Motor Running & Motor Starting Capacitors

Lamp Power Factor Capacitors

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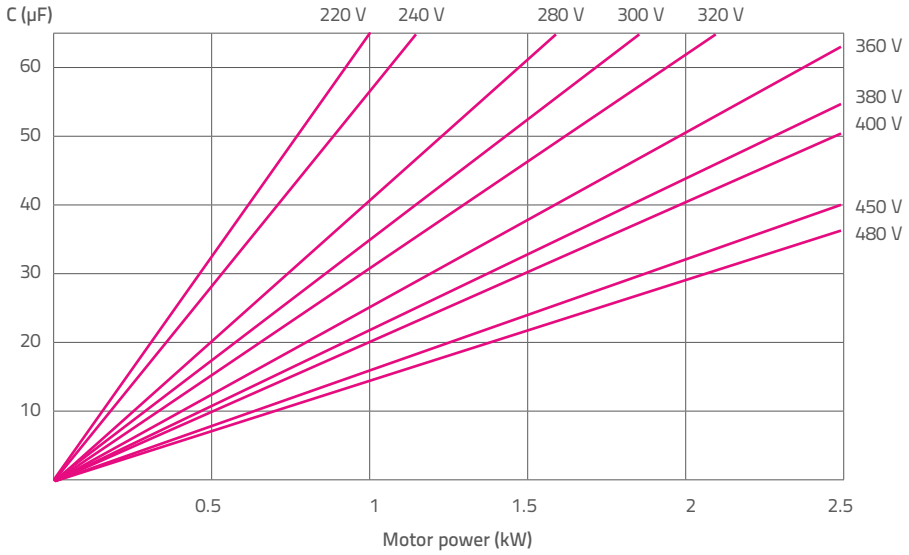
Motor Running & Motor Starting Capacitors / Lamp power Factor Capacitors

Motor Running & Motor Starting Capacitors
Type KNM

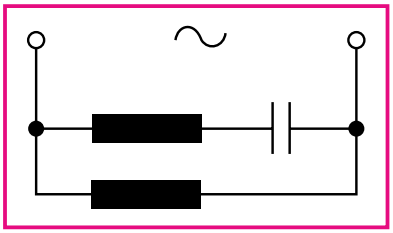
Applications

Motor running capacitors type KNM are designed for obtaining an auxiliary phase in single-phase and in three-phase motors connected to a single phase. The capacitors provide a starting moment of 25 % to 30 % of rated moment. The approximate values of capacitors with the respect to motor power are given on the draft below.

Selection of capacitors values for different voltages and motor power

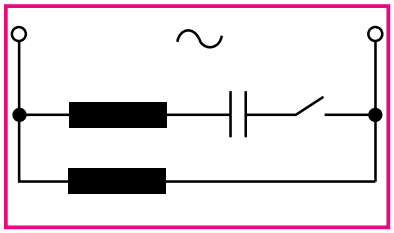


The connection and operation of single-phase motors with capacitor



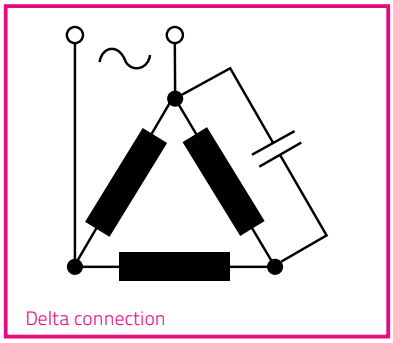
Motor running capacitors

The capacitor is connected for the entire time the motor is in operation.

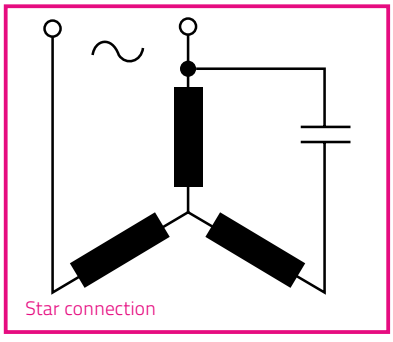


Motor starting capacitors

The capacitor is connected in series with the auxiliary motor winding only, it operates for short periods of time (3 s max.) and is automatically switched off using a centrifugal switch or electromagnetic relay as soon as the motor has built up speed.



Delta connection



Star connection

Connecting three-phase motors to a single-phase power supply

Motor Running Capacitors
Type KNM80xx, KNM90xx

Safety Class S2

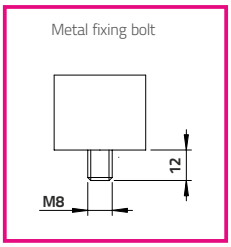
Protected 10.000 AFC (UL, CSA)

Design

Motor running capacitors type KNM80xx and KNM90xx are made of metallized polypropylene film. The protection against climatic and mechanical influence is reached by using aluminium can and thermoplastic cover as a casing. The capacitors are impregnated with plant oil (non PCB) and protected with a mechanical disconnector. The leads are designed as soldering tags, two-wire cable lead and single or double fast-on tags.

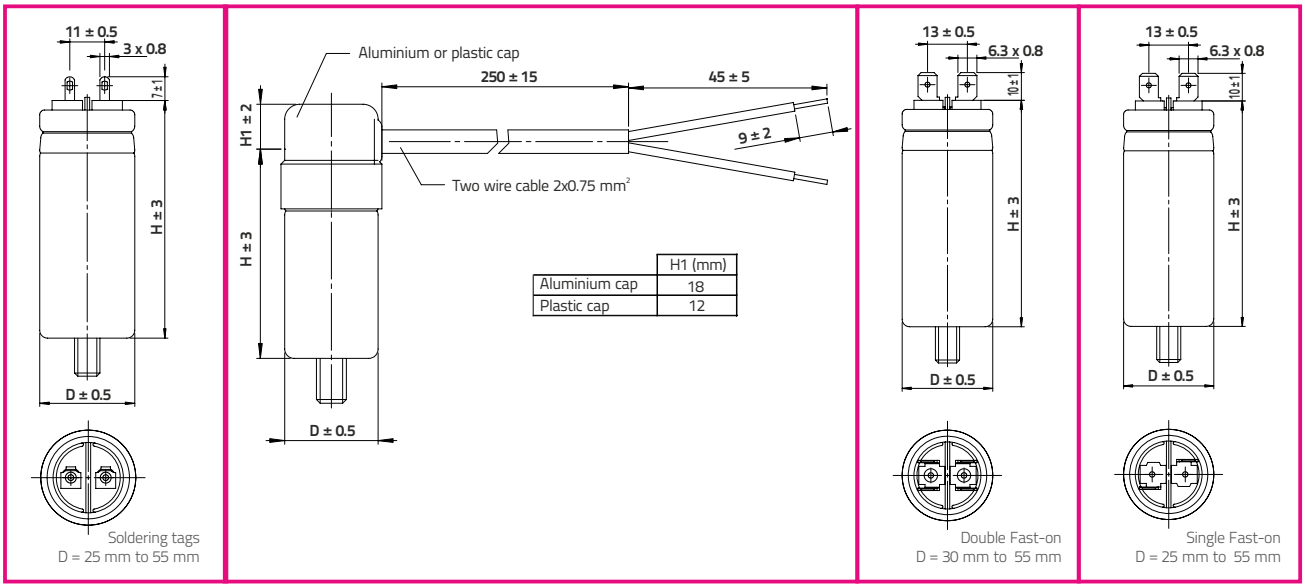
Specifications

Rated voltage U_n	as per table
Rated capacitance C_n	as per table
Capacitance tolerance	± 10% (± 5% on request)
Rated frequency f_n	50 to 60 Hz
Loss angle tanδ	max. 10×10^{-4} at U_n and 50 Hz
Test voltage terminal to terminal	$2 \times U_n$, 50 Hz, 2 s
Test voltage terminal to case	2400 V, 50 Hz, 2 s
Life time class	as per table
Climate category	according to EN 60252-1
Temperature range	-25 °C to +85 °C
Compliance with standards	EN 60252-1, UL 810, CSA C 22.2 No. 190-M1985



Standard designs of capacitors type KNM80xx and KNM90xx

With bolt	KNM8011, 9011	KNM8011, 9011	KNM8015, 9015	KNM8017, 9017
Without bolt	KNM8010, 9010	KNM8010, 9010	KNM8014, 9014	KNM8016, 9016



Motor Running Capacitors
Type KNM80xx, KNM90xx

Standard values and dimensions of capacitors type KNM80xx

Capacitance C (µF)	Approvals	S2 EN 60252-1	c UL us C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class, Climate category	420 VAC 30.000h 470 VAC 10.000h 50/60hz 25/85/21	450 VAC 50/60Hz 10.000 AFC -25/+85°C
	Type	KNM8010, KNM8011 KNM8016, KNM8017	
	D x H (mm)	KNM8014, KNM8015 (D > = 30 mm)	
1	25 x 56	●	
1.5	25 x 56	●	
2	25 x 56	●	
2.5	25 x 56	●	
3	25 x 61	●	
3	30 x 56	●	●
3.5	30 x 56	●	●
4	25 x 75	●	
4	30 x 56	●	●
4.5	25 x 75	●	
4.5	30 x 61	●	●
5	25 x 75	●	
5	30 x 61	●	●
6	30 x 75	●	●
6	35 x 61	●	●
7	30 x 75	●	●
7	35 x 61	●	●
7.5	30 x 75	●	●
7.5	35 x 61	●	●
8	30 x 75	●	●
8.5	35 x 75	●	●
9	30 x 88	●	●
9	35 x 75	●	●
10	35 x 75	●	●
11	35 x 75	●	●
12	35 x 75	●	●
12.5	35 x 88	●	●
13	35 x 88	●	●
13.5	35 x 88	●	●
14	35 x 88	●	●
14	40 x 75	●	●
15	40 x 75	●	●
16	40 x 75	●	●
18	35 x 100	●	●
18	40 x 88	●	●
20	40 x 88	●	●
22	40 x 88	●	●
25	40 x 100	●	●
25	45 x 88	●	●
30	45 x 100	●	●

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Standard values and dimensions of capacitors type KNM90xx

Capacitance C (µF)	Approvals	S2 EN 60252-1	c UL us C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class, Climate category	300 VAC 50/60 HZ 10.000 h 25/85/21	300 VAC 50/60 HZ 10.000 AFC -25/+85 °C
	Type	KNM9010, KNM9011 KNM9016, KNM9017	
	D x H (mm)	KNM9014, KNM9015 (D > = 30 mm)	
1	25 x 56		
1.5	25 x 56		
2	25 x 56		
2.5	25 x 56		
3	25 x 56		
3.15	25 x 56		
3.5	25 x 56		
4	25 x 65		
4.5	25 x 56		
5	25 x 56		
6	25 x 61		
6.5	25 x 61		
7	25 x 75		
7	30 x 56		●
8	25 x 75		
8	30 x 56		●
9	25 x 75		
9	30 x 61		●
10	25 x 80		
10	30 x 61		●
12	30 x 75		●
12	35 x 61		●
12.5	30 x 75		●
13	30 x 75		●
13.5	30 x 75		●
13.5	35 x 61		●
14	30 x 75		●
15	30 x 75		●
16	30 x 80		●
16	35 x 61		●
18	30 x 88		●
20	35 x 75		●
22	35 x 75		●
24	35 x 80		●
25	35 x 80		●
30	35 x 125		●
30	40 x 100		●
35	40 x 100		●
40	40 x 125		●
40	45 x 100		●
45	45 x 75		●
45	45 x 100		●
50	45 x 109		●
50	50 x 100		●

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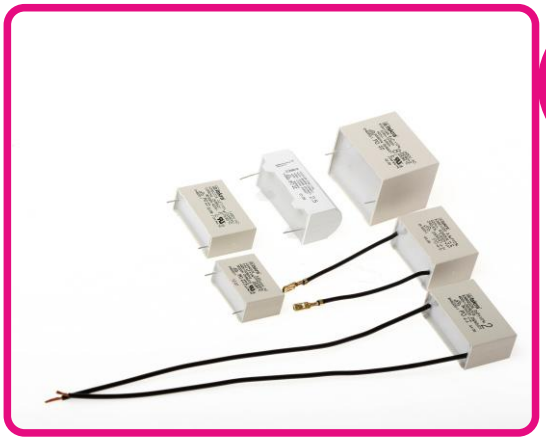
Motor Running Capacitors
Type KNM12xx, KNM22xx, KNM32xx



Safety Class S0

Construction only (UL, CSA)

Design

Motor running capacitors type KNM12xx, KNM22xx and KNM32xx are made of metalized polypropylene film.

The protection against climatic and mechanical influences is reached by using prismatic plastic case sealed with epoxy resin. The case and the resin are self-extinguishing. Leads are designed as tinned copper wire or insulated copper wires.

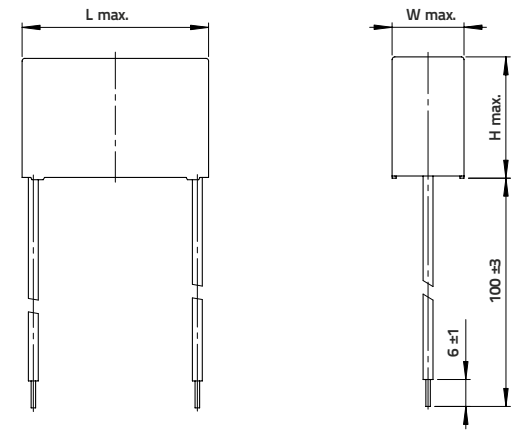
Note: Capacitors **KNM12xx, KNM22xx** and **KNM32xx** can be used also for other purposes, such as in industrial electronics in electronics circuits where capacitors are lower pulse loaded.

Specifications

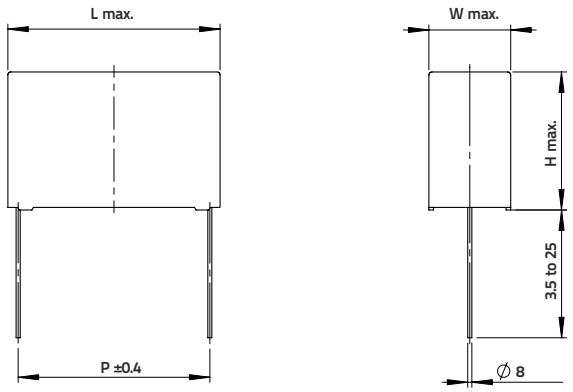
Rated voltage U_n	as per table
Rated capacitance C_n	as per table
Capacitance tolerance	± 10% (± 5% on request)
Rated frequency f_n	50 Hz
Loss angle tanδ	$<10 \times 10^{-4}$ at U_n at 1 kHz 1 V
Test voltage terminal to terminal	$2 \times U_n$, 50 Hz, 2 s
Life time class	as per table
Climate category	according to EN 60252-1
Temperature range	-25 °C to +85 °C
Allowed pulse loading	⩽ 1µF, 100 V/µs; > 1µF, 50 V/µs
Compliance with standards	EN 60252-1, UL 810, CSA C 22.2 No. 190-M1985

Standard designs of capacitors type KNM12xx, KNM22xx and KNM32xx

KNM1255, 1244, 2225, 2244, 3225, 3244



KNM1228, 2228, 3228



Standard values and dimensions of capacitors type KNM12xx

Capacitance	Approvals		SO EN 60252-1		cULus C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class		275 VAC 10.000 h 50/60 Hz	400 VAC 3.000 h 50/60 Hz	400 VAC 50/60 Hz
	Climate category		25/85/21	25/85/21	-25/+85 °C
C (µF)	W x H x L (mm)	P (mm)			
0.33	7.5 x 16.5 x 26.5	22.5	●		●
0.47	9.0 x 18.5 x 26.5	22.5	●		●
0.68	11.0 x 20.5 x 26.5	22.5	●		●
0.82	11.0 x 20.0 x 32.0	27.5	●		●
1	11.0 x 20.0 x 32.0	27.5	●		●
1.2	11.0 x 20.0 x 32.0	27.5	●		●
1.3	14.0 x 20.0 x 32.0	27.5	●		●
1.4	14.0 x 20.0 x 32.0	27.5	●		●
1.5	14.0 x 20.0 x 32.0	27.5	●		●
1.6	13.0 x 22.0 x 32.0	27.5	●		●
1.8	15.0 x 24.5 x 32.0	27.5	●		●
2	15.0 x 24.5 x 32.0	27.5	●	●	●
2	14.0 x 25.0 x 38.5	35	●	●	●
2.2	15.0 x 24.5 x 32.0	27.5	●	●	●
2.2	14.0 x 25.0 x 38.5	35	●	●	●
2.5	14.0 x 25.0 x 38.5	35	●	●	●
2.7	14.0 x 25.0 x 38.5	35	●	●	●
2.8	14.0 x 25.0 x 38.5	35	●	●	●
3	14.0 x 25.0 x 38.5	35	●	●	●
3	14.0 x 25.0 x 41.5	37.5	●	●	●
3.2	16.0 x 27.0 x 41.5	37.5	●	●	●
3.5	16.0 x 27.0 x 41.5	37.5	●	●	●
4	16.0 x 27.0 x 41.5	37.5	●	●	●
4.5	18.0 x 31.0 x 41.5	37.5	●	●	●
5	18.0 x 31.0 x 41.5	37.5	●	●	●
5	24.0 x 26.5 x 41.5	37.5	●	●	●
5.5	24.0 x 26.5 x 41.5	37.5	●	●	●
6	24.0 x 26.5 x 41.5	37.5	●	●	●
6.5	33.0 x 35.0 x 41.5	37.5	●	●	●
7	33.0 x 35.0 x 41.5	37.5	●	●	●
7.5	33.0 x 35.0 x 41.5	37.5	●	●	●
8	33.0 x 35.0 x 41.5	37.5	●	●	●
9	33.0 x 35.0 x 41.5	37.5	●	●	●
10	33.0 x 35.0 x 41.5	37.5	●	●	●

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Standard values and dimensions of capacitors type KNM22xx

Capacitance	Approvals		SO EN 60252-1	C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class		400 VAC 30.000 h 50/60 Hz	400 VAC 50/60 Hz
	Climate category		25/85/21	-25/+85 °C
C (µF)	W x H x L (mm)	P (mm)		
0.33	10.0 x 19.0 x 31.5	27.5	●	●
0.33	11.0 x 20.5 x 26.5	22.5	●	●
0.39	11.0 x 20.0 x 32.0	27.5	●	●
0.47	12.0 x 21.0 x 31.5	27.5	●	●
0.56	11.0 x 20.0 x 32.0	27.5	●	●
0.62	11.0 x 20.0 x 32.0	27.5	●	●
0.68	11.0 x 20.0 x 32.0	27.5	●	●
0.75	12.0 x 21.0 x 31.5	27.5	●	●
0.82	13.0 x 22.0 x 32.0	27.5	●	●
1	14.0 x 25.0 x 38.5	35	●	●
1	14.0 x 23.5 x 31.5	27.5	●	●
1.2	14.0 x 25.0 x 38.5	35	●	●
1.5	14.0 x 25.0 x 38.5	35	●	●
1.8	16.0 x 27.0 x 41.5	37.5	●	●
2	16.0 x 27.0 x 41.5	37.5	●	●
2.2	16.0 x 27.0 x 41.5	37.5	●	●
2.5	18.0 x 31.0 x 41.5	37.5	●	●
2.6	18.0 x 31.0 x 41.5	37.5	●	●
2.7	18.0 x 31.0 x 41.5	37.5	●	●
3	24.0 x 26.5 x 41.5	37.5	●	●
3.5	33.0 x 35.0 x 41.5	37.5	●	●
4	33.0 x 35.0 x 41.5	37.5	●	●
4.5	33.0 x 35.0 x 41.5	37.5	●	●
5	33.0 x 35.0 x 41.5	37.5	●	●

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Standard values and dimensions of capacitors type KNM32xx

Capacitance	Approvals		SO EN 60252-1	C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class		400 VAC 30.000 h 460 VAC 10.000 h 50/60 Hz	450 VAC 50/60 Hz
	Climate category		40/85/56	-40/+85 °C
C (µF)	W x H x L (mm)	P (mm)		
0.33	11.0 x 20.5 x 31.5	22.5	●	●
0.33	10.0 x 19.0 x 31.5	27.5	●	●
0.39	11.0 x 20.0 x 32.0	27.5	●	●
0.47	11.0 x 20.5 x 26.5	22.5	●	●
0.50	10.0 x 18.5 x 26.5	22.5	●	●
0.56	11.0 x 20.5 x 26.5	22.5	●	●
0.62	11.0 x 20.0 x 26.5	22.5	●	●
0.68	10.0 x 19.0 x 31.5	27.5	●	●
0.75	11.0 x 20.0 x 32.0	27.5	●	●
0.82	11.0 x 20.0 x 32.0	27.5	●	●
1	12.0 x 21.0 x 31.5	27.5	●	●
1.2	14.0 x 23.5 x 31.5	27.5	●	●
1.5	15.0 x 24.5 x 32.0	27.5	●	●
1.8	17.0 x 26.5 x 31.5	27.5	●	●
2	17.0 x 26.5 x 31.5	27.5	●	●
2.2	14.0 x 25.0 x 41.5	37.5	●	●
2.5	16.0 x 27.0 x 41.5	37.5	●	●
2.6	16.0 x 27.0 x 41.5	37.5	●	●
2.7	16.0 x 27.0 x 41.5	37.5	●	●
3	18.0 x 26.0 x 41.5	37.5	●	●
3.5	18.0 x 31.0 x 41.5	37.5	●	●
4	24.0 x 26.5 x 41.5	37.5	●	●
4.5	33.0 x 35.0 x 41.5	37.5	●	●
4.5	29.0 x 31.0 x 41.5	37.5	●	●
5	33.0 x 35.0 x 41.5	37.5	●	●
5	29.0 x 31.0 x 41.5	37.5	●	●
5.5	33.0 x 35.0 x 41.5	37.5	●	●
5.5	29.0 x 31.0 x 41.5	37.5	●	●
6	33.0 x 35.0 x 41.5	37.5	●	●
6	29.0 x 31.0 x 41.5	37.5	●	●
6.3	33.0 x 35.0 x 41.5	37.5	●	●
7	33.0 x 35.0 x 41.5	37.5	●	●
8	33.0 x 35.0 x 41.5	37.5	●	●

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Motor Running Capacitors
Type KNM31xx

Safety Class S0

Construction only (UL, CSA)

Design

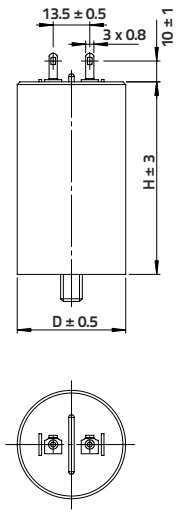
Motor running capacitors type KNM31xx are made of metallized polypropylene film. Case and cover are made with self-extinguishing plastic material, the capacitive element is sealed with polyurethanic or epoxy resin. Leads are designed as soldering tags, single or double fast-on tags, two-wire cable, stranded wire or solid wire.

Specifications

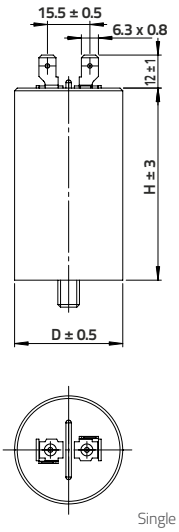
Rated voltage U_n	as per table
Rated capacitance C_n	as per table
Capacitance tolerance	± 10% (± 5% on request)
Rated frequency f_n	50 to 60 Hz
Loss angle tanδ	max. 10×10^{-4} at U_n and 50 Hz
Test voltage terminal to terminal	$2 \times U_n$, 50 Hz, 2 s
Test voltage terminal to case	2400 V, 50 Hz, 2 s
Life time class	as per table
Climate category	according to EN 60252-1
Temperature range	-25 °C to +85 °C
Compliance with standards	EN 60252-1, UL 810, CSA C 22.2 No. 190-M1985

Standard designs of capacitors type KNM31xx

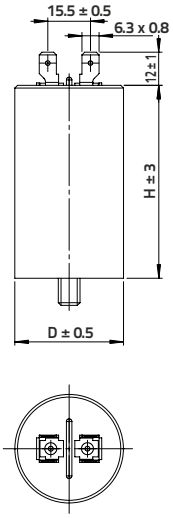
With bolt	KNM3111	KNM3117	KNM3115
Without bolt	KNM3110	KNM3116	KNM3114
Fast fix	KNM3101	KNM3107	KNM3105



Soldering tags

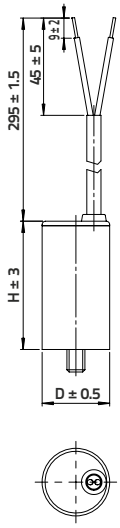


Single fast-on

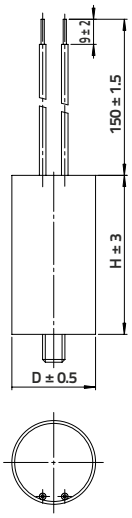


Double fast-on

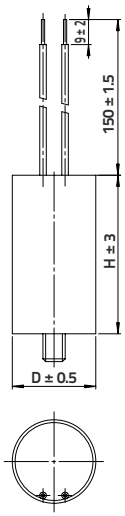
With bolt	KNM3138	KNM3126	KNM3147
Without bolt	KNM3137	KNM3125	KNM3144
Fast fix	KNM3108	KNM3106	KNM3104



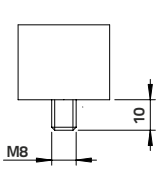
Two-wire cable
2 x 0.75 mm²

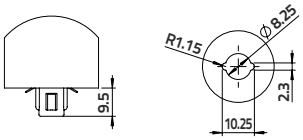


Stranded wire 0.5 mm²



Solid wire 0.5 mm²





Fast Fix (D = 30 to 40 mm)
Driling
Plate thickness: 0.8 - 1.5 mm

Motor Running Capacitors
Type KNM31xx

Standard values and dimensions of capacitors type KNM31xx - motor running: 400 VAC 30.000 h

Capacitance	Approvals	SQ EN 60252-1		cULus C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class	400 VAC 30.000 h 50/60 Hz	450 VAC 10.000 h 50/60 Hz	450 VAC 50/60 Hz
	Climate category	25/85/21	25/85/21	-25/+85 °C
C (µF)	D x H (mm)			
1	25 x 57	●	●	●
1.25	25 x 57	●	●	●
1.3	25 x 50	●	●	
1.5	25 x 57	●	●	●
1.6	25 x 50	●	●	
1.7	25 x 50	●	●	
2	25 x 57	●	●	●
2	25 x 50	●	●	
2.5	25 x 57	●	●	●
2.5	25 x 50	●	●	
3	25 x 57	●	●	●
3	25 x 50	●	●	
3.15	25 x 57	●	●	●
3.15	30 x 57	●	●	●
3.5	30 x 57	●	●	●
3.5	25 x 50	●	●	
4	25 x 71	●	●	●
4	30 x 57	●	●	●
4.5	30 x 57	●	●	●
5	30 x 57	●	●	●
5.5	35 x 57	●	●	●
6	30 x 71	●	●	●
6	35 x 57	●	●	●
6.3	30 x 71	●	●	●
6.3	35 x 57	●	●	●
6.8	35 x 57	●	●	●
7	30 x 71	●	●	●
7	35 x 57	●	●	●
7.5	30 x 71	●	●	●
7.5	35 x 57	●	●	●
8	30 x 95	●	●	●
8	35 x 57	●	●	●
8	35 x 71	●	●	●
9	35 x 71	●	●	●
10	35 x 71	●	●	●
11	35 x 71	●	●	●
12	35 x 71	●	●	●
12	35 x 95	●	●	●
12.5	40 x 71	●	●	●
13	40 x 71	●	●	●
14	40 x 71	●	●	●
15	35 x 95	●	●	●
15	40 x 71	●	●	●
16	35 x 95	●	●	●
16	40 x 71	●	●	●
17	45 x 71	●	●	●
17.5	35 x 95	●	●	●
17.5	45 x 71	●	●	●
18	40 x 95	●	●	
18	45 x 71	●	●	●
20	40 x 95	●	●	
20	45 x 71	●	●	●
22	40 x 95	●	●	●
25	40 x 95	●	●	●
30	45 x 95		●	●

● Approved

Motor Running Capacitors
Type KNM31xx

Standard values and dimensions of capacitors type KNM31xx - motor running: 400 VAC 30.000 h

Capacitance	Approvals	SQ EN 60252-1		cULus C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class	400 VAC 30.000 h 50/60 Hz	450 VAC 10.000 h 50/60 Hz	450 VAC 50/60 Hz
	Climate category	25/85/21	25/85/21	-25/+85 °C
C (µF)	D x H (mm)			
31.5	45 x 95		●	●
35	45 x 120			●
36	45 x 120			●
40	45 x 120			●
45	45 x 120			●
50	50 x 120			●
55	50 x 120			●
60	55 x 120			●
65	55 x 120			●
70	55 x 120			●
75	60 x 120			●
80	60 x 120			●
90	65 x 120			●
100	65 x 120			●

● Approved

NOTE: 25 x 50 mm (D x H) only for type KNM3125, KNM3144

Motor Running Capacitors
Type KNM31xx

Standard values and dimensions of capacitors type KNM31xx - motor running: 400 VAC 10.000 h

Capacitance	Approvals	SO EN 60252-1		cULus C22.2 No. 190-M1985
	Rated voltage, Frequency Life time class	400 VAC 10.000 h 50/60 Hz	450 VAC 3.000 h 50/60 Hz	450 VAC 50/60 Hz
	Climate category	25/85/21	25/85/21	-25/+85 °C
C (µF)	D x H (mm)			
0.5	25 x 57	●	●	●
1	25 x 57	●	●	●
1.5	25 x 57	●	●	●
2	25 x 57	●	●	●
2.5	25 x 57	●	●	●
3	25 x 57	●	●	●
3.15	25 x 57	●	●	●
3.5	25 x 57	●	●	●
4	30 x 57	●	●	●
4.5	30 x 57	●	●	●
5	30 x 57	●	●	●
5.5	30 x 57	●	●	●
6	30 x 57	●	●	●
6.3	30 x 57	●	●	●
6.8	30 x 57	●	●	●
7	30 x 57	●	●	●
7.5	30 x 71	●	●	●
7.5	35 x 57	●	●	●
8	30 x 71	●	●	●
8	35 x 57	●	●	●
8.5	30 x 71	●	●	●
9	30 x 71	●	●	●
9	35 x 57	●	●	●
10	30 x 71	●	●	●
10	35 x 57	●	●	●
11	30 x 71	●	●	●
12	35 x 71	●	●	●
12.5	35 x 71	●	●	●
13	35 x 71	●	●	●
14	35 x 71	●	●	●
15	35 x 71	●	●	●
16	35 x 71	●	●	●
16	40 x 71	●	●	●
18	40 x 71	●	●	●
20	40 x 71	●	●	●
22	35 x 95	●	●	●
22	40 x 71	●	●	●
25	40 x 95	●	●	●
25	45 x 71	●	●	●
30	40 x 95	●	●	●
35	45 x 95	●	●	●
40	45 x 95	●	●	●

● Approved

Motor Starting Capacitors
Type KNM31xx

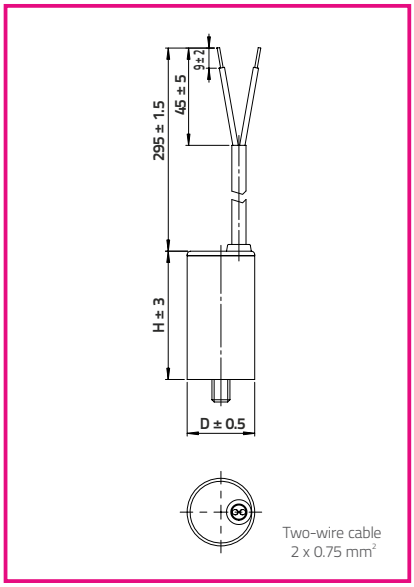
Safety Class S0

Design

Motor starting capacitors type KNM31xx are made of metallized polypropylene film. Case is made of self-extinguishing plastic material, the capacitive element is sealed with polyurethanic or epoxy resin. Leads are designed as two-wire cable.

Specifications

Rated voltage U_n	280 VAC
Rated capacitance (C_{min} - C_{max})	as per table
Rated frequency f_n	40 to 60 Hz
Test voltage terminal to terminal	1.3 x U_n, 50 Hz, 2 s
Test voltage terminal to case	2400 V, 50 Hz, 2 s
Temperature range	-25 °C to +70 °C
Duty cycle	3/1.7 % Hours applications N = 20 Application time t = 3 s N x t = 60

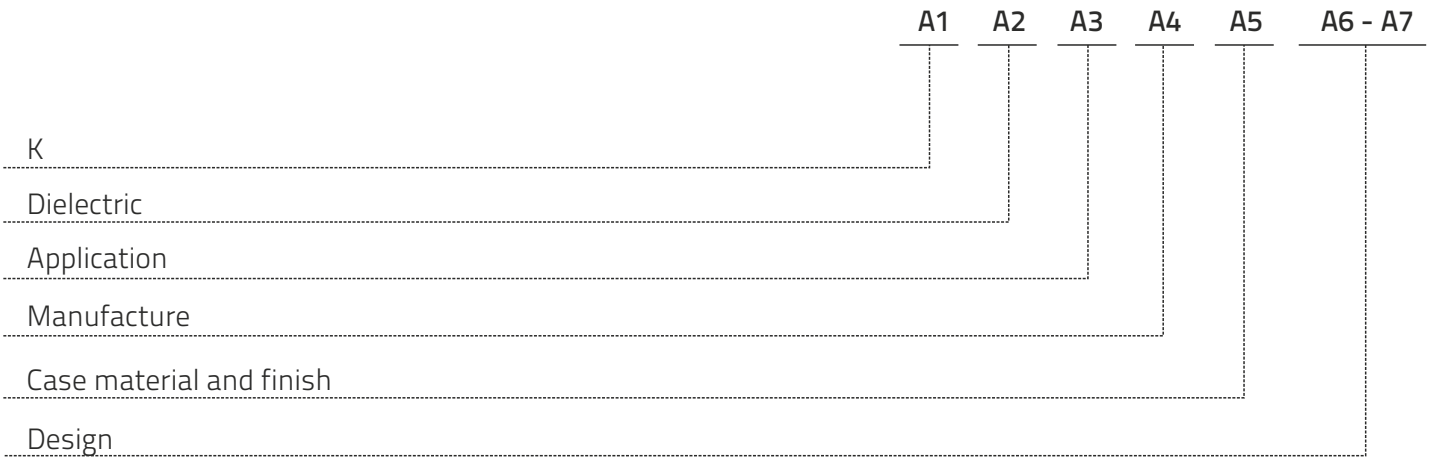


Standard values and dimensions of capacitors type KNM31xx - motor starting

Capacitance C (µF)	D x H (mm)
50 - 63	45 x 95
63 - 80	45 x 120
80 - 100	45 x 120
100 - 125	50 x 120
108 - 132	55 x 120
125 - 156	55 x 120
156 - 200	60 x 120

Motor Running & Motor Starting Capacitors
Type KNM

Type designation data



A1	K	Capacitor
A2	N	Dielectric metallized polypropylene film
A3	M	Motor running
A4	1, 2, 3	in casing sealed with epoxy resin
	8, 9	in casing impregnanated, closed with plastic cover, mechanical disconector incorporated
A5	0	aluminium, cylindrical
	1	plastic, cylindrical
	2	plastic, prismatic
A6 A7	01	soldering tags 3.0 x 0.8 mm, Fast fix
	04	solid wire with insulation, Fast fix
	05	double fast-on terminals 6.3 x 0.8 mm as per DIN 46244, Fast fix
	06	stranded wire with insulation, Fast fix
	07	single fast-on terminals 6.3 x 0.8 mm as per DIN 46244, Fast fix
	08	two wire insulated cable lead, Fast fix
	10	soldering tags 3.0 x 0.8 mm
	11	soldering tags 3.0 x 0.8 mm, Fixing bolt
	12	plastic cap, two-wire insulated cable lead
	13	plastic cap, two-wire insulated cable lead, fixing bolt
	14	double fast-on terminals 6.3 x 0.8 mm as per DIN 46244
	15	double fast-on terminals 6.3 x 0.8 mm as per DIN 46244, Fixing bolt
	16	single fast-on terminals 6.3 x 0.8 mm as per DIN 46244
	17	single fast-on terminals 6.3 x 0.8 mm as per DIN 46244, Fixing bolt
	25	stranded wire with insulation
	26	stranded wire with insulation, Fixing bolt
	28	tinned copper wire leads of 0.8 mm diameter and 3.5 to 25 mm lenght
	37	two wire insulated cable lead
	38	two wire insulated cable lead, Fixing bolt
	44	44- soild wire with insulation
	47	47 - solid wire with insulation, Fixing bolt
	51	51 - aluminium cap, two wire insulated cable lead, Fixing bolt

Details according to DIN EN 60252-1

Life time class:

The minimum total life for which the capacitor has been designed at rated duty, voltage, temperature and frequency.

- Class A 30.000 hours
- Class B 10.0000 hours
- Class C 3.000 hours
- Class D 1.000 hours

Safety class:

(S2) Degree of safety protection indicating that the capacitor type has been designed to fail in the open-circuit mode only and is protected against fire or shock hazard.

(S1) Degree of safety protection indicating that the capacitor type may fail in the open-circuit or short-circuit mode and is protected against fire or shock hazard.

(S0) Degree of safety protection indicating that the capacitor type has no specific failure protection.

CAUTION: In case of overload, they may burst or catch fire.

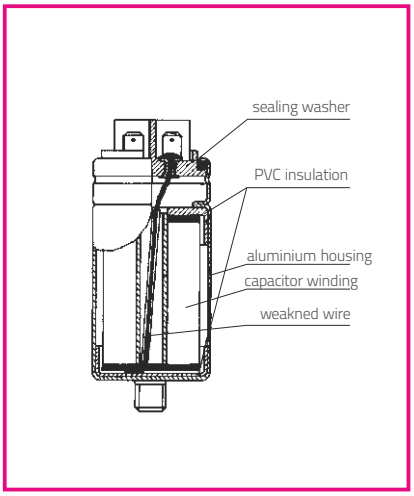
Other Markings:

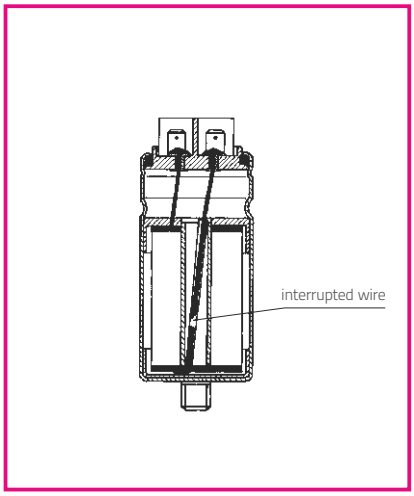
Temperature range:

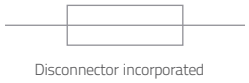
- First number: -25 °C lowest allowed ambient temperature
- Second number: +85 °C highest allowed ambient temperature

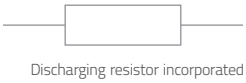
Operating of the Mechanical Disconnector:

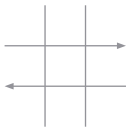
After many breakdowns, the pressure inside the capacitor case begins to enlarge and the weaker (intended) areas of the case begin o expand. One terminal, which is also weakened, cannot withstand the expansion and consequently breaks resulting in an interruption of the electrical circuit.






Disconnector incorporated


Discharging resistor incorporated


or **SH**

Self-healing capacitor version

Degree of protection (IP)

Protection category in accordance with IEC 529

1st code letter	Degree of protection Short description	2nd code letter	Degree of protection Short description
0	Non-protected	0	Non-protected
1	Protected against solid objects greater than 50 mm	1	Protected against dripping water
2	Protected against solid objects greater than 12 mm	2	Protected against dripping water when titled up to 15°
3	Protected against solid objects greater than 2.5 mm	3	Protected against spraying water
4	Protected against solid objects greater than 1.0 mm	4	Protected against splashing water
5	Dust-protected	5	Protected against water jets
6	Total dust-protected	6	Protected against water jets

Instructions for Ordering

When the buyer intends to order Iskra capacitors, the following data are needed:

- Type designation of the capacitor
- Rated voltage and rated frequency
- Rated capacitance and capacitance tolerance
- Safety class
- Life time class

Example:

The motor running, impregnated, cylindrical capacitor with mechanical disconnector, fast-on tags and fixing screw, for the climate class 25/85/21 and class of operation of 10000 hours, for the rated voltage 470 V 50/60 Hz, rated capacitance 10 μF ± 10 %, is written as it is shown below: KNM8017 10 μF ± 10 % 470 VAC 50/60 Hz 10.000 h 25/85/21.

Production Program

Capacitors for use in electronics:

- Polyester film capacitors, metallized and nonmetallized
- Polypropylene film capacitors, metallized and nonmetallized

Capacitors and filters for radio interference suppression

Motor running & motor starting capacitors

Power factor correction capacitors for lamps

Power factor capacitors and automatic power factor banks

Electronic regulators for power factor banks

Tools and production equipment and machinery

Lamp Power Factor Capacitors
Type KNF50xx

Safety device

Design

The KNF capacitors are made of metallized polypropylene film. The mechanical and climatic protection is provided by aluminium can and thermoplastic washer (type KNF50xx) or plastic can (type KNF61xx). The type KNF50xx is also protected with the mechanical disconnector. The metallized version provides self-healing properties. This design assures long life and reliable operation.

The terminals are on the top of the capacitors in the form of soldering tags which can be used for soldering the contact wires or as the contact terminals for the screwless connector.

The following types of capacitors are available:

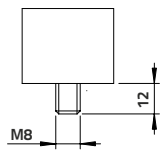
- with the incorporated discharging resistor
- with the fixing bolt on the bottom of the capacitor
- QUICK-FIT fixing lugs
- with the screwless connector

Specifications

Rated voltage U_n	250 VAC, 450 VAC
Rated capacitance C_n	as per table
Capacitance tolerance	± 4%, ± 5%, ± 10%
Rated frequency f_n	50 to 60 Hz
Loss angle tanδ	max. 10×10^{-4} at U_n and 50 Hz
Test voltage terminal to terminal	2 x U_n, 50 Hz, 2 s
Test voltage terminal to case	2500 V, 50 Hz, 2 s
Climate category	as per table
Compliance with standards	EN 61048, EN 61049

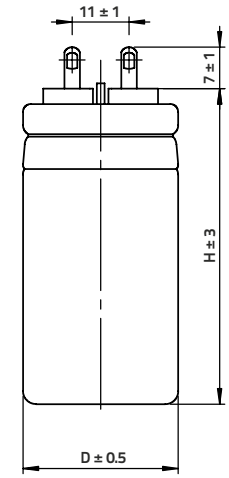
The Iskra capacitors type KNF do not contain any PCB or PCN

Metal fixing bolt

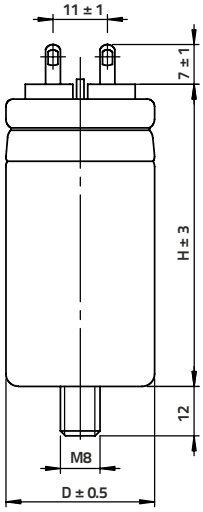


Standard designs of capacitors type KNF50xx

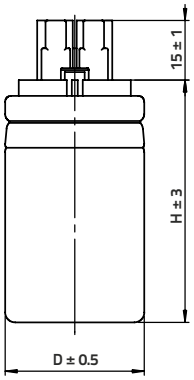
KNF5010, KNF5030



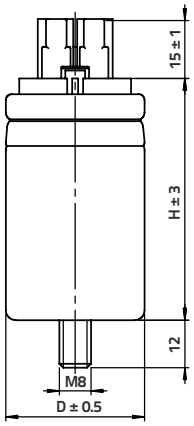
KNF5011, KNF5031



KNF5018



KNF5019



Lamp Power Factor Capacitors
Type KNF50xx

Standard values and dimensions of capacitors type KNF50xx, 250 VAC and 450 VAC

Capacitance	Rated voltage 250 VAC 50/60 Hz
	Climate category 40/100/21
	KNF5018, KNF5019 KNF5010, KNF5030 KNF5011, KNF5031
C (µF)	D x H (mm)
2	25 x 61
2.5	25 x 61
3	25 x 61
3.5	25 x 61
4	25 x 61
4.5	25 x 88
4.5	25 x 61
4.5	30 x 61
5	25 x 88
6	25 x 88
7	25 x 88
7	30 x 61
8	25 x 88
8	30 x 88
9	30 x 88
10	30 x 88
12	30 x 88
12	35 x 76
13.5	30 x 88
13.5	35 x 88
14	35 x 88
15	35 x 88
16	35 x 88
18	35 x 88
20	35 x 88
20	40 x 88
20	35 x 110
21	35 x 110
25	40 x 88
30	45 x 88
30	40 x 110

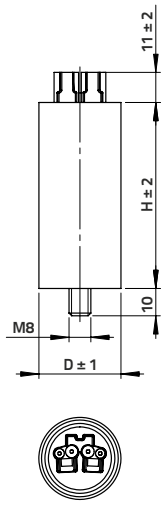
Capacitance	Rated voltage 450 VAC 50/60 Hz
	Climate category 25/85/21
	KNF5018, KNF5019 KNF5010, KNF5030 KNF5011, KNF5031
C (µF)	D x H (mm)
2	25 x 61
2	25 x 88
2.4	25 x 88
2.5	25 x 88
2.7	25 x 88
2.7	25 x 61
2.8	25 x 88
2.9	25 x 88
3	25 x 88
3.2	25 x 88
3.2	30 x 61
3.3	25 x 88
3.4	25 x 88
3.4	30 x 61
3.5	25 x 88
3.6	25 x 88
3.7	25 x 88
4	25 x 88
4.4	30 x 88
4.6	30 x 88
5	30 x 88
5.1	30 x 88
5.2	30 x 88
5.3	30 x 88
5.4	30 x 88
5.5	30 x 88
5.7	30 x 88
5.9	30 x 88
6	30 x 88
6.3	30 x 88
6.8	30 x 88
7.2	35 x 88
7.8	35 x 88
8.4	35 x 88
8.7	35 x 88
9	35 x 88
10	35 x 88

Lamp Power Factor Capacitors
Type KNF61xx

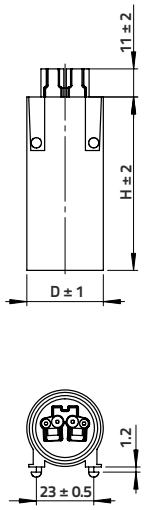
PLastic case

Standard designs of capacitors type KNF61xx

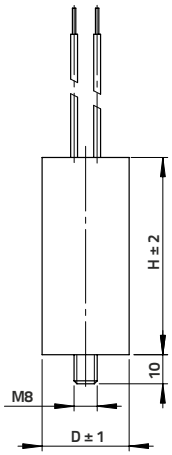
KNF6119



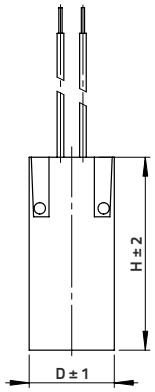
KNF6152



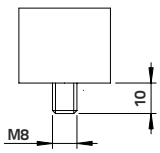
KNF6153



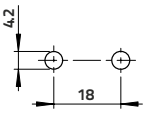
KNF6154



Metal fixing bolt



Mounting holes



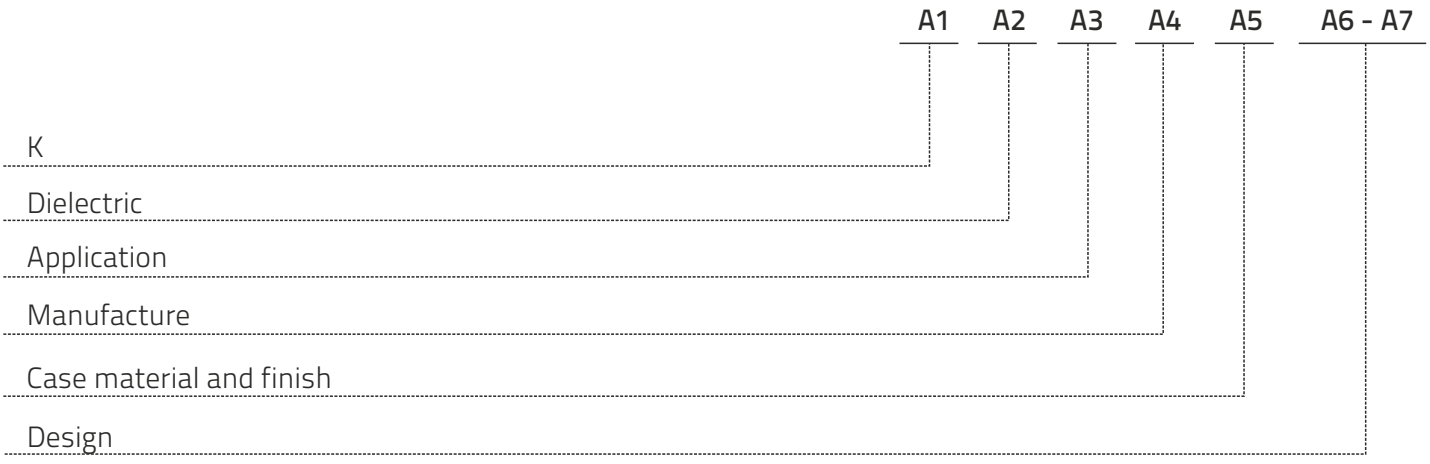
Lamp Power Factor Capacitors
Type KNF61xx

Standard values and dimensions of capacitors type KNF61xx

Capacitance C (µF)	Rated voltage 250 VAC 50/60 Hz Climate category 40/85/21 KNF6119, KNF6152 KNF6153, KNF6154 D x H (mm)
2	25 x 55
2.5	25 x 55
3	25 x 55
3.15	25 x 55
3.5	25 x 55
4	25 x 55
4.2	25 x 55
4.5	25 x 68
5	25 x 68
5.5	25 x 68
6	25 x 68
6.3	25 x 68
6.5	25 x 68
6.8	30 x 68
7	30 x 68
7.2	30 x 68
7.5	30 x 68
8	30 x 68

Capacitance C (µF)	Rated voltage 250 VAC 50/60 Hz Climate category 40/85/21 KNF6119, KNF6152 KNF6153, KNF6154 D x H (mm)
8.4	30 x 68
9	30 x 68
10	30 x 68
11	35 x 68
12	35 x 68
12.5	35 x 68
13	35 x 68
13.5	35 x 68
13.5	30 x 92
14	35 x 68
14	30 x 92
15	35 x 68
15	30 x 92
16	35 x 68
16	30 x 92
18	35 x 92
20	35 x 92
22	35 x 92
25	35 x 92

Type designation data



A1	K	Capacitor
A2	N	Dielectric metallized polypropylene film
A3	F	Power factor correction on lamps
A4	5	impregnated, closed with plastic washer, mechanical disconnector incorporated
	6	closed with plastic washer, dry construction
A5	0	aluminium, cylindrical
	1	plastic, cylindrical
A6 A7	10	soldering tags 3.0 x 0.8 mm
	11	soldering tags 3.0 x 0.8 mm, Fixing bolt
	18	screwless connector
	19	screwless connector, Fixing bolt
	30	soldering tags 3.0 x 0.8 mm, discharging resistor
	31	soldering tags 3.0 x 0.8 mm, discharging resistorm, Fixing bolt
	52	screwless connector, Quick-Fit fixing lugs
	53	solid wire with insulation, fixing bolt, dischaging resistor
	54	solid wire with insulation, Quick-fit fixing lugs, discharging resistor

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