

Standard Capacitors NK series

SF₆ Gas insulated Standard Capacitors

■ **The SF₆ insulated standard capacitors** are used in high voltage instrumentation applications as a comparison standard when capacitance and dissipation factor $\tan\delta$ measurements are made on electrical apparatus and insulating materials of all types including cables, capacitors, bushings, instrument transformers and power transformers.

The series 3370 NK/./../ standard capacitors can also be used as the high-voltage section of a capacitive divider. This allows high accurate voltage measurements e.g. such as those required for loss measurements on power transformer.

Haefely Test AG standard capacitors have been optimally designed for our range of modern capacitance and dissipation factor $\tan\delta$ measuring bridge series type 28xx. However, the built-in guard electrode also permits the capacitor's use in conjunction with the old fashioned Schering bridges.

The capacitor's electrical field distribution is kept linear by a special design, which results in high voltage withstand capabilities – a true advantage especially at high humidity levels and at limited test space and height.



Standard capacitor family from 5 kV up to 800 kV

Design

Standard capacitors with nominal voltages up to 30 kV

There are designs with polished metal plate electrodes built into a metal pressure tank and insulated with SF₆ gas (3370 NK/100/5, 3370 NK/1000/30) available as well as the standard open design of the higher rated voltages (3388/100/25).

Standard capacitors with nominal voltages of 100 kV and higher

The metallic pressure tank and the corresponding internal concentric electrode form the measuring capacitance C₁₂.

The electrodes are insulated from each other with SF₆ gas.

The insulating cylinder also serves as a pressure vessel. It is made of high-grade, fibre-reinforced synthetic resin.

The standard capacitors are furnished with a mobile base fitted with easy moving swivel casters.

The measuring connections, gas-filling valve and pressure gauge are mounted on the mobile base. The measuring connection is provided with surge arresters.

The top electrode allows making corona free connections to other high voltage components.

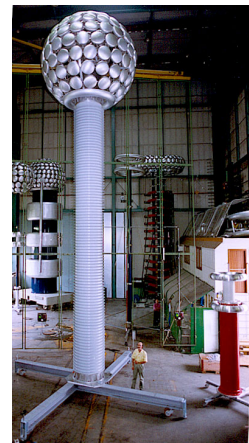
Transportation

Usually, the capacitors having a rated voltage of less than 800 kV are shipped with their rated SF₆ pressure and are therefore ready for immediate use. For higher voltages the internal pressure is reduced to 120 kPa (absolute) and must be pressurised on-site after installation.

Outdoor use

The standard type is designed for indoor operation. Special versions are available on request for outdoor operation.

Please contact our sales department.



A 1000 kV outdoor (with porcelain insulator) and a 600 kV indoor standard capacitor.

Technical Data

Code	Voltage max. [kV AC _{RMS}]	Capacitance ± 3 % [pF]	PD Level @ U _N [pC]	Design	Height H [mm]	Diameter top electrode D [mm]	Base frame dim. B [mm]	Weight net [kg]	Use for
3370NK/1000/5	5	1000	≤ 1*	A	255	---	200	10	1)
3388/100/25	25	100 **	≤ 5	B	500	180	180	5.3	1) 3)
3370NK/1000/30	30	1000	≤ 1	B	685	---	510	90	1) 2)
3370NK/100/100	100	100	≤ 2	C	1340	270	400	40	1) 2) 3)
3370NK/100/200	200	100	≤ 2	D	2000	600	1200	180	1) 2) 3)
3370NK/50/300	300	50	≤ 3	D	2570	1200	1200	350	1) 2)
3370NK/50/400	400	50	≤ 3	D	3120	1200	1200	400	1) 2)
3370NK/33/600	600	33.3	≤ 3	D	4300	1200	2200	800	2)
3370NK/50/600	600	50	≤ 3	D	4300	1200	2200	800	1)
3370NK/50/800	800	50	≤ 10	D	6260	2200	2790	1300	1)
3370NK/20/1000	1000	20	≤ 10	E	7980	2500	3020	2000	1) 2)
3370NK/20/1200	1200	20	≤ 10	E	8000	3400	3700	3000	1) 2)

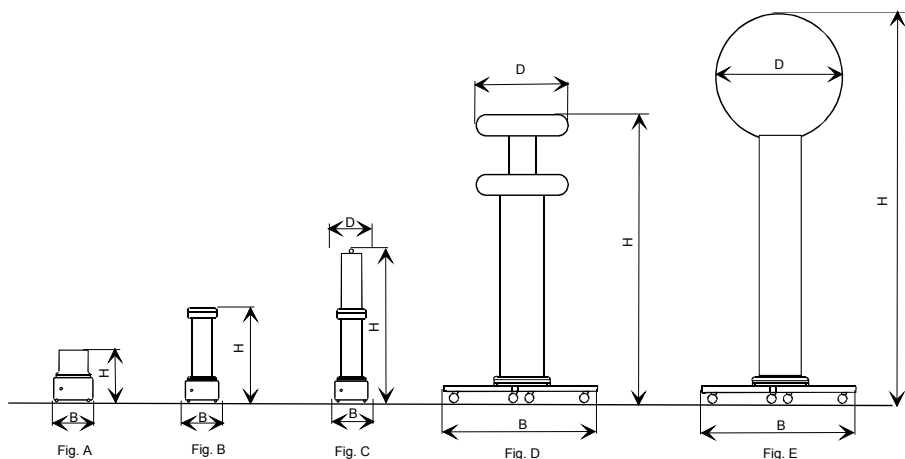
* valid up to 2500 V
** accuracy +5% -0%

1) Reference leg of C & tanδ bridge measurement (series 28xx series)
2) Primary capacitance of electronic voltage dividers (486x series)
3) Primary capacitance of voltage divider for high accurate voltage measurement

General

Voltage drift (0...U _N)	< 3 x 10 ⁻⁵	Pressure loss	<1% / annum
Frequency drift (10-1000 Hz)	< 1 x 10 ⁻⁵	Temperature coefficient	3 x 10 ⁻⁵ / °C @ gas volume = constant
Stability capacitance C ₁₂	<0,01% / annum	Insulation resistance	> 500 MΩ
Calibration accuracy C ₁₂	0.05% + 0.01 pF	Relative humidity	<90% non-condensing
tanδ C ₁₂	<1 x10 ⁻⁵	Operating temperature	- 5 ... + 45 °C
Nominal pressure of SF ₆ gas	450 ± 50 kPa	Storage temperature	- 20 ... + 50 °C
Test pressure	1000 kPa	Height above sea level	<1000m
Pressure coefficient	2.5 x 10 ⁻³ / 100 kPa @temp = constant	Re-calibration	1 year recommended acc. IEC60060-2

Design types



Scope of Supply

Standard capacitor, Instruction manual, Test report, Cables and connectors depending on size and type (contact our sales department for further details)

Accessories & Options

- SF₆ - filling device (for 3370 NK /x/1000 and higher) cylinder(s) with kg SF₆
- Connecting fittings
- Additional capacitance C₁₃ for capacitive divider voltage measurement

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