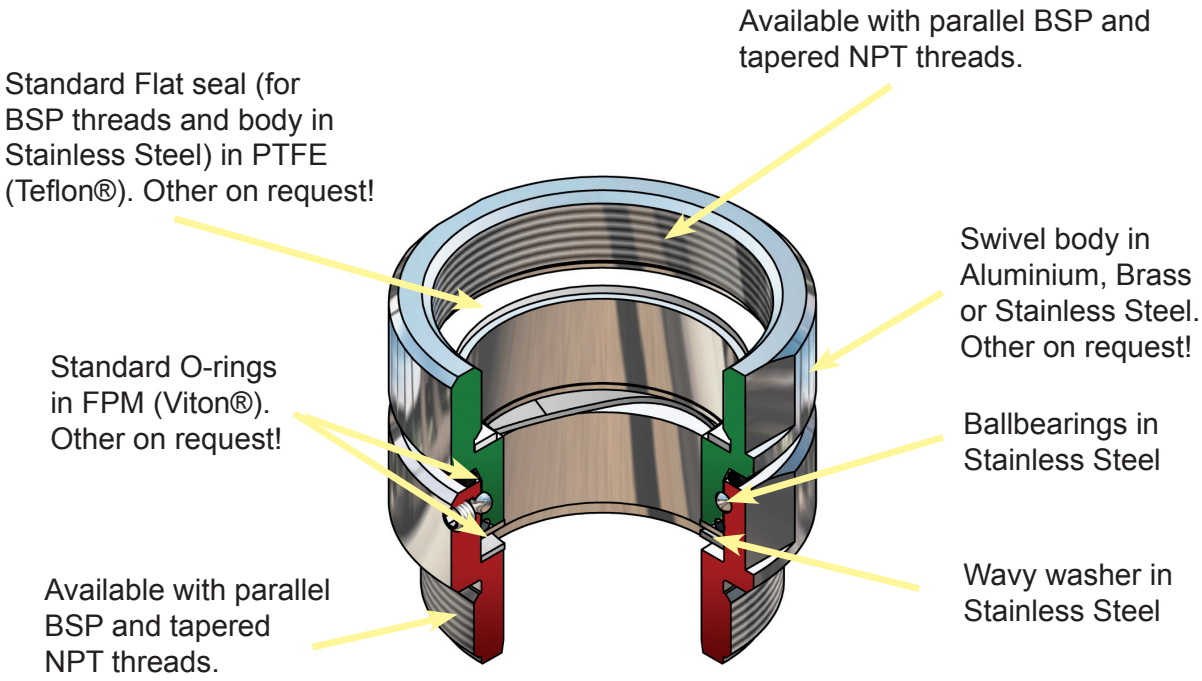
- Hose assemblies
- Filling machines
- Handling of refuelling of equipment e.t.c.



NOTE
Unsuitable for high bending moments. Heavy Duty Swivels should be used in these applications.

- **Low maintenance**
  Each unit consist of two body halves. Stainless Steel balls and a single spring assisted O-ring seal.
- **Compact external dimensions**
- **High flow rate / low pressure drop**
- **Full range of sizes, materials, seals and connections**
- **Minimal maintenance requirements**
- **Safety**
  Swivel function - allows the hose to relax to it´s natural rest position whilst allowing freedom of movement without imparting torque stress at the point of connection - Torque stress is the largest single cause of Composite, PTFE and Stainless Steel convoluted hose failure.
- **Economical**
  Cost effective solution to prolong lifetime of hoselines.

Mann Tek standard Hose Swivel



Hose Swivels - single ball bearing

Combinations of sizes, connections and materials

Sizes

Swivel sizes							
3/4”	1”	1 1/4”	1 1/2”	2”	2 1/2”	3”	4”

Connections

Threads (Female / Male[1])
BSP (ISO 228)
NPT (ASME/ANSI 1.20.1
BSPT (EN 10226)
ACME
Weld end

Flanges
DIN Flange (ISO 1092 PN 10/16, PN 25/40 (Type A, B, E, F [2]))
ASA Flange (ASME/ANSI 16.5)
TW-Flange (DIN 28459)
T.T.M.A

[1] Any combinations of male and female threads is possible.

[2] Se page14 for illustrations of different types of DIN-flanges

Materials and Seals

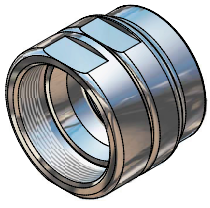
Standard Materials and standard Seals					
Component	Material	Material Standard	Operation temp	O-ring	Flat Seal
Body	Aluminium	EN 755 - AW-6262-T6	-40°C to 250°C	FPM/KFM (Viton®)	PUR (Vulkollan®)
		EN 1706-AC-42100-T6			
	Brass	EN 12164 - CW614N			PUR (Vulkollan®)
		EN 1982 - CB491K-GS			
	Stainless Steel	EN 10272 - 1.4404+AT			PTFE (Teflon®)
		EN 10213 - 1.4409+AT			

Working Pressure: (10 bar) - 300 psi (20 bar)

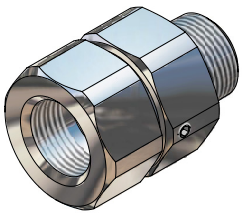
Illustrations of combinations

We manufacture Swivels in different sizes, connections and materials on request!

One side	Other side
BSP/NPT Female	BSP/NPT Female

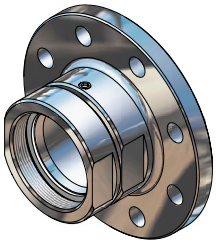


One side	Other side
BSP/NPT Female	BSP/NPT Male

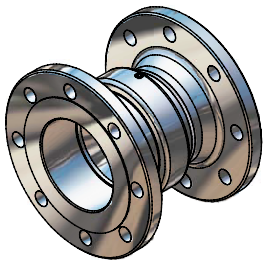


One side	Other side
BSP/NPT Male	BSP/NPT Male

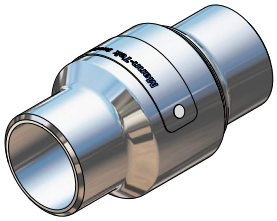
One side	Other side
BSP/NPT Thread	Flange



One side	Other side
Flange	Flange



One side	Other side
Weld end	Weld end *)



*) Or other connection on request

Viton® and Teflon® are registered trademarks of DuPont, DuPont Elastomers. Vulkollan® is registered trademark of Bayer AG

Heavy Duty Swivels - double ball race

Use of Heavy Duty Swivel - double ball race

The swivel Heavy duty is designed especially for hose rails to load and unload products like Aliphatic and Aromatic hydrocarbons, Alcohols and Amines, Ether and Ester, Glycos and Water, Liquid Fertilizers, Acids and Lyes.

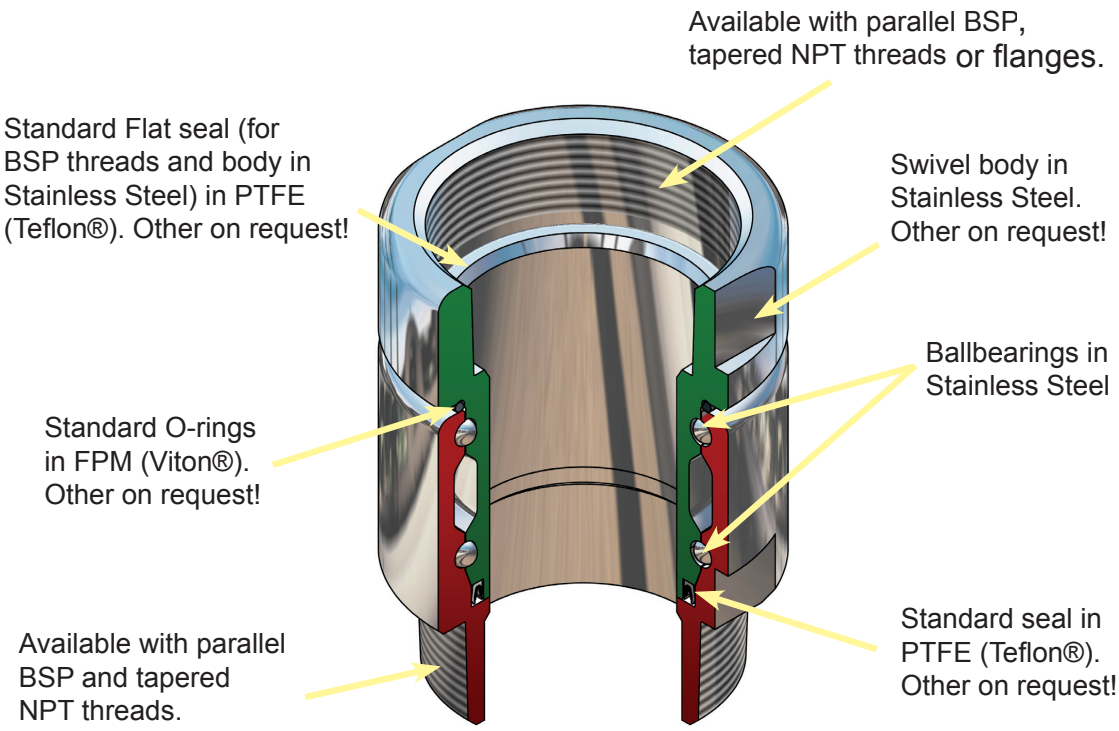
NOTE
Please ask us for your special application.

Applications

- Offshore hose reels ship-to-shore
- Oil platform loading rigs
- Marine and industrial loading arms
- Hoses for road and rail tanker
- Chemical and petrochemical liquids and liquefied gases

- **Low maintenance**
  Each unit consist of two body halves. Stainless Steel balls and a single spring assisted O-ring seal.
- **Compact external dimensions**
- **High flow rate / low pressure drop**
- **Full range of sizes, materials, seals and connections**
- **Minimal maintenance requirements**
- **Safety**
  Swivel function - allows the hose to relax to it´s natural rest position whilst allowing freedom of movement without imparting torque stress at the point of connection - Torque stress is the largest single cause of Composite, PTFE and Stainless Steel convoluted hose failure.
- **Economical**
  Cost effective solution to prolong lifetime of hoselines.

Heavy duty Swivel in Stainless Steel



Heavy Duty Swivels - double ball race

Combinations of sizes, connections and materials

Sizes

Swivel sizes						
2"	3"	4"	5"	6”	8"	10"

Connections

Threads (Female / Male[1])
BSP (ISO 228)
NPT (ASME/ANSI 1.20.1
BSPT (EN 10226)
ACME
Victaulic
Weld end

Flanges
DIN Flange (ISO 1092 PN 10/16, PN 25/40 (Type A, B, E, F [2]))
ASA Flange 150 psi / 300 psi (ASME/ANSI 16.5)
TW-Flange (DIN 28459)
T.T.M.A

[1] Any combinations of male and female threads is possible.

[2] Se page 14 for illustrations of different types of DIN-flanges

Materials and Seals

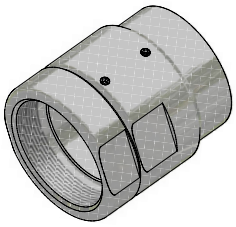
Standard Materials and standard Seals					
Component	Material	Material Standard	Operation temp	Seal	Flat Seal
Body	Aluminium	EN 755 - AW-6262-T6	-100°C to 250°C	PTFE (Teflon®)	PUR (Vulkollan®)
		EN 1706-AC-42100-T6			
	Stainless Steel	EN 10272 - 1.4404+AT			PTFE (Teflon®)
		EN 10213 - 1.4409+AT			

Working Pressure: 150 psi (10 bar)-1800 psi (125 bar)

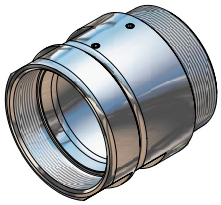
Illustrations of combinations

We manufacture Swivels in different sizes, connections and materials on request!

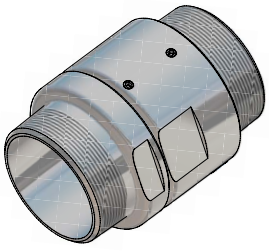
One side	Other side
BSP/NPT F	BSP/NPT F



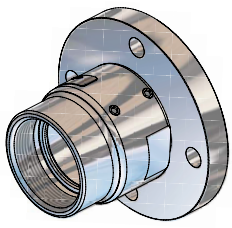
One side	Other side
BSP/NPT F	BSP/NPT M



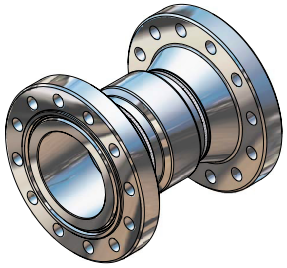
One side	Other side
BSP/NPT M	BSP/NPT M



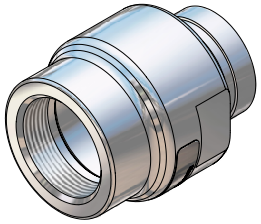
One side	Other side
Thread	Flange



One side	Other side
Flange	Flange

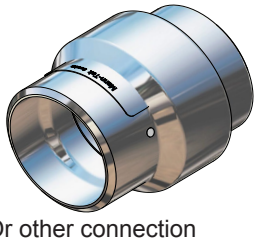


One side	Other side
Victaulic	Victaulic*)



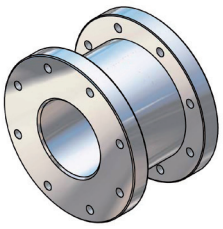
*) Or other connection on request

One side	Other side
Weld end	Weld end *)



*) Or other connection on request

Compact version



Viton® and Teflon® are registered trademarks of DuPont, DuPont Elastomers. Vulkollan® is registered trademark of Bayer AG

How to order Swivels

Letter **B** between connection and material indicates a special Hose Swivel with bushring in PTFE and O-rings in FEP (Teflon®)

Letter **K** between connection and material indicates a short version.

Swivel Code No: D 12 80 24 01 B

- **D** — Letter **D** indicates that the product is a Swivel
- **12** — Connection one side.
- **80** — Connection other side.
- **24** — Material body+innerparts.
- **01** — Material Seal.
- **B** — Used for Extra

NOTE ***For loading arm applications, contact our technical department,***

Connections (thread, flange etc.)

01 = ¾" BSP (Female)
02 = ¾" NPT (Female)
03 = 1" BSP (Female)
04 = 1" NPT (Female)
05 = 1 ¼" BSP (Female)
06 = 1 ¼" NPT (Female)
07 = 1 ½" BSP (Female)
08 = 1 ½" NPT (Female)
09 = 1 ¾" BSP (Female)
10 = 2" BSP (Female)
11 = 2" NPT (Female)
12 = 2 ½" BSP (Female)
13 = 2 ½" NPT (Female)
14 = 3" BSP (Female)
15 = 3" NPT (Female)
16 = 4" BSP (Female)
17 = 4" NPT (Female)
18 = Flange undrilled Ø156
19 = Flange undrilled Ø165
20 = Flange undrilled Ø210
21 = Flange undrilled Ø230
22 = Flange undrilled Ø254
23 = Flange DN 25 PN 10/16
24 = Flange DN 25 PN 25/40
25 = Flange DN 32 PN 10/16
26 = Flange DN 32 PN 25/40
27 = Flange DN 40 PN 10/16
28 = Flange DN 40 PN 25/40
29 = Flange DN 50 PN 25/40*
30 = Flange DN 50 PN 10/16
31 = Flange DN 50 PN 25/40
32 = Flange DN 65 PN 25/40*
33 = Flange DN 65 PN 10/16
34 = Flange DN 65 PN 25/40
35 = Flange DN 80 PN 25/40*
36 = Flange DN 80 PN 10/16
37 = Flange DN 80 PN 25/40
38 = Flange DN 100 PN 25/40*
39 = Flange DN 100 PN 10/16
40 = Flange DN 100 PN 25/40
41 = Flange DN 125 PN 6
42 = Flange DN 125 PN 10/16
43 = Flange DN 125 PN 25/40
44 = Flange DN 150 PN 6
45 = Flange DN 150 PN 10/16
46 = Flange DN 150 PN 25/40
47 = Flange DN 20 PN 10/16
48 = Flange DN 20 PN 25/40
49 = Flange ¾" ANSI Class 150
50 = Flange ¾" ANSI Class 300
51 = Flange 1" ANSI Class 150
52 = Flange 1" ANSI Class 300
53 = Flange 1 ¼" ANSI Class 150
54 = Flange 1 ¼" ANSI Class 300
55 = Flange 1 ½" ANSI Class 150
56 = Flange 1 ½" ANSI Class 300
57 = Flange 2" ANSI Class 150
58 = Flange 2" ANSI Class 300
59 = Flange 2 ½" ANSI Class 150
60 = Flange 2 ½" ANSI Class 300
61 = Flange 3" ANSI Class 150
62 = Flange 3" ANSI Class 300
63 = Flange 4" ANSI Class 150
64 = Flange 4" ANSI Class 300
65 = Flange TW 1 (3" - DN 80)
66 = Flange TW 3 (4" - DN 100)
67 = Flange 3" T.T.M.A.
68 = Flange 4" T.T.M.A.
69 = ¾" BSP (Male)
70 = ¾" NPT (Male)
71 = 1" BSP (Male)
72 = 1" NPT (Male)
73 = 1 ¼" BSP (Male)
74 = 1 ¼" NPT (Male)
75 = 1 ½" BSP (Male)
76 = 1 ½" NPT (Male)
77 = 1 ¾" BSP (Male)
78 = 2" BSP (Male)
79 = 2" NPT (Male)
80 = 2 ½" BSP (Male)
81 = 2 ½" NPT (Male)
82 = 3" BSP (Male)
83 = 3" NPT (Male)
84 = 4" BSP (Male)
85 = 4" NPT (Male)
86 = Weld.flange 2" Ø60,5 inner
87 = Flange TW 1 (2" DN50)
88 = Weld.flange 2" Ø50-Ø70 (flat)
89 = Weld.flange 2" Ø57 (int. chamfer)
90 = Weld.flange 2" Ø60 (outer chamfer)
91 = Weld.flange 3" Ø75-Ø90 (flat)
92 = Weld.flange 3" Ø76 (int. chamfer)
93 = Weld.flange 3" Ø89 (outer. chamfer)
94 = Weld.flange 4" Ø100-Ø120 (flat)
95 = Weld.flange 4" Ø102 (int. chamfer)
96 = Weld.flange 4" Ø108 (int. chamfer)
97 = Weld.flange 4" Ø114 (outer. chamfer)
98 = Flange TW 1 (2" - DN 50) with drain connection
99 = Flange DN 150 PN 25
100 = Flange 6" ANSI Class 150
101 = Flange 6" ANSI Class 300
102 = Flange DN 200 PN 10
103 = Flange DN 200 PN 16
104 = Flange DN 200 PN 25
105 = Flange 8" ANSI Class 150
106 = Flange 8" ANSI Class 300
107 = Flange Square ISO 45
108 = S60x6 (Female)
109 = S60x6 (Male)
110 = 6" BSP (Female)
111 = 6" NPT (Female)
112 = W2" - 7 (Female)
113 = Weld.flange 3" Ø92 inner
114 = Square flange, 4 holes
115 = 6" BSP (Male)
116 = 6" NPT (Male)
117 = 8" NPT (Female)
118 = 4" Victaulic
119 = Flange DN 50 PN 25/40**
120 = Flange DN 65 PN 25/40**
121 = Flange DN 80 PN 25/40**
122 = Flange DN 100 PN 25/40**
123 = W2" - 7 (Male)
124 = 5" NPT (Female)
125 = 5" NPT (Male)
126 = Flange DN 100 PN6
127 = Flange DN 80 PN6
128 = Flange DN 65 PN6
129 = Flange DN 50 PN6
130 = Flange 8" ANSI Class 600
131 = W90x1/6" (Female)
132 = ½" NPT (Female)
133 = ½" BSP (Female)
134 = Flange ø184.2, 6 holes
135 = Flange TW 7 (6" - DN 150)
136 = 4" ASSPT (Female)
137 = Triclamp DN 25
138 = M54x 1,5 (Female)
139 = 2" Triclamp (ISO 2852-51)
140 = Weld.flange Ø73 (outer chamfer)
141 = 3" Victaulic
142 = Flange 5" ANSI Class 150
143 = 3" Ball valve
144 = 2" Victaulic
145 = 3" BSPT (Male)
146 = 5" Victaulic
147 = 2" BSPT (Female)
148 = 2" BSPT (Male)
149 = 1 ½" Victaulic
150 = 2 ½" Victaulic
151 = Flange 1" DIN 11864-2
152 = Flange 2" DIN 11864-2
153 = Flange ø135, 8xM6
154 = 4" BSPT (Female)
155 = 4" BSPT (Male)
156 = Weld flange 2" ø61,5 (inner)
157 = 3" BSPT (Female)
158 = Weld end 1½" ø48 (outer)
159 = Thread TR 57x4
160 = Flange 2" BS10 Table D
161 = Flange 12" ANSI Class 150
162 = Flange 10" ANSI Class 150
163 = Flange DN 250 PN 16
164 = M130x6 (Female)
165 = Flange 10" ANSI Class 300
166 = ACME 1¼" (Female)
167 = ACME 1¾" (Female)
168 = ACME 2¼" (Female)
169 = ACME 3¼" (Female)
170 = ACME 1¼" (Male)
171 = ACME 1¾" (Male)
172 = ACME 2¼" (Male)
173 = ACME 3¼" (Male)
174 = Weld.flange Ø76 (outer. chamfer)
175 = Flange DN 15 PN 10/16
176 = Flange DN 15 PN 25/40
177 = M130x6 (Male)
178 = Flange 6" T.T.M.A.
179 = Flange DN 80 PN 25/40***
180 = ½" NPT (Male)
181 = ½" BSP (Male)
182 = 5" BSP (Female)
183 = 5" BSP (Male)
184 = Weld end 8" ø219 (outer)
185 = Weld end 6" ø168 (outer)
186 = Flange DN 250 PN 25
187 = Flange 2" T.T.M.A.
188 = Flange 3" BS10 Table D
189 = Flange ½" ANSI Class 150
190 = Flange 1" ANSI Class 150 Flat Face
191 = Flange 12" ANSI Class 300
192 = Flange DN250 PN10
193 = Weld end Ø114 Schedule 40
194 = Weld end Ø114 Schedule 80
195 = 6" Victaulic
196 = 1" Victaulic
197 = Flange DN 125 JIS 5K
198 = Flange DN 100 JIS 5K
199 = Flange DN 80 JIS 5K
200 = Flange DN 50 JIS 5K
201 = Flange DN 40 JIS 5K
202 = Flange 2" DIN 11864-3
203 = 3½" BSP (Female)
204 = Flange Ø110, Ø86/Ø5.5 (6x)
205 = Weld end Ø60 Schedule 80
206 = Weld end Ø89 Schedule 40
207 = Weld end Ø89 Schedule 80
208 = Flange DN 25 PN 6
209 = Flange DN 32 PN 6
210 = Flange DN 40 PN 6
211 = Flange DN 125 JIS 10K
212 = Flange DN 100 JIS 10K
213 = Flange DN 80 JIS 10K
214 = Flange DN 50 JIS 10K
215 = Flange DN 40 JIS 10K
216 = Flange DN 80, holes Ø14 (6x)
217 = Flange 5" ANSI Class 300
218 = 3" Triclamp (ISO 2852-76)
219 = Weld end Ø34 Schedule 40
220 = Flange DN 150 JIS 10K
221 = Flange Ø175, holes M10 (8x)
222 = Weld end Ø140 PN10/16
223 = Flange 2" ANSI Class 150 Flat Face
224 = Flange DN 200 JIS 10K
225 = Flange DN 32 PN10/16
226 = Flange 6" ANSI Class 600
227 = Flange DN 50 JIS 16K
228 = Flange DN 40 JIS 16K
229 = 8" NPT (Male)
230 = 1" EN 10226 Rp1 (1" BSPT Parallell)
231 = Flange DIN 86282 PN6 AW595
232 = Flange DN100 PN6 (8 x M16)

Material (Swivel body + innerparts)

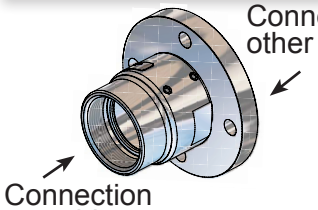
1 = Aluminium
2 = Brass
4 = Stainless steel

O-ring / Seals materials

01 = Viton® (FPM/FKM)
02 = Nitrile (NBR)
03 = EPDM
04 = Kalrez® (FFKM)
05 = NBR Low temp
06 = Teflon® (PTFE)
07 = Neoprene® (CR)
08 = Silicone (VMQ)
09 = Vulkollan® (PUR)
10 = Butyl (IIR)
11 = Nitrile (Gasol NBR 70 K-6)
12 = Perfluorelastomer (FFPM/FFKM)
13 = PVC / NBR
14 = Fluorsilicone rubber (FVMQ)
15 = FEP encapsulated silicone
16 = Hypalon® (CSM)
17 = Chemraz® 505 (FFKM)
18 = Xyflour® 860 (AFKM)
19 = Zetpol® / Therban® (HNBR)
20 = NBR 90 shore
21 = Viton®-GF (Special Viton quality)
22 = Composite
23 = Viton® GFLT-S
24 = Viton® GLT
25 = Klingerit®
26 = POM
27 = Epiclorhydrin (ECO)
28 = Viton® GFLT-S NMO
29 = FPM/FKM High Temp
31 = Viton® 90 Shore (FPM/FKM)
33 = EPDM 291
34 = Kalrez® 0040
37 = Chemraz® 510 (90 Shore)
40 = FEP PTFE encapsulated Viton®
47 = Chemraz 605 High Temp
50 = Kalrez® (PFPM) 1050LF
51 = Nylon® (PA)
61 = Viton® (FPM), FDA, USP C6 & ADI
62 = Nitrile (NBR), FDA, USP C6 & ADI
63 = EPDM, FDA, USP C6 & ADI
64 = Kalrez® (FFKM) 6230, FDA, USP C6 & ADI
66 = PTFE (Virgin), FDA
71 = FPM/FKM Low Temp
75 = FEP Silicone, FDA, USP C6 & ADI
77 = Chemraz® SD517, FDA, USP C6 & ADI
83 = EPDM BAM

Used for extra (last letter)

A = Flat Seal, PTFE (Teflon®)
B = Flat Seal PUR (Vulkollan®)
D = Flat Seal FPM (Viton®)
W = Double Ball Race

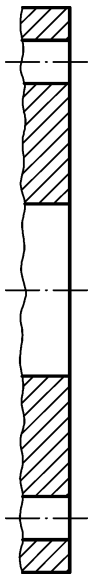


E.G. Code No: D10794401A=Hose Swivel, Single ball bearing
One side: 2" BSP (Female) **Other side:** 2" NPT (Male)
Material: Stainless Steel, Flat Seal PTFE (Teflon®)

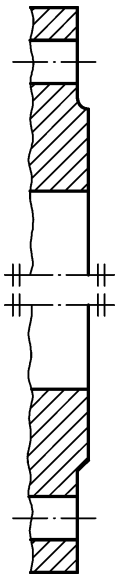
E.G. Code No: D85614401W=Swivel, Double ball race
One side: 4" NPT (Male) **Other side:** Flange 3", ANSI (ASA) 150 psi
Material: Stainless Steel

Flange facing types according to EN 1092

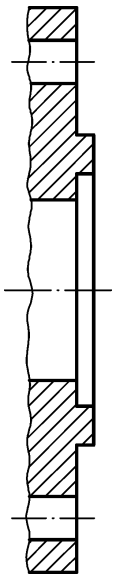
Type A Flat face



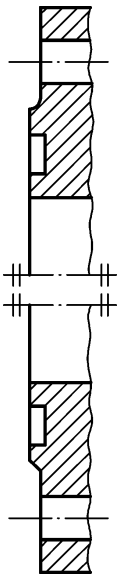
Type B Raised face



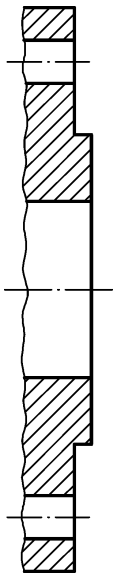
Type C Tongue



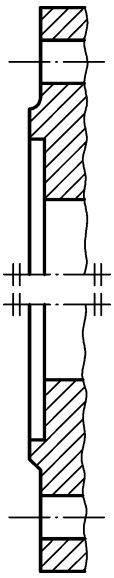
Type D Groove



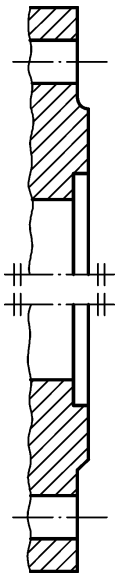
Type E Spigot



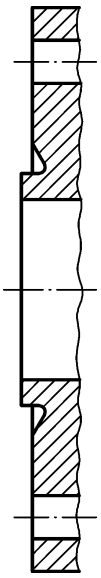
Type F Recess



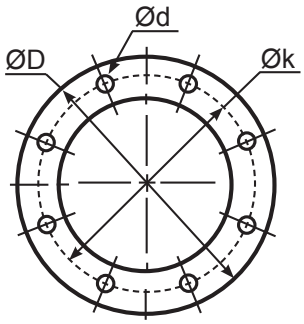
Type G O-ring Spigot



Type G O-ring Groove



Flange Measurement - 1/2



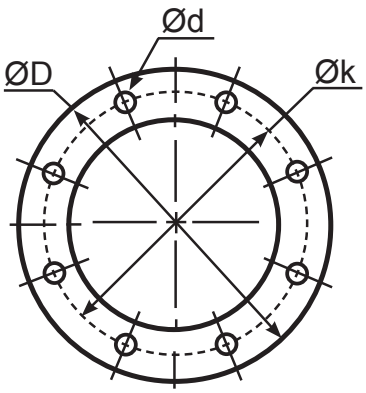
Ø D = **Diameter**
Ø k = **Centre diameter**
n = **Numer of holes**
Ø d = **Hole diameter**

EN 1092-1																	
DN		PN 10				PN 16				PN 25				PN 40			
		ØD	Øk	n	Ød	ØD	Øk	n	Ød	ØD	Øk	n	Ød	ØD	Øk	n	Ød
20	mm	105	75	4	14	105	75	4	14	105	75	4	14	105	75	4	14
	inch	4.13	2.95		0.55	4.13	2.95		0.55	4.13	2.95		0.55	4.13	2.95		0.55
25	mm	115	85	4	14	115	85	4	14	115	85	4	14	115	85	4	14
	inch	4.53	3.35		0.55	4.53	3.35		0.55	4.53	3.35		0.55	4.53	3.35		0.55
32	mm	140	100	4	18	140	100	4	18	140	100	4	18	140	100	4	18
	inch	5.51	3.94		0.71	5.51	3.94		0.71	5.51	3.94		0.71	5.51	3.94		0.71
40	mm	150	110	4	18	150	110	4	18	150	110	4	18	150	110	4	18
	inch	5.91	4.33		0.71	5.91	4.33		0.71	5.91	4.33		0.71	5.91	4.33		0.71
50	mm	165	125	4	18	165	125	4	18	165	125	4	18	165	125	4	18
	inch	6.50	4.92		0.71	6.50	4.92		0.71	6.50	4.92		0.71	6.50	4.92		0.71
65	mm	185	145	4	18	185	145	4	18	185	145	8	18	185	145	8	18
	inch	7.28	5.71		0.71	7.28	5.71		0.71	7.28	5.71		0.71	7.28	5.71		0.71
80	mm	200	160	8	18	200	160	8	18	200	160	8	18	200	160	8	18
	inch	7.87	6.30		0.71	7.87	6.30		0.71	7.87	6.30		0.71	7.87	6.30		0.71
100	mm	220	180	8	18	220	180	8	18	235	190	8	22	235	190	8	22
	inch	8.66	7.09		0.71	8.66	7.09		0.71	9.25	7.48		0.87	9.25	7.48		0.87
125	mm	250	210	8	18	250	210	8	18	270	220	8	26	270	220	8	26
	inch	9.84	8.27		0.71	9.84	8.27		0.71	10.63	8.66		1.02	10.63	8.66		1.02
150	mm	285	240	8	22	285	240	8	22	300	250	8	26	300	250	8	26
	inch	11.22	9.45		0.87	11.22	9.45		0.87	11.81	9.84		1.02	11.81	9.84		1.02
200	mm	340	295	8	22	340	295	12	22	360	310	12	26	375	320	12	30
	inch	13.39	11.61		0.87	13.39	11.61		0.87	14.17	12.20		1.02	14.76	12.60		1.18
250	mm	395	355	12	22	405	355	12	26	425	370	12	30	450	385	12	33
	inch	15.55	13.98		0.87	15.94	13.98		1.02	16.73	14.57		1.18	17.72	15.16		1.30
300	mm	445	400	12	22	460	410	12	26	485	430	16	30	515	450	16	33
	inch	17.52	15.75		0.87	18.11	16.14		1.02	19.09	16.93		1.18	20.28	17.65		1.30

Flange translation EN 1092 ---- DIN

EN 1092-1	DIN
EN 1092-1 PN 6	DIN 2631
EN 1092-1 PN 10	DIN 2632
EN 1092-1 PN 16	DIN 2633
EN 1092-1 PN 25	DIN 2634
EN 1092-1 PN 40	DIN 2635
EN 1092-1 Type B Raised Face	DIN 2526 Form C
EN 1092-1 Type C Tongue	DIN 2512 Form F
EN 1092-1 Type D Groove	DIN 2512 Form N
EN 1092-1 Type E Spigot	DIN 2513 Form V
EN 1092-1 Type F Recess	DIN 2513 Form R

Flange Measurement - 2/2



Ø D = **Diameter**
Ø k = **Centre diameter**
n = **Numer of holes**
Ø d = **Hole diameter**

ANSI (ASA) B 16,5

INCH		150 psi				300 psi			
		ØD	Øk	n	Ød	ØD	Øk	n	Ød
3/4"	mm	98,4	69,8	4	15,9	117,5	82,5	4	19
	inch	3 7/8	2 3/4		5/8	4 5/8	3 1/4		3/4
1"	mm	107,7	79,4	4	15,9	123,8	88,9	4	19
	inch	4 1/4	3 1/8		5/8	4 7/8	3½		3/4
1 1/4"	mm	117,5	88,9	4	15,9	133,3	98,4	4	19
	inch	4 5/8	3½		5/8	5 1/4	3 7/8		3/4
1 1/2"	mm	127	98,4	4	15,9	155,6	114,3	4	22,2
	inch	5	3 7/8		5/8	6 1/8	4½		7/8
2"	mm	152,4	120,6	4	19	165,1	127	8	19
	inch	6	4 3/4		3/4	6½	5		3/4
2 1/2"	mm	177,8	139,7	4	19	190,5	149,2	8	22,2
	inch	7	5½		3/4	7½	5 7/8		7/8
3"	mm	190,5	152,4	4	19	209,5	168,3	8	22,2
	inch	7½	6		3/4	8 1/4	6 5/8		7/8
4"	mm	228,5	190,5	8	19	254	200	8	22,2
	inch	9	7½		3/4	10	7 7/8		7/8
5"	mm	254	215,9	8	22,2	279,4	234,9	8	22,2
	inch	10	8½		7/8	11	9 1/4		7/8
6"	mm	279,4	241,3	8	22,2	317,5	269,9	12	22,2
	inch	11	9½		7/8	12½	10 5/8		7/8
8"	mm	342,9	298,4	8	22,2	381	330,2	12	25,4
	inch	13½	11 3/4		7/8	15	13		1
10"	mm	406,4	361,9	12	25,4	444,5	387,3	16	28,6
	inch	16	14 1/4		1	17½	15 1/4		1 1/8
12"	mm	482,6	431,8	12	25,4	520,7	450,8	16	31,7
	inch	19	17		1	20½	17 3/4		1 1/4

TW DIN 28459

	DN		ØD	Øk	n	Ød
TW1	50	mm	154	130	8	11
		inch	6.06	5.12		0.43
TW1	80	mm	154	130	8	11
		inch	6.06	5.12		0.43
TW3	100	mm	174	150	8	14
		inch	6.85	5.91		0.55
TW5	125	mm	204	176	8	14
		inch	8.03	6.93		0.55
TW7	150	mm	240	210	12	14
		inch	9.45	8.27		0.55

T.T.M.A

INCH		ØD	Øk	n	Ød
2"	mm	114,3	95,3	6	11,1
	inch	4.50	3.75		0.44
3"	mm	142,9	123,8	8	11,1
	inch	5.63	4.87		0.44
4"	mm	168,3	149,2	8	11,1
	inch	6.63	5.87		0.44
5"	mm	196,9	177,8	12	11,1
	inch	7.75	7.00		0.44
6"	mm	228,6	206,4	12	11,1
	inch	9.00	8.13		0.44
8"	mm	276,2	257,2	16	11,1
	inch	10.87	10.13		0.44

Mounting instruction

When installing Mann Tek equipment to new pipe work, tanks, etc. ensure the system is free from debris that may be transferred through the coupling. Where the hose or loading arm assembly is the primary static dissipation or earth route, the electrical continuity value of the assembly shall be checked to ensure regulatory compliance. Special attention should be paid to the balancing of loading arms. The weight of the coupling plus transfer media should be taken into account at the specification stage. It is usual for loading arm balance settings to account of weight variations due to differences in the full / empty cycle.

The loading arm should be set to balance in the condition present at the time of connection. For example, should the loading arm be empty at the time of connection then it should be balanced in the empty condition.

The Mann-Tek product can be installed directly in the product line and is ready for use after removing the transport protection. The installation is recommended as follows:

a. Remove the packaging and the flange protection

b. Check the coupling for damages before mounting.

c. To prevent damages during mounting a suitable wrench should be used for the intended bolts and nuts.

d. Ensure that the product line is empty and all valves are close before you connect the coupling into the line.

e. Set in all bolts first and tighten them by hand. Then increase the tightening torque in 2 steps up to the recommended value in the following table. Proceed every time according to the sequence shown in g.

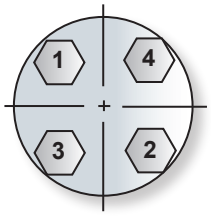
f. Tightening torque[1)] for bolts:

Metric	
Size	**8.8**
M8	24 Nm
M10	50 Nm
M12	85 Nm
M16	210 Nm
M20	410 Nm
M22	550 Nm
M24	700 Nm

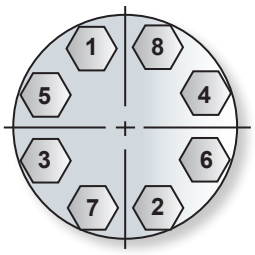
Inch	
Size	**A193 B7**
5/16 -18 UNC	16 lbf-ft
3/8 -16 UNC	29 lbf-ft
1/2 -13 UNC	70 lbf-ft
5/8 -11 UNC	139 lbf-ft
3/4 -10 UNC	243 lbf-ft
7/8 -9 UNC	389 lbf-ft
1 -8 UNC	582 lbf-ft

g. Bolt tightening sequence.

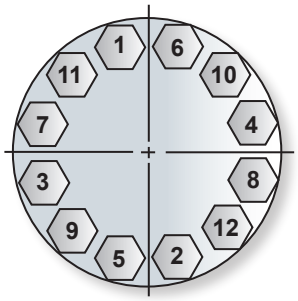
4 Bolt Pattern



8 Bolt Pattern



12 Bolt Pattern



The start-up may take place only when the Mann-Tek product has been mounted as instructed and the necessary function tests and leak tests have been conducted by the approved authorities.

[1)] The torque forces recommended bases on a thread friction coefficient μ=0,14 and a standard flat seal according to EN 1514-1

NPT

Sealing NPT threads can be an exasperating experience if certain techniques are not followed. The following tips will help alleviate many common problems in thread sealing:

1. Always use some type of sealant (tape or paste) and apply sealant to male thread only. If using a hydraulic sealant, allow sufficient curing time before system is pressurized.

2. When using tape sealant, wrap the threads in a clockwise motion starting at the first thread and, as layers are applied, work towards the imperfect (vanishing) thread. If the system that the connection being made to cannot tolerate foreign matter (i.e. air systems), leave the first thread exposed and apply the tape sealant as outlined above.

3. When using paste sealant, apply to threads with a brush, using the brush to work the sealant into the threads. Apply enough sealant to fill in all the threads all the way around.

4. When connecting one stainless steel part to another stainless steel part that will require future disassembly, use a thread sealant that is designed for stainless steel. This stainless steel thread sealant is also useful when connecting aluminium to aluminium that needs to be disconnected in the future. These two materials gall easily, and if the correct sealant is not used, it can be next to impossible to disassemble.

5. When connecting parts made of dissimilar metals (i.e. steel and aluminium), standard tape or paste sealant per forms satisfactory.

6. For sizes 2" and below, tape or paste performs satisfactory. When using thread tape, four wraps (covering all necessary threads) is usually sufficient.

7. For sizes 2½" and above, thread paste is recommended. If thread tape is used, eight wraps (covering all necessary threads) is usually sufficient. Apply more wraps if necessary.

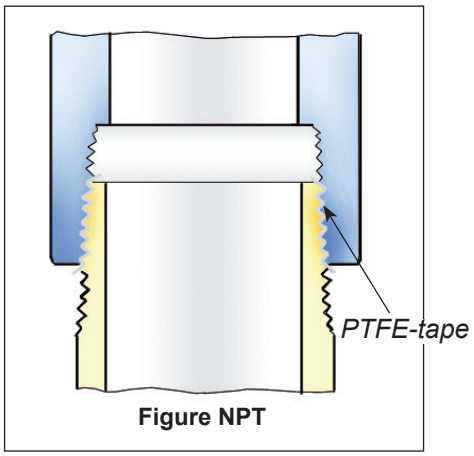


Figure NPT

8. For stubborn to seal threads, apply a normal coating of thread paste followed by a normal layer of thread tape.

9. For extremely stubborn to seal threads, apply a normal coating of thread paste followed by a single layer of gauze bandage followed by a normal layer of thread tape.

Caution!

When this procedure is done, the connection becomes permanent. Extreme measures will be necessary to disconnect these components. All other measures to seal the threads should be explored prior to use of this technique.

10. Over-tightening threads can be just as detrimental as insufficient tightening. For sizes 2" and below, hand tighten the components and, with a wrench, tighten 3 full turns. For sizes 2½" and above, hand tighten the components and, with a wrench, tighten 2 full turns.

BSP

The threads are parallel with flat sealing surface.

This allows to use the full thread length for screwed-on parts. The largest possible transfer of force is guaranteed for short length. The thread seal behind the relief groove of the thread cannot drop out.

Simple screwing down, makes a safe connection. Subsequent tightening during operation is possible at any time. Change of seal and new assembly do not require any expert knowledge.

The European standardisations for hose assemblies require parallel threads with flat seals, because of the advantages.

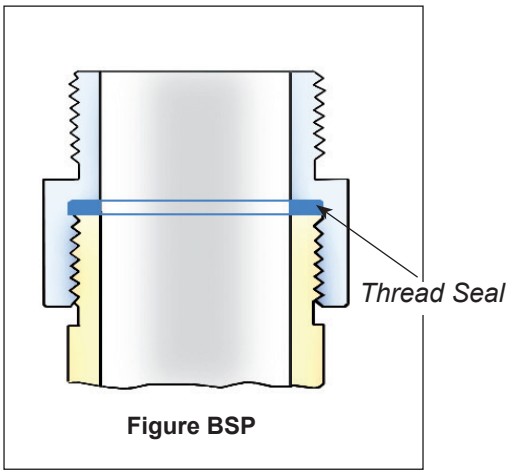
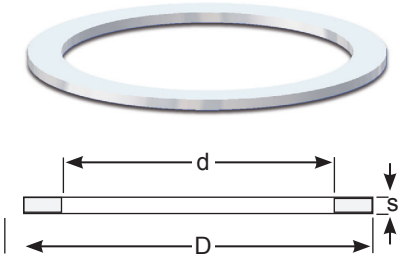


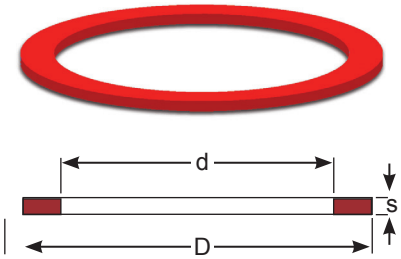
Figure BSP

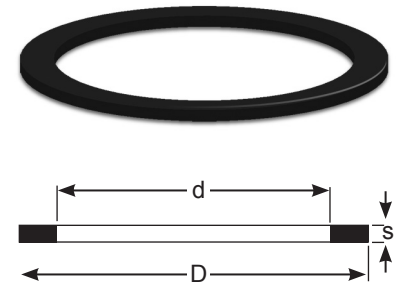
Flat Seals for thread

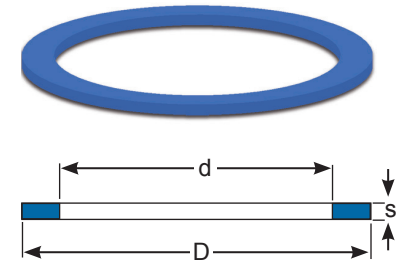
weight ≈kg	Thread BSP	Materials Application	Dimensions ≈ mm			Product No
			D	d	s	
0,001	BSP ½"	PTFE (Teflon®) white , massive continuously hard, universally resistant **Teflon®** is a registered trademark of DuPont	20	13	2	On request
0,001	BSP ¾"		26	19	2	1498-06
0,002	BSP 1"		33	24	2	1220-06
0,003	BSP 1 ¼"		42	34	2	1536-06
0,003	BSP 1 ½"		48	39	2	1196-06
0,004	BSP 2"		60	49	2	1052-06
0,007	BSP 2 ½"		76	63	2,5	1181-06
0,006	BSP 3"		88	77	3	1110-06
0,009	BSP 4"		114	100	3	1295-06
0,016	BSP 6"		164	150	3	1963-06
0,001	BSP ½"	Thermopac asbestos free, light hard. Especially for hot oils and hot bitumen up to 250° C and for hot water and saturated steam up to 25 bar.	20	13	2	On request
0,001	BSP ¾"		26	19	2	1498-25
0,002	BSP 1"		33	24	2	1220-25
0,002	BSP 1 ¼"		42	34	2	1536-25
0,003	BSP 1 ½"		48	39	2	1196-25
0,004	BSP 2"		60	49	2	1052-25
0,005	BSP 2 ½"		76	63	3	1181-25
0,009	BSP 3"		88	77	3	1110-25
0,013	BSP 4"		114	100	3	1295-25
0,016	BSP 6"		164	150	3	1963-25
0,001	BSP ½"	FPM/FKM (Viton®) soft for aromatic hydrocarbons and hot oils. **Viton®** is a registered trademark of DuPont	20	13	2	On request
0,001	BSP ¾"		26	19	2	1498-01
0,002	BSP 1"		33	24	2	1220-01
0,002	BSP 1 ¼"		42	34	2	1536-01
0,003	BSP 1 ½"		48	39	2	1196-01
0,004	BSP 2"		60	49	2	1052-01
0,006	BSP 2 ½"		76	63	3	1181-01
0,008	BSP 3"		88	77	3	1110-01
0,014	BSP 4"		114	100	3	1295-01
0,016	BSP 6"		164	150	3	1963-01
0,001	BSP 3/4"	**PUR (Vulkollan®)** Flat seals type of polyurethane, hightly resitant to abrasion, non-toxic. Shore hardness=90^0 . For all petroleum based products and many solvents. Colour:Blue **Vulkollan®** is a registered trademark of Bayer	26	19	2	1498-09
0,001	BSP 1"		33	24	2	1220-09
0,001	BSP 1 ¼"		42	34	2	1536-09
0,002	BSP 1 ½ "		48	39	2	1196-09
0,003	BSP 1 ¾"		54	44	2,5	On request
0,003	BSP 2"		60	49	2	1052-09
0,005	BSP 2 ½ "		76	63	2,5	1181-09
0,006	BSP 3"		88	77	3	1110-09
0,010	BSP 3½"		100	80	3	On request
0,009	BSP 4"		114	100	3	1295-09
0,012	BSP 5" (No std)		140	124	3	On request
0,016	BSP 6"		164	150	3	1963-09



Bonded fibre material



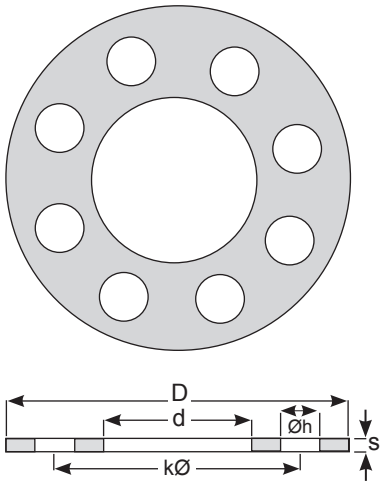




Flange Seals

Flange Standard / Suitable for	Dimensions ≈ mm					Product No
	D	d	Øk	Øh	s	
DN 25 PN 10/16	108	78,5	91	4 x 6,5	2	-
DN 32 PN 10/16	140	43	100	4 x 18	2	-
DN 50 PN 6	140	61	110	4 x 15	2	-
DN 50 TW 1	154	50	130	8 x 12	2	-
DN 80 TW 1	154	90	130	8 x 12	2	-
DN 50 PN 10/16	165	61	125	4 x 18	2	-
DN 100 TW3	174	110	150	8 x 14	2	-
DN 65 PN 10/16	185	76	145	4 x 18	2	-
DN 80 PN 10/16	200	90	160	8 x 18	2	-
DN 125 TW5	204	135	176	8 x 14	2	-
DN 100 PN 10/16	220	115	180	8 x 18	2	-
DN 150 TW7	240	160	210	12 x 14	2	-
DN 125 PN 10/16	250	141	210	8 x 18	2	-
DN 150 PN 10/16	280	169	240	8 x 22	2	-
DN 200 PN 10	340	220	295	8 x 22	2	-
DN 200 PN 16	340	220	295	12 x 22	2	-

On request



MATERIAL:
ELAPAC- FD is a three component mixture, made of ***RUBBER (NBR)*** vulcanised, for the adhesion and resistance to kinking.

CORK for compressibility and sealing capability. When tightening the flange seal does not move towards the outer or inner edge of the sealing faces.The flange seal does not ”settle,” and can be re-used in most cases.

FIBRES give the material the necessary rigidity and the stability to insert flange seals into narrow gaps from the side. The values for swelling are considerably lower for fibre reinforced mixtures than for plain rubber seals.

Further advantages: No leaching out of softening agents. No shrinking or hardening through drying. No influence on or discoloration of media. No hardening at temperature range of -25 o up to +70o Celsius. No sticking on flange. Additional ”adhesives” are not necessary. – Therefore good reusability.

RESISTANCE:
The details refer to fitted flange seals. Only the inner rim of the flange seal is in contact with the medium. In the event of a possible attack this would only result in low penetration and the use is still possible. If the flange seal is completely immerged in the medium during laboratory tests, swelling and loss of stability is of course higher. If the resistance of ***ELAPAC*** is not sufficient but good compressibility is required, we offer the special design ***”TM”*** seal which is PTFE encapsulated.

Application of foodstuffs: ELAPAC-FD is only suitable with PTFE-cover, otherwise mixture particles can influence the quality of the foodstuffs.

APPLICATION:
As an elastic flange seal for tank truck and tank plant construction etc., where rough sealing surfaces require a high adaptability, where flange seals should still have good flexibility to avoid pipe fractures or simple sealing materials because little or no force can be used to tighten the joint. Not suitable for use as thread seal, because the material is too soft and does not have enough lateral strength, this allows the medium to attack the seal material. Also not suitable for applications where the flange seal is only squashed on 2 mm to 3 mm of the total width. Care should be taken not to squash the material to much especially the 2 mm material, if in doubt please use the 3 mm material.

GAS IMPERMEABILITY :
Due to the fibre content of ELAPAC; gas permeability is to be expected when using seals with narrow width – especially at high vacuum operation.

APPROVALS:
Approved as flange sealing material for all fuels and lubricants by the German military and the major oil companies for tank trucks, refineries and aircraft refuellers. Approved in 3 mm thickness by the German railway (Mat. No. 150.309). ELAPAC-FD meets the DIN 28 463.

TECHNICAL DATA:

hardness, Shore	A 86 ± 3
tensile strength	longitudinal 10 N/mm2
	lateral 4,5 N/mm2
elongation at break	longitudinal 15 N/mm2
	lateral 70 N/mm2
compressibility	75 %
recovery	90 %
compression set 24h, 70⁰ C	40 %
tear resistance	longitudinal 7 N/mm2
	lateral 10 N/mm2
working pressure maximal	25 bar
colour	blue
marking	print ***ELAPAC-FD***

O-ring materials

Designation	Trade name	ISO 1629	ASTM 1418	Temp Range °C		Field of Application
Nitrile Butadiene Rubber	Buna N® Europrene N® Hycar® Nipol N® Perbunan N®	NBR	NBR	-45	110	Standard material for hydraulics and pneumatics. Mineral oil-based hydralic fluids, animal and vegetable oils and fats. Flame retardant liquids. Aliphatic hydrocarbons (prophane, butane, petrol). Silicone oils and greases. Water up to 80Cº. Bio oils made from synthetic esters and vegetable oils
Ethylene-Propylene-Diene Rubber	Dutral Keltan® Vistalon® Buna AP®	EPDM	EPDM	-55	120	Hot water, vapour, brake fluids, detergents. Alcohols, ketons, engine coolants, flame retardant phosphate-based liquids, organic and inorganic acids and bases. Not resistent to mineral oils
Fluoroelastomer	Fluorel® Technoflon® Viton®	FPM	FKM	-20	200	Mineral oil and greases. Aliphatic, aromatic and chlorinated hydrocarbons, petrol, 99 octan petrol, diesel fuels, flame retardant phosphatebased liquids. Silicone oils and greases acids, lyes
Fluorosilicone Elastomer	-	MFQ	FVMQ	-60	200	Mineral oils, fuels. lubricant on Di-Ester basis, hot air.
Silicone	Silastic® Silopren®	MVQ	VMQ	-60	200	Mineral oils, fuels. lubricant on Di-Ester basis, hot air.
Hydrogenated Nitrile-Butadiene Rubber	Therban® Tornac® Zetpol®	HNBR**	HNBR**	-35	120	Mineral oil-based hydralic fluids, animal and vegetable fats, aliphatic hydrocarbons, diesel fuels, ozone, sour gas, dilute acids and bases Mineral oil-based hydralic fluids, animal and vegetable fats, aliphatic hydrocarbons, diesel fuels, ozone, sour gas, dilute acids and bases
Butyl Rubber	Exxon Butyl® Polysar Butyl®	IIR	IIR	-55	100	Butyl is a copolymer of isobutylene and isoprene. It has largely been replaced by ethylene propylene for O-ring usage. Butyl is resistant to the same fluid types as ethyleneпropylene and except for resistance to gas permeation, it is somewhat inferior to ethylene-propylene for O-ring service. Excellent weather resistance, and gas permeation resistance. Poor petroleum oil and fuel resistance.
Perfluorinated Elastomer	CHEMRAZ® Kalrez® PERLAST®	FFPM	FFPM	-40	260	Best chemical resistance of all elastomers, including organic acids, f.i. acetic acid, benzoic acid, formic acid
Chloroprene Rubber	Baypren® Neoprene®	CR	CR	-40	120	Resistant to refrigerants, ammonia, carbon dioxide, freon(R12,R13,R21,R22,R113-R115), silicone oils, water, oxygen(low-pres.), bleaches, coustic soda, alcohols, chlorine, ozone, castor oil and veg. oils. Low resistance to mineral oils!
Polyester / Polyether Urethane Rubber	Adiprene® Urepan® Vulkollan® Desmopan®	AU EU PUR	AU EU	-40	100	Mineral oils and greases, oxygen, ozone. HFA and HFB fluids, air. Not resistant in esters, aliphatic, aromatic and chlorinated hydrocarbons, concentrated acids and lyes, water above +50ºC.
Polytetrafluoroethylene	Teflon®	PTFE	PTFE	-200	260	PTFE is used wherever the chemical and thermal resistance of the normal elastomer is no longer sufficient. These are primarily applications in the chemical industry, foodstuffs industry, pharmaceuticals and medical technology. PTFE are used only as static seals, e.g. on flange connections, on covers, .etc.
Fluorinated Ethylene Propylene	Teflon FEP®	FEP/MVQ	FEP/VMQ	-60	200	FEP is used wherever the chemical and thermal resistance of the normal elastomer is no longer sufficient. These are primarily applications in the chemical industry, foodstuffs industry, pharmaceuticals and medical technology.
		FEP/FPM	FEP/FKM	-20	200	
Perflouralkoxy	Teflon PFA®	PFA/MVQ	PFA/VMQ	-60	250	PFA is used wherever the chemical and thermal resistance of the normal elastomer is no longer sufficient. These are primarily applications in the chemical industry, foodstuffs industry, pharmaceuticals and medical technology.
		PFA/FPM	PFA/FKM	-20	250	
Tetrafluoroethylene-Propylene Copolymer Elastomer	Aflas®	—-	TFE / P**	-25	200	Mineral oils and greases, brake fluids, fuels, alcohols, heat transfer media, oils. amines, acids, bases

Viton® (FPM) and Teflon® (FPM/KPM) are registered trademarks of DuPont, DuPont Elastomers. Vulkollan® is registered trademark of Bayer AG

About

Mann Tek is a Swedish manufacturer and supplier of couplings with experience of the industry for more than 20 years. We supply modern, easy to use, safe and timesaving products. A environmentally safe system for both staff and its surroundings, which prevents a variety of hazards.
Our products are the obvious choice in harsh and demanding environments and where there´s a need of a safe and spill free handling of fluids, gases and bulk powders. With more than twenty years of knowledge and experience of multiply industries it has accumulated extensive expertise about applications in many types of variations in which our couplings have been, and can be used, with excellent results.

We constantly strive to develop and improve the performance and design of our products, to meet changes, new market demands and standards. Which, today, is what made us market leading.
Our couplings are the obvious choice when certifications and product approvals are required, anywhere in the world.
Mann Tek® is certified to ISO9001:2008 and the products are produced in accordance with several important standards, e.g. the NATO STANAG 3756

Company Approvals

Apragaz · TDT · VdTÜV · Lloyd's Register · Ex II 2G · PG · CE

Mann-Tek is a certified ISO9001-company.

Phone: +46 501 39 32 00
Fax +46 501 39 32 09
Email: sales@mann-tek.com
Web site: www.mann-tek.com
Address: Mann Teknik AB
Strandvägen 16
S-542 31 Mariestad
Sweden

Sales office:
Argentina | Great Britain | Netherlands
Sweden | United Arab Emirates