

EWOX



# **TRANSFORMERS & SWITCHGEARS**



Power  
Transformer



Distribution  
Transformer

Single Phase  
Pole Mount  
Transformer



PAD Mounted  
Transformer



Dry Type  
Transformer(VPI)



Dry Type  
Transformer(UL)



Load Break  
Switch



Switchgear





# Contents

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- 02 Brief History
- 03 Message of CEO
- 04 Overseas Supply
- 06 Power Transformer
- 08 Distribution Transformer
- 10 Single Phase Pole Mount Transformer
- 12 PAD Mounted Transformer
- 14 Dry Type Transformer (VPI)
- 16 Dry Type Transformer (UL)
- 18 Load Break Switch (DB-GS Series)
- 22 Load Break Switch (DB-PAD Series)
- 26 Switchgear





# Brief History

A company unfolding a new dream and hope  
with advanced technology and faith

## >>1970

- 1973. 1. Established Dongbang Metal Industrial Co.

## >>1980

- 1984. 6. Obtained Transformer K.S (Korea Industrial Standards) approval by the office of industrial advancement
- 8. Started to supply transformers to KEPCO (Pole mounting, PAD mounted & Power transformer).
- 1986. 1. Firm name was changed to Dongbang Electric Industrial Co., Ltd.
- 1988. 10. Approved as a qualified supplier by Far East Engineer District, U.S. Army Corps of Engineers (F.E.D).

## >>1990

- 1994. 11. Awarded the grand prize at the quality control competitive contest in the electric industry field.
- 1995. 2. Developed 25.8kV Gas Load Break Switch for overhead line. (KEPCO)
- 1996. 12. Obtained ISO 9001 (KETI)
- 1998. 5. Obtained KT (Excellent Korean Technology) Mark
- 6. Obtained Hopefully Electric Power's & Venturing Enterprise (KEPCO)
- 1999. 9. Certificate of Excellent Quality Product (Supply Administration Republic of KOREA)

## >>2000

- 2000. 2. Certificate of Technology & Excellent Enterprise (S&M. E. A)
- 10. Change obtained ISO 9001 (QA INTERNATIONAL)
- 12. Obtained ISO 14001 (EAGLE REGISTRATIONS INC.)
- 2003. 1. Technical cooperation agreement for 25.8kV C-GIS concluded with Japan  
AE Power Systems Corporation (JAEPS)
- 2004. 7. Developed 24kV Class VPI Dry Type Transformer.
- 8. Certificate of conformity with the following European Directive. - CE Mark -
- 8. Developed 25.8kV, 600A, Gas Load Break Switches For Under Ground Cable (KEPCO)
- 2005. 1. Developed 25.8kV C-GIS (2000A, 600A, 25kA, Class "E2") - KEPCO.
- 11. Developed 23kV Class Dry (VPI) Type Transformers (KEPCO)
- 2006. 3. Obtained Certificate New Excellent Product (C-GIS) (Ministry of Commerce, Industry & Energy)
- 2007. 8. Obtained Certificate "UL" For Dry Type Transformers (Underwriters Laboratories)
- 2009. 2. Developed Polymeric Insulated Load Break Switch (Overhead Line)
- 2. Developed 25.8kV Gas Insulated Auto Section Switch
- 2010. 1. Developed 22.9kV Compact Type Pole Transformer (KEPCO)





## Message of CEO

Dear customers and netizens

It is a great pleasure to meet with you in this space to introduce our company for you.

We, Dongbang Electric Industrial Co., Ltd., since the establishment in 1973, have been steadily working toward the “**Customer Satisfaction**” at all times. Beginning with our supply of power transformer to KEPCO in 1984, we currently manufacture SF<sub>6</sub> gas switchgear, reactor and others, and we have recently developed and marketed VPI transformer, 25.8kV level of dry transformer.

In addition, with the strategic technology alliance with Japan AE Power Systems Corporation to have gas insulated switchgear (C-GIS) of cubicle type was successfully developed for the first time in Korea along with the new IEC standard with E2, C2 and M2.

We truly believe that all our accomplishment and progress have come from the encouragement and support from all of our customers, and all our employees are committed to be progressive and positive in becoming “**Company that is trusted by our customers with the high satisfaction**” for outstanding quality, certain delivery and reasonable pricing with our high technology and continuous R&D.

We will be with you at all times.

Thank you.

**Tai-Gwun Yang**  
President



# Overseas Supply

We will reach the world  
with the global brand **EWOX**.



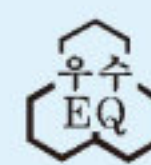




Dongbang will demonstrate technical prowess with eco-friendly and high quality products under the **EWOX** brand.

The electric transformer industry collectively introduced dry-type transformers using VPI (Vacuum Pressure Impregnation) process for the first time. Dongbang Electric Industrial Co., Ltd., which displayed technical prowess acquiring validation under U.S. safety regulations (UL, Underwriters Laboratories), is invading the overseas market by coming up with the in-house brand '**EWOX**'.

**EWOX**, meaning eco-friendly and excellent or 'eco-friendly cutting edge technology' in Korean, signifies infinite growth with the use of the initial 'E' which represents eco-friendliness and excellence of technology. '**EWOX**' will be set apart and fostered as a solid brand domestically and abroad.



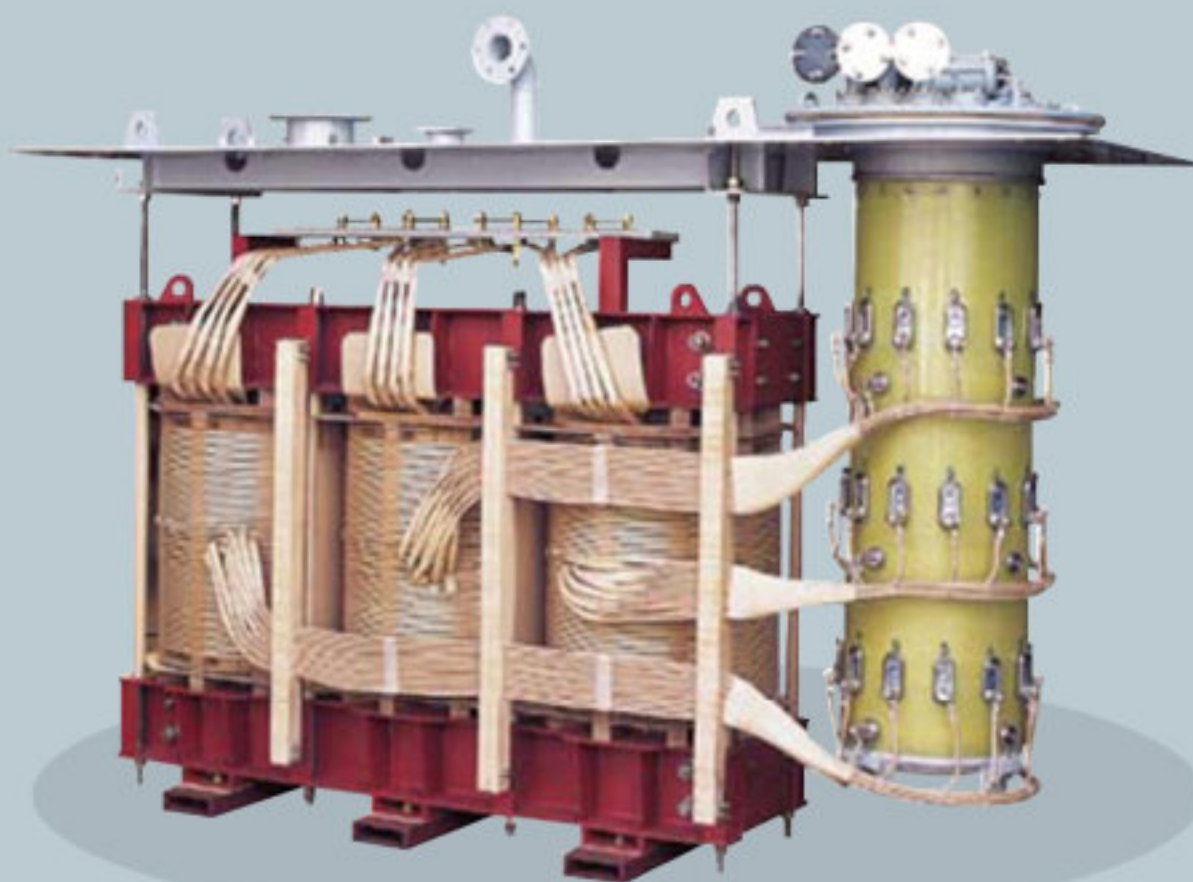


# Power Transformer

We manufacture a range of either oil or synthetic liquid-filled transformers up to 30MVA at voltages up to 60KV.

Tapping are provided on the H.V winding, controlled either by means of an off-circuit switch, or an on-load tap changer.

Cooling is normally by means of tankmounted radiators, which can be either welded in position or of the detachable, bolton type.



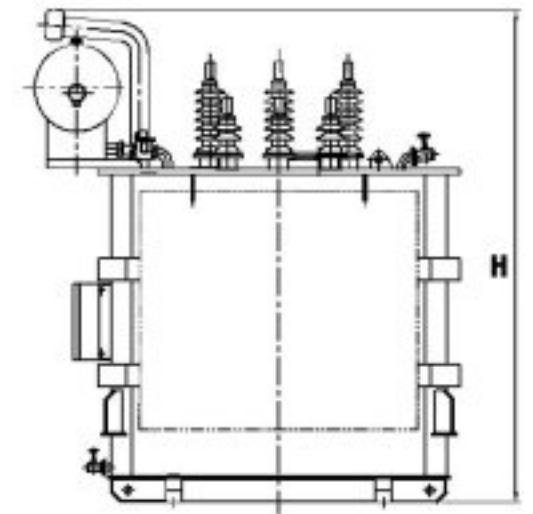
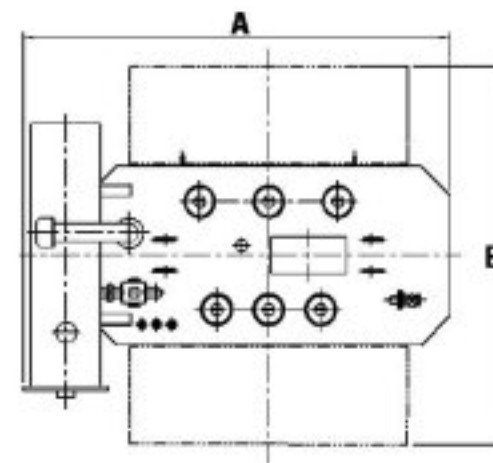
## Applicable Standards

KS (Korea Industrial Standard)  
IEC (International Electrotechnical Commission)  
BSI (British Standard Institution)  
ANSI (American National Standard Institution)  
IEEE (Institute of Electrical and Electronics Engineers)  
JEC (Japanese Electrical Committee)

## Ratings

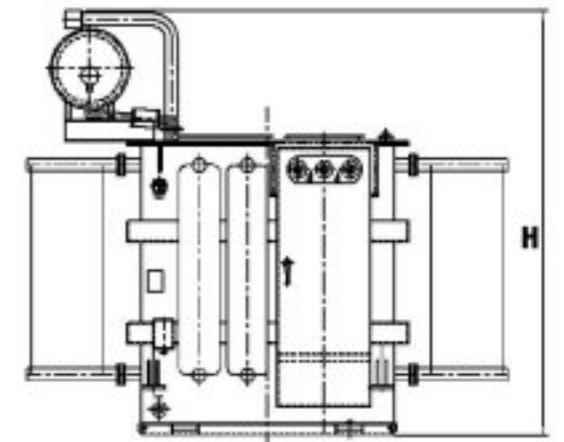
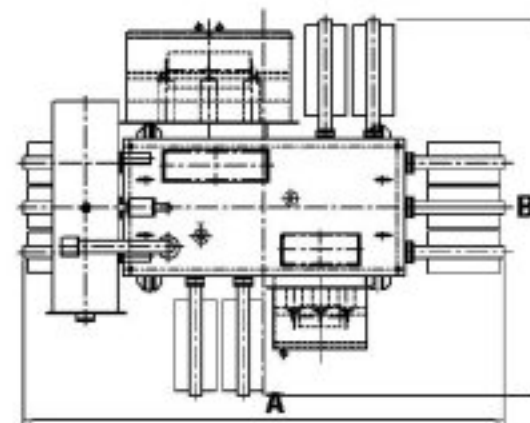
Phase: Three  
Frequency: 50/60Hz  
High Voltage: 66kV and Below  
Low Voltage: 27.5kV and Below  
Capacity: 2,000kVA through 30,000kVA





#### Open Type

Capacity (kVA)	$\eta$ (%)	$\varepsilon$ (%)	$l_o$ (%)	Dimension (mm)			Oil (ℓ)	Total W.T (kg)
				A	B	H		
2000	98.6	1.35	4.0	2350	1960	2500	1700	6200
2500	98.7	1.30	3.5	2400	2200	2600	2000	7000
3000	98.8	1.25	3.5	2600	2700	2700	2450	8600
5000	98.9	1.25	3.5	2700	2850	3100	2600	11000
6000	99.0	1.20	2.5	3000	3580	3300	3200	12000
7500	99.1	1.10	2.2	3400	3600	3500	4700	13200
10000	99.2	1.00	2.0	3400	3700	3800	5500	16200
15000	99.3	0.80	2.0	3600	3800	4000	6000	17500
20000	99.4	0.80	1.9	4000	5000	4300	6700	19000



#### Cable Box Type

Capacity (kVA)	$\eta$ (%)	$\varepsilon$ (%)	$l_o$ (%)	Dimension (mm)			Oil (ℓ)	Total W.T (kg)
				A	B	H		
2000	98.6	1.35	4.0	2300	1900	2500	1700	6800
2500	98.7	1.30	3.5	2450	2700	2700	2000	7500
3000	98.8	1.25	3.5	2600	2800	2800	2450	9000
5000	98.9	1.25	3.5	3700	3200	2850	2600	11500
6000	99.0	1.20	2.5	4400	3250	3300	3200	12800
7500	99.1	1.00	2.0	4600	3300	3500	4700	14000
10000	99.2	1.00	2.0	4800	3400	3900	5500	17000
15000	99.3	0.80	2.0	5000	3600	4100	6100	18500
20000	99.4	0.80	1.9	5600	4000	4500	6800	20000

#### Transformer Standard Accessories

Accessories	Capacity (kVA)			
	1000 & Above	3000 & Above	5000 & Above	7500 & Above
H.V&L.V Bushing	⊙	⊙	⊙	⊙
Oil drain Valve	⊙	⊙	⊙	⊙
Oil Filter Valve	⊙	⊙	⊙	⊙
Oil Sampling Valve	⊙	⊙	⊙	⊙
Oil Level Indicator	⊙	⊙	⊙	⊙
Thermometer	⊙	⊙	⊙	⊙
Name Plate	⊙	⊙	⊙	⊙
Dehydrating Breather	⊙	⊙	⊙	⊙
Pressure Relief Device	⊙	⊙	⊙	⊙
Conservator		⊙	⊙	⊙
Tap Changer	⊙	⊙	⊙	⊙
Radiator	⊙	⊙	⊙	⊙
Radiator Valve		⊙	⊙	⊙
Hand Hole	⊙	⊙	⊙	⊙
Lifting Lug	⊙	⊙	⊙	⊙
Grounding Terminal	⊙	⊙	⊙	⊙
Jacking Pad		⊙	⊙	⊙
Buchholz Relay			⊙	⊙
Ladder				⊙
Terminal			⊙	⊙
Skid Base	⊙	⊙	⊙	⊙

\* The above are subject to change without prior notice



# Distribution Transformer



## 11kV or 33kV Class

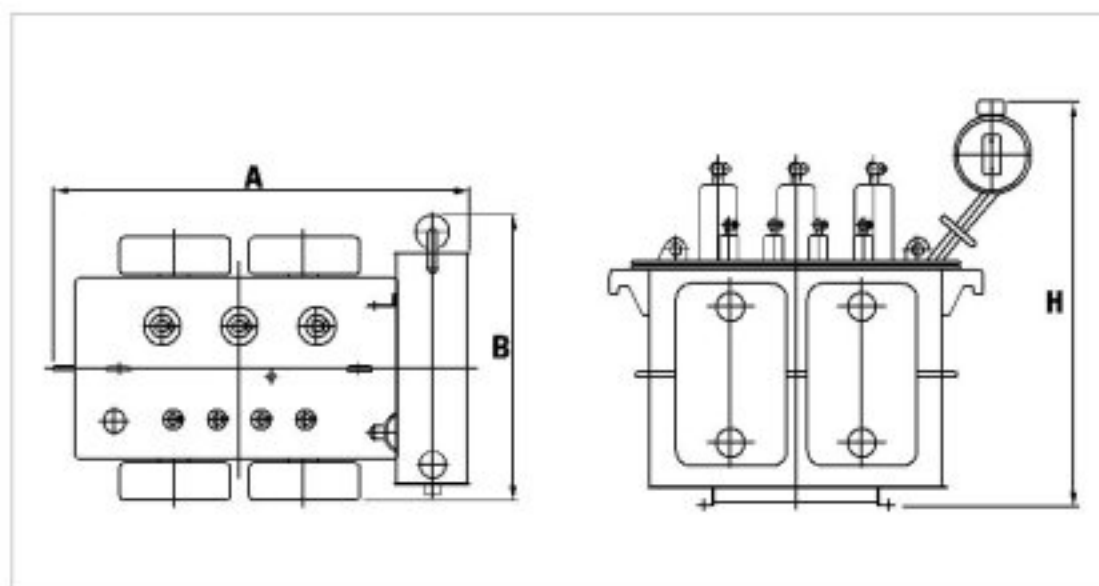
### Ratings

Phase: Single, Three

Frequency: 50/60Hz

High Voltage: 11kV, 33kV

Low Voltage: 433Y/250V, 415Y/240V, 400Y/230V



### Three Phase Dimensions (11kV)

Capacity (kVA)	Dimension (mm)			Oil (l)	Total W.T (kg)
	A	B	H		
50	1040	700	1050	127	440
100	1130	780	1100	163	600
200	1140	800	1300	220	870
300	1180	900	1350	265	1100
500	1300	1350	1550	470	1900
750	1600	1600	1800	600	2500
1000	1650	1650	1850	700	3000



## 11kV or 33kV Class

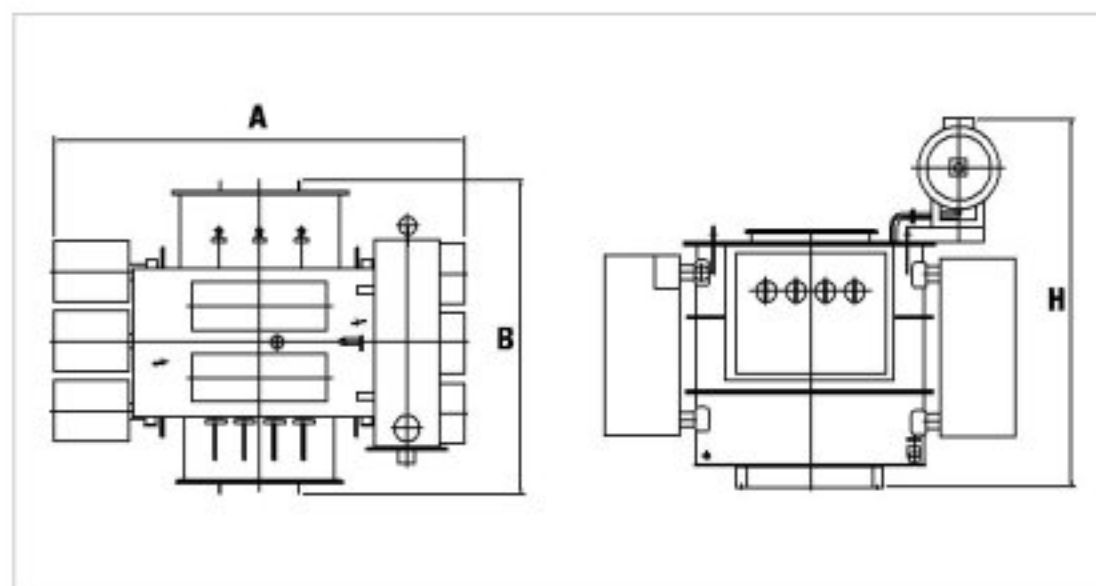
### Ratings

Phase: Single, Three

Frequency: 50/60Hz

High Voltage: 11kV, 33kV

Low Voltage: 433Y/250V, 415Y/240V, 400Y/230V



### Three Phase Dimensions (11kV)

Capacity (kVA)	Dimension (mm)			Oil (l)	Total W.T (kg)
	A	B	H		
500	1510	1400	1600	500	2100
750	1850	1450	1800	650	2700
1000	2100	1580	1850	755	3300
1500	2300	1650	2050	1000	3900
2000	2650	1700	2250	1500	4700
3000	3760	1820	2500	2200	8400
5000	3870	1900	2680	2600	10000





### 22.9kV Class (Cover Bushing Type)

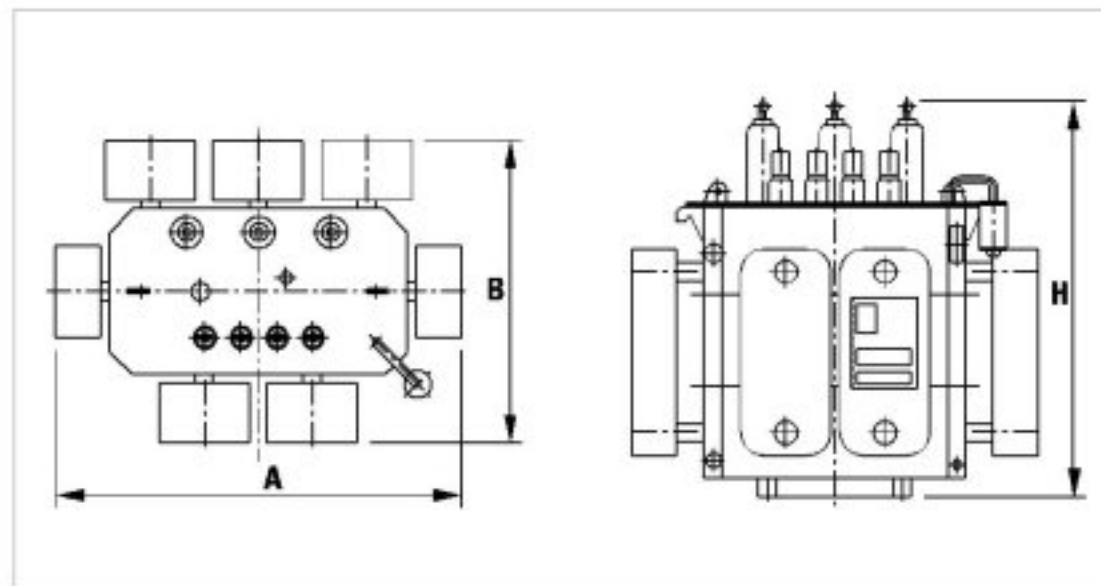
#### Ratings

Phase: Single, Three

Frequency: 50/60Hz

High Voltage: 22.9kV

Low Voltage: 600V and Below



#### Characteristics & Dimensions (Three phase)

Capacity (kVA)	$\eta$ (%)	$\epsilon$ (%)	$l_o$ (%)	Dimension (mm)			Oil ( $\ell$ )	Total W.T (kg)
				A	B	C		
100	97.2	1.8	6.5	1100	820	1270	210	740
150	97.5	1.7	6.2	1240	830	1370	260	950
200	97.7	1.6	6.0	1310	900	1370	280	1100
250	97.8	1.6	5.5	1350	940	1420	310	1250
300	98.0	1.5	5.5	1360	940	1480	340	1350
400	98.1	1.5	5.5	1470	1210	1530	450	1650
500	98.2	1.4	5.0	1580	1220	1580	470	1850
750	98.3	1.4	4.5	1790	1620	1700	680	2700
1000	98.5	1.3	4.0	1870	1680	1800	880	3450
1500	98.7	1.25	4.0	2580	1750	2060	1530	4550

### 22.9kV Class (Cable Box Type)

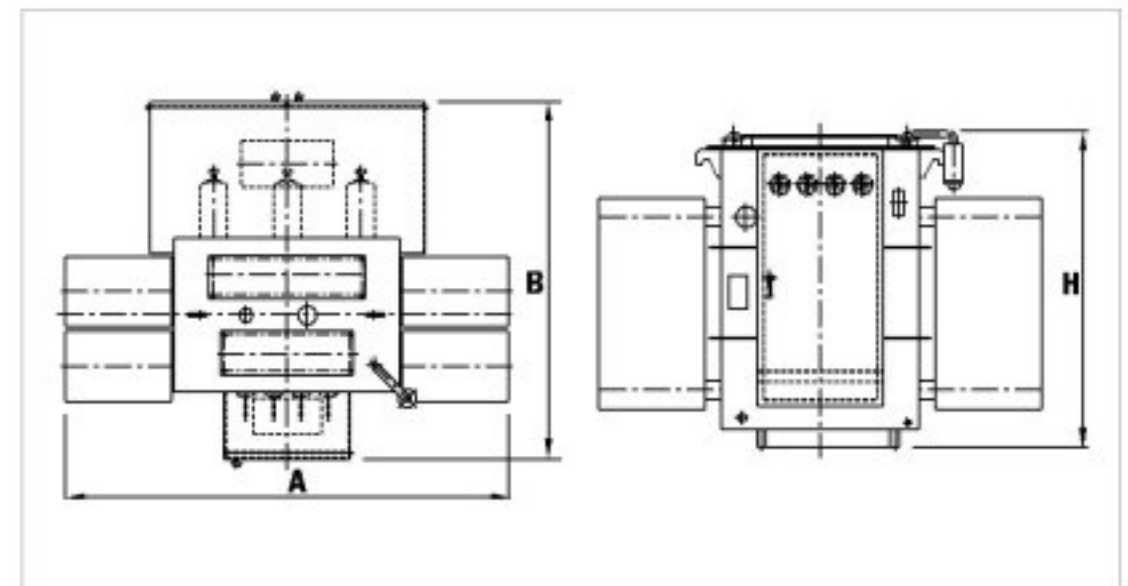
#### Ratings

Phase: Single, Three

Frequency: 50/60Hz

High Voltage: 22.9kV

Low Voltage: 600V and Below



#### Characteristics & Dimensions (Three phase)

Capacity (kVA)	$\eta$ (%)	$\epsilon$ (%)	$l_o$ (%)	Dimension (mm)			Oil ( $\ell$ )	Total W.T (kg)
				A	B	C		
100	97.2	1.8	6.5	1200	1400	1350	280	900
150	97.5	1.7	6.2	1530	1430	1350	320	1150
200	97.7	1.6	6.0	1550	1500	1350	360	1320
250	97.8	1.6	5.5	1590	1520	1350	370	1550
300	98.0	1.5	5.5	1670	1540	1350	400	1600
400	98.1	1.5	5.5	1930	1580	1400	470	1850
500	98.2	1.4	5.0	1800	1580	1500	490	2150
750	98.3	1.4	4.5	2110	1680	1560	720	2850
1000	98.5	1.3	4.0	2300	1760	1610	950	3650
1500	98.7	1.25	4.0	2560	1850	1700	1600	4900

\* The above are subject to change without prior notice



# Single Phase Pole Mount Transformer



**Single Bushing Type**

## Ratings

Frequency: 50/60Hz

High Voltage: 33, 22 & 11kV Grdy

Low Voltage: 600V and Below



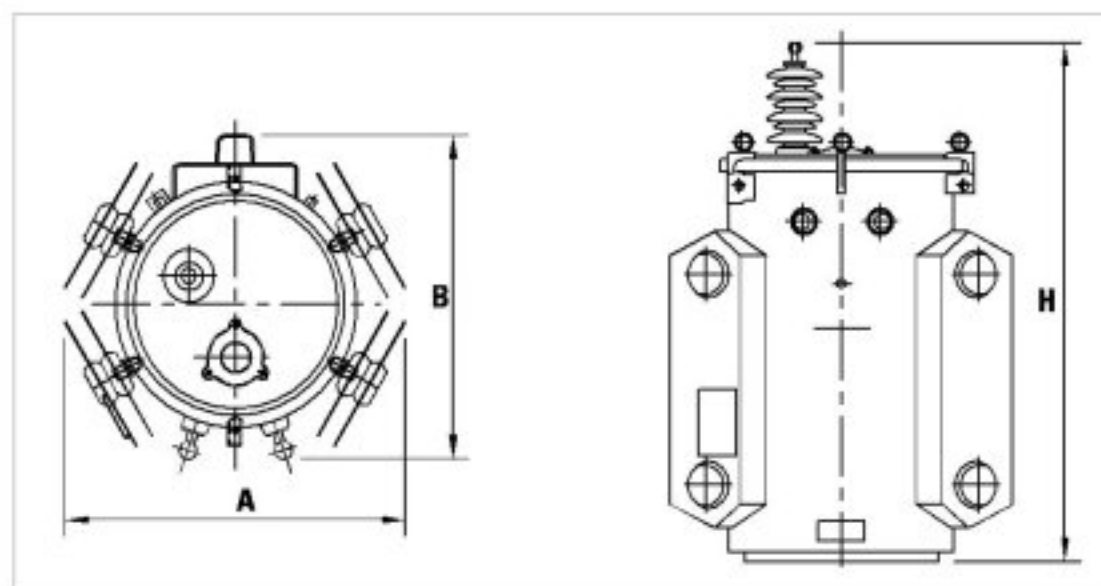
**CSP Type**

## Ratings

Frequency: 50/60Hz

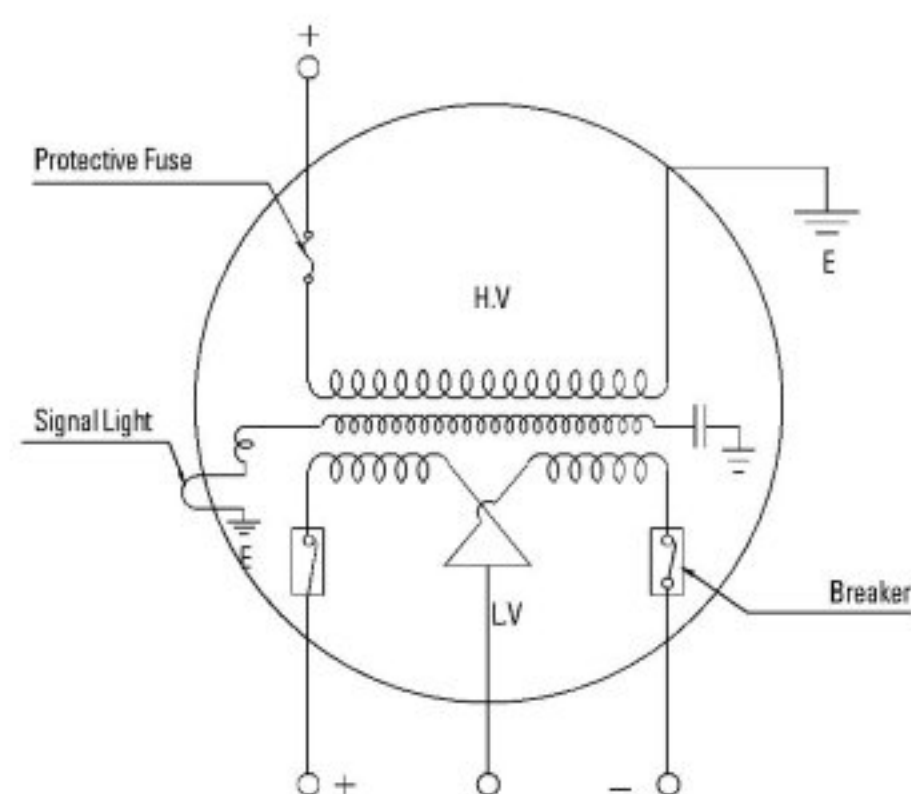
High Voltage: 33, 22 & 11kV Grdy

Low Voltage: 600V and Below



## Characteristics & Dimensions

Capacity (kVA)	Dimension (mm)			Oil (l)	Total W.T (kg)
	A	B	H		
10	450	520	1020	30	125
20	500	570	1060	40	170
30	540	630	1110	50	225
50	650	680	1160	70	305
75	720	710	1180	90	400
100	740	740	1270	110	485
150	740	820	1220	110	500



Connection Diagram





### Compact Type

#### Ratings

Frequency: 50/60Hz

High Voltage: 33, 22 & 11kV Grdy

Low Voltage: 600V and Below



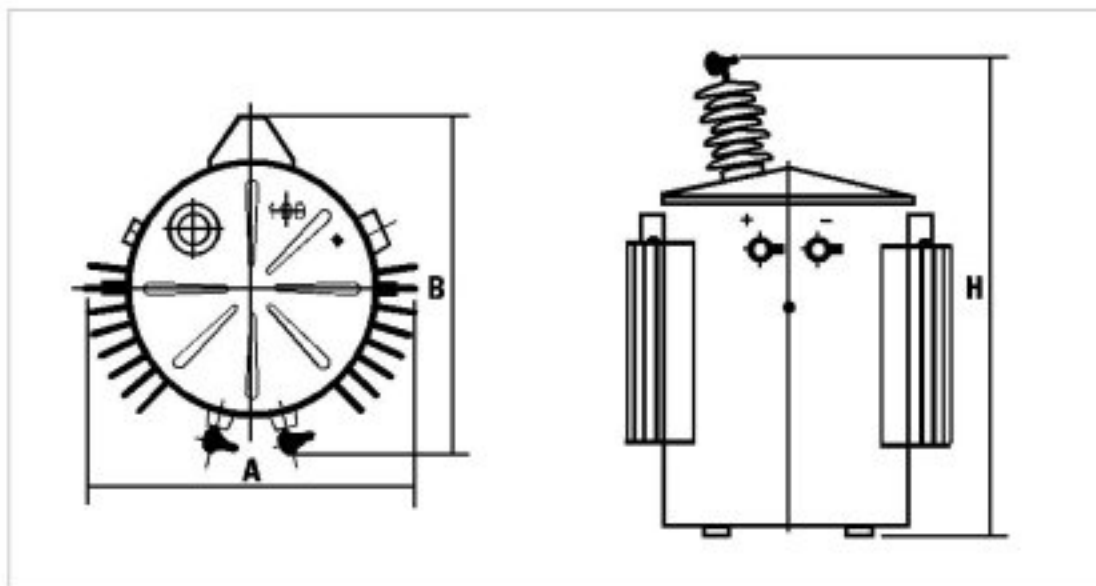
### Two Bushing Type

#### Ratings

Frequency: 50/60Hz

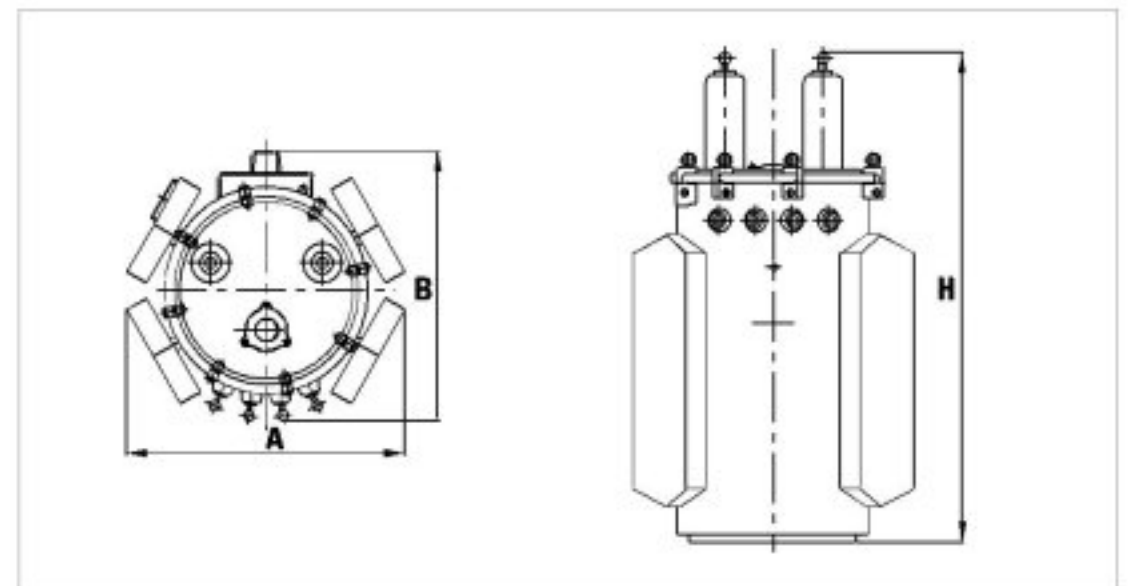
High Voltage: 33, 22 & 11kV Grdy

Low Voltage: 600V and Below



#### Characteristics & Dimensions

Capacity (kVA)	Dimension (mm)			Oil (ℓ)	Total W.T (kg)
	A	B	H		
20	530	610	1060	51	180
30	570	660	1080	62	220
50	590	700	1100	66	270
75	685	780	1140	102	380
100	805	820	1180	120	470



#### Characteristics & Dimensions

Capacity (kVA)	Dimension (mm)			Oil (ℓ)	Total W.T (kg)
	A	B	H		
10	420	580	1100	50	170
15	490	590	1120	60	200
20	680	650	1150	75	250
30	690	660	1150	80	270
50	750	700	1200	90	360
75	790	750	1250	110	450
100	820	750	1280	130	560

\* The above are subject to change without prior notice



# PAD Mounted Transformer

A pad-mounted transformer is specifically designed for applications of underground distribution loads ; apartments, schools, shopping centers, and industrial plants. For radial or loop feed applications, both live front and dead front construction is available.

It is an oil-filled single or three phase distribution transformer.



## Rating

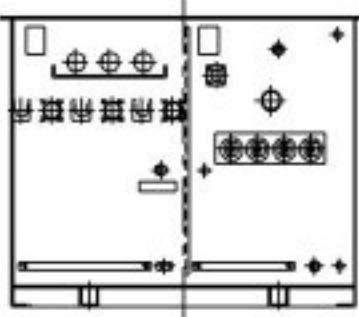
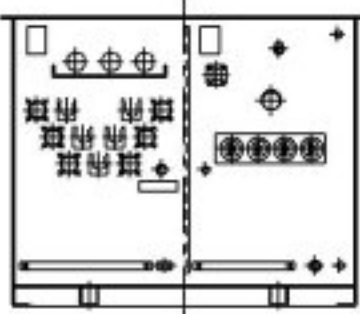
Phase: Three

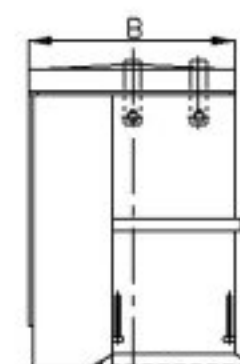
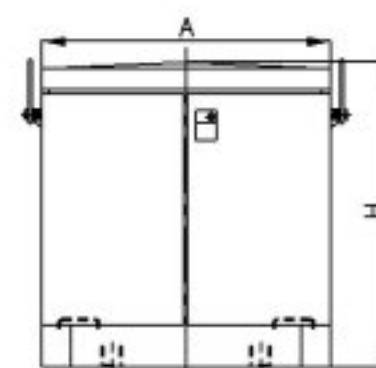
Frequency: 50/60Hz

High Voltage: 6.6kV and above

Low Voltage : 600V and Below

## Characteristics & Dimensions

Description	Capacity (kVA)	BIL 95 kV			BIL150kV		
		A (mm)	B (mm)	H (mm)	A (mm)	B (mm)	H (mm)
Dead front Radial feed 	45	1500	1000	1300	1600	1150	1400
	75	1500	1000	1300	1600	1150	1400
	112.5	1500	1100	1300	1600	1200	1400
	150	1500	1200	1400	1600	1200	1650
	225	1550	1250	1400	1700	1250	1700
	300	1550	1450	1400	1700	1650	1800
	500	1600	1450	1500	1700	1650	1800
	750	1600	1700	1500	1800	1700	2050
	1000	1600	1750	1600	1800	1800	2100
Dead front Loop feed 	45	1550	1000	1450	1800	1150	1550
	75	1550	1000	1550	1800	1150	1600
	112.5	1550	1100	1600	1800	1200	1650
	150	1550	1200	1650	1800	1200	1700
	225	1600	1250	1700	1800	1250	1750
	300	1600	1350	1750	1800	1350	1850
	500	1650	1450	1850	1900	1650	1950
	750	1650	1700	1950	1900	1700	2100
	1000	1650	1750	2100	1900	1800	2150



\* The above are subject to change without prior notice





- |  |                                       |
|--|---------------------------------------|
| 1. PACKING STAND.<br>INSULATED STAND-OFF BUSHING<br>INSULATED PROTECTIVE CAP | 9. FILTER VALVE                       |
| 2. LOAD BREAK ELBOW CONNECTOR<br>BUSHING WELL & INSERT                       | 10. NAME PLATE                        |
| 3. LOAD BREAK SWITCHGEAR   | 11. THERMOMETER                       |
| 4. NEUTRAL TERMINAL (H.V)  | 12. SECONDARY BUSHING<br>TERMINAL LUG |
| 5. BAY-O-NET FUSE HOLDER   | 13. GROUND TERMINAL (L.V)             |
| 6. DANGER MARK   | 14. FUSE NAME PLATE                   |
| 7. TAP CHANGER   | 15. GROUND LUGS                       |
| 8. OIL LEVEL GAUGE   | 16. PRESSURE RELIEF VALVE             |



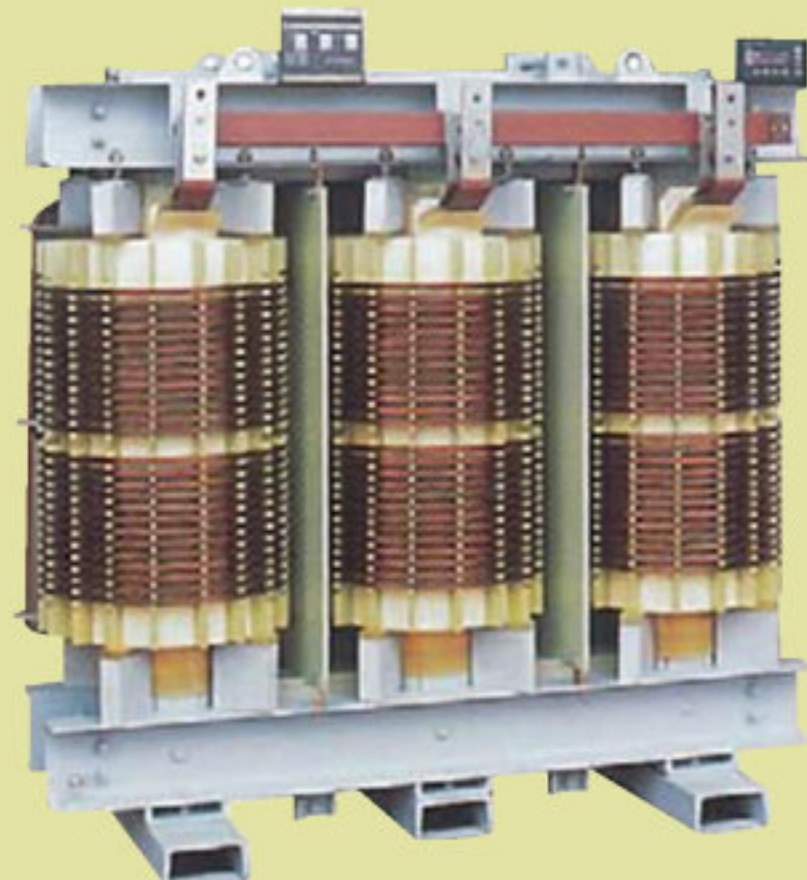


# Dry Type Transformer (VPI)



## VPI (Vacuum Pressure Impregnation)

- High level of Safety
- High Reliability
- Environmentally Friendly
- Increase emergency overload capability
- No cracking
- Low Noise & Easy Maintenance
- Small size & Light Weighted
- Space Utilization
- Designed to be free of partial Discharge





## WHAT IS "VPI"?

The coils shall be dried at atmospheric pressure in an oven through which hot air is continuously circulated.

The totally dried coils shall be vacuum pressure impregnated in polyester resin varnish.

The VPI process shall apply a one cycle polyester protective shield of varnish to the coils.

The VPI process shall effectively impregnate the coils assemblies, thus resulting in a unit which is virtually impermeable to moisture, dust, dirt, salt air, and other industrial contaminants.

The VPI processed coils shall be permanently assembled on the core, and then dipped in polyester resin varnish.

The varnish shall be cured on the core and coil assembly following an established temperature vs. time baking cycle in a hot air circulating oven.

### Substation (22.9kV CLASS) & Distribution Transformers

#### Rating

Phase: Single, Three

Frequency: 50/60Hz

Primary Voltage: 25kV and Below

Secondary Voltage: 120V thru 6600V

#### Specification

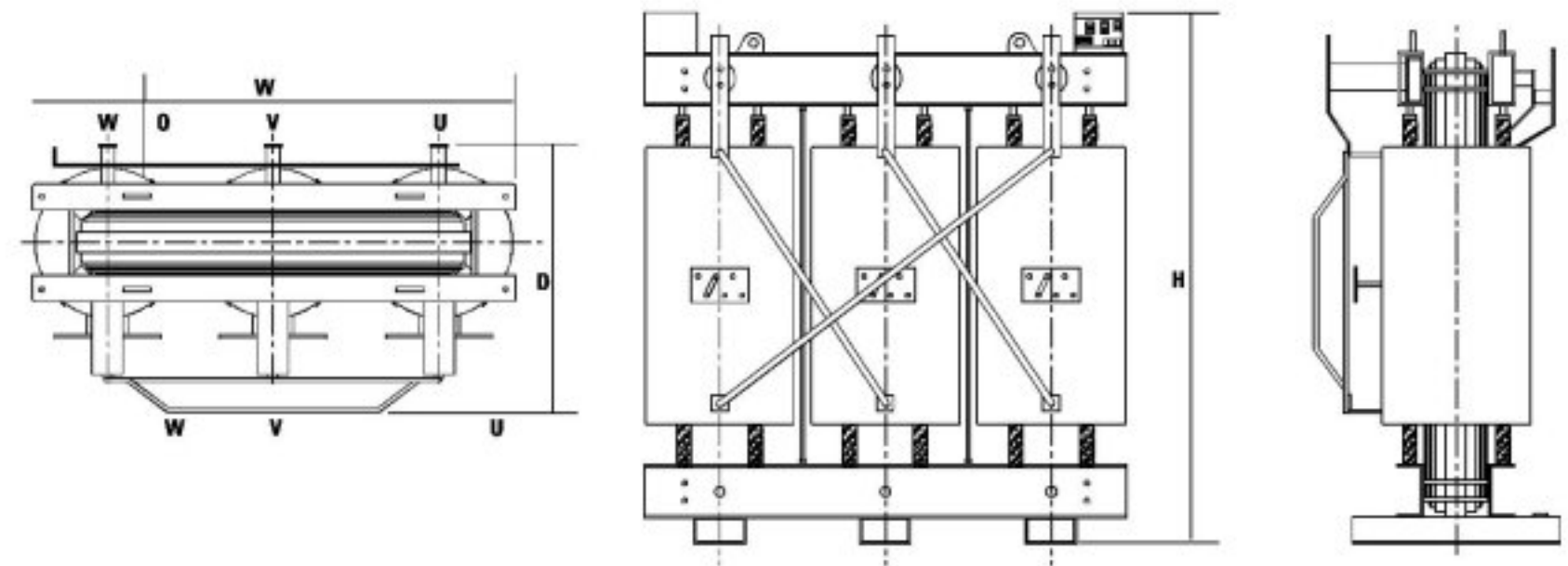
Cooper Winding

150℃ or special request 220℃ insulation

AA, AA/FA

Only "H" Class

ANSI (IEEE), IEC, JEC, KS



#### Dimensions

Capacity (kVA)	Impedance (%)	Voltage variation rate (%)	Efficiency (%)	Dimension (mm)			Weight (Kg)
				W	D	H	
100	6.0	2.1	97.4	1020	680	1100	570
200	6.0	2.0	98.0	1150	700	1200	830
300	6.0	1.7	98.1	1160	710	1340	1030
400	6.0	1.6	98.3	1220	730	1410	1200
500	6.0	1.5	98.3	1330	770	1450	1430
600	6.0	1.5	98.3	1360	780	1500	1640
750	6.0	1.4	98.5	1420	810	1530	1950
1000	6.0	1.3	98.6	1510	840	1610	2400
1500	6.0	1.2	98.8	1700	870	1800	3300
2000	6.0	1.1	98.8	1850	900	1930	4100

\* The above are subject to change without prior notice

#### Characteristics

Item	VPI Transformer	Mold Transformer	Oil Transformer
Insulation class	"H" type	"F" type, "B" type	"A" insulation
Maximum temperature limits	220℃	130~150℃	90℃
Nonflammable degree	Excellent	Excellent	Good
Disaster prevention	Excellent	Excellent	Good
Small size & light weighted	Excellent	Very good	Good
Maintenance	Excellent	Very good	Good
Environment-friendly degree	Excellent	Very good	Good



# Dry Type Transformer (UL)

DRY Type General Purpose & Power Transformers are designed, manufactured and tested in accordance with IEEE, ANSI, NEMA and UL standards.

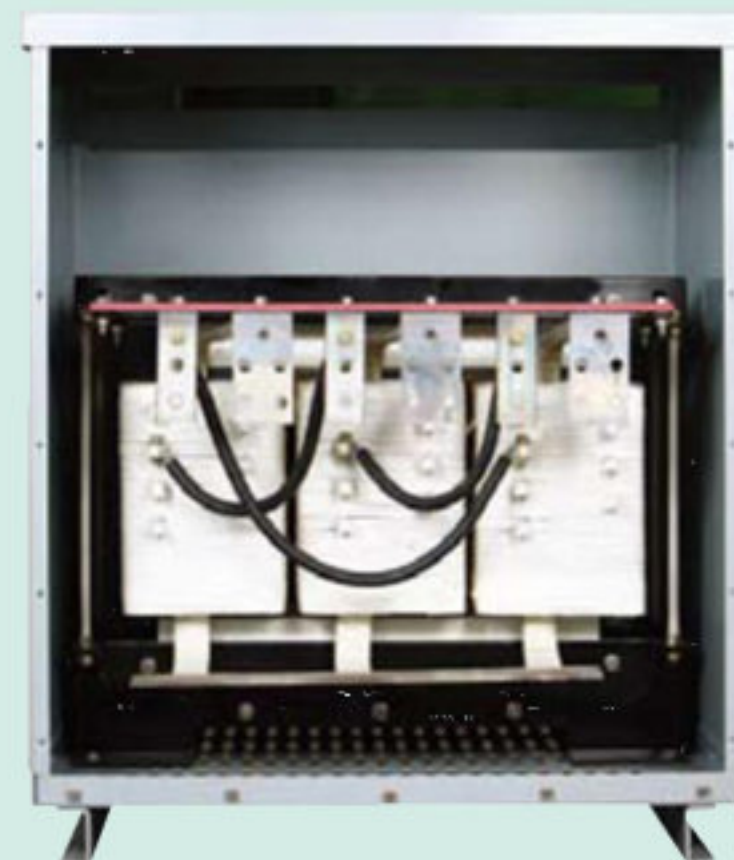
These are air-cooled dry type transformers with Class 220(R) insulation systems.

All insulating materials exceed NEMA-220 standards and be rated for 220°C UL component recognize insulation system.



## STANDARD FEATURES

- » UL LISTED
- » 3 Phase, 45 - 300kVA
- » 480V - 208Y / 120V (Dyn 1)
- » COPPER WINDINGS
- » INSULATION SYSTEM 220
- » 60 Hz
- » NEMA TYPE 1
- » FLOOR MOUNTING TYPE
- » 6 TAPS
- » COOLING CLASS "AA"





## ELECTRICAL RATING : Delta to WYE, 50/60Hz

**VOLTAGE TAPS** :Transformers in most cases shall have a minimum of 480V (+2, -4, 2.5%) full capacity primary taps (432/444/456/468/480/492/504).

## PERCENT IMPEDANCE & TEMPERATURE RISE

Catalogue No.	Phase	Freq.	kVA	Ambient Temp.	①Max. Temp. Rise	Insulation System Rating	% Imp.
DC342B045I	3	60	45	40°C	94°C	220°C	2.5
DC342B075I	3	60	75	40°C	94°C	220°C	3.0
DC342B112I	3	60	112.5	40°C	94°C	220°C	3.4
DC342B150I	3	60	150	40°C	116°C	220°C	3.0
②-DC342B225I	3	60	225	40°C	75°C	220°C	3.9
②-DC342B300I	3	60	300	40°C	107°C	220°C	3.43

① Data based on UL File E306669. ②-Use wire rated for at least 90°C.

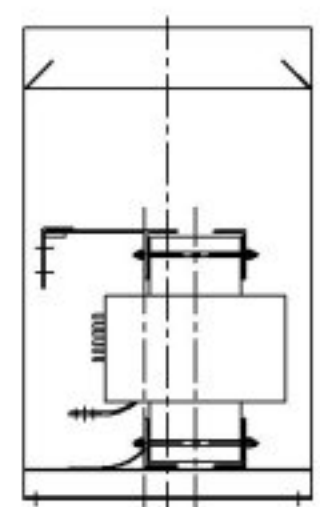
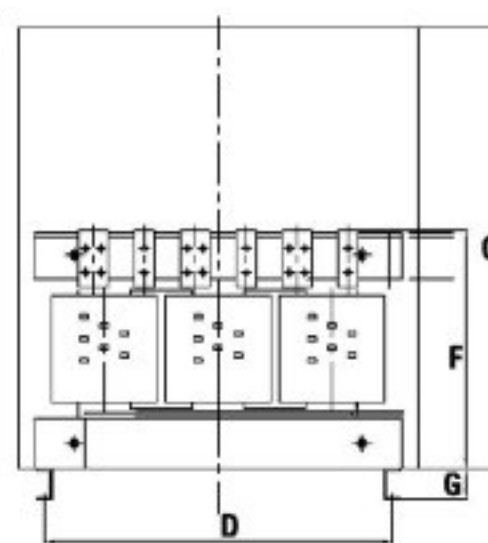
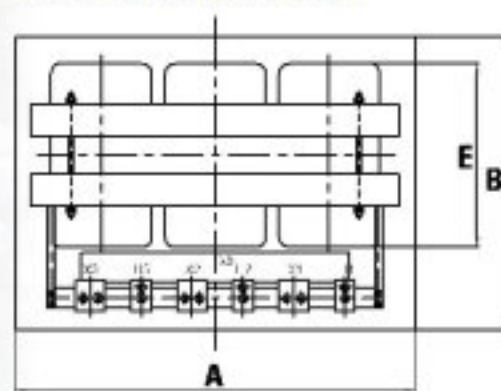
## COOLING CLASS & WEIGHT

Catalogue No.	Insulation System	Winding	Cooling Class	Vector Group	Weight (LBS)
DC342B045I	Dongbang-220	COPPER	'AA'	Dyn 1	639(° ± 10%)
DC342B075I	Dongbang-220	COPPER	'AA'	Dyn 1	684(° ± 10%)
DC342B112I	Dongbang-220	COPPER	'AA'	Dyn 1	1058(° ± 10%)
DC342B150I	Dongbang-220	COPPER	'AA'	Dyn 1	1382(° ± 10%)
DC342B225I	Dongbang-220	COPPER	'AA'	Dyn 1	2059(° ± 10%)
DC342B300I	Dongbang-220	COPPER	'AA'	Dyn 1	2508(° ± 10%)

## INSULATION SYSTEM

These transformers are provided with Class 220(R), electrical insulation system, File E304840, Vol.1, Sec.2, Designation DongBang-220.

## OUTLINE DRAWING



## DIMENSION

Catalogue No.	Rating (kVA)	Cased (mm)			Core & Dim. (mm)		
		A	B	C	D	E	F
DC342B045I	45	750	630	853	483	254	486
DC342B075I	75	750	630	893	545	321	510
DC342B112I	112.5	750	630	1023	555	325	585
DC342B150I	150	870	760	1103	689	365	630
DC342B225I	225	1170	830	1183	944	430	700
DC342B300I	300	1170	870	1233	954	470	738

## SOUND LEVELS

DONGBANG Dry Type General Purpose and Power transformers are designed and manufactured to comply with NEMA and ANSI standards.

DONGBANG Dry type general purpose transformers shall be quite type with maximum sound level at 3 Decibels less than NEMA and ANSI standard level for transformer rating indicated.

kVA	NEMA Standard Sound Level (DB)	Average Sound Level (DB)
10~50	45	42
51~150	50	47
150~300	55	52



# DB-GS Series Load Break Switch

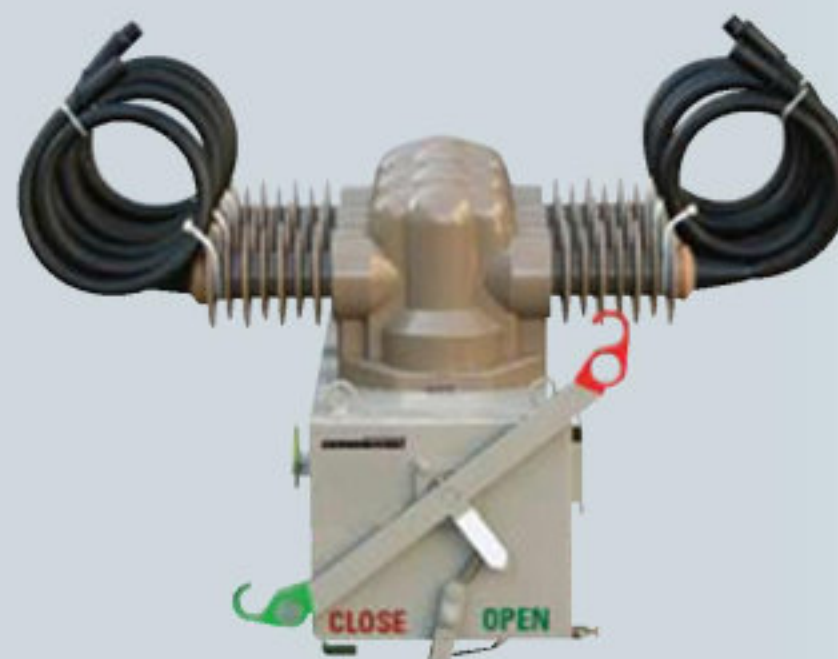
DB-GS series is 3 phase, SF<sub>6</sub> gas and polymeric insulated load break switches (LBS) for overhead lines operating at a voltage up to 25.8kV. It meets the demand for oil-less and maintenance free operation with SF<sub>6</sub> gas and polymeric, related parts and devices installed inside its hermetically sealed stainless steel tank.

DB-GS load break switches can be manually operated or motorized for sectionalizing, automation and remote control to suit your power line requirements.

DB-GS series load break switchgear has been fully certified in accordance with IEC 60694 (1996), IEC 60265 (1998) and ANSI/IEEE C37.71 (1984) to meet and exceed customer specifications



**SF<sub>6</sub> GAS Insulated Type**



**Polymeric Insulated Type**



## OUTSTANDING FEATURES

- » SCADA-mate Configuration, or 3 Current Transformers and 6 Resistive Voltage Sensors are integrated inside of the tank. So extra cost to attach the CT and Voltage Sensor is not necessary.
- » World First Resistive Voltage Sensors with an accuracy of 0.5%, while traditional capacitive sensor has 3% accuracy.
- » SF<sub>6</sub> Gas Insulation and Interruption Media is enclosed in stainless steel tank sealed for life and maintenance free with less than 0.2% leakage rate per year, showing normal insulation and interruption performance even at an atmospheric gas pressure.
- » Unique and Field Proven Puffer and Heavy duty Tulip-Shaped Contacts made of arc resistant Cu-W tip ensures short arc-extinguishing time of less than 0.5 cycles and more than 400 times load current capacity.
- » There is no plastic material between open contacts, so SF<sub>6</sub> gas makes no deterioration combined with arc and leakage current in the tank.
- » Insulation Coordination enables outside flash over first. The outside flash over voltage is the least, the inside flash over voltage is next to it, and the puncture voltage of the bushings is the most among them.
- » Toggle Action Spring Mechanism that has very simple and reliable structure for close and open operation, and that is independent from operator's handling power or speed shows quick open and quick close operation below 0.7 sec when operated by motor.
- » Safety Bursting Membrane releases overpressure gas safely from the enclosed tank at a pressure of 0.3~0.7kgf/Cm<sup>2</sup>•G.
- » You can easily check the on/off position of the main contacts by ON/OFF Position Indicator directly connected with the main shaft from the ground level

## DB-GS-AUTO TYPE LOAD BREAK SWITCH

DB-GS-Auto Type load break switch integrates 3 current transformers and 6 voltage sensors inside the tank.

Motor parts that is enclosed in the stainless steel box welded underneath the tank operate the main shaft only while electrical operation, so in any case, DB-GS-Auto type Switch reserves all the benefits of simplicity and reliability of manual operation.

Lead Acid Battery provides DC power to the control circuit board in case of AC power source failure. The batteries have sufficient capacity to sustain more than 24 hour operation while failure of AC power supply.

## DB-GS-MANUAL TYPE LOAD BREAK SWITCH

DB-GS-MANUAL Type Load Break Switch operates manually without and separate control unit and any power supply.

## INFORMATION FOR CUSTOMERS INQUIRY

- » If you take following advice when you make an inquiry to us, you will get more detailed and earlier reply.
- » Select product's type, voltage class, continuous current, and short-time withstand current
- » Select the control type combined, parts or functions you want to be included in the equipment
- » Select delivery place and transportation method
- » Write the selected specifications to us by email or fax.

## ELECTRICAL CHARACTERISTICS

Description	DB-GS	
Rated Maximum Voltage	25.8kV	11/15kV
Rated Frequency	50/60Hz	50/60Hz
Rated Continuous Current	400A(630A)	400A(630A)
Number of Phases	3	3
Rated Impulse Withstand Voltage (BIL)	150kV	150kV
Rated Short Time Withstand Current (rms)	12.5kA (1sec)	12.5kA (1sec)
Cable Charging Current (rms, sym.)	20A	20A
Transformer Magnetizing Current Current (rms)	14A	14A(21A)
Line Charging Current	2A	2A
Power Frequency withstand Voltage 60kV (dry-1min/wet-10sec)	60kV	60kV
Electrical Operations	400 times	400 times
Mechanical Operations	5,000 times	5,000 times
Weight without Mounting Frame	200kg	200kg



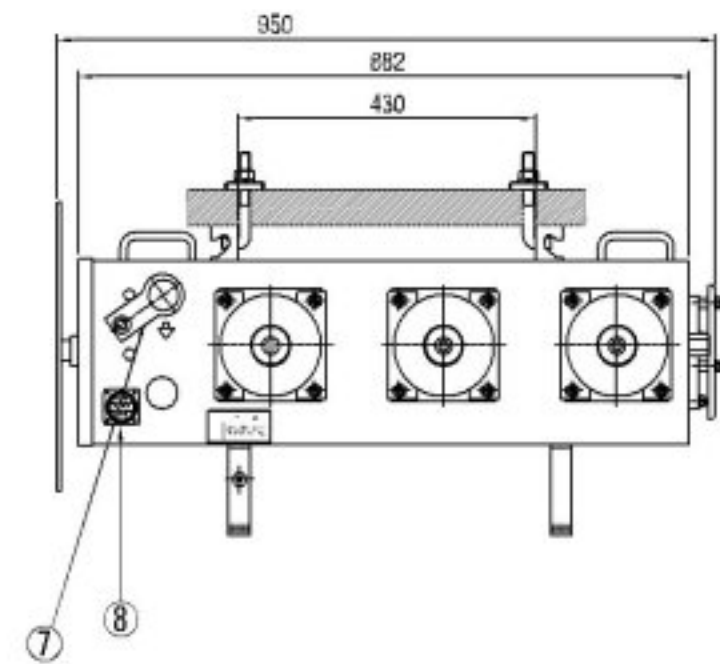
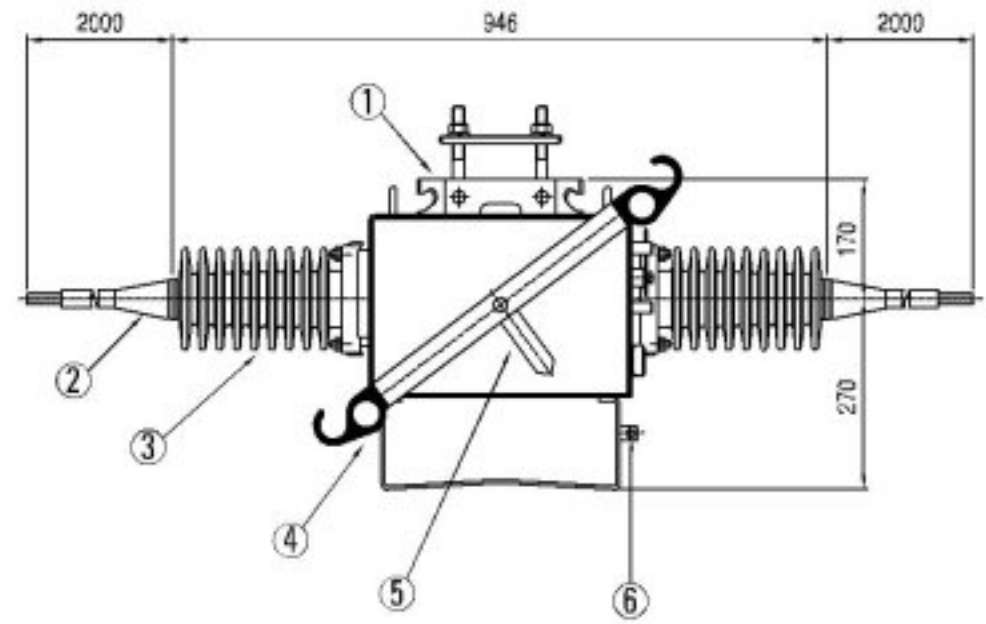
# DB-GS Series Load Break Switch





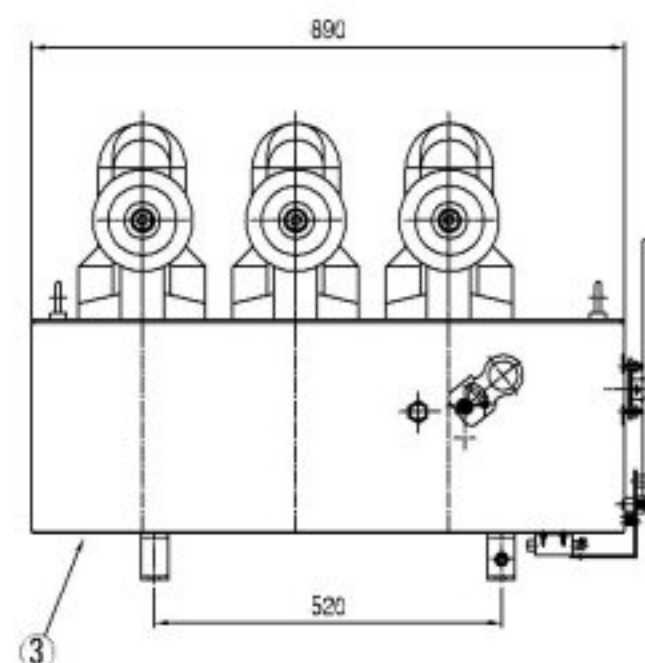
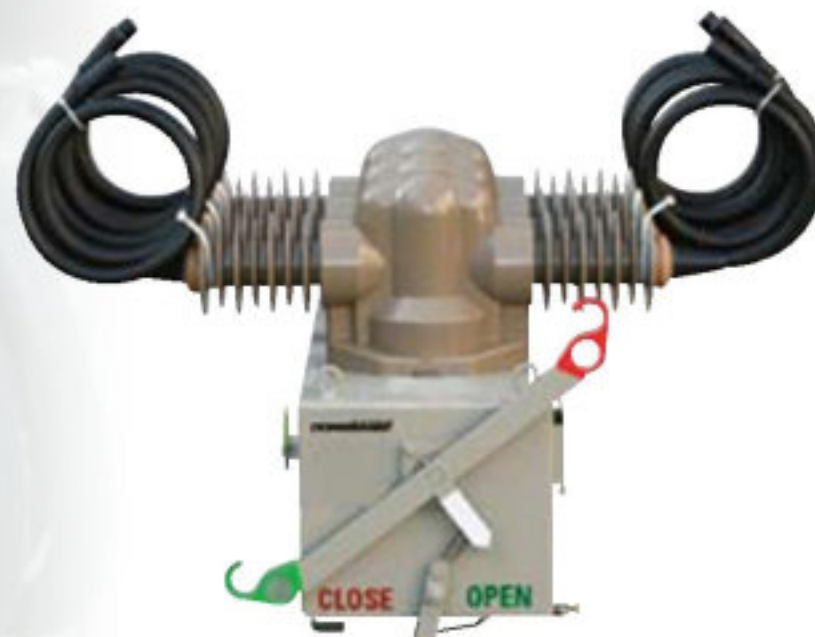
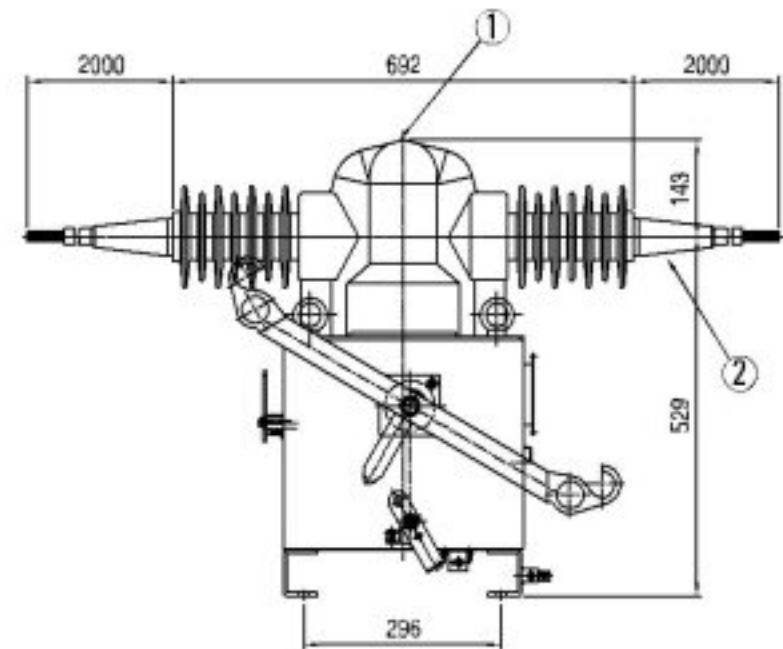
## SF<sub>6</sub> GAS Insulated Type

1. Lifting Lug
2. Moldcone Lead Wire
3. Porcelain Bushing
4. Manual Operating Handle
5. Indicator
6. Earth Terminal
7. Operation Locking Handle
8. Receptacle



## Polymeric Insulated Type

1. Epoxy Insulation Body
2. Moldcone Lead Wire
3. Enclosure





# DB-PAD Series Load Break Switch

DB-PAD is puffer interrupting pad mounted fully dead front switchgear for underground system up to 25.8kV, 630A, enclosed in stainless steel tank full of SF<sub>6</sub> gas insulation media. It incorporates grounding switches in every way to provide added safety and faster working.

DB-PAD Series pad mounted load break switchgear has been fully certified in accordance with IEC 60265-1 and ANSI/IEEE C37.71 (1984) to meet and exceed customer specifications.





## OUTSTANDING FEATURES

- » SF<sub>6</sub> Gas Insulation Media which is enclosed in stainless steel tank sealed for life and maintenance free with less than 0.2% leakage rate per year, showing normal insulation and interruption performance even at an atmospheric gas pressure
- » Unique and Field Proven Puffer and Heavy duty Tulip-Shaped Contacts made of arc resistant Cu-W tip ensures short arc-extinguishing time of less than 0.5 cycles and more than 400 times load current capacity
- » Internal power source through integrated capacitor-potential transformer combination for the control circuit's power
- » Three phase group-operated mechanism offers regular close-open speed regardless of operating speed or method (manual or electrical)
- » Front ground circuit bushings offer easy cable testing
- » Deadfront design and mechanical interlock between main and earth Switch provides a high level of safety and efficient maintenance. Closed state of main circuit switch interlocks grounding circuit switch, and also closed state of grounding circuit switch interlocks main circuit switch in every ways.
- » Integrated capacitive voltage sensors, CT's and internal power supply makes this switch easy to be installed in SCADA system

## DB-PAD-AUTO TYPE

- » Every bushing in DB-PAD-AUTO Type Pad Mounted Load Break Switch is installed with CT and voltage sensor, so most electrical values of connected distribution system can be measured. And, combined with SCADA-mate control and RTU, this switch can be operated from system remote control center.
- » Lead Acid Battery provides DC power to the control circuit board in case of AC power source failure. The batteries have sufficient capacity to sustain more than 24 hour operation while failure of AC power supply.

## DB-PAD-MANUAL TYPE

- » DB-PAD-MANUAL Type Pad Mounted Load Break Switch operates manually without and control unit and any power supply.

## INFORMATION FOR CUSTOMER'S INQUIRY

- » If you take following advice when you make an inquiry to us, you will get more detailed and earlier reply.
- » Select the product's type, the number of ways, combination of circuit breaker and switch, voltage class, continuous current, and short time withstand current
- » Select the control type, parts or functions you want to be included in this equipment
- » Select delivery place and transportation method
- » Write the selected specifications to us by email or fax.





# DB-PAD Series Load Break Switch



## ELECTRICAL CHARACTERISTICS

DESCRIPTION		DB-PAD	
Maximum System Voltage		25.8kV	11/15kV
Rated Frequency		50/60Hz	50/60Hz
Rated Continuous Current		630A	630A
Rated Fault Making Current (peak)		32.5kAp	32.5 kAp
Electrical Operation Time (Close/Open)		700 ms each	700 ms each
Number of Mechanical Operations (main)		5,000 times	5,000 times
Number of Mechanical Operations (ground)		1,000 times	1,000 times
Short Time Withstand Current (rms)		12.5kA (1sec)	12.5kA (1sec)
Breaking Capacity	Mainly Active Load Current	630A	630A
	Cable Charging Current Breaking	25A	25A
	Magnetizing Current Breaking	21A	21A
	Line Charging Current Breaking	1.5A	1.5A
	Closed Loop Breaking Current	630A	630A
Insulation Level	Lightning Impulse Withstand Voltage	125 kV BIL	125 kV BIL
	Power Frequency Withstand Voltage	60kV	60kV
	DC Voltage Withstand Voltage	78kV	78kV
Weight without Outer Enclosure (4 way)		300kg	300kg



**DB-PAD-AUTO  
(4W4S)**



**DB-PAD-MANUAL  
(3W3S)**

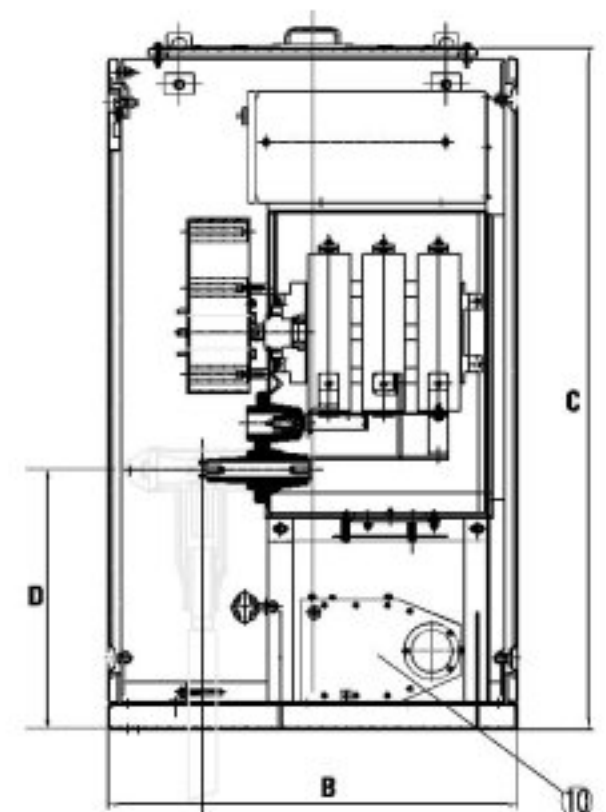
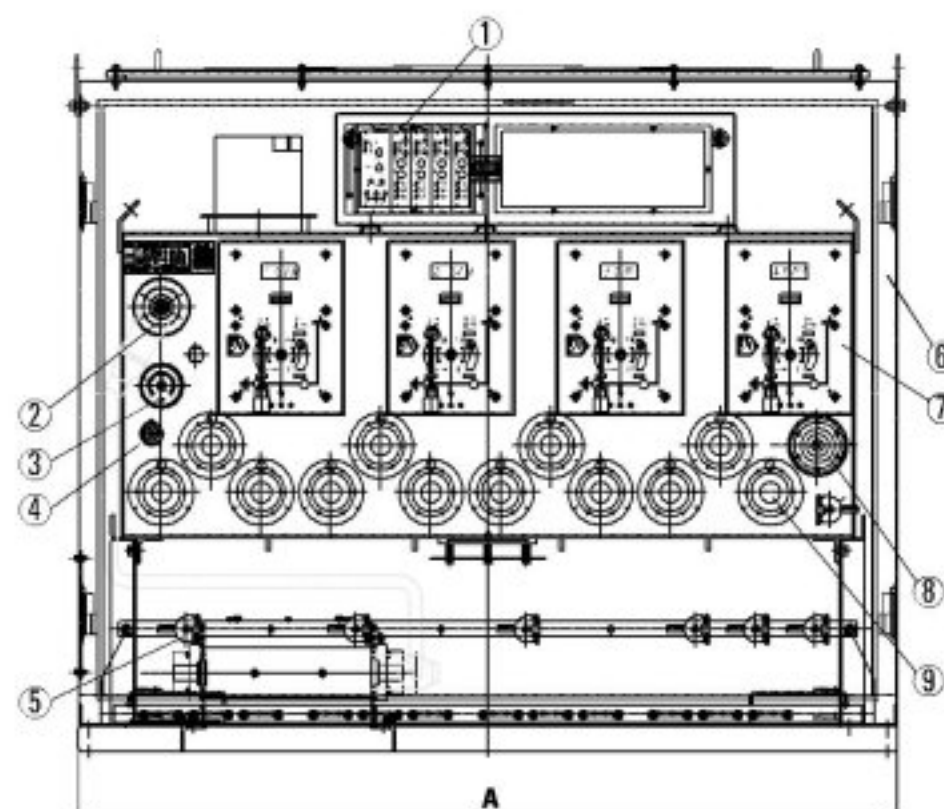


**DB-PAD-MANUAL  
(4W4S)**



1. Local Controller
2. PT Bushing
3. SF<sub>6</sub> Gas Pressure Gauge
4. SF<sub>6</sub> Gas Filling Valve
5. Grounding Lug
6. Enclosure
7. Operating Shaft & Indicator
8. Earth Bushing
9. Main Bushing
10. PT

Model	Dimension (±3%)			
	A	B	C	D
4 W-4S (Auto)	1600	800	1300	540
3 W-3S (Manual)	1200	800	1200	540
4 W-4S (Manual)	1600	800	1200	540





# 25.8kV SF<sub>6</sub> gas insulated switchgear

This product satisfies the standards of IEC 62271-100,102 IEC 60517 and ES 150-576.

In particular, it passed the test of E2, M2 and C2 for the first time in Korea as the recognition of its outstanding electric and mechanic durability.

All main circuit charged part are in metal enclosure which is filled by SF<sub>6</sub> GAS and the GIS is consisted of two bus-bar tank (double bus-bar system), one VCB tank and operating control box.

2-position (ON-OFF) and 3-position (ON-OFF-earth) disconnecting switches are mounted inside of the bus-bar tank.



## RATING

Voltage: 25.8kV

Frequency: 50/60Hz

Current: 2000A/600A

Short Time Withstand Current (1sec): 25kA

Impulse Voltage: 150kV

Breaking Capacity: 25kA

## SPECIFICATION

Guaranteed ON-OFF times on no-load

- VCB: 10,000 times

- D . S: 1,000 times

Performed test: "Class 2 (E2, M2, C2)"

## FEATURE

- » VT Panel is separately installed for voltage monitoring of double bus-bar.

- » 3 compartment (2 bus-bar compartment and 1 VCB compartment) are completely separated for easy maintenance.

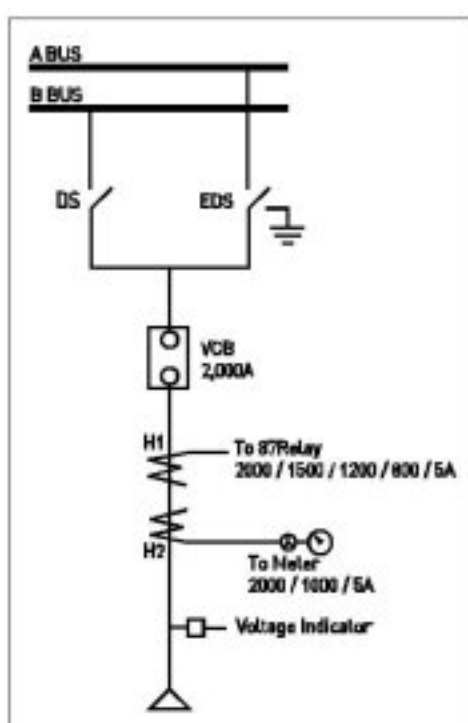
- » 3 rupture disk (pressure release device) are installed at each compartment.

- » When the gas is leaked to become 0 air pressure (atmospheric pressure) it would endure to the highest voltage of operation

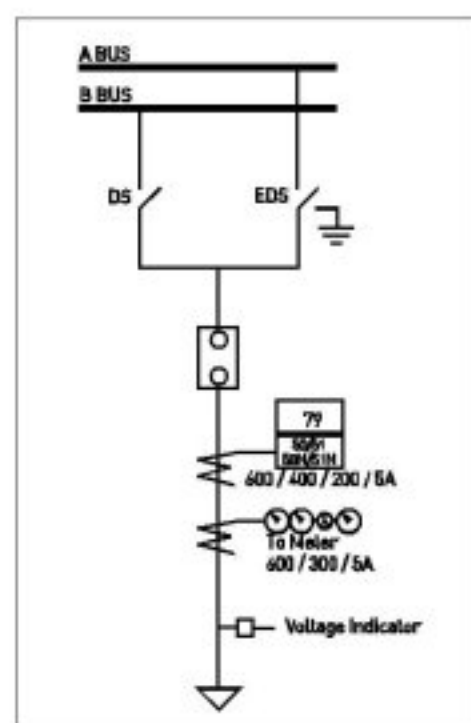


Bellows for panel connecting and absorbing of impact.  
It is made be stainless steel.

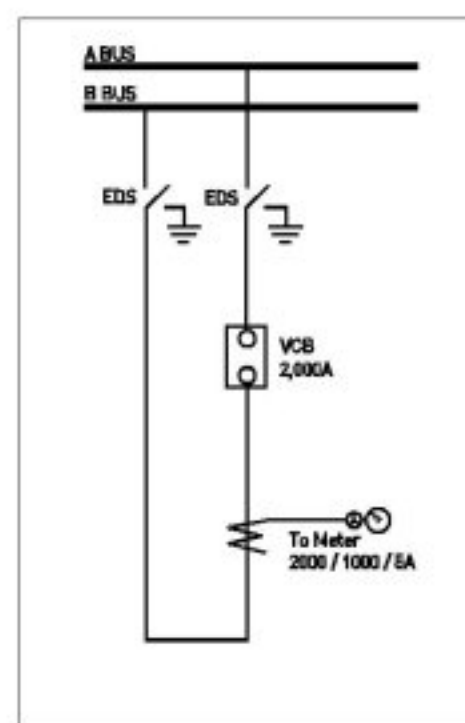




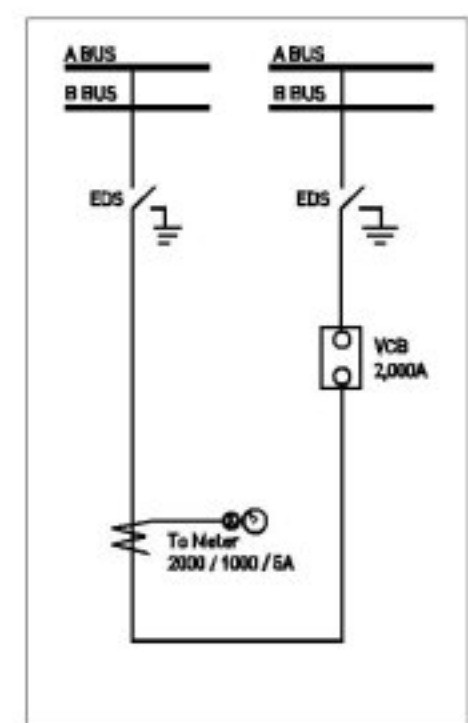
Main



Feeder



Bus Tie



Bus Section





## We make the best products through effective production facilities



For the requirement of various kinds of international standards and the maintenance of our long reputation for top quality products, all transformers are submitted to tests in accordance with the related standards, or to such tests as the user's specification requires.

Including the careful parts and raw materials test upon their purchasement, the stable top of our products is strengthened by the adoption of the intermediate tests on the production line and the statistic quality control technique.

The final inspection is always managed on the standpoints of our customers so that all transformers can carry out their function more than our customers expected from them.





**DONGBANG**  
DONGBANG ELECTRIC INDUSTRIAL CO., LTD.



[www.dbeco.co.kr](http://www.dbeco.co.kr)

***DONGBANG***  
DONGBANG ELECTRIC INDUSTRIAL CO., LTD.

396-2, Mokne-dong, Danwon-gu, Ansan-si, Gyeonggi-do, Korea  
Tel\_ 82-31-494-2279 Fax\_ 82-31-491-6951  
E-mail\_ former@chol.com / busi@dbeco.co.kr