DIN VDE 0250-813 · MV TRAILING AND REELING CABLE | 12/20 kV | 8 sizes | CR rubber | BARE COPPER | REELING / FESTOON DUTY

R(N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV

Medium-Voltage Trailing and Reeling Cable 12/20 kV – 3 screened power cores + 3 split PE conductors + 2 pilot cores 2×2.5 mm². Polychloroprene rubber sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, voltage drop and installation guidance for 8 sizes.

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01 Application and Product Overview

R(N)TSCGEWöu-P is a medium-voltage trailing cable to DIN VDE 0250-813 for mobile equipment that is supplied from a drag cable or a cable reel. Three individually screened, EPR-insulated power cores and three split protective conductors are stranded together, bedded in a rubber inner sheath and covered with an oil-resistant polychloroprene outer sheath. The cable is used for 12/20 kV supply of excavators, shovels, crushers and reclaimers.

Design

Each power core has an inner and an outer semi-conductive layer extruded together with the EPR insulation and a tinned or bare copper-wire braid screen. This keeps the electric field inside the core insulation and lets the cores be terminated with standard medium-voltage accessories. The three protective conductors lie in the outer interstices and carry the earth current; their total cross-section is stated in the designation (for example 3×50+3×25/3E means three conductors of 50 mm² and three protective conductors of 25 mm² in total). The inner and outer sheath are polychloroprene rubber.

Typical applications

- Electric rope shovels, draglines and large excavators fed through a cable reel
- Bucket-wheel excavators, stackers and reclaimers in open-cast mines and bulk-material plants
- Mobile crushing and screening plants and relocatable conveyor drive stations
- Mobile transformer stations, skid-mounted switchgear and pump sets
- Ship-to-shore and harbour cranes fed from a reel at medium voltage
- Tunnelling machines and long-wall equipment with medium-voltage supply
- Drag-cable connections that are laid on the ground and moved with the machine
- Replacement of existing (N)TSCGEWöu cabling to DIN VDE 0250-813

8 sizes	12/20 kV	+90 °C	CR rubber
Cross-section 25 – 185 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: CR rubber

Key features

- Individually screened cores with semi-conductive layers for 12/20 kV
- Split PE conductors in the outer interstices for a round, torsion-stable core
- Oil-resistant polychloroprene sheath; flame-retardant to IEC 60332-1-2
- Permanent tensile load 15 N/mm², dynamic load 30 N/mm² on the copper cross-section
- Reeling bending radius 12.5 × D, trailing 10 × D, fixed 6 × D
- Short-circuit temperature 250 °C; rated 90 °C at the conductor

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◆ 8 sizes from 25 to 185 mm²; weight from 3,110 to 10,640 kg/km; copper from 1,010 to 6,290 kg/km

Core layout and conductor

Three power cores and three split protective conductors in the outer interstices of the stranded core, laid with a short lay length. The power cores are individually screened with semi-conductive layers and a copper braid. Two pilot cores of 2.5 mm² (blue, white) form a monitoring loop for earth-continuity relays. The conductors are bare annealed copper. Bare copper has the lowest conductor resistance of the class 5 range and is the usual choice for dry and damp indoor use. Where the cable is exposed to salt, sulphur or permanent moisture, the tinned version of the same cable is preferable.

Standard background

DIN VDE 0250-813 defines the medium-voltage trailing cable (N)TSCGEWöu in the voltage classes 3.6/6 kV to 18/30 kV. The standard specifies the screened core design, the protective-conductor arrangement and the dimensional and test requirements; the R(N)TSCGEWöu version is the design for reeling duty.

The reeling version has a lighter core and a more flexible sheath than the drag-cable version, so that it can be wound on a cable reel with a core diameter of 2 × the reeling bending radius. For a reel, use the data of the reeling section: it gives the minimum reel core diameter, the winding capacity and the current rating by number of layers.

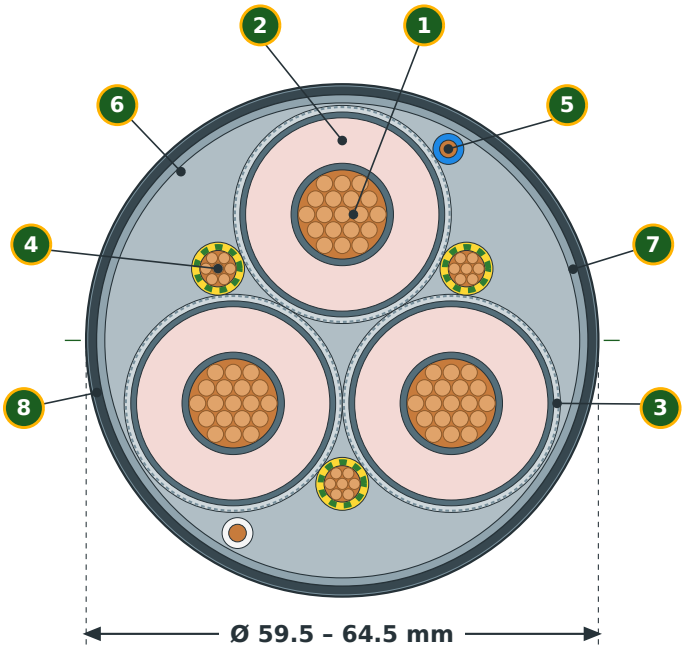
12/20 kV suits 20 kV systems with a maximum operating voltage of 24 kV. The insulation wall is 5.5 mm; the test voltage is 29 kV.

02 Construction

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

R(N)TSCGEWöu-P

Sample size 3×70+3×35/3E+2×2.5 · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Bare annealed fine-wire copper, class 5 to IEC 60228 / DIN VDE 0295
2	Semi-conductive layers and insulation	Inner and outer semi-conductive compound with EPR insulation (3GI3), extruded together
3	Core screen	Bare copper-wire braid, coverage ≥ 80 %
4	Split PE conductor	Class 5 copper, green-yellow insulation, laid in the outer interstices between the power cores
5	Pilot cores	Class 5 copper, blue and white insulation
6	Filler and binder tape	Rubber or compound filler with polyester binder tape
7	Inner sheath	Rubber compound, extruded over the stranded core
8	Outer sheath	Polychloroprene (CR) rubber, type 5GM5

The drawing shows size 3×70+3×35/3E+2×2.5. Other sizes have the same construction with scaled dimensions; the layout of every size is checked for non-overlap of all elements.

Construction details

Conductor	Bare annealed fine-wire copper, class 5 to DIN VDE 0295 / IEC 60228
Insulation	EPR rubber, type 3GI3 (90 °C), maximum conductor temperature 90 °C
Core screen	Semi-conductive layers extruded with the insulation; bare copper-wire braid screen
Core identification	Power cores brown, black, grey; protective conductors green-yellow
Stranding	Power cores, split PE conductors and auxiliary elements stranded together with a short lay length
Inner sheath	Rubber compound; thickness about 1.0 mm at this size
Outer sheath	Polychloroprene (CR) rubber, type 5GM5; thickness about 1.3 mm at this size

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03 Electrical, Thermal and Mechanical Characteristics

Electrical data

Rated voltage U_0/U	12/20 kV AC
Test voltage	29 kV AC, 5 min
Maximum operating voltage, three-phase	24 kV
Maximum operating voltage, DC (core-earth / core-core)	18/36 kV
Current-carrying capacity	Design values by the method of DIN VDE 0298-4, free air, 30 °C ambient
Conductor resistance	Maximum at 20 °C, class 5, bare

Thermal and mechanical data

Maximum conductor temperature	+90 °C
Maximum temperature at short circuit	+250 °C (5 s maximum)
Ambient temperature, fixed installation	−40 °C to +80 °C
Ambient temperature, in motion	−25 °C to +80 °C
Minimum bending radius	Fixed: 6 × D; trailing: 10 × D; on a cable reel: 12.5 × D
Maximum tensile load	Permanent 15 N/mm², dynamic 30 N/mm² on the total copper cross-section of the power cores
Flame propagation	IEC 60332-1-2 / DIN EN 60332-1-2
Halogen-free	No (CR rubber)
Mineral oil resistance	Resistant, DIN EN 60811-404
UV and ozone resistance	Resistant
Water	Damp and wet areas, spray water

04 Dimensions, Weights and Rated Data – 12/20 kV (8 sizes)

Type designation cores × mm²	FeiChun article no.	Cond. Ø max mm	Outer Ø min mm	Outer Ø max mm	Bend radius fixed mm	Bend radius moving mm	Weight approx. kg/km	Copper kg/km	Max. pull N	R_{20} max Ω/km	Rated current A	I_k (1 s) kA
3×25+3×25/3E+2×2.5	FC-NTSC-0559-01	6.5	49.5	54.0	324	540	3,110	1,010	1,120	0.780	139	3.58
3×35+3×25/3E+2×2.5	FC-NTSC-0559-02	7.7	52.0	56.5	339	565	3,610	1,300	1,580	0.554	171	5.00
3×50+3×25/3E+2×2.5	FC-NTSC-0559-03	9.2	55.0	60.0	360	600	4,360	1,730	2,250	0.386	214	7.15
3×70+3×35/3E+2×2.5	FC-NTSC-0559-04	10.8	59.5	64.5	387	645	5,270	2,400	3,150	0.272	265	10.01
3×95+3×50/3E+2×2.5	FC-NTSC-0559-05	12.6	65.5	71.0	426	710	6,590	3,260	4,280	0.206	320	13.59
3×120+3×70/3E+2×2.5	FC-NTSC-0559-06	14.2	68.5	74.0	444	740	7,450	4,180	5,400	0.161	371	17.16
3×150+3×70/3E+2×2.5	FC-NTSC-0559-07	15.8	72.0	78.5	471	785	8,840	5,040	6,750	0.129	426	21.45
3×185+3×95/3E+2×2.5	FC-NTSC-0559-08	17.6	76.0	83.0	498	830	10,640	6,290	8,320	0.106	486	26.45

Current-carrying capacity: design values by the method of DIN VDE 0298-4, free air, 30 °C ambient; for other ambient temperatures use the factors below and the multi-core reduction factor already included in the table. Copper weight = 9.6 kg/(km·mm²) of copper cross-section (VDE copper index). Pull force = 15 N/mm² × total copper cross-section of the power cores. Diameters, dimensions and weights are nominal design values calibrated to published type tables; they vary within manufacturing tolerances. Confirm critical dimensions before dimensioning reels, glands or festoon systems. Other sizes and configurations are produced to order.

Ambient temperature factors (conductor 90 °C)

°C	20	25	30	35	40	45	50	55	60
Factor	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Short-circuit current rating

I_k = 0.143 kA/mm² × cross-section of the power core (conductor 90 °C → 250 °C). For another duration t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

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05 Tensile Load, Reeling and Festoon Data

The values below support reel and festoon design: the permitted pull split into copper and braid parts, the free-hanging length (the length at which the cable's own weight reaches the rated pull, without a safety factor), the minimum reel core diameter and an indicative winding capacity for a reel with 2,500 mm flange diameter and 1,000 mm traverse width at 90 % fill. They are not a substitute for the reel manufacturer's calculation.

Type designation cores × mm²	Pull, copper N	Dynamic pull N	Total permitted pull N	Free-hanging length m (vertical)	Min. reel core Ø mm	Winding capacity m (reel 2,500 × 1,000)
3×25+3×25/3E+2×2.5	1,120	2,250	1,120	36	1,350	960
3×35+3×25/3E+2×2.5	1,580	3,150	1,580	44	1,412	830
3×50+3×25/3E+2×2.5	2,250	4,500	2,250	52	1,500	715
3×70+3×35/3E+2×2.5	3,150	6,300	3,150	60	1,612	510
3×95+3×50/3E+2×2.5	4,280	8,550	4,280	66	1,776	420
3×120+3×70/3E+2×2.5	5,400	10,800	5,400	73	1,850	315
3×150+3×70/3E+2×2.5	6,750	13,500	6,750	77	1,962	225
3×185+3×95/3E+2×2.5	8,320	16,650	8,320	79	2,076	150

06 Voltage Drop, Losses and Short-Circuit Data

Voltage drop per 100 m of cable at rated current with the conductor at 90 °C, cos φ = 0.8 and reactance 0.10 Ω/km (three-phase). The percentage refers to a system voltage of 20,000 V. Loss is the total I²R loss of the loaded cores per 100 m. The short-circuit columns give the permitted current for four durations.

Type designation cores × mm²	Rated current A	R at 90 °C Ω/km	Voltage drop V / 100 m	Voltage drop % of 20,000 V	Loss kW / 100 m	I_k 0.1 s kA	I_k 0.5 s kA	I_k 1 s kA	I_k 3 s kA
3×25+3×25/3E+2×2.5	139	0.995	20.60	0.10	5.76	11.31	5.06	3.58	2.06
3×35+3×25/3E+2×2.5	171	0.706	18.51	0.09	6.20	15.83	7.08	5.00	2.89
3×50+3×25/3E+2×2.5	214	0.492	16.82	0.08	6.76	22.61	10.11	7.15	4.13
3×70+3×35/3E+2×2.5	265	0.347	15.49	0.08	7.31	31.65	14.16	10.01	5.78
3×95+3×50/3E+2×2.5	320	0.263	14.97	0.07	8.07	42.96	19.21	13.59	7.84
3×120+3×70/3E+2×2.5	371	0.205	14.41	0.07	8.48	54.26	24.27	17.16	9.91
3×150+3×70/3E+2×2.5	426	0.164	14.14	0.07	8.96	67.83	30.33	21.45	12.38
3×185+3×95/3E+2×2.5	486	0.135	14.15	0.07	9.58	83.66	37.41	26.45	15.27

07 Selection Guide and Sizing Aid

R(N)TSCGEWöu-P 3×+3E+2×2.5 covers 8 sizes. The smallest, 3×25+3×25/3E+2×2.5, has an outer diameter of up to 54.0 mm and weighs about 3,110 kg/km; the largest, 3×185+3×95/3E+2×2.5, has an outer diameter of up to 83.0 mm and weighs about 10,640 kg/km, 3.4 times as much. Across the range the rated current rises from 139 A to 486 A at 30 °C and the fixed bending radius from 324 mm to 498 mm.

Example 1. A circuit draws 144 A continuously at 40 °C ambient temperature, in a group of two cables. Temperature factor 0.91, grouping factor 0.80: required table current = 144 / (0.91 × 0.80) = 198 A. The smallest suitable size is 3×50+3×25/3E+2×2.5 with 214 A.

Example 2. A circuit draws 327 A continuously at 35 °C ambient temperature, on its own. Temperature factor 0.96: required table current = 327 / (0.96) = 342 A. The smallest suitable size is 3×120+3×70/3E+2×2.5 with 371 A.

08 Engineering Profile by Size

Every size of R(N)TSCGEWöu-P 3×+3E+2×2.5 with the dimensions that decide how it behaves in a circuit: layers, weight, copper share, heat, voltage drop, bending, termination and pull.

3×25+3×25/3E+2×2.5. This size has with a conductor of Ø 6.5 mm under semi-conductive layers and EPR insulation (core Ø 22.1 mm) and 1.0 mm inner and 0.8 mm outer sheath; outer diameter 49.5–54.0 mm, weight about 3,110 kg/km of which copper 1,010 kg/km (32 %). Rated current 139 A at 30 °C; at that load the voltage drop is 20.60 V per 100 m (0.10 % of 20,000 V) and the loss 5.76 kW per 100 m. Bending radius 324 mm fixed, 540 mm moving; gland M75, lug bolt M8. Short-circuit rating 3.58 kA for 1 s; permitted pull 1,120 N, free-hanging length 36 m.

3×35+3×25/3E+2×2.5. This size has with a conductor of Ø 7.6 mm under semi-conductive layers and EPR insulation (core Ø 23.2 mm) and 1.0 mm inner and 0.8 mm outer sheath; outer diameter 52.0–56.5 mm, weight about

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3,610 kg/km of which copper 1,300 kg/km (36 %). Rated current 171 A at 30 °C; at that load the voltage drop is 18.51 V per 100 m (0.09 % of 20,000 V) and the loss 6.20 kW per 100 m. Bending radius 339 mm fixed, 565 mm moving; gland M85, lug bolt M8. Short-circuit rating 5.00 kA for 1 s; permitted pull 1,580 N, free-hanging length 44 m.

3×50+3×25/3E+2×2.5. This size has with a conductor of Ø 9.1 mm under semi-conductive layers and EPR insulation (core Ø 24.7 mm) and 1.0 mm inner and 0.8 mm outer sheath; outer diameter 55.0–60.0 mm, weight about 4,360 kg/km of which copper 1,730 kg/km (40 %). Rated current 214 A at 30 °C; at that load the voltage drop is 16.82 V per 100 m (0.08 % of 20,000 V) and the loss 6.76 kW per 100 m. Bending radius 360 mm fixed, 600 mm moving; gland M85, lug bolt M10. Short-circuit rating 7.15 kA for 1 s; permitted pull 2,250 N, free-hanging length 52 m.

3×70+3×35/3E+2×2.5. This size has with a conductor of Ø 10.8 mm under semi-conductive layers and EPR insulation (core Ø 26.4 mm) and 1.0 mm inner and 1.3 mm outer sheath; outer diameter 59.5–64.5 mm, weight about 5,270 kg/km of which copper 2,400 kg/km (46 %). Rated current 265 A at 30 °C; at that load the voltage drop is 15.49 V per 100 m (0.08 % of 20,000 V) and the loss 7.31 kW per 100 m. Bending radius 387 mm fixed, 645 mm moving; gland M90, lug bolt M10. Short-circuit rating 10.01 kA for 1 s; permitted pull 3,150 N, free-hanging length 60 m.

3×95+3×50/3E+2×2.5. This size has with a conductor of Ø 12.6 mm under semi-conductive layers and EPR insulation (core Ø 28.2 mm) and 1.0 mm inner and 2.5 mm outer sheath; outer diameter 65.5–71.0 mm, weight about 6,590 kg/km of which copper 3,260 kg/km (49 %). Rated current 320 A at 30 °C; at that load the voltage drop is 14.97 V per 100 m (0.07 % of 20,000 V) and the loss 8.07 kW per 100 m. Bending radius 426 mm fixed, 710 mm moving; gland M90, lug bolt M12. Short-circuit rating 13.59 kA for 1 s; permitted pull 4,280 N, free-hanging length 66 m.

3×120+3×70/3E+2×2.5. This size has with a conductor of Ø 14.1 mm under semi-conductive layers and EPR insulation (core Ø 29.7 mm) and 1.0 mm inner and 2.3 mm outer sheath; outer diameter 68.5–74.0 mm, weight about 7,450 kg/km of which copper 4,180 kg/km (56 %). Rated current 371 A at 30 °C; at that load the voltage drop is 14.41 V per 100 m (0.07 % of 20,000 V) and the loss 8.48 kW per 100 m. Bending radius 444 mm fixed, 740 mm moving; gland M100, lug bolt M12. Short-circuit rating 17.16 kA for 1 s; permitted pull 5,400 N, free-hanging length 73 m.

3×150+3×70/3E+2×2.5. This size has with a conductor of Ø 15.8 mm under semi-conductive layers and EPR insulation (core Ø 31.4 mm) and 1.0 mm inner and 2.5 mm outer sheath; outer diameter 72.0–78.5 mm, weight about 8,840 kg/km of which copper 5,040 kg/km (57 %). Rated current 426 A at 30 °C; at that load the voltage drop is 14.14 V per 100 m (0.07 % of 20,000 V) and the loss 8.96 kW per 100 m. Bending radius 471 mm fixed, 785 mm moving; gland M100, lug bolt M12. Short-circuit rating 21.45 kA for 1 s; permitted pull 6,750 N, free-hanging length 77 m.

3×185+3×95/3E+2×2.5. This size has with a conductor of Ø 17.5 mm under semi-conductive layers and EPR insulation (core Ø 33.1 mm) and 1.0 mm inner and 2.8 mm outer sheath; outer diameter 76.0–83.0 mm, weight about 10,640 kg/km of which copper 6,290 kg/km (59 %). Rated current 486 A at 30 °C; at that load the voltage drop is 14.15 V per 100 m (0.07 % of 20,000 V) and the loss 9.58 kW per 100 m. Bending radius 498 mm fixed, 830 mm moving; gland special, lug bolt M16. Short-circuit rating 26.45 kA for 1 s; permitted pull 8,320 N, free-hanging length 79 m.

Averaged over all sizes copper makes up 51 % of the cable weight; the share rises from 32 % at 3×25+3×25/3E+2×2.5 to 59 % at 3×185+3×95/3E+2×2.5, which is why the larger sizes are costed mostly on the copper market price.

09 Construction Dimensions by Size

Wall thicknesses and diameters of the layers at each size, taken from the validated cross-section layout; the overall diameter in section 04 is the sum of these layers within tolerance. The insulation wall follows the voltage class 12/20 kV.

Type designation cores × mm²	Conductor Ø mm	Core Ø over insulation, mm	Insulation wall mm	Laid-up core Ø mm	Inner sheath mm	Outer sheath mm	Screen + braid mm	Sheath share of Ø, %
3×25+3×25/3E+2×2.5	6.45	22.05	semi-cond. + EPR	48.1	1.00	0.80	–	7
3×35+3×25/3E+2×2.5	7.63	23.23	semi-cond. + EPR	50.7	1.00	0.80	–	7
3×50+3×25/3E+2×2.5	9.12	24.72	semi-cond. + EPR	53.9	1.00	0.80	–	6
3×70+3×35/3E+2×2.5	10.79	26.39	semi-cond. + EPR	57.5	1.00	1.26	–	7
3×95+3×50/3E+2×2.5	12.57	28.17	semi-cond. + EPR	61.3	1.00	2.51	–	10
3×120+3×70/3E+2×2.5	14.13	29.73	semi-cond. + EPR	64.7	1.00	2.30	–	9
3×150+3×70/3E+2×2.5	15.80	31.40	semi-cond. + EPR	68.3	1.00	2.52	–	9
3×185+3×95/3E+2×2.5	17.55	33.15	semi-cond. + EPR	72.0	1.00	2.76	–	9

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10 Termination Planning (indicative)

Type designation cores × mm²	Outer Ø or W × H mm	Cable gland thread	Lug / ferrule bolt	Strip length mm	Straight length behind gland, mm
3×25+3×25/3E+2×2.5	54.0	M75	M8	14	160
3×35+3×25/3E+2×2.5	56.5	M85	M8	16	170
3×50+3×25/3E+2×2.5	60.0	M85	M10	19	180
3×70+3×35/3E+2×2.5	64.5	M90	M10	26	195
3×95+3×50/3E+2×2.5	71.0	M90	M12	31	215
3×120+3×70/3E+2×2.5	74.0	M100	M12	35	220
3×150+3×70/3E+2×2.5	78.5	M100	M12	41	235
3×185+3×95/3E+2×2.5	83.0	special	M16	47	250

Gland threads, lug bolts and strip lengths are planning guides computed from the dimensions above; confirm them with the accessory manufacturer.

11 Comparison with Related Variants at Size 3×70+3×35/3E+2×2.5

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet R(N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV	–	64.5	5,270	3,150	265
R(N)TSCGEWöu 3×+3E 12/20 kV 3×70+3×35/3E	core configuration	64.5 (+0%)	5,220 (-1%)	3,150 (+0%)	265 (+0%)
R(N)TSCGEWöu-C 3×+3E+2×1.5 12/20 kV 3×70+3×35/3E+2×1.5	core configuration	64.5 (+0%)	5,250 (-0%)	3,150 (+0%)	265 (+0%)
R(N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV 3×70+3×35/3E+2×2.5	tinned vs bare copper	64.5 (+0%)	5,270 (+0%)	3,150 (+0%)	262 (-1%)
R(N)TSCGEWöu-P-HT 3×+3E+2×2.5 12/20 kV 3×70+3×35/3E+2×2.5	tensile braid	67.0 (+4%)	5,550 (+5%)	14,980 (+376%)	265 (+0%)
(N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV 3×70+3×35/3E+2×2.5	reeling design	64.5 (+0%)	5,270 (+0%)	3,150 (+0%)	265 (+0%)
R(N)TSCGEWöu-P 3×+3E+2×2.5 8.7/15 kV 3×70+3×35/3E+2×2.5	voltage class	60.0 (-7%)	4,870 (-8%)	3,150 (+0%)	257 (-3%)
R(N)TSCGEWöu-F 3×+3E+12FO 12/20 kV 3×70+3×35/3E+12FO	core configuration	64.5 (+0%)	5,230 (-1%)	3,150 (+0%)	265 (+0%)
R(N)TSCGEWöu-P 3×+3E+2×2.5 18/30 kV 3×70+3×35/3E+2×2.5	voltage class	75.5 (+17%)	6,380 (+21%)	3,150 (+0%)	275 (+4%)

Percentages show the change against this datasheet; where a variant does not offer the exact size, the nearest listed size is used.

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12 Standards and Testing

Standard	Scope
DIN VDE 0250-813	Trailing cable (N)TSCGEWöu, 3.6/6 kV to 18/30 kV
DIN VDE 0295 / IEC 60228	Conductors, class 5
DIN VDE 0207-20 / -21	Rubber insulation and sheath compounds
DIN VDE 0298-3 / -4	Application and current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation
IEC 60502-2 (reference)	Partial-discharge and voltage testing practice for screened MV cores

Routine and type tests

- AC voltage test on every drum length (routine test): 29 kV, 5 min
- Partial-discharge test of the screened power cores
- Conductor resistance and checks of dimensions, insulation thickness and sheath thickness
- Continuity of conductors and protective earth
- Flame propagation test (IEC 60332-1-2) and mineral-oil resistance on type-test samples
- Bending and torsion tests for reeling duty (type test)

Test documentation: every delivery is accompanied by a test certificate from FeiChun's own laboratory. Third-party witnessed tests can be arranged at the buyer's cost.

The design follows DIN VDE 0250-813. This datasheet does not claim the VDE approval mark; mark or approval certificates, where required for a project, are arranged on request and apply only to the type tested.

13 Installation, Marking and Delivery

Installation guidance

- Terminate the core screens with MV accessories rated for the voltage class and ground the screens at both ends.
- Use a reel core diameter of at least 2 × the reeling bending radius; wind in orderly layers without cross-over.
- Avoid torsion above the limit agreed with FeiChun for the reel design; release twist before respooling.
- Connect all three split PE conductors at both ends.
- Lay drag cables on a prepared surface and protect them against vehicle crossings with cable ramps.
- Carry out a voltage test of the installed cable after termination, with the test voltage in the table of section 03.

Sheath marking

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FEICHUN R(N)TSCGEWöu-P [cross-section] 12/20 kV [year] [serial no.] [metre mark]
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Packing and delivery

Drum	Steel or fumigated wooden drums; cable ends sealed with heat-shrink caps
Delivery length	As ordered, in one continuous length without joints
Lead time	2–3 weeks after technical approval
Warranty	At least 3 years against manufacturing defects
Drum label	Type, cross-section, length, gross/net weight, batch no., drum no.

Ordering information

Order example: R(N)TSCGEWöu-P 3×70+3×35/3E+2×2.5 12/20 kV – 500 m on one drum. When requesting a quotation, state the cable type, configuration, cross-section, voltage, conductor (bare copper), length per piece, required standards and installation conditions.

14 Certification and Quality

All cable is subject to FeiChun's quality control, with routine testing over 100 % of the delivered length. Declarations of conformity, type-test reports and third-party tests (for example for a mine, a tunnel or a rail project) are provided per project requirement; copies of the records are available on request. FeiChun holds CE, EAC and UKCA documentation for certain product groups. Whether a certificate covers this specific construction must be confirmed with FeiChun before it is quoted in a tender.

VDE, mine-specific (for example coal-mine safety marks, MSHA) and ATEX / IECEx approvals are not implied by this datasheet. They depend on the project, the machine and the country and are arranged with the end user.

15 Related Datasheets and Frequently Asked Questions

Variants of this cable with a different configuration, conductor, temperature grade, screen or voltage. All datasheets are PDF files.

- R(N)TSCGEWöu 3×+3E 12/20 kV – core configuration, CR rubber
- R(N)TSCGEWöu-C 3×+3E+2×1.5 12/20 kV – core configuration, CR rubber

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- R(N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV – tinned vs bare copper, CR rubber, tinned
- R(N)TSCGEWöu-P-HT 3×+3E+2×2.5 12/20 kV – tensile braid, CR rubber
- (N)TSCGEWöu-P 3×+3E+2×2.5 12/20 kV – reeling design, CR rubber
- R(N)TSCGEWöu-P 3×+3E+2×2.5 8.7/15 kV – voltage class, CR rubber
- R(N)TSCGEWöu-F 3×+3E+12FO 12/20 kV – core configuration, CR rubber
- R(N)TSCGEWöu-P 3×+3E+2×2.5 18/30 kV – voltage class, CR rubber

Overview of all (N)TSCGEWöu datasheets: (N)TSCGEWöu Medium-Voltage Trailing Cables

Frequently asked questions

What does 3×50+3×25/3E mean?
Three power cores of 50 mm² and three protective (PE) conductors with a total cross-section of 25 mm² (the /3 divides it into three conductors), designated E.

What is the difference between (N)TSCGEWöu and R(N)TSCGEWöu?
The R version is designed for reeling duty with a lighter, more flexible core and a smaller permitted bending radius on the reel; the unprefixed version is the drag-cable design.

What sizes are available for R(N)TSCGEWöu-P 3×+3E+2×2.5?
8 sizes from 25 to 185 mm². The outer dimension of the largest size, 3×185+3×95/3E+2×2.5, is 83.0 mm and the weight is about 10,640 kg/km.

What current can 3×95+3×50/3E+2×2.5 carry?
320 A in free air at 30 °C ambient, with the conductor at 90 °C. Other temperatures and grouping change the value; use the factors in section 04.

16 Trademark Notice and Intellectual Property

Cable type designations such as R(N)TSCGEWöu-P are standardised, descriptive designations defined in DIN VDE and EN standards; they are used to state which standard this product is designed to. References to other manufacturers' trade names, where made, serve only for technical comparison; FeiChun Cables is not affiliated with them.

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