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Convincing technology creates compact performance

The GEAFOL Basic: the optimum foundation for power distribution

Contents

The GEAFOL Basic: A true GEAFOL and more

Maximum efficiency in use and economic, resource-saving production: the new GEAFOL Basic.

Tailored design

Let's be clear right from the start: the GEAFOL Basic represents an evolution, not a revolution. It's based on nearly 50 years of proven GEAFOL technology and quality, but it offers numerous innovations that have allowed us to provide it with several very special characteristics. Its design takes several requirements for special applications into account which we wouldn't have dared to dream of when the original GEAFOL was being developed. As a result, for example, the GEAFOL Basic distribution transformer with a maximum rated power of 3.15 MVA is almost ten percent lighter than a comparable model from the proven GEAFOL series. And this "slimming down" also positively affects the dimensions.

Universal use

The highest safety requirements must be met whenever distribution transformers are operated in the direct vicinity of humans. GEAFOL Basic distribution transformers are the perfect solution in this case, because their proven GEAFOL design is coupled with proven operational reliability and a long service life. What's more, they've got the seal of approval because all GEAFOL Basic distribution transformers meet the specifications of VDE 0532-76-11/ IEC 60076-11/DIN EN 60076-11, DIN EN 50541-1.
On request, other standards, such as GOST, SABS or CSA/ANSI/ IEEE, can also be taken into account. Our GEAFOL transformers are always also tested by UL/CSA/TÜV.
They meet the highest requirements for safe installation in residential and work environments with Climatic Class C2, Environmental Class E2 and Fire Classification F1.

Optimum compromise

Keeping the distance between the distribution transformer and consumer as short as possible considerably reduces both the complexity of the electrical network and losses in the transmission and distribution of energy. Frequently, however, there is often a shortage of space in the vicinity of the consumer. The GEAFOL Basic distribution transformer represents an optimum compromise between performance, safety and small dimensions. In addition, the high degree of standardization ensures the best possible cost-benefit ratio. Thanks to their compact shape and comprehensive safety certification, GEAFOL Basic distribution transformers can be used in almost every environment.

Further development of proven technology

With approx. 100,000 transformers in use worldwide, essential parts of the GEAFOL technology have already proven themselves over the long term. These include the strip winding and foil winding made from aluminum, which we adopted without change for the new GEAFOL Basic in order to ensure reliability and a long service life. In return, the mechanical design and high-voltage windings underwent a re-design in order to make them lighter and smaller as a truly clean solution. As a result, it was possible to considerably improve heat dissipation. With fewer horizontal surfaces, less dust is deposited, which leads to a further reduction in the already minimal time and effort needed for maintenance and also increases operational reliability.

Thanks to its technical characteristics, the GEAFOL Basic is well suited to a large number of applications. And you don't have to take the limitations of classic transformer technology into account when planning. Use in a load center allows optimum network designs to be realized – with corresponding advantages in terms of cost and efficiency.

In addition, the GEAFOL Basic makes it possible to dispense with special safety precautions, such as coolant collecting troughs. And with its small dimensions, the GEAFOL Basic permits more power to be installed in the same space. On request, GEAFOL Basic transformers can also be designed for converter loads and particular mechanical stresses (GEAFOL Basic+).

Everything that's needed for the future

The GEAFOL Basic is also setting new standards when it comes to being prepared for the future. Even though the end of its service life is still a long way off, the GEAFOL Basic already has the perfect answer to the question of recycling. All metal parts as well as the cast resin can be recycled in an environmentally friendly way.

EU guidelines: Ecodesign Directive of the European Commission

Effective July 1, 2015, transformers that are installed within the European Economic Area (EEA) must meet the ecodesign requirements of the new directive, provided that they fall within the scope of the directive. Since the directive is a measure to implement Ecodesign Directive 209/125/EC, the CE mark is used as evidence of compliance. GEAFOL Basic transformers are designed accordingly and are particularly low-loss and economic.

GEAFOL Basic – the intelligent further development of an excellent technology.

Regardless of the application, a low weight, small dimensions and high operational reliability with the lowest possible maintenance make the GEAFOL Basic the first choice.

The GEAFOL Basic – Overview of features and advantages

- Innovative clean design
- Power range up to 3.15 MVA and voltages up to 36 kV (medium-voltage) or 1000 V (low-voltage)
- Variants available for converter operation (GEAFOL Basic+ on request)
- Mechanically reinforced designs available (GEAFOL Basic+ on request)
- Up to approx. 10 % lower weight
- Up to approx. 30 % increase in power possible through forced-air cooling
- Proven GEAFOL technology and quality
- Optimum compromise between size and power
- Certified in accordance with VDE 0532/IEC 60076-11/ DIN EN 60076-11, DIN EN 50541-7
- Loss-optimized designs taking into account Ecodesign Directive 2009/125/EC for installation within the European Economic Area
- Climatic Class C2, Environmental Class E2 and Fire Classification F1
- Maintenance-free windings embedded in moisture-proof, fire-resistant and self-extinguishing insulating material that is suitable for the tropics
- High electrical safety thanks to foil winding
- Freedom from partial discharges up to twice the rated voltage
- Standardized accessories

Built-in safety

The coils of the high-voltage winding of the GEAFOL Basic are manufactured from aluminum foil. This foil winding combines simple winding techniques with high electrical safety, as its insulation is subject to less electrical stress than other types of windings. While in the case of a conventional round-wire winding, the turn-to-turn voltages amount to double the voltage between layers, in the case of a foil winding no more than the simple turn-to-turn voltage occurs, because in this case each layer consists of one turn. This results in great power frequency voltage strength and impulse strength. In addition, the epoxy-resin vacuum casting of the high-voltage windings is performed at a high temperature, which avoids hazardous entrapped gas and allows for a high level of freedom from partial discharges up to twice the rated voltage. A high level of process expertise guarantees excellent product quality, which is reflected, among other things, by an excellent MTBF Index.

Reliable design

The conductive material for the low voltage strip winding is also made of aluminum, with the width of the aluminum strip practically equivalent to the length of the coil in order to considerably reduce the axial short-circuit forces in the transformer. It's these characteristics that make the design of the GEAFOL Basic possible. The conductive and insulating materials are bonded to each other by heat treatment and form a compact unit that also reliably handles radial forces. The ends of the windings are encapsulated in resin.

Using vacuum switches with GEAFOL transformers

Transformers are the key operating elements at hubs in the distribution system. Switches must control the switching of distribution transformers reliably and safely, with no need for overvoltage protection.

An important parameter in transformers is the magnetization current, one of the "small inductive currents." Interrupting these currents naturally creates marked transients, but no unacceptably high switching overvoltages that would pose a threat to connected distribution transformers are permitted.

Extensive trials using a combination of Siemens GEAFOL transformers and vacuum switches have proven that the GEAFOL medium-voltage windings can handle switching overvoltages with no difficulty – providing further proof of their high product quality and operational safety.

Construction and features

1 **Three-limb core** made of grain-oriented, low-loss electric sheet steel insulated on both sides

2 **Low-voltage winding** made of aluminum strip; turns are permanently bonded with insulating sheet

3 **High-voltage winding** made of individual aluminum coils using foil technology and vacuum casting

4 **Low-voltage connectors (facing up)**

5 **Lifting eyes integrated into the upper core frame for simple transport**

6 **Delta connection tubes with HV terminals**

7 **Clamping frame and truck**
Convertible rollers for longitudinal and transverse travel

8 **Insulation made of an epoxy resin/quartz powder mixture** makes the transformer extensively maintenance-free, moisture-proof and suitable for the tropics, fire-resistant and self-extinguishing

9 **High-voltage tappings ±2 x 2.5 % (on the high-voltage terminal side) to adapt to the respective network conditions; reconnectable off load**

Temperature monitoring with PTC thermistor detector in limb V of the low-voltage winding (in all three phases on request)

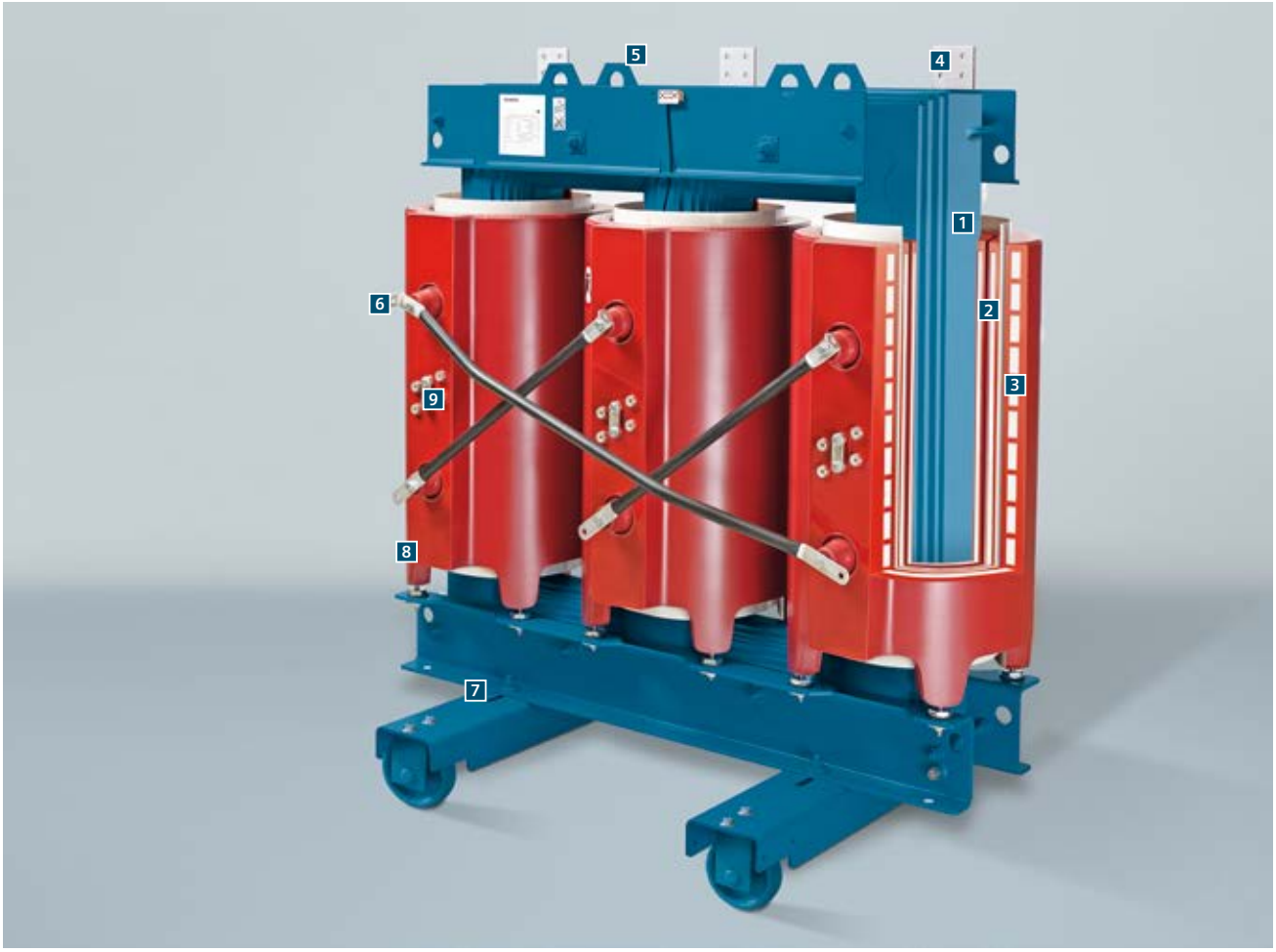
Painting of steel parts
High-build coating, RAL 5009 on request: special two-component coating (for particularly aggressive environments)

Structure made of individual components, for example, windings can be individually assembled and replaced on site

Climatic Class C2

Environmental Class E2

Fire Classification F1



A new design for your success – the reliable, space-saving GEAFOL Basic

Selection of ordering data

GEAFOL Basic transformers according to Ecodesign Directive 2009/125/EG, EU Regulation no. 548/2014

Rated power	Rated primary voltage tapping ± 2 x 2.5 %	Rated secondary voltage (no-load)	Insulation level HV (AC/LI)	Insulation level LV (AC/LI)	Impedance voltage at rated current	No-load losses	Load losses	Noise level	Order No.	Total weight	Dimensions [1]		
											Length	Width	Height
S_r	U_r HV	U_r LV			u_{zr}	P_0	P_{k120}	L_{WA}					
kVA	kV	kV	kV	kV	%	W	W	dB		kg	mm	mm	mm
100	10	0.4	28/75	3/–	4	280	2050	51	4GT5044-3FY	740	1220	690	970
	20	0.4	50/95	3/–	4	280	2050	51	4GT5064-3FY	860	1240	750	1200
160	10	0.4	28/75	3/–	4	400	2900	54	4GT5244-3FY	840	1240	695	1100
	20	0.4	50/95	3/–	4	400	2900	54	4GT5264-3FY	970	1280	725	1180
250	10	0.4	28/75	3/–	4	520	3800	57	4GT5444-3FY	1170	1340	715	1125
	20	0.4	50/95	3/–	4	520	3800	57	4GT5464-3FY	1380	1420	750	1225
315	10	0.4	28/75	3/–	4	650	4500	59	4GT5544-3FY	1280	1390	820	1115
	20	0.4	50/95	3/–	4	650	4500	59	4GT5564-3FY	1540	1490	840	1215
400	10	0.4	28/75	3/–	4	750	5500	60	4GT5644-3FY	1360	1370	820	1270
	20	0.4	50/95	3/–	4	750	5500	60	4GT5664-3FY	1600	1450	835	1355
500	10	0.4	28/75	3/–	4	950	6600	61	4GT5744-3FY	1540	1430	820	1270
	20	0.4	50/95	3/–	4	950	6600	61	4GT5764-3FY	1770	1520	845	1390
630	10	0.4	28/75	3/–	6	1100	7600	62	4GT5844-3EY	1820	1500	840	1485
	20	0.4	50/95	3/–	6	1100	7600	62	4GT5864-3EY	1860	1540	870	1505
800	10	0.4	28/75	3/–	6	1300	8000	64	4GT5944-3EY	2190	1600	860	1505
	20	0.4	50/95	3/–	6	1300	8000	64	4GT5964-3EY	2520	1680	900	1595
1000	10	0.4	28/75	3/–	6	1550	9000	65	4GT6044-3EY	2520	1640	990	1575
	20	0.4	50/95	3/–	6	1550	9000	65	4GT6064-3EY	2580	1690	990	1635
1250	10	0.4	28/75	3/–	6	1800	11000	67	4GT6144-3EY	3030	1740	990	1695
	20	0.4	50/95	3/–	6	1800	11000	67	4GT6164-3EY	2850	1760	995	1735
1600	10	0.4	28/75	3/–	6	2200	13000	68	4GT6244 3EY	3520	1695	990	1845
	20	0.4	50/95	3/–	6	2200	13000	68	4GT6264 3EY	3710	1755	1005	1895
2000	10	0.4	28/75	3/–	6	2600	16000	70	4GT6344-3EY	4270	1870	1280	1885
	20	0.4	50/95	3/–	6	2600	16000	70	4GT6364-3EY	4650	1930	1280	1975
2500	10	0.4	28/75	3/–	6	3100	19000	71	4GT6444-3EY	5430	2000	1280	2125
	20	0.4	50/95	3/–	6	3100	19000	71	4GT6464-3EY	5750	2045	1280	2175
3150	10	0.4	28/75	3/–	6	3800	22000	74	4GT6544-3EY	7080	2140	1280	2435
	20	0.4	50/95	3/–	6	3800	22000	74	4GT6564-3EY	7420	2185	1280	2490

All GEAFOL Basic transformers comply with DIN VDE 0532-76-11/DIN EN 60076-11/IEC 60076-11/DIN EN 50541-1.
Power ratings >3150 kVA, different voltages and designs as well as special equipment on request.
1) Dimension drawing: page 10, indications are approximate values.

Selection of ordering data

GEAFOL Basic transformers

Rated power	Rated primary voltage tapping ± 2 x 2.5 %	Rated secondary voltage (no-load)	Insulation level HV (AC/LI)	Insulation level LV (AC/LI)	Impedance voltage at rated current	No-load losses	Load losses	Noise level	Order No.	Total weight	Dimensions [1]		
											Length	Width	Height
S_r	U_r HV	U_r LV			u_{zr}	P_0	P_{k120}	L_{WA}					
kVA	kV	kV	kV	kV	%	W	W	dB		kg	mm	mm	mm
100	10	0.4	28/75	3/–	4	440	1850	61	4GT5044-3CY	600	1190	685	920
	10	0.4	28/75	3/–	4	320	1850	51	4GT5044-3GY	780	1230	690	985
	10	0.4	28/75	3/–	6	360	2000	61	4GT5044-3DY	580	1200	690	910
	10	0.4	28/75	3/–	6	290	2000	51	4GT5044-3HY	710	1210	690	1040
	20	0.4	50/95	3/–	4	600	1750	61	4GT5064-3CY	690	1230	750	1035
	20	0.4	50/95	3/–	4	400	1750	51	4GT5064-3GY	880	1290	760	1085
	20	0.4	50/95	3/–	6	460	2050	61	4GT5064-3DY	700	1270	765	1040
	20	0.4	50/95	3/–	6	340	2050	51	4GT5064-3HY	780	1260	725	1120
160	10	0.4	28/75	3/–	4	610	2600	65	4GT5244-3CY	840	1270	700	1005
	10	0.4	28/75	3/–	4	440	2600	54	4GT5244-3GY	940	1270	700	1105
	10	0.4	28/75	3/–	6	500	2750	65	4GT5244-3DY	790	1280	710	980
	10	0.4	28/75	3/–	6	400	2750	54	4GT5244-3HY	860	1310	710	990
	20	0.4	50/95	3/–	4	700	2500	65	4GT5264-3CY	910	1330	770	1085
	20	0.4	50/95	3/–	4	580	2500	54	4GT5264-3GY	1070	1340	735	1130
	20	0.4	50/95	3/–	6	650	2700	65	4GT5264-3DY	850	1330	775	1075
	20	0.4	50/95	3/–	6	480	2700	54	4GT5264-3HY	950	1360	745	1095
250	10	0.4	28/75	3/–	4	820	3200	68	4GT5444-3CY	990	1320	705	1045
	10	0.4	28/75	3/–	4	600	3200	57	4GT5444-3GY	1140	1340	710	1125
	10	0.4	28/75	3/–	6	700	3300	68	4GT5444-3DY	940	1350	715	1045
	10	0.4	28/75	3/–	6	560	3300	57	4GT5444-3HY	1100	1380	725	1070
	20	0.4	50/95	3/–	4	880	3200	68	4GT5464-3CY	1100	1360	740	1155
	20	0.4	50/95	3/–	4	800	3300	57	4GT5464-3GY	1290	1400	745	1210
	20	0.4	50/95	3/–	6	880	3400	68	4GT5464-3DY	1040	1400	750	1115
	20	0.4	50/95	3/–	6	650	3400	57	4GT5464-3HY	1180	1430	755	1135
315	10	0.4	28/75	3/–	4	980	3500	68	4GT5544-3CY	1150	1370	820	1075
	10	0.4	28/75	3/–	4	730	3500	59	4GT5544-3GY	1350	1390	820	1155
	10	0.4	28/75	3/–	6	850	3900	68	4GT5544-3DY	1080	1370	820	1120
	10	0.4	28/75	3/–	6	670	3700	59	4GT5544-3HY	1190	1410	820	1125
	20	0.4	50/95	3/–	4	1250	3500	68	4GT5564-3CY	1310	1440	835	1190
	20	0.4	50/95	3/–	4	930	3500	59	4GT5564-3GY	1470	1470	840	1210
	20	0.4	50/95	3/–	6	1000	3800	68	4GT5564-3DY	1250	1450	840	1200
	20	0.4	50/95	3/–	6	780	3800	59	4GT5564-3HY	1350	1480	840	1190
400	10	0.4	28/75	3/–	4	1150	4400	68	4GT5644-3CY	1320	1400	820	1225
	10	0.4	28/75	3/–	4	880	4400	60	4GT5644-3GY	1470	1390	820	1325
	10	0.4	28/75	3/–	6	1000	4900	68	4GT5644-3DY	1250	1410	820	1220
	10	0.4	28/75	3/–	6	800	4900	60	4GT5644-3HY	1450	1460	820	1240
	20	0.4	50/95	3/–	4	1270	3800	68	4GT5664-3CY	1460	1460	840	1310
	20	0.4	50/95	3/–	4	1100	3800	60	4GT5664-3GY	1670	1520	845	1310
	20	0.4	50/95	3/–	6	1200	4300	68	4GT5664-3DY	1370	1480	845	1275
	20	0.4	50/95	3/–	6	940	4300	60	4GT5664-3HY	1540	1530	850	1320
500	10	0.4	28/75	3/–	4	1300	5900	69	4GT5744-3CY	1480	1450	820	1180
	10	0.4	28/75	3/–	4	1000	5300	61	4GT5744-3GY	1630	1420	820	1345
	10	0.4	28/75	3/–	6	1200	6400	69	4GT5744-3DY	1390	1450	820	1255
	10	0.4	28/75	3/–	6	950	6400	61	4GT5744-3HY	1540	1490	820	1250
	20	0.4	50/95	3/–	4	1700	4900	69	4GT5764-3CY	1650	1510	845	1370
	20	0.4	50/95	3/–	4	1300	4900	61	4GT5764-3GY	1830	1520	845	1385
	20	0.4	50/95	3/–	6	1400	5100	69	4GT5764-3DY	1530	1520	855	1270
	20	0.4	50/95	3/–	6	1100	5100	61	4GT5764-3HY	1750	1560	860	1355

All GEAFOL Basic transformers comply with DIN VDE 0532-76-11/DIN EN 60076-11/IEC 60076-11/DIN EN 50541-1.
Power ratings >2500 kVA, different voltages and designs as well as special equipment on request.
1) Dimension drawing: page 10, indications are approximate values.

Selection of ordering data

GEAFOL Basic transformers

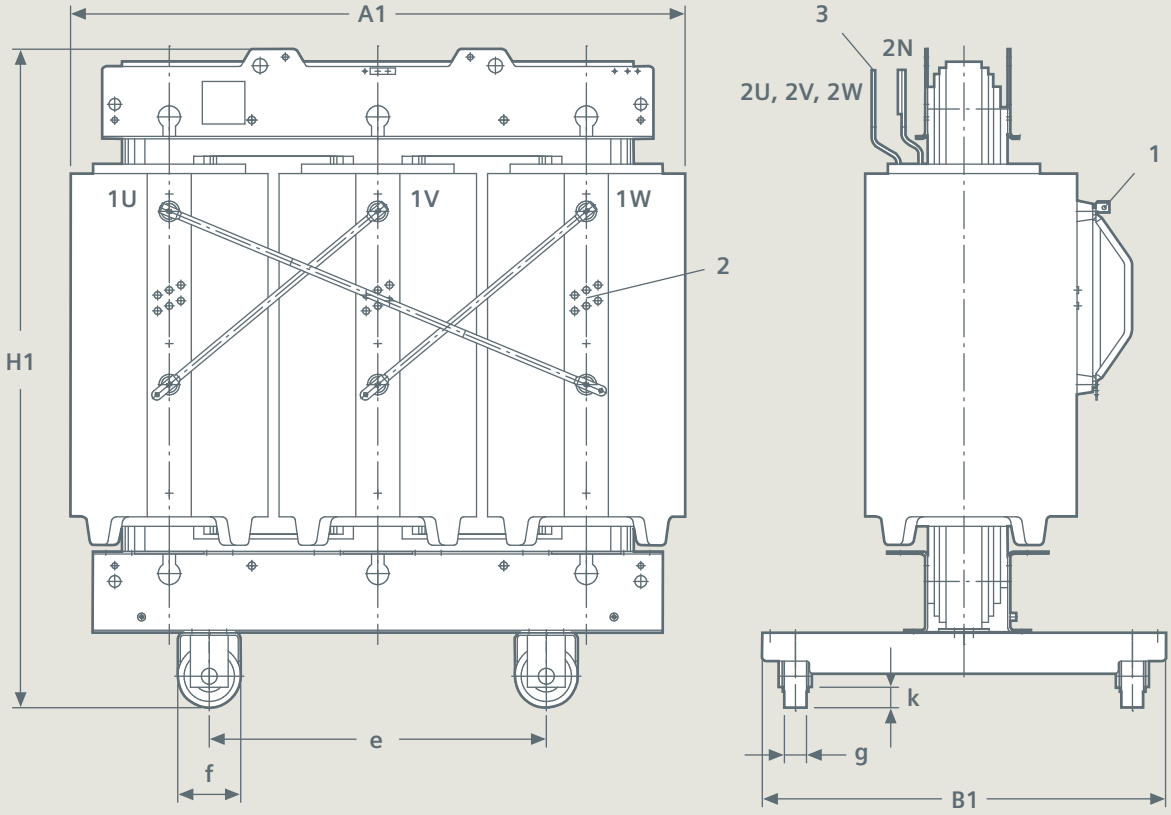
Rated power	Rated primary voltage tapping ± 2 x 2.5 %	Rated secondary voltage (no-load)	Insulation level HV (AC/LI)	Insulation level LV (AC/LI)	Impedance voltage at rated current	No-load losses	Load losses	Noise level	Order No.	Total weight	Dimensions [1]		
											Length	Width	Height
S_r	U_r HV	U_r LV			u_{zr}	P_0	P_{k120}	L_{WA}					
kVA	kV	kV	kV	kV	%	W	W	dB		kg	mm	mm	mm
630	10	0.4	28/75	3/–	4	1500	7300	70	4GT5844-3CY	1660	1460	820	1335
	10	0.4	28/75	3/–	4	1150	7300	62	4GT5844-3GY	1880	1480	820	1430
	10	0.4	28/75	3/–	6	1370	7500	70	4GT5844-3DY	1760	1550	835	1350
	10	0.4	28/75	3/–	6	1100	7500	62	4GT5844-3HY	1900	1560	835	1370
	20	0.4	50/95	3/–	4	2000	6900	70	4GT5864-3CY	1900	1550	855	1405
	20	0.4	50/95	3/–	4	1600	6900	62	4GT5864-3GY	2090	1520	845	1570
	20	0.4	50/95	3/–	6	1650	6800	70	4GT5864-3DY	1800	1590	865	1370
	20	0.4	50/95	3/–	6	1250	6800	62	4GT5864-3HY	2140	1650	880	1400
800	10	0.4	28/75	3/–	4	1800	7800	72	4GT5944-3CY	2020	1520	820	1520
	10	0.4	28/75	3/–	4	1400	7800	64	4GT5944-3GY	2280	1550	830	1540
	10	0.4	28/75	3/–	6	1700	8300	72	4GT5944-3DY	2000	1610	845	1345
	10	0.4	28/75	3/–	6	1300	8300	64	4GT5944-3HY	2240	1640	855	1370
	20	0.4	50/95	3/–	4	2400	8500	72	4GT5964-3CY	2140	1550	855	1615
	20	0.4	50/95	3/–	4	1900	8500	64	4GT5964-3GY	2360	1580	860	1605
	20	0.4	50/95	3/–	6	1900	8200	72	4GT5964-3DY	2120	1650	875	1445
	20	0.4	50/95	3/–	6	1500	8200	64	4GT5964-3HY	2340	1670	885	1450
1000	10	0.4	28/75	3/–	4	2100	10000	73	4GT6044-3CY	2560	1600	990	1635
	10	0.4	28/75	3/–	4	1600	10000	65	4GT6044-3GY	2980	1640	990	1745
	10	0.4	28/75	3/–	6	2000	9500	73	4GT6044-3DY	2390	1620	990	1580
	10	0.4	28/75	3/–	6	1500	9500	65	4GT6044-3HY	2650	1660	990	1560
	20	0.4	50/95	3/–	4	2800	9500	73	4GT6064-3CY	2580	1590	990	1790
	20	0.4	50/95	3/–	4	2300	8700	65	4GT6064-3GY	2860	1630	990	1810
	20	0.4	50/95	3/–	6	2300	9000	73	4GT6064-3DY	2460	1660	990	1645
	20	0.4	50/95	3/–	6	1800	9000	65	4GT6064-3HY	2760	1700	990	1680
1250	10	0.4	28/75	3/–	6	2400	11000	78	4GT6144-3DY	2710	1720	990	1655
	10	0.4	28/75	3/–	6	1800	11000	68	4GT6144-3HY	3220	1780	990	1715
	20	0.4	50/95	3/–	6	2700	11200	78	4GT6164-3DY	2850	1780	990	1695
	20	0.4	50/95	3/–	6	2100	11200	68	4GT6164-3HY	3150	1800	990	1710
1600	10	0.4	28/75	3/–	6	2800	13600	76	4GT6244-3DY	2970	1705	990	1710
	10	0.4	28/75	3/–	6	2100	13600	68	4GT6244-3HY	3340	1745	990	1730
	20	0.4	50/95	3/–	6	3100	13200	76	4GT6264-3DY	3200	1765	1010	1810
	20	0.4	50/95	3/–	6	2400	13200	68	4GT6264-3HY	3570	1800	1015	1860
2000	10	0.4	28/75	3/–	6	3500	15500	78	4GT6344-3DY	3640	1805	1280	1815
	10	0.4	28/75	3/–	6	2600	15500	70	4GT6344-3HY	4090	1855	1280	1850
	20	0.4	50/95	3/–	6	3900	15800	78	4GT6364-3DY	3700	1785	1280	2025
	20	0.4	50/95	3/–	6	2900	15800	70	4GT6364-3HY	4070	1820	1280	2055
2500	10	0.4	28/75	3/–	6	4300	20000	81	4GT6444-3DY	4380	1895	1280	2045
	10	0.4	28/75	3/–	6	3000	20000	71	4GT6444-3HY	5030	1920	1280	2085
	20	0.4	50/95	3/–	6	4400	19000	81	4GT6464-3DY	4590	1900	1280	2150
	20	0.4	50/95	3/–	6	3500	19000	71	4GT6464-3HY	5070	1990	1280	2135

All GEAFOL Basic transformers comply with DIN VDE 0532-76-11/DIN EN 60076-11/IEC 60076-11/DIN EN 50541-1.
Power ratings >2500 kVA, different voltages and designs as well as special equipment on request.
1) Dimension drawing: page 10, indications are approximate values.

Truck dimensions

Rated power	Dimensions in mm			
S_r in kVA	e	f	g	k
630 to 800	670	125	40	45
1000 to 1600	820	160	50	55
2000 to 3150	1070	200	70	65

Dimension drawing of the transformer



Dimension drawing
Dimensions A1, B1 and H1, see pages 7 to 9
Dimension e applies for longitudinal and transverse travel

1 High-voltage terminal
2 High-voltage tappings on the HV terminal side
3 Low-voltage terminal

Terminal dimensions (low-voltage)

Hole measurements for 400-V low-voltage terminals

Rated power	Fig.	Dimensions in mm	
S_r in kVA		a	b
630	1	26	26
800 to 1250	2	60	40
1600	3	40	40
2000	3	50	40
2500	3	60	40
3150	4	60	40

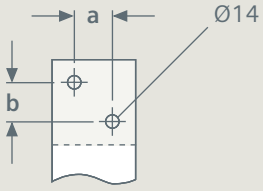


Fig. 1

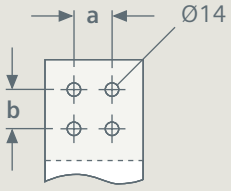


Fig. 2

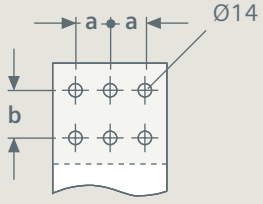


Fig. 3

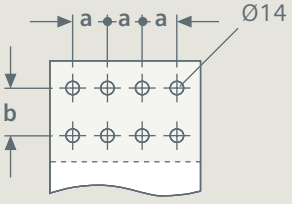


Fig. 4

Dimensions in mm

Notes

Unless indicated otherwise on the individual pages of this catalog, the specified values, dimensions and weights in particular are subject to change without notice.

The illustrations are non-binding. All product designations used are trademarks or product names of Siemens AG or other suppliers. All dimensions in this catalog are given in mm unless stated to the contrary.

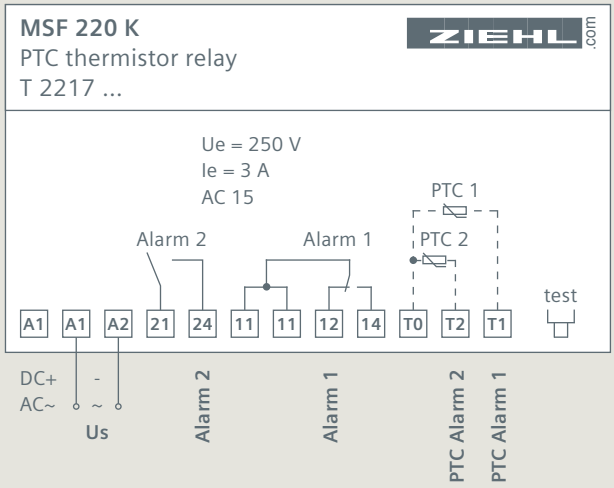
Accessories*)

Additional transformer ventilation for more power

GEAFOL transformers can be equipped with fans to increase the power rating by up to about 30 percent.

With a 25 percent increase in power rating, for example, the short-circuit losses given in the list are increased by about 56 percent, and the short-circuit voltage increases in linear fashion by 25 percent.

The fans are automatically switched on or off via temperature sensors in the LV winding in connection with a fan controller.



Terminal diagram: Standard trip relay for PTC sensors

Temperature monitoring

The temperature of GEAFOL transformers is monitored in the low-voltage winding by means of PTC thermistor detectors or by using PT 100 sensors (on request).

In the case of static converter transformers, the core temperature is monitored additionally. The most cost-effective solution is monitoring with PTC thermistor detectors and trip relay without temperature indication.

Every GEAFOL transformer is equipped at least with a PTC thermistor detector loop for tripping.

Function

Temperature monitoring with PTC thermistors: If two sensor systems are used to monitor temperature, one is wired up to give an alarm and the other to switch off the transformer. The nominal operating temperatures of both systems differ by 20 K. A third system can, for example, take over controlling of the fans.

The temperature sensors function as resistors. If the response temperature of a sensor is reached, the resistances rises sharply and the trip relay switches over immediately.

If the winding cools down by about 6 K below the operating temperature, the relay coil in the trip relay is fully energized and the contact switches back.

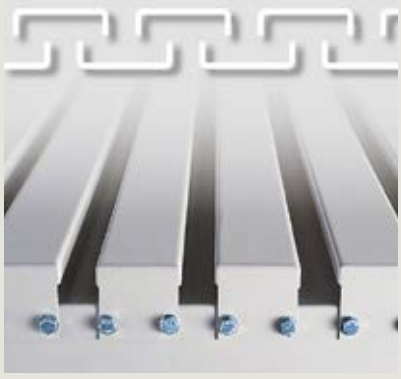
The ambient temperature of the trip relay is limited to 55 °C. It is therefore suitable for installation in medium- or low-voltage distribution cabinets.

*) Accessories upon request

Standard housing

Installation	Indoor	Indoor	Indoor		Outdoor	
Protection class	IP00	IP20	IP23	IP23D	IP23DW	
14th character of order no.	A	B	C	D	E	
Environmental influences						
Enclosed electrical operating areas	●	●	●	●	●	
Electrical operating areas	–	●	●	●	●	
Water up to 60° up to the ⊥	–	–	●	●	●	
Snow	–	–	–	–	●	
Direct sunlight	–	–	–	–	●	
Salty air	●	●	●	●	●	Special paint finish
Aggressive chem. atmosphere	●	●	●	●	●	Special paint finish
Accidental contact	–	●	●	●	●	
Foreign matter >12 mm Ø	–	●	●	●	●	
Protection against access with wire[1)]	–	–	on request	●	●	

1) Test wire diameter 1 mm according to EN 60529.



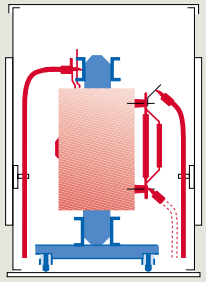
Roof construction of protection class IP23 (indoor installation)

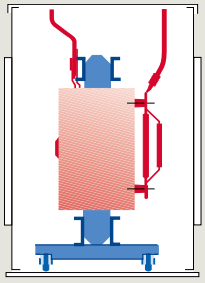
Graphic:
Cutaway section of the ventilation slots with the roof strips.

Photo:
The roof strips are turned down at the side walls and screwed firmly in place.

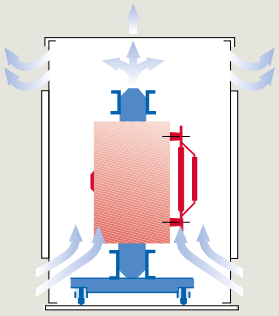
Labyrinth arrangement of ventilation louvers provides additional security against access with wire.

Standard housing



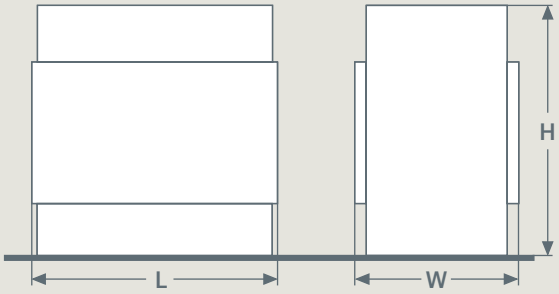


Variable connection technology: The cable can be fed in through the floor, the roof or through one of the side walls.



A reduction in power is possible in case of installation inside the protective housing.

Dimension drawing of the housing



Indoor (protection class IP20)

Housing size	Max. housing dimensions mm			Housing weight kg
	L	W	H	
1	1390	1010	1335	121
2	1860	1280	1535	177
3	1860	1280	1885	211
4	2120	1500	2120	252
5	2360	1500	2340	290

Outdoor (protection class IP23DW)

Housing size	Max. housing dimensions mm			Housing weight kg
	L	W	H	
1	1440	1070	1540	153
2	1880	1320	1845	233
3	1880	1420	2245	267
4	2240	1540	2480	325
5	2380	1540	2950	392

Indoor (protection class IP23 and IP23D)

Housing size	Max. housing dimensions mm			Housing weight kg
	L	W	H	
1	1390	1010	1395	134
2	1860	1280	1595	207
3	1860	1280	1945	247
4	2120	1500	2225	302
5	2360	1500	2495	370

Selection of ordering data*) **)

Standard housing for GEAFOL Basic transformers

Rated power S_r (kVA)	Rated voltage HV U_r (kV)**)	Type	Housing size
100	10	4GT5044-3CY	2
	10	4GT5044-3GY	2
	10	4GT5044-3DY	2
	10	4GT5044-3HY	2
	20	4GT5064-3CY	2
	20	4GT5064-3GY	3
	20	4GT5064-3DY	3
	20	4GT5064-3HY	3
160	10	4GT5244-3CY	3
	10	4GT5244-3GY	3
	10	4GT5244-3DY	3
	10	4GT5244-3HY	3
	20	4GT5264-3CY	3
	20	4GT5264-3GY	3
	20	4GT5264-3DY	3
	20	4GT5264-3HY	3
250	10	4GT5444-3CY	3
	10	4GT5444-3GY	3
	10	4GT5444-3DY	3
	10	4GT5444-3HY	3
	20	4GT5464-3CY	3
	20	4GT5464-3GY	3
	20	4GT5464-3DY	3
	20	4GT5464-3HY	3
315	10	4GT5544-3CY	3
	10	4GT5544-3GY	3
	10	4GT5544-3DY	3
	10	4GT5544-3HY	3
315	20	4GT5564-3CY	3
	20	4GT5564-3GY	3
	20	4GT5564-3DY	3
	20	4GT5564-3HY	3
400	10	4GT5644-3CY	3
	10	4GT5644-3GY	3
	10	4GT5644-3DY	3
	10	4GT5644-3HY	3
	20	4GT5664-3CY	3
	20	4GT5664-3GY	3
	20	4GT5664-3DY	3
	20	4GT5664-3HY	3
500	10	4GT5744-3CY	3
	10	4GT5744-3GY	3
	10	4GT5744-3DY	3
	10	4GT5744-3HY	3

Rated power S_r (kVA)	Rated voltage HV U_r (kV)**)	Type	Housing size
500	20	4GT5764-3CY	3
	20	4GT5764-3GY	3
	20	4GT5764-3DY	3
	20	4GT5764-3HY	3
630	10	4GT5844-3CY	3
	10	4GT5844-3GY	3
	10	4GT5844-3DY	3
	10	4GT5844-3HY	3
	20	4GT5864-3CY	3
	20	4GT5864-3GY	3
	20	4GT5864-3DY	3
	20	4GT5864-3HY	3
800	10	4GT5944-3CY	3
	10	4GT5944-3GY	3
	10	4GT5944-3DY	3
	10	4GT5944-3HY	3
	20	4GT5964-3CY	4
	20	4GT5964-3GY	4
	20	4GT5964-3DY	3
	20	4GT5964-3HY	3
1000	10	4GT6044-3CY	4
	10	4GT6044-3GY	4
	10	4GT6044-3DY	4
	10	4GT6044-3HY	4
	20	4GT6064-3CY	4
	20	4GT6064-3GY	4
	20	4GT6064-3DY	4
	20	4GT6064-3HY	4
1250	10	4GT6144-3DY	4
	10	4GT6144-3HY	4
	20	4GT6164-3DY	4
	20	4GT6164-3HY	4
1600	10	4GT6244-3DY	4
	10	4GT6244-3HY	4
	20	4GT6264-3DY	4
	20	4GT6264-3HY	4
2000	10	4GT6344-3DY	5
	10	4GT6344-3HY	5
	20	4GT6364-3DY	5
	20	4GT6364-3HY	5
2500	10	4GT6444-3DY	5
	10	4GT6444-3HY	5[1)]
	20	4GT6464-3DY	5
	20	4GT6464-3HY	5[2)]

Standard housing for GEAFOL Basic transformers per the Ecodesign Directive

Rated power S_r (kVA)	Rated voltage HV U_r (kV)**)	Type	Housing size
100	10	4GT5044-3FY	1
	20	4GT5064-3FY	2
160	10	4GT5244-3FY	2
	20	4GT5264-3FY	2
250	10	4GT5444-3FY	2
	20	4GT5464-3FY	2
315	10	4GT5544-3FY	2
	20	4GT5564-3FY	2
400	10	4GT5644-3FY	3
	20	4GT5664-3FY	3
500	10	4GT5744-3FY	3
	20	4GT5764-3FY	3
630	10	4GT5844-3EY	3
	20	4GT5864-3EY	3

Rated power S_r (kVA)	Rated voltage HV U_r (kV)**)	Type	Housing size
800	10	4GT5944-3EY	3
	20	4GT5964-3EY	4
1000	10	4GT6044-3EY	3
	20	4GT6064-3EY	4
1250	10	4GT6144-3EY	4
	20	4GT6164-3EY	4
1600	10	4GT6244-3EY	4
	20	4GT6264-3EY	4
2000	10	4GT6344-3EY	4
	20	4GT6364-3EY	4
2500	10	4GT6444-3EY	5[1)]
	20	4GT6464-3EY	5[2)]
> 2500	Housing on request		

*) Different design and special equipment on request **) Design for 30 kV on request
1) IP20: Height + 100 mm 2) IP20/IP23/IP23D/IP23DW: Width and height + 100 mm

Apart from standard housings we can supply housings with frame construction and doors that can also be equipped with roof ventilators. These housing types are also suitable for combined installation with low- and medium-voltage cabinets. Please ask us if you need them.

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