ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

1 General Information

1.0 Scope

This assembly manual describes the assembly of ITT Cannon connectors and provides information concerning processing of the connectors and structure. The instructions herein refer to circular connectors of following series / reference standards:
CA-Bayonet / VG 95234
CA-Thread / VG 95342
CA-COM Bayonet
CA-COM Thread

Purpose of this manual is to describe the assembly procedures of the connectors including the preparation of cables. It also contains an overview of the tools for crimping, insertion and removal of contacts.

For detailed specifications of each series see specific catalogues.

To download specific connector drawings or 3D models by inserting connector description (e.g. CA 3106E10SL-3P-B-03) into the search field on the website: www.ittcannon.com

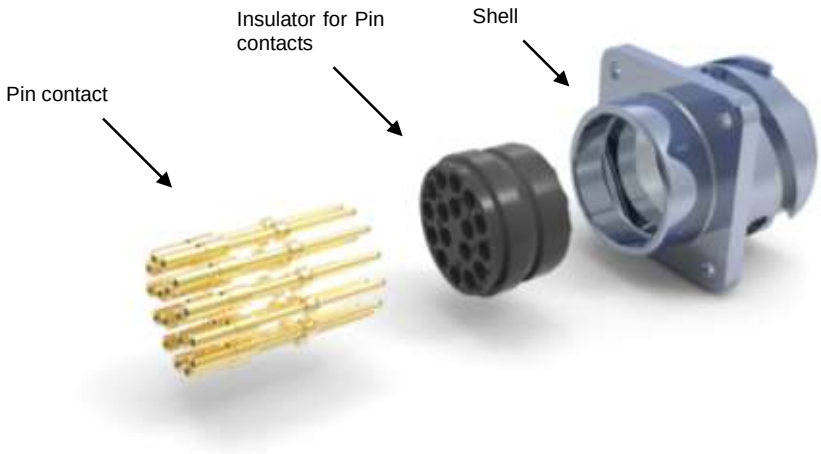
1.1 Box Mounting Receptacle - Method of mounting

The box mounting receptacle is usually mounted to a panel with 4 screws. Depending on the connector style front or rear mounting is possible.

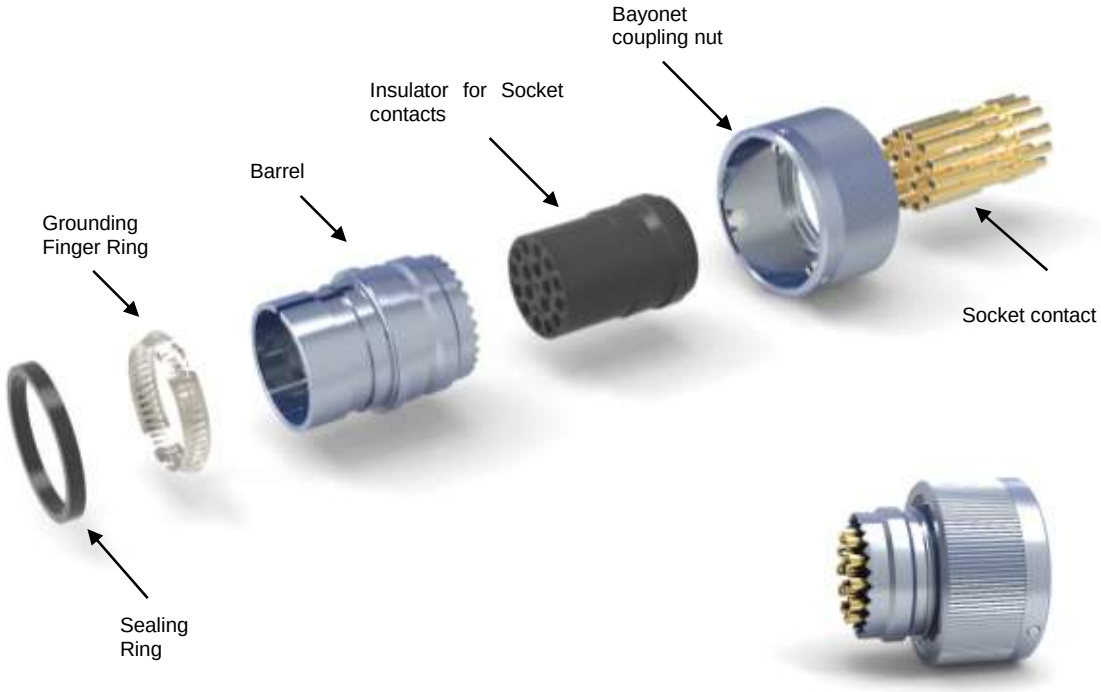
ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

2 Connector Components Bayonet Coupling

2.0 Exploded View Box Mounting Receptacle



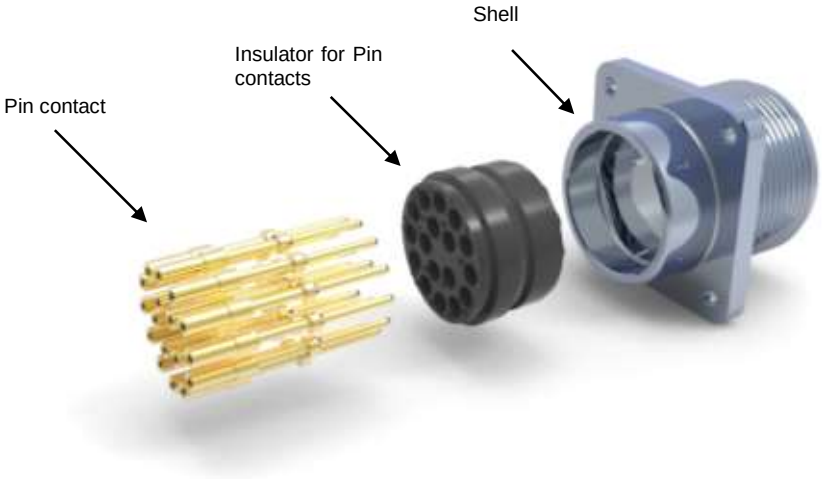
2.1 Exploded View free straight Connector (Plug)



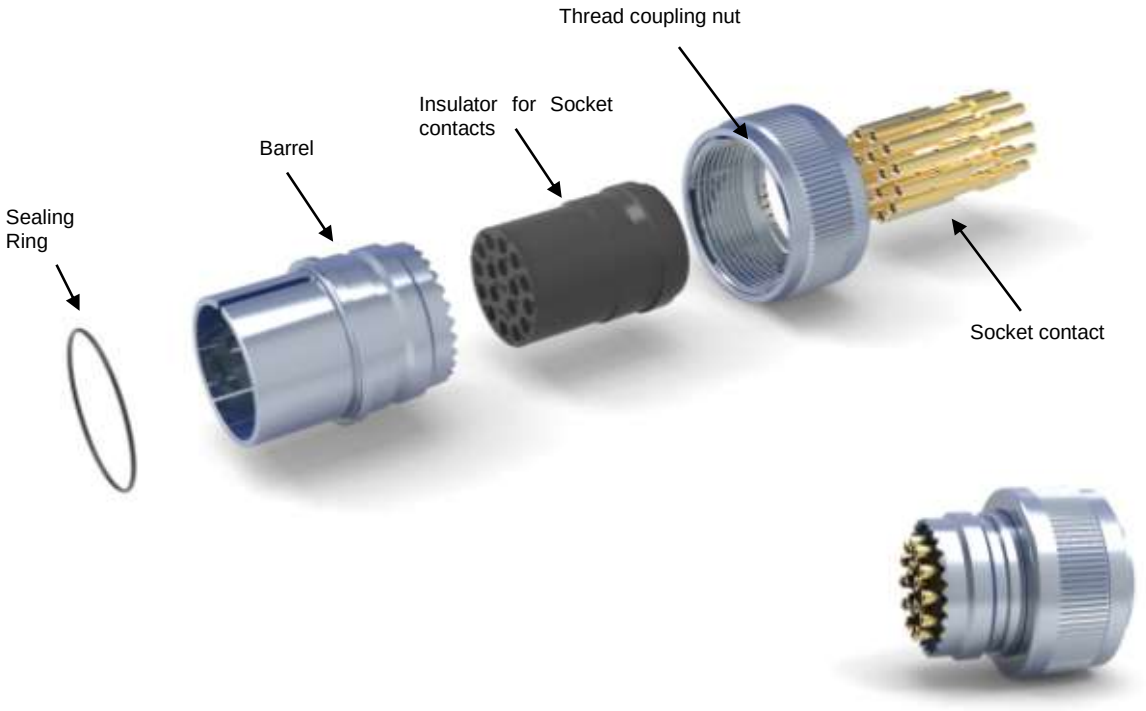
ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

3 Connector Components Thread Coupling

3.0 Exploded View Box Mounting Receptacle



3.1 Exploded View free straight Connector (Plug)

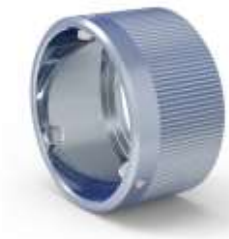


3.2 Connector Components

Grommet: ensures sealing of the individual wires and prevents ingress of water into the termination area.

Ferrule: The ferrule is slipped over the grommet. When tightening the endbell the grommet is pressed against the insulator and compressed radially. The compression ensures the sealing of the cable outlets.

Coupling nut: It performs the mating and unmating operations with the relevant receptacle.



Contacts: Three different termination styles are available::
- crimp contacts (AWG and metric)
- solder contacts with solder pot termination
- solder contacts with solder pin termination (for printed circuit boards/ PCB)

Pin
Crimp contacts

Socket

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

Insulator: It isolates the contacts one from each other and versus shell. The insulator is already mounted into the Barrel. Solder contacts are pre-installed while crimp contacts have to be inserted into the contact cavity after the crimping process.

Endbell / Backshell:
Depending on style the endbell can provide following functions:
- Fixation and strain relief of cable
- Adaption of shielding
- Adaption of heat shrink boots

Adapter: Is equipped with a threaded back end to connect accessories for cable clamping (like a PG or metric cable gland).

4 Contacts and Assembly Tools

4.0 Standard Crimp Contacts

Contact Size	Wire Size mm²	Wire Size AWG	Pin Contact Part – No. A36	Pin Contact Part – No. A176	Socket Contact Part – No. A36	Socket Contact Part – No. A176
10 / 20	0,14 - 0,38	26 / 22	030-8585-004	030-8585-008	031-8554-004	031-8554-008
	0,5 - 1,0	20 / 18	030-8585-009	030-8585-011	031-8554-009	031-8554-011
15S / 16S	0,14 - 0,38	26 / 22	030-8586-010	030-8586-016	031-8555-130	031-8555-135
	0,3 - 0,6	22 / 20	330-8744-000	330-8744-006	031-8688-110	031-8688-115
	0,75 - 1,5	18 / 16	030-8586-000	030-8586-006	031-8555-110	031-8555-115
15 / 16	0,14 - 0,38	26 / 22	030-8587-030	030-8587-036	031-8556-130	031-8556-135
	0,3 - 0,6	22 / 20	330-8659-000	330-8659-006	031-8639-120	031-8639-115
	0,75 - 1,5	18 / 16	030-8587-000	030-8587-006	031-8556-110	031-8556-115
	1,5 - 2,0	16 / 14	030-8587-010	030-8587-016	031-8556-140	031-8556-145
	2,0 - 3,0	14 / 12	030-8587-020	030-8587-026	031-8556-120	031-8556-126
25 / 12	0,3 - 0,6	22 / 20	-	-	031-8557-040	031-8557-046
	0,75 - 1,5	18 / 16	030-8588-010	030-8588-016	031-8557-020	031-8557-026
	2,0 - 3,0	14 / 12	030-8588-000	030-8588-006	031-8557-000	031-8557-006
	4,0	-	030-8588-054	030-8588-060	031-8557-010	031-8557-016
	6,0	10	-	-	031-8557-030	031-8557-036
25A / 12	2,0 - 3,0	14 / 12	330-8515-101	-	-	-
60 / 100 / 8	2,0 - 3,0	14 / 12	030-8612-010	030-8612-016	031-8519-010	031-8519-016
	4,0	-	030-8612-020	030-8612-026	-	-
	6,0	10	030-8589-000	030-8589-006	031-8558-000	031-8558-006
	-	8	030-8612-000	030-8612-006	031-8519-000	031-8519-006
	10,0	-	030-8590-000	030-8590-006	031-8559-000	031-8559-006
160 / 4	10,0	-	030-8591-020	030-8591-026	031-8560-020	031-8560-026
	-	6	030-8613-010	030-8613-016	031-8520-010	031-8520-016
	16,0	-	030-8591-000	030-8591-006	031-8560-000	031-8560-006
	-	4	030-8613-000	030-8613-006	031-8520-000	031-8520-006
500 / 0	16,0	-	030-8614-030	030-8614-036	031-8521-030	031-8521-036
	25,0	4	030-8614-010	030-8614-016	031-8521-010	031-8521-016
	35,0	2	030-8614-020	030-8614-026	031-8521-020	031-8521-026
	50,0	-	030-8592-000	030-8592-006	031-8561-000	031-8561-006
	-	0	030-8614-000	030-8614-006	031-8521-000	031-8521-006

4.1 Crimping Tools

Crimping tools with 8 indent crimp profile for contacts sizes metric/AWG: 10/20, 15s/16s, 15/16, 25/12

Hand crimp tool M22520/1-01
Order no.: 995-0001-585

Pneumatic crimp tool WA27F-CE
Order no.: 121586-5067

Bench mount BM-2A
For pneumatic crimping tool
Order no.: 121586-5068

For further information see CAS25059.

Foot pedal WA10A
For pneumatic crimping tool
Order no.: 121586-5069

Locator
For hand tool and pneumatic tool

Contact size metric/AWG	Designation	Order no.
10/20	600325	121586-0034
15s/16s	TH452	995-0002-052
15/16	TH452	995-0002-052
25/12	TH452	995-0002-052
14/12	CT120090-10	120090-0010

Gauge M22520/3-1
For hand tool and pneumatic tool
Order no.: 995-0001-684

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

Crimping tools with hexagon crimp profile for contacts sizes metric/AWG: 60, 100/8, 160/4, 500/0

Hydraulic hand crimp tool HPW400U-ITT
Order no.: 121586-5257

Hydraulic electro crimp tool*
HP700EL-ITT
Order no.: 121586-5279

*Contains:
- Hydraulic pump EHA5-ITT with hand remote control and high pressure tube.
- Foot pedal FT5-ITT.
- Crimp head with table fixation HPT400-ITT

Switch-mode power supply and Lithium-Ion battery with recharger are not included in the delivery! Power supply options must be ordered separately (see below).

For further delivery options and spare parts see CAS25084.

Switch mode power supply SNT4-ITT for hydraulic pump EHA5-ITT, 230V
Order no. 121586-5280

Lithium Ion battery 18V 3Ah with recharger LGA4-ITT for hydraulic pump EHA5-ITT
Order no. 121586-5281

Lithium Ion reserve battery, 18V 3Ah, RA4-ITT for hydraulic pump EHA5-ITT
Order no. 121586-5282

Crimp die Locator

Contact size metric/AWG	Crimp die for hydraulic tool	Wrench size mm
60, 100/8	CT 121586-5231	5,20
160/4	CT 121586-5230	7,25
500/0	CT 121586-5229	11,40
Locator	CT 121586-5232	---

4.2 Insertion Tools

For insertion of crimped contacts into the insulator following insertion tools are available:

Photos
 Insertion tool CIT
 Insertion tip CIT-TIP
 Insertion pliers CIT-F80
 Insertion tool kit CIT-F80-KIT
 Guide pin

Description	Designation	Order no.
Insertion tool for contact # 10/20	CIT-20	121086-3009
Insertion tool for contact # 15/16	CIT-16	121086-3008
Insertion tool for contact # 25/12	CIT-12	121086-3007
Insertion tool for contact # 100/8	CIT-8	121086-0095
Insertion tool for contact # 160/4	CIT-4	121086-0094
Insertion tool for contact # 500/0	CIT-0	121086-0093
Insertion tip for contact # 10/20	CIT-20-TIP	317-8648-005
Insertion tip for contact # 15/16	CIT-16-TIP	317-8648-004
Insertion tip for contact # 25/12	CIT-12-TIP	317-8648-003
Insertion tip for contact #100/8	CIT-8-TIP	317-8648-002
Insertion tip for contact # 160/4	CIT-4-TIP	317-8648-001
Insertion tip for contact # 500/0	CIT-0-TIP	317-8648-000
Insertion pliers for contact # 10/20	CIT-F80-20	121086-0098
Insertion pliers for contact # 15/16	CIT-F80-16	121086-0097
Insertion pliers for contact # 25/12	CIT-F80-12	121086-0096
Insertion tool kit # 10/20 – 500/0	CIT-F80-KIT	121086-3004
Guide pin for contact # 15/16	----------	27977-16T50
Guide pin for contact # 25/12	----------	27977-12T8

ATTENTION:
A proper installation of contacts is only ensured when the required insertion tools are used.

For assembly of socket contacts sizes 15S/16S, 15/16 and 25/12 guide pins must be used!
Without the use of these guide pins during contact insertion contacts and insulator will be damaged.

4.3 Extraction Tools

In case a contact has to be exchanged the following extraction tools are to be used:

Photos
 Extraction tool CET
 Extraction tool kit CET-F80-KIT

Description	Designation	Order no.
Extraction tool for contact size # 10/20	CET-F80-20	121086-0082
Extraction tool for contact size # 15/16	CET-F80-16	121086-0081
Extraction tool for contact size # 25/12	CET-F80-12	121086-0080
Extraction tool for contact size # 100/8	CET-8	121086-0079
Extraction tool for contact size # 160/4	CET-4	121086-0078
Extraction tool for contact size # 500/0	CET-0	121086-0077
Extraction tool kit # 10/20 – 500/0	CET-F80-KIT	121086-3005

ATTENTION:
A proper removal of contacts is only ensured if the required extraction tools are used.

4.4 Pipe Wrench for Endbells

Soft jaw adjustable pliers
order No.: 550014-1644

5 Instructions for the Crimping Process

5.0 Dimensions for Single Conductors

The cables must be selected with respect to the connector specification. For applications according to the reference standards VG95234 and VG95342 the requirements herein must be considered too.
For securing of water tightness performance the outer diameter of the insulation must correlate with the dimensions, listed in the table below.

Contact size		Conductor dimensions		Insulation dimensions Waterproof / Ø mm		Insulation dimensions Spray waterproof / Ø mm	
AWG	**metric**	**AWG**	**mm²**	**min**	**max**	**min**	**max**
-	10	-	0,75 – 1,0	1,5	3,0	-	-
16S/16	15S/15	16	0,75 – 1,5	1,6	3,3	-	-
12	25 25A	12	2,5 – 3,0	2,9	4,3	1,6	3,3
-	60	-	6,0	3,5	5,8	2,9	4,3
8	100	8	10,0	4,2	6,5	-	-
4	-	4	-	6,9	9,4	4,2	5,7
-	160	-	16,0	5,5	6,2	7,0	9,4
0	500	0	50,0	10,5	14,0	10,6	14,0

Shrinkable tube:
If wires with a smaller insulation diameter are used their diameter has to be increased by using a shrink tube to correspond with the diameter required.
Shrink tubes have to be ordered separately.

5.1 Wire Stripping Length and Adjustment of Crimp Tool

The values for selector adjustment for contact sizes 10/20 to 25/12 in the table are recommendations. For the used cable the suitable selector no. must be found and verified by tests.

Contact size	Wire stripping length [mm]	Selector proposal
10 / 20	6,0 +0,5	4
15 / 16	6,0 +0,5	5 / 6
25 / 12 25A	6,0 +0,5	7 / 8
60 / 100 / 8	11,0 +0,8 / -0,4	Hex 5,20
160 / 4	11,0 +0,8 / -0,4	Hex 7,25
500 / 0	13,0 +0,8 / -0,4	Hex 11,40

Attention:
During stripping process wire strands must not be damaged or cut. Wire insulation must not be damaged either. The stripped wire ends must not be twisted. Contamination and touching by hand must be avoided.

For the used cable the crimp quality must be verified by measurement of the wire pull-out force. For all connector styles according to this document the pull-out forces referenced by VG95234 are valid.

Rated cross-section		Tensile strength
AWG	[mm²]	[N] min.
26	0,1	15
20	0,50	80
18	0,75	120
16	1,5	230
14	2,5	380
12	3	570
10	6	365
8	10	401
6	16	445
3	25	712
2	35	801
1	50	890

5.2 Inspection of Crimp Tools

The tools and especially the crimp profiles and crimp inserts shall be regularily inspected for damage. The crimp dimension of the hand crimp tool M22520/1-01 and the pneumatic crimp tool WA27F-CE can be checked by using the gauge pin M22520/3-1. For this purpose the tool is adjusted to selector no. 4 and pressed up to stop. In this position the dimension shall be checked with the gauge.

ATTENTION: do not crimp on gauge!

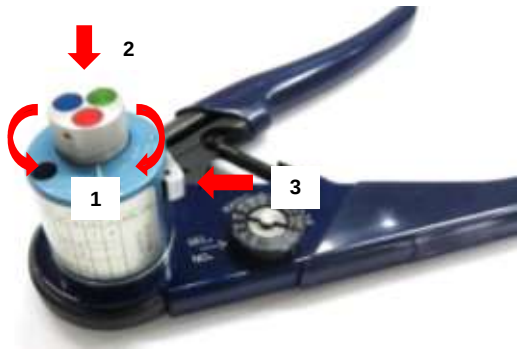
5.3 Crimping of Contacts

ATTENTION:
When working with crimp tools it is essential to observe the operating instructions and the safety instructions.

Crimping of contacts sizes metric/AWG 10/20, 15s/16s, 15/16, 25/12 with tools for the 8-indent crimp:

This presentation focusses on the hand crimp tool. The proceeding with the pneumatic tool is done analogical.

Preparation:
Select the correct locator for the contact (see section 4.1).
Strip the wire, which must fit to the contact, to the correct stripping length (see section 5.1).



- Place the specified locator with its coding in the regular position on the holding fixture of the hand crimp tool or pneumatic tool. Tighten it with a hex-wrench 9/64 inch.
- Turn the cylinder into the correct position (e.g. red, blue or green) **(1)**. A label at the locator indicates the position. The same data are shown in the tables below.
- Arrest the locator by pressing it downwards **(2)**. The cylinder can be released by pressing the lever located laterally **(3)**.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

ITT Cannon order number: TH452							
CONTACT SIZE	CONTACTS	COLOR CODE	18	16	14	12	WIRE SIZE
12/P 16/S 12/S	030-8588-XXX 031-8639-120 031-8557-XXX	RED			7	8	SELECTOR NUMBER
16/S	031-8556-XXX		5	6			
16S/P 16S/P	030-8586-XXX 330-8744-000	BLUE	5	6			
16/P 16S/S 16S/S 16/P	030-8587-XXX 031-8555-XXX 031-8688-110 330-8659-000	GREEN	5	6			

Table at the locator: TH452

ITT Industries order no. CT120090-10							
CA –Contacts		color code	20	18	16	14	12	wire size
Pin	030-8588-000	red	6		8	7	8	SEL.NO.
Socket	031-8557-000 031-8557-XXX							
Pin-contacts	330-8515-XXX	yellow	6		8	7	8	
Socket	031-8555-XXX	green		5	6			
Pin	030-8587-000							

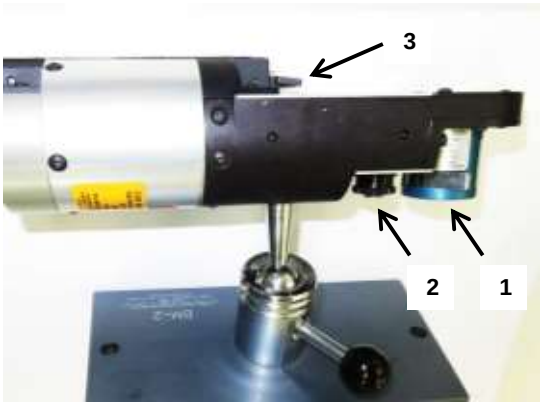
Table at the locator: CT120090-10

- Identify the right selector position 1 through 8 for the contact to be crimped, as described under section 5.1.
- For adjustment of the tool the selector wheel is lifted **(1)** and turned into the chosen position **(2)**. It arrests in this position by spring load, when released.

- Place the stripped wire end in the contact termination and insert both together in the tool up to stop as shown on the photo.
- Then press the handles until the mechanism allows to open it.

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E



- With the pneumatic tool the adjustment of the locator **(1)** and selector **(2)** is performed in the same way as with the hand crimp tool.
- The triggering mode of the crimp tool can be changed between foot pedal and manual switch **(3)**.

- Remove the contact from the open tool and inspect the crimp visually.

Crimping of contacts sizes metric/AWG 60, 100/8, 160/4, 500/0 with the hydraulic tools

This presentation focusses on the hydraulic electro tool. The proceeding with the hydraulic hand tool is done analogical.

Preparation:
Select the correct crimp insert for the contact (see section 4.1).
Strip the wire, which must fit to the contact, to the correct stripping length (see section 5.1).

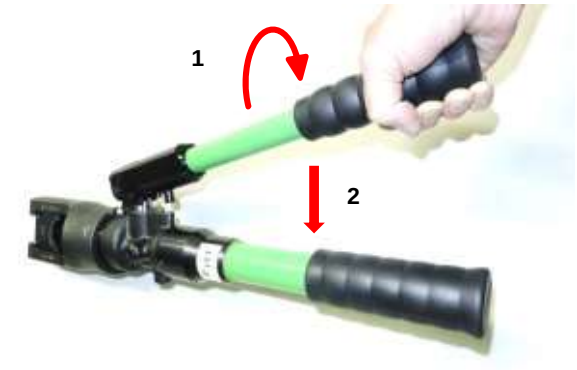
- For the crimp process the locator should be used, which is fixed at the crimp insert by screw.
- Adjust the stop of the locator by turning the nut with wrench size 10mm while securing the stop against turning with a screw driver.
- Check the crimp position by placing a contact in the tool for trial. The crimp position should be approx. in the middle between the contact end and the inspection hole.

- Insert lower and upper crimp die in the tool. Both must arrest noticeable. Otherwise the dies could be damaged seriously.
- Slide the contact termination on the stripped cable and place both together in the crimp tool in straight position.
- **ATTENTION: hold contact and cable at the cable only with sufficient distance from moving parts!** The contact tip shall be pushed slightly against the stop of the locator.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

- Start the crimp process by pressing the foot pedal. Keep the foot pedal pressed until the final position is reached and the tool opens again.

- With the hydraulic hand tool the pressure is generated by cyclic movement of the lever.
- When the pressure is reached and the crimp process is complete the actuating force is noticeable lighter.

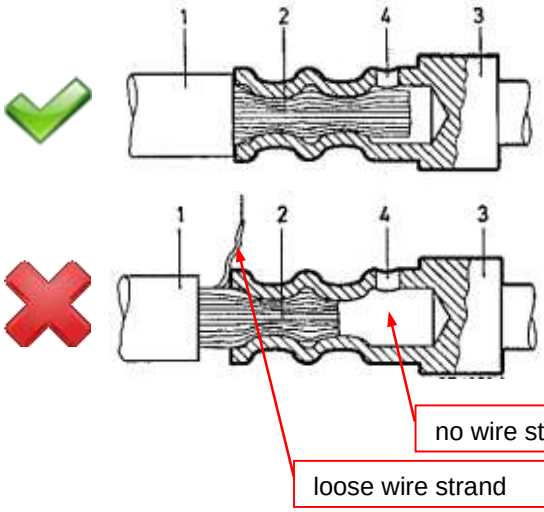


- Turn moveable lever clockwise up to stop **(1)** and press down lever afterwards **(2)**. The tool will open by this operation.

- Remove cable with the crimped contact when the tool has opened. Check the crimp visually. If the crimp position is not at the right place re-adjust the locator.
- A slight burr in the crimp area should be removed carefully with a knife or scraper.
- The crimp quality must be verified according to applicable standards (see section 5.1).

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

ATTENTION:
- Do not use bent or otherwise damaged contacts.
- There shall be no loose strands out of the crimp section.
- The crimp indent shall not overlap the inspection hole.
- The wire strands must be visible in the inspection hole.
- The wire insulation shall border on the contact end. A small gap is acceptable.



1 insulation of cable
2 wire
3 contact
4 inspection hole (wire strands must be visible)

5.4 Wire Hole Fillers

Where contacts are not used, the cavities are to be closed by wire holes filler.

size	VG95234 part no.	contact size		colour	part no.
		AWG	metric in mm²		
20	VG95234B20	-	0,75-1,0	red	225-1000-000
16S	VG95234B16S	16	0,75-1,5	nature	225-8510-000
16	VG95234B16	12	2,5	blue	225-0017-000
12	VG95234B12	-	6,0	yellow	225-0018-000
8	VG95234B08	8	10,0	white	225-0019-000
4	VG95234B04	4	16,0	green	225-8502-000
0	VG95234B00	0	50,0	black	225-8503-000

Assembly hint: Non-used contact cavities have to be closed by an unwired contact, while the suitable wire hole filler has to be inserted into the empty cavity of the grommet.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

6 Processing of Solder Contacts

6.0 Soldering of contacts

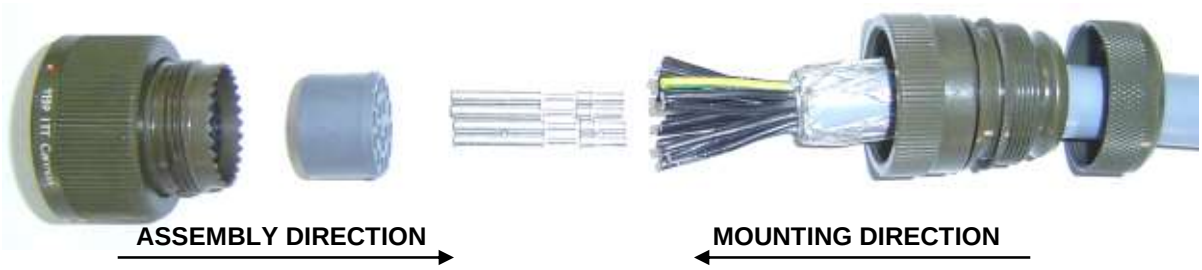
Pass the wire through the rear accessories such as e. g. endbell, ferrule and grommet. Make sure that the wires are inserted through the correct cavity of the grommet. Use Isopropyl alcohol for easier wire insertion through the grommet. The solder process has to be performed professionally.

ATTENTION:
The blank wire ends must not be contaminated.
Avoid damage of the insulator by overheating.

7 Assembly of Contacts

7.0 Overview, Configuration and Preparation for Contact Installation

1. Pull crimped contact through all accessories used, such as ferrule, endbell and cable clamp.
2. Fix the shell with coupling nut in the assembly adapter and mate with each other. Usually an empty mating half shell as utilized to fix the connector in an appropriate manner.



For longer cable lengths or for applications with already connected cables, slide all parts on the cable **before** assembling contacts into barrel and insulator.
Pay attention to the correct order and mounting direction of all parts, as pictured.
Hint: Use a tie wrap for fixing all parts on the mounting area of the cable.

The second option is to crimp the contacts before you slide all parts over the cable, see illustration below.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

7.1 Insertion of Contacts

1

- Plug on and fix the connector for assembling.
- For this purpose an assembly adapter or an empty shell / housing can be used.
- **ATTENTION: install the connector always in a suitable fixture and do not hold in hand, risk of injury!**

2

- Assemble socket contacts sizes 15S/16S, /15/16, 25/12 only by using guide pins (see page 4.3).
- Insert guide pin into contact mating side with the chamfered side in assembly insertion direction

3

- Wetting of the contacts with Isopropyl alcohol is necessary to guarantee proper insertion and to avoid damage.

4

- Position the grommet. Make sure that the grommet is placed in the right direction with the elevated ring and marking above.
- The contact cavities of the grommet must be aligned with the cavities of the connector.

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

5

- Pre-insert the contacts in the insulator.
- Contact insertion is preferably started in the center of the insulator.

6

- Place the tip of the tool, which fits to the contact size (see 4.3), at the collar of the contact. Press the contact through the grommet (if it is part of the connector style) with uniform force into the insulator until it latches.
- Insert contacts by applying slow, continuous pressure, until it snaps into its position.
- Do not install damaged or bent contacts! If a contact is damaged during the insertion this contact has to be removed. A new contact has to be installed.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

7

- After insertion operation remove the insertion tool cautiously.
- Avoid any movement of the tool during the insertion process which is not axial to the contact / insulator.
- The picture shows fully assembled contacts.

8

- After insertion of contacts remove the guide pins if necessary (socket contacts only).

- After insertion of the contacts, check the connector on the mating side to ensure that all contacts are on the same level.

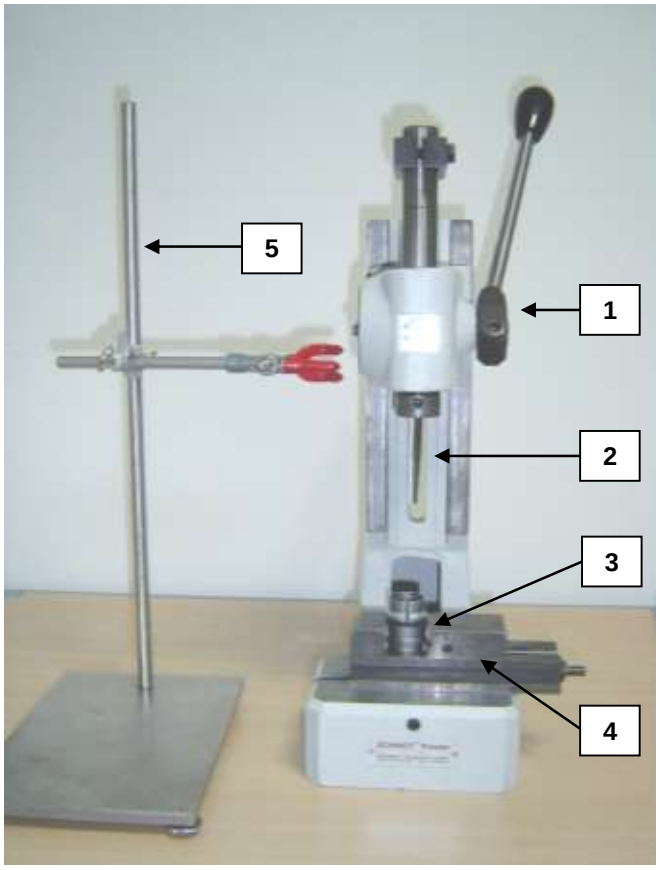
→ For the installation dimensions of the contact in the insulator, see chapter 7.3.

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

7.2 Contact Insertion with Hand Lever Press

For easy assembly a hand lever press can be used. This efficient method allows contact insertion with less effort and a precise positioning of the contacts.

Necessary equipment:



1 – Hand lever press
For a flexible use referring the different connector styles the press should provide the following minimum dimensions:
- Working height: 200mm
- Working stroke: 70mm

2 –Insertion tip for the relevant contact size (order information see 4.3).

3 - Adaptor for fixation of the connector to be assembled: dummy counterpart connector or similar device.

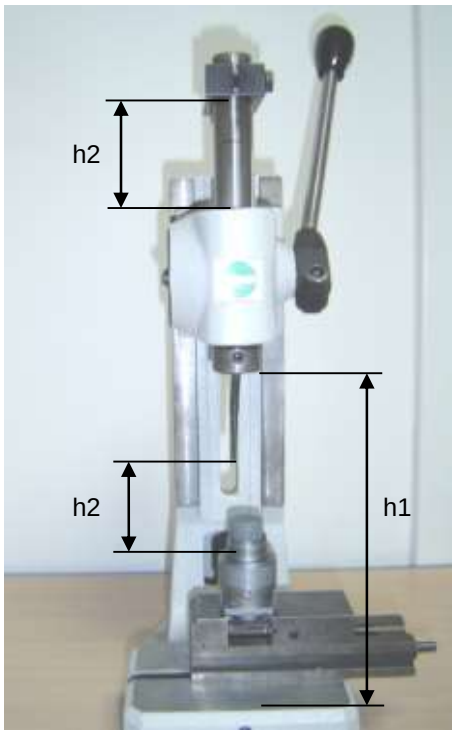
4 – Bench vice

5 - Stand for fixation of the cables, especially recommended when working with system cable.

Preparation:

- Install the insertion tip for the relevant contact size with its closed side towards the operator.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E



- Adjust the press to the convenient working height (h1).
- Adjust the lower stop exactly to the correct position of the assembled contact (h2).

Contact insertion:

The further proceeding corresponds in principal with the manual assembly process.

- Place the connector to be assembled in the assembly adaptor.
- Slide the endbell (if there is one) over the cable and fix the prepared cable by means of a tripod holder.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

- If a grommet is part of the connector place the grommet in the correct position.
- Wet the contact cavities to be assembled with Isopropyl alcohol.
- With socket contacts sizes 15s/16s, 15/16 and 25/12 use guide pins.

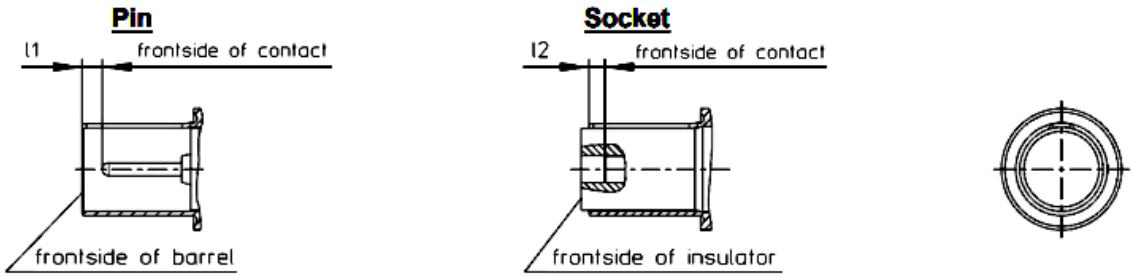
- Pre-assemble the row of contacts which shall be inserted next.
- Press the contact with the lever one by one into the final position.
- Repeat this process with the next row in the same way.
- When assembly is completed inspect the mating side of the connector for correct contact position.
- If socket contacts sizes 15s/16s, 15/16 or 25/12 were installed remove guide pins.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

7.3 Installation dimensions of the contact in the insulating body

CA/CA-B/VG95234/VG95342

Free connector:



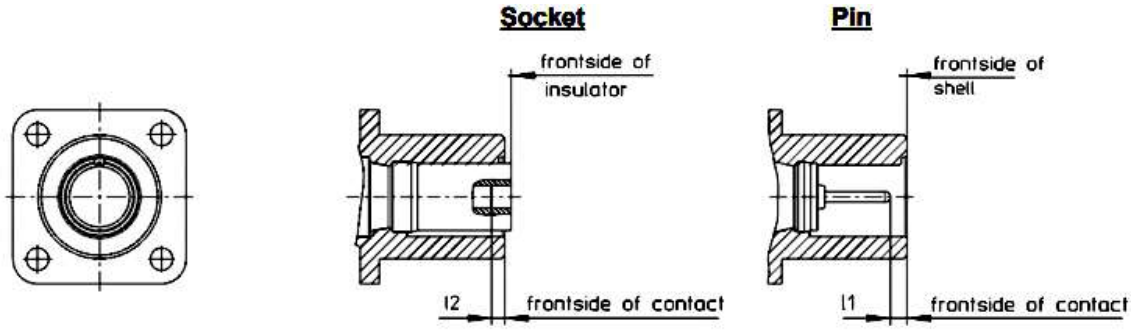
1. Contacts have to be snapped in.
2. The contact peaks (frontside) have to be aligned to each other within a range of ±0.2mm.

Contact size	L1 for pin contact					L2 for socket contact		
metric	10	15S	15	25	60	10	15S	15, 25
					100			60, 100
					160			160
					500			500
AWG	20	16S	16	12	8 0 4	20	16S	16 12 8 4 0
Shell size								
10SL 12S 14S 16S	–	-2,7 -1,7	–	–	–	–	-2,5 -1,5	–
16 18 20 22 24 28 32 36	-10,3 -9,3	–	-7,1 -6,1	-3,5 -2,5	-2,8 -1,8	-1,9 -0,9	–	-3,1 -2,1

Upper and lower size limit in mm.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

Fixed connector:



1. Contacts have to be snapped in.
2. The contact peaks (frontside) have to be aligned to each other within a range of ±0.2mm.

Contact size	L1 for pin contact					L2 for socket contact		
metric	10	15S	15	25	60	10	15S	15, 25
					100			60, 100
					160			160
					500			500
AWG	20	16S	16	12	8 0 4	20	16S	16 12 8 4 0
Shell size								
10SL 12S 14S 16S	–	-2,7 -1,7	–	–	–	–	-2,5 -1,5	–
16 18 20 22 24 28 32 36	-10,3 -9,3	–	-7,1 -6,1	-3,5 -2,5	-2,8 -1,8	-1,9 -0,9	–	-3,1 -2,1

Upper and lower size limit in mm.

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

8 Assembly Instruction for Banding adapter

1

- Slide the end-bell onto the housing.

2

- To tighten the end-bell with the applicable torque, the connector must be mounted on a torque measuring device.
- An empty mating connector housing can be used to adapt for mounting.
- Tighten the end-bell and the clamping nut with the open-end wrench for end-bells. Observe the permissible tightening torque (see table below).
- During tightening, make sure that the cable is not twisted.

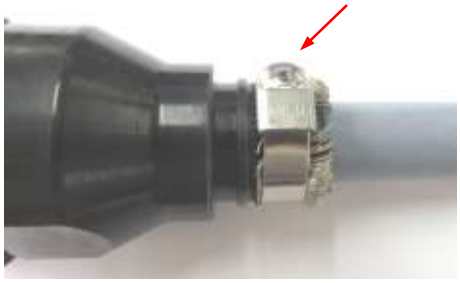
3

- Remove the insulating tape from the cable and braided shield.
- Unbraid the shielding and comb it evenly over the end-bell.

4

- Insert the metal band in the tool and pull it over the end-bell. Then fix the metal band in place using the banding tool according to the manufacturer's specifications*.

5



- Cut shielding to length as shown. Scissors or side cutters can be used for this purpose.

* Shield banding tools are a standard market offering and available through a number of sources. Among others you can buy tools and bands from experienced manufacturers as e.g. DMC (Daniels) or Band-IT.

Bearbeitet:	Geprüft:	Norm:	Änd.-Stand:	Änd.-Datum:
MS	GWE		N	MS 07.07.2021

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

6

- Fully assembled connector.

Permissible torque for tightening the end-bell according to VG95234:

Shell size	ENDBELL/BACKSHELL Max. tightening torque	CLAMPING NUT Max. tightening torque
10SL	3,0 Nm	3,0 Nm
14S	5,0 Nm	5,0 Nm
16S	7,0 Nm	7,0 Nm
16	7,0 Nm	7,0 Nm
18	8,0 Nm	8,0 Nm
20	9,0 Nm	9,0 Nm
22	11,0 Nm	11,0 Nm
24	13,0 Nm	13,0 Nm
28	17,0 Nm	15,0 Nm
32	18,0 Nm	17,0 Nm
36	24,0 Nm	19,0 Nm

Thread	Torque for screws at the flanges
M3	1,2±0,2 Nm
M4	1,4±0,2 Nm
M5	2,0±0,2 Nm

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

9 Assembly Instruction for the End-bell Style M

1

- Move end-bell to the shell. Tighten end-bell nut. Make sure that the cable is not twisted.
- Make sure that teeth are sliding into each other.

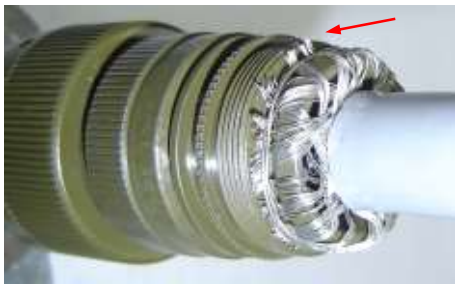
2

- Move the shielding braid on the end-bell.
- Arrange it evenly round over the end-bell.

3

- Fix the shielding braid with binding wire.

4



- Cut the shielding braid according to picture, use a scissors or wire cutter.

5

- Move the clamping nut on the end-bell.
- Screw the clamping nut onto the end-bell.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

6

- For tightening the endbell with the applicable torque the connector must be installed on a torque measurement device.
- For adaption of the connector during assembly a mating connector can be used.
- Tighten the endbell housing and clamping nut .with respect to the permissible torque (see table below).
- While tightening the endbell, take care that the cable is secured against twisting.

7

- Fully assembled connector.

Permissible torque for tightening the endbell according to VG95234:

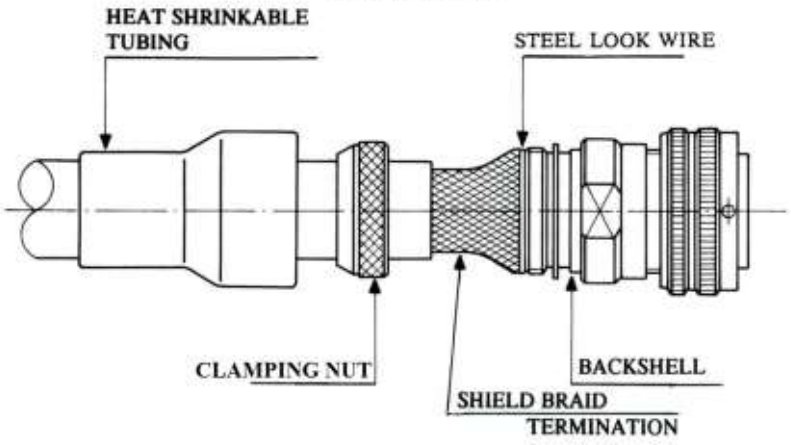
Shell size	ENDBELL/BACKSHELL Max. tightening torque	CLAMPING NUT Max. tightening torque
10SL	3,0 Nm	3,0 Nm
14S	5,0 Nm	5,0 Nm
16S	7,0 Nm	7,0 Nm
16	7,0 Nm	7,0 Nm
18	8,0 Nm	8,0 Nm
20	9,0 Nm	9,0 Nm
22	11,0 Nm	11,0 Nm
24	13,0 Nm	13,0 Nm
28	17,0 Nm	15,0 Nm
32	18,0 Nm	17,0 Nm
36	24,0 Nm	19,0 Nm

Thread	Torque for screws at the flanges
M3	1,2±0,2 Nm
M4	1,4±0,2 Nm
M5	2,0±0,2 Nm

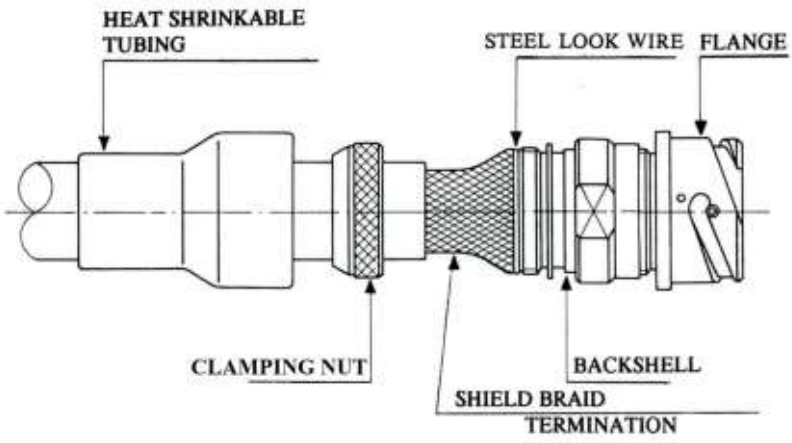
ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

Depending on connector style and application a heat shrink boot can be assembled.

Straight Plug connector



Straight Receptacle connector



ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

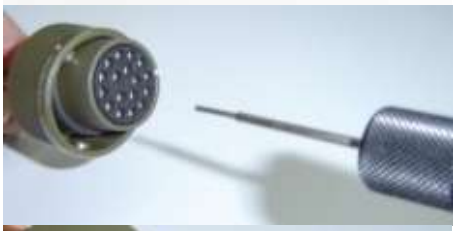
10 Removal of Contacts

1

- Remove the endbell, if part of the housing, in opposite sequence as described in these instructions. Slide the endbell back over the cable.

2

- The insert of the removal tool can be installed in 2 ways: for removal of pin contacts use the side with the sleeve; for removal of socket contacts use the side with the pin.
- Assemble the removal tool for the contact type of the connector.



3

- Slide the tip of the removal tool parallel to the contact axis inside the socket contact or over the pin contact.

4

- Press the contact back with uniform force up to the stop of the tool. Then remove the tool carefully from the connector.

5

- Pull out the contact at the cable carefully at the termination side.

11 Reference Documents

Connector series	Spezification	Standard
CA-Bayonet	CA-Bayonet catalogue	VG95234
CA-Thread	CA-Thread catalogue	VG95342
CA-COM Bayonet	CA-COM catalogue	---
CA-COM Thread	CA-COM catalogue	---
All listed series	CAS25059	---
All listed series	CAS25084	---

Document	Title
VG95234	Electrical connectors and plug-and-socket devices — Connectors with bayonet coupling, pressure-water tight, up to 245 A
VG95342	Electrical connectors and plug-and-socket devices — connectors with thread coupling, water-protected, up to 245 A
CAS25059	CRIMP SPECIFACATION – Pneumatik Crimp Tool WA27F-CE / WA22-CE
CAS25084	Crimp tool for MS / CA / VG 95234 Hex – Crimp AWG #0; #4; #8 APD Hex–Crimp 6/10/16/25/35/50/70/95 mm²

12 Product Safety Information

1. MATERIAL CONTENT AND PHYSICAL FORM
Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.
a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.
b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

2. FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD
There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionization and burning. Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock. If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonization of insulation and tracking paths. Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

3. HANDLING
Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers. Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

4. DISPOSAL
Incineration of certain materials may release noxious or even toxic fumes.

5. APPLICATION
Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles. Circuit resistance and continuity check should be made to make certain that there are no high resistance joints or spurious conducting paths. Always use the correct application tools as specified in the Data Sheet/Catalog. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

IMPORTANT GENERAL INFORMATION
1. Air and creepage paths/Operating voltage: The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations. For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.
2. Temperature: All information given are temperature limits. The operation temperature depends on the individual application.
3. Other important information: Cannon continuously endeavors to improve their products. Therefore, Cannon products may deviate from the description, technical data and shape as shown in this.
4. assembly and wiring instruction: ITT Interconnect Solutions, a Division of ITT Corporation manufactures the highest quality products available in the marketplace; however these products are intended to be used in accordance with the specifications in this publication. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of Cannon. Any new issue of this publication shall automatically invalidate and supersede any and all previous issues.

ITT	ASSEMBLY AND WIRING INSTRUCTION CA-CONNECTOR	CAS25094E

13 Change History

Index	Change no.	Description of change	Date
E	5301W	Hydraulic-electro tool complete replaced by new version. Semi-automatic crimp station removed. Change history added	20.10.2016
G	5319W	Added reference to CAS25084 in 4.2.	09.11.2016
H	5350W	5.1 Wire stripping length for contact size 10/20 changed; 4.0 New and part numbers for size 10/20 changed: 030-8585-010 changed to 030-8585-004, 030-8585-000 changed to 030-8585-009, 030-8585-016 changed to 030-8585-008, 030-8585-006 changed to 030-8585-011, 031-8554-010 changed to 031-8554-004, 031-8554-000 changed to 031-8554-009, 031-8554-016 changed to 031-8554-008, 031-8554-006 changed to 031-8554-011	09.11.2017
J	5963W	Section former 4.1 “Crimping Tool Description” removed. Section 4.1 “crimping tools”: restructured, not matching pneumatic tool WA22-CE removed. Section 4.2 “insertion tools”: restructured, insertion tips and insertion tool kit added. Section 4.3 “extraction tools”: tool CET-F80-20 added. Section 5 “Instructions for the Crimping Process” reworked: Requirements for the choice of cable changed, reference standards added, section 5.2 “inspection of crimp tools” added. Section 5.3 “crimping of contacta”: detailed description, photos and safety note added. Section 6 “processing of solder contacts”: description of solder process removed, because in this case general complex rules are valid. Section 7.1 “insertion of contacts”: reworked. Section 7.2 “contact insertion with hand lever press”: added. Section 8 “assembly instruction for the endbell style M”: text supplements, tolerance for assembly torques changed from “max ± 5%” into “-10%”. Section 9 “removal of contacts”: extended by description of steps. Section former 10/10.0 “annex/ useful hints”: removed, because hints are already covered by assembly description or not applicable. Section 10 “reference documents” added. Further editorial changes	27.5.2019
K		Section 8 process description, "Processing instructions for banding adapters" added.	15.04.2021
M		Section 5.1 "Wire Stripping Length and Adjustment of Crimp Tool” Pull-out force added and text revised.	17.05.2021
N		Section 4.0 “Contacts and Assembly Tools” Added more locator and revised text. Section 7.3 "Installation dimensions of the contact in the insulator" added.	07.07.2021