



Oil Type Transformer



Oil-immersed
Transformer (up to 35kV)



Oil-immersed
Transformer (66 to 230kV)



Oil-immersed
Transformer (330 to 500kV)



Silverstone Electric, Passion, Wisdom, Action and Quality

www.silverstone-electric.com



Silverstone's main function is to service the electrical industry by supplying transmission line and transformation equipment to various contractors, municipalities, power utilities, Telecom companies, and other institutions locally and abroad.

At Silverstone we have the factories, the knowledge and the experience needed to serve the OEM needs from our customers, we aim to be "Your Premium Electric Supplier" with a strong desire to cater quality products comes in a reasonably low price. Proudly to say that Silverstone's stringent quality assurance systems have gratified to achieve total customized customer satisfaction.

Scope of our products:

Fuse Cutout | Drop Out Fuse | Lightning Arrester | Surge Arrester | Composite Insulators | Porcelain Insulators | Disconnect Switch | Heat Shrink | Cable Accessory | Electric Components | Pad Mount Transformer | Distribution Transformer | Switchgear | Relay Protection Panel | Battery Charger Panel

* Some parameters quoted in our catalogues like the voltage level, frequency and standards are based on China State Grid technical requirements. Products for exportation will comply with IEC Standards or according to customer's requirements.

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Features of 220kV~500kV Oil-immersed Transformers

1. Low loss, low noise

The core laminations are composed of imported high quality grain-oriented cold-rolled silicon steel sheets with miter joints and the joints are lapped with 5 steps, thus ensuring low loss and low noise. The inside of the tank is lined with shields. Measures have also been taken for metallic structural parts located in high magnetic field, to reduce stray loss, thereby the total load loss, and to relieve local overheating.

2. Safe and reliable service

Reliability of the products is the everlasting objective of Silverstone Electric and we ensure that the transformers can be operated under long service voltage and also under short time overvoltage. Appropriate cooling arrangement and relatively low current density ensure that the winding temperature rise is much lower, at least 5K, than specified in the national standard. The mechanical stress in winding conductors during short circuit is also kept well below safe limit. Together with technological procedures during manufacture and other means to elevate mechanical strength, 220kV~500kV transformers that we supplies could withstand severe short circuit in all cases during service.

3. Easy erection and maintenance

To minimize erection work at site, Silverstone Electric transformers are so fabricated that lifting the active part out of the tank for inspection after arrival at site is not mandatory. Besides, all components to be mounted on the transformer at site have been pre-assembled before dispatch, and all secondary wirings have been laid down into conduits on the transformer and connected to the terminals in the control cabinet or terminal box. Natural oil circulation and forced air cooling (ONAF) are generally adapted in our transformers below 480MVA, and 70% nameplate rating can be achieved in case the fans are out of service. Natural oil circulation is adapted in transformers below 240MVA. Little maintenance work is required for the cooling devices.

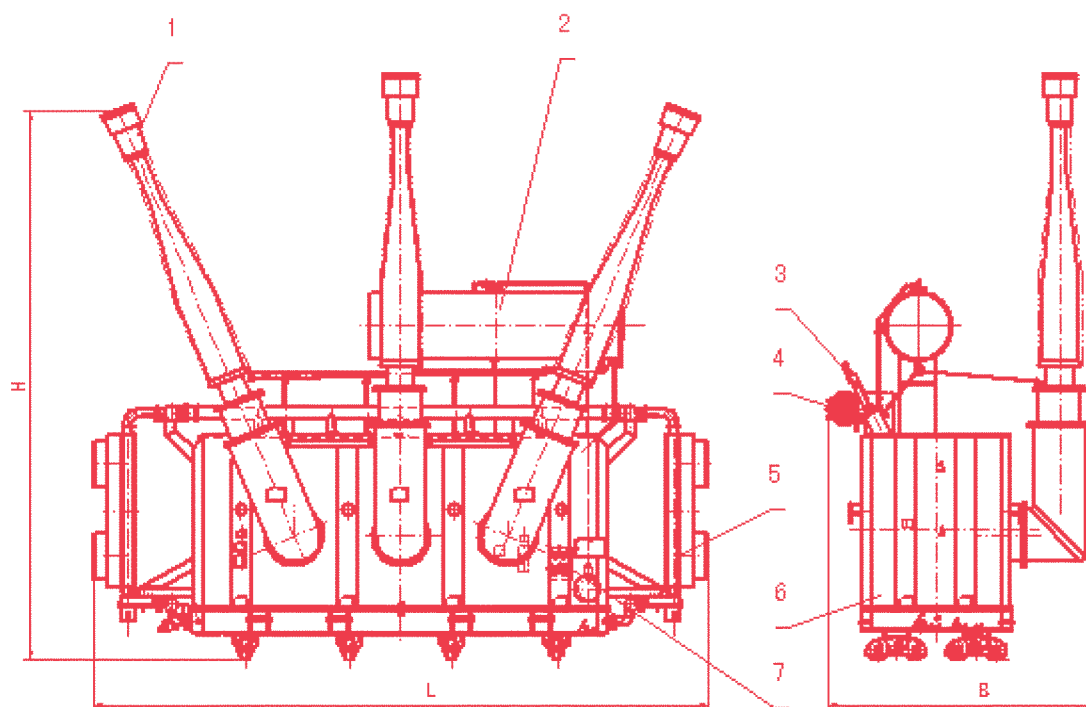
4. Careful fabrication

Vertical winding machines with tension device are used for winding, so that the windings can be wound tightly and therefore mechanically strong as a whole. All insulation parts subjected to mechanical stress during short circuit, such as spacers in windings are made with T4 densified pressboard to reduce shrinkage. Individual windings are dried first, followed by a second drying of the assembled phase block. After core and coil assembly, Vapor Phase Drying (VPD) is once again carried out to ensure that all insulation parts are thoroughly dried and no further shrinkage is possible to occur during service. All the high voltage terminals and nearby metallic structural parts are rounded up to prevent partial discharge. High voltage bushing terminals are contained within turrets, and kept concentric with the turret. All the leads are properly crimped and metallized to be rounded up. VPD process insures that the moisture content within the transformer is kept at a very low level, and the core and coil assembly is once more cleaned by condensed vapor flowing down the surfaces. The fabricated tanks are relieved from welding stress and shot-blasted integrally, so as to be free from oil leakage trouble and to give the tank a clean, pleasant looking appearance.

500kV

Technical Data Table of Three-phase Two-winding Off-circuit Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)		CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)
	H.V	L.V				
S(F)(P)-240000	$500 \pm 2 \times 2.5\%$ $525 \pm 2 \times 2.5\%$ $550 \pm 2 \times 2.5\%$	13.8 15.75 20 24	YNd11	490	110	14~16
SF(P)-360000				660	148	
SF(P)-400000				720	160	
SF(P)-480000				820	183	
SFP-600000				960	215	
SFP-720000				1120	245	

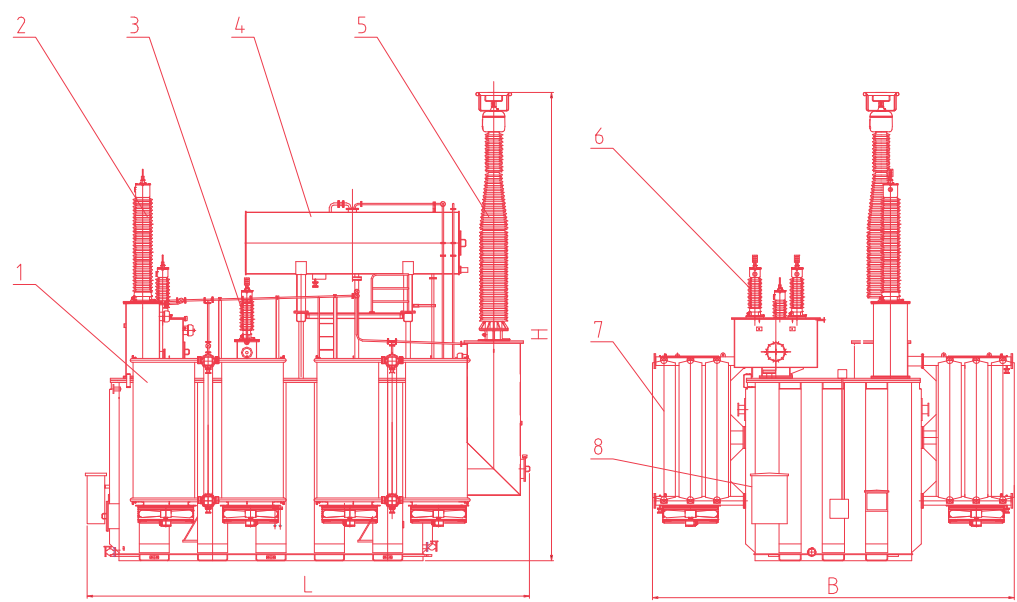


1. H.V. Bushing
2. Conservator
3. Neutral Bushing
4. L.V. Bushing
5. Cooler
6. Transformer Body
7. Control Cabinet

500kV (Cont...)

Technical Data Table of Single-phase
Three-winding Off-circuit Tap Changing Autotransformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
ODS(F)(P) S-167000	500/√3 525/√3 550/√3	242/√3 ± 2 x 2.5%	15.75	Ia0i0	280	45	12~20	34~46	20~30
ODS(F)(P)S-250000			35		380	55			
ODS(F)(P)S-334000			38.5		450	68			
ODS(F)(P)S-400000			63		510	75			

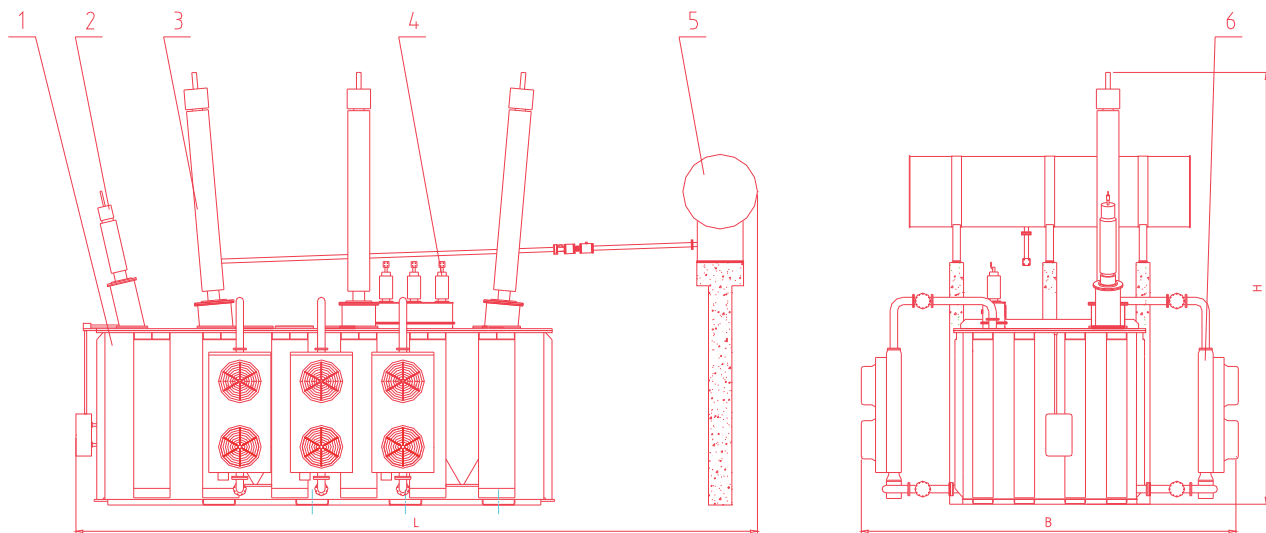


- 1. Transformer Body
- 2. M.V Bushing
- 3. Neutral Bushing
- 4. Conservator
- 5. H.V Bushing
- 6. L.V Bushing
- 7. Radiator
- 8. Control Cabinet

330kV

Technical Data Table of Three-phase
Two-winding Off-circuit Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)		CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)
	H.V	L.V				
S(F)(P)-150000	345 ± 2 x 2.5% 363 ± 2 x 2.5%	13.8 15.75 20	YNd11	380	80	14~16
S(F)(P)-180000				435	88	
S(F)(P)-240000				540	96	
SF(P)-360000				680	135	
SF(P)-400000				720	158	
SFP-720000				1120	245	

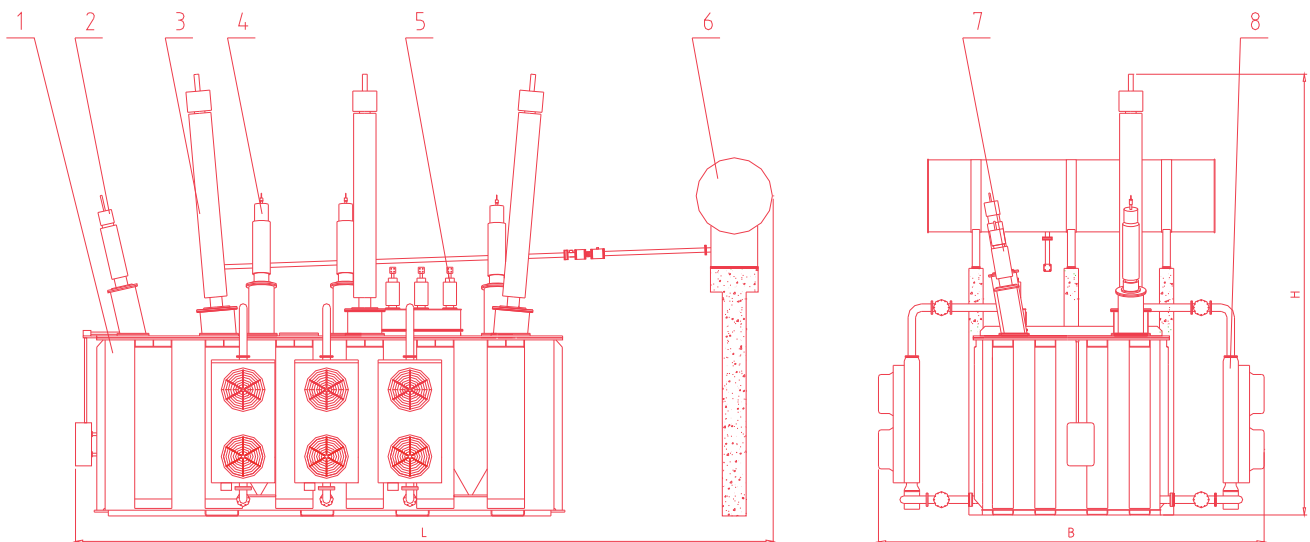


- 1. Transformer Body
- 2. H.V. Neutral Bushing
- 3. H.V. Bushing
- 4. L.V. Bushing
- 5. Conservator
- 6. Cooler

330kV (Cont...)

Technical Data Table of Three-phase Three-winding Off-circuit Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
S(F)(P)S-150000	330±2x2.5% 345±2x2.5%	121	13.8 15.75 20	YNyn0d11	450	90	24~26	14~15	8~9
S(F)(P)S-180000					520	98			
S(F)(P)S-240000					650	105			
SF(P)S-360000					820	150			
SF(P)S-400000					860	175			

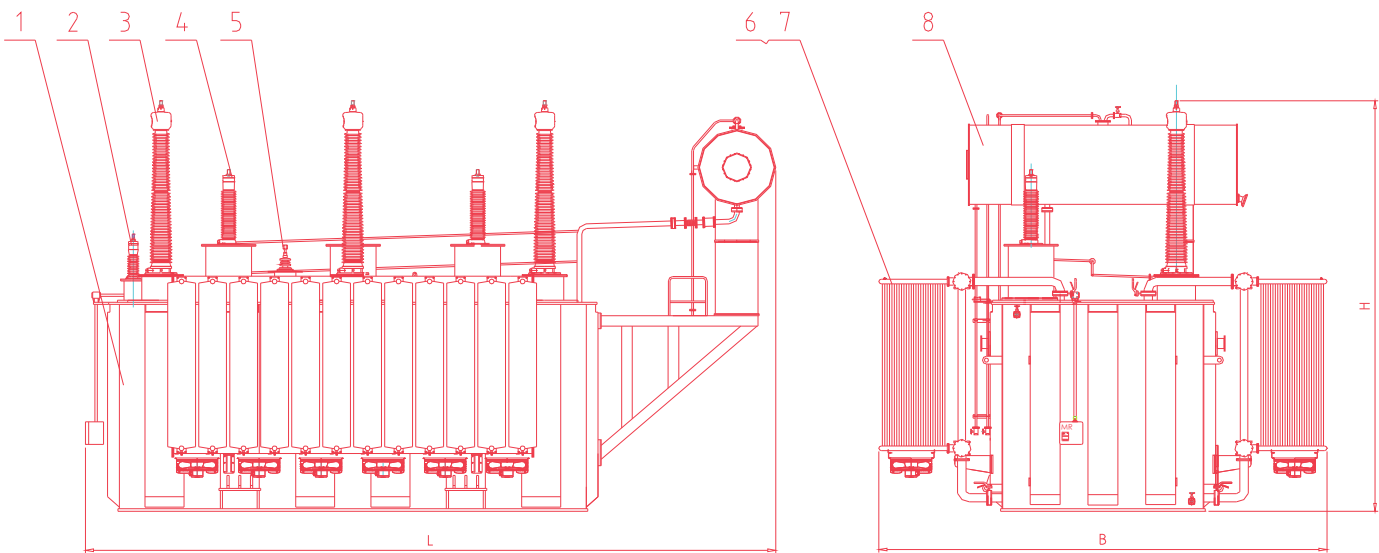


1. Transformer Body
2. H.V. Neutral Bushing
3. H.V. Bushing
4. M.V. Bushing
5. L.V. Bushing
6. Conservator
7. M.V. Neutral Bushing
8. Cooler

330kV (Cont...)

Technical Data Table of Three-phase
Three-winding Off-circuit Tap Changing Autotransformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
OS(F)(P)S-150000	330±2x2.5% 345±2x2.5%	121	10.5 35 38.5	YNa0d11	340	50	10~11	24~26	12~14
OS(F)(P)S-180000					380	58			
OS(F)(P)S-240000					480	70			
OS(F)(P)S-360000					670	98			

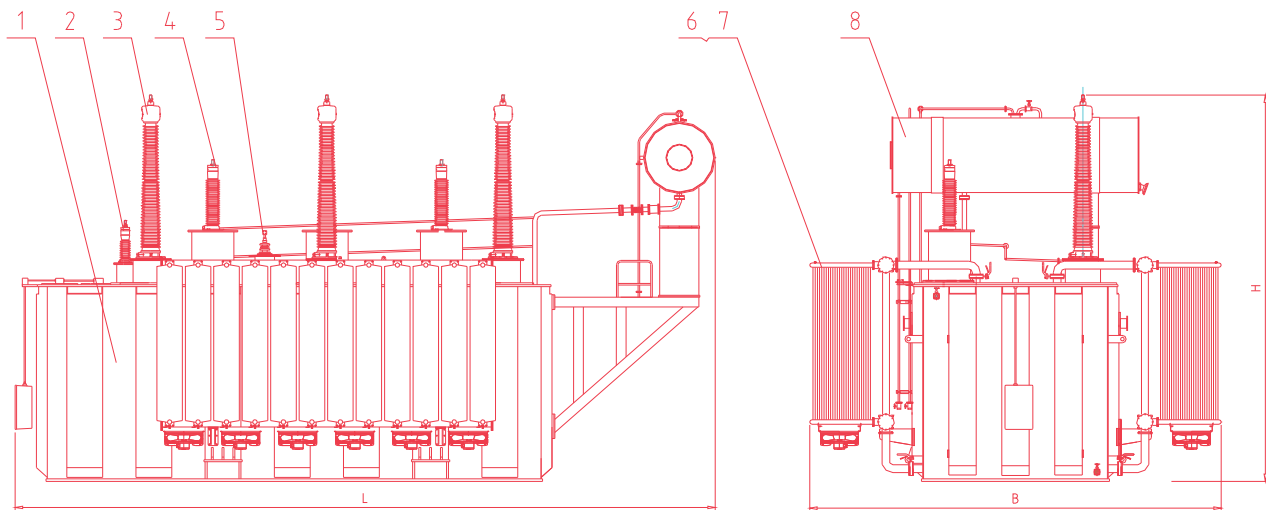


- 1. Transformer Body
- 2. Neutral Bushing
- 3. H.V. Bushing
- 4. M.V. Bushing
- 5. L.V. Bushing
- 6. Radiator
- 7. Fan
- 8. Conservator

330kV (Cont...)

Technical Data Table of Three-phase
Three-winding On-load Tap Changing Autotransformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
OS(F)(P)SZ-150000	330 ± 8 x 1.25% 345 ± 8 x 1.25%	121	10.5 35 38.5	YNa0d11	340	52	10~11	24~26	12~14
OS(F)(P)SZ-180000					380	60			
OS(F)(P)SZ-240000					480	75			
OS(F)(P)SZ-360000					670	100			

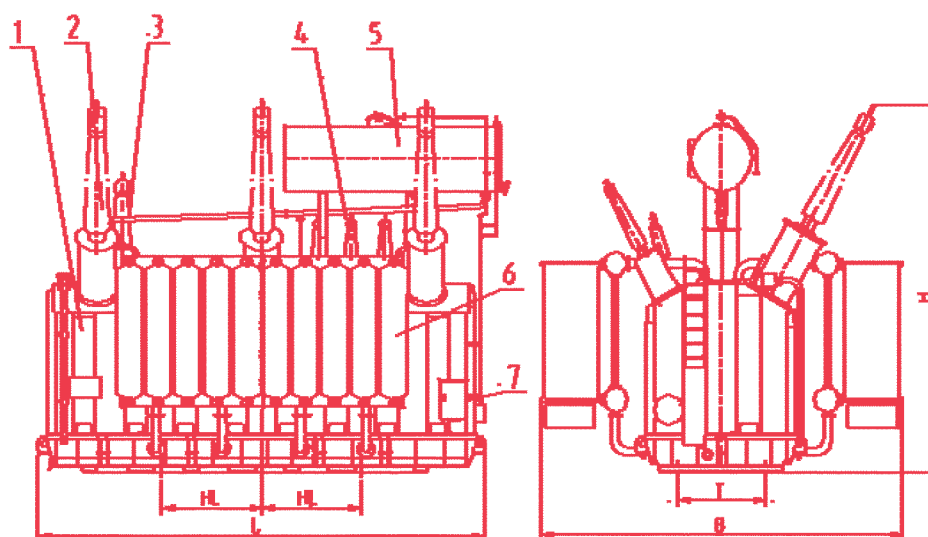


- 1. Transformer Body
- 2. Neutral Bushing
- 3. H.V. Bushing
- 4. M.V. Bushing
- 5. L.V. Bushing
- 6. Radiator
- 7. Fan
- 8. Conservator

220kV

Technical Data Table of Three-phase Two-winding Off-circuit Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)		CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)
	H.V	L.V				
S(F)(P)11-63000	230 ± 2 x 2.5% 242 ± 2 x 2.5%	13.8 15.75	YNd11	210	40	12~14
S(F)(P)11-90000				280	51	
S(F)(P)11-120000				340	63	
S(F)(P)11-150000				400	75	
S(F)(P)11-180000				450	86	
S(F)(P)11-240000				525	107	
SF(P)11-360000				712	145	
SF(P)11-400000				770	157	
SFP11-720000				1197	244	

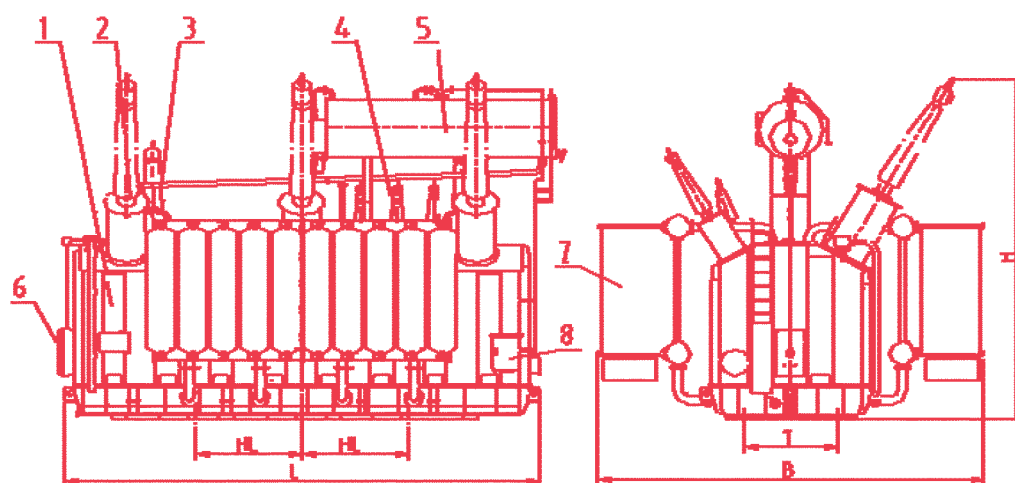


1. Transformer Body
2. H.V. Bushing
3. Neutral Bushing
4. L.V. Bushing
5. Conservator
6. Radiator (Air-forced Cooler)
7. Control Cabinet

220kV (Cont...)

Technical Data Table of Three-phase Two-winding On-load Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)		CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)
	H.V	L.V				
S(F)(P)Z11-31500	220 ± 8 x 1.25% 230 ± 8 x 1.25%	10.5 11 35	YNd11	125	26	12~14
S(F)(P)Z11-50000				180	36	
S(F)(P)Z11-63000				210	43	
S(F)(P)Z11-90000				290	56	
S(F)(P)Z11-120000				340	70	
S(F)(P)Z11-150000				400	82	
S(F)(P)Z11-180000				450	90	
S(F)(P)Z11-240000				558	112	
SF(P)Z11-360000				757	151	
SF(P)Z11-400000				819	164	

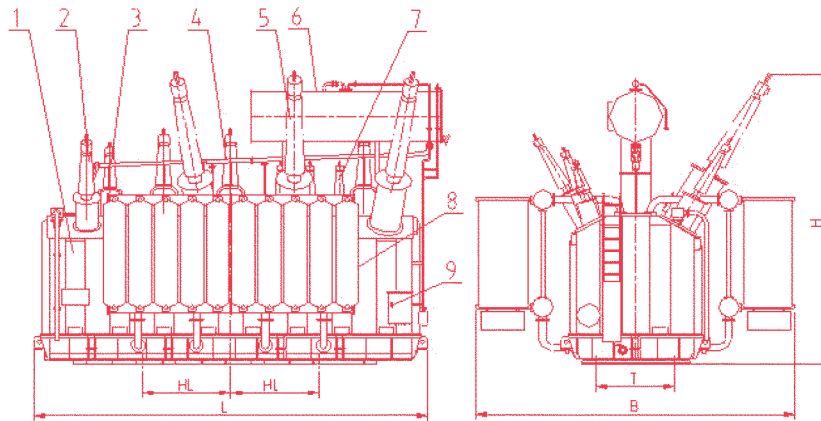


1. Transformer Body
2. H.V. Bushing
3. Neutral Bushing
4. L.V. Bushing
5. Conservator
6. On Load Tap Changer
7. Radiator (Air-forced Cooler)
8. Control Cabinet

220kV (Cont...)

Technical Data Table of Three-phase Three-winding Off-circuit Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
S(F)(P)S11-63000	230± 2x2.5%	110 115 121	10.5 35	YNyn0d11	240	45	12~14	22~24	7~9
S(F)(P)S11-90000					320	56			
S(F)(P)S11-120000					410	70			
S(F)(P)S11-150000					460	81			
S(F)(P)S11-180000					500	90			

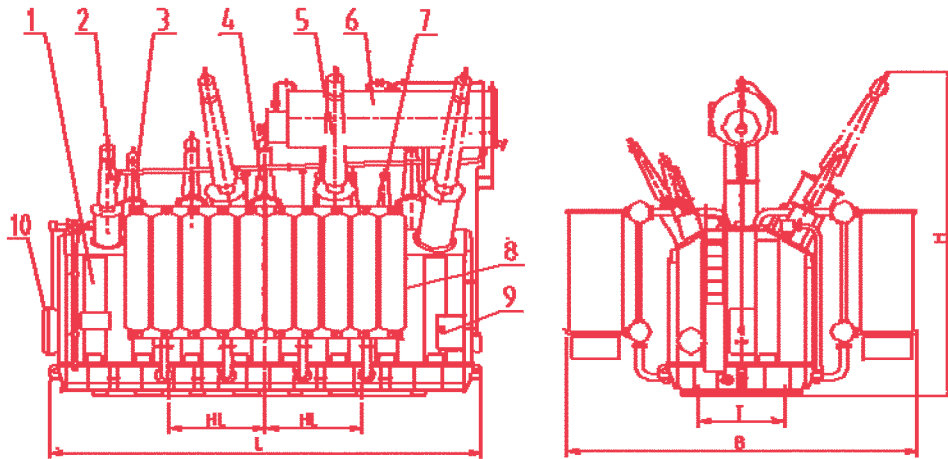


1. Transformer Body
2. H.V. Neutral Bushing
3. M.V. Neutral Bushing
4. M.V. Bushing
5. H.V. Bushing
6. Conservator
7. L.V. Bushing
8. Radiator (Cooler)
9. Control Cabinet

220kV (Cont...)

Technical Data Table of Three-phase Three-winding On-load Tap Changing Power Transformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
S(F)(P)SZ11-63000	230 ± 8 x 1.25% 220 ± 8 x 1.25%	110 115 121	10.5 35	YNyn0d11	240	52	12~14	22~24	7~9
S(F)(P)SZ11-90000					320	60			
S(F)(P)SZ11-120000					405	72			
S(F)(P)SZ11-150000					460	80			
S(F)(P)SZ11-180000					500	90			
S(F)(P)SZ11-240000					610	115			

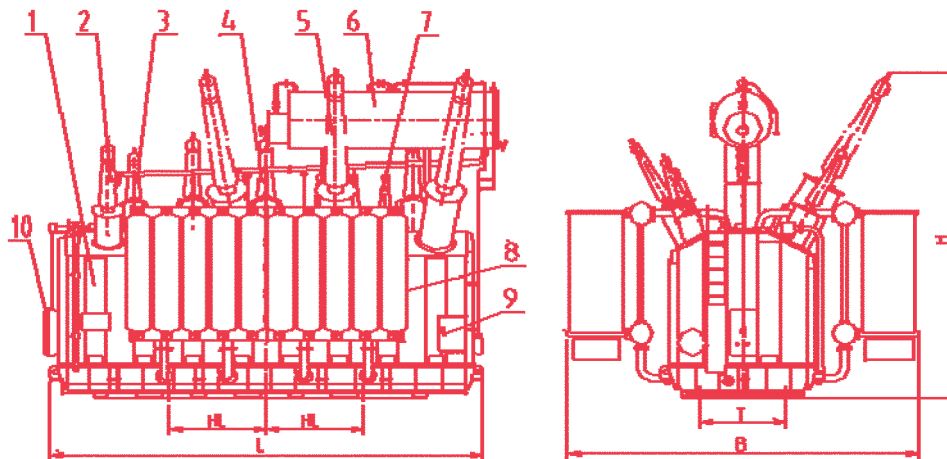


1. Transformer Body
2. H.V. Neutral Bushing
3. M.V. Neutral Bushing
4. M.V. Bushing
5. H.V. Bushing
6. Conservator
7. L.V. Bushing
8. Radiator (Cooler)
9. Control Cabinet
10. On Load Tap Changer

220kV (Cont...)

Technical Data Table of Three-phase Three-winding On-load Tap Changing High-Impedance Power Transformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
S(F)(P)SZ11-K-150000	230 ± 8 x 1.25%	110	10.5 35	YNyn0d11	460	85	14	50	35
S(F)(P)SZ11-K-180000		115			500	95	14	50	35
S(F)(P)SZ11-K-240000		121			610	120	14	35	21

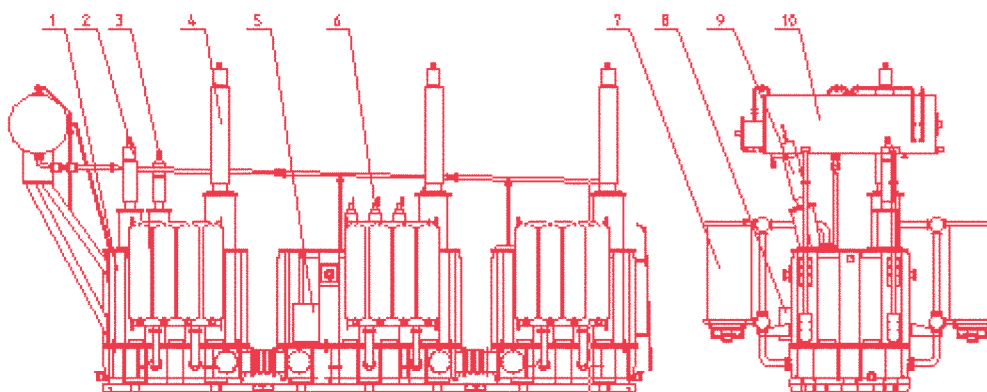


1. Transformer Body
2. H.V. Neutral Bushing
3. M.V. Neutral Bushing
4. M.V. Bushing
5. H.V. Bushing
6. Conservator
7. L.V. Bushing
8. Radiator (Cooler)
9. Control Cabinet
10. On Load Tap Changer

220kV (Cont...)

Technical Data Table of Three-phase Three-winding On-load Tap Changing Combined Power Transformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
S(F)(P)SZ11-H-120000	230 ± 8 x 1.25%	110	10.5 35	YNyn0d11	325	85	12~14	22~24	7~9
S(F)(P)SZ11-H-150000		115			445	93			
S(F)(P)SZ11-H-180000		121			550	105			

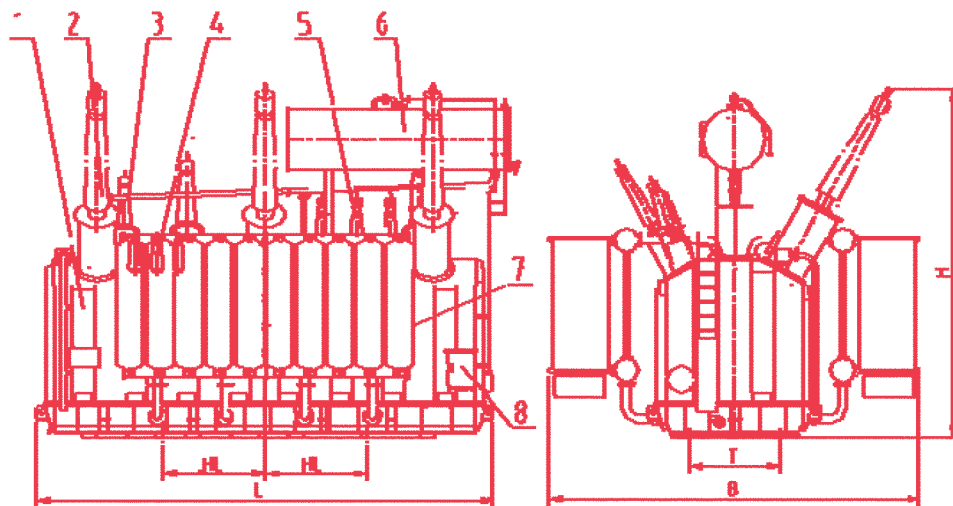


1. Transformer Body
2. H.V. Neutral Bushing
3. M.V. Neutral Bushing
4. H.V. Bushing
5. On Load Tap Changer
6. L.V. Bushing
7. Radiator (Cooler)
8. Control Cabinet
9. M.V. Bushing
10. Conservator

220kV (Cont...)

Technical Data Table of Three-phase Three-winding Off-circuit Tap Changing Autotransformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
OS(F)(P)S11-120000	230 ±	110 115 121	10.5 35	YNa0d11	270	36	8~10	30~34	18~22
OS(F)(P)S11-150000	2 x 2.5%				310	43			
OS(F)(P)S11-180000	220 ±				348	50			
OS(F)(P)S11-240000	2 x 2.5%				420	62			

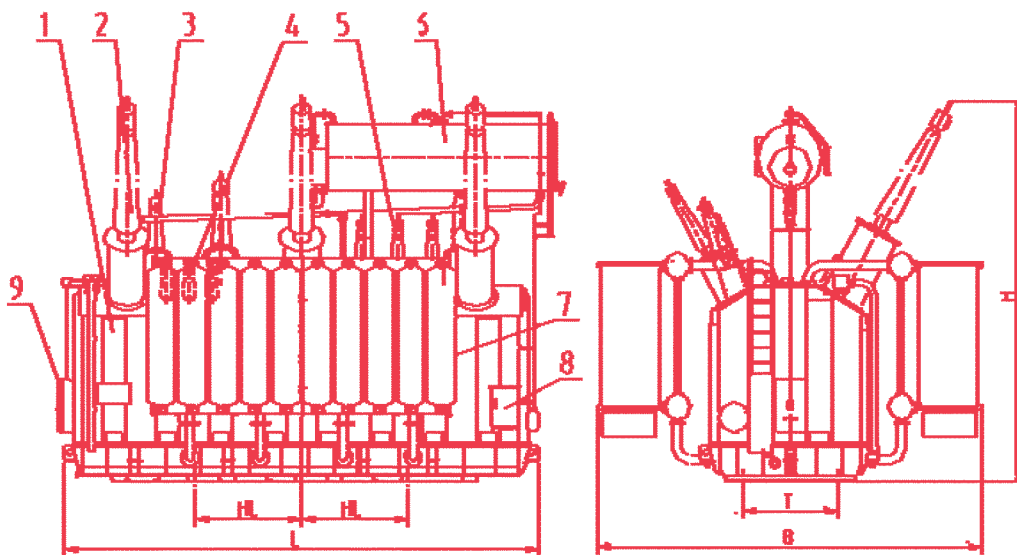


1. Transformer Body
2. H.V. Bushing
3. Neutral Bushing
4. L.V. Bushing
5. T.V. Bushing
6. Conservator
7. Radiator (Cooler)
8. Control Cabinet

220kV (Cont...)

Technical Data Table of Three-phase Three-winding On-load Tap Changing Autotransformers

TYPE	RATED VOLTAGE (KV)			CONNECTION SYMBOL	LOAD LOSS (KW)	NO-LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)		
	H.V	M.V	L.V				HV-MV	HV-LV	MV-LV
OS(F)(P)SZ11-120000	230 ± 8 x 1.25% 220 ± 8 x 1.25%	110 115 121	10.5 35	YNyn0d11	270	42	8~10	30~34	18~22
OS(F)(P)SZ11-150000					310	45			
OS(F)(P)SZ11-180000					350	50			
OS(F)(P)SZ11-240000					380	65	18	61	39
OS(F)(P)SZ11-320000					610	72			
OS(F)(P)SZ11-400000					680	82	13	122	110



1. Transformer Body
2. H.V. Bushing
3. Neutral Bushing
4. T.V. Bushing
5. L.V. Bushing
6. Conservator
7. Radiator (Cooler)
8. Control Cabinet
9. On Load Tap Changer

110kV

Features of 110kV Oil-immersed Transformers (35kV Large Capacity main transformers)

1. Low loss, therefore significantly energy-saving. The average no-load loss is 35% lower, and the load loss 10~20% lower, than prescribed by the present National standard GB/T 6451.
2. The core laminations are made up from imported high-quality cold-rolled grain-oriented silicon steel sheets with miter joints and without punched holes, and are stacked without the upper yoke sheets in place. After stacking, the core is pressed integrally and finally glued together by epoxy resin on the cut edges, so that the three limbs and the upper and lower yokes are bonded together into a rigid, vertically straightened entity, together with the plate-type upper and lower frame.
3. Zigzag directed flow of oil are provided within the windings, so that all parts of the windings can be cooled more evenly, thus reducing the temperature rise of the windings as a whole as well as the hot-spot temperature rise, prolonging the service life of transformers.
4. The regulating winding is a separate winding, apart from the high voltage main winding. In this way, total ampere-turn balance between windings can be obtained irrespective of the tapping position; and the axial electrodynamic force during short circuit can be much reduced, thus upgrading the short circuit withstand capability of the transformer as a whole. All the windings are perfectly dried before assembly. The radial clearances between windings and between low voltage winding and core are filled with pre-dried vertical spacers and insulating cylinders in such a way that the windings are tightly together radially with practically 'zero' allowance between them.
5. The windings of one phase are assembled into an integral phase block before placing onto the core. The low voltage winding is wound directly on strong thick paper cylinder. Vertical spacer strips are provided in spaces between windings and outside the outermost winding. The radial dimensions of all windings are kept within strict tolerance, so that a rigid winding phase block are obtained, capable of withstanding all the radial short-circuit forces encountered in service, and the possibility of buckling of the inner winding is obviated. Axially, the height of all windings is kept within close tolerance. Horizontal spacers between discs of a winding are pre-densified. The assembled winding phase block are pressed up and down by single support and pressure plates after careful adjustment of the heights of individual windings. Axial pressures are co-ordinated with the calculated short circuit force, so that the capability of the transformer to withstand axial short-circuit force is much increased.
6. The winding manufacture, winding assembly, and core and winding assembly work are all proceeded in totally closed clean rooms inside workshops. The cleanliness and temperature stability requirement of the area are the same as that required for the manufacture of 500kV class transformers. The final vapor phase drying of the core and coil assembly is practically a further cleaning process.
7. Core frames in the form of a flat plate are used for clamping the core, and are joined together by side beams. The core and coil assembly is fixed in the tank, being positioned against the tank at six sides rigidly, such that there can be no displacement of the assembly due to impacts during transport. Three-dimensional impact recorders are installed on transformers during transport to detect whether or not unacceptable impact force has been experienced and displacement of the core and coil assembly occurred during transportation. If not, lifting of the core and coil assembly out of the tank is not necessary. Flat cover permits the bushings to be mounted in a vertical position, thus eliminating oil leakage because of uneven pressure on the gasket.
8. Transformer tanks are fabricated with steel plates wide enough so that there are no weld joints on each surface. The steel plates for tank walls are pressed into corrugated shape to increase mechanical strength and to reduce noise due to vibration of the tank wall. Secondary wirings are housed within stainless steel conduits and ended at terminals in a stainless steel control cabinet, resulting in higher reliability and giving a neat appearance.
9. Diaphragm membrane is provided within the conservator, preventing direct contact of oil with air, protecting the oil from aging, thereby prolonging the service life of oil. Magnetic oil-level gauge reflects correctly the oil level in conservator. Flat plate-type radiators effectively cool down the transformer.

110kV (Cont...)

10. Quality assurance rules are observed from the very beginning of acquisition of raw materials and components. No rusting, colliding, scratching or hammering is allowed for steel plate. Special attention is paid to those parts susceptible to oil leakage. All the gasket groove surfaces are carefully machined, and limits are provided to prevent the gasket material from being compressed over its elastic limit. The transformer tank is integrally shot-blasted, and burrs and welding slag are thoroughly removed. Radiators and other component parts are tested in accordance with their respective service condition. Usually the flanges of upper and lower parts of the tank are bolted together with double gasket grooves in their jointing surface and kept tight with high quality gasket material, effectively preventing oil leakage from the jointing surface. If required by the customer, the upper and lower part of the tank can also be welded oil tight.
11. High quality paint is applied as surface finish of the tank and exposed steel parts, after shot-blasting and pretreatment, thus ensuring a durable life and glossy surface.
12. Quality assurance rules are also observed for all insulating parts, from raw material to final assembly. Strict regulations are observed for drying, wrapping and storage, preventing the absorption of moisture, swelling, and deformation. Finished spacers and pressure rings are all stored in practically isothermal oven. Finished windings, after pressing and adjustment are conserved in specially made isothermal cylinders. For the core and oil assembly, the time interval between lifting out from oven and tanking is strictly controlled, so that no significant absorption of moisture can occur due to exposure.

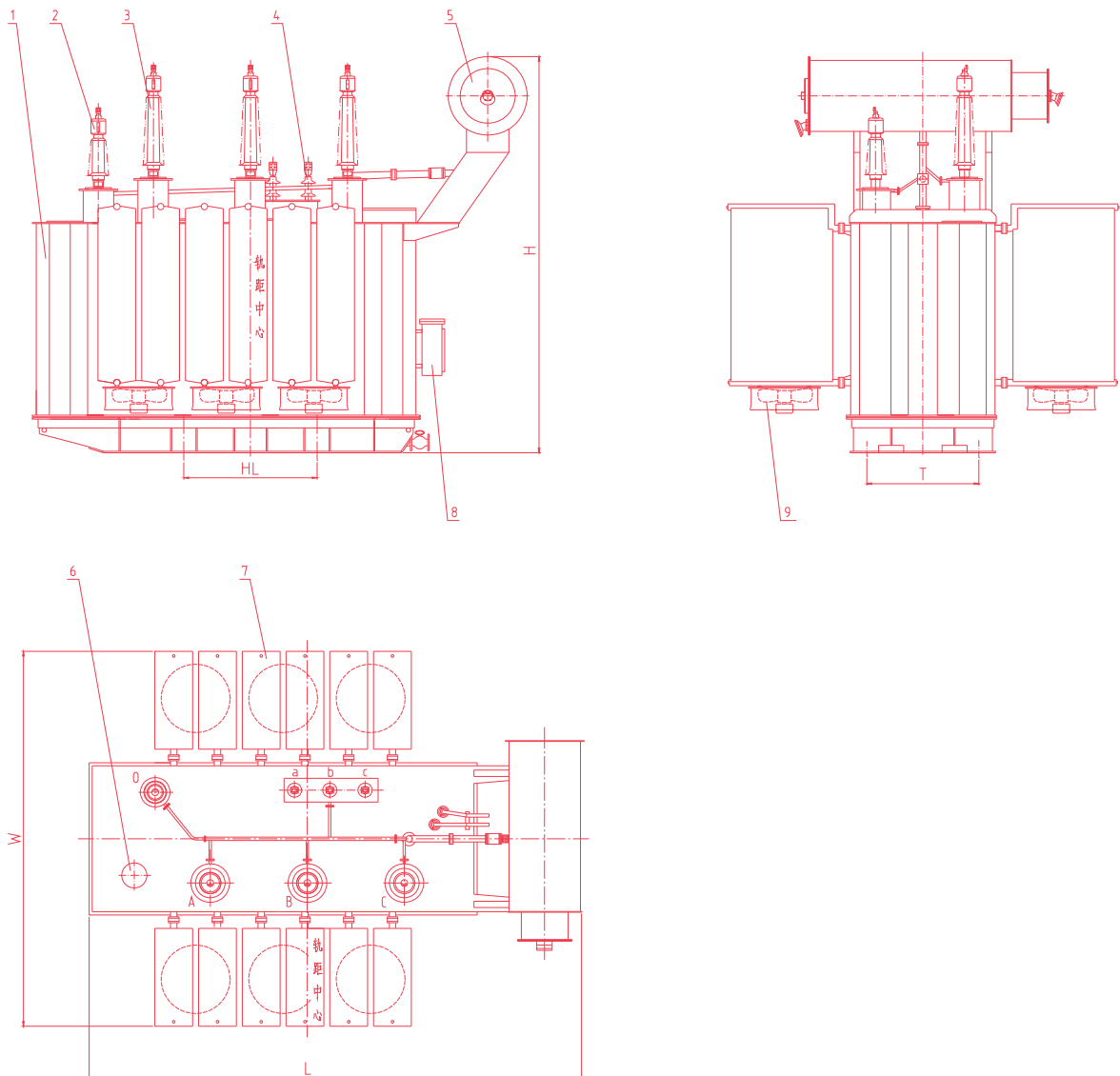
110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Two-winding Off-circuit Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SF11-6300/110	6300	H.V.: 110±2×2.5% 121±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNd11	7.4	34.2	0.2	10.5
SF11-8000/110	8000			9.0	42.8		
SF11-10000/110	10000			10.6	50.4		
SF11-12500/110	12500			12.5	59.9		
SF11-16000/110	16000			15.0	73.2		
SF11-20000/110	20000			17.6	88.4		
SF11-25000/110	25000			20.8	104.5		
SF11-31500/110	31500			24.6	126.4		
SF11-40000/110	40000			29.4	148.2		
SF11-50000/110	50000			35.2	184.3		
SF11-63000/110	63000			41.6	222.3		
SF11-90000/110	90000			54.4	304.0		
SF11-120000/110	120000			67.8	377.2		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SF11-6300/110	6300	9.6	6.6	21.3	19.0	4320	5340	4220	1475	1475
SF11-8000/110	8000	12.2	7.2	24.6	21.9	4470	5570	4260	1475	1475
SF11-10000/110	10000	14.6	7.9	28.4	24.5	4580	5750	4300	1475	1475
SF11-12500/110	12500	16.8	8.6	32.0	28.6	4690	5810	4330	1475	1475
SF11-16000/110	16000	19.0	9.8	36.6	31.0	4830	6140	4360	2040	1475
SF11-20000/110	20000	21.3	10.9	40.8	36.0	4840	6220	4400	2040	1475
SF11-25000/110	25000	25.0	11.3	45.9	38.1	5020	6350	4440	2040	1475
SF11-31500/110	31500	29.1	12.9	51.2	43.7	5100	6400	4530	2040	1475
SF11-40000/110	40000	34.5	14.8	60.8	49.6	5300	6520	4860	2040	1475
SF11-50000/110	50000	36.6	16.5	69.0	57.6	5340	6680	5100	2040	1475
SF11-63000/110	63000	46.8	17.1	77.7	65.4	5630	6780	5120	2040	1475
SF11-90000/110	90000	56.9	18.9	94.2	76.3	5880	6920	5140	2040	1475
SF11-120000/110	120000	73.6	23.5	122.7	101.3	6090	7560	5240	2040	1475

110kV (Cont...)



1. Transformer Body
2. H.V. Neutral Bushing
3. H.V. Bushing
4. L.V. Bushing
5. Conservator
6. On-load tap-changer (OLTC)
7. Radiator
8. Control Cabinet
9. Operating mechanism of OLTC

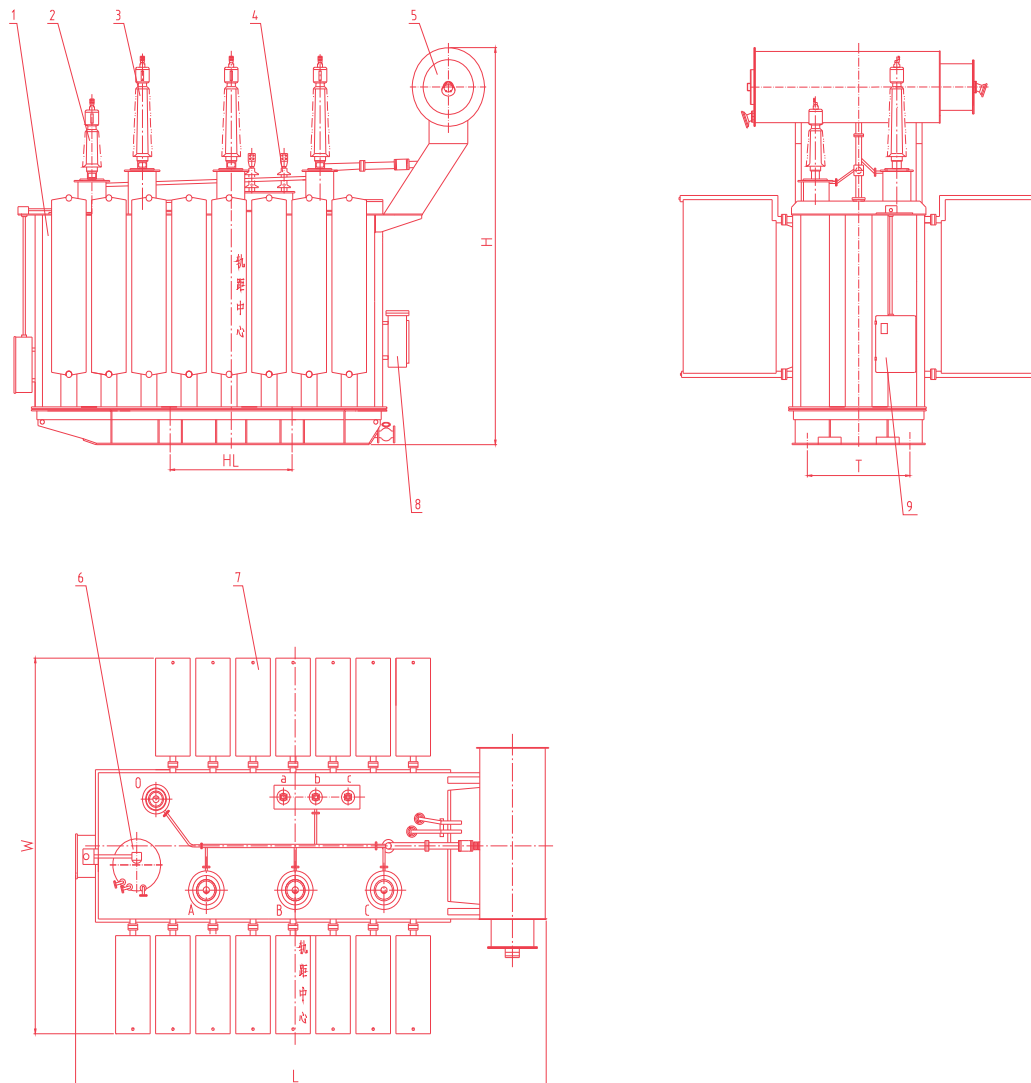
110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Two-winding On-load Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SZ11-6300/110	6300	H.V.: 110±8×1.25% L.V.: 6.3; 6.6; 10.5; 11	YNd11	8.0	34.2	0.2	10.5
SZ11-8000/110	8000			9.6	42.8		
SZ11-10000/110	10000			11.4	50.4		
SZ11-12500/110	12500			13.4	59.9		
SZ11-16000/110	16000			16.2	73.2		
SZ11-20000/110	20000			19.2	88.4		
SZ11-25000/110	25000			22.7	104.5		
SZ11-31500/110	31500			27.0	126.4		
SZ11-40000/110	40000			32.3	148.2		
SZ11-50000/110	50000			38.2	184.3		
SZ11-63000/110	63000			45.4	222.3		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SZ11-6300/110	6300	9.8	7.8	24.2	19.4	4320	5540	4710	1475	1475
SZ11-8000/110	8000	12.6	8.4	27.1	22.3	4470	5770	4760	1475	1475
SZ11-10000/110	10000	14.8	9.6	31.7	25.0	4580	5950	4860	1475	1475
SZ11-12500/110	12500	17.1	10.5	36.0	29.4	4690	6010	4860	1475	1475
SZ11-16000/110	16000	19.3	11.5	40.2	31.8	4830	6340	4880	2040	1475
SZ11-20000/110	20000	21.6	12.9	45.5	36.9	4840	6420	5120	2040	1475
SZ11-25000/110	25000	25.3	13.2	50.5	39.1	5020	6550	5340	2040	1475
SZ11-31500/110	31500	29.4	15.0	57.3	44.7	5100	6600	5380	2040	1475
SZ11-40000/110	40000	34.9	17.0	66.4	50.7	5300	6720	5430	2040	1475
SZ11-50000/110	50000	40.0	18.8	76.0	59.0	5340	6880	5520	2040	1475
SZ11-63000/110	63000	47.4	20.6	88.1	67.0	5630	6980	5540	2040	1475

110kV (Cont...)



1. Transformer Body
2. H.V. Neutral Bushing
3. H.V. Bushing
4. L.V. Bushing
5. Conservator
6. On-load tap-changer (OLTC)
7. Radiator
8. Control Cabinet
9. Operating mechanism of OLTC

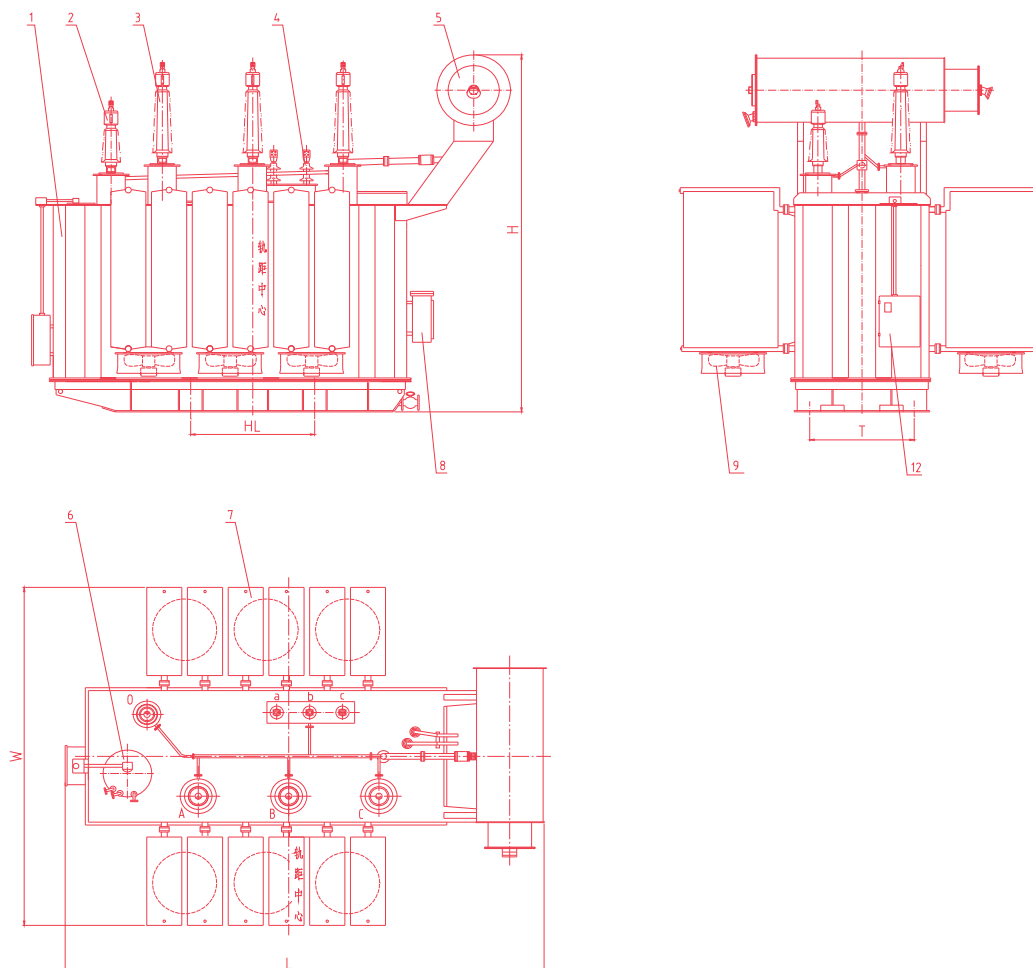
110kV (Cont...)

Technical Data Table of Air-forced Cooling Three-phase Two-winding On-load Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SFZ11-6300/110	6300	9.8	6.6	21.7	19.4	4320	4220	4710	1475	1475
SFZ11-8000/110	8000	12.6	7.2	24.9	22.3	4470	4260	4760	1475	1475
SFZ11-10000/110	10000	14.8	7.9	28.8	25.1	4580	4300	4860	1475	1475
SFZ11-12500/110	12500	17.1	8.6	32.7	29.4	4690	4330	4860	1475	1475
SFZ11-16000/110	16000	19.3	10.0	37.3	31.8	4830	4360	4880	2040	1475
SFZ11-20000/110	20000	21.6	11.2	41.5	36.9	4840	4400	5120	2040	1475
SFZ11-25000/110	25000	25.3	11.6	46.8	39.1	5020	4440	5340	2040	1475
SFZ11-31500/110	31500	29.4	13.2	52.1	44.7	5100	4530	5380	2040	1475
SFZ11-40000/110	40000	34.9	15.2	61.8	50.7	5300	4860	5430	2040	1475
SFZ11-50000/110	50000	40.0	17.0	70.5	59.0	5340	5100	5520	2040	1475
SFZ11-63000/110	63000	47.4	17.6	79.1	67.0	5630	5120	5540	2040	1475

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SFZ11-6300/110	6300	H.V.: 110±8×1.25% L.V.: 6.3; 6.6; 10.5; 11	YNd11	8.0	34.2	0.2	10.5
SFZ11-8000/110	8000			9.6	42.8		
SFZ11-10000/110	10000			11.4	50.4		
SFZ11-12500/110	12500			13.4	59.9		
SFZ11-16000/110	16000			16.2	73.2		
SFZ11-20000/110	20000			19.2	88.4		
SFZ11-25000/110	25000			22.7	104.5		
SFZ11-31500/110	31500			27.0	126.4		
SFZ11-40000/110	40000			32.3	148.2		
SFZ11-50000/110	50000			38.2	184.3		
SFZ11-63000/110	63000			45.4	222.3		

110kV (Cont...)



1. Transformer Body
2. H.V. Neutral Bushing
3. H.V. Bushing
4. L.V. Bushing
5. Conservator
6. On-load tap-changer (OLTC)
7. Radiator
8. Control Cabinet
9. Operating mechanism of OLTC

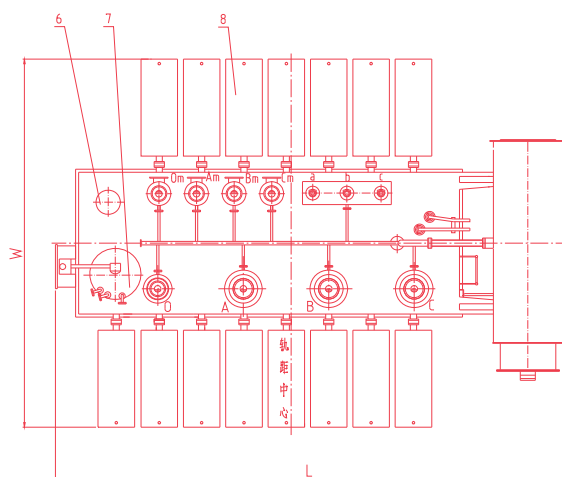
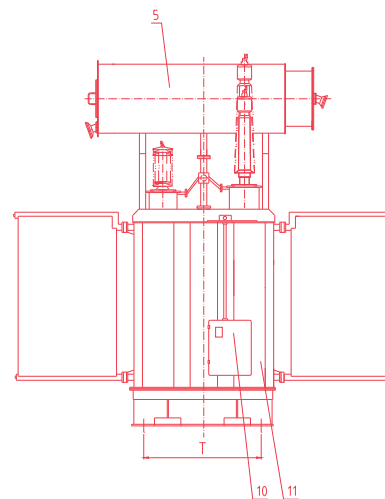
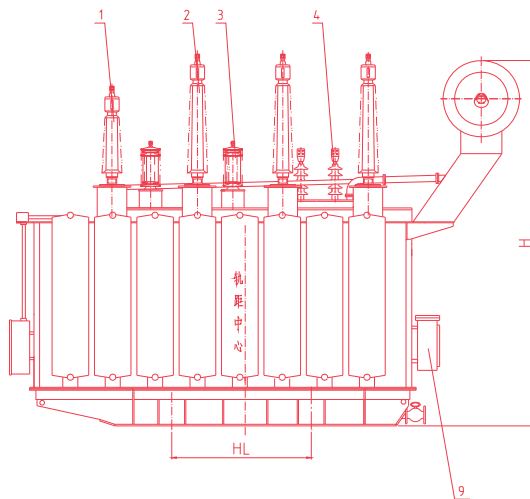
110kV (Cont...)

Technical Data Table of Air-nature Cooling Three-phase Three-winding On-load Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SSZ11-6300/110	6300	H.V.: 110±8×1.25% M.V.: 38.5±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNyn0d11	9.6	44.7	0.2	For step-down purpose H.V-M.V: 10.5 H.V-L.V: 17~18 M.V-L.V: 6.5 For step-up purpose H.V-M.V: 17~18 H.V-L.V: 10.5 M.V-L.V: 6.5
SSZ11-8000/110	8000			11.5	53.2		
SSZ11-10000/110	10000			13.7	62.7		
SSZ11-12500/110	12500			16.2	74.1		
SSZ11-16000/110	16000			19.4	90.3		
SSZ11-20000/110	20000			22.9	106.4		
SSZ11-25000/110	25000			27.0	126.4		
SSZ11-31500/110	31500			32.2	149.2		
SSZ11-40000/110	40000			38.6	179.6		
SSZ11-50000/110	50000			45.5	213.8		
SSZ11-63000/110	63000			54.2	256.5		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SSZ11-6300/110	6300	13.1	9.2	31.4	23.6	4390	6770	4760	4760	1475
SSZ11-8000/110	8000	15.9	10.6	35.4	27.1	4440	6800	4780	4780	1475
SSZ11-10000/110	10000	17.7	11.7	38.3	30.1	4550	6850	4870	4870	1475
SSZ11-12500/110	12500	20.6	13.1	45.0	34.7	4690	6910	4900	4900	1475
SSZ11-16000/110	16000	24.3	14.2	51.7	40.3	4820	7010	4990	4990	1475
SSZ11-20000/110	20000	27.7	14.8	54.4	42.1	4870	7170	5150	5150	1475
SSZ11-25000/110	25000	30.5	16.2	60.9	47.0	4980	7190	5320	5320	1475
SSZ11-31500/110	31500	36.6	18.0	70.8	53.7	5060	7350	5410	5410	1475
SSZ11-40000/110	40000	44.0	21.4	84.3	65.3	5400	7450	5600	5600	1475
SSZ11-50000/110	50000	53.7	24.5	99.0	77.6	5460	7770	5640	5640	1475
SSZ11-63000/110	63000	61.6	25.8	110.1	86.5	5740	7830	5760	5760	1475

110kV (Cont...)



1. H.V. Neutral Bushing
2. H.V. Bushing
3. M.V. Bushing
4. L.V. Bushing
5. Conservator
6. Off-circuit Tap-changer
7. On-load tap-changer (OLTC)
8. Radiator
9. Control Cabinet
10. Operating mechanism of OLTC
11. Transformer Body

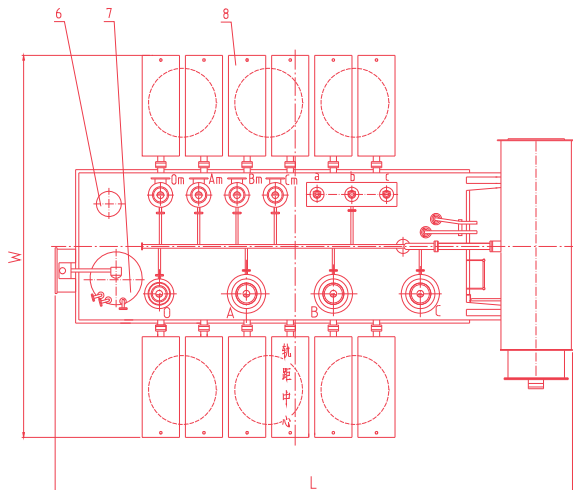
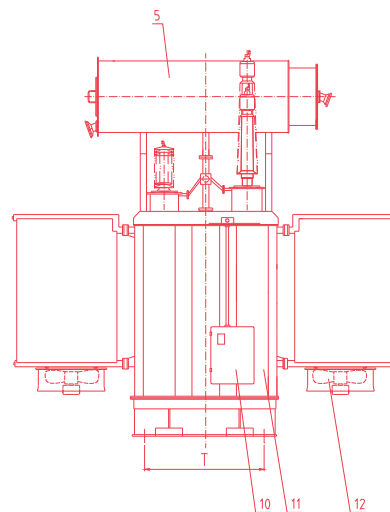
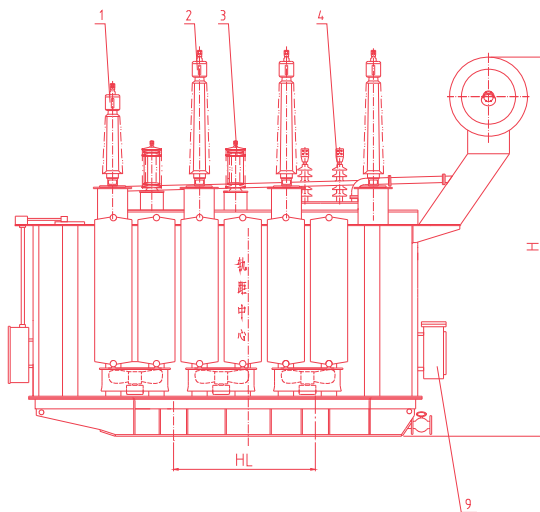
110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Three-winding On-load Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SFSZ11-6300/110	6300	H.V.: 110±8×1.25% M.V.: 38.5±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNyn0d11	9.6	44.7	0.2	For step-down purpose H.V-M.V: 10.5 H.V-L.V: 17~18 M.V-L.V: 6.5 For step-up purpose H.V-M.V: 17~18 H.V-L.V: 10.5 M.V-L.V: 6.5
SFSZ11-8000/110	8000			11.5	53.2		
SFSZ11-10000/110	10000			13.7	62.7		
SFSZ11-12500/110	12500			16.2	74.1		
SFSZ11-16000/110	16000			19.4	90.3		
SFSZ11-20000/110	20000			22.9	106.4		
SFSZ11-25000/110	25000			27.0	126.4		
SFSZ11-31500/110	31500			32.2	149.2		
SFSZ11-40000/110	40000			38.6	179.6		
SFSZ11-50000/110	50000			45.5	213.8		
SFSZ11-63000/110	63000			54.2	256.5		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SFSZ11-6300/110	6300	13.1	8.4	28.8	23.6	4390	6770	4290	2040	1475
SFSZ11-8000/110	8000	15.9	9.7	32.4	27.1	4440	6800	4310	2040	1475
SFSZ11-10000/110	10000	17.7	10.4	35.0	30.1	4550	6850	4330	2040	1475
SFSZ11-12500/110	12500	18.3	11.8	40.3	34.7	4690	6910	4460	2040	1475
SFSZ11-16000/110	16000	24.3	13.0	45.7	40.3	4820	7010	4780	2040	1475
SFSZ11-20000/110	20000	27.7	13.2	48.3	42.1	4870	7170	4740	2040	1475
SFSZ11-25000/110	25000	30.5	13.8	54.7	47.0	4980	7190	4780	2040	1475
SFSZ11-31500/110	31500	36.6	15.0	62.5	53.7	5060	7350	4910	2040	1475
SFSZ11-40000/110	40000	44.0	18.1	76.2	65.3	5400	7450	5150	2040	1475
SFSZ11-50000/110	50000	53.7	21.5	90.1	77.6	5460	7770	5370	2040	1475
SFSZ11-63000/110	63000	61.6	22.6	100.3	86.5	5740	7830	5640	2040	1475

110kV (Cont...)



1. H.V. Neutral Bushing
2. H.V. Bushing
3. M.V. Bushing
4. L.V. Bushing
5. Conservator
6. Off-circuit Tap-changer
7. On-load tap-changer (OLTC)
8. Radiator
9. Control Cabinet
10. Operating mechanism of OLTC
11. Transformer Body

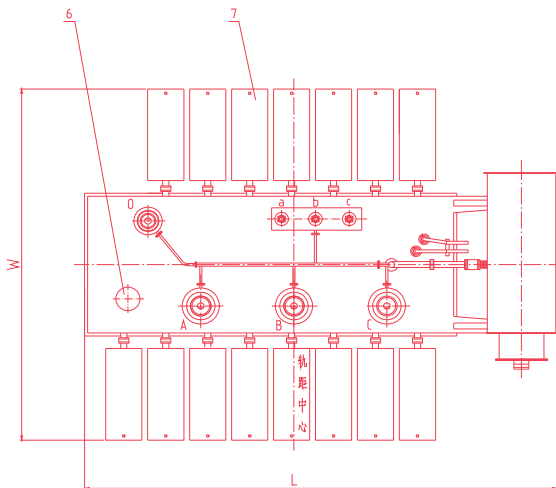
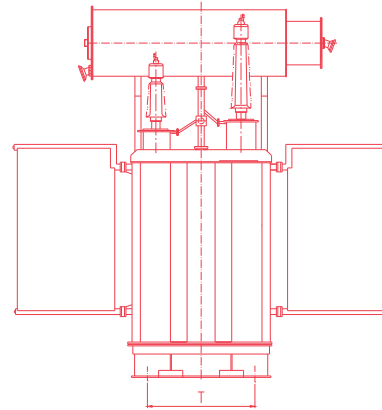
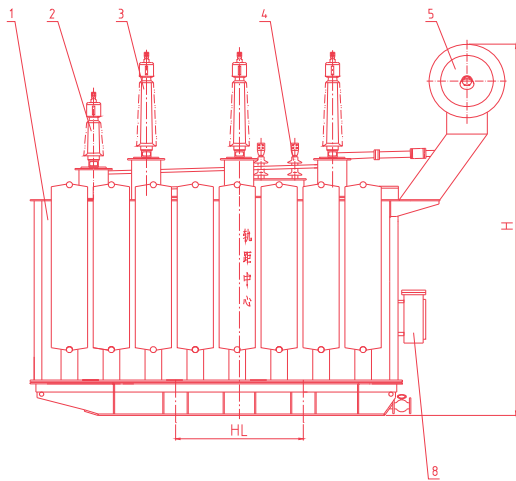
110kV (Cont...)

Technical Data Table of Natural Air Cooling Three-phase Two-winding Off-circuit Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
S11-6300/110	6300	H.V.: 110±2×2.5% 121±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNd11	7.4	34.2	0.2	10.5
S11-8000/110	8000			9.0	42.8		
S11-10000/110	10000			10.6	50.4		
S11-12500/110	12500			12.5	59.9		
S11-16000/110	16000			15.0	73.2		
S11-20000/110	20000			17.6	88.4		
S11-25000/110	25000			20.8	104.5		
S11-31500/110	31500			24.6	126.4		
S11-40000/110	40000			29.4	148.2		
S11-50000/110	50000			35.2	184.3		
S11-63000/110	63000			41.6	222.3		
S11-90000/110	90000			54.4	304.0		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
S11-6300/110	6300	9.6	7.8	23.5	19.0	4320	5340	4710	1475	1475
S11-8000/110	8000	12.2	8.4	26.4	21.9	4470	5570	4760	1475	1475
S11-10000/110	10000	14.6	9.6	30.8	24.4	4580	5750	4820	1475	1475
S11-12500/110	12500	16.8	10.3	34.8	28.6	4690	5810	4850	1475	1475
S11-16000/110	16000	19.0	11.3	38.9	31.0	4830	6140	4880	2040	1475
S11-20000/110	20000	21.3	12.6	44.1	36.0	4840	6220	5120	2040	1475
S11-25000/110	25000	25.0	12.9	48.9	38.1	5020	6350	5340	2040	1475
S11-31500/110	31500	29.1	14.7	55.6	43.7	5100	6400	5380	2040	1475
S11-40000/110	40000	34.5	16.6	64.5	49.6	5300	6520	5430	2040	1475
S11-50000/110	50000	36.6	18.3	73.7	57.6	5340	6680	5520	2040	1475
S11-63000/110	63000	46.8	20.1	85.5	65.4	5630	6780	5540	2040	1475
S11-90000/110	90000	57.4	25.1	107.7	78.1	5880	6920	5590	2040	1475

110kV (Cont...)



1. Transformer Body
2. H.V. Neutral Bushing
3. H.V. Bushing
4. L.V. Bushing
5. Conservator
6. On-load tap-changer (OLTC)
7. Radiator
8. Control Cabinet
9. Operating mechanism of OLTC

110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Three-winding Large-capacity Off-circuit Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	SHORT-CIRCUIT IMPEDANCE (%)	TOTAL WEIGHT (T)
SF11-90000/110	121±2×2.5% /10.5	YNd11	54.4	304.0	10.5	92.4
SF11-120000/110	121±2×2.5% /10.5	YNd11	67.8	377.2	12	120.6
SF11-150000/110	121±2×2.5% /10.5	YNd11	80.2	448.4	12	143.7
SF11-180000/110	121±2×2.5% /10.5	YNd11	90.0	505.4	14	164.8
SFZ11-150000/110	115±8×1.25% /38.5±2×2.5%/10	YNyn0+d11	89.6	450.6	13	166.5
SFS11-180000/110	121±2×2.5%/37/15.75	YNyn0d11	108.3	563.7	10.5/18/6.5	192.7

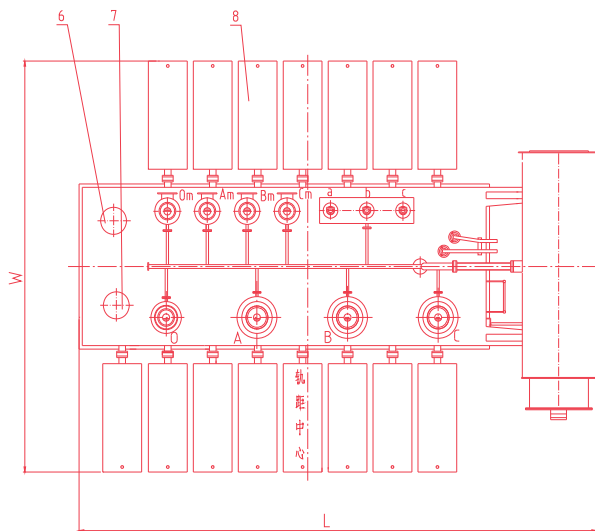
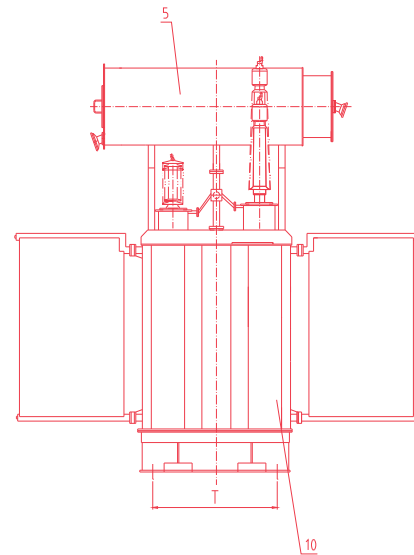
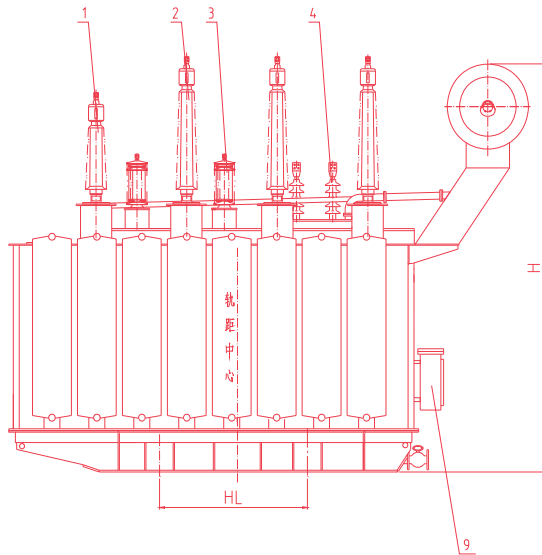
110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Three-winding Off-circuit Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SS11-6300/110	6300	H.V.: 110±2×2.5% M.V.: 38.5±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNyn0d11	9.0	44.7	0.2	For step-down purpose H.V-M.V: 10.5 H.V-L.V: 17~18 M.V-L.V: 6.5 For step-up purpose H.V-M.V: 17~18 H.V-L.V: 10.5 M.V-L.V: 6.5
SS11-8000/110	8000			10.6	53.2		
SS11-10000/110	10000			12.6	62.7		
SS11-12500/110	12500			14.7	74.1		
SS11-16000/110	16000			17.9	90.3		
SS11-20000/110	20000			21.1	106.4		
SS11-25000/110	25000			24.6	126.4		
SS11-31500/110	31500			29.4	149.2		
SS11-40000/110	40000			34.9	179.6		
SS11-50000/110	50000			41.6	213.8		
SS11-63000/110	63000			49.3	256.5		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SS11-6300/110	6300	12.9	9.0	30.8	23.2	4390	6700	4760	2040	1475
SS11-8000/110	8000	15.6	10.4	34.5	26.5	4440	6720	4780	2040	1475
SS11-10000/110	10000	17.3	11.5	37.2	29.3	4550	6730	4870	2040	1475
SS11-12500/110	12500	20.2	12.8	43.7	33.9	4690	6810	4900	2040	1475
SS11-16000/110	16000	23.8	13.8	50.2	39.4	4820	6910	4990	2040	1475
SS11-20000/110	20000	27.2	14.4	52.8	41.1	4870	7070	5150	2040	1475
SS11-25000/110	25000	29.9	15.7	59.0	45.8	4980	7120	5320	2040	1475
SS11-31500/110	31500	35.9	17.5	68.1	52.3	5060	7250	5410	2040	1475
SS11-40000/110	40000	43.2	20.8	82.0	63.8	5400	7350	5600	2040	1475
SS11-50000/110	50000	52.7	23.7	96.1	75.6	5460	7570	5640	2040	1475
SS11-63000/110	63000	60.4	24.8	106.1	83.5	5740	7830	5760	2040	1475

110kV (Cont...)



1. H.V. Neutral Bushing
2. H.V. Bushing
3. M.V. Bushing
4. L.V. Bushing
5. Conservator
6. Off-circuit Tap-changer
7. On-load tap-changer (OLTC)
8. Radiator
9. Control Cabinet
10. Operating mechanism of OLTC
11. Transformer Body

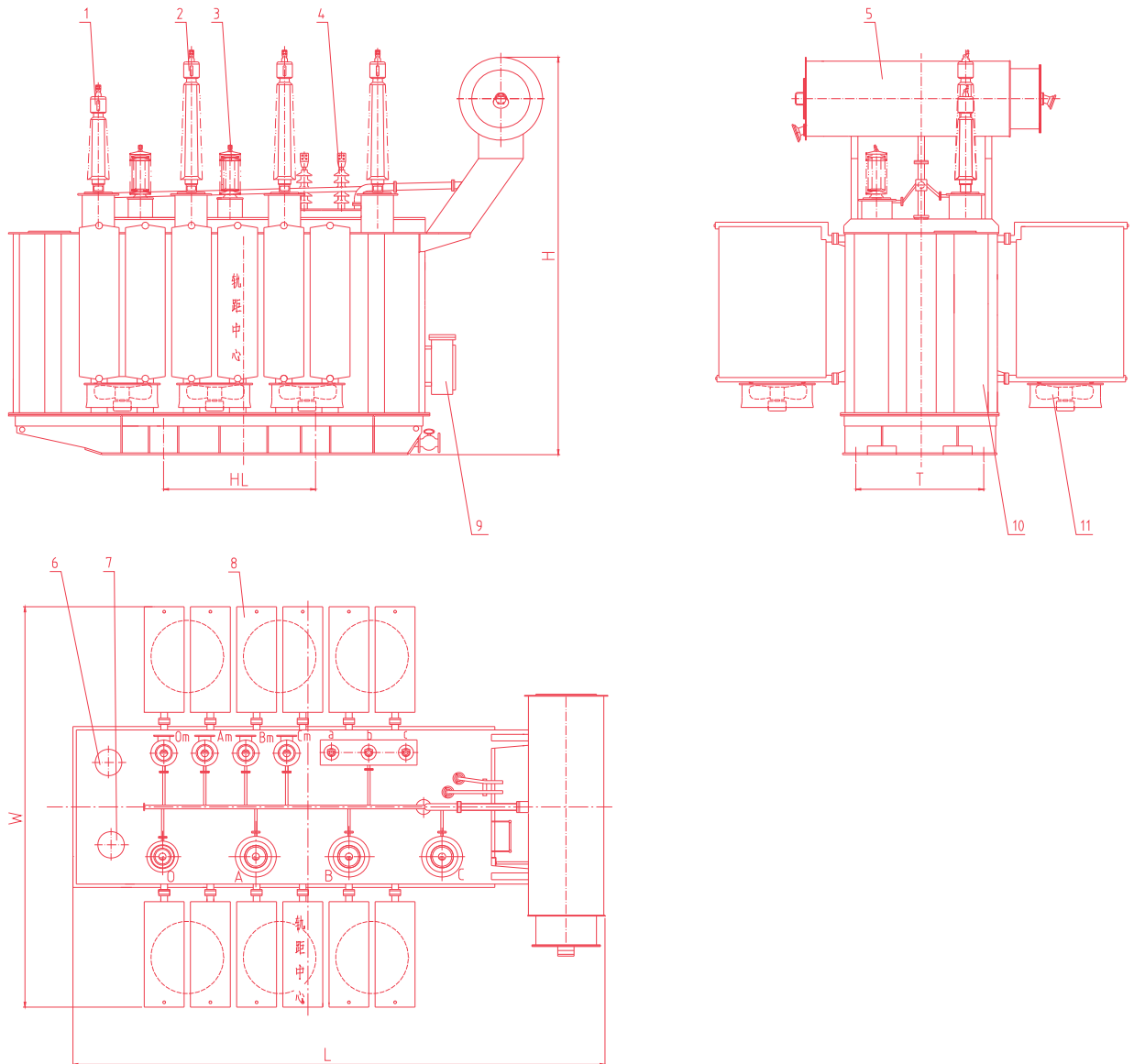
110kV (Cont...)

Technical Data Table of Forced Air Cooling Three-phase Three-winding Off-circuit Tap Changing Power Transformers with Low-loss and Low-noise

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
SFS11-6300/110	6300	H.V.: 110±8×1.25% M.V.: 38.5±2×2.5% L.V.: 6.3; 6.6; 10.5; 11	YNyn0d11	9.0	44.7	0.2	For step-down purpose H.V-M.V: 10.5 H.V-L.V: 17~18 M.V-L.V: 6.5 For step-up purpose H.V-M.V: 17~18 H.V-L.V: 10.5 M.V-L.V: 6.5
SFS11-8000/110	8000			10.6	53.2		
SFS11-10000/110	10000			12.6	62.7		
SFS11-12500/110	12500			14.7	74.1		
SFS11-16000/110	16000			17.9	90.3		
SFS11-20000/110	20000			21.1	106.4		
SFS11-25000/110	25000			24.6	126.4		
SFS11-31500/110	31500			29.4	149.2		
SFS11-40000/110	40000			34.9	179.6		
SFS11-50000/110	50000			41.6	213.8		
SFS11-63000/110	63000			49.3	256.5		

TYPE	RATED CAPACITY (KVA)	WEIGHT (T)				OVERALL DIMENSION (MM)				
		CORE AND COIL WITH LOWER TANK	OIL	TOTAL	TRANSPORT	H	L	W	HL	T
SFS11-6300/110	6300	12.9	8.2	28.0	23.2	4390	6700	4760	2040	1475
SFS11-8000/110	8000	15.6	9.5	31.5	26.6	4440	6720	4780	2040	1475
SFS11-10000/110	10000	17.3	10.2	34.0	29.5	4550	6730	4870	2040	1475
SFS11-12500/110	12500	20.2	11.5	39.2	34.0	4690	6810	4900	2040	1475
SFS11-16000/110	16000	23.8	12.6	44.3	39.4	4820	6910	4990	2040	1475
SFS11-20000/110	20000	27.2	12.8	46.8	41.1	4870	7070	5150	2040	1475
SFS11-25000/110	25000	29.9	13.4	53.0	45.9	4980	7120	5320	2040	1475
SFS11-31500/110	31500	35.9	14.5	60.5	52.4	5060	7250	5410	2040	1475
SFS11-40000/110	40000	43.2	17.5	73.9	63.8	5400	7350	5600	2040	1475
SFS11-50000/110	50000	52.7	20.7	87.2	75.6	5460	7570	5640	2040	1475
SFS11-63000/110	63000	60.4	21.6	96.3	83.5	5740	7830	5760	2040	1475

110kV (Cont...)



1. H.V. Neutral Bushing
2. H.V. Bushing
3. M.V. Bushing
4. L.V. Bushing
5. Conservator
6. Off-circuit Tap-changer
7. On-load tap-changer (OLTC)
8. Radiator
9. Control Cabinet
10. Operating mechanism of OLTC
11. Transformer Body

110kV (Cont...)

Technical Data for S11 Type Off-circuit Tap Changing Transformers with 35kV

TYPE	RATED CAPACITY (KV)	RATED VOLTAGE (KV)			CONNECTION SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE (%)
		H.V (KV)	M.V (KV)	L.V (KV)					
S11-50/35	50	35 38.5	±5%	0.4	Yyn0 Dyn11	0.17	1.15	2.0	6.5
S11-100/35	100					0.23	1.92	1.9	
S11-125/35	125					0.27	2.26	1.8	
S11-160/35	160					0.29	2.68	1.7	
S11-200/35	200					0.34	3.15	1.6	
S11-250/35	250					0.41	3.74	1.5	
S11-315/35	315					0.49	4.51	1.4	
S11-400/35	400					0.58	5.44	1.13	
S11-500/35	500					0.69	6.55	1.2	
S11-630/35	630					0.83	7.82	1.1	
S11-800/35	800					0.98	9.35	0.9	
S11-1000/35	1000					1.15	11.5	0.8	
S11-1250/35	1250					1.41	13.9	0.7	
S11-1600/35	1600					1.70	16.6	0.6	
S11-2000/35	2000		±2X2.5%	3.15	Yd11	2.18	18.3	0.6	7.0
S11-2500/35	2500					2.56	19.5	0.6	
S11-3150/35	3150					3.04	23.0	0.6	
S11-4000/35	4000					3.62	27.2	0.5	7.5
S11-5000/35	5000					4.32	31.2	0.5	
S11-6300/35	6300					5.25	34.9	0.4	
S11-8000/35	8000		±2X2.5%	6.6	YNd11	7.20	38.3	0.4	7.5
S11-10000/35	10000					8.70	45.1	0.4	
S11-12500/35	12500					10.08	53.6	0.4	
S11-16000/35	16000					12.16	65.5	0.3	8.0
S11-20000/35	20000					14.40	79.1	0.3	
S11-25000/35	25000					17.02	93.5	0.2	
S11-31500/35	31500					20.22	112.2	0.2	

110kV (Cont...)

TYPE	RATED CAPACITY (KVA)	WEIGHT (KG)		OVERALL DIMENSION (MM)			TRACK SPACING (MM)
		OIL	TOTAL	L	W	H	
S11-50/35	50	280	770	1150	900	1800	550×550
S11-100/35	100	360	1150	1210	950	1880	660×660
S11-125/35	125	400	1180	1320	1120	1960	660×660
S11-160/35	160	460	1300	1400	1140	1980	660×660
S11-200/35	200	500	1500	1420	1160	2000	660×660
S11-250/35	250	550	1670	1480	1200	2050	660×660
S11-315/35	315	580	1950	1730	1180	2100	660×660
S11-400/35	400	620	2200	2100	1150	2300	660×660
S11-500/35	500	680	2400	2100	1220	2170	820×820
S11-630/35	630	780	3450	2150	1250	2250	820×820
S11-800/35	800	900	3900	2300	1310	2350	820×820
S11-1000/35	1000	1000	4550	2480	1360	2450	820×850
S11-1250/35	1250	1200	4900	2500	1420	2580	1070×1070
S11-1600/35	1600	1250	5400	2650	1750	2580	1070×1070
S11-2000/35	2000	1300	6200	2680	1850	2700	1070×1070
S11-2500/35	2500	1580	7000	2860	2050	2800	1070×1070
S11-3150/35	3150	1950	9500	2950	2850	2900	1070×1275
S11-4000/35	4000	2000	10000	2980	2900	2900	1070×1275
S11-5000/35	5000	2300	11000	3100	3000	3100	1070×1275
S11-6300/35	6300	2850	12850	3250	3300	3250	1070×1275
S11-8000/35	8000	3100	15600	3450	3450	3400	1070×1275
S11-10000/35	10000	3550	19000	3550	3650	3550	1475×1475
S11-12500/35	12500	4200	21500	4000	3650	3650	1475×1475
S11-16000/35	16000	5500	27000	4240	3800	3960	1475×1475
S11-20000/35	20000	5880	30000	4260	4000	4100	1475×1475
S11-25000/35	25000	7000	34000	4350	4200	4200	1475×1475
S11-31500/35	31500	8000	40500	4610	4450	4350	1475×1475

110kV (Cont...)

Technical Data for SZ11 Type On-load Tap Changing Transformers with 35kV

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)			CONNECTING SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANC %	
		H.V (KV)	TAPPING RANGE OF M.V	L.V (KV)						
SZ11-1000/35	1000	35	± 3 x 2.5%	0.4	Yyno	1.34	11.4	1.0	6.5	
SZ11-1250/35	1250					1.58	13.4	1.0		
SZ11-1600/35	1600					1.91	16.2	0.9		
SZ11-2000/35	2000					2.24	19.1	0.9		
SZ11-1600/35	1600	35		6.3	Yd11	1.91	16.2	0.9		
SZ11-2000/35	2000					2.30	19.1	0.9		
SZ11-2500/35	2500					2.72	20.5	0.7		
SZ11-3150/35	3150	35 38.5		± 3 x 2.5%	10.5		3.23	24.6	0.7	7.0
SZ11-4000/35	4000						3.87	29.0	0.6	
SZ11-5000/35	5000				4.64	34.0	0.6	7.5		
SZ11-6300/35	6300				5.63	36.6	0.4			
SZ11-8000/35	8000		± 4 ₂ x 2.5%		6	YNd11	7.87	40.4	0.4	8.0
SZ11-10000/35	10000						9.28	47.8	0.4	
SZ11-12500/35	12500						10.94	56.5	0.3	
SZ11-16000/35	16000	13.17		69.0			0.3			
SZ11-20000/35	20000	15.57		83.0			0.2			
SZ11-25000/35	25000	11			18.5	98.2	0.2			
SZ11-31500/35	31500				21.9	116.5	0.2			

110kV (Cont...)

TYPE	RATED CAPACITY (KVA)	WEIGHT (KG)		OVERALL DIMENSION (MM)			TRACK SPACING (MM)
		OIL	TOTAL	L	W	H	
SZ11-1000/35	1000	1500	4750	2850	1600	2580	820×820
SZ11-1250/35	1250	1550	5200	2880	1750	2600	1070×1070
SZ11-1600/35	1600	1600	6100	2900	1900	2580	1070×1070
SZ11-2000/35	2000	1750	7000	3050	2100	2600	1070×1070
SZ11-1600/35	1600	1600	6100	2800	1950	2700	1070×1070
SZ11-2000/35	2000	1750	7000	3050	2000	2800	1070×1070
SZ11-2500/35	2500	2100	8000	3200	2100	2850	1070×1070
SZ11-3150/35	3150	2450	9150	3500	2840	2800	1070×1275
SZ11-4000/35	4000	2650	10500	3600	2900	2920	1070×1275
SZ11-5000/35	5000	2900	12000	3700	3200	2950	1070×1275
SZ11-6300/35	6300	3400	13700	3900	3260	3100	1070×1275
SZ11-8000/35	8000	4300	17500	4100	3400	3200	1475×1475
SZ11-10000/35	10000	4500	20000	4350	3400	3350	1475×1475
SZ11-12500/35	12500	5500	23500	4450	3600	3850	1475×1475
SZ11-16000/35	16000	6380	27500	4800	4100	3950	1475×1475
SZ11-20000/35	20000	7900	32800	4900	4150	4100	1475×1475
SZ11-25000/35	25000	8500	39500	5100	4350	4150	1475×1475
SZ11-31500/35	31500	9500	43500	5200	4350	4300	1475×1475

Features of 10kV & 35kV oil-immersed distribution transformer

1. The features of the product structure are:

Core of transformer are made by the high quality cold-rolled grain-oriented silicon steel sheet with laser notch, cutting by the imported world first class cut-into-length production line to ensure less shear burrs, high precision lamination, also inclined by 45° full-seam construction, making the silicon steel sheet rolling direction same as the magnetic flux direction, it can reducing the load loss, load current and noise level.

- 1.2 HV winding is made with polyvinyl acetal wire enamel wire, layer type, double-sided glue dots paper are used as the layer insulation between layers, it will stick together after dry, so that the HV winding to solidify to a solid after dry. HV winding ampere-turns arranged by our specific technology, it will reduce axial strength during short circuit happen.
- 1.3 Corrugated tank structure used in the transformer design. The imported corrugated tank production line can produce the corrugated sheet and welding seam automatically, the weld the tank rim and bottom on the welding desk, it will be performed the leakage test after welding process finished one tank by one tank, and a finally leakage test for whole transformer to ensure the quality of sealing.
- 1.4 The oil will be filling in the transformer under vacuum condition, strictly and advanced technology greatly improved the insulation strength of transformer.
- 1.5 Latest invention technology are used on designing of transformer bushing, no pressure pin and plate on the outside, it avoids oil leakage, steel rust and etc, the structure is reasonable and contour artistic.
- 1.6 Oil level gauge with magnetic plate structure, it can fully isolation the oil tank and air, can ensure the quality of transformer oil not to effect by ultraviolet radiation.
- 1.7 Bar-type No Circuit Tap Changer used on the transformer design, it is easy to be operated. It can be automatically and quickly switched, and have obviously feeling during switched by hand. Effectively solve the problems of switch as other tap-changer. Client can also add a lock to prevent the non-normal random switching according their requirement.

2. Dyn11:

The comparison of the Dyn11 and Yyn0 vector group: Both Dyn11 and Yyn0 vector group distribution transformers are three-phase three-column type, only the insulation requirements of high-voltage winding of Dyn11 transformer, insulation strength slightly higher than Yyn0, others are all similar. However, still big difference between those two types of transformers.

- 2.1 Three-column core transformer, the third harmonic flux only can circulate through the tank wall and other parts. Thus, walls and other components will be heated cause by the stray loss. Dyn11 will much better than Yyn0 in this issue.
- 2.2 Zero sequence impedance of Dyn11 is much smaller than Yyn0, it is conducive to shut off load in LV side when fault grounding happened.
- 2.3 Dyn11 transformer can be running even the neutral current is equal or more than 75% of phase current. Therefore, the ability to withstand unbalanced load, Dyn11 is greater than Yyn0.
- 2.4 When one phase fuses in HV side of Dyn11 transformer, the other two-phase load can still run, but Yyn0 can not. So Dyn11 vector group, the neutral potential displacement of LV side will not be affected by the unbalanced load.
- 2.5 Whether single-phase short circuit in LV side, or three-phase short circuit, the current is no change with the neutral grounding type of Dyn11 transformer.
- 2.6 Single-phase short circuit current of Dyn11 transformer is approximately equal to three-phase short-circuits current, which is beneficial to fuses choosing. Zero sequence impedance of Yyn0 transformer is greater than the positive and negative sequence impedance, so the single-phase short-circuit current is less than three-phase short-circuit current, it will take some difficult in fuses choosing.

10kV SZ11

Technical Data for SZ11 Type On-load Tap Changing Transformer with 10kV

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)			CONNECTING SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANCE %
		H.V (KV)	TAPPING RANGE OF M.V	L.V (KV)					
SZ11-200/10	200	6 6.3 10 10.5 11	$\pm 4 \times 2.5\%$	0.4	Dyn11	0.38	1.96	1.5	4
SZ11-250/10	250					0.45	2.47	1.4	
SZ11-315/10	315					0.54	4.10	1.4	
SZ11-400/10	400					0.64	4.96	1.3	
SZ11-500/10	500					0.77	5.90	1.2	
SZ11-630/10	630					0.96	7.27	1.1	4.5
SZ11-800/10	800					1.12	8.89	1.0	
SZ11-1000/10	1000					1.36	10.43	1.0	
SZ11-1250/10	1250					1.56	12.40	0.9	
SZ11-1600/10	1600					1.92	14.79	0.8	

TYPE	RATED CAPACITY (KVA)	WEIGHT (KG)		OVERALL DIMENSION (MM)			TRACK SPACING (MM)
		OIL	TOTAL	L	W	H	
SZ11-200/10	200	250	1140	1700	850	1520	550×550
SZ11-250/10	250	280	1280	1740	880	1560	550×550
SZ11-315/10	315	310	1450	1780	920	1600	660×660
SZ11-400/10	400	340	1650	1810	960	1650	660×660
SZ11-500/10	500	390	2010	1910	1100	1800	660×660
SZ11-630/10	630	620	2940	2190	1140	2050	820×820
SZ11-800/10	800	650	3050	2250	1180	2060	820×820
SZ11-1000/10	1000	690	3210	2280	1220	2080	820×820
SZ11-1250/10	1250	800	3740	2400	1370	2180	820×820
SZ11-1600/10	1600	1000	5150	2520	1500	2150	820×820

10kV S11-M

Technical Data for S11-M Sealed Transformer with 10kV

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)			CONNECTING SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANC %
		H.V (KV)	TAPPING RANGE OF M.V	L.V (KV)					
S11-M-30/10	30	6 6.3 10 10.5 11	± 5 $\pm 2 \times 2.5\%$	0.4	Dyn11	0.10	0.63	2.3	4.0
S11-M-50/10	50					0.13	0.91	2.0	
S11-M-63/10	63					0.15	1.09	1.9	
S11-M-80/10	80					0.18	1.31	1.9	
S11-M-100/10	100					0.20	1.58	1.8	
S11-M-125/10	125					0.24	1.89	1.7	
S11-M-160/10	160					0.28	2.31	1.6	
S11-M-200/10	200					0.34	2.73	1.5	
S11-M-250/10	250					0.40	3.20	1.4	
S11-M-315/10	315					0.48	3.83	1.4	
S11-M-400/10	400					0.57	4.52	1.3	
S11-M-500/10	500					0.68	5.41	1.2	
S11-M-630/10	630					0.81	6.20	1.1	4.5
S11-M-800/10	800					0.98	7.50	1.0	
S11-M-1000/10	1000					1.15	10.30	1.0	
S11-M-1250/10	1250					1.36	12.00	0.9	
S11-M-1600/10	1600					1.64	14.50	0.8	

10kV SZ11

TYPE	RATED CAPACITY (KVA)	WEIGHT (KG)		OVERALL DIMENSION (MM)			TRACK SPACING (MM)
		OIL	TOTAL	L	W	H	
S11-M-30/10	30	70	305	990	580	885	400×400
S11-M-50/10	50	75	385	960	550	955	400×400
S11-M-63/10	63	80	430	980	560	995	400×400
S11-M-80/10	80	80	445	990	640	885	400×450
S11-M-100/10	100	85	515	1010	680	920	400×450
S11-M-125/10	125	95	570	1070	730	940	400×550
S11-M-160/10	160	105	670	1120	760	975	550×550
S11-M-200/10	200	115	760	1220	850	1000	550×550
S11-M-250/10	250	135	885	1270	890	1060	550×650
S11-M-315/10	315	145	1040	1360	960	1095	550×650
S11-M-400/10	400	180	1200	1395	990	1160	550×750
S11-M-500/10	500	230	1400	1475	1045	1220	660×750
S11-M-630/10	630	305	2050	1710	960	1570	660×850
S11-M-800/10	800	345	2345	1720	980	1600	660×850
S11-M-1000/10	1000	400	2590	1740	1040	1650	820×850
S11-M-1250/10	1250	520	3410	1790	1070	1735	820×850
S11-M-1600/10	1600	570	3680	2010	1230	1690	820×900

10kV S13-M

Technical Data for S13-M Sealed Transformer with 10kV

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)			CONNECTING SYMBOL	NO-LOAD LOSS (KW)	LOAD LOSS (KW)	NO-LOAD CURRENT (%)	SHORT-CIRCUIT IMPEDANC %
		H.V (KV)	TAPPING RANGE OF M.V	L.V (KV)					
S13-M-30/10	30	6 6.3 10 10.5 11	± 5 $\pm 2 \times 2.5\%$	0.4	Dyn11	0.08	0.63	2.3	4.0
S13-M-50/10	50					0.1	0.91	2.0	
S13-M-63/10	63					0.11	1.09	1.9	
S13-M-80/10	80					0.13	1..	1.9	
S13-M-100/10	100					0.15	1.58	1.8	
S13-M-125/10	125					0.17	1.89	1.7	
S13-M-160/10	160					0.2	2.31	1.6	
S13-M-200/10	200					0.24	2.73	1.5	
S13-M-250/10	250					0.29	3.2	1.4	
S13-M-315/10	315					0.34	3.83	1.4	
S13-M-400/10	400					0.41	4.52	1.3	
S13-M-500/10	500					0.48	5.41	1.2	
S13-M-630/10	630					0.57	6.20	1.1	4.5
S13-M-800/10	800					0.7	7.50	1.0	
S13-M-1000/10	1000					0.83	10.30	1.0	
S13-M-1250/10	1250					0.97	12.00	0.9	
S13-M-1600/10	1600					1.17	14.50	0.8	

10kV SZ13-M

TYPE	RATED CAPACITY (KVA)	WEIGHT (KG)		OVERALL DIMENSION (MM)			TRACK SPACING (MM)
		OIL	TOTAL	L	W	H	
S13-M-30/10	30	70	330	880	540	860	400×400
S13-M-50/10	50	75	415	900	550	930	400×400
S13-M-63/10	63	80	465	930	580	970	400×400
S13-M-80/10	80	85	520	950	610	1000	400×450
S13-M-100/10	100	95	560	980	650	1030	400×450
S13-M-125/10	125	100	650	1000	700	1060	400×550
S13-M-160/10	160	115	780	1100	730	1105	550×550
S13-M-200/10	200	130	880	1140	775	1150	550×550
S13-M-250/10	250	135	990	1200	810	1170	550×650
S13-M-315/10	315	165	1160	1250	850	1250	550×650
S13-M-400/10	400	195	1450	1300	880	1320	550×750
S13-M-500/10	500	230	1680	1420	900	1430	660×750
S13-M-630/10	630	305	2100	1600	930	1460	660×850
S13-M-800/10	800	345	2580	1710	1020	1550	660×850
S13-M-1000/10	1000	400	2850	1780	1070	1700	820×850
S13-M-1250/10	1250	520	3750	1850	1070	1780	820×850
S13-M-1600/10	1600	570	4050	2010	1230	1700	820×900

D11

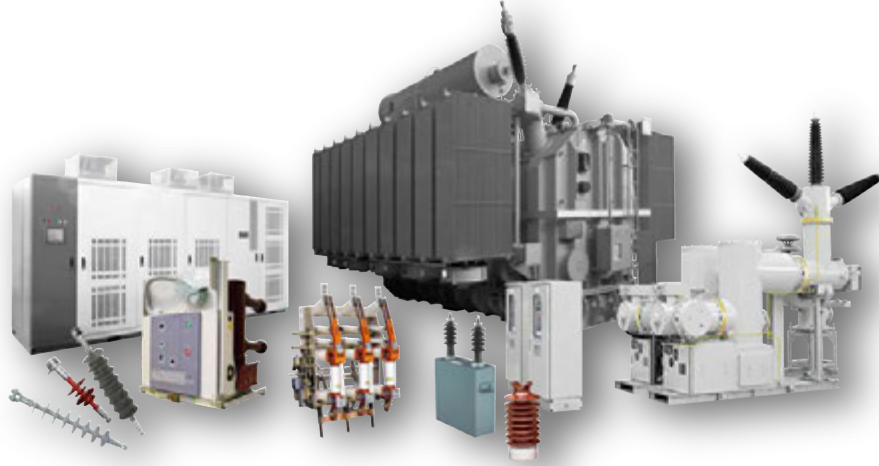
Technical Data for D11 Single-phase Oil-immersed Transformer

TYPE	RATED CAPACITY (KVA)	RATED VOLTAGE (KV)	NO-LOAD LOSS (W)	LOAD LOSS (W)	SHORT-CIRCUIT IMPEDANCE (%)	NO-LOAD CURRENT (%)
D11-M-20/10	20	10/0.23	70	375	3.5	0.5
D11-M-30/10	30		85	490	3.5	0.5
D11-M-50/10	50		135	660	3.5	0.4
D11-M-63/10	63		160	790	3.5	0.35
D11-M-80/10	80		180	930	3.5	0.35
D11-M-100/10	100		210	1100	3.5	0.3
D11-M-125/10	125		235	1300	3.5	0.3
D11-M-160/10	160		270	1500	3.5	0.3

TYPE	WEIGHT (KG)			(MM) OVERALL DIMENSIONS		
	OIL	BODY	TOTAL	L	W	H
D11-M-20/10	50	90	175	670	570	690
D11-M-30/10	60	120	215	700	630	750
D11-M-50/10	70	170	295	740	670	780
D11-M-63/10	75	195	320	760	685	800
D11-M-80/10	90	235	390	780	700	820
D11-M-100/10	100	285	445	800	730	840
D11-M-125/10	110	335	510	830	760	860
D11-M-160/10	120	400	600	860	790	880

Silverstone Electric

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