



PRODUCT CATALOG
OIL IMMERSED TRANSFORMER



HUNAN ELECTRIC UNION CORP.

PRODUCT OVERVIEW

HUNAN ELECTRIC has the production capacity for power distribution transformers below 40.5kV, from 25kVA to 40MVA, with an annual production capacity of 100MVA. High power distribution transformers are widely used in oil fields, metallurgy, chemical industry, mines, docks and other places.

- We use high-quality copper wire coils and silicon steel sheets, equipped with a more efficient cooling system, lower losses, and a high work efficiency of $\geq 99.3\%$.

- Featuring good stability, reliable quality, and long lifespan, it can operate stably in various harsh environments.

- The actual measurement of the product is superior to GB and IEC standards, CB CCC SASO certification, etc-The high reliability of operation verification in more than 50 countries and regions around the world has been sold to Iraq, Kuwait, the United Arab Emirates, Libya, Zimbabwe, South Africa, Uganda, Rwanda, Ethiopia, Ghana, Uzbekistan, Kazakhstan, Pakistan, Vietnam, Nepal, Bangladesh, Indonesia and other countries, with a cumulative export of more than 5000 units.

- It is mainly used in urban distribution network below 35KV, power supply and distribution system of industrial and mining enterprises and civil buildings-Executive Standards: IEC 60076 Series, IEC 6013, IEC 60214-1, IEC 60296; GB 1094-1996, GB / T 6451-2008, GB / TT7597-2007, etc



PRODUCT ADVANTAGE

Leading technology

- High voltage copper tape winding technology to improve lightning resistance
- Low voltage copper foil winding technology, high quality A grade insulation material insulation
- Small magnetic leakage, high mechanical strength, short circuit resistance
- Core 45° fully inclined joint step laminated structure



20kV/3mva oilfield specific transformer

The shell

- ABB robot automatic welding, laser detection, avoid leakage, pass rate of 99.99998%
- Electrostatic spray treatment, 50 years without removing paint (coating corrosion resistance within 100h, hardness ≥ 0.4)
- Fully sealed structure, maintenance free, normal operation service life of more than 30 years

The iron core

The iron core is made of high quality cold-rolled grain oriented silicon steel sheet with mineral oxide insulation (from Baosteel and WISCO of China).

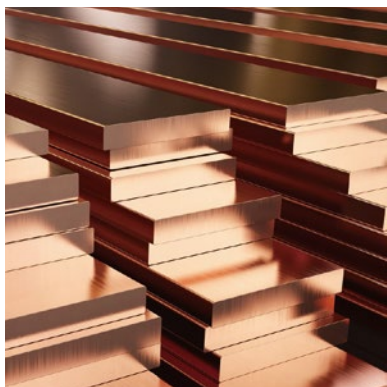
By controlling the cutting and stacking process of silicon steel sheet, the loss level, no-load current and noise can be minimized. The iron core is specially reinforced to ensure the structure of the transformer is firm during normal operation and transportation.



Winding

The low voltage winding is made of high quality copper foil with excellent insulation resistance

High voltage winding is usually made of insulated copper wire, using hunan electric patented technology



High quality material

Baosteel and WISCO produce silicon steel sheets

China's high quality oxygen free copper

CNPC (Kunlun Petroleum) High quality transformer oil (25#)

Patent technology

Thanks to Hunan Electric "ultra-low loss energy-saving power transformer" patent technology, can achieve 5% material savings, transformer loss than similar products in the market reduced 10-20%, more energy saving and environmental protection.



Other instructions

The low-voltage outlet terminal is a tin-plated copper bar

High voltage outlet terminals are tin-plated ring bolts

Default no-load voltage regulation (can be customized) tap switch 5 or 7 gear adjustment

Transformer above 630KVA is equipped with gas relay protection.

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20kV/3mva oilfield specific transformer

OUR FACTORY

The company mainly produces more than 300 sets of equipment, and the key equipment includes the full-automatic vacuum resin casting equipment of Hubers company, 400 / 600mm core automatic cross cutting machine, foil winding machine, the most advanced transformer kerosene vapor phase drying equipment in China, large-scale core stacking turnover platform, large scale assembly platform, etc



SILICON STEEL SHEET CROSSCUTTING MACHINE



Hunan Electric has 22000 square meters of modern plant, with a monthly delivery capacity of up to 500 distribution transformers, and has fully passed the ISO9001, ISO14001, SA8000, BSCI and other market access standards reviewed and issued by international certification bodies. At present, the company has 10 senior engineers, 30 senior technicians and more than 300 employees, with an annual output value of US \$100 million.



FLUID FILLED DISTRIBUTION TRANSFORMER

Type of transformer	Hermetically seal liquid fille (optional conservator)
Style of transformer	Ground Mounted - Cable or busbar Connected
Choice of dielectric fluid	Mineral oil to IEC60296 (KUNLUN25#)
Ratings	25kva up to 40mva
Voltages	Up to 36kV (4.16/7.2/10/11/12.47/13.2/13.8/15/20/22/24/24/30/33//34.5/35kV)
Losses	GB 20052-2020 (Officially implemented on June 1, 2021)
Availability	Fast Transformer STOCK (choice of aluminium or copper windings) manufacture – 7 weeks

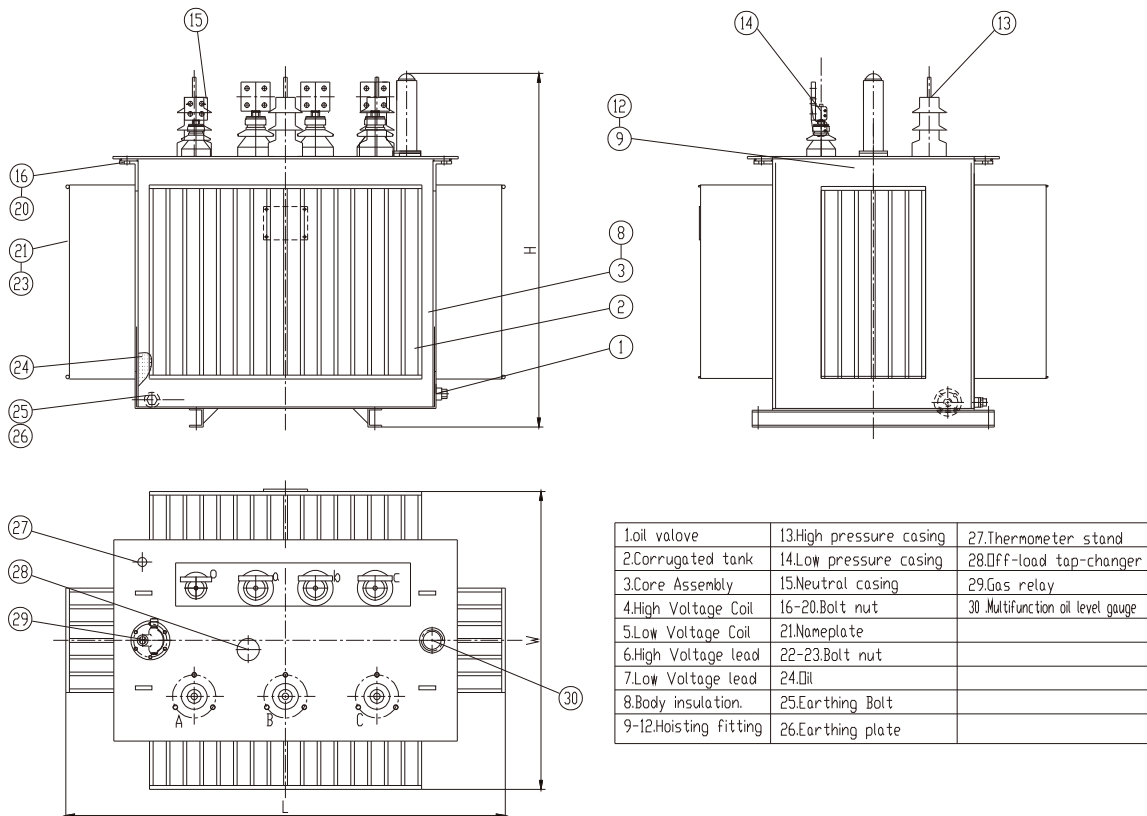
Standard Tank Fittings	Optional Tank Fittings
Oil level indicator	Fluid-filled conservator
Rating and diagram plate	Gas & fluid actuated relay
Off circuit tap changer	Pressure relief device
pressure relief valve	Dehydrating breather
Dial thermometer	Liquid temperature indicator
Earth terminal	Winding temperature indicator
Filling valve	Marshalling box
Drain valve	Vacuum / pressure gauge
Lifting lugs	Plain rollers and axles
Earthing terminals	

CUSTOMER-ORIENTED CREATE VALUE FOR CUSTOMERS
MAKE FRIENDS ALL OVER THE WORLD

TECHNICAL PARAMETERS

7.2kV, 11kV ,17.5kV Oil-immersed Transformer

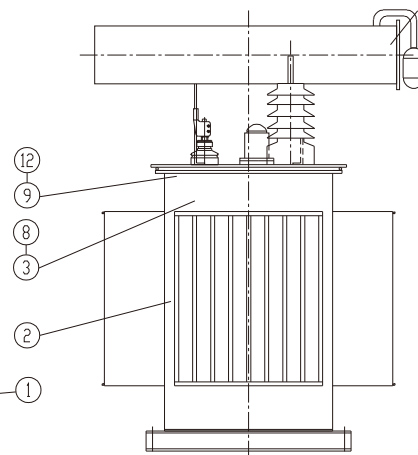
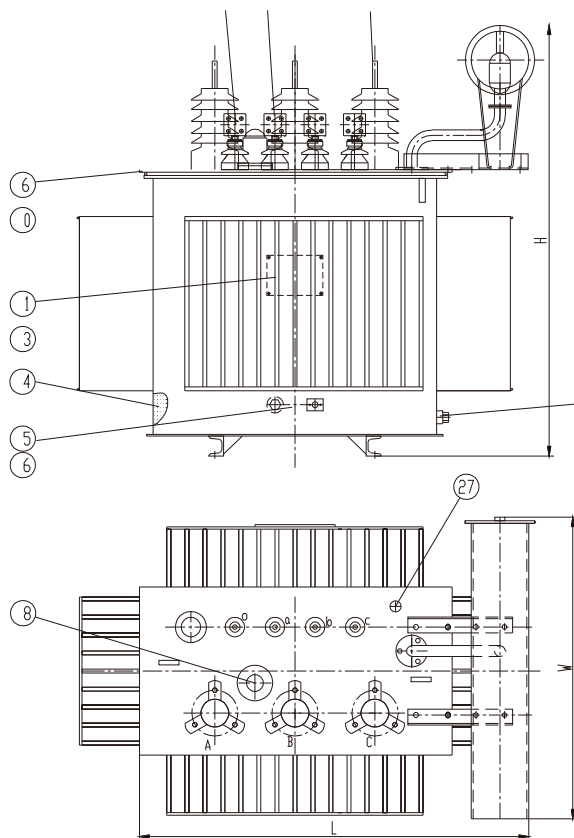
Rating (kva)	High vologe (kV)	High voltage tap range (%)	Low vologe (kV)	connection symbol	No-Load Loss	Load Loss (w)	No-Load current(%)	Short current impedance(%)
30	4.16 7.2 11 13.8	$\pm 5\%$ $\pm 2 \times 2.5\%$	0.4 0.415 0.420 0.44	Dyn11 Yyn0	100	630/600	1.5	4
50					130	910/870	1.3	4
63					150	1090/1040	1.2	4
80					180	1310/1250	1.2	4
100					200	1580/1500	1.1	4
125					240	1890/1800	1.1	4
160					280	2310/2200	1	4
200					340	2730/2600	1	4
250					400	3200/3050	0.9	4
315					480	3830/3650	0.9	4
400					570	4520/4300	0.8	4
500					680	5410/5150	0.8	4
630					810	6200	0.6	4.5
800					980	7500	0.6	4.5
1000					1150	10300	0.6	4.5
1250					1360	12000	0.5	4.5
1600					1640	14500	0.5	4.5
2000					1940	18300	0.4	5
2500					2290	21200	0.4	5



TECHNICAL PARAMETERS

20kV,24kV,30kV, 34.5kV,35kV Oil-immersed Transformer

Rating (kva)	High voltage (kV)	High voltage tap range (%)	Low voltage (kV)	connection symbol	No-Load Loss	Load Loss (w)	No-Load current(%)	Short current impedance(%)
50	24 35	$\pm 5\%$ $\pm 2 \times 2.5\%$	0.4 0.415 0.420 0.44	Dyn11 Yyn0	160	1200/1140	1.3	6.5
100					230	2010/1910	1.1	6.5
125					270	2370/2260	1.1	6.5
160					280	2820/2680	1.0	6.5
200					340	3320/3160	1.0	6.5
250					400	3950/3760	0.95	6.5
315					480	4750/4530	0.95	6.5
400					580	5740/5470	0.85	6.5
500					680	6910/6580	0.85	6.5
630					830	7860	0.65	6.5
800					980	9400	0.65	6.5
1000					1150	11500	0.65	6.5
1250					1400	13900	0.6	6.5
1600					1690	16600	0.6	6.5
2000					1990	19700	0.55	6.5
2500					2360	23200	0.55	6.5
3150					2810	27600	0.5	6.5
4000					3360	33000	0.5	6.5
5000					3970	39100	0.5	6.5

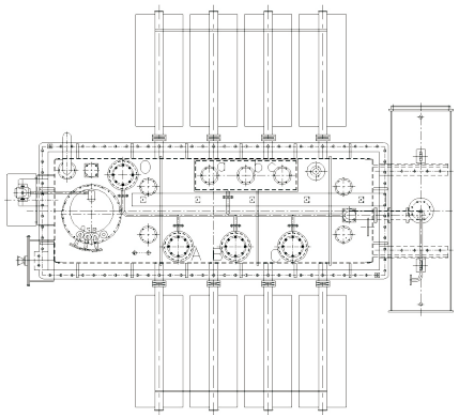
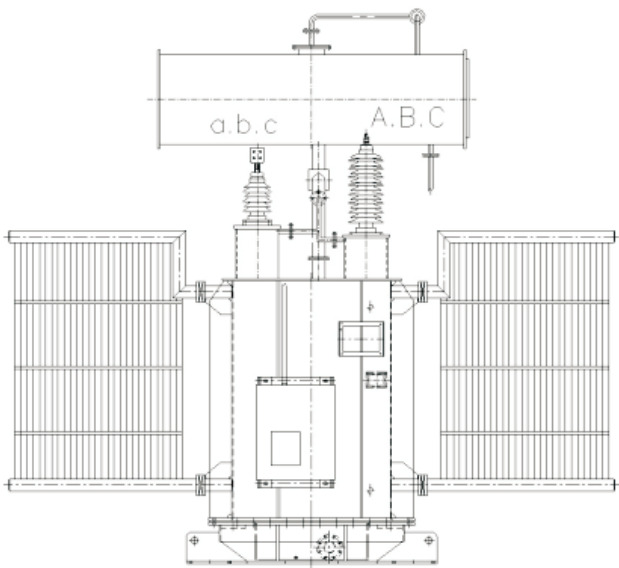
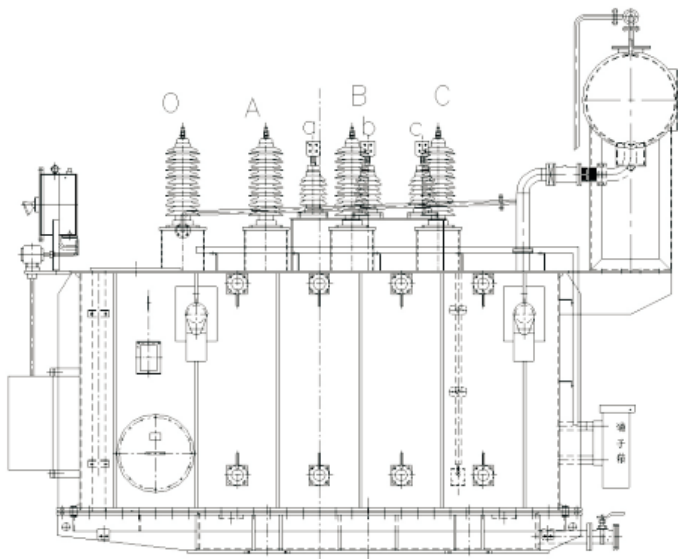


1.Oil valve	13.High pressure casing	28.Off-load tap-changer
2.Corrugated tank	14.Low pressure casing	29.Oil Storage tank
3.Core Assembly	15.Neutral casing	
4.High Voltage Coil	16-20.Bolt nut	
5.Low Voltage Coil	21-23.Nameplate	
6.High Voltage lead	24.Oil	
7.Low Voltage lead	25.Earthing Bolt	
8.Body insulation	26.Earthing plate	
9-12.Hoisting fitting	27.Thermometer stand	

TECHNICAL PARAMETERS

Main transformer with on-load tap changer

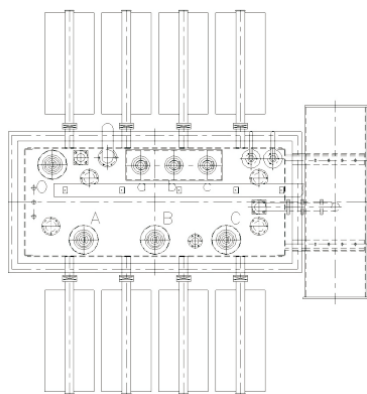
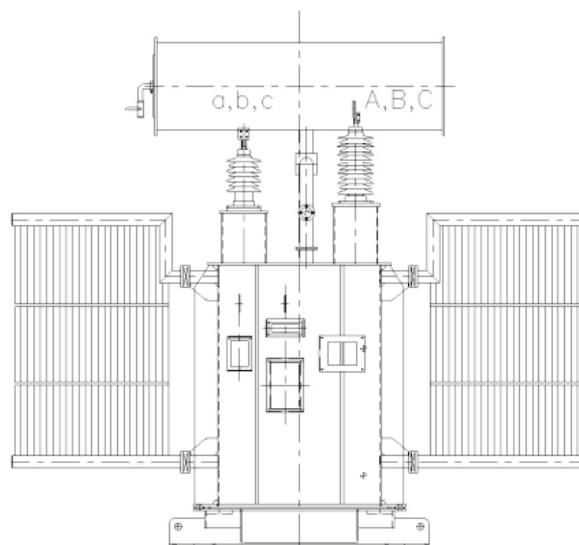
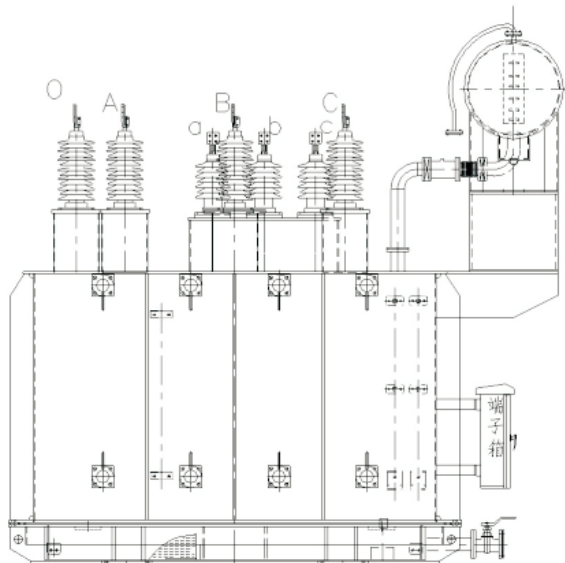
Rating (kva)	High voltage (kV)	High voltage tap range (%)	Low voltage (kV)	connection symbol	No-Load Loss	Load Loss (kw)	No-Load current(%)	Short current impedance(%)
2000	20 22 33 34.5 35 38.5	$\pm 3 \times 2.5\%$	6 6.6 10 11 12 13.8 22	Yd11	2.3	19.2	0.5	6.5
2500					2.72	20.6	0.5	6.5
3150					3.23	24.7	0.5	7
4000					3.87	29.1	0.5	7
5000					4.64	34.2	0.5	7
6300					5.63	36.7	0.5	7
8000					7.87	40.6	0.4	8
10000				YNd11	9.28	48.0	0.4	8
12500					10.9	56.8	0.35	8
16000					13.1	70.3	0.35	8
20000					15.5	82.7	0.3	8
25000					18.3	97.8	0.3	10
31500					21.8	116	0.3	10



TECHNICAL PARAMETERS

Main transformer with off load tap changer

Rating (kva)	High voltage (kV)	High voltage tap range (%)	Low voltage (kV)	connection symbol	No-Load Loss	Load Loss (Kw)	No-Load current(%)	Short current impedance(%)
630	20	$\pm 2 \times 2.5\%$	6	Yd11	0.83	7.86	0.65	6.5
800					0.98	9.4	0.65	6.5
1000					1.15	11.5	0.65	6.5
1250					1.4	13.9	0.55	6.5
1600					1.69	16.6	0.45	6.5
2000					2.17	18.3	0.45	6.5
2500					2.56	19.6	0.45	6.5
3150					3.04	23	0.45	7
4000					3.61	27.3	0.45	7
5000					4.32	31.3	0.45	7
6300					5.24	35	0.45	7
8000				YNd11	7.2	38.4	0.35	8
10000					8.7	45.3	0.35	8
12500					10	53.8	0.3	8
16000					12.1	65.8	0.3	8
20000					14.4	79.5	0.3	8
25000					17	94	0.25	10
31500					20.2	112	0.25	10



TEST



Comprehensive experimental platform for power transformer

Delivery test (or routine test)

These tests verify the electrical performance specified in the contract. And submit a formal test report.

characteristic measurement

- Winding resistance;
- Transformation ratio and vector group;
- Impedance voltage;
- Load loss;
- No load loss and no-load current.

insulation test:

- Power frequency withstand voltage test- Inductive voltage withstand test.
- Partial discharge measurement ensures that the expected service life of transformer less than 5pc is closely related to the initial partial discharge level measured during manufacturing.

Special test

These tests will be arranged at customer's request at customer's expense.

Short circuit test

These tests were carried out on a special test bench in accordance with IEC 60076-5.

A total of three tests were performed on each transformer column, each lasting 0.5 seconds.

Noise level measurement is part of a special test.

- Transformer noise is mainly caused by magneticstriction of magnetic circuit.

- Noise levels can be expressed in two ways:

Sound pressure level L_p , measured in accordance with IEC 551 at 1m from the transformer in no-load operation

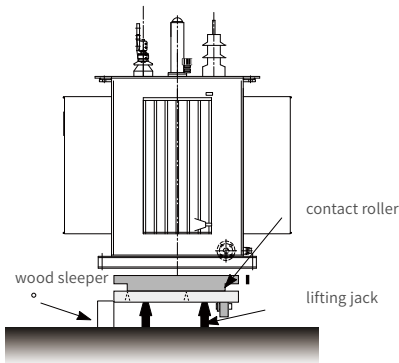
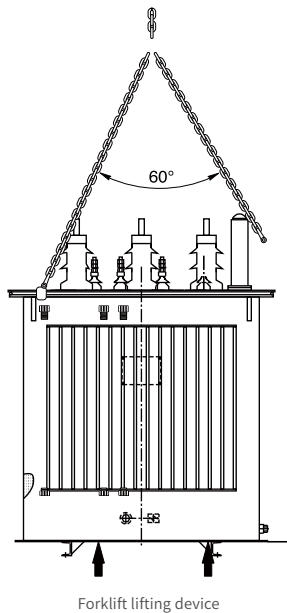


Noise testing chamber



Transformer test

INSTALLATION



carry

Use the 4 lifting lugs of the transformer (it must be lifted vertically, not obliquely); For the transformer with 2 lifting lugs in the center of the top of the shell, use 2 lifting lugs. The included angle formed by the sling shall not be greater than 60° .

First, check the forklift's forking capacity. If appropriate, the fork arm shall be inserted into the base channel after removing the roller.

The transformer with or without enclosure shall be hauled from the base. For this purpose, holes with a diameter of 27mm are opened on each side of the base. It can be dragged from two directions: the axial direction of the base and the direction perpendicular to this axis.

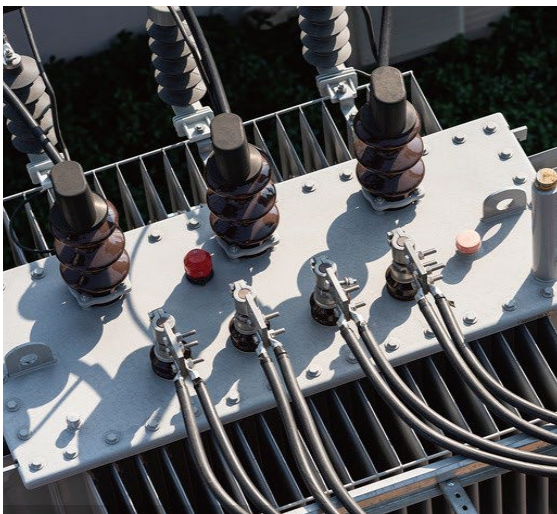
storage

Hunan electric transformer shall avoid being polluted by dripping water and sand dust (such as masonry and sand blasting) during storage. If hunan electric transformer is supplied with a plastic cover, it shall be covered on the equipment during storage. Hunan electric transformer can be stored in an environment with a minimum room temperature of -25°C and a maximum room temperature of 50°C . No gas or conductive dust that seriously affects the insulation of the transformer; No explosion hazard, no corrosion of electrical components

LOGISTICS SHIPMENT



INSTALLATION



INSTALLATION SITE

·The transformer shall be installed in a dry, flat place where water is not easy to enter. The installation site shall have sufficient ventilation to ensure that all heat of the transformer can be dissipated

·No load shall be supported anywhere on the enclosure except the power supply cable of the transformer. In addition to correctly installing the connecting cable according to the relevant drawings, facilities or accessories not supplied by the manufacturer or without permission are not allowed to be installed in the shell, otherwise, the user shall bear the risk. For the transformation, connection and installation of any accessories, please consult our technicians.

·The embedded parts, reserved holes, etc. have been cleaned and adjusted to meet the design requirements.

·Protective mesh doors, railings, and other safety facilities are complete, and ventilation and fire protection facilities are installed.

INSTALLATION

INSPECTION BEFORE OPERATION

1. The transformer body and accessories are free from defects, oil leakage, and kept clean.
2. Is the nameplate, voltage level, wiring group, tap position and operation mode, cooling conditions, etc. of the transformer consistent with the actual situation.
3. Whether the connection of the incoming and outgoing lines is firm and reliable, whether the phase color of the transformer casing is correct, and whether the transformer casing is reliably grounded.
4. The tap position of the transformer is in the normal voltage range.
5. Is the valve between the oil conservator and the gas relay open; Whether the oil level and color of the oil level gauge are normal; Is there any gas in the gas relay protector.
6. Check whether the transformer respirator is unobstructed and whether the silicone of the moisture absorber is ineffective and discolored.
7. Is the pressure relief valve blocked and functioning properly.
8. Measure the insulation resistance of the transformer winding and bushing with a megohmmeter, and the insulation resistance value should not be less than 70% of the product's factory test value.



INSPECTION IN OPERATION

Under normal use and environmental conditions, check the transformer once a year, dust around the transformer and accessories, and fasten lead terminals, pins, grounding screws, connecting bus screws, etc.

PRE-SALE SERVICE:

1. ISO certified excellent Manufacturer
2. Third-party authoritative certifications: CE, CB, UL, CSA etc
3. Flexible payment: T/T, LC,
4. Sufficient inventory, fast delivery time and long validity of the price
5. The whole process of picture tracking can be realized in production and transportation
6. Experienced professional sales team and a strong technical team
7. Sincerely invite customers to visit the company for guidance

AFTER-SALES SERVICE:

1. If there is any quality problem after receiving the goods, you can return the goods free of charge or ship new products
2. We provide our customers with a 1-year product warranty
3. Provide 24-hour, 365-day technical guidance worldwide
4. The VIP customers enjoy our promotional activity
trained by management consultants, is able to provide professional solutions for customers.
4. Our technical team is ready for 24-hour technical support worldwide.
5. Our customer service team ensures on time delivery.



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