

Seal Conversions

Mechanical Seal Conversions for Horizontal Pumping Systems (HPS) “H-Pump”



- H-Pump
- Surface Pumping System
- Horizontal Pumping System

Horizontal Pumping Systems (HPS) “H-Pump”



The need for affordable pumping systems to replace API-610 and positive displacement pumps is being met by Horizontal Pumping Systems (HPS) also referred to as H-Pumps or Surface Pumping Systems (SPS).

The pump design is modular allowing additional stages to be added as required.

HPS pumps can be used as a single unit or in series to generate the high pressure required for injection.

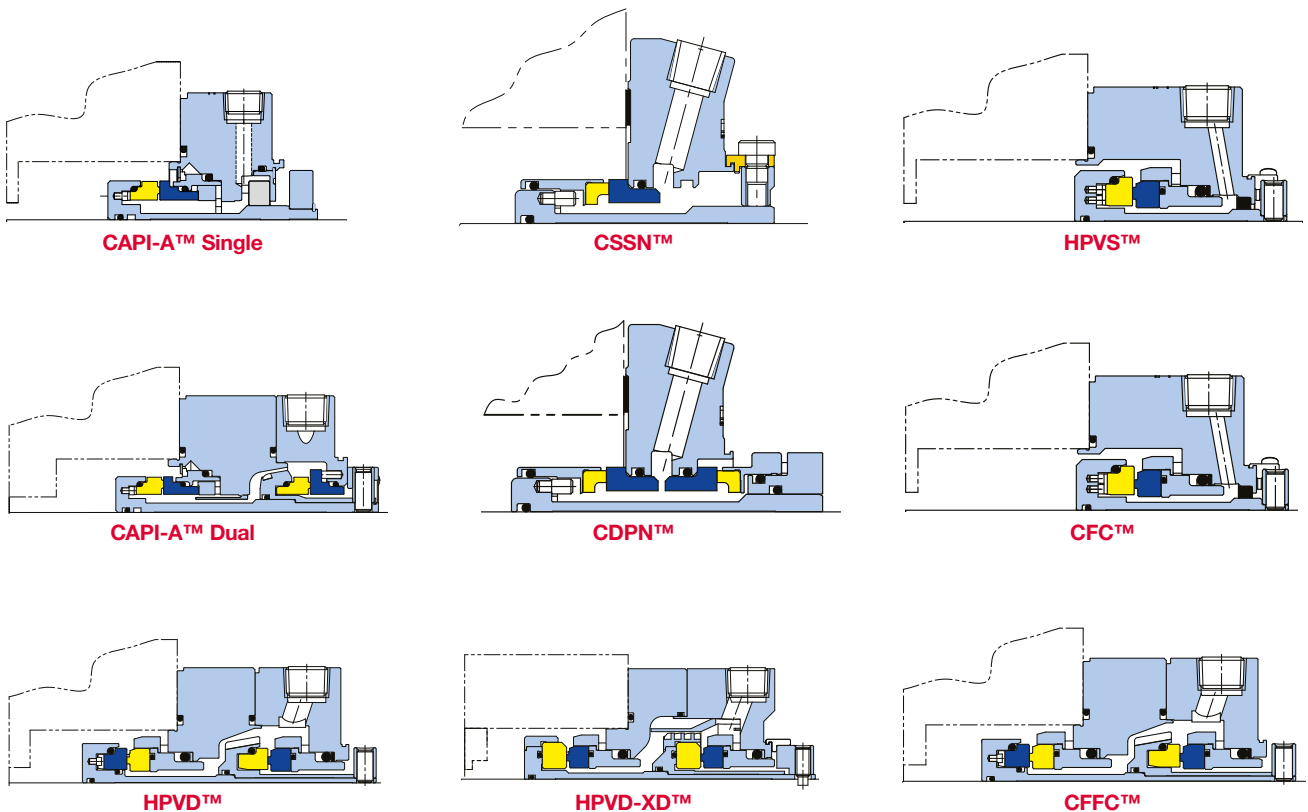
Design modularity means pumps are supplied in shorter lead-times. HPS are field repairable using service utility equipment versus large cranes. The back pull-out seal arrangement is designed for ease of maintenance and the seal is advantageously located at the suction intake (seeing lowest pressure point).

Applications

HPS pumps are used for injection pumps, booster pumps, hydraulic drive and jockey pumps in pipelines, Crude Oil Pipeline booster pumps, CO₂ Injection, NGL, Amine, Mine Dewatering, Natural Gas Liquid (NGL) Pipeline, Water Injection, Water Flood Injection, Salt Dome Leaching, Saltwater disposal, High-pressure wash for refineries, Geothermal injection, Industrial high-pressure facilities and Jet Pumping.

Typically most H-Pumps in salt water re-injection duty are supplied with a single component seal installed on the intake assembly of the thrust chamber shaft. The AESSEAL® P04U is a direct replacement and is available in Monel™ metallurgy if required.

For pumps requiring single cartridge seals, AESSEAL® offer CSSN™, CAPI-A™, CFC™, or HPVS™. Where a dual or tandem cartridge seal is required AESSEAL® offer CDPN™, CAPI-A™ dual, CFFC™ or HPVD™ depending on the pressure requirement.



Modularity:

The AESSEAL® H-Pump family of seals is designed to cover a wide range of H-Pump applications with maximized interchangeability. The conversion from a CFC™ seal to HPVS™ seal is accomplished by changing just one face component. Standard material options are shown below, anything outside of Material certification such as 3.1 or Zone-0, features, or size options that deviate from the standard offering are to be considered special and will not benefit from the cost and lead time benefits associated with a standardised range, please contact the Technical department.

Design Performance:

Mechanical Seal performance is enhanced through design. Sandy and waxy crude are major causes of mechanical seal failure during extraction and oil processing. The cause of failure is typically clogged seal springs positioned in the process media. Unfortunately, nearly all API682 mechanical seals found on the market today share this design flaw.

Most AESSEAL® API seal designs have multiple stationary mounted springs that do not contact the process fluid. This eliminates all possibility of seal face hang-up or seal failure from spring clogging, significantly increasing meantime between failure (MTBF), even with high solids content.

Piping Plans

Single Seal

01, 02, 11, 13, 14, 21, 31, 32, 61, 62, 65

Double Seal

Outer Seal: 51, 52, 53A, 53B, 53C, 54, 75, 76

Inner Seal: 01, 02, 11, 13, 14, 21, 31, 32

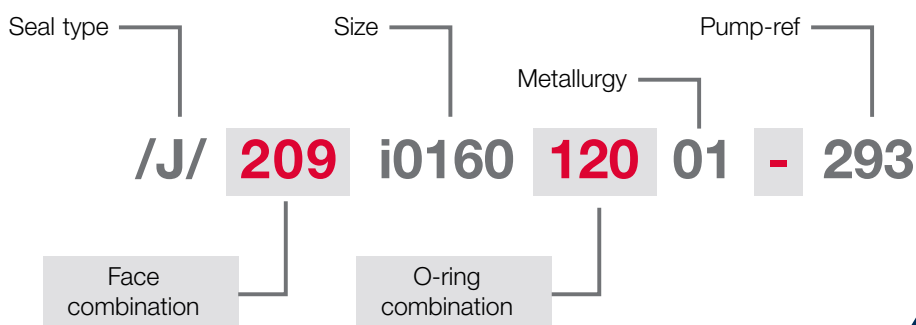
Mechanical Seal Selection

When it comes to mechanical seal selection, it is important to have the same modular flexibility in the selection of the seal as there is in the pump design. The addition of stages and the combination of 2 or more pumps in series means the seals will experience a wide range of pressures that will require engineered sealing solutions.

- 1.000" seal chamber bore minimum diameter of 3.146" and maximum bore diameter of 3.150"
- 1.500" seal chamber bore diameter minimum is 3.562" and the maximum bore diameter is 3.575"
- All seals aside from the CSSN™ and CDPN™ takes advantage of 2 off flush ports

Coding Logic

E.g. 1.500" CAPI-A™ Cba/SiC FKM

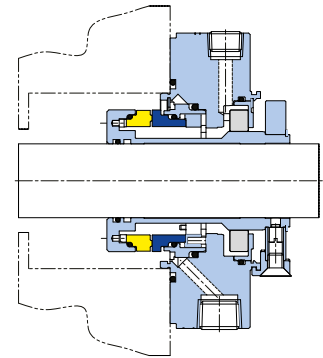


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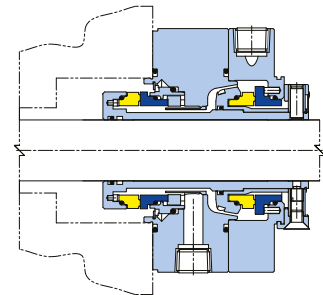
Mechanical Tables



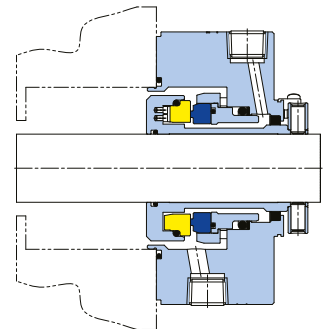
CAPI-A™ SINGLE (J/J)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC (209)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	SiC/SiC (226)	EPR (017)*		
		TFE/P (001)		
		TFE/P/FKM (003)		
		FFKMA (173)		
		FFKMA/FKM (178)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		
		AES-ELAST (179)		
		AES-ELAST/FKM (189)		



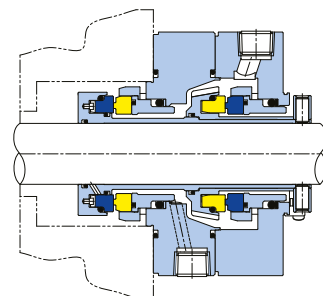
CAPI-A™ DOUBLE (E/E)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC/CBa/SiC (451)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	SiC/SiC/CBa/SiC (531)	EPR (017)*		
	SiC/SiC/SiC/SiC (541)	TFE/P (001)		
		TFE/P/FKM (003)		
		FFKMA (173)		
		FFKMA/FKM (178)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		
		AES-ELAST (179)		
		AES-ELAST/FKM (189)		



CFC™ (010)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC (209)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	SiC/GSiC (225)	EPR (017)*		
		TFE/P (001)		
		FFKMA (173)		
		KALREZ 6375 (093)		
		AES-ELAST (179)		

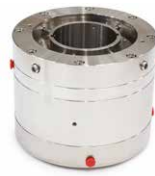


CFFC™ (003)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC/SiC/Cba (459)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	GSiC/SiC/CBa/SiC (502)	EPR (017)*		
	GSiC/SiC/SiC/GSiC (507)	TFE/P (001)		
		TFE/P/FKM (003)		
		FFKMA (173)		
		FFKMA/FKM (178)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		
		AES-ELAST (179)		
		AES-ELAST/FKM (189)		

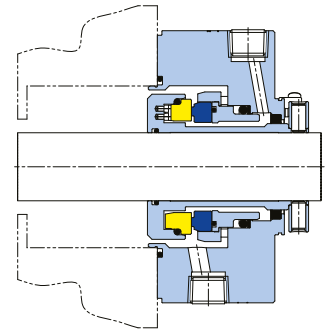


* Available for 1.000 ONLY

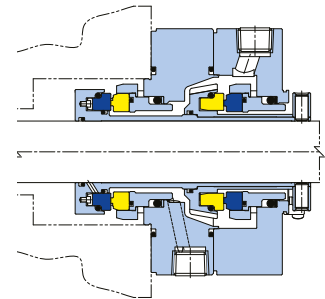
Mechanical Tables



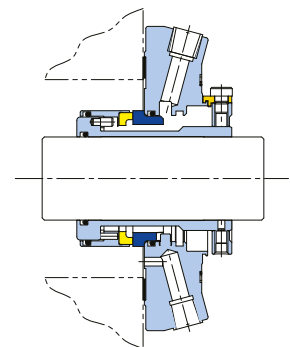
HPVST™ (002)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC (209)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	SiC/GSiC (225)	EPR (017)*		
		TFE/P (001)		
		FFKMA (173)		
		KALREZ 6375 (093)		
		AES-ELAST (179)		



HPVD™ (001)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.000 (i0160)	CBa/SiC/SiC/Cba (459)	FKM (120)	316L SS (01)	H-Pump (293)
1.500 (i0240)	GSiC/SiC/CBa/SiC (502)	EPR (017)*		
	GSiC/SiC/SiC/GSiC (507)	TFE/P (001)		
		TFE/P/FKM (003)		
		FFKMA (173)		
		FFKMA/FKM (178)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		
		AES-ELAST (179)		
		AES-ELAST/FKM (189)		



CSSN™ (3AV)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.500 (i0240)	CB/SiC (204)	FKM (120)	316L SS (01)	H-Pump (293)
	CB/TC (205)	FFKMA (173)		
	SiC/SiC (226)	AES-ELAST (179)		
	TC/SiC (232)	TFE/P (001)		
	TC/TC (233)	EPR (017)		
		AES-ELAST/FKM (189)		
		FFKMA/FKM (178)		
		TFE/P/FKM (003)		
		TFE/P/EPR (002)		
		AES-ELAST/EPR (200)		
		AES-ELAST/TFE/P (196)		
		FFKMA/EPR (229)		
		FFKMA/TFE/P (215)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		

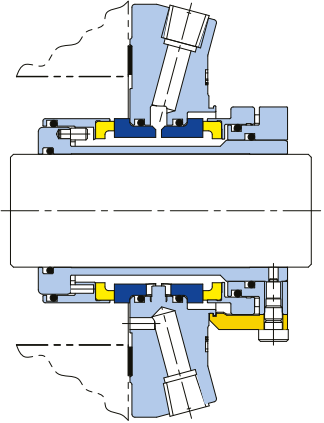


* Available for 1.000 ONLY

Mechanical Tables

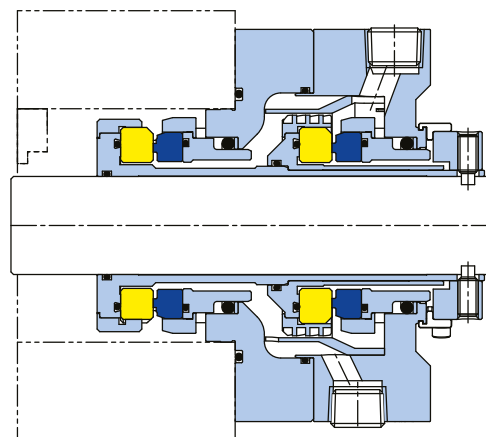


CDPN™ (3AW)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.500 (i0240)	CB/SiC/CB/SiC (410)	FKM (120)	316L SS (01)	H-Pump (293)
	CB/TC/TC/CB (434)	FFKMA (173)		
	SiC/SiC/SiC/CB (538)	AES-ELAST (179)		
	SiC/SiC/SiC/SiC (541)	TFE/P (001)		
	TC/TC/TC/CB (631)	EPR (017)		
	TC/TC/TC/TC (635)	AES-ELAST/FKM (189)		
		FFKMA/FKM (178)		
		TFE/P/FKM (003)		
		TFE/P/EPR (002)		
		AES-ELAST/EPR (200)		
		AES-ELAST/TFE/P (196)		
		FFKMA/EPR (229)		
		FFKMA/TFE/P (215)		
		KALREZ 6375 (093)		
		KALREZ 6375/FKM (102)		



For seal chamber pressures ranging over 90barg (1305 PSIG) an engineered special is available with the below available options, application to be technically reviewed by the AESSEAL® technical department prior to ordering the seal. For additional material configurations please contact the technical department.

HPVD-XD™ (001)				
Size	Face Combinations	O-ring Combinations	Metallurgy	Pump Ref
1.500 (i0240)	SiC/CBa/SiC/Cba (518)	FKM (120)	316L SS (01)	H-Pump (500 TO 1440 PSIG) (405)





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AESSEAL plc is certified to:

ISO 9001, ISO 14001, ISO/IEC 20000, ISO/IEC 27001,
ISO/TS 29001, ISO 37001, ISO 45001 & ISO 50001



Net Zero champions globally



Use double mechanical seals with hazardous products.

Always take safety precautions:

- Guard your equipment
- Wear protective clothing



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