

PG - 8K

-40°C +105°C



## Specifications

- **Voltage range :** 50 VDC to 450 VDC
- **Can size :** 35φ x 62mm to 90φ x 220mm
- **Operating Temperature range :** -40°C to + 105°C
- **Capacitance :** 1000 MFD to 200000 MFD

Tolerance ± 20%

- **Leakage current:** The max. leakage current ( $I_r$ ) is given by the formula:

$$I_r = 0.003 CV \text{ (microamps)}$$

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 105°C. When capacitors operate at temperatures other than 105°C, the permissible rms ripple current at 105°C should be multiplied by the factors given below :

+40°C	+45°C	+50°C	+65°C
2.7	2.6	2.5	2.2

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-8K 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 7*

**AEST-D** - Screw terminals with stud mounting. *see page 7*

**AEST-AL-** Capacitor with aluminium bottom disc. *see page 8*

### 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 below :

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	90°C	95°C	100°C	105°C
0	250	250	180	128	90	64	45	32	23	16	11	8	6	4
0.1	250	250	179	127	90	63	45	32	22	16	11	8	6	4
0.2	250	248	175	124	88	62	44	31	22	16	11	8	5	4
0.3	250	240	169	120	85	60	42	30	21	15	11	7	5	4
0.4	250	228	161	114	81	57	40	29	20	14	10	7	5	4
0.5	250	215	152	107	76	54	38	27	19	13	9	7	5	3
0.6	250	199	141	99	70	50	35	25	18	12	9	6	4	3
0.7	250	182	128	91	64	45	32	23	16	11	8	6	4	3
0.8	232	164	116	82	58	41	29	20	14	10	7	5	4	3
0.9	206	146	103	73	51	36	26	18	13	9	6	5	3	2
1	180	128	90	64	45	32	23	16	11	8	6	4	3	2
1.1	156	110	78	55	39	28	19	14	10	7	5	3	2	
1.2	133	94	66	47	33	24	17	12	8	6	4	3		
1.3	112	79	56	40	28	20	14	10	7	5	3	2		
1.4	93	66	46	33	23	16	12	8	6	4	3			
1.5	76	54	38	27	19	13	9	7	5	3	2			
1.6	61	43	31	22	15	11	8	5	4	3				
1.7	49	34	24	17	12	9	6	4	3	2				
1.8	38	27	19	14	10	7	5	3	2					
1.9	30	21	15	10	7	5	4	3						
2	23	16	11	8	6	4	3							
2.1	17	12	8	6	4	3	2							
2.2	13	9	6	4	3	2								
2.3	9	7	5	3	2									
2.4	7	5	3	2										
2.5	5	3	2											
2.6	3	2												
2.7	2													

Example:

4700 MFD, 400 VDC, Size : 76 x 146

Specified Ripple Current ( $I_{105C}$ ) at 100Hz, 105°C= 12.2A

If working conditions are as follows :

Applied Ripple Current ( $I_R$ ) : 12.2A

Frequency = 100 Hz

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


Calculations :

1.  $I_R / I_{105C} = 12.2 / 12.2 = 1.00$

2. From the above table it will be seen that the useful life works out to be 64,000 hours or about 7 years. If the ripple current applied is lower, say 10 amps then the useful life will be 82,000 hours or approximately 9 years.

### 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-8K
- 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 2<sup>nd</sup> March, 2012
- 2) Manufacturing code 10XA will mean 10<sup>th</sup> 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)	Ripple at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm
50	60	4700	0.032	0.339	10.4	6.0	35x62
		6800	0.027	0.235	11.2	6.5	35x62
		10000	0.024	0.160	14.0	8.1	35x105
		10000	0.025	0.160	15.7	9.1	50x80
		15000	0.022	0.107	14.7	8.5	35x105
		22000	0.016	0.073	19.2	11.1	50x80
		33000	0.014	0.049	23.4	13.5	50x105
		47000	0.012	0.035	28.5	16.5	63x105
		68000	0.011	0.025	32.9	19.0	76x105
		100000	0.008	0.017	38.9	22.5	76x120
63	75	150000	0.007	0.012	46.7	27.0	76x146
		200000	0.006	0.009	55.4	32.0	76x220
		4700	0.028	0.339	11.1	6.4	35x62
		6800	0.019	0.235	13.3	7.7	35x62
		10000	0.018	0.160	16.4	9.5	35x105
		10000	0.019	0.160	18.0	10.4	50x80
		10000	0.020	0.160	19.0	11.0	50x105
		15000	0.021	0.107	17.0	9.8	50x80
		22000	0.011	0.073	25.4	14.7	50x105
		33000	0.007	0.048	36.8	21.3	63x105
75	90	47000	0.009	0.034	35.8	20.7	76x105
		68000	0.011	0.025	36.3	21.0	76x146
		100000	0.005	0.016	59.7	34.5	90x146
		100000	0.005	0.016	63.5	36.7	76x220
		150000	0.004	0.011	76.8	44.4	90x220
		4700	0.030	0.339	11.4	6.6	35x80
		6800	0.029	0.235	12.8	7.4	35x105
		10000	0.028	0.160	14.7	8.5	50x80
		10000	0.028	0.160	16.3	9.4	50x105
		15000	0.022	0.107	18.2	10.5	50x105
75	90	22000	0.018	0.073	22.8	13.2	63x105
		33000	0.006	0.048	43.3	25.0	76x105
		47000	0.011	0.035	33.4	19.3	76x120
		68000	0.010	0.024	38.2	22.1	76x146
		100000	0.008	0.017	49.3	28.5	76x220

Custom designed capacitors available

### 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)	Ripple at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm
100	115	2200	0.059	0.725	7.6	4.4	35x62
		3300	0.050	0.484	8.8	5.1	35x80
		4700	0.040	0.340	10.9	6.3	35x105
		6800	0.034	0.235	13.3	7.7	50x80
		10000	0.021	0.160	18.9	10.9	50x105
		15000	0.018	0.107	23.4	13.5	63x105
		22000	0.017	0.073	26.8	15.5	76x105
		33000	0.012	0.049	34.6	20.0	76x146
		47000	0.010	0.035	41.5	24.0	90x146
		47000	0.010	0.035	43.3	25.0	76x220
150	172	68000	0.008	0.024	48.8	28.2	76x220
		100000	0.005	0.016	64.4	37.2	90x220
		1000	0.143	1.595	5.2	3.0	35x80
		1500	0.104	1.064	6.7	3.9	35x105
		2200	0.090	0.726	7.3	4.2	35x105
		3300	0.081	0.486	9.5	5.5	50x105
		4700	0.057	0.341	11.4	6.6	50x105
		5000	0.056	0.321	13.1	7.6	63x105
		6800	0.048	0.236	14.2	8.2	63x105
		10000	0.030	0.161	19.7	11.4	63x146
200	230	12000	0.028	0.134	22.8	13.2	76x146
		15000	0.021	0.107	26.1	15.1	76x146
		22000	0.014	0.073	37.2	21.5	76x220
		33000	0.009	0.049	51.0	29.5	90x220
		1000	0.134	1.595	5.4	3.1	35x80
		1500	0.086	1.063	7.4	4.3	35x105
		2200	0.072	0.725	9.2	5.3	50x80
		3300	0.066	0.485	10.6	6.1	50x105
		4700	0.062	0.341	12.5	7.2	63x105
		5000	0.054	0.320	14.4	8.3	63x120
27000	27000	6800	0.046	0.236	16.1	9.3	76x105
		10000	0.023	0.160	25.1	14.5	76x146
		12000	0.017	0.133	29.1	16.8	76x146
		15000	0.016	0.107	32.9	19.0	90x146
		22000	0.012	0.073	40.7	23.5	76x220
		27000	0.010	0.059	47.5	27.4	90x220

Custom designed capacitors available

### 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)	Ripple at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm		
250	288	1000	0.104	1.594	6.7	3.9	35x105		
		1500	0.088	1.063	8.3	4.8	50x80		
		2200	0.068	0.725	10.4	6.0	50x105		
		3300	0.052	0.484	13.7	7.9	63x105		
		4700	0.040	0.340	17.3	10.0	76x105		
		5000	0.038	0.319	17.8	10.3	76x105		
		6800	0.029	0.235	22.5	13.0	76x146		
		10000	0.019	0.160	28.0	16.2	76x146		
		12000	0.014	0.133	36.3	21.0	76x220		
		15000	0.014	0.107	35.5	20.5	90x146		
		15000	0.013	0.106	38.9	22.5	76x220		
		22000	0.008	0.073	53.8	31.1	90x220		
315	362	1000	0.127	1.595	6.9	4.0	50x80		
		1500	0.103	1.064	8.5	4.9	50x105		
		2200	0.064	0.725	12.3	7.1	63x105		
		3300	0.057	0.484	14.5	8.4	76x105		
		4700	0.036	0.340	18.2	10.5	76x105		
		6800	0.025	0.235	24.2	14.0	76x146		
		10000	0.018	0.160	32.9	19.0	76x220		
		15000	0.013	0.107	41.7	24.1	90x220		
				20000	0.009	0.080	51.0	29.5	90x220
		350	385	1000	0.115	1.594	7.3	4.2	50x80
1500	0.076			1.063	9.9	5.7	50x105		
2200	0.062			0.725	12.5	7.2	63x105		
3300	0.041			0.483	16.4	9.5	63x120		
3300	0.040			0.483	17.3	10.0	76x105		
3300	0.041			0.483	17.3	10.0	76x120		
4700	0.034			0.340	20.8	12.0	76x146		
6800	0.019			0.235	30.3	17.5	90x146		
6800	0.019			0.234	32.0	18.5	76x220		
10000	0.014			0.160	37.2	21.5	76x220		
				15000	0.012	0.106	43.3	25.0	90x220
400	440			1000	0.110	1.594	7.4	4.3	50x80
				1500	0.073	1.063	10.0	5.8	50x105
		2200	0.059	0.725	12.8	7.4	63x105		
		3300	0.041	0.483	17.0	9.8	63x146		
		4700	0.033	0.340	21.1	12.2	76x146		
		6800	0.027	0.235	26.8	15.5	76x220		
		10000	0.016	0.160	38.1	22.0	90x220		
		12000	0.013	0.133	41.5	24.0	90x220		

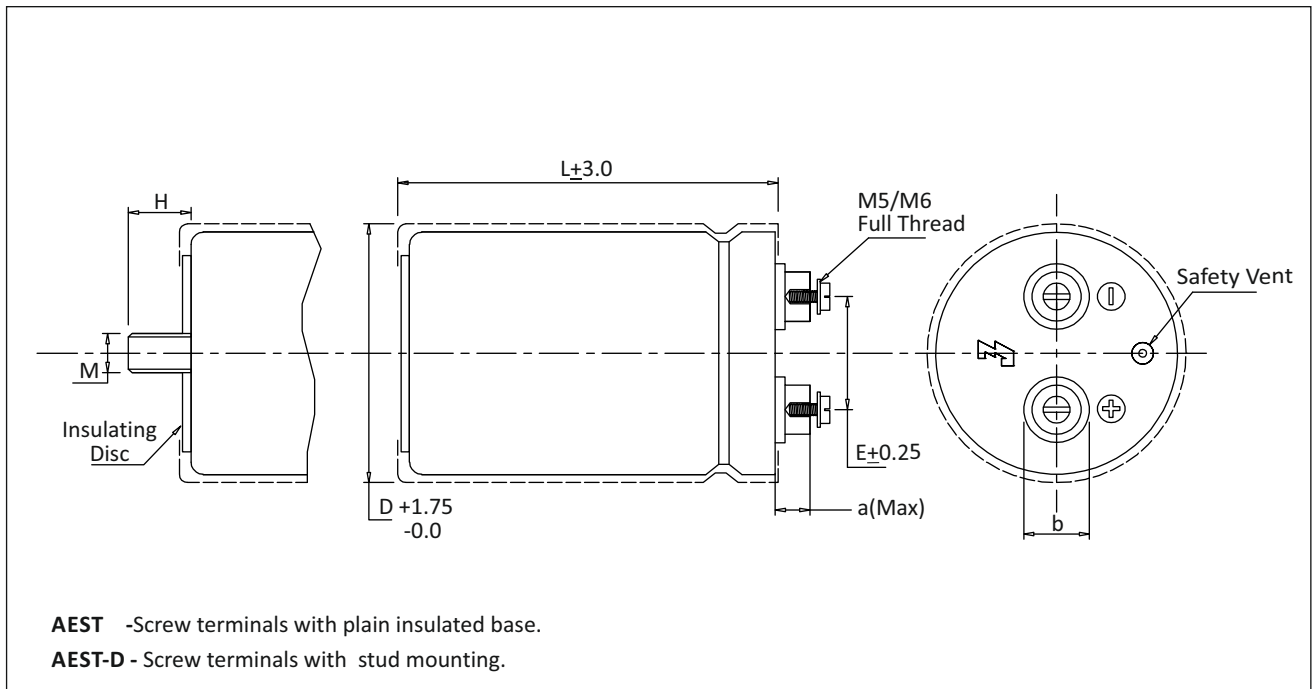
Custom designed capacitors available

### 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)	Ripple at 100 Hz, 105°C (Amps)	Can size Nominal D x L mm
415	456	1000	0.100	1.594	7.8	4.5	50x80
		1500	0.071	1.063	10.2	5.9	50x105
		2200	0.058	0.725	14.4	8.3	76x105
		3300	0.039	0.483	19.4	11.2	76x146
		4700	0.029	0.339	24.6	14.2	90x146
		6800	0.020	0.235	31.0	17.9	76x220
		10000	0.013	0.159	41.0	23.7	90x220
450	495	1000	0.095	1.594	8.8	5.1	50x105
		1500	0.079	1.063	11.1	6.4	63x105
		2200	0.056	0.725	14.7	8.5	76x105
		3300	0.033	0.483	21.1	12.2	76x146
		4700	0.028	0.339	22.7	13.1	76x146
		4700	0.027	0.339	26.8	15.5	76x220
		6800	0.017	0.234	33.0	19.1	76x220
		10000	0.011	0.159	45.2	26.1	90x220

Custom designed capacitors available

### Screw Terminals type AEST/AEST-D

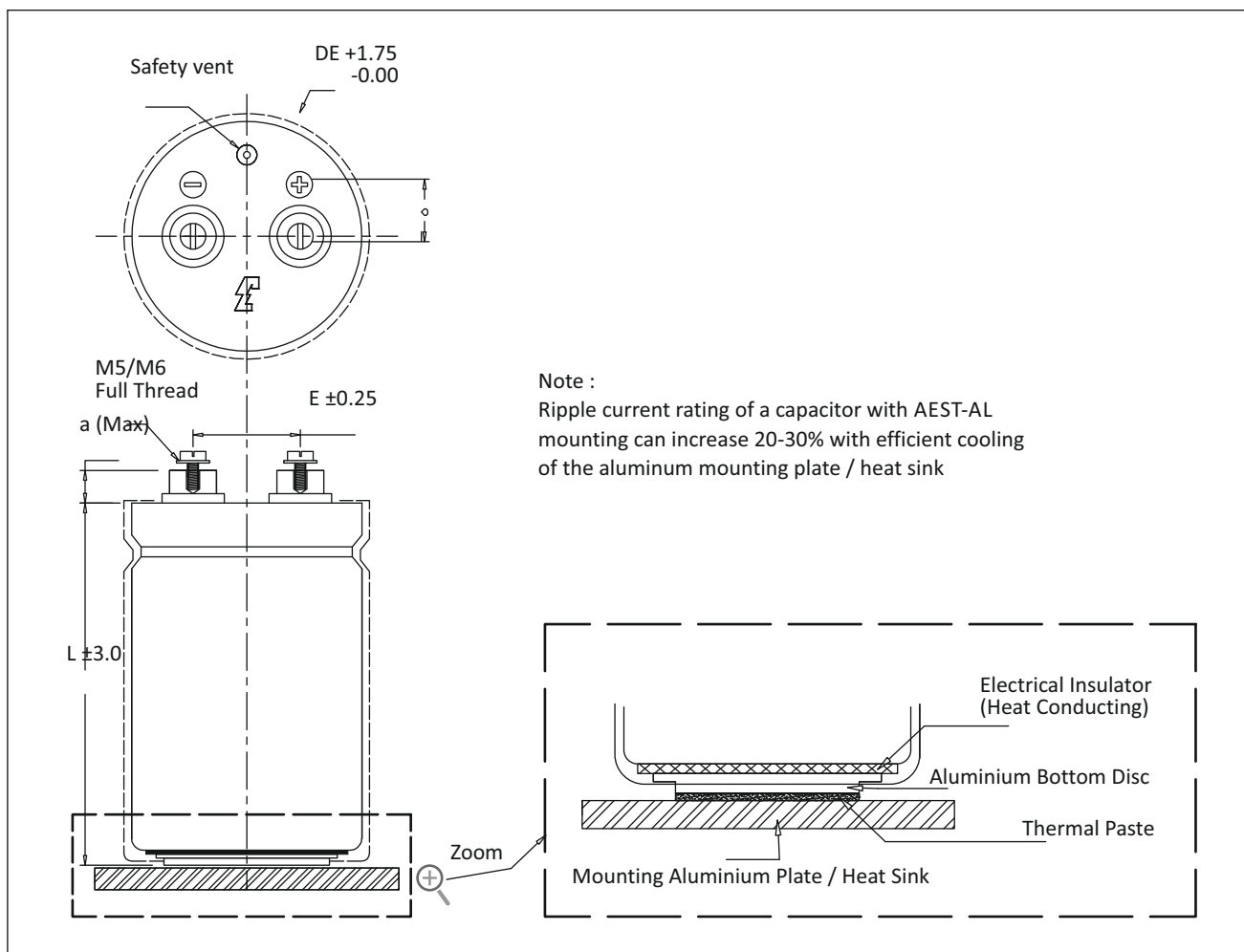


#### Dimension in mm.

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	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

\* Low Post Design

### Screw Terminals type AEST-AL



Dimension in mm.

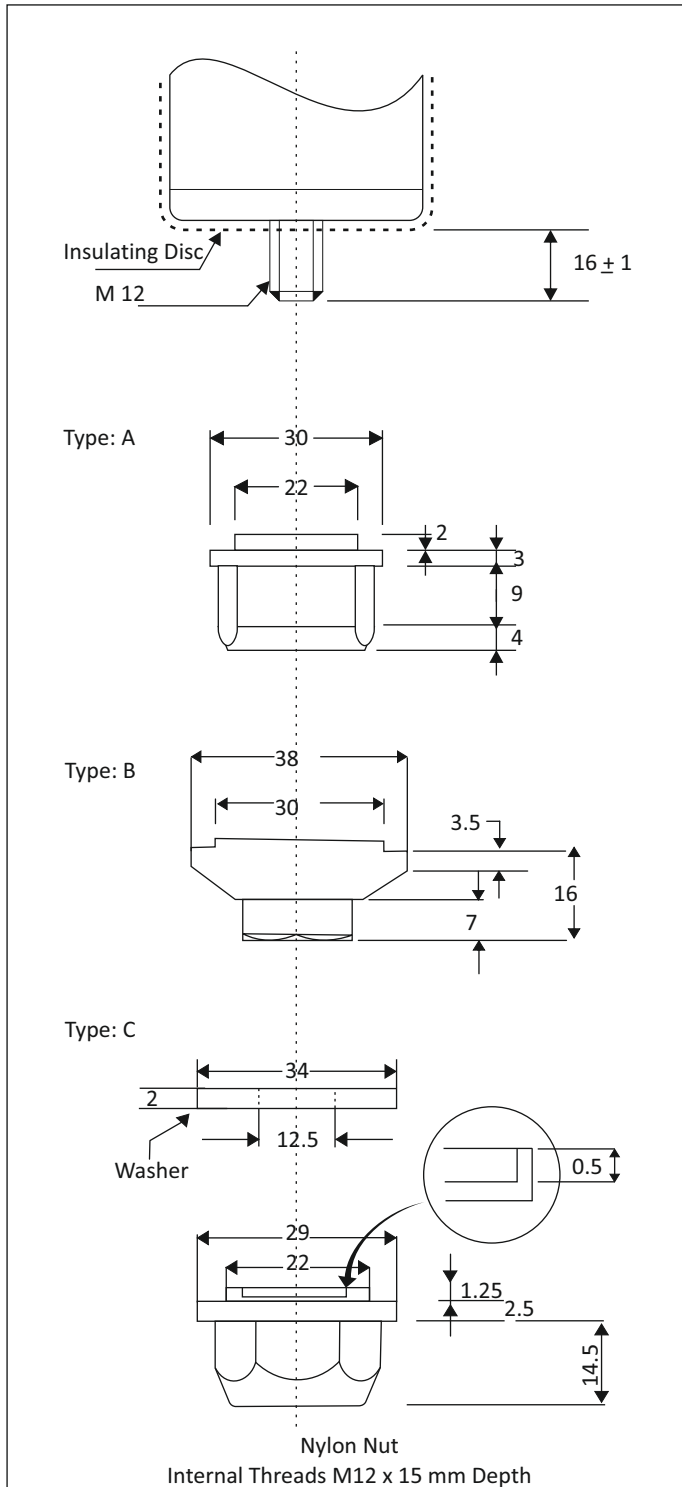
Terminal	D	E	L	a (Max)	b±0.1
M 5	63	28.5	105	7.8	12.0
M 5	63	28.5	120	7.8	12.0
M 5	63	28.5	146	7.8	12.0
M 5	76	31.6	105	7.8	12.0
M 5	76	31.6	120	7.8	12.0
M 5	76	31.6	146	7.8	12.0
M 5	76	31.6	175	7.8	12.0
M 5	76	31.6	220	7.8	12.0
M 6	76	31.6	105	5.3 *	16.0
M 6	76	31.6	120	5.3 *	16.0
M 6	76	31.6	146	5.3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

\* Low Post Design



### Mounting Accessories

#### Mounting Nut and Washers for Cans with



Dimension in mm.

#### Vertical Mounting Clamps

