



# SCENIC® MECHANICAL SEAL SELECTION GUIDELINES



	Type	Arrangement	Design Standard	Operating Limits			Special Technology			Size Standard				Accessories	Applications	Remarks
				Pressure	Temperature	Speed	Isolated Springs	VOC Controllable	Main Functions	Inch Std.	Big/Taper	Metric (mm)	Cust. Design			
DIN/ANSI Cartridge Seals	CARLIFE® 99	Single	DIN/ANSI/ISO	Vac.~ 22.6 bar (327 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■		Multi-function/ High temp.	●	●	●	●	-	• General industrial applications: chemical & water pumps; small to large horizontal, vertical, and vacuum pumps. • Special processes which are highly acidic, alkaline, corrosive, and abrasive. • Widely used in renewable energy industries such as alcohol, bio-diesel, and corn processing.	Requires Plan 21 if temperature is > 80°C for water.
	CARLIFE® 99PR™	Single	DIN/ANSI	22.6 bar (327 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■		High temp.	●	●	●	●	WCHE	• Chemical & water pumps; Horizontal, vertical, and large pumps. • Processes with high temperature. • To apply with Plan 21/23.	Throat bushings are required inside the seal chamber.
	EZ-46™	Single	DIN/ANSI/ISO	11.8 bar (170.7psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)			Light solids/ High temp.	●	●	●	●	-	• Rotating equipments with severe shaft end-play or vibration such as pumps, chemical process pumps, and sewage pumps etc. • Processes with low impurity, high viscosity, prone to crystallizing & clogging, and high temperature.	When the operating temperature is > 100 °C (212 °F), use perfluoroelastomer o-rings for secondary seal.
	LD 368™	Dual/ Face-to-face	DIN/ANSI/ISO	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)			High temp.	●	●	●	●	SP-3GL	• Processes with normal condition. • Processes that will not produce impurity and crystalline. • Rotating equipments with minimal vibration and without shaft run-out. • Applicable to Plan 52/53.	
	LD 388™	Dual/Tandem	DIN/ANSI/ISO API 682 3CW-FB	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High press./ High temp.	●	●	●	●	SP-3GL SP-5GL	• Chemical and large industrial pumps. • Processes with highly dangerous conditions such as acidic, alkaline, corrosive, volatile, toxic, and VOC intolerance. • Applicable to Plan 52/53/54.	
	LD 389™	Dual/Tandem	DIN/ANSI/ISO API 682 3CW-FB	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High press. / High temp.	●	●	●	●	SP-3GL SP-5GL	• Features, design structures, and applications are similar to LD388. • The extended length of LD389 for the seal chamber is shorter than that of LD388; Ideal for seal chamber with limited space. • Applicable to Plan 52/53/54.	LD389 is the advance version of LD388. At the same time, their components are interchangeable with the CARLIFE Family's parts.
	CARLIFE® 299™	Dual/ Back to back	DIN/ANSI	Vac.~24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High temp.	●	●	●	●	SP-3GL	• Rotating equipments like mixers with shaft end-play and run-out problem. • Processes with VOC intolerance and high temperature. • Applicable to Plan 52.	
	CARLIFE® 399™	Dual/Tandem	DIN/ANSI API 682 3CW-FB	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	7000 fpm (35 m/s)	■	★	High press./ High temp.	●	●	●	●	SP-3GL SP-5GL	• Chemical and large industrial pumps, mixers, and agitators etc. • Process fluids with high pressure and highly dangerous conditions such as toxic, corrosive, and volatile etc; Prevents VOC leakage effectively. • Applicable to Plan 52/53/54	
API 682 Cartridge Seals	CARLIFE® 399Q™	Dual/Tandem	DIN/ANSI API 682 3CW-FB	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	7000 fpm (35 m/s)	■	★	Clean seal / High press./ High temp.	●	●	●	●	SP-3GL SP-5GL	• Features, design structures, and applications are similar to LD399. • Connected with external steam to foil and remove building up of solid particles accumulated beneath the seal faces. • Applicable to Plan 52/53/54.	CARLIFE 399 is equipped with Quench Port.
	APD® 155™	Single	API 682 Type A 1CW-FX	49.1 bar (712 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)			High press. / High temp.	●	●	●	●	WCHE	• When the operating temperature is higher than 100°C, use Plan 21. • High pressure and VOC intolerance process pumps. Meets API682 specifications.	Engineered seal design if operating pressure is > 24.5 bar.
	APD® 355™	Dual/Tandem	API 682 Type A 2CW-CW/3CW-FB	49.1 bar (712 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		★		High press. / High temp.	●	●	●	●	SP-3GL SP-5GL	• Mainly used in high pressure and VOC intolerance process pumps. • Applicable to Plan 52/53/54. • Meets API682 specifications. Distinctively for chemical and fuel pumps used refinery industry.	Engineered seal design if operating pressure is > 24.5 bar.
	APD® 302™	Dual/ Back to back	API 682 Type A 3CW-BB	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	High press./ High temp./ Light solids	●	●	●	●	SP-3GL SP-5GL	• Large and heavy oil process pumps for refinery industries. • Application to Plan 52/53/54. • Process fluid with low solid particle content, prone to crystallization, and VOC intolerance.	Apply Plan 53 for pressurization.
	APD® 302T™	Dual/ Back to back	API 682 Type A 2CW-CW/3CW-BB	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	High press./ High temp./ Light solids	●	●	●	●	SP-3GL SP-5GL	• Large and heavy oil process pumps for refinery industries. • Application to Plan 52/53/54. • Process fluid with low solid particle content, prone to crystallization, and VOC intolerance.	Apply Plan 53 for pressurization.
APD® 302SD/TSD™	Dual/ Back to back	API 682 Type A 2CW-CW/3CW-BB	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	■		★	High Temp./High press./ Medium solids	●	●	●	●	SP-3GL SP-5GL	• Process fluids with medium solid particles content, prone to crystallization, and VOC intolerance. • Large and heavy oil process pumps for refinery industries. • Application to Plan 52/53/54. • Max. Particle Size:6000 micron; Max. Solid by Weight: 20%.	Apply Plan 53 for pressurization.	
Metal Bellows Seals	CAR MB5™	Single	DIN/ANSI/API 682 Type B, 1CW-FX	29.4 bar (427 psig)	-60 ~ 230 °C (-76 ~ 446 °F)	5000 fpm (25 m/s)			High press. / High temp.	●	●	●	●	WCHE	• Processes with lower specific gravity, low impurity particle content, and minor problem with crystallization. • Specifically designed for high temperature processes. • Also applicable to Plan 21/23.	Switch to double-ply bellows design when the operating pressure is > 14.7 bar.
	CAR 600™	Single	API 682 Type C 1CW-FX	44.1 bar (640 psig)	-75 ~ 426 °C (-103 ~ 799 °F)				High press. / High temp.	●	●	●	●	WCHE	• Processes with lower specific gravity, low impurity particle content, and minor problem with crystallization. • Specifically designed for high temperature processes. • Applicable to Plan 21/23.	Switch to double-ply bellows design when the operating pressure is > 14.7 bar.
	APB™	Dual/Tandem	API 682 Type B 2CW-CW	44.1 bar (640 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		★		High press. / High temp.	●	●	●	●	SP-3GL SP-5GL	• Processes with lower specific gravity, low impurity particle content, and slight problem with crystallization. • Specifically designed for high temperature processes. • Applicable to Plan 52.	Switch to double-ply bellows design when the operating pressure is > 14.7 bar.
	APBG™	Dual/Tandem	API 682 Type C 2CW-CW	44.1 bar (640 psig)	-40 ~ 426 °C (-40 ~ 799 °F)		★		High press. / High temp.	●	●	●	●	SP-3GL SP-5GL	• Processes with lower specific gravity, low impurity particle content, and slight problem with crystallization. • Specifically designed for high temperature processes such as kerosene. • Applicable to Plan 52.	Switch to double-ply bellows design when the operating pressure is > 14.7 bar.
	BL 138™	Dual/Tandem	DIN/ANSI	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		★		High press. / High temp.	●	●	●	●	SP-3GL	• Processes with lower specific gravity, low impurity particle content, slight problem with crystallization, and prone to vaporization with occasional vibration such as styrene (SM). • Applicable to Plan 52.	Only use metal bellows design for internal seal. Switch to double-ply bellows design when the pressure is > 14.7 bar.
	BT 155™	Dual/Tandem	DIN/ANSI/API 682 Type B, 2CW-CW	44.1 bar (640 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		★		High press. / High temp.	●	●	●	●	SP-3GL SP-5GL	• Processes with lower specific gravity, low impurity particle content, slight problem with crystallization, and prone to vaporization with occasional vibration in light hydrocarbon services such as olefin, ethylene, butadiene (BD) and butane. • Applicable to Plan 52.	Only use metal bellows design for internal seal. Switch to double-ply bellows design when the pressure is > 14.7 bar.
Slurry Seals	CARLIFE® 99SS™	Single	DIN/ANSI	17.7 bar (256 psig)	-40 ~ 180 °C (-40 ~ 356 °F)	5000 fpm (25 m/s)	■		Medium solids	●	●	●	●	-	• Processes with medium solid particle content such as slurry, impurity, crystalline, fiber, and etc. • Max. Particle Size : 6000 micron; Max. Solid by Weight: 40%. • FGD desulphurization process of power plants.	
	CARLIFE® 99SSQ™	Single	DIN/ANSI	17.7 bar (256 psig)	-40 ~ 180 °C (-40 ~ 356 °F)		■		Medium solids/ Clean seal/Const. temp.	●	●	●	●	-	• Features, design structures, and applications are similar to CARLIFE 99SS. • Processes with low temperature, medium particle content, and environment prone to icing or crystallizing, require external steam to clean or insulate the mechanical seal. • Max. Particle Size : 6000 micron; Max. Solid by Weight: 40%	CARLIFE 99SS is equipped with Quench and Drain Ports.
	CARLIFE® 99SSQD™	Single	DIN/ANSI	17.7 bar (256 psig)	-40 ~ 135 °C (-40 ~ 275 °F)		■		Dry Running/Const. temp./ Medium solids / Lubrication/Cooling	●	●	●	●	ALD	• Features, design structures, and application are similar to CARLIFE 99SSQ. • Processes require cooling or insulating; Can act as low pressure dual cartridge seal; and may operate as dry running seal. • Max.Particle Size : 6000 micron; Max. Solid by Weight: 40%	CARLIFE 99SS is equipped with Quench and Drain Ports.
	CARLIFE® 399SS™	Dual/Tandem	DIN/ANSI	17.7 bar (256 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	Heavy solids/ High temp.	●	●	●	●	SP-3GL	• Features, design structures, and applications are similar to CARLIFE 99SS. • Processes with heavy solid particle content such as slurry, impurity, crystalline, fiber, and etc. • Max. Particle Size:10000 micron; Max. Solid by Weight: 60%. • Applicable to Plan 52.	Engineered seal design if Plan 53/54 is adopted.
	CARLIFE® 399SSQ™	Dual/Tandem	DIN/ANSI	17.7 bar (256 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	Heavy solids/High temp./Clean seal	●	●	●	●	SP-3GL	• Features, design structures, and applications are similar to CARLIFE 399SS. • Processes with heavy particle content; Require external steam connection to clean the seal faces. • Max. Particle Size:10000 micron; Max. Solid by Weight: 60%. • Applicable to Plan 52.	Engineered seal design if Plan 53/54 is adopted. CARLIFE 399SS is equipped with Quench Port.
	LD 388S™	Dual/Tandem	DIN/ANSI/ISO/ API 682 3CW-FB	24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	High press./High temp./ Medium solids	●	●	●	●	SP-3GL SP-5GL	• Processes with medium solid particle content such as slurry, impurity, crystalline, fiber, and etc. • Max. Particle Size:10000 micron; Max. Solid by Weight: 60%. • Applicable to Plan 52/53. • Features, design structures, and applications are similar to LD 388.	Require additional special design if Plan 53 is adopted. Engineered seal design, if Plan 53 is adopted.
Gas Seals	GS 300™	Single	DIN/ANSI/ ISO/API 682	19.7 bar (285 psig)	-40 ~ 250 °C (-40 ~ 482 °F)	10000 fpm (50 m/s)	■		High speed / High temp./ Dry Running	●	●	●	●	GSP	• High purity process fluids with dry running requirement, without solid particle and VOC condition such as food, pharmaceutical, fermentation, pure chemical, and etc. • Rotating equipments such as compressors, blowers, mixers, reactor tanks, and etc.	Operating pressures are: 19.6bar (284.5 psig) for internally mounted seal, and 0.9 bar (14.2psig) for externally mounted seal.
	GS 2300™	Dual/ Back to back	DIN/ANSI/ISO/ API 682 3NC-BB	19.7 bar (285 psig)	-40 ~ 250 °C (-40 ~ 482 °F)		■	★	High speed / High temp./Dry Running	●	●	●	●	GSP	• Rotating equipments such as compressors, blowers, mixers, reactor tanks, and etc. • High purity process fluids with dry running requirement, volatile, without solid particle, and with VOC condition such as food, pharmaceutical, fermentation, pure chemical, and etc. • Applicable to Plan 74.	Barrier gas pressure must be 2-4 bar (29-58 psig) greater than the operating pressure.

	Type	Arrangement	Design Standard	Operating Limits			Special Technology			Size Standard			Accessories	Applications	Remarks	
				Pressure	Temperature	Speed	Isolated Springs	VOC Controllable	Main Functions	Inch Std.	Big/Taper	Metric (mm)				Cust. Design
Mixer/Agitator Seals	MGS <sup>®</sup> 1000 <sup>™</sup> (MGS 1000 <sup>™</sup> )	Single	—	Vac.~ 3 bar (42.7 psig)	-40 ~ 120 °C (-40 ~ 248 °F)	1000 fpm (5 m/s)	■		Dry Running/ Lubrication/Cooling			●	●	ALD	• Rotating equipments like mixers with low speed, low pressure, severe shaft run-out and vibration, vacuum, and etc. • Specially designed for high purity processes without VOC condition such as food, pharmaceutical, fermentation, chemical reaction, and etc. • Applicable as dry running seal.	
	MGS <sup>®</sup> 1001 <sup>™</sup> (MGS 1001 <sup>™</sup> )	Single	—	Vac.~ 3 bar (42.7 psig)	-40 ~ 120 °C (-40 ~ 248 °F)	1000 fpm (5 m/s)	■		Dry Running/Cooling/ Support /Lubrication			●	●	ALD	• Features, design structures, and applications are similar to MGS1000. • Applicable as dry running seal. • Rotating equipments with severe shaft run-out and vibration; Require additional support.	MGS 1000 with bearing.
	MGS <sup>®</sup> 2000 <sup>™</sup> (MGS 2000 <sup>™</sup> )	Dual/ Back-to-back	—	Vac ~ 24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High temp.			●	●	SP-3GL	• Rotating equipments such as large mixers or reactor tanks with severe shaft run-out, vibration, vacuum, and etc. • High purity process fluids such as food, pharmaceutical, fermentation, chemical reaction, and etc. • Applicable to Plan 52/53/54.	Requires cooling jacket for temperature > 120 °C. Requires external flushing during high speed.
	MGS <sup>®</sup> 2001 <sup>™</sup> (MGS 2001 <sup>™</sup> )	Dual/ Back-to-back	—	Vac ~ 24.5 bar (355.6 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High temp./ Support			●	●	SP-3GL	• Features, design structures, and application are similar to MGS2000. • Rotating equipments with severe shaft run-out and vibration; Require additional support. • Applicable to Plan 52/53/54.	MGS 2000 with bearing. Requires external flushing during high speed.
	MGS <sup>®</sup> D <sup>™</sup> (MGS D <sup>™</sup> )	Dual/ Back-to-back	DIN 28138	Vac.~ 44.1 bar (640 psig)	-40 ~ 120 °C (-40 ~ 482 °F)	5000 fpm (25 m/s)	■	★	High pressure			●		SP-3GL	• Rotating equipments like mixers with shaft run-out problem, high temperature, and high speed rotor. • Processes with high impurity, high viscosity, and prone to crystallization. • Applicable to Plan 52/53/54.	Engineered seal design if operating pressure is > 24.5 bar.
	MGS <sup>®</sup> DC <sup>™</sup> (MGS DC <sup>™</sup> )	Dual/ Back-to-back	DIN 28138	Vac.~ 44.1 bar (640 psig)	-40 ~ 250 °C (-40 ~ 482 °F)	5000 fpm (25 m/s)	■	★	Cooling / Hightemp. /High pressure			●		SP-3GL	• Features, design structures, and applications are similar to MGS D. • Ideal for processes with high temperature; Require cooling. • Applicable to Plan 52/53/54.	MGS D is equipped with cooling jacket. Engineered seal design, if operating pressure is > 24.5 bar.
	MGS <sup>®</sup> DB <sup>™</sup> (MGS DB <sup>™</sup> )	Dual/ Back-to-back	DIN 28138	Vac.~ 44.1 bar (640 psig)	-40 ~ 120 °C (-40 ~ 482 °F)	5000 fpm (25 m/s)	■	★	High pressure/ Support			●		SP-3GL	• Features, design structures, and applications are similar to MGS D. • Rotating equipments with severe shaft run-out and vibration; Require additional support. • Applicable to Plan 52/53/54.	MGS D is equipped with bearing. Engineered seal design, if operating pressure is > 24.5 bar.
MGS <sup>®</sup> DBC <sup>™</sup> (MGS DBC <sup>™</sup> )	Dual/ Back-to-back	DIN 28138	Vac.~ 44.1 bar (640 psig)	-40 ~ 250 °C (-40 ~ 482 °F)	5000 fpm (25 m/s)	■	★	Cooling/Support/ High temp./High press.			●		SP-3GL	• Features, design structures, and applications are similar to MGS DB and MGS DC. • Ideal for processes with high temperature; Require cooling. • Applicable to Plan 52/53/54. • Rotary equipments with severe shaft run-out and vibration; Require additional support.	MGS D is equipped with bearing and cooling jacket. Engineered seal design, if operating pressure is > 24.5 bar.	
ODM Seals	APD <sup>®</sup> 302VK <sup>™</sup> (VK 302 <sup>™</sup> )	Dual/ Back-to-back	API 682 Type A 3CW-BB	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)	5000 fpm (25 m/s)	■	★	High Pressure/High temp./High viscosity			●	●	SP-3GL SP-5GL	• Features, design structures, and applications are similar to APD 302T. • Used specifically for VIKING <sup>®</sup> 's viscous gear and screw pumps, API heavy delivery pumps and etc. • Applicable to Plan 52/53/54.	Adopt narrow seal face design.
	APD <sup>®</sup> 302WL <sup>™</sup>	Dual/ Back-to-back	API 682 Type A 3CW-BB	29.4 bar (427 psig)	-40 ~ 230 °C (-40 ~ 446 °F)		■	★	High Pressure/ High temp.			●	●	SP-3GL SP-5GL	• Features, design structures, and applications are similar to APD 302T. • Used specifically for Allweiler <sup>®</sup> 's AE/AED series pumps. • Applicable to Plan 52/53/54.	Gland without slot Design.
	CAR FBI <sup>™</sup>	One stage	—	< 1 bar (< 14.5 psig)	0 ~ 400 °C (32 ~ 752 °F)		■		High temp./ Low Temp.			●		GSP	• Low speed rotating equipments like mixers, powder delivery machines, dryers, granulators, grinders, turning valves, and etc. • High speed rotating equipments like blowers, centrifuges, and etc. • Low pressure fluid or powder delivery processes used in chemical, pulp and paper, semi-conductor, and etc.	
	CAR FBII <sup>™</sup>	Two stages	—	1.47 bar (21.34 psig)	0 ~ 400 °C (32 ~ 752 °F)		■	★	High temp./ Low Temp.			●		GSP	• High speed rotating equipments like blowers, centrifuges, and etc. • Low speed rotating equipments like mixers, powder delivery machines, dryers, granulators, grinders, turning valves, and etc. • Low pressure and hazardous processes such as volatile, corrosive, and toxic.	
WG <sup>™</sup> Series	Single	—	24.5 bar (355.6 psig)	-40 ~ 204 °C (-40 ~ 400 °F)	12000 rpm	■		High Speed / High Pressure			●		—	• High speed and high pressure rotating equipments like gear pumps, API pumps, and compressors. • Used in iron and steel, mechanical, chemical, and petrochemical industries.	May use gear box to regulate the operating pressure at 24.5 bar.	
Devices	AB <sup>™</sup> [Gasbag]	—	—	1.96 bar (28.5 psig)	-10 ~ 150 °C (14 ~ 302 °F)	—		Provisional guard seal			●		—	• Use AB airbag principle to block the process fluid during maintenance of the cartridge seal. • Can be integrated and installed at the end (toward the process side) of the cartridge seal as a unit.	Inflate AB to block the leakage of the process during maintenance of the seal. After maintenance, deflate AB to activate the device.	
	Q <sup>™</sup> [Quench Port]	—	API 682	—	—	—		Clean Seal/ Const. temp./ Slurry/ Solids			●		—	• Requires external steam to flush out solid particles produced in the mechanical seal. • Used specifically in processes with impurity and low temperature; environmentally prone to icing or insulating, crystallizing, and etc.	Quench ports are added into the cartridge seal design.	
	QD <sup>™</sup> [Quench Port+Drain Port]	—	API 682	0.98 bar (14.2 psig)	-40 ~ 135 °C (-40 ~ 275 °F)	5000 fpm (25 m/s)			Dry Running/ Const. temp./ Lubrication/ Cooling/ Solids			●	ALD	• Processes require cooling or insulating. • Dry running seal applications. • Can be used as double cartridge seal but pressurization in the seal must not exceed 0.98bar (14.2psig). • Used specifically in processes with impurity, prone to crystallization, solid particles, and etc.	Quench and Drain ports are added into the cartridge seal design.	
	C <sup>™</sup> [Cooling Jacket]	—	—	—	—	—		Cooling			●		—	• Installed on top of the high temperature seal that requires cooling.	Cooling jackets are added into the cartridge seal design.	
Accessories	ALD 125/250 <sup>™</sup> [Auto-Lubrication Device]	—	Ex ia IIB T4	4.9 bar (71.1 psig)	-20 ~ 60 °C (-4 ~ 140 °F)	—		Lubrication		Standard specification			—	• Fixed Lubrication supply for special processes such as lubrication in high altitude, dangerous operating environment, and underwater etc. • All sorts of operations where occasional or continuous greasing are required such as roll and ball bearings, and etc. • Dry running seal applications.	Built-in grease with the option of Multi-function/ High Load/ High temp./ Food/ High speed/ Specific for Mechanical seal.	
	SP-3GL <sup>™</sup> [3 gallon Buffer/barrier Fluid Reservoir]	—	API 682 ANSI	27.5 bar (398.3 psig)	200 °C (392 °F)	—		Lubrication/ Cooling/ Buffer/ Barrier		Standard/Optional specification			—	• Cooling and lubricating specifically for double seal. • Conform to API Plan 52/53 or ANSI Plan 7352/7353. • Processes require the prevention of VOC leakage.	Optional accessories with 6m cooling coil/ level switch/ pressure switch etc. Optional welded joint or removable flange design for under cover of reservoir.	
	SP-5GL <sup>™</sup> [5 gallon Buffer/barrier Fluid Reservoir]	—	API 682	54 bar (782.4 psig)	200 °C (392 °F)	—		Lubrication/ Cooling/ Buffer/ Barrier		Standard/Optional specification			—	• Cooling and lubricating specifically for double seal. • Conform to API Plan 52/53. • Processes require the prevention of VOC leakage, high temperature, and high heat dissipation efficiency.		
	GSP <sup>™</sup> [Gas Supply Panel]	—	API 682	—	—	—		Buffer/ Barrier		Standard/Optional specification			—	• Gas supply and adjustment specifically for gas sea and CAR FB series of blower seal. • Processes require the prevention of VOC leakage. • Applicable to Plan 72/74	Optional level switch/ pressure switch.	
	CS1 <sup>™</sup> [Cyclone Separator]	—	API 682	Max. 63 bar (913.5 psig)	125 °C (257 °F)	—		Filter		Standard specification			—	• Processes require filtering of their solid particles or impurities; where specific gravities of their solid particles or impurities are greater than the specific gravities of their fluids. • Permissible pressure range: 2~8 bar (29~116 psi). • Applicable to Plan 31/41.	Disassemble cyclone separator.	
	CS2 <sup>™</sup> [Cyclone Separator]	—	API 682	Max. 63 bar (913.5 psig)	125 °C (257 °F)	—		Filter		Standard specification			—	• Processes require filtering of their highly hardness solid particles or impurities; where specific gravities of their solid particles or impurities are greater than the specific gravities of their fluids. • Applicable to Plan 31/41. • Permissible pressure range: 2~8bar (29~116psi)	Disassemble cyclone separator. Replaceable SIC bushing as an option.	
WCHE <sup>™</sup> [Water-Cooled Heart Exchanger]	—	API 682	14.5 bar (210 psig)	95 °C (203 °F)	—		Cooling		Standard/Optional specification			—	• Use in mechanical seal Flush Plan 21/22/23/41. • Horizontal or vertical setting is applicable.	Shell : 210 psig @ 200°F Coil : 1500 psig @ 400°F		

★ VOC controllable means that the device has the effect to minimize or prevent VOC (Volatile Organic Compound) leakage from contaminating the atmosphere. ■ Isolated Springs: Separates springs from the process fluid to prevent factors such as stress, corrosion, solid particle, crystal line, and etc., the method may affect the overall structural performance of the cartridge seal and enhance seal lifetime.

- In British standard, Std./ Big/ Taper represent Standard Bore, Big Bore, and Taper Bore respectively.
- If the process pressure exceeds 15 kg/cm<sup>2</sup>G (213.4 psig) or the temperature exceeds 120 °C (248 °F), please consult SCENIC<sup>®</sup> for appropriate seal selection.
- All standard models can be custom modified according to individual process and operating parameters. Please contact SCENIC<sup>®</sup> for any special design and application.
- The products listed above are used widely in various industrial fields: such as petrochemical refinery, chemical, nuclear, pipeline delivery, renewable energy, pulp and paper, mineral, pharmaceutical, food, steel, semiconductor, electronics, biotechnology, power plant, and wastewater treatment etc.
- We strongly recommend that you consult SCENIC<sup>®</sup> with your detail information (operating conditions) to ensure proper, suitable, reliable, and safe seal model is selected for you.

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