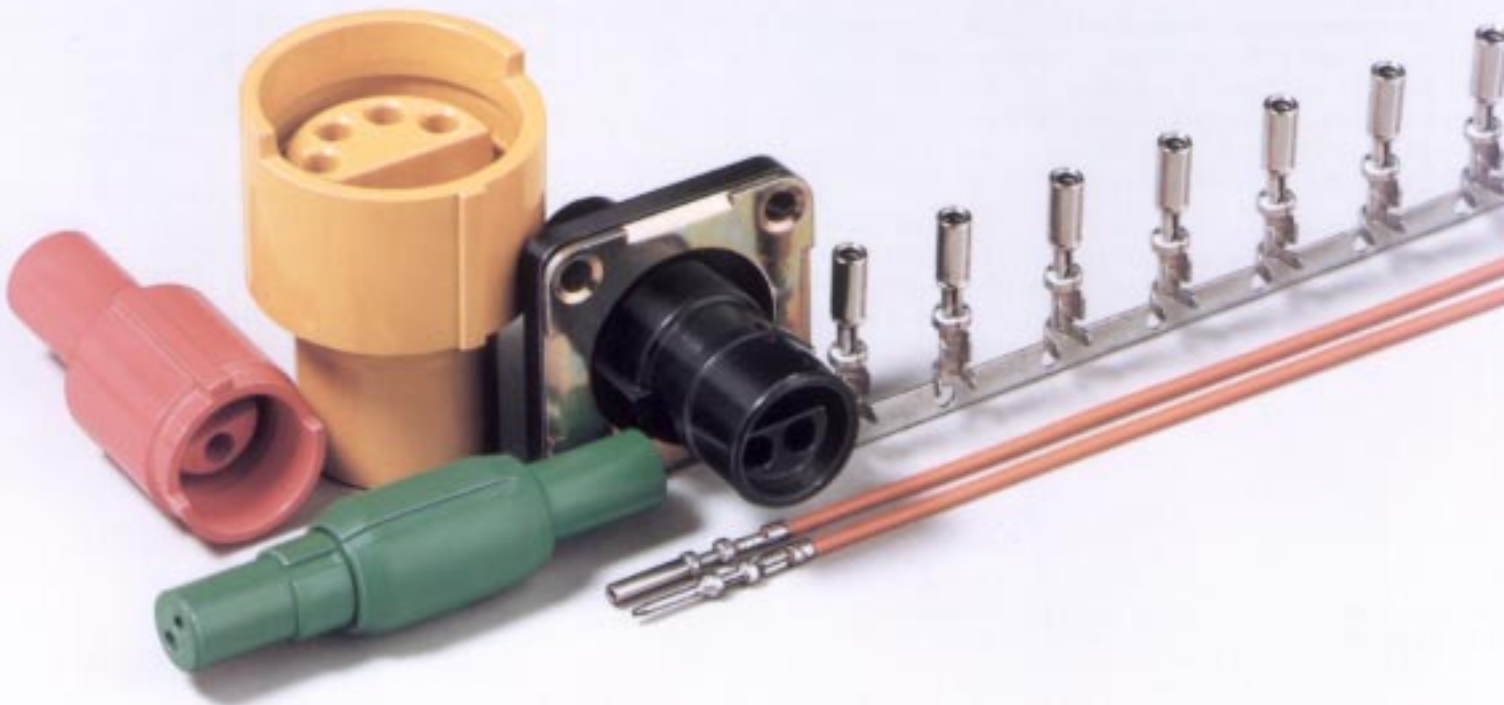


SURE-SEAL
CONNECTORS



Contents

Introduction.....	2
Features.....	3
Technical Data.....	4
Mini SURE-SEAL	
Contact Arrangements	
Part Numbers	
Dimensions.....	5
SURE-SEAL	
Contact Arrangements.....	6
Part Numbers.....	6
Dimensions.....	8
Accessories.....	10
Tools.....	11
Application Examples.....	12
Product Safety Information.....	14

Reliability. Lowcost. Performance. Delivery!

ITT Cannon provides them all with SURE-SEAL connectors – a series of low-cost UL and CSA recognized environmental connectors.

The one-piece molded body and rugged multiple moisture seals make the SURE-SEAL connector a natural for applications whose outside contaminants must be excluded.

One of the main features of the SURE-SEAL connector is its simplicity. In addition to the contacts only two other parts – the connector bodies – are required to complete the inter-connect.

ITT Cannon developed SURE-SEAL connectors to meet the increased requirements for safety and reliability in the transportation field brought about by Department of Transportation regulations.

The sealed SURE-SEAL connectors satisfy all of the parameters defined by transportation / industrial standards including vibration, shock, temperature cycling, salt water spray and immersion, petroleum derivatives, industrial gas and, most important, low millivolt drop and low contact resistance.

Features

Low Installed Cost

SURE-SEAL connectors from ITT Cannon are designed to be terminated by the OEM. The OEM being the termination facility gives complete in-house capability! The total installed costs are what counts!

Field Serviceable

When necessary, SURE SEAL connectors can be changed, modified or wired in the field.

One Piece Molded Bodies

The SURE-SEAL connector incorporates a very simple one piece molded body. No other parts – other than contacts – are needed to assemble a complete connector.

Low Cost Contacts

Without sacrificing quality, the cost of the SURE-SEAL connector is kept low by using stamped contacts available in reels in a continuous strip for use on the industry accepted semi-automatic crimp machines. All contacts utilize a "B" type crimp.

Wide Range of Wire Accomodation

SURE-SEAL connectors are ideally suited to be terminated with wires of size 0,5 – 1,5 mm² (AWG 14 – 20) and with an insulation diameter of 1,4 – 1,8 mm, 1,8 – 2,8 and 2,4 – 3,3 mm. Termination to jacketed multiconductor cables in the range of 5,3 – 8,4 mm diameter is possible with total environmental seal still assured.

Polarized against Mismatching

SURE-SEAL connector mating faces are designed with two stepped planes. The plug and receptacle must be properly oriented in order for the contacts to engage. For "blind" mating a raised indexing rib and matching raised indexing spline have been added to the plug and receptacle.

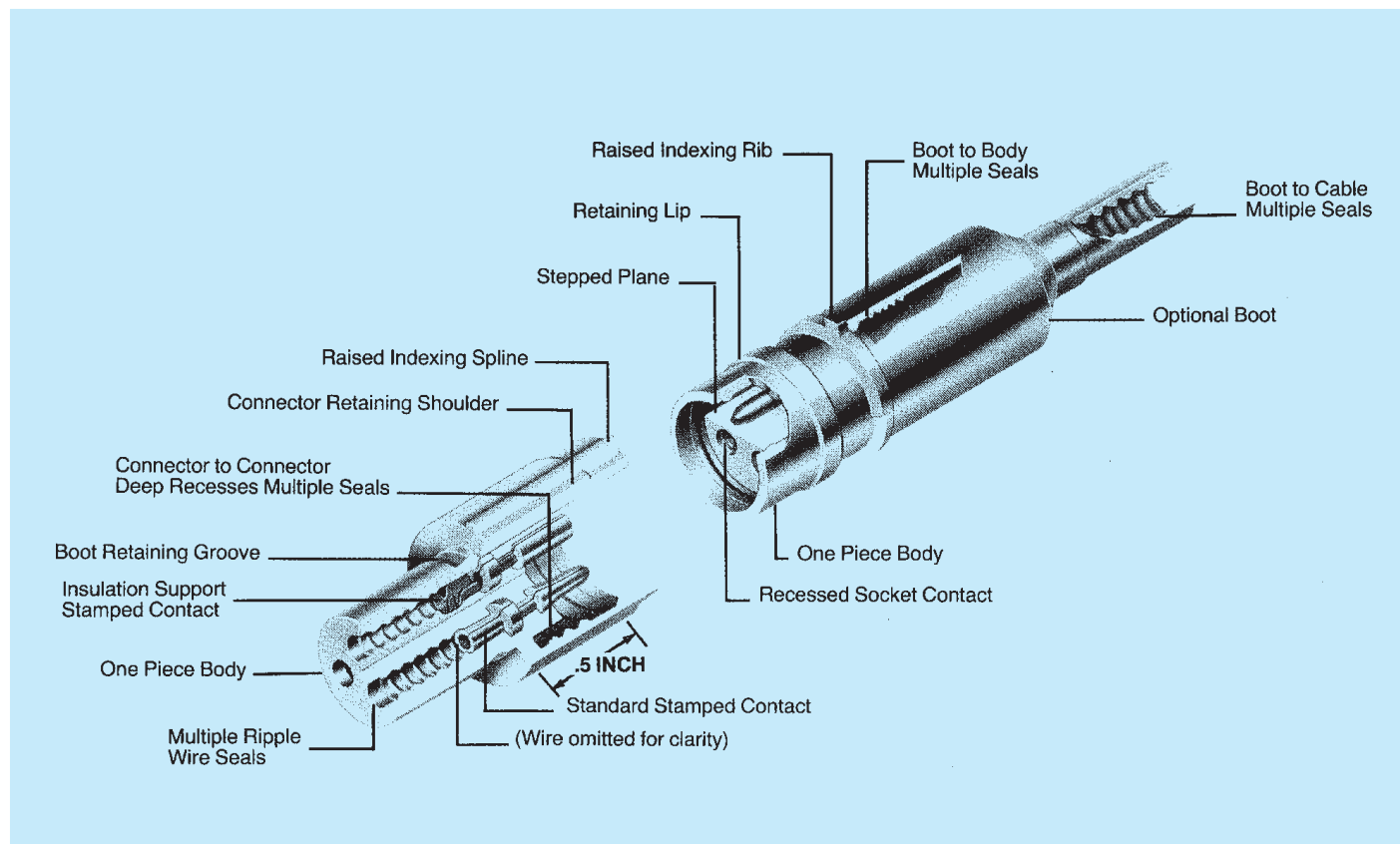
Submersible

Not just splash-proof but truly submersible for short periods of time, SURE-SEAL fulfills the requirements according to IP66A of DIN 40050. Note: Although SURE-SEAL can withstand submersion it is not designed to be used as an underwater connector.

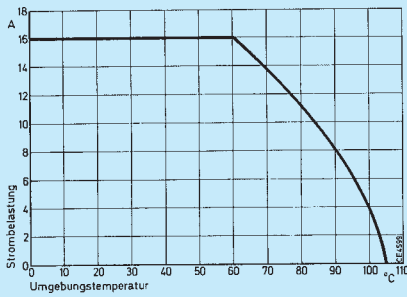
Environmental

SURE-SEAL connectors are designed to meet temperatures from –40 to 105°C under conditions of high humidity, severe vibration, ice and mud. Sealing integrity is still maintained with exposure to brake fluid, gasoline, diesel fuel, anti-freeze, ultraviolet radiation, ozone, and steam cleaning under normal operating conditions.

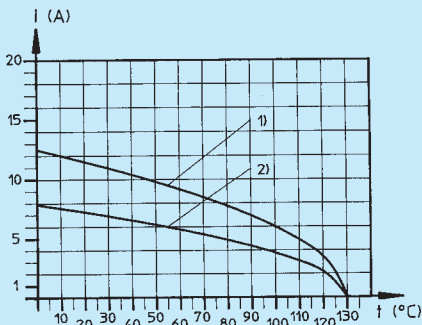
Design



SURE-SEAL

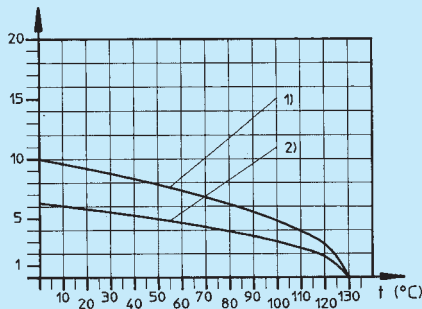


Mini SURE-SEAL



Individual contact in the connector

- 1) APK-...10_07-0,75qmm*
- 2) APK-...10_07-0,35qmm*



Connector fully equipped

Standard Data

Materials

Plug and receptacle
Contacts, stamped
Contacts, machined

Perbunan or Nitril-Butadien caoutchouc
Copper alloy, tinned
Copper alloy, hard silver plate

Mechanical Data

Crimp contacts
Number of contacts
Polarization
Contact retention force
Insertion of contacts

Semi-automatic or manual crimping
1 – 10 contacts
visually and mechanically by connector design
35 N min
From connector rear with simple hand tool or simultaneous insertion of multiple crimped contacts with semi-automatic insertion machine

Max. operating temperature
acc to DIN IEC 68, part 1

-40/105°C

Electrical Data SURE-SEAL

Contact resistance
Insulation resistance
Dielectric withstanding voltage
Wire size

10 mΩ max
100 MΩ min
1200 V~ (Sea level)
0,75 – 1,5 mm² (AWG 14 – 18)
0,5 – 1,0 mm²
2,4 – 3,3 bzw. 1,8 – 2,8 mm
3,9 – 4,7 mm

Wire insulation range
Insulation stripping length

Current rating

see Diagramme

Electrical Data Mini SURE-SEAL

Contact resistance
Insulation resistance
Dielectric withstanding voltage
Wire size

10 mΩ max
100 MΩ min
1200 V~ (Sea level)
0,4 – 0,75 mm² (AWG 20 – 18)
0,5 – 1,0 mm²
1,4 – 1,8 mm
3,0 – 3,3 mm

Wire insulation range
Insulation stripping length

Current rating

see Diagramme

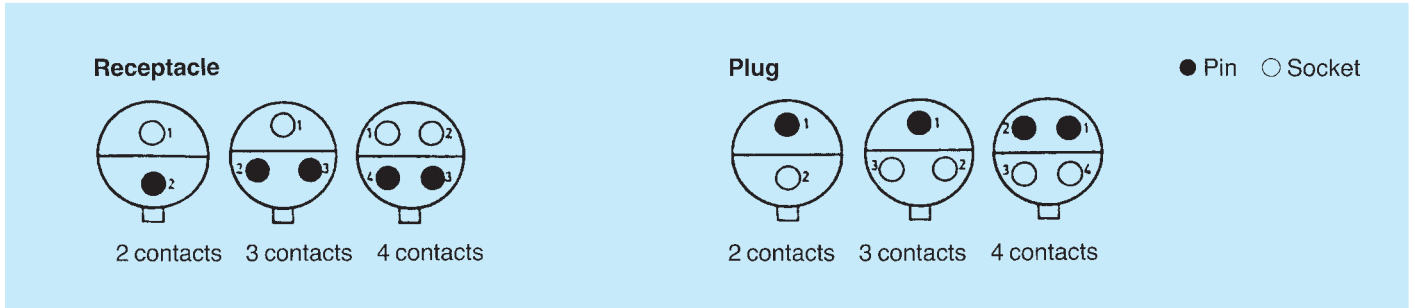
Test Criteria

Sealing capability
Weather-, UV- and ozone
resistance
Industrial gas
Humidity
Dry heat
Vibration

IP 67 / DIN 40050
In accordance with ASTM-D-1171 and
ASTM-D-1149
In accordance with MIL-C-23216, Para. 4.6.13
95% / 95°C / 1000 hours
105°C / 1000 hours
10 - 55 Hz, 0,06" double amplitude,
1 hour, X and Y plane
50 g, 11 ms, 30 cycles, X and Y plane
50 mating cycles
MIL-STD-202, Methode 101 D

Shock
Durability
Salt spray

Contact Arrangements



Part Numbers

Plug

Number of contacts	Shell size	black	red	green	yellow
2	MSS2P	120-8552-100	120-8552-110	120-8552-120	120-8552-130
3	MSS3P	120-8552-101	120-8552-111	120-8552-121	120-8552-131
4	MSS4P	120-8552-102	120-8552-112	120-8552-122	120-8552-132

Receptacle

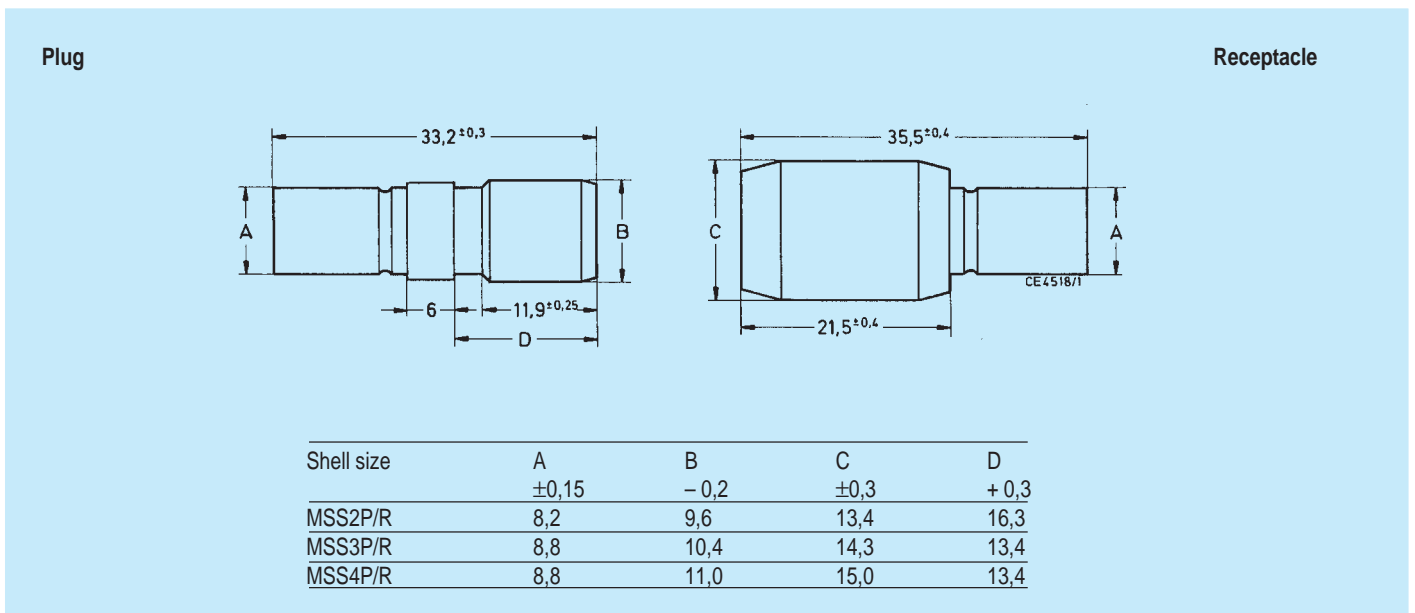
Number of contacts	Shell size	black	red	green	yellow
2	MSS2R	120-8551-100	120-8551-110	120-8551-120	120-8551-130
3	MSS3R	120-8551-101	120-8551-111	120-8551-121	120-8551-131
4	MSS4R	120-8551-102	120-8551-112	120-8551-122	120-8551-132

Contacts, stamped

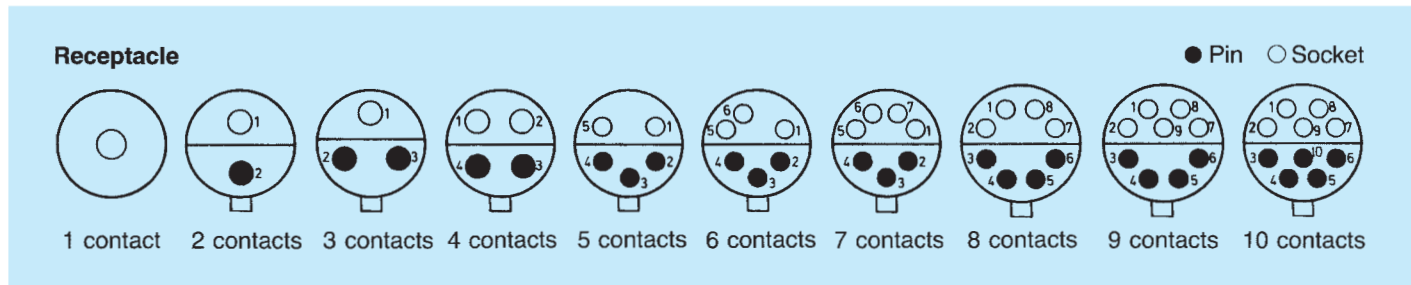
with insulation support		Pin	Socket	Wire hole filler
Mini SURE-SEAL, 0,4 – 0,75 mm ²	individual	330-8672-100	031-8703-100	225-1012-000
	on reels, 5000 pcs	MSS 121348-100	MSS 121347-100	

Contacts, machined

without insulation support		Pin	Socket	Wire hole filler
Mini SURE-SEAL, 0,4 – 0,75 mm ²	individual	330-8672-005	031-8703-052	225-1012-000



Contact Arrangements



Part Numbers

Receptacle

Number of contacts	Shell size	black	red	green	yellow
1	SS1R	120-1833-000*	-	-	-
2	SS2R	120-8551-000	120-8551-010	120-8551-020	120-8551-030
3	SS3R	120-8551-001	120-8551-011	120-8551-021	120-8551-031
4	SS4R	120-8551-002	120-8551-012	120-8551-022	120-8551-032
5	SS5R	120-8551-005	120-8551-015	120-8551-023	120-8551-033
6	SS6R	120-8551-006	120-8551-016	120-8551-024	120-8551-036
7	SS7R	120-8551-007	120-8551-017	120-8551-025	120-8551-037
8	SS8R	120-8551-308	-	-	-
9	SS9R	120-8551-009	-	-	-
10	SS10R	120-8551-010	-	-	-

* cable entry 2,4 – 3,3 mm Ø (all other 1,8 – 2,8 mm Ø)

Contacts, stamped

with insulation support		Pin	Socket	Wire hole fillers
SURE-SEAL, 0,5 – 1,0 mm ²	individual	330-8672-001	031-8703-001	225-0093-000
	on reels, 5000 pcs	SS121348-20	SS121347-20	
SURE-SEAL, 0,75 – 1,5 mm ² (not for new equipment)	individual	330-8672-000	031-8703-000	
	on reels, 5000 pcs	SS121348-10	SS121347-10	

Contacts, machined

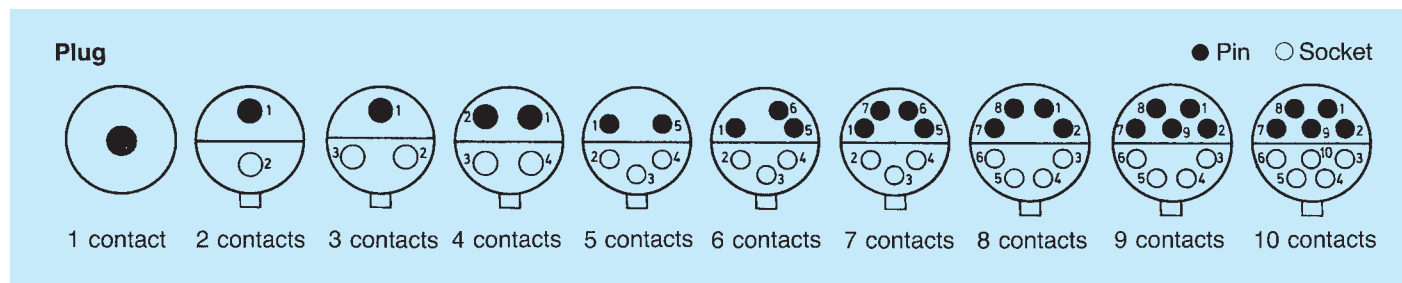
without insulation support		Pin	Socket	Wire hole filler
SURE-SEAL 0,5 – 1,0 mm ²		330-8672-002	031-8703-050	225-0093-000
SURE-SEAL 0,75 – 1,5 mm ²		330-8672-003	031-8703-051	

Accessories

Number of contacts	Receptacles	Plugs Boot	Applicable accessories Clip/Clamp	Clip/Clamp	Colour of
1	SS1R*	SS1P*	-	026-0452-000	black
2	SS2R	SS2P	317-1398-000	029-0263-000	red
3	SS3R	SS3P	317-1397-000	029-0262-000 or	yellow
4	SS4R	SS4P	317-1399-000	029-8514-001	black
5	SS5R	SS5P	317-8657-000	026-0450-000	natural
6	SS6R	SS6P	317-8657-000	or	
7	SS7R	SS7P	317-8657-000	029-8514-000	black
8	SS8R	SS8P	317-8857-002	026-0451-000	
9	SS9R	SS9P	317-8857-002	or	black
10	SS10R	SS10P	317-8857-002	029-8514-004	

* cable entry 2,4 – 3,3 mm Ø (all other 1,8 – 2,8 mm Ø)

Contact Arrangements



Part Numbers

Plug

Number of contacts	Shell size	black	red Consult factory	green Consult factory	yellow Consult factory
1	SS1P	120-1832-000*	-	-	-
2	SS2P	120-8552-000	120-8552-010	120-8552-020	120-8552-030
3	SS3P	120-8552-001	120-8552-011	120-8552-021	120-8552-031
4	SS4P	120-8552-002	120-8552-012	120-8552-022	120-8552-032
5	SS5P	120-8552-005	120-8552-015	120-8552-023	120-8552-033
6	SS6P	120-8552-006	120-8552-016	120-8552-024	120-8552-036
7	SS7P	120-8552-007	120-8552-017	120-8552-025	120-8552-037
8	SS8P	120-8552-308	-	-	-
9	SS9P	120-8552-309	-	-	-
10	SS10P	120-8552-310	-	-	-

* cable entry 2,4 – 3,3 mm Ø (all other 1,8 – 2,8 mm Ø)

Plug with flange

Number of contacts	Shell size	black	red Consult factory	green Consult factory	yellow Consult factory
2	SSF2P	120-8552-000	120-8552-210	120-8552-220	120-8552-230
3	SSF3P	120-8552-201	120-8552-211	120-8552-221	120-8552-231
4	SSF4P	120-8552-202	120-8552-212	120-8552-222	120-8552-232
8	SSF8P	120-8552-305	-	-	-
9	SSF9P	120-8552-306	-	-	-
10	SSF10P	120-8552-307	-	-	-

Plug

2-, 3-, 4-way

Shell size	A	B	Insulation
	- 0,3	- 0,3	∅
SS1P	-	-	2,4 - 3,3
SS2P	13,9	10,9	1,8 - 2,8
SS3P	15,2	12,3	1,8 - 2,8
SS4P	15,2	12,3	1,8 - 2,8

5-, 6-, 7-way

Shell size	A	B	Insulation
	- 0,3	- 0,3	∅
SS5P	25,3	20,2	1,8 - 2,8
SS6P	25,3	20,2	1,8 - 2,8
SS7P	25,3	20,2	1,8 - 2,8

8-, 9-, 10-way

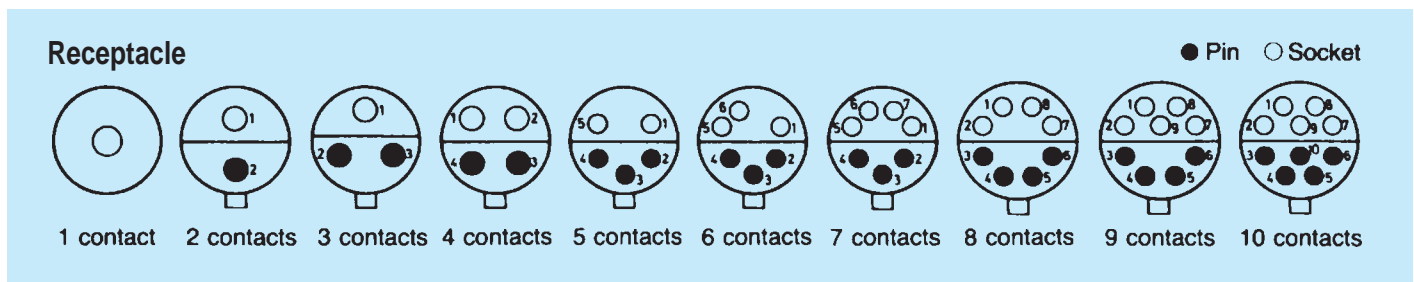
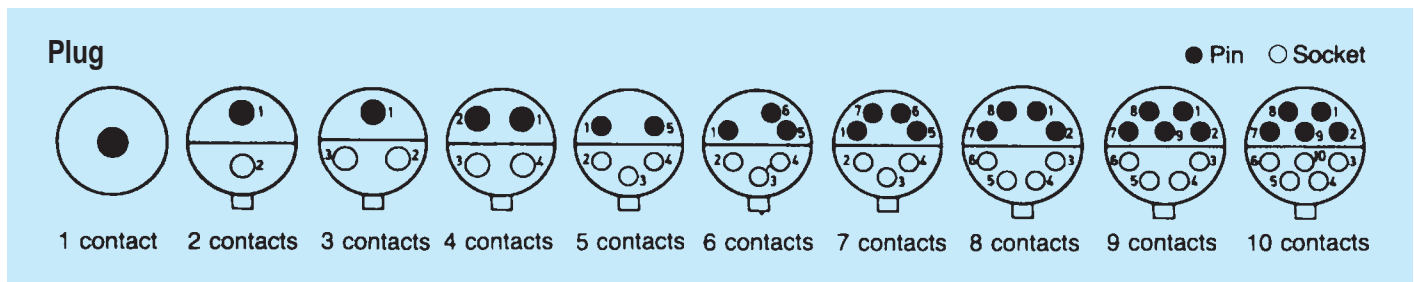
Shell size	A	B	Insulation
	±0,3	±0,2	∅
SS8P	28,55	23,5	1,8 - 2,8
SS9P	28,55	23,5	1,8 - 2,8
SS10P	28,55	23,5	1,8 - 2,8

Receptacle

Shell size	A	B	Insulation
	- 0,5	- 0,3	∅
SS1R	-	-	2,4 - 3,3
SS2R	18,0	10,9	1,8 - 2,8
SS3R	18,9	12,3	1,8 - 2,8
SS4R	18,9	12,3	1,8 - 2,8

Shell size	A	B	Insulation
	- 0,3	- 0,3	∅
SS5R	29,1	20,2	1,8 - 2,8
SS6R	29,1	20,2	1,8 - 2,8
SS7R	29,1	20,2	1,8 - 2,8

Shell size	A	B	Insulation
	- 0,5	±0,2	∅
SS8R	33,5	23,5	1,8 - 2,8
SS9R	33,5	23,5	1,8 - 2,8
SS10R	33,5	23,5	1,8 - 2,8



Plug

Plug with flange

2-, 3-, 4-way

Shell size	A	B	Insulation
	- 0,3	- 0,3	∅
SSF2P	13,9	10,8	1,8 - 2,8
SSF3P	15,2	12,3	1,8 - 2,8
SSF4P	15,2	12,3	1,8 - 2,8

8-, 9-, 10-way

Shell size	A	B	Insulation
	±0,3	±0,2	∅
SSF8P	28,55	23,5	1,8 - 2,8
SSF9P	28,55	23,5	1,8 - 2,8
SSF10P	28,55	23,5	1,8 - 2,8

Mounting plate

for connector with flange

Steel, zinc plated

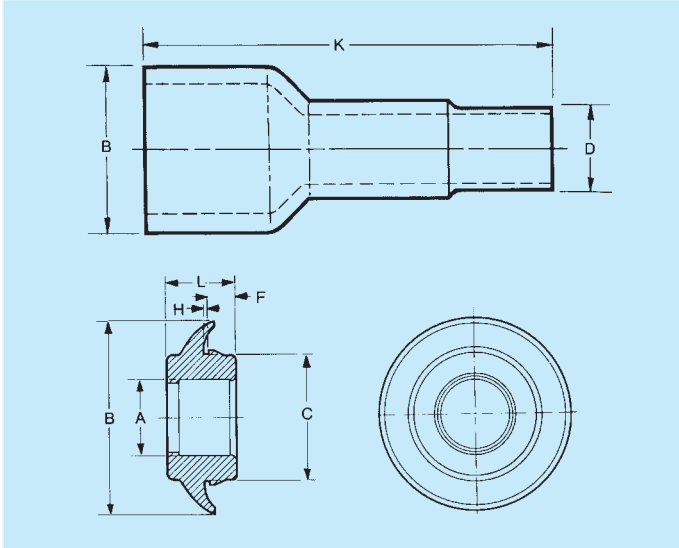
Part No. 606-8516-000

Part No. 066-8516-002

Mounting dimensions

Front and rear panel mounting

Accessories



Boot

Seals wired cable jackets to connector body

Number of contacts	Part number	B	D	Cable outer → max	K max
2	317-1398-000	16,51	9,65	5,28 - 5,79	52,07
3	317-1397-000	15,49	9,65	5,59 - 6,10	52,07
3 / 4	317-1399-000	19,05	12,7	8,76 - 9,65	52,07
5 / 7	317-8657-000	27,0	12,5	7,20 - 8,40	62,0
8 / 9 / 10	317-8657-002	31,2	16,2	10,0 - 12,4	63,7

Grommet

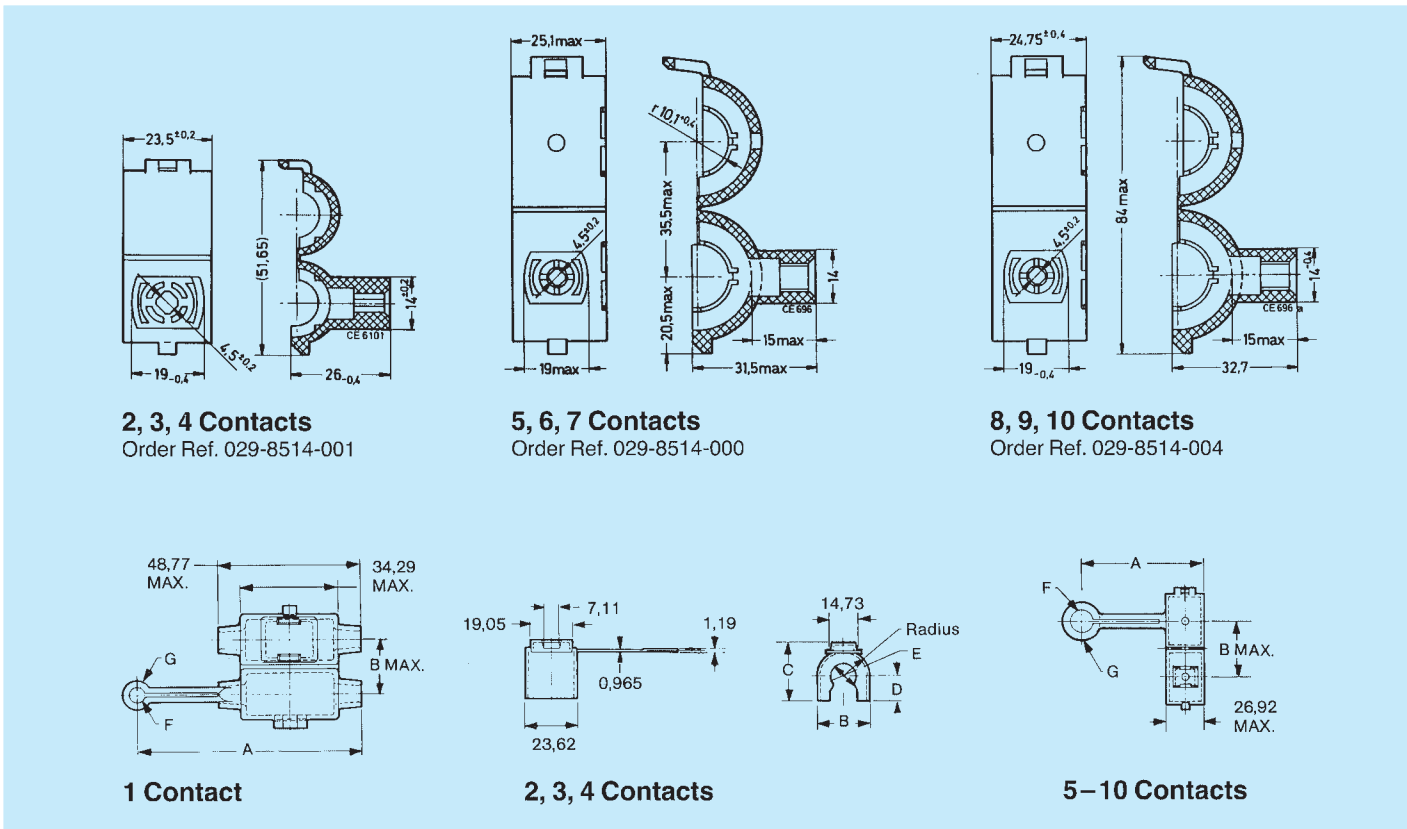
Provides for panel mounting of either plug or receptacle

Number of contacts	Part number	A max	B max	C max	F max	H max	L max
2	351-1640-000	10,41	32,39	19,18	5,84	1,4	17,53
3 / 4	351-1641-000	11,94	32,39	19,18	5,84	1,4	17,53
5 / 7	351-1633-000	19,43	55,88	36,7	8,0	1,65	20,57
8 / 9 / 10	351-1634-000	22,61	55,88	36,7	8,0	1,65	20,57

Clip/Clamp

Secures plug and receptacle in mated condition

Number of contacts	Part number	A max	B	C	D	E	F max	G max
1	026-0452-000	56,52	18,80	-	-	-	5,33	9,91
2	029-0263-000	-	22,61	25,40	10,67	-	-	-
3 / 4	029-0262-000	-	23,62	26,67	11,43	12,19	-	-
5 / 6 / 7	026-0450-000	77,34	35,43	-	-	-	15,49	23,11
8 / 9 / 10	026-0451-000	77,34	38,61	-	-	-	16,76	24,38



Tools

for stamped contacts

Tool	SURE-SEAL 0,75 – 1,5 mm ²	SURE-SEAL 0,5 – 1,0 mm ²	Mini SURE-SEAL 0,4 – 0,75 mm ²
Stripper/Crimper	ACT 2500-SS-10	ACT 2500-SS-20	ACT 2500-MSS
Crimp machine, semi-automatic,	94-4510-SS-10, EPS 2000-SS-10	94-4510-SS-20, EPS 2000-SS-10	94-4510-MSS, EPS 2000-SS-10
Hand crimp tool	CCT-SS-10	CCT-MSS/SS-20	CCT-MSS/SS-20

for machined contacts

Tool	SURE-SEAL 0,75 – 1,5 mm ²	SURE-SEAL 0,5 – 1,0 mm ²	Mini SURE-SEAL 0,4 – 0,75 mm ²
Crimp machine, semi-automatic	HACS-SS	HACS-SS	HACS-MSS
Hand crimp tool, 8-indent crimp termination	612 600	612 600	612 6000
Turret for hand tool			
- pin	317-8661-000	317-8661-000	317-8661-006
- socket	317-8661-001	317-8661-001	317-8661-007
Pneumatic bench tool	612 871	612 871	612 871
- with bench mount and foot pedal	611 380	611 380	611 380
Locator for pneumatic bench tool			
- pin	CT 317-8661-002	CT 317-8661-002	CT 317-8661-012
- socket	CT 317-8681-003	CT 317-8681-003	CT 317-8681-013

for machined and stamped contacts

Tool	SURE-SEAL 0,75 – 1,5 mm ²	SURE-SEAL 0,5 – 1,0 mm ²	Mini SURE-SEAL 0,4 – 0,75 mm ²
Assembly machine ¹⁾ 2 – 3 contacts	CBITG-SS-*	CBITG-SS-*	CBITG-MSS-*
Assembly machine ¹⁾ 2 – 10 contacts	CBITA-SS-*	CBITA-SS-*	CBITA-MSS-*
Hand lever press	CHPZ-240	CHPZ-240	CHPZ-240
Insertion tip ²⁾	CIT-SSF-1-Tip	CIT-SSF-1-Tip	CIT-MSS-1-Tip
Hand insertion tool	CITG-SS-1	CITG-SS-1	CIT-MSS-1
Guiding pin (for manual assembly required)	317-8588-000	317-8588-000	-

Assembly Machine ³⁾

No. of	Basic tool for SURE-SEAL Standard		Exchangeable inserts for				Mini SURE-SEAL	
	Standard	with flange	Mini SURE-SEAL	SURE-SEAL Standard Plug	Receptacle	with flange	Plug	Receptacle
1	CIFG-SS-1	-	-	CT195-8508-010	CT195-8508-011	-	-	-
2	CIFG-SS-2	CIF-SSF-2	CIF-MSS-2	CT195-8508-000	CT195-8508-001	CT195-8508-000	CT195-8508-013	CT195-8508-014
3	CIFG-SS-3	CIF-SSF-3	CIF-MSS-3	CT195-8508-002	CT195-8508-003	CT195-8508-002	CT195-8508-015	CT195-8508-016
4	CIFG-SS-4	CIF-SSF-4	CIF-MSS-4	CT195-8508-004	CT195-8508-005	CT195-8508-004	CT195-8508-017	CT195-8508-018
5/6/7	CIFG-SS-5/6/7	CIF-SSF-5/6/7	-	CT195-8508-006	CT195-8508-007	CT195-8508-006	-	-
8/9/10	CIFG-SS-8/9/10	CIF-SSF-8/9/10	-	CT195-8508-006	CT195-8508-009	CT195-8508-008	-	-

* Insert number of contacts

- 1) For SURE-SEAL with flange please consult factory
- 2) Multiple insertion tips for other contact arrangements upon request
- 3) Please order for plug or receptacle

Ask for our detailed SURE-SEAL Assembly Instructions