

Product Specifications: MOS

B. Product Specification

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| 1.0 | Cylinder Design | 1 piece design - barrel type cylinder with integral CE head and separate removable OE head. |
| 2.0 | Cylinder Valve Location | Valves located in cylinder barrel, tangential to bore, inlet and discharge directly opposed and offset with top suction and bottom discharge. |
| 3.0 | Cylinder Cooling | All cylinder sizes air cooled. |
| 4.0 | Cylinder Gas Connections | Top suction and bottom discharge gas connections. Flange connections are machined to conform to the dimensional requirements of ANSI B16.5. |

CYLINDER SIZE (IN)	RATING (LBS)	SIZE (IN)
4.75	900	6
5.75	900	6
6.00	900	6
6.50	900	6
7.00	900	6
7.50	900	6
8.00	900	6
8.50	900	6
9.00	600	8
9.50	600	8
10.50	600	8
11.50	600	8
12.25	400	8
13.00	400	8
14.00	400	8
15.00	400	8
16.25	400	8
17.50	400	8
19.00	300	10
20.50	300	10

5.0 Capacity Control / Unloading

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| 5.1 | Clearance Pocket (optional) | Variable volume, screw operated, located in head end. Clearance chamber sealed by piston and ring arrangement. |
| 5.2 | Unloaders (optional) | Pneumatically actuated plug type depressor unloader. Located on suction valve on OE only. Required on each suction valve/end. Air to load. |
| 5.3 | Clearance Head (optional) | Head is machined back to provide increase in clearance. |

6.0	Instrumentation	OE and CE indicator holes, 2 per end, drilled, tapped and plugged (1/2" NPT).
7.0	Protective Coatings	Interior surface: sprayed with rust preventive oil.
8.0	Bore	Non lined, 32 RMS finish, 1/8" larger diameter counter bore.
9.0	Piston Assembly	Piston and rod assembly is held together by a Supernut style piston nut.
9.1	Piston Design Configuration	
	4.75 – 8.50 Cyls.	Solid, 1 piece design, ductile iron.
	9.00 – 15.00 Cyls.	Cored ductile iron, 2 piece design (vented).
	16.25 – 20.50 Cyls.	Cored aluminum, 2 piece design (vented). Pistons are anodized and Teflon impregnated.
9.2	Piston Rings	
	Combination Rings	Ring functions as a compression ring and rider band in one. On bores 10.50" and larger, ring is a single piece step cut. Rings smaller than 10.50" come as 2 piece.
10.0	Piston Rod	One piece heat treated alloy steel, 8-16 RMS finish in packing travel area, rolled threads.
	Option	Age Hardened 17-4 PH Stainless Steel (HRC=26-33) with Siemens Energy TC3 coating in packing travel area. HRC of coating = 70. 6-10 RMS finish.
11.0	Piston Rod Packing	Full floating ring type, consisting of segmented rings attached by Inconel garter springs in annular cups, loaded by a bolted flange-like gland. Fully lubricated (one lube point) and vented.
11.1	Ring Types and No.	4 types, 6 pairs: 1 pressure breaker, 3 sealing, 1 tangent and 1 oil scraper ring.
11.2	Ring Descriptions	
	Pressure Breaker	Consists of a single, gapped carbon and graphite filled PTFE pressure ring cut radially into equal segments with pressure relief grooves on outer face and a solid metallic back-up ring. Rings are located in the cup closest to the pressure.

Sealing Rings	Comprised of a carbon and graphite filled PTFE packing ring and a solid metallic back-up ring having no cuts. This arrangement seals in one direction. The ERC ring always faces the pressure.
Tangent Rings	Consists of one pair made up of two double acting tangentially cut carbon and graphite filled PTFE packing rings.
Oil Scraper Rings	Comprised of three cast iron radial cut unidirectional rings. Each ring has a double scraping edge and drainage slots on one face. The drainage slots must face away from the oil side.

12.0 Cylinder Lubrication

12.1 System Configuration

Distribution Block Type - mechanical force feed lubricator driven off crankshaft with individual pumping unit(s) manifolded together and fed into divider block system. Divider valves w/cycle counters, filter(s), rupture disk, check valves and proximity switch included. 316 stainless steel tubing. Swagelok stainless steel fittings.

Option (Standard when Pump to Point mechanical force feed lubricator driven off pressures exceed 3000 psig) crankshaft with individual pumping units for each lubrication feed. 316 stainless steel tubing. Swagelok stainless steel fittings. Check valves are included.

Option Electric Driven Lubricator.

Option Digital No-Flow Timer.

12.2 Lube Points

Two cylinder lube points, one centered at the top and the other at the bottom. One lube point for all packing.

13.0 Valves

13.1 Valve Type

Siemens Energy High Speed HammerHead Valves. Consists of valve seat, stop plate, elements & springs. Non-metallic (PEEK) valve plate.

13.2 Valve Assembly

All cylinders have barrel type crabs and O-ring sealed valve covers. All assemblies are polarized so that an inlet valve cannot be installed in a discharge port.

13.3 Valve Table

BORE SIZE (IN)	VALVE SIZE	PRESSURE RATING PSIG (DIFF/STATIC)	NO. VALVES/ CORNER	LIFT (IN)	LIFT AREA (SQ. IN.)	EFFECTIVE		
						FLOW AREA (SQ. IN.)	VALVE CLEAR. INLET	(CU. IN.) DISCH
4.75"	HH36	1250/2500	1	0.060	1.69	1.42	7.60	3.80
5.75"	HH36	1250/2500	1	0.085	2.40	1.77	7.83	3.80
6.00"	HH48	2000/4000	1	0.060	2.80	2.20	10.32	7.89
6.50"	HH48	2000/4000	1	0.060	2.80	2.20	10.32	7.89
7.00"	HH48	2000/4000	1	0.085	3.97	2.67	10.68	7.89
7.50"	HH48	2000/4000	1	0.085	3.97	2.67	10.68	7.89
8.00"	HH60	1300/2600	1	0.085	6.00	4.26	17.48	12.42
8.50"	HH60	1300/2600	1	0.085	6.00	4.26	17.48	12.42
9.00"	HH60	1300/2600	2	0.060	4.24	3.46	16.95	12.42
9.50"	HH60	1300/2600	2	0.060	4.24	3.46	16.95	12.42
10.50"	HH60	1300/2600	2	0.060	4.24	3.46	16.95	12.42
11.50"	HH60	1300/2600	2	0.085	6.00	4.26	17.48	12.42
12.25"	HH67	400/800	2	0.060	5.08	4.24	21.40	10.41
13.00"	HH67	400/800	2	0.085	7.20	5.28	22.04	10.41
14.00"	HH67	400/800	2	0.085	7.20	5.28	22.04	10.41
15.00"	HH67	400/800	2	0.085	7.20	5.28	22.04	10.41
16.25"	HH67	400/800	3	0.085	7.20	5.28	22.04	10.41
17.50"	HH67	400/800	3	0.085	7.20	5.28	22.04	10.41
19.00"	HH75	375/750	3	0.105	12.61	8.02	29.18	16.87
20.50"	HH75	375/750	3	0.105	12.61	8.02	29.18	16.87

14.0 Quality Assurance

All major components are visually and dimensionally inspected and their material content reviewed for compliance. Procedures are per Siemens Energy standard manufacturing specifications. Any records generated as a result are maintained at the factory.

Cylinder -

1/2 hour hydrotest at 1.5 times MAWP.
Chemical and physical
Documentation provided: QAF-014 (assembly and test record)

Piston Rods -

Chemical, physical and magnetic particle.
Documentation provided: None

Valving -

Leak tested.
Documentation provided: None

NOTE: Additional dollars are required for the following (see pricing pages):

- Additional QA/QC requirements outside the standard plan.
- Supplying documentation that normally isn't provided.
- Witnessing any tests or inspection points.