

Cable joints and terminations Heat shrink tubes and accessories

breakout boots, end caps, wall ducts, sleeves, tapes



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Heat shrink medium wall tubes with mastic	Medium wall heat shrink tubes, up to 36kV, anti-tracking	Medium and thick wall heat shrink tubes for Medium Voltage bus bar insulation	Insulating tapes for bus bars	Semi-rigid heat shrink tubes from PVDF, highly chemical resistant Heat shrink tubes of modified	elastomer Heat shrink tubes of modified fluoroelastomer, very flexible	Teflon heat shrink tubes	Heat shrink breakout boots	Cold shrink breakout boots	Heat shrink sheds	Heat shrink cable end caps	Heat shrink protection kits for 0,6/1kV	Heat shrink phase markers	Heat shrink wall ducts	Heat shrink repair wrap- arounds	Heat shrink tapes	Heat shrink pipe end caps	Cable joints	Cable terminations	Earthing sets
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Heat shrink medium wall tubes with mastic	Medium wall heat shrink tubes, up to 36kV, anti-tracking	Medium and thick wall heat shrink tubes for Medium Voltage bus bar insulation	Insulating tapes for bus bars	Semi-rigid heat shrink tubes from PVDF, highly chemical resistant	Heat shrink tubes of modified elastomer	Heat shrink tubes of modified fluoroelastomer, very flexible	Teflon heat shrink tubes	Heat shrink breakout boots	Cold shrink breakout boots	Heat shrink sheds	Heat shrink cable end caps	Heat shrink protection kits for 0,6/1kV	Heat shrink phase markers	Heat shrink wall ducts	Heat shrink repair wrap- arounds	Heat shrink tapes	Heat shrink pipe end caps	Cable joints	Cable terminations	Earthing sets
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# — — — — — Radiation crosslinked polyolefin

#### What polyolefin is?

Polyolefin in made as an effect of polymerization of unsaturated hydrocarbons.

Among the mostly used polyolefins there are:

- Polyethylene (PE)
- Ethylene copolymer / vinyl acetate (EVA)

### Kinds of PE:

- Linear low density polyethylene (LLDPE)
- Low density polyethylene (LDPE)
- Medium density polyethylene (MDPE)
- High density polyethylene (HDPE)

### Non-crosslinked polyethylene

Despite many advantages (goods dielectric properties, good mechanical and chemical properties, easiness in processing) non-crosslinked polyethylene has many disadvantages. To improve its parameters (see the chart below), polyethylene should undergo the process of radiation crosslinking.

#### What the radiation crosslinking consist in?

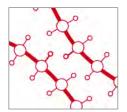
This process consists in exposing material to the electron beams accelerated in vacuum up to the energy of several electron volts. Thermoplastics, like polyethylene, are built of long irregular polymer chains. When exposed to radiation, two neighbouring chains make bonds in the places where hydrogen atoms split. This strong bond of chains is called "linked chains" (see the pictures at left).

The crosslinked polyethylene when heated to the temperature higher than crystal thawing, becomes soft and elastic, caoutchouc-like material. The non-crosslinked polyethylene would become ductile-fluid mass.

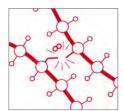
RADPOL S.A. is the only Polish company, which possesses an accelerator for industrial radiation crosslinking.

#### Shape memory

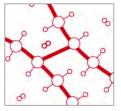
The crosslinked products obtain the property called "shape memory". This is the most interesting property of the heat shrink. The heat shrink may be shaped variously but when heated it shrinks down returning to its initial shape. This property is mainly used for insulation recovery. For that purpose a crosslinked expanded heat shrink product with adhesive layer is put on the broken insulation and heated up. The new insulation layer shrinks down tightly on the place of repair. This method of repair and insulation is considered to be the most effective as far as the work costs and time and also life-length are concerned. Crosslinked heat shrink products are used for insulation, protection, anti-corrosion layers and decorative elements.



Polymer chains before crosslinking



Splitting of hydrogen atoms during crosslinking



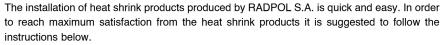
New stronger polymer bonds

# Comparison of non-crosslinked PE to radiation crosslinked PF

Non-crosslinked polyethylene	Radiation crosslinked polyethylene
In temperature over +120°C gets softened and thaws	In temperature over +120°C gets its initial form ("shape memory"), gets soft and flexible
Maximum operation temperature up to +70°C	Maximum operation temperature up to +135°C
Does not resist thermal shock (over 4 hours)	Withstands thermal shock up to +200°C (even up to +250°C)
Susceptible for stress corrosion	Fully stress corrosion resistant
Low resistance to material creeping	High resistance to material creeping (in low temperatures)
Resistant to chemical factors	Resistant to aggressive chemical factors
Soluble in solvents	Almost non-soluble in solvents (susceptible for swelling)
Low mechanical resistance	High mechanical resistance
Resistant to incomplete discharges	Highly resistant to incomplete discharges







#### Tools

The heat shrink products should be shrunk with hot-air blowers, gas heating torches and other equipment able to reach the temperature of over +120°C.

# Installation of heat shrink tubes: thin wall, medium wall and thick wall

# Prepare the surface of the object on which the heat shrink tube will be installed:

- 1. Un-dust and degrease the surface of the object, e.g. with a non-oil solvent
- 2. The PVC cable surface should be ground with a piece of abrasive cloth and heated up
- 3. Metal surfaces should be polished with abrasive cloth and heated up.

#### Prepare the heat shrink tube:

1. Choose the tube with the required insulation parameters and diameter (the diameter of the recovered heat shrink tube should be smaller than the circumference of the object).

#### Shrinking:

- 1. Slide the heat shrink tube.
- Set the temperature of hot-air blower between +120°C and +200°C.
   The shrinking temperature should not exceed +200°C which could cause local overheating of the material.
- 3. Start the shrinking process from the middle of the tube with constant round movements around the tube to achieve steady shrink.
  - The middle part of the tube should shrink down and stick closely to the object.
- 4. Shrink the ends of the tube with constant movements from the middle towards the ends. Properly shrunk tube should be smooth, with no bulges and notches.
- 5. If the installed tube is a double layer tube with adhesive the adhesive should flow out at the ends of the heat shrink tube.
- 6. Leave the shrunk tube to cool down.





# Installation of heat shrink tube of large diameter on posts (renovation)

#### Prepare the post:

- Dismantle all the post's elements, e.g. lighting elements, for better heat shrink tube installment.
- 2. Clean and apply the ground coating on the bare part of the post.

### Prepare the heat shrink tube:

Choose the heat shrink tube with the required parameters and diameter.

#### Shrinking:

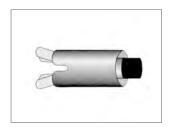
- 1. Slide the heat shrink tube.
- Set the temperature of hot air blower between +120°C and +200°C.
   The shrinking temperature should not exceed +200°C which could cause local overheating of the material.
- Start the shrinking process from the bottom of the tube with constant round movements around the tube to achieve steady shrink.
  - The bottom part of the tube should shrink down and stick closely to the object.
- 4. Shrink the other part of the tube with constant movements from the bottom up. Properly shrunk tube should be smooth, with no bulges and notches.
- If the installed tube is a double layer tube with adhesive the adhesive should flow out at the ends of the heat shrink tube.
- 6. Leave the shrunk tube to cool down.



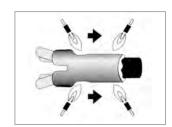
Technical details and operational properties of heat shrink tubes

# Installation of heat shrink breakout boots

Installation steps are the similar to installation of thin wall, medium wall and thick wall heat shrink tubes (see page 7).





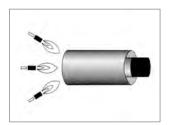


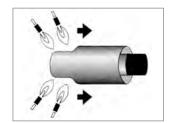


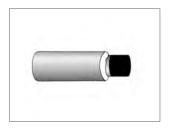
# Installation of heat shrink end caps

Start the heating of the heat shrink end cap from the top of it towards the end. Keep the continuous movements of the heat torch or blower to gain the steady shrink. After proper installation the adhesive should flow out at the end of the end cap.









# — — — — Technical details and operational properties of heat shrink tubes

# Material

The heat shrink tubes by RADPOL are made of polyolefin (e.g. polyethylene) radiation crosslinked. They excellent insulate and seal. They play roles of protective layers, anti-corroding shields and decorative elements.

Used as a part of the final product they increase its technical level. The heat shrink tubes protect against changing weather conditions and underground aggressive factors. They make a very good protection against moist.

They adopt the shape of the object on which they are shrank and improve its mechanical protection. RADPOL heat shrink tubes have very high shrink strength. They don't undergo fatigue corrosion and are resistant to UV radiation, fungus, mould and other corrosive agents; urine, salts, majority of oils, petrol, alcohols and grease.

#### Colours

Heat shrink tubes of regular colours are shown in the tables and product descriptions. (see pages 12 to 16).

The non-standard colours are produced on request.

Heat shrink tubes of large diameters have black colour.

#### Lengths

Standard length (if not stated) is 1 meter.

Thin wall tubes - possibility on request of cutting into various length e.g. 2 cm, 20 cm etc. or producing on 50, 100, 300 m spools.

Medium, thick wall tubes and tubes of large dimensions to the size of 195/90 - possibility on request manufacturing longer than 1 meter.

On special demand we make tubes of different diameters and insulation properties.

We guarantee short realizations of non standard products' orders.

# Shrink temperature

Shrink temperature is between +90°C to +200°C.

In case of temperature higher than +200°C, the overheating may occur.

#### Storage

Heat shrink products should be protected against direct sunray and stored in closed warehouses in temperatures between -10°C to +35°C.



°C 115 115 95
°C do do do +105 +125 +105
% ±10 ±10 ±10
MPa 15 15 15
% 350 350 450
°C 136 158 136
MPa 12 12 13
% 250 250 300
°C dripping, dripping, dripping, breaking breaking breaking and wall and wall spreading spreading
°C 136 158 136 %
doesn't doesn't doesn't corrode
°C doesn't doesn't doesn't break in break in break in temp55 temp55 temp40
inflammable inflammable inflammable
% 0,1 0,1 0,1
kV/mm 16 16 20
Ωm 10 ¹² 10 ¹² 10 ¹²



Technical details and operational properties of adhesive and mastic

☐ ☐ ☐ ☐ ☐ ☐ ☐ Technical details and operational properties of adhesive for tubes RCK, RPK (to the dimension of 63/19)

#### Material

fusible thermoplastic adhesive, polyamide-based

#### Softening point

+115°C ±10(ASTM D3461).

#### Viscosity

testing temperature +160°C result 140 000 MPas ±70 000 (wg ASTM D3236).

#### Water absorption

less than 0,5%

#### Working temperature of tubes with adhesive

from -25°C to +105°C.

— — — — Technical details and operational properties of adhesive for tubes RPK, RGK, RDK (above the dimension of 63 ∕ 19)

#### Material

fusible thermoplastic adhesive, copolymer EVA-based.

#### Peel strength (from PE)

Min. 125N/25 mm (PN-EN 12068:2002).

#### Viscosity

testing temperature +160°C result 16 000 ±1500MPas testing temperature +180°C result 8 750 ±750 MPas ±70 000 (PN-ISO 2555:1999).

### Softening point

76 ±3°C ±10(PN-EN 1238-2001).

# Working temperature of tubes with adhesive

from -15°C to +70°C.

☐ ☐ ☐ ☐ ☐ ☐ ☐ Technical details and operational properties of mastic

#### Adherence to degreased steel plate

maximum 2 mm (tested in temperature 70°C after 2 hours, angle 45° acc. to PN-B-24008:1997.

### Ageing changes - after 2 hours in temperature +120°C:

 change of surface (gasification, surface fracturing and changing, lost of surface adhesion) – non-allowable

#### Working temperature

from -40°C to +80°C.



# — — — Heat shrink thin wall tubes, medium wall tubes, thick wall tubes and tubes of large diameter

Types of heat shrink tubes



Heat shrink tube type	Thin wa	ll tubes	Medium	wall tubes	Tick w	all tubes	Tube	s of large dia	meters
neat silllik tube type	No adhesive	Adhesive layered	No adhesive	Adhesive layered	No adhesive	Adhesive layered	No adhesive	Adhesive layered	Mastic layered
Standard +105°C	RC, RCE	RCK	RP	RPK	RG	RGK	RD	RDK	RDM
Standard +105°C, self-extinguishing	RCS, RCES	-	RPS	RPKS	RGS	RGKS	-	-	-
Heat resistant +125°C	RCH1, RCEH1	-	RPH1	RPKH1	-	_	-	-	-
Heat resistant +125°C, self-extinguishing	RCH1S, RCEH1S	-	RPH1S	RPKH1S	-	-	-	-	-
Heat resistant +135°C, self-extinguishing	RCEH2S	RCEH2KS	-	-	-	-	-	-	-

NEW

Thin wall tubes		
Thin wall tubes, standard	+105°C	RC
Thin wall tubes, standard	+105°C, flexible	RCE
Thin wall tubes, standard	+105°C, adhesive-layered	RCK
Thin wall tubes, standard	+105°C, self-extinguishing	RCS
Thin wall tubes, standard	+105°C, flexible, self-extinguishing	RCES
Thin wall tubes, heat-resistant	+125°C	RCH1
Thin wall tubes, heat-resistant	+125°C, flexible	RCEH1
Thin wall tubes, heat-resistant	+125°C, self-extinguishing	RCH1S
Thin wall tubes, heat-resistant	+125°C, flexible, self-extinguishing	RCEH1S
Thin wall tubes, heat-resistant	+135°C, flexible, quick-shrink, self-extinguishing	RCEH2S
Thin wall tubes, heat-resistant	+135°C, flexible, quick-shrink, self-extinguishing, adhesive-layered	RCEH2KS

Medium wall tubes		
Medium wall tubes, standard	+105°C	RP
Medium wall tubes, standard	+105°C, adhesive-layered	RPK
Medium wall tubes, standard	+105°C, self-extinguishing	RPS
Medium wall tubes, standard	+105°C, self-extinguishing, adhesive-layered	RPKS
Medium wall tubes, heat-resistant	+125°C	RPH1
Medium wall tubes, heat-resistant	+125°C, adhesive-layered	RPKH1
Medium wall tubes, heat-resistant	+125°C, self-extinguishing	RPH1S
Medium wall tubes, heat-resistant	+125°C, adhesive-layered, self-extinguishing	RPKH1S

Thick wall tubes		
Thick wall tubes, standard	+105°C	RG
Thick wall tubes, standard	+105°C, adhesive-layered	RGK
Thick wall tubes, standard	+105°C, self-extinguishing	RGS
Thick wall tubes, standard	+105°C, self-extinguishing, adhesive-layered	RGKS

Tubes of large diameters		
Tubes of large diameters	+105°C	RD
Tubes of large diameters	+105°C, adhesive-layered	RDK
Tubes of large diameters	+105°C, with mastic	RDM





# RC - Thin wall tubes, standard +105°C

Product	black	red	blue	green	yellow	mixed	yellow-green	Dimer	nsions in	[mm]	Package	Spool
type	index	index	index	index	index	index	index	D	d	s	[pcs of 1m]	lengths [m]
RC 1,6 / 0,8	4-004-00	4-006-00	4-007-00	х	X	4-009-00	x	1,6	0,8	0,43	100	100
RC 2,4 / 1,2	4-018-00	4-020-00	4-021-00	4-024-00	4-025-00	4-023-00	4-026-00	2,4	1,2	0,51	100	100
RC 3,2 / 1,6	4-032-00	4-034-00	4-035-00	4-038-00	4-039-00	4-037-00	4-040-00	3,2	1,6	0,51	100	100
RC 4/1	4-046-00	4-048-00	4-049-00	X	X	4-051-00	X	4,0	1,0	1,00	100	100
RC 4,8 / 2,4	4-060-00	4-048-00	4-063-00	4-067-00	4-069-00	4-065-00	4-071-00	4,8	2,4	0,51	100	100
RC 6,4 / 3,2	4-078-00	4-080-00	4-081-00	4-085-00	4-087-00	4-083-00	4-089-00	6,4	3,2	0,64	100	100
RC 8 / 2	4-096-00	4-098-00	4-099-00	4-102-00	4-103-00	4-101-00	4-104-00	8,0	2,0	1,00	100	100
RC 9,5 / 4,8	4-111-00	4-113-00	4-114-00	4-117-00	4-118-00	4-116-00	4-119-00	9,5	4,8	0,64	100	100
RC 12,7 / 6,4	4-126-00	4-128-00	4-129-00	4-132-00	4-133-00	4-131-00	4-134-00	12,7	6,4	0,64	100	100
RC 15,8 / 7,9	4-050-00	4-086-00	X	Х	X	X	X	15,8	7,9	0,76	50	100
RC 19 / 9,5	4-141-00	4-143-00	4-144-00	4-147-00	4-148-00	4-146-00	4-149-00	19,0	9,5	0,92	50	100
RC 25,4 / 12,7	4-155-00	4-157-00	4-158-00	4-161-00	4-162-00	4-160-00	4-163-00	25,4	12,7	0,89	50	100
RC 31,8 / 15,9	4-070-00	Х	Х	Х	Х	Х	X	31,8	15,9	1,02	50	50
RC 38 / 19	4-170-00	4-172-00	4-173-00	4-176-00	4-177-00	4-175-00	4-178-00	38,0	19,0	1,13	50	50
RC 51 / 25,5	4-184-00	4-186-00	4-187-00	Х	х	4-189-00-2	X	51,0	25,5	1,14	40	50
RC 76 / 38	4-198-00	X	X	X	X	X	X	76,0	38,0	2,30	20	-
RC 102 / 51	4-208-00	Х	Х	Х	х	х	X	102,0	51,0	2,00	20	-

Standard length = 1 meter

Product	transparent	white	violet	brown	gray	orange	Dime	ensions in l	mm1	Package	Spool
type	index	index	index	index	index	index	D	d	s	[pcs of 1m]	lengths [m]
RC 1,6 / 0,8	4-002-00	X	X	X	X	X	1,6	0,8	0,43	100	100
RC 2,4 / 1,2	4-016-00	X	X	4-017-00	X	x	2,4	1,2	0,51	100	100
RC 3,2 / 1,6	4-030-00	4-029-00	х	4-031-00	X	х	3,2	1,6	0,51	100	100
RC 4/1	X	x	x	X	X	x	4,0	1,0	1,00	100	100
RC 4,8 / 2,4	4-058-00	4-057-00	4-061-00	4-059-00	X	x	4,8	2,4	0,51	100	100
RC 6,4 / 3,2	4-076-20	4-075-00	Х	х	х	x	6,4	3,2	0,64	100	100
RC 8 / 2	4-094-00	4-093-00	x	X	4-333-00	x	8,0	2,0	1,00	100	100
RC 9,5 / 4,8	4-109-00	4-108-00	x	4-110-00	4-120-00	x	9,5	4,8	0,64	100	100
RC 12,7 / 6,4	4-124-00	4-123-00	x	X	X	4-130-00	12,7	6,4	0,64	100	100
RC 15,8 / 7,9	4-066-00	x	x	x	4-137-00	x	15,8	7,9	0,76	50	100
RC 19 / 9,5	4-139-00	4-138-00	x	X	X	4-145-00	19,0	9,5	0,92	50	100
RC 25,4 / 12,7	4-153-00	x	4-156-00	4-154-00	X	X	25,4	12,7	0,89	50	100
RC 31,8 / 15,9	X	x	x	X	X	x	31,8	15,9	1,02	50	50
RC 38 / 19	4-168-00	x	4-171-00	Х	X	x	38,0	19,0	1,13	50	50
RC 51 / 25,5	4-182-00	X	X	X	X	x	51,0	25,5	1,14	40	50
RC 76 / 38	X	X	Х	X	X	x	76,0	38,0	2,30	20	-
RC 102 / 51	x	x	x	x	x	x	102,0	51,0	2,00	20	-

x - non standard product. Standard length = 1 meter. Mixed - tubes of 5 different colors.

Tubes on spools are supplied round or flat up to dimension 12,7/6,4. Tubes on spools of larger dimensions than 12,7/6,4 are supplied flat. Tubes of other colors and length (cut into pieces) are supplied on special request - please contact our Export Dept.

# RCK - Thin wall tubes, standard +105°C, adhesive-layered

Product	black	mixed	transparent	red	yellow	blue	green	Dimen	ensions in [mm]		Adhesive layer thickness	Package
type	index	index	index	index	index	index	index	D	d		after recovery [mm] - S1	[pcs of 1m]
RCK 3 / 1	4-963-03	4-963-11	х	х	х	х	Х	3	1	1,00	0,40	10
RCK 4 / 1	4-964-03	4-964-11	4-964-01	X	X	X	X	4	1	1,00	0,40	10
RCK 6/2	4-965-03	4-965-11	4-965-01	x	x	X	х	6	2	1,20	0,50	10
RCK 8 / 2	4-966-03	4-966-11	4-966-01	X	4-966-09	X	X	8	2	1,20	0,50	10
<b>RCK 12/3</b>	4-967-03	4-967-10	4-967-01	x	x	x	х	12	3	1,20	0,50	10

x - non standard product. Standard length = 1 meter. Mixed - tubes of 5 different colors.

Tubes of other colors and length (cut into pieces) are supplied on special request - please contact our Export Dept.

# Overprint on heat shrink tubes

On special requests we make ink method overprint on heat shrink tubes in white or black color - please contact our Export Dept.







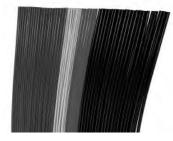
- D minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery
- S1 adhesive layer thickness after entire recovery



### NEW

# Mix of heat shrink tubes in phase colors

One package contains most popular colors used by fitters and electricians (50 m of each dimension).



		Mix of phase colors								
Product type	index		P	ackage [pcs of 1r	n]					
		black	brown	blue	red	yellow-green				
RC 6,4/3,2x1-MF	4-083-00-1	20	10	10	5	5				
RC 8/2x1-MF	4-101-00-1	20	10	10	5	5				
RC 9,5/4,8x1-MF	4-116-00-1	20	10	10	5	5				
RC 12,7/6,4x1-MF	4-131-00-1	20	10	10	5	5				
RC 19/9,5x1-MF	4-146-00-1	20	10	10	5	5				
RC 25,4/12,7x1-MF	4-160-00-1	20	10	10	5	5				
RC 38/19x1-MF	4-175-00-1	20	10	10	5	5				

# RCE - Thin wall tubes, standard +105°C, flexible

Product	black	red	blue	yellow	mixed	transparent	brown	Dime	nsions	[mm]	Package	Spool
type	index	index	index	index	index	index	index	D	d		[pcs of 1m]	lengths [m]
RCE 1,6 / 0,8	х	Х	х	Χ	Х	Х	Х	1,6	0,8	0,43	100	100
RCE 2,4 / 1,2	4-10-002	Х	X	Χ	Χ	X	X	2,4	1,2	0,51	100	100
RCE 3,2 / 1,6	4-10-003	4-10-025	X	Χ	4-10-018	Х	Х	3,2	1,6	0,51	100	100
RCE 4 / 1	X	Х	X	Χ	X	X	X	4,0	1,0	1,00	100	100
RCE 4,8 / 2,4	4-10-005	4-060-07-00	Х	Х	4-10-019	Х	Х	4,8	2,4	0,51	100	100
RCE 6,4 / 3,2	4-085-07-01	Х	X	Χ	4-10-020	X	X	6,4	3,2	0,64	100	100
RCE 8 / 2	4-096-05-1	Х	X	Χ	Х	Х	Х	8,0	2,0	1,00	100	100
RCE 9,5 / 4,8	4-108-05-00	Х	4-10-059	4-108-08-00	4-10-022	X	4-108-09-00	9,5	4,8	0,64	100	100
RCE 12,7 / 6,4	4-126-05-00	Х	X	Χ	Х	Х	Х	12,7	6,4	0,64	100	100
RCE 19 / 9,5	X	Х	X	Χ	X	4-10-017	X	19,0	9,5	0,92	50	100
RCE 25,4 / 12,7	4-10-008	Х	Х	Χ	Х	Х	Х	25,4	12,7	0,89	50	100
RCE 38 / 19	4-10-009	Х	X	Х	Х	4-10-014	Х	38,0	19,0	1,13	50	50
RCE 51 / 25,5	х	Х	Х	Х	Х	Х	Х	51,0	25,5	1,14	40	50
RCE 76 / 38	X	Х	X	Х	Х	Х	Х	76,0	38,0	2,30	20	-
RCE 102 / 51	х	Х	Х	Х	Х	Х	Х	102,0	51,0	2,00	20	-

# RCS - Thin wall tubes, standard +105 °C, self-extinguishing

Product	black	red	blue	green	yellow	white	Dime	nsions	[mm]	Package	Spool
type	index	index	index	index	index	index	D	d	s	[pcs of 1m]	lengths [m]
RCS 1,6 / 0,8	4-254-00	х	х	x	х	х	1,6	0,8	0,43	100	100
RCS 2,4 / 1,2	4-269-00	X	X	X	X	X	2,4	1,2	0,51	100	100
RCS 3,2 / 1,6	4-284-00	X	x	x	x	4-281-00	3,2	1,6	0,51	100	100
RCS 4 / 1	X	X	X	X	X	X	4,0	1,0	1,00	100	100
RCS 4,8 / 2,4	4-299-00	4-295-00	4-304-00	4-310-00	4-308-00	4-296-00	4,8	2,4	0,51	100	100
RCS 6,4 / 3,2	4-317-00	4-320-00	4-318-00	X	X	4-314-00	6,4	3,2	0,64	100	100
RCS 8 / 2	X	X	X	X	X	X	8,0	2,0	1,00	100	100
RCS 9,5 / 4,8	4-350-00	X	X	X	X	X	9,5	4,8	0,64	100	100
RCS 12,7 / 6,4	4-365-00	X	X	X	X	X	12,7	6,4	0,64	100	100
RCS 19 / 9,5	4-380-00	X	X	X	X	X	19,0	9,5	0,92	50	100
RCS 25,4 / 12,7	X	X	X	X	x	X	25,4	12,7	0,89	50	100
RCS 38 / 19	4-410-00	X	X	X	X	X	38,0	19,0	1,13	50	50
RCS 51 / 25,5	X	X	x	x	x	X	51,0	25,5	1,14	40	50
RCS 76 / 38	X	X	X	x	X	X	76,0	38,0	2,30	20	-
RCS 102 / 51	4-455-00	x	x	x	x	x	102,0	51,0	2,00	20	-

x - non standard product.

Standard length = 1 meter.

Mixed - tubes of 5 different colors.

Tubes on spools are supplied round or flat up to dimension 12,7/6,4. Tubes on spools of larger dimensions than 12,7/6,4 are supplied flat. Tubes of other colors and length (cut into pieces) are supplied on special request - please contact our Export Dept.

From dimension 51/25,5 tubes are packed by 10 pcs.

Overprint on heat shrink tubes: On special requests we make ink method overprint on heat shrink tubes in white or black color (as shown on page 12) - please contact our Export Dept.

RCES - Thin wall tubes, standard +105 °C, flexible, self-extinguishing

Product	black	Dime	ensions [	mm]	Package	Spool
type	index	D	d		[pcs of 1m]	lengths [m]
RCES 1,6 / 0,8	Х	1,6	0,8	0,43	100	100
RCES 2,4 / 1,2	X	2,4	1,2	0,51	100	100
RCES 3,2 / 1,6	х	3,2	1,6	0,51	100	100
RCES 4 / 1	X	4,0	1,0	1,00	100	100
RCES 4,8 / 2,4	4-973-03-00	4,8	2,4	0,51	100	100
RCES 6,4 / 3,2	4-975-03-00	6,4	3,2	0,64	100	100
RCES 8 / 2	4-976-03-00	8,0	2,0	1,00	100	100
RCES 9,5 / 4,8	4-977-03-00	9,5	4,8	0,64	100	100
RCES 12,7 / 6,4	4-978-03-00	12,7	6,4	0,64	100	100
RCES 19 / 9,5	X	19,0	9,5	0,92	50	100
RCES 25,4 / 12,7	X	25,4	12,7	0,89	50	100
RCES 38 / 19	X	38,0	19,0	1,13	50	50
RCES 51 / 25,5	X	51,0	25,5	1,14	40	50
RCES 76 / 38	X	76,0	38,0	2,30	20	-
RCES 102 / 51	Х	102,0	51,0	2,00	20	-



RCH1 - Thin wall tubes, heat-resistant +125°C

RCEH1 - Thin wall tubes, heat-resistant +125°C, flexible

RCH1S - Thin wall tubes, heat-resistant +125°C, self-extinguishing

Product	black	Product	black	Product	black	Dim	ensions [	mm]	Package	Spool
type	index	type	index	type	index	D	d		[pcs of 1m]	lengths [m]
RCH1 1,6 / 0,8	X	RCEH1 1,6 / 0,8	X	RCH1S 1,6 / 0,8	X	1,6	0,8	0,43	100	100
RCH1 2,4 / 1,2	X	RCEH1 2,4 / 1,2	X	RCH1S 2,4 / 1,2	X	2,4	1,2	0,51	100	100
RCH1 3,2 / 1,6	X	RCEH1 3,2 / 1,6	X	RCH1S 3,2 / 1,6	X	3,2	1,6	0,51	100	100
RCH1 4 / 1	X	RCEH1 4 / 1	X	RCH1S 4 / 1	X	4,0	1,0	1,00	100	100
RCH1 4,8 / 2,4	4-550-00	RCEH1 4,8 / 2,4	X	RCH1S 4,8 / 2,4	4-799-00	4,8	2,4	0,51	100	100
RCH1 6,4 / 3,2	X	RCEH1 6,4 / 3,2	X	RCH1S 6,4 / 3,2	X	6,4	3,2	0,64	100	100
RCH1 8 / 2	X	RCEH1 8 / 2	X	RCH1S 8 / 2	X	8,0	2,0	1,00	100	100
RCH1 9,5 / 4,8	X	RCEH1 9,5 / 4,8	X	RCH1S 9,5 / 4,8	X	9,5	4,8	0,64	100	100
RCH1 12,7 / 6,4	X	RCEH1 12,7 / 6,4	X	RCH1S 12,7 / 6,4	4-850-00	12,7	6,4	0,64	100	100
RCH1 19 / 9,5	X	RCEH1 19 / 9,5	X	RCH1S 19 / 9,5	X	19,0	9,5	0,92	50	100
RCH1 25,4 / 12,7	X	RCEH1 25,4 / 12,7	X	RCH1S 25,4 / 12,7	X	25,4	12,7	0,89	50	100
RCH1 38 / 19	X	RCEH1 38 / 19	X	RCH1S 38 / 19	X	38,0	19,0	1,13	50	50
RCH1 51 / 25,5	X	RCEH1 51 / 25,5	x	RCH1S 51 / 25,5	X	51,0	25,5	1,14	40	50
RCH1 76 / 38	X	RCEH1 76 / 38	X	RCH1S 76 / 38	X	76,0	38,0	2,30	20	-
RCH1 102 / 51	X	RCEH1 102 / 51	X	RCH1S 102 / 51	X	102,0	51,0	2,00	20	-

x- non-standard product, available on request. Standard length = 1 meter.

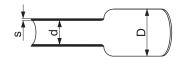
Tubes on spools are supplied round or flat up to dimension 12,7/6,4.

Tubes on spools of larger dimensions than 12,7/6,4 are supplied flat.

Other lengths of tubes are supplied on special request - please contact our Export Dept.

Technical and operational properties - see page 9.

Overprint on heat shrink tubes: On special requests we make ink method overprint on heat shrink tubes in white or black color (as shown on page 12) - please contact our Export Dept.



- D minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery

# RCEH1S - Thin wall tubes, heat-resistant +125°C, flexible, self-extinguishing

	Product	black		Dimensions [mm]		Package	Spool
	type	index	D	d		[pcs of 1m]	[m]
	RCEH1S 1,6 / 0,8	X	1,6	0,8	0,43	100	100
	RCEH1S 2,4 / 1,2	4-985-01	2,4	1,2	0,51	100	100
	RCEH1S 3,2 / 1,6	4-985-02	3,2	1,6	0,51	100	100
	RCEH1S 4 / 1	X	4,0	1,0	1,00	100	100
	RCEH1S 4,8 / 2,4	x	4,8	2,4	0,51	100	100
	RCEH1S 6,4 / 3,2	X	6,4	3,2	0,64	100	100
	RCEH1S 8 / 2	x	8,0	2,0	1,00	100	100
	RCEH1S 9,5 / 4,8	X	9,5	4,8	0,64	100	100
	RCEH1S 12,7 / 6,4	X	12,7	6,4	0,64	100	100
	RCEH1S 19 / 9,5	4-985-09	19,0	9,5	0,92	50	100
	RCEH1S 25,4 / 12,7	X	25,4	12,7	0,89	50	100
	RCEH1S 38 / 19	X	38,0	19,0	1,13	50	50
d	RCEH1S 51 / 25,5	X	51,0	25,5	1,14	40	50
е	RCEH1S 76 / 38	X	76,0	38,0	2,30	20	-
	RCFH1S 102 / 51	Y	102.0	51.0	2 00	20	-

x - non-standard product, available on request.

**NEW** 

# RCEH2S - Thin wall tubes, heat-resistant +135°C, flexible, quick-shrink, self-extinguishing

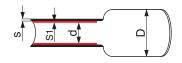
		,		,	7 1	,	5
4	Product	black		Dimensions [mm]		Package	Spool
	type	index	D	d		[pcs of 1m]	[m]
	RCEH2S 1,6 / 0,8	Х	1,6	0,8	0,43	100	100
	RCEH2S 2,4 / 1,2	X	2,4	1,2	0,51	100	100
	RCEH2S 3,2 / 1,6	X	3,2	1,6	0,51	100	100
	RCEH2S 4 / 1	X	4,0	1,0	1,00	100	100
	RCEH2S 4,8 / 2,4	X	4,8	2,4	0,51	100	100
	RCEH2S 6,4 / 3,2	X	6,4	3,2	0,64	100	100
	RCEH2S 8 / 2	X	8,0	2,0	1,00	100	100
	RCEH2S 9,5 / 4,8	X	9,5	4,8	0,64	100	100
	RCEH2S 12,7 / 6,4	X	12,7	6,4	0,64	100	100
	RCEH2S 19 / 9,5	X	19,0	9,5	0,92	50	100
	RCEH2S 25,4 / 12,7	X	25,4	12,7	0,89	50	100
	RCEH2S 38 / 19	X	38,0	19,0	1,13	50	50
	RCEH2S 51 / 25,5	X	51,0	25,5	1,14	40	50
)	RCEH2S 76 / 38	X	76,0	38,0	2,30	20	-
	RCEH2S 102 / 51	X	102.0	51.0	2.00	20	-

x - non-standard product, available on request.

**NEW** 

# RCEH2KS - Thin wall tubes, heat resistant +135 C, flexible, quick-shrink, self-extinguishing, adhesive-layered

Product	black	Dimer	nsions	[mm]	Adhesive layer thickness	Package	Spool
type	index	D	d		after recovery [mm] - S1	[pcs of 1m]	[m]
RCEH2KS 3 / 1	X	3	1	1,00	0,40	10	100
RCEH2KS 4 / 1	X	4	1	1,00	0,40	10	100
<b>RCEH2KS 6 / 2</b>	X	6	2	1,20	0,50	10	100
RCEH2KS 8 / 2	X	8,0	2,0	1,20	0,50	10	100
RCEH2KS 12 / 3	X	12,0	3,0	1,20	0,50	10	100



- D minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery

x - non-standard product, available on request.

S1 - adhesive layer thickness after entire recovery





# RP - Medium wall tubes, standard +105°C RPK - Medium wall tubes, standard +105°C, adhesive-layered

			•			,		
1	Product	black	Product	black	Di	mensions (	mm]	Package
	type	indeks	type	indeks	D	d		[pcs of 1m]
	RP 9 / 3	5-004-00	RPK 9 / 3	5-503-00	9	3	2,00	50
	RP 12 / 4	5-018-00	RPK 12 / 4	5-518-00	12	4	2,00	50
			RPK 17/3	5-871-00	17	3	2,50	50
	RP 18 / 6	5-033-00	RPK 18 / 6	5-533-00	18	6	2,00	50
	RP 22 / 6	5-042-00	RPK 22 / 6	5-542-00	22	6	2,00	50
	RP 25 / 10	5-048-00	RPK 25 / 10	5-548-00	25	10	2,00	50
	RP 30 / 8	5-043-00	RPK 30 / 8	5-543-00	30	8	2,50	30
	RP 35 / 12	5-044-00	RPK 35 / 12	5-544-00	35	12	2,00	30
	RP 40 / 16	5-078-00	RPK 40 / 16	5-578-00	40	16	2,00	50
	RP 52 / 20	5-093-00	RPK 52 / 20	5-593-00	52	20	2,50	40
	RP 63 / 19	5-045-00	RPK 63 / 19	5-545-00	63	19	2,50	30
	RP 80 / 35	5-119-00	RPK 80 / 35	5-623-00	80	35	4,00	20
	RP 103 / 45	5-132-00	RPK 103 / 45	5-638-00	103	45	4,50	15
	RP 132 / 58	5-147-00	RPK 132 / 58	5-653-00	132	58	4,50	10



# RPS - Medium wall tubes, standard +105°C, self-extinguishing RPKS - Medium wall tubes, standard +105°C, self-extinguishing, adhesive-layered

				U	0,		,
Product	black	Product	black	Di	mensions (	mm]	Package
type	indeks	type	indeks	D	d		[pcs of 1m]
RPS 9 / 3	X	RPKS 9 / 3	5-704-00	9	3	2,00	50
RPS 12 / 4	X	RPKS 12 / 4	5-719-00	12	4	2,00	50
RPS 18 / 6	X	<b>RPKS 18 / 6</b>	X	18	6	2,00	50
RPS 22 / 6	X	<b>RPKS 22 / 6</b>	X	22	6	2,00	50
RPS 25 / 10	X	RPKS 25 / 10	5-749-00	25	10	2,00	50
RPS 30 / 8	X	RPKS 30 / 8	X	30	8	2,50	30
RPS 35 / 12	X	<b>RPKS 35 / 12</b>	5-744-00	35	12	2,00	30
RPS 40 / 16	X	RPKS 40 / 16	5-779-00	40	16	2,00	50
RPS 52 / 20	X	RPKS 52 / 20	5-794-00	52	20	2,50	40
RPS 63 / 19	X	<b>RPKS 63 / 19</b>	5-745-00	63	19	2,50	30
RPS 80 / 35	X	RPKS 80 / 35	5-824-00	80	35	4,00	20
RPS 103 / 45	X	RPKS 103 / 45	X	103	45	4,50	15
RPS 132 / 58	X	RPKS 132 / 58	X	132	58	4,50	10

Attention: RP(K)S 35/12 replaces RP(K)S 32/12, RP(K)S 63/19 replaces RP(K)S 63/27.

x - non standard product, available on special request. Standard length = 1 m, longer RP(K)S tubes available on special request.



# RPH1 - Medium wall tubes, heat-resistant +125°C RPKH1 - Medium wall tubes, heat-resistant +125 °C, adhesive-layered

Product	black	Product	black	Dir	mensions [	mm]	Package
type	indeks	type	indeks	D	d	s	[pcs of 1m]
RPH1 9 / 3	Х	RPKH1 9 / 3	Х	9	3	2,00	50
RPH1 12 / 4	X	RPKH1 12 / 4	X	12	4	2,00	50
RPH1 22 / 6	X	RPKH1 22 / 6	X	22	6	2,00	50
RPH1 25 / 10	X	RPKH1 25 / 10	X	25	10	2,00	50
RPH1 30 / 8	X	RPKH1 30 / 8	X	30	8	2,00	30
RPH1 35 / 12	X	RPKH1 35 / 12	X	35	12	2,50	30
RPH1 40 / 16	X	RPKH1 40 / 16	X	40	16	2,00	50
RPH1 52 / 20	X	RPKH1 52 / 20	X	52	20	2,00	40
RPH1 63 / 19	X	RPKH1 63 / 19	X	63	19	2,50	30
RPH1 80 / 35	X	RPKH1 80 / 35	X	80	35	2,50	20
RPH1 103 / 45	X	RPKH1 103 / 45	X	103	45	4,00	15
RPH1 132 / 58	X	RPKH1 132 / 58	X	132	58	4,50	10

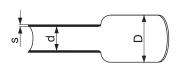
Attention: RP(K)H1 22/6 replaces RP(K)H1 18/6, RP(K)H1 35/12 replaces RP(K)H1 32/12, RP(K)H1 63/19 replaces RP(K)H1 63/27. x - non standard product, available on special request. Standard length = 1 m, longer RP(K)H1 tubes available on special request



# RPH1S - Medium wall tubes, heat-resistant +125°C, self-extinguishing RPKH1S - Medium wall tubes, heat-resistant +125°C, adhesive-layered, self-extinguishing

					•		_
Product	black	Product	black	Dimensions [mm]		mm]	Package
type	indeks	type	indeks	D	d		[pcs of 1m]
RPH1S 9 / 3	Х	RPKH1S 9 / 3	Х	9	3	2,00	50
RPH1S 12 / 4	X	RPKH1S 12 / 4	X	12	4	2,00	50
RPH1S 22 / 6	X	RPKH1S 22 / 6	X	22	6	2,00	50
RPH1S 25 / 10	X	RPKH1S 25 / 10	X	25	10	2,00	50
RPH1S 30 / 8	X	RPKH1S 30 / 8	X	30	8	2,50	30
RPH1S 35 / 12	X	RPKH1S 35 / 12	X	35	8	2,00	30
RPH1S 40 / 16	X	RPKH1S 40 / 16	X	40	16	2,00	50
RPH1S 52 / 20	X	RPKH1S 52 / 20	X	52	20	2,50	40
RPH1S 63 / 19	X	RPKH1S 63 / 19	X	63	19	2,50	30
RPH1S 80 / 35	X	RPKH1S 80 / 35	X	80	35	4,00	20
RPH1S 103 / 45	X	RPKH1S 103 / 45	X	103	45	4,50	15
RPH1S 132 / 58	X	RPKH1S 132 / 58	X	132	58	4.50	10

Attention: RP(K)H1S 22/6 replaces RP(K)H1S 18/6, RP(K)H1S 35/12 replaces RP(K)H1S 32/12, RP(K)H1S 63/19 replaces RP(K)H1S 63/27. x - non standard product, available on special request. Standard length = 1 m, longer RP(K)H1S tubes available on special request.



D - minimum internal diameter before recovery

d - maximum internal diameter after recovery

s - wall thickness after entire recovery



RG - Thick wall tubes, standard +105°C

RGK - Thick wall tubes, standard +105°C, adhesive-layered

1	Product	black	Product	black	Dime	nsions	[mm]	Package
	type	index	type	index	D	d	s	[pcs of 1m]
	RG 55 / 15	5-932-00	RGK 55 / 15	5-932-01	55	15	4,5	40
	RG 95 / 25	5-933-00	RGK 95 / 25	5-933-01	95	25	4,5	15
	RG 105 / 32	5-935-00	RGK 105 / 32	5-935-01	105	32	4,0	12
	RG 140 / 34	5-938-00	RGK 140 / 34	5-938-01	140	34	4,5	8

Attention: RG(K) 55/15 replaces RG(K) 50/18, RG(K) 95/25 replaces RG(K) 60/25 and 80/32,

RG(K) 105/32 replaces RG(K) 100/42, RG(K) 140/34 replaces RG(K) 128/55.

Standard length = 1 m, longer RG(K) tubes available on special request.

# RGS - Thick wall tubes, standard +105 $^{\circ}$ C, self-extinguishing RGKS - Thick wall tubes, standard +105 $^{\circ}$ C, self - extinguishing, adhesive-layered



 $\textbf{Attention:} \ RG(K)S\ 55/15\ replaces\ RG(K)S\ 50/18,\ \ RG(K)S\ 95/25\ replaces\ RG(K)S\ 60/25\ and\ 80/32, RG(K)S\ 95/25\ replaces\ RG(K)S\$ 

RG(K)S 105/32 replaces RG(K)S 100/42, RG(K)S 140/34 replaces RG(K)S 128/55.

Standard length = 1 m, longer RG(K)S tubes available on special request.



D - minimum internal diameter before recovery

d - maximum internal diameter after recovery

s - wall thickness after entire recovery

# □ □ □ □ □ □ □ □ DIY heat shrink kits

Meant for electricians, car fitters, handymen and other users who need handy sets of heat shrink tubes to DIY works. Sets consist of different colors short length tubes.







Type of Smallster			Type of heat shrink tube			
	name	index	content	length [mm]	quantity [pcs]	
			RC 2,4 / 1,2	50	6	
	PRC 1	6-009-01	RC 3,2 / 1,6	50	6	
	PRC I	6-009-01	RC 4,8 / 2,4	50	5	
			RC 6,4 / 3,2	50	5	
		6-009-02	RC 4,8 / 2,4	70	5	
	PRC 2		RC 6,4 / 3,2	70	5	
	PRC 2		RC 9,5 / 4,8	70	3	
			RC 12,7 / 6,4	70	3	
			RC 2,4 / 1,2	90	6	
			RC 3,2 / 1,6	90	6	
	DDC 0	0.000.00	RC 4,8 / 2,4	90	6	
	PRC 3	6-009-03	RC 6,4 / 3,2	90	6	
			RC 9,5 / 4,8	90	6	
			RC 12,7 / 6,4	90	6	

# PRC - Smallster rack

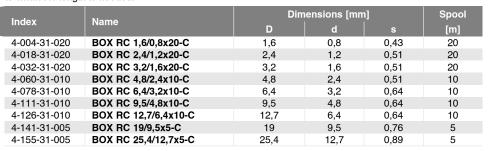
Product		Type of smallster		
name	index	content	quantity [pcs]	
		PRC 1	18	
PRC	PRC	PRC 2	15	
		PRC 3	9	



#### VIE/V/

# BOX - Thin wall tube on spools

Thin wall heat shrink tubes supplied on spools in convenient boxes. You may cut a piece of tube to whatever length is needed.



Standard colour - black. Other colours available on request – contact the Export Dept. Tubes' properties - see the **Technical and operational properties** of RC (page 9).



# ZDM 1, ZDM 2, ZDM 3 - DIY cases

		Case	ZDM 1	Case	ZDM 2	Case	ZDM 3
Content	Type of element	length	quantity	length	quantity	length	quantity
		[mm]	[pcs]	[mm]	[pcs]	[mm]	[pcs]
	RC 1,6 / 0,8	-	-	55	60	55	30
	RC 2,4 / 1,2	95	60	55	30	55	20
	RC 3,2 / 1,6	95	40	55	25	55	14
	RC 4,8 / 2,4	95	24	55	15	55	10
	RC 6,4 / 3,2	95	14	100	15	100	14
	RC 12,7 / 6,4	95	2	100	8	100	5
	RC 19 / 9,5	95	2	100	3	100	5
heat shrink tube	RC 25,4 / 12,7	95	2	-	-	-	-
	RC 2,4 / 1,2	195	3	-	-	-	-
	RC 3,2 / 1,6	195	2	-	-	-	-
	RC 4,8 / 2,4	195	3	-	-	-	-
	RC 6,4 / 3,2	195	2	-	-	-	-
	RC 9,5 / 4,8	195	1	100	8	100	8
	RC 12,7 / 6,4	195	1	-	-	-	-
	RP 12 / 4	-	-	100	6	100	4
coble lug	K 2,5	-	-	-	10	-	-
cable lug	K 6	-	-	-	-	-	10
copper ring cable lug	KOS 10	-	-	-	-	-	10
copper connection	flat male copper lug	-	-	-	10	-	10
lugs	flat female copper lug	-	-	-	10	-	10
copper compression	Z 2,5	-	-	-	-	-	20
connector	Z 4	-	-	-	-	-	20
tin and resin		-	-	1000	1	1000	1



Type of case				
name	indeks			
ZDM 1	6-015-01			
ZDM 2	6-015-01			
ZDM 3	6-015-01			

Case dimensions: 210 mm x 105 mm x 50 mm



# Dimension - width 59 cm - height 133 cm

- depth 34 cm

# KRC-2 - Stand with thin wall tubes

Comtons	Туре	Length	Quantity
Content	of tube	[mm]	[pcs]
	RC 1,6 / 0,8	1 000	30
	RC 2,4 / 1,2	1 000	40
	RC 3,2 / 1,6	1 000	70
	RC 4 / 1	1 000	40
	RC 4,8 / 2,4	1 000	70
	RC 6,4 / 3,2	1 000	60
	RC 8 / 2	1 000	45
heat shrink	RC 9,5 / 4,8	1 000	40
tubes	RC 12,7 / 6,4	1 000	30
	RC 19 / 9,5	1 000	15
	RC 25,4 / 12,7	1 000	15
	RC 38 / 19	1 000	5
	RCK 4 / 1	500	10
	RCK 6 / 2	500	10
	RCK 8 / 2	500	10
	RCK 12 / 3	500	10

Comfortable and nice-looking stand for warehouses, mega stores and shops contains a set of standard thin wall heat shrink tubes and adhesive-layered ones of various diameters and colours. New more durable package made of moisture-proof polyproplylene material exposes perfectly the variety of heat shrink tube offer. Additional dimension of heat shrink tube in the set - RCK 12/3.

#### NFW

Stand KRC-2			
name	index		
KRC-2	KRC-2		

- shrink temperature from +90°C to +200°C,
- quick and easy installation,
- high shrink strength,
- protection against moist,
- high resistance to changing weather conditions,
- higher safety and fine look after installation.



# Stand with heat shrink tubes Heat shrink tubes of large diameters

n ølt

Easier product identification.

Overprint with size on every tube.

# Dimension - width 59 cm

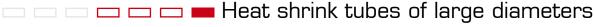
- height 133 cm - depth 34 cm KRPK-1 - Stand with medium wall adhesive-layered tubes

Content	Type of tube	length [mm]	quantity [pcs]
	RPK 9/3	1000	5
	RPK 12/4	1000	13
	RPK 17/3	1000	4
	RPK 18/6	1000	5
la a a a a la vival e	RPK 22/6	1000	5
heat shrink	RPK 25/10	1000	10
tubes	RPK 30/8	1000	4
	RPK 35/12	1000	5
	RPK 40/16	1000	5
	RPK 52/20	1000	4
	RPK 63/19	1000	4

_			
		Stand	KRPK-1
	name		Index
	KRPK-	-1	KRPK-1

- shrink temperature from +90°C to +200°C,
- overprint with dimension on all tubes,
- quick and easy installation,
- high shrink strength,
- possibility of cables' insulation reconstruction,
- protection against moist,
- high resistance to changing weather conditions and UV radiation.

Comfortable exposition cardboard contains a set of medium wall heat shrink tubes adhesive-layered in black colour. The stand is made of moisture-proof polypropylene material.





They are designed for insulation of metal elements, lampposts, masts, pipelines and elements of bridges. Due to high shrink ratio, they are a great insulation for cable culverts ends e.g. under the streets

RDK tubes are wholly adhesive-layered and RDM are supplied with mastic stripes at the ends. Both adhesive layer and mastic stripes are tight insulation and protect against any moist penetration under the heat shrink layer. The dimensions of RDK and RDM tubes are specially matched to the sizes of lamposts. They protect them effectively against salt, animals' urine and gases in the air.

**Properties** 

Working temperature from -55°C to 105°C.

Standard colour - black.

Standard length - 1 meter.

UV - resistant.

Up to the dimension 140/34 lengths > 1 m are possible.

RDK - Standard +105°C, adhesive-layered

RDM - Standard +105°C, with mastic

RD - Standard +105°C

ш	м	1 B	10
ш	ш	м	
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ш		113	
u	w	W	
		-	_
Adhesiv	∕e-layere	d tube	
name		index	
<b>RDK 76</b>	/ 18	5-920-01	

Adhesive-layere	d tube	Tube with mastic		Standard tube		Dim	ensions	[mm]	Package
name	index	name	index	name	index	D	d	s	[pcs of 1 m]
RDK 76 / 18	5-920-01	RDM 76 / 18	5-930-00	RD 76 / 18	5-920-00	76	18	4,0	15
RDK 95 / 25	5-921-01	RDM 95 / 25	5-931-10	RD 95 / 25	5-921-00	95	25	4,5	15
RDK 105 / 32	5-922-01	RDM 105 / 32	5-932-10	RD 105 / 32	5-922-00	105	32	4,0	12
RDK 140 / 34	5-924-01	RDM 140 / 34	5-934-10	RD 140 / 34	5-924-00	140	34	4,5	8
RDK 155 / 90	5-925-01	RDM 155 / 90	X	RD 155 / 90	X	155	90	2,9	1
RDK 175 / 90	5-926-01	RDM 175 / 90	X	RD 175 / 90	X	175	90	2,9	1
RDK 195 / 90	5-965-01-4	RDM 195 / 90	X	RD 195 / 90	X	195	90	2,5	1
RDK 225 / 90	5-964-01	RDM 225 / 90	X	RD 225 / 90	X	225	90	2,5	1
RDK 245 / 125	5-974-01	RDM 245 / 125	X	RD 245 / 125	X	245	125	2,8	1
RDK 255 / 125	5-975-01	RDM 255 / 125	X	RD 255 / 125	X	255	125	2,8	1
RDK 275 / 125	5-976-01	RDM 275 / 125	x	RD 275 / 125	X	275	125	2,8	1
RDK 300 / 125	5-977-01	RDM 300 / 125	X	RD 300 / 125	X	300	125	2,8	1
RDK 350 / 125	5-978-01	RDM 350 / 125	x	RD 350 / 125	X	350	125	3,0	1
RDK 390 / 200	5-979-01	RDM 390 / 200	X	RD 390 / 200	X	390	200	3,0	1
RDK 400 / 200	5-980-01	RDM 400 / 200	x	RD 400 / 200	X	400	200	3,0	1
RDK 440 / 200	5-981-01	RDM 440 / 200	X	RD 440 / 200	X	440	200	3,0	1
RDK 460 / 200	5-982-01	RDM 460 / 200	X	RD 460 / 200	X	460	200	3,0	1
RDK 500 / 200	5-983-01	RDM 500 / 200	X	RD 500 / 200	X	500	200	3,0	1
RDK 530 / 200	X	RDM 530 / 200	X	RD 530 / 200	X	530	200	3,0	1
RDK 560 / 250	X	RDM 560 / 250	X	RD 560 / 250	X	560	250	3,2	1
RDK 620 / 250	X	RDM 620 / 250	X	RD 620 / 250	X	620	250	3,2	1
RDK 710 / 250	X	RDM 710 / 250	X	RD 710 / 250	X	710	250	3,2	1
RDK 820 / 250	x	RDM 820 / 250	X	RD 820 / 250	x	820	250	4,0	1
RDK 920 / 250	X	RDM 920 / 250	X	RD 920 / 250	X	920	250	4,0	1
RDK 1040 / 250	X	RDM 1040 / 250	X	RD 1040 / 250	X	1040	250	4.0	1

**Attention:** RD(K/M) 76/18 replaces RD(K/M) 70/18, RD(K/M) 95/25 replaces RD(K/M) 80/25

RD(K/M) 105/32 replaces RD(K/M) 100/32, RD(K/M) 140/34 replaces RD(K/M) 130/42

 $RD(K/M) \ 155/90 \ replaces \ RD(K/M) 155/77, \ RD(K/M) \ 175/90 \ replaces \ RD(K/M) \ 175/77$ 

x - non standard product available on special request.

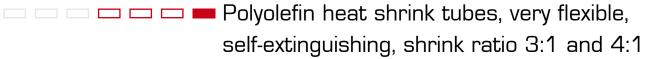
On special demand we can produce tubes of non standard sizes



- D minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery







**RC3S**: widely used for electrical insulation, making cable bundles and marking. They play a role of a good protector against corrosion and abrasion. 3:1 shrink ratio gives possibility to insulate objects of irregular shapes.

RC4S: designed for military industry, aviation and electronics.

They are used also for making and repairing cable bundles and joints.

Special formula and unique technology used during the production process.

These tubes can be easily assembled on the objects of big diameters and next shrinked down to small ferrule's dimension.

#### **Properties**

Excellent physical, chemical and electrical properties

Self-extinguishing (apart from transparent tubes)

Working temperatures from -55°C to +135°C.

Shrink temperature: Min. 70°C

Standard colour: black. Non-standard colours:

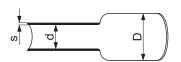
RC3S: red, blue, yellow, green.

# RC3S - Polyolefin heat shrink tubes, very flexible, self-extinguishing, shrink ratio 3:1



Product	index	Dim	ensions [	Spool lengths	
name	ilidex	D	d	s	[m]
RC3S 1,6 / 0,5	0-10-16-05	1,6	0,5	0,45	200
RC3S 3,2 / 1	0-10-32-1	3,2	1,0	0,55	200
RC3S 4,8 / 1,5	0-10-48-15	4,8	1,5	0,60	100
RC3S 6,4 / 2	0-10-64-2	6,4	2,0	0,65	100
RC3S 9,5 / 3	0-10-95-3	9,5	3,0	0,75	100
RC3S 12,7 / 4	0-10-127-4	12,7	4,0	0,80	50
RC3S 19,1 / 6	0-10-191-6	19,1	6,0	0,90	50
RC3S 25,4 / 8	0-10-254-8	25,4	8,0	1,00	50
RC3S 39 / 13	0-10-39-13	39,0	13,0	1,25	50

# RC4S - Polyolefin heat shrink tubes, very flexible, self-extinguishing, shrink ratio 4:1

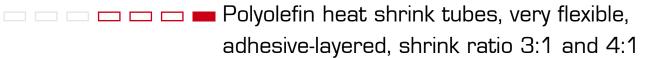


- **D** minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery

Product	index	Dimensions [mm]			Package	Length of piece
name	IIIUCA	D	d	s	[pcs]	[m]
RC4S 19,1 / 4,6	0-11-191-46	19,1	4,6	1,7	50	1,22
RC4S 25,4 / 7	0-11-254-7	25,4	7,0	1,7	50	1,22
RC4S 38,1 / 9,5	0-11-381-95	38,1	9,5	1,7	50	1,22
RC4S 50,8 / 14	0-11-508-14	50,8	14,0	1,7	20	1,22
RC4S 76,2 / 20,6	0-11-762-206	76,2	20,6	1,7	20	1,22
RC4S 102 / 26,7	0-11-102-267	102,0	26,7	1,7	20	1,22
RC4S 115 / 36,8	0-11-115-368	115,0	36,8	1,7	20	1,22

Properties	Test method	Test result
Tensile strength	ASTM D 2671	14 MPa
Elongation at rupture	ASTM D 2671	800%
Tensile strength after ageing (+175°C, 168 h)	ASTM D 2671	14 MPA
Elongation at rupture after ageing (+175°C, 168 h)	ASTM D 2671	350%
Inflammability test	UL 224 VW1 SAE-AMS-DTL-23053/5	Positive
Heat shock (+250°C, 4 h)	ASTM D 2671	No cracks
Cold bend (-55°C, 4 h)	ASTM D 2671	No cracks
Dielectric strength	ASTM D 150	20kV/mm
Volume resistivity	ASTM D 876	10 ¹⁴ Ωcm
Infuence on copper	UL 224	No corrosion
Water absorption	ASTM D 570	0,15%
Chemical resistance	SAE-AMS-DTL-23053/5	Positive
Longitudinal change after recovery	UL 224	0 ±5%





Designed for making protection on cable bundles and metal pipes against water and moisture.

They make both good insulation and sealing.

#### **Properties**

Produced by co-extrusion moulding of polyolefines and thermofusible adhesive.

Working temperatures from - 45°C to 125°C.

Shrink temperature; Min. 80°C.

Standard colour: black.

Non-standard colours: red, blue, yellow.

Self-extinguishing.

# RC3K - Polyolefin heat shrink tubes, very flexible, adhesive-layered, shrink ratio 3:1



Product	Index	Dimensions [mm]		Adhesive-layer	Spool lengths	
name	index	D	d	s	thickness after recovery	[m]
RC3K 3 / 0,6	0-12-3-06	3,0	0,6	1,0	0,50	200
RC3K 4,8 / 1,5	0-12-48-15	4,8	1,5	1,1	0,50	100
RC3K 6 / 2	0-12-6-2	6,0	2,0	1,2	0,50	100
RC3K 9 / 3	0-12-9-3	9,0	3,0	1,3	0,60	50
RC3K 12 / 4	0-12-12-4	12,0	4,0	1,7	0,80	25
RC3K 19 / 6	0-12-19-6	19,0	6,0	2,0	0,80	25
RC3K 24 / 8	0-12-24-8	24,0	8,0	2,2	1,05	25
RC3K 30 / 10	0-12-30-10	30,0	10,0	2,4	1,05	Cut into 1,22 m
RC3K 40 / 13	0-12-40-13	40,0	13,0	2,5	1,05	25
RC3K 50 / 19	0-12-50-19	50,0	19,0	2,5	1,05	Cut into 1,22 m

# RC4K - Polyolefin heat shrink tubes, very flexible, adhesive-layered, shrink ratio 4:1

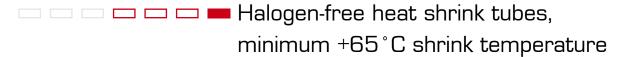


- **D** minimum internal diameter before recovery
- $\ensuremath{\mathbf{d}}$  maximum internal diameter after recovery
- s wall thickness after entire recovery

Product	Index	Dimensions [mm]		[mm]	Adhesive-layer	Spool lengths
name	index	D	d	s	thickness after recovery	[m]
RC4K 4 / 1	0-13-4-1	4	1,00	1,00	0,50	100
RC4K 6 / 1,27	0-13-6-127	6	1,27	1,20	0,60	100
RC4K 8 / 1,65	0-13-8-165	8	1,65	1,55	0,75	50
RC4K 12 / 2,41	0-13-12-241	12	2,41	1,95	1,00	25
RC4K 16 / 4	0-13-16-4	16	4,00	2,10	1,05	25
RC4K 18 / 4,45	0-13-18-445	18	4,45	2,40	1,20	25
RC4K 24 / 6	0-13-24-6	24	6,00	2,50	1,25	25
RC4K 32 / 8	0-13-32-8	32	8,00	2,50	1,25	25
RC4K 52/13	0-13-52-13-122	52	13,00	2,50	1,25	Cut into 1,22 m

Properties	Test method	Test result
Tensile strength	ASTM D 2671	Min. 10,4 MPa
Tensile strength after ageing (+158°C, 168 h)	ASTM D 2671	Remains 70%
Elongation at rupture	ASTM D 2671	Min. 200%
Longitudinal change after recovery	UL 224	0 -10%
Heat shock (+250°C, 4 h)	ASTM D 2671	No cracks
Cold bend (-30°C, 1 h)	ASTM D 2671	No cracks
Voltage test AC (2500 V, 60 s)	ASTM D 2671	No breakdowns
Volume resistivity	ASTM D 876	Min. 10 ¹⁴ Ωcm
Inflammability test	SAE-AMS-DTL-23053/5	Self-extinguishing after 30 s
Infuence on copper (+158°C, 168 h)	UL 224	No corrosion
Water absorption	ASTM D 570	Possitive







Useful for insulation in places where heat-sensitive elements occur (e.g. cables in PVC ducts) and where a quick shrink is needed.

Special halogen-free formula makes the tubes flexible and sensitive for even low temperature shrinking. They are good mechanical and electrical insulators.

# **Properties**

Made of modified radiation crosslinked polyolefin.

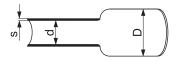
Shrink ratio 2:1.

Working temperature: from +45°C to +125°C.

Shrink temperature: Min. +65°C.

Standard colour: black.

# RLT - Halogen-free heat shrink tubes of low shrink temperature



D - minimum internal diameter before recovery

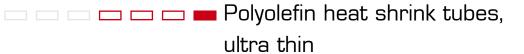
d - maximum internal diameter after recovery

 $\boldsymbol{s}$  - wall thickness after entire recovery

Product	Index	Dim	nensions [	Spool lengths	
name	IIIUEX	D	d	s	[m]
RLT 3,2 / 1,6	0-14-32-16	3,2	1,6	0,5	200
RLT 4,8 / 2,4	0-14-48-24	4,8	2,4	0,5	200
RLT 6,4 / 3,2	0-14-64-32	6,4	3,2	0,6	100
RLT 9,5 / 4,8	0-14-95-48	9,5	4,8	0,6	50
RLT 12,7 / 6,4	0-14-127-64	12,7	6,4	0,6	50
RLT 19,1 / 9,5	0-14-191-95	19,1	9,5	0,8	50
RLT 25,4 / 12,7	0-14-254-127	25,4	12,7	0,9	50

Properties	Test method	Test result	
Tensile strength	ASTM D 2671	15 MPa	
Elongation at rupture	ASTM D 2671	450%	
Tensile strength after ageing (+158°C, 168 h)	ASTM D 2671	11 MPA	
Elongation at rupture after ageing (+175°C, 168 h)	ASTM D 2671	350%	
Heat shock (+200°C, 4 h)	ASTM D 2671	No cracks	
Cold bend (-55°C, 4 h)	ASTM D 2671	No cracks	
Infuence on copper	UL 224	No corrosion	
Inflammability test	MVSS 302	Positive	
	23°C/24h ISO 37	200%	
Liquid resistance	Tensile strength	11 MPa	
	Elongation	200%	
Longitudinal change after recovery	UL 224	0±5%	





Advised for usage in places where quick shrink and space economy is required. Low shrink temperature reduces shrink time and limits the danger of local overheating on heat-sensitive objects.

#### **Properties**

Flame-resistant polyolefin tubes.

Environmental friendly.

Ultra thin and flexible.

Shrink ratio 2:1.

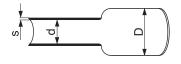
Working temperature: from -55°C to +125°C.

Shrink temperature: Min. 70°C. Standard colour: black.

# RUC - Polyolefin heat shrink tubes, ultra thin



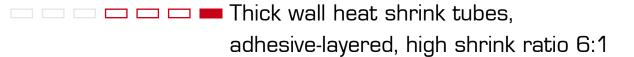
Product	Index	Din	nensions	Spool lengths	
name	IIIdex	D	d	s	[m]
RUC 1,4/0,6	0-15-14-06	1,4	0,6	0,20	200
RUC 1,9/0,8	0-15-19-08	1,9	0,8	0,20	200
RUC 3/1,2	0-15-3-12	3,0	1,2	0,25	200
RUC 3,5/1,6	0-15-35-16	3,5	1,6	0,25	200
RUC 5,5/2,4	0-15-55-24	5,5	2,4	0,25	100
RUC 6,5/3,2	0-15-65-32	6,5	3,2	0,28	100
RUC 10,5/ 4,8	0-15-105-48	10,5	4,8	0,28	100
RUC 13,5/6,4	0-15-135-64	13,5	6,4	0,28	50



- $\ensuremath{\mathbf{D}}$  minimum internal diameter before recovery
- d maximum internal diameter after recovery
- s wall thickness after entire recovery

Properties	Test method	Test result
Operating temperature	IEC 216	-55°C to +125°C
Tensile strength	ASTM D 2671	> 14 MPa
Elongation at rupture	ASTM D 2671	> 400%
Longitudinal change after recovery	UL 224	0 ±5%
Elongation at rupture after ageing	158 °C, 168 h	> 300%
Inflammability test	VW-1	Positive
Dielectric strength	IEC 243	> 20 kV/mm
Volume resistivity	IEC 93	>10 ¹⁴ Ωcm
Infuence on copper	ASTM D 2671	No corrosion







Ideal insulation on objects with different diameters – cables, connectors and other elements. High shrink strength guarantees good adherence to the objects of various shapes and full protection against environmental influence.

They make a good mechanical protection of cable joints and terminations.

### **Properties**

Shrink ratio 6:1. UV-resistant.

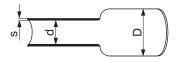
Very high mechanical protection.

Working temperature: from -55°C to +110°C (IEC 216).

Standard colour: black.

Shrink temperature: Min. +120°C.

# RBG - Thick wall heat shrink tubes, adhesive-layered, high shrink ratio 6:1



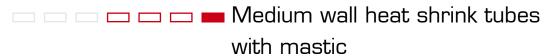
- **D** minimum internal diameter before recovery
- d maximum internal diameter after recovery
- $\boldsymbol{s}$  wall thickness after entire recovery

Product	Index	Dime	Dimensions [mm]		Package	Length of pieces
name	index	D	d	s	[pcs]	[m]
RBG 19,0 / 3,2	0-16-190-32	19,0	3,2	3,2	20	1,22
RBG 33,0 / 5,5	0-16-330-55	33,0	5,5	3,4	20	1,22
RBG 44,4 / 7,4	0-16-444-74	44,4	7,4	3,6	20	1,22
RBG 50,8 / 8,3	0-16-508-83	50,8	8,3	4,3	20	1,22
RBG 69,8 / 11,7	0-16-698-117	69,8	11,7	4,8	20	1,22
RBG 88,9 / 17,1	0-16-889-171	88,9	17,1	4,8	20	1,22
RBG 119,4 / 22,9	0-16-1194-229	119,4	22,9	4,8	10	1,22
RBG 235 / 40	0-16-235-41	235,0	40,0	4,8	1	1,22

Properties of heat shrink tubes	Test method	Test result
Tensile strength	ASTM D 2671	> 14 MPa
Elongation at rupture	ASTM D 2671	> 400%
Density	ASTM D 792	1,05 g/cm ³
Longitudinal change after recovery	UL 224	0 -10%
Elongation at rupture after ageing	+150°C, 168 h	> 300%
Dielectric strength	IEC 243	> 20 kV/mm
Resistivity	IEC 93	>10 ¹⁴ Ωcm
Copper influence	ASTM D 2671	No corrosion
Stress cracking resistance (+50°C)	ASTM D 1 693	No cracks
Water absorption	ISO 62	< 0,15%

Properties of adhesive	Test method	Test result
Water absorption	ISO 62	< 0,2%
Softening point	ASTM D E8	85°C
Peel strength	DIN 30672	4 N/cm
Influence on copper	ASTM D 2671	No corrosion
Fungus resistance	ISO 846	Resistant







RPM tubes are on all length covered with mastic sealing. They are designed for the protection of metal pipes' joints and other connections which require reliable sealing. Radiation crosslinked covering guarantee effective mechanical protection.

Mastic layer guard against moist and water penetration.



UV-resistant.

Covered on all length with mastic sealing.

Good insulation properties.

Working temperature: from -35°C to +110°C (IEC 216).

Shrink temperature: Min. 120°C.

Standard colour: black.



# RPM - Medium wall heat shrink tubes with mastic

Product	index	D	imensions {	(mm)	Packing
name	index	D	d	s	[pcs 1m]
RPM 30/6	0-19-00-1	30	6	2,5	10
RPM 33/8	0-19-00-2	33	8	2,5	10
RPM 40/12	0-19-00-3	40	12	2,5	10
RPM 55/20	0-19-00-4	55	20	2,0	10
RPM 75/25	0-19-00-5	75	25	2,0	10
RPM 95/30	0-19-00-6	95	30	2,0	10
RPM 120/40	0-19-00-7	120	40	2,0	1
RPM 140/50	0-19-00-8	140	50	2,3	1
RPM 160/50	0-19-00-9	160	50	2,3	1
RPM 180/66	0-19-00-10	180	66	2,5	1
RPM 205/66	0-19-00-11	205	66	2,5	1
RPM 235/70	0-19-00-12	235	70	2,5	1
RPM 265/75	0-19-00-13	265	75	3,0	1
RPM 300/85	0-19-00-14	300	85	3,0	1
RPM 350/100	0-19-00-15	350	100	3,0	1

Properties of heat shrink tubes	Test method	Test result
ensile strength	ASTM D 2671	≥ 14MPa
ongation at rupture	ASTM D 2671	≥ 400%
ngitudinal change after recovery	UL 224	0-10%
ngation at rupture r ageing	+150°C, 168h	≥ 300%
lectric strength	IEC 243	≥ 20kV/mm
istivity	IEC 93	$\geq$ 10 ¹⁴ $\Omega$ cm
per influence	ASTM D 2671	No corrosion
ss cracking stance (+50°C)	ASTM D 1693	No cracks
l bend (-55°C, 4h)	ASTM D 2671	No cracks
perties of mastic	Test method	Test result
er absorption	ISO 62	< 0,1%
ening point	ASTM D E8	80°C
strength	ASTM D 1000	50N/25 mm
uence on copper	ASTM D 2671	No corrosion

Resistant

ISO 846

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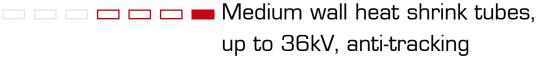
 $[\]boldsymbol{\mathsf{D}}$  - minimum internal diameter before recovery

Fungus resistance

d - maximum internal diameter after recovery

s - wall thickness after entire recovery







Designed for insulation in cable terminations and joints for Medium Voltage up to 36kV.

Their anti-tracking properties guarantee maximum reliability when installed.

#### Properties

Produced from special formula of radiation crosslinked polyethylene.

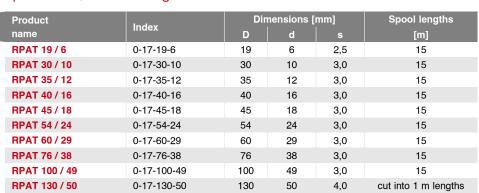
Halogen-free.

Working temperature from -55°C to +125°C.

Shrink temperature: Min. +110°C.

Standard colour - red.

RPAT - Medium wall heat shrink tubes, up to 36kV, anti-tracking



Typowy wynik

Min. 11 MPa

Min. 13 MPa

Min. 350%

Max. 3.0

Min. 25

Min. 15kV/mm

Min. 10¹³ Ωcm

No corrosion

No cracks

3,75kV, 1 h, not occurred

Min. 400%

0 - 10%





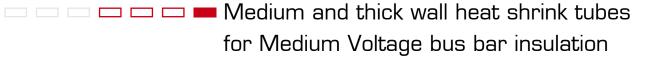
D - minimum internal diameter before recovery

d - maximum internal diameter after recovery

 $\boldsymbol{s}$  - wall thickness after entire recovery







Designed for better insulation of bus bars in switchgears and substations. They guarantee high anti-tracking protection and arcing resistance. The form of tube makes the installation of it more comfortable and cheaper.

#### **Properties**

Produced from modified radiation crosslinked polyethylene.

Halogen-free.

Working temperature from -40°C to +125°C.

Shrink temperature: Min. +110°C.

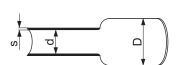
Standard colour - red.

# RBM - Medium wall heat shrink tubes for Medium Voltage bus bar insulation



Product	Index	Index Dimensions [mm] Recommended	Dimensions [mm] D d s		Recommended	Spool length
name	maox	D			bus bar size	[m]
RBM 25 / 10	0-01-25-10	25	10	2	25 x 3	30
RBM 30 / 12	0-01-30-12	30	12	2	35 x 4	30
RBM 35 / 14	0-01-35-14	35	14	2	35 x 4	30
RBM 40 / 16	0-01-40-16	40	16	2	40 x 5	30
RBM 50 / 20	0-01-50-20	50	20	2	50 x 5	15
RBM 65 / 25	0-01-65-25	65	25	2	65 x 8	15
RBM 75 / 30	0-01-75-30	75	30	2	75 x 8	15
RBM 100 / 40	0-01-100-40	100	40	2	100 x 10	15

# RBH - Thick wall heat shrink tubes for Medium Voltage bus bar insulation



- $\boldsymbol{\mathsf{D}}$  minimum internal diameter before recovery
- d maximum internal diameter after recovery
- $\boldsymbol{s}$  wall thickness after entire recovery

Product	Indov	Dim	ensions	[mm]	Recommended	Spool length
name	Index	D	D d s bu		bus bar size	[m]
RBH 19 / 6	0-02-19-6	19	6	3	15 x 3	15
RBH 25 / 10	0-02-25-10	25	10	3	25 x 3	15
RBH 30 / 12	0-02-30-12	30	12	3	35 x 4	15
RBH 40 / 16	0-02-40-16	40	16	3	40 x 5	15
RBH 50 / 20	0-02-50-20	50	20	3	50 x 5	15
RBH 65 / 25	0-02-65-25	65	25	3	65 x 8	15
RBH 75 / 30	0-02-75-30	75	30	3	75 x 8	15
RBH 85 / 35	0-02-85-35	85	35	3	85 x 10	15
RBH 100 / 40	0-02-100-40	100	40	3	100 x 10	15
RBH 120 / 50	0-02-120-50	120	50	3	120 x 12	15
RBH 150 / 60	0-02-150-60	150	60	3	150 x 15	cut into 1 m lengths

Properties	Test method	Test result
Tensile strength	ASTM D 2671	Min. 11,8 MPa
Tensile strength after ageing (+120°C, 168 hours)	ASTM D 2671	Min. 10 MPa
Longitudinal change after recovery	ASTM D 2671	0 -10%
Elongation at rupture	ASTM D 2671	700,00%
Elongation at rupture after ageing (+120°C, 168 hours)	ASTM D 267 1	Min. 500%
Dielectric strength	IEC 243	Min. 20kV/mm
Dielectric constant	IEC 250	Max. 3,0
Resistivity	IEC 93	Min. 10 ¹³ Ωcm
Flammability	ASTM 4589	Min. 25
Copper influence (+120°C, 168h)	ASTM D 2671	No corrosion
Cold bend (-40°C, 4 hours)	ASTM D 2671	No cracks
Water absorption (+23°C, 14 days)	ISO 62	Min. 0,5%





They are very flexible and easy to install. They are designed for bus bar insulation in all the places the tube could not be installed. The double-layer structure (polyethylene and adhesive) guarantee a good electrical and percussive insulation of bus bars up to 24kV.

### **Properties**

The adhesive-layer melts and seals the PE insulation.

Working temperature: from -55°C to +105°C.

Shrink temperature: Min. +100°C.

Standard colour: red

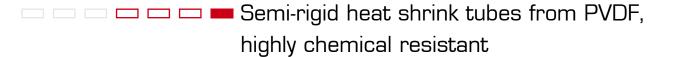


# RTBB - Insulating tapes for bus bars

Product name	Index	Dimensions [mm]  Width Thickness after recovery		Package [pcs]	Length [m]
RTBB-1	0-03-25	25	1,0 +0,1	1	5
RTBB-2	0-03-50	50	1,0 +0,1	1	5

Properties	Test method	Test result
Tensile strength	ASTM D 638	Min. 11 MPa
Tensile strength after ageing (+120°C, 168 hours)	ASTM D 2671	Min. 10 MPa
Elongation at rupture	ASTM D 638	550%
Elongation at rupture after ageing (+120°C, 168 hours)	ASTM D 2671	Min. 450%
Dielectric strength	IEC 243	Min. 20kV/mm
Dielectric constant	IEC 250	Max. 3,0
Resistivity	IEC 93	Min. 10 ¹³ Ωcm
Flammability	ASTM D 2671	Self-extinguishing after 60 s
Copper influence (+120°C, 168h)	ASTM D 2671	No corrosion
Water absorption (+23°C, 14 days)	ISO 62	Min. 0,5 %
Shrink ratio		30%







They are designed for application in conditions requiring a very good heat resistance, abrasion-resistance and chemical resistance, especially to solvents.

They guarantee a good insulation layer to wires, joints and soldered connections against chemical corroders.

### **Properties**

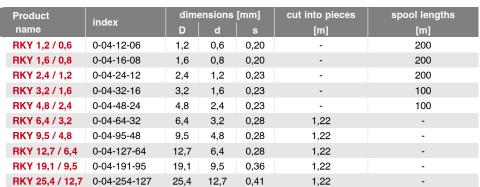
Flammability

Produced from PVDF (polyvinylidene fluoride of excellent chemical resistance).

Working temperature from- 55°C to +175°C.

Shrink temperature; Min. +175°C. Standard colour: transparent.

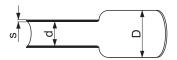
# RKY - Semi-rigid heat shrink tubes from PVDF, highly chemical resistant



Properties	Test method	Test result
Tensile strength	ASTM D 2671	Min. 34,5 MPa
Elongation after ageing (+120°C, 168 hours)	+250°C, 168 h	Min. 50%
Heat shock	+300°C, 1 h	No cracks
Cold bend (-40°C, 4 hours)	-55°C, 1 h	No cracks
Dielectric strength	ASTM D 2671	Min. 30kV/mm
Resistivity	ASTM D 876	10 ¹⁴ Ωcm

VW-1

Inflammable



 $\boldsymbol{\mathsf{D}}$  - minimum internal diameter before recovery

d - maximum internal diameter after recovery

 $\boldsymbol{s}$  - wall thickness after entire recovery







The tubes are resistant to prolonged influence of high-temperature liquids.

They guarantee a good protection of lays and connections due to a high resistance to abrasion.

# **Properties**

Produced from radiation crosslinked modified elastomer.

Self-extinguishing.

Resistant to chemical substances and gas oils.

Working temperature from -55°C to +150°C (IEC 216).

Shrink temperature: Min. +150°C.

Standard colour: black.



D - minimum internal diameter before recovery

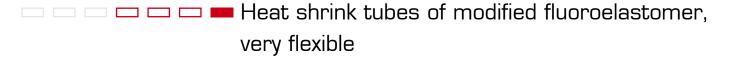
- d maximum internal diameter after recovery
- s wall thickness after entire recovery

# REL - Heat shrink tubes of modified elastomer

Product	index	Dir	nensions [	Spool lengths	
name	IIIUEX	D	d	s	[m]
REL 3,2 / 1,6	0-05-32-16	3,2	1,6	0,76	50
REL 4,8 / 2,4	0-05-48-24	4,8	2,4	0,85	50
REL 6,4 / 3,2	0-05-64-32	6,4	3,2	0,90	50
REL 9,5 / 4,8	0-05-95-48	9,5	4,8	1,02	50
REL 12,7 / 6,4	0-05-127-64	12,7	6,4	1,22	50
REL 19,1 / 9,5	0-05-191-95	19,1	9,5	1,45	50
REL 25,4 / 12,7	0-05-254-127	25,4	12,7	1,80	20
REL 38,1 / 19,1	0-05-381-191	38,1	19,1	2,40	20
REL 50,8 / 25,4	0-05-508-254	50,8	25,4	2,80	20

Properties	Test method	Test result
Tensile strength	ASTM D 2671	Min. 13 MPa
Elongation at rupture after ageing	+160°C, 168 h	Min. 220%
Heat shock	+215°C, 4 h	No cracks
Secant modulus (at 2% elongation)	ASTM D 882	Max. 50 MPa
Resistivity	ASTM D 876	10 ¹⁴ Ωcm
Flammability	ASTM D 2671	Self-extinguishing after 15 s







They are recommended for installation where a high resistance to corrosive liquids - oils, lubricants, solvents - in higher temperatures occurs.

The tubes guarantee high abrasion-resistance, unchangeable flexibility in low and high temperatures. No cracks.

### **Properties**

Produced from modified fluoroelastomer radtiation crosslinked.

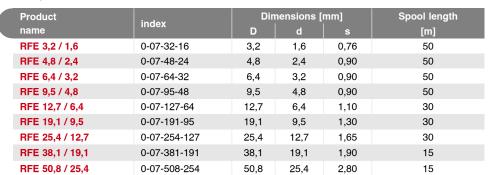
Self-extinguishing.

Working temperature from -55°C to +200°C (IEC 216).

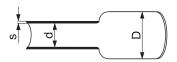
Shrink temperature: Min. +150°C.

Standard colour: black.

# RFE - Heat shrink tubes of modified fluoroelastomer, very flexible



Properties	Test method	Test result
Tensile strength	ASTM D 2671	Min. 8,5 MPa
Tensile strength after ageing	+250°C, 168 h	Min. 200%
Heat shock	+300°C, 4 h	No cracks
Secant modulus	ASTM D 412	Max. 13,8 MPa
Dielectric strength	ASTM D 2671	Min. 7,9kV/mm
Resistivity	ASTM D 876	10 ¹⁴ Ωcm
Infuence on copper (+175°C, 16 h)	SAE-AMS-DTL-23053/13	No corrosion
Inflammability test	ASTM D 2671	self-extinguishing after 15s



 $\boldsymbol{\mathsf{D}}$  - minimum internal diameter before recovery

d - maximum internal diameter after recovery

 $\boldsymbol{s}$  - wall thickness after entire recovery







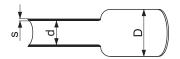
Designed for application in places where a good resistant to high temperatures and chemicals in required. They are meant for military, motorization, aviation and others due to their good electrical insulation and high heat-resistance.

# **Properties**

Working temperature from -65°C to +260°C.

Standard colour: transparent. Shrink temperature: Min. +350°C.

# RTE - Teflon heat shrink tubes



**D** - minimum internal diameter before recovery

 $\ensuremath{\mathbf{d}}$  - maximum internal diameter after recovery

 $\boldsymbol{s}$  - wall thickness after entire recovery

Product	indov	Dim	ensions	[mm]	Package	Piece length
name	index	D	d	s	[pcs]	[m]
RTE 1,52 / 0,97	0-09-152-097	1,52	0,97	0,3	10	1,22
RTE 1,93 / 1,17	0-09-193-117	1,93	1,17	0,3	10	1,22
RTE 2,36 / 1,45	0-09-236-145	2,36	1,45	0,30	10	1,22
RTE 3,05 / 1,82	0-09-305-182	3,05	1,82	0,30	10	1,22
RTE 3,81 / 2,26	0-09-381-226	3,81	2,26	0,30	10	1,22
RTE 4,85 / 2,80	0-09-485-280	4,85	2,80	0,30	10	1,22
RTE 6,10 / 3,55	0-09-610-355	6,10	3,55	0,38	10	1,22
RTE 7,67 / 4,40	0-09-767-440	7,67	4,40	0,38	10	1,22
RTE 9,40 / 5,45	0-09-940-545	9,40	5,45	0,38	10	1,22
RTE 10,92 / 6,90	0-09-1092-690	10,92	6,90	0,38	10	1,22
RTE 11,94 / 8,56	0-09-1194-856	11,94	8,56	0,38	10	1,22

Properties	Test method	Test result
Tensile strength	ASTM D 2671	17 MPa
Elongation at rupture	ASTM D 2671	200%
Specific gravity	ASTM D 792	2,3
Heat shock (+400°C, 4 h)	ASTM D 2671	No cracks
Cold bend (-65°C, 4 h)	ASTM D 2671	No cracks
Volume resistivity	ASTM D 2671	10 ¹⁸ Ωcm
Dielectric strength	ASTM D 2671	34kV/mm
Infuence on copper	UL 224	No corrosion
Inflammability test	ASTM D 2671	Self-extinguishing
Chemical resistance	SAE-AMS-DTL-23053/12	Perfect
Water absorption	ASTM D 570	Max. 0,1





#### **Properties**

Reliable long-term work of break out boots is ensured by the resistance to UV radiation, aggressive chemical factors and also creeping current. They are made of high quality crosslinked polymer thanks which they aren't prone to erosion. Heat shrink breakout boots have perfect insulation and sealing properties. Their internal surfaces are covered with the thermofusible adhesive layer.

Working temperature: **AK**: from -30°C to +135°C,

**AKB**: from -30°C to +135°C, **AKR**: from -40°C to +120°C, **AKF**: from -30°C to +135°C.

Shrink temperature: > +125°C. Elongation at rupture: Min. 300%.

Volume resistivity: **AK**: min.  $10^{13} \Omega$ cm,

**AKB**: min.  $10^{13}$  Ωcm, **AKR**: min.  $10^{12}$  Ωcm, **AKF**: min.  $10^{13}$  Ωcm.

Self-extinguishing - relates to AKR No corrosion In contact with CU.

Resistant to UV radiation.

Resistant to creeping current (relates to - AKR).

Dielectric strength: Min. 10kV/mm.

Heat shock: no cracks, no flow (+250°C, 4 hours). Heat ageing: no cracks, no flow (+120°C, 500 hours).

Standard colours: **AK, AKB, AKF**: black,

AKR: red.



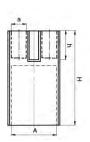
# **Application**

Heat shrink breakout boots are designed for insulation of cable ends at separated cores. They are elements for both indoor and outdoor terminations and cable joints of polymer or paper insulated cables.

Voltage: 0,6/1kV and 3,5/6kV.







**Attention:** dimensions A1, a1, H1 and h1 concern breakout boots after recovery.

Product		Number	Dimensions [mm]									
name	index	of cores	A	A1	а	a1	Н	H1	h	h1	Wall thick.	Core thick.
AK2 1,5-25	0-072-00	2	30,0	10,0	12,0	4,0	70,0	95,0	18,0	28,0	2,0	2,0
AK2 25-120	0-073-00	2	50,0	24,0	21,0	7,0	85,0	120,0	32,0	40,0	3,0	3,0
AK2 120-240	0-079-00	2	98,0	42,6	28,4	8,2	147,4	165,3	65,8	68,8	3,3	3,3
AK3 1,5-16	0-076-00	3	25,0	9,0	9,0	3,0	45,0	76,0	14,0	20,0	2,5	1,2
AK3 4-35	0-077-01	3	37,0	13,0	14,0	4,0	85,0	117,0	18,0	31,0	2,2	1,4
AK3 25-120	0-078-01	3	65,0	25,1	27,0	5,5	165,4	164,3	31,0	50,0	3,5	2,2
AK3 95-300	0-082-01	3	75,0	30,0	35,0	13,0	190,0	220,0	55,0	60,0	3,5	2,7
AK4 1,5-10	0-084-00/1	4	28,0	9,0	9,0	1,8	50,0	78,0	16,0	21,0	2,7	2,7
AK4 6-35	0-086-00	4	35,0	16,0	12,0	5,0	85,0	105,0	14,0	20,0	2,3	1,4
AK4 25-95	0-093-01	4	55,0	20,0	20,0	6,0	140,0	150,0	30,0	38,0	3,0	2,5
AK4 35-150	0-093-00	4	70,0	23,0	26,0	7,5	154,5	187,4	38,4	51,5	5,6	2,5
AK4 95-300	0-096-00	4	100,0	32,3	36,5	13,9	170,0	218,0	51,0	58,0	4,0	2,8
AK4 240-400	0-097-00	4	135,0	50,6	51,5	13,9	213,2	241,8	68,0	78,7	4,2	4,2
AKF1	0-060-00	4	162,0	70,0	64,0	18,0	240,0	260,0	75,0	80,0	4,2	4,2
AK5 10-16	0-095-00	5	42,0	17,0	12,2	2,7	85,1	95,7	25,1	26,0	3,6	2,4
AK5 25-50	0-095-01	5	55,3	23,5	16,6	3,9	145,1	155,7	40,0	45,3	3,9	3,3
AK5 70-120	0-095-02	5	81,3	31,7	24,6	5,7	153,0	180,0	57,8	63,1	3,9	3,0
AK5 150-240	0-095-03	5	102,0	41,8	33,6	7,7	162,9	196,7	64,5	71,3	4,1	3,2





**Attention:** dimensions A1, a1, H1 and h1 concern breakout boots after recovery.

# AKR, AKB, AKF - Heat shrink breakout boots

#### Application

Heat shrink breakout boots **AKR** (red) **AK**, **AKB** and **AKF** (black ones) are designed for cable insulation at the end of mechanical casing (plastic or metal) on the overhead transmission line of MV.

The heat shrink boots protect the cable against water penetration, dust, insects and other dirt.

These breakout boots are meant for Low and Medium Voltage cables.



1	Product		Number		Dimensions [mm]								
	name	index	of cores	Α	A1	a	a1	Н	H1	h	h1	Wall thick.	Core thick.
	AKR 3	0-098-02	3	110	45	55	21	160	230	53	55	3,5	2,2
	AKR 4	0-098-03	3	135	55	64	27	230	250	52	56	3,8	2,8
	AKR 5	0-098-04	3	175	56	64	28	230	250	40	65	3,8	2,8
	AKB 3	0-100-00	3	125	46	52	22	160	230	40	60	3,8	2,5
	AKB 4	0-100-01	3	135	60	64	26	230	250	40	65	3,8	2,8
	AKB 5	0-100-02	3	175	56	64	28	230	250	40	65	3,8	2,8
	AK 4 240-400	0-097-00	4	135	50,6	51,5	13,9	213,2	241,8	68	78,7	4,2	4,2
	AKF1	0-060-00	4	162	70,0	64	18	240	260	75	80	4,2	4,2

**Attention:** dimensions A1, a1, H1 and h1 concern breakout boots after recovery.

# AKR - 3-core heat shrink breakout boots for MV up to 36kV

# Application

Heat shrink breakout boots AKR are designed for insulation of MV cable ends at separated cores



They are the integral part of MV indoor and outdoor cable terminations.

Product		Number	Dimensions [mm]									
name	index	of cores	Α	A1	a	a1	Н	H1	h	h1	Wall thick.	Core thick.
AKR 1	0-098-01	3	60	24	25	8	180	187	45	50	3,0	2,5
AKR 2	0-098-00	3	75	30	32	13	160	210	56	60	4,0	2,2
AKR 3	0-098-02	3	110	45	55	21	165	230	53	55	3,5	2,2
AKR 4	0-098-03	3	135	55	64	27	225	250	52	56	3,8	2,8
AKR 5	0-098-04	3	175	55	64	27	225	250	52	56	3,8	2,8







AKZ cold shrink breakout boots are designed for insulation of cable ends at separated cores and both indoor and outdoor cable terminations.

They successfully protect against moisture penetration.

Application range: **AKZ 4**: 0,6/1kV.

#### **Properties**

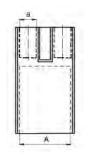
Excellent mechanical and insulation properties of cold shrink breakout boots guarantee a long-term life of power line.

Made of silicone, installed by removing the inner plastic spiral.

UV-resistant.

No heat needed for installation.

Colour: grey.



Attention: dimensions A1, a1 concern breakout boots after recovery.

# AKZ 4 - Cold shrink breakout boots 0,6/1kV

Product	index	Quantity		Dimensio		
name	index	of cores	A	A1	а	a1
AKZ 4 70-120	0-22-70-120	4	66,0	20	30	8
AKZ 4 150-240	0-22-150-240	4	87,5	24	37	11

# — — — — — Heat shrink sheds



## Application

They play an integral role in installation of indoor and outdoor cable up to 72kV.

Their job is to prevent occurring fault paths.

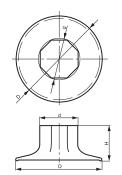
**CES** heat shrink sheds have very good physical properties and resistance to ageing and also chemical factors.

# **Properties**

Working temperature from -40°C to 120°C.

Shrink temperature: >120°C. Volume resistivity: Min.  $10^{12} \Omega$ cm. Dielectric strength: Min. 10kV/mm.

Heat ageing (500 hours, +120 C): no cracks, no flowing.



# CES - Heat shrink sheds

Product	index		Diı	Inclination			
name	illuex	D	d	d ₁	s	Н	angle
CES-1	0-114-00	91	38	13	2,7	37	10°
CES-2	0-114-01	122	50	20	2,8	40	10°
CES-3	0-114-02	140	59	31	2,9	45	10°
CES-4	0-114-03	141	79	34	2.9	50	10°

d1 - inner diameter after recovery

s - wall thickness after total recovery





#### Application

They are applied as insulation of power and telecommunication cables' ends. They also make an ideal insulation on bolts against the weather conditions at e.g. bridges or lampposts. They are resistant to acids and basics. The inner double layer of end caps - thermofusible adhesive - increases the tightness of the insulation

#### **Properties**

Made of radiation crosslinked polyethylene. Working temperature: from -55°C to 105°C. Shrink temperature: from 120°C to 200°C.

Tensile strength: Min. 10 Mpa. Elongation at rupture: Min. 350%. Heat ageing: tested in temperature +136°C for 168 hours.

Resistance to rupture: 70% of initial value and elongation at rupture: min. 100%. Resistance to heat shock (+200°C,4 hours): no cracks, flowing and deformation.

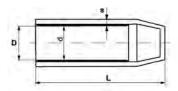
Resistance to corrosion in contact with copper: no penetration, decreases and no blackens of copper wire.

Water absorption: 0,1% of weight (24 hours, temperature +25°C ±2). Dielectric strength: Min. 16kV/mm, volume resistivity: Min.  $10^{10}~\Omega cm$ .

Colour: black.







#### Attention:

- D minimum inner diameter before recovery
- d maximum inner diameter after entire recovery
- s wall thickness after entire recovery
- L end cap length before recovery

Other dimensions and colours of end caps: available on special request - contact our Export Dept.

Product	index		Dimen	sions [mm]		Package
name	IIIdex	D	d	s	L	[pcs]
KTK 3 / 1	0-6-715-00	3,4	1,0	1,0	25	100
KTK 4,8 / 1,5	0-6-716-00	5,0	1,5	1,0	30	100
KTK 6/2	0-6-717-00	6,4	2,0	1,0	30	100
KTK 9/3	0-6-718-00	10,0	3,0	1,4	35	100
KTK 10 / 4	6-718-00	11,0	4,0	2,4	48,5	100
KTK 14 / 4	6-719-00	14,5	4,0	2,4	48,5	100
KTK 16 / 8	6-720-00	16,0	7,9	2,9	85,0	100
KTK 18 / 6	6-731-00	18,0	6,0	2,1	20,0	100
KTK 21 / 6	6-732-00	21,0	6,0	2,1	20,0	100
KTK 23 / 8	6-721-00	23,0	7,9	2,9	85,0	100
KTK 33 / 15	6-722-00	33,0	14,6	3,5	106,0	100
KTK 40 / 15	6-723-00	40,0	14,6	3,5	106,0	100
KTK 52 / 25	6-724-00	53,0	24,2	3,5	160,0	50
KTK 70 / 25	6-725-00	70,0	24,2	3,5	115,0	50
KTK 90 / 45	6-726-00	91,0	43,8	4,7	160,0	10
KTK 120 / 60	0-6-727-00	121,0	43,8	4,7	160,0	10
KTK 145 / 60	0-6-728-00	145,0	60	4,0	150,0	10
KTK 160 / 82	0-6-729-00	160,0	82	4,0	150,0	10
KTK 200 / 90	0-6-730-00	200,0	90	4,2	160,0	10

#### KTM - Heat shrink cable end caps

0-6-719-00

0-6-720-00

0-6-721-00

NEW



Aр	pliq	cati	on

Product

KTM 190 / 120

KTM 230 / 120

KTM 310 / 200

They are applied for the protection of spun cast concrete poles against water penetration. Inner surface of KTM end caps is covered with butyl rubber mastic which guarantee tightness of the insulation.

120

120

200

190

230

310

Dimensions [mm]

4,2

5,5

5,5

160

160

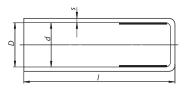
160

#### Attention:

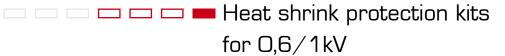
- D minimum inner diameter before recovery,
- d maximum inner diameter after entire recovery,
- s wall thickness after entire recovery,
- L end cap length before recovery.

#### Other dimensions and colours of end caps:

available on special request - contact our Export Dept.







#### Application

Protection kits are meant for cable ends protection. They allow the operation of cable under tension of 1kV. The cleaning tissue attached to the kit should be used for degreasing of cable surface before the installation.

#### ZO4 - Protection kits for 4-core polymer insulated cables



Product		Cable cross-section			Components of set				
name	index	[m	nm²]	Insulation	Insulation cap		сар	tissue	
namo		from	to	Туре	Quan.[pcs]	Туре	Quan.[pcs]	[pcs]	
ZO 4 16-25	6-004-00	16	25	10 / 4 x 48,5	4	33 / 15 x 106	1	1	
ZO 4 35	6-004-01	;	35	16 / 8 x 50	4	40 / 15 x 106	1	1	
ZO 4 50-70	6-004-02	50	70	16 / 8 x 50	4	52 / 25 x 160	1	1	
ZO 4 95-120	6-004-03	95	120	23 / 8 x 50	4	52 / 25 x 160	1	1	
ZO 4 150	6-004-04	1	50	23 / 8 x 50	4	70 / 25 x 160	1	1	
ZO 4 185	6-004-05	1	85	33 / 15 x 50	4	70 / 25 x 160	1	1	
ZO 4 240	6-004-06	2	40	33 / 15 x 50	4	90 / 45 x 160	1	1	

#### ZO5 - Protection kits for 5-core polymer insulated cables



Product index		Cable cross-section [mm²]		Insulation		ents of set Covering (	Cleaning tissue	
name		from	to	Туре	Quan.[pcs]	Туре	Quan.[pcs]	[pcs]
ZO 5 16-25	6-005-00	16	25	10 / 4 x 48,5	5	40 / 15 x 106	1	1
ZO 5 35	6-005-01	;	35	16 / 8 x 50	5	52 / 25 x 160	1	1
ZO 5 50-70	6-005-02	50	70	16 / 8 x 50	5	70 / 25 x 160	1	1
ZO 5 95-120	6-005-03	95	120	23 / 8 x 50	5	70 / 25 x 160	1	1
ZO 5 150	6-005-04	1	50	23 / 8 x 50	5	90 / 45 x 160	1	1
ZO 5 185-240	6-005-05	185	240	33 / 15 x 50	5	90 / 45 x 160	1	1

## Heat shrink phase markers - ZOK, ZOKżt



#### Application

Designed for phase marking of conductors finished with copper or aluminum lugs for installation outdoor, indoor and underground. They are good electrical insulators, they protect against mechanical and corrosion damages. The double layer hot-melt protection guarantees tightness of insulated connection.

#### Colours

**ZOK - 4** - black phase markers with white marking L1, L2, L3, L4,

**ZOKzt - 4** - black phase markers with white marking L1, L2, L3, N and one yellow-green phase marker.

#### Material

Made of medium wall heat shrink adhesive layered tubes (RPK).

- D minimum internal diameter before recovery,
- d maximum internal diameter after recovery,
- I length of phase marker.

#### ZOK, ZOKzt - Heat shrink phase markers

Product	index Product index		Produ	Product name		Dimensions of phase marker [mm]		
name	IIIuex	name	IIIuex	Al	Cu	D	d	L
ZOK-1	6-001-01	ZOKżt-1	6-002-01	-	16, 25	12	4	40
ZOK-2	6-001-02	ZOKżt-2	6-002-02	16, 25, 35	35, 50, 70	18	6	50
ZOK-3	6-001-03	ZOKżt-3	6-002-03	50, 70, 95	95, 120, 150, 185	25	10	80
ZOK-4	6-001-04	ZOKżt-4	6-002-04	120, 150, 185	240	32	12	100
ZOK-5	6-001-05	ZOKżt-5	6-002-05	240	-	40	16	120

#### Heat shrink wall ducts Heat shrink repair wrap-arounds Heat shrink tapes

## _ _ _ _ _ _ Heat shrink wall ducts



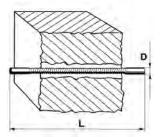
#### **Application**

Meant for tight ducts through walls, ceilings, partitions. They guarantee water-proof and gas-proof insulation. They are resistant to changing weather conditions; make good protection of cables and wires against mechanical abrasion, damages by rodents and insect penetrations.

#### Design

The are made of heat shrink tube and galvanized steel spiral. They are supplied double layered - with adhesive.

#### TPM - Heat shrink wall ducts



Product		Dim. of heat shrink duct [mm]			Dimensions of wall [mm]		
name	illuex	D	d	L Max. wall thicknes		Required diameter of wall hole	
TPM 14 / 10	6-760-00	14	10	800	500	50	
TPM 23 / 12	6-761-00	23	12	800	500	55	
TPM 28 / 16	6-762-00	28	16	800	500	60	
TPM 38 / 20	6-763-00	38	20	800	500	70	
TPM 48 / 19	6-764-01	48	19	800	500	85	
TPM 86 / 45	6-765-00	86	45	800	500	125	

d - inner diameter after entire recovery.

#### - - - - - Heat shrink repair wrap-arounds



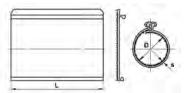
#### **Application**

They are designed for installation on single cores of multicore cables. They are also used for making and repairing straight and branch power cable joints and for telecommunication cables.

The wrap-arounds are supplied covered with thermosensitive paint (visible spots) which plays role of shrink temperature indicator protecting against local overheating.

The spots disappear when the shrink temperature is appropriate.





#### RM - Heat shrink repair wrap-arounds

Product		Index for length							
name	250 mm	500 mm	750 mm	1000 mm	1500 mm	D	d	s	
RM 42/8	0-122-04	0-122-03	0-122-02	0-122-01	0-122-00	42	8	3	
RM 62 / 22	0-123-06	0-123-05	0-123-02	0-123-01	0-123-00	62	22	3	
RM 92/30	0-124-06	0-124-05	0-124-02	0-124-01	0-124-00	92	30	3	
RM 122 / 38	0-125-04	0-125-03	0-125-02	0-125-01	0-125-00	122	38	3	
RM 160 / 55	0-126-04	0-126-03	0-126-02	0-126-01	0-126-00	160	55	3	
RM 210 / 55	0-127-04	0-127-03	0-127-02	0-127-01	0-127-00	210	55	3	

#### 🗆 🖂 🧀 🗀 💳 Heat shrink tapes



#### **Application**

They are mainly applied for cable bundling, repair and insulation of damaged cables and wires and for protecting the cables against mechanical defects and corrosion.

#### T - Electroinsulating tape

Product name	index	Length of tape [m]	Width of tape [mm]	Thickness of tape [mm]
T-25(15m)	0-644-00	15	25	0,9
T-50(15m)	0-645-00	15	50	0,9
T-100(15m)	0-646-00	15	100	0,9





#### TKT - Electroinsulating tape adhesive layered



#### **Application**

Advised for application for any constructional joints as a tight and durable protection. Good adherence of applied adhesive layer to metals, wood, ceramics and plastics guarantees good insulation of ventilation ducts, jacket pipes, wires, power and telecommunication cables. The conjunctions with TKT tape aren't prone to abrasion and corrosion.

Product name	index	Length of tape [m]	Width of tape [mm]	Thickness of tape [mm]	Thickness of adhesive layer [mm]
TKT-25(15m)	0-641-00	15	25	1,0	0,1
TKT-50(15m)	0-635-00/1	15	50	1,0	0,1
TKT-75(15m)	0-642-00	15	75	1,0	0,1
TKT-100(15m)	0-636-00/2	15	100	1,0	0,1
TKT-150(15m)	0-643-00	15	150	1,0	0,1

### 🗆 🗀 🗀 🗀 💳 Heat shrink pipe end caps





#### **Application**

Designed for insulation of cable outlets from cable ducts and for insulation of pre-insulated pipes' ends. They seal and protect against moisture penetration . They are applied in district heating industry, power engineering, construction engineering and telecommunication. They are resistant to: UV radiation, corrosive agents, fungus and mildew.

REC - Heat shrink pipe end caps

NEW
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Product	index		End cap dimension [mm]						
name	IIIuex	D	D ₁	d	d ₁	L ₁	L ₂		
REC 50	0-6-0000-13	60	30	45	10	70	50		
REC 75	6-0000-14	85	20	42	20	60	40		
REC 90	6-0000-01	105	27	45	27	60	40		
REC 110	6-0000-02	125	27	65	27	60	40		
<b>REC 125</b>	6-0000-03	140	35	76	35	60	40		
REC 140	6-0000-04	156	45	95	45	60	40		
<b>REC 160</b>	6-0000-05	178	58	105	58	80	50		
REC 160(S)	0-6-0000-12	170	92	60	20	80	40		

Attention: dimensions D1, d1 diameter after entire recovery.





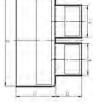
#### REC - Heat shrink pipe double end caps

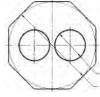
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Product	index	End cap dimension [mm]							
name	liluex	D	D ₁	d	d ₁	L ₁	L ₂		
REC 2x20(25)/90	0-6-0000-01-20	105	65	35	15	60	40		
REC 2x25(32)/110	0-6-0000-02-25	125	65	45	15	60	40		
REC 2x25(40)/125	0-6-0000-03-25	140	65	50	15	60	40		
REC 2x33,7/140	0-6-0000-04-33	156	65	45	15	60	40		
REC 2x25/160	0-6-0000-05-10	170	120	38	27	80	50		

Attention: dimensions D1, d1 diameter after entire recover.













## Straight cable joints for 0,6/1kV polymer insulated 4-core cables of type Y(A)KY, Y(A)KXS

Sets without connectors. For use with compression connectors.

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	1,5-10	4	ZRM 1,5-10*	6-049-00 NEW
	16-25	4	ZRM-1/JLP-CX4 16-25	6-106-01/1
0.64147	35-70	4	ZRM-2/JLP-CX4 35-70	6-106-02/1
0,6/1kV	95	4	ZRM-3/JLP-CX4 95	6-106-03/1
	120-150	4	ZRM-4/JLP-CX4 120-150	6-106-04/1
	185-300	4	ZRM-5/JLP-CX4 185-300	6-106-05/2

#### NEW

## Straight cable joints for 0,6/1kV polymer insulated 4-core cables of type Y(A)KY, Y(A)KXS

Sets without connectors. For use with compression or screw connectors.

Voltage range	Cable cross-section [mm²] for compression connectors	Cable cross-section [mm²] for screw connectors			Number of cores	Type of cable joint	index
	16-50	16-35	85	22	4	ZRM 16-50 / JLP-CX4 16-50	6-061-00
0,6/1kV	70-120	70-120	105	28	4	ZRM 70-120 / JLP-CX4 70-120	6-062-00
	150-300	150-185	145	35	4	ZRM 150-300 / JLP-CX4 150-300	6-063-00

Voltage range	Cable cross-section [mm²] for compression connectors	Cable cross-section [mm²] for screw connectors	Max. dimensions (mm Length	n) of screw connector Diameter	Number of cores	Type of cable joint	index
0.64147	16-70	16-35	105	22	4	ZRM 16-70 / JLP-CX4 16-70	6-064-00
0,6/1kV	95-300	95-185	145	35	4	ZRM 95-300 / JLP-CX4 95-300	6-065-00

Only 2 or 3 cable joints covering the range of cable cross-sections 16 mm² - 300 mm²!

## Straight cable joints for 0,6/1kV polymer insulated 4-core cables of type YAKY, YAKXS.

Cable cross- Number of

Sets are supplied with Al connectors acc. to DIN standards.

Voltage range	section [mm²]	cores	Type of cable joint	index
	16	4	ZRMZ-16/JLP-CX4 16 (KA,D)	6-107-00-16
	25	4	ZRMZ-25/JLP-CX4 25 (KA,D)	6-107-00-25
	35	4	ZRMZ-35/JLP-CX4 35 (KA,D)	6-107-00-35
	50	4	ZRMZ-50/JLP-CX4 50 (KA,D)	6-107-00-50
0.04114	70	4	ZRMZ-70/JLP-CX4 70 (KA,D)	6-107-00-70
0,6/1kV	95	4	ZRMZ-95/JLP-CX4 95 (KA,D)	6-107-00-95
	120	4	ZRMZ-120/JLP-CX4 120 (KA,D)	6-107-00-120
	150	4	ZRMZ-150/JLP-CX4 150 (KA,D)	6-107-00-150
	185	4	ZRMZ-185/JLP-CX4 185 (KA,D)	6-107-00-185
	240	4	ZRMZ-240/JLP-CX4 240 (KA,D)	6-107-00-240



## Straight cable joints for 0,6/1kV polymer insulated 4-core cables of type YKY, YKXS.

Cable cross- Number of

Sets are supplied with Cu connectors acc. to DIN standards.

Voltage range			Type of cable joint	index
veninge innige	section [mm ² ]	cores	1,500 01 044510 504411	
	0,5-1,5	4	JSP-CX4 0,5-1,5 (K,ZZ)	6-457-05
	1,5-2,5	4	JSP-CX4 1,5-2,5 (K,ZZ)	6-457-00
	4-6	4	JSP-CX4 4-6 (K,ZZ)	6-457-01
	10	4	JSP-CX4 10 (K,Z)*	6-111-10
	16	4	JLP-CX4 16 (K,D)	6-457-04
0,6/1kV	25	4	JLP-CX4 25 (K,D)	6-112-01
	35	4	JLP-CX4 35 (K,D)	6-112-02
	50	4	JLP-CX4 50 (K,D)	6-112-03
	70	4	JLP-CX4 70 (K,D)	6-112-04
	95	4	JLP-CX4 95 (K,D)	6-112-05
	120	4	JLP-CX4 120 (K,D)	6-112-06
	150	4	JLP-CX4 150 (K,D)	6-112-07
	185	4	JLP-CX4 185 (K,D)	6-112-08
	240	4	JLP-CX4 240 (K,D)	6-112-09
	Voltage range  0,6/1kV	0,5-1,5 1,5-2,5 4-6 10 16 25 35 50 70 95 120 150 185	0,5-1,5 4 1,5-2,5 4 4-6 4 10 4 16 4 25 4 35 4 50 4 70 4 95 4 120 4 150 4 185 4	0,5-1,5 4 JSP-CX4 0,5-1,5 (K,ZZ) 1,5-2,5 4 JSP-CX4 1,5-2,5 (K,ZZ) 4-6 4 JSP-CX4 16 (K,ZZ) 10 4 JSP-CX4 16 (K,ZZ) 16 4 JLP-CX4 16 (K,D) 25 4 JLP-CX4 25 (K,D) 35 4 JLP-CX4 35 (K,D) 50 4 JLP-CX4 50 (K,D) 70 4 JLP-CX4 70 (K,D) 95 4 JLP-CX4 95 (K,D) 120 4 JLP-CX4 150 (K,D) 150 4 JLP-CX4 150 (K,D) 150 4 JLP-CX4 150 (K,D) 150 4 JLP-CX4 150 (K,D) 185 4 JLP-CX4 185 (K,D)

^{*} Standard Cu connector



NEW

## Straight cable joints for 0,6/1kV polymer insulated 4-core cables of type Y(A)KY, Y(A)KXS



Sets are supplied with screw connectors

Voltage range	Cable cross-section [mm²]	Number of cores	Type of cable joint	index
	16-35	4	JLP-CX4 16-35 (S)	6-120-00
0.6/4147	25-70	4	JLP-CX4 25-70 (S)	6-120-04
0,6/1kV	70-120	4	JLP-CX4 70-120 (S)	6-120-05
	150-240	4	JLP-CX4 150-240 (S)	6-120-06

## Straight cable joints for 0.6/1kV polymer insulated 1-core cables of type Y(A)KY, Y(A)KXS

Sets without connectors, one set for four single cores. For use with compression connectors.

Voltage range	Cable cross-section [mm²]	Number of cores	Type of cable joint	index
	16-25	1	ZRMj-1/JLP-CX1 16-25	6-050-01/1
	35-70	1	ZRMj-2/JLP-CX1 35-70	6-050-02/1
0,6/1kV	95	1	ZRMj-3/JLP-CX1 95	6-050-03/1
	120-150	1	ZRMj-4/JLP-CX1 120-150	6-050-04/1
	185-300	1	ZRMj-5/JLP-CX1 185-300	6-050-05/2

Attention: ZRMj-5/JLP-CX1 185-240 has been expanded to the cable cross-section 300 mm².

NFW

Straight cable joints for 0,6/1kV polymer insulated 1-core cables

of type Y(A)KY, Y(A)KXS



Sets without connectors, one set for four single cores. For use with compression or screw connectors.

	Voltage range	Cable cross-section [mm²] for compression connectors	Cable cross-section [mm²] for screw connectors	Max. dimensions (mn Length	n) of screw connector Diameter	Number of cores	Type of cable joint	index
	0,6/1kV	16-70	16-35	105	22	1	ZRMj 16-70 / JLP-CX1 16-70	6-060-00
		95-300	95-185	145	35	1	ZRMj 95-300 / JLP-CX1 95-300	6-060-01

Only 2 or 3 cable joints covering the range of cable cross-sections 16 mm² - 300 mm²!

NEW

## Straight cable joints for 0.6/1kV polymer insulated 3-core cables of type Y(A)KY, Y(A)KXS

Sets without connectors, For use with compression connectors. ATTENTION: New cable joints replace joints of type ZRMt (1,2,3,4,5).

	Voltage range	Cable cross-section [mm²] for compression connectors	• •	Max. dimensions (mm Length	n) of screw connector Diameter	Number of cores	Type of cable joint		index
		1,5-10	-	-	-	3	ZRM 1,5-10*	NEW	6-049-00
	0,6/1kV	16-70	16-35	105	22	3	ZRMt 16-70 / JLP-	CX 3 16-70	6-113-05
		95-300	95-185	145	35	3	ZRMt 95-300 / JLF	P-CX 3 95-300	6-113-06

 $^{^{\}star}$  The set can be also used for 4 and 5 core cables of cross-section 1,5-10  $\text{mm}^2.$ 

NEW

Straight cable joints for 0,6/1kV polymer insulated 5-core cables



Sets without connectors, For use with compression or screw connectors. ATTENTION: New cable joints replace joints of type ZRMp (1,2,3,4,5).

	Voltage range	Cable cross-section [mm²] for compression connectors	• •	Max. dimensions (mm Length	n) of screw connector Diameter	Number of cores	Type of cable joint		index
	0,6/1kV	1,5-10	-	-	-	5	ZRM 1,5-10*	NEW	6-049-00
		16-70	16-35	105	22	5	ZRMp 16-70 / JLP-	CX 5 16-70	6-114-05
		95-300	95-185	145	35	5	ZRMp 95-300 / JLF	P-CX 5 95-300	6-114-06

^{*} The set can be also used for 3 and 4 core cables of cross-section 1,5-10 mm².



## Straight cable joints for O,6/1kV paper insulated cables of type KFtA, AKFtA

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	16-25	3	JLP-CF3 16-25	6-171-10
	35-50	3	JLP-CF3 35-50	6-171-11
	70-95	3	JLP-CF3 70-95	6-171-12
	120-150	3	JLP-CF3 120-150	6-171-13
0.6/1kV	185-240	3	JLP-CF3 185-240	6-171-19
0,6/160	16-25	4	JLP-CF4 16-25	6-176-17
	35-50	4	JLP-CF4 35-50	6-176-11
	70-95	4	JLP-CF4 70-95	6-176-13
	120-150	4	JLP-CF4 120-150	6-176-14
	185-240	4	JLP-CF4 185-240	6-176-15

## Straight cable joints for 0.6/1kV polymer insulated and armoured cables of type Y(A)KYF(o, p, t, l)Y

	Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
		16-35	4	JLP-CA4 16-35	6-160-05
	0,6/1kV	50-95	4	JLP-CA4 50-95	6-157-04-01
		120-240	4	JLP-CA4 120-240	6-157-10

## Straight cable joints for 0,6/1kV mining cables and wires of type YnOGY

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	2,5-6	4	JLPG-CXY-4 2,5-6	6-121-00
	10-16	4	JLPG-CXY-4 10-16	6-121-01
0.6/1kV	25-35	4	JLPG-CXY-4 25-35	6-121-02
0,0/160	50-120	4	JLPG-CXY-4 50-120	6-121-03
	2,5-6	5	JLPG-CXY-5 2,5-6	6-122-00
	10	5	JLPG-CXY-5 10	6-122-01

## Straight cable joints for $0.6/1 \,\mathrm{kV}$ mining cables and wires of type HO7RN-F

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	2,5	3	JLPG-CGH-3 2,5	6-123-00
	4-6	3	JLPG-CGH-3 4-6	6-123-01
	10-25	3	JLPG-CGH-3 10-25	6-123-02
	2,5-4	4	JLPG-CGH-4 2,5-4	6-124-00
0,6/1kV	6-10	4	JLPG-CGH-4 6-10	6-124-01
	16-25	4	JLPG-CGH-4 16-25	6-124-02
	2,5-4	5	JLPG-CGH-5 2,5-4	6-125-00
	6-10	5	JLPG-CGH-5 6-10	6-125-01
	16-25	5	JLPG-CGH-5 16-25	6-125-02

## Straight cable joints for 0,6/1kV mining cables and wires of type OnGcekż-G, OnGcekżi-G

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	10; 10; 2,5	5	JLPG-CGO 3+1+1 3x10+10+2,5 (K,Z)	6-128-00
	16; 10; 2,5	5	JLPG-CGO 3+1+1 3x16+10+2,5 (K,Z)	6-129-00
0,6/1kV	25; 16; 4	5	JLPG-CGO 3+1+1 3x25+16+4 (K,Z)	6-126-06
	16; 10; 2,5	7	JLPG-CGO 3+1+3 3x16+10+3x2,5 (K,Z)	6-130-00
	25; 16; 2,5	7	JLPG-CGO 3+1+3 3x25+16+3x2,5 (K,Z)	6-135-00







#### Application

They are designed for joining cables of the same insulation, cross-section and number of cores. They are meant for cables of type: Y(A)KY, Y(A)KXS, YKSY, YKSY, YKSX, YNKSY, OGŁ, OGŁp, OW, OPd, OWY.

#### Joint content

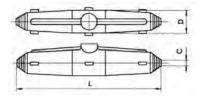
Resin joint set consists of: resin cast, polyurethane resin, insulation tape, protective gloves and connectors (on special request).

#### **Properties**

Two-piece polyurethane resin (resin and hardener) is delivered in two containers for quick and easy mixing. The mixed components of resin fill up the resin cast making the conjunction tight and excellent insulated. Gloves protect hands against contact with resin.

No heat needed for installation.

Installation guide supplied along with the product.



Voltage range	Type of cable joint	Dimension L	s [mm] D	Outer cable diameter - C [mm]	index
	JLZ1	189	40	6 - 28	0-115-00
	JLZ2	275	50	12 -32	0-115-01
0,6/1kV	JLZ3	355	72	26 - 45	0-115-02
	JLZ4	547	108	37 - 67	0-115-03
	JLZ5	800	132	48 - 88	0-115-04

#### JLZR1; 2; 3 - Branch cast resin joints





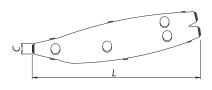
They are designed for joining 3, 4 and 5-core 0,6/1kV cables of main cable cores' cross-section 1 - 35 mm² and branch cable cores' cross-section 1 - 25 mm². Used for cables of type: Y(A)KY, Y(A)KXS, YKSY, YDY, YLY.

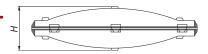
**Joint content:** Two-piece transparent cast, polyurethane resin, insulation mass, protective gloves, instruction manual. The set doesn't contain branch grips (available on request).

**Properties:** Joints guarantee full tightness thanks to it they can be applied in ground and water, cable ducts and indoors. No special tools and heat sources needed during the assembling. Wide range of application along with the small size of the set are the most important advantages of new joints which are appreciated by the installers daily assembling the most popular cables and wires.









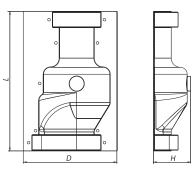
Voltage range	Type of cable joint	Main cable cores' cross- section	Branch cable cores' cross- section	Width H [mm]	Length L [mm]	Hole diameter C [mm]		index
		[mm ² ]	[mm ² ]			min.	max	
	JLZR1	3x2,5÷10 4x1,5÷6 5x1÷4	3x2,5÷4 4x1,5÷2,5 5x1÷2,5	45	150	10	19	0-115-05
0,6/1kV	JLZR2	3x2,5÷16 4x2,5÷10 5x1,5÷6	3x2,5÷6 4x1,5÷4 5x1,5÷4	66	175	6	21	0-115-06
	JLZR3	3x6÷35 4x4÷25 5x2,5÷10	3x2,5÷25 4x2,5÷16 5x2,5÷10	70	225	9	24	0-115-07

Joints hold a positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-EN 50393:2006.











NFW

#### Application

They are designed for joining 4-core  $0.6/1 \, \text{kV}$  cables of main cable cores' cross-section 16 -  $240 \, \text{mm}^2$  and branch cable cores' cross-section 6 -  $70 \, \text{mm}^2$ . Used for cables of type: Y(A)KY, Y(A)KXS.

**Joint content:** Two-piece transparent cast, polyurethane resin, sealing sponges, branch ferrule, protective gloves, instruction manual.

Properties: No special tools and heat sources needed during the assembling.

The cast is perfectly matched to the connection. It doesn't require any additional cutting. The place of cable connection is excellently visible. Applied branch ferrule enable cables joining without necessity of cutting them. Assembling is carried out by using of hex wrench. Polyurethane resin is supplied in two-part bag enabling quick and easy mixing. The resin mixture fully fills up the resin cast. It is also resistant to UV radiation and chemical factors. The joint guarantee full tightness of the connection thanks to it they can be applied in ground and water, cable ducts and indoors.

Voltage range	Type of cable joint	Main cable cores' cross-section [mm²]	Branch cable cores' cross-section	Number of cores		Dimensio	ons	index
	Joint	RM, SM/RE, SE	[mm ² ]		L	D	Н	
	JLZR4	16-25 / 25-35	6-50	4	253	165	61,5	0-115-08
0.6/1/0/	JLZR5	35-50 / 35-70	6-50	4	303	177	63,5	0-115-09
0,6/1kV	JLZR6	70-120 / 95-150	6-70	4	303	200	76,5	0-115-10
	JLZR7	185-240 / 185-240	6-70	4	303	205	81,5	0-115-11

Joints hold a positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-EN 50393:2006.

#### RPU - Polyurethane resin

NEW

#### **Application**

It is used for the reconstruction of the insulation of polymer, paper or rubber insulated power, signal and telecommunication cables for the rated voltage of 0,6/1 (1,2) kV.

**Properties:** The package with resin has been designed and made in such way that it could be quickly, easy and effectively used by the installer. Properly matched proportions of two-component polyurethane resin are separated by the special plastic separator which when removed, enables mixing of the resin with the hardener. Mixture created in such way is characterized by perfect adhesion, resistance to hydrolysis and is ready to be used for the cables as the insulation and mechanical covering.



Type of resin	Volume [ml]	index
RPU 730	730	0-115-12
RPU 1000	1000	0-115-13

Max. storage time in temperature from 15°C to 35°C - 48 months.

Properties	Value	Requirements for the norm DIN VDE 0291
Max. using time after mixing 5°C 23°C 35°C	35 min 20 min 15 min	Accordance with product data (±30%)
Base component Ignition temperature	>200°C	>55°C
Resistance to elongation	≥8,0 Mpa	≥5,0
Heat ageing	-5 Shore A	-7
Adherence	>1500 CP.S	<1500
Elongation at rupture	≥100%	≥50
Gelation time 300ml Packing >1000ml Packing <1000ml	23°C 26 min 17 min	Accordance with product data (±10%) Accordance with product data (±10%)
Max. reaction temperature	60°C	Accordance with product data (±10%)
Density change after harden	6%	Max. 6,5%
Assimilate component Ignition temperature	>200°C	>100°C
Density	1,07 g/cm ³	_



#### Cable joints

Properties	Value	Requirements for the norm DIN VDE 0291
Resistance to blowing	>10kJ/m²	>10kJ/m²
Hardness	75 Shore A	Min. 20 Shore D
Thermal extension factor 20-50°C	5,9x10 ⁻⁴ K ⁻¹	Accordance with product data (±15%)
Thermal conductivity	0,2w x m ⁻¹ x K ⁻¹	Accordance with product data (±20%)
Flammability	Class II c	Accordance with DIN VDE 0304 part 3
Water absorption 42 days in temp. 50°C	360 mg	Max. 400 mg
Electrolytic corrosion	1	-
Tension test 23°C 80°C	>20kV >10kV	No breakdown 20kV 20kV
Dispersion of insulation material factor 23°C i 50Hz 23°C i 1kHz	0,08 0,05	Max. 0,1
Resistance to creeping current 23°C i 50Hz 23°C i 1kHz	5 5,1	<6 -
Resistance to creeping current	KA 3c	Min. KA 3c
Resistance to hydrolysis after submersion in water 90°C		
Resistance to elongation	8,2N/mm ²	≥65% of initial value
Elongation at rupture	60%	≥65% of initial value
Hardness	47 Shore	≥65% of initial value

#### Straight cable joints for 0,6/1kV traction cables

#### Application

Joints designed for joining traction cables: YKY, YAKY, YKXS, YAKXS, XAKXS, XKXS.

For special orders the joints are supplied with aluminium connectors.

Traction cable: single-core polymer insulated cable, screened with drain wires or tapes (YAKY 630/25). YAKY-zp cable: YAKY cable with test cores (YAKY 630 + 2x2,5).



Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	500-630	1	JLP-CX1 500-630	6-051-09
0,6/1kV	630	1	JLP-CT1 630	6-052-00
	630	1+2	JL P-CX1+2 1x630+2x2 5	6-057-00

#### JOP - Straight cable joints 0,6/1kV for deep-well pumps

#### **Application**

**Example** 

JLP-CT1 630

Description

Name

Joints for rubber insulated cables are designed to be installed in environment of high humidity. Their design excludes any moisture penetration thanks to special sealant. The joint sets are supplied with connectors of doubled length which guarantee proper mechanical strength to elongation. Due to this the cable joints are stable and dependable.

JOP joints are designed for connection of round and flat cables:

straight cable joint for LV 0,6/1kV for traction single-core cables of cross-section 630 mm²

OGŁ, OGŁp, OW, OPd, OWY.

Transition joints for the mention cables are supplied on special request, contact our Export Dept.



#### **Example**

Name

JOP-CG3 1,5-2,5 (K, Z)

#### Description

straight cable joint LV 0,6/1kV for rubber copper three-core cables of 1,5-2,5 mm² cross-section, with copper connectors of double length

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	1,5-2,5	3	JOP-CG3- 1,5-2,5 ( K,Z )	6-181-04
	4	3	JOP-CG3- 4 ( K,Z )	6-181-00
	6	3	JOP-CG3- 6 ( K,Z )	6-181-03
	10	3	JOP-CG3- 10 ( K,Z )	6-181-02
	16	3	JOP-CG3-16 (K,Z)	6-181-01
	25	3	JOP-CG3-25 (K,Z)	6-181-09
	35	3	JOP-CG3-35 (K,Z)	6-181-07
	50	3	JOP-CG3-50 (K,Z)	6-181-08
0.04137	1,5-2,5	4	JOP-CG4-1,5-2,5 ( K,Z )	6-183-01
0,6/1kV	4	4	JOP-CG4-4 ( K,Z )	6-183-00
	6	4	JOP-CG4-6 ( K,Z )	6-183-04
	10	4	JOP-CG4-10 ( K,Z )	6-183-03
	16	4	JOP-CG4-16 ( K,Z )	6-183-02
	1,5-2,5	5	JOP-CG5-1,5-2,5 (K,Z)	6-185-01
	4	5	JOP-CG5- 4 (K,Z)	6-185-00
	6	5	JOP-CG5-6 (K,Z)	6-185-02
	10	5	JOP-CG5-10(K,Z)	6-185-03
	16	5	JOP-CG5-16 (K,Z)	6-185-04



#### JSP - Straight cable joints for 0,6/1kV signal cables

For cable types: YKSY, YKSYy, YKSX, YNKSY



Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	1,5-2,5	2	JSP-CX2 1,5-2,5 (K,ZZ)	6-455-00
	0,5-1,5	3	JSP-CX3 0,5-1,5 (K,ZZ)	6-450-01
	1,5-2,5	3	JSP-CX3 1,5-2,5(K,ZZ)	6-450-00
	10	3	JSP-CX3 10 (K,Z)	6-450-02
	0,5-1,5	4	JSP-CX4 0,5-1,5(K,ZZ)	6-457-05
	1,5-2,5	4	JSP-CX4 1,5-2,5 (K,ZZ)	6-457-00
	4-6	4	JSP-CX4 4-6 (K, ZZ)	6-457-01
	10	4	JSP-CX4 10 (K,Z)	6-457-04
	1,5-2,5	5	JSP-CX 5 1,5-2,5(K,ZZ)	6-452-02
	4-6	5	JSP-CX 5 4-6(K,ZZ)	6-452-01
	10	5	JSP-CX 5 10 (K,Z)	6-452-05
	0,5-1,5	6	JSP-CX 6 0,5-1,5 (K,ZZ)	6-451-14
	0,5-1,5	7	JSP-CX 7 0,5-1,5 (K,ZZ)	6-451-15
0,6/1kV	1,5-2,5	7	JSP-CX 7 1,5-2,5(K,ZZ)	6-451-01
,	4-6	7	JSP-CX 7 4-6(K,ZZ)	6-451-02
	0,5-1,5	10	JSP-CX 10 0,5-1,5 (K,ZZ)	6-451-11
	1,5-2,5	10	JSP-CX 10 1,5-2,5 (K,ZZ)	6-451-04
	4-6	10	JSP-CX10 4-6(K,ZZ)	6-451-09
	0,5-1,5	14	JSP-CX 14 0,5-1,5 (K,ZZ)	6-451-12
	1,5-2,5	14	JSP-CX14 1,5-2,5(K,ZZ)	6-449-00
	1,5-2,5	19	JSP-CX 19 1,5-2,5(K,ZZ)	6-451-05
	1,5-2,5	24	JSP-CX 24 1,5-2,5 (K,ZZ)	6-451-03
	1,5-2,5	30	JSP-CX30 1,5-2,5(K,ZZ)	6-451-07
	0,5-1,5	37	JSP-CX 37 0,5-1,5(K,ZZ)	6-451-10
	1,5-2,5	37	JSP-CX 37 1,5-2,5(K,ZZ)	6-451-06
	1,5-2,5	40	JSP-CX40 1,5-2,5 (K,ZZ)	6-459-00
	0,5-1,5	75	JSP-CX75 0,5-1,5(K,ZZ)	6-451-08

Joint sets are supplied with copper connectors insulated with heat shrink.

For cable types: KSY, KSYFt, Ksywo, KSYFtA, KSYFoA, KSYFty, KSYFoy, YKSYFpy, YKSYFty, YKSYFoy, YKSXFpy, YKSXFoy,

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	10	3	JSP-CA 3 10 (K,Z)	6-255-06
	1,5-2,5	4	JSP-CA 4 1,5-2,5 ( K,ZZ)	6-254-06
	4-6	4	JSP-CA 4 4-6 ( K,ZZ)	6-254-07
	10	4	JSP-CA 4 10 (K,Z)	6-255-07
	1,5-2,5	5	JSP-CA 5 1,5-2,5 ( K,ZZ)	6-254-05
	4-6	5	JSP-CA 5 4-6( K,ZZ)	6-254-03
0,6/1kV	1,5-2,5	7	JSP-CA 7 1,5-2,5( K,ZZ)	6-254-02
	4-6	7	JSP-CA 7 4-6( K,ZZ)	6-254-04
	1,5-2,5	10	JSP-CA 10 1,5-2,5( K,ZZ)	6-255-01
	1,5-2,5	14	JSP-CA 14 1,5-2,5 (K,ZZ)	6-255-05
	1,5-2,5	19	JSP-CA 19 1,5-2,5 (K,ZZ)	6-255-04
	1,5-2,5	24	JSP-CA 24 1,5-2,5(K,ZZ)	6-255-03
	1,5-2,5	37	JSP-CA37 1,5-2,5(K,ZZ)	6-255-02

Joint sets are supplied with copper connectors insulated with heat shrink.

Transition joints for the signal cables are supplied on special request, contact our Export Dept.

#### **Example**

Example	Description
JSP-CX7 1,5-2,5 (K,ZZ)	Straight cable joint LV 0,6/1kV for polymer insulated (PE, XLPE, PCV) copper 7-core signal cables with copper connectors.



On request we make 0.6/1kV transition cable joints with screw or compression connectors:

- Y(A)KY(-żo)
- Y(A)KXS(-żo)
- Y(A)KYFoy(-żo)
- Y(A)KYFpy(-żo)
- YAKYFtly(-żo)
- (A)KFtA
- OGł
- H07RN-F

Due to variety of cable connections requests for 0,6/1kV transition cable joints are determined individually. In that case please contact our Export Department.

#### Exemplary content of the transition joint







## Straight cable joints for single-core screened polymer insulated cables with drain wires

6/10kV 8,7/15kV 12/20kV

**Application:** designed for joining cables of type: YH(A)KXS, XUH(A)KXS, XH(A)KXS, X(RU)H(A)KXS

**Technical information:** The set contains stress control mastic which is wrapped around the screens' terminations and the connector's surface. It is used for preliminary controlling of the electrical field and filling up the space between insulation and connector's endings. The joint is supplied with stress control tubing which is shaping the electromagnetic field distribution on the whole connection length, insulation and double-layer tube with integrated layers: inner insulation, outer semiconducting. Outer semiconducting layer reconstructs the cable's screen and increases the insulation layer's pressure strength. This design guarantees the perfect adhesion of all tubes in the joint. Copper netting applied on the whole joint length increases the mechanical resistance of the joint and improves the heat venting from the drain wire.

Drain wire is being connected by screw or compression connectors additionally protected by the heat shrink tube.

Reconstruction of the cable covering is made by heat shrink thick wall adhesive-layered tube guaranteeing good adhesion of the tube to the cable's outer surface.

Plastic mass applied at the joints endings protects against moisture penetration.



NEW! Sets made as single-phase, contain screw connectors.

Voltage range	Cable cross-section [mm²]	Type of cable joint	index
	50-150	JHP-10-CX1 50-150 (S)	6-420-08
6/10kV	150-240	JHP-10-CX1 150-240 (S)	6-420-09
	240-400	JHP-10-CX1 240-400 (S)	6-420-10
	50-150	JHP-15-CX1 50-150 (S)	6-421-11
8,7/15kV	120-240	JHP-15-CX1 120-240 (S)	6-421-12
	185-400	JHP-15-CX1 185-400 (S)	6-421-13
	35-150	JHP-20-CX1 35-150 (S)	6-700-04
12/20kV	95-240	JHP-20-CX1 95-240 (S)	6-700-05
	185-400	JHP-20-CX1 185-400 (S)	6-700-06



Sets made as single-phase, meant for joining cables with the use of compression connectors (sets don't contain connectors).

Voltage range	Cable cross-section [mm²]	Type of cable joint	index
	50-70	JHP-10-CX1 50-70	6-420-05
6/10kV	95-150	JHP-10-CX1 95-150	6-420-06
	185-240	JHP-10-CX1 185-240	6-420-07
	35-50	JHP-15-CX1 35-50	6-421-08
8,7/15kV	50-120	JHP-15-CX1 50-120	6-421-09
	150-240	JHP-15-CX1 150-240	6-421-10
12/20kV	35-95	JHP-20-CX1 35-95	6-422-02
12/20KV	120-240	JHP-20-CX1 120-240	6-422-11

#### Properties of the joints:

- for cables with cross-sections up to 400 mm² (concerns joints with screw connectors),
- · in case of joints with screw connectors they limit the number of tools necessary for the assembling,
- · thermoplastic control mastic applied in the joint prevents from appearing of the incomplete discharges,
- high electrical and mechanical resistance,
- · guarantee reliable and long-life work of the power line,
- short assembling time thanks to simple construction and attached installation guide,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norms PN-90/E-06401 i PN-HD 629.1 \$2:2006.



3.6/6kV

## Straight cable joints for 3-core unscreened polymer insulated cables

Application: designed for joining cables of type: YKY, YAKY

**Technical information:** Heat shrink thick wall adhesive-layered tubes used for reconstruction of cores and connectors insulation.

Additional insulation space is guaranteed by polyethylene spacer situated between the phase cores. Drain wire is reconstructed with the use of tinned copper sleeve installed by spring clips.

Covering of the joint is formed by the heat shrink thick wall adhesive-layered tube.



Voltage range	Cable cross-section [mm²]	Type of cable joint	index
	25-35	JHP-6-CX3 25-35	6-192-00
0.6./6M/	50-95	JHP-6-CX3 50-95	6-192-01
3,6/6kV	120-185	JHP-6-CX3 120-185	6-192-02
	240	JHP-6-CX3 240	6-192-03

Joint sets are meant for joining cables with the use of compression connectors (sets don't contain connectors).

#### Properties of the joints:

- · cover full range of cable cross-sections,
- · insulation layer of very high pressing strength,
- · high electrical and mechanical resistance due to heat shrink thick wall adhesive-layered tubes,
- · applied heat shrink tubes protect against moisture penetration.

#### 3,6/6kV

## Straight cable joints for 3-core unscreened polymer insulated and armoured cables

**Application:** designed for joining cables of type: YAKYFty, YKYFty, YAKYFpy, YKYFoy, YKYFoy

**Technical information:** Heat shrink thick wall adhesive-layered tubes used for reconstruction of cores and connectors insulation.

Additional insulation space is guaranteed by polyethylene spacer situated between the phase cores. Drain wire and metal armour are reconstructed with the use of tinned copper sleeve installed by spring clips. Covering of the joint is formed by the heat shrink thick wall adhesive-layered tube.



Voltage range	Cable cross-section [mm²]	Type of cable joint	index
3,6/6kV	25-50	JHP-6-CA3 25-50	6-211-00
	70-120	JHP-6-CA3 70-120	6-211-01
	150-240	JHP-6-CA3 150-240	6-211-02

Joint sets are meant for joining cables with the use of compression connectors (sets don't contain connectors).

#### Properties of the joints:

- · cover full range of cable cross-sections,
- · insulation layer of very high pressing strength,
- high electrical and mechanical resistance due to heat shrink thick wall adhesive-layered tubes,
- applied heat shrink tubes protect against moisture penetration.





# Straight cable joints for 3-core screened saturated paper insulated cables with common metal sheath

8,7/15kV 12/20kV

**Application:** designed for joining cables of type: H(A)KnF(t, p)A, H(A)KnF(t, p)y, H(A)Kny.

**Technical information:** The set contains stress control mastic and tubing which are applied for controlling of the electrical field on connectors, individual cores' screens terminations and metal sheath. Oil-proof insulation tubes increase the electrical resistance of the connected cables. Reconstruction of the particular cores' screens is made with the use of heat shrink double-layer tubes. Copper netting along with two earthing straps guarantee conducting of high short-circuit current and regular heat venting from the connection. Heat shrink thick wall adhesive-layered tube used for covering reconstruction and insulation mastic guarantee full protection against moisture penetration.

#### Properties of the joints:

- universal application for cables of two voltage levels: 8,7/15kV and 12/20kV,
- resistant to difficult environmental conditions, full protection against moisture penetration,
- in case of joints with screw connectors they limit the number of tools necessary for the assembling,
- guarantee reliable and long-life work of the power line,
- · high electrical and mechanical resistance,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.2 S2:2006.



Joint sets are meant for joining cables with the use of compression connectors (sets don't contain connectors).

Voltage range	Cable cross- section [mm²]	Type of cable joint	index
8,7/15 kV	35-150	JHP-20-CF3 35-150	6-500-00
i 12/20kV	95-240	JHP-20-CF3 95-240	6-500-01

Joint sets are supplied with screw connectors.

Voltage range	Cable cross- section [mm²]	Type of cable joint	index
8,7/15 kV	35-150	JHP-20-CF3 35-150 (S)	6-500-02
i 12/20kV	95-240	JHP-20-CF3 95-240 (S)	6-500-03

# Straight cable joints for 3-core screened saturated paper insulated and armoured cables with common metal sheath

3.6/6kV 6/10kV

Application: designed for joining cables of type: AKnFtA, AKnFpA, AKnFt, AKnFp,

 $\mathsf{AKnFty}, \ \mathsf{AKnFpy}, \ \mathsf{KnFtA}, \ \mathsf{KnFpA}, \ \mathsf{KnFt}, \ \mathsf{KnFp}$ 

**Technical information:** Insulation of the particular cable's cores isolation is made with the use of transparent tubes which are resistant to cable saturant. Heat shrink breakout boot with the filling mastic seals the cores' outlets and metal sheath termination. Heat shrink thick wall adhesive-layered tubes are applied for reconstruction of cores and connectors insulation. Additional insulation space is guaranteed by polyethylene spacer situated between the phase cores.

The interior of the joint is filled with the three-cornered insulation mastic. Metal sheath and armour are reconstructed with the use of tinned copper sleeve installed by spring clips. Covering of the joint is formed by the heat shrink thick wall adhesive-layered tube.

#### Properties of the joints:

- · cover full range of cable cross-sections,
- high electrical and mechanical resistance due to heat shrink thick wall adhesive-layered tubes,
- · made of materials resistant to cable saturant,
- guarantee reliable and long-life work of the power line,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-90/E-06401.



Joint sets are meant for joining cables with the use of compression connectors (sets don't contain connectors).

١	/oltage range	Cable cross- section [mm²]	Type of cable joint	index
		16-50	JHP-6-CF3 16-50	6-231-02
	3,6/6kV	70-120	JHP-6-CF3 70-120	6-231-03
		150-240	JHP-6-CF3 150-240	6-231-04
		16-50	JHP-10-CF3 16-50	6-251-02
	6/10kV	70-120	JHP-10-CF3 70-120	6-251-01
	6/TUKV	150-185	JHP-10-CF3 150-185	6-251-08
		240	JHP-10-CF3 240	6-251-03



8,7/15kV 12/20kV

#### NEW

Transition cable joints from 3-core screened saturated paper insulated and armoured cable with common metal sheath to three single core extruded and screened polymer insulated cables with drain wires

**Application:** designed for joining cables of type: H(A)KnF(t, p)A, H(A)KnF(t, p)y, H(A)Kny with cables YH(A)KXS, XH(A)KXS, XUH(A)KXS, XRUH(A)KXS. **Technical information:** In the initial stage of preparing for the assembling, paper insulated cable is transformed into polymer insulated cable with the use of transparent heat shrink thin wall tubes and 3-core breakout boot. Cores are being joined by leakproof connectors with partition. The joint set contains stress control mastic and tubing which are applied for controlling of the electrical field on connectors, individual cores' screens terminations and metal sheath. Insulation tubes increase the electrical resistance of the construction, double-layer tubes reconstruct the individual cores' screens. Spring clips guarantee the proper connection of the polymer cables' drain wires with the metal sheath and armour of the paper cable. Full protection against moisture penetration is ensured by heat shrink thick wall adhesive-layered tubes for the covering reconstruction, heat shrink 3-core breakout boot closing the connection from the side of polymer cables and insulation mastic.

#### Properties of the joints:

- universal application for cables of two voltage levels: 8,7/15kV i 12/20kV,
- resistant to difficult environmental conditions, full protection against moisture penetration, can work under water,
- in case of joints with screw connectors they limit the number of tools necessary for the assembling,
- guarantee reliable and long-life work of the power line,
- high electrical and mechanical resistance,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.2 S2:2006.



Joint sets are meant for joining cables with the use of compression connectors (sets don't contain connectors).

Voltage range	Cable cross-section [mm²]	Type of cable joint	Index
8,7/15 kV	35-150	JHP-20-CF/CXd 3/1 35-150/35-150	6-500-04
i 12/20kV	95-240	JHP-20-CF/CXd 3/1 95-240/95-240	6-500-05

Joint sets are supplied with screw connectors.

Voltage range	Cable cross-section [mm²]	Type of cable joint	Index
8,7/15 kV	35-150	JHP-20-CF/CXd 3/1 35-150/35-150 (S)	6-500-06
i 12/20kV	95-240	JHP-20-CF/CXd 3/1 95-240/95-240 (S)	6-500-07

3,6/6kV

Transition cable joints 3,6/6kV from 3-core polymer insulated cable to 3-core paper insulated cable



	Voltage	Cable cross-	able cross- Number of cores			
┫	range	section [mm²]	Polymer insulated cable	Paper insulated cable	Type of cable joint	Index
		35	3	3	JHP-6-CX/CF 3/3 35/35 (KA/KA,D)	6-404-08
		50	3	3	JHP-6-CX/CF 3/3 50/50 (KA/KA,D)	6-404-16
		70	3	3	JHP-6-CX/CF 3/3 70/70 (KA/KA,D)	6-404-17
		95	3	3	JHP-6-CX/CF 3/3 95/95 (KA/KA,D)	6-406-01
	3,6/6kV	120	3	3	JHP-6-CX/CF 3/3 120/120 (KA/KA,D)	6-406-00
		150	3	3	JHP-6-CX/CF 3/3 150/150 (KA/KA,D)	6-404-09
		185	3	3	JHP-6-CX/CF 3/3 185/185 (KA/KA,D)	6-407-05
		240	3	3	JHP-6-CX/CF 3/3 240/240 (KA/KA,D)	6-404-07

Cable cross-	Number	of cores		Index
section [mm²]	Polymer insulated cable	Paper insulated cable	Type of cable joint	
35	3	3	JHP-6-CA/CF 3/3 35/35 (KA/KA,D)	6-419-04
50	3	3	JHP-6-CA/CF 3/3 50/50 (KA/KA,D)	6-419-05
70	3	3	JHP-6-CA/CF 3/3 70/70 (KA/KA,D)	6-419-06
95	3	3	JHP-6-CA/CF 3/3 95/95 (KA/KA,D)	6-419-07
120	3	3	JHP-6-CA/CF 3/3 120/120 (KA/KA,D)	6-419-08
150	3	3	JHP-6-CA/CF 3/3 150/150 (KA/KA,D)	6-419-09
185	3	3	JHP-6-CA/CF 3/3 185/185 (KA/KA,D)	6-419-10
240	3	3	JHP-6-CA/CF 3/3 240/240 (KA/KA,D)	6-419-01
	section [mm²] 35 50 70 95 120 150 185	section [mm²]         Polymer insulated cable           35         3           50         3           70         3           95         3           120         3           150         3           185         3	section [mm²]         Polymer insulated cable         Paper insulated cable           35         3         3           50         3         3           70         3         3           95         3         3           120         3         3           150         3         3           185         3         3	section [mm²]         Polymer insulated cable         Paper insulated cable         Type of cable joint           35         3         3 JHP-6-CA/CF 3/3 35/35 (KA/KA,D)           50         3         3 JHP-6-CA/CF 3/3 50/50 (KA/KA,D)           70         3         3 JHP-6-CA/CF 3/3 70/70 (KA/KA,D)           95         3         3 JHP-6-CA/CF 3/3 95/95 (KA/KA,D)           120         3         3 JHP-6-CA/CF 3/3 120/120 (KA/KA,D)           150         3         3 JHP-6-CA/CF 3/3 150/150 (KA/KA,D)           185         3         JHP-6-CA/CF 3/3 185/185 (KA/KA,D)

Due to variety of cable connections requests for 3,6/6kV transition cable joints are determined individually.

Application: They are meant for the connection of 3-core unscreened polymer insulated cables e.g. of type YAKY with 3-core paper insulated and armoured cables e.g. of type: AKnFtA, AKnFpA, AKnFt, AKnFp, AKnFty, AKnFpy.

Joint sets are supplied with aluminium compression connectors with partitions acc. to DIN standards.

Application: They are meant for the connection of 3-core unscreened polymer insulated and armoured cables e.g. of type YAKYFty YAKYFpy, YAKYFoy, YAKXSFty with 3-core paper insulated and armoured cables e.g. of type AKnFtA, AKnFpA, AKnFt, AKnFp, AKnFty, AKnFpy.

Joint sets are supplied with aluminium compression connectors with partitions acc. to DIN standards



Straight cable joints for screened rubber insulated wires with three service cores and three protection cores

3,6/6kV

Technical information: Tinned mining connectors are used for joining service cores and protection cores. Screens made of rubber semiconducting on service cores and their insulation, are reconstructed on protection cores with the use of semiconducting self-bond tapes. Heat shrink thick wall adhesive-layered tubes are used for reconstruction of connectors insulation. The area of connection is filled with insulation mastic. Covering is reconstructed with the use of two heat shrink thick wall self-extinguishing tubes with double-

sealing (thermofusible adhesive and

mastic).

Application: designed for joining wires of type: OGb, OGc, OnGcekgż-G, OnGbekgż-G.



Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	3x16 + 3x16/3	3+1/3	JHP-6-CG4 3x16 + 3x16/3 (K,D)	6-203-06
	3x25 + 3x16/3	3+1/3	JHP-6-CG4 3x25 + 3x16/3 (K,D)	6-203-07
	3x35 + 3x16/3	3+1/3	JHP-6-CG4 3x35 + 3x16/3 (K,D)	6-203-08
3,6/6kV	3x50 + 3x25/3	3+1/3	JHP-6-CG4 3x50 + 3x25/3 (K,D)	6-203-09
	3x70 + 3x35/3	3+1/3	JHP-6-CG4 3x70 + 3x35/3 (K,D)	6-203-10
	3x95 + 3x50/3	3+1/3	JHP-6-CG4 3x95 + 3x50/3 (K,D)	6-203-11
	3x120 + 3x70/3	3+1/3	JHP-6-CG4 3x120 + 3x70/3 (K,D)	6-203-12

Joint sets are supplied with mining tinned copper connectors acc. to DIN standards.

#### Properties of the joints:

- guarantee durable cables' connection thanks to threaded mining connectors,
- · flexible connection resistant to difficult working conditions such as opencast mines,
- high electrical and mechanical resistance due to heat shrink thick wall adhesive-layered tubes,
- guarantee covering reconstruction with the use of flame-retardant heat shrink thick wall adhesive-layered tube,
- · anti-moisture barrier in the form of insulation and filling mastic,
- positive technical approving issued by EMAG 03/04.

#### NEW

Technical information: Tinned mining connectors are used for joining service cores. Stress control mastic is wrapped around the screens' terminations and the connector's surface. They are used for preliminary controlling of the electrical field and filling up the space between insulation and connector's endings. The joint is supplied with stress control tubing which is shaping the electromagnetic field distribution on the whole connection length, insulation and double-layer tube with integrated layers: inner insulation and outer semiconducting. Heat shrink thick wall adhesive-layered flame-retardant tube is used for reconstruction of the outer covering. Protection against moisture penetration is guaranteed by applied both thermofusible adhesive and mastic.

Joint sets are supplied with mining connectors for pressing.

#### Straight cable joints for 4-core screened rubber insulated wires

Application: designed for joining mining wires of type: OnGcekgż-G (S), OnGcekgż-G (Z), OnGcrekgż-G (S), OnGcrekgż-G (Z) 6/10kV.



Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	3x16 + 3x16/3	3+1/3	JHP-10-CG4 3x16 + 3x16/3 (K,D)	6-195-00
	3x25 + 3x16/3	3+1/3	JHP-10-CG4 3x25 + 3x16/3 (K,D)	6-195-01
	3x35 + 3x16/3	3+1/3	JHP-10-CG4 3x35 + 3x16/3 (K,D)	6-195-02
	3x50 + 3x25/3	3+1/3	JHP-10-CG4 3x50 + 3x25/3 (K,D)	6-195-03
6/10kV	3x70 + 3x35/3	3+1/3	JHP-10-CG4 3x70 + 3x35/3 (K,D)	6-195-04
	3x95 + 3x50/3	3+1/3	JHP-10-CG4 3x95 + 3x50/3 (K,D)	6-195-05
	3x120 + 3x70/3	3+1/3	JHP-10-CG4 3x120 + 3x70/3 (K,D)	6-195-06
	3x150 + 3x70/3	3+1/3	JHP-10-CG4 3x150 + 3x70/3 (K,D)	6-195-07
	3x185 + 3x95/3	3+1/3	JHP-10-CG4 3x185 + 3x95/3 (K,D)	6-195-08

#### Properties of the joints:

- guarantee durable wires' connection thanks to threaded mining connectors,
- cover cable cross-sections up to 185 mm² of service core and up to 95 mm² of protection core,
- thermoplastic stress control mass applied in the joint set prevents from incomplete discharges occuring,

   the stress control mass applied in the joint set prevents from incomplete discharges occuring,

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- high electrical and mechanical durability, resistance to difficult working conditions such as opencast mines,
- guarantee reliable and long-life work of the power line,
- anti-moisture barrier in the form of insulation and filling masses.

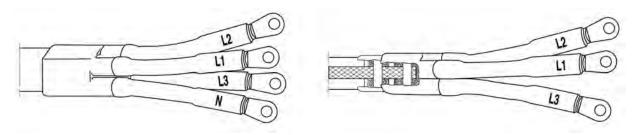
Positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN HD 629.1 S2:2006

6/10kV



## _ _ _ _ _ Cable terminations

#### Cable terminations 0,6/1kV - TLP



#### Cable terminations O,6/1kV for polymer insulated cables of type: Y(A)KY, Y(A)KXS

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	16-35	3	TLP-CX3 16-35	6-509-00
	50-70	3	TLP-CX3 50-70	6-509-02
	95-120	3	TLP-CX3 95-120	6-509-01
	150-240	3	TLP-CX3 150-240	6-509-03
	16-35	4	TLP-CX4 16-35	6-502-00
0.04147	50-70	4	TLP-CX4 50-70	6-502-01
0,6/1kV	95-120	4	TLP-CX4 95-120	6-502-02
	150-240	4	TLP-CX4 150-240	6-502-03
	10-16	5	TLP-CX5 10-16	6-503-00
	25-50	5	TLP-CX5 25-50	6-503-01
	70-120	5	TLP-CX5 70-120	6-503-02
	150-240	5	TLP-CX5 150-240	6-503-03

#### Cable terminations O,6/1kV for paper insulated cables of type: KFtA, AKFtA

Voltage range	Cable cross- section [mm²]	Number of cores	Length of cable termination [mm]	Type of cable joint	index
	16-35	3	450	TLP-CF3/450 16-35	6-505-00
	50-70	3	450	TLP-CF3/450 50-70	6-505-04
	95-150	3	450	TLP-CF3/450 95-150	6-505-02
0.6(4)(4)	185-240	3	450	TLP-CF3/450 185-240	6-505-03
0,6/1kV	16-35	4	450	TLP-CF4/450 16-35	6-506-04
	50-70	4	450	TLP-CF4/450 50-70	6-506-05
	95-150	4	450	TLP-CF4/450 95-150	6-506-06
	185-240	4	450	TLP-CF4/450 185-240	6-506-07

Voltage range		Cross-section of extra core [mm²]			Type of cable joint	index
	70	35	3+1	450	TLP-CF3+1/450 70+35	6-508-03
0,6/1kV	95	50	3+1	450	TLP-CF3+1/450 95+50	6-508-04
0,6/160	185	95	3+1	450	TLP-CF3+1/450 185+95	6-508-05
	240	120	3+1	450	TLP-CF3+1/450 240+120	6-508-06

#### Cable terminations 0,6/1kV for rubber insulated cables of type: OG, HO7RN-F, HO7BN4-F

Voltage range	Cable cross- section [mm²]	Number of cores	Type of cable joint	index
	16-25	4	TLP-CG4 16-25	6-512-00
0.04137	35-70	4	TLP-CG4 35-70	6-514-00
0,6/1kV	95-150	4	TLP-CG4 95-150	6-515-00
	150-240	4	TLP-CG4 150-240	6-516-00



#### NF\//

## Indoor cable terminations for single-core screened polymer insulated cables with drain wires

6/10kV 8,7/15kV 12/20kV

**Application:** designed for termination cables of type: YH(A)KXS, XUH(A)KXS, XH(A)KXS, X(RU)H(A)KXS.

**Technical information:** The sets are based on heat shrink technology. They contain: phase marker resistant to creeping current, stress control mastic and tubing which are applied for controlling of the electrical field, insulation mastic preventing from moisture penetration. Terminations are additionally equipped with double-layer mastic used in drain wires' outlet and increasing termination tightness even in situations of multiple warming up and cooling processes in case of breaking work.

**New!** Termination sets enable making of three single-phase terminations, supplied with screw connectors.

	Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		50-95	THP-I-10-CXd1 50-95 (S)	450	6-801-05
	6/10kV	120-240	THP-I-10-CXd1 120-240 (S)	450	6-801-06
		240-400	THP-I-10-CXd1 240-400 (S)	450	6-801-07
		35-95	THP-I-15-CXd1 35-95 (S)	450	6-802-05
	8,7/15kV	95-240	THP-I-15-CXd1 95-240 (S)	450	6-802-06
		185-400	THP-I-15-CXd1 185-400 (S)	450	6-802-07
		35-150	THP-I-20-CXd1 35-150 (S)	450	6-800-04
	12/20kV	70-240	THP-I-20-CXd1 70-240 (S)	450	6-800-05
		185-400	THP-I-20-CXd1 185-400 (S)	450	6-800-06



Termination sets enable making of three single-phase terminations. They are meant for termination cables with the use of compression terminals (sets don't contain terminals).

35-95 THP-I-10-CXd1 35-95 450 6	6-801-02
	6-801-04
	6-802-02
8,7/15kV 95-240 THP-I-15-CXd1 95-240 450 6	6-802-04
35-95 THP-I-20-CXd1 35-95 450	6-800-02
	6-800-03

- · resistant to hard environmental conditions,
- for cables with cross-sections up to 400 mm² (concerns terminations with screw terminals),
- in case of terminations with screw terminals they limit the number of tools necessary for the assembling,
- · heat shrink tubes applied in the termination create insulation protection against superficial discharges,
- resistant to UV radiation,
- full protection against moisture penetration,
- · high electrical and mechanical resistance,
- short assembling time thanks to simple construction and attached installation guide,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norms PN-90/E-06401 and PN-HD 629.1 S2:2006.



6/10kV 8,7/15kV 12/20kV



## Outdoor cable terminations for single-core screened polymer insulated cables with drain wires

NEW

**Application:** designed for termination cables of type: YH(A)KXS, XUH(A)KXS, XH(A)KXS, X(RU)H(A)KXS

**Technical information:** The construction of the outdoor termination is similar to indoor termination. Additionally depending on the voltage level heat shrink sheds are shrinked on insulation tube. They prevent from creeping current.

## **New!** Termination sets enable making of three single-phase terminations, supplied with screw terminals.

	Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		50-95	THP-N-10-CXd1 50-95 (S)	450	6-554-08
	6/10kV	120-240	THP-N-10-CXd1 120-240 (S)	450	6-554-09
		240-400	THP-N-10-CXd1 240-400 (S)	450	6-554-10
		35-95	THP-N-15-CXd1 35-95 (S)	450	6-555-05
	8,7/15kV	95-240	THP-N-15-CXd1 95-240 (S)	450	6-555-06
		185-400	THP-N-15-CXd1 185-400 (S)	450	6-555-07
		35-150	THP-N-20-CXd1 35-150 (S)	450	6-556-06
	12/20kV	70-240	THP-N-20-CXd1 70-240 (S)	450	6-556-05
		185-400	THP-N-20-CXd1 185-400 (S)	450	6-556-07



Termination sets enable making of three single-phase terminations They are meant for termination cables with the use of compression terminals (sets don't contain terminals).

	Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	6/10kV	35-95	THP-N-10-CXd1 35-95	450	6-554-02
	6/TUKV	95-240	THP-N-10-CXd1 95-240	450	6-554-04
	0.7/15/2/	35-95	THP-N-15-CXd1 35-95	450	6-555-02
	8,7/15kV	95-240	THP-N-15-CXd1 95-240	450	6-555-04
	10/00147	35-95	THP-N-20-CXd1 35-95	450	6-556-02
	12/20kV	70-240	THP-N-20-CXd1 70-240	450	6-556-03

- resistant to hard environmental conditions,
- for cables with cross-sections up to 400 mm² (concerns terminations with screw terminals),
- · in case of terminations with screw terminals they limit the number of tools necessary for the assembling,
- · heat shrink tubes applied in the termination create insulation protection against superficial discharges,
- · resistant to UV radiation,
- full protection against moisture penetration,
- high electrical and mechanical resistance,
- short assembling time thanks to simple construction and attached installation guide,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norms PN-90/E-06401 and PN-HD 629.1 S2:2006.





Termination sets enable making of three single-phase terminations, are supplied with earthing kit, sets don't contain cable terminals.

## Indoor cable terminations for single-core unscreened polymer insulated cables with drain tapes

Application: designed for termination cables of type: YKY, YAKY.

**Technical information:** Connection of drain tapes is done with the use of earthing set. Insulation and filling mastic used as anti-moisture barrier. Heat shrink phase marker resistant to creeping current and environmental conditions is shrinked on insulation.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	25-70	THP-I-6-CX1/300 25-70	300	6-612-03
	25-70	THP-I-6-CX1/450 25-70	450	6-601-00
0.6/6/4/	95-120	THP-I-6-CX1/300 95-120	300	6-612-11
3,6/6kV		THP-I-6-CX1/450 95-120	450	6-612-00
	150-240	THP-I-6-CX1/300 150-240	300	6-612-04
		THP-I-6-CX1/450 150-240	450	6-612-02

#### Properties of the terminations:

- · resistant to hard environmental conditions,
- · insulation protection prevent from superficial discharges occurring,
- · resistant to UV radiation,
- short assembling time thanks to simple construction.



Termination sets enable making of three single-phase terminations, are supplied with earthing kit, sets don't contain cable terminals.

## Indoor cable terminations for single-core unscreened polymer insulated cables with drain wires

Application: designed for termination cables of type: YKY, YAKY.

**Technical information:** Insulation and filling mastic used as anti-moisture barrier. Heat shrink phase marker resistant to creeping current and environmental conditions shrinked on insulation.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	05.70	THP-I-6-CXd1/450 25-70	450	6-616-00-1
	25-70	THP-I-6-CXd1/650 25-70	650	6-617-00-1
0.6/6/4/	95-120	THP-I-6-CXd1/450 95-120	450	6-616-00-2
3,6/6kV		THP-I-6-CXd1/650 95-120	650	6-616-00-3
	150-240	THP-I-6-CXd1/450 150-240	450	6-616-00
		THP-I-6-CXd1/650 150-240	650	6-616-00-4

#### Properties of the terminations:

- · resistant to hard environmental conditions,
- insulation protection prevent from superficial discharges occurring,
- resistant to UV radiation,
- short assembling time thanks to simple construction.
- high electrical and mechanical resistance.

3,6/6kV

3,6/6kV



3,6/6kV



Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals

## Indoor cable terminations for 3-core unscreened polymer insulated cables with drain tapes

Application: designed for termination cables of type: YKY, YAKY.

Technical information: Connection of drain tapes is done with the use of earthing set.

Heat shrink breakout boot with adhesive protects the place of cores' outlet.

Additional anti-moisture barrier is guaranteed by insulation and filling mastic.

Heat shrink phase marker resistant to creeping current and environmental conditions is shrinked on particular cores' insulation.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THP-I-6-CX3/300 25-50	300	6-603-04
	25-50	THP-I-6-CX3/650 25-50	650	6-603-08
		THP-I-6-CX3/800 25-50	800	6-603-12
	70-120	THP-I-6-CX3/300 70-120	300	6-603-05
3,6/6kV		THP-I-6-CX3/650 70-120	650	6-603-07
		THP-I-6-CX3/800 70-120	800	6-603-10
		THP-I-6-CX3/300 150-240	300	6-603-06
	150-240	THP-I-6-CX3/650 150-240	650	6-603-09
		THP-I-6-CX3/800 150-240	800	6-603-11

#### Properties of the terminations:

- · resistant to hard environmental conditions,
- insulation protection prevent from superficial discharges occurring,
- resistant to UV radiation,
- · high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation mastics.

3,6/6kV



Additional anti-moisture barrier is guaranteed by insulation and filling mastic. Heat shrink phase marker resistant to creeping current and environmental conditions is shrinked on particular cores' insulation.

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals

## Indoor cable terminations for 3-core unscreened polymer insulated cables with drain wires

**Application:** designed for termination cables of type: YKY, YAKY.

Technical information: Heat shrink breakout boot with adhesive protects

the place of cores' outlet.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THP-I-6-CXd3/300 25-50	300	6-610-01
	25-50	THP-I-6-CXd3/650 25-50	650	6-610-07
		THP-I-6-CXd3/800 25-50	800	6-610-12
		THP-I-6-CXd3/300 70-120	300	6-610-02
3,6/6kV	70-120	THP-I-6-CXd3/650 70-120	650	6-610-05
		THP-I-6-CXd3/800 70-120	800	6-610-11
		THP-I-6-CXd3/300 150-240	300	6-610-03
	150-240	THP-I-6-CXd3/650 150-240	650	6-610-09
		THP-I-6-CXd3/800 150-240	800	6-610-10

- resistant to hard environmental conditions,
- insulation protection prevent from superficial discharges occurring,
- resistant to UV radiation,
- · high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic.





the place of cores' outlet. Additional anti-moisture

Heat shrink phase marker and shed resistant to

creeping current and environmental conditions

are shrinked on particular cores' insulation.

barrier is guaranteed by insulation and filling

Outdoor cable terminations for 3-core unscreened polymer insulated cables with drain tapes

3,6/6kV

Application: designed for termination cables of type: YKY, YAKY.

Technical information: Connection of drain tapes is done with the use of earthing set.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	25-50	THP-N-6-CX3/450 25-50	450	6-613-00-6
	25-50	THP-N-6-CX3/650 25-50	650	6-613-00-4
3.6/6kV	70-120	THP-N-6-CX3/450 70-120	450	6-613-00-2
3,0/0KV		THP-N-6-CX3/650 70-120	650	6-613-00-1
	150-240	THP-N-6-CX3/450 150-240	450	6-613-00-7
		THP-N-6-CX3/650 150-240	650	6-613-00-3

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals. Meant for leakproof terminals.

#### Properties of the terminations:

- · resistant to hard environmental conditions.
- · insulation protection prevent from superficial discharges occurring,
- resistant to UV radiation,
- · high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic.



Outdoor cable terminations for 3-core unscreened polymer insulated cables with drain wires

3,6/6kV

Application: designed for termination cables of type: YKY, YAKY.

Technical information: Heat shrink breakout boot with adhesive protects the place of cores' outlet.

	Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		25-50	THP-N-6-CXd3/450 25-50	450	6-550-05
		25-50	THP-N-6-CXd3/650 25-50	650	6-550-03
_	3.6/6kV	70-120	THP-N-6-CXd3/450 70-120	450	6-550-06
	3,0/0KV		THP-N-6-CXd3/650 70-120	650	6-550-08
		150-240	THP-N-6-CXd3/450 150-240	450	6-550-07
			THP-N-6-CXd3/650 150-240	650	6-550-04

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals. Meant for leakproof terminals .

#### Properties of the terminations:

- · resistant to hard environmental conditions,
- · insulation protection prevent from superficial discharges occurring,
- · resistant to UV radiation,
- · high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling masses.

Additional anti-moisture barrier is guaranteed by insulation and filling masses. Heat shrink phase marker and shed resistant to creeping current and environmental conditions are shrinked on particular cores' insulation.



3,6/6kV



Heat shrink breakout boot with adhesive protects the place of cores' outlet.

Additional anti-moisture barrier is guaranteed by insulation and filling mastic. Heat shrink phase marker and shed resistant to creeping current and environmental conditions are shrinked on particular cores' insulation.

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals.

## Indoor cable terminations for 3-core unscreened polymer insulated and armoured cables with drain tapes

**Application:** designed for termination cables of type: YAKYFty, YKYFty, YAKYFpy, YKYFoy, YKYFoy

Technical information: Connection of armour and drain tapes is done with the use of earthing kit.

Voltage rang	e Cable cross- e section [mm²]	Type of cable joint	Length [mm]	index
		THP-I-6-CA3/300 25-50	300	6-611-03
	25-50	THP-I-6-CA3/650 25-50	650	6-611-09
		THP-I-6-CA3/800 25-50	800	6-611-07
		THP-I-6-CA3/300 70-120	300	6-611-02
3,6/6kV	70-120	THP-I-6-CA3/650 70-120	650	6-611-10
		THP-I-6-CA3/800 70-120	800	6-611-06
		THP-I-6-CA3/300 150-240	300	6-611-04
	150-240	THP-I-6-CA3/650 150-240	650	6-611-11
		THP-I-6-CA3/800 150-240	800	6-611-05

#### Properties of the terminations:

- spring clips connect easily and safely the earthing tape with cable's armour,
- · resistant to hard environmental conditions,
- insulation protection prevent from superficial discharges occurring,
- · resistant to UV radiation,
- · high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic.

3,6/6kV



Heat shrink breakout boot with adhesive protects the place of cores' outlet.

Additional anti-moisture barrier is guaranteed by insulation and filling mastic. Heat shrink phase marker and shed resistant to creeping current and environmental conditions are shrinked on particular cores' insulation.

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals.

Meant for leakproof terminals

## Outdoor cable terminations for 3-core unscreened polymer insulated and armoured cables with drain tapes

**Application:** designed for termination cables of type: YAKYFty, YKYFty, YAKYFpy, YKYFpy, YKYFoy, YKYFoy

Technical information: Connection of armour and drain tapes is done with the use of earthing set.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THP-N-6-CA3/300 25-50	300	6-553-03
	25-50	THP-N-6-CA3/650 25-50	650	6-553-04
		THP-N-6-CA3/800 25-50	800	6-553-02
	70-120	THP-N-6-CA3/300 70-120	300	6-553-05
3,6/6kV		THP-N-6-CA3/650 70-120	650	6-553-06
		THP-N-6-CA3/800 70-120	800	6-553-00
		THP-N-6-CA3/300 150-240	300	6-553-07
	150-240	THP-N-6-CA3/650 150-240	650	6-553-08
		THP-N-6-CA3/800 150-240	800	6-553-01

- spring clips connect easily and safely the earthing tape with cable's armour,
- · resistant to hard environmental conditions,
- · insulation protection prevent from superficial discharges occurring,
- · resistant to UV radiation,
- high electrical and mechanical resistance,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic.



#### NFW

## Indoor cable terminations for 3-core screened saturated paper insulated and armoured cables with common metal sheath

8,7/15kV 12/20kV



**Application:** designed for termination cables of type: H(A)KnFtA, H(A)KnF(t, p)y, H(A)Kny. **Technical information:** Insulation of the particular cable's cores isolation is made with the use of transparent tubes. Stress control mastic are applied for controlling of individual cores' screens and collective screen under the metal sheath. Heat shrink phase markers and breakout boot are resistant to creeping current. Connection of armour with metal sheath is done with the use of earthing kit.

Termination sets are meant for terminating cables with the use of compression terminals and are supplied with earthing kit (sets don't contain terminals).

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]*	index
	35-150	THP-I-20-CF3/450 35-150	450	6-602-00
8,7/15kV i 12/20kV	95-240	THP-I-20-CF3/450 95-240	450	6-602-01
	35-150	THP-I-20-CF3/1200 35-150	1200	6-602-02
	95-240	THP-I-20-CF3/1200 95-240	1200	6-602-03

Termination sets are supplied with screw terminals and earthing kit.

	Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]*	index
	8,7/15kV i 12/20kV	35-150	THP-I-20-CF3/450 35-150 (S)	450	6-602-04
		95-240	THP-I-20-CF3/450 95-240 (S)	450	6-602-05
		35-150	THP-I-20-CF3/1200 35-150 (S)	1200	6-602-06
		95-240	THP-I-20-CF3/1200 95-240 (S)	1200	6-602-07

^{*} capability of production terminations of lenghts 650, 800.

#### Properties of the terminations:

- universal application for cables of two voltage levels: 8,7/15kV and 12/20kV,
- · resistant to hard environmental conditions,
- in case of terminations with screw connectors they limit the number of tools necessary for the assembling,
- · resistant to UV radiation,
- · full protection against moisture penetration,
- · high electrical and mechanical resistance,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.2 S2:2006.



# Outdoor cable terminations for 3-core screened saturated paper insulated and armoured cables with common metal sheath

8,7/15kV 12/20kV

**Application:** designed for termination cables of type: H(A)KnFtA, H(A)KnF(t, p)y, H(A)Kny **Technical information:** Analogous construction like in case of indoor terminations. Additionally heat shrink sheds preventing from creeping current occurrence are shrinked on phase markers.

Termination sets are meant for terminating cables with the use of compression terminals and are supplied with earthing kit (sets don't contain terminals).

	Voltage range	Cable cross- section [mm ² ]	Type of cable joint	Length [mm]*	index
		35-150	THP-N-20-CF3/450 35-150	450	6-602-08
	8,7/15kV i 12/20kV	95-240	THP-N-20-CF3/450 95-240	450	6-602-09
		35-150	THP-N-20-CF3/1200 35-150	1200	6-602-10
		95-240	THP-N-20-CF3/1200 95-240	1200	6-602-11

Termination sets are supplied with screw terminals and earthing kit.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]*	index
	35-150	THP-N-20-CF3/450 35-150 (S)	450	6-602-12
8,7/15kV i 12/20kV	95-240	THP-N-20-CF3/450 95-240 (S)	450	6-602-13
	35-150	THP-N-20-CF3/1200 35-150 (S)	1200	6-602-14
	95-240	THP-N-20-CF3/1200 95-240 (S)	1200	6-602-15

^{*} capability of production terminations of lenghts 650, 800.

- universal application for cables of two voltage levels: 8,7/15kV and 12/20kV,
- · resistant to hard environmental conditions,
- in case of terminations with screw connectors they limit the number of tools necessary for the assembling,
- resistant to UV radiation,
- full protection against moisture penetration,
- high electrical and mechanical resistance,
- positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.2 S2:2006.





#### 3,6/6kV 6/10kV



Connection of sheath and metal armour is made with the use of earthing kit. Cable's cores insulation is strengthen by heat shrink phase markers L1, L2 and L3 which are made of material resistant to creeping current. Additional anti-moisture barrier is guaranteed by insulation mastic.

Minimal termination length - 300 mm.

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals.

Meant for leakproof terminals.

#### Properties of the terminations:

- spring clips connect easily and safely the earthing tape with cable's armour,
- · resistant to hard environmental conditions,
- high electrical and mechanical resistance,

## Indoor cable terminations for 3-core saturated paper insulated and armoured cables with common metal sheath

**Application:** designed for termination cables of type: AKnFtA, AKnFpA, AKnFt, AKnFp, AKnFty, AKnFpy, KnFtA, KnFpA, KnFt, KnFp

**Technical information:** Insulation of particular cable's cores is made with the use of transparent heat shrink tubes resistant to cable saturant.

Heat shrink breakout boot with adhesive protects the place of cores' outlet and metal sheath termination.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THP-I-6-CF3/300 25-50	300	6-604-11
	25-50	THP-I-6-CF3/650 25-50	650	6-604-08
		THP-I-6-CF3/800 25-50	800	6-604-13
		THP-I-6-CF3/300 70-120	300	6-604-05
3,6/6kV	70-120	THP-I-6-CF3/650 70-120	650	6-604-09
		THP-I-6-CF3/800 70-120	800	6-604-07
		THP-I-6-CF3/300 150-240	300	6-604-06
150-240	150-240	THP-I-6-CF3/650 150-240	650	6-604-10
		THP-I-6-CF3/800 150-240	800	6-604-12
	35-50	THP-I-10-CF3/450 35-50	450	6-605-15
		THP-I-10-CF3/650 35-50	650	6-605-1
		THP-I-10-CF3/800 35-50	800	6-605-12
		THP-I-10-CF3/450 70-120	450	6-605-04
6/10kV	70-120	THP-I-10-CF3/650 70-120	650	6-605-10
		THP-I-10-CF3/800 70-120	800	6-605-07
		THP-I-10-CF3/450 150-240	450	6-605-0
	150-240	THP-I-10-CF3/650 150-240	650	6-605-09
		THP-I-10-CF3/800 150-240	800	6-605-08

- · resistant to UV radiation,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic,
- designed and made of materials resistant to cable saturant.

#### 3,6/6kV 6/10kV



## Outdoor cable terminations for 3-core saturated paper insulated and armoured cables with common metal sheath

**Application:** designed for termination cables of type: AKnFtA, AKnFpA, AKnFt, AKnFp, AKnFty, AKnFpy, KnFtA, KnFpA, KnFt, KnFp.

**Technical information:** Analogous construction like in case of indoor terminations. Additionally heat shrink sheds preventing from creeping current occurrence are shrinked on phase markers. Minimal termination length - 450 mm.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THP-N-6-CF3/450 25-50	450	6-560-02
	25-50	THP-N-6-CF3/650 25-50	650	6-560-03
		THP-N-6-CF3/800 25-50	800	6-560-04
		THP-N-6-CF3/450 70-120	450	6-560-05
3,6/6kV	70-120	THP-N-6-CF3/650 70-120	650	6-560-06
		THP-N-6-CF3/800 70-120	800	6-560-07
		THP-N-6-CF3/450 150-240	450	6-560-08
	150-240 35-50	THP-N-6-CF3/650 150-240	650	6-560-09
		THP-N-6-CF3/800 150-240	800	6-560-00
		THP-N-10-CF3/450 35-50	450	6-552-18
		THP-N-10-CF3/650 35-50	650	6-552-19
		THP-N-10-CF3/800 35-50	800	6-552-00
		THP-N-10-CF3/450 70-120	450	6-552-05
6/10kV	70-120	THP-N-10-CF3/650 70-120	650	6-552-09
		THP-N-10-CF3/800 70-120	800	6-552-01
		THP-N-10-CF3/450 150-240	450	6-552-08
	150-240	THP-N-10-CF3/650 150-240	650	6-552-07
		THP-N-10-CF3/800 150-240	800	6-552-06

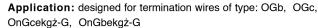
Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals. Meant for leakproof terminals.

- spring clips connect easily and safely the earthing tape with cable's armour,
- · resistant to hard environmental conditions,
- · high electrical and mechanical resistance,
- · resistant to UV radiation,
- anti-moisture barrier in the form of heat shrink breakout boot and insulation and filling mastic.
- designed and made of materials resistant to cable saturant.



## Indoor cable terminations for screened rubber insulated wires with three service cores and three protection cores

3,6/6kV



**Technical information:** Wire's cores outlet is protected with heat shrink breakout boots with adhesive (4-core and 3-core - for three protection cores).

Additional anti-moisture barrier is guaranteed by insulation mastic.

Terminations of semi-conducting screens are wrapped round by stress control mastic.

Heat shrink phase marker resistant to creeping current and environmental conditions is shrinked on particular cores' insulation.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	3x16 + 3x16/3	THP-I-6-CG4/450 3x16 + 3x16/3	450	6-609-19
	3x25 + 3x16/3	THP-I-6-CG4/450 3x25 + 3x16/3	450	6-609-20
	3x35 + 3x16/3	THP-I-6-CG4/450 3x35 + 3x16/3	450	6-609-21
3,6/6kV	3x50 + 3x25/3	THP-I-6-CG4/450 3x50 + 3x25/3	450	6-609-22
3x	3x70 + 3x35/3	THP-I-6-CG4/450 3x70 + 3x35/3	450	6-609-23
	3x95 + 3x50/3	THP-I-6-CG4/450 3x95 + 3x50/3	450	6-609-24
	3x120 + 3x70/3	THP-I-6-CG4/450 3x120 + 3x70/3	450	6-609-18

Sets don't contain cable terminals.

Terminations of non standard lengths are available on request.

#### Properties of the terminations:

- supplied with stress control masses for regulating of the electrical tension distribution on conducting screens' terminations,
- · resistant to hard environmental conditions,
- · full protection against moisture penetration,
- · insulation protection prevents from creeping current,
- resistant to UV radiation.

#### NEW

## Indoor cable termination for 4-core screened rubber insulated wires

6/10kV

**Application:** designed for termination wires of type: OnGcekgż-G (S), OnGcekgż-G (Z), OnGcrekgż-G (S), OnGcrekgż-G (Z) 6/10kV.

**Technical information:** Heat shrink breakout boots protect the cores' outlet. Mastic used for additional anti-moisture protection. Stress control tubing and mastic are applied for controlling of the electrical field on the screen's termination. Heat shrink phase marker resistant to creeping current and environmental conditions is shrinked on particular cores' insulation.



Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	3x16 + 3x16/3	THP-I-10-CG4/800 3x16 + 3x16/3	800	6-551-00
	3x25 + 3x16/3	THP-I-10-CG4/800 3x25 + 3x16/3	800	6-551-01
	3x35 + 3x16/3	THP-I-10-CG4/800 3x35 + 3x16/3	800	6-551-02
	3x50 + 3x25/3	THP-I-10-CG4/800 3x50 + 3x25/3	800	6-551-03
6/10kV	3x70 + 3x35/3	THP-I-10-CG4/800 3x70 + 3x35/3	800	6-551-04
	3x95 + 3x50/3	THP-I-10-CG4/800 3x95 + 3x50/3	800	6-551-05
	3x120 + 3x70/3	THP-I-10-CG4/800 3x120 + 3x70/3	800	6-551-06
	3x150 + 3x70/3	THP-I-10-CG4/800 3x150 + 3x70/3	800	6-551-07
	3x185 + 3x95/3	THP-I-10-CG4/800 3x185 + 3x95/3	800	6-551-08

Sets don't contain cable terminals.

#### Properties of the terminations:

- supplied with stress control tubing and mastic for regulating of the electrical tension distribution on semiconducting screens' terminations,
- · resistant to hard environmental conditions,
- full protection against moisture penetration,
- phase markers resistant to creeping current.

Positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.1 S2:2006.



6/10kV

# W

## Outdoor cable terminations for 4-core screened rubber insulated wires

NEW

**Application:** designed for termination wires of type: OnGcekgż-G (S), OnGcekgż-G (Z), OnGcrekgż-G (S), OnGcrekgż-G (Z) 6/10kV.

**Technical information:** Analogous construction like in case of indoor terminations. Additionally heat shrink sheds preventing from creeping current occurrence are shrinked on phase markers (two on one phase).

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
	3x16 + 3x16/3	THP-N-10-CG4/800 3x16 + 3x16/3	800	6-551-06
	3x25 + 3x16/3	THP-N-10-CG4/800 3x25 + 3x16/3	800	6-551-07
	3x35 + 3x16/3	THP-N-10-CG4/800 3x35 + 3x16/3	800	6-551-08
	3x50 + 3x25/3	THP-N-10-CG4/800 3x50 + 3x25/3	800	6-551-09
6/10kV	3x70 + 3x35/3	THP-N-10-CG4/800 3x70 + 3x35/3	800	6-551-10
	3x95 + 3x50/3	THP-N-10-CG4/800 3x95 + 3x50/3	800	6-551-11
	3x120 + 3x70/3	THP-N-10-CG4/800 3x120 + 3x70/3	800	6-551-12
	3x150 + 3x70/3	THP-N-10-CG4/800 3x150 + 3x70/3	800	6-551-13
	3x185 + 3x95/3	THP-N-10-CG4/800 3x185 + 3x95/3	800	6-551-14

Sets don't contain cable terminals.

#### Properties of the joints:

- supplied with stress control tubing and masses for regulating of the electrical tension distribution on semi-conducting screens' terminations,
- · resistant to hard environmental conditions,
- · full protection against moisture penetration,
- · phase markers resistant to creeping current.

Positive technical approving issued by Institute of Power Engineering in conformity with requirements of norm PN-HD 629.1 S2:2006.

3,6/6kV

# Indoor cable terminations for 3-core unscreened polymer insulated and armoured mining power cables with flame-retardant sheath

NEW

**Application:** designed for termination cables of type: YKGYFtyn, YKGYFtlyn, YKGYFoyn, YKGYFpyn.

**Technical information:** Connection of drain wires and armour is made with the use of earthing kit. Termination sets are supplied with phase markers, flame-retardant breakout boot and bigger quantity of insulation mastic.

Voltage range	Cable cross- section [mm²]	Type of cable joint	Length [mm]	index
		THPG-I-6-CA3/300 25-50	300	6-620-02
	25-50	THPG-I-6-CA3/450 25-50	450	6-620-04
		THPG-I-6-CA3/650 25-50	650	6-620-05
		THPG-I-6-CA3/300 70-120	300	6-620-01
3,6/6kV	70-120	THPG-I-6-CA3/450 70-120	450	6-620-06
150-240		THPG-I-6-CA3/650 70-120	650	6-620-07
	150-240	THPG-I-6-CA3/300 150-240	300	6-620-03
		THPG-I-6-CA3/450 150-240	450	6-620-08
		THPG-I-6-CA3/650 150-240	650	6-620-09

Termination sets made as three-phase are supplied with earthing kit, sets don't contain cable terminals. Meant for leakproof terminals

#### Properties of the joints:

- spring clips connect easily and safely the earthing tape with cable's armour,
- insulation protection prevent from superficial discharges occurring ,
- · resistant to hard environmental conditions,
- · self-extinguishing,
- · high electrical and mechanical resistance,
- · full protection against moisture penetration thanks to applied heat shrink breakout boot and insulation mastic.





## □ □ □ □ □ ■ Earthing sets

#### Application

Designed for earthing the metal sheath (lead or aluminum) and steel armouring of cables with saturated paper insulation and metal sheath, armoured, of types: AKnFtA, AKnFpA, AKnFt, AKnFp, AKnFty, AKnFpy.

#### PEK - Earthing sets



	Voltage range	Cable cross- section [mm²]	Number of cores	Type of earthing sets	index
	3,6/6kV , 6/10kV 8,7/15kV , 12/20kV	16-35	3	PEK-20-CF3 16-35	6-007-04
		50-95	3	PEK-20-CF3 50-95	6-007-05
		120-240	3	PEK-20-CF3 120-240	6-007-03

#### **Example**

Name	Description of earthing set
PEK-20-CF3 16-35	earthing set for MV 3,6/6kV ÷ 12/20kV for three-core armoured cables of cross-section 16-35 mm² with saturated paper insulation and metal sheath



#### Application

□ □ □ □ □ □ ■ Hand heating butane torches

Used for installation of heat shrink equipment, stripping old paint or varnish layers.

#### **Equipment**

Hand heating butane torches are equipped with: piezoelectric igniter, temperature regulator, reusable butane can.

#### **Properties**

Max. temperature: 1300°C.

Temperature (soldering tip): from +200°C to +450°C.

Butane can: heating torch R850: capacity 94 ml,
heating torch R770: capacity 64 ml.

Average operating time: 60-70 minutes.



Name	index	Name	index
Heating torch R850	0-20-00-00	Heating torch R770	0-20-00-01



#### □ □ □ □ □ □ □ Cable processing tool



#### PR AIS 17190 - Rotary cutter for cable insulation

index: 0-596-00

Tool is equipped with circular cutters which easily cut very hard cable insulation, even in low temperatures. This cutter may be used for processing armoured cables. To make a cut around the cable insulation - one quick movement is enough to set in motion four circular cutters.

Distance rolls, applied to the set, are meant to regulate the depth of the cut from 0,5 mm to 5 mm.

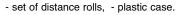
The cutter is supplied with ribbed leading roll, which simplifies cutting longwise, especially in low temperatures, as well as metal fangs, which pull apart the insulation.

The cutter is adapted for processing cables of outer diameter from 16 to 52 mm.

Range	Insulation thickness
Ø 25 ÷ 60 mm	0.5 ÷ 5.0 mm

#### Set content:

rotary cutter,ratchet,mandrel key,spare bolts,





#### PR AV 6220 - Cable insulation stripper

index: 0-598-00

The tool is designed for stripping the insulation along with the armour from cables of outer diameter over 25 mm. It cuts longwise as well as around.

A cutter with depth regulation from 0 to 5 mm is supplied with a toe protecting a cable against damage.

The tool using is very safe and fully prevent from user wounding.

Range	Insulation thickness
Ø 0,08 ÷ 10 mm	0 ÷ 5,0 mm





#### PR 17220 - Conductor screen stripper

index: 0-598-01

Professional tool for MV power cables processing.

Smooth and precise reseatting to processed cable outer diameter ( $\varnothing$  10-52 mm) and screen thickness (0 - 1,4 mm) allows for universal application.

The tool strips the conductor screen on ant length, both backward and forward.

Ribbed guide with changeable angle makes the stripping smooth and easy.

Range	Insulation thickness
Ø 10 ÷ 52 mm	0 ÷ 1,4 mm

#### Set content:

- screen stripper, - silicone paste,

- mandrel key, - plastic case.

#### Cable insulation stripper - AV series

Tool for insulation stripping of AV series is the easiest and economic way to remove the insulation from conductors of cross-section range 25-240 mm².

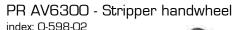
Regulated handwheel allows for reseating the length of removed insulation up to 10 cm.

This is the best solution for cable processing before lug compression.

The stripping is safe and quick.

#### Stripper heads

Head	index
PR-AV63025 / 25 mm ²	0-592-00
PR-AV63035 / 35 mm ²	0-592-01
PR-AV63050 / 50 mm ²	0-592-02
PR-AV63070 / 70 mm ²	0-592-03
PR-AV63095 / 95 mm ²	0-592-04
PR-AV63120 / 120 mm ²	0-592-05
PR-AV63150 / 150 mm ²	0-592-06
PR-AV63185 / 185 mm ²	0-592-07
PR-AV63240 / 240 mm ²	0-592-08







More than 300 pages of products with photos and technical details.











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