



CEFIL'AIR®

Inflatable Seals

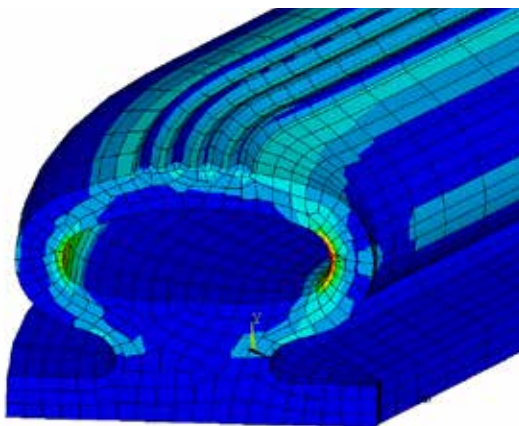
Meeting Your Critical Sealing
Requirements.

INTRODUCTION

When faced with the problem of sealing between parts, which move in relation to one another and are capable of being connected and disconnected at will, the easiest, safest and most effective technique to use is pneumatic seals.

CEFIL'AIR® seals, which are expanded and retracted by a pneumatic process, have been designed to meet multiple applications. CEFIL'AIR® inflatable seals bring wider possibilities of use as a result of its patented design employing modern techniques and the most advanced elastomers.

These seals can satisfy the highest demands of temperatures from -60 °C to +220 °C, as well as higher temperatures during short periods. They can also withstand pressures from dynamic vacuum ($1,33 \cdot 10^{-6}$ Bar) to several hundred Bars (10^2 Bar and more). CEFIL'AIR® inflatable seals can be used in all sectors of industry including advanced techniques and scientific research.



With know-how and expertise in the field of pneumatic seals, Technetics Group develops and markets CEFIL'AIR® products for diverse customer applications. Thanks to engineering studies, calculations and FEA, particularly within maestral® laboratory, Technetics Group is able to meet the challenges of today and tomorrow, including economic challenges with reactivity, anticipation and competitiveness, as well as challenges concerning safety and security to ultimately meet customer needs.

APPLICATIONS

CEFIL'AIR® inflatable seals are fitted in the following cases where sealing, handling, or locking is required:

- movable cofferdam bulkheads
- storage containers
- transport containers
- leaktight panels
(naval, aerospace industry)
- nuclear vessels
(equipment or personnel chambers)
- isothermal chambers
- clean rooms
- sliding or quick-locking doors
(autoclaves, sterilisers)
- centrifugal filters
(access doors and drainage hoppers)
- aircraft access doors
- cockpit canopies
- portholes
- cofferdams
- pneumatic conveyors
(bagging hoppers, valve gates)
- phonic isolation



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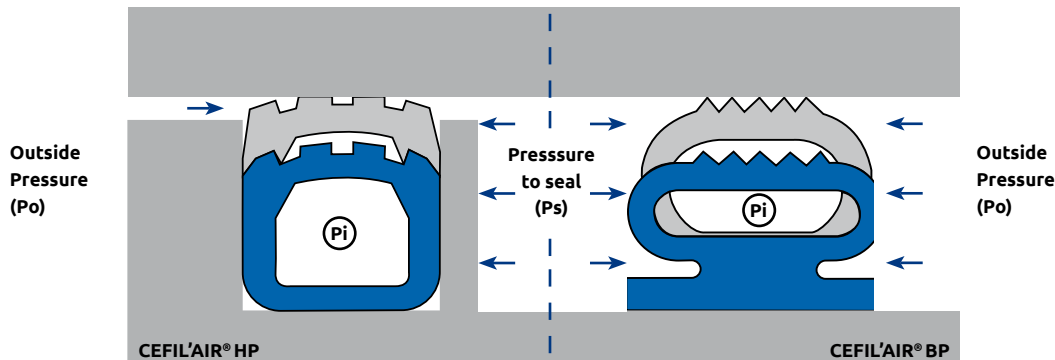
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OPERATION

CEFIL'AIR® seals have no textile reinforcement or expansion system. Their expansion, like their retraction, is obtained through the combined effects of the walls of the seal forming elastic arms. The seals, which are produced from elastomers with a high modulus of elasticity and considerable elongation and fitted in grooves, are restricted to low work rates. As a result, they are protected against risks of bursting, so it is necessary to observe the fitting dimensions (table, pages 4-5).

Comment: CEFIL'AIR® HP inflatable seals must be captive in slots or grooves closed on all four faces in accordance with the specified dimensions. **You are strongly recommended not to pressurise or use the seals when one of the faces of the groove is open.** On the other hand, CEFIL'AIR® LP seals can be secured by their base and work freely. However, the maximum pressure cannot be applied until their contact face (toothed side) is against the item to be sealed.



When free, CEFIL'AIR® seals must not be inflated above $\geq 0,8$ to $1,5$ bar (according to the type of the profile). When fitted in a groove, they are perfectly leaktight for an inflation pressure of $1,25$ to $1,45$ times the pressure to seal (P_s). The maximum inflation pressure (P_i) which the seals can withstand depends on the clearance (J) between the supporting frame and the moving panel (see profiles on pages 4-5). The inflation pressure (P_i) can be higher if clearance is reduced. CEFIL'AIR® seals are designed to provide tightness on pressurised equipment. This creates a lateral force on the seal, which tends to force it either towards the outside (equipment under pressure) or towards the inside of the equipment (equipment under vacuum).

a) Equipment under vacuum ($P_0 - P_s > 0$)

The condition of the surfaces in contact, as well as the completion of the assembly operation, make it possible for CEFIL'AIR® seals to withstand a vacuum of 10^{-3} Torr (dynamic vacuum).

b) Equipment under pressure ($P_0 - P_s < 0$)

With an internal pressure created by gas or a controlled atmosphere, the strength is directly linked to the clearances, deformation of the contact faces and the pressurisation of the seal. In these applications, it is always necessary to reduce dimension (J) to a minimum, restricting the surface to which the pressure of the enclosure (P_s) will be applied, in order to reduce the radial component or, depending on the arrangement, the axial component, as far as possible as this tends to force the seal outwards. Generally, the ratio $P_s - P_0 / P_i$ is of $0,7$ to $0,2$ but with the limits laid down in the table concerning profiles (pages 4-5).

MANUFACTURE

CEFIL'AIR® inflatable seals are made by joining together extruded or moulded sections. This connection is made in our workshops, which ensures perfect continuity while at the same time reducing any stresses in the joint to a minimum.

This method provides substantial flexibility with regard to the geometry of the sections. There are two types of standard profiles and a series of special profiles that are used in numerous applications, i.e. **sealing, locking or gripping during automatic handling have been created.**

For specific uses which need reinforced manufacturing (textiles, high performance aramid fibers) or expanded profiles, see pages 12 and 13 and please contact our technical department.

TYPES OF ELASTOMERS

CEFIL'AIR® inflatable seals are produced with elastomers with high mechanical properties. Silicone, SBR and EPDM are the most commonly used. Although these are high performance materials, they are not suitable for all applications, and consequently, other elastomers should be used.

Elastomers	Ref.	Δ Sh A	Temp. range °C	Properties
SBR Styrene Butadiene Rubber	1 A 60	60	-20 +100	Good resistance to: - water - demineralised water - air - diluted acids and bases - ketones Abrasion-resistant
CR* Chloroprene	4 B61K	60	-20 +110	Same as SBR, with better resistance to: - ultraviolet rays - ozone Low resistance to grease
IIR* Butyl	5 B 60	65	-20 +120	Good resistance to: - diluted acids and bases - ketones - very low permeability
EPDM* Ethylene Propylene	6 B 65	65	-30 +150	Good resistance to: - water - steam - atmospheric conditions Low resistance to hydrocarbon
VMQ Silicone BIO-GUARDIAN®	C 65 M	60	-60 +220	Good resistance to: - dry and humid heat - steam P ≤ 6 bars - cold - very low oil resistance - does not age
FVMQ* Fluorosilicone	CF 65 M	60	-50 +200	Same as Silicone, with better resistance to: - aromatic hydrocarbons - chlorinated solvents
NBR* Nitrile Rubber	3 B	70	-30 +110	Good resistance to: - oils - greases - fuels - some solvents
HNBR* Hydrogenated Nitrile Rubber	3 H	70	-40 +160	Same as NBR, with better resistance to: - ozone - high temperatures
FKM* (VITON®) Fluorocarbon Rubber	3 E 65	65	-20 +180	Good resistance to: - chlorinated solvents - aromatics - strong acids and bases

*Profiles not kept in stock, produced on special request. (Please contact our technical department).

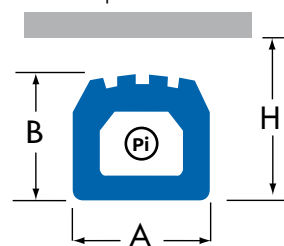
Note : This information represents broad outlines for use. For specific applications, please contact our technical department.

STANDARD HP PROFILES

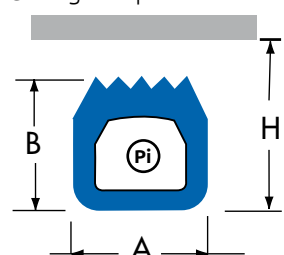
PRODUCTION

(1) Tolerances ISO 3302-1 category 2.

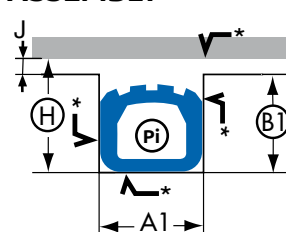
Grooved profile



Corrugated profile



ASSEMBLY



PROFILES			HOUSINGS				
Ref. Nr. silicone	Ref. Nr. SBR	A x B (1)	+ 0,5 + 0 A1*	+ 0,5 + 0 B1	+ 1 + 0 H	J maxi*	Pi maxi
339	10035	16 x 12	16	13	15	3	4
347	10036	16 x 18	16	19	21	3	4
356	10041	22 x 19	22	20	22	3	6
443	10039	26 x 19	26	20	23	4	6
405	10042	27 x 21	27	22	25	4	6
627	10175	35 x 26	35	27,5	32,5	6	8
369	10217	35 x 32	35	33,5	43,5	11	8

415	10102	6,5 x 5	6,5	5,5	6	1,5	1
512	---	14 x 10	14	11	13	3	4
639	---	16 x 14	16	15	17	3	5
603	10177	20 x 20	20	21	23,5	3,5	6
514	10351	21 x 24	21	25	28	4	7
529	---	54 x 40	54	42	50	9	10

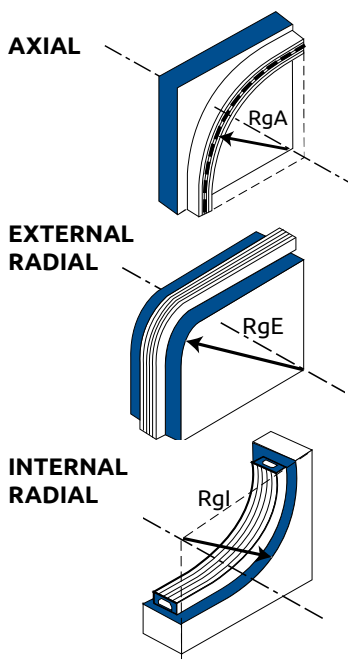
* The housing width and expansion of the seal should be checked in accordance with the requirements on page 7.

In the retracted position, the seal is contracted and protected in its groove ($B1 > B$).

The clearance (J) can be reduced to zero when the two parts are in contact, without their movements being hindered by the seal ($B1 = H$).

* $\sqrt{Ra}$ 3,2 to 6,3. standard N8 (see page 9).

CURVE RADII (between 2 straight lengths).



PROFILES STANDARDS HP					
Ref. Nr. silicone	Ref. Nr. SBR	A x B	RgA* mini	RgE* mini	Rgl* mini
339	10035	16 x 12	38	40	52
347	10036	16 x 18	48	50	78
356	10041	22 x 19	61	50	69
443	10039	26 x 19	73	60	79
405	10042	27 x 21	83,5	70	111
627	10175	35 x 26	87,5	70	106
369	10217	35 x 32	87,5	80	122
415	10102	6,5 x 5	18	20	25
512	---	14 x 10	32	30	42
639	---	16 x 14	48	40	64
603	10177	20 x 20	60	50	70
514	10331	21 x 24	60,5	50	74
529	---	54 x 40	147	150	190

* For profiles other than in silicone, increase the above values RgA/RgE/Rgl by a minimum of 20%.

In order to obtain the full expansion and retraction of the seal, as well as guarantee its maximum efficiency, the minimum curve radii in the corners must be in accordance with the opposite table. The sketches define the reference line of the radius at the bottom of the groove according to the position of the curve in relation to the direction of the expansion.

Please consult our technical department for small sized circular seals.

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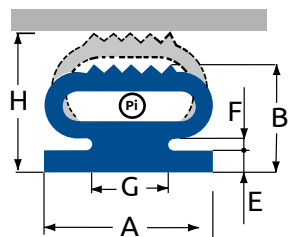
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STANDARD LP PROFILES

PRODUCTION

(1) Tolerances ISO 3302-1 category 2.



Ref. Nr. silicone	Ref. Nr. SBR	A x B (1)		Housings		Dimensions					
				A1 +2 +0	B1 +2 -2	H1	H	E	F	G	Pi maxi
921	10152	30	20	30	22	30	25	4	4	12	3
704	10118	40	27	40	29	40	35	5	5	15	3
736	10211	60	35	60	38	60	50	6	6	25	3
828	10126	90	55	90	60	90	75	8*	8	30	3
---	10094	130	70	130	80	130	100	15	10	40	3
---	10170	150	80	150	90	140	110	16,5	12	50	3

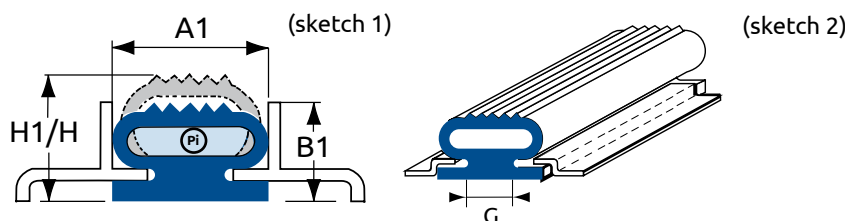
- Other forms of seals can be produced (see page 13).
- The dimensions of the dies available may be supplied on request.

* Profile 10126E = 10 mm.

ASSEMBLY

This profile can be used with a groove (sketch 1) or without a groove (sketch 2). Dimension (B) corresponds to the seal in the idle position. When it is subjected to a pressure of 1,5 bar (seal in free position), (H1) (maximum height) is obtained. Dimension (H) is a normal working value, intermediate values can be also used between (B) and (H). The foot must be secured on each side when the seal is subjected to an external pressure acting on its side. Specifically, in the axial position, standard LP CEFIL'AIR® seals must be maintained in the radii by quadrants.

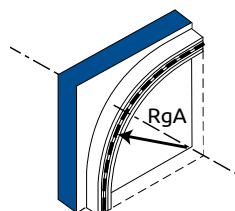
Fixing Examples :



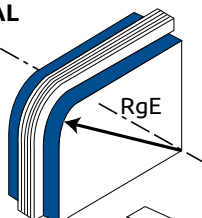
Note : Other fixing systems can be considered, they are left up to the user's initiative and are to be supplied by him.

CURVE RADII (between 2 straight lengths).

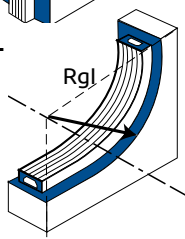
AXIAL



EXTERNAL RADIAL



INTERNAL RADIAL



STANDARD LP PROFILES						
Ref. Nr. silicone	Ref. Nr. SBR	A x B		RgA* mini	RgE* mini	RgI* mini
921	10152	30	20	90	60	100
704	10118	40	27	160	90	117
736	10211	60	35	230	100	165
828	10126	90	55	320	300	405
---	10094	130	70	740	460	650
---	10170	150	80	1000	560	700

* For profiles other than silicone, increase the above values RgA/RgE/RgI by a minimum of 20%.

In order to obtain the full expansion and retraction of the seal, as well as guarantee its maximum efficiency, the minimum curve radii in the corners must be in accordance with the opposite table, which defines the value of the radius at the bottom of the groove according to the position of the curve in relation to the direction of the expansion.

Please consult our technical department for small sized circular seals.

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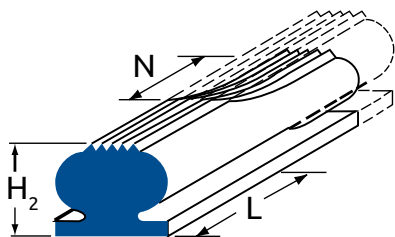
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END PLUGS

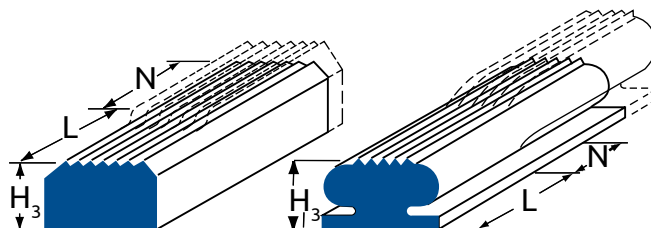
Linear seals may be manufactured with "solid" end plugs. In this case, the plugged areas are neutralised, as neither expansion nor contraction can occur.

Two constructions are possible: either by plugging the expanded seal or by plugging the retracted seal. When using either solution, it is necessary to provide flanges or end plates to hold the seal in order to prevent tearing caused by seal expansion (see flanges or retaining plates below).

Type with expanded end



Type with retracted end



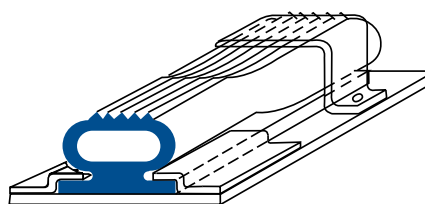
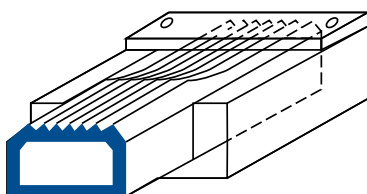
PROFILES STANDARDS HP						
Ref. Nr. silicone	Ref. Nr. SBR	A x B	H ₂	H ₃	L	N
339	10035	16 x 12	15	13	16	5
347	10036	16 x 18	21,5	19,5	16	5
356	10041	22 x 19	22,5	20,5	22	6
443	10039	26 x 19	23,5	20,5	26	7
405	10042	27 x 21	26	23	27	7
627	10175	35 x 26	34	29	35	9
369	10217	35 x 32	45	35	35	9
415	10102	6,5 x 5	6,5	5,5	6,5	2
512	---	14 x 10	13	11	14	5
639	---	16 x 14	17,5	15,5	16	4
603	10177	20 x 20	24	21,5	20	5
514	10331	21 x 24	29	26	21	6
529	---	54 x 40	48	42	54	14

PROFILES STANDARDS BP						
Ref. Nr. silicone	Ref. Nr. SBR	A x B	H ₂	H ₃	L	N
921	10152	30 x 20	25	22	20	15
704	10118	40 x 27	35	29	25	20
736	10211	60 x 35	50	38	40	30
828	10126	90 x 55	75	60	60	45
---	10094	130 x 70	100	80	80	65
---	10170	150 x 80	110	90	100	80

Note : The dimension N represents the intermediate part between the active seal and the end plug which cannot come into contact with the face to be sealed. The efficiency of the seal is only obtained beyond L + N.

These parts must not be outside of the support face seals under any circumstances.

Flange or retaining plate



END PLUGS

For specific applications requiring expansion nearly all along the seal, EXPANDABALE end plugs are available upon request.

Examples :

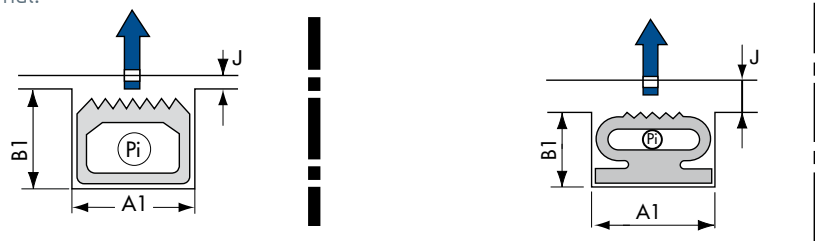


PLEASE CONSULT OUR TECHNICAL DEPARTMENT

DEFINITION OF SEAL ACCORDING TO DIRECTION

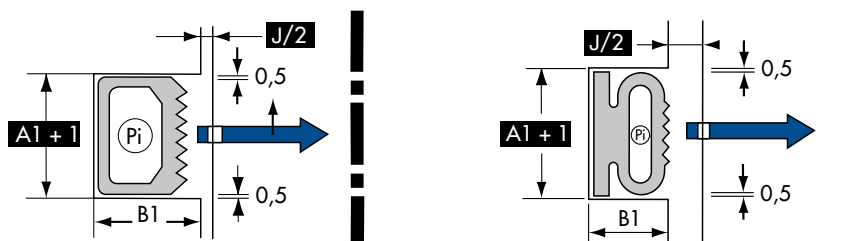
AXIAL EXPANSION (LAYOUT I)

The working pressure P_i is normal.



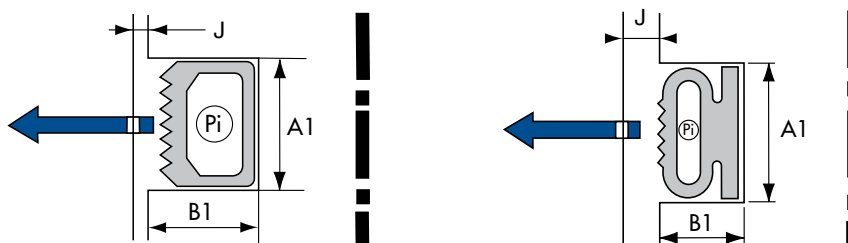
INTERNAL RADIAL EXPANSION (LAYOUT II)

The working pressure P_i is 20 to 30% greater than the normal pressure.



EXTERNAL RADIAL EXPANSION (LAYOUT III)

The working pressure P_i is normal or 15 to 25% higher.



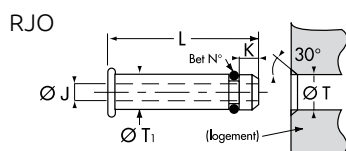
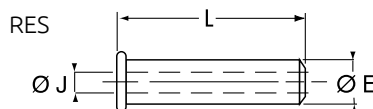
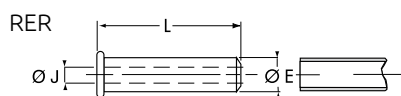
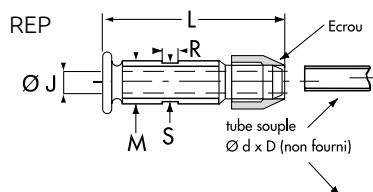
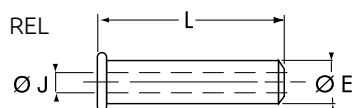
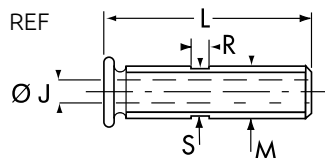
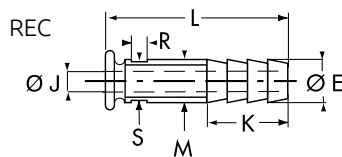
The circular layouts I, II and III are also applicable for formed seals if the radius R_{gA} , R_{gE} and R_{gI} are followed (see pages 4 & 5).

FITTINGS AND VALVES

Our standard fittings and valves are manufactured in brass.

We also produce fittings in any other material, such as bronze, stainless steel and elastomers.

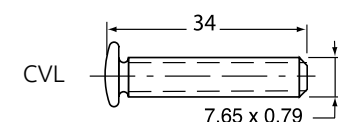
STANDARD FITTINGS



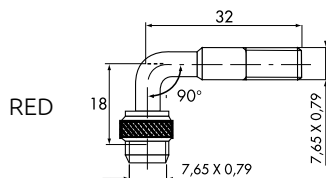
Notes:

- during the assembly of RJO fitting, it is important to secure the O-ring (chamfers 30°, smooth edges, etc.).
- RES fitting is only available in rubber.

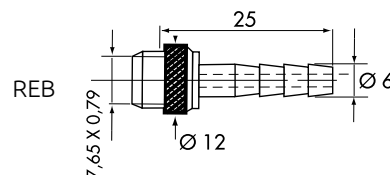
STANDARD VALVES



with non return valve



with non return valve



without non return valve

RED elbow fittings and REB fittings can only be fitted on CVL valves and on REF valves 7,65x0,79.

SPECIAL FITTINGS

We offer a wide range of solutions. Please contact our Technical Department for more information.

Ø E		4		6		8		10		12	
M		M6		M8		M10		M12		M14	
Ø J		1,5		3		5		6		6	
K		12		16		16		20		20	
L		30/35 40/50		30/35/40 50/50		40/45/50 60/70/80		40/50/60 70/80/90		50/60/70 80/90/100	
S x R		5x6		6x6		8x8		10x8		11x8	
M	M4	M6	7,65x0,79	M8	1/8 G	M10	1/8 NPT	M12	1/4 G	M14	M16
Ø J	1,2	3	3	3	5	5	5	6	6	6	8
L	15/20/25 30/35/40 50	15/20/25 30/35/40 50	20/25/30 35/40/50 60	15/20/25 30/35/40 50/60	20/25/30 35/40/50 60/70	20/25/30 35/40/50 60/70	20/25/30 35/40/50 60/70	20/25/30 35/40/50 60/70	20/25/30 35/40/50 60/70	30/35/40 45/50/60 70/80	40/45/50 60/70/80 90/100
S x R	3x4	5x6	6x6	6x8	8x8	8x8	8x8	10x8	10x8	11x8	13x10
Ø E	4	6		8		10		12		14	16
Ø J	1,5	3,4		3,4		5		6,8		6,8	8,5
L	15/20/25 30/40	15/20/25 30/35/40 50		20/25/30 35/40/50		25/30/35 40/45/50 60		30/35/40 45/50/60 70		35/40/45 50/60/70 80	45/50/60 70/80/90
M						M10		M12		M14	
Ø J						3		5		7	
d x D						4x6		6x8		8x10	
L						50/60/70		50/60/70 80		60/70/80 90	
SxR						8x8		10x8		12x8	
Ø E	4	6		8		10		12		14	
Ø J	1	3		5		7		9		11	
d x Ø	2x4	4x6		6x9		8x10		9x12		11x14	
L	25	35		50		60		75		85	
Ø E		6	7	8							
Ø J		3	3	3							
L		minimum lengths of 200 mm (by multiple of 100 mm)									
Ø T ₁	4	6		8		10		12		14	
Ø T	4H8	6H8		8H8		10H8		12H8		14H8	
Ø J	1	1,5		2		4		5		6,8	
BET N°	11018	15001		15004		15006		15007		15008	
K	2	2		4		5		5		6	
L	15/20/25 30/40	15/20/25/30 35/40/50		15/20/25/30 35/40/50		20/25/30/5 40/45/50/60		25/30/35/40 45/50/60/70		35/40/45/50 60/70/80	

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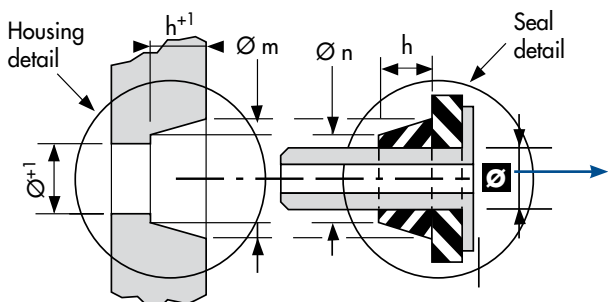
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POSITION OF FITTINGS AND VALVES

CEFIL'AIR® inflatable seals conception requires that connections be located at the bottom of the grooves or at the end of the seals (straight length). When seals have curves radii it is preferable to avoid connections located in the curved area. If the equipment around the seal for assembly or other reasons requires a lateral supply, it is possible to use elbow fittings or special constructions (please consult our technical department).

SURMOULDED CONES

SURMOULDED CONES (standard sizes)



For a maximum binding (metal/rubber), the fitting valves are equipped with a surmoulded rubber cone in accordance to their diameters (see table below).

Ø	4	4	6	8	10	12	14	16	18
m	6	8	12	14	21	24	26	28	30
n	5	6	10	12	14	16	18	20	22
h	3	4	6	6	10	10	12	12	12

Note : For REC, REF, REP fittings, and CVL valves, please consider the size of the thread part (M) as the connection diameter (see sketches on page 7). In case of intermediate value (dimensions in inches), take the next larger cone. (For other sizes, please contact our technical department).

ASSEMBLY CONDITIONS

SURFACE FINISH

The mean roughness obtained by machining (lathe, mill, etc.) must not be less than the value of 0,8 to 1,6 microns Ra (L.C.A. Rugotest, standard N6 - N7).

Applications where high performances are not required, 3,2 microns Ra are permissible (standard N8, L.C.A. Rugotest). Transverse scratches and local damage to the bearing surfaces to be sealed are prohibited.

PREPARATION OF GROOVES AND CONTACT FACE

Before installation, it must be verified that the groove taking the seal is free from roughness (grit or weld spatter, flash or projections sharp edges). If roughness occurs, this must be taken off before the installation, followed by degreasing with a suitable solvent.

INSTALLATION

1/ - The seal must be absolutely free from internal pressure at the time of fitting. If the valve is equipped with its mechanism, this must be removed during installation.

2/ - The installation of the seal in the groove must start, by positioning the pressure connexion (fittings or valves) in the (in) housings, then, the mechanical fixing is operated. It is important to make sure that splice vulcanisation is located far from the curve area.

3/ In order to fit the seal correctly, it is necessary to pressurise it immediately after positioning it in the glued groove, while observing the operation recommendations, i.e. perfectly captive on its four faces.

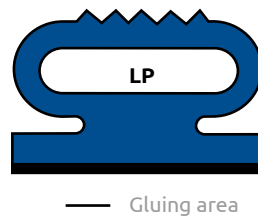
4/ It is possible to leave the CEFIL'AIR® seal pressurised throughout the time necessary for drying or vulcanizing the adhesives ; it is also possible, after a short drying time, to retract it in order to complete the setting operation. However, it must only be moved after the bond is completely fixed.

ASSEMBLY CONDITIONS

FIXING THE SEALS

Although CEFIL'AIR® inflatable HP seals can be fitted in grooves without any form of retention, it is preferable to glue them to the bottom of the grooves. For this operation, it is recommended to use our general-purpose adhesive CEFIL'GRIP®, which can be applied directly to the metal when it has been thoroughly degreased and is free from rust or scale. For intensive utilizations of CEFIL'AIR® inflatable seals, we advise to prepare the support by a sanding process and to use the sticking primary (i.e. PM 820) and the silicone (RTV). If a different product than the one recommended is used, please check the instructions manual.

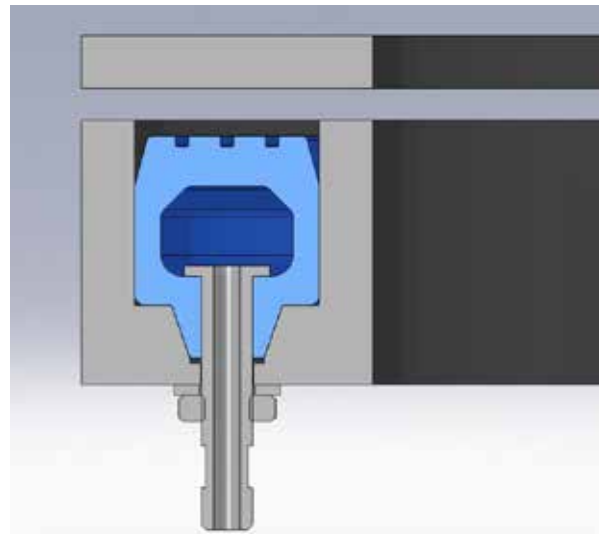
HP seals must be secured by the part opposite that of the seal (bottom of groove only), avoiding the use of adhesives on the lateral parts.



LP seals will preferably be fixed mechanically, but, if an adhesive is necessary, the gluing must be limited to the foot of the profile.

FIXING THE PRESSURE CONNECTION

The housing hole needs to have a conical part according to indications on page 9, to receive the surmoulded rubber cone of the seal. In the case of threaded connections (REC, REF, REP, CVL) tightening must be moderate and during this operation it is absolutely necessary to maintain the connection in order to avoid damaging the link between metal and rubber. It is important not to apply any torque to the fitting.



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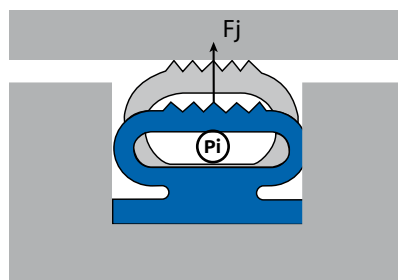
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CALCULATIONS AND SUPPLY

APPLICATION FORCE (CALCULATIONS)

CEFIL'AIR® seals are retracted even with a residual internal pressure. Their expansion occurs above the latter and brings the contact and sealing face against for the moving part. The pressure necessary for expansion varies a little over a whole range of arrangements and depending on the profiles used. In the majority of cases, the minimum operating pressure is 1,5 bar. The inflation of the CEFIL'AIR® seal provides an application force proportional to a unit contact surface. The total applied load (Fj) for the seal on the moving panel will be determined by:



$$F_j = (P_i \times K_j) \times LD$$

Pi = Internal pressure of the seal in bar
LD = Expanded length of the seal in cm
Kj = Coefficient of unit contact surface

Ø	512	339	347	356	443	405	627	369	415	639	603	514	616	921	704	736	828	10094	10170
Kj	1,0	1,2	1,2	2,0	2,2	2,3	3,0	3,0	0,7	1,2	1,6	1,6	5,0	0,8	1,5	2,5	3,0	4,2	5,0
Pi	4	4	4	6	6	6	8	8	1	5	6	7	10	3	3	3	3	3	3

EXAMPLE OF CALCULATION

For a CEFIL'AIR® seal with profile N° 347, diameter 1500 mm used with internal pressure Pi of 2 bars

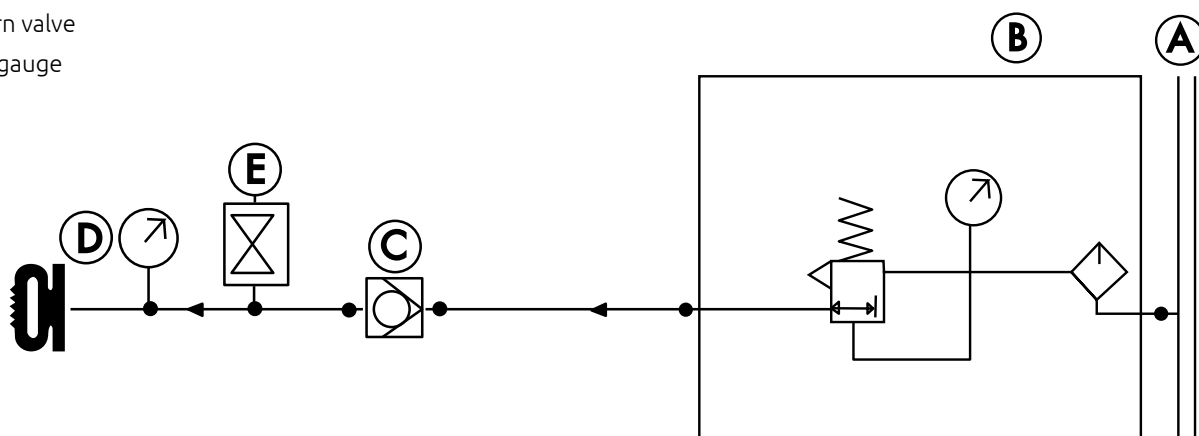
$$F_j = (P_i \times K_j) \times \mu \times \varnothing^{(1)} \\ = (2 \times 1,2) \times (3,14 \times 150 \text{ cm}) = 1.130 \text{ da.N}$$

(1) mean diameter

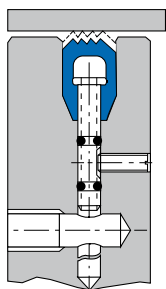
PRESSURE SUPPLY

CEFIL'AIR® inflatable seals can be supplied either with gas or fluids. However, it is necessary to provide a constant supply, which must be guaranteed by a pressure regulator to avoid overpressure. Due to the relative permeability of elastomers (when inflated with air or gas) notably for silicone, it is necessary to provide pressure regulation for this type of inflation. It is also possible to use fluids (water, oil, etc.) to prevent elastomer gas permeability. (Please contact our technical department).

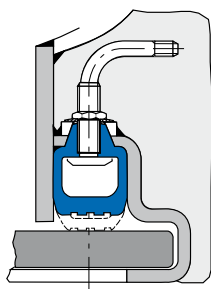
- (A) Air collector
- (B) Pressure relief valve filter
- (C) Non return valve
- (D) Pressure gauge
- (E) Valve



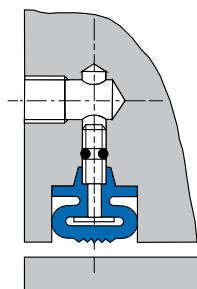
EXAMPLES OF APPLICATION : "Sealing"



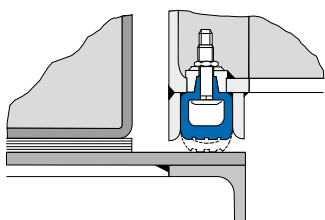
MOBILE BULKHEAD SEALING
WITH PROFILE REF. 514



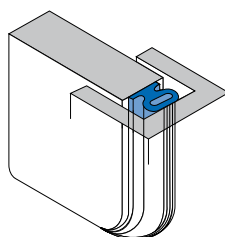
STERILISER DOOR SEALING
WITH PROFILE REF. 369



NUCLEAR POWER STATION SEALING DOOR
WITH PROFILE REF. 10093



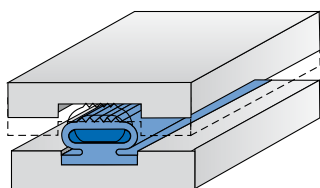
SEAL ON ISOTHERMAL BULKHEAD SEALING
WITH PROFILE REF. 369



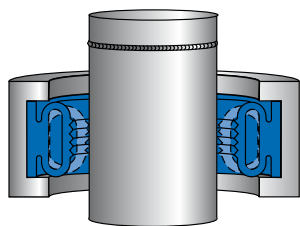
COFFERDAM SEALING
WITH PROFILE REF. 10094

EXAMPLES OF APPLICATIONS : "Handling"

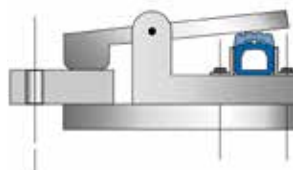
CEFIL'AIR® inflatable seals can also be used for the moving, handling, holding or clamping, particularly for fragile or complex geometry objects. (see following sketch).



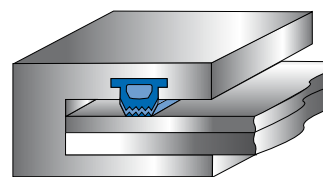
TO LIFT



TO HOLD

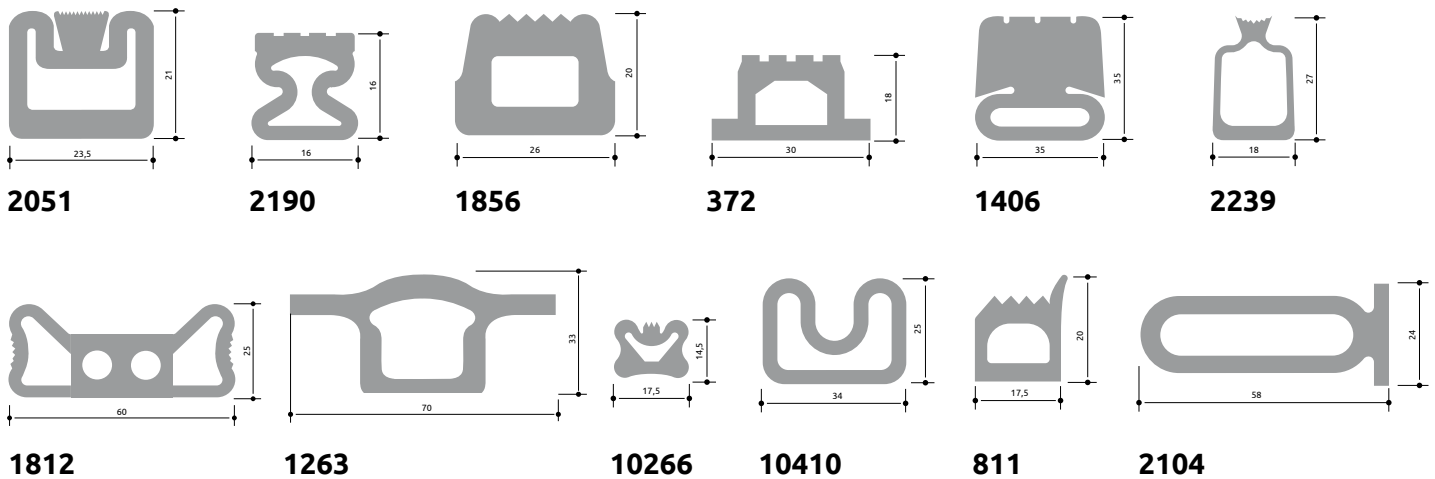


TO CLAMP



TO PRESS

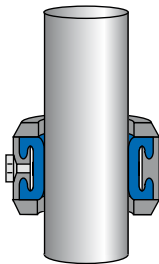
OTHER EXAMPLES OF PROFILES



OTHER EXAMPLES OF APPLICATIONS

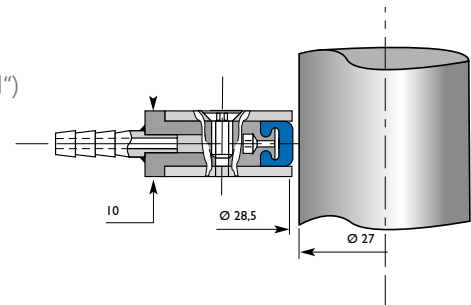
SMALL DIAMETER

Principle



Examples :

Locking on shaft
(cartridge mounting
"minimum height occupied")

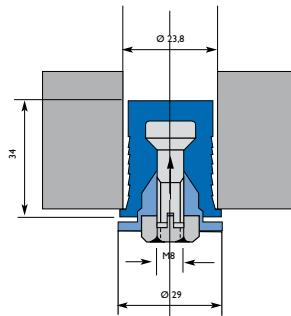
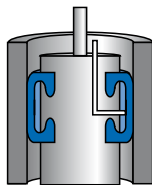


Locking on shaft

Application : Handling of cylindrical pieces

Hole tightening

Application :
Handling hollow pieces
(tube, bottle, etc.)



END PLUGS FOR TUBE

Example : "Mechanical expansion"

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CONTACT:	EMAIL:
ADDRESS:	DATE:
END USER:	INSTALLATION LOCATION:
REF:	ACTIVITIES FIELD:
N° CLIENT:	

WORKING CONDITIONS (Information requested for any enquiry)

New assembly or modifiable conception ☐ or Existing not be change* ☐	
Assembly position ☐ Horizontal ☐ Under cover ☐ Vertical ☐ Slanting	
Function Needed ☐ Sealing or ☐ Handling	
Pressure to seal* Bars or Global Load Expected* daN	
Working temperature* (°C)	
Media* ☐ Gas ☐ Liquid ☐ Vacuum	
Working cycles nbr	☐ per Hr. or ☐ per Days or ☐ per Months
Inflating duration	☐ Sec. or ☐ Min. or ☐ Hours or ☐ Days or ☐ Weeks or ☐ Months or ☐ Year
Deflating duration	☐ Sec. or ☐ Min. or ☐ Hours or ☐ Days or ☐ Weeks or ☐ Months or ☐ Year

CONFIGURATION (Information requested for any enquiry) - dimensions in millimeter. Please provide drawing

☐ Bottom groove cotation (Ag, ...g, ...)		☐ Face to seal cotation (A0, ...0, ...)	
Bottom groove	Face to seal	Round corner configuration Axial expansion Mean length A0 Mean width B0 Mean Radius R0 Valve position C0 Clearance J 	
Circular Axial expansion Mean Diameter D0 / Dg Clearance J 	Round corner configuration Internal radial expansion Length A0 / Ag Width B0 / Bg Radius R0 / Rg Valve position C0 Clearance J 		
Circular Internal radial expansion Diameter D0 / Dg Clearance J 	Round corner configuration External radial expansion Length A0 / Ag Width B0 / Bg Radius R0 / Rg Valve position C0 Clearance J 		
Circular External radial expansion Diameter D0 / Dg Clearance J 	Straight length Length A0 Valve position C0 Clearance J ☐ Retracted end plug ☐ Expandable end plugs ☐ Expanded end plugs 		
Square right angle corners Axial expansion Mean length A0 Mean width B0 Valve position C0 Angles dimensions D0 Clearance J 			

Valve (Information requested for any enquiry)

Material: ☐ Stainless Steel ☐ Brass ☐ Rubber (RES only) ☐ Other:	
Type : Size: Diameter: Length L: Lc (RER):	
☐ RJO	☐ REF
☐ REP	☐ REC
☐ CVL	☐ CVL+RED+REB
☐ CVL+REB	☐ CVL+RED
☐ RER	☐ RES

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