



Merkel Xpress

Machined Seals. Promptly Delivered.

Merkel Xpress

Your Technology Specialist

simrit[®]

Merkel Xpress Custom-Manufactured Seals

Demanding projects often require high-quality seals without delay or hassle. Our Merkel Xpress service offers superior custom seals with a fast turnaround, often shipped within 24 hours.

Your machines aren't always in contained rooms. Your equipment is out in the elements, buried in dirt, water, and grime, under extreme threat by intense conditions and hostile environments. The gear is subject to incredible stress, wear, and tear. Downtime can be very costly—customers know “time is money.” The quality and integrity of the sealing system is crucial; your machines are profitable in use, not idle, waiting for a replacement seal.

In today's economic environment our Merkel Xpress service is the clear solution for companies needing precise and speedy results. Short turnaround, high reliability, and quality with custom-manufactured work make Simrit your technology specialist. Simrit offers reliable product solutions customers can rely on. Expect to see an order filled in as soon as 24 hours.

The Merkel Xpress service has the diversified ability to meet the needs of multiple industries, such as hydraulic cylinders impacting equipment from tractors to dump trucks, and even to steel mills. Custom-manufactured sizes are also available ranging to 2.54 meters in diameter. Aware of our diverse customers' sealing needs, Merkel Xpress service readily provides a solution with superior results and rapid response.

Welcome to the unrivaled power of Simrit

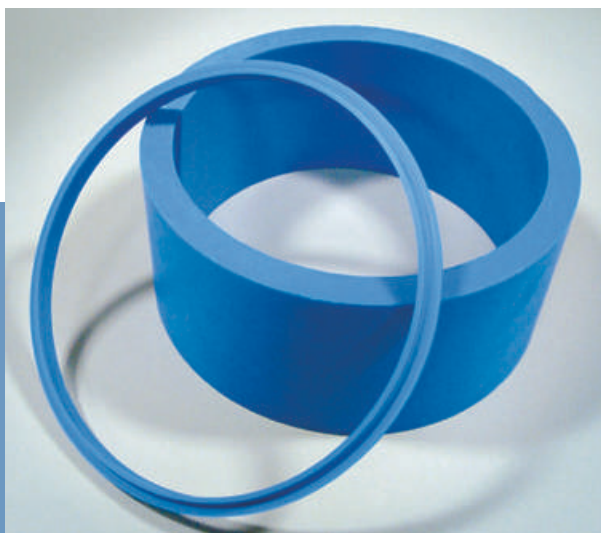
Simrit is the industrial sealing products division of the Freudenberg and NOK Group Companies, the world's largest supplier of elastomeric seals and custom-manufactured products, with over \$12 billion in annual sales

worldwide. Simrit provides customers with unmatched experience, product availability, and expertise in the agriculture and construction—and beyond. Industrial customers, OEMs, and distributors alike know that one of Simrit's key advantages is the ability to customize our total sealing solution to virtually any size and application. In fact, it is the breadth of our global resources that enables us to focus personally on a customer's individual needs within specific markets and particular applications.

As both leader and dynamic innovator, Simrit's unique position allows for the continual improvement of our products and services. We are dedicated to discovering new materials and exploring advanced processes to help your technologies not only grow, but thrive in the future.

The Simrit service package at a glance:

- **World's largest product range**—Superior design solutions from a single source.
- **Continuous innovation**—Technological prominence gives our customers competitive advantage.
- **Unique expertise in material, high-quality standards**—The end-to-end leader for safe, cost-effective applications.
- **A vast range of integrated services**—Holistic support from development through product deployment.
- **“Globality”**—Global expertise united with the knowledge of local markets and customer demands.



The Merkel Xpress service offers a prompt solution to your custom sealing needs. Relying on over 150 years of expertise, our engineers strive to provide fast resolutions to customers' needs in a variety of industries, with a range of requirements and a host of possibilities.

Merkel Xpress service at www.simrit.com

Custom-designed seals at your fingertips

When schedules are tight, the task of getting a customized part designed and affordably produced can seem daunting and unrealistic. Not anymore. The Merkel Xpress service is our rapid prototype and production cell, which is redefining the way our customers think about producing their designs.

Conceived as a cost-effective solution for low-quantity production or rapid prototypes, Merkel Xpress service is a Computer Numeric Control (CNC) machine, integrated with software, to custom-produce seals—up to 100 inches in diameter—usually in less than one day. Seal design variations are easily accommodated with Merkel Xpress and products can be held to extremely high tolerances. Molding issues such as knit lines, ejector pin markings, and flash are eliminated and there are no mold changes.



Online access with www.simrit.com makes it quick and easy to design your own products or choose from nearly 100 standard designs, including rod seals, piston seals, wipers, pneumatic seals, static seals, guide bands, backup rings, O-rings, shaft seals, swivel seals, and more. Select the perfect Simrit material from the dozens available and in stock. Best of all, you can typically have your custom parts shipped within 24 hours—guaranteed!*

- Hundreds of seal profiles
- Instant quotes online
- Dozens of Simrit materials
- Made to print and certified
- 24-hour guarantee*
- Simrit engineering and expertise



Materials

The Merkel Xpress service uses some of the highest quality materials in the world: virtually any type of sealing material used in a hydraulic or pneumatic application. Below are the the standard Xpress materials and dozens more are available (some are FDA approved).

- Polyurethanes
- Elastomers
- Plastomers
- Fluoro-Plastic (PTFE)



*Merkel Xpress Guarantee

When you are quoted an item and you see the "Guaranteed" icon, you can count on the fact that Simrit will ship that item within 24 hours. This guarantee applies only to some Merkel Xpress™ profiles and materials.

Conditions of this guarantee are as follows. Parts cannot be made to customer print or modified from Simrit norms. Applies to only items quoted and ordered online within 3 business days of being quoted. Partial shipments applicable. Items ordered after 2:00 pm EST may require an additional business day. If the guarantee is not met, we will ship that item free UPS ground, Continental US only.

Standard Dirt Wipers

Features

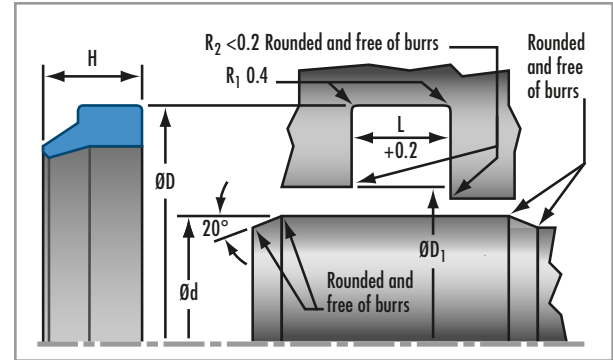
Standard “Snap-in” wipers are proven performers in preventing dirt and contaminants from entering the system. Xpress makes these dirt wipers available in a variety of materials, custom tailored to meet your specific requirements. “Press fit” wipers are also available.

Applications

- Agricultural and construction equipment
- Presses and injection molding machines
- Standard hydraulic cylinders

Surface Requirements

Peak-to-Valley Heights	R_{Max}	R_a
Running Surface	$\leq 2.5\mu m$	0.05-0.3 μm
Bottom of groove	$\leq 6.3\mu m$	$\leq 1.6\mu m$
Sides of groove	$\leq 15\mu m$	$\leq 3\mu m$



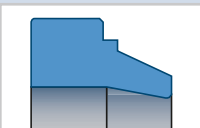
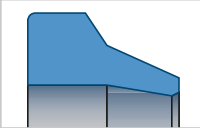
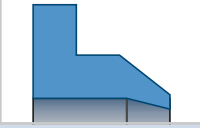
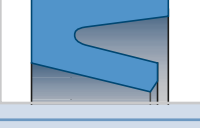
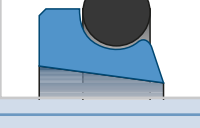
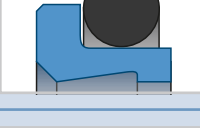
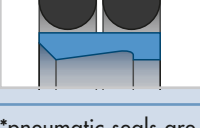
Standard Sizes

Ød	ØD	D1	L	H
20-80	Ød+8.6	Ød+3.0	5.3	7.0
81-150	Ød+12.2	Ød+6.0	7.2	12.0
151-500	Ød+20.0	Ød+10.0	10.2	18.0
501-1000	Ød+25.0	Ød+12.6	12.7	20.0

Standard Dirt Wiper Seal Profiles Available

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DA102	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA103	94AU925 (P100)/POM Red HPU (P500)/POM NBR (N100)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA105PN	94AU925 (P100)/POM Red HPU (P500)/POM NBR (N100)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA106PN	94AU925 (P100)/POM Red HPU (P500)/POM NBR (N100)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA101	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s

Standard Dirt Wipers

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DA104PN	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA107	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA108	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA109	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	2.0 m/s
	DA111	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	1.0 m/s
	DA112	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	1.0 m/s
	DA113	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	1.0 m/s
	DA115	PTFE Bronze PTFE Glass MoS2 with NBR or FPM energizer	-30 to +150°C (-22°F to +300°F) (Typical, can be influenced by fluids)	5.0 m/s
	DA116	PTFE Bronze PTFE Glass MoS2 with NBR or FPM energizer	-30 to +150°C (-22°F to +300°F) (Typical, can be influenced by fluids)	5.0 m/s
	DA117	PTFE Bronze PTFE Glass MoS2 with NBR or FPM energizer	-30 to +150°C (-22°F to +300°F) (Typical, can be influenced by fluids)	5.0 m/s

*pneumatic seals are indicated with a "PN" suffix

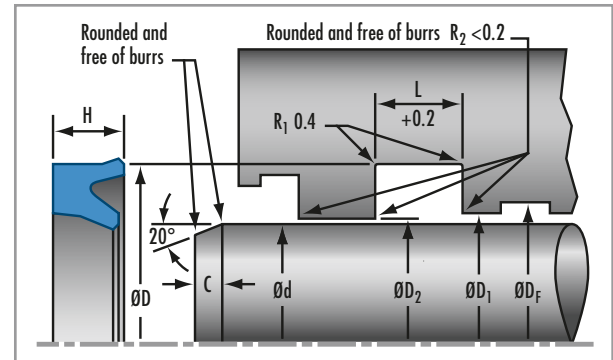
Standard Rod Seals

Features

Standard rod seals can be used as primary or secondary seals in hydraulic or pneumatic cylinders. Available in a variety of materials and designs, including backup rings, O-ring-energized, and special designs to reduce friction, they can be tailored to meet your specific requirements.

Applications

- Agricultural and construction equipment
- Presses and injection molding machines
- Standard hydraulic and pneumatic cylinders



Standard Sizes

Ød	ØD	L	C/S
5-24.9	Ød+8.0	6.3	4.0
25-49.9	Ød+10.0	8.0	5.0
50-149.9	Ød+15.0	10.0	7.5
150-299.9	Ød+20.0	14.0	10.0
300-499.9	Ød+25.0	17.0	12.5
500-699.9	Ød+30.0	25.0	15.0
≥700	Ød+40.0	32.0	20.0

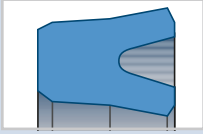
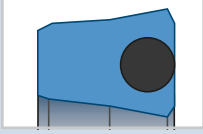
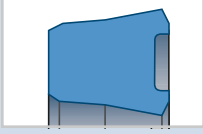
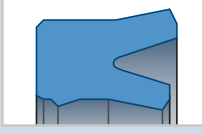
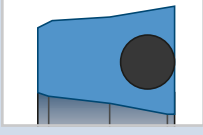
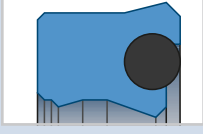
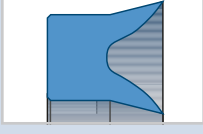
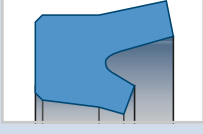
Surface Requirements

Peak-to-Valley Heights	R _{Max}	R _a
Running Surface	≤2.5µm	0.05-0.3µm
Bottom of groove	≤6.3µm	≤1.6µm
Sides of groove	≤15µm	≤3µm

Standard Rod Seal Profiles Available

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DS101	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS102	94AU925 (P100)/POM Red HPU (P500)/POM NBR (N100)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS103	94AU925/NBR Red HPU (N100)/NBR	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DS104	94AU925/NBR/POM Red HPU/NBR/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s

Standard Rod Seals

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DS105PN	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS106	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS107	94AU925/NBR Red HPU/NBR	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DS108	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS117	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS121	94AU925 (P100)/NBR Red HPU (P500)/NBR	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DS125	94AU925 (P100)/NBR Red HPU (P500)/NBR	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DS139	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DS1141	94AU925 (P100)/POM Red HPU (P500)/POM NBR (N100)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s

*pneumatic seals are indicated with a "PN" suffix

PTFE Rod Seals

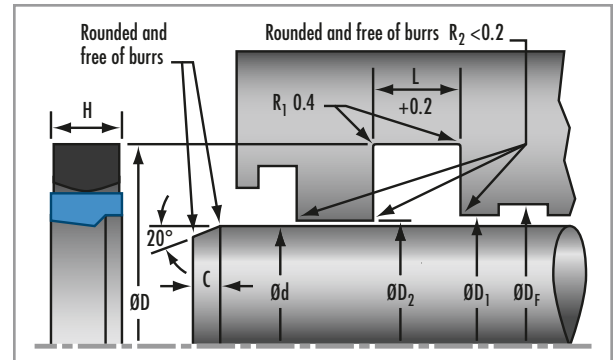
Features

PTFE rod seals are typically used as primary seals in hydraulic applications. The various PTFE compounds and energizer materials available in combination with these features offer an optimal solution for most applications:

- Very high resistance to pressure
- Good thermal conductivity
- Very good extrusion resistance
- High resistance to abrasion
- Low friction, free of stick-slip

Applications

- Agricultural, construction, and industrial equipment
- Presses and injection molding machines
- Control and regulation equipment
- Standard hydraulic and pneumatic cylinders



Standard Sizes

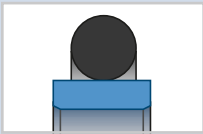
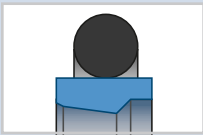
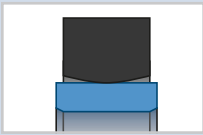
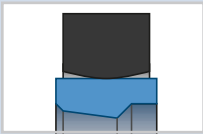
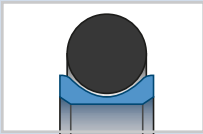
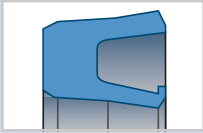
Ød	ØD	L	C/S
5-7.9	Ød+4.9	2.2	2.45
8-18.9	Ød+7.3	3.2	3.65
19-37.9	Ød+10.7	4.2	5.35
38-199.9	Ød+15.1	6.3	7.55
200-255.9	Ød+20.5	8.1	10.25
256-649.9	Ød+24.0	8.1	12.0
≥650	Ød+27.3	9.5	13.65

Surface Requirements

Peak-to-Valley Heights	R_{Max}	R_a	R_{pkx}	R_{pk}	R_k	R_{vk}	R_{vkk}
Running Surface	$\leq 2.5\mu m$	0.05-0.3 μm	$< 0.5\mu m$	$< 0.5\mu m$	0.25-0.7 μm	0.2-0.65 μm	0.2-2.0 μm
Bottom of groove	$\leq 6.3\mu m$	$\leq 1.6\mu m$					
Sides of groove	$\leq 15\mu m$	$\leq 3\mu m$					

PTFE Rod Seals

PTFE Rod Seal Profiles Available

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DS124	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DS129	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DS138	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DS238	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DS142	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DS119	PTFE Bronze/SS PTFE Glass/SS	-200 to +260°C (-328°F to +500°F) -200 to +260°C (-328°F to +500°F)	5.0 m/s

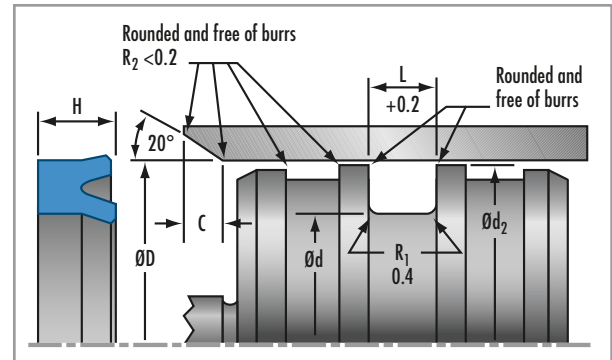
Standard Piston Seals

Features

Standard piston seals can be used for single-acting and double-acting pistons in hydraulic or pneumatic cylinders. Available in a variety of materials and designs, including backup rings, O-ring energizers, special designs to reduce friction, and tailored to meet your specific requirements.

Applications

- Agricultural and construction equipment
- Presses and injection molding machines
- Standard hydraulic cylinders



Standard Sizes

ØD	Ød	L	C/S
5-24.9	ØD-8.0	6.0	4.0
25-49.9	ØD-10.0	7.0	5.0
50-74.9	ØD-12.0	8.0	6.0
75-149.9	ØD-16.0	10.0	8.0
150-299.9	ØD-20.0	12.0	10.0
300-499.9	ØD-24.0	18.0	12.0
500-749.9	ØD-30.0	20.0	15.0
≥750	ØD-40.0	26.0	20.0

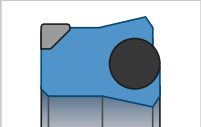
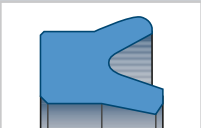
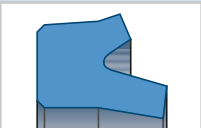
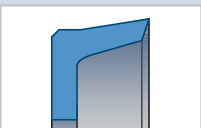
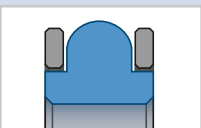
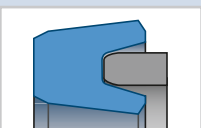
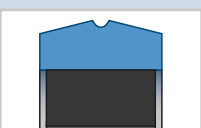
Surface Requirements

Peak-to-Valley Heights	R_{Max}	R_a
Running surface	$\leq 2.5\mu m$	$0.05-0.3\mu m$
Bottom of groove	$\leq 6.3\mu m$	$\leq 1.6\mu m$
Sides of groove	$\leq 15\mu m$	$\leq 3\mu m$

Standard Piston Seal Profiles Available

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DK101	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK102	94AU925/POM Red HPU/POM NBR/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK103	94AU925 (P100)/POM Red HPU (P500)/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s

Standard Piston Seals

Profile (standard offering)	Type*	Standard Materials	Operating Temperature	Sliding Speed
	DK104	94AU925/NBR/POM Red HPU/NBR/POM	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DK105PN	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK141	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK116	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK216	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK120	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK123	94AU925 (P100) Red HPU (P500)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
	DK126	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s
	DK143	94AU925 (P100)/NBR Red HPU (P500)/NBR	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F)	0.5 m/s
*pneumatic seals are indicated with a "PN" suffix				

PTFE Piston Seals

Features

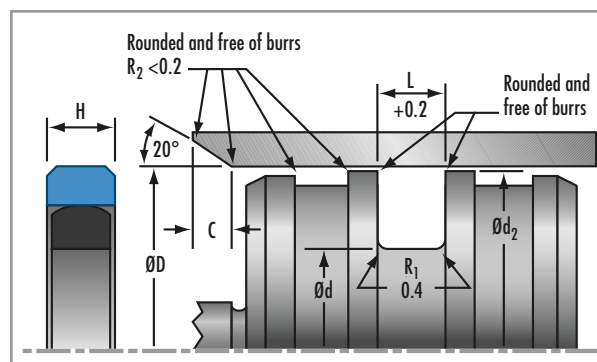
PTFE piston seals are either single- or double-acting seals used in hydraulic or pneumatic applications. The various PTFE compounds and energizer materials available combined with the following features offer an optimal solution for most applications. Features include:

- Very high resistance to pressure
- Good thermal conductivity
- Very good extrusion resistance
- High resistance to abrasion
- Low friction, free of stick-slip

Some designs allow the addition of pressure relief in applications where pressure traps are a concern.

Applications

- Agricultural, construction, and industrial equipment
- Presses and injection molding machines
- Control and regulation equipment
- Standard hydraulic and pneumatic cylinders



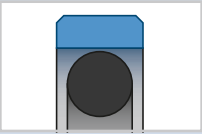
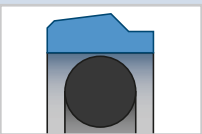
Standard Sizes

ØD	Ød	L	C/S
8-14.9	ØD-4.9	2.2	2.45
15-39.9	ØD-0.5	3.2	3.75
40-79.9	ØD-11.0	4.2	5.5
80-132.9	ØD-5.5	6.3	7.75
133-329.9	ØD-21.0	8.1	10.5
330-649.9	ØD-24.5	8.1	12.25
≥650	ØD-28.0	9.5	14.0

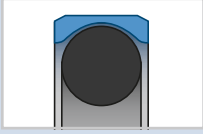
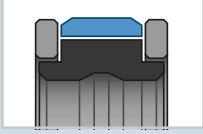
Surface Requirements

Peak-to-Valley Heights	R _{Max}	R _a	R _{pkx}	R _{pk}	R _k	R _{vk}	R _{vkx}
Running Surface	≤2.5µm	0.05-0.3µm	<0.5µm	<0.5µm	0.25-0.7µm	0.2-0.65µm	0.2-2.0µm
Bottom of groove	≤6.3µm	≤1.6µm					
Sides of groove	≤15µm	≤3µm					

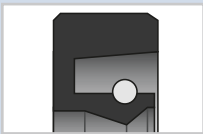
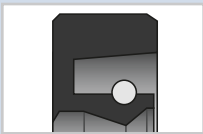
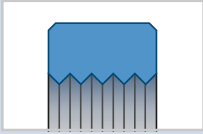
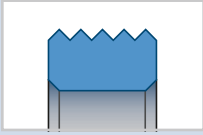
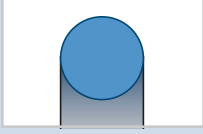
PTFE Piston Seal Profiles Available

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DK108	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DK125	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s

PTFE Piston Seals

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DK138	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DK238	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DK142	PTFE Bronze/NBR PTFE Glass/NBR PTFE Bronze/FPM PTFE Glass/FPM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DK222	PTFE Bronze/NBR/POM PTFE Glass/NBR/POM PTFE Bronze/FPM/POM PTFE Glass/FPM/POM	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -10 to +200°C (-14°F to +390°F) -10 to +200°C (-14°F to +390°F)	5.0 m/s
	DK139	PTFE Bronze/SS PTFE Glass/SS	-200 to +260°C (-328°F to +500°F) -200 to +260°C (-328°F to +500°F)	5.0 m/s
	DK119	PTFE Bronze/SS PTFE Glass/SS	-200 to +260°C (-328°F to +500°F) -200 to +260°C (-328°F to +500°F)	5.0 m/s

Rotary Shaft Seals

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DR204	NBR (N100)/SS	-30 to +100°C (-22°F to +212°F)	10.0 m/s
	DR205	NBR (N100)/SS	-30 to +100°C (-22°F to +212°F)	10.0 m/s
	DR206	NBR (N100)	-30 to +100°C (-22°F to +212°F)	10.0 m/s
	DR207	NBR (N100)	-30 to +100°C (-22°F to +212°F)	10.0 m/s
	DR104	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.2 m/s
	DR105	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.2 m/s
	DR106	NBR (N100)	-30 to +110°C (-22°F to +230°F)	12.0 m/s
	DR108	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s 0.5 m/s 10.0 m/s
	DR109	94AU925 (P100) Red HPU (P500) NBR (N100)	-30 to +110°C (-22°F to +230°F) -20 to +110°C (-7°F to +230°F) -30 to +110°C (-22°F to +230°F)	0.5 m/s 0.5 m/s 5.0 m/s

PTFE Rotary Seals

Features

PTFE rotary seals are available in a variety of designs and materials. They come in single-action and double-action designs with elastomer energizers or springs. They can be used in small housings and are suitable for stroke, rotary, and pivoting movements.

Applications

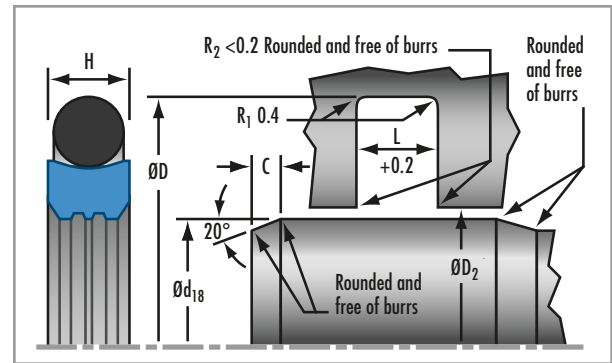
- General chemistry
- Petrochemicals

Standard Sizes

Ød	ØD	L	C/S
20-40	Ød+7.5	3.2	3.75
41-90	Ød+11.0	4.2	5.5
91-299	Ød+15.5	6.3	7.75
300-399	Ød+21.0	8.1	10.5
400-549	Ød+24.5	8.1	12.25
≥550	Ød+28.0	9.5	14.0

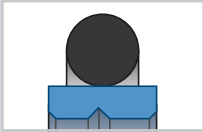
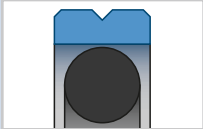
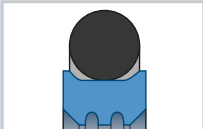
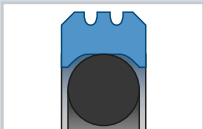
Surface Requirements

Peak-to-Valley Heights	R_{Max}	R_a
Running surface	≤2.5µm	0.05-0.3µm
Bottom of groove	≤6.3µm	≤1.6µm
Sides of groove	≤15µm	≤3µm



PTFE Rotary Seals

PTFE Rotary Seal Profiles Available

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DR110	PTFE Bronze/NBR PTFE Glass/NBR PTFE Graphite/NBR	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F)	0.5 m/s
	DR111	PTFE Bronze/NBR PTFE Glass/NBR PTFE Graphite/NBR	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F)	0.5 m/s
	DR115	PTFE Bronze/NBR PTFE Glass/NBR PTFE Graphite/NBR	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F)	0.5 m/s
	DR116	PTFE Bronze/NBR PTFE Glass/NBR PTFE Graphite/NBR	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F)	0.5 m/s
	DR117	PTFE Bronze/NBR PTFE Glass/NBR PTFE Graphite/NBR	-30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F) -30 to +120°C (-22°F to +248°F)	0.5 m/s

Guide Rings

Features

Guide rings can be supplied in a variety of designs and materials for use in piston and rod applications. The material and design can be matched to your operating conditions and requirements.

Applications

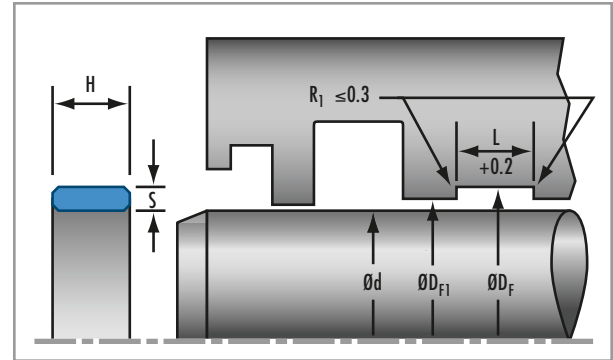
- Mobile hydraulics and construction equipment
- Injection molding machines and presses
- Steel hydraulics engineering

Standard Sizes

$\text{ØD}_{\text{Piston}}/\text{Ød}_{\text{Rod}}$	Piston Ød	Piston ØD	S_{profile}	L
6-29.9	$\text{ØD}-3$	$\text{ØD}+3$	1.5	4
30-49.9	$\text{ØD}-3$	$\text{ØD}+3$	1.5	5.6
50-99.9	$\text{ØD}-5$	$\text{ØD}+5$	2.5	9.7
100-799.9	$\text{ØD}-5$	$\text{ØD}+5$	2.5	15
≥ 800	$\text{ØD}-8$	$\text{ØD}+8$	4.0	25

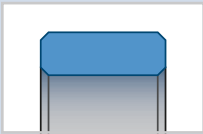
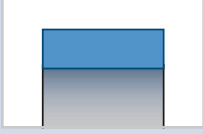
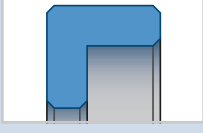
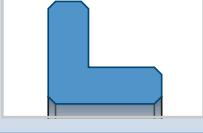
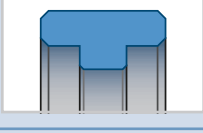
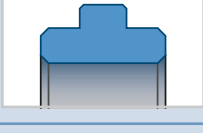
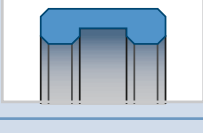
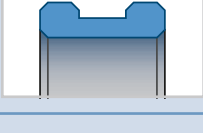
Surface Requirements

Peak-to-Valley Heights	R_{Max}	R_a
Running surface	$\leq 2.5\mu\text{m}$	0.05-0.3 μm
Bottom of groove	$\leq 6.3\mu\text{m}$	$\leq 1.6\mu\text{m}$
Sides of groove	$\leq 15\mu\text{m}$	$\leq 3\mu\text{m}$



Guide Rings

Guide Rings Profiles Available

Profile (standard offering)	Type	Standard Materials	Operating Temperature	Sliding Speed
	DF101	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF102	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF103	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF104	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF105	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF106	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF107	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s
	DF108	POM PTFE Polyester Resin/Fabric	-40 to +100°C (-40°F to +212°F) -200 to +260°C (-328°F to +500°F) -40 to +100°C (-40°F to +212°F)	4.0 m/s

Merkel Xpress Materials Guide

Material Data				Material Type		
Property	Measurement Conditions	Unit of Measure	DIN	94AU925 polyurethane	Red HPU polyurethane	NBR
Color				blue	red	black
Specific Gravity		g/cm ³	53 479	1.18	1.20	1.32
Hardness		shore A	53 505	94	94	85
		shore D	53 505	43	—	—
Extension Modulus	100% elongation	N/mm ²	53 455	—	16	11
Tensile Strength		N/mm ²	53 455	64	60	17
Elongation		%	53 455	470	430	150
Tear Strength		N/mm	53 515	95	—	—
		N/mm	53 507	—	150	9
Resilience		%	53 512	—	35	20
Abrasion		mm ³	53 516	—	—	130
E-Modulus Strength		N/mm ²	53 457	—	—	—
Compression Set	20°/24 hours	%	53 517	—	—	—
	70°/22 hours	%	53 517	23	—	—
	70°/70 hours	%	53 517	—	28	—
	70°/100 hours	%	53 517	—	—	—
	100°/22 hours	%	53 517	—	—	9
	150°/22 hours	%	53 517	—	—	—
	175°/22 hours	%	53 517	—	—	—
Temperature, minimum		°C		−30	−20	−30
Temperature, maximum		°C		+110	+110	+110
Temperature, max. water/steam		°C		—	+80	—
Temperature, max. hot air		°C		—	—	—

SQ-PU, SQ-SIL/EPDM, FPM also with FDA permission available.

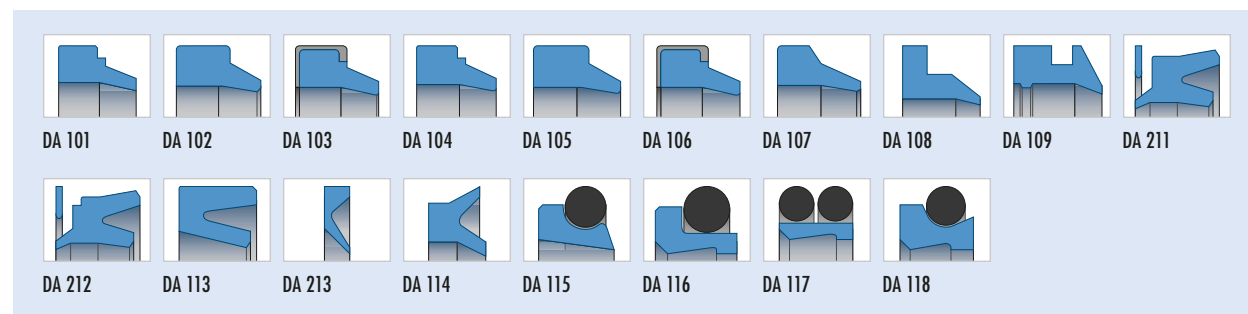
All test results are measured from test specimen and cannot be transferred to seal applications.

Merkel Xpress Materials Guide

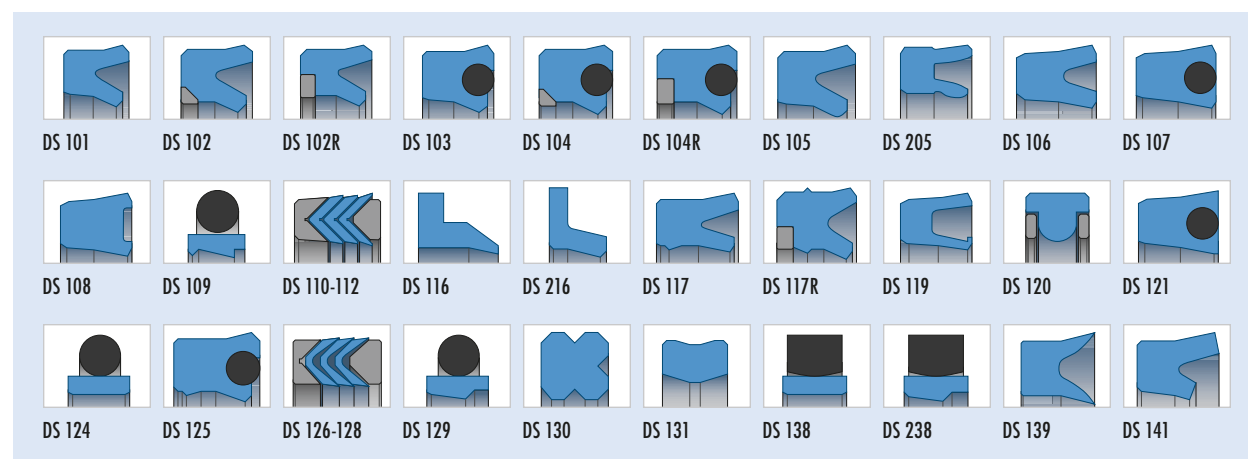
Material Type								
H-NBR	FKN	EPDM	Silicone	PTFE virgin/white	PTFE glass/MoS ₂	PTFE bronze	FQN polyacetal	PA polyamide
green	brown	black	blue	white	gray	bronze	white/black	natural/black
1.32	2.51	1.23	1.60	2.16	2.30	3.20	1.41	1.13
85	85	85	85	—	—	—	—	—
—	—	—	—	55	63	69	85	85
9.7	10	9.2	—	—	—	—	—	—
19.5	14	14	7.5	27	15	14	70	80
245	200	130	150	350	280	170	40	40
—	—	—	—	—	—	—	—	—
6	6	9	12	—	—	—	—	—
30	7	34	35	—	—	—	—	—
110	200	108	—	—	—	—	—	—
—	—	—	—	540	1320	1375	3000	3000
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	24	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
21.1	5	18	—	—	—	—	—	—
27.7	6	20	—	—	—	—	—	—
—	7.7	—	34	—	—	—	—	—
−20	−20	−45	−60	−200	−200	−200	−45	−40
+150	+220	+130	+200	+260	+260	+260	+100	+110
+130	+150	+150	+120	—	—	—	—	—
+180 short	+300 short	+180 short	+300 short	—	—	—	—	—

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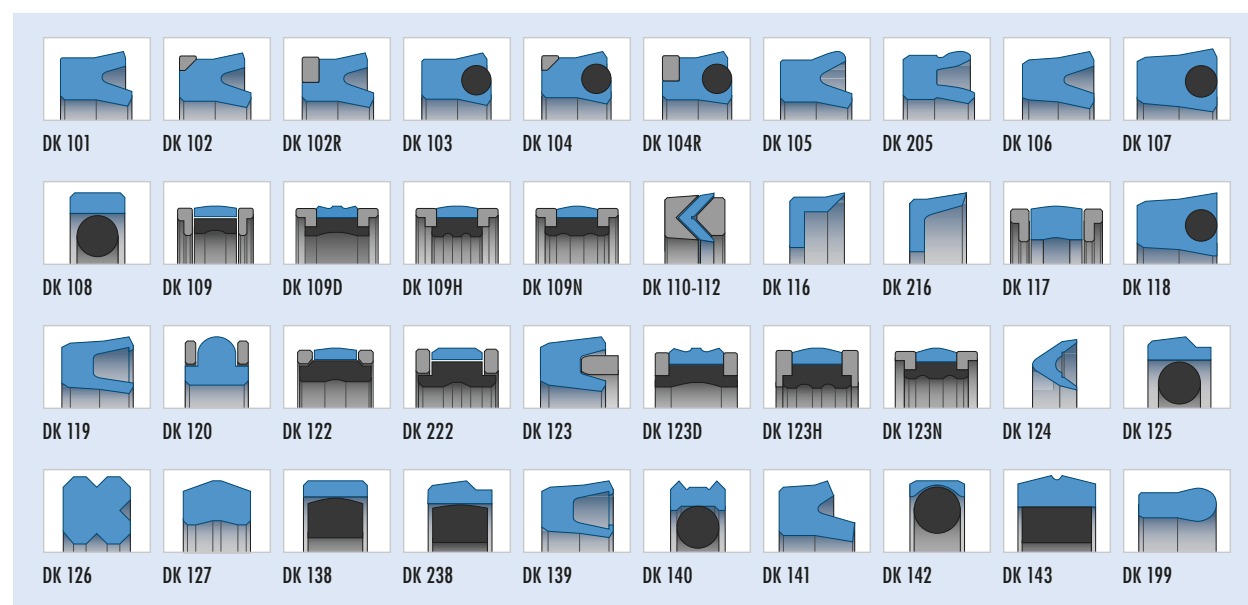
Dirt Wipers Profiles (DA)



Rod Seals Profiles (DS)

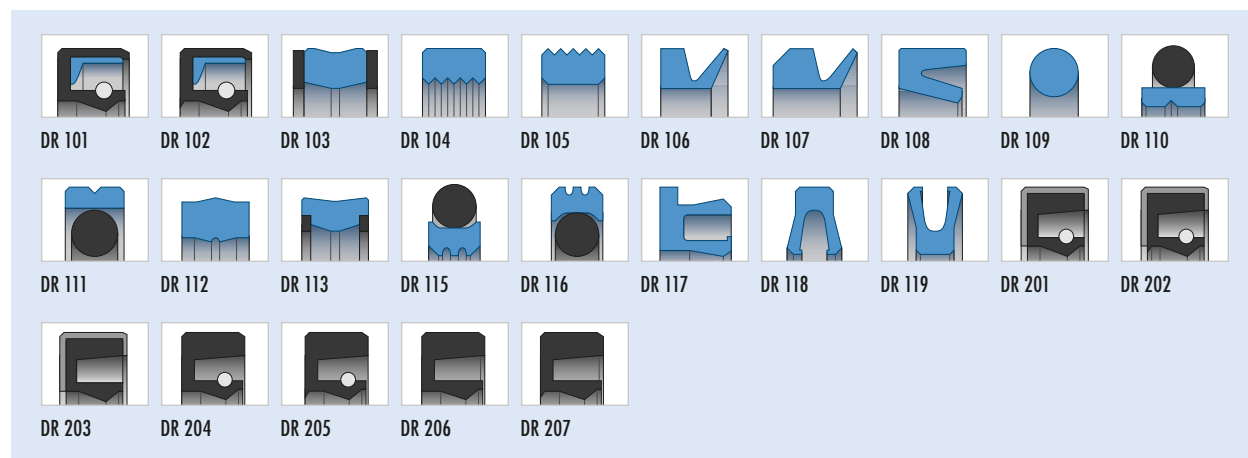


Piston Seals Profiles (DK)

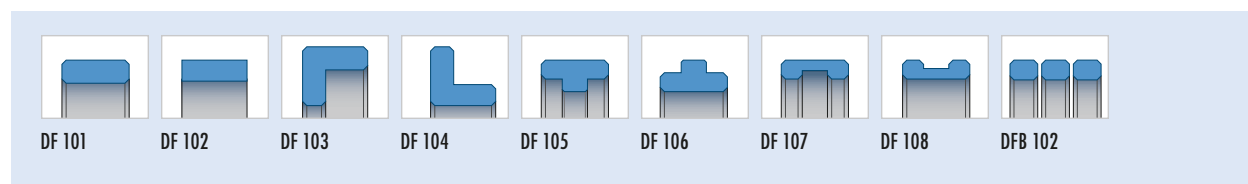


Merkel Xpress Profiles Guide

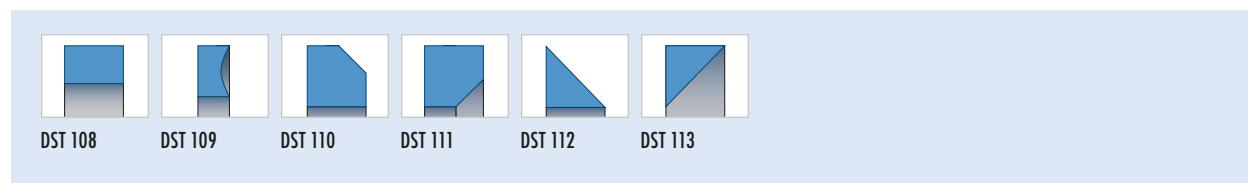
Rotary Seals Profiles (DR)



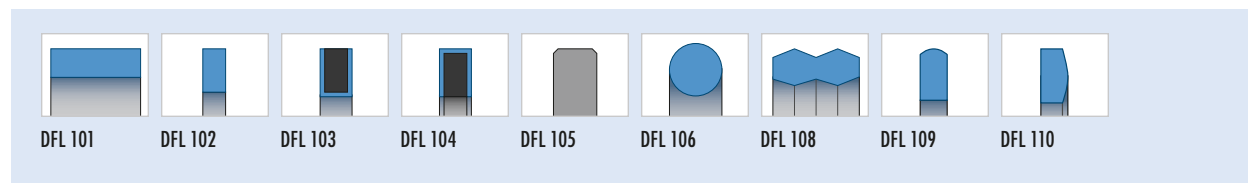
Guide Rings Profiles (DF)



Backup Rings Profiles (DST)



Gaskets Profiles (DFL)



Xpress Seal Materials

Polyurethanes

94AU925 (P100), blue
 Red HPU (P500), red
 C-HPU (P550), yellow
 HT-PU (P800), natural

Plastomers

POM (L100), black
 Nylon (L200), natural

Elastomers

85A NBR (N100), black
 85A H-NBR (N300), green
 85A FPM (F100), brown
 85A EPDM (E100), black
 85A Silicone (S100), natural

Fluoro-Plastic (PTFE)

PTFE Virgin (T300)
 PTFE Glass, 15% (T500)
 PTFE Bronze, 40% (T400)
 PTFE Carbon (T700)
 PTFE Glass/MoS₂ (T900)

Simrit Americas

Milan, Ohio, USA

Tel: +1 (877) 331 8427

Fax: +1 (419) 499 2068

Email: merkelpress@simrit.us

www.simrit.com

