

# Transformer





230kV Power Transformer (Left)  
400kV Testing Transformer (Right)



132/33kV 90/125MVA Power Transformer

Step-down transformers in substations and step-up transformers in power stations are essential components in those facilities. These transformers cover the electric power for many of electricity consumers, so highly reliable transformers are required.

In relation, to the load loss occupying the majority of total loss, as a result of employing a transposed conductor, achieving non-magnetization of metal adjacent to the winding, and providing a magnetic shielding of tank inner wall, stray-load loss has been reduced significantly whereby transformers with high efficiency and little loss have been created.

## Standard Features for Conservator Type

- High and Low voltage bushings
- Off-circuit tap changer
- Lifting lugs
- Earthing terminals
- Buchholz relay
- Dehydrating breather
- Pressure relief device
- Dial type thermometer
- Oil level gauge / Oil level indicator
- Filling lug
- Skid base
- Drain valve
- Rating plate

## Options and accessories

- On load tap changer
- Plug-in bushings on HV
- Galvanized tank
- Rubber bag
- Dual voltage
- Winding temperature Indicator
- Cooling fans and pumps
- Cable boxes
- Wheels

<b>Rating</b>	1000kVA up to 30,000kVA
<b>Primary voltage</b>	36 kV and below
<b>Secondary voltage</b>	36kV and below
<b>Model</b>	Hermetically Sealed Type Sealed Type Conservator Type
<b>Tank Design</b>	Corrugated Wall (up to 3MVA) Radiator Fin



Medium and large distribution transformers, installed in substations near to the consumer's side, receive high voltage electric power from the grid, reduce its voltage, and distribute electricity to consumers and lower voltage substations.

Loop provides distribution transformers up to 30MVA capacity and up to 36kV primary/secondary voltage. And necessary accessories are available if requested. The most suitable one will be delivered in accordance with customer's requirements.

## Standard Features for Conservator Type

- High and Low voltage bushings
- Off-circuit tap changer
- Lifting lugs
- Earthing terminals
- Buchholz relay
- Dehydrating breather
- Pressure relief device
- Dial type thermometer
- Oil level gauge / Oil level indicator
- Filling lug
- Skid base
- Drain valve
- Rating plate

## Options and accessories

- On load tap changer
- Plug-in bushings on HV
- Galvanized tank
- Rubber bag
- Dual voltage
- Winding temperature Indicator
- Cooling fans and pumps
- Cable boxes
- Wheels



630kVA Transformer



Pole transformer



Unit substation

<b>Installation</b>	Pole or Ground Mounted
<b>Rating</b>	30kVA up to 1.000kVA
<b>Primary voltage</b>	36 kV and below
<b>Secondary voltage</b>	600V and below
<b>Model</b>	Hermetically Sealed Type Sealed Type Conservator Type
<b>Tank Design</b>	Plain Tank (up to 50 kVA) Corrugated Wall (up to 3 MVA) Radiator Fins

Small distribution transformers, installed on utility poles or on concrete pads, act as the last transformers providing the final utilization voltage (100V~600V) at the consumer's facilities. So, there is the variety of requirements, installation type, electrical ratings, tank design, accessories, and so on.

Small distribution transformers of **Loop** are available up to 1,000kVA capacity and up to 36kV primary voltage. Each type of pole-mounted/pad-mounted installation, hermetically-sealed/conservator-type design, and plain/corrugated-wall/radiator-fins tank construction, is standardized and able to be supplied.

## Standard Features for Hermetically Sealed Type

- High and Low voltage bushings
- Off-circuit tap changer in 5 positions
- Lifting lugs
- Earthing terminals
- Pressure relief device
- Thermometer pocket
- Filling lug
- Skid base
- Drain valve
- Rating plate

## Options and accessories

- Plug-in bushings on HV
- Dual voltage transformer
- Galvanized tank
- Surge arrester, CSP-type version
- Max. thermometer
- Dial type thermometer with two contacts
- Oil level indicator
- Arcing horns, Bird guard
- Integrated pole brackets on tank
- Bi-directional rollers
- Skid base
- Cable boxes

For arc furnace applications and rectifier applications in the field of industry, low voltage and large current transformers are applied.

Loop is able to deliver the fittest transformer up to 30MVA at client's request.



Rating 8.5MVA  
Primary voltage 20kV  
Secondary voltage 2x0.75kV  
Yy6d5, ODFW



Rating 7.2MVA  
Primary voltage 20kV  
Secondary voltage 2x0.775kV  
Y (+7.5)y6d5 and Y(-7.5)y6d5 ODFW

## Rectifier Transformer

Range: Up to 30MVA

Voltage: Up to 77kV

Cooling Type: ODFW, OFAF, ONAN, ONAF

### Features

Reasonable core construction.

### Low Loss

Winding are made of common insulated and continuous transposed conductor  
Non-magnetic materials and tank shield

- Low noise
- Very high current levels

## Arc Furnace Transformer

Range: Up to 30MVA

Voltage: Up to 77kV

Cooling Type: ODFW, OFAF, ONAN, ONAF

### Features

- Reasonable core construction.
- Winding constructed for low voltage and heavy currents
- Winding construction with highly reliable insulations
- Great short-circuit resistance of winding
- Highly reliable high quality transformer
- Vacuum switch type on-load tap changer
- Optimal devices to prevent oil deterioration is provided

# standard distribution Transformers

Hermetically Sealed Fully with Mineral oil type

## 1. Specifications

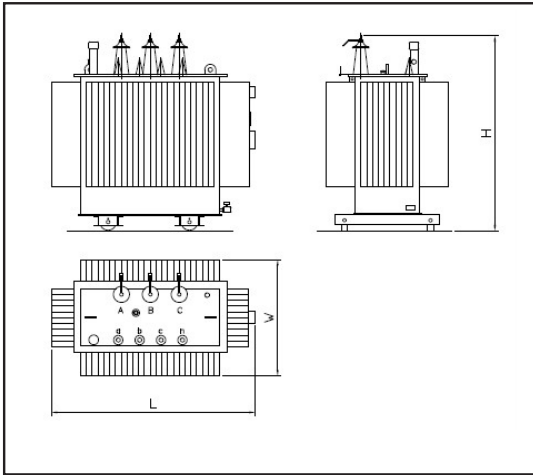
### 1-1. 22kV - 400/230V & 24kV - 416/240V

Item	Capacity	No load	Load loss (75oC)	Impedance	Dimensions (mm)			Total weight	Oil
	kVA	Watt	Watt	%	Height	Length	Width	kg	Liter
1	50	160	950	4	1,100	1,000	700	500	135
2	100	250	1,550	4	1,250	1,050	750	750	200
3	160	360	2,100	4	1,300	1,150	750	990	250
4	250	500	2,950	4	1,350	1,200	750	1300	300
5	315	800	3,900	4	1,400	1,400	800	1300	350
6	400	960	4,600	4	1,400	1,500	850	1550	380
7	500	1,150	5,500	4	1,500	1,550	900	1750	430
8	630	1,350	6,500	4	1,550	1,600	850	2,150	450
9	800	1,600	11,000	6	1,600	1,800	1,100	2,500	650
10	1,000	1,950	13,500	6	1,750	1,900	1,100	3,200	700
11	1,250	2,300	16,400	6	1,850	2,000	1,150	4,000	850
12	1,500	2,800	19,800	6	1,950	2,100	1,250	4,150	1,150
13	2,000	3,250	24,000	6	2,050	2,250	1,350	5,650	1,450
14	2,500	3,500	28,500	6	2,150	2,450	1,450	6,450	1,750

### 1-2. 33kV - 400/230V

Item	Capacity	No load	Load loss (75oC)	Impedance	Dimensions (mm)			Total weight	Oil
	kVA	Watt	Watt	%	Height	Length	Width	kg	Liter
1	50	170	950	4	1,300	1,000	700	550	165
2	100	260	1,550	4	1,400	1,050	750	800	230
3	160	370	2,100	4	1,450	1,150	750	990	280
4	250	520	2,950	4	1,500	1,200	750	1450	350
5	315	850	3,900	4	1,550	1,350	800	1450	400
6	400	1000	4,600	4	1,550	1,450	850	1700	450
7	500	1,200	5,500	4	1,650	1,500	900	1900	500
8	630	1,400	6,500	4	1,700	1,650	850	2,300	550
9	800	1,700	11,000	6	1,750	1,850	1,100	2,650	700
10	1,000	2,000	13,500	6	1,900	1,950	1,100	3,350	750
11	1,250	2,350	16,400	6	2,000	2,000	1,150	4,150	900
12	1,500	2,850	19,800	6	2,100	2,100	1,250	4,300	1,200
13	2,000	3,300	24,000	6	2,200	2,250	1,350	5,800	1,450
14	2,500	3,800	28,500	6	2,350	2,450	1,450	6,600	1,750

## Distribution Transformer Outline



## Distribution Transformer



## 2. Accessories (Standard & Option)

Item	kVA		50	100	160	250	315	400	500	630	800	1000	1250	1500	2000	2500
1	Bushings		●	●	●	●	●	●	●	●	●	●	●	●	●	●
2	Arcing horn		●	●	●	●	●	●	●	●	●	●	●	●	●	●
3	Off load tap changer		●	●	●	●	●	●	●	●	●	●	●	●	●	●
4	Earth terminal		●	●	●	●	●	●	●	●	●	●	●	●	●	●
5	Lifting lug		●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	Lifting eye		●	●	●	●	●	●	●	●	●	●	●	●	●	●
7	Wheel		○	○	○	○	○	○	○	○	○	●	●	●	●	●
8	Nameplate		●	●	●	●	●	●	●	●	●	●	●	●	●	●
9	Oil drain		●	●	●	●	●	●	●	●	●	●	●	●	●	●
10	Thermometer pocket		●	●	●	●	●	●	●	●	●	●	●	●	●	●
11	Marshaling box		○	○	○	○	○	○	○	○	○	●	●	●	●	●
12	Cable box		○	○	○	○	○	○	○	○	○	○	○	○	○	○
13	P'ry terminal connector	Pad type	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Clamp type	●	●	●	●	●	●	●	●	●	●	●	●	●	●
14	S'ry terminal connector	Pad type	●	●	●	●	●	●	○	○	○	○	○	○	○	○
		Clamp type	○	○	○	○	○	○	●	●	●	●	●	●	●	●
15	Oil level gauge	W/O contact	●	●	●	●	●	●	●	●	●	●	●	●	●	●
16	Thermometer	W/O contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		2 contact	○	○	○	○	○	○	○	○	○	○	●	●	●	●
17	WDG Temp.indicator	2 contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○
18	Pressure relief device	W/O contact	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		1 contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### Accessories List

- Standard Accessories
- Option Accessories

## 3. Remarks

- Distribution transformers are designed for general application uses at ambient temperature maximum 40°C at temperature raised 60°C (top oil) / 65°C (winding), which will be manufactured and tested.

# standard distribution Transformers

## Open Type with Conservator Tank (Mineral Oil)

### 1. Specifications

#### 1-1. Open Type with Conservator Tank 22kV – 400/230V & 24kV - 416/240V

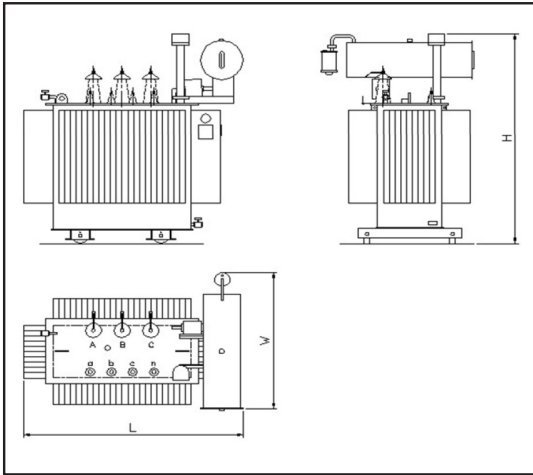
Item	Capacity	No load	Load loss (75oC)	Impedance	Dimensions (mm)			Total weight	Oil
	kVA	Watt	Watt	%	Height	Length	Width	kg	Liter
1	50	160	950	4	1,250	1,300	850	650	150
2	100	250	1,550	4	1,350	1,300	850	750	200
3	160	360	2,100	4	1,450	1,400	850	950	250
4	250	500	2,950	4	1,550	1,500	850	1200	320
5	315	800	3,900	4	1,600	1,550	850	1250	350
6	400	960	4,600	4	1,650	1,600	900	1550	380
7	500	1,150	5,500	4	1,700	1,700	950	1800	450
8	630	1,350	6,500	4	1,750	1,800	950	2,100	600
9	800	1,600	11,000	6	1,850	1,900	1,050	2,650	650
10	1,000	1,950	13,500	6	2,050	2,050	1,150	3,200	700
11	1,250	2,300	16,400	6	2,100	2,250	1,200	4,000	900
12	1,500	2,800	19,800	6	2,250	2,250	1,350	4,200	1,100
13	2,000	3,250	24,000	6	2,350	2,300	1,400	5,500	1,200
14	2,500	3,500	28,500	6	2,500	2,500	1,550	6,500	1,800

#### 1-2. Open Type with Conservator Tank 33kV – 400/230V

Item	Capacity	No load	Load loss (75oC)	Impedance	Dimensions (mm)			Total weight	Oil
	kVA	Watt	Watt	%	Height	Length	Width	kg	Liter
1	50	170	950	4	1,450	1,400	900	700	200
2	100	260	1,550	4	1,550	1,400	900	800	250
3	160	370	2,100	4	1,650	1,500	900	1,000	300
4	250	520	2,950	4	1,750	1,600	900	1250	350
5	315	850	3,900	4	1,750	1,650	900	1350	400
6	400	1000	4,600	4	1,800	1,700	950	1650	450
7	500	1,200	5,500	4	1,850	1,800	1000	1900	500
8	630	1,400	6,500	4	1,900	1,900	1,000	2,200	650
9	800	1,700	11,000	6	2,000	2,000	1,100	2,750	700
10	1,000	2,000	13,500	6	2,200	2,150	1,200	3,500	750
11	1,250	2,350	16,400	6	2,250	2,350	1,250	4,500	950
12	1,500	2,850	19,800	6	2,400	2,350	1,400	4,800	1,150
13	2,000	3,300	24,000	6	2,500	2,400	1,450	6,200	1,250
14	2,500	3,800	28,500	6	2,650	2,600	1,600	7,200	1,850



### Distribution Transformer Outline



### Distribution Transformer



## 2. Accessories (Standard & Option)

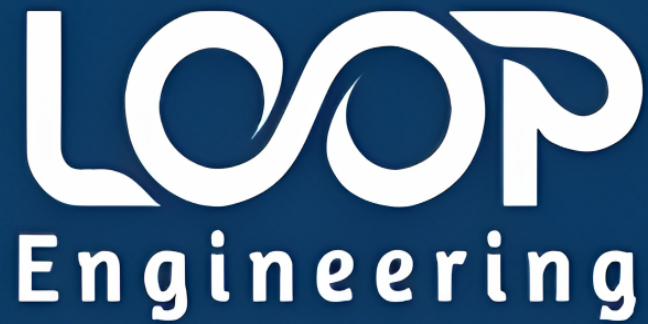
Item	kVA		50	100	160	250	315	400	500	630	800	1000	1250	1500	2000	2500
1	Bushings		●	●	●	●	●	●	●	●	●	●	●	●	●	●
2	Arcing horn		●	●	●	●	●	●	●	●	●	●	●	●	●	●
3	Off load tap changer		●	●	●	●	●	●	●	●	●	●	●	●	●	●
4	Dehydrating breather filled with silica gel		●	●	●	●	●	●	●	●	●	●	●	●	●	●
5	Earth terminal		●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	Lifting lug		●	●	●	●	●	●	●	●	●	●	●	●	●	●
7	Lifting eye		●	●	●	●	●	●	●	●	●	●	●	●	●	●
8	Wheel		○	○	○	○	○	○	○	○	○	●	●	●	●	●
9	Nameplate		●	●	●	●	●	●	●	●	●	●	●	●	●	●
10	Oil drain		●	●	●	●	●	●	●	●	●	●	●	●	●	●
11	Thermometer pocket		●	●	●	●	●	●	●	●	●	●	●	●	●	●
12	Marshaling box		○	○	○	○	○	○	○	○	○	●	●	●	●	●
13	Cable box		○	○	○	○	○	○	○	○	○	○	○	○	○	○
14	P'ry terminal connector	Pad type	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Clamp type	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15	S'ry terminal connector	Pad type	●	●	●	●	●	●	○	○	○	○	○	○	○	○
		Clamp type	○	○	○	○	○	○	●	●	●	●	●	●	●	●
16	Oil level gauge	W/O contact	●	●	●	●	●	●	●	●	●	●	●	●	●	●
17	Thermometer	W/O contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		2 contact	○	○	○	○	○	○	○	○	○	●	●	●	●	●
18	WDG Temp.indicator	2 contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○
19	Buchholz relay	2 contact	○	○	○	○	○	○	○	○	○	●	●	●	●	●
20	Pressure relief device	W/O contact	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		1 contact	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### Accessories List

- Standard Accessories
- Option Accessories

## 3. Remarks

- Distribution transformers are designed for general application uses at ambient temperature maximum 40°C at temperature raised 60°C (top oil) / 65°C (winding), which will be manufactured and tested.



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