

# GROUP D

## 개폐기 및 보호기기 *Switch & Protective device*



 PYUNGIL Co., Ltd.

경기도 안양시 동안구 관양2동 1475-10번지 평일빌딩 Tel : 031.420.6600 Fax : 031.424.7300

PYUNGIL Bldg., 1475-10, Gwanyang 2-dong, Dongan-gu, Anyang-si, Gyeonggi-do, 431-808, Korea  
Tel : 82-31-420-6650~3 FAX : 82-31-424-7300

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# 주상형 SF6 절연 부하개폐기

## Pole-mounted SF6 Insulated Load Break Switch

*Manual Operation & Automatic Operation*



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## 용 도 APPLICATION

가공배전선로에 설치되는 SF6 절연부하 개폐기로 절연 및 소호성능이 뛰어나고 다른 보호 장치와 보호협조가 가능하며, 현장 또는 중앙제어 장치에 의하여 조작 및 전압, 전류표시, 고장표시 기능등을 내장한 원격제어가 가능한 제품입니다.

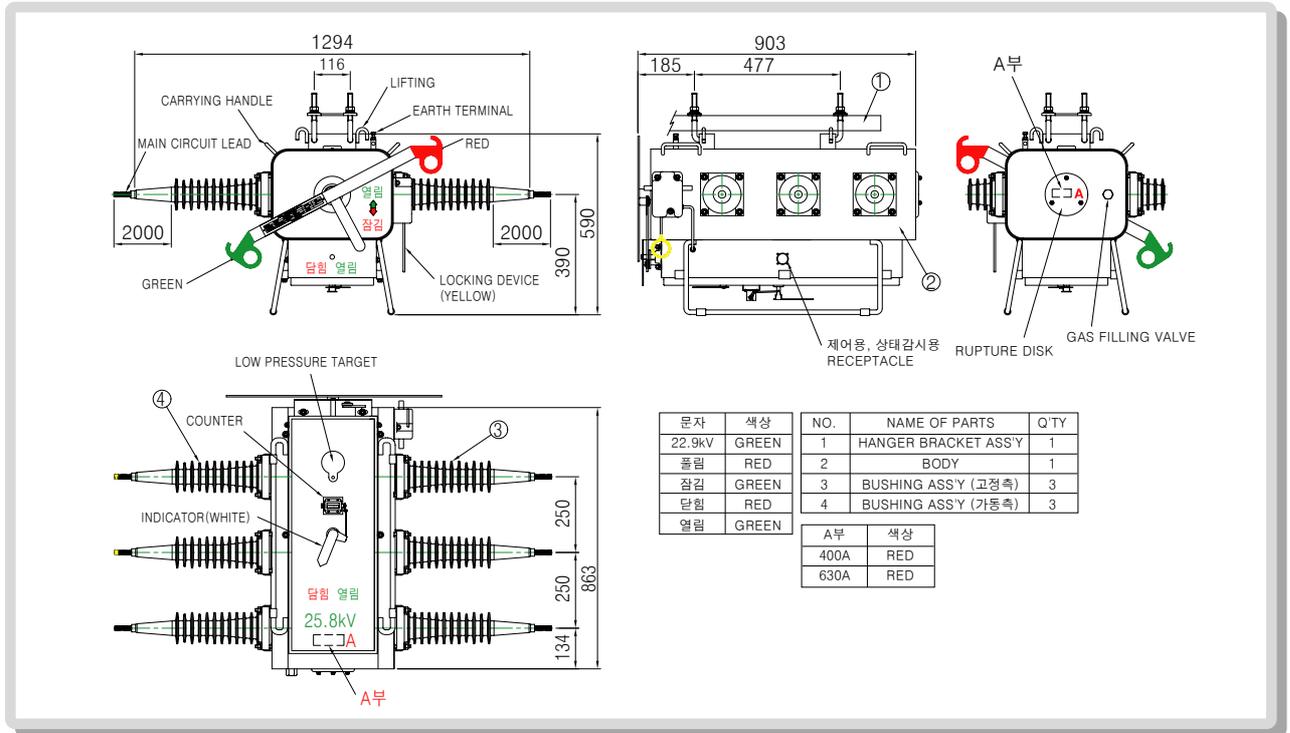
**PYUNGIL pole-mounted type SF6 insulated load break switch** permits fast, efficient modernization of overhead distribution systems for 27kV (400 A or 630 A). It's compact, light weight design assures easy installation with cross arm mounting and aerial lug or mold cone connection. In addition to the standard porcelain bushing, a variety of options are available including rubber bushing over the epoxy bushing and epoxy bushing. Connecting terminal and mold cone is also available for the porcelain bushing and rubber bushing.

**PYUNGIL SF6 switch** construction is completely sealed and corrosion resistant, and the color coded operating handle is easily visible from the ground. PYUNGIL SF6 switch can be applied with the other protective devices for the protective coordination, and it equips indicators for voltage indication, current indication and fault indication. The switch varies by manual type, motorized type and automatic type and can be used together with SCADA systems for distribution automation.

## 특징 FEATURE

원방 조작 및 제어 감시기능(자동형)	<i>Remote Control and Operation (Automatic Type)</i>
잠금장치기능	<i>Locking Device Equipped</i>
감압쇄정장치기능	<i>Self-Locking Function at Low Pressure</i>
저압력에서 우수한 차단 및 절연 성능(SF6 Gas 사용)	<i>Excellent Loadbreak and Insulation Performance at Low Pressure</i>
Polymer Bushing 사용	<i>Polymeric Bushing Equipped</i>
운반 및 취급 시 파손우려 없음	<i>Easy to handle &amp; Light-weighted</i>
Porcelain Bushing 적용 제작가능	<i>Porcelain Bushing Available</i>

도면 DRAWING



정격 RATINGS

Section		MANUAL		AUTO (Remote)	
Type		PS151-4M	PS151-6M	PS151-4A	PS151-6A
Rated Voltage		25.8kV			
Rated Current		400A	630A	400A	630A
Rated Frequency		50/60Hz			
Rated Short-time Current		12.5kA/1sec (rms)			
Rated Making Current		32.5kA (Peak). 5 times			
Current Switching Capacity	Load Current	400A/200 times	630A/200 times	400A/200 times	630A/200 times
		20A/20 times	31.5A/20 times	20A/20 times	31.5A/20 times
	Loop Current	400A/200 times	630A/200 times	400A/200 times	630A/200 times
	Cable charging Current	25A/10 times			
		7.5A/10 times			
	Line charging Current	1.5A/10 times			
Exiting Current	14A/10 times	21A/10 times	14A/10 times	21A/10 times	
No Voltage	5000 times				
Rated Control Voltage		-		1 ∅ 220VAC/24VDC	
Power Frequency Withstand Voltage	Dry	60kV/1min			
	Wet	50kV/10sec			
Surge Withstand Voltage (1.2/50 $\mu$ s)		150kV			
SF6 Charging Voltage		1.5kgf/cm <sup>2</sup> • G (at 20°C)			
Weight (kg)		135	155	170	190
Applied Standard		IEC 60265-1. ANSI C37.71			

주상형 SF6 절연 부하개폐기

POLE-MOUNTED SF6 INSULATED LOAD BREAK SWITCH

부 상 BUSHING

자기제 부상

Porcelain Bushing

Solid porcelain bushing designed to applicable ANSI/IEEE standards.

Terminal type and moldcone type are available, and standard conductor is copper. According to customer's request, higher creepage can be applicable.



Porcelain Bushing

폴리머 부상

Rubber Bushing

Rubber bushing connected with the epoxy apparatus bushing designed to applicable ANSI/IEEE standards.

Terminal type and moldcone type are available. Standard conductor is copper and aluminum conductor is optional.



Rubber Bushing

에폭시 부상

Epoxy Bushing

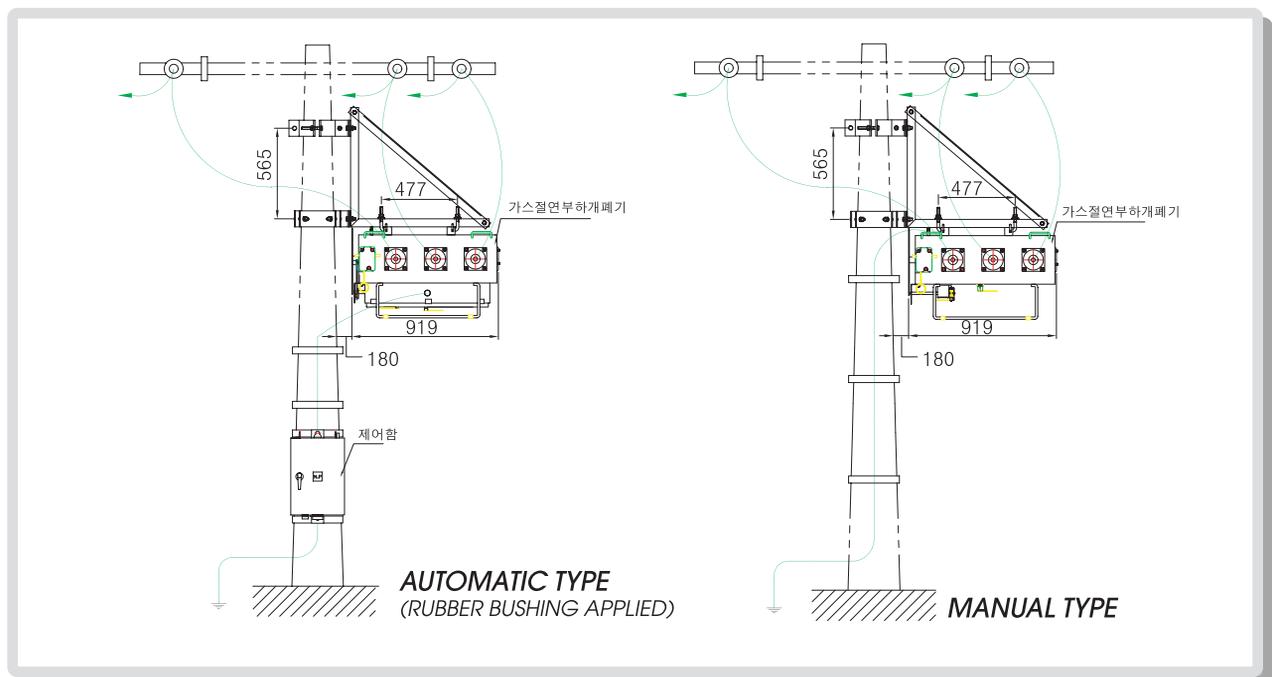
Epoxy apparatus bushing for elbow connectors designed to applicable ANSI/IEEE standards.

Standard conductor is copper and aluminum conductor is optional.



Epoxy Bushing

시공도 INSTALLATION DRAWING



# 지상형 SF6 절연 부하개폐기

## Pad-mounted SF6 Insulated Load Break Switch

*Manual Operation, Electrical Operation & Automatic Operation*



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## 용 도 APPLICATION

지중배전선로에 설치되는 SF6 절연부하 개폐기로 절연 및 소호성능이 뛰어나고, 고압간선 및 고압분기선의 개폐와 지상 변압기 및 고압수용가 책임분계점 개폐를 하는 제품입니다.

**PYUNGIL SF6 pad-mounted types SF6 insulated load break switch** is designed to separate or branch the line for underground distribution systems for 27kV (630 Amp). Three way through seven way switch is available for either two-position or three-position loadbreak switches or circuit breakers, and the construction of switch is completely sealed, oil-free, environment-free and corrosion resistant. The insulation material, sulfur hexafluoride (SF6) is non-toxic, non-flammable, Arc-extinguishing and minimal maintenance required. Accordingly SF6 switches are relatively maintenance-free and require no periodic inspection of contact.

The controller of the switch for distribution automation has a fault indicating function at fault current or line and central monitoring function. The SF6 switch is available for indoor, outdoor and pad-mount application and designed to meet the requirements of IEC 60256-1, ANSI/IEEE C37.71 and ANSI/IEEE 386 under rigid quality compliance of the ISO 9001 quality assurance program.

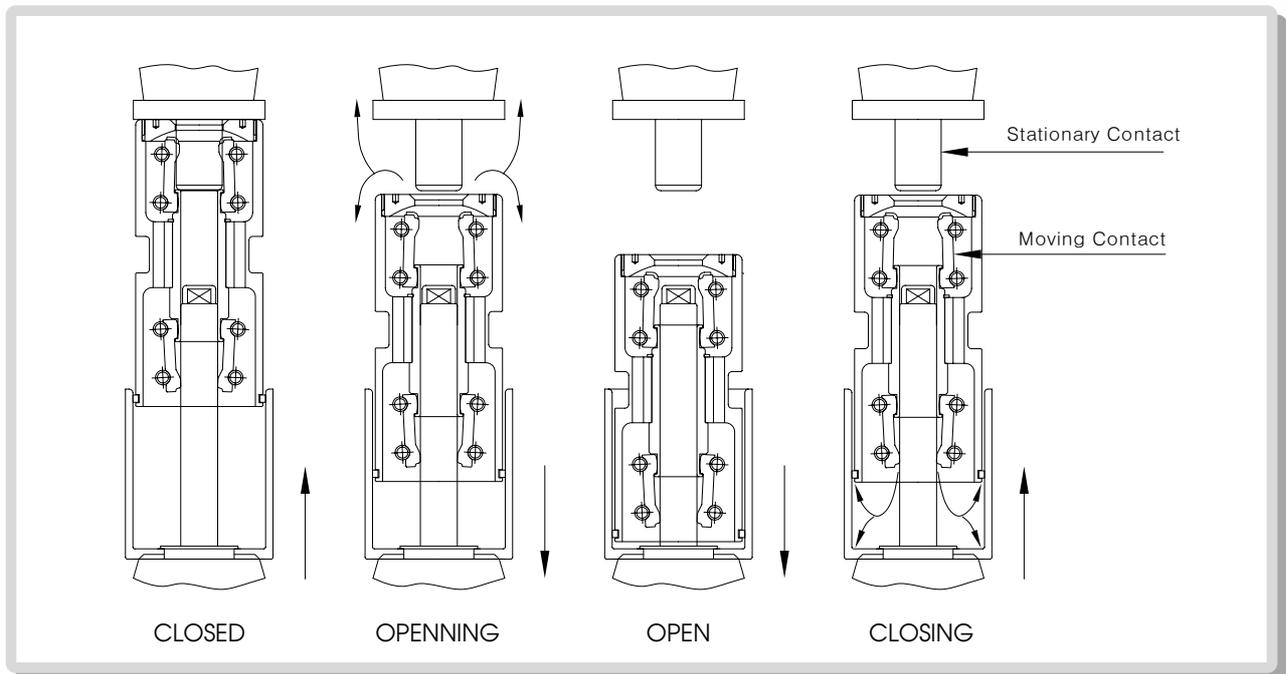
## 특징 FEATURE

우수한 개폐성능	<i>Excellent Switching Performance</i>
저압에서 뛰어난 절연성능	<i>Reliable Performance at Low Pressure</i>
보수 유지 최소화	<i>Minimal Maintenance</i>
소형 경량화	<i>Compact &amp; Light-weighted</i>
배전 자동화에 적용 가능	<i>Distribution Automation Possible</i>
2절점 또는 3절점 개폐기	<i>2 position or 3 position Selectable</i>

### PUFFER PRINCIPLE

The SF6 insulated switches utilize linear puffer interrupters inside a welded stainless steel tank. The stationary contact and piston assembly are housed in cylindrical tubes. The stationary contacts are connected to the cable bushings. As the contacts are closing, the piston assembly compresses the SF6 between the contacts. This increases the dielectric strength of the gap, minimizing prestriking.

The contacts are designed using a tulip bay-o-net construction and the sliding action of the contacts provides a self cleaning action of the main current carrying surface. The contact fingers are designed for increasing contact pressure with increasing current for proper operation during momentary or making conditions.



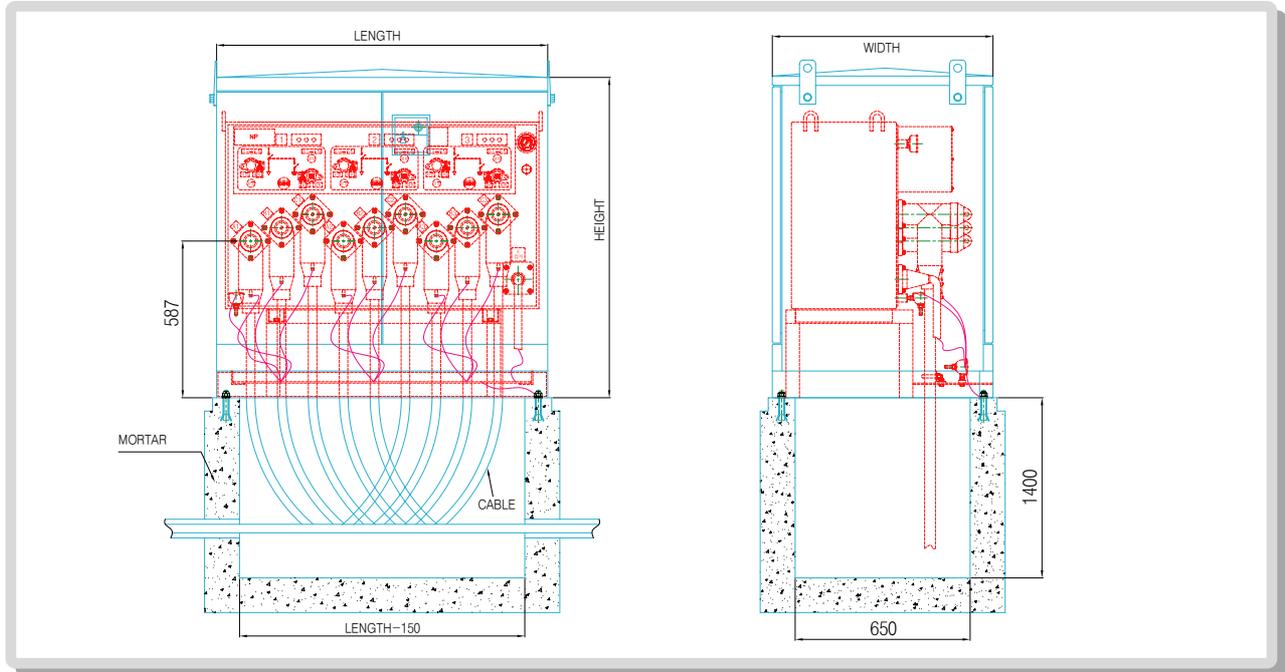
### 정격 RATINGS

ITEM	VALUE	
Rated Voltage	12kV	25kV
Rated Current	630A	630A
Impulse Voltage	95kV/125kV/150kV	
Rated Frequency	50Hz, 60Hz	
Power-frequency Withstand Voltage	42kV	60kV
DC Withstand Voltage	78kV	
Partial Discharge	19kV	
Short-time Current	20kA (rms), 4sec	
Rated Making Current	50kA (peak) 5 times	
Gas Charging Voltage	10psi • G (at 20°C)	
Span of Operating Mechanism	Open/Close 5000 cycles	Open/Earth 1000 cycles
Operating Type	Manual, Electrical (Motor-operated), Automatic	
Applied Standard	IEC 60265-1, ANSI C37.71	



지상형 SF6 절연 부하개폐기  
PAD-MOUNTED SF6 INSULATED LOAD BREAK SWITCH

도면 DRAWING



종류 TYPE

Way	Voltage	Model No.	Operation Type	Dimension(L × W × H)	Circuit diagram
3	12/25kV	33-D-M-X	Manual	1,200 × 800 × 1,200	
		33-D-A-X	Electrical	1,364 × 800 × 1,300(S)	
		33-D-B-X	Automatic	1,364 × 950 × 1,300(D)	
4	12/25kV	44-D-M-X	Manual	1,536 × 800 × 1,200	
		44-D-A-X	Electrical	1,700 × 800 × 1,300(S)	
		44-D-B-X	Automatic	1,700 × 950 × 1,300(D)	
5	12/25kV	55-D-M-X	Manual	1,872 × 800 × 1,200	
		55-D-A-X	Electrical	2,036 × 800 × 1,300(S)	
		55-D-B-X	Automatic	2,036 × 950 × 1,300(D)	
6	12/25kV	66-D-M-X	Manual	2,208 × 800 × 1,200	
		66-D-A-X	Electrical	2,372 × 800 × 1,300(S)	
		66-D-B-X	Automatic	2,372 × 950 × 1,300(D)	
7	12/25kV	77-D-M-X	Manual	2,544 × 800 × 1,200	
		77-D-A-X	Electrical	2,708 × 800 × 1,300(S)	
		77-D-B-X	Automatic	2,708 × 950 × 1,300(D)	

NOTE : (S) means "Single Connection", and (D) means "Double Connection"

# 폴리머 피뢰기 Polymer-housed Surge Arrester for 3kV to 18kV



## 특징

GAPLESS 피뢰기  
경량으로 운반 및 설치 용이  
고 피뢰성능  
깨지지 않음  
우수한 내구성  
GROUND ISOLATOR 선택 가능

## FEATURE

GAPLESS METAL OXIDE ARRESTER  
EASY TO HANDLE AND INSTALL  
ECONOMICAL SURGE PROTECTION  
RESISTANT TO BREAKAGE  
ROBUST DESIGN  
OPTIONAL GROUND ISOLATOR

## 용도 APPLICATION

AC 전력 계통에서 번개 또는 회로 개폐 서지를 제한하며 속류를 차단하는 보호 장치

**PYUNGIL** polymer surge arresters with EPDM or silicone housing offer safety and convenience features with excellent protective characteristics. The resilience of the polymer housing minimizes the risk of damage in case the arrester is dropped or is subjected to careless handling during transportation and installation.

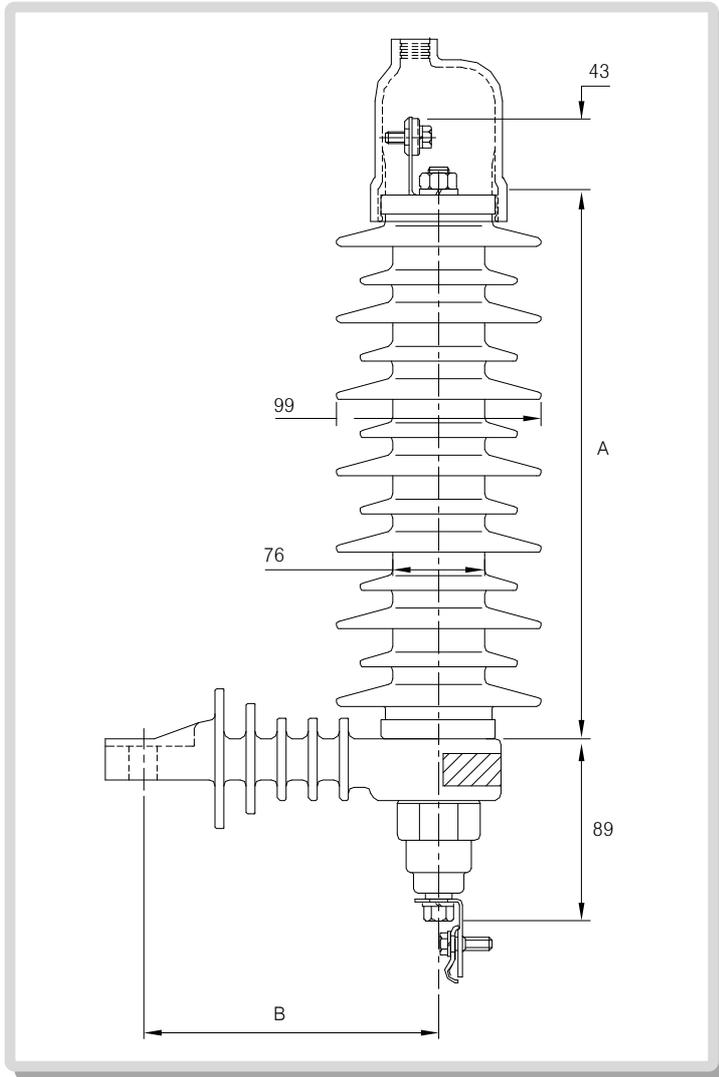
**PYUNGIL** arresters comply with the design test of IEC 60099-4, and exceeds ANSI requirements. The operation of the arrester is typical of gapless metal oxide arrester. During steady state conditions, line-to-ground voltage is applied continuously across the arrester terminals. When a surge occurs, the arrester immediately limits the overvoltage to the required protective level by conducting the surge current to ground. Upon passage of the surge, the arrester returns to its initial state. A disconnecting device, which removes the ground terminal from the arrester in the unlikely event of arrester failure, is available; thus, theoretically PYUNGIL arrester prevents a permanent system short circuit.

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폴리머 피뢰기

POLYMER-HOUSED SURGE ARRESTER FOR 3kV TO 18kV

도면 Drawing



치수 / Dimension

Rated Voltage (kV)	A(mm)	B(mm)	Creepage Distance (mm)
3	134	142.5	340
6	134	142.5	340
9	171	142.5	450
12	171	142.5	627
15	227	142.5	627
18	264	142.5	738

정격 / Ratings

SYSTEM L-L Voltage(kV)	Grounded Neutral Circuits	Undergr Impedance Grounded
4.16	3	6
7.20	6	9
7.62	6	9
8.32	6	9.10
12.00	9	15
12.47	9	15
13.20	9.10	15
13.80	10.12	15
20.78	15.18	21
22.90	18	27

치수 / Dimension

CAT.NO.	Rated Voltage (kV)	Discharge Current (kA crest)	MCOV (kV rms)	Max. F.O.W (kV Crest)	8/20 Max. Discharge Voltage (kV Crest)			
					3kA	5kA	10kA	20kA
PPA-03	3	5	2.55	11.5	9.7	10.4	11.5	13.0
PPA-06	6	5	5.10	22.3	19.4	20.8	22.3	26.0
PPA-09	9	5	7.65	33.5	29.1	30.5	33.0	38.0
PPA-12	12	5	10.20	44.5	38.5	40.6	44.0	50.3
PPA-15	15	5	12.70	55.8	48.5	50.7	54.8	62.9
PPA-18	18	5	15.30	66.7	58.0	60.9	65.8	75.5

# 폴리머 컷아웃 스위치

## Cutouts with Polymeric Insulator



CUTOUTS

### 특징

우수한 호환성  
경량으로 운반 및 설치 용이  
안정된 성능  
깨지지 않음  
우수한 내후성  
자기 세척 기능

### FEATURE

GAPLESS METAL OXIDE ARRESTER  
EASY TO HANDLE AND INSTALL  
ECONOMICAL SURGE PROTECTION  
RESISTANT TO BREAKAGE  
ROBUST DESIGN  
OPTIONAL GROUND ISOLATOR

### 용도 APPLICATION

주상 변압기 1차측 선로에 부착하여 변압기를 보호하고 선로의 개폐를 위한 폴리머 컷아웃 스위치

Protection technologies from overcurrents introduced by abnormal condition have been utilized with cutouts. Recently the state-of-the-art technology of the polymer has been integrated into the conventional overcurrent protection device. PYUNGIL cutouts provides dependable overcurrent protection performance for primary distribution systems. Currently two voltage rated cutouts is available, 15kV and 27kV.

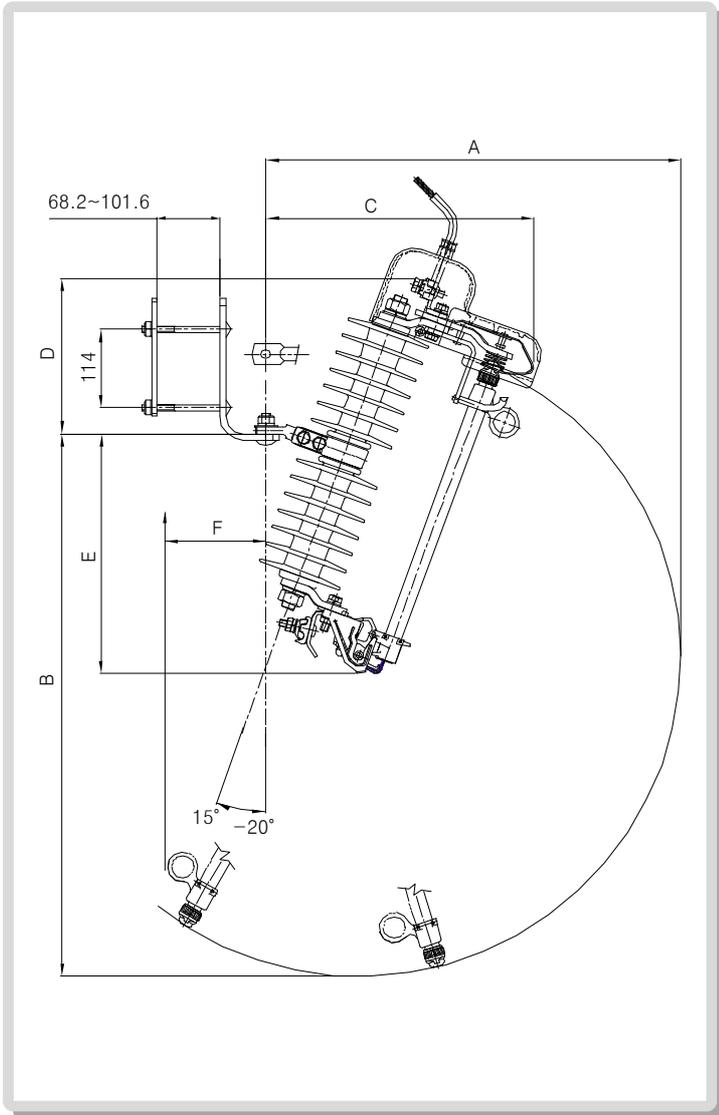
**PYUNGIL** cutouts is electrically and mechanically interchangeable with the other manufacturers' such as S&C, A.B. Chance or ABB cutouts. In addition, Fuse holder interchangeability reduces the time required to replace the fuse during an outage. PYUNGIL cutouts is designed to meet or exceed the requirements of ANSI Standards C37.41-1994 and C37.42-1989, NEMA SG-2-1986 and the other relevant industrial standards.

**PYUNGIL** cutouts is available in several frame sizes to match the BIL of each distribution system, in a variety of fault current interrupting ratings and optional load break designs. It can be applied to capacitor banks, transformer banks, and for sectionalizing circuits. It is equipped with hooks for use with a portable load break tool, allowing it to be used to break load currents.

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**폴리머 CUT OUT SWITCH**  
CUTOUPS WITH POLYMERIC INSULATOR

**도면 Drawing**



**FEATURES**

- Application Flexibility
- Reliable Protection
- Safe & Simple Operation
- Easy & Quick Installation
- Optimum Interchangeability
- Self-Cleaning Function
- Light Weight
- Non-Frangibility
- Good Weatherability

**정격 / Rated Voltage**

CAT.NO	Rated Voltage	BIL	Interrupting RMS Asym
SPD-15-10	15kV	110kV	7100/10000A
SPD-27-25	27kV	125kV	7100/10000A
SPD-27-50	27kV	150kV	8000/12000A

**치수 / Dimension**

CAT.NO	Rated Voltage (kV)	BIL(kV)	Dimension(mm)					
			A	B	C	D	E	F
SPD-15-10	7.8/15	110	429	524	330	152	257	67
SPD-27-25	15/27	125	505	654	346	194	299	111
SPD-27-50	27	150	600	790	388	226	350	143