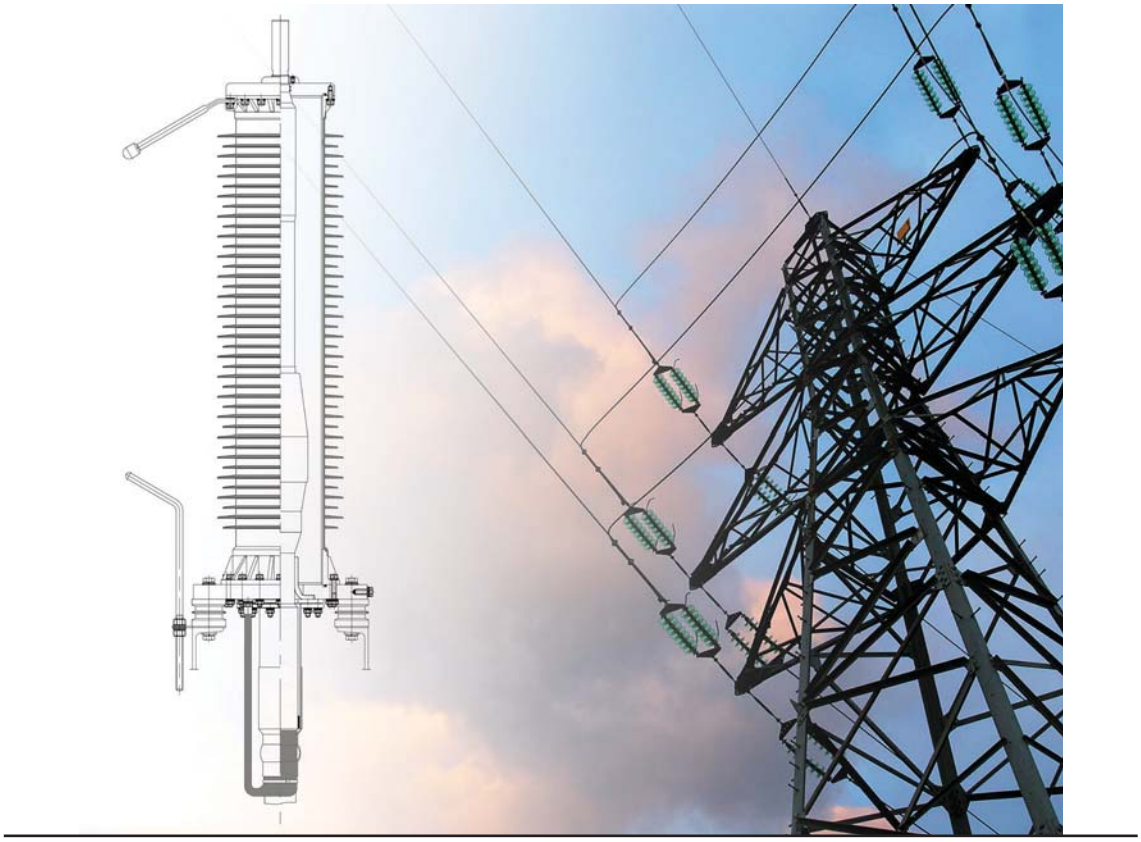
Nexans



High Voltage Accessories
up to 170 kV

High Voltage Accessories up to 170 kV

Table of content

Technical instructions and application information

The data given were determined diligently, they are however only guide values and do not release our customers of the duty to carry out tests themselves in order to check the suitability of the products delivered by us for the intended use. Selection, processing and use of the products cannot be controlled by us and are therefore exclusively in your field of responsibility.

Attention: Before first ordering please contact manufacturer.

Illustrations and drawings may only show a close reflection and are not decisive. The weights, volumes and dimensions are approximate.
We reserve the right to alter or modify the characteristics described. This catalogue substitutes all former editions.

Our products meet the VDE standards respectively correspond to DIN pages and IEC recommendations.

Our responsibilities are only those listed in the latest edition of "General Terms and Conditions for the Supply of Products and Services of the Electrical and Electronics Industry". If requested we provide a copy.
Types or versions not part of the catalogue you receive on request.

Hof, February 2013

Nexans Power Accessories Germany GmbH

Specialist for cable accessories and cabling technology

Nexans Power Accessories Germany GmbH has been a leader in pre-assembled cable accessories for more than 50 years. The company is part of the Nexans Power Accessories Business Group and is represented in more than 40 countries worldwide.

Our strength is the collaboration with the "best in the industry". As such, the intensive research and development activities of the Nexans Power Accessories Germany GmbH are backed by the entire Nexans Group, a worldwide leader in power cables.

With energy at the basis of its development, Nexans offers an extensive range of cables and cabling solutions. The Group is a global player in the energy transmission and distribution, industry and building markets. Nexans addresses a wide series of market segments: from energy and telecom networks to energy resources (wind turbines, photovoltaic, oil and gas or mining) to transportation (shipbuilding, aerospace, automotive and automation, railways).

Nexans Power Accessories Germany GmbH is specialized in manufacturing of low, medium and high voltage accessories as well as mechanical connectors and cable lugs.

In the headquarters in Hof, the GPH standard product range of compression or mechanical connectors and cable lugs is developed and manufactured as well as customized solutions. At a second location, the focus concentrates on kitting of cable accessories from 1 kV up to 170 kV and the assembly of customized jumper cables for medium voltage applications.

With the brand name Euromold we are a European market leader for medium voltage accessories. Longtime know-how and technological advance in this area was successfully transferred into high voltage applications. We provide a complete range of cold-shrinkable and slip-on accessories, e.g. premoulded terminations and joints for cables and epoxy bushings for transformers and switchgears, up to 170 kV. For low and medium voltage applications, a series of Nexans heat-shrinkable terminations and joints up to 42 kV is available. The product range is completed by dedicated installation tools.

Nexans Power Accessories have set industrial and European product standards. Quality and environmental awareness are vital elements of our corporate philosophy and management system. Besides our certification according to DIN EN ISO 9001 we are acting certified in the scope of environmental protection and industrial safety.

Outdoor Termination with Composite Insulator
for single core XLPE HV cables

up to 170 kV

Application
- For single core XLPE HV cables
- Optionally with arcing horn, Flat Terminal Connector

Uo / U (Um)

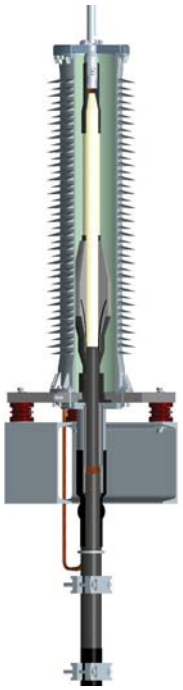
36 / 60 - 69 (72,5) kV
64 / 110 - 115 (123) kV
76 / 132 - 138 (145) kV
87 / 150 - 161 (170) kV

Description
Bolted or compression conductor connector, premoulded and factory tested EPDM stress cone, composite insulator filled with insulating fluid, insolated arrangement, disconnectable earth lead

Characteristics
Frequence: 50 Hz
Conductor cross-section:
185 - 2000 mm²

Specifications and Standards
All high voltage accessories are in compliance with national and international specifications and can be adapted to special requirements of the customer. Therefore, all technical information are purely for information purposes. For your specific requirements, please don't hesitate to contact us.

International: IEC 60 840
National: DIN VDE 0276-632



	Dimensional Characteristics			Electrical Characteristics					
Product Name	Height (mm)	Weight per Piece (kg)	Oil Volume (l)	Operating Voltage (kV)	Max. Operating Voltage (kV)	Im-pulse Voltage (kV)	Nominal Leakage Path (mm)	Flashover Distance (mm)	AC With-stand Voltage 24h (kV)
FEV72,5-2.5VIn	1168	65	14	66	72,5	325	2560	754	90
FEV123-3.6VIn	1445	130	35	110	123	550	3622	1040	160
FEV145-3.6VIn	1445	130	35	132	145	650	3622	1040	190
FEV170-5.2VIn	1880	160	50	150	170	750	5215	1475	220

Premoulded EPDM Stress Cones (ESC-Series)

Description

Premoulded EPDM stress cones are used for more than 30 years on cables with extruded insulation. Euromold's ESC range of high voltage stress cones is designed based on the long experience with moulded dielectrical components.
The stress control is provided by a semi-conductive EPDM deflector on which the insulating part of the stress cone is moulded under high pressure.

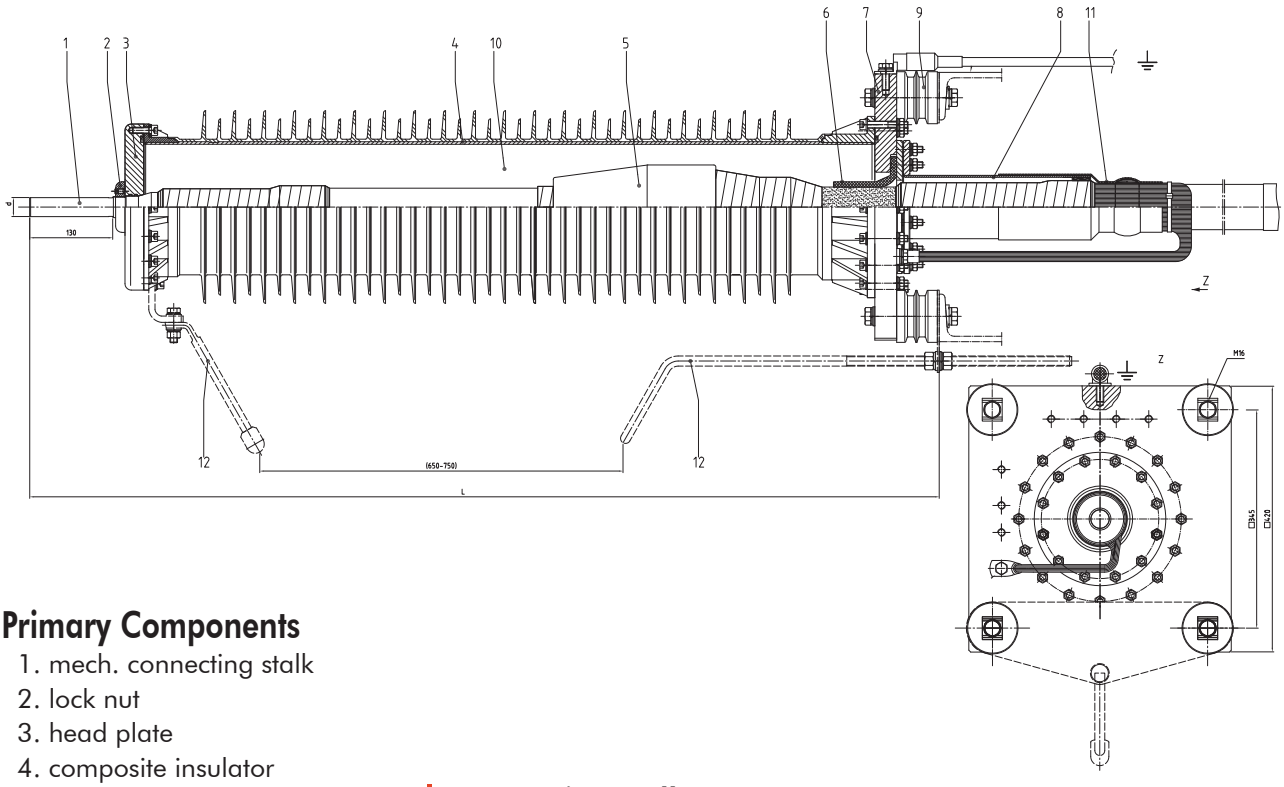
Stress cones are suitable to terminate cables with extruded insulation from 72,5 kV up to 550 kV in insulators filled with insulating fluid (gas or oil).

Specifications and Standards

ESC series EPDM stress cones have been qualified as part of outdoor, switch gear and transformer termination.

International: IEC 60 840, IEC 62 067
National: DIN VDE 0276-632

Outdoor Termination



Primary Components

1. mech. connecting stalk
2. lock nut
3. head plate
4. composite insulator
5. EPDM stress cone
6. sealing flange
7. base plate
8. cable gland
9. support insulator
10. silicone oil
11. heat shrinkable tube
12. arcing horn (option)

Connecting stalk

Conductor cross-section (mm²)	Diameter Ø d (mm)
≤ 630	Ø 30
> 630 < 1400	Ø 40
≥ 1400	Ø 50

01-02-2013

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Product Finder Outdoor Termination

General Provisions

Standard accessories = Accessories for standard cables

Standard cable:

- single core cable
- conductor material = Al or Cu
- conductor design = RE (circular solid), RM (circular stranded), RMV (circular, stranded condensed)
- XLPE insulation
- copper wire screen
- Polymer laminated sheath longitudinal watertight screen region is allowed.
- A conductive coating on to the outer sheath is allowed.

Material short text

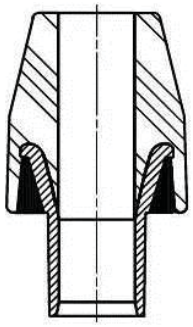
Product Name	Short Text					
FEV72,5-2.5VIn-STD	AA	BB	EX	SX	DDD	KX
FEV123-3.6VIn STD	AA	BB	EX	SX	DDD	KX
FEV145-3.6VIn STD	AA	BB	EX	SX	DDD	KX
FEV170-5.2VIn STD	AA	BB	EX	SX	DDD	KX

AA = conductor diameter (rounded up in whole numbers)
BB = conductor material
EX = characteristic of EPDM stress cone (please vide data sheet)
SX = characteristic of sealing flange (please vide data sheet)
DDD = cross-section of copper wire screen (mm^2)
KX = characteristic cable clamp (please vide data sheet)

To find the correct components, please see also the next page.

Data sheet / Characteristics

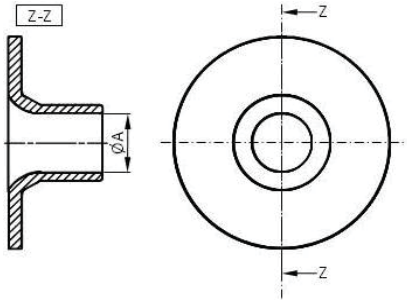
EX = characteristic of stress cone [ESC]	
characteristic „EX“	range = Ø core insulation*
E0	35 – 42 mm
E1	41 – 48 mm
E2	47 – 55 mm
E3	53 – 61 mm
E4	60 – 72 mm
E5	70 – 81 mm
E6	79 – 90 mm



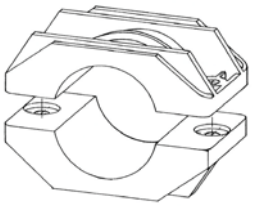
* After finish the core insulation

Data sheet / Characteristics

SX = characteristic of sealing flange [SFP]		
characteristic „SX“	range = Ø semi-conductive layer	Ø A
S1	35 – 44 mm	32 mm
S2	43 – 54 mm	39 mm
S3	53 – 62 mm	50 mm
S4	61 – 70 mm	57 mm
S5	68 – 78 mm	64 mm
S6	76 – 86 mm	72 mm
S7	84 – 95 mm	80 mm
S8	94 – 115 mm	90 mm
S9	110 – 135 mm	105 mm



KX = characteristic of cable clamp	
characteristic „KX“	range = Ø outer diameter
K1	50 – 75 mm
K2	75 – 100 mm
K3	100 – 130 mm
K4	130 – 160 mm



Example: FEV123-3.6VIn-STD for cable with following characteristics:

Cable Data	Classification of the characteristics
Conductor diameter = 49,2 mm	AA = 50
Conductor material = Copper	BB = CU
Ø over core insulation after finishing = 87,3 mm	EX = E6
Ø semi-conductive layer on the core insulation = 91,1 mm	SX = S7
cross-section of copper wire screen = 95 mm2	DDD = 95
outer diameter of the cable = 104 mm	KX = K3

Material short text: FEV123-3.6VIn-STD-50-CU-E6-S7-95-K3

01-02-2013

Straight Joint (VM-A)

Straight Joint with premoulded EPDM joint body for single core XLPE HV cables with Al-tape laminated sheath.

Application

up to 170 kV

- For single core XLPE HV cables with Al-tape laminated sheath.

Uo / U (Um)

36 / 60 - 69 (72,5) kV
64 / 110 - 115 (123) kV
76 / 132 - 138 (145) kV
87 / 150 - 161 (170) kV

Description

Bolted or compression conductor connector, premoulded and factory tested EPDM joint body, sealed connection for bonding cable, copper casing with PE envelope

Specifications and Standards

All high voltage accessories are in compliance with national and international specifications and can be adapted to special requirements of the customer. Therefore, all technical information are purely for information purposes. For your specific requirements please don't hesitate to contact us.

International: IEC 60 840
National: DIN VDE 0276-632

	Dimensional Characteristic	Electrical Characteristics			
Product Name	**Conductor Cross-section (mm²)**	**Operating Voltage (kV)**	**Max. Operating Voltage (kV)**	**Impulse Voltage (kV)**	**Frequence (Hz)**
VM72,5-A	185 - 2000	66	72,5	325	50
VM123-A	185 - 2000	110	123	550	50
VM145-A	185 - 2000	132	145	650	50
VM170-A	185 - 2000	150	170	750	50

Premoulded EPDM Joint Body (PMJ-Series)

Description

Premoulded EPDM transmission cable joints for cable systems up to 550 kV are installed since more than 30 years and have shown an excellent reliability.

The PMJ series of transmission cable joints covers a voltage range from 72,5 kV up to 550 kV. PMJ cable joints are factory moulded in EPDM and individually tested ensuring the highest reliability.

The installation procedure is simple and does not require clean room environment or expensive tools. Field assembly is greatly simplified because all electrical stress management elements are built in during the factory moulding.

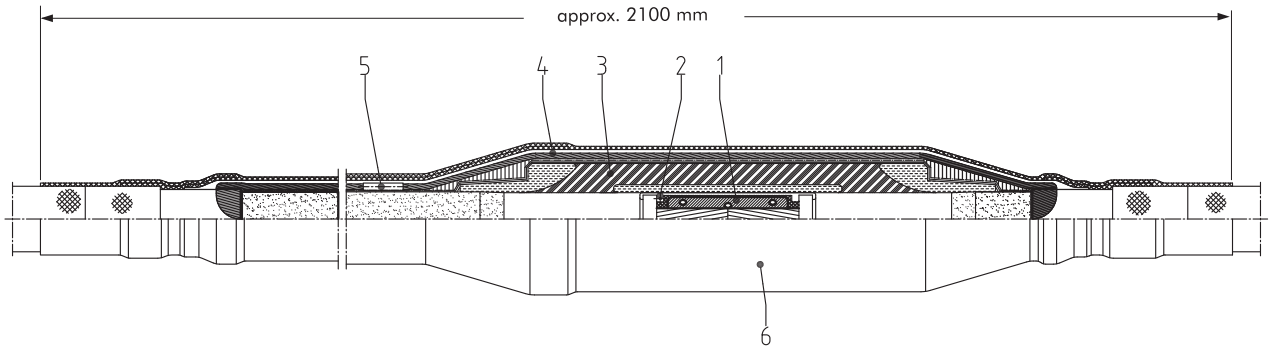
PMJ cable joint bodies are designed for use on solid dielectric cables with insulation diameters from 35 mm to 130 mm. When assembled they provide permanent, fully-screened, fully-submersible cable joints for direct burial or free in air. These joints are available with or without screen break.

Specifications and Standards

PMJ series EPDM joint bodies have been qualified as part of transmission cable joints.

International: IEC 60 840, IEC 62 067
National: DIN VDE 0276-632

Straight Joint (VM-A)



Primary Components

1. conductor connector
2. connecting sleeve
3. premoulded EPDM joint body
4. vapour barrier
5. screen connector
6. heat shrinkable corrosions protection

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Sectionalising Straight Joint (TIVM-A)

Sectionalising Straight Joint with premoulded EPDM joint body for single core XLPE HV cables with Al-tape laminated sheath.

Application

up to 170 kV

- For single core XLPE HV cables with Al-tape laminated sheath.

Uo / U (Um)

36 / 60 - 69 (72,5) kV
64 / 110 - 115 (123) kV
76 / 132 - 138 (145) kV
87 / 150 - 161 (170) kV

Description

Bolted or compression conductor connector, premoulded and factory tested EPDM joint body, premoulded cable sealing outlet for bonding cable, copolymer aluminium tape, outer protection with heat shrinkable tubes

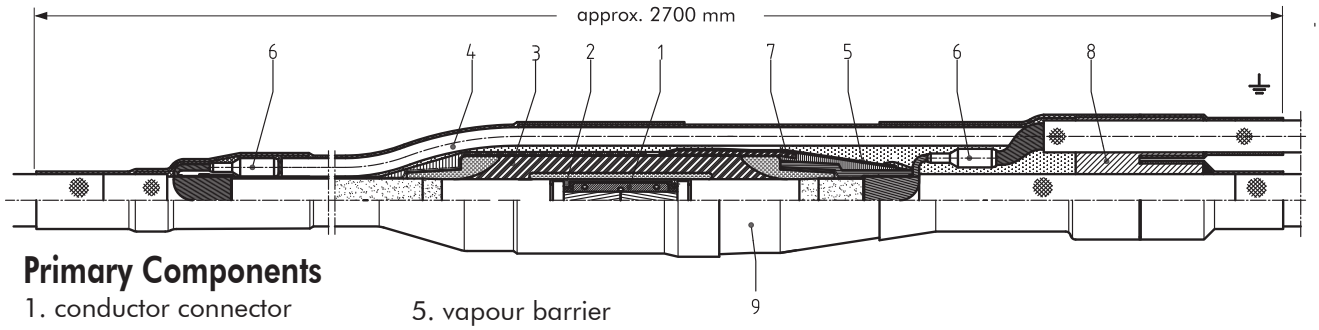
Specifications and Standards

All high voltage accessories are in compliance with national and international specifications and can be adapted to special requirements of the customer. Therefore, all technical information are purely for information purposes. For your specific requirements, please don't hesitate to contact us.

International: IEC 60 840, IEC 62 067
National: DIN VDE 0276-632

	Dimensional Characteristic	Electrical Characteristics			
Product Name	**Conductor Cross-section (mm²)**	**Operating Voltage (kV)**	**Max. Operating Voltage (kV)**	**Impulse Voltage (kV)**	**Frequence (Hz)**
TIVM72,5-A	185 - 2000	66	72,5	325	50
TIVM123-A	185 - 2000	110	123	550	50
TIVM145-A	185 - 2000	132	145	650	50
TIVM170-A	185 - 2000	150	170	750	50

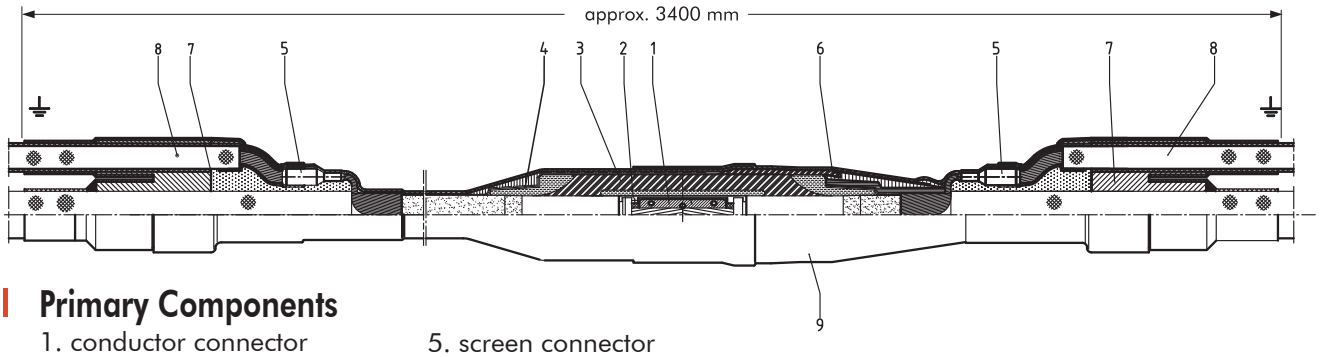
Sectionalising Straight Joint (TIVM-A1)



Primary Components

1. conductor connector
2. connecting sleeve
3. premoulded EPDM joint body
4. CB-cable
5. vapour barrier
6. screen connector
7. shield break
8. cable sealing outlet
9. heat shrinkable corrosion protection

Sectionalising Straight Joint (TIVM-A2)



Primary Components

1. conductor connector
2. connecting sleeve
3. premoulded EPDM joint body
4. vapour barrier
5. screen connector
6. shield break
7. cable sealing outlet
8. bonding cable
9. heat shrinkable corrosion

Material short text

Product Name	Short Text					
VM72.5-A-STD	AA	BB	PX	DDD		
VM123-A-STD	AA	BB	PX	DDD		
VM145-A-STD	AA	BB	PX	DDD		
VM170-A-STD	AA	BB	PX	DDD		
TIVM72.5-A1/A2-STD*	AA	BB	PX	DDD	CCC	OX
TIVM123-A1/A2-STD*	AA	BB	PX	DDD	CCC	OX
TIVM145-A1/A2-STD*	AA	BB	PX	DDD	CCC	OX
TIVM170-A1/A2-STD*	AA	BB	PX	DDD	CCC	OX

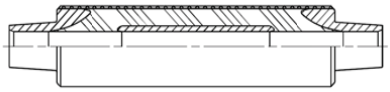
AA = conductor diameter (rounded up in whole numbers)
BB = conductor material
PX = characteristic of premoulded EPDM joint body (please vide data sheet)
DDD = cross section of copper wire screen (mm^2)
CCC = cross section of bonding cable (mm^2)
OX = characteristic of cable sealing outlet (please vide data sheet)

To find the correct components, please see on the next page. * Can be ordered as TIVM...-A1-STD or TIVM...-A2-STD

01-02-2013

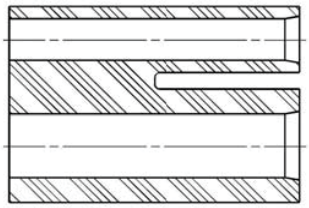
Data sheet / Characteristics

PX = characteristics pre-moulded [PMJ]	
characteristic „PX“	range = Ø core insulation*
P0	35 – 42 mm
P1	41 – 48 mm
P2	47 – 55 mm
P3	53 – 61 mm
P4	60 – 72 mm
P5	70 – 81 mm
P6	79 – 90 mm
P7	88 – 99 mm
P8	96 – 115 mm



* after finish the core insulation

OX = characteristics cable sealing outlet		
characteristic „OX“	range bonding cable = outer diameter**	range HV cable = outer diameter **
O1	20 – 30 mm	55 – 65 mm
O2	20 – 30 mm	65 – 80 mm
O3	20 – 30 mm	80 – 90 mm
O4	20 – 30 mm	90 – 100 mm
O5	20 – 30 mm	100 – 120 mm
O6	30 – 40 mm	55 – 65 mm
O7	30 – 40 mm	65 – 80 mm
O8	30 – 40 mm	80 – 90 mm
O9	30 – 40 mm	90 – 100 mm
O10	30 – 40 mm	100 – 120 mm
O11	40 – 50 mm	80 – 90 mm
O12	40 – 50 mm	90 – 100 mm
O13	40 – 50 mm	100 – 120 mm



** after stripping of outer conductive coating if applicable

Example: TIVM123-A-STD for cable with following characteristics:

Cable Data	Classification of the characteristics
Conductor diameter = 49,2 mm	AA = 50
Conductor material = Al	BB = Al
Ø over core insulation after finishing = 87,3 mm	PX = P6
cross-section of copper wire screen = 95 mm2	DDD = 95
Bonding cable = 2XC(F)2Y 1x120RM/120	CCC = 120
outer diameter of the HV-cable = 104 mm**	OX = O10
outer diameter of the bonding cable = 35 mm**	OX = O10

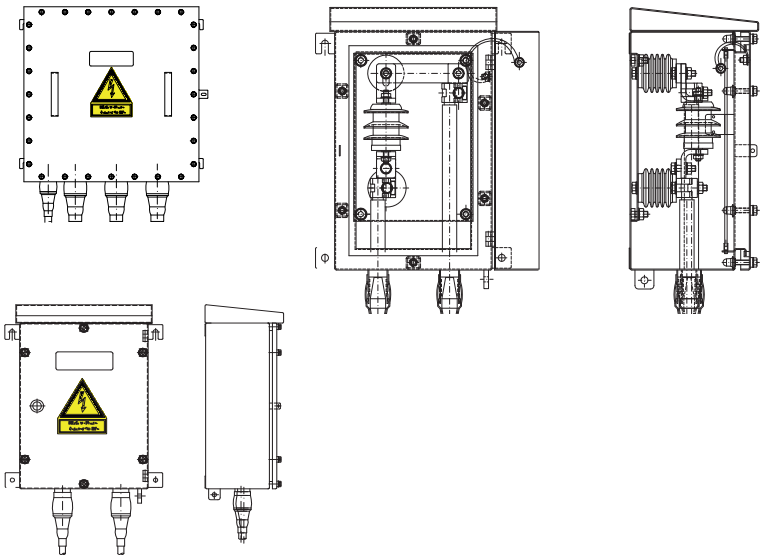
** after stripping of outer conductive coating if applicable

Material short text: TIVM123-A1-STD-50-AL-P6-95-120-O10

Accessories for Joints and Terminations

Link boxes for grounding and cross bonding of HV cables

- Available for indoor, outdoor or underground use
- Different mechanical protection levels available
- Electrically and mechanically type-tested
- 1-phase and 3-phase boxes
- With or without surge arresters
- With or without removable links
- For coaxial cross bonding cables or single core cables



Splice box for fiber optic cables inside the HV cables

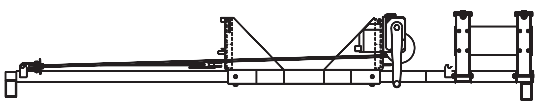
- To protect the splice of fiber optic cables inside the HV accessory

Flat terminal connector

- For use on outdoor terminations
- Made of aluminum alloy
- 45° angle type also available

Tools

- for cable preparation
- for installation of cable accessories and joint bodies



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