

OIL FILTER UNIT FOR OLTC AND OIL PUMP, GAS BLOWER FOR TRANSFORMER



OIL PUMP
(HNL 3 - 80 TYPE)



OIL PUMP
(HNL 7 - 150 TYPE)



OIL FILTER UNIT



GAS BLOWER



OIL PUMP (HNL - 200 TYPE)





1. GENERAL

Cleaning of the switching oil by a paper filter

When on-load tap changers are used in industrial transformers under extremely onerous conditions (defined as those involving a high switching frequency, consistently at full load and frequent overloads), arcing will relatively soon cause contamination of the switching oil. This applies, for example, to on-load tap changers incorporated into transformers on furnace or electrolytic plants.

The oil filter unit is used to clean the switching oil in on-load tap changers. Depending on requirements, it can be fitted with a paper filter for cleaning.

The oil filter unit allows to filter the switching oil continuously without interrupting the transformer operation.

Filtering the switching oil increases the mechanical life of the diverter switch unit considerably and maintains the dielectric strength of heavily stressed insulation material. It also reduces the number of inspections and oil changes which are otherwise necessary at short intervals.

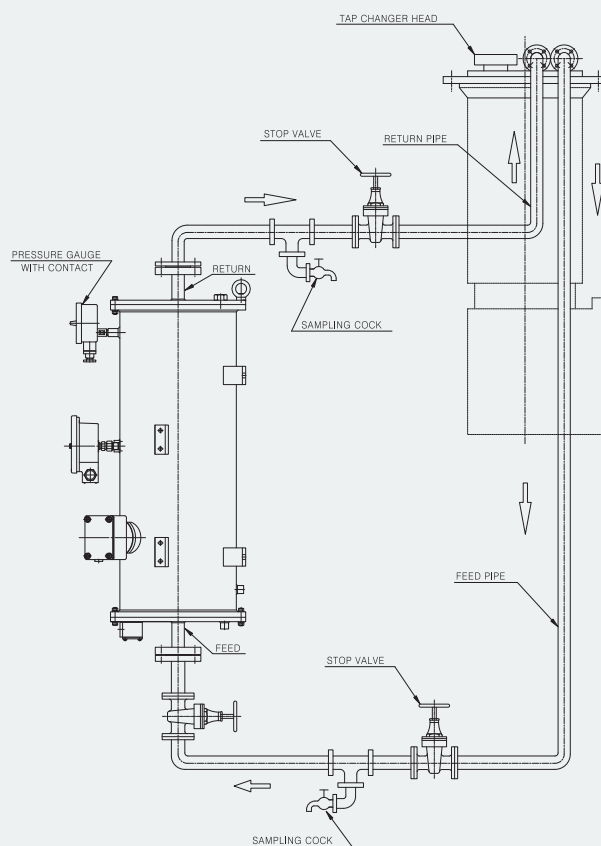


Figure 1.

2. DESIGN

(See figure 1)

Pump unit

(See figure 2 or dimension drawings)

VOLTAGE (V)	220		380		415		440	
FREQUENCY (Hz)	60	50	60	50	60	50	60	50
RATING CURRENT (A)	7.0	7.7	4.0	4.4	3.7	4.1	3.5	3.9

Pump motor

Ratings (standard design) :

- ? Power : 1.5kw
- ? Voltage : AC 220/380V, 3 PHASE
- ? Current : 7/4 A
- ? Frequency : 60 Hz (50 Hz)
- ? Synchronous speed : 3600 rpm (3000 rpm)
- ? Other voltages and frequencies available on request.

Feed pump

- Centrifugal pump, capacity approx.
- 50L/min against a pressure of 0.3 bar

- Filter insert : Design with paper filter insert for cleaning of the switching oil, filter fineness 0.5 μ (micron)

- Pressure tank :
 - Steel cylinder with top and bottom covers
 - Outdoor design
 - Dimensions = \varnothing 370(mm) \times 920H(mm)
 - Test pressure 6 bar
 - Flanged connectors for feed and return pipes.
 - Pressure gauge with contact (mounted to pressure tank) : adjustable from 0~4 bar, set at 3.5 bar, contact rating : AC 220, 1A
 - Temperature switch (mounted to pressure tank) : adjustable from 0~140 $^{\circ}$ C, set at 25 $^{\circ}$ C, contact rating : AC 220, 10A
 - Weight of the complete pump unit (dry) : approx. 125kg
 - Oil capacity : approx. 50 liter



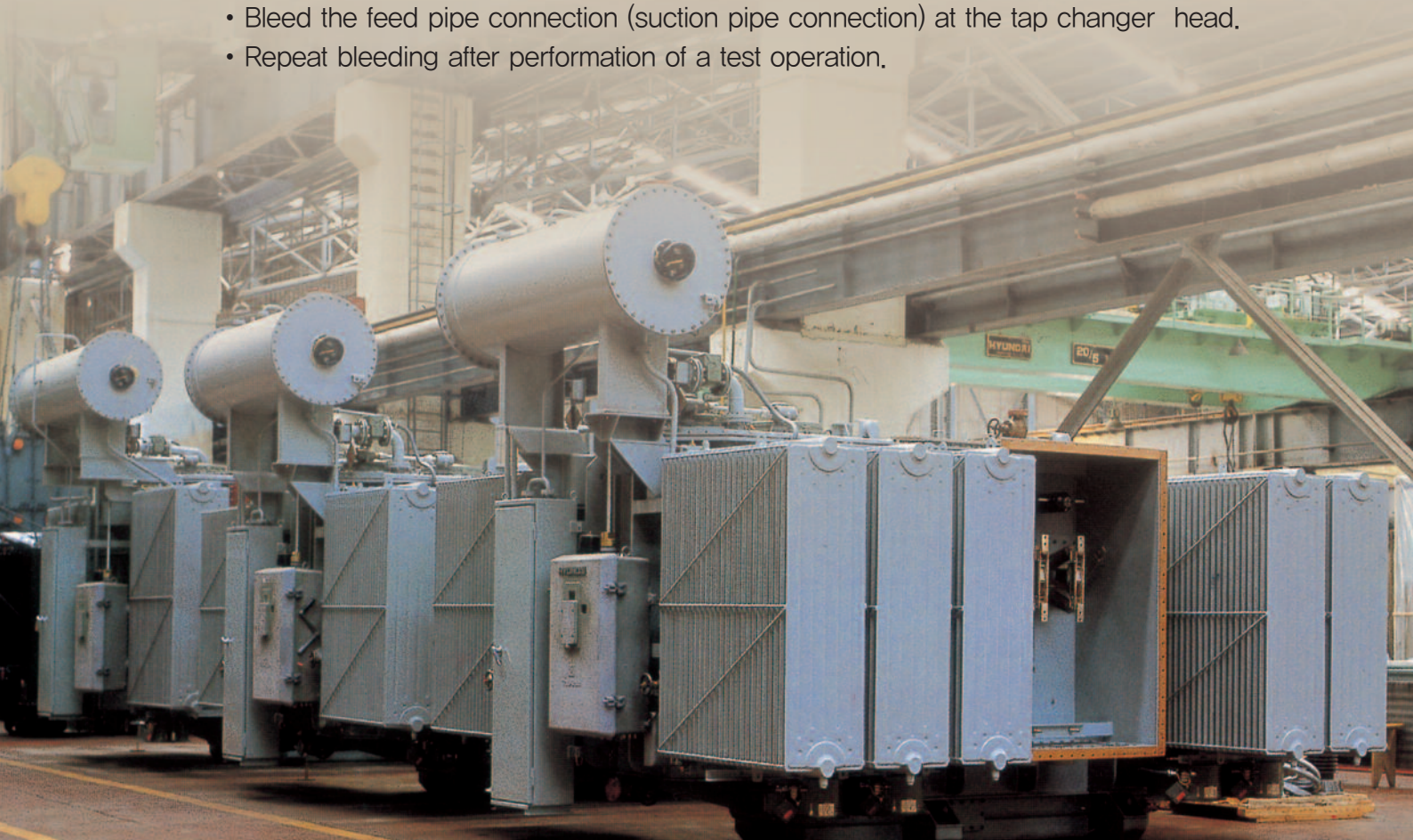
Figure. 2



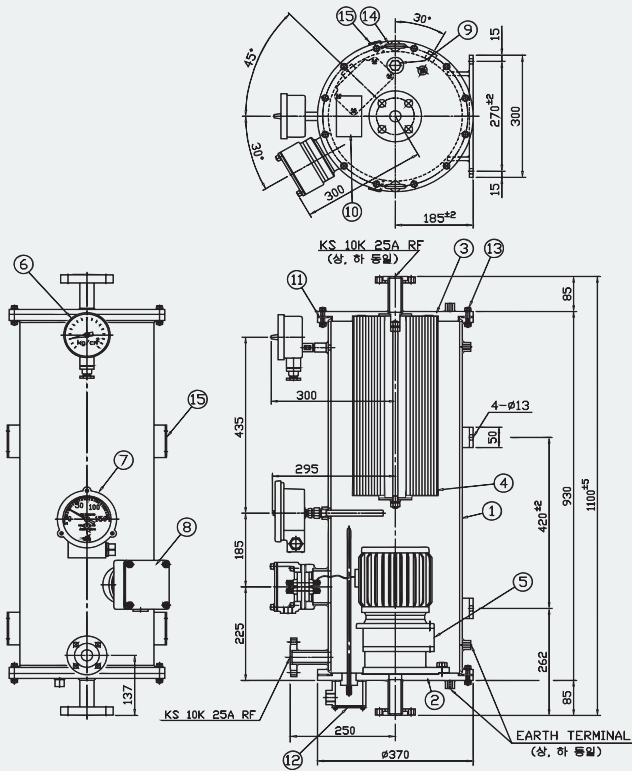
3. REPLACEMENT OF THE FILTER INSERT

Paper filter

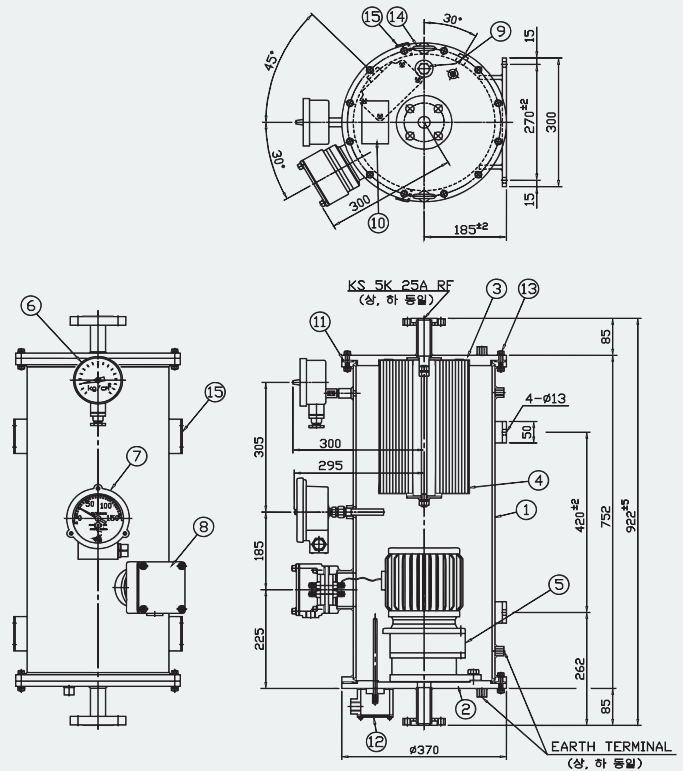
- The paper filter insert must be replaced when the max operating pressure of approx. 3.5bar has been reached. The exact pressure limit is set at the pressure gauge by the manufacturer.
- Replacement of the paper filter insert should be carried out as follows :
 - Shut the stop valves of feed and return pipes.
 - Open the sample valve of the feed pipe and the bleeder screw at the return pipe elbow oil return at the pressure tank.
 - Drain about 25 liters of the oil.
 - Unscrew 12 cover bolts M8/w.s.13 and remove the cover with gaskets.
 - Unscrew lock nut M12/w.s.19 and remove the filter insert with gaskets.
 - Install the new filter insert with gasket. Make sure that the gasket is properly seated. Fasten with lock nut M12/w.s.19, tightening torque 30Nm.
 - Fasten the cover and the cover gasket (12 screws M18 with nuts, max torque 15Nm.)
 - Establish connection for the return pipe.
 - Open the stop valves for feed and return.
 - Bleed the pressure tank at the return pipe connection.
 - Bleed the feed pipe connection (suction pipe connection) at the tap changer head.
 - Repeat bleeding after performance of a test operation.



4. DIMENSION DRAWING



HF-04 TYPE



HF-06 TYPE

15	HOLDER		4
14	EYE BOLT		2
13	BOLT, NUT		24
12	HEATER		1
11	GASKET		2
10	NAME PLATE		1
9	VENT		2
8	TERMINAL BOX		1
7	TEMP' G/G		1
6	PRESSURE G/G		1
5	MOTOR PUMP		1
4	FILTER		1
3	TOP COVER		1
2	BOTTOM COVER		1
1	BODY		1
ITEM NO	DESCRIPTION		Q' TY

Oil filter unit type "HF-04, 06"
pump unit with paper filter insert
dimension drawing

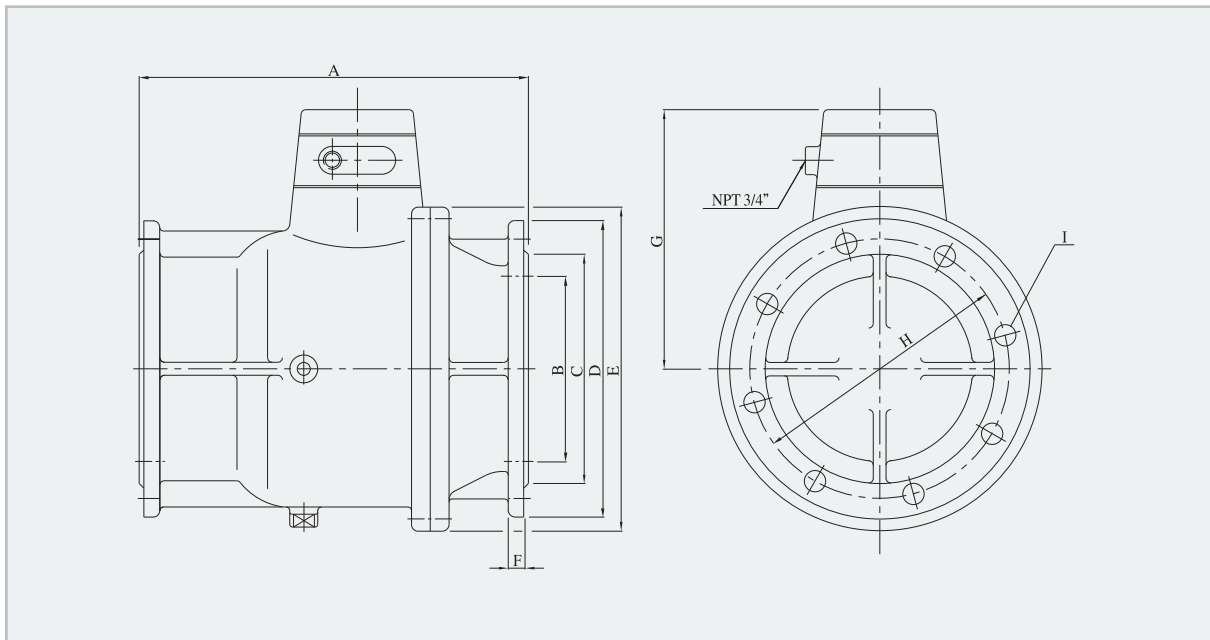


5. OIL PUMP(HNL - 200 TYPE)

5-1. STANDARD SPECIFICATION

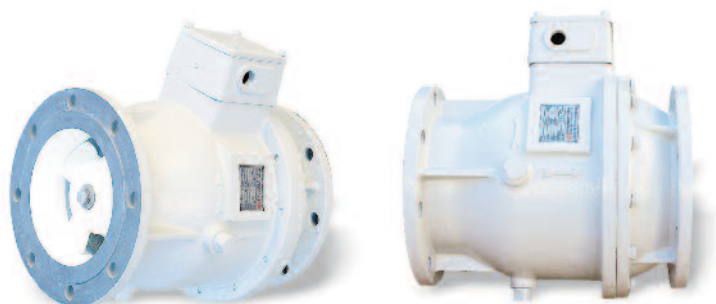
NO	PUMP TYPE	HEAD(M)	CAPACITY (M ³ / Hr)	NOMINAL FLANGE (A)		MOTOR OUTPUT(Kw)
				SUCTION	DISCHARGE	
1	HNL1 -150	1.5	65	150	150	0.75
2	HNL2 -150	1.4	100	150	150	1.5
3	HNL2 -200	1.5	120	200	200	1.5
4	HNL3 -200	2.5	120	200	200	2.2

5-2. OUTLINE DRAWING



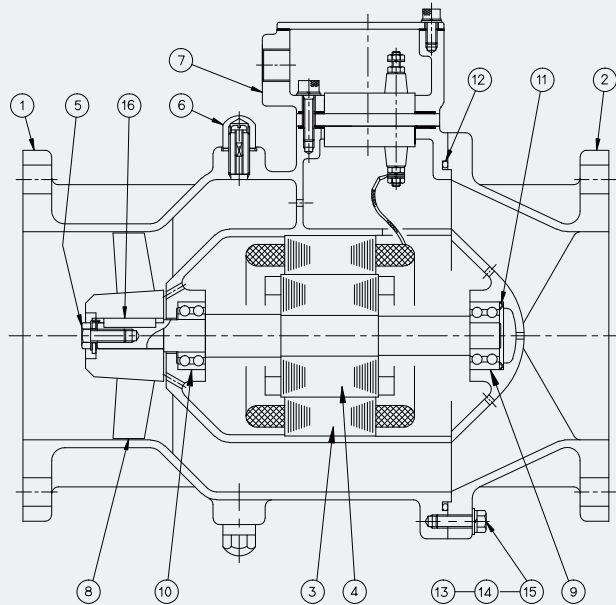
5-3. DIMENSIONS

NO	TYPE	A	B	C	D	E	F	G	H	I
1	HNL1 -150	395	Ø150	Ø215	Ø285	Ø300	22	245	Ø240	8-Ø23
2	HNL2 -150	360	Ø150	Ø210	Ø265	Ø290	20	235	Ø230	8-Ø19
3	HNL2 -200	420	Ø200	Ø265	Ø320	Ø350	22	280	Ø280	8-Ø23
4	HNL3 -200	420	Ø200	Ø265	Ø320	Ø350	22	280	Ø280	8-Ø23



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5-4. SECTION DRAWING

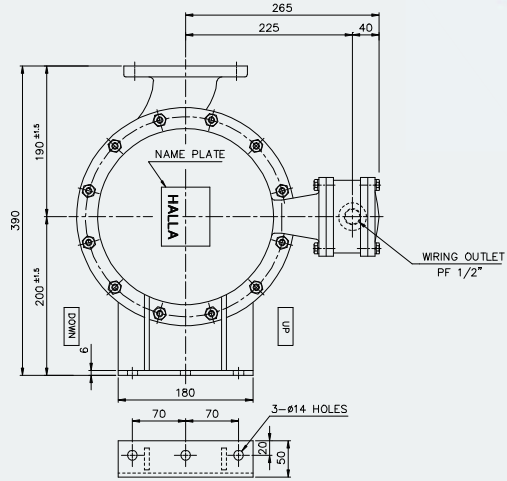
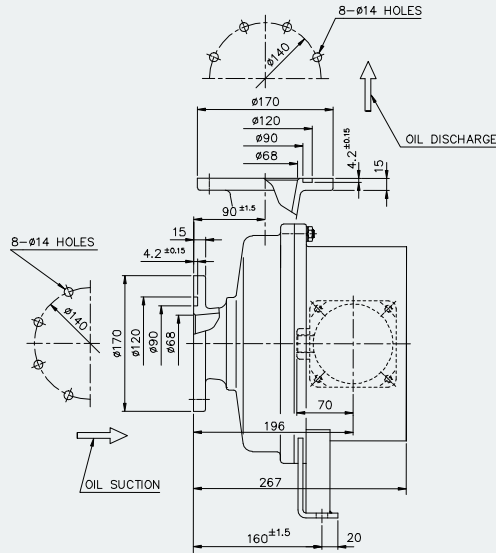


16	KEY	S45C	1
15	평 WASHER	SUP6	12
14	SPRING WASHER	SUP6	12
13	BOLT	S45C	12
12	O-RING	VITON	1
11	PLATE SPRING	SUP6	1
10	BEARING	SUJ2	1
9	BEARING	SUJ2	1
8	PROPELLER	AL	1
7	TERMINAL BOX ASS'Y	AL	1
6	VENT ASS'Y	SS400	4
5	CLAMPING SET ASS'Y	SUS304	1
4	ROTOR ASS'Y	S45C	1
3	STATOR ASS'Y	SS400	1
2	PRESSURE CONNECTION	SC46	1
1	INTAKE CONNECTION	SC46	1
ITEM NO	DESCRIPTION	MATERIAL	Q' TY



6. OIL PUMP(HNL 3 - 80 TYPE)

6-1. SPEC & DIMENSION



SPECIFICATION

TOTAL HEAD	7M
QUANTITY	700 L/mim(42M ³ /Hr)

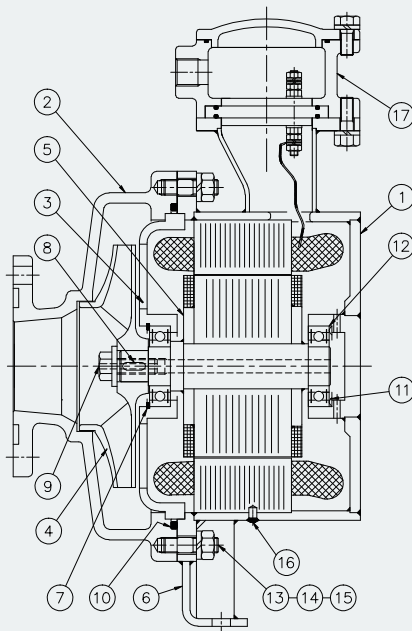
USING LIQUID

LIQUID PUMPED	SILICON OIL(50Cst at 25°C)
OPERATING TEMPERATURE	80°C

MOTOR SPECIFICATION

PEASE	1Ø, 3Ø
FREQUENCY	50Hz, 60Hz
VOLT	220V, 380V, 440V
RATED OUTPUT	2.2kW
COLOR	MUNSELL N5.8
WEIGHT	APPROX. 54Kg

6-2. SECTION DRAWING

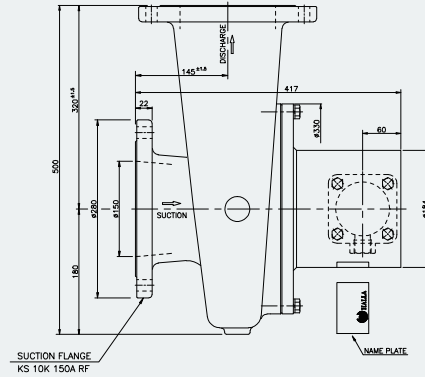
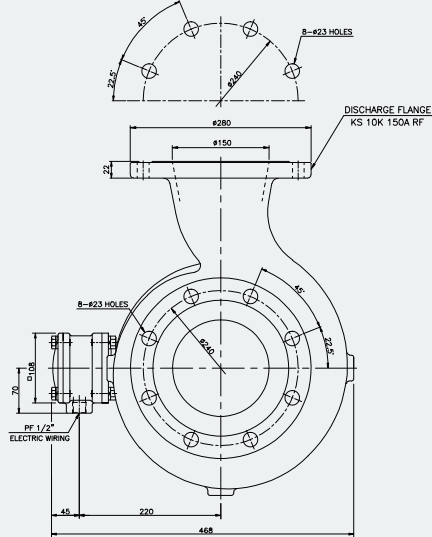


17	TERMINAL ASS' Y	FC20	1
16	PIN	SUS304	1
15	NUT	SCM4	12
14	SPRING WASHER	SUP6	12
13	STUD BOLT	SCM4	12
12	BEARING	SUJ2	2
11	BEARING SPRING W/W	SUP6	1
10	O-RING	VITON	1
9	LOCKING BOLT	SCM4	1
8	KEY	SM45C	1
7	SNAP RING	SUP6	1
6	BASE PLATE	SS400	1
5	ROTOR ASS' Y	SM45C	1
4	IMPELLER	SC46	1
3	LINER DISC	SC46	1
2	CASING	SC46	1
1	HOUSING	SS400	1
ITEM NO	DESCRIPTION	MATERIAL	Q' TY

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7. OIL PUMP(HNL 3 - 150 TYPE)

7-1. SPEC & DIMENSION



SPECIFICATION

TOTAL HEAD	4M
CAPACITY	2000 L/mim(120M ³ /Hr)

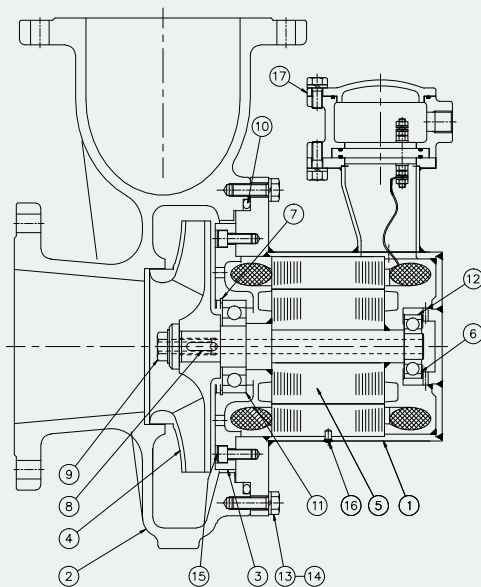
USING LIQUID

LIQUID PUMPED	SILICON OIL(50Cst at 25°C)
OPERATING TEMPERATURE	80°C

MOTOR SPECIFICATION

PEASE	3Ø
FREQUENCY	50Hz, 60Hz
VOLT	220V, 380V, 440V
RATED OUTPUT	2,2kW

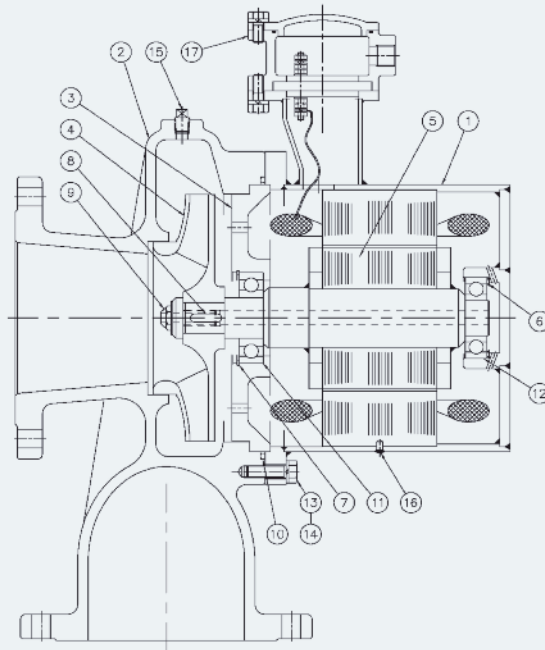
7-2. SECTION DRAWING



17	TERMINAL ASS'Y	FC20	1
16	PIN	SUS304	1
15	WRENCH BOLT	SM45C	6
14	SPRING WASHER	SUP6	16
13	BOLT	SM45C	16
12	REAR BEARING	SUJ2	1
11	FRONT BEARING	SUJ2	1
10	O-RING	VITON	1
9	IMPELLER BOLT	SM45C	1
8	KEY	SM45C	1
7	SNAP RING	SUP6	1
6	WAVE WASHER	SUP6	1
5	ROTOR ASS'Y	SM45C	1
4	IMPELLER	SC46	1
3	LINER DISC	SS400	1
2	CASING	SC46	1
1	HOUSING ASS'Y	SS400	1
ITEM NO	DESCRIPTION	MATERIAL	Q' TY

OIL FILTER UNIT · OIL PUMP · GAS BLOWER

8-2. SECTION DRAWING

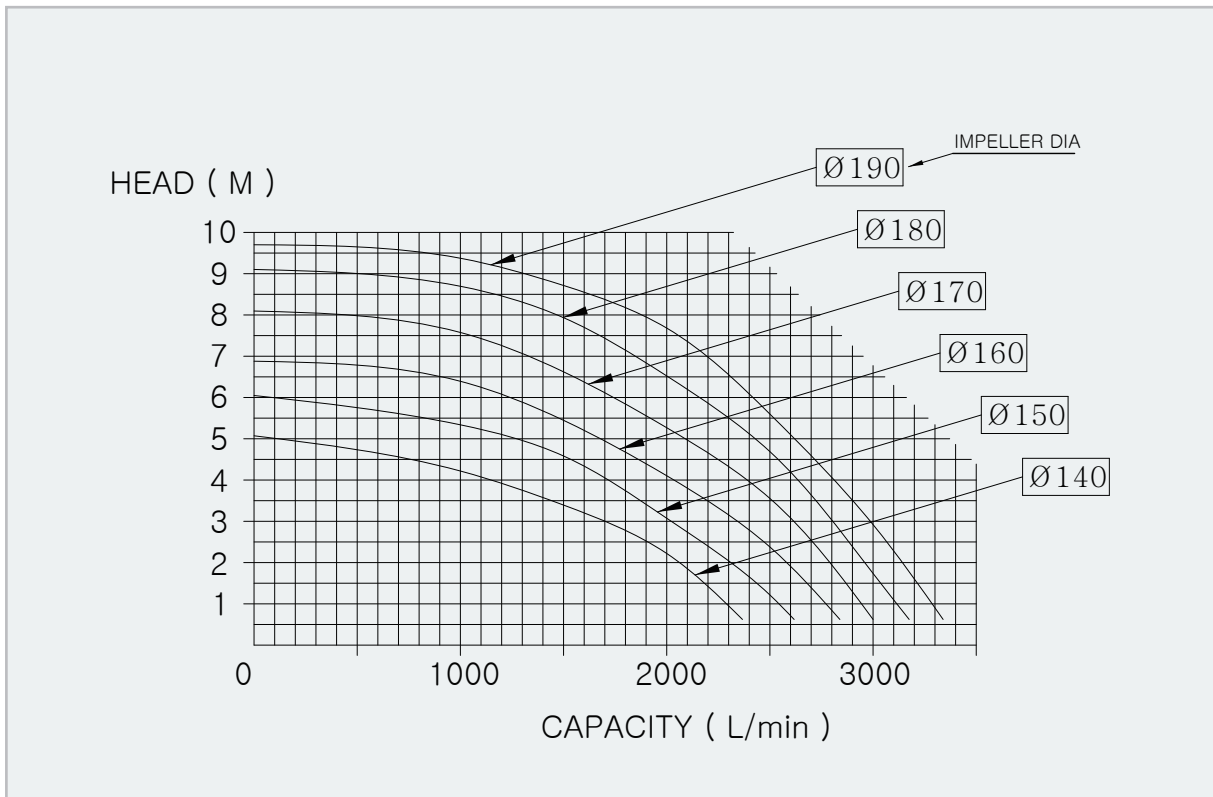


17	TERMINAL ASS' Y	FC20	1
16	PIN	SUS304	1
15	PLUG	SS400	3
14	SPRING WASHER	SUP6	16
13	BOLT	S45C	16
12	REAR BEARING	SUJ2	1
11	FRONT BEARING	SUJ2	1
10	O-RING	VITON	1
9	IMPELLER BOLT	SS400	1
8	KEY	SM45C	1
7	SNAP RING	SUP6	1
6	WAVE WASHER	SUP6	1
5	ROTOR ASS' Y	SM45C	1
4	IMPELLER	SC46	1
3	LINER DISC	SS400	1
2	CASING	SC46	1
1	HOUSING ASS' Y	SS400	1
ITEM NO	DESCRIPTION	MATERIAL	Q' TY

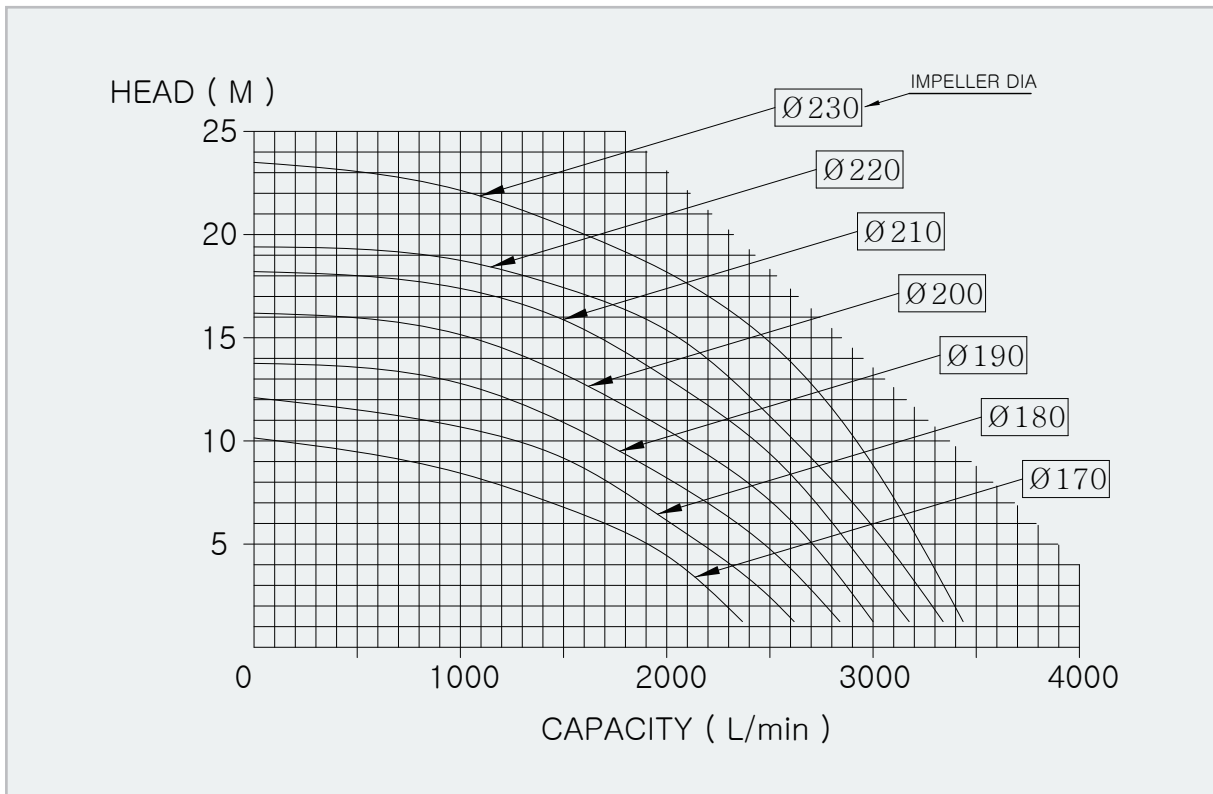


9. ESTIMATED CURVE

9-1. HNL3-150 PUMP



9-2. HNL7-150 PUMP



OIL FILTER UNIT · OIL PUMP · GAS BLOWER

10. KTX OIL PUMP(HNL 8- 90)

10-1. SPEC & DIMENSION

SPECIFICATION

TOTAL HEAD	11.3M
CAPACITY	1250 L/min(75M ³ /Hr)

USING LIQUID

LIQUID PUMPED	SILICON OIL(50Cst at 25℃)
OPERATING TEMPERATURE	80℃

MOTOR SPECIFICATION

PEASE	3Ø
FREQUENCY	60Hz
VOLT	440V
RATED OUTPUT	6.0kW, 15A

PUMP TYPE : HNL8-90

10-2. SECTION DRAWING

23	육각머리 볼트			10
22	Connecting Seat	SS400		4
21	Drain Cock	SS400		1
20	Vent Cock	SS400		1
19	파형 스프링			1
18	접시머리나사			12
17	Terminal Box		HPS-6000-11	1
16	Bearing Case		HPS-6000-10	1
15	Nut			24
14	Bolt			24
13	Key			1
12	Snap Ring			1
11	O-ring	VITON		1
10	O-ring	VITON		1
9	O-ring	VITON		1
8	Bearing	NTN		1
7	Bearing	NTN		1
6	Impeller	SS400	HPS-6000-10	1
5	Rotor Ass'y		HPS-6000-09	1
4	Stator ass'y		HPS-6000-01	1
3	Press. Connection	SS400	HPS-6000-07	1
2	Intake Connection	SS400	HPS-6000-05	1
1	Middle Connection	SS400	HPS-6000-01	1
ITEM NO	DESCRIPTION	MATERIAL	DWG.NO.	Q' TY



11. GAS BLOWER

11-1. SPEC & DIMENSION

Technical drawings of the gas blower showing front, side, and detail views with dimensions and labels.

Front View Dimensions: 281, 731, 450^{±0.2}, 272, 586, 314, NAME PLATE

Side View Dimensions: M12 EARTH TERMINAL, 233^{±0.2}, 916, 524, 671, 316, NAME PLATE, TERMINAL BOX, LEVEL GUAGE, DRAIN VALVE, 12

Detail View Dimensions: 4-ø19, 340, 400

SPECIFICATION

NO	POWER	CAPACITY	STATIC PRESSURE	SUCTION PRESSURE
1	9.0kW	45M ³ /min	900mmAq	3.0Bar
2	11.0kW	54M ³ /min	450mmAq	1.2Bar
3	15.0kW	54M ³ /min	450mmAq	3.5Bar

GAS : SF-6
ELECTRIC : 3Ø, 60Hz, 4P, 220V, 380V, 440V

11-2. SECTION DRAWING

3D rendering and section drawing of the gas blower with numbered callouts.

30	AXIS	S45C	1
29	SLEEVE	S45C	1
28	BEARING HOLDER	SS400	1
27	BEARING	SUJ2	1
26	STOP RING	SK5	1
25	PIPE (RETURN)	SUS304	1
24	COVER	SS400	1
23	SIGHT GLASS	강화 GLASS	1
22	BEARING	SUJ2	1
21	BOTTOM BLIND COVER	SS400	1
20	KEY	S45C	1
19	STOP RING	SK5	1
18	IMPELLER	SS400	1
17	WAVE WASHER	SK5	1
16	BEARING HOUSING	SS400	1
15	BASE PLATE	SS400	1
14	DRAIN VALVE	C3771	1
13	COVER	SS400	1
12	PIPE (SEND)	SUS304	1
11	STATOR	SS400	1
10	ROTOR	S45C	1
9	RFAME	SS400	1
8	BOLT	SUS304	12
7	BEARING HOUSING	SS400	1
6	SEAL PLATE	SS400	1
5	KEY	S45C	2
4	LOCK WASHER	SUS304	1
3	BOLT	SUS304	1
2	IMPELLER	SS400	1
1	IMPELLER CASE	SS400	1

ITEM NO	DESCRIPTION	MATERIAL	Q' TY
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OIL FILTER UNIT · OIL PUMP · GAS BLOWER

Inquiry Data Sheet / Order Form of Halla Oil Filter Unit Pump, and Blower

- Company :
- Department :
- Name :
- Tel :
- Fax :

Inquiry Data

1. Oil Filter Unit

- Voltage : _____ (V)
- Frequency : _____ (Hz)

2. Oil Pump

- Voltage : _____ (V)
- Capacity : _____ (ℓ /min)
- Suction & Discharge Piping : _____ (A)
- Frequency : _____ (Hz)
- Pressure : _____ (bar)
- Head : _____ (m)

3. Gas Blower

- Voltage : _____ (V)
- Static Pressure : _____ (mmAq)
- Capacity : _____ (M³/min)
- Suction Pressure : _____ (bar)

• Others

- Spare parts _____
- Accessories _____
- Remarks _____



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