

High Voltage Power Induction Heating



Capacitors



Iskra[®]

Iskra Kondenzatorji

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Induction heating capacitors KLS

Advanced technology of low loss KLS capacitor units is based on construction of ALL-FILM capacitor sections and impregnation with environmentally compatible insulating oil (NON-PCB).

Applications

KLS capacitors are especially designed for inductive heat generating plants operating at frequencies between 50 and 10000 Hz. Manufactured by request, these capacitors are designed to comply with the specific requirements of each customer. Most of these capacitors provide for step changes in kvar by virtue of terminated sections within each unit. This allows for the tuning of the circuit for changing inductive loads.

Construction

KLS capacitors utilize a polypropylene film and aluminum foil construction with NON-PCB liquid impregnant. The impregnating fluid M/DBT and textured polypropylene film have exceptional dielectric properties over the entire operating temperature range of induction heating capacitors.

The extended foil design of capacitor elements makes nearly continuous connection to the foils, so capacitor overcurrent and cooling capabilities are increased.

KLS capacitors designed for operating at lower frequencies are air cooled. Medium frequency capacitors utilize internal tubes for cooling. Bushings and connection for cooling water are placed on capacitor case cover.

Safety Requirements

The standard capacitor does not have internal discharge devices - all capacitor units should be connected directly with a discharge device, this may be other electrical equipment connected directly across the

capacitor (i.e. furnace coil). The discharge path must not have a disconnecting switch or fuses.

When the capacitors is switched off and re-energized at short intervals, arrangements should be made so that, at the time of re-application of the voltage, the capacitor terminal voltage shall

not be more than 10% of the rated voltage of the capacitor.

Before working on a capacitor ensure that the capacitor bank is properly isolated, wait to ensure the capacitor is discharged and short circuit the capacitor terminals before handling.

TECHNICAL DATA

Voltage range:	500–3000 V
Output range:	up to 500 kvar ($f_n = 50, 60$ Hz) up to 4000 kvar ($f_n > 60$ Hz)
Rated frequency:	50–10000 Hz
Tolerance of capacity:	- 5 %...+ 10 % (narrower tolerances on request)
Losses (typical):	0,15–0,7 W/kvar
Temperature category (ambient temperature):	-25 °C/+45 °C (air cooled capacitors) +1 °C/+45 °C (water cooled capacitors)
Outlet water temperature:	45 °C max.
Max. pressure of incoming cooling water:	8 bar
Cooling water flow:	4,5 l/min–12,5 l/min
Impregnating fluid:	environmentally compatible NON-PCB dielectric oil based on M/DBT
Discharge resistors:	On demand, for 50/60 Hz capacitors only
Internal fuses:	Air cooled 50/60 Hz capacitors only
Temperature monitoring:	Temperature sensors can be built-in upon request
Pressure monitoring:	Pressure switches can be built-in upon request
Case material:	Mild steel containers for 50/60 Hz capacitors. Brass or aluminium containers for medium frequency capacitors.
Case finish:	One layer of top coat on one layer of primer. Standard colour RAL 7032.

Quality Assurances

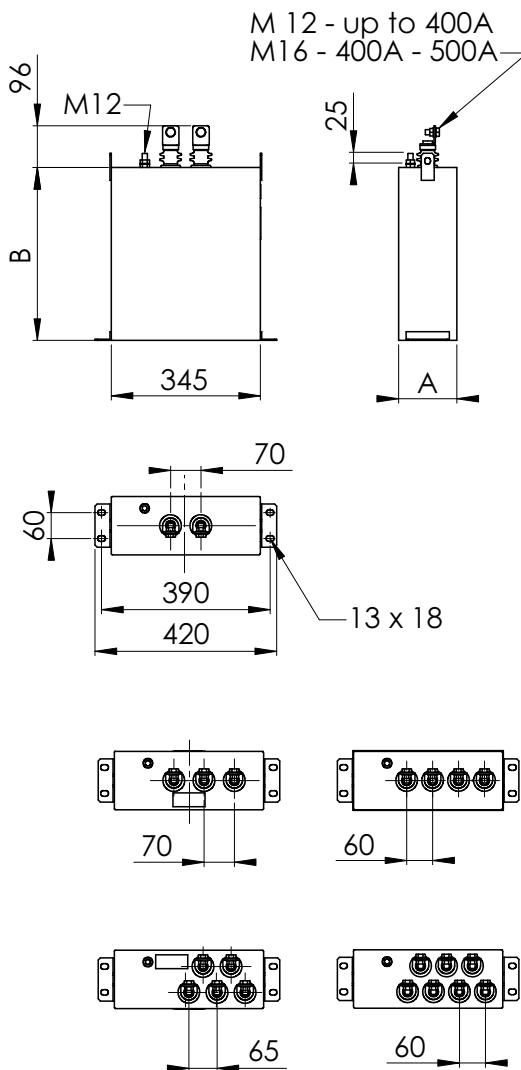
All capacitors are subjected to the following routine tests:

- Sealing test on container.
- Short circuit discharge test $1,7 \times$ rated voltage DC, one discharge, for internally fused capacitors.
- Capacitance measurements.
- Loss measurements at 50 Hz.
- Voltage test between terminals at $2,0 \times$ rated voltage AC, 10 sec or $4,0 \times$ rated voltage DC, 10 sec.
- Voltage test terminals to container where applicable.

Capacitors comply with IEC 60110-1 and VDE 0560 Part 9.

AIR COOLED CAPACITORS 50 Hz (Note 2)

Picture 1 - typical sizes; dimensions in mm



Air Cooled Capacitors 50 Hz

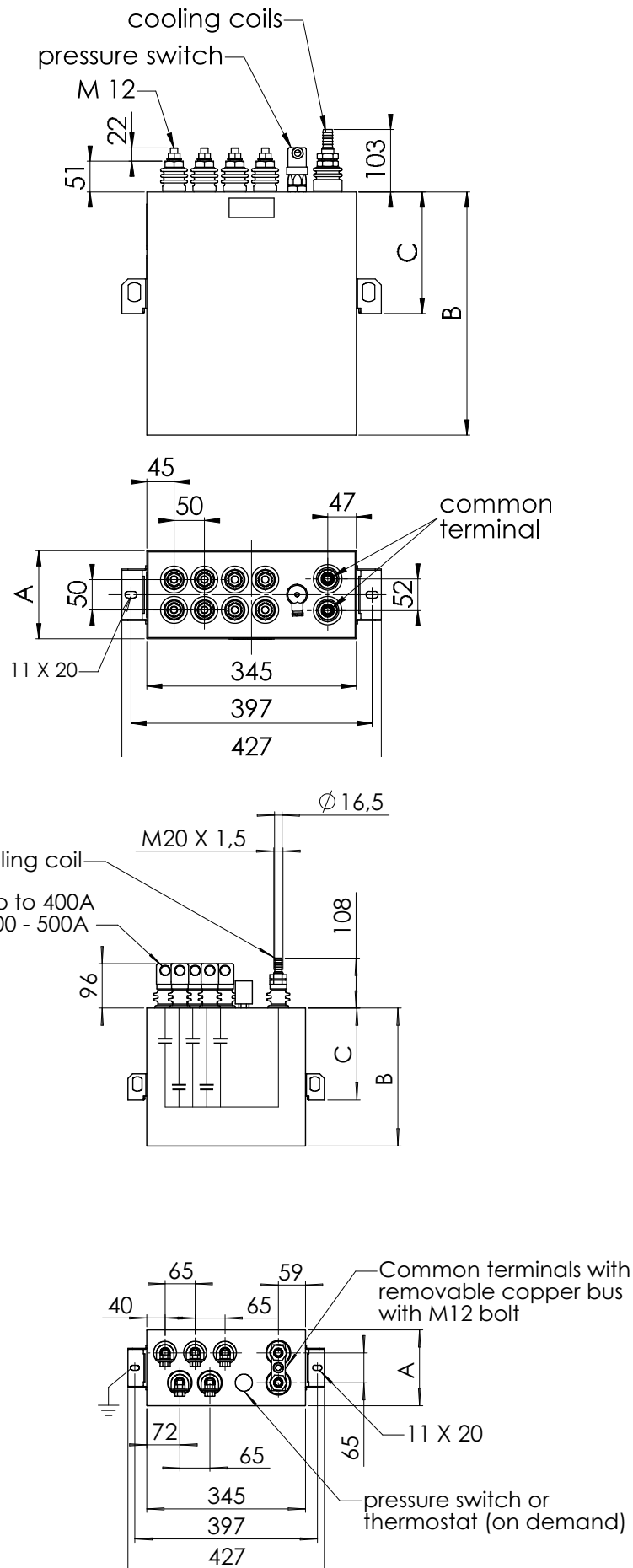
U_n (V)	Q_n (kvar)	f_n (Hz)	I_n (A)	C_n (μ F)	A (mm)	B (mm)	Weight (kg)
500	135	50	270	1719	135	1000	70
600	165	50	275	1459	135	1000	70
600	210	50	350	1857	170	1000	88
660	180	50	273	1315	135	1000	70
660	230	50	348	1681	170	1000	88
770	225	50	292	1208	135	1000	70
770	285	50	370	1530	160	1000	83
880	275	50	313	1130	135	1000	70
880	335	50	381	1377	160	1000	83
990	280	50	283	909	135	1000	70
990	345	50	348	1120	160	1000	83
1100	300	50	273	789	145	840	68
1100	370	50	336	973	145	1000	75
1200	340	50	283	752	135	1000	70
1200	390	50	325	862	160	1000	83
1350	222	50	164	388	135	660	46
1400	500	50	357	812.0	165	1050	90
1500	415	50	277	587	145	1000	75
2400	410	50	205	226	145	1000	75
2500	365	50	146	186	135	1000	70
2500	400	50	160	204	150	1000	78
3000	415	50	138	147	145	1000	75

Notes:

1. For output and voltage outside this range, please contact factory. Case sizes are typical and actual sizes will be confirmed at the time of order. Arrangement of bushings shown are for reference only.
2. Power at 60 Hz = 1,2 times power at 50 Hz.

WATER COOLED CAPACITORS, 180–10000 Hz

Picture 2 - Single Cooling Coil Capacitor (Insulated Poles, "Dead" Case)



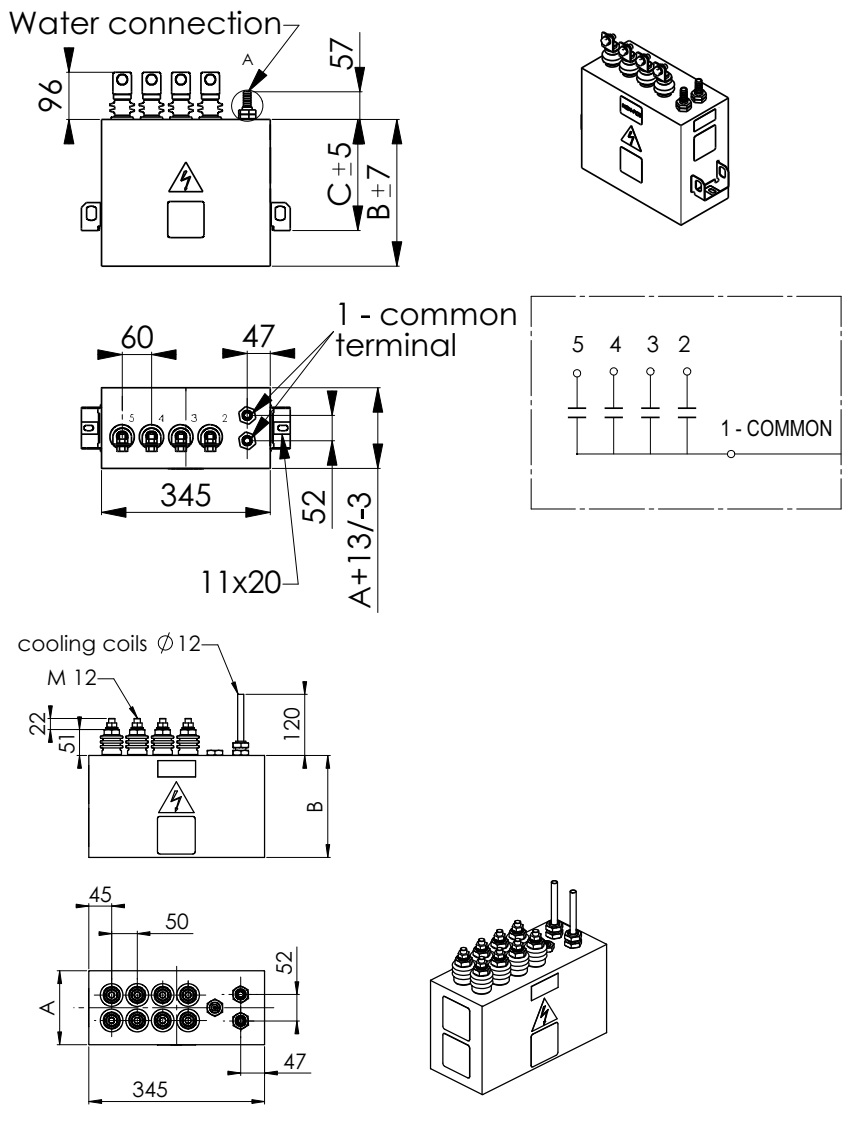
Single cooling coil capacitors (typical sizes)

f_n (Hz)	U_n (V)	Q_n (kvar)	I_n (A)	C_n (μ F)	A (mm)	B (mm)	C (mm)	Weight (kg)
180	700	332	474	599	160	600	200	50
420	1500	1000	667	168	165	650		56
500	600	600	1000	531	160	460	120	38
500	2800	2000	714	81	145	640	200	48
520	3000	666	222	23	145	330	120	25
520	3000	2250	750	77	145	840	200	63
600	800	1200	1500	497	145	500	200	38
700	1250	1200	960	175	160	360	283	30
1000	750	1200	1600	340	145	470	120	35
1000	800	400	500	99	165	220	200	19
1000	1150	865	752	104	145	350	200	26
1200	1000	900	900	119	165	300		26
2000	600	750	1250	166	145	330	120	25
2000	800	640	800	80	165	265	200	23
2000	1500	2000	1333	71	145	540	200	41
2400	800	850	1063	88	145	300	200	23
2400	800	1260	1575	130.6	145	400	200	30
2400	1000	1600	1600	106.1	145	400	200	30
2500	1500	2100	1400	59	165	500	200	43
2800	400	141	353	50	145	200	200	15
3000	400	600	1500	199	165	330	227	28
3000	600	1360	2267	200	165	400	200	34
3000	1100	615	559	27	145	265	200	20
3000	1100	1230	1118	54	145	400	200	30
3000	1250	1200	960	41	165	330	227	28
3000	1500	2330	1553	55	165	520	200	44
4000	650	600	923	57	145	220	200	17
5000	700	875	1250	57	165	300	200	26
5000	800	400	500	20	145	175	175	13
5000	800	800	1000	40	145	265	125	20
9600	440	300	682	26	110	300		17
10000	460	625	1359	47	145	265	120	20
10000	650	630	969	24	145	265	200	20
10000	800	650	813	16	165	220	200	19

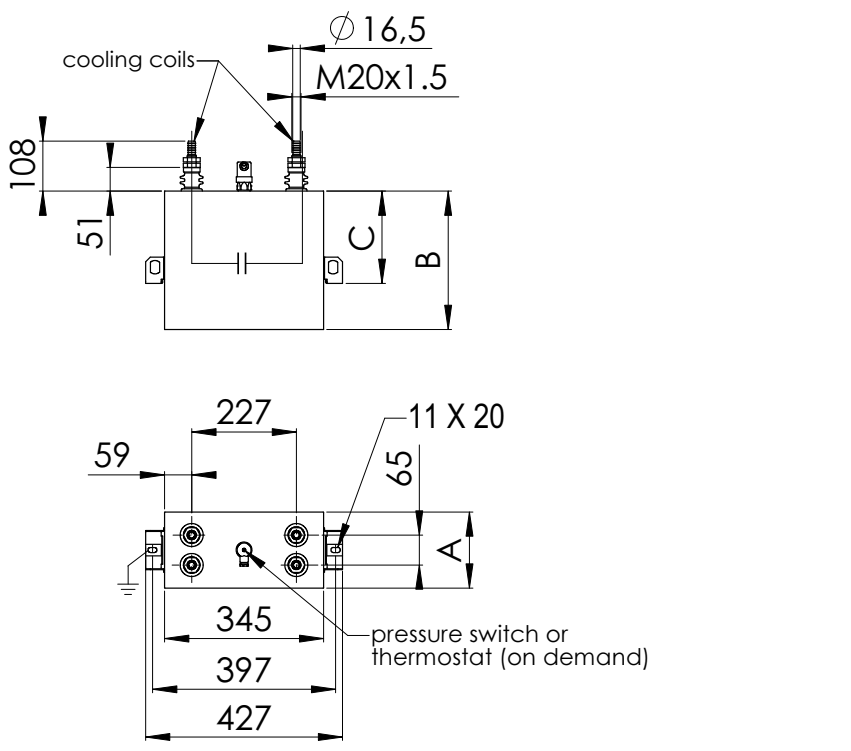
Notes:

1. For output, frequency and voltage outside this range, please contact factory. Case sizes are typical and actual sizes will be confirmed at the time of order.
2. Arrangement shown are typical. Arrangements available are from 1 to 8 taps.

Picture 3 - Single Cooling Coils Capacitor ("Live" Case)



Picture 4 - Double Cooling Coils Capacitor



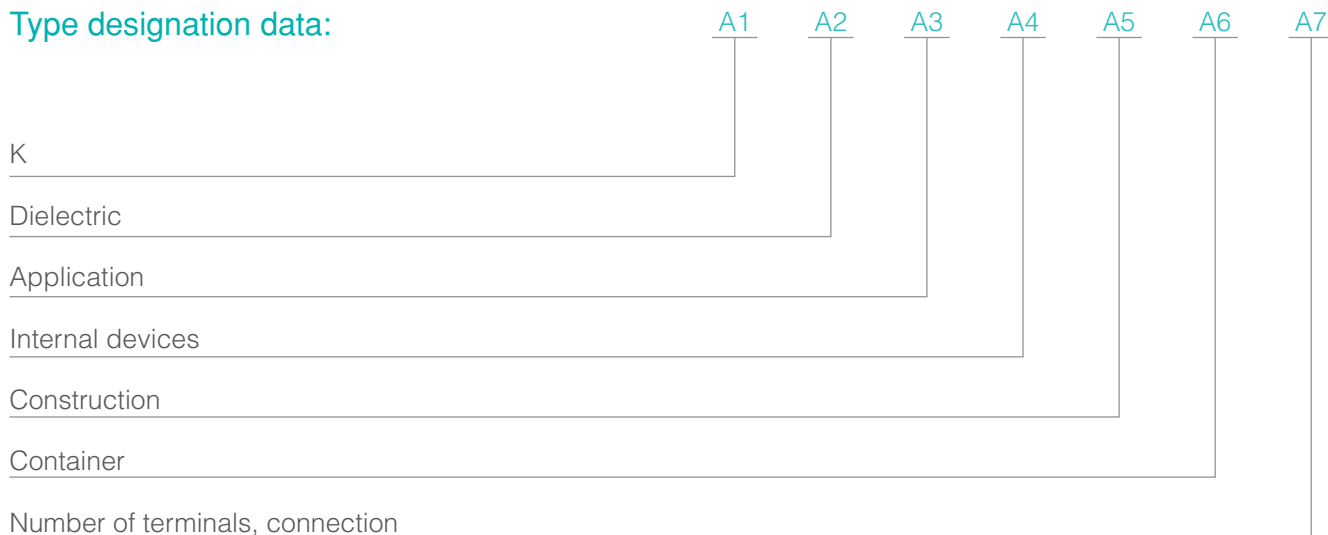
Double cooling coil capacitors

f_n (Hz)	U_n (V)	Q_n (kvar)	I_n (A)	C_n (μ F)	A (mm)	B (mm)	C (mm)	Weight (kg)
259	1850	2125	1149	381,5	165	1000	100	86
400	1100	1216	1105	399,9	145	540	200	41
500	1500	3000	2000	424,4	165	760	100	65
500	1875	2500	1333	226,4	165	625	200	53
500	2000	3300	1650	262,6	165	800	100	68
500	2050	3000	1463	227,2	165	710	200	61
550	2000	3000	1500	217,0	165	660	200	56
1000	650	1200	1846	452,0	165	400	200	34
1000	660	1440	2182	526,1	165	400	200	34
1000	800	640	800	159,2	145	265	200	20
1000	800	1350	1688	335,7	145	375	200	28
1000	1000	1600	1600	254,6	145	350	200	26
1000	1150	865	752	104,1	145	265	200	20
1000	2000	2000	1000	79,6	165	540	200	46
1500	600	900	1500	265,3	145	300	200	23
2000	650	1200	1846	226,0	165	330	200	28
2000	800	640	800	79,6	145	220	200	17
2400	800	600	750	62,2	145	200	200	15
2400	800	1450	1813	150,2	145	330	200	25
2500	600	1130	1883	199,8	145	265	200	20
2500	1500	2100	1400	59,4	165	330	200	28
3000	525	1036	1973	199,4	165	300	200	26
3000	600	1360	2267	200,4	165	300	200	26
4000	800	482	603	30,0	145	175	175	13
8000	800	480	600	14,9	145	175	175	13
8000	1500	1700	1133	15,0	165	265	200	23

Notes:

1. For output, frequency and voltage outside this range, please contact factory. Case sizes are typical and actual sizes will be confirmed at the time of order.

Type designation data:



A1	K	capacitor
A2	L	dielectric polypropylene (all-film)
A3	S	induction heating capacitor
A4	1	discharge resistors built in
	2	without discharge resistors
	3	internal fuses and discharge resistors built in
	4	internal fuses built in
	5	discharge resistors and thermostat or pressure switch built-in
	6	thermostat or pressure switch built-in
	7	internal fuses, discharge resistors and thermostat or pressure switch built-in
	8	internal fuses, and thermostat or pressure switch built-in
A5	0	air cooled, common terminal on the case («live case«)
	1	air cooled, isolated terminals
	2	water cooled, common terminal on the case («live case«)
	3	water cooled, isolated terminals
	4	water cooled, two cooling coils, isolated terminals
A6	0	case side mounting
	2	case bottom mounting
A7	0	number of terminals

Ordering data:

When ordering, please state:

Rated output:	kvar
Rated voltage:	V
Rated frequency:	Hz
Tolerance of capacitance:	-...% / +...%
Cooling:	air / water
Terminal connection	one terminal connected to the case («live») / isolated («dead»)
Number of bushings:	
Internal fuses:	Yes/No
Discharge resistors:	Yes/No
Thermostat:	Yes/ No
Pressure switch:	Yes/ No
Special conditions:	
Standards and regulations:	

While every care is taken to ensure that the information contained in this publication is correct, no legal responsibility can be accepted for any inaccuracy. The Company reserves the right to alter or modify the information contained herein at any time in the light of technical or other developments.

High voltage power capacitors KLV

Advanced technology of KLV capacitors is based on construction of ALL-FILM capacitor sections, improved electrical and mechanical connections between sections and impregnation with environmentally compatible insulating oil.

Applications

KLV capacitors are designed for reactive power compensation of electrical networks and industrial plants. When required voltages are higher than rated voltage of individual capacitor, units are integrated into banks by means of series connection. Fusing is provided according to national requirements.

Owing to high partial discharge inception voltage, KLV capacitors are suitable for installation in networks with higher harmonics and transient voltages. Low temperature-dependent capacitance change makes them particularly suitable for filter circuit installations.

Technical Data

Dielectric: All-film

Impregnating fluid: Environmentally compatible impregnating oil based on M/DBT (NON - PCB).

Discharge resistor: Built in discharge resistor reduces the voltage on a de-energised capacitor from the crest of rated voltage to 75 V

in 10 minutes or less (discharge to 50 V in 5 minutes on demand).

Internal fuses: Internal fuses are built in on demand.

Depending on the capacitor's rated voltage and rated output, KLV high voltage power capacitors have a varying number of series groups with winding elements connected in parallel. The melting of element fuses, in this case, is not caused by energy of the power supply as with low voltage capacitors, but by the stored energy of the winding elements connected in parallel. This energy must be selected sufficiently high so that the melting of the fuse wire is ensured in case of an element failure. The great number of winding elements in one capacitor unit is the reason why the loss of capacitance is very little after the melting of one fuse.

Element fuses can extend the service life of a power capacitors and thus avoid interruptions of operation. However, the fuse mechanism is only intact as long as there is a sufficient number of elements connected in parallel - when the capacitors grow older, eventually the point of time will come at which the fuses of the remaining elements will no longer melt. For this reason is recommended to measure capacitance every one or two years. Besides, each capacitor bank should be monitored by means of an unbalance protection device or a phase comparison protection

device. External fuses can also be used when internal fuses can not be used due to higher rated voltage or smaller rated output of capacitor.

Pressure switch with terminal cap (on demand):

Used for protection of capacitor units and banks, without unbalance protection.

In case of a capacitor failure increased pressure may occur inside the container which finally might cause a rupture of the can! In order to prevent such a damage, the pressure switch is used for monitoring. When exceeding a pressure of 0,5 bar a potential-free contact is operated, which shall be used for disconnecting the bank via the circuit breaker (installed on customer's site) without time delay. By this the disconnection of the defect capacitor can be ensured.

Note:

The required shortcircuit protection acc. to IEC or similar standards has to be provided on customer's installation.

Case material/Finish: Capacitor case is made of stainless steel and coated with primer and top coat.

For indoor mounting are available capacitors made of ordinary steel case, coated with primer and top coat.

Bushing and connections:

Terminal clamps, with provision to accommodate any combination of 2 conductors from 4 mm² solid to 50 mm² stranded wire are available on demand.

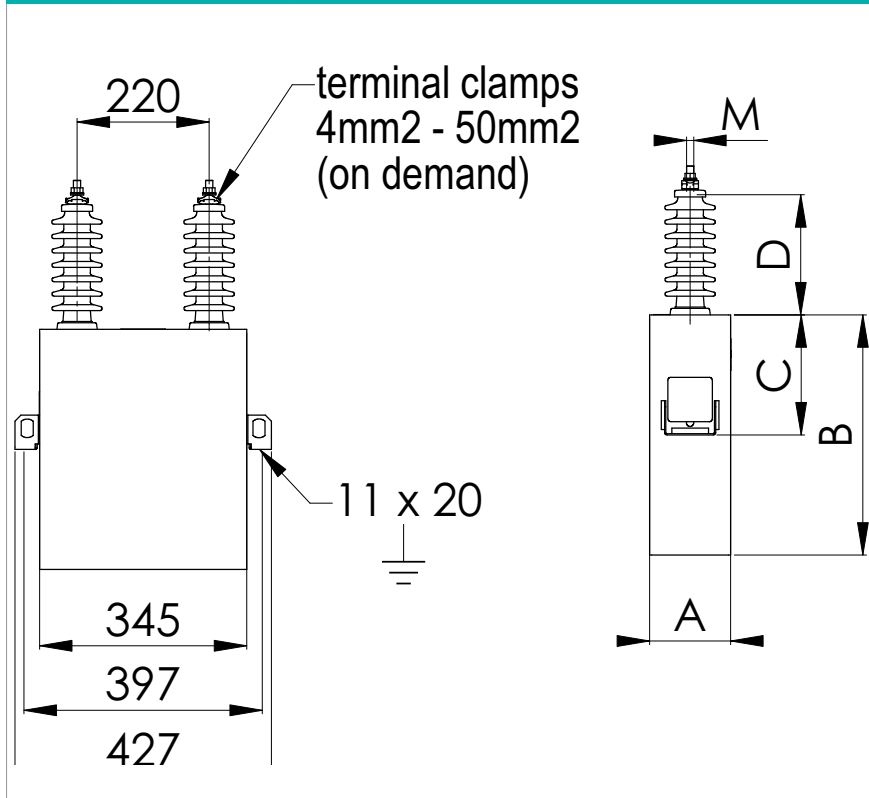
Mounting: Vertical or horizontal

TECHNICAL DATA

Voltage range:	up to 13,86 kV (terminal - to - terminal)
Output range:	up to 400 kvar at 50 Hz, up to 480 kvar at 60 Hz
Rated frequency:	50, 60 Hz
Tolerance of capacity:	- 5 %...+ 10 % (narrower tolerances on request)
Average losses:	0,08–0,15 W/kvar
Standard insulation levels:	7,2–12–17,5–24 kV
Temperature category:	-25/C per IEC 60871-1 (other categories on request)
Compliance with standards:	IEC 60871-1, 1997, ANSI/IEEE 18 - 1992, NEMA CP-1, 1988

Single-phase capacitors

Picture 1 (dimensions in mm)



Notes:

* Dimensions with an asterisk (*) refer to internally fused capacitors

- 1) Internal fuses recommended
- 2) For output and voltage outside this range, please contact factory
- 3) Case sizes are typical and actual sizes will be confirmed at the time of order
- 4) Dim A may expand up to 115 % due to thermal flexure
- 5) Power at 60 Hz = 1,2 × power at 50 Hz

Table I: Single-phase capacitors, 50 Hz standard units

U _n (V)	Q _n (kvar)	Insulation level (kV/kVp)	I _n (A)	C _n (μF)	A (mm)	B (mm)	B* (mm)	C (mm)	D (mm)	M (mm)	Weight (kg)	Weight* (kg)	Notes
3640	50	28/75	13,7	12,01	135	185	/	120	245	14	15	/	
3640	100	28/75	27,5	24,02	135	290	/	120	245	14	22	/	
3640	150	28/75	41,2	36,04	135	400	440	200	245	14	29	32	1)
3640	200	28/75	54,9	48,05	135	500	560	200	245	14	37	40	1)
3640	250	28/75	68,7	60,06	135	610	680	200	245	14	46	48	1)
3640	300	28/75	82,4	72,07	135	740	780	200	245	14	52	56	1)
3640	400	28/75	109,9	96,1	135	940	/	200	245	14	66	/	
3640	400	28/75	109,9	96,1	145	/	960	200	245	14	/	71	1)
6060	50	28/75	8,3	4,33	135	185	/	120	245	14	16	/	
6060	100	28/75	16,5	8,67	135	290	/	120	245	14	23	/	
6060	150	28/75	24,8	13,00	135	400	/	200	245	14	30	33	
6060	200	28/75	33,0	17,34	135	500	590	200	245	14	39	42	1)
6060	250	28/75	41,3	21,67	135	610	660	200	245	14	47	50	1)
6060	300	28/75	49,5	26,00	135	740	780	200	245	14	55	59	1)
6060	400	28/75	66,0	34,67	135	940	/	200	245	14	/	70	
6060	400	28/75	66,0	34,67	145	/	960	200	245	14	/	75	1)
6930	50	28/75	7,2	3,31	135	185	/	120	245	14	16	/	
6930	100	28/75	14,4	6,63	135	290	/	120	245	14	23	/	
6930	150	28/75	21,6	9,94	135	400	/	200	245	14	30	33	
6930	200	28/75	28,9	13,26	135	500	590	200	245	14	39	42	1)
6930	250	28/75	36,1	16,57	135	610	660	200	245	14	47	50	1)
6930	300	28/75	43,3	19,88	135	740	780	200	245	14	55	59	1)
6930	400	28/75	57,7	26,51	135	940	/	200	245	14	/	70	
6930	400	28/75	57,7	26,51	145	/	960	200	245	14	/	75	1)
10100	50	38/95	5,0	1,56	135	185	/	120	245	14	16	/	
10100	100	38/95	9,9	3,12	135	290	/	120	245	14	23	/	
10100	150	38/95	14,9	4,68	135	400	/	200	245	14	30	/	
10100	200	38/95	19,8	6,24	135	520	/	200	245	14	39	/	
10100	250	38/95	24,8	7,80	135	640	680	200	245	14	47	50	1)
10100	300	38/95	29,7	9,36	135	740	780	200	245	14	55	59	1)
10100	400	38/95	39,6	12,48	135	960	/	200	245	14	/	67	
10100	400	38/95	39,6	12,48	145	/	960	200	245	14	/	75	1)
13860	100	50/125	7,2	1,66	140	310	/	120	300	14	23	/	
13860	150	50/125	10,8	2,49	140	415	/	200	300	14	30	/	
13860	200	50/125	14,4	3,31	140	520	/	200	300	14	38	/	
13860	250	50/125	18,0	4,14	140	640	/	200	300	14	47	/	
13860	300	50/125	21,6	4,97	140	740	/	200	300	14	53	/	
13860	400	50/125	28,9	6,63	140	960	/	200	300	14	70	/	
13860	400	50/125	28,9	6,63	150	/	960	200	300	14	/	75	1)

Three-phase capacitors

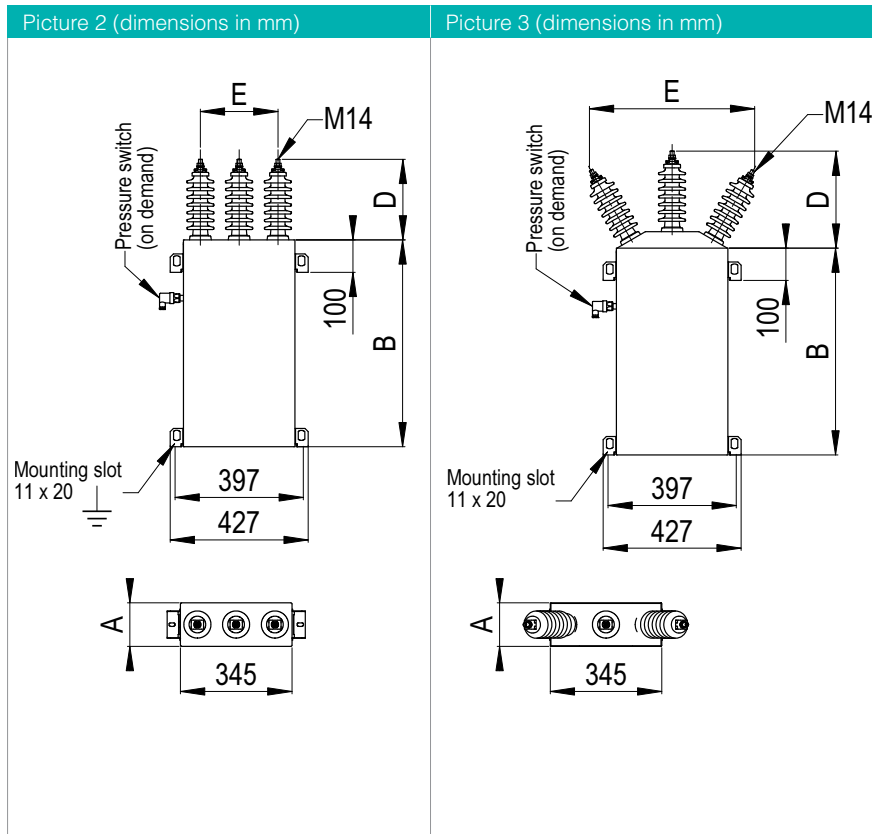


Table II: Three-phase capacitors, 50 Hz standard units

U _n (V)	Q _n (kvar)	Insulation level (kV/kVp)	I _n (A)	C _N (μF)	A (mm)	B (mm)	D (mm)	E (mm)	Weight (kg)	Picture
3300	50	20/60	3 x 8,7	7,31	145	180	245	240	16	2
3300	100	20/60	3 x 17,5	14,61	145	275	245	240	23	2
3300	150	20/60	3 x 26,2	21,92	145	370	245	240	30	2
3300	200	20/60	3 x 35,0	29,23	145	470	245	240	37	2
3300	250	20/60	3 x 43,7	36,54	145	570	245	240	44	2
3300	300	20/60	3 x 52,5	43,84	145	670	245	240	51	2
3300	360	20/60	3 x 63,0	52,61	145	800	245	240	61	2
3300	400	20/60	3 x 70,0	58,46	145	870	245	240	66	2
6600	50	20/60	3 x 4,4	1,83	145	180	245	240	16	2
6600	100	20/60	3 x 8,7	3,65	145	275	245	240	23	2
6600	150	20/60	3 x 13,1	5,48	145	370	245	240	30	2
6600	200	20/60	3 x 17,5	7,31	145	470	245	240	37	2
6600	250	20/60	3 x 21,9	9,13	145	570	245	240	44	2
6600	300	20/60	3 x 26,2	10,96	145	670	245	240	51	2
6600	360	20/60	3 x 31,5	13,15	145	800	245	240	61	2
6600	400	20/60	3 x 35,0	14,61	145	870	245	240	66	2
11000	100	28/75	3 x 5,2	1,32	145	275	296	510	26	3
11000	150	28/75	3 x 7,9	1,97	145	370	296	510	33	3
11000	200	28/75	3 x 10,5	2,63	145	470	296	510	40	3
11000	250	28/75	3 x 13,1	3,29	145	570	296	510	48	3
11000	300	28/75	3 x 15,7	3,95	145	670	296	510	55	3
11000	400	28/75	3 x 21,0	5,26	145	870	296	510	69	3

Notes:

- 1) For output and voltage outside this range, please contact factory
- 2) Case sizes are typical and actual sizes will be confirmed at the time of order
- 3) Internally fused capacitors on demand
- 4) Pressure switch on demand
- 5) Either 2 or 4 fixing brackets are used, depending on the height of the unit. Special bracket positions can be provided if required. Please specify at the enquiry stage.
- 6) Dim A may expand up to 115 % due to thermal flexure

Table III : Application of standard three-phase 50 Hz units at other operating voltages

Rated voltage	3,3 kV		6,6 kV			11 kV	
	3 kV	3,3 kV	6 kV	6,3 kV	6,6 kV	10,5 kV	11 kV
Operating power (kvar)	41	50	41	46	50		
	83	100	83	91	100	91	100
	124	150	124	137	150	137	150
	165	200	165	182	200	182	200
	207	250	207	228	250	228	250
	248	300	248	273	300	273	300
	298	360	298	328	360		
	331	400	331	364	400	364	400

Notes:Values in **bold** type indicate rated values

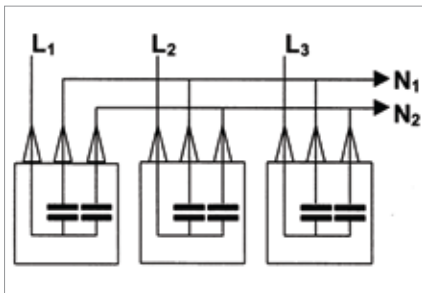
High voltage power capacitors with two outputs KLV xxx4

Advanced technology of KLV capacitors is based on construction of ALL-FILM capacitor sections, improved electrical and mechanical connections between sections and impregnation with environmentally compatible insulating oil.

Introduction

KLV-xxx4 capacitors are supplied in sets of three to provide an economical unbalance detection scheme. This is particularly advantageous in low output capacitor banks.

Connection



Dielectric: All-film

Impregnating fluid:

Environmentally compatible impregnating oil based on M/DBT (NON - PCB).

Discharge resistor: Built in discharge resistor reduces the voltage on a de-energised capacitor from the crest of rated voltage to 75 V in 10 minutes or less (discharge to 50 V in 5 minutes on demand).

Case material/Finish: Capacitor case is made of stainless steel and coated with primer and top coat.

For indoor mounting are available capacitors made of ordinary steel case, coated with primer and top coat.

Bushing and connections:

Bushings: 3 porcelain bushings provide 75 kV BIL as standard (95 kV BIL option on request).

TECHNICAL DATA

Voltage range:	up to 12 kV
Output range:	up to 400 kvar, 50 Hz up to 480 kvar, 60 Hz
Rated frequency:	50, 60 Hz
Tolerance of capacity:	- 5 %...+ 10 % (narrower tolerances on request)
Average losses:	0,08–0,15 W/kvar
Standard insulation levels:	7,2–12
Temperature category:	-25/C per IEC60871-1 (other categories on request)

PERMISSIBLE OVERLOADS

Current:	1,3 × Rated current continuously
Voltage:	1,1 × Rated voltage continuously
Output:	1,35 × Rated output continuously

QUALITY ASSURANCE

Factory tests:	All units are subject to the following tests unless otherwise agreed: Voltage test between terminals and container 2,15 × U_n a.c. or 4,3 × U_n d.c, 10 s Voltage test between terminals and container Discharge resistance test (if applicable) Loss measurement Capacitance measurement Type tests may be performed (at extra charge)
Compliance with standards:	Capacitor units comply with: <ul style="list-style-type: none"> • IEC 60871-1 • VDE0560 Teil 410 • ANSI/IEEE 18 • NEMA CP-1

Terminals M14 as standard.

Terminal clamps, with provision to accommodate any combination of 2 conductors from 4 mm² solid to 50 mm² stranded wire are available on demand.

Mounting: indoor /outdoor

Single-phase capacitors with two outputs

Picture 3: KLV xx14 BIL 20/60 kV, KLV xx14 BIL 28/75 kV (dimensions in mm)

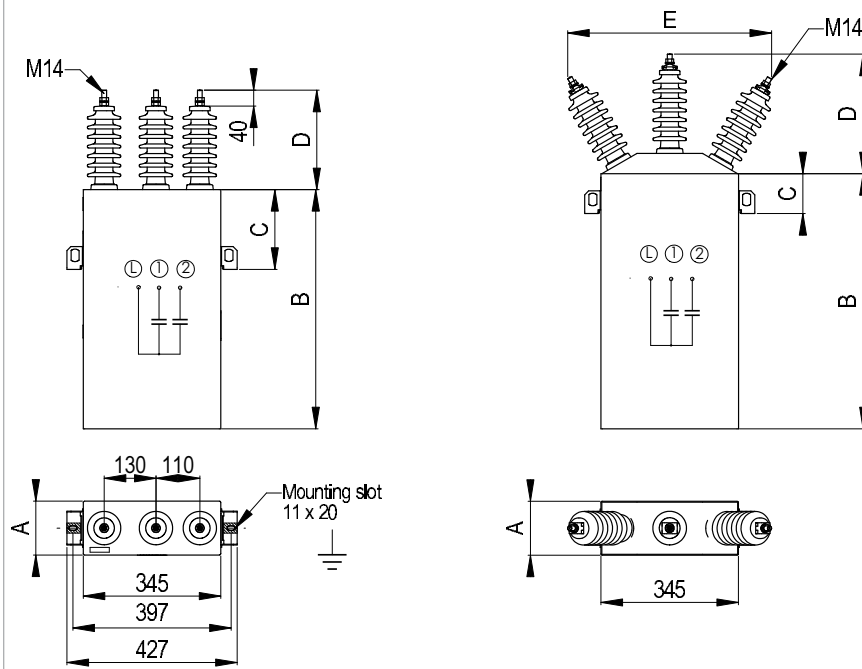


Table IV - Power capacitors with two outputs

Q _n (kvar)	A (mm)	B (mm)	C (mm)	D (mm)		E (mm)		Weight (kg)
				BIL 60 kV	BIL 75 kV	BIL 60 kV	BIL 75 kV	
25	135	150	120	245	296	/	510	12
50	135	200	120	245	296	/	510	16
75	135	240	120	245	296	/	510	18
100	135	290	120	245	296	/	510	22
125	135	340	120	245	296	/	510	25
150	135	400	200	245	296	/	510	29
175	135	430	200	245	296	/	510	31
200	135	500	200	245	296	/	510	36
225	135	560	200	245	296	/	510	40
250	135	610	200	245	296	/	510	43
275	135	670	200	245	296	/	510	48
300	135	740	200	245	296	/	510	52
325	135	780	200	245	296	/	510	55
350	135	840	200	245	296	/	510	59
375	135	900	200	245	296	/	510	63
400	135	940	200	245	296	/	510	66

Notes:

- 1) For output and voltage outside this range, please contact factory.
- 2) Case sizes are typical and actual sizes will be confirmed at the time of order.
- 3) Either 2 (standard) or 4 (on demand) fixing brackets may be used. Special bracket positions can be provided if required. Please specify at the enquiry stage.
- 4) Dim A may expand up to 115 % due to thermal flexure.

Type designation data:

	A1	A2	A3	A4	A5	A6	A7
K							
Dielectric							
Application							
Internal devices							
Case material and finish							
Number of terminals, connection							

A1	K	capacitor
A2	L	dielectric polypropylene (all-film)
A3	V	high voltage capacitor for power factor correction
A4	1	discharge resistor built in
	2	without discharge resistors
	3	internal fuses and discharge resistors built in
	4	internal fuses built in
A5	0	ordinary steel case coated with primer and top coat (intended for indoor installation)
	2	stainless steel case coated with primer and top coat (intended for outdoor and aggressive atmosphere installation)
A6	1	case side mounting (2 brackets)
	2	case side mounting (2 brackets on the top and / or 2 brackets on the bottom)
A7	0	single phase, one bushing capacitor
	1	single-phase, two bushing capacitor
	3	three phase capacitor
	4	single phase capacitor with two outputs

Production programme

Capacitors for use in electronics

- polyester film capacitors, metallized and nonmetallized
- polypropylene film capacitors, metallized and nonmetallized

Capacitors and filters for radio interference suppression

Spark suppression capacitors for motor cars

Motor running & motor starting capacitors

Lamp capacitors

Power factor capacitors and automatic power factor banks

Power factor controller

Induction heating capacitors

Tools and production equipment and machinery

Ordering data:

When ordering, please state:

Number of phases:	
Rated output:	kvar
Rated voltage:	V
Rated frequency:	Hz
Tolerance of capacitance:	-...%/+...%
Number of bushings:	Single bushing, two bushings...
Installation:	Indoor/Outdoor
Insulation level:	.../...kV, if higher than required by U_n
Internal fuses:	Yes/No
Pressure switch:	Yes/No
Terminal clamps:	Yes/No
Temperature category:	
Standards and regulations:	
Special conditions:	

While every care is taken to ensure that the information contained in this publication is correct, no legal responsibility can be accepted for any inaccuracy. The Company reserves the right to alter or modify the information contained herein at any time in the light of technical or other developments.

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