



Your sincerely manufacturer and supplier of power transformers,switchgears,auto-recloser,metering box,drop out fuses,solar panel,vector inverter,diesel generator...



■ Company profile:

WenZhou ENBOLI Electric co., Ltd was established in 1998. The company's existing industrial park is 30 acres and the factory area is 70,000 square meters. Its subsidiaries are engaged in power transformers below 110KV, high-voltage components below 110KV, complete sets of electrical appliances below 35KV, power fittings, wires and cables, fuses, distribution boxes and other power transmission and distribution products.



The company has KEMA international certification, ISO9001 quality management system certification, IOS14001 environmental management system certification, OHSAS18001 occupational health and safety management and other system certifications, and has passed the International Electrotechnical Association (IEC) CE, American TUL and other international system certifications.

The company has 1,200 employees, including 50 managers and 12 technicians. The annual production amount reaches 380 million. The key processes of the products use automatic monitoring instruments and equipment, and advanced SAP management software is introduced to digitally manage the production and operation process.





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Production workshop

The first-class talent, first-class technology, fist-dass facilites and a first-class management system forward a first-class production line. In order to ensure a highly efficient operation of the first production line, the company adopts multimodes and multi-means of management to enhance the working efficiency. We train the technical personnel to perfect equipment operation and advance automatic technology skills. We also actively implement the "6S" policy to energize logistics management and the effectiveness of each post, forming a common awareness of efficient and high-quality production, so as to promote the development of economic system of our company.



Assembly workshop



Core Workshop



Winding Workshop



H.V Testing Hall



DRY TYPE MINING EXPLOSION ISOLATION MOBILE TRANSFORMER SUBSTATION

■ Features of Products

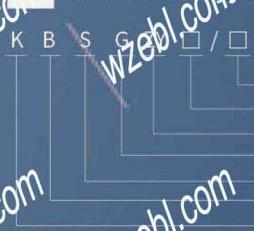
The mineral product separates the explosive migration transformer substation by the mineral product with the do-like transformer. the high-pressure load switch either the high pressure and the low pressure switch or the low pressure guarantees is composed. Has the leakage, the leakage, the overload, short-circuits, the performance.

KBSGZY series dry-type mining explosion isolation mobile transformer substation is a kind of movable whole set distribution and transformation device. It is suitable for normally mines filled with firedamp mixed gas, grime and explosive gas, but also the gas and steam environment that can corrode metal and insulation.

■ Standard

JB3955-1993; GB1094.1~2-1996; GB12173-2008; GB1094.3-2003; GB1094.5-2008

■ Transformer Type Meaning



- Rated voltage
- Rated capacity
- Movable transformer substation
- Dry type
- Three-phase
- Explosion isolation type
- Mining use



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Using environment and working condition

1. The elevation is less than 1000m, the special environment gives the explanation in addition
2. Ambient temperature:
Highest temperature +40°C ;
Lowest temperature -5°C ;
Maximum daily average temperature +30°C ;
Maximum annual average temperature +20°C ;
Lowest outdoor air temperature-5°C ;
3. The relative humidity is less than 95% (When the air temperature is 25°C);
4. In has the methane and the coal dust, also has the explosion hazard in the mine pit;
5. Does not have, the vibration as well as with the gradient does not surpass in 15° environment;
6. Does not have sufficiently the dipping and the insulation gas and the steam;
7. No-water drop place;
8. Power supply voltage profile is approximate to the sine wave;
9. The three-phase supply voltage approximate is symmetrical;(When extracts this condition stipulation, separate consultation)

KBSGZY series 6kV mining explosion isolation dry type movable transformer substation technical data

Rated capacity (kVA)	HV/LV (kV)	Vector group	Impedance voltage	Loss (kW)		No-load current (%)	(L×W×H) Outline dimension (mm)	Weight (kg)	Gauge (mm)
				No-load	Load				
50	6±5% 0.693/0.4 1.2/0.693	Yy0 (a11)	4	350	550	2.5	3290×950×1160	2350	600
100			4	520	920	2.5	3580×950×1430	2600	
200			4	820	1550	2	3710×950×1445	3050	
250			4	950	1800	2	3820×965×1530	3300	
315			4	1100	2150	1.8	3870×975×1540	3500	
400			4	1300	2600	1.8	3890×995×1550	3600	
500			4	1500	3100	1.5	3910×1050×1570	4100	
630			4	1800	3680	1.5	4085×1080×1450	5360	
800	1.2 3.45	Yy0 (d11) Dyn11	4	2050	4500	1.0	4085×1080×1510	5680	600 900
1000			4	2350	5400	1.0	4100×1130×1540	6500	
1250			4	2750	6500	1.0	4190×1160×1610	6700	
1600			4	3350	8000	0.8	4190×1200×1750	9230	
2000			4.5	3800	9500	0.6	4570×1220×1790	9930	
2500			5	4500	10600	0.6	4580×1230×1850	13830	
3150			5.5	5300	12500	0.6	4820×1260×1880	17250	
4000			6	6100	14000	0.6	4930×1400×1920	19810	

KBSGZY series 11kV mining explosion isolation dry type movable transformer substation technical data

Rated capacity (kVA)	HV/LV (kV)	Vector group	Impedance voltage	Loss (kW)		No-load current (%)	(L×W×H) Outline dimension (mm)	Weight (kg)	Gauge (mm)
				No-load	Load				
50	10±5% 0.693/0.4 1.2/0.693	Yy0 (d11)	4	390	680	2.5	3200×950×1295	2400	600
100			4	560	1050	2.5	3580×950×1430	2800	
200			4	950	1800	2	3990×950×1525	3200	
250			4	110	2100	2	4020×950×1540	3500	
315			4	1300	2500	1.8	4050×980×1555	3800	
400			4	1500	3000	1.8	4200×1050×1610	4000	
500			4	1750	3500	1.5	4200×1080×1610	4300	
630			4	2000	4100	1.5	4370×1080×1450	5400	
800	1.2 3.45	Yy0 (d11) Dyn11	4	2300	5100	1.2	4370×1080×1600	5700	600 900
1000			4.5	2600	6100	1.2	4400×1110×1675	6900	
1250			4.5	3100	7400	1.0	4480×1125×1740	7300	
1600			5	3800	8500	1.0	4640×1245×1830	9300	
2000			5	4500	9700	0.7	4665×1250×1900	11900	
2500			5.5	5200	10800	0.7	4870×1390×1900	14330	
3150			5.5	6100	12800	0.7	4880×1390×1900	19350	
4000			6	7000	15000	0.7	5210×1450×1900	21910	



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110KV LEVEL THREE-PHASE ON LOAD TAP-CHANGING ELECTRIC POWER TRANSFORMER

Summary

We have adopted series of important reforms on the 110kV level three-phase oil-immersed on-load tap-changing transformer referring material, process and structure. The transformer has the features of small size, light weight, high efficiency, low loss, low noise, reliable operation etc. which can reduce a large amount of power network loss and operation expenses with significant economic benefits. It is suitable for power plant substation, heavy section plant or enterprises etc.

Model and meaning



Protective mode (Usually don't mark, TH-hygro-thermal, TA-dry-hot)
Rated high voltage (kV)
Rated Power (kVA)
Design serial number (9,10.....)
Tap-changing mode (Don't mark for NLTC, Z-OLTC)
Conductor mode (Don't mark copper conductor, L-Aluminum conductor)
Coil number (Don't mark two windings, S-three windings, F-splitting windings)
Circulation mode (Don't mark natural circulation, P-Forced circulation)
Cooling method (J-Don't mark self-cooling, F-Oil-immersed air force cooling, S-Water cooling)
Phase number (D-Single phase, S-Three phase)



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Main 110kV level three-phase on-load tap-changing power transformer technical parameters

Rated capacity (kVA)	Voltage combination		Vector Group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short circuit impedance (%)	
	High voltage (kV)	Low voltage (kV)						
6300	110±2x2.5%	6.3	YNd11	7.40	35.0	0.62	10.5	
8000				8.90	42.0	0.62		
10000				10.5	50.0	0.58		
12500				12.4	59.0	0.58		
16000		6.6		15.0	73.0	0.54		
20000				17.6	88.0	0.54		
25000				20.8	104	0.50		
31500				24.6	123	0.48		
40000	115±2x2.5%	11		29.4	148	0.45	12-14	
50000				35.2	175	0.42		
63000				41.6	208	0.38		
75000				47.2	236	0.33		
90000		13.8		54.4	272	0.30		
120000				67.8	337	0.27		
150000				80.1	399	0.24		
180000				90.0	457	0.20		

Note 1:-5% tapping position is maximum current tapping.

Note 2: For boost transformer, it is advisable to adopt non-tapping structure. If there is any requirement for operation, sub-connectors can be set up.

Note 3: When the average annual load rate of transformer is between 42% and 46%, the maximum operating efficiency can be obtained by using the loss value in the table.

6300kVA~63000kVA three-phase three-winding NLTC power transformer

Rated capacity (kVA)	Voltage combination			Vector group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short-circuit impedance (%)	
	High voltage (kV)	Medium voltage (kV)	Low voltage (kV)					Step up	Step down
6300	110±2x2.5%	33	6.3	YN _n 0d11	8.90	44.0	0.66	H-M 17.5~18.5	H-M 10.5
8000					10.6	53.0	0.62		
10000					12.6	62.0	0.59		
12500					14.7	74.0	0.56		
16000					17.9	90.0	0.53		
20000					21.1	106	0.53		
25000					24.6	126	0.48		
31500					29.4	149	0.48		
40000					34.8	179	0.44		
50000					41.6	213	0.44		
63000					49.2	256	0.40		

Note 1: High, medium and low voltage winding capacity allocation is (100/100/100)% high, medium and low.

Note 2: The connection group label can be YNd11y10 as required.

Note 3: According to the user's requirement, medium voltage can be selected as different from the voltage value in the meter or with taps.

Note 4: -5% tapping position is maximum current tapping.

Note 5: For boost transformer, it is advisable to adopt non-tapping structure. If the operation requires, tapping can be set up.

Note 6: When the average annual load rate of transformer is about 45%, the maximum operating efficiency can be obtained by using the loss value in the table.



III 6300kVA~63000kVA three-phase two winding OLTC power transformer

Rated capacity (kVA)	Voltage combination		Vector Group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short circuit impedance (%)
	High voltage (kV)	Low voltage(kV)					
6300	1.0±8x1.25%	6.3 6.6 10.5 11 21	YNd11	8.00	35.0	0.64	10.5
8000				9.60	42.0	0.64	
10000				11.3	50.0	0.59	
12500				13.4	59.0	0.59	
16000				16.1	73.0	0.55	
20000				19.2	88.0	0.55	
25000				23.7	104	0.51	
31500				27.0	123	0.51	
40000				32.3	156	0.46	12-18
50000				38.2	194	0.46	
63000				45.4	232	0.42	

Note 1:On-load tap-changer, temporarily providing step-down structure products.

Note 2:According to user's requirements, other voltage combination products can be provided.

Note 3:- 10% tapping position is maximum current tapping.

Note 4:When the average annual load rate of transformer is between 45% and 50%, the maximum operating efficiency can be obtained by using the loss value in the table.

III 6300kVA~63000kVA three phase two winding OLTC power transformer

Rated capacity (kVA)	Voltage combination			Vector Group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short circuit impedance (%)
	High voltage (kV)	Medium voltage (kV)	Low voltage(kV)					
6300	3.10±8x1.25%	33 36 37 38.5	6.3 6.6 10.5 11 21	YNyn0d11	9.60	44.0	0.76	H-M 10.5 H-L 18-19 M-L 6.5
8000					11.5	53.0	0.76	
10000					13.6	62.0	0.71	
12500					16.1	74.0	0.71	
16000					19.3	90.0	0.67	
20000					22.8	108	0.67	
25000					27.0	126	0.62	
31500					32.1	149	0.62	
40000					38.5	179	0.58	
50000					45.5	213	0.58	
63000					54.1	254	0.53	

Note 1:On-load tap-changer, temporarily providing step-down structure products.

Note 2:High, medium and low voltage winding capacity allocation is (100/100/100)% high, medium and low.

Note 3:The connection group label can be YNd11y10 as required.

Note 4:- 10% tapping position is maximum current tapping.

Note 5:According to user's requirement, medium voltage can be selected as different from the voltage value in the meter or with taps.

Note 5:When the average annual load rate of transformer is about 47%, the maximum operating efficiency can be obtained by using the loss value in the table.



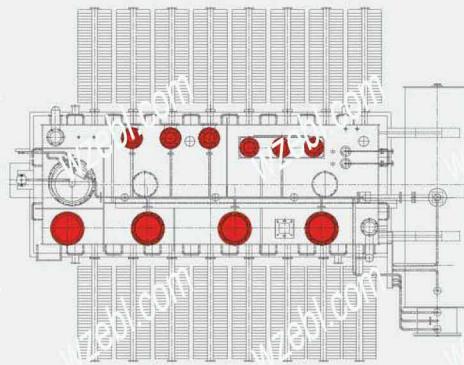
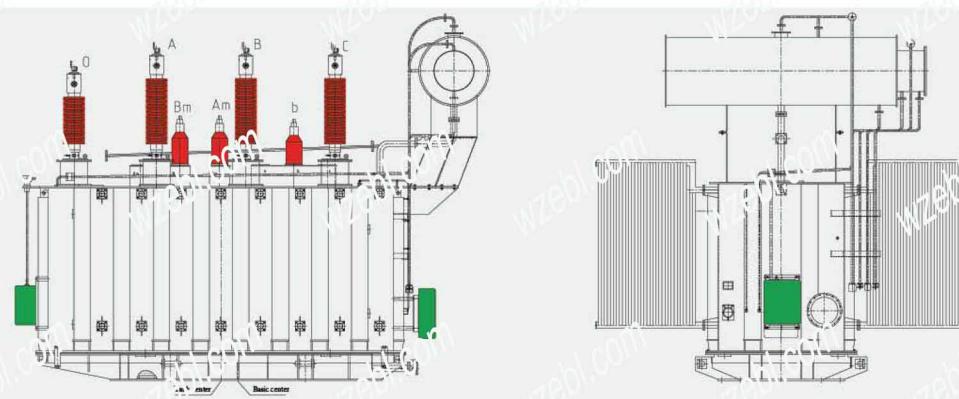
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III 6300kVA~63000kVA three-phase two winding OLTC power transformer

Rate capacity (kva)	Voltage combination		Vector Group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short circuit impedance (%)
	High voltage (kV)	Low voltage (kV)					
6300	110±8x1.25%	6.3 6.6 10.5 11 21	YNd11	8.00	35.0	0.64	10.5
8000				9.60	42.0	0.64	
10000				11.3	50.0	0.59	
12500				13.4	51.0	0.59	
16000				16.1	73.0	0.55	
20000				19.2	88.0	0.55	
25000				22.7	104	0.51	
31500				27.0	123	0.51	
40000				32.3	156	0.46	
50000				38.2	194	0.46	12-18
63000				45.4	232	0.42	

III Main 110kV level three-phase on-load tap-changing power transformer technical parameters



Specification of power transformer could be customized.

Ordering instructions

Consumer needs to offer the following technical parameters when ordering:

Model, Product, rated volume, system voltage, voltage combination, connection symbol labeling, short circuit impedance, no-load loss on-load loss, no-load current, rated frequency, cooling method, altitude, working environment and other requirements. Serial number.



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220kV THREE-PHASE ON-LOAD VOLTAGE REGULATING TRANSFORMER

Summary

220kV three-phase oil immersed on-load voltage regulating transformer brings about a series of major transformations in terms of material, technique, and construction. It is characteristic of compact construction, low weight, high efficiency, low loss, low noise, and reliability of performance. The product can reduce considerable losses on grid and operational costs and extend distinct economic efficacy.

The product meets following national standards: GB1094.1-2013 Power transformers Part 1: General; GB1094.2-2013 Power transformers Part 2: Temperature rise; GB1094.3-2008 Power transformers Part 3: Insulation levels, dielectric test and external clearances in air; GB1094.5-2003 Power transformers Part 5: Ability to withstand short-circuit; GB/T6451-2015 Specific requirements for three-phase oil immerse power transformer.

Model and meaning



Protection code (No label generally; TH wet and hot; TA dry and hot)
Power voltage class of high voltage winding

Rated capacity (kVA)

Design sequence number (1, 2)

Method of regulation (No label for non-exciting regulation, Z - on-load regulation)

Lead material (no label for copper wire; L aluminum wire)

No. of winding (No label for double-winding; S-three-winding, F double-split)

Mode of circulation (No label for natural circulation, P-forced circulation)

Mode of cooling (J no label for self-cooling, F immerse air cooling, W water cooling)

N-Phase (D single phase, S three-phase)

Main 220kV level three-phase on-load voltage regulating power transformer technical parameters

31500kVA~420000kVA three-phase duplex-winding non-field excitation changing power transformer

Rated capacity (kVA)	Voltage combination		Vector group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short-circuit impedance (%)	
	High voltage (kV)	Low voltage (kV)						
31500	220±2x2.5% 242±2x2.5%	6.3 6.6 10.5 11	Yn11	28	128	0.56	12~14	
40000				32	149	0.56		
50000				39	179	0.52		
63000				46	209	0.52		
75000		10.5 13.8		53	237	0.48		
90000				64	273	0.44		
120000		10.5、11、13.8 15.75 18、20		75	338	0.44		
150000				89	400	0.40		
160000				93	420	0.39		
180000				102	459	0.36		
240000		15.75 18 20		128	538	0.33		
300000				154	641	0.30		
360000				173	735	0.30		
370000				176	750	0.30		
400000				187	795	0.28		
420000				193	824	0.28		

Note 1 Transformers with rated capacity less than 31500 kVA and other voltage combinations can also be provided as required.

Note 2 Transformers with low voltage of 35 kV or 38.5 kV can also be provided as required.

Note 3 The non-splitting structure is preferred. If there is any requirement for operation, sub-connectors can be set up.

Note 4 When the average annual load rate of transformer is between 45% and 50%, the maximum operating efficiency can be obtained by using the loss value in the table.

31500kVA~300000kVA three-phase three-winding non-field excitation changing power transformer

Rated capacity (kVA)	Voltage Combination			Vector group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short-circuit impedance(%)		
	High voltage (kV)	Med-ium voltage (kV)	Low voltage (kV)					Step up	Step down	
31500	220±2x2.5% 230±2x2.5% 242±2x2.5%	69 115 121	6.3、6.6 10.5、21 36、37 38.5	Yyn0d11	32.0	153	0.58	H-M 22~24 H-L 12~14 12~14	H-M 12~14 H-L 22~24 M-L	
40000					38.0	183	0.50			
50000					44.0	216	0.44			
63000					52.0	257	0.44			
90000					68.0	333	0.39			
120000			10.5、13.8 21、36、37 38.5		84.0	410	0.39	M-L 7~9	M-L 7~9	
150000					100	487	0.33			
180000					113	555	0.33			
240000					140	684	0.29			
300000					163	807	0.24			

Note 1: The capacity allocation of load loss in the table is (100/100/100)%. The capacity allocation of boost structure can be (100/50/100)%. The capacity allocation of Buck structure can be (100/50/100)% or (100/50/100)%.

Note 2: Transformers with rated capacity less than 31500 kVA and other voltage combinations can also be provided as required.

Note 3: Transformers with low voltage of 35 kV can also be provided as required.

Note 4: Priority should be given to non-splitting structure. If the operation requires, splitting can be set.

Note 5: When the average annual load rate of transformer is between 45%, the maximum operating efficiency can be obtained by using the loss value in the table.



III 31500kVA~180000kVA three-phase duplex-winding on-load tap changing power transformer

Rated capacity (kVA)	Voltage combination		Vector group	No-load loss (kW)	Load loss (kW)	No load current (%)	Short-circuit impedance (%)	
	High voltage (kV)	Low voltage(kV)						
31500	220±8x1.25% 230±8x1.25%	6.3、6.6 10.5、11、21 36、37 38.5	YNd11	30.0	128	0.57	T2~14	
40000				36.0	149	0.57		
50000				42.0	179	0.53		
63000				50.0	209	0.53		
90000		10.5、11、21 36、37 38.5		64.0	273	0.45		
120000				79.0	338	0.45		
150000				92.0	400	0.41		
180000				108.0	459	0.38		
120000	36 69	10.5、11、21 36、37 38.5		81.0	337	0.45		
150000				96.0	394	0.41		
180000				112	451	0.38		
240000				143	560	0.30		

III 31500kVA~240000kVA three-phase three-winding on-load tap changing power transformer

Rated capacity (kVA)	Voltage combination			Vector group	No load loss (kW)	Load loss (kW)	No load current (%)	Capacity assignment	Short-circuit impedance (%)
	High voltage (kV)	Middle voltage (kV)	Low voltage(kV)						
31500	220±8x1.25% 230±8x1.25%	6.3 6.6 10.5 11 21 33 36 37 38.5	YNyN0d11	35.0	153	0.63	100/100/100 100/50/100 100/100/50	H-M 12~14 H-L 22~24 M-L 7~9	
40000				41.0	183	0.50			
50000				48.0	216	0.60			
63000				56.0	257	0.55			
90000		69 10.5 121			73.0	333	0.44		
120000		10.5 11 21 33 36 37 38.5		92.0	410	0.44			
150000				108	487	0.39			
180000				124	598	0.39			
240000				154	741	0.35			

Note 1 The data listed in the table are applicable to depressurized structural products, and boost structural products can also be provided as required.

Note 2 Transformers with low voltage of 35 kV can also be provided as required.

Note 3 When the average annual load rate of transformer is between 45% and 50%, the maximum operating efficiency can be obtained by using the loss value in the table.

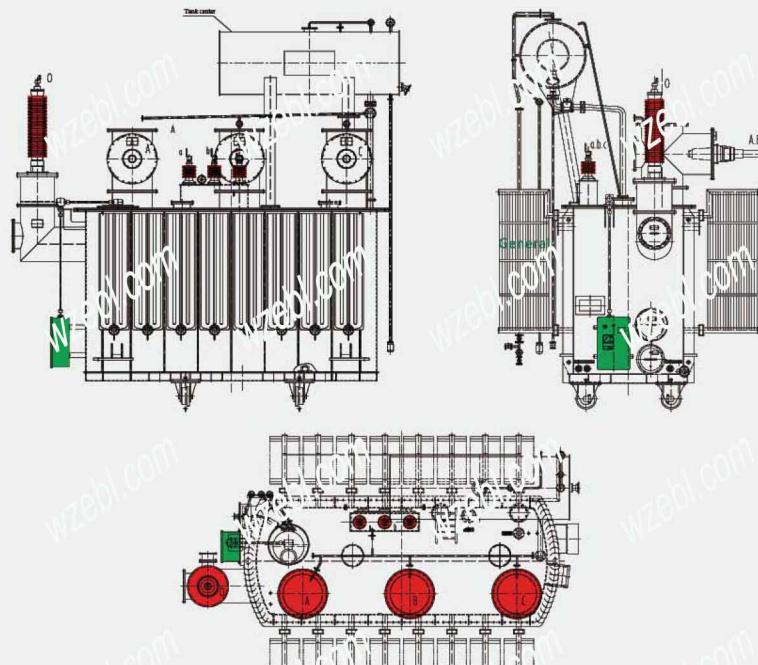
III 31500kVA~240000kVA three-phase three-winding on-load self-coupled power transformer

Rated capacity (kVA)	Voltage combination			Vector group	No-load loss (kW)	Load loss (kW)	No load current (%)	Capacity assignment	Short-circuit impedance (%)
	High voltage (kV)	Med-ium voltage (kV)	Low voltage(kV)						
31500	220±8x1.25% 230±8x1.25%	115 121	6.3	YNyn0d11	20.0	102	0.44	100/100/50	H-M 8~11 H-L 28~34 M-L 18~24
40000			6.6		24.0	125	0.44		
50000			10.5		23.0	149	0.39		
63000			21		33.0	179	0.39		
90000			36		40.0	234	0.33		
120000			37		51.0	292	0.33		
150000			38.5		60.0	346	0.28		
180000			10.5		68.0	398	0.28		
240000			21		83.0	513	0.24		

- Products exclusive in the product list may also be provided upon user requirements. Performance of the products will be customized.
- Medium voltage device could select voltage value or tap other than those specified in the table upon user requirement. High voltage tapping may choose asymmetrical regulating tapping.
- Short circuit impedance may choose value other than those defined in the table.
- Final size is based on drawings of signed contract.

IV Construction

220kV three-phase duplex winding on-load voltage regulating transformer



Specification of rectifier transformer could be customized.



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