

PG - 9A with Screw Terminals

2,000 hrs at 85°C



Specifications

- **Voltage range :** 50 VDC to 450 VDC
- **Can size :** 35φ x 80mm to 90φ x 220mm
- **Operating Temperature range :** -40°C to +85°C
- **Capacitance :** 470 MFD to 47000 MFD
Tolerance of ± 20%
- **Leakage current:** The max. leakage current (I_r) is given by the formula:
I_r = 0.006 CV (microamps)
C = capacitance in microfarads
V = DC rated voltage
Pre-conditioning of the capacitors, prior to testing for leakage current is essential.
- **Ripple Current:** All capacitors withstand rms ripple current at 100 Hz at 85°C. When capacitors operate at temperatures other than 85°C, the permissible rms ripple current at 85°C should be multiplied by the factors given below

+40°C	+45°C	+50°C	+65°C
2.10	2.00	1.90	1.60

Where capacitors are required to operate at frequencies other than 100 Hz, the multiplying factors given below, may be used to determine the ripple current capacity, at that frequency.

Frequency Hz	100	250	500	1k to10k	>10K
Multiplying Factor	1.0	1.05	1.20	1.32	1.35

- **Useful Life :** Useful life is the period of time which the capacitor takes to reach “end-of-life”.
For PG-9A capacitors the useful life is estimated as 2000 hours at maximum rated temperature, ripple current and voltage.

“End-of-life” is defined as follows :

- Catastrophic failure : capacitors show short or open circuit
- Mechanical failure : operation of safety vent or sleeve damage
- Parametric failure :
 - Capacitance change ± 30%
 - ESR exceed three times specified value
 - Leakage current exceed specified value

Notes :

1. Can is negative, However, it is isolated with a PVC insulating sleeve and polypropylene end-disc.
2. Maximum ripple current for each capacitor diameter .

Capacitor Diameter	35mm	50mm	63mm	76mm	90mm
Max. Ripple Current (Amps)	20	20	40	40	72

Capacitor mounting

Capacitors are available in screw terminals in three mounting styles

- AEST** - Screw terminals with plain insulated base. *see page 6*
- AEST-D** - Screw terminals with stud mounting. *see page 6*
- AEST-AL**- Capacitor with aluminium bottom disc. *see page 7*

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Calculation of useful life

The useful life for a known ripple current load and ambient temperatures is determined on the basis of the below useful life table shown :

Useful life (in khrs) at Different Ambient Temperature °C

Ripple Current Multiplier	40°C	45°C	50°C	55°C	60°C	65°C	70°C	75°C	80°C	85°C
0	91	64	45	32	23	16	11	8	6	4
0.1	90	64	45	32	22	16	11	8	6	4
0.2	88	62	44	31	22	16	11	8	6	4
0.3	85	60	43	30	21	15	11	8	5	4
0.4	81	57	41	29	20	14	10	7	5	4
0.5	76	54	38	27	19	13	10	7	5	3
0.6	71	50	35	25	18	12	9	6	4	3
0.7	64	46	32	23	16	11	8	6	4	3
0.8	58	41	29	21	15	10	7	5	4	3
0.9	52	37	26	18	13	9	6	5	3	2
1	45	32	23	16	11	8	6	4	3	2
1.1	39	28	20	14	10	7	5	3	2	
1.2	33	24	17	12	8	6	4	3		
1.3	28	20	14	10	7	5	4			
1.4	23	16	12	8	6	4	3			
1.5	19	13	10	7	5	3				
1.6	15	11	8	5	4	3				
1.7	12	9	6	4	3					
1.8	10	7	5	3						
1.9	7	5	4							
2	6	4								
2.1	4									
2.2	3									

Example:

10000 MFD, 350 VDC, Size : 76 x 145

Specified Ripple Current (I_{RSC}) at 100Hz, 85°C = 21.5A

If working conditions are as follows :

Applied Ripple Current (I_R) : 32A

Frequency = 100 Hz


Ambient temperature (close to the capacitor) : 55°C

Calculations :

From the table it will be seen that if the multiplies 1.5 the life expectancy at 55°C will be 7000 hours.

Marking on capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol  followed by the words ALCON ELECTROLYTIC
- The capacitor grade viz. PG-9A
- The capacitance value __ MFD, rated voltage __VDC
- The surge voltage
- Capacity tolerance
- Climatic category
- Part number on non-standard capacitors

Manufacturing Date Code Chart

The manufacturing code shall consists of four digits (alphanumeric). The first two shall denote the date (numeric). The third stands for the month (alphanumeric). The fourth stands for the year (alphabet)

First two spaces DATE	Third space MONTH	Fourth space YEAR
01	1 = JANUARY	A = 2012
02	2 = FEBRUARY	B = 2013
03	3 = MARCH	C = 2014
.	4 = APRIL	D = 2015
.	5 = MAY	E = 2016
.	6 = JUNE	F = 2017
10	7 = JULY	G = 2018
11	8 = AUGUST	H = 2019
.	9 = SEPTEMBER	J = 2020
.	X = OCTOBER	K = 2021
.	Y = NOVEMBER	L = 2022
31	Z = DECEMBER	M = 2023

For example :

- 1) Manufacturing code 023A will mean 2nd March, 2012
- 2) Manufacturing code 10XA will mean 10th October, 2012

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (Ohms)	Impedance at 100 Hz, 25°C (Ohms)	Ripple at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm
150	172	5000	0.042	0.320	8.8	50x105
		6800	0.028	0.235	10.9	50x105
		8200	0.020	0.195	12.8	50x105
		10000	0.019	0.160	13.5	50x120
		10000	0.028	0.160	12.4	63x105
		12000	0.022	0.133	12.6	50x120
		15000	0.020	0.107	14.6	63x105
		15000	0.022	0.107	15.1	63x120
		18000	0.017	0.089	17.7	63x146
		22000	0.013	0.073	20.5	63x146
		22000	0.013	0.073	20.5	76x105
		22000	0.012	0.073	21.5	76x120
		27000	0.010	0.059	25.3	76x146
		33000	0.007	0.048	30.6	76x146
47000	0.006	0.034	37.6	76x220		
200	240	4700	0.040	0.340	9.1	50x105
		5000	0.038	0.319	9.3	50x105
		5600	0.029	0.285	10.7	50x105
		6800	0.027	0.235	11.0	50x105
		6800	0.028	0.235	12.3	63x105
		8200	0.020	0.195	13.2	50x120
		10000	0.019	0.160	13.8	50x120
		10000	0.020	0.160	14.6	63x105
		12000	0.023	0.133	14.8	63x120
		15000	0.015	0.107	18.8	63x146
		15000	0.015	0.107	18.8	76x105
		18000	0.013	0.089	20.7	76x120
		22000	0.012	0.073	23.4	76x146
		27000	0.007	0.059	30.0	76x146
33000	0.007	0.048	35.2	76x220		
250	288	4700	0.030	0.339	10.5	50x105
		4700	0.030	0.339	12.0	63x105
		5000	0.029	0.319	10.7	50x105
		5600	0.022	0.285	12.8	50x120
		6800	0.018	0.234	13.9	50x120
		8200	0.021	0.195	14.4	63x105
		10000	0.023	0.160	14.7	63x120
		12000	0.012	0.133	21.3	63x146
		12000	0.011	0.133	20.1	76x105
		12000	0.011	0.133	22.0	76x120
		15000	0.014	0.107	21.5	76x146
		18000	0.013	0.089	22.1	76x146
		27000	0.008	0.059	32.6	76x220

Other Capacitor values and sizes available on request.

Standard Capacitor Values

Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (Ohms)	Impedance at 100 Hz, 25°C (Ohms)	Ripple at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm
315	362	2200	0.067	0.725	7.0	50x105
		2700	0.036	0.590	9.6	50x105
		2700	0.036	0.590	10.0	50x120
		2700	0.037	0.590	10.7	63x105
		3300	0.029	0.483	11.0	50x120
		3900	0.025	0.409	13.1	63x105
		4700	0.026	0.339	13.9	63x120
		5600	0.020	0.285	16.1	63x146
		5600	0.016	0.285	18.1	76x105
		6800	0.015	0.234	18.5	63x146
		6800	0.014	0.234	19.8	76x120
		8200	0.012	0.194	22.9	76x146
		10000	0.012	0.159	23.0	76x146
		15000	0.009	0.106	31.4	76x220
350	385	1800	0.043	0.885	8.7	50x105
		2200	0.032	0.724	10.1	50x105
		2700	0.029	0.590	11.1	50x120
		3300	0.035	0.483	10.1	50x120
		3300	0.036	0.483	10.9	63x105
		3900	0.030	0.409	12.9	63x120
		4700	0.022	0.339	15.6	63x146
		5600	0.015	0.285	18.5	63x146
		5600	0.016	0.285	18.5	76x105
		5600	0.015	0.284	19.2	76x120
		6800	0.018	0.234	19.2	76x146
		8200	0.015	0.194	21.0	76x146
		10000	0.014	0.159	21.5	76x146
		12000	0.009	0.133	30.7	76x220
400	440	470	0.390	3.397	2.1	35x80
		680	0.366	2.353	2.4	35x105
		1000	0.161	1.596	4.1	50x80
		1500	0.117	1.064	5.3	50x105
		2200	0.105	0.727	5.6	50x105
		2200	0.105	0.727	6.4	63x105
		2700	0.084	0.592	7.2	63x105
		3300	0.061	0.484	8.4	63x105
		3300	0.068	0.484	8.6	63x120
		3900	0.055	0.410	9.8	63x146
		3900	0.056	0.410	9.8	76x105
		4700	0.048	0.340	10.6	76x105
		4700	0.047	0.340	10.8	76x120
		5600	0.036	0.285	12.2	76x120
5600	0.039	0.285	13.0	76x146		

Other Capacitor values and sizes available on request.

Standard Capacitor Values

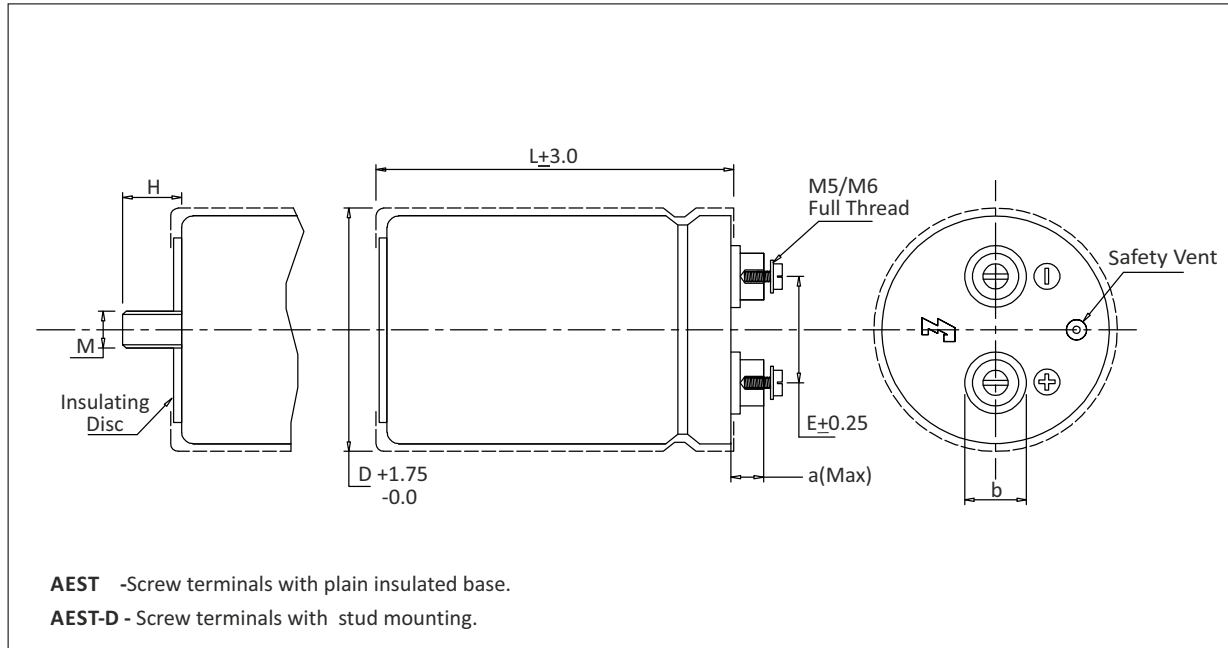
Rated Voltage (VDC)	Surge Voltage (VDC)	Capacitance Nominal (MFD)	MAX ESR at 100 Hz, 25°C (Ohms)	Impedance at 100 Hz, 25°C (Ohms)	Ripple at 100 Hz, 85°C (Amps)	Can size Nominal D x L mm
400	440	6800	0.031	0.235	14.6	76x146
		6800	0.032	0.235	16.2	76x177
		8200	0.029	0.195	17.0	76x177
		8200	0.029	0.195	15.5	90x120
		10000	0.026	0.160	18.2	76x220
		10000	0.026	0.160	17.2	90x146
		12000	0.028	0.134	19.0	90x177
		15000	0.025	0.107	20.1	90x220
450	495	470	0.347	3.395	2.5	35x105
		470	0.446	3.399	2.5	50x80
		680	0.220	2.346	3.1	35x105
		680	0.221	2.346	3.5	50x80
		1000	0.147	1.595	4.3	50x80
		1000	0.143	1.595	4.8	50x105
		1500	0.132	1.065	5.7	63x105
		1800	0.106	0.887	5.8	50x120
		2200	0.101	0.727	5.7	50x105
		2200	0.101	0.727	6.5	63x105
		2200	0.101	0.727	7.0	63x120
		2700	0.074	0.592	7.6	63x105
		2700	0.075	0.592	8.1	63x120
		3300	0.064	0.484	9.1	63x146
		3300	0.063	0.484	9.2	76x105
		3900	0.057	0.410	9.7	76x105
		3900	0.055	0.410	9.9	76x120
		4700	0.049	0.340	10.5	76x120
		4700	0.048	0.340	11.6	76x146
		5600	0.037	0.285	13.2	76x146
		5600	0.037	0.285	15.0	76x177
		6800	0.034	0.235	15.6	76x177
		6800	0.034	0.235	14.2	90x120
		8200	0.029	0.195	17.0	76x220
8200	0.029	0.195	16.5	90x146		
10000	0.023	0.160	19.1	76x220		
10000	0.023	0.160	18.3	90x146		
10000	0.023	0.160	20.6	90x177		
12000	0.018	0.133	23.8	90x220		
15000	0.016	0.107	25.0	90x220		

Other Capacitor values and sizes available on request.

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2,000 hrs at 85°C

Screw Terminals type AEST/AEST-D

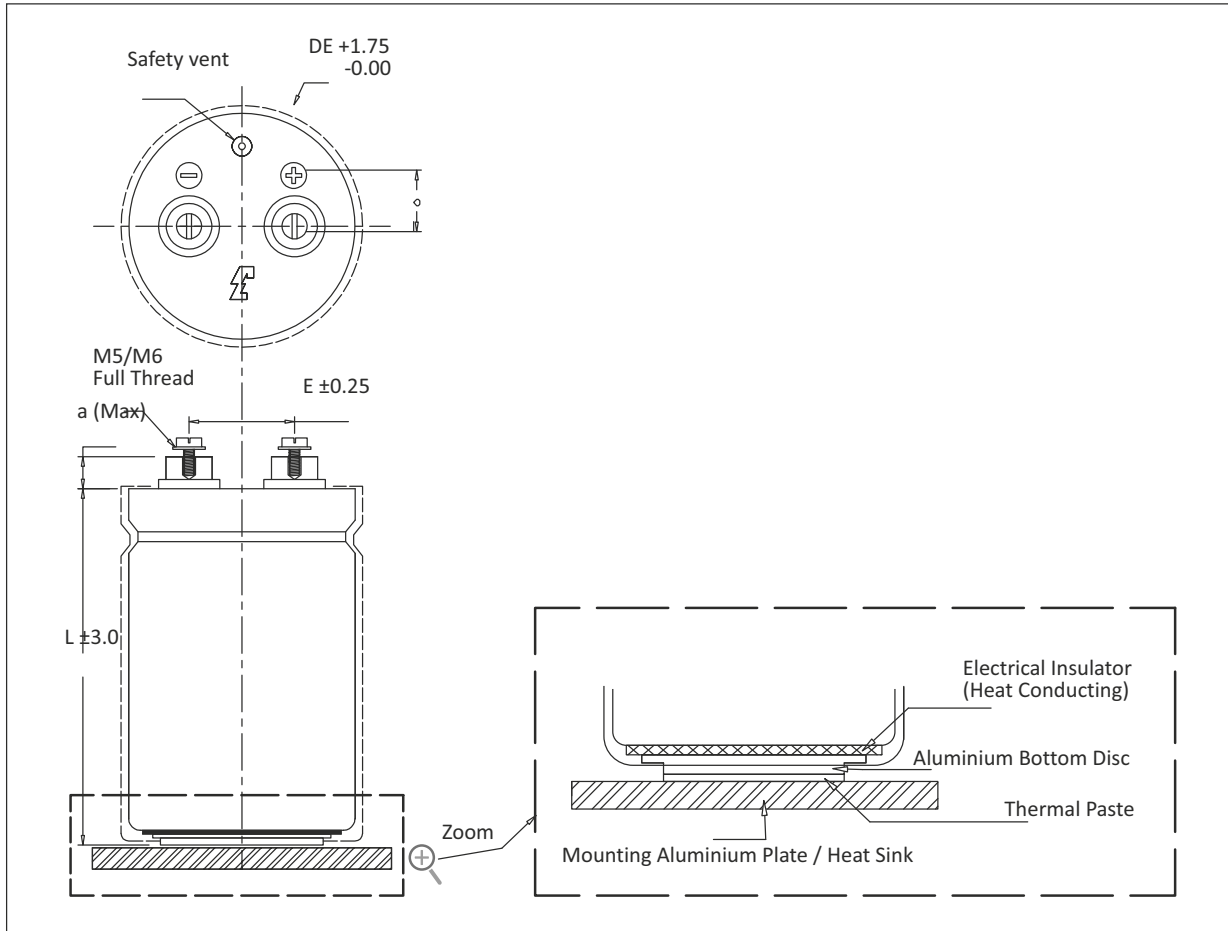


Dimension in mm.

Terminal	D	E	L	a (Max)	b±0.1	M	H±1.0
M5	35	12.6	62	7.8	9.5	—	—
M5	35	12.6	80	7.8	9.5	—	—
M5	35	12.6	105	7.8	9.5	—	—
M5	50	22.1	80	7.8	9.5	M 12	16.0
M5	50	22.1	105	7.8	9.5	M 12	16.0
M5	50	22.1	120	7.8	9.5	M 12	16.0
M5	63	28.5	105	7.8	12.0	M 12	16.0
M5	63	28.5	120	7.8	12.0	M 12	16.0
M5	63	28.5	146	7.8	12.0	M 12	16.0
M5	76	31.6	105	7.8	12.0	M 12	16.0
M5	76	31.6	120	7.8	12.0	M 12	16.0
M5	76	31.6	146	7.8	12.0	M 12	16.0
M5	76	31.6	175	7.8	12.0	M 12	16.0
M5	76	31.6	220	7.8	12.0	M 12	16.0
M6	76	31.6	105	5.3 *	16.0	M 12	16.0
M6	76	31.6	120	5.3 *	16.0	M 12	16.0
M6	76	31.6	146	5.3 *	16.0	M 12	16.0
M6	76	31.6	175	5.3 *	16.0	M 12	16.0
M6	76	31.6	220	5.3 *	16.0	M 12	16.0
M6	90	32	105	5.3 *	16.0	M 12	16.0
M6	90	32	146	5.3 *	16.0	M 12	16.0
M6	90	32	220	5.3 *	16.0	M 12	16.0

Note : 1* Low Post Design

Screw Terminals type AEST-AL



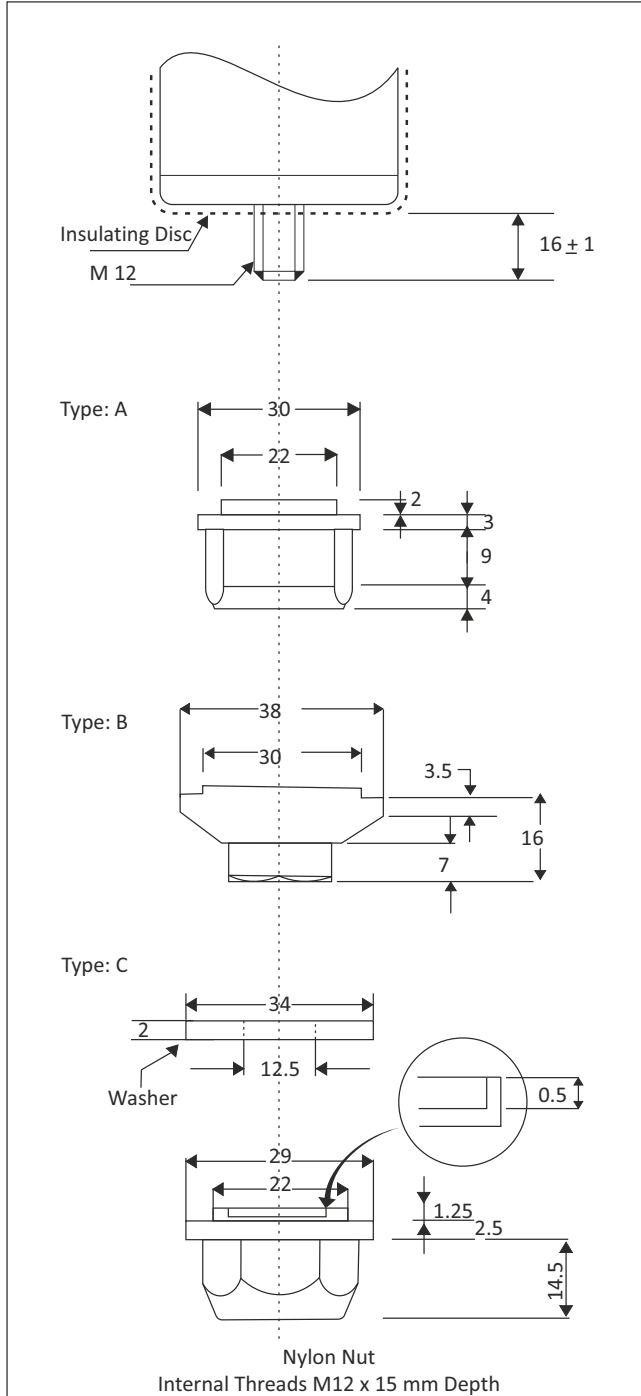
Dimension in mm.

Terminal	D	E	L	a (Max)	b±0.1
M 5	63	28.5	105	7.8	12.0
M 5	63	28.5	120	7.8	12.0
M 5	63	28.5	146	7.8	12.0
M 5	76	31.6	105	7.8	12.0
M 5	76	31.6	120	7.8	12.0
M 5	76	31.6	146	7.8	12.0
M 5	76	31.6	175	7.8	12.0
M 5	76	31.6	220	7.8	12.0
M 6	76	31.6	105	5.3 *	16.0
M 6	76	31.6	120	5.3 *	16.0
M 6	76	31.6	146	5.3 *	16.0
M 6	76	31.6	175	5.3 *	16.0
M 6	76	31.6	220	5.3 *	16.0
M 6	90	32	105	5.3 *	16.0
M 6	90	32	146	5.3 *	16.0
M 6	90	32	220	5.3 *	16.0

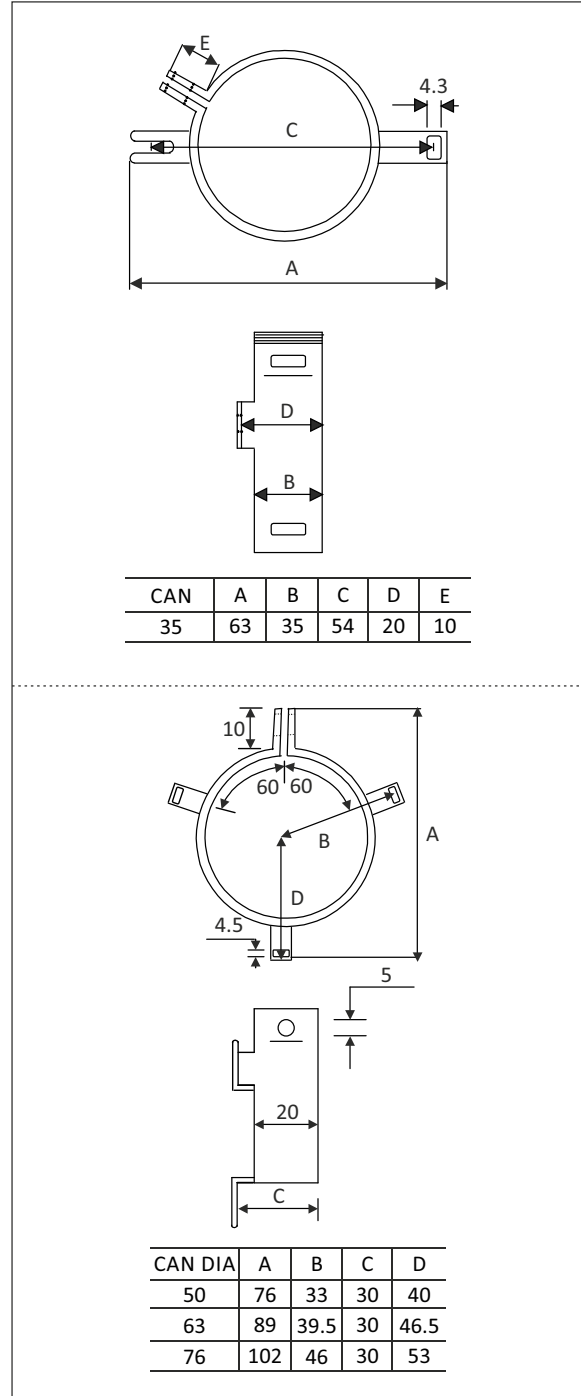
Note : 1* Low Post Design

Mounting Accessories

Mounting Nut and Washers for Cans with



Vertical Mounting Clamps



Dimension in mm.