

**Coupling Capacitors**  
**Type KK**  
**Type TK**  
**Type 9230**



## Description

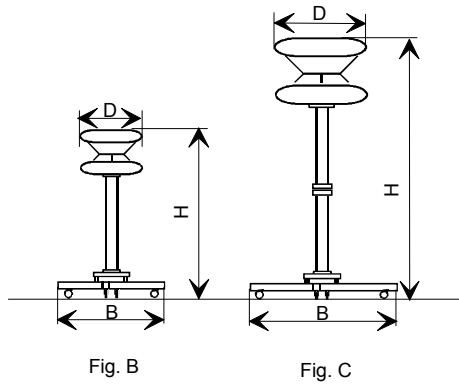
The coupling capacitors of the series KK or TK (and 9230) consist of 1 or more modular units, built into glass fibre reinforced epoxy tubes. Their applications are:

- 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 (above 100 kV). They are built for indoor use.

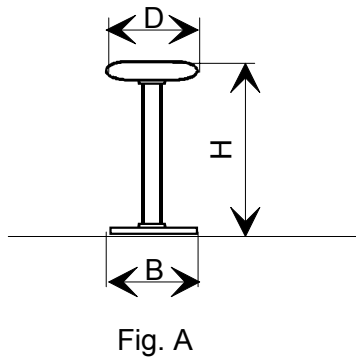
## Technical data of KK series

Type KK	Voltage kV	Capacity nF	PD Level at Un pC	Type	Height H mm	Diameter top electrode D mm	Base frame dimension B mm	Weight net, approx. kg
75-25	75	25	≤ 1	B	1900	660	1200	110
150-10	150	10	≤ 1	B	2600	660	1500	180
250-10	250	10	≤ 1	B	2600	660	1500	180
300-1	300	1	≤ 1	B	2600	660	1500	150
300-2	300	2	≤ 1	B	2600	660	1500	180
300-4	300	4	≤ 1	B	3200	660	1500	220
400-1	400	1	≤ 2	B	3300	1580	1500	270
400-2	400	2	≤ 2	B	3300	1580	1500	270
400-4	400	4	≤ 2	B	3300	1580	1500	270
400-7	400	7	≤ 2	B	3300	1580	1500	270
400-10	400	10	≤ 2	B	4200	1580	1500	300
500-5	500	5	≤ 3	C	4600	1900	2100	490
600-1	600	1	≤ 3	C	4600	1900	2100	490
600-2	600	2	≤ 3	C	5800	1900	2100	560
800-0.5	800	0.5	≤ 5	C	6000	1900	3100	650
800-1	800	1	≤ 5	C	6000	1900	3100	650
800-3.5	800	3.5	≤ 5	C	6000	1900	3100	650



### Technical data of TK series

Type TK	Voltage kV	Capacity nF	PD Level at Un pC	Type	Height H mm	Diameter top electrode D mm	Base frame dimension B mm	Weight net approx. kg
50-1	50	1	$\leq 1$	A	500	220	350	13
100-1	100	1	$\leq 1$	A	720	300	350	15
100-10	100	10	$\leq 1$	A	740	300	350	30
200-1	200	1	$\leq 1$	A	1640	350	850	60
300-1	300	1	$\leq 1$	A	1860	600	850	80
400-1	400	1	$\leq 2$	A	2400	820	850	90



The above listed TK capacitors can also be fitted with a double toroid electrode if they shall be used with big HV connections or act as HV filters. They become then KKS or KKF's.

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.

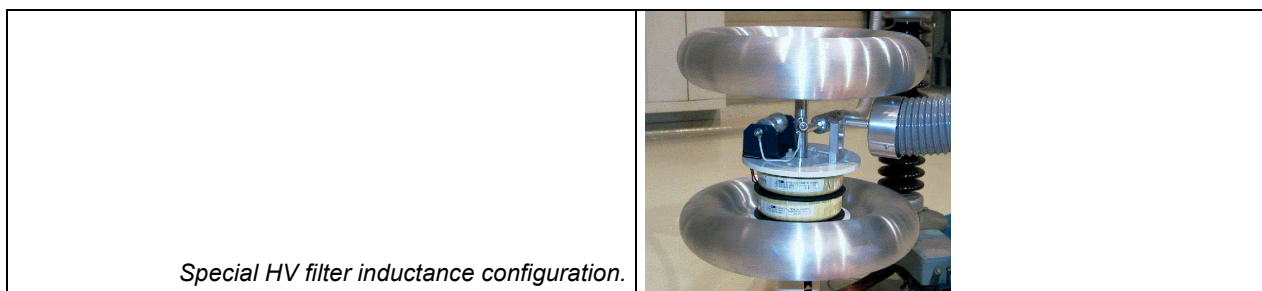
Following inductances are available:

Type	Inductivity mH	Max. current A	Weight kg	Capacity of KK nF
F 600-2	600	2	3	< 1
F 350-8	350	8	33	< 5
F 70-8	70	8	20	$5 \leq C \leq 10$
F 30-50	30	50	100	> 10
F 70-50	70	50	150	$5 \leq C < 10$
F 50-90	50	90	250	> 10

Typical insertion loss ( $50 \Omega / 50 \Omega$ ) at 40 kHz - 400 kHz  $\geq$  20 dB



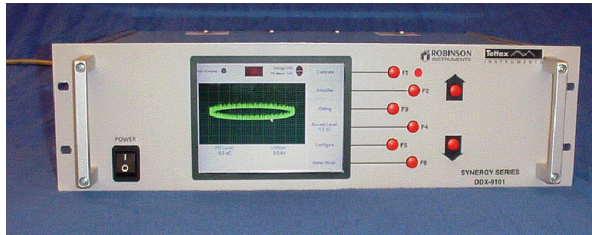
Examples of HV filter configurations.



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 TE AKV, AKV 568, 9232, etc. can be used. Other manufacturers' coupling impedances can be used also. Please see electrical diagram on page 6.

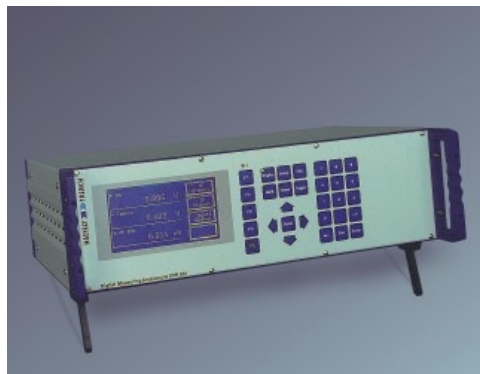


*Digital partial discharge detector type DDX<sup>®</sup> 9101.*

## Measuring of AC voltages

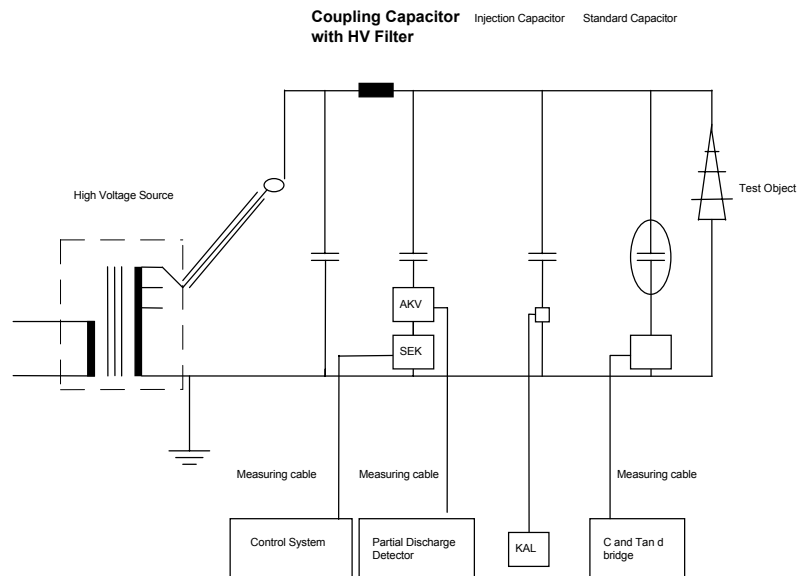
The secondary unit type SEK AC (option) with standard output voltage 140 V RMS is used for voltage measurements with a DMI 551 or with a control unit OT 247 and OT 257.

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



*Digital Measuring Instrument type DMI 551*

## Typical electrical diagram of coupling capacitor



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

## Colours

Insulating parts  
Top electrode

grey-white RAL 9002  
aluminium

## 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,  $\tan \delta$ , and partial discharge values are tested before and after the  $1,2 U_n$  over-voltage test.

## **Transportation**

Usually, the capacitors having a rated voltage of less than 200 kV are 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



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Subject to technical modifications without notice.

Haefely Test AG  
Lehenmattstrasse 353  
CH - 4052 Basel  
Switzerland

Tel. +41 61 373 41 11  
Fax. +41 61 373 49 12  
e-mail [sales@haefely.com](mailto:sales@haefely.com)  
[www.haefely.com](http://www.haefely.com)