HC51 Series

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10kV - STRAIGHT COAXIAL CONNECTOR SERIES

FEATURES

- Rated voltage 10kV$_{DC}$
- Recessed contacts
- Coaxial design
- Bayonet coupling
- Intermateable with industry standard 10kV coaxial connectors
- Completed cable assemblies available
- RoHS compliant (exemption 6c)

APPLICATIONS

- Instrument high voltage connections
- High voltage power supplies / amplifiers
- Medical electronics
- Nuclear instrumentation
- Test and measurement equipment
- High voltage laboratory wiring
- General high voltage testing

DESCRIPTION

10kV reverse polarity coaxial high voltage connectors designed to minimize the risk of electrical shock to personnel through the use of recessed contacts. Both the cable connectors and the bulkhead receptacles have recessed contacts and will stand off the rated voltage in unmated condition.
The front mount receptacles are hermetically sealed.

The straight crimp cable plug HC51P-58 and the rear mount crimp receptacle HC51RB-58 are compatible with our 20kV rated LSZH **HRG58-20-2** coaxial cable for crimp assembly.
For high temperature applications up to 8kV$_{DC}$ the connectors can also be assembled with silicone or FEP insulated coaxial cable **HSL-10S-0.5-A-2** or **HRG303-40-U-A-2**, respectively.

A suitable crimping tool is available on request.
The connectors are RoHS compliant according to 2011/65/EU / 2015/863 / Exemption 6c.

The connectors must never be mated or unmated when energized.

Please see the HC52 series for 20kV$_{DC}$ models.
HC51 series connectors are not intermateable with SHV or HC52 series connectors.

SPECIFICATIONS

Operating voltage:	max. 10kV$_{DC}$ (at sea level)
Test voltage:	15kV$_{DC}$
Impedance:	non constant
Insulation resistance:	1000GΩ
Center contact resistance:	≤ 3mΩ
Outer contact resistance:	≤ 2mΩ
Operating temperature:	-55 to +85°C (high temperature versions available)
Leak rate	< 1x10^{-6} mbar*l/s @ 1bar differential pressure (applies to front mount bulkhead receptacles only)

Ratings listed above apply to clean mated connector pairs in standard atmospheric conditions. When connectors are used in an adverse environment (such as high temperature, humidity, pollution content, extreme mechanical exposure, etc.), the connector should be derated. The fitness for use must be proved by extended operational tests.

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MODEL OVERVIEW - PLUGS

Part Number Description	Termination Center Contact	Contact Pin Material/ Plating	Insulator Material	Body Material/ Plating	Gasket Material	Weight
HC51P-58 **Straight Crimp Cable Plug** 	Solder	Beryllium Copper/ Au over Ni over Cu	High Density PE	Brass/ Ni over Cu	Silicone	20.3g

MODEL OVERVIEW - RECEPTACLES

Part Number Description	Termination Center Contact	Contact Pin Material/ Plating	Insulator Material	Body Material/ Plating	Gasket Material	Weight
HC51RB-58 **Rear Mount Bulkhead Crimp Receptacle** 	Solder	Brass/ Au over Ni over Cu	High Density PE	Brass/ Ni over Cu	Silicone	
HC51RB-A **Front Mount Bulkhead Receptacle (long insulator)** 	Solder	Beryllium Copper/ Au over Ni over Cu	High Density PE	Brass/ Sn-Zn-Cu Alloy over Cu	Silicone	29g
HC51RB-B **Front Mount Bulkhead Receptacle (short insulator)** 	Solder	Beryllium Copper/ Au over Ni over Cu	High Density PE	Brass/ Sn-Zn-Cu Alloy over Cu	Silicone	29g

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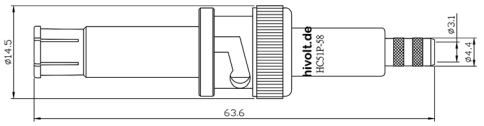
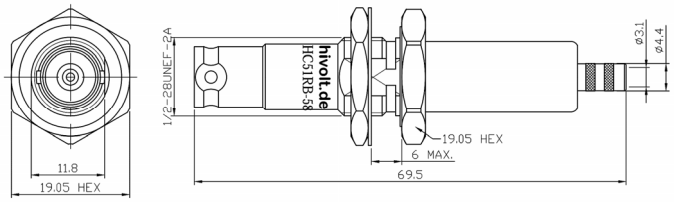
DIMENSIONS

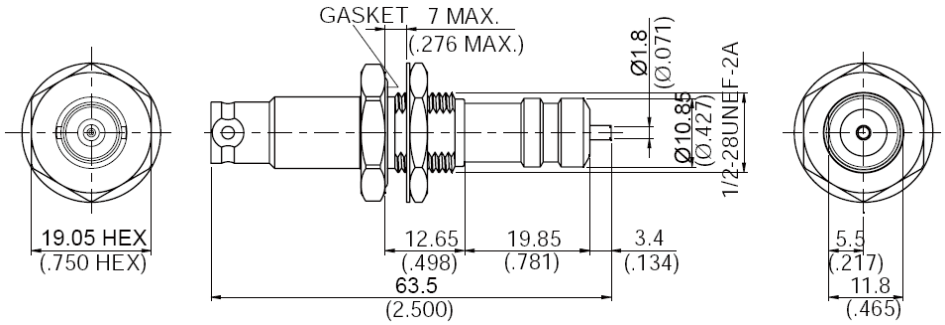
HC51P-58



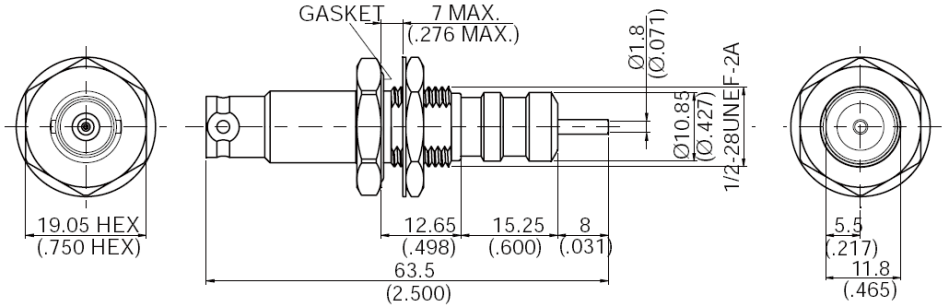
HC51RB-58



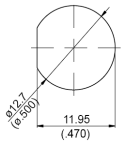
HC51RB-A



HC51RB-B



PANEL CUT-OUT FOR RECEPTACLES



- All dimensions are in mm (inch); drawings not to scale.
- All values and dimensions without given tolerances are nominal.

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ORDERING INFORMATION

10kV Straight Crimp Cable Plug (female)	**HC51P-58**
10kV Rear Mount Bulkhead Crimp Receptacle (male)	**HC51RB-58**
10kV Front Mount Bulkhead Receptacle (male, long insulator)	**HC51RB-A**
10kV Front Mount Bulkhead Receptacle (male, short insulator)	**HC51RB-B**

CRIMP TOOLS

Ergonomic blank crimp tool frame suitable for crimp inserts **HC-CR-DIE-A, HC-CR-DIE-B, HC-CR-DIE-C**	**HC-CR-2**
Crimp Insert Hex **5.5mm**, 5.9mm, Square 0.98mm, 1.6mm, **2.4mm**	**HC-CR-DIE-B**

Bespoke ready-to-use high voltage cable assemblies based on different high voltage cable types are available. The cable assemblies are fully tested. Please contact hivolt.de for details.

Examples:

Cable: HRG58-20-2; Length: 2m; **HC51P-58** plug assembled on both ends	**HCA-010-H51A-002-H51A-A**
Cable: HSL-10S-0.5-A-2; Length: 80m; **HC51P-58** plug assembled on one end	**HCA-010-H51A-080-S**
Cable: HRG58-20-2; Length: 33m; **HC51P-58** plug assembled on one end, **HC51RB-58** receptacle on the other end	**HCA-010-H51A-033-H51R-A**

Disclaimer

The information given in this data sheet is technical data, not assured product characteristics. It has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. The user has to ensure by adequate tests that the product is suitable for his application regarding safety and technical aspects.
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Safety Advice

Design, installation and inspection of machinery and devices carrying high voltage require accordingly trained and qualified personnel. Appropriate safety rules and directives must be complied with.
Improper handling of high voltage can mean severe injuries or death and may cause serious collateral damage!

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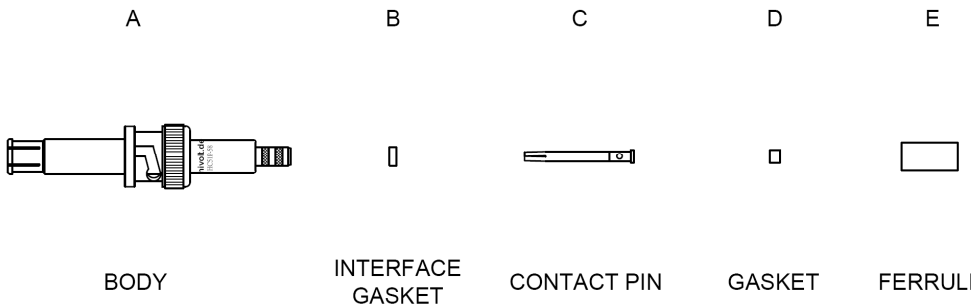
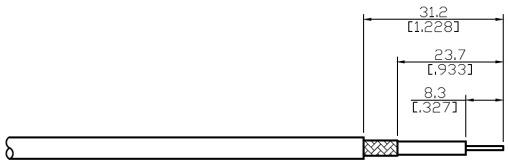
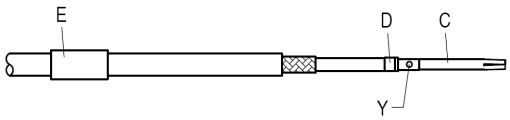
▪ CABLE ASSEMBLY INSTRUCTIONS HC51P-58



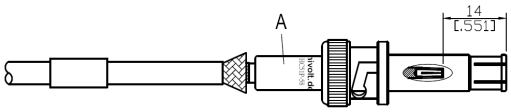


Step 1: strip as shown.
Make sure not to scratch the isolation!

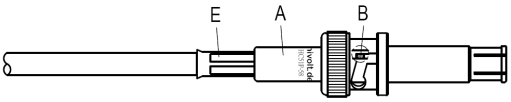


Step 2: slide ferrule "E" over cable.

Step 3: put gasket "D" and pin "C" on center conductor and solder in "Y".
Gasket must be under compression after soldering is completed.



Step 4: loosen braiding and slide connector "A" in place.



Step 5: slide ferrule "E" towards the connector "A" and crimp.
Use 5.5mm/0.217" hex crimp die insert **HC-CR-DIE-B**.

Step 6: Install interface gasket B over contact pin

All dimensions are in mm [inch]; drawings not to scale

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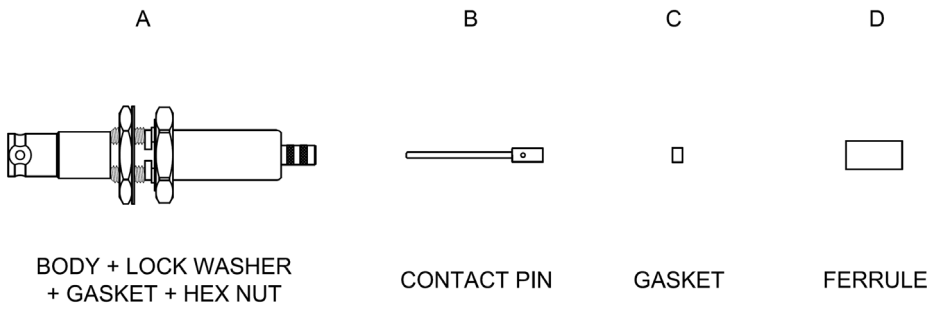
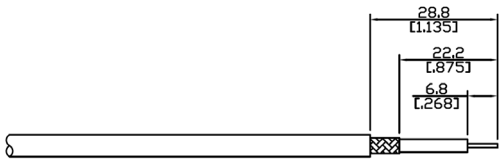
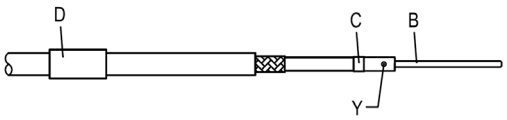
CABLE ASSEMBLY INSTRUCTIONS HC51RB-58



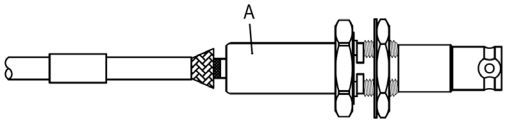


Step 1: strip as shown.
Make sure not to scratch the isolation!

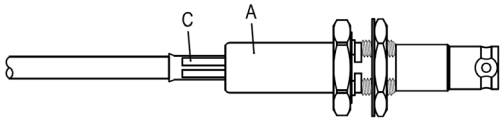


Step 2: slide ferrule "D" over cable.

Step 3: put gasket "C" and pin "B" on center conductor and solder in "Y".
Gasket must be under compression after soldering is completed.



Step 4: loosen braiding and slide connector "A" in place.



Step 5: slide ferrule "D" towards the connector "A" and crimp.
Use 5.5mm/0.217" hex crimp die insert
HC-CR-DIE-B

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