DIN VDE 0250-814 · HEAVY RUBBER TRAILING CABLE · CRANES AND REELS | 0.66/1.14 kV | 13 sizes | CR rubber | BARE COPPER | TENSILE SUPPORT BRAID | REELING / FESTOON DUTY

NSHTöu 4G 0.66/1.14 kV

Heavy Rubber Trailing Cable with Tensile Support 0.66/1.14 kV – 4 cores of equal cross-section in concentric layers with a short lay length. Polychloroprene rubber sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, voltage drop and installation guidance for 13 sizes.

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01 Application and Product Overview

NSHTöu is the heavy rubber trailing cable for cranes, reels and festoon systems that move under tension. The design follows DIN VDE 0250-814: EPR/HEPR-insulated cores of fine-wire copper are stranded with a short lay length, a rubber inner sheath carries a tensile support element and an oil-resistant polychloroprene outer sheath protects the cable. Compared with a plain NSHTöu cable the tensile support allows a permanent load of 15 N/mm² and a dynamic load of 30 N/mm² on the copper cross-section.

Design

The cores are insulated with rubber of type 3GI3 (HEPR) for 90 °C at the conductor. Cores and protective conductors are stranded in short-lay layers; in the three-core designs with split PE the protective conductors lie in the outer interstices, so that the power cores form a compact, balanced triangle. A rubber inner sheath is extruded over the stranded core; an aramid tensile support braid bedded between the sheaths takes the axial load; the outer sheath is polychloroprene 5GM5. The construction keeps the copper free of tension, which is what extends cable life on reels and cranes.

Typical applications

- Crane, hoist and bridge-crane trailing cables with a cable chain or festoon trolley
- Cable reels of bucket-wheel excavators, stackers, reclaimers and portal cranes
- Mobile harbour and container equipment with repeated winding and unwinding
- Mining machinery, drilling rigs and shuttle systems that carry the cable under tension
- Mobile crushing and screening plants fed from a reel or a drag-cable arrangement
- Industrial hoisting systems with long free-hanging lengths
- Tunnelling machines and transfer cars with tensile and torsional loading
- Test rigs and shiploading equipment that need a cable approved for reeling duty

13 sizes	0.66/1.14 kV	+90 °C	CR rubber
Cross-section 1.5 – 150 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: CR rubber

Key features

- Aramid tensile support braid: permanent load 15 N/mm², dynamic load 30 N/mm² on the copper cross-section
- HEPR insulation, 90 °C at the conductor, short-circuit temperature 250 °C
- Reeling-duty bending radii of 6 × D to 10 × D depending on diameter
- Oil-resistant polychloroprene sheath, flame-retardant to IEC 60332-1-2
- Split PE conductors in the outer interstices (3×+3E designs) for a round, compact core
- Fine-wire class 5 conductors, bare or tinned
- 13 sizes from 1.5 to 150 mm²; weight from 290 to 8,140 kg/km; copper from 58 to 5,760 kg/km

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Core layout and conductor

4 cores of equal cross-section in concentric layers with a short lay length. Core colours: green-yellow, brown, black, grey (DIN VDE 0293-308); the green-yellow core is the protective conductor. The four-core layout carries three phases and PE (4G) or three phases and neutral (4×). 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 0250-814 describes the NSHTöu rubber trailing cable. The standard adds a tensile-bearing element to the heavy rubber-sheathed design so that the cable can be used as a trailing, reeling or festoon cable under tension. For sizes from 25 mm² the split-PE 3×+3E designs are the usual choice for crane and reel feeds.

The standard sheath compound is flexible down to 25 °C in motion and 40 °C in fixed installation. For regular use below this limit select the low-temperature grade of the same cable.

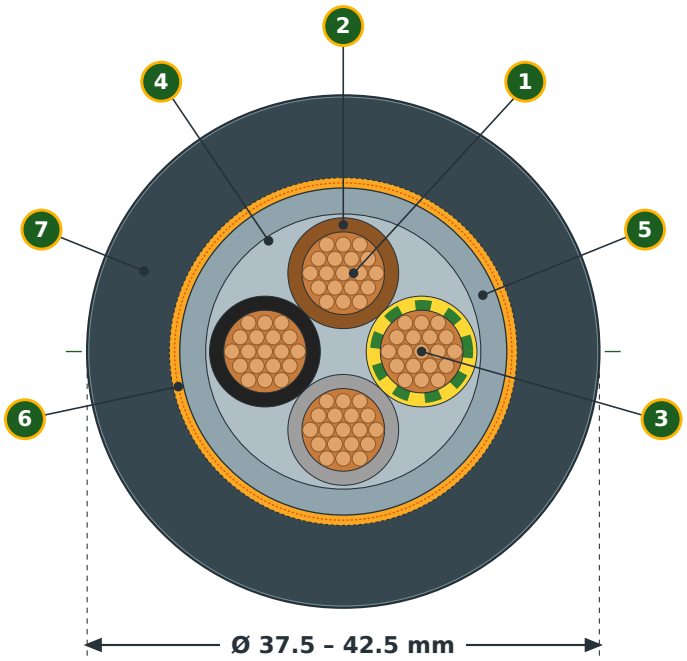
A braid of aramid yarn between the inner and the outer sheath takes the axial load that would otherwise stretch the copper. It keeps the stranded cores from lengthening, prevents loops (“bird-caging”) when the cable is released from tension on a reel and raises the permissible working load above the copper-based rating. The load must be introduced through a clamp that holds the sheath and the braid, never through the conductors.

0.66/1.14 kV is the rating for the 1,000 V (1.14 kV) systems used in mining and in heavy industry; it has a slightly thicker insulation than the 0.6/1 kV version. The test voltage is 3 kV.

02 Construction

FEICHUN · CROSS-SECTION A–A · 0.66/1.14 kV

NSHTöu
Sample size 4G25 · 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	Insulation	HEPR rubber, type 3GI3 (90 °C)
3	Protective (PE) core	Green-yellow insulation, same cross-section as the power cores
4	Filler and binder tape	Rubber or compound filler with polyester binder tape
5	Inner sheath	Rubber compound, extruded over the stranded core
6	Tensile support braid	Aramid yarn braid between inner and outer sheath; carries the axial load
7	Outer sheath	Polychloroprene (CR) rubber, type 5GM5

The drawing shows size 4G25. Other sizes have the same construction with scaled dimensions; the layout of every size is checked for non-overlap of all elements.

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Construction details

Conductor	Bare annealed fine-wire copper, class 5 to DIN VDE 0295 / IEC 60228
Insulation	HEPR rubber, type 3GI3 (90 °C), maximum conductor temperature 90 °C
Core identification	Green-yellow, brown, black, grey to DIN VDE 0293-308
Stranding	Cores in concentric layers with a short lay length
Inner sheath	Rubber compound; thickness about 2.0 mm at this size
Tensile support braid	Aramid yarn braid, 0.81 mm thick, between inner and outer sheath
Outer sheath	Polychloroprene (CR) rubber, type 5GM5; thickness about 6.4 mm at this size

03 Electrical, Thermal and Mechanical Characteristics

Electrical data

Rated voltage U_0/U	0.66/1.14 kV AC
Test voltage	3 kV AC, 5 min
Maximum operating voltage, three-phase	1.2 kV
Maximum operating voltage, DC (core-earth / core-core)	1.0/1.8 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: 3 × D (D ≤ 12 mm), 4 × D (D > 12 mm); moving: 4 × D (≤ 12 mm), 5 × D (≤ 20 mm), 6 × D (> 20 mm); reeling: 6 to 10 × D
Maximum tensile load	Permanent 15 N/mm², dynamic 30 N/mm² on the total copper cross-section of the power cores (including the aramid support braid)
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

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04 Dimensions, Weights and Rated Data – 0.66/1.14 kV (13 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
4G1.5	FC-NSHT-0380-01	1.7	15.9	18.0	72	90	290	58	1,260	13.3	23	0.214
4G2.5	FC-NSHT-0380-02	2.2	18.1	20.6	82	124	410	96	1,480	7.98	31	0.357
4G4	FC-NSHT-0380-03	2.7	20.7	23.6	94	142	540	154	1,770	4.95	42	0.572
4G6	FC-NSHT-0380-04	3.3	23.0	26.0	104	156	680	230	2,120	3.30	54	0.858
4G10	FC-NSHT-0380-05	4.1	26.5	30.0	120	180	1,040	384	2,660	1.91	74	1.43
4G16	FC-NSHT-0380-06	5.2	29.5	33.5	134	201	1,570	610	3,460	1.21	99	2.29
4G25	FC-NSHT-0380-07	6.5	37.5	42.5	170	255	2,230	960	4,840	0.780	131	3.58
4G35	FC-NSHT-0380-08	7.7	40.5	46.0	184	276	2,980	1,340	6,020	0.554	162	5.00
4G50	FC-NSHT-0380-09	9.2	46.5	52.5	210	315	4,030	1,920	7,800	0.386	202	7.15
4G70	FC-NSHT-0380-10	10.8	52.5	59.5	238	357	4,370	2,690	9,940	0.272	250	10.01
4G95	FC-NSHT-0380-11	12.6	59.5	67.5	270	405	5,410	3,650	12,650	0.206	302	13.59
4G120	FC-NSHT-0380-12	14.2	65.5	74.5	298	447	6,760	4,610	15,170	0.161	350	17.16
4G150	FC-NSHT-0380-13	15.8	71.0	81.0	324	486	8,140	5,760	18,570	0.129	402	21.45

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 plus the permissible load of the aramid braid. 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).

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	Pull, aramid braid N	Total permitted pull N	Free-hanging length m (vertical)	Min. reel core Ø mm	Winding capacity m (reel 2,500 × 1,000)
4G1.5	90	1,350	1,170	1,260	442	288	13,150
4G2.5	150	1,630	1,330	1,480	367	412	9,785
4G4	240	2,010	1,530	1,770	334	472	7,300
4G6	360	2,480	1,760	2,120	317	520	6,155
4G10	600	3,260	2,060	2,660	260	600	4,425
4G16	960	4,420	2,500	3,460	224	670	3,485
4G25	1,500	6,340	3,340	4,840	221	850	2,050
4G35	2,100	8,120	3,920	6,020	205	920	1,720
4G50	3,000	10,800	4,800	7,800	197	1,050	1,210
4G70	4,200	14,140	5,740	9,940	231	1,190	920
4G95	5,700	18,350	6,950	12,650	238	1,350	600
4G120	7,200	22,370	7,970	15,170	228	1,490	425
4G150	9,000	27,570	9,570	18,570	232	1,620	345

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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 0.08 Ω/km (three-phase). The percentage refers to a system voltage of 690 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 690 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
4G1.5	23	17.0	54.24	7.86	2.69	0.678	0.303	0.214	0.124
4G2.5	31	10.2	43.97	6.37	2.93	1.13	0.506	0.357	0.206
4G4	42	6.31	37.08	5.37	3.34	1.81	0.809	0.572	0.330
4G6	54	4.21	31.93	4.63	3.68	2.71	1.21	0.858	0.495
4G10	74	2.44	25.59	3.71	4.00	4.52	2.02	1.43	0.826
4G16	99	1.54	21.99	3.19	4.54	7.24	3.24	2.29	1.32
4G25	131	0.995	19.14	2.77	5.12	11.31	5.06	3.58	2.06
4G35	162	0.706	17.20	2.49	5.56	15.83	7.08	5.00	2.89
4G50	202	0.492	15.46	2.24	6.02	22.61	10.11	7.15	4.13
4G70	250	0.347	14.09	2.04	6.50	31.65	14.16	10.01	5.78
4G95	302	0.263	13.50	1.96	7.19	42.96	19.21	13.59	7.84
4G120	350	0.205	12.87	1.86	7.54	54.26	24.27	17.16	9.91
4G150	402	0.164	12.50	1.81	7.97	67.83	30.33	21.45	12.38

07 Selection Guide and Sizing Aid

NSHTöu 4G covers 13 sizes. The smallest, 4G1.5, has an outer diameter of up to 18.0 mm and weighs about 290 kg/km; the largest, 4G150, has an outer diameter of up to 81.0 mm and weighs about 8,140 kg/km, 28.1 times as much. Across the range the rated current rises from 23 A to 402 A at 30 °C and the fixed bending radius from 72 mm to 324 mm.

Example 1. A circuit draws 50 A continuously at 40 °C ambient temperature, in a group of two cables. Temperature factor 0.91, grouping factor 0.80: required table current = 50 / (0.91 × 0.80) = 69 A. The smallest suitable size is 4G10 with 74 A.

Example 2. A circuit draws 178 A continuously at 35 °C ambient temperature, on its own. Temperature factor 0.96: required table current = 178 / (0.96) = 186 A. The smallest suitable size is 4G50 with 202 A.

08 Engineering Profile by Size

Every size of NSHTöu 4G with the dimensions that decide how it behaves in a circuit: layers, weight, copper share, heat, voltage drop, bending, termination and pull.

4G1.5. This size has with a conductor of Ø 1.7 mm under 0.80 mm of insulation (core Ø 3.3 mm) and 1.2 mm inner and 2.4 mm outer sheath; outer diameter 15.9–18.0 mm, weight about 290 kg/km of which copper 58 kg/km (20 %). Rated current 23 A at 30 °C; at that load the voltage drop is 54.24 V per 100 m (7.86 % of 690 V) and the loss 2.69 kW per 100 m. Bending radius 72 mm fixed, 90 mm moving; gland M32, lug bolt M5. Short-circuit rating 0.214 kA for 1 s; permitted pull 1,260 N, free-hanging length 442 m.

4G2.5. This size has with a conductor of Ø 2.1 mm under 0.80 mm of insulation (core Ø 3.7 mm) and 1.2 mm inner and 3.0 mm outer sheath; outer diameter 18.1–20.6 mm, weight about 410 kg/km of which copper 96 kg/km (23 %). Rated current 31 A at 30 °C; at that load the voltage drop is 43.97 V per 100 m (6.37 % of 690 V) and the loss 2.93 kW per 100 m. Bending radius 82 mm fixed, 124 mm moving; gland M32, lug bolt M5. Short-circuit rating 0.357 kA for 1 s; permitted pull 1,480 N, free-hanging length 367 m.

4G4. This size has with a conductor of Ø 2.7 mm under 0.80 mm of insulation (core Ø 4.3 mm) and 1.3 mm inner and 3.6 mm outer sheath; outer diameter 20.7–23.6 mm, weight about 540 kg/km of which copper 154 kg/km (29 %). Rated current 42 A at 30 °C; at that load the voltage drop is 37.08 V per 100 m (5.37 % of 690 V) and the loss 3.34 kW per 100 m. Bending radius 94 mm fixed, 142 mm moving; gland M32, lug bolt M5. Short-circuit rating 0.572 kA for 1 s; permitted pull 1,770 N, free-hanging length 334 m.

4G6. This size has with a conductor of Ø 3.3 mm under 0.80 mm of insulation (core Ø 4.9 mm) and 1.4 mm inner and 3.8 mm outer sheath; outer diameter 23.0–26.0 mm, weight about 680 kg/km of which copper 230 kg/km (34 %). Rated current 54 A at 30 °C; at that load the voltage drop is 31.93 V per 100 m (4.63 % of 690 V) and the loss 3.68 kW per 100 m. Bending radius 104 mm fixed, 156 mm moving; gland M40, lug bolt M5. Short-circuit rating 0.858 kA for 1 s; permitted pull 2,120 N, free-hanging length 317 m.

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4G10. This size has with a conductor of Ø 4.1 mm under 0.80 mm of insulation (core Ø 5.7 mm) and 1.5 mm inner and 4.6 mm outer sheath; outer diameter 26.5–30.0 mm, weight about 1,040 kg/km of which copper 384 kg/km (37 %). Rated current 74 A at 30 °C; at that load the voltage drop is 25.59 V per 100 m (3.71 % of 690 V) and the loss 4.00 kW per 100 m. Bending radius 120 mm fixed, 180 mm moving; gland M40, lug bolt M6. Short-circuit rating 1.43 kA for 1 s; permitted pull 2,660 N, free-hanging length 260 m.

4G16. This size has with a conductor of Ø 5.2 mm under 0.80 mm of insulation (core Ø 6.8 mm) and 1.7 mm inner and 4.8 mm outer sheath; outer diameter 29.5–33.5 mm, weight about 1,570 kg/km of which copper 610 kg/km (39 %). Rated current 99 A at 30 °C; at that load the voltage drop is 21.99 V per 100 m (3.19 % of 690 V) and the loss 4.54 kW per 100 m. Bending radius 134 mm fixed, 201 mm moving; gland M50, lug bolt M6. Short-circuit rating 2.29 kA for 1 s; permitted pull 3,460 N, free-hanging length 224 m.

4G25. This size has with a conductor of Ø 6.5 mm under 1.10 mm of insulation (core Ø 8.7 mm) and 2.0 mm inner and 6.4 mm outer sheath; outer diameter 37.5–42.5 mm, weight about 2,230 kg/km of which copper 960 kg/km (43 %). Rated current 131 A at 30 °C; at that load the voltage drop is 19.14 V per 100 m (2.77 % of 690 V) and the loss 5.12 kW per 100 m. Bending radius 170 mm fixed, 255 mm moving; gland M63, lug bolt M8. Short-circuit rating 3.58 kA for 1 s; permitted pull 4,840 N, free-hanging length 221 m.

4G35. This size has with a conductor of Ø 7.6 mm under 1.10 mm of insulation (core Ø 9.8 mm) and 2.2 mm inner and 6.4 mm outer sheath; outer diameter 40.5–46.0 mm, weight about 2,980 kg/km of which copper 1,340 kg/km (45 %). Rated current 162 A at 30 °C; at that load the voltage drop is 17.20 V per 100 m (2.49 % of 690 V) and the loss 5.56 kW per 100 m. Bending radius 184 mm fixed, 276 mm moving; gland M75, lug bolt M8. Short-circuit rating 5.00 kA for 1 s; permitted pull 6,020 N, free-hanging length 205 m.

4G50. This size has with a conductor of Ø 9.1 mm under 1.20 mm of insulation (core Ø 11.5 mm) and 2.5 mm inner and 7.2 mm outer sheath; outer diameter 46.5–52.5 mm, weight about 4,030 kg/km of which copper 1,920 kg/km (48 %). Rated current 202 A at 30 °C; at that load the voltage drop is 15.46 V per 100 m (2.24 % of 690 V) and the loss 6.02 kW per 100 m. Bending radius 210 mm fixed, 315 mm moving; gland M75, lug bolt M10. Short-circuit rating 7.15 kA for 1 s; permitted pull 7,800 N, free-hanging length 197 m.

4G70. This size has with a conductor of Ø 10.8 mm under 1.20 mm of insulation (core Ø 13.2 mm) and 2.8 mm inner and 8.0 mm outer sheath; outer diameter 52.5–59.5 mm, weight about 4,370 kg/km of which copper 2,690 kg/km (62 %). Rated current 250 A at 30 °C; at that load the voltage drop is 14.09 V per 100 m (2.04 % of 690 V) and the loss 6.50 kW per 100 m. Bending radius 238 mm fixed, 357 mm moving; gland M85, lug bolt M10. Short-circuit rating 10.01 kA for 1 s; permitted pull 9,940 N, free-hanging length 231 m.

4G95. This size has with a conductor of Ø 12.6 mm under 1.30 mm of insulation (core Ø 15.2 mm) and 3.1 mm inner and 9.0 mm outer sheath; outer diameter 59.5–67.5 mm, weight about 5,410 kg/km of which copper 3,650 kg/km (67 %). Rated current 302 A at 30 °C; at that load the voltage drop is 13.50 V per 100 m (1.96 % of 690 V) and the loss 7.19 kW per 100 m. Bending radius 270 mm fixed, 405 mm moving; gland M90, lug bolt M12. Short-circuit rating 13.59 kA for 1 s; permitted pull 12,650 N, free-hanging length 238 m.

4G120. This size has with a conductor of Ø 14.1 mm under 1.30 mm of insulation (core Ø 16.7 mm) and 3.3 mm inner and 10.1 mm outer sheath; outer diameter 65.5–74.5 mm, weight about 6,760 kg/km of which copper 4,610 kg/km (68 %). Rated current 350 A at 30 °C; at that load the voltage drop is 12.87 V per 100 m (1.86 % of 690 V) and the loss 7.54 kW per 100 m. Bending radius 298 mm fixed, 447 mm moving; gland M100, lug bolt M12. Short-circuit rating 17.16 kA for 1 s; permitted pull 15,170 N, free-hanging length 228 m.

4G150. This size has with a conductor of Ø 15.8 mm under 1.60 mm of insulation (core Ø 19.0 mm) and 3.7 mm inner and 10.0 mm outer sheath; outer diameter 71.0–81.0 mm, weight about 8,140 kg/km of which copper 5,760 kg/km (71 %). Rated current 402 A at 30 °C; at that load the voltage drop is 12.50 V per 100 m (1.81 % of 690 V) and the loss 7.97 kW per 100 m. Bending radius 324 mm fixed, 486 mm moving; gland special, lug bolt M12. Short-circuit rating 21.45 kA for 1 s; permitted pull 18,570 N, free-hanging length 232 m.

Averaged over all sizes copper makes up 58 % of the cable weight; the share rises from 20 % at 4G1.5 to 71 % at 4G150, which is why the larger sizes are costed mostly on the copper market price.

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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 0.66/1.14 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, %
4G1.5	1.65	3.25	0.80	8.5	1.16	2.43	0.65	50
4G2.5	2.13	3.73	0.80	9.6	1.24	2.98	0.67	50
4G4	2.70	4.30	0.80	11.0	1.33	3.58	0.68	50
4G6	3.30	4.90	0.80	12.4	1.42	3.84	0.70	49
4G10	4.08	5.68	0.80	14.3	1.55	4.60	0.72	49
4G16	5.16	6.76	0.80	16.9	1.72	4.78	0.75	46
4G25	6.45	8.65	1.10	21.5	2.02	6.42	0.81	46
4G35	7.63	9.83	1.10	24.3	2.21	6.41	0.84	44
4G50	9.12	11.52	1.20	28.4	2.48	7.15	0.89	43
4G70	10.79	13.19	1.20	32.5	2.75	8.01	0.94	42
4G95	12.57	15.17	1.30	37.2	3.07	9.01	1.00	41
4G120	14.13	16.73	1.30	41.0	3.32	10.07	1.04	41
4G150	15.80	19.00	1.60	46.5	3.68	9.99	1.11	39

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
4G1.5	18.0	M32	M5	10	35
4G2.5	20.6	M32	M5	10	40
4G4	23.6	M32	M5	10	45
4G6	26.0	M40	M5	11	50
4G10	30.0	M40	M6	11	60
4G16	33.5	M50	M6	12	65
4G25	42.5	M63	M8	14	85
4G35	46.0	M75	M8	16	90
4G50	52.5	M75	M10	19	105
4G70	59.5	M85	M10	26	120
4G95	67.5	M90	M12	31	135
4G120	74.5	M100	M12	35	150
4G150	81.0	special	M12	41	160

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

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11 Comparison with Related Variants at Size 4G25

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet NSHTöu 4G 0.66/1.14 kV	–	42.5	2,230	4,840	131
NSHTöu 4× 0.66/1.14 kV 4×25	core configuration	42.5 (+0%)	2,230 (+0%)	4,840 (+0%)	111 (-15%)
NSHTöu 5× 0.66/1.14 kV 5×25	core configuration	46.5 (+9%)	2,720 (+22%)	5,720 (+18%)	98 (-25%)
NSHTöu 4G 0.66/1.14 kV 4G25	tinned vs bare copper	42.5 (+0%)	2,230 (+0%)	4,840 (+0%)	130 (-1%)
NSHTöu 4G 0.66/1.14 kV 4G25	low-temperature sheath	42.5 (+0%)	2,230 (+0%)	4,840 (+0%)	131 (+0%)
NSHTöu 4G 0.6/1 kV 4G25	voltage class	41.0 (-4%)	2,120 (-5%)	4,660 (-4%)	131 (+0%)
NSHTöu 3G 0.66/1.14 kV 3G25	core configuration	38.5 (-9%)	1,720 (-23%)	4,040 (-17%)	131 (+0%)
NSHTöu 5G 0.66/1.14 kV 5G25	core configuration	46.5 (+9%)	2,720 (+22%)	5,720 (+18%)	111 (-15%)
NSHTöu 3× 0.66/1.14 kV 3×25	core configuration	38.5 (-9%)	1,720 (-23%)	4,040 (-17%)	131 (+0%)

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

12 Standards and Testing

Standard	Scope
DIN VDE 0250-814	Rubber-insulated flexible cable NSHTöu, 0.6/1 kV
DIN VDE 0295 / IEC 60228	Conductors, class 5
DIN VDE 0207-20 / -21	Rubber insulation and sheath compounds
DIN VDE 0293-308	Core identification
DIN VDE 0298-3 / -4	Application: bending, tensile load; current-carrying capacity
DIN EN 60332-1-2 / IEC 60332-1-2	Flame propagation, single cable

Routine and type tests

- AC voltage test on every drum length (routine test): 3 kV, 5 min
- 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
- Tensile test of the finished cable and inspection of the aramid braid coverage (type test)
- 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 0250-814. 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.

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13 Installation, Marking and Delivery

Installation guidance

- Introduce the pulling or hanging load only through a strain-relief clamp or cable grip that holds the sheath and the aramid braid.
- Respect the dynamic limit of 30 N/mm² on the copper cross-section; the permanent limit is 15 N/mm².
- On a reel use a core diameter of at least 2 × the reel bending radius in the table and guide the cable without cross-over.
- Limit torsion by guiding the cable straight; release twist before re-spooling.
- Fit protective sleeves at the entry to the reel or trolley to avoid sheath wear.
- Terminate the protective conductors at both ends.

Sheath marking

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FEICHUN NSHTöu [cross-section] 0.66/1.14 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: NSHTöu 4G25 0.66/1.14 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.

- NSHTöu 4× 0.66/1.14 kV – core configuration, CR rubber
- NSHTöu 5× 0.66/1.14 kV – core configuration, CR rubber
- NSHTöu 4G 0.66/1.14 kV – tinned vs bare copper, CR rubber, tinned
- NSHTöu 4G 0.66/1.14 kV – low-temperature sheath, CR rubber, low-temp
- NSHTöu 4G 0.6/1 kV – voltage class, CR rubber
- NSHTöu 3G 0.66/1.14 kV – core configuration, CR rubber
- NSHTöu 5G 0.66/1.14 kV – core configuration, CR rubber
- NSHTöu 3× 0.66/1.14 kV – core configuration, CR rubber

Overview of all NSHTöu datasheets: NSHTöu Heavy Rubber Trailing Cables

Frequently asked questions

What does the T in NSHTöu stand for?
The T marks the tensile-bearing element of the trailing cable. In this datasheet it is realised as an aramid support braid between the inner and outer sheath.

What tensile load can the cable carry?
At the largest size, 4G150, the permitted pull is 18,570 N (15 N/mm² of the copper cross-section, plus the aramid braid).

What sizes are available for NSHTöu 4G?
13 sizes from 1.5 to 150 mm². The outer dimension of the largest size, 4G150, is 81.0 mm and the weight is about 8,140 kg/km.

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What current can 4G25 carry?
131 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 NSHTöu 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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