

설치 및 작동 설명서

Instructions for installation and operation

Model : DM-5S, DM-5, DM-5N, DM-15, DM-50

DM-150, DM-500, DM-1500

DM-15HP, DM-50HP, DM-150HP



■ DRAIN MASTER 설치 시 본 설명서를 필독하시기 바랍니다.

■ DRAIN MASTER 의 모든 기능은 본 설명서에 명기된 사항을 지켰을 때 만 보장됩니다.

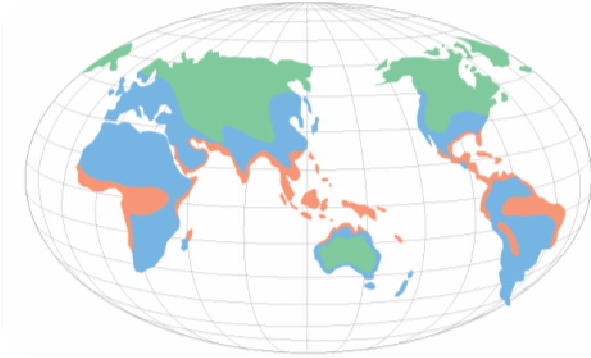
■ 목차(Table of contents)

- * 안전수칙 (IMPORTANT INFORMATION) / 2
- * 기술적 데이터 (TECHNICAL DATA) / 3
- * 규격(DIMENSION) / 4~9
- * 기능(FUNCTION) / 10
- * 설치 (INSTALLATION) / 11
- * 전기설치(ELECTRICAL INSTALLATION) 및 데이터 (DATA) / 12
- * 유지보수 (MAINTENANCE) 및 소모품 (EXPENDABLE MATERIALS) / 13
- * 부품품 (COMPONENTS) 및 액세서리(ACCESSORIES) / 13~24

■ 안전수칙 (IMPORTANT INFORMATION)

- ▶ 최대 작동 압력(Max. Operating pressure)을 초과하지 말 것 !
- ▶ TEST 버튼을 계속해서 누르지 말 것 !
- ▶ 위험지역(방폭지역)에서는 사용하지 말 것 !
- ▶ DRAIN MASTER의 설치 또는 유지보수 작업 시 응축수 유입라인을 닫고 장치내의 압력을 배출시킨 상태에서 작업을 해야 한다.
- ▶ 안전 규격에 맞는 배관 자재 및 부속을 사용해야 한다.
- ▶ 규격에 맞는 공구를 사용해야 한다.
- ▶ 결빙 위험 지역에 설치시 자동 온도조절장치(Heater Unit)를 장착하여야 한다.(옵션품)
- ▶ 전기 설치는 반드시 관련법규에 맞는 자격 있는 기술자가 설치 해야 한다.
- ▶ DRAIN MASTER는 전원 연결이 되어야만 작동 한다.
- ▶ 부품 교환의 경우 당사의 순정품을 사용하여야 하며, 그렇지 않을 경우 그 제품에 대한 품질 보증을 할 수 없다.

■ 기술적 데이터(TECHNICAL DATA)



- Green: Dry and cool climate(such as in Northern Europe, Canada, Northern states of the USA, Central Asia)
- Blue: temperate climate(such as in Central and Southern Europe, Central America)....Korea
- Red: humid, tropical climate(such as in the coastal regions of South-East Asia, Oceania, Amazon and Congo regions)

DRAIN MASTER S/HP	Climate zone	Peak Compressor Performance m³/min	Peak Dryer Performance m³/min	Peak Filter Performance m³/min	NRTL	CE	IP 65
					Operating Pressure min / max (bar)	Temperature min / max (°C)	Application (*)
DM-5S	Green	5	10	50	0.8~16	0~80	A.B
	Blue	4.5	9	45			
	Red	3	6	30			
DM-5	Green	7	14	70			
	Blue	5	10	50			
	Red	4.5	9	45			
DM-5N	Green	8	16	80			
	Blue	7	14	70			
	Red	5	10	50			
DM-15	Green	24	48	240			
	Blue	21	42	210			
	Red	15	30	150			
DM-50	Green	80	160	800			
	Blue	70	140	700			
	Red	50	100	500			
DM-150	Green	170	340	1700			
	Blue	150	300	1500			
	Red	105	210	1050			
DM-500	Green	570	1140	5700			
	Blue	500	1000	5000			
	Red	350	700	3500			
DM-1500	Green	1750	3500				
	Blue	1500	3000				
	Red	1050	2100				
DM-15HP	Green	24	48	240	1.2/60	+ 1 / 80	A.B
	Blue	21	42	210			
	Red	15	30	150			
DM-50HP	Green	80	160	800			
	Blue	70	140	700			
	Red	50	100	500			
DM-150HP	Green	170	340	1700			
	Blue	150	300	1500			
	Red	105	210	1050			

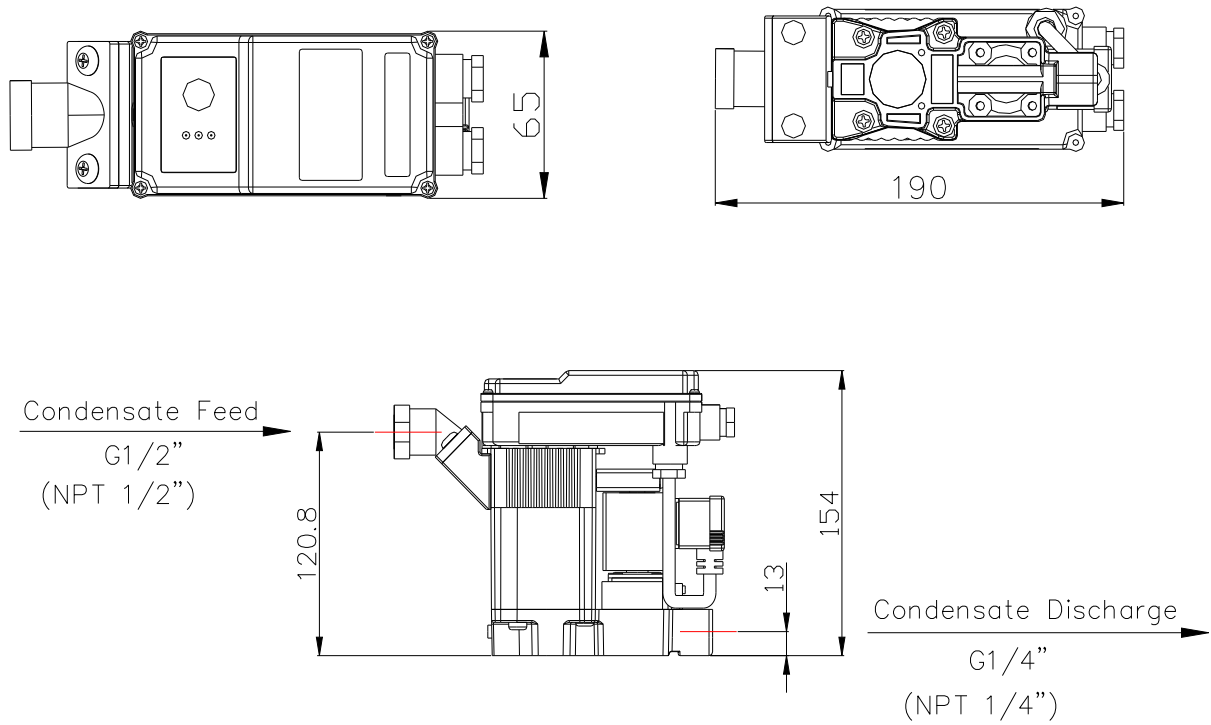
*Application: A.oil contaminated condensate ; B.oil free, aggressive condensate

DRAIN MASTER <i>S/HP</i>	DM-5S DM-5N		DM-5 DM-15		DM-50	DM-150	DM-500	DM-1500	DM-15HP	DM-50HP	DM-150HP
Condensate Feed	1/2"	1/2" x 2				3/4" x 3		1"x1,3/4"x2	1/2" x 2		3/4" x 3
Condensate Discharge	1/4"	3/8"	1/2"							3/8"	
Voltage	Free voltage 90~260Vac, 24/48Vdc, 24/48Vac										
Housing Material	POM	Aluminium, Hardcoated									
Weight (Kg)	0.92	1.30	1.25	1.65	2.20	3.30	5.30	7.30	1.95	2.50	4.05

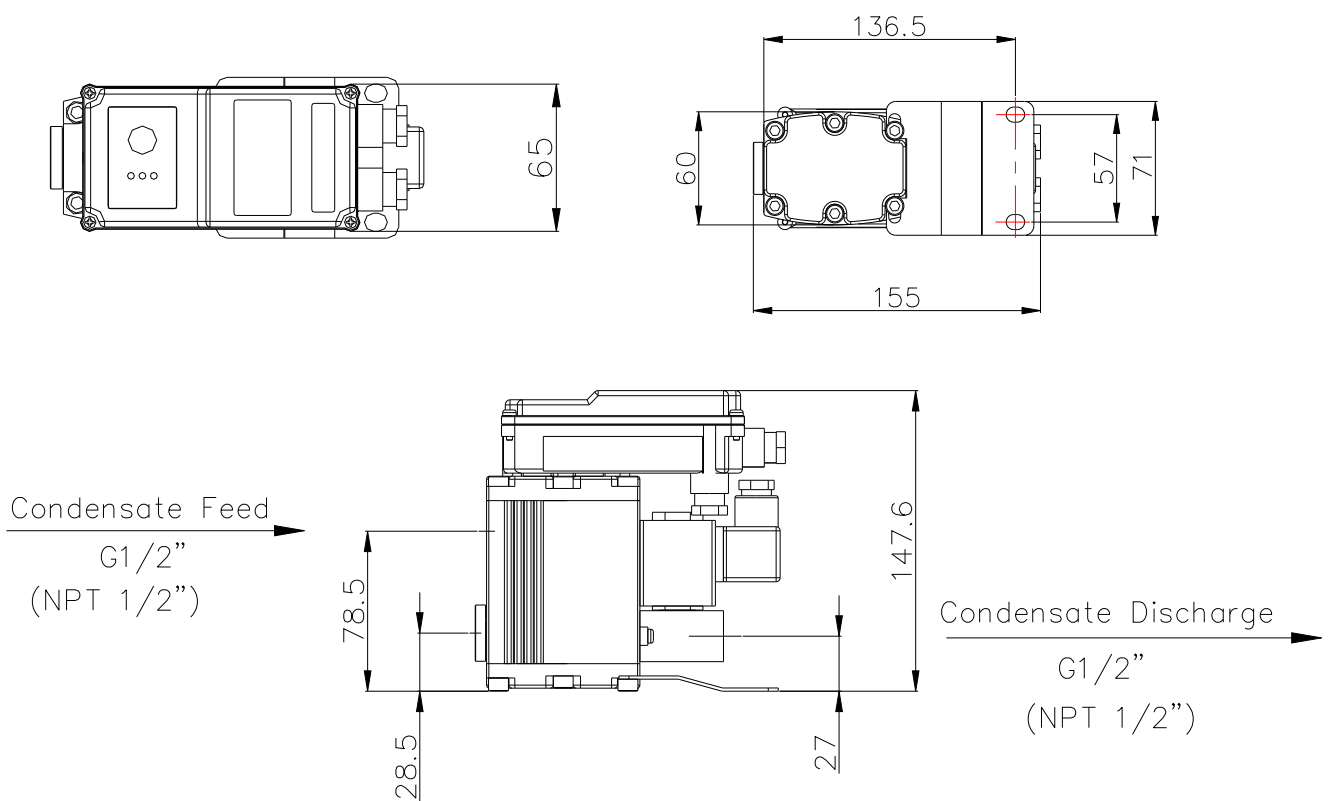
► Must attach automatic thermostat(option : Heater unit) in freezing area.

■ 규격(DIMENSION)

DM-5S

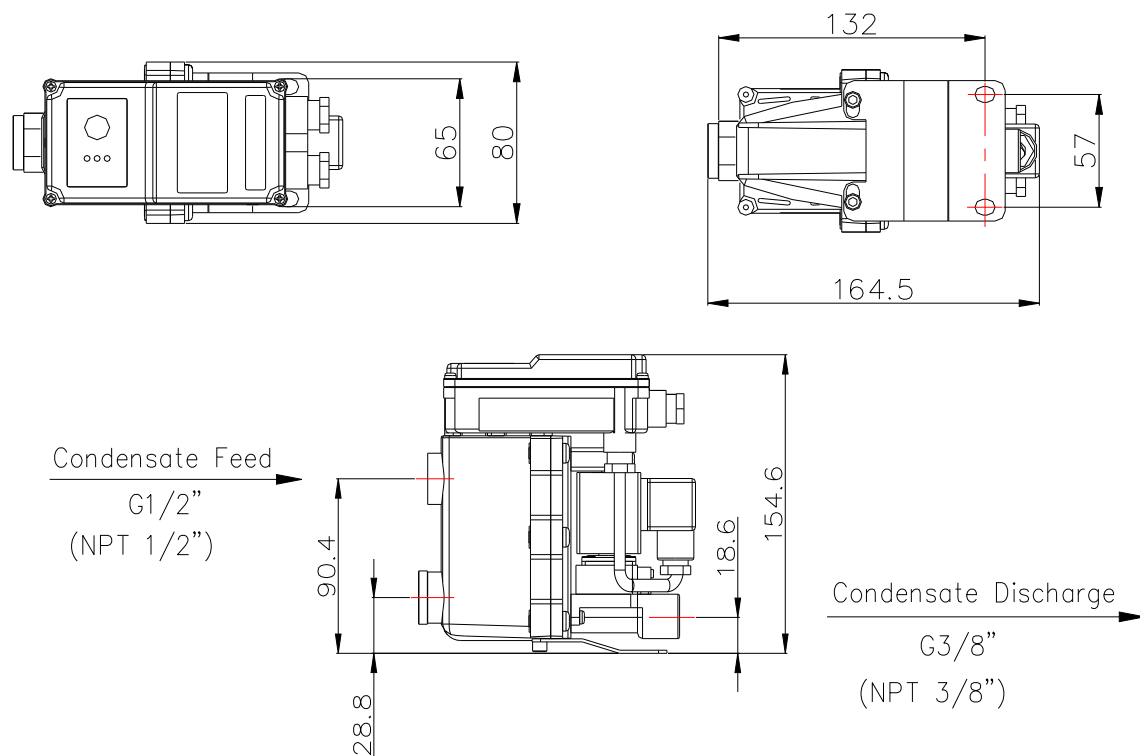


DM-5

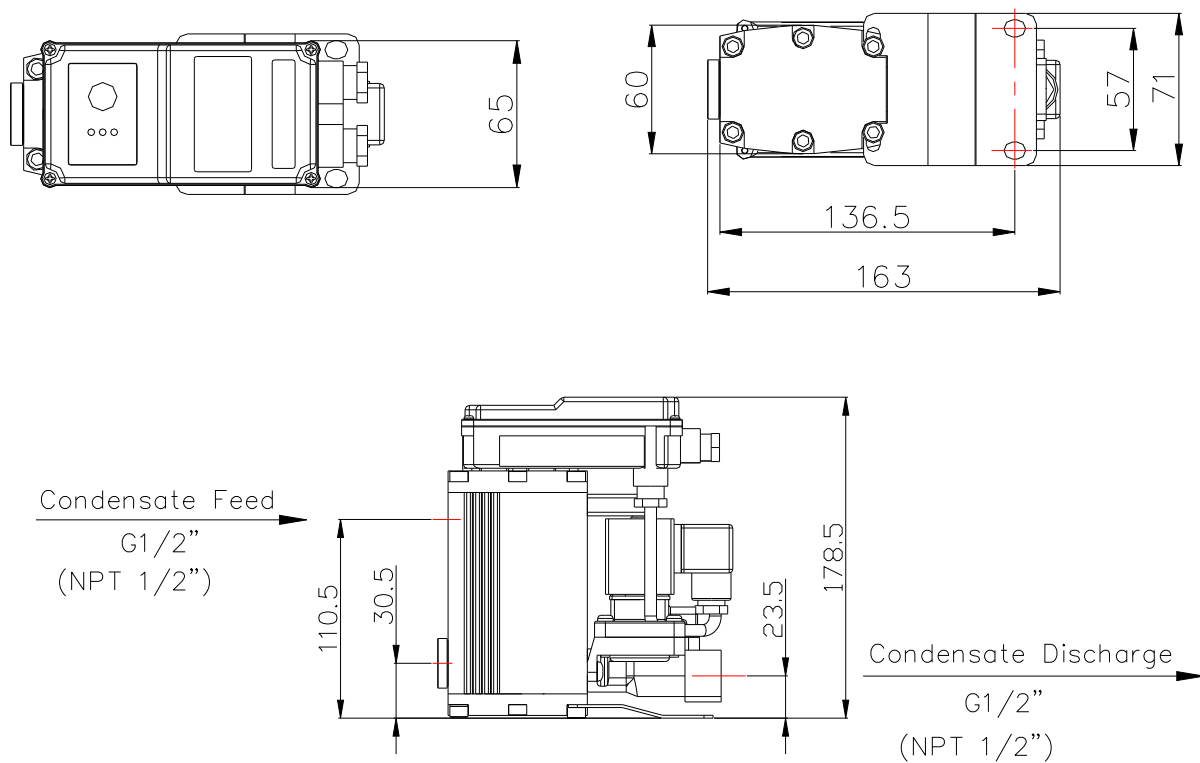


■ 규격(DIMENSION)

DM-5N

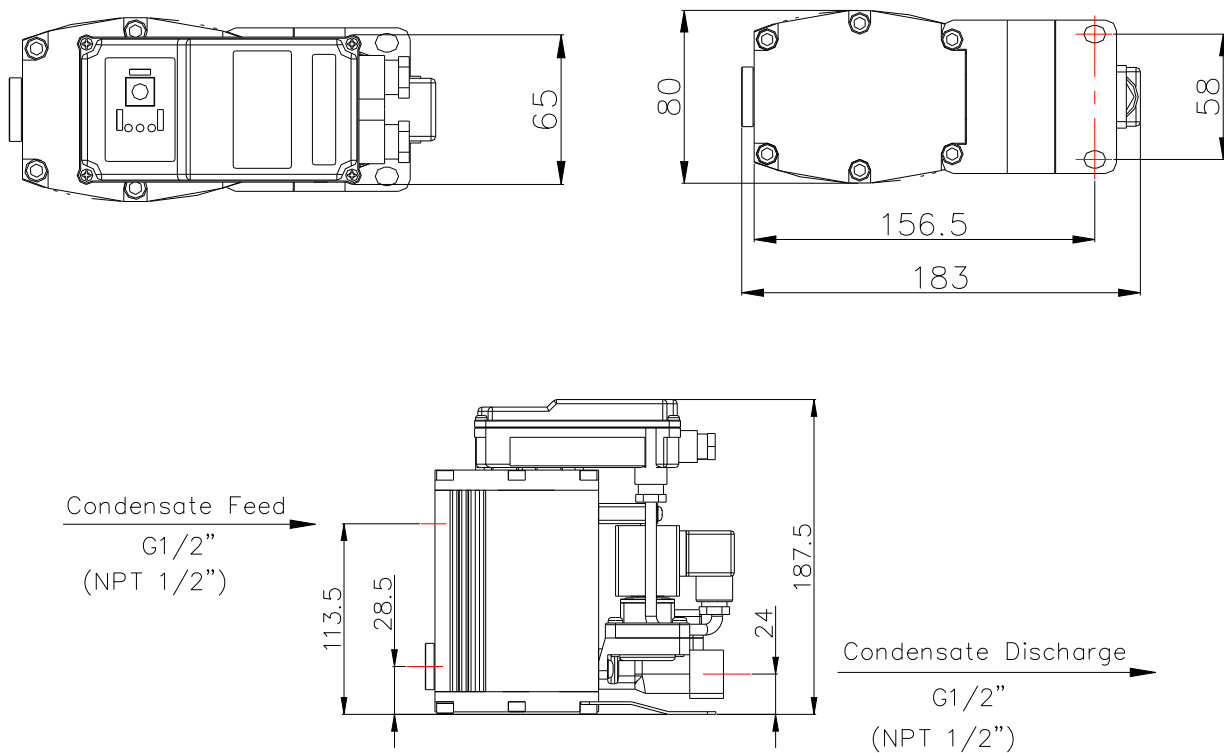


DM-15

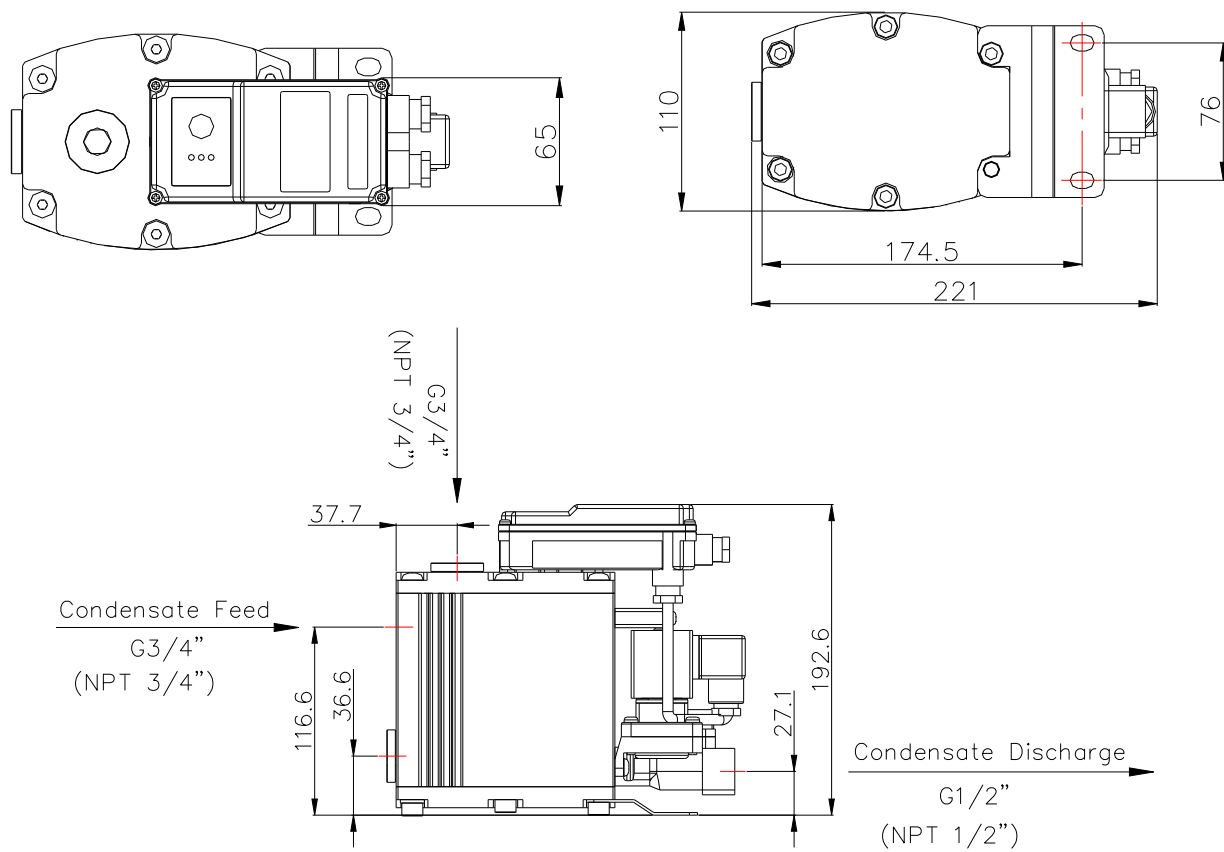


■ 규격(DIMENSION)

DM-50

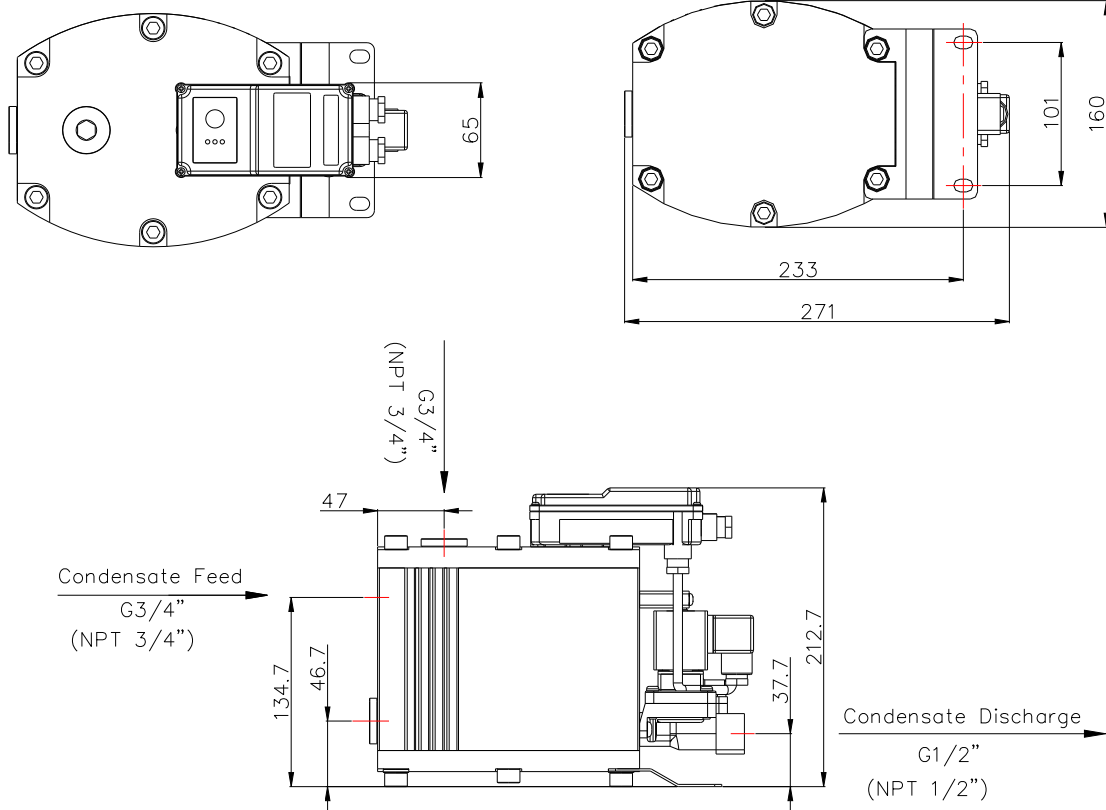


DM-150

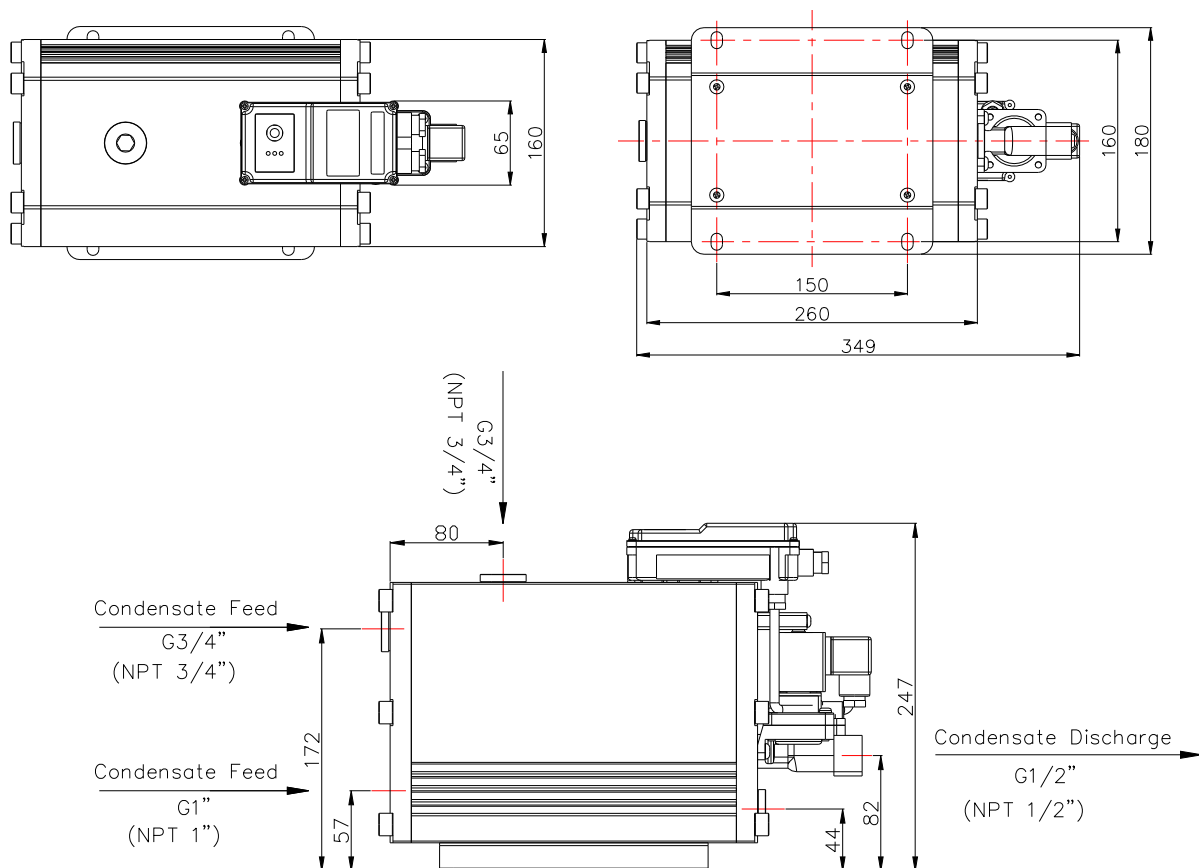


■ 규격(DIMENSION)

DM-500

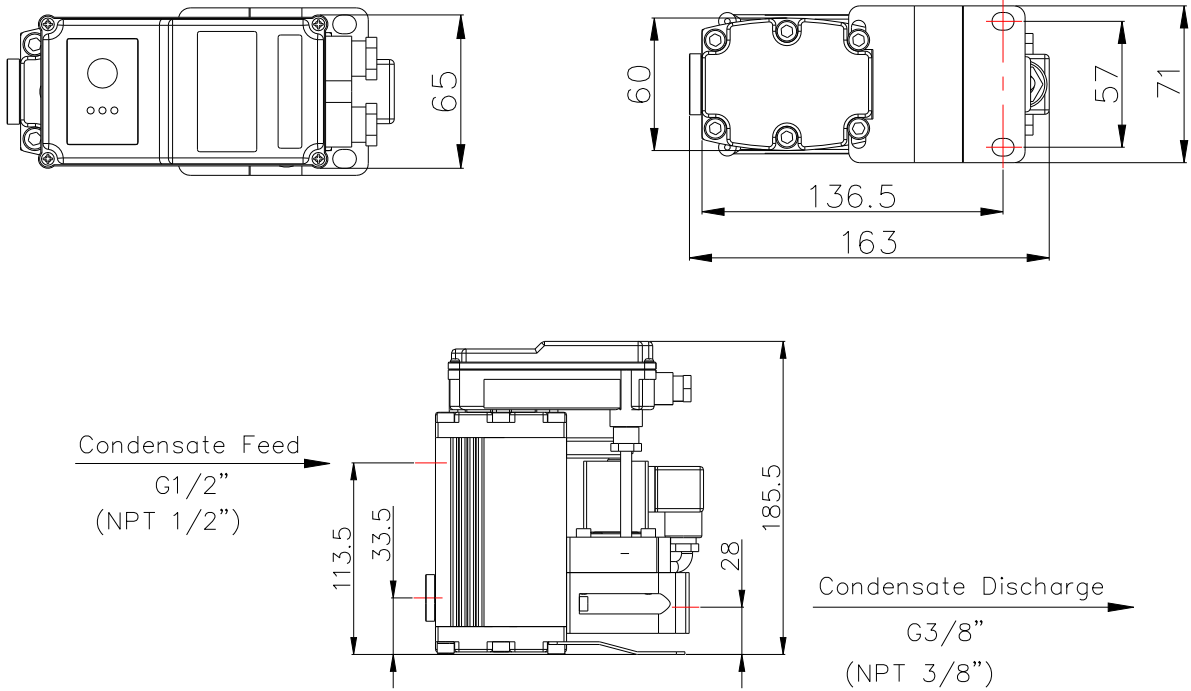


DM-1500

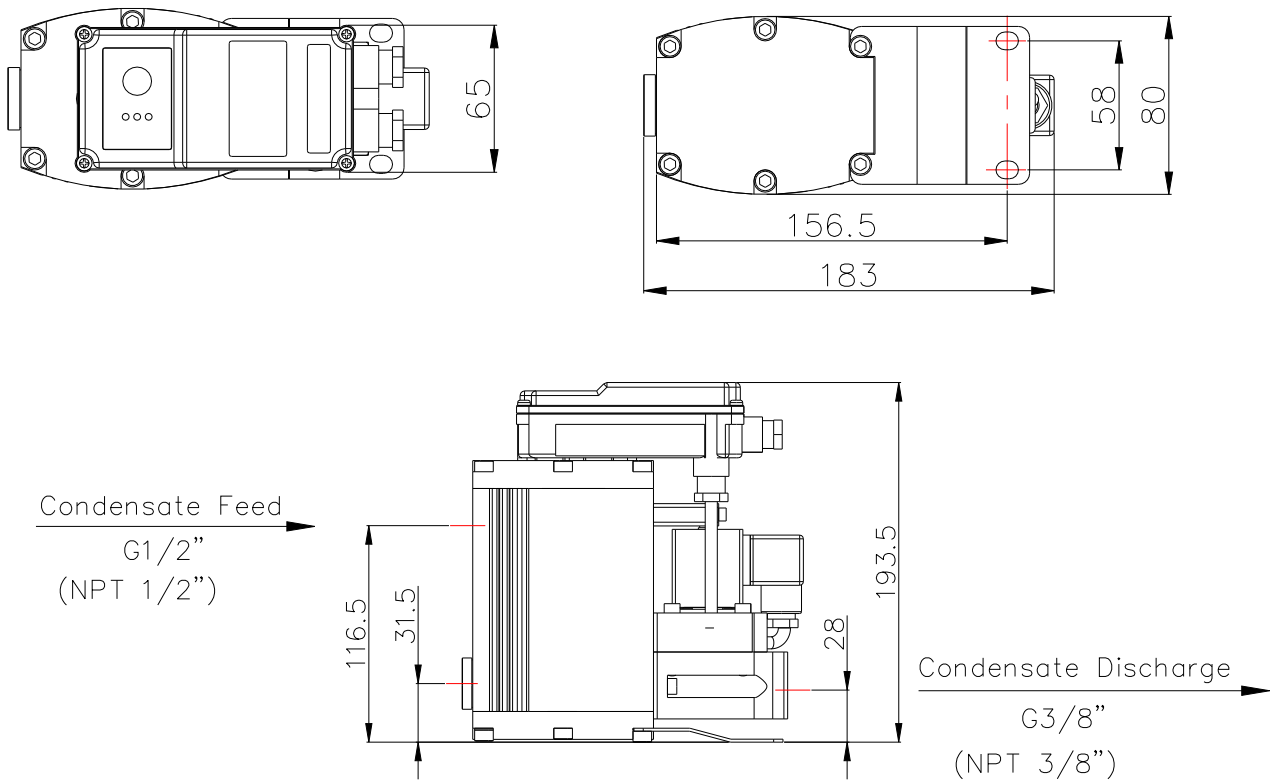


■ 규격(DIMENSION)

DM-15HP

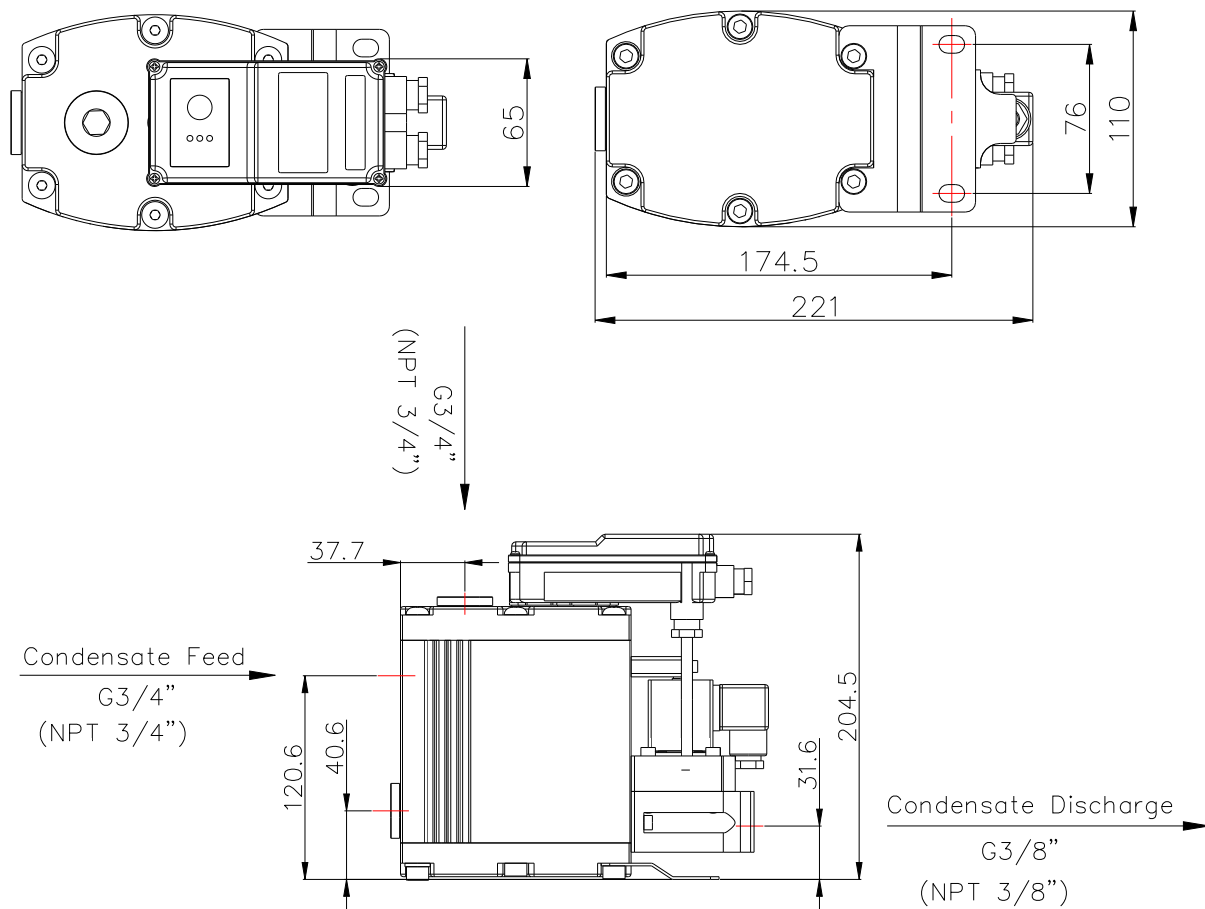


DM-50HP



■ 규격(DIMENSION)

DM-150HP



■ 기능(FUNCTION)

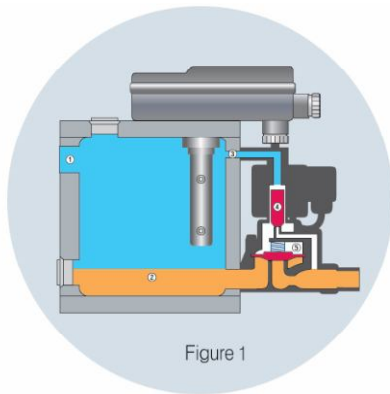


Figure 1

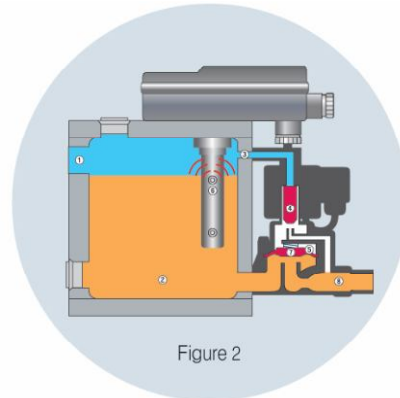


Figure 2

유입라인(1)으로 유입된 응축수는 저장조에 모이고, 상부의 유량감지 센서가 응축수를 감지하여 전자 제어장치로 신호를 보내면 밸브가 작동하여 다이어프램이 Open되어 응축수가 배출 된다.

배출이 완료되면 하부의 유량감지 센서에 감지되어 밸브의 작동이 멈추고 다이어프램이 Close된다.



Normal Mode

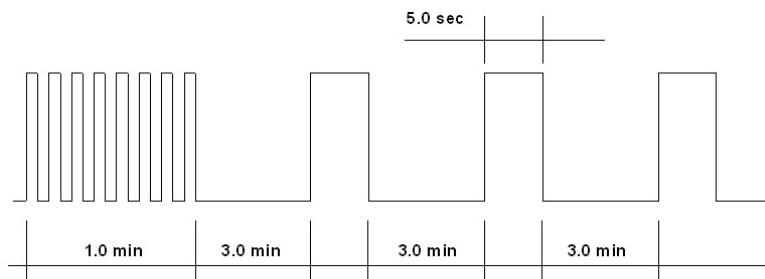
- ▶ TEST BUTTON을 눌러 작동 상태 확인 (수동 배출)
- ▶ TEST BUTTON은 1초 이하로 누를것.



Alarm Mode

다음과 같은 경우 오작동이 발생한다.

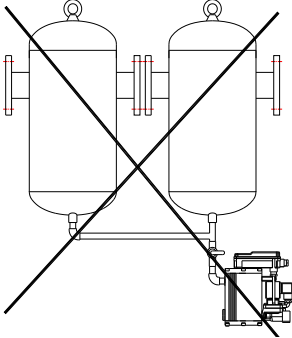
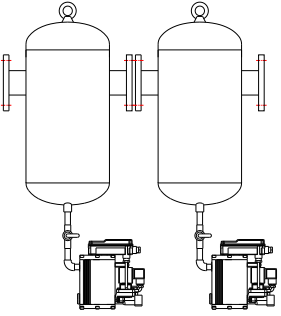
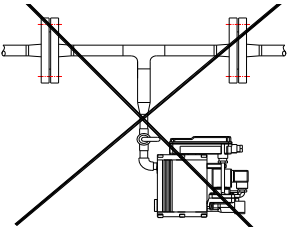
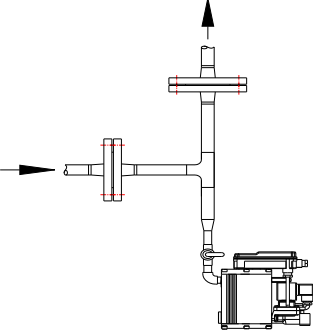
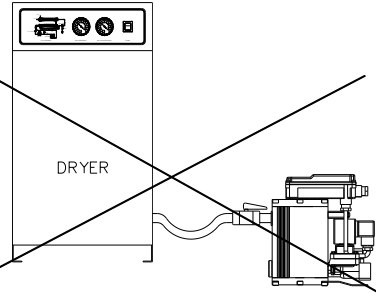
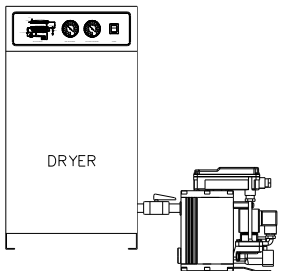
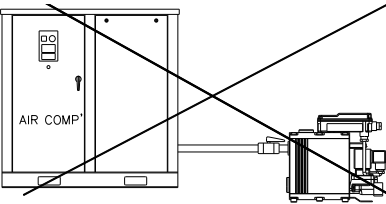
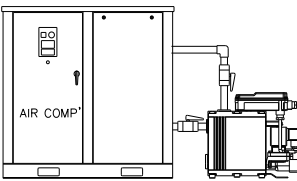
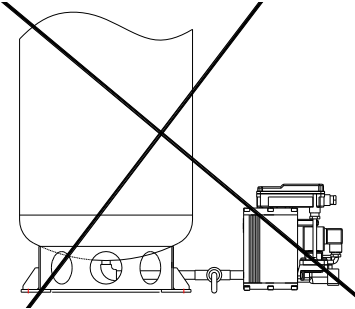
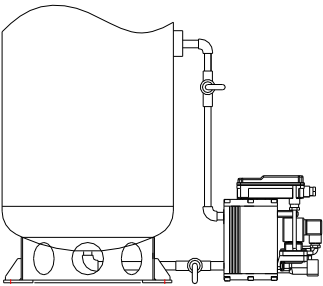
- ▶ 설치가 제대로 되지 않은 경우.
- ▶ 응축수가 과도하게 발생되어 과부하가 걸리는 경우.
- ▶ 배출라인이 막혀(이물질, 동결 등) 배출이 제대로 되지 않는 경우.
- ▶ 내부압력이 배출 최소 압력(0.8bar)보다 낮아 배출이 되지 않는 경우.



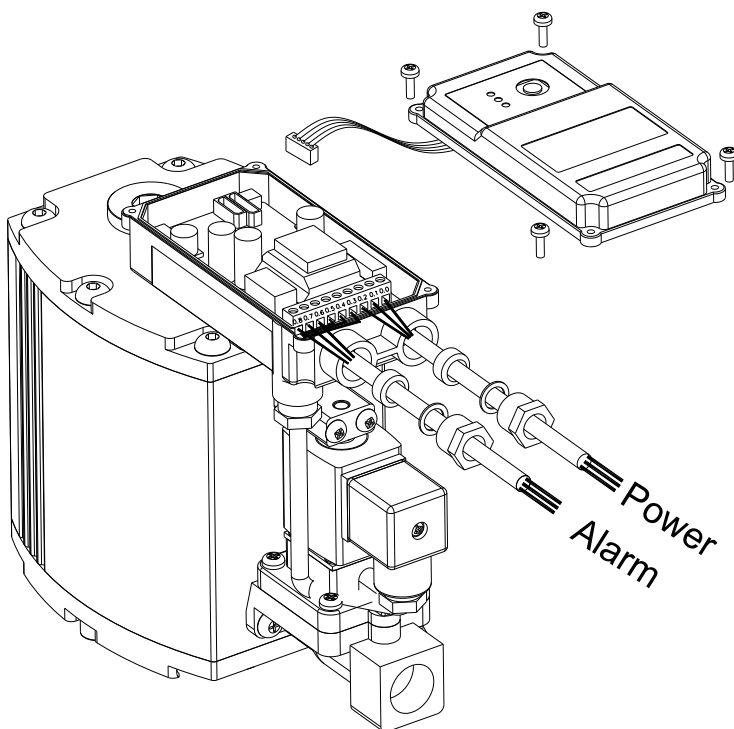
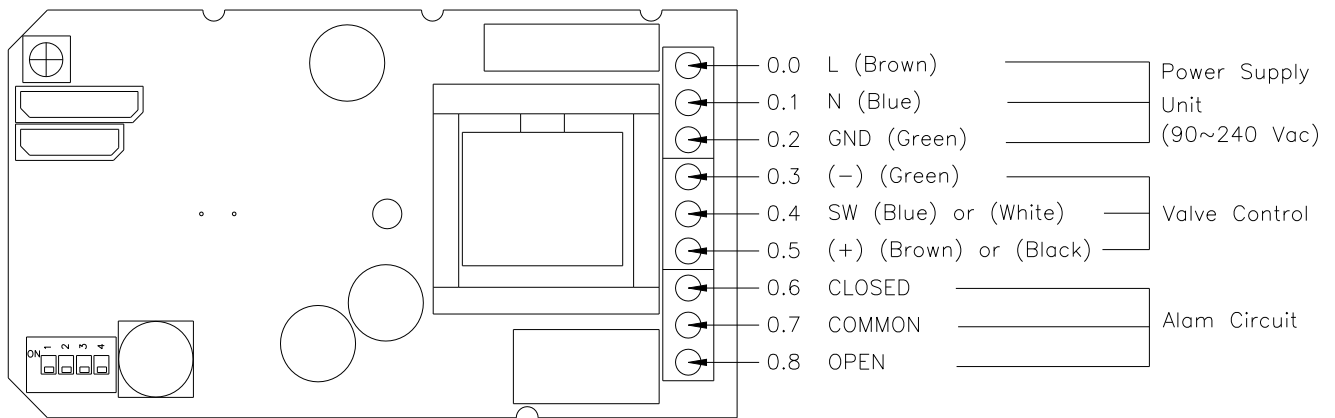
오작동이 발생하면 비상모드로 전환되어 알람 시그널을 점등 시키고 자동 복원 기능이 작동하여 매 3분마다 5초씩 밸브를 강제 개방하게 된다.

자동 복원 되거나, 보수에 의하여 오류가 시정되면 알람 시그널이 점멸되고 정상모드로 복귀한다.

■ 설치 (INSTALLATION)

		각각의 응축수 라인을 따로 따로 설치 해야 한다.
		배관 라인이 직선으로 되었을 경우 응축수와 에어가 분리될수 있도록 배관을 조정하여야 한다.
		응축수 유입 라인은 응축수 유입이 잘 되도록 구부러져 처지는 일이 없도록 설치 한다.
		유입라인의 수평 배관이 길어지면 에어 밴팅라인을 설치하는 것이 좋다.
		탱크등의 수평 배관시 압력계등에 밴팅 라인을 설치하는 것이 바람직하다. (하우징 내부에 에어가 차면 압력에 의해 응축수가 흘러 들어가지 못하는 현상이 발생함)

■ 전기 설치 (ELECTRICAL INSTALLATION)



0.0	Phase	Power
0.1	Neutral	
0.2	Ground	
0.3	24 VDC	Valve
0.4		
0.5		
0.6	Normally closed	Alarm
0.7	Common	
0.8	Normally open	

■ 전기 데이터 (ELECTRICAL DATA)

Power Voltage	90~240/24/48 Vac	24/48 Vdc
Max, Power input	P < 2.0 VA	P < 2.0 W
Recommended cable jacket diameter	Ø 5.8 ~ 8.0 mm	
Cable cross-section and fuse protection	3 x 0.75 mm ² / 5 x 0.25 mm ² 0.5 A	100 mA
Contact loading relay or out	260 Vac - < 1.0 A	

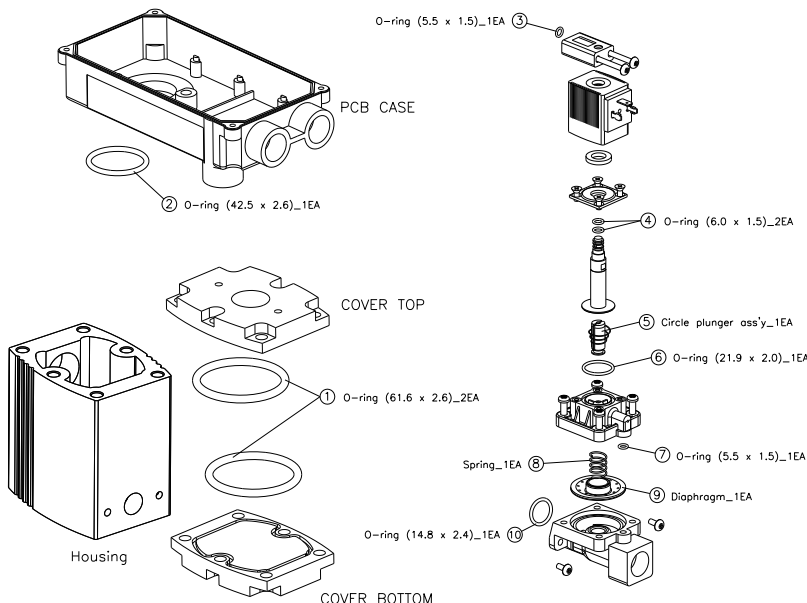
▶ 작동압(>0.8bar)이 없거나 오류 신호시, 비상 릴레이가 작동되어 알람모드(Alarm mode)로 전환된다.

■ 유지보수 및 소모품(MAINTENANCE,EXPENDABLE MATERIALS)

문제의 종류(Trouble shooting)	원인(Factor)	해결방법(Solution)
▶ 테스트 버튼을 눌러도 응축수가 배출되지 않을 때. 	*유입, 배출 라인이 닫혔거나 막혔을 경우.	-유입, 배출라인의 현상 체크
	*PCB Board 결함	-PCB Board 교체
	*솔레노이드 밸브 결함.	-솔레노이드 밸브 교체.
	*부품 마모.	-마모 부품 교체. (Wearing part kits)
	*배출 가능한 최저 압력이하. (Pressure... < 0.8bar)	-사용 압력 체크.
▶ 테스트 버튼을 누르고 있는 상태에서만 응축수가 배출 될때.	*유입라인의 배관 기울기가 불충분 할 경우.	-유입라인의 배관 기울기를 주던가, 벤팅라인을 설치 한다.
	*유입 라인의 배관 길이가 길 경우.	-에어 벤팅라인 설치(설치방법 참조)
	*응축수가 과다하여 과부하 상태일 경우.	-응축수량에 맞는 모델 선정.
	*센서 튜브의 극심한 오염으로 감지 불능.	-센서 튜브 청소.
▶ 전원 램프가 점등 되지 않는다.	*전원 공급이 되지 않을 경우.	-정격 전압 체크 -케이블 연결 상태 확인.
	*PCB Board 결함	-PCB Board 교체
▶ 밸브에서 에어가 계속해서 유출된다.	*다이아프램 하부에 이물질이 낀 경우.(스케일 등)	-이물질 제거.
	*콘트롤 에어 라인이 막힌 경우.	-이물질 제거.
	*솔레노이드 밸브 내부에 이물질이 끼어 작동이 원활하지 못 한 경우.	-밸브 전체를 청소 한다.
	*부품 마모. (Diaphragm, Plunger등)	-마모 부품 교체.

Sample

Wearing Part kits



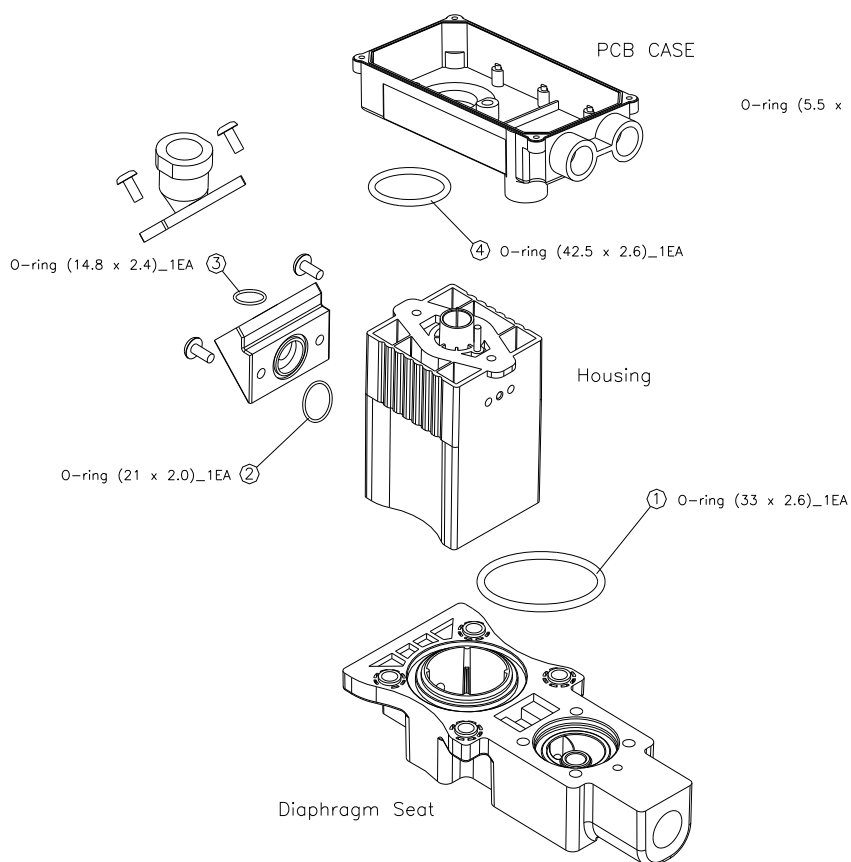
- ▶ 하우징과 밸브는 일년에 한번 청소 할 것.
- ▶ 일년에 한번 마모성 부품을 체크 할 것.

▶ 마모성 부품(Wearing parts)

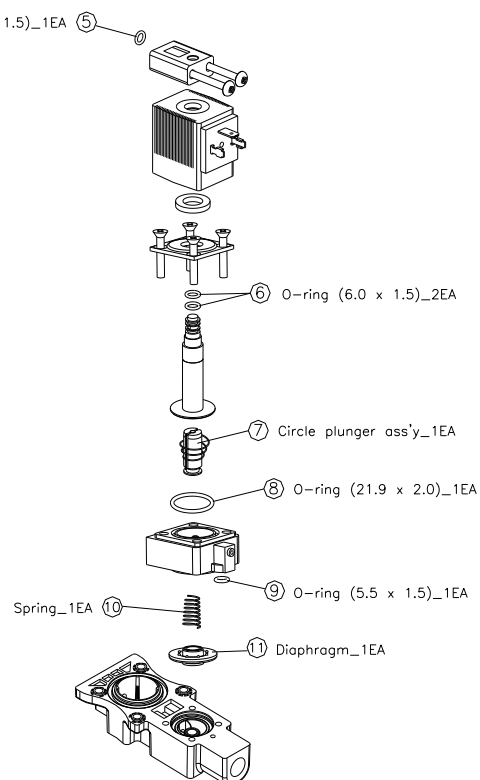
- DM-5S	:	SP DM5S 101
- DM-5	:	SP DM5 101
- DM-5N	:	SP DM5N 101
- DM-15	:	SP DM15 101
- DM-50	:	SP DM50 101
- DM-150	:	SP DM150 101
- DM-500	:	SP DM500 101
- DM-1500	:	SP DM1500 101
- DM-15HP	:	SP DM15H 101
- DM-50HP	:	SP DM50H 101
- DM-150HP	:	SP DM150H 101

DM-5S

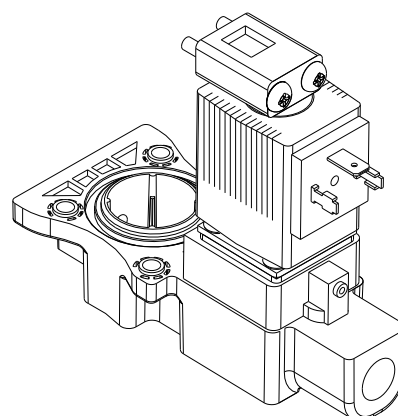
Wearing Part kits



Order part name	Wearing Part Kits
Order reference	SP DM5S 101
Amount	1 Pcs



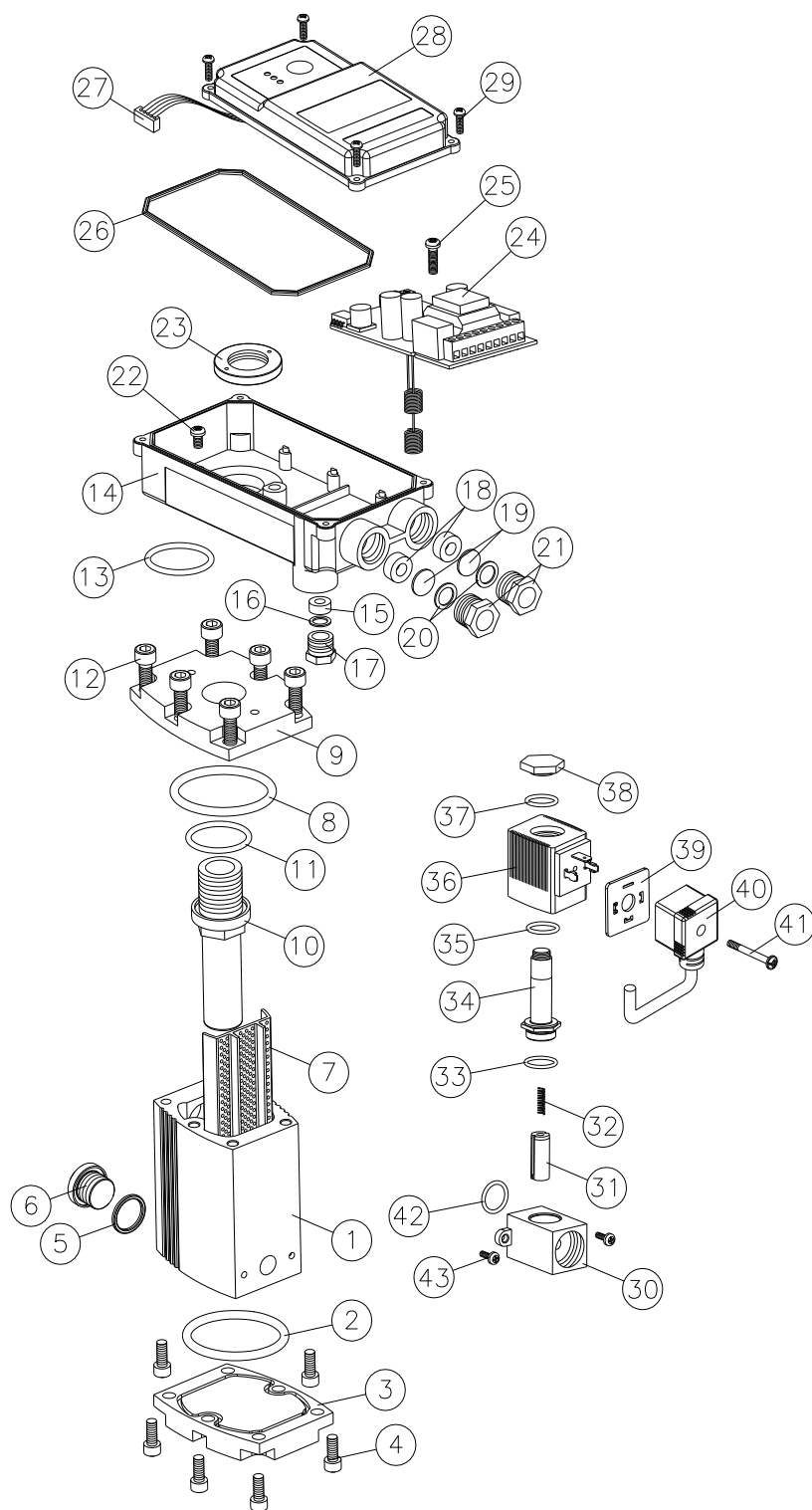
Solenoid Valve



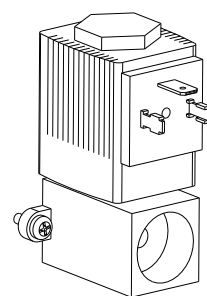
Wearing part kits	SP DM5S 101	
Housing	SP DM5S 103	
Diaphragm Seat	SP DM5S 104	
Sensor board	SP DM5S 105	
Diaphragms(3pcs)	SP DM5S 106	
Solenoid valve	SP DM5S 107	
PCB case	SP DM00 201	

■ 부속품 (COMPONENTS)

DM-5

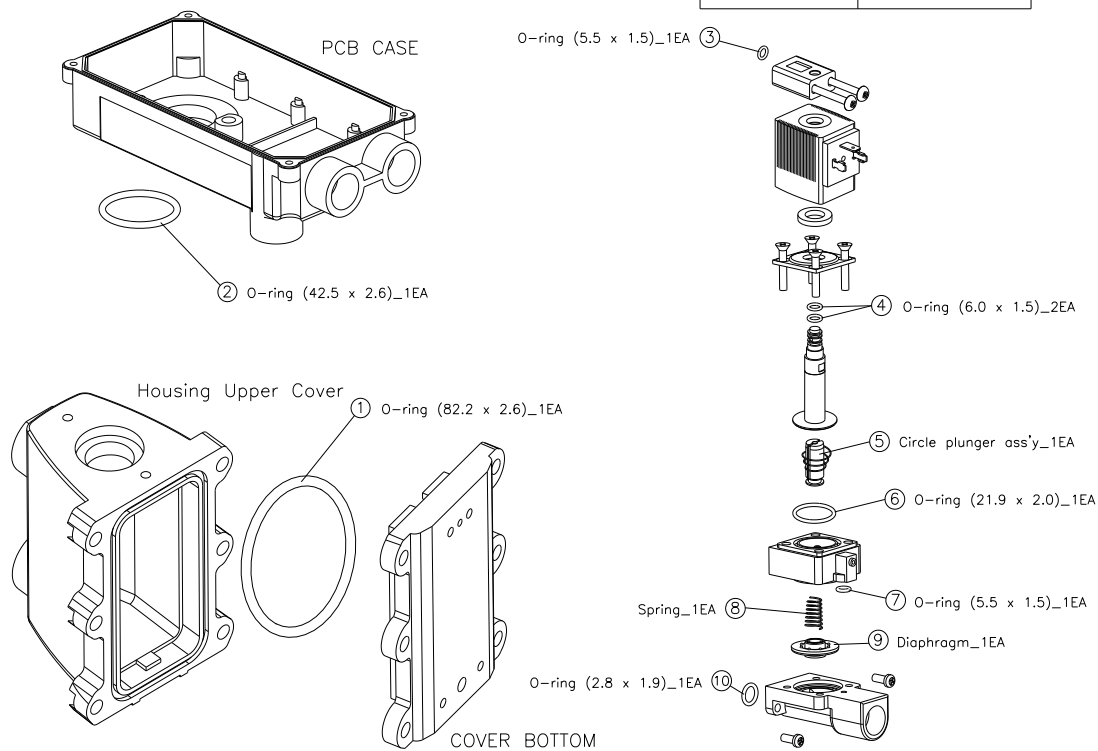


Solenoid Valve



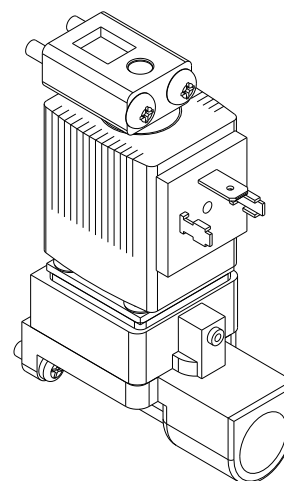
Wearing part kits	SP DM5 101	2 , 8 , 13 , 31 , 32 , 33 , 35 , 37 , 42
Housing	SP DM5 102	1
Cover Top	SP DM5 103	9
Cover Bottom	SP DM5 104	3
Sensor board	SP DM5 105	24
Solenoid valve	SP DM5 107	
PCB case	SP DM00 201	28

Wearing Part kits

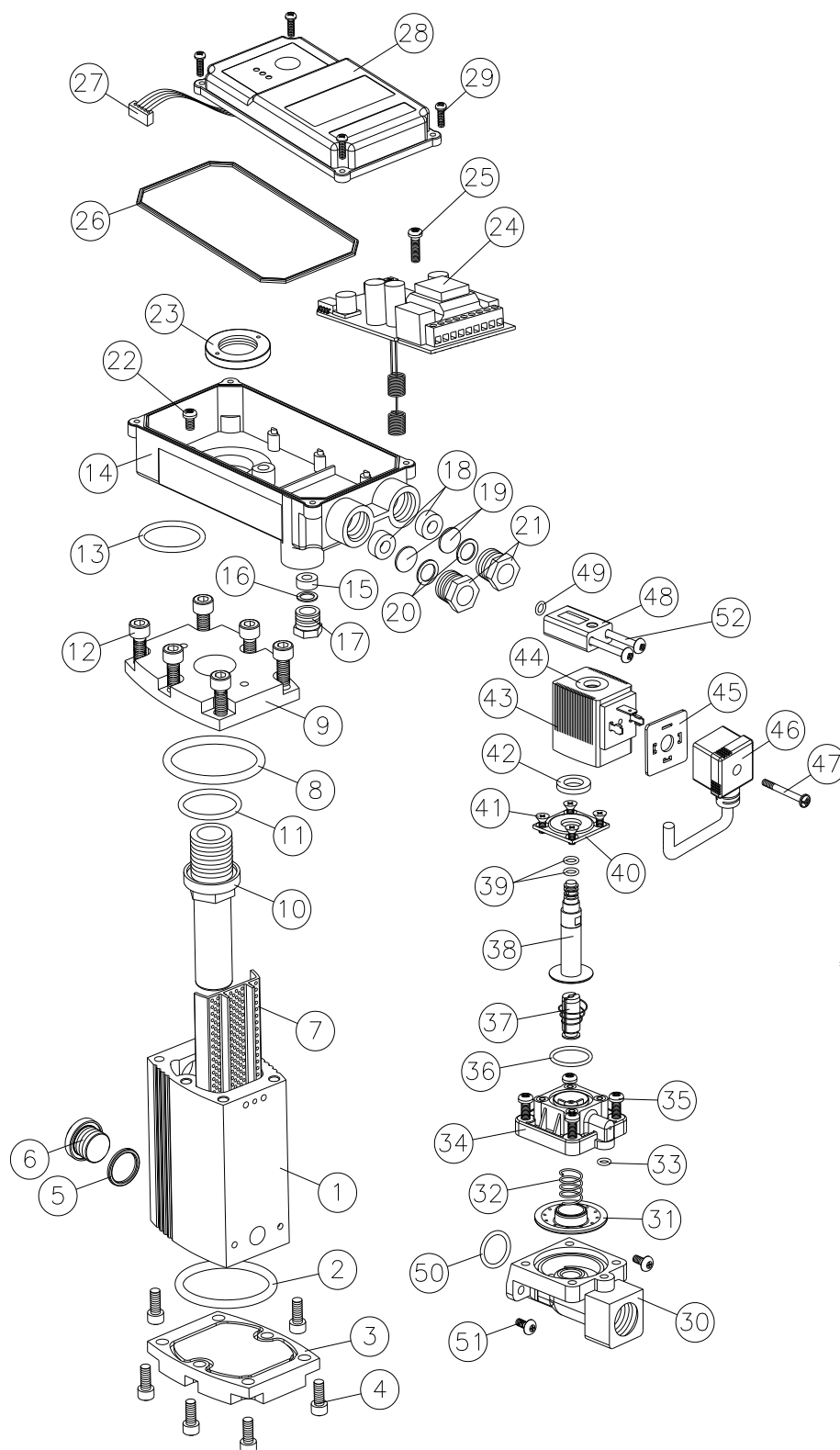


Order part name	Wearing Part Kits
Order reference	SP DM5N 101
Amount	1 Pcs

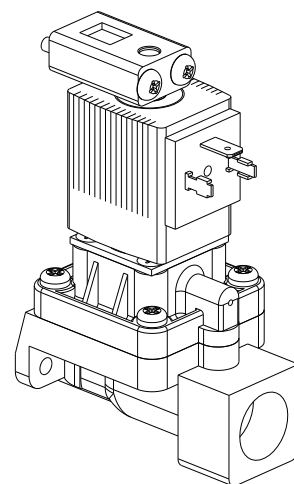
Solenoid Valve



Wearing part kits	SP DM5N 101	
Housing Upper cover	SP DM5N 103	
Bottom cover	SP DM5N 104	
Sensor board	SP DM5N 105	
Diaphragms(3pcs)	SP DM5N 106	
Solenoid valve	SP DM5N 107	
PCB case	SP DM00 201	



Solenoid Valve

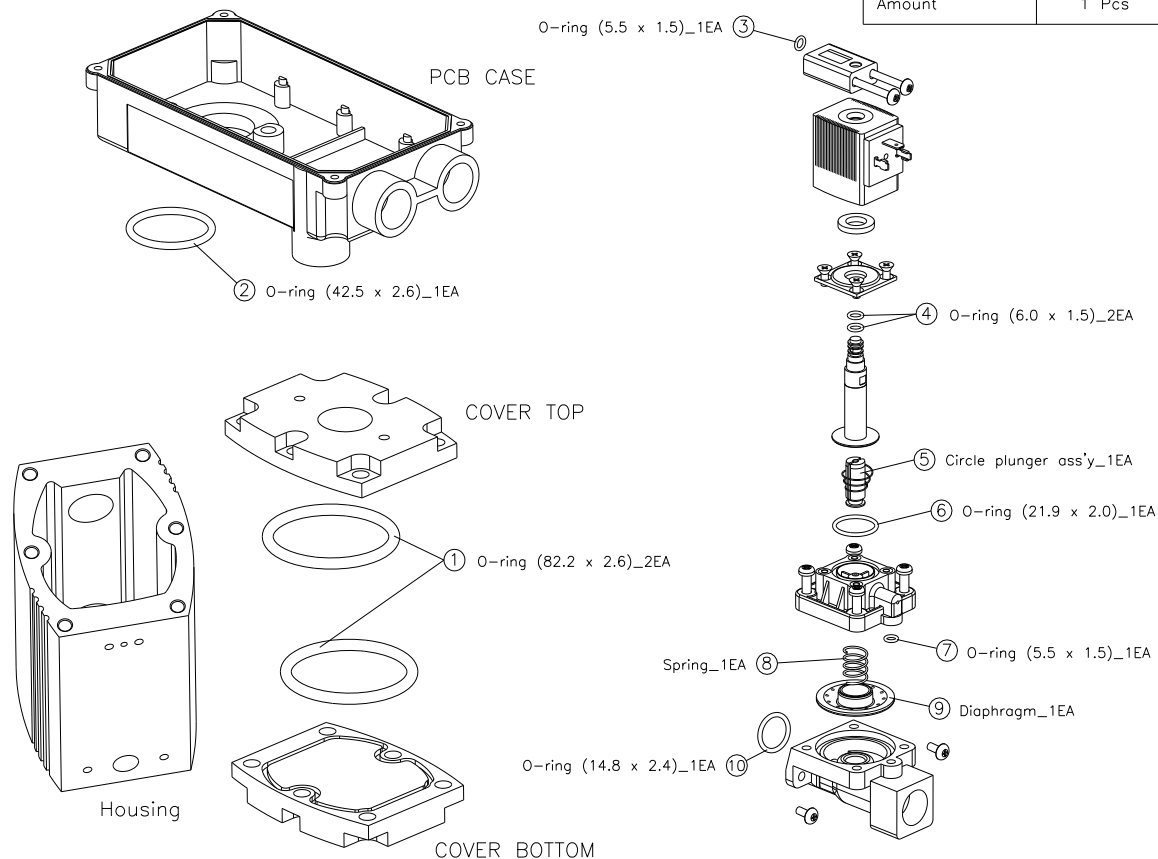


Wearing part kits	SP DM15 101	2 , 8 , 13 , 31 , 32 , 33 , 36 , 37 , 39 , 49 , 50
Housing	SP DM15 102	1
Cover Top	SP DM15 103	9
Cover Bottom	SP DM15 104	3
Sensor board	SP DM15 105	24
Diaphragms(3pcs)	SP DM15 106	31 , 32
Solenoid valve	SP DM15 107	
Pcb case	SP DM00 201	28

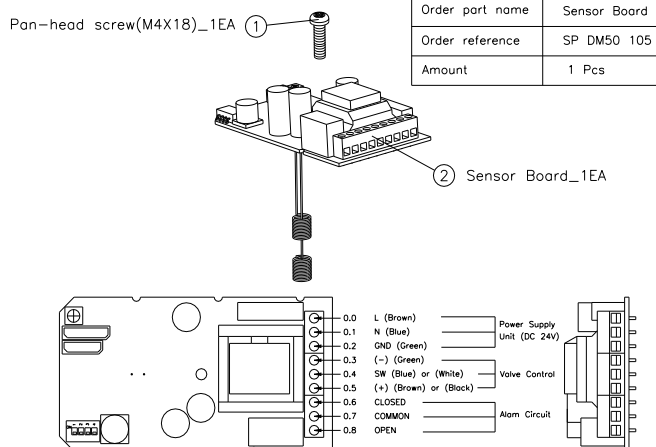
■ 부속품 (COMPONENTS)

DM-50

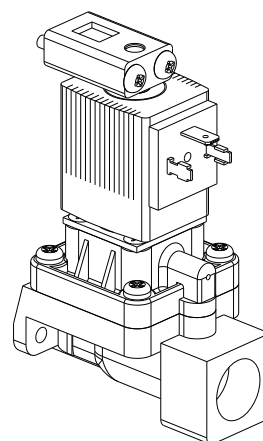
Wearing Part kits



Spare Parts



Solenoid Valve

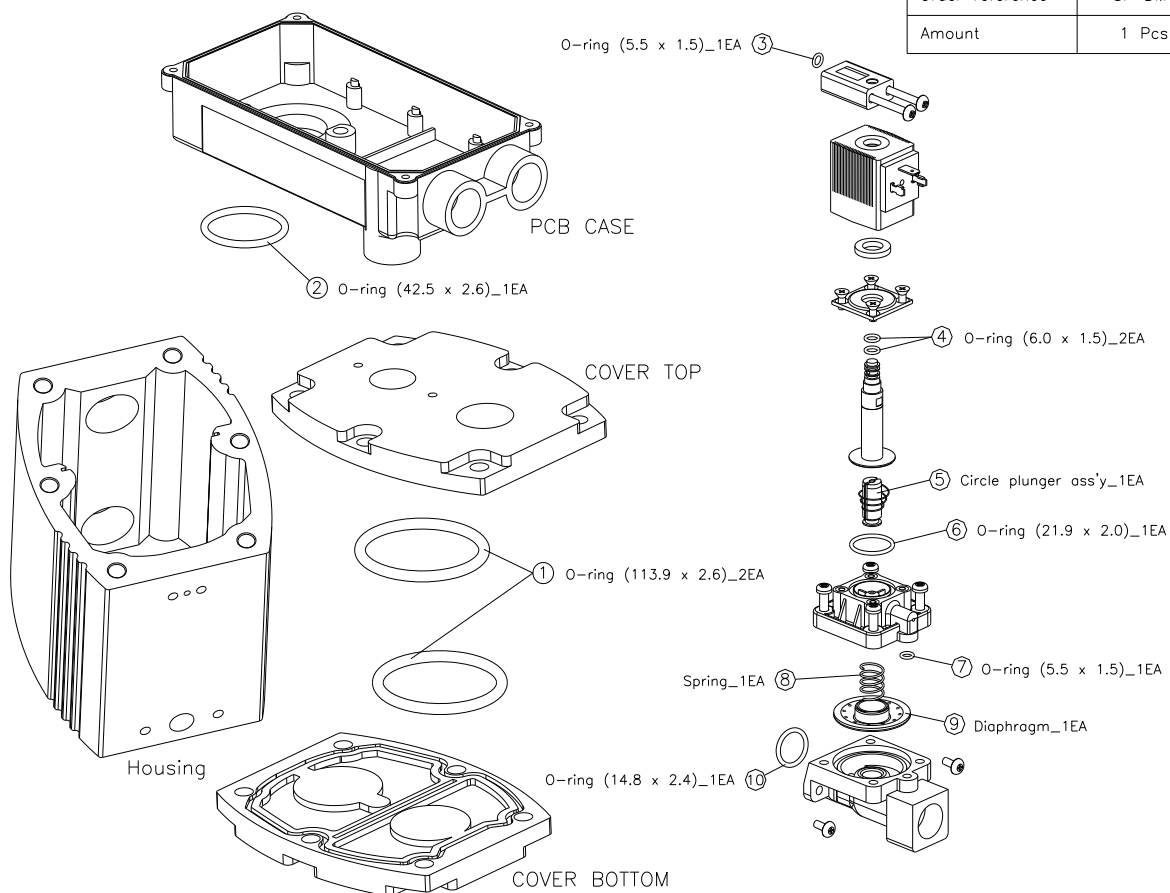


Wearing part kits	SP DM50 101	
Housing	SP DM50 102	
Cover Top	SP DM50 103	
Cover Bottom	SP DM50 104	
Sensor board	SP DM50 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM50 107	
Pcb case	SP DM00 201	

■ 부속품 (COMPONENTS)

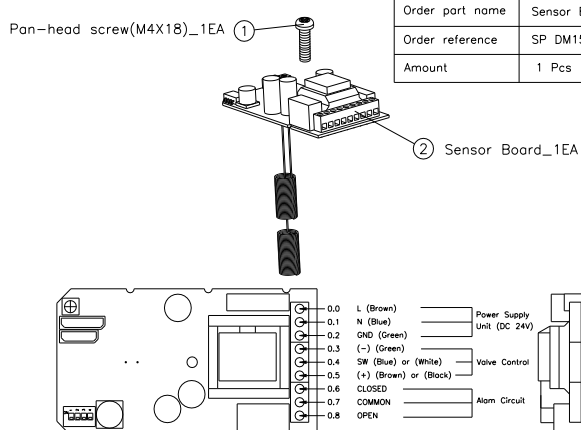
DM-150

Wearing Part kits



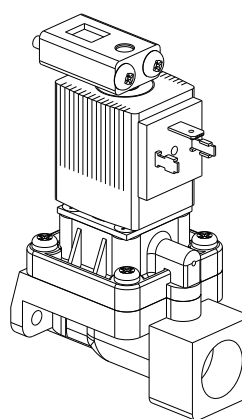
Order part name	Wearing Part Kits
Order reference	SP DM150 101
Amount	1 Pcs

Spare Parts



Order part name	Sensor Board
Order reference	SP DM150 105
Amount	1 Pcs

Solenoid Valve

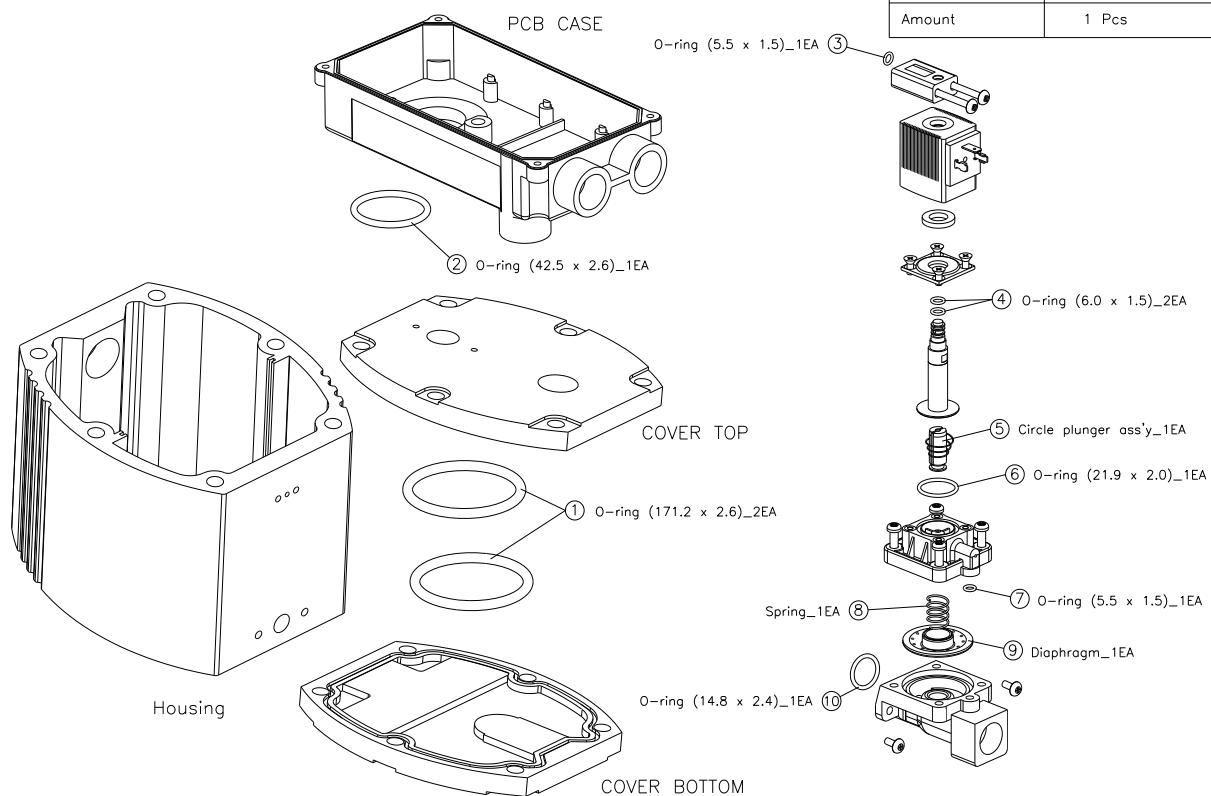


Wearing part kits	SP DM150 101	
Housing	SP DM150 102	
Cover Top	SP DM150 103	
Cover Bottom	SP DM150 104	
Sensor board	SP DM150 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM150 107	
Pcb case	SP DM00 201	

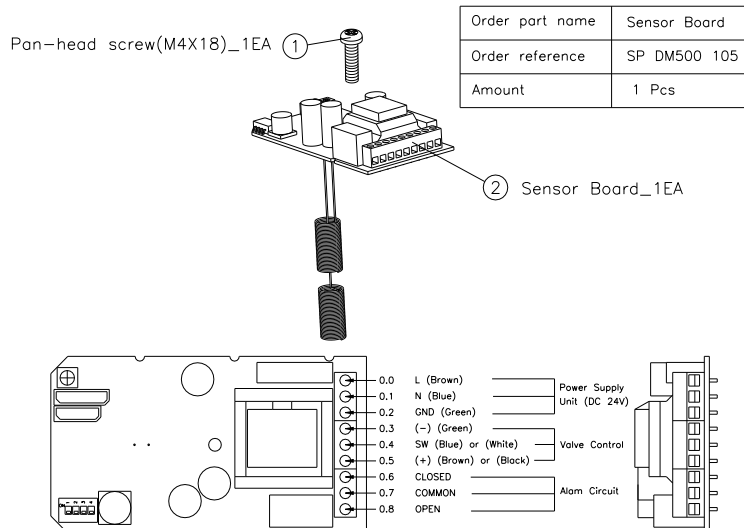
■ 부속품 (COMPONENTS)

DM-500

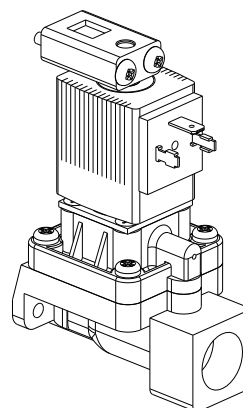
Wearing Part kits



Spare Parts



Solenoid Valve

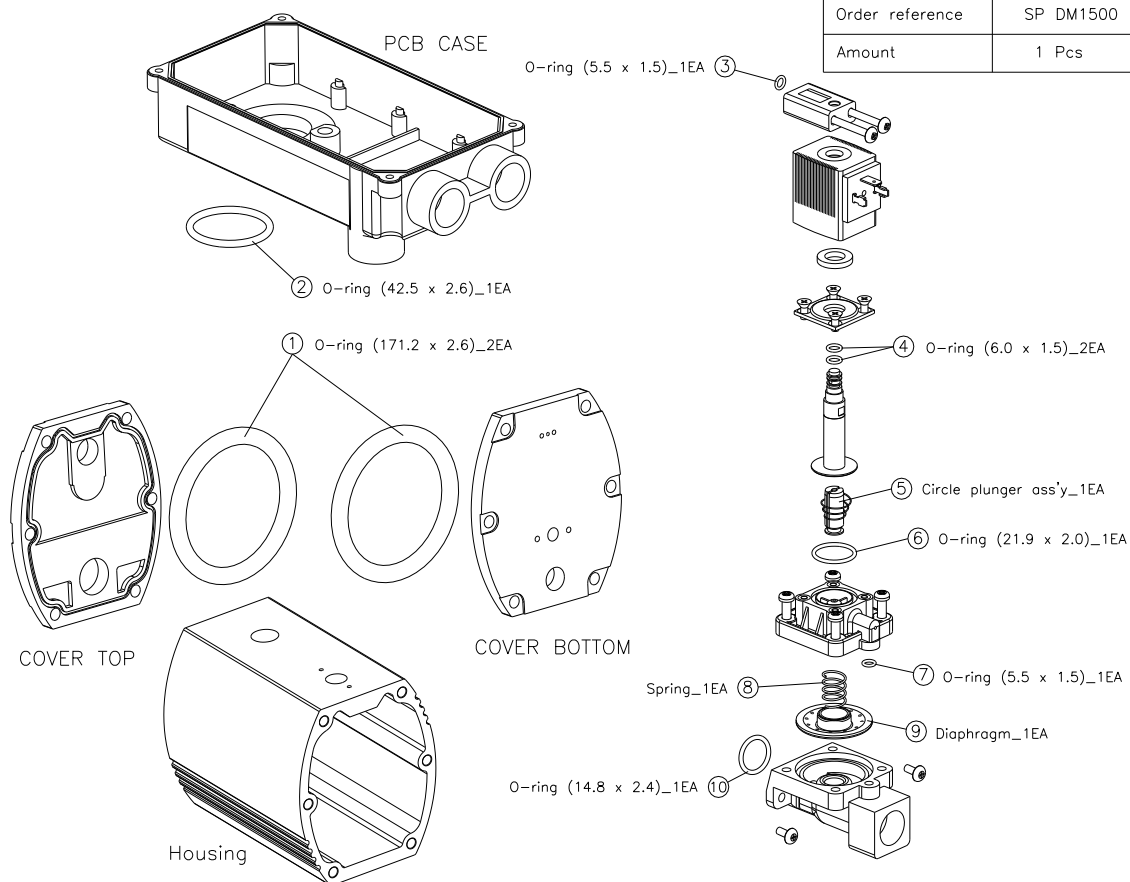


Wearing part kits	SP DM500 101	
Housing	SP DM500 102	
Upper cover	SP DM500 103	
Bottom cover	SP DM500 104	
Sensor board	SP DM500 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM500 107	
Pcb case	SP DM00 201	

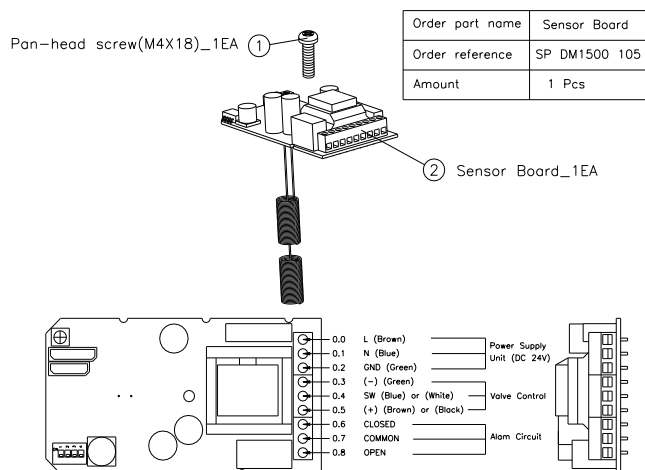
■ 부속품 (COMPONENTS)

DM-1500

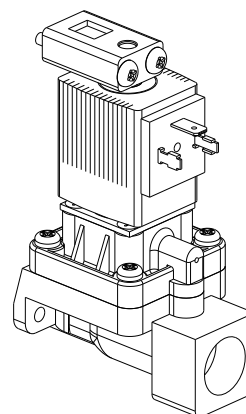
Wearing Part kits



Spare Parts



Solenoid Valve

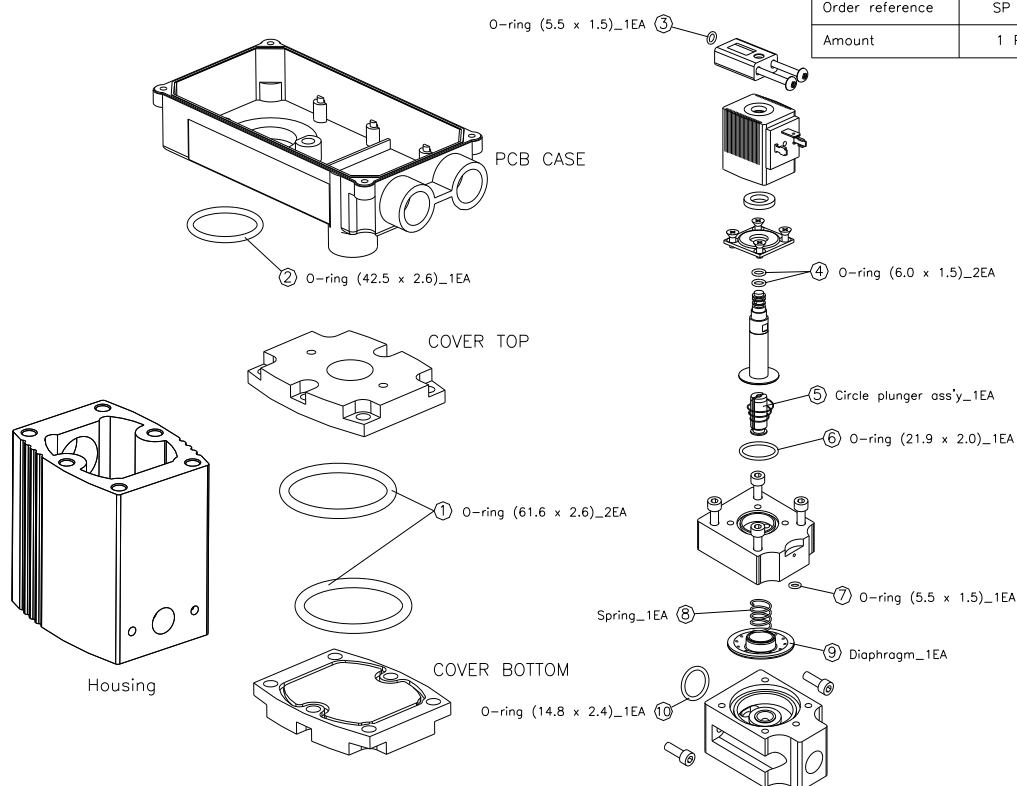


Wearing part kits	SP DM1500 101	
Housing	SP DM1500 102	
Upper cover	SP DM1500 103	
Bottom cover	SP DM1500 104	
Sensor board	SP DM1500 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM1500 107	
Pcb case	SP DM00 201	

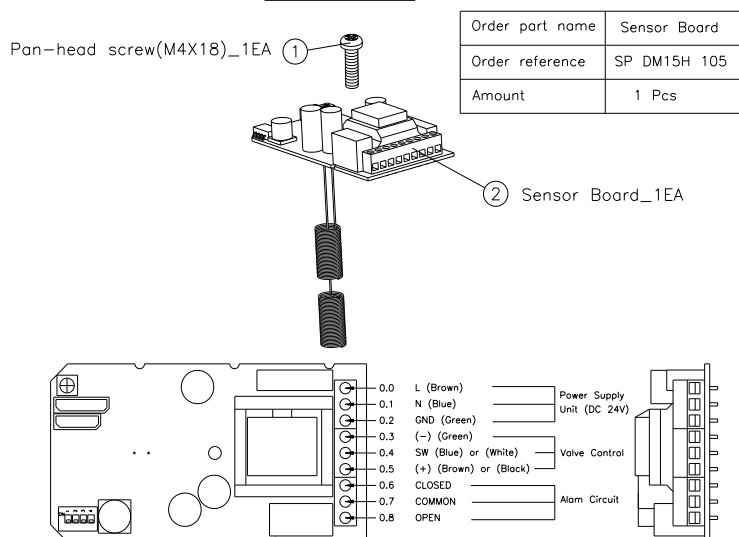
■ 부속품 (COMPONENTS)

DM-15HP

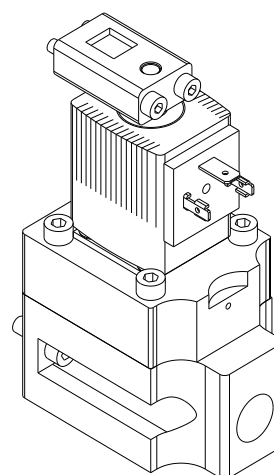
Wearing Part kits



Spare Parts



Solenoid Valve

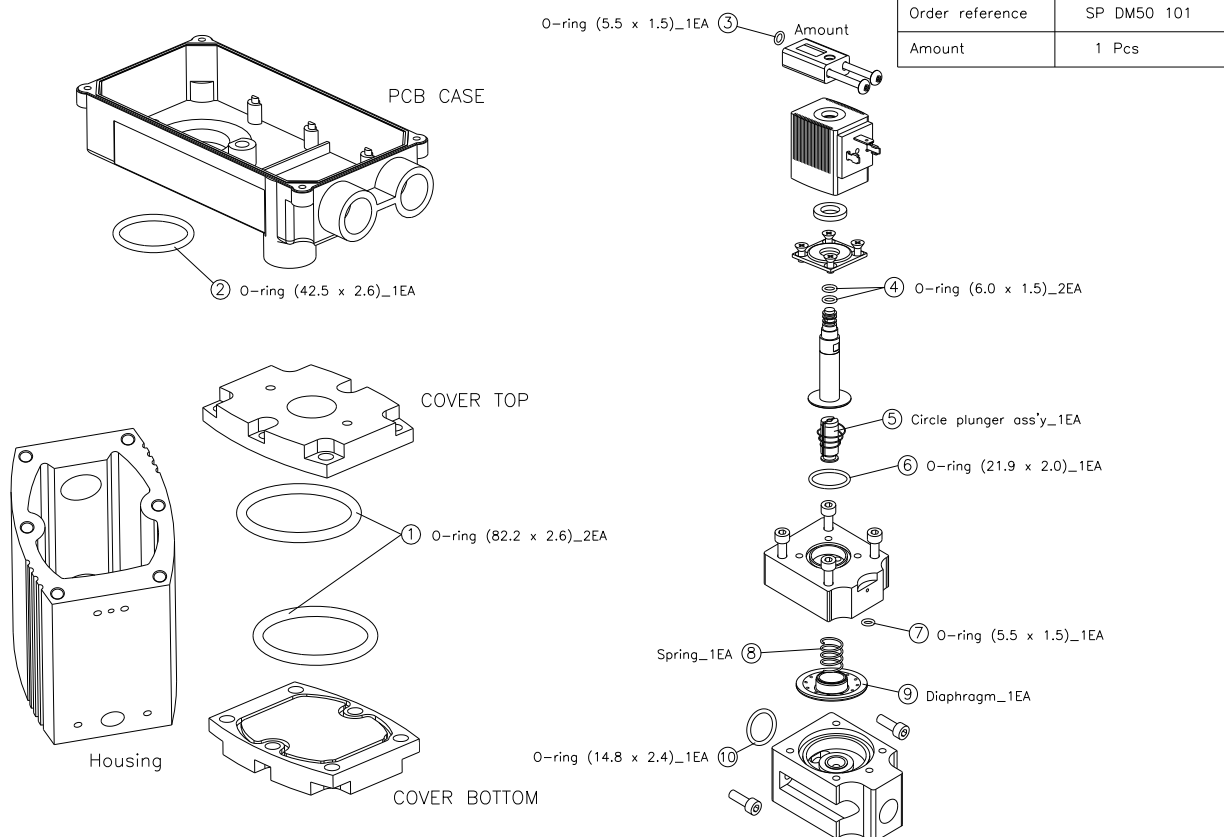


Wearing part kits	SP DM15 101	
Housing	SP DM15 102	
Upper cover	SP DM15H 103	
Bottom cover	SP DM15H 104	
Sensor board	SP DM15H 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM15H 107	
Pcb case	SP DM00 201	

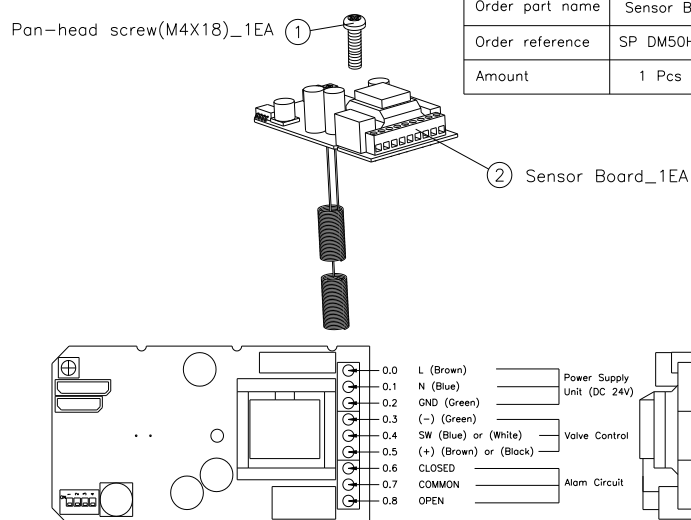
■ 부속품 (COMPONENTS)

DM-50HP

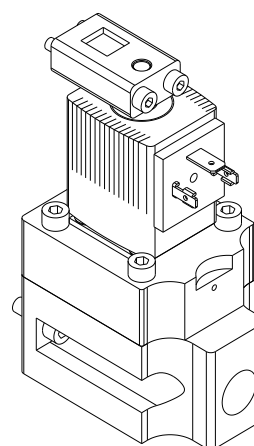
Wearing Part kits



Spare Parts



Solenoid Valve



Wearing part kits	SP DM50 101	
Housing	SP DM50 102	
Upper cover	SP DM50H 103	
Bottom cover	SP DM50H 104	
Sensor board	SP DM50H 105	
Diaphragms(3pcs)	SP DM15 106	
Solenoid valve	SP DM50H 107	
Pcb case	SP DM00 201	