

**Connect · Contact · Control** 

Connectors

Series NF07, NF10

Circular Audio
Miniature Connectors

Catalogue A58.en





# Connectors for audio technology: Series NF07 and NF10

Our well-proven 7- and 10-pole circular audio miniature connectors NF07 and NF10 are especially designed for communication engineering. They provide high reliability under extreme ambient conditions. The present catalogue

describes the watertight connectors with a bayonet groove, covering a wide temperature range. The modular design provides many combinations allowing to suit your particular requirements.

**Features** Series NF

Our 7- and 10-pole circular audio miniature connectors are watertight and locked by a bayonet coupling. Hard gold plated spring-loaded contacts with self-cleaning faces ensure a continuously low contact resistance.

The following series are available:

Series	Description
7-pole standard <b>NF07</b> series	Page 7
7-pole <b>NF07 /S</b> series with enhanced shielding	Page 16
10-pole <b>NF10</b> series with enhanced shielding	Page 23

# Important features of our circular audio miniature connectors series NF07 and NF10:

#### General application characteristics:

- Reliability under extreme ambient conditions
- High protection degree and water-tightness even when unmated
- · Application under a wide temperature range.
- Stockable for 10 years in Schaltbau original packing

#### **Electrical features:**

- Scoop proof: The design prevents a short-circuit between plug shells and receptacle contacts while mating.
- Spring-loaded contacts: hard gold plated with selfcleaning faces. High shock and vibration resistance and a very low contact resistance allow high reliability even at low voltages and currents.
- EMP Shielding: Series NF10 and the shielded NF07 show good attenuation characteristics with regard to electromagnetic influences, HF influences and pulse repetition frequencies.
- Contact termination: Available as follows:
  - solder cup for connecting leads
  - solder pin 3.5 mm for PCB terminal
  - solder pin 8.0 mm for PCB terminal



Audio connectors to military specification (Photo: SEL Defence Systems)

#### **Mechanical features:**

 Shell material: All shells consist of stainless steel and non magnetic materials. The receptacle shells and the plug shells are black anodised. The finish of the backshells is olive drab or black.

The modular design of the connector systems allows many combinations.

The following connector backshells are available:

- for heatshrink boots
- · for cable sleeves
- for screen termination
- for potting
- Polarization: The NF series feature a variety of connector orientations. NF10 series comes with an option of 5 bayonet latch positions, whereas NF07 series connectors are available with 4 max. A marking colour corresponds to each of the different insert positions.

#### Optional customized filters:

Planar technique: C-filter

• Modular technique: C-filter, π-filter

• **Tubular technique:** C-filter, π-filter, RFI-filter



**Specifications** Series NF

Series		NF07	NF07/S	NF10
Number of contacts		7	7	10
Contact arrangement Plug: Front view Receptacle: Rear view				000
Contact identification Plug: Front view Receptacle: Rear view		B A F C B E	B A F C B E	B A G C H K D E
Rated voltage		50 V	50 V	50 V
Connector orientations		3	4	5
Rated current: I min. I max.		6 μA 2.5 A *¹	6 μA 2.5 A *1	6 μA 2.5 A *1
Contact resistance		approx. 5 mΩ *2	approx. 5 mΩ *2	approx. 5 mΩ *2
Temperature range		-55°C +100°C (10 sec. max. up to +150°C)	-55°C +100°C (10 sec. max. up to +150°C)	-55°C +100°C (10 sec. max. up to +150°C)
Insulation resistance		≥ 5,000 MΩ	≥ 5,000 MΩ	≥ 5,000 MΩ
Test voltage		500 V <sub>rms</sub> 50 Hz	$500  V_{rms}  50  Hz$	500 V <sub>rms</sub> 50 Hz
EMP-shielding		approx. 60 dB	70 dB *3	70 dB
Sealing mated and unmated		IP68 *4 0.4 bar, 2 hours at 25°C	IP68 *4 0.4 bar, 2 hours at 25°C	IP68 *4 0.4 bar, 2 hours at 25°C
Mechanical life		5,000 couplings	5,000 couplings	5,000 couplings
Shell: Plug: Materials  Finish Colours Materials  Finish Colours		Stainless steel  Cr 3 <sup>+2</sup> Black Stainless steel  Cr 3 <sup>+2</sup> Black	Aluminium alloy / Stainless steel Ni 3+2 Cd 6+2 cF / Cr 3+2 Olive (RAL6015) / Black Stainless, antimagnetic steel Cr 3+2 Black	Aluminium alloy / Stainless steel Ni 3+2 Cd 6+2 cF / Cr 3+2 Olive (RAL6015) / Black Stainless, antimagnetic steel Cr 3+2 Black
Contact inserts		Thermoplastic / Duroplast	Thermoplastic / Duroplast	Thermoplastic / Duroplast
Sealing elements		Silicone elastomer / Fluor-silicone elastomer	Silicone elastomer / Fluor-silicone elastomer	Silicone elastomer / Fluor-silicone elastomer
Contact type: Plug Receptac Material:	e Crimp-type copper wrought alloy	Rigid contacts Spring contacts  •	Rigid contacts Spring contacts  •	Rigid contacts Spring contacts  •
Finish:	Layer in micrometer	Gold Cu: 1.0 / Ni: 2.0 / Au: 5±1	Gold Cu: 1.0 / Ni: 2.0 / Au: 5±1	Gold Cu: 1.0 / Ni: 2.0 / Au: 5±1  S SCHALTBAU

<sup>\*1</sup> for any two contacts

# **Competence of Schaltbau**

At the beginning of the seventies Schaltbau developed the 7-pole connector NF07. It was standardized as VG 95351.

In 1982 the procurement authorities of the German armed forces (BWB) placed an order to develop a 10-pole connector. It was standardized as VG 96934.

Schaltbau has been continuously enhancing the series NF07 and NF10. Presently approx. 22 type variants of NF07 and 34 variants of NF10 are available (not including orientations).

Variants with attenuation values exceeding 80dB and completely antimagnetic types are being manufactured.

# **Standards**

Series NF

# Series NF 07:

7-pole standard connector:
 VG 95351 meets requiremens regarding test

and approval.
7-pole connector, suitable for shielding: Test according to VG 96934

#### Series NF 10:

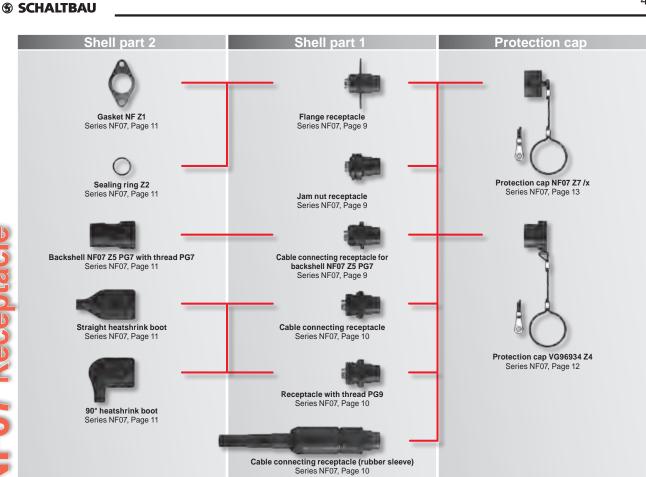
 10-pole connector, suitable for shielding: VG 96934 meets requirements regarding test and approval.

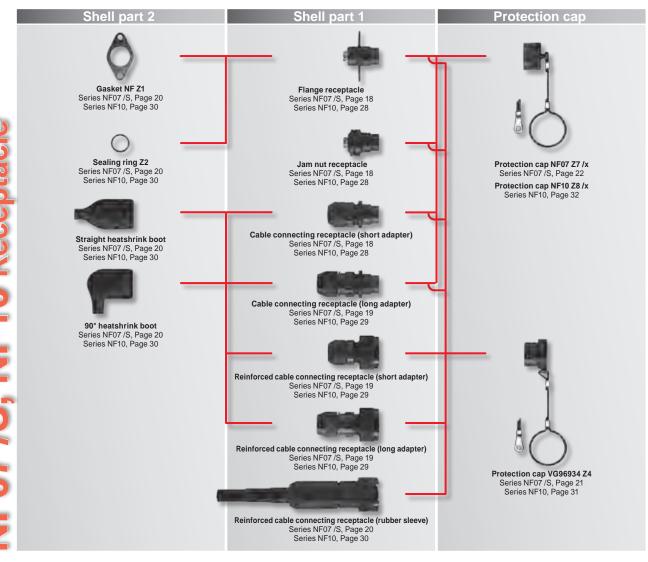
**Note:** According to IEC 61984 connectors are devices which in normal use must not be coupled or uncoupled when live or under load.

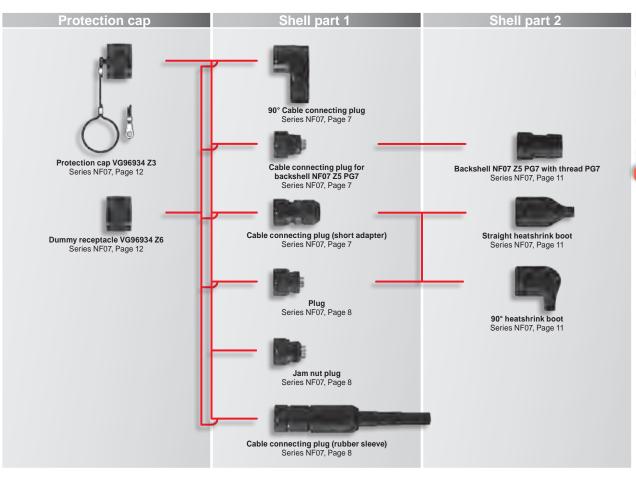
<sup>\*2</sup> required:  $\leq 20 \text{ m}\Omega \text{ (VG96934 / VG95351)}$ 

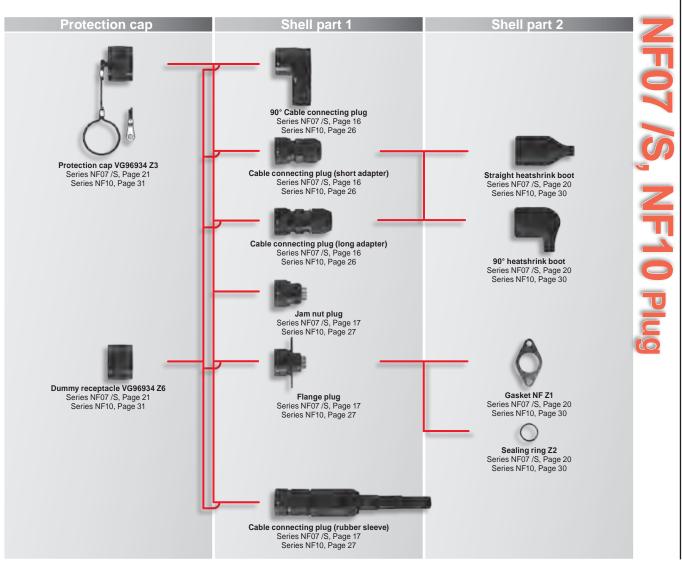
<sup>\*3</sup> Do not intermate connectors NF07 /S series with enhanced shielding with NF07 series connectors.

<sup>\*4</sup> according to VG95319-2, Test-No. 5.9.2.











#### **Ordering information**

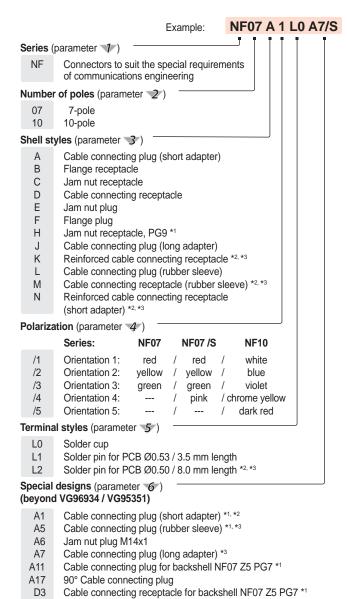
Series NF

NEOT TE DOT

Our NF connector system has a modular structure. Consequently, there are many variation possibilities. You will find the exact ordering code for all variants listed in

a chart relating to the corresponding device outline. We make a difference between an ordering code for our NF series connectors and a separate one for accessories.

#### Series NF07, NF07 /S and NF10



\*1 Series NF07 only

D6 D7

/S

- \*2 Series NF07 /S only
- \*3 Series NF10 only
- \*4 Unlike the NF07 series, the NF07 /S and NF10 series connectors feature enhanced shielding. The extra parameter /S is not necessary for the NF10 series.

Reinforced cable connecting receptacle (long adapter)  $^{*2,*3}$  enhanced shielding, extra parameter for series NF07 /S only  $^{*4}$ 

Cable connecting receptacle (rubber sleeve) \*1

#### Protection caps and dummy receptacles

		Example:					F07 Z7 /	1
Protection	caps/dumm	y receptac	cles (para	mete	er <b>1</b> )	_		
VG9693 VG9693 VG9693 NF07	4 Z4 Prote 4 Z6 Dum Z7 NF0	Protection cap (VG96934) Protection cap (VG96934) Dummy receptacle (VG96934) NF07: Protection cap for polarization NF10: Protection cap for polarization						
Polarization	<b>n</b> (paramete	2)						J
	Serie	es	NF07		NF07 /S		NF10	
/1 /2 /3 /4 /5	Oriei Oriei Oriei	ntation 1: ntation 2: ntation 3: ntation 4: ntation 5:	red yellow green 	/ / / /	red yellow green pink 	/ / / ch /	white blue violet nrome yellow dark red	/

#### Backshells

		Example:	NFU/ 25 PG/
Backshell (parar	meter 1/)		
NF07 Z5 PG7 203W112-30 224K012-30	Backshell, PG7 Straight heatshrink boot 90° heatshrink boot		

#### Seals

	Example:	<b>Z</b> 1
Seals (parameter 7)		
Z1 Gaske	et	
Z2 O-Rin	g	

#### Tools

	Example:	<b>Z</b> 16
Tool (paramete	er 🚺) -	
Z16	Assembly tool for jam nut receptacle N	F07, NF07 /S, NF10

#### Note:

Presented in this catalogue are only stock items which can be supplied in short delivery time.

For some connectors minimium order quantities may apply. Please contact us for terms and conditions.

#### Special variant:

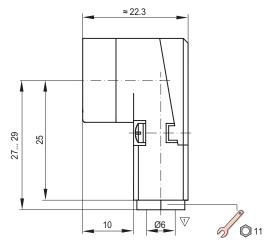
If you need a special variant feel free to contact us. Maybe the type of connector you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minumum order quantities apply.

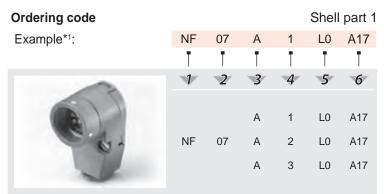


# 90° cable connecting plug

Series NF07

#### **Device outline**





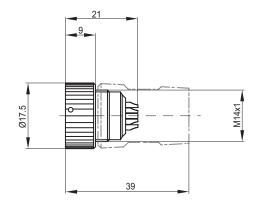
<sup>\*1</sup> See also ordering information on page 6

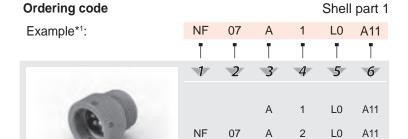
Note: Terminal styles on page 13

# Cable connecting plug for backshell NF07 Z5 Pg7

Series NF07

#### **Device outline**





Α

3

L0

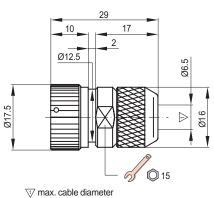
A11

**Note:** Backshell NF07 Z5 PG7 on page 11 Terminal styles on page 13

# Cable connecting plug (short adapter)

Series NF07

#### **Device outline**



# Ordering code Shell part 1 Example\*1: NF 07 A 1 L0 A1 I I I I I I I I I 1 2 3 4 5 6



<sup>\*1</sup> See also ordering information on page 6

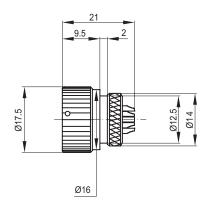
<sup>\*1</sup> See also ordering information on page 6

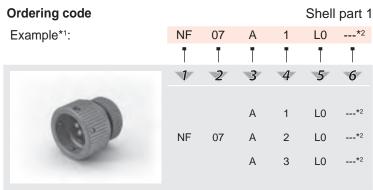


# Plug for heatshrink boot

Series NF07

#### **Device outline**





- \*1 See also ordering information on page 6
   \*2 Customized designs upon request

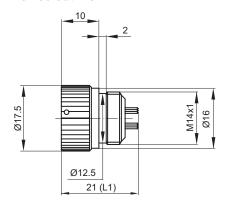
Note: Heatshrink boots on page 11 Terminal styles on page 13

# Jam nut plug M14x1

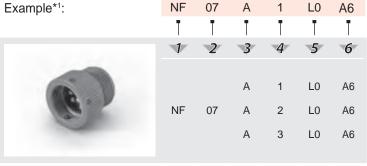
Series NF07

Shell part 1





# **Ordering code**



\*1 See also ordering information on page 6

Note: Terminal styles on page 13

# Cable connecting plug (rubber sleeve)

Series NF07

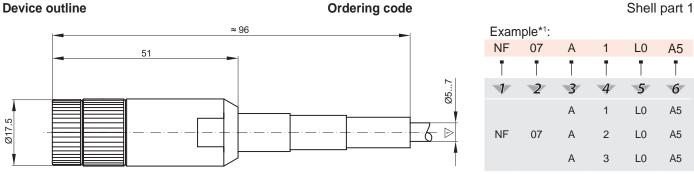
A5

6

Α5

Α5

A5



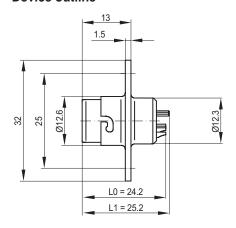
<sup>\*1</sup> See also ordering information on page 6

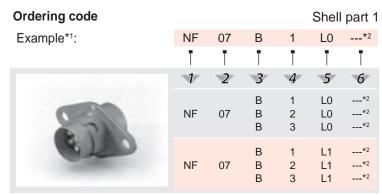


# Flange receptacle

Series NF07

#### **Device outline**



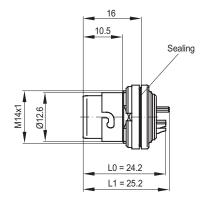


- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 13

# Jam nut receptacle Series NF07

#### **Device outline**





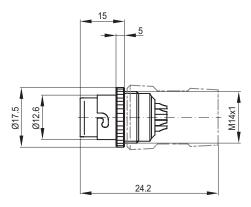
- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 13

# Cable connecting receptacle for backshell NF07 Z5 Pg7

Series NF07

#### **Device outline**



#### Shell part 1 **Ordering code** Example\*1: NF L0 D3 4 5 6 D 1 L0 D3 NF 07 D 2 L0 D3 D 3 L0 D3

\*1 See also ordering information on page 6

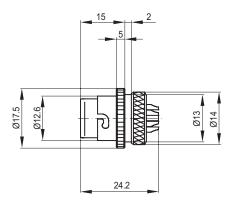
**Note:** Backshell NF07 Z5 PG7 on page 11 Terminal styles on page 13



# Cable connecting receptacle (for heatshrink boot)

Series NF07

#### **Device outline**





- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

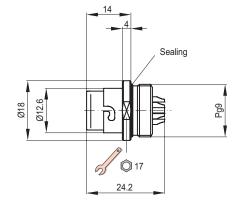
Heatshrink boots on page 11 Terminal styles on page 13

# Jam nut receptacle with thread Pg9

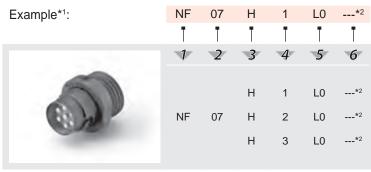
Series NF07

Shell part 1

#### **Device outline**



#### **Ordering code**

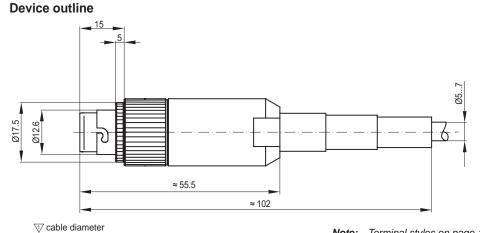


- See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 13

# Cable connecting receptacle (rubber sleeve)

Series NF07



#### Ordering code Shell part 1 Example\*1: 07 L0 D6 5 2 3 4 6 D 1 L0 D6 D 2 L0 NF 07 D6 D 3 L0 D6

<sup>\*1</sup> See also ordering information on page 6



# **Backshell NF07 Z5 with thread Pg7**

Series NF07

#### **Device outline**

# 

**Note:** For use with commercially available screw coupling built to DIN 46 320

# Ordering code

Accessories / Shell part 2



\*1 See also ordering information on page 6

# **Heatshrink boots**

**Device outline** 

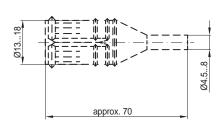
# Ordering code

Accessories / Shell part 2

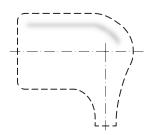
203W 112-30

Series NF07

Heatshrink boot, straight



Heatshrink boot, 90°



γ...

Example\*1:



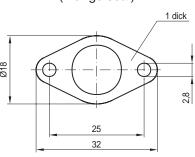
\*1 See also ordering information on page 6

# Seals NF Z1 and NF Z2

Series NF07

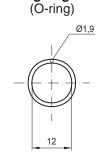
#### **Device outline**

# Gasket NF Z1 (Flange seal)

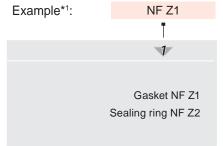


# Sealing ring NF Z2

**Ordering code** 



# Accessories / Shell part 2

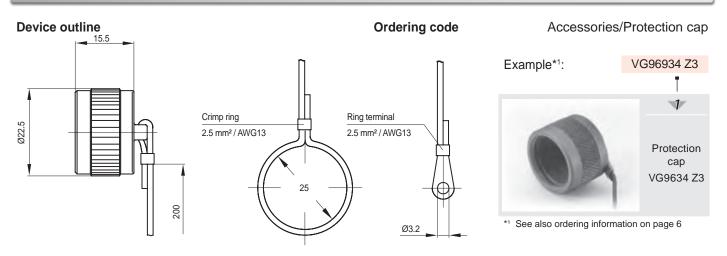


\*1 See also ordering information on page 6



#### **Protection cap VG96934 Z3**

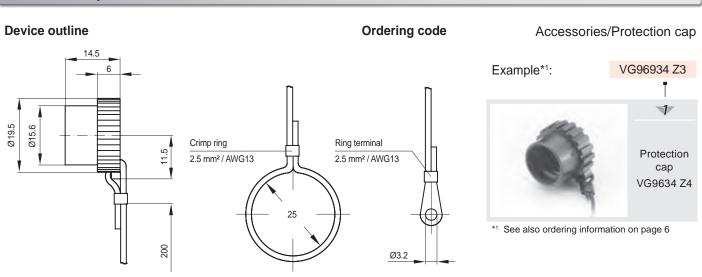
Series NF07



**Note:** It is possible to fit loops or ring terminals (both included)

# Protection cap VG96934 Z4 (rubber)

Series NF07



Note: It is possible to fit loops or ring terminals (both included)

# **Dummy receptacle VG96934 Z6**

Series NF07



Note: Dummy receptacle to be mounted onto the case of a device for receiving a free plug cable

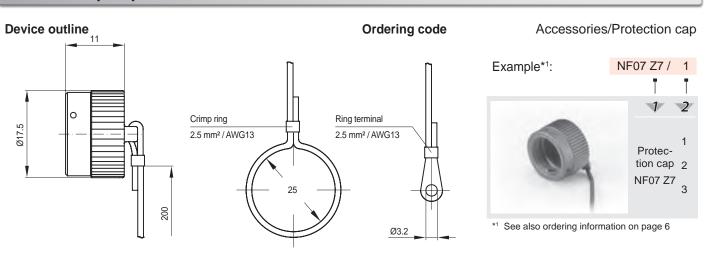


\*1 See also ordering information on page 6

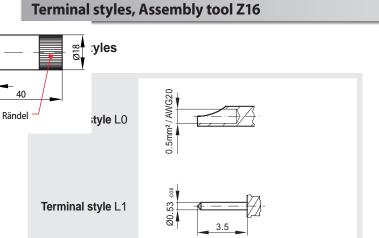


# Protection cap for polarization NF07 Z7/x

Series NF07



Note: It is possible to fit loops or ring terminals (both included)

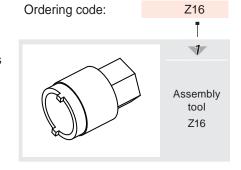


**Note:** Terminals must not be subjected to force or stress

# Assembly tool Z16

Series NF07
Accessories

Assembly tool for jam nut receptacles NF07 C x xx

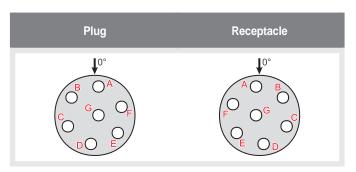


**Note:** Width across flats SW13, use with torque spanner, torque 8\*2 Nm max.

# **Contact arrangement, Polarization**

Series NF07

#### **Contact arrangement**



Note: Planforms seen from connector face

#### **Polarization**

Bayonet latch positions	Polarization Series NF07					
<b>1</b> 0°	Orientation	α1	α2	Colour		
90°	1	90°	120°	red		
	2	105°	130°	yellow		
	3	110°	135°	green		
$\alpha_2$ $\alpha_1$						

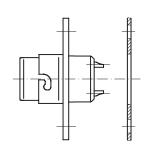


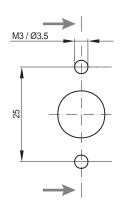
# **Standard mounting borings**

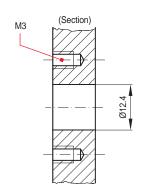
Series NF07

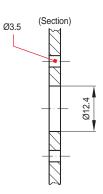
#### Flange receptacles

 Panel cutout for flange receptacles with gasket NF Z1

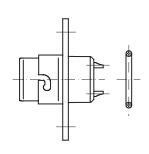


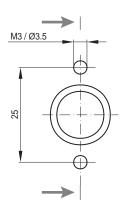


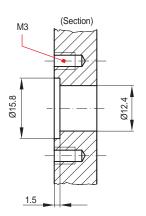


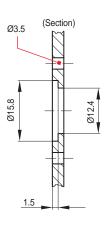


 Panel cutout for flange receptacles with sealing ring NF Z2





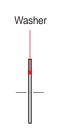




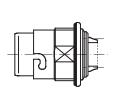
## Jam nut receptacles

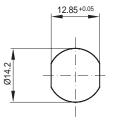
• Panel cutout for jam nut receptacles









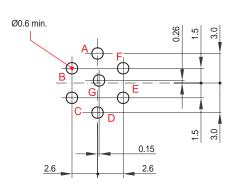


Note:

Use assembly tool VG96934 Z10 Torque 2 Nm max.

#### **PCB** terminal

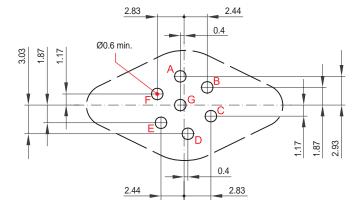
Panel drilling for plugs



Note:

These mounting borings can also be used for NF07 /S Series receptacles

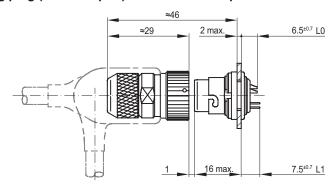
Panel drilling for receptacles



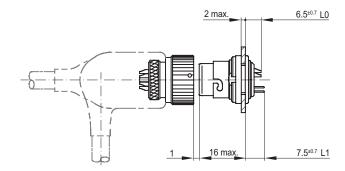
# Standard assembly and installation dimensions

Series NF07

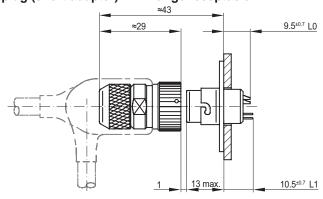
• Cable connecting plug (short adapter) <=> Jam nut receptacle



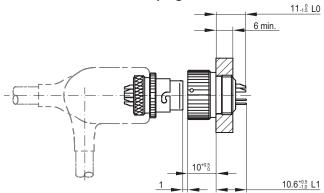
• Plug for heatshrink boot <=> Jam nut receptacle



• Cable connecting plug (short adapter) ⇐⇒ Flange receptacle



Receptacle for heatshrink boot ⇐⇒ Jam nut plug

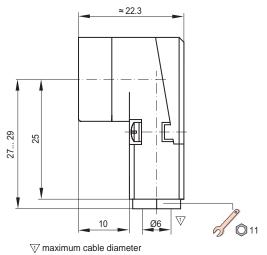




# 90° cable connecting plug

Series NF07 /S





Ordering code						ll part 1
Example*1:	NF	07	Α	1	L0	A17/S
	Ţ	Ţ	Ţ	Ī	Ī	Ţ
-	1	2	3	4	5	6
	NF	07	A A A	1 2 3 4	L0 L0 L0	A17/S A17/S A17/S A17/S

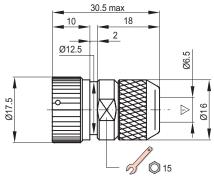
<sup>\*1</sup> See also ordering information on page 6

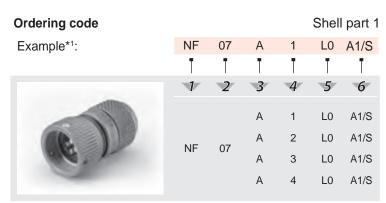
Note: Terminal styles on page 22

# Cable connecting plug (short adapter)

Series NF07 /S

#### **Device outline**





<sup>\*1</sup> See also ordering information on page 6

Note: Terminal styles on page 22

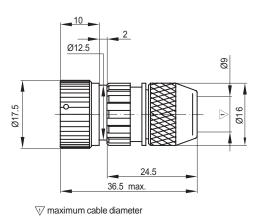
# Cable connecting plug (long adapter)

Series NF07 /S

/S

L0

#### **Device outline**



#### Ordering code Shell part 1 Example\*1: NF L0 /S 07 3 4 5 6 Α 1 L0 /S 2 L0 /S NF 3 Α L0 /S

\*1 See also ordering information on page 6

Note: Terminal styles on page 22

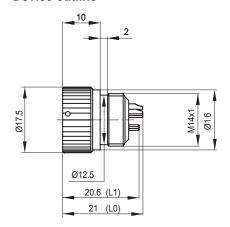
4

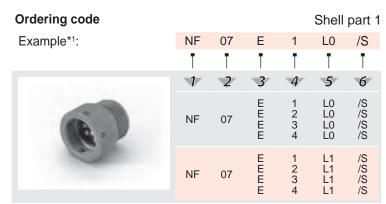
Α



# Jam nut plug Series NF07 /S

#### **Device outline**

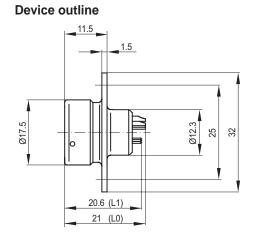


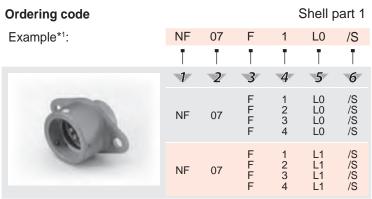


<sup>\*1</sup> See also ordering information on page 6

Note: Terminal styles on page 22

# Flange plug Series NF07 /S





<sup>\*1</sup> See also ordering information on page 6

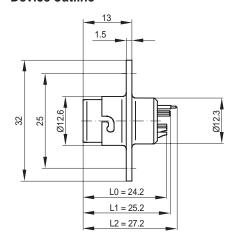
Note: Terminal styles on page 22

#### Cable connecting plug (rubber sleeve) Series NF07/S Shell part 1 **Device outline Ordering code** ≈ 96 Example\*1: NF 07 L0 /S 51 4 5 6 Ø5.. L /S 1 L0 /S 2 L0 NF 07 3 L0 /S L /S 4 L0 \*1 See also ordering information on page 6



# Flange receptacle Series NF07 /S

#### **Device outline**



Ordering code					Shell	part 1
Example*1:	NF	07	В	1	L0	/S
	Ī	Ī	Ī	Ī	Ī	T
	1	2	3	4	5	6
	NF	07	B B B	1 2 3 4	L0 L0 L0 L0	/S /S /S
6170	NF	07	B B B	1 2 3 4	L1 L1 L1 L1	/S /S /S
	NF	07	B B B	1 2 3 4	L2 L2 L2 L2	/S /S /S

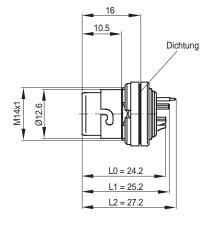
<sup>\*1</sup> See also ordering information on page 6

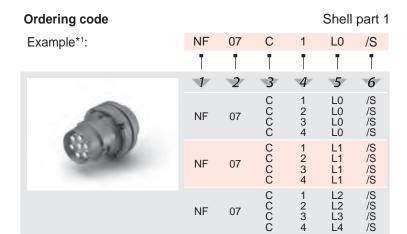
Note: Terminal styles on page 22

# Jam nut receptacle

Series NF07 /S

#### **Device outline**



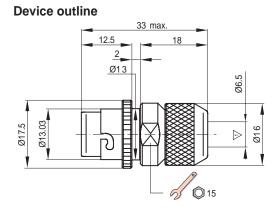


 $<sup>^{\</sup>star_1}\,$  See also ordering information on page 6

Note: Terminal styles on page 22

# Cable connecting receptacle (short adapter)

Series NF07 /S



#### Ordering code Shell part 1 Example\*1: NF 07 D L0 /S 3 4 5 6 D 1 L0 /S D 2 L0 /S NF 07 /S D 3 L0 D 4 /S L0

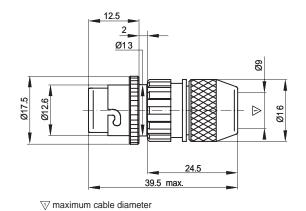
<sup>\*1</sup> See also ordering information on page 6



# Cable connecting receptacle (long adapter)

Series NF07 /S

#### **Device outline**



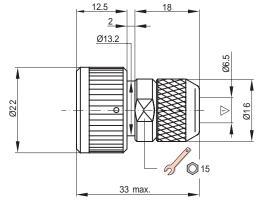
**Designation / Ordering** Shell part 1 Example\*1: NF 07 L0 D7/S D 1 5 6 D 1 L0 D7/S D 2 L0 D7/S NF 07 D 3 D7/S L0 D 4 L0 D7/S

Note: Terminal styles on page 22

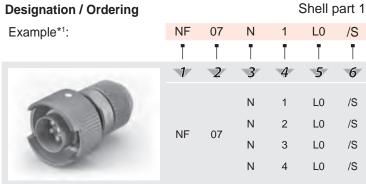
# Reinforced cable connecting receptacle (short adapter)

Series NF07/S

#### **Device outline**



# **Designation / Ordering**



<sup>\*1</sup> See also ordering information on page 6

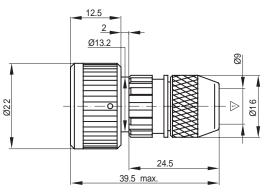
Note: Terminal styles on page 22

# Reinforced cable connecting receptacle (long adapter)

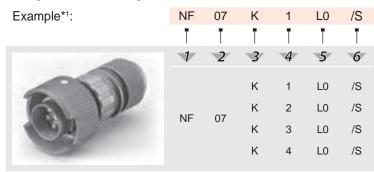
Series NF07/S

Shell part 1

#### **Device outline**



#### **Designation / Ordering**



\*1 See also ordering information on page 6

<sup>\*1</sup> See also ordering information on page 6



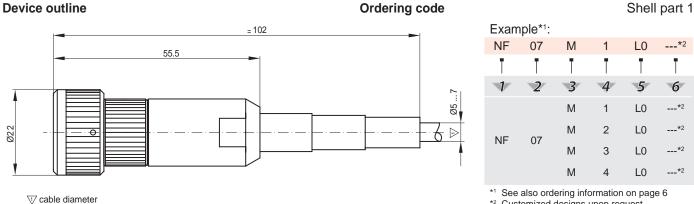
# Reinforced cable connecting receptacle (rubber sleeve)

Series NF07 /S

**---**\*2

6

\_\_\_\*2



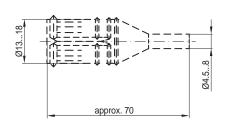
\*1 See also ordering information on page 6

Note: Terminal styles on page 22

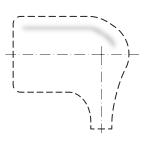
#### **Heatshrink boots** Series NF07 /S

#### **Device outline** Ordering code

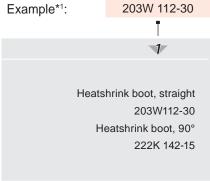
Heatshrink boot, straight



Heatshrink boot, 90°



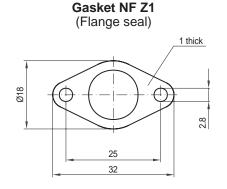
Accessories / Shell part 2

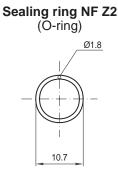


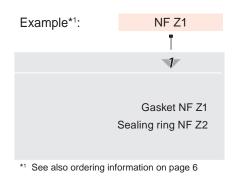
\*1 See also ordering information on page 6

#### Seals NF Z1 and NF Z2 Series NF07 /S

#### **Device outline Ordering code** Accessories / Shell part 2





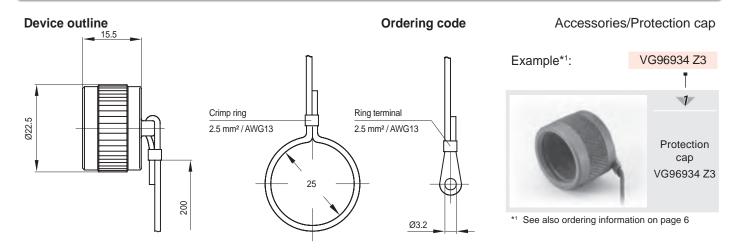


<sup>\*2</sup> Customized designs upon request



# **Protection cap VG96934 Z3**

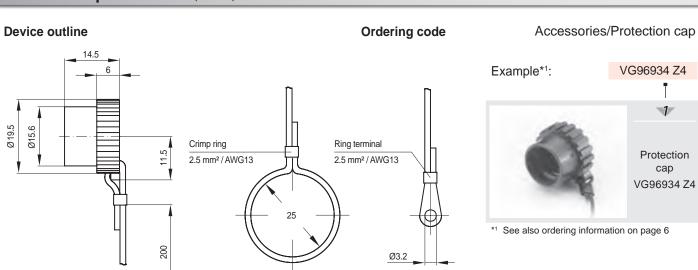
Series NF07 /S



Note: It is possible to fit loops or ring terminals (both included)

# Protection cap VG96934 Z4 (rubber)

Series NF07 /S



Note: It is possible to fit loops or ring terminals (both included)

# **Dummy receptacle VG96934 Z6**

Series NF07 /S



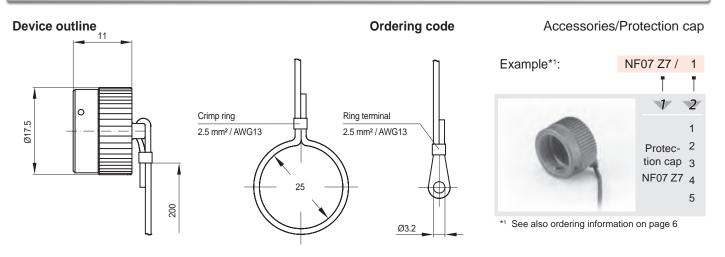
**Note:** Dummy receptacle to be mounted onto the case of a device for receiving a free plug cable

\*1 See also ordering information on page 6



# Protection cap for polarization NF07 Z7/x

Series NF07 /S



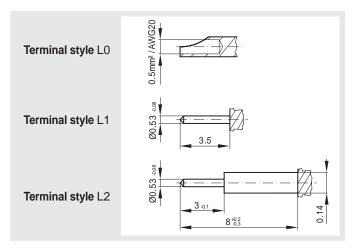
Note: It is possible to fit loops or ring terminals (both included)

# **Terminal styles, Assembly tool Z16**

Series NF07 /S

Accessories

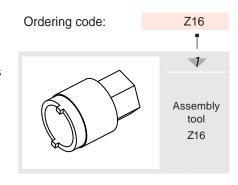
# Terminal styles



**Note:** Terminals must not be subjected to force or stress

## Assembly tool Z16

Assembly tool for jam nut receptacles NF07 C x xx / S

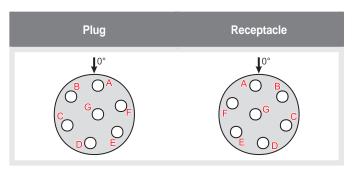


**Note:** Width across flats SW13, use with torque spanner, torque 8\*2 Nm max.

# **Contact arrangement, Polarization**

Series NF07 /S

#### **Contact arrangement**



Note: Planforms seen from connector face

#### **Polarization**

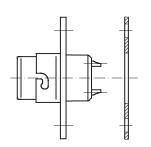
Bayonet latch positions	Polarization Series NF07				
<b>T</b> 0°	Orientation	α1	α2	Colour	
90°	1	90°	120°	red	
	2	105°	130°	yellow	
	3	110°	135°	green	
$\alpha_2$ $\alpha_1$	4	100°	165°	pink	

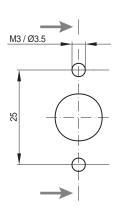


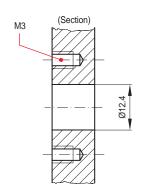
Mounting borings Series NF07 /S

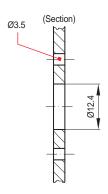
#### Flange receptacles

 Panel cutout for flange receptacles with gasket NF Z1

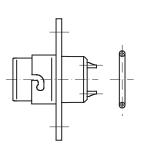


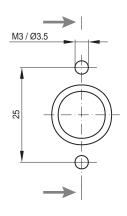


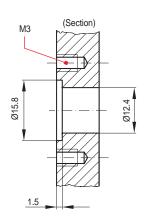


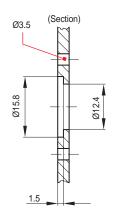


 Panel cutout for flange receptacles with sealing ring NF Z2









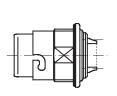
## Jam nut receptacles

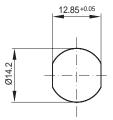
• Panel cutout for jam nut receptacles







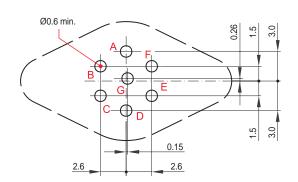




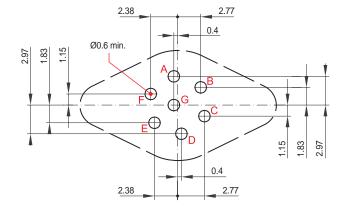
Note: Use assembly tool VG96934 Z10 Torque 2 Nm max.

#### **PCB** terminal

Panel drilling for plugs



Note: These mounting borings can also be used for NF07 Series receptacles • Panel drilling for receptacles

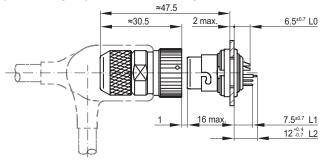




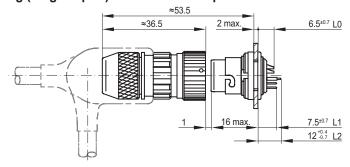
# **Assembly and installation dimensions**

Series NF07 /S

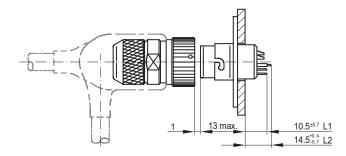
• Cable connecting plug (short adapter) <=> Jam nut receptacle



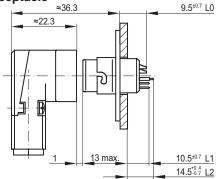
• Cable connecting plug (long adapter) <=> Jam nut receptacle



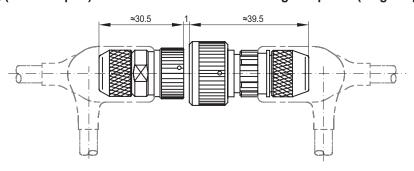
• Cable connecting plug (short adapter) <=> Flange receptacle



• 90° Cable connecting plug <>> Flange receptacle



• Cable connecting plug (short adapter) <=> Reinforced cable connecting receptacle (long adapter)

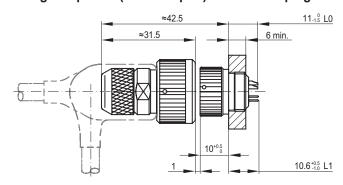




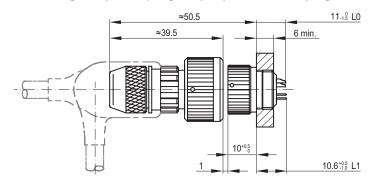
# **Assembly and installation dimensions**

Series NF07/S

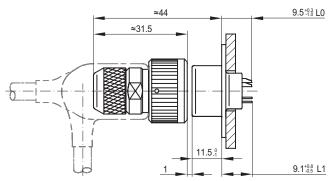
• Reinforced cable connecting receptacle (short adapter) <=> Jam nut plug



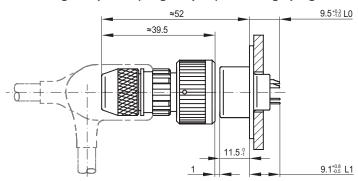
• Reinforced cable connecting receptacle (long adapter) <> Jam nut plug



• Reinforced cable connecting receptacle (short adapter) <=> Flange plug



• Reinforced cable connecting receptacle (long adapter) <> Flange plug





# 90° cable connecting plug

Series NF10

Shell part 1

A17

6

A17

A17

A17

A17

A17

L0

5

L0

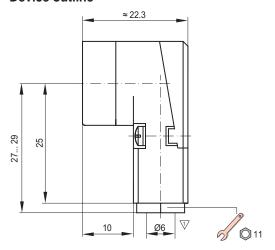
L0

L0

L0

L0

#### **Device outline**



*1 See also ordering infor	mation on page 6

Note: Terminal styles on page 32

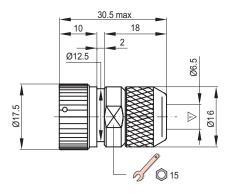
Ordering code

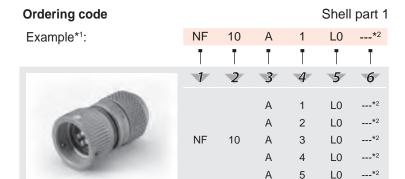
Example\*1:

# Cable connecting plug (short adapter)

Series NF10

#### **Device outline**





NF

NF

10

10

Α

3

Α

Α

Α

Α

Α

1

2

3

4

5

- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 32

Ordering code

Example\*1:

Crimp ring eyelet and strain relief split pin included in delivery

NF

NF

10

10

3

Α

Α

Α

Α

Α

1

2

3

4

5

# Cable connecting plug (long adapter)

Series NF10

Shell part 1

Α7

6

A7

Α7

Α7

A7

Α7

L0

5

L0

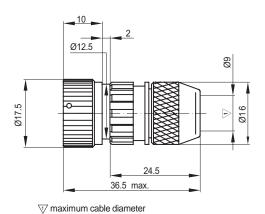
L0

L0

L0

L0

#### **Device outline**



#### \*1 See also ordering information on page 6

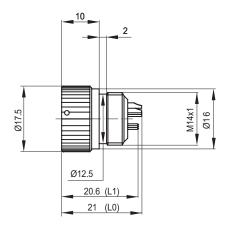
Note: Terminal styles on page 32

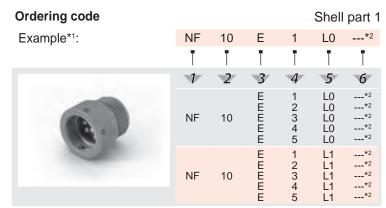
Crimp ring eyelet and strain relief split pin included in delivery



#### Jam nut plug Series NF10

#### **Device outline**

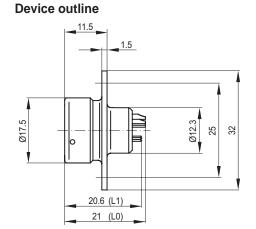


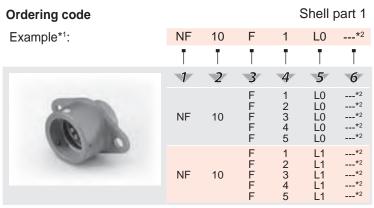


- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 32

#### Flange plug Series NF10





- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 32

#### Cable connecting plug (rubber sleeve) Shell part 1 **Device outline Ordering code** ≈ 96 Example\*1: NF 10 L0 A5 51 3 5 6 Ø5.. Α L0 Α5 Α 2 L0 Α5 Α 3 L0 NF 10 A5 Α 4 L0 Α5

\*1 See also ordering information on page 6

Α

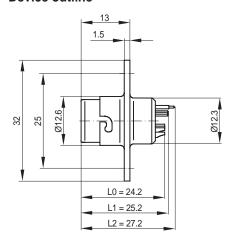
Series NF10

A5



# Flange receptacle Series NF10

#### **Device outline**



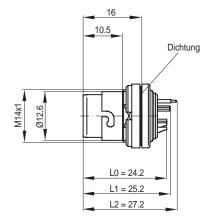
Note: Terminal styles on page 32

Ordering code					Shell	part 1
Example*1:	NF	10	В	1	L0	*2
	Ţ	Ī	Ī	Ī	Ī	Ţ
	NF	10	B B B B	1 2 3 4 5	L0 L0 L0 L0	*2 *2 *2 *2
ETB.	NF	10	B B B B	1 2 3 4 5	L1 L1 L1 L1	*2 *2 *2 *2
	NF	10	B B B B	1 2 3 4 5	L2 L2 L2 L2 L2	*2 *2 *2 *2 *2

- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

# **Jam nut receptacle** Series NF10

#### **Device outline**



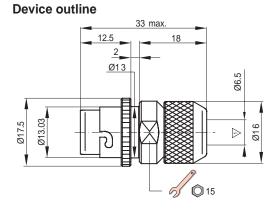
Note: Terminal styles on page 32

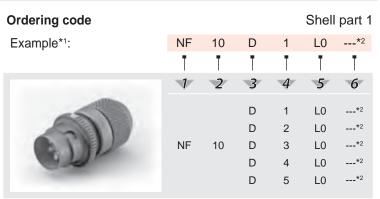
#### **Ordering code** Shell part 1 Example\*1: NF 10 С L0 3 1 5 6 ---\*2 L0 L0 L0 L0 L0 CCCCC 1 2 3 4 5 ---\*2 ---\*2 NF 10 00000 00000 L1 L1 L1 L1 NF 10 L2 L3 L4 L5 1 2 3 4 5 ---\*2 ---\*2 NF 10

- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

# Cable connecting receptacle (short adapter)

Series NF10





- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 32

Crimp ring eyelet and strain relief split pin included in delivery



# Cable connecting receptacle (long adapter)

Series NF10

Shell part 1

D7

6

D7

D7

D7

D7

D7

L0

5

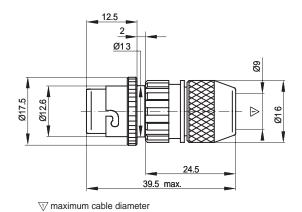
L<sub>0</sub>

L0

L0

L0

#### **Device outline**



\*1 See also ordering information on page 6

**Ordering code** 

Example\*1:

lote: Terminal styles on page 32

Crimp ring eyelet and strain relief split pin included in delivery

NF

NF

10

10

D

D

D

D

D

1

2

3

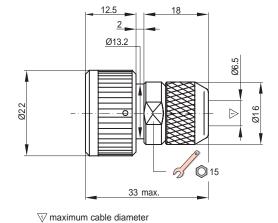
4

5

# Reinforced cable connecting receptacle (short adapter)

Series NF10

#### **Device outline**



#### **Ordering code** Shell part 1 L0 Example\*1: 1 4 5 6 L0 Ν 1 Ν 2 NF 3 Ν L<sub>0</sub> 10 Ν 4 L0 Ν 5 L0

- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

Note: Terminal styles on page 32

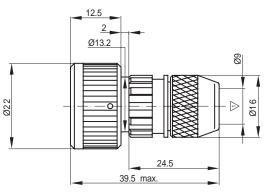
Crimp ring eyelet and strain relief split pin included in delivery

# Reinforced cable connecting receptacle (long adapter)

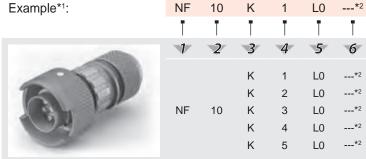
Series NF10

Shell part 1

#### **Device outline**



# Ordering code



- \*1 See also ordering information on page 6
- \*2 Customized designs upon request

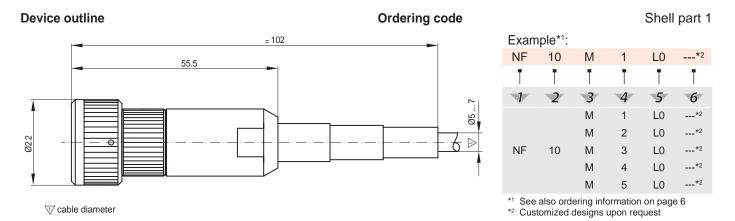
Note: Terminal styles on page 32

Crimp ring eyelet and strain relief split pin included in delivery



# Reinforced cable connecting receptacle (rubber sleeve)

Series NF10

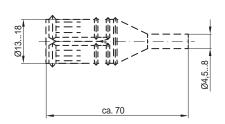


Note: Terminal styles on page 32

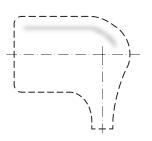
**Heatshrink boots** Series NF10

**Device outline** Ordering code

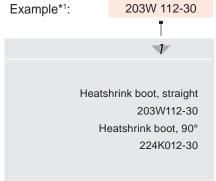
Heatshrink boot, straight



Heatshrink boot, 90°



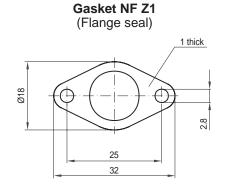
Accessories / Shell part 2

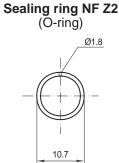


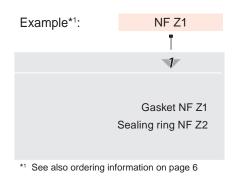
\*1 See also ordering information on page 6

#### Seals NF Z1 and NF Z2 Series NF10

#### Accessories / Shell part 2 **Device outline Ordering code**



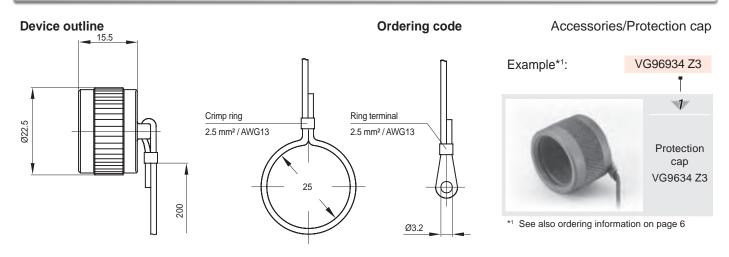






# **Protection cap VG96934 Z3**

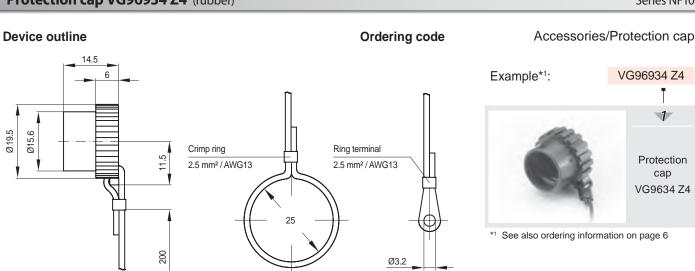
Series NF10



Note: It is possible to fit loops or ring terminals (both included).

# Protection cap VG96934 Z4 (rubber)

Series NF10



Note: It is possible to fit loops or ring terminals (both included).

# **Dummy receptacle VG96934 Z6**

Series NF10



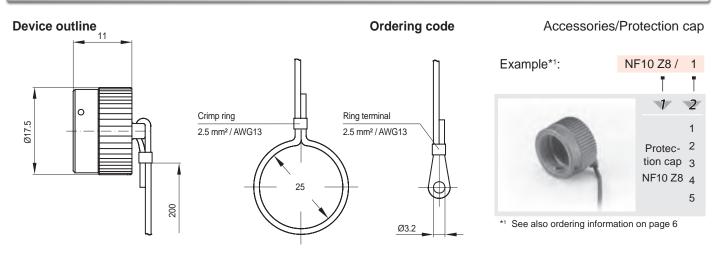
Note: Dummy receptacle to be mounted onto the case of a device for receiving a free plug cable

\*1 See also ordering information on page 6



# Protection cap for polarization NF10 Z8/x

Series NF10



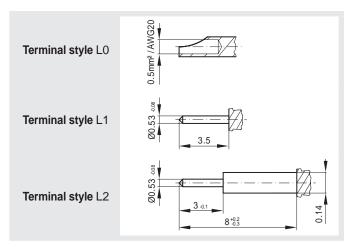
Note: It is possible to fit loops or ring terminals (both included)

# **Terminal styles, Assembly tool Z16**

Series NF10

Accessories

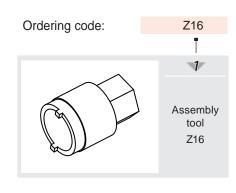
# Terminal styles



**Note:** Terminals must not be subjected to force or stress

## Assembly tool Z16

Assembly tool for jam nut receptacles NF10 C x xx

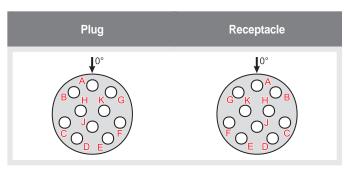


**Note:** Width across flats SW13, use with torque spanner, torque 8\*2 Nm max.

# **Contact arrangement, Polarization**

Series NF10

#### **Contact arrangement**



Note: Planforms seen from connector face

#### **Polarization**

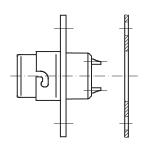
Bayonet latch positions	Polarization Series NF10			
0° 30° α1	Orientation	α1	α2	Colour
	1	95°	140°	white
	2	85°	115°	blue
	3	100°	105°	violet
	4	110°	120°	chrome yellow
α2	5	80°	145°	dark red

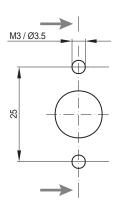


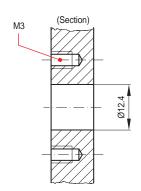
Mounting borings Series NF10

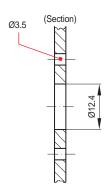
#### Flange receptacles

 Panel cutout for flange receptacles with gasket NF Z1

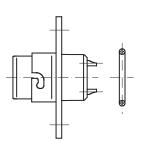


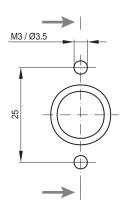


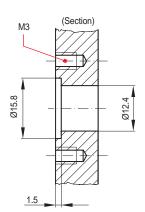


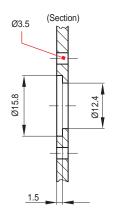


 Panel cutout for flange receptacles with sealing ring NF Z2



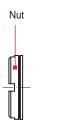






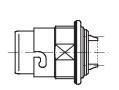
## Jam nut receptacles

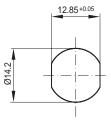
• Panel cutout for jam nut receptacles









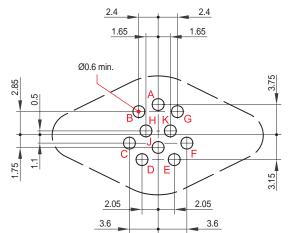


Note: Use as

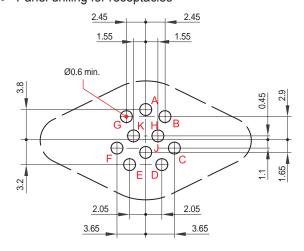
Use assembly tool VG96934 Z10 Torque  $8^{+2}$  Nm max.

#### **PCB** terminal

• Panel drilling for plugs



• Panel drilling for receptacles

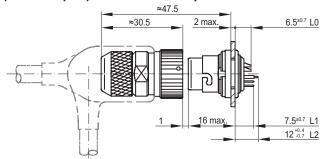




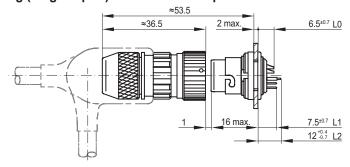
# **Assembly and installation dimensions**

Series NF10

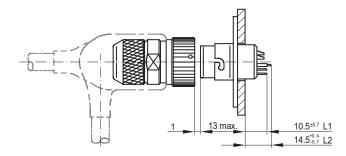
• Cable connecting plug (short adapter) <=> Jam nut receptacle



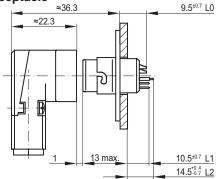
• Cable connecting plug (long adapter) <=> Jam nut receptacle



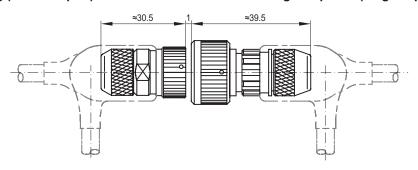
• Cable connecting plug (short adapter) <=> Flange receptacle



• 90° Cable connecting plug <>> Flange receptacle



• Cable connecting plug (short adapter) <=> Reinforced cable connecting receptacle (long adapter)

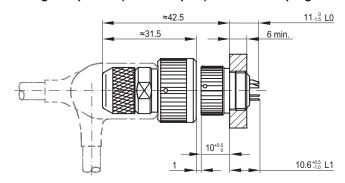




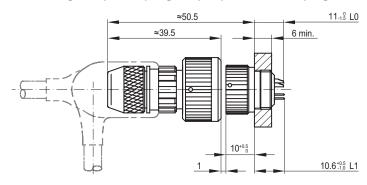
# **Assembly and installation dimensions**

Series NF10

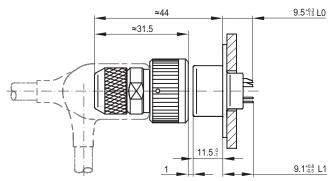
• Reinforced cable connecting receptacle (short adapter) <=> Jam nut plug



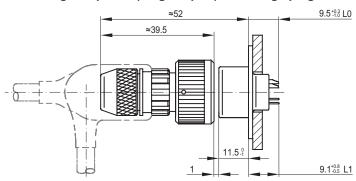
• Reinforced cable connecting receptacle (long adapter) <> Jam nut plug



• Reinforced cable connecting receptacle (short adapter) <=> Flange plug



• Reinforced cable connecting receptacle (long adapter) <> Flange plug



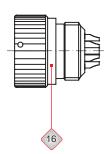


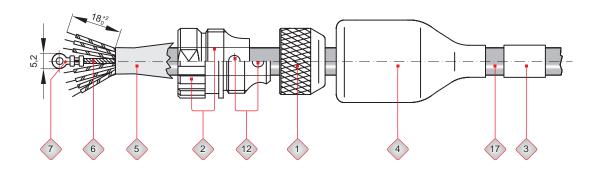
## Cable assembly details for plugs with short or long adapter

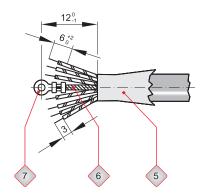
Series NF

Styles A, D, J, K and N with cable according to VG 95218-11.

Details not mentioned are to be chosen appropriately.







The lock nut (1) and the connector backshell (2) are to be loosened from the connector (16).

Slide lock nut (1) heatshrink boot (4) and, if used, sleeve (3) for fixing the protective cap on the cable.

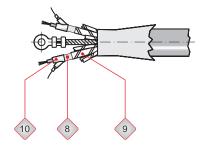
Remove jacket from cable end (17) approx. 18+2 mm with cable stripper.

Fold back screen meshing (5).

If existing, open and cut off foil type shielding with slitting tool (knife or similar).

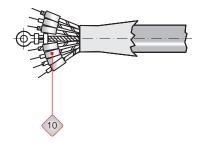
Strip approx. 3 mm and tin single wires. Use thermal stripping device.

Shorten strain relief rope (6) to indicated dimensions 12-1 mm with crimp ring eyelet (7).



#### If existing:

Insulate the single wire screen meshing (8) of the shielded single wire (9) with small PTFE tape and if required gather them and crimp them together with an insulated single wire on the appropriate contact.



#### Note:

Prior to the form fit extrusion-coating of the connector, the connector backshell is to be potted.

If the connector backshell is not to be potted:

Slide shrinkable tubings (10) diameter 1.6 mm to 2.4 mm, approx. 7 mm long - over single wires or insulate with small PTFE tape.

#### Note:

For easier handling, clamp connector in an appropriate fixture and fix cable in suitable holder.



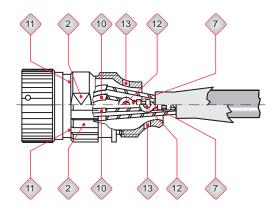
Solder single wires on the contacts with filament type extra thin tin solder L Sn60, diameter 1 mm with acid free flux core. Temperature stabilized soldering iron with a tip diameter of approx. 2 mm.

Solder tip temperature 310°C max.; soldering time 4 seconds max.

Slide insulating tubing (10) over solder cups (and shrink fit them)

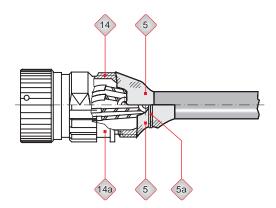
Apply on threads (11) of plug conductive adhesive (only on first thread) and screw on connector backshell (2).

Tighten securely with pliers covered with plastic or rubber.



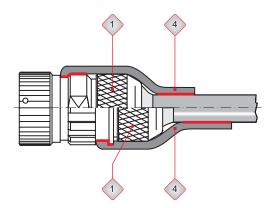
Slide cable in connector backshell (2) so that strain relief split pin (12) can be slid through bore holes (13) in connector backshell (2) and cable eye or ring eyelet (7).

The ring eyelet should be on the inner curve side at an angular connector backshell to avoid compressive load of the single wires at tensile load.



Fold the screen meshing (5) over the back of the conical adapter (14), and trim off just short of the thread.

In case of connector backshells with long adapter (14a), the screen meshing (5) has to be fixed by additional wire (5a).



Apply conductive adhesive to the first threads.

Screw jam nut (1) onto the connector backshell and tighten securely with pliers.

#### Intermediate examination:

Check contact resistance, insulation resistance and dielectric strength according to VG 96934-1, Test No.5.12 and 5.13.

Unless a moulded backfitting is to be applied:

Mount heatshrink boot (4) according to VG95343-4.



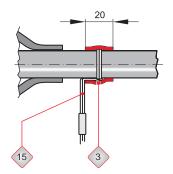
#### Note:

In order to achieve the tightness IP67 mentioned in the data sheet, the heatshrink boot has to be glued to the parts marked in red in the opposite drawing.

Schaltbau recommends to use adhesives made by manufacturers of the heatshrink boot.

#### Final examination:

Insulation resistance and dielectric strength tests according to VG 96934-1, Test No.5.12 and 5.13.



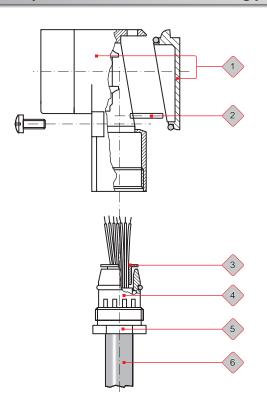
Fitting of the protective cap to cable:

Loop cord (15) of protective cap round the cable.

Shrink on heatshrink tube (3).

# Cable assembly details for 90° cable connecting plug

Series NF



Slide pressure screw (5) and strain relief (4) on cable before screen end.

Slide screen cone (3) between single wire and screen meshing.

Press strain relief (4) over screen cone (3) with screen meshing from below.

The screen meshing is now between strain relief (4) and screen cone (3).

Cut off projecting parts of the screen meshing.

Insert premounted cable into housing (1).

Knot strain relief rope around the strain relief split pin (2).

#### Note:

An effective strain relief can only be achieved by a permanently and tightly knotted strain relief rope.

For further assembly steps (insulate, tin, solder and insulate single wires) and test please refer to prior chapter.

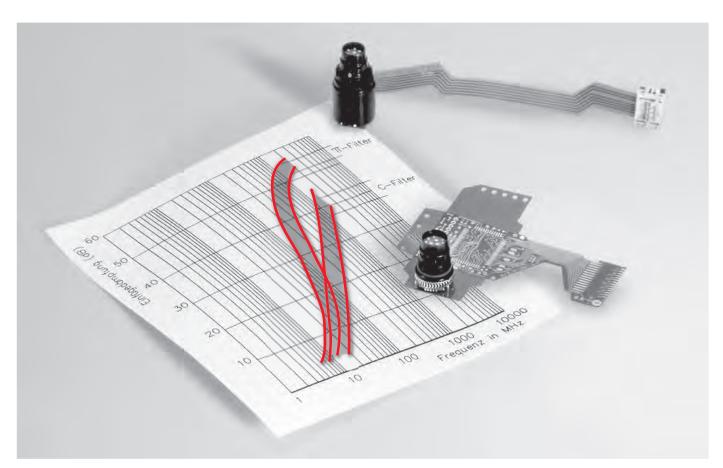


#### SF07, SF10 Filtered connectors

Series SF

Connector series NF07 and NF10 were especially designed for application in modern telecommunication engineering. In case an additional protection against

electromagnetic disturbance is desired, we recommend our shielded and filtered connectors of series SF07 and SF10. Please inquire for customized designs.



More and more highly efficient electronic systems co-operate on limited space. The protection against electromagnetic influence increasingly requires EMC-suitable interfaces.

Shielded and filtered connectors help to protect the whole system against undesirable electromagnetic disturbance. Our solutions allow to avoid malfunctions and direct or indirect economic losses such as:

- Malfunction of peripheral electronics
- Destruction of modules
- Machine standstills.

For this purpose the SF concept offers filter systems in

• Planar technique: • C-filter

• Modular technique: • C-filter

• π-filter

• Tubular technique: • C-filter

• π-filter

RFI-filter

Please do not hesitate to request detailed information.











The production facilities of Schaltbau GmbH have been IRIS certified since 2008.







Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

# **Electrical Components and Systems for Railway Engineering and Industrial Applications**

Connectors	<ul> <li>Connectors manufactured to industry standards</li> </ul>			
	<ul> <li>Connectors to suit the special requirements of</li> </ul>			
	communications engineering (MIL connectors)			
	<ul> <li>Charging connectors for battery-powered machines and systems</li> </ul>			
	<ul> <li>Connectors for railway engineering, including UIC connectors</li> </ul>			
	<ul> <li>Special connectors to suit customer requirements</li> </ul>			
Snap-action switches	<ul> <li>Snap-action switches with positive opening operation</li> </ul>			
	<ul> <li>Snap-action switches with self-cleaning contacts</li> </ul>			
	<ul><li>Enabling switches</li></ul>			
	<ul> <li>Special switches to suit customer requirements</li> </ul>			
Contactors	<ul> <li>Single and multi-pole DC contactors</li> </ul>			
	<ul> <li>High-voltage AC/DC contactors</li> </ul>			
	<ul> <li>Contactors for battery powered vehicles and power supplies</li> </ul>			
	<ul> <li>Contactors for railway applications</li> </ul>			
	<ul> <li>Terminal bolts and fuse holders</li> </ul>			
	<ul> <li>DC emergency stop switches</li> </ul>			
	<ul> <li>Special contactors to suit customer requirements</li> </ul>			
Electrics for rolling stock	<ul> <li>Equipment for driver's cab</li> </ul>			
	<ul><li>Equipment for passenger use</li></ul>			
	<ul><li>High-voltage switchgear</li></ul>			
	<ul><li>High-voltage heaters</li></ul>			
	<ul> <li>High-voltage roof equipment</li> </ul>			
	<ul> <li>Equipment for electric brakes</li> </ul>			
	<ul> <li>Design and engineering of train electrics to customer requirements</li> </ul>			

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