ISO 9001, ISO14001

www.halslube.com

HALS

HANSUNG AUTOMATIC LUBRICATION SYSTEM

Products & Technical Information Collection



HALS

㈜ 한성정공

Hansung Precision promises !

We will do responsible efforts and Investments for the Future !

Hansung Precision Co., Ltd., established in 1985 and accumulated technology & know-how for over 30 years, is specialized in oil & grease lubrication pump for industrial machinery including machine tools and coolant pump for machine tools.
Hansung Precision Co.,Ltd. using "HALS" brand, was the first Korean company produced centralized automatic lubrication pump and high-pressure precision lubrication system.
Since export of automatic lubrication pump to Japan and Taiwan for the first time in Korea in the early 1990s, Hansung Precision Co., Ltd. has been exporting lubrication pumps and coolant pumps to a lot of countries including Japan.
HALS centralized lubrication pumps, coolant pumps, rotor pumps and grease pumps, which are highly compatible and reliable, work a key function not only in machine tools but also in the other industrial machines.
HALS lubrication system for machine tools account for more than 80% of Korean domestic market.

HALS

It's the history !

Keeping with the artisanship of HALS !

1985.08 : 한성정공 설립
~
1996.08 : 고압정밀윤활시스템 개발 (국내 최초)
1997.03 : 국세청장표창 수상
1997.11 : 국무총리표창 수상 (우수자본재개발유공)
1999.03 : EM인증(국립기술품질원)
1999.09 : ISO9001 인증
2001.11 : 국무총리표창 수상(해외무역진흥)
2004.10 : 산업부장관표창 수상(우수자본재개발유공)
2004.11 : 100만불 수출탑 수상
2005.05 : 벤처기업 인증(중소기업청)
2006.10 : ISO14001 인증
2007.09 : 싱글PPM 인증(Oil Pump Type)
2008.08 : 기업부설연구소 설립
2008.10 : 싱글PPM 인증(Coolant Pump Type)
2009.06 : INNOBIZ 인증(중소기업청)
2011.09 : 대통령표창 수상 (우수자본재개발유공)
2012.06 : 윤활급유펌프 특허 등록
2012.07 : 오일압력감지 스위치 특허 등록
2012.08 : 정량밸브일체형원터치니플 특허 등록
2012.11 : 300만불 수출탑 수상
2014.02 : NRTL 인증(윤활펌프)
2014.08 : NRTL 인증(Rotor Pump)
2015.10 : 쿨런트 펌프 수출(Fanuc, 삼성전자 베트남 공장)
2017.03 : Main-Biz 인증(중소기업청)
2017.11 : NRTL 인증 (Coolnat Pump 15종)
2018.04 : 전동식 정량 그리스펌프 개발
2018.06 : INNOBIZ 인증 (중소벤처기업부)
2018.08 : 그리스 펌프용 정량밸브 디자인 등록
2018.09 : 산업포장 수훈 (우수자본재개발유공)
2018.09 : 윤활유주입기 디자인 등록
2018.12 : 윤활유용 펌프 장치 특허 등록
2019.03 : 글로벌 IP스타기업 선정(특허청)
2019.04 : 글로벌 강소기업 선정(중소벤처기업부, 인천광역시)
2019.04 : 글로벌 선도기업 선정(한국산업단지공단)
2019.09 : 수출유망중소기업 지정(중소벤처기업부)
2019.11 : 인천광역시 비전기업 인증(인천광역시청)
2019.11 : NRTL 인증(전동식 정량 그리스 윤활펌프 (HGP-10HMG/10LMG))
2019.11 : 차세대 세계일류상품 선정(산업통상자원부)

1985.08 Established HANSUNG PRECISION COMPANY
~
1996.08 : Develop a high pressure precision lubrication system for the first time in Korea
1997.03 : Awarded the Director of the National Tax Service Prize
1997.11 : Awarded the Prime Minister Citation of Korea
1999.03 : EM certification (The National Institute of Quality and Technology)
1999.09 : Certify ISO9001
2001.11 : Awarded the Prime Minister Citation of Korea
2004.10 : Awarded the Minister of Commerce, Industry and Energy Citation
2004.11 : Awarded one million dollar export tower
2005.05 : Designated as a "Venture business company" (SMBA)
2006.10 : Certify ISO 14001:2004
2007.09 : Certify Single PPM for oil pump
2008.08 : Established a company affiliated research institute
2008.10 : Certify Single PPM for coolant pump
2009.06 : Designated as an "INNO-BIZ Company" by SMBA
2011.09 : Awarded the Presidential Citation of Korea
2012.06 : Registration of patent (Lubricant oil pump)
2012.07 : Registration of patent (Oil pressure detector switch)
2012.08 : Registration of patent (Quantitative valve integrated one-touch nipple)
2012.11 : Awarded three million dollars export tower
2014.02 : Certify NRTL (LUBE PUMP)
2014.08 : Certify NRTL (COOLANT PUMP_HMF, MF TYPE PUMP, ROTOR PUMP)
2015.10 : Export Coolant Pump 45,000 sets to FANUC(for SAMSUNG Vietnam Factory)
2017.03 : Designated as a Main-Biz Company (Small & Medium Business Administration)
2017.11 : Certify NRTL (15 Models of Coolnat Pump)
2018.04 : Develope an Electric Grease Lubricating Pump
2018.06 : Designated as an INNO-BIZ Company (Ministry of SMEs and Startups)
2018.08 : Registration of a Design (Metering Valve for Grease Lubrication Pump)
2018.09 : Awarded the Industrial Service Medal of Korea
2018.09 : Registration of a design (Grease Lubrication Pump)
2018.12 : Registration of a Patent (Electric grease lubricating pump)
2019.03 : Designated as a "Global IP-Star Company" (Korean Intellectual Property Office)
2019.04 : Designated as a "Small Giant Company" (Ministry of SMEs and Startups)
2019.04 : Designated as a "KICOX Global Leading Company" (Korea Industrial Complex Corporation)
2019.07 : Designated as a "Promising Export Firm" (Ministry of SMEs and Startups)
2019.11 : Certificate of "Incheon Metropolitan City's Visionary Enterprise" (Incheon Metropolitan City)
2019.11 : Certify NRTL (Electric Metering Grease Lubrication Pump(HGP-10HMG/10LMG))
2019.11 : Dedicated as a "Korean World-Class Product & Enterprise" (Ministry of Trade, Industry and Energy (MOTIE))

ISO 9001, ISO14001

www.halslube.com

the Global Leader

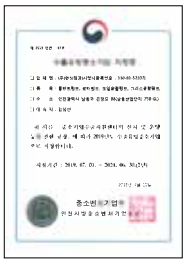
To the World Best Technology & Quality







































ISO 9001, ISO14001

www.halslube.com

LUBE
COOLANT
ROTOR
GREASE

HALS

HANSUNG AUTOMATIC LUBRICATION SYSTEM

There are no relaxation on HASUNG's Efforts and Sincerity

The products such as oil or grease lubricating pump and the related component we have manufactured should be taken carefully and seriously. We are manufacturing the products from cutting and grinding a part to assembling and packing with concentration and delicacy, concerning customers without mistakes.

Hansung Precision Co., Ltd. does not take anything lightly in order to get precise designs for parts and products. You can find our value in our investment for research and development. Our planning and designing are based on endurance and Camegie-like efforts.

LUBE PUMP

LUBE PUMP Summary 1
▶ Concentrated Lubricating System 2
▶ Fixed Quantity Oil Supply System 3
▶ Proportional Oil Supply System 4
▶ HMGP-303 & 303D 5
▶ HMGP-303S & 303M 7
▶ HMGP-205S 9
▶ HMGP-6N & 6C 11
▶ HMGP-105N series 13
▶ HMGP-105D series 15
▶ HMGP-205C series 17
▶ HALS-33 19
▶ HMGP 6A & 6MA 20
▶ TANK series 21
▶ HMV series 23
▶ 340 series 24
▶ 350 series 25
▶ HMLV series 26
▶ HMVS series 27
▶ MIXING VALVE 28
▶ VALVE series 29
▶ DISTRIBUTOR series 30
▶ ACCESSORY series 31
▶ Operating Instructions 38
▶ Breakdown Countermeasures 39
▶ Temperature-Viscoslty Table 40

COOLANT PUMP

COOLANT PUMP Summary 1
▶ HCP-S series 3
▶ HCP-F series 6
▶ HCP-F(High Pressure) series 9
▶ HCP-EMF(S) series 12
▶ HCP-EBMF series 15
▶ HCP-EHMF(S) series 18
▶ HCP-EHMF series 21
▶ HCP-EMS series 26
▶ HCS(Suction Filter) series 29
▶ Method of Pump Selection 30
▶ Method of Product Installation 31
▶ Caution for Usage 34
▶ Method of Wire Connetion 36

ROTOR PUMP

ROTOR PUMP Summary 1
▶ ROTOR Operating Explanation 3
▶ HTOP-A(VB) series 7
▶ HTOP-F series 8
▶ 3M-MA(VB)/3M-HA(VB/VD) series 9
▶ OIL COOLER series 12
▶ HTP-(HA/HB)(VB/VD) series 14
▶ HTP-3M-HA(VB/VD) series 16
▶ HMTP-3M-HA VBF series 19
▶ HMTP-1M-HA(VB/VD) series 21
▶ Method of Product Installation 23
▶ Cause & Remedy of Trouble 26

GREASE PUMP

GREASE PUMP Summary 1
▶ HM series 3
▶ DV series 4
▶ DW series 6
▶ HGP-10□MG series 8
▶ HCG(Cartridge Exclusive Grease) 9
▶ MG-10 10
▶ HGP-16 series 11
▶ HGP-720 series 13
▶ HGMV-HMGC+HVA 14
▶ HU-□R(L) series 15
▶ HUA-16/26 series 15
▶ U-R TYPE Distributor operation Manual 17

The last page is INDEX.

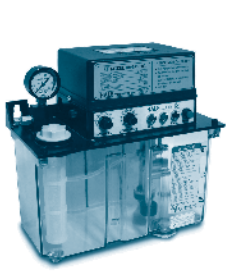
HANSUNG AUTOMATIC LUBRICATION SYSTEM

Lube PUMP

HALS

Lube pump series

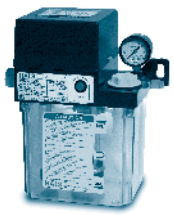
정량급유 Fixed Quantity Oil Supply





HMGP-205S





HMGP-303 Type series

각종 MCT, CNC, 사출기 등
중앙 집중식 윤활시스템

Various MCT, CNC, Injection machine, etc.
Central Concentrated Lubricating System

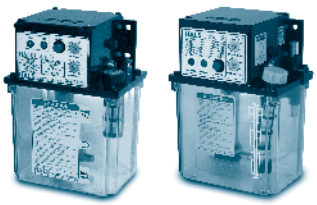
	정량 급유장치 (Fixed Quantity Oil Supply)
Pump	HMGP-303 Type, 205S(정량 급유 펌프) (Fixed Quantity Oil Supply Pump)
Pressure	15kg/cm² ~ 20kg/cm²(정격압력 이상이면 토출량과는 무관함) (If pressure is higher than the fixed point, it is irrelevant to discharge volume.)
Pressure S/W	Option
Main pipe	ø 6
Valve	정량(Fixed Quantity) V/V(0.01cc ~ 1.0cc)
Volume per discharge	펌프량 110cc인 경우(0.03cc, 0.1cc, 0.6cc 각 1EA 사용시) When the capacity of the pump is 110cc (in the case of using each of 0.03cc, 0.1cc, 0.6cc)
Number of operation	내 · 외부 Control 작동 (Operation of inner and outer control)
Deviation	±10% 이내 (Within±10%)
Others	펌프의 토출량과 급유점의 토출량은 직접적인 상관이 없으며 Valve에서 정확한 양을 계량하여 급유점에 공급함 The volume of the pump is irrelevant to that of the point of oil supply and Valve measures the precise quantity of the volume and send it to the point of oil supply.

Size of V/V	Volume of a discharge
0.03cc	0.03cc
0.1cc	0.1cc
0.6cc	0.6cc
TOTAL	0.73cc

Page 5

비례급유 Proportional Oil Supply





HMGP-6N

HMGP-105 series





HMGP-205C

HALS-33/HMGP-6A

NC선반, 사출기, 인쇄기, 밀링머신, 연마기, 프레스,
섬유기계, 에스컬레이터, 각종 산업기계

NC lathe, Injection machine, Printers, Milling machines, Grinders,
Presses, Textiles machines, Escalators, various industrial machines

	비례 급유장치 (Proportional Oil Supply)
Pump	HMGP-6N, 105 Type(비례 급유 펌프) (Proportional Oil Supply Pump)
Pressure	8, 16kg/cm²(압력차에 의한 토출량의 편차가 심함) (Wide deviation depending on the pressure)
Pressure S/W	None
Main pipe	ø 4, ø 6
Valve	비례(Proportional) V/V(V/V No. 0,1,2,3,4)
Volume per discharge	펌프량 110cc인 경우(V/V No. 0, 1, 3 각 1EA 사용시) When the capacity of the pump is 110cc (in the case of using each of V/V No. 0,1,3)
Number of operation	Pump 내 Volume 조절 작동 (Operation of volume controller in the pump)
Deviation	±30% (도착 오일의 급유점 기준) (based on point of oil supply for arrived oil)
Others	펌프의 토출량과 급유점의 토출량 변화가 심함 The discharge volume of the pump and that of the point of oil supply widely varies.

V/V No.	0	1	2	3	4
Volume of a discharge	1	2	4	8	16

Size of V/V	Volume of a discharge	Quantity of passing oil
0	1	10cc
1	2	20cc
3	8	80cc
TOTAL	11	110cc

Page 11

집중 윤활 장치 Concentrated Lubricating System

집중 윤활 급유 장치의 설계 *Design of Concentrated Lubricating Oil Supply Device*

집중 윤활 급유 장치는 사용하고자 하는 윤활 급유소를 하나의 장치로 구동하고, 유지할 수 있는 시스템으로 기계의 수명을 연장시키며, 유지 관리비를 절감할 수 있는 장치이다. 각종공작기계, 섬유기계, 사출기, 프레스, 포장기계 및 산업기계 전반에 적용되며, 사용하는 방법에 따라 정량 급유 방식과 비례 급유 방식으로 구분된다. 집중 윤활 급유방식을 충분히 활용하기 위해서는 기계 급유부에 적절한 급유시스템 선정 및 설계가 필요하다.
시스템 설계에 앞서 각 기계의 정확한 급유개소와 급유 공급 방식 및 급유량을 선정하고, 파이프의 크기 및 토출량의 합계를 산출한다.
이후 펌프의 용적 효율비 및 배관 손실을 감안하여 산출한 급유량에 1.25~1.5배로 급유량을 최종 선정한다. 또한 검지 및 보호 장치 등 제어방식을 설정하고 이후 배관의 레이아웃과 부품을 선정한다.

The concentrated lubricating oil supply device drives and maintains all the oil supply sites from one device, increases system life expectancy and reduces running and maintenance costs. Applied to various machine tools, textiles machines, injection machine, presses, packaging machines and other general industrial machines, and is classified into a fixed quantity oil supply type and a proportional oil supply type according to the methods of use. In order to fully make use of the concentrated oil supply type, a suitable oil supply system for the machine oil supply part needs to be selected and designed.
Prior to system design, precise oil supply sites, oil supply methods and oil supply quantities for each machine need to be selected, and pipe size and discharge quantities need to be calculated. Then, the quantity of oil supplied calculated with pump capacity, efficiency and pipe loss in consideration, is multiplied by 1.25~1.5 to calculate the final quantity of oil supplied. Also, control methods such as examination and protection devices are set, and then the pipe layout and components are selected.

필요 급유량 설계 방법 *Design Method for Required Oil Supply Quantity*

각 급유개소의 필요 급유량은 경험치와 실측치를 바탕으로 한 아래의 계산 방식으로 계산한다.
▶ 유량(Q) : 1시간당 필요급유량 (ml/h) ▶ 직경, 길이, 폭 : 단위cm ▶ 적용검토 : 보통사용 oil 점도 (회전수 120rpm 을 기준)
◎ 점도 증가율이 10배 이면, 유량은 2배로 증가
※ 단 필요 급유량은 마찰면의 재질, 표면의 점도, 운전조건(점도, 회전수 하중, 운전 및 주위온도, 주위의 유해물 등) 윤활제의 종류 등으로 좌우되므로 계산식에 의한 값을 기준으로 하여 급유개소의 조건에 따라 급유량 조절이 필요하다

The quantity of oil supplied for each oil supply site is calculated based on experience and actual values as follows
· Oil quantity(Q) : required quantity of oil supplied for each hour (ml /h)
· Diameter, Length, Width : Unit-cm
· Application examination : Normal use oil viscosity (120rpm as standard)
◎ If the rate of viscosity increase is X10, the oil quantity increases double
※ But, the quantity of oil supplied is influenced by friction surface material, surface viscosity, drive conditions(viscosity, revolution load, drive and surrounding temperature, surrounding toxic materials, etc) and lubricating oil type. Therefore, the calculated values need to be used as standards, and the actual fueling quantity needs to be controlled with the conditions of each fueling site taken into consideration.

필요 급유량 계산 방법 *Calculation Method for Oil Supply Quantity*



Bearing (Ball Bearing, Roller Bearing, Needle Bearing)
Q = 0.04 x 직경 x 열수 [Q=0.04 x diameter x number of rows]



Sliding Bearing
Q = 0.023 x 회전축 직경 x 축경길이 [Q=0.023 x rotating shaft diameter x shaft region length]



Plane Sliding
Q = 0.0017 x 길이 x 폭 (수평방향) [Q=0.0017 x length x width (horizontal direction)]
Q = 0.006 x 길이 x 폭 (수직방향) [Q=0.006 x length x width (vertical direction)]



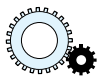
Cylinder Sliding
Q = 0.023 x 직경 x 길이 [Q=0.023 x diameter x length]



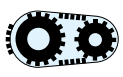
Ball Bearing Way
Q = 0.012 x 길이 x 열수 [Q=0.012 x length x number of rows]



CAM
Q = 0.013 x 접촉원주 x 폭 [Q=0.013 x contact circumference x width]



Gear
Q = 0.046 x 피치원 직경 x Gear폭 [Q=0.046 x pitch circle diameter x gear width]



Chain
Q = 0.008 x 길이 x 폭 [Q=0.008 x length x width]

정량 급유 시스템 Fixed Quantity Oil Supply System

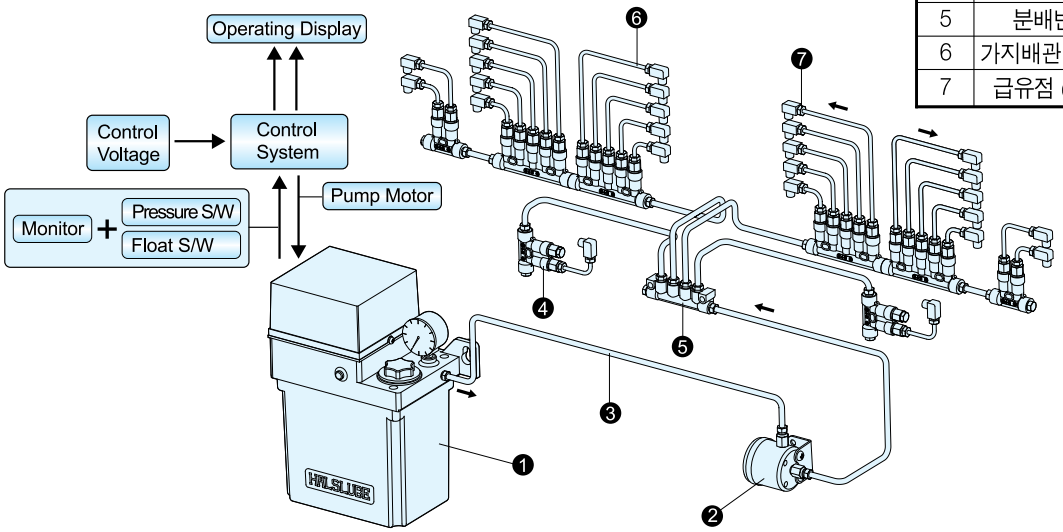
시스템의 개요 *System Summary*

집중 윤활 장치는 펌프로부터 압송된 윤활제가 Piston 작동 정량식 밸브 내의 piston을 작동시키고, 각 밸브의 정해진 급유량 (0.01~1.0cc/st) 을 정확히 공급하는 장치이다.
밸브는 펌프의 토출 압력으로 직접 작동하므로, 20m의 원거리와 50개소 정도의 급유소 까지 사용이 가능하다. 소형기계에서 대형 기계까지 폭 넓게 사용되어 지는 시스템이다.

The concentrated lubricating system uses the lubricating oil from the pump to operate the piston and the piston inside the valve, and delivers the precise quantity of oil supplied(0.01~1.0cc/st) to each valve. The valve is automatically operated by the pump discharge pressure, and can be used for long distances of up to 20m and for 50 separate oil supply sites. A system used widely from small machines to large machines.

윤활방식 Lubrication Type	피스톤 정량 급유방식 Piston fixed quantity oil supply method
배관방식 Piping	Main pipe : ø6 Oil supply pipe : ø4
윤활제 Lubricant	32~220cSt
펌프 Pump	HMGP-303 series
	HMGP-205S
	HMGP-6MA
탱크용량 Capacity of Tank	사출품 2, 4, 5 Liter Resin tank 2,4,5Liter
	STEEL탱크 6Liter 이상(주문제작가능) Metal Tank more than 6Liter (Can be custom built to order)
Control방식 Method of Control	내부제어 HMGP-303 Internal control HMGP-303
	외부제어 HMGP-303S, 303M, 205S, 6MA External control HMGP-303S, 303M, 205S, 6MA
적용밸브 Application Valve	HMV series 정량밸브 HMV series Fixed Quantiry Valve

No.	구성기기(Component)
1	펌프 (Pump)
2	라인필터 (Line Filter)
3	주배관 (Main Pipe)
4	정량밸브 (Fixed Quantity Valve)
5	분배변 (Distributor)
6	가지배관 (Oil Supply Pipes)
7	급유점 (Oil Supply Spot)



특 징 *Feature*

1) 정량밸브를 통하여 정량의 윤활유를 정확히 공급할 수 있다.
2) 밸브 설치는 급유 개소에 따라, 토출량과 토출 구수를 자유로이 선정할 수 있고, 합리적인 조합이 가능하다.
3) Pump Control 장치는 내장형과 외장형으로 구분되며, 사용환경에 따라 자유로운 구동시간 조정이 가능하다.
4) 밸브의 작동유무감지 (Pressure switch) 및 오일의 잔량 감지 (Float switch) 등의 안전 장치 설치로 오류를 사전에 감지 할 수 있다.

1) Fixed quantities of lubricating oil can be delivered precisely using the fixed quantity valve.
2) Discharge amounts and number of discharge outlets can be chosen freely to suit oil supply sites, and allows reasonable combinations.
3) The pump control is divided into an internal and an external one, and the operating time can be adjusted depending on operational environments.
4) Safety devices such as the valve pressure switch and the float switch can be installed to detect errors in advance.

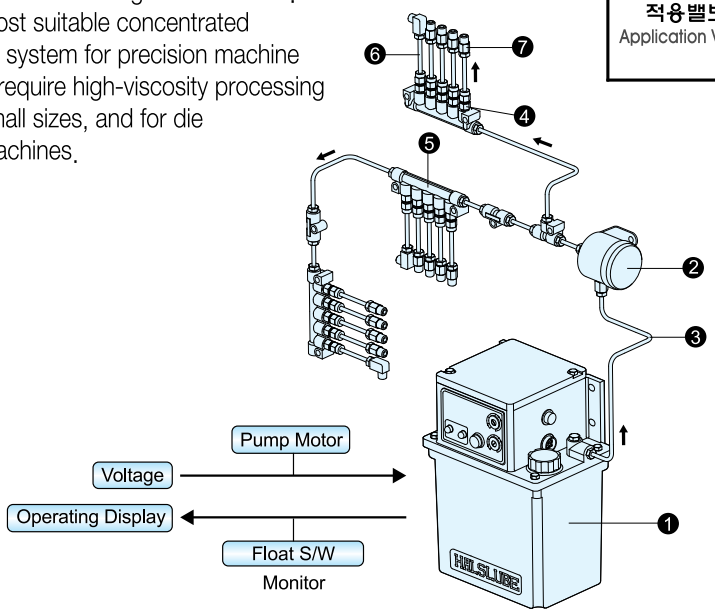
비례 급유 시스템 Proportional Oil Supply System

시스템의 개요 *System Summary*

집중 윤활 장치는 윤활 급유 개소에 연결된 배관을 통하여 펌프에서 압송된 윤활제 흐름에 저항을 생기게 하여, 토출 유량을 억제하고 각 윤활개소에 윤활유를 분배 급유하는 시스템이다.
사용되는 비례급유 밸브는 저압에 소량 토출 되며, 간헐 방식과 연속 급유 방식으로 나누어 진다.
또한 펌프에서 말단의 급유 개소까지 외경 ø4mm 단일 배관을 사용하며, 폭넓은 점도 범위에 사용할 수 있다.
소형에서의 고점도 가공이 필요한 정밀공작기계와 금형 기계에 적용되는 대표적인 집중 윤활 장치이다.

The concentrated lubricating system makes the pipes connected to the lubricating oil supply sites to have resistance against the flow of lubricating oil delivered from the pump, this suppressing the quantity of oil discharge, and distributes the lubricating oil to each oil supply site.
The used proportional oil supply valve discharges little under small pressure, and is classified into a continuous oil supply type and an intermittent oil supply type.
Also, it uses a single pipe with an external diameter of ø4mm from the pump to every oil supply site, and can be used across a wide range of viscosities.
It is the most suitable concentrated lubricating system for precision machine tools that require high-viscosity processing even in small sizes, and for die casting machines.

윤활방식 Lubrication Type	간헐/연속 급유 윤활 방식 Piston fixed quantity oil supply method	
배관방식 Piping	Main pipe : ø6, ø4 Oil supply pipe : ø4	
윤활제 Lubricant	32~220(cSt)	
펌프 Pump	수동식 Manual	HALS-33
	자동식 Automatic	HMGP-105 series HMGP-6N HMGP-205C
	공압식 Pneumatic	HMGP-6A
탱크용량 Capacity of Tank	사출품 2, 4, 5 Liter Resin tank 2,4,5Liter	
	STEEL탱크 6Liter 이상(주문제작가능) Metal Tank more than 6Liter (Can be custom built to order)	
Control방식 Method of Control	내부제어 (Internal control) HMGP-6N, 105N,105,105MB	
	외부제어 (External control) HALS-33, HMGP-105C, HMGP-105W, HMGP-205C, HMGP-6C	
적용밸브 Application Valve	간헐식 HAS, HJB, HJS, HJB-L Intermittent type HAS, HJB, HJS, HJB-L	
	연속식 HSC, HJC, HHC Continuous type HSC, HJC, HHC	



No.	구성기기(Component)
1	펌프 (Pump)
2	라인필터 (Line Filter)
3	주배관 (Main Pipe)
4	저항밸브 (Resistance valve)
5	분배변 (Distributor)
6	가지배관 (Oil Supply Pipes)
7	급유점 (Oil Supply Spot)

특 징 *Feature*

1) 단일식 배관 시스템으로 취부가 간단하고 접속이 용이하다.
2) 펌프는 수동, 자동, 공압식 등 다양한 종류로 제작되므로 적용기계에 적합한 펌프의 선택이 가능하다.
3) 모든 펌프에는 Suction filter가 장착되어 밸브의 이물 혼입을 방지하여 확실한 급유가 가능하다.
4) 밸브의 토출 크기와 조립방식 (기계, 라인, 배관 취부형) 선택이 가능하여 급유개소의 특징에 따라 적합한 급유가 가능하다.

1) A single pipe system that allows simple spraying and easy connections.
2) The pump is produced in various types(manual, automatic, pneumatic type), allowing the selection of suitable pumps for the machines in use.
3) Every pump is equipped with a suction filter to prevent the entry of foreign substances and to allow safe oil supply.
4) The valve's discharge size and assembly method (for machine, for line, for distributor) can be chosen to allow suitable oil supply for different oil supply sites.

HMGP 303 & 303D

Internal Control Fixed Quantity Oil Supply Pump

내부제어용 정량급유 펌프



Model

HMGP - □ - 01 - T - □ - □ - □ - □ - □

- Interval Time: S: 3~30min / L: 30~120min
- 110: 110V, 220: 220V
- Float S/W Contact A: NC, B: NO
- Blank: Without Float S/W, F: Attach Float S/W
- 2: Resin Tank (303D), 4: Resin Tank (303), Option: Steel Tank
- 303D: 2Liter Type, 303: 4Liter Type

Feature

1. Gear식 용적 펌프로 폭넓은 점도 범위에서도 정확한 이송이 가능하다.
2. 20m 이상의 원거리에도 적용되며 소형에서 대형 공작기계 및 고정밀 기계에도 활용된다.
3. 정량급유 시스템 활용을 위해서는 사용 Valve는 HMV Series를 선택 하여야 한다.
4. Control 내장형이므로 별도의 제어 장치가 필요 없다.
5. 유면 저하 감지 기능이 내장 되어 있다. (Float switch)

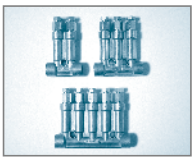
1. A gear type volume pump that allows precise delivery across a wide range of viscosities.
2. It can be applied to long distances of more than 20m, and can also be used in small, large machine tools and high-precision machines.
3. To make full use of the fixed quantity oil supply system, the HMV series needs to be used for the valve.
4. It has an internal control, and therefore does not require separate control devices.
5. It has a built-in ullage decrease detector . (Float switch)

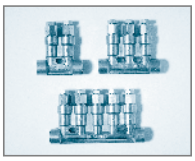
Pump Spec.

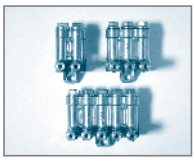
PUMP SPEC.				
MODEL NAME		HMGP-303		HMGP-303D
PUMP TYPE		GEAR PUMP		
DISCHARGE PRESSURE		17kg/cm²		
PRESSURE GAUGE		0~35kg/cm²		
USING OIL		32~220(cst)		
FILTER		80 Mesh		
TANK CAPACITY		4Liter		2Liter
DISCHARGE AMOUNT		150cc/min		
INTERVAL TIME		3~120min		3~30 / 30~120min
FLOAT S/W		Contact type A contact (NO)		
		ON at Low level		
PRESSURE S/W		N/A		
OIL SUPPLY CONTROL DEVICE		Internal control		
MOTOR SPEC.				
INPUT		80W		
PHASE		1 ø		
VOLTAGE		110V	200V	220V
CURRENT		1.8A/1.24A	1.0A	1.35A/0.85A
FREQUENCY		50/60Hz		
PACKING SPEC.				
PACKING SIZE(cm)		36(W) x 17.5(L) x 30.5(D)		15(W) x 18(L) x 26(D)
WEIGHT(kg)	PUMP	4		3
	PACKING	4.5		3.5

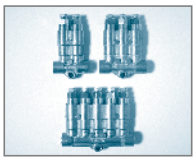
※ Motor-3200r.p.m 기준

Components

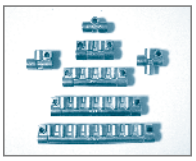

HMV

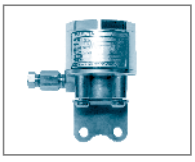

340


HMLV


350

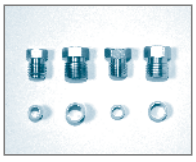

HMVS


Distributor

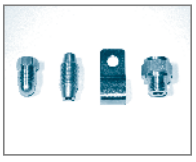

Line Filter


Gauge


Pressure Switch

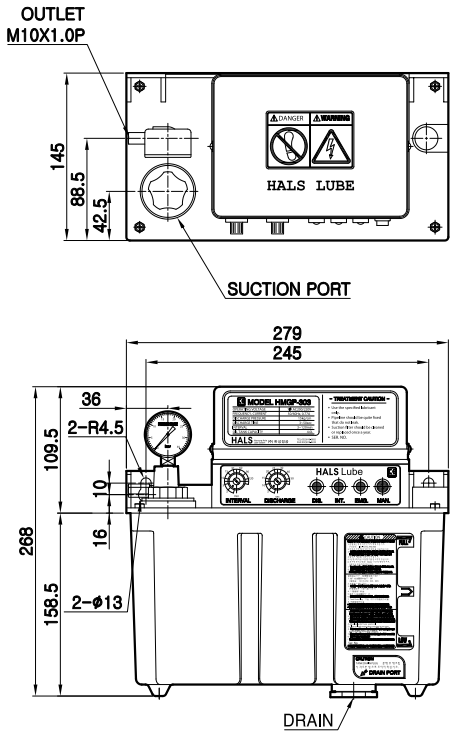

Bushing, Ring


Hose

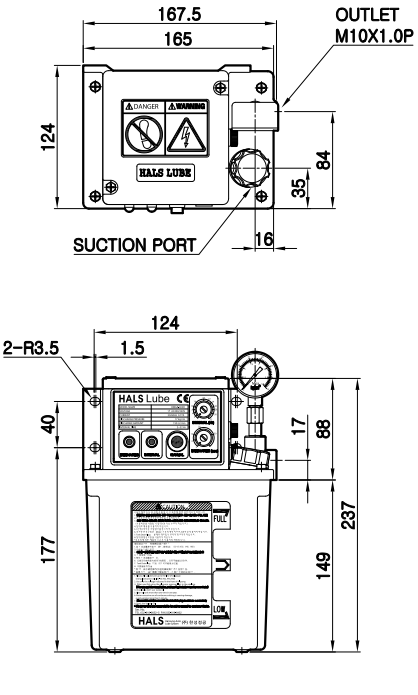

etc.

External Figure

HMGP-303

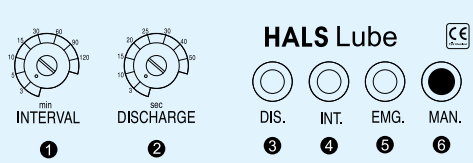


HMGP-303D



Operating Guide

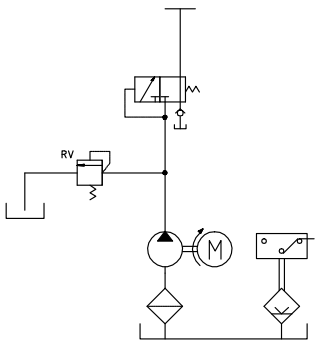
Pump control - Front



1) The pump operates once power is connected and electricity is supplied. You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
2) Minimum pause time of the pump is 3 minutes, and the minimum discharge time can be set to 3 seconds.
3) When operating the pump, the DIS. lamp ③ switches on, and during the pause, the INT lamp④ switches on. When ullage inside the tank decreases, the EMG. lamp⑤ switches on. When ullage inside the tank decreases, the EMG. lamp⑤ switches on.
4) The MAN. button⑥ can be used for test operations and to let air out from the pipes. (But, do not operate more than 5 minutes, as it can cause Motor damage.)
5) The pump is set at 17kg/cm^2 when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).

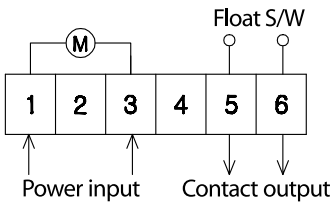
1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지시간(분)을 정하고, discharge ②으로 구동시간(초)를 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
2) 펌프의 최소 휴지시간은 3분이고, 최저 토출 시간은 3초까지 설정이 가능하다.
3) 펌프 구동시 DIS. 램프③가 켜지고, 휴지시 에는 INT.램프 ④가 켜진다. Tank 내 유면 저하시 EMG. 램프⑤가 켜진다.
4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑥을 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
5) Pump는 공장 출고시 17kg/cm^{2}으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing

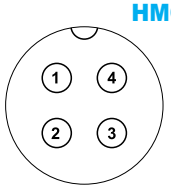


Wiring Diagram

HMGP-303



HMGP-303D



① ④ : POWER (1:BLACK, 4:WHITE)

② ③ : OIL ALARM (2:RED, 3:GREEN)

HMGP 303S & 303M

External Control Fixed Quantity Oil Supply Pump

외부제어용 정량급유 펌프



Model

HMGP - □ - 01 - T □ - □ / □ - □ - □

- 303M: 2Liter Type / 303S: 4Liter Type
- 2: Resin Tank (303M) / 4: Resin Tank (303S) / Option: Steel Tank
- Blank: Without Float S/W / F: Attach Float S/W
- Blank: Without Pressure S/W / P: Attach Pressure S/W
- 110: 110V, 220: 220V
- Blank: Without Manual S/W / M: Attach Manual S/W

Feature

1. 신뢰성이 높은 외부제어식 정량급유용 오일 펌프이다.
2. 폭넓은 분야에 활용이 되며 특히 고정밀, 대형 공작기계 정량 급유용 펌프로 적합하다.
3. Pump의 주요 구동 연결부를 일체형 다이캐스팅으로 제작하여 내구성이 우수하다.
4. 외부제어식으로 자유로운 펌프제어가 가능하다.
5. 유면 저하 감지 기능 및 압력 저하 감지 기능이 내장되어 있다.

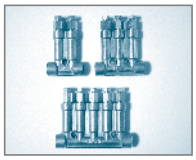
1. A highly reliable externally controlled fixed quantity oil supply pump.
2. It is used across a wide range of fields, and is especially suitable as a fixed quantity oil supply pump for high-precision, large machine tools.
3. The pump's main drive connection parts are made of single die casting pieces to ensure excellent durability.
4. An external control type that allows free pump control.
5. It has a built-in ullage decrease detector and a pressure decrease detector.

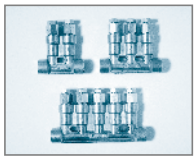
Pump Spec.

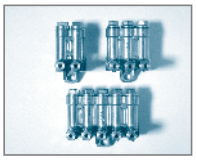
PUMP SPEC.				
MODEL NAME		HMGP-303S		HMGP-303M
PUMP TYPE		GEAR PUMP		
DISCHARGE PRESSURE		17kg/cm²		
PRESSURE GAUGE		0~35kg/cm²		
USING OIL		32~220(cSt)		
FILTER		80 Mesh		
TANK CAPACITY		4Liter		2Liter
DISCHARGE AMOUNT		150cc/min		
FLOAT S/W		Contact type A contact (NO)		
		ON at Low level		
PRESSURE S/W		Contact type A contact (NO)		
		Operation pressure : 12±1 bar ON		
OIL SUPPLY CONTROL DEVICE		External control		
MOTOR SPEC.				
INPUT		80W		
PHASE		1 Ø		
VOLTAGE		110V	200V	220V
CURRENT		1.8A/1.25A	1.0A	1.35A/0.85A
FREQUENCY		50/60Hz		
PACKING SPEC.				
PACKING SIZE(cm)		36(W) x 18(L) x 31(D)		23(W) x 14(L) x 28(D)
WEIGHT(kg)	PUMP	4		3.5
	PACKING	4.5		4

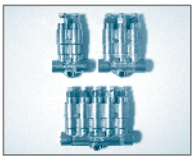
※ Motor-3200r.p.m 기준

Components

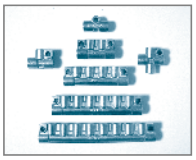

HMV

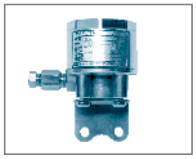

340


HMLV


350

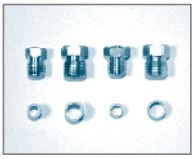

HMVS


Distributor


Line Filter


Gauge


Pressure Switch

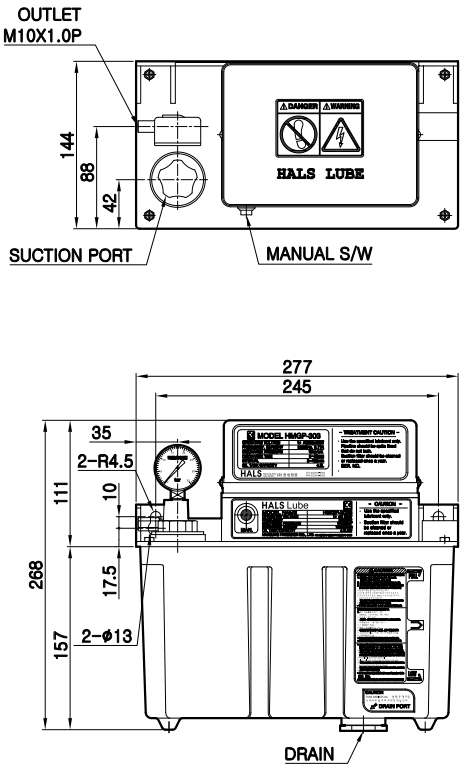

Bushing, Ring


Hose

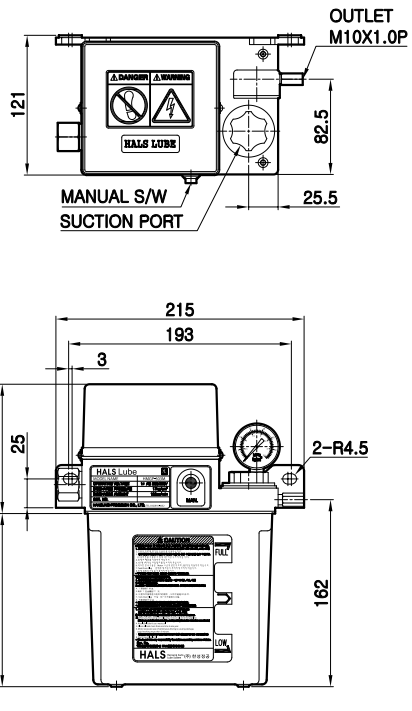

etc.

External Figure

HMGP-303S



HMGP-303M

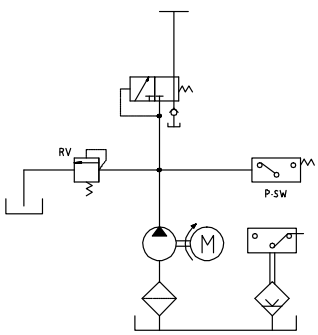


Operating Guide

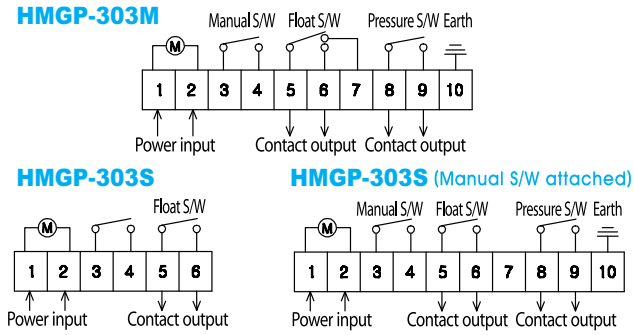
1) 별도의 제어장치가 없고 전원을 연결하고 전기를 공급하면 펌프가 작동한다. HMGP-303과 동일방법으로 휴지시간과 구동시간을 반복적으로 작동시키면 된다.
2) 펌프의 최대구동 시간은 4분이고, 휴지시간은 구동시간의 4배로 설정하여야 한다.
   ※ 정확한 정량밸브 작동을 위해서 시간 준수가 필요하다.
3) 시험구동 및 배관내 에어 빼기용으로 Manual Button을 사용할 수 있다.
4) Pump는 출고시 17kg/cm²으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.
5) Pressure Switch는 Pump를 구동시켜 일정한 시간내 설정된 압력 도달 여부를 감지하여, 정상 작동 할 경우 접점신호를 기계 제어장치로 보내어 오동작을 확인할 수 있다.

1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied. The pause and operation times can be set in the same way as for HMGP-303.
2) Maximum operation time of the pump is 4 minutes, and the pause time needs to be set at 4 times the operation time.
   ※ Time needs to be followed for precise fixed quantity valve operation.
3) The manual button can be used for test operations and to tale out air from the pipes.
4) The pump is set at 17kg/cm² when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).
5) The pressure switch can operate the pump and detect whether or not the set pressure has been reached within a given time, and send contact signals to the machine control device during normal operation to check for errors.

Hydraulic circuit drawing



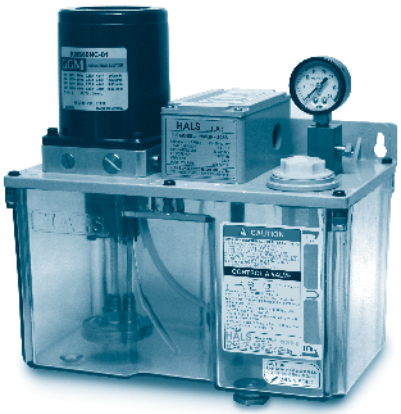
Wiring Diagram



HMGP 205S

External Control Fixed Quantity Oil Supply Pump

외부제어용 정량급유 펌프





Model

HMGP-205S-01-T□-□/□-□-□

- 110: 110V
  220: 220V
- Blank: Without Fan
  F: Attach Fan
- Blank: Without Pressure S/W
  P: Attach Pressure S/W
- Blank: Without Float S/W
  F: Attach Float S/W
- 5: Resin Tank
  Option: Steel Tank
  Blank: Pump Part

Feature

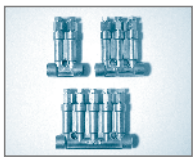
1. 급유 개소가 많고, 대형기계에 적합한 고압 대용량 정량 급유용 펌프이다.
2. 외부제어 방식으로 사용환경에 따라 다양한 펌프 제어가 가능하다.
3. Pump 주요 구동부가 AL Body내 내장되어 내구성이 우수하다.
4. Pump 부만 별도 사용이 가능하며, Tank 없이 별도의 Tank에 부착하여 사용이 가능하다.

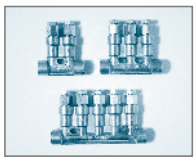
1. A large capacity fixed quantity oil supply pump suitable for multiple oil supply sites and large machines.
2. An external control type that allows various pump controls according to operational environments.
3. Main drive parts of the pump are inside the AL body to ensure superior durability.
4. The pump part can be used separately, and can be attached to other tanks for use.

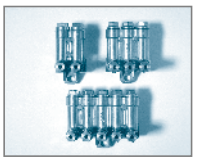
Pump Spec.

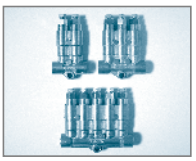
PUMP SPEC.			
MODEL NAME		HMGP-205S	
PUMP TYPE		GEAR PUMP	
DISCHARGE PRESSURE		15~30kg/cm²	
PRESSURE GAUGE		0~35kg/cm²	
USING OIL		32~1300(cSt)	
FILTER		80 Mesh	
TANK CAPACITY		5Liter	
DISCHARGE AMOUNT		300cc/min	
FLOAT S/W		Contact type A contact (NO)	
		ON at Low level	
PRESSURE S/W		Contact type A contact (NO)	
		Operation pressure : 12±1 bar ON	
OIL SUPPLY CONTROL DEVICE		External control	
MOTOR SPEC.			
OUTPUT		60W	
PHASE		1 Ø	
VOLTAGE		200V	220V
CURRENT		1.0A	1.35A/0.85A
FREQUENCY		50/60Hz	
PACKING SPEC.			
PACKING SIZE(cm)		35(W) x 18(L) x 30(D)	
WEIGHT(kg)	PUMP	5	
	PACKING	5.5	

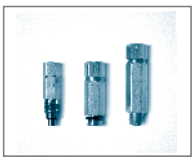
Components

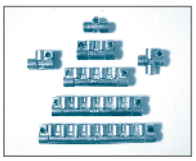

HMV

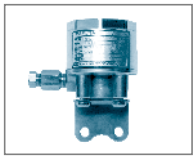

340


HMLV


350

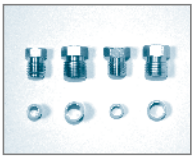

HMVS


Distributor


Line Filter


Gauge


Pressure Switch

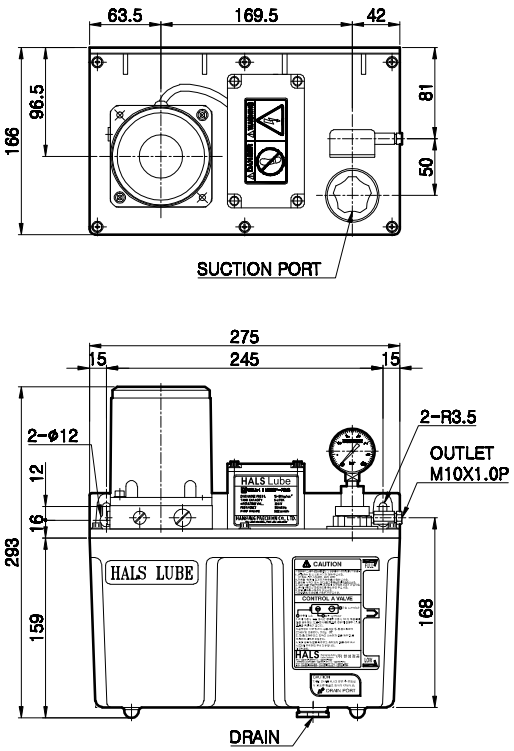

Bushing, Ring


Hose

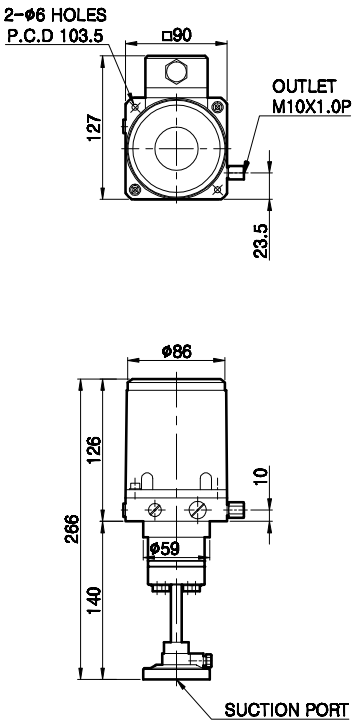

etc.

External Figure

TANK UNIT



PUMP

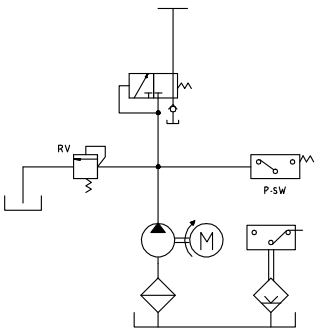


Operating Guide

1) 별도의 제어장치가 없고 전원을 연결하고 전기를 공급 하면 펌프가 작동한다. HMGP-303과 동일방법으로 휴지시간과 구동시간을 반복적으로 작동시키면 된다.
2) 펌프의 최소 휴지시간은 4분이고, 휴지시간은 구동시간의 4배로 설정하여야 한다.
   ※ 정확한 정량밸브 작동을 위해서 시간 준수가 필요하다.
3) 본 Motor는 연속 구동 펌프가 아니므로, 5분이상 구동은 삼가해 주십시오.
4) Pump는 공장 출고시 17kg/cm²으로 설정되나, 사용유 점도 변화 (사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.
5) Pressure Switch는 Pump를 구동시켜 일정한 시간 내 설정된 압력 도달 여부를 감지하여, 정상 작동할 경우 접점신호를 기계 제어장치로 보내어 오동작을 확인할 수 있다. (option)
6) Pump부만 별도로 사용 Tank내 자유로이 부착하여 사용이 가능하다.

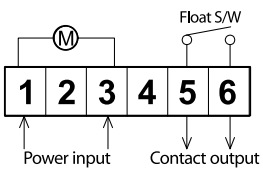
1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied. The pause and operation times can be set in the same way as for HMGP-303.
2) Minimum pause time of the pump is 4 minutes, and the pause time needs to be set at 4 times the operation time.
   ※ Time needs to be followed for precise fixed quantity valve operation.
3) This motor is not a continuous operation pump, so please refrain from operating for more than 5 minutes.
4) The pump is set at 17kg/cm² when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).
5) The pressure switch can operate the pump and detect whether or not the set pressure has been reached within a given time, and send contact signals to the machine control device during normal operation to check for errors. (option)
6) The pump is used separately. It can be attached freely inside the tank for use.

Hydraulic circuit drawing

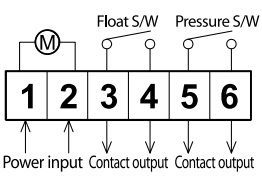


Wiring Diagram

Nomal type



Pressure S/W attached (option)



HMGP 6N & 6C

Internal Control or External Control Proportional Oil Supply Pump

내부제어용 및 외부제어용 비례급유 펌프



Model

HMGP - 6□ - 02 - T□ - □ - □ - □

- Interval Time:
  - G: 1~120mim
  - L: 2~32Hr
  - S: 1~60min
  - M: Manual S/W (6C)
- 110: 110V, 220: 220V
- Blank: Without Float S/W
  F: Attach Float S/W
- 4: Resin Tank
  Option: Steel Tank
- N: Internal Control
  C: External Cotrol

Feature

1. 대표적인 비례급유용 펌프로 광범위한 산업분야에 활용이 된다.
2. 구조가 간단하고 내구성이 우수하다.
3. 내부제어 방식(6N) 및 외부제어 방식(6C)으로 전원 공급만으로 사용이 가능하다.
4. 유면저하시 감지장치 부착으로 기계의 신뢰성을 높였다.
5. 방진장치가 설치되어 진동 및 충격이 있는 프레스 등에도 활용이 가능하다.
6. Line Filter 와 Drain Filter를 병행 사용하여 Oil 재사용 가능하다.
7. 비례급유용 시스템에 활용하기 위해서는 HJB series valve를 사용하여야 한다.

1. It is the most suitable pump for proportional oil supply, and can be applied to a wide range of industrial fields
2. It has a simple structure and excellent durability
3. An Internal control or External control type that can be used by simply supplying power.
4. It is equipped with a ullage decrease detector to increase reliability.
5. It is equipped with a dustproof device, and can be used in presses that are subjected to vibrations and impacts.
6. A line filter and a drain filter are used side by side, allowing oil reuse.
7. To fully utilize the proportional oil supply system, you must use the HJB series valve.

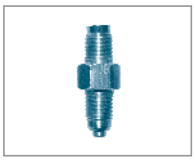
Pump Spec.

PUMP SPEC.				
MODEL NAME		HMGP-6N	HMGP-6C	
PUMP TYPE		GEAR PUMP		
DISCHARGE PRESSURE		16kg/cm²		
PRESSURE GAUGE		0~35kg/cm²		
USING OIL		32~220(cSt)		
FILTER		80 Mesh		
TANK CAPACITY		4Liter		
DISCHARGE AMOUNT		4~113cc	100cc/min	
INTERVAL TIME		1~120min / 1~60min / 2~32Hr	External control	
FLOAT S/W		Contact type A contact (NO)		
		ON at Low level		
OIL RECOVERY		Attachable		
OIL WARNING		BUZZER/LAMP		
MOTOR SPEC.				
INPUT		50W		
PHASE		1 ø		
VOLTAGE		110V	200V	220V
CURRENT		1.15A/0.95A	0.60A	0.75A/0.50A
FREQUENCY		50/60Hz		
PACKING SPEC.				
PACKING SIZE(cm)		35(W) x 18(L) x 30(D)		
WEIGHT(kg)	PUMP	5		
	PACKING	6		

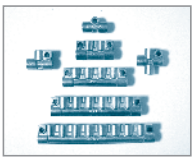
※ Motor-3200r.p.m 기준

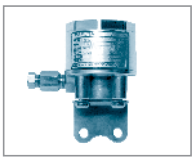
Components


HSA/HSC


HJB/HJC

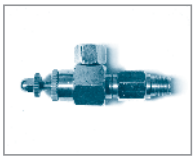

HJS/HHC


Distributor


Line Filter


Drain Filter


Gauge

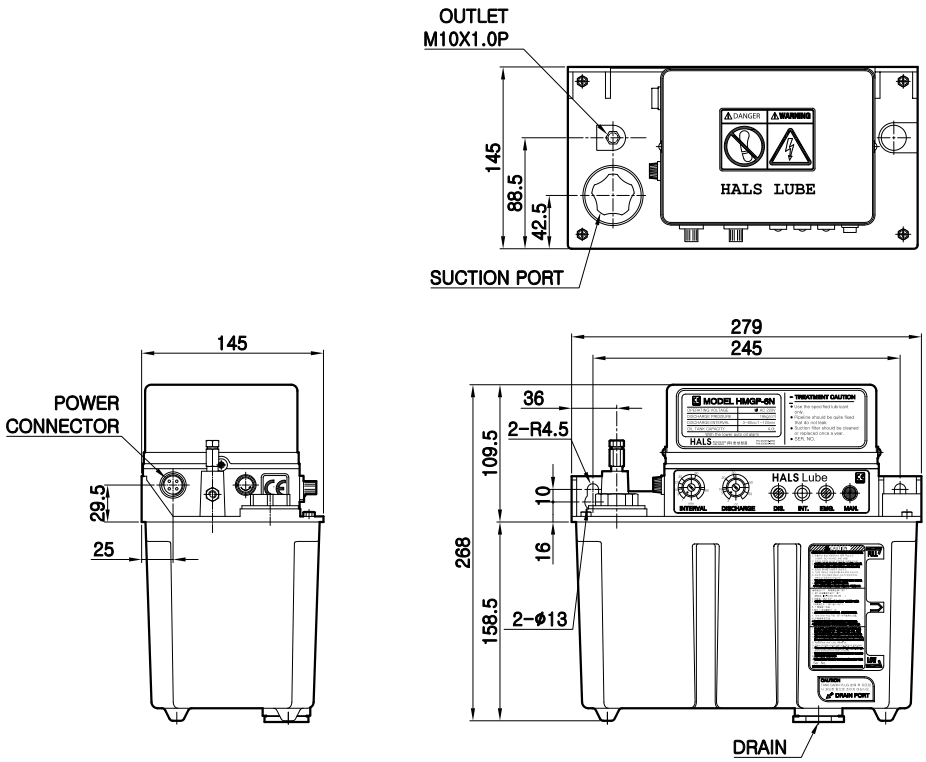

Oil Control Valve


Bushing, Ring, Cap


Hose

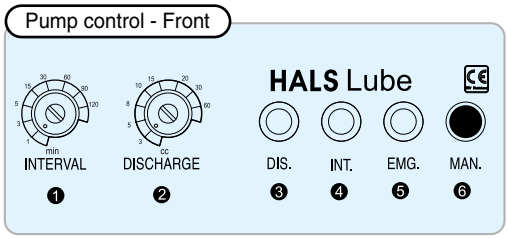

etc.

External Figure



Operating Guide

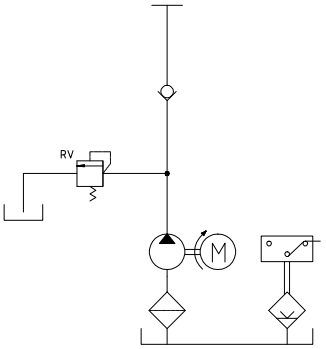
Pump control - Front



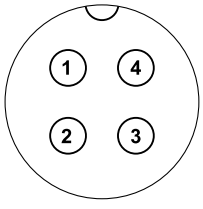
1) The pump operates once power is connected and electricity is supplied. You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
2) Minimum pause time of the pump is 1 minute, and the lowest discharge can be set to 4cc.
3) When operating the pump, the DIS. lamp ③ switches on, and during the pause, the INT. lamp④ switches on. When ullage inside the tank decreases, the EMG. lamp⑤ switches on.
4) The MAN. button⑥ can be used for test operations and to let air out from the pipes. (But, do not operate more than 5 minutes, as it can cause motor damage.)
5) The pump is set at 16kg/cm^2 when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).

1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①번으로 휴지시간(분)을 정하고, discharge ②번으로 구동량을 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
2) 펌프의 최소 휴지시간은 1분이고 최저 토출은 4cc까지 설정이 가능하다.
3) 펌프 구동시 DIS. 램프③이 켜지고, 휴지시에는 INT. 램프④가 켜진다. Tank 내 유면 저하시 EMG. 램프 ⑤가 켜진다.
4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑥을 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
5) Pump는 공장 출고시 16kg/cm^{2}으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing



Wiring Diagram



① ④ : POWER (1:BLACK, 4:WHITE)

② ③ : OIL ALARM (2:RED, 3:GREEN)

HMGP 105 N series

Internal & External Control Proportional Oil Supply Pump

내부 및 외부제어용 비례급유 펌프



Model

HMGP - □ - 02 - T □ - □ - □ - □

- Interval Time: S: 3~30min / L: 30~120min
- 110: 110V, 220: 220V
- Blank: Without Float S/W, F: Attach Float S/W
- 2: Resin Tank, Option: Steel Tank
- 103: Attach Float S/W, 105N: Without Float S/W, 105M: Attach Buzzer, 105C: External Control

Feature

1. 대표적인 비례급유용 펌프로 광범위한 산업기계에 사용이 된다.
2. 소형으로 설치 공간의 제약이 적고, 사용이 간단하여 유지 · 보수가 용이하다.
3. 유면저하시 접점출력 및 BUZZER 사용 등으로 사용자 환경에 맞추어 선택이 가능하다.
4. 전기종에 Suction Filter가 부착되어 배관에 이물 혼입을 방지하였다.
5. 사용환경에 따라 설정 압력 증가가 가능하다.
6. 내부제어(HMGP-105N, 105M, 103) 방식 및 외부제어(HMGP-105C) 방식이 가능하다.

1. It is the most suitable pump for proportional oil supply. It can be applied to a wide range of industrial machines.
2. The compact design reduces installation space limitations, and the simple use means easy installation and repairs.
3. During reduced ullage, selections can be made to suit user environments using contact output and buzzer.
4. Every model is attached with a suction filter to prevent the entry of alien substances in the pipe.
5. Increased pressure settings are available according to operational environments.
6. Internal control type(HMGP-105N, 105M, 103) and External control type(HMGP-105C) can be used.

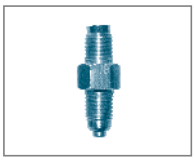
Pump Spec.

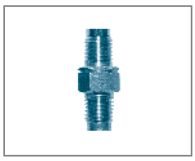
PUMP SPEC.				
MODEL NAME	HMGP-105N	HMGP-105M	HMGP-103	HMGP-105C
PUMP TYPE	GEAR PUMP			
DISCHARGE PRESSURE	8kg/cm²			
USING OIL	32~220(cSt)			
FILTER	80mesh			
TANK CAPACITY	2Liter			
DISCHARGE AMOUNT	S : 4~45cc/min / L : 4~80cc/min			100cc/min
INTERVAL TIME	S : 3~30min / L : 30~120min			External Control
FLOAT S/W	–		Contact type A contact (NO)	
	–		ON at Low level	
OIL WARNING	Order specification	BUZZER	Optput at Contact point	
MOTOR SPEC.				
INPUT	50W			
PHASE	1Ø			
VOLTAGE	110V	200V	220V	
CURRENT	1.15A/0.95A	0.60A	0.75A/0.5A	
PREQUENCY	50/60Hz			
PACKING SPEC.				
PACKING SIZE	15(W) x 18(L) x 26(D)			
WEIGHT(kg) PUMP	2.4			
WEIGHT(kg) PACKING	2.5			

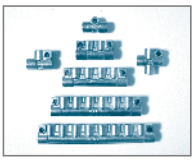
※ Motor-3200r.p.m 기준

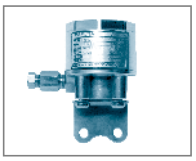
Components


HSA/HSC


HJB/HJC

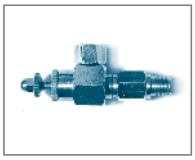

HJS/HHC


Distributor


Line Filter


Drain Filter


Gauge

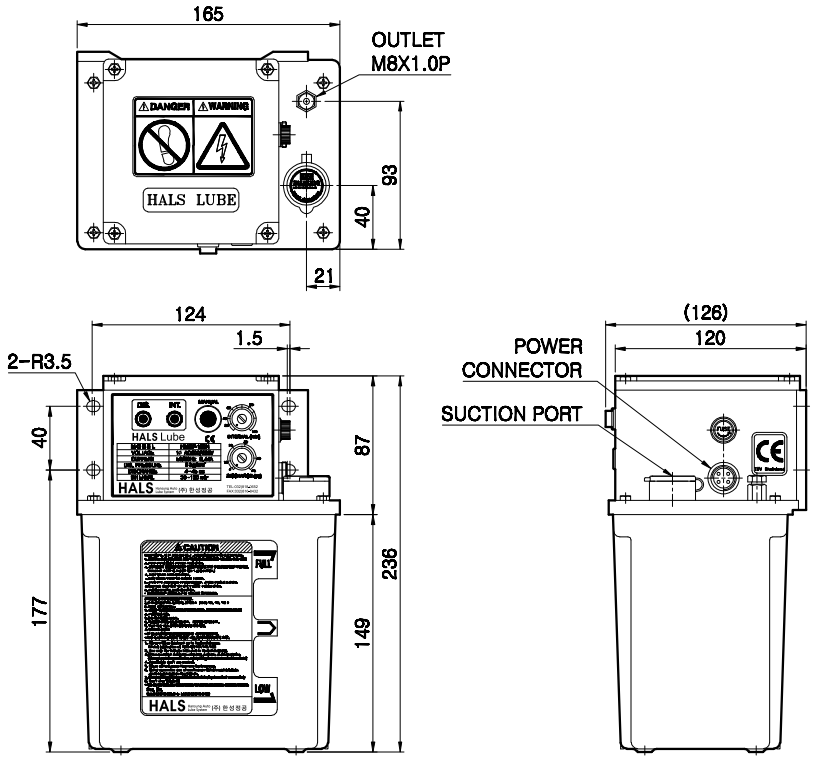

Oil Control Valve


Bushing, Ring, Cap

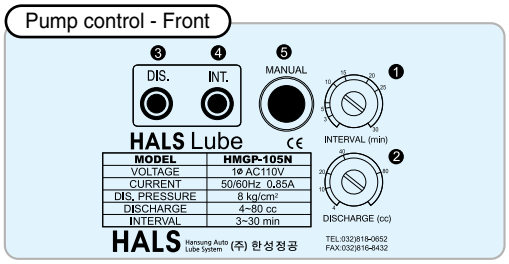

Hose


etc.

External Figure



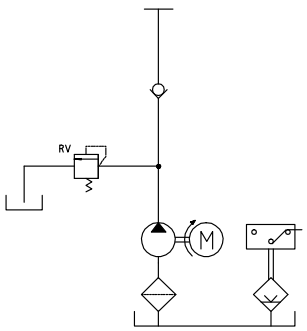
Operating Guide



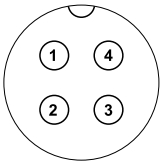
1) The pump operates once power is connected and electricity is supplied.
You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
2) Minimum pause time of the pump is 3 minutes, and the minimum discharge time can be set to 3cc.
(The pause time is divided into 3~30 minutes for S type, and 30~120 minutes for the L type.)
3) When operating the pump, the DIS. lamp ③ switches on, and during the pause, the INT. lamp ④ switches on.
4) The MAN. button⑥ can be used for test operations and to let air out from the pipes. (But, do not operate more than 5 minutes, as it can cause motor damage.)
5) The pump is set at 8kg/cm^2 when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).

1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지시간(분)을 정하고, discharge ②으로 구동시간(초)를 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
2) 펌프의 최소 휴지시간은 3분이고, 최저 토출은 3cc까지 설정이 가능하다. **(휴지시간은 S형 3~30분과 L형30~120분으로 구분된다.)**
3) 펌프 구동시 DIS. 램프 ③이 켜지고, 휴지시에는 INT. 램프 ④가 켜진다.
4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑤를 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
5) Pump는 공장 출고시 8kg/cm^{2}으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing



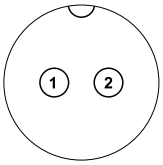
Wiring Diagram



HMGP-103, 105C

① ④ : POWER (1:BLACK, 4:WHITE)

② ③ : OIL ALARM (2:RED, 3:GREEN)



HMGP-105N, 105M

① ②: POWER (1:BLACK, 2:WHITE)

HMGP 105 D series

Internal & External Control Proportional Oil Supply Pump

내부 및 외부제어용 비례급유 펌프



Model

HMGP - 105 □ - 02 - T □ - □ - □ - □

- Interval Time: S: 3~30min / L: 30~120min
- 110: 110V, 220: 220V
- Blank: Without Float S/W, F: Attach Float S/W
- 2: Resin Tank, Option: Steel Tank
- D : Internal Control, DC: External Cotrol, W: External Cotrol (Attach Pressure S/W)

Feature

1. 비례 급유용 펌프로 HMGP-105N과 동일한 형태이지만 Control Box부를 다이캐스팅 AL로 제작하여 외부 충격에도 내구성이 우수하다.
2. 펌프 주요부가 일체형으로 제작되어 유지 보수가 용이하다.
3. 내부제어(HMGP-105D)방식 및 외부제어 (HMGP-105DC, 105W)방식이 가능하다.

1. A product identical in shape to HMGP-105, but with the control box made out of die casting AL to ensure superior durability and resistance against external impacts.
2. The main parts of the pump are integrated to ensure easy repairs and maintenance.
3. Internal control type(HMGP-105D) and External control type(HMGP-105DC, 105W) can be used.

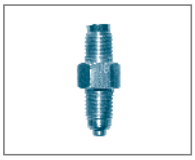
Pump Spec.

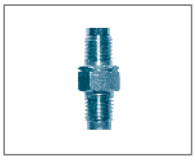
PUMP SPEC.				
MODEL NAME		HMGP-105D	HMGP-105DC	HMGP-105W
PUMP TYPE		GEAR PUMP		
DISCHARGE PRESSURE		8kg/cm²		
USING OIL		32~220(cSt)		
FILTER		80 Mesh		
TANK CAPACITY		2Liter		
DISCHARGE AMOUNT		4~45 / 4~80cc/min	100cc/min	
INTERVAL TIME		3~30 / 30~120min	External Control	
FLOAT S/W		Contact type A contact (NO)		
		ON at Low level		
PRESSURE S/W		-		Contact type A contact (NO)
		-		Operation pressure 1.5±0.2 bar ON
MOTOR SPEC.				
INTPUT		50W		
PHASE		1 ø		
VOLTAGE		110V	200V	220V
CURRENT		1.15A/0.95A	0.60A	0.75A/0.50A
FREQUENCY		50/60Hz		
PACKING SPEC.				
PACKING SIZE(cm)		15(W) x 18(L) x 26(D)		
WEIGHT(kg)	PUMP	2.9		
	PACKING	3		

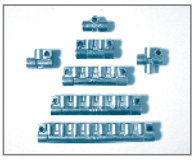
※ Motor-3200r.p.m 기준

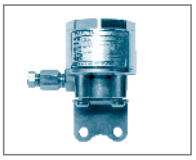
Components


HSA/HSC


HJB/HJC

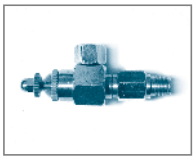

HJS/HHC


Distributor


Line Filter


Drain Filter


Gauge


Oil Control Valve

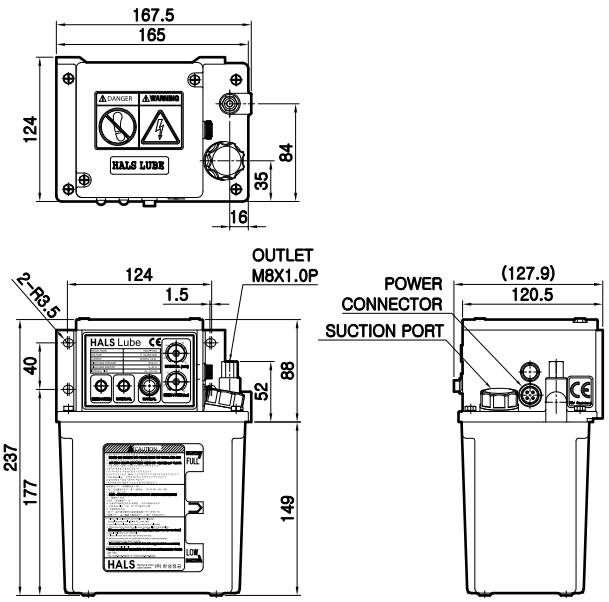

Bushing, Ring, Cap


Hose

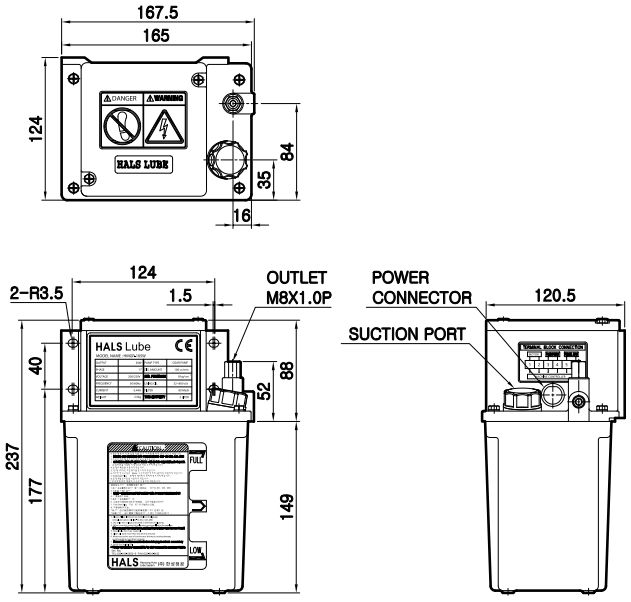

etc.

External Figure

HMGP-105D

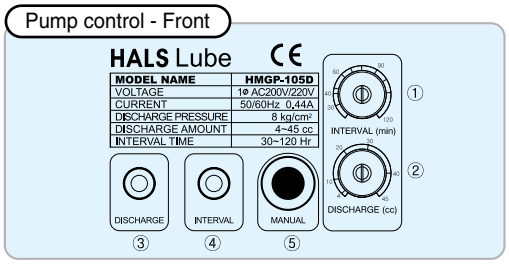


HMGP-105W



Operating Guide

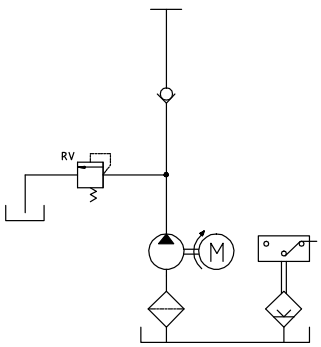
Pump control - Front



1) The pump operates once power is connected and electricity is supplied. You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
2) Minimum pause time of the pump is 3 minutes, and the discharge time can be set to 3cc.(HMGP-105D)
3) When operating the pump, the DIS. lamp ③ switches on, and during the pause, the INT. lamp④ switches on.
4) The MAN. button⑥ can be used for test operations and to let air out from the pipes. (But, do not operate more than 5 minutes, as it can cause motor damage.)
5) The pump is set at 8kg/cm^2 when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).

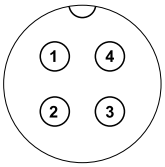
1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지 시간(분)을 정하고, Discharge ②으로 구동시간(초)를 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
2) 펌프의 최소 휴지 시간은 3분이고, 최저 토출은 3cc까지 설정이 가능하다.
3) 펌프 구동시 DIS. 램프 ③이 켜지고, 휴지시에는 INT. 램프④가 켜진다.
4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑤를 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
5) Pump는 공장 출고시 8kg/cm^{2}으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing



Wiring Diagram

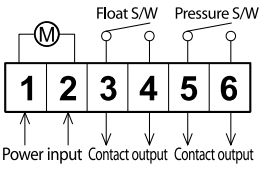
HMGP-105D, 105DC



① ④ : POWER (1:BLACK, 4:WHITE)

② ③ : OIL ALARM (2:RED, 3:GREEN)

HMGP-105W



HMGP 205C

External Control Continuous Oil Supply Pump

외부제어용 연속급유 펌프



Model

HMGP - 205C - 03 - T □ - □ - □

- 110: 110V, 220: 220V
- Blank: Without Float S/W
  F: Attach Float S/W
- 5: Resin Tank
  Option: Steel Tank
  Blank: Pump Part

Feature

1. 대용량의 비례급유 시스템에 적용할 수 있다.
2. 윤활 급유 장치 뿐만 아니라 소량의 윤활유 회수 장치에도 적합하다.
3. 외부 제어용 펌프로 사용자 환경에 맞추어 다양한 적용이 가능하다.
4. 유면 저하 감지 기능이 내장되어 있다.
5. HJB series 및 HJC series (연속급유용)으로 광범위하게 적용된다.

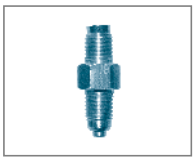
1. It can be applied to large capacity proportional oil supply systems.
2. It is suitable for lubricating oil supply devices, as well as for a small number of lubricating oil recovery devices.
3. An externally controlled pump, and is capable of various applications according to the users' operational environments.
4. It is equipped with an ullage decrease detector.
5. Applied applied broadly from HJB series to HJC series.(Continuous type)

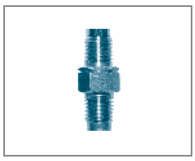
Pump Spec.

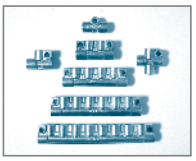
PUMP SPEC.			
MODEL NAME		HMGP-205C	
PUMP TYPE		GEAR PUMP	
DISCHARGE PRESSURE		5~10kg/cm²	
PRESSURE GAUGE		0~35kg/cm²	
USING OIL		32~220(cSt)	
FILTER		80 Mesh	
TANK CAPACITY		5Liter	
DISCHARGE AMOUNT		100cc/min	
INTERVAL TIME		CONSTANT	
FLOAT S/W		Contact type A contact (NO)	
		ON at Low level	
OIL SUPPLY CONTROL DEVICE		External control	
OIL WARNING		Output at Contact point	
MOTOR SPEC.			
OUTPUT		25W	
PHASE		1 ø	
VOLTAGE		110V	220V
CURRENT		0.46A	0.21A
FREQUENCY		50/60Hz	
PACKING SPEC.			
PACKING SIZE(cm)		35(W) x 18(L) x 30(D)	
WEIGHT(kg)	PUMP	7	
	PACKING	8	

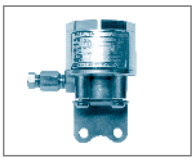
Components


HSA/HSC


HJB/HJC

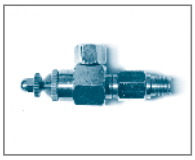

HJS/HHC


Distributor


Line Filter


Drain Filter


Gauge


Oil Control Valve

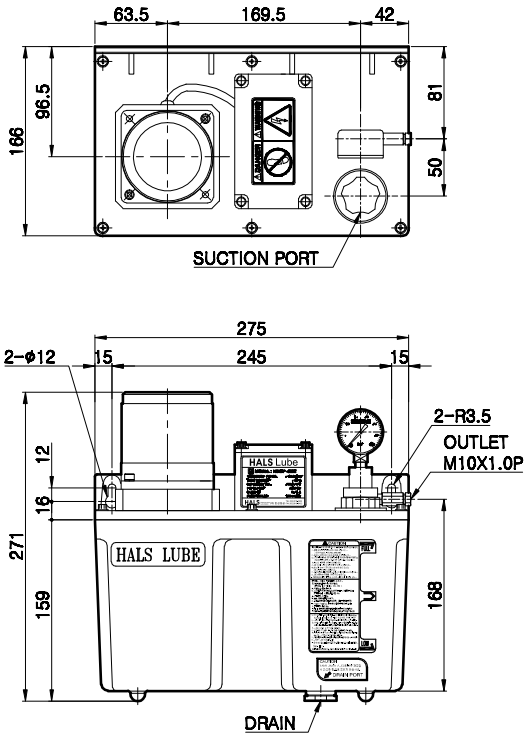

Bushing, Ring, Cap


Hose

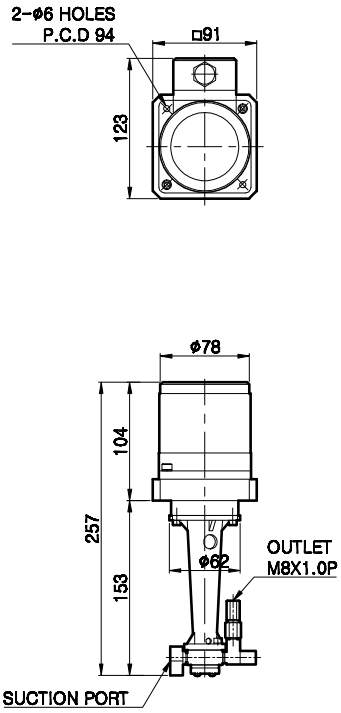

etc.

External Figure

TANK UNIT



PUMP

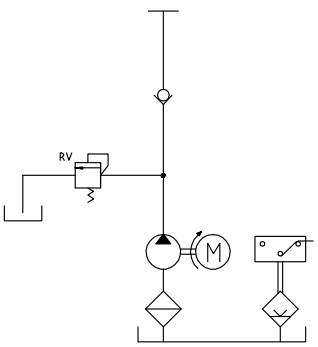


Operating Guide

1) 별도의 제어장치가 없고 전원을 연결하고 전기를 공급 하면 펌프가 작동한다.
2) 펌프는 사용 환경에 맞추어 휴지시간과 구동시간을 반복적으로 작동시키면 된다.
3) 본제품은 연속구동형 비례밸브와 함께 사용할 수 있는 펌프이지만, 연속구동형 제품은 아니므로 최대 5분이상 구동 설정을 하면 Motor가 소손될 수 있다.
4) Pump는 공장 출고시 8kg/cm^{2}으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.
5) HMGP-205S와 마찬가지로 Pump부만 별도로 사용할 수 있어 별도 Tank내에 자유로이 부착하여 사용이 가능하다.

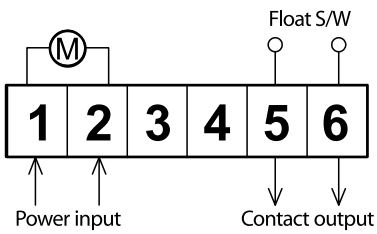
1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied.
2) The pump has to be operated repeatedly adjust on the pause time and the operation time.
3) This pump can be used with continuously operating proportional valve. But, this is not a continuous operation pump, so please refrain from operating for more than 5 minutes.
4) The pump is set at 8kg/cm^2 when released from the factory, but this may differ depending on the changes in the viscosities of the oils used (oil viscosity, surrounding temperature).
5) The pump is used separately like as HMGP-205S. It can be attached freely inside the tank for use.

Hydraulic circuit drawing



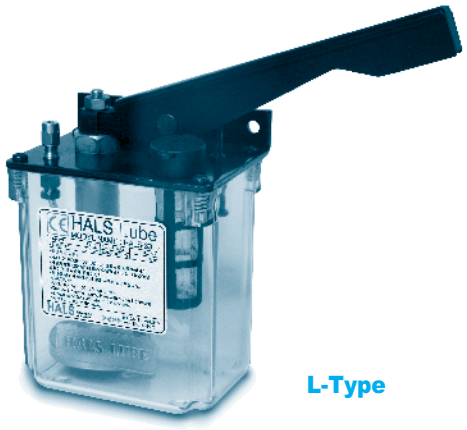
Wiring Diagram

Normal type



HALS 33

Piston Manual Pump
피스톤 수동 펌프



L-Type

Model

HALS - 33 - ☐

R: Right type
L: Left type

Feature

피스톤 수동 펌프로서 펌프의 상징인 실린더의 내면을 특수 가공하여 펌프의 송출 압력을 7kg/cm² 까지 높였으므로 원활한 윤활유의 공급이 가능해졌으며, 또한 소형 및 경량으로 설치 공간이 적게 들어 매우 경제적인 펌프이다.

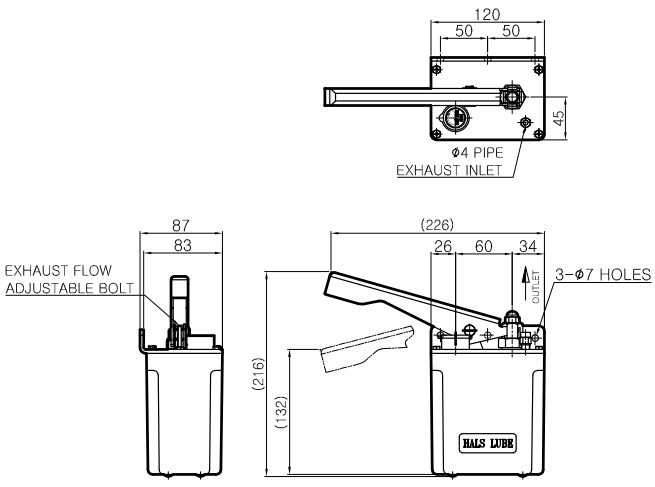
A piston manual pump with a specially processed cylinder interior to raise the pump discharge pressure to 7kg/cm² for a smooth supply of lubricating oil. Also compact and lightweight, requiring little installation space, and is therefore very economical.

Pump Spec.

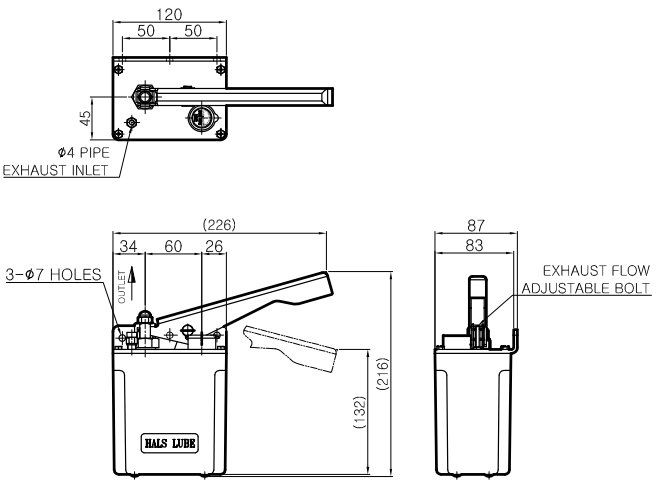
PUMP SPEC.		
MODEL NAME		HALS-33
PUMP TYPE		PISTON
DISCHARGE PRESSURE		7kg/cm²
TANK CAPACITY		1Liter
DISCHARGE AMOUNT		7cc/st
PACKING SPEC.		
PACKING SIZE(cm)		25(W) x 18(L) x 23(D)
WEIGHT(kg)	PUMP	1
	PACKING	2

External Figure

R-type



L-type



Air Drive Fixed Quantity / Proportional Oil Supply Pump

에어구동형 정량/비례급유 펌프



Model

HMGP - 6□ - 04 - T□ - □

- Blank: Without Float S/W
- F: Attach Float S/W
- 2: Resin Tank
- Option: Steel Tank
- A: Proportional
- MA: Fixed Quantity

Pump Spec.

PUMP SPEC.			
MODEL NAME		HMGP-6A	HMGP-6MA
DISCHARGE PRESSURE		10kg/cm²	20kg/cm²
USING OIL		32~220(cSt)	
FILTER		80 Mesh	
TANK CAPACITY		2Liter	
DISCHARGE AMOUNT		0~6cc/st	6cc/st
PACKING SPEC.			
PACKING SIZE(cm)		15(W) x 18(L) x 26(D)	
WEIGHT(kg)	PUMP	1	
	PACKING	2	

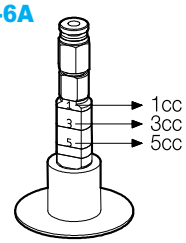
Feature

1. HMGP-6A
   - 압축공기 공급으로 간단한 윤활유 공급이 가능하다.
   - 펌프 구동부를 다이캐스팅 AL제작하여 내구성이 우수하다
   - Control Bar를 통해 손쉽게 토출량 조절이 가능하다.
   - 전기종에 Suction Filter가 부착되어 이물질 혼입이 없다.
2. HMGP-6MA
   - HMV Series인 정량 밸브와 사용되는 정량급유용 펌프이다.
   - 원거리 이송이 가능하다.

1. HMGP-6A
   - Easy lubricating oil supply through supplying compressed air
   - The pump drive parts are produced with die casting molds for superior durability
   - Easy control bar operation for free control of the quantity of discharge
   - The attached suction filter on every model prevents suction of foreign substances
2. HMGP-6MA
   - A fixed quantity oil supply pump used with the HMV Series fixed quantity valve.
   - It is capable of long distance delivery.

Operating Guide

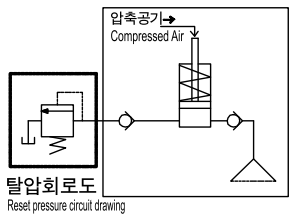
HMGP-6A



HMGP-6A 유량조정 Control Bar 회전으로 손쉽게 유량조절이 가능

HMGP-6A oil quantity adjustment The oil quantity can easily be adjusted by turning the control bar

HMGP-6MA

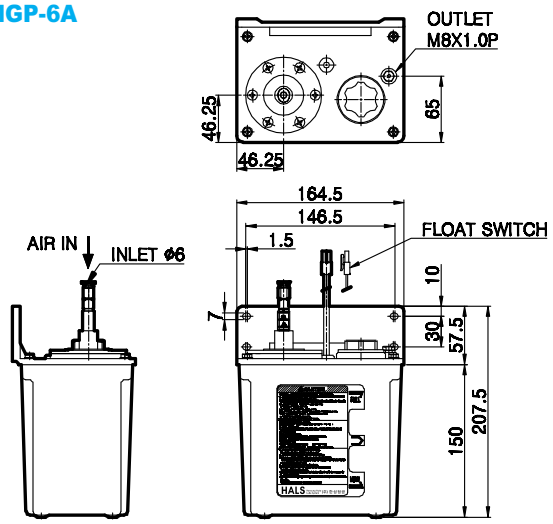


Air 혼입부에 Sol V/V를 장착하여 펌프의 작동시간을 조정하여야 한다.

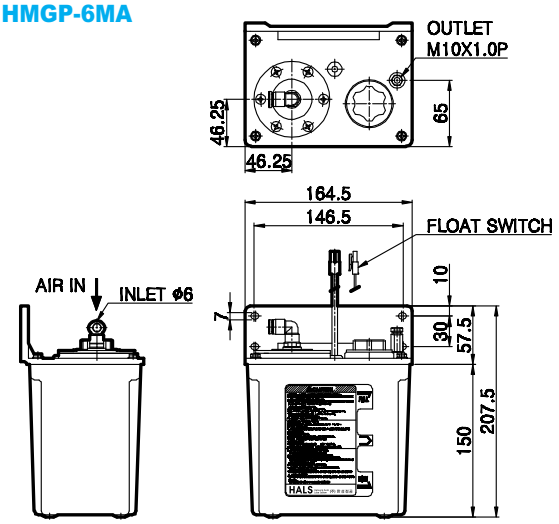
The pump operation time needs to be adjusted by attaching a Sol V/V at the air adulteration section.

External Figure

HMGP-6A



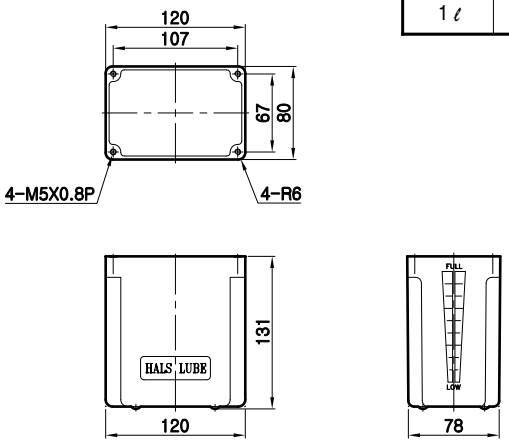
HMGP-6MA



RESIN TANK

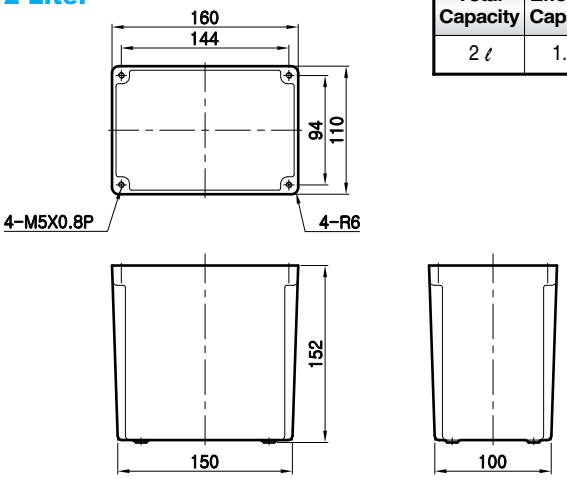
1 Liter

Total Capacity	Effective Capacity
1 ℓ	0.85 ℓ



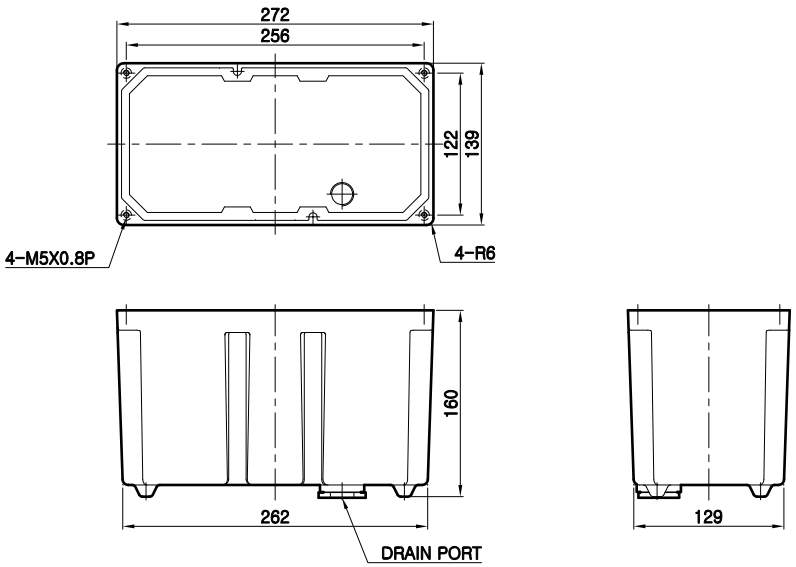
2 Liter

Total Capacity	Effective Capacity
2 ℓ	1.4 ℓ



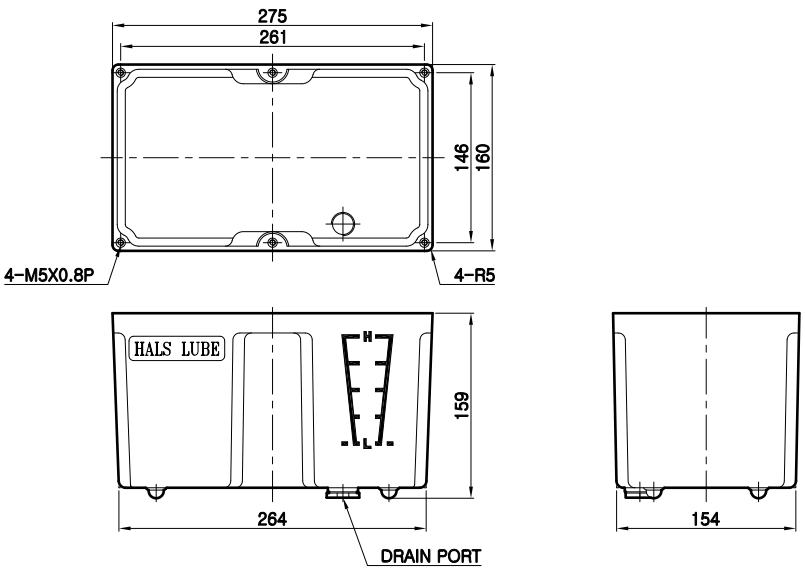
4 Liter

Total Capacity	Effective Capacity
4.5 ℓ	3.5 ℓ

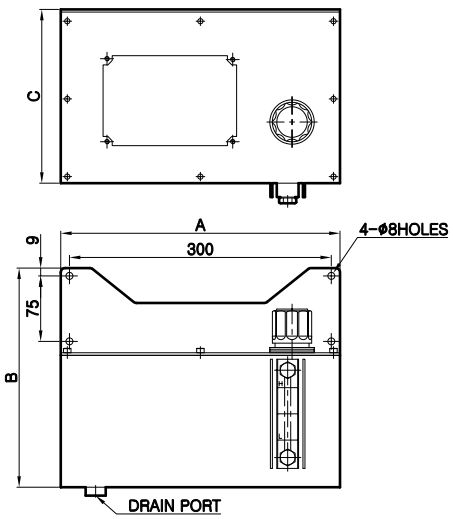


5 Liter

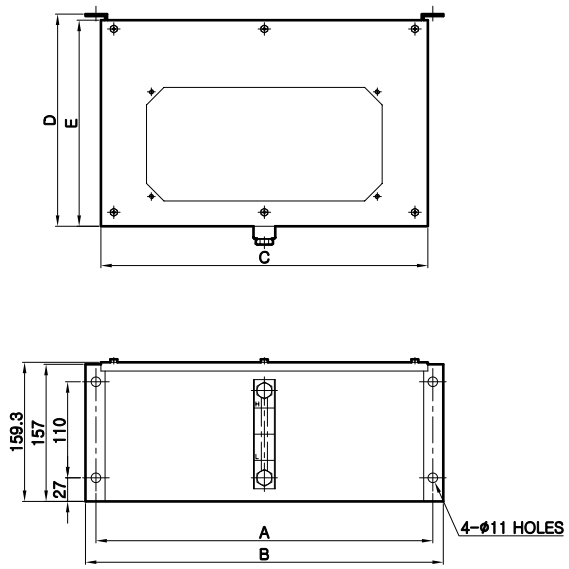
Total Capacity	Effective Capacity
5.5 ℓ	4.5 ℓ



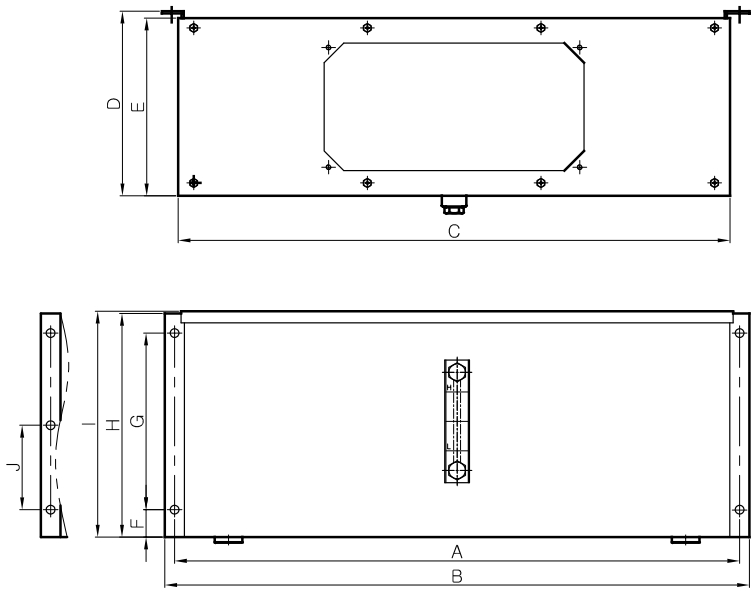
STEEL TANK



Type	Total Capacity	Effective Capacity	A	B	C	Applicate Pump
T5	6.7ℓ	5ℓ	280	249	185	HMGP–303M
T6	7.7ℓ	6ℓ	320	251	199	
T7	9.1ℓ	7ℓ	350	253	206	



Type	Total Capacity	Effective Capacity	A	B	C	D	E	Applicate Pump
T12	12.6ℓ	9.8ℓ	386	410	374.6	243	236	HMGP-303(S) HMGP-6N Type HMGP-205S
T20	20.5ℓ	16ℓ	460	484	448.6	327	320	

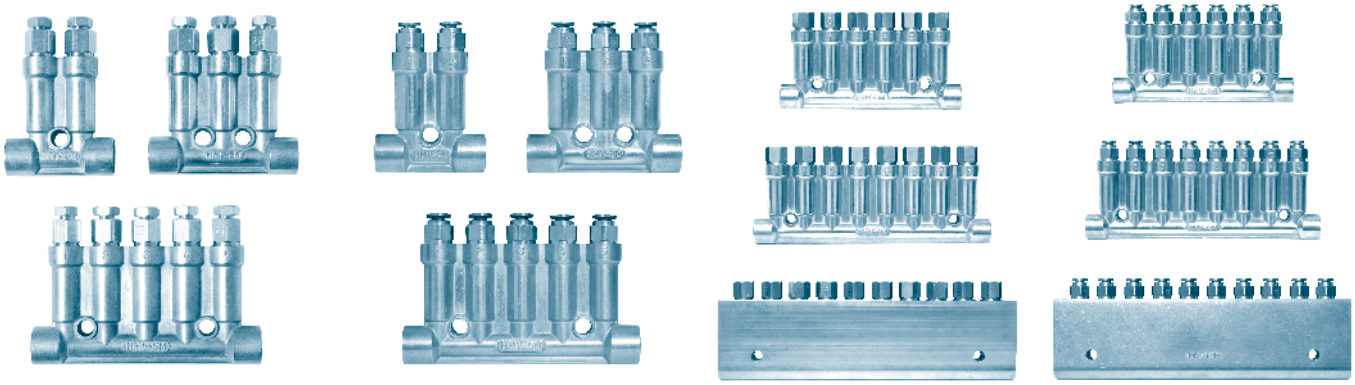


Type	Total Capacity	Effective Capacity	A	B	C	D	E	F	G	H	I	J	Applicate Pump
T10	12ℓ	8.8ℓ	314	338	293	166	159	31	180	231	-	-	HMGP-6N Type
T20	26ℓ	16ℓ	576	596	562.6	188	181	28	180	228	230.3	-	
T30	35ℓ	18ℓ	630	650	620	235	225	20	180	220	222.3	90	
T55	54ℓ	30ℓ	640	670	620	286	276	26.6	283	336.2	338.5	141.5	

HMV series

Fixed Quantity Oil Supply Valve

정량급유 밸브



Spec.

	Number of outlet	Operating Pressure	Reset Pressure
HMV-2	2	10 kg/cm²	3 kg/cm²
HMV-3	3		
HMV-5	5		
HMV-6	6		
HMV-8	8		
HMV-10	10		

Model

HMV - □ - □ □

- □ □ : Code No. / Number of Outlet
- □ : P Push – in fitting / S Screw connector

Code No.	1	2	3	4	5	6	7
Volume(cc/st.)	0.03	0.05	0.1	0.16	0.2	0.3	0.4
Marking	003	005	01	016	02	03	04

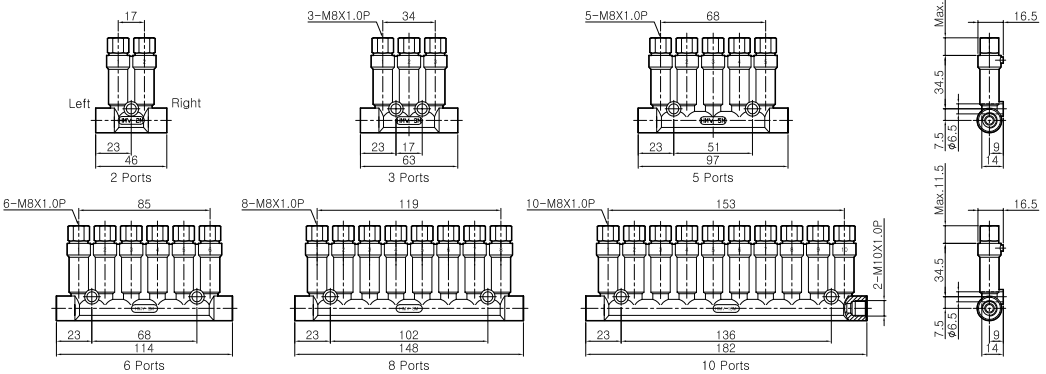
※ 주문방법 (How to order):

▶ 5구 사용에 왼쪽부터 0.1 - 0.03 - 0.3 - 0.05 - 0.2 (cc) 가 필요한 경우 주문번호 HMV-5-31625

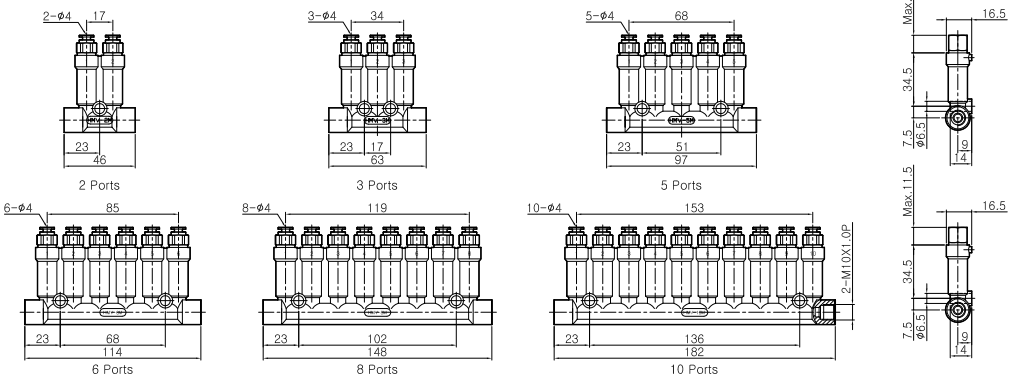
▶ When you need 0.1-0.03-0.3-0.05-0.2(cc) from left while using five ports - Order number HMV-5-31625

External Figure

[TWO TOUCH NIPPLE TYPE]

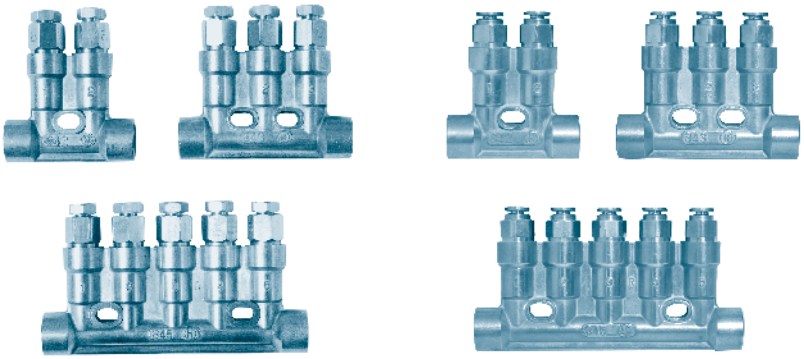


[ONE TOUCH NIPPLE TYPE]



Fixed Quantity Oil Supply Valve

정량급유 밸브



Model

34 □ - □ - □

- □ Number Of Outlet
- □ Code No.
- P Push – in fitting
- S Screw connector

Spec.

	Number of outlet	Operating Pressure	Reset Pressure
342	2	10 kg/cm²	3 kg/cm²
343	3		
345	5		

Code No.	1	2	3	4
Volume(cc/st.)	0.03	0.06	0.1	0.16
Marking	003	006	01	016

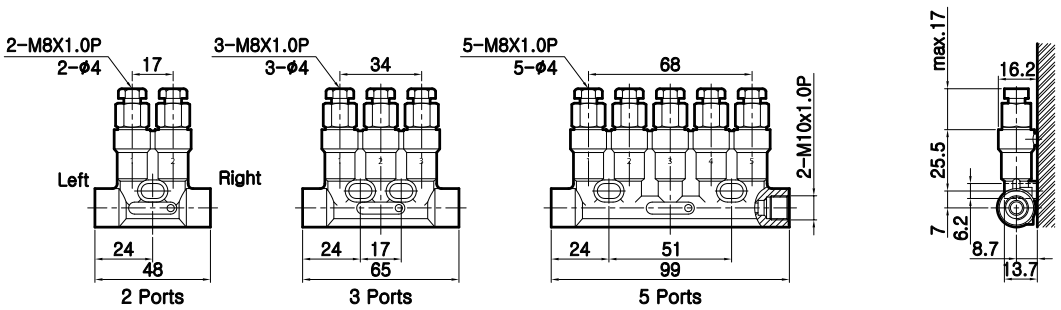
※ 주문방법 (How to order):

▶ 5구 사용에 왼쪽부터 0.03 - 0.1 - 0.06 - 0.03 - 0.16 (cc) 가 필요한 경우 주문번호 345-13214

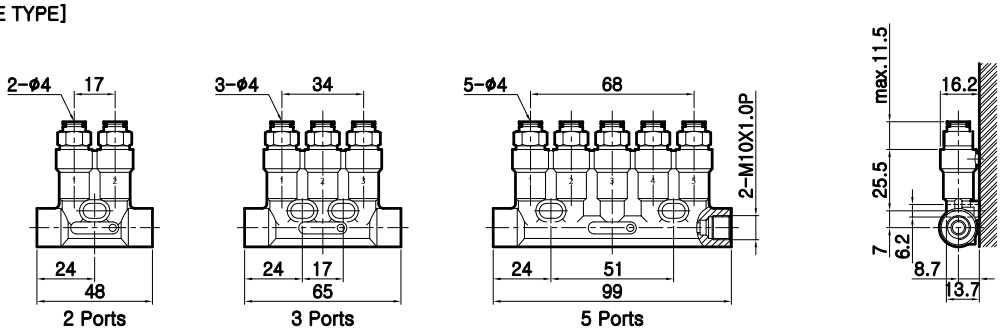
▶ When you need 0.03-0.1-0.06-0.03-0.16(cc) from left while using five ports - Order number 345-13214

External Figure

[TWO TOUCH NIPPLE TYPE]



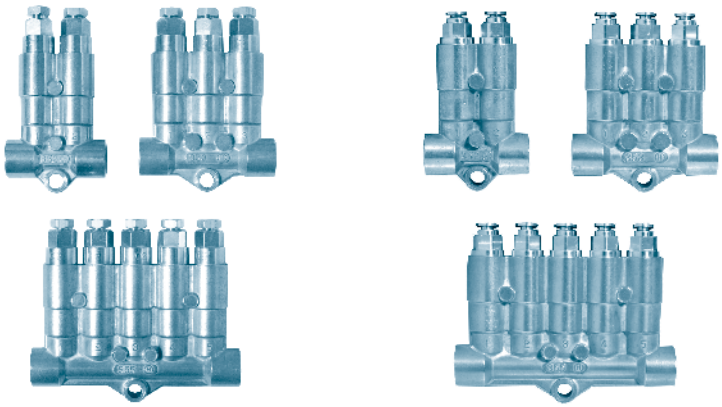
[ONE TOUCH NIPPLE TYPE]



350 series

Fixed Quantity Oil Supply Valve

정량급유 밸브



Model

35 □ - □ - □

- P Push – in fitting
- S Screw connector
- Code No.
- Number Of Outlet

Spec.

	Number of outlet	Operating Pressure	Reset Pressure
352	2	10 kg/cm²	3 kg/cm²
353	3		
355	5		

Code No.	3	5	6	7
Volume(cc/st.)	0.1	0.2	0.4	0.6
Marking	01	02	04	06

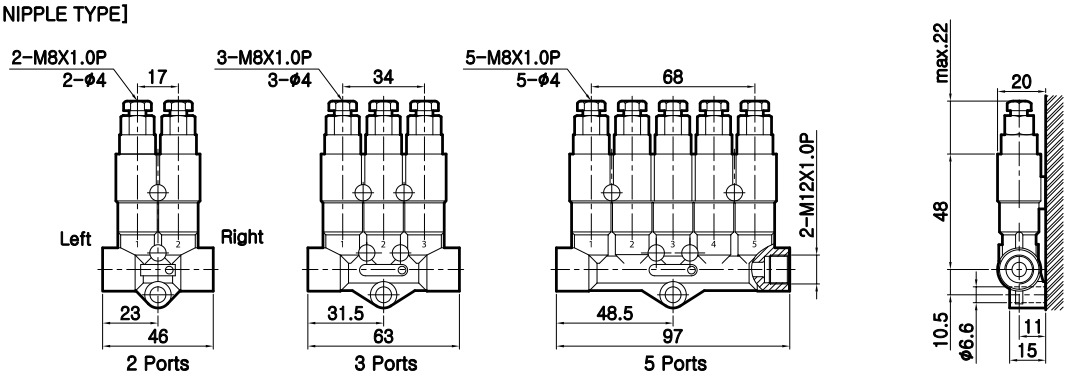
※ 주문방법 (How to order):

▶ 5구 사용에 왼쪽부터 0.1 - 0.4 - 0.2 - 0.2 - 0.6 (cc) 가 필요한 경우 주문번호 355-36557

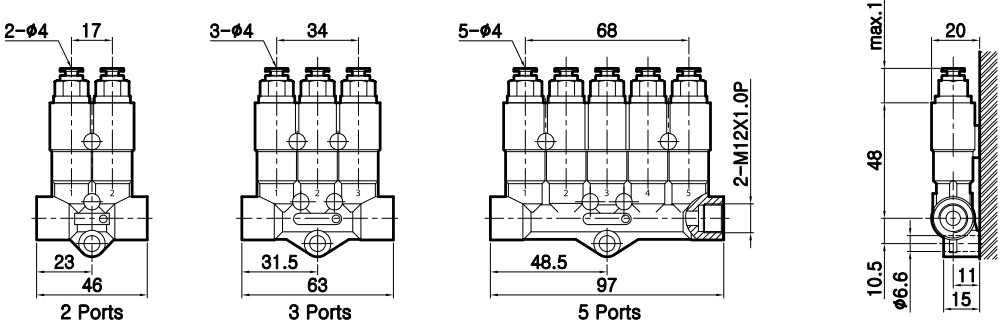
▶ When you need 0.1-0.4-0.2-0.2-0.6(cc) from left while using five ports - Order number 355-36557

External Figure

[TWO TOUCH NIPPLE TYPE]

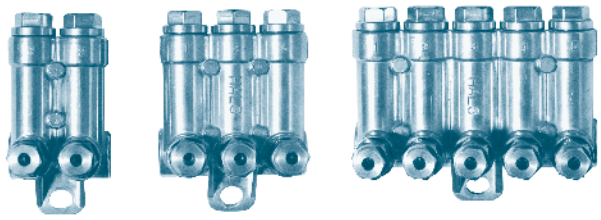


[ONE TOUCH NIPPLE TYPE]



Fixed Quantity Oil Supply Valve

정량급유 밸브



Model

HMLV □ - □ - □

- S Screw connector
- Code No.
- Number Of Outlet

Feature

1. 기존 HMV와 달리 Pump의 작동이 멈춘 후 Oil을 공급하는 정량 밸브이다.
2. 급유시스템에 따라 HMV와 조합해서 사용이 가능하며, 간단한 Nipple 교체로 0.1~1.0cc까지 급유가 가능하다.

1. Unlike existing HMV, this quantitative valve supplies oil only after pump stops operating.
2. Depending on oil supply system, it is possible to be used in combination with HMV. Also, oil supply up to 0.1~1.0cc is possible just by replacing nipple.

※ 주문방법 (Order Method):

▶ 5구 사용에 왼쪽부터 0.1 - 0.3 - 0.4 - 0.6 - 1.0 (cc) 가 필요한 경우 주문번호 HMLV-5-0103040610

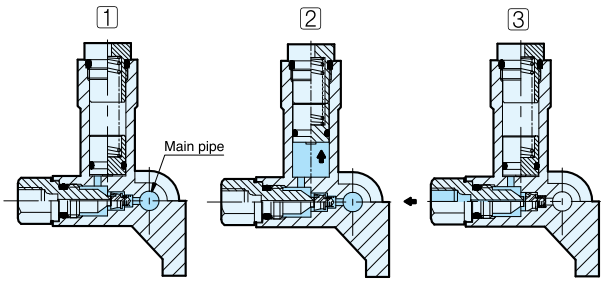
▶ When you need 0.1-0.3-0.4-0.6-1.0(cc) from left while using five ports - Order number HMLV-5-01 03 04 06 10

Spec.

	Number of outlet	Operating Pressure	Reset Pressure
HMLV-2	2	10 kg/cm²	3 kg/cm²
HMLV-3	3		
HMLV-5	5		

Code No.	01	02	03	04	06	10
Volume(cc/st.)	0.1	0.2	0.3	0.4	0.6	1.0
Marking	01	02	03	04	06	10

Operating Guide

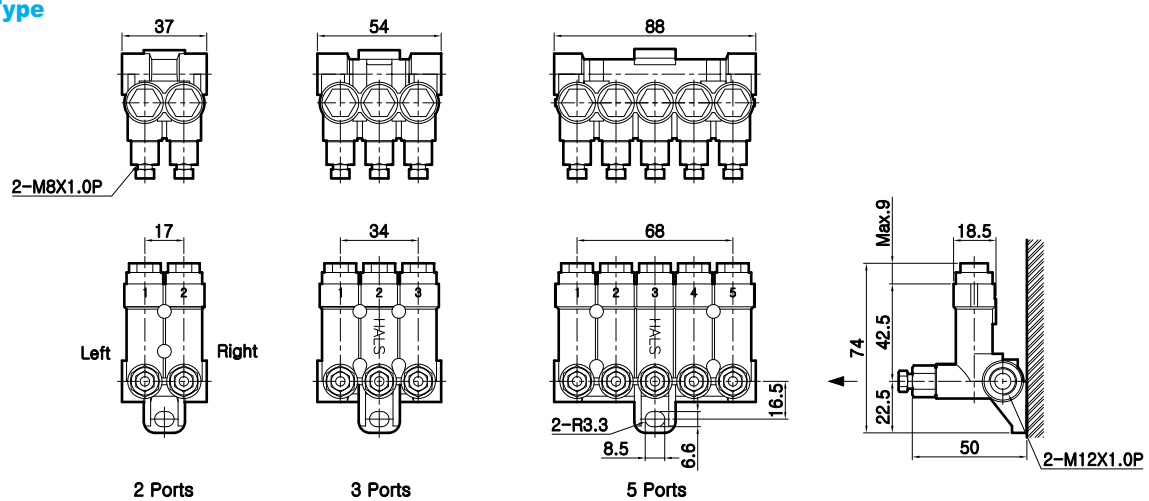


1. 펌프가 작동하면 분배기 내 피스톤 앞부분으로 오일이 채워진다.
2. 주 배관에서의 10~20kg/cm² 압력의 오일은 실린더 내의 피스톤을 밀어 정량의 오일을 채운다.
3. 펌프가 멈추고 주배관의 압력이 해지되면 피스톤은 스프링의 압력으로 급유점에 윤활유를 공급하며, 이 작동을 반복 운동한다.

1. Once pump begins operating, oil fills up the front part of the distributor piston.
2. Oil with pressure of 10~20kg/cm² in the main pipe pushes the piston within the cylinder to fill up desired quantity of oil.
3. When pump stops and the pressure in the main pipe is released, the piston supplies lubricant oil through the spring pressure and repeats this operation.

External Figure

HMLV-Type



HMVS series

Fixed Quantity Oil Supply Valve

정량급유 밸브

Model

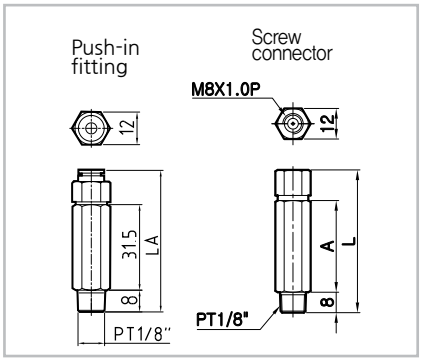
□ - □ - □

- P Push – in fitting
- S Screw connector
- Code No.
- HMVS

Feature

1. HMV와 동일한 구조의 정량밸브이나, 일체형 밸브 사용이 어려운 설치공간에 활용이 가능한 분리형 구조의 정량밸브이다.
2. 정량 토출량의 범위에따라 소형 HMS(0.01~0.1)와 대형 HMVS(0.03~0.6)로 구분된다.

1. A fixed quantity valve structurally identical to HMV, but has a separable structure for use in installation spaces where the use of a single-unit valve is difficult.
2. It is separated into a small HMS(0.01~0.1) or a large HMVS(0.03~0.6) valve, depending on the range of the fixed quantity discharge quantity.



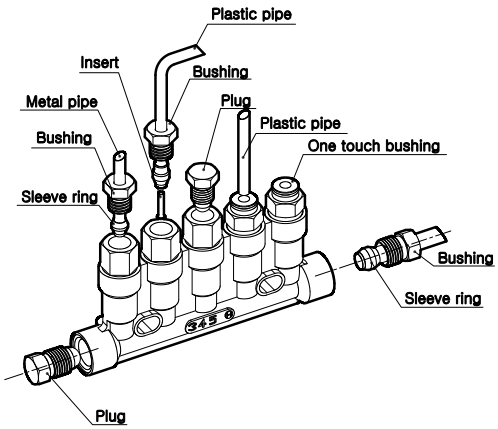
Model		A (mm)	L (mm)	LA (mm)
HMVS	0.03	31.5	51.5	51
	0.06			
	0.1			
	0.1			
	0.3			
	0.4			
	0.6	36	56	55

Spec.

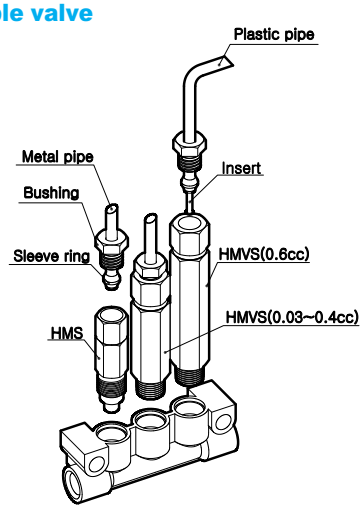
Model	HMVS						
Volume(cc/st.)	0.03	0.06	0.1	0.16	0.3	0.4	0.6
Marking	003	006	01	02	03	04	06
Code No.	003	006	01	02	03	04	06

Assembly method

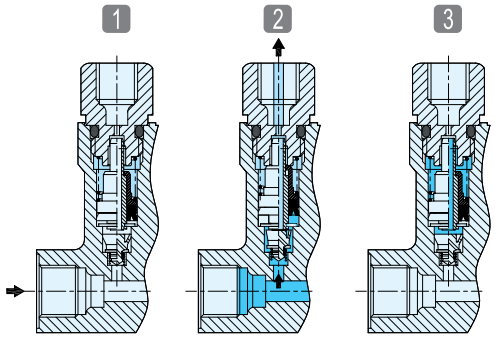
Single-unit valve



Separable valve



Operating Guide



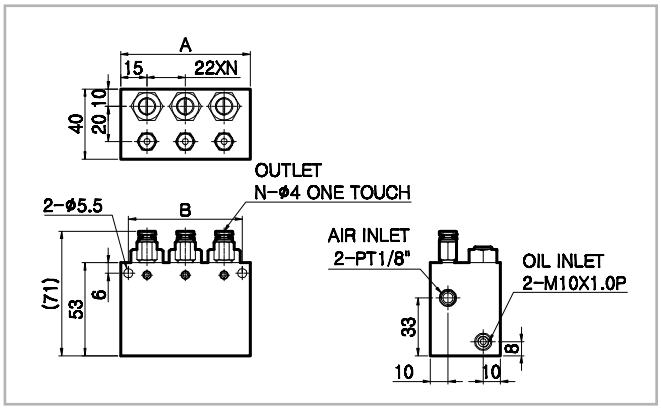
1) 윤활점으로 정해진 오일은 분배기내 피스톤 앞부분에 채워져 있다.
2) 중앙 윤활 펌프가 구동을 시작하면 오일이 이송되고 피스톤이 주 배관에서의 (10~20kg/cm²) 압력에 의하여 움직이게 되고 앞부분의 오일을 윤활점으로 보내게 된다.
3) 주 배관의 압력이 해지되면 분배기 내 피스톤은 원상태로 되돌아 오게 되면서 피스톤 앞부분으로 Oil이 재충전 된다.
4) 위의 작동을 반복하여, 급유점에 윤활유를 공급한다.

1) The front of the piston inside the distributor is filled with lubricating oil.
2) When the central lubricating oil begins to operate, the oil is delivered, and the pressure from the main pipe (10~20kg/cm²) moves the piston, which in turn pushes the oil from the front of the piston to the lubricating spot.
3) When the pressure from the main pipe is eliminated, the piston moves back to its original position, and the oil is refilled into the front of the piston.
4) The above process is repeated to provide lubricating oil.

Mixing Valve
혼합밸브

Model

HM - □ - □
- Code No.
- Number of Outlet



Feature

1. 일정량의 오일을 토출하여 제어된 외부의 압축공기와 혼합되어 미세한 기름입자로 변화시키는 윤활시스템
2. 기계요소의 윤활면에 엷은 유막을 입혀주는 이상적인 윤활방식
3. 경제적, 환경적으로 최상의 윤활성능을 보장

1. A lubricating system that mixes oil discharges and external compressed air to create fine oil particles.
2. An ideal lubricating method that creates a thin oil membrane on the machine's lubricating surface.
3. It is economical and environmentally-friendly, and ensures optimal lubricating performance.

Spec.

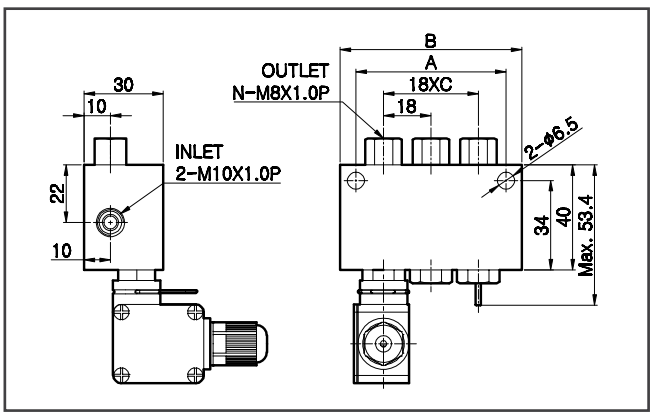
OPERATING TYPE	Metering Piston			
DISCHARGE AMOUNT	0.03~0.16cc/st.			
USING OIL	MIST Oil			
AIR PRESSURE	0.35~0.5MPa			
Volume(cc/st.)	0.03	0.06	0.1	0.16
Code No.	1	2	3	4

DIMENSION		
Number of outlets(N)	A	B
2	52	43
3	74	65
4	96	87

HMIV
피스톤 정량 밸브

Model

HMIV - □ - □
- Code No.
- Type



Feature

Piston 작동식 정량밸브로 육안 식별이 가능한Indicator 부착으로 밸브의 작동 유무를 쉽게 확인 할 수 있고, Limit s/w 부착으로 전기적인 제어 확인이 가능하다.

A piston-driven fixed quantity valve, attached with an indicator that allows easy visual discrimination, and the valve's operation can be checked simply by the indicator's movements, and the attachment of limit S/W allows electricity control checks.

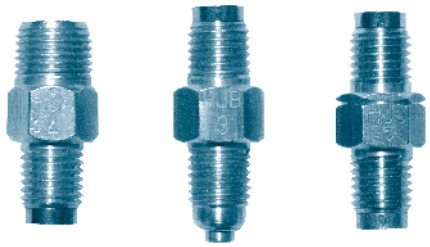
Spec

TYPE	N	A	B	C
HMIV-2	2	39	51	1
HMIV-3	3	57	69	2
HMIV-4	4	75	87	3
HMIV-5	5	93	105	4

Volume(cc/st.)	0.03	0.05	0.1	0.2	0.3	0.5
Code No.	1	2	3	4	5	6

Proportional Oil Supply Valve

비례급유 밸브



Model

□ - □

Oil Quantity

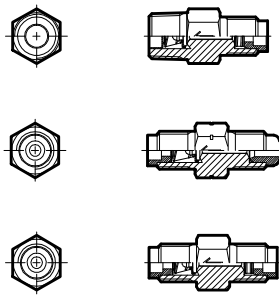
Valve Type

Feature

1. 비례급유 시스템의 Flow unit 부품이다.
2. 간헐급유용 밸브와 연속 급유용 밸브로 구분되며, 조립 방법에 따라 분배변취부, 라인취부, 기계취부로 구분된다
3. Filter를 사용하여 이물 혼입을 막아야 한다.

1. The flow unit component of the proportional oil supply system.
2. It is separated into an intermittent oil supply valve or a continuous oil supply valve, and is separated into a distributor spray, line spray or a machine spray, depending on the assembly method.
3. Always use the filter to prevent the entry of foreign substances.

SPEC.



HSA (기계 취부용)
(for Machine Spraying)

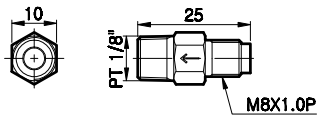
HJB (분배변 취부용)
(for Distributor Spraying)

HJS (라인 취부용)
(for Line Spraying)

Valve No.	#0	#1	#2	#3	#4
Oil Quantity	5	10	20	40	80

Assembly Method

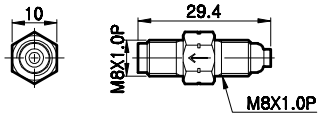
HSA/HSC



DISTRIBUTOR GROUP(기계취부용)

HSA(간헐급유용) (Intermittent Oil Supply)	
Code NO.	Valve NO.
36010	#0
36011	#1
36012	#2
36013	#3
36014	#4

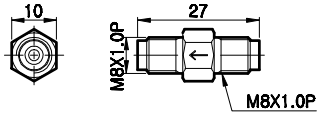
HJB/HJC



DISTRIBUTOR GROUP(분배변 취부용)

HJB(간헐급유용) (Intermittent Oil Supply)	
Code NO.	Valve NO.
46010	#0
46011	#1
46012	#2
46013	#3
46014	#4

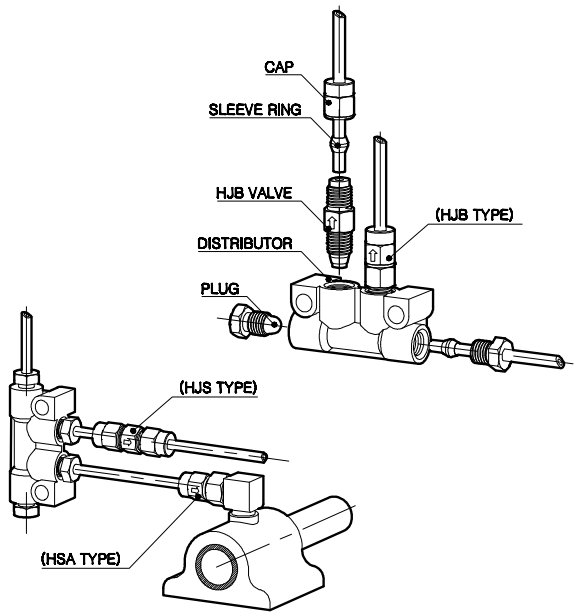
HJS/HHC



DISTRIBUTOR GROUP(라인 취부용)

HJS(간헐급유용) (Intermittent Oil Supply)	
Code NO.	Valve NO.
56010	#0
56011	#1
56012	#2
56013	#3
56014	#4

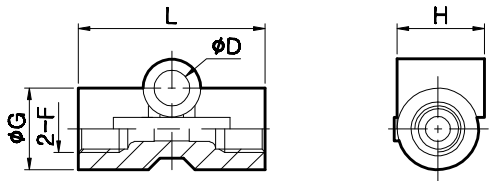
Operating Guide



Flow unit는 내부 로드의 굵기로 유량 정수치를 결정하며, 한쪽 방향 제어를 위하여 체크 밸브를 내장하고 있어 상호간 고저차 및 펌프에서의 거리에도 실용상 영향이 없고 유압이 0.35kg/cm²이 되었을 때 체크 밸브가 열리게 되어 있다.
각 unit의 측면에는 형식 No. 및 기름의 흐름방향이 명확하게 각인되어 있다.

The flow unit decides the fixed oil quantity using the internal rod's thickness, and has a check valve to control the direction of one side, and therefore does not have an effect even in different altitudes or distance from the pump. The check valve opens when the oil pressure reaches 0.35kg/cm².
The type No. and the oil flow direction is clearly inscribed on the side of each unit.

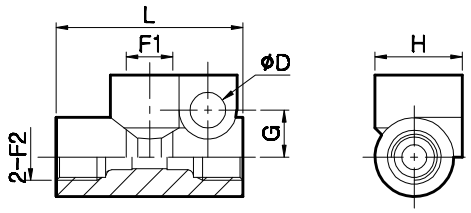
External Figure



2-WAY DISTRIBUTOR

Code NO.	2-F	L	D	G	H
10248	M8×1P	32	6.2	14	15
10268	M10×1P	32	6.2	14	15
*10288	PT 1/8	32	6.2	14	15

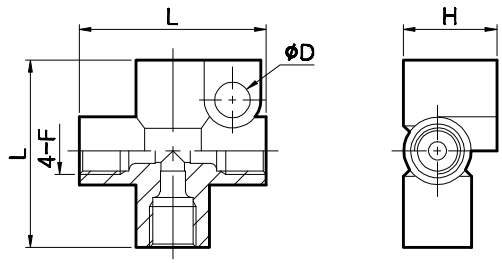
* 부분은 주문에 의한 제작품임 * parts are order specifications



3-WAY DISTRIBUTOR

Code NO.	F1	2-F2	L	D	G	H
10088	M8×1P	M8×1P	32	6.2	11	17
* 10081	M8×1P	M10×1P	32	6.2	11	17
10011	M10×1P	M10×1P	32	6.2	11	17
* 10181	PT 1/8	M10×1P	32	6.2	11	17
* 10118	M10×1P	PT 1/8	32	6.2	11	17

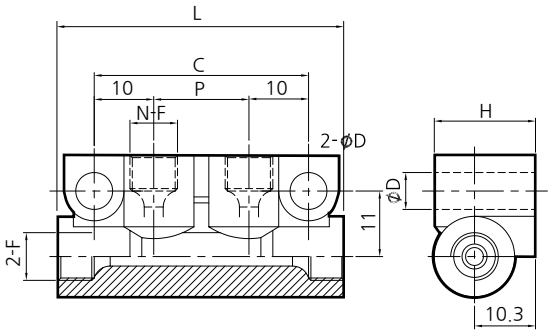
* 부분은 주문에 의한 제작품임 * parts are order specifications



4-WAY DISTRIBUTOR

Code NO.	4-F	L	H	D
44081	M8×1P	32	16	ø6.2
44011	M10×1P	32	16	ø6.2
*44018	PT 1/8	32	16	ø6.2

* 부분은 주문에 의한 제작품임 * parts are order specifications

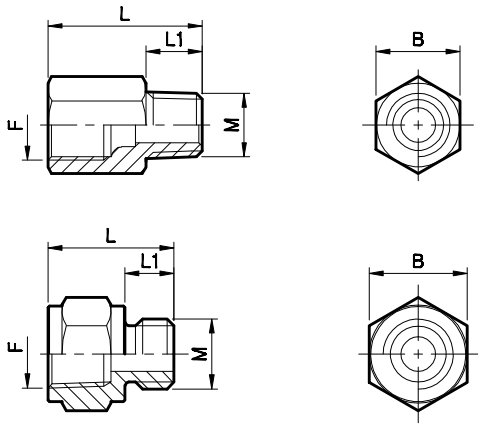


DISTRIBUTOR

Code NO.	Number of Port	N-F	2-F	L	C	H	D	P
20088	4(2P)	M8×1P	M8×1P	48	36	17	ø6.2	16
* 20081		M8×1P	M10×1P	48	36	17	ø6.2	16
* 20011		M10×1P	M10×1P	48	36	17	ø6.2	16
20181		PT 1/8	M10×1P	48	36	17	ø6.2	16
* 20118		M10×1P	PT 1/8	48	36	17	ø6.2	16
30088	5(3P)	M8×1P	M8×1P	64	52	17	ø6.2	16x2
* 30081		M8×1P	M10×1P	64	52	17	ø6.2	16x2
* 30011		M10×1P	M10×1P	64	52	17	ø6.2	16x2
30181		PT 1/8	M10×1P	64	52	17	ø6.2	16x2
* 30118		M10×1P	PT 1/8	64	52	17	ø6.2	16x2
40088	6(4P)	M8×1P	M8×1P	80	68	17	ø6.2	16x3
* 40081		M8×1P	M10×1P	80	68	17	ø6.2	16x3
* 40011		M10×1P	M10×1P	80	68	17	ø6.2	16x3
40181		PT 1/8	M10×1P	80	68	17	ø6.2	16x3
* 40118		M10×1P	PT 1/8	80	68	17	ø6.2	16x3
50088	7(5P)	M8×1P	M8×1P	96	84	17	ø6.2	16x4
* 50081		M8×1P	M10×1P	96	84	17	ø6.2	16x4
* 50011		M10×1P	M10×1P	96	84	17	ø6.2	16x4
50181		PT 1/8	M10×1P	96	84	17	ø6.2	16x4
* 50118		M10×1P	PT 1/8	96	84	17	ø6.2	16x4
60088	8(6P)	M8×1P	M8×1P	112	100	17	ø6.2	16x5
* 60081		M8×1P	M10×1P	112	100	17	ø6.2	16x5
* 60011		M10×1P	M10×1P	112	100	17	ø6.2	16x5
60181		PT 1/8	M10×1P	112	100	17	ø6.2	16x5
* 60118		M10×1P	PT 1/8	112	100	17	ø6.2	16x5
80088	10(8P)	M8×1P	M8×1P	144	132	17	ø6.2	16x6
* 80081		M8×1P	M10×1P	144	132	17	ø6.2	16x6
* 80011		M10×1P	M10×1P	144	132	17	ø6.2	16x6
80181		PT 1/8	M10×1P	144	132	17	ø6.2	16x6
* 80118		M10×1P	PT 1/8	144	132	17	ø6.2	16x6

* 부분은 주문에 의한 제작품임 * parts are order specifications

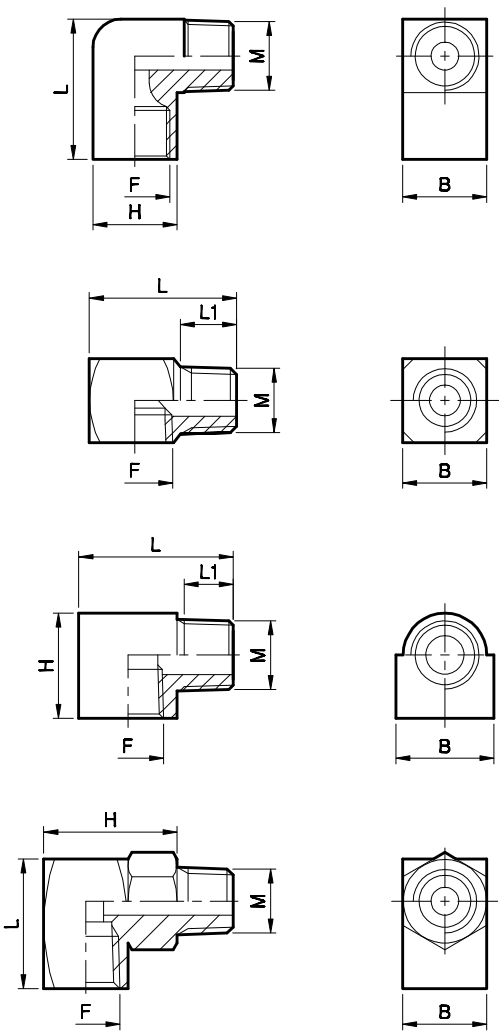
Adaptor



Code NO.	TUBE DIA. (out side)	B	L	L1	M	F
51114	ø4	10	18	8	PT 1/8	M8×1P
51115	ø6	12	22	8	PT 1/8	PF 1/8
51116	ø6	12	22	8	PT 1/8	M10×1P

Code NO.	TUBE DIA. (out side)	B	L	L1	M	F
51117	ø6	14	17	7	M10×1P	PT 1/8
51118	ø6	17	18	8	M12×1P	M10×1P

Elbow



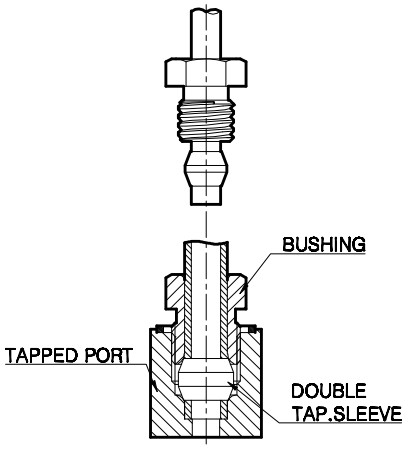
Code NO.	TUBE DIA. (out side)	M	F	L	B	H
51154	ø4	PT 1/8	M8×1P	18	10	10
51156	ø6	PT 1/8	M10×1P	20	12	12

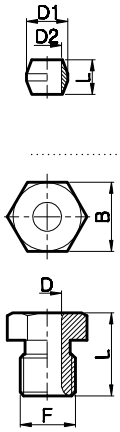
Code NO.	B	L	L1	M	F
51155	12	21	8	PT 1/8	PT 1/8

Code NO.	B	H	L	L1	M	F
51157	13	13	22	8	PT 1/8	PT 1/8

Code NO.	B	L	H	M	F
51141	12	18.5	19	PT 1/8	M8×1P
51142	12	18.5	19	PT 1/8	PT 1/8

Connectors for steel, copper tubing and plastic tubing





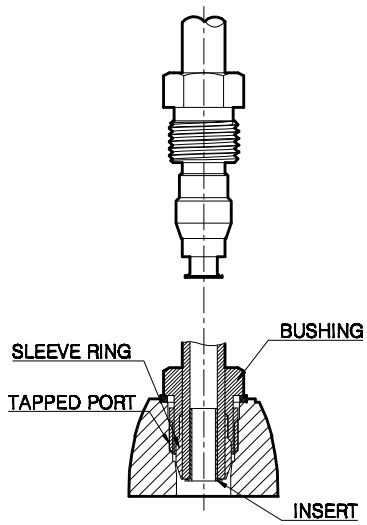
Sleeve Ring

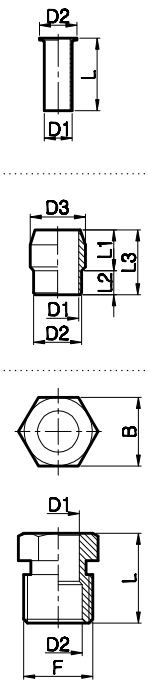
Code NO.	TUBE DIA. (out side)	L	D1	D2
51094	ø4	5	ø6.0	ø4.2
51096	ø6	6	ø8.0	ø6.2

Bushing

Code NO.	TUBE DIA. (out side)	B	L	D	F
51073	ø4	8	12	ø4.2	M8×1P
51074	ø4	10	12	ø4.2	M8×1P
51076	ø6	10	13	ø6.2	M10×1P
51077	ø6	12	13	ø6.2	PF 1/8

Connectors for plastic tubing





Insert

Code NO.	TUBE DIA	D1	D2	L
51102	ø4×ø2	ø2	ø3	10.5
51103	ø4×ø2.5	ø2.5	ø3.5	12.5
51104	ø6×ø4	ø4	ø5.4	10.5

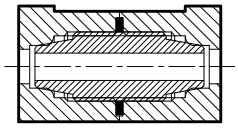
Sleeve Ring

Code NO.	TUBE DIA. (out side)	L1	L2	L3	D1	D2	D3
51194	ø4	4.8	3.2	8	ø4.2	ø5	ø6
51196	ø6	5.9	3.5	9.4	ø6.2	ø7	ø8

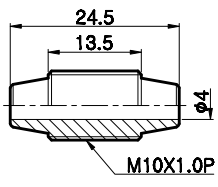
Bushing

Code NO.	TUBE DIA. (out side)	B	L	D1	D2	F
51174	ø4	8	12	ø4.2	ø5	M8×1P
51176	ø6	10	13	ø6.2	ø7	M10×1P

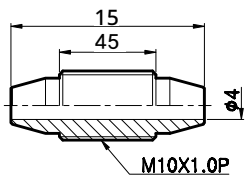
Connectors for distributor



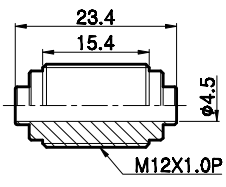
DISTRIBUTOR CONNECTION



HMV CONNECTOR

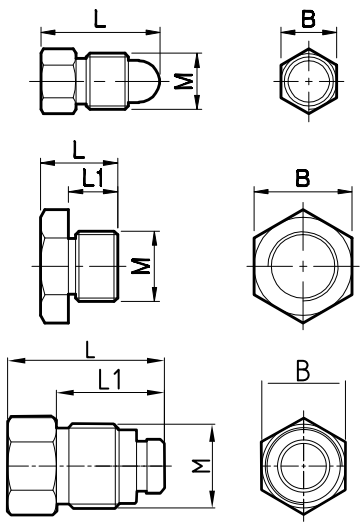


340 CONNECTOR



350 CONNECTOR

Plug



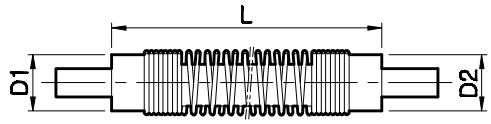
Code NO.	B	L	M
*51162	8	15	M10×1P
51164	10	17	M8×1P
51168	10	19.5	M10×1P

* 부분은 주문에 의한 제작품임 * parts are order specifications

Code NO.	B	L1	L	M
51169	14	7	11	M10×1P
51170	17	7	12	M12×1P

Code NO.	B	L1	L	M
51071	12	15.5	22.5	M12 X 1P

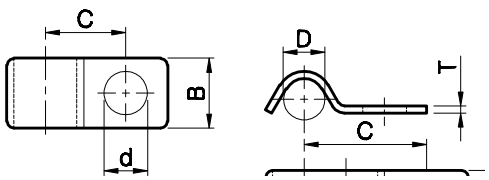
Flexible Hose



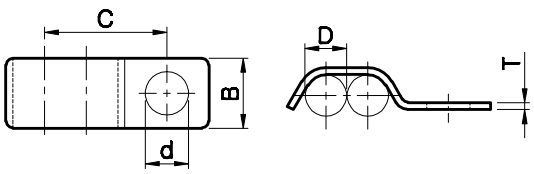
TUBE DIA. (OUT SIDE)	D1	D2	USING PRESSURE
ø4	ø4	ø10	MAX. 13kg/cm²
ø6	ø6	ø10	MAX. 25kg/cm²

PIPE LAYING STANDARD	CODE NO.	REMARKS
ø4	EX) 4F-050	L=50cm
ø6	EX) 6F-350	L=350cm

Tube clamp

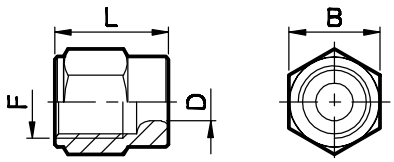


CODE NO.	TUBE DIA. (OUT SIDE)	D	B	d	C	T
51054	ø4	ø4	10	ø6.2	9	1.0
51056	ø6	ø6	10	ø6.2	11.5	1.0



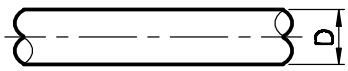
CODE NO.	TUBE DIA. (OUT SIDE)	D	B	d	C	T
51064	2-ø4	ø4	10	ø6.2	13	1.0
51066	2-ø6	ø6	10	ø6.2	17.5	1.0

CAP



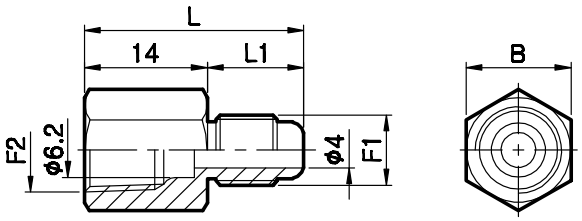
Code NO.	TUBE DIA. (out side)	B	L	D	F
51084	ø4	10	12.5	ø4.2	M8×1P

Tube



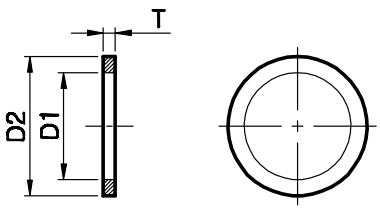
Code NO.	D	MATERIAL
70014N	ø4	Nylon
70016N	ø6	Nylon
70014C	ø4	Bs
70016C	ø6	Bs

Reducer



Code NO.	TUBE DIA. (out side)	B	L	L1	F1	F2
51029	ø4-ø6	12	25	11	M8×1P	M10×1P
51030	ø4-ø6	12	25	11	M8×1P	PT 1/8

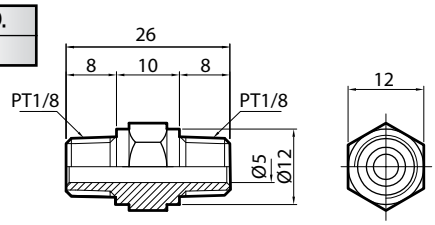
Cu-Washer



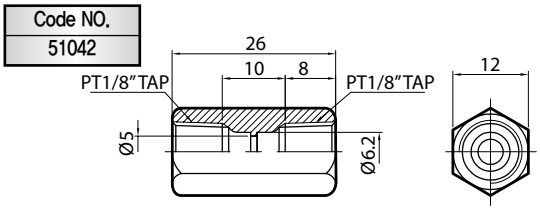
Code NO.	D1	D2	T	Remark
51171	ø10.2	ø13.9	1	M10 type
51172	ø12.2	ø15.9	1.4	M12 type

Male / Female connector

Code NO. 51041

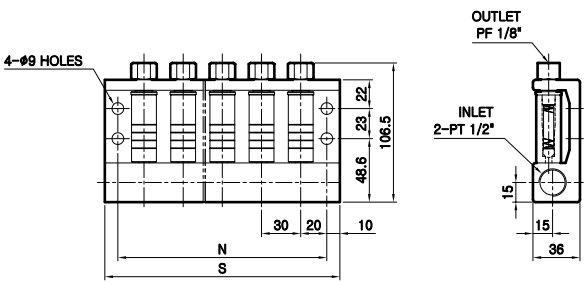


Code NO. 51042

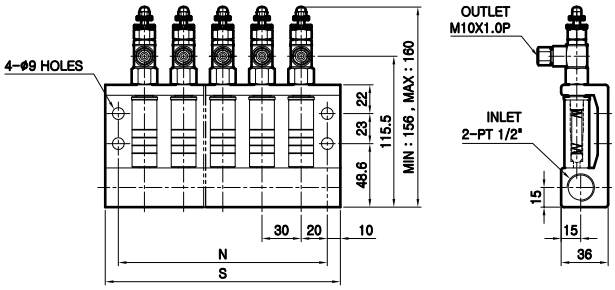


Flow Indicator

Normal Type



Control Type



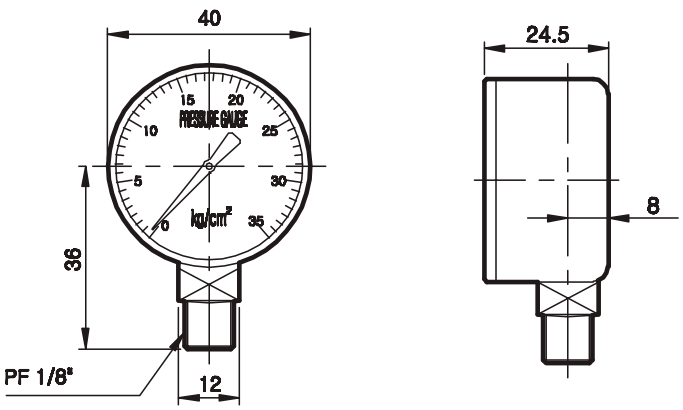
FLOW INDICATOR는 유체의 흐름을 눈으로 점검하고 각 가지관으로의 분배 기능을 갖추고 유량을 조절할 수 있어 사용하기에 편리하게 제작되었다.
주로 연속 윤활장치에 사용되며, 가지관의 수는 4구~14구까지 제작이 가능하며 가지관 1개당 토출량은 약 50cc/min~2ℓ/min까지 조절이 가능하다.
단, 조절범위 이외로 요구할 때에는 당사 기술부와 협의하여야함

The flow indicator has been designed to enable easy visual checking of oil flow, distribution to different branch pipes and control of oil quantity.
It is mainly used in continuous lubricating systems, and the branch pipes can be produced with 4 to 14 outlets. Each branch pipe's discharge quantity can be controlled from 50cc/min to 2ℓ/min.
But, for use outside the control range, you must consult our technical department.

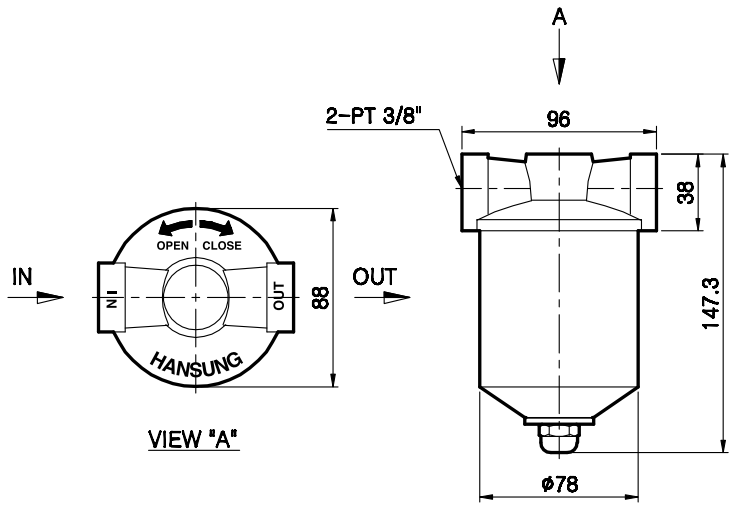
Number of outlets(N)	4	6	8	10	12	14
N	130	190	250	310	370	430
S	150	210	270	330	390	450
Max. Pressure	10kg/cm²					
Discharge Volum	50~2000cc/min					
Using Oil	10~2000 cSt					

Pressure Gauge

Model	HPG-35
PRESSURE RANGE	0~35kg/cm²



Drain Filter



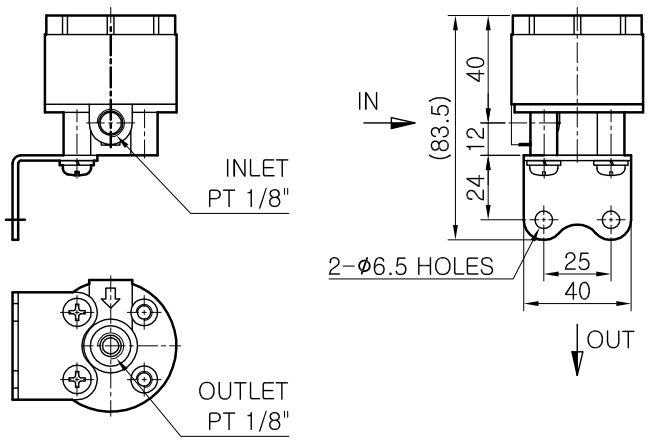
소용량 윤활 System용으로 개발한 Drain Filter는 회수되는 Oil중의 이물질을 제거하여 기계의 수명을 연장시키는데 사용한다.
또한 Oil의 재활용으로 Oil 소비를 획기적으로 줄일 수 있다.
Drain Filter는 청소후 사용가능한 반영구적인 제품이다.

The drain filter, designed for use in small capacity lubricating systems, eliminates foreign substances in recovered oil to expand machine lifespans.
Also, by recycling the oil, oil consumption can be greatly reduced.
Drain filter is a semi-permanent product that is reusable after cleaning.

MODEL	HLF-80M
USING PRESSURE	under 18kg/cm²
OIL AMOUNT	10 Liter / min
FILTER	80 Mesh
CODE No.	51194

※ 기타 Mesh는 주문제작 가능 (other Mesh are order specifications)

Line Filter



소용량 윤활 System용으로 개발한 Line Filter는 Oil 중에 이물질을 제거하여 기계의 수명을 연장시키는데 사용한다.

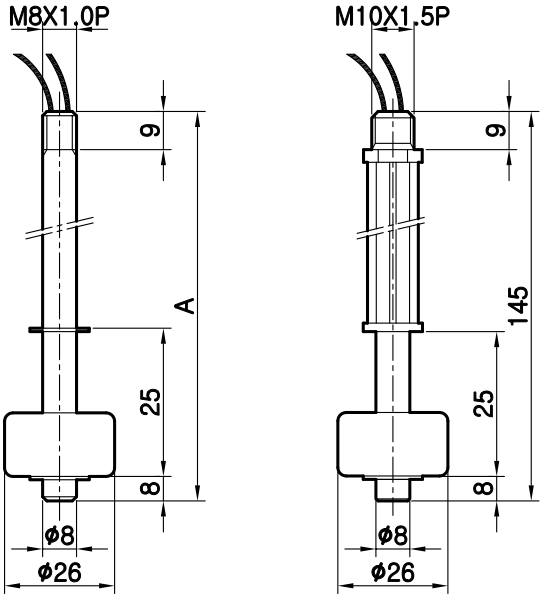
1. 엘리먼트 청소 또는 교환시 하부 Cover만으로 이/탈착되게 제작되었음
2. 소결 엘리먼트를 사용하여 세척후 재사용이 가능
3. AL 소재를 사용하여 가볍고 부식이 없음

The line filter, designed for use in small capacity lubricating systems, eliminates foreign substances in the oil to expand machines' lifespans.

1. It has been designed to detach and attach with just the cover when element cleaning or exchanging.
2. It can be reused after cleansing with sintering elements.
3. AL materials have been used to make it lightweight and corrosion proof.

MODEL	HLF-40
MAX. PRESSURE	30kg/cm²
USING PRESSURE	10kg/cm²
OIL AMOUNT	0.5Liter/min
FILTER	40 μ
CODE No.	51193

Float Switch

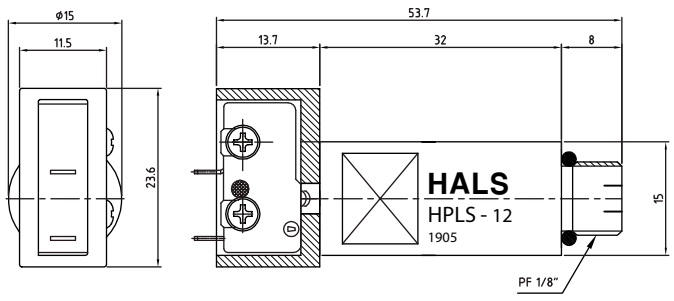


탱크내 유량검출용 오일레벨 스위치로서, Float System용 축에 Lead S/W가 내장되어 있고 로다 내부에 소형자석이 있어 유량 상한선 · 하한선을 검출한다. Lead S/W의 점검 개폐용량은 매우 적으므로 보조릴레이를 사용하여야 한다.

An oil level switch used to detect oil quantity inside the tank, and has a built-in lead S/W on the float system shaft. There is also a small magnet inside the rotor that detects oil quantity upper and lower limits. Maintenance opening and closing of lead S/W is very small, and therefore a supplementary relay needs to be used.

VOLTAGE	Max. AC 100V / DC 200V
CURRENT	2.0A
USING TEMP.	-10~80℃
USING OIL	32~1300cst
DIM 'A'	consider tank size

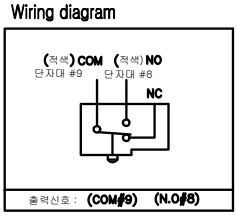
Pressure Switch



압력으로 제어하는 정량윤활급유방식의 핵심부품으로서 펌프의 압력 손실로 인한 윤활불능 등 이상을 감지할 수 있도록 제작되었다.

A core component of a pressure-controlled fixed quantity lubricating oil supply method, and has been designed to detect abnormalities such as lubricating impotence caused by pressure loss.

Wiring diagram



TYPE	HPLS-12
OPERATING PRESSURE	12±1kg/cm²
ELECTRICAL RATINGS	DC Max. 42V
	Max. 4A
ENDURANCE	Above 100,000 Cycle
OPERATING TEMP.	-20~120℃

사용방법 Operating Instructions

■ 작동 준비

1. 준비
   - ▶ 배관, 전기 배선의 완료를 확인하고 추천하는 청정한 윤활제를 Tank에 충전시켜 주십시오.
   - ▶ 전동 펌프의 경우 모터의 구동 유무를 확인하십시오.
2. 주 배관의 에어 제거
   - ▶ 집중윤활장치의 적절한 동작을 위해서는 에어의 혼입을 피해야 합니다. 따라서, 에어 제거를 충분히 행해야 합니다.
   - ▶ 에어를 제거하기 위해서는 오일이 펌프 토출 밖으로 유출될 때 까지 펌프를 연속적으로 작동 시키십시오.
   - ▶ 펌프를 작동하여 주 배관에 기름을 채울 시 에는 주 배관의 가장 높은 위치나, 펌프에서 가장 먼 위치까지 완전히 외부로 기름이 샐 때 까지 에어를 빼 주십시오.
3. 급유배관의 에어제거
   - ▶ 급유 배관도 가장 긴 배관까지 파이프 밖으로 오일이 유출될 때 까지 에어를 빼 주십시오.
4. 배관 중 기름 누유 확인
   - ▶ 에어 제거가 완료 되면 가압한 배관 중에 기름 누유가 발생하는 곳을 확인하시고 수리를 해주십시오.

■ 시운전

- ▶ 펌프를 구동할 때 기름 토출이 되는지 여부를 배관 연결 전 확인 하십시오.
- ▶ 펌프의 기름 토출 확인이 되면 급유 배관을 연결 하십시오.
- ▶ 펌프 구동의 시간 설정을 장치 기계의 시방 내용으로 설정되었는지 확인하시고 정상 운전을 시켜주십시오.
- ▶ 운전과 휴지의 사이클 반복에 펌프가 정확히 작동하는지 확인 하십시오.

■ 유지 관리

- ▶ 전 시스템별 장치는 유지관리가 필요하므로 사용 주기마다 시스템이 정확하게 작동하는지 확인하십시오.
- ▶ Tank내 유면이 낮아지면 즉시 추천하는 청정의 윤활제를 보충하십시오.
- ▶ 펌프의 Suction Filter가 막히게 되면, 펌프의 Suction Filter 청소 및 사용 중인 Line Filter를 교체 또는 정상 작동할 수 있도록 세척해 주십시오.
- ▶ 작동불량이 발생할 경우 고장 및 조치를 참조하십시오.
- ▶ 휘발성 오일, 수용성 오일, 그리스등을 윤활제로 절대 사용하지 마십시오. 그로인한 문제 발생에 대한 책임은 사용자에게 있습니다.
- ▶ 수리, 분해, 장치의 수정은 전문가에 의해 수행되어야 합니다.
- ▶ 고객 임의로 기기 수정에 따라 발생된 문제는 책임지지 않습니다.

■ 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.
- ▶ Never use volatile oil, water soluble oil or grease as lubricating oil. Responsible for the problem on this, for the users.
- ▶ Repair, disassembling and revision of device should be carried out by experts.
- ▶ We are not responsible for problems caused customer' s arbitrary modification of machine.

고장대책법

Breakdown Countermeasures

고장원인 및 대책

현 상	원 인	대 책
펌프에서 오일 토출이 안된다.	Tank 내의 유면이 낮다.	사용중의 기름과 동종류, 동급의 기름을 보충한다.
	흡입 Filter 의 구멍이 막힘	Filter의 세정 또는 교환
	펌프 내부배관의 파손	교환
	사용유의 점도가 32~220cSt 범위내에 있지 않음	적정 오일로 교환
압력의 저하	상기의 어떤 원인에 의해 펌프에서 기름이 안 올라온다.	상기의 처치에 따른다.
	윤활점에 있어서 Flow Unit의 Control Unit 선정이 적당치 않다.	데이터 시트를 다시 검토한다.
	Relief valve 선정이 적당치 않다.	옳은 설정치에 다시 설정
	Relief valve의 볼씨트부의 이물질 혼입	Relief valve를 분해 세척
	배관 접속부분에서부터 기름누출	적정토르크로 다시 조임 또는 배관을 다시 설치
	배관의 파손	파손된 배관을 교체한다.
Flow unit 로 부터 기름이 누출된다.	상기 어느 원인에 따라 Flow Unit 로부터 기름이 안나옴.	상기 처치에 따른다.
펌프 외부에서 기름이 누출된다.	펌프와 오일탱크의 씰패킹의 마모 또는 파손	교환
	펌프 접합부의 조이기 볼트의 느슨함	조이기 볼트를 다시 조인다.

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 32~220cSt 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, 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.

Notice

1.오일의 점도는 오일의 온도에 따라 다릅니다. 작동 점도 범위 내에서 기름을 사용해야 합니다.〈※점도 테이블 참조 P.40〉
2.어떤 첨가제를 포함한 오일, 수용성 오일 및 용매의 사용은 불가합니다.
3.주기적으로 탱크 내의 불순물을 확인하시고, 청정오일을 보충하거나, 오일을 교환하기 전에 꼭 탱크를 청소하십시오.
4.적절한 전압과 압력을 확인 하십시오.
5.흡입 필터는 적어도 1년에 1회 이상은 청소하시기 바랍니다.

1. The viscosity of oil varies according to oil temperature. Oil must be used within the scope of viscosity.
〈Refer to viscosity table, p. 40〉
2. Use of oil, water-based oil and solvent with any additives is prohibited.
3. Check regularly impurities inside the tank and make sure to replace clean oil and clean the tank before replacing oil.
4. Make sure to verify if voltage and pressure are appropriate.
5. Clean the suction filter at least once a year.

온도-점도 대응표

Temperature - Viscosity Table

[mm²/s]

Temp. (℃)	32#	68#	100#	150#	220#	380#	460#
0	265	880	1500	2700	4200	9000	13000
1	245	785	1390	2300	-	-	-
2	226	715	1280	2100	-	-	-
3	210	650	1170	1930	-	-	-
4	195	590	1060	1780	-	-	-
5	182	540	950	1650	-	-	-
6	170	495	890	1520	-	-	-
7	160	465	830	1400	-	-	-
8	150	440	770	1300	2000	-	-
9	142	410	710	1200	1800	-	-
10	135	380	650	1100	1650	3500	4500
11	127	350	604	1000	1500	-	-
12	121	330	558	900	1400	-	-
13	116	315	512	850	1300	-	-
14	108	290	466	800	1200	-	-
15	102	270	420	750	1000	-	-
16	98	250	400	700	950	-	-
17	92	240	375	650	900	2000	2500
18	87	230	355	600	850	1800	2300
19	83	210	330	560	800	1600	2100
20	80	200	310	520	750	1500	1900
21	75	190	290	480	700	1350	1750
22	70	180	275	460	650	1250	1600
23	67	170	255	440	600	1150	1500
24	65	160	240	420	560	1050	1400
25	62	152	220	380	520	950	1300
26	58	144	210	360	490	900	1200
27	55	127	200	320	460	850	1100
28	52	120	190	300	430	800	1000
29	50	115	180	280	405	750	920
30	48	110	170	265	380	700	850
31	46	105	160	250	360	650	800
32	44	100	155	235	340	610	750
33	42	95	145	225	320	580	700
34	40	90	140	215	300	550	650
35	38	85	130	200	280	520	610
36	36	81	125	190	260	490	580
37	35	77	120	180	245	460	550
38	34	74	110	170	235	430	520
39	33	71	105	160	227	405	490
40	32	68	100	150	220	380	460
41	31	65	-	142	213	355	430
42	30	62	-	135	206	330	400
43	29	60	-	128	200	316	375

NOTE

HALS
㈜ 한성정공



HANSUNG AUTOMATIC LUBRICATION SYSTEM

Coolant PUMP

HALS

Coolant pump series



HCP-S series

소형 경량의 자흡식 절삭유펌프
TANK 공간의 제약이 있는 경우
활용이 가능

연삭기
선 반
세척기
방전기
기타 선삭 및
절삭 가공 전용기

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

침수식 절삭유펌프로 별도의
기름마중이 없이 초기구동이 용이
TANK내 PUMP부가 침수되는 형식

MCT
CNC
기타 선삭 및
절삭 가공 전용기

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 6



HCP-EMF(S) & HCP-BMF series

침수식 절삭유펌프로
많은 유량이 필요할 경우 사용됨
다단펌프로 다양한 범위의
성능구현이 가능

MCT
CNC
연삭기
세척기
방전기
기타 선삭 및
절삭 가공 전용기

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 12



HCP-EHMF(S) series

고압 다단 펌프로
높은 압력이 필요한 경우 적용
장착방법에 따라
VERTICALI과 HORIZONTAL형으로
구분됨

MCT
CNC

.....

A multi-stage hlgh-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 18



HCP-EMS series

주요구동부가 STAINLESS 정밀프레스 제조공법으로
소형, 경량사용에 용이하며
다단 구조의 펌프로 고압사용이 용이함

MCT
CNC
세척기
방전기
기타 선삭 및
절삭 가공 전용기

.....

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

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

Page 26

HCP S series



Model

HCP - □S - □ - □

- Voltage
- Terminal Block
  - Blank: General Direction
  - R: Opposite Direction
- Pump Type

Structure

- 펌프와 모터가 일체형으로 된 소형의 자흡식 펌프
- 흡입부로 파이프를 연결하여 사용유를 흡입하는 형식의 펌프

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

Feature

1. 펌프와 모터가 일체형으로 소형, 경량의 펌프
2. 소형으로 설치공간의 제약이 적음
3. MECHANICAL SEAL이 장착되어 장시간의 공회전은 금지함 (공회전 30초 이상 금지)
4. **반드시 펌프구동전 펌프 자흡실내 사용유 넣은 후 구동**

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.**

Pump Spec.

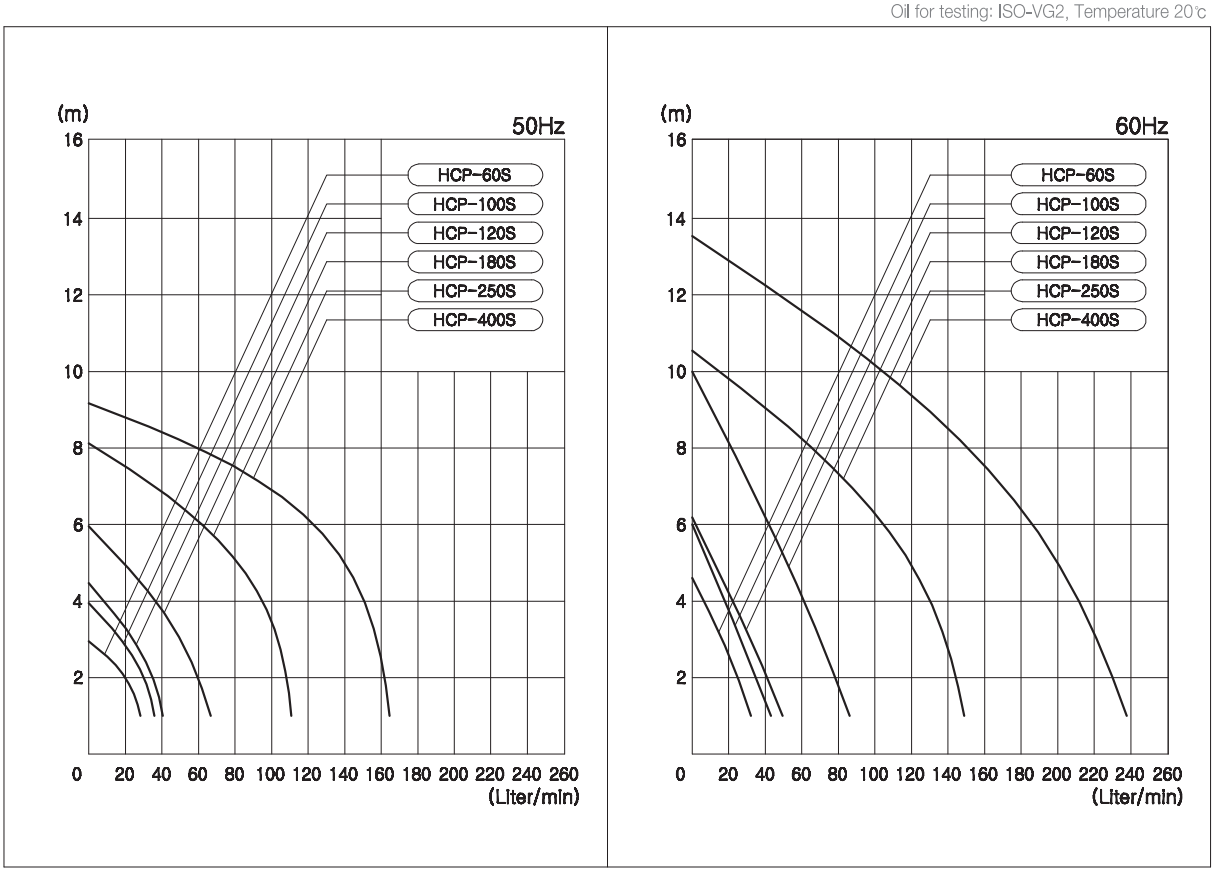
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)
HCP-60S	60	50	200 380	0.42 0.24	3	2	2	20	3/8″
		60	200/220 380	0.45 0.26				25	
HCP-100S	100	50	200 380	0.51 0.3	3	2	2	30	3/8″
		60	200/220 380	0.55 0.32				36	
HCP-120S	120	50	200 380	0.56 0.33	3	2	2	35	3/8″
		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″
		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″
		60	200/220 380	1.5 0.86				130	
HCP-400S	400	50	200 380	2.4 1.4	3	2	5	140	1″
		60	200/220 380	2.5 1.5				200	

Packing Spec.

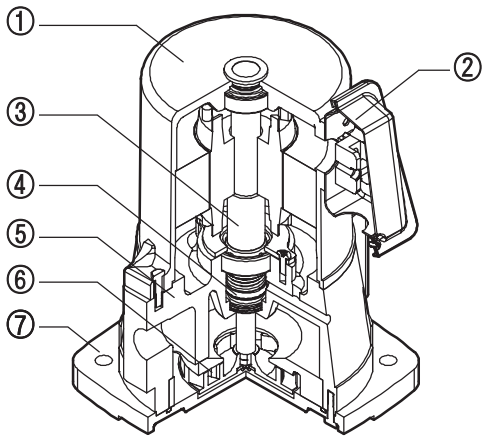
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP-60S	18(W) x 16(L) x 26(D)	8	9
HCP-100S			
HCP-120S			
HCP-180S	26(W) x 21(L) x 21(D)	11	12
HCP-250S	26(W) x 22(L) x 23(D)	12	13
HCP-400S	34(W) x 22(L) x 23(D)	16	17

Performance Curve

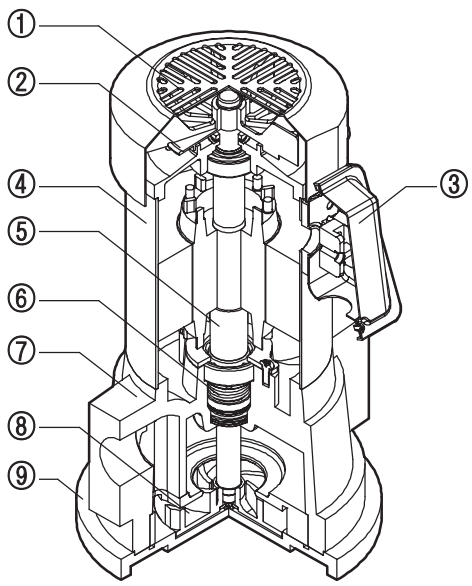
Oil for testing: ISO-VG2, Temperature 20℃



- 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
- When using non water-soluble cutting fluid, Viscosity must be under 32cSt. Pump performance (pressure and quantity) will decrease compared to water-solube cutting fluid.



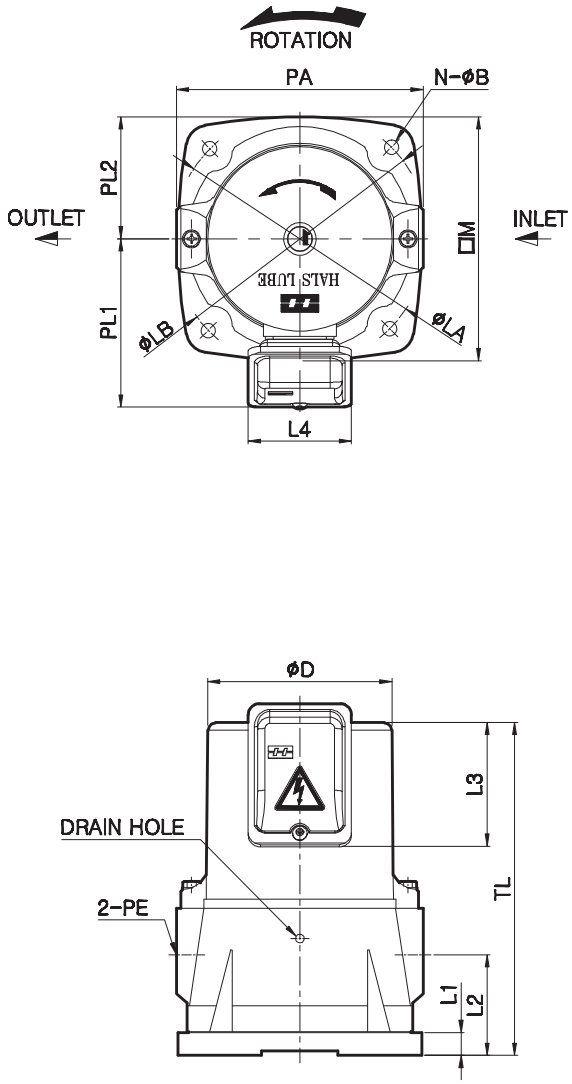
No	PART NAME	No	PART NAME
1	MOTOR	5	PUMP BODY
2	TERMINAL BLOCK	6	IMPELLER
3	SHAFT	7	BASE
4	MECHANICAL SEAL	-	-



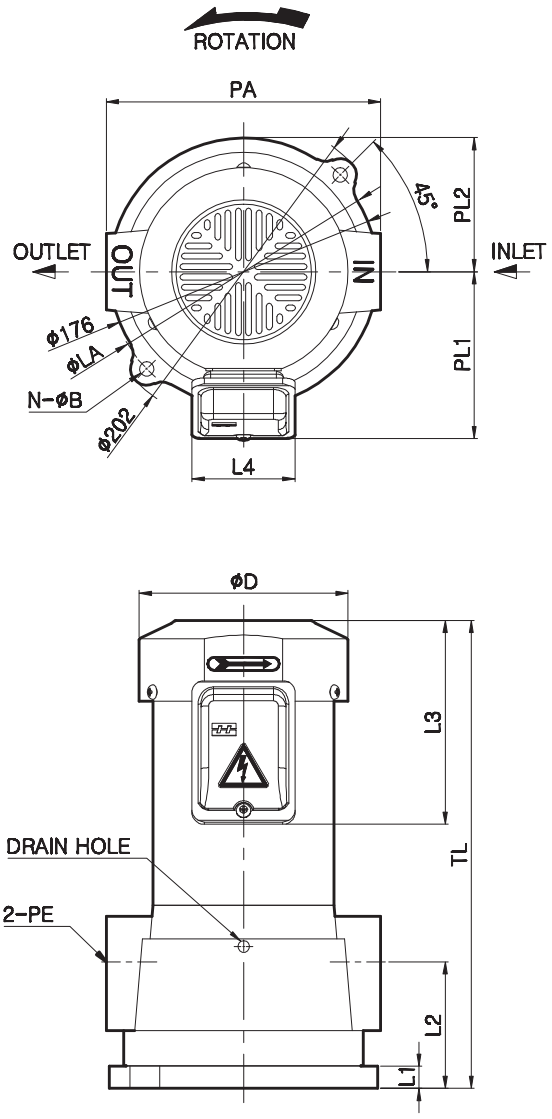
No	PART NAME	No	PART NAME
1	FAN COVER	6	MECHANICAL SEAL
2	FAN	7	BODY
3	TERMINAL BLOCK	8	IMPELLER
4	MOTOR	9	BASE
5	SHAFT	-	-

External Figure

HCP-60S~250S



HCP-400S



Dimension

※ LA, LB형 ( )안의 치수는 수출용임 [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	95	56	55.5	88	68	3/8″	201	132(132)	150(130)	4-7	130	130	95	65
HCP-100S	95	56	55.5	88	68	3/8″	201	132(132)	150(150)	4-7	130	130	95	65
HCP-120S	95	15	55.5	88	68	3/8″	201	132(132)	150(150)	4-7	130	130	95	65
HCP-180S	121	15	66	81	68	1/2″	201	167(160)	170(164)	4-10	162	160	110	80
HCP-250S	121	20	71	81	68	3/4″	225	167(160)	170(170)	4-10	162	160	110	80
HCP-400S	137	14.5	83	133	68	1″	307	180(180)	-	2-10	180	-	110	88



Model

HCP - □ F - □ - □

- Voltage
- Terminal Block
  - Blank: General Direction
  - R: Opposite Direction
- Pump Type

Structure

- 펌프부가 탱크내 침수되어 구동하는 펌프
- 탱크 깊이와 성능에 따라 펌프 선택이 다양하고 별도의 기름마중 없이 사용이 가능함

- 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.

Feature

1. 펌프와 모터가 동축이나, 분리된 형태
2. 소형의 단각형 탱크의 깊이에 따라 다양한 선택가능
3. MECHANICAL SEAL등 별도의 SEAL이 없는 구조
4. 연마입자가 혼합된 연삭기를 포함한 광범위한 부분의 적용이 가능

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.

Pump Spec.

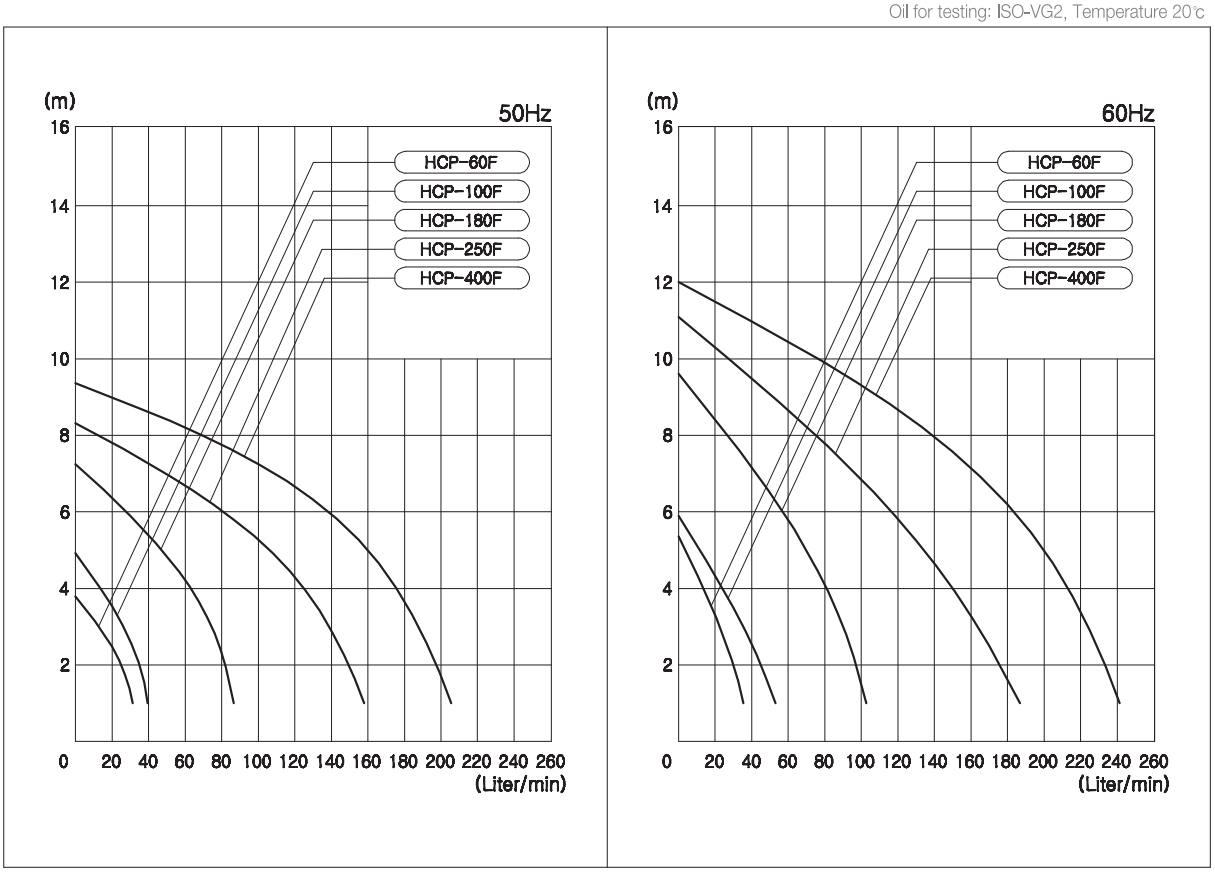
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)
HCP-60F	60	50	200 380	0.42 0.24	3	2	2	25	3/8″
		60	200/220 380	0.45 0.26				32	
HCP-100F	100	50	200 380	0.51 0.3	3	2	2	37	3/8″
		60	200/220 380	0.55 0.32				47	
HCP-180F	180	50	200 380	0.93 0.53	3	2	3	75	1/2″
		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″
		60	200/220 380	1.5 0.86				150	
HCP-400F	400	50	200 380	2.4 1.4	3	2	5	160	1″
		60	200/220 380	2.5 1.5				200	

Packing Spec.

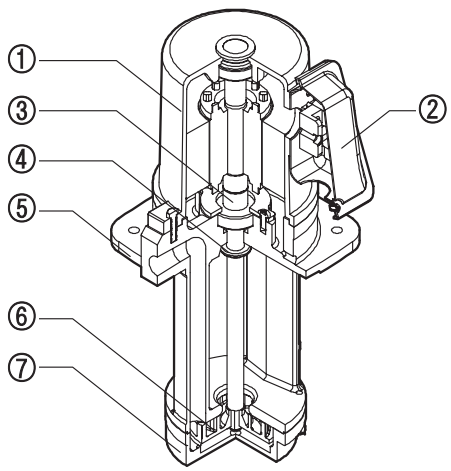
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP-60F HCP-100F	34(W) x 20(L) x 17(D)	7	8
HCP-180F	40(W) x 22(L) x 21(D)	11	12
HCP-250F	48(W) x 22(L) x 22(D)	15	16
HCP-400F	58(W) x 22(L) x 22(D)	17	18

Performance Curve

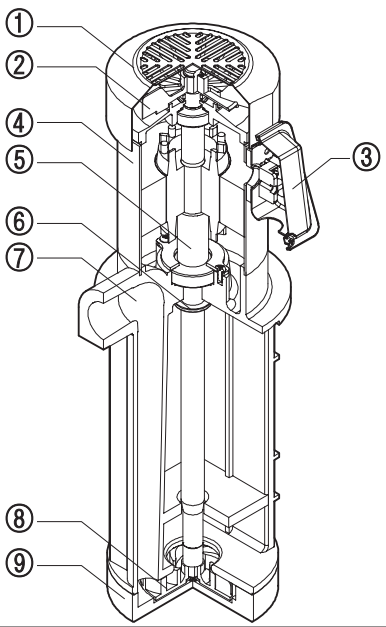
Oil for testing: ISO-VG2, Temperature 20℃



- 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
- When using non water-soluble cutting fluid, Viscosity must be under 32cSt. Pump performance (pressure and quantity) will decrease compared to water-solube cutting fluid.



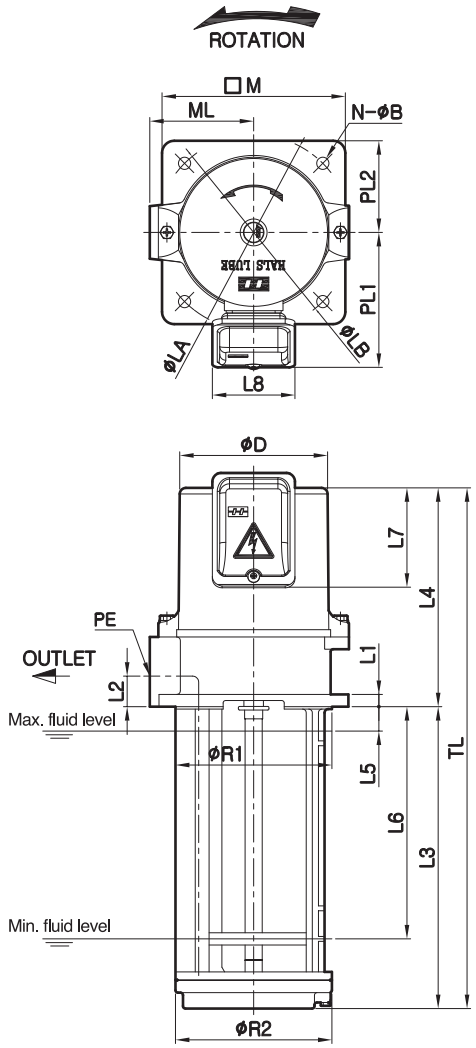
No	PART NAME	No	PART NAME
1	MOTOR	5	PUMP BODY
2	TERMINAL BLOCK	6	IMPELLER
3	SHAFT	7	IMPELLER HOUSING
4	STOPPER	-	-



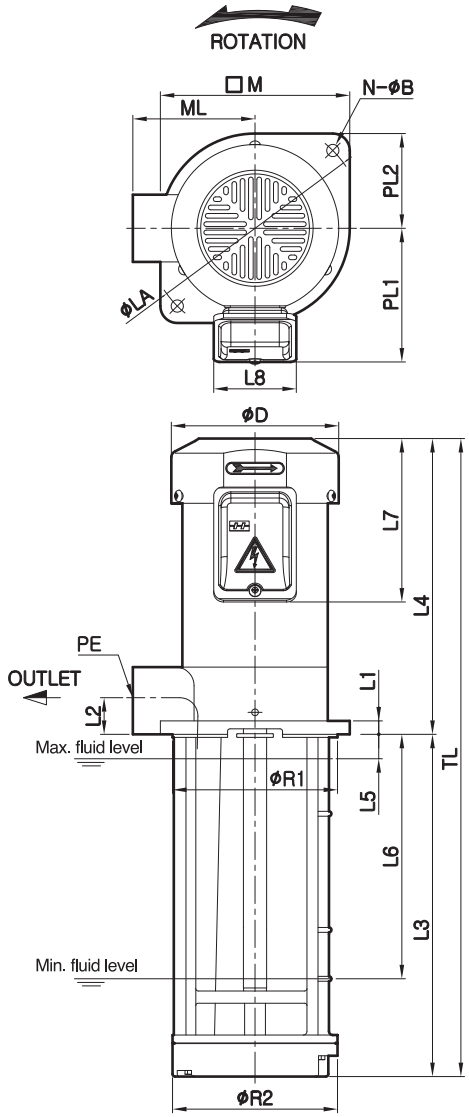
No	PART NAME	No	PART NAME
1	FAN COVER	6	STOPPER
2	FAN	7	BODY
3	TERMINAL BLOCK	8	IMPELLER
4	MOTOR	9	IMPELLER HOUSING
5	SHAFT	-	-

External Figure

HCP-60F~250F



HCP-400F



Dimension

※ LA, LB형 ( )안의 치수는 수출용임 [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	93	68	3/8″	305	90	90	130 (132)	130 (130)	4-7	94	64	128	71
HCP-100F	94	8	15	155	150	20	90	93	68	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	68	1/2″	346	115	115	160 (160)	160 (134)	4-10	109	72.5	145	80
HCP-250F	121	10	25	250	180	20	190	93	68	3/4″	427	128	128	160 (160)	160 (170)	4-10	109	75	150	85
HCP-400F	137	11	30	280	232	20	200	143	68	1″	512	135	135	180 (180)	-	2-10	110	77.5	155	100

HCP F (High Pressure) series



Model

HCP - □ F - □ - □

- Voltage
- Terminal Block
  - Blank: General Direction
  - R: Opposite Direction
- Pump Type

Structure

- HCP-F TYPE과 동일한 구조의 침수식 펌프
- 탱크깊이에 따라 다양한 종류의 펌프 형태
- A submerged-type pump with the same structure as the HCP-F type.
- There are various pump forms according to the different tank depths.

Feature

1. 펌프와 모터가 분리형으로 HCP-F와 동일형태
2. HCP-F 보다 높은 압력을 요하는 경우 적용
3. 펌프 상단부에 와류 방지부가 있어 원활한 흡입이 가능
4. TANK 형태에 따라 다양한 침수깊이와 상단과 하단 흡입 형태로 구분
5. HCP-419F, 420F는 하단 흡입형 제품으로 흡입 수위 폭이 넓음

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-419F,420F are bottom section suction products that have a wide range of suction oil levels.

Pump Spec.

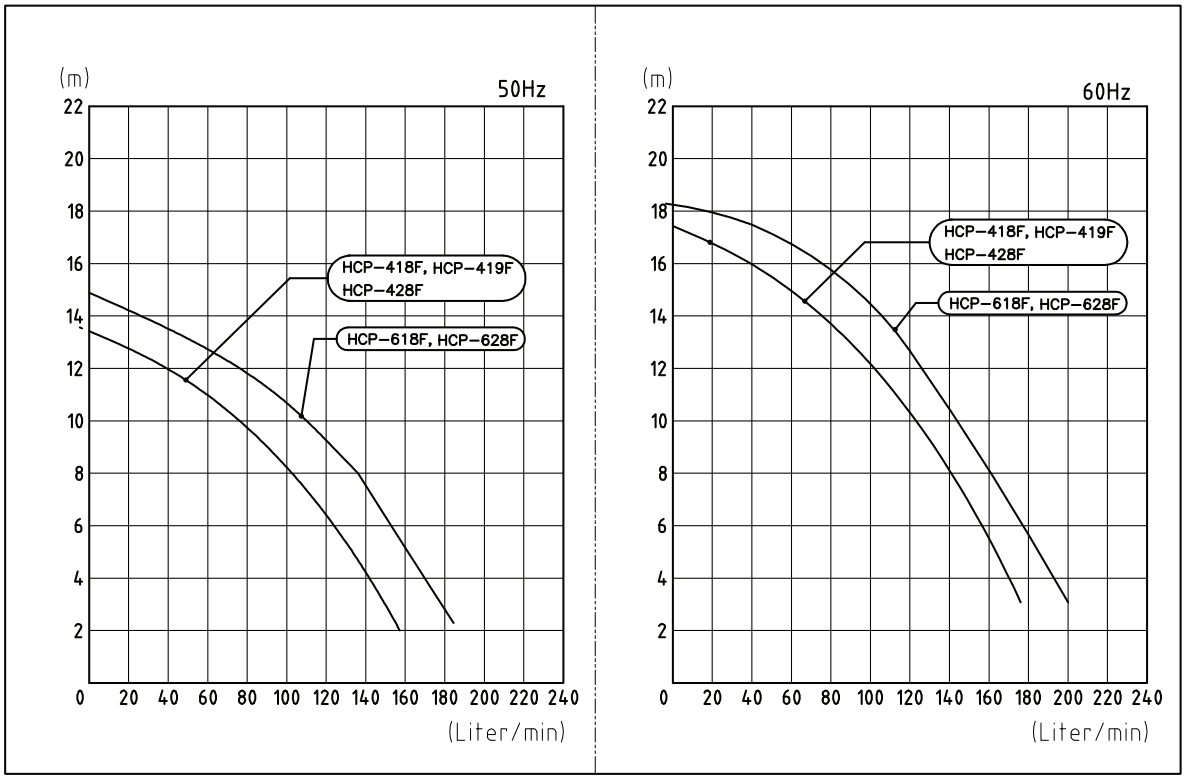
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)
HCP- 418F, 428F,419F	400	50	200 380	2.4 1.4	3	2	12	40	1″
		60	200/220 380	2.5 1.5			16		
HCP- 618F, 628F	600	50	200 380	2.79 1.61	3	2	12	80	1″
		60	200/220 380	3.0 1.73			16		

Pump Spec.

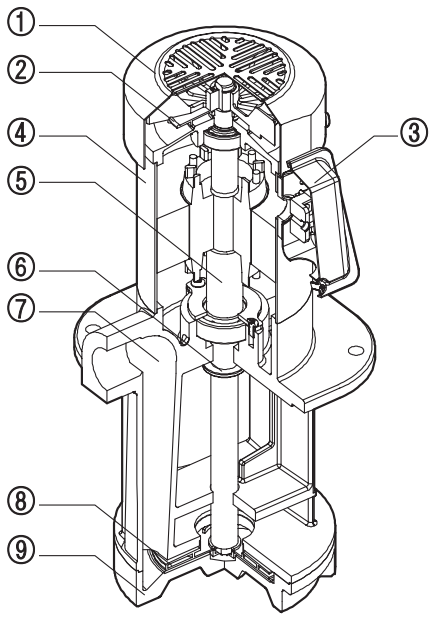
MOTOR	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PUMP
HCP-418F	46(W) x 23(L) x 24(D)	17	18
HCP-419F	50(W) x 24(L) x 24(D)	18	19
HCP-428F	58(W) x 22(L) x 23(D)	18	19
HCP-618F	46(W) x 23(L) x 24(D)	17	18
HCP-628F	58(W) x 22(L) x 23(D)	18	19

Performance Curve

Oil for testing : ISO-VG32, Temperature 20°c



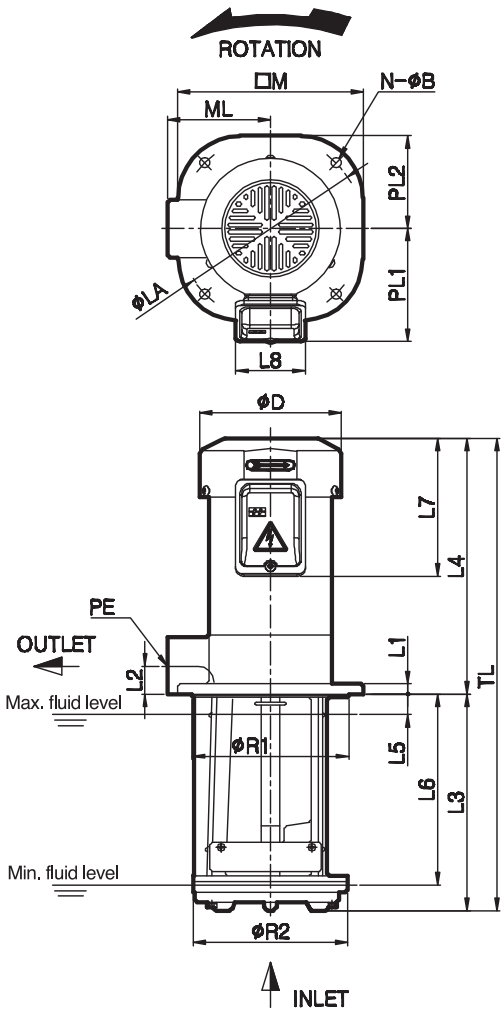
* 비수용성 절삭유 사용시 32cSt이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력-유량) 이 저하됨
* When using non water-soluble cutting fiuld, Viscosity must be under 32cSt Pump performance (pressure and quantity) will decrease compared to water-solube cutting fiuld.



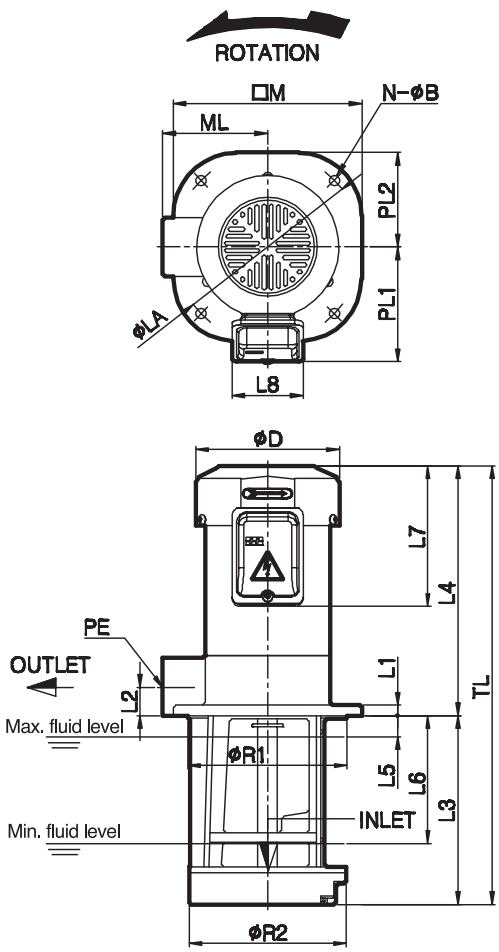
No	PART NAME	No	PART NAME
1	FAN COVER	6	STOPPER
2	FAN	7	BODY
3	TERMINAL BLOCK	8	IMPELLER
4	MOTOR	9	IMPELLER HOUSING
5	SHAFT	-	-

External Figure

HCP-419F



HCP-418F
HCP-618F
HCP-428F
HCP-628F



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 - 418F/618F	137	10	27	180	234	20	122	143	143	1″	414	152	150	180	4-10.5	110	90	180	100
HCP - 419F	137	10	27	210	244	20	185	139	139	1″	454	152	150	180	4-10.5	110	90	180	100
HCP - 428F/628F	137	10	27	280	234	20	220	143	143	1″	514	152	150	180	4-10.5	110	90	180	100



Model

HCP - ☐ ☐ MF ☐ - ☐ - ☐

- Voltage
- Terminal Block
  - L: 90° Direction / R: 180° Direction
- Blank: General Type / S: Short Type
- Blank: General Motor
  - E: High Efficiency Motor
- Pump Type

Feature

1. HCP-☐MF(S)
   - 많은 유량을 요할 경우 적용이 가능
   - Motor부가 분리되어 온도의 전달이 적음
   - 침수 하단흡입식 펌프로 탱크 밑면과 30mm이상 유지하여야 함
   - 펌프부가 분리되어 Motor부로 사용유의 침입이 적음
2. HCP-☐EMF(S)
   - HCP-MF(S) Type에 고효율 모터를 장착
   - 효율의 극대화로 우수한 절전 및 투자비 회수가 가능한 높은 경제성
   - 낮은 온도상승, 고 절연재료 사용으로 권선수명연장
   - 고효율 에너지 기자재 마크 획득 (IE3)

1. HCP-☐MF(S)
   - It can be applied when large quantities of oil are required
   - The motor part is detached to reduce the transfer of heat.
   - A submerged bottom section suction pump that must be kept at least 30mm above the tank floor.
   - The pump part is detached to reduce the entry of oil into the motor.
2. HCP-☐EMF(S)
   - High efficiency motor is installed in HCP-MF(S) Type
   - Excellent electricity savings and high economic return on investment through optimized efficiency
   - Increase in life-time use through slow temperature increase and use of highly energy-efficient energy materials
   - Acquired high efficiency energy equipment mark (IE3)

Pump Spec.

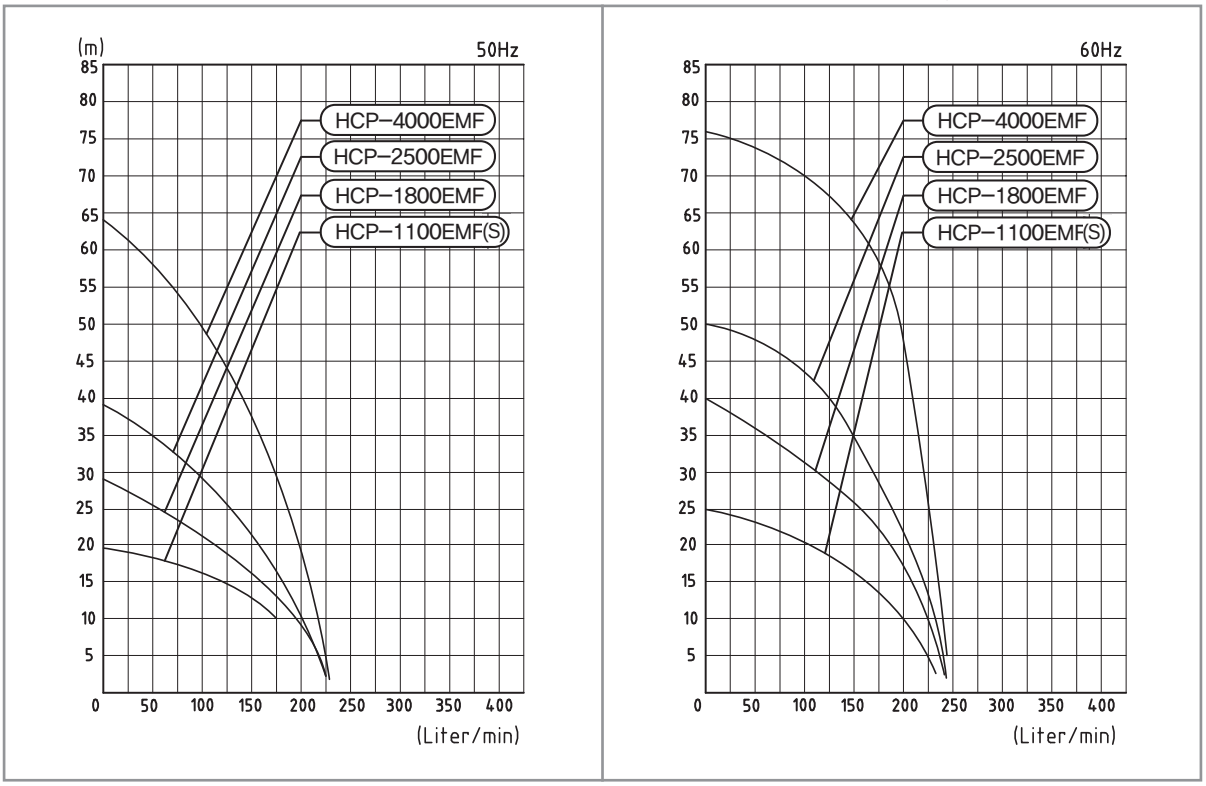
Type \ Specification	MOTOR						PUMP		
	OUTPUT(W)	FREQUENCY(Hz)	VOLTAGE(V)	CURRENT(A)	PHASE	POLES	TOTAL HEAD(m)	DIS. VOL(l /min)	PIPE SIZE(PT)
HCP- 1100EMF(S)	1100	50	200 380	4.2 2.5	3	2	6.5	200	1¼"(1½")
		60	200/220 380	4.8 2.8			10		
HCP- 1800EMF	1800	50	200 380	6.6 3.8	3	2	20	100	1½"
		60	200/220 380	7.0 4.1			30		
HCP- 2500EMF	2500	50	200 380	8.8 5.2	3	2	30	100	1½"
		60	200/220 380	10.0 5.6			45		
HCP- 4000EMF	4000	50	200 380	16.0 8.5	3	2	50	100	1½"
		60	200/220 380	18.0 10.7			70		

Packing Spec.

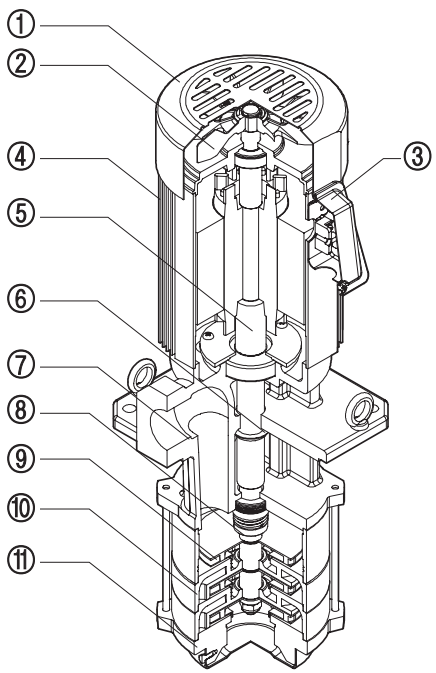
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP- 1100EMF	59(W) x 25(L) x 29(D)	28	29
HCP- 1100EMFS		27	28
HCP- 1800EMF	63(W) x 29(L) x 30(D)	31	32
HCP- 2500EMF		35	36
HCP- 4000EMF	80(W) x 27(L) x 31(D)	45	46

Performance Curve

Oil for testing: ISO-VG2, Temperature 20°C



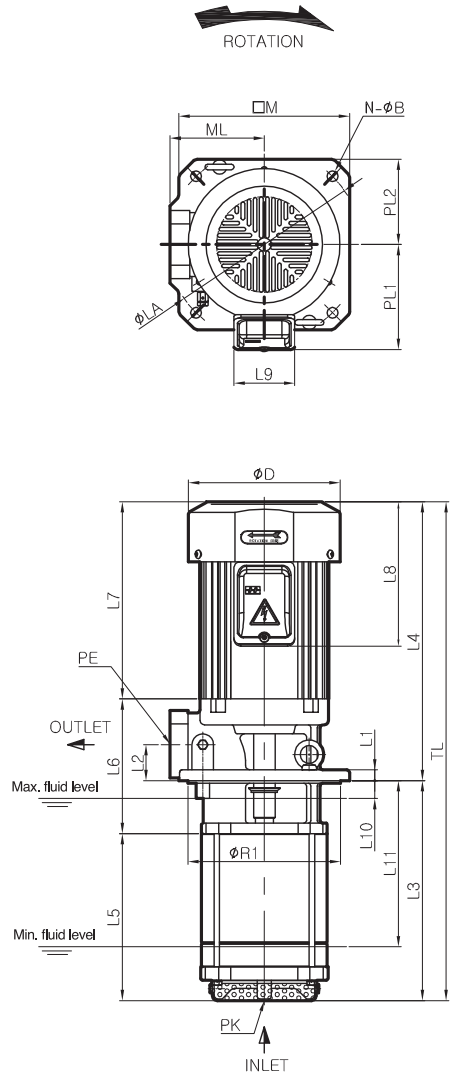
● 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
● When using non water-soluble cutting fluid, Viscosity must be under 32cSt, Pump performance (pressure and quantity) will clecrease compared to water-solube cutting fluid.



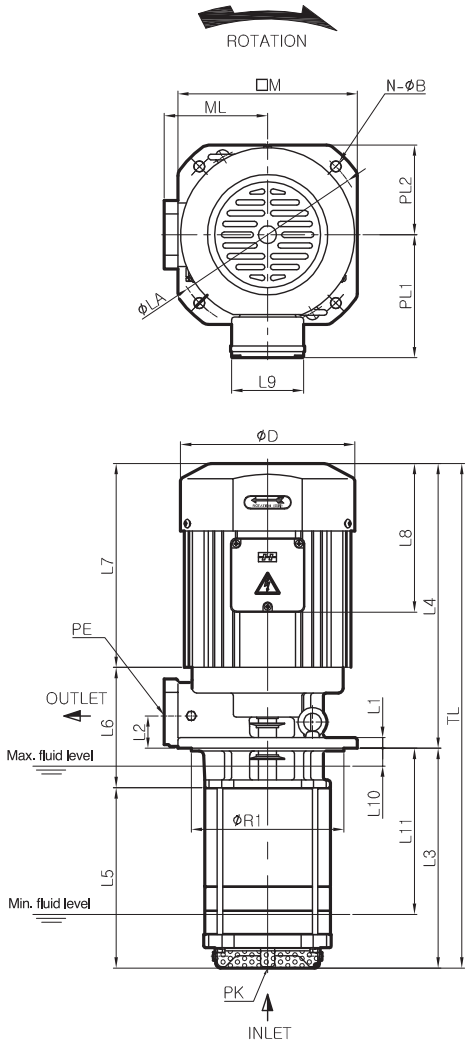
No	PART NAME	No	PART NAME	No	PART NAME
1	FAN COVER	5	SHAFT	9	IMPELLER
2	FAN	6	STOPPER	10	IMPELLER CASING
3	TERMINAL BLOCK	7	BODY	11	INLET COVER
4	MOTOR	8	IMPELLER SEAL	-	-

External Figure

HCP-1100EMF(S)



HCP-1800EMF~4000EMF



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-1100EMF	169	12	40	245	310.5	186	150	220	166	67.6	20	185	1½″ 1¼″	555	170	215	4-12	119	95	190	105	2″
HCP-1100EMFS	169	12	40	210	310.5	151	150	220	166	67.6	20	150	1¼″	520	170	215	4-12	119	95	190	105	2″
HCP-1800EMF	164	12	36	245	317	201	134	227	166	80	20	185	1½″	562	170	215	4-12	119	95	190	115	2″
HCP-2500EMF	194	12	36	245	343	201	134	253	166	80	20	185	1½″	588	170	215	4-12	137	100	200	115	2″
HCP-4000-EMF	232	12	36	354	377	310	144	277	176	80	20	303	1½″	731	170	215	4-12	162	109	218	115	2″

HCP EBMF series



Model

HCP - ☐ EBMF - ☐ - ☐

- Voltage
- Terminal Block
  - L: 90° Direction
  - R: 180° Direction
- Pump Type

Structure

- HCP–EBMF 전 기종 취부 자리는 동일하여 변경이 자유로움
- 펌프 하단부에서 탱크 밑면과 30mm이상 유지하여야 함

- Attachment area is same for all HCP–EBMF equipment and therefore flexible in terms of moving.
- Must maintain 30mm distance from the tank's bottom in the lower part of the pump.

Feature

1. 대형 공작기계의 대용량 원심 다단 펌프로 세척 및 샤워용 절삭유 펌프로 적합
2. 펌프부와 모터부가 분리되어 모터의 사용유 침입이 거의 없음

1. A large capacity multi-level pump of large machine tools suitable for cutting oil pump used for washing and shower.
2. The motor and the pump have the same shaft but are separated to decrease the flow of oil into the motor.

Pump Spec.

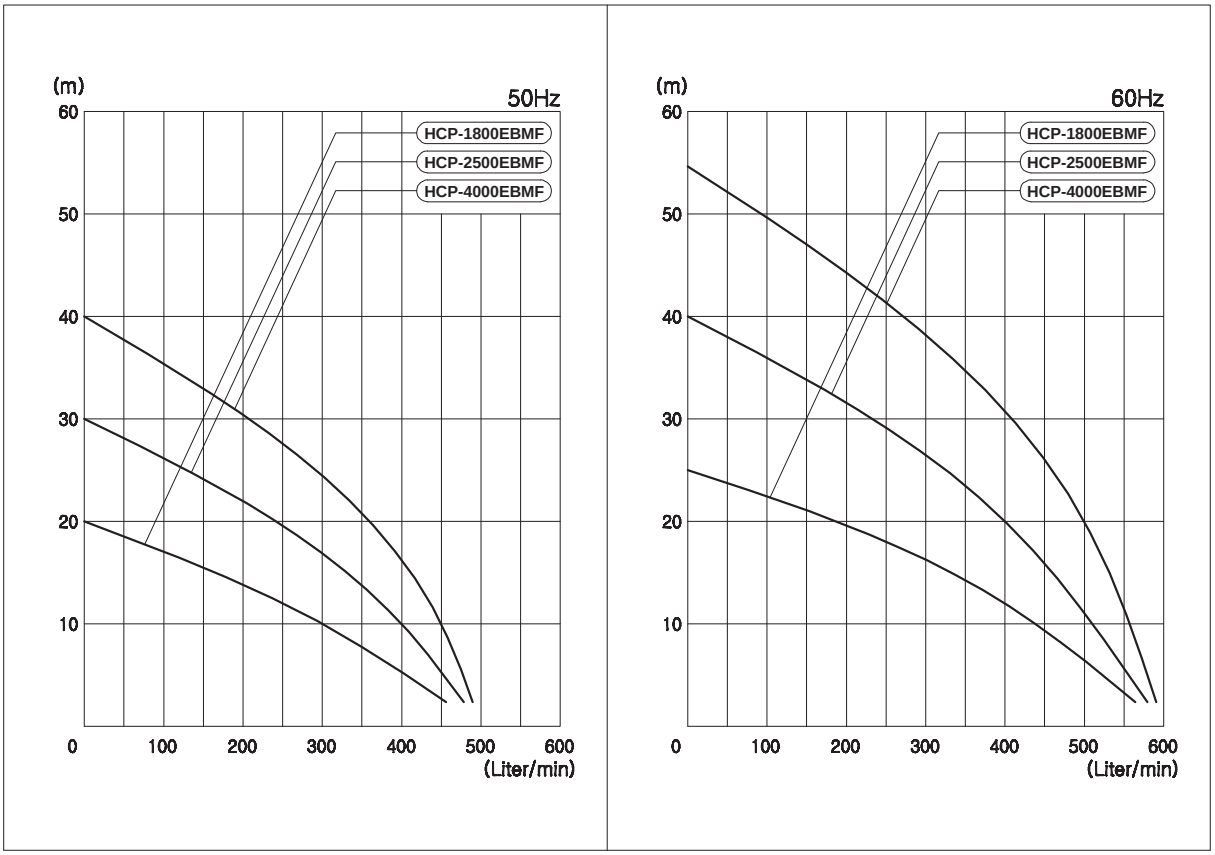
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)
HCP-1800EBMF	1800	50	200 380	7.5 4.1	3	2	10	300	2″
		60	200/220 380	8.5 / 8.0 4.6			12	400	
HCP-2500EBMF	2500	50	200 380	9.0 5.5	3	2	10	400	2″
		60	200/220 380	12.0 / 11.0 6.4			20		
HCP-4000EBMF	4000	50	200 380	16.0 8.5	3	2	10	450	2″
		60	200/220 380	18.0 / 17.0 10.7			20	500	

Packing Spec.

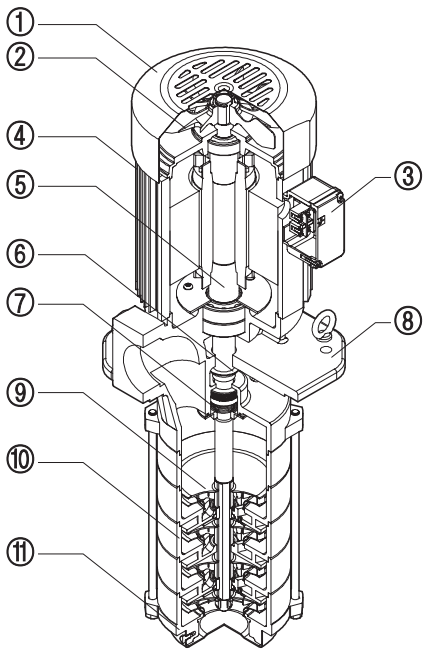
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP-1800EBMF	63(W) x 29(L) x 30(D)	35	36
HCP-2500EBMF		40	41
HCP-4000EBMF	80(W) x 27(L) x 31(D)	45	46

Performance Curve

Oil for testing: ISO-VG2, Temperature 20℃



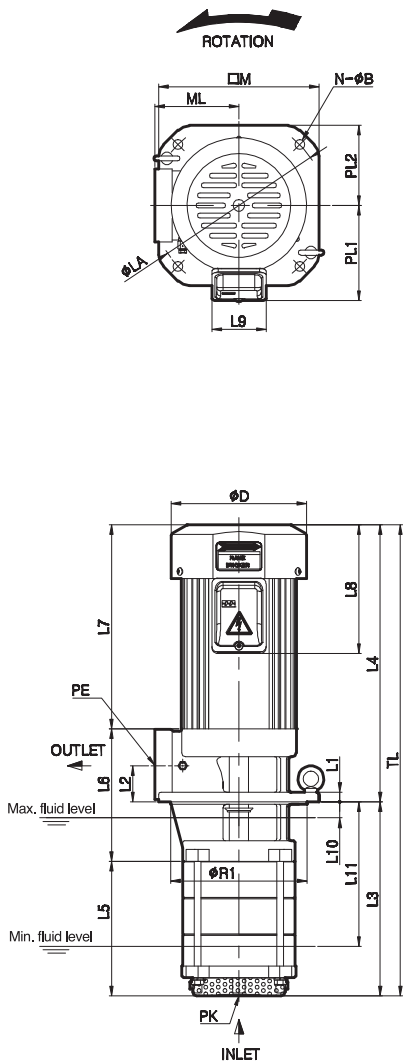
- 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
- When using non water-soluble cutting fluid, Viscosity must be under 32cSt. Pump performance (pressure and quantity) will decrease compared to water-solube cutting fluid.



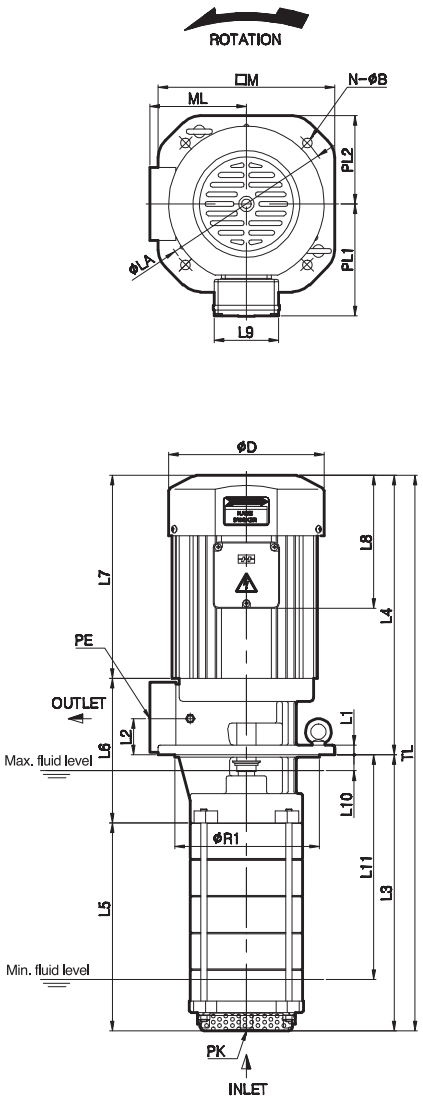
No	PART NAME	No	PART NAME	No	PART NAME
1	FAN COVER	5	SHAFT	9	IMPELLER
2	FAN	6	STOPPER	10	IMPELLER CASING
3	TERMINAL BLOCK	7	IMPELLER SEAL	11	INLET COVER
4	MOTOR	8	BODY	-	-

External Figure

HCP-1800~2500EBMF



HCP-4000EBMF



Dimension

Item	ø D	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	PE (PT)	TL	R1	LA	N-øB	PL1	PL2	M	ML	PK (PT)
HCP-1800EBMF	186	12	45	341	322	160	180	227	163	67.6	20	190	2″	563	180	215	4-12	137	110	220	120	2½″
HCP-2500EBMF	186	12	45	252	342	160	180	247	163	67.6	20	200	2″	594	180	215	4-12	137	110	220	120	2½″
HCP-4000EBMF	194	12	5	345	368	260	180	273	166	80	20	245	2″	713	180	215	4-12	154	110	220	120	2½″



Feature

1. HCP-□HMF(S)
   - 동일한 펌프 취부자리로 교체가 용이함
   - Mechanical Seal이 장착되어 장시간의 공회전은 금지함 (공회전 10초 이상 금지)
   - 일체형 축으로 제작되어 내구성과 관리가 용이함
2. HCP-□EHMF(S)
   - HCP-HMF(S) Type에 고효율 모터를 장착
   - 효율의 극대화로 우수한 절전 및 투자비 회수가 가능한 높은 경제성
   - 낮은 온도상승, 고 절연재료 사용으로 권선수명연장
   - 고효율 에너지 기자재 마크 획득

1. HCP-□HMF(S)
   - Identical pump spray areas make exchanges easy.
   - Prolonged idling is prohibited due to the installed mechnical seal. (Idling for more than 10 seconds is prohibited)
   - It is produced with a single-unit shaft, which increases durability and makes management easy.
2. HCP-□EHMF(S)
   - High efficiency motor is installed in HCP-HMF(S) Type.
   - Excellent electricity savings and high economic return on investment through optimized efficiency.
   - Increase in life-time use through slow temperature increase and use of highly energy-efficient energy materials.
   - Acquired high efficiency energy equipment mark.

Model

HCP - □ EHMF - □ - □ - □

- Voltage
- Terminal Block
  L: 90° Direction / R: 180° Direction
  Blank: General Type / S: Short Type
- E: High Efficiency Motor
- Pump Type

Pump Spec.

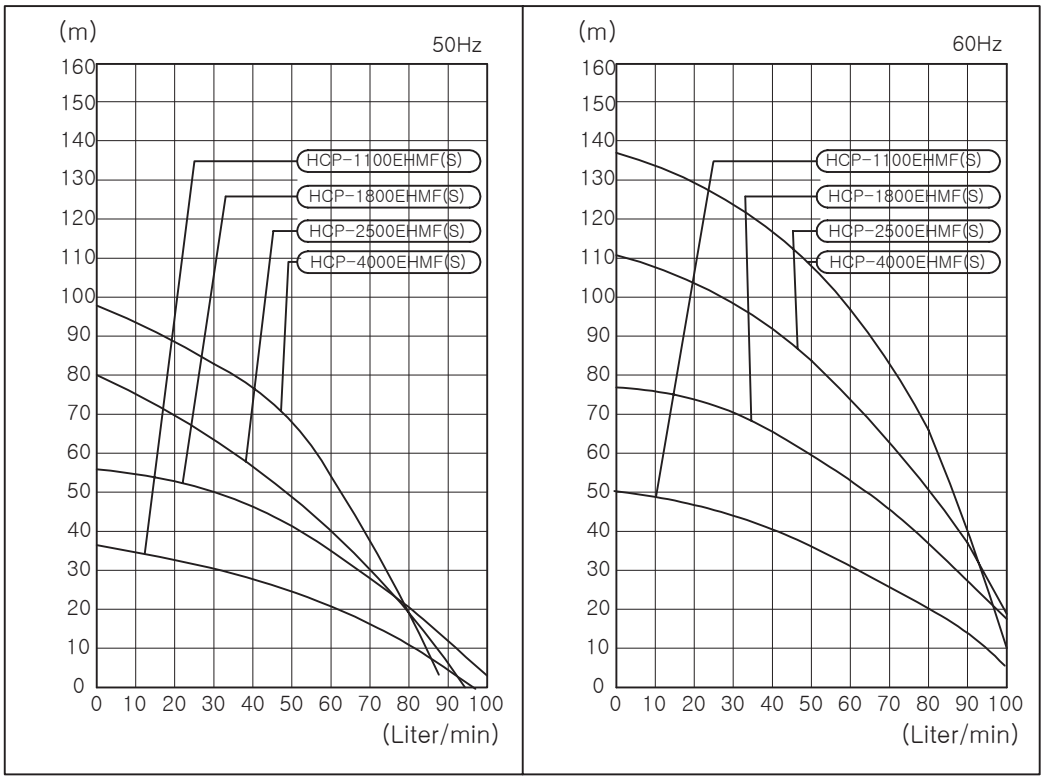
Specification / Type	MOTOR						PUMP		
	OUTPUT(W)	FREQUENCY(Hz)	VOLTAGE(V)	CURRENT(A)	PHASE	POLES	TOTAL HEAD(m)	DIS. VOL(l /min)	PIPE SIZE(PT)
HCP-1100EHMF(S)	1100	50	220 380	4.3 2.5	3	2	30	30	3/4"
		60	200/220 380	5.1 3.0			45		
HCP- 1800EHMF(S)	1800	50	200 380	6.5 3.8	3	2	50	30	3/4"
		60	200/220 380	7.0 4.1			70		
HCP- 2500EHMF(S)	2500	50	200 380	8.7 5.2	3	2	70	30	3/4"
		60	200/220 380	9.7 5.6			100		
HCP- 4000EHMF(S)	4000	50	200 380	16.0 8.5	3	2	90	20	3/4"
		60	200/220 380	18.0 10.7			130		

Packing Spec.

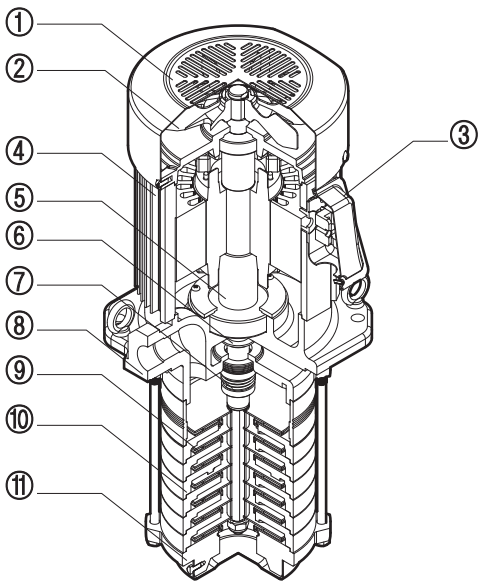
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP- 1100EHMF	50(W) x 30(L) x 27(D)	26	27
HCP- 1100EHMFS		25	27
HCP- 1800EHMFS		28	29
HCP- 1800EHMF	63(W) x 29(L) x 30(D)	29	30
HCP- 2500EHMF		39	40
HCP- 2500EHMFS		38	39
HCP- 4000EHMF		45	46
HCP- 4000EHMFS		44	45

Performance Curve

Oil for testing: ISO-VG32, Temperature 20°C



● 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
● When using non water-soluble cutting fluid, Viscosity must be under 32cSt, Pump performance (pressure and quantity) will clecrease compared to water-solube cutting fluid.

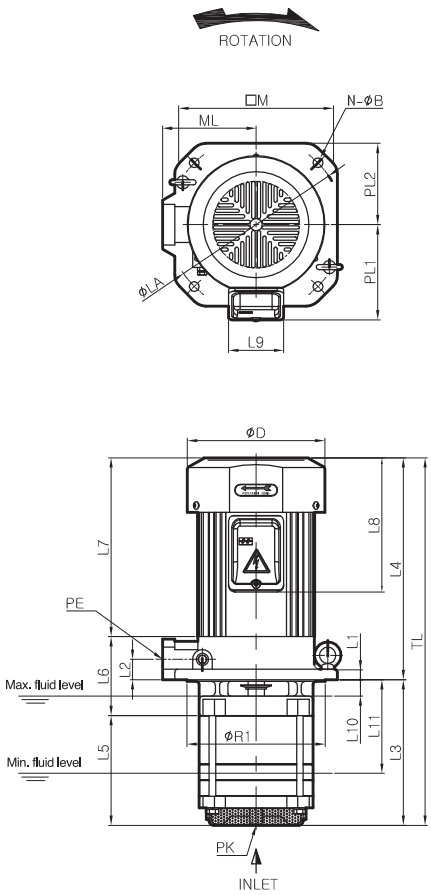


No	PART NAME	No	PART NAME	No	PART NAME
1	FAN COVER	5	SHAFT	9	IMPELLER
2	FAN	6	STOPPER	10	IMPELLER CASING
3	TERMINAL BLOCK	7	IMPELLER SEAL	11	INLET COVER
4	MOTOR	8	BODY	-	-

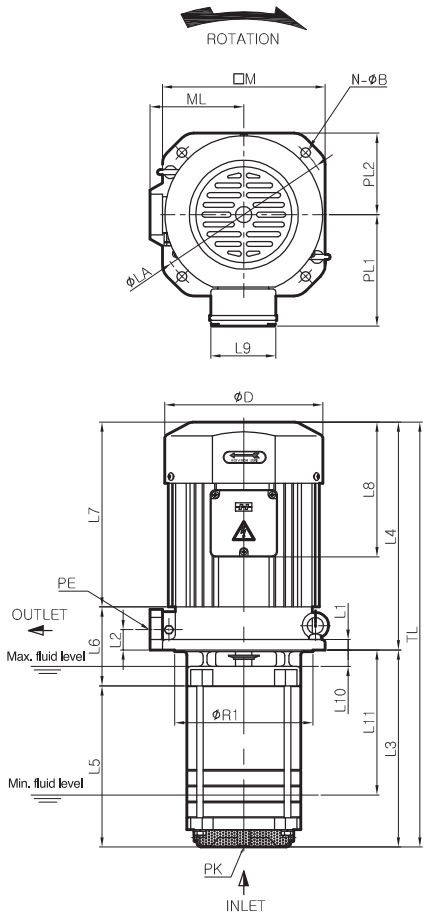
HCP EHMF

External Figure

HCP-1100EHMF(S)~HCP-2500EHMF(S)



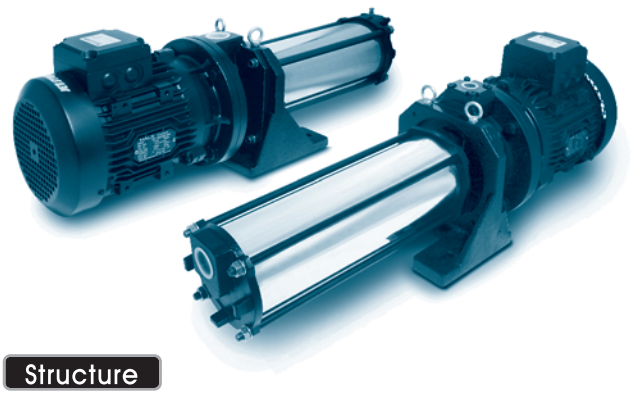
HCP-4000EHMF(S)



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-1100EHMF	169	13	25	179	272.5	136	97	219.5	164	68	20	115	3/4″	451	170	215	4-12	119	100	200	115	1½″
HCP-1100EHMFS	162.5	13	25	154	272.5	111	97	219.5	164	68	20	90	3/4″	426	170	215	4-12	119	100	200	115	1½″
HCP-1800EHMF	86	13	25	243	280	199	97	227	164	83	20	178	3/4″	523	170	215	4-12	137	100	200	115	1½″
HCP-1800EHMFS	186	13	25	195	280	151	97	227	164	83	20	130	3/4″	475	170	215	4-12	137	100	200	115	1½″
HCP-2500EHMF	186	13	25	290	306	246	97	253	164	83	20	224	3/4″	596	170	215	4-12	137	100	200	115	1½″
HCP-2500EHMFS	186	13	25	250	306	206	97	253	164	83	20	184	3/4″	556	170	215	4-12	137	100	200	115	1½″
HCP-4000EHMF	186	13	25	359	326	316	97	273	170	95	20	302	3/4″	687	170	215	4-12	154	100	200	115	1½″
HCP-4000EHMFS	186	13	25	312	326	269	97	273	170	95	20	255	3/4″	638	170	215	4-12	154	100	200	115	1½″

HCP EHMF □ series



Model

HCP - □ EHMF □□ - □ - □

- Voltage
- Termical Block
  - L: 90° Direction / R: 180° Direction
  - A: Vertical+Elbow / B: Horizontal+Elbow
  - C: Vertical / D: Horizontal
- Pump Head
- E: High Effciency Motor
- Pump Type

Structure

- 사용환경에 따라 Vertical과 Horizontal형태로 제작
- 동일한 펌프 취부자리로 교체가 용이함.
- HCP-4000HMF280S는 기존 펌프와 달리 IN, OUT이 반대로 되어 있어 Mechanical Seal부에 진공압이 발생되어 누유 발생 문제를 줄임.

- Either vertical or horizontal type possible depending on manufacturing environment.
- Easily replaced to the area in the same pump.
- Unlike existing pump, HCP-4000HMF280S has IN and OUT the other way round and therefore minimizes oil leakage as pressure is formed inside mechanical seal.

Feature

1. HCP-HMF(S) Type과 동일한 압력형 다단 원심펌프
2. 고압의 절삭유 토출로 대형 · 정밀 공작기계의 가공물 냉각 및 세척용 펌프로 사용
3. Mechanical Seal이 장착되어 장시간의 공회전은 금지함 (공회전 30초 이상 금지)
4. 일체형 축으로 제작되어 내구성과 관리가 용이함

1. Multi-step centrifugal pump that is identical with HCP-HMF(S) Type.
2. Used as cooling and cleaning pump for large scale / high precision manufacturing machine via discharge of high pressure cutting oil.
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.

Pump Spec.

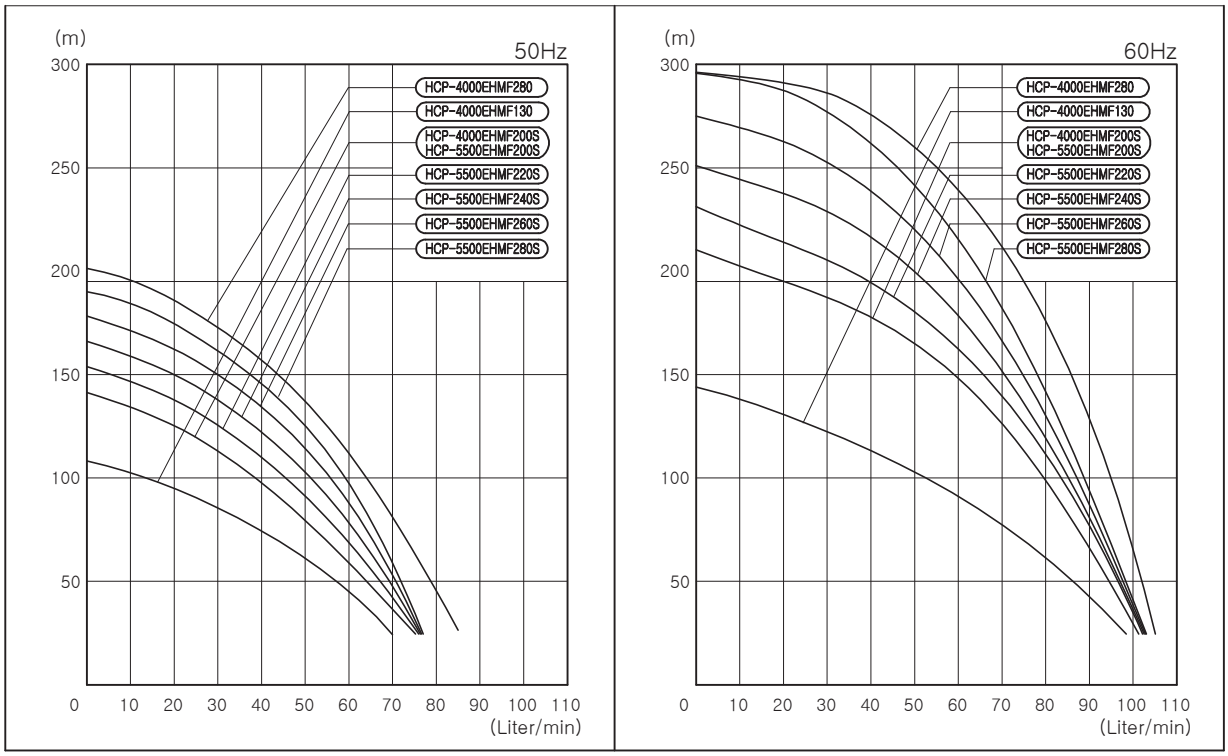
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (ℓ/min)	PIPE SIZE (PT)
HCP-4000EHMF130	4000	50	200 380	16.0 8.5	3	2	90	20	3/4″
		60	200/220 380	18.0/17.0 10.7			130		
HCP-4000EHMF200	4000	50	200 380	16.0 8.5	3	2	125	20	3/4″
		60	200/220 380	18.0/17.0 10.7			200		
HCP-4000EHMF280S	4000	50	200 380	15.0 9.0	3	2	195	20	3/4″
		60	200/220 380	18.0 10.7			280		
HCP-5500EHMF200	5500	50	200 380	17 10.5	3	2	145	20	3/4″
		60	220 380	25 14.5			200		
HCP-5500EHMF220	5500	50	200 380	17 10.5	3	2	155	20	3/4″
		60	220 380	25 14.5			220		
HCP-5500EHMF240	5500	50	200 380	17 10.5	3	2	165	20	3/4″
		60	220 380	25 14.5			240		
HCP-5500EHMF260	5500	50	200 380	17 10.5	3	2	175	20	3/4″
		60	220 380	25 14.5			260		
HCP-5500EHMF280	5500	50	200 380	17 10.5	3	2	185	20	3/4″
		60	220 380	25 14.5			280		

Packing Spec.

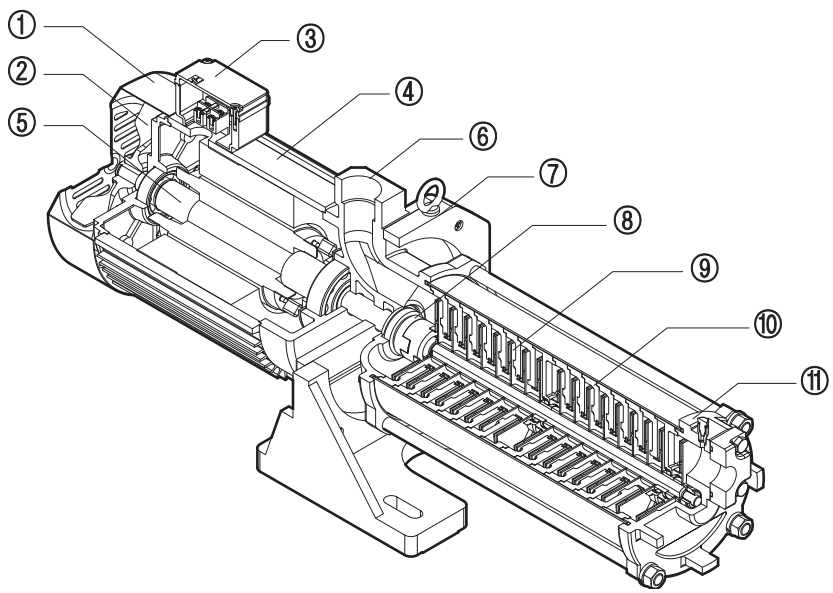
MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP-4000EHMF130	80(W) x 27(L) x 31(D)	44(A, C), 54(B, D)	45(A, C), 55(B,D)
HCP-4000EHMF200		49(A, C), 59(B, D)	50(A, C), 60(B,D)
HCP-4000EHMF280S		59(A, C), 69(B, D)	60(A, C), 70(B, D)
HCP-5500EHMF200	100(W) x 28(L) x 33(D)	59(A, C), 69(B, D)	60(A, C), 70(B, D)
HCP-5500EHMF220		62(A, C), 72(B, D)	63(A, C), 73(B, D)
HCP-5500EHMF240		64(A, C), 74(B, D)	65(A, C), 75(B, D)
HCP-5500EHMF260		67(A, C), 77(B, D)	68(A, C), 78(B, D)
HCP-5500EHMF280		69(A, C), 79(B, D)	70(A, C), 80(B, D)

Performance Curve

Oil for testing: ISO-VG2, Temperature 20°C



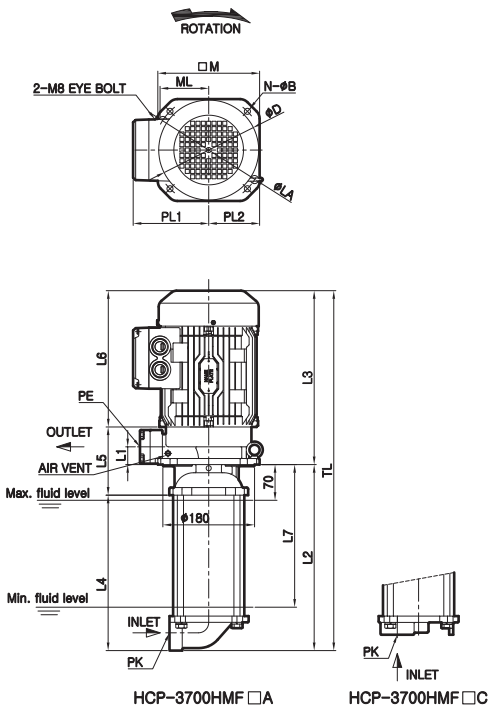
● 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
● When using non water-soluble cutting fluid, Viscosity must be under 32cSt, Pump performance (pressure and quantity) will clecrease compared to water-solube cutting fluid.



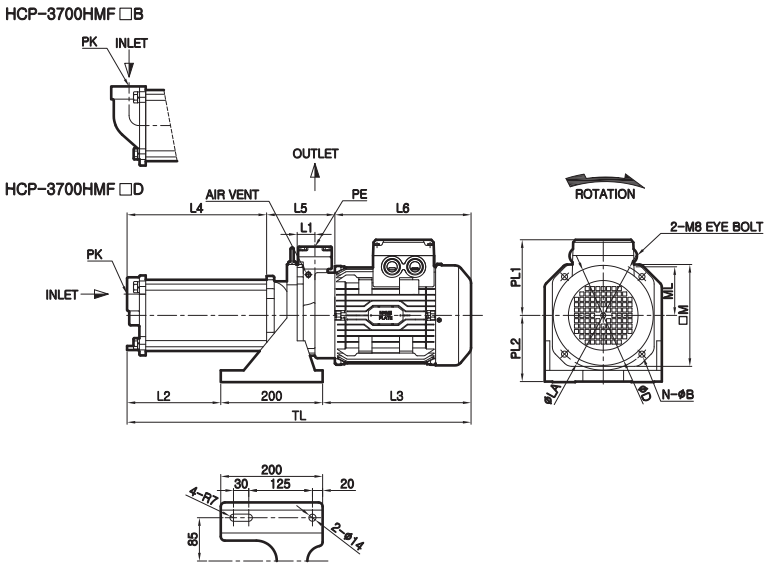
No	PART NAME	No	PART NAME	No	PART NAME
1	FAN COVER	5	SHAFT	9	IMPELLER
2	FAN	6	BODY	10	IMPELLER CASING
3	TERMINAL BLOCK	7	FLANGE	11	INLET COVER
4	MOTOR	8	IMPELLER SEAL	-	-

External Figure

HCP-4000HMF □A /□C



HCP-4000HMF □B /□D



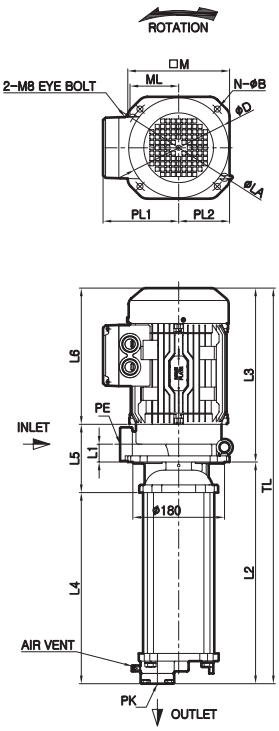
Dimension

Type \ Item	ø D	L1	L2	L3	L4	L5	L6	L7	PE (PT)	TL	LA	N-ø B	PL1	PL2	M	ML	PK (PF)
HCP-4000HMF130A	196.4	35	291.1	341.5	231.2	134	267.5	200	3/4″	632.7	215	4-12	148.5	100	200	95.5	1 ½″
HCP-4000HMF130B	196.4	35	141.2	291.5	231.2	134	267.5	-	3/4″	632.7	215	4-12	148.5	130	200	95.5	1 ½″
HCP-4000HMF130C	196.4	35	260.1	341.5	200.1	134	267.5	200	3/4″	601.6	215	4-12	148.5	100	200	95.5	1 ¼″
HCP-4000HMF130D	196.4	35	110.1	291.5	200.1	134	267.5	-	3/4″	601.6	215	4-12	148.5	130	200	95.5	1 ¼″
HCP-4000HMF200A	196.4	35	365.2	341.5	305.2	134	267.5	280	3/4″	706.7	215	4-12	148.5	100	200	95.5	1 ½″
HCP-4000HMF200B	196.4	35	215.2	291.5	305.2	134	267.5	-	3/4″	706.7	215	4-12	148.5	130	200	95.5	1 ½″
HCP-4000HMF200C	196.4	35	334.1	341.5	274.1	134	267.5	280	3/4″	675.6	215	4-12	148.5	100	200	95.5	1 ¼″
HCP-4000HMF200D	196.4	35	184.1	291.5	274.1	134	267.5	-	3/4″	675.6	215	4-12	148.5	130	200	95.5	1 ¼″

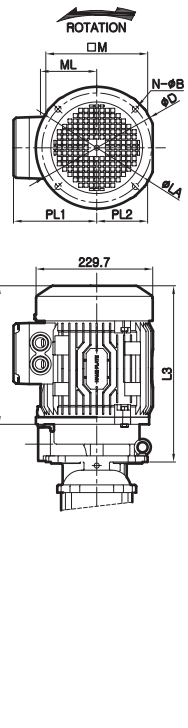
External Figure

HCP-4000EHMF280S-C

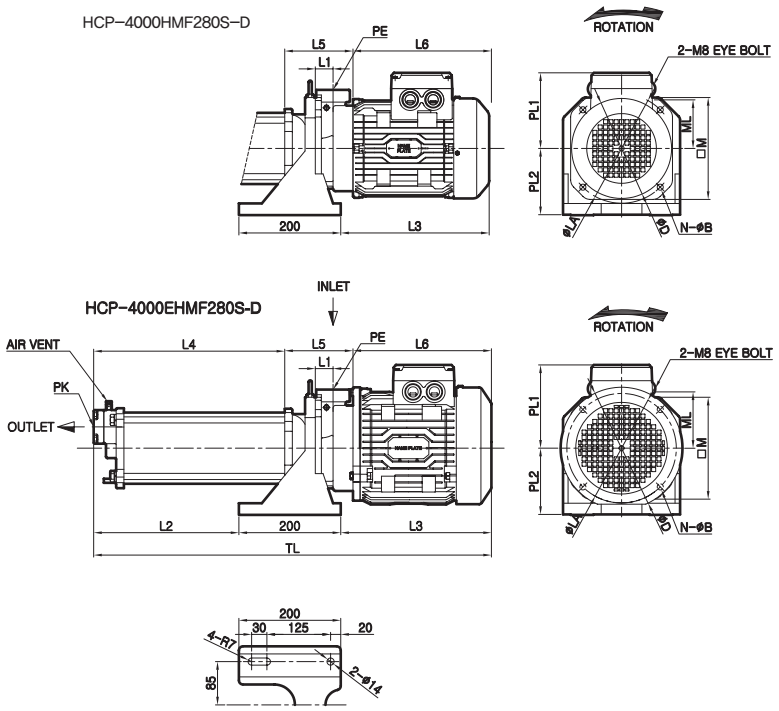
HCP-4000HMF280S-C



HCP-4000EHMF280S-C



HCP-4000EHMF280S-D

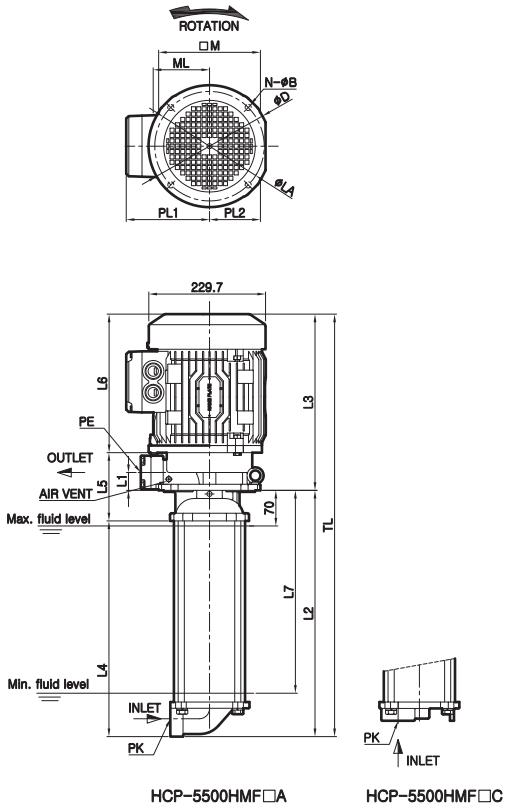


Dimension

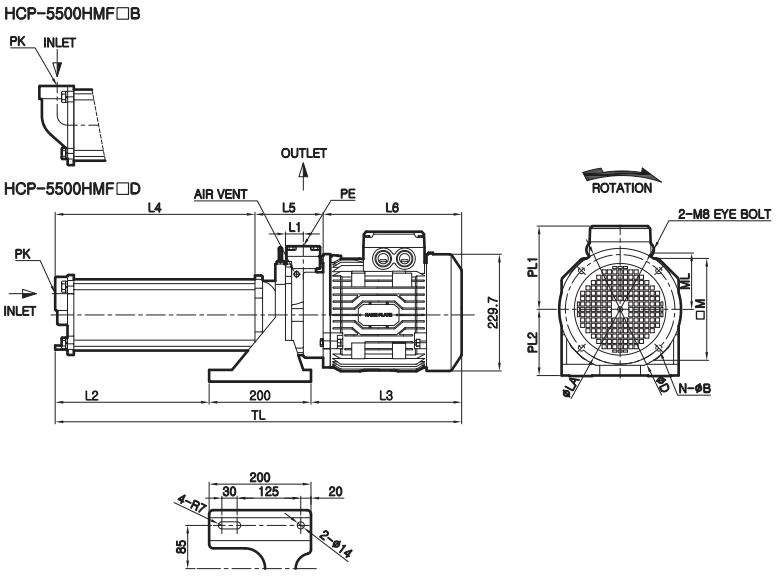
Type \ Item	ø D	L1	L2	L3	L4	L5	L6	PE (PT)	TL	LA	N-ø B	PL1	PL2	M	ML	PK (PF)
HCP-4000EHMF200S-C	239.4	35	436	346	376	144	272	1¼"	797	215	4-12	163	100	200	110.5	3/4"
HCP-4000EHMF200S-D	239.4	35	286	296	376	144	272	1¼"	797	215	4-12	163	130	200	110.5	3/4"
HCP-4000EHMF280S-C	239.4	35	436	346	376	144	272	1¼"	782	215	4-12	163	100	200	110.5	3/4"
HCP-4000EHMF280S-D	239.4	35	286	296	376	144	272	1¼"	782	215	4-12	163	130	200	110.5	3/4"

External Figure

HCP-5500EHMF □A /□C



HCP-5500EHMF □B /□D



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)
HCP-5500EHMF200A	239	35	384	346	324	144	272	298.5	3/4″	730	215	4-12	163.5	100	200	110.5	1½″
HCP-5500EHMF200B	239	35	233.7	296	324	144	272	-	3/4″	730	215	4-12	163.5	130	200	110.5	1½″
HCP-5500EHMF200C	239	35	353	346	293	144	272	298.5	3/4″	699	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF200D	239	35	203	296	293	144	272	-	3/4″	699	215	4-12	163.5	130	200	110.5	1¼″
HCP-5500EHMF220A	239	35	410	346	350	144	272	324.3	3/4″	756	215	4-12	163.5	100	200	110.5	1½″
HCP-5500EHMF220B	239	35	260	296	350	144	272	-	3/4″	756	215	4-12	163.5	130	200	110.5	1½″
HCP-5500EHMF220C	239	35	379	346	318	144	272	324.3	3/4″	724	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF220D	239	35	228	296	318	144	272	-	3/4″	724	215	4-12	163.5	130	200	110.5	1¼″
HCP-5500EHMF240A	239	35	428	346	368	144	272	342.8	3/4″	774	215	4-12	163.5	100	200	110.5	1½″
HCP-5500EHMF240B	239	35	278	296	368	144	272	-	3/4″	774	215	4-12	163.5	130	200	110.5	1½″
HCP-5500EHMF240C	239	35	397	346	337	144	272	342.8	3/4″	743	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF240D	239	35	247	296	337	144	272	-	3/4″	743	215	4-12	163.5	130	200	110.5	1¼″
HCP-5500EHMF260A	239	35	465	346	405	144	272	379.8	3/4″	811	215	4-12	163.5	100	200	110.5	1½″
HCP-5500EHMF260B	239	35	315	296	405	144	272	-	3/4″	811	215	4-12	163.5	130	200	110.5	1½″
HCP-5500EHMF260C	239	35	434	346	374	144	272	379.8	3/4″	780	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF260D	239	35	284	296	374	144	272	-	3/4″	780	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF280A	239	35	484	346	424	144	272	398.3	3/4″	830	215	4-12	163.5	100	200	110.5	1½″
HCP-5500EHMF280B	239	35	334	296	424	144	272	-	3/4″	830	215	4-12	163.5	130	200	110.5	1½″
HCP-5500EHMF280C	239	35	452	346	392	144	272	398.3	3/4″	798	215	4-12	163.5	100	200	110.5	1¼″
HCP-5500EHMF280D	239	35	302	296	392	144	272	-	3/4″	798	215	4-12	163.5	130	200	110.5	1¼″



Model

HCP - □ - □ / □ - □

- Terminal Block
  - L: 90° Direction
  - R: 180° Direction
- Impeller Stage □
- Casing Stage □
- Pump Type □ : 750EMS
  - □ : 1100EMS

Structure

- 동일한 펌프 취부자리로 교체가 용이함
- 사용 TANK 깊이에 따라 다양한 침수 깊이로 제작이 가능함
- 다단펌프로 광범위한 성능 구현이 가능

- Easy to replace it with identical pump attachment area.
- Depending on tank depth, it can be manufactured with various immersion depth.
- A multi-stage pump capable of a wide range of performances.

Feature

1. 주요 구동부가 Stainless로 제작되어 내구성 및 내식성이 우수함
2. 소형으로 설치공간의 제약이 있는 경우 사용
3. 압력형과 유량형 펌프로 구분되며 다양한 성능 범위를 갖고 있음

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.

Pump Spec.

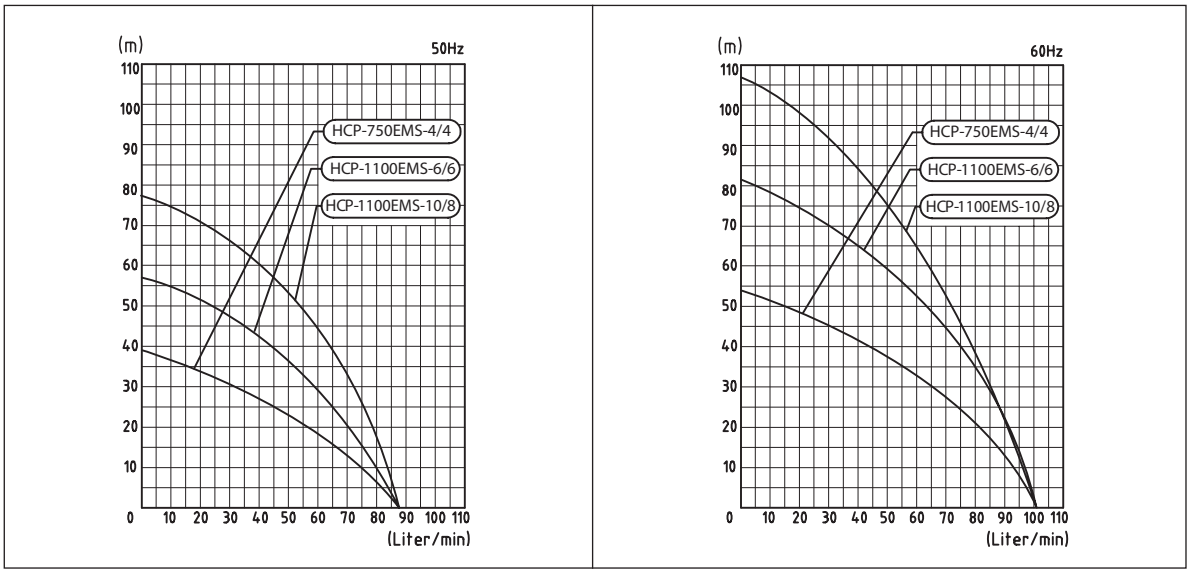
Specification / Type	MOTOR						PUMP		
	OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	PHASE	POLES	TOTAL HEAD (m)	DIS. VOL (l/min)	PIPE SIZE (PT)
HCP-550EMS-4/3	550	50	220 380	2.5 1.5	3	2	23	30	3/4"
		60	220 380	2.2 1.3			35		
HCP-750EMS-4/4	750	50	220 380	3.2 2.0	3	2	30	35	3/4"
		60	220 380	3.4 2.2			45		
HCP-1100EMS-6/6	1100	50	220 380	4.2 2.5	3	2	45	30	3/4"
		60	220 380	4.6 3.0			70		
HCP-1100EMS-10/8	1100	50	220 380	5.4 3.0	3	2	75	20	3/4"
		60	220 380	6.1 5.5			100		

Packing Spec.

MODEL NAME	PACKING SIZE(cm)	WEIGHT(kg)	
		PUMP	PACKING
HCP-550EMS-4/3	51(W) x 28(L) x 26(D)	11.5	12.3
HCP-750EMS-4/4	51(W) x 28(L) x 26(D)	12	12.8
HCP-1100EMS-6/6	51(W) x 28(L) x 26(D)	15.6	16.4
HCP-1100EMS-10/8	58(W) x 28(L) x 26(D)	17.5	18.5

Performance Curve

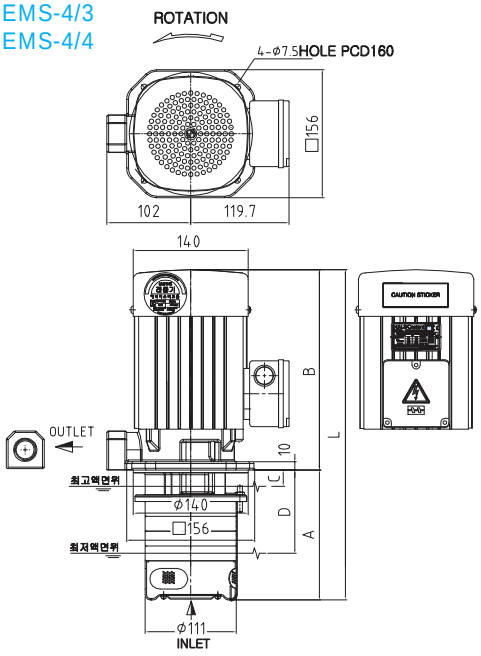
Oil for testing: ISO-VG2, Temperature 20°C



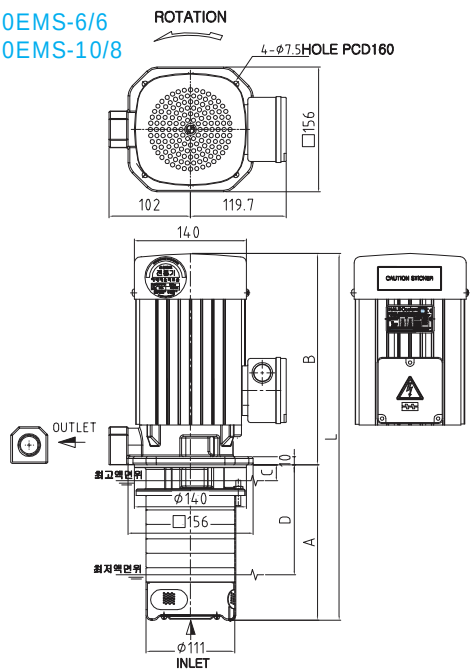
● 비수용성 절삭유 사용시 32cSt 이하의 점도를 사용하여야 하며, 수용성 절삭유에 비하여 펌프성능(압력·유량)이 저하됨.
● When using non water-soluble cutting fluid, Viscosity must be under 32cSt, Pump performance (pressure and quantity) will clecrease compared to water-solube cutting fluid.

External Figure

HCP-550EMS-4/3
HCP-750EMS-4/4



HCP-1100EMS-6/6
HCP-1100EMS-10/8



Dimension

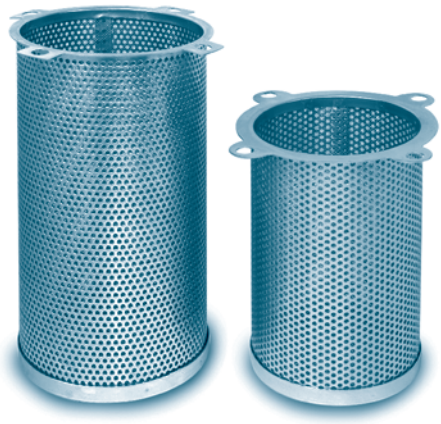
Type \ Item	A	B	C	D	L
HCP-550EMS-4/3	160	244	20	102	404
HCP-750EMS-4/4	160	244	20	102	404
HCP-1100EMS-6/6	196	264	20	138	460
HCP-1100EMS-10/8	267	264	20	210	531

Technical Data

Model	No. of Casing	No. of Impeller	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT(A)		TOTAL HEAD(M)		DIS.VOL (ℓ/min)	Immersion Depth (mm)	Total Height (mm)	Remarks
					50Hz	60Hz	50Hz	60Hz				
					220V/380V	220V/380V						
HCP-550EMS-	3	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	142	386	
	3	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	142	386	
	3	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	142	386	
	4	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	160	404	
	4	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	160	404	
	4	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	160	404	
	5	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	178	422	
	5	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	178	422	
	5	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	178	422	
	6	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	196	440	
	6	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	196	440	
	6	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	196	440	
	7	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	214	458	
	7	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	214	458	
	7	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	214	458	
	8	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	232	476	
	8	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	232	476	
	8	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	232	476	
	9	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	250	494	
	9	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	250	494	
	9	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	250	494	
	10	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	268	512	
	10	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	268	512	
	10	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	268	512	
	11	1	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	8	12	30	286	530	
	11	2	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	16	23	30	286	530	
	11	3	50Hz/60Hz	220V/380V	2.5/1.5	2.2/1.3	23	35	30	286	530	
HCP-750EMS-	4	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	160	404	
	5	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	178	422	
	5	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	178	422	
	6	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	196	440	
	6	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	196	440	
	7	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	214	458	
	7	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	214	458	
	8	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	232	476	
	8	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	232	476	
	9	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	250	494	
	9	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	250	494	
	10	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	268	512	
	10	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	268	512	
	11	4	50Hz/60Hz	220V/380V	3.2/2.0	3.4/2.2	30	45	30	286	530	
	11	5	50Hz/60Hz	220V/380V	3.6/2.5	4.0/3.0	37	55	30	286	530	
HCP-1100EMS-	6	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	196	460	
	7	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	214	478	
	7	7	50Hz/60Hz	220V/380V	4.5/3.0	5.0/3.5	53	77	30	214	478	
	8	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	232	496	
	8	7	50Hz/60Hz	220V/380V	4.5/3.0	5.0/3.5	53	77	30	232	496	
	8	8	50Hz/60Hz	220V/380V	4.7/3.2	6.0/4.0	75	100	20	232	496	
	9	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	250	513	
	9	7	50Hz/60Hz	220V/380V	4.5/3.0	5.0/3.5	53	77	30	250	513	
	9	8	50Hz/60Hz	220V/380V	4.7/3.2	6.0/4.0	75	100	20	250	513	
	10	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	268	531	
	10	7	50Hz/60Hz	220V/380V	4.5/3.0	5.0/3.5	53	77	30	268	531	
	10	8	50Hz/60Hz	220V/380V	4.7/3.2	6.0/4.0	75	100	20	268	531	
	11	6	50Hz/60Hz	220V/380V	4.2/2.5	4.6/3.0	50	70	30	286	550	
	11	7	50Hz/60Hz	220V/380V	4.5/3.0	5.0/3.5	53	77	30	286	550	
	11	8	50Hz/60Hz	220V/380V	4.7/3.2	6.0/4.0	75	100	20	286	550	

- MOTOR 출력은 550W, 750W, 1100W 세가지 종류이며 IE-3등급 모터임. Three types of motors of Class IE-3 are used (550W, 750W, 1100W)
- Pipe Size는 PT 3/4″로 공통임. Pipe Size is common as PT 3/4″

HCS Suction Filter series



Model

HCS - □

Model Name

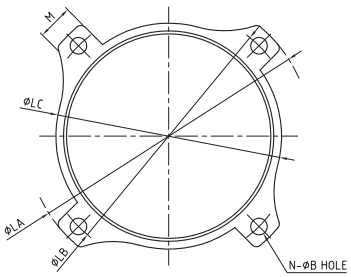
Feature

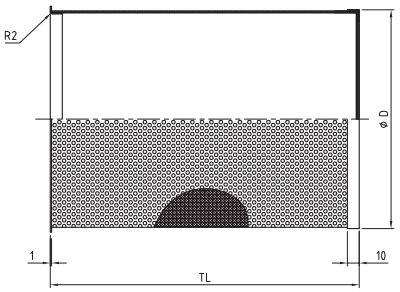
1. 본 HCS-TYPE은 침수형 Coolant Pump인 HCP-F, HCP-MF용 Suction Filter임
2. 펌프의 이물질 흡입을 방지하므로, 내구성을 보장하며 가공물의 정도를 향상시킴
3. 원활한 사용을 위해 주기적인 청소가 필요함
4. 펌프의 형태에따라 F-TYPE은 20Mesh, MF-TYPE은 14Mesh의 여과망을 사용

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.

External Figure

HCP-60F~900





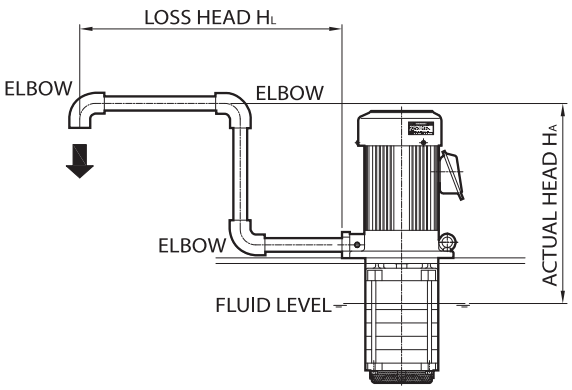
Type / Item	ØD	ØR1	TL	ØLA	ØLB	ØLC	M	N-ØB
HCS-180F	124	117	180	180	160	143	30	4-Ø12
HCS-250F	140	133	255	180	160	150	30	4-Ø12
HCS-400F	144	137	285	202	180	153	30	2-Ø12
HCS-418F	161	154	186	200	180	176	30	4-Ø12
HCS-419F	161	154	215	200	180	176	30	4-Ø12
HCS-428F	161	154	286	200	180	176	30	4-Ø12
HCS-1100EHMF	184	177	190	240	215	199	30	4-Ø12
HCS-1100EMF	184	177	260	240	215	199	30	4-Ø14
HCS-1800EHMFS	184	177	205	240	215	199	30	4-Ø14
HCS-1800EMF	184	177	285	240	215	199	30	4-Ø14
HCS-4000EBMF	193	186	360	240	215	199	30	4-Ø14
HCS-4000EHMF200C	193	186	345	240	215	199	30	4-Ø14
HCS-4000EHMFS	193	186	320	240	215	199	30	4-Ø14

제품 선정 방법 Method of Pump Selection

펌프의 선정 방법은 배관의 경로와 연결방식에 의해서 결정된다. 손실양정은 파이프의 길이와 배관부품의 수로 결정되어 진다. 따라서, 배관 경로 설계시 파이프 길이는 되도록 짧게하고 엘보나 기타 피팅 및 밸브는 필요한 수만 사용하는 것이 손실양정을 적게하는 방법이다.
적정한 배관 설계를 바탕으로 얻어진 전양정과 필요한 유량을 기준으로 펌프를 선정할 수 있고, 선정하는 방법은 아래와 같은 과정으로 계산할 수 있다.

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:

양정 계산 방법 (Head Calculation Method)



사용자가 원하는 전체양정인 전양정(H_T)은 실제양정(H_A)과 손실양정(H_L)의 합을 뜻하며, 아래와 같이 나타낸다.

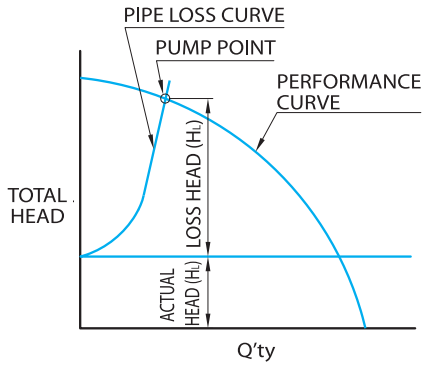
The total head (H_T) as required by the user is the sum of the actual head(H_A) and the loss of head(H_L), and is expressed as below.

$$H_T = H_A + H_L$$

상단 도면과 같이 실제양정에 손실양정을 더한 전양정 값과 이때 필요한 유량을 기준으로 펌프를 선정하면 된다.
※ 사용환경과 사용유의 점도에 따라 계산값의 변화가 있다.
[손실양정 계산은 아래의 방법으로 구할 수 있다.]

As illustrated in the diagram on the top, 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:]

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



여기서,
f=관마찰계수 (레이놀드 수에 의해 결정)
※수용성오일 0.03, 점도가 높을 수록 계수값은 증가함
L=관의 길이 (m) d=파이프 내경 (m)
V=유체의 속도 (m/s) g=중력가속도 (9.8m²/s)

관의 길이 L 값은 전체 배관길이 뿐만 아니라, 각종 배관부품의 손실 길이 값도 포함해야 한다. 각종 부품에 대한 손실 길이 값은 하기 표를 참조하여 값을 더한다.

EX) **전체 파이프길이 + 엘보길이 x 갯수 + 흡입 + 토출 = 전체 관길이 (L)**

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 (9.8m²/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.

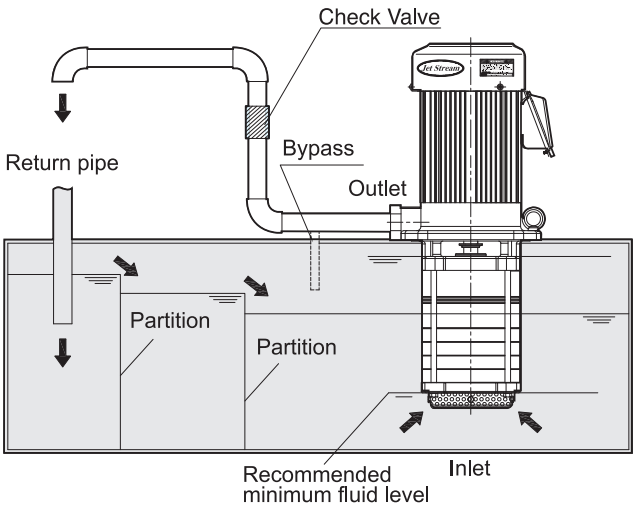
EX) **Total pipe length + elbow length x quantity + suction + discharge = total piping length (L)**

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

SIZE	INFLOW	OUTFLOW	90° ELBOW	BALLVALVE
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

제품 설치 방법 Method of Product Installation

전기종 (All Type)



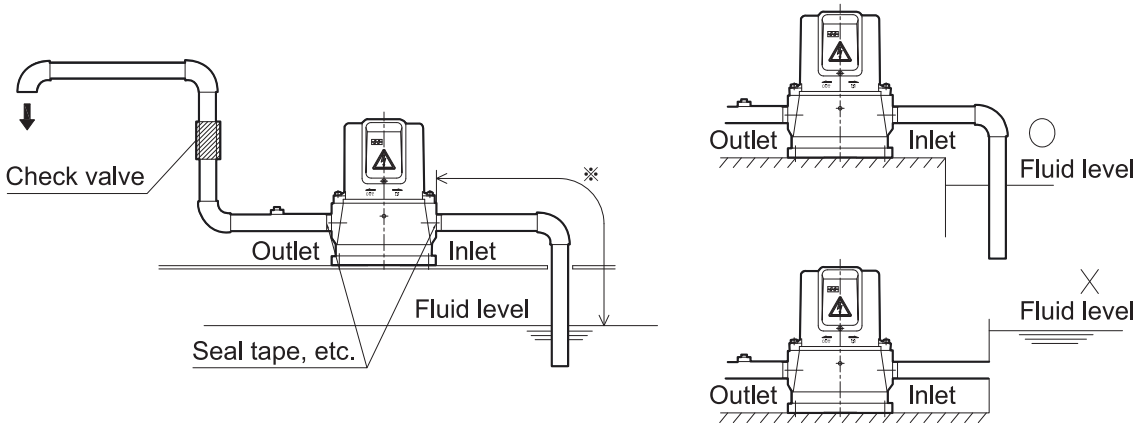
① 파이프 길이는 되도록 짧게 하고, 엘보, 피팅 그리고 각종 밸브들의 수도 적게하여 주십시오. 또한, 파이프는 정식 규격품을 사용하여 주십시오. 만약 파이프가 가늘거나, 많은 굴곡이 있는 경우 토출량이 줄어듭니다.
② 연결한 파이프의 무게가 바로 펌프에 영향이 없도록 배관해 주십시오.
③ 펌프 나사부 연결시 과도한 힘으로 조립하지 마십시오.
④ 사용유나 에어혼입을 방지하기 위하여 배관 연결시 실 테이프와 같은 누유방지 후 배관하여 주십시오.
⑤ 탱크는 폭이 넓게 제작하여 주십시오. 사용펌프의 토출량의 적어도 3배 이상의 크기의 탱크 용량으로 제작하십시오. 탱크의 용량이 충분하지 못할 경우 토출량의 저하나, 사용유의 온도상승, 흡입 스트레이너로의 이물질이나 기포 등에 따라 막히는 현상등의 문제점이 발생됩니다. 탱크내 사용유 보충시 에어 혼입을 방지하기 위하여 천천히 공급해 주십시오.
⑥ 칩, 먼지 또는 다른 이물질의 펌프 유입을 막아주십시오. 탱크내 3단계의 오일 턱을 제작하거나, 적어도 1단계의 오일턱과 필터를 사용해 주십시오.
⑦ 만약, 수격현상이 발생할 경우 펌프 토출부 바로 앞에 바이패스 할 수 있도록 배관을 설치하여 주십시오.
⑧ 만약 수위면이 낮을 경우 공기가 혼입되거나, 사용유 토출이 되지 못합니다. 탱크내 최저 수위는 추천하는 수위까지 채워주십시오. 사용유의 점도에 따라 수위 높이는 다르지만, 안전을 고려하여 실제 수위는 충분히 높게 책정하여 주십시오. 반면 수위면이 너무 높은 경우 모터부 틈으로 사용유가 유입되어 모터 소손이 발생됩니다. 따라서, 최고 수위면은 추천하는 최대 수위면이 넘지 않도록 하여 주십시오.

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.

제품 설치 방법

Method of Product Installation

HCP-S type

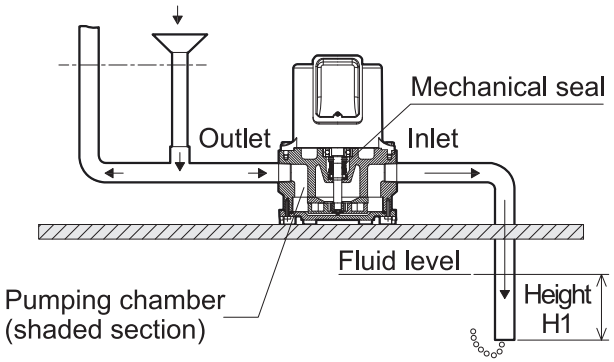


- ▶ HCP-S TYPE은 탱크에 가까이 설치하고, 흡입 파이프의 길이도 최대한 짧게 하여 주십시오.
- ▶ 최대 흡입 배관길이는 (※) 0.7m 이하로 하십시오.
- ▶ 다른 이유로 흡입배관을 연장할 경우 토출부 파이프에 체크밸브를 연결해 주십시오.
- ▶ 흡입배관 연결부도 실 테이프와 같이 확실한 누유방지 후 배관하여 주십시오. 만약 흡입부로 에어 혼입시 토출량 저하 및 펌핑의 이상이 발생합니다
- ▶ 펌프의 흡입부 수위는 반드시 펌프 흡입부 보다 낮아야 합니다. 수위가 높을 경우 MECHANICAL SEAL로부터 오일 누유가 발생 할 수 있습니다.

- ▶ 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.

기름마중

Priming



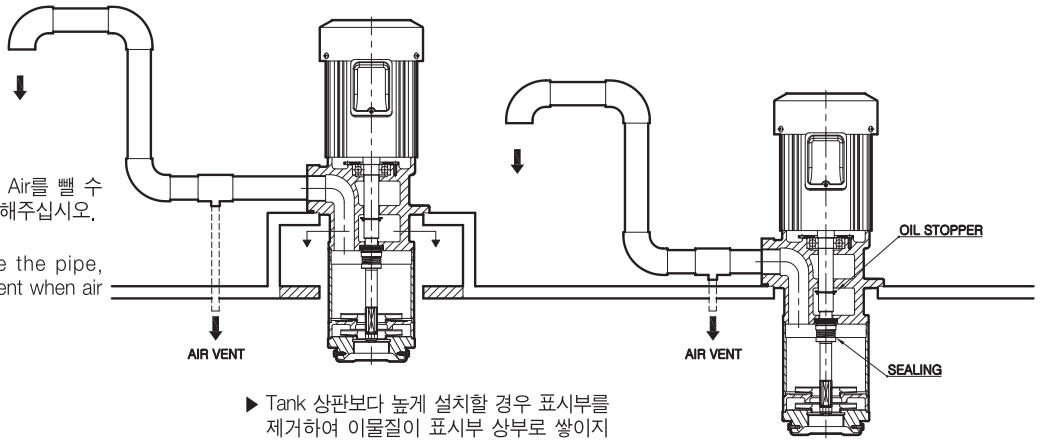
- ▶ HCP-S TYPE의 경우 처음 구동할 경우나, 오랜 휴식후 구동할 경우 펌프내 에어가 차 있게 됩니다. 따라서 펌핑을 하기 위해서는 에어를 빼주어야 합니다. 만약 에어가 있는 상태에서 구동할 경우 사용유 토출이 안되거나, 압력 저하나 유량 저하의 원인이 됩니다. 또한 이에 따른 과도한 공회전을 하게 되면 MECHANICAL SEAL의 파손의 원인이 됩니다.
- ▶ HCP-S TYPE의 기름마중 방법은 도면과 같이 토출부 앞부분에 사용유를 넣어주십시오.

- ▶ As with the HCP-S type, 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.

제품 설치 방법

Method of Product Installation

HCP-MF & HMF type



▶ Drain 배관설치:
배관 내에 Air가 찰 경우 Air를 뺄 수 있는 Air vent배관을 설치해주십시오.

▶ Install drain pipe:
if air can enter inside the pipe, install the pump in air vent when air can be released.

▶ Tank 상판보다 높게 설치할 경우 표시부를 제거하여 이물질이 표시부 상부로 쌓이지 않도록 넓게 제작해 주십시오.

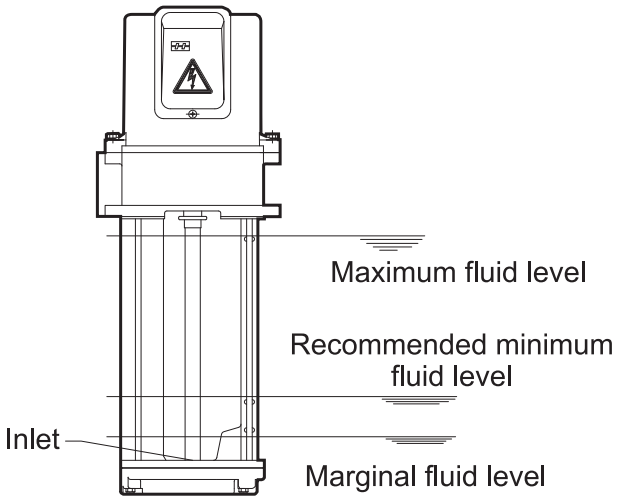
▶ When installing higher than the upper board of tank, remove the display unit and build it with a large space so that impure materials cannot accumulate over the display unit' s upper part.

▶ Pump Flange 상부로 사용액이 흐를 경우 Sealing을 교체하여야 합니다.

▶ If liquid is discharged from the upper part of plump flange, sealing must be replaced.

펌프사용

Use the Pump



▶ 펌프 사용은 CATALOG 및 명판상 에 기재되어 있는 규격의 범위 내에 사용하시기 바랍니다. 또한, 펌프의 성능이 저하된 경우에는 흡입부로 이물질 혼입의 원인이 크므로 탱크 청소는 정기적으로 1년에 2~3회씩 시행한 후 청정 사용유로 교체하여 재구동을 하여 주십시오.

▶ HCP-S TYPE 일체형 축으로 제작되었으며, 축봉장치로 MECHANICAL SEAL을 채택하였습니다.
따라서 지나친 공회전은 SEAL 파손의 원인이 되므로 30초 이상의 공회전은 삼가해 주십시오.

▶ 침수식 펌프의 경우 왼쪽 그림과 같이 사용유 수위면이 최대와 최소 사이에 위치하여야 합니다. 추천 최저 수위 이하로 떨어질 경우 구동중 에어 혼입이 일어 날수 있습니다. 또한, 펌프 바닥부터 탱크 까지 간격은 20~30mm 이상이 되도록 하여 주십시오. 최고수위는 펌프 플랜지부에서 적어도 20mm 정도 떨어지도록 하십시오.

▶ 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 type 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.

취급상 주의사항

Caution for Usage

- 장치를 취급하기 전에 사용설명서에 제공된 모든 지시(설치, 교통, 유지보수, 검사 등)를 철저하게 읽고 올바르게 장치를 사용합니다. 장치를 사용하기 전에 장치의 메커니즘과 안전 및 취급절차를 숙지하십시오.
- 전원이 공급되는 중에는 작업을 하지 마십시오. 주전원을 완전히 차단 후 작업하십시오.
- 정전의 경우 주전원스위치를 끄십시오.
- 이상이 발견된 경우 즉시 장치를 중지하고 주전원스위치를 끄십시오.
- 안전하게 지면에 접지단자를 연결합니다.
- 기기 · 배관 및 배선은 전기설비 및 내부배선표준에 대한 기술표준에 따라 수행되어야한다.
- 보호 장치는 기기에 포함되지 않습니다. 전기 시설에 대한 기술표준에 지정된 대로 과전류 보호 장치의 설치는 필수입니다.
- 절삭칩, 절삭유 슬러지 또는 기타 이물질을 외부배선포트를 통해 단자함에 들어오지 않도록 충분한 방진 및 커넥터, 마개 등을 사용하여 방적조치를 하십시오.
- 폭발물 근처에서 사용하지 마십시오.
- 기기 근처에 인화성물질을 두지 마십시오.
- 이 제품은 등유, 가솔린이나 기타 휘발성 액체를 사용할 수 없습니다.
- MOTOR FAN, IMPELLER 등 회전체를 만지거나 접근하지 마십시오.
- 기기의 구멍(팬 커버, 펌프입구와 출구, 배수구 등)에 손가락이나 물체를 삽입하지 마십시오.
- 기기를 절대로 밟지 마십시오.
- 반드시 통풍이 자유롭고 장치주변을 깨끗이 합시다.
- 기기가 유지보수가 쉽고 (좁은 지역을 피해서) 검사를 할 수 있는 장소에 기기를 설치하십시오.
- 수평인 장소에 기기를 설치하십시오. 기기가 문제없는지 확인합니다.
- 사용되는 액체의 점도가 너무 높은 경우 모터의 수명이 단축되고 단선의 위험이 존재합니다.
- 기기가 연삭 및 유체절삭 등의 절삭유와 함께 사용하도록 설계되어 있습니다. 분말, 연마재, 세라믹 등의 미세한 슬러지가 혼합된 경우 메카니컬 씰의 수명이 상당히 줄어들 것입니다. 적절한 필터(자석이나 종이필터 등)을 설치합니다.
- 기기를 연결하기 전에 회전방향을 확인하십시오.
- 에어 벤트 밸브를 기기가 시작할 때 펌프의 밸브를 약간 열어 액체가 밸브에서 배출되어 있는지 확인합니다. 확인 후 확실하게 밸브를 닫습니다.
- 수리, 분해, 장치의 수정은 전문가에 의해 수행되어야 합니다.
- 고객의 임의로 기기수정에 따라 발생된 문제는 책임지지 않습니다.
- 이 카탈로그에 언급된 사양 이외에 다른 전압의 제품을 생산하고 있습니다. 더 자세한 사항을 위해서 저희에게 연락하십시오.

주문 전 검토사항

(1) 용　　도 : 공작기계 이외에 특별한 용도를 위해 기기를 쓸 수 있는지 주의 깊게 여부를 고려해서 실제로 사용 또는 저희에게 연락하십시오.
(2) 사용 액체 : 이물질 종류, 점도, 온도, 산도, 오염
(3) 펌프 사양 : 전체 헤드 토출량, 흡입 헤드 (자흡식 높이)
(4) 모터 사양 : 출력 전압, 주파수, PHASE
(5) 사용 조건 : 환기, 온도
(6) 배관 방식 : 배관도
(7) 설치 방법 : 자흡식 타입과 비자흡식 타입 간의 차이

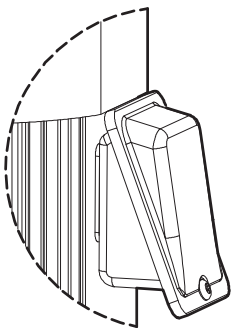
취급상 주의사항 Caution for Usage

- Before handling device, make sure to read thoroughly all the instructions (installation, transportation, repair & maintenance and inspection) provided in the instruction manual to use the device properly.
- Make sure to understand the mechanism of device and safety and treatment procedure before using.
- Do not operate the device while the electricity is being supplied. Start using after main electricity has been blocked.
- Turn off the main electricity during black-out.
- If you find flaws, immediately stop the device and turn off the main power switch.
- Safely connect the earth terminal to the ground.
- Installation, pipe and wiring system must be performed according to the technical standard of electricity installation and interior wiring standard.
- Protective equipment is not part of the machine. As specified in the technical standard pertaining to electricity installation, installation of over-current protection device is required.
- There should be sufficient dust preventives, connectors, marks and other measures to stop cutting chips, cutting oil, sludge or other impure materials to enter the terminal box through external wiring port.
- Do not use it near explosives.
- Do not place inflammable materials around the machine.
- Lamp oil, gasoline or other inflammable liquid cannot be used for this product.
- Do not touch or go near motor fan, impeller or other spinning object.
- Do not insert fingers or objects to the holes of the machine (fan cover, pump door and exit, drainage)
- Do not step on the machine.
- Make sure there is good ventilation and clean the place near the device.
- Install the equipment in a place where repair and maintenance (avoid narrow place) where inspection can be done.
- Place the device on a flat surface. Make sure there is no defect with the machine.
- If the viscosity of liquid being used is too high, the life of motor declines and there is a risk of disconnection.
- The device was designed to use cutting oil such as grinding and fluid cutting. If fine sludge such as powder, grinding chips and ceramic powder are mixed, the life of mechanical seal will significantly decline. Appropriate filter (magnet or paper filter) must be installed.
- Verify the spinning direction before connecting to the device.
- When the machine starts air vent valve, open the valve to verify if liquid has been discharged from the valve. After verification, make sure to close the valve tight.
- Repair, disassembling and revision of device should be carried out by experts.
- We are not responsible for problems caused customer' s arbitrary modification of machine.
- We are producing products with different voltages with specification not mentioned in this catalogue. For more detailed information, please contact us.

Check items before Odering

(1) Use: Consider carefully if the machine can be used for purpose other than manufacturing tool and contact us.
(2) Liquid used: type, viscosity, temperature, acidity and pollution of impure materials
(3) Pump specification: total discharge of head, suction head (suction height)
(4) Motor specification: output voltage, frequency, phase
(5) Use condition: ventilation, temperature
(6) Piping method: piping diagram
(7) Installation method: difference between suction type and non-suction type

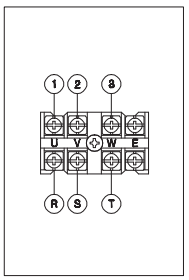
TERMINAL BOX CONNECTION



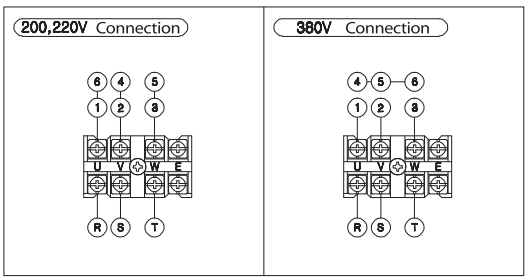
Model

- HCP-S TYPE
- HCP-F TYPE
- HCP-F(고압형) TYPE
- HCP-EMF(S) TYPE
  - HCP-1100EMFS
  - HCP-1100EMF
  - HCP-1800EMF
  - HCP-2500EMF
  - HCP-4000EMF
  - HCP-1100EBMF
  - HCP-1800EBMF
  - HCP-2500EMF
- HCP-EHMF(S) TYPE
  - HCP-1100EHMF
  - HCP-1100EHMFS
  - HCP-1800EHMF
  - HCP-1800EHMFS
  - HCP-2500EHMF
  - HCP-2500EHMFS
  - HCP-4000EHMF
  - HCP-4000EHMFS

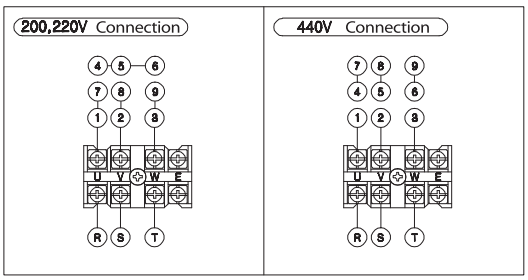
Sole Connection



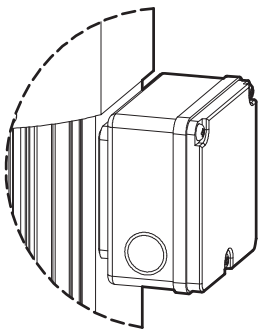
220V/380V Connection



220V/440V Connection



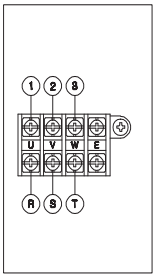
TERMINAL BOX CONNECTION



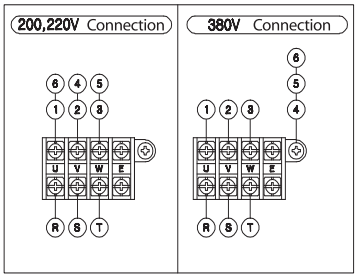
Model

- HCP-S TYPE
- HCP-F TYPE
- HCP-F(고압형) TYPE
- HCP-EMF(S) TYPE
  - HCP-1100EMFS
  - HCP-1100EMF
  - HCP-1800EMF
  - HCP-2500EMF
  - HCP-4000EMF
  - HCP-1100EBMF
  - HCP-1800EBMF
  - HCP-2500EMF
- HCP-EHMF(S) TYPE
  - HCP-1100EHMF
  - HCP-1100EHMFS
  - HCP-1800EHMF
  - HCP-1800EHMF
  - HCP-2500EHMF
  - HCP-2500EHMFS
  - HCP-4000EHMF
  - HCP-4000EHMFS
  - HCP-4000HMF130-A,B,C,D
  - HCP-4000EHMF130-A,B,C,D
  - HCP-4000HMF200-A,B,C,D
  - HCP-4000EHMF200-A,B,C,D
  - HCP-4000HMF280S-C,D
  - HCP-4000EHMF280S-C,D

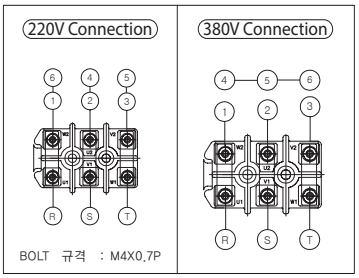
Sole Connection



220V/380V Connection

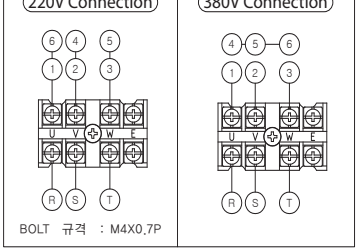


4000W/220V/380V Connection



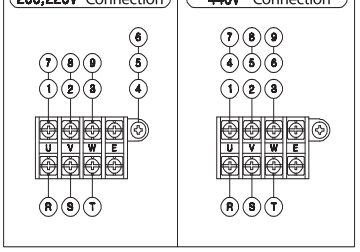
BOLT 규격 : M4X0.7P

220V/380V Connection



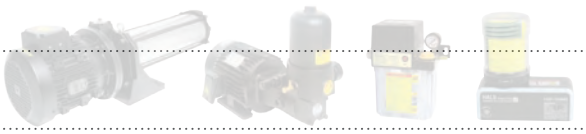
BOLT 규격 : M4X0.7P

220V/440V Connection



NOTE

HALS
(주) 한성정공

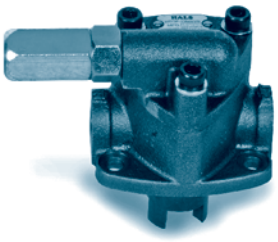


HANSUNG AUTOMATIC LUBRICATION SYSTEM

Rotor PUMP

HALS

Rotor pump series



HTOP-A(VB) series

소형의 내접기어 펌프
COUPLING이 부착되어
구동MOTOR를 연결하여 작동

각종 공작기계
산업용 윤활유 공급용

A compact internal gear pump, attached with a coupling, and is operated by connecting the drive motor.

Various machine tools
For supplying Industrial lubricating oil

Page 7



HTOP-F series

소형의 내접기어 펌프로
회전방향에 상관없이
흡입과 토출이 동일

공작기계
산업기계

A compact internal gear pump that has equal suction and discharge, regardless of rotation direction.

Machine tools
Industrial machines

Page 8



HMTP-3M-MA(VB) series

HTOP-A(VB)와 MOTOR를
결합한 펌프 조립품

사용환경에 따라
다양한 적용이 가능

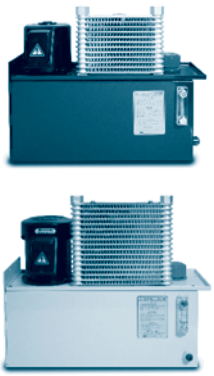
MCT
CNC
기타 선삭 및
절삭 가공 전용기
산업기계

A pump produced by connecting a motor to the HTOP-A(VB) product

Various applications are available according to operational environments

MCT
CNC
Other turning and cutting processing machines
Industrial machines

Page 9



OIL COOLER series

HMTP 3M-□-MA(VB) 펌프를 이용한
OIL COOLER UNIT 제품

각종 공작기계
오일 COOLER 장치

An oil cooler unit that uses the HMTP 3M-□-MA(VB) pump

Various machine tools
OIL COOLER UNIT

Page 12



HTP-(HA/HB)(VB/VD) series

HTOP TYPE에 비하여
다양한 압력과 유량범위를 갖은
내접 기어 펌프

MCT
CNC
기타 선삭 및
절삭 가공 전용기
산업기계

An internal gear pump that has more various pressures and oil quantity range than the HTOP type

MCT
CNC
Other turning and cutting processing machines
Industrial Machines

Page 14



HMTP-3M-HA(VB/VD)-(E) series

HTP-HA(VB)에 MOTOR를
조립한 펌프 완성품

출력에 따른 다양한 압력과
유량범위를 갖고 있음

MCT
CNC
기타 선삭 및
절삭 가공 전용기
산업기계

A product produced by connecting a motor to the HTP-HA(VB) product

It has various pressures and oil quantity range according to output

MCT
CNC
Other turning and cutting processing machines
Industrial Machines

Page 16



HMTP-3M-HAVBF-(E) series

HTP-HA(VB)제품에
Suction Filter를 부착한 제품

Filter 청소가 간단하고
HTP type 전기종에 적용이
가능함

MCT
CNC
기타 선삭 및
절삭 가공 전용기
산업기계

A product produced by attaching the suction filter to the HTP-HA(VB) product

Filter cleaning is simple.
It is possible to apply
in the HTP all type

MCT
CNC
Other turning and cutting processing machines
Industrial Machines

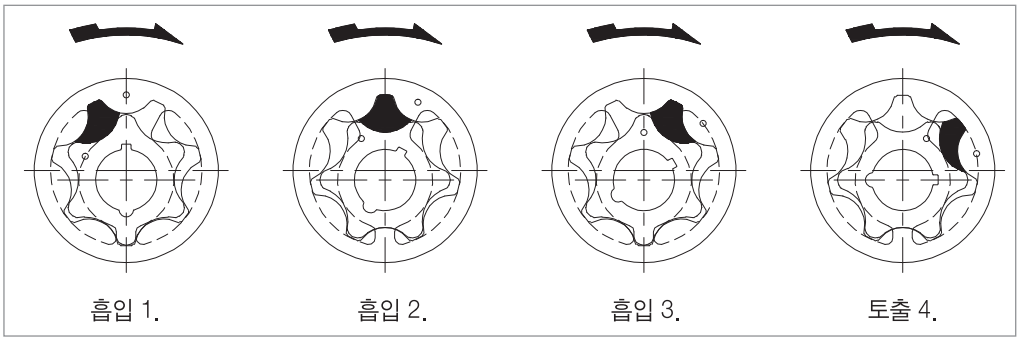
Page 19

ROTOR 작동설명 Rotor Operating Explanation

ROTOR PUMP OUTLINE

Rotor Pump는 한쌍의 내치차와 외치차로 이루어져 있는 내접형 Gear Pump이다. 내치차와 외치차의 기어는 Trochoid곡선상 중심을 갖고 원호의 포물선을 따라 움직인다.

Rotor pump is an internal gear pump consisting of in rotor and outer rotor gear. Internal and external gear operates along a circular trajectory with trochoid curve at the center.



외치차(Out Rotor)는 내치차(In Rotor) 보다 치수가 1매 많아, 동일방향으로 회전하여 상대속도가 매우 적어 치차의 마모나 소음이 적게 발생된다.

An out-rotor is 1 measurement higher than an in-rotor. It spins in the same direction and the relative speed differential is low. Therefore, there is less friction and noises created.

ROTOR PUMP SELECTION

필요한 유량확인 Necessary oil quantity	필요한 압력 Necessary pressure	Relief v/v 설정압력 Relief v/v configuration pressure	적용오일 Applied oil	주위온도 Surrounding temperature
토출량은 사용유 온도와 종류에 따라 달라짐 충분한 여유를 주어서 선택 Discharge quantity varies according to type and temperature of oil used. Give enough time to choose.	최대 적용 가능한 압력과 모터를 초과하여 선택할 수 없다. Cannot choose the quantity exceeding maximum applicable pressure and motor.	안전밸브로 설정압력에 따라 작동됨 설정압력은 펌프최대 압력보다 초과할 수 없다. Operates using safety valve according to configured pressure. Configured pressure cannot exceed the maximum pump pressure.	본 Rotor Pump는 광범위한 Oil사용이 가능하지만 본 Catalog는 ISO VG 46을 기반으로 작성, 다른 오일 사용시 성능과 내구성의 차이가 있을 수 있다. A wide range of oil can be applied to the rotor pump. This catalogue was created using ISO VG 46. There could be differences in performance and durability when using different oil.	Oil 온도 Motor 온도 주위온도 -10~40℃ Oil temperature Motor temperature Surrounding temperature -10~40℃

ROTOR PUMP FEATURE

제품비 Manufacturing cost	타 용적식 펌프에 비하여 저렴하다. Cheap relative to other capacity type pump.
취급성 Handling	내접형 Gear 펌프이므로 다른 펌프에 비하여 동용량의 경우 취급이 편하고 소형 · 경량이다. It is an internal gear pump and therefore handling is easier and is small in size and weight compared to pumps with similar capacity.
용적효율 Capacity efficiency	일반 Gear 펌프에 비하여 용적효율이 유수하다. Compared to general gear pump, capacity efficiency is good.
유지보수 Repair & maintenance	구조가 간단하여 분해 · 점검이 용이하다. It has simple structure and easy to disassemble and inspect.
소음, 진동 Noise and vibration	Gear Pump 및 타 용적식 펌프에 비하여 특유의 내접형 Gear를 사용하여 소음과 진동이 적다. It uses its unique internal gear compared to gear pump and other capacity type pump, causing low noises and vibration.
적용부분 Applicable part	보통 1500~2000rpm에서 사용하지만 300~3000rpm까지 광범위한 회전에서 사용할 수 있고 사용자가 희망하는 용량 · 기종이 다양하며 Pump의 호환성이 높다. It is used on average at 1500-2000 rpm but can also be used in a wide range of revolution such as 300-3000 rpm. It has a variety of capacity ad type for users with various needs and pump compatibility is also excellent.
주요용도 Main use	강제급유, 저유압유 구동, 기름이송용, 여과기 이송용 Forced oil supply, low pressure oil supply, oil transportation, filtration transportation oil.
적용분야 Applicable areas	각종 공작기계, 선박엔진, 농업용 엔진, 기타엔진, 냉각기용, 감속기, 건설기계, 각종 산업기계, 프레스, 인쇄기계, 제지기계, 발전기, 압축기 등 Various machining tools, vessel engine, agricultural engine, other engines, coolants use, decelerator, construction machine, various industrial machine, press, printing machine, paper manufacturing machine, generator and compressor.

OIL 순환 SYSTEM

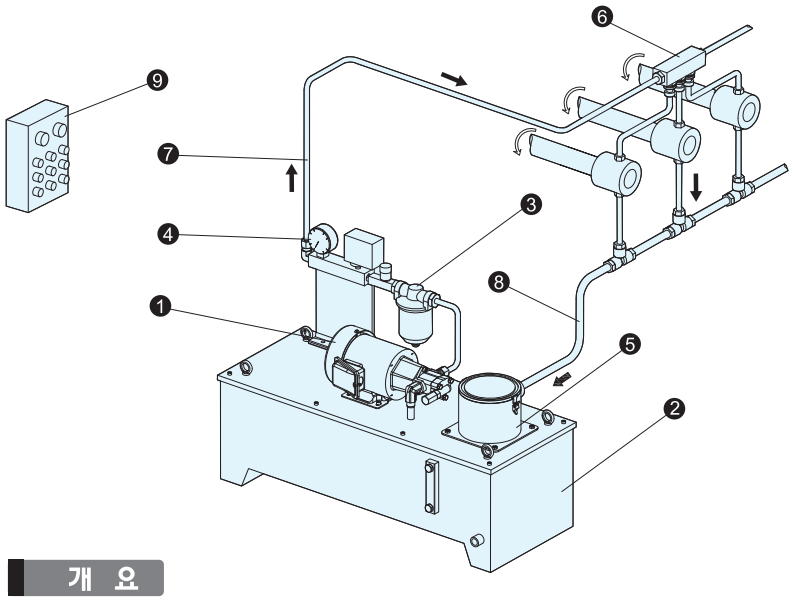
Oil Circulation System

개 요

오일 순환 시스템은 주로 윤활 및 냉각이 필요한 고온의 윤활점에 윤활제를 여과 및 냉각 과정 등을 거쳐 반복 순환하여 사용하는 시스템이다.
시스템의 구성 요소는 탱크, 펌프, 필터, 히팅 및 냉각장치, 오일 압력 및 온도제어 장치, 전기 콘트롤 장치, 밸브 및 피팅 등으로 구성되어지며, 설비의 상황과 조건에 맞게 자동화의 수준이 결정 되어진다.

적 용

기어 BOX, 베어링, 발전기, 대형 송풍기, 내연기관, 정밀 공작기계 등



번호	구성기기
1	순환펌프
2	오일탱크
3	필터
4	압력계
5	드레인필터
6	분배변
7	공급배관
8	회수배관
9	제어반

Number	component
1	circulation pump
2	oil tank
3	filter
4	pressure gauge
5	drain filter
6	distributor
7	supply pipe
8	recovery pipe
9	control board

개 요

The oil circulation system repeatedly circulates lubricating oil that has been filtered and cooled to high-temperature lubricating points that need lubrication and cooling.
The system is comprised of a tank, pump, filter, heating and cooling device, oil pressure and temperature control device, electricity control device, valves and fittings. The level of automation is set according to equipment status and condition.

적 용

gearboxes, bearings, generators, large air blowers, internal combustion engines, and precision machine tools, etc.

펌프 사용유 참고표

Reference table for pump oil

Oil / Model	Industrial Lubricant Oil	Pressure Oil	Gear Oil	Turbin Oil	Engine Oil	Spindle Oil	Silicon Oil	Cooking Oil	Cutting chips (Oil based, Water based)	Light Oil (Gasoline)	Lamp Oil
HTOP-F	○	○	○	○	X	X	X	X	X	X	X
HTOP-A	○	○	○	○	○	X	○	X	X	X	X
HTP-HA	○	○	○	○	○	□	X	X	●	X	X

○ : 성능 범위내 사용가능[Possible to use within capacity range], ● : 압력제한 (0.7MPa 이하에서 사용) [Pressure limit (can be used below 0.7MPa),
□ : 압력제한 (0.5MPa 이하에서 사용) [Pressure limit (can be used below 0.5MPa)] , X : 사용불가 [Cannot be used]

펌프선정

PUMP Selection

유량확인

- CATALOG 또는 도면을 참고하여 선정하십시오.
- 사용액체, 온도, 압력에 의해 토출량이 변화 합니다.
- 안전율을 반영하여 선정하여 주십시오.

압력확인

- CATALOG 또는 도면을 참고하여 선정하십시오.
- PUMP의 최대 압력 및 MOTOR의 출력을 초과하지 않도록 선정하십시오.

RELIEF VALVE 압력설정

- RELIEF VALVE 압력 설정은 SETTING 압력범위 안에서 조정이 가능합니다.
- VB RELIEF VALVE (내부드레인형) 압력 설정 시 펌프의 운전 중에 조정 할 경우 토출측을 완전히 막은 상태에서 30초 이상 운전하지 마십시오.
- 조절밸브 사용방법은 별도로 기재되어 있고, VB(내부드레인)과 VD(외부드레인)을 사용 환경에 맞게 선정하십시오.

사용유 확인

- ROTOR PUMP는 폭 넓은 용도로 사용되지만 오일용임을 인식 하십시오.
- CATALOG 상 모든 제품은 ISO VG 46 40℃을 기준으로 설계 및 성능이 표시 되었습니다.

온도 확인

- 사용 가능한 주위 온도는 -20℃ ~ 40℃입니다.
- 모터 주위온도는 -10℃ ~ 40℃입니다.
- 사용 액체의 온도 범위는 -5℃~80℃입니다.
- 펌프 온도와 사용하는 오일의 온도차이는 40℃이내야 합니다.

사용 점도범위

- 점도범위는 10~500 mm^2/s입니다.
- 점도가 낮으면 토출량이 적어지고, 점도가 높으면 소요동력이 증가합니다.

모터확인

- 일부기종(HTOP-F)를 제외한 모든 제품은 회전방향과 흡입 · 토출방향이 고정되어 있습니다.
- 회전방향이 반대로 바뀌면 흡입 · 토출의 방향도 바뀌고 오일이 외부로 분출합니다.
- CATALOG를 확인하여 여유있는 동력을 선정하십시오.
- 동력은 압력 · 유량 · 전도에 따라 변화 합니다. 점도가 높을 경우 큰동력이 필요합니다.

Verify oil quantity

- Refer to catalogue or blue prints to make your choice.
- Discharge quantity changes according to liquid, temperature and pressure used.
- Make your selection reflecting safety rate.

Verify pressure

- Refer to catalog and blue print to make your selection.
- Make your selection so that the maximum pressure of the pump does not exceed motor output.

Relief valve pressure configuration

- Configuration of relief valve pressure can be adjusted within the scope of setting pressure range
- When setting for VB relief valve (internal drain type) pressure, if making adjustment during pump operation, do not operate more than 30 seconds while discharge side is completely blocked.
- An instruction on how to use control valve is separately listed. Adjust VB(internal drain) and VD(external drain) appropriately according to user environment.

Check oil used

- Rotor pump is used for wide range of purpose but do not forget that it is for oil.
- Design and performance of all products in the catalogue were described according to ISO VG 46 40℃ standard.

Checking temperature

- Surrounding temperature that can be used is -20℃ to 40℃.
- The surrounding temperature of motor is -10℃ to 40℃.
- The temperature range of used liquid is -5℃ to 80℃.
- The difference between pump temperature and used oil should be within 40℃.

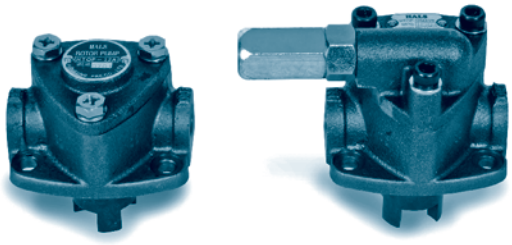
Range of viscosity used

- Range of viscosity used is 10-500 mm^2/s.
- If viscosity is low, discharge decrease. If viscosity is high, consumed motor power increases.

Check the motor

- All products except for some product line (HTOP-F) have fixed spinning and suction/discharge direction.
- If the spinning direction reverses, suction/discharge direction also changes and oil is leaked to outside.
- Check the catalogue to secure sufficient motor power.
- Motor power changes according to pressure, oil quality and conduction. If viscosity is high, higher motor power is required.

HTOP A(VB) series



Model

HTOP - □ □

- A: Without Relief V/V
- AVB: Attach Relief V/V
- Pump Type

Structure

- 내접기어 용적식 펌프로 외접기어펌프에 비하여 소형이며, MOTOR 구동부와 연결하여 펌프 구동을 시킬 수 있음
- An internal gear bulk pump. It is small compared to external gear pumps, and can be connected to motor drive parts to operate the pump.

Feature

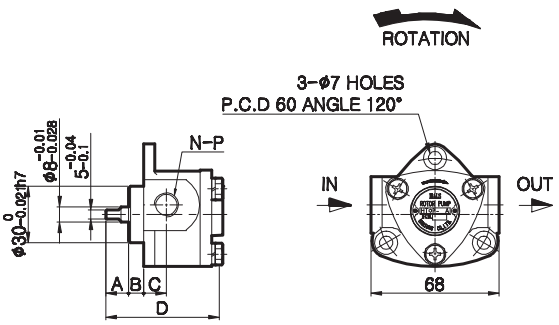
1. 용적식 펌프로 회전수에 따른 정확한 유체이송가능
2. 회전수에 따라 다양한 유량범위를 갖고 있음
3. RELIEF VALVE 부착이 가능하여 압력 조정이 용이

1. A volume pump that allows precise fluid delivery according to the rev counts.
2. It has a wide flow range according to the rev counts.
3. A relief valve can be added to allow easy pressure setting adjustments.

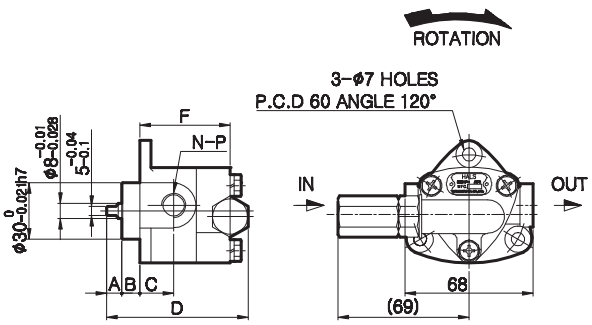
Pump Spec.

Specification / Type	THEORY DISCHARGE AMOUNT(cm³/rev)	DISCHARGE AMOUNT(ℓ/min)		MAX. PRESSURE (MPa)	MAX. R.P.M	PACKING SIZE (cm)	WEIGHT(kg)	
		1500rpm	1800rpm				PUMP	PACKING
HTOP-11A	1.5	2.2	2.7	0.5	2000	10(W)x8(L)x9(D)	0.6	0.7
HTOP-12A	2.5	3.7	4.5	0.5	1800			
HTOP-13A	4.5	6.7	8.1	0.5	1800		0.8	0.9
HTOP-11AVB	1.5	2.2	2.7	0.5	2000			
HTOP-12AVB	2.5	3.7	4.5	0.5	1800		0.9	1
HTOP-13AVB	4.5	6.7	8.1	0.5	1800		1	1.1

External Figure



TYPE	A	B	C	D	N-P
HTOP-11A	12	8	12	57	2-PT 1/8″
HTOP-12A	12	8	12	62	2-PT 1/4″
HTOP-13A	14	5	14	76.5	2-PT 3/8″



TYPE	A	B	C	D	F	N-P
HTOP-11AVB	12	8	12	72	43	2-PT 1/8″
HTOP-12AVB	12	8	12	77	48	2-PT 1/4″
HTOP-13AVB	14	5	14	91.5	63.5	2-PT 3/8″



Model

HTOP - □ F

Pump Type

Structure

- MOTOR의 회전방향에 상관없이 동일한 흡입 · 토출이 이루어짐
- 내부의 편심 고정자에 의해 ROTOR를 180°회전
- It is capable of equal suction and discharge regardless of motor rev direction.
- The internal eccentric stator rotates the rotor by 180°

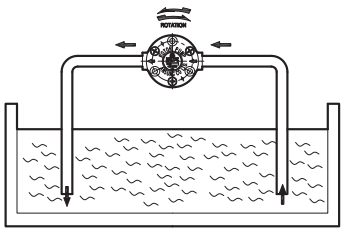
Feature

1. 구조가 간단하고, 설치 보수가 용이함
2. 소형으로 설치공간의 제약이 있는 경우 사용
3. 공작기계,산업기계뿐만 아니라 농업용으로도 활용

1. The simple structure means easy installation and repairs.
2. The compact design reduces installation space limitations.
3. It is used not only in machine tools and industrial machines, but also in agriculture.

Pump Spec.

Specification / Type	THEORY DISCHARGE AMOUNT(cm³/rev)	DISCHARGE AMOUNT(ℓ/min)		MAX. PRESSURE (MPa)	MAX. R.P.M	PACKING SIZE (cm)	WEIGHT(kg)	
		1500rpm	1800rpm				PUMP	PACKING
HTOP-2F	1.80	2.70	3.24	0.5	2000	10(W)x8(L)x9(D)	1	1.1
HTOP-3F	2.50	3.75	4.50	0.5	2000		1.1	1.2



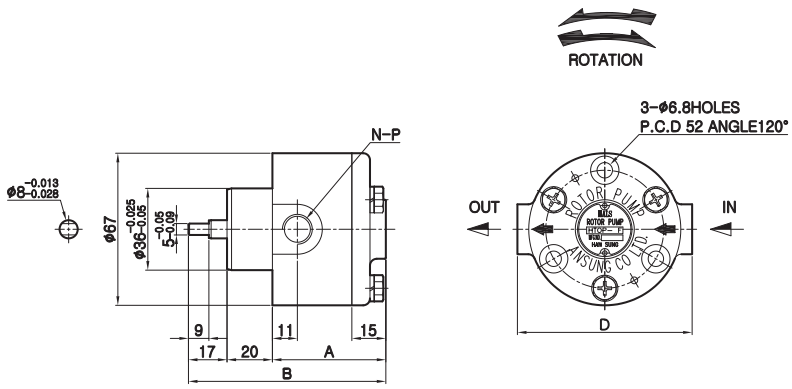
좌, 우 어느 쪽으로 회전시켜도 OIL의 흐름은 항상 한 방향으로 흐름

You can spin left or right, the direction of oil flow is fixed in one way.

GEROTOR의 편심회전을 특수한 링을 사용하여 회전방향으로 향하게 하여 180도 회전을 시킴으로써, 회전방향에 관계없이 OIL의 흐름 방향을 일정하게 하도록 설계

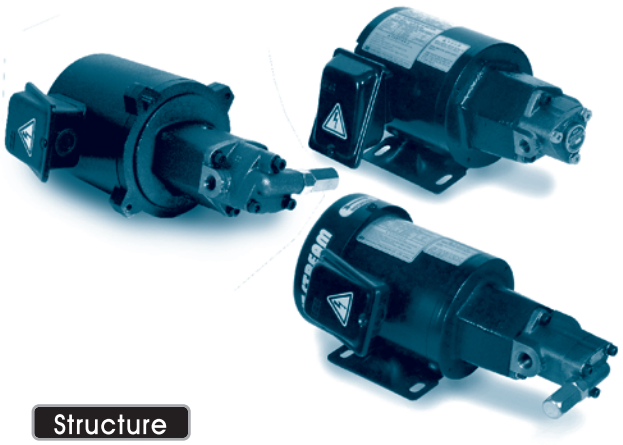
By having the one-sided spinning of GEROTOR spin in 180 degree in the spinning direction using a special ring, it was designed to fixed the direction of oil flow in one direction regardless of the spinning direction.

External Figure



TYPE	A	B	N-P	D
HTOP-2F	32	84	2-PT 1/4″	77
HTOP-3F	35	87	2-PT 1/4″	77

HMTP 3M-MA(VB)/3M-HA(VB/VD) series



Model

HMTP - 3M - □ - □□ - □□ - □

- Voltage
- Blank: Horizontal Type
- V: Vertical Type
- Blank: Without Fan
- F: Attach Fan
- MA: Without Relief V/V
- MAVB: Attach Relief V/V
- HAVB: 내부드레인
- HAVD: 외부드레인(배관)
- Pump Type
- Motor Output

Structure

- HTOP-A(VB)제품에 MOTOR를 연결한 펌프
- 전기공급만으로 사용이 가능한 제품으로 HORIZONTAL형과 VERTICAL형으로 구분

- A pump produced by connecting a motor to the HTOP-A(VB) product
- It is useable with only a power supply, and is separated into a horizontal type or a vertical type.

Feature

1. 동일한 조립형태로 PUMP교체만으로 다양한 성능을 얻을 수 있음
2. 소형으로 설치공간의 제약이 있는 경우 사용
3. 기본형태인 HORIZONTAL 뿐만 아니라, 설치 공간이 협소할 경우 VERTICAL 사용도 가능

1. Identical assembly structure means various performances can be achieved simply by changing the pump.
2. The compact size is useful for use in limited installation spaces.
3. The standard form is the horizontal, but it can also be used in a vertical form if the installation space is limited.

Pump Spec.

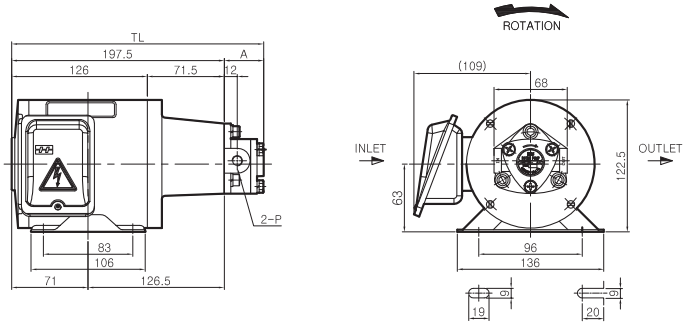
TYPE	50Hz 4P(1500rpm)		60Hz 4P(1800rpm)	
	DISCHARGE AMOUNT(ℓ/min)	PRESSURE (MPa)	DISCHARGE AMOUNT(ℓ/min)	PRESSURE (MPa)
HMTP-11MA(VB)	2.2	0.5	2.7	0.5
HMTP-12MA(VB)	3.7	0.5	4.5	0.5
HMTP-13MA(VB)	6.7	0.5	8.1	0.5
HMTP-3M-212HA(VB/VD)	18	0.5	21.6	0.5

Motor Spec.

OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	R.P.M	PHASE	POLES	PACKING SIZE (cm)	MOTOR WEIGHT (kg)
75W	50	200	0.56	1390	3	4	34(W)x20(L)x18(D)	8
		380	0.32	1390				
	60	200	0.51	1660				
		220	0.52	1690				
		380	0.28	1690				
100W	50	200	0.65	1430	3	4	34(W)x22(L)x17(D)	
		380	0.4	1430				
	60	200	0.6	1720				
		220	0.6	1730				
		380	0.3	1730				
200W	50	200	1.3	1430	3	4		
		380	0.9	1430				
	60	200	1.1	1690				
		220	1.1	1710				
		380	0.6	1710				

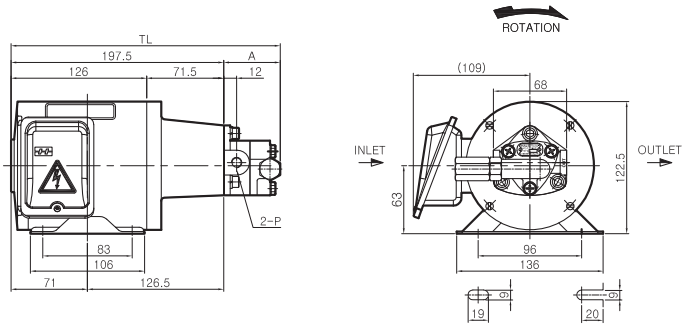
External Figure

MA



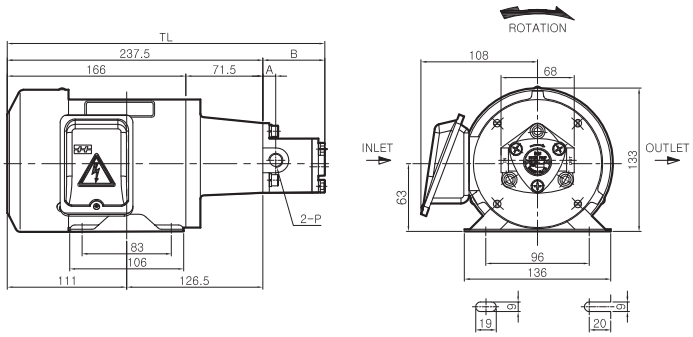
TYPE	A	TL	P
HMTP-11MA	37	234.5	PT1/8″
HMTP-12MA	42	239.5	PT1/4″

MAVB



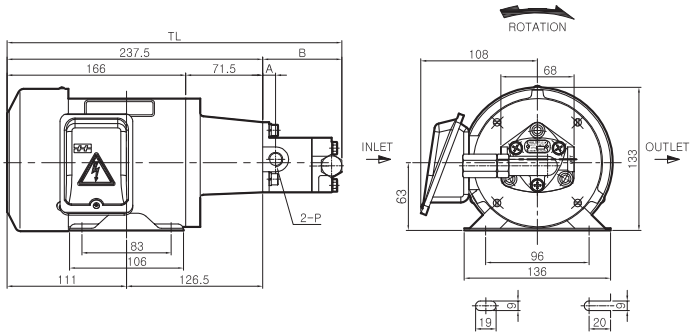
TYPE	A	TL	P
HMTP-11MAVB	52	249.5	PT1/8″
HMTP-12MAVB	57	254.5	PT1/4″

MA-F



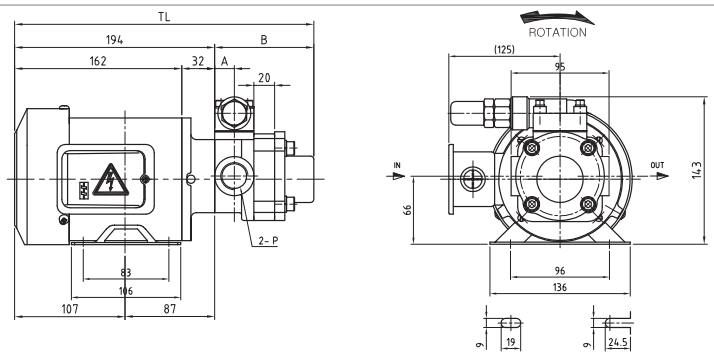
TYPE	A	B	TL	P
HMTP-11MA	12	37	274.5	PT1/8″
HMTP-12MA	12	42	279.5	PT1/4″
HMTP-13MA	14	57	294.5	PT3/8″

MAVB-F



TYPE	A	B	TL	P
HMTP-11MAVB	12	52	289.5	PT1/8″
HMTP-12MAVB	12	57	294.5	PT1/4″
HMTP-13MAVB	14	73	310.5	PT3/8″

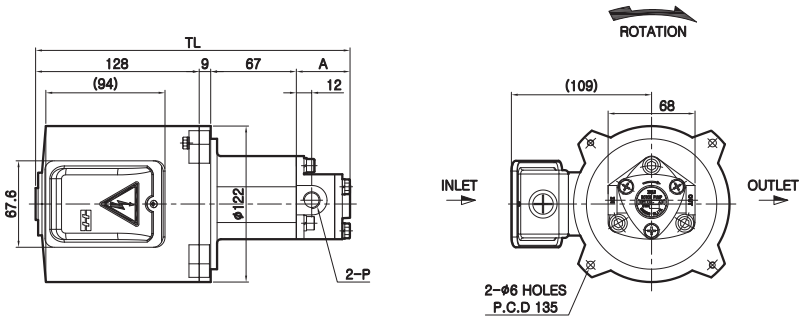
HAVB(VD)



TYPE	A	B	TL	P
HMTP-HAVB(VD)	19	96	290	PT3/4″

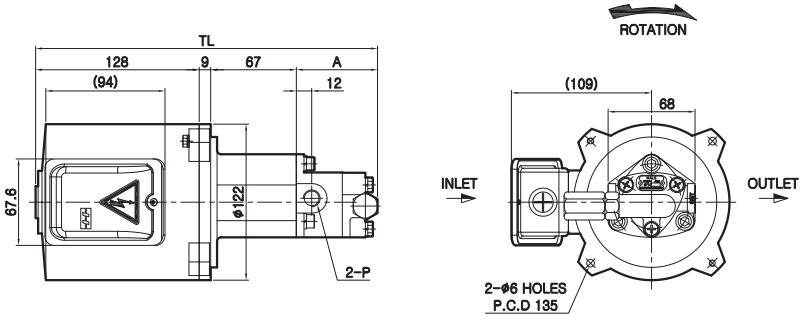
External Figure

MA-V



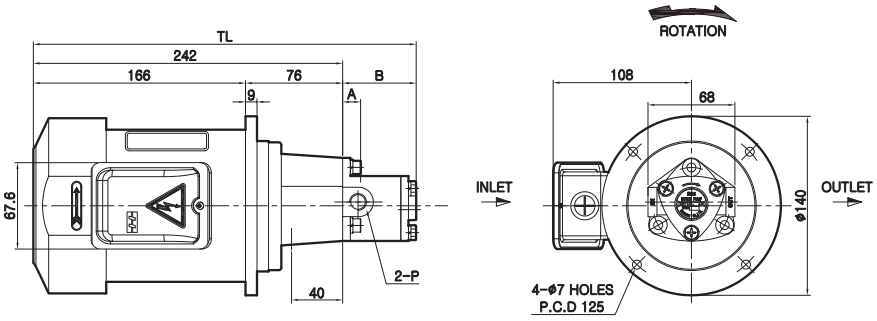
TYPE	A	TL	P
HMTP-11MA	37	234.5	PT1/8″
HMTP-12MA	42	239.5	PT1/4″

MAVB-V



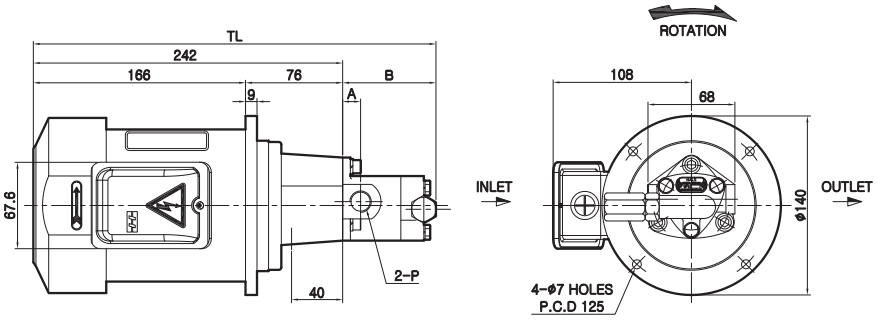
TYPE	A	TL	P
HMTP-11MAVB	52	249.5	PT1/8″
HMTP-12MAVB	57	254.5	PT1/4″

MA-FV

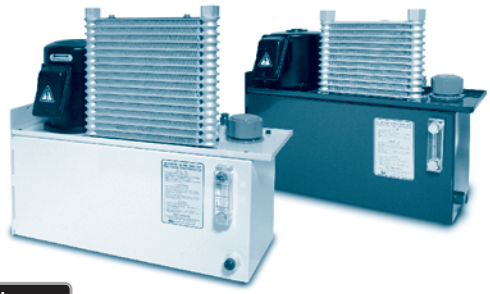


TYPE	A	B	TL	P
HMTP-11MA	12	37	274.5	PT1/8″
HMTP-12MA	12	42	279.5	PT1/4″
HMTP-13MA	14	57	294.5	PT3/8″

MAVB-FV



TYPE	A	B	TL	P
HMTP-11MAVB	12	52	289.5	PT1/8″
HMTP-12MAVB	12	57	294.5	PT1/4″
HMTP-13MAVB	14	73	310.5	PT3/8″



Model

HMTP - 3M- □ - □□ - T □ - □ - □

- Voltage
- S: Small Cooler/ L: Large Cooler
- Tank Capacity
- MA: Without Relief V/V
- MAVB: Attach Relief V/V
- Pump Type
- Motor Output

Structure

- HMTP-3M-□-□ MA(VB)펌프와 FAN COOLER를 조합한 COOLER UNIT
- TANK용량에 따라 7,8,14,24 LITER로 구분

- A cooler unit produced by connecting a fan cooler to the HMTP-3M-□-□ MA(VB) pump.
- Separated into 7,8,14,24 liter according to tank capacity.

Feature

1. 소형의 COOLER UNIT로 VERTICAL형 펌프 사용
2. 소형으로 설치공간의 제약이 있는 경우 사용
3. 오일 냉각장치로 설치가 간단하여 소형 공작기계 뿐만 아니라 산업기계 활용이 가능
4. HMTP-3M-MA(VB) 사용하므로 성능에 맞는 PUMP를 선정

1. A compact cooler unit, and uses a vertical type pump.
2. Its compact design allows it to be used in limited installation spaces.
3. An oil cooler unit with a simple method of installation, and can be used not only for small machine tools, but also for industrial machines.
4. Choose a pump appropriate for performance by using HMTP-3M-MA(VB).

Pump Spec.

TYPE	50Hz 4P(1500rpm)		60Hz 4P(1800rpm)	
	DISCHARGE AMOUNT(ℓ/min)	PRESSURE (MPa)	DISCHARGE AMOUNT(ℓ/min)	PRESSURE (MPa)
HMTP-11MA(VB)	2.2	0.5	2.7	0.5
HMTP-12MA(VB)	3.7	0.5	4.5	0.5
HMTP-13MA(VB)	6.7	0.5	8.1	0.5

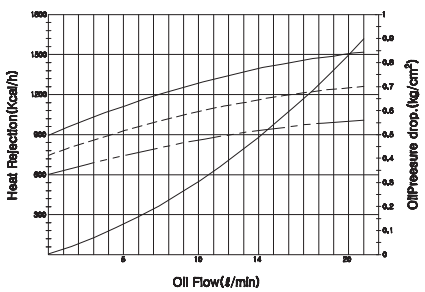
OUTPUT(W)	FREQUENCY(Hz)	VOLTAGE(V)	CURRENT(A)	R.P.M	PHASE	POLES
75W	50	200	0.56	1390	3	4
		380	0.32	1390		
	60	200	0.51	1660		
		220	0.52	1690		
		380	0.28	1690		
100W	50	200	0.65	1430	3	4
		380	0.4	1430		
	60	200	0.6	1720		
		220	0.6	1730		
		380	0.3	1730		
200W	50	200	1.3	1430	3	4
		380	0.9	1430		
	60	200	1.1	1690		
		220	1.1	1710		
		380	0.6	1710		

Fan Spec.

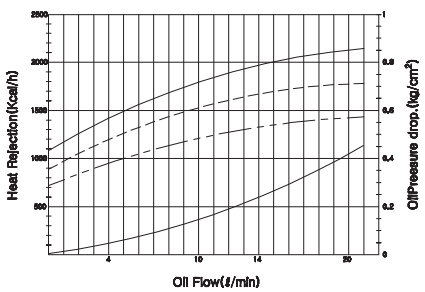
Voltage	FREQUENCY	OUTPUT	CURRENT
200	50	35	0.24
	60	33	0.2

Performance Curve

R-1



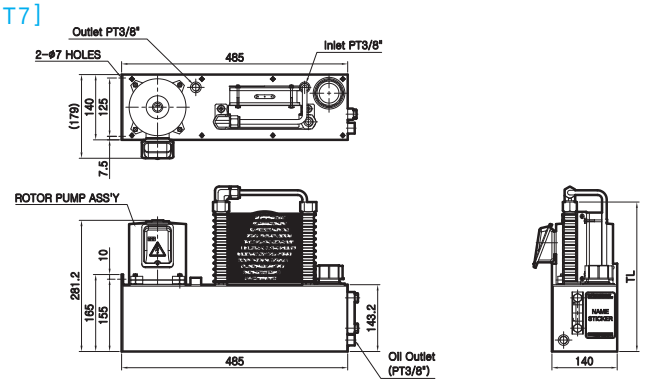
R-2



※ 냉각용량에 따라 두가지 COOLER (R-1, R-2)선택이 가능 [Cooler can be selected according to two kinds of cooling capacity (R1, R2)]

External Figure

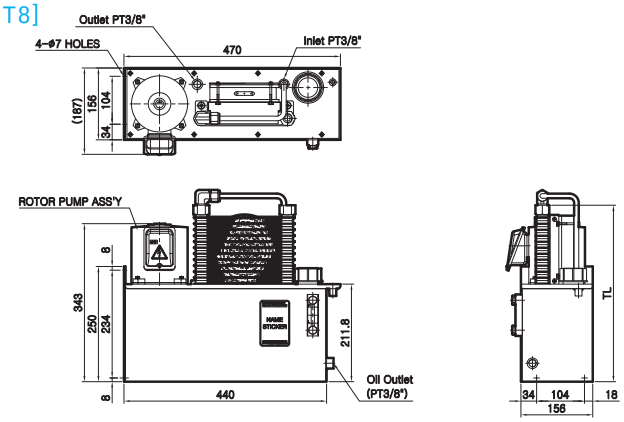
[T7]



PACKING SIZE(cm)	WEIGHT(kg)	
	TANK	PACKING
53(W) x 21(L) x 40(D)	19	20

COOLER	TL
R1	320
R2	380.4

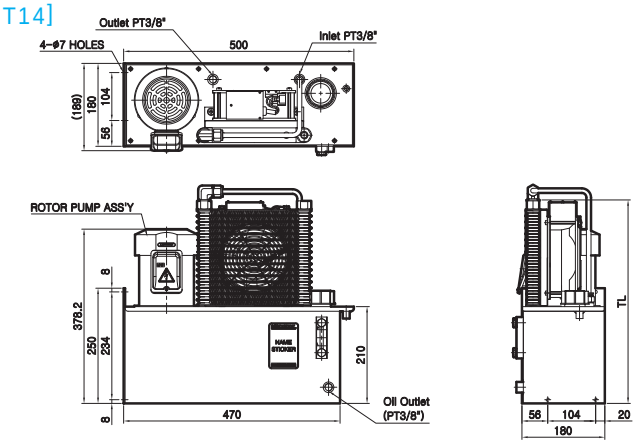
[T8]



PACKING SIZE(cm)	WEIGHT(kg)	
	TANK	PACKING
51(W) x 23(L) x 47(D)	20	21

COOLER	TL
R1	383
R2	443.4

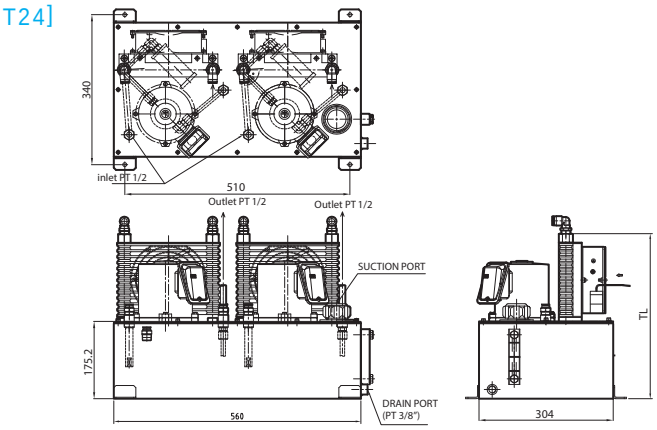
[T14]



PACKING SIZE(cm)	WEIGHT(kg)	
	TANK	PACKING
51(W) x 23(L) x 47(D)	22	23

COOLER	TL
R1	381.2
R2	441.6

[T24]



PACKING SIZE(cm)	WEIGHT(kg)	
	TANK	PACKING
51(W) x 25(L) x 47(D)	42	43

COOLER	TL
R1	374
R2	434.5

HTP (HA/HB)(VB/VD) series



Model

HTP - □□

- HA: Without Relief V/V
- HAVB: Attach VB Relief V/V
- HAVD: Attach VD Relief V/V
- HBVB: Attach VB Relief V/V+Bracket

Pump Type

Structure

- 내접기어식 용적형 펌프 구조로 MOTOR 동력원연결을 통하여 펌프 사용이 가능. 연결부는 동일하나, 내접기어 형태에 따라 다양한 성능 범위를 갖고 있음
- An internal gear bulk type pump structure that can operate the pump with a motor power supply. The connection section is identical, but it has a wife range of performances according to the shape of the internal gear.

Feature

1. 이중 OIL SEAL 사용으로 누유를 최소화
2. 수용성 절삭유 사용이 가능함
3. 불소 OIL SEAL을 사용하여 고온에서 사용이 가능
4. RELIEF VALVE 부착이 가능하여 압력 조정이 용이
5. VD는 외부드레인 RELIEF VALVE임

1. It uses a double oil seal to minimize oil leaks.
2. Water-soluble cutting fluids can be used.
3. It uses a fluoride oil seal, and can be used at high temperature.
4. A relief valve can be attached for easy pressure control.
5. VD is an external drain relief valve.

Pump Spec.

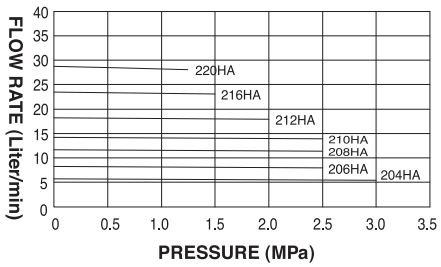
TYPE	50Hz 4P(1500rpm)				60Hz 4P(1800rpm)			
	DISCHARGE AMOUNT (ℓ/min)	MAX. DISCHARGE PRESSURE (MPa)			DISCHARGE AMOUNT (ℓ/min)	MAX. DISCHARGE PRESSURE (MPa)		
		400W	750W	1500W		400W	750W	1500W
HTP-204(HA/HB)(VB/VD)	6.3	2.15	3.0	3.0	7.5	1.6	3.0	3.0
HTP-206(HA/HB)(VB/VD)	9.0	1.15	2.5	2.5	10.8	0.7	2.35	2.5
HTP-208(HA/HB)(VB/VD)	12.6	0.7	2.3	2.5	15.1	0.4	1.75	2.5
HTP-210(HA/HB)(VB/VD)	15.3	0.45	1.55	2.5	18.3	0.25	1.15	2.5
HTP-212(HA/HB)(VB/VD)	18.0	0.35	1.35	2.0	21.6	-	0.85	2.0
HTP-216(HA/HB)(VB/VD)	24.3	0.2	0.85	2.0	29.1	-	0.55	1.95
HTP-220(HA/HB)(VB/VD)	29.7	-	0.55	1.55	35.6	-	0.35	1.4

Performance Curve

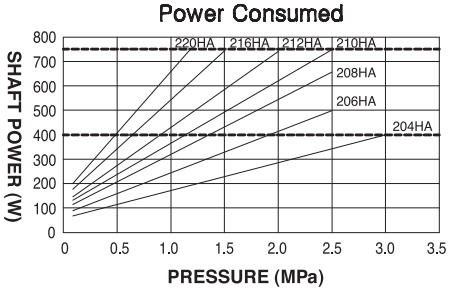
Oil for testing : ISO-VG46, Temperature 40℃

1500rpm

Feature of Flux

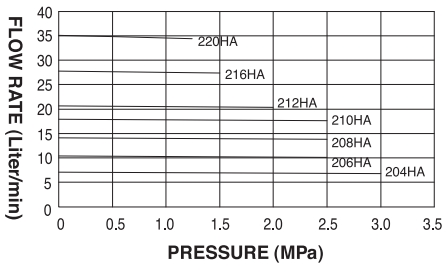


Power Consumed

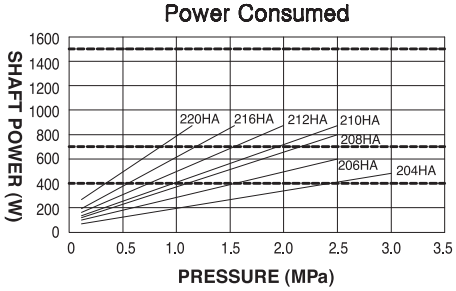


1800rpm

Feature of Flux

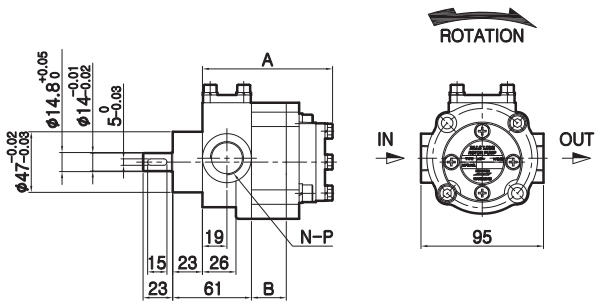


Power Consumed

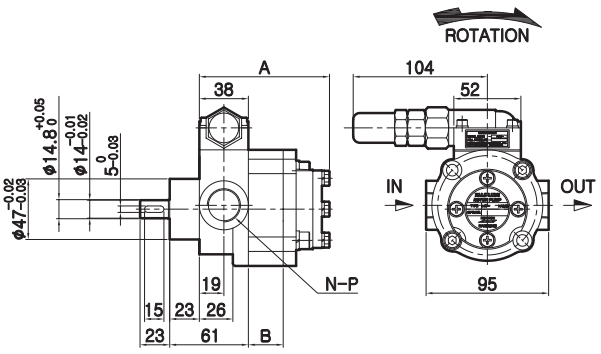


External Figure

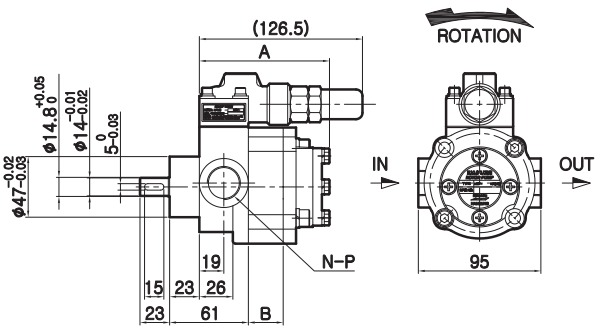
HA



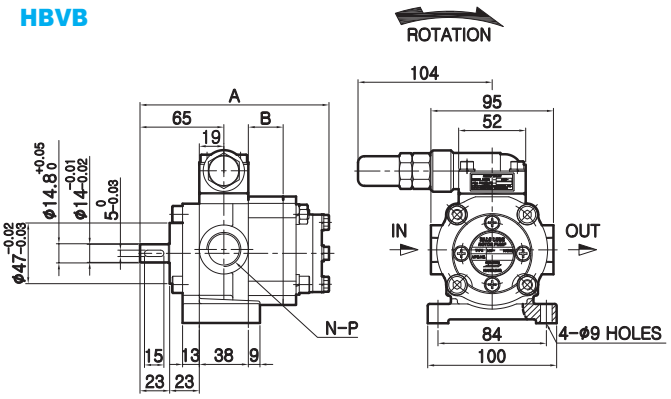
HAVB



HAVD



HBVB



Dimension

TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HTP-204HA(VB/VD)	83	7	2-1/2″	**HTP-212HA(VB/VD)**	96	20	2-3/4″
HTP-206HA(VB/VD)	86	10	2-1/2″	**HTP-216HA(VB/VD)**	103	27	2-3/4″
HTP-208HA(VB/VD)	90	14	2-1/2″	**HTP-220HA(VB/VD)**	109	33	2-3/4″
HTP-210HA(VB/VD)	93	17	2-3/4″	**-**	-	-	-

Dimension

TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HTP-204HBVB	126.5	7	2-1/2″	**HTP-212HBVB**	139.5	20	2-3/4″
HTP-206HBVB	129.5	10	2-1/2″	**HTP-216HBVB**	146.5	27	2-3/4″
HTP-208HBVB	133.5	14	2-1/2″	**HTP-220HBVB**	152.5	33	2-3/4″
HTP-210HBVB	136.5	17	2-3/4″	**-**	-	-	-

HMTP 3M-HA(VB/VD) series



Model

HMTP - 3M- □ - □□ - □ - □

- Voltage
- Blank: General Motor
- E: High Efficienty Motor
- P: Premium Motor
- HA: Without Relief V/V
- HAVB: Attach VB Relief V/V
- HAVD: Attach VD Relief V/V
- Pump Type
- Motor Output

Feature

- HTP-HAVB펌프에 MOTOR를 조립한 일체형 펌프
- 별도의 동력원이 필요없음
- MOTOR출력에 따라 다양한 성능범위를 갖음
- A single-unit pump produced by connecting a motor to the HTP-HAVB pump.
- It does not require a separate power source.
- It has a wide range of performances according to motor output.

Structure

1. HMTP-3M-HA(VB/VD)
   - Relief Valve 형태에 따라 다양한 적용 가능
   - Coupling 연결형식으로 유지 · 보수가 간단
   - F Type은 Suction Filter 내장형으로 별도의 흡입부의 Filter 부착이 필요없음
2. HMTP-3M-HA(VB/VD)-E/P
   - HMTP-3M-HA(VB/VD) Type에 고효율 모터(프리미엄모터)를 장착
   - 효율의 극대화로 우수한 절전 및 투자비 회수가 가능한 높은 경제성
   - 낮은 온도상승, 고 절연재료 사용으로 권선수명연장
   - 고효율 에너지 기자재 마크 획득 (IE3)

1. HMTP-3M-HA(VB/VD)
   - Various applications are possible according to relief valve shape.
   - A coupling connection type, and is easy to maintain.
   - The F Type has a built in suction filter, and therefore does not require additional filter attachments.
2. HMTP-3M-HA(VB/VD)-E/P
   - Install high efficiency motor to HMTP-3M-HA(VB/VD) Type.
   - By maximizing efficiency, high economic efficiency is obtained in terms of excellent electricity savings and return on investment.
   - Low temperature increase and use of highly conductive materials increase life-time period.
   - Acquired high efficiency energy materials mark. (IE3)

Pump Spec.

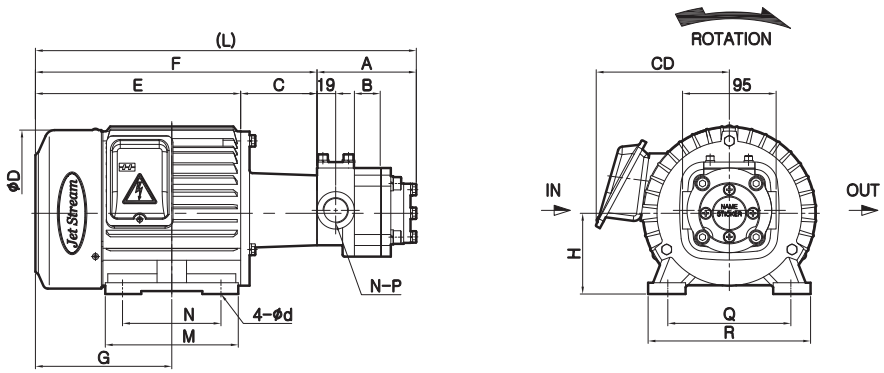
TYPE	50Hz 4P(1500rpm)				60Hz 4P(1800rpm)			
	DISCHARGE AMOUNT (ℓ/min)	MAX. DISCHARGE PRESSURE (MPa)			DISCHARGE AMOUNT (ℓ/min)	MAX. DISCHARGE PRESSURE (MPa)		
		400W	750W	1500W		400W	750W	1500W
HMTP-204HA(VB/VD)	6.3	2.15	3.0	3.0	7.5	1.6	3.0	3.0
HMTP-206HA(VB/VD)	9.0	1.05	2.5	2.5	10.8	0.7	2.35	2.5
HMTP-208HA(VB/VD)	12.6	0.7	2.3	2.5	15.1	0.4	1.75	2.5
HMTP-210HA(VB/VD)	15.3	0.45	1.55	2.5	18.3	0.25	1.15	2.5
HMTP-212HA(VB/VD)	18.0	0.35	1.35	2.0	21.6	-	0.85	2.0
HMTP-216HA(VB/VD)	24.3	0.2	0.85	2.0	29.1	-	0.55	1.95
HMTP-220HA(VB/VD)	29.7	-	0.55	1.55	35.6	-	0.35	1.4

Motor Spec.

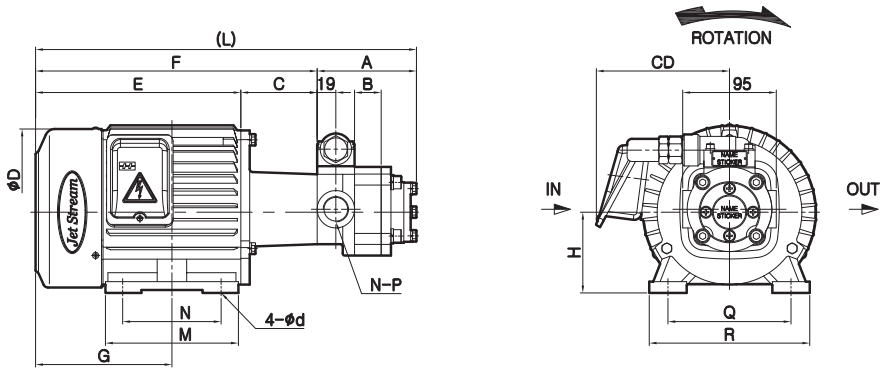
OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	R.P.M	PHASE	POLES	PACKING SIZE (cm)	MOTOR WEIGHT (kg)
400W	50	200	2.4	1420	3	4	42(W) x 22(L) x 21(D)	8
		380	1.3	1420				
	60	200	2.2	1700				
		220	2.2	1720				
		380	1.2	1720				
750W	50	200	3.5	1430	3	4	45(W) x 25(L) x 22(D)	13
		380	1.9	1440				
	60	200	3.4	1710				
		220	3.4	1730				
		380	1.8	1730				
1500W	50	200	6.9	1430	3	4	46(W) x 27(L) x 24(D)	18
		380	3.4	1430				
	60	200	6.6	1720				
		220	6.6	1730				
		380	3.2	1730				

External Figure

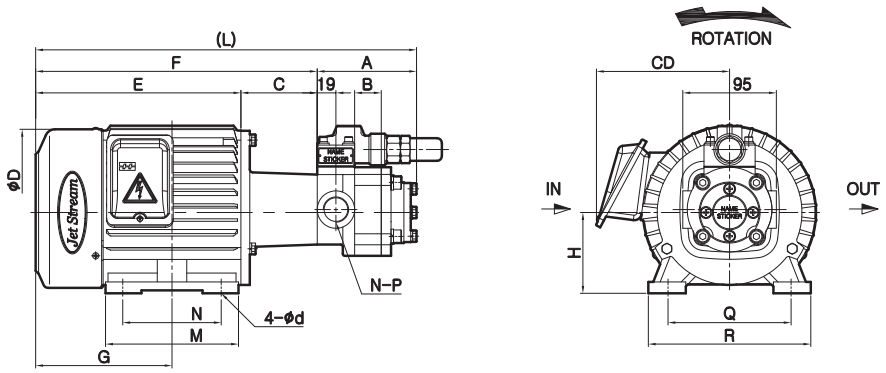
HA



HAVB



HAVD



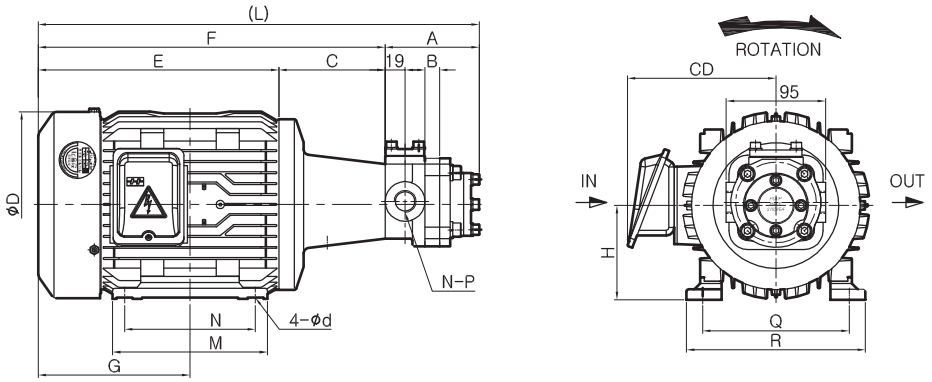
Dimension

	OUTPUT	C	ø D	E	F	G	L	ø d	M	N	Q	R	CD	H
MOTOR	400W	75.5	146	170	245.5	113	F+A	7	112	90	112	142	125	71
	750W	77.5	169	209	286	139	F+A	10	132	100	125	163	135	80
	1500W	85.5	196	234	319.5	153	F+A	10	156	125	140	172	140	90

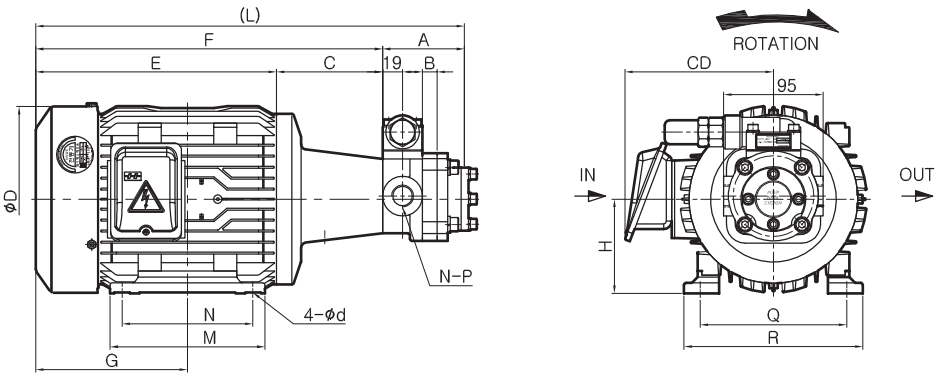
TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HMTP-204HA(VB/VD)	83	7	2-1/2″	HMTP-212HA(VB/VD)	96	20	2-3/4″
HMTP-206HA(VB/VD)	86	10	2-1/2″	HMTP-216HA(VB/VD)	103	27	2-3/4″
HMTP-208HA(VB/VD)	90	14	2-1/2″	HMTP-220HA(VB/VD)	109	33	2-3/4″
HMTP-210HA(VB/VD)	93	17	2-3/4″	-	-	-	-

External Figure

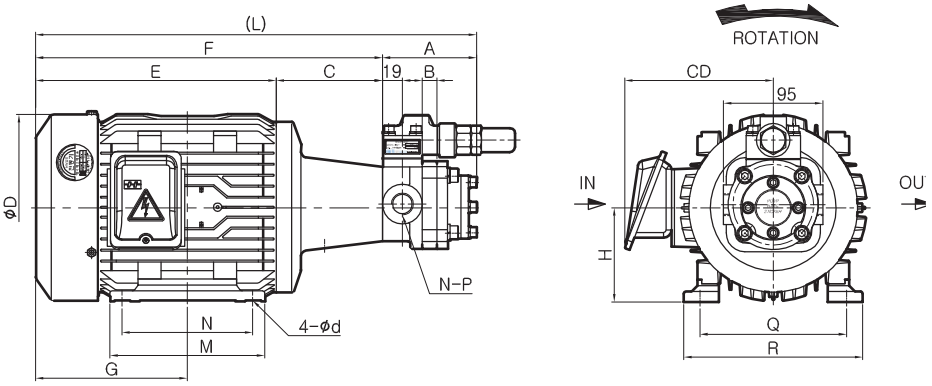
HA-E/P



HAVB-E/P



HAVD-E/P



Dimension

	OUTPUT	C	Ø D	E	F	G	L	Ø d	M	N	Q	R	CD	H
MOTOR (Efficiency)	750W	86	169	206.5	292.5	136.5	F+A	10	132	100	125	163	135	80
	1500W	90.5	196	236	326.5	155	F+A	10	156	125	140	172	140	90
MOTOR (Premium)	750W	85.5	158	230.5	316	154	F+A	10	120	100	125	150	132	52
	1500W	101.5	178	230	331.5	145	F+A	10	148	125	140	171	142	62

TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HMTP-204HA(VB/VD)	83	7	2-1/2″	HMTP-212HA(VB/VD)	96	20	2-3/4″
HMTP-206HA(VB/VD)	86	10	2-1/2″	HMTP-216HA(VB/VD)	103	27	2-3/4″
HMTP-208HA(VB/VD)	90	14	2-1/2″	HMTP-220HA(VB/VD)	109	33	2-3/4″
HMTP-210HA(VB/VD)	93	17	2-3/4″	-	-	-	-

HMTP 3M-HAVBF series



Model

HMTP - 3M - □ - □□ F - □ - □

- Voltage
  - Blank: General Motor
  - E: High Efficienty Motor
- HA: Without Relief V/V
- HAVB: Attach VB Relief V/V
- Pump Type
- Motor Output

Structure

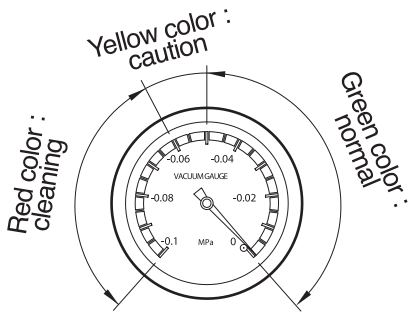
- 기존 HMTP-3M-HAVB Pump부에 흡입 Filter를 부착하는 형태
- 750, 1500W는 고효율 Motor 사용이 가능
- Suction filter is installed on the existing HMTP-3M-HAVB Pump.
- High efficiency motor can be used for 750, 1500W.

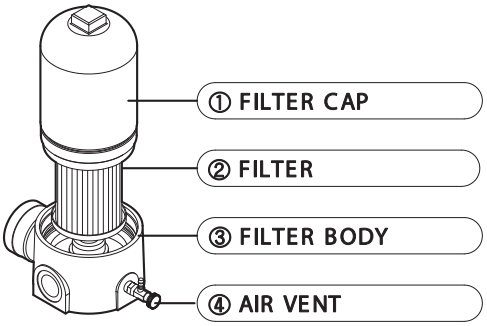
Feature

1. Pump 상단에 설치된 흡입 Filter를 통과한 액체를 흡입하기 때문에 펌프내부에 이물질 유입을 방지
2. Pump에 직접 장착되므로 별도의 배관연결이 불필요
3. Filter의 교환 및 청소가 간단
4. Filter Body에 부착된 진공압력계로 Filter 세척시기를 쉽게 판단이 가능

1. It sucks in liquid that penetrates suction filter installed in the upper part of the pump and therefore impure materials cannot enter inside the pump.
2. It is installed directly to pump and therefore no separate wiring connection is necessary.
3. Replacement and cleaning of filter is simple.
4. Vacuum pressure machine installed on filter body is used to determine when to do filter cleaning.

FILTER CLEANING METHOD





1. 청소주기 확인

진공압력계의 눈금이 적색부분 (-0.06MPa) 이상에 위치하게 되면 FILTER 청소주기 이므로 하기의 청소 방법 순서로 FILTER를 세척 후 사용하여야 한다. 만약, 적색부에 눈금이 위치한 상태에서 지속적으로 펌프 구동을 할 경우 펌프 및 모터 소손의 원인이 되므로 주기적인 점검이 꼭 필요하다.

2. 청소 방법

[1] FILTER 내의 오일 제거

AIR VENT④ 및 펌프의 짧은 공회전을 통하여 FILTER② 내 사용유를 제거한다.

[2] FILTER CAP 분해

FILTER CAP①을 스패너를 이용하여 풀어서 분해한다.

[3] FILTER 분해

FILTER BODY③에 고정된 FILTER②를 분해한다.

[4] FILTER 청소

분해한 FILTER②를 압축공기등을 이용하여 FILTER MESH 망에 붙어있는 이물질을 완벽히 제거한다.

[5] 재조립

분해의 역순으로 재조립한다. 또한, 구동 전에 AIR VENT④가 완벽히 잠겨있는지 확인한다. (만약 열려 있다면 펌프내로 AIR혼입이 발생되어 소음발생 및 정상 성능을 만족시킬 수 없다.)

1. Check cleaning period

If the marker in the vacuum pressure machine goes above the red area (-0.006MPa), it is a filter cleaning period. Filter must be cleaned according to the method below and used. If pump operates continuously with the red marker staying in the same location, it becomes a cause for pump or motor damage and therefore period inspection is necessary.

2. Cleaning method

[1] Removing oil inside the filter

Used oil inside the filter is removed using short spinning of the pump and air vent.

[2] Disassembling filter cap

Use a spanner to disassemble filter cap.

[3] Filter disassembling

Disassemble the filter fixed in the filter body.

[4] Filter cleaning

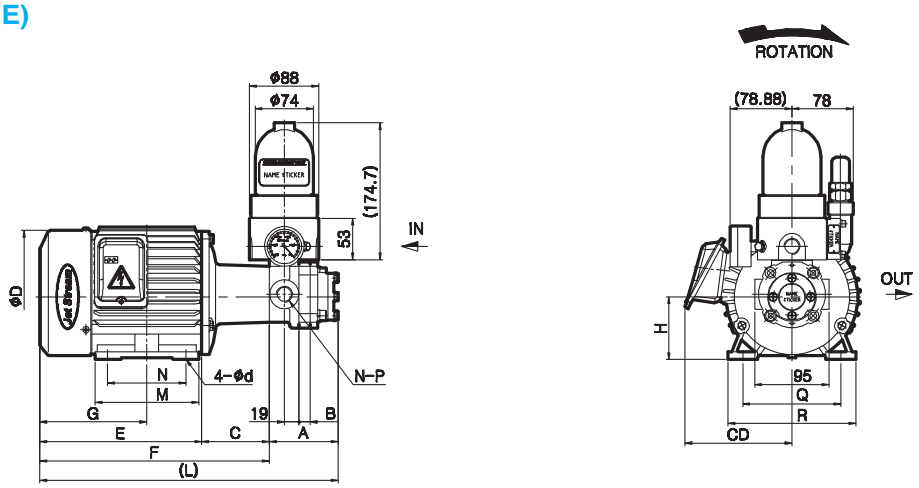
Use pressuring air to completely remove impure substances attached to the filter mesh in the disassembled filer.

[5] Resassembling

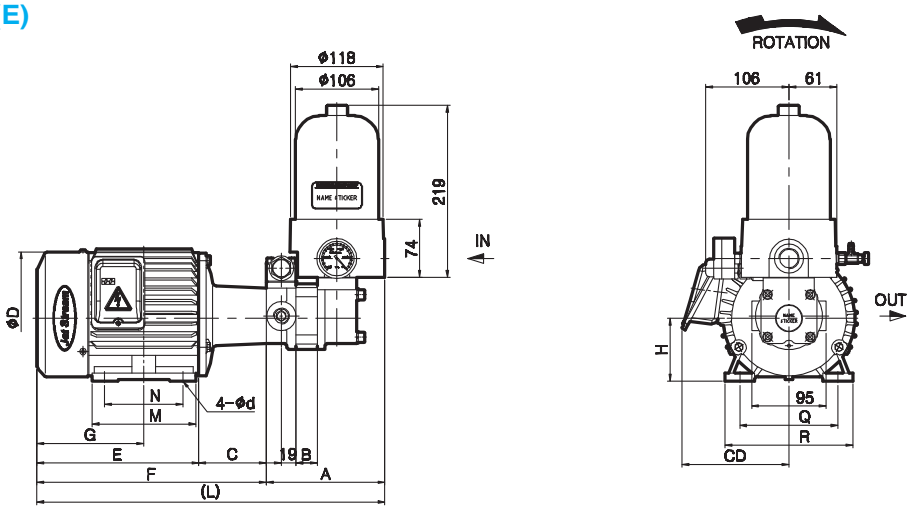
Reassembling occurs in reverse sequence of assembling. In addition, make sure air vent is completely locked before operating. (If it is open, air can come inside the pump and therefore noise creation and normal operation will not done).

External Figure

204~210HAVBF-(E)



212~220HAVBF-(E)



Dimension

HMTP-3M-□ HAVBF

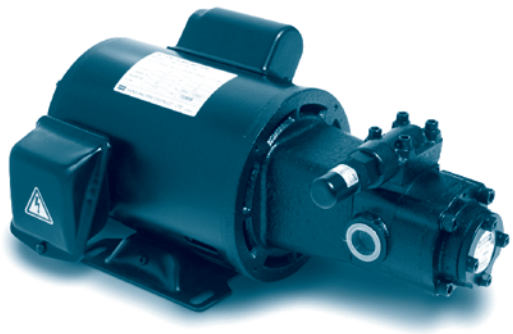
	OUTPUT	C	ø D	E	F	G	L	ø d	M	N	Q	R	CD	H
MOTOR	400W	75.5	146	170	245.5	113	F+A	7	112	90	112	142	125	71
	750W	77.5	169	209	286	139	F+A	10	132	100	125	163	135	80
	1500W	85.5	196	234	319.5	153	F+A	10	156	125	140	172	140	90

HMTP-3M-□ HAVBF-E

	OUTPUT	C	ø D	E	F	G	L	ø d	M	N	Q	R	CD	H
MOTOR	750W	86	169	206.5	292.5	136.5	F+A	10	132	100	125	163	135	80
	1500W	90.5	196	236	326.5	155	F+A	10	156	125	140	172	140	90

TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HMTP-204HAVB	83	7	2-1/2″	HMTP-212HAVB	144	20	2-3/4″
HMTP-206HAVB	86	10	2-1/2″	HMTP-216HAVB	151	27	2-3/4″
HMTP-208HAVB	90	14	2-1/2″	HMTP-220HAVB	145	33	2-3/4″
HMTP-210HAVB	93	17	2-3/4″	-	-	-	-

HMTP 1M-HA(VB/VD) series



Model

HMTP -1M - □ - □□ - □

- Voltage
- HA: Without Relief V/V
  HAVB: Attach VB Relief V/V
  HAVD: Attach VD Relief V/V
- Pump Type
- Motor Output

Structure

- HTP-HA(VB/VD) 펌프에 MOTOR를 조합한 일체형 펌프
- MOTOR 출력에 따라 400W, 750W 모터 조립이 가능

- Integrated pump that combined motor to HTP-HA(VB/VD).
- Possible to assemble 400W, 750W motors according to motor output.

Feature

1. 단상 100V/220V 모터 일체형 펌프
2. HMTP-3M-HA(VB/VD)와 동일한 펌프 사용
3. 소 · 중 유량형으로 사용

1. 100V/220V motor one-body pump.
2. Use the pump same as HMTP-3M-HA(VB/VD).
3. Use small to medium oil quantity type.

Pump Spec.

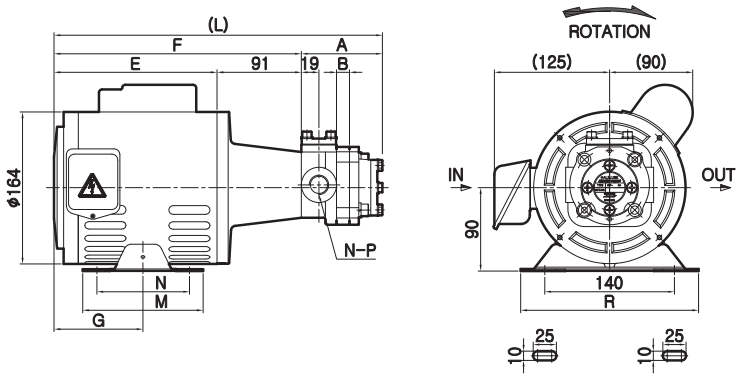
TYPE	50Hz 4P(1500rpm)			60Hz 4P(1800rpm)		
	DISCHARGE AMOUNT(ℓ/min)	Max. Discharge Pressure (MPa)		DISCHARGE AMOUNT(ℓ/min)	Max. Discharge Pressure (MPa)	
		400W	750W		400W	750W
HTP-204HAVB	6.3	2.15	3.0	7.5	1.6	3.0
HTP-206HAVB	9.0	1.05	2.5	10.8	0.7	2.35
HTP-208HAVB	12.6	0.7	2.3	15.1	0.4	1.75
HTP-210HAVB	15.3	0.45	1.55	18.3	0.25	1.15
HTP-212HAVB	18.0	0.35	1.35	21.6	-	0.85
HTP-216HAVB	24.3	0.2	0.85	29.1	-	0.55
HTP-220HAVB	29.7	-	0.55	35.6	-	0.35

Motor Spec.

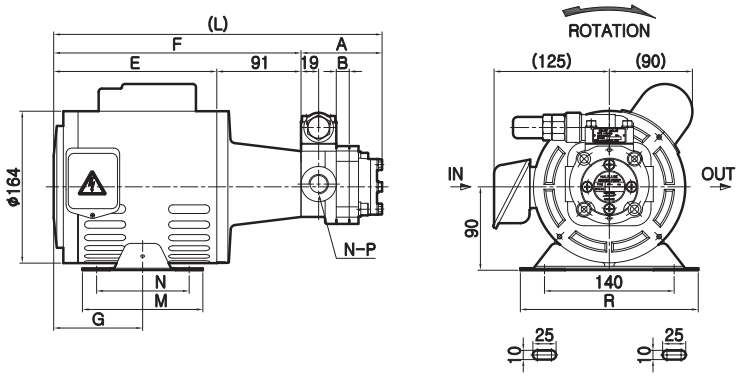
OUTPUT (W)	FREQUENCY (Hz)	VOLTAGE (V)	CURRENT (A)	R.P.M	PHASE	POLES	PACKING SIZE (cm)	MOTOR WEIGHT (kg)
400W	50	100	8.4	1420	1	4	45(W) x 25(L) x 22(D)	8
		200	7.6	1710				
	60	100	4.2	1420				
		200	3.8	1710				
750W	50	100	11.2	1450			46(W) x 27(L) x 24(D)	13
		200	9.6	1740				
	60	100	5.7	1450				
		200	4.9	1740				

External Figure

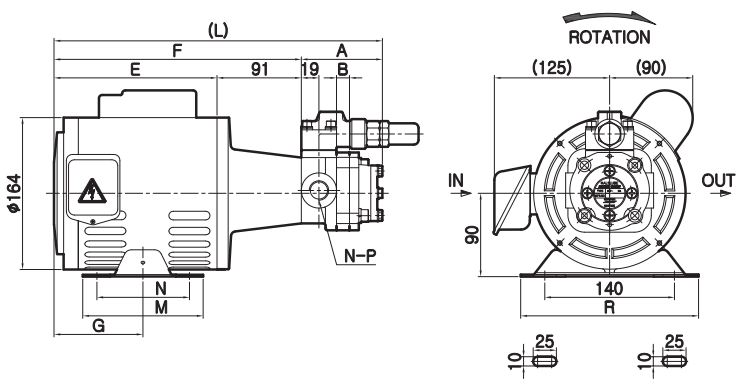
HA



HAVB



HAVD



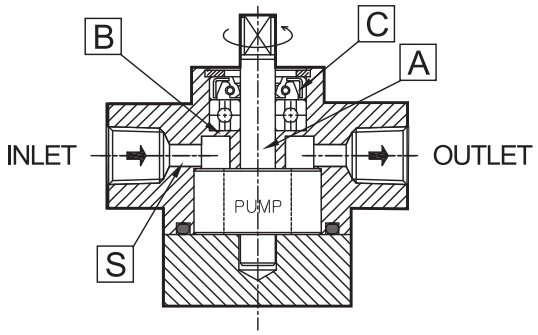
Dimension

	OUTPUT	E	F	G	L	M	N	R
MOTOR	400W	176	267	96	F+A	130	100	192
	750W	216	307	123	F+A	150	125	175

TYPE	A	B	N-P(PT)	TYPE	A	B	N-P(PT)
HMTP-204HAVB	83	7	2-1/2″	HMTP-212HAVB	96	20	2-3/4″
HMTP-206HAVB	86	10	2-1/2″	HMTP-216HAVB	103	27	2-3/4″
HMTP-208HAVB	90	14	2-1/2″	HMTP-220HAVB	109	33	2-3/4″
HMTP-210HAVB	93	17	2-3/4″	-	-	-	-

제품 설치 방법

Method of Product Installation



1 회전방향

화살표 방향으로 회전을 하여야 하며, 만일 역회전을 하였을 경우에는 OIL SEAL이 파괴될 수 있는 위험이 있습니다. 현재의 ROTOR PUMP는 왼쪽 그림과 같이 토출되어지지만 압력에 의하여 OIL이 SHAFT를 통하여(A)안쪽 OIL SEAL 부위로 들어가게 되고(C) DRAIN HOLE을 통하여(B) 흡입부로 돌아오는(S)형식으로 설계 되어 있습니다.
하지만 펌프가 역회전을 하였을 시 흡입과 이송이 바뀌게 되어서 OIL이 DRAIN HOLE을 통하여 OIL SEAL 내에 머무르게 되고 OIL SEAL의 파손의 원인이 되고 OIL을 반대로 밀어내는 현상이 발생합니다.

2 흡입부 배관

흡입관경은 1.5m/sec의 속도를 얻을 수 있도록 설계를 하여야 하고 가능한 짧은 흡입관을 설치할 수 있도록 펌프 위치를 설정하여야 합니다. 왜냐하면 원활한 OIL의 흡입을 위해서는 파이프의 전장 및 곡관부를 최소화 하는 것이 필요하기 때문입니다. 또한 높은 점도의 OIL을 사용할시에는 반드시 구경이 큰 배관을 사용하여야 하며 OIL 점도에 따라서 마찰력 증가를 고려하여야 합니다.

3 흡입 압력

ROTOR PUMP는 가압시 일반적으로 720mmHg 이상의 흡입압력을 나타내고, 이것은 보통의 GEAR PUMP에 비하여 진공도가 높다고 할 수 있습니다. 그러나 안전을 위하여 흡입압력이 -0.5kg/cm² 이상이 되지 않도록 배관을 설계하여야 합니다.

4 흡입시의 OIL FILTER사용

펌프 구동시 FILTER에서 이상음 또는 높은 소음이 발생한다면 반드시 펌프를 멈추고 PUMP와 FILTER 와의 용량을 확인하여야 한다. FILTER 통과유량은 PUMP의 토출량의 두배보다 많은 양을 필요로 합니다.

5 배관

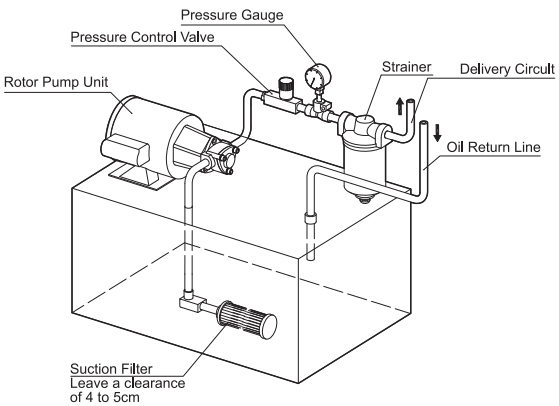
배관의 적당한 지름은 속도가 적어도 3m/sec를 유지할 수 있도록 선택하여야 합니다. 토출배관쪽은 흡입배관과 달리 파이프 지름은 작아야만 하고 배관 마찰에 의한 손실압력은 부하압력으로 더해지며, 펌프에 반대로 적용되지 않습니다. 따라서 손실을 고려하여 유속 범위 내의 배관 지름을 올바르게 선택하여야 하며, 만약 배관 및 밸브의 통과되는 OIL 량이 적다면 유속은 높아지고 혼란한 OIL 흐름이 원인이 됩니다.

6 PUMP SPEED와의 관계

보통, 회전펌프는 속도 증대에 의하여 OIL 량도 증가합니다. 빠른 속도는 경제적으로 펌프를 사용할 수 있지만, 유량의 증가는 소음 발생의 원인이 되므로, 저소음 및 경제적인 구동의 구체적인 설정을 위하여 양과 속도가 조화 되어야 합니다.

7 고점도 오일의 속도

고점도의 경우 빠른 속도에서는 적은 유량이 토출 되고 저속은 반대입니다. 따라서 고점도의 OIL의 경우 소음 등을 고려하여 저속구동이 필요합니다.

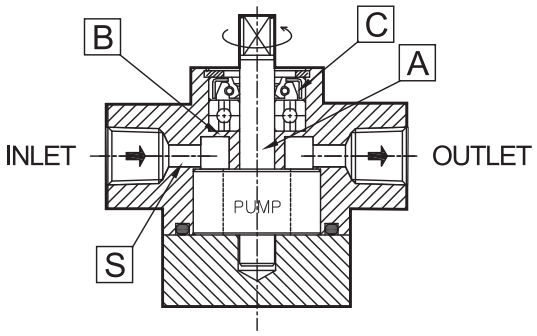


8 PUMP 설치

사용액이 튀지 않고, 통풍이 잘되는 곳에 설치하여야 합니다. 또한 보수점검이 용이한 곳에 설치하여야 하고, PUMP는 사용유의 유면보다 약간 위에 설치하여야 합니다.

9 탱크 크기

탱크안의 알맞은 OIL량은 펌프의 분당 유량의 3-4배 정도입니다. 장소의 절감을 위하여 작은 탱크를 제작한다면 오일의 공급이 불충분하여 펌프 흡입의 불안정의 원인이 될 수도 있고, 사용 탱크로의 빠른 OIL 회수가 보장되더라도 불안정한 탱크의 오일상태로 인하여 유온은 상승하고 오일 오염의 원인이 됩니다. 흡입하는 부의 오일온도가 적어도 55℃ 이하를 유지하여야 합니다.



1. Direction of rotation

It should rotate as the arrow direction. If backlash happens, oil seal could be destroyed. Rotor pump discharges like the drawing in normal condition. It is designed for pressure to send oil to oil seal part through the shaft and then return it into suction part through the drain hole. However, if the pump backlash, suction and delivery go into reverse so that oil stays in oil seal through drain hole resulting in damage in the oil seal and adverse oil flow.

2. Suction pipe

The suction pipe diameter needs to be designed to achieve a peed of 1.5m/sec, and the pump location needs to be set to allow the installation of the shortest suction pipe.
This is because in order to achieve smooth oil suction, the pipe's total length and curves need to be minimized.
Also, when using highly-viscous oil, you have to use a pipe with a large circumference, and take friction increase into consideration according to oil viscosity.

3. Suction pressure

Rotor pump shows high suction pressure at 720mmhg or higher in general if pressured. This figure means this pump has high vacuum rates. For the safety matter, piping design must be aimed at maintaining the suction pressure at lower than -0.5kg/cm2.

4. Using oil filter during suction

If strange or loud noises come from the filter during pump operation, immediately stop operation and check the pump and filter quantities.
The oil quantity that passes through the filter requires more than twice the amount of discharge.

5. Piping

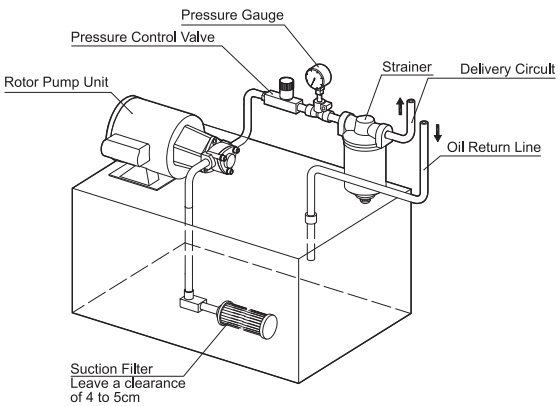
The most suitable pipe diameter is one that can maintain a speed of at least 3m/sec.
The discharge pipe, as opposed to the suction pie, needs to have a small pipe diameter. Pressure loss caused by pipe friction is added to the downward pressure, and is not applied to the pump.
Hence, you have to choose the right pipe diameter within the oil speed range by taking the loss into consideration, and if the quantity of oil passing through the pipes and the valves is small, oil speed will increase and cause chaotic oil flow.

6. Relation with Pump speed

For high-viscosity, small quantities of oil are discharged at high speeds, and veice versa.
Hence, for high-viscosity oil, operation should be slow, taking factors such as noise into consideration.

7. Speed for oil with high viscosity

In the case of oil with high viscosity, the amount of oil flow decreases at high speed and vice versa. Oil with high viscosity is desirable for low speed drive in order for low noise.



8. Installation of Pump

It must be installed in the place with good ventilation and beyond the reach of splash of the liquid and easy access to check and repair. Pump must be installed a little bit higher than the surface of the water.

9. Installation of Pump

The adequate amount of oil inside the tank is 3~4 times the pump's per minute oil quantity.
If a small tank is produced to reduce space usage, the oil supply may become insufficient, and cause unstable pump suction. Even with fast oil recovery to the tank, the unstable oil condition will raise oil temperature and cause oil contamination.
The oil temperature at the suction section needs to be maintained at below 55℃

제품 설치 방법

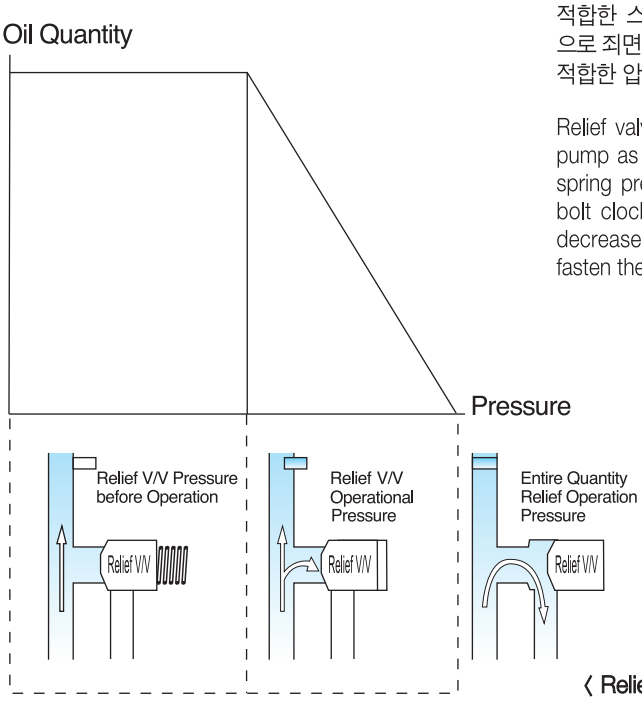
Method of Product Installation

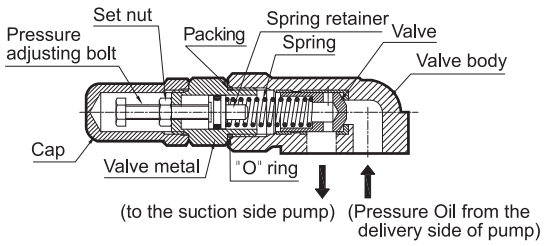
RELIEF VALVE 작동

Operating Relife Valve

ROTOR PUMP의 RELIEF VALVE는 아래의 그림과 같이 펌프 상측에 직접 연결이 되어있고 압력은 적합한 스프링형 압력으로 조절되어 있습니다.
적합한 스프링의 조절방법은 처음에 CAP을 제거하고, 볼트를 시계방향으로 죄면 설정압이 증가하고 반시계방향은 설정압이 줄어듭니다.
적합한 압력을 조절한 후 조임NUT를 조이고 CAP을 단단하게 잠급니다.

Relief valve of the rotor pump is connected directly to the top of the pump as illustrated below, and the pressure is controlled via a suitable spring pressure. To adjust the spring, remove the cap, and rotate the bolt clockwise to increase the pressure setting and anticlockwise to decrease the pressure setting. After setting the pressure as needed, fasten the tightening nut and close the cap firmly.



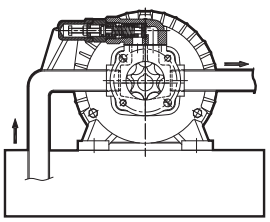


〈 Relief Valve Operation Order 〉

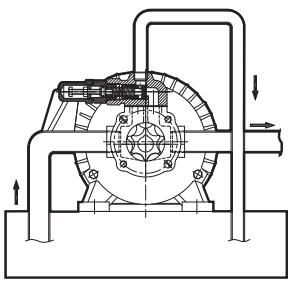
RELIEF VALVE 종류

Relife Valve Type

VB type



VD type



■ VB type RELIEF VALVE

펌프 토출 압력을 안전하게 보내는 안전 VALVE로 사용됩니다.
본 밸브는 펌프 상측에 바로 연결되어 보통의 상태에서는 작동하지 않지만, 펌프의 압력이 미리 설정된 압력보다 높아지면 밸브가 개방되어 토출부의 일부의 OIL이 흡입쪽으로 되돌아가게됩니다.
본 밸브는 펌프 뿐만 아니라 모터의 과부하도 막을 수 있는 안전밸브입니다.
만약 본 밸브가 항상 활발히 움직이거나 오랜시간 동안 밸브가 개방되어 사용하게 되면 기포나 소음발생 그리고 온도 상승과 같은 현상이 발생합니다. 따라서 이런 경우에는 다른 형태의 밸브를 선택하여야 합니다.

It is used as a safety valve to send the pump discharge pressure safely.
This valve is connected directly to the top of the pump, and does not operate under normal conditions. When the pump's pressure exceeds the preset pressure, the valve opens, and some oil from the discharge section flows back into the suction section.
This valve is a safety valve that can motor overload as well as pump overloads. If this valve is always moving or is left open for prolonged periods of time, it can cause bubbles, noise, and temperature increases. Therefore, in such cases, a different valve needs to be used.

■ VD type RELIEF VALVE

위의 사용법과 동일한 구조로 되어있으나, 드레인 되어진 오일을 탱크내로 보내주게 되므로 VB type에 비하여 펌프내 과부하를 막을 수 있는 밸브입니다.

It has the same structure as the above method of use, but the drained oil is sent inside the tank, and therefore it can prevent overload inside the pump compared to the VB type.

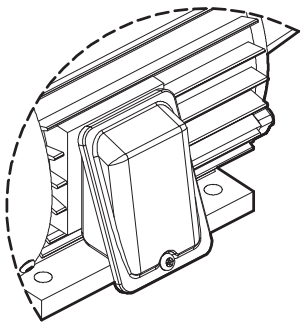
펌프 고장 및 대책

Cause & Remedy of Trouble

고장내용 Description of defects	현상 또는 예상원인 Symptom and expected cause	점검사항 · 방법 Inspection list and method	처치 · 대책 Treatment and solution
- 토출량이 부족 **- 흡입하지 않음** **- 압력이 올라가지 않는다.** - Insufficient discharge amount - Does not perform suction - Pressure does not go up.	● OIL이 나오는데 양이 적다. ● OIL이 나오지 않는다. ● Oil is discharged but in small quantity. ● Oil is not discharged at all.	● 진공 게이지 흡입압력 측정 ● -0.03MPa 이상을 표시하면 캐비테이션 ● Measuring vacuum gauge suction pressure ● Cavitation if -0.03MPa is marked	● 사용유의 점도를 낮춘다 ● Lower viscosity of the used oil
		● 흡입 배관의 막힘 ● 석션 필터의 오염상태를 확인 ● Blockage of suction pipe ● Check pollution level of suction filter	● 석션 필터 청소 ● Cleaning suction filter
		● 탱크의 유량 부족 ● 유면계 또는 육안으로 확인 ● Insufficient tank oil quantity ● Inspect using the oil gauge or with eyes	● 기름을 규정량까지 보충한다. ● 기준은 펌프1분간의 토출량의 3~4배에 해당하는 양이 필요합니다. ● Supplement the oil to the maximum quantity allowed. ● The standard the quantity that is equivalent to the quantity 3-4 times greater than the discharge capability of pump per 1 minuite.
		● 배관의 이음매에서 공기를 흡입하고 있을 가능성이 없는가? ● Is there a possibility to suck in air in the connecting join of the pipe system?	● 배관을 조인다. ● Make pipe system tight.
		● 사용 압력에 대해 유체의 점도가 낮은가? ● Is the viscosity of liquid low compared to the pressure used?	● 펌프에 적합한 점도의 유체를 사용한다. ● Use the liquid with viscosity appropriate to the pump.
		● 압력계를 보면서 릴리프 밸브의 압력 조정 ● 나사를 조여본다. ● 결과: 압력이 올라가지 않는다. ● Control the relief valve while watching the pressure meter. ● Tighten the bolt. ● Result: the pressure does not increase.	● 릴리프 밸브에 이물질 걸림이 예상되므로 릴리프밸브를 세척하여 이물질을 제거한다. ● Impure materials are expected to be caught in the relief valve and therefore remove the impure materials by cleaning the relief valve.
		● 압력계를 보면서 릴리프 밸브의 압력 조정 ● 나사를 조여본다. ● 결과: 압력이 상승한다. ● Adjust the relief valve pressure while watching the pressure gauge. ● Tighten the screw. ● Result: pressure goes up.	● 릴리프 밸브가 제대로 작동하고 있는 상태이므로 설정 압력을 증가시킨다. ● Relief valve is properly working and therefore set-up pressure must increase.
		● 펌프의 회전 방향 차이 ● 육안으로 회전 방향을 확인 ● The difference between spinning direction of pump. ● Inspect spinning direction with eyes.	● 펌프에 표기된 회전 방향으로 수정 ● Change it to the spinning direction indicated in the pump.
		● 흡입측 및 토출측의 유로가 차단되어 있지 않은가? ● Is oil channel in suction or discharge side blocked?	● 흡입측 및 토출측 유로를 개방한다. ● Open the oil channel in suction or discharge side.
			● 흡입측 및 토출측 유로를 넓힌다. ● Widen the oil channel in suction or discharge side.
- 오일 누유 - Oil leakage	● 오일실에서 누유 ● Oil leakage from oil seal.	● 펌프의 회전방향이 틀리지는 않았는가? ● Is spinning direction of pump incorrect?	● 펌프 수리 또는 교체 ● Pump repair or replacement
		● 흡입 배관에 압력이 걸려 있지는 않는가? ● Is there pressure on suction pipe?	● 펌프는 유면높이 1m이내에 설치 ● 오일실의 내압은 Max. 0.03MPa ● Pump is installed within 1m height of oil surface. ● The internal pressure of oil seal is Max. 0.03MPa
		● 유온이 오일실의 내구성 온도보다 높다. ● Oil temperature is higher than that of oil seal.	● 특수 재질의 오일 실사용 (당사문의) ● Oil seal with special materials was used. (Please contact us).
		● 유체의 종류가 오일실 재질에 부적합 ● The type of liquid is not appropriate for oil sea materials.	● 오일실 교환 또는 펌프 교체 ● Oil seal or pump replacement.

고장내용 Description of defects	현상 또는 예상원인 Symptom and expected cause	점검사항 · 방법 Inspection list and method	처치 · 대책 Treatment and solution
- 기름이 나오지 않는다. - 차단기가 작동 한다. - Oil does not leak. - Stopper machine operates.	● 모터가 회전하지 않는다. ● Motor does not rotate.	● 정전 또는 전압 저하 ● Black-out or voltage decrease.	● 전원 설비 확인 ● Verify electric power installation.
		● 전자 개폐기, 차단기가 작동하지는 않았는가? ● Did electronic opener and stopper work?	● 전자 개폐기, 차단기를 리셋 ● Reset electronic opener and stopper.
		● 전원 코드의 단선 또는 연결 불량 ● Disconnection of connection defect of power cord	● 전원 코드를 교환 또는 연결을 다시 한다. ● Replace power cord or reconnect
	● 오버로드 ● Overload	● 소요 동력은 적정하지 않는가? ● Is consumed power appropriate?	● 모터출력을 높이거나 펌프의 크기를 낮춘다. ● 모르는 경우는 오일의점도, 사용압력, 배관상태를 확인하신 후 당사에 연락하십시오. ● Increase motor output or lower the pump size ● If you do not now, please check viscosity of oil, pressured used and pipe condition and contact us.
	● 펌프를 손으로 돌려도 회전하지 않는다. ● 회전이 무겁다. ● Even if you spin the pump with hand, it does not spin. ● Rotation is heavy.	● 사용유의 점성이나 윤활성은 적당한가? ● Is viscosity and fluidity of oil appropriate?	● 로터가 닳아있거나 이물질이 끼여 있을 가능성이 있기 때문에 수리한다. ● Rotor could have been worn out or there could be impure materials. Therefore, it should be repaired.
		● 사용유가 오염되어있지는 않은가? ● Is oil used polluted?	● 펌프 교체 또는 수리 ● Pump replacement and repair.
- 소리가 크다 - 이상한 소리가 난다 - The noise is big. - It makes weird noises.	● 흡입측의 저항이큼 (캐비테이션) ● 흡입측 배관이 너무 가늘다 ● 흡입측 배관이 너무 길다 ● 펌프 회전이 너무 빠르다 ● 석션필터가 저항이 있다 ● 오일의 점도가 너무높다 ● 흡입 높이가 너무 높다 ● Resistance is big on suction side (cavitation). ● Pipe on the suction side is too thin. ● Pipe on the suction side is too long. ● Pump revolution is too fast. ● Suction filter has resistance. ● Viscosity of oil is too high. ● Suction height is too high.	● 진공 게이지 흡입 압력 측정 ● -0.03MPa 이상을 표시하면 캐비테이션 ● Measure vacuum gauge' s suction pressure. ● If it is greater than -0.03MPa, it is caviatation.	● 흡입압력-0.03MPa이내(대기압에가까운쪽)으로 조정한다. ● 배관을 굵게한다 ● 배관을 짧게한다 ● 펌프 회전을 느리게한다 ● 필터의 저항이 적은것으로 교체한다 ● 오일의 점도를 낮춘다 ● 흡입 높이를 낮춘다 ● Adjust it within suction pressure of -0.03MPa (close to atmospheric pressure). ● Make pipe thick. ● Make pipe short. ● Make pump revolution slow. ● Replace the one with lower filter resistance. ● Lower the viscosity of oil. ● Lower the suction height.
	● 공기를 함께 흡입한다 (에어레이션) ● Suck in the air with it (aeration).	● 탱크 내에 기포는 없습니까? ● 배관이 느슨하게 조여지지는 않았습니까? ● Are there vapors inside the tank? ● Are pipes too loosely tightened?	● 탱크, 배관, 펌프 내에 공기 침입이 없도록 조정 ● Adjust it so that air does not penetrate inside the tank, pipe system and pump.
		● 리턴 배관이 Oil 안에 들어가 있는지 확인 하십시오. ● Make sure return pipe is inside oil.	● 리턴 배관을 Oil 안으로 위치시킨다. ● Locate return pipe above inside oil.
	● 커플링의 동심도 불량 ● Concentricity of the couple ring is also defective.	● 두 커플링의 동심도가 넘어가 있는지 확인 ● Make sure concentricity of two couple rings is right.	● 커플링의 규격 값 이내로 수정 ● Adjust it within the standard measurement of couple rings.

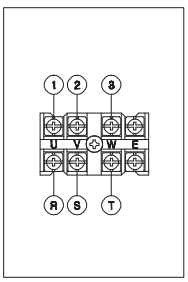
TERMINAL BOX CONNECTION



Model

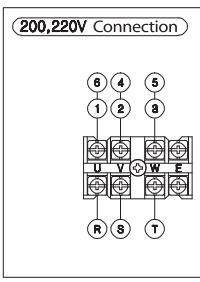
- HMTP-3M-MA(VB)
- HMTP-3M-HA(VB/VD)
- HMTP-3M-HAVBF-P
- HMTP-3M-HAVBF-E
- OIL COOLER
- HMTP-3M-HA(VB/VD)E
- HMTP-3M-HA(VB/VD)-P
- HMTP-3M-HAVBF

Sole Connection

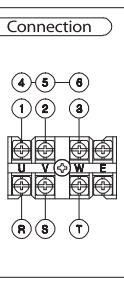


220V/380V Connection

200,220V Connection

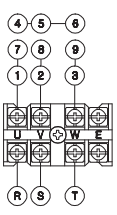


380V Connection

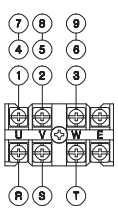


220V/440V Connection

200,220V Connection



440V Connection



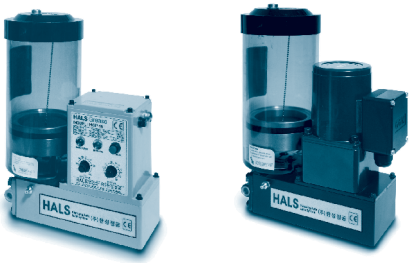
HANSUNG AUTOMATIC LUBRICATION SYSTEM

Grease PUMP

HALS

Grease pump series

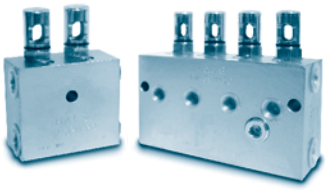
Two Line System



HGP-16 Series



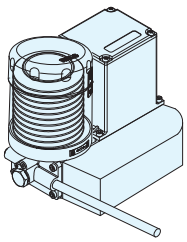
HM



DV, DW

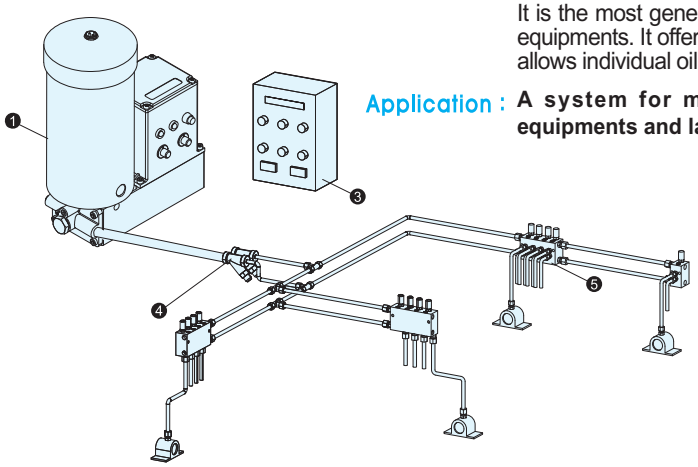
개 요 : TWO LINE 급유 시스템은 한대의 운전펌프에서 절환변을 통과한 2개의 급유 주관중 1개의 주관 그리스가 모든 분배변을 통하여 급유가 완료되면 주관내 압력이 상승하고 설정한 압력에서 절환변을 통하여 다른 주관으로 공급이 자동변경되는 시스템이다. 주로 중 · 대형 급유시스템에 적합하고, 펌프 및 분배변의 선택에 따라 최대 1000개이상의 윤활급유가 가능하다.
펌프 절환밸브를 통하여 작동압력을 조절하기 때문에 동작이 확실하고 보수점검이 용이하다.
중 · 대형의 산업설비에 가장 보편화된 집중 윤활 시스템이다. 설치 후 주유개소의 추가 및 제거가 용이하며, 개별적 급유가 가능하다.

적 용 : 제철설비, 대형 운반 하역기기 등 많은 수의 급유개소의 시스템



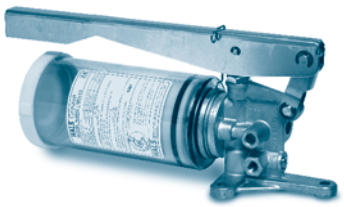
Summary: In the Two Line System, once grease from 1 main tube from the 2 main oil supply tubes that pass the change over valve is supplied oil through all the distributors, the pressure inside the main tube rises, and at the preset pressure, the supply goes through the change over valve to other main tubes automatically. It is mostly suitable for medium/large oil supply systems, and is capable of oil supply more than 1000 sites depending on the pump and distributor selection. The operating pressure is controlled with a pump change over valve, which ensures precise movements and easer repairs and maintenance.
It is the most general concentrated lubricating system for medium/large industrial equipments. It offers easy addition/removal of oil supply sites after installation, and allows individual oil supply.

Application : **A system for multiple fueling sites such as iron manufacture equipments and large load transportation machines.**



Number	Part Name
1	펌프 (pump)
2	절환밸브 (change over valve)
3	배전반 (electricity control board)
4	여과기 (strainer)
5	분배변 (distributor)

Single Line System



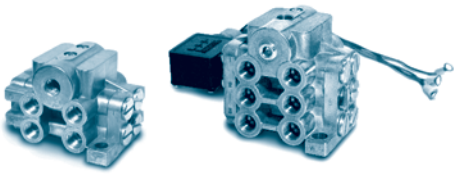
MG-10



HGP-10 MG Series



HGP-720 series



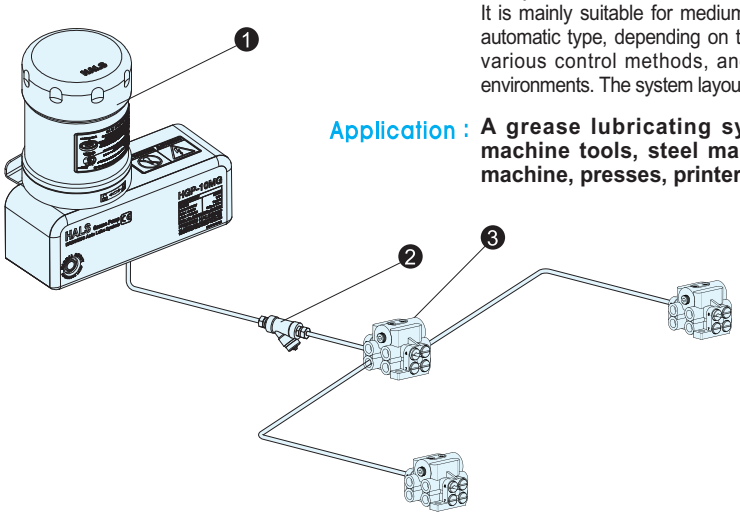
HU-R

개 요 : SINGLE LINE 급유 시스템은 한대의 운전펌프에서 하나의 공급 주관을 통하여 각각의 급유 개소에 분배변의 가지관을 부착하여 사용하는 급유 시스템이다.
시스템의 구성이 간단하고, 주관이 하나만 존재하기 때문에 설치 비용이 저렴하다.
주로 중 · 소규모의 급유시스템에 적합하고, 펌프의 종류에 따라 수동방식, 전동방식으로 나누어 진다. 다양한 제어방식을 이용하여 급유장치를 모니터링 할 수도 있기 때문에 사용자의 환경에 따라 적합한 사양을 선택할 수 있다.
SYSTEM LAYOUT이 단순하며, 설치 비용이 저렴하다.

적 용 : **대형공작기계, 철강 · 제강 설비, 주조기, 압연기, 사출기, 프레스, 인쇄기, 자동화라인 등 광범위한 그리스 윤활 시스템**

Summary: The Single Line oil supply system uses one drive pump and one main supply tube, and attaches distributor tubes to each oil supply site. The system's formation is very simple, and because there is only one main tube, installation is cheap.
It is mainly suitable for medium/small oil supply systems, and is classified in to a manual or automatic type, depending on the pump type. The oil supply system can be monitored using various control methods, and therefore users can choose specifications to suit their environments. The system layout is simple, and installation is cheap.

Application : **A grease lubricating system for a wide range of use including large machine tools, steel manufacture equipments, casters, rollers, injection machine, presses, printers, automated lines, etc.**



Number	Part Name
1	펌프 (pump)
2	여과기 (strainer)
3	분배변 (distributor)

HM series

Manual Pump

수동펌프



Model

HM □ - □□□

- Blank: Manual Switch / A: Automatic Switch
- 1: 7cc/st
  2: 3.5cc/st
- 2: 2Liter
  4: 4Liter
- S: Single Line / M: Dual Line

Feature

HM 펌프는 소형 수동 그리스 펌프로서 급유 빈도가 자동펌프에 비하여 적은 경우에 사용되며, 윤활급유소가 비교적 적은 시스템에 적용된다. 최고 토출압력은 토출량에 따라 100kg/cm²와 210kg/cm² 두가지로 나누어지며, 탱크의 용량도 2Liter와 4Liter로 구분된다. 토출부 블록의 교체로 SINGLE LINE과 TWO LINE 적용시 절환변 부착이 가능하다. 작동방법이 간단하여 고장이 적고, 유지보수가 용이하다.

The HM pump is a compact manual grease pump, and is used to supply smaller discharge quantities compared to automatic pumps, and is applied to systems with relatively small lubricating oil supplies. The maximum discharge pressure is divided into 100kg/cm² or 210kg/cm² depending on the quantity of discharge, and the tank is separated into a 2liter or a 4liter. Exchange of the discharge part's block allows attachments of switching sides when applying single line and two line. The simple operation method means less breakdowns, and easier repairs and maintenance.

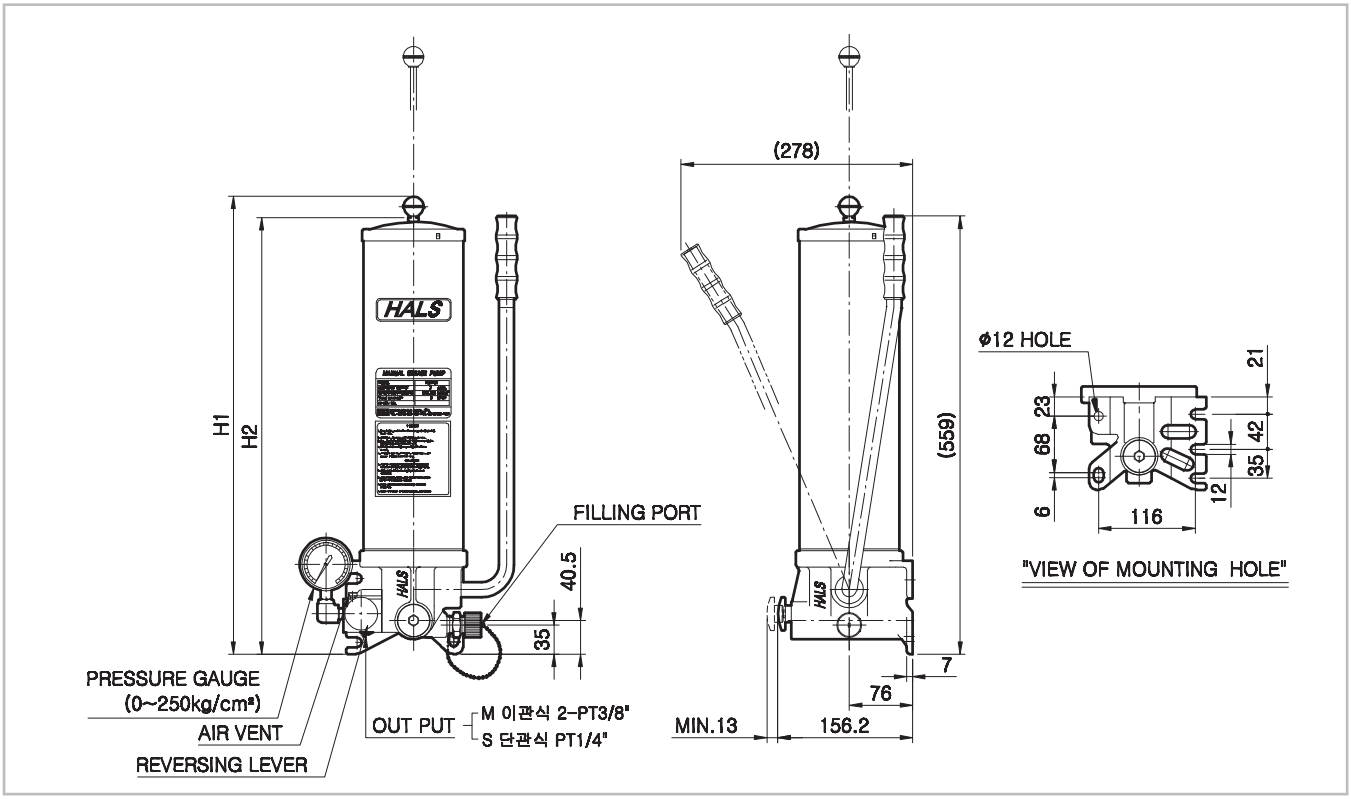
Pump Spec.

TYPE	HM□-21	HM□-41	HM□-22	HM□-42
DISCHARGE AMOUNT (cc/st)	7		3.5	
MAX. DISCHARGE PRESSURE (kg/cm²)	100		210	
TANK CAPACITY(Liter)	2	4	2	4
WEIGHT(kg)	8	9	8	9

Dimension

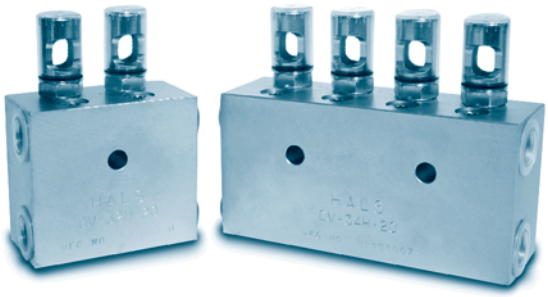
MODEL		H1		H2
		MIN.	MAX.	
HM□-21	HM□-22	350.5	526.5	324.2
HM□-41	HM□-42	550.5	726.5	524.2

External Figure



Distributor

DV형 분배 밸브



Model

DV - □□ H - 20

- Number of Outlet
- Valve Type

Feature

- DV형 분배변은 TWO LINE SYSTEM에서 사용
- 윤활제는 주 배관으로 공급되어 송출압력에 의하여 각각의 급유소에 적절히 공급
- 분배구의 작동은 지시봉의 상하 동작으로 확인이 가능
- 윤활제 공급량은 조절나사를 이용하여 원하는 량만큼 조절이 가능

- 정확한 량의 윤활제 공급이 가능한 정밀 윤활 공급장치
- 견고하고 우수한 내구성
- 최대 21MPa에서도 사용이 가능한 광범위한 범위의 윤활과 신뢰성이 우수

- DV Type distributors are two line system distributors.
- Lubricant is supplied appropriately to each lubricating point by the pressure of lubricant transferred in turn from main supply line.
- Operation of distributing valve is checked by indicator.
- Amount of grease can be adjusted as desired by the adjusting screw.

- Accurate lubrication sliding unit is finished in high precision, which enables accurate weighing and lubricating.
- Robust and highly endurable.
- Maximum working pressure 21MPa application of high pressure improves reliability of lubrication and enables lubrication in a broad range.

Specification

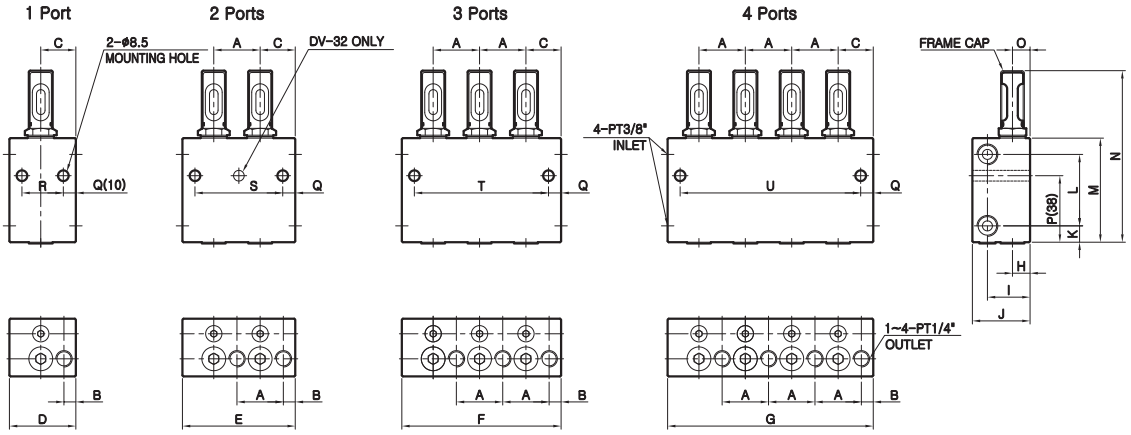
Distributor Size	30	40	50	60
MAX. DISCHARGE PRESSURE (MPa)	21			
APPLICABLE GREASE	Centralized Lubrication Grease NLGI Consistency Number #0~#2			
MIN. DISCHARGE PRESSURE (MPa)	1	1	1	1
DISCHARGE VOLUME (cm^3/stroke MAX)	1.2	2.5	5	14
DISCHARGE VOLUME (cm^3/stroke MIN)	0.2	0.6	1.2	3
ADJUSTING AMOUNT PER ROTATION OF ADJUSTING SCREW (cm^3)	0.06	0.10	0.15	0.68
ASSEMBLY BOLT SIZE	M8 x 60	M8 x 60	M8 x 65	M8 x 75
USING TEMPERATURE	Standard:-20~100℃, High:-40~200℃			

※ 주의 : Oil용 밸브로 사용하는 경우, 10 MPa 이하의 압력을 설정합니다. (When using the valve for oil, set the pressure below 10MPa.)

Weight Spec.

Type	DV-31	DV-32	DV-33	DV-34	DV-41	DV-42	DV-43	DV-44	DV-51	DV-52	DV-53	DV-54	DV-61	DV-62
Weight(kg)	0.8	1.4	1.8	2.3	1.0	1.9	2.7	3.2	1.4	2.4	3.5	4.6	2.4	4.2

External Figure



Dimension

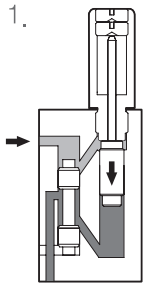
Type	Size(mm)																				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
DV-31, 32, 33, 34	29	8	22.5	44	73	102	131	11	27	38	11	42	64	104	11	41*	36.5*	24	-	29	58
DV-41, 42, 43, 44	31	9.5	25	50	81	112	143	11	29	40	11	54	76	125	11	48	10	30	61	92	123
DV-51, 52, 53, 54	37	9.5	28	53	90	127	164	14	34	45	13	57	83	138	14	53	10	33	70	107	144
DV-61, 62	46	10	33	62	108	-	-	29	45	57	16	57	89	149	20	56	10	42	88	-	-

※ 주 의 : - DV-31 타입은 *로 표시된 치수가 다릅니다. 치수도면의 ( )안 치수를 참조하십시오.
- 그림과 같이 DV-32의 장착구멍은 한 곳에 있습니다.
- 각 분배 밸브의 프레임은 먼지 보호용 프레임 캡이 장착되어 있습니다.

※ Caution : - As for DV-31 type, the dimension marked with * is different. See the dimension ( ) in the dimension drawing.
- As for DV-32 type, mounting hole is at one position as shown.
- The frame of each distributor is equippen with frame cap for dust control.

Operating Principles

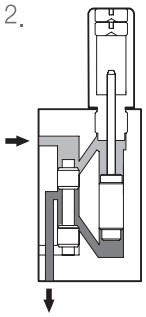
Step 1.



밸브를 통하여 압입된 윤활제는 PILOT PISTON을 누르고, MAIN PISTON으로 압력이 전달되어 하강하게 된다.

The lubricating oil entered through the valve presses the PILOT PISTON, and the pressure is passed onto the MAIN PISTON which moves down.

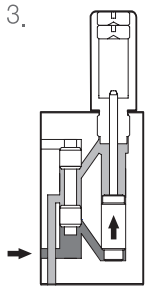
Step 2.



MAIN PISTON 하강하게 되며 공간에 존재하는 윤활제를 가압하여 토출하게 된다.

When the MAIN PISTON moves down, it exerts pressure on the lubricating oil, and discharges the oil.

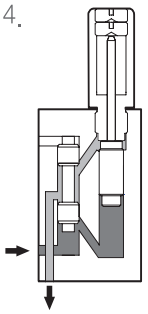
Step 3.



밸브를 통하여 압입된 윤활제로는 PILOT PISTON 상승하고, MAIN PISTON으로 압력이 전달되어 상승하게 된다.

The lubricating oil enetered through the valve raised the PILOT PISTON, and the pressure is passed onto the MAIN PISTON which moves up.

Step 4.

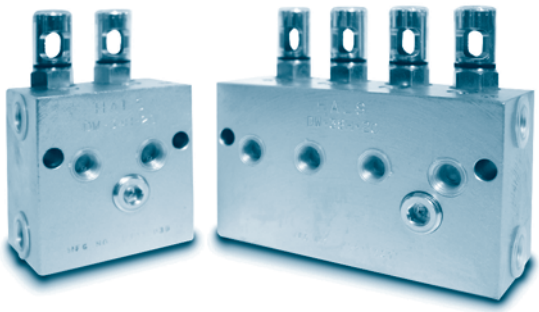


MAIN PISTON 상승하게 되며 공간에 존재하는 윤활제를 가압하여 토출하게 된다.

When the MAIN PISTON rises, it exerts pressure on the lubricating oil, and discharges the oil.

Distributor

DW형 분배 밸브



Model

DW - □ □ H - 20

- Number of Outlet
- Valve Type

Feature

- **DW형 분배변은 TWO LINE SYSTEM에서 사용**
- **이중 토출형으로 토출구 수가 2배로 제작되어 공간 절약이 가능**
  - 토출구 수가 2배로 설치 및 배관 작업을 단순화 함
  - 최대 21MPa에서도 사용이 가능한 광범위한 범위의 윤활과 신뢰성이 우수
  - DW-30, 40, 50 형 전체 밸브의 설치 치수가 동일하여 변경이 용이함
  - 견고하고 우수한 내구성

- **DW Type distributors are two line system distributors.**
- **The ports are doubled in number from single discharging type (1 port/element) to dual discharging type (2 ports/element) for saving space.**
  - Distributing valves can be reduced half in number with reference to required number of lubricating ports, which simplifies installation and piping.
  - Maximum working pressure 21MPa application of high pressure improves reliability of lubrication and enables lubrication in a broad range.
  - DW-30, 40, and 50 type all have the same installation dimension, so that distributing valve can be connected with each other and size can be changed easily.
  - Robust and highly endurable.

Specification

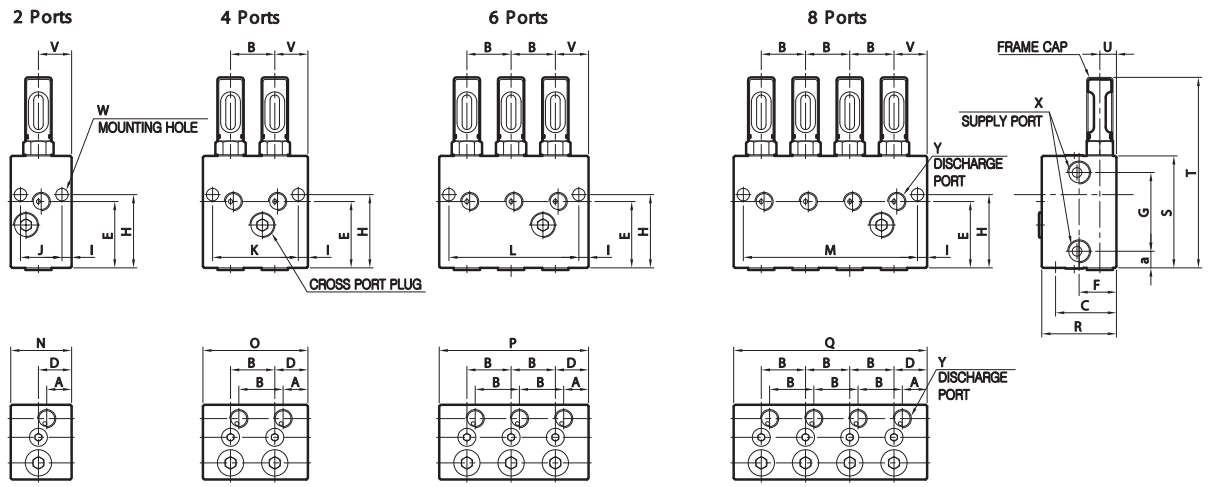
Distributor Size	20	30	40	50
MAX. DISCHARGE PRESSURE (MPa)	21			
APPLICABLE GREASE	Centralized Lubrication Grease NLGI Consistency Number #0~#2			
MIN. DISCHARGE PRESSURE (MPa)	1.2	1	1	1
DISCHARGE VOLUME (cm^3/stroke MAX)	0.6	1.2	2.5	5.0
DISCHARGE VOLUME (cm^3/stroke MIN)	0.15	0.2	0.6	1.2
ADJUSTING AMOUNT PER ROTATION OF ADJUSTING SCREW (cm^3)	0.04	0.06	0.10	0.15
ASSEMBLY BOLT SIZE	M8 x 60L	M8 x 75L		
USING TEMPERATURE	Standard:-20~100℃, High:-40~200℃			

※ 주의 : Oil용 밸브로 사용하는 경우, 10 MPa 이하의 압력을 설정합니다. (When using the valve for oil, set the pressure below 10MPa.)

Weight Spec.

Type	DW-22	DW-24	DW-26	DW-28	DW-32, 42, 52	DW-34, 44, 54	DW-36, 46, 56	DW-38, 48, 58
Weight(kg)	0.5	0.8	1.1	1.4	1.4	2.4	3.4	4.4

External Figure

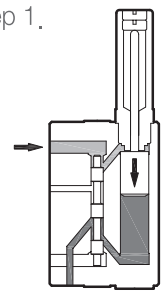


Dimension

Type	Size(mm)																								
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	a	X	Y
DW-22, 24, 26, 28	18	17	32.5	18	33	21	37	34	6	24	41	58	75	36	53	70	87	40	54	81	8	18	7	9	Rc 1/4	Rc 1/8
DW-32, 34, 36, 38	18	32	44	22	47	27	57	52	7	30	62	94	126	44	76	108	140	54	79	120	12	24	9	11	Rc 3/8	Rc 1/4
DW-42, 44, 46, 48																				127						
DW-52, 54, 56, 58																				137						

Operating Principles

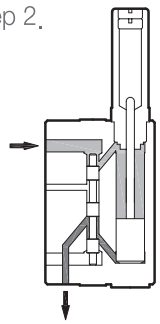
Step 1.



상부의 공급관이 압력이 가해져, 파일럿 피스톤이 아래로 밀려 윤활유를 아래로 밀어내 메인 피스톤은 도면상의 공간으로 이동합니다.

Pressure is applied to the pipe line in the upper part, causing pilot piston to be pushed down to push down lubricant oil, causing main piston to move to the space in the diagram.

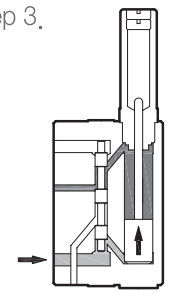
Step 2.



메인 피스톤이 아래의 공간으로 내려오면서 아래의 공간의 윤활유가 파일럿 피스톤의 작은 구멍 관을 통해 토출관으로 토출됩니다.

As main piston comes down to the space below, the lubricant oil in the lower space is discharged through a discharge hole in a small pipe in the pilot piston.

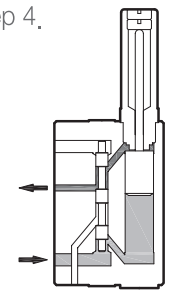
Step 3.



그런다음, 아래의 공급관에 압력이 가해져, 파일럿 피스톤이 밀려 올라가며, 윤활유를 위쪽으로 밀어내 메인 피스톤은 도면상의 공간으로 이동합니다.

Then, pressure is applied to the supply pipe below, moving pulling up the pilot piston, moving the lubricant oil out and main piston moves along the space in the diagram.

Step 4.



메인 피스톤이 상부의 공간으로 올라오면서, 상부 공간의 윤활유가 파일럿 피스톤의 작은 구멍 관을 통해 토출관으로 토출됩니다.

Main piston comes up in the space above and lubricant oil in the upper part is discharged through a discharge hole through a small pipe in the pilot piston.

HGP 10□MG

Metering Cartridge Grease Pump

정량식 카트리지 그리스 펌프

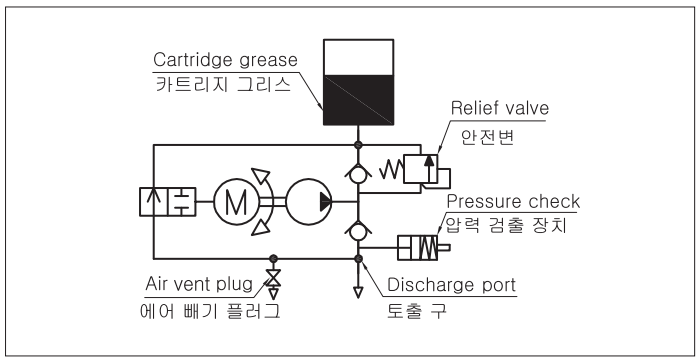


Model

HGP - 10 □ - □

- □ 무기호 : 그리스 없음, Non-Grease
- □ 000 : 전용 그리스
- □ 00, 0, 1 : 일반 그리스
- □ LMG : 토출 압력 50kg/cm²
- □ HMG : 토출 압력 80kg/cm²
- 10 : Pump Design Series
- Hansung Grease Pump

Circuit Diagram



Feature

- 그리스 펌핑 및 탈압 기능의 복합화로 컴팩트 및 경량화
- 정량식 분배변과 조합하여 다수의 윤활개소에 그리스를 정시, 정량 공급
- 카트리지 교환으로 편리하게 재충전 함으로써, 경제적이고 깨끗한 환경 유지
- LM Guide, Ball Screw 윤활에 최적화된 탈압형 정량식 펌프
- 지정된 그리스 (NLGI Grade 000, 00, 0, 1) 사용

- Compact and lightweight design with built-in **depressurization features for the supply of quantitative grease**
- This grease pump is **assembled with the metering valve** and discharges the quantity of grease on time.
- **Easy to replace cartridge to recharge grease**, maintaining a clean environment
- A grease pump that is designed to be excellent at lubrication points, such as the LM guide and ball screw
- Designated grease (NLGI Grade 000, 00, 0, 1) using pump

Specification

MOTOR SPECIFICATION	
Out Put 출력	8W
RPM 회전수	6500
Voltage(V) 전압	DC 24V
Current(A) 전류	HMG 1.2A
	LMG 0.8A

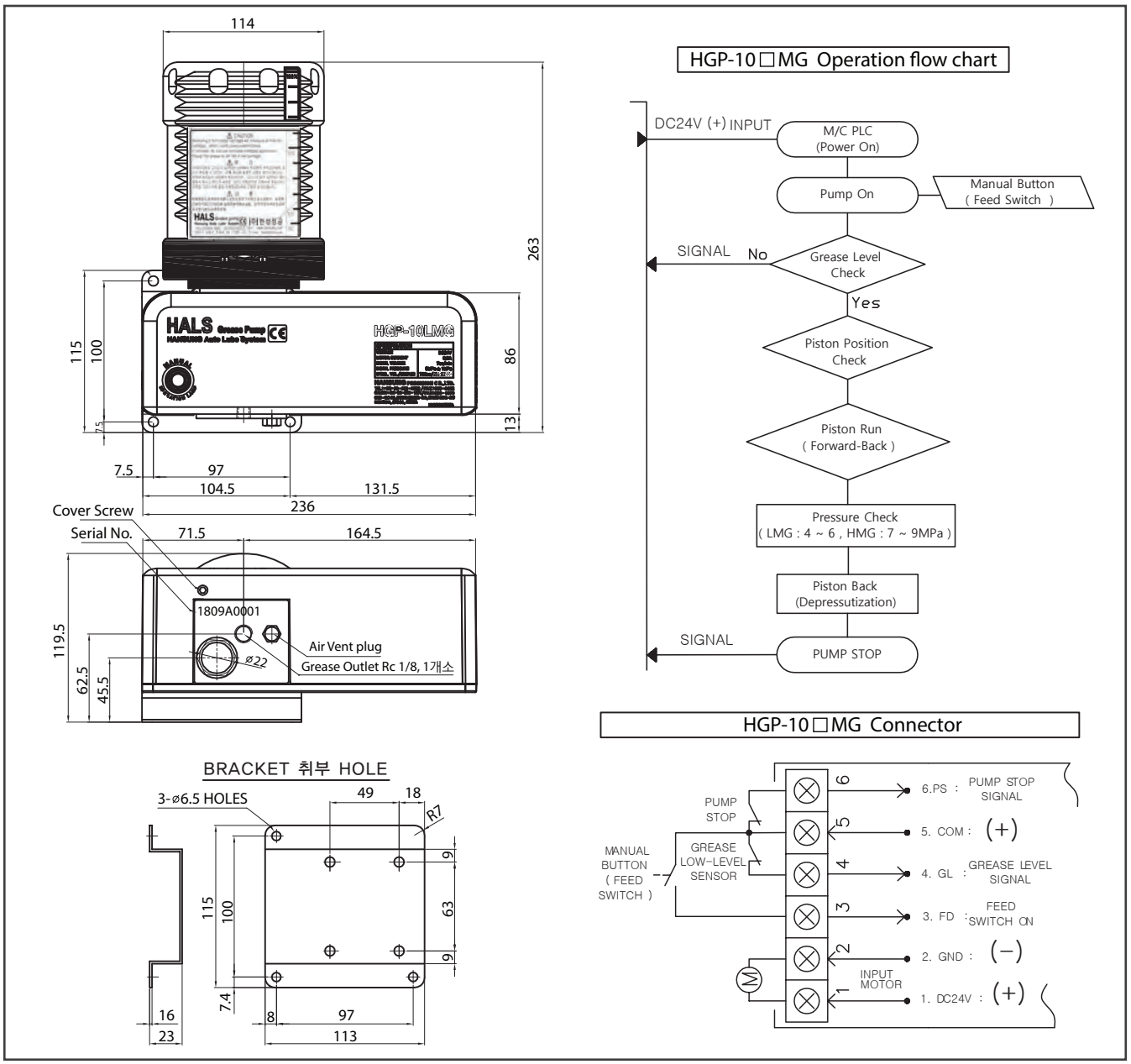
GREASE SPECIFICATION		
Cartridge Vol. (ml) 카트리지 용량		700
Constency (NLGI Grade) 점도 등급	전용	000
	일반	00, 0, 1
Worked Penetration 25℃ 혼화 조도 (NLGI 000~1)		310~475
Density (g/cm2,15℃) 밀도 (NLGI 기준)		0.89

PUMP SPECIFICATION	
Operating Temperature 사용 온도	−10℃ ~ +45℃
Discharging Pressure (kg/cm2) 토출 압력	HMG:80, LMG:50
Discharging Volume (cc/min) 토출 유량	7
Power Consumption 소비 전력	24W
Interval Time 최소 휴지시간	More than 10 minutes
Discharging Port 토출 구경	PT1/8″
Weight (Kg) 중 량	2.5

※ 전원 220V/110V Option 사양임
※ −10℃ ~ +45℃ 온도범위 이외로 사용시에는 사전 문의를 요청드립니다.

HGP 10 □MG

External Figure



HCG

Cartridge Exclusive Grease

카트리지 전용 그리스



Model

HCG - ☐ - ☐

- ☐ : Cartridge Volume 700ml
- 000, 00, 0, 1 : NLGI Grade
- Model Name

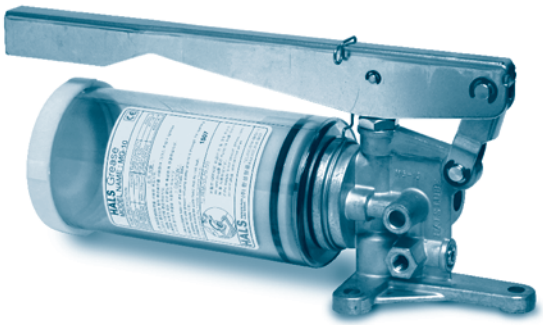
Feature

- 고품질 범용 그리스 / 고품질 극압, 고하중 그리스
- 탁월한 마모 방지성, 수분 저항성을 지님
- 소량으로 지속, 안정적인 윤활효과가 있음

- HCG model is a high-quality universal grease. It can be used even during extreme pressure, heavy duty.
- It is and has excellent abrasion resistance, also has water resistance.
- HCG grease has a low-capacity lubricating effect for a long time

MG 10

Manual Pump
수동펌프



Model

MG - □

10: 1.0cc/st

Feature

강제급유식 수동 그리스펌프인 MG-10은 그리스 윤활유의 집중급유방식을 채택하여 급유량의 적절한 계획을 수립할 수 있고 급유비용의 절감 및 기계 정지시간의 절약으로 생산성의 향상을 기대할 수 있다. 그리스 주입시에 발생할 수 있는 위험요소를 제거하여 보다 안전한 급유관리를 할 수 있다.

- ▶ 급유량의 적절한 계획을 수립할 수 있으며 HU-R형 그리스 분배기를 사용하여 순차 급유가 가능하다.
- ▶ 기계 및 베어링의 수명을 연장할 수 있다.
- ▶ 오염된 그리스의 혼입을 방지할 수 있다.
- ▶ Grease 토출이 이루어지지 않을 경우 Air Vent Screw(-)를 열어 Body 내 Air를 제거한 후 재작동시킨다.

MG-10, the forced oil supply manual grease pump, adopts a concentrated lubricating oil supply method to allow suitable planning of oil supply quantities, and increases productivity through reduced oil supply costs and machine stoppage time. The elimination of risks that can happen during grease injections allows safer management of oil supply.

- ▶ It allows suitable planning of oil supply quantities, and the use of a HU-R type grease spray allows multi-stage oil supply.
- ▶ It can extend the lifespan of machines and bearings.
- ▶ It can prevent the entry of contaminated grease.
- ▶ If there is no grease discharge, unscrew the air vent screw(-) and remove the air inside the body.

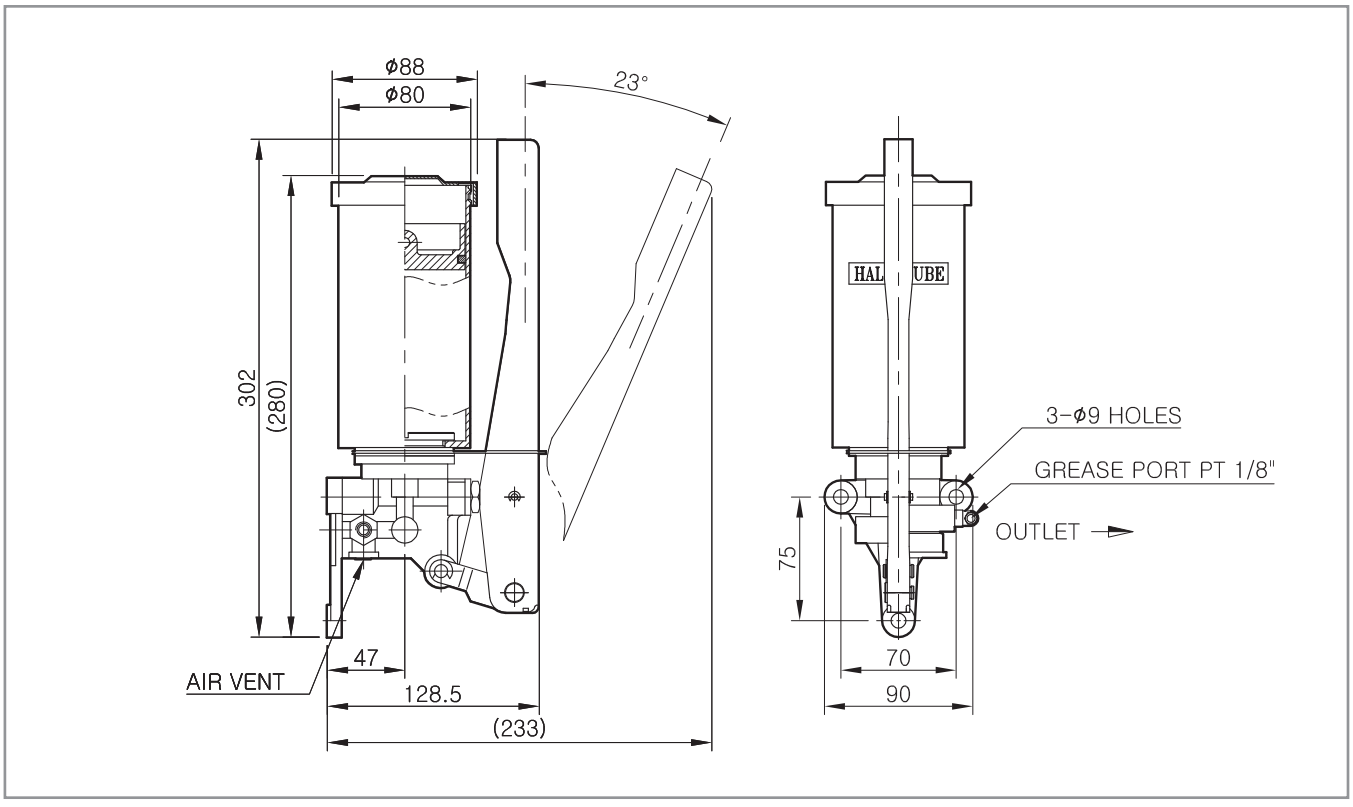
Pump Spec.

PUMP TYPE	PISTON
DIS. PRESSURE	MAX. 130kg/cm²
DISCHARGE AMOUNT	1.0cc/st
TANK CAPACITY	600cc
SIZE OF OUTLET	PT 1/8″
USING GREASE	#000~#1
REMARK	-

Packing Spec.

PACKING SIZE (cm)		32(W) x 10(L) x 14(D)
WEIGHT (kg)	PUMP	3
	PACKING	4

External Figure



Compact Electric Grease Pump Type

소형전동 그리스펌프



Model

HGP - □□□ - □

- 110: 110V / 220: 220V
- Blank: Without Float S/W / F: Attach Float S/W
- Blank: Internal Control / S: External Cotrol / E: Geared Motor
- 16: 16cc/min, 40: 40cc/min, 60: 60cc/min

Feature

HGP-16 type은 감속모터 구동 Grease Pump로 종래의 대형 Pump의 사용상 문제점을 대폭 보완한 제품으로 소형이며 강력한 Controller 내장식 Grease Pump이다.

▶ 소형 경량으로 가격이 저렴하다.
▶ Controller 내장식 Grease Pump이다.(HGP-□)
▶ 반드시 순차식 분배변 조합으로 사용한다.
▶ Two Line 시스템 적용시는 절환 밸브를 조합하여 사용한다.
※ 토출이 이루어지지 않을경우 Air Vent Plug의 Plug를 열어 공기를 제거하여 주십시오.
※ Grease Level Switch는 주문사양.
※ HGP-16(S)는 외부제어를 요할 경우의 제품으로 주문사양임.

HGP-□E-〉 외부제어용

HGP-16E type은 종래의 HGP-□와 동일한 펌프구조를 갖고 있으나, 조절방법을 내장형 Controller를 통한 방법이 아닌 외부장치 조절방법을 채택하여 제작된 펌프로서 사용자의 선택의 폭을 넓게 하였다.

HGP-16 type is a reduction motor-driven grease pump that supplements the problems of existing large pumps, and is a compact and powerful controller-equipped grease pump.

▶ It is compact, lightweight and affordable.
▶ A controller-equipped grease pump.(HGP-□(S))
▶ It has to used with a multi-stage distributor combination.
▶ For use in two line systems, it is used in conjunction with change over valves.
※ If there is no discharge, remove air by opening the air vent plug's plug.
※ Grease level switch is an order specification.
※ HGP-16(S) is an order specification used for external control.

HGP-□E-〉for external control

HGP-16 Etype has the same pump structure as the traditional HGP-□, but uses an external control method rather than an internal controller to increase the user's range of choices.

Tank Spec.

Type	HGP-□	HGP-□C
TANK CAPACITY	2Liter	200, 500, 800cc
WEIGHT	5kg	4.5kg
USING GREASE	#000~#1	
NUMBER OF OUTLET	24	

Packing Spec.

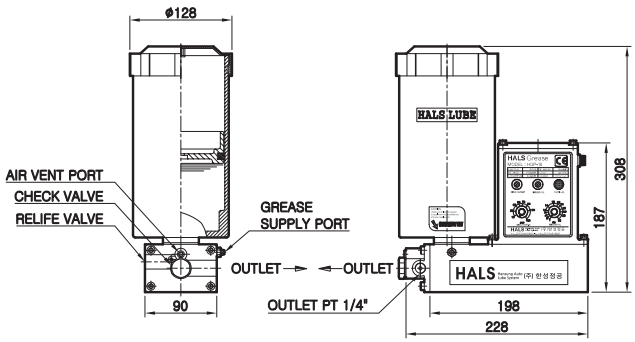
PACKING SIZE (cm)		25(W) x 17(L) x 37(D)
WEIGHT (kg)	PUMP	5
	PACKING	6

Pump Spec.

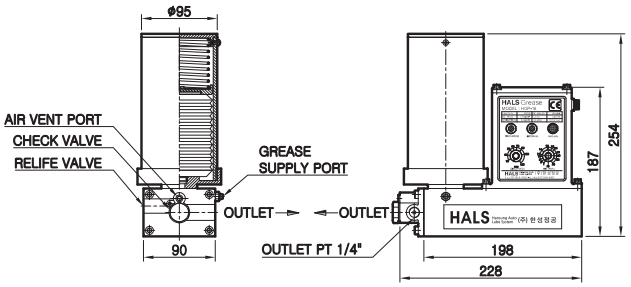
PUMP SPEC.								
MODEL	HGP-16		HGP-16S		HGP-16E		HGP-40E	
PUMP TYPE	PISTON							
DIS. PRESSURE(kg/cm²)	120		120		160		100	
DIS. AMOUNT(cc/min)	16		16		16		40	
USING PRESSURE(kg/cm²)	60							
INTERVAL	1~32Hr		External control					
DISCHARGE TIME	10~120SEC							
MOTOR SPEC.								
OUTPUT	100W		100W		25W		25W	
PHASE	1Ø		1Ø		1Ø		1Ø	
VOLTAGE (V)	110	120	110	120	110	120	110	120
CURRENT (A)	3	1.5	3	1.5	0.6	0.3	0.6	0.3

External Figure

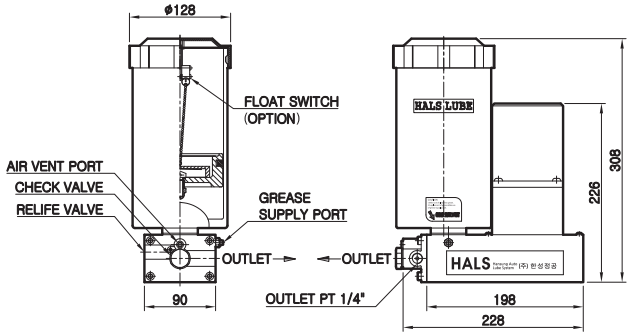
HGP-□(S)



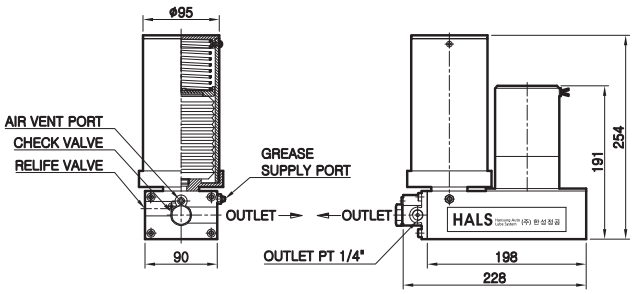
HGP-□C



HGP-□E



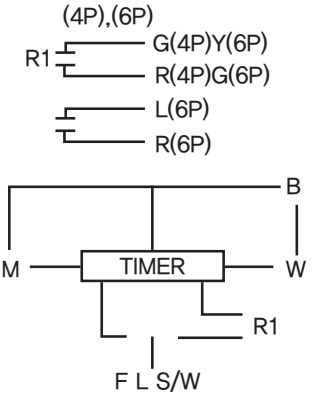
HGP-□EC



Power	W(white), B(black) – 2P, 4P, 6P
Wires	G(green), R(red) – 4P
	Y(yellow), G(green), L(blue), R(red) –6P

Normal power & grease [(G,R – 4P), (Y,G – 6P)] : N . O connector
전원 및 Grease가 정상 상태일 때 [(G,R – 4P)(Y,G – 6P)] : N . O connector

POWER(AC 110/220V)



Air Drive Pump Type

에어 구동펌프



Model

HGP - □□

- Blank: Without Float S/W
- F: Attach Float S/W
- 720: 72cc/min
- 950: 95cc/min
- 1200: 120cc/min

Feature

HGP-□type은 압축공기의 공급으로 작동하여 연속으로 그리스를 토출하는 Pump이다. Pump의 제어는 공기의 회로를 개폐하여 임의로 조작이 가능하다. 공급되는 공기압에 의하여 Pump의 토출량과 토출압력이 변하는 Air Drive Pump이다.

▶ 고압이송으로 원거리 급유에 적합하다.
▶ 반드시 순차식 분배변 조합으로 사용한다.
▶ 명시한 분당 토출량은 공급 압축공기의 압력이 5kg/cm² 이상이어야 한다.
※ 토출이 이루어지지 않을 경우 Air Vent Port의 Plug를 열어 공기를 제거하여 주십시오.
※ Grease Level Switch는 주문사양. (HGP-□F type)

HGP-□C형은 별도의 그리스 충전없이 분해 조립이 간단한 CARTRIDGE형 GREASE 부착하여 그리스 충전시 발생되는 이물질 이나 공기 혼입등을 막을 수 있다.

HGP-□ type is operated by a supply of compressed air, and is a continuous grease discharge pump. The pump can be arbitrarily controlled by opening and closing the air passage. An air drive pump that can change the discharge quantity and discharge pressure by controlling the pressure of the supplied air.

▶ It offers high-pressure deliveries suitable for long-distance oil supply.
▶ It has to be used with a multi-stage distributor combination.
▶ The mentioned discharge per minute requires more than 5kg/cm² pressure in the supplied compressed air.

※ If there is no discharge, remove air by opening the Air Vent Plug's Plug.
※ Grease level switch is an order specification.(HGP-□Ftype)

HGP-□C uses cartridge type grease, which does not require grease filling, is easy to disassemble and assemble, and prevents the entry of foreign substances and air that usually occurs during fillings.

Pump Spec.

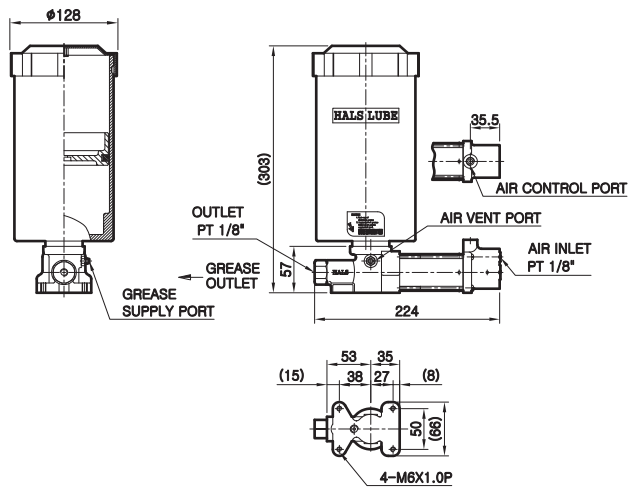
MODEL	HGP-720
PUMP TYPE	PISTON
OPERATING PROCESS	AIR DRIVE
DISCHARGE AMOUNT(cc/st)	0.4
DISCHARGE PRESSURE(kg/cm²)	MAX.200
AIR PRESSURE	MIN. 5kg/cm²
TANK CAPACITY	2 LITER
USING GREASE	#000~#1

Packing Spec.

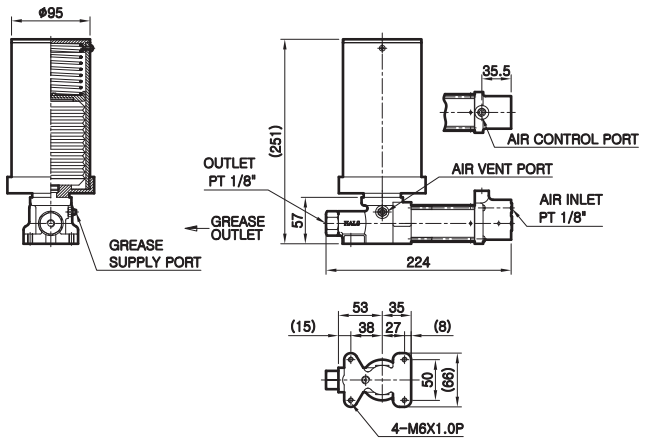
PACKING SIZE (cm)		25(W) x 16(L) x 33(D)
WEIGHT (kg)	PUMP	3
	PACKING	4

External Figure

HGP-□

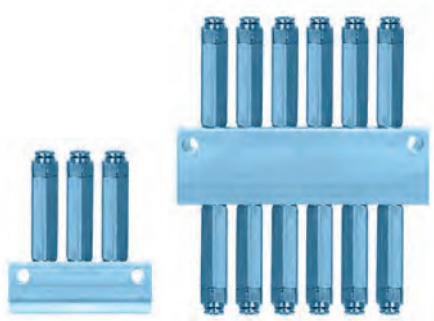


HGP-□C



Grease Metering Valve

그리스 정량 밸브



Model

HGMV - □ □ - □

- (HMGC) Code No.
- (HVA) PORT Single S, Double D
- (HVA) PORT 수량 (Number of outlet)
- Hansung Grease Metering Valve Assy

※ 주문방법

▶ 5구 사용 예 : 왼쪽부터0.1-0.03-0.3-0.05-0.2(cc)가 필요한경우

⇨ **주문번호 HGMV-5S-10330520**

※ How to order

▶ When you need 0.1-0.03-0.3-0.05-0.2(cc) from left while using five port ⇨ **Order number HGMV-5S-10330520**

Feature

- HGMV valve는 용적식 급유 방식의 고신뢰성 밸브
- 전용 분배구 사용으로 자유로운 조합이 가능 (1구 ~16구 가능)

- HGMV series is positive displacement injector valve with high reliability.
- It is available for various combination because it is using exclusive distributor. (Can be used 1~16 ports)

METERING GREASE VALVE SPECIFICATION								
HMGC CODE NO.		3	5	10	20	30	50	100
HMGC (OneTouch)	Discharging Volume (cc/st) 토출 유량	0.03	0.05	0.1	0.2	0.3	0.5	1.0
Operating Pressure (kg/cm2) 작동 압력		25						
Reset Pressure (kg/cm2) 복귀 압력		15						

Metering Grease Valve Model (Olny Valve)

HMG (C) - □ □

- Model Code No. 3 5 10 20 50 100
- One Touch Type
- Metering Valve Model Name

Grease Distributor Model (Only Distributor)

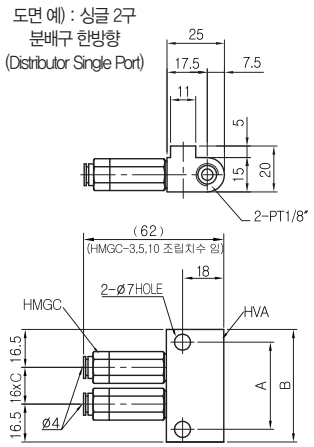
HVA - □ □ □

- S : Single (port 한방향)
- D : Double (port 양방향)
- Single Port수 : 1~12
- Double Port수 : 2~16
- Distributor Model Name

External Figure

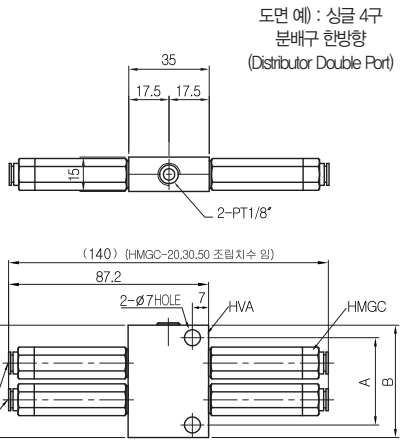
HGMV - 2S - □□

도면 예) : 싱글 2구 분배구 한방향 (Distributor Single Port)



HGMV - 4D - □□

도면 예) : 싱글 4구 분배구 한방향 (Distributor Double Port)



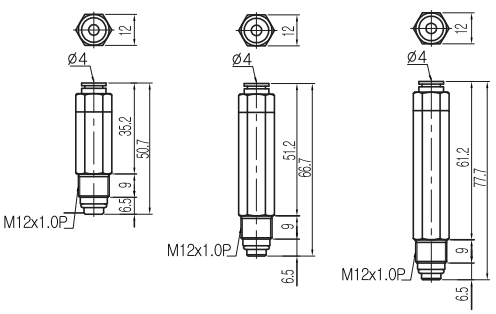
정량 급유식 그리스 밸브
(Port, Double Single 동일함)
Metering Grease Valve
HMGC Model

MODEL			
Vol.(cc/st.)	0.03	0.05	0.1
Marking	003	005	01
Code No.	3	5	10

MODEL				
Vol.(cc/st.)	0.2	0.05	0.5	0.1
Marking	02	03	05	10
Code No.	20	30	50	100

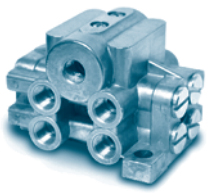
HGMV	DIMENSION											
No. of Single Type Valve	1	2	3	4	5	6	7	8	9	10	11	12
No. of Double Type Valve	2	4	6	8	10	12	14	16	–	–	–	–
A	22	38	54	70	86	102	118	134	150	166	182	198
B	33	49	65	81	97	113	129	145	161	177	193	209
C	0	1	2	3	4	5	6	7	8	9	10	11

HMGC-3,5,10 | HMGC-20,30,50 | HMGC-100

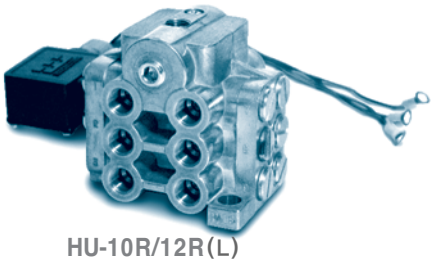


HU □R(L) series

Sequential Distributor
순차적 분배변



HU-2~8R(L)



HU-10R/12R(L)

Model

HU - □ R □

- Blank: Without Limit S/W
- L: Attach Limit S/W
- Numer of Outlet

Feature

HU-R type 분배변은 연속적으로 작동되는 Piston에 의하여 가압유를 각각의 토출구에 정해진 양을 자동적으로 공급하고 Grease의 운동이 가능하면 계속해서 작동할 수 있는 분배변이다. 분배변은 독립적으로 작동하고 토출은 토출구에 따라서 2~8, 10,12구까지 되어 있다.
HU-RL type 분배변은 지시봉(Indicator)에 Limit S/W를 부착하여 분배변의 작동유무를 감지할 수 있다.

- ▶ 배관조립시 토출구가 남았을 경우 절대로 Plug를 사용하여 막지 말아야 한다.
- ▶ 불필요한 토출구는 보조금구(Attachment)를 사용하여 배관하여야 한다. (단, Attachment 연결 배관의 토출량은 2배가 된다.)
- ▶ 분배변은 1 Cycle 작동을 완료하면서 지시봉(indicator)이 전/후진을 하여 어느 한 배관이라도 막히게 되면 분배변이 작동하지 않으므로 이상유무의 육안식별이 가능하다.

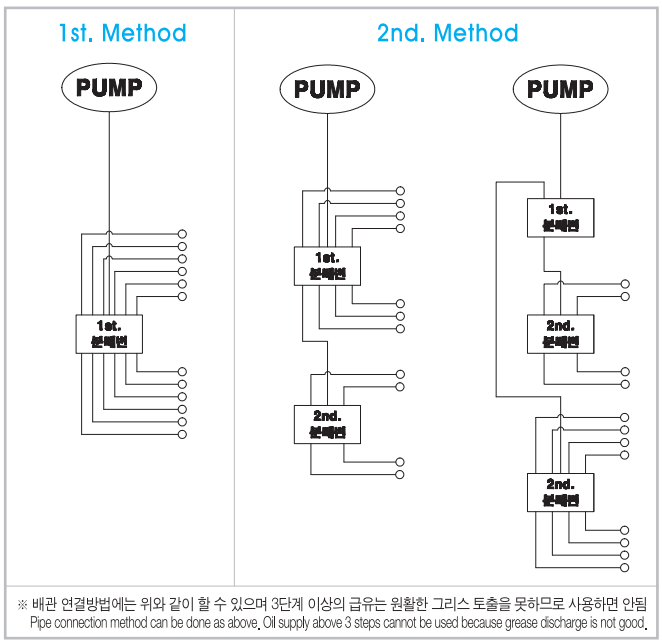
＊주의 : 비누계 성분의 Grease는 사용하지 마십시오.

The HU-R type distributor automatically supplies fixed quantities of pressurized oil to each discharge outlet trough the continuously operating piston, and can operate continuously with grease movement. The distributor operated independently, and the discharge varies between 2~8,10,12 according to the discharge outlet.
The HU-RL type distributor's operation can be detected by attaching a limit S/W to the Indicator.

- ▶ When assembling the pipes, if there are extra discharge outlets, never block them with a plug.
- ▶ Unnecessary discharge outlets need to be piped using the attachments. (But, the pipe connected with attachments will have double the discharge quantity.)
- ▶ Once the distributor has completed 1 cycle, the Indicator moves forward/backward if any pipe is blocked, and does not operate, to allow visual discrimination of any problems.

※ Warning: Do not use soap-based grease.

Oil Supply Method



※ 배관 연결방법에는 위와 같이 할 수 있으며 3단계 이상의 급유는 원활한 그리스 토출을 못하므로 사용하면 안됨
Pipe connection method can be done as above. Oil supply above 3 steps cannot be used because grease discharge is not good.

Pump Spec.

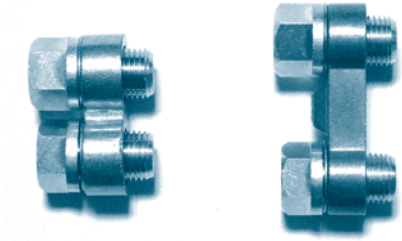
MODEL	HU-R(L)
NUMBER OF OUTLET	2~12
DISCHARGE AMOUNT	0.3cc/stroke
DIS. PRESSURE	MIN. 15kg/cm² MAX. 150kg/cm²
Operating Grease(NLGI Grade)	000,00,0,1,2

Packing Spec.

PACKING SIZE (cm)		13(W) x 8(L) x 8(D)
WEIGHT (kg)	DISTRIBUTOR	1
	PACKING	1

HUA 16/26 series

Sequential Distributor Supplementary Connecting Outlet
순차적 분배변 보조 연결구



Model

HUA-16 : 중심거리 (16) 세로용 (Center distance (16) for Vertical)
HUA-26 : 중심거리 (26) 가로용 (Center distance (26) for Horizontal)

Feature

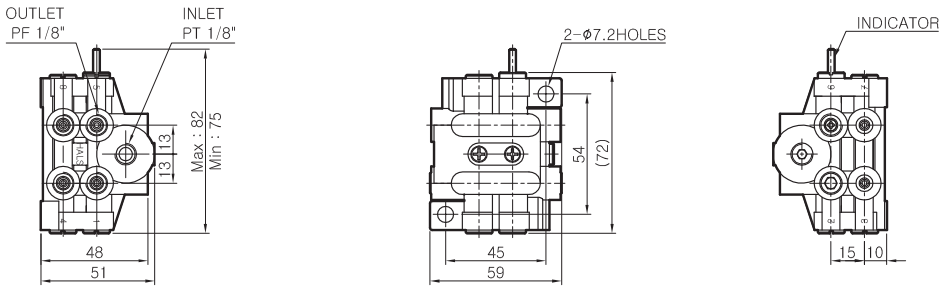
HU-R Grease 분배변 사용 배관 조립시 주유구의 수를 줄일 때 또는 필요한 부분의 주유량을 두 배로 할 때 사용하는 보조연결구이다.

This is a supplementary connecting outlet used when assembling pipes using HU-R grease distributor, reducing the number of oil supply outlets or doubling the oil supply quantities in necessary areas.

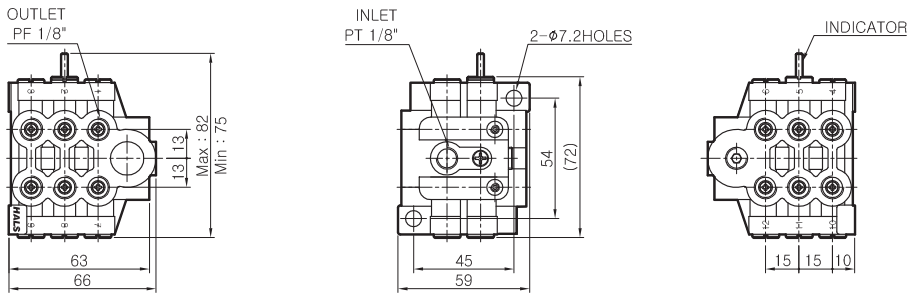
External Figure

HU- □R Type

HU-2~8R

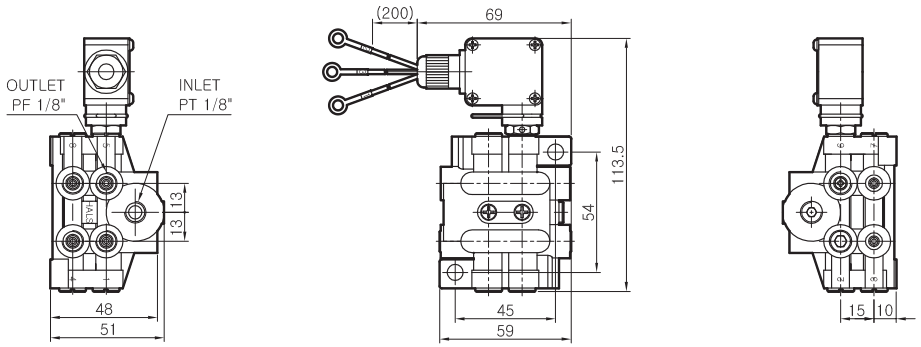


HU-10, 12R

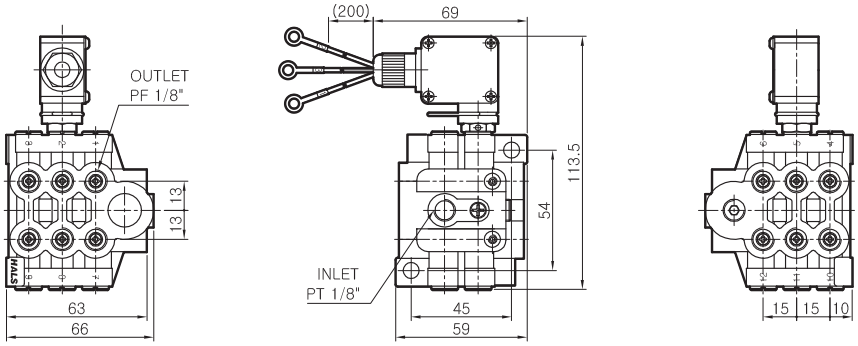


HU-□RL Type

HU-2~8RL

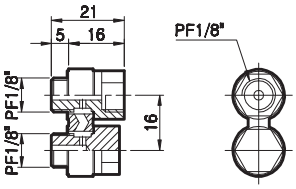


HU-10, 12RL

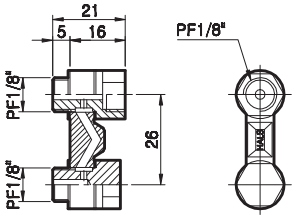


External Figure

HUA-16



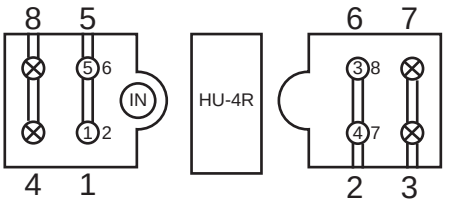
HUA-26



U-R TYPE Distributor operation Manual

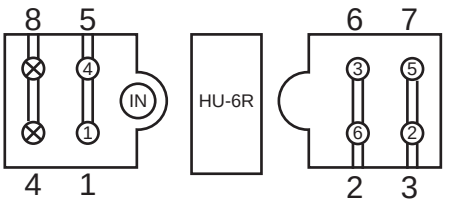
Operation Flow chart

HU-4R



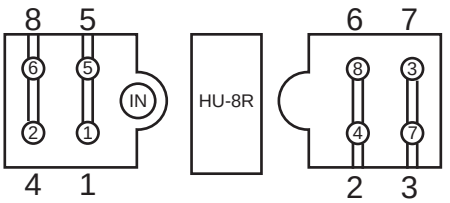
비율 : 1 : 1 : 1 : 1 (동일토출)

HU-6R



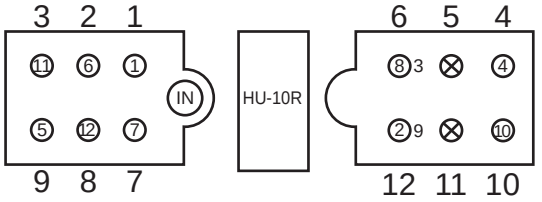
비율 : 1 : 1 : 1 : 1 : 1 : 1 (동일토출)

HU-8R



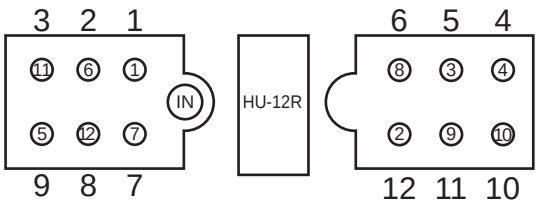
비율 1:1:1:1:1:1:1:1 (동일토출)

HU-10R



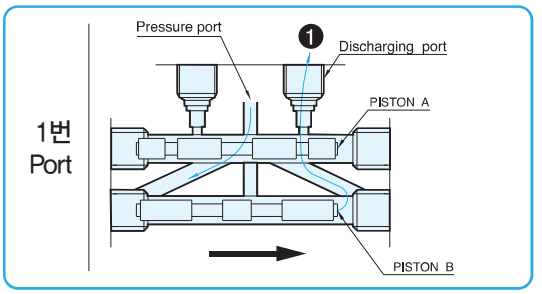
비율:1:1:1:1:2:1:1:1:1:2 (⑥,⑫ Port 2회토출)

HU-12R

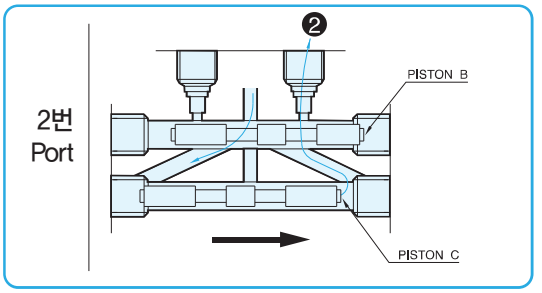


비율:1:1:1:1:1:1:1:1:1:1:1:1 (동일토출)

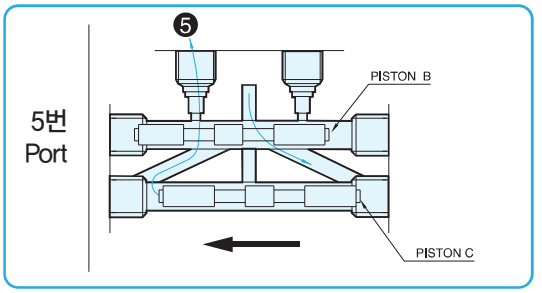
Perfomance Property



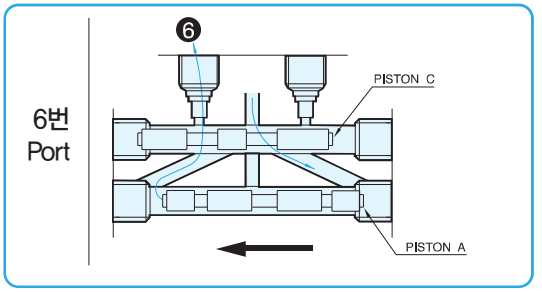
가압구로부터 가압된 Grease는 Piston A의 틈을 통과하여
Piston B의 좌측을 밀어낸다.
Piston B가 오른쪽으로 이동하여 Piston B 우측의 Grease는
Piston A의 틈을 통과하여 토출구 ❶ 을 통하여 외부로 토출한다.



앞에서의 Piston B가 우측으로 이동한 후에 가압구로부터
Grease는 Piston B의 틈을 통과하여 Piston C의 좌측으로
밀어낸다.
Piston C가 오른쪽으로 이동하고 Piston C 우측의 Grease는
Piston B의 틈을 통과하여 토출구 ❷를 통하여 외부로 토출된다.



Pison B가 좌측으로 이동한 후 가압구로부터 Grease는
Piston B의 틈을 통과하여 Piston C의 우측을 밀어낸다.
Piston C가 좌측으로 이동하여 Piston C의 좌측 Grease는
Piston B의 틈을 통과하여 토출구 ❺를 통하여 외부로 토출된다.



Pison C가 좌측으로 이동한 후 가압구로부터 Grease는
Piston C의 틈을 통과하여 Piston A의 우측을 밀어낸다.
Piston A가 좌측으로 이동하여 Piston A의 좌측 Grease는
Piston C의 틈을 통과하여 토출구 ❻를 통하여 외부로 토출된다.

INDEX-I

MODEL NAME PAGE

LUBE PUMP

HMGP-type

HMGP-303 5
HMGP-303D 5
HMGP-303S 7
HMGP-303M 7
HMGP-205S 9
HMGP-6N 11
HMGP-6C 11
HMGP-105N 13
HMGP-105M 13
HMGP-103 13
HMGP-105C 13
HMGP-105D 15
HMGP-105DC 15
HMGP-105W 15
HMGP-205C 17
HALS-33 19
HMGP-6A 20
HMGP-6MA 20

TANK Series

RESIN TANK..... 21
1 LITER TANK..... 21
2 LITER TANK..... 21
4 LITER TANK..... 21
5 LITER TANK..... 21
STEEL TANK..... 22

Fixed Quality Oil Supply Valve

HMV..... 23
HMV-340..... 24
HMV-350..... 25
HMLV 26
HMVS..... 27
Mixing Value..... 28
HMIV 28

MODEL NAME PAGE

Proportional Oil Supply Valve

HSA 29
HSC 29
HJB 29
HJC 29
HJS 29
HHC 29

Distributor

DISTRIBUTOR 30

Accessory

ADAPTOR 31
ELBOW 31
SLEEVE RING 32
BUSHING 32
INSERT 32
M10x1.0P CONNECTOR 32
M12x1.0P CONNECTOR 32
CONNECTOR 32
PLUG 33
FLEXIBLE HOSE 33
TUBE CLAMP 33
CAP 34
TUBE 34
REDUCER 34
Cu-WASHER 34
Mail/Female connector 34
FLOW INDICATOR 35
PRESSURE GAUGE..... 35
DRAIN FILTER 36
LINE FILTER 36
FLOAT SWITCH..... 37
PRESSURE SWITCH..... 37

MODEL NAME PAGE

COOLANT PUMP

HCP-S type

HCP-60S 3
HCP-100S 3
HCP-120S 3
HCP-180S 3
HCP-250S 3
HCP-400S 3

HCP-F type

HCP-60F 6
HCP-100F 6
HCP-180F 6
HCP-250F 6
HCP-400F..... 6

HCP-F(High Pressure) type

HCP-418F..... 9
HCP-428F..... 9
HCP-419F..... 9
HCP-618F..... 9
HCP-628F..... 9

HCP-EMF(S) type

HCP-1100EMF(S)..... 12
HCP-1800EMF..... 12
HCP-2500EMF..... 12
HCP-4000EMF..... 12

INDEX-II

MODEL NAME PAGE

HCP-EBMF TYPE

HCP–1800EBMF 15

HCP–2500EBMF 15

HCP–4000EBMF 15

HCP-EHMF(S) type

HCP–1100EHMF(S) 18

HCP–1800EHMF(S) 18

HCP–2500EHMF(S) 18

HCP–4000EHMF(S) 18

HCP-EHMF type

HCP-4000EHMF130 21

HCP-4000EHMF200 21

HCP-4000EHMF280S 21

HCP-5500HMF200 21

HCP-5500HMF220 21

HCP-5500HMF240 21

HCP-5500HMF260 21

HCP-5500HMF280 21

HCP-EMS type

HCP–750EMS–4/4 26

HCP–1100EMS–6/6 26

HCP–1100EMS–10/8 26

Suction Filter

HCS SUCTION FILTER 29

MODEL NAME PAGE

ROTOR PUMP

HTOP type

HTOP-11A 7

HTOP-12A 7

HTOP-13A 7

HTOP-11AVB 7

HTOP-12AVB 7

HTOP-13AVB 7

HTOP-2F 8

HTOP-3F 8

HMTP-3M-MA(VB) type

HMTP-3M-75 9

HMTP-3M-100 9

HMTP-3M-200 9

Oil Cooler

Oil COOLER (7L TANK) 13

Oil COOLER (8L TANK) 13

Oil COOLER (14L TANK) 13

Oil COOLER (24L TANK) 13

HTP type

HTP-204(HA/HB)(VB/VD) 14

HTP-206(HA/HB)(VB/VD) 14

HTP-208(HA/HB)(VB/VD) 14

HTP-210(HA/HB)(VB/VD) 14

HTP-212(HA/HB)(VB/VD) 14

HTP-216(HA/HB)(VB/VD) 14

HTP-220(HA/HB)(VB/VD) 14

HMTP-3M-HA(VB/VD) type

HMTP-3M-400-HA(VB/VD)-(E/P) 16

HMTP-3M-750-HA(VB/VD)-(E/P) 16

HMTP-3M-1500-HA(VB/VD)-(E/P) 16

HMTP-3M-HAVBF type

HMTP-3M-400-HAVBF-(E) 19

HMTP-3M-750-HAVBF-(E) 19

HMTP-3M-1500-HAVBF-(E) 19

HMTP-1M-HA(VB/VD) type

HMTP-1M-400-HA(VB/VD) 21

HMTP-1M-750-HA(VB/VD) 21

MODEL NAME PAGE

GREASE PUMP

HM 3

DV 4

DW 6

HGP-10 □ MG 8

HCG 9

MG-10 10

HGP-16(S) 11

HGP-16E 11

HGP-40E 11

HGP-720 13

HGMV 14

HU-2~8R 15

HU-10R 15

HU-12R 15

HU-2~8RL 15

HU-10RL 15

HU-12RL 15

HUA-16 15

HUA-26 15

UR–TYPE 17

(Operation Manual)

NOTE

HALS
㈜ 한성정공

Homepage : **www.halslube.com**
E-mail : **hals@halslube.com**

HALS

|주| 한성정공
Hansung Auto Lube System

인천광역시 남동구 은청로 88 (남동공단 2단지 75B/6L)
Tel : 032)818-0652~5 / Fax : 032)816-8432
75B6L, 88, Euncheong-ro, Namdong-gu, Incheon, Korea
TEL : +82-32-818-0652~5/Fax : +82-32-816-8432

(주)한성HALS HANSUNG HALS CO.,LTD.
TEL : +82-32-822-1871~3 / FAX : +82-32-822-1870

부산 영업소 BUSAN Office
TEL : +82-51-325-4187 / FAX : +82-51-322-6661

대구 대리점 DAEGU Office
TEL : +82-53-633-3604 / FAX : +82-53-633-3662

광주 대리점 GWANGJU Office
TEL : +82-62-955-6766 / FAX : +82-62-955-6765

창원 대리점 CHANGWON Office
TEL : +82-55-237-6123 / FAX : +82-55-237-6124

경기 시화대리점 GYEONGGI Sihwa Office
TEL : +82-31-431-5186 / FAX : +82-31-431-5187

경기 안산대리점 GYEONGGI Ansan Office
TEL : +82-31-365-3185 / FAX : +82-31-365-8186

경남 대리점 GYEONGNAM Office
TEL : +82-51-796-3757 / FAX : +82-51-796-3759

중국 영업소 CHINA Office
(HAN CHENG PRECISION (DALIAN) CO., LTD)
No.42-899-1, Wujia Country, Zhanqian Street,
Jinzhou District, Dalian City, China
TEL : +86-411-85901698 / FAX : +86-411-85901698
E-Mail : 13624288118@163.com

일본 영업소 (LEE-TECH INC.) JAPAN Office
KAIGAN STREET 2-2-1, MINATOGU, OSAKA CITY, JAPAN
TEL : +81-6-6599-7100 / FAX : +81-6-6599-7101
E-Mail : lti@leetechinc.com

미국 영업소 United States Office
(RAS MACHINE TOOL TECHNOLOGIES, INC.)
30 Front Street, Belchertown, MA 01007
TEL : +1-413-323-9041 / FAX : +1-413-323-9595
E-Mail : rick@rasmachinetool.com

HL 2019 - 12

※ 본 카탈로그는 외관 및 제품성능 개선을 위하여 예고없이 내용이 수정될 수 있습니다.
※ Specification and standard of this Product are subject to change for quality improvement without prior notice.