

# SEALING SYSTEM

wipers  
rod seals  
piston seals  
rod and piston seals  
guide rings  
other

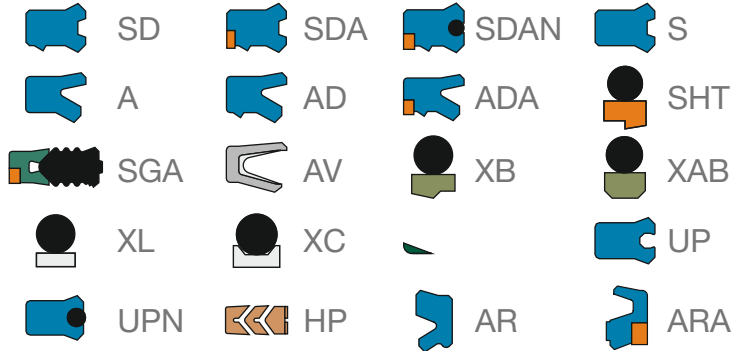


# SEALING SYSTEM

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## HYDRAULIC CYLINDER

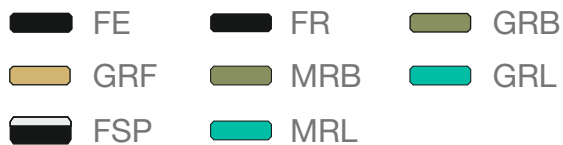
### ROD SEAL



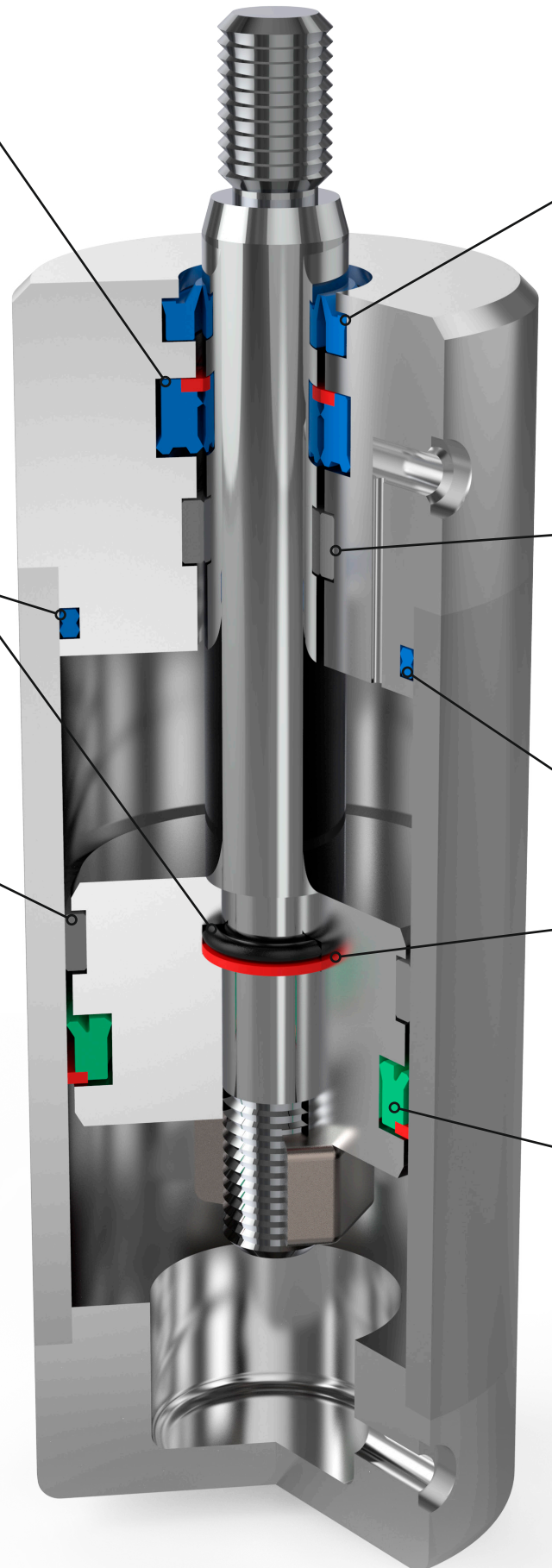
### STATIC SEAL



### PISTON GUIDE RING



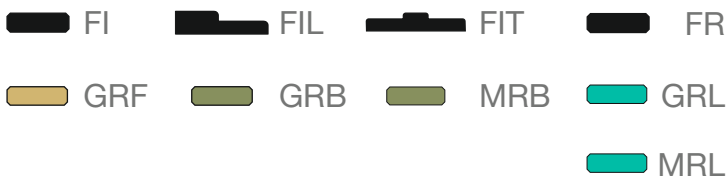
### OTHERS



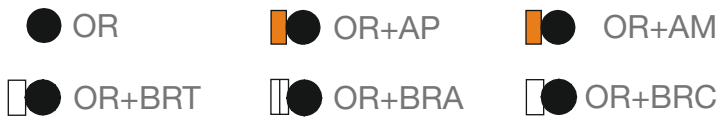
### ROD WIPER



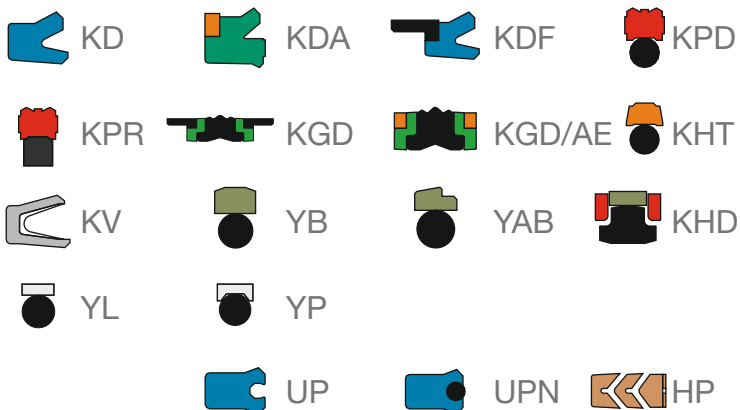
### ROD GUIDE RING



### O-RING



### PISTON SEAL

































### APPLICATION EXAMPLES BY EQUIPMENT

EXCAVATOR	MINI CONSTRUCTION EQUIP.
MINI BACK HOE	WHEEL LOADER
TRUCK CRANE	BULLDOZER
DUMP TRUCK	WHEEL CRANE
FORKLIFT	TELESCOPIC CYLINDER
GARBAGE TRUCK	COMBINE
FARM TRACTOR	PRESSING MACHINE
ROBOT	LIFT
INJECTION MOLDING MACHINE	MULTI STORIES PARKING
HYDRAULIC ELEVATOR	PLUNGER PUMP

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## Wipers

<b>SA</b>		<b>SAF</b>		<b>SAP</b>		<b>SAG</b>	
	0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		4.0 m/s 12 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F
-	TPU	-	TPU	-	TPE	-	TPU
<b>SAC</b>		<b>SAB</b>		<b>SAD</b>			
	0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F
-	TPU	15 bar 218 psi	TPU	-	TPU		TPU
<b>SAF/GM</b>		<b>SMI</b>		<b>SMA</b>		<b>SAA</b>	
	0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		2.0 m/s 6 ft/sec -30°C ÷ 100°C -22°F ÷ 212°F		2.0 m/s 6 ft/sec -30°C ÷ 100°C -22°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F
-	TPU + Metal	-	NBR + Metal	-	NBR + Metal	-	TPU
<b>S1A</b>		<b>S2A</b>		<b>SABL</b>			
	15 m/s 45 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		15 m/s 45 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		0.8 m/s 2.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.8 m/s 2.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F
-	PTFE + NBR	-	PTFE + NBR	-	TPU		TPU
							
	0.8 m/s 2.5 ft/sec -40°C ÷ 120°C -40°F ÷ 248°F						
-	TPU + FKM						

## Road and piston seals

<b>UP</b>		<b>UPN</b>		<b>OP</b>		<b>HP</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		Depending on working conditions -30°C ÷ +80°C -22°F ÷ 176°F		0.5 m/s 1.5 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F
400 bar 5800 psi	TPU	400 bar 5800 psi	TPU + NBR	500 bar 7500 psi	TPU	400 bar 5800 psi	NBR + Fabric

## Rod Seals

<b>SD</b>		<b>SDA</b>		<b>SDAN</b>		<b>S</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F
400 bar 5800 psi	TPU	700 bar 10000 psi	TPU + POM	700 bar 10000 psi	TPU + NBR + POM	400 bar 5800 psi	TPU
<b>A</b>		<b>AD</b>		<b>ADA</b>		<b>SHT</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s (<100°C) 1.5 ft/sec 1.0 m/s (<80°C) 3 ft/sec -30°C ÷ +100°C -22°F ÷ 212°F
400 bar 5800 psi	TPU	400 bar 5800 psi	TPU	700 bar 10000 psi	TPU + POM	500 bar 7500 psi	TPU + NBR
<b>SGA</b>		<b>AV</b>		<b>XB</b>		<b>XAB</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ +110°C -40°F ÷ 230°F		15 m/s 45 ft/sec -200°C ÷ 200°C -328°F ÷ 392°F		15 m/s 45 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		15 m/s 45 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F
700 bar 10000 psi	NBR + POM + TPE	300 bar 4300 psi	PTFE + INOX	600 bar 8700 psi	PTFE + NBR	600 bar 8700 psi	PTFE + NBR
<b>XRB</b>		<b>XL</b>		<b>XC</b>			
	1 m/s 3 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		2 m/s 6 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		4 m/s 12 ft/sec -30°C ÷ +130°C -22°F ÷ +266°F		0.5 m/s 1.5 ft/sec -40°C ÷ +110°C -40°F ÷ 230°F
400 bar 5800 psi	PTFE + NBR	160 bar 2300 psi	PTFE + NBR	210 bar 3000 psi	PTFE + NBR		400 bar 5800 psi
<b>AR</b>		<b>ARA</b>					
	0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ +100°C -40°F ÷ 212°F				
250 bar 3600 psi	TPU	160 bar 2300 psi	TPU + POM				

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## Piston Seals

<b>KD</b>		<b>KDA</b>		<b>KDF</b>		<b>SP</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -30°C ÷ 110°C -22°F ÷ 230°F		0.5 m/s 1.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		- -30°C ÷ 110°C -22°F ÷ 230°F
400 bar 5800 psi	TPU	500 bar 7500 psi	TPU + POM	400 bar 5800 psi	TPU + POM	-	POM
<b>KPD</b>		<b>KPR</b>		<b>KGD</b>		<b>KGD/AE</b>	
	0.5 m/s 1.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		0.5 m/s 1.5 ft/sec -30°C ÷ 100°C -22°F ÷ 212°F		0.5 m/s 1.5 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		0.5 m/s 1.5 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F
400 bar 5800 psi	TPU + NBR	400 bar 5800 psi	TPU + NBR	400 bar 5800 psi	NBR + POM + TPE	400 bar 5800 psi	NBR + POM + TPE
<b>KHT</b>		<b>KV</b>		<b>YB</b>		<b>YAB</b>	
	0.5 m/s (<100°C) 1.5 ft/sec 1.0 m/s (<80°C) 3 ft/sec -30°C ÷ 100°C -22°F ÷ 212°F		15 m/s 45 ft/sec -200°C ÷ 200°C -328°F ÷ 392°F		15 m/s 45 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F		15 m/s 45 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F
500 bar 7500 psi	TPE + NBR	300 bar 4300 psi	PTFE + INOX	600 bar 8700 psi	PTFE + NBR	600 bar 8700 psi	PTFE + NBR
<b>KHD</b>		<b>YL</b>		<b>YP</b>		<b>YRB</b>	
	1.5 m/s 4.5 ft/sec -40°C ÷ 120°C -40°F ÷ 248°F		2 m/s 6 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F		4.0 m/s 12 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F		1.0 m/s 3 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F
500 bar 7500 psi	PTFE + NBR + POM	160 bar 2300 psi	PTFE + NBR	210 bar 3000 psi	PTFE + NBR	400 bar 5800 psi	PTFE + NBR
	0.5 m/s 1.5 ft/sec -40°C ÷ 100°C -40°F ÷ 212°F		2 m/s 6 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F		15 m/s 45 ft/sec -30°C ÷ 130°C -22°F ÷ 266°F		
500 bar 7500 psi	TPU + NBR + POM	500 bar 7500 psi	PTFE + NBR	600 bar 8700 psi	PTFE + NBR		

## Guide rings

<b>FI</b>		<b>FIL</b>		<b>FIT</b>		<b>FE</b>	
	1 m/s 3 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		1 m/s 3 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		1 m/s 3 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		1 m/s 3 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F
-	POM	-	POM	-	POM	-	POM
<b>FR</b>		<b>GRF</b>		<b>GRB</b>		<b>MRB</b>	
	1 m/s 3 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		1 m/s 3 ft/sec -40°C ÷ 120°C -40°F ÷ 248°F		5 m/s 15 ft/sec -50°C ÷ 200°C -50°F ÷ 392°F		5 m/s 15 ft/sec -50°C ÷ 200°C -50°F ÷ 392°F
-	POM	-	Phenolic	-	PTFE	-	PTFE
<b>FSP</b>		<b>GRL</b>		<b>MRL</b>			
	0.8 m/s 2.5 ft/sec -40°C ÷ 110°C -40°F ÷ 230°F		1 m/s 3 ft/sec -40°C ÷ 130°C -40°F ÷ 266°F		1 m/s 3 ft/sec -40°C ÷ 130°C -40°F ÷ 266°F		
-	POM	-	Polyester	-	Polyester		

## Others

<b>OR</b>		<b>AP</b>		<b>AM</b>		<b>BRC</b>	
	Depending on working conditions -30°C ÷ 110°C -22°F ÷ 230°F		0.8 m/s 2.5 ft/sec -40°C ÷ 140°C -40°F ÷ 284°F		0.8 m/s 2.5 ft/sec -40°C ÷ 140°C -40°F ÷ 284°F		2 m/s 6 ft/sec -200°C ÷ 200°C -328°F ÷ 392°F
Depending on working conditions	NBR	Depending on working conditions	TPE	Depending on working conditions	TPE	500 bar 7500 psi	PTFE
<b>BRT</b>		<b>BRA</b>		<b>PFS</b>		<b>DV</b>	
	2 m/s 6 ft/sec -200°C ÷ 200°C -328°F ÷ 392°F		2 m/s 6 ft/sec -200°C ÷ 200°C -328°F ÷ 392°F		- -40°C ÷ 100°C -40°F ÷ 212°F		- -40°C ÷ 100°C -40°F ÷ 212°F
400 bar 5800 psi	PTFE	400 bar 5800 psi	PTFE	500 bar 7500 psi	TPU	-	TPU



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