



## KPH SERIES - Liquid Ring Compressors



SIHI Pumps  
[www.sterlingamericas.com](http://www.sterlingamericas.com)



## **SIHI** **PERFORMANCE AND RELIABILITY**

### **Pressures Attainable:**

Available in three ranges. Allows the **greatest flexibility in process application.**

### **Operational Safety:**

The low temperature rise provided by the liquid ring principle ensures the **safest compression of thermally sensitive, hazardous or explosive process gases.**

### **Entrained Liquid & Vapor Handling:**

Liquid slugs or condensable vapors can be pumped **without damage.**

### **Long Economical Life:**

Elimination of internal metallic contact minimizes maintenance and increases long life - **only one moving part and no internal lubrication required.**

### **Low Vibration & Noise:**

Absence of reciprocating parts assures **quiet and low vibration operation** - eliminating the need for special foundations.

### **Low Starting Torque:**

Can be started under pressure without over-sizing electrical components. **Saves electrical installation and operating costs.**

### **Process Flexibility:**

Most SIHI compressors can function with **inlet pressures lower or higher than atmospheric pressure** - further increases flexibility in process applications.

### **Construction Flexibility:**

Availability in a variety of materials including **cast & ductile irons, bronzes, stainless steels, hastelloys, titanium, and other castable and machinable alloys**, combined with the ability to use the mechanical seals of choice ensures the greatest construction flexibility.

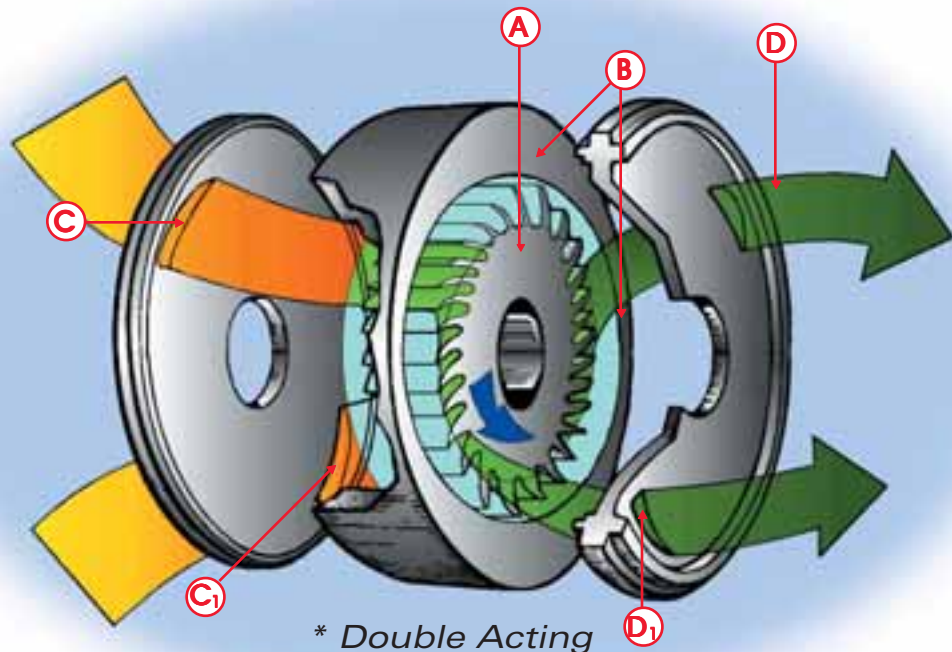
### **Construction simplicity eases service:**

Allows service in the field with minimum down time.  
*(Factory repair or factory field service is also available if desired).*  
**"The service you need is the service we offer".**



Also available for nuclear applications

## SIHI SINGLE & DOUBLE-ACTING OIL-FREE COMPRESSORS



*NOTE: The Single Acting Principle is shown in the Liquid Ring Vacuum Pump Brochure*

In the SIHI double-acting compressor, a shaft-mounted impeller (A) coincides with the center line of an internally elliptical compressor body (B). As a result of centrifugal force, the service liquid assumes this elliptical shape. During each revolution of the impeller the blades are totally immersed in liquid at six and twelve o'clock, while all but the blade tips are exposed at three and nine o'clock. This design achieves a complete suction/compression cycle during each 180° rotation of the impeller.

Air or gas enters the compressor through the suction ports (C) & (C1), where the service liquid is receding to the root of the passing impeller blades. The gas is carried between the impeller blades and compressed by the service liquid. When fully submerged the gas is compressed and discharged through the discharge ports (D) & (D1).

During the compression cycle heat is imparted to the service liquid, which is continuously replaced with the cooled service liquid. The amount of coolant introduced is equal to the amount of service liquid discharged to the separator.

Since the points of highest compression are diametrically opposed with this double-acting compressor principle, minimizing this increases pump reliability and improves mechanical seal life.

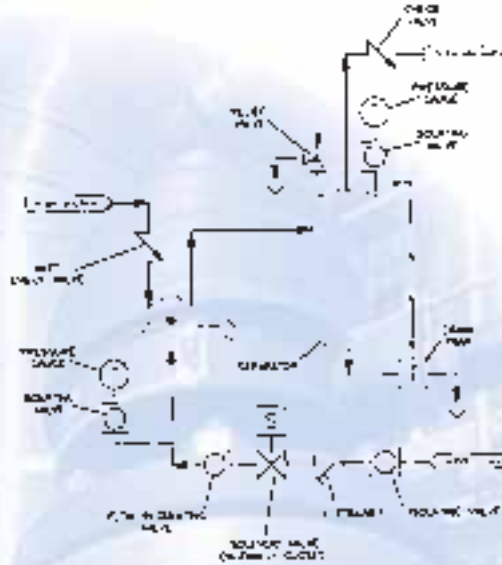
# SERVICE LIQUID ARRANGEMENTS

## ONCE THROUGH

Used where service liquid is plentiful, contamination is not a problem and maximum gas discharge cleanliness is required.

### Benefits

- Simplicity
- Lowest initial cost
- Purest discharge

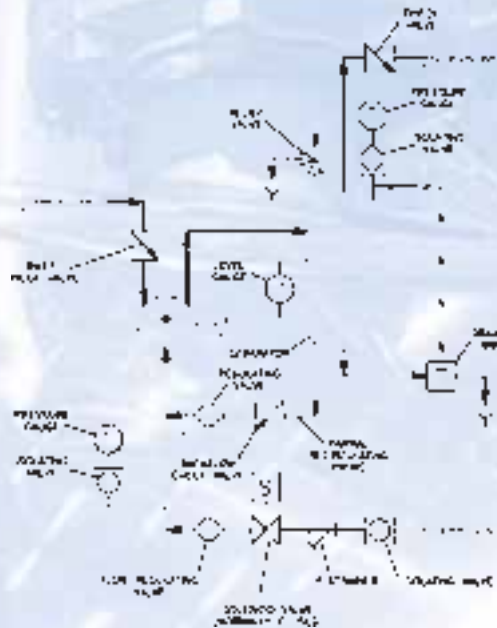


## PARTIAL RECIRCULATION

Used where service liquid is available and contamination problems are minimal.

### Benefits

- Simplicity
- Low initial cost
- Reduced service liquid consumption



## TOTAL RECIRCULATION

Used where gases and liquids are toxic or hazardous, and when environmental contamination is a concern.

### Benefits

- Service liquid contained and separated from nonhazardous coolant systems
- Low service liquid usage
- Allows recovery of condensable inlet gases



# SERVICE LIQUID SYSTEMS



Accessories for the above service liquid arrangements can be provided by SIHI in completely piped, assembled and tested factory packages.

# Performance of *Medium* Pressure Compressors



Model Number (Inlet x Outlet Size) measured in inches	SPEED RPM	5 PSIG 34.5 kPa		10 PSIG 69.0 kPa		15 PSIG 103.4 kPa		20 PSIG 137.9 kPa		22 PSIG 151.7 kPa		25 PSIG 172.3 kPa		30 PSIG 206.9 kPa		Average Service Liquid Flow in USGPM
		SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	
KPH 20103 (1¼ x 1¼)	3500	13.5	1.2	13.3	1.6	8.6	2.2	-	-	-	-	-	-	-	-	1.3
KPH 20107 (1¼ x 1¼)	3500	30.0	2.0	28.6	2.7	24.3	3.7	-	-	-	-	-	-	-	-	1.4
KPH 25003 (1¼ x 1¼)	3500	12.9	1.7	12.8	1.9	12.4	2.2	11.4	2.4	10.4	2.7	9.9	2.8	6	3.4	1.8
KPH 25007 (1¼ x 1¼)	3500	28.0	3.0	27.6	3.4	26.8	4.0	25.0	4.6	22.7	5.4	21.4	5.4	16.8	6.3	1.8
KPH 3404 (1½ x 1½)	1750	36	2.2	29	3.3	15	4.6	-	-	-	-	-	-	-	-	2.8
KPH 3408 (1½ x 1½)	1750	66	4.1	66	5.8	56	7.4	-	-	-	-	-	-	-	-	3.2
KPH 3704 (1½ x 1½)	1750	38	3.6	38	4.5	37	5.5	35	6.7	-	-	-	-	-	-	4.5
KPH 40412 (1½ x 1½)	1750	114	5.7	112	8.0	103	10.0	80	11.2	-	-	-	-	-	-	3.1
KPH 40517 (2 x 2)	1750	155	8.7	151	11.4	132	14.5	102	15.5	87	15.9	-	-	-	-	5.4
KPH 50518 (2½ x 2½)	1750	247	14.0	245	18.5	235	22.0	214	26.0	203	27.0	-	-	-	-	11
KPH 50523 (2½ x 2½)	1750	297	18.0	290	24.0	280	29.0	257	33.0	245	34.0	-	-	-	-	9
KPH 60520 (4 x 4)	1750	350	22	347	28	330	35	302	40	285	43	-	-	-	-	12
KPH 60527 (4 x 4)	1750	460	29	450	38	430	46	395	54	380	58	-	-	-	-	14
KPH 70123 (4 x 4)	1150	590	34	585	48	575	60	545	73	520	78	-	-	-	-	15
	975	477	25	455	35	415	45	350	54	320	57	-	-	-	-	15
KPH 70530 (5 x 5)	1150	782	46	775	62	762	78	722	94	695	100	-	-	-	-	28
	975	635	33	600	45	545	58	470	70	430	74	-	-	-	-	28
KPH 70540 (5 x 5)	1150	1030	57	1025	75	980	95	860	115	795	125	-	-	-	-	32
	975	885	40	835	55	760	70	655	85	610	90	-	-	-	-	32
KPH 80540 (8 x 8)	880	1475	94	1455	118	1412	142	1350	167	1325	177	-	-	-	-	52
	705	1125	60	1050	80	910	100	775	118	700	127	-	-	-	-	52
KPH 80553 (8 x 8)	880	1908	116	1875	149	1825	180	1750	208	1700	218	-	-	-	-	61
	705	1463	77	1368	101	1205	126	1005	150	920	159	-	-	-	-	61
KPH 80557 (8 x 8)	715	1995	105	1925	145	1755	180	1575	202	1420	207	-	-	-	-	45
	575	1525	66	1365	95	1120	120	765	138	600	140	-	-	-	-	45
KPH 90554 (10 x 10)	690	2440	130	2400	175	2260	210	1980	250	1830	260	-	-	-	-	85
	605	2070	95	1980	140	1780	170	1480	200	1340	210	-	-	-	-	85
KPH 90567 (10 x 10)	690	2840	150	2800	215	2700	270	2490	325	2360	350	-	-	-	-	93
	605	2560	125	2460	175	2220	225	1790	275	1600	296	-	-	-	-	93
KPH 10054 (12 x 12)	590	4230	240	4150	325	3950	420	3475	500	3200	520	-	-	-	-	135
	475	3450	160	3300	240	2750	310	-	-	-	-	-	-	-	-	135
KPH 11055 (14 x 14)	485	6185	315	6100	440	5650	550	4850	680	4400	730	-	-	-	-	185
	410	5360	240	5100	300	4450	430	3300	530	2700	580	-	-	-	-	185

Capacity in standard cubic feet per minute at inlet pressure 14.7 PSIA air at 20°C (68°F) and using 15°C (59°F) water as service liquid.

# Performance of *High* Pressure Compressors



Model Number (Inlet x Outlet Size) measured in inches	SPEED RPM	30 PSIG 206.9 kPa		40 PSIG 275.8 kPa		50 PSIG 344.7 kPa		60 PSIG 413.6 kPa		80 PSIG 551.6 kPa		100 PSIG 689.8 kPa		110 PSIG 758.4 kPa		125 PSIG 861.9 kPa		150 PSIG 1043.2 kPa		Average Service Liquid Flow in USGPM
		SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	SCFM	HP	
KPH 35502 (1¼ x 1¼)	1750	8.7	3.5	8.3	4.0	7.6	4.7	7.0	5.3	-	-	-	-	-	-	-	-	-	-	2.6
KPH 35504 (1 x 1)	3500	25.5	7.0	24.5	7.6	23.0	8.5	21.5	9.0	-	-	-	-	-	-	-	-	-	-	2.4
KPH 37202 (1¼ x 1¼)	1750	9.7	6.3	9.7	7.3	9.7	7.5	9.7	8.2	9.5	10.0	8.8	10.8	8.4	11.6	-	-	-	-	5.5
KPH 47005 (1¼ x 1¼)	3500	39	16.8	39	17.1	39	19.0	39	18.2	38	19.8	36	21.5	35	22.5	-	-	-	-	4.4
KPH 47105 (1¼ x 1¼)	3500	39	18.5	39	21.0	39	22.0	39	23.0	38	24.0	36	26.0	35	27.0	33	29.2	28	32.0	4.4
KPH 55204 (2 x 2)	3500	43	13.5	41	14.3	39	15.0	38	16.0	37	18.0	35	19.5	-	-	-	-	-	-	4.0
KPH 55206 (2 x 2)	3500	69	17.0	68	19.8	68	20.5	67	22.8	65	26.7	60	30.0	-	-	-	-	-	-	6.0
KPH 55209 (2 x 2)	3500	102	30.0	100	32.5	100	33.3	99	35.0	97	38.0	90	43.0	-	-	-	-	-	-	8.0
KPH 55210 (2 x 2)	3500	118	30.0	117	30.8	115	35.0	114	38.5	108	44.0	100	49.5	-	-	-	-	-	-	9.0
KPH 65112 (3 x 3)	1750	214	43	208	49	194	56.3	-	-	-	-	-	-	-	-	-	-	-	-	9.7
KPH 65118 (3 x 3)	1750	320	57	315	76	300	78	-	-	-	-	-	-	-	-	-	-	-	-	13
KPH 65127 (3 x 3)	1750	487	85	477	96	462	109	-	-	-	-	-	-	-	-	-	-	-	-	16
KPH 65212 (3 x 3)	1750	260	72	258	75	250	82	246	90	234	108	208	114	-	-	-	-	-	-	15
KPH 65218 (3 x 3)	1750	390	100	385	110	375	126	370	132	350	155	315	190	-	-	-	-	-	-	22

Capacity in standard cubic feet per minute at inlet pressure 14.7 PSIA air at 20°C (68°F) and using 15°C (59°F) water as service liquid.



## Applications

- ▣ Clean Process Gas Compression
- ▣ Compression of Hazardous or Explosive Mixtures
- ▣ Ultimate Safety
- ▣ Vapor Recovery - EPA Improvements
- ▣ Vent Gas Compression

*Well Head  
Gas Recovery*

*Vent Gas  
Compression*