REPLACEMENT FOR TF KABLE R-(N)TSCGEWÖU | 12/20 kV | (N)TSCGEWÖU, DIN VDE 0250-813 | PCP rubber, red | article datasheet

FC-R-(N)TSCGEWÖU 3×50+3×25/3 12/20 kV

Medium-Voltage Reeling Cable – polychloroprene rubber compound 5GM5 to DIN VDE 0207-21, red. FeiChun replacement for TF Kable R-(N)TSCGEWÖU: construction, dimensions, weight, current rating, standards and installation guidance.

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01 Application and Product Overview

FC-R-(N)TSCGEWÖU 3×50+3×25/3 is a medium-Voltage Reeling Cable rated 12/20 kV and the FeiChun replacement for TF Kable R-(N)TSCGEWÖU 3×50+3×25/3. It has an outer diameter of 67.0 – 71.0 mm, weighs about 6,060 kg/km and carries 186 A in free air at 30 °C. The series covers 25 – 240 mm².

Typical applications

- Medium-voltage supply of ship-to-shore, gantry and bucket-wheel machines through motor-driven reels
- Stackers, reclaimers, ship loaders and dredgers travelling on rails
- Open-cast mining equipment with high torsional and reeling stress
- Outdoor service with UV radiation, ozone and seawater spray

Design

Three screened power cores rated 12/20 kV and a protective conductor split into three parts in the interstices, under a polyester anti-twist braid. Semi-conductive layers keep the electric field inside the insulation.

3×50+3×25/3	12/20 kV	186 A	Ø 71.0 mm
Cross-section	Rated voltage U_0/U	Current at 30 °C	Outer dimension, max

Key features

- Fine-wire class 5 tinned or bare copper conductors to IEC 60228
- Rubber insulation with inner and outer semi-conductive layers extruded in one pass
- Travel speed up to 120 m/min, torsion up to ±25 °/m
- Flame-retardant to IEC 60332-1-2; oil, ozone and UV resistant

Replacement reference

REFERENCE PRODUCT	⇄	FEICHUN REPLACEMENT
TF Kable R-(N)TSCGEWÖU 3×50+3×25/3 (N)TSCGEWÖU, DIN VDE 0250-813		**FC-R-(N)TSCGEWÖU 3×50+3×25/3 12/20 kV** Medium-Voltage Reeling Cable

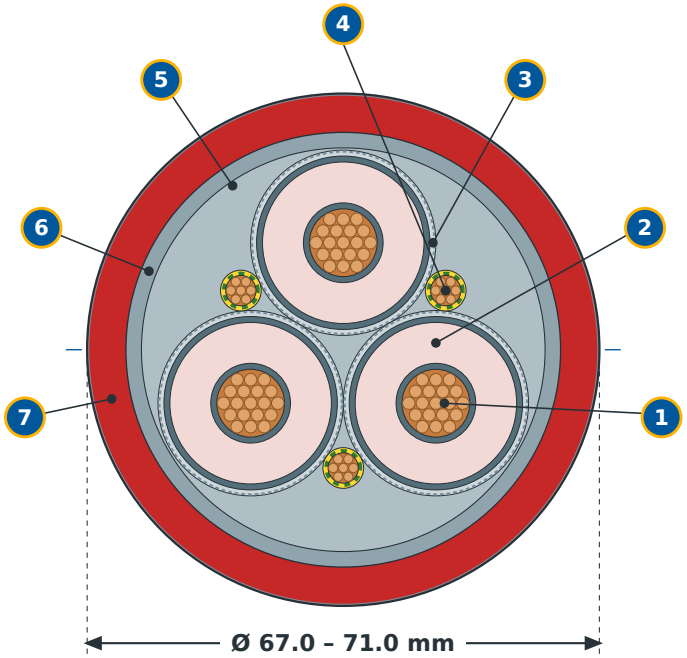
The FeiChun cable has the same core configuration, voltage rating and field of application as the reference product. Dimensions and weights are FeiChun design values; compare them with reels, guides and glands before direct replacement.

02 Construction

FEICHUN · CROSS-SECTION A-A · 12/20 kV

FC-R-(N)TSCGEWÖU

Sample size 3×50+3×25/3 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Fine-wire copper, class 5 to IEC 60228
2	Insulation and semi-conductive layers	Rubber insulation between inner and outer semi-conductive layers
3	Core screen	Copper wire braid
4	Protective conductor	Green-yellow insulated copper
5	Filler and anti-twist braid	Rubber compound, polyester braid
6	Inner sheath	Rubber or elastomer compound
7	Outer sheath	Polychloroprene rubber compound 5GM5 to DIN VDE 0207-21, red

The drawing shows 3×50+3×25/3. Other sizes have the same construction with scaled dimensions.

Construction details

Conductor	Fine-wire tinned or bare copper, class 5 to IEC 60228 / DIN VDE 0295
Insulation	EPR rubber compound 3GI3 to DIN VDE 0207-20, with semi-conductive layers
Core screen	Copper wire braid, coverage ≥ 80 %
Protective conductor	Split into three parts in the interstices, green-yellow
Core identification	Colour coded to HD 308 / DIN VDE 0293
Inner sheath	Rubber or elastomer compound
Outer sheath	Polychloroprene rubber compound 5GM5 to DIN VDE 0207-21, red

Sheath material

The red polychloroprene sheath 5GM5 identifies medium-voltage cables on site and combines flame retardancy with high resistance to oil, weather, ozone and abrasion.

03 Electrical, Thermal and Mechanical Data

Electrical data

Rated voltage U_0/U	12/20 kV AC
Test voltage	29 kV AC, 5 min
Current-carrying capacity	DIN VDE 0298-4, 30 °C ambient; see table
Conductor resistance	Maximum at 20 °C, class 5 to IEC 60228

Thermal and mechanical data

Maximum conductor temperature	+90 °C
Short-circuit temperature	+250 °C
Ambient temperature, fixed	-40 ... +80 °C
Ambient temperature, moving	-25 ... +80 °C
Minimum bending radius, moving	See table (12 × D)
Maximum tensile load	20 N/mm² of copper cross-section of the power cores
Maximum travel speed	120 m/min
Maximum torsion	±25 °/m
Flame propagation	IEC 60332-1-2
Halogen-free sheath	No
Oil, ozone and UV resistance	Resistant

04 Dimensions, Weights and Ratings

The highlighted row is 3×50+3×25/3; the adjacent sizes of the series are shown for comparison.

Type designation	Article no.	Conductor Ø max mm	Outer Ø min mm	Outer Ø max mm	Min. bend radius mm	Weight approx. kg/km	Max. pull N	R_{20} max Ω/km	Rated current A	I_k (1 s) kA
3×35+3×16/3	FC-TF0782-3353163	7.7	63.5	67.0	804	5,170	2,100	0.554	149	5.00
3×50+3×25/3	**FC-TF0782-3503253**	**9.2**	**67.0**	**71.0**	**852**	**6,060**	**3,000**	**0.386**	**186**	**7.15**
3×70+3×35/3	FC-TF0782-3703353	10.8	71.0	75.0	900	7,200	4,200	0.272	230	10.01

Current-carrying capacity: design values to DIN VDE 0298-4, free air, 30 °C ambient. Pull force = 20 N/mm² × copper cross-section of the power cores. Dimensions and weights are nominal design values within manufacturing tolerances.

Ambient temperature factors

°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

I_k = 0.143 kA/mm² × conductor cross-section for 1 s; for duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$.

05 Reel Design Data

Rated current for the number of layers on the reel (DIN VDE 0298-4 factors 0.80 / 0.61 / 0.49 / 0.41) and the minimum reel core diameter (2 × bending radius).

Type designation	Outer Ø max, mm	Min. reel core Ø, mm	Copper, kg/km	1 layer, A	2 layers, A	3 layers, A	4 layers, A
3×35+3×16/3	67.0	1,608	1,620	119	91	73	61
3×50+3×25/3	**71.0**	**1,704**	**2,170**	**149**	**113**	**91**	**76**
3×70+3×35/3	75.0	1,800	2,900	184	140	113	94

06 Selection Guide

Typical use: 3×50+3×25/3 is a medium MV feeder for gantry cranes, stackers and drills of about 6.4 MVA.

At 20 kV, 3×50+3×25/3 transmits about 6.44 MVA continuously in free air at 30 °C (one layer on a reel: about 5.15 MVA).

For comparison: 3×35+3×16/3 has 67.0 mm, 5,170 kg/km and 149 A; 3×70+3×35/3 has 75.0 mm, 7,200 kg/km and 230 A. Choose the smallest size whose current, after the temperature and reel-layer factors, covers the load.

Example. A circuit carries 148 A at 40 °C ambient. Required table current = 148 / 0.91 = 163 A, so 3×50+3×25/3 (186 A) is suitable.

On a reel with 2,500 mm flange diameter, 1,000 mm traverse and 1,704 mm core, about 410 m of 3×50+3×25/3 can be wound (indicative).

07 Standards and Testing

Standard	Scope
IEC 60228 / DIN VDE 0295	Conductors, class 5
DIN VDE 0298-3	Bending radii and tensile loads
DIN VDE 0298-4	Current-carrying capacity
IEC 60332-1-2	Flame propagation, single cable
DIN VDE 0250-813	Design reference for the construction
IEC 60502-2	Extruded insulation 6 kV to 30 kV, test methods
IEC 60811-404	Mineral oil resistance

Routine and type tests

- AC voltage test on every delivery length: 29 kV, 5 min
- Conductor resistance, dimensions and insulation thickness
- Continuity of all conductors
- Partial-discharge test of the power cores (IEC 60502-2 method)
- Flame propagation, IEC 60332-1-2 (type test)

Test documentation: every delivery comes with a test certificate from FeiChun's own laboratory; third-party witnessed tests can be arranged at the buyer's cost.

08 Installation, Marking and Delivery

Installation guidance

- Unwind the cable tangentially from the drum; avoid loops, kinks and pulling over the drum flange.
- Keep the bending radius and tensile load within the values in this datasheet.
- Use a reel core diameter of at least twice the minimum bending radius; fit a guide so that turns do not cross.
- Before first operation, let the cable relax at full length to release torsion from transport.
- Use MV terminations and couplers suitable for screened flexible cores; connect all earth conductors at both ends.

Sheath marking

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FEICHUN FC-R-(N)TSCGEWÖU 3×50+3×25/3 12/20 kV [year] [metre mark]
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Packing and delivery

Packing	Steel or fumigated wooden drums; cable ends sealed
Delivery length	As ordered, in one continuous length
Lead time	2–3 weeks after technical approval
Warranty	1 year, covering failures not caused by human factors
Terms	FCA buyer's nominated forwarder's warehouse in China (Incoterms 2020); prices subject to LME copper

Order example: FC-R-(N)TSCGEWÖU 3×50+3×25/3 12/20 kV – replacement for TF Kable R-(N)TSCGEWÖU 3×50+3×25/3, 500 m on one drum. State type, cross-section, voltage, length per piece and installation conditions when requesting a quotation.

09 Certification and Quality

FeiChun holds CE (Low Voltage Directive), EAC and UKCA certificates and an ATEX documentation verification for defined product groups. Whether a certificate scope covers this construction is confirmed per project. All cable is routine-tested over 100 % of the delivered length.

10 Related Datasheets

This datasheet in Russian: FC-R-(N)TSCGEWÖU 3×50+3×25/3 12/20 kV

- FC-R-(N)TSCGEWÖU 3×35+3×16/3 12/20 kV – replacement for TF Kable R-(N)TSCGEWÖU
- FC-R-(N)TSCGEWÖU 3×70+3×35/3 12/20 kV – replacement for TF Kable R-(N)TSCGEWÖU
- FC-R-(N)TSCGEWÖU 3×25+3×25/3 12/20 kV – replacement for TF Kable R-(N)TSCGEWÖU
- FC-R-(N)TSCGEWÖU 3×95+3×50/3 12/20 kV – replacement for TF Kable R-(N)TSCGEWÖU

Library overview: FeiChun replacements for TF Kable

Frequently asked questions

Can FC-R-(N)TSCGEWÖU replace TF Kable R-(N)TSCGEWÖU 3×50+3×25/3?

Yes. It is designed with the same core configuration, voltage rating and field of application. Compare the outer diameter, bending radius and weight with your reel, guides or glands before ordering; FeiChun confirms suitability on request.

What are the outer diameter and minimum bending radius of 3×50+3×25/3?

Outer diameter 67.0 – 71.0 mm; minimum bending radius in moving operation 852 mm (12 × D).

What current can 3×50+3×25/3 carry?

186 A in free air at 30 °C ambient. Apply the temperature factors in section 04 and the layer factors when wound on a reel.

Is the cable halogen-free?

No. The PCP rubber, red sheath contains halogen; a halogen-free PUR version can be offered.

11 Trademark Notice and Intellectual Property

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Document control

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