

FURUKAWA ELECTRIC INDUSTRIAL CABLE CO.,LTD.

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Spec. No. 8GS-060017

STANDARD SPECIFICATION

FOR

TV CAMERA CABLE

FURUKAWA ELECTRIC INDUSTRIAL CABLE CO.,LTD.

1. Scope

This specification shall cover the following TV camera cables combined with optic fibers.

2SM-9.2-37.5 : TV camera cable for general use.

2. Constitution

TV camera cables shall be constituted as follows ;

For power supply : 4 cores 0.52 mm²

For reflection•voice : 2 SM fibers (*1)

For control : 2 cores 0.18 mm²

*1 : Allowable minimum bending radius is 15mm.

3. Conditions

(1) Operating temp. Range : -20°C ~ +60°C

(2) Storage and transportation temp. Range : -40°C ~ +80°C

(3) Bending radius : Not less than 6 times of cable overall diameter

(4) Allowable tension : 700N

4. Material & construction

Material & construction of TV camera cable shall conform to the attached tables, the attached drawings and the following items ;

4.1 Conductor for power & control

Conductor shall be tin-coated annealed stranded copper wire. A tin-coated annealed copper wire before stranding shall specify in JIS C 3152.

4.2 Insulation

PE insulation shall be applied over the conductor.

The average thickness of insulation shall not be less than 90% of the value given in the attached tables, and the minimum thickness shall not be less than 80% of the value given in the attached tables.

4.3 Core identification

Core identification shall be made by the coloring of insulation shown as follows;

For power : Black , White(natural)

For control : Red , Green

4.4 Strength member

Strength member shall be applied with black colored PE over the galvanized stranded steel wire.

The average thickness of PE shall not be less than 90% of the value given in the attached tables, and the minimum thickness shall not be less than 80% of the value

given in the attached tables.

4.5 Optic fiber

Optic fiber shall be SM(single mode) fiber with a silicone buffer layer and a nylon outer layer.

Core identification of optic fiber shall be made by the coloring of the outer surface and shall be blue and yellow.

4.6 Cabling

A strength member ,4 power cores,2 control cores and 2 SM fibers shall be cabled with suitable fillers.

A suitable binder tape shall be applied over the cabled core.

4.7 Shielding

Shielding shall be braided with tin coated annealed copper wires specified in JIS C 3152,over the suitable binder tape.

4.8 Anti-injury sheath

Special plastic, as an anti-injury sheath,shall be applied over the shielding.The average thickness of anti-injury sheath shall not be less than 90% of the value given in the attached tables,and the minimum thickness shall not be less than 70% of the value given in the attached tables.

Standard color of the anti-injury sheath for 2SM-9.2-37.5 shall be black.

However ,red ,green,yellow and blue color may be selected for the customer request.

5. Test method

5.1 Appearance

Appearance test shall be carried out in accordance with 3 of JIS C 3005.

5.2 Construction

Construction test shall be carried out in accordance with 5 of JIS C 3005.

Construction test,for optic fiber,shall be carried out in accordance with 6 of JIS C 6825.

5.3 Conductor resistance

Conductor resistance test shall be carried out in accordance with 6 of JIS C 3005.

5.4 Dielectric strength

Dielectric strength test shall be carried out in accordance with 8.(2) of JIS C 3005

5.5 Insulation resistance

Insulation resistance test shall be carried out in accordance with 9.1(2) of JIS C 3005.

5.6 Tension of insulation and sheath

Tension test shall be carried out in accordance with 19 of JIS C 3005.

5.7 Thermal aging of insulation and sheath

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Thermal aging test shall be carried out in accordance with 19 of JIS C 3005.

Heating temp. and heating time shall be $90^{\circ}\text{C} \times 96\text{h}$ for insulation and $100^{\circ}\text{C} \times 48\text{h}$ for sheath.

5.8 Heat deformation

Heat deformation test shall be carried out in accordance with 25 of JIS C 3005.

Heat temp. and load shall be $75^{\circ}\text{C} \pm 3^{\circ}\text{C} \times 10\text{N}$ for insulation and $120 \pm 3^{\circ}\text{C} \times 5\text{N}$ for sheath.

5.9 Resistance to low temp.

Low temp. test shall be carried out in accordance with 24 of JIS C 3005.

The cooling temp. shall be $-15 \pm 0.5^{\circ}\text{C}$.

5.10 Flame retardant

Flame retardant test shall be carried out in accordance with 28.(1) of JIS C 3005.

5.11 Resistance to oil of sheath

Oil resistance test shall be carried out in accordance with 20 of JIS C 3005.

Heating temp. and immersed time shall be $70 \pm 2^{\circ}\text{C} \times 4\text{h}$.

5.12 Cutoff wavelength

Cutoff wavelength test shall be carried out in accordance with JIS C 6825.

5.13 Transmission loss

Transmission loss test shall be carried out in accordance with JIS C 6826.

6. Inspection

Inspection shall be carried out on the following items in accordance with test method of 6.

- | | |
|--------------------------|--------------------------------------|
| (1) Appearance | (4) Dielectric strength |
| (2) Construction | (5) Insulation resistance |
| (3) Conductor resistance | (6) Transmission loss of optic fiber |

7. Packing

Each length of the cables shall be wound on a reel or coiled into a bundle and suitably packaged so as not to be damaged in transportation.

8. Marking

8.1 Marking on cable

The following information shall be indelibly marked at suitable intervals on the surface of cable.

- (1) Symbol (2SM-9.2-37.5)
- (2) Manufacturer's name and /or its mark

(3) Year of manufacture

8.2 Marking on package

The following information shall be suitably marked on the package.

(1) Symbol (2SM-9.2-37.5)

(2) Length and quantity

(3) Manufacturer's name and /or its mark

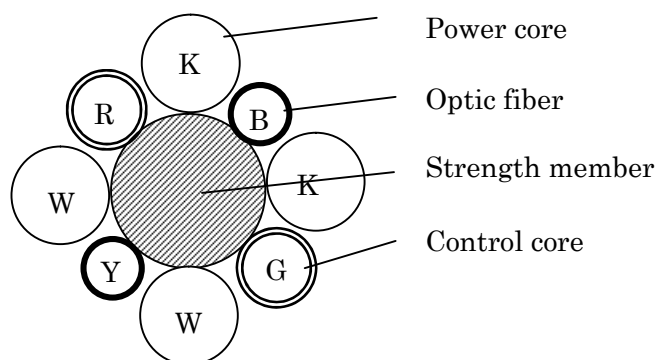
(4) Year of manufacture

Attached table

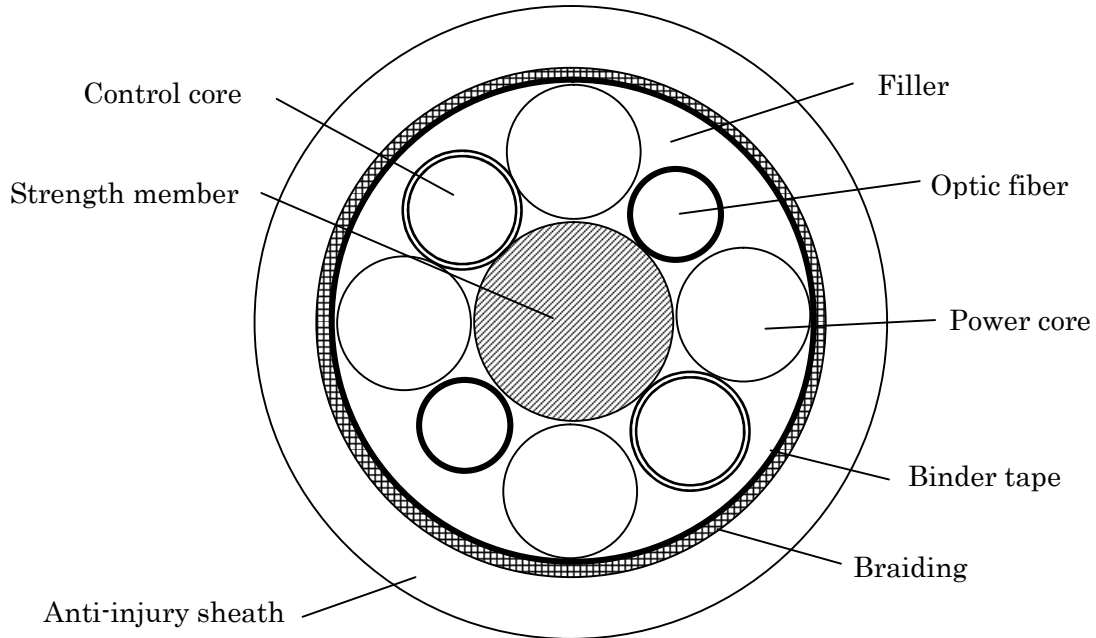
Symbol		2SM-9.2-37.5			
Kind of cores		Power	Control	Optic fiber	Strength member
No. of cores	No.	4	2	2	1
Size of conductor	mm ²	0.52	0.18	-	-
Construction of conductor	No/mm	21/0.18	7/0.18	-	19/0.36
Diameter of mode field	μm	-	-	9.5±1	-
Cladding diameter	μm	-	-	125±3	-
Approx. diameter of conductor	mm	0.9	0.55	-	1.8
Nominal thickness of insulation	mm	0.4	0.3	-	0.35
Approx. core diameter	mm	1.7	1.2	0.9	2.5
Approx. thickness of tin-coated annealed copper braid	mm	0.3			
Nominal thickness of anti-injury sheath	mm	1.2			
Approx. overall diameter	mm	9.2±0.3			
Approx. net weight	g/m	120			
Max. conductor resistance (20°C)	Ω/km	37.5	113	-	To be Conducted
AC withstanding voltage	V/1min	1,000	500	-	-
Min. insulation resistance (room temp.)	MΩkm	10,000	10,000	-	-

Core identification

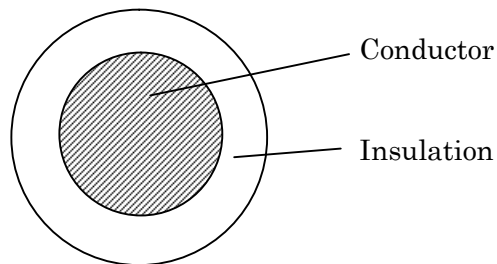
- K : Black
- W : White(natural)
- R : Red
- G : Green
- B : Blue
- Y : Yellow



Attached drawing Cross section drawing of 2SM-9.2-37.5



Cross section drawing of power core,control core and strength member



Cross section drawing of optic fiber

