DIN VDE 0250-814 · HEAVY RUBBER TRAILING CABLE · CRANES AND REELS | 0.66/1.14 kV | 8 sizes | CR rubber, low-temp | TINNED COPPER | LOW-TEMPERATURE GRADE | TENSILE SUPPORT BRAID | REELING / FESTOON DUTY

NSHTöu 3×+3E+12FO 0.66/1.14 kV

Heavy Rubber Trailing Cable with Tensile Support 0.66/1.14 kV – 3 power cores + 3 split PE conductors + 12-fibre single-mode optical element. Low-temperature polychloroprene rubber sheath. Complete technical data sheet: construction, dimensions, weights, current ratings, voltage drop and installation guidance for 8 sizes.

Document no. FC-TDS-VDE-2026-0376-EN · Revision 0 · Issued 2 November 2026 · Language: English

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
- Cold-climate duty: sites, cold stores and open-cast operations where the cable is moved at temperatures down to 40 °C

8 sizes	0.66/1.14 kV	+90 °C	CR rubber, low-temp
Cross-section 25 – 185 mm²	Rated voltage U_0/U	Maximum conductor temperature	Sheath: CR rubber, low-temp

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

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- 8 sizes from 25 to 185 mm²; weight from 2,220 to 8,790 kg/km; copper from 960 to 6,240 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 colour-coded brown, black, grey. A central 12-fibre single-mode (G.652.D) optical element carries data through the same reel channel. The conductors are tinned: each copper wire carries a thin tin coating. Tinning protects the copper against oxidation and corrosion in damp, salty or sulphurous atmospheres and keeps the conductor solderable, which is an advantage in outdoor, marine and mining installations. The resistance limits of tinned class 5 conductors are marginally higher than for bare copper; the R_{20} column shows the tinned values.

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 low-temperature grade of the sheath compound remains flexible down to 40 °C in motion and 50 °C in fixed installation, so the cable can be reeled and trailed on cold sites, in cold stores and in northern open-cast operations. The mechanical and electrical ratings are those of the standard grade; only the cold-flexing limit is extended.

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.

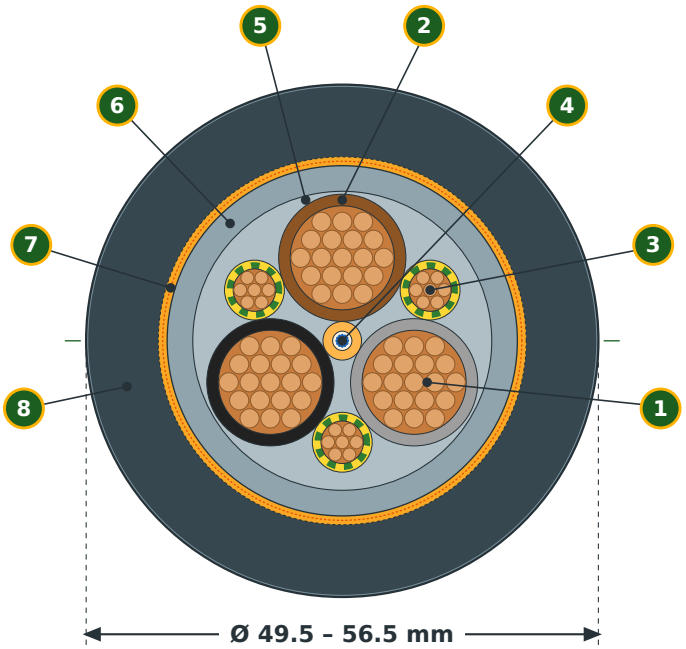
0.66/1.14 kV is the rating for the 1,000 V (1.14 kV) systems used in mining and in heavy industry; it has a slightly thicker insulation than the 0.6/1 kV version. The test voltage is 3 kV.

02 Construction

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

NSHTöu

Sample size 3×70+3×35/3E+12FO · Rev 0 · Illustrative, not to scale



No.	Component	Material
1	Conductor	Tinned annealed fine-wire copper, class 5 to IEC 60228 / DIN VDE 0295
2	Insulation	HEPR rubber, type 3GI3 (90 °C)
3	Split PE conductor	Class 5 copper, green-yellow insulation, laid in the outer interstices between the power cores
4	Optical element	12 single-mode G.652.D fibres in a compression-resistant loose tube
5	Filler and binder tape	Rubber or compound filler with polyester binder tape
6	Inner sheath	Rubber compound, extruded over the stranded core
7	Tensile support braid	Aramid yarn braid between inner and outer sheath; carries the axial load
8	Outer sheath	Polychloroprene (CR) rubber, low-temperature grade

The drawing shows size 3×70+3×35/3E+12FO. 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	Tinned 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	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 2.7 mm at this size
Tensile support braid	Aramid yarn braid, 0.92 mm thick, between inner and outer sheath
Outer sheath	Polychloroprene (CR) rubber, low-temperature grade; thickness about 7.5 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, tinned

Thermal and mechanical data

Maximum conductor temperature	+90 °C
Maximum temperature at short circuit	+250 °C (5 s maximum)
Ambient temperature, fixed installation	−50 °C to +80 °C
Ambient temperature, in motion	−40 °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, low-temp)
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 – 0.66/1.14 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+12FO	FC-NSHT-0376-01	6.5	38.0	43.0	172	258	2,220	960	4,550	0.795	130	3.58
3×35+3×25/3E+12FO	FC-NSHT-0376-02	7.7	40.0	45.5	182	273	2,810	1,250	5,490	0.565	160	5.00
3×50+3×25/3E+12FO	FC-NSHT-0376-03	9.2	45.0	51.0	204	306	3,620	1,680	6,900	0.393	200	7.15
3×70+3×35/3E+12FO	FC-NSHT-0376-04	10.8	49.5	56.5	226	339	3,830	2,350	8,550	0.277	247	10.01
3×95+3×50/3E+12FO	FC-NSHT-0376-05	12.6	55.5	63.0	252	378	4,710	3,220	10,640	0.210	299	13.59
3×120+3×70/3E+12FO	FC-NSHT-0376-06	14.2	60.5	69.0	276	414	5,920	4,130	12,600	0.164	346	17.16
3×150+3×70/3E+12FO	FC-NSHT-0376-07	15.8	65.0	74.0	296	444	6,990	4,990	15,200	0.132	398	21.45
3×185+3×95/3E+12FO	FC-NSHT-0376-08	17.6	73.5	83.0	332	498	8,790	6,240	18,050	0.108	454	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 plus the permissible load of the aramid braid.

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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)
3×25+3×25/3E+12FO	1,120	5,680	3,430	4,550	208	860	2,070
3×35+3×25/3E+12FO	1,580	7,060	3,910	5,490	199	910	1,700
3×50+3×25/3E+12FO	2,250	9,150	4,650	6,900	194	1,020	1,305
3×70+3×35/3E+12FO	3,150	11,700	5,400	8,550	227	1,130	1,045
3×95+3×50/3E+12FO	4,280	14,910	6,360	10,640	230	1,260	695
3×120+3×70/3E+12FO	5,400	18,000	7,200	12,600	216	1,380	610
3×150+3×70/3E+12FO	6,750	21,950	8,450	15,200	221	1,480	425
3×185+3×95/3E+12FO	8,320	26,380	9,730	18,050	209	1,660	350

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
3×25+3×25/3E+12FO	130	1.01	19.34	2.80	5.14	11.31	5.06	3.58	2.06
3×35+3×25/3E+12FO	160	0.720	17.30	2.51	5.53	15.83	7.08	5.00	2.89
3×50+3×25/3E+12FO	200	0.501	15.55	2.25	6.01	22.61	10.11	7.15	4.13
3×70+3×35/3E+12FO	247	0.353	14.14	2.05	6.46	31.65	14.16	10.01	5.78
3×95+3×50/3E+12FO	299	0.268	13.58	1.97	7.18	42.96	19.21	13.59	7.84
3×120+3×70/3E+12FO	346	0.209	12.90	1.87	7.51	54.26	24.27	17.16	9.91
3×150+3×70/3E+12FO	398	0.168	12.59	1.82	8.00	67.83	30.33	21.45	12.38
3×185+3×95/3E+12FO	454	0.138	12.44	1.80	8.52	83.66	37.41	26.45	15.27

07 Selection Guide and Sizing Aid

NSHTöu 3×+3E+12FO covers 8 sizes. The smallest, 3×25+3×25/3E+12FO, has an outer diameter of up to 43.0 mm and weighs about 2,220 kg/km; the largest, 3×185+3×95/3E+12FO, has an outer diameter of up to 83.0 mm and weighs about 8,790 kg/km, 4.0 times as much. Across the range the rated current rises from 130 A to 454 A at 30 °C and the fixed bending radius from 172 mm to 332 mm.

Example 1. A circuit draws 134 A continuously at 40 °C ambient temperature, in a group of two cables. Temperature factor 0.91, grouping factor 0.80: required table current = 134 / (0.91 × 0.80) = 184 A. The smallest suitable size is 3×50+3×25/3E+12FO with 200 A.

Example 2. A circuit draws 305 A continuously at 35 °C ambient temperature, on its own. Temperature factor 0.96: required table current = 305 / (0.96) = 319 A. The smallest suitable size is 3×120+3×70/3E+12FO with 346 A.

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08 Engineering Profile by Size

Every size of NSHTöu 3×+3E+12FO 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+12FO. This size has with a conductor of Ø 6.5 mm under 1.10 mm of insulation (core Ø 8.7 mm) and 2.1 mm inner and 6.3 mm outer sheath; outer diameter 38.0–43.0 mm, weight about 2,220 kg/km of which copper 960 kg/km (43 %). Rated current 130 A at 30 °C; at that load the voltage drop is 19.34 V per 100 m (2.80 % of 690 V) and the loss 5.14 kW per 100 m. Bending radius 172 mm fixed, 258 mm moving; gland M63, lug bolt M8. Short-circuit rating 3.58 kA for 1 s; permitted pull 4,550 N, free-hanging length 208 m.

3×35+3×25/3E+12FO. 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 6.2 mm outer sheath; outer diameter 40.0–45.5 mm, weight about 2,810 kg/km of which copper 1,250 kg/km (44 %). Rated current 160 A at 30 °C; at that load the voltage drop is 17.30 V per 100 m (2.51 % of 690 V) and the loss 5.53 kW per 100 m. Bending radius 182 mm fixed, 273 mm moving; gland M75, lug bolt M8. Short-circuit rating 5.00 kA for 1 s; permitted pull 5,490 N, free-hanging length 199 m.

3×50+3×25/3E+12FO. This size has with a conductor of Ø 9.1 mm under 1.20 mm of insulation (core Ø 11.5 mm) and 2.4 mm inner and 6.8 mm outer sheath; outer diameter 45.0–51.0 mm, weight about 3,620 kg/km of which copper 1,680 kg/km (46 %). Rated current 200 A at 30 °C; at that load the voltage drop is 15.55 V per 100 m (2.25 % of 690 V) and the loss 6.01 kW per 100 m. Bending radius 204 mm fixed, 306 mm moving; gland M75, lug bolt M10. Short-circuit rating 7.15 kA for 1 s; permitted pull 6,900 N, free-hanging length 194 m.

3×70+3×35/3E+12FO. This size has with a conductor of Ø 10.8 mm under 1.20 mm of insulation (core Ø 13.2 mm) and 2.7 mm inner and 7.5 mm outer sheath; outer diameter 49.5–56.5 mm, weight about 3,830 kg/km of which copper 2,350 kg/km (61 %). Rated current 247 A at 30 °C; at that load the voltage drop is 14.14 V per 100 m (2.05 % of 690 V) and the loss 6.46 kW per 100 m. Bending radius 226 mm fixed, 339 mm moving; gland M85, lug bolt M10. Short-circuit rating 10.01 kA for 1 s; permitted pull 8,550 N, free-hanging length 227 m.

3×95+3×50/3E+12FO. This size has with a conductor of Ø 12.6 mm under 1.30 mm of insulation (core Ø 15.2 mm) and 2.9 mm inner and 8.3 mm outer sheath; outer diameter 55.5–63.0 mm, weight about 4,710 kg/km of which copper 3,220 kg/km (68 %). Rated current 299 A at 30 °C; at that load the voltage drop is 13.58 V per 100 m (1.97 % of 690 V) and the loss 7.18 kW per 100 m. Bending radius 252 mm fixed, 378 mm moving; gland M85, lug bolt M12. Short-circuit rating 13.59 kA for 1 s; permitted pull 10,640 N, free-hanging length 230 m.

3×120+3×70/3E+12FO. This size has with a conductor of Ø 14.1 mm under 1.30 mm of insulation (core Ø 16.7 mm) and 3.1 mm inner and 9.2 mm outer sheath; outer diameter 60.5–69.0 mm, weight about 5,920 kg/km of which copper 4,130 kg/km (70 %). Rated current 346 A at 30 °C; at that load the voltage drop is 12.90 V per 100 m (1.87 % of 690 V) and the loss 7.51 kW per 100 m. Bending radius 276 mm fixed, 414 mm moving; gland M90, lug bolt M12. Short-circuit rating 17.16 kA for 1 s; permitted pull 12,600 N, free-hanging length 216 m.

3×150+3×70/3E+12FO. This size has with a conductor of Ø 15.8 mm under 1.60 mm of insulation (core Ø 19.0 mm) and 3.4 mm inner and 9.0 mm outer sheath; outer diameter 65.0–74.0 mm, weight about 6,990 kg/km of which copper 4,990 kg/km (71 %). Rated current 398 A at 30 °C; at that load the voltage drop is 12.59 V per 100 m (1.82 % of 690 V) and the loss 8.00 kW per 100 m. Bending radius 296 mm fixed, 444 mm moving; gland M100, lug bolt M12. Short-circuit rating 21.45 kA for 1 s; permitted pull 15,200 N, free-hanging length 221 m.

3×185+3×95/3E+12FO. This size has with a conductor of Ø 17.5 mm under 1.80 mm of insulation (core Ø 21.1 mm) and 3.7 mm inner and 10.8 mm outer sheath; outer diameter 73.5–83.0 mm, weight about 8,790 kg/km of which copper 6,240 kg/km (71 %). Rated current 454 A at 30 °C; at that load the voltage drop is 12.44 V per 100 m (1.80 % of 690 V) and the loss 8.52 kW per 100 m. Bending radius 332 mm fixed, 498 mm moving; gland special, lug bolt M16. Short-circuit rating 26.45 kA for 1 s; permitted pull 18,050 N, free-hanging length 209 m.

Averaged over all sizes copper makes up 64 % of the cable weight; the share rises from 43 % at 3×25+3×25/3E+12FO to 71 % at 3×185+3×95/3E+12FO, 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, %
3×25+3×25/3E+12FO	6.45	8.65	1.10	21.9	2.05	6.34	0.81	46
3×35+3×25/3E+12FO	7.63	9.83	1.10	24.3	2.21	6.22	0.84	43
3×50+3×25/3E+12FO	9.12	11.52	1.20	27.7	2.44	6.79	0.88	42
3×70+3×35/3E+12FO	10.79	13.19	1.20	31.0	2.66	7.48	0.92	42
3×95+3×50/3E+12FO	12.57	15.17	1.30	35.0	2.92	8.28	0.97	41
3×120+3×70/3E+12FO	14.13	16.73	1.30	38.2	3.13	9.17	1.01	41
3×150+3×70/3E+12FO	15.80	19.00	1.60	42.7	3.43	8.97	1.06	39
3×185+3×95/3E+12FO	17.55	21.15	1.80	47.0	3.72	10.79	1.11	40

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+12FO	43.0	M63	M8	14	85
3×35+3×25/3E+12FO	45.5	M75	M8	16	90
3×50+3×25/3E+12FO	51.0	M75	M10	19	100
3×70+3×35/3E+12FO	56.5	M85	M10	26	115
3×95+3×50/3E+12FO	63.0	M85	M12	31	125
3×120+3×70/3E+12FO	69.0	M90	M12	35	140
3×150+3×70/3E+12FO	74.0	M100	M12	41	150
3×185+3×95/3E+12FO	83.0	special	M16	47	165

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+12FO

Variant	Differs in	Outer Ø / H mm	Weight kg/km	Pull N	Current A
This datasheet NSHTöu 3×+3E+12FO 0.66/1.14 kV	–	56.5	3,830	8,550	247
NSHTöu 3×+3E+2×1.5 0.66/1.14 kV 3×70+3×35/3E+2×1.5	core configuration	53.0 (-6%)	3,680 (-4%)	8,090 (-5%)	247 (+0%)
NSHTöu 3×+3E 0.66/1.14 kV 3×70+3×35/3E	core configuration	53.0 (-6%)	3,650 (-5%)	8,090 (-5%)	247 (+0%)
NSHTöu 3×+3E+12FO 0.66/1.14 kV 3×70+3×35/3E+12FO	tinned vs bare copper	56.5 (+0%)	3,830 (+0%)	8,550 (+0%)	250 (+1%)
NSHTöu 3×+3E+12FO 0.66/1.14 kV 3×70+3×35/3E+12FO	low-temperature sheath	56.5 (+0%)	3,830 (+0%)	8,550 (+0%)	247 (+0%)
NSHTöu 3×+3E+12FO 0.6/1 kV 3×70+3×35/3E+12FO	voltage class	55.0 (-3%)	3,750 (-2%)	8,360 (-2%)	247 (+0%)
NSHTöu 18G 0.66/1.14 kV 18G4	core configuration	48.0 (-15%)	2,300 (-40%)	5,220 (-39%)	19 (-92%)
NSHTöu 14G 0.66/1.14 kV 14G4	core configuration	49.0 (-13%)	2,200 (-43%)	5,100 (-40%)	21 (-91%)
NSHTöu 12G 0.66/1.14 kV 12G4	core configuration	35.5 (-37%)	1,360 (-64%)	3,410 (-60%)	22 (-91%)

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 0250-814	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.

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 3×70+3×35/3E+12FO 0.66/1.14 kV – 500 m on one drum. When requesting a quotation, state the cable type, configuration, cross-section, voltage, conductor (tinned), 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 3×+3E+2×1.5 0.66/1.14 kV – core configuration, CR rubber, low-temp, tinned

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- NSHTöu 3×+3E 0.66/1.14 kV – core configuration, CR rubber, low-temp, tinned
- NSHTöu 3×+3E+12FO 0.66/1.14 kV – tinned vs bare copper, CR rubber, low-temp
- NSHTöu 3×+3E+12FO 0.66/1.14 kV – low-temperature sheath, CR rubber, tinned
- NSHTöu 3×+3E+12FO 0.6/1 kV – voltage class, CR rubber, low-temp, tinned
- NSHTöu 18G 0.66/1.14 kV – core configuration, CR rubber, low-temp, tinned
- NSHTöu 14G 0.66/1.14 kV – core configuration, CR rubber, low-temp, tinned
- NSHTöu 12G 0.66/1.14 kV – core configuration, CR rubber, low-temp, tinned

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, 3×185+3×95/3E+12FO, the permitted pull is 18,050 N (15 N/mm² of the copper cross-section, plus the aramid braid).

What sizes are available for NSHTöu 3×+3E+12FO?
8 sizes from 25 to 185 mm². The outer dimension of the largest size, 3×185+3×95/3E+12FO, is 83.0 mm and the weight is about 8,790 kg/km.

What current can 3×95+3×50/3E+12FO carry?
299 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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Document control

Document no. FC-TDS-VDE-2026-0376-EN
Revision 0 — first issue
Date 2 November 2026
Product NSHTöu 0.66/1.14 kV

Prepared — Engineering | Checked — QC | Approved — International Business

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