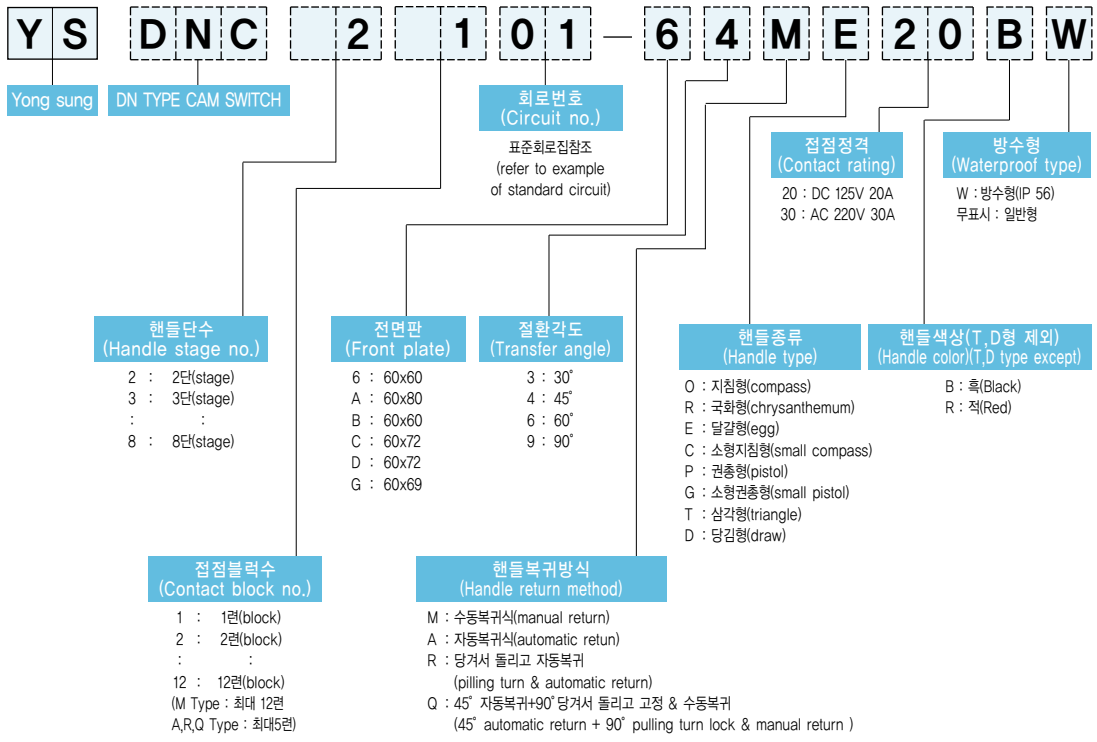
형식 구분도 | Type Classification Diagram - DNC 20A, 30A |



※ 방수형(W : IP56)은 주문제작입니다. (Water proof type (W : IP56) is manufactured by order.)
※ 핸들복귀방식 A,R,Q 타입은 5련까지 가능합니다. (Handle return A,R,Q type is limited to 5 contact block.)

접점 정격 | Contact Rating - DNC 20A |

정격절연전압 (Rating insulation voltage)			DC250V		
정격통전전류 (Rating Conductive current)			35A		
DC	정격전압 (Rated votage)		110V	125V	220V
	정격전류 (Rated current)	저항부하 (Resistive load)	22A	20A	10A
		유도부하 (Inductive load)	4A	3.5A	2A

유도부하 (Inductive load) ----- $T_{0.95}$ = 300ms

적용규격 (Applied standard) ----- KSC 4519, IEC 60947-5-1

※ 직류 20A용은 영구자석이 부착되어 있습니다.
(For DC 20A, permanent magnet is attached.)

접점 정격 | Contact Rating - DNC 30A |

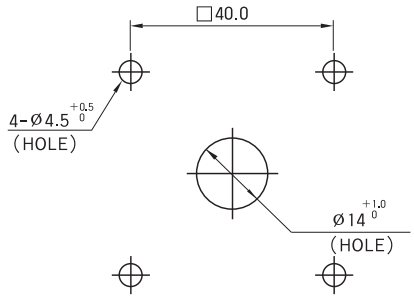
정격절연전압 (Rating insulation voltage)			AC600V, DC250V		
정격통전전류 (Rating Conductive current)			35A		
AC	정격전압 (Rated votage)		110~120V	220~240V	380~440V
	정격전류 (Rated current)	저항부하 (Resistive load)	30A	30A	15A
		유도부하 (Inductive load)	20A	10A	5A
DC	정격전압 (Rated votage)		110V	125V	220V
	정격전류 (Rated current)	저항부하 (Resistive load)	10A	8.8A	5A
		유도부하 (Inductive load)	2.5A	2.1A	1.2A

유도부하 (Inductive load) ----- COSØ=0.4, $T_{0.95}$ = 300ms

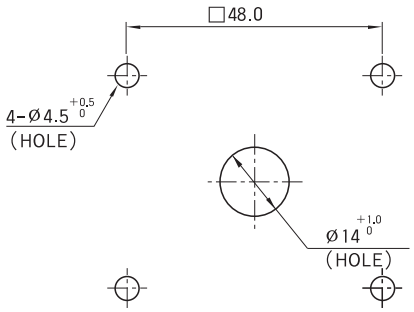
적용규격 (Applied standard) ----- KSC 4519, IEC 60947-5-1

판넬 가공 치수 | Cut-out Dimension | (unit : mm)

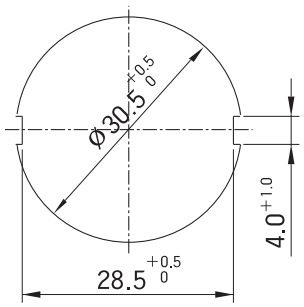
5, H, I TYPE



6, A, B, C, D, G TYPE

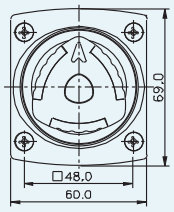


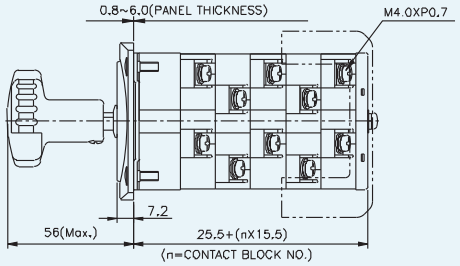
3 TYPE



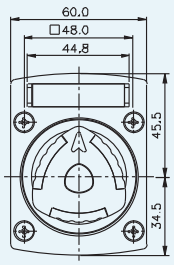
외형 / 치수도 | Shape / Dimension Drawing | (unit : mm)

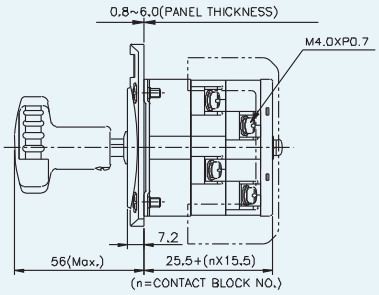
수동복귀 (M Type)



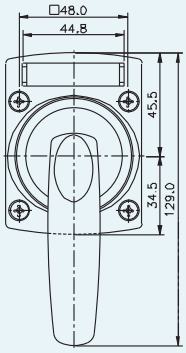


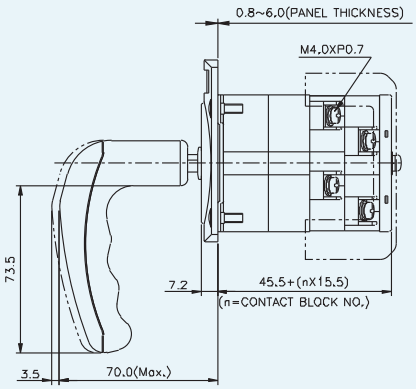
자동복귀 (A Type)





핸들걸림 (R, Q Type)





2 캠 스위치류
CAM SWITCHES

■ CE ■ CCC ■ c UL us For use on a flat surface of a type 1 enclosure File No. E242380 ■ KSC 4519 제 8406호

■ 한국전기연구원개발시험합격 (Certified by KERI's R & D Test)

2-1 캠 스위치 (AC250V-10A,30A / DC125V-20A)
Cam Switch (AC250V-10A,30A / DC125V-20A)

특징 | Features |

· 기기의 폭넓은 동작이 가능하도록 다양한 규격으로 연구개발하였습니다.
· 캠 스위치의 생명인 회로구성의 다양성으로 모든 기기에 완벽하게 사용할 수 있습니다. (별도의 회로집 참조)
· 엄격한 실험을 통해 표준화 회로에 따라 균일하게 생산 품질을 향상시켰습니다.
· 캠 스위치는 85년 11월 한국전기연구원개발시험에 합격하여 그 품질의 우수성을 인정받아 한국전력에 많은 납품실적을 올리게 되었습니다.

· Researched & Developed with various standard for wide operating of device.
· With various circuit formation which is Cam Switch's key part, can be perfectly applied to all kinds of devices. (Refer to separate circuit collection.)
· Improved production quality according to standardization circuit through strict testing.
· Approved the quality by passing the KERI's R & D Test in 1985/11, Cam Switch has recorded many delivery results in Korea Electric Power Corporation.

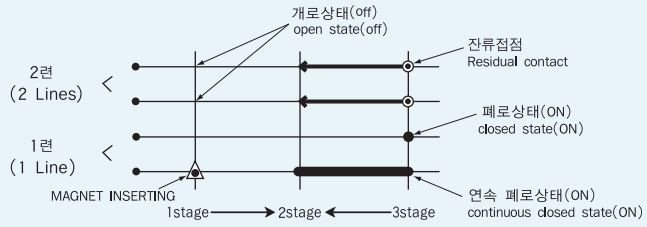
접점의 동작 기호 설명 | Explanation of Contact's Operating Marks |

- ● 폐로위치를 나타낸다. (ON)
- ＋ 개로위치를 나타낸다. (OFF)
- ▬ 폐로위치의 구간을 나타낸다.
- ⊢◉ 잔류 접점을 나타낸다.
- △● DC 20A Magnet 삽입표시를 나타낸다.

- ● Closed position (ON)
- ＋ Open position (OFF)
- ▬ Interval of closed position
- ⊢◉ Residual contact
- △● Mark of DC 20A magnet inserting contact

예) YS DNC - 3201A의 표준접속도
- 핸들 단수 : 3단
- 접점 블럭수 : 2련
- 접점 구성 번호 : 01
- 핸들 동작 : A (자동복귀방식)

ex) Standard connection diagram of YS DNC - 3201A
- Number of handle stage : 3 stages
- Number of contact block : 2 lines
- Contact composition No. : 01
- Handle operating : A (Automatic return type)

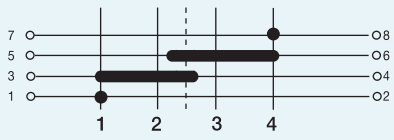


· 절환시 중첩되는 회로 (Circuit superimposed when transfer)

핸들 절환시 단과 단 사이의 중심부에서 개로측 접점과 폐로측 접점이 일정구간 중첩되었다 단락되는 회로

EX) AS

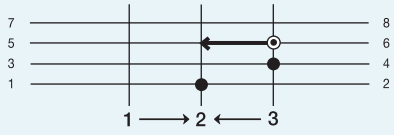
Circuit which open/closed side contacts are superimposed and shorted for a certain distance in the central part between stages when handle transfer.



· 잔류 접점회로 (Residual contact circuit)

핸들이 1단 개로(OFF) 상태로 동작했다가 자동 복귀됐을 때 개로(OFF) 상태를 유지하고, 3단 폐로(ON) 상태로 동작했다가 자동 복귀됐을 때는 계속 폐로(ON) 상태로 유지하는 접점회로.

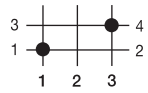
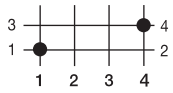
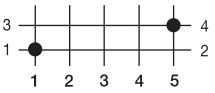
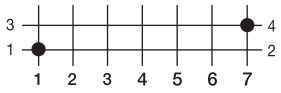
Contact circuit which keeps open state(OFF) when auto-returning after handle Operates at 1 stage open state(OFF), while maintaining closed(ON) state when auto-returning after operating at 3 stage closed(ON) state.



접점 구성시 주의사항 | Remark on Contact Form |

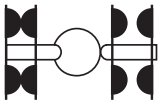
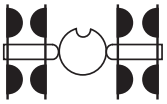
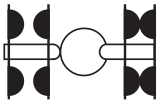
· 캠스위치 안에 내장되어 있는 2접점(4단자)은 캠에 대하여 대조적으로 배치되어 있어서 핸들의 각도가 180˚회전되면 2접점 모두 폐로 또는 개로상태가 되니 임의개조하지 마십시오.

· Please note 2 contacts all will be close or open state if handle angle turns 180˚ as 2 contacts (4terminals) built-in Cam Switch are arranged in contrast to cam.

예 Example	90˚절환 3단일 때 90˚transfer 3 stages	60˚절환 4단일 때 60˚transfer 4 stages	45˚절환 5단일 때 45˚transfer 5 stages	30˚절환 7단일 때 30˚transfer 7 stages
회로전개도 Circuit Diagram				

· 내장된 캠과 접점, 핸들위치 (90˚3단의 예)

· Built-in cam and contact, handle position (example of 90˚, 3stages)

핸들위치 Handle Position			
접점과 캠 Contact & Cam			

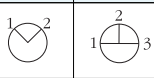
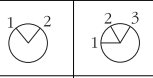
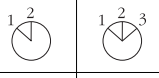
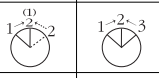
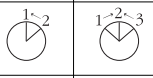
부품 재질 | Part Materials |

부 품 (Part)	재 질 (Materials)
몸 체 (Body)	ABS내열 (Heat resistance ABS) Resin
C A M	Acetal Resin
접 점 (Contact)	은산화 Cadmium 합금 (Silver-cadmium oxide alloy)
단 자 (Terminal)	황동 (Brass)
볼 트 (Bolt)	탄소강 (Carbon Steel)
스프링 (Spring)	Stainless 강 (Stainless steel)

성능 개요 | Performance Summary |

수명 (Lifetime)	기계적 (Mechanical)	above 500,000 times (switching freq : 20times/min.)
	전기적 (Electrical)	above 100,000 times (switching freq : 20times/min.)
절연저항 (Insulation resistance)		above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)		below 50mΩ (initial value)
내전압 (Withstand voltage)		AC 2,500V/min (50~60Hz)
내진동 (Withstand vibration)	내 구 (Endurance)	10~55Hz, 복진폭 1.5㎜
	오동작 (Malfunction)	10~15Hz, 복진폭 1.0㎜
내충격 (WIthstand impact)	내 구 (Endurance)	약 30g (300 ㎳)
	오동작 (Malfunction)	약 10g (100 ㎳)
작동에 필요한 힘 (Operating force)		560g
사용주위온도 (Ambient temperature)		-25℃ ~ +40℃
상대습도 (Relative humidity)		45 ~ 85%

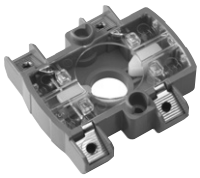
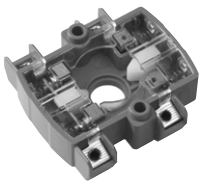
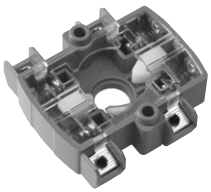
핸들 위치 표준 표본도 | Handle Position Standard Diagram |

복귀방법 Return method	절환각도 Transfer angle	각 단 핸들위치 표본(Each handle position sample)										
		2단 (stage)	3단 (stage)	4단 (stage)	5단 (stage)	6단 (stage)	7단 (stage)	8단 (stage)	9단 (stage)	10단 (stage)	11단 (stage)	12단 (stage)
수동복귀식 기호(M) Manual return mark(M)	90°											
	60°											
	45°											
	30°											
자동복귀식 기호(A) Automatic return mark(A)	45°					핸들이 1단, 3단에서 중앙2단으로 자동복귀(3 stage) Automatic handle return from 1, 3 stage to center. 2단(stage) • 좌측1단,2단으로 자동복귀 • 우측2단,1단으로 자동복귀						
	30° 10A ONLY					핸들이 1, 2, 4, 5단에서 중앙3단으로 자동복귀						
핸들걸림식 기호(R) Handle suspending mark(R)	45°					핸들이 1단,3단에서 중앙으로 자동복귀. 단, 핸들을 조작할 때는 반드시 앞으로 당겨 조작합니다. Automatic handle return from 1, 3 stage to center. Only in handle operating, pull forward it.						
혼합복귀식 기호(C) Composite return mark(C)	45° 10A ONLY					1단에서 2단으로 자동복귀, 3단에서 2단으로는 수동복귀 Automatic return from 1 stage to 2. Manual return from 3 stage to 2 stage.						
						3단에서 2단으로 자동복귀 1단에서 2단으로는 수동복귀 Automatic return from 3 stage to 2. Manual return from 1 stage to 2.						
	30° 10A ONLY					(4단일 경우) case of 4 stage 1단에서 2단으로만 자동복귀 Automatic return only from 1 stage to 2. (5단일 경우) case of 4 stage 1단에서 2단으로만 자동복귀 Automatic return only from 1 stage to 2. 5단에서 4단으로만 자동복귀 Automatic return only from 5 stage to 4.						
						4단에서 3단으로만 자동복귀 Automatic return only from 4 stage to 3.						
핸들걸림식 기호(JA) Handle suspending mark(JA)	45° 10A ONLY					자연상태에서 핸들이 2단, 4단에서 중앙으로 자동복귀(자동복귀식과 같은 구조)되고, Push 후 1단 Locking Type, 5단 Locking Type으로 구성됨. (단, 핸들을 조작할 때에는 반드시 밀어서 조작합니다.) Automatic handle return(same structure as automatic return type) in natural stage, and after push composed of 1 stage locking type, 5 stage locking type, 1, 5 stage locking type 5 stage locking type, 1–5stage locking type. (in handle operation, push it.)						
핸들걸림식 기호(Q) Handle suspending mark(Q)	45° 20/30A ONLY					자연상태에서 핸들이 2단,4단에서 중앙으로 자동복귀되고, 당김 후 1단 5단 Locking type. Automatic handle return in natural stage, and after pull, composed of 1 stage & 5 stage locking type.						

제작 가능 련수 | Possible Manufacturing Number of Connection Block |

	10A	20A, 30A
수동 복귀식 (Manual Return Type)	12련 (12 Block)	12련 (12 Block) · NC Type
자동 복귀식 (Automatic Return Type)	5련 (5 Block)	5련 (5 Block)
핸들 걸림식 (Handle suspending Type)		
혼합 복귀식 (Composite Return Type)	5련 (5 Block)	–

하부 및 연결 단자 | Contact Block & Connection Terminal |

부품명 (Parts Name) / 정격 (Rating)	하 부 (Contact Block)	연 결 단 자 (Connection Terminal)	
		가로용 (Horizontal Type)	세로용 (Vertical Type)
AC220V 5A			
AC220V 5A			
AC220V 10A			
DC125V 20A			
AC220V 30A			

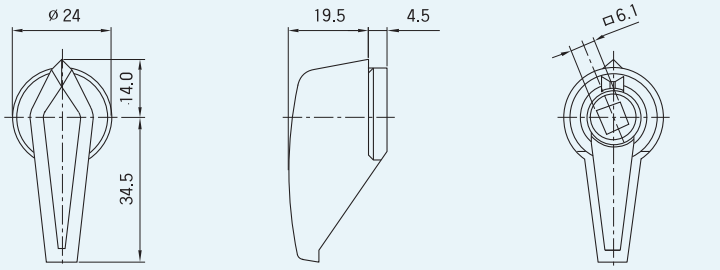
핸들 | Handle | (unit : mm)

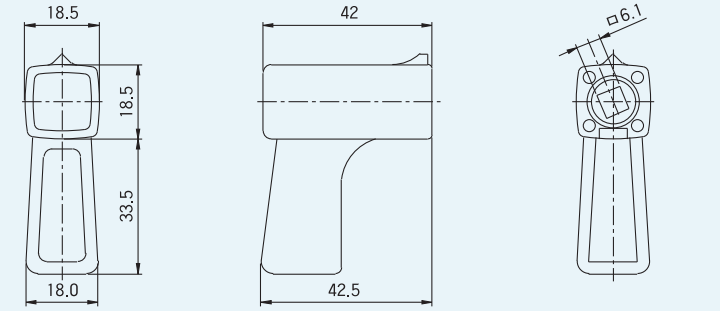
· 스위치에 부착하는 핸들은 절환용, 조정용, 조작용 등 용도에 따라 선택합니다.
· 핸들의 색상은 흑색, 적색 2종류이며, 흑색을 표준으로 합니다.

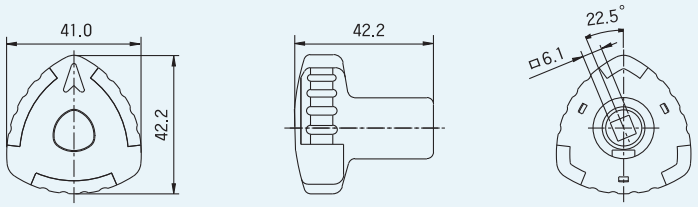
· Handle for switch attachment is chosen depending on applications for transfer, adjusting, operating etc.
· Handle colors are 2 types of black and red, and black is standard.

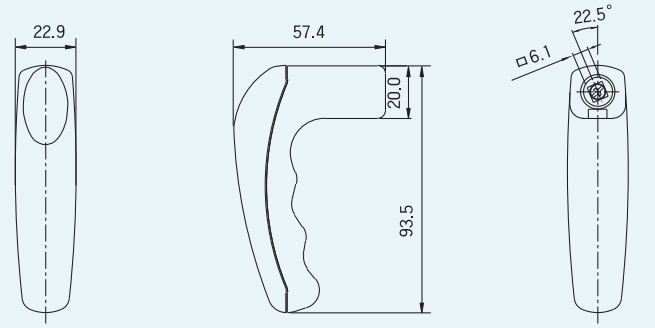
핸들종류 (Handle Type)	외형치수 (Shape Dimension)
R형 : 국화형 (R type : Chrysanthemum)	
E형 : 달걀형 (E type : Egg)	
O형 : 지침형 (O type : Compass)	
P형 : 권총형 (P type : Pistol)	

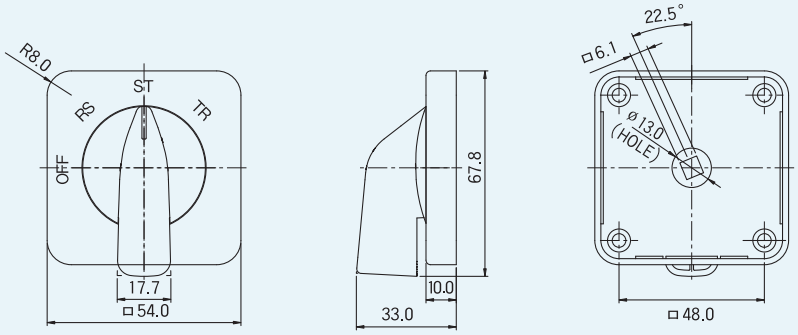
핸들종류 (Handle Type)	외형치수 (Shape Dimension)
C형 : 소형 지침형 (C type : Small Compass)	
G형 : 소형 권총형 (G type : Small Pistol)	
T형 : 삼각형 (T type : Triangle)	
D형 : 당김형 (D type : Draw)	
J형 : 유럽형 (J type : Europe)	



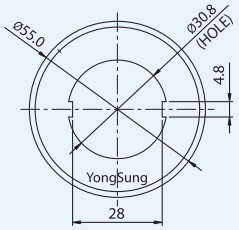
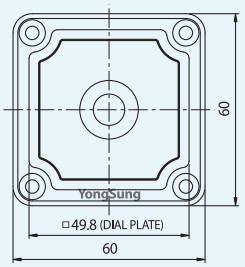
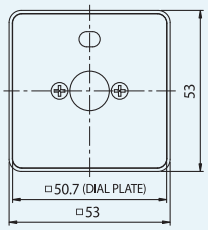
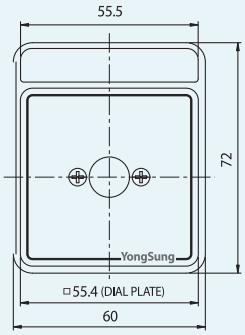
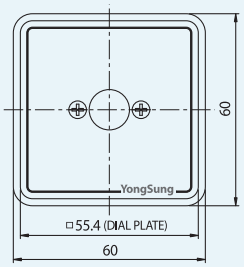
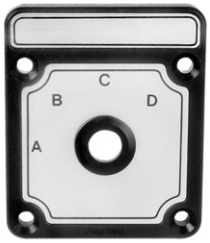
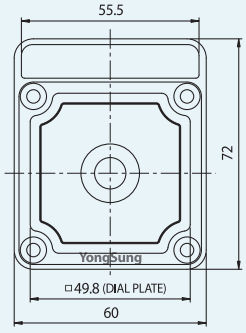




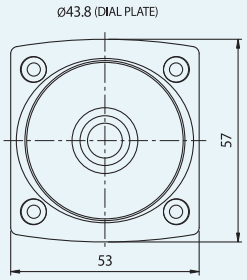




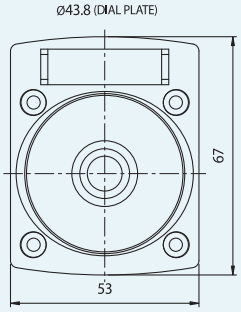
표준 전면판 | Standard Front Plate | (unit : mm)

전면판 종류 (Front Plate)	외형 치수 (Shape Dimension)	전면판 종류 (Front Plate)	외형 치수 (Shape Dimension)
3 TYPE		B TYPE	
			
50 TYPE		C TYPE	
			
60 TYPE		D TYPE	
			

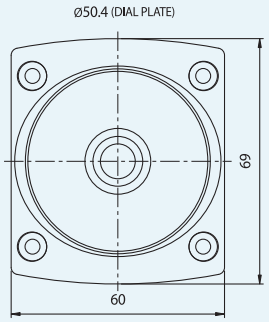
전면판 종류 (Front Plate)	외형 치수 (Shape Dimension)
I TYPE	



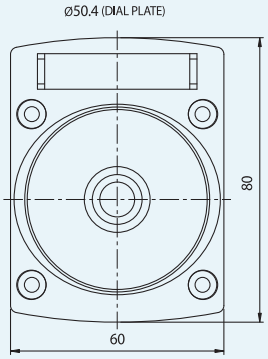
전면판 종류 (Front Plate)	외형 치수 (Shape Dimension)
H TYPE	



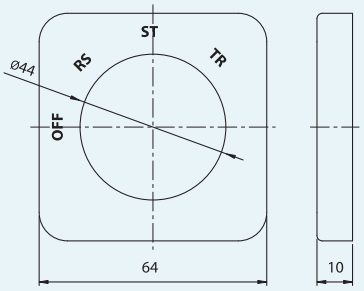
G TYPE

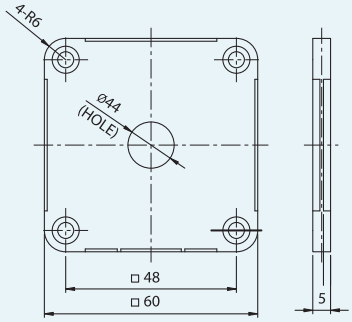


A TYPE



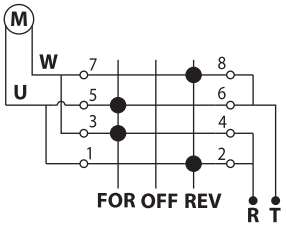
전면판 종류 (Front Plate)	외형 치수 (Shape Dimension)	
J TYPE	커버 (Cover)	사각판 (Square Plate)



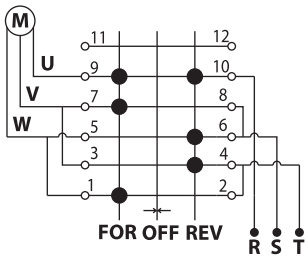


기본 회로예 (모터용 회로) | Example of Basic Circuit (Motor circuit) |

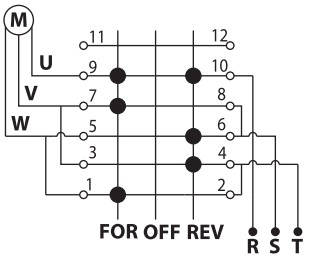
DNC3271 : 단상 모터 가역 회로 (circuit)



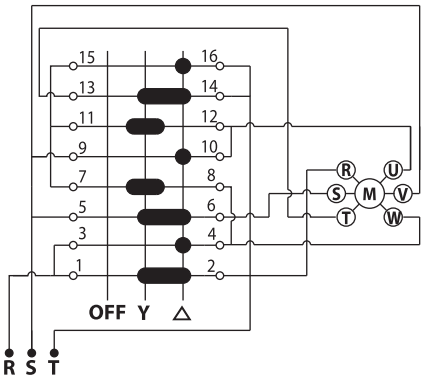
DNC3376A : 3상 모터 가역 회로 (자동복귀) (circuit)



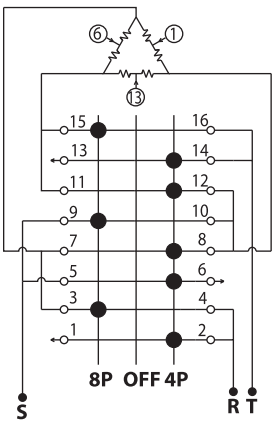
DNC3376 : 3상 모터 가역 회로 (circuit)



DNC3443 : Y-△ 회로 (Y-△ circuit)



DNC3444 : 4극 8극 회로 (circuit)



DNC3445 : 8극 4극 회로 (circuit)