HAEFELY
HIGH VOLTAGE TEST

# KK / TK

## Coupling Capacitors

The coupling capacitors of the series KK or TK consist of 1 or more modular units, built into glass fibre reinforced epoxy tubes. Their applications are:

- providing a base load for high voltage AC resonant test systems (KK only).
- the separation of the partial discharge signal from the high voltage.
- measuring AC voltages in the industrial frequency range.
- attenuating interferences coming from the HV side (together with a HV inductance, KK only)

The standard base frame is fitted with castors for mobility (from 100 kV). Upon request, large and heavy versions can be equipped with air cushions. They are built for indoor use.

The below listed TK capacitors can also be fitted with a double toroid electrode if they shall be used with large HV connections or act as HV filters. They become then KKs or KKFs.

Please contact us for details in this case.

### HIGH VOLTAGE FILTER FOR KK SERIES (OPTION)

By adding an inductance to the coupling capacitor, they form the high voltage filter KKF, which attenuates interferences coming from the high voltage reactor / transformer side.
The high voltage filter inductance is connected between the reactor / transformer and the coupling capacitor or between two coupling capacitors.

- Typical insertion loss (50 Ω / 50 Ω) at 40 kHz - 400 kHz:
  ≥ 20dB

**Following inductances are available:**

| Type | Inductivity mH | Max. current A | Weight approx kg |
|---|---|---|---|
| F 70-8 | 70 | 8 | 20 |
| F 100-20 | 100 | 20 | 33 |
| F 140-8 | 140 | 8 | 20 |
| F 150-15 | 150 | 15 | 20 |
| F 330-10 | 330 | 10 | 30 |
| F 500-4 | 500 | 4 | 30 |
| F 600-2 | 600 | 2 | 35 |

Examples of HV filter configurations.

## TECHNICAL DATA OF TK SERIES

| Type TK | Voltage kV | Capacity nF | PD Level at Un pC | Type | Height approx. mm | Diameter top electrode approx. mm | Base frame dimension approx. mm | Weight net approx. kg |
|---|---|---|---|---|---|---|---|---|
| 50-1 | 50 | 1 | ≤ 1 | A | 1100 | 350 | 600 | 40 |
| 100-1 | 100 | 1 | ≤ 1 | A | 1100 | 350 | 600 | 40 |
| 100-10 | 100 | 10 | ≤ 1 | A | 910 | 350 | 600 | 55 |
| 200-1 | 200 | 1 | ≤ 1 | A | 1750 | 350 | 600 | 50 |
| 300-1 | 300 | 1 | ≤ 1 | A | 2540 | 820 | 1010 | 91 |
| 400-1 | 400 | 1 | ≤ 2 | A | 2360 | 820 | 850 | 87 |

Values for information only. Other values upon request.

## TECHNICAL DATA OF KK SERIES

| Type KK | Voltage kV | Capacity nF | PD Level at Un pC | Type | Height approx. mm | Diameter top electrode approx. mm | Base frame dimension < approx. mm | Weight net approx. kg |
|---|---|---|---|---|---|---|---|---|
| 75-25 | 75 | 25 | ≤ 1 | A | 1500 | 500 | 800 | 120 |
| 150-10 | 150 | 10 | ≤ 1 | B | 2600 | 660 | 1500 | 180 |
| 250-10 | 250 | 10 | ≤ 1 | B | 4260 | 800 | 2000 | 520 |
| 300-1 | 300 | 1 | ≤ 1 | B | 2540 | 800 | 1510 | 130 |
| 300-2 | 300 | 2 | ≤ 1 | B | 2600 | 660 | 1500 | 180 |
| 300-4 | 300 | 4 | ≤ 1 | B | 3170 | 660 | 1500 | 220 |
| 400-1 | 400 | 1 | ≤ 2 | B | 2870 | 1200 | 1510 | 160 |
| 400-2 | 400 | 2 | ≤ 2 | B | 3220 | 1200 | 1500 | 270 |
| 400-4 | 400 | 4 | ≤ 2 | B | 3220 | 1200 | 1500 | 270 |
| 400-7 | 400 | 7 | ≤ 2 | B | 3220 | 1200 | 1500 | 270 |
| 400-10 | 400 | 10 | ≤ 2 | B | 3700 | 1200 | 1500 | 300 |
| 500-5 | 500 | 5 | ≤ 3 | C | 4550 | 1900 | 2030 | 490 |
| 600-1 | 600 | 1 | ≤ 3 | C | 5640 | 1960 | 3060 | 690 |
| 600-2 | 600 | 2 | ≤ 3 | C | 4485 | 1960 | 2000 | 460 |
| 800-0.5 | 800 | 0.5 | ≤ 5 | C | 6180 | 2200 | 3060 | 700 |
| 800-1 | 800 | 1 | ≤ 5 | C | 6180 | 2200 | 3060 | 750 |
| 800-3.5 | 800 | 3.5 | ≤ 5 | C | 5930 | 1900 | 3100 | 650 |

Values for information only. Other values upon request.

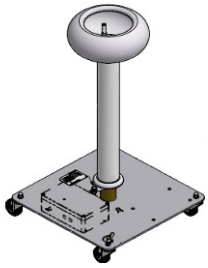


Fig. A

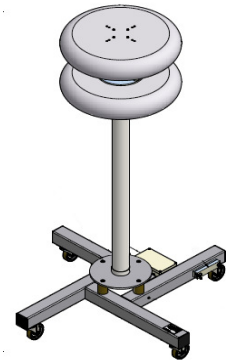


Fig. B

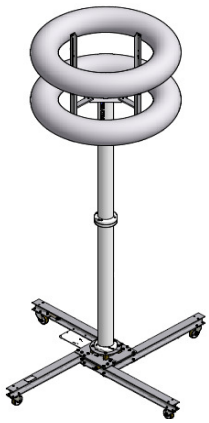


Fig. C

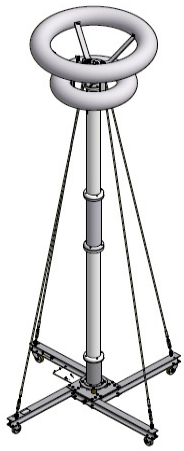
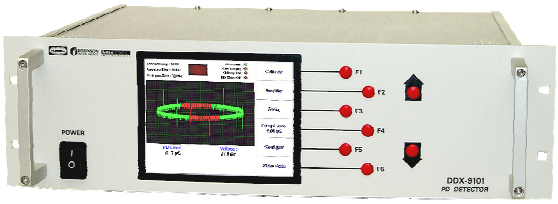


Fig. D

Special HV filter inductance configuration

## MEASURING OF PARTIAL DISCHARGES

By adding a coupling quadripole (option), the coupling capacitor can be used for measuring partial discharges. Coupling quadripoles type AKV 568, AKV 9330, AQS 9110a can be used. Other manufacturers' coupling impedances can be used also.
Please see electrical diagram.




*Digital partial discharge detector type DDX® 9101.*

## MEASURING OF AC VOLTAGES

The secondary unit type SEK AC (option) with standard output voltage 140 V RMS is used for voltage measurements with a DMI 551 or with a control unit OT 247 and OT 257.

The formed high voltage AC divider will measure in a frequency range of 10 ... 1000 Hz with an accuracy of ± 0.5 %.


*Digital Measuring Instrument type DMI 551*

## COLOURS

| | |
|---|---|
| Insulating parts | grey-white RAL 9002 |
| Top electrode | aluminuim |

## BASIC SCOPE OF SUPPLY

- High voltage coupling capacitor unit(s)
- Mobile base frame
- Top electrode
- Struts if required

## CALIBRATION

Our basic standard for calibrating each coupling capacitor is a PTB (Germany) calibrated internal standard. A HV divider should be re-calibrated every year. Haefely Test AG can provide these services, in our Basel works or on-site.

## ROUTINE TESTS IN THE FACTORY

Normally, the capacitance, tan δ, and partial discharge values are tested before and after the 1,1 $U_n$ over-voltage test.

## TRANSPORTATION

Usually, the capacitors having a rated voltage of less than 200 kV a shipped assembled and are therefore ready for immediate use.

For higher voltages the coupling capacitor must be assembled on-site.

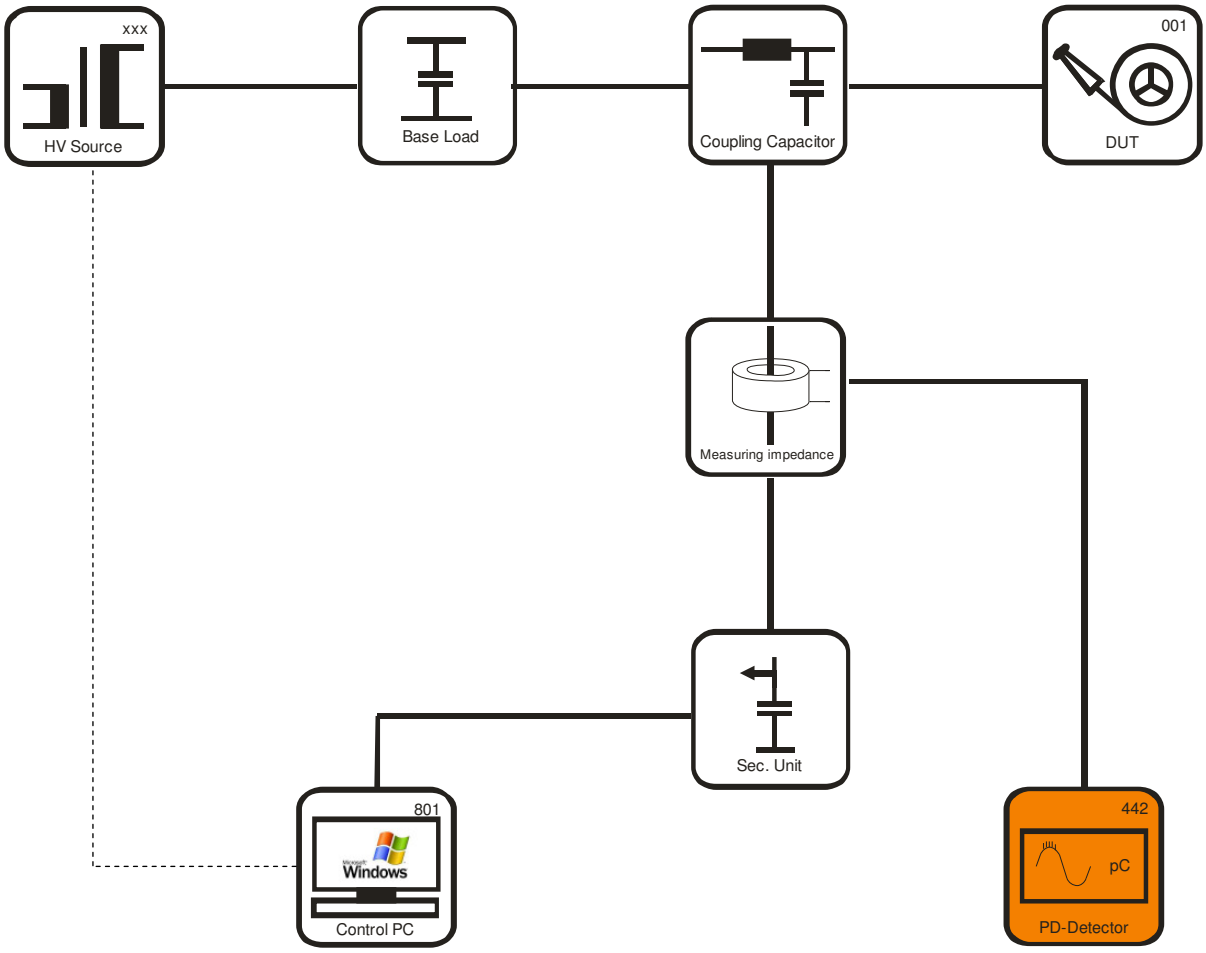
## ACCESSORIES (NOT INCLUDED)

- Set of HV connections
- Secondary part for voltage measurements
- Coupling quadripole for Partial Discharge measurements

## SPECIAL VERSIONS

- Outdoor version with porcelain insulator

## TYPICAL ELECTRICAL DIAGRAM OF COUPLING CAPACITOR




If the coupling capacitor is used simultaneously for voltage and PD measurements, the measuring impedance (coupling quadripole) & the secondary part are to be connected as shown above.

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