

**TE'S DOV MEDIUM VOLTAGE  
SURGE ARRESTER**  
3-36 kV RATED VOLTAGE  
DH CLASSIFICATION

TE Connectivity (TE) pioneered under the brand Bowthorpe EMP the development of polymeric composite housed surge arresters in the early 1980's and since then has proven service experience across the globe, operating in the world's toughest environments. The Distribution Over Voltage (DOV) surge arrester provides active over voltage protection that contributes directly to improved system reliability, reducing lost minutes and protecting expensive assets on the electrical network.

### DOV Medium Voltage Surge Arrester

The 10 kA DH class distribution arrester has a voltage range from 3 to 36 kV ( $U_R$ ). It has been type tested in a European high voltage laboratory and independently approved by accredited laboratory to meet the requirements of IEC Standard 60099-4, Ed. 3.0. The DOV surge arrester is the latest gapless, zinc oxide arrester family of TE's Bowthorpe EMP arrester product range. The cage design development was based on over 40 years of internal experience in arrester design. The DOV core arresters are manufactured using excellent ZnO varistors, which display excellent thermal and current handling characteristics due to the guaranteed homogeneity of the varistor volume. The DOV surge arresters are manufactured according to high-quality standards, providing exceptional operating performance and long service life.

### Product Features

- The crimped structural construction ensures light weight product with optimal mechanical strength.
- The manufacturing process ensures void free construction and optimum interface sealing. This is achieved by bonding the silicone housing directly to the ZnO discs and aluminum fittings using a bonding solution.
- The silicone housing was developed using the knowledge accumulated over 40 years of internal materials science expertise and experience, resulting in an optimum shed profile and a material with excellent tracking and erosion resistance.
- Alternating sheds for superior pollution flash over resistance
- Exceptional Tracking and Erosion Resistance Test (TERT ) performance
- Type Tests are independently verified in accordance with IEC60099-4, Ed 3.0



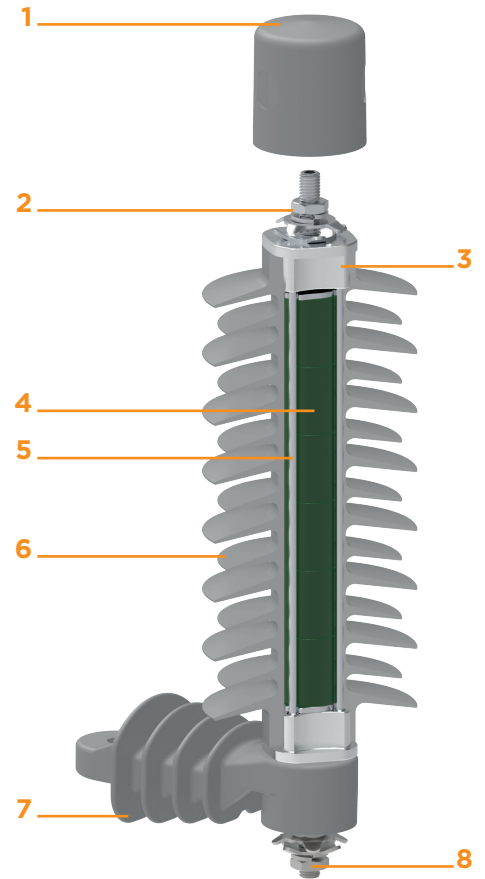
**DOV Medium Voltage Surge Arrester Design**

At the core of the DOV design is our improved ZnO varistor disk, which has exceptional thermal and electrical characteristics and stability. The new varistor and DOV design combination has resulted in excellent energy handling and TOV performance. The construction of the DOV design comprises of:

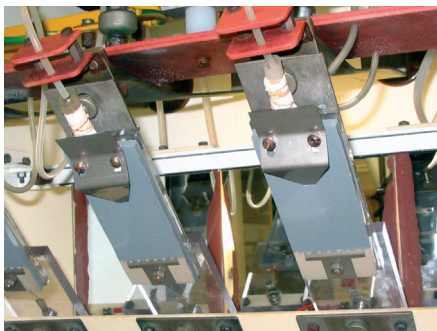
- Zinc Oxide (ZnO) varistors
- TE's Bowthorpe EMP silicone housing
- Flame retardant FRP structure
- Corrosion resistant aluminium fittings

**Design Features and Benefits**

- Active overvoltage protection for distribution network
- Improves system reliability by reducing downtime caused by overvoltage incidents
- Strong protection for most expensive assets on electrical network
- Based on proven technology and more than 40 years of experience in arrester design
- Manufactured to the excellent quality providing exceptional operating performance and long service life



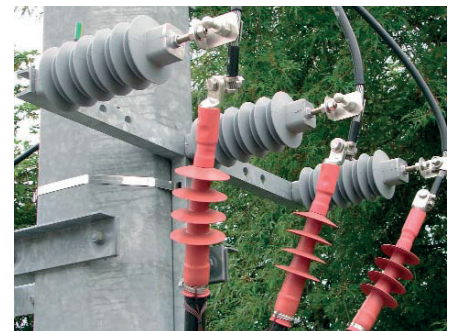
- |                     |  |
|---------------------|--|
| 1. Birdcap          | 6. Silicon housing                     |
| 2. Line Accessories | 7. Insulating Bracket and Disconnecter |
| 3. End fitting      | 8. Earth Accessories                   |
| 4. ZnO Varistors    |  |
| 5. FRP Rods         |  |



Exceptional TERT performance



Excellent hydrophobicity



DOV surge arrester Application

Designed and optimized to protect distribution assets including transformers and cable-end terminations from lightning and switching surge related over-voltages in areas with relatively high iso-keraunic levels. Suitable for both outdoor and indoor applications.

PRODUCT APPLICATION	
Technical Data	Range
Product line name	DOV
DOV Series - Rated Voltage range (U <sub>r</sub> )	3-36 kV
Creepage	405 - 1128 mm
Rated discharge current (8/20μs)	10 kA
Energy Classification according to IEC 60099-4 (Ed. 3.0)	DH
Repetitive Charge transfer rating (Q <sub>rs</sub> )	0.4 C
Thermal Charge transfer rating (Q <sub>th</sub> )	1.1 C
High current short circuit: (pre-failing method)	20 kA
Safe Short-term Load (SSL)	225 Nm
Safe Long-term Load (SLL)	175 Nm

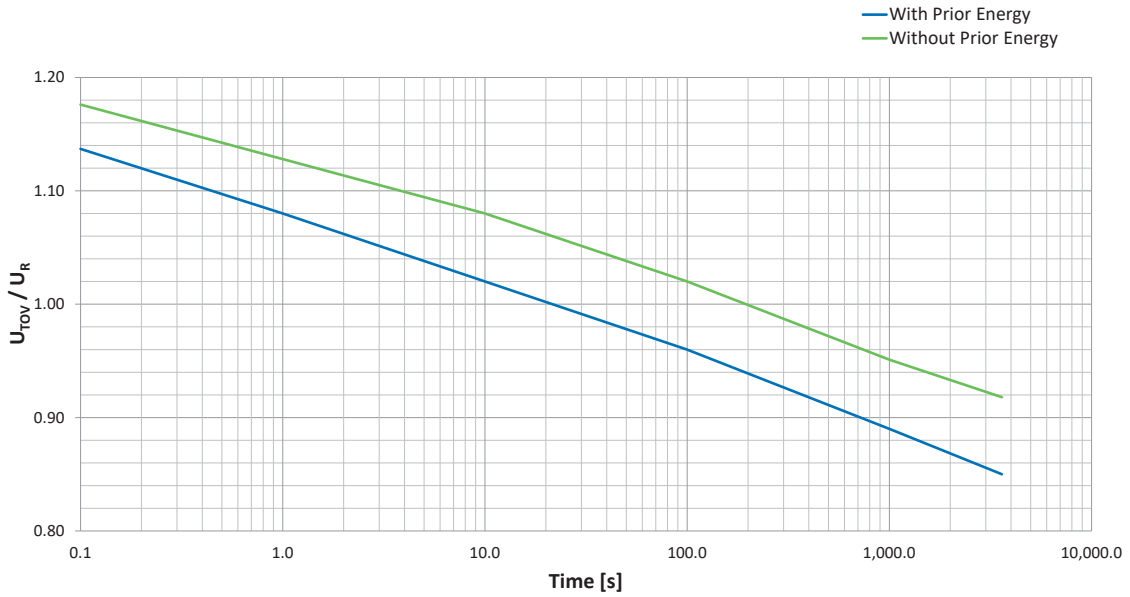
**DOV STANDARD HOUSING PARAMETERS & RATED VOLTAGE COMPATIBILITY**

Maximum Rating (U <sub>r</sub> - kV)	No. of Sheds	Flashover Distance (mm)	Creepage Length (mm)	Arrester (body) Height (mm)	Larger Shed Ø (mm)	Smaller Shed Ø (mm)	Lightning Impulse 1.2/50ms (kV)	Power Frequency Withstand Voltage (wet) (kV)
Housing 'A' ≤ 12 kV	6	162	405	160	105	93	174	46
Housing 'B' ≤ 22 kV	11	234	697	229	105	93	185	72
Housing 'C' ≤ 24 kV	13	266	817	258	105	93	203	87
Housing 'D' ≤ 30 kV	15	304	945	298	105	93	230	98
Housing 'E' ≤ 36 kV	15	318	1128	298	120	103	243	103

**DOV STANDARD ELECTRICAL DATA**

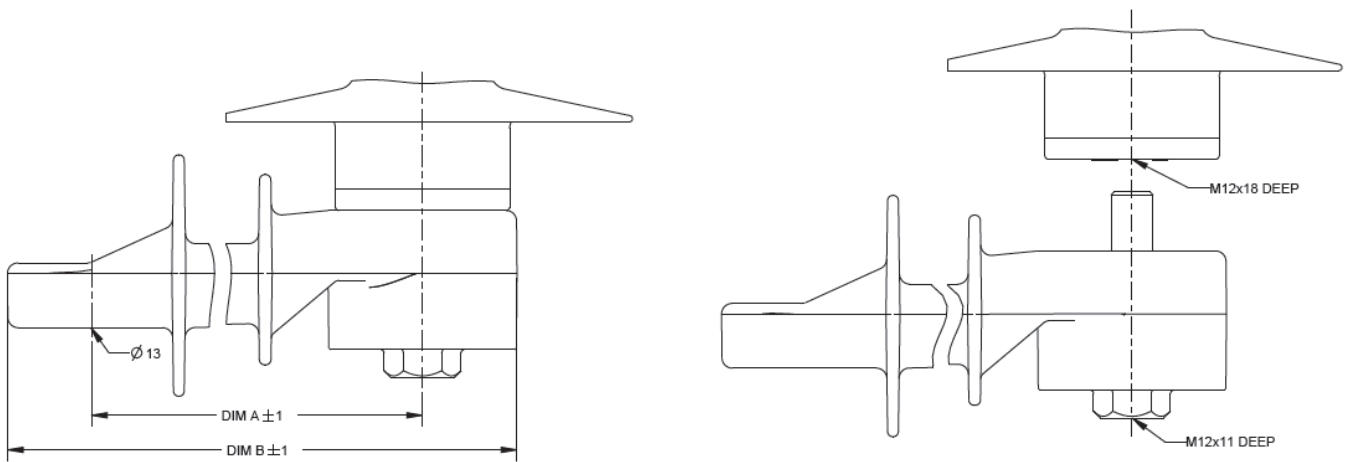
Product Description	Rated Voltage (U <sub>r</sub> ) kV	Continuous Operating Voltage (U <sub>c</sub> ) kV	Residual Voltage - kV				
			Lightning [8/20μs]		Switching [30/60μs]	Steep Front [1/2μs]	Extended Housing
			5kA	10kA	500A	10kA	
DOV-03A	3.5	2.8	12.6	13.7	10.4	15.1	B, C, D or E
DOV-04A	4.5	3.6	12.6	13.7	10.4	15.1	B, C, D or E
DOV-05A	5.0	4.0	16.8	18.3	13.9	20.1	B, C, D or E
DOV-06A	6.0	4.8	16.8	18.3	13.9	20.1	B, C, D or E
DOV-09A	9.0	7.2	25.2	27.4	20.8	30.1	B, C, D or E
DOV-10A	10.5	8.4	29.4	32.0	24.3	35.2	B, C, D or E
DOV-12A	12	9.6	33.7	36.6	27.8	40.3	B, C, D or E
DOV-13B	13.5	10.8	37.3	40.5	30.8	44.6	C, D or E
DOV-15B	15	12.0	41.4	45.0	34.2	49.5	C, D or E
DOV-16B	16.5	13.2	45.5	49.5	37.6	54.5	C, D or E
DOV-18B	18	14.4	49.7	54.0	41.0	59.4	C, D or E
DOV-19B	19.5	15.6	53.8	58.5	44.5	64.4	C, D or E
DOV-21B	21	16.8	58.0	63.0	47.9	69.3	C, D or E
DOV-22B	22.5	18.0	62.1	67.5	51.3	74.3	C, D or E
DOV-24C	24	19.2	66.2	72.0	54.7	79.2	D or E
DOV-27D	27	21.6	74.5	81.0	61.6	89.1	D or E
DOV-28D	28.5	22.8	78.7	85.5	65.0	94.1	D or E
DOV-30D	30	24.0	82.8	90.0	68.4	99.0	D or E
DOV-31E	31.5	25.2	86.9	94.5	71.8	104.0	-
DOV-33E	33	26.4	91.1	99.0	75.2	108.9	-
DOV-36E	36	28.8	99.4	108.0	82.1	118.8	-

**DOV Medium Voltage Surge Arrester Temporary Overvoltage (TOV) curve with and without prior energy as per IEC60099-4, Ed. 3.0 surge arrester standard.**



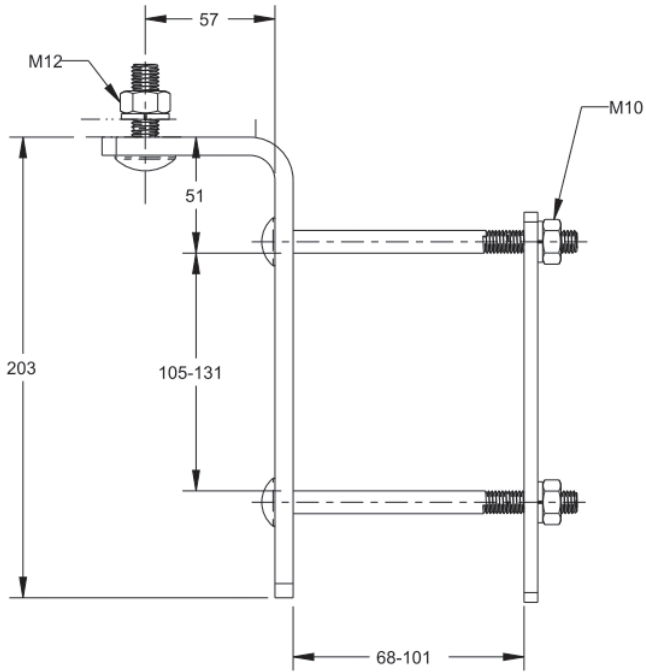
U<sub>TOV</sub> = TOV withstand voltage; U<sub>R</sub> = Surge arrester Rated voltage

**Insulating Bracket & Disconnecter (2, 4 & 6 shed Bracket)**

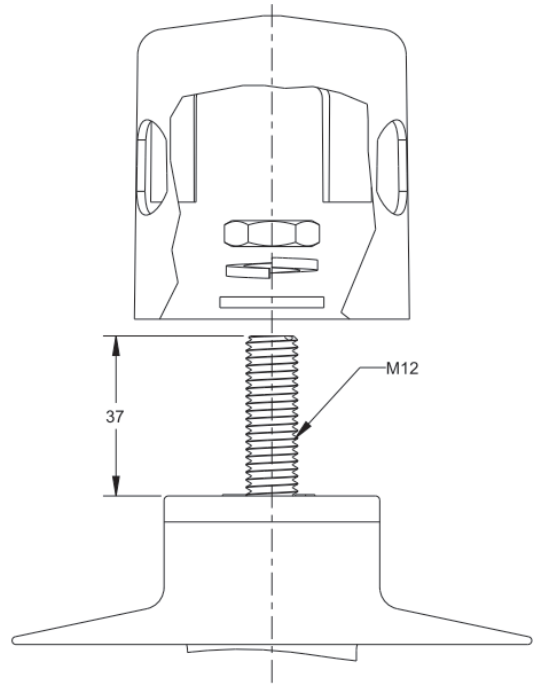


DESCRIPTION				
	DIM A (mm)	DIM B (mm)	WEIGHT (kg)	Ur (kV)
DOV-BKT-DIS-2	100	151	0.44	≤15
DOV-BKT-DIS-4	130	181	0.53	>15≤27
DOV-BKT-DIS-6	160	211	0.59	>27

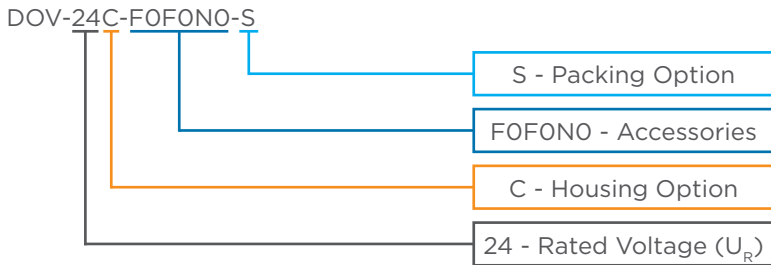
NEMA CrossArm Bracket



Bird Protection Cover



Typical product description



Product naming convention



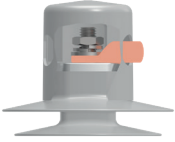
Naming convention cross reference:

DOV = Series type: DOV. YY = see table on page 4 various rating ( $U_r$ ) options

M = see table on page 4 various housing options

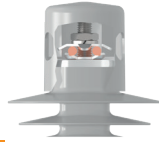
P = See next page for packaging options

1 Line lead accessories



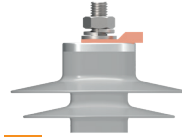
**B** xxxxx

Birdcap with F accessory



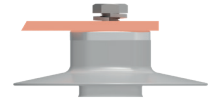
**E** xxxxx

Birdcap with M accessory



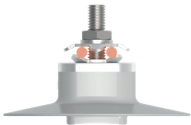
**F** xxxxx

Exposed stud for lug connection



**H** xxxxx

M12 Cap screw & spring washer



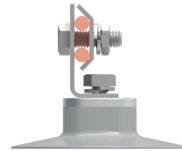
**M** xxxxx

Clamp for conductors up to 12 mm Ø.



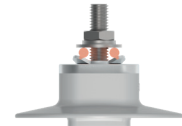
**O** xxxxx

No stud. No accessories



**Q** xxxxx

Clamp for conductors 8 mm to 16 mm Ø.



**W** xxxxx

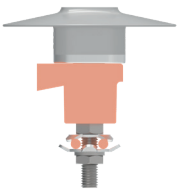
Clamp for conductors up to 6.8 mm Ø.

2 Line lead options

x	<b>0</b> xxxx	No Line Lead Wire
x	<b>1</b> xxxx	0.5 m 16 mm <sup>2</sup> Copper Line Lead & one M12 lug
x	<b>2</b> xxxx	1 m 16 mm <sup>2</sup> Copper Line Lead & one M12 lug
x	<b>3</b> xxxx	1 m 16 mm <sup>2</sup> Copper Line Lead & two M12 lugs

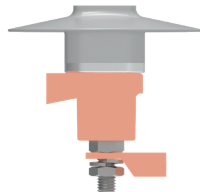
x	<b>4</b> xxxx	0.5 m 35 mm <sup>2</sup> Copper Line Lead & one M12 lug
x	<b>5</b> xxxx	1 m 35 mm <sup>2</sup> Copper Line Lead & one M12 lug
x	<b>6</b> xxxx	1 m 50 mm <sup>2</sup> Copper Line Lead & no lug

3 Earth lead accessories:



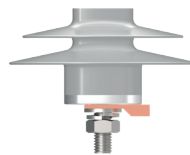
xx **D** xxx

Clamp for conductors up to 12 mm Ø.



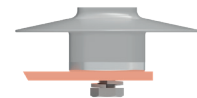
xx **E** xxx

Disconnector + F accessory



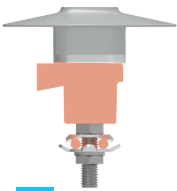
xx **F** xxx

Exposed stud for lug connection



xx **H** xxx

M12 Cap screw & spring washer



xx **K** xxx

Clamp for conductors up to 6.8 mm Ø.



xx **M** xxx

Clamp for conductors up to 12 mm Ø.



xx **O** xxx

No stud. No accessories



xx **W** xxx

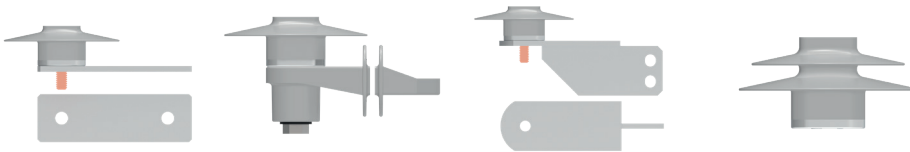
Clamp for conductors up to 6.8 mm Ø.

**4 Earth lead options**

xxx	0	xx	No Earth Lead Wire
xxx	1	xx	0.5 m 16 mm <sup>2</sup> Copper Earth Lead & one M12 lug
xxx	2	xx	1 m 16 mm <sup>2</sup> Copper Earth Lead & one M12 lug
xxx	3	xx	1 m 16 mm <sup>2</sup> Copper Line Lead & two M12 lugs

xxx	4	xx	0.5 m 35 mm <sup>2</sup> Copper Earth Lead & one M12 lug
xxx	5	xx	1 m 35 mm <sup>2</sup> Copper Earth Lead & one M12 lug
xxx	6	xx	1 m 50 mm <sup>2</sup> Copper Earth Lead & no lug

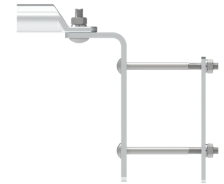
**5 Mounting brackets**



- xxxx **A** x  
Straight 2 hole mounting bracket\*
- xxxx **B** x  
Insulating bracket\*
- xxxx **C** x  
DIN metal bracket. (stainless)\*
- xxxx **N** x  
No mounting accessories

\*only available in -I and -D packaging options

**6 Mounting bracket options**



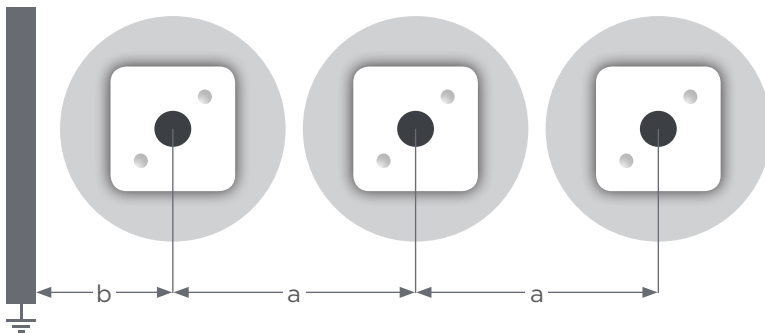
- xxxxx **O**  
No option
- xxxxx **1**  
NEMA Cross arm bracket

**P Packaging**

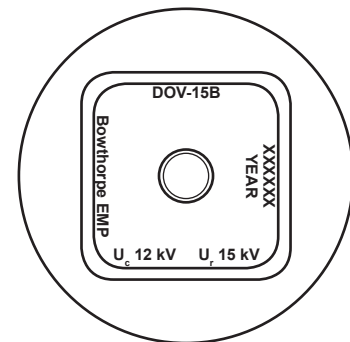
I	Individual Packaging	(1 arrester per box)
D	Dual Packaging	(2 arresters per box)
S	Standard Packaging	(3 arresters per box)

All Line and Earth terminations fasteners are M12 unless stated otherwise

Minimum clearances following IEC 60071-2 for altitudes up to 1000 m



Sample of DOV product marking



[te.com/energy](http://te.com/energy)

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