TYPE · MV SHEARER CABLE · CHAIN OPERATION | 1.8/3 kV | 15 Variants

PROTOMONT (VO) Equivalent

FC-PMT-VO (N)TSKCGEWÖU 1,8/3 kV

Coal-cutter cable for chain operation without wire spinning — screened EPR cores, split concentric PE with control cores and a tough red CM/CPE outer sheath.

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Language **English (AU)**

01 Application & Product Overview

FC-PMT-VO (N)TSKCGEWÖU 1.8/3 kV is the lighter, more flexible chain-operation shearer cable: the steel/copper spinning is omitted and the outer sheath is vulcanised directly over the inner sheath.

Three EPR main cores with single semi-conductive screen design are laid up with three double-concentric control/PE elements around a semi-conductive centre. The chlorinated-polyethylene (CM/CPE) outer sheath of quality 5GM3 gives high abrasion and tear resistance with a smaller diameter and weight than the (V) design.

Typical applications

- Longwall shearers and coal cutters in cable protection chains
- Mobile face equipment where lower weight and higher flexibility are required
- Underground supply at 1.1–3.3 kV networks
- Earth-fault and insulation monitoring via the ST control cores
- Underground coal and potash / salt mines

15 variants
25 – 300 mm², 1 or 2 control cores

1.8/3 kV
Rated voltage, 6 kV test

15 N/mm²
Max. tensile load on conductors

± 50 °/m
Permissible torsional stress

Cross-reference

REFERENCE TYPE

PROTOMONT (VO) (N)TSKCGEWÖU 1,8/3 kV

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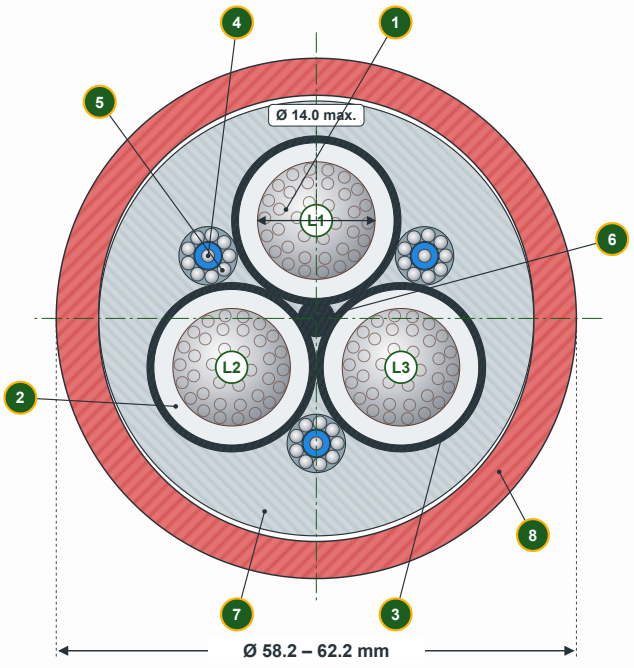
FEICHUN EQUIVALENT

FC-PMT-VO (N)TSKCGEWÖU 1,8/3 kV

Equivalent in construction and dimensions to PROTOMONT (VO) (N)TSKCGEWÖU 1,8/3 kV.

02 Construction



FEICHUN · SECTION A–A · 1.8/3 kV

FC-PMT-VO (N)TSKCGEWÖU

Doc. No. FC-TDS-PMVO3-2026-D9B4
Ref. 3×95 mm²
Rev. 0 · 2026-10-12 · 1st-angle · NTS

Drawing representative of the reference size; other sizes scale proportionally.

Pos.	Element	Material
1	Conductor	Tinned annealed copper, very finely stranded, class FS (DIN VDE 0295) / class 5 (IEC 60228)
2	Insulation	EPR rubber compound type 3GI3 (DIN VDE 0207-20), main cores in natural colour with black / grey / brown marking
3	Insulation screen	Semi-conductive NBR layer, cold-strippable ('easy strip')
4	Control core(s) (ST)	Tinned copper 1.5 mm², EPR 3GI3 insulation, blue
5	Concentric PE conductor (KON)	Tinned copper wires laid concentrically over the control core(s); total earth cross-section split into three
6	Centre filler	Semi-conductive elastomer
7	Inner sheath	Special EPR rubber compound GM1b (DIN VDE 0207-21), vulcanised

Pos.	Element	Material
8	Outer sheath	Chlorinated polyethylene (CM/CPE) rubber compound 5GM3 (DIN VDE 0207-21), vulcanised directly over the inner sheath, flame-retardant, oil- and abrasion-resistant, red

Drawing: 3×95 mm² reference size.

Construction details

Element	Description
Conductor	Very finely stranded tinned annealed copper, class FS (finer than class 5) to DIN VDE 0295 / IEC 60228
Main core insulation	EPR rubber, special compound type 3GI3 to DIN VDE 0207-20
Electrical field control	Semi-conductive layer over the insulation of each main core (semi-conductive NBR, cold-strippable 'easy strip') - single-screen design
Main core identification	Natural colour (black / grey / brown marking)
Control / PE elements	One double-concentric element in each of the three outer interstices: blue EPR-insulated tinned copper 1.5 mm² control core(s) (ST) surrounded by a concentric protective-earth conductor of tinned copper wires (KON, total earth cross-section split /3 across the three elements)
Lay-up	Three main cores and three control/PE elements laid up together over a central semi-conductive elastomer filler, short lay length for chain operation
Inner sheath	Special EPR rubber compound type GM1b, vulcanised
Outer sheath	Heavy-duty chlorinated polyethylene (CM/CPE) rubber compound, quality 5GM3 to DIN VDE 0207-21, vulcanised directly over the inner sheath (no steel/copper wire spinning), flame retardant, oil and abrasion resistant; standard colour red, other colours on request

03 Electrical, Thermal & Mechanical Data

Electrical parameters

Parameter	Value
Rated voltage U_0/U (Um)	1.8/3 (3.6) kV
AC test voltage	6 kV
AC test voltage, control cores	2 kV
Current-carrying capacity	DIN VDE 0298-4, Table 15 (rubber trailing cables, 30 °C ambient); derate for grouping and ambient temperature in the chain

Thermal & mechanical parameters

Parameter	Value
Max. permissible conductor temperature	+90 °C
Max. short-circuit conductor temperature	+250 °C
Ambient temperature, fixed installation	−40 °C to +80 °C
Ambient temperature, flexible operation	−20 °C to +60 °C
Min. bending radius in cable protection chain	2.3 × D at max. 5 N/mm² tensile load
Min. distance between S-type direction changes	20 × D
Max. permanent tensile load on conductors	15 N/mm² (based on total main conductor cross-section)
Max. torsional stress	±50 °/m
Flame retardance	IEC 60332-1-2 / EN 60332-1-2
Oil resistance	IEC 60811-404

Parameter	Value
Ozone and UV resistance	Resistant

04 Dimensions, Weights & Ratings — 1.8/3 kV (15 variants)

Type designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
Control/PE elements with 1 × 1.5 mm² control core (1,5STKON)										
3×25+3×(1.5STKON+16/3KON)	FC-PMVO3-001	7.1	37.8	40.8	94	2,500	1,125	0.795	131	3.57
3×35+3×(1.5STKON+16/3KON)	FC-PMVO3-002	8.4	42.0	45.0	104	3,150	1,575	0.565	162	5.00
3×50+3×(1.5STKON+25/3KON)	FC-PMVO3-003	10.1	45.7	48.7	112	3,950	2,250	0.393	202	7.15
3×70+3×(1.5STKON+35/3KON)	FC-PMVO3-004	11.9	50.9	54.9	126	5,000	3,150	0.277	250	10.01
3×95+3×(1.5STKON+50/3KON)	FC-PMVO3-005	14.0	58.2	62.2	143	6,310	4,275	0.210	301	13.58
3×120+3×(1.5STKON+70/3KON)	FC-PMVO3-006	15.5	60.1	64.1	147	7,690	5,400	0.164	352	17.16
3×150+3×(1.5STKON+70/3KON)	FC-PMVO3-007	17.2	65.6	69.6	160	9,150	6,750	0.132	404	21.45
3×185+3×(1.5STKON+95/3KON)	FC-PMVO3-008	19.1	69.7	73.7	170	10,800	8,325	0.108	461	26.45
3×240+3×(1.5STKON+120/3KON)	FC-PMVO3-009	22.0	78.9	82.9	191	13,940	10,800	0.0817	540	34.32
3×300+3×(1.5STKON+150/3KON)	FC-PMVO3-010	24.8	83.4	88.4	203	17,000	13,500	0.0654	620	42.90
Control/PE elements with 2 × 1.5 mm² control cores (2x1,5ST)										
3×95+3×(2×1.5ST+50/3KON)	FC-PMVO3-011	14.0	57.2	62.2	143	6,350	4,275	0.210	301	13.58
3×120+3×(2×1.5ST+70/3KON)	FC-PMVO3-012	15.5	62.8	66.8	154	7,950	5,400	0.164	352	17.16
3×150+3×(2×1.5STKON+3×70/3KON)	FC-PMVO3-013	17.2	66.2	70.2	162	9,100	6,750	0.132	404	21.45
3×185+3×(2×1.5ST+95/3KON)	FC-PMVO3-014	19.1	70.4	74.4	171	10,750	8,325	0.108	461	26.45
3×240+3×(2×1.5ST+120/3KON)	FC-PMVO3-015	22.0	78.9	82.9	191	13,650	10,800	0.0817	540	34.32

Current rating: DIN VDE 0298-4 values for flexible rubber cables at 30 °C ambient — apply the factors below for other ambient temperatures, grouping and multi-layer laying. Bending radius: 2.3 × D in the cable protection chain at ≤ 5 N/mm² tensile load. Tensile force: 15 N/mm² × total phase cross-section. Further sizes and special designs are manufactured to order.

Ambient temperature factors (90 °C conductor)

°C	20	25	30	35	40	45	50
Factor	1.08	1.04	1.00	0.96	0.91	0.87	0.82

Short-circuit rating

Permissible short-circuit current for 1 s: $I_k = 0.143$ kA/mm² × phase cross-section (EPR, 90 °C → 250 °C, tinned copper). For other durations t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

05 Standards & Tests

Standard	Scope
DIN VDE 0250-813	Basis of design — flexible mining cables, medium voltage
DIN VDE 0295 / IEC 60228	Conductors, class FS / 5 — class FS, tinned
DIN VDE 0207-20	Insulating compound 3GI3 — insulation 3GI3
DIN VDE 0207-21	Sheathing compounds — sheath 5GM3
DIN VDE 0298-4	Current-carrying capacity
IEC 60332-1-2 / EN 60332-1-2	Flame propagation, single cable
IEC 60811-404	Oil resistance of sheath

Routine & type tests

- AC voltage test 6 kV on every drum (main cores); 2 kV on control cores
- Conductor resistance, dimensional and continuity checks of PE, control and monitoring conductors
- Insulation resistance and screen / semi-conductive layer resistance
- Bending, torsion and tensile tests in a cable protection chain (type test)
- Flame retardance (IEC 60332-1-2) and oil resistance (IEC 60811-404) of the outer sheath

Test documentation: each delivery is accompanied by a FeiChun in-house laboratory inspection certificate. Third-party witnessed testing can be arranged at the buyer's cost.

06 Installation, Marking & Delivery

Installation notes

- Guide the cable in the cable protection chain (cable handler) — the chain takes the tensile forces; minimum bending radius 2.3 × D at ≤ 5 N/mm² tensile load.
- Keep at least 20 × D between S-type direction changes and keep torsion within the stated limit.
- Do not exceed the permanent tensile load of 15 N/mm² on the main conductors, including start-up and braking peaks.
- Unwind tangentially from the delivery drum — never pull off over the flange; lay out and relax the cable before fitting it into the chain.
- Connect all three PE parts at both ends; connect the control conductors to the earth-fault / insulation monitoring relay of the shearer supply.
- Use flameproof (Ex d) or increased-safety plugs and couplers suited to the cable diameter and approved for the mine.

Sheath marking

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FEICHUN FC-PMT-VO (N)TSKCGEWÖU [size] 1,8/3 kV [year] [serial no.] [metre mark]
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Packing & delivery

Item	Standard
Drum	Steel or fumigated wooden drums, ends sealed with heat-shrink caps
Lengths	To order, single continuous length (no joints)

Item	Standard
Production lead time	2–3 weeks after technical confirmation
Warranty	Min. 3 years against manufacturing defects
Drum label	Type, size, length, gross/net weight, batch no., drum no.

07 Certifications & Quality

CE — LVD 2014/35/EU

Attestation No. M.2025.206.C116598 · EN 50525-1:2011+A1:2022 · UDEM International Certification · valid to 01.04.2030

EAC — TR CU 004/2011

Certificate No. ЕАЭС KG417/052.CN.02.15390 · GOST 31996-2012, GOST 31565-2012 · valid 24.10.2025–23.10.2030

UKCA — Verification

No. ICR/VC/HS2508110 · BS EN 50525-1:2011+A1:2022 · ICR Polska · valid to 17.08.2030

FeiChun also holds ATEX (Directive 2014/34/EU) documentation verification and IECEx / VDE related approvals for designated product families. Mine-specific approvals are arranged with the end user or local distributor where required. Certificate copies are available on request.

08 Trademark Notice & Intellectual Property

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FEICHUN CABLE