Heat-resistant, highly bendable robot cable

ORF cable series

Fixed	Torsion
Swinging bending	Sliding bending

UL 758 Style 2517 105˚C 300 V

Using fluorine material to insulate the core wires makes them suitable for all robot moving parts.

▦ Features

● Making the conductor a small-diameter wire and using fluoride resin as the insulator improve the bending characteristics, which make this cable optimal for use in moving parts of robots and other devices.

● Oil-proof materials are used in the cable coating.

● Environmentally friendly. Compliant with the RoHS directive.
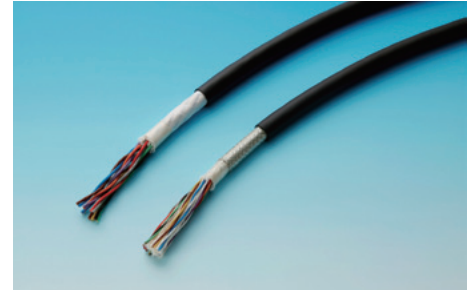
▦ Specifications

Material/configuration

Conductor	Tin-plated, soft copper, twisting cable
Insulator	Fluorine resin
Insulator identification	By (Table 1)
Shielding	Tin-plated, soft copper cable; braided
Sheath material (sheath color)	Oil-proof PVC (black matte)

Usage environment

Application	Fixed and moving parts between equipment and within equipment indoors
Operation temperature range	-10 to 105˚C

Line-up

Shielding	Twisted pair type
Without shielding	Conductor size: 0.2 to 0.5 sq. mm Number of pairs: 1 to 20
With shielding	Conductor size: 0.2 to 0.5 sq. mm Number of pairs: 1 to 20

Applicable standards

UL758 Style 2517 (Rating: 105˚C, 300 V)

Sheath labeling

OKI ELECTRIC CABLE 🆄 AWM 2517 105C 300V VW-1 ORF □ SQ △△

□ : Conductor cross-sectional area (mm^2) 0.2/0.3/0.5   △△ : Without shielding: No indication/With shielding: −SB

▦ Special characteristics

Electrical performance

Conductor cross-sectional area	Conductor resistance Ω /km (20˚C)	Insulator resistance MΩ -km (20˚C)	Withstand voltage V·1 minute interval
0.2 sq. mm (AWG25)	105 or less	1500 or more	AC 2000
0.3 sq. mm (AWG23)	72 or less	1500 or more	AC 2000
0.5 sq. mm (AWG21)	44 or less	1500 or more	AC 2000

Mobility

Mode	Performance	Test conditions
Sliding bending	50 million times or more	Bend radius R: about 6 times the outer diameter of the cable Sliding speed: 70 times per minute Movement distance: 350 mm
Swinging bending	20 million times or more	Bend radius R: about 8 times the outer diameter of the cable Bend angle: ±90° Bend speed: 40 times per minute Load: 4.9 N Count: one round trip is one count
Torsion	20 million times or more	Torsion angle: ±180° Torsion speed: 70 times per minute Interval X: 500 mm

Note. Under Oki test conditions and methods. For details, see page 3.
These values are for reference only and are not guaranteed values.
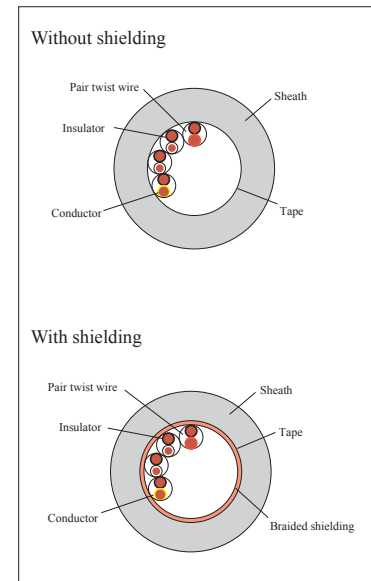
Line-up

Display of product name

● Without shielding: ORF- (1) × (2) P (2517)

● With shielding: ORF- (1) × (2) P (SB) (2517)

(1): Conductor sq. mm (mm^2) (2): Number of pairs
(See the chart below.)

Construction

Conductor			Core wire diameter mm	(2) Number of pairs	Without shielding		With shielding		Permitted electric current* A (30°C)
(1) sq. mm	AWG size	Configuration			Outer diameter mm	Approximate weight kg/km	Outer diameter mm	Approximate weight kg/km	
0.2	25	40/0.08	1.0	1	3.9	18	4.4	26	4.7
				2	5.7	34	6.2	46	3.7
				3	6.2	43	6.7	56	3.2
				4	6.4	47	6.9	61	2.9
				5	7.2	60	7.7	77	2.6
				6	7.7	70	8.2	85	2.4
				7	8.0	75	8.5	91	2.3
				8	8.8	89	9.3	110	2.2
				10	10.5	120	11.0	145	2.1
				12	11.5	135	12.0	175	1.9
				15	11.0	145	11.5	180	1.8
				20	12.0	190	12.5	220	1.6
0.3	23	3/20/0.08	1.3	1	4.5	24	5.0	34	6.6
				2	6.8	48	7.3	63	5.1
				3	7.3	58	7.8	74	4.4
				4	8.1	72	8.6	90	4.0
				5	8.7	86	9.2	110	3.6
				6	9.5	105	10.0	130	3.4
				7	10.0	110	10.5	135	3.2
				8	11.0	130	11.5	160	3.0
				10	12.5	170	13.0	210	2.9
				12	14.5	220	15.0	240	2.6
				15	14.0	230	14.5	270	2.4
				20	15.5	290	16.0	345	2.2
0.5	21	3/33/0.08	1.6	1	5.1	31	5.6	41	9.3
				2	7.9	64	8.4	83	7.3
				3	8.9	86	9.4	110	6.3
				4	9.8	110	10.5	140	5.7
				5	11.0	140	11.5	165	5.2
				6	11.5	150	12.5	195	4.8
				7	12.5	175	13.0	210	4.6
				8	13.5	200	14.0	240	4.3
				10	16.0	270	16.5	310	4.1
				12	17.5	290	18.0	340	3.7
				15	17.0	350	17.5	410	3.5
				20	19.5	460	20.0	510	3.1

*The permitted electric current value is calculated with a straight installation in air. It is not a guaranteed value.

Cross-section view (example)

Without shielding

Pair twist wire — Sheath
Insulator
Conductor — Tape

With shielding

Pair twist wire — Sheath
Insulator — Tape
Conductor — Braided shielding

(Table 1) Wire-pair configuration table

Corresponding no.	Insulation body color		Corresponding no.	Insulation body color	
	No.1 core wire	No.2 core wire		No.1 core wire	No.2 core wire
1	Blue	White	11	Blue	Black
2	Yellow	Brown	12	Yellow	Gray
3	Green	Black	13	Green	Orange
4	Red	Gray	14	Red	White
5	Purple	Orange	15	Purple	Brown
6	Blue	Brown	16	Blue	Gray
7	Yellow	Black	17	Yellow	Orange
8	Green	Gray	18	Green	White
9	Red	Orange	19	Red	Brown
10	Purple	White	20	Purple	Black