



GREEN T.HE  
High efficiency  
Transformers

THE GLOBAL SPECIALIST  
IN ELECTRICAL AND DIGITAL BUILDING INFRASTRUCTURES

 **legrand**<sup>®</sup>





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# THE NEW STANDARD

The new EN 50541-1 standard requires that distribution transformers are built with the objective of **ensuring high energy efficiency, while reducing the impact on the environment.**

Legrand, who has always been committed to contributing to a sustainable technological development, fulfils the requirements of the EN 50541-1 standard by introducing, within its cast resin transformer range, the new GREEN TRANSFORMER HIGH EFFICIENCY (Green T.HE).

These transformers ensure a consistent reduction in energy consumption, resulting in financial savings, and the decrease of CO<sub>2</sub> emissions released into the atmosphere.



## **The EN 50541-1 Standard**

applies to 50 Hz, 100 kVA to 3150 kVA three-phase dry-type distribution transformers with maximum voltage per component not exceeding 36 kV. It replaces the following Standards: HD 538.1 S1:1992 + A1:1995 and HD 538.2 S1:1995 which remain applicable until 02-01-2014.

## CLASSIFICATION

The classification of a cast resin transformer depends on the value of the no-load losses ( $P_0$ ), as well as the load losses ( $P_k$ ), characteristics of the machine.

More precisely,  $P_0$  losses are independent from the load, and remain constant for the whole period the transformer is connected to the electric power network. On the other hand,  $P_k$  losses only occur when the transformer is connected to a load, and are proportional to the square of the load itself.

NO-LOAD LOSSES ( $P_0$ )	LOAD LOSSES ( $P_k$ )
A <sub>0</sub>	A <sub>k</sub>
B <sub>0</sub>	
C <sub>0</sub>	B <sub>k</sub>

## STANDARDS

The EN 50541-1 Standard provides new loss level classifications for transformers; 3 of these apply to no-load losses, and 2 to load losses. Letter A identifies the most virtuous and economic level for both types of losses.



## CERTIFICATIONS AND ACCEPTANCE TESTS

Prior to the Legrand cast resin transformers being supplied to the customer, they are individually inspected and must pass the acceptance and, when necessary, type tests, if they are required at the time of order.

At the end of the acceptance tests a specific inspection certificate is delivered with each transformer.

### ACCEPTANCE TESTS

■ Measurement of winding resistance	IEC 60076-1
■ Measurement of transformation ratio and check of polarity and connections	IEC 60076-1
■ Measurement of short-circuit voltage and losses due to load	IEC 60076-1
■ Measurement of no-load losses and no-load current	IEC 60076-1
■ Insulation test with applied voltage	IEC 60076-3
■ Insulation test with induced voltage	IEC 60076-3
■ Measurement of partial discharges	IEC 60076-11

### TYPE TESTS (on request)

■ Atmospheric impulse test	IEC 60076-3
■ Temperature rise test	IEC 60076-2

### SPECIAL TESTS (on request)

■ Measurement of sound level	IEC 60076-10
■ Short-circuit withstand test	IEC 60076-11

# Economic and Environmental advantages



For a correct economic assessment, when purchasing a transformer the OPERATING COST of the machine needs special consideration.

The purchase price of the transformer is only a marginal part of the Total Ownership Cost of the machine (TCO), while the operating cost (mainly connected with losses), represents over 80% of the total cost. This means that in a relatively short time it will be possible to recover the extra cost invested for the purchase of a Green T.HE cost, compared with the cost of a standard loss transformer.

## EXAMPLE OF POTENTIAL SAVINGS OBTAINED USING A GREEN TRANSFORMER HIGH EFFICIENCY

EUROPE	Class N transformer	Class AA Green T.HE	
Rated power (SR): 1000 kVA	Purchase price	14,000 €	18,500 €
Primary no-load voltage (V10): 20 kV	Operating cost (20 years)	50,971 €	37,923 €
Secondary no-load voltage (V20): 400 V	TOTAL Cost	64,971 €	56,423 €
Uk: 6%			
Transformer lifetime: 20 years			
In this example, the extra 4,500 € required for the purchase of the Green T.HE transformer is recovered in less than six years, while the total saving for the 20 year period will be approximately 8,500 €.	<b>FINANCIAL SAVING</b> <b>8,548 €</b>	<b>SAVING IN TERMS OF CO<sub>2</sub> EMISSIONS</b> <b>1,648 Ton CO<sub>2</sub></b>	

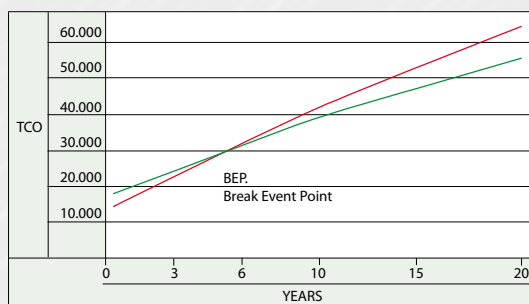
**Note:** Financial savings have been calculated taking into account the electric power supply costs listed on the EUROSTAT website.  
EU-27: cost of energy 0,1170 €/kWh. Equivalence 0,5778 kgCO<sub>2</sub>/kWh.

Reducing the consumptions of a transformer also means decreasing CO<sub>2</sub> emissions, limiting the impact of the machine on the environment.

Taking the example of the previous page as reference, it is clear that during the 20 years of operation, Green T.HE ensures a reduction of over 1500 tonnes in emissions of CO<sub>2</sub> into the atmosphere. This extremely important environmental advantage also becomes an economical advantage in those countries where carbon emissions trading based on the quantity of CO<sub>2</sub> emitted has been introduced.

In these countries, companies who do not comply with set carbon dioxide limits must pay for any excess, while companies that are committed to preserving the environment will not have to

sustain the burden of this additional charge, in addition to being able to sell carbon credits, and therefore turn them into financial advantage, CO<sub>2</sub> credits.



**Note:** The time required to reach the break even point changes depending on energy costs, and therefore the country in which the analysis is carried out. The chart takes into account Europe, and an energy cost of 0.1170 €/kWh.

TLC = PURCHASE COST + OPERATING COST of the transformer

Once the transformer has exhausted its own operating cycle, all of the accompanying materials can be easily recycled or disposed of, as indicated in the PEP (Product Environmental Profile) document, which describes the environmental impact of a product during its life cycle (from the extraction of the raw materials needed for its construction, through to its disposal).

# The range of Green Transformers High efficiency

Quality and reliability  
guaranteed

With the new Green T.HE range, Legrand offers its customer a product of extremely high quality that ensures great performance and reliability levels throughout the lifetime of the product.

The high quality of the construction materials used, and the compliance to the EN 50541-1 standard, are the fundamental characteristics that distinguish these new high energy efficiency transformers.







Transformers complying with the IEC 60076-11 standard



Transformers complying with the EN 50541-1 standard

**D**  
DISTRIBUTION  
LOSSES

**N**  
NORMAL  
LOSSES

$B_0B_k^*$

$B_0A_k$

$A_0B_k$

$A_0A_k$

\* This range is also known as R range in previous catalogues

## Legrand cast resin transformers: better quality and efficiency

With the introduction of new Green T.HE, Legrand's range of cast resin transformers becomes even wider, and gives the possibility of meeting the needs of the entire market, thanks to an offer that includes both standard products, and specific custom products. The cast resin transformers offered by Legrand are classed based on the losses, and are split into different categories, starting from products with distribution losses, up to products with extremely reduced losses, and therefore extremely high efficiency ( $A_0A_k$ ).



# Green T.HE

## MV/LV Cast Resin Transformers

Compliance with standard: IEC 60076-11 / EN 50541-1

Power (kVA): 100–3150  
 Frequency (Hz): 50  
 Adjustment, MT side:  $\pm 2 \times 2.5\%$

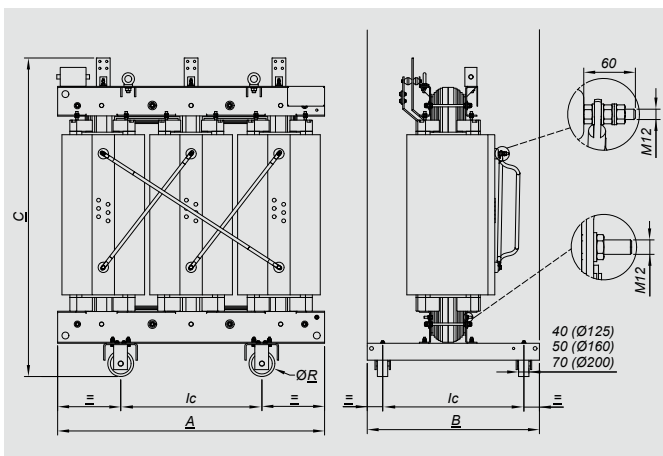
Vectorial group: Dyn11  
 Thermal class of the insulating system: 155 °C (F) / 155 °C (F)  
 Temperature rise: 100/100 K  
 Class of use: E2-C2-F1 Certified CESI A9032391 IEC 60076-11  
 Tolerances: According to IEC/CEI

Primary voltages (kV): 6-10-11. Insulation class: 12 kV BIL 60 kV  
 (BIL 75 kV available on request at no extra charge,  
 to be specified at the time of order)  
 Secondary voltages no-load (V): 400-433 (insulation class 1.1 kV)

Primary voltages (kV): 12-13,2-15. Insulation class: 17,5 kV BIL 75 kV  
 (BIL 95 kV available on request at no extra charge,  
 to be specified at the time of order)  
 Secondary voltages no-load (V): 400-410-420 (insulation class 1.1 kV)

Primary voltages (kV): 20-23. Insulation class: 24 kV BIL 95 kV  
 (BIL 125 kV available on request at no extra charge,  
 to be specified at the time of order)  
 Secondary voltages no-load (V): 400-410-420 (insulation class 1.1 kV)

Primary voltages (kV): 25-33. Insulation class: 36 kV BIL 170 kV  
 Secondary voltages no-load (V): 400-420 (insulation class 1.1 kV)



Values are for reference only. Construction drawings must be used for design.  
 Data provided may be modified without warning for reasons of technical production or product improvement.



## 12 kV insulation class

$S_n$ (kVA)	Series	Uk (%)	Primary voltage (kV)	Secondary voltage (V)	Po (W)	Pk (W) at 120°C	Io (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	Ic - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
100	AoAk	4	10	400	260	1800	2	51	1300	600	1300	520	125	880	1
	AoAk	6	10	400	260	1800	2	51	1300	600	1300	520	125	800	1
	AoBk	4	10	400	260	2000	2	51	1300	600	1300	520	125	880	1
	AoBk	6	10	400	260	2000	2	51	1300	600	1300	520	125	800	1
	BoAk	4	10	400	330	1800	2	51	1300	600	1300	520	125	880	1
	BoAk	6	10	400	330	1800	2	51	1300	600	1300	520	125	800	1
	BoBk	4	10	400	320	2000	1.8	51	1000	600	1100	520	125	630	1
	BoBk	6	10	400	320	2000	1.8	51	1000	600	1100	520	125	570	1
	N	4	10	400	440	2000	1.9	59	1000	600	1100	520	125	630	1
	N	6	10	400	440	2000	1.9	59	1000	600	1100	520	125	570	1
160	AoAk	4	10	400	350	2500	1.7	54	1300	640	1400	520	125	1000	2
	AoAk	6	10	400	350	2600	1.7	54	1300	640	1400	520	125	870	2
	AoBk	4	10	400	350	2700	1.7	54	1300	640	1400	520	125	1000	2
	AoBk	6	10	400	350	2700	1.7	54	1300	640	1400	520	125	870	2
	BoAk	4	10	400	450	2500	1.7	54	1300	640	1400	520	125	1000	2
	BoAk	6	10	400	450	2600	1.7	54	1300	640	1400	520	125	870	2
	BoBk	4	10	400	440	2700	1.6	54	1050	600	1140	520	125	700	1
	BoBk	6	10	400	440	2700	1.7	54	1050	600	1140	520	125	800	1
	N	4	10	400	610	2700	1.7	62	1050	600	1140	520	125	900	1
	N	4	10	400	610	2700	1.8	62	1050	600	1140	520	125	800	1
200	AoAk	4	10	400	425	2850	1.5	56	1350	640	1450	520	125	1120	2
	AoAk	6	10	400	425	3000	1.5	56	1350	640	1450	520	125	980	2
	AoBk	4	10	400	425	3200	1.5	56	1350	640	1450	520	125	1060	2
	AoBk	6	10	400	425	3100	1.5	56	1350	640	1450	520	125	920	2
	BoAk	4	10	400	525	2850	1.5	56	1350	640	1450	520	125	1060	2
	BoAk	6	10	400	530	3000	1.5	56	1350	640	1450	520	125	920	2
	BoBk	4	10	400	540	3150	1.4	56	1150	620	1190	520	125	1030	1
	BoBk	6	10	400	540	3150	1.5	56	1150	620	1190	520	125	900	1
	N	4	10	400	720	3150	1.5	63	1150	620	1190	520	125	1030	1
	N	6	10	400	720	3150	1.7	63	1150	620	1190	520	125	900	1
250	AoAk	4	10	400	500	3200	1.3	57	1400	640	1500	520	125	1310	3
	AoAk	6	10	400	500	3400	1.3	57	1400	640	1500	520	125	1140	3
	AoBk	4	10	400	500	3500	1.3	57	1400	640	1500	520	125	5200	3
	AoBk	6	10	400	500	3500	1.3	57	1400	640	1500	520	125	1090	3
	BoAk	4	10	400	610	3200	1.3	57	1400	640	1500	520	125	1250	3
	BoAk	6	10	400	610	3400	1.3	57	1400	640	1500	520	125	1090	3
	BoBk	4	10	400	600	3500	1.1	57	1250	630	1270	520	125	1150	2
	BoBk	6	10	400	580	3700	1.3	57	1250	630	1220	520	125	1000	2
	N	4	10	400	820	3500	1.2	65	1250	630	1270	520	125	1150	2
	N	6	10	400	750	3700	1.5	65	1250	630	1220	520	125	1000	2
	D	6	10	400	910	3800	1.5	67	1250	640	1300	520	125	1050	2

## 12 kV insulation class (continued)

$S_n$ (kVA)	Series	Uk (%)	Primary voltage (kV)	Secondary voltage (V)	Po (W)	Pk (W) at 120°C	Io (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	Ic - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
315	AoAk	4	10	400	600	3850	1.2	59	1450	750	1550	670	125	1390	3
	AoAk	6	10	400	600	3950	1.2	59	1450	750	1550	670	125	1230	3
	AoBk	4	10	400	600	4200	1.2	59	1450	750	1550	670	125	1300	3
	AoBk	6	10	400	600	4050	1.2	59	1450	750	1550	670	125	1180	3
	BoAk	4	10	400	745	3850	1.2	59	1450	750	1550	670	125	1300	3
	BoAk	6	10	400	740	3950	1.2	59	1450	750	1550	670	125	1180	3
	BoBk	4	10	400	730	4400	1	59	1200	750	1300	670	125	1350	2
	BoBk	6	10	400	700	4600	1	59	1250	750	1250	670	125	1200	2
	N	4	10	400	880	4400	1.1	67	1200	750	1300	670	125	1350	2
	N	4	10	400	850	4600	1.1	67	1250	750	1250	670	125	1200	2
	D	6	10	400	1050	4600	1.4	69	1350	750	1370	670	125	1200	2
400	AoAk	4	10	400	700	4500	1.1	60	1500	750	1600	670	125	1000	4
	AoAk	6	10	400	700	4500	1.1	60	1500	750	1600	670	125	870	4
	AoBk	4	10	400	700	4900	1.1	60	1500	750	1600	670	125	1000	4
	AoBk	6	10	400	700	4900	1.1	60	1500	750	1600	670	125	870	4
	BoAk	4	10	400	880	4500	1.1	60	1500	750	1600	670	125	1000	4
	BoAk	6	10	400	880	4500	1.1	60	1500	750	1600	670	125	870	4
	BoBk	4	10	400	800	4900	1.6	60	1050	600	1140	520	125	1500	3
	BoBk	6	10	400	790	5400	1.6	60	1050	600	1140	520	125	1350	3
	N	4	10	400	1150	4900	1.7	68	1050	600	1140	520	125	1500	3
	N	6	10	400	1000	5400	1.7	68	1050	600	1140	520	125	1350	3
	D	6	10	400	1320	5600	1.7	70	1050	600	1140	520	125	1350	3
500	AoAk	4	10	400	850	5600	1.1	61	1600	750	1700	670	125	1890	4
	AoAk	6	10	400	850	5800	1.1	61	1650	750	1750	670	125	1730	4
	AoBk	4	10	400	850	6100	1.1	61	1600	750	1700	670	125	1780	4
	AoBk	6	10	400	850	5900	1.1	61	1600	750	1700	670	125	1630	4
	BoAk	4	10	400	1015	5600	1.1	61	1600	750	1700	670	125	1780	4
	BoAk	6	10	400	795	5800	1.1	61	1600	750	1700	670	125	1630	4
	BoBk	4	10	400	1020	6500	0.8	61	1250	750	1550	670	125	1640	3
	BoBk	6	10	400	920	6700	0.8	61	1300	750	1500	670	125	1500	3
	N	4	10	400	1300	6500	0.9	69	1250	750	1550	670	125	1640	3
	N	6	10	400	1200	6700	0.9	69	1300	750	1500	670	125	1500	3
	D	6	10	400	1630	6700	1.2	71	1350	750	1540	670	125	1550	3
630	AoAk	4	10	400	1000	6700	1	62	1600	850	1750	670	160	2200	5
	AoAk	6	10	400	1000	7100	1	62	1650	850	1750	670	160	1980	5
	AoBk	4	10	400	1000	7300	1	62	1600	850	1750	670	160	2100	5
	AoBk	6	10	400	1000	7300	1	62	1600	850	1750	670	160	1890	5
	BoAk	4	10	400	1150	6700	1	62	1600	850	1750	670	160	2100	5
	BoAk	6	10	400	1150	7100	1	62	1600	850	1750	670	160	1890	5
	BoBk	4	10	400	1150	7300	0.7	62	1350	850	1600	670	160	2000	4
	BoBk	6	10	400	1050	7600	0.7	62	1500	850	1590	670	160	1800	4
	N	4	10	400	1500	7300	0.8	70	1350	850	1600	670	160	2000	4
	N	6	10	400	1450	7600	0.8	70	1500	850	1590	670	160	1800	4
	D	6	10	400	1790	7800	1.2	72	1500	850	1670	670	160	1800	4

## 12 kV insulation class (continued)

S <sub>r</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
800	AoAk	6	10	400	1100	8000	0.9	64	1700	850	1950	670	160	2480	5
	AoBk	6	10	400	1100	9000	0.9	64	1650	850	1900	670	160	2330	5
	BoAk	6	10	400	1300	8000	0.9	64	1650	850	1900	670	160	2330	5
	BoBk	6	10	400	1350	9400	0.7	64	1500	850	1740	670	160	2100	4
	N	6	10	400	1750	9400	0.8	71	1500	850	1740	670	160	2100	4
	D	6	10	400	2100	9400	1.1	73	1500	850	1780	670	160	2150	4
1000	AoAk	6	10	400	1300	9000	0.8	65	1650	1000	2100	820	160	2670	6
	AoBk	6	10	400	1300	10000	0.8	65	1650	1000	2100	820	160	2670	6
	BoAk	6	10	400	1500	9000	0.8	65	1650	1000	2050	820	160	2670	6
	BoBk	6	10	400	1550	10000	0.6	65	1550	1000	1820	820	160	2500	5
	N	6	10	400	2000	10000	0.7	73	1550	1000	1820	820	160	2500	5
	D	6	10	400	2470	11000	1	74	1550	1000	1890	820	160	2550	5
1250	AoAk	6	10	400	1500	11000	0.7	67	1850	1000	2200	820	160	3370	6
	AoBk	6	10	400	1500	12000	0.7	67	1850	1000	2150	820	160	3130	6
	BoAk	6	10	400	1800	11000	0.7	67	1850	1000	2150	820	160	3320	6
	BoBk	6	10	400	1900	12700	0.5	67	1550	1000	2000	820	160	2950	5
	N	6	10	400	2300	12700	0.6	74	1550	1000	2000	820	160	2950	5
	D	6	10	400	2940	13400	1	75	1550	1000	2030	820	160	3000	5
1600	AoAk	6	10	400	1800	13000	0.6	68	1950	1000	2200	820	160	3900	6
	AoBk	6	10	400	1800	14500	0.6	68	1950	1000	2150	820	160	3760	6
	BoAk	6	10	400	2200	13000	0.6	68	1950	1000	2150	820	160	3760	6
	BoBk	6	10	400	2200	14000	0.4	68	1650	1000	2180	820	160	3550	6
	N	6	10	400	2800	14000	0.5	76	1650	1000	2180	820	160	3550	6
	D	6.5	10	400	3520	16400	0.9	77	1650	1000	2180	820	160	3600	6
2000	AoAk	6	10	400	2200	15500	0.5	70	2000	1310	2400	1070	200	4560	7
	AoBk	6	10	400	2200	18000	0.5	70	2000	1310	2250	1070	200	4420	7
	BoAk	6	10	400	2600	16000	0.5	70	2000	1310	2250	1070	200	4420	7
	BoBk	6	10	400	2800	18000	0.4	70	1800	1310	2260	1070	200	4300	6
	N	6	10	400	3300	18000	0.5	79	1800	1310	2260	1070	200	4300	6
	D	7	10	400	3890	19000	0.9	80	1900	1310	2220	1070	200	4500	6
2500	AoAk	6	10	400	2600	18500	0.4	71	2150	1310	2450	1070	200	5470	7
	AoBk	6	10	400	2600	21000	0.4	71	2100	1310	2350	1070	200	5370	7
	BoAk	6	10	400	3200	19000	0.4	71	2100	1310	2350	1070	200	5420	7
	BoBk	6	10	400	3300	21000	0.3	71	2050	1310	2390	1070	200	5250	7
	N	6	10	400	4300	21000	0.4	81	2050	1310	2390	1070	200	5250	7
	D	7	10	400	5040	23000	0.8	82	2050	1310	2310	1070	200	5200	7
3150	AoAk	6	10	400	3150	22000	0.4	74	2250	1400	2550	1070	200	6010	8
	AoBk	6	10	400	3150	26000	0.4	74	2200	1400	2550	1070	200	5800	8
	BoAk	6	10	400	3800	22000	0.4	74	2250	1400	2550	1070	200	6050	8
	BoBk	7	10	400	3950	26000	0.3	74	2150	1310	2400	1070	200	6250	7
	N	7	10	400	4600	26000	0.4	83	2150	1310	2400	1070	200	6250	7

## 17.5 kV insulation class

S <sub>s</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
100	AoAk	4	10	400	330	1350	2	51	1300	600	1300	520	125	880	1
	AoAk	6	15	400	280	1800	2	51	1300	600	1300	520	125	800	1
	AoBk	4	15	400	330	1750	2	51	1300	600	1300	520	125	880	1
	AoBk	6	15	400	280	2050	2	51	1300	600	1300	520	125	800	1
	BoAk	4	15	400	360	1350	2	51	1300	600	1300	520	125	880	1
	BoAk	6	15	400	340	1800	2	51	1300	600	1300	520	125	800	1
	BoBk	6	15	400	380	2050	1.9	51	1050	600	1090	520	125	560	1
	N	6	15	400	430	1900	2	59	1050	600	1090	520	125	560	1
160	AoAk	4	15	400	450	1800	1.7	54	1300	640	1400	520	125	1000	2
	AoAk	6	15	400	400	2600	1.7	54	1300	640	1400	520	125	870	2
	AoBk	4	15	400	450	2500	1.7	54	1300	640	1400	520	125	1000	2
	AoBk	6	15	400	400	2900	1.7	54	1300	640	1400	520	125	870	2
	BoAk	4	15	400	490	1800	1.7	54	1300	640	1400	520	125	1000	2
	BoAk	6	15	400	480	2600	1.7	54	1300	640	1400	520	125	870	2
	BoBk	6	15	400	480	2900	1.6	54	1200	630	1210	520	125	750	1
	N	6	15	400	570	2800	1.7	62	1200	630	1210	520	125	750	1
200	AoAk	4	15	400	545	2250	1.5	56	1350	640	1450	520	125	1120	2
	AoAk	6	15	400	560	3000	1.5	56	1350	640	1450	520	125	980	2
	AoBk	4	15	400	545	2975	1.5	56	1350	640	1450	520	125	1060	2
	AoBk	6	15	400	460	3350	1.5	56	1350	640	1450	520	125	920	2
	BoAk	4	15	400	575	2250	1.5	56	1350	640	1450	520	125	1060	2
	BoAk	6	15	400	565	3000	1.5	56	1350	640	1450	520	125	920	2
	BoBk	6	15	400	570	3600	1.4	56	1250	630	1230	520	125	800	1
	N	6	15	400	680	3600	1.5	63	1250	630	1230	520	125	800	1
250	AoAk	4	15	400	640	2700	1.3	57	1400	640	1500	520	125	1310	3
	AoAk	6	15	400	520	3400	1.3	57	1400	640	1500	520	125	1140	3
	AoBk	4	15	400	640	3450	1.3	57	1400	640	1500	520	125	1250	3
	AoBk	6	15	400	520	3800	1.3	57	1400	640	1500	520	125	1090	3
	BoAk	4	15	400	660	2700	1.3	57	1400	640	1500	520	125	1250	3
	BoAk	6	15	400	650	3400	1.3	57	1400	640	1500	520	125	1090	3
	BoBk	6	15	400	670	3800	1.2	57	1250	640	1240	520	125	950	2
	N	6	15	400	750	3650	1.3	65	1250	640	1240	520	125	950	2
	D	6	15	400	910	3800	1.5	67	1250	640	1300	520	125	980	2
315	AoAk	4	15	400	745	3250	1.2	59	1450	750	1550	670	125	1390	3
	AoAk	6	15	400	635	3950	1.2	59	1450	750	1550	670	125	1230	3
	AoBk	4	15	400	745	4175	1.2	59	1450	750	1550	670	125	1300	3
	AoBk	6	15	400	635	4650	1.2	59	1450	750	1550	670	125	1180	3
	BoAk	4	15	400	815	3250	1.2	59	1450	750	1550	670	125	1300	3
	BoAk	6	15	400	795	3950	1.2	59	1450	750	1550	670	125	1180	3
	BoBk	6	15	400	790	4600	1.1	59	1250	750	1300	670	125	1050	2
	N	6	15	400	880	4500	1.2	67	1250	750	1300	670	125	1050	2
	D	6	15	400	1050	4600	1.4	69	1350	750	1370	670	125	1150	2

## 17.5 kV insulation class (continued)

S <sub>3</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
400	AoAk	4	10	400	850	3850	1.1	60	1500	750	1600	670	125	1390	4
	AoAk	6	15	400	750	4500	1.1	60	1500	750	1600	670	125	1240	4
	AoBk	4	15	400	850	4900	1.1	60	1500	750	1600	670	125	1300	4
	AoBk	6	15	400	750	5500	1.1	60	1500	750	1600	670	125	1150	4
	BoAk	4	15	400	970	3800	1.1	60	1500	750	1600	670	125	1300	4
	BoAk	6	15	400	940	4500	1.1	60	1500	750	1600	670	125	1170	4
	BoBk	6	15	400	790	4600	1.1	59	1250	750	1300	670	125	1050	3
	N	6	15	400	880	4500	1.2	67	1250	750	1300	670	125	1050	3
	D	6	15	400	1050	4600	1.4	69	1350	750	1370	670	125	1150	3
500	AoAk	4	15	400	450	1050	1.1	61	1600	750	1700	670	125	1890	4
	AoAk	6	15	400	925	5800	1.1	61	1650	750	1750	670	125	1730	4
	AoBk	4	15	400	1050	5900	1.1	61	1600	750	1700	670	125	1780	4
	AoBk	6	15	400	925	6550	1.1	61	1600	750	1700	670	125	1630	4
	BoAk	4	15	400	1120	4550	1.1	61	1600	750	1700	670	125	1780	4
	BoAk	6	15	400	1095	5800	1.1	61	1600	750	1700	670	125	1630	4
	BoBk	6	15	400	1110	6700	0.9	61	1350	750	1520	670	125	1400	3
	N	6	15	400	1200	6700	1	69	1350	750	1520	670	125	1050	3
	D	6	15	400	1630	6700	1.2	71	1350	750	1540	670	125	1400	3
630	AoAk	4	15	400	1250	5300	1	62	1600	850	1750	670	160	2200	5
	AoAk	6	15	400	1100	7100	1	62	1650	850	1750	670	160	1980	5
	AoBk	4	15	400	1250	6900	1	62	1600	850	1750	670	160	2100	5
	AoBk	6	15	400	1100	7600	1	62	1600	850	1750	670	160	1890	5
	BoAk	4	15	400	1270	5300	1	62	1600	850	1750	670	160	2100	5
	BoAk	6	15	400	1250	7100	1	62	1600	850	1750	670	160	1890	5
	BoBk	6	15	400	1290	7800	0.9	62	1500	850	1630	670	160	1700	4
	N	6	15	400	1600	7800	1	70	1500	850	1630	670	160	1700	4
	D	6	15	400	1790	7800	1.2	72	1500	850	1670	670	160	1650	4
800	AoAk	6	15	400	1300	8000	0.9	64	1700	850	1950	670	160	2480	5
	AoBk	6	15	400	1300	9400	0.9	64	1650	850	1900	670	160	2330	5
	BoAk	6	15	400	1500	8000	0.9	64	1650	850	1900	670	160	2330	5
	BoBk	6	15	400	1520	9400	0.8	64	1500	850	1780	670	160	2000	4
	N	6	15	400	1780	9300	0.9	71	1500	850	1780	670	160	2000	4
	D	6	15	400	2100	9400	1.1	73	1500	850	1780	670	160	1900	4
1000	AoAk	6	15	400	1550	9000	0.8	65	1650	1000	2100	820	160	2760	6
	AoBk	6	15	400	1550	11000	0.8	65	1650	1000	2100	820	160	2670	6
	BoAk	6	15	400	1800	9000	0.8	65	1650	1000	2050	820	160	2670	6
	BoBk	6	15	400	1800	11000	0.7	65	1550	1000	1870	820	160	2300	5
	N	6	15	400	2000	10800	0.8	73	1550	1000	1870	820	160	2300	5
	D	6	15	400	2470	11000	1	74	1550	1000	1890	820	160	2300	5

## 17.5 kV insulation class (continued)

S <sub>N</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
1250	AoAk	6	15	400	1800	11000	0.7	67	1850	1000	2200	820	160	3370	6
	AoBk	6	15	400	1800	13000	0.7	67	1850	1000	2150	820	160	3130	6
	BoAk	6	15	400	2100	11000	0.7	67	1850	1000	2150	820	160	3320	6
	BoBk	6	15	400	2000	13000	0.6	67	1550	1000	2010	820	160	2750	5
	N	6	15	400	2350	12600	0.7	74	1550	1000	2010	820	160	2750	5
	D	6	15	400	2940	13400	1	75	1550	1000	2030	820	160	2700	5
1600	AoAk	6	15	400	2200	13000	0.6	68	1950	1000	2200	820	160	3900	6
	AoBk	6	15	400	2200	16000	0.6	68	1950	1000	2150	820	160	3760	6
	BoAk	6	15	400	2400	13000	0.6	68	1950	1000	2150	820	160	3760	6
	BoBk	6	15	400	2420	16000	0.5	68	1650	1000	2190	820	160	3300	6
	N	6	15	400	2750	15500	0.6	76	1650	1000	2190	820	160	3300	6
	D	6.5	15	400	3520	16400	0.9	77	1650	1000	2180	820	160	3400	6
2000	AoAk	6	15	400	2600	16000	0.5	70	2000	1310	2400	1070	200	4650	7
	AoBk	6	15	400	2600	18000	0.5	70	2000	1310	2250	1070	200	4420	7
	BoAk	6	15	400	3000	16000	0.5	70	2000	1310	2250	1070	200	4420	7
	BoBk	6	15	400	2920	19000	0.5	70	1800	1310	2250	1070	200	4000	6
	N	6	15	400	3350	18500	0.6	79	1800	1310	2250	1070	200	4000	6
	D	7	15	400	3890	19000	0.9	80	1900	1310	2200	1070	200	4250	6
2500	AoAk	6	15	400	3100	19000	0.4	71	2150	1310	2450	1070	200	5470	7
	AoBk	6	15	400	3100	23000	0.4	71	2100	1310	2350	1070	200	5370	7
	BoAk	6	15	400	3600	19000	0.4	71	2100	1310	2350	1070	200	5420	7
	BoBk	6	15	400	3650	23000	0.4	71	1950	1310	2320	1070	200	4950	7
	N	6	15	400	4300	21800	0.5	81	1950	1310	2320	1070	200	4950	7
	D	7	15	400	5040	23000	0.8	82	2050	1310	2310	1070	200	4900	7
3150	AoAk	6	15	400	3800	22000	0.4	74	2250	1400	2550	1070	200	6010	8
	AoBk	6	15	400	3800	28000	0.4	74	2200	1400	2550	1070	200	5800	8
	BoAk	6	15	400	4300	22000	0.4	74	2250	1400	2550	1070	200	6050	8
	BoBk	7	15	400	3950	27000	0.3	74	2150	1310	2350	1070	200	5250	7
	D	7	15	400	4700	26000	0.4	83	2150	1310	2350	1070	200	5250	7



## 24 kV insulation class

$S_n$ (kVA)	Series	Uk (%)	Primary voltage (kV)	Secondary voltage (V)	Po (W)	Pk (W) at 120°C	Io (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	Ic - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
100	AoAk	4	20	400	330	1350	2	51	1300	600	1300	520	125	900	1
	AoAk	6	20	400	280	1800	2	51	1300	600	1300	520	125	810	1
	AoBk	4	20	400	330	1750	2	51	1300	600	1300	520	125	900	1
	AoBk	6	20	400	280	2050	2	51	1300	600	1300	520	125	810	1
	BoAk	4	20	400	360	1350	2	51	1300	600	1300	520	125	900	1
	BoAk	6	20	400	340	1800	2	51	1300	600	1300	520	125	810	1
	BoBk	4	20	400	400	1750	2	51	1200	600	1160	520	125	630	1
	BoBk	6	20	400	340	2050	2	51	1050	600	1110	520	125	570	1
	N	4	20	400	540	1750	2.1	59	1200	600	1160	520	125	630	1
	N	6	20	400	480	2000	2.1	59	1050	600	1110	520	125	570	1
160	AoAk	4	20	400	450	1800	1.7	54	1300	640	1400	520	125	1060	2
	AoAk	6	20	400	400	2600	1.7	54	1300	640	1400	520	125	930	2
	AoBk	4	20	400	450	2500	1.7	54	1300	640	1400	520	125	1060	2
	AoBk	6	20	400	400	2900	1.7	54	1300	640	1400	520	125	930	2
	BoAk	4	20	400	490	1800	1.7	54	1300	640	1400	520	125	1060	2
	BoAk	6	20	400	480	2600	1.7	54	1300	640	1400	520	125	930	2
	BoBk	4	20	400	580	2500	1.7	54	1250	640	1260	520	125	900	1
	BoBk	6	20	400	480	2900	1.7	54	1250	640	1240	520	125	800	1
	N	4	20	400	750	2500	1.8	62	1250	640	1260	520	125	900	1
	N	6	20	400	650	2800	1.8	62	1250	640	1240	520	125	800	1
200	AoAk	4	20	400	545	2250	1.5	56	1350	640	1450	520	125	1250	2
	AoAk	6	20	400	460	3000	1.5	56	1350	640	1450	520	125	1100	2
	AoBk	4	20	400	545	2975	1.5	56	1350	640	1450	520	125	1185	2
	AoBk	6	20	400	460	3350	1.5	56	1350	640	1450	520	125	1040	2
	BoAk	4	20	400	575	2250	1.5	56	1350	640	1450	520	125	1185	2
	BoAk	6	20	400	565	3000	1.5	56	1350	640	1450	520	125	1040	2
	BoBk	4	20	400	680	2900	1.5	56	1350	640	1320	520	125	1030	1
	BoBk	6	20	400	550	3600	1.5	56	1250	640	1250	520	125	900	1
	N	4	20	400	900	2900	1.7	63	1350	640	1320	520	125	1030	1
	N	6	20	400	800	3600	1.7	63	1250	640	1250	520	125	900	1
250	AoAk	4	20	400	640	2700	1.4	57	1400	640	1000	520	125	1380	3
	AoAk	6	20	400	520	3400	1.3	57	1400	640	1500	520	125	1200	3
	AoBk	4	20	400	640	3450	1.3	57	1400	640	1500	520	125	1320	3
	AoBk	6	20	400	520	3800	1.3	57	1400	640	1500	520	125	1150	3
	BoAk	4	20	400	600	2700	1.3	57	1400	640	1500	520	125	1320	3
	BoAk	6	20	400	650	3400	1.3	57	1400	640	1500	520	125	1150	3
	BoBk	4	20	400	800	3450	1.3	57	1350	640	1360	520	125	1150	2
	BoBk	6	20	400	650	3800	1.3	57	1350	640	1260	520	125	1000	2
	N	4	20	400	1000	3450	1.5	65	1350	640	1360	520	125	1150	2
	N	6	20	400	850	3700	1.5	65	1350	640	1260	520	125	1000	2
	D	6	20	400	1050	3800	1.5	67	1350	640	1360	520	125	1050	2

## 24 kV insulation class (continued)

$S_n$ (kVA)	Series	Uk (%)	Primary voltage (kV)	Secondary voltage (V)	Po (W)	Pk (W) at 120°C	Io (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	Ic - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
315	AoAk	4	20	400	745	3250	1.2	59	1450	750	1550	670	125	1570	3
	AoAk	6	20	400	635	3950	1.2	59	1450	750	1550	670	125	1400	3
	AoBk	4	20	400	745	4175	1.2	59	1450	750	1550	670	125	1520	3
	AoBk	6	20	400	635	4650	1.2	59	1450	750	1550	670	125	1350	3
	BoAk	4	20	400	815	3520	1.2	59	1450	750	1550	670	125	1520	3
	BoAk	6	20	400	795	3950	1.2	59	1450	750	1550	670	125	1350	3
	BoBk	4	20	400	920	4500	1.2	59	1350	750	1450	670	125	1350	2
	BoBk	6	20	400	750	4600	1.2	59	1350	750	1350	670	125	1200	2
	N	4	20	400	1150	4500	1.4	67	1350	750	1450	670	125	1350	2
	N	6	20	400	950	4500	1.4	67	1350	750	1350	670	125	1200	2
	D	6	20	400	1210	4600	1.4	69	1350	750	1410	670	125	1200	2
400	AoAk	4	20	400	850	3800	1.1	60	1500	750	1600	670	125	1770	4
	AoAk	6	20	400	750	4500	1.1	60	1500	750	1600	670	125	1600	4
	AoBk	4	20	400	850	4900	1.1	60	1500	750	1600	670	125	1660	4
	AoBk	6	20	400	750	5500	1.1	60	1500	750	1600	670	125	1500	4
	BoAk	4	20	400	970	3800	1.1	60	1500	750	1600	670	125	1660	4
	BoAk	6	20	400	940	4500	1.1	60	1500	750	1600	670	125	1500	4
	BoBk	4	20	400	1110	4900	1.1	60	1450	750	1530	670	125	1500	3
	BoBk	6	20	400	940	5500	1.1	60	1500	750	1440	670	125	1350	3
	N	4	20	400	1360	4900	1.3	68	1450	750	1530	670	125	1500	3
	N	6	20	400	1150	5400	1.3	68	1500	750	1440	670	125	1350	3
	D	6	20	400	1470	5600	1.3	70	1500	750	1510	670	125	1350	3
500	AoAk	4	20	400	1050	4550	1.1	61	1600	750	1700	670	125	2000	4
	AoAk	6	20	400	925	5800	1.1	61	1650	750	1750	670	125	1850	4
	AoBk	4	20	400	1050	5900	1.1	61	1600	750	1700	670	125	1910	4
	AoBk	6	20	400	925	6550	1.1	61	1600	750	1700	670	125	1750	4
	BoAk	4	20	400	1120	4550	1.1	61	1600	750	1700	670	125	1910	4
	BoAk	6	20	400	1095	5800	1.1	61	1600	750	1700	670	125	1750	4
	BoBk	4	20	400	1300	6400	1.1	61	1450	750	1610	670	125	1640	3
	BoBk	6	20	400	1050	6700	1.1	61	1500	750	1560	670	125	1500	3
	N	4	20	400	1580	6400	1.2	69	1450	750	1610	670	125	1640	3
	N	6	20	400	1350	6700	1.2	69	1500	750	1560	670	125	1500	3
	D	6	20	400	1740	6700	1.2	71	1500	750	1570	670	125	1550	3
630	AoAk	4	20	400	1250	5300	1	62	1600	850	1750	670	160	2330	5
	AoAk	6	20	400	1100	7100	1	62	1650	850	1750	670	160	2100	5
	AoBk	4	20	400	1250	6900	1	62	1600	850	1750	670	160	2220	5
	AoBk	6	20	400	1100	7600	1	62	1600	850	1750	670	160	2000	5
	BoAk	4	20	400	1270	5300	1	62	1600	850	1750	670	160	2220	5
	BoAk	6	20	400	1250	7100	1	62	1600	850	1750	670	160	2000	5
	BoBk	4	20	400	1600	6900	1	62	1500	850	1690	670	160	2000	4
	BoBk	6	20	400	1250	7800	1	62	1500	850	1650	670	160	1800	4
	N	4	20	400	1950	6900	1.1	70	1500	850	1690	670	160	2000	4
	N	6	20	400	1650	7800	1.1	70	1500	850	1650	670	160	1800	4
	D	6	20	400	2000	7800	1.2	72	1500	850	1700	670	160	1800	4

## 24 kV insulation class (continued)

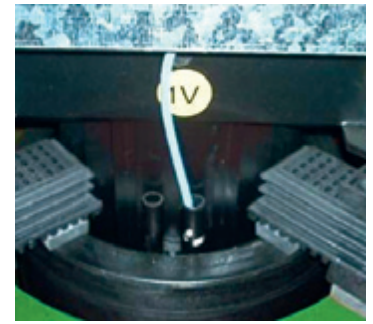
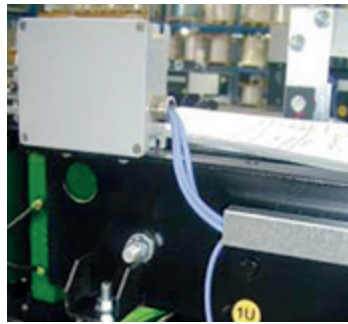
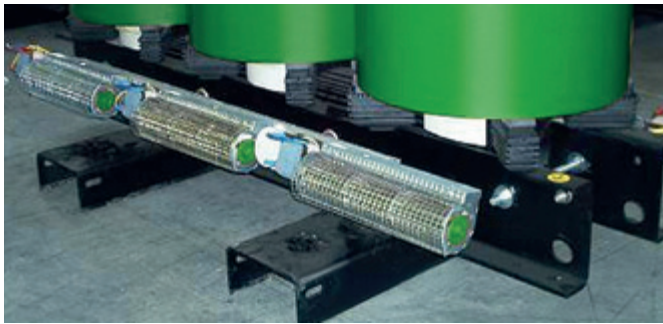
S <sub>N</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
800	AoAk	6	20	400	1300	8000	0.9	64	1700	850	1950	670	160	2600	5
	AoBk	6	20	400	1300	9400	0.9	64	1650	850	1900	670	160	2450	5
	BoAk	6	20	400	1500	8000	0.9	64	1650	850	1900	670	160	2450	5
	BoBk	6	20	400	1450	9400	0.9	64	1550	850	1810	670	160	2100	4
	N	6	20	400	1850	9300	1	71	1550	850	1810	670	160	2100	4
	D	6	20	400	2310	9400	1.1	73	1550	850	1850	670	160	2150	4
1000	AoAk	6	20	400	1550	9000	0.8	65	1650	1000	2100	820	160	3000	6
	AoBk	6	20	400	1550	11000	0.8	65	1650	1000	2100	820	160	2900	6
	BoAk	6	20	400	1800	9000	0.8	65	1650	1000	2050	820	160	2900	6
	BoBk	6	20	400	1800	11000	0.8	65	1650	1000	1890	820	160	2500	5
	N	6	20	400	2200	10800	0.9	73	1650	1000	1890	820	160	2500	5
	D	6	20	400	2790	11000	1	74	1650	1000	1930	820	160	2550	5
1250	AoAk	6	20	400	1800	11000	0.7	67	1850	1000	2200	820	160	3550	6
	AoBk	6	20	400	1800	13000	0.7	67	1850	1000	2150	820	160	3300	6
	BoAk	6	20	400	2100	11000	0.7	67	1850	1000	2150	820	160	3500	6
	BoBk	6	20	400	2100	13000	0.7	67	1650	1000	2030	820	160	2900	5
	N	6	20	400	2600	12800	0.8	74	1650	1000	2030	820	160	2900	5
	D	6	20	400	3260	13400	1	75	1650	1000	2070	820	160	3000	5
1600	AoAk	6	20	400	2200	13000	0.6	68	1950	1000	2200	820	160	4200	6
	AoBk	6	20	400	2200	16000	0.6	68	1950	1000	2150	820	160	4050	6
	BoAk	6	20	400	2400	13000	0.6	68	1950	1000	2150	820	160	4050	6
	BoBk	6	20	400	2400	16000	0.6	68	1750	1000	2200	820	160	3550	6
	N	6	20	400	2950	15500	0.7	76	1750	1000	2200	820	160	3550	6
	D	6.5	20	400	3730	16400	0.9	77	1800	1000	2250	820	160	3600	6
2000	AoAk	6	20	400	2600	16000	0.5	70	2000	1310	2400	1070	200	4900	7
	AoBk	6	20	400	2600	18000	0.5	70	2000	1310	2250	1070	200	4750	7
	BoAk	6	20	400	3000	16000	0.5	70	2000	1310	2250	1070	200	4750	7
	BoBk	6	20	400	2900	19000	0.5	70	1900	1310	2270	1070	200	4300	6
	N	6	20	400	3800	18600	0.6	79	1900	1310	2270	1070	200	4300	6
	D	6	20	400	4570	19000	0.9	80	1900	1310	2270	1070	200	4500	6
2500	AoAk	6	20	400	3100	19000	0.4	71	2150	1310	2450	1070	200	5800	7
	AoBk	6	20	400	3100	23000	0.4	71	2100	1310	2350	1070	200	5700	7
	BoAk	6	20	400	3600	19000	0.4	71	2100	1310	2350	1070	200	5750	7
	BoBk	6	20	400	3800	23000	0.4	71	1950	1310	2350	1070	200	5250	7
	N	6	20	400	4800	22000	0.5	81	1950	1310	2350	1070	200	5250	7
	D	7	20	400	5880	23000	0.8	82	2050	1310	2310	1070	200	5200	7
3150	AoAk	6	20	400	3800	22000	0.4	74	2250	1400	2550	1070	200	7150	8
	AoBk	6	20	400	3800	28000	0.4	74	2200	1400	2550	1070	200	6900	8
	BoAk	6	20	400	4300	22000	0.4	74	2250	1400	2550	1070	200	7200	8
	BoBk	7	20	400	4500	26000	0.4	74	2250	1310	2400	1070	200	6250	7
	N	7	20	400	5100	26000	0.5	83	2250	1310	2400	1070	200	6250	7

## 36 kV insulation class

S <sub>3</sub> (kVA)	Series	U <sub>k</sub> (%)	Primary voltage (kV)	Secondary voltage (V)	P <sub>0</sub> (W)	P <sub>k</sub> (W) at 120°C	I <sub>0</sub> (%)	LwA-Acoustic power (dB (A))	Length (A) (mm)	Width (B) (mm)	Height (C) (mm)	I <sub>c</sub> - wheel centre line (mm)	R - wheel diameter (mm)	Weight (kg)	BOX type
160	AoAk	6	33	400	850	2500	1.7	57	1400	640	1450	520	125	1400	2
	AoBk	6	33	400	850	2700	1.7	57	1300	640	1400	520	125	1300	2
	BoAk	6	33	400	900	2500	1.7	57	1300	640	1400	520	125	1300	2
200	AoAk	6	33	400	925	3000	1.5	58	1400	640	1550	520	125	1500	3
	AoBk	6	33	400	925	3350	1.5	58	1350	640	1500	520	125	1400	3
	BoAk	6	33	400	1000	3000	1.5	58	1350	640	1500	520	125	1400	3
250	AoAk	6	33	400	1000	3500	1.3	59	1450	640	1600	520	125	1600	4
	AoBk	6	33	400	1000	3800	1.3	59	1450	640	1550	520	125	1500	4
	BoAk	6	33	400	1100	3500	1.3	59	1400	640	1550	520	125	1500	4
315	AoAk	6	33	400	1100	4250	1.2	60	1500	750	1650	670	160	1800	4
	AoBk	6	33	400	1100	4650	1.2	60	1450	750	1600	670	160	1700	4
	BoAk	6	33	400	925	4250	1.2	60	1450	750	1600	670	160	1700	4
400	AoAk	6	33	400	1200	5000	1.1	61	1600	750	1750	670	160	2000	4
	AoBk	6	33	400	1200	5400	1.1	61	1550	750	1700	670	160	1900	4
	BoAk	6	33	400	1300	5000	1.1	61	1550	750	1700	670	160	1900	4
500	AoAk	6	33	400	1300	6000	1.1	62	1700	750	1800	670	160	2400	5
	AoBk	6	33	400	1300	6550	1.1	62	1650	750	1750	670	160	2300	4
	BoAk	6	33	400	1450	6000	1.1	62	1650	750	1750	670	160	2300	4
630	AoAk	6	33	400	1400	7000	1	63	1750	1000	1950	820	160	2700	5
	AoBk	6	33	400	1400	7500	1	63	1700	1000	1900	820	160	2600	5
	BoAk	6	33	400	1600	7000	1	63	1700	1000	1900	820	160	2500	5
800	AoAk	6	33	400	1650	8400	0.9	64	1850	1000	2100	820	160	3100	6
	AoBk	6	33	400	1650	9000	0.9	64	1800	1000	2050	820	160	3000	6
	BoAk	6	33	400	1900	8400	0.9	64	1800	1000	2050	820	160	2900	6
1000	AoAk	6	33	400	1900	10000	0.8	65	1900	1000	2150	820	160	3600	6
	AoBk	6	33	400	1900	11000	0.8	65	1850	1000	2100	820	160	3500	6
	BoAk	6	33	400	2250	10000	0.8	65	1850	1000	2100	820	160	3400	6
1250	AoAk	6	33	400	2200	12000	0.7	67	1950	1000	2300	820	160	4100	6
	AoBk	6	33	400	2200	13000	0.7	67	1900	1000	2200	820	160	4000	6
	BoAk	6	33	400	2600	12000	0.7	67	1900	1000	2200	820	160	3900	6
1600	AoAk	6	33	400	2550	14000	0.6	68	2100	1310	2400	1070	200	5000	7
	AoBk	6	33	400	2550	16000	0.6	68	2050	1310	2350	1070	200	4900	7
	BoAk	6	33	400	3000	14000	0.6	68	2050	1310	2350	1070	200	4800	7
2000	AoAk	6	33	400	3000	17000	0.5	72	2250	1310	2450	1070	200	6100	7
	AoBk	6	33	400	3000	18500	0.5	72	2150	1310	2400	1070	200	5900	7
	BoAk	6	33	400	3500	17000	0.5	72	2150	1310	2400	1070	200	5800	7
2500	AoAk	6	33	400	3500	20000	0.4	73	2350	1310	2550	1070	200	7200	8
	AoBk	6	33	400	3500	22500	0.4	73	2250	1310	2500	1070	200	7000	7
	BoAk	6	33	400	4200	20000	0.4	73	2250	1310	2500	1070	200	7000	7

# Green T.HE MV/LV cast resin transformers

## Installation accessories



Pack	Cat.Nos	Ventilation bars		
		Ventilation bars allow a temporary increase of the rated power (at rated operation conditions) - When ordering an AN/AF transformer, the ventilation bars will be supplied fitted to the transformer - When ordering a transformer, and the AN to AN/AF conversion (within the limits indicated in the table below) is completed after delivery, the purchaser will have to return the original data plate to the manufacturer, who shall then supply a new data plate and the corresponding assembly instructions Note 1 If the purchaser already has ventilation bars from the manufacturer available, the purchaser will have to return the original data plate to the manufacturer and send a conversion request, in order to receive the new data plate Note 2 The warranty is automatically void if the fan coil bars are not supplied by the manufacturer or if the assembly instructions are not followed correctly		
		Range (kVA)	Δ Power (%)	Notes
1	CB02443	100 - 250	+ 30	A temporary increase in rated conditions
1	CB02453	315 - 800	+ 30	
1	CB02463	1000 - 1250	+ 30	
1	CB01413	1600 - 2500	+ 20	
1	CB01411	3150	+ 15	
1	CB02444	100 - 250	+ 40	
1	CB02454	315 - 800	+ 40	
1	CB02464	1000 - 1250	+ 40	
1	CB01414	1600 - 2500	+ 30	
1	CB01412	3150	+ 20	

Temperature measurement probes						
Probes are supplied mounted on to the transformer and wired to aluminium IP 66 junction box						
		Type	Range (kVA)	N°	Δ t (C°)	Installation
1	200073	Pt100	≤ 2000	3	-	On the LV (3) windings
1	200074	Pt100	>2500	3	-	On the LV (3) windings
1	200137	Pt100	≤ 2000	3 + 1	-	On the LV (3) windings + on the core (1)
1	200138	Pt100	>2500	3 + 1	-	On the LV (3) windings + on the core (1)
1	CB00120	PTC	-	3 x 2	130-140	On the LV (3 pairs) windings for alarm and release
1	CB02400	PTC	-	3 x 2	110-120	On the LV (3 pairs) windings for alarm and release

Temperature control devices			
Central units are supplied unassembled			
		Type	Description
1	220035	VRT200	Fan control
1	220002	T154	Temperature control for 4 Pt100 probes
1	220023	MT200L	Temperature control for 4 Pt100 probes
1	220010	T119 DIN	Temperature control for 6 PTC probes, preset for DIN rail mounting
1	220004	T 119	Temperature control for 6 PTC probes

Pack	Cat.Nos	Non-magnetic thermometer	
1	250662	Thermometer (supplied without supporting bracket)	
1	250005	Thermometer support bracket (must be ordered alongside thermometer)	
Surge arrester kit			
		Vn (kV)	
1	130054D	10	
1	130055D	15	
1	130056D	20	
Rubber supports (anti vibration)			
		Range (kVA)	Description
1	170019	100 - 1600	4 buffers supplied for mounting under the transformer casters
1	170020	2000 - 3150	4 buffers supplied for mounting under the transformer casters

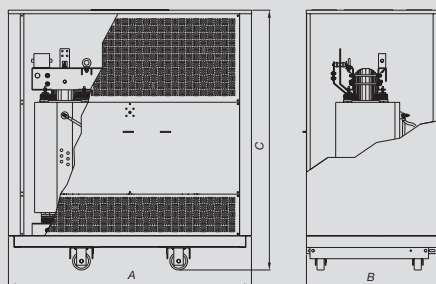
Accessories for connection to busbar trunking system							
For SCP Al busbars							
	For SCP Al	kVA	Transformer			Bars SCP	
			Insulation class (kV)	In at 400 V (A)	Ik 6 % (kA)		
1	60281012P	630	12-17.5-24-36	910	15.2	1000	
1	60281014P	800		1155	19.5	1250	
1	60281016P	1000		1443	24.1	1600	
1	60281017P	1250		1804	30.1	2000	
1	60391014P	1600		2310	38.5	2500	
1	60391016P	2000		2887	48.2	3200	
1	60391017P	2500		3608	60.2	4000	
For SCP Cu busbars							
	For SCP Cu	kVA		Transformer			Bars SCP
				Insulation class (kV)	In at 400 V (A)	Ik 6 % (kA)	
1	65281011P	630	12-17.5-24-36	910	15.2	1000	
1	65281013P	800		1155	19.5	1250	
1	65281015P	1000		1443	24.1	1600	
1	65281016P	1250		1804	30.1	2000	
1	65281018P	1600		2310	38.5	2500	
1	65391015P	2000		2887	48.2	3200	
1	65391016P	2500		3608	60.2	4000	
1	65391018P	3150		4552	65 (7 %)	5000	

# Green T.HE MV/LV cast resin transformers

## Installation accessories

### BOXES

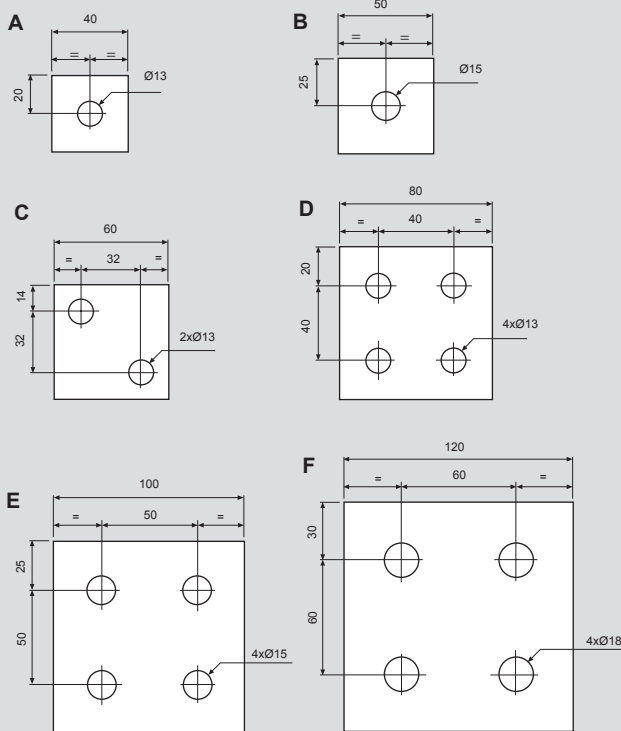
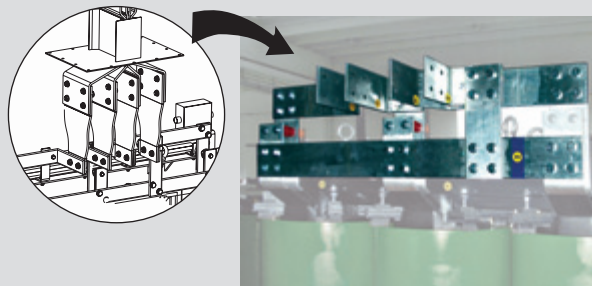
RAL 7035 colour  
AREL door lock on the box, Cat.Nos 230076



Cat.Nos	Box type	IP degree	Dimensions (mm)			Weight (kg)
			Length (A)	Width (B)	Height (C)	
230316	1	IP 21	1600	900	1470	120
230288	1	IP 23	1600	900	1470	130
230353	1	IP 31	1600	900	1470	120
230211	2	IP 21	1700	950	1580	140
230273	2	IP 23	1700	950	1580	140
230263	2	IP 31	1700	950	1580	140
230212	3	IP 21	1800	1000	1680	160
230215	3	IP 23	1800	1000	1680	170
230234	3	IP 31	1800	1000	1680	160
230204	4	IP 21	1900	1050	1950	180
230277	4	IP 23	1900	1050	1950	200
230222	4	IP 31	1900	1050	1950	180
230213	5	IP 21	2050	1100	2200	210
230221	5	IP 23	2050	1100	2200	230
230223	5	IP 31	2050	1100	2200	210
230214	6	IP 21	2300	1310	2500	280
230267	6	IP 23	2300	1310	2500	340
230249	6	IP 31	2300	1310	2500	280
230287	7	IP 21	2500	1310	2700	300
230309	7	IP 23	2500	1310	2700	360
230371	7	IP 31	2500	1310	2700	300
231042	8	IP 21	2700	1400	2800	320
231043	8	IP 23	2700	1400	2800	380
231044	8	IP 31	2700	1400	2800	320

Boxes can be supplied separately or assembled on the transformer  
If you required the box pre-assembled add the "M" suffix to the code (e.g. 231043M)

### SIZES AND DRILLING OF LV CONNECTION TERMINALS



### DRILLING STANDARD

LV connection terminals are manufactured from aluminium  
Special CUPAL bimetallic plates can be supplied for the connection of copper cables

Drawing	Range (kVA)	Thickness (mm)
A	100	4
	160	4
B	200	5
	400	5
C	500	6
	630	8
D	800	8
E	1000	8
F	1250	8
	1600	10
	2000	12
	2500	16
	3150	20

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