



**SEALING SYSTEMS
AND INDUSTRY
SOLUTIONS**

EXPERIENCE RESEARCH AT YOUR SERVICE

“We work with the same passion and precision as you would find in haute couture to create products which correspond perfectly to our clients’ needs.”

Lorenzo Simoncini, CEO ATP S.p.A.

	FOOD AND BEVERAGE		
	PHARMACEUTICAL		
	PACKAGING AND AUTOMATION		
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Over 40 years of experience in designing and creating unique, made-to-measure elastomer and plastic sealing systems have allowed us to develop a **wide range of solutions** (some of which are patent-protected) to resolve challenges facing industries.

Elevating its products beyond the classic sealing systems, ATP has introduced **innovations in form and material** which have allowed it to reach new levels of performance, even in the harshest conditions, ensuring a longer service life for every kind of machinery.

Our solutions are **fully customisable**, and can be adapted to meet the most stringent product requirements and produced using environmentally sustainable development techniques.

Our **partnership with OKS** allows ATP to apply the finishing touches to our offer with a wide range of lubricants, providing improved efficiency in production - reducing the time-frame and costs of maintenance - and significantly safeguarding the product against contamination.

Customised materials and solutions

A selective and regular process of selection of international-standard materials ensures we are able to develop high-quality, durable solutions. In our products, we make use of polyurethanes, elastomers, plastics and special PTFEs.

Designed and tested within the company laboratories, with complete oversight of the supply chain allowing for enhanced endurance in the harshest conditions.



ATP also offers many other blends depending on the purpose of application. For more information, contact our technical staff.

	Rubber & Polyurethanes						
	SINTEK® HTPU	SINTEK® D55	SINTEK® EPDM KTW FDA 81	SINTEK® FPM FDA	SINTEK® HNBR	SINTEK® NBR	
	Hydrolysis-resistant polyurethane with increased resistance to wear. → HARDNESS 95Sh A → TEMP. RANGE: -20/115°C	Hydrolysis-resistant polyurethane with increased resistance to wear. → HARDNESS 55Sh D → TEMP. RANGE: -20/115°C	Elastomer, resistant to sterilisation and steam, but not to oils and fats. → HARDNESS 81Sh → TEMP. RANGE: -40/130°C	Elastomer with increased chemical resistance. → HARDNESS 80Sh → TEMP. RANGE: -20/220°C	Elastomer, resistant to fats and oils, excellent abrasion-resistance. → HARDNESS 85Sh → TEMP. RANGE: -20/150°C (180°C arial)	Elastomer, resistant to fats and oils, not suitable for solvents and flammable liquids. → HARDNESS 85Sh → TEMP. RANGE: -30/110°C	
	Engineering plastics						
	SINTEK® SP DS	SINTEK® CER P	SINTEK® TV HT	HYTRON® LX	HYTRON® SP	HYTRON® 4.6	HYTRON® VF
	Modified polyethylene for enhanced resistance to wear. → TEMP. RANGE: -200/80°C (120°C for short periods)	Modified polyethylene with improved resistance to wear and tear. → TEMP. RANGE: -150/80°C (120°C for short periods)	Modified polyethylene acetic resin with increased thermal-resistance. → TEMP. RANGE: -200/110°C (130°C for short periods)	resin with increased thermal-resistance. solid lubricant. → TEMP. RANGE: -40/100°C	Acetic additive resin with low friction coefficient. → TEMP. RANGE: -40/110°C	Polymer with increased thermal, stress and wear resistance. → TEMP. RANGE: -40/130°C (220 breve)	Polymer with good thermal, chemical and mechanical resistance → TEMP. RANGE: -40/150°C
	High-performance plastics						
	SINTEK® FC	SINTEK® BM	SINTEK® N2	SINTEK® 916	SINTEK® EKO AL	SINTEK® V1 AL 001177	HYTRON® AK
	Carbon fibre-filled PTFE with low friction and high resistance to wear. → TEMP. RANGE: -200/260°C	Bronze-filled PTFE with increased mechanical resistance. → TEMP. RANGE: -200/260°C	Special PTFE with low friction and high resistance to wear. → TEMP. RANGE: -200/260°C	Special filled PTFE for improved flow with ceramic treatment for food & beverages. → TEMP. RANGE: -200/260°C	Special filled-PTFE for improved, low-abrasion flow on stainless steel. → TEMP. RANGE: -200/260°C	PTFE technopolymer with improved elasticity for membranes and bellows. → TEMP. RANGE: -200/260°C	Technopolymer, resistant to high temperatures, wear and high loads. → TEMP. RANGE: -50/250°C (300°C for short periods)
							HYTRON® AKM
							Special technopolymer, resistant to high temperatures, wear and high loads. → TEMP. RANGE: -20/250°C (310°C for short periods)

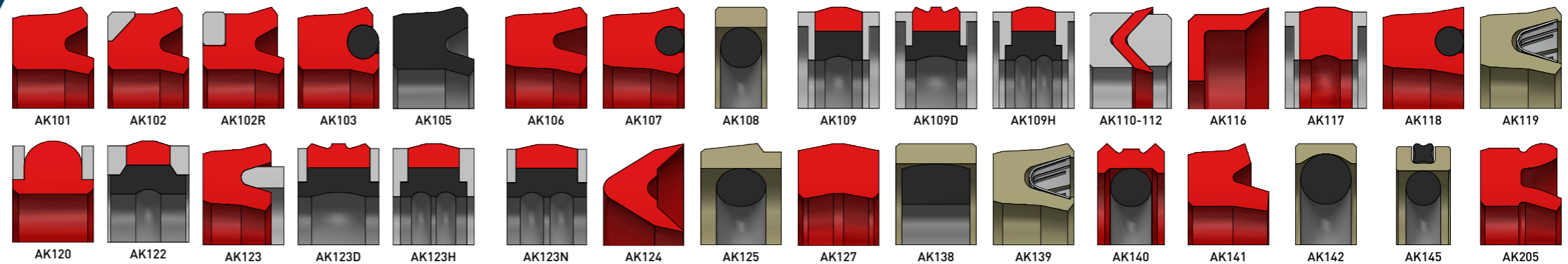
Standard Turning Profiles

ATP designs and produces customised, high-precision sealing systems with mechanical turning, waterjet cutting and moulding.

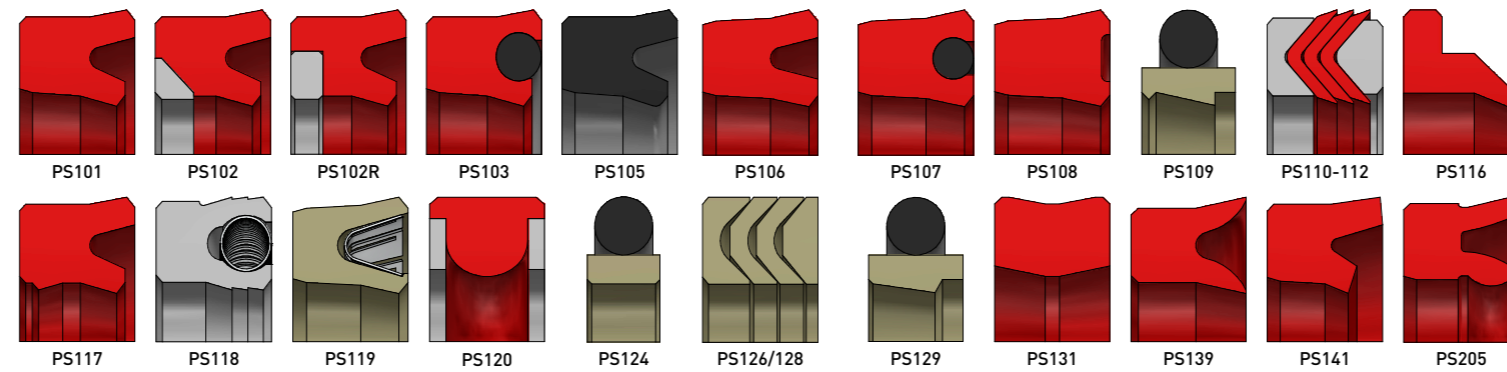
Aside from the multitude of customised solutions, ATP also offers certain standard profiles which are commonly used for piston seals (for cylinder flow), for rod seals, for scrapers, static and rotary seals.



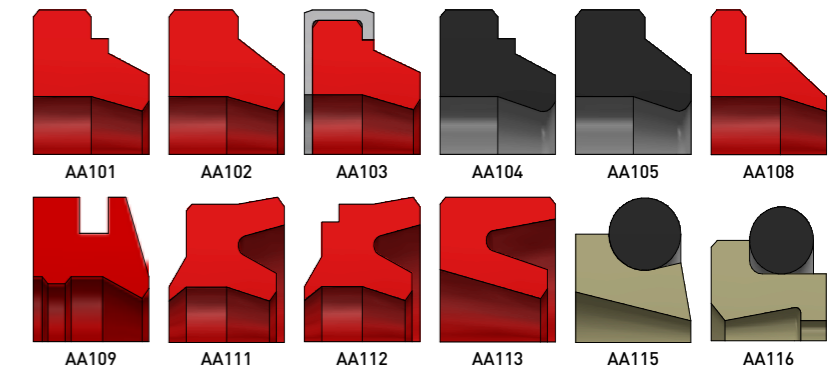
Piston Seals



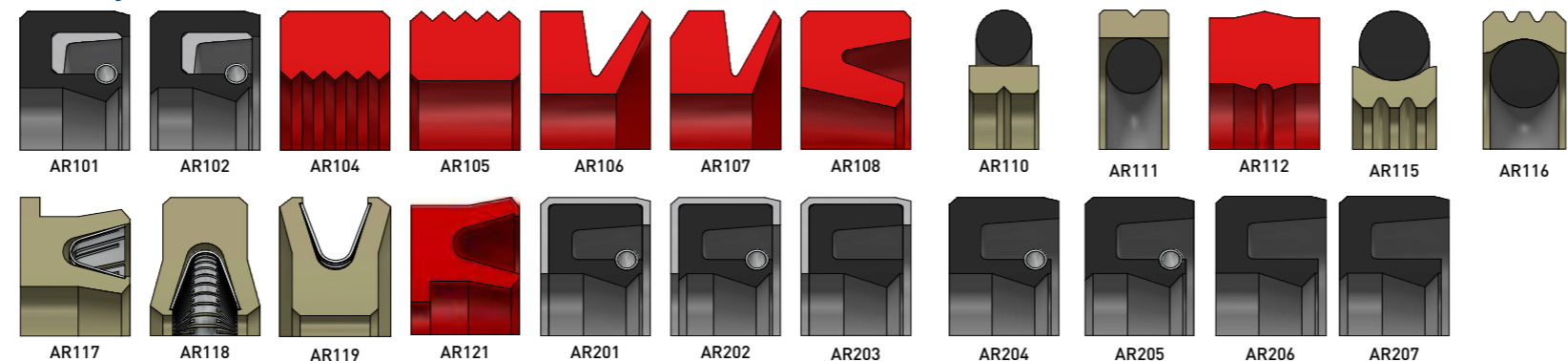
Rotary Seals



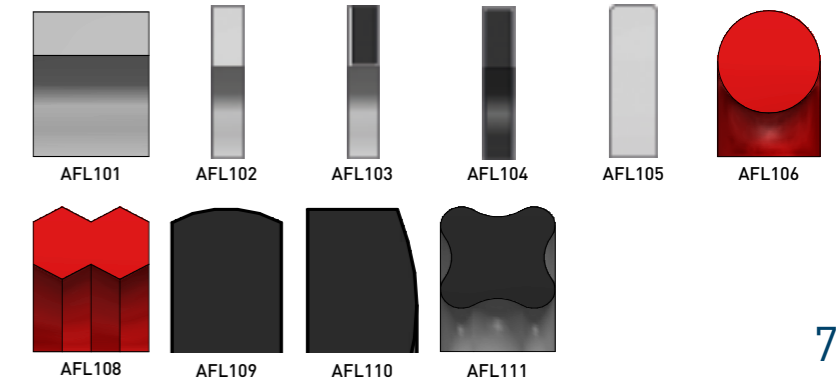
Scrapers



Rotary seals



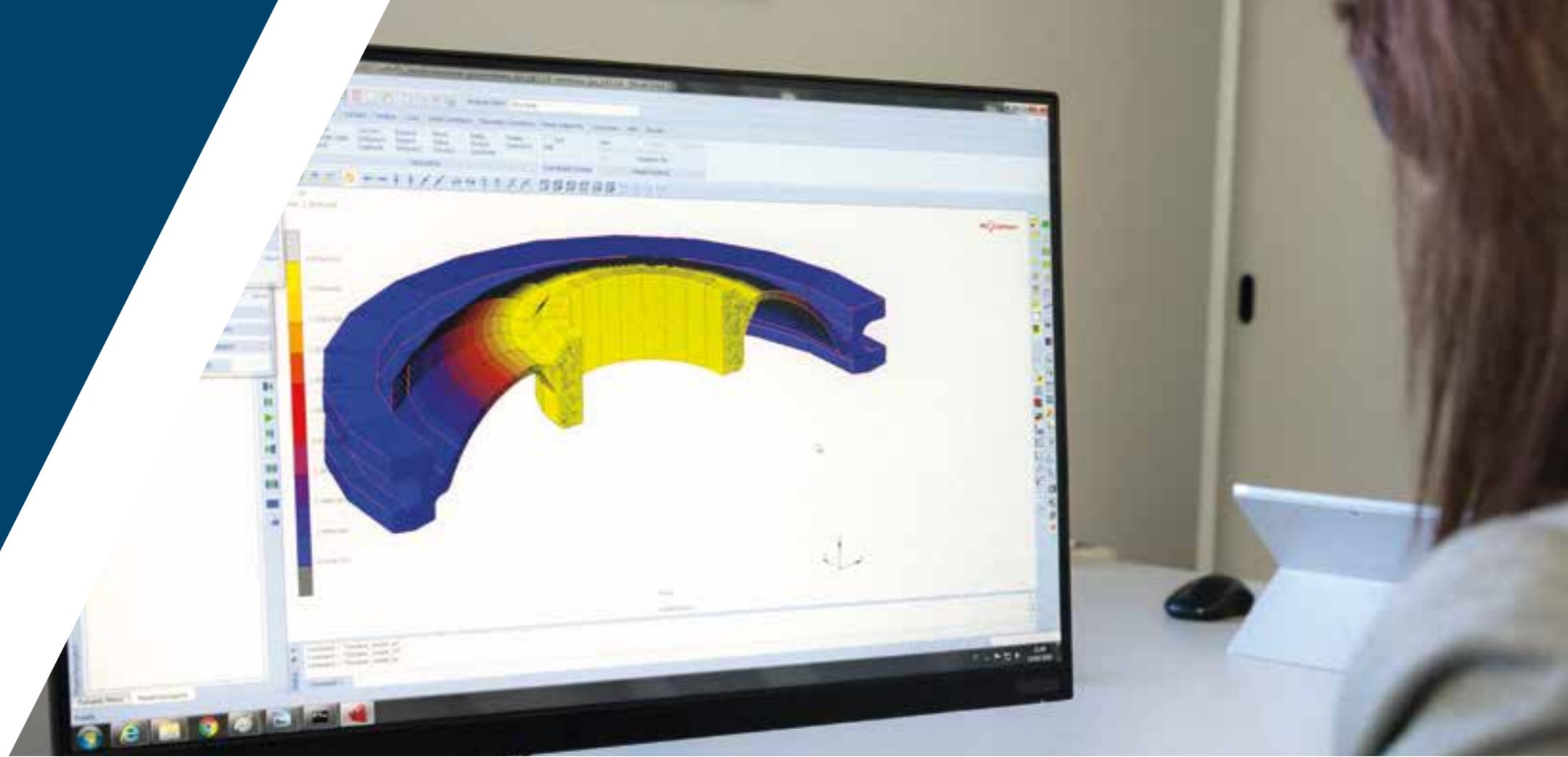
Static Seals



R&D from FEA analysis to prototype

Research & Development represents a core asset, one in which the company invests a sizeable amount of its income.

The search for increasingly innovative and efficient solutions, both in terms of form and materials, has moved ATP towards design reinforced with finite element analysis (FEA) simulation.

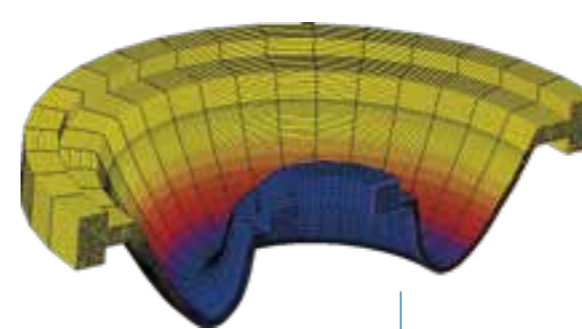
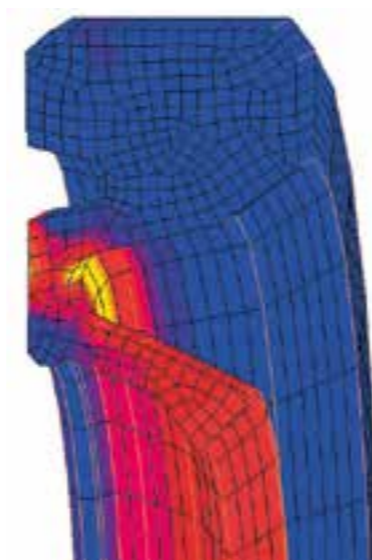
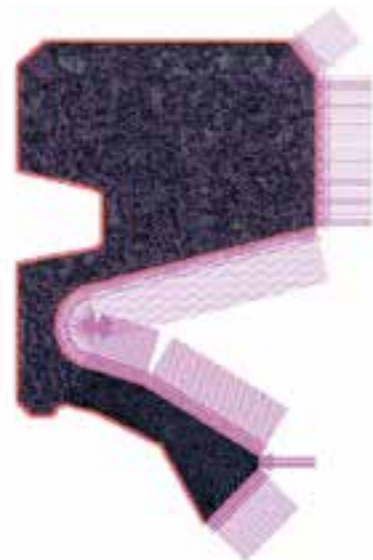


The integration of this computerised simulation in the design process ensures improved accuracy in the office regarding deformities and stresses on the materials.

Thanks to the use of "Marc" software, it has become possible to also carry out FEA on materials in non-linear circumstances and under different levels of stress, enabling the rapid identification of the optimal design and the

notable improvement in product performance. Above all, analysis of the results of the simulation allows us to alter the shapes, reducing the wear on the materials used and increasing the service life of our solutions.

The ATP testing laboratory allows for prototype solutions of static and dynamic sealing materials to be tested, allowing their friction, wear and hardness to be evaluated.



Details of the FEA carried out on the SINTEK HTPU membrane mounted on a fill valve placed under pressure of 4 bar



FEA findings in SINTEK HTPU seals with a diameter exceeding 700mm, later tested on a drilling platform

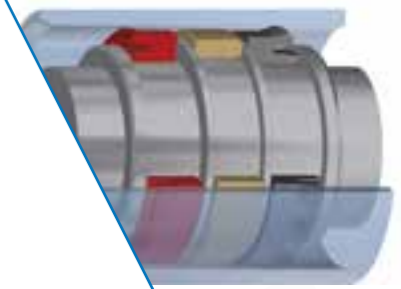
Perfect
movement

Gaskets for
Pistons and
Rods

01

FLOATING LIP SEALS FOR OLEODYNAMICS

Lip seals, widely used in hydraulic cylinders, are **easy to mount and cause a proportionate amount of friction to the pressure exerted**. This usually makes it a highly attractive solution for pressure up to c300 bar (in SINTEK HTPU) and speed up to 0.5m/s. Owing to its careful selection of the suitable materials and dimensions, ATP is able to create optimised lip seal solutions even for application in the most challenging conditions.



SEALS FOR PNEUMATICS

For pneumatic seals, aside from standard lip solutions, ATP crafts special floating solutions (see also cap. 02) which are interchangeable within the same locations. For reduced spaces, it is possible to create highly compact double-acting solutions (AZK, AZS), where the pressure is able to act on both sides of the seal.



COMPOSITE SEALS

A more compact system is available for hydraulic cylinders with the use of track seals. In these solutions, an elastomeric O-Ring statically compresses a moulded plastic ring which functions like a dynamic seal. **Regarding** the chosen materials and dimensions, track seals generally allow for pressure up to c500 bar, or speed beyond 10m/s. For some oleodynamic applications, ATP also offers solutions in SINTEK HTPU with increased ease of installation.



GASKET WITH STAINLESS STEEL SPRING

In critical chemical and thermal conditions, it is also possible to use PTFE gaskets with a stainless steel spring (such as EK and ES). **The use of the metallic spring as an energiser provides exceptional results, even in conditions of low temperatures and even extremely high Delta T.** In addition to the regular dimensions, ATP is able to design **customised** solutions of this kind. For the most demanding applications, it is also possible to provide Elgiloy springs.

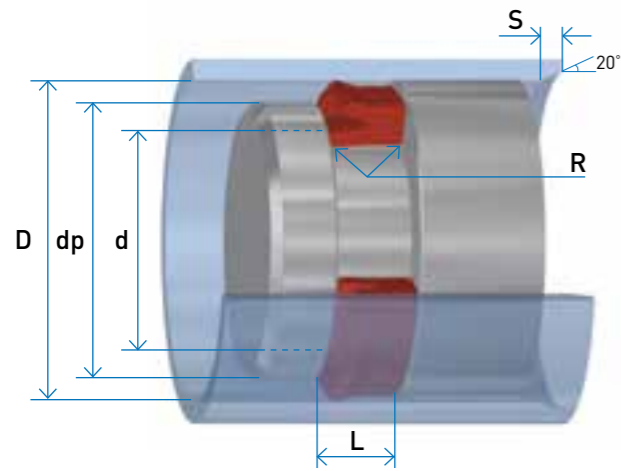


EXTREMELY HIGH-PRESSURE GASKETS

For high-pressure seals, in addition to the special dimensions for lip seals in SINTEK HTPU and SINTEK D55, it is also possible to use packages of PTFE or other materials, depending on the operating conditions for the application. ATP has created special multimaterial solutions, able to resist pressure above 500 bar. Here, in addition to the static energising component and the dynamic flow component, there is also an anti-extrusion element.



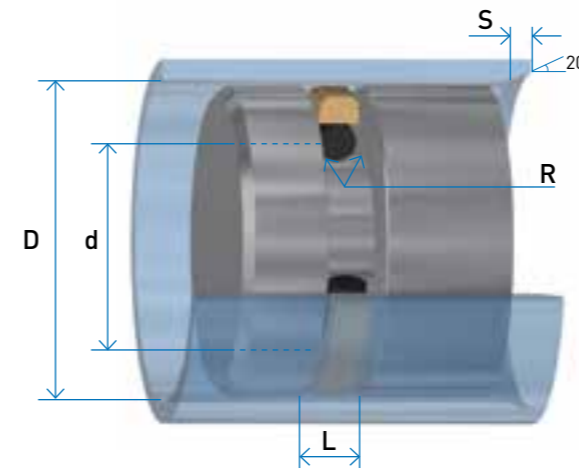
AK 101 LIP SEALS



D	d	L	dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 mm	+/-0.1 mm	max	min
14 - 25	D - 8	6	D - 5	0.4	3.5
25 - 50	D - 10	7	D - 6	0.4	4
50 - 75	D - 12	8	D - 7	0.4	4.5
75 - 150	D - 15	10	D - 9	0.4	5
150 - 300	D - 20	12	D - 14	0.4	5
> 300	contact our technical staff				

Ability to resize for customised seats

KTPE COMPOSITE SEALS



D	d	L	R	S
KTPE	KTPE/P	KTPE/L		
H8 Ra=0.2	H8 Ra=0.2	H8 Ra=0.2	H8 Ra=0.2	0/+0.2 Ra=1.6
max	min			
8 - 15		15 - 40	D - 4.9	2.2
				0.3
15 - 40		40 - 80	D - 7.5	3.2
				0.5
40 - 80	15 - 40	80 - 133	D - 11	4.2
				0.8
80 - 133	40 - 80	133 - 330	D - 15.5	6.3
				1.1
133 - 330	80 - 133	330 - 670	D - 21	8.1
				1.6
330 - 670	133 - 330	> 670	D - 24.5	8.1
				1.6
> 670	330 - 670		D - 28	9.5
				2.2

AVAILABLE IN STANDARD, HEAVY (KTPE/P) OR LIGHT (KTPE/L)

SUGGESTED MATERIALS

SINTEK HTPU - application for increased duration
 SINTEK FPM FDA - application for high temperature or with chemical agents
 SINTEK EPDM 81 KTW FDA - application in the food industry
 (no oils and fats)

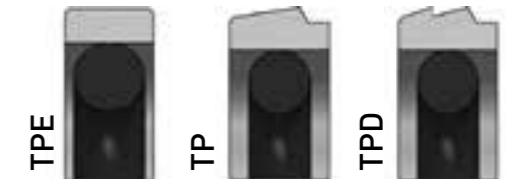
PROFILES WITH IDENTICAL SEAT



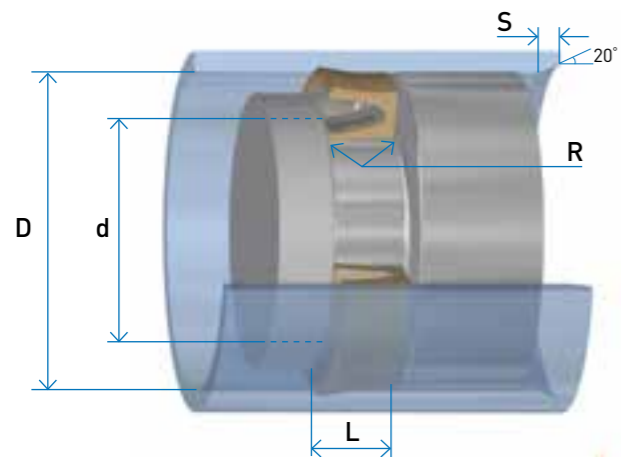
SUGGESTED MATERIALS

SINTEK FC - application in increased pressure
 SINTEK BM - oleodynamic applications at high temperature
 SINTEK 916 - applications for stainless steel
 (e.g. alimentary and pharmaceutical)

PROFILES WITH IDENTICAL SEAT



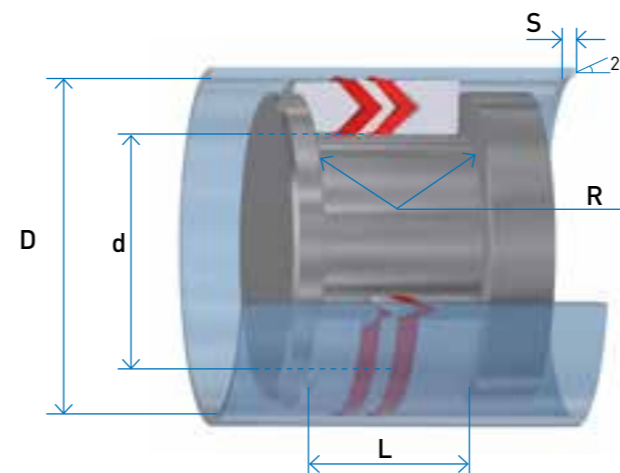
GASKET WITH EK SPRING



Serie	D	d	L	R	S
	H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	max	min
EK-X	6 - 14	D - 2.9	2.4	0.4	2
EK-Y	14 - 20	D - 4.5	3.6	0.4	3
EK-A	20 - 45	D - 6.2	4.8	0.5	3.5
EK-B	45 - 125	D - 9.4	7.1	0.6	6.7
EK-C	125 - 350	D - 12.2	9.5	0.7	9
> 350	contact our technical staff				

Ability to resize for customised seats

PACKING SEALS



D	d	L	R	S
H8 Ra=0.4	H8 Ra=0.8	0/+0.2 mm	max	min
20 - 40	D - 10	9.5	0.4	4
40 - 75	D - 15	12.3	0.4	5
75 - 150	D - 20	21.2	0.5	6
150 - 200	D - 25	25.8	0.6	8.5
200 - 300	D - 30	33.5	0.7	10
300 - 400	D - 40	41.5	0.8	13
> 400	contact our technical staff			

REMOVABLE SHAFT ON ONE SIDE

SUGGESTED MATERIALS

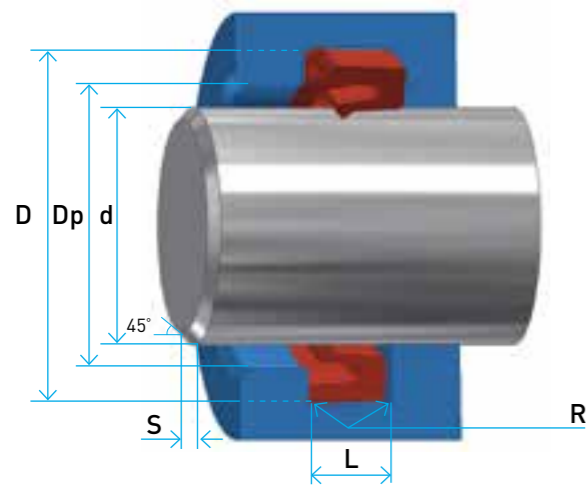


SUGGESTED INTERMEDIARY RING MATERIALS



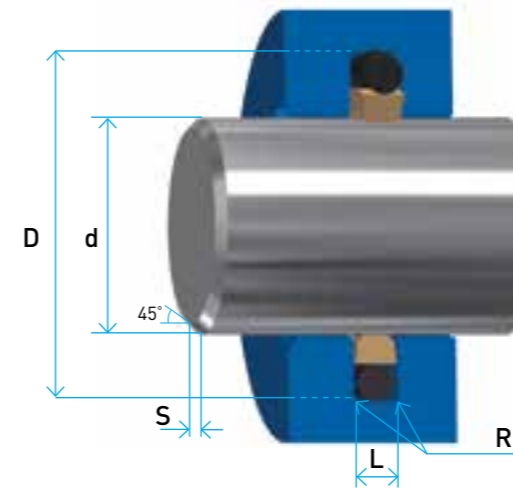
SINTEK HTPU - Wear resistant
 SINTEK CER P - Smooth and wear resistant
 SINTEK FC - Smooth and resistant to high temperatures

PS 101 LIP SEALS



D	d	L	Dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1	max	min
5 - 25	d + 8	6	d + 5	0.4	3.5
25 - 50	d + 10	7	d + 6	0.4	4
50 - 75	d + 12	8	d + 7	0.4	4.5
75 - 150	d + 15	10	d + 9	0.4	5
150 - 300	d + 20	12	d + 14	0.4	5
> 300	contact our technical staff				

KTSI COMPOSITE GASKETS



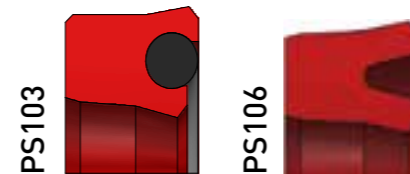
d	D	L	R	S		
KTSI	KSI/P	KTSI/L	H8 Ra=1.6	0/+0.2 Ra=1.6	max	min
H8 Ra=0.2	H8 Ra=0.2	H8 Ra=0.2	H8 Ra=1.6	0/+0.2 Ra=1.6	max	min
3 - 8		8 - 19	d + 4.9	2.2	0.3	1.5
8 - 19		19 - 38	d + 7.3	3.2	0.5	2
19 - 38	8 - 19	38 - 200	d + 10.7	4.2	0.8	3
38 - 200	19 - 38	200 - 256	d + 15.1	6.3	1.1	4.5
200 - 256	38 - 200	256 - 650	d + 20.5	8.1	1.6	5.5
256 - 650	200 - 256	> 650	d + 24	8.1	1.6	6
> 650	256 - 650		d + 27.3	9.5	2.2	8

AVAILABLE IN STANDARD, HEAVY (KTSI/P) OR LIGHT (KTSI/L)

SUGGESTED MATERIALS

SINTEK HTPU - application for increased duration
 SINTEK FPM FDA - application at high temperature or with chemical agents
 SINTEK EPDM 81 KTW FDA - application in the food industry (no oils and fats)

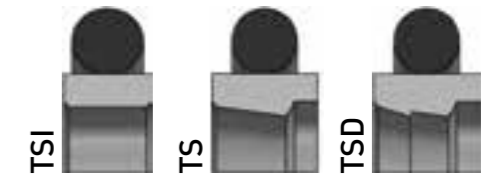
PROFILES WITH IDENTICAL SEAT



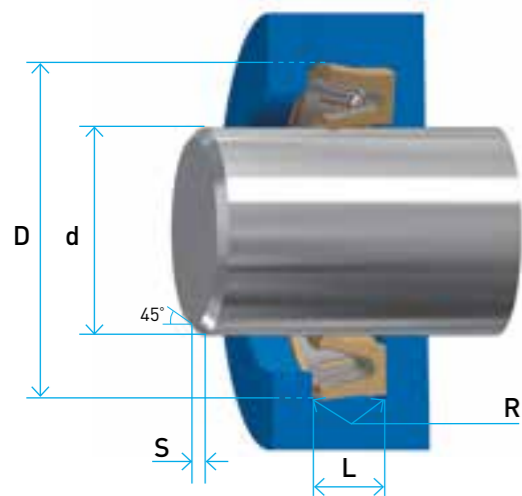
SUGGESTED MATERIALS

SINTEK FC - application in increased pressure
 SINTEK BM - oleodynamic applications at high temperature
 SINTEK 916 - applications for stainless steel (e.g. alimentary and pharmaceutical)

PROFILES WITH IDENTICAL SEAT



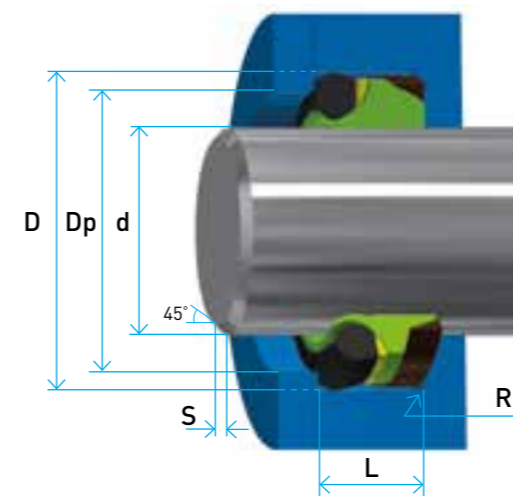
GASKET WITH ES SPRING



Series	d	D	L
	H8 Ra=0.4	h8 Ra=0.4	0/+0.2 mm
ES-Y	da 10 a 20	d + 4.5	3.6
ES-A	da 20 a 40	d + 6.2	4.8
ES-B	da 40 a 120	d + 9.4	7.1
ES-C	da 120 a 340	d + 12.2	9.5
	> 340	contact our technical staff	

OPEN GASKET SEAT

GASKETS FOR EXTREMELY HIGH PRESSURE



d	D	L	R	S
H8 Ra=0.2	H8 Ra=0.4	0/+0.05 mm	max	min
10 - 24	d + 10	15	0.2	2
15 - 19	d + 10	17	0.2	2.5
20 - 24	d + 10	19	0.2	3
> 25	contact our technical staff			

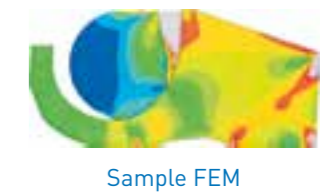
OPEN GASKET SEAT

SUGGESTED MATERIALS

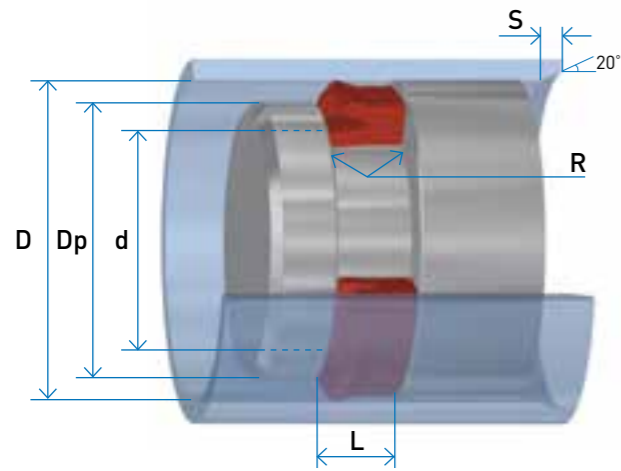


TECHNICAL DETAILS

The parallel presence of pressure above 500 bar and rapid movements (e.g. high-pressure pumps) is an ideal opportunity to use FEA to identify the optimal dimensions and materials. In the table we will display sample quotes for the most common dimensions.

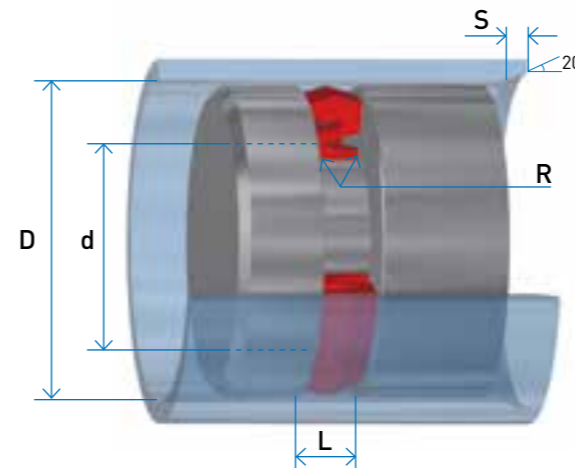


AK 105 LIP SEALS



D	d	L	dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1 mm	max	min
14 - 35	D - 8	6	D - 5	0.4	3.5
35 - 75	D - 10	7,5	D - 6	0.4	4
75 - 120	D - 12	9,5	D - 7	0.4	5
> 120	contact our technical staff				

AZK SEALS



D	d	L	R	S
H8 Ra=0.4	H8 Ra=01.6	0/+0.2Ra=1.6	max	min
< 15	contact our technical staff			
15 - 40	D - 7,5	3.2	0.5	2
40 - 80	D - 11	4.2	0.8	3
> 80	contact our technical staff			

THE INTERNAL LIP IS ROUNDED TO IMPROVE THE GAS SEAL

SUGGESTED MATERIALS FOR AK 105 AND PS 105

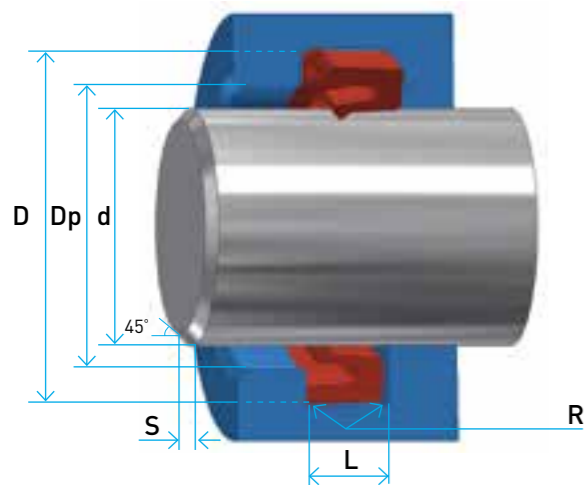


SINTEK HTPU
Enhanced wear resistance
SINTEK FPM FDA
High temperature resistance
SINTEK EPDM KTW FDA 81
Steam resistance

SUGGESTED MATERIALS

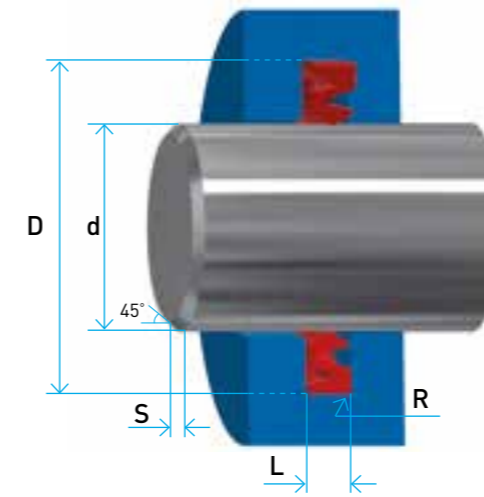


PS 105 LIP SEAL



d	D	L	Dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1 mm	max	min
6 - 25	d + 8	6	d + 5	0.4	3.5
25 - 50	d + 10	7.5	d + 6	0.4	4
50 - 70	d + 12	9.5	d + 7	0.4	4.5
> 70	contact our technical staff				

AZS SEALS



d	D	L	R	S
H8 Ra=0.4	H8 Ra=1.6	0/+0.2 Ra=1.6	max	min
< 10	contact our technical staff			
10 - 19	d + 7.3	3.2	0.5	2
19 - 50	d + 10.7	4.2	0.8	3
> 50	contact our technical staff			

THE INTERNAL LIP IS ROUNDED TO IMPROVE THE GAS SEAL

SUGGESTED MATERIALS FOR AK 105 AND PS 105



SINTEK HNBR
Resistant to wear and high temperatures
SINTEK HTPU SL
Scratch resistant, smoother
SINTEK D55
Scratch resistant, 55Sh D hardness

SUGGESTED MATERIALS



Innovation
in motion

Floating
Seals

02

AUTO-ADAPTIVE INNOVATION

The auto-adaptive **ATP (PATENT MI2006A002057)** seal, which can be developed for rods and cylinders, offers a solution for linear sealing systems up to 20 bar and is set apart by its **automatic eccentricity compensation, increased efficiency and long service life.**

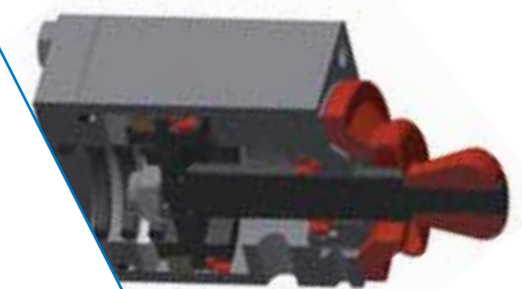
The auto-adaptive seals make it possible to reduce wear, as the contact pressure between the seal and the shaft (or the cylinder) is significantly reduced in comparison to traditional seals.



EFFECTIVENESS AND EFFICIENCY

Applied to the hydraulic and pneumatic system, the auto-adaptive seal provides a **clear improvement both in terms of effectiveness (precision of the seal) as well as efficiency (duration of the seal).**

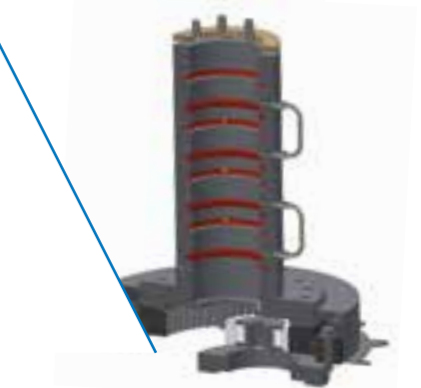
When there is increased movement, the floating seal is utilised for batching food products, as the presence of a wide groove is easier to clean.



AUTO-ADAPTIVE ROTATION

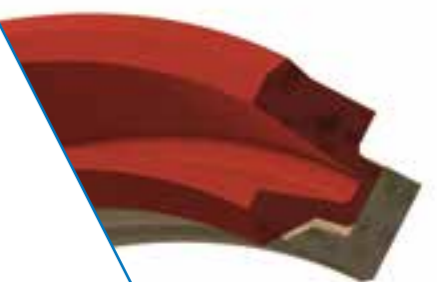
Floating seals can also be used when dealing with rotary movements, both regular and irregular. **In rotary applications, owing to the reduced preload required to make them function, floating seals allow for noticeably improved usage results** in comparison to traditional lip seals.

In addition, the lubrication provided by OKS products creates a layer of grease below the dynamic lip which hugely improves the service life of these seals.

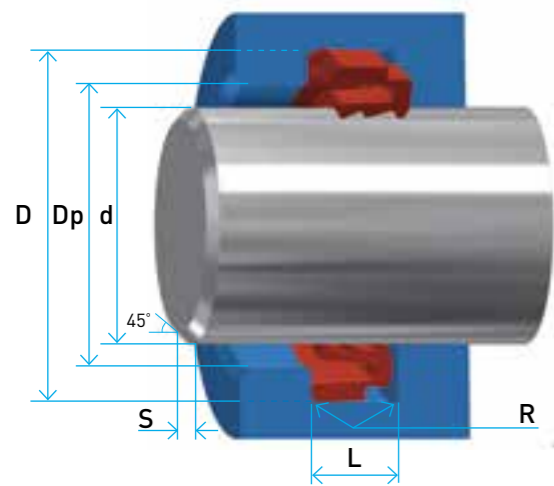


DUAL MATERIAL FLOATING SEAL

ATP has developed a dual material floating seal for some rotary applications. This was designed **with a particular emphasis on gaseous fluids with an increased rotation speed when faced with fluctuating pressure (up to 16 bar).** The dual material seal is the result of research into the auto-adaptive seals in which the rudder is replaced with a unique blade which allows for automatic and proportional compensation of the contact pressure between the seal and the shaft.



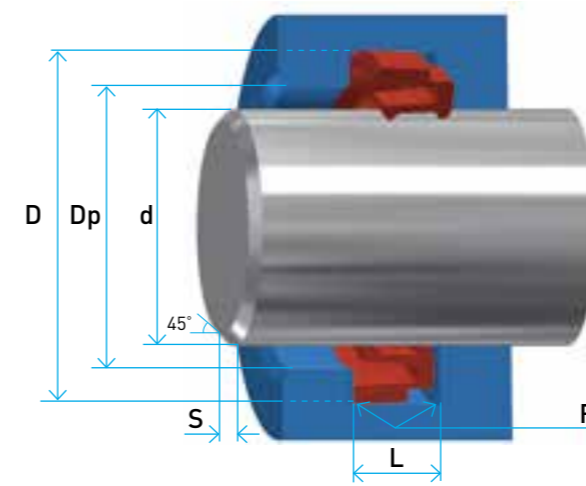
LINEAR FLOATING SEALS FOR RODS



d	D	L	Dp	R	S
h8 Ra=0.4	H8 Ra=0.4	0/+0.2 Ra=1.6	+/-0.1	max	min
< 20	contact our technical staff				
20 - 50	d + 8	6	d + 5	0.4	3
50 - 150	d + 10	7,5	d + 6	0.4	4
150 - 250	d + 14	10	d + 9	0.4	5
> 250	contact our technical staff				

Ability to resize for customised seats

ROTARY FLOATING SEALS FOR RODS



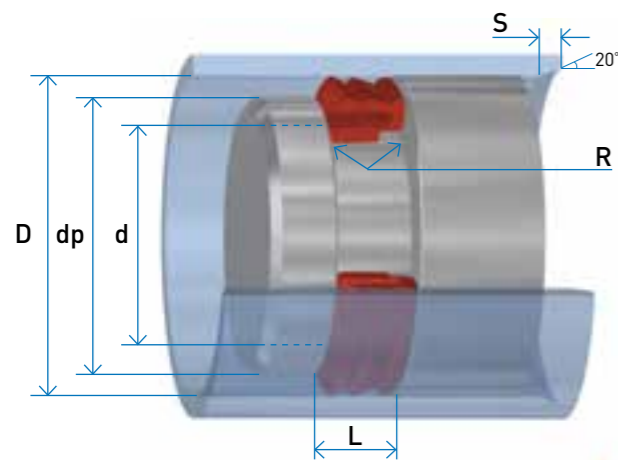
d	D	L	Dp	R	S
h8 Ra=0.4	H8 Ra=1.6	0/+0.2 mm	+/-0.1 mm	max	min
< 20	contact our technical staff				
20 - 50	d + 10	8	d + 6	0.4	3
50 - 100	d + 14	10	d + 9	0.4	4
100 - 250	d + 18	14	d + 12	0.4	5
> 250	contact our technical staff				

SUGGESTED MATERIALS

The lubrication of the seals is critically important, because by reducing the friction drag, the service life of the seal itself is increased. To ensure proper lubrication, it is important to be familiar with the chemical compatibility of the lubricant with the material of the seal. The wrong choice may cause swelling

of the gasket with the ensuing loss of the seal. It is also important for the lubricant to remain in contact with the gasket and part of the flow for its entire service life. The floating system is able to trap the fat used in the assembly between the heel and the sealing point, lengthening the service life of the seal.

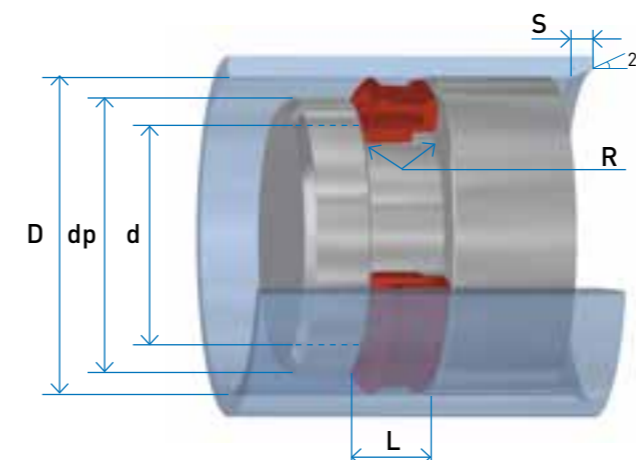
LINEAR FLOATING SEALS FOR CYLINDERS



D	d	L	dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1	max	min
< 20	contact our technical staff				
20 - 50	D - 8	6	D - 5	0.4	4
50 - 100	D - 10	7,5	D - 6	0.4	5
100 - 250	D - 14	10	D - 9	0.4	6
> 250	contact our technical staff				

Ability to resize for customised seats

ROTARY FLOATING SEALS FOR CYLINDERS



D	d	L	dp	R	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1	max	min
< 20	contact our technical staff				
20 - 50	D - 10	8	D - 6	0.4	4
50 - 100	D - 14	10	D - 9	0.4	5
100 - 250	D - 18	14	D - 12	0.4	6
> 250	contact our technical staff				

Ability to resize for customised seats

A REMOVABLE SHAFT ON ONE SIDE IS RECOMMENDED FOR EASE OF ASSEMBLY

A REMOVABLE SHAFT ON ONE SIDE IS RECOMMENDED FOR EASE OF ASSEMBLY

RECOMMENDED LUBRICANT



- OKS 1110 - Only suitable option with EPDM (NSF H1 certified)
- OKS 480 - For seals and bearings (NSF H1 certified)
- OKS 475 - For extremely low-friction lubrication (NO EPDM)

SUGGESTED MATERIALS FOR FLOATING SEALS

- SINTEK HTPU - Enhanced wear resistance
- SINTEK FPM FDA - High temperature resistance
- SINTEK EPDM KTW FDA 81 - Steam and sanitiser resistant

Contamination
prohibited

Standard and
customised
scrapers

03

STANDARD SCRAPERS

The purpose of scrapers is to protect the sealing system from external pollutants. The standard application is for **open-air surroundings where it is used for protection from mud and dirt**. Generally, the most common AA101 and AA102 profiles, traditionally made of rubber, have been reinvented by ATP in **SINTEK HTPU, a compound noted for its increased resistance to wear**.

CUSTOMISED SCRAPERS

In industrial machinery, the importance of keeping the sealing system clean is increased: even if the dirt appears insignificant, its effects are far from it. The customised wiper seals are an integral part of the sealing system, and ATP designs and builds them to measure, as with every other component of the system. Through a purposed design process, **ATP is able to prioritise specific characteristics such as low friction, thermal/chemical resistance and the need to maintain fluids under pressure**.

PTFE WIPER SEALS

In cases of increased velocity or highly restricted spaces, it is necessary to use compact wiper seals, such as those with the AA116 profile. **The ability to construct them from filled PTFE allows the thermal resistance to be combined with wear resistance**.

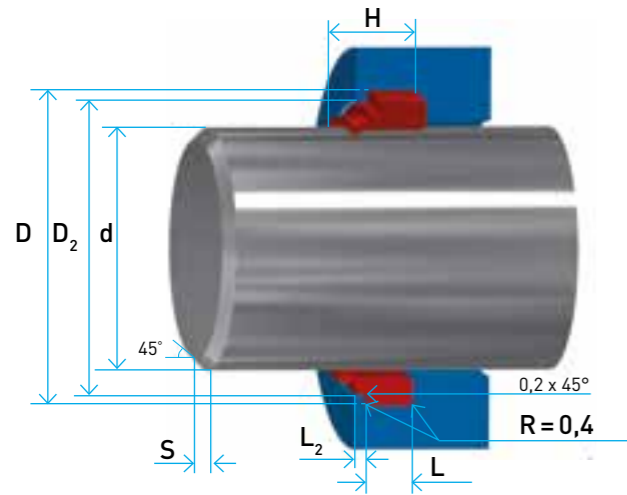
Their profile allows these wiper seals to function as safety gaskets for the sealing system.

WIPER SEALS AND ASR SEALS

Used in cases of reduced space in which it is necessary to create compact sealing systems, able to isolate pollutants even under pressure, ASR seals are made to measure according to the type of pollutant from which they must protect, as well as the sliding surface and the pressure. **This profile is designed for irregular movements, but may also be used for rotational movements**. Significant experience in developing front-facing applications has allowed ATP to develop new, unique profiles able to ensure the wiper seal's resistance even in cases of elevated pressure (e.g. from the use of high-pressure cleaners).

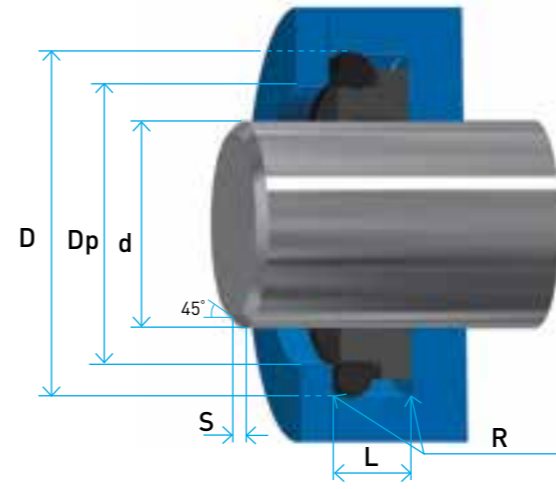


AA 101 WIPER SEAL



d	D	D ₂	L	L ₂	H	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2	+/-0.2 Ra=1.6	+/-0.1	max	min
< 11	contact our technical staff					
11 - 50	d + 8	d + 6	4	1	7.2	3
50 - 100	d + 10	d + 7	5	1.5	8.3	3.5
100 - 150	d + 12	d + 9	5.5	1.5	10.5	4.5
150 - 300	d + 15	d + 11	6.5	2	12.8	5.5
> 300	contact our technical staff					

AA 116 WIPER SEAL (TRB)



d	D	D _p	L	R	S
H8 Ra=0.2	h8 Ra=1.6	+/-0.2	+/-0.2 Ra=1.6	max	min
< 12	contact our technical staff				
12 - 65	d + 6.8	d + 1.6	5	0.4	3
65 - 250	d + 8.8	d + 1.7	6	0.5	4.5
250 - 420	d + 12.2	d + 2	8.4	0.8	5.5
420 - 650	d + 16	d + 2.2	11	1	6
> 650	contact our technical staff				

AVAILABLE IN STANDARD, HEAVY (KTPE/P) OR LIGHT (KTPE/L)

SUGGESTED MATERIALS AA 101 AND AA 102



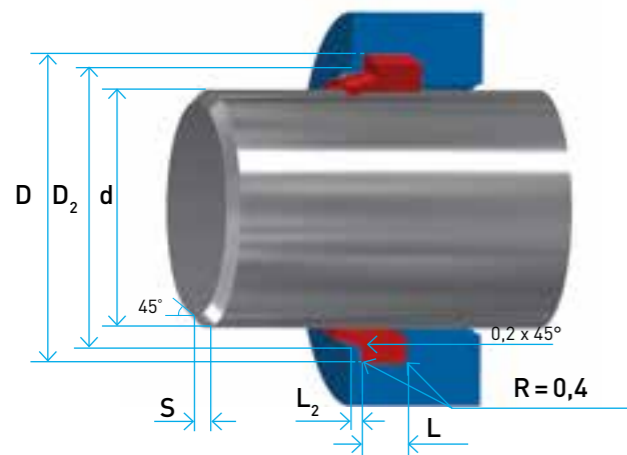
SINTEK HTPU
Enhanced wear resistance
SINTEK D55
Resistant to extreme dirt
SINTEK EPDM KTW FDA 81
Steam resistant

TECHNICAL NOTES

May be assembled, albeit with difficulty, even in closed channel flow. SINTEK CER P may be used for room-temperature application.

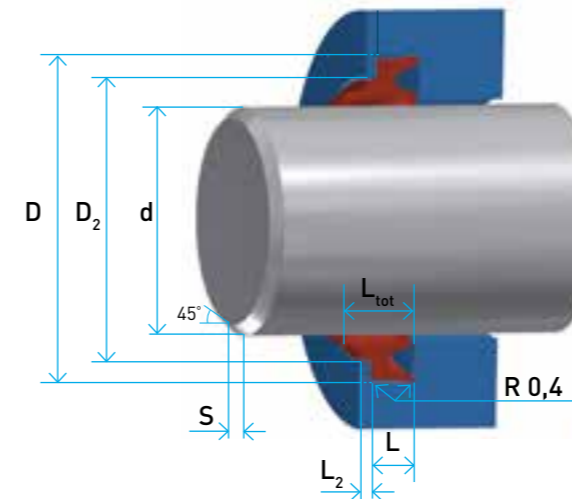


WIPER SEAL AA102



d	D	D ₂	L	L ₂	H	S
H8 Ra=0.4	h8 Ra=1.6	0/+0.2	+/-0.2 Ra=1.6	+/-0.1	max	min
< 11	contact our technical staff					
11 - 50	d + 8	d + 6	4	1	6.2	3
50 - 100	d + 10	d + 7	5	1.5	7.3	3.5
100 - 150	d + 12	d + 9	5.5	1.5	8.5	4.5
150 - 300	d + 15	d + 11	6.5	2	10.5	5.5
> 300	contact our technical staff					

ASR CUSTOMISED WIPER SEALS



d	D	D ₂	L	L ₂	L _{tot}	S
H8 Ra=0.4	h8 Ra=1.6	H8	+/-0.2 Ra=1.6	+/-0.2	max	min
< 20	contact our technical staff					
20 - 50	d + 10	d + 5	8	1.5	12.5	3
50 - 150	d + 15	d + 6	10	2	16	4
150 - 250	d + 20	d + 10	14	2	20	5
> 250	contact our technical staff					

SIZING IN OPEN CHANNEL. FOR SIZING IN CLOSED CHANNEL CONTACT OUR TECHNICAL STAFF

SUGGESTED MATERIALS AA 101 AND AA 102



SINTEK NBR
Enhanced wear resistance
SINTEK FPM FDA
High temperature resistance
SINTEK HTPU SL
Dry application

SUGGESTED MATERIALS



RECOMMENDED LUBRICANT **OKS**

OKS 1110 - Only suitable option with EPDM (NSF H1 certified)
OKS 480 - For seals and bearings (NSF H1 certified)
OKS 475 - For extremely low-friction lubrication (NO EPDM)

Reliability and
service life

Rotary
Seals

04

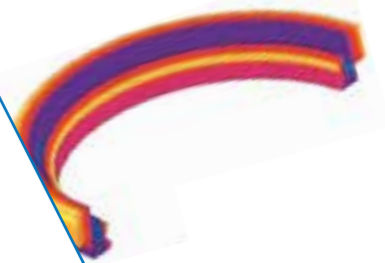
SOLUTIONS FOR ROTARY JOINTS

Rotary seals allow for the transportation of fluids from a stationary part of the machine (processing area) to a rotating part (filling area), and therefore they are considered **the heart of many filling machines**. The most widespread use is in rotary joints in centrifugal machines which allow the multi-channel passage of the product, steriliser, air and gas, both in pressure and depression. The extremely strenuous application conditions in this sector require the use of high-performance guidance systems.



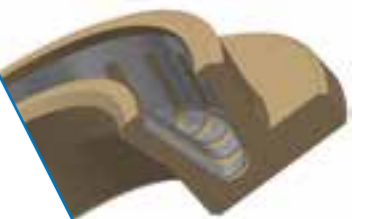
RESEARCH, DEVELOPMENT AND INNOVATION

ATP's R&D Department is constantly engaged in the research of new **applications with increased performance**. FEA research conducted into the floating seal, for example, found that it provided improved sealing with reduced preloading compared to traditional seals, even in rotary systems. This enables reduced wear and increased periods between maintenance work.



ROTARY SEALS WITH STAINLESS STEEL SPRING

The classic PTFE rotary seals with stainless steel are among the most widely-used solutions in the food industry. **The ability to use specially-certified materials, such as SINTEK EKO AL, represents a vital step forward**. In many cases of sub-optimal thermal application it is also possible to draw on more wear-resistant materials such as SINTEK SP DS. As an alternative to these, ATP has developed a range of other customised solutions designed for the specific conditions of use.

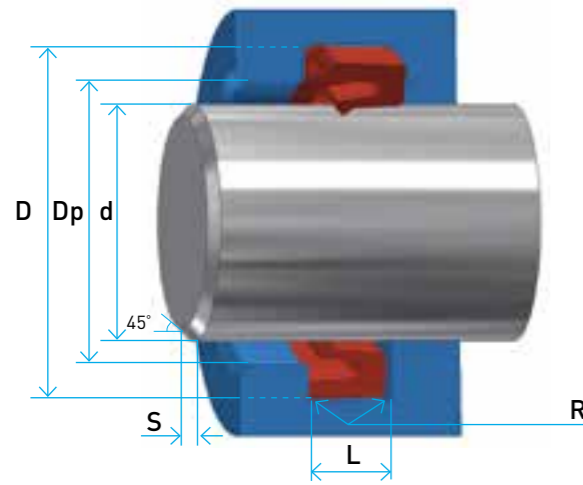


COMPOSITE SEALS FOR ROTATING MOVEMENTS

Among the classic solutions for rotating movements are **RTPE- and RTSI-style seals**. These allow for exceptional sealing even in cases of **increased pressure and the absence of the "stick-slip" phenomenon, as well as exceptional chemical and thermal resistance**. Along with the PTFE solutions, it is also possible to produce this type of seal in SINTEK HTPU as well as other materials which allow for increased ease of assembly.



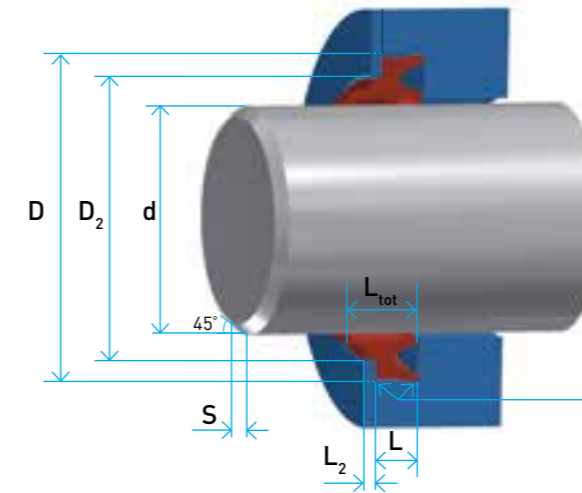
LIP SEALS FOR ROTATING MOVEMENTS



d	D	L	Dp	R	S
h8 Ra=0.4	H8 Ra=1.6	0/+0.2 Ra=1.6	+/-0.1	max	min
< 20	contact our technical staff				
20 - 50 *	d + 10	8	d + 6	0.4	3
50 - 150	d + 15	10	d + 9	0.4	4
150 - 250	d + 20	14	d + 12	0.4	5
> 250	contact our technical staff				

Ability to resize for customised seats
 * 20-50 open channel or contact our technical staff

ASR LIP SEALS FOR ROTATING MOVEMENTS



d	D	D ₂	L	L ₂	L _{tot}	R	S
h8 Ra=0.4	H8 Ra=1.6	H8	0/+0.2	0/+0.2	max	max	min
< 20	contact our technical staff						
20 - 50	d + 10	d + 5	8	1.5	12.5	0.4	3
50 - 150	d + 15	d + 7	10	2	16	0.4	4
150 - 250	d + 20	d + 10	14	2	20	0.4	5
> 250	contact our technical staff						

Ability to resize for customised seats

SIZING IN OPEN CHANNEL. FOR SIZING IN CLOSED CHANNEL CONTACT OUR TECHNICAL STAFF

SUGGESTED MATERIALS



SINTEK HTPU
Application for increased wear

SINTEK FPM FDA
Application at high temperature or with chemical agents

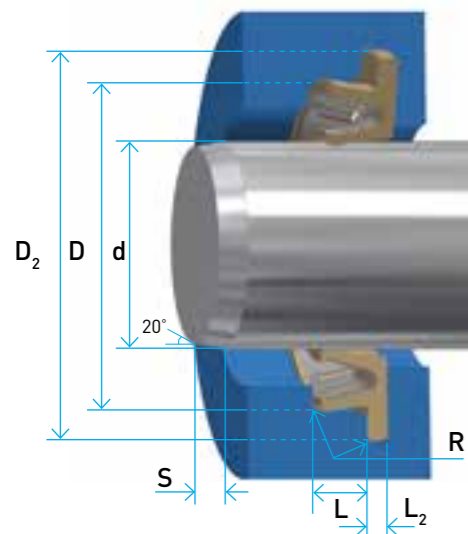
SINTEK HTPU SL
Dry application

RECOMMENDED LUBRICANT



OKS 1110 - only suitable option with EPDM (NSF H1 certified)
OKS 480 - for seals and bearings (NSF H1 certified)
OKS 475 - for extremely low-friction lubrication (NO EPDM)

LIP SEAL WITH SPRING FOR RES ROTATION



Series	d	D	D ₂	L	L ₂	R	S
	h8 Ra=0.2	H8 Ra=1.6	H8	0/+0.2 Ra=1.6	0/+0.2	max	min
RES A	20 - 40	d + 7	d + 13	4.8	1.5	0.3	4.5
RES B	40 - 120	d + 10.5	d + 18	7.1	2	0.4	7.5
RES C	120 - 340	d + 14	d + 22	9.5	3	0.5	10
	> 340	contact our technical staff					

Ability to resize for customised seats

REMOVABLE CASING ON ONE

SUGGESTED MATERIALS

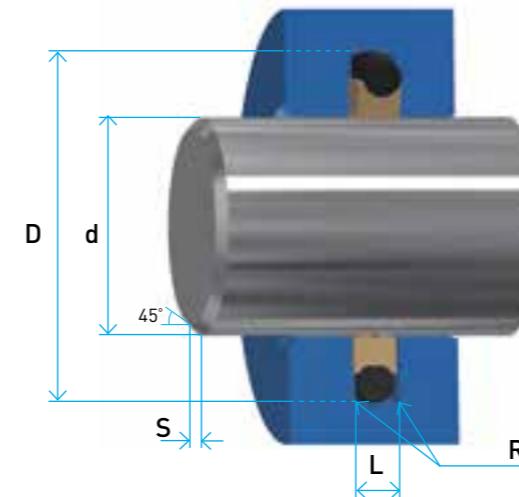


SINTEK FC
Heavy oleodynamic applications

SINTEK 916
Application on stainless steel (e.g. alimentary and pharmaceutical)

SINTEK UHMW
Heavy wear application, temperatures up to 60°C

RTSI COMPOSITE SEALS FOR ROTATING MOVEMENTS



Series	d	D	L	R	S
	H8 Ra=0.4	H8 Ra=0.4	0/+0.2 mm	max	min
RTSI 1	10 - 18	d + 4.9	2.2	0.4	2
RTSI 2	19 - 37	d + 7.5	3.2	0.6	3
RTSI 3	38 - 132	d + 11	4.2	0.8	4.5
RTSI 4	133 - 255	d + 15.5	6.3	1.2	5
RTSI 5	256 - 649	d + 21	8.1	1.6	6
RTSI 6	650 - 1000	d + 28	9.5	2.1	8
	> 1000	contact our technical staff			



Series	Cylinder	internal	width	Cylinder	internal	width	
	H8 Ra=0.4	h8 Ra=0.4	0/+0.2 mm		H8 Ra=0.4	h8 Ra=0.4	0/+0.2 mm
RTPE 1	10 - 29	D - 4.9	2.2	RTPE 4	133 - 329	D - 15.5	6.3
RTPE 2	30 - 69	D - 7.5	3.2	RTPE 5	330 - 669	D - 21	8.1
RTPE 3	70 - 132	D - 11	4.2	RTPE 6	670 - 100	D - 28	9.5

Uncomprising seals

Static and Face Seals

05

O-RING

O-Rings are the ideal static seal. **This type of profile makes the most of the elasticity of its construction material, creating a bearing preload** through its deformation. On the commercial level, the most common elastomeric compounds, such as NBR, FPM, EDPM and silicon are pressed in huge volumes in line with standard size reference charts (e.g. English reference, DOWTI, USA...) and ISO allowances.

Often, however, it's necessary to design this type of seal with customised dimensions or with specific materials. **ATP is able to produce turned o-rings in either standard or special compounds, measured for radial or face seals.** O-rings are generally not recommended for dynamic application, as they generate high levels of friction, and are very delicate compared to other solutions.



CUSTOMISED STATIC SEALS

In cases of high pressure, static seals can be produced with o-rings supported by anti-extrusion rings, although their assembly is not favoured by fitters. **ATP produces customised profiles, including the BLT, which do not require the use of anti-extrusion rings, even in cases of high pressure.**



FACE SEALS

In cases of dynamic application, between a shaft and a perpendicular surface, or between two parallel surfaces, production of the seal must take into account not only the temperature, pressures and contact with fluids, but also the notable movement generated by the sliding surface. **The classic Head Gasket seals have been re-examined by ATP to better adapt them to the dynamic conditions, making the most of materials such as SINTEK HTPU which enable greatly increased service life even in systems with high levels of stress.**

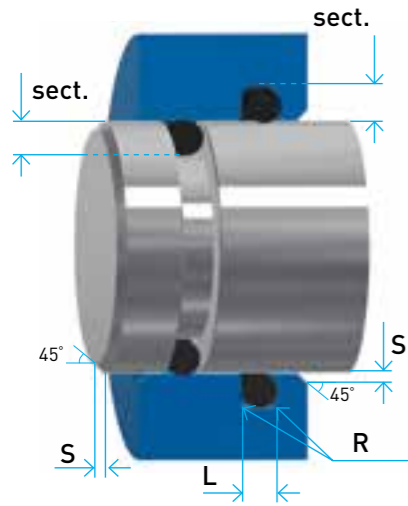


LOW FRICTION FACE SEALS

Among the frontal applications, ATP has produced a **low friction profile which allows important axial recovery, due to a shape which generates low axial preloading.** The use of SINTEK D55 (highly robust yet elastic) is preferred for earth-moving machinery where, aside from regular dirt, there's often mud and other hard materials to deal with.



O-RINGS

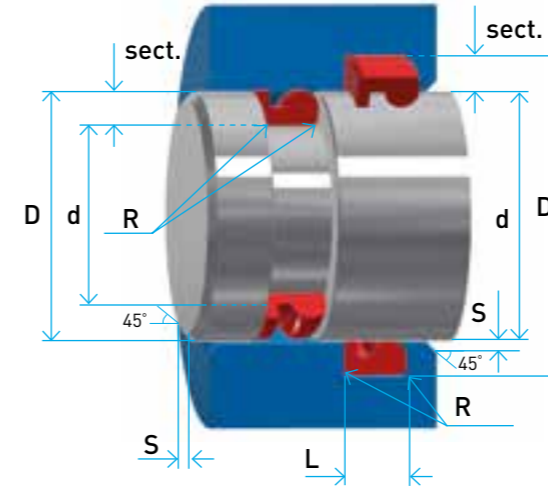


cord		sect.	L	L ₁ *	L ₂ *	R	S
(US Standard)	ISO	+/- 0.03	0/+0.2	0/+0.2	0/+0.2	max	min
1.78	1.8	1.4	2.5	3.5	4.5	0.2	3
2.62	2.65	2.1	3.5	5	6.5	0.2	3.5
3.53	3.55	2.8	4.5	5.9	7.4	0.4	4
5.34	5.3	4.3	7	8.4	10.1	0.5	5
6.99	7	5.8	9.5	10.8	12.8	0.6	6

For other measurements, contact our technical staff

SUGGESTED ROUGHNESS RA=0.8 (MAX 1.6)

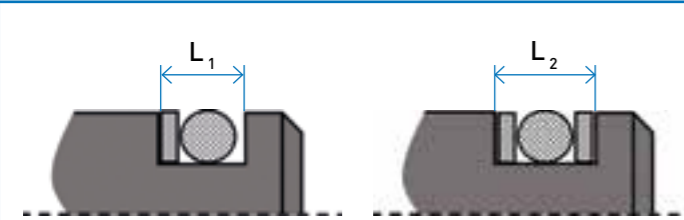
BLT STATIC SEALS



d	D	L	R
h8 Ra=0.8	H8 Ra=1.6	0/+0.2 Ra=1.6	max
da 5 a 15	d + 2.5	4.5	0.3
da 15 a 75	d + 5	5.4	0.3
da 75 a 150	d + 8	7.7	0.3
da 150 a 200	d + 10	9.3	0.6
da 200 a 350	d + 15	13	0.6
> 350	contact our technical staff		

SUGGESTED ROUGHNESS RA=0.8 (MAX 1.6)

* L₁ AND L₂ ARE THE WIDTH NECESSARY FOR ASSEMBLING THE DI 1 AND 2 BACKUP RINGS RESPECTIVELY



ASSEMBLY WITH BACK-UP

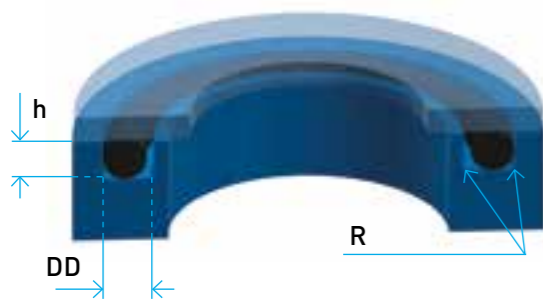
In cases of high pressure it is important to ensure minimal give so as to avoid the anti-extrusion phenomenon of the o-ring. In case of an increase in pressure, it may be necessary to use one or two back-up rings to avoid anti-extrusion. Contact our technical staff for measurements.

ALTERNATIVE MEASUREMENTS

The BLT static seal is often used in place of an O-Ring. It is possible to measure the seal in line with the OR cord that it is intended to replace, but with the axial measurements of the seat L₂.

cord	sect.	L	R
OR	+/- 0,03	0/+0,2	max
1.78	1.4	4.5	0.3
2.62	2.2	6.5	0.3
3.53	3	7.4	0.5
5.33	4.5	10.1	0.6
6.99	6	12.8	0.8

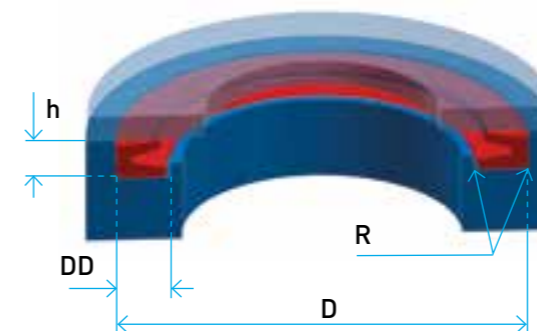
O-RINGS FACE SEALS



cord		h	DD	R
(US Standard)	ISO	+/- 0.03	0/+0.2	max
1.78	1.8	1.4	2.6	0.3
2.62	2.65	2.1	3.8	0.3
3.53	3.55	2.8	5	0.5
5.33	5.3	4.3	7.3	0.6
6.99	7	5.8	9.7	0.8

For additional measurements, contact our technical staff

STATIC LIP SEAL



D	h	DD	R
H8 Ra=0.8	0/+0.05	0/+0.2	max
< 40	contact our technical staff		
40 - 46	3.1	6	0.4
46 - 125	4.7	8	0.4
125 - 300	6.1	10	0.4
> 300	contact our technical staff		

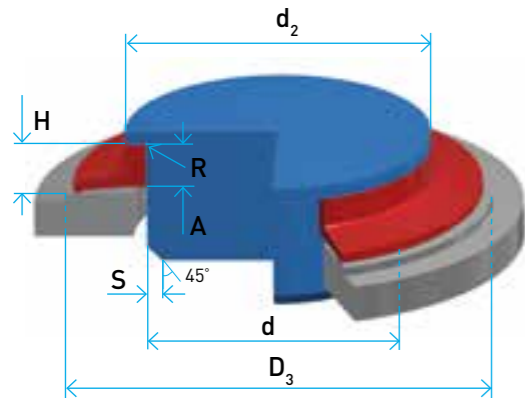
SUGGESTED MATERIALS for O-RINGS



TECHNICAL NOTES

Face lip seals are recommended when the frontal surfaces have a non-planary surface of up to 1mm. In the case of high pressure (in which case, the non-planarity must be confirmed by our technical staff) the use of SINTEK HTPU is recommended.

EXTERNAL FACE SEAL



d	d ₂	D ₃	H	A	H gask	S	R
h8	0/+0.2	0/+0.2	+/- 0.1	0/+0.2			max
< 10	contact our technical staff						
10 - 19	d + 3	d + 10	4.5	3.5	5.5	1	0.4
19 - 38	d + 4	d + 12	5	4	6	1.5	0.4
38 - 105	d + 5	d + 15	7	6	8	2	0.6
105 - 200	d + 6	d + 18	9	10	10.3	3	0.6
200 - 350	d + 8	d + 21	10.5	11.7	12	4	0.6
> 350	contact our technical staff						

SLIDING SURFACE Ra 0.4 / STATIC SURFACES Ra 0.8

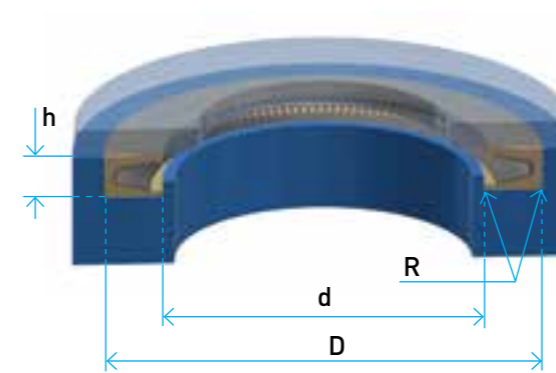
TECHNICAL NOTES

Face seals are dynamic seals originally produced in NBR for slow movement and a lack of pressure, keeping dirt far from mechanical components. The use of more high-performance materials (e.g. SINTEK HTPU) allows for increased resistance to wear and to the dynamic conditions. Certain dimensions also enable resistance to pressure.

ALTERNATIVELY



EFR - FACE SEAL IN PTFE



D	h	d	R
H8 Ra=0.8	0/+0.05	0/+0.2	max
da 39 a 46	3.1	D - 10.5	0.4
da 46 a 125	4.7	D - 15.5	0.4
da 125 a 300	6.1	D - 20.5	0.4
> 300	contact our technical staff		

EFR are used in applications with static or manual movements. For regular dynamic applications, contact our technical staff for measurements.

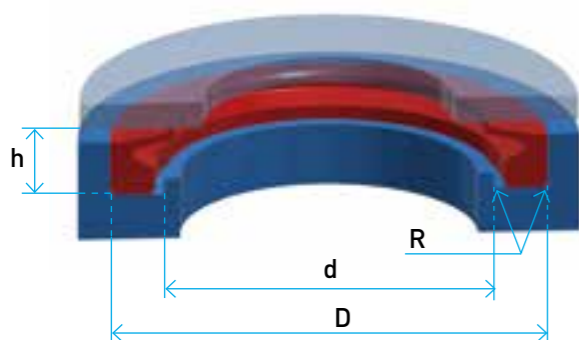
SLIDING SURFACE Ra 0.2 / STATIC SURFACES RA 0.8 (Ra 0.2 FOR GAS)

SUGGESTED MATERIALS

- SINTEK FC** - heavy applications
- SINTEK 916** - stainless steel applications (e.g. alimentary and pharmaceutical)
- SINTEK CERP** - low temperatures



INTERNAL FACE SEAL



D	d	h	R	S
H8	h8	+/- 0.1	max	max
< 20	contact our technical staff			
20 - 50	D - 10	6	0.4	0.3
50 - 100	D - 12	8	0.4	0.5
100 - 250	D - 15	10	0.4	0.6
> 250	contact our technical staff			

SLIDING SURFACE Ra 0.4 / STATIC SURFACES Ra 1.6

ELASTOMERS



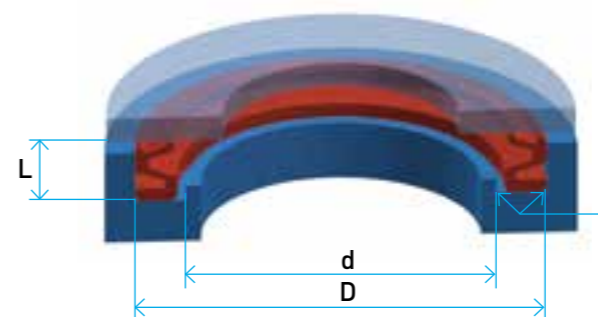
POLYURETHANES



TECHNICAL NOTES

Similar to the static face lip seals, dynamic face seals are recommended when the frontal surfaces have a non-planary surface of up to 1mm. Polyurethanes, such as our SINTEK HTPU, are indispensable under high-pressure to achieve increased service life.

LOW FRICTION ROTARY FACE SEALS



d	D	L	R
h8	H8	+/- 0.1	max
< 20	contact our technical staff		
da 20 a 50	d + 10	8	0.4
da 50 da 100	d + 12	10	0.4
da 100 a 250	d + 15	12	0.4
> 250	contact our technical staff		

Ability to resize for customised seats

SLIDING SURFACE Ra 0.4 / STATIC SURFACES Ra 1.6

TECHNICAL NOTES

In cases of non-planarity exceeding 1mm, the regularly recommended solution is a low friction face seal. Owing to the increased axial flexibility, it can also be adapted to increased preload assembly. The use of lubricants is recommended on the sliding surfaces.

RECOMMENDED LUBRICANT



- OKS 1110** - Only suitable option with EPDM (NSF H1 certified)
- OKS 480** - For seals and bearings (NSF H1 certified)

Target
excellence

Plastic Flow
Solutions

06

GUIDING COMPONENTS OF THE SYSTEM

The guiding component is a core element of the sealing system: if the guiding component is inefficient, the seal could be compromised and the system fall into disrepair. **ATP provides guiding components both for oleodynamics, in SINTEK BM, as well as for applications in stainless steel in SINTEK JAL. ATP is also able to design turning guides in a range of materials, depending on temperature, load-bearing and available space.** ATP also designs and produces face guides such as washers and runners.



PLASTIC FLOW MATERIALS

The typical lightness and smoothness of plastic materials and their ongoing evolution makes them an increasingly common choice. **Beyond the turning of standard plastic materials** (e.g. PE UHMW, POM, PA, PET, PTFE) **ATP offers additional ones made with loaded materials which improve on specific aspects.** The use of CNC 5 axis turning machines allows **ATP to combine the typical precision of turning with the ability to produce highly-specific templates and milling.**



INNOVATIVE PLASTIC MATERIALS

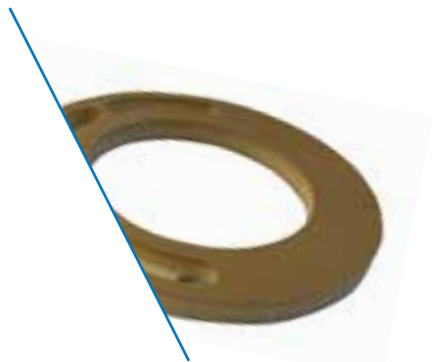
ATP is constantly working on the research and development of **new plastic materials able to improve efficiency of the applications even in strenuous conditions.** Especially

- in the case of applications subjected to **heavy loads**, use **HYTRON LX** (POM loaded with micro lubricants) which maintains a low-friction coefficient which holds over time.
- for applications at temperatures up to **60°C**, use the **SINTEK CER P** (PE filled) which notably improves the **wear resistance** even in comparison to PE UHMW.
- when the temperature is higher, use **HYTRON AK**, a **more resistant material with more stable dimensions.** In situations where there are also increased loads, **HYTRON AKM supports a higher pv.**

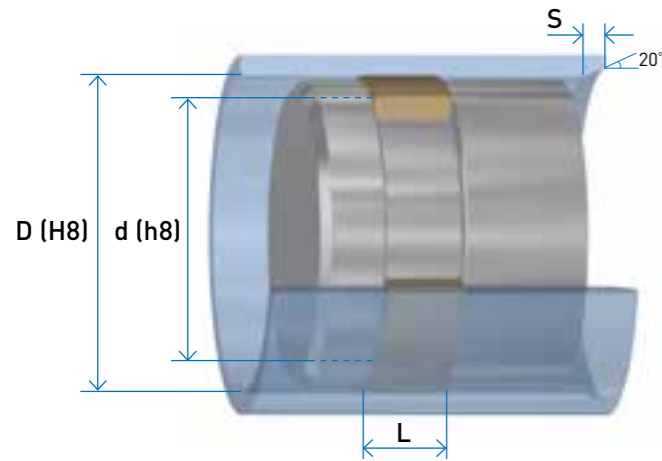


SPECIAL PLASTIC SLEWING RINGS

Making the most of the typical low attrition coefficient of plastics such as PTFE, and the increased mechanical strength resulting from the use of additives, even with **semi-processed it is possible to produce slewing rings for rotating joints.** **In addition to their guiding function, they allow for a high level of sealing between the air passages within.** The system works for both blowing and suction. The use of compounds such as **SINTEK EKO-AL** or **SINTEK 916** also allows for the use of this application in the food industry.



PTFE GUIDES



SEATS		GUIDE
sp	L	Width
D(H8)/d(h8)	0/+0.2	
2.5	6.3	6.1
2.5	8.1	7.9
2.5	9.7	9.5
2.5	15	14.8
2.5	20	19.5
2.5	25	24.5

E.g. guide table 2.5mm density

SLIDING SURFACE Ra 0.4 / STATIC SURFACES Ra 1.6

SUGGESTED MATERIALS

- SINTEK EKO AL
- SINTEK SP DS
- SINTEK UHMW
- HYTRON LX

FOR ADDITIONAL MEASUREMENTS AND PROFILES, CONTACT OUR TECHNICAL STAFF



RUNNERS



The dimensions of the sliding runners can be based on the choice of the most suitable material for the system load.

$$Seq = L_1 \times L_2$$

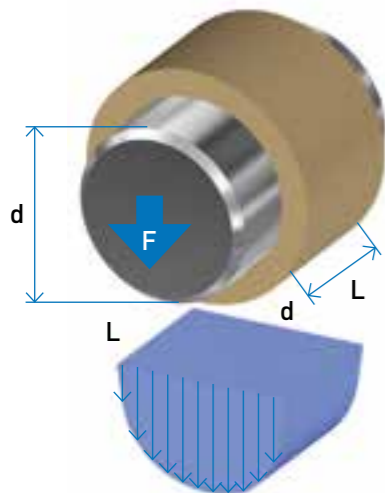
$$Peq = F / Seq$$

$$PV = Peq \times V$$

SAMPLE USES

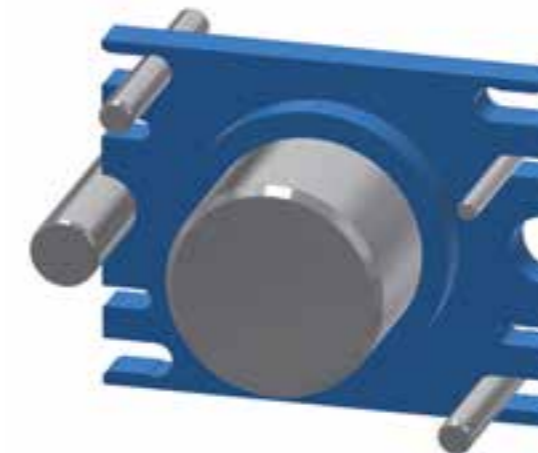
- SINTEK CER P - Applications subject to high wear with temperatures up to 60°C
- SINTEK FC - Filled PTFE for applications requiring low friction
- HYTRON AKM - Very heavy applications, including with high temperatures

PLASTIC RINGLETS



The dimensions of the ringlets can be decided by selecting the most suitable material for the strain on the system. Particularly given diameter d (the slide between the shaft and ringlets) and width, L, it is possible to calculate the equivalent sliding surface: $Seq = d \times L$ [mm²]. With load F [N] applied to the ringlet, it is possible to calculate the value of the load equivalent distribution: $Peq = F / Seq$ [MPa]. Peq must be below the maximum typical crushing load of the material. With the peripheral velocity of the shaft V [m/s] it is possible to calculate: $PV = Peq \times V$. The maximal value for PV varies depending on the material. **For an accurate measurement of the dimensions and selection of materials, contact our technical staff.**

SPECIAL PLASTICS



The use of special lathes, with motorised CNC mills, makes it possible to create products from complex plastic materials with a high level of precision and the distinctive low eccentricity of the turning. To create different turning items, beyond the classic 3 axle, an additional movement axle is employed to the motorised tool, which can be used for milling on a parallel axle to the orthogonal one.

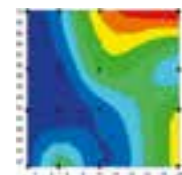
A FEW CHARACTERISTIC VALUES OF OUR MATERIALS

Admissible limits of PV [Mpa x m/s], regular un-lubricated function at 23°C
Admissible limits of peq [Mpa] after 1000hr, statics with 2% deformity

	SINTEK CERP	HYTRON LX	HYTRON AK	HYTRON AKM
V = 0.1 m/s	0.08	0.16	0.33	0.66
V = 1 m/s	0.05	0.1	0.21	0.42
	SINTEK CERP	HYTRON LX	HYTRON AK	HYTRON AKM
T=23°C UR 50%	5	24	49	57

NEW MEANS OF CALCULATING FOR CUSTOMISED APPLICATIONS

For more complex applications, it is necessary to carry out custom research into the reaction of the plastic material to the client's desired counter-surface. Certain materials have already been tested for their rate of wear and this information is available.



Maximum
hygiene

PTFE
Membranes
and Bellows

07

PTFE BELLOWS

PTFE bellows, originally analysed and used in the chemical sector for their **resistance in harsh conditions and at high temperatures**, are used as a dynamic separation tool when the use of seals is either impossible or not advantageous. Rubber bellows can also be installed on fixed organs to protect mechanical components.



SINTEK V1 AL 001177 BELLOWS

ATP has superseded the old style of PTFE bellows by introducing innovations in shape and material, for example by utilising SINTEK V1-AL 001177, which makes it possible to **achieve higher levels of performance and a longer service life, even in the harshest conditions**. The research into innovative production techniques has brought about unique solutions of over 300mm in length.



SINTEK V1 AL 001177 MEMBRANE

When the motions are short, it is possible to replace the bellows with next-gen membranes, made from a special fluoride material. **These components are clean and robust, making them ideal for applications such as pneumatic valves.**

The membranes, like the bellows, are not subject to mechanical wear, but they are sensitive to material fatigue. This is why it is vital to properly examine the shape, including using innovative tools such as FEA and the use of improved materials in the production.



CUSTOMISED SOLUTIONS

Using a customised design of both the profile of the membrane as well as of the metallic supports, it is possible to create **applications even in situations of high pressure or other challenging conditions.**

In addition to the PTFE membrane, ATP designs and produces membranes in thermoplastics, such as SINTEK HTPU, and elastomers (rubber and silicon).



An extra
gear

PTFE
Special

08

PTFE, INNOVATION FROM THE POWDER UP

Owing to its low friction coefficient and increased thermal and chemical resistance, **PTFE is one of the most important plastics in mechanical applications**. ATP has a longstanding involvement in the production of PTFE parts, using semi-manufactured products of the highest quality purchased from leading European producers. **The company** has also begun **internal production of semi-manufactured PTFE products, produced from fine, filled powder** which is turned into increasingly high-performance compound materials. Set apart by their incredibly high quality, these semi-manufactured products can also be produced in small batches.



BATCH TESTS: UNCOMPROMISING QUALITY

ATP's laboratories enable checks on the specific mechanical characteristics of the semi-manufactured products **for every batch produced. The new dynamometer with climate-controlled room allows for the creation of a stress-strain curve even for one specific isotherm**. Our laboratories also make it possible to measure distinctive parameters of the material such as weight, hardness and density. Last but not least, it is also possible to request specific tests on a batch at third party laboratories/organisations.



SINTEK 916

ATP, in collaboration with multiple university research centres, is developing **special PTFE materials with increased** resistance to wear, able to withstand even the harshest conditions.

In the food and pharmaceutical industries, for example, with its high temperatures, high-pressure washdowns and ceramic-reinforced sliding surfaces, after multiple tests on various compounds, **SINTEK 916, FDA and 10:2011 (1935:2004) certified** was chosen.



PRODUCTIVE IDEAS AND INNOVATION

ATP is able to provide 100% customisable solutions, taking into account the needs of the client and working with specific requirements which can be added to the semi-manufactured product. The use of a dynamometer with climate-controlled room makes it possible to examine the PTFE under specific temperatures and use this data to carry out FEA at the same temperature. **ATP's production processes is of a par with the leading global manufacturers, while maintaining the flexibility required for production of small batches**. The dual material bellows for the pharmaceutical industry, for example, is the result of a semi-manufactured product pressed with two different materials.



Precision and innovation

Metal Turning and Waterjet Cutting

09

MILL FOR METAL TURNING

Sliding runners and slewing bearings are usually produced through **sheet milling** which allows for the careful management of both the thickness of the component as well as the various adjustments to its surface, such as cavities and bores. **The use of technologically advanced materials such as SINTEK CER P, HYTRON SP and HYTRON AK ensure high-performing components even in the harshest conditions.** The use of a vacuum table enables increased **precision in processing.**



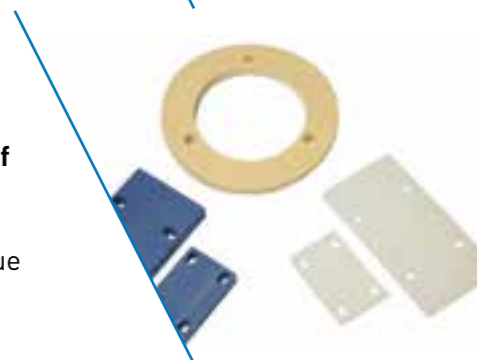
THE MOST COMPLEX PROCESSES

In 2018, ATP purchased a **new numerical control production centre.** In addition to the metal turning, **it is also capable of executing multi-axle procedures with complex-shaped pieces.** Research into the ideal forms and the perfect plastics ensures we can support our clients from the very earliest stages of design.



WATERJET CUTTING

Waterjet cutting, usually employed for the creation of flat gaskets, **has been optimised by ATP, using targeted production processes which have improved the precision of the cutting.** The use of high-quality materials, certified for applications which come into contact with food (e.g. white rubber and blue metal-detectable silicon) ensures we are able to provide a plethora of solutions in the sector.



WATERJET CUTTING AND INNOVATION

Waterjet cutting can be carried out on special FDA- and 1935:2004-certified polyurethane sheets of differing thicknesses, made from SINTEK HTPU, SINTEK EPDM 81 KTW FD and SINTEK FPM FDA, from which ATP is able to make small calibrated sheets. By doing this, it is possible to make shapes which are distinctive to waterjet technology by using materials with technical characteristics superior to normal ones.



SILICONE SHEETS 40Sh and 60Sh	POLYURETHANE SHEETS	ELASTOMER SHEETS	SINTEK® EPDM AT130 ESPANSIVE	THERMO-RESISTANT SHEETS
High-quality silicone with increased elasticity and thermal resistance. FDA and 1935:2004.	Polyurethane with high resistance to hydrolysis and increased resistance to wear.	Sheets of all the primary elastomers such as NBR (70Sh), EPDM (60Sh), FPM (70Sh), PARA (40/45Sh) for mechanical use. Various other commercial sheets, and white NBR and EPDM sheets.	Mousse, expansive EPDM base with improved resistance to external agents.	Special materials for high thermal resistance, typical for application in contact with electric heaters and other heat sources.
→ HARDNESS 40 Sh and 60Sh (other hardness options available)	→ HARDNESS 90Sh (other hardness options available)		→ TEMP. RANGE: -40/80°C	For example: Fibre-glass resin
→ TEMP. RANGE: -60/230°C	→ TEMP. RANGE: -20/90°C		OTHER EXPANSIVE MATERIALS AVAILABLE	

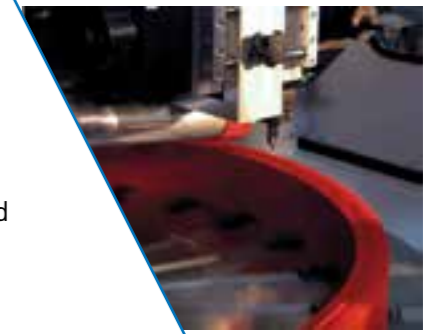
Working
together!

Special
applications

10

3mm-2500mm GASKETS

Turning with a horizontal axis makes it possible to produce gaskets with a diameter up to 700mm. For anything above these dimensions, ATP uses vertical axis lathes for objects from elastomers, polyurethanes and plastics, up to a diameter of 2500 mm. The ability to have semi-manufactured elastomers and polyurethanes which can be produced in small batches also makes it possible to manage small amounts of items. In addition, the use of FEA makes it possible to carry out preliminary research regarding the applications with a significant saving on time and cost for prototyping. Our production process provides us with maximum flexibility while reducing delivery times to a minimum. Among the primary uses: large presses, hydroelectric applications and the mining sector.



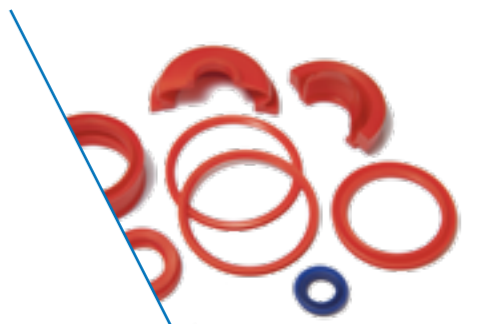
CUSTOMISED IDEAS

ATP's products are born of passion, experience, research and innovation. The foundations of every project is the study of the client's applications, and the solutions provided are designed to improve not only the application, but the output of the machines themselves. The use of FEA ensures quick identification of the optimal design and a notable reduction in the number of prototypes and experimental tests.



COMPACT SOLUTIONS

ATP is able to provide tailor-made solutions for limited space with dual-purpose lip seals, functional in rotary as well as alternative applications. Similar solutions have been developed with significant success for frontal applications. The ability to adapt existing mechanisms has always been one of ATP's strengths, which developed replacement parts for the OEM which were able to improve on the performance of the original parts assembled in the machines and already in the field.



COMPOSITE SYSTEMS: BETTER TOGETHER

Bringing together the features of plastics and elastomers, our technical staff are able to research multi-material solutions which can resolve the flaws of even the most complex applications. One example of this is the research into rod sealing systems able to follow their movements in case of increased dynamic eccentricity.



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