

Industrial Mechanical Seals



**Manual of seals and
counterfaces fitting**

cyclam
INDUSTRIE



Fitting of CYCLAM seals and counterfaces

The correct working of CYCLAM seal assembly (which normally consists of seal and counterface) depends essentially on its correct fitting onto the components of the machine in which it must operate. **It is, therefore, most important what the fitting instructions given below are followed scrupulously.**

Important: CYCLAM seal assemblies are made of high precision components which must be handled with caution, particularly the friction faces which are very fragile. Ensure that installed length L3 is well within the permitted tolerances. **Never compress to below the L3 min.**

Storage: This should be in a cool, dry environment, sheltered from light. Leave the units in their original packaging until required for fitting. The storage limit is 10 years, but seals stored separately from the mating counterface should be checked after 1 year to see if the super finishing needs renewing.

Fitting of seals

a- Profile of shaft and fitting cone

The seals are designed for tight fitting on the shaft; this fit is achieved by interface in the diameter of the rubber membrane on the shaft. For correct fitting, **the part of the shaft on which it is required to slide the seal must not have any sharp edges. An entry chamfer or a removable entry cone is necessary for correct positioning of the seal on the shaft** (see figure 1 & 2). The C1 minimum chamfer length is given in the table of dimensions.

b- Cleaning

Cleaning of the shaft with a solvent (petrol, trichlorethylene, etc...) is necessary to remove all traces of grease and dirt from the section over which the seal must pass.

c- Lubrication

To facilitate fitting, it is necessary to use a lubricant composed of **4% CYCLAM lubricant in demineralised water**. If this not available use Teepol at the same dilution. Using a paint brush moisten the shaft and the internal diameter of the seal with the mixture **just before** fitting. Never immerse the seal in the lubricant. **We strongly advise against the use at any time of any grease, tallow, oil or fatty materials.**

d- Fitting on the shaft

A fitting tube is necessary for placing the seal in its working position. This tube differs depending on whether the seal is pushed in one direction or the other sense. Dimensions are indicated in the table.

Fitting with friction face forward

This is the easiest form of fitting, using a simple metal or plastic tube (see figure1). A stop should be provided to prevent over compression of the seal.

Fitting with friction face backward

In the case of seals PR, EP, PRR and EPR, the use of a specially designed tube permits pushing directly on the membrane of the seal (figure 2). For seals DR, NAP, and NBP, pushing is carried out directly on the friction face. **It is imperative to avoid irregular obstructions that could create a permanent deformation in the friction face, however minute.**

It is equally essential to take care not to scratch or chip the superfinished face. Fitting is carried out by presenting the seal concentrically by hand onto the entry cone and then **pushing it into its design position with a fitting tube**, on which is a flat rubber ring (see figure 3).



Seal head								
D1	d12	d30	y1	y2	c1	x1	x2	d3
5	8	16			1.5			
6	9	16			1.5			
7	10	16			1.5			
8	15	24	11.2	21	2	6.5	3.8	18
9	15	24	11.2	21	2	6.5	3.8	
10	18	28	13.7	24.5	2	7	3.8	24
12	22	32	15	28.5	2	8	4.5	24
14	23	35	17	31.5	2.5	8	4.5	28
15	23	35	17	31.5	2.5	8	4.5	32
16	23	35	19	31.5	2.5	8	4.5	32
17	25	39	21	35.5	2.5	8	4.5	32
18	25	39	21	35.5	2.5	8	4.5	35
19	28	42	24	38.5	2.5	8	4.5	
20	28	42	24	38.5	2.5	8	4.5	39
22	30	42	26	38.5	2.5	8	4.5	35
23	37	47	29	42.5	3	8	4.5	
24	37	47	29	42.5	3	8	4.5	38
25	37	47	29	42.5	3	8	4.5	42
28	40	54	33	48.5	3	8	5	42
30	40	54	33	50	3	8	5	44
32	44	54	33	50	3	8	5	46
35	47	60	38	53	3	10	5	49
38	50	65	44	57	4	10	5	54
40	52	65	44	57	4	10	5	56
45	55	70	49	62	4	12	5/7	61
48	57				4			
50	64	85	59	80.5	4	14	8	66
55	69	85	61	80.5	4	14	8	71
60	84	105	73	98	4	17	7.5	80
65	84	105	76	98	4	17	8	85
70	89	105	76	98	4	17	8	90
75	94	115	81	106	6	19	8	
80	95	120	87	108	6	19	8	
85	100	130	93	118	6	20	8	
90	105	135	98	122	6	20	8	
95	113	140	103	127	6	21	8	
100	115	145	108	132	8	21	8	
105	120	150	113	137	8	21	8	
110	126	160	119	148	8	22	8	
115	132	165	119	151	8	22	8	
120	135	170	129	156	8	22	8/14	
150	165	210	158	181	8	27	10	

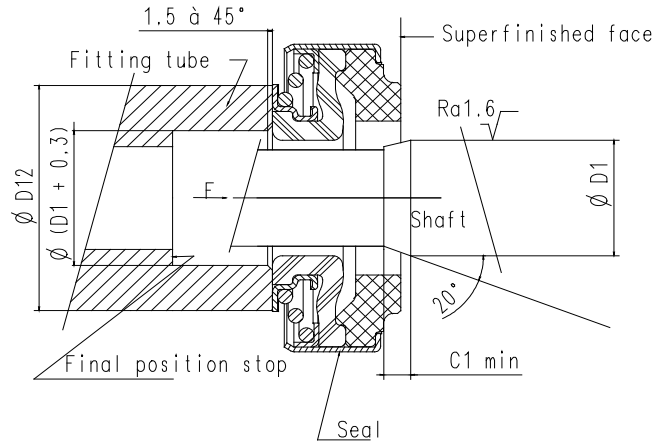


Figure 1
Chamfer on shaft and fitting of all types of seal "Friction face forward" with fitting tube

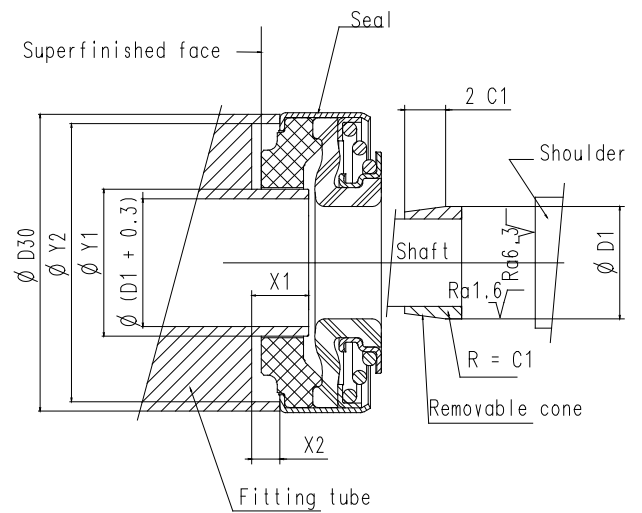


Figure 2
Removable cone and fitting "friction face backward" of seals PR, EP, EPR and PRR with fitting tube

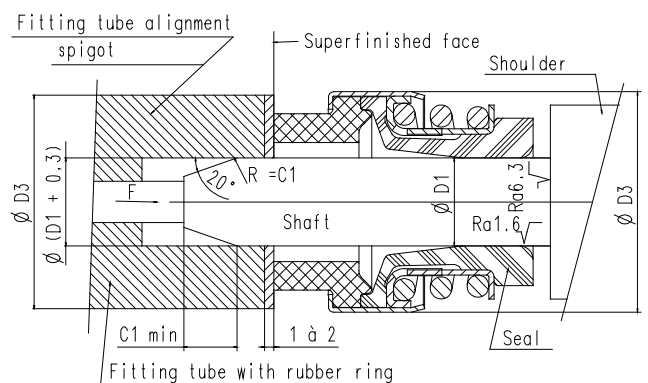


Figure 3
Fitting "friction face backward" of seals DR, NAP, and NBP with fitting tube

Fitting of counterfaces

a- Entry chamfer

The counterface housing must include an entry chamfer for easy, practical installation (see figure 4). If this is impossible, then a removable cone must be used (see figure 5). For counterfaces IN the flatness of the abutment of the housing must be better than 0.03.

b- Cleaning

Thorough cleaning of the housing is necessary before presenting the counterface in order to eliminate all traces of grease and dirt in this area.

c- Lubrication

As for the seal, the use of a water based CYCLAM lubricant solution is necessary to facilitate the fitting of the counterface into its housing.

d- Fitting

Check that the rubber joint is correctly placed on the contact ring. Fitting requires a fitting tube that differs according to the type of counterface used.

After fitting, inspect to see that the counterface is properly seated at the bottom of its housing (max. perpendicular error permissible: 0.15).

Dimensions of counterfaces fitting tubes

Types TAR, LAR et LTAR									
D1	x3	x5	y42	y51	y52	y71	x4	y31	O-Ring R or AN
8	2.9	0.50	20.5	23.6	21.9	25.8	2	8.3	14
9	4	0.50	20.5	28.6	27.9	30.8	2	9.3	18
10	4	0.50	26	28.6	27.9	30.8	2	10.3	18
12	4	0.50	28	32.5	30.9	34.8	2	12.3	20
14	4	0.50	30	35.6	33.9	37.8	2	14.3	22
15	4	0.50	30	35.6	33.9	37.8	2	15.3	22
16	4	0.50	30	35.6	33.9	37.8	2	16.3	22
17	4	0.50	35	39.6	37.9	41.8	2	17.3	25
18	4	0.50	35	39.6	37.9	41.8	2	18.3	25
19	4	0.55	38	41.8	40.9	44.8	2	19.3	26
20	4	0.55	38	41.8	40.9	44.8	2	20.3	26
22	4	0.55	39	41.8	40.9	44.8	2	22.3	26
23	5.9	0.55	43	46.8	45.1	49.8	2	23.3	28
24	5.9	0.55	43	46.8	45.1	49.8	2	24.3	28
25	5.9	0.55	43	46.8	45.1	49.8	2	25.3	28
28	5.9	0.55	48	53.8	52.5	56.8	2	28.4	30
30	5.9	0.55	48	53.8	52.5	56.8	2	30.4	30
32	5.9	0.55	48	53.8	52.5	56.8	2	32.4	30
35	5.9	0.65	53	59.8	57.5	62.7	2	35.4	32
38	6.2	0.65	58	62.8	62.5	67.7	2	38.4	33
40	6.2	0.65	58	62.8	62.5	67.7	2.5	40.4	33
45	6.2	0.65	63	67.8	67.5	72.7	2.5	45.4	35
48								48.4	
50	6.2	0.80	75	82.8	81.4	87.7	3.5	50.5	39
55	6.2	0.80	76	82.8	81.4	87.7	3.5	55.5	39
60	6.2	1	89	104.8	101.3	109.7	3.5	60.5	46
65	6.2	1	92	104.8	101.3	109.7	3.5	65.5	46
70	6.2	1	92	104.8	101.3	109.7	3.5	70.5	46
75		1	104		111.3	119.7	3.5	75.5	49
80		1	107		116.6	124.7	3.5	80.5	51
85		1	117		126.3	134.7	3.5	85.5	53
90		1	121		131.6	139.7	3.5	90.5	55
95		1	127		136.2	144.7	3.5	95.5	57
100		1	132		141.5	149.7	3.5	100.5	58
105		1	137		146.2	154.7	3.5	105.5	60
110		1	148		156.2	164.7	3.5	110.5	63
115		1	151		161.5	169.7	3.5	115.5	64
120		1	156		166.3	174.7	3.5	120.5	65

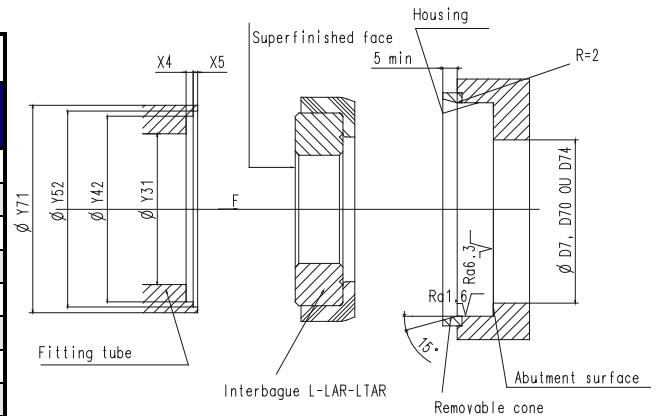


Figure 4
Fitting of counterfaces L, LAR, LTAR

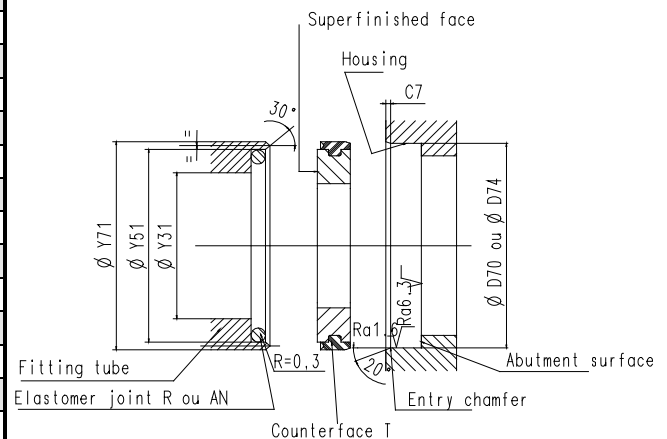


Figure 5
Fitting of counterfaces TAR

Types IN									
D1	X5	x6	y42	y44	y52	Y54	y71	x4	y31
10	0.5	0.7	15	16	17.6	18.2	20.8	2	10.3
12	1	1.7	17	18	19.6	20.2	22.8	2	12.3
14	0.5	1.3	19	20	21	22.2	24.8	2	14.3
16	0.5	1.3	21	22	23	24.2	26.8	2	16.3
18	0.5	0.7	26	27	30.1	29	32.8	2	18.3
20	0.5	0.7	29	29	30.8	31	34.8	2	20.3
22	0.5	0.7	30	31	33.1	33	36.8	2	22.3
24	0.5	0.7	32	33	35.1	35	38.8	2	24.3
25	0.5	0.7	34	34	36.1	36.2	39.8	2	25.3
28	0.5	0.7	36	37	38.8	39.1	42.8	2	28.3
30	0.7	1.1	38	39	40.8	41.1	44.8	2	30.4
32	0.7	1.1	40	42	45.1	44.1	47.8	2	32.4
35	0.7	2.1	43	44	45	46.1	49.8	2	35.4
38	0.7	2.1	47	50	51.7	52.1	55.8	2	38.4
40	0.7	2.1	49	52	53.5	54.2	57.8	2.5	40.4
45	0.9	1.6	54	57	57.5	59.1	62.8	2.5	45.4
48	2.8	3.6	57	60	60.5	62	65.8		48.4
50	2.8	3.6	59	64	64.3	66.1	69.8	3.5	50.5
55	2.8	3.6	64	67	69.3	71.2	74.7	3.5	55.5
60	3	6.2	71	73	74.5	74.2	79.7	3.5	60.5
65	3	3.5	76	77	78.3	79.2	84.7	3.5	65.5
70	3	3.5	81	84	85.7	86.3	91.7	3.5	70.5

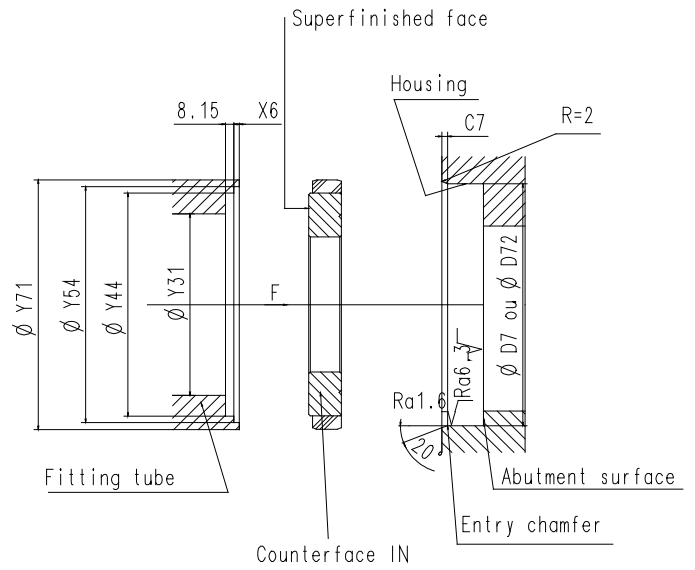


Figure 6
Fitting of counterfaces IN

Types L						
Designation	x4	x5	y31	y42	y52	Y71
5.18.5	2	0.3	5.3	14	16.2	17.8
7.18.5	2	0.3	7.3	14	16.2	17.8
8.18.5	2	0.3	6.3	14	16.2	17.8
9.22.5	2	0.6	9.3	18	20.2	21.8
12.26.8	2	2.7	12.3	21	23.2	25.8
12.26.5	2	0.3	12.3	21	23.2	25.8
12.25.5	2	0.7	12.3	21	23.2	24.8
12.25.8	2	3.2	12.3	21	23.2	24.8
12.24.6	2	1.6	12.3	20	22.2	23.8
12.29.8	2	1.2	12.3	24	26.2	28.8
13.32.6	2	0.7	13.3	27	29	31.8
14.25.7	2	2.7	14.3	21	23.2	24.8
16.30.8	2	1.2	16.3	25	27.4	29.8
16.29.5	2	0.3	16.3	25	27.4	28.8
16.32.8	2	1	16.3	25	27.4	31.8
16.30.8	2	0.3	16.3	25	27.4	29.8
18.32.7	2	1	18.3	26	29	31.8
20.37.10	2	4.3	20.3	30	33.4	36.8
22.37.12	2	4.3	22.3	31	34.2	36.8
20.39.10	2.5	4.3	20.3	33	36.4	38.8
22.40.10	2.5	4.3	22.3	32	36.5	39.8
22.38.10	2	4.3	22.3	30	34.1	37.8
22.45.10	2.5	2.5	25.3	38	42.2	44.8
25.45.6	2.5	0	25.3	37		44.8
40.71.6	3.5	0.3	40.3	63	67.2	70.8
45.71.6	3.5	0.3	45.3	63	67.2	70.8
120.189.25	5	8.5	120.3	175	180.2	188.8

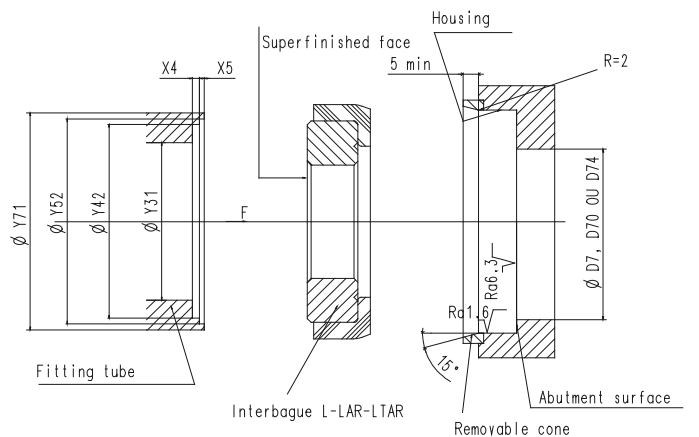


Figure 4
Fitting of counterfaces L, LAR, LTAR

Fitting of seal assembly

Before assembly make sure that the friction faces of the seal and counterface are perfectly clean.

Clean them with a piece of non-fluffy tissue or cloth soaked in petrol or a classical solvent.

Assemble the components containing the counterface and present them concentrically to the shaft, making sure not to touch the latter. If the parts are heavy or large, use a removable plastic sleeve for protection between the shaft and contact ring. Immediately after assembly the unit can be placed in service. However, in all cases where the pressure to be sealed is high for the type of unit used, **it is preferable to wait several hours after assembly before placing the unit in service.**

Properly chosen and installed following the above instructions, a CYCLAM seal assembly will give complete satisfaction.



Cyclam
75 rue Robert Le Coq
80038 Amiens Cedex 1
France
Tel.: 0033(0)3 22 54 5970
Fax.: 0033(0)3 22 44 4636

If the products featured will be used in a potentially dangerous and / or hazardous process, Cyclam Customer Support should be consulted prior to their selection and use.

In the interest of continuous development, Cyclam Company reserves the right to alter designs and specifications without prior notice.