BASKET SPREADER CONTROL CABLE — EXTREME DUTY

FeiChun FC-YSLZ3SOE-J — 44 x 12 AWG (44 G 3.3 mm²)

Bundle-Stranded, PVC Insulated, TPU Sheathed Extra-Flexible Control Cable for Vertical Free-Fall Basket Spreader Service

Form-Fit-Function Cross-Reference to the Nexans RHEYCORD® (BS) YSLZ3SOE-J Industry Designation

⬇ Vertical Free-Fall Basket Duty | 🌀 Alternating-Bend & Torsion Tested | 🛢 Oil Resistant | ☀ UV & Ozone Resistant | 🌊 Marine Terminal Environments | 💅 Abrasion-Grade TPU Sheath

Document No. : **FC-TDS-YSLZ3SOEJ-2026-EVQFL2EG** Revision : **B** Issue Date : **July 2026** Reference System : **DIN VDE / DIN EN / IEC**

Manufacturer : **FeiChun Special Cables (安徽飞纯特种电缆)**

1 Application & Service Profile

FC-YSLZ3SOE-J is a special control cable engineered for load-lifting attachments — above all the **electro-hydraulic telescopic spreader** — operating under **high mechanical stress in vertical free-fall basket operation**: the configuration in which the spreader cable hangs from the trolley carriage in an extended catenary and coils into a steel basket beneath the trolley rather than winding onto a powered drum. The cable is rated for dry, humid and wet rooms and for fully exposed outdoor marine terminal environments, and carries combined control and auxiliary power circuits between the crane trolley and the spreader's solenoid valve bank, twist-lock sensors, position encoders and floodlighting.

🚢 **Ship-to-Shore (STS) Cranes**	**Rail-Mounted Gantry (RMG)**	**Rubber-Tyred Gantry (RTG)**	📦 **Intermodal Stacking Cranes**	⚓ **Mobile Harbour Cranes**

2 Extreme-Duty Engineering Analysis — Why Basket Spreader Service Is a Distinct Stress Regime

Basket spreader duty imposes a combination of four simultaneous mechanical stresses that no drum-reeling or festoon cable is designed to survive. FC-YSLZ3SOE-J is constructed specifically against this four-mode load case:

① Sustained Catenary Tension (Vertical Self-Load)

In the raised position the cable supports its own weight over a free hang of typically 20–60 m. At ~3.8 kg/m for the 44 x 12 AWG construction, a 50 m hang places a continuous ~190 kg static load on the upper terminations. The Class 6 extra-fine-strand conductors and distributed heavy-weight strength elements keep working stress within the rated 15 N/mm² static / 30 N/mm² dynamic conductor limits, preventing progressive strand fatigue at the gland.

② Cyclic Flexure at the Basket Entry Point

Every hoist cycle bends the same short cable section over the basket lip as the spreader is raised and lowered — 20–30 cycles/hour, >100,000 cycles/year in a busy terminal. Bundle stranding (rather than concentric layering) lets cores migrate within the assembly under bending, equalising strain and passing the alternating/reversed bending test per the DIN VDE test regime.

③ Coiling Torsion & Impact Loading

Free-fall coiling into the basket introduces torsional displacement and repeated impact as loops stack and collapse at travel speeds up to 160 m/min. The round, torsion-balanced bundle geometry and torsional-resistance-tested construction prevent corkscrew deformation and loop lock-up inside the basket.

④ Abrasion, Oil, UV, Ozone & Salt Atmosphere

The cable scrubs against the steel basket wall on every cycle while fully exposed 30–40 m above the quay to wind-driven salt spray, hydraulic oil mist and intense UV. The thermoplastic polyurethane (TPU) outer sheath per DIN EN 50363-10-2 provides the abrasion and tear performance class required, with oil, moisture, UV and ozone resistance for indoor and outdoor service.

Marine-coastal upgrade path : for tropical or subtropical coastal terminals where chloride-driven corrosion fatigue of bare copper limits service life, FeiChun offers the FC-YSLZ3SOE-J Marine variant with FC-FLX™ hot-dip tinned Class 6 conductors and FC-ASB™ aramid strength member (near-zero creep under sustained catenary load, <0.05% moisture absorption). Standard variant documented herein uses plain copper per the reference designation.

3 Construction Details

1. **Conductor** : Extra-flexible plain (bare) annealed copper, bunched extra-fine-wire stranding to DIN EN / IEC 60228 **Class 6**. 12 AWG ≈ 3.3 mm^2 nominal cross-section. Optional: hot-dip tinned FC-FLX™ conductors for marine-coastal service.

2. **Insulation** : PVC compound to DIN EN 50363-3, wall dimensioned for 450/750 V duty and 2.0 kV AC routine test withstand.

3. **Core Assembly** : **Bundle stranding (Bündelverseilung)** — cores cabled in strain-equalising bundles around a central strength/filler element, with heavy-weight elements distributed through the assembly to control hang behaviour and coiling geometry. EMC concentric screen available as a variant.

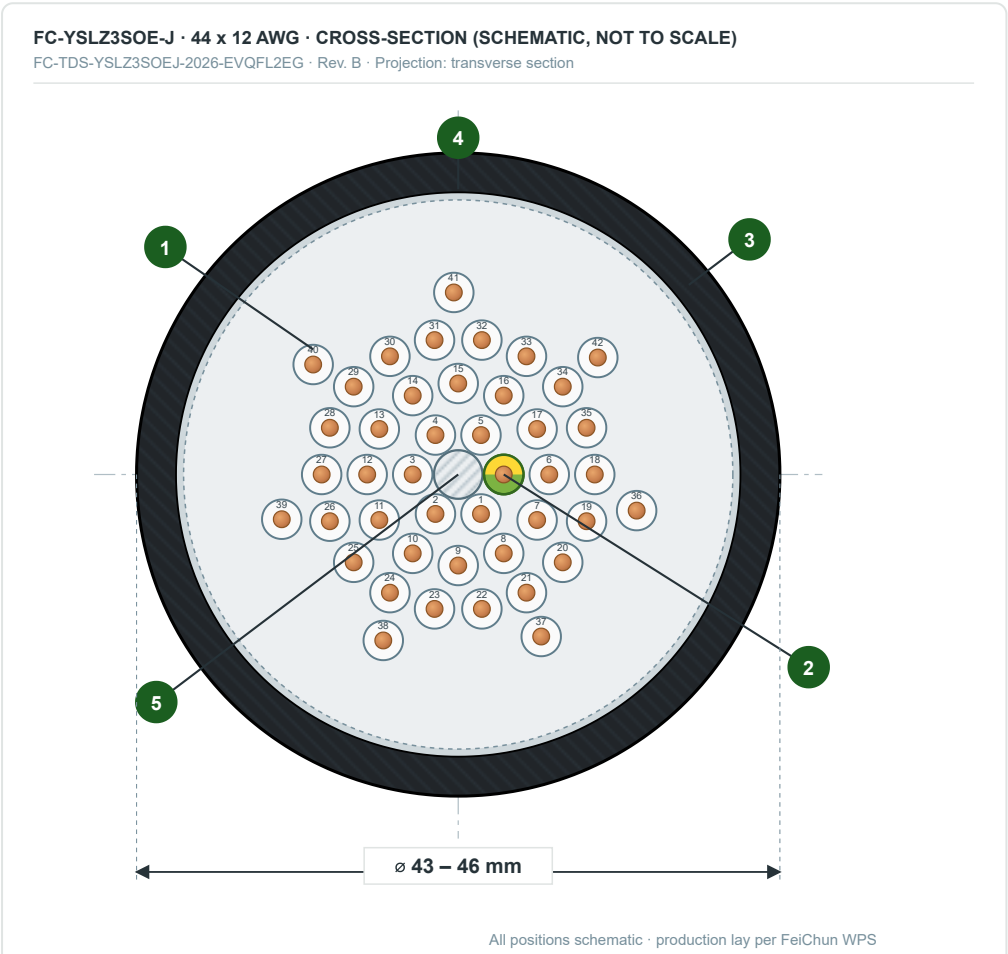
4. **Binder** : Separating/binder wrap over the completed core assembly.

5. **Outer Sheath** : **Thermoplastic polyurethane (TPU)** to DIN EN 50363-10-2, colour black. High abrasion, tear, oil, hydrolysis, UV and ozone resistance; suitable for permanent outdoor exposure.

6. **Core Identification** : DIN VDE 0293 Part 308 — white cores with black printed numbers (1…43) plus one green/yellow (G/YE) protective earth core in the outer layer.

7. **Sheath Marking** : FC-YSLZ3SOE-J 44 x 12 AWG 300/500 V FeiChun [Year] [Metre Marking]

4 Cross-Sectional Engineering Drawing — 44 x 12 AWG



Pos.	Element	Material / Specification
1	**Conductors** (42 signal cores)	Plain annealed copper, extra-fine-wire Class 6 to DIN EN / IEC 60228; 12 AWG (≈3.3 mm^2); white PVC insulation to DIN EN 50363-3 with black printed numbers 1–43 per DIN VDE 0293-308
2	**Protective Earth Core**	1 x green/yellow (G/YE) core, outer layer, same conductor class and insulation system
3	**Binder Wrap**	Separating tape/binder over the bundle-stranded core assembly
4	**Outer Sheath**	Thermoplastic polyurethane (TPU) to DIN EN 50363-10-2, black; abrasion / tear / oil / UV / ozone resistant (hatched area = section cut)
5	**Central Strength / Filler Element**	Strain-relief and heavy-weight elements distributed through the bundle (cross-hatched); FC-ASB™ aramid upgrade available

Bundle stranding shown: 42 numbered signal cores + 1 G/YE earth core arranged in migrating bundles about the central element. Copper cross-hatching, section hatching and Ø dimension per engineering-drawing convention; individual core positions rotate along the lay length and are illustrative in the transverse plane.

5 Electrical, Thermal & Mechanical Ratings

Nominal Voltage (Uo/U) : 450/750 V

Max. Operating Voltage AC (Um) : 550 V

Max. Operating Voltage DC (Vm) : 825 V

Routine AC Test Voltage : 2.0 kV

Current Rating : Per DIN VDE 0298 Part 4 (installation-method dependent)

Insulation System : PVC / DIN EN 50363-3

Conductor Tensile Stress (static) : 15 N/mm^2

Conductor Tensile Stress (dynamic) : 30 N/mm^2

Bending Radii : Per DIN VDE 0298 Part 3, see construction characteristics

Travelling Speed : Up to 160 m/min

Type Tests : Alternating / reversed bending test; torsional resistance test

Torsion Behaviour : Torsion-balanced round bundle construction

Max. Conductor Temp. (Service) : +70 °C

Max. Conductor Temp. (Short-Circuit) : +150 °C

Surface Temp. — Fixed Installation : −20 °C to +60 °C

Surface Temp. — Mobile Operation : −20 °C to +60 °C

Oil Resistance : Yes — hydraulic/mineral oil exposure typical of spreader valve banks

Weathering : Moisture, UV and ozone resistant; indoor & outdoor rated

Environment : Dry, humid and wet rooms; outdoor marine terminal atmosphere

Halogen-Free Variant : TPE-insulated LSHF construction on request for enclosed/tunnel duty

6 Applicable Standards & Design References

Normative references governing design, materials and verification

Standard	Scope Applied
DIN EN / IEC 60228, Class 6	Conductor construction — extra-fine-wire flexible stranding, resistance classes
DIN EN 50363-3	PVC insulating compound for low-voltage energy cables
DIN EN 50363-10-2	Thermoplastic polyurethane (TPU) sheathing compound
DIN VDE 0293 Part 308 / HD 308 S2	Core identification — white cores, black printed numbers + G/YE earth core
DIN VDE 0298 Part 3	Bending radii for flexible use
DIN VDE 0298 Part 4	Current-carrying capacity by installation method
Industry cross-reference	Nexans RHEYCORD®(BS) YSLZ3SOE-J designation — form-fit-function equivalence target for dimensions, ratings and duty

7 Dimensions & Weights — Control Series

FC-YSLZ3SOE-J · Unscreened control construction

Cores × Cross-Section	OD Min. (mm)	OD Max. (mm)	Weight approx. (kg/km)	Approx. Hang Load @ 50 m (kg)
48 x 1 mm²	32	35	2,100	105
44 x 2.5 mm²	37	40	3,250	163
24 x 12 AWG	33	35	2,200	110
36 x 12 AWG	39.5	42.5	3,500	175
42 x 12 AWG	43	46	3,900	195
44 x 12 AWG	**43**	**46**	**3,800**	**190**

※ OD and weight are approximate manufacturing values for the standard (unscreened) construction; hang-load column is an indicative static self-weight figure (weight/km × 0.05 km) for termination design, not a certified rating. EMC-screened and optical-fibre-integrated (OFE) variants carry adjusted OD/weight — request a project-specific datasheet.

8 Factory Testing, Quality Assurance & Delivery

Routine Tests (100%) : Conductor resistance at 20 °C; 2.0 kV AC voltage withstand; spark test on insulation; dimensional verification of insulation wall, lay length and OD

Sample / Type Tests : Alternating & reversed bending endurance; torsional resistance; tensile & elongation of insulation and sheath before/after ageing; oil immersion; low-temperature bend

Traceability : Each drum shipped with a serialised FeiChun Test Report referencing this document number

Delivery Lengths : Standard 250 m / 500 m drums; cut-to-length to project schedule

Options : Additional core counts; EMC concentric screen; integrated optical fibre element (OFE); integrated BUS pair; FC-FLX™ tinned conductors; FC-ASB™ aramid strength member; LSHF halogen-free construction

Commercial Terms : FOB Shanghai, Incoterms 2020; pricing subject to LME copper market fluctuation

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This document describes FeiChun Special Cables' FC-YSLZ3SOE-J product, engineered as a form-fit-function cross-reference to the industry-standard basket spreader cable configuration commercially known as RHEYCORD®(BS) YSLZ3SOE-J. RHEYCORD® is a registered trademark of Nexans, referenced solely for technical cross-reference and compatibility purposes; FeiChun is not affiliated with, and this document is not endorsed by, Nexans. Ratings reproduced from the reference designation are published industry values; certified performance of FeiChun production lots is documented in the accompanying serialised FeiChun Test Report. All FeiChun-specific technical content, drawings and layout are the intellectual property of Anhui FeiChun Special Cable Co., Ltd., protected under PRC copyright law and applicable international IP conventions. Unauthorised reproduction, distribution or commercial use without prior written consent is prohibited.
Document ID: FC-TDS-YSLZ3SOEJ-2026-EVQFL2EG · Rev. B