

SPECIFICATION

FOR

600V ETHYLENE PROPYLENE RUBBER INSULATED
POLYCHLOROPRENE SHEATHED FLEXIBLE CABLE

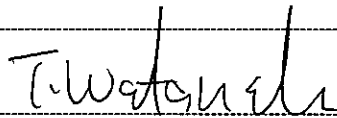
Code : 600V MM-CAR-2PNCT-SX

Quantity

Your Ref. No.

Our Ref. No.

Signed by



Takanobu Watanabe
Manager

Engineering Dept. I
Electric Wire & Cable Business Unit

Proterial, Ltd.

Issue and revision record

REV. No.	Issue date	Item	Prepared by	Reviewed by	Approved by
—	Feb. 21, 2024	FIRST ISSUE	K. Yamane	N. Ono	T. Watanabe
1	March 21, 2024	<ul style="list-style-type: none"> • Changed marking method and marking content • Added 600V MM-CAR-2PNCT-SX 3×16mm² and 600V MM-CAR-2PNCT-SX 16×4mm² 	K. Yamane	N. Ono	T. Watanabe
2	May 21, 2024	<ul style="list-style-type: none"> • Added 600V MM-CAR-2PNCT-SX 4×16mm² 	<i>K. Yamane</i> K. Yamane	<i>N. Ono</i> N. Ono	<i>T. Watanabe</i> T. Watanabe

1. Scope

This specification covers 600V Ethylene Propylene Rubber Insulated Polychloroprene Sheathed Flexible Cable, which is reference to Japanese Electrical Appliance and Material Safety Law or Japanese Electrical Facility Regulation, and Manufacture' s Standard.

This cable shall have flame retardant property as per IEEE Std. 383-1974 paragraph 2. 5, Vertical Tray Flame Test (VTFT).

2. Construction and Materials

2.1 Insulated cores

2.1.1 Conductor

Conductor shall be stranded flexible conductor consisting of tinned annealed copper wires.

A suitable separator tape shall be applied over the conductor.

2.1.2 Insulation

Insulation shall consist of black flame retardant ethylene propylene rubber compound.

Nominal thickness shall be shown in the table 1, 3, 5, 7, 9, 11.

Ave. thick. : not less than 90% of the nominal thickness

Min. thick. : not less than 80% of the nominal thickness

2.1.3 Core identification

The core identification shall be made by the color of insulation or the color of insulation surface as shown in the Fig. 2, 4, 6, 8, 10, 12.

2.2 Drain wire

2.2.1 Conductor

Conductor shall be stranded flexible conductor consisting of tinned annealed copper wires.

2.2.2 Semi-conductive layer

Semi-conductive layer shall consist of semi-conductive rubber compound.

Nominal thickness shall be shown in the table 1, 3, 5, 7, 9, 11.

2.2.3 Core identification

The core identification shall be made by the color of the semi-conductive layer as shown in the Fig. 2, 4, 6, 8, 10, 12.

2.3 Cabling of cores

The insulated conductors and the drain wire shall be cabled.

Suitable rubber filler may be applied at manufacturer's discretion, if necessary.

2.4 Semi-conductive shielding layer

Semi-conductive sheilding layer over the cabled cores and drain wire shall be consist of the semi-conductive rubber compound.

Suitable tape may be applied over the semi-conductive shielding layer at manufacture's discretion, if necessary.

2.5 Sheath

Sheath shall consist of black flame retardant polychloroprene compound.
 Nominal thickness shall be shown in the table 1, 3, 5, 7, 9, 11.

- Ave. thick. : not less than 90% of the nominal thickness
- Min. thick. : not less than 85% of the nominal thickness

A straight line shall be marked on the surface of the sheath.

2.6 Dimension

The dimension of the cable shall be in accordance with the table 1, 3, 5, 7, 9, 11.

3. Marking

The abbreviated description, manufacture' s name and year of manufacture shall be marked between the straight lines on the surface of the sheath.

4. Inspection

Inspection shall be made on the following items prior to shipment.

Properties	Standard to comply with	Requirements	Test interval
Construction and dimensions	JIS C 3005 4.3	To comply with clause 2 and the attached table 1, 3, 5, 7, 9, 11	Every shipment
Withstand voltage test	JIS C 3005 4.6	To withstand AC 3000V for 1 min. 600V MM-CAR-2PNCT 3×6mm ² 600V MM-CAR-2PNCT 3×16mm ² 600V MM-CAR-2PNCT 4×16mm ²	
		To withstand AC 3000V for 1 min. 600V MM-CAR-2PNCT 12×4mm ² 600V MM-CAR-2PNCT 16×4mm ² 600V MM-CAR-2PNCT 20×2.5mm ²	
Conductor resistance	JIS C 3005 4.4	Not more than the value in the attached table 2, 4, 6, 8, 10, 12	First shipment
Insulation resistance	JIS C 3005 4.7	Not less than the value in the attached table 2, 4, 6, 8, 10, 12	

5. Guide to use

This cable is designed for carrier drum system (cable tender system) as shown below.

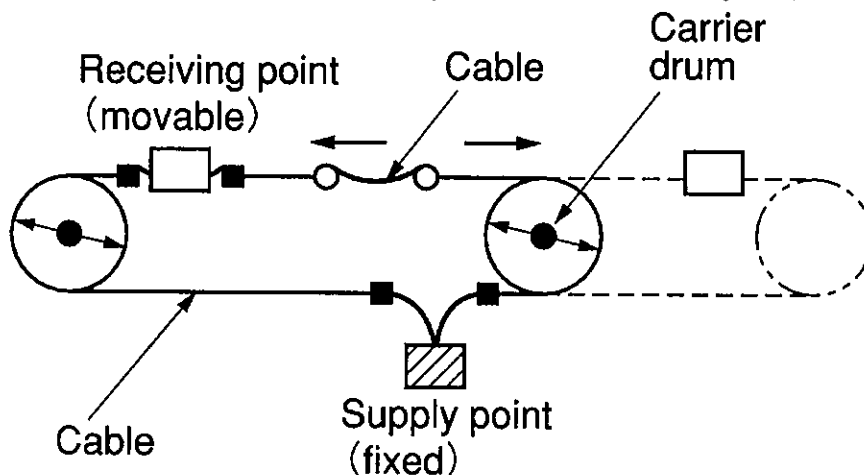


Table 1 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 3×6mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	3	1
Conductor	Nominal cross-section area	mm ²	6	6
	Construction	No. /mm	84/0.3	84/0.3
	Approx. diameter	mm	3.3	3.3
Nominal thickness of insulation		mm	1.0	—
Nominal thickness of semi-conductive layer		mm	—	1.0
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	2.3	
Approx. diameter of completed cable		mm	21	
Maximum diameter of completed cable		mm	22.1	
Approx. weight of completed cable		kg/km	595	

Table 2: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	3.39
Minimum insulation resistance at 20°C	MΩ·km	400
Permissible minimum bending radius	mm	130

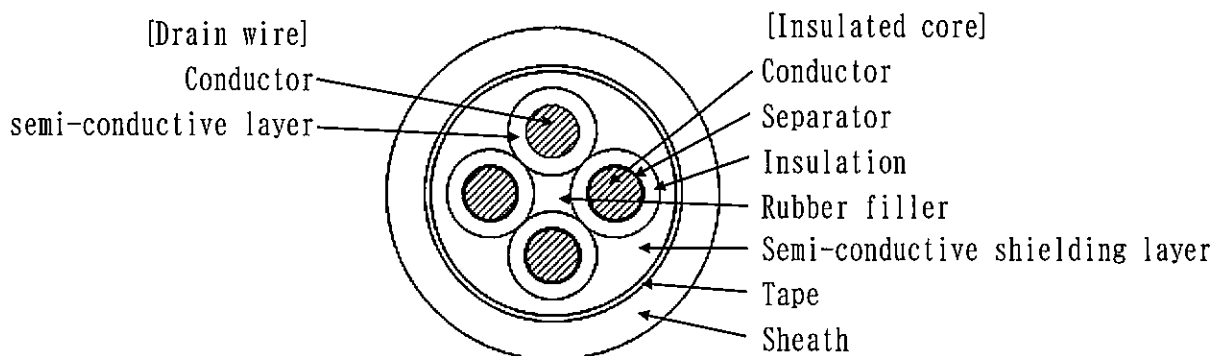


Fig.1 Cable cross section

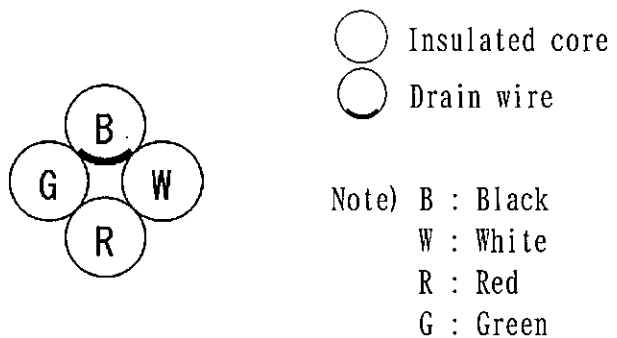


Fig.2 Core identification

Table 3 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 3×16mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	3	3
Conductor	Nominal cross-section area	mm ²	16	3.5
	Construction	No. /mm	7/18/0.4	45/0.32
	Approx. diameter	mm	5.9	2.5
Nominal thickness of insulation		mm	1.2	—
Nominal thickness of semi-conductive layer		mm	—	0.8
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	2.7	
Approx. diameter of completed cable		mm	27	
Maximum diameter of completed cable		mm	28.4	
Approx. weight of completed cable		kg/km	1130	

Table 4: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	1.24
Minimum insulation resistance at 20°C	MΩ·km	300
Permissible minimum bending radius	mm	170

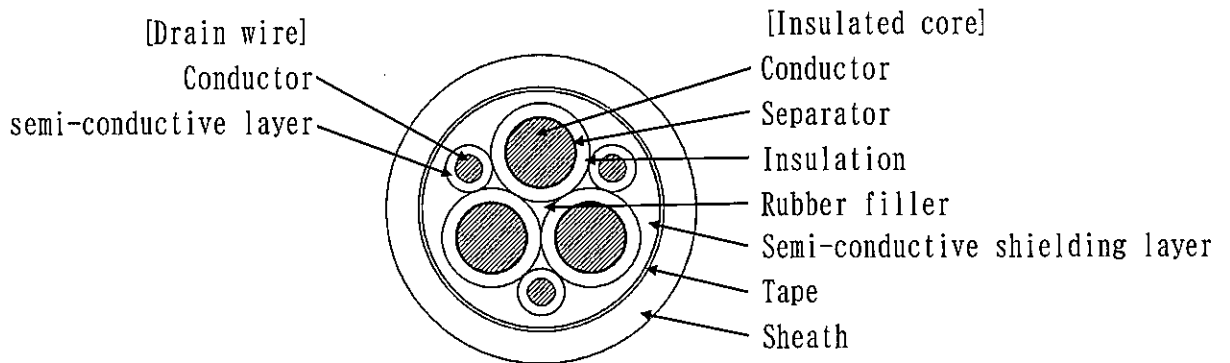


Fig. 3 Cable cross section

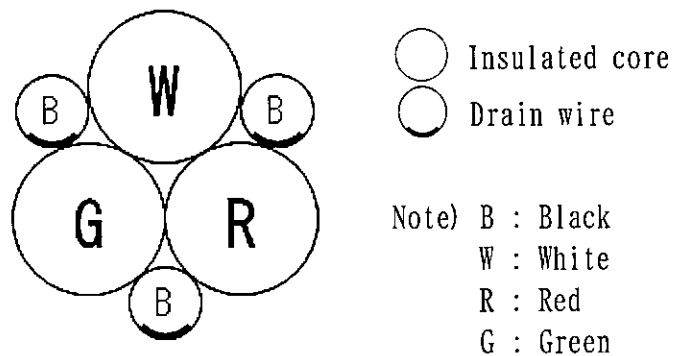


Fig. 4 Core identification

Table 5 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 4×16mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	4	2
Conductor	Nominal cross-section area	mm ²	16	3.5
	Construction	No. /mm	7/18/0.4	45/0.32
	Approx. diameter	mm	5.9	2.5
Nominal thickness of insulation		mm	1.2	—
Nominal thickness of semi-conductive layer		mm	—	0.8
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	3.0	
Approx. diameter of completed cable		mm	33	
Maximum diameter of completed cable		mm	34.7	
Approx. weight of completed cable		kg/km	1570	

Table 6: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	1.24
Minimum insulation resistance at 20°C	MΩ·km	300
Permissible minimum bending radius	mm	200

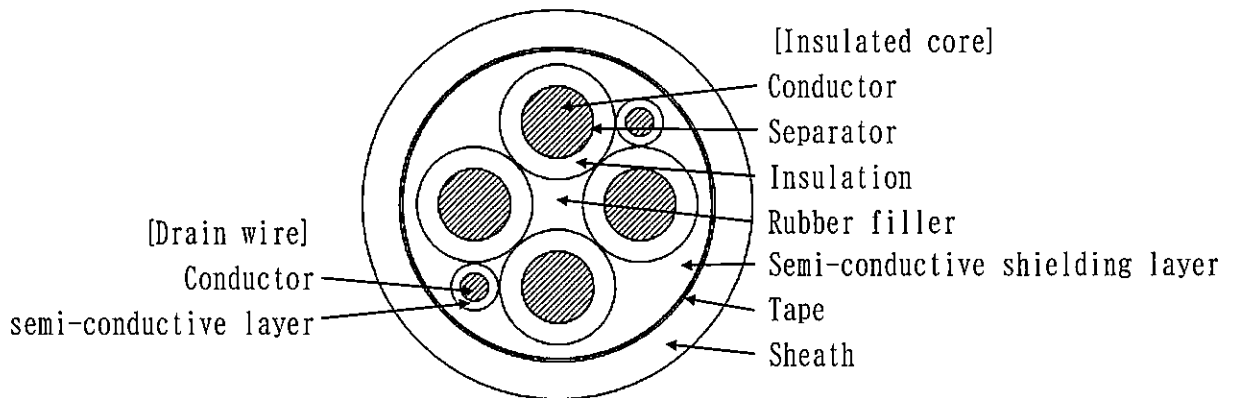


Fig. 5 Cable cross section

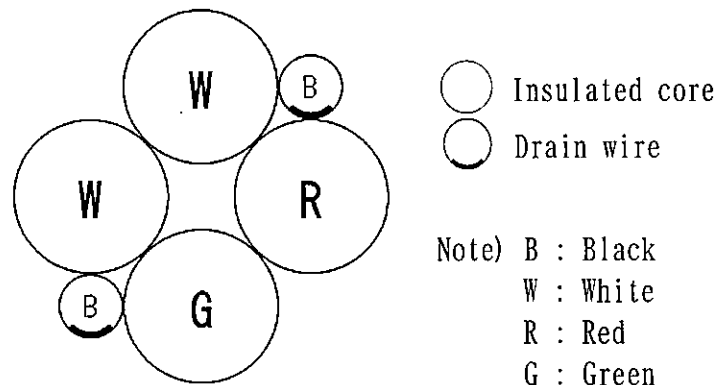


Fig. 6 Core identification

Table 7 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 12×4mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	12	1
Conductor	Nominal cross-section area	mm ²	4	4
	Construction	No. /mm	56/0.3	56/0.3
	Approx. diameter	mm	2.6	2.6
Nominal thickness of insulation		mm	1.0	—
Nominal thickness of semi-conductive layer		mm	—	1.0
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	2.9	
Approx. diameter of completed cable		mm	30	
Maximum diameter of completed cable		mm	31.5	
Approx. weight of completed cable		kg/km	1270	

Table 8: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	5.09
Minimum insulation resistance at 20°C	MΩ·km	400
Permissible minimum bending radius	mm	180

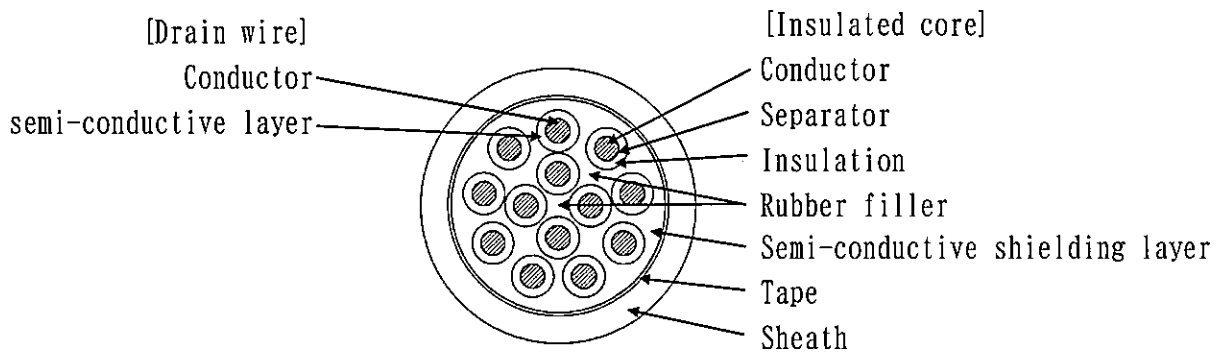


Fig. 7 Cable cross section

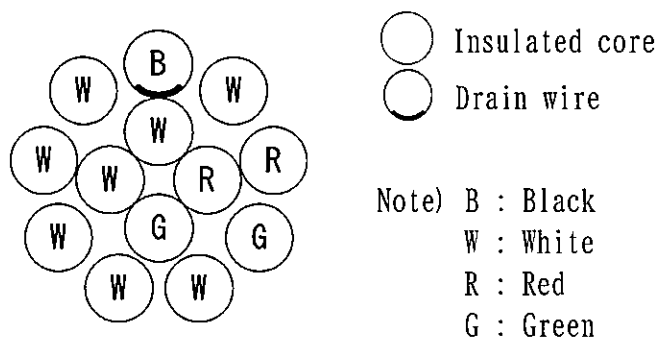


Fig. 8 Core identification

Table 9 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 16×4mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	16	1
Conductor	Nominal cross-section area	mm ²	4	4
	Construction	No. /mm	56/0.3	56/0.3
	Approx. diameter	mm	2.6	2.6
Nominal thickness of insulation		mm	1.0	—
Nominal thickness of semi-conductive layer		mm	—	1.0
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	3.1	
Approx. diameter of completed cable		mm	33	
Maximum diameter of completed cable		mm	34.7	
Approx. weight of completed cable		kg/km	1700	

Table 10: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	5.09
Minimum insulation resistance at 20°C	MΩ·km	400
Permissible minimum bending radius	mm	200

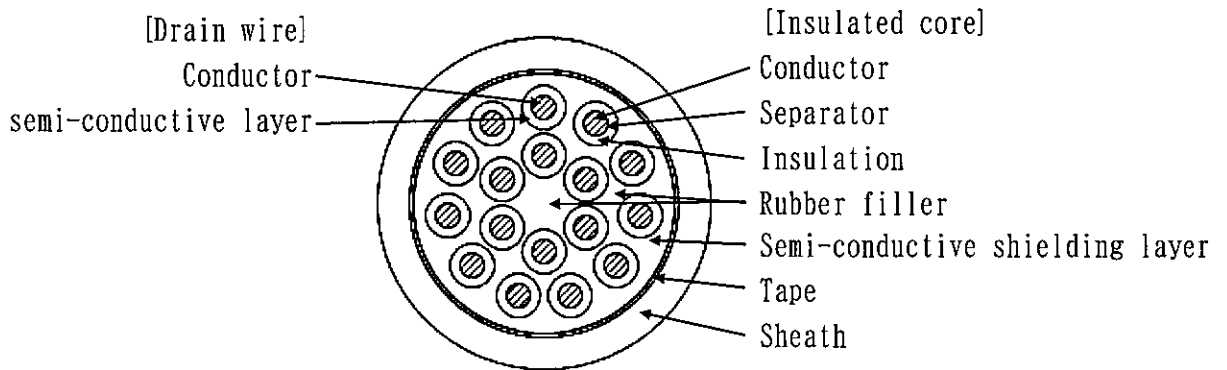


Fig.9 Cable cross section

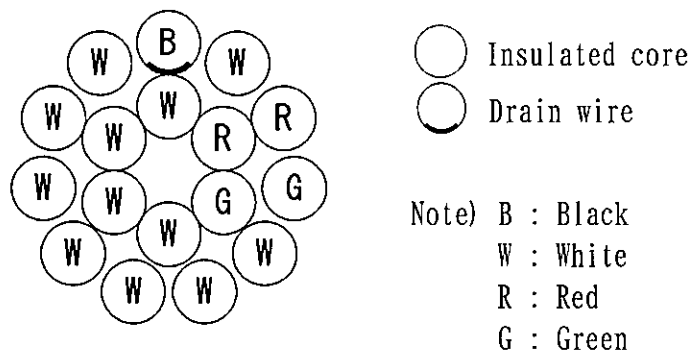


Fig.10 Core identification

Table 11 : Dimensions
(Code : 600V MM-CAR-2PNCT-SX 20×2.5mm²)

Item		Unit	Specified Value	
Type of conductor		—	Insulated core	Drain wire
No. of conductor		—	20	1
Conductor	Nominal cross-section area	mm ²	2.5	2.5
	Construction	No. /mm	49/0.25	49/0.25
	Approx. diameter	mm	2.1	2.1
Nominal thickness of insulation		mm	0.8	—
Nominal thickness of semi-conductive layer		mm	—	0.8
Nominal thickness of semi-conductive shielding layer		mm	1.0	
Nominal thickness of sheath		mm	2.8	
Approx. diameter of completed cable		mm	29	
Maximum diameter of completed cable		mm	30.5	
Approx. weight of completed cable		kg/km	1220	

Table 12: Characteristic

Item	Unit	Specified Value
Type of conductor	—	Insulated core
Maximum conductor resistance at 20°C	Ω/km	8.21
Minimum insulation resistance at 20°C	MΩ·km	500
Permissible minimum bending radius	mm	180

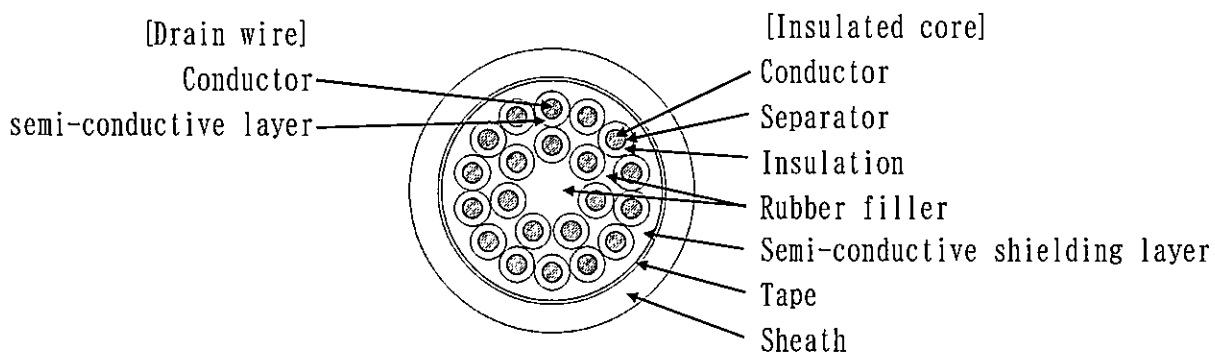


Fig. 11 Cable cross section

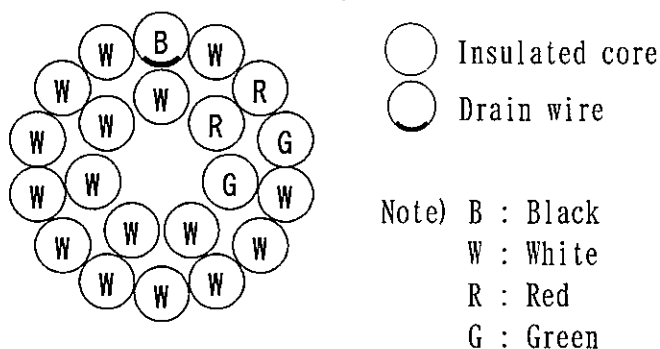


Fig. 12 Core identification