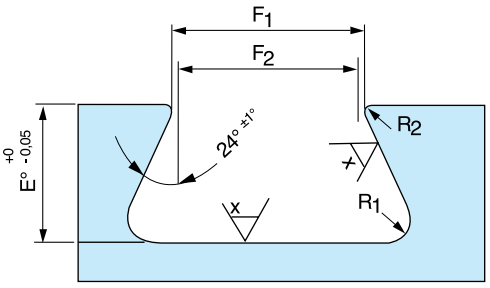
12. O-ring Gland Design

12 C. Gland Design Dovetail Grooves

Gland Design for a Static Application; for O-rings in Dovetail Grooves, INCHES

Dovetail grooves are used to hold the O-ring in place during installation or maintenance. This groove design is relatively uncommon as it is expensive to machine and should not be used unless absolutely required.
The dovetail groove construction is only recommended for O-rings with cross sections of .139 inch (3,53 mm) and larger.



x = surface finish in µm R_a

Fig. 1-30

Surface Finish X
groove top and bottom :
for liquids
X = 32 micro inches (0.8 µm Ra)

for vacuum and gases
X = 16 micro inches (0.4 µm Ra)

groove sides:
X = 63 micro inches (1.6 µm Ra)

Table AS.C3 Gland Dimensions Dovetail Grooves, INCHES

O-ring Cross section W		Gland Depth. E	Squeeze %	Groove Width to Sharp Corner F_2	Groove Radius	
1/16	.070	.050/.052	27	.055/.059	.005	.015
3/32	.103	.081/.083	21	.083/.087	.010	.015
1/8	.139	.111/.113	20	.113/.117	.010	.030
3/16	.210	.171/.173	18	.171/.175	.015	.030
1/4	.275	.231/.234	16	.231/.235	.015	.060
3/8	.375	.315/.319	16	.315/.319	.020	.090

Radius "R2" is critical. Insufficient radius will cause damage to the seal during installation, while excessive radius may contribute to extrusion. R2 is size radius, R1 is machining radius.

12. O-ring Gland Design

12 C. Gland Design Dovetail Grooves

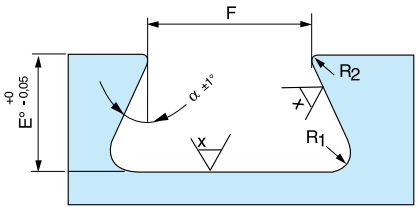
Gland Design for a Static Application for O-rings in Dovetail Grooves, METRIC

Dovetail grooves are used to hold the O-ring in place during installation or maintenance. This groove design is relatively uncommon as it is expensive to machine and should not be used unless absolutely required.
The dovetail groove construction is only recommended for O-rings with bigger cross sections, .139 inch (3,53 mm) and bigger.

Surface Finish X
groove top and bottom :
for liquids
X = 32 micro inches (0.8 µm Ra)

for vacuum and gases
X = 16 micro inches (0.4 µm Ra)

groove sides:
X = 63 micro inches (1.6 µm Ra)



x = surface finish in µm R_a

Fig. 1-30

Table 3.C-3 Gland Dimensions Dovetail Grooves, METRIC

W O-ring Cross Section	E Groove Depth	F Groove Width	α Side Wall Angle	R Radius	
mm	E +-0,05	F +/-0,05	α +/-1°	R_1	R_2
3,0	2,4	2,7	29	0,25	0,25
3,5 - 3,53*	2,8	3,15	28	0,25	0,25
4,0	3,2	3,6	32	0,8	0,25
4,5	3,65	4,05	28	0,8	0,25
5,0	4,15	4,5	24	0,8	0,25
5,33*	4,4	4,8	24	0,8	0,25
5,5	4,6	4,95	24	0,8	0,4
5,7	4,8	5,15	23	0,8	0,4
6,0	5,05	5,4	25	1,15	0,4
6,5	5,5	5,85	24	1,15	0,4
6,99* - 7,0	5,95	6,3	23	1,5	0,5
7,5	6,4	6,55	24	1,5	0,5
8,0	6,85	7,05	24	1,5	0,5
8,4	7,25	7,40	24	1,5	0,5
8,5	7,35	7,50	24	1,5	0,5
9,0	7,8	7,90	24	1,5	0,5
9,5	8,2	8,35	24	1,5	0,5
10,0	8,7	8,80	24	1,5	0,5

Groove dimensions are to be seen as an advice due to the fact they are based on our experience.