TYPE · BS 6708 COAL-CUTTER TRAILING CABLE | 0.64/1.1 kV | 23 Variants | Acc. to BS 6708

FC-BS6708 Type 7 · 7S · 7M · 11 640/1100 V

Screened, flexible EPR-insulated coal-cutter and trailing cables to BS 6708 — Types 7, 7S, 7M and 11 — with heavy-duty, oil-resistant flame-retardant PCP sheath.

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01 Application & Product Overview

FC-BS6708 cables are heavy-duty flexible trailing cables for coal cutters, shearers, continuous miners, loaders and similar face machinery in underground coal mines, manufactured to the BS 6708 Type 7, 7S, 7M and 11 constructions.

Each power core carries its own tinned copper/nylon braid screen in contact with the earth path, so that any damage to a core produces an earth fault before a phase-to-phase fault. The four types differ in the pilot arrangement: single unscreened pilot (7), three-core pilot unit (7S), screened phase-size pilot (7M), and four screened cores without separate earth (11).

Typical applications

- Coal cutters, shearers and continuous miners — 1,100 V face supplies
- Loaders, shuttle cars and mobile face equipment
- Underground coal mines with firedamp / coal-dust explosion risk (with approved plugs)
- Mobile equipment in quarries and surface mines
- Pilot-circuit earth continuity protection (Types 7, 7S, 7M)

23 variants
Types 7, 7S, 7M, 11

640/1100 V
Rated voltage, 3 kV test

Screened cores
Cu/nylon braid on every power core

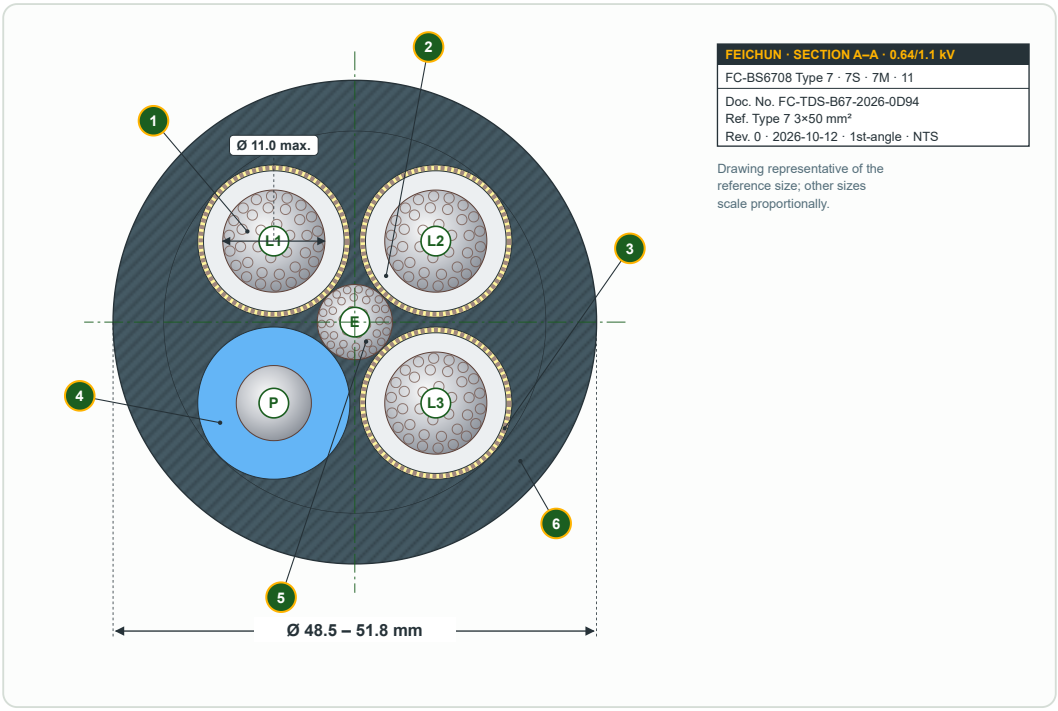
HOFR PCP
Heavy-duty outer sheath

Cross-reference

REFERENCE TYPE	FEICHUN EQUIVALENT
TYPE 7 / 7S / 7M / 11 0,64/1,1 kV acc. to BS 6708	FC-BS6708 Type 7 · 7S · 7M · 11 640/1100 V

Manufactured to the dimensional and constructional requirements of BS 6708; 3×150 mm² sizes are designed generally in accordance with BS 6708.

02 Construction



Pos.	Element	Material
1	Power conductor	Flexible tinned annealed copper, class 5 (BS EN 60228)
2	Insulation	EPR elastomeric compound, 90 °C rated; cores red, yellow, brown
3	Core screen	Composite tinned copper / nylon braid over each power core
4	Pilot core	Type 7: EPR-insulated pilot, blue, built up to screened-core diameter (7S: 3-core pilot unit; 7M / 11: screened phase-size pilot)
5	Earth conductor	Bare flexible tinned copper at the cable centre (Type 11: rubber centre, screens form the earth path)
6	Outer sheath	Heavy-duty oil-resistant, flame-retardant PCP (HOFR), black

Drawing: Type 7 3×50 mm² reference size.

Construction details

Element	Description
Power conductors	3 x flexible tinned annealed copper, class 5 to BS EN 60228
Power core insulation	Extruded EPR elastomeric compound (MEPR), 90 °C rated; cores identified red, yellow, brown by proofed tape
Power core screens	Composite tinned copper/nylon braid over each power core, in contact with the earth conductor

Element	Description
Earth conductor	Type 7, 7S, 7M: bare flexible tinned copper conductor at the cable centre. Type 11: no separate earth – the four core screens laid around an elastomeric (PCP) centre filler form the earth path
Pilot	Type 7: 1 unscreened EPR-insulated pilot core, insulated to the screened power core diameter (blue). Type 7S: 3-core pilot unit (EPR cores black, white, blue) sheathed in PCP to the screened core diameter, unscreened. Type 7M and Type 11: 1 pilot core of phase size with its own copper/nylon braid screen
Lay-up	Three power cores and the pilot core/unit laid up around the bare earth conductor (Type 11: around elastomeric centre); identification tape over lay-up
Outer sheath	Heavy-duty, oil-resistant, flame-retardant polychloroprene (PCP/HOFR) elastomer; black (Type 7S with blue stripe), other colours on request

03 Electrical, Thermal & Mechanical Data

Electrical parameters

Parameter	Value
Rated voltage U_0/U	640/1100 V
Test voltage	3 kV AC power cores, 2 kV AC pilot cores
Current ratings	Continuous rating at 25 °C ambient, cable in free air; for 30 °C multiply by 0.96. Intermittent ratings approx. 13–20 % higher
Earth path resistance	3 (or 4) screens and earth in parallel, e.g. 0.66 Ω/km (Type 7 3x16) to 0.176 Ω/km (3x150)

Thermal & mechanical parameters

Parameter	Value
Max. conductor temperature	90 °C
Max. short-circuit temperature	250 °C (max. 5 s)
Operating temperature, flexing	−25 °C to +60 °C ambient
Operating temperature, fixed	−40 °C to +80 °C ambient
Min. bending radius	Approx. 8 x D per manufacturer tables (see table); 6 x D absolute minimum for occasional flexing
Max. tensile load on conductors	15 N/mm² of power conductor cross-section
Flame retardance	EN/IEC 60332-1-2

Parameter	Value
Oil, ozone and UV resistance	Heavy-duty PCP sheath: oil-resistant, weathering, ozone and abrasion resistant
Note	3x150 mm² sizes are designed generally in accordance with BS 6708 but fall outside the sizes listed in the standard

04 Dimensions, Weights & Ratings — 0.64/1.1 kV (23 variants)

Type designation cores × mm²	FeiChun part no.	Conductor Ø max. mm	Outer diameter min. mm	Outer diameter max. mm	Min. bending radius mm	Weight approx. kg/km	Max. tensile force N	R_{20} max. Ω/km	Current rating A	Short-circuit current kA (1 s)
Type 7 – three individually screened power cores, one unscreened pilot core, centre bare earth										
3×16+1×16E+1×16P	FC-B67-001	6.3	35.8	38.6	309	2,340	720	1.240	85	2.29
3×25+1×16E+1×16P	FC-B67-002	7.8	39.7	42.9	343	2,860	1,125	0.795	110	3.57
3×35+1×18E+1×16P	FC-B67-003	9.2	43.1	46.3	370	3,410	1,575	0.565	135	5.00
3×50+1×25E+1×25P	FC-B67-004	11.0	48.5	51.8	414	4,420	2,250	0.393	170	7.15
3×70+1×35E+1×35P	FC-B67-005	13.1	55.1	58.8	470	5,800	3,150	0.277	205	10.01
3×95+1×50E+1×50P	FC-B67-006	15.1	62.4	66.1	529	7,600	4,275	0.210	250	13.58
3×120+1×50E+1×70P	FC-B67-007	17.0	68.0	72.5	580	9,090	5,400	0.164	295	17.16
3×150+1×70E+1×95P	FC-B67-008	19.0	70.4	78.4	627	10,900	6,750	0.132	320	21.45
Type 7S – three individually screened power cores, three-core sheathed pilot unit, centre bare earth										
3×50+1×25E+3×4P	FC-B67-009	11.0	48.5	51.8	420	4,340	2,250	0.393	170	7.15
3×70+1×35E+3×6P	FC-B67-010	13.1	55.1	58.8	470	5,800	3,150	0.277	205	10.01
3×95+1×50E+3×6P	FC-B67-011	15.1	62.4	66.1	530	7,380	4,275	0.210	250	13.58
3×120+1×50E+3×10P	FC-B67-012	17.0	68.0	72.5	580	8,810	5,400	0.164	295	17.16
3×150+1×70E+3×10P	FC-B67-013	19.0	70.4	78.4	630	10,450	6,750	0.132	320	21.45
Type 7M – three individually screened power cores, one screened pilot core of phase size, centre bare earth										
3×16+1×16E+1×16P (scr.)	FC-B67-014	6.3	35.8	38.6	310	2,600	720	1.240	85	2.29
3×25+1×16E+1×25P (scr.)	FC-B67-015	7.8	39.7	42.9	350	3,200	1,125	0.795	110	3.57
3×35+1×18E+1×35P (scr.)	FC-B67-016	9.2	43.1	46.3	370	3,850	1,575	0.565	135	5.00
3×50+1×25E+1×50P (scr.)	FC-B67-017	11.0	48.5	51.8	420	4,910	2,250	0.393	170	7.15
3×70+1×35E+1×70P (scr.)	FC-B67-018	13.1	55.1	58.8	470	6,200	3,150	0.277	205	10.01
3×95+1×50E+1×95P (scr.)	FC-B67-019	15.1	62.4	66.1	530	8,080	4,275	0.210	250	13.58
3×120+1×50E+ 1×120P (scr.)	FC-B67-020	17.0	68.0	72.5	580	9,610	5,400	0.164	295	17.16
3×150+1×70E+ 1×150P (scr.)	FC-B67-021	19.0	70.4	78.4	630	11,450	6,750	0.132	320	21.45
Type 11 – three power cores and one pilot core, all individually screened, laid around an elastomeric centre (screens form the earth path)										
3×16+1×16P (scr.)	FC-B67-022	6.3	30.9	33.0	270	1,960	720	1.240	85	2.29
3×25+1×25P (scr.)	FC-B67-023	7.8	34.5	36.8	300	2,500	1,125	0.795	110	3.57

Current rating: continuous rating at 25 °C ambient, cable in free air; multiply by 0.96 for 30 °C ambient. Bending radius: typical service value approx. 8 × D. Tensile force: 15 N/mm² × total phase cross-section. Further sizes and special designs are manufactured to order.

Ambient temperature factors (90 °C conductor)

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

Short-circuit rating

Permissible short-circuit current for 1 s: I_k = 0.143 kA/mm² × phase cross-section (EPR, 90 °C → 250 °C, tinned copper). For other durations t: $I_{k,t} = I_{k,1s} / \sqrt{t}$ (0.1 s ≤ t ≤ 5 s).

05 Standards & Tests

Standard	Scope
BS 6708	Flexible cables for use at mines and quarries
BS EN 60228	Conductors, class 5, tinned — class 5, tinned
BS 7655	Elastomeric insulating and sheathing compounds — elastomeric insulating and sheathing compounds
EN/IEC 60332-1-2	Flame propagation, single cable

Routine & type tests

- AC voltage test 3 kV (power cores) and 2 kV (pilot cores) on every drum
- Conductor resistance and dimensional checks
- Screen continuity and earth-path resistance check
- Flame retardance (EN/IEC 60332-1-2) and oil resistance of the outer sheath

Test documentation: each delivery is accompanied by a FeiChun in-house laboratory inspection certificate. Third-party witnessed testing can be arranged at the buyer's cost.

06 Installation, Marking & Delivery

Installation notes

- Minimum bending radius approx. 8 × D in service (see table); 6 × D absolute minimum for occasional flexing.
- Do not exceed 15 N/mm² tensile load on the power conductors; anchor the cable at the machine with a suitable strain clamp.
- Connect all core screens and the earth conductor to the earth terminal of the plug; connect the pilot core to the earth-continuity (pilot) protection relay.
- Unwind tangentially from the delivery drum and lay out to relax before use.
- Use plugs and restrained couplers approved for the mine; inspect the sheath regularly.

Sheath marking

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FEICHUN FC-BS6708 TYPE [7/7S/7M/11] [size]
640/1100 V BS 6708 [year] [serial no.]
[metre mark]
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Packing & delivery

Item	Standard
Drum	Steel or fumigated wooden drums, ends sealed with heat-shrink caps
Lengths	To order, single continuous length (no joints)
Production lead time	2–3 weeks after technical confirmation

Item	Standard
Warranty	Min. 3 years against manufacturing defects
Drum label	Type, size, length, gross/net weight, batch no., drum no.

07 Certifications & Quality

CE — LVD 2014/35/EU

Attestation No. M.2025.206.C116598 · EN 50525-1:2011+A1:2022 · UDEM International Certification · valid to 01.04.2030

EAC — TR CU 004/2011

Certificate No. ЕАЭС KG417/052.CN.02.15390 · GOST 31996-2012, GOST 31565-2012 · valid 24.10.2025–23.10.2030

UKCA — Verification

No. ICR/VC/HS2508110 · BS EN 50525-1:2011+A1:2022 · ICR Polska · valid to 17.08.2030

FeiChun also holds ATEX (Directive 2014/34/EU) documentation verification and IECEx / VDE related approvals for designated product families. Mine-specific approvals are arranged with the end user or local distributor where required. Certificate copies are available on request.

08 Trademark Notice & Intellectual Property

The type designation BS 6708 Types refers to a published standard construction and is cited solely for technical cross-referencing. FC-BS6708 is a FeiChun product manufactured to that construction; no affiliation with any other manufacturer offering the same type is implied.

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FEICHUN CABLES