Snubber capacitors

APPLICATIONS

Snubber capacitors are used in applications where high pulse loadings and high frequencies are presented. Purpose of snubber capacitors is to eliminate voltage spikes which are caused by semiconductors or other devices.

- IGBT (Insulated Gate Bipolar Transistor) module
- AC and DC converter and inverter (Electric drives)
- Uninterruptable power system (UPS)
- Power supply

FEATURES

- High voltage
- High pulse load capability
- Self-healing properties
- High reliabilty
- Low self-inductance
- Low dissipation factor of dielectric
- Terminal options for direct mount or board
- High insulation resistance

CHARACTERISTICS

• Rated capacitance:	0.1µF - 8µF
• Capacitance tolerance:	±5%, ±10%
• Rated voltage:	630 V DC, 850 V DC, 1000 V DC, 1200 V DC, 1500 V DC, 2000 V DC, 2500 V DC, 3000 V DC
• Operating temeperature range:	-40°C to 85°C
• Climatic category:	40/85/56 according to IEC 60068
• Maximum application temperature:	85°C
• Dissipation factors at 1kHz:	tgδ ≤ 5 x 10-4
• Test voltage terminal to terminal:	1.5 x Ur, 10s
• Peak non - repetitive max current:	Ipkr x 1.5
• Life expectancy:	≥ 100,000 hours at U_r

REFERENCE STANDARD

- IEC 61071

DC VOLTAGES AND RATED CAPACITANCE

Double side metallized plastic film with internal series connection	
U (V DC)	**C (µF)**
630	0.33 - 8
850	0.22 - 5.6
1000	0.22 - 4
1200	0.15 - 3.3
1500	0.1 - 2.5
2000	0.1 - 1.5
2500	0.1 - 1.2
3000	0.033 - 1

GENERAL CHARACTERISTICS

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.33	630	400	max. 600	32 x 20 x 11
0.39	630	400	max. 600	32 x 24.5 x 15
0.47	630	400	max. 600	32 x 24.5 x 15
0.56	630	400	max. 600	41.5 x 23 x 14
0.68	630	400	max. 600	41.5 x 23 x 14
1	630	400	max. 500	41.5 x 27 x 16
1.2	630	400	max. 500	41.5 x 31 x 18
1.5	630	400	max. 500	41.5 x 31 x 18
2	630	400	max. 500	41.5 x 38 x 21
2.2	630	400	max. 500	41.5 x 38 x 21
2.5	630	400	max. 400	41.5 x 43 x 28
2.7	630	400	max. 400	41.5 x 43 x 28
3	630	400	max. 400	41.5 x 43 x 28
3.3	630	400	max. 400	41.5 x 43 x 28
3.5	630	400	max. 400	41.5 x 43 x 28
4	630	400	max. 300	42 x 45 x 30
4.7	630	400	max. 300	57.5 x 45 x 30
5	630	400	max. 300	57.5 x 45 x 30
5.6	630	400	max. 300	57.5 x 45 x 30
6	630	400	max. 300	57.5 x 45 x 30
6.3	630	400	max. 300	57.5 x 50 x 35
7	630	400	max. 100	57.5 x 50 x 35
8	630	400	max. 100	57.5 x 50 x 35

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.22	850	500	max. 600	32 x 20 x 11
0.27	850	500	max. 600	32 x 24.5 x 15
0.33	850	500	max. 600	32 x 24.5 x 15
0.39	850	500	max. 600	41.5 x 23 x 14
0.47	850	500	max. 600	41.5 x 23 x 14
0.56	850	500	max. 600	41.5 x 27 x 16
0.68	850	500	max. 600	41.5 x 27 x 16
0.82	850	500	max. 600	41.5 x 31 x 18
1	850	500	max. 600	41.5 x 31 x 18
1.2	850	500	max. 500	41.5 x 38 x 21
1.5	850	500	max. 500	41.5 x 38 x 21
1.8	850	500	max. 500	41.5 x 43 x 28
2	850	500	max. 500	41.5 x 43 x 28
2.2	850	500	max. 500	42 x 45 x 30
2.5	850	500	max. 500	42 x 45 x 30
2.7	850	500	max.400	42 x 45 x 30
3	850	500	max.400	57.5 x 45 x 30
3.3	850	500	max.400	57.5 x 45 x 30
4	850	500	max.400	57.5 x 45 x 30
4.7	850	500	max.400	57.5 x 50 x 35
5.6	850	500	max.300	57.5 x 50 x 35

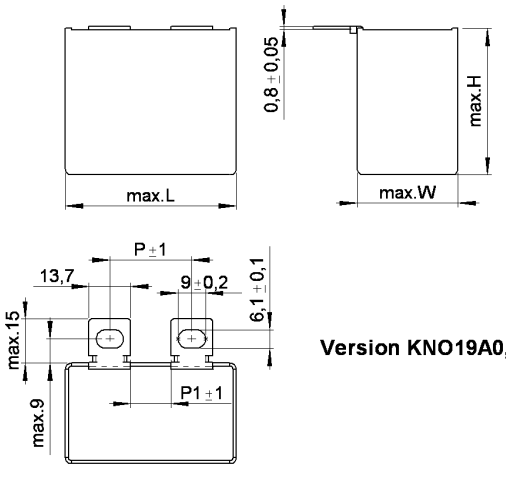
Capacitance, Construction, Mounting

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.22	1000	600	max. 1000	32 x 24.5 x 15
0.27	1000	600	max. 1000	32 x 24.5 x 15
0.33	1000	600	max. 900	32 x 24.5 x 15
0.33	1000	600	max. 900	41.5 x 23 x 14
0.39	1000	600	max. 900	41.5 x 23 x 14
0.47	1000	600	max. 900	41.5 x 27 x 16
0.56	1000	600	max. 900	41.5 x 27 x 16
0.68	1000	600	max. 900	41.5 x 31 x 18
0.82	1000	600	max. 500	41.5 x 32 x 19
1	1000	600	max. 500	41.5 x 38 x 21
1.2	1000	600	max. 400	41.5 x 38 x 21
1.5	1000	600	max. 400	41.5 x 43 x 28
1.8	1000	600	max. 400	42 x 45 x 30
2	1000	600	max. 400	42 x 45 x 30
2.2	1000	600	max. 400	42 x 45 x 30
2.5	1000	600	max. 400	57.5 x 45 x 30
2.7	1000	600	max. 400	57.5 x 45 x 30
3	1000	600	max. 400	57.5 x 45 x 30
3.3	1000	600	max. 400	57.5 x 50 x 35
4	1000	600	max. 300	57.5 x 50 x 35

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.15	1200	630	max. 800	32 x 24.5 x 15
0.22	1200	630	max. 800	41.5 x 23 x 14
0.27	1200	630	max. 800	41.5 x 23 x 14
0.33	1200	630	max. 700	41.5 x 27 x 16
0.39	1200	630	max. 700	41.5 x 27 x 16
0.47	1200	630	max. 700	41.5 x 31 x 18
0.56	1200	630	max. 700	41.5 x 32 x 19
0.68	1200	630	max. 700	41.5 x 38 x 21
0.82	1200	630	max. 700	41.5 x 38 x 21
1	1200	630	max. 500	41.5 x 43 x 28
1.2	1200	630	max. 500	41.5 x 43 x 28
1.5	1200	630	max. 500	42 x 45 x 30
2	1200	630	max. 500	57.5 x 45 x 30
2.2	1200	630	max. 500	57.5 x 45 x 30
2.5	1200	630	max. 500	57.5 x 50 x 35
2.7	1200	630	max. 500	57.5 x 50 x 35
3	1200	630	max. 500	57.5 x 50 x 35
3.3	1200	630	max. 500	57.5 x 50 x 35

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.1	1500	650	max. 900	32 x 20 x 11
0.12	1500	650	max. 900	32 x 24.5 x 15
0.15	1500	650	max. 900	41.5 x 23 x 14
0.22	1500	650	max. 900	41.5 x 23 x 14
0.27	1500	650	max. 700	41.5 x 27 x 16
0.33	1500	650	max. 700	41.5 x 27 x 16
0.39	1500	650	max. 700	41.5 x 31 x 18
0.47	1500	650	max. 700	41.5 x 32 x 19
0.56	1500	650	max. 700	41.5 x 38 x 21
0.68	1500	650	max. 700	41.5 x 38 x 21
0.75	1500	650	max. 700	41.5 x 43 x 28
0.82	1500	650	max. 700	41.5 x 43 x 28
1	1500	650	max. 700	41.5 x 43 x 28
1.2	1500	650	max. 700	57.5 x 45 x 30
1.5	1500	650	max. 700	57.5 x 45 x 30
2	1500	650	max. 500	57.5 x 45 x 30
2.2	1500	650	max. 500	57.5 x 50 x 35
2.5	1500	650	max. 400	57.5 x 50 x 35

C (µF)	Ur (Vdc)	Urms (Vac)	du/dt (V/µs)	DIMENSIONS (mm) L x H x W
0.1	2000	700	max. 1000	32 x 24.5 x 15
0.1	2000	700	max. 1000	41.5 x 23 x 14
0.12	2000	700	max. 1000	41.5 x 23 x 14
0.15	2000	700	max. 1000	41.5 x 23 x 14
0.22	2000	700	max. 900	41.5 x 27 x 16
0.27	2000	700	max. 900	41.5 x 31 x 18
0.33	2000	700	max. 900	41.5 x 32 x 19
0.39	2000	700	max. 900	41.5 x 38 x 21
0.47	2000	700	max. 900	41.5 x 38 x 21
0.56	2000	700	max. 900	41.5 x 43 x 28
0.68	2000	700	max. 900	41.5 x 43 x 28
0.82	2000	700	max. 600	42 x 45 x 30
1	2000	700	max. 700	42 x 45 x 35
1	2000	700	max. 600	57.5 x 45 x 30
1.2	2000	700	max. 600	57.5 x 45 x 30
1.5	2000	700	max. 600	57.5 x 50 x 35



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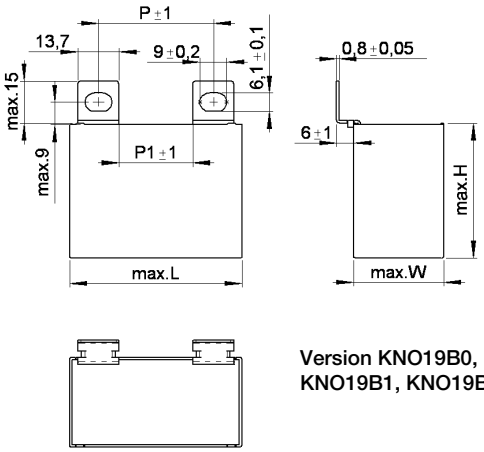

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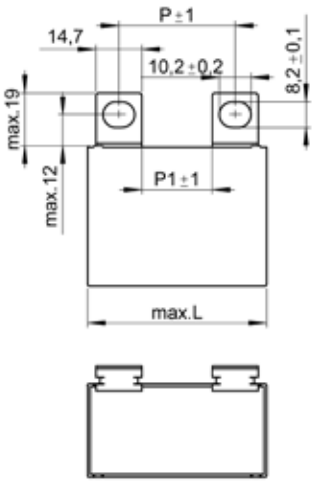

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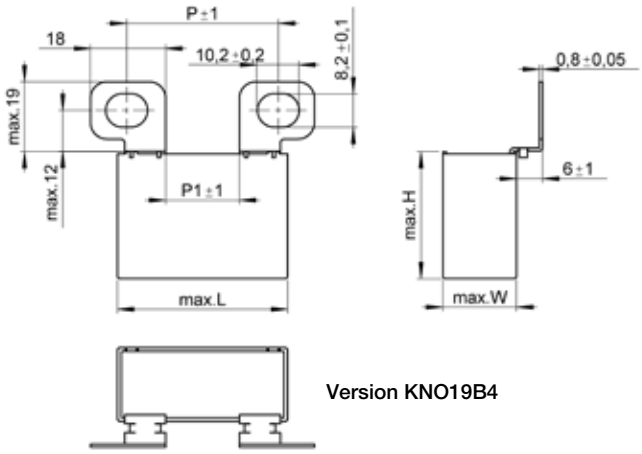


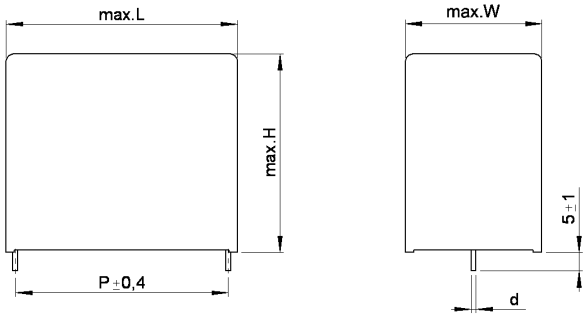
Version KNO19B4

LUG DIMENSIONS

Version	L (mm)	P (mm)	P1 (mm)	Screw
A0	41,5	24	10	M6
A0	42	25	11	M6
A0	57,5	37	23	M6
A1	57,5	25	13	M6
B0	41,5	24	10	M6
B0	42	25	11	M6
B0	57,5	37	23	M6
B1	57,5	25	13	M6
B2	57,5	37	23	M8
B3	57,5	22	10	M6
B4	41,5	37	18	M8

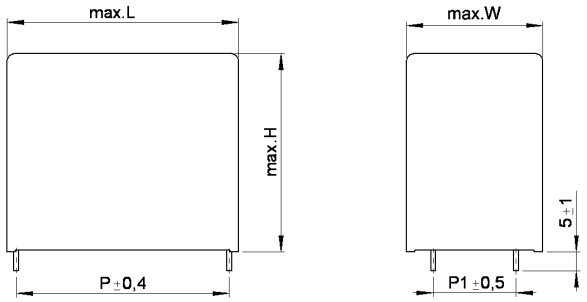
Dimensions and Applications

Version KNO1910



2 pins. 4 pins				
Version	L (mm)	P (mm)	P1 (mm)	d (mm)
10	32	27.5	/	0.8
	41.5	37.5	/	1 or 1.2
	42	37.5	/	1 or 1.2
	57.5	50.5	/	1.2

Version KNO1914

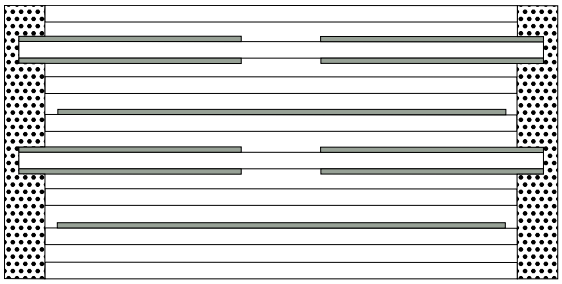


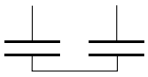
14	32	27.5	10.2	0.8
	41.5	37.5	10.2 or 20.3	1 or 1.2
	42	37.5	10.2 or 20.3	1 or 1.2
	57.5	50.5	20.3	1.2

CONSTRUCTION

- Dielectric: Polypropylene film
- Capacitor electrodes:Vacuum deposited metal layers
- Casing: Plastic case with epoxy resin sealing - flame retardant (UL 94 V -0)
- Terminals: Tinned lugs from brass, copper or parallel tinned copper wire with 2 or 4 executions

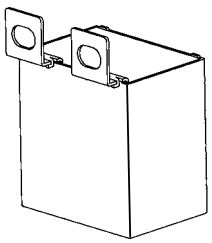
INTERNAL CONSTRUCTION





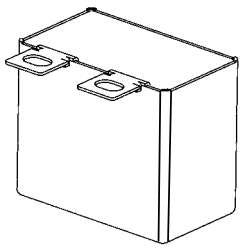
Double sided metallized plastic film with internal series connection an metallized plastic film

MOUNTING



HORIZONTALLY MOUNTED

FIXING LUGS
FOR
M6 SCREWS

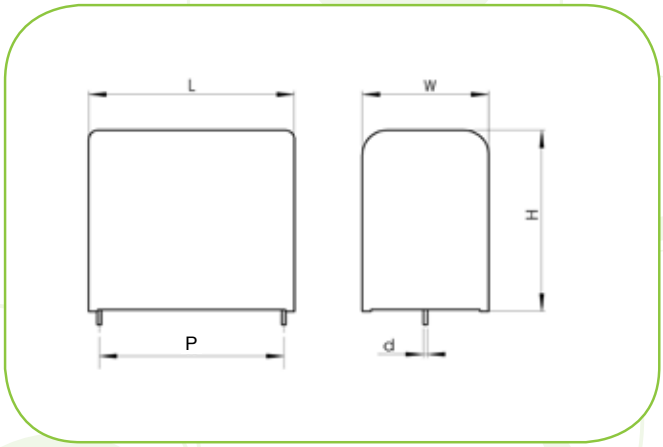


VERTICALLY MOUNTED

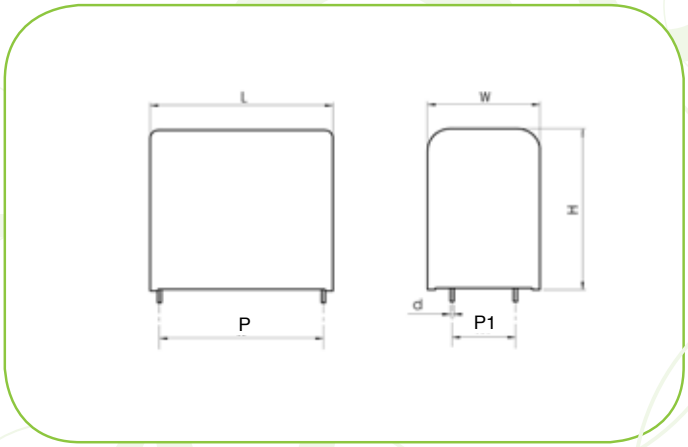
Dimensions and Applications

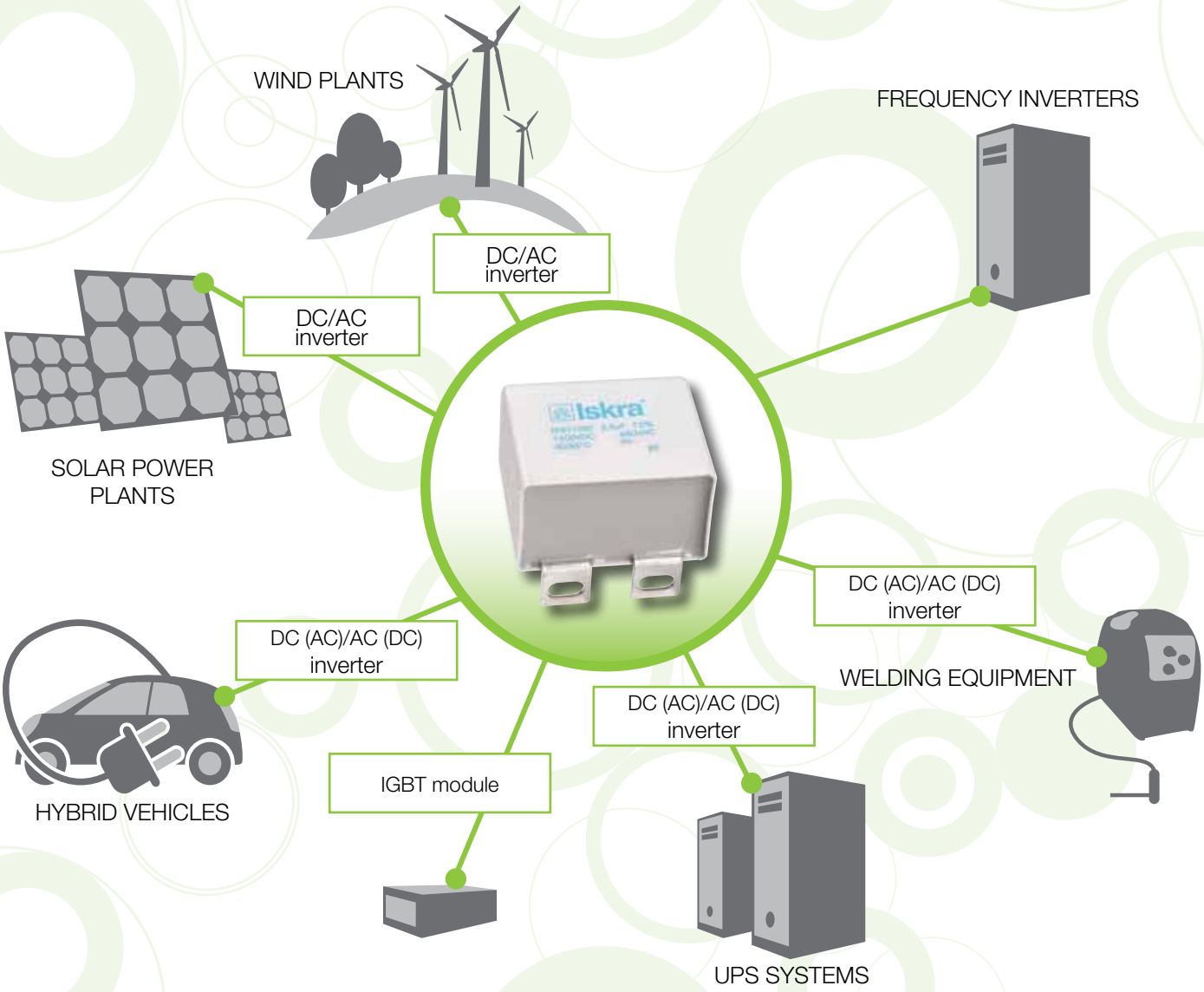
Parallel tinned copper wire

2 pins



4 pins





CAUTIONS AND WARNINGS

Mechanical overloads

	**Attention:** The capacitor is designed for mounting on a PC board. After it has been soldered to the PC board do not move the capacitor. The capacitor shall not be mounted on places where vibrations or accelerations occur. Do not exceed the tested ability to withstand vibration. Avoid any compressive, tensile or flexural stress.

Note: Movement of the capacitor within the case can cause low insulation resistance, shorts, failure on terminals and the capacitor case.

Overload

	**Attention:** Do not overload the capacitor. Avoid overload of the capacitor and consider the flammability of materials.

Impulses

	**Attention:** If electric energy impulses are higher, dielectric breaks down. Avoid external electric energy impulse. The peak voltage (U_p, AC) shall not be higher than the rated DC voltage (U_N, DC).

Environmental conditions

	**Attention:** Do not exceed operating temperature. Do not expose the capacitor to humidity longer than it is recommended. Do not expose the capacitor to increased temperature more than it is recommended. The dissipation factor may change up and down with increased temperature. Avoid external fire or electricity.

Note: If the capacitor is exposed to humidity longer than it is recommended, the insulation resistance can occur. The place around the capacitor units must have good air circulation.

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