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HALS

HANSUNG AUTOMATIC LUBRICATION SYSTEM
Products & Technical Information Collection



HALS

|주| 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

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1996.08 : 고압정밀윤활시스템 개발 (국내 최초)

1997.03 : 국제청정표창 수상

1997.11 : 국무총리표창 수상 (우수자본재개발유공)

1999.03 : EM인증(국립기술품질원)

1999.09 : ISO9001 인증

2001.11 : 국무총리표창 수상(해외무역진출)

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(Coolant 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)

1985.08 Established HANSUNG PRECISION COMPANY

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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 Coolant Pump)

2018.04 : Develop 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)

the Global Leader

To the World Best Technology & Quality



HANSUNG AUTOMATIC LUBRICATION SYSTEM

LUBE PUMP HALS

GREASE PUMP

ROTOR PUMP

COOLANT PUMP

LUBE PUMP

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/cm ² ~ 20kg/cm ² (정격압력 이상이면 토출량과는 무관함) (If pressure is higher than the fixed point, it is irrelevant to discharge volume.)	
Pressure S/W	Option	
Main pipe	φ 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)	
	Size of V/V	Volume of a discharge
	0.03cc	0.03cc
	0.1cc	0.1cc
	0.6cc	0.6cc
	TOTAL	0.73cc
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.	

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/cm ² (압력차에 의한 토출량의 편차가 심함) (Wide deviation depending on the pressure)	
Pressure S/W	None	
Main pipe	φ 4, φ 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)	
	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
	0	1
Number of operation	Pump 내 Volume 조절 작동 (Operation of volume controller in the pump)	
	± 30% (도착 오일의 급유점 기준) (based on point of oil supply for arrived oil)	
	펌프의 토출량과 급유점의 토출량 변화가 심함 The discharge volume of the pump and that of the point of oil supply widely varies.	

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 오 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)

$Q = 0.04 \times \text{직경} \times \text{열수}$ [$Q=0.04 \times \text{diameter} \times \text{number of rows}$]



Sliding Bearing

$Q = 0.023 \times \text{회전축 직경} \times \text{축경길이}$ [$Q=0.023 \times \text{rotating shaft diameter} \times \text{shaft region length}$]



Plane Sliding

$Q = 0.0017 \times \text{길이} \times \text{폭 (수평방향)}$ [$Q=0.0017 \times \text{length} \times \text{width (horizontal direction)}$]

$Q = 0.006 \times \text{길이} \times \text{폭 (수직방향)}$ [$Q=0.006 \times \text{length} \times \text{width (vertical direction)}$]



Cylinder Sliding

$Q = 0.023 \times \text{직경} \times \text{길이}$ [$Q=0.023 \times \text{diameter} \times \text{length}$]



Ball Bearing Way

$Q = 0.012 \times \text{길이} \times \text{열수}$ [$Q=0.012 \times \text{length} \times \text{number of rows}$]



CAM

$Q = 0.013 \times \text{접촉원주} \times \text{폭}$ [$Q=0.013 \times \text{contact circumference} \times \text{width}$]



Gear

$Q = 0.046 \times \text{피치원 직경} \times \text{Gear폭}$ [$Q=0.046 \times \text{pitch circle diameter} \times \text{gear width}$]



Chain

$Q = 0.008 \times \text{길이} \times \text{폭}$ [$Q=0.008 \times \text{length} \times \text{width}$]

정량 급유 시스템 Fixed Quantity Oil Supply System

시스템의 개요

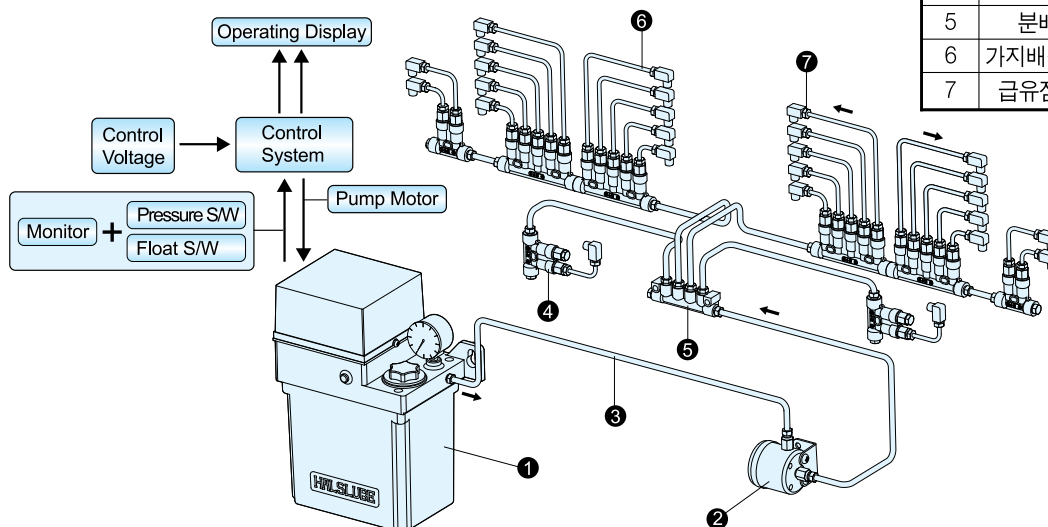
System Summary

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 : $\phi 6$ Oil supply pipe : $\phi 4$
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 Quantity 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)



특징

Feature

- 1) 정량밸브를 통하여 정량의 윤활유를 정확히 공급할 수 있다.
 - 2) 밸브 설치의 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 토출되며, 간헐 방식과 연속 급유 방식으로 나누어 진다. 또한 펌프에서 말단의 급유 개소까지 외경 $\phi 4\text{mm}$ 단일 배관을 사용하며, 폭넓은 점도 범위에 사용할 수 있다. 소형에서의 고점도 가공이 필요한 정밀공작기계와 금형 기계에 적용되는 대표적인 집중 윤활 장치이다.

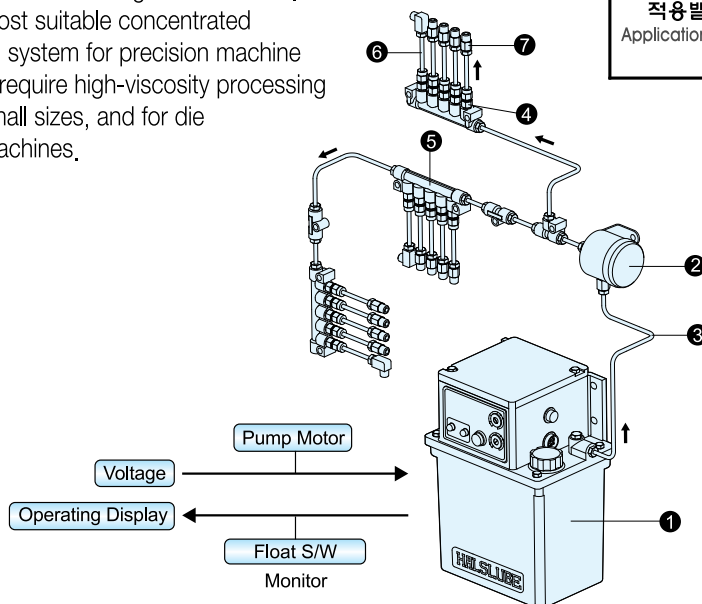
The concentrated lubricating system makes the pipes connected to the lubricating oil supply sites to have resistance against the flow of lubricating oil delivered from the pump, this suppressing the quantity of oil discharge, and distributes the lubricating oil to each oil supply site.

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 $\phi 4\text{mm}$ 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 : $\phi 6$, $\phi 4$ Oil supply pipe : $\phi 4$	
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)

특징

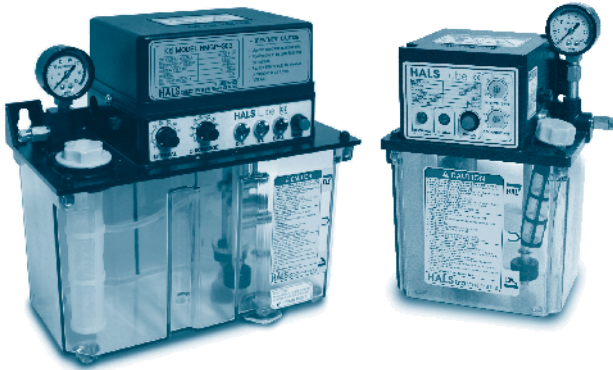
Feature

- 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.

Internal Control Fixed Quantity Oil Supply Pump

내부제어용 정량급유 펌프



Model

HMGP - ☐ - O1 - T - ☐ - ☐ - ☐ - ☐

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)

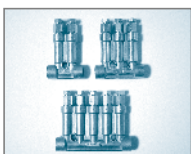
1. A gear type volume pump that allows precise delivery across a wide range of viscosities.
2. It can be applied to long distances of more than 20m, and can also be used in small, large machine tools and high-precision machines.
3. To make full use of the fixed quantity oil supply system, the HMV series 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.

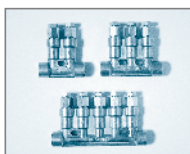
PUMP SPEC.							
MODEL NAME		HMGP-303		HMGP-303D			
PUMP TYPE		GEAR PUMP					
DISCHARGE PRESSURE		17kg/cm ²					
PRESSURE GAUGE		0~35kg/cm ²					
USING OIL		32~220(cSt)					
FILTER		80 Mesh					
TANK CAPACITY		4Liter		2Liter			
DISCHARGE AMOUNT		150cc/min					
INTERVAL TIME		3~120min		3~30min			
FLOAT 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 ∅					
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

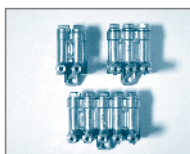
Components



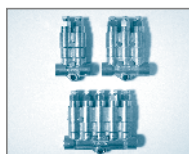
HMV



340



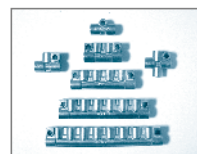
HMLV



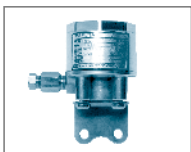
350



HMVS



Distributor



Line Filter



Gauge



Pressure Switch



Bushing, Ring



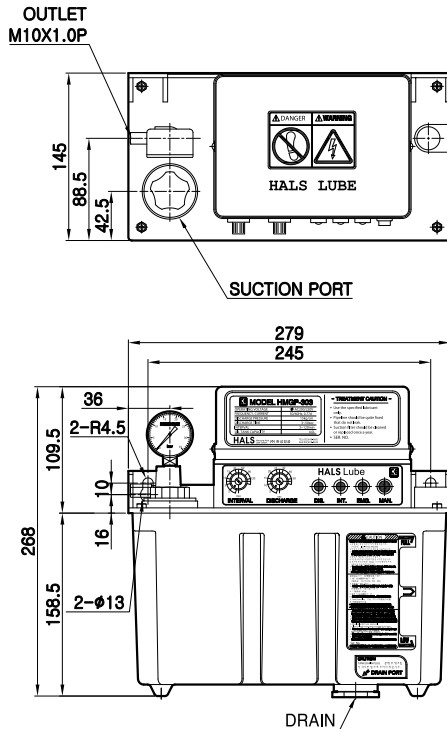
Hose



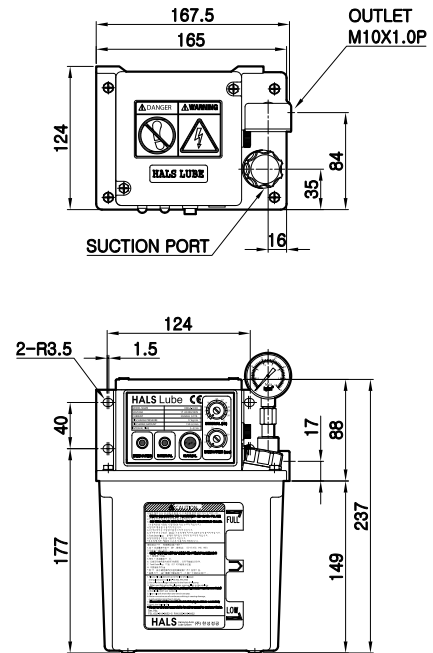
etc.

External Figure

HMGP-303

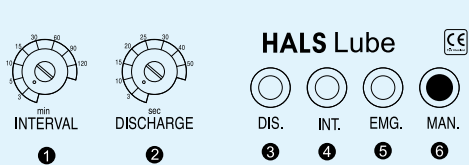


HMGP-303D



Operating Guide

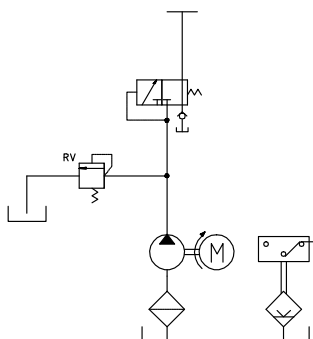
Pump control - Front



- 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. lamp ④ switches on. When ullage inside the tank decreases, the EMG. lamp ⑤ switches on. When ullage inside the tank decreases, the EMG. lamp ⑤ switches on.
- 4) The MAN. button ⑥ 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/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).

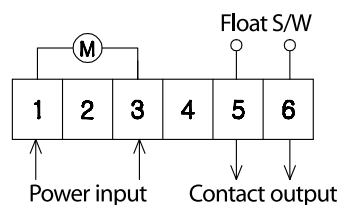
- 1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지시간(분)을 정하고, discharge ②으로 구동시간(초)을 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
- 2) 펌프의 최소 휴지시간은 3분이고, 최저 토출 시간은 3초까지 설정이 가능하다.
- 3) 펌프 구동시 DIS. 램프③가 켜지고, 휴지시에는 INT. 램프 ④가 켜진다. Tank 내 유면 저하시 EMG. 램프⑤가 켜진다.
- 4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑥을 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
- 5) Pump는 공장 출고시 17kg/cm²으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing

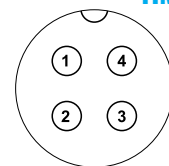


Wiring Diagram

HMGP-303



HMGP-303D



- ① ④ : POWER (1:BLACK, 4:WHITE)
② ③ : OIL ALARM (2:RED, 3:GREEN)

External Control Fixed Quantity Oil Supply Pump

외부제어용 정량급유 펌프



Model

HMGP - [] - O1 - T [] - [] / [] - [] - []

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

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.

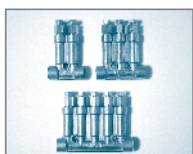
1. A highly reliable externally controlled fixed quantity oil supply pump.
2. It is used across a wide range of fields, and is especially suitable as a fixed quantity oil supply pump for high-precision, large machine tools.
3. The pump's main drive connection parts are made of single die casting pieces 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.

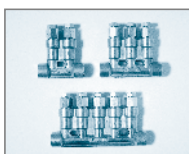
PUMP SPEC.					
MODEL NAME		HMGP-303S		HMGP-303M	
PUMP TYPE		GEAR PUMP			
DISCHARGE PRESSURE		17kg/cm²			
PRESSURE GAUGE		0~35kg/cm²			
USING OIL		32~220(cSt)			
FILTER		80 Mesh			
TANK CAPACITY		4Liter		2Liter	
DISCHARGE AMOUNT		150cc/min			
FLOAT S/W		Contact type A contact (NO)			
		ON at Low level			
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 ∅			
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

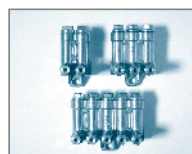
Components



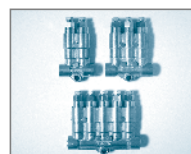
HMV



340



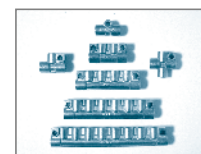
HMLV



350



HMVS



Distributor



Line Filter



Gauge



Pressure Switch



Bushing, Ring



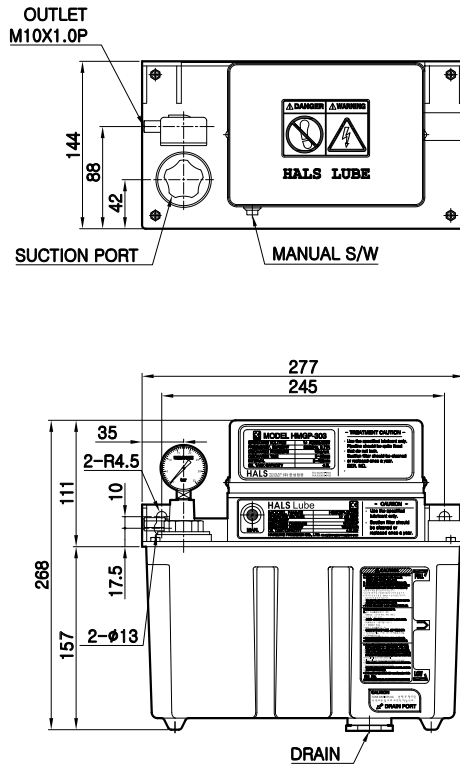
Hose



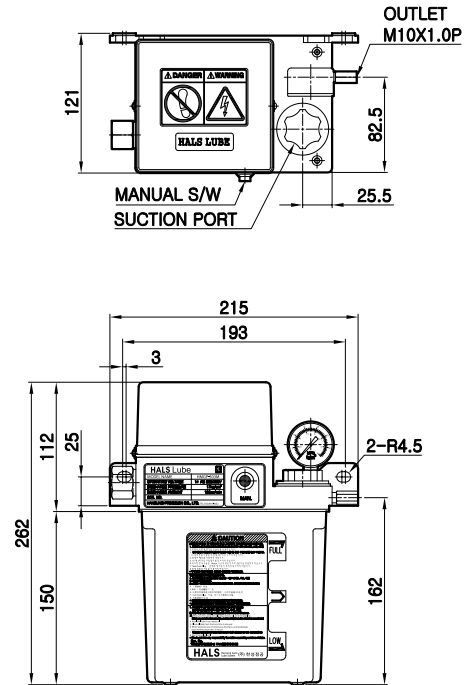
etc.

External Figure

HMGP-303S



HMGP-303M

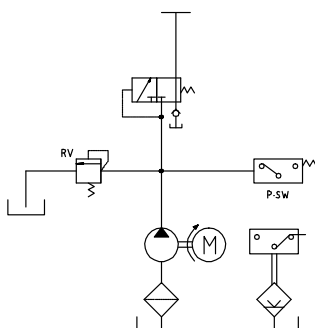


Operating Guide

- 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/cm²로 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 점접신호를 기계 제어장치로 보내어 자동작을 확인할 수 있다.

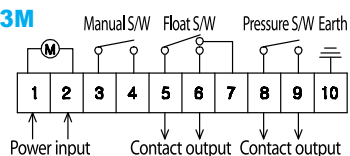
- 1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied. The pause and operation times can be set in the same way as for HMGP-303.
- 2) Maximum operation time of the pump is 4 minutes, and the pause time needs to be set 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 take 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

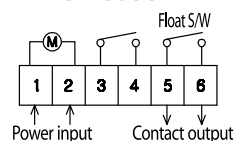


Wiring Diagram

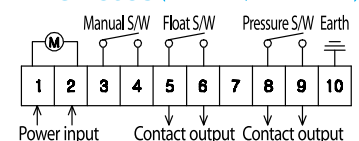
HMGP-303M



HMGP-303S

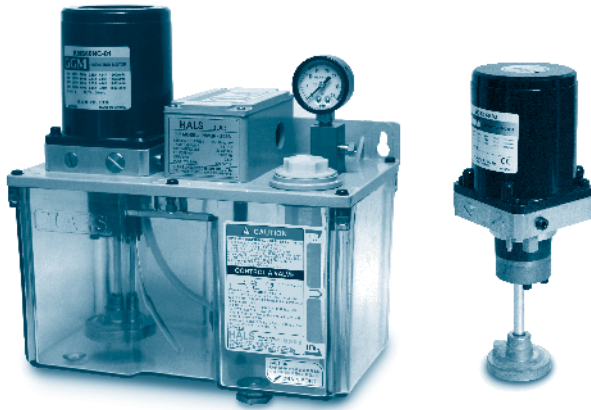


HMGP-303S (Manual S/W attached)



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.

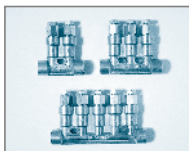
Pump Spec.

PUMP SPEC.		
MODEL NAME		HMGP-205S
PUMP TYPE		GEAR PUMP
DISCHARGE PRESSURE		15~30kg/cm ²
PRESSURE GAUGE		0~35kg/cm ²
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 ∅
VOLTAGE		200V220V
CURRENT		1.0A1.35A/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

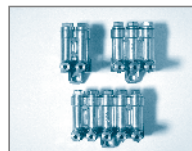
Components



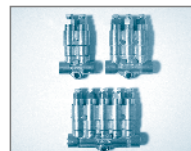
HMV



340



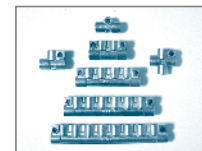
HMLV



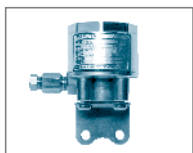
350



HMVS



Distributor



Line Filter



Gauge



Pressure Switch



Bushing, Ring



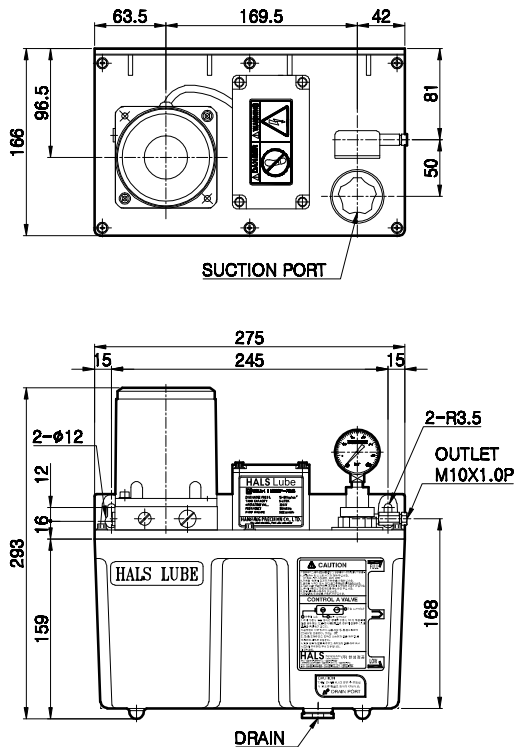
Hose



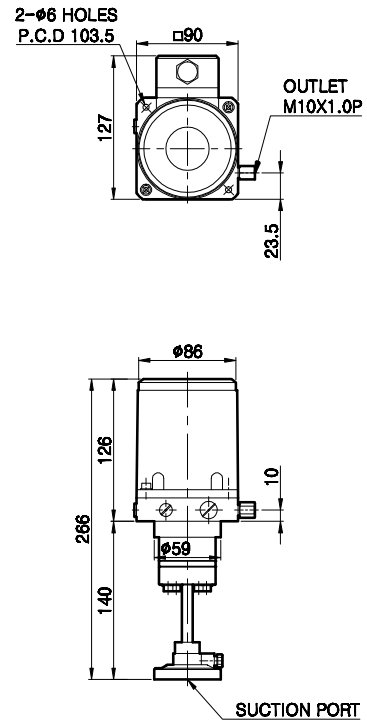
etc.

External Figure

TANK UNIT



PUMP

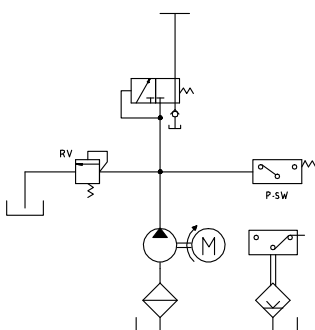


Operating Guide

- 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 자동작을 확인할 수 있다. (option)
- 6) Pump부만 별도로 사용 Tank내 자유로이 부착하여 사용이 가능하다.

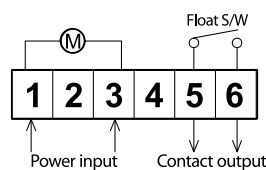
- 1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied. The pause and operation times can be set in the same way as for HMGP-303.
- 2) Minimum pause time of the pump is 4 minutes, and the pause time needs to be set at 4 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

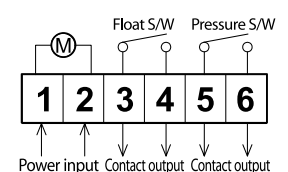


Wiring Diagram

Normal type



Pressure S/W attached (option)



Internal Control Proportional Oil Supply Pump

내부제어용 비례급유 펌프



Model

HMGP - 6 - O2 - T - - -

Interval Time:
G: 1~120min
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 Control

Feature

- 대표적인 비례급유용 펌프로 광범위한 산업분야에 활용이 된다.
- 구조가 간단하고 내구성이 우수하다.
- 내부제어 방식으로 전원 공급만으로 사용이 가능하다.
- 유면저하시 감지장치 부착으로 기계의 신뢰성을 높였다.
- 방진장치가 설치되어 진동 및 충격이 있는 프레스 등에도 활용이 가능하다.
- Line Filter 와 Drain Filter를 병행 사용하여 Oil 재사용 가능하다.
- 비례급유용 시스템에 활용하기 위해서는 HJB series valve를 사용하여야 한다.

- It is the most suitable pump for proportional oil supply, and can be applied to a wide range of industrial fields
- It has a simple structure and excellent durability
- An Internal control type that can be used by simply supplying power.
- It is equipped with a ullage decrease detector to increase reliability.
- It is equipped with a dustproof device, and can be used in presses that are subjected to vibrations and impacts.
- A line filter and a drain filter are used side by side, allowing oil reuse.
- 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/cm ²		
PRESSURE GAUGE	0~35kg/cm ²		
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 ∅		
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



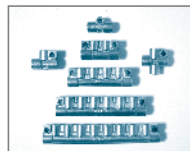
HSA/HSC



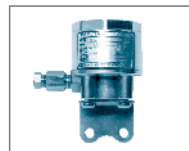
HJB/HJC



HJS/HHC



Distributor



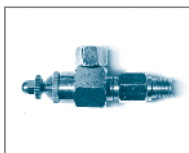
Line Filter



Drain Filter



Gauge



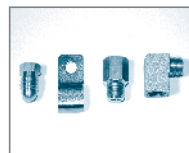
Oil Control Valve



Bushing, Ring, Cap

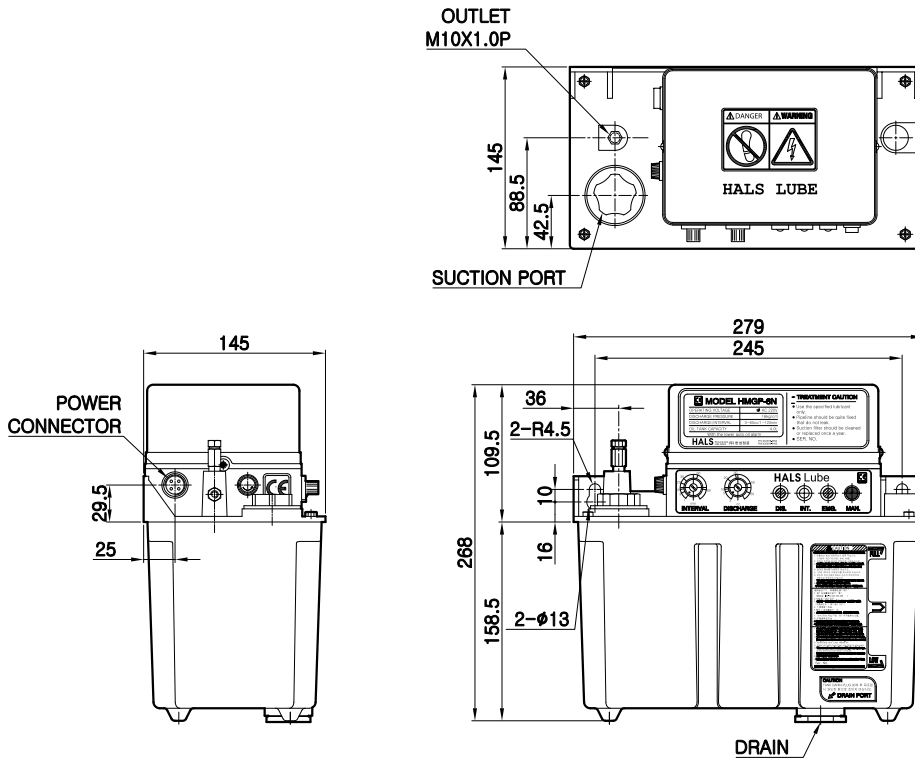


Hose



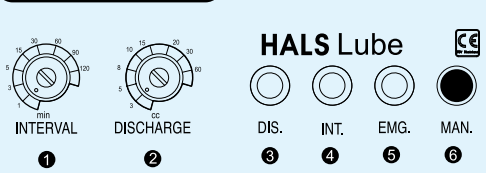
etc.

External Figure



Operating Guide

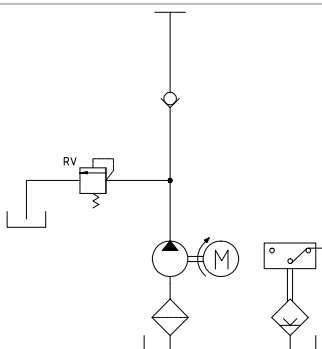
Pump control - Front



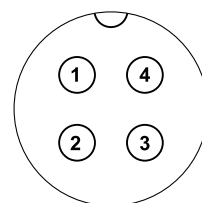
- 1) The pump operates once power is connected and electricity is supplied. You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
- 2) Minimum pause time of the pump is 1 minute, 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. lamp ④ switches on. When ullage inside the tank decreases, the EMG. lamp ⑤ switches on.
- 4) The MAN. button ⑥ 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/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).

- 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/cm²으로 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)

Internal & External Control Proportional Oil Supply Pump

내부 및 외부제어용 비례급유 펌프



Model

HMGP - [] - 02 - T [] - [] - [] - []

Interval Time:

S: 3~30mm / L: 30~120mm

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 점접출력 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/cm ²			
USING OIL	32~220(cSt)			
FILTER	80mesh			
TANK CAPACITY	2Liter			
DISCHARGE AMOUNT	4~80cc	4~45cc	3~30/ 4~80cc	100cc/min
INTERVAL TIME	300~120min		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		
	PACKING	2.5		

※ Motor-3200r.p.m 기준

Components



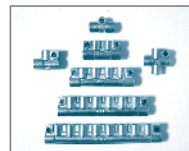
HSA/HSC



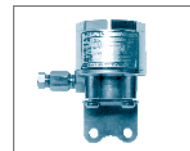
HJB/HJC



HJS/HHC



Distributor



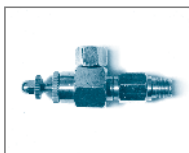
Line Filter



Drain Filter



Gauge



Oil Control Valve



Bushing, Ring, Cap

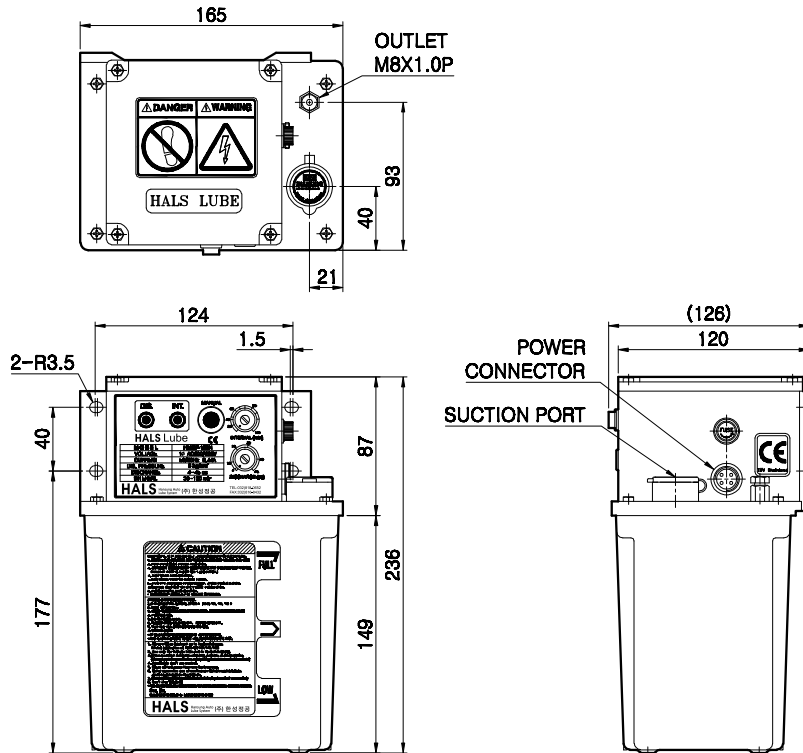


Hose



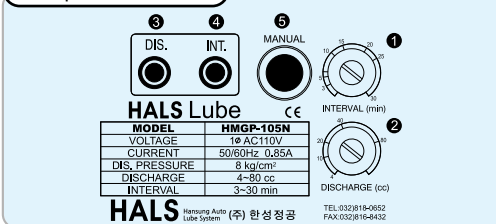
etc.

External Figure



Operating Guide

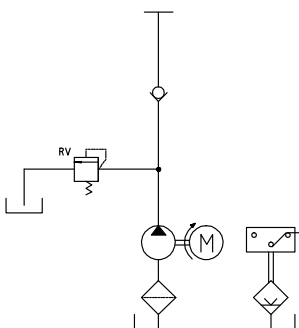
Pump control - Front



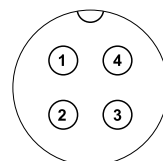
- The pump operates once power is connected and electricity is supplied. You can set the pause time using the Interval ① on the front of the pump, and discharge ② to set the operating time (seconds). Afterwards, the pump will repeatedly operate and pause.
- Minimum pause time of the pump is 3 minutes, 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.)
- When operating the pump, the DIS. lamp ③ switches on, and during the pause, the INT. lamp ④ switches on.
- The MAN. button ⑤ 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.)
- The pump is set at 8kg/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).

- 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지시간(분)을 정하고, discharge ②으로 구동시간(초)을 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
- 펌프의 최소 휴지시간은 3분이고, 최저 토출은 3cc까지 설정이 가능하다. (휴지시간은 S형 3~30분과 L형 30~120분으로 구분된다.)
- 펌프 구동시 DIS. 램프 ③이 켜지고, 휴지시에는 INT. 램프 ④가 켜진다.
- 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑤를 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
- Pump는 공장 출고시 8kg/cm²으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing

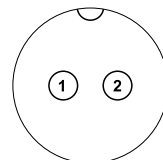


Wiring Diagram



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: 3~30mm / L: 30~120mm
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 Control
W: External Control
(Attach Pressure S/W)

Feature

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

- 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.
- The main parts of the pump are integrated to ensure easy repairs and maintenance.
- 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/cm ²		
USING OIL	32~220(cSt)		
FILTER	80 Mesh		
TANK CAPACITY	2Liter		
DISCHARGE AMOUNT	3~30/ 4~80cc	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 ∅		
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



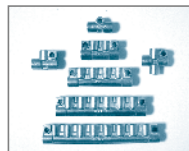
HSA/HSC



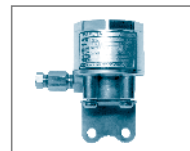
HJB/HJC



HJS/HHC



Distributor



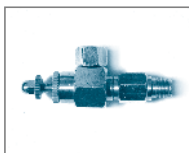
Line Filter



Drain Filter



Gauge



Oil Control Valve



Bushing, Ring, Cap



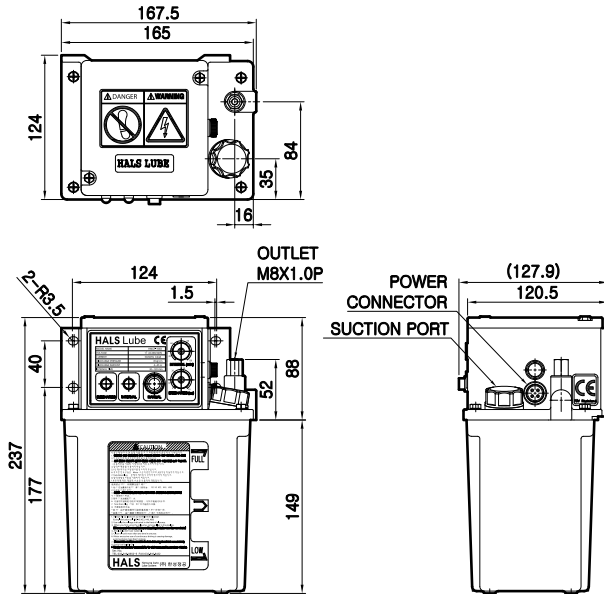
Hose



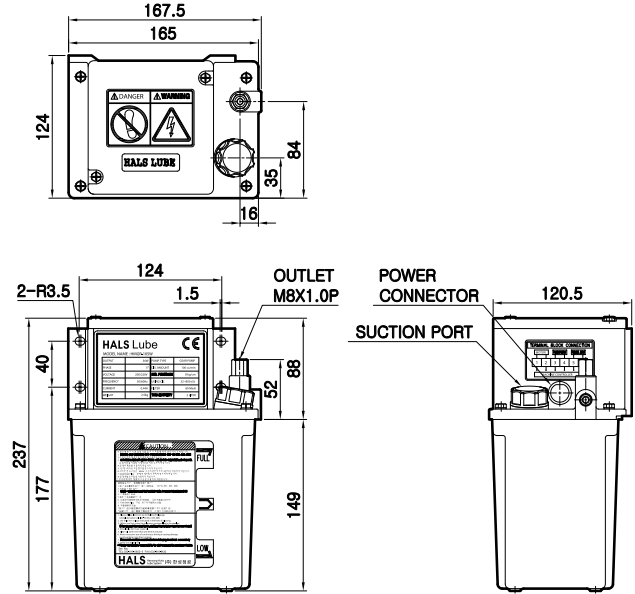
etc.

External Figure

HMGP-105D

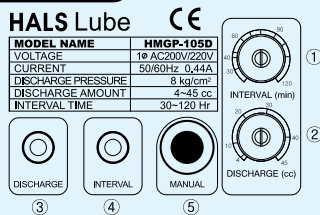


HMGP-105W



Operating Guide

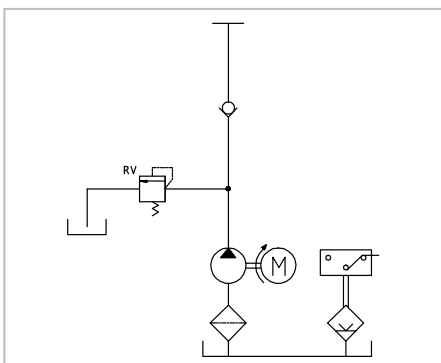
Pump control - Front



- 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. lamp ④ switches on.
- 4) The MAN. button ⑤ 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/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).

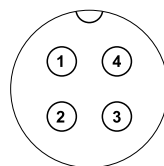
- 1) 전원을 연결하고 전기를 공급하게 되면 펌프가 작동한다. 펌프 전면부 Interval ①으로 휴지 시간(분)을 정하고, Discharge ②으로 구동시간(초)을 눈금에 맞게 정할 수 있다. 이후 구동과 휴지를 반복하면서 작동한다.
- 2) 펌프의 최소 휴지 시간은 3분이고, 최저 토출은 3cc까지 설정이 가능하다.
- 3) 펌프 구동시 DIS. 램프 ③이 켜지고, 휴지시에는 INT. 램프 ④가 켜진다.
- 4) 시험구동 및 배관내 에어 빼기용으로 MAN. 버튼 ⑤를 사용할 수 있다. (단, 5분이상 구동 시키지 마십시오. Motor 소손의 원인이 됩니다.)
- 5) Pump는 공장 출고시 8kg/cm²으로 설정되나, 사용유 점도 변화(사용유 점도, 주위온도)에 따라 차이가 있을 수 있다.

Hydraulic circuit drawing



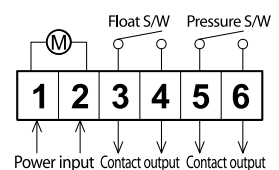
Wiring Diagram

HMGP-105D, 105DC



- ① ④ : POWER (1:BLACK, 4:WHITE)
② ③ : OIL ALARM (2:RED, 3:GREEN)

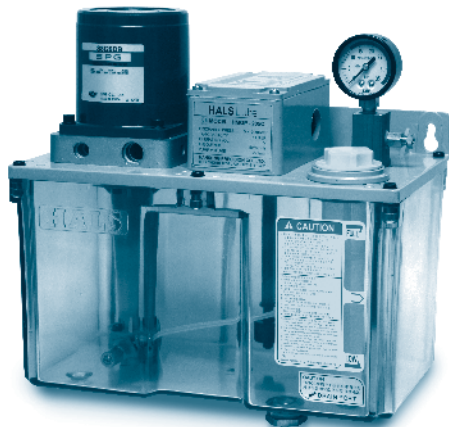
HMGP-105W



Power input Contact output Contact output

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

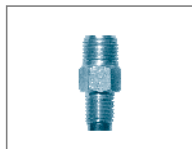
1. 대용량의 비례급유 시스템에 적용할 수 있다.
2. 윤활 급유 장치 뿐만 아니라 소량의 윤활유 회수 장치에도 적합하다.
3. 외부 제어용 펌프로 사용자 환경에 맞추어 다양한 적용이 가능하다.
4. 유면 저하 감지 기능이 내장되어 있다.
5. HJB series 및 HJC series (연속급유용)으로 광범위하게 적용된다.

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/cm ²
PRESSURE GAUGE		0~35kg/cm ²
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 ∅
VOLTAGE		110V220V
CURRENT		0.46A0.21A
FREQUENCY		50/60Hz
PACKING SPEC.		
PACKING SIZE(cm)		35(W) x 18(L) x 30(D)
WEIGHT(kg)	PUMP	7
	PACKING	8

Components



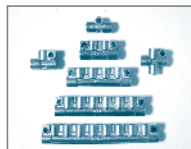
HSA/HSC



HJB/HJC



HJS/HHC



Distributor



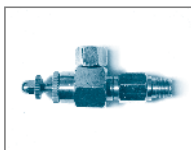
Line Filter



Drain Filter



Gauge



Oil Control Valve



Bushing, Ring, Cap



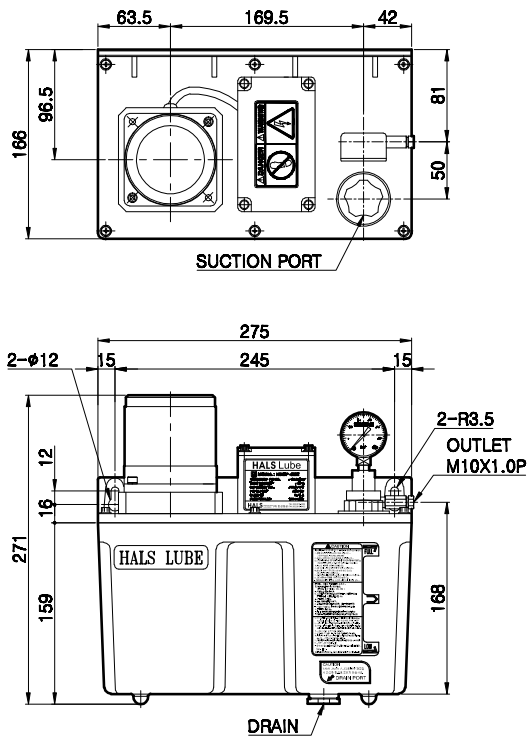
Hose



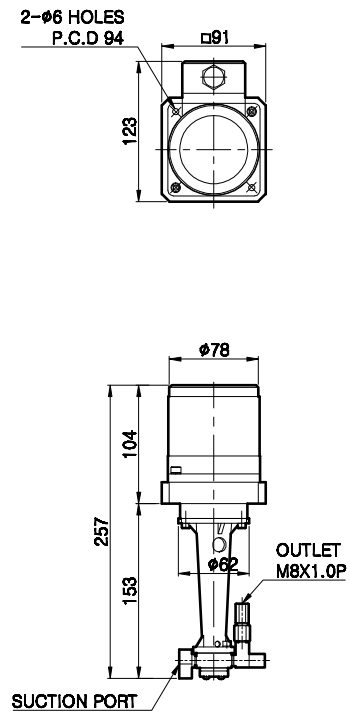
etc.

External Figure

TANK UNIT



PUMP

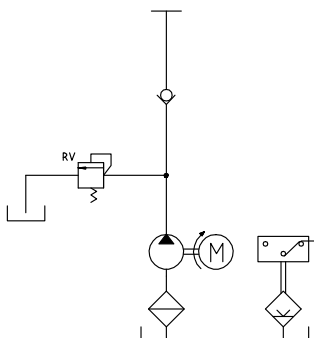


Operating Guide

- 1) 별도의 제어장치가 없고 전원을 연결하고 전기를 공급 하면 펌프가 작동한다.
- 2) 펌프는 사용 환경에 맞추어 휴지시간과 구동시간을 반복적으로 작동 시키면 된다.
- 3) 본제품은 연속구동형 비례밸브와 함께 사용할 수 있는 펌프이지만, 연속 구동형 제품은 아니므로 최대 5분이상 구동 설정을 하면 Motor가 소손 될 수 있다.
- 4) Pump는 공장 출고시 8kg/cm²으로 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.

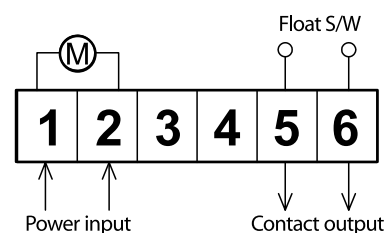
- 1) It does not have a separate control device, and the pump operates automatically once power is connected and electricity is supplied.
- 2) The pump has to be operated repeatedly adjust on the pause time and the operation time.
- 3) This pump can be used with continuously operating proportional valve. 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/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 pump is used separately like as HMGP-205S. It can be attached freely inside the tank for use.

Hydraulic circuit drawing



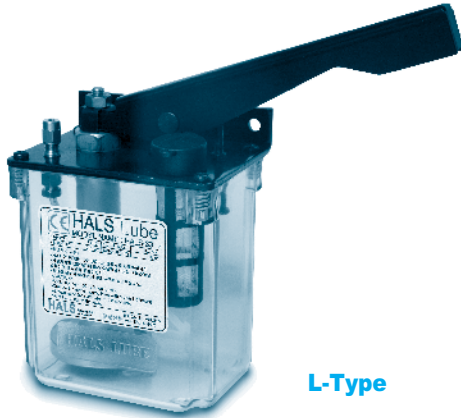
Wiring Diagram

Normal type



Piston Manual Pump

피스톤 수동 펌프



L-Type

Model

HALS - 33 -

R: Right type
L: Left type

Feature

피스톤 수동 펌프로써 펌프의 상징인 실린더의 내면을 특수 가공하여 펌프의 송출 압력을 7kg/cm^2 까지 높였으므로 원활한 윤활유의 공급이 가능해졌으며, 또한 소형 및 경량으로 설치 공간이 적게 들어 매우 경제적인 펌프이다.

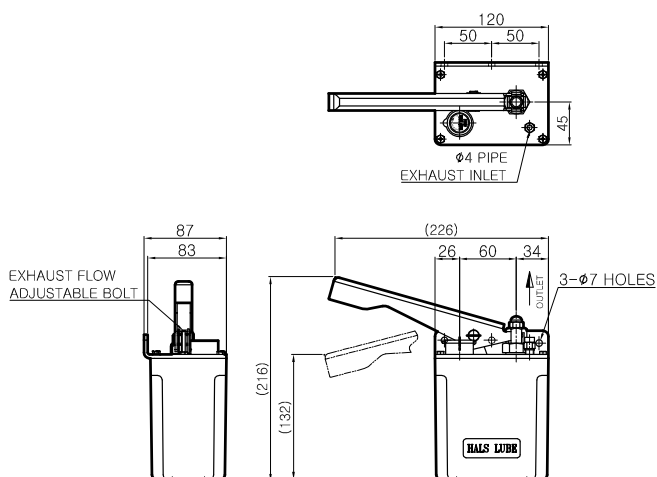
A piston manual pump with a specially processed cylinder interior to raise the pump discharge pressure to 7kg/cm^2 for a smooth supply of lubricating oil. Also compact and lightweight, requiring little installation space, and is therefore very economical.

Pump Spec.

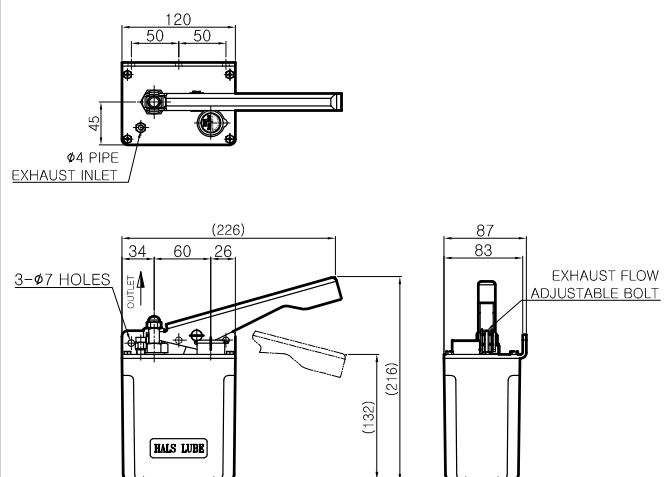
PUMP SPEC.		
MODEL NAME		HALS-33
PUMP TYPE		PISTON
DISCHARGE PRESSURE		7kg/cm²
TANK CAPACITY		1Liter
DISCHARGE AMOUNT		7cc/st
PACKING SPEC.		
PACKING SIZE(cm)		25(W) x 18(L) x 23(D)
WEIGHT(kg)	PUMP	1
	PACKING	2

External Figure

R-type



L-type



Air Drive Fixed Quantity / Proportional Oil Supply Pump

에어구동형 정량/비례급유 펌프

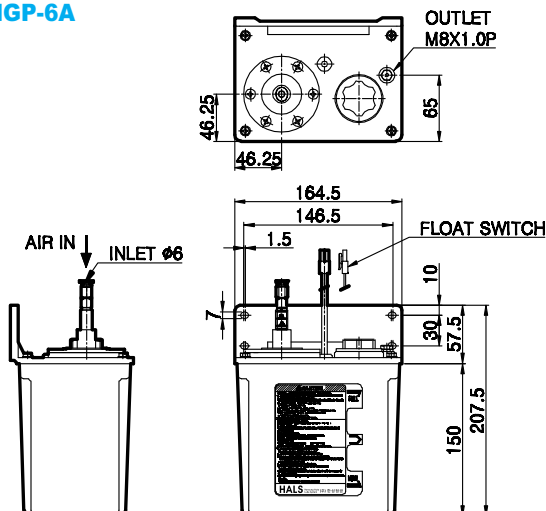


Feature

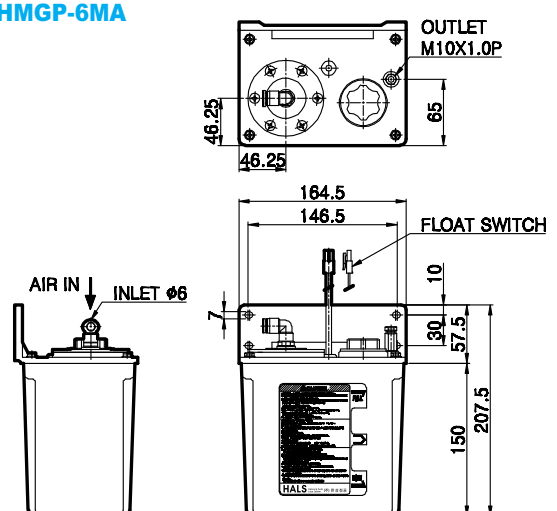
- HMGP-6A**
 - 압축공기 공급으로 간단한 윤활유 공급이 가능하다.
 - 펌프 구동부를 다이캐스팅 AL제작하여 내구성이 우수하다
 - Control Bar를 통해 손쉽게 토출량 조절이 가능하다.
 - 전기종에 Suction Filter가 부착되어 이물질 혼입이 없다.
- HMGP-6MA**
 - HMV Series인 정량 밸브와 사용되는 정량급유용 펌프이다.
 - 원거리 이송이 가능하다.

External Figure

HMGP-6A



HMGP-6MA



Model

HMGP - 6 - 04 - T -

Blank: Without Float S/W

F: Attach Float S/W

2: Resin Tank

Option: Steel Tank

A: Proportional

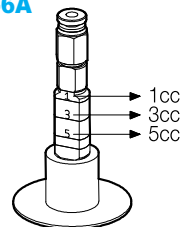
MA: Fixed Quantity

Pump Spec.

PUMP SPEC.		
MODEL NAME	HMGP-6A	HMGP-6MA
DISCHARGE PRESSURE	10kg/cm ²	20kg/cm ²
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

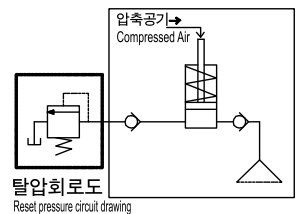
Operating Guide

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

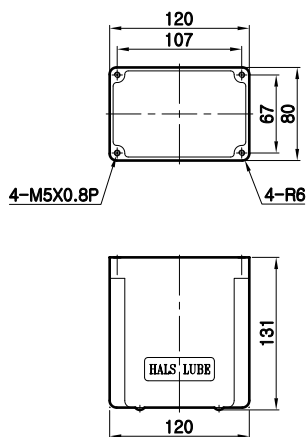


Air 혼입부에 Sol V/V를 장착하여
펌프의 작동시간을 조정하여야 한다.
The pump operation time needs to
be adjusted by attaching a Sol V/V
at the air adulteration section.

RESIN TANK

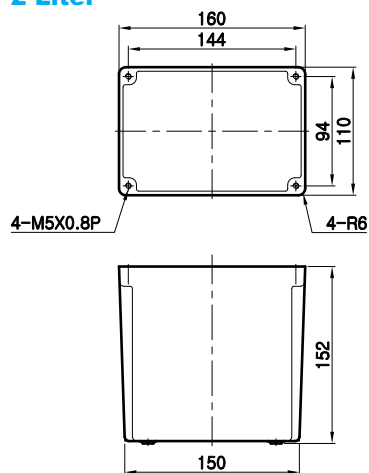
1 Liter

Total Capacity	Effective Capacity
1 ℓ	0.85 ℓ



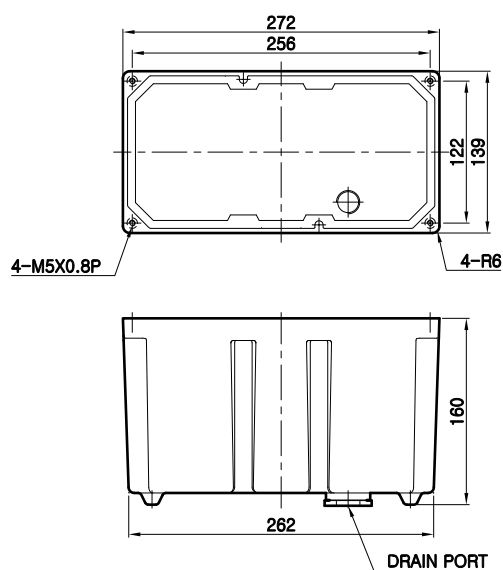
2 Liter

Total Capacity	Effective Capacity
2 ℓ	1.4 ℓ



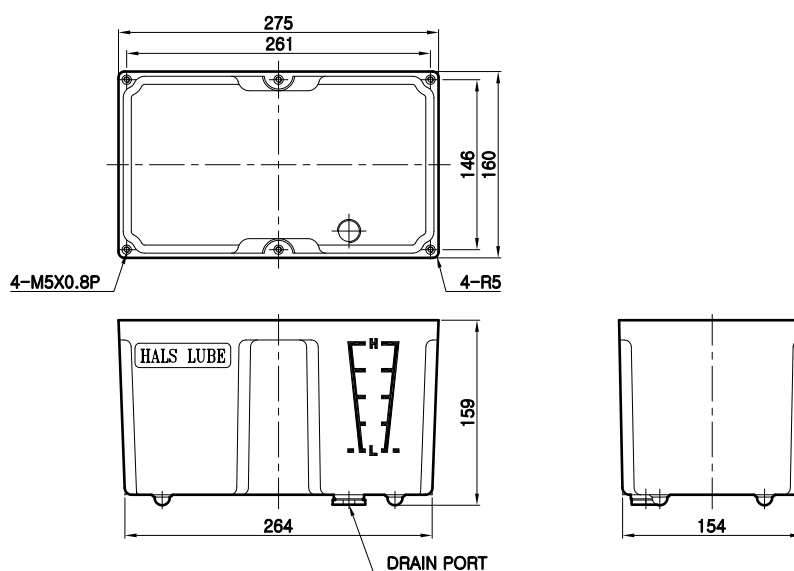
4 Liter

Total Capacity	Effective Capacity
4.5 ℓ	3.5 ℓ

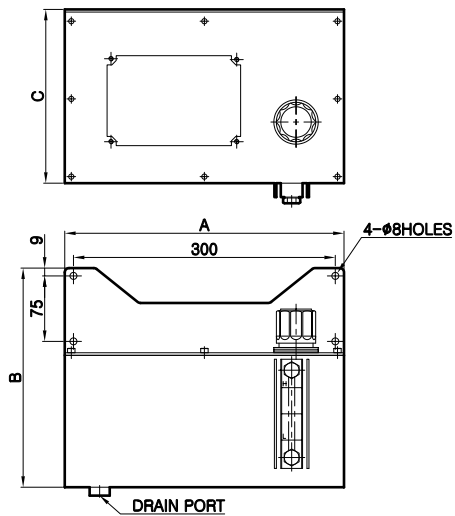


5 Liter

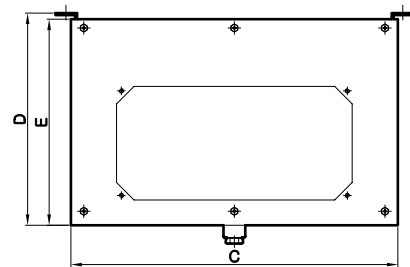
Total Capacity	Effective Capacity
5.5 ℓ	4.5 ℓ



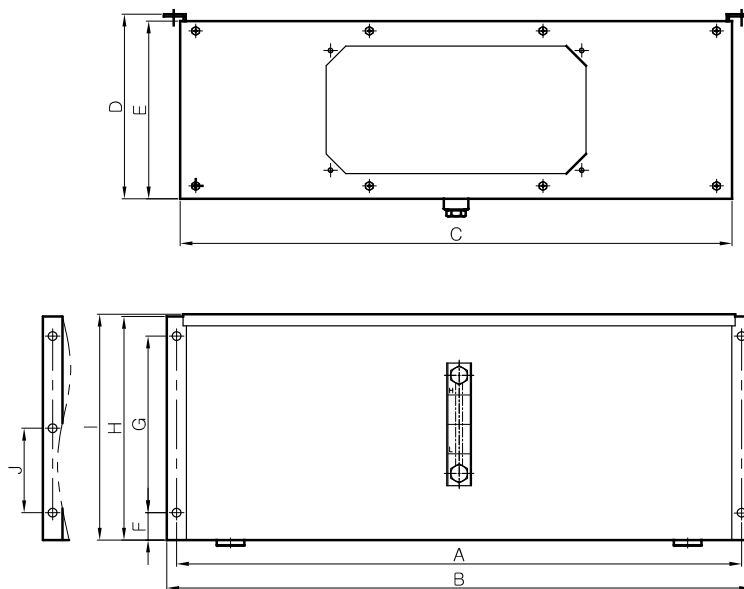
STEEL TANK



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



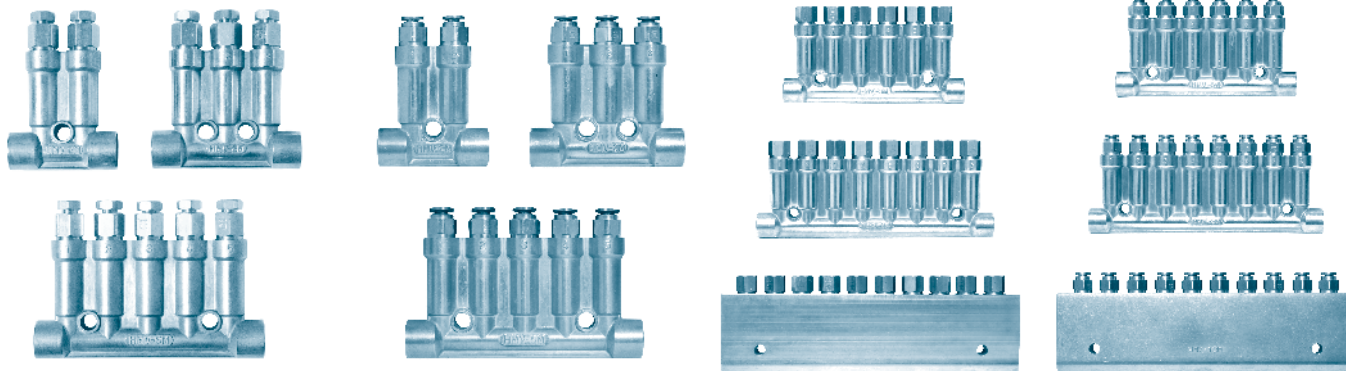
Type	Total Capacity	Effective Capacity	A	B	C	D	E	Applicate Pump
T12	12.6 ℓ	9.8 ℓ	386	410	374.6	243	236	HMGP-303(S) HMGP-6N Type HMGP-205S
T20	20.5 ℓ	16 ℓ	460	484	448.6	327	320	



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

Fixed Quantity Oil Supply Valve

정량급유 밸브



Spec.

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

Model

HMV - -

P Push - in fitting
S Screw connector

Code No.
Number of Outlet

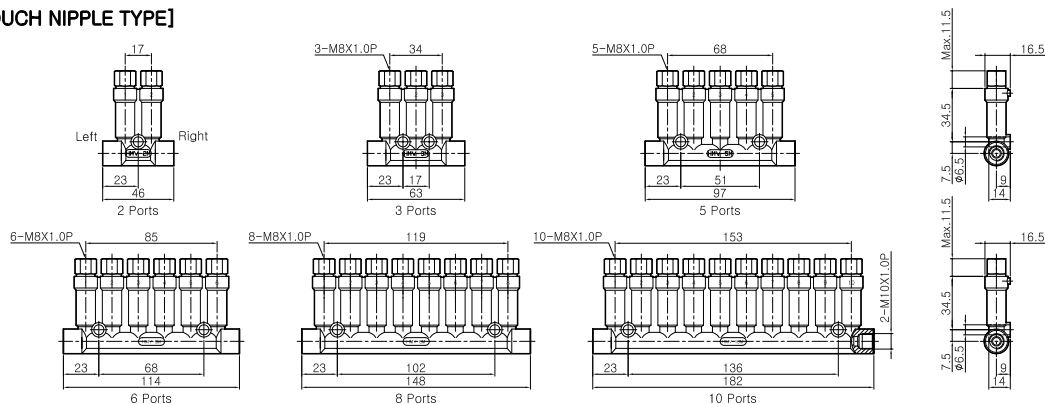
Code No.	1	2	3	4	5	6	7
Volume(cc/st.)	0.03	0.05	0.1	0.16	0.2	0.3	0.4
Marking	003	005	01	016	02	03	04

※ 주문방법 (How to order):

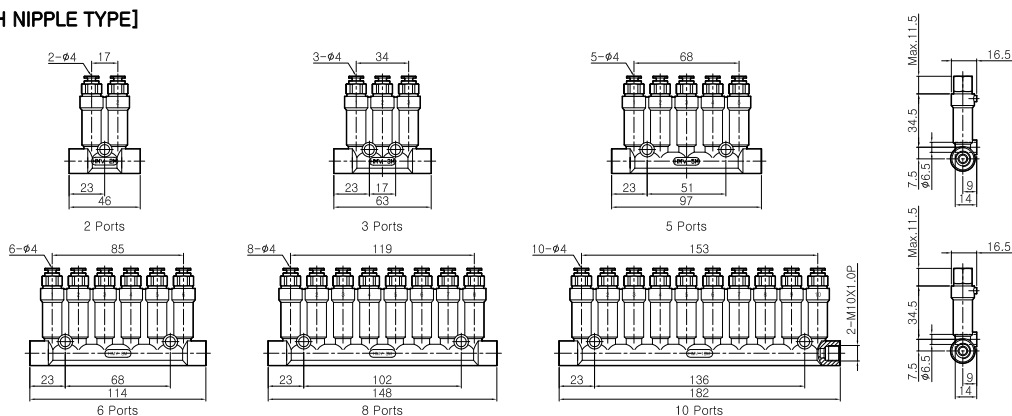
- ▶ 5구 사용에 왼쪽부터 0.1 - 0.03 - 0.3 - 0.05 - 0.2 (cc) 가 필요한 경우 주문번호 HMV-5-31625
- ▶ When you need 0.1-0.03-0.3-0.05-0.2(cc) from left while using five ports - Order number HMV-5-31625

External Figure

[TWO TOUCH NIPPLE TYPE]

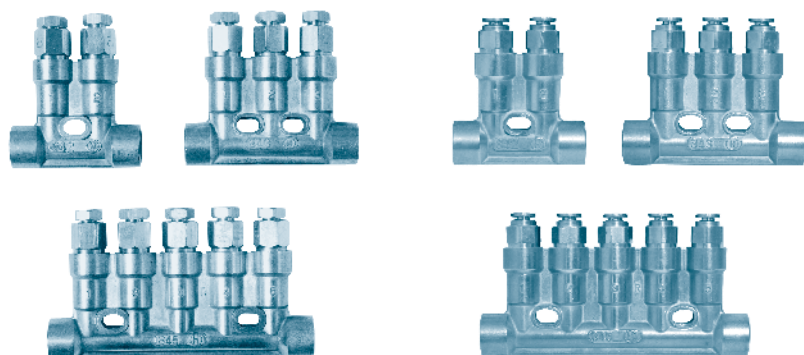


[ONE TOUCH NIPPLE TYPE]



Fixed Quantity Oil Supply Valve

정량급유 밸브



Model

34 - -

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

Spec.

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

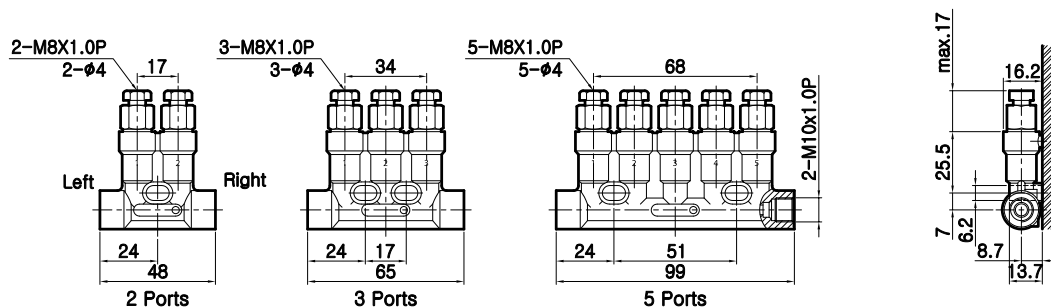
Code No.	1	2	3	4
Volume(cc/st.)	0.03	0.06	0.1	0.16
Marking	003	006	01	016

※ 주문방법 (How to order):

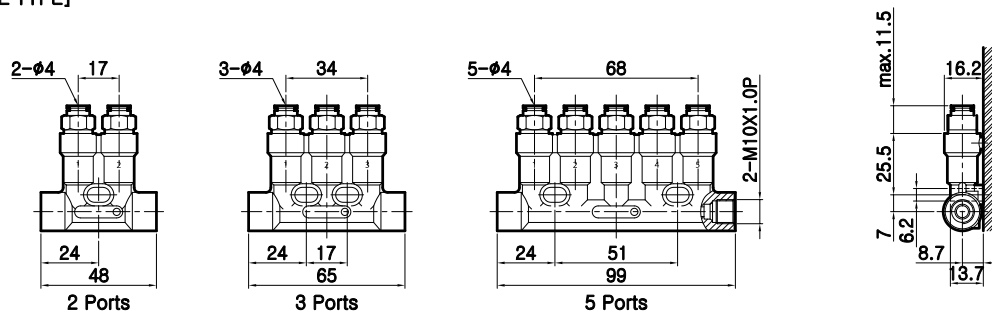
- ▶ 5구 사용에 왼쪽부터 0.03 - 0.1 - 0.06 - 0.03 - 0.16 (cc) 가 필요한 경우 주문번호 345-13214
- ▶ When you need 0.03-0.1-0.06-0.03-0.16(cc) from left while using five ports - Order number 345-13214

External Figure

[TWO TOUCH NIPPLE TYPE]



[ONE TOUCH NIPPLE TYPE]

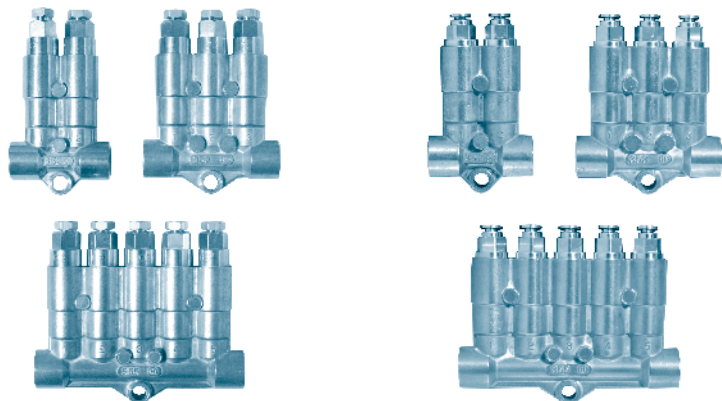


350

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/cm ²	3 kg/cm ²
353	3		
355	5		

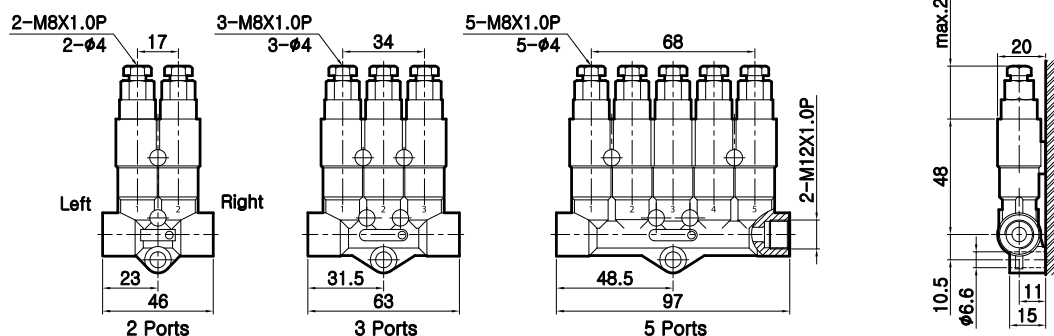
Code No.	3	5	6	7
Volume(cc/st.)	0.1	0.2	0.4	0.6
Marking	01	02	04	06

※ 주문방법 (How to order):

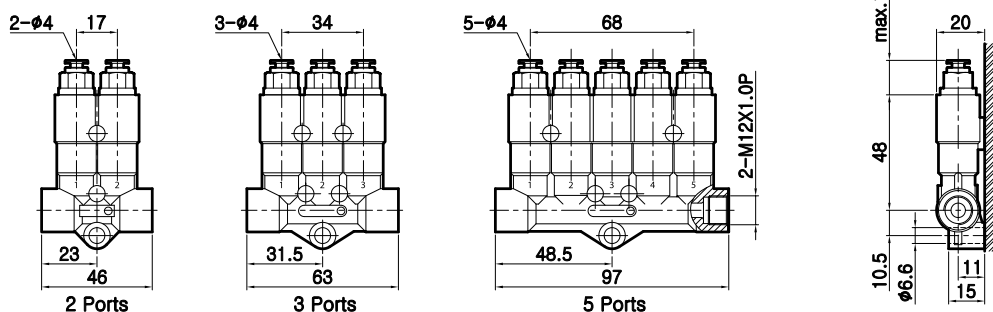
- ▶ 5구 사용에 왼쪽부터 0.1 - 0.4 - 0.2 - 0.2 - 0.6 (cc) 가 필요한 경우 주문번호 355-36557
- ▶ When you need 0.1-0.4-0.2-0.2-0.6(cc) from left while using five ports - Order number 355-36557

External Figure

[TWO TOUCH NIPPLE TYPE]

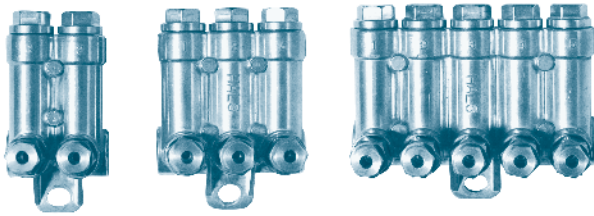


[ONE TOUCH NIPPLE TYPE]



Fixed Quantity Oil Supply Valve

정량급유 밸브

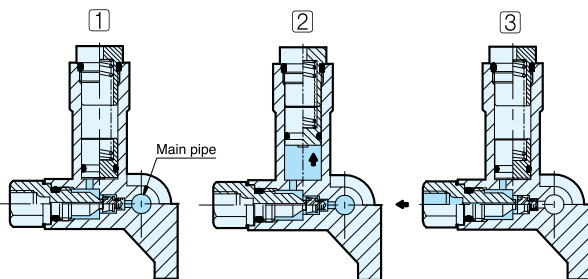


Spec.

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

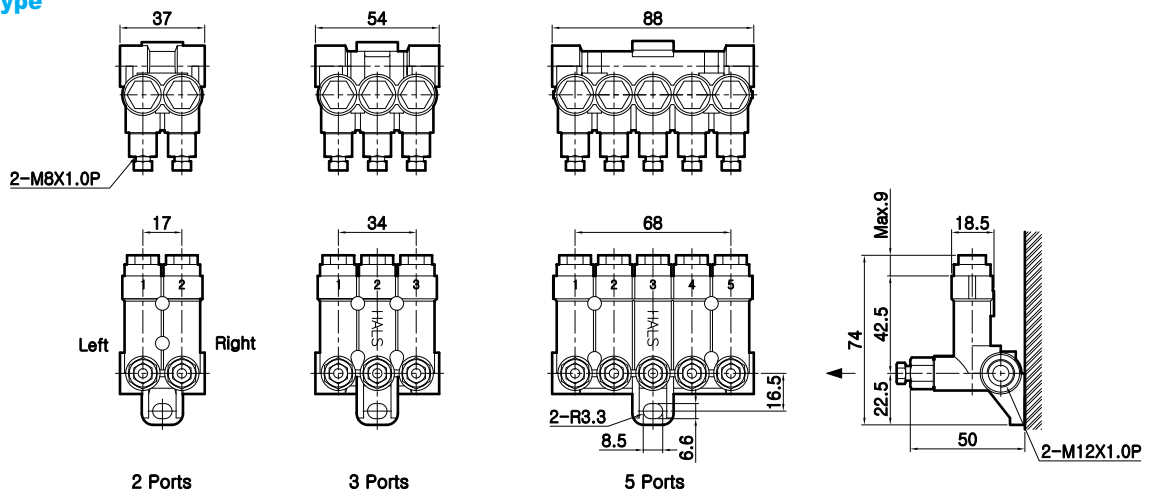
Operating Guide



- ① 펌프가 작동하면 분배기 내 피스톤 앞부분으로 오일이 채워진다.
 - ② 주 배관에서 10~20kg/cm² 압력의 오일은 실린더 내의 피스톤을 밀어 정량의 오일을 채운다.
 - ③ 펌프가 멈추고 주배관의 압력이 해제되면 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



Model

HMLV - -

S Screw connector
Code No.
Number Of Outlet

Feature

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

1. Unlike existing HMLV, 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 HMLV. Also, oil supply up to 0.1~1.0cc is possible just by replacing nipple.

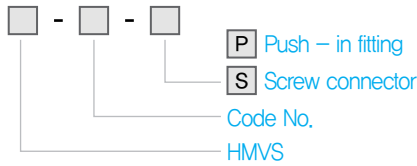
※ 주문방법 (Order Method):

- ▶ 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

Fixed Quantity Oil Supply Valve

정량급유 밸브

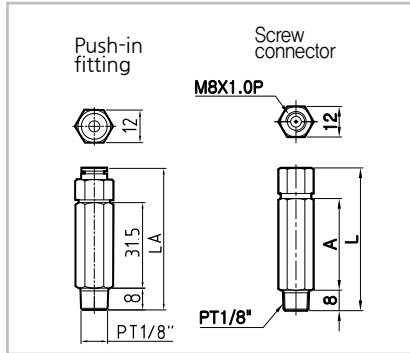
Model



Feature

1. HMV와 동일한 구조의 정량밸브이나, 일체형 밸브 사용이 어려운 설치공간에 활용이 가능한 분리형 구조의 정량밸브이다.
2. 정량 토출량의 범위에 따라 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.



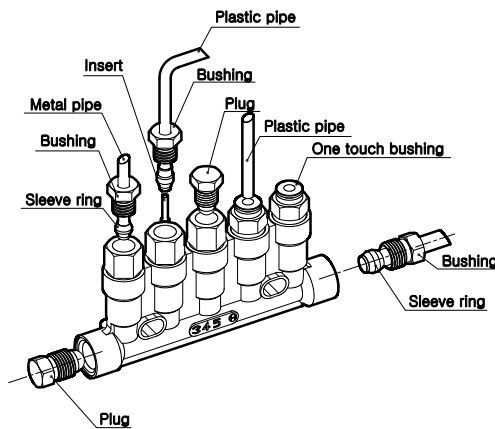
Model	A (mm)	L (mm)	LA (mm)
HMVS	0.03	31.5	51.5
	0.06		
	0.1		
	0.1		
	0.3		
	0.4		
	0.6	36	56

Spec.

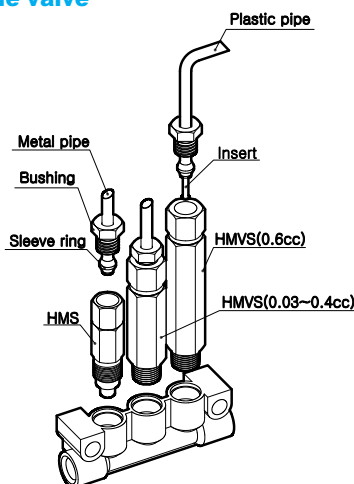
Model	HMVS					
Volume(cc/st.)	0.03	0.06	0.1	0.16	0.3	0.4
Marking	003	006	01	02	03	04
Code No.	003	006	01	02	03	04

Assembly method

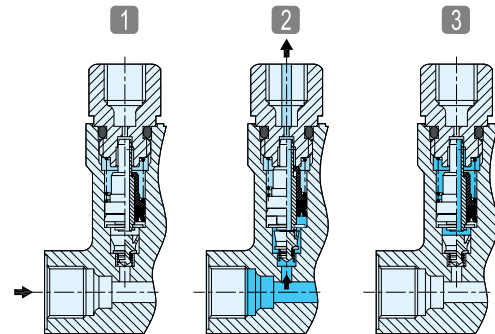
Single-unit valve



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 에이 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.

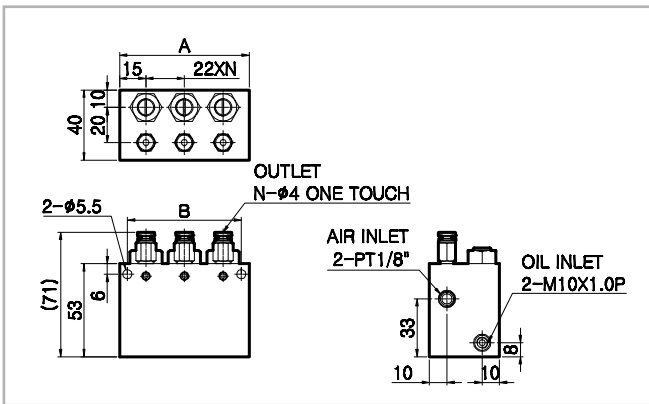
Mixing Valve

혼합밸브

Model

HMV - -

Code No.
Number of Outlet



Feature

1. 일정량의 오일을 토출하여 제어된 외부의 압축공기와 혼합되어 미세한 기름입자로 변화시키는 윤활시스템
 2. 기계요소의 윤활면에 얇은 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

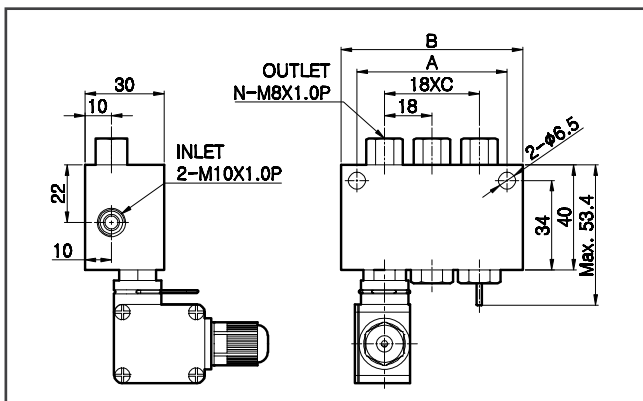
HMIV

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.

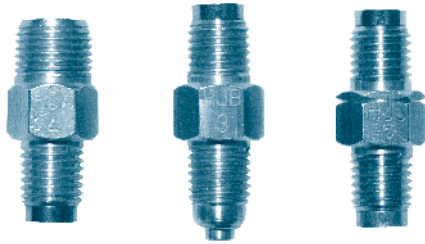
Spec

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

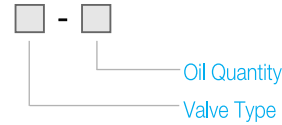


Feature

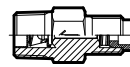
1. 비례급유 시스템의 Flow unit 부품이다.
2. 간헐급유용 밸브와 연속 급유용 밸브로 구분되며, 조립 방법에 따라 분배변취부, 라인취부, 기계취부로 구분된다.
3. Filter를 사용하여 이물 혼입을 막아야 한다.

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.

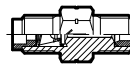
Model



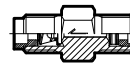
SPEC.



HSA (기계 취부용)
(for Machine Spraying)



HJB (분배변 취부용)
(for Distributor Spraying)

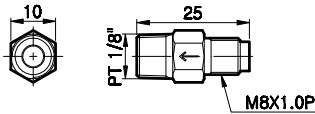


HJS (라인 취부용)
(for Line Spraying)

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

Assembly Method

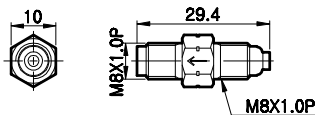
HSA/HSC



DISTRIBUTOR GROUP (기계취부용)

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

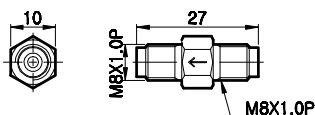
HJB/HJC



DISTRIBUTOR GROUP (분배변 취부용)

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

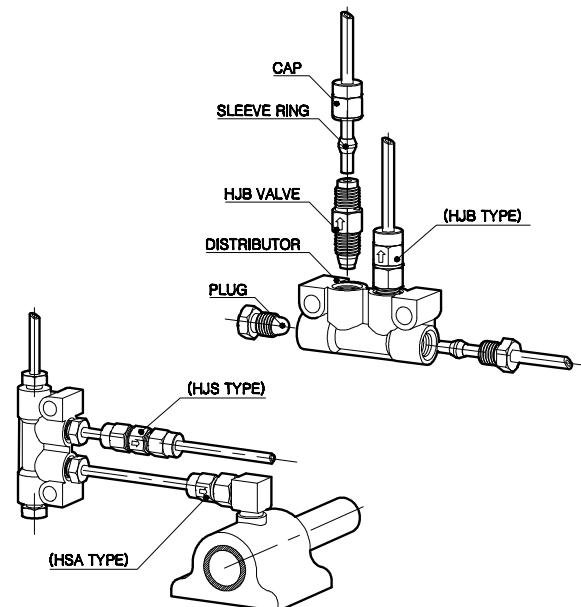
HJS/HHC



DISTRIBUTOR GROUP (라인 취부용)

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

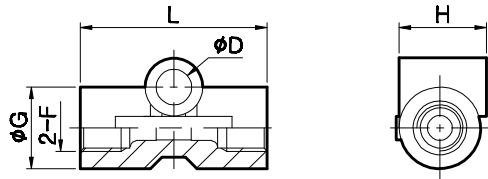
Operating Guide



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

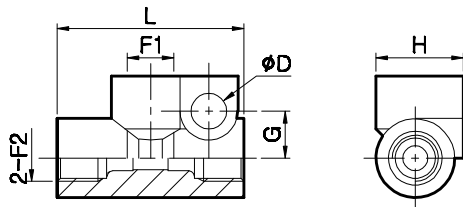


2-WAY DISTRIBUTOR

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

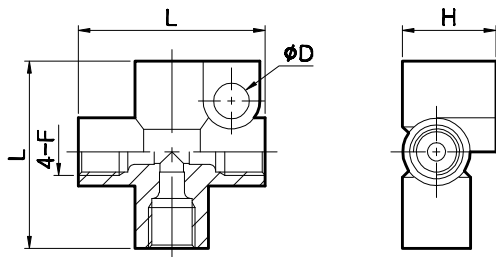


3-WAY DISTRIBUTOR

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

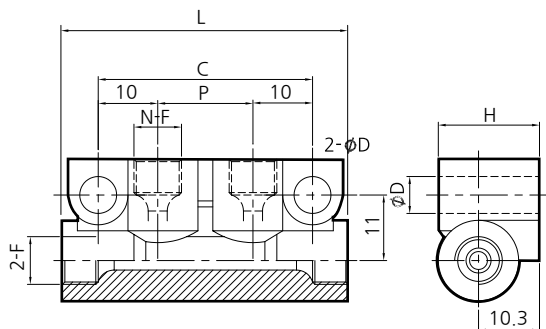


4-WAY DISTRIBUTOR

Code NO.	4-F	L	H	D
44081	M8×1P	32	16	ø 6,2
44011	M10×1P	32	16	ø 6,2
* 44018	PT 1/8	32	16	ø 6,2

* 부분은 주문에 의한 제작품임

* parts are order specifications



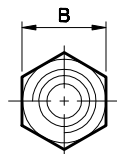
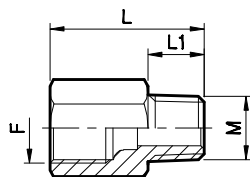
DISTRIBUTOR

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

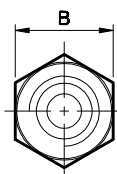
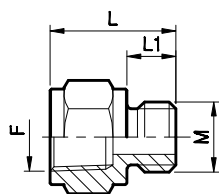
* 부분은 주문에 의한 제작품임

* parts are order specifications

Adaptor

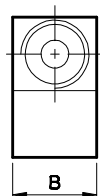
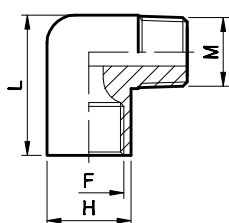


Code NO.	TUBE DIA. (out side)	B	L	L1	M	F
51114	ø 4	10	18	8	PT 1/8	M8×1P
51115	ø 6	12	22	8	PT 1/8	PF 1/8
51116	ø 6	12	22	8	PT 1/8	M10×1P

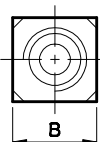
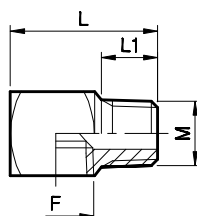


Code NO.	TUBE DIA. (out side)	B	L	L1	M	F
51117	ø 6	14	17	7	M10×1P	PT 1/8
51118	ø 6	17	18	8	M12×1P	M10×1P

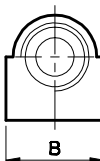
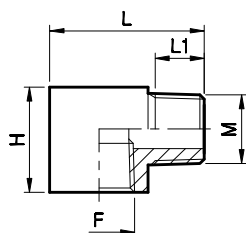
Elbow



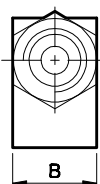
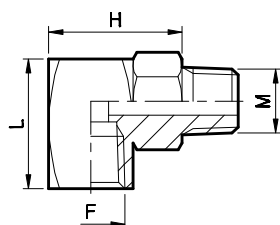
Code NO.	TUBE DIA. (out side)	M	F	L	B	H
51154	ø 4	PT 1/8	M8×1P	18	10	10
51156	ø 6	PT 1/8	M10×1P	20	12	12



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

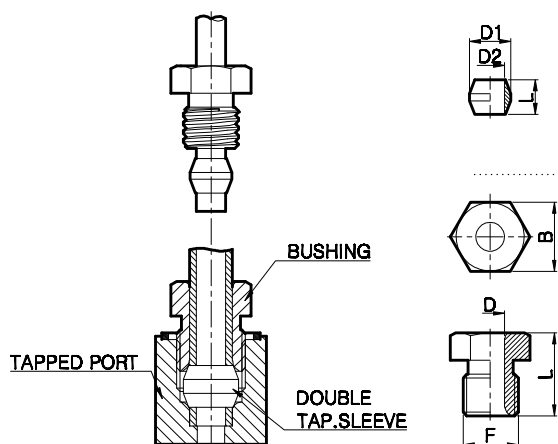


Code NO.	B	H	L	L1	M	F
51157	13	13	22	8	PT 1/8	PT 1/8



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



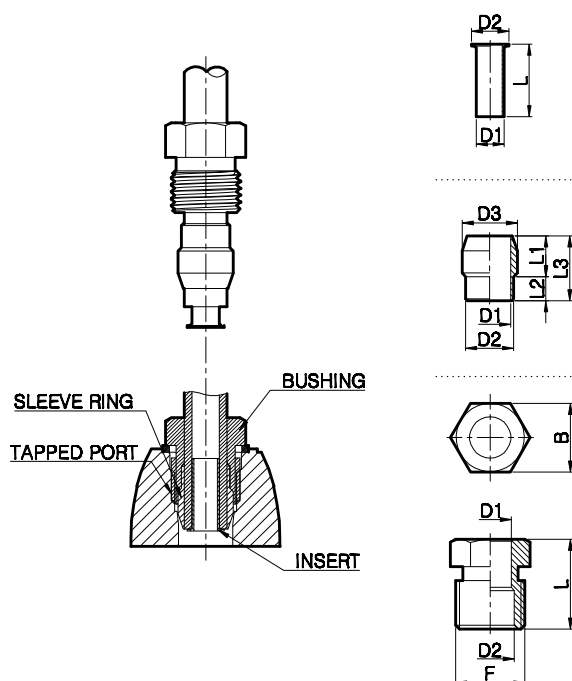
Sleeve Ring

Code NO.	TUBE DIA. (out side)	L	D1	D2
51094	ø 4	5	ø 6,0	ø 4,2
51096	ø 6	6	ø 8,0	ø 6,2

Bushing

Code NO.	TUBE DIA. (out side)	B	L	D	F
51073	ø 4	8	12	ø 4,2	M8×1P
51074	ø 4	10	12	ø 4,2	M8×1P
51076	ø 6	10	13	ø 6,2	M10×1P
51077	ø 6	12	13	ø 6,2	PF 1/8

Connectors for plastic tubing



Insert

Code NO.	TUBE DIA	D1	D2	L
51102	ø 4 × ø 2	ø 2	ø 3	10,5
51103	ø 4 × ø 2,5	ø 2,5	ø 3,5	12,5
51104	ø 6 × ø 4	ø 4	ø 5,4	10,5

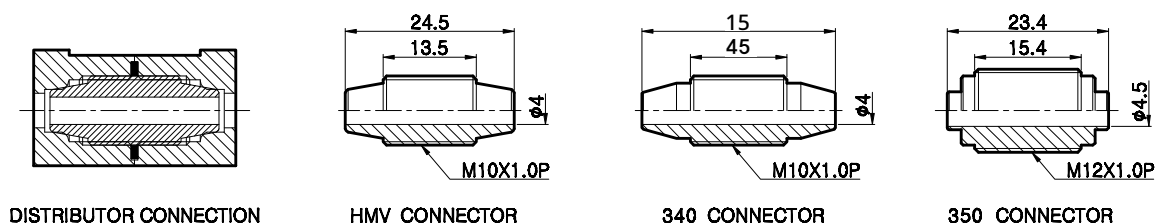
Sleeve Ring

Code NO.	TUBE DIA. (out side)	L1	L2	L3	D1	D2	D3
51194	ø 4	4,8	3,2	8	ø 4,2	ø 5	ø 6
51196	ø 6	5,9	3,5	9,4	ø 6,2	ø 7	ø 8

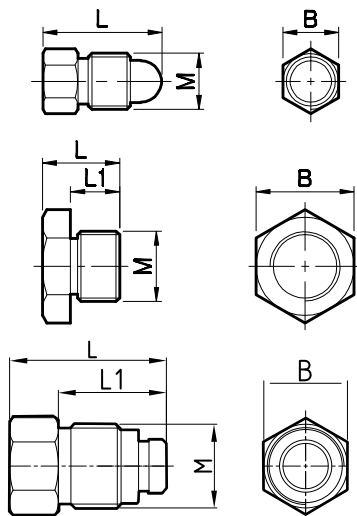
Bushing

Code NO.	TUBE DIA. (out side)	B	L	D1	D2	F
51174	ø 4	8	12	ø 4,2	ø 5	M8×1P
51176	ø 6	10	13	ø 6,2	ø 7	M10×1P

Connectors for distributor



Plug



Code NO.	B	L	M
* 51162	8	15	M10×1P
51164	10	17	M8×1P
51168	10	19,5	M10×1P

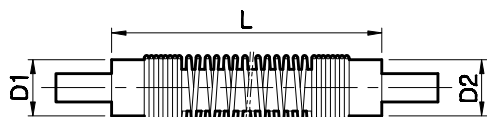
* 부분은 주문에 의한 제작품임

* 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

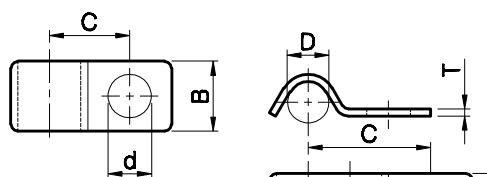
Flexible Hose



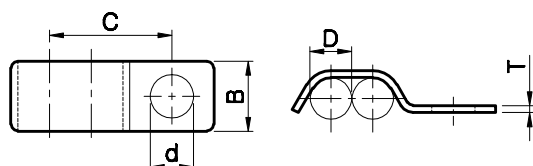
Inner Diameter (mm)	Outer Diameter (mm)	Length (mm)	Pressure (kg/cm²)
ø 4	ø 4	ø 10	MAX, 13kg/cm²
ø 6	ø 6	ø 10	MAX, 25kg/cm²

Inner Diameter (mm)	Model	Length (cm)
ø 4	EX) 4F-050	L=50cm
ø 6	EX) 6F-350	L=350cm

Tube clamp

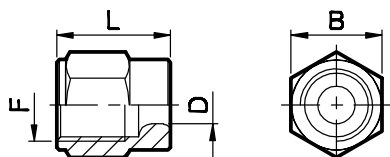


Inner Diameter (mm)	Outer Diameter (mm)	Length (mm)	Width (mm)	Height (mm)	Thickness (mm)
ø 4	ø 4	10	ø 6,2	9	1,0
ø 6	ø 6	10	ø 6,2	11,5	1,0



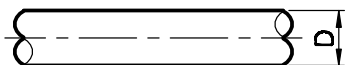
Inner Diameter (mm)	Outer Diameter (mm)	Length (mm)	Width (mm)	Height (mm)	Thickness (mm)
2-ø 4	ø 4	10	ø 6,2	13	1,0
2-ø 6	ø 6	10	ø 6,2	17,5	1,0

CAP



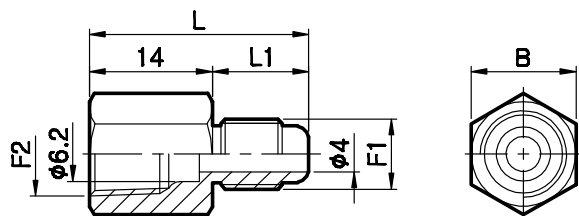
Code NO.	TUBE DIA. (out side)	B	L	D	F
51084	ø 4	10	12,5	ø 4,2	M8×1P

Tube



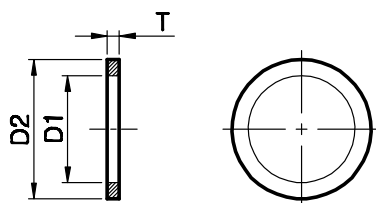
Code NO.	D	MATERIAL
70014N	ø 4	Nylon
70016N	ø 6	Nylon
70014C	ø 4	Bs
70016C	ø 6	Bs

Reducer



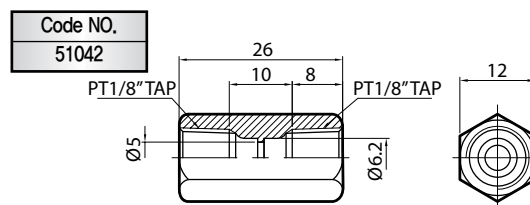
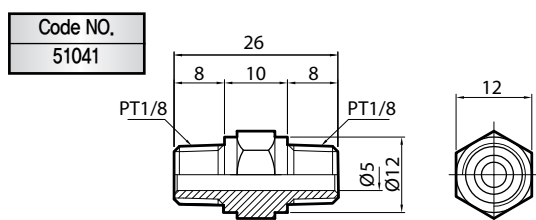
Code NO.	TUBE DIA. (out side)	B	L	L1	F1	F2
51029	ø 4-ø 6	12	25	11	M8×1P	M10×1P
51030	ø 4-ø 6	12	25	11	M8×1P	PT 1/8

Cu-Washer



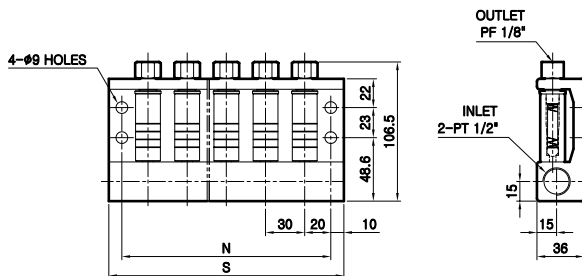
Code NO.	D1	D2	T	Remark
51171	ø 10,2	ø 13,9	1	M10 type
51172	ø 12,2	ø 15,9	1,4	M12 type

Male / Female connector

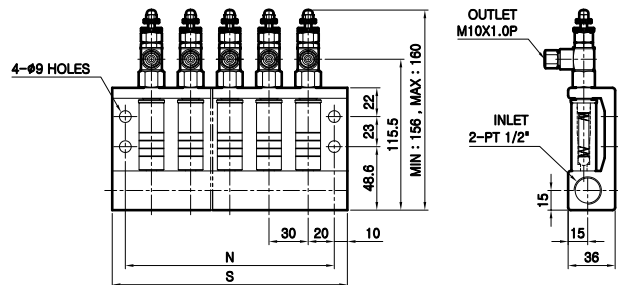


Flow Indicator

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

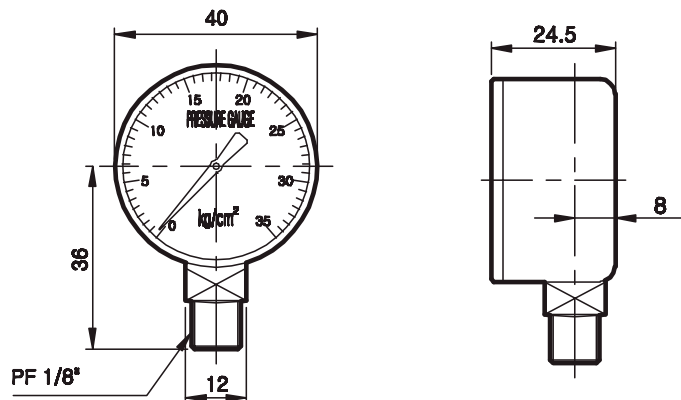
The flow indicator has been designed to enable easy visual checking of oil flow, distribution to different branch pipes and control of oil quantity. It is mainly used in continuous lubricating systems, and the branch pipes can be produced with 4 to 14 outlets. Each branch pipe's discharge quantity can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

But, for use outside the control range, you must consult our technical department.

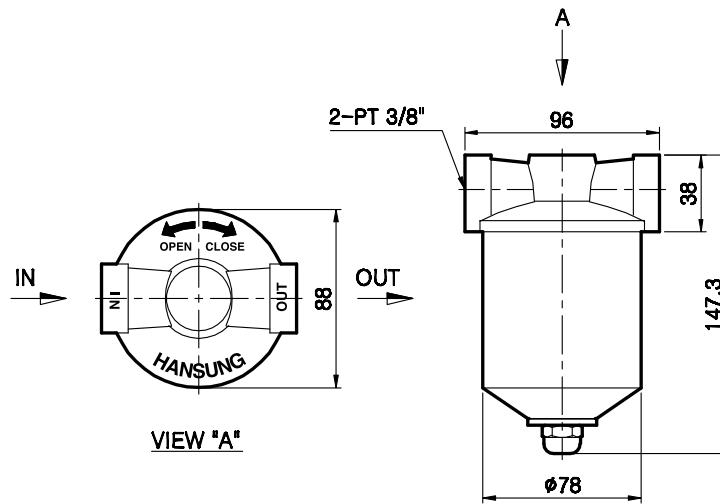
Number of outlets(N)	4	6	8	10	12	14
N	130	190	250	310	370	430
S	150	210	270	330	390	450
Max. Pressure	10kg/cm ²					
Discharge Volum	50~2000cc/min					
Using Oil	10~2000 cSt					

Pressure Gauge

Model	HPG-35
PRESSURE RANGE	0~35kg/cm ²



Drain Filter



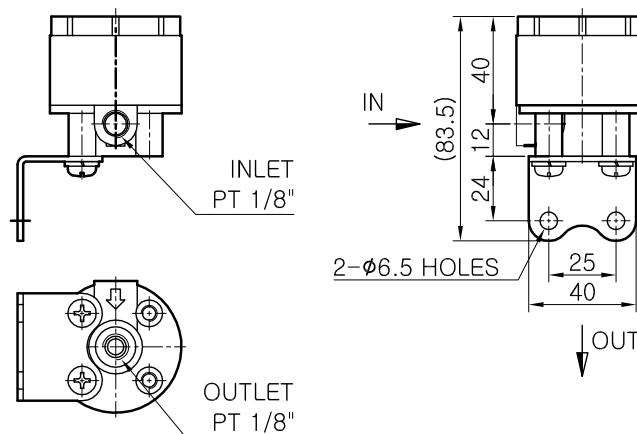
소용량 윤활 System용으로 개발한 Drain Filter는 회수되는 oil중의 이물질을 제거하여 기계의 수명을 연장시키는데 사용한다.
또한 oil의 재활용으로 oil 소비를 획기적으로 줄일 수 있다.
Drain Filter는 청소후 사용가능한 반영구적인 제품이다.

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/cm ²
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.

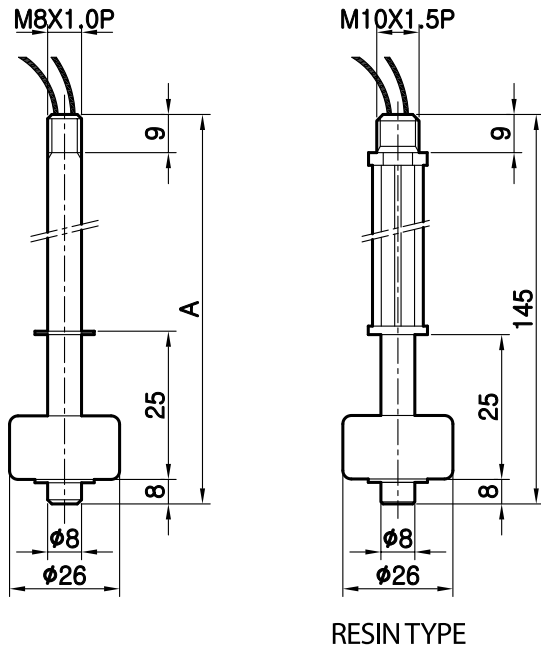
1. 엘리먼트 청소 또는 교환시 하부 Cover만으로 이/탈착되게 제작되었음
2. 소결 엘리먼트를 사용하여 세척후 재사용이 가능
3. AL 소재를 사용하여 가볍고 부식이 없음

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/cm ²
USING PRESSURE	10kg/cm ²
OIL AMOUNT	0.5Liter/min
FILTER	40 μ
CODE No.	51193

Float Switch

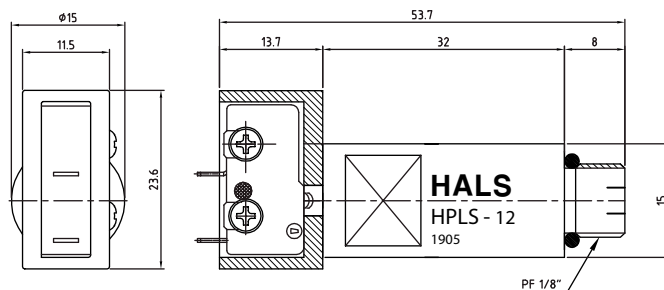


탱크내 유량검출용 오일레벨 스위치로서, Float System용 축에 Lead S/W가 내장되어 있고 로타 내부에 소형자석이 있어 유량 상한선 · 하한선을 검출한다. Lead S/W의 점검 개폐용량은 매우 적으므로 보조릴레이를 사용하여야 한다.

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

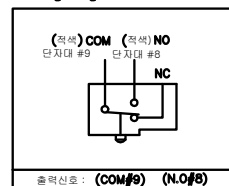
Pressure Switch



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/cm ²
ELECTRICAL RATINGS	DC Max, 42V Max. 4A
ENDURANCE	Above 100,000 Cycle
OPERATING TEMP.	-20~120℃

■ 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 시에는 주 배관의 가장 높은 위치나, 펌프에서 가장 먼 위치까지 완전히 외부로 기름이 쏠 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 out 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.

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 32~800cSt 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	적정토크로 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 32~800cSt range.	Change to suitable oil.
Pressure decrease.	Oil is not coming up from the pump due to one of the above reasons.	Follow the above instructions.
	The flow unit and control unit election for the lubricating spots are inadequate.	Check the data sheet again.
	The relief valve selection is inadequate.	Adjust the setting to the right values.
	Foreign substances have been mixed to the relief valve ball seat.	Disassemble and cleanse the relief valve.
	Oil is leaking from the pipe connection parts.	Tighten again with the optimum torque, 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.

[mm²/s]

Temp. (°C)	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

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