NAW Series

Waterproof equivalent to IP-67

Safety standard certified products available

RoHS **Quick lock**

Overview

- Metallic type of quick lock waterproof connectors.
- Robust assured by employment of a metallic shell.
- Suitable for use in civil engineering & construction machines and other various types of machinery.

Feature

RoHS	RoHS Directive compliant
Waterproof	Waterproof connector【Waterproof function equivalent to IP-67 when coupled】
Lock method	Quick lock
Features of mechanism/ material	○ Die cast shell with zinc alloy. ○ Smooth coupling thanks to employment of 5-key system guide. ○ Installation in a small space enabled by use of the L za.
Standards	○ UL・CSA standard certified connectors available.（UL : UL1977　CSA : C22.2 No.182.3） ○ < CSA NRTL/C > standard certified connectors available.（CSA : C22.2 No.182.3　UL : 1977） Note: The specifications of safety standard certified products are slightly different from those of standard products. For the rated voltage, current and cable conductor cross sectional area, refer to A List of Standards Acquired (pp.128-129).
Cable termination	Soldering

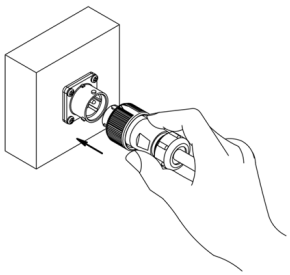
Characteristics Insulation resistance , Withstand voltage , Contact resistance , Waterproof　p.103

The pin contact type has an exposed electrode. If it is used on the [power supply] side, it may cause electric shock or short-circuit accidents. To prevent such accidents, use the socket contact type on the [power supply] side and the pin contact type on the [equipment] side.

Insertion

Align the plug and the guide of the mating connector (receptacle/adapter) and push in straight until it clicks in place.

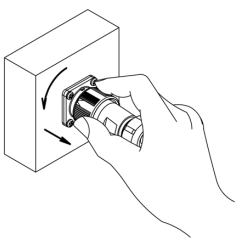
Caution: When inserting, do not turn the lock nut.



Extraction

Extract the connector with the lock nut turned in the arrow direction 30 degrees CCW for Size 16 and 45 degrees CCW for Sizes 20 & 24.

Caution: When extracting, do not turn the end bell.



NAW Series

Product No. designation

NAW - 20 ■ - P M _ _ □ _

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

《Option》

・When using a plural number of same products at the same time, the guide position can be changed in order to prevent mis-insertion.
(For applicable products, see below.)
Product name example : NAW-2010-PFX
Guide position change symbol (X, Y, Z) in the red character part.

④ Shell shape
⑤ Contact shape < Pin (male) contact : M , Socket (female) contact : F >
⑥ K type symbol (K) 《 Required only for products with settings 》
⑦ Guide position change symbol (X , Y , Z) 《 Required only when changing the guide position 》
⑧ Symbol indicating cable packing size. 《 Plug & adapter require symbol to be specified. 》
⑨ Safety standard specification (< UL・CSA > , < CSA NRTL/C >)
《 Required only when safety standard is to be specified. 》For applicable products, see pp.128-129.

Cable termination : Soldering

Material and Finish

	Material	Finish
Shell	Zinc alloy (Partially aluminum alloy)	Special treatment
Insulator	Synthetic resin	—
Contact	Copper alloy	Silver plating Gold plating
Packing	Synthetic rubber	—

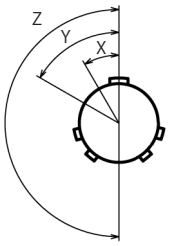
Operating temperature range

Shell size	Number of Contacts	Operating temperature range
16	3 , 5	-25℃ to +85℃
20	2 , 3 , 4 , 5 , 7 , 10 , 12	
24	2 , 3 , 4 , 5 , 10 , 14 , 16	
16	8	-25℃ to +60℃
20	14	
24	21 , 24	

To change the guide position (Following number of contacts only)

Shell size	Number of Contacts	Guide Position Symbol		
		X	Y	Z
16	★ 3	30°	60°	180°
	★ 5	45°	90°	315°
20	☆ 7	30°	-	-
	☆ 10	45°	90°	315°
	☆ 12		95°	190°
24	★ 10	45°	90°	315°
	★ 14			
	★ 16			

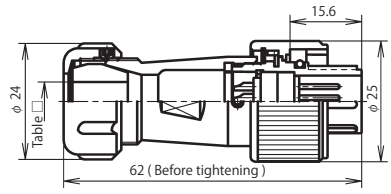
★ CSA NRTL/C products supported also.
☆ UL・CSA products supported also.



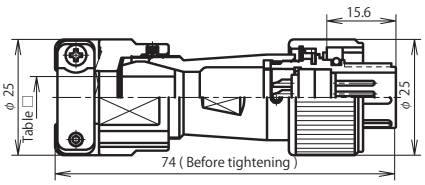
An image of guide position change

< When viewed from the pin (male) contact side coupling face >

【Power receiving side】< Pin (male) contact used >



NAW-16 ■ -PM □



NAW-16 ■ -PMK □

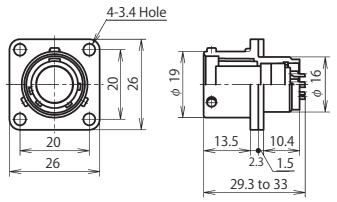
Plug

G Type

Coupled

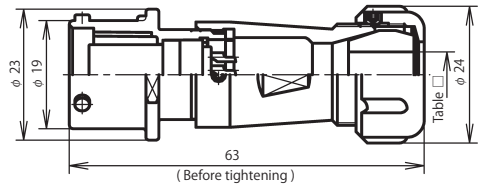
Receptacle

【Power supply side】< Socket (female) contact used >

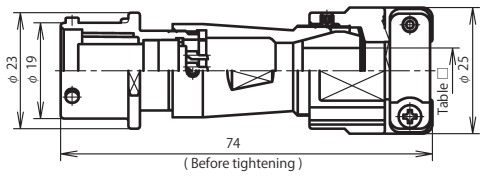


NAW-16 ■ -RF

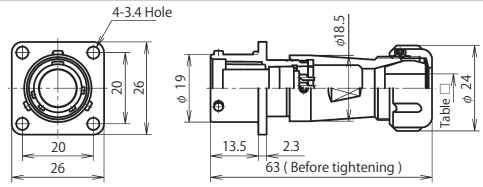
Adapter



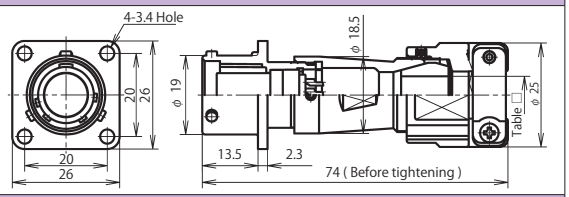
NAW-16 ■ -AdF □



NAW-16 ■ -AdFK □



NAW-16 ■ -Ad(F)F □



NAW-16 ■ -Ad(F)FK □

Cap p.102 • L za p.91

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
16	5	φ 4.0 to φ 4.8	●	—	●	—
	7	φ 5.7 to φ 6.8	●	●	●	—
	8	φ 6.9 to φ 7.9	●	●	●	—
	9	φ 8.0 to φ 9.4	●	●	●	—
	11	φ 9.5 to φ 11.0	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.129.

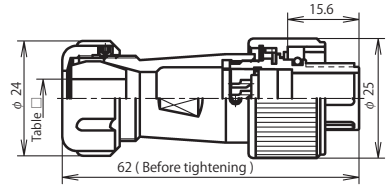
Shell size	Number of Contacts	3	5	8
16	Contact arrangement <When viewed from the pin (male) contact coupling side>			
	Safety standard (Note-1)	CSA NRTL/C		—
	Rating (Allowable current for signals)	125V		—
		10A	5A	[3A]
	Withstand voltage (V r.m.s.)	1,500	1,000	500
	Wire size (㎟)	1.25	0.5	0.3
	Remarks	—		For signals

[ ] : Gold plating contact

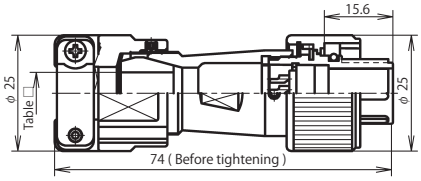
Note-1 : Specified separately. For safety standards, see p.129.

S Type

【Power supply side】< Socket (female) contact used >



NAW-16 ■ -PF □



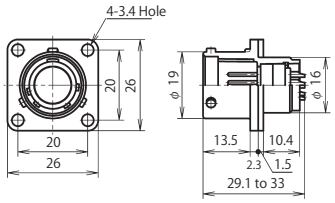
NAW-16 ■ -PFK □

Plug

Coupled

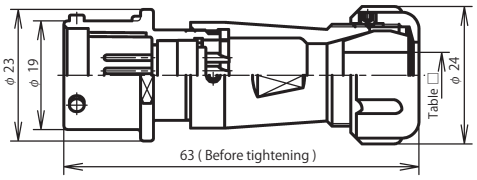
Receptacle

【Power receiving side】< Pin (male) contact used >

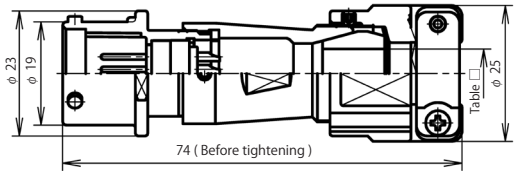


NAW-16 ■ -RM

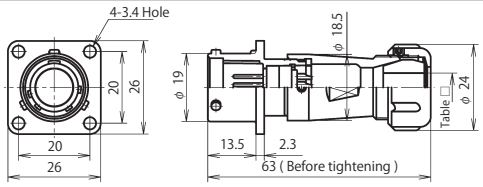
Adapter



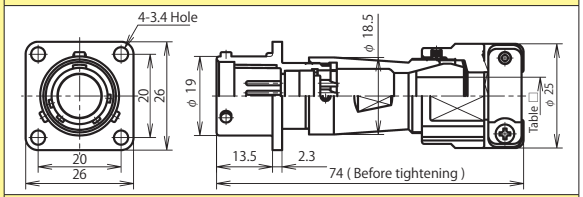
NAW-16 ■ -AdM □



NAW-16 ■ -AdMK □



NAW-16 ■ -Ad(F)M □



NAW-16 ■ -Ad(F)MK □

Cap p.102 • L za p.91

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
16	5	φ 4.0 to φ 4.8	●	—	●	—
	7	φ 5.7 to φ 6.8	●	●	●	—
	8	φ 6.9 to φ 7.9	●	●	●	—
	9	φ 8.0 to φ 9.4	●	●	●	—
	11	φ 9.5 to φ 11.0	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.129.

Shell size	Number of Contacts	3	5	8
16	Contact arrangement <When viewed from the pin (male) contact coupling side>			
	Safety standard (Note-1)	CSA NRTL/C		—
	Rating (Allowable current for signals)	125V		—
		10A	5A	[3A]
	Withstand voltage (V r.m.s.)	1,500	1,000	500
	Wire size (㎟)	1.25	0.5	0.3
	Remarks	—		For signals

[ ] : Gold plating contact

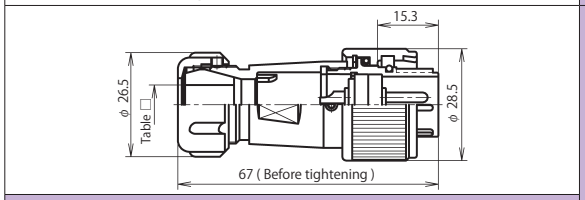
Note-1 : Specified separately. For safety standards, see p.129.

【Power receiving side】< Pin (male) contact used >

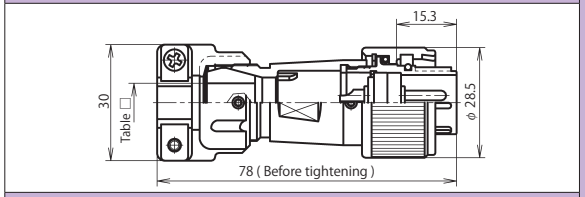
G Type

【Power supply side】< Socket (female) contact used >

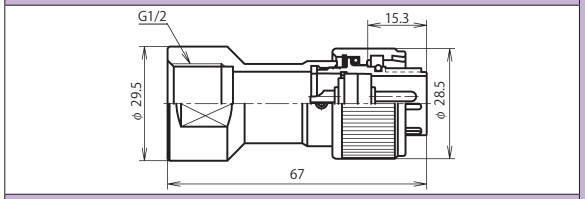
Plug — Coupled — Receptacle / Adapter



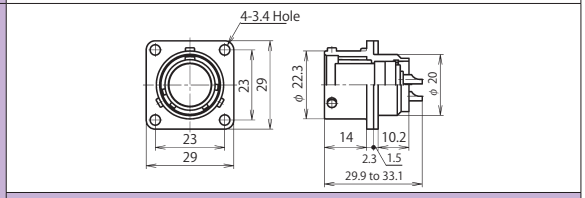
NAW-20 ■ -PM □



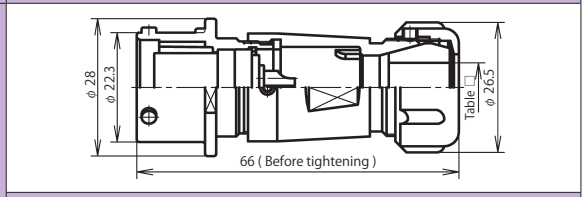
NAW-20 ■ -PMK □



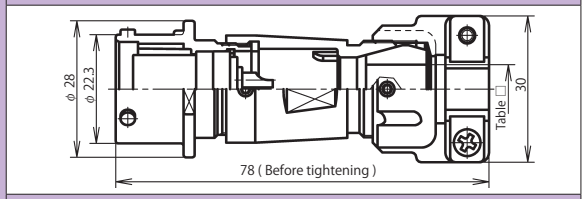
NAW-20 ■ -GPM1/2 (Note)



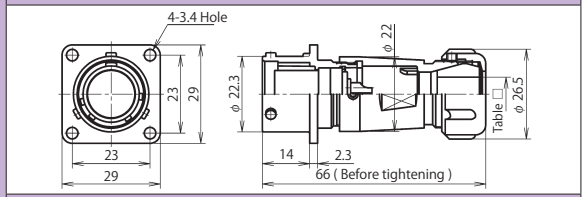
NAW-20 ■ -RF



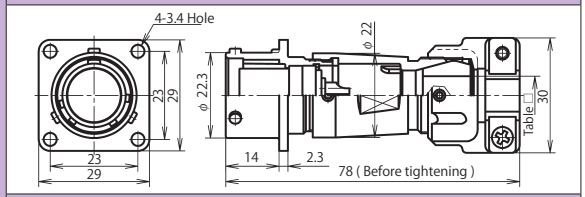
NAW-20 ■ -AdF □



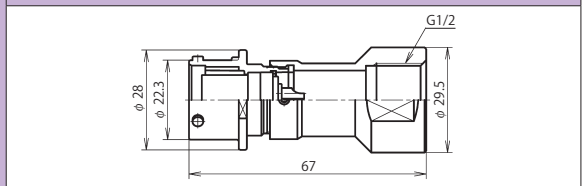
NAW-20 ■ -AdFK □



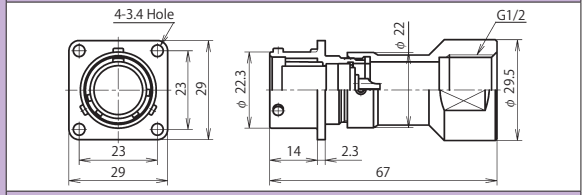
NAW-20 ■ -Ad(F)F □



NAW-20 ■ -Ad(F)FK □



NAW-20 ■ -GAdF1/2 (Note)



NAW-20 ■ -GAd(F)F1/2 (Note)

Note: We show sizes by the nominal "G(PF)" of parallel pipe threads. p.135
The waterproof of the conduit installation part depends on the conduit connecting components to use.

Cap p.102 • L za p.91

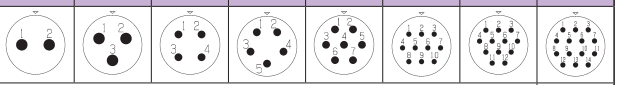
For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
20	6	ϕ 5.5 to ϕ 6.3	●	—	●	—
	8	ϕ 7.0 to ϕ 8.5	●	●	●	—
	10	ϕ 8.6 to ϕ 10.5	●	●	●	—
	12	ϕ 10.6 to ϕ 12.5	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.128.

Shell size	Number of Contacts	2	3	4	5	7	10	12	14
20	Contact arrangement <When viewed from the pin (male) contact coupling side>								
	Safety standard (Note-1)	UL・CSA							—
	Rating (Allowable current for signals)	250V							—
		15A		10A			5A		[3A]
	Withstand voltage (V r.m.s.)	1,500				1,000			500
	Wire size (㎟)	2		1.25			0.5		0.3
	Remarks	—							For signals

[ ] : Gold plating contact

Note-1 : Specified separately. "Specified as a set of UL and CSA". For safety standards, see p.128.

【 Power supply side 】< Socket (female) contact used >

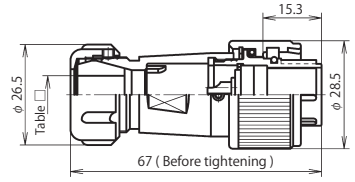
S Type

【 Power receiving side 】< Pin (male) contact used >

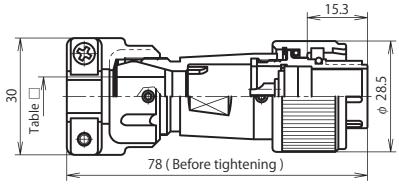
Plug

Coupled

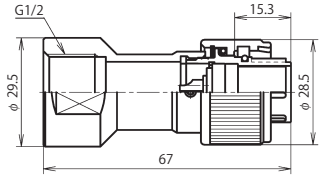
Receptacle



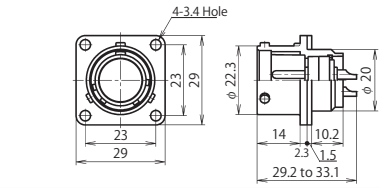
NAW-20 ■ -PF □



NAW-20 ■ -PFK □

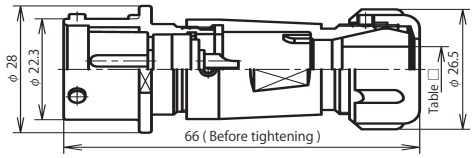


NAW-20 ■ -GPF1/2 (Note)

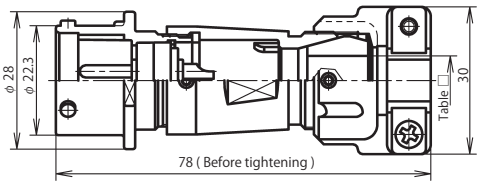


NAW-20 ■ -RM

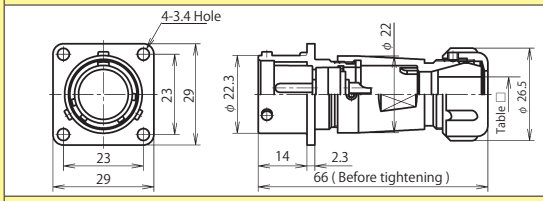
Adapter



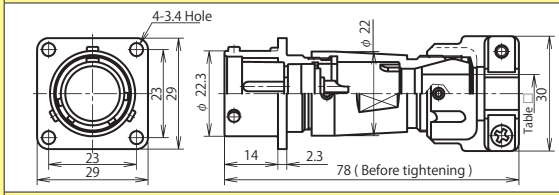
NAW-20 ■ -AdM □



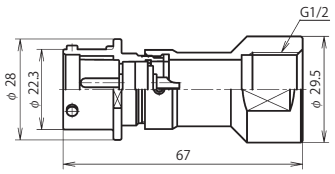
NAW-20 ■ -AdMK □



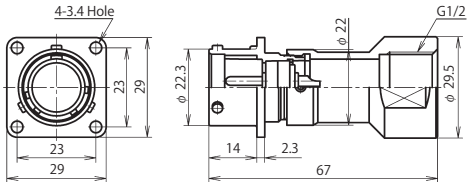
NAW-20 ■ -Ad(F)M □



NAW-20 ■ -Ad(F)MK □



NAW-20 ■ -GAdM1/2 (Note)



NAW-20 ■ -GAd(F)M1/2 (Note)

Note: We show sizes by the nominal "G(PF)" of parallel pipe threads. p.135
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Cap p.102 • L za p.91

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Table □

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Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
20	6	ϕ 5.5 to ϕ 6.3	●	—	●	—
	8	ϕ 7.0 to ϕ 8.5	●	●	●	—
	10	ϕ 8.6 to ϕ 10.5	●	●	●	—
	12	ϕ 10.6 to ϕ 12.5	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.128.

Shell size	Number of Contacts	2	3	4	5	7	10	12	14
20	Contact arrangement <When viewed from the pin (male) contact coupling side>								
	Safety standard (Note-1)	UL・CSA							—
	Rating (Allowable current for signals)	250V							—
		15A		10A			5A		[3A]
	Withstand voltage (V r.m.s.)	1,500				1,000			500
	Wire size (㎟)	2		1.25			0.5		0.3
	Remarks	—							For signals

[ ] : Gold plating contact

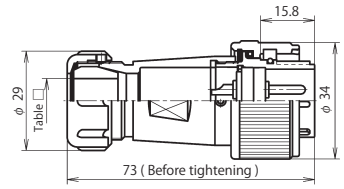
Note-1 : Specified separately. "Specified as a set of UL and CSA". For safety standards, see p.128.

【 Power receiving side 】< Pin (male) contact used >

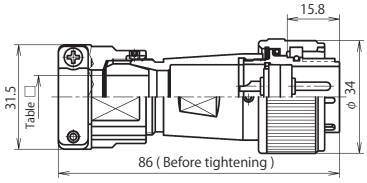
G Type

【 Power supply side 】< Socket (female) contact used >

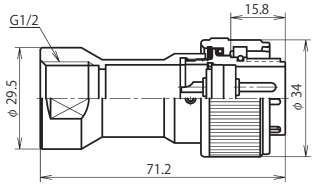
Plug



NAW-24 ■ -PM □



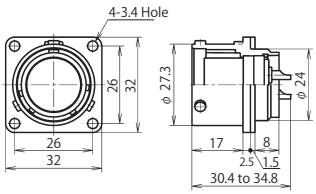
NAW-24 ■ -PMK □



NAW-24 ■ -GPM1/2 (Note)

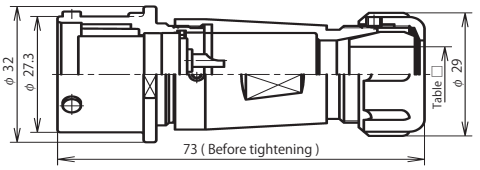
Coupled

Receptacle

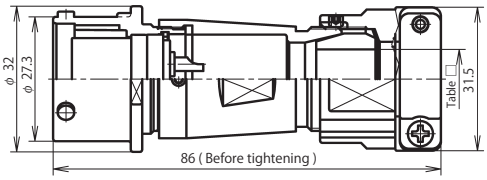


NAW-24 ■ -RF

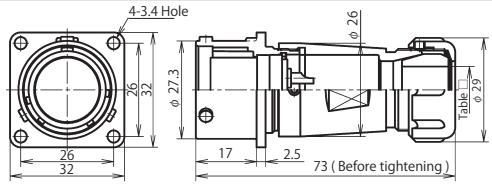
Adapter



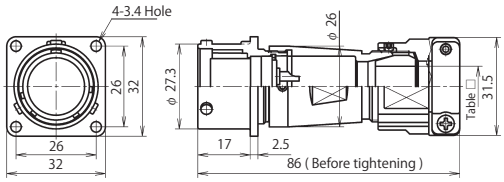
NAW-24 ■ -AdF □



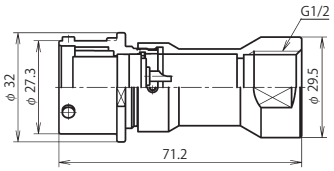
NAW-24 ■ -AdFK □



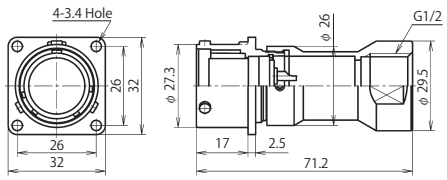
NAW-24 ■ -Ad(F)F □



NAW-24 ■ -Ad(F)FK □



NAW-24 ■ -GAdF1/2 (Note)



NAW-24 ■ -GAd(F)F1/2 (Note)

Note: We show sizes by the nominal "G(PF)" of parallel pipe threads. p.135
The waterproof of the conduit installation part depends on the conduit connecting components to use.

Cap p.102 • L za p.91

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
24	8	φ 6.8 to φ 8.0	●	●	●	—
	11	φ 9.5 to φ 11.0	●	●	●	—
	13	φ 11.1 to φ 13.0	●	●	●	—
	15	φ 13.1 to φ 15.0	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.129.

Shell size	Number of Contacts	2	3	4	5	10	14	16	21	24
24	Contact arrangement <When viewed from the pin (male) contact coupling side>									
	Safety standard (Note-1)	CSA NRTL/C							—	
	Rating (Allowable current for signals)	250V							—	
		20A		15A		10A	5A		3pcs=6A [18pcs=3A]	[3A]
	Withstand voltage (V r.m.s.)	1,500				1,000			500	
	Wire size (㎟)	3.5		2		1.25	0.5		3pcs=0.75 18pcs=0.3	0.3
	Remarks	—							For signals	

[ ] : Gold plating contact

Note-1 : Specified separately. For safety standards, see p.129.

【 Power supply side 】< Socket (female) contact used >

S Type

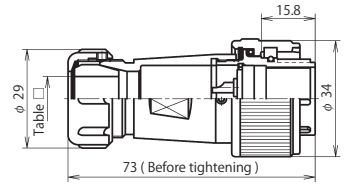
【 Power receiving side 】< Pin (male) contact used >

Plug

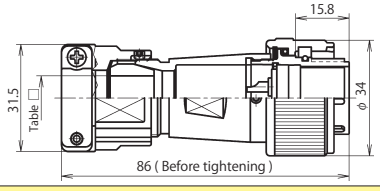
Coupled

Receptacle

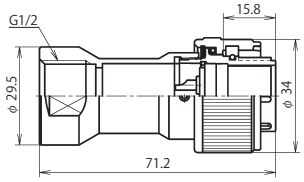
Adapter



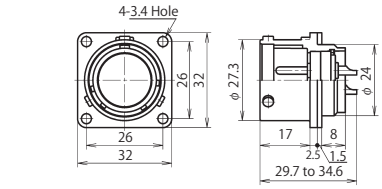
NAW-24 ■ -PF □



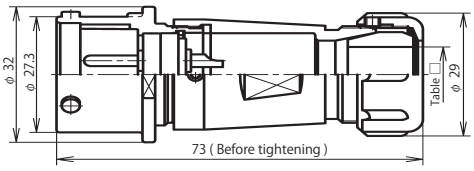
NAW-24 ■ -PFK □



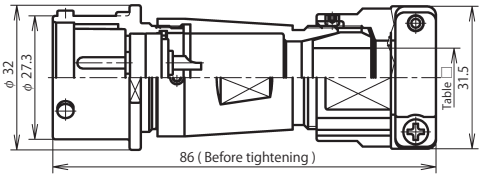
NAW-24 ■ -GPF1/2 (Note)



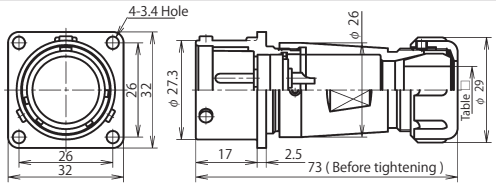
NAW-24 ■ -RM



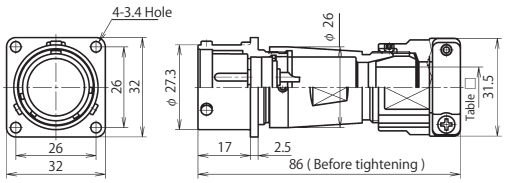
NAW-24 ■ -AdM □



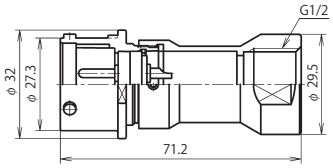
NAW-24 ■ -AdMK □



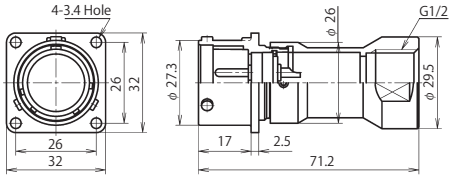
NAW-24 ■ -Ad(F)M □



NAW-24 ■ -Ad(F)MK □



NAW-24 ■ -GAdM1/2 (Note)



NAW-24 ■ -GAd(F)M1/2 (Note)

Note: We show sizes by the nominal "G(PF)" of parallel pipe threads. p.135
The waterproof of the conduit installation part depends on the conduit connecting components to use.

Cap p.102 • L za p.91

For the plug and adapter , be sure to select □ (cable packing symbol).

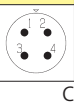
Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

Shell size	Symbol □	Outer diameter of cable used	Normal products		Safety standard	
			Standard	K Type	Standard	K Type
24	8	ϕ 6.8 to ϕ 8.0	●	●	●	—
	11	ϕ 9.5 to ϕ 11.0	●	●	●	—
	13	ϕ 11.1 to ϕ 13.0	●	●	●	—
	15	ϕ 13.1 to ϕ 15.0	●	●	●	—

■ indicates the number of contacts.
The conductor cross sectional area is less than the following value.However, for safety standard certified products, use a cable having a value shown on p.129.

[ ] : Gold plating contact

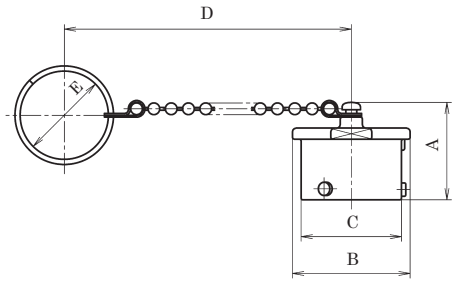
Shell size	Number of Contacts	2	3	4	5	10	14	16	21	24
24	Contact arrangement <When viewed from the pin (male) contact coupling side>									
	Safety standard (Note-1)	CSA NRTL/C							—	
	Rating (Allowable current for signals)	250V							—	
		20A		15A		10A	5A		3pcs=6A [18pcs=3A]	[3A]
	Withstand voltage (V r.m.s.)	1,500				1,000			500	
	Wire size (㎟)	3.5		2		1.25	0.5		3pcs=0.75 18pcs=0.3	0.3
	Remarks	—							For signals	

Note-1 : Specified separately. For safety standards, see p.129.

NAW Series

【PCa】 Plug cap

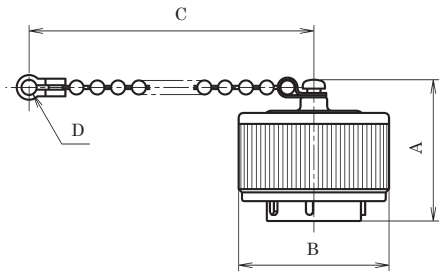
Caps used for plugs. Used to protect the contact part when they are not coupled with a receptacle/adapter.



Shell size	Designation	Standard dimensions				
		A	B	C	D	E
16	NAW-16-PCa	25	ϕ 23	ϕ 19	160	ϕ 21
20	NAW-20-PCa		ϕ 28	ϕ 22.3		
24	NAW-24-PCa	26.5	ϕ 32	ϕ 27.3	165	ϕ 24

【RCa】 Receptacle cap

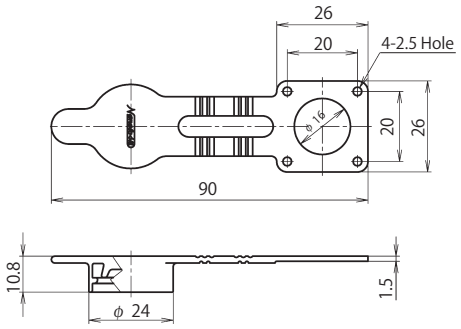
Caps used for receptacles. Used to protect the contact part when they are not coupled with a plug.



Shell size	Designation	Standard dimensions			
		A	B	C	D
16	NAW-16-RCa	30.5	ϕ 25	150 (※1)	3.45 Hole
20	NAW-20-RCa	32	ϕ 28.5		
24	NAW-24-RCa		ϕ 34		

(※1) Length 70 mm also available. (Example：NAW-20-RCa L70)

【RCa・2】 Receptacle rubber cap



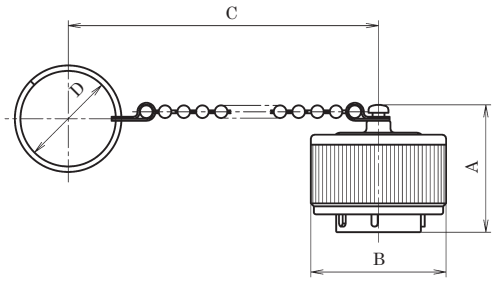
Caps used for receptacles. Used to protect the contact part when they are not coupled with a plug.
This is a flange packing one piece type and the flange packing part is installed between the flange of the receptacle and the mounting panel.
The flange packing part is water tight. The cap is not water tight.

Shell size 16 NAW only

Shell size	Designation
16	NAW-16-RCa・2

【AdCa】 Adapter cap

Caps used for adapters. Used to protect the contact part when they are not coupled with a plug.
For adapters with flange, RCa may also be used.



Shell size	Designation	Standard dimensions			
		A	B	C	D
16	NAW-16-AdCa	30.5	ϕ 25	160	ϕ 21
20	NAW-20-AdCa	32	ϕ 28.5		
24	NAW-24-AdCa		ϕ 34	165	ϕ 24

Number of contacts

Shell size	Contact	Insulation resistance (M Ω)		Contact resistance (m Ω)		Withstand voltage (V r.m.s.)	
		Normal products	Safety standard CSA NRTL/C	Normal products	Safety standard CSA NRTL/C	Normal products	Safety standard CSA NRTL/C
16	3	DC 500V 2,000 min.		3 max.		1,500	
	5	DC 500V 1,000 min.		5 max.		1,000	
	8	DC 250V 1,000 min.	—	5 max.	—	500	—
24	2	DC 500V 5,000 min.		3 max.		1,500	
	3						
	4						
	5						
	10	DC 500V 2,000 min.				1,000	
	14	DC 500V 1,000 min.		5 max.			
	16						
	21	DC 250V 1,000 min.	—	5 max.	—	500	—
	24						

Number of contacts

Shell size	Contact	Insulation resistance (M Ω)		Contact resistance (m Ω)		Withstand voltage (V r.m.s.)	
		Normal products	Safety standard UL・CSA	Normal products	Safety standard UL・CSA	Normal products	Safety standard UL・CSA
20	2	DC 500V 2,000 min.		3 max.		1,500	
	3						
	4						
	5						
	7					1,000	
	10	DC 500V 1,000 min.		5 max.			
	12						
	14	DC 250V 1,000 min.	—	5 max.	—	500	—

(Waterproof) No trace of water exposure after being kept at a water pressure of 40 kPa for 24 hours in the coupled state in its normal state of use.