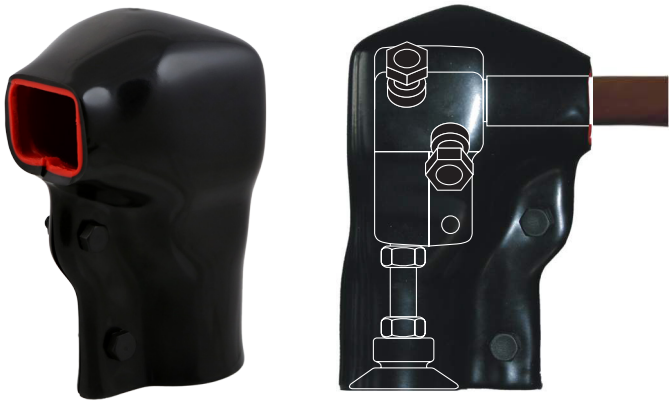
2. INSULATION GUARDS



2.1. OZT TYPE COVERS OF LOW VOLTAGE CLAMPS



OZT GUARDS

Construction:

2 PVC layers having 3-6 mm thickness in total, applied by means of plastisol gelation. Top layer

- *black (UV resistant) Internal layer*
- *red (signalling) The shape - depending on clamps used (as in the drawings).*

Intended use:

Protection of low voltage transformer clamps against effects of short – circuits resulting from intervention of animals, implemented by full guarding live elements. Fastening by means of PE screws.

Selection rules:

1. *Depending on type of clamp used,*
2. *Depending on low voltage transformer bushing insulator outer diameter: Ø50, Ø70, Ø90.*

Note:

Each guard offered by us is available in a version tested for electrical break-down, depicted by the letter „B" added to name.

Technical properties:

Resistance to insulation break-down: 7000 V/mm Specific through resistance at temp.:
20°C - 3x10 W cm 70°C - 3x10 W cm
Tensile strength: >10MPa Elongation: 23% for negative temperature range, for tests according to PN-73/E-29200.

Catalogue no.	KTM	Cover type	Type of clamp being guarded	Thread of bushing	Outer diameter of insulator
BK7100	1362-112-150-000	OZT - 1/50	TOGA 1	M 12 or M 16	50mm
BK7101	1362-112-150-001	OZT - 1/50 B	TOGA 1	M 12 or M 16	50mm
BK7102	1362-112-170-000	OZT - 1/70	TOGA 1	M 16 or M 20	70mm
BK7103	1362-112-170-001	OZT - 1/70 B	TOGA 1	M 16 or M 20	70mm
BK7104	1362-112-190-000	OZT - 1/90	TOGA 1	M 30 x 2	90mm
BK7105	1362-112-190-001	OZT - 1/90 B	TOGA 1	M 30 x 2	90mm
BK7106	1362-112-250-000	OZT - 2/50	TOGA 2	M 12 or M 16	50mm
BK7107	1362-112-250-001	OZT - 2/50 B	TOGA 2	M 12 or M 16	50mm
BK7108	1362-112-270-000	OZT - 2/70	TOGA 2	M 16 or M 20	70mm
BK7109	1362-112-270-001	OZT - 2/70 B	TOGA 2	M 16 or M 20	70mm
BK7110	1362-112-350-000	OZT - 3/50	TOGA 3	M 12 or M 16	50mm
BK7111	1362-112-350-001	OZT - 3/50 B	TOGA 3	M 12 or M 16	50mm
BK7112	1362-112-370-000	OZT - 3/70	TOGA 3	M 16 or M 20	70mm
BK7113	1362-112-370-001	OZT - 3/70 B	TOGA 3	M 16 or M 20	70mm
BK7114	1362-112-390-000	OZT - 3/90	TOGA 3	M 30 x 2	90mm
BK7115	1362-112-390-001	OZT - 3/90 B	TOGA 3	M 30 x 2	90mm
BK7116	1362-112-450-000	OZT - 4/50	TOGA 4	M 12 or M 16	50mm
BK7117	1362-112-450-001	OZT - 4/50 B	TOGA 4	M 12 or M 16	50mm
BK7118	1362-112-470-000	OZT - 4/70	TOGA 4	M 30 x 2	70mm
BK7119	1362-112-470-001	OZT - 4/70 B	TOGA 4	M 30 x 2	70mm
BK7120	1362-112-550-000	OZT - 5/50	TOGA 5	M 12 or M 16	50mm
BK7121	1362-112-550-001	OZT - 5/50 B	TOGA 5	M 12 or M 16	50mm
BK7122	1362-112-570-000	OZT - 5/70	TOGA 5	M 16 or M 20	70mm
BK7123	1362-112-570-001	OZT - 5/70 B	TOGA 5	M 16 or M 20	70mm
BK7124	1362-112-670-000	OZT - 6/70	TOGA 6	M 16 or M 20	70mm
BK7125	1362-112-670-001	OZT - 6/70 B	TOGA 6	M 16 or M 20	70mm
BK7126	1362-112-690-000	OZT - 6/90	TOGA 6	M 30 x 2	90mm
BK7127	1362-112-551-000	OZT - 5/50 z przekładką	TOGA 5	M 16 or M 20	50mm
BK7128	1362-112-571-000	OZT - 5/70 z przekładką	TOGA 5	M 16 or M 20	70mm
BK7200	1362-112-690-001	OZT - 6/90 B	TOGA 6	M 30 x 2	90mm
BK7129	1362-112-890-000	OZT - 8/90	TOGA 8	M 33 x 2 or M 48x3	90mm

2.2. OZ MK TYPE GUARDS OF LOW VOLTAGE CLAMPS





OZ MK TYPE GUARDS

Construction:
2 PVC layers having 3-6 mm thickness in total, applied by means of plastisol gelation. Top layer
- *black (UV resistant) Internal layer*
- *red (signalling) The shape – depending on clamps used (as in the drawings).*

Intended use:
Protection of low voltage transformer clamps against effects of short – circuits resulting from intervention of animals, implemented by full guarding of live elements. Fastening by means of PE screws.

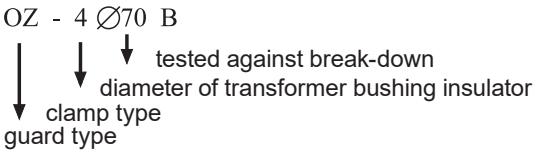
OZ MK5 TYPE GUARD

Selection rules:
1. *Depending on type of clamp used,*
2. *Depending on low voltage transformer bushing insulator outer diameter: Ø50, Ø70, Ø90.*

Note:
Each guard offered by us is available in a version tested for electrical break-down, depicted by the letter „B" added to name.

Technical properties:
Resistance to insulation break-down: 7000 V/mm
Specific through resistance at temp.:
20°C – 3x10 W cm 70°C – 3x10 W cm
Tensile strength: >10MPa Elongation: 23% for negative temperature range, for tests according to PN-73/E-29200.

Ordering example:



Catalogue no.	KTM	Guard type	Type of clamp being guarded	Thread of bushing	Outer diameter of insulator
BK7201	1362-112-100-050	OZ MK 1/50	MK 1/50	M 12 or M 16	50mm
BK7202	1362-112-200-050	OZ MK 2/50	MK 2/50	M 12 or M 16	50mm
BK7203	1362-112-200-070	OZ MK 2/70	MK 2/70	M 12 or M 20	70mm
BK7205	1362-112-300-090	OZ MK 3/90	MK 3/90	M 30x2	90mm

Catalogue no.	KTM	Guard type	Type of clamp being guarded	Thread of bushing	Outer diameter of insulator
BK7207	1362-112-500-090	OZ MK 5/90	MK 5/90	M 30x2	90mm
BK7208	1362-112-500-070	OZ MK 5/70	MK 5/70	M 20	70mm

2.3. OZ ZGU OP AND OZ ZGU TYPE GUARDS



Fig. 1 OZ ZGU OP -BK 7008



Fig. 2 OZ ZGU-BK 7007

OZ ZGU TYPE GUARDS

Construction:

2 PVC layers having 3-6 mm thickness in total, applied by means of plastisol gelation. Top layer

- *black (UV resistant) Internal layer*
- *red (signalling) The shape – depending on clamps used (as in the drawings).*

Intended use:

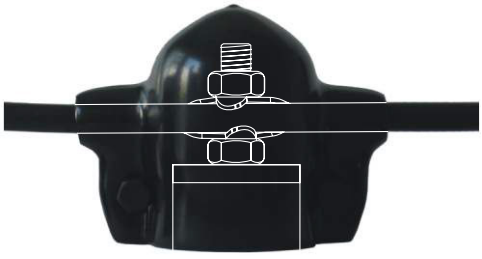
Protection of medium voltage screw clamps against short circuits caused by intervention of birds and other animals. Fig. 1 – for connections with armament version with MV surge arresters installed directly on transformer bushing screw; BK 7008 Fig. 2 – for armament version with surge arresters installed on transformer tube or in location other than point 1; BK 7007

Technical properties:

7000 V/mm break-down resistance Specific through resistance at temp.:
20 °C – 3x1011 Ωcm 70 °C 3x108 Ωcm
Tensile strength over 10 MPa Elongations 23% within negative temperature range, according to PN-73/E29200.

Catalogue no.	KTM	Type	Max. cross-section of wire	Thread of bushing
BK7007	1362-112-000-001	OZ ZGU	70 mm^2	M12
BK7008	1362-112-000-002	OZ ZGU OP	70 mm^2	M12

2.4 OSOP TYPE GUARD OF MEDIUM VOLTAGE SURGE ARRESTER (SBK)



OSOP TYPE GUARD

Catalogue no.	KTM	Type
BK 7003	1362-112-110-050	OSOP

Construction:

Material as in case of transformer clamp guards.

Technical properties:

Analogous as in case of transformer clamp guards.

Intended use:

Protection of medium voltage surge arresters current clamp against effects of short circuits caused by intervention of animals (SBK surge arresters of TRIDELTA company make are preferred). Fastening by means of PE screws.

2.5. OIP-2, OIP-3 TYPE COVER - ANTI-BIRD INSULATOR AND OIN TYPE COVER OF SPARK GAP



OIP 2



OIN

Construction:
Made of thermoplastic material, self-extinguishing, resistant to UV radiation and environmental factors. The shape of lower part provides for precise seating on insulator shed. Fastening band positioned below fastening line on the shed. There is an perforation over fastening line, ensuring mounting of the device solely in proper position, i.e. on the first, upper insulator shed. This prevents from installation errors and shortening of leakage path.
There are 4 slits made in wall in orthogonal planes, enabling off-take of leads.
The OIP 2I and OIP 3I version additionally equipped with the OIN type guard of spark gap upper part

Intended use:
Protection of medium voltage distribution transformers bushing insulators of electrical connections against short-circuiting risk by birds and penetration of foreign bodies.

Advantages:
made of material featuring self-extinguishing properties, firm seating of device on the insulator, simple installation, protection against wrong installation, compact structure, resistance to outdoor conditions, high mechanical strength.

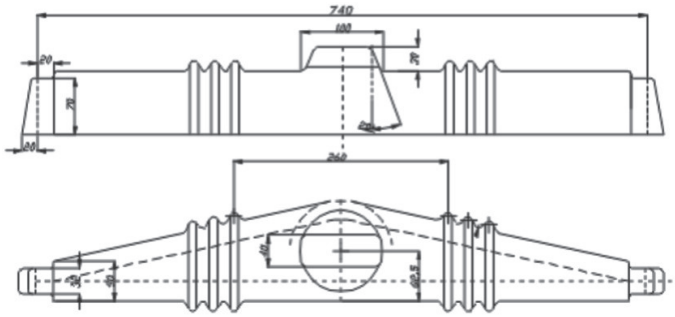
Specifications:
Outer diameter range for insulators:
OIP 2 – 120 to 170 mm OIP 3 – above 170 mm
OIN – universal guard – adapted to all types of spark gaps and both guard types used. Total height: 260 mm.
Utilisation temperature range: -40°C to +70°C.

Catalogue no.	KTM	Type	Intended use	Outer diameter of insulator
BK7004	1362-112-002-000	OIP 2	Osłona izolatorów SN	120 - 170
BK7005	1362-112-003-000	OIP 3	Osłona izolatorów SN	Above 170
BK7006	1362-112-185-070	OIN	Osłona iskiernika	-

Caution! Application of guard against birds absolutely requires improvement of overvoltage protection, by means of modern surge arresters utilisation and optimization of the protection for installation place. With proper overvoltage protection, spark gap can be dismounted from bushing insulators without risk. When using guards against birds without improvement of overvoltage protection, possibility of flashover and ignition of guards exists, which results in bushing insulator destruction.

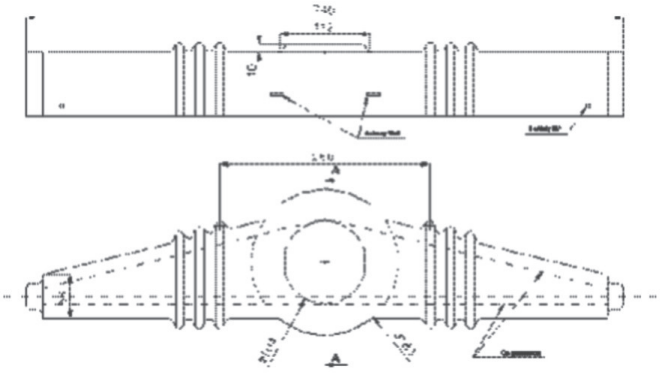
2.6. GUARDS OF LINE POST INSULATORS





BK 7001





BK 7002

Material:
PCV with additives increasing resistance to UV radiation, and formed with vacuum thermoforming technology.

Installation:
The body of the guard is seated on the first shed of insulator in such manner, so that it guards both passage of the lead through the insulator, and the leads section upstream and downstream the insulator, subsequently fastened by means of self-tightening bands.

Intended use:
Protection of connections on high and medium voltage line post insulators against consequences of earth faults and phase-to-phase faults, caused by intervention of birds.

Advantages:
Simple installation, firm seating on the insulator (fastening band located below fastening line on the shed), resistance to UV radiation and temperature changes.

Catalogue no.	KTM	Type	Weight of guard	Insulator type
BK 7001	1362-112-125-078	OIW.LWP	0,4 kg	LWP 8/24 LWP 12,5/24
BK 7002	1369-900-175-074	St 20	0,5 kg	St 20