RF Multipin Connectors
SQ-, TQ-, IQ-, and RQ-Series

Spectrum
Elektrotechnik GmbH

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The Company: Spectrum Elektrotechnik GmbH was founded in 1981 and has become a leading supplier of state-of-the-art components used in RF and microwave technology, including connectors, adapters, cable assemblies, phase shifters, couplers, gain amplitude equalizers, terminations, and calibration kits. In addition, a number of complex and integrated components have been engineered and manufactured for specialized programs and various customers' special needs. Throughout the world, Spectrum Elektrotechnik GmbH has established a reputation as a design, development, and manufacturing center. The company has attained recognition for setting standards, introducing new ideas into the field, and for its leadership in cutting-edge technologies.

The Products: Spectrum's products are used in many commercial systems including cellular applications, radios, SatCom/VSAT, satellites, space applications, test centers, and wireless communication. Spectrum's products are also used in various defense applications including airborne radars, electronic intelligence, electronic warfare, jamming systems, and missile guidance. Wherever RF or microwave expertise and advanced manufacturing technologies are needed, you will find Spectrum Elektrotechnik GmbH.

Newest information always at:
www.spectrum-et.com

Spectrum Elektrotechnik GmbH is a leading manufacturer of RF and Microwave Components in the Frequency Range of DC to 65 GHz. The products are published in eight individual catalogs, showing detailed information and comprehensive data.

Adapters, DC - 65 GHz, 50 Ohms
Coaxial Adapters (In Series and Between Series)
High Power Adapters
Push-On Adapters
Waveguide to Coax Adapters

Connectors, DC - 65 GHz, 50 Ohms
Blind Mate Connectors
Coaxial Connectors
High Power Connectors
Multi Pin Connectors
Push-On Connectors

Cable Assemblies, DC-65 GHz, 50 Ohms
ANA Test Cables
Flexible Cable Assemblies
Low Loss Cable Assemblies
Phase Stable Cable Assemblies
Semi Rigid Cable Assemblies (Dia. 0.034" to 1")

Test Necessities and Accessories, DC-65 GHz, 50 Ohms
LRL, TRL Calibration and Verification Kits
ANA Cable Assemblies
Torque Wrenches
Interface Gauges
Calibration Kits
Terminations

Components, 50 Ohms
Attenuators
Circulators
CDM-Components
Couplers
Custom Components
DC-Blocks, DC-18 GHz
Duplexers
Gain-Equalizers, DC-33 GHz
Isolators, DC-40 GHz
Limiters
Mismatches
Phase Shifters, DC-63 GHz
Terminations, DC-65 GHz
Waveguide Components

Quick Connections, 50 Ohms, DC-40 GHz
Blind Mate Connectors
Push - On Adapters
Push - On Connectors
Push - On Cable Assemblies
SQ-, TQ-, IQ-, RQ-Series, Multi Coax Connections, DC-40 GHz

Components, 75 Ohms
Adapters
Connectors

Machines and Tools
Coax Cable Cutting/Stripping Machines
Flex Cable Cutting/Stripping Machines

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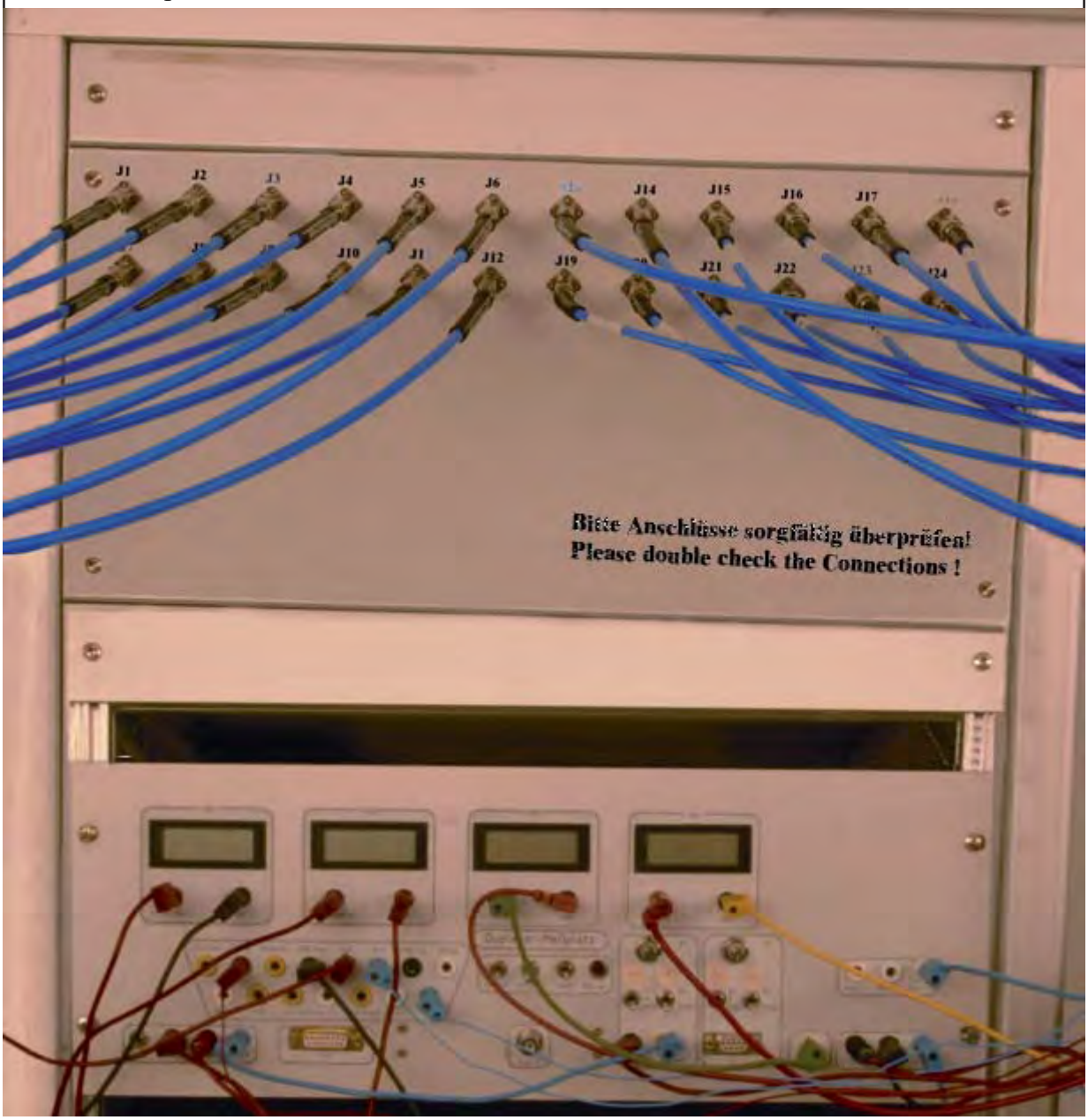
Contents

General RF Multipin Connectors

The Problem: In various applications many coaxial microwave links have to be connected and disconnected. This means threadening and unthreadening, torquing and untorquing. Very dense packaging is not possible, as there is still room needed for manual threadening and for the use of a torque wrench. In helicopters and aircrafts all connectors usually have to be safely secured, e.g. by wiring the coupling nuts of the connectors, using wire holes, a time-consuming process.

Threadening and torquing, unthreadening and untorquing 24 connections, a time consuming process, and lots of space is needed.



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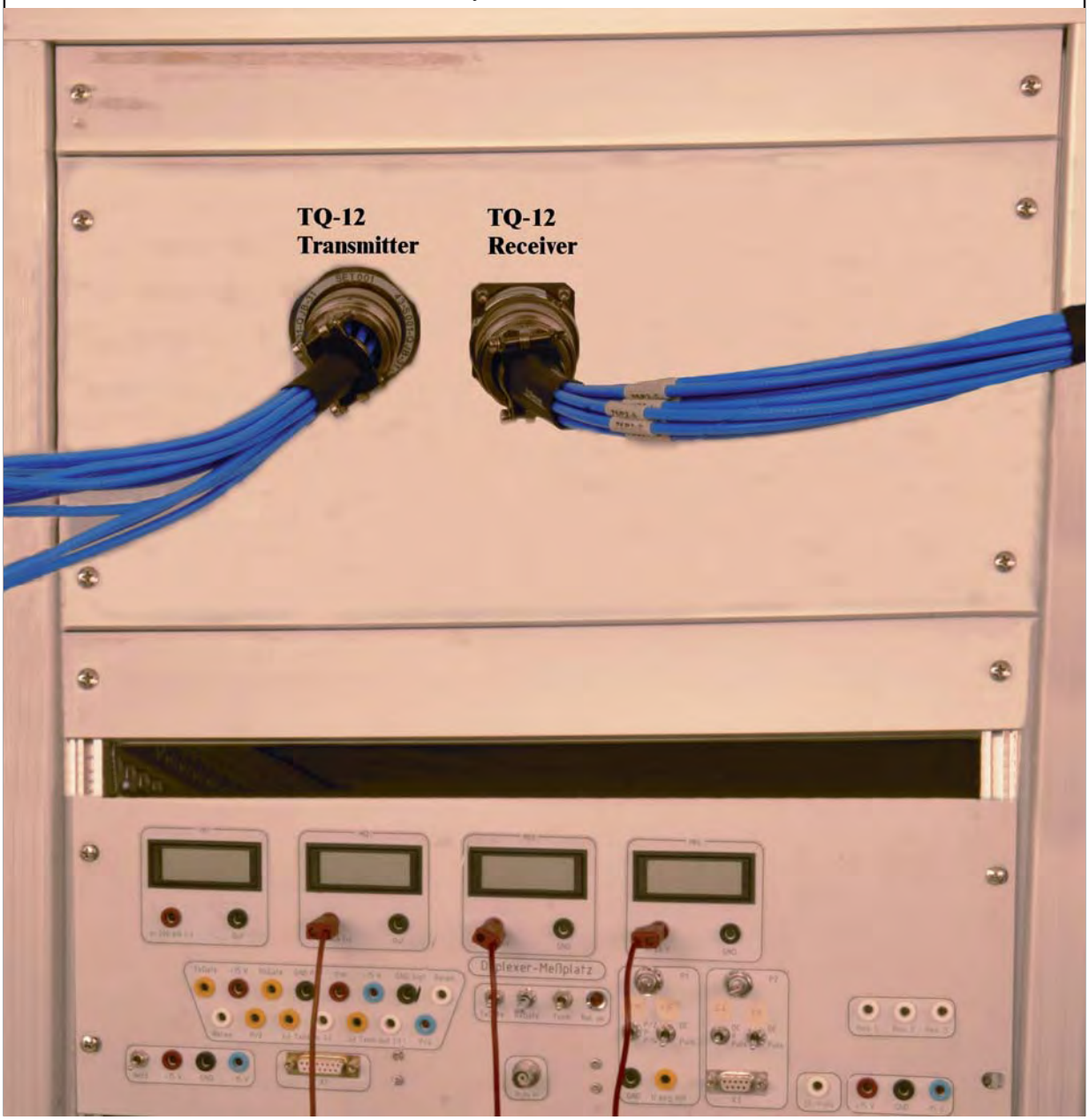
RF Multipin Connectors General

The Solution: Spectrum's Multipin Connectors are available with four (4), seven (7), eight (8) twelve (12) and twenty three (23) coaxial inserts (terminating the coaxial cable assemblies) at the Multipin end, connecting all the coaxial cable assemblies at once and in seconds with no need of a torque wrench, no need for safety wires and using minimum space.

24 cable assemblies in 2 connectors, safely connected and disconnected within seconds.



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The different Multipin Series

a) The traditional model is the **SQ-8** Multipin Connector using the circular size 21 shell per MIL-DTL-38999, supplied with eight (8) coaxial microwave inserts, terminating always one end of each cable assembly. As the inserts are spring loaded and use a bayonet catch, the cable assemblies can be inserted and replaced in seconds. The inserts were designed for Spectrum's Type 11 and Type 43 cables. The SQ-8 does not mate with the TQ-8 or IQ-8.

b) The new **TQ-Series** Multipin Connectors are using the circular size 21 shell per MIL-DTL-38999 with four (4) or eight (8) inserts and size 25 with seven (7) or twelve (12) inserts allowing the use of four different cables, Type 11, Type 43, Type 100 and Type 141, depending on flexibility and/or insertion loss needed.

c) The new **IQ-Series** Multipin Connectors are almost identical with the TQ-series, having one major difference: The outer conductors of the coaxial cable assemblies and the connector shell per MIL-DTL-38999 are not using the same ground. The coaxial lines can be guided in a metal hose, net mesh or armour, connected to the shells for lightening protection. TQ- and IQ-Series mate with each other.

d) The new **RQ-Series** Multipin Connectors are using a rectangular shell developed by Spectrum Elektrotechnik GmbH, allowing the dense packaging of twenty three (23) coaxial cable assemblies plus twenty six (26) signal lines in one connector, using Type 11 and/or Type 43 coaxial cable and AWG20 wire for the lower frequency signals or supplies.

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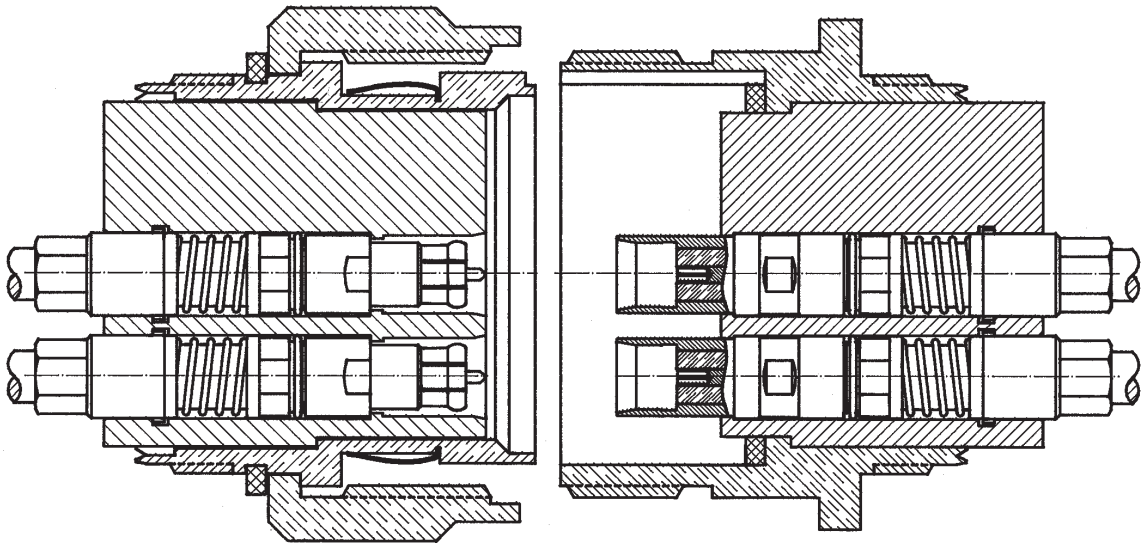
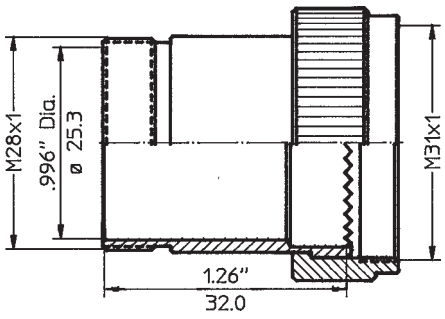
SQ-8 RF Multipin Connector



The cross section view demonstrates the perfect engineering that has lead to the success of the SQ-8: Every cable assembly terminated with an SQ-8 Insert can be replaced in minimum time by simply engaging/disengaging a bayonet catch. The inserts are spring loaded for blind mating / self alignment purposes. The outer conductor of the female insert protrudes above the reference plane of the SQ-8. During the mating process the female outer conductors will catch first the mating plane, align all eight female outer conductors prior to capturing and aligning the male outer conductors, before the center conductors will even come close to their mating positions.

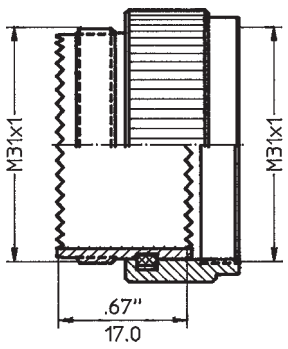
SQ-8 Standard Back Body



SQ-8 Standard Back Body Part No.	Surface Treatment
BPSQ-2101-07	Black anodized
BPSQ-2101-15	Nickel plated

Back body is aluminium

SQ-8 Adapter Back Body



SQ-8 Adapter Back Body Part No.	Surface Treatment
BPSQ-2102-07	Black anodized
BPSQ-2102-15	Nickel plated

Back body is aluminium

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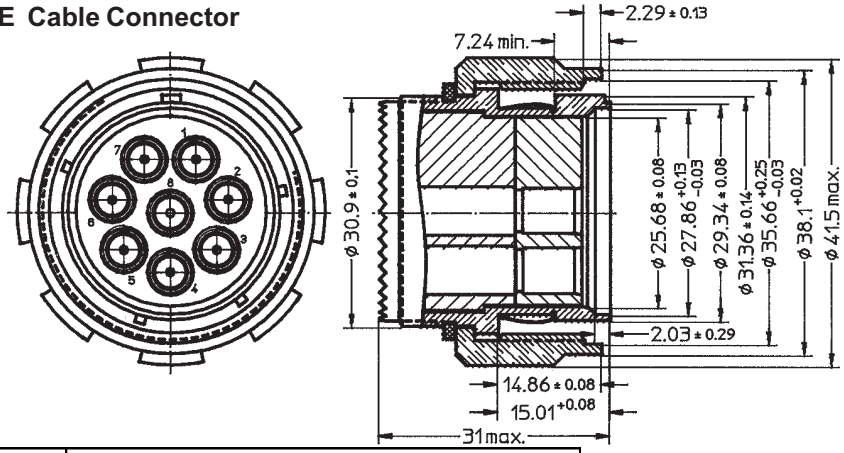
Interface Mating Dimensions (Per MIL-DTL-38999, Series III, Shell Size 21)

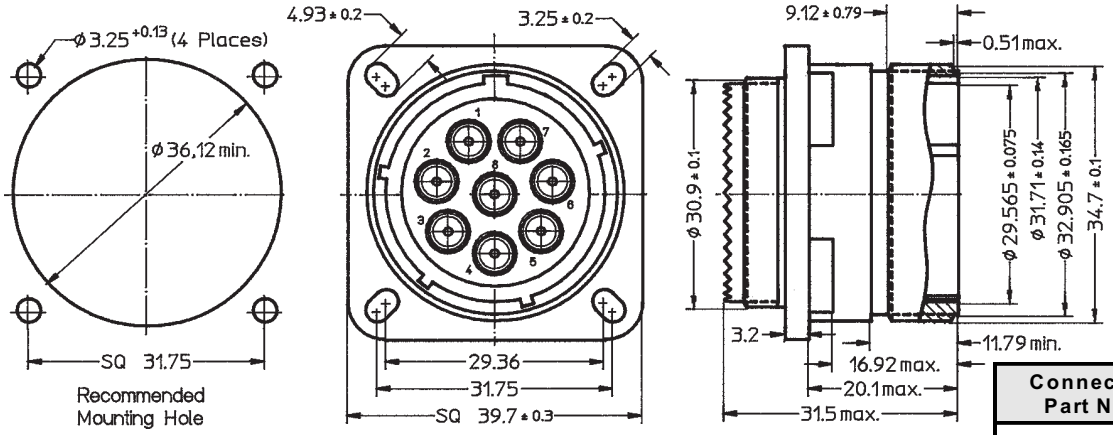
SQ-8 MALE Cable Connector



Connector Part No.
SQ-8MLE-XY

X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C=CADMIUM; N= NICKEL)

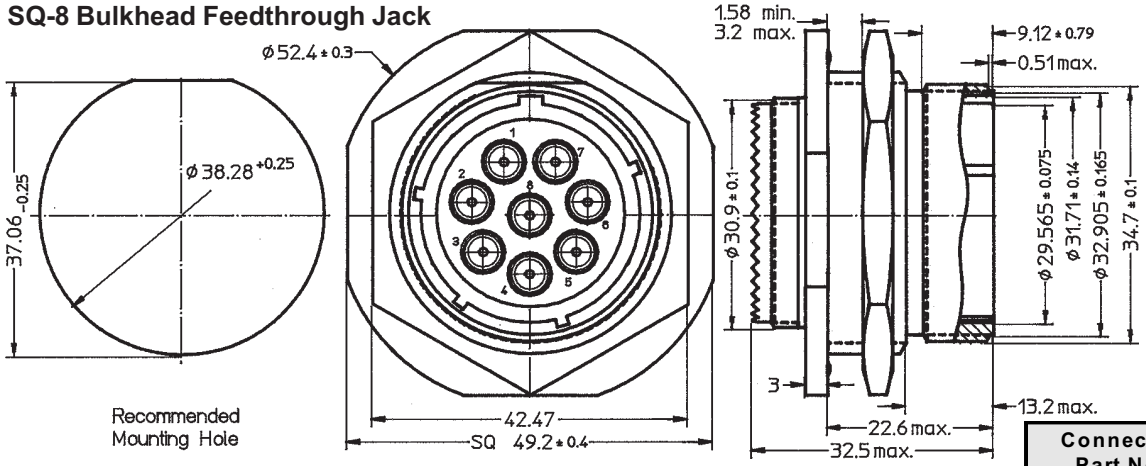
SQ-8 4 - Hole Flange Mount Jack



Connector Part No.
SQ-8FMJ-XY

X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C=CADMIUM; N= NICKEL)

SQ-8 Bulkhead Feedthrough Jack



Connector Part No.
SQ-8BFJ-XY

X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C=CADMIUM; N= NICKEL)

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SQ-8 RF Multipin Connector Inserts

SPECIFICATIONS OF THE SQ - 8 INSERTS

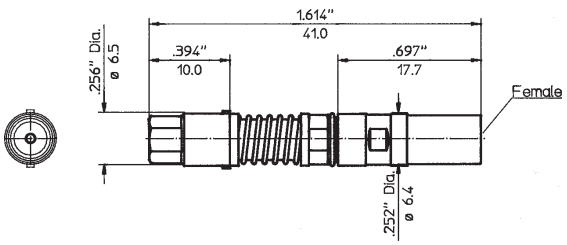
ELECTRICAL

Frequency Range	DC - 24.0 GHz min., DC - 40.0 GHz optional.
Insulation Resistance	The insulation resistance shall not be less than 5,000 megohms.
Voltage Standing Wave Ratio (VSWR)	1.02 + .005 * f (GHz)
Contact Resistance	The center contact resistance drop shall not exceed 3.0 milliohms and the outer contact resistance drop shall not exceed 2.0 milliohms.
Dielectric Withstanding Voltage	The magnitude of the test voltage shall be 1,000 volts rms at sea level.
RF High Potential Withstanding Voltage	The RF high potential withstanding voltage is 670 volts rms at 5 MHz.
RF Leakage	- (100 - f (GHz)) dB
Insertion Loss	(.03 SQT(f(GHz))) dB

MECHANICAL

Connector Durability	The connector is to be tested and its mating connector shall be subjected to 500 insertions and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and the connector shall meet the mating characteristic requirements.
Cable Retention Force	60 pounds (267 N) min., without stress relief.
Coupling Nut Retention Force	Not applicable.
Force to Engage and Disengage	Not applicable.
Longitudinal Force max.	Longitudinal force is not applicable.
Mating Characteristics	Applicable to Females only: oversize pin .0372 inch (.945 mm) max. dia.,.045 inch (1.14 mm) deep; insertion force 3 lbs. (13.34 N) max. with .037 inch (.94 mm) min. dia. pin; withdrawal force 1.00 oz (.278 N) min. with .0355 inch (.90 mm) max. dia. pin.
Recommended Mating Torque	Not applicable.

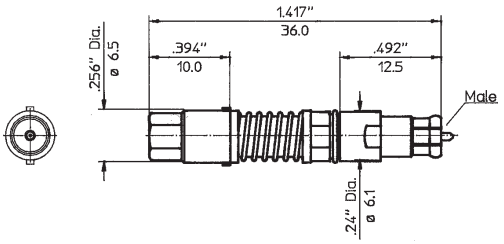
SQ-8 Insert Female



SQ-8 Insert Female Part No.	Connector Code	Cable Type
SQ15-2101-02	QF	43

Connector outer conductor is passivated stainless steel.
Center contact is beryllium copper gold plated.
Dielectric is PTFE.

SQ-8 Insert Male



SQ-8 Insert Male Part No.	Connector Code	Cable Type
SQ15-1102-02	QM	43

Connector outer conductor is passivated stainless steel.
Center contact is beryllium copper gold plated.
Dielectric is PTFE.

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TQ-Series

FEATURES

*** SHELLS:**
per MIL-DTL-38999, sizes 21 and 25

*** CONNECTOR TYPES:**
Male
Four Hole Flange
Bulkhead Feedthrough Jack
and also a pressurized version of the Bulkhead Feedthrough Jack

*** INSERTS** (to be specified with the Cable Assemblies):
Spring loaded
Limited spring loaded
Fixed
Pressurized

THE PART NUMBER SYSTEM FOR THE IQ-MULTI-PIN CONNECTORS

		Number of coaxial contact spaces in the shell	Connector Type		Keyed Version	Surface Treatment C = Cadmium N = Nickel
TQ	-	04 (Shell Size 21) 07 (Shell Size 25) 08 (Shell Size 21) 12 (Shell Size 25)	BFJ (Female spring loaded BFJ) FBFJ (Female firm BFJ) FFMJ (Female firm Flange) FMJ (Female spring loaded Flange) FMLE (Male firm) LBFJ (Female limited floating BFJ) LFMJ (Female limited floating Flange) LMLE (Male limited floating) MLE (Male spring loaded) PBFJ (Female pressurized BFJ) PFMJ (Female pressurized Flange)	-	N A B C D	C N

Details about Finding the appropriate Part Number please refer to page 16

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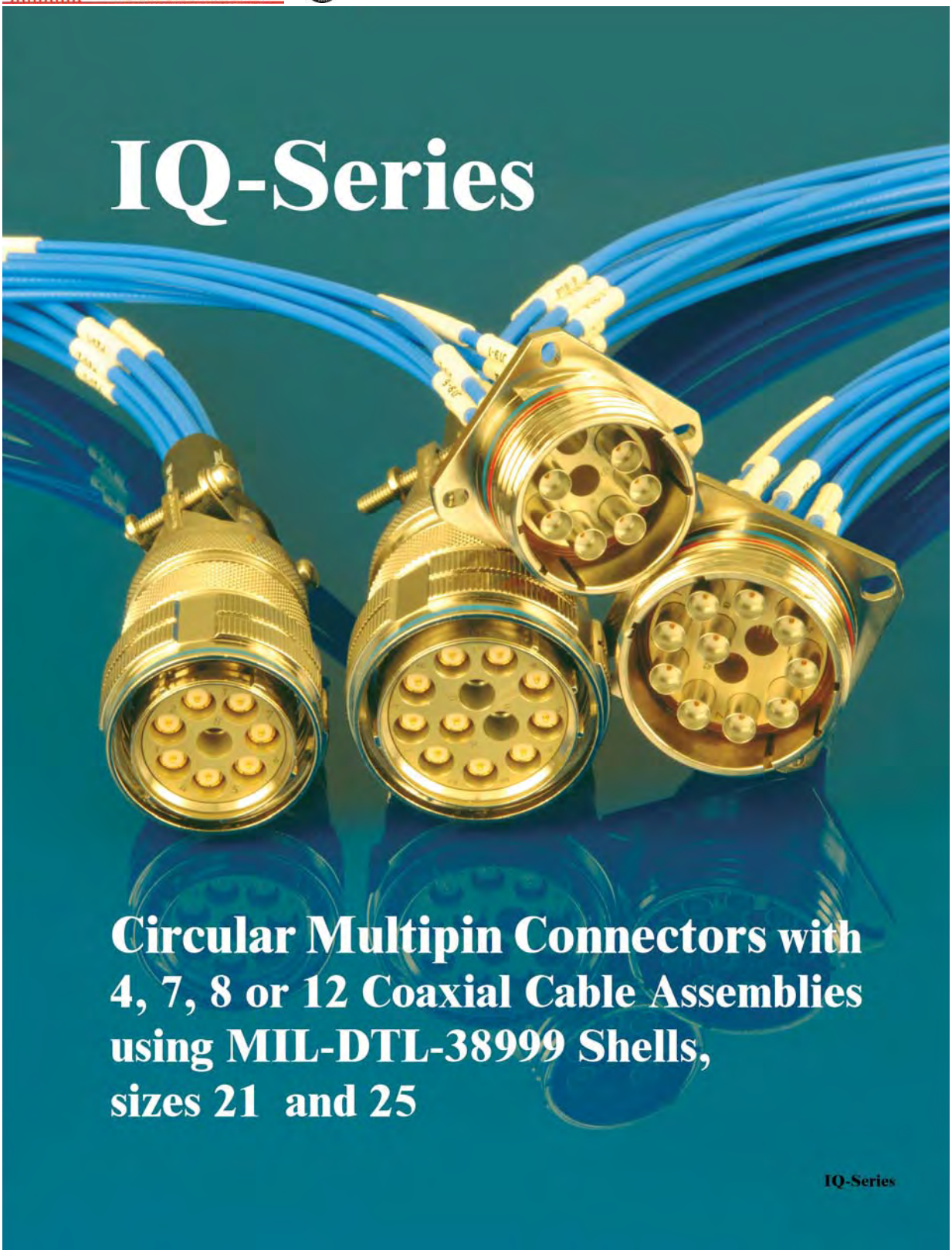

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IQ-Series

The TQ-Series and the IQ-Series are identical with just one major difference, the grounding of the assemblies.

TQ-Series:
The connector Body of the MIL-DTL-38999 shell and the outer conductors of the coaxial cable assemblies are using one common ground.

IQ-Series:
The connector Body of the MIL-DTL-38999 shell and the outer conductors of the coaxial cable assemblies are insulated from each other. Guiding the coaxial lines in metal armor or net mesh will protect the coaxial signal lines from lightening or other influences. In this case the harness is a Triax assembly

The Inserts used in the TQ- and IQ-Series are identical, as seen on pages 25 ff of the catalog.

The Part Number System for the IQ-Multi-Pin Connectors

		Number of coaxial contact spaces in the shell	Connector Type		Keyed Version	Surface Treatment C = Cadmium N = Nickel
IQ	-	**04** (Shell Size 21) **07** (Shell Size 25) **08** (Shell Size 21) **12** (Shell Size 25)	**BFJ** (Female spring loaded BFJ) **FBFJ** (Female firm BFJ) **FFMJ** (Female firm Flange) **FMJ** (Female spring loaded Flange) **FMLE** (Male firm) **LBFJ** (Female limited floating BFJ) **LFMJ** (Female limited floating Flange) **LMLE** (Male limited floating) **MLE** (Male spring loaded) **PBFJ** (Female pressurized BFJ) **PFMJ** (Female pressurized Flange)	-	**N** **A** **B** **C** **D**	**C** **N**

Details about Finding the appropriate Part Number please refer to page 16

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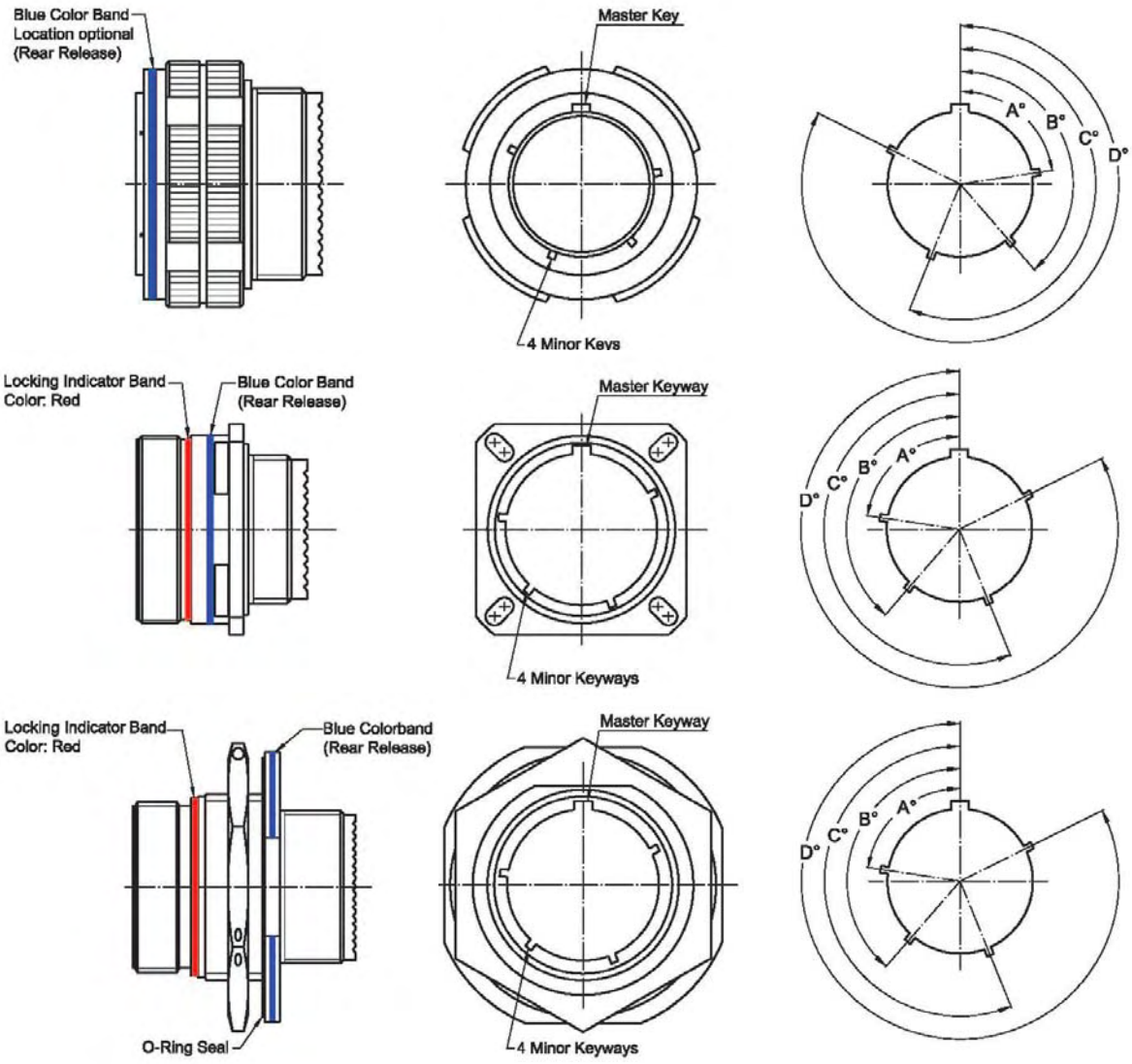
RF Multipin Connector Keying



Keying (X)	A°	B°	C°	D°
N	80	142	196	293
A	135	170	200	310
B	49	169	200	244
C	66	140	200	257
D	62	145	180	280
X in P/N to be replaced with the Key Parameter				

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Finding the Part Number of the Multipin Connector

Step 1:
Identify the Connector Series, IQ or TQ
Example: **TQ** *is chosen*
Part Number so far is: **TQ-**

Step 2:
Select the number of inserts you need in the Multipin Connector. The shells with 4 and 8 inserts are of size 21, the shells with 7 and 12 inserts are of size 25.
Important is also the cable you would like to use. Is size and flexibility of importance, or rather insertion loss? To identify your cable please refer to pages 44ff.
Example: **7 inserts** *are selected*
Part Number so far becomes: **TQ-07**

Step 3:
The connector type depends on the type of insert you are going to use. For details please refer to pages 14 and 15 for the connector shells and 25ff for details, advantages and disadvantages on the inserts.
Example: **The female Bulkhead Shell using spring loaded inserts with bayonet catch** *is selected*
Part Number so far becomes: **TQ-07BFJ-**

Step 4:
5 differently keyed connectors are available, N for normal or standard, and then A, B, C and D. For details please refer to page 15.
Example: **N** *is selected*
Part Number so far becomes: **TQ-07BFJ -N**

Step 5:
The surface treatment of the shells needs to be selected, C for Cadmium, N for Nickel
Example: **C** *is selected*
The final Part Number is: **TQ-07BFJ –NC**

Note 1: Selecting the female shell for 7 inserts you need to select the male shell also for 7 inserts. Only the shells with the same number of inserts and with the same key are mating with each other.

Note 2: The Part Number above describes the Multipin Connector without the cable assemblies. To identify the cable assemblies with the inserts or connectors terminating the cable selected, please refer to pages 37ff.

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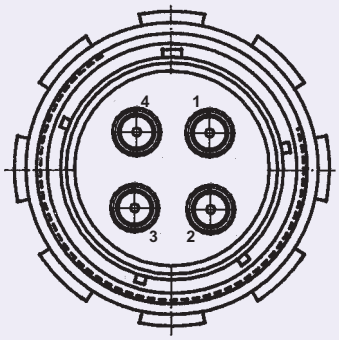
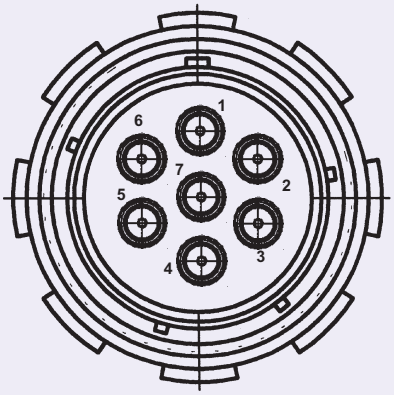
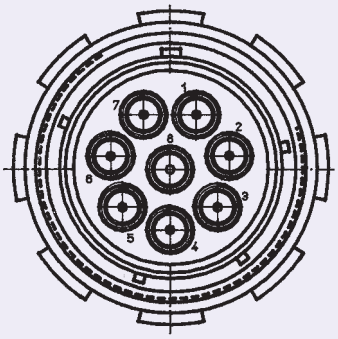


TQ-04
IQ-04

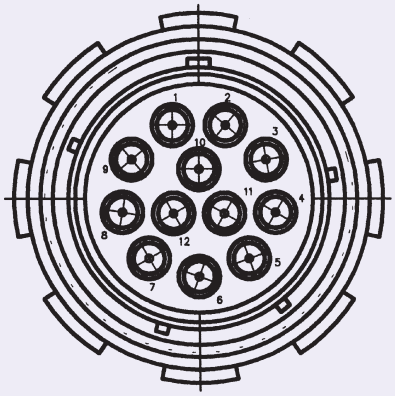


TQ-07
IQ-07

TQ-08
IQ-08



TQ-12
IQ-12



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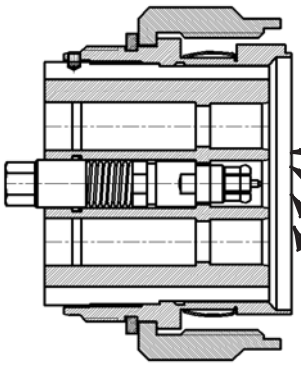
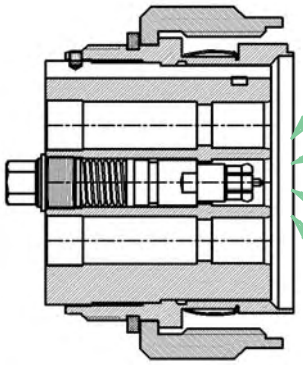
TQ-and IQ-Series Combinations



TQ- and IQ-MALE
using spring loaded inserts with Bayonet Catch

P/N	TQ-ABMLE-XY

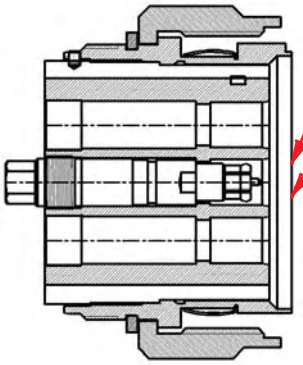
AB: NUMBER OF INSERTS (04, 07, 08, 12)	X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



TQ- and IQ-MALE
using firm mounted inserts but with Limited Floating

P/N	TQ-ABLMLE-XY

AB: NUMBER OF INSERTS (04, 07, 08, 12)	X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



TQ- and IQ-MALE
using firm mounted inserts

P/N	TQ-ABFMLE-XY

AB: NUMBER OF INSERTS (04, 07, 08, 12)	X: KEY (N, A, B, C, D)	Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)

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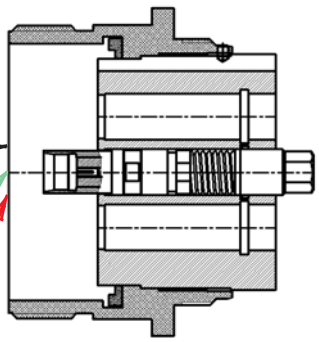
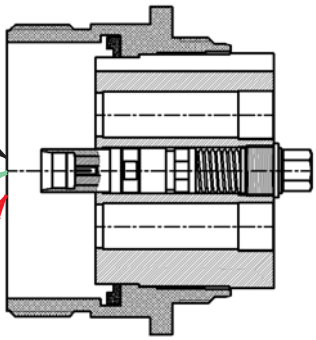


TQ- and IQ-FEMALE
using spring loaded inserts with Bayonet Catch

P/N	TQ-ABBFJ-XY	TQ-ABFMJ-XY
Mounting	BULKHEAD	4-HOLE-FLANGE

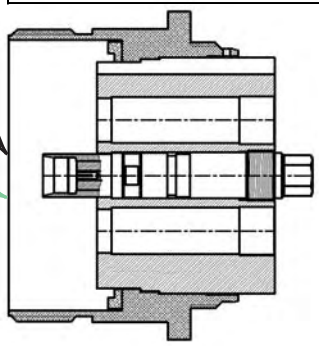
AB: NUMBER OF INSERTS (04, 07, 08, 12) | X: KEY (N, A, B, C, D) | Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



TQ-and IQ-FEMALE
using firm mounted inserts but with Limited Floating

P/N	TQ-ABLBFJ-XY	TQ-ABLFMJ-XY
Mounting	BULKHEAD	4-HOLE-FLANGE

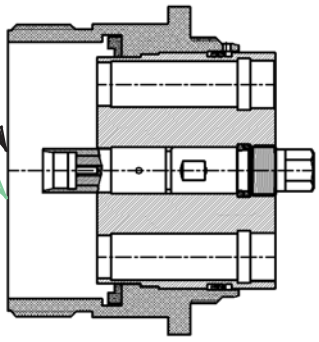
AB: NUMBER OF INSERTS (04, 07, 08, 12) | X: KEY (N, A, B, C, D) | Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



TQ- and IQ-FEMALE
using firm mounted inserts

P/N	TQ-ABFBFJ-XY	TQ-ABFFMJ-XY
Mounting	BULKHEAD	4-HOLE-FLANGE

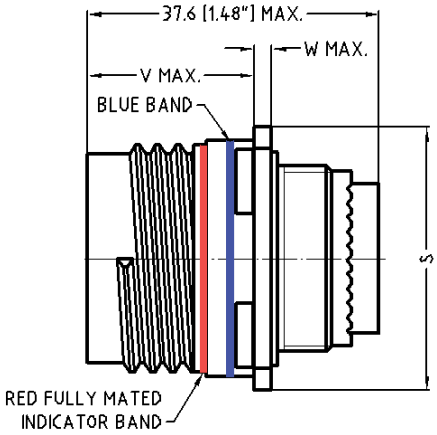
AB: NUMBER OF INSERTS (04, 07, 08, 12) | X: KEY (N, A, B, C, D) | Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



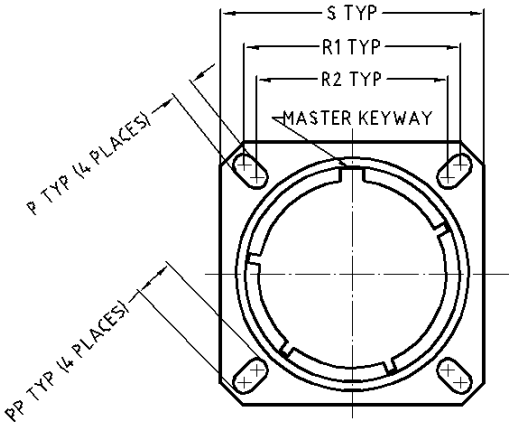
TQ- and IQ-FEMALE
pressurized using firm mounted inserts

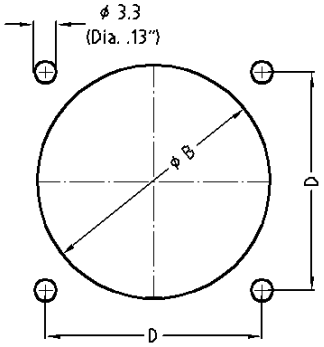
P/N	TQ-ABPBFJ-XY	TQ-ABPFMJ-XY
Mounting	BULKHEAD	4-HOLE-FLANGE

AB: NUMBER OF INSERTS (04, 07, 08, 12) | X: KEY (N, A, B, C, D) | Y: SHELL SURFACE TREATMENT (C = CADMIUM; N = NICKEL)



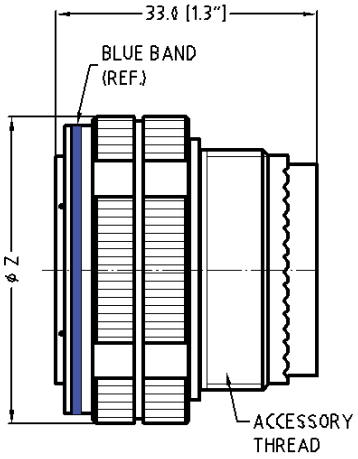
4-Hole Flange Mount Jack





Recommended Mounting Hole

Male



Shell Size	Dia.A max.	Dia. B	C Thread	D	H Flat	G	S ±.001 (±0.25)	V max.	W max.	R1 Typ	R2 Typ	P +.004 (+0.1) -.002 (0.05)	PP +.004 (+0.1) -.002 (0.05)	Dia.Z max.	Acces-sory Thread
21	2.074 (52.68)	1.422 (36.12)	M38x1	1.250 (31.75)	1.460 (37.08)	1.510 (38.35)	1.563 (39.70)	.791 (20.09)	.126 (3.20)	1.250 (31.75)	1.156 (29.36)	.128 (3.25)	.194 (4.93)	1.641 (41.68)	M31x1
25	2.322 (58.98)	1.672 (42.47)	M44x1	1.500 (38.10)	1.710 (43.43)	1.760 (44.70)	1.811 (46.00)	.791 (20.09)	.126 (3.20)	1.500 (38.10)	1.375 (34.93)	.154 (3.91)	.242 (6.15)	1.889 (47.98)	M37x1

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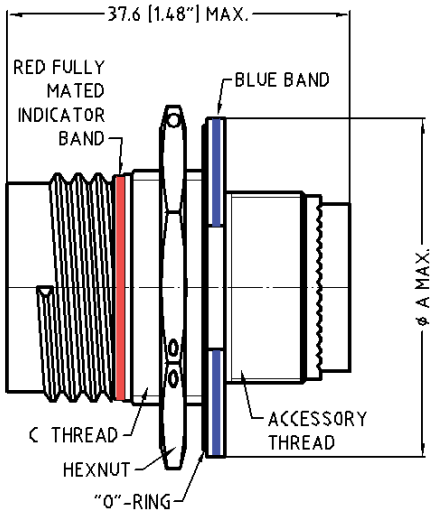
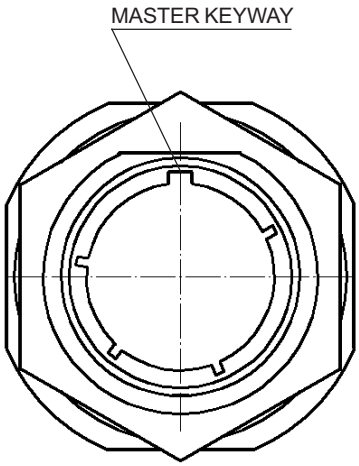
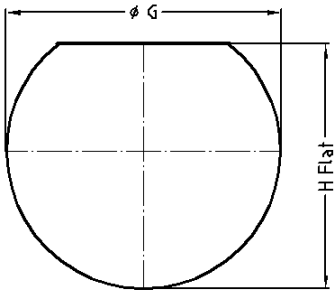
Bulkhead Feedtrough Jack





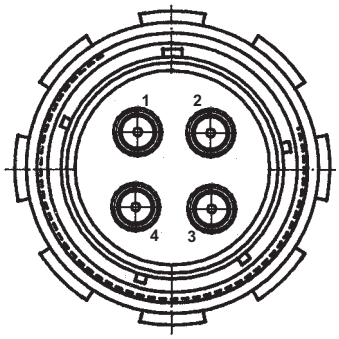
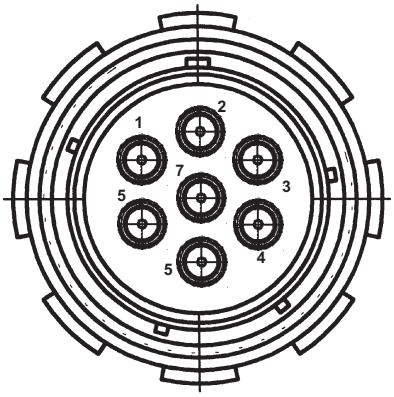
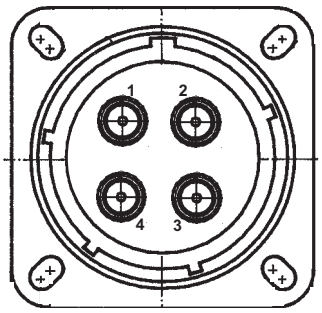
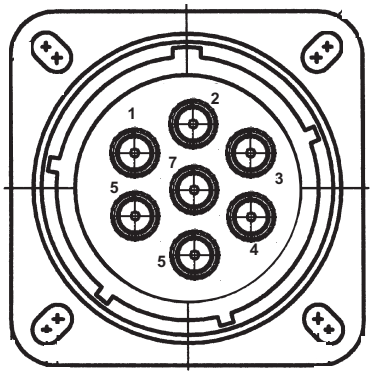
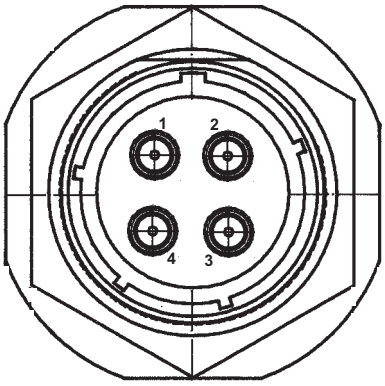
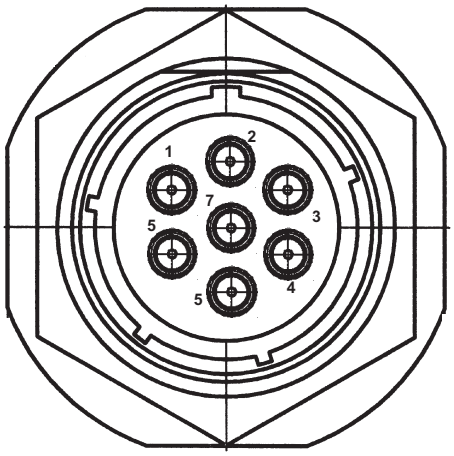


Recommended Mounting Hole

Shell Size	Dia.A max.	Dia. B	C Thread	D	H Flat	G	S ±.001 (±0.25)	V max.	W max.	R1 Typ	R2 Typ	P +.004 (+0.1) -.002 (0.05)	PP +.004 (+0.1) -.002 (0.05)	Dia.Z max.	Acces-sory Thread
21	2.074 (52.68)	1.422 (36.12)	M38x1	1.250 (31.75)	1.460 (37.08)	1.510 (38.35)	1.563 (39.70)	.791 (20.09)	.126 (3.20)	1.250 (31.75)	1.156 (29.36)	.128 (3.25)	.194 (4.93)	1.641 (41.68)	M31x1
25	2.322 (58.98)	1.672 (42.47)	M44x1	1.500 (38.10)	1.710 (43.43)	1.760 (44.70)	1.811 (46.00)	.791 (20.09)	.126 (3.20)	1.500 (38.10)	1.375 (34.93)	.154 (3.91)	.242 (6.15)	1.889 (47.98)	M37x1

Multipin.pmd

TQ-and IQ-Series Overview

TQ-04, IQ-04	TQ-07, IQ-07
male	
	
4 - Hole Flange Mount Jack	
	
Bulkhead Feedthrough Jack	
	

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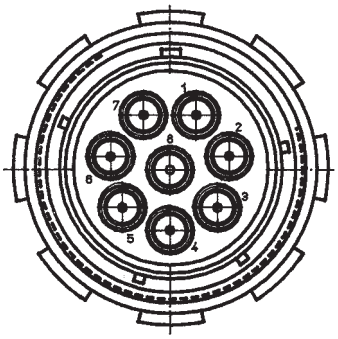
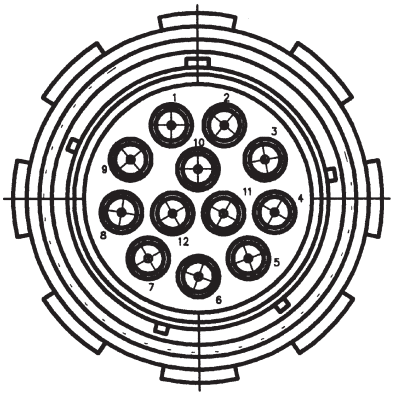
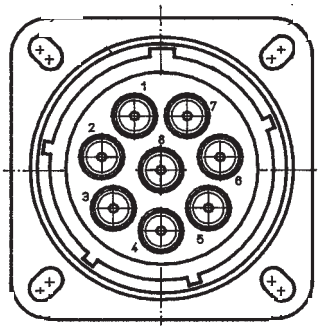
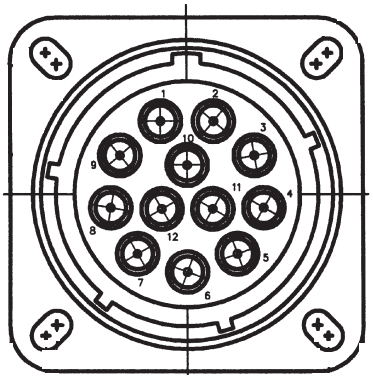
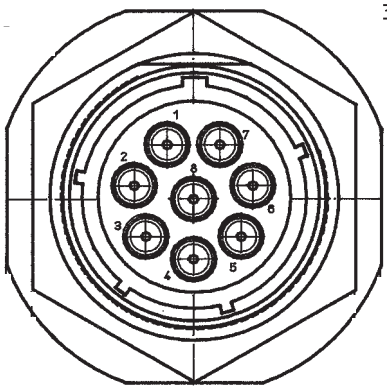
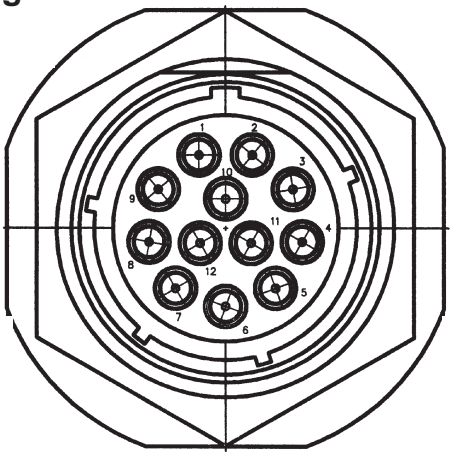
TQ-08, IQ-08	TQ-12, IQ-12
male	
	
4 - Hole Flange Mount Jack	
	
Bulkhead Feedthrough Jack	
	

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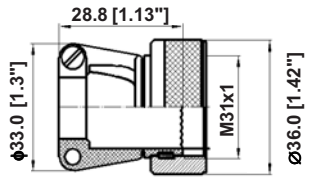
Circular Multipin, Backparts

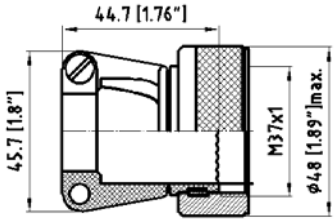
TQ-04 TQ-08	Shell Size 21	IQ-04 IQ-08	TQ-07 TQ-12	Shell Size 25	IQ-07 IQ-12

Straight Back Body with Clamps



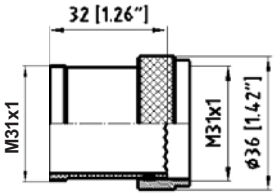
Standard Back Body Part No.	Surface Treatment
BPTQ-2101-07	Al black anodized
BPTQ-2101-15	Al nickel plated

Straight Back Body with Clamps



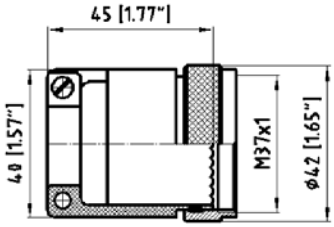
Standard Back Body Part No.	Surface Treatment
BPTQ-2501-07	Al black anodized
BPTQ-2501-15	Al nickel plated

Extender Back Body



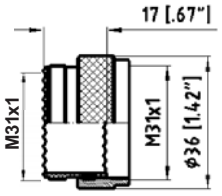
Standard Back Body Part No.	Surface Treatment
BPTQ-2102-07	Al black anodized
BPTQ-2102-15	Al nickel plated

Straight Back Body with Clamps



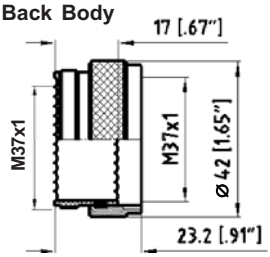
Standard Back Body Part No.	Surface Treatment
BPTQ-2502-07	Al black anodized
BPTQ-2502-15	Al nickel plated

Short Back Body



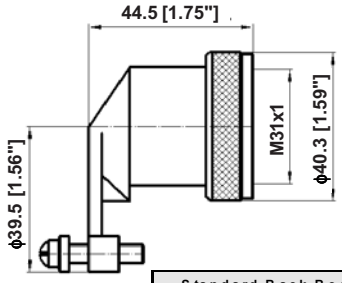
Standard Back Body Part No.	Surface Treatment
BPTQ-2103-07	Al black anodized
BPTQ-2103-15	Al nickel plated

Short Back Body



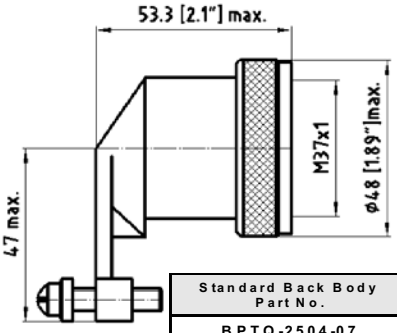
Standard Back Body Part No.	Surface Treatment
BPTQ-2503-07	Al black anodized
BPTQ-2503-15	Al nickel plated

Right Angle Back Body



Standard Back Body Part No.	Surface Treatment
BPTQ-2104-07	Al black anodized
BPTQ-2104-15	Al nickel plated

Right Angle Back Body



Standard Back Body Part No.	Surface Treatment
BPTQ-2504-07	Al black anodized
BPTQ-2504-15	Al nickel plated

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The Inserts

Several different inserts, as needed for the individual applications are available, as shown on the next pages, Frequency ranges: DC - 24 GHz and DC - 40 GHz

SPECIFICATION OF THE SQ - INSERTS	
ELECTRICAL	
Frequency Range	DC - 24.0 GHz min., DC - 40.0 GHz optional.
Insulation Resistance	The insulation resistance shall not be less than 5,000 megohms.
Voltage Standing Wave Ratio (VSWR)	1.02 + .005 * f (GHz)
Contact Resistance	The center contact resistance drop shall not exceed 2.0 milliohms and the outer contact resistance drop shall not exceed 2.0 milliohms.
Dielectric Withstanding Voltage	The magnitude of the test voltage shall be 1,000 volts rms at sea level.
RF High Potential Withstanding Voltage	The RF high potential withstanding voltage is 670 volts rms at 5 MHz.
RF Leakage	- (100 - f (GHz)) dB
Insertion Loss	(.03 SQT(f(GHz))) dB
MECHANICAL	
Connector Durability	The connector is to be tested and its mating connector shall be subjected to 500 insertions and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and the connector shall meet the mating characteristic requirements.
Cable Retention Force	60 pounds (267 N) min., without stress relief.
Coupling Nut Retention Force	Not applicable.
Force to Engage and Disengage	Not applicable.
Longitudinal Force max.	Longitudinal force is not applicable.
Mating Characteristics	Applicable to Females only: oversize pin .0372 inch (.945 mm) max. dia.,.045 inch (1.14 mm) deep; insertion force 3 lbs. (13.34 N) max. with .037 inch (.94 mm) min. dia. pin; withdrawal force 1.00 oz (.278 N) min. with .0355 inch (.90 mm) max. dia. pin.
Recommended Mating Torque	Not applicable.

This catalog only covers the Multipin Connector Series. Spectrum manufactures many more products. A short overview you will find on pages 50ff. Detailed information about all our products you will find on our Web Page. But at any time please feel free to contact our engineering staff for any product you are looking for. We may have designed already the unit you need.

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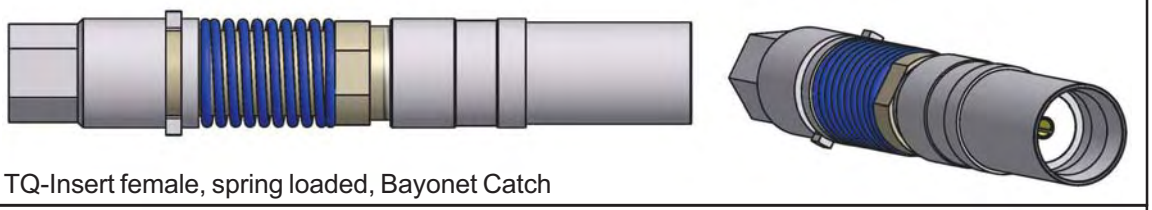
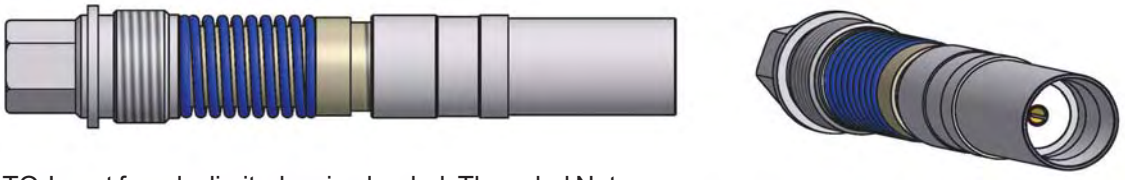
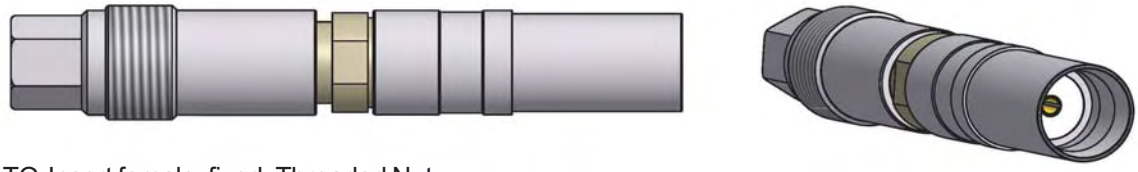
TQ- and IQ-Multipin, RF-Inserts



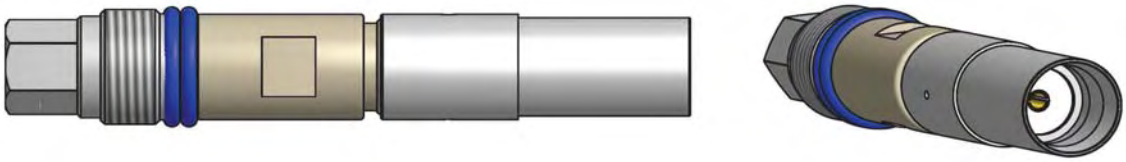
TQ-Insert female, spring loaded, Bayonet Catch



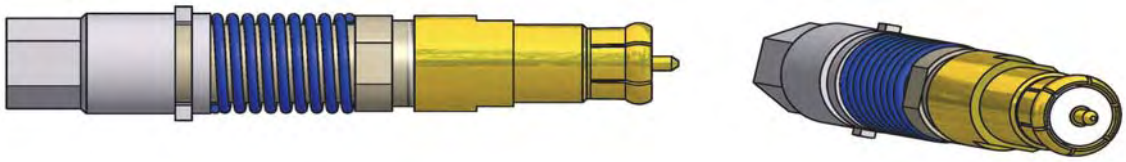
TQ-Insert female, limited spring loaded, Threaded Nut



TQ-Insert female, fixed, Threaded Nut

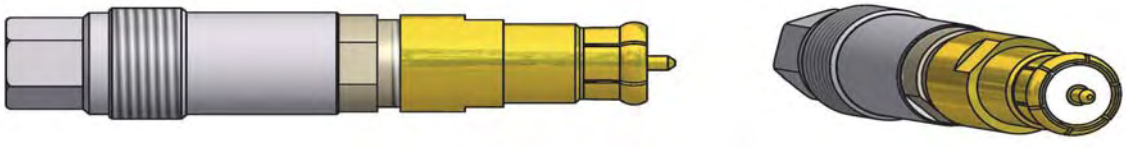


TQ-Insert female, pressurized, Threaded Nut



TQ-Insert male, spring loaded, Bayonet Catch

TQ-Insert male, limited spring loaded, Threaded Nut



TQ-Insert male, fixed, Threaded Nut

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Advantage and Disadvantage RF -Inserts, TQ- and IQ-Multipin

Advantage	Disadvantage
Very easy connection and replacement by using a bayonet catch	The cable assembly moves in axial direction during connection and disconnection of the TQ- and IQ-Multipin Connector
Connection and replacement by using a threaded back body. The connector still moves in radial direction ensuring perfect alignment when mating.	None
Connection and replacement by using a threaded back body. The connector is fixed in the TQ-Multipin Housing	None, but the mating connector needs to be limited spring loaded or spring loaded
Connector is pressurized, only for Bulkhead Feedthrough Shells, mounted in walls between chambers of different pressure. Connection and replacement by using a threaded back body. The connector is fixed in the TQ-Multipin Housing	None, but the mating connector needs to be limited spring loaded or spring loaded
Very easy connection and replacement by using a bayonet catch	The cable assembly moves in axial direction during connection and disconnection of the TQ- and IQ-Multipin Connector
Connection and replacement by using a threaded back body. The connector still moves in radial direction ensuring perfect alignment when mating.	None
Connection and replacement by using a threaded back body. The connector is fixed in the TQ-and and IQ-Multipin Housing	None, but the mating connector needs to be limited spring loaded or spring loaded

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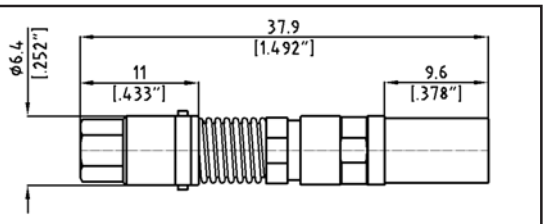
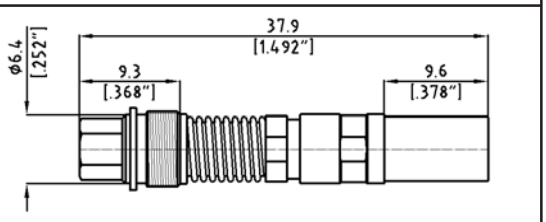
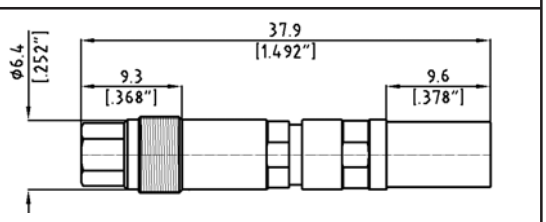
Cable Type		
11	141	43
TQ11-2101-02	TQ41-2101-02	TQ43-2101-02
Connector Code: QF		
TQ-Insert female, spring loaded, Bayonet Catch, DC-24 GHz		



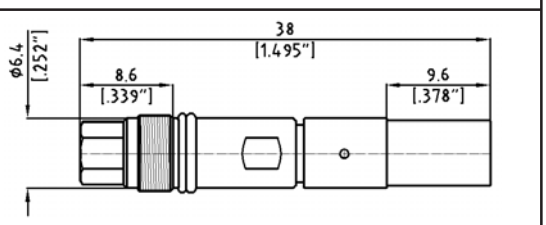
Cable Type		
11	141	43
TQ11-21S1-02	TQ41-21S1-02	TQ43-21S1-02
Connector Code: QFE		
TQ-Insert female, limited spring loaded, Threaded Nut, DC-24 GHz		



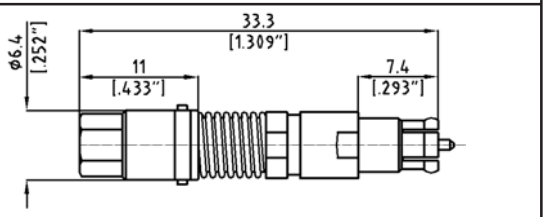
Cable Type		
11	141	43
TQ11-21E1-02	TQ41-21E1-02	TQ43-21E1-02
Connector Code: QFF		
TQ-Insert female, firm Threaded Nut, DC-24 GHz		



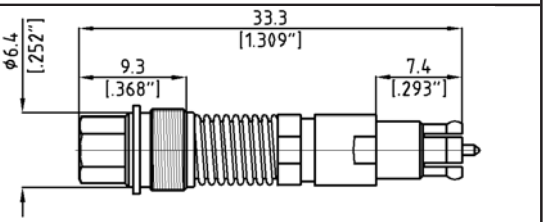
Cable Type		
11	141	43
TQ11-21P1-02	TQ41-21P1-02	TQ43-21P1-02
Connector Code: QPF		
TQ-Insert female, pressurized, Threaded Nut, DC-24 GHz		



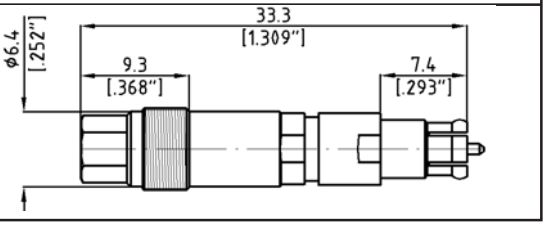
Cable Type		
11	141	43
TQ11-1102-02	TQ41-1102-02	TQ43-1102-02
Connector Code: QM		
TQ-Insert male, spring loaded, Bayonet Catch, DC-24 GHz		



Cable Type		
11	141	43
TQ11-11S1-02	TQ41-11S1-02	TQ43-11S1-02
Connector Code: QME		
TQ-Insert male, limited spring loaded, Threaded Nut, DC-24 GHz		



Cable Type		
11	141	43
TQ11-11F1-02	TQ41-11F1-02	TQ43-11F1-02
Connector Code: QMF		
TQ-Insert male, firm, Threaded Nut, DC-24 GHz		



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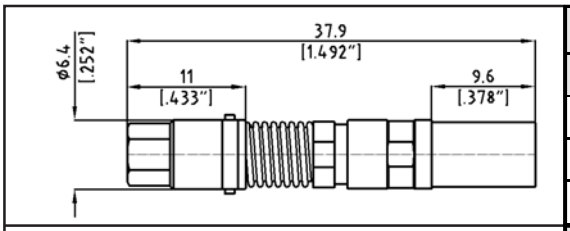
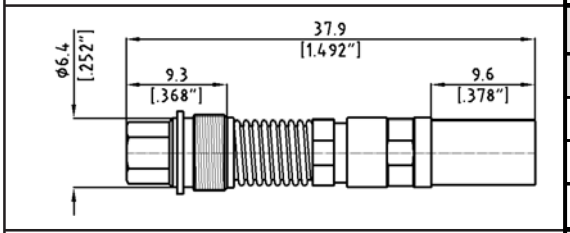
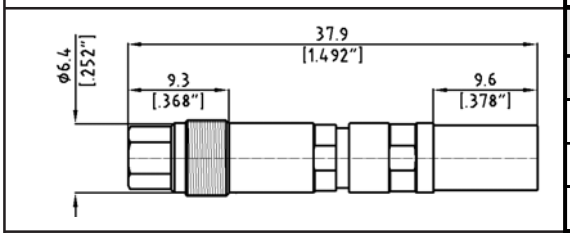


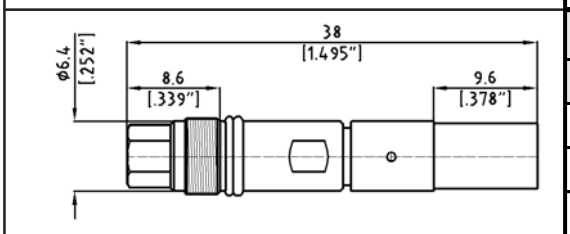
Cable Type
11
TX11-2101-02
Connector Code: XF
TQ-Insert female, spring loaded, Bayonet Catch, DC-40 GHz



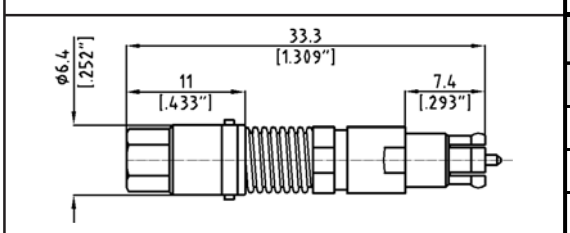
Cable Type
11
TX11-21S1-02
Connector Code: XFE
TQ-Insert female, limited spring loaded, Threaded Nut, DC-40 GHz



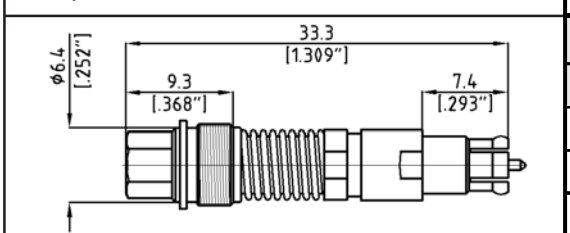
Cable Type
11
TX11-21E1-02
Connector Code: XFF
TQ-Insert female, firm, Threaded Nut, DC-40 GHz



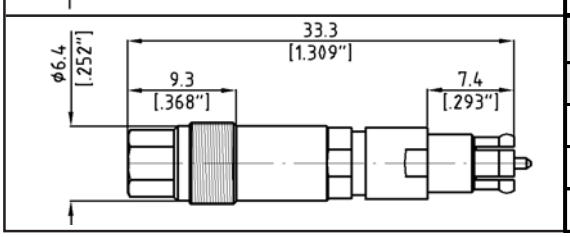
Cable Type
11
TX11-21P1-02
Connector Code: XPF
TQ-Insert female, pressurized, Threaded Nut, DC-40 GHz



Cable Type
11
TX11-1102-02
Connector Code: XM
TQ-Insert male, spring loaded, Bayonet Catch, DC-40 GHz



Cable Type
11
TX11-11S1-02
Connector Code: XM E
TQ-Insert male, limited spring loaded, Threaded Nut, DC-40 GHz



Cable Type
11
TX11-11F1-02
Connector Code: XM F
TQ-Insert male, firm, Threaded Nut, DC-40 GHz

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TQ- and IQ-Multipin, RF-Inserts Specification

SPECIFICATIONS OF THE RQ - INSERTS	
ELECTRICAL	
Frequency Range	DC - 24.0 GHz and DC - 40.0 GHz.
Insulation Resistance	The insulation resistance shall not be less than 5,000 megohms.
Voltage Standing Wave Ratio (VSWR)	1.02 + .005 * f (GHz)
Contact Resistance	The center contact resistance drop shall not exceed 2.0 milliohms and the outer contact resistance drop shall not exceed 2.0 milliohms.
Dielectric Withstanding Voltage	The magnitude of the test voltage shall be 1,000 volts rms at sea level.
RF High Potential Withstanding Voltage	The RF high potential withstanding voltage is 670 volts rms at 5 MHz.
RF Leakage	- (100 - f (GHz)) dB
Insertion Loss	(.03 SQT(f(GHz))) dB
MECHANICAL	
Connector Durability	200 cycles min. for Male Inserts 500 cycles min. for Female Inserts
Cable Retention Force	60 pounds (267 N) min., without stress relief.
Coupling Nut Retention Force	Not applicable.
Force to Engage and Disengage	Not applicable.
Longitudinal Force max.	Longitudinal force is not applicable.
Recommended Mating Torque	Not applicable.
ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature	-71°C to +115°C
Vibration	MIL-STD-202, Method 204, Condition D
Mechanical shock	MIL-STD-202, Method 213, Condition I
Thermal shock	MIL-STD-202, Method 107, Condition G
Moisture resistance	MIL-STD-202, Method 106
Corrosion	MIL-STD-202, Method 101, Condition B
MATERIAL AND FINISH	
Contact	Beryllium Copper 33-25 CuBe2PbH per DIN 17666 (ASTM B 196) gold plated per ASTM B 488, Type II, Code C
Outer Conductor	Stainless steel passivated per ASTM A 967
Insulator	PTFE Fluorocarbon per ASTM D 1710
Ferrule	Brass CuZn39Pb3 per DIN EN 12163/12164 CW614N ASTM B16 gold plated per ASTM B 488, Type II, Code C

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Spectrum Elektrotechnik GmbH

RQ23-DC26

23 Coaxial Cable Assemblies & 26 Signal and Supply Lines

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RQ-Series Multipin Connector

For certain applications even the 12 RF coaxial connections of our circular TQ- and IQ-Series were too little, plus the need for DC signal and driver signals, challenging Spectrum to design a **Multi COAX/DC Connector,** the **SR23-DC26**, connecting and disconnecting 23 coaxial RF lines and 26 signal and supply lines at once and in seconds, and by using the smallest possible size for this complex design. The male coaxial insert is a modified version of our successful SMA Push-On for lower insertion force and withdrawal force, as we are specifying 150N maximum in total for the insertion and withdrawal of all 23 coaxial lines plus the 26 signal and supply lines. The female coax inserts terminating the cable use the standard SMA female interface, mating with any standard SMA male connector, while the male SMA Push-Ons mate with any standard SMA female connector by just being pushed on, instead of threadening and torquing. Using the standard SMA connector styles ensures that existing test cables terminated with SMA connectors can be used during testing.
With 23 coaxial cable assemblies there is a good chance that one, or even several may be damaged at some time and need to be replaced. Therefore the connectors were designed such that any of the coaxial cable assemblies can be replaced in a very short time by just taking out the proper mounting bolt, holding the coaxial inserts in groups of 4 or 8 in place, and replacing the assembly or assemblies and inserting and securing the mounting bolt again. The maximum operating frequency is guaranteed to 25 GHz when using the cable of Types 11 or 43.

Several modern systems require phase match of the cable assemblies of a harness. Spectrum is using utmost cable manufacturing, interface cutting techniques and advanced adjustable connector designs meeting almost any requirement a customer may have for phase match among the assemblies.
Selecting the proper materials and aging techniques in well defined processes is an important parameter as well to make cable assemblies and harnesses to operate in temperature ranges of minus 54°C to plus 115°C as standard. Spectrum offers also extended temperature ranges from minus 72° C to plus 200°C. All connectors are RoHS compliant and meet the condition and corrosion requirement to MIL-STD-202, method 101, condition B. The Connector series are compliant to thermal shock to MIL-STD-202, method 107, condition B, vibration to MIL-STD-202, method 204, condition D, and shock to MIL-STD-202, method 213.

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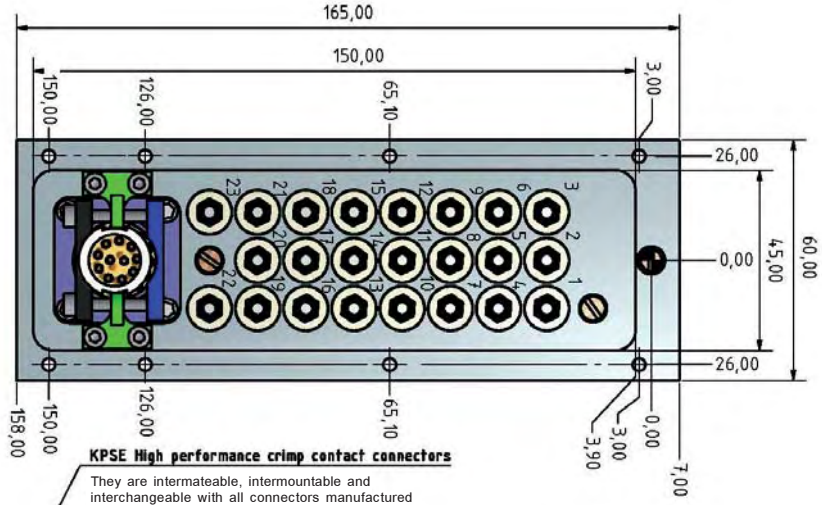
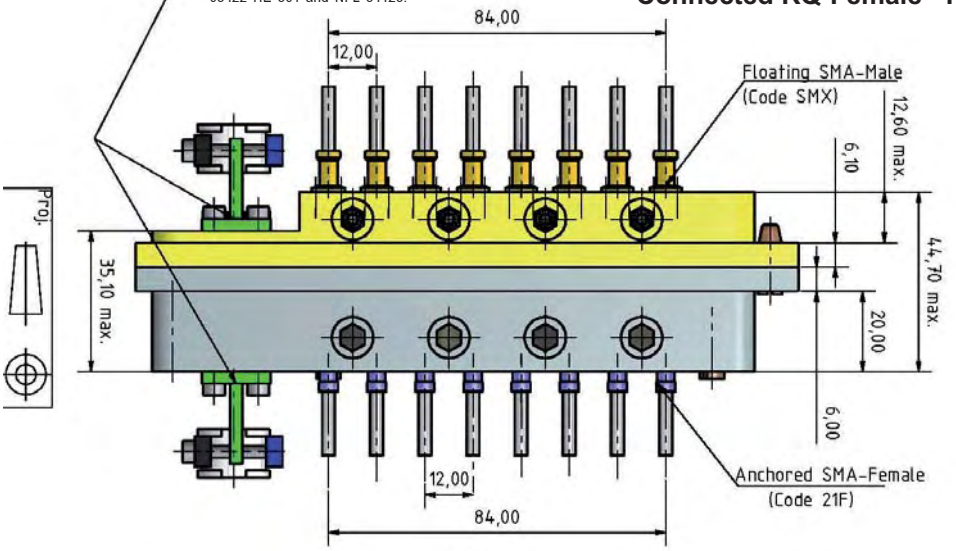
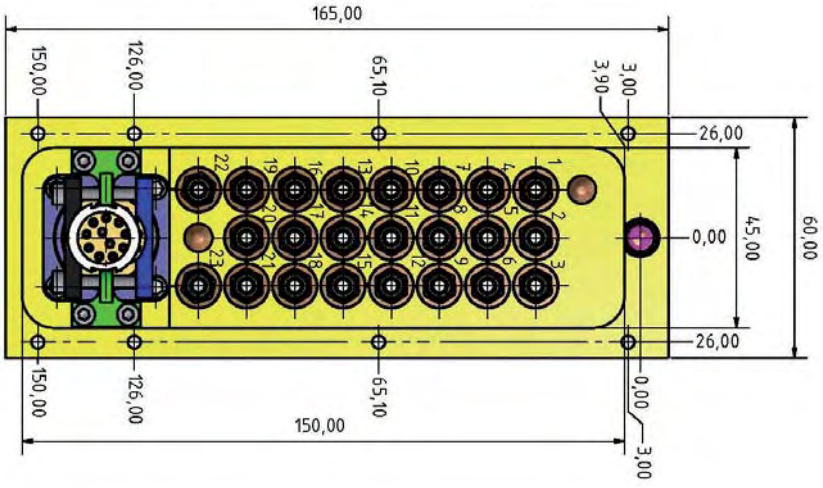


KPSE High performance crimp contact connectors

They are intermateable, intermountable and interchangeable with all connectors manufactured acc. to MIL-C-26482, LN 29500, VG 95328, NFC 93422 HE 301 and NFL 54125.

Connected RQ-Female - RQ-Male





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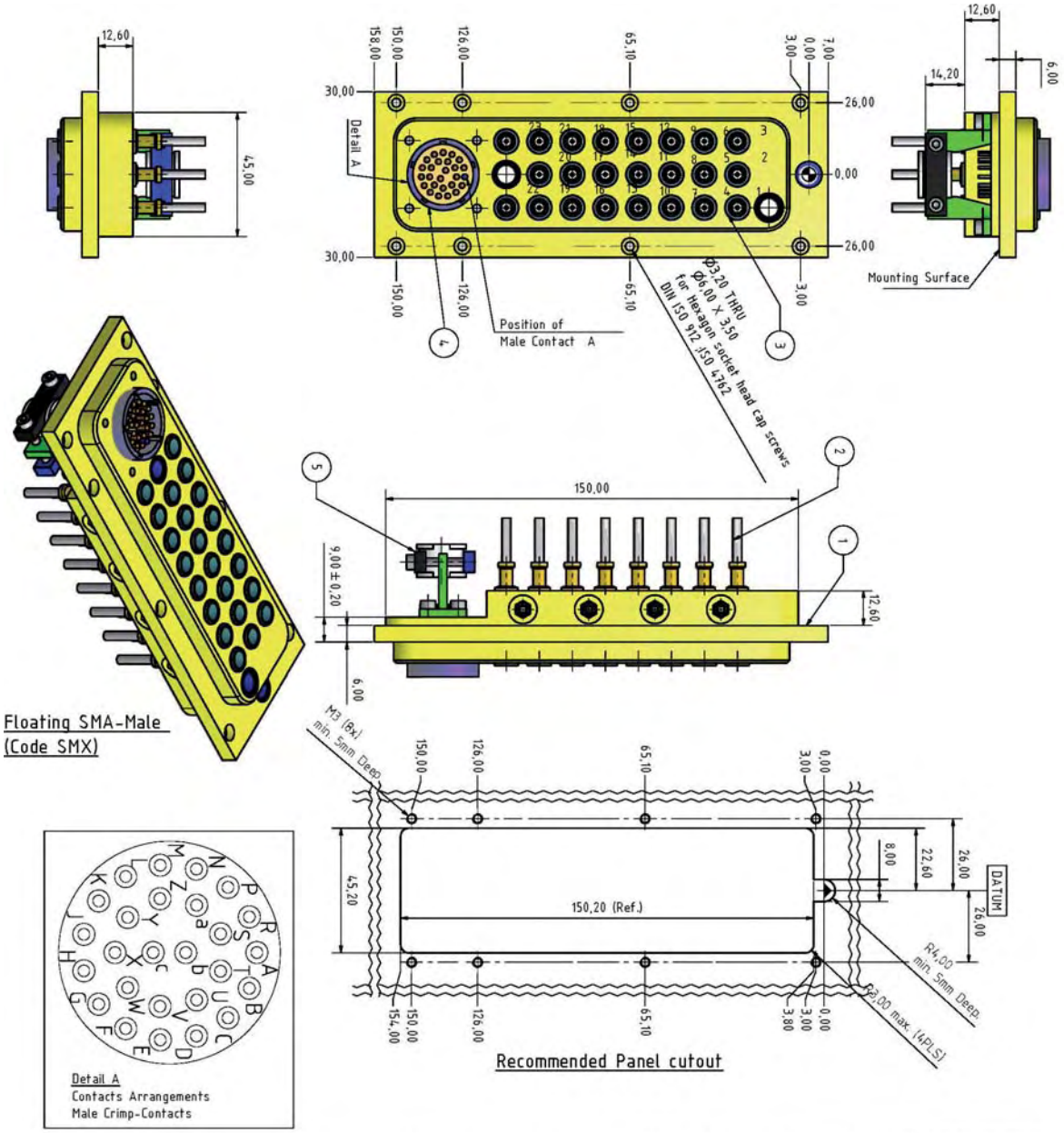
RQ-Male Multipin Connector

RQ-Male



DESCRIPTION	SPECIFICATIONS
INSERTION AND WITHDRAWAL OF WHOLE CONNECTOR	150 N max.
DURABILITY	200 CYCLES MIN.

Proj.

Tolerances ± 0.05mm

ITEM	Qty.	PART NUMBER		DESCRIPTION		MATERIAL AND FINISH
5	1	07-146-Z		Back Shell for AWG20-22		Material: AlMg4.5Mn; Alodine
4	1	07-057-Z		Receptacle Housing 02-16KPT (26 Pole) With 26 Crimp Contacts AWG-20		Receptacle Housing:Interface Per MIL-C-26482 / VG95328 ;Alodine (or Anodized Finish) With Crimp Contacts AWG-20 Gold Plated.
3	23	RQ23-1101-02	RQ23-1102-02	SMA-male floating mount		Interface Per MIL-STD- 348A.Fig.310.1
2	23	TYP 11	TYP 43	Cable Typ 11	Cable Typ 43	Spectrum TYP 11 | Spectrum TYP 43
1	1	07-057-1		Housing		Material: AlMg4.5Mn; Alodine

P/N	RQ23-DC26-M

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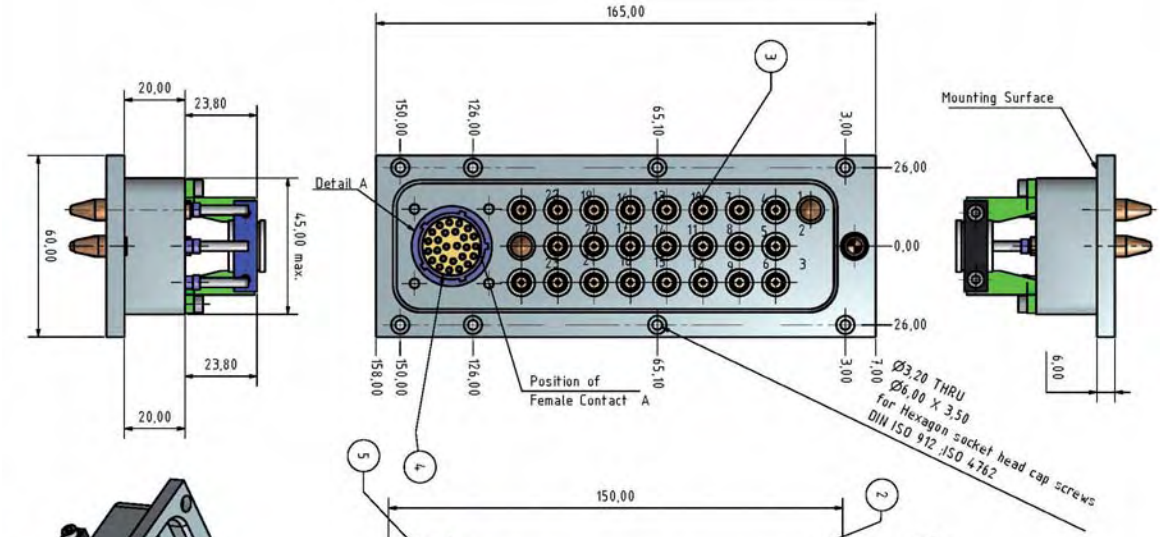
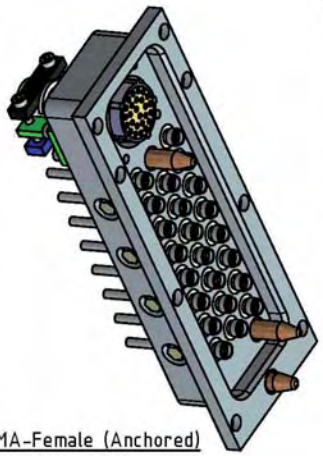
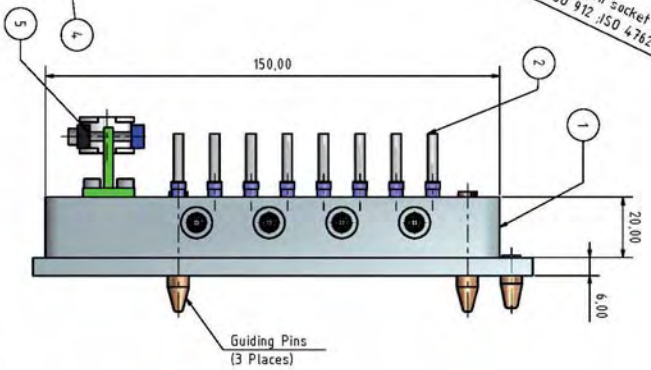
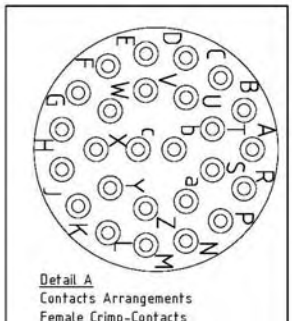
RQ-Female

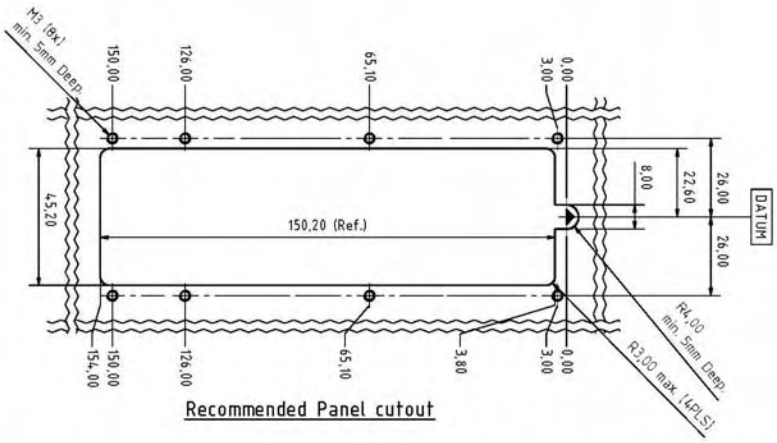




SMA-Female (Anchored)
(Code 21F)







Recommended Panel cutout

ITEM	Qty.	PART NUMBER	DESCRIPTION	MATERIAL AND FINISH
5	1	07-146-Z	Back Shell for AWG20-22	Material: AlMg4.5Mn; Alodine
4	1	07-058-Z	Receptacle Housing 06-KPT/KPSE-16 (26 Pole) With 26 Crimp Contacts AWG-20	Receptacle Housing:Interface Per MIL-C-26482 / VG95328 ;Alodine (or Anodized Finish) With Crimp Contacts AWG-20 Gold Plated.
3	23	RQ23-2101-02 / RQ23-2102-02	SMA-Female Anchored	Interface Per MIL-STD- 348A.Fig.310.2
2	23	TYP 11 / TYP 43	Cable Typ 11 / Cable Typ 43	Spectrum TYP 11 / Spectrum TYP 43
1	1	07-058-1	Housing	Material: AlMg4.5Mn; Alodine

DESCRIPTION	SPECIFICATIONS
INSERTION AND WITHDRAWAL OF WHOLE CONNECTOR	150 N max.
DURABILITY	200 CYCLES MIN.

Tolerances ± 0.05mm

Proj.

P/N	RQ23-DC26-F

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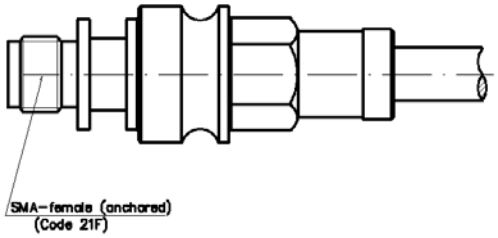
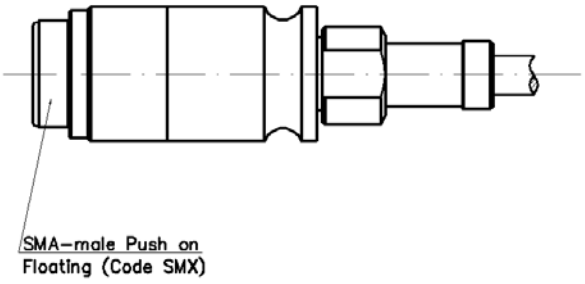
Inserts RQ-Series, DC Back-Body

Female



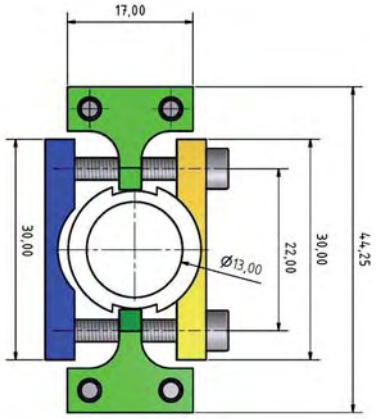
Cable	Connector P/N	Code
Type 11	RQ23-2101-02	21F
Type 43	RQ23-2102-02	

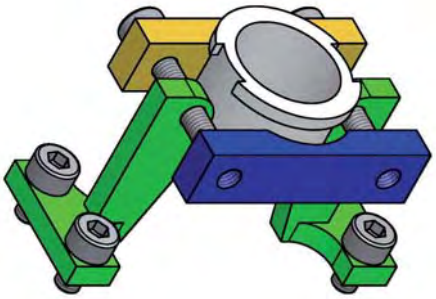
Male

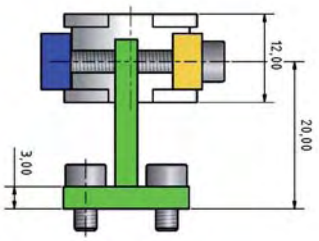


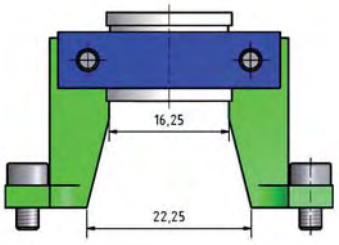
Cable	Connector P/N	Code
Type 11	RQ23-1101-02	SMX
Type 43	RQ23-1102-02	

Back Body for Signal and Supply Lines









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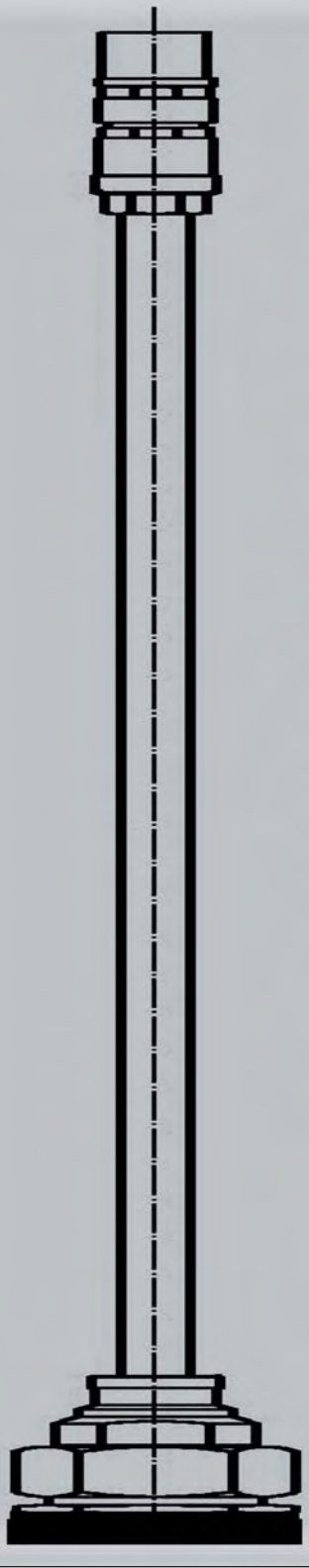


Specifying Cable Assemblies for the SQ-, TQ-, IQ-, & RQ-Series

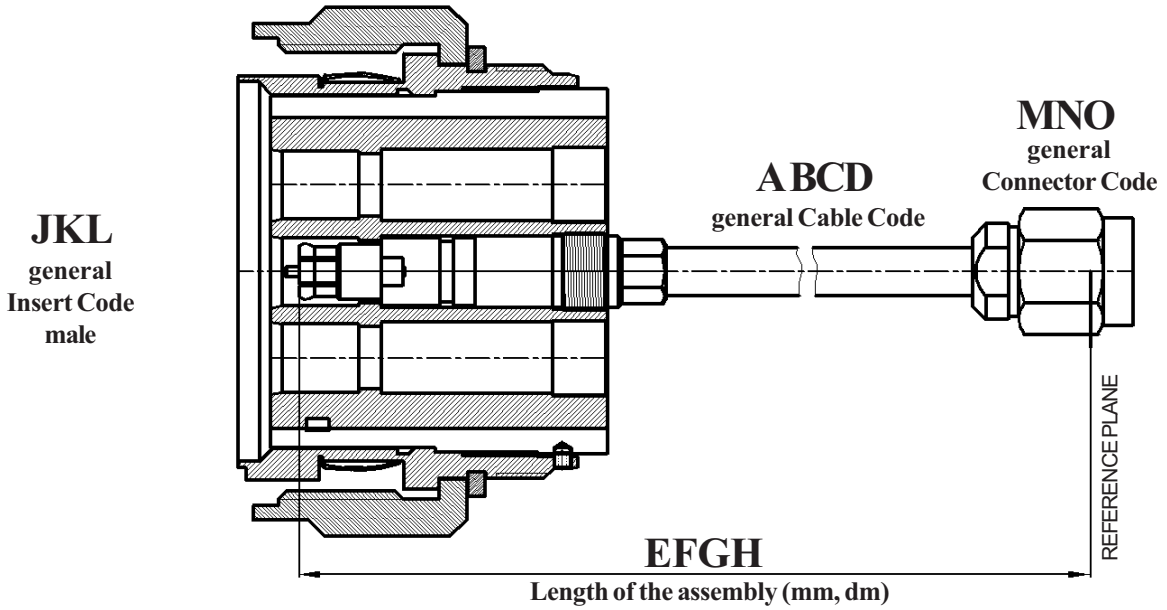
Multipin.pmd

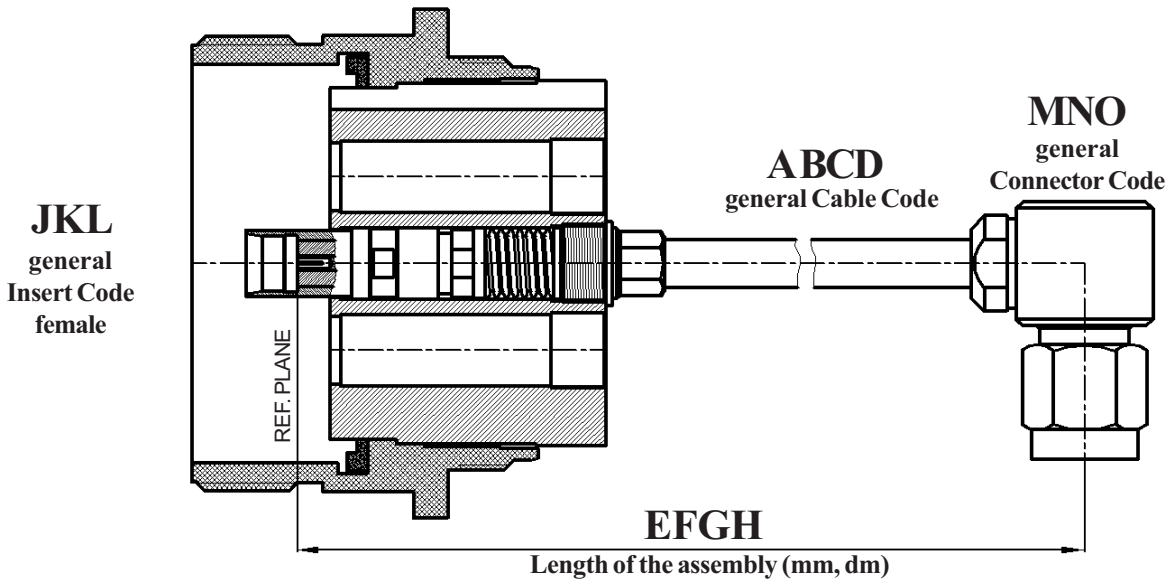
Ordering Information SQ-, TQ-, IQ- Assemblies

The Part Number Sequence is:

ABCD - EFGH - JKL - MNO

for Details please see next page →





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Finding the Part Number for an Assembly as needed in a Circular Multipin Connector

Step 1: Fill in the Cable Code for the first 4 digits (ABCD).
Identify the Cable you intend to use; for technical information please refer to pages 45ff.

- For SQ-Series only Cable Types 11 and 43 are available
- For TQ- and IQ-Series Cable Types 11, 43 are available for both shell sizes 21 and 25 (4, 7, 8 and 12 inserts), Types 100 and 141 are only available for shell size 21 with 4 inserts and for shell size 25 with 7 inserts.

Example: Cable of Type **43** *is chosen*
Part Number so far is: **43-** (although 4 digits are available, only digits used are filled in)

Step 2: Fill in the length of the Cable Assembly, next 4 digits (EFGH)

- The length of the assembly needs to be in Millimeters (mm) for assembly lengths up to 9999mm (393.7 inches).
- For length over 9999mm the length will be inserted in Decimeters (dm) with a leading d, and then 3 digits for the length (1dm=10cm=3.94 inches). This works up to 999dm (=99.90m =30.47 ft =3.933 inches)
- For longer lengths please consult the factory

Example: A length of 1.6m is needed: **1600** (1.6m = 63 inches)
Part Number so far becomes: **43-1600-**

Step 3: Identify the insert you want to use, next 3 digits (JKL)

- For the **SQ**-Series only the fully spring loaded inserts are available,
  - Codes QF or XF for the fully spring loaded female insert,
  - Codes QM or XM for the fully spring loaded male insert.
  - QF and QM inserts operate to 24.0 GHz, XM and XF inserts to 40.0 GHz
- For the **TQ-** and **IQ-**Series please refer to page 42 for the appropriate code

Example: **for the TQ-Series a firm mounted female insert to 24 GHz** *is selected*
Part Number so far becomes: **43-1600-QFF-**

Step 4: Identify the insert or connector for the other end, next 3 digits (MNO)

- For the Code please refer to pages 42 and 43
- Not for every Cable every connector listed will be available as standard.
- For connectors not listed please consult the factory.

Example: **TNC male right angle** *is selected*
The final Part Number is: 43-1600-QFF-35

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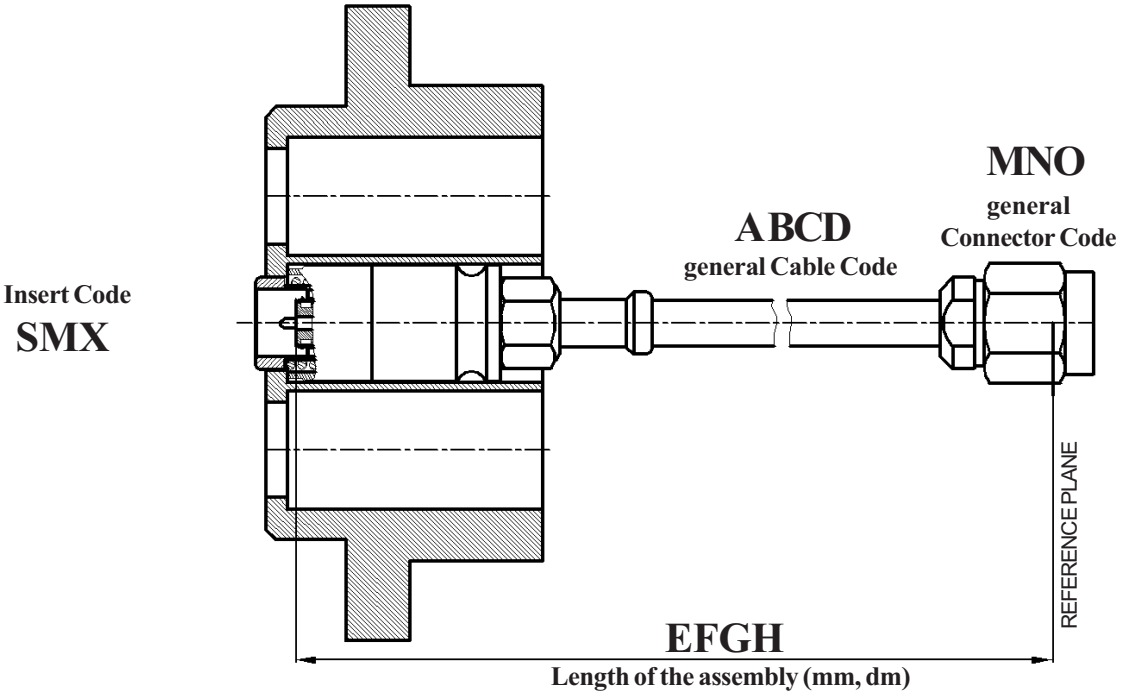
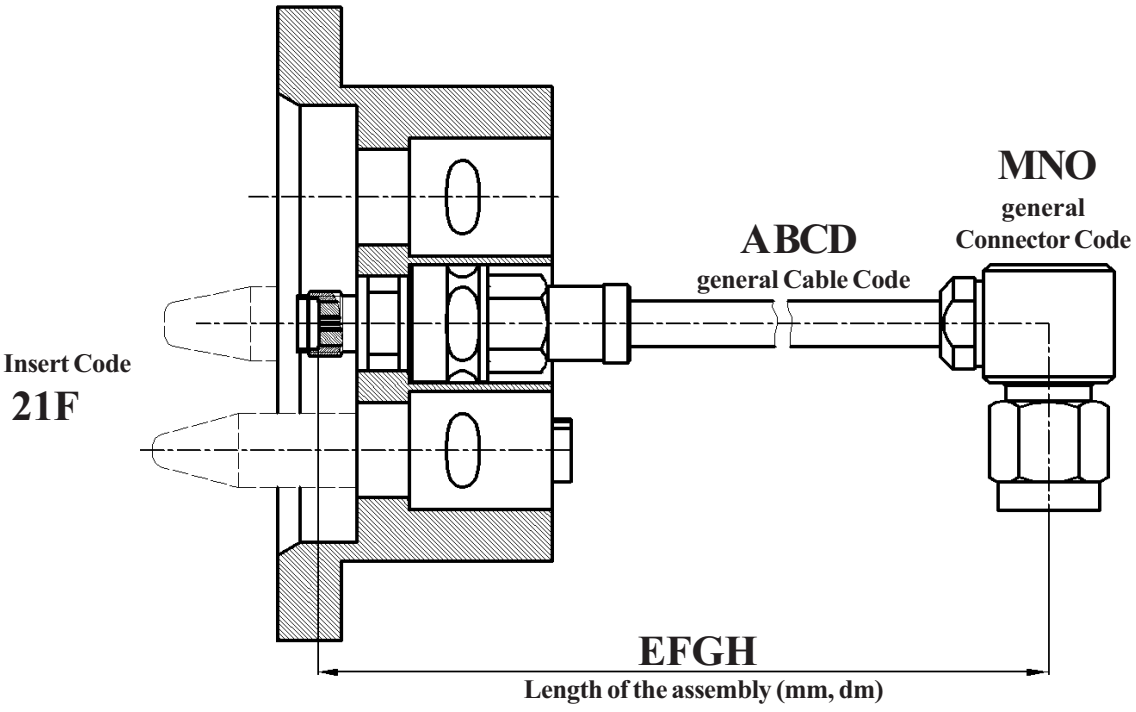
Ordering Information RQ- Assemblies

The Part Number Sequence is:

ABCD - EFGH - JKL - MNO

for Details please see next page →





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Finding the Part Number for an Assembly as needed in a Rectangular Multipin Connector RQ23-DC26

Step 1: Fill in the Cable Code for the first 4 digits (ABCD).
Identify the Cable you intend to use; for technical information please refer to pages 45ff.

- For RQ-Series only Cable Types 11 and 43 are available as standard
- Please consult the factory if you are interested in using a different cable.

Example: Cable of Type **11** *is chosen*
Part Number so far is: **11-** (although 4 digits are available, only digits used are filled in)

Step 2: Fill in the length of the Cable Assembly, next 4 digits (EFGH)

- The length of the assembly needs to be in Millimeters (mm) for assembly lengths up to 9999mm (393.7 inches).
- For length over 9999mm the length will be inserted in Decimeters (dm) with a leading d, and then 3 digits for the length (1dm=10cm=3.94 inches). This works up to 999dm (=99.9m = 30.47ft =3,933 inches)
- For longer lengths please consult the factory

Example: a length of 2.9m is needed: **2900** (2.9m = 114.2 inches)
Part Number so far becomes: **11-2900-**

Step 3: Identify the insert you want to use, next 3 digits

- Code SMX stands for the fully spring loaded male Push-On.
- Code 21F stands for the firm mounted SMA female.

Example: **The male Push-On** *is selected*
Part Number so far becomes: **11-2900-SMX-**

Step 4: Identify the insert or connector for the other end, next 3 digits (MNO)

- For the Code please refer to pages 42 and 43
- Not for every Cable every connector listed will be available as standard.
- For connectors not listed please consult the factory.

Example: **A short SMA male right angle** *is selected*
The final Part Number is: 11-2900-SMX-152

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Connector Index

Type	Sex	Description	Conn. Code
1.85mm	Female	Straight	VF
1.85mm	Male	Straight	VM
2.4 mm	Female	Straight	HF
2.4 mm	Female	Straight, 2-Hole-Flange	HF2
2.4 mm	Female	Straight, 4-Hole-Flange	HV
2.4 mm	Female	Straight, BFJ	HB
2.4 mm	Female	Straight, NMD	H2
2.4 mm	Male	2-Hole-Flange	HM2
2.4 mm	Male	Straight	HM
2.4 mm	Male	Straight, Maxi Nut	M2
2.92mm	Female	2-Hole Flange	KF2
2.92mm	Female	4-Hole-Flange	KF4
2.92mm	Female	BFJ	KFB
2.92mm	Female	Right Angle Mitred	KF9
2.92mm	Female	Straight	KF
2.92mm	Female	Straight, NMD	WI
2.92mm	Male	Right Angle Mitred	KM9
2.92mm	Male	Straight	KM
2.92mm	Male	Straight,High Power	KMU
2.92mm	Male	Straight, NMD	WIM
2.92mm	Male	Straight, Short Connector	KMS
3.5 mm	Female	BFJ	92B
3.5 mm	Female	Straight	92
3.5 mm	Female	Straight, NMD	H3
3.5 mm	Male	Straight	91
3.5.mm	Male	Straight, NMD	H3M
3.,5 mm	Male	Straight, Maxi Nut	M3
7 mm	Sexless	Straight, 4 slots	90
7 mm	Sexless	Straight, 6 slots	96
7mm	Sexless	Straight, Field Replaceable 4 slots	E90
7mm	Sexless	Straight, Field Replaceable 6 slots	E96
7/16	Female	4-Hole-Flange	754
7/16	Female	BFJ	753
7/16	Female	Straight	76
7/16	Male	Push-On	7S
7/16	Male	Right Angle Mitred	755
7/16	Male	Straight	75
13/13	Female	Straight	ZB1
13/30	Male	Straight	Z13
BMA	Female	Straight, 2-Hole-Flange	BF
BMA	Female	Straight	BW
BMA	Female	BFJ	BB
BMA	Male	Straight	BM
BNC	Female	BFJ	81B
BNC	Female	Right Angle Mitred	83
BNC	Female	Straight	81
BNC	Female	Straight, 4-Hole-Flange	84
BNC	Male	Right Angle Mitred	74
BNC	Male	Straight	71
C	Female	Straight	89
C	Male	Straight	88
EIA 5/8	Male	Straight	EA5
HN	Female	Straight	68
HN	Female	BFJ	68B
HN	Male	Right Angle Mitred	67
HN	Male	Straight	69
IQ and TQ Inserts	Female	Insert, Firm, DC-24 GHz	QFF
	Female	Insert, Firm, DC-40 GHz	XFF
	Female	Insert,Lim.Spring Load, DC-24GHz	QFE
	Female	Insert,Lim.Spring Load, DC-40GHz	XFE
	Female	Insert, Pressurized, DC-24 GHz	QPF
	Female	Insert, Pressurized, DC-40 GHz	XPF
	Female	Insert, Spring Loaded, DC-24 GHz	QF
	Female	Insert, Spring Loaded, DC-40 GHz	XF
	Male	Insert, Firm, DC-24GHz	QMF
	Male	Insert, Firm, DC-40GHz	XMF
	Male	Insert,Lim.Spring Load,DC-24GHz	QME
	Male	Insert,Lim.Spring Load,DC-40GHz	XME
	Male	Insert, Spring Load.,DC-24 GHz	QM
	Male	Insert, Spring Load.,DC-40 GHz	XM
N	Female	4-Hole-Flange Straight	65
N	Female	4-Hole-Flange Straight, H. Power	64H
N	Female	BFJ	63

Type	Sex	Description	Conn. Code
N	Female	Right Angle, 4-Hole-Flange	5C
N	Female	Right Angle Mitred, 4-Hole-Flange	5A
N	Female	Straight	61
N	Female	Straight, Interchangeable	E61
N	Female	Straight, High Power	61H
N	Male	Push-On Brass silver plat., full lock.	NSB
N	Male	Push-On, Full Locking	NS
N	Male	Push-On, Double "D"	NDS
N	Male	Right Angle Mitred	55
N	Male	Right Angle, High Power	55H
N	Male	Straight	51
N	Male	Straight, Beryllium Copper silver pl.	50
N	Male	Straight, High Power	51H
N	Male	Straight, H. Power, Venting Holes	51V
N	Male	Straight, Interchangeable	E51
N	Male	Straight, Ruggedized	52
SC	Female	BFJ	78
SC	Female	Straight	79
SC	Male	BFJ	78H
SC	Male	Right Angle, Mitred	77
SC	Male	Right Angle, Mitred High Power	77H
SC	Male	Straight	80
SC	Male	Straight, H. Power, Venting Holes	80H
SC	Male	Straight, Venting Holes	80V
SMA	Female	2-Hole-Flange,l gold plated	26
SMA	Female	Straight 4-Hole-Flange	25
SMA	Female	Straight 4-Hole-Flange Gold Plated	24
SMA	Female	Radius Right Angle	19
SMA	Female	Radius Right Angle Gold Plated	28
SMA	Female	Radius Right Angle, 4-Hole Flange	29
SMA	Female	Right Angle, Mitred LongNeck	18L
SMA	Female	Right Angle, Mitred RegularNeck	18R
SMA	Female	Right Angle, Mitred, Gold Plated	18
SMA	Female	RQ23 Insert, Firm	21F
SMA	Female	Straight	21
SMA	Female	BFJ	23
SMA	Female	BFJ, Gold Plated	22
SMA	Female	Straight, Gold Plated	20
SMA	Female	Straight, High Power	21H
SMA	Female	Straight, Interchangeable	E21
SMA	Female	Straight, Phase Adjustable	PH
SMA	Female	Straight, Phase Adj. 4-H-Flange	PH1
SMA	Male	180 Degree Bow	8W
SMA	Male	2-Hole-Flange	27
SMA	Male	Push-On	SM
SMA	Male	Push-On W. Lim. Thread Lock Nut	SMK
SMA	Male	Push-On, Locking	SML
SMA	Male	Push-On Locking, Maxi Nut	Smm
SMA	Male	Push-On, Straight	SMR
SMA	Male	Radius Right Angle, Mitred Gold Pl.	16
SMA	Male	Radius Right Angle	17
SMA	Male	Right Angle, Mitred	15
SMA	Male	Right Angle, Mitred, Gold Plated	14
SMA	Male	Right Angle, Mitred, Long Neck	153
SMA	Male	Right Angle, Mitred, Regular Neck	151
SMA	Male	Right Angle, Mitred, Short Neck	152
SMA	Male	RQ23 Insert, Spring Loaded	SMX
SMA	Male	Straight	11
SMA	Male	Straight, Across Flats	1S
SMA	Male	Straight For Armored Cable	1E
SMA	Male	Straight, Gold Plated	10
SMA	Male	Straight, Interchangeable	E11
SMA	Male	Straight, Long	15L
SMA	Male	Straight, Maxi Nut	MA
SMA	Male	Straight Phase Adjustable	11L
SMA	Male	Straight, Short	11S
SMA	Rev. Sex	Radius Right Angle	R99
SMB	Female	Right Angle Mitred	RB
SMB	Female	Straight	FB
SMC	Female	Straight	FC
SMP	Female	Float Mount	SPV
SMP	Female	Right Angle Mitred	SPQ
SMP	Female	Straight	TMP

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Type	Sex	Description	Conn. Code
SMP	Female	Straight, BFJ,Float Mount	SPU
SMP	Female	Straight, DC-18 GHz	SPF
SMP	Female	Straight, DC-26.5 GHz	SPE
SMP	Female	Straight, DC-40 GHz	PF
SMP	Female	Straight, EMI-Gasket	SPG
SMP	Female	Straight, Float Mount	SPT
SMP	Female	Straight, Test Conn.	TP
SMP	Male	BFJ Smooth Bore	STS
SMP	Male	Straight	SPW
SMP	Male	Straight, Commercial	TMJ
SMP	Male	Straight, Full Det. 2-Hole-Flange	SRF
SPM	Female	Straight, 2-Hole-Flange	PG
SPM	Male	Straight	PM
SPM	Male	Straight, High Power	PMH
SQ	Female	Insert, Spring Load.,DC-24 GHz	QF
Inserts	Male	Insert, Spring Load.,DC-24 GHz	QM
SSMP	Female	Straight	SZF
TNC	Female	135 Deg. Angle, BFJ	42
TNC	Female	BFJ	43
TNC	Female	BFJ, Pressurized	43P
TNC	Female	Radius Right Angle, 4-H.-Fl. Gold Pl.	46
TNC	Female	Radius Right Angle, 4-H.-Fl.	47
TNC	Female	Straight	41
TNC	Female	Straight, gold plated	40
TNC	Female	Straight 4-Hole-Flange	45
TNC	Female	Straight 4-Hole-Flange, gold plated	44
TNC	Female	Straight, High Power	41H
TNC	Female	Straight, High Power	41U
TNC	Female	Straight, Interchangeable	E41
TNC	Male	135 Degree Angle, 12.4 GHz	36R
TNC	Male	135 Degree Angle, 18 GHz	36
TNC	Male	Right Angle Mitred	35
TNC	Male	Right Angle Mired, Brass Ni-plated	34
TNC	Male	Right Angle Mitred, High Power	35H
TNC	Male	Right Angle Mitred,Phase Adjustable	35L
TNC	Male	Straight	31
TNC	Male	Straight, High Power	31H
TNC	Male	Straight, High Power	31U
TNC	Male	Straight, Interchangeable	E31

Connector Housings are stainless steel passivated if not mentioned differently.

CONNECTOR SPECIFICATION

MATERIALS

STEEL corrosion resistant 1.4305 per DIN EN 10088-3 or ASTM A 582.
ALUMINUM AlMg4.5Mn, AlMgSi0.5, AlMgSi1 per DIN EN 573-3 or SAE AMS QQ-A-225/8.
BRASS CuZn39Pb3 per DIN EN 12163/12164 or CW614N or ASTM B 16
COPPER BERYLLIUM 33-25 CuBe2PbH per ASTM B196
TFE Flurocarbon per ASTM D 1710
SILICONE RUBBER per A A 59588
BORRIUM NITRITE Dielectric for high power applications per in house specification.

FINISH

CENTER CONTACTS shall be gold plated to a minimum thickness of .00005 inch (1.27 µm) in accordance with ASTM B 488 Type 2, Code C, Class 1.25.
STAINLESS STEEL shall be passivated per ASTM-A967.
ALUMINUM: Conductive Parts shall have an iridited finish per MIL-DTL-5541, Other parts, such as Coupling Nuts and Back Bodies shall be anodized per MIL-A-8625.
BRASS: .00003 inch (0.8 µm) min. gold plating per ASTM B 488 Type 2, Code C, Class 0.75, or nickel plating per SAE AMS-QQ-N-290, as specified.
VARIOUS: Imoloy .0001 inch (2.5 µm) min. plating, consisting of 55% Copper / 20% Zinc / 25% Tin (on special request).

ELECTRICAL

Please refer to the appropriate connector specification.

MECHANICAL

Please refer to the appropriate connector specification.

ENVIRONMENTAL

Corrosion (Salt Spray): Specification MIL-STD-202, Method 101, Test Condition B.The salt solution shall be 5%.
Vibration: Specification MIL-STD-202, Method 204, Test Condition D.
Shock: Specification MIL-STD-202, Method 213, Test Condition I.
Moisture Resistance: Specification MIL-STD-202, Method 106. Step 7b (vibration) shall be omitted. Insulation resistance shall be 200 Megohms min. within 5 minutes of removal from humidity.
Corona Level: The connecor shall not exhibit breakdown (corona) when the applied voltage is 375 volts rms and the altitude is 70,000 feet.

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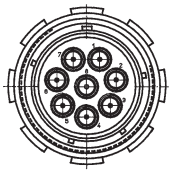
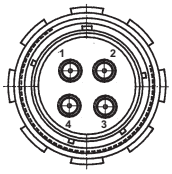
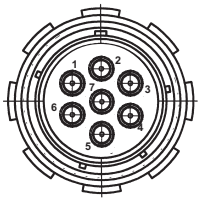
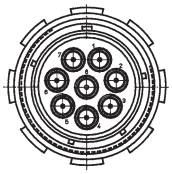
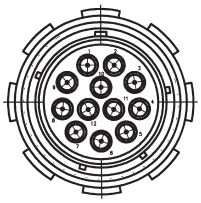
Cable Types for SQ-, TQ- and IQ-Series

Connector Series	Cable
SQ-08 	Type 11 regular Type 43 regular For the cable specification please refer to pages 45 ff.
TQ-04, IQ-04 	Type 11 regular + armored Type 43 regular + armored Type 100 regular + armored Type 141 regular + armored For the cable specification please refer to pages 45 ff.
TQ-07, IQ-07 	Type 11 regular + armored Type 43 regular + armored Type 100 regular Type 141 regular For the cable specification please refer to pages 45 ff.
TQ-08, IQ-08 	Type 11 regular Type 43 regular For the cable specification please refer to pages 45 ff.
TQ-12, IQ-12 	Type 11 regular Type 43 regular For the cable specification please refer to pages 45 ff.

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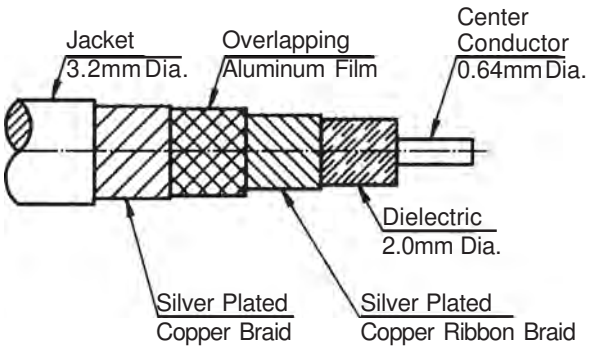
Cable - Type 11

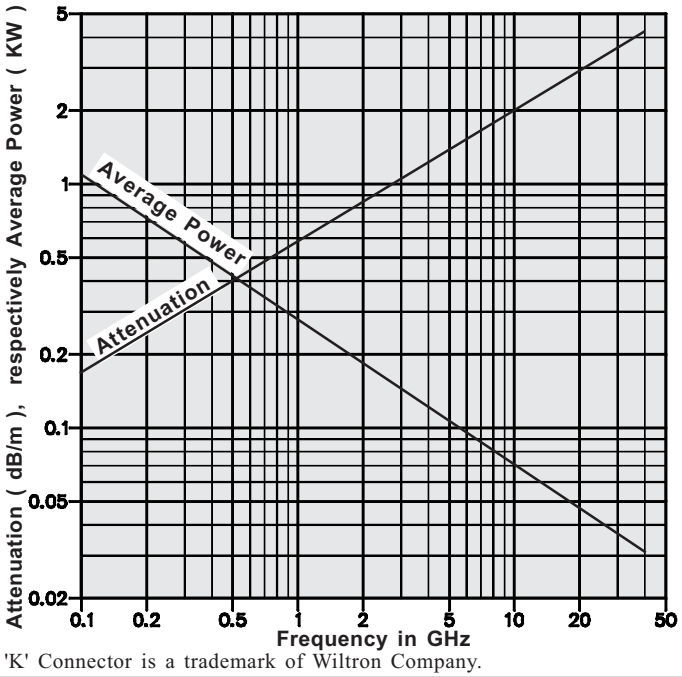
DC - 40.0 GHz

SPECIFICATION		Type 11
Cable Code	Standard	11
	Armored	11x
Frequency Range		DC 40.0 GHz
Outer Diameter in mm	Standard	3.2
	Armored	t.b.d.
Impedance in Ohms at Sea Level and +25°C		50 ± 2
Velocity in %, ± 2%		74
Capacitance in pF/m		90
Dielectric Strength (60 Hz) in KV rms		5.0
Max. Operating Voltage at Sea Level, in KV rms, 60 Hz		0.5
Nominal Insertion Loss in dB/m vs. Frequency	0.5 GHz	0.39
	2.0 GHz	0.77
	5.0 GHz	1.21
	10.0 GHz	1.74
	18.0 GHz	2.45
	26.5 GHz	3.0
	40.0 GHz	4.0
Nominal CW-Power in Watts, vs. Frequency, at Sea Level and + 20°C	0.5 GHz	405
	2.0 GHz	180
	5.0 GHz	105
	10.0 GHz	70
	18.0 GHz	48
	26.5 GHz	38
	40.0 GHz	28
RF - Leakage at 18.0 GHz		- 100 dBC
Operating Temperature Range		-54°C to +110°C
Outer Conductor Construction		Silver Plated Copper Braid, Overlapping Aluminum Film, Silver Plated Copper Braid
Outer Jacket		PTFE
Dielectric Diameter in mm		2.0
Dielectric Material		Low Density PTFE
Dielectric Constant		1.8
Center Conductor Material		Copper, Silver Plated
Center Conductor Dia. in mm		0.64
Weight in Grams/Meter		26
Minimum Bend Radius, Inside, Static (mm)		13
Minimum Bend Radius, Inside, Dynamic (mm)		32

Characteristics:

- Low Loss Performance to 40.0 GHz.
- Small Diameter.
- Rugged Construction.
- Procurement for completely terminated assemblies, fully tested. The test documentation for VSWR and Insertion Loss will be supplied with the cable assembly.
- Available connectors: 1.4/4.4, 2.4mm, 3.5mm, BMA, K*, N, SMA, and TNC.





* 'K' Connector is a trademark of Wiltron Company.

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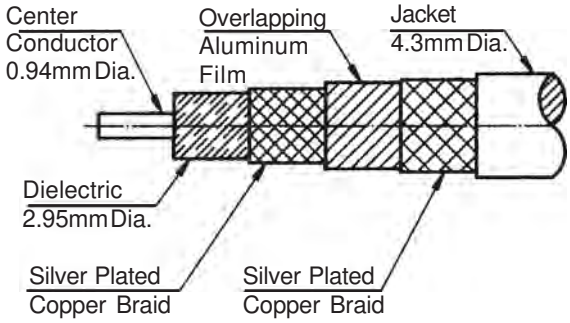
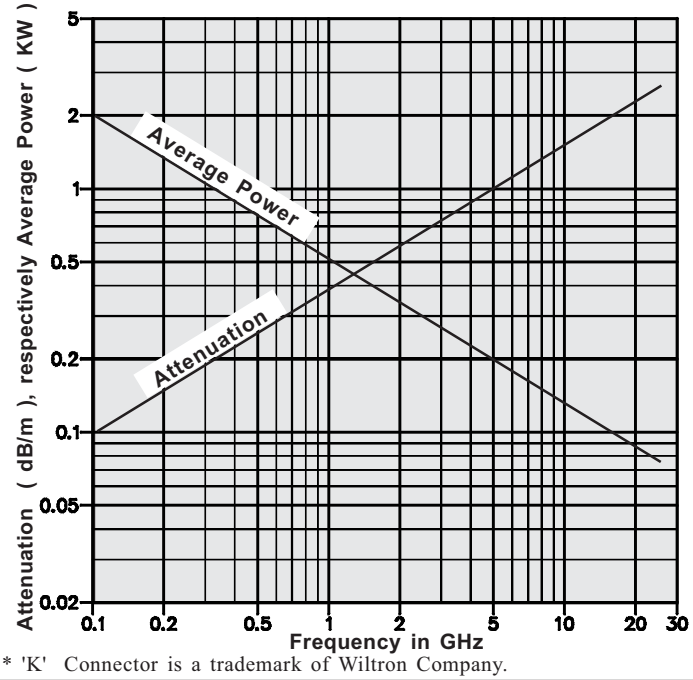
Cable - Type 43

DC - 26.5 GHz

Characteristics:

- Performance to 26.5 GHz, when terminated with K* or 3.5mm connectors (mating with SMA).
- Procurement for completely terminated assemblies, fully tested. The test documentation for VSWR and Insertion Loss will be supplied with the cable assembly.
- Available connectors: 1.4/4.4, 2.4mm, 3.5mm, 7mm, 7/16, HN, K*, N, SBX, SBY, SQ8,SMA, SPM and TNC.





SPECIFICATION		Type 43
Cable Code	Standard	43
	Armored	43x
Frequency Range		DC 26.5 GHz
Outer Diameter in mm	Standard	4.3
	Armored	t.b.d.
Impedance in Ohms at Sea Level and +25°C		50 ± 2
Velocity in %, ± 2%		72
Capacitance in pF/m		79
Dielectric Strength (60 Hz) in KV rms		5.0
Max. Operating Voltage at Sea Level, in KV rms, 60 Hz		0.7
Nominal Insertion Loss in dB/m vs. Frequency	0.5 GHz	0.28
	2.0 GHz	0.61
	4.0 GHz	0.85
	8.0 GHz	1.28
	12.4 GHz	1.70
	18.0 GHz	2.10
	26.5 GHz	2.70
Nominal CW-Power in Watts, vs. Frequency, at Sea Level and + 20°C	0.5 GHz	800
	2.0 GHz	340
	4.0 GHz	220
	8.0 GHz	150
	12.4 GHz	120
	18.0 GHz	90
	26.5 GHz	75
RF - Leakage at 18.0 GHz		-90 dBC
Operating Temperature Range		-54°C to +110°C
Outer Conductor Construction		Silver Plated Copper, Aluminium Film, Silver Plated Copper
Outer Jacket		PTFE
Dielectric Diameter in mm		2.95
Dielectric Material		Low Density PTFE
Dielectric Constant		1.9
Center Conductor Material		Copper, Silver Plated
Center Conductor Dia. in mm		0.94
Weight in Grams/Meter		45
Minimum Bend Radius, Inside, Static (mm)		40
Minimum Bend Radius, Inside, Dynamic (mm)		100

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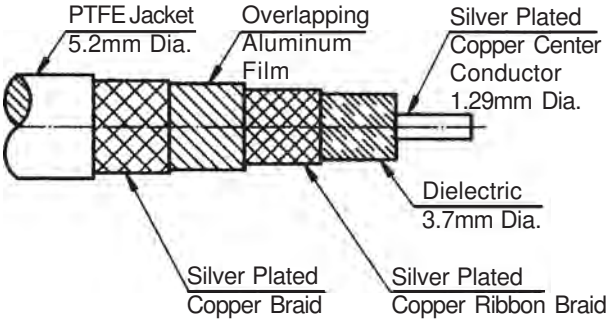
Cable - Type 100

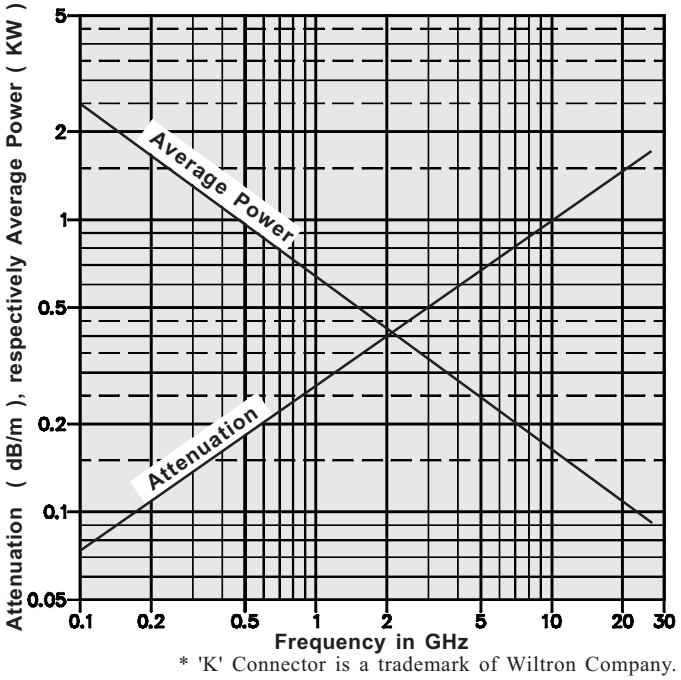
Low Loss, Low Cost
High Performance
DC - 26.5 GHz

SPECIFICATION		Type 100
Cable Code	Standard	100
	Armored	100x
Frequency Range		DC 26.5 GHz
Outer Diameter in mm	Standard	5.2
	Armored	t.b.d.
Impedance in Ohms at Sea Level and +25°C		50 ± 1
Velocity in %, ± 2%		75
Capacitance in pF/m		87
Dielectric Strength (60 Hz) in KV rms		6.0
Max. Operating Voltage at Sea Level, in KV rms, 60 Hz		1.5
Nominal Insertion Loss in dB/m vs. Frequency	0.5 GHz	0.18
	2.0 GHz	0.40
	5.0 GHz	0.63
	10.0 GHz	0.97
	18.0 GHz	1.35
	26.5 GHz	1.70
Nominal CW-Power in Watts, vs. Frequency, at Sea Level and + 20°C	0.5 GHz	950
	2.0 GHz	421
	5.0 GHz	244
	10.0 GHz	162
	18.0 GHz	114
	26.5 GHz	91
Peak-Power, 10% Duty Cycle		4 x CW-Power
RF - Leakage at 18.0 GHz		- 100 dBC
Operating Temperature Range		-54°C to +110°C
Outer Conductor Construction		Copper Ribbon Braid, Overlapping Aluminum Film, Silver Plated Copper Braid
Outer Jacket		PTFE
Dielectric Diameter in mm		3.7
Dielectric Material		Low Density PTFE
Dielectric Constant		1.8
Center Conductor Material		Copper, Silver Plated
Center Conductor Dia. in mm		1.29
Weight in Grams/Meter		69
Minimum Bend Radius, Inside, Static (mm)		26
Minimum Bend Radius, Inside, Dynamic (mm)		60

Characteristics:

- Performance to 26.5 GHz, when terminated with K* or 3.5 mm connectors (mating with SMA).
- Rugged Construction.
- Short delivery; certain lengths with preferred connector styles may be in stock.
- The cable mostly used; significant price advantage over other similar products.
- Procurement for completely terminated assemblies, fully tested. The test documentation for VSWR and Insertion Loss will be supplied with the cable assembly.
- Available connectors: 1.4/4.4, 2.4mm, 3.5mm, 7mm, 7/16, HN, K*, N, SBX, SBY, SC, SMA, SPM and TNC.





* 'K' Connector is a trademark of Wiltron Company.

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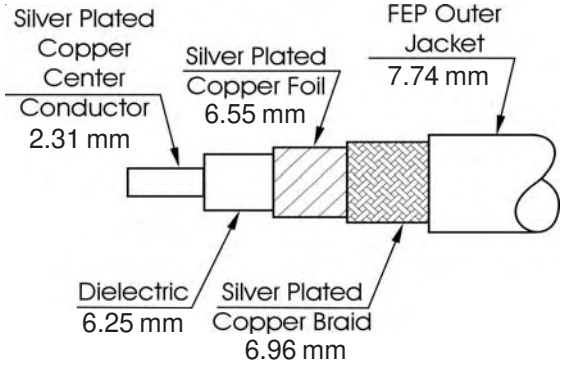
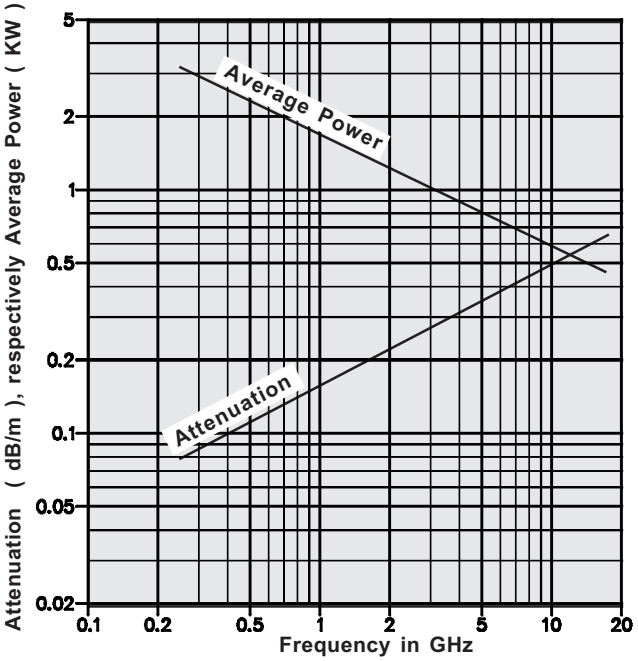
Characteristics:
Procurement for completely terminated assemblies, fully tested. The test documentation for VSWR and Insertion Loss will be supplied with the cable assembly. Available connectors: 7 mm, N, SC, SMA, and TNC.

Cable - Type 141

DC - 19.5 GHz





SPECIFICATION		Type 141
Cable Code	Standard	**141**
Frequency Range		DC 19.5 GHz
Outer Diameter in mm	Standard	7.74
Impedance in Ohms at Sea Level and +25°C		50 ± 2
Velocity in %, ± 2%		84
Capacitance in pF/m		79
Nominal Insertion Loss in dB/m vs. Frequency	1 GHz	0.16
	2.0 GHz	0.23
	4.0 GHz	0.31
	8.0 GHz	0.44
	12.4 GHz	0.54
	18.0 GHz	0.64
Nominal CW-Power in Watts, vs. Frequency, at Sea Level and + 20°C	1 GHz	1900
	2.0 GHz	1450
	4.0 GHz	900
	8.0 GHz	830
	12.4 GHz	560
	18.0 GHz	420
RF - Leakage at 18.0 GHz		-90 dBC
Operating Temperature Range		-65°C to +135°C
Outer Conductor Construction		Silver Plated Copper Foil, Silver Plated Copper
Outer Jacket		FEP
Dielectric Diameter in mm		6,25
Dielectric Material		Low Density PTFE
Dielectric Constant		1.4
Center Conductor Material		Copper, Silver Plated
Center Conductor Dia. in mm		2,31
Weight in Grams/Meter		116
Minimum Bend Radius, Inside, Static (mm)		44
Minimum Bend Radius, Inside, Dynamic (mm)		t.b.d.

Multipin.pmd

Spectrum Elektrotechnik GmbH P.O. Box 45 05 33, 80905 Munich, Germany **Tel. +49-89-3548-040, Fax +49-89-3548-0490**
www.spectrum-et.com Email: Sales@Spectrum-et.com

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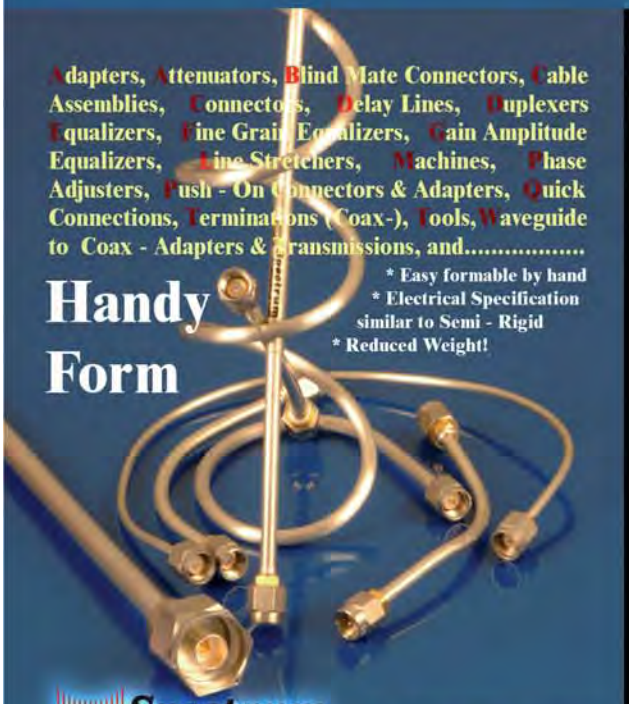

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