



# SUHNER® QMA SUBMINIATURE CONNECTORS

## Description

SUHNER QMA coaxial connectors are available with 50 Ω impedance. The frequency range extends to 11 GHz, depending on the connector and cable type, however most of the QMA connectors are Return Loss optimised for frequencies up to 6 GHz. The interface is based on the SMA dimension, but, instead of a threaded coupling mechanism, a new snap-lock mechanism is used.

The QMA interface has a very similar performance to the SMA, but in addition it offers an easier, faster and safer coupling operation, helping the customers to save significantly time during production of their systems.

The packaging density of QMA is increased compared to SMA connectors thanks to the fact that no torque spanner is required to fasten the coupling nut.

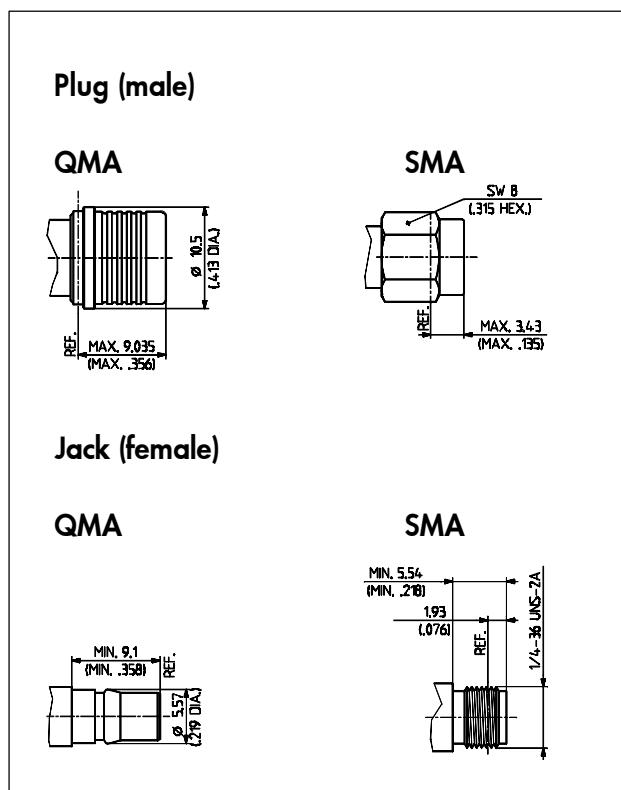
QMA is not intermateable with SMA.

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## Interface Dimensions



## Features of QMA connectors

- > Cycle time improvement for making RF connections (10 times faster to mount than threaded connectors)
- > No torque required
- > Higher packaging density
- > Free-rotating connection when mated
- > Eliminates loosening problems associated with threaded connectors
- > Same performance as SMA up to 6 GHz

**SUHNER QMA - the cost effective solution for advanced RF interconnections!**

## Technical Data

ELECTRICAL DATA	REQUIREMENTS
Impedance	50 $\Omega$
Frequency range	DC to 6 GHz optimized DC to 11 GHz working range [cut-off frequency: 18 GHz]
Return loss (typical)	DC - 3 GHz $\geq$ 32 dB; 3 to 6 GHz $\geq$ 25 dB; 6 to 11 GHz $\geq$ 20 dB
Dielectric withstanding voltage (at sea level, in V rms, 50 Hz)	1000
Working voltage (at sea level, in V rms, 50 Hz)	$\leq$ 335
Insulation resistance	$\geq 5 \cdot 10^3$ M $\Omega$
Contact resistance - centre contact - outer contact	$\leq$ 3 m $\Omega$ $\leq$ 2.5 m $\Omega$

MECHANICAL DATA	REQUIREMENTS
Engagement force (typical)	25 N
Disengagement force (typical)	20 N
Retention force for interface	$\geq$ 60 N
Durability (matings)	100 cycles
Distance between connectors	12.4 mm / .49 in. minimum

ENVIRONMENTAL DATA	MIL TEST CONDITIONS
Temperature range	- 40°C ... + 85°C / - 40°F ... + 185°F
Corrosion	IEC 60169-1 16.7 (48 hrs)
Vibration	IEC-68-2-64 (random, 5-20 Hz: 1.29m <sup>2</sup> /s <sup>3</sup> / 20-500 Hz: -3dB/octave)
Damp heat - steady state	IEC 60169-1 16.3 (96 hrs)
Thermal shock	IEC 60169-1 16.4 (-40° C / + 85° C)

MATERIAL DATA		
CONNECTOR PART	MATERIAL	PLATING
Bodies	brass	SUCOPLATE®
Solder bodies	brass	SUCOPRO
Pin contact	brass	SUCOPRO
Socket contact	spring bronze	SUCOPRO
Outer contact	spring bronze	SUCOPLATE®
Insulators	PTFE or PFA	
Crimp ferrule	copper	SUCOPLATE®

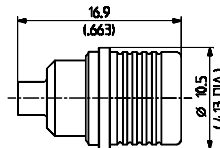
Some connectors may have a specification that differs from the above mentioned data.

# Cable Connectors

## Straight Cable Plugs (male)

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

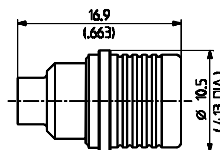
- > cable entry soldered
- > centre contact plugged-in



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Notes
11 QMA-50-2-3 / 133 NE	23017704	Y11,Y3 (Sucoform 86)	single	27428	
11 QMA-50-2-3 / 133 NH	23017705	Y11,Y3 (Sucoform 86)	bulk 100 pcs.	27428	

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

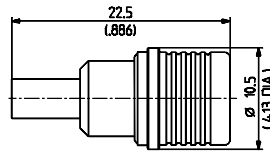
- > cable entry soldered
- > centre contact plugged-in



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Notes
11 QMA-50-3-3 / 133 NE	23017695	Y12,Y5 (Sucoform 141)	single	27428	
11 QMA-50-3-3 / 133 NH	23017696	Y12,Y5 (Sucoform 141)	bulk 100 pcs.	27428	

> for flexible cables

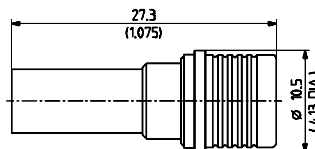
> SUHNER® full crimp



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Crimp Insert
11 QMA-50-2-1 / 133 NE	23017700	U4 (K 02252 D)	single	27427	2 A
11 QMA-50-2-1 / 133 NH	23017701	U4 (K 02252 D)	bulk 100 pcs.	27427	2 A
11 QMA-50-2-2 / 133 NE	23017720	U2 (RG 316/U)	single	27427	2 A
11 QMA-50-2-2 / 133 NH	23017721	U2 (RG 316/U)	bulk 100 pcs.	27427	2 A

> for flexible cables

> cable entry crimp  
> centre contact soldered

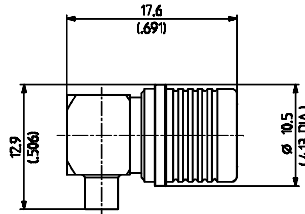


SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Crimp Insert
11 QMA-50-3-1 / 133 NE	23017697	U9,U11 (RG 400/U)	single	27429	B
11 QMA-50-3-1 / 133 NH	23017698	U9,U11 (RG 400/U)	bulk 100 pcs.	27429	B
11 QMA-50-3-2 / 133 NE	23017702	U7 (RG 58 C/U)	single	27429	B
11 QMA-50-3-2 / 133 NH	23017703	U7 (RG 58 C/U)	bulk 100 pcs.	27429	B

## Right Angle Cable Plugs (male)

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

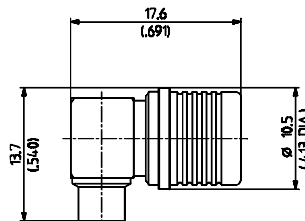
- > cable entry soldered
- > centre contact soldered



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Notes
16 QMA-50-2-3 / 133 NE	23017666	Y11,Y3 (Sucoform 86)	single	27444	
16 QMA-50-2-3 / 133 NH	23017667	Y11,Y3 (Sucoform 86)	bulk 100 pcs.	27444	

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

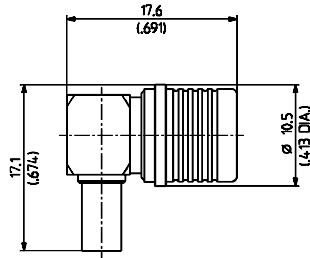
- > cable entry soldered
- > centre contact soldered



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Notes
16 QMA-50-3-3 / 133 NE	23017693	Y12,Y5 (Sucoform 141)	single	27444	
16 QMA-50-3-3 / 133 NH	23017694	Y12,Y5 (Sucoform 141)	bulk 100 pcs.	27444	

> for flexible cables

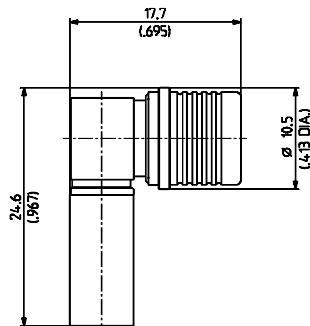
- > cable entry crimp
- > centre contact soldered



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Crimp Insert
16 QMA-50-2-1 / 133 NE	23017654	U4 (K 02252 D)	single	27443	A
16 QMA-50-2-1 / 133 NH	23017644	U4 (K 02252 D)	bulk 100 pcs.	27443	A
16 QMA-50-2-2 / 133 NE	23017657	U2 (RG 316/U)	single	27443	A
16 QMA-50-2-2 / 133 NH	23017658	U2 (RG 316/U)	bulk 100 pcs.	27443	A

> for flexible cables

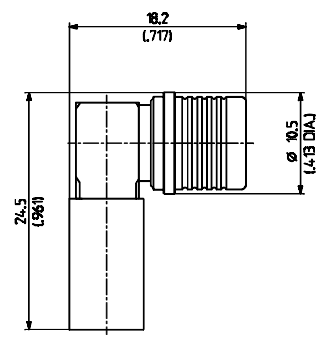
- > cable entry crimp
- > centre contact soldered



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Crimp Insert
16 QMA-50-3-1 / 133 NE	23017686	U9,U11 (RG 400/U)	single	27443	B
16 QMA-50-3-1 / 133 NH	23017687	U9,U11 (RG 400/U)	bulk 100 pcs.	27443	B
16 QMA-50-3-2 / 133 NE	23017691	U7 (RG 58 C/U)	single	27443	B
16 QMA-50-3-2 / 133 NH	23017692	U7 (RG 58 C/U)	bulk 100 pcs.	27443	B

> for flexible cables

- > cable entry crimp
- > centre contact soldered

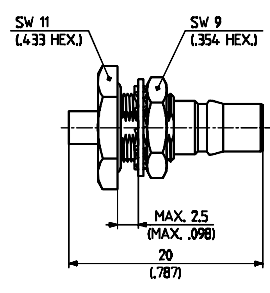


SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction	Crimp Insert
16 QMA-50-4-1 / 133 NH	23012849	S16 (S 04262 D)	bulk 100 pcs.	27405	C

### Straight Bulkhead Cable Jacks (female)

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

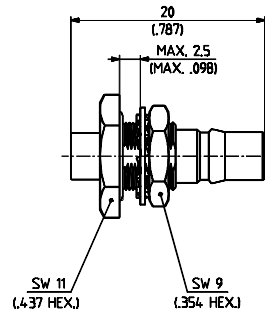
- > cable entry soldered
- > centre contact plugged-in
- > with panel seal



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction/ Mounting Hole	Notes
24 QMA-50-2-1 / 111 NE	23017742	Y11,Y3 (Sucoform 86)	single	27428 / ML 20	
24 QMA-50-2-1 / 111 NH	23017743	Y11,Y3 (Sucoform 86)	bulk 100 pcs.	27428 / ML 20	

> for semi-rigid cables, SUCOFORM and MULTIFLEX cables

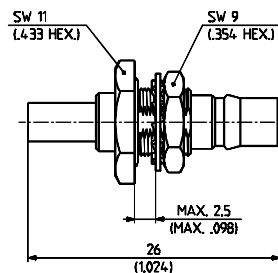
- > cable entry soldered
- > centre contact plugged-in
- > with panel seal



SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction/ Mounting Hole	Notes
24 QMA-50-3-3 / 111 NE	23017683	Y12,Y5 (Sucoform 141)	single	27428 / ML 20	
24 QMA-50-3-3 / 111 NH	23017684	Y12,Y5 (Sucoform 141)	bulk 100 pcs.	27428 / ML 20	

> for flexible cables

- > cable entry crimp
- > centre contact soldered
- > with panel seal

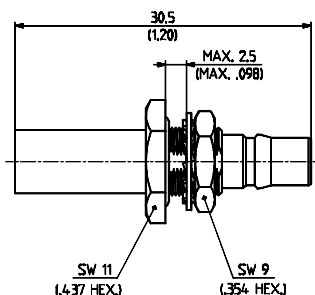


SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction/ Mounting Hole	Crimp Insert
24 QMA-50-2-2 / 133 NE	23017829	U4 (K 02252 D)	single	27429 / ML 20	A
24 QMA-50-2-2 / 133 NH	23017830	U4 (K 02252 D)	bulk 100 pcs.	27429 / ML 20	A
24 QMA-50-2-3 / 133 NE	23017837	U2 (RG 316/U)	single	27429 / ML 20	A
24 QMA-50-2-3 / 133 NH	23017838	U2 (RG 316/U)	bulk 100 pcs.	27429 / ML 20	A



> for flexible cables

- > cable entry crimp
- > centre contact soldered
- > with panel seal

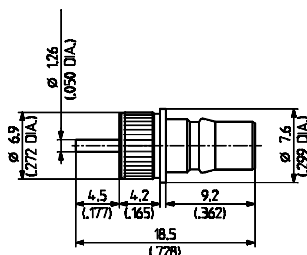


SUHNER TYPE	Article No.	Cable Group (example)	Packaging	Assembly Instruction/ Mounting Hole	Crimp Insert
24 QMA-50-3-1 / 133 NE	23017822	U9,U11 (RG 400/U)	single	27429 / ML 20	B
24 QMA-50-3-1 / 133 NH	23017823	U9,U11 (RG 400/U)	bulk 100 pcs.	27429 / ML 20	B
24 QMA-50-3-2 / 133 NE	23017795	U7 (RG 58 C/U)	single	27429 / ML 20	B
24 QMA-50-3-2 / 133 NH	23017796	U7 (RG 58 C/U)	bulk 100 pcs.	27429 / ML 20	B

## Receptacles with Solder End

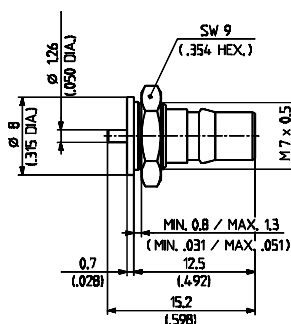
### Receptacles, Jack (female)

- > bulkhead mounted
- > press-in chassis mount



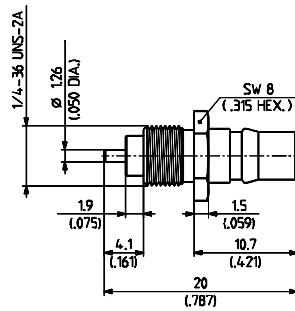
SUHNER TYPE	Article No.	Packaging	Mounting Hole	Notes
22 QMA-50-0-1 / 133 NE	23027250	single	ML 143	press-in

- > bulkhead mounted
- > without panel seal



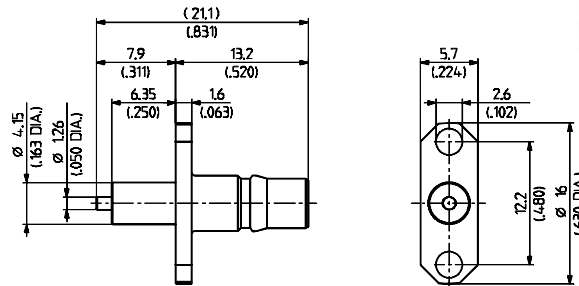
SUHNER TYPE	Article No.	Packaging	Mounting Hole	Notes
22 QMA-50-0-3 / 133 NH	23018585	bulk 100 pcs.	ML 20	flush dielectric

- > bulkhead mounted
- > without panel seal



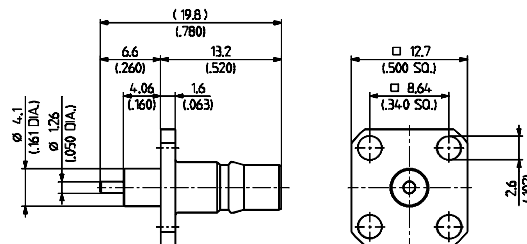
SUHNER TYPE	Article No.	Packaging	Notes
22 QMA-50-0-4 / 133 NH	23022628	bulk 100 pcs.	extended dielectric

- > panel mounted
- > 2-hole flange



SUHNER TYPE	Article No.	Packaging	Notes
23 QMA-50-0-2 / 111 NH	23024985	bulk 100 pcs.	extended dielectric

- > panel mounted
- > 4-hole flange

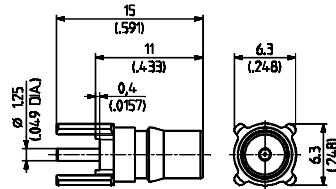


SUHNER TYPE	Article No.	Packaging	Notes
23 QMA-50-0-3 / 111 NH	23025007	bulk 100 pcs.	extended dielectric

# PCB Connectors

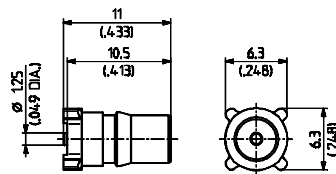
## Straight PCB Jacks (female)

> with stand-off



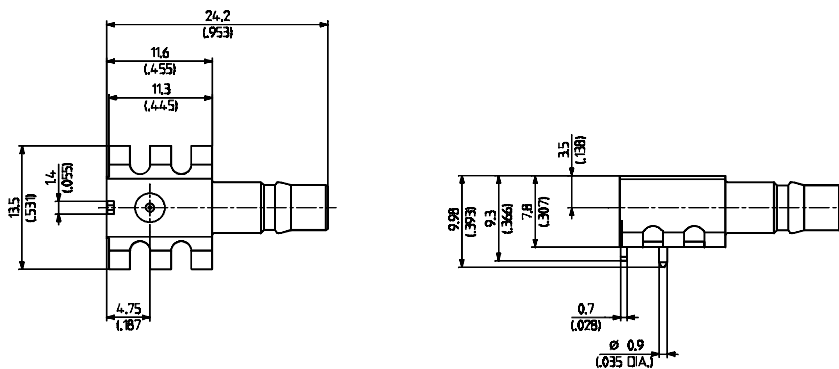
SUHNER TYPE	Article No.	Packaging	PCB Layout	Notes
82 QMA-50-0-3 / 111 NH	23017656	bulk 100 pcs.	ML 41	

> surface mount type SMT



SUHNER TYPE	Article No.	Packaging	PCB Layout	Notes
82 QMA-550-0-2 / 111 NH	23017631	bulk 100 pcs.	ML 136	

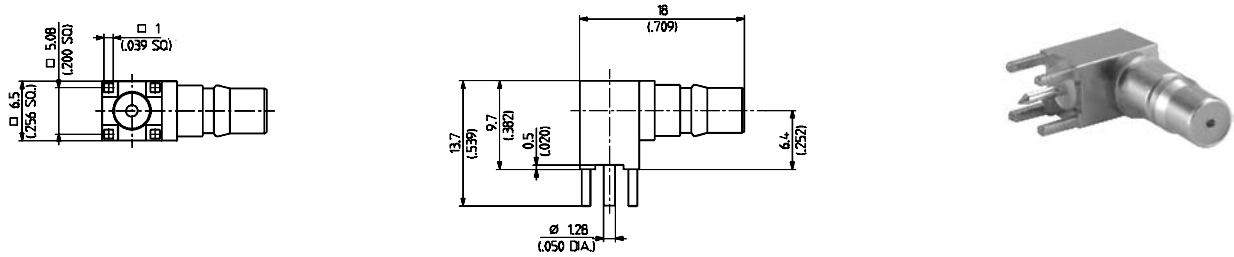
> surface mount type SMT (with setting pin)



SUHNER TYPE	Article No.	Packaging	PCB Layout	Notes
85 QMA-550-0-2 / 111 NM	23021299	Tape and Reel	ML 137	

## Right Angle PCB Jacks (female)

> with stand-off

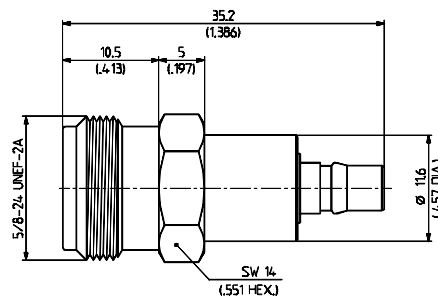


SUHNER TYPE	Article No.	Packaging	PCB Layout	Notes
85 QMA-50-0-3 / 111 NH	23021463	bulk 100 pcs.	ML 41	

## Adaptors Between Series

### Straight Adaptors

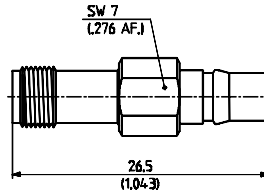
> N = jack (female)  
> QMA = jack (female)



SUHNER TYPE	Article No.	Packaging	Notes
31 N-QMA-50-1 / 1-- NE	23027960	single	precision adaptor

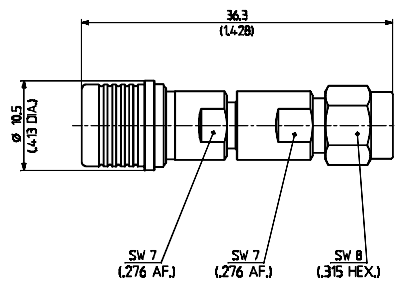
## Phase Matched Adaptors

- > PC3.5 = jack to jack (female)
- > QMA = jack to jack (female)



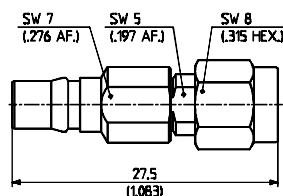
SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
31 PC35-QMA-50-1 / 199 NE	23017468	single	25.4 ± 2.6 mm / 1.00 ± 0.102 in.	

- > PC3.5 = plug to plug (male)
- > QMA = plug to plug (male)



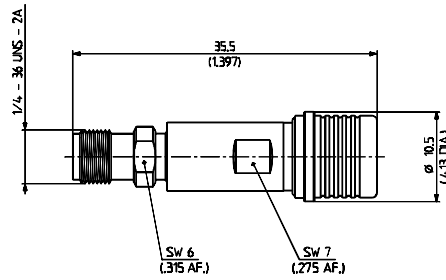
SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
32 PC35-QMA-50-1 / 1-- NE	23017489	single	25.4 ± 2.6 mm / 1.00 ± 0.102 in.	

- > PC3.5 = plug to plug (male)
- > QMA = jack to jack (female)



SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
33 PC35-QMA-50-1 / 199 NE	23017467	single	25.4 ± 2.6 mm / 1.00 ± 0.102 in.	

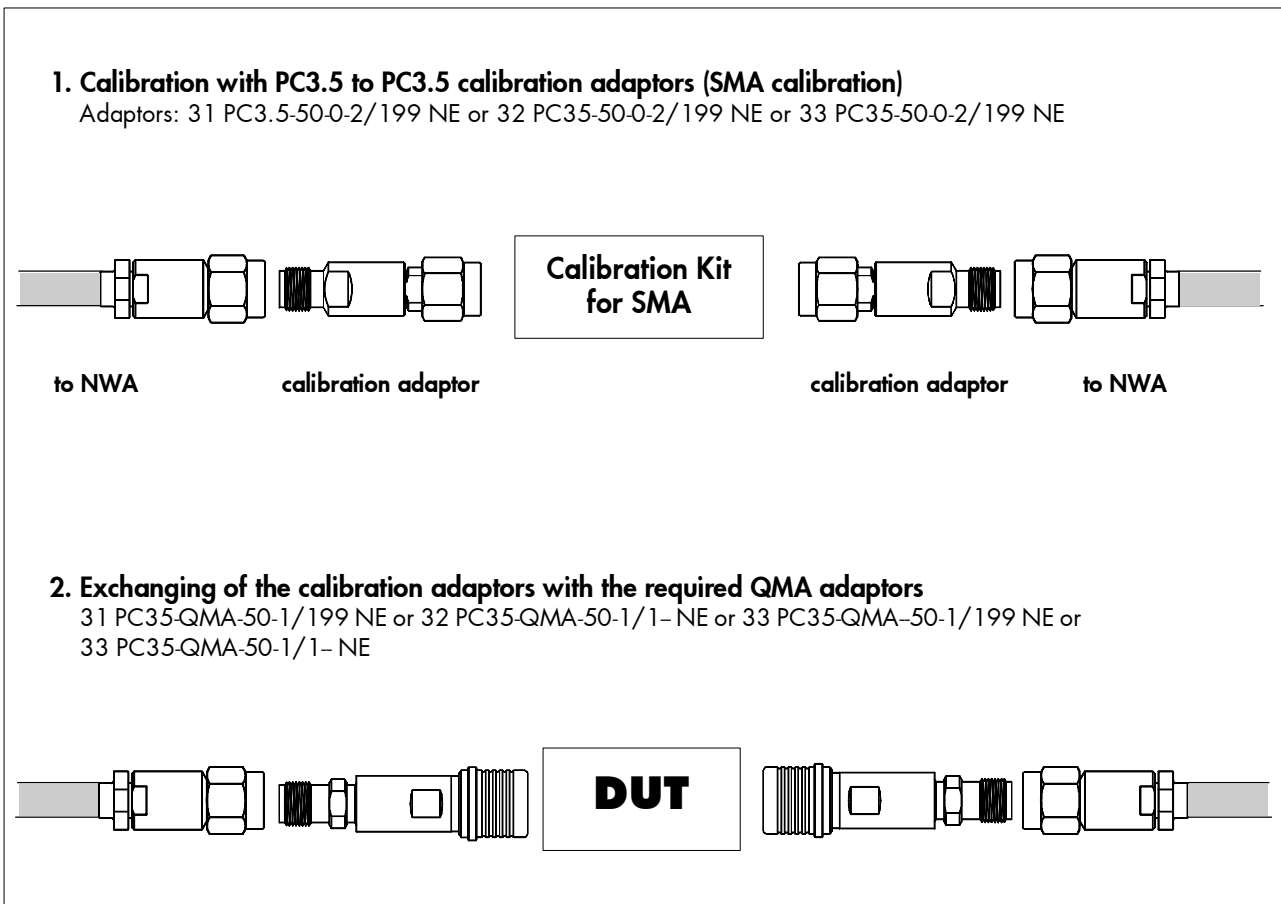
- > QMA = plug to plug (male)
- > PC3.5 = jack to jack (female)



SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
33 QMA-PC35-50-1 / 1-- NE	23017488	single	25.4 ± 2.6 mm / 1.00 ± 0.102 in.	

## QMA-Calibration with adaptor swapping method

For return Loss/VSWR measurement of QMA connectors, HUBER+SUHNER recommends the following calibration method:

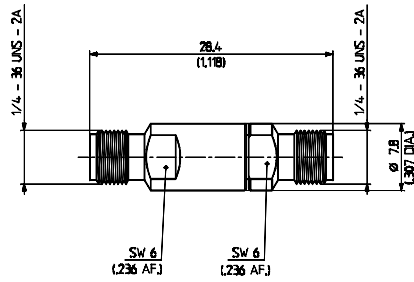


Thanks to the same electrical length and the same return loss behaviour of all these adaptors, the adaptor swapping method can be used (same dimensions of all electrical relevant piece parts in these adaptors).

# PC 3.5 Adaptors for Calibration

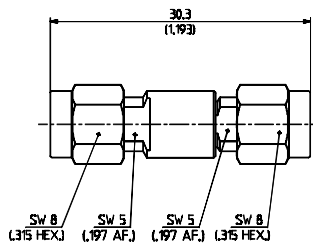
## Straight Adaptors

> jack to jack (female)



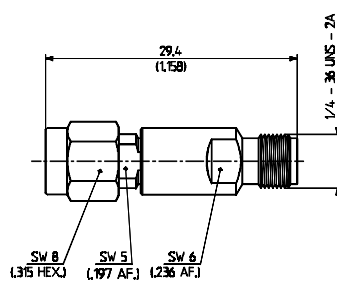
SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
31 PC35-50-0-2 / 199 NE	23020456	single	ML 58	

> plug to plug (male)



SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
32 PC35-50-0-2 / 199 NE	23020457	single	ML 58	

> plug to jack (male-female)

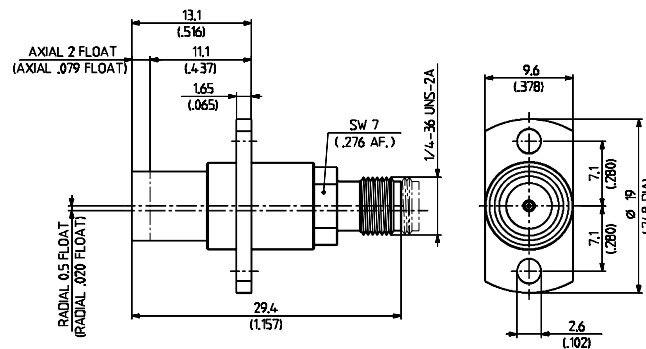


SUHNER TYPE	Article No.	Packaging	Electrical Length	Notes
33 PC35-50-0-2 / 199 NE	23020453	single	ML 58	

## RF Components

### Floating Adaptors

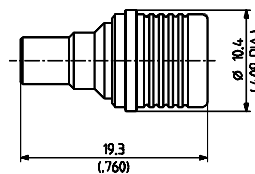
To support volume electrical testing of RF-Systems (e.g. filters) in production, HUBER+SUHNER offers a floating adaptor. The QMA adaptor is mounted on a testing jig and is pushed towards the interfaces on the test specimen to contact several connectors in one step. The adaptor can cope with the required misalignment in radial and axial direction to do several connections in one step.



SUHNER TYPE	Article No.	Packaging	Mounting Hole	Notes
39 QMA-SMA-U50-1 / 11- NE	23022741	single	ML 58	

### Terminations

> plug (male)



SUHNER TYPE	Article No.	Packaging	Power	Notes
65 QMA-50-0-2 / 13- NH	23024831	bulk 100 pcs.	0.5 Watt max	23 dB return loss DC to 6 GHz



## Assembly Tools

### small crimp tool with interchangeable inserts 1/2A, 2B, 2C



Fig. 1

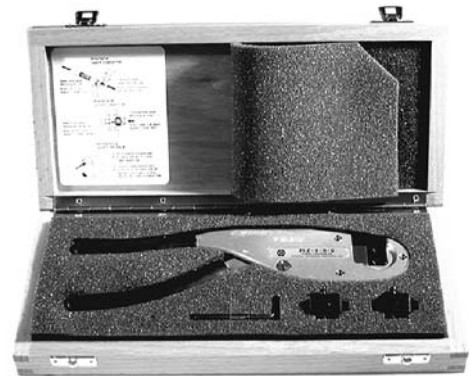
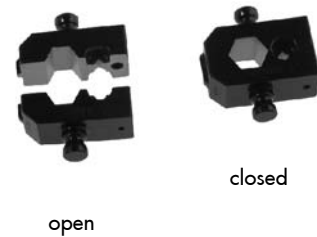


Fig. 2

SUHNER TYPE	Article No.	Notes	Fig.
75 Z-0-0-50	22544754	tool without inserts	1
75 Z-0-0-51	22544755	tool with various inserts in wooden box (1/2A, 2B, 2C)	2

### interchangeable inserts for small crimp tool



SUHNER TYPE	Article No.	Size	Colour code for standard types	Square-section	Hexagonal section
76 Z-0-2-51	22544756	1/2A	red	0.7/1.6 mm (.028/.063 in.)	3.3 mm (.130 in.)
76 Z-0-3-51	22544757	2B	orange	1.6 mm (.063 in.)	5.5 mm (.217 in.)
76 Z-0-4-51	22544758	2C	yellow	1.6 mm (.063 in.)	6.5 mm (.256 in.)

### large crimp tool with interchangeable inserts 1/2A, 2B, 2C, 3D



Fig. 1



Fig. 2

SUHNER TYPE	Article No.	Notes	Fig.
75 Z-0-0-1	22543157	tool without inserts	1
76 Z-0-0-15	22543177	tool with various inserts in wooden box (1/2A, 2B, 2C, 3D)	2

**table press with interchangeable inserts**



SUHNER TYPE	Article No.	Notes
75 Z-0-0-2	22543158	press without inserts

**interchangeable inserts for large crimp tool and table press**



SUHNER TYPE	Article No.	Size	Colour code	Square-section	Hexagon section
76 Z-0-2-1	22543181	1/2 A	red	0.7/1.6 mm (.028/.063 in.)	3.3 mm (.130 in.)
76 Z-0-3-1	22543185	2B	orange	1.6 mm (.063 in.)	5.5 mm (.217 in.)
76 Z-0-4-1	22543189	2C	yellow	1.6 mm (.063 in.)	6.5 mm (.256 in.)

**decoupling tool for high density applications**



SUHNER TYPE	Article No.	Notes
74 Z-0-0-372	23021575	decoupling tool for QMA connectors

**assembly tools for semi-rigid and SUCOFORM cables**



SUHNER TYPE	Article No.	Note
74 Z-0-0-157	22643029	cable stripping jig including cutting insert set 74 Z-0-0-160

**cutting inserts for assembly tool 74 Z-0-0-157**



SUHNER TYPE	Article No.	Note
74 Z-0-0-160	22643514	cutting insert set for cables EZ 47, EZ 86 and EZ 141
74 Z-0-0-207	22645363	cutting inserts for EZ 86
74 Z-0-0-208	22645362	cutting inserts for EZ 141

**special tools for QMA assembling**



SUHNER TYPE	Article No.	Note
74 Z-0-0-360	23023444	locator tools, W360

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