Operating Instructions & Breakdown Countermeasures

Operating Instructions

■ Operation preparation

1. Preparation
   - ▶ Check the pipes and electrical wirings, and fill the Tank with a recommended clean lubricating oil.
   - ▶ For electric pumps, check that the motor is operational.
2. Removal of air from main pipe
   - ▶ For optimal operation of concentrated lubricating systems, the entry of air is to be avoided. Therefore, you must carry out sufficient air removal.
   - ▶ To eliminate air, operate the pump continuously until the oil is discharged.
   - ▶ When filling the main pipe with oil by operating the pump, let the air our until the oil is discharged at the highest point of the main pipe, or at the furthest point from the pump.
3. Removal of air from fueling pipe
   - ▶ Let air out until oil is discharged at the end of the longest oil supply pipe.
4. Checking for oil leaks in the pipes
   - ▶ Once air has been removed, check for oil leaks in the pipes, and make the necessary repairs.

■ Test operations

- ▶ When operating the pump, check that oil is discharged before connecting the pipes.
- ▶ Connect the pipes once it has been verified that the pump is discharging oil.
- ▶ Check that the pump operation time has been set according to the specification of the device, and operate normally.
- ▶ Check that the pump is operating properly during the operation and pause cycles.

■ Maintenance

- ▶ All system devices require maintenance. Make sure to check that the system is operating normally every operational cycle.
- ▶ If ullage levels inside the tank decrease, immediately replenish with the recommended, clean lubricating oil.
- ▶ If and when the Suction Filter becomes clogged, clean the Suction Filter, and clean or exchange the Line Filter in use.
- ▶ In the event of malfunctions, refer to the breakdowns and countermeasures section.
- ▶ Do not use volatile oil, water soluble oil or grease as lubricating oil.

Cause & Remedy of Trouble

Status	Cause	Countermeasures
There is no oil discharge from pump.	Ullage levels inside the tank are low.	Replenish with oil of the same type and class as the one in use.
	The suction filter holes have been clogged.	Cleanse or exchange of the filter
	Exchange damaged pipes of the pump	Exchange
	The oil viscosity is not within the 32~800cSt range.	Change to suitable oil.
Pressure decrease.	Oil is not coming up from the pump due to one of the above reasons.	Follow the above instructions.
	The flow unit and control unit election for the lubricating spots are inadequate.	Check the data sheet again.
	The relief valve selection is inadequate.	Adjust the setting to the right values.
	Foreign substances have been mixed to the relief valve ball seat.	Disassemble and cleanse the relief valve.
	Oil is leaking from the pipe connection parts.	Tighten again with the optimum torque (60kg/cm^2), or reinstall the pipes.
	Pipes have been damages.	Replace the damaged pipes.
Oil is leaking from the flow unit.	Oil is not discharged from the flow unit due to one of the above reasons.	Follow the above instructions.
Oil is leaking from outside the pump.	The seal packing of the pump and the oil tank has been worn down or damaged.	Exchange
	Tightening bolts at the pump connections are loose.	Re-tighten the bolts.

HALS LUBE®

COOLANT PUMP

HANSUNG LUBRICATION SYSTEM

COOLANT PUMP *Series*

HALS LUBE®

HCP-S series

A compact and lightweight self-priming cutting fluid pump.

It can be used when there are limitations on TANK space.

Grinder
Lathe
Washer
Electrical discharging machine
other turning and cutting processing machines

Page 3.

HCP-F series

A submerged type cutting fluid pump that can be driven initially without oil priming.

The pump part is submerged inside the tank.

MCT
CNC
other turning and cutting processing machines

Page 5.

HCP-MF series

A submerged type cutting fluid pump that is used when large quantities of oil are required.

A multi-stage pump capable of a wide range of performances.

MCT
CNC
Grinder
Washer
Electrical discharging machine
other turning and cutting processing machines

Page 9.

HCP-HMF series

A multi-stage high-pressure pump, applied when high pressure is required.

It is separated into a vertical type or a horizontal type depending on the installation method used.

MCT
CNC

Page 11.

HCP-SMF/SHMF series

A multi-stage pump with its main drive parts produced from stainless materials to ensure excellent durability and anti-corrosiveness.

MCT
CNC
other turning and cutting processing machines

Page 15.

HCP-S(H)HM/(H)MSF series

A compact multi-stage pump with the main drive parts produced from stainless. It is separated into a vertical or a horizontal type, depending on the installation method used.

Its compact and lightweight design makes it easy to use.

MCT
CNC
Washer
Electrical discharging machine
other turning and cutting processing machines

Page 17.

HCP S series

Feature

1. A compact, lightweight single-unit pump.
2. The small, design means less installation limitations
3. Prolonged idling is prohibited due to the installed mechanical seal. (Idling for more than 30 seconds is prohibited)
4. Sufficient quantities of oil need to be supplied to the self-priming compartment before use

Structure

- A single-unit small self-priming pump
- A pipe is connected to the suction part to suck in oil.

HCP - □ S

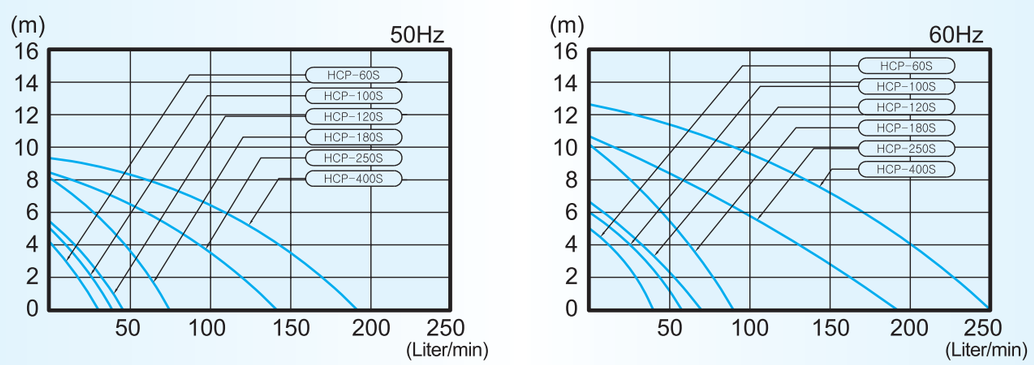
- S : Pump Type : Self-priming Type
- □ : Motor Output
- HCP : HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)	WEIGHT (kg)
HCP-60S	60	50	200 380	0.42 0.24	3	2	2	20	3/8	6.9
		60	200/220 380	0.45 0.26				25		
HCP-100S	100	50	200 380	0.51 0.3	3	2	2	30	3/8	7.1
		60	200/220 380	0.55 0.32				36		
HCP-120S	120	50	200 380	0.56 0.33	3	2	2	35	3/8	9.1
		60	200/220 380	0.6 0.35				42		
HCP-180S	180	50	200 380	0.93 0.53	3	2	3	58	1/2	11.1
		60	200/220 380	1.0 0.57				70		
HCP-250S	250	50	200 380	1.4 0.8	3	2	4	95	3/4	11.3
		60	200/220 380	1.5 0.86				130		
HCP-400S	400	50	200 380	2.4 1.4	3	2	5	140	1	15
		60	200/220 380	2.5 1.5				200		

Performance Curve

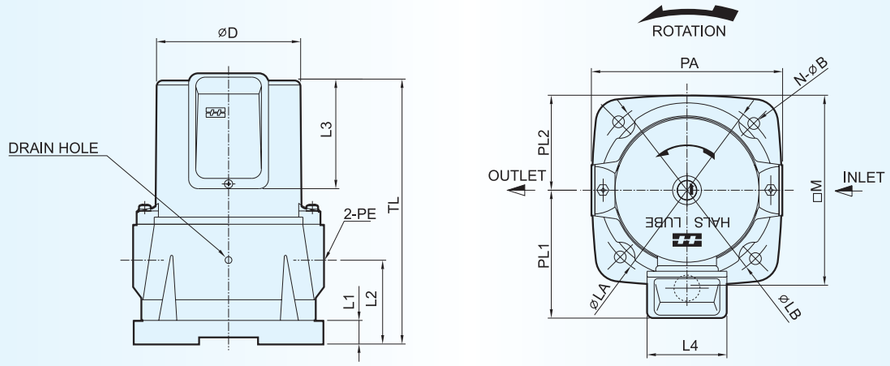
Oil for Testing : ISO-VG2, temperature 20℃



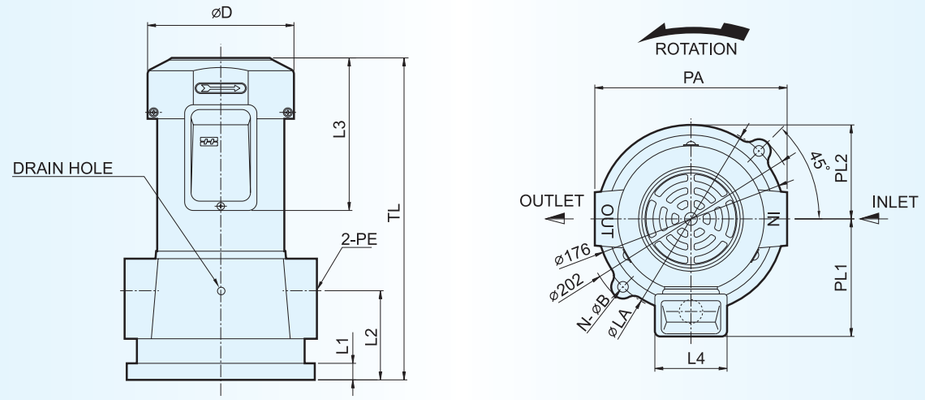
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

HCP-60S~250S



HCP-400S



Dimension

※ LA, LB ( ) are products for export

Type \ Item	ø D	L1	L2	L3	L4	PE(PT)	TL	LA	LB	N-ø B	PA	M	PL1	PL2
HCP-60S	94	15	55.5	92.5	67.6	2-3/8	200.5	132(132)	150(130)	4-7	130	130	93.5	65
HCP-100S	94	15	55.5	92.5	67.6	2-3/8	200.5	132(132)	150(150)	4-7	130	130	93.5	65
HCP-120S	94	15	55.5	92.5	67.6	2-3/8	200.5	132(132)	150(150)	4-7	130	130	93.5	65
HCP-180S	121	15	66	93	67.6	2-1/2	218.5	167(160)	170(164)	4-10	162	160	108.5	80
HCP-250S	121	20	71	93	67.6	2-3/4	224.5	167(160)	170(170)	4-10	162	160	108.5	80
HCP-400S	137	14.5	83	143	67.6	2-1	301	180(180)	-	2-10	180	-	110	88

HCP F series

Feature

1. The motor and the pump have the same shaft but are separated
2. Various selections can be made according to the depths of the compact low-set tanks.
3. A structure with no additional seals such as a mechanical seal
4. Can be applied to a wide range of parts including grinding machine with mixed abrasive grain.

Structure

- A pump that operates with the pump part submerged in the tank.
- Different pumps can be selected according to tank depths, and can be used without separate oil priming.

HCP - □ F

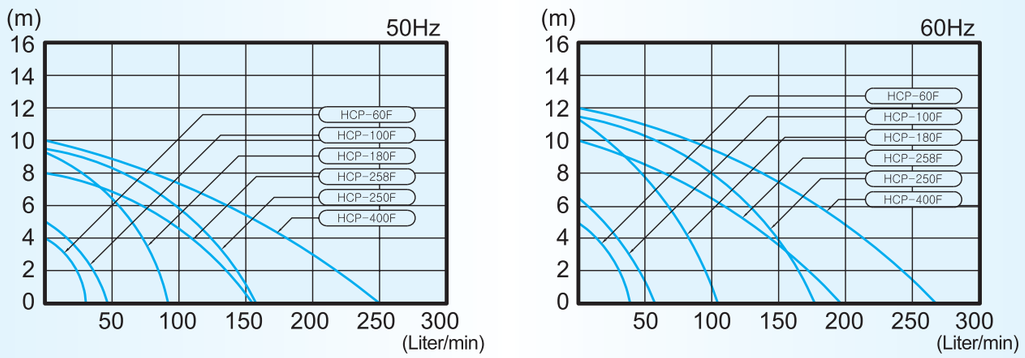
- F : Pump Type : Submerged Type
- □ : Motor Output
- HCP : HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)	WEIGHT (kg)
HCP-60F	60	50	200 380	0.42 0.24	3	2	2	25	3/8	7
		60	200/220 380	0.45 0.26				32		
HCP-100F	100	50	200 380	0.51 0.3	3	2	2	37	3/8	7.6
		60	200/220 380	0.55 0.32				47		
HCP-180F	180	50	200 380	0.93 0.53	3	2	3	75	1/2	11.2
		60	200/220 380	1.0 0.57				90		
HCP-250F	250	50	200 380	1.4 0.8	3	2	4	125	3/4	14.2
		60	200/220 380	1.5 0.86				150		
HCP-258F	250	50	200 380	1.4 0.8	3	2	4	110	3/4	12
		60	200/220 380	1.5 0.86				145		
HCP-400F	400	50	200 380	2.4 1.4	3	2	5	160	1	17.5
		60	200/220 380	2.5 1.5				200		

Performance Curve

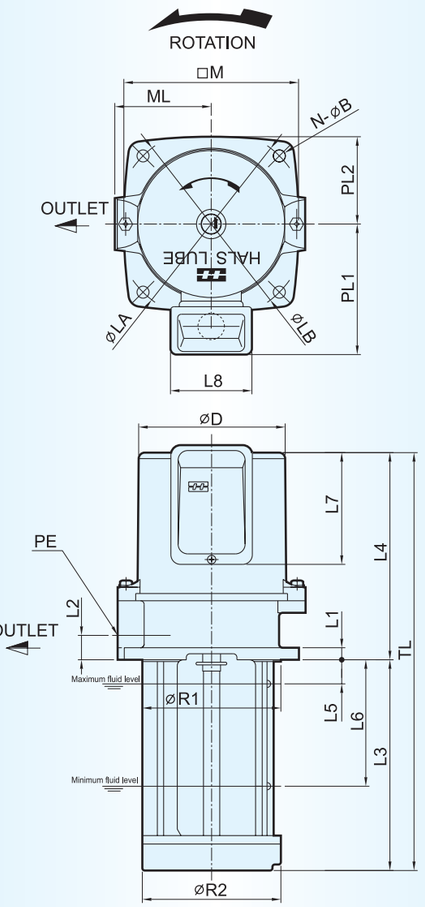
Oil for Testing : ISO-VG2, temperature 20℃



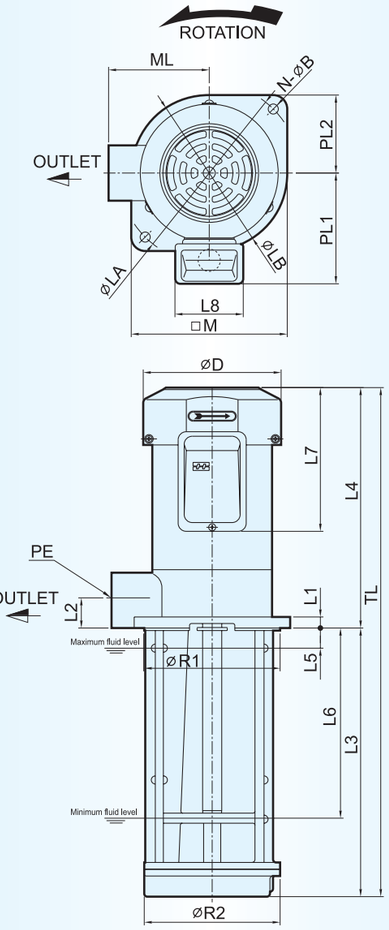
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

HCP-60F~258F



HCP-400F



Dimension

※ LA, LB ( ) are products for export

Type \ Item	ø D	L1	L2	L3	L4	L5	L6	L7	L8	PE(PT)	TL	R1	R2	LA	LB	N-ø B	PL1	PL2	M	ML
HCP-60F	94	8	15	155	150	20	90	92.5	67.6	3/8	305	90	90	130 (132)	130 (130)	4-7	94	64	128	71
HCP-100F	94	8	15	155	150	20	90	92.5	67.6	3/8	305	90	90	130 (132)	130 (134)	4-7	94	64	128	71
HCP-180F	121	10	20	175	171	20	105	93	67.6	1/2	346	115	115	160 (160)	160 (134)	4-10	108.5	72.5	145	80
HCP-250F	121	10	25	247	180	20	190	93	67.6	3/4	427	128	128	160 (160)	160 (170)	4-10	108.5	75	150	85
HCP-258F	121	11	27	180	185	20	120	93	67.6	3/4	365	128	128	160 (160)	170 (170)	4-10	108.5	79	158	90
HCP-400F	137	11	30	280	236	20	200	143	67.6	1	516	135	135	180 (180)	-	2-10	110	77.5	155	100

HCP F High Pressure series

Feature

1. It has the same separate motor & pump structure as the HCP-F
2. It is used when more pressure than HCP-F is required.
3. There is an anti-vortex part at the top of the pump, which allows smooth suction
4. The pump is divided into top section suction or bottom section suction according to the type of the applied tank.
5. HCP-250FL-25,419F,420F are bottom section suction products that have a wide range of suction oil levels.

Structure

- A submerged-type pump with the same structure as the HCP-F TYPE.
- There are various pump forms according to the different tank depths.

HCP- ☐ F

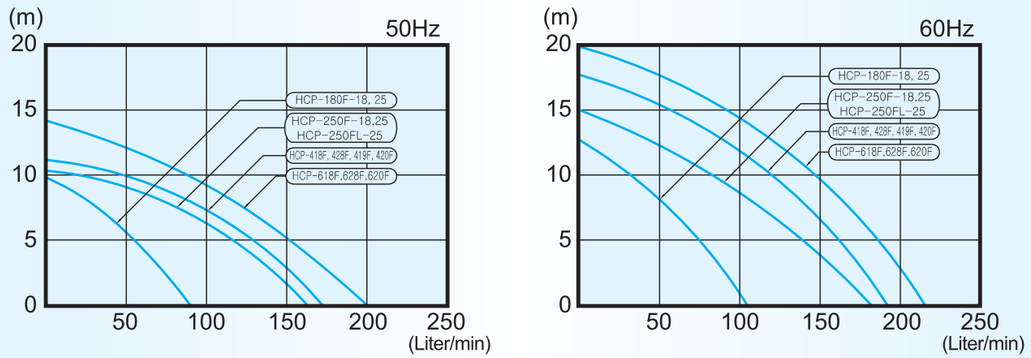
- F — Pump Type : Submerged Type (High Pressure)
- ☐ — Motor Output
- HCP — HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ /min)	PIPE SIZE (PT)	WEIGHT (kg)
HCP-180F-18, 25	180	50	200 380	0.93 0.53	3	2	9	10	PF 1/2	11/12
		60	200/220 380	1.0 0.57			13			
HCP-250F-18, 25 HCP-250FL-25	250	50	200 380	1.4 0.8	3	2	10	10	PF 3/4	12/13/14
		60	200/220 380	1.5 0.86			14			
HCP-418F, 428F, 419F, 420F	400	50	200 380	2.4 1.4	3	2	12	40	1	15.6/17.5
		60	200/220 380	2.5 1.5			16			
HCP-618F, 628F, 620F	600	50	200 380	2.79 1.61	3	2	12	80	1	19.5
		60	200/220 380	3.0 1.73			16			

Performance Curve

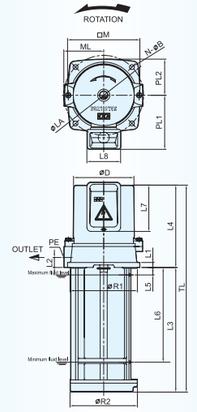
Oil for Testing : ISO-VG2, temperature 20℃



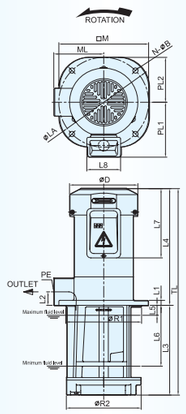
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

HCP-180F-18, 25
HCP-250F-18, 25

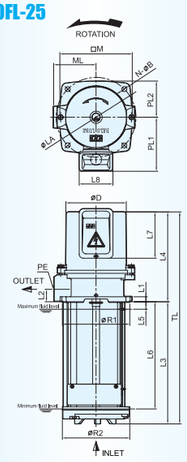


HCP-418F~628F

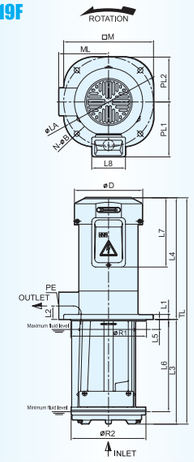


Bottom Inlet type

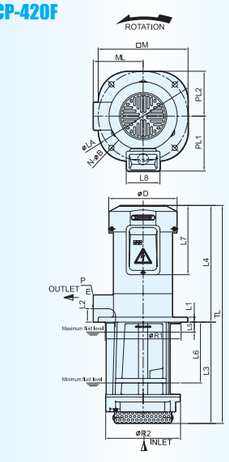
HCP-250FL-25



HCP-419F



HCP-420F



Dimension

Type \ Item	Ø D	L1	L2	L3	L4	L5	L6	L7	L8	PE (PT)	TL	R1	R2	LA	N-Ø B	PL1	PL2	M	ML
HCP-180F-18	121	10	20	180	173	22	116	93	67.6	PF 1/2	353	135	135	160	4-10	108.5	72.5	145	80
HCP-180F-25	121	10	25	250	180	15	190	93	67.6	PF 1/2	430	135	135	160	4-10	108.5	75	150	85
HCP-250F-15	121	10	20	180	173	22	116	93	67.6	PF 3/4	353	135	135	160	4-10	108.5	72.5	145	80
HCP-250F-25	121	10	25	250	180	15	190	93	67.6	PF 3/4	430	135	135	160	4-10	108.5	75	150	85
HCP-250FL-25	121	10	25	245	180	15	215	93	67.6	PF 3/4	425	135	135	160	4-10	108.4	72.5	145	85
HCP-418F/618F	137	10	27	180	234	20	122	143	67.6	1	414	152	150	180	4-10.5	110	90	180	100
HCP-419F	137	10	27	210	244	20	185	139	67.6	1	454	152	150	180	4-10.5	110	90	180	100
HCP-420F	137	10	27	200	234	20	122	143	67.6	1	434	152	150	180	4-10.5	110	90	180	100
HCP-428F//628F	137	10	27	280	234	20	220	143	67.6	1	514	152	150	180	4-10.5	110	90	180	100

HCP MF series

Feature

1. It can be applied when large quantities of oil are required
2. The motor part is detached to reduce the transfer of heat.
3. A submerged bottom section suction pump that must be kept at least 30mm above the tank floor.
4. The pump part is detached to reduce the entry of oil into the motor.

Structure

- A submerged multi-stage pump, and the spray area for every model has been identically produced
- For use in deep tank, additional pipes can be connected to the suction part to allow use.

HCP - □ MF

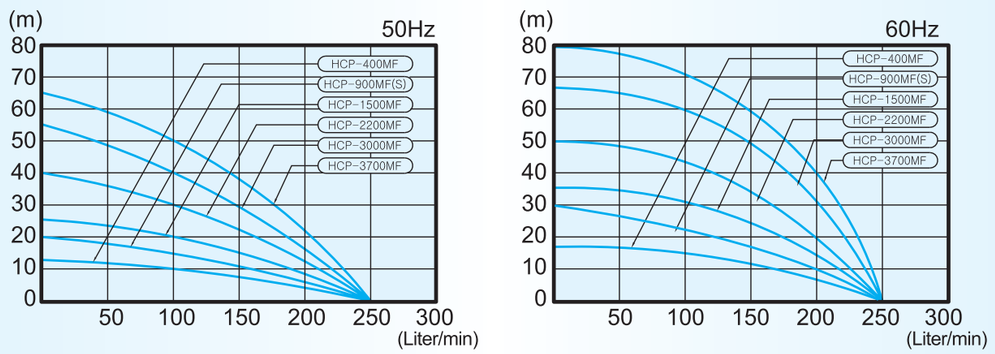
- MF : Pump Type : (Multi-Submerged Type)
- □ : Motor Output
- HCP : HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	Pipe Size (PT)	Pipe Size (PT)
HCP-400MF	400	50	200 380	2.4 1.4	3	2	5	150	1 1/4 (1 1/2)	25
		60	200/220 380	2.5 1.5				200		
HCP-900MF(S)	900	50	200 380	5.2 3.1	3	2	6.5	200	1 1/4 (1 1/2)	26.5
		60	200/220 380	6.0/5.8 3.4			10			
HCP-1500MF	1500	50	200 380	7.5 4.1	3	2	20	100	1 1/2	37
		60	200/220 380	8.5/8.0 4.6			30			
HCP-2200MF	2200	50	200 380	9.0 5.5	3	2	30	100	1 1/2	41
		60	200/220 380	12.0/11.0 6.4			45			
HCP-3000MF	3000	50	200 380	13.0 7.1	3	2	40	100	1 1/2	43
		60	200/220 380	15.0/14.0 8.0			60			
HCP-3700MF	3700	50	200 380	16.0 8.5	3	2	50	100	1 1/2	45
		60	200/220 380	18.0/17.0 10.7			70			
HCP-1500BMF	1500	50	200 380	7.5 4.1	3	2	10	300	2	45.5
		60	200/220 380	8.5/8.0 4.6			12	400		
HCP-2200BMF	2200	50	200 380	9.0 5.5	3	2	10	400	2	46.5
		60	200/220 380	12.0/11.0 6.4			20			

Performance Curve

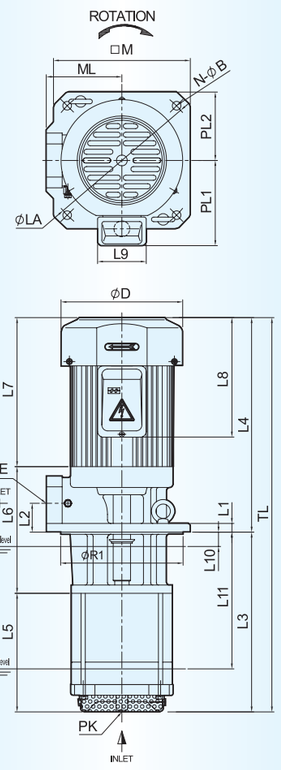
Oil for Testing : ISO-VG2, temperature 20℃



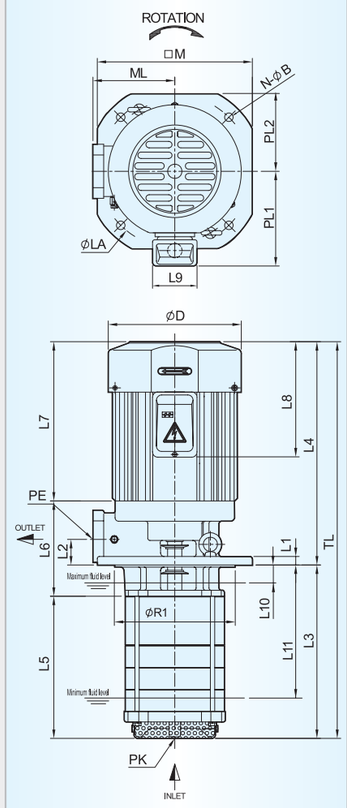
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

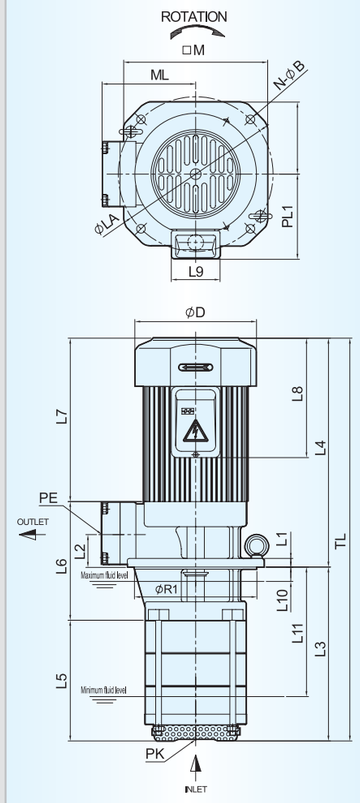
HCP-400MF~2200MF



HCP-3000MF~3700MF



HCP-1500BMF/2200BMF



Dimension

Type \ Item	ØD	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	PE (PT)	TL	R1	LA	N-ØB	PL1	PL2	M	ML	PK (PF)
HCP-400MF	169	12	40	250	298	165	176	207	166	67.6	20	190	1 1/2 1 1/4	548	170	215	4-12	119.0	95	190	105	2″
HCP-900MF	169	12	40	250	298	165	176	207	166	67.6	20	190	1 1/2 1 1/4	548	170	215	4-12	119.0	95	190	105	2″
HCP-900MFS	169	12	40	209	298	124	176	207	166	67.6	20	160	1 1/4	507	170	215	4-12	119.0	95	190	105	2″
HCP-1500MF	169	12	40	244	321	159	176	230	166	67.6	20	190	1 1/2	565	170	215	4-12	119.0	95	190	105	2″
HCP-2200MF	169	12	40	244	348	159	176	257	166	67.6	20	190	1 1/2	592	170	215	4-12	119.0	95	190	105	2″
HCP-3000MF	187	12	36	244	326	200	134	236	171	67.6	20	190	1 1/2	570	170	215	4-12	125.5	109	218	115	2″
HCP-3700MF	187	12	36	354	338	310	134	248	171	67.6	20	303	1 1/2	692	170	215	4-12	125.5	109	218	115	2″
HCP-1500BMF	169	12	45	241.7	318	167.7	165	227	171	67.6	20	180	2	559.7	170	215	4-12	119.0	100	200	130	2 1/2″
HCP-2200BMF	169	12	45	241.7	318	167.7	165	227	171	67.6	20	180	2	559.7	170	215	4-12	119.0	100	200	130	2 1/2″

HCP HMF(S) High Pressure series

Feature

1. A high-pressure pump capable of more than 25bar of discharge pressure.
2. Identical pump spray areas make exchanges easy.
3. Prolonged idling is prohibited due to the installed mechnical seal. (Idling for more than 30 seconds is prohibited)
4. It is produced with a single-unit shaft, which increases durability and makes management easy.

Structure

- A submerged multi-stage pump structurally identical to the HCP-MF.
- The submerged type product is the normal product, but for high pressure, it can be produced in a horizontal shape.

HCP- ☐ HMF S

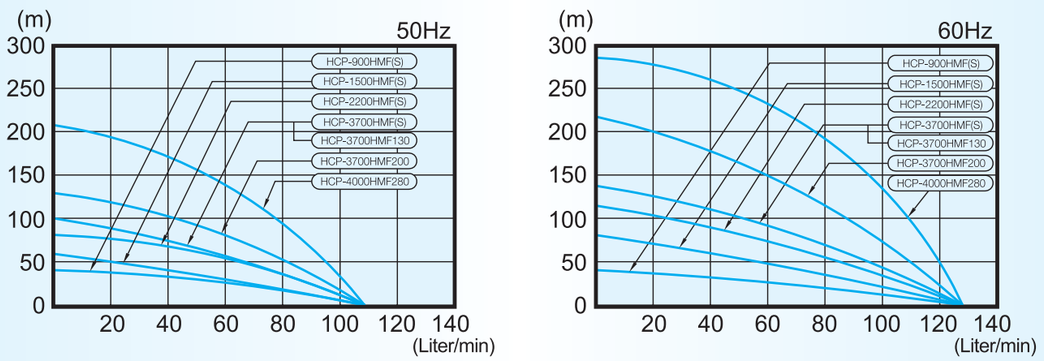
- S : Pump Type : Short Body
- HMF : Pump Type : High Pressure Multi-Submerged Type
- ☐ : Motor Output
- HCP : HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)	WEIGHT (kg)
HCP-900HMF(S)	900	50	200 380	5.2 3.1	3	2	30	20	3/4	28
		60	200/220 380	6.0/5.8 3.4			45			
HCP-1500HMF(S)	1500	50	200 380	7.5 4.1	3	2	50	20	3/4	30
		60	200/220 380	8.5/8.0 4.6			70			
HCP-2200HMF(S)	2200	50	200 380	9.0 5.5	3	2	70	20	3/4	35
		60	200/220 380	12.0/11.0 6.4			100			
HCP-3700HMF(S)	3700	50	200 380	16.0 8.5	3	2	90	20	3/4	45
		60	200/220 380	18.0/17.0 10.7			130			
HCP-3700HMF130	3700	50	200 380	16.0 8.5	3	2	90	20	3/4	50
		60	200/220 380	18.0/17.0 10.7			130			
HCP-3700HMF200	3700	50	200 380	16.0 8.5	3	2	125	20	3/4	55
		60	200/220 380	18.0/17.0 10.7			200			
HCP-4000HMF280S	4000	50	200 380	15.0 9.0	3	2	195	20	3/4	70
		60	200/220 380	18.0 10.7			280			

Performance Curve

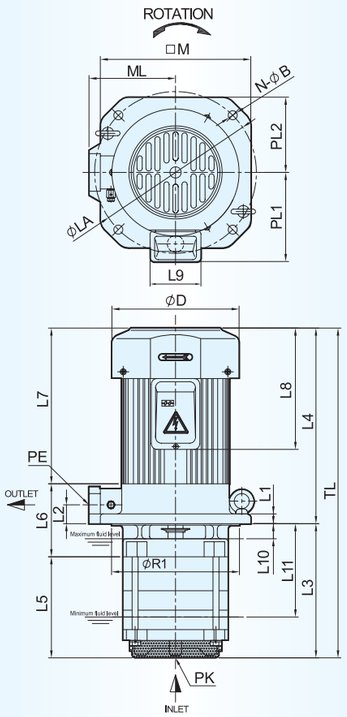
Oil for Testing : ISO-VG2, temperature 20℃



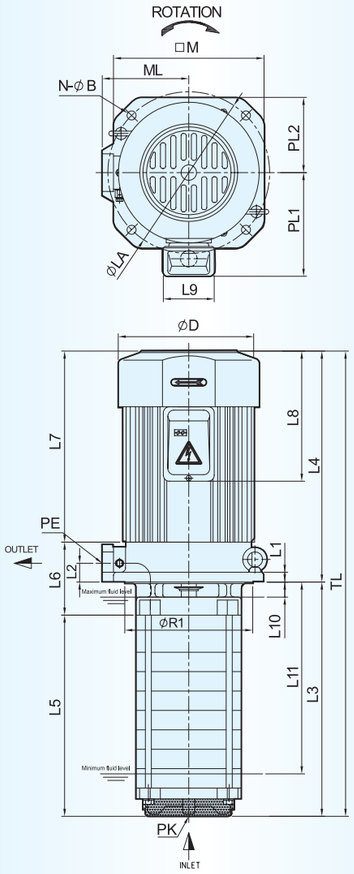
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

HCP-900HMF(S)~1500HMF(S)



HCP-2200HMF(S)~3700HMF(S)



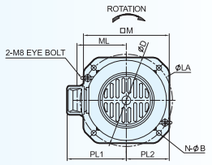
Dimension

Type \ Item	ØD	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	PE (PT)	TL	R1	LA	N-ØB	PL1	PL2	M	ML	PK (PF)
HCP-900HMF	169	13	25	180	260	136	97	207	166	67.6	20	124	3/4	440	170	215	4-12	119	100	200	115	1 1/2
HCP-900HMFS	169	13	25	144	260	100	97	207	166	67.6	20	89	3/4	404	170	215	4-12	119	100	200	115	1 1/2
HCP-1500HMF	169	13	25	242	283	198	97	230	167	67.6	20	187	3/4	525	170	215	4-12	138	100	200	115	1 1/2
HCP-1500HMFS	169	13	25	197	283	153	97	230	167	67.6	20	142	3/4	480	170	215	4-12	138	100	200	115	1 1/2
HCP-2200HMF	187	13	25	290	267	246	97	214	171	67.6	20	238	3/4	557	170	215	4-12	125.5	100	200	115	1 1/2
HCP-2200HMFS	187	13	25	248	267	204	97	214	171	67.6	20	190	3/4	515	170	215	4-12	125.5	100	200	115	1 1/2
HCP-3700HMF	187	13	25	361	301	317	97	248	171	67.6	20	302	3/4	662	170	215	4-12	125.5	100	200	115	1 1/2
HCP-3700HMFS	187	13	25	313	301	269	97	248	171	67.6	20	255	3/4	614	170	215	4-12	125.5	100	200	115	1 1/2

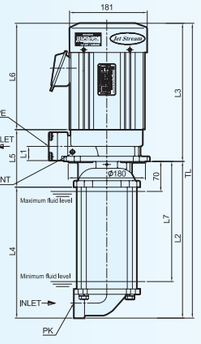
HCP HMF(S) series

External Figure

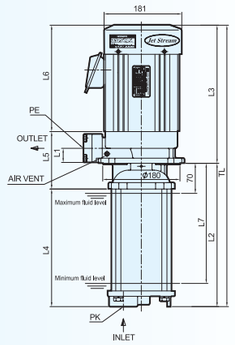
HCP-3700HMF130A/200A
HCP-3700HMF130C/200C



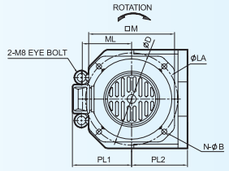
HCP-3700HMF130A/200A



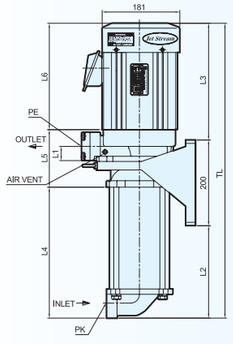
HCP-3700HMF130C/200C



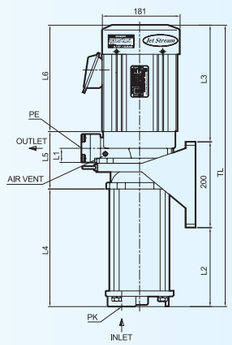
HCP-3700HMF130B/200B
HCP-3700HMF130D/200D



HCP-3700HMF130B/200B



HCP-3700HMF130D/200D

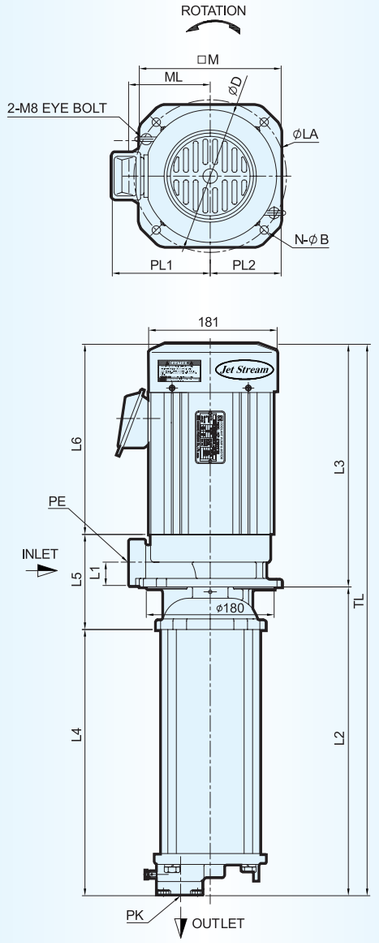


Dimension

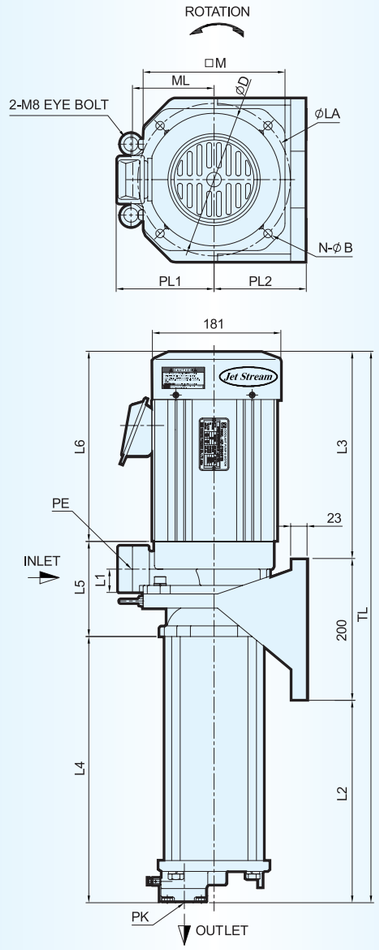
Type \ Item	ø D	L1	L2	L3	L4	L5	L6	L7	PE (PT)	TL	LA	N-ø B	PL1	PL2	M	ML	PK (PF)
3700HMF130A	187	33	292.1	322	232.1	134	248	200	3/4	614.1	215	4-12	138	100	200	115	1 1/2
3700HMF130B	187	33	142.1	272	232.1	134	248	-	3/4	614.1	215	4-12	138	130	200	115	1 1/2
3700HMF130C	187	33	263.7	322	203.7	134	248	200	3/4	585.7	215	4-12	138	100	200	115	1 1/4
3700HMF130D	187	33	113.7	272	203.7	134	248	-	3/4	585.7	215	4-12	138	130	200	115	1 1/4
3700HMF200A	187	33	365.2	322	305.2	134	248	280	3/4	687.2	215	4-12	138	100	200	115	1 1/2
3700HMF200B	187	33	215.2	272	305.2	134	248	-	3/4	687.2	215	4-12	138	130	200	115	1 1/2
3700HMF200C	187	33	334.1	322	274.1	134	248	280	3/4	656.1	215	4-12	138	100	200	115	1 1/4
3700HMF200D	187	33	184.1	272	274.1	134	248	-	3/4	656.1	215	4-12	138	130	200	115	1 1/4

External Figure

HCP-4000HMF280S-C



HCP-4000HMF280S-D



※ HCP-4000HMF280Stype is a product in which the suction and the discharge outlets have exchanged places. It minimizes oil leaks in the Mechanical Seal.

Dimension

Type \ Item	ø D	L1	L2	L3	L4	L5	L6	PE (PT)	TL	LA	N-ø B	PL1	PL2	M	ML	PK (PF)
4000HMF280S-C	187	33	435.3	342	375	134	268	1 1/4	777.3	215	4-12	138	100	200	115	3/4
4000HMF280S-D	187	33	285.3	292	375	134	268	1 1/4	777.3	215	4-12	138	130	200	115	3/4

HCP SMF/SHMF series

Feature

1. The main drive parts are made with stainless materials, which increase durability and corrosion resistance.
2. It is lighter than cast products
3. It has the same structure and performance as HCP-MF/HCP-HMF, which allows exchange of parts.

Structure

- A multi-level pump structurally identical to HCP-MF and HCP-HMF(S)
- The main drive parts are made with stainless materials.

HCP- □ S MF/HMF

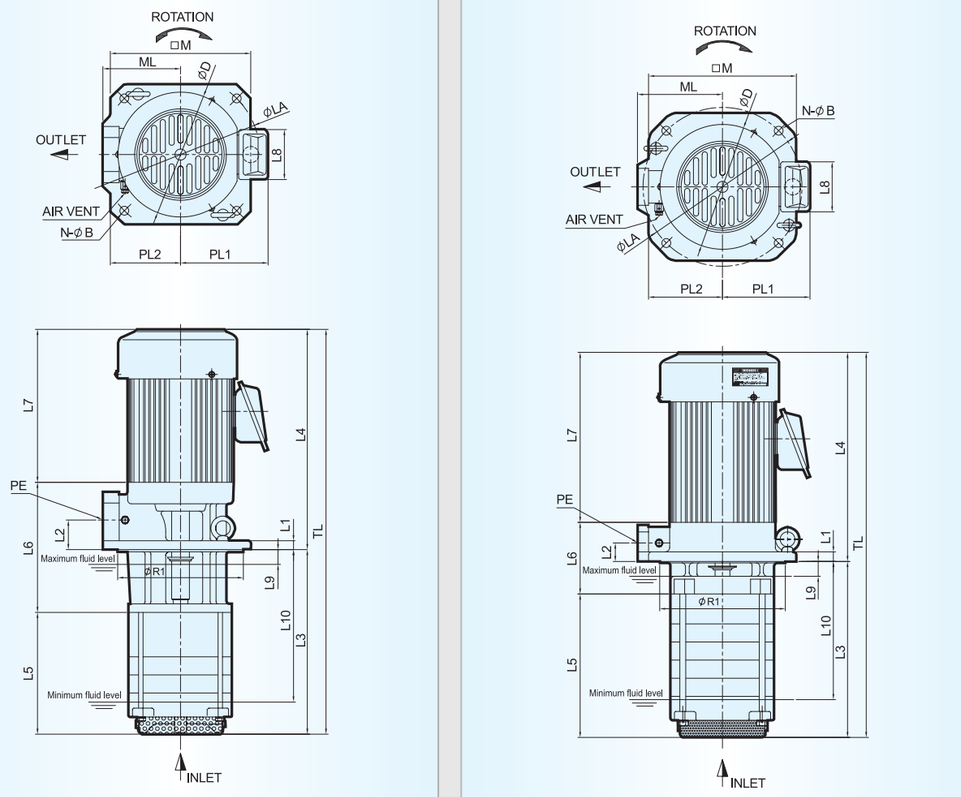
- Pump Type
  MF : Multi-Submerged Type
  HMF : Hign Pressure Multi-Submerged Type
- Special Spec. : Stainless Type
- Motor Output
- HANSUNG **Coolant Pump**

Pump Spec.

Type \ Specification	MOTOR						PUMP			
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)	WEIGHT (kg)
HCP-400SMF	400	50	200 380	2.4 1.4	3	2	5	150	1 1/4 (1 1/2)	24
		60	200/220 380	2.5 1.5				200		
HCP-900SMF(S)	900	50	200 380	5.2 3.1	3	2	6.5	200	1 1/4 (1 1/2)	25
		60	200/220 380	6.0/5.8 3.4			10			
HCP-1500SMF	1500	50	200 380	7.5 4.1	3	2	20	100	1 1/2	35
		60	200/220 380	8.5/8.0 4.6			30			
HCP-2200SMF	2200	50	200 380	9.0 5.5	3	2	30	100	1 1/2	38
		60	200/220 380	12.0/11.0 6.4			45			
HCP-3000SMF	3000	50	200 380	13.0 7.1	3	2	40	100	1 1/2	39
		60	200/220 380	15.0/14.0 8.0			60			
HCP-3700SMF	3700	50	200 380	16.0 8.5	3	2	50	100	1 1/2	40
		60	200/220 380	18.0/17.0 10.7			70			
HCP-900SHMF(S)	900	50	200 380	5.2 3.1	3	2	30	20	3/4	25
		60	200/220 380	6.0/5.8 3.4			45			
HCP-1500SHMF(S)	1500	50	200 380	7.5 4.1	3	2	50	20	3/4	27
		60	200/220 380	8.5/8.0 4.6			70			
HCP-2200SHMF(S)	2200	50	200 380	9.0 5.5	3	2	70	20	3/4	30
		60	200/220 380	12.0/11.0 6.4			100			
HCP-3700SHMF(S)	3700	50	200 380	16.0 8.5	3	2	90	20	3/4	37
		60	200/220 380	18.0/17.0 10.7			130			

External Figure

HCP-400SMF(S)~3700SMF



HCP-900SHMF(S)~3700SHMF(S)

Dimension

Type \ Item	Ø D	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	PE (PT)	TL	R1	LA	N-Ø B	PL1	PL2	M	ML
HCP-400SMF	169	12	40	250	298	165	176	207	67.6	20	190	1 1/2, 1 1/4	548	170	215	4-12	119	95	190	105
HCP-900SMF	169	12	40	250	298	165	176	207	67.6	20	190	1 1/2, 1 1/4	548	170	215	4-12	119	95	190	105
HCP-900SMFS	169	12	40	209	298	124	176	207	67.6	20	190	1 1/4	507	170	215	4-12	119	95	190	105
HCP-1500SMF	169	12	40	244	321	159	176	230	67.6	20	190	1 1/2	565	170	215	4-12	119	95	190	105
HCP-2200SMF	169	12	40	244	348	159	176	257	67.6	20	190	1 1/2	592	170	215	4-12	119	95	190	105
HCP-3000SMF	187	12	36	244	326	200	134	248	67.6	20	190	1 1/2	570	170	215	4-12	125.5	109	218	115
HCP-3700SMF	187	12	36	354	338	310	134	248	67.6	20	303	1 1/2	692	170	215	4-12	125.5	109	218	115
HCP-900SHMF	169	13	25	180	260	136	97	207	67.6	20	124	3/4	440	170	215	4-12	119	100	200	115
HCP-900SHMFS	169	13	25	144	260	100	97	207	67.6	20	89	3/4	404	170	215	4-12	119	100	200	115
HCP-1500SHMF	169	13	25	242	283	198	97	230	67.6	20	187	3/4	525	170	215	4-12	119	100	200	115
HCP-1500SHMFS	169	13	25	197	283	153	97	230	67.6	20	142	3/4	480	170	215	4-12	119	100	200	115
HCP-2200SHMF	187	13	25	290	267	246	97	214	67.6	20	238	3/4	557	170	215	4-12	125.5	100	200	115
HCP-2200SHMFS	187	13	25	248	267	204	97	214	67.6	20	190	3/4	515	170	215	4-12	125.5	100	200	115
HCP-3700SHMF	187	13	25	361	301	317	97	248	67.6	20	302	3/4	662	170	215	4-12	125.5	100	200	115
HCP-3700SHMFS	187	13	25	313	301	269	97	248	67.6	20	255	3/4	614	170	215	4-12	125.5	100	200	115

HCP S(H)HM/(H)MSF series

HCP-S(H)HM

HCP-(H)MSF

Feature

1. The main drive parts are made with stainless materials, which increase durability and corrosion resistance.
2. It is compact, and can be used when there are limitations on instillation space.
3. It is separated into a pressure type and a oil quantity type, and has a wide range of performances.

Structure

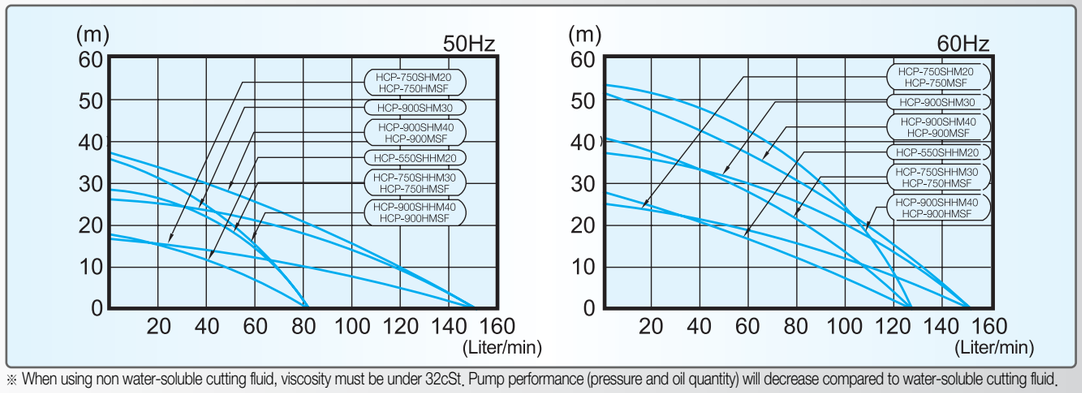
- A horizontal type self -priming multi-stage pump
- Unlike the HCP-S, A horizontal type pump, but the operation methods are the same.
- A multi-stage pump capable of a wide range of performances.

HCP- □ S(H)HM □
- Impeller Stage
- Pump Type : Horizontal Multi-Stage Type
- High Pressure
- STAINLESS TYPE
- Motor Output
- HANSUNG **Coolant Pump**

HCP- □ (H)MSF
- Pump Type : (Multi-Stage Small Size)
- High Pressure
- Motor Output
- HANSUNG **Coolant Pump**

Performance Curve

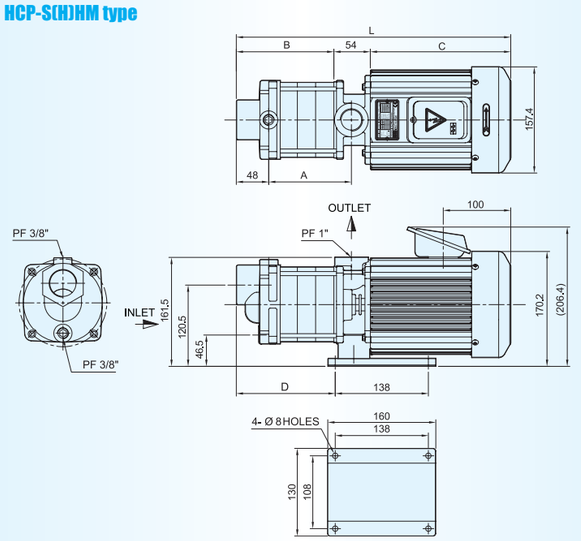
Oil for Testing : ISO-VG2, temperature 20℃



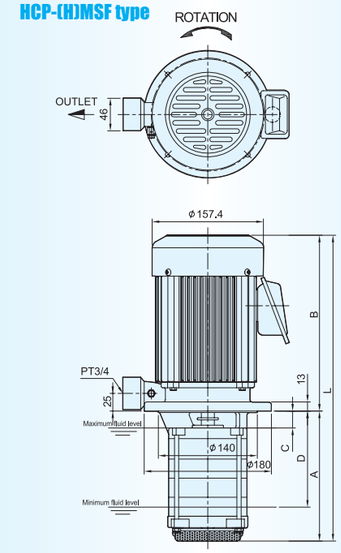
※ When using non water-soluble cutting fluid, viscosity must be under 32cSt. Pump performance (pressure and oil quantity) will decrease compared to water-soluble cutting fluid.

External Figure

HCP-S(H)HM type



HCP-(H)MSF type



Pump Spec.

Type \ Specification	MOTOR						PUMP			
	Output (W)	Frequency (Hz)	Voltage (V)	Current (A)	Phase	Poles	Total Head (m)	Dis. Vol (ℓ/min)	Pipe Size (PT)	Weight (kg)
HCP-750SHM20	750	50	200 380	3.5 2.0	3	2	15	35	1	17
		60	200/220 380	4.0 2.5			20			
HCP-900SHM30	900	50	200 380	5.2 3.1	3	2	20	35	1	18
		60	200/220 380	6.0/5.8 3.4			30			
HCP-900SHM40	900	50	200 380	5.2 3.1	3	2	30	35	1	19
		60	200/220 380	6.0/5.8 3.4			45			
HCP-550SHHM20	550	50	200 380	2.5 1.4	3	2	15	20	1	13
		60	200/220 380	2.7 1.6			25			
HCP-750SHHM30	750	50	200 380	3.5 2.0	3	2	25	20	1	14
		60	200/220 380	4.0 2.5			35			
HCP-900SHHM40	900	50	200 380	5.2 3.1	3	2	30	20	1	15
		60	200/220 380	6.0/5.8 3.4			50			
HCP-750MSF	750	50	200 380	3.5 2.0	3	2	15	35	3/4	23
		60	200/220 380	4.0 2.5			20			
HCP-900MSF	900	50	200 380	5.2 3.1	3	2	30	35	3/4	23
		60	200/220 380	6.0/5.8 3.4			45			
HCP-750HMSF	750	50	200 380	3.5 2.0	3	2	25	20	3/4	20
		60	200/220 380	4.0 2.5			35			
HCP-900HMSF	900	50	200 380	5.2 3.1	3	2	30	20	3/4	20
		60	200/220 380	6.0/5.8 3.4			50			

Dimension

Type \ Item	A	B	C	D	L
HCP-750HM20	68.5	90.5	208	92.5	352.5
HCP-900SHM30	95.5	117.5	208	119.5	379.5
HCP-900SHM40	122.5	144.5	208	146.5	406.5
HCP-550SHHM20	59.5	81.5	208	84.5	343.5
HCP-750SHHM30	77.5	99.5	208	102.5	361.5
HCP-900SHHM40	95.5	117.5	208	120.5	379.5
HCP-750MSF	184	249	20	136	433
HCP-900MSF	184	249	20	136	433
HCP-750HMSF	165	249	20	117	414
HCP-900HMSF	165	249	20	117	414

HCS Suction Filter series

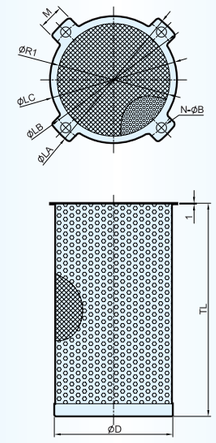
Feature

1. This HCS-TYPE is a suction filter for the submerged type coolant pumps HCP-F and HCP-MF.
2. It prevents the entry of foreign substances to the pump, ensuring durability and increased viscosity.
3. It requires regular cleaning for optimum use.
4. The F-TYPE uses a 20Mesh filter, and the MF-TYPE uses a 14Mesh filter

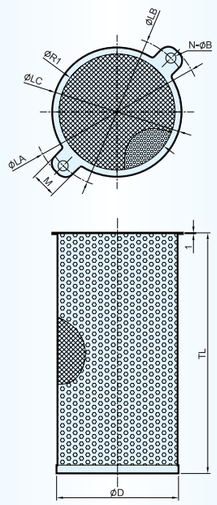
HCS - □
- Product Range
- HANSUNG **Coolant Suction Filter**

External Figure

HCP-60F~900MFS



HCP-400F

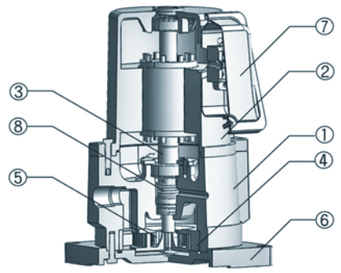


Dimension

Type \ Item	ø D	ø R1	TL	ø LA	ø LB	ø LC	M	N-ø B
HCS- 60F	99	92	160	147	130	118	30	4 - ø 9
HCS- 100F	99	92	160	147	130	118	30	4 - ø 9
HCS- 180F	124	117	180	180	160	143	30	4 - ø 12
HCS- 250F	140	133	252	180	160	150	30	4 - ø 12
HCS- 258F	137	130	185	180	160	156	30	4 - ø 12
HCS- 400F	144	137	284.5	202	180	153	30	2 - ø 12
HCS- 418F	161	154	186	200	180	176	30	4 - ø 12
HCS- 428F	161	154	285	200	180	176	30	4 - ø 12
HCS- 900MF	184	177	260	240	215	190	30	4 - ø 14
HCS- 900MFS	179	172	213.5	235	215	186	30	4 - ø 14

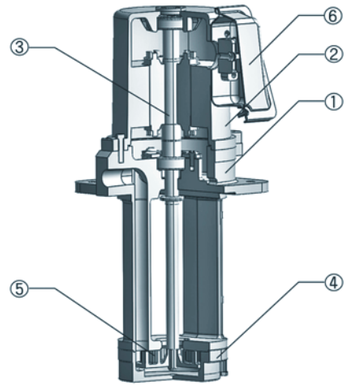
Inner Figure

HCP - S series



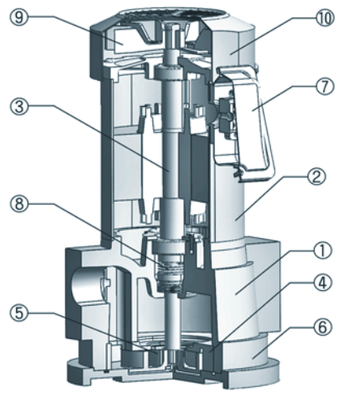
No	PART NAME
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	BASE
7	TERMINAL BOX
8	MECHANICAL SEAL

HCP - F series



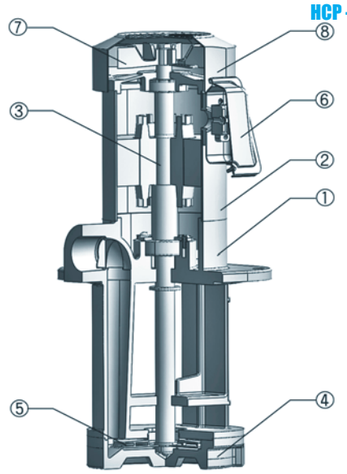
No	PART NAME
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	TERMINAL BOX

HCP - S series



No	Part Name
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	BASE
7	TERMINAL BOX
8	MECHANICAL SEAL
9	FAN
10	FAN COVER

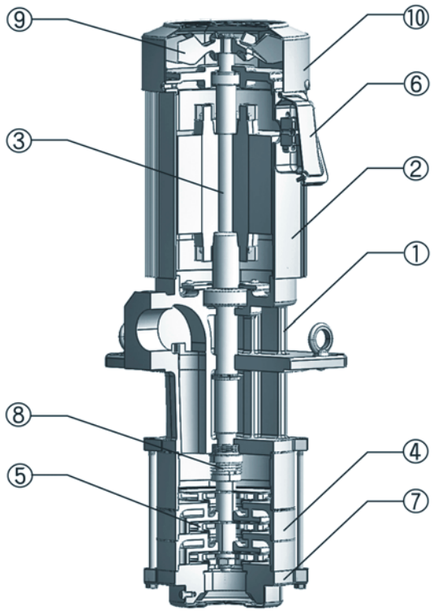
HCP - F series



No	Part Name
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	TERMINAL BOX
7	FAN
8	FAN COVER

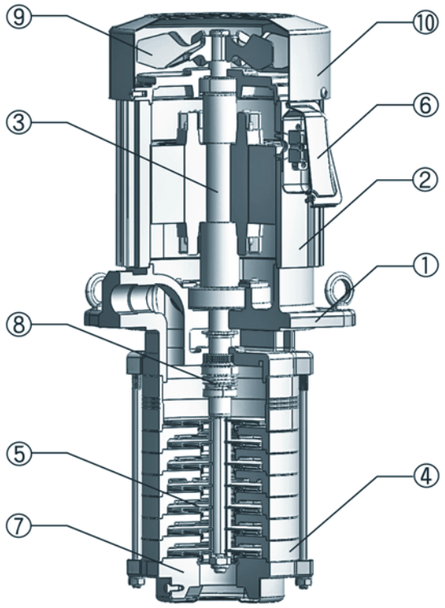
Inner Figure

HCP - MF series



No	Part Name
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	TERMINAL BOX
7	INLET COVER
8	MECHANICAL SEAL
9	FAN
10	FAN COVER

HCP - HMF series

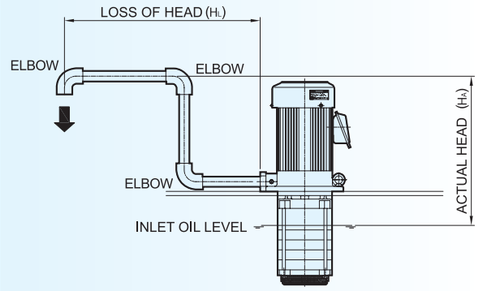


No	Part Name
1	PUMP BODY
2	MOTOR
3	SHAFT
4	IMPELLER HOUSING
5	IMPELLER
6	TERMINAL BOX
7	INLET COVER
8	MECHANICAL SEAL
9	FAN
10	FAN COVER

Method of Pump Selection

The selection of the pump is made according to the pipe path and the connection method.
The loss of head is decided by the pipe length and the number of pipe components.
Hence, when designing the pipe path, the pipe length should be kept as short as possible, and elbows or other fittings and valves should be kept to the minimum necessary number to minimize loss of head.
A pump can be selected based on the total head and required oil quantity acquired through an optimum piping design, and the selection method can be calculated as follows:

Head Calculation Method



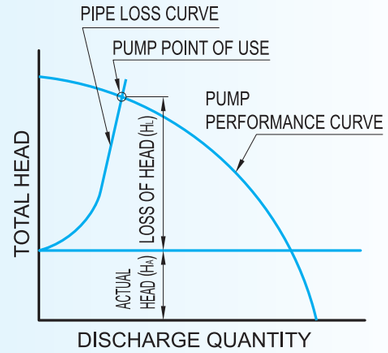
The total head (HT) as required by the user is the sum of the actual head(HA) and the loss of head(HL), and is expressed as below.

$$H_T = H_A + H_L$$

As illustrated in the diagram on the right, the pump can be selected based in the total head calculated by adding the actual head to the loss of head, and the required oil quantity.
※ The calculated values differ according to operational environments and oil viscosity.

The loss of head can be calculated as follows:

$$H_L = f \times \frac{L}{d} \times \frac{v^2}{2g}$$



Here,
f= pipe coefficient of friction (decided by the Reynolds number)
※ Water-soluble oil 0.03, coefficient value increases with viscosity

L=Pipe length (m)
d=pipe internal diameter (m)
V=fluid speed (m/s)
g=gravitational acceleration (9.8m^2/s)

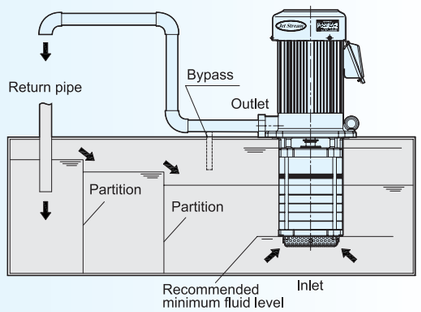
L, the pipe length, is not only the length of the total piping, but also includes piping components' length loss values.
Refer to the below table to calculate the length loss values for the components.

EX)
Total pipe length + elbow length x quantity + suction + discharge = total piping length (L)

SIZE	INFLOW	OUTFLOW	90° ELBOW	BALLVALVE
8A(1/4B)	0.3	0.6	0.7	6.4
10A(3/8B)	0.4	0.8	0.9	6.7
15A(1/2B)	0.6	1.2	1.1	6.7
20A(3/4B)	0.8	1.6	1.3	7.3
25A(1B)	1.1	2.2	1.6	8.8
40A(1 1/2B)	1.9	3.2	2.3	12.8

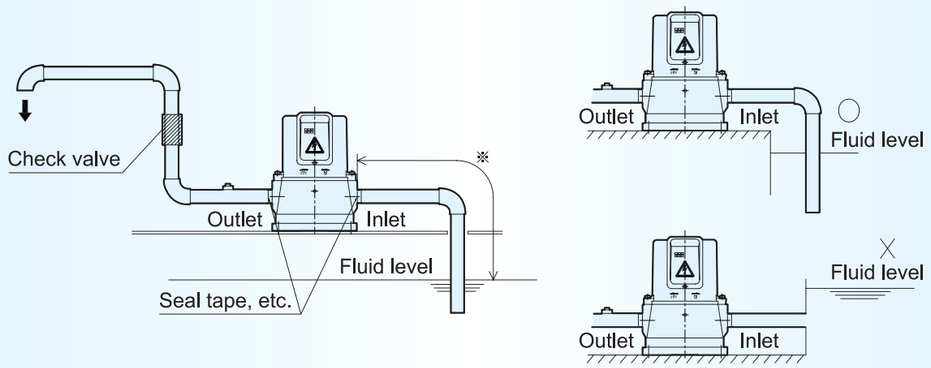
Product Installation Methods

All Type



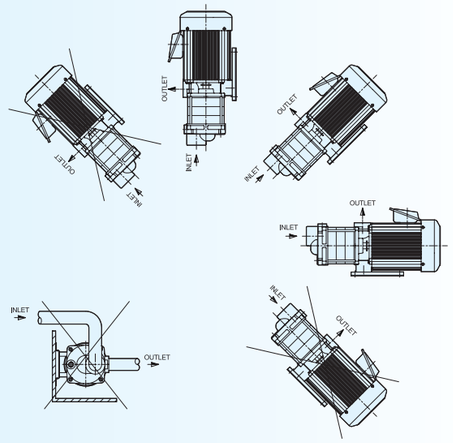
① Keep the pipe length to a minimum, as well as the number of elbows, fittings and various valves. Also, use officially standardized products. If the pipe is thin, or has many curves, the discharge quantity will decrease.
② Make sure that the pipe's weight does not directly affect the pump.
③ When connecting the pump screws, do not use excessive force.
④ To prevent the entry of oil or air, take oil leak prevention measures, for example by using seal tapes, before piping.
⑤ Use tanks with large widths. Even if the discharge quantity is small, produce a tank that is at least 3 times the size. If the tank capacity is insufficient, it may cause reductions in discharge quantity, increase in oil temperature, clogging caused by foreign substances or bubbles in the strainer. When supplying oil inside the tank, supply slowly to prevent the adulteration of air.
⑥ Make sure to prevent the entry of chips, dust, and other foreign substances into the pump. Produce a 3-level oil thresholds inside the tank, or use at least a 1-level oil threshold and a filter.
⑦ In the event of water hammer effects, install a bypass pipe in front of the discharge outlet.
⑧ If the oil level is low, air can mix, or oil will not be discharged. Keep the minimum tank oil level as recommended. Oil levels differ according to oil viscosity, but make sure to keep the actual level sufficiently high. However, if the oil level is too high, oil can enter through the gap in the motor section, and cause motor damage. Hence, make sure that the oil level does not exceed the recommended maximum oil level.

HCP-S type



▶ Install the HCP-STYPE close to the tank, and keep length of the suction pipe to a minimum.
▶ Keep the maximum length of the suction pipe below (※)0.7m.
▶ When extending the suction pipe for other reasons, connect a check valve to the discharge pipe
▶ Make sure to take oil leak prevention measures, for example by using a seal tape, before installing the suction pipe connection. If air enters the suction pipe, it can cause pumping and reduced discharge quantity.
▶ The oil level at the pump suction section needs to be lower than the pump suction section. If the oil level is high, it can cause oil leaks from the mechanical seal.

HCP-S(H)HM type



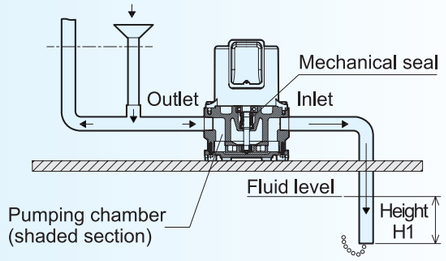
▶ To reduce suction loss, keep the length of the suction pipe to a minimum. The pump needs to be installed in a well-ventilated area, and if installed outdoors, make sure to install a protective device to prevent freezing.

▶ Install the pump in a suitable location as illustrated in the diagram. If the suction oil level is lower that the suction section, connect a check valve to the end of the suction pipe. If the oil level is low, there will be no suction.

▶ If the length of the suction pipe is 10m, of if the suction oil level is further that 4m away, connect a pipe that is larger than the circumference of the pump suction.

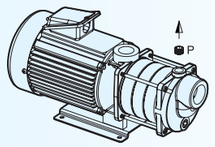
▶ Make sure that all the pipes are perfectly connected as to eliminate the adulteration of bubbles. Also, if the pipes are connected by a hose rather than a pipe, make sure to connect to pipes that are not foldable. Make sure to install a filter at the suction section to prevent the adulteration of lumps of foreign substances.

Priming

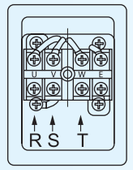


▶ As with the HCP-STYPE or the HCP-S(H)HMTYPE, there will be air inside the pump when using it after a prolonged rest. Therefore, to operate the pump, air needs to be let out. If it is operated with the presence of air, the oil will not discharge, or it may cause pressure reduction and oil quantity reduction. Moreover, the consequent excessive idling will cause mechanical seal damage.

▶ For HCP-S TYPE oil priming, inject oil into the front of the discharge section as set out in the diagram. For HCP-S(H)HMTYPE, if the pump's suction section is higher than the oil level, mix in oil at the point illustrated in the diagram (P) to fully fill up the oil inside the pump before operation.



Connection of Electric Line



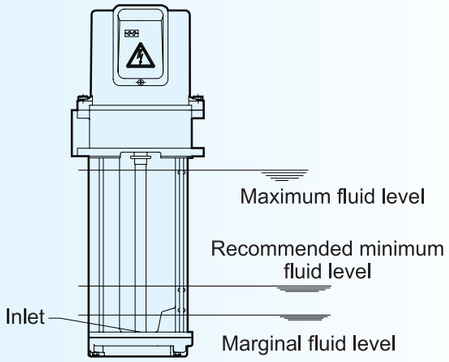
220V	
R -	1+6
S -	2+4
T -	3+5

380V		
R - 1	6	
S - 2	4	+
T - 3	5	

● Check the specifications on the nametag before connecting the power.
● The connections should be made as mentioned above, and check the rotation direction.

Operating Instructions & Breakdown Countermeasures

Use the Pump



- Make sure to use the pump within the standard range as set out in the catalog and the nametag. Also, in the event of lowered pump performance, it is most likely caused by the adulteration of foreign substances at the suction section. Please operate again with clean oil 2 to 3 times a year.
- HCP-S and HCP-S(H)HMTYPE have been produced with a single shaft, and use a mechanical seal as the stuffing box. Therefore, excessive idling can damage the SEAL, and idling for more than 30 seconds should be avoided.
- For submerged type pumps, the oil level needs to be between the maximum and the minimum levels as illustrated in the diagram on the left. If the level drops below the recommended level, air adulteration can occur during operations. Also, make sure that the gap between the floor and the tank is more than 20~30mm. Keep the maximum oil level at least 20mm lower that the flange section.

Cause & Remedy of Trouble

Status		Cause	Countermeasures
Faulty rotation	Noise	Faulty switch connection	Adjust the connection
		Electric wire disconnection	Contact main office or other offices
		Worn bearings causing contact between motor rotators and fixed parts	Exchange bearings
	No noise	Motor coil disconnection	Contact main office or other offices
		Electric wire disconnection	Repair electric wire
		Faulty switch contact	Adjust or exchange switch
During rotation	Noise, Excess current, Excessive heat	Contact between motor rotators and fixed parts	Contact main office or other offices
		Imbalance of motor rotators and fixed parts	
		Fixed coil disconnection	
		Reverse rotation	Change 2 wires from the R.S.T terminals
Discharge quantity reduction	Small discharge quantity	Bubbles inside the tank	Eliminate bubble source
		Worn impellers	Replace impellers
		Low oil viscosity	Maintain optimum viscosity (32cSt at 30°c)
	Sudden reduction in discharge quantity	Clogging of suction outlet	Clean suction outlet
		Insufficient oil inside the tank	Supplement oil

※ The motor can be used at temperatures of up to 120°c (surrounding temperature + motor temperature) with E-type electricity in accordance with KSC4202. Contact us if and when the surrounding temperature

HALS LUBE®

ROTOR PUMP

HANSUNG LUBRICATION SYSTEM