B & MCS-R SERIES

Section 9 Table of Contents

B SERIES

MCS-R SERIES

B Series

INTRODUCTION

The B series connectors are of robust design with fixed solder pot contacts of 15 A current rating. They are available in four different contact arrangements.

By their ruggedness, they are particularly suitable for rack and panel and cable to panel applications.

APPLICATIONS

The series B connectors ensures complete safety for the following applications:

Industries, transports, communications, power equipment and all specific civil and military electronic systems.

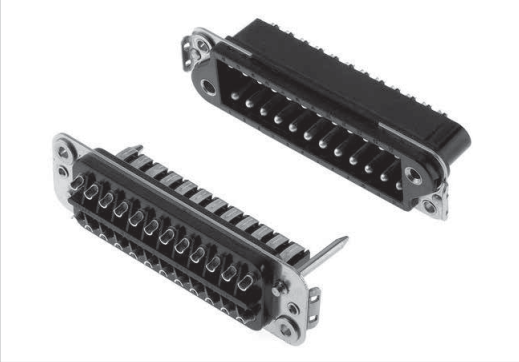
FEATURES

Plug and receptacle connectors are made of a thermoset insulator moulded onto a stainless steel fixing plate. Four contact arrangements are available, 8, 14, 24 and 32 contacts.

The receptacle box type connectors are fitted with round pin contacts. The plug connectors are fitted with spring blade contacts and two stainless steel guide pins of different diameter providing polarization and mating before the contacts to ensure correct alignment.

The pin contacts are in silver plated brass, the spring blade contacts are in silver plated bronze. The cambered configuration and elasticity procures a self wiping condition at each mating, ensuring high reliability.

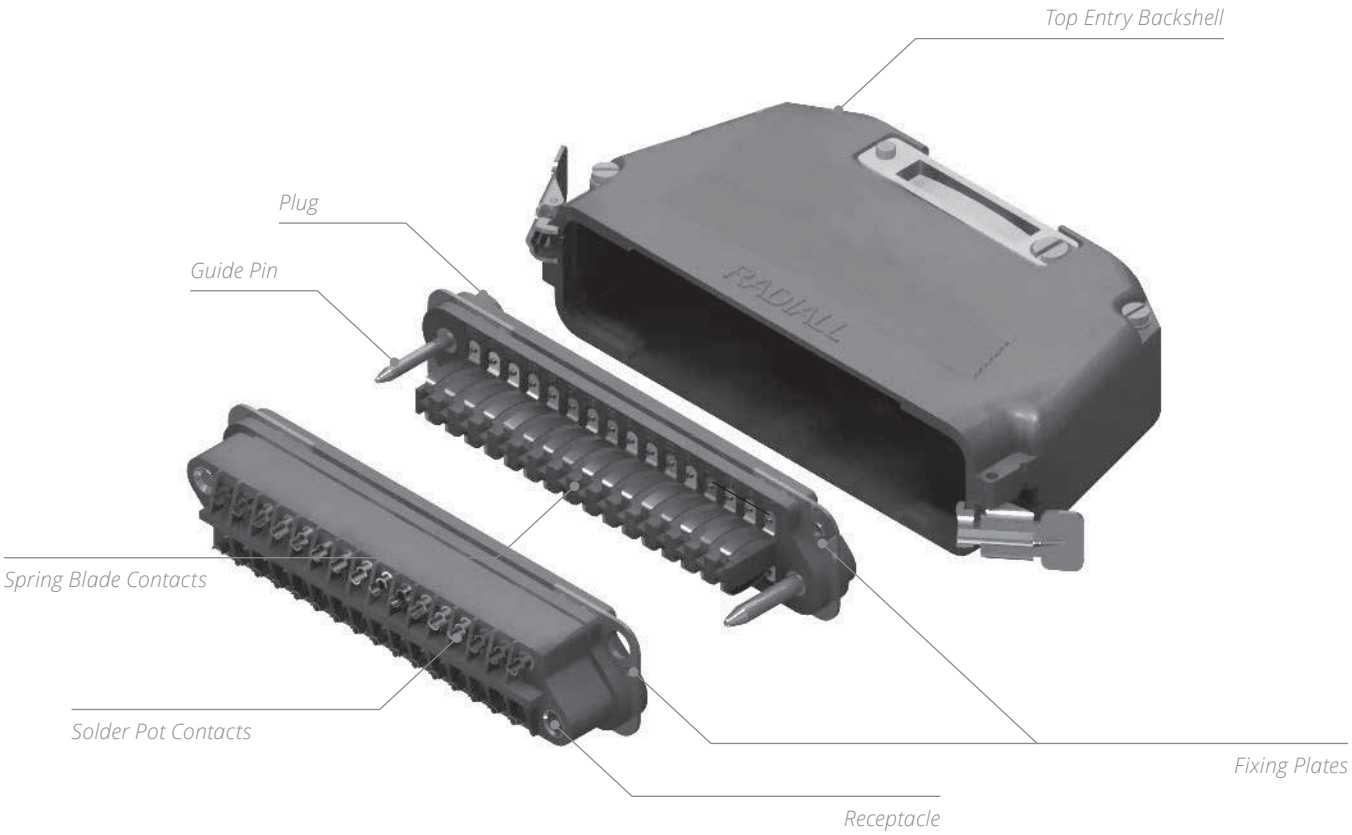
The B series connector is only available with solder pot termination for gauge 16 wires. Standard receptacle connectors are fitted with floating eyelets, which allows 0.75 mm radial float.



B Series

PRODUCT OVERVIEW

Detailed view of the various parts of this series connector



B Series

TECHNICAL CHARACTERISTICS

ELECTRICAL

- **Current Rating by Contact:** 15 A
- **Test Voltage:**
  - **Between Contacts:** > 1,500 Vrms
  - **Between Contacts and Earth:** > 2,000 Vrms
- **Insulation Resistance:** > 5,000 MΩ
- **Contact Resistance:** < 10 mΩ

MECHANICAL & ENVIRONMENTAL

- **Temperature Range:** -55 °C (-131 °F) to +125 °C (+257 °F)
- **Humidity:** 21 Days
- **Mating and Unmating:** 500 Cycles
- **Contact Retention:** > 50 N

MATERIALS

DESCRIPTION	MATERIAL/FINISH
Insulator Block	Glass Filled Phenolic
Pin Contacts (Male)	Brass-Silver Plated
Spring Blade Contacts (Female)	Bronze-Silver Plated
Guide Pins	Stainless Steel
Fixing Plate	Stainless Steel

MASSES G (OZ)

PLUG				
CONTACT ARRANGEMENT	08	14	24	32
WEIGHT	35 (1.25)	50 (1.80)	70 (2.50)	85 (3)
RECEPTACLE				
CONTACT ARRANGEMENT	08	14	24	32
WEIGHT	35 (1.25)	50 (1.80)	70 (2.50)	85 (3)
BACKSHELLS				
SIDE ENTRY	170 (6)	190 (6.70)	265 (9.35)	300 (10.60)
TOP ENTRY	180 (6.35)	200 (7.05)	280 (9.90)	320 (11.30)

B Series

HOW TO ORDER CONNECTORS

The following indications are to help you out when ordering B connectors.

When a receptacle connector is ordered with the locking system, in place of the floating eyelets, brackets are fitted whilst the locking clips are always fitted on the backshell.

For backshell and accessories please refer to pages 9-18 to 9-19 for ordering.

The plug connector is fitted with spring leaf contacts and the receptacle box type connector with pin contacts.

CONNECTOR PART NUMBER

B

SERIES PREFIX

CONTACT ARRANGEMENT
08–14–24-32

PRODUCT TYPE
M: Plug connector
F: Receptacle connector [2]

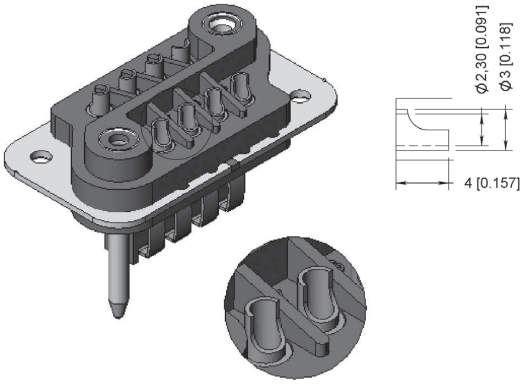
TERMINATION STYLE [1]
71: Ø 2.30 solder pot
73: Ø 3.20 solder pot
74: PC Tail
75: 5 mm terminal blade
78: NFC 20120 terminal blade
80: Screw cup termination

MODIFICATION CODE
NV: Without locking
VP: Brackets for locking system receptacle only (see page 9-17 for details)

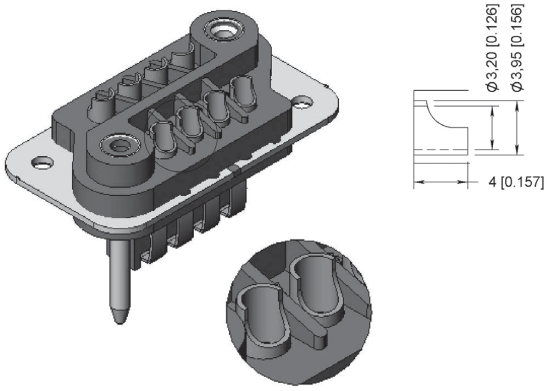
Notes
1. Please refer to page 9-6 for views of termination styles.
2. Receptacle connector: only the 71 termination style is available.

TERMINATION STYLES

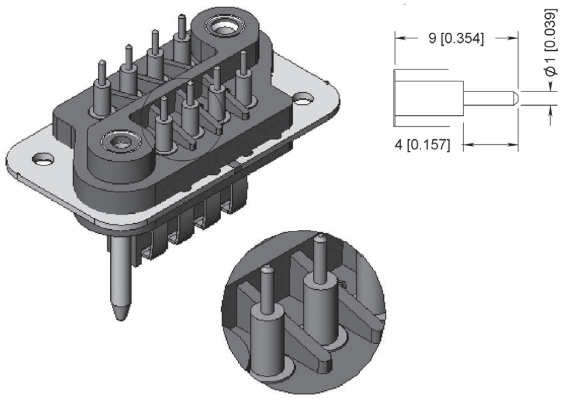
Following are the different termination styles available in details



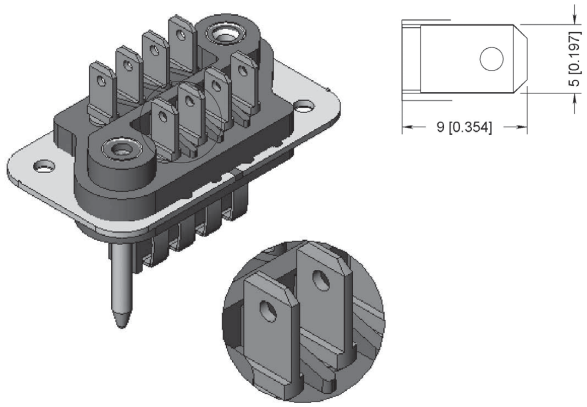
STYLE 71



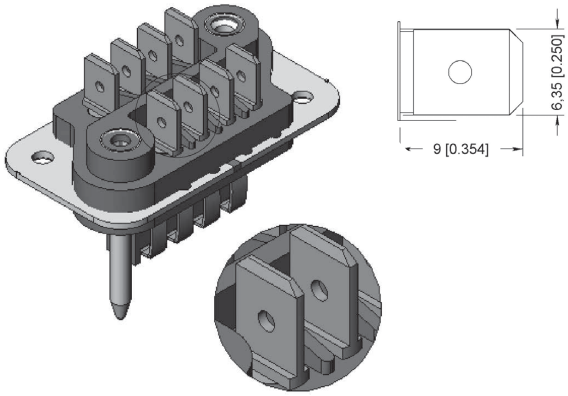
STYLE 73



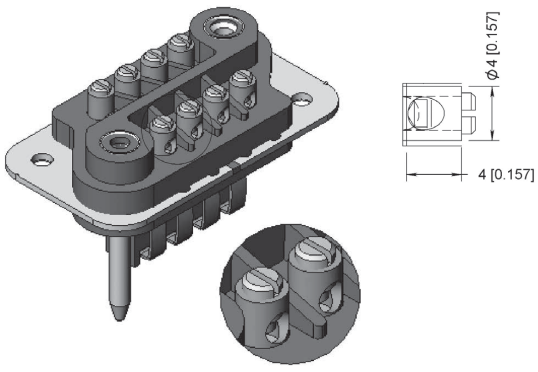
STYLE 74



STYLE 75



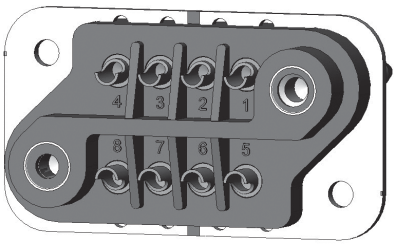
STYLE 78



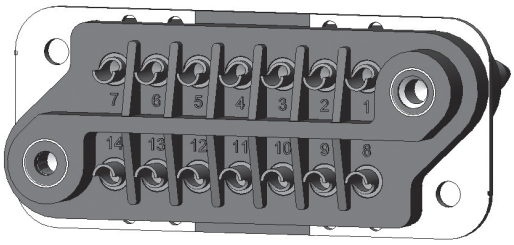
STYLE 80

B Series

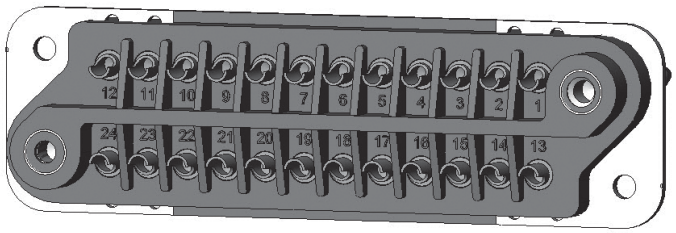
CONTACT ARRANGEMENTS



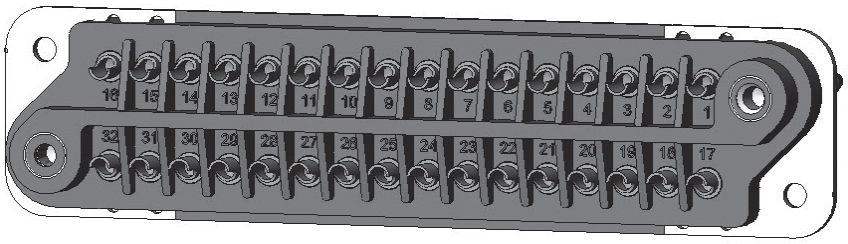
8 CONTACTS



14 CONTACTS



24 CONTACTS

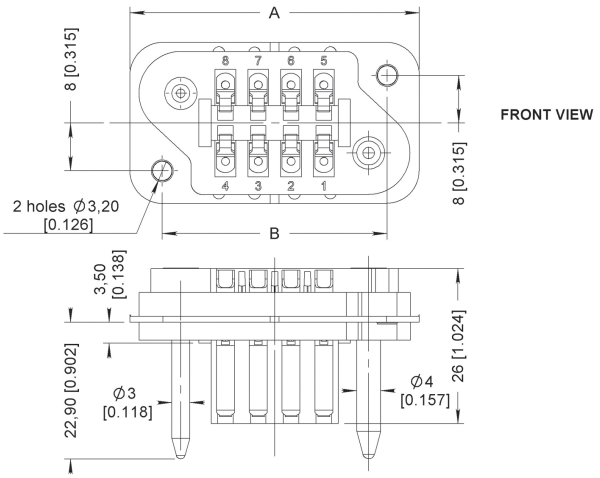


32 CONTACTS

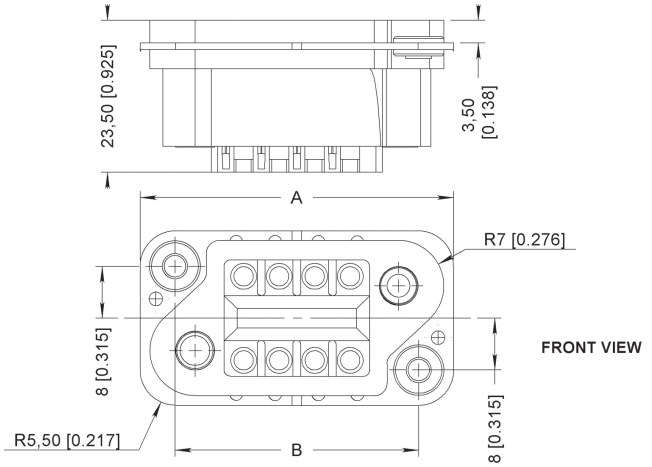
DIMENSIONS

SINGLE SHELL DIMENSIONS-MM(INCH)

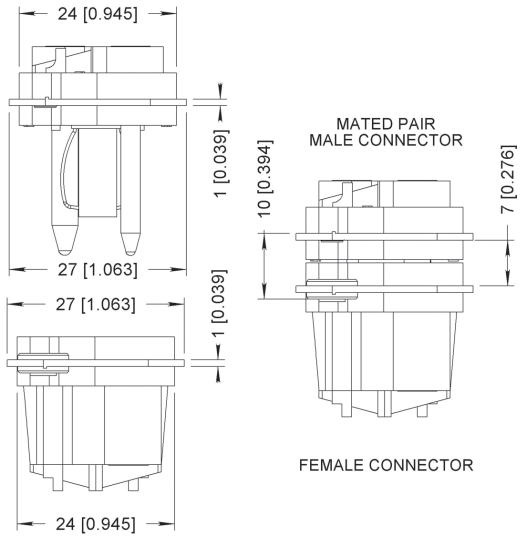
MALE



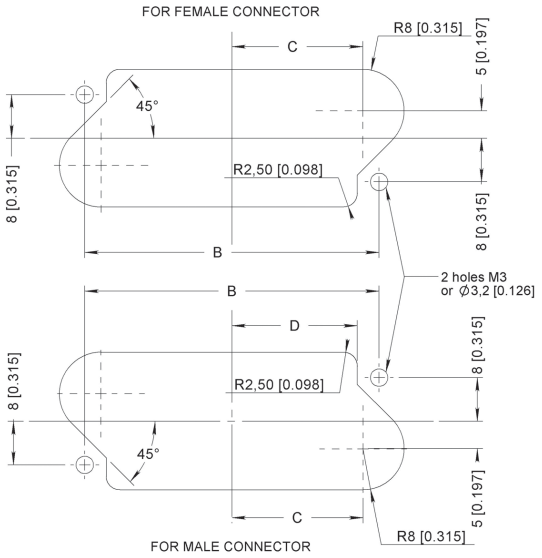
FEMALE



MATED SHELL DIMENSIONS



PANEL CUT-OUTS



CONTACT ARRANGEMENT	PLUG & RECEPTACLE CONNECTOR DIMENSIONS MM(INCH)			
	A	B	C	D
08	48.5 (1.909)	37.5 (1.476)	15.75 (0.620)	15.5 (0.610)
14	65 (2.559)	54 (2.125)	24 (0.944)	23.5 (0.925)
24	92.5 (3.641)	81.5 (3.208)	37.75 (1.486)	37.5 (1.476)
32	114.5 (4.507)	103.5 (4.074)	48.75 (1.919)	48.5 (1.909)

MCS-R Series

INTRODUCTION

The MCSR series connectors are of robust design and available in four contacts arrangements, respectively 28, 48, 83 and 113 wire contacts, size gauge 16.

The same number of micro coaxial contacts can be installed instead of the wired contacts. A unique feature of the MCSR connector is that it's interchangeable with the B series, however, it is not fully intermateable.

The connectors may be adapted with die cast aluminium hoods, with two types of cable entries, either from the top or from the side.

APPLICATIONS

MCSR connectors are suitable for various applications in the following industrial fields: Communications and automation systems, electronic equipment, naval, aerospace, and defense applications.

FEATURES

The MCS-R series, plug and receptacle connectors are made of a thermostat insulator moulded onto a stainless steel fixing plate. Four contact arrangements are available, 28, 48, 83 and 113 contacts.

The plug connector is fitted with two guide pins of different diameter, which provides polarization and mate before the contacts ensuring a perfect alignment and reliability. The plug connector accepts socket wire contacts or pin micro coaxial contacts.

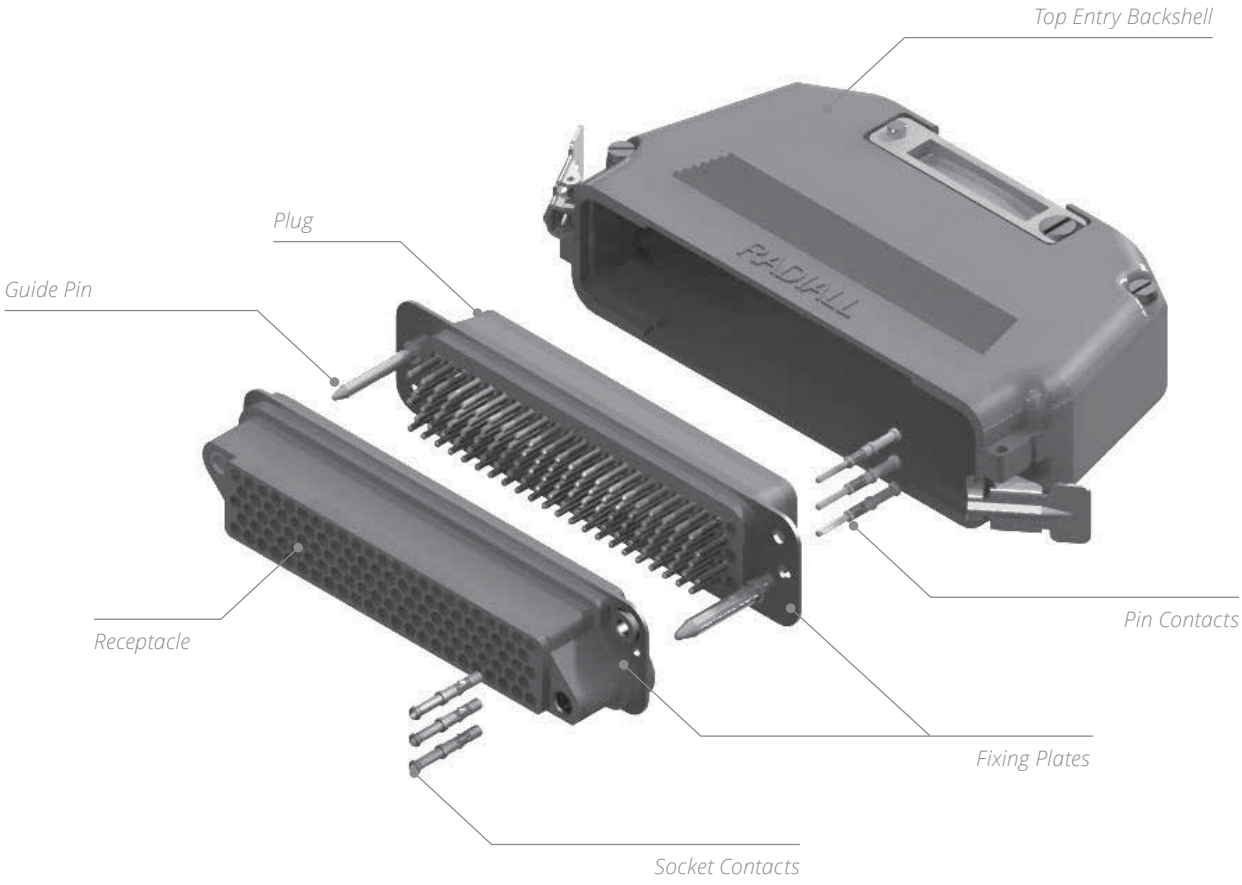
The receptacle connector accepts pin wire contacts or socket micro coaxial contacts and is fitted with floating eyelets which allows 0.75 mm radial float.

Three termination styles on the contacts are available, wire contacts with solder pot or crimp for wire size gauge 16 and micro coaxial contacts, crimp style.

MCS-R Series

PRODUCT OVERVIEW

Detailed view of the various parts of this series connector



TECHNICAL CHARACTERISTICS

ELECTRICAL

- **Current Rating by Contact:** 13 A
- **Operating Voltage:** 350 Vrms at 50 Hz
- **Test Voltage:** 1,500 Vrms at 50 Hz
- **Insulation Resistance:** > 5,000 MΩ
- **Contact Resistance:** < 12 mΩ

ELECTRICAL WITH MICRO COAXIAL CONTACTS

- **Impedance:** 50 Ω
- **Operating Frequency Range:** 0 to 1,000 MHz
- **VSWR of Pair of Contacts:** < 1.4 from 0 to 1,000 MHz
- **Insertion Loss of a Pair of Contacts at 1,000 MHz:** < 0.20 dB
- **Test Voltage at Sea Level (Mated Pair):** 600 Vrms at 50 Hz
- **Insulation Resistance:** > 5,000 MΩ
- **Contact Resistance:** < 12 mΩ

MECHANICAL & ENVIRONMENTAL

- **Temperature Range:** -55 °C (-131 °F) to +125 °C (+257 °F)
- **Humidity:** 21 Days
- **Mating and Unmating:** 500 Cycles
- **Contact Retention:** > 50 N

MCS-R Series

MATERIALS

DESCRIPTION	MATERIAL/FINISH
Insulator Block	Glass Filled Phenolic
Guide Pins	Stainless Steel
Fixing Plate	Stainless Steel
Contacts	Copper Alloy–Gold over Nickel-Plated

MASSES G (OZ)

PLUG				
CONTACT ARRANGEMENT	28	48	83	113
WEIGHT	40 (1.45)	60 (2.15)	90 (3.20)	115 (4.05)
RECEPTACLE				
CONTACT ARRANGEMENT	28	48	83	113
WEIGHT	40 (1.45)	55 (1.95)	85 (3)	110 (3.90)
BACKSHELLS				
SIDE ENTRY	170 (6)	190 (6.70)	265 (9.35)	300 (10.60)
TOP ENTRY	180 (6.35)	200 (7.05)	280 (9.90)	320 (11.30)

MCS-R Series

HOW TO ORDER CONNECTORS

The following indications are useful when ordering MCS-R connectors.

When ordering a connector with its locking system VP, brackets fitted on the female connector replace the eyelets, whilst the locking clips are always fitted on the backshell.

Series MCS-R contacts are removable. Contacts shall be ordered separately following the termination style and quantities desired.

For backshells and accessories please refer to page 9-18 to 9-19 for ordering.

For contact references please refer to page 9-15.

MCSR

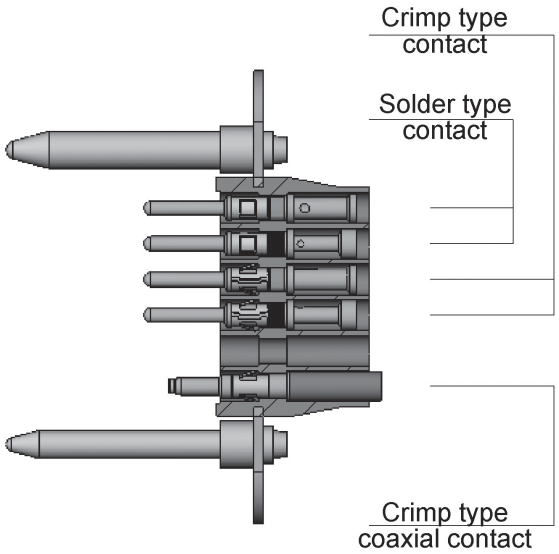
SERIES PREFIX

CONTACT ARRANGEMENT
028–048–083-113

PRODUCT TYPE
M: Plug connector
F: Receptacle connector

MODIFICATION CODE
00: Without locking
VP: Brackets for locking system receptacle only (see page 9-16 for detail)

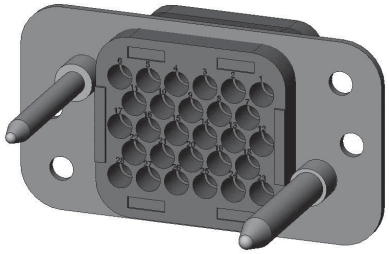
TERMINATION STYLES



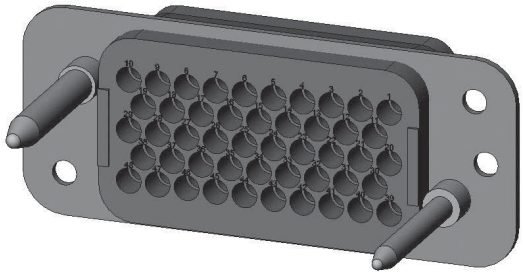
MCS-R Series

CONTACT ARRANGEMENTS

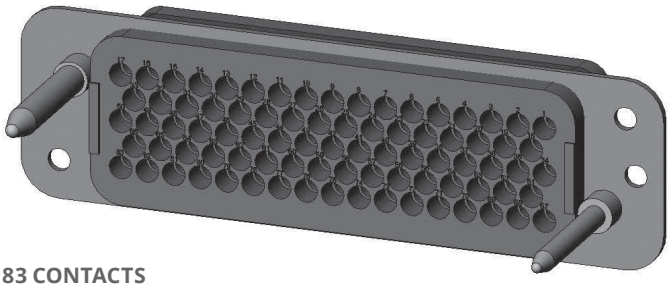
PLUG VIEW SHOWN



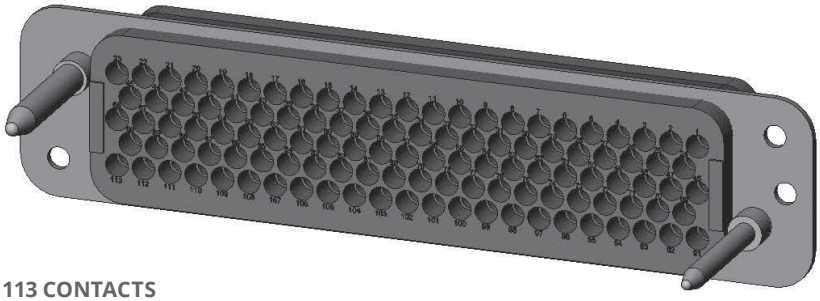
28 CONTACTS



48 CONTACTS



83 CONTACTS

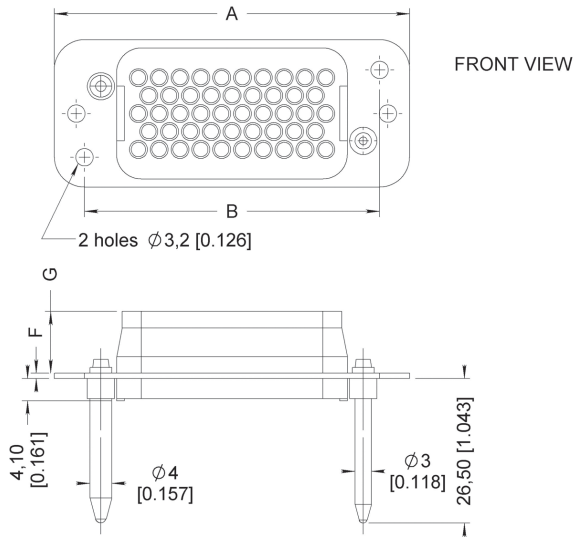


113 CONTACTS

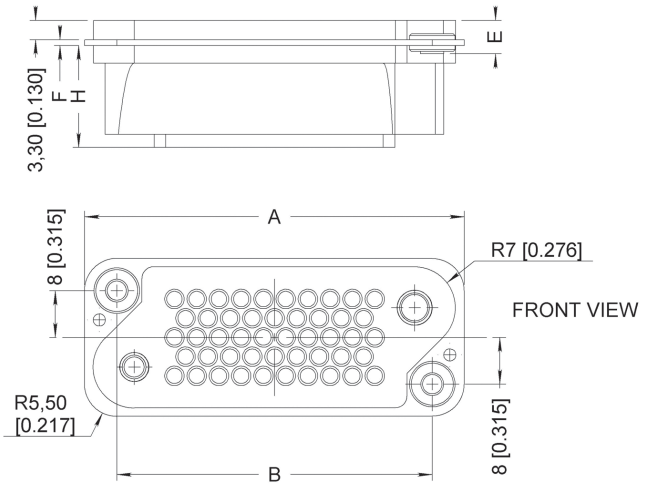
DIMENSIONS

SINGLE SHELL DIMENSIONS MM (INCH)

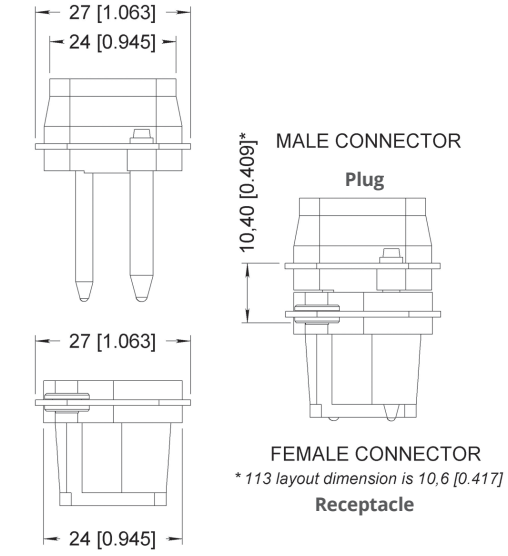
PLUG



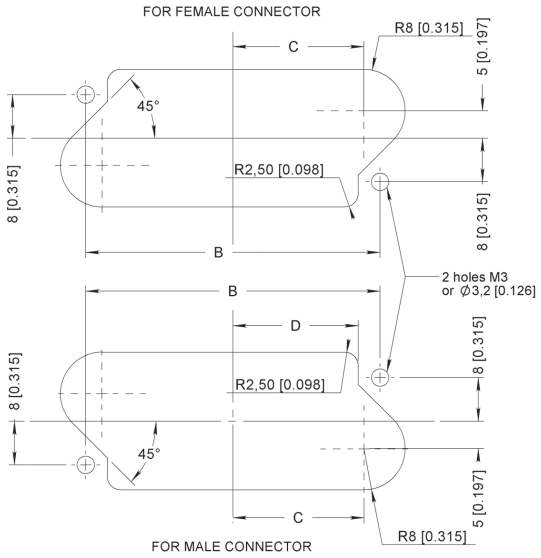
RECEPTACLE



MATED SHELL DIMENSIONS



PANEL CUT-OUTS



CONTACT ARRANGEMENT	PLUG & RECEPTACLE CONNECTOR DIMENSIONS MM (INCH)							
	A	B	C	D	E	F	G	H
028	48.5 (1.909)	37.5 (1.476)	15.75 (0.620)	15.5 (0.610)	5.3 (0.209)	1 (0.039)	11.5 (0.452)	17.7 (0.697)
048	65 (2.559)	54 (2.126)	24 (0.945)	23.5 (0.925)	5.3 (0.209)			
083	92.5 (3.642)	81.5 (3.209)	37.75 (1.486)	37.5 (1.476)	5.3 (0.209)			
113	114.5 (4.508)	103.5 (4.075)	48.75 (1.919)	48.5 (1.909)	5.5 (0.217)	1.2 (0.047)	11.3 (0.445)	17.5 (0.689)

CONTACT REFERENCES [1]

MICRO COAXIAL CONTACTS

			OUTER CONDUCTOR DESCRIPTION		CENTER CONDUCTOR DESCRIPTION	
CABLE TYPE	**TYPE**	**PART NUMBER**	**CRIMPING TOOL**	**SETTING**	**CRIMPING TOOL**	**POSITIONNER**
RG178 RG196 KX21	Pin	614120	282281 M22520/2-01	1	282292 M22520/4-01	282973 M22520/4-02
	Socket	690020				
RG174 RG188 RG316 KX3–KX22	Pin	614140	282281 M22520/2-01	2	282292 M22520/4-01	282973 M22520/4-02
	Socket	690040				
AWG26 Twisted Pair Cable Ø1.1	Pin	614160	282281 M22520/2-01	2	282292 M22520/4-01	282973 M22520/4-02
	Socket	690060				
AWG24 Twisted Pair Cable Ø1.3	Pin	614170	282281 M22520/2-01	2	282292 M22520/4-01	282973 M22520/4-02
	Socket	690070				

CRIMP WIRE CONTACTS [2]

CABLE TYPE	TYPE	PART NUMBER	CRIMPING TOOL	POSITIONER	EXTRACTION TOOL
AWG16 AWG18 AWG20	Pin	614200	282291 M22520/1-01	282975	282920
	Socket	690300			
AWG20 AWG22 AWG24	Pin	614200	282291 M22520/1-01	282976	282920
	Socket	690300			

SOLDER WIRE CONTACTS [2]

CABLE TYPE	TYPE	PART NUMBER	EXTRACTION TOOL
AWG16 AWG18 AWG20	Pin	614230	282920
	Socket	614330	
AWG20 AWG22 AWG24	Pin	614240	282920
	Socket	614340	

Notes:

1. For other termination please consult us

2. Stripping length for cable types AWG16-18-20 is 6 and for types AWG20-22-24 it is 5

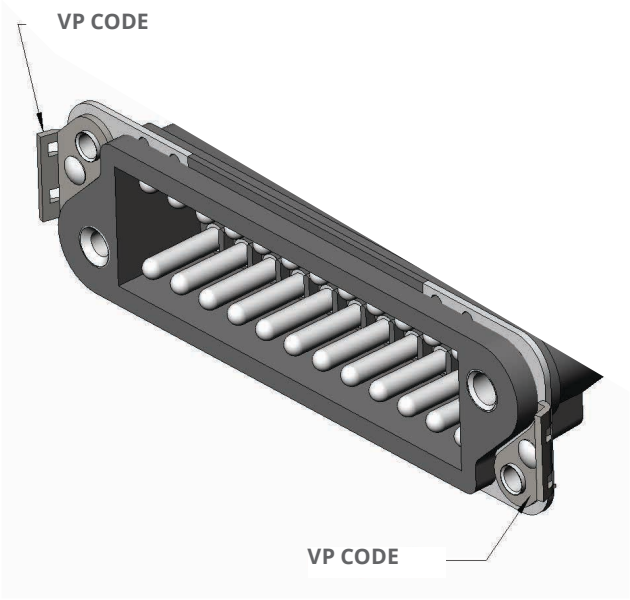
MCS-R Series

LOCKING SYSTEM CODE VP

The brackets can only be used on the receptacle connector and enables it to be fastened securely when its mating half is fitted with a hood

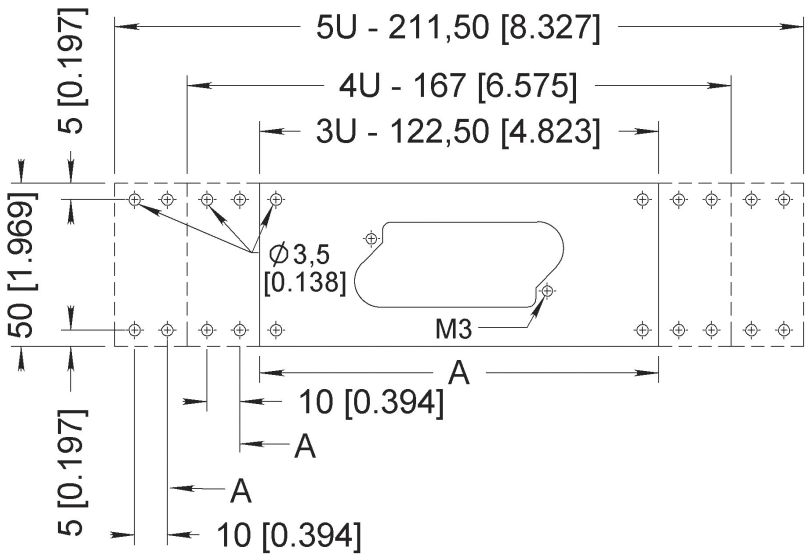
The brackets replace the floating eyelets on the receptacle connector

On both series B and MCSR when VP code is ordered, the corresponding hood must be ordered with the male connector

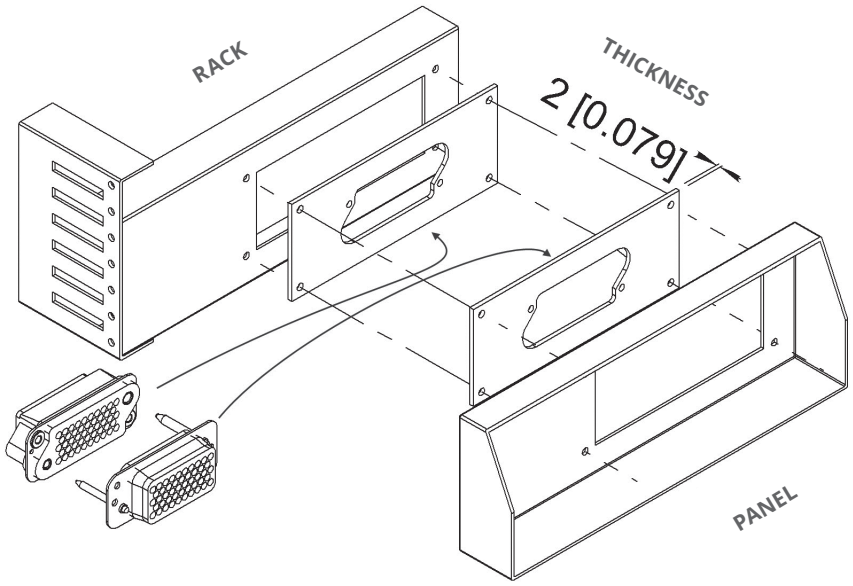


CONNECTORS MOUNTING PLATES

The mounting plates already blanked out, simplify the wall cut out on the rack or panel as well as on any other item designed to support the connector. The latter is directly fitted to the mounting plate, which can then be easily secured with accuracy on the equipment due to the four oblong holes of the mounting plate.



SERIES		REFERENCE FOLLOWING NUMBER OF CUT OUTS		
B	MCSR	3 U	4 U	5 U
14	48	PP314	PP414	PP514
24	83	PP324	PP424	PP524
32	113	-	PP432	-
Dimensions A mm (inch)		114.5 (4.508)	139 (5.472)	183.5 (7.224)



MCS-R Series

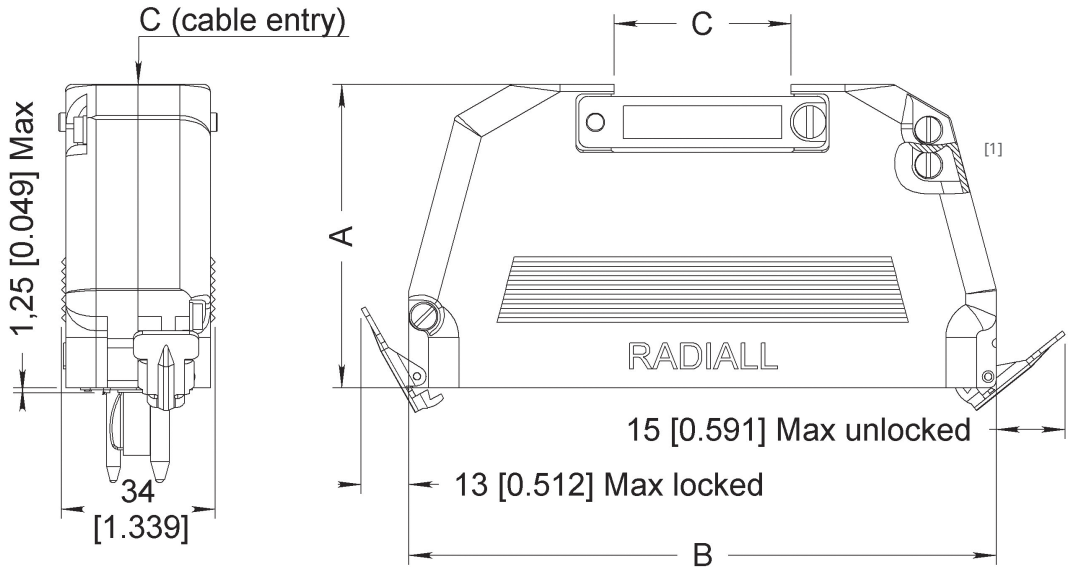
CONNECTORS ACCESSORIES

The backshells for both series B and MCSR are available in four sizes and are supplied in two halves which enables them to be fitted after the wiring of the connectors.

They are available either with TOP or SIDE (45°) cable entry.

Each backshell is fitted with a pair of locking clips, one fixed on each end. This allows the connector backshell assembly to be fastened securely to the mating connector fitted with the VP brackets.

TOP ENTRY



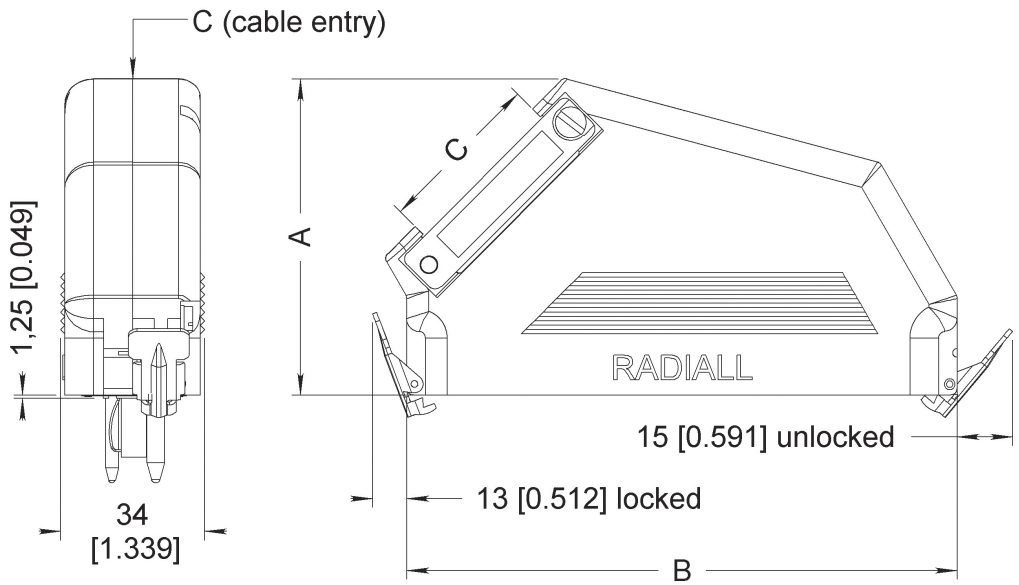
PART NUMBER FOR TOP ENTRY	NUMBER OF CONTACTS		B & MCSR DIMENSIONS MM (INCH)		
	B SERIES	MCSR SERIES	A	B	C
612813	8	28	52.5 (2.067)	60.5 (2.382)	26 × 10 (1.024 × 0.394)
612823	14	48		77 (3.031)	26 × 15 (1.024 × 0.591)
612837	24	83	65.5 (2.579)	104.5 (4.114)	38 × 20 (1.496 × 0.787)
612845	32	113		126.5 (4.980)	38 × 20 (1.496 × 0.787)

Notes

1. This screw is for grounding purpose.

MCS-R Series

SIDE ENTRY



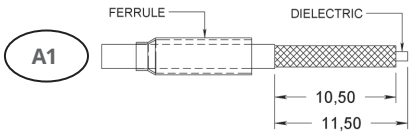
PART NUMBER FOR SIDE ENTRY	NUMBER OF CONTACTS		B & MCSR DIMENSIONS MM (INCH)		
	B SERIES	MCSR SERIES	A	B	C
612814	8	28	63 (2.480)	60.5 (2.382)	26 × 10 (1.024 × 0.394)
612824	14	48		77 (3.031)	26 × 15 (1.024 × 0.591)
612838	24	83	73 (2.874)	104.5 (4.114)	38 × 20 (1.496 × 0.787)
612846	32	113		126.5 (4.980)	38 × 20 (1.496 × 0.787)

MICRO COAXIAL CONTACTS ASSEMBLY INSTRUCTIONS

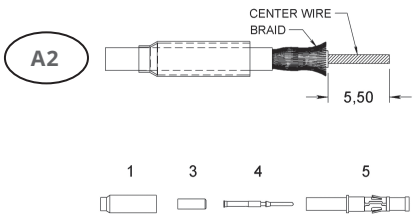
Three different modes of assembly are to be considered depending on the cable type used. The two first assemblies A and B are applicable for braid coaxial cables, whilst the third assembly C is applicable for twin conductor cable. The three mounting procedures are identical for both contact types, pin and socket.

MOUNTING PROCEDURE COAXIAL CABLES

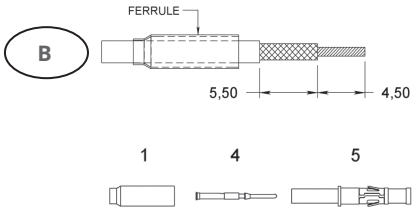
After sliding the ferrule over the cable and stripping the latter to the dimensions shown in A1.



- Comb the braid in opening it up, strip the center wire to the dimension shown in A2.
- Slide the insulator bushing [1] over the dielectric .
- Place the center contact [2] over the conductor, the contact must butt against the insulator bushing [1].
- Crimp the center contact with tool 282281.
- Slide the cable and contact into the body [3] ensuring that it's pushed home, then trim back the braid over the body [3].
- Slide the ferrule over the braid up to the body shoulder.
- Place the assembly into tool 282292 and crimp the ferrule.



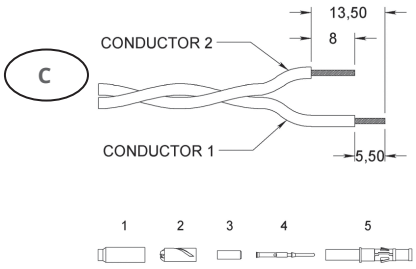
After sliding the ferrule over the cable, strip the latter to dimensions shown in B (mounting of coaxial contacts without insulator bushing).



- Comb the braid and place the center contact over the conductor butting it against the dielectric.
- Place the sub assembly into tool 282281 and crimp the center contact.
- The following steps are identical to those indicated in A.

MICRO COAXIAL CONTACTS WITH TWIN CONDUCTOR CABLE [4]

After sliding the ferrule over the twin conductors and stripping them to dimensions shown in C.



- Slide the adaptor 2 and the insulator bushing [1] over conductor 1.
- Place the center contact [2] over the conductor, butting it against the sheath.
- Place the sub assembly into tool 282281 and crimp the centre contact.
- Slide the cable and contact into the body [3], ensuring that its home.
- Slide the adaptor 2 onto the body [3] against the shoulder.
- Place conductor 2 into the helical slot.
- Slide the ferrule over the adaptor and conductor 2, up to the shoulder of the body [3].
- Place the assembly into tool 282292 and crimp the ferrule.

Notes

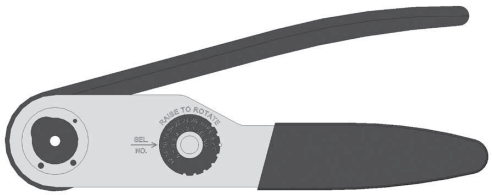
1. Insulating bush
2. Socket or pin contact
3. Contact body
4. Conductor 1 is for the center contact, whilst conductor 2 is for earthing.

MCS-R Series

TOOLS

CRIMP TOOLS

PART NUMBER	MIL SPEC P/N
282281	M22520/2-01
282291	M22520/1-01
282292	M22520/4-01



POSITIONERS

PART NUMBER	MIL SPEC P/N
282973	M22520/4-02
282976	Daniels TP616
282975	Daniels TP617

EXTRACTION TOOL

PART NUMBER
282920