

04 Sleeve type (straight view)

Related products

Fiber units
Sleeve type
(Side view)
P.47



Fiber amplifier
D3RF
P.110



The fine tip makes mounting highly flexible and adjusting position very easy

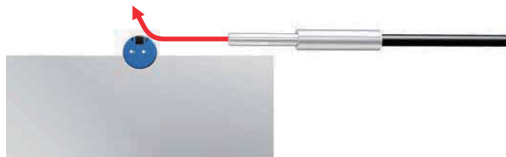


- Long sleeve type can be bent
- Thread type and cylindrical type available

Flexible mounting Bendable sleeve

Long sleeve type can be bent (up to R10 mm). Fine tuning of the sensing position is possible even after the mounting position has been determined.

No sleeve



Difficult to change detection point after mounting

Bendable sleeve type



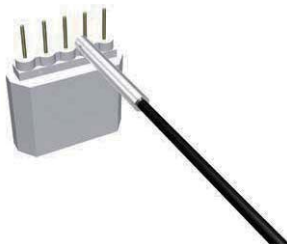
Fine tuning possible even after mounting

Bendable sleeve type
Through-beam type: NF-TB05, NF-TB03, NF-TH09
Diffuse type: NF-DB08, NF-DM03, NF-DR10, NF-DH05, NF-DB06, NF-DB02, NF-DH04
*Please bend the sleeve at an angle of 90° or less.

Easy position adjustment

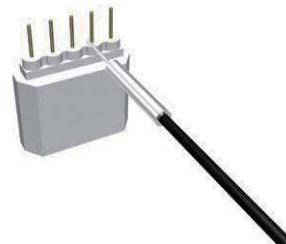
Position adjustment for the detection point can be easily performed when mounting due to the fact that the sleeve type has a fine tip and the workpiece is not hidden by the tip even when approaching the workpiece for detection.

No sleeve



Difficult to see small workpieces and difficult to adjust position.

Fine sleeve type



The tip does not get in the way, making position adjustment easy.

Fine sleeve type
Through-beam type:
NF-TB05, NF-TP01, NF-TT01
Diffuse type: NF-DB05, NF-DT04,
NF-DT02, NF-DP01,
NF-DR05, NF-DR07

Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Fiber Units

Easy mounting

Thread type

Cylindrical type

Sleeve type

Flexible R4/R2

Flexible R1/R2

Retro-reflective

Small object detection

Screen/Array

Limited diffuse

Narrow view/wafer mapping

Heat resistant

Chemical resistant

Vacuum resistant

Liquid level/liquid leakage/water detection

Lens for through-beam type

Correct use

Sleeve fiber units (through-beam type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type	<p>ø0.88 sleeve: 40 mm long, Free cut</p>	<p>7-EL 470 6-UL 450 5-PL 380 4-LG 340 3-ST 220 2-FS 120 1-HS 45</p>	<p>Long 270 Std 140 Fast 80</p>	100	-40 to +70°C	Fiber R25 Sleeve R10	NF-TB05 Bendable sleeve
	<p>ø1.5 sleeve: 90 mm long, Free cut</p>	<p>7-EL 4,000 6-UL 1,900 5-PL 1,900 4-LG 1,600</p>	<p>3-ST 1,200 2-FS 550 1-HS 180</p> <p>Long 1,000 Std 600 Fast 250</p>	450	-40 to +70°C	Fiber R25 Sleeve R15	NF-TB03 Bendable sleeve
	<p>ø2.1 sleeve: 60 mm long, Heat resistant</p>	<p>7-EL 1,350 6-UL 1,260 5-PL 1,120 4-LG 900 3-ST 630 2-FS 410 1-HS 120</p>	<p>Long 750 Std 450 Fast 220</p>	300	-30 to +350°C or -60 to +200°C	Fiber R25 Sleeve R10	NF-TH09 Bendable sleeve
	<p>ø0.25 fine sleeve: 5 mm long</p>	<p>7-EL 27 6-UL 25 5-PL 21 4-LG 18</p>	<p>3-ST 12 2-FS 7 1-HS 2</p> <p>Long 6 Std 3.5 Fast 2</p>	1	-40 to +70°C	R5	NF-TP01 Fine core
<p>ø0.5 fine sleeve: 5 mm long, Free cut</p>	<p>7-EL 170 6-UL 110 5-PL 80 4-LG 70</p>	<p>3-ST 50 2-FS 25 1-HS 8</p> <p>Long 80 Std 40 Fast 20</p>	30	-40 to +70°C	R15	NF-TT01 Low cost	

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (diffuse type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Diffuse type	<p>ø0.8 sleeve: 15 mm long, Coaxial</p>	<p>7-EL 99 6-UL 90 5-PL 80 4-LG 70 3-ST 40 2-FS 20 1-HS 7</p>	<p>Long 50 Std 25 Fast 14</p>	20	-20 to +60°C	R25	NF-DB05 Fine core

● The sensing distances for the diffuse type fiber units are values on 500 x 500 mm white paper.

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (diffuse type)

Photoelectric Sensors

Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Fiber Units

Easy mounting

Thread type

Cylindrical type

Sleeve type

Flexible R4/R2

Flexible R1/R2

Retro-reflective

Small object detection

Screen/Array

Limited diffuse

Narrow view/wafer mapping

Heat resistant

Chemical resistant

Vacuum resistant

Liquid level/liquid leakage/water detection

Lens for through-beam type

Correct use

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
M3	<p>ø0.82 sleeve: 15 mm long, Flexible Coaxial</p>	<p>7-EL: 240 6-UL: 120 5-PL: 100 4-LG: 85 3-ST: 60 2-FS: 35 1-HS: 10</p>	<p>Long: 70 Std: 40 Fast: 15</p>	15	-40 to +70°C	R4	NF-DT04
	<p>ø0.82 sleeve: 15 mm long Flexible, Free cut</p>	<p>7-EL: 190 6-UL: 125 5-PL: 70 4-LG: 65</p>	<p>3-ST: 45 2-FS: 25 1-HS: 8</p> <p>Long: 40 Std: 15 Fast: 5</p>	10	-40 to +70°C	R4	NF-DT02
Diffuse type	<p>ø1.48 sleeve: 40 mm long, Free cut</p>	<p>7-EL: 195 6-UL: 180 5-PL: 160 4-LG: 140 3-ST: 90 2-FS: 50 1-HS: 15</p>	<p>Long: 110 Std: 50 Fast: 30</p>	40	-40 to +70°C	Fiber R25 Sleeve R10	NF-DB08 Bendable sleeve
	<p>ø1.5 sleeve: 28 mm long, Free cut</p>	<p>7-EL: 450 6-UL: 240 5-PL: 220 4-LG: 190</p>	<p>3-ST: 120 2-FS: 60 1-HS: 16</p> <p>Long: 100 Std: 60 Fast: 30</p>	45	-40 to +70°C	R15	NF-DT05
	<p>ø1.5 sleeve: 90 mm long, Free cut</p>	<p>7-EL: 450 6-UL: 240 5-PL: 220 4-LG: 190</p>	<p>3-ST: 120 2-FS: 60 1-HS: 16</p> <p>Long: 120 Std: 50 Fast: 30</p>	45	-40 to +70°C	Fiber R15 Sleeve R10	NF-DM03 Bendable sleeve
	<p>ø1.48 sleeve: 40 mm long, Flexible, Free cut</p>	<p>7-EL: 140 6-UL: 135 5-PL: 110 4-LG: 95 3-ST: 65 2-FS: 30 1-HS: 10</p>	<p>Long: 60 Std: 35 Fast: 17</p>	30	-40 to +60°C	Fiber R1 Sleeve R10	NF-DR10 Bendable sleeve
	<p>ø2.1 sleeve: 90 mm long, Heat resistant</p>	<p>7-EL: 1,110 6-UL: 1,050 5-PL: 910 4-LG: 800 3-ST: 520 2-FS: 190 1-HS: 50</p>	<p>Long: 750 Std: 250 Fast: 80</p>	200	-30 to +350°C or -60 to +200°C	Fiber R25 Sleeve R10	NF-DH05 Bendable sleeve

●The sensing distances for the diffuse type fiber units are values on 500 x 500 mm white paper.
 ●Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (diffuse type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Diffuse type	<p>o2.5 sleeve: 40 mm long, Free cut</p>	<p>7-EL 680 6-UL 630 5-PL 550 4-LG 480 3-ST 320 2-FS 180 1-HS 50</p>	<p>Long 400 Std 240 Fast 110</p>	130	-40 to +70°C	Fiber R25 Sleeve R10	NF-DB06 Bendable sleeve
	<p>o2.5 sleeve: 90 mm long, Free cut</p>	<p>7-EL 1,100 6-UL 750 5-PL 750 4-LG 650</p>	<p>3-ST 450 2-FS 300 1-HS 80</p> <p>Long 450 Std 250 Fast 100</p>	150	-40 to +70°C	Fiber R25 Sleeve R20	NF-DB02 Bendable sleeve
	<p>o2.8 sleeve: 60 mm long, Heat resistant</p>	<p>7-EL 950 6-UL 900 5-PL 780 4-LG 680 3-ST 450 2-FS 200 1-HS 59</p>	<p>Long 650 Std 250 Fast 80</p>	300	-30 to +350°C or -60 to +200°C	Fiber R25 Sleeve R10	NF-DH04 Bendable sleeve
	<p>o1.5 sleeve: 3 mm long</p>	<p>7-EL 28 6-UL 26 5-PL 23 4-LG 20 3-ST 13 2-FS 3 1-HS 1</p>	<p>Long 18 Std 5 Fast Unusable</p>	3	-40 to +60°C	R10	NF-DP01 Fine core
	<p>o0.82 sleeve: 5 mm long, Flexible</p>	<p>7-EL 190 6-UL 125 5-PL 75 4-LG 65</p>	<p>3-ST 45 2-FS 25 1-HS 8</p> <p>Long 40 Std 15 Fast 5</p>	10	-40 to +70°C	R4	NF-DR05
	<p>o0.82 sleeve: 80 mm long</p>	<p>7-EL 90 6-UL 50 5-PL 45 4-LG 40</p>	<p>3-ST 25 2-FS 10 1-HS 4</p> <p>Long 35 Std 18 Fast 10</p>	7	-40 to +70°C	R25	NF-DR07
	<p>o1.5 sleeve: 20 mm long, Free cut</p>	<p>7-EL 400 6-UL 200 5-PL 190 4-LG 160</p>	<p>3-ST 100 2-FS 50 1-HS 16</p> <p>Long 100 Std 60 Fast 12</p>	45	-40 to +70°C	R15	NF-DK43 Low cost

● The sensing distances for the diffuse type fiber units are values on 500 x 500 mm white paper.

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

05 Sleeve type (side view)

Related products

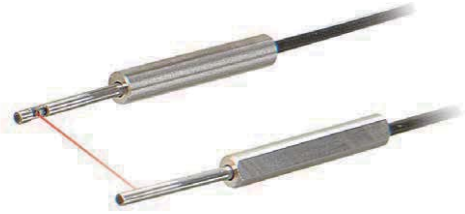
Fiber units
Sleeve type (Straight view)
● P.43

Fiber amplifier

D3RF
● P.110



Side angle light beam provides optimal detection in narrow places

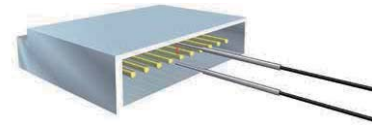


A wide range of variations including flexible types and heat resistant types

Possible to detect objects in narrow space Thin sleeve

The fine tipped side view sleeve type eliminates mounting space problems. Optimal for detection in complex areas, such as for connector pin detection.

Connector pin detection



Sleeve fiber units (through-beam type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type	M3 ø1 sleeve: 10 mm long, Free cut Detecting part detail	7-EL 650 6-UL 450 5-PL 300 4-LG 250 3-ST 200 2-FS 100 1-HS 25	Long 200 Std 150 Fast 60	75	-40 to +70°C	R15	NF-TV04 Thin sleeve
	ø2 ø1 sleeve: 15 mm long, flexible, Free cut Detecting part detail ø0.5 Multi core fiber ø0.05 x 151	7-EL 160 6-UL 150 5-PL 130 4-LG 110 3-ST 76 2-FS 45 1-HS 11	Long 90 Std 50 Fast 25	20	-40 to +60°C	R1	NF-TG05 Thin sleeve
	ø2.5 ø1 sleeve: 10 mm long, Free cut Detecting part detail	7-EL 650 6-UL 450 5-PL 300 4-LG 250 3-ST 200 2-FS 100 1-HS 25	Long 200 Std 150 Fast 60	75	-40 to +70°C	R15	NF-TV02 Thin sleeve
	ø2.5 ø1 sleeve: 27 mm long, Heat resistant Detecting part detail	7-EL 450 6-UL 260 5-PL 240 4-LG 200 3-ST 140 2-FS 70 1-HS 20	Long 120 Std 80 Fast 50	50	-40 to +200°C	R30	NF-TH04S-27V2 (Made-to-order products) Thin sleeve

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (through-beam type)

Photoelectric Sensors

Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Fiber Units

Easy mounting

Thread type

Cylindrical type

Sleeve type

Flexible R4/R2

Flexible R1/R2

Retro-reflective

Small object detection

Screen/Array

Limited diffuse

Narrow view/wafer mapping

Heat resistant

Chemical resistant

Vacuum resistant

Liquid level/liquid leakage/water detection

Lens for through-beam type

Correct use

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type	<p>ø1.5 sleeve: 25 mm long, Heat resistant Fiber length: 300 mm and 400 mm (each fiber)</p> <p>Heat/freezing resistant Ordinary temperature type</p>	<p>7-EL 1,600 6-UL 850 5-PL 800 4-LG 600 3-ST 400 2-FS 200 1-HS 60</p>	<p>Long 350 Std 250 Fast 150</p>	150	-40 to +200°C	R30	NF-TH055-A <small>Made-to-order products</small>
	<p>ø2 sleeve: 20 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 2,000 6-UL 1,300 5-PL 1,000 4-LG 900</p>	<p>3-ST 600 2-FS 300 1-HS 100</p>	320	-40 to +70°C	R25	NF-TV01
	<p>ø2 sleeve: 20 mm long 5 m long, Free cut</p> <p>Chamfering</p>	<p>7-EL 1,700 6-UL 1,100 5-PL 850 4-LG 750</p>	<p>3-ST 500 2-FS 250 1-HS 85</p>	200	-40 to +70°C	R25	NF-TV01-5

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (diffuse type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Diffuse type	<p>M6 ø2.7 sleeve: 20 mm long, Free cut</p> <p>SUS304 M6 x P0.75 SUS303</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30</p>	90	-40 to +70°C	R25	NF-DV03
	<p>ø2.7 sleeve: 20 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30</p>	90	-40 to +70°C	R25	NF-DV01
	<p>ø2 sleeve: 15 mm long, Flexible, Free cut</p> <p>Multi core fiber ø0.05 x 151</p>	<p>7-EL 53 6-UL 50 5-PL 43 4-LG 36 3-ST 20 2-FS 12 1-HS 4</p>	<p>Long 25 Std 12 Fast 5</p>	10	-40 to +60°C	R1	NF-DR12
	<p>ø2.8 sleeve: 10 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 230 6-UL 110 5-PL 85 4-LG 75</p>	<p>3-ST 55 2-FS 30 1-HS 8</p>	15	-40 to +70°C	R15	NF-DV02
	<p>ø5 ø2.7 sleeve: 65 mm long, Free cut</p> <p>SUS304 SUS303</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30</p>	90	-40 to +70°C	R25	NF-DK33

● The sensing distances for the diffuse type fiber units are values on 500 x 500 mm white paper

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05 Sleeve type (side view)

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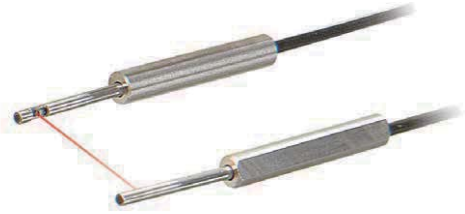
Fiber units
Sleeve type (Straight view)
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D3RF
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Side angle light beam provides optimal detection in narrow places

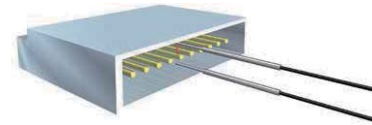


A wide range of variations including flexible types and heat resistant types


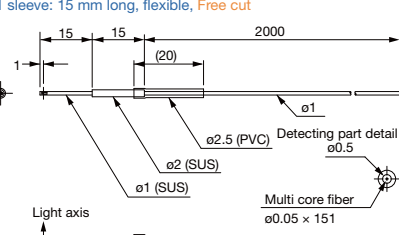
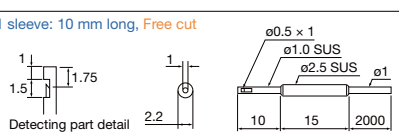
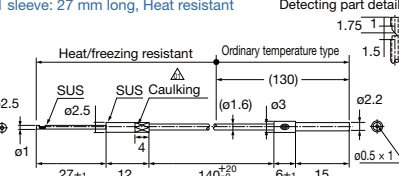
Possible to detect objects in narrow space Thin sleeve

The fine tipped side view sleeve type eliminates mounting space problems. Optimal for detection in complex areas, such as for connector pin detection.

Connector pin detection



Sleeve fiber units (through-beam type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type	M3 ø1 sleeve: 10 mm long, Free cut 	7-EL 650 6-UL 450 5-PL 300 4-LG 250 3-ST 200 2-FS 100 1-HS 25	Long 200 Std 150 Fast 60	75	-40 to +70°C	R15	NF-TV04 Thin sleeve
	ø2 ø1 sleeve: 15 mm long, flexible, Free cut 	7-EL 160 6-UL 150 5-PL 130 4-LG 110 3-ST 76 2-FS 45 1-HS 11	Long 90 Std 50 Fast 25	20	-40 to +60°C	R1	NF-TG05 Thin sleeve
	ø2.5 ø1 sleeve: 10 mm long, Free cut 	7-EL 650 6-UL 450 5-PL 300 4-LG 250 3-ST 200 2-FS 100 1-HS 25	Long 200 Std 150 Fast 60	75	-40 to +70°C	R15	NF-TV02 Thin sleeve
	ø2.5 ø1 sleeve: 27 mm long, Heat resistant 	7-EL 450 6-UL 260 5-PL 240 4-LG 200 3-ST 140 2-FS 70 1-HS 20	Long 120 Std 80 Fast 50	50	-40 to +200°C	R30	NF-TH04S-27V2 Made-to-order products Thin sleeve

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Sleeve fiber units (through-beam type)

Photoelectric Sensors

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Fiber Units

Easy mounting

Thread type

Cylindrical type

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Flexible R4/R2

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Small object detection

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Vacuum resistant

Liquid level/liquid leakage/water detection

Lens for through-beam type

Correct use

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type	<p>ø1.5 sleeve: 25 mm long, Heat resistant Fiber length: 300 mm and 400 mm (each fiber)</p> <p>Heat/freezing resistant Ordinary temperature type</p>	<p>7-EL 1,600 6-UL 850 5-PL 800 4-LG 600 3-ST 400 2-FS 200 1-HS 60</p>	<p>Long 350 Std 250 Fast 150</p>	150	-40 to +200°C	R30	NF-TH055-A <small>Made-to-order products</small>
	<p>ø2 sleeve: 20 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 2,000 6-UL 1,300 5-PL 1,000 4-LG 900</p>	<p>3-ST 600 2-FS 300 1-HS 100</p>	320	-40 to +70°C	R25	NF-TV01
	<p>ø2 sleeve: 20 mm long 5 m long, Free cut</p> <p>Chamfering</p>	<p>7-EL 1,700 6-UL 1,100 5-PL 850 4-LG 750</p>	<p>3-ST 500 2-FS 250 1-HS 85</p>	200	-40 to +70°C	R25	NF-TV01-5

● Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Sleeve fiber units (diffuse type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Bending radius (mm)	Model
		D3RF	D2RF	BRF			
Diffuse type	<p>M6 ø2.7 sleeve: 20 mm long, Free cut</p> <p>SUS304 M6 x P0.75 SUS303</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30</p>	90	-40 to +70°C	R25	NF-DV03
	<p>ø2.7 sleeve: 20 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30</p>	90	-40 to +70°C	R25	NF-DV01
	<p>ø2 sleeve: 15 mm long, Flexible, Free cut</p> <p>Multi core fiber ø0.05 x 151</p>	<p>7-EL 53 6-UL 50 5-PL 43 4-LG 36 3-ST 20 2-FS 12 1-HS 4</p>	<p>Long 25 Std 12 Fast 5</p>	10	-40 to +60°C	R1	NF-DR12
	<p>ø2.8 sleeve: 10 mm long, Free cut</p> <p>Chamfering</p>	<p>7-EL 230 6-UL 110 5-PL 85 4-LG 75</p>	<p>3-ST 55 2-FS 30 1-HS 8</p>	15	-40 to +70°C	R15	NF-DV02
	<p>ø5 ø2.7 sleeve: 65 mm long, Free cut</p> <p>SUS304 SUS303</p>	<p>7-EL 680 6-UL 400 5-PL 350 4-LG 300</p>	<p>3-ST 200 2-FS 100 1-HS 30 Fast 50</p>	90	-40 to +70°C	R25	NF-DK33

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