

HV/HV power transformers

immersed transformers
from 5 to 60 MVA
for 7.2 to 123 kV systems



standards

These transformers comply with the following standards ⁽¹⁾:

- IEC standards;
- French standards NF C 52 100 (1990).

France Transfo guarantees that its transformers are assembled using components that are both new and PCB-free (< 2 ppm level), in strict compliance with the current standards.



electrical characteristics

rated power (MVA) ⁽³⁾		5	10	20	25	5	10	20	25	30
rated insulation level (kV) ⁽⁴⁾	primary	24-36				72.5				
	secondary	7.2 - 12 - 17.5 - 24				7.2 - 12 - 17.5 - 24				
losses (kW)	no load	6	10	17	21	7	11	18	22	25
	load ⁽²⁾	43	71	120	140	43	71	120	140	160
rated impedance voltage (%) ⁽²⁾		8	9	10	11	8	9	10	11	11

(1) other possibilities upon request, please consult us.

(2) load losses and rated impedance voltage at 75°C.

(3) each type of cooling device comes with its particular type of equipment (circulators, ventilators, etc.).

cooling	type	ONAN	ODAF	ONAF	ODWF
of oil	natural through thermoposition	■		■	
	directional through circulators		■		■
of tank	natural through thermoposition	■		■	
	forced through fans		■	■	
	forced through water circulation				■

(4) reminder of insulation levels:

rated insulation level (kV)	7.2	12	17.5	24	36	52	72.5	90	123
kV r.m.s. 50 Hz - 1 mn	20	28	38	50	70	95	140	185	230
kV B.I.L., 1.2/50 μs	60	75	95	125	170	250	325	450	550

(5) other ambient temperature (45°C, 50°C, 55°C, etc.) upon request, consult us.

description

This range consists of transformers complying with the following specification:

- three-phase transformers, 50 or 60 Hz,
- for indoor or outdoor use (installation to be specified);
- maximum ambient temperature: 40°C ⁽⁵⁾;
- mineral oil immersed (other dielectric upon request);
- breathing type with conservator ;
- cover bolted on tank or welded bell type as per specification;
- ONAN, ONAF, ODAF or ODWF cooling type;
- standard anti-corrosion surface treatment and coating ⁽¹⁾;
- final colour grey RAL 7033 ⁽¹⁾.

basic fittings

Each transformer includes:

- 1 off-circuit tappings switch with padlocking located on the cover ; this switch operates on the highest rated voltage to bring the transformer to the supply voltage-actual value (generally ± 5%, 3 or 5 positions);
- porcelain bushings on primary and secondary sides;
- 2 earthing terminals;
- 1 conservator with level indicator tube;
- 1 silicagel airdryer;
- 1 Buchholz relay with 2 contacts (alarm and tripping);
- 1 thermostat with two contact (alarm and tripping);
- 1 dial type thermometer (without contact);
- 4 directional flat rollers;
- lifting and/or untanking lugs;
- 1 rating plate;
- 1 filling plug;
- 1 draining device and treatment valve with sampler.

options

The following fittings may be provided as an option:

- 1 on-load tap changer in the main tank (generally ± 12% - 19 positions maximum) with:
 - 1 protective relay and eventually, on request:
 - 1 parallel operation device;
 - 1 voltage regulator with voltage drop equalizer;
 - 1 remote indicator of tap changer position.
- magnetic level indicator (with or without contact, please specify);
- HV fixed plug-in connectors HN 52 S 61 :
 - 250, 400, 630 or 1250 A - 24 kV;
 - 400, 630 or 1250 A - 36 kV.
- HV mobile plug-in connectors HN 52 S 61, straight or elbow (the cable characteristics should be specified);
- condenser bushings;
- increased creepage distance bushings;
- 1 bonnet on HV bushings:
 - in the air for connection by dry cables or busducts (except rated insulation level 72.5 kV) ;
 - oil immersed, hermetically sealed for cable connection;
 - SF6 immersed, hermetically sealed for connection by busbars on oil/SF6 bushings;
- winding temperature indicator by thermal image ;
- current transformer:
 - "bushing" type around terminals;
 - standard type for earth fault current detector;
- 1 overpressure valve (with or without contact, please specify);
- 1 automatic oil retaining valve (between conservator and tank);
- "Atmoseal" oil protection system;
- 1 treatment valve at the upper part of the tank ;
- 1 insulation valve for radiators;
- 4 jacking lugs with hauling eyes.

Note : the above options concern usual cases and are not restrictive. For other information, please consult us.

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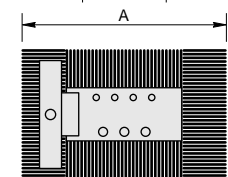
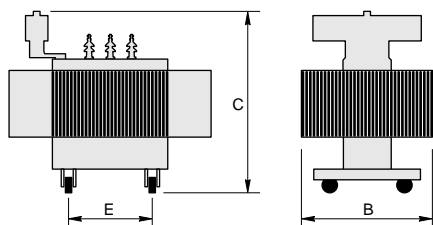


dimensions and weights

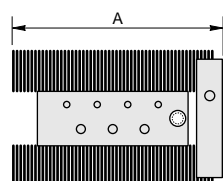
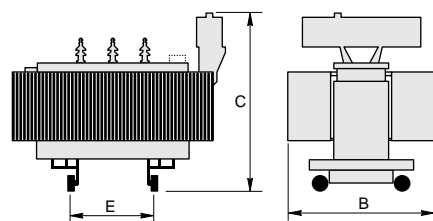
Typical dimensions and weights are indicated in the table below for mineral oil immersed transformers, completely set up* with a standard type cooling.

They correspond to transformers intended for systems of 7.2 to 72.5 kV having electrical characteristics as indicated in the previous table.

For other voltages, other characteristics or when the transformers are immersed in another dielectric, dimensions and weights would be different, please, consult us.



Transformers 5 MVA, with off-voltage tapping switch.



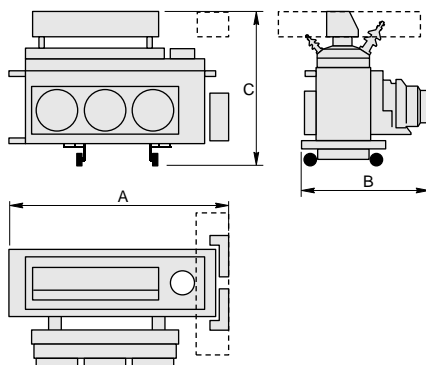
Transformers 5 MVA with on-load tap changer, or 10 to 25 MVA with off-voltage tapping switch or with on-load tap changer.

ONAN type cooling

rated power (MVA)	with off-voltage tappings switch					with on-load tap changer				
	dimensions (mm)				total weight(kg)	dimensions (mm)				total weight(kg)
	A	B	C	E		A	B	C	E	
rated insulation level 24 kV										
5	2700	2100	2500	1000	8500	3400	2200	2550	1000	10000
10	3750	2450	3500	1500	17000	3800	2500	3500	1500	19000
20	4300	3900	3600	1500	26500	4600	3900	3600	1500	27000
25	4000	3900	3800	1500	35000	4100	3900	3800	1500	37000
31 to 60	consult us									
rated insulation level 36 kV										
5	3300	2400	2950	1000	11000	3600	2400	3000	1000	13000
10	3900	3300	3600	1500	18000	3900	3400	3600	1500	20000
20	4400	3950	3700	1500	27000	4700	4000	3700	1500	29000
25	4200	4300	4000	1500	36000	4800	4300	4000	1500	38000
31 to 60	consult us									
rated insulation level 72.5 kV										
5	4100	2600	3300	1000	17000					
10	3900	3400	3500	1500	18000	4000	3900	3600	1500	22000
20	4500	4000	4000	1500	27000	5000	4100	4000	1500	32000
25	4400	4600	4300	1500	41000	5000	4600	4300	1500	43000
30	consult us									

ODAF type cooling

rated power (MVA)	with off-voltage tappings switch				with on-load tap changer				
	dimensions (mm)			total weight(kg)	dimensions (mm)			total weight(kg)	
	A	B	C		A	B	C		
rated insulation level 72.5 kV									
20	3500	2700	4000	21000	4500	3000	4000	23000	
25	4000	3000	4300	25000	4700	3000	4300	28000	
rated insulation level > 72.5 kV									



Transformers 20 to 25 MVA, with off-voltage switch or on-load tap changer.

* For the protection of some components or the compliance with the railway or road regulations, the transformers could be delivered partially dismantled.

Casual arrangements such as bars and cables supports, flexible connectors, etc. are to be provided the contractors in order to avoid mechanical stresses on the transformer flat-bars and bushings.

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Due to the evolution of standards and materials, the present document will bind us only after confirmation from technical department.