

Flat Cables

FFC-Flat Flexible Cables AXOJUMP®

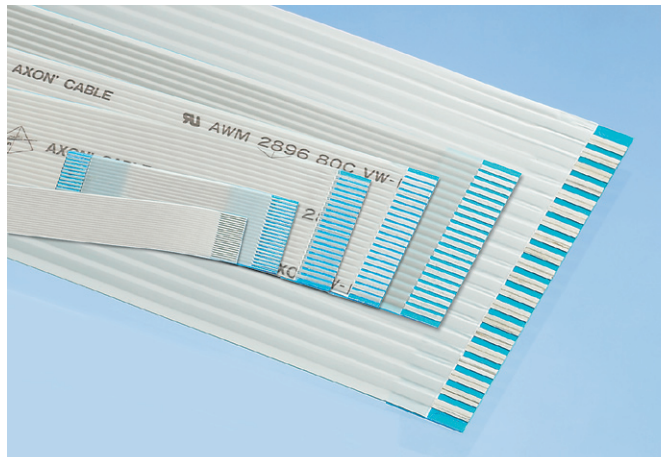
Standard Flat Flexible Cables

Pitches

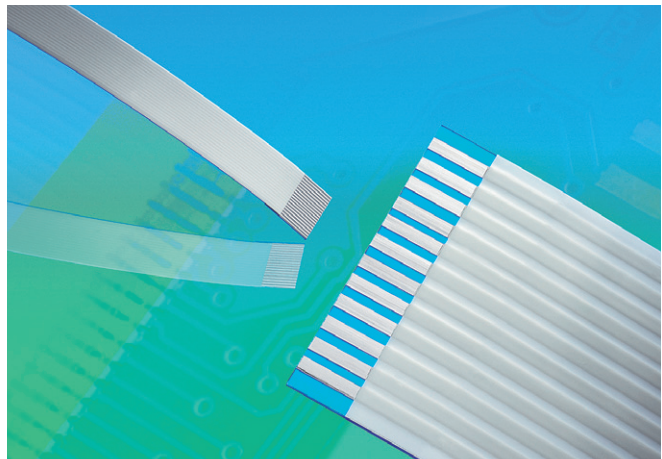
The standard range of
FFC-Flat Flexible Cables AXOJUMP®
consists of the following pitches:

- 0.30 mm,
- 0.50 mm,
- 0.80 mm,
- 1.00 mm,
- 1.25 mm,
- 1.27 mm,
- 2.54 mm.

*Other pitches can be manufactured
upon request.*



SAME NUMBER OF CONDUCTORS BUT DECREASING PITCH



0.3 mm PITCH VERSUS 2.54 mm PITCH

Connection schemes

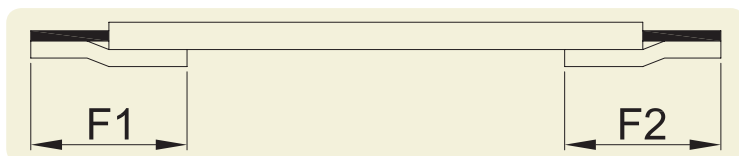
See identification code at the end of the brochure.

Each type of stripping has its own letter code: A, B, C or D.

For each end a strip length (S1, S2), a connection (see page 14) and a reinforcement length (F1, F2) is defined.

Type A

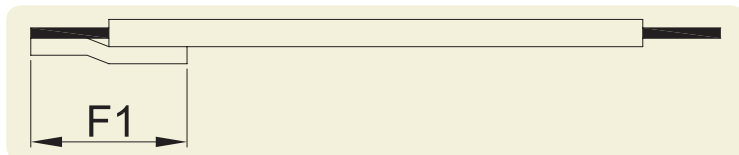
Reinforcements F1 and F2 at both ends of the cable, on the same side.



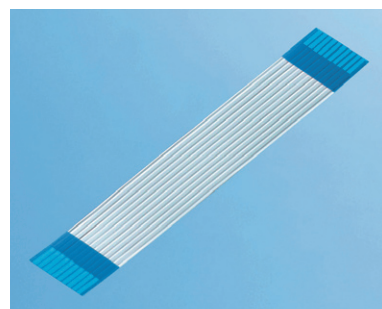
- **Removable connection** (connector/connector)
 - 2 Polyester reinforcements, standard or "easy-to-insert" version.
- **Solder connection** (solder/solder)
 - 2 Polyimide reinforcements.
- **Mixed connection** (solder/connector)
 - Soldering at one end: use of Polyimide reinforcement.
 - Removable at the other end (connector): use of a Polyester reinforcement, standard or "easy-to-insert" version.

Type B

One single reinforcement F1 at one end / no reinforcement at the other end.



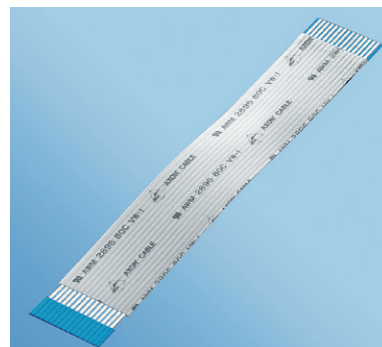
- **Mixed connection** (solder/connector)
 - Soldering at one end: stripping or bus bar version.
 - Removable at the other end (connector): use of a Polyester reinforcement, standard or "easy-to-insert" version.



FFC, TYPE A



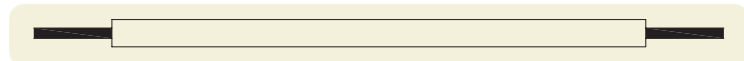
FFC, TYPE B - STRIPPED VERSION



FFC, BUS BAR VERSION

Type C

No reinforcement.



► Solder connection (solder/solder)

- Stripping (without reinforcement) at both ends.

Note: the stripped conductors are unprotected and therefore fragile. They may be damaged during shipment and storage. AXON' recommends the use of bus bar version to protect the conductors.



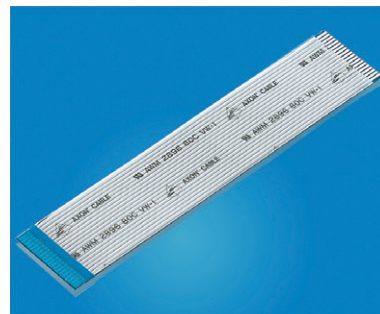
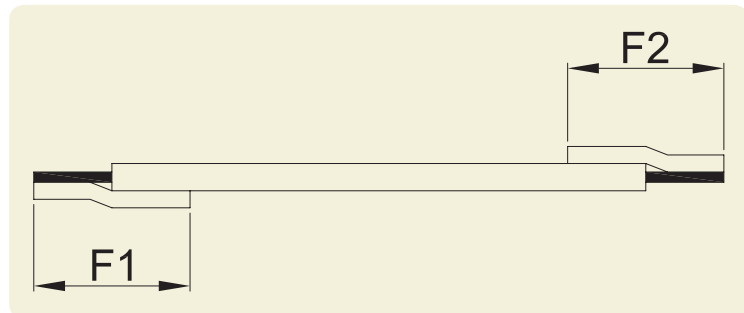
FFC, BUS BAR VERSION



FFC, TYPE C - STRIPPED VERSION

Type D

2 reinforcements F1 and F2 at the both ends on opposite sides.



FFC, TYPE D

► Removable connection (connector/connector)

- 2 Polyester reinforcements, standard or "easy-to-insert" version.

► Solder connection (solder/solder)

- 2 Polyimide reinforcements.

► Mixed connection (solder/connector)

- Soldering at one end: use of a Polyimide reinforcement.
- Removable at the other end (connector): use of a Polyester reinforcement, standard or "easy-to-insert" version.

Connection definition

See identification code at the end of the brochure.

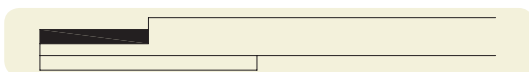
Connection with ZIF or LIF connectors

Polyester reinforcement version B, R, W, J, K

for termination to connectors.

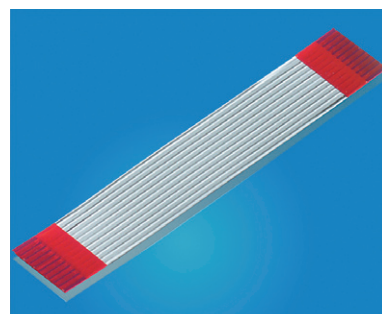


- › **Version B:** blue Polyester tape.
- › **Version R:** red Polyester tape.

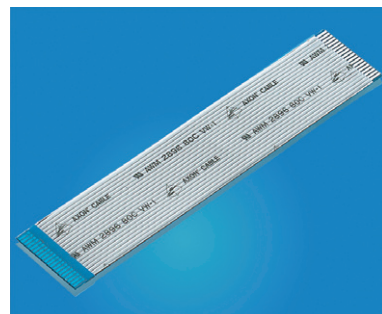


- › **Version W:** white Polyester tape, mainly for 0.30 mm pitch FFC's. The insulation tape remains between conductor and reinforcement tape.
- › **Version J or K:** blue Polyester tape, mainly used for gold plated FFC.

See summary of reinforcement tapes page 16.



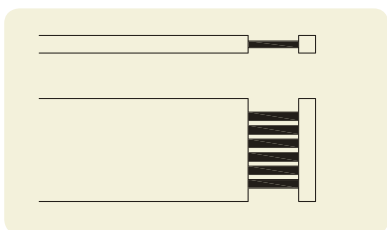
FFC, VERSION R REINFORCEMENT



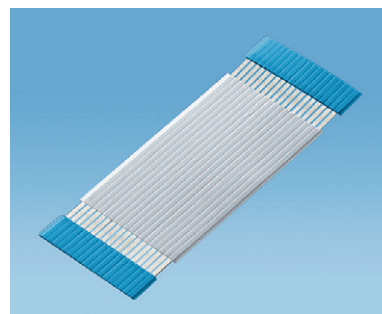
FFC, VERSION B REINFORCEMENT

Connection with soldering

«Bus bar» reinforcement version T

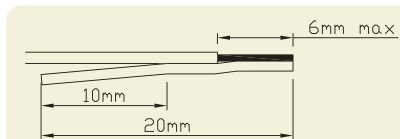


- › **Bus bar version:** the pitch between the conductors is maintained thanks to a blue tape at the end.



FFC, VERSION T REINFORCEMENT

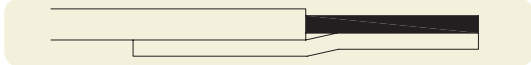
"Easy-to-insert" reinforcement version E



- **Version E:** Polyester reinforcement only partly adhered to the cable to ease installation.

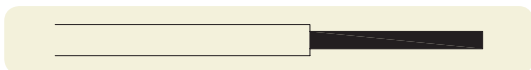
Polyimide reinforcement version H

for thermal protection during hot bar soldering operation.



- **Version H:** Polyimide natural colour (amber).

End without reinforcement version "-"



- **Version "-":** Stripped conductors

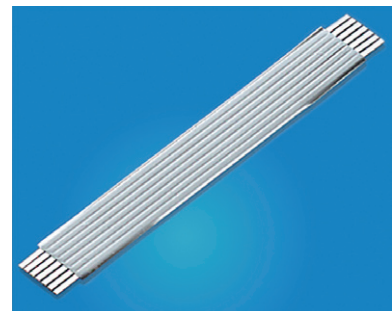
Note: the conductors are unprotected and therefore fragile. They may be damaged during shipment and storage. AXON' recommends the use of bus bar version to protect the conductors.



FFC, VERSION E REINFORCEMENT



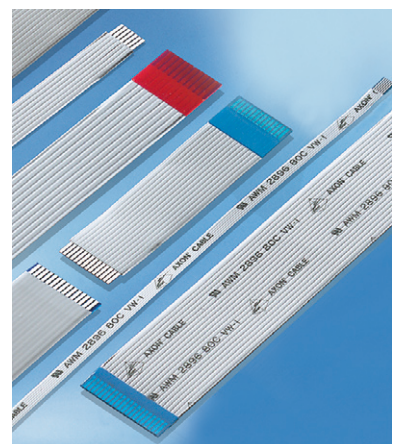
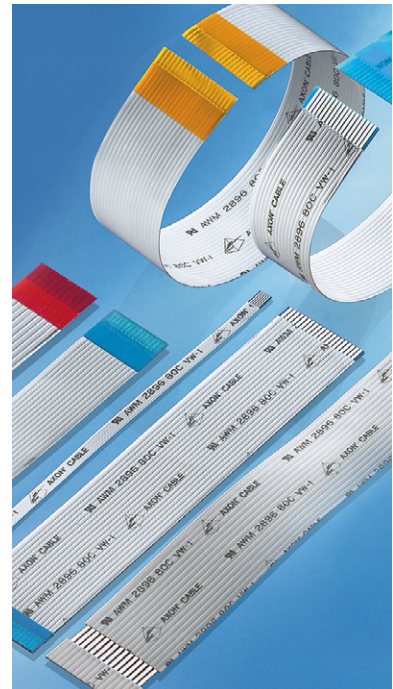
FFC, VERSION H REINFORCEMENT



FFC, VERSION "-" REINFORCEMENT

Summary of reinforcement tapes

Type of connection	Version		Material	Colour	Conductors	Comments
with ZIF or LIF connectors 0,30 mm thickness (T)	Standard	B	Polyester	Blue	All	Most commonly used
	Easy-to-insert	E	Polyester	Blue	All	Easy insertion
	Standard	J	Polyester	Blue	Flexible	Mainly used for gold plated FFC
	Standard	K	Polyester	Blue	Standard	Mainly used for gold plated FFC
	Standard	R	Polyester	Red	All	Not available for every design
	Standard	W	Polyester	White	For 0,30 mm pitch	Mainly used for 0,30 mm pitch FFC
with soldering	Standard	H	Polyimide	Natural (Amber)	All	Used for hot bar soldering
	Bus bar	T	Polyester	Blue	Standard, Flexible	Used for conductors protection



DIFFERENT CONNECTION TYPES

Insulation tapes

See identification code at the end of the brochure.

AXON' offers flat cables with insulation tapes of different thicknesses according to the required flexibility, temperature resistance, colour and marking.

Type of tape		Compatible pitches (mm)	Material	UL style	Maximum temperature rating	Maximum voltage rating	Colour	Conductors	Comments
S	Standard	0.30 to 2.54	Polyester	20706	105°C	60 Volts	White	Standard, Flexible	Tin or gold plated conductors
E*	Extra-flexible	0.50 to 1.27	Polyester	20706	105°C	60 Volts	White	Extra-flexible, ultra-flexible	Tin or gold plated conductors
H		0.50 to 2.54	Polyester	2643	105°C	300 Volts	White	Standard, Flexible	Tin or gold plated conductors
K		0.50 to 2.54	Polyester	2896	80°C	30 Volts	White	Flexible	Tin plated conductors
L**		0.50 to 2.54	Polyester	2896	80°C	30 Volts	White	Standard, flexible	Tin plated conductors
X		Used for special designs, please contact us	Polyimide	21039	125°C	60 Volts	Amber	Special conductors	Tin or gold plated conductors

* Black insulation on request

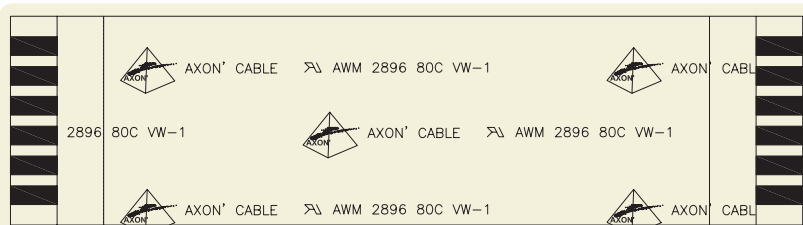
** UL marking on request

AXOJUMP® Flat Flexible Cables can be used at below freezing temperatures as low as -40°C.

Marking

See identification code at the end of the brochure.

- **Version A:** both sides unmarked.
- **Version B:** one side marked with standard UL printing (if originally marked tape is available) and the other side unmarked. Specific markings can be studied upon request.



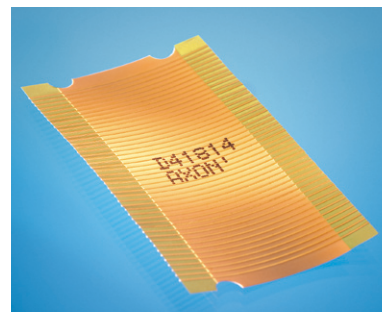
ORIGINALY MARKED TAPE UL STYLE AND AXON' LOGO



POLYIMIDE INSULATION : UPPER TAPE OPAQUE/LOWER TAPE CLEAR ; INK-JET MARKING



UL MARKING



INK-JET MARKING

Conductors

See identification code at the end of the brochure.

Standard version S

Pitch (mm)	Width (mm)	Thickness (mm)	Resistance at 20° C Ω/ Km
0.50	0.30	0.10	730 max
0.80	0.50		400 max
1.00	0.70		280 max
1.25/1.27	0.80		250 max
2.54	1.57	0.076	194 nom

Flexible version F

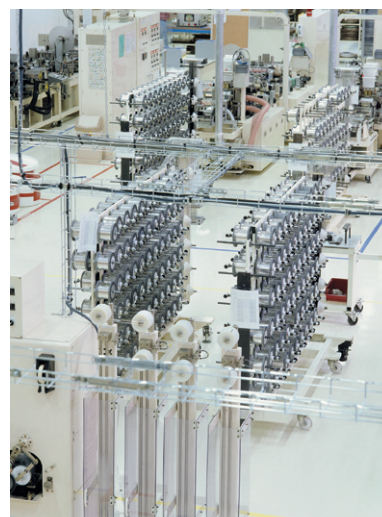
Pitch (mm)	Width (mm)	Thickness (mm)	Resistance at 20° C Ω / Km
0.30	0.15	0.05	3164 max
0.50	0.30		1460 max
0.80	0.50		800 max
1.00	0.70		520 max
1.25/1.27	0.80		500 max



FLAT TIN PLATED COPPER CONDUCTOR

Extra flexible version E (E tape only)

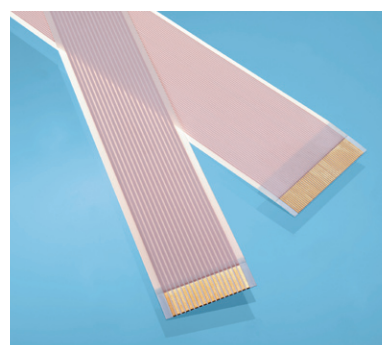
Pitch (mm)	Width (mm)	Thickness (mm)	Resistance at 20° C Ω / Km
0.50	0.30	0.035	1730 max
0.80	0.50		1030 max
1.00	0.70		720 max
1.25/1.27	0.80		643 max



CONDUCTOR MANUFACTURING

Ultra flexible version U (E tape only)

Pitch (mm)	Width (mm)	Thickness (mm)	Resistance at 20° C Ω / Km
1.00	0.60	0.025	1500 max
1.25/1.27	0.80		970 max



GOLD PLATING AT EXPOSED ENDS



DECREASING PITCHES

Standard dimensions

Pitch : P (mm)	0.30 *	0.50	0.80	1.00	1.25	1.27	2.54
Number of conductors : N	11-51 **	6-50 **	4-50 **	4-99 **	3-79 **	3-79 **	2-38 **
Span : E (mm)	(N-1) 0.30	(N-1) 0.50	(N-1) 0.80	(N-1) 1.00	(N-1) 1.25	(N-1) 1.27	(N-1) 2.54
Width : W (mm)	(N+1) 0.30	(N+1) 0.50	(N+1) 0.80	(N+1) 1.00	(N+1) 1.25	(N+1) 1.27	(N+1) 2.54
Margin : M (mm)	0.30	0.50	0.80	1.00	1.25	1.27	2.54
Strip length : S1, S2 (mm)	Tape S and L : according to reference and ± 0.8 Tape H, E, X, K : according to reference and ± 1						
Reinforcement length : F1, F2 (mm)	According to reference and ± 2						
Insulated length : L (mm)	According to reference and						
	40 to 60 ± 2	20 to 60 ± 2					
	61 to 100 ± 3	61 to 100 ± 3					
	101 to 200 ± 4	101 to 200 ± 4					
	201 to 500 ± 5	201 to 3999 ± 5					
		4000 to 5999 ± 10					
		6000 to 9999 ± 15					
Thickness at end of cable : T (mm)	0.20 mm	0.30 mm					
Cable thickness : t (mm)	0.30 (with standard conductors) 0.22 (with flexible conductors) 0.20 for 0.30 mm pitch						
Strip length mismatch : S-S' (mm)	max. 0.20	max. 0.30	max. 0.30	max. 0.40	max. 0.40	max. 0.40	max. 0.40
Upper and lower tape mismatch at strip	max. 0.70						

*Available with insulation type S only - **For special needs, please contact us

Shielding

See identification code at the end of the brochure.

FFC with aluminium shielding

Aluminium foil shielding is possible on flat cables with:

- a width of 7 to 30 mm and a length of 60 to 1100 mm,
- > for static applications.

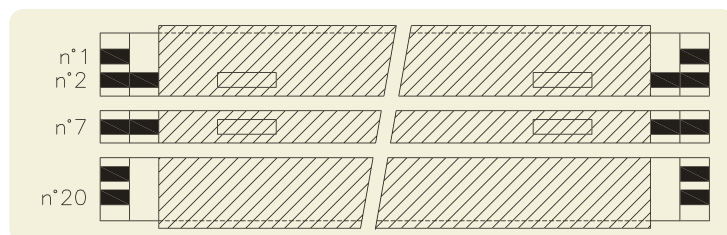
> Version S

Aluminium shielded version without grounding.

> Version G + grounded tracks (for example G2-G7)

Aluminium shielded version with grounding (max. 3 grounds).

Groundings are possible for ≥ 1.00 mm pitch FFC.



Welded connection between the aluminium foil to the specified stripped conductor.

FFC with painted shield

A painted shield is possible on flat cables with:

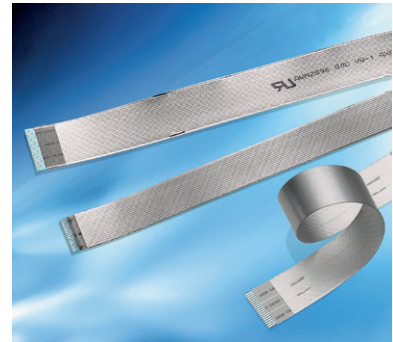
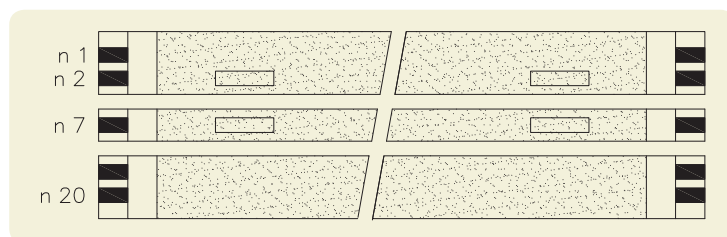
- a width of 3.5 to 30 mm and a length of 50 to 650 mm,
- > for dynamic applications (Please contact us for further information).

> Version PS

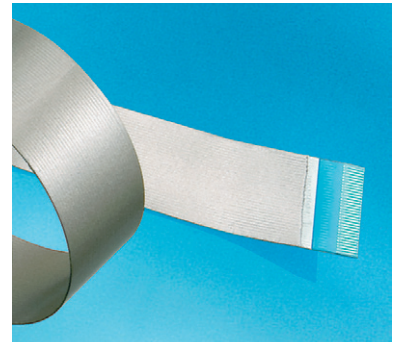
Painted shielded version without grounding

> Version PG + grounded tracks (for example G2-G7)

Painted shielded version with grounds (no limit for the number of grounds)



ALUMINIUM SHIELDING



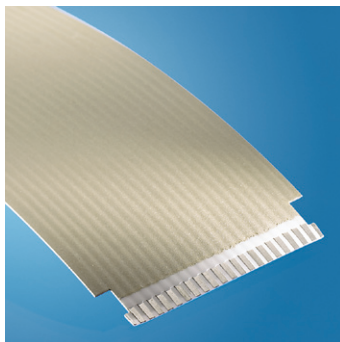
PAINTED SHIELD

Special products

Responding to a growing demand for custom designed products, AXON' has developed numerous special versions of flat cable:

- folded versions,
- non-standard or hybrid pitches,
- special insulation tapes,
- double sided adhesive pads,
- crimped contacts,
- punching, marking, slitting, stripping and special mounting/fastening.

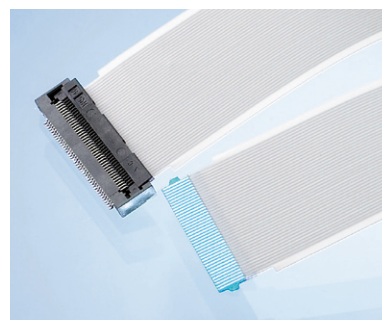
AXON' can quickly develop the necessary tooling required to manufacture customised cables. Our team of technical experts will offer you design assistance and the best cable solution suited to your needs.



PUNCHINGS



FOLDED AND SOLDERED



INK JET MARKING / FH 28 PUNCHING

Folding

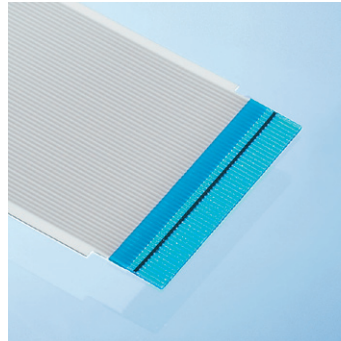
- adapted to the equipment's shape.
- easy to install.

Punching

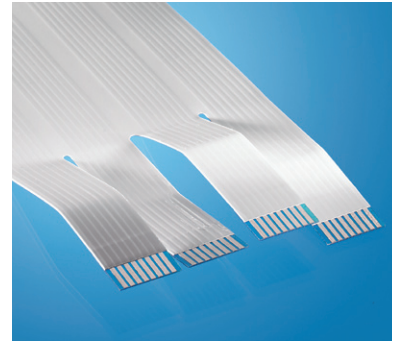
- facilitates positioning of the cable in the equipment.
- polarisation (POKA YOKE).
- cable retained in the connector.
- improves the contact between conductors and connector.

Slitting

- connection to multiple PCB's at different heights or to different parts of the same PCB.
- facilitates positioning of the cable into the equipment.
- polarisation (POKA YOKE).



LINE MARKING ON THE REINFORCEMENT



SLITTINGS

Specific marking

- identification of the product.
- polarisation.
- marking of texts, lines, symbols.

Other custom options

Additional insulation layers:

- Increases abrasion resistance.
- Improves electrical insulation.
- Facilitates hot bar soldering.

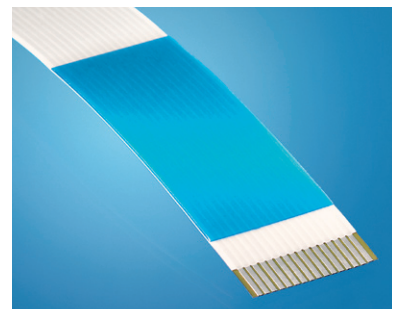
Mounting brackets.

Strain relieving solder joints.

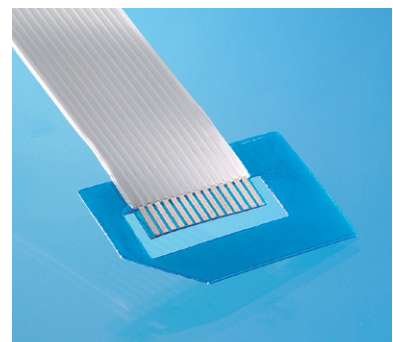
- Enhances cable/connector retention.

AXON' is at your disposal for any special design.

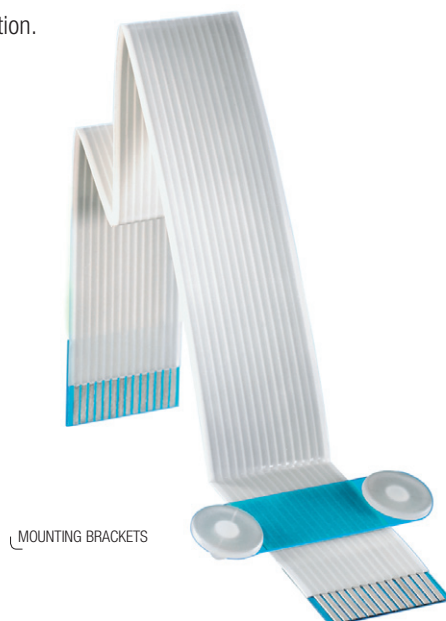
We can adapt our products to your manufacturing process.



ADDITIONAL REINFORCEMENT

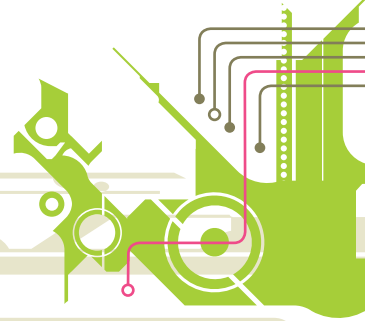


SPECIFIC POSITIONNING DEVICE



MOUNTING BRACKETS

Identification code for AXOJUMP® Flat Flexible Cables



FFC 1.00 A 20/ 0075 S 5.0-5.0- 10.0-10.0 F A BB/ G 2-7

Option

S: Aluminium shielding without grounding
G: Grounded Aluminium shielding + n° of grounded conductors
PS: Painted shielding without grounding
PG: Painted shielding with grounding + n° of grounded conductors
AU: Gold plated contacts
M: Ink-jet marking
N: Notches, punchings
L: Adhesive labels on the cable
F1: Foldings + n° of folds
R1: Marking of a line on the reinforcements + n° of markings
V1: Additional reinforcement tape + n° of additional reinforcements

Definition of the connection F1 and F2

B, J, K: Blue Polyester E: Polyester « Easy-to-insert » type
R: Red Polyester "–": No reinforcement
W: White Polyester T: « Bus bar » type
H: Polyimide

UL marking of the insulation tape

A: tape without UL marking B: tape with UL marking

Type of conductor

S: static E: extra-flexible (35 µm)
F: flexible (50 µm) U: ultra-flexible (25 µm)

Reinforcement length F1 and F2 in mm

Strip length S1 and S2 in mm

Type of insulation tape: S / E / L / H / K / X

Insulated length in mm

Number of conductors

Type of connection

A: one reinforcement at each end on the same side of the FFC
B: one single reinforcement
C: no reinforcement
D: one reinforcement at each end on opposite sides of the FFC

Pitch in mm: 0.30 / 0.50 / 0.80 / 1.00 / 1.25 / 1.27 / 2.54

Flat Flexible Cable

General drawing

