

## The crimping concept

The crimp connection is an irreversible, non-reusable connection between one or two conductors and a crimp contact. It is obtained by compression deformation (cold forming) and consequent reshaping of the contact crimping stem, or crimp barrel. A good crimp connection is provided by a suitable combination between the crimping dies, the contact crimp barrel (hence the crimp contact), and the cross-section of the conductor.

These considerations refer to crimped connections made with flexible copper conductors of class 5 (flexible) or 6 (more flexible than class 5) according to EN IEC 60228 standard.

Solid copper conductors (class 1) or conductors made by other materials (aluminium, iron, etc.) often require special precautions for both crimp contacts and crimping tools, to be agreed upon with the manufacturer.

The main technical advantages provided by crimped connections over soldered connections are:

- Independence from temperature, being this a “cold” process, performed without using heat and not requiring further materials.
- Elimination of the contact uncertainties due to cold solders.
- No degradation of the elastic characteristics of the female contacts (a problem that arises with soldering temperatures).
- No health risks connected with the use of heavy metals or fumes generated from the soldering process.
- Preservation of the conductor's flexibility immediately beyond connection.
- No conductors with burned, discoloured or overheated insulating material.
- Excellent reproducibility of the performances of the electrical and mechanical connections.
- Easier production controls.

Other advantages obtained by crimping connections over screw-type connections are:

- Lower voltage drop across the connection.
- High stability in time even in the presence of vibrations.
- High durability in presence of corrosion (gas-tightness).
- Individual insertion of the contacts in the connector (it is possible to eliminate unnecessary contacts).
- Less time required for connection.
- Possibility of pre-production of the terminated conductors with crimp contacts.
- Easy replacement of individual contacts during maintenance.
- Possibility of selectively isolating the circuits during maintenance via the extraction of the contacts from the connector.

The crimped connections for wire sections up to 10 mm<sup>2</sup> are covered by the EN 60352-2:2006 European standard equivalent to the IEC 60352-2 Issue 2 (2006-02) international standard.

The **EN 60352-2** standard also includes a practical guidance, which lists the following main points.

The quality of a crimped connection is mainly affected by the quality of the materials used and by the condition of the surfaces both of the crimp contact (in particular the crimp barrel) and of the conductor.

To ensure a good quality crimped connection, an essential parameter is the mechanical retention of the conductor in the contact. The standard makes a distinction between the closed crimp barrel, inherently stronger, and the open crimp barrel. ILME crimp contacts are closed crimp barrel contacts, with inspection hole which ensure a higher mechanical performance compared to the open barrel crimp contacts, such as better mechanical robustness and stability during operation. They have been high speed precision-machined, thus ensuring a better electrical performance (better conductivity).

In 2002 the Amendment 2 of the previous IEC standard had controversially unified the minimum tensile strength for open crimp barrel contacts (curve B of former Figure 5) and closed crimp barrel contacts (curve A of former Figure 5) making them both equal to the lower values (those of curve B), which can be achieved by open barrel crimp contacts. This change has determined an arguable relaxation of the suitability requirements both for closed crimp barrel, typically larger, machine turned and for crimp tools specially made for these contacts. Several industries continue to prefer the higher performance ensured by closed crimp barrel contacts, the only ones able to ensure the higher resistance to tensile stress values believed to be essential for the most demanding industrial applications.

Therefore, ILME continues to refer to curve A of Figure 5 illustrated in the EN 60352-2:1994 standard: ILME closed crimp barrel contacts, used with flexible copper wires, featuring a cross-sectional area included in the ranges shown and correctly crimped with the recommended tools, ensure tensile breaking resistant connections at least equal to the values shown in the table below (for reference, the corresponding  $R_p/S$  unified tensile stress load value is also shown [N/mm<sup>2</sup>]). See Table 1.

| Section S |                 | Resistance to traction $R_t$ (N) | $R_t/S$ (N/mm <sup>2</sup> ) |
|-----------|-----------------|----------------------------------|------------------------------|
| AWG       | mm <sup>2</sup> |                                  |                              |
| 26        | 0,12            | 18                               | 150                          |
| -         | 0,14            | 21                               | 150                          |
| 24        | 0,22            | 33                               | 150                          |
| -         | 0,25            | 37,5                             | 150                          |
| 22        | 0,32            | 48                               | 150                          |
| -         | 0,37            | 55,5                             | 150                          |
| 20        | (0,6)           | 75                               | 150                          |
| -         | 0,75            | 112,5                            | 150                          |
| 18        | (0,82)          | 125                              | 150                          |
| -         | 1               | 150                              | 150                          |
| 16        | (1,3)           | 195                              | 150                          |
| -         | 1,5             | 220                              | 147                          |
| 14        | (2,1)           | 300                              | 143                          |
| -         | 2,5             | 325                              | 130                          |
| 12        | (3,3)           | 430                              | 130                          |
| -         | 4               | 500                              | 125                          |
| 10        | (5,3)           | 635                              | 120                          |
| -         | 6               | 650                              | 108                          |
| 7         | 10              | 1000                             | 100                          |
|           |                 | (1300)                           | (130)                        |
| -         | 16              | 1650                             | 103                          |
| -         | 25              | 2300                             | 92                           |
| -         | 35              | 2800                             | 80                           |
|           | 50              | 3300                             | 66                           |
| -         | 70              | 3900                             | 56                           |

Table 1.

**NOTE** - For 10 mm<sup>2</sup> wire sections, the resistance to tensile stress shown in *italics* are those specified in the NF F 61-030 standard (for 10 mm<sup>2</sup>, the value in brackets).

The basic criterion used for the tensile strength values required by EN 60352-2 standard is that such resistance is at least equal to 60% of the per unit breaking load of the same annealed copper conductor.

This applies to conductor cross-sectional areas up to about 1,5 mm<sup>2</sup>; above this cross-section, the ratio is slightly lower, as retention is also affected by friction, which increases linearly with the housing diameter, whilst the cross-section increases by the square.

IEC/EN 60352-2 standard, which historically targeted the electronics industry, restricts its requirements to crimp connections for conductors with a maximum cross-sectional area of 10 mm<sup>2</sup>. For cross-sections higher than 10 mm<sup>2</sup>, up to 70 mm<sup>2</sup>, the standard to refer to is the NF F 61-030:1989 French standard which relates to electrical connectors to be used on board of railway rolling stock, in particular for large crimp contacts, such as those manufactured by ILME.

**NOTE** - Alternatively, for wire sections between 35 mm<sup>2</sup> and 300 mm<sup>2</sup>, EN 61238-1:2003 standard can be referred to.

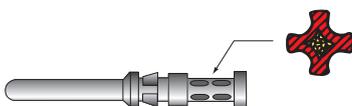
This standard requires constant  $R_t/S$  values equal to 60 N/mm<sup>2</sup>, lower than those established by the above mentioned French standard.

## Selecting the crimping tool and relevant controls

When you have selected quality crimp contacts and conductors, the next and most important step is to select the correct crimp tool. The practical guidance of standard EN 60352-2 provides the following recommendations on the subject, listing some of the ideal requirements for crimping tools, some optional characteristics, but, above all, it provides a preview of the indispensable controls:

- a) The crimping tools and the contacts used shall be supplied by the same manufacturer, otherwise the user shall assume all responsibility for the quality and reliability of the crimp connections.
- b) The crimping tools must function correctly and provide a correct crimp without damage to the pin or the component to crimp.
- c) In order to obtain a reliable crimp connection, a crimping device with a mechanism that controls the entire crimping cycle shall be used. At the end of the crimping cycle the handles and the ratchet must return to the open position.
- d) In all cases the crimping operation shall be made in one single phase, with no further interventions.
- e) The removable parts of the tool such as the crimping dies and the locators must be designed in such a way as to make it possible to be inserted within the tool only in the correct manner.
- f) The tools must be supplied with the appropriate means for a correct positioning of the pins to be crimped and of the conductors during crimping.
- g) The tools must be designed in such a way so that only the necessary adjustments may be made.
- h) The action of the tool must be such that both the pin to be crimped and the fixture of the isolation (when present) are respectively crimped or compressed with a single action.
- i) The design of the tool must ensure that the dies for a particular tool may be interchangeable within tools of the same type. If they are not interchangeable, the identification of tools for which they are suitable must be marked on the dies.
- j) The tools may be designed so as to produce a marking or coding of the die on the pin to be crimped so that the crimping may be checked for verification of the correct die.
- k) The design of the tool must allow the verification of the dies with gauges to measure wear. The gauge verification method must be that specified by the manufacturer of the tools.

With suitable flexible copper conductors, the crimping tool proposed by ILME gives 8-indent crimping (see figure) in conformity with standard EN 60352-2. Periodic control of the wear of the crimping dies can be carried out with the appropriate "go – no go" gauges (to be purchased separately). For extra operational details, consult the following pages on tools, and the relevant instruction sheets and/or use and maintenance manuals.



The manual and automatic crimping tools selected by ILME are carefully designed to ensure symmetrical deformation of the crimping area of the contact and wire, by means of their own, internal high pressure forming parts. The positioner ensures that the wire and crimp contact meet in the appropriate part of the tool. Sprung mechanisms built into the tools ensure that the contacts are not inserted in the tool before the indenters are fully open, and that the tool does not open before the crimping process has been completed.

The **CIPZ D** (for 5A crimp contacts), **CCPZ MIL** (for 10A and 16A crimp contacts) and **CXPZ D** (for 40A crimp contacts) manual crimping tools are suitable for use when compressed air sources are unavailable, for low or medium-low workloads.

The **CCPZ RN** (for 10A, 16A and 40A crimp contacts) manual crimping tool is also suitable for low or medium-low workloads.

All the above tools provide 8-indent crimping.

The **CCPZ TP** (for 10A and 16A crimp contacts) and **CXPZ TP** (for 40A crimp contacts) manual crimping tools are also suitable for low or medium-low workloads and provide a "square shaped" crimping cross-section. Crimped connections produced by these tools are in compliance with the requirements of EN 60352-2.

The **CCPZP** pneumatic crimping bench tool without automatic positioner (for 10A and 16A crimp contacts) is suitable for use in the workshop (where compressed air is available) for high or medium-high workloads. Using the same manual crimping tool turrets, it is possible to change rapidly from crimping on male contacts to crimping on female contacts of the same series (10A and 16A).

The **CCPZPA** pneumatic crimping bench tool with automatic positioner (for 10A and 16A crimp contacts) is suitable for workshop jobs (where compressed air is available) for medium-high or high workloads. It is recommended in particular for crimping high quantities of contacts that are the same type or have the same section, thus saving a significant amount of time thanks to automatic operation and reduced operator fatigue. Where the type or kind of contact must be changed frequently, it is preferred to use the version without automatic positioner.

The **CXPZP D** pneumatic crimping bench tool without automatic positioner (for 40A crimp contacts) is suitable for use in the workshop (where compressed air is available) for high or medium-high workloads. By using the same positioners as those of manual crimper CXPZ D, the size of a contact can be rapidly changed with one of the same type.

The semiautomatic stripping-crimping machine, type **ZFU-CD**, is suitable to be used in workshops (where an electrical or pneumatic power supply is available) and for heavy workloads. It enables to produce large amounts of crimped connections in less time because of the possibility of simultaneously carrying out stripping and crimping operations. The contact and tool replacement operations, which are minimized because of the pre-set programs that can be stored and customized by the user, require the production to be programmed to reduce downtime. When a sequential processing is required despite the economic advantages offered by the above-described solution, it is preferable to use pneumatic bench pliers without the above-described positioner or one of the manual pliers.

In any case, the quality of the results from the crimping tools, combined with the ILME crimp contacts, is identical and at the highest market levels, exceeding the requirements of the standard EN 60352-2.

Although the crimping appliances and tools suggested here include a set of control automatisms and mechanisms, which prevent the chief misunderstandings and errors, the operator is advised to always take care not to work in inappropriate conditions.

# The crimping operation

The practical guide in standard EN 60352-2 supplies further general information regarding crimp contacts for multipole connectors.

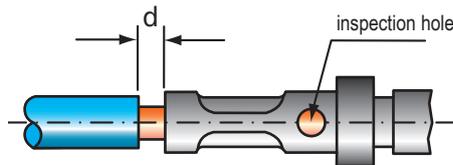
## 1. Insertion of the conductor in the crimp contacts

The conductor must be correctly positioned in the pin to be crimped.

The crimping indentations must be correctly positioned on the foot to be crimped. There must be sufficient space, in conformity with the manufacturer's instructions, between the end of the insulating material of the conductor and the pin to be crimped ("d").

As a general rule, the stripping length is equal to the pin insertion depth + 1 mm (for sections up to 1 mm<sup>2</sup>) and + 2 mm (for sections from 1 to 10 mm<sup>2</sup>) \*. When using closed crimp pins with an inspection hole, the crimp conductor must be visible through the inspection holes.

\* Keeping the conductor strands visible above the contact collar enables you to check correct, i.e. make sure no strands have been cut. This also ensures a certain flexibility for the connection, by not transmitting to the contact any flexure stresses caused by installation. However, in practice, some operators give priority to insulation, by reducing to zero the gap between cable insulation and the contact collar.



## 2. Insertion of crimped contacts in the connector insert

It is recommended that the crimped contacts be perfectly straight and inserted within the contact slots in a single operation and without excessive force until a clicking sound is heard.

The correct retention of the contact should be verified with a light pulling of the wire. Non alignment of the crimped contacts must be avoided because this could cause possible loosening of the retention springs and consequently jeopardise the retention of the contact in the insert.

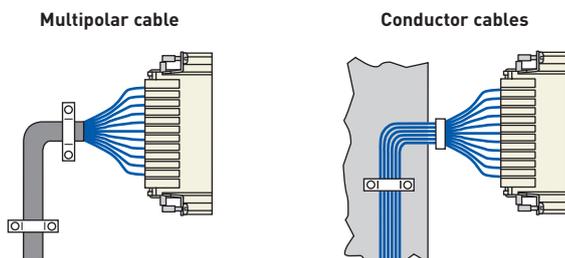
For small section conductors ( $\leq 0,35 \text{ mm}^2$ ) or for specific application, the use of the insertion tool specified by the manufacturer is recommended.

## 3. Removal of inserted contacts

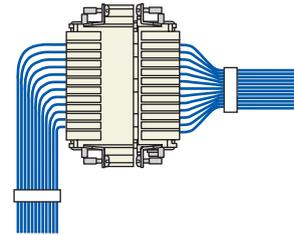
In the case of incorrect insertion or wiring substitution, inserted contacts may only be removed using the removal tools specified by the manufacturer.

## 4. Mounting and flexure of multi-wired bundles or multipolar cables with crimp contacts

Bundles of conductors or multipolar cables with crimp contacts for multipole connectors must not cause stress to the inserted contacts with their weight as this would cause the contacts to bend over to the coupling area of the connectors and consequently damage them. The connectors must therefore be provided with cable clamps or the conductor bundles or multipolar cables must be mounted as described in the figures below.



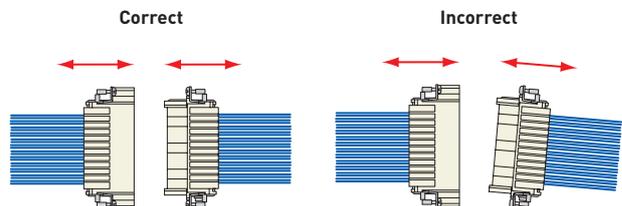
If the conductor bundles or the multipolar cables have to be immediately folded over on the back of the connector insert, it is recommended not to use any mechanical force in the axial direction with respect to the coupled contacts. The figure shows a correct bending and clamping of the multiwire bundles using the crimp contacts.



## 5. Coupling and uncoupling of multipolar connectors with crimp contacts

In order to prevent stress on the crimp contacts, the connectors must be coupled and uncoupled in the axial direction with respect to the contacts, without touching the conductor bundles or cables.

Standard DIN 43652 (incorporated into specification EN 175301-801) that applies to the ILME inserts of the CD series (this recommendation is also valid for the CDD series) prescribes a maximum deflection from the axis of  $\pm 5^\circ$  on the greater side and  $\pm 2^\circ$  on the smaller side.

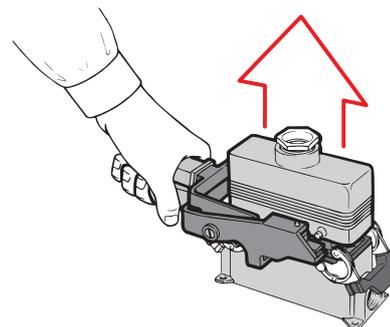


To keep the play within this limit, especially during the uncoupling phase, guide pins CRM and CRF may be used. The use of ILME pliers (code number CPES) is recommended for the uncoupling operations for CD inserts (64 poles) and CDD inserts (108 poles). The pliers work on the fulcrum and lever principle and perform the following main tasks:

I - Reduce effort and coupling times to the minimum, even when working in the most impractical and inaccessible points.

II - Perform the uncoupling of multipolar connectors in full conformity of standard DIN 43652 (now EN 175301-801).

The pliers allow the extraction of the inserts to be made perfectly axially with respect to the contacts, evenly distributing the pressure on four points (housing pins).



# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |             |           |
|-----------------|-------------|-----------|
| CD              | (10 A)      | 66 - 74   |
| CDD             | (10 A)      | 76 - 83   |
| CDC             | (16 A)      | 104 - 106 |
| CCE             | (16 A)      | 130 - 135 |
| CMCE            | (16 A)      | 137 - 145 |
| CQE             | (16 A)      | 168 - 173 |
| CQEE            | (16 A)      | 176 - 177 |
| CQ              | (10 A/16 A) | 186 - 193 |
| CX 8/24         | (16 A/10 A) | 194       |
| CX 6/36 *       | (10 A)      | 198       |
| CX 12/2 *       | (10 A)      | 199       |
| RX 12/2 * (HNM) | (10 A)      | 221       |
| CX 6/6 *        | (16 A)      | 206       |
| RD (HNM)        | (10 A)      | 208 - 209 |
| RDD (HNM)       | (10 A)      | 210 - 213 |
| RCE (HNM)       | (16 A)      | 214 - 217 |
| RQEE (HNM)      | (16 A)      | 218 - 219 |
| MIXO            | (10 A/16 A) | 271 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## manual crimping tool positioner - gauge



## insertion tool - removal tools replacement tip

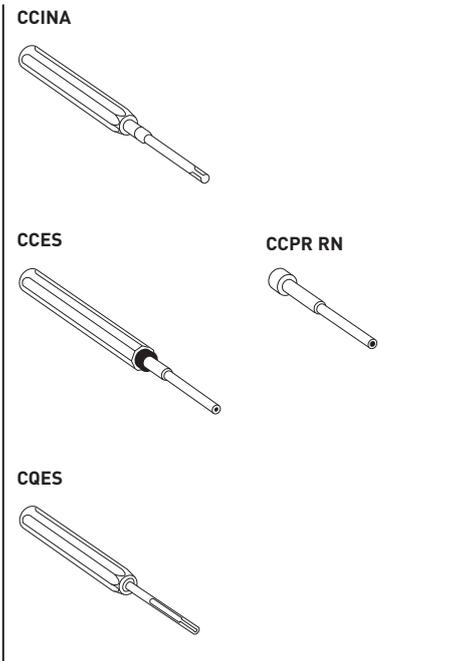
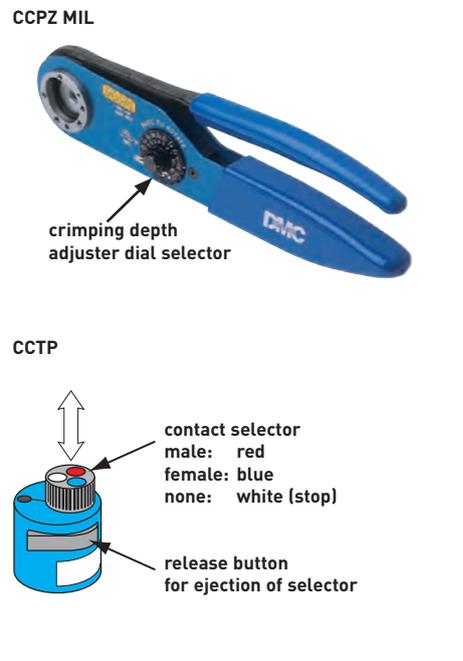
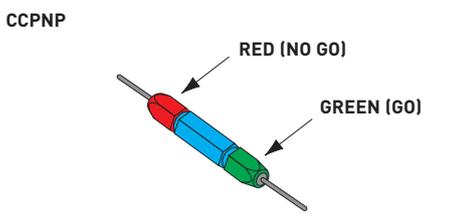


| description   | part No.                         | part No.                   |
|---|----------------------------------|----------------------------|
| crimping tool for <b>10 A</b> and <b>16 A</b> contacts DANIELS AF8 model (turret excluded)  | <b>CCPZ MIL</b>                  |                            |
| positioner inserts (see note) for <b>10 A</b> contacts ( <b>CD</b> and <b>RD HNM</b> series) for <b>16 A</b> contacts ( <b>CC</b> and <b>RC HNM</b> series)   | <b>CCTP 10</b><br><b>CCTP 16</b> |                            |
| "go / no go" control gauge to verify indenter closure (see note)  | <b>CCPNP</b>                     |                            |
| insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0,75 mm <sup>2</sup>   |                                  | <b>CCINA</b>               |
| removal tools for the extraction of contacts from the inserts for <b>10 A</b> contacts ( <b>CD</b> and <b>RD HNM</b> series) <sup>1)</sup> for <b>16 A</b> contacts ( <b>CC</b> and <b>RC HNM</b> series) <sup>2)</sup> |                                  | <b>CCES</b><br><b>CQES</b> |
| replacement tip for CCES removal tool   |                                  | <b>CCPR RN</b>             |

1) for CQ, CD, RD, CDD, RDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)  
 2) for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC. For CMCE (16+2), CX inserts (contacts 16 A insert CX 8/24) using a flat 3 mm screwdriver.

**Notes:**  
**Positioner / Head turret**  
 conforms to international standard MIL-C-22520/1  
 - An interchangeable and indispensable accessory of the CCPZ MIL crimping tool, it precisely positions the contact where crimping is performed. Each series of contacts requires its own turret.

**"go / no go" control gauge**  
 conforms with international standard MIL-C-22520/3  
 - A tool used to periodically check that the crimping tool meets standard requirements.



**16 A - CONTACT HEAD TURRET / POSITIONER**

| CC / RC series |        | 0,14            | 0,25            | 0,34            | 0,5             | 0,75            | 1,0             | 1,5             | 2,5             | 3,0             | 4,0             | conductor section                           |
|----------------|--------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---|
| red            | blue   | mm <sup>2</sup> |   |
| male           | female | 26              | 24              | 22              | 20              | 18              | 17              | 16              | 14              | 12              | 12              | AWG   |
| 0,3            | 0,3    | 5               | 5               | 6               |                 |                 |                 |                 |                 |                 |                 | crimping depth adjuster selector<br>CCTP 16 |
| 0,5            | 0,5    |                 | 6               | 6               | 7               |                 |                 |                 |                 |                 |                 |   |
| 0,7            | 0,7    |                 |                 | 6               | 6               | 7               |                 |                 |                 |                 |                 |   |
| 1,0            | 1,0    |                 |                 | 6               | 6               | 7               | 7               |                 |                 |                 |                 |   |
| 1,5            | 1,5    |                 |                 |                 | 6               | 7               | 7               | 8               |                 |                 |                 |   |
| 2,5            | 2,5    |                 |                 |                 |                 | 6               | 6               | 7               | 7               |                 |                 |   |
| 3,0            | 3,0    |                 |                 |                 |                 |                 | 6               | 7               | 7               |                 |                 |   |
| 4,0            | 4,0    |                 |                 |                 |                 |                 |                 |                 | 7               | 8               |                 |   |

**10 A - CONTACT HEAD TURRET / POSITIONER**

| CD / RD series |        | 0,14            | 0,25            | 0,34            | 0,5             | 0,75            | 1,0             | 1,5             | 2,5             | conductor section                           |
|----------------|--------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---|
| red            | blue   | mm <sup>2</sup> |   |
| male           | female | 26              | 24              | 22              | 20              | 18              | 17              | 16              | 14              | AWG   |
| 0,3            | 0,3    | 5               | 5               | 6               |                 |                 |                 |                 |                 | crimping depth adjuster selector<br>CCTP 10 |
| 0,5            | 0,5    |                 |                 |                 | 6               |                 |                 |                 |                 |   |
| 0,7            | 0,7    |                 |                 |                 |                 | 6               |                 |                 |                 |   |
| 1,0            | 1,0    |                 |                 |                 |                 |                 | 6               |                 |                 |   |
| 1,5            | 1,5    |                 |                 |                 |                 |                 |                 | 7               |                 |   |
| 2,5            | 2,5    |                 |                 |                 |                 |                 |                 |                 | 7               |   |

# Use and maintenance instructions

## 1. General specifications

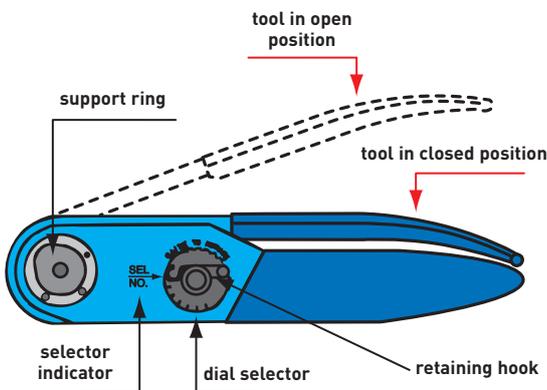
The **CCPZ MIL crimping tool** conforms to the international standard MIL-C-22520/1. Crimping is performed with 8 pressure points. The tool is equipped with a geared mechanism to control the complete crimping cycle. **The tool must be equipped with an interchangeable positioner (CCTP) according to the series of contacts to be crimped.**

### 1.1 Crimping range

Conductor cross-sectional area range:  
from 0,14 mm<sup>2</sup> (26 AWG) to 4 mm<sup>2</sup> (12 AWG) for positioner 16 A,  
from 0,14 mm<sup>2</sup> (26 AWG) to 2,5 mm<sup>2</sup> (14 AWG) for positioner 10 A

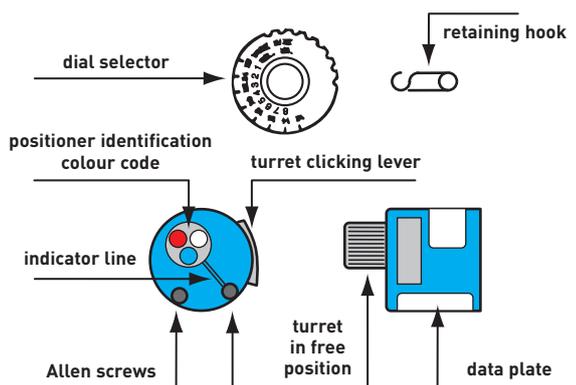
#### Caution!

**The handle of the tool must be in the open position when the turret is installed, disassembled or opened. If not, the turret and the crimping tool may be damaged.**



## 2. CCTP positioner installation

- 1 The crimping tool must be in the open position.
- 2 Press the clicking lever that releases the positioner in the adjustment position.
- 3 Position the previously selected CCTP positioner on the support ring located on the crimping tool (matching the special pin on the base of the turret with the corresponding hole on the support ring), aligning the tapped holes with the socket head screws.
- 4 With the CCTP positioner positioned against the support ring, tighten the socket head screws with the 9/64" (3,5 mm) Allen wrench (supplied with the kit).
- 5 Refer to the data plate on the CCTP positioner. From the colour code column, select the colour of the positioner that corresponds to the appropriate code and dimension of the contact to be crimped.
- 6 With the CCTP positioner in the adjustment position, turn the turret until the colour-coded positioner is aligned with the indicator line. Press the turret until it clicks into the connected position.
- 7 Refer to the data plate on the CCTP positioner. From the column indicating the proper conductor section, determine the number that corresponds to the contact being used.
- 8 Remove the retaining hook from the crimping tool dial selector. Lift the dial selector and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).



## 3. Crimping instructions

- 1 Insert the contact and the prepared conductor through the opening of the indenter in the turret positioner.
- 2 Tighten the crimping tool handle until the stop gear is released. The tool will return to the open position.
- 3 Check the position of the crimping on the contact crimping foot. Ideally, the crimping should be between the inspection hole and the top edge of the crimping foot.  
The head of the contact should not be squared and the inspection hole should be intact.

## 4. Removing the CCTP positioner

With the crimping tool in the open position, to disassemble the positioner, loosen the socket head screws using the 9/64" (3,5 mm) Allen wrench (supplied with the kit). After the threads are released from the support ring, pull off the positioner with a straight movement.

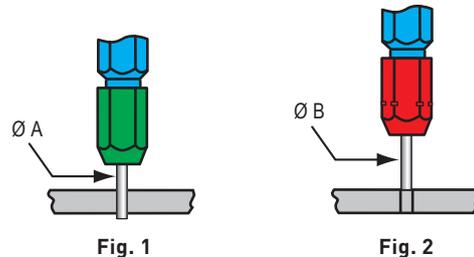
## 5. Instructions to check calibration

The operations to check the crimping tool must be carried out with the dial selector in position 4 and the CCPNP gauge.  
**ATTENTION! Do not crimp the gauge.**

### 5.1 Calibration check

Put the crimping tool in the completely closed position.  
"GO" - Insert the end (green) of the gauge as shown (Fig. 1). The gauge must pass freely between the indenter tips.  
"NO GO" - Insert the end (red) of the gauge as shown (Fig. 2). The gauge should not pass through the opening.

| Gauge | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|-------|------------------------|-----------------------------|------------------------------|
| CCPNP | 4                      | 0,991 (mm)                  | 1,118 (mm)                   |
|       |                        | 0,0390 (in)                 | 0,0440 (in)                  |



## 6. Crimping tool maintenance

No maintenance is required.

However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris. A metal brush may be used for this purpose.

The following is strongly recommended:

- 1 DO NOT immerse the tools in a solution to clean them.
- 2 DO NOT brush oil in the tools to lubricate them.
- 3 DO NOT try to disassemble the tool or repair it.

This is a high-precision manual crimping tool and must be used as such. For automatic crimping operations refer to the CCPZP and/or CCPZPA crimping tool models.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |             |           |
|-----------------|-------------|-----------|
| CD              | (10 A)      | 66 - 74   |
| CDD             | (10 A)      | 76 - 83   |
| CDC             | (16 A)      | 104 - 106 |
| CCE             | (16 A)      | 130 - 135 |
| CMCE            | (16 A)      | 137 - 145 |
| CQE             | (16 A)      | 168 - 173 |
| CQEE            | (16 A)      | 176 - 177 |
| CQ              | (10 A/16 A) | 186 - 193 |
| CX 8/24         | (16 A/10 A) | 194       |
| CX 6/12 *       | (10 A)      | 197       |
| CX 6/36 *       | (10 A)      | 198       |
| CX 12/2 *       | (10 A)      | 199       |
| RX 12/2 * (HNM) | (10 A)      | 221       |
| CX 6/6 *        | (16 A)      | 206       |
| RD (HNM)        | (10 A)      | 208 - 209 |
| RDD (HNM)       | (10 A)      | 210 - 213 |
| RCE (HNM)       | (16 A)      | 214 - 217 |
| RQEE (HNM)      | (16 A)      | 218 - 219 |
| MIXO            | (10 A/16 A) | 271 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## manual crimping tool



front view showing incorporated crimping dies

## insertion tool

### removal tools - tip



description

part No.

part No.

crimping tool for **10 A** and **16 A** contacts  
RENNSTEIG model (crimping dies and  
turret head are included)

**CCPZ TP**

insertion tool

for insertion of the contacts into the inserts  
for crimped contacts up to 0,75 mm<sup>2</sup>

**CCINA**

removal tools

for the extraction of contacts from the inserts  
for **10 A** contacts (**CD** and **RD HNM** series) <sup>1)</sup>  
for **16 A** contacts (**CC** and **RC HNM** series) <sup>2)</sup>

**CCES**  
**CQES**

replacement tip

for CCES removal tool

**CCPR RN**

- <sup>1)</sup> for CQ, CD, RD, CDD, RDD, CX, RX inserts  
(10 A auxiliary contacts) and MIXO module (10 A)  
<sup>2)</sup> for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts  
(excluded 16+2), MIXO module (16 A), CX 6/6 (16 A)  
and CDC. For CMCE (16+2), CX inserts (contacts 16 A  
insert CX 8/24) using a flat 3 mm screwdriver.

**CCPZ TP**



rear view showing incorporated turret head  
positioner

**CCINA**



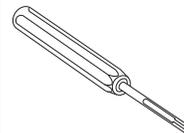
**CCES**



**CCPR RN**



**CQES**



**CCPZ TP** is a simple but effective "square shaping"  
manual crimping tool incorporating discrete (4-size  
nests) crimping dies and dedicated turret positioner for  
relevant crimp contacts series and sizes.

For series CD (10 A) and CC (16 A) contacts (and  
their corresponding **HNM** variants series RD and RC)  
manual crimping tool **CCPZ MIL** – or their equivalent  
pneumatic **CCPZP** or **CCPZPA** for large volumes of  
crimps, or even the fully automatic stripper crimper  
machine **ZFU** – as well as the universal crimping  
tool **CCPZ RN**, by providing 8-indent crimping, are  
recommended for highly demanding applications, such  
as in transportation.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                        |           |                  |
|------------------------|-----------|------------------|
| <b>CQ4 02</b>          | (40A)     | <b>182</b>       |
| <b>CQ4 02 H</b>        | (40A)     | <b>183</b>       |
| <b>CQ4 03</b>          | (40A)     | <b>184</b>       |
| <b>CQ 04/2 *</b>       | (40A/10A) | <b>191</b>       |
| <b>CX 6/12 *</b>       | (40 A)    | <b>197</b>       |
| <b>CX 6/36 *</b>       | (40 A)    | <b>198</b>       |
| <b>CX 12/2 *</b>       | (40 A)    | <b>199</b>       |
| <b>RX 12/2 * (HNM)</b> | (40 A)    | <b>221</b>       |
| <b>MIXO</b>            | (40 A)    | <b>267 - 272</b> |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## manual crimping tool



front view showing incorporated crimping dies

## removal tool



|             |          |          |
|-------------|----------|----------|
| description | part No. | part No. |
|-------------|----------|----------|

crimping tool for **40 A** contacts  
RENNSTEIG model (crimping dies and  
turret head are included)

**CXPZ TP**

### removal tool

for the extraction of contacts from the inserts  
for **40 A** contacts (**CX** and **RX HNM**) <sup>1)</sup> and cables  $\varnothing \leq 5$  mm  
for **40 A** contacts (**CX** and **RX HNM**) <sup>2)</sup> and cables  $\varnothing \leq 7,5$  mm

**CXES**  
**CXES-10**

<sup>1)</sup> for CX, RX inserts (40 A contacts) and MIXO module (40 A)

<sup>2)</sup> for MIXO module CX 03 4B and contacts 10 mm<sup>2</sup>.

**CXPZ TP** is a simple but effective "square shaping" manual crimping tool incorporating discrete (3-size nests) crimping dies and turret positioner for relevant crimp contacts sizes ranging from size 1.5 to size 6.0. Size 10 requires **CCPZ RN** (Rennsteig PEW 8.75 universal manual crimp tool) or **CXPZP D** (Daniels WA27-309-EP pneumatic tool)

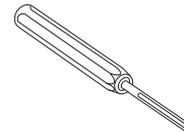
For series CX (40 A) contacts (and their corresponding **HNM** variants series RX) manual crimping tool **CXPZ D** (Daniels M309) up to size 6.0 or **CCPZ RN** (Rennsteig PEW 8.75) for all sizes – or the pneumatic **CXPZP D** for large volumes of crimps, by providing 8-indent crimping, are recommended for highly demanding applications, such as in transportation.

**CXPZ TP**



rear view showing incorporated turret head positioner

**CXES - CXES-10**



# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |           |           |
|-----------------|-----------|-----------|
| CQ4 02          | (40A)     | 182       |
| CQ4 02 H        | (40A)     | 183       |
| CQ4 03          | (40A)     | 184       |
| CQ 04/2 *       | (40A/10A) | 191       |
| CX 6/12 *       | (40 A)    | 197       |
| CX 6/36 *       | (40 A)    | 198       |
| CX 12/2 *       | (40 A)    | 199       |
| RX 12/2 * (HNM) | (40 A)    | 221       |
| MIXO            | (40 A)    | 267 - 272 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## manual crimping tool positioner - gauge



## removal tool



| description | part No. | part No. |
|-------------|----------|----------|
|-------------|----------|----------|

crimping tool for **40 A** contacts up to size 6.0 <sup>1)</sup>  
DANIELS M309 model (turret excluded) **CXPZ D**

positioner (see note)  
for contacts **40 A** (CX and RX HNM series) **CXTP 40**

"go / no go" control gauge  
to verify indenter closure (see note) **CXPNP**

removal tool  
for the extraction of contacts from the inserts  
for **40 A** contacts (CX and RX HNM) <sup>2)</sup> and cables  $\varnothing \leq 5$  mm  
for **40 A** contacts (CX and RX HNM) <sup>3)</sup> and cables  $\varnothing \leq 7,5$  mm **CXES  
CXES-10**

- 1) for all sizes including 10 see crimping tools on pages 714 (CCPZ RN) and 726 (CXPZP D).
- 2) for CX, RX inserts (40 A contacts) and MIXO module (40 A)
- 3) for MIXO module CX 03 4B and contacts 10 mm<sup>2</sup>.

**Notes:**

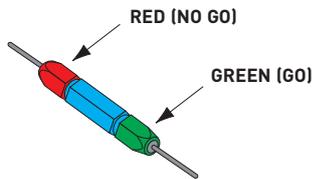
**Positioner**

- An interchangeable and indispensable accessory of the CXPZ D crimping tool, it precisely positions the contact where crimping is performed.

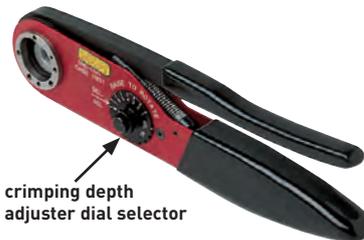
**"go / no go" control gauge**

- A tool used to periodically check that the crimping tool meets standard requirements.

**CXPNP**



**CXPZ D**



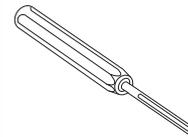
**CXTP 40**



**CXTP 40**

|           |                 |              |     |     |     |    |
|-----------|-----------------|--------------|-----|-----|-----|----|
| CONTACT   | CX / RX         | 1.5          | 2.5 | 4.0 | 6.0 | 10 |
| WIRE SIZE | mm <sup>2</sup> | 1,5          | 2,5 | 4   | 6   | 10 |
|           | AWG             | 16           | 14  | 12  | 10  | 8  |
| SEL. NO.  |                 | 5            | 5   | 5   | 7   | 8  |
| USE WITH  |                 | M309         |     |     |     |    |
|           |                 | WA-27-309-EP |     |     |     |    |

**CXES - CXES-10**



# Use and maintenance instructions

## 1. General specifications

The **CXPZ D crimping tool** performed with 8 pressure points.  
The tool is equipped with a geared mechanism to control the complete crimping cycle.

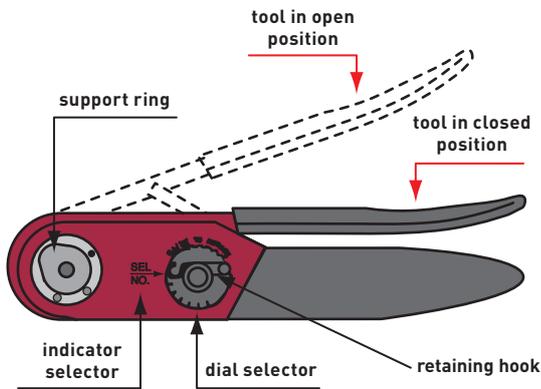
**The tool must be equipped with an interchangeable turret (CXTP) according to the series of contacts to be crimped.**

### 1.1 Crimping range

Conductor cross-sectional area range: from 1,5 mm<sup>2</sup> (16 AWG) to 6 mm<sup>2</sup> (10 AWG).

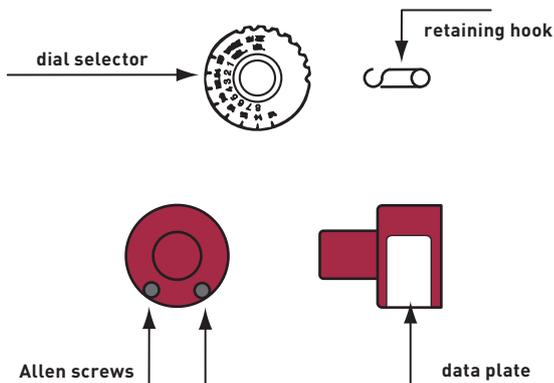
#### Caution!

**The handle of the tool must be in the open position when the turret is installed, disassembled or opened. If not, the turret and the crimping tool may be damaged.**



## 2. CXTP positioner installation

- 1 The crimping tool must be in the open position.
- 2 Position the CXTP 40 positioner on the support ring located on the crimping tool (matching the special pin on the base of the turret with the corresponding hole on the support ring), aligning the tapped holes with the socket head screws.
- 3 With the CXTP 40 positioner positioned against the support ring, tighten the socket head screws with the 9/64" (3,5 mm) Allen wrench (supplied with the kit).
- 4 Refer to the data plate on the CXTP 40 positioner.  
From the column indicating the proper conductor cross-sectional area, determine the number that corresponds to the contact being used.
- 5 Remove the retaining hook from the crimping tool dial selector.  
Lift the dial selector and turn it until the selector number is aligned with the indicator (SEL.NO.).  
Replace the retaining hook (if necessary).



## 3. Crimping instructions

- 1 Insert the contact and the prepared \* conductor through the opening of the indenter in the turret positioner.
- 2 Tighten the crimping tool handle until the stop gear is released.  
The tool will return to the open position.
- 3 Check the position of the crimping on the contact crimping foot. Ideally, the crimping should be between the inspection hole and the top edge of the crimping foot.  
The head of the contact should not be squared and the inspection hole should be intact.

\* i.e. stripped at the correct length and with strands lightly twisted to recover regular lay of strands

## 4. Removing the CXPT positioner

With the crimping tool in the open position, to disassemble the turret, loosen the socket head screws using the 9/64" (3,5 mm) Allen wrench (supplied with the kit).

After the threads are released from the support ring, pull off the positioner with a straight movement.

## 5. Instructions to check calibration

The operations to check the crimping tool must be carried out with the dial selector in position 4 and with the CXPNP gauge (formerly Daniels G425, now Daniels G436 or G1004 which are equivalent for the purpose).

**ATTENTION! Do not crimp the gauge.**

### 5.1 Calibration check

Put the crimping tool in the completely closed position.

"GO" - Insert the end (green) of the gauge as shown (Fig. 1).

The gauge must pass freely between the indenter tips.

"NO GO" - Insert the end (red) of the gauge as shown (Fig. 2).

The gauge should not pass through the opening.

| Gauge | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|-------|------------------------|-----------------------------|------------------------------|
| CXPNP | 4                      | 1,549 (mm)                  | 1,676 (mm)                   |
|       |                        | 0,0609 (in)                 | 0,0659 (in)                  |

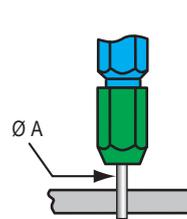


Fig. 1

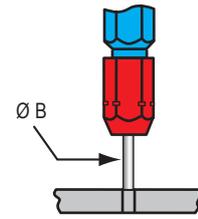


Fig. 2

## 6. Crimping tool maintenance

No maintenance is required.

However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris.

A metal brush may be used for this purpose.

The following is strongly recommended:

- 1 DO NOT immerse the tools in a solution to clean them.
- 2 DO NOT brush oil in the tools to lubricate them.
- 3 DO NOT try to disassemble the tool or repair it.

This is a high-precision manual crimping tool and must be used as such.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|               |                  |           |
|---------------|------------------|-----------|
| CD            | (10 A)           | 66 - 74   |
| CDD           | (10 A)           | 76 - 83   |
| CDC           | (16 A)           | 104 - 106 |
| CCE           | (16 A)           | 130 - 135 |
| CQE           | (16 A)           | 168 - 173 |
| CQEE          | (16 A)           | 176 - 177 |
| CMCE          | (16 A)           | 137 - 145 |
| CQ4           | (40A)            | 182 - 184 |
| CQ            | (10 A/16 A)      | 186 - 193 |
| CX 8/24       | (16 A/10 A)      | 194       |
| CX 6/36       | (40 A/10 A)      | 198       |
| CX 12/2       | (40 A/10 A)      | 199       |
| RX 12/2 (HNM) | (40 A/10 A)      | 221       |
| CX 6/6 *      | (16 A)           | 206       |
| RD (HNM)      | (10 A)           | 208 - 209 |
| RDD (HNM)     | (10 A)           | 210 - 213 |
| RCE (HNM)     | (16 A)           | 214 - 217 |
| RQEE (HNM)    | (16 A)           | 218 - 219 |
| MIXO          | (40 A/16 A/10 A) | 267 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## manual crimping tool gauge



## insertion tool - removal tools replacement tip



| description  | part No.        | part No.  |
|--|-----------------|---|
| crimping tool for <b>10A, 16A</b> and <b>40A</b> contacts<br>RENNSTEIG model (turret included)   | <b>CCPZ RN</b>  |   |
| "go / no go" control gauge<br>to verify indenter closure (see note)  | <b>CCPNP RN</b> |   |
| insertion tool<br>for insertion of the contacts into the inserts<br>for crimped contacts up to 0,75 mm <sup>2</sup>  |                 | <b>CCINA</b>  |
| removal tools<br>for the extraction of contacts from the inserts<br>for <b>10A</b> contacts ( <b>CD / RD HNM</b> ) <sup>1)</sup><br>for <b>16A</b> contacts ( <b>CC / RC HNM</b> ) <sup>2)</sup><br>for <b>40A</b> contacts ( <b>CX / RX HNM</b> ) <sup>3)</sup> and cables $\varnothing \leq 5$ mm<br>for <b>40A</b> contacts ( <b>CX / RX HNM</b> ) <sup>4)</sup> and cables $\varnothing \leq 7,5$ mm |                 | <b>CCES</b><br><b>CQES</b><br><b>CXES</b><br><b>CXES-10</b> |
| replacement tip<br>for CCES removal tool   |                 | <b>CCPR RN</b>  |

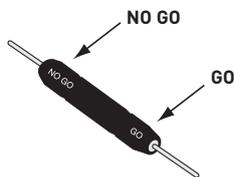
- 1) for CQ, CD, RD, CDD, RDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)
- 2) for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC. For CMCE (16+2), CX inserts (contacts 16 A insert CX 8/24) using a flat 3 mm screwdriver.
- 3) for CX, RX inserts (40 A contacts) and MIXO module (40 A)
- 4) for MIXO module CX 03 4B and contacts 10 mm<sup>2</sup>.

**Notes:**

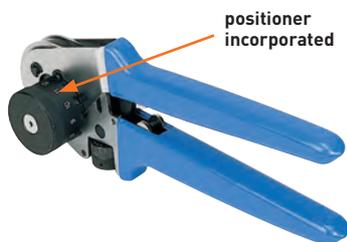
"go / no go" control gauge

- A tool used to periodically check that the crimping tool meets standard requirements.

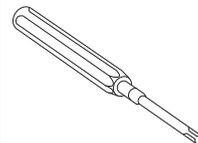
CCPNP RN



CCPZ RN



CCINA



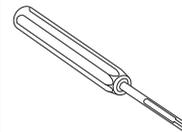
CCES



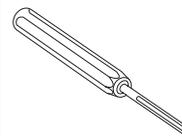
CCPR RN



CQES



CXES - CXES-10



Watch our online tutorial

# Use and maintenance instructions

## 1. General specifications

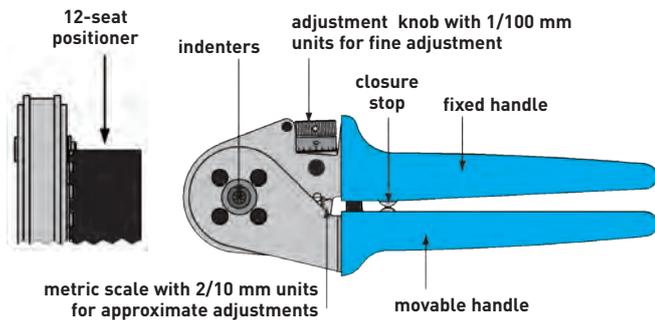
The **CCPZ RN crimping tool** crimps with 8 pressure points, obtaining similar results to the prescriptions of standard MIL-C-22520/1.

The tool has a geared mechanism for controlling the complete crimping cycle, and houses a positioning turret with 12 positions, six of which can be used for positioning the ILME male and female crimping contacts of series CD (10A max), CC (16A max) and CX (40 A max).

### 1.1 Crimping range

Conductor cross-sectional area range: from 0,14 mm<sup>2</sup> (26 AWG) to 10 mm<sup>2</sup> (8 AWG).

**Caution!** The handle of the tool must be in the open position when the turret is installed, disassembled or opened. If not, the turret and the crimping tool may be damaged.



## 2. Description of tool

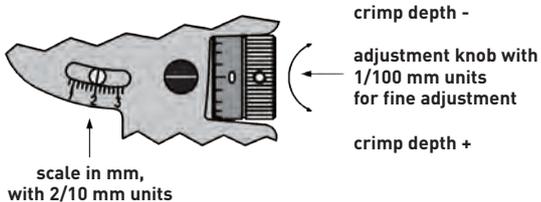
Crimping tool components: a first mobile handle, with a precision stop mechanism with teeth and an opening limiting guide; a second fixed handle with metric scale (units of 2/10 mm); an adjustment system with fine step adjustments of 1/100 mm; four indenters; a 12-seat positioner, fully rotating through 360° for accurate positioning of contacts. A reference table engraved on the tool surface provides the positioner (POS) number and crimping depth (SET) to select according to the type and size of the ILME contact (the crimping tool can be set to any crimping depth which may be required by the contact manufacturer).

## 3. Adjustment of crimp depth

Crimp depth to be adjusted as follows:  
the adjustment knob should be turned clockwise to reduce crimping depth, and anti-clockwise to increase it.

### 3.1 Adjustment tolerances:

- 1 scale mark on the knob = adjustment of 1/100 mm (0,01 mm);
- 1 complete rotation of knob = adjustment of 2/10 mm (0,2 mm, this indication can be read on the knob and on the approximate scale);
- 5 knob rotations = adjustment of 1,0 mm (this indication can be read on the scale).



## 4. Crimping instructions

The reference matrix on the crimping tool indicates the correct seat of the positioner (POS M1, F2, M3, F4, M5, F6) to select, and the crimping depth (SET) to adjust for the contact to be crimped.

The contact is inserted through the crimper entry hole on the opposite side of the positioner.

The contact is closed by closing the handles in the first stop position, in order to prevent the contact coming out off the crimper and to facilitate fitting the conductor in the contact.

The precision stop mechanism with teeth ensures consistently precise crimps, by forcing the crimper to close completely and finish the crimping cycle before the crimper can be re-opened.

## Tool adjustment

### Positioner seat = M1 (male) - F2 (female)

| CDMA/D - RDM2D (male)<br>CDFA/D - RDF2D (female) | Section<br>(mm <sup>2</sup> ) | Crimp<br>depth (mm) |
|--|-------------------------------|---------------------|
| 0,3  | 0,14<br>0,25<br>0,37          | 1,3                 |
| 0,5  | 0,5                           | 1,55                |
| 0,7  | 0,75                          | 1,55                |
| 1,0  | 1,0                           | 1,55                |
| 1,5  | 1,5                           | 1,55                |
| 2,5  | 2,5                           | 1,55                |

### Positioner seat = M3 (male) - F4 (female)

| CCMA/D - RCM2D (male)<br>CCFA/D - RCF2D (female) | Section<br>(mm <sup>2</sup> ) | Crimp<br>depth (mm) |
|--|-------------------------------|---------------------|
| 0,3  | 0,14                          | 1,2                 |
| 0,3  | 0,25-0,37                     | 1,3                 |
| 0,5  | 0,5                           | 1,55                |
| 0,7  | 0,75                          | 1,55                |
| 1,0  | 1,0                           | 1,55                |
| 1,5  | 1,5                           | 1,8                 |
| 2,5  | 2,5                           | 1,8                 |
| 3,0  | 3,0                           | 1,9                 |
| 4,0  | 4,0                           | 2,0                 |

### Positioner seat = M5 (male) - F6 (female)

| CXMA/D - RXM2D (male)<br>CXFA/D - RXF2D (female) | Section<br>(mm <sup>2</sup> ) | Crimp<br>depth (mm) |
|--|-------------------------------|---------------------|
| 1,5  | 1,5                           | 1,55                |
| 2,5  | 2,5                           | 1,8                 |
| 4,0  | 4,0                           | 2,0                 |
| 6,0  | 6,0                           | 2,5                 |
| 10,0   | 10,0                          | 2,3                 |

## 5. Calibration check

The crimping tool is adjusted in the manufacturer's plant.  
To ensure correct calibration, we advise you to check the tool with a gauge every working day.

This is easily done with the CCPNP RN cylindrical gauge in the 2,0 mm Ø position.

**ATTENTION!** Do not crimp the gauge.

Crimp depth of 2 mm can be adjusted with the adjustment knob (scale marked on "2", screw indicator on "0" as shown in the above figure).

Put the crimping tool in the completely position.

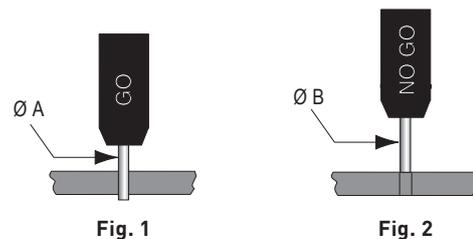
"GO" - Insert the end of the gauge as shown (Fig. 1).

The gauge must pass freely between the indenter tips.

"NO GO" - Insert the end of the gauge as shown (Fig. 2).

The gauge should not pass through the opening.

| Gauge    | tool selector<br>pos. No. | Ø A<br>GO | Ø B<br>NO GO |
|----------|---------------------------|-----------|--------------|
| CCPNP RN | 2,00 (mm)                 | 1,94 (mm) | 2,06 (mm)    |



## 6. Maintenance and repair

Keep the crimping tool clean and store it correctly when not in use.

The joints need to be lubricated periodically, and the pin stop circular clips must always stay in position.

This is a high precision crimping tool and must be used as such.

## Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|   |            |
|---|------------|
| <b>CQ</b> (CI, RI HNM contacts, 21 poles) (5 A) | <b>190</b> |
| <b>MIXO</b> (CI, RI HNM contacts, 25 poles)     | <b>284</b> |
| <b>MIXO Gigabit</b> (CI contacts, 8 poles)      | <b>286</b> |
| <b>MIXO BUS</b> (CI contacts, 8 poles) (5 A)    | <b>293</b> |
| <b>MIXO D-SUB</b> (CI contacts, 9 poles) (5 A)  | <b>296</b> |

### manual crimping tool positioner - gauge



### insertion / removal tool



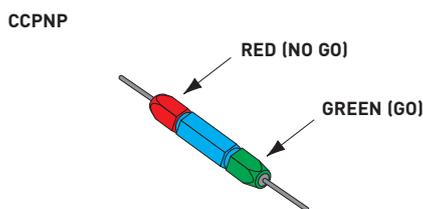
| description  | part No.      | part No.      |
|--|---------------|---------------|
| crimping tool for <b>CI, RI HNM</b> contacts DANIELS AFM8 model ( <b>positioner excluded</b> )   | <b>CIPZ D</b> |               |
| positioner (DANIELS K1450I) for <b>CI, RI HNM</b> contacts (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD series)  | <b>CITP D</b> |               |
| "go / no go" control gauge (DANIELS G125) to verify indenter closure (see note)  | <b>CCPNP</b>  |               |
| insertion tool:<br>for insertion of the contacts into the inserts, and removal tool:<br>for the extraction of contacts from the inserts<br>for <b>CI, RI HNM</b> contacts 0,2 - 0,5 mm <sup>2</sup> (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD series) |               | <b>CIVES</b>  |
| for <b>CI, RI HNM</b> contacts 0,75 mm <sup>2</sup> (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD Series)   |               | <b>CIES B</b> |

**Notes:**  
"go / no go" control gauge  
conforms with international standard MIL-C-22520/3  
- A tool used to periodically check that the crimping tool meets standard requirements.

**CIFA - CIMA - CIFD - CIMD  
CIF2D - CIM2D - CIFJD - CIMJD  
RIFD - RIMD**

|      |                 |           |
|------|-----------------|-----------|
| WIRE | mm <sup>2</sup> | 0,08-0,75 |
| WIRE | AWG             | 28 - 18   |
| SEL  | NO.             | 7         |

**CITP D**



# Use and maintenance instructions

## 1. General specifications

The **CIPZ D crimping tool** (Daniels designation AFM8) conforms to the U.S. Military Standard **MIL-C-22520/2C** (designation M22520/2-01) <sup>1)</sup>. Crimping is performed with 8 pressure points and the tool is equipped with a geared mechanism to control the complete crimping cycle.

The tool must be equipped with an interchangeable positioner (CITP D) according to the series of contacts to be crimped.

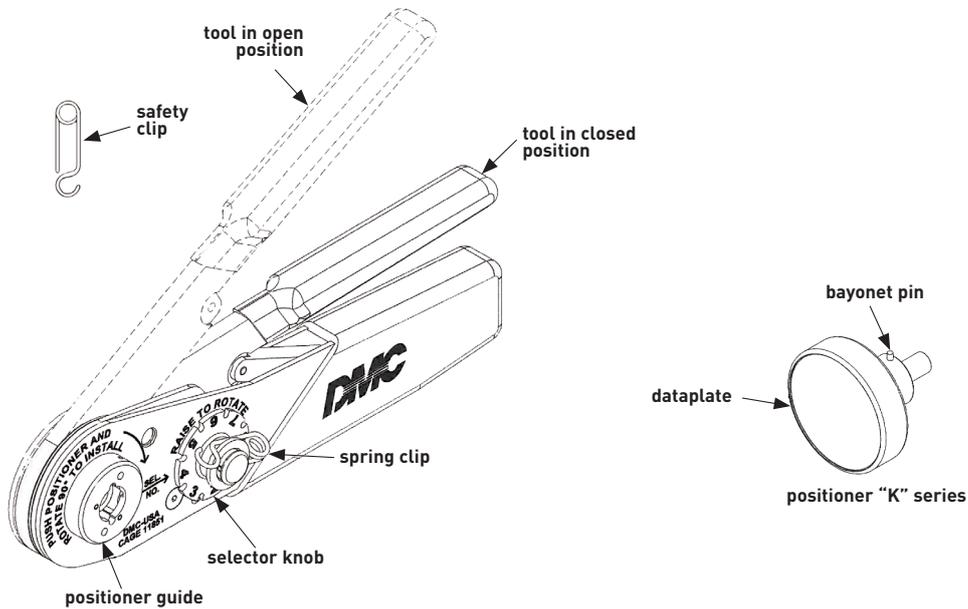
<sup>1)</sup> Since October 2011 the MIL-C-22520 series is being progressively replaced by a corresponding **SAE <sup>1)</sup> AS22520** series. The military series will be fully cancelled once all SAE parts will be published. SAE International, so named since 2006 and established in 1905 as the *Society of Automotive Engineers*, is a U.S.-based, globally active professional association and standards developing organization working in various industries, having as core business the transport industries such as automotive, aerospace, and commercial vehicles.

## 2. Crimping range

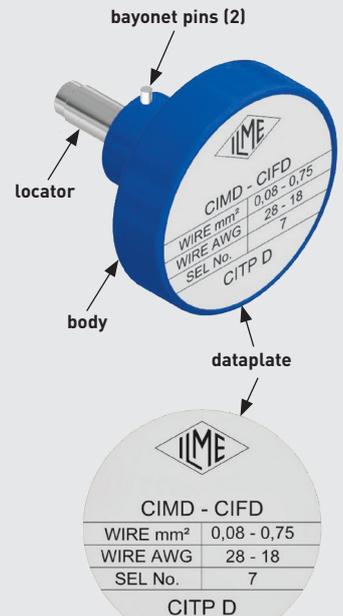
Conductor cross-sectional area range: from 0,08 mm<sup>2</sup> (28 AWG) to 0,52 mm<sup>2</sup> (20 AWG).

### Caution!

The handle of the tool must be in the open position when the positioner is installed, disassembled or opened. If not, the positioner and the crimping tool may be damaged.



Note: dimensions in inches



CITP D positioner

### 3. CITP D positioner installation

- 1 The crimping tool must be in the open position.
- 2 Remove the safety clip from the positioner guide.
- 3 Insert the previously selected **CITP D** positioner into the positioner guide on the head of the tool. Push down and rotate 90 degrees until bayonet pins lock.
- 4 Refer to the data plate on the **CITP D** positioner for the setup of the selector number that determines crimp height, based on the contact size and conductor size.
- 5 With the tool in open position, remove the spring clip then raise and rotate selector knob until number indicated on data plate for conductor size to be crimped is in line with SEL. NO. arrow. Reinstall spring clip to avoid unintended change of setup

### 4. Crimping instructions

- 1 Insert the contact and the prepared (correctly stripped) conductor through the indenter opening in the positioner.
- 2 Squeeze the crimping tool handles together until ratchet releases. Handles will return to open position.
- 3 Check the position of the crimping on the contact crimp barrel. Ideally, the crimping should be between the inspection hole and the top edge of the crimp barrel.

The edge of the contact barrel should not result squared and the inspection hole should remain intact.

### 5. Removing the CITP D positioner

With the crimping tool in the open position, to disassemble the positioner, push down on the positioner to release the bayonet pins from the positioner guide. Turn 90 degrees anticlockwise and remove the positioner from the tool.

### 6. Instructions to check calibration

The operations to check the crimping tool must be carried out with the dial selector in position 8 and the CCPNP gauge.

**CAUTION!** Do not crimp gauge!

#### 6.1 Calibration check

Put the crimping tool in the completely closed position.

“GO” - Insert the end (green) of the gauge as shown (Fig. 1).

The gauge must pass freely between the indenter tips.

“NO GO” - Insert the end (red) of the gauge as shown (Fig. 2).

The gauge should not pass through the opening.

| Gauge | tool selector pos. No. | $\varnothing A \pm 0,00254$ mm (GO) green | $\varnothing B \pm 0,00254$ mm (NO GO) red |
|-------|------------------------|---|--|
| CCPNP | 8                      | 0,991 (mm)                                | 1,118 (mm)                                 |
|       |                        | 0,0390 (in)                               | 0,0440 (in)                                |

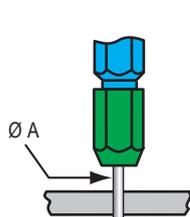


Fig. 1

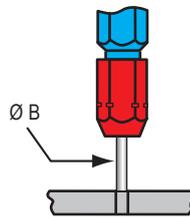


Fig. 2

### 7. Crimping tool maintenance

No maintenance is required. However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per SAE (MIL) standards are identified by coloured bands in the crimping area) and any other debris. A small wire brush may be used for this purpose.

The following is strongly recommended:

- 1 DO NOT immerse the tools in a solution to clean them.
- 2 DO NOT brush oil in the tools to lubricate them.
- 3 DO NOT try to disassemble the tool or repair it.

This is a high-precision manual crimping tool and must be used as such.



## Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

**CX 6/6** (100 A) **206**  
**MIXO** (200 A/100 A/70 A) **262 - 266**

manual crimping tool  
 crimping dies



removal tool



| description   | part No.   | part No.    |
|---|--|-------------|
| crimping tool for <b>70 A/100 A/200 A</b> series contacts<br>basic tool mod. CEMBRE HT 45<br>excluding crimping dies and locators <sup>1)</sup>   | <b>CPPZ C</b>  |             |
| crimping dies<br>for CX7 contacts with 10 mm <sup>2</sup> (AWG 8 - 7) section<br>for CX7 contacts with 16 mm <sup>2</sup> (AWG 6 - 5) section<br>for CX7 contacts with 25 mm <sup>2</sup> (AWG 4 - 3) section   | <b>CGD 10 C</b><br><b>CGD 16 C</b><br><b>CGD 25 C</b>                        |             |
| crimping dies<br>for CG contacts with 10 mm <sup>2</sup> (AWG 8 - 7) section<br>for CG contacts with 16 mm <sup>2</sup> (AWG 6 - 5) section<br>for CG contacts with 25 mm <sup>2</sup> (AWG 4 - 3) section<br>for CG contacts with 35 mm <sup>2</sup> (AWG 2) section             | <b>CGD 10 C</b><br><b>CGD 16 C</b><br><b>CGD 25 C</b><br><b>CGD 35 C</b>     |             |
| crimping dies<br>for CY contacts section 16 mm <sup>2</sup> (AWG 6)<br>for CY contacts section 25 mm <sup>2</sup> (AWG 4) and<br>section 35 mm <sup>2</sup> (AWG 2)<br>for CY contacts section 50 mm <sup>2</sup> (AWG 1)<br>for CY contacts section 70 mm <sup>2</sup> (AWG 2/0) | <b>CGD 25 C</b><br><b>CYD 35 C</b><br><br><b>CYD 50 C</b><br><b>CYD 70 C</b> |             |
| locator<br>for CX7 contacts<br>for CG contacts<br>for CY contacts   | <b>CX7PZ LOC</b><br><b>CGPZ LOC</b><br><b>CYPZ LOC</b>                       |             |
| removal tool for 70A CX7 series contact   |  | <b>C7ES</b> |

<sup>1)</sup> part No. **CPPZ CF**: manual crimping tool carrying case (CGPZ VLG) complete with crimping tool (CPPZ C), crimping dies (CGD/CYD) and locator (CX7PZ LOC, CGPZ LOC, CYPZ LOC).

**NOTE:**

For **CGMA 35** and **CGFA 35** contacts, and their corresponding **CGD 35 C** matrix pair, the contact may be inserted even after closing the head.

| part No.        | punching | contacts                                   | AWG min [mm <sup>2</sup> ] |                            |                            |
|-----------------|----------|--|----------------------------|----------------------------|----------------------------|
|                 |          |  | mm <sup>2</sup>            | AWG min [mm <sup>2</sup> ] | AWG max [mm <sup>2</sup> ] |
| <b>CGD 10 C</b> | ME 2     | <b>CX7MA 10, CX7FA 10, CGT 6.0, CGT 10</b> | 10                         | 8 (8,4)                    | 7 (10,6)                   |
| <b>CGD 16 C</b> | ME 3     | <b>CX7MA 16, CX7FA 16</b>                  | 16                         | 6 (13,3)                   | 5 (16,8)                   |
| <b>CGD 25 C</b> | ME 5     | <b>CX7MA 25, CX7FA 25</b>                  | 25                         | 4 (21,2)                   | 3 (26,7)                   |
| <b>CGD 10 C</b> | ME 2     | <b>CGMA 10, CGFA 10</b>                    | 10                         | 8 (8,4)                    | 7 (10,6)                   |
| <b>CGD 16 C</b> | ME 3     | <b>CGMA 16, CGFA 16, CGT 16</b>            | 16                         | 6 (13,3)                   | 5 (16,8)                   |
| <b>CGD 25 C</b> | ME 5     | <b>CGMA 25, CGFA 25, CGT 25</b>            | 25                         | 4 (21,2)                   | 3 (26,7)                   |
| <b>CGD 35 C</b> | ME 7     | <b>CGMA 35, CGFA 35</b>                    | 35                         | —                          | 2 (33,6)                   |
| <b>CGD 25 C</b> | ME 5     | <b>CYMA 16, CYFA 16</b>                    | 16                         | 6 (13,3)                   | —                          |
| <b>CYD 35 C</b> | ME 9     | <b>CYMA 25, CYFA 25</b>                    | 25                         | 4 (21,2)                   | —                          |
|                 |          | <b>CYMA 35, CYFA 35</b>                    | 35                         | 2 (33,6)                   | —                          |
| <b>CYD 50 C</b> | ME 12    | <b>CYMA 50, CYFA 50</b>                    | 50                         | 1 (42,4)                   | —                          |
| <b>CYD 70 C</b> | ME 17    | <b>CYMA 70, CYFA 70</b>                    | 70                         | 2/0 (67,4)                 | —                          |



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# Use and maintenance instructions

## General specifications

The **CPPZ C crimping tool** is a hydraulically operated tool suitable for manually crimping contact series (70A/100A/200A max) removable crimp contacts which may be used in MIXO series type **CX7**, **CG**, **CY** and **CGT** adapters. By using a suitable, hexagonal footprint crimp matrix pair, these pliers allow crimped connections to be made which conform to the highest quality standards.

The main features of these pliers are listed below:

- Scope of application: suitable for crimping wire terminals for up to 150 mm<sup>2</sup> flexible copper wires.
- Force developed: 50 kN (6 tons).
- Nominal operating pressure: 600 bar (8.600 psi).
- Dimensions: length 346 mm (13,6");
  - width (locked moving handle) 130 mm (5,1");
  - width (free moving handle) 250 mm (9,8").
- Weight: (without matrixes and without ILME locator) 2,0 kg (4,4 lbs).
- Recommended oil: AGIP ARNICA 32 or SHELL TELLUS OIL TX 32 or equivalent.
- Other features: please read the user and maintenance manual supplied with the tool.

The pliers are equipped with a locator specifically designed for ILME crimp contacts to be mounted on the moving part of the pliers head by means of the Allen screw provided.

**NOTE:** It is possible to use the CPPZ C pliers with the CX7 70 A, CG 100 A and CY 200 A contact series, by simply fitting the CX7PZ LOC, CGPZ LOC or CYPZ LOC locator and crimping matrixes to be purchased separately.

**WARNING:** For crimping the CGT adapters, the crimp locating operation must be carried out by the user.

## User instructions

### 1. Preliminary operations

According to requirements, the pliers can be fitted with one or more pairs of crimp matrixes selected from the matrixes listed in the catalogue, to crimp the contacts shown in the table page 720.

**NOTE:** The crimp contacts are only suitable for crimping flexible copper wires featuring a nominal section shown in the table with the crimp matrixes shown in the table. Any contacts – wires – matrixes combination which does not conform to these instructions is not physically possible (ex: using 35 mm<sup>2</sup> contacts with CGD 25 C matrixes is not possible because the pliers head would not close) or produces non conforming crimped connections or not usable in the MIXO series.

Open the tool head by moving the matrix supporting hook ③ outwards until the matrix support ① is released.

With reference to **Figures 1 and 2**, select a pair of matrixes suitable to the type of contact and insert them in the housings: one in the matrix support ①, the other one in the matrix pusher support ②. (NB: the two matrixes of each pair are the same).

Insert the contact by resting it in the locator with the tip forward, then close the head.

The contact crimp housing will be accessible in the mouth between the matrixes.

Remove the moving handle ④ by removing the handle locking belt from the handle.

Before carrying out the next operations, make sure the head is fully closed to avoid damages.

The pliers head can rotate by 180° in relation to the body, thus allowing the operator to work in the most comfortable position.

**WARNING: do not force the head by trying to rotate it when the tool is under pressure.**

### 2. Approaching the matrixes

If possible closing the dies, rest the pliers head on a work top, then move the moving handle to start moving the matrixes closer to the contact, then carry on moving them until the contact is locked between the matrixes.

Push the correctly stripped and suitable long (15 mm) wire all the way in the contact (or the CGT adapters) crimp housing by carefully checking that the braids are fully compacted, are not damaged and, above all, are all fully inserted. Correctly pushing the contact in the locator ensures that the matrixes are exactly in the right area to compress (the contact crimp shaft centre). Make sure that the locator is free from any residue which would alter

the position of the contact. For crimping the CGT 16 earth adapter, manually locate the area to be crimped between the matrixes. If necessary, re-open the matrixes by following the instructions described in paragraph 4 and reposition the contact.

### 3. Crimping

Continue to operate the moving handle (pumping): the piston will gradually move forward until the matrixes come into contact.

Continue the pumping action until the maximum pressure valve clicks in.

### 4. Releasing the dies

Fully press the pressure release lever ⑤ located on the pliers pumping body until the piston goes back and the matrixes open.

To remove the crimped contact, re-open the pliers head.

### 5. Storage

Fully return the piston as described in paragraph 4, then lock the moving handle in position by using the belt provided.

## Cleaning and maintenance

The tool is very sturdy and does not require any special care; a correct operation is ensured by following a few simple precautions.

The tool is supplied with a user and maintenance manual, which gives all detailed instructions. Read this manual before use.

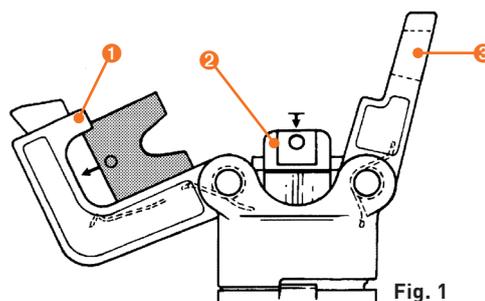


Fig. 1

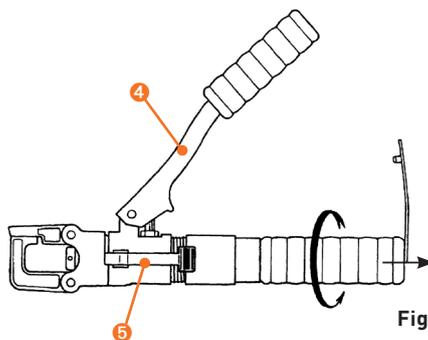


Fig. 2

## CGPZ VLG carrying case



- for CPPZ C \* crimping tool
- dimensions 445 x 290 x h 95 mm
- weight 1,2 kg
- houses 20 pairs of matrixes

\* to store the CPPZ C crimping tool inside the carrying case, turn the pliers head by 180° so that the locator becomes visible.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |             |           |
|-----------------|-------------|-----------|
| CD              | (10 A)      | 66 - 74   |
| CDD             | (10 A)      | 76 - 83   |
| CDC             | (16 A)      | 104 - 106 |
| CCE             | (16 A)      | 130 - 135 |
| CMCE            | (16 A)      | 137 - 145 |
| CQE             | (16 A)      | 168 - 173 |
| CQEE            | (16 A)      | 176 - 177 |
| CQ              | (10 A/16 A) | 186 - 193 |
| CX 8/24         | (16 A/10 A) | 194       |
| CX 6/36 *       | (10 A)      | 198       |
| CX 12/2 *       | (10 A)      | 199       |
| RX 12/2 * (HNM) | (10 A)      | 221       |
| CX 6/6 *        | (16 A)      | 206       |
| RD (HNM)        | (10 A)      | 208 - 209 |
| RDD (HNM)       | (10 A)      | 210 - 213 |
| RCE (HNM)       | (16 A)      | 214 - 217 |
| RQEE (HNM)      | (16 A)      | 218 - 219 |
| MIXO            | (10 A/16 A) | 271 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## pneumatic crimping tool positioner - gauge



## insertion tool - removal tools replacement tip

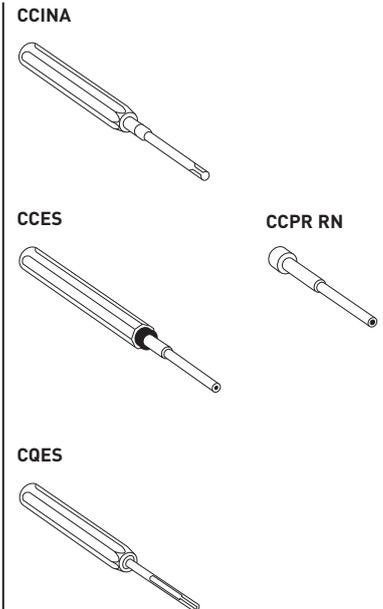
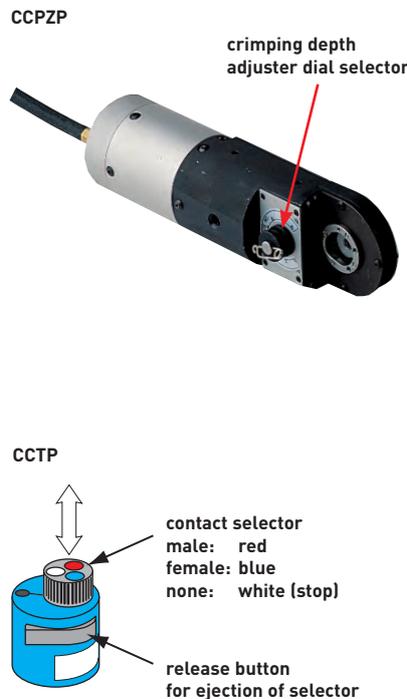
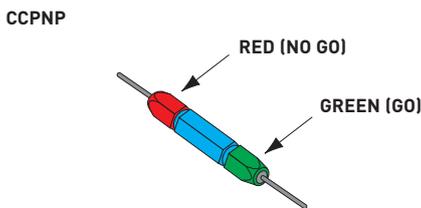


| description  | part No.                         | part No.                   |
|--|----------------------------------|----------------------------|
| pneumatic crimping tool for <b>10 A</b> and <b>16 A</b> contacts model DANIELS WA27F (turret excluded)   | <b>CCPZP</b>                     |                            |
| positioner (see note)<br>for <b>10 A</b> contacts ( <b>CD</b> and <b>RD HNM</b> series)<br>for <b>16 A</b> contacts ( <b>CC</b> and <b>RC HNM</b> series)  | <b>CCTP 10</b><br><b>CCTP 16</b> |                            |
| bench support for CCPZP pneumatic crimping tool (DANIELS BM-2A)  | <b>CCSPZP</b>                    |                            |
| pneumatic foot valve (DANIELS WA10A)   | <b>CCVPP</b>                     |                            |
| "go / no go" control gauge to verify indenter closure (see note)   | <b>CCPNP</b>                     |                            |
| insertion tool<br>for insertion of the contacts into the inserts<br>for crimped contacts up to 0,75 mm <sup>2</sup>  |                                  | <b>CCINA</b>               |
| removal tools<br>for the extraction of contacts from the inserts<br>for <b>10 A</b> contacts ( <b>CD</b> and <b>RD HNM</b> series) <sup>1)</sup><br>for <b>16 A</b> contacts ( <b>CC</b> and <b>RC HNM</b> series) <sup>2)</sup> |                                  | <b>CCES</b><br><b>CQES</b> |
| replacement tip<br>for CCES removal tool   |                                  | <b>CCPR RN</b>             |

1) for CQ, CD, RD, CDD, RDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)  
2) for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC. For CMCE (16+2), CX inserts (contacts 16 A insert CX 8/24) using a flat 3 mm screwdriver.

**Notes:**  
**Positioner**  
conforms to international standard MIL-C-22520/1  
- An interchangeable and indispensable accessory of the CCPZP crimping tool, it precisely positions the contact where crimping is performed. Each series of contacts requires its own turret.

**"go / no go" control gauge**  
conforms with international standard MIL-C-22520/3  
- A tool used to periodically check that the crimping tool meets standard requirements.



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# Use and maintenance instructions

## 1. General specifications

This is the pneumatic version of the **DANIELS AF8 crimping tool** (CCPZ MIL). Crimping is performed with 8 pressure points.

The tool is equipped with a geared mechanism to control the complete crimping cycle.

**The tool must be equipped with an interchangeable turret (CTP) according to the series of contacts to be crimped.**

It is possible to use a hand valve (located on the crimping tool) or a foot valve (optional). The tool operating pressure is 5,5 - 8,3 bar. It is recommended to utilise an adjustment and air filtering unit.

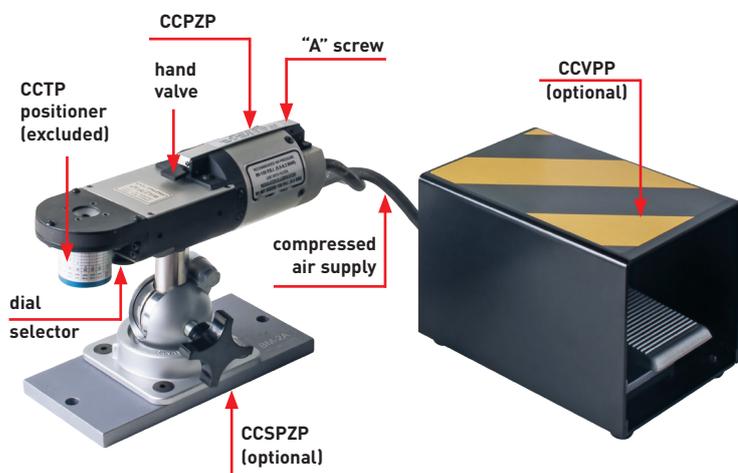
### 1.1 Crimping range

Conductor cross-sectional area range: from 0,14 mm<sup>2</sup> (26 AWG) to 4 mm<sup>2</sup> (12 AWG).

### 1.2 Operation with pneumatic foot valve (optional)

Connect the foot valve between the compressed air source and the tool air inlet.

Lower the hand valve on the tool and stop it in the lowered position with the stop "A" screw using a 1/16" (1,5 mm) Allen wrench.



## 2. Checking the crimping complete cycle control mechanism

Correct operation can be checked based on the following procedure:

- 1 Install a CCTP turret (see point 3).
- 2 Reduce the pressure to 1 bar.
- 3 Using a contact that corresponds to the installed turret, with size 0,5, and a wire with section 0,5 mm<sup>2</sup>, use the crimping tool, referring to the crimping instructions. The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.
- 4 To release the partially crimped contact, increase the air pressure of the line to 5,5 - 8,3 bar and again use the crimping tool. It will then complete the crimping, allowing the indenters to return to the fully open position.

## 3. CCTP positioner installation (Fig. A)

- 1 Position the previously selected CCTP positioner on the support ring located on the crimping tool (matching the special pin on the base of the turret with the corresponding hole on the support ring), aligning the tapped holes with the socket head screws.
- 2 With the CCTP positioner positioned against the support ring, tighten the socket head screws with the 9/64" (3,5 mm) Allen wrench (supplied with the kit).
- 3 Refer to the data plate on the CCTP positioner. From the colour code column, select the colour of the positioner that corresponds to the appropriate code and dimension of the contact to be crimped.
- 4 With the CCTP positioner in the adjustment position, turn the turret selector until the colour-coded positioner is aligned with the indicator line. Press the turret until it clicks into the connected position.
- 5 Refer to the data plate on the CCTP positioner. From the column indicating the proper conductor section, determine the number that corresponds to the contact being used.
- 6 Remove the retaining hook from the crimping tool dial selector. Lift the dial selector and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).

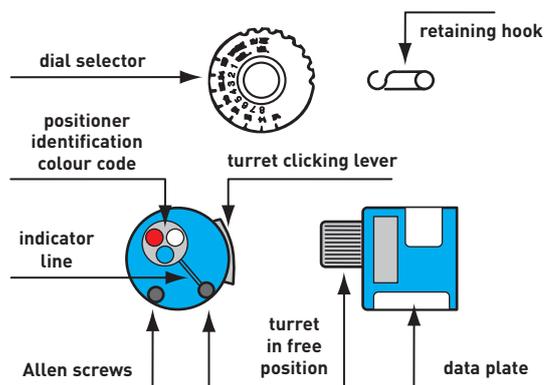


Fig. A

## 4. Crimping instructions

- 1 Insert the contact and the prepared conductor through the opening of the indenter in the turret positioner.
- 2 Activate the hand valve or the foot valve. Once crimping has been completed, the tool will return to the open position.
- 3 Check the position of the crimping on the contact crimping foot. Ideally, the crimping should be between the inspection hole and the top edge of the crimping foot. The head of the contact should not be squared and the inspection hole should be intact.

## 5. Releasing a partially crimped contact

To release a partially crimped contact, do the following:

- 1 Increase the air pressure to 8,3 bar and use the crimping tool. If the increase in air pressure does not release the contact, do the following.
- 2 Turn the dial selector clockwise to the highest lockable setting (the dial selector must be in the blocked position before continuing). Use the crimping tool.
- 3 If it does not release after several attempts, contact the ILME offices.

## 6. Removing the CCTP positioner

With the crimping tool in the open position, to disassemble the turret, loosen the socket head screws using the 9/64" (3,5 mm) Allen wrench (supplied with the kit). After the threads are released from the support ring, pull off the turret with a straight movement.

## 7. Instructions to check calibration

The operations to check the crimping tool must be carried out with the dial selector in position 4 and the CCPNP gauge.

**ATTENTION! Do not crimp the gauge.**

### 7.1 Calibration check

Put the crimping tool in the completely closed position.

"GO" - Insert the end (green) of the gauge as shown (Fig. 1).

The gauge must pass freely between the indenter tips.

"NO GO" - Insert the end (red) of the gauge as shown (Fig. 2).

The gauge should not pass through the opening.

| Gauge | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|-------|------------------------|-----------------------------|------------------------------|
| CCPNP | 4                      | 0,991 (mm)<br>0,0390 (in)   | 1,118 (mm)<br>0,0440 (in)    |

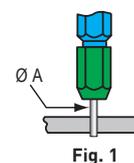


Fig. 1

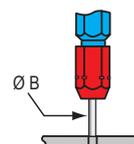


Fig. 2

## 8. Crimping tool maintenance

No maintenance is required.

However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris. A metal brush may be used for this purpose.

The following is strongly recommended:

- 1 DO NOT immerse the tools in a solution to clean them.
  - 2 DO NOT brush oil in the tools to lubricate them.
  - 3 DO NOT try to disassemble the tool or repair it.
- This is a high precision crimping tool and must be used as such.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |             |           |
|-----------------|-------------|-----------|
| CD              | (10 A)      | 66 - 74   |
| CDD             | (10 A)      | 76 - 83   |
| CDC             | (16 A)      | 104 - 106 |
| CCE             | (16 A)      | 130 - 135 |
| CMCE            | (16 A)      | 137 - 145 |
| CQE             | (16 A)      | 168 - 173 |
| CQEE            | (16 A)      | 176 - 177 |
| CQ              | (10 A/16 A) | 186 - 193 |
| CX 8/24         | (16 A/10 A) | 194       |
| CX 6/36 *       | (10 A)      | 198       |
| CX 12/2 *       | (10 A)      | 199       |
| RX 12/2 * (HNM) | (10 A)      | 221       |
| CX 6/6 *        | (16 A)      | 206       |
| RD (HNM)        | (10 A)      | 208 - 209 |
| RDD (HNM)       | (10 A)      | 210 - 213 |
| RCE (HNM)       | (16 A)      | 214 - 217 |
| RQEE (HNM)      | (16 A)      | 218 - 219 |
| MIXO            | (10 A/16 A) | 271 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## pneumatic crimping tool with automatic positioner inserts - gauge



## insertion tool - removal tools replacement tip

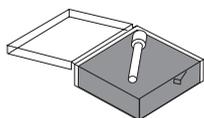


| description   | part No.       | part No.                   |
|---|----------------|----------------------------|
| crimping tool with automatic positioner model DANIELS WA27FAP (inserts excluded)  | <b>CCPZPA</b>  |                            |
| positioner inserts (see note)   |                |                            |
| male contacts <b>10 A</b> (CDM and RDM HNM series)  | <b>CCTPADM</b> |                            |
| female contacts <b>10 A</b> (CDF and RDF HNM series)  | <b>CCTPADF</b> |                            |
| male contacts <b>16 A</b> (CCM and RCM HNM series)  | <b>CCTPACM</b> |                            |
| female contacts <b>16 A</b> (CCF and RCF HNM series)  | <b>CCTPACF</b> |                            |
| "go / no go" control gauge to verify indenter closure (see note)  | <b>CCPNP</b>   |                            |
| insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0,75 mm <sup>2</sup>   |                | <b>CCINA</b>               |
| removal tools for the extraction of contacts from the inserts for <b>10 A</b> contacts (CD and RD HNM series) <sup>1)</sup> for <b>16 A</b> contacts (CC and RC HNM series) <sup>2)</sup> |                | <b>CCES</b><br><b>CQES</b> |
| replacement tip for CCES removal tool   |                | <b>CCPR RN</b>             |

- 1) for CQ, CD, RD, CDD, RDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)
- 2) for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC. For CMCE (16+2), CX inserts (contacts 16 A insert CX 8/24) using a flat 3 mm screwdriver.

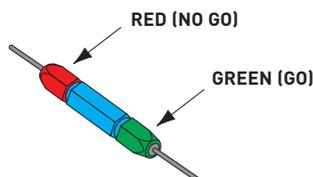
**Notes:**  
**Positioner inserts**  
 - Interchangeable and indispensable accessories of the CCPZPA crimping tool precisely position the contact where crimping is performed.  
 Each contact requires its own positioner insert selected according to the type of contact (10 A or 16 A) and the kind (male or female).

**CCTPADM and CCTPADF**  
**CCTPACM and CCTPACF**

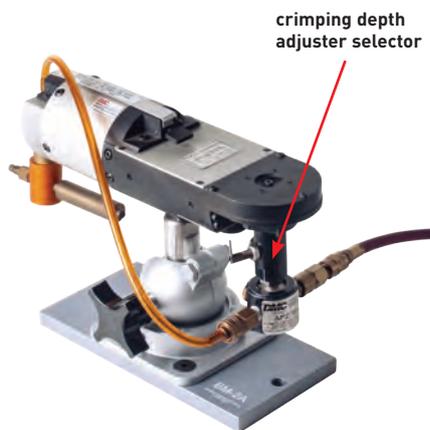


**"go / no go" control gauge**  
 conforms with international standard MIL-C-22520/3  
 - A tool used to periodically check that the crimping tool meets standard requirements.

**CCPNP**



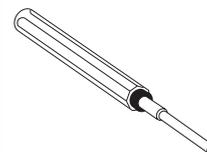
**CCPZPA**



**CCINA**



**CCES**



**CCPR RN**



**CQES**



# Use and maintenance instructions

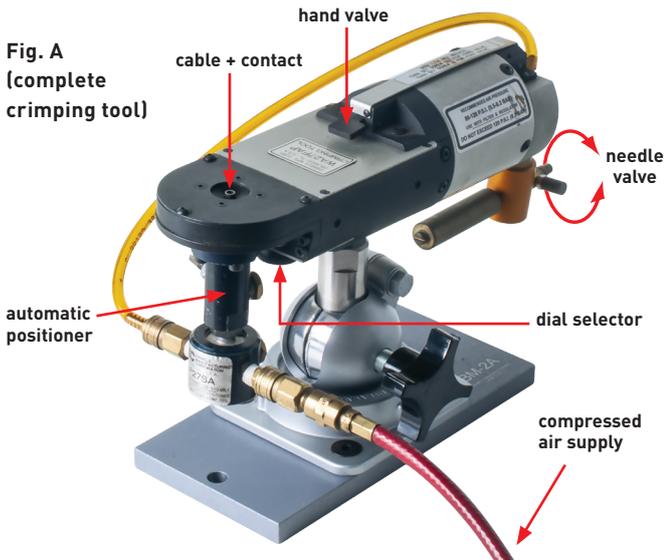
## 1. General specifications

This is the pneumatic version of the manual crimping tool. Crimping is performed with 8 pressure points. The tool is equipped with a geared mechanism to control the complete crimping cycle. Thanks to the automatic positioner it is possible to crimp simply by inserting the uncrimped contact + wire into the tool crimping cavity. **It is also necessary to order the interchangeable positioner inserts relative to the series of contacts to be crimped.**

The tool operating pressure is 5,5 - 8,3 bar. It is recommended to utilise an adjustment and air filtering unit.

### 1.1 Crimping range

Conductor cross-sectional area range: from 0,12 mm<sup>2</sup> (26 AWG) to 4 mm<sup>2</sup> (12 AWG).



## 2. Installation or replacement of a positioner insert

- 1 Disconnect the workshop compressed air source.
- 2 Disconnect the air hoses from the automatic positioner (rapid connectors).
- 3 Remove the connection screws, using the 9/64" (3,5 mm) Allen wrench (supplied with the kit), to separate the automatic positioner from the crimping tool.

The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.

- 4 Unscrew the positioner closing housing.
- 5 Install or replace the proper positioner insert in the positioner housing, replacing the underlying spring.
- 6 Reverse the operations, as described from point 4 to point 1.

## 3. Crimping position adjustment (Fig. B)

- 1 Release the automatic positioner from the crimping tool body (see points 1 and 2 "Installation or replacement of a positioner insert").
- 2 While holding the body positioner in position using a 19 mm wrench, loosen the lock nut with a 14 mm wrench.
- 3 Push the positioner insert toward the bottom and lock it using the lock pin. The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.
- 4 If the pin doesn't lock, unscrew the body valve toward the bottom.
- 5 With the pin locked, tighten the body valve toward the top until it strikes against the positioner insert.
- 6 While maintaining that position, tighten the lock nut.
- 7 Replace and connect the positioner on the crimping tool.
- 8 Release the lock pin in the "free" position.

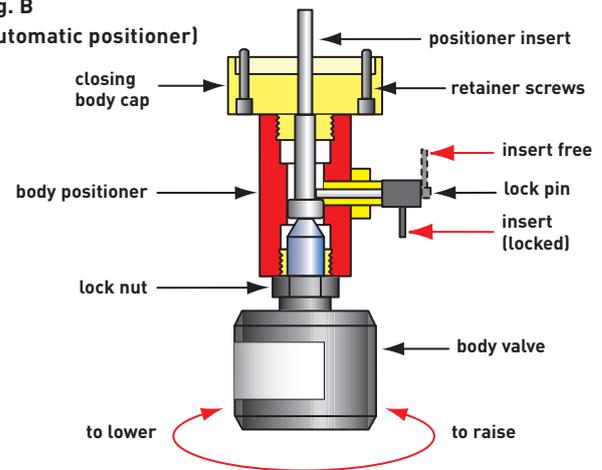
## 4. Checking the crimping complete cycle control mechanism

Correct operation can be checked based on the following procedure:

- 1 Reduce the pressure to 1 bar.
- 2 Using a contact that corresponds to the installed positioner, with size 0,5 and a wire with section 0,5 mm<sup>2</sup>, use the crimping tool, referring to the crimping instructions. The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.
- 3 To release the partially crimped contact, increase the air pressure of the line to 5,5 - 8,3 bar and again use the crimping tool. It will then complete the crimping, allowing the indenters to return to the fully open position. The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.

Fig. B

(automatic positioner)



## 5. Crimping instructions

- 1 To obtain the suitable selector number, refer to the data plate located on the cover of the positioner insert case, and adjust the dial selector as specified.
- 2 Insert the contact and the prepared conductor through the opening of the indenter in the crimping tool casing (Fig. A).
- 3 Exert slight pressure until the crimping tool automatically crimps the contact. **CAUTION: Wire sections less than 0,34 mm<sup>2</sup> (24 AWG) up to 0,08 mm<sup>2</sup> (28 AWG) or equivalent are not sufficiently rigid, so that it may be rather difficult to push the contact + wire.**
- 4 Check the position of the crimping on the contact crimping foot. Ideally, the crimping should be between the inspection hole and the top edge of the crimping foot. The head of the contact should not be squared and the inspection hole should be intact.

## 6. Instructions to check calibration

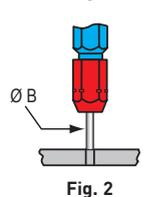
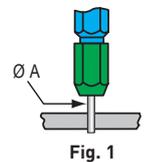
The operations to check the crimping tool must be carried out with the dial selector in position 4 and the CCPNP gauge.

**ATTENTION! Do not crimp the gauge.**

### 6.1 Calibration check

- 1 Disconnect the compressed air.
- 2 Push the positioner insert toward the bottom and lock it using the lock pin.
- 3 Reconnect the compressed air.
- 4 Turn the needle valve counterclockwise to open the air supply (Fig. A).
- 5 The indenters will extend and remain in the extracted position until the valve is closed.
- 6 Check using the gauge, referring to the "go / no go" instructions reported below.
- 7 When the calibration check has been completed, close the needle valve turning it clockwise (Fig. A).
- 8 Put the lock pin in the "free" position.
  - "GO" - Insert the end (green) of the gauge as shown (Fig. 1). The gauge must pass freely between the indenter tips.
  - "NO GO" - Insert the end (red) of the gauge as shown (Fig. 2). The gauge should not pass through the opening.

| Gauge | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|-------|------------------------|-----------------------------|------------------------------|
| CCPNP | 4                      | 0,991 (mm)<br>0,0390 (in)   | 1,118 (mm)<br>0,0440 (in)    |



## 7. Crimping tool maintenance

No maintenance is required. However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris. A metal brush may be used for this purpose. The following is strongly recommended:

1. DO NOT immerse the tools in a solution to clean them.
  2. DO NOT brush oil in the tools to lubricate them.
  3. DO NOT try to disassemble the tool or repair it.
- This is a high-precision crimping tool and must be used as such.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |           |           |
|-----------------|-----------|-----------|
| CQ4 02          | (40A)     | 182       |
| CQ4 02 H        | (40A)     | 183       |
| CQ4 03          | (40A)     | 184       |
| CQ 04/2 *       | (40A/10A) | 191       |
| CX 6/12 *       | (40 A)    | 197       |
| CX 6/36 *       | (40 A)    | 198       |
| CX 12/2 *       | (40 A)    | 199       |
| RX 12/2 * (HNM) | (40 A)    | 221       |
| MIXO            | (40 A)    | 267 - 272 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## pneumatic crimping tool positioner – gauge



CCSPZP

CCVPP

## removal tool



description

part No.

part No.

pneumatic crimping tool for **40 A** contacts model DANIELS WA27-309-EP (bench support, positioner and control gauge are optional, pneumatic foot valve with 2,7 m air hose is supplied with tool)

CXPZP D

positioner (see note) for **40 A** contacts (**CX** and **RX HNM** series)

CXTP 40

bench support for CXPZP D pneumatic crimping tool (DANIELS BM-2A)

CCSPZP

"go / no go" control gauge (DANIELS G1005) to verify indenter closure or wear (see note)

CXPNPP

removal tool

for the extraction of contacts from the inserts for **40 A** contacts (**CX** and **RX HNM**) <sup>1)</sup> and cables  $\varnothing \leq 5$  mm for **40 A** contacts (**CX** and **RX HNM**) <sup>2)</sup> and cables  $\varnothing \leq 7,5$  mm

CXES  
CXES-10

- 1) for CX, RX inserts (40 A contacts) and MIXO module (40 A)
- 2) for MIXO module CX 03 4B and contacts 10 mm<sup>2</sup>.

### Notes:

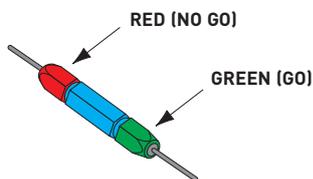
#### Positioner

- An interchangeable and indispensable accessory of the CXPZP D pneumatic crimping tool, it precisely positions the contact where crimping is performed.

#### "go / no go" control gauge

- A tool used to periodically check that the crimping tool meets standard requirements.

#### CXPNPP



#### CXPZP D



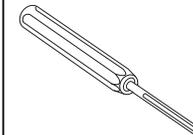
#### CXTP 40



#### CXTP 40

|           |                 |                      |     |     |     |    |
|-----------|-----------------|----------------------|-----|-----|-----|----|
| CONTACT   | CX / RX         | 1.5                  | 2.5 | 4.0 | 6.0 | 10 |
| WIRE SIZE | mm <sup>2</sup> | 1,5                  | 2,5 | 4   | 6   | 10 |
|           | AWG             | 16                   | 14  | 12  | 10  | 8  |
| SEL. NO.  |                 | 5                    | 5   | 5   | 7   | 8  |
| USE WITH  |                 | M309<br>WA-27-309-EP |     |     |     |    |

#### CXES - CXES-10



# Use and maintenance instructions

## 1. General specifications

This is the pneumatic version of the CXPZ D hand crimping tool (DANIELS M309). Crimping is performed with 8 pressure points. The tool is equipped with a geared mechanism to control the complete crimping cycle.

**The tool must be equipped with the interchangeable positioner CXTP 40 suitable for series CX (or RX HNM version) crimp contacts.**

The tool comes already equipped with a pneumatic foot pedal valve (WA10A) attached to the tool through 2,7 m (9 ft.) air hose.

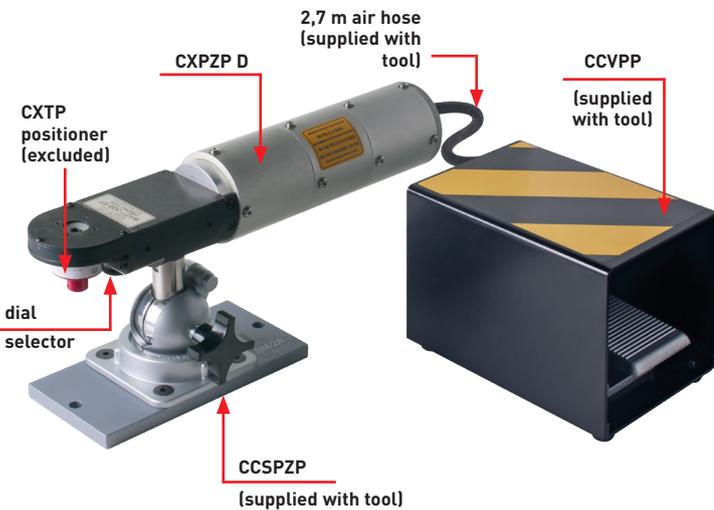
The tool operating pressure is 5,5 – 8,3 bar. It is recommended to utilise a lubrication, adjustment and air filtering unit.

### 1.1 Crimping range

Conductor cross-sectional area range: from 1,5 mm<sup>2</sup> (16 AWG) to 10 mm<sup>2</sup> (8 AWG).

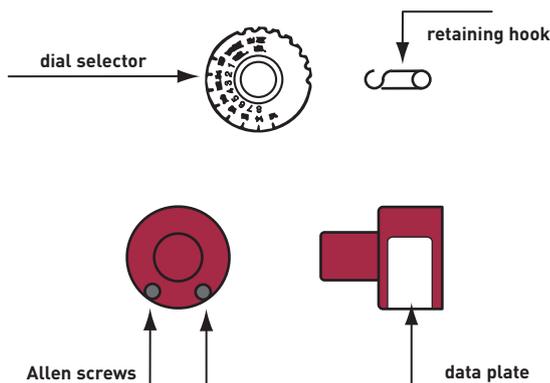
### 1.2 Operation with pneumatic foot valve (supplied with tool)

Connect the foot valve between the compressed air source and the tool air inlet.



## 2. CXTP 40 positioner installation

- Place the CXTP 40 positioner on the support ring located on the crimping tool (matching the special pin on the base of the turret with the corresponding hole on the support ring), aligning the tapped holes with the socket head screws.
- With the CXTP 40 positioner places against the support ring, tighten the socket head screws with the 9/64" (3,5 mm) Allen wrench (supplied with the kit).
- Refer to the dataplate on the CXTP 40 positioner. From the column indicating the proper conductor cross-sectional area, determine the number that corresponds to the contact being used.
- Remove the retaining hook from the crimping tool dial selector. Lift the dial selector and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).



## 3. Checking the crimping complete cycle ratcheting control mechanism

Correct operation can be checked based on the following procedure:

- Install the CXTP 40 positioner (see paragraph 2).
- Reduce the pressure to 1 bar.
- Using a series CX contact that corresponds to the installed turret, e.g. size 1.5, and a wire with cross-sectional area 1.5 mm<sup>2</sup> (16 AWG) use the crimping tool, referring to the crimping instructions. The indenters will not reach the fully closed position and the contact will be internally blocked if the geared mechanism is operating correctly.
- To release the partially crimped contact, increase the air pressure of the line to 5,5 – 8,3 bar and again use the crimping tool. It will then complete the crimping, allowing the indenters to return to the fully open position.

## 4. Removing the CXPT 40 positioner

With the crimping tool in the open position, to disassemble the positioner, loosen the socket head screws using the 9/64" (3,5 mm) Allen wrench (supplied with the kit). After the threads are released from the support ring, pull off the positioner with a straight movement.

## 5. Releasing a partially crimped contact

To release a partially crimped contact, do the following:

- Increase the air pressure to 8.5 bar and use the crimping tool. If the increase in air pressure does not release the contact, do the following.
- Turn the dial selector clockwise to the highest lockable setting (the dial selector must be in the blocked position before continuing). Use the crimping tool.
- If it does not release after several attempts, contact the ILME offices.

## 6. Crimping instructions

- Insert the contact and the prepared conductor through the opening of the indenter in the turret positioner.
- Activate the hand valve or the foot valve. Once crimping has been completed, the tool will return to the open position.
- Check the position of the crimping on the contact crimping foot. Ideally, the crimping should be between the inspection hole and the top edge of the crimping foot. The head of the contact should not be squared and the inspection hole should be intact.

## 7. Instructions to check calibration

The operations to check the crimping tool must be carried out with the dial selector in **position 5** and the **CXPNPP** gauge (DANIELS G1005 – formerly G425, which is equivalent).

**CAUTION! Do not crimp the gauge.**

### 7.1 Calibration check

Put the crimping tool in the completely closed position.

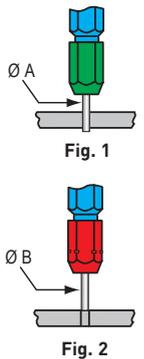
“GO” - Insert the end (green) of the gauge as shown (Fig. 1).

The gauge must pass freely between the indenter tips.

“NO GO” - Insert the end (red) of the gauge as shown (Fig. 2).

The gauge should not pass through the opening.

| Gauge  | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|--------|------------------------|-----------------------------|------------------------------|
| CXPNPP | 5                      | 1,7526 (mm)<br>0,069 (in)   | 1,8796 (mm)<br>0,074 (in)    |



## 8. Crimping tool maintenance

No maintenance is required. However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris. A metal brush may be used for this purpose. The following is strongly recommended

- DO NOT immerse the tools in a solution to clean them.
- DO NOT brush oil in the tools to lubricate them.
- DO NOT try to disassemble the tool or repair it.

This is a high-precision crimping tool and must be used as such.

# Tools and accessories for crimp contacts

for contacts of inserts series (as applicable): page:

|                 |             |           |
|-----------------|-------------|-----------|
| CD              | (10 A)      | 66 - 74   |
| CDD             | (10 A)      | 76 - 83   |
| CDC             | (16 A)      | 104 - 106 |
| CCE             | (16 A)      | 130 - 135 |
| CMCE            | (16 A)      | 137 - 145 |
| CQE             | (16 A)      | 168 - 173 |
| CQEE            | (16 A)      | 176 - 177 |
| CQ              | (10 A/16 A) | 186 - 193 |
| CX 8/24         | (16 A/10 A) | 194       |
| CX 6/36 *       | (10 A)      | 198       |
| CX 12/2 *       | (10 A)      | 199       |
| RX 12/2 * (HNM) | (10 A)      | 221       |
| CX 6/6 *        | (16 A)      | 206       |
| RD (HNM)        | (10 A)      | 208 - 209 |
| RDD (HNM)       | (10 A)      | 210 - 213 |
| RCE (HNM)       | (16 A)      | 214 - 217 |
| RQEE (HNM)      | (16 A)      | 218 - 219 |
| MIXO            | (10 A/16 A) | 271 - 306 |

\* the underlined polarities indicate those contacts that require the tools shown in this page

## stripping and crimping machine



## insertion tool - removal tools replacement tip



| description  | part No. | part No.     |
|--|----------|--------------|
| automatic stripping, crimping machine<br>Zoller+Fröhlich AM-03 Universal model   | ZFU-CD   |              |
| insertion tool<br>for insertion of the contacts into the inserts<br>for crimped contacts up to 0,75 mm <sup>2</sup>  |          | CCINA        |
| removal tools<br>for the extraction of contacts from the inserts<br>for <b>10A</b> contacts ( <b>CD</b> and <b>RD HNM</b> series) <sup>1)</sup><br>for <b>16A</b> contacts ( <b>CC</b> and <b>RC HNM</b> series) <sup>2)</sup> |          | CCES<br>CQES |
| replacement tip<br>for CCES removal tool   |          | CCPR RN      |

1) for CQ, CD, RD, CDD, RDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)  
2) for CQ, CQE, CQEE, RQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC.  
For CMCE (16+2), CX inserts (contacts 16 A insert CX 8/24) using a flat 3 mm screwdriver.

### Technical specifications

|  |  |
|--|--|
| Drive                                  | electro-pneumatic                        |
| Electric feeder                        | 230V/50Hz                                |
| Absorbed power                         | 120VA                                    |
| Fuse (on the system filter module)     | 2 x 2 A mT                               |
| Air operating pressure                 | 5.5 bar                                  |
| Air consumption                        | 2 nl/cycle                               |
| Flexible conductors in conformity with | IEC 60228 class 5                        |
| Rated section                          | 0,34-2,5 mm <sup>2</sup> (22 AWG-14 AWG) |
| Feeding length                         | 52 mm                                    |
| Contacts                               | loose, turned                            |
| Contact breaker                        | see list of tools                        |
| Feeding                                | vibrating conveyor                       |
| Crimping form                          | 4/8 ratchets                             |
| Cycle time                             | 2,5 s - 3 s                              |
| Continuous sound level                 | < 70 dB (A)                              |
| Dimensions (l x d x h)                 | (530 x 500 x 480) mm                     |
| Colour                                 | blue, RAL 5012                           |
| Weight                                 | 40 Kg                                    |

### Tools list

| contacts                             | CD, RD... (10A max) |         |      |     |     |     | CC, RC... (16A max) |      |     |     |     |     |
|--------------------------------------|---------------------|---------|------|-----|-----|-----|---------------------|------|-----|-----|-----|-----|
| conductor section (mm <sup>2</sup> ) | 0,34                | 0,5     | 0,75 | 1,0 | 1,5 | 2,5 | 0,5                 | 0,75 | 1,0 | 1,5 | 2,5 |     |
| AWG (approximate)                    | 22                  | 20      | 18   | 18  | 16  | 14  | 20                  | 18   | 18  | 16  | 14  |     |
| feeding bowl/male                    | A                   |         |      |     |     |     | B (M)               |      |     |     |     |     |
| feeding bowl/female                  |                     |         |      |     |     |     | B (F)               |      |     |     |     |     |
| feeding tube                         | A                   |         |      |     |     |     | B                   |      |     |     |     |     |
| wire holder                          | 0,34                | 0,5-1,5 |      |     | 2,5 |     | 0,5-1,5             |      |     |     |     | 2,5 |
| starting unit                        | AB                  |         |      |     |     |     | AB                  |      |     |     |     |     |
| stripping blades                     | V-shaped blades     |         |      |     |     |     | V-shaped blades     |      |     |     |     |     |
| rear blade spacers                   |                     |         |      |     |     |     |                     |      |     |     |     |     |
| left/right                           | 0,5 mm / 1,0 mm     |         |      |     |     |     | 0,5 mm / 1,0 mm     |      |     |     |     |     |
| contact holder / pins                | A (M)               |         |      |     |     |     | B                   |      |     |     |     |     |
| contact holder / bushes              | A (F)               |         |      |     |     |     |                     |      |     |     |     |     |
| contact stop                         | A                   |         |      |     |     |     | B                   |      |     |     |     |     |

### Preset stripping and contact crimping programs

| contacts                             | CD, RD... (10A max) |      |      |      |      |      | CC, RC... (16A max) |      |      |      |      |
|--------------------------------------|---------------------|------|------|------|------|------|---------------------|------|------|------|------|
| conductor section (mm <sup>2</sup> ) | 0,34                | 0,5  | 0,75 | 1,0  | 1,5  | 2,5  | 0,5                 | 0,75 | 1,0  | 1,5  | 2,5  |
| AWG (approximate)                    | 22                  | 20   | 18   | 18   | 16   | 14   | 20                  | 18   | 18   | 16   | 14   |
| Program number                       | 1A                  | 2A   | 3A   | 4A   | 5A   | 6A   | 7B                  | 8B   | 9B   | 10B  | 11B  |
| stripping position (mm)              | 0,75                | 1,00 | 1,20 | 1,30 | 1,40 | 1,70 | 1,00                | 1,20 | 1,30 | 1,40 | 1,70 |
| crimping position                    | 1,30                | 1,35 | 1,40 | 1,50 | 1,55 | 1,60 | 1,40                | 1,40 | 1,50 | 1,55 | 1,70 |

### Supplied with the following accessories:

- 1 vibrating conveyor feeder bowl for CD, RD contact series
- 1 vibrating conveyor feeder bowl for male CC, RC contact series
- 1 vibrating conveyor feeder bowl for female CC, RC contact series
- 1 feeder tube (contact passage from vibrating conveyor to machine) for CD, RD contact series
- 1 feeder tube (contact passage from vibrating conveyor to machine) for CC, RC contact series
- 1 contact holder (in crimping position) for male CD, RD contact series
- 1 contact holder (in crimping position) for female CD, RD contact series
- 1 contact holder (in crimping position) for CC, RC contact series
- 1 contact stop for CD, RD contact series
- 1 contact stop for CC, RC contact series
- 1 wire holder for 0,34 mm<sup>2</sup> cables
- 1 wire holder for 0,5 to 1,5 mm<sup>2</sup> cables
- 1 wire holder for 2,5 mm<sup>2</sup> cables
- 1 "GO / NO GO" control gauge
- 1 Allen wrench for setup operations
- 1 set of spacers to regulate the stripping length
- 1 removal tool to extract contacts from the crimping chamber

### General specifications

The **Zoller+Fröhlich AM-03** Universal stripping-crimping machine is a semi-automatic, electro-pneumatically operated bench machine used to quickly and reliably strip flexible copper wires and to crimp loose, turned crimp male and female, **CD, RD HNM** series (10 A max) and **CC, RC HNM** series (16 A max) contacts in a single run.

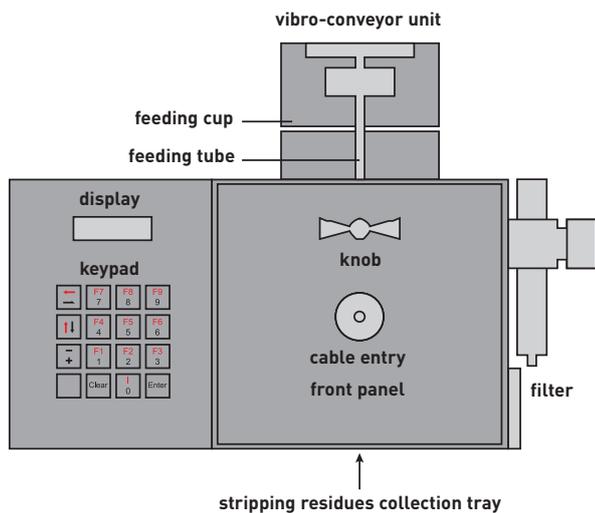
The contacts are automatically fed by means of a vibro-conveyor unit fitted on the top section of the machine.

The machine carries out the crimping operation with four, eight pressure point indenters, in compliance with the requirements set out in the MIL-C-22520/1 standard. The stripping depth and crimping depth adjustment is controlled by a software controlled motor. Up to 50 different combinations may be stored and retrieved from the program; these combinations are useful, for example, to meet different requirements related to the wire insulator type and thickness.

The adjustment and programming operations are carried out by using the keypad located on the front panel. The LCD display shows all the functions, the main information and any errors.

The machine is fitted with devices used to check that the crimping cycle has been completed.

The general safety instructions described in the machine user and maintenance manual must be followed and the use of the machine should only be restricted to qualified and trained personnel.



### Crimping range

Wire section: from 0,34 mm<sup>2</sup> (AWG 26) to 2,5 mm<sup>2</sup> (AWG 14).

### Description of the machine

To ensure a correct operation, the machine must be positioned on a hard bench, which does not amplify the effects of the internal movements occurring inside the machine. The machine consists of a vibrator which loads the contacts, of a tube which feeds the contacts and of a motorised wire stripping and contact crimping unit.

For each type and size of contact, the machine is provided with a factory stored preset program (see the machine user manual), which may be customised at any time.

The program allows the user to:

load, edit and save a program, as well as check/edit the stripping length and depth and the crimping depth.

**Warning:** when the machine is switched on, the working program is always the last program used.

The machine electronics adjustment is carried out by means of the keypad. Select one of the 12 programs (see table on page 728) according to the contact used\*.

Each program stores the stripping and crimping depth.

The stripping depth is the measurement in mm of how much the stripping blades must penetrate the insulator to strip it off, and depends on the type of cable used. The crimping depth is the measurement in mm of how much the four indenters must penetrate the contact at the end of the crimping operation. This depth depends on the size and shape of the contact (crimp shaft thickness) and determines the quality of the crimping operation in terms of gas tightness and resistance to tensile stress.

\* **Note:** The machine also has a 12C program suitable for 10 A, 2,5 mm<sup>2</sup> crimp contacts with 6 mm stripping length. This program is therefore unsuitable for ILME CD, RD HNM series contacts (stripping length 8 mm).

### Operational setups

The tool carrier carriage may be accessed by opening the front door, by anticlockwise rotation of the knob, which releases the pressure from all the valves. For tool selection, see table on page 728.

- For CD, RD HNM series male and female crimp contacts (10 A max), the feeding cup A must be fitted onto the machine, whilst for CC, RC HNM series crimp contacts (16 A max) feeding cup B (M) for male contacts and B (F) for female contacts must be used.
- The feeding tubes to be fitted are A for CD, RD HNM series contacts and B for CC, RC HNM series contacts respectively.
- The wire holders which support the wire during the stripping stage feature three different sizes for CD, RD HNM contacts and two sizes for CC, RC HNM contacts.
- The contact holders are two (A (M) for male contacts and A (F) for female contacts) for CD, RD HNM series contacts, according to the different rear diameter between male and female contacts in this series, whilst there is only one holder (B) for CC, RC HNM series contacts.
- The contact holder is A for CD, RD HNM series contacts and B for CC, RC HNM series contacts.

### Feeding the wire

The wire must be cut straight and the single braids must not be bent or pulled apart; in particular, the first 4cm must be perfectly straight.

### Checking the stripping depth:

The machine can be operated simply as a stripping machine by disabling the crimping operation.

Please refer to the machine user manual.

### Maintenance and repairs

Stripping residues collection tray: empty the tray approximately every 2000 cycles (the frequency depends on the sizes of the stripped wire and on the stripping length). Pneumatically controlled maintenance unit: regularly drain any water that may have collected.

The trap may be cleaned with water.

To remove the trap, simply disconnect the air supply.

The filter unit may be unscrewed for cleaning purposes, then immersed in a cleaning agent (such as petrol or oil), thoroughly washed and dried.

### Checking the calibration values

The correct calibration of the machine must be periodically checked by using the "GO / NO GO" caliper supplied as standard with the machine, by following the procedure described in the machine user and maintenance manual.

## Tools and accessories for crimp contacts

for contacts series (as applicable):

page:

CX PLF/PLM  
CX MLF/MLM

299  
299

manual crimping tool

Front view



polishing disc, polish paper,  
removal tool,  
jacket stripper and fibre stripper,  
cable cutter

CLES



description

part No.

part No.

crimping tool for POF **CX PL** and MOST **CX ML** contacts  
RENNSTEIG model <sup>1)</sup>

**CLPZ R**

polishing disc (RATIOPLAST 910 PS 0SC 00 001)  
for POF <sup>2)</sup> and MOST <sup>3)</sup> contacts

**CLDL**

polish paper:  
grain size 1000 (RATIOPLAST 910 PB 001 00 001)  
grain size 4000 (RATIOPLAST 910 PB 001 40 250)

**CLC1**  
**CLC4**

removal tool  
for the extraction of contacts from the CX L inserts

**CLES**

jacket stripper (RATIOPLAST 910 AZ 001 00 PA1)  
for POF <sup>2)</sup> and MOST <sup>3)</sup> fibre optic with PA jacket  
fibre stripper (RATIOPLAST 910 AB 001 00 001)  
for POF <sup>2)</sup> fibre optic

**CLSG**

**CLSP**

cable cutter (RATIOPLAST 910 SW 001 00 001)  
for Ø 2,3 mm max, for POF <sup>2)</sup> and MOST <sup>3)</sup> fibre optic

**CLTE**

- <sup>1)</sup> on request tool **CLPZ** RATIOPLAST  
910 CZ 001 00 008 for contacts POF <sup>2)</sup> / MOST <sup>3)</sup>  
crimping on the back  
<sup>2)</sup> **POF = POLYMER OPTICAL FIBRE**  
<sup>3)</sup> **MOST = MEDIA ORIENTED SYSTEM TRANSPORT**

**Note:**  
as alternative to crimping please use glue UHU PLUS  
ENDFEST 300 (BICOMPONENT), part No. "CL GL"  
(provide a strain relief by cable glands):  
- mix the two components on a sheet (just a drop/each)  
- the stripped ca. 5 mm POF <sup>2)</sup> (that means the inner  
fibre) has to be dipped in the glue (just 5 mm);  
- the POF <sup>2)</sup> has to be pushed now in the contact/ferrule;  
- min. one night to hard/dry the glue;  
- finally the POF <sup>2)</sup> has to be polished (polishing disc).

Rear view



**CLDL**



**CLC1 / CLC4**



**CLSG**



**CLSP**



**CLTE**



# Use and maintenance instructions

## General specifications

Strip the fibre about 12 mm for male contact and about 15 mm for female contact (see Figures 1 and 2).

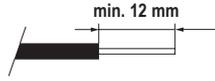


Fig. 1 - Example of cable stripping for male crimp contact

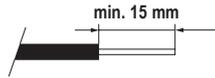
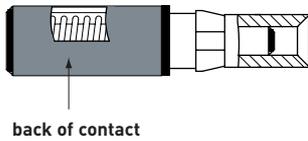


Fig. 2 - Example of cable stripping for female crimp contact

## Crimping instructions

- The data sheet for crimping tool **CLPZ R** explains how the crimping tool works and how to adjust the crimping depth and locator for the contacts to be crimped. Position the turret on 3, push and turn of 90° the knob of turret. Adjust the crimping depth on 2 (unscrew the allen screw, after adjusting refix the screw). For the female contact: unscrew the back of the contact, pull out the internal central part; on Figure 3 is indicated the crimping area (front part of contact). For male contact: crimp the front part of contact.
- Push the stripped fibre as far as possible into the contact sleeve so that it protrudes approx. 1 mm from the tip of the contact.



back of contact

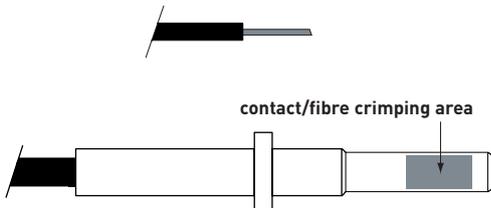


Fig. 3 - Female contact/fibre crimping area

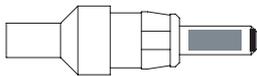


Fig. 4 - Male contact/fibre crimping area

- Insert the contact together with the fibre optic cable as far as possible into the crimping opening of the crimping tool (**CLPZ R**, see Figure 5) while applying gentle pressure to the fibre optic cable and connector, close the tool until you hear it disengages.

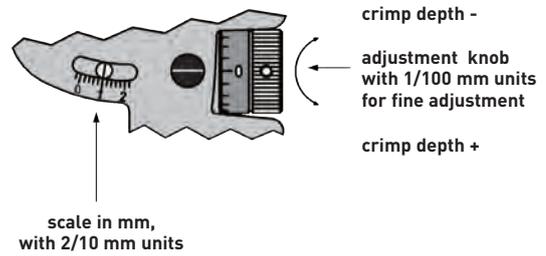
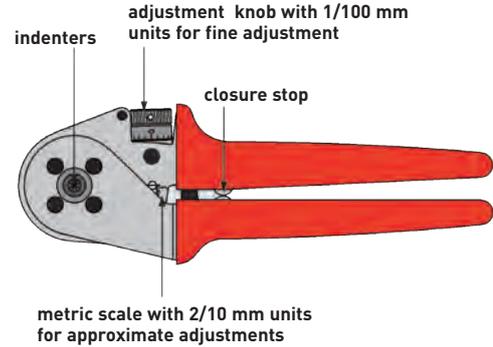


Fig. 5 - Manual crimping tool

## Finishing the front surface

- Insert the contact into the polishing disc (**CLDL**) as shown in Figure 6. Work on a smooth surface (such as a sheet of glass), use grade 1000 polishing paper to grind off the protruding fibre and polish it with grade 4000 polishing paper.
- Wipe away any residue remaining after grinding. The best optical attenuation values are achieved when a wet grinding method is used.

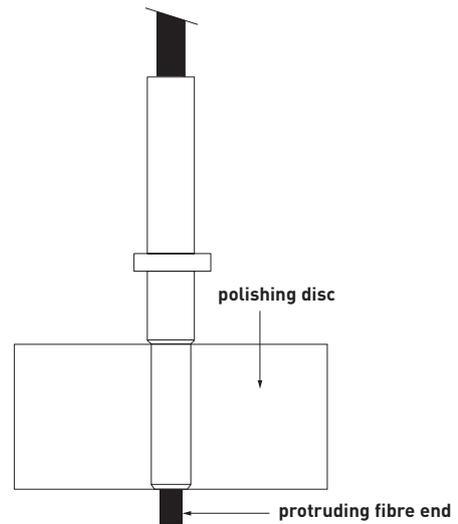


Fig. 6 - Polishing Disc with Guide for Connector Sleeve

## Final mounting instructions

Screw the back female part contact. Put inside the CX 04 LF/ CX 04 LM insert.

Tools and accessories for crimp contacts

for contacts series (as applicable):

page:

manual crimping tool

polishing disc, polish paper,  
removal tool,  
jacket stripper and fibre stripper,  
cable cutter

CLF DD/CLM DD

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Front view



CCES



description

part No.

part No.

RENNSTEIG model crimping tool  
for POF <sup>1)</sup> CLF DD / CLM DD contacts

CLPZ R

polishing disc (RATIOPLAST 910 PS 001 00 001)  
for POF <sup>1)</sup> contacts

CLDL DD

polish paper:  
grain size 1000 (RATIOPLAST 910 PB 001 00 001)  
grain size 4000 (RATIOPLAST 910 PB 001 40 250)

CLC1  
CLC4

removal tool, for the extraction of contacts from the  
CD, CDD, CX inserts

CCES

jacket stripper (RATIOPLAST 910 AZ 001 00 PA1)  
for POF <sup>1)</sup> fibre optic with PA jacket  
fibre stripper (RATIOPLAST 910 AB 001 00 001)  
for POF <sup>1)</sup> fibre optic

CLSG

CLSP

cable cutter (RATIOPLAST 910 SW 001 00 001)  
for Ø 2,3 mm max, for POF <sup>1)</sup> fibre optic

CLTE

<sup>1)</sup> POF = POLYMER OPTICAL FIBRE

Rear view



CLDL DD



CLC1 / CLC4



CLSG



CLSP



CLTE



# Use and maintenance instructions

### Finishing the front surface of the fibre optic

- Before crimping, insert POF fibre optic into the polishing disc (CLDL DD) as shown in Fig. 1.
- Work on a smooth surface (such as a sheet of glass), use grade 1000 polishing paper to grind off the protruding fibre and polish it with grade 4000 polishing paper.
- Polish making 8-shape circles.
- Wipe away any residue remaining after grinding.

The best optical attenuation values are achieved when a wet grinding method is used.

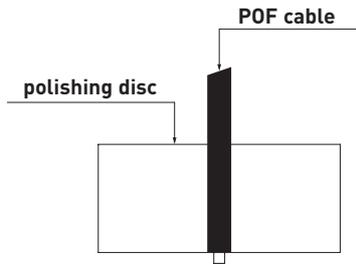


Fig. 1 - Polishing Disc with Guide for POF fibre

### General specifications

Strip the fibre 19 mm for male contact and 14 mm for female contact (refer to Figures 2 and 3).

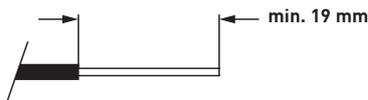


Fig. 2 - Example of cable stripping for male crimp contact

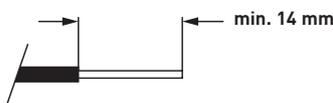


Fig. 3 - Example of cable stripping for female crimp contact

### Crimping instructions

- The CLPZ R crimping tool data sheet explains how the crimping tool works and how to adjust the crimping depth and locator to crimp the contacts as shown in Fig. 4.
- Select position no. 1 on the turret (for male contact) and no. 2 (for female contact), push and turn of 90° the knob of the turret.
- Adjust the crimping depth on 1,45 (unscrew the allen screw, after adjusting refix the screw).
- Insert the contact together with the fibre optic cable as far as possible into the crimping opening of the crimping tool (CLPZ R, refer to Fig. 5) while applying gentle pressure to the fibre optic connector, close the tool until you hear it disengages.

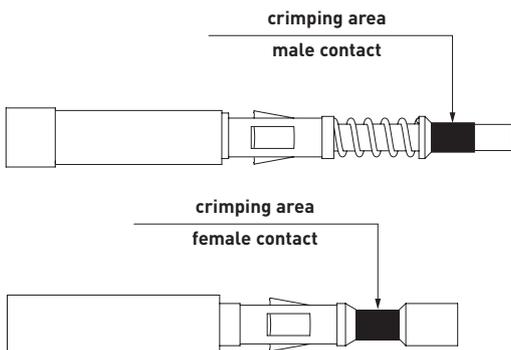


Fig. 4 - Crimping area

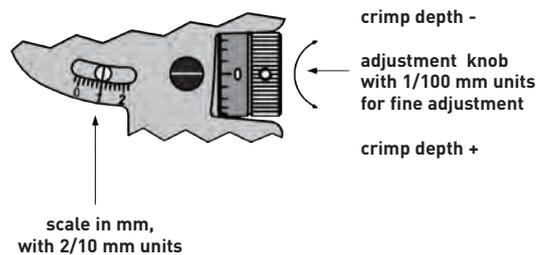
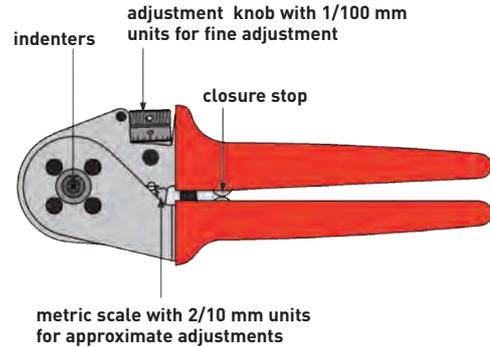


Fig. 5 - Manual crimping tool

### Final mounting instructions

Screw the back female part contact. Put inside the CD/CDD/CX insert.



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## Tools and accessories for crimp contacts

for contacts series (as applicable):

CX 50 RF/M  
CX 75 RF/M

page:

300  
300

manual crimping tool



removal tool

coaxial cable stripper



description

part No.

part No.

crimping tool  
for CX 50 RF/M and CX 75 RF/M coaxial contacts

COPZ

removal tool  
for the extraction of contacts from the CX R inserts

CLES

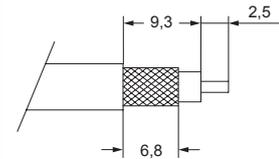
coaxial cable stripper  
for the preparation of the cable according to the drawing

COST



Watch  
our  
online  
tutorial

conductor stripping



| coaxial contacts | for cables | ø external  | part No. |
|------------------|------------|-------------|----------|
| 50Ω              | RG 316/U   | 2,49 ±0,1   | CX 50 RF |
|                  | RG 174/U   | 2,79 ±0,127 | CX 50 RM |
|                  | RG 188 A/U | 2,79 max    |          |
| 75Ω              | RG 179 B/U | 2,54 ±0,127 | CX 75 RF |
|                  | RG 187 A/U | 2,79 max    | CX 75 RM |
|                  | TZC 75 101 | 2,79 max    |          |

### Crimping instructions

- 1) Strip the cable as per drawing using the tool COST.
- 2) Crimp the central contact of coaxial connector in the correct crimping area with the position 0,72 of crimping tool COPZ.
- 3) Insert the brass back end on the cable.
- 4) Insert the central contact in the coaxial connector, put the braid shield around the back cylinder of contact.
- 5) Insert the brass back end on the braid shield.
- 6) Crimp the ferrule with position 3,25 of crimping tool COPZ.

We recommend the use of coding pins CRF CX / CRM CX.

Fit the brass tube on the cable

As alternative to crimping, it is possible to solder the central contact.

### CX 50 RF/M and CX 75 RF/M coaxial contacts



# Tools and accessories for crimp contacts

for insert series (as applicable):

CJ (RJ45)  
MIXO (RJ45)

page:

223  
304 - 307

manual crimp pliers



shielded cable stripper



| description   | part No.      | part No.    |
|---|---------------|-------------|
| RJ45 CJ series plug insert crimp pliers basic tool YAMAICHI Y-ConTool-11 mod. with plug insert inserter | <b>CJPZ Y</b> |             |
| Y-ConTool-20 cable stripper cuts the cable sheath and releases the wires in a single operation          |               | <b>CJST</b> |



Watch our CX 8 JM online tutorial

## RJ45 plug insert crimp pliers mounting instructions

CRIMPING TOOLS

# Tools and accessories for crimp contacts

inserts (as applicable):

MIXO (RJ45) CX 8 J6M

page:

302

manual crimp pliers



shielded cable stripper



description

part No.

part No.

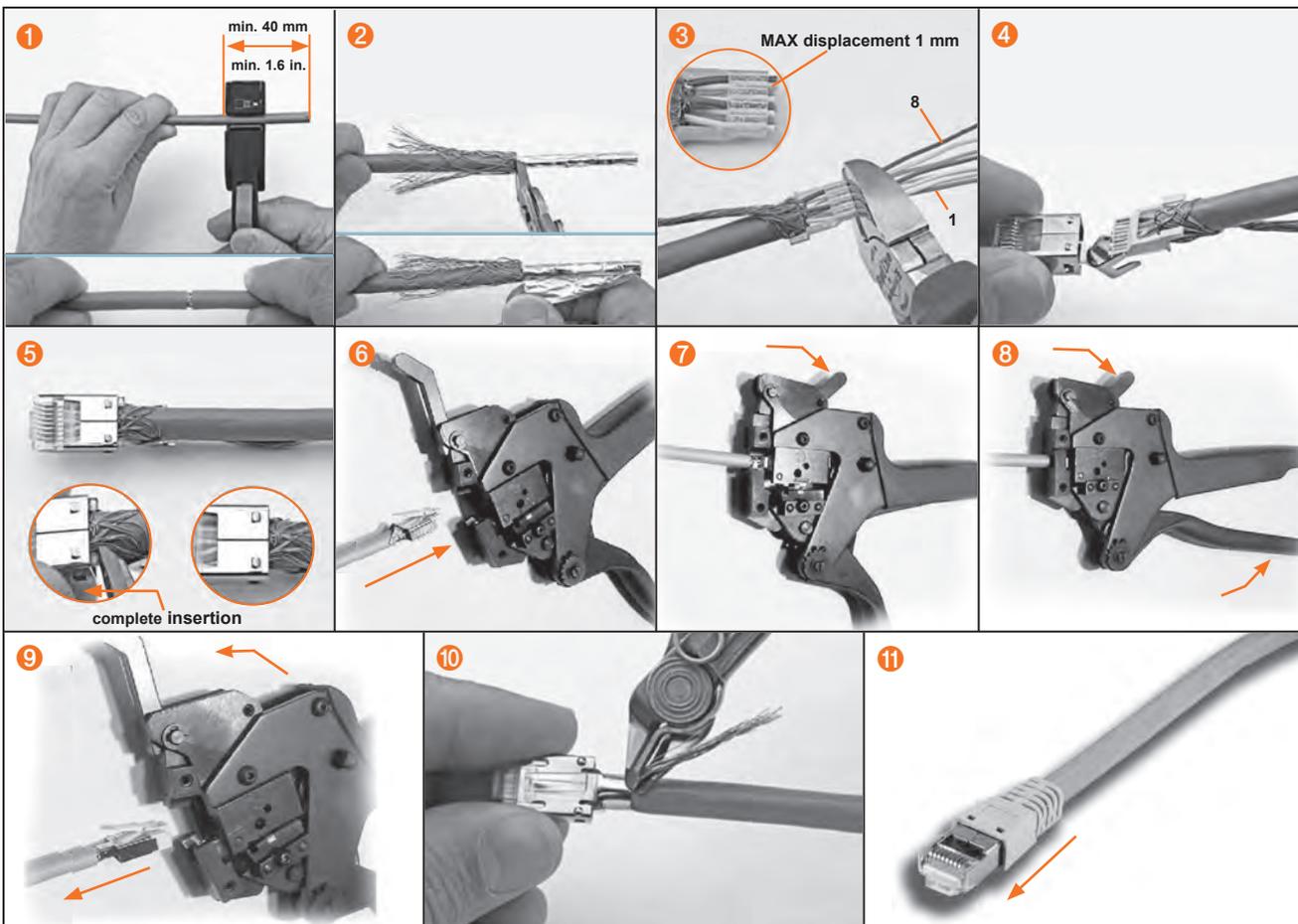
RJ45 CJ series plug insert crimp pliers

**CJPZ T**

Y-ConTool-20 cable stripper  
cuts the cable sheath and  
releases the wires in a single operation

**CJST**

## RJ45 plug insert crimp pliers mounting instructions



CRIMPING TOOLS



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our  
online  
tutorial

# Tools and accessories for crimp contacts

inserts (as applicable):

MIXO (RJ45) CX 8 J6IM

page:

302

manual IDC pliers



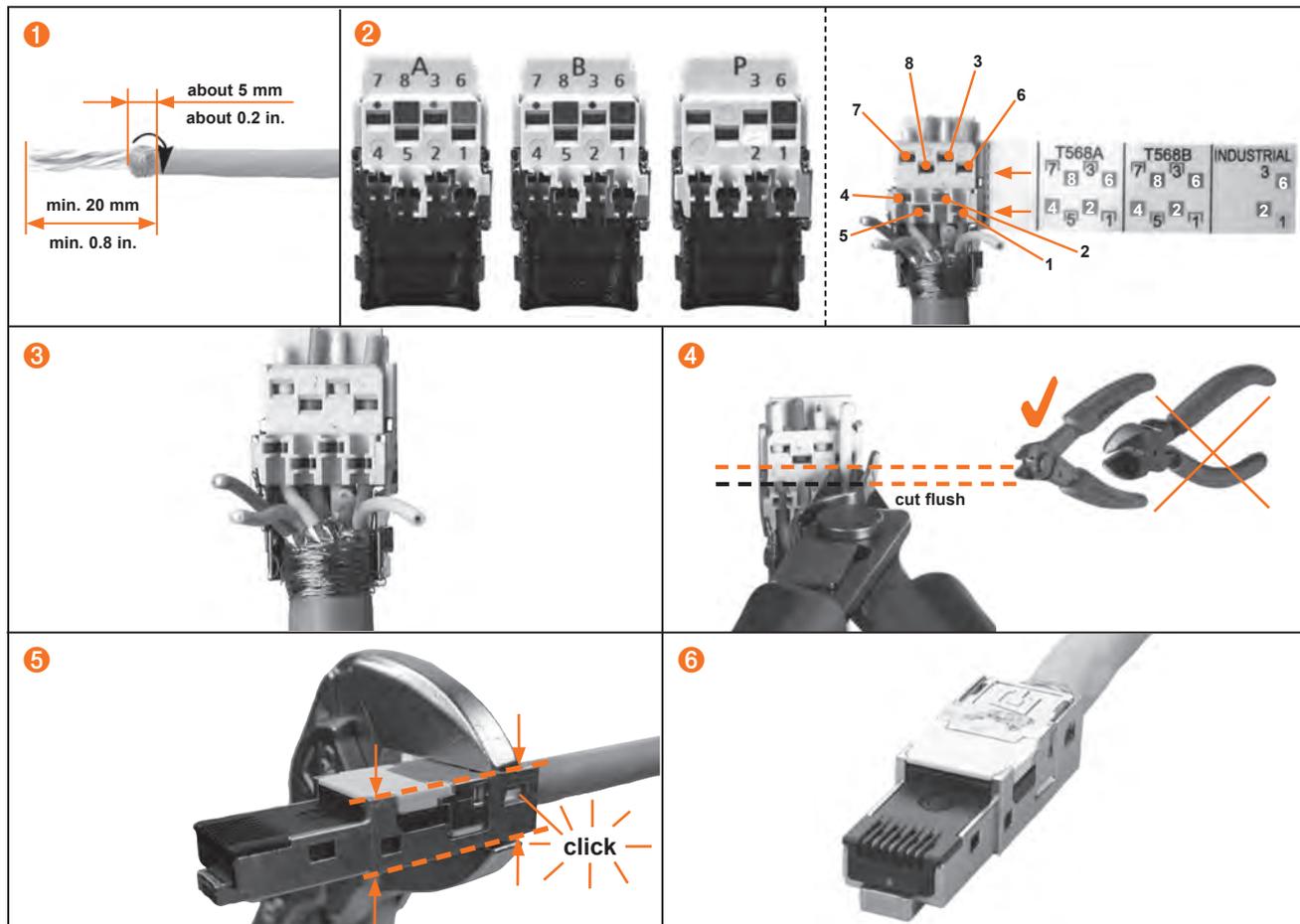
description

part No.

wrench pliers for CX 8 J6IM

CJPW K

## CX 8 J6IM IDC plug insert crimp pliers mounting instructions



| RJ45 PIN No. | Connection       |       | Application |                     |            |                               |                    |         |
|--------------|------------------|-------|-------------|---------------------|------------|-------------------------------|--------------------|---------|
|              | Colour Code T568 |       | DIN 47100   | Industrial PROFINET | 10BT/100BT | 1 Gigabit 10 Gigabit Ethernet | Token Ring ISDN/So | Upo/TEL |
|              | A                | B     |             |                     |            |                               |                    |         |
| 1            | WH-GN            | WH-OG | WH          | YE                  | •          | •                             |                    |         |
| 2            | GN               | OG    | BN          | OG                  | •          | •                             |                    |         |
| 3            | WH-OG            | WH-GN | GN          | WH                  | •          | •                             | •                  |         |
| 4            | BU               | BU    | YE          | -                   |            | •                             | •                  | •       |
| 5            | WH-BU            | WH-BU | GY          | -                   |            | •                             | •                  | •       |
| 6            | OG               | GN    | PK          | BU                  | •          | •                             | •                  |         |
| 7            | WH-BN            | WH-BN | BU          | -                   |            | •                             |                    |         |
| 8            | BN               | BN    | RD          | -                   |            | •                             |                    |         |

**Legend**

- BN = brown
- BU = blue
- GN = green
- GY = grey
- OG = orange
- PK = pink
- RD = red
- WH = white
- YE = yellow



Watch our online tutorial

# for SQUICH® terminal

for insert series (as applicable):

page:

|       |           |
|-------|-----------|
| CDSH  | 86 - 91   |
| CSAH  | 99 - 103  |
| CSH   | 110 - 115 |
| CSH S | 122 - 127 |
| CMSH  | 136 - 144 |

## SQUICH® reopening tool



description

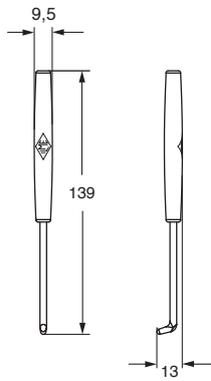
part No.

reopening tool  
for SQUICH® actuator button

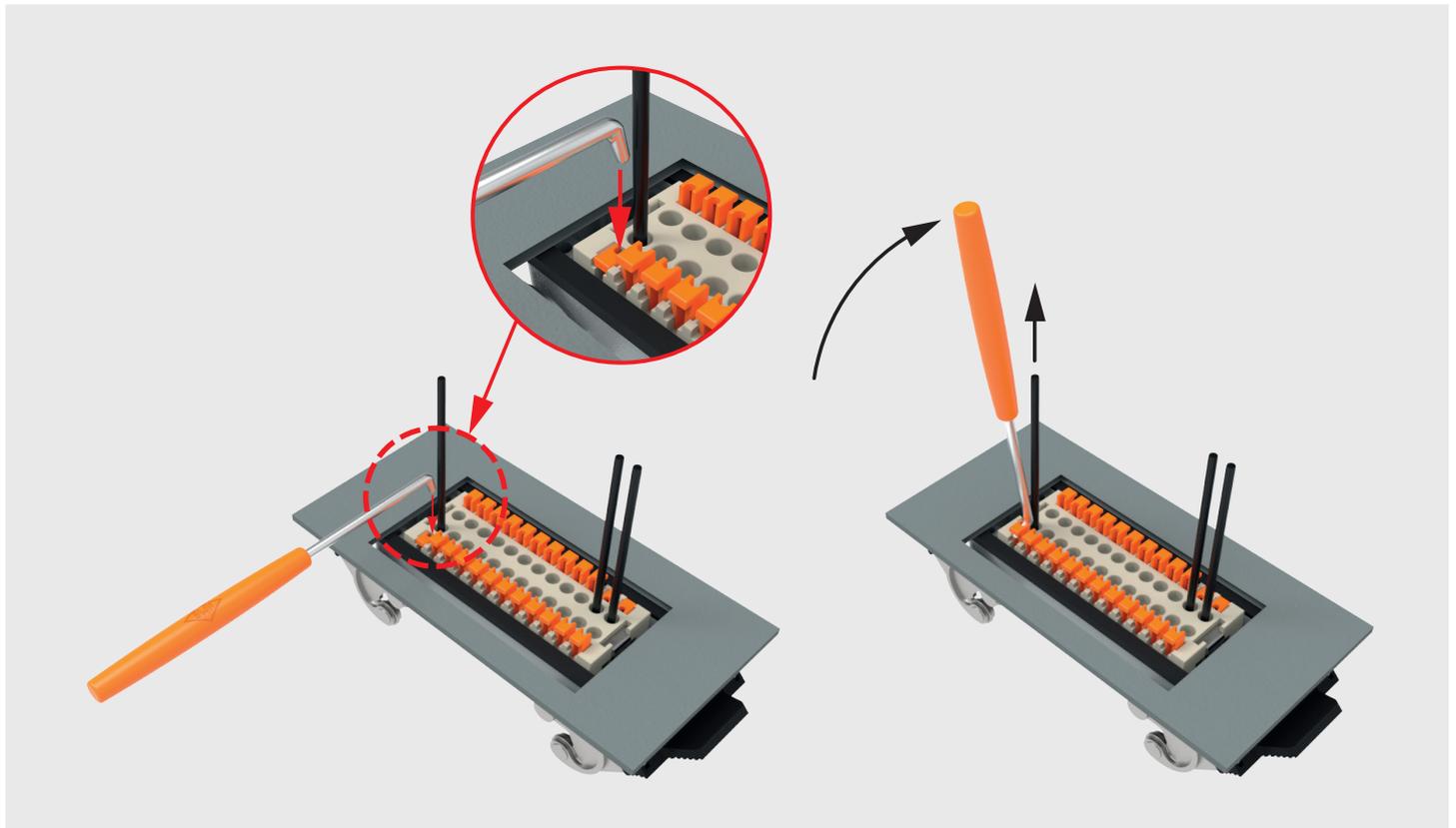
CSHES

It allows the release of the connection from a SQUICH® terminal without disassembly of the connector insert from the bulkhead mounting housing, by operating from the accessible rear side of the control panel.  
With mains power disconnected (connector not under voltage), the smoothed hook-shaped tool tip is inserted in the slot of the actuator button head of the corresponding terminal, then by a delicate tilt towards the centre of the connector, the tools acts as a lifting lever for the actuator button, releasing the wire.

**CAUTION:** Not suitable for SQUICH® terminals of CKSH inserts or MIXO CX 05 SH modular inserts.



### Reopening tool use instructions



# punching tool for bulkhead mounting housing

hydraulic panel punching tool



punching unit



| description   | part No.      | part No.   |
|---|---------------|--|
| hydraulic punching tool (without punching unit)   | <b>CCW CT</b> |  |
| punching unit for M25 hole <sup>1)</sup>  |               | <b>CCW M25</b>   |
| punching unit for M32 hole  |               | <b>CCW M32</b>   |
| punching units for panel cut-out of bulkhead mounting housings for size 21.21 CK/CKA for size 21.21 CGK IP68 for size 21.21 IVG for MIXO ONE for size 49.16 for size 66.16 for size 44.27 for size 57.27 for size 77.27 for size 104.27 |               | <b>CCW PD 03<br/>CCW PD 03G<br/>CCW PD 03IVG<br/>CCW PD 1M<br/>CCW PD 15<br/>CCW PD 25<br/>CCW PD 06<br/>CCW PD 10<br/>CCW PD 16<br/>CCW PD 24</b> |

| Punching unit  | Bulkhead mounting housings<br>Size | Pilot hole<br>(mm) | Mounting configuration             |  | Draw stud           | Adapter             | Spacer        |
|--|------------------------------------|--------------------|------------------------------------|--|---------------------|---------------------|---------------|
|  |                                    |                    | Hydraulic tool operation CCW CT    | Manual operation                                       |                     |                     |               |
| <b>CCW M25</b> <sup>2)</sup><br>dimensions $\varnothing$ 25 mm | M25 hole or MKA IAF25 housings     | $\varnothing$ 10,0 | with adapter and with spacer       | ---  | <b>CCW CT</b>       | <b>CCW CT</b>       | <b>CCW CT</b> |
| <b>CCW M32</b>   | M32 hole for MKA IF                | $\varnothing$ 20,0 | with adapter and with spacer       | ---  | <b>CCW CT</b>       | <b>CCW CT</b>       | <b>CCW CT</b> |
| <b>CCW PD 03</b>   | 21.21                              | $\varnothing$ 14,5 | with adapter and with spacer       | with screw ball-bearing nut (no adapter and no spacer) | <b>CCW PD 03</b>    | <b>CCW PD 03</b>    | <b>CCW CT</b> |
| <b>CCW PD 03G</b>  | 21.21 (CGK IP68)                   |                    |                                    |  | <b>CCW PD 03G</b>   | <b>CCW PD 03G</b>   | <b>CCW CT</b> |
| <b>CCW PD 03IVG</b>  | 21.21 (IVG)                        | $\varnothing$ 14,5 | with adapter and with spacer       | with screw ball-bearing nut (no adapter and no spacer) | <b>CCW PD 03IVG</b> | <b>CCW PD 03IVG</b> | <b>CCW CT</b> |
| <b>CCW PD 1M</b>   | MIXO ONE                           | $\varnothing$ 14,5 | without adapter and without spacer | with screw ball-bearing nut (no adapter and no spacer) | <b>CCW PD 1M</b>    | <b>CCW PD 1M</b>    | <b>CCW CT</b> |
| <b>CCW PD 15</b>   | 49.16                              | $\varnothing$ 20,4 | without adapter and without spacer | ---  | <b>CCW PD 15</b>    | NN                  | NN            |
| <b>CCW PD 25</b>   | 66.16                              |                    |                                    |  | <b>CCW PD 25</b>    | NN                  | NN            |
| <b>CCW PD 06</b>   | 44.27                              | $\varnothing$ 25,4 | without adapter and without spacer | ---  | <b>CCW PD 06</b>    | NN                  | NN            |
| <b>CCW PD 10</b>   | 57.27                              |                    |                                    |  | <b>CCW PD 10</b>    | NN                  | NN            |
| <b>CCW PD 16</b>   | 77.27                              |                    |                                    |  | <b>CCW PD 16</b>    | NN                  | NN            |
| <b>CCW PD 24</b>   | 104.27                             |                    |                                    |  | <b>CCW PD 24</b>    | NN                  | NN            |

<sup>2)</sup> CCW M25 can be used to drill M25 pilot hole; NN = Not Needed

**3, 6 and 7**  
delivered with CCW CT

**LEGEND:**

- 2** Punch <sup>1)</sup>
- 3** Draw stud 3/8"
- 4** Die
- 6** Spacer
- 7** Adapter 3/8" - 3/4" UNF



## Use and maintenance instructions

### Hydraulic operating instructions (CCW PD ..)

1. Screw the short thread of the 13,0/11,0 mm draw stud **3** into the  $\frac{3}{4}$ " UNF adapter **7** (CCW PD 03/03G only).
2. Screw the 13,0/11,0 mm draw stud **3** complete with the  $\frac{3}{4}$ " UNF adapter **7** onto the hydraulic cylinder or screw the short thread of any of the larger draw studs **3** (without the adapter) directly onto the hydraulic cylinder (CCW PD 03/03G only).
3. Put the die **4** onto the draw stud **3** and move it towards the hydraulic cylinder. If necessary, place the spacer **6** between the hydraulic cylinder and die **4**.
4. Insert draw stud **3** with pre-mounted die through the pilot hole in the sheet until the die abuts the sheet.
5. Place the punch **2** onto the draw stud and move it towards the sheet until it abuts the sheet.
6. Screw the counter nut **1** onto the thread of the draw stud **3**.
7. Adjust punch rectangularly (4 marks on die) and tighten counter nut manually.

### Punching

8. Operate hydraulic punch CCW CT driver until punch is drawn through sheet.
9. Depressurise hydraulic punch driver after punching.
10. Remove the counter nut **1** and punch **2** from the draw stud **3**.
11. Remove the die **4** from the draw stud **3** and remove slugs from the die **4**.

### Drilling mounting holes

When punching, the position of mounting holes are marked. Use suitable spiral drill to drill mounting holes.

### Manual operating instructions (CCW PD 03/..03G/..03IVG/ and ..1M)

#### Knockout punch mounting

1. Screw the ball-bearing nut **5** onto the long thread of the draw stud 13,0/11,0 mm **3**. Put the die **4** onto the draw stud **3** and move it towards the ball bearing nut **5**.
2. For further steps refer to hydraulic operating instructions steps 4 to 7.

#### Punching

3. Use screw wrench SW 24 to rotate ball-bearing nut **5** until punch is drawn through sheet.
4. For further steps refer to hydraulic operating instructions steps 10 to 11.

Prior to commissioning please read operating instructions.

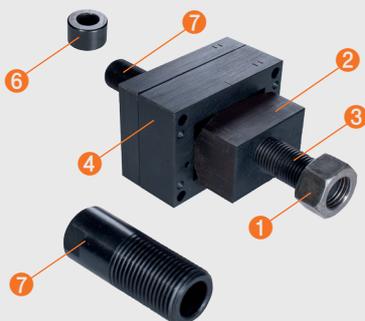
Components under voltage must not be machined.

Prior to operating ensure de-energised state of the work environment (e.g. switch cabinet) or the material to be machined.

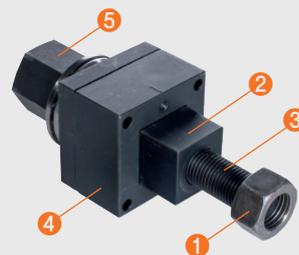
#### Hydraulic operating CCW PD.. (except CCW PD 03/ 03G)



#### Hydraulic operating (CCW PD 03G/..03IVG/..1M and CCW M32)



#### Manual operating (CCW PD 03/..03G/..03IVG/ and ..1M)



#### LEGEND:

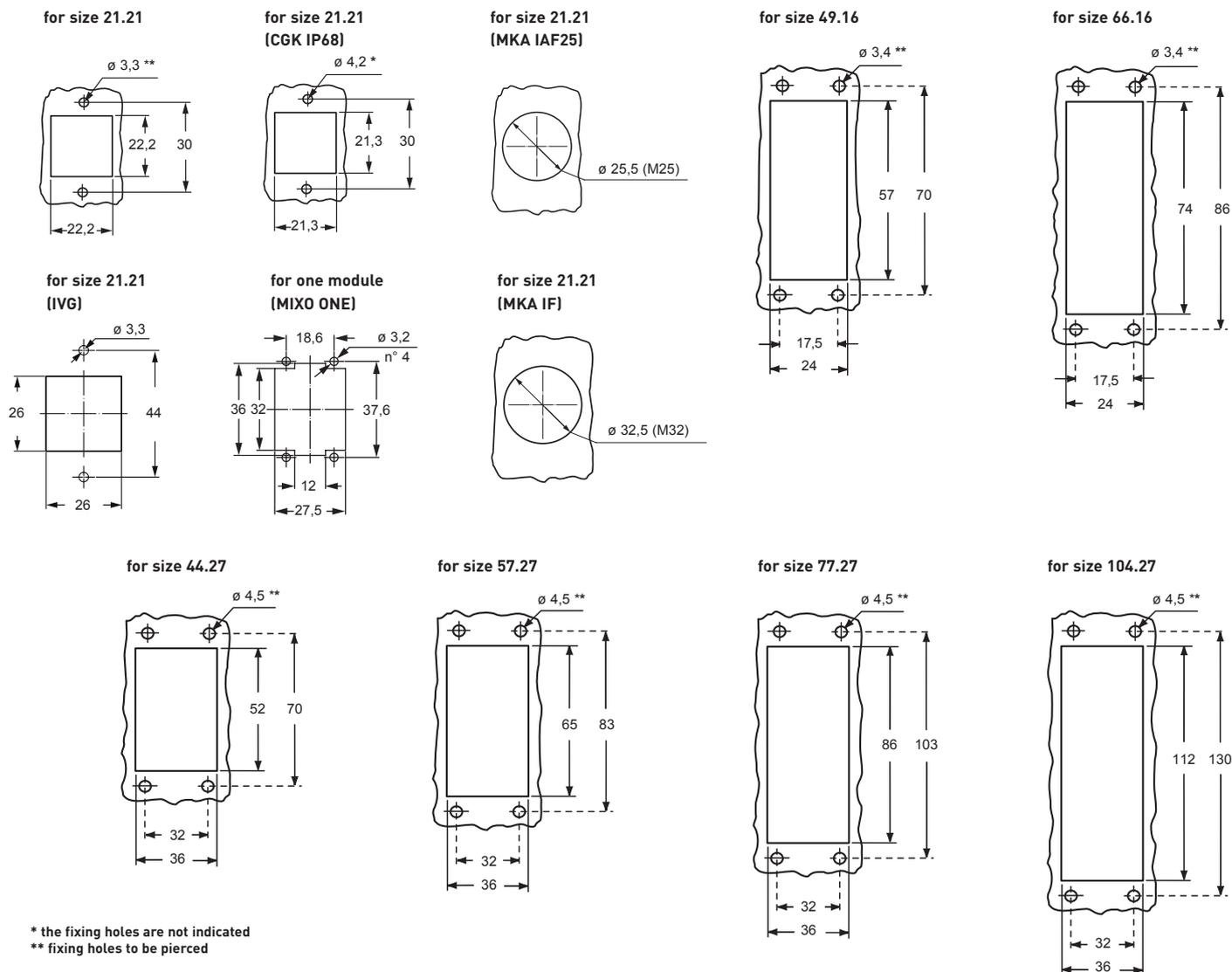
- 1** Counter nut
- 2** Punch
- 3** Draw stud
- 4** Die
- 5** Ball-bearing nut
- 6** Spacer
- 7** Adapter

# Use and maintenance instructions

| ILME Product Number | Bulkhead mounting housings Size | Accessories               | Draw stud <sup>3)</sup> | Pilot hole                | Sheet thickness | Manual screw-wrench use | Hydraulic use |
|---------------------|---------------------------------|---------------------------|-------------------------|---------------------------|-----------------|-------------------------|---------------|
| CCW M25 (***)       | M25 hole or MKA IAF25 housings  | Punch and die 25,4 M25    | 3/8"                    | 10,0 mm                   | St./Fe. 2 mm    |                         | ● (**)        |
| CCW M32             | M32 hole for MKA IF             | Punch and die 32,5 M32    | 13,0/11,0 mm            | 20,0 mm                   | St./Fe. 2 mm    |                         | ●             |
|                     |                                 | <b>Panel cut-out (mm)</b> |                         |                           |                 |                         |               |
| CCW PD 03           | 21.21                           | 22,2 x 22,2               | 13,0/11,0 mm            | 14,5 mm                   | St./Fe. 2 mm    | ●                       | ● (*)         |
| CCW PD 03G          | 21.21 (CGK IP68)                | 21,3 x 21,3               | 13,0/11,0 mm            | 14,5 mm                   | St./Fe. 2 mm    | ●                       | ● (*)         |
| CCW PD 03IVG        | 21.21 (IVG)                     | 26 x 26                   | 13,0/11,0 mm            | 14,5 mm                   | St./Fe. 2 mm    | ●                       | ● (*)         |
| CCW PD 1M           | MIXO ONE                        | 32 x 27,5                 | 13,0/11,0 mm            | 14,5 mm                   | St./Fe. 2 mm    | ●                       | ●             |
| CCW PD 15           | 49.16                           | 24,0 x 57,0               | 19,0/14,0 mm            | 20,4 mm M20               | St./Fe. 3 mm    |                         | ●             |
| CCW PD 25           | 66.16                           | 24,0 x 73,0               | 19,0/14,0 mm            | 20,4 mm M20               | St./Fe. 3 mm    |                         | ●             |
| CCW PD 06           | 44.27                           | 36,0 x 52,0               | 25,0/21,0 mm            | 25,4 mm M25 <sup>2)</sup> | St./Fe. 3 mm    |                         | ●             |
| CCW PD 10           | 57.27                           | 36,0 x 65,0               | 25,0/21,0 mm            | 25,4 mm M25 <sup>2)</sup> | St./Fe. 3 mm    |                         | ●             |
| CCW PD 16           | 77.27                           | 36,0 x 86,0               | 25,0/21,0 mm            | 25,4 mm M25 <sup>2)</sup> | St./Fe. 3 mm    |                         | ●             |
| CCW PD 24           | 104.27                          | 36,0 x 112,0              | 25,0/21,0 mm            | 25,4 mm M25 <sup>2)</sup> | St./Fe. 3 mm    |                         | ●             |

(\*) Adapter (delivered with CCW PD 03/03G/IVG) and spacer (delivered with CCW CT) needed; (\*\*) Adapter M25 and spacer (delivered with CCW CT) needed; (\*\*\*) CCW M25 can be used to drill M25 hole.

## Panel cut-out dimensions (in mm)



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## CRIMPING TOOLS

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### **Professional crimping hand tool SIPZ W, SIPZC W for SI stamped contact Series**

Easy handling tools designed both for loose and coils version of 5 A stamped crimp contacts. Application range from 0,08 mm<sup>2</sup> to 0,52 mm<sup>2</sup> (AWG 28-20). Contacts positioning with insulation stop.

### **CIPZP D Pneumatic crimping tool**

Pneumatic version of the CIPZ D tool for 5 A turned contacts. Crimping range from 0,08 mm<sup>2</sup> to 0,75 mm<sup>2</sup> (AWG 28-18) with CITP D locator for CI and RI contacts Series.

### **CCPZP RN Pneumatic crimping machine**

4/8 indent crimping unit with locator and digital readout display for CD / RD, CC / RC and CX / RX contact Series. The machine is operated by a pneumatic foot valve according to the same crimping adjustment of CCPZ RN manual tool (crimping depth and positioner seat).



Find more  
information on  
our products at  
[www.ilme.com](http://www.ilme.com)

# Tools and accessories for crimp contacts

for 5 A SI stamped contacts of inserts series

pages:

|                   |            |             |
|-------------------|------------|-------------|
| <b>CQ</b>         | (21 poles) | <b>190</b>  |
| <b>MIXO</b>       | (25 poles) | <b>284</b>  |
| <b>MIXO</b>       | (36 poles) | <b>30 *</b> |
| <b>MIXO BUS</b>   | (8 poles)  | <b>293</b>  |
| <b>MIXO D-SUB</b> | (9 poles)  | <b>296</b>  |
| <b>MIXO D-SUB</b> | (9 poles)  | <b>70 *</b> |

refer to CN.19 pages  
\* refer to NEWS 2020 pages

## manual crimping tool



## insertion / removal tool



description

part No.

part No.

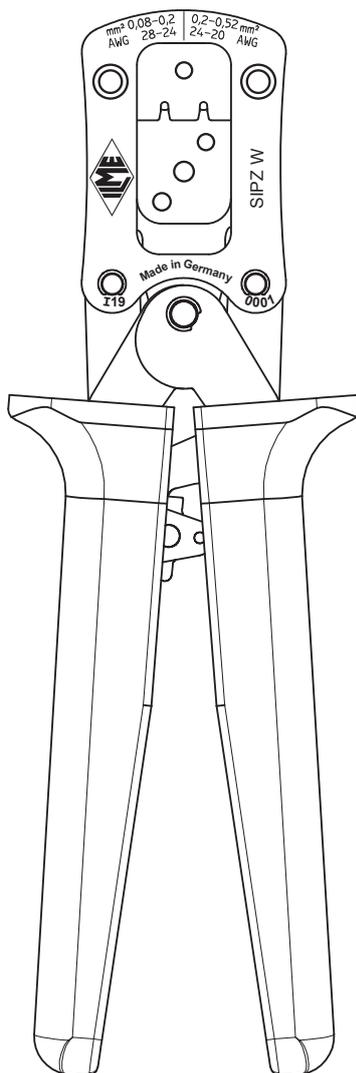
manual crimping tool for **SI** contacts (for loose pcs.)  
WEZAG CS 10-D model

**SIPZ W**

extraction tool:  
for the insertion and removal of the contacts into the inserts  
- for **SI** contacts 0,08 - 0,52 mm<sup>2</sup>  
(SIF..D / SIM..D Series)

**CIES**

**SIPZ W**  
Front view



**Dimensions**

- Length: approx. 195 mm
- Width: approx. 63 mm
- Weight: approx. 290 g

**Application range**

| Cross section range mm <sup>2</sup> / AWG | Crimp height ± 0,05 | Crimp width ± 0,05 | Contact Type |
|---|---------------------|--------------------|--------------|
| 0,08-0,2 / 28-24                          | 0,70                | 1,15               | SI stamped   |
| 0,2-0,52 / 24-20                          | 0,75                | 1,45               |              |

# Tools and accessories for crimp contacts

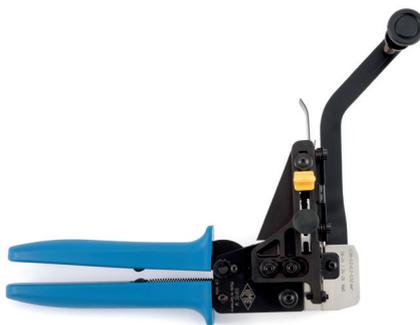
for 5 A SI stamped contacts of inserts series

pages:

|            |            |      |
|------------|------------|------|
| CQ         | (21 poles) | 190  |
| MIXO       | (25 poles) | 284  |
| MIXO       | (36 poles) | 30 * |
| MIXO BUS   | (8 poles)  | 293  |
| MIXO D-SUB | (9 poles)  | 296  |
| MIXO D-SUB | (9 poles)  | 70 * |

refer to CN.19 pages  
\* refer to NEWS 2020 pages

## manual crimping tool



## insertion / removal tool



description

part No.

part No.

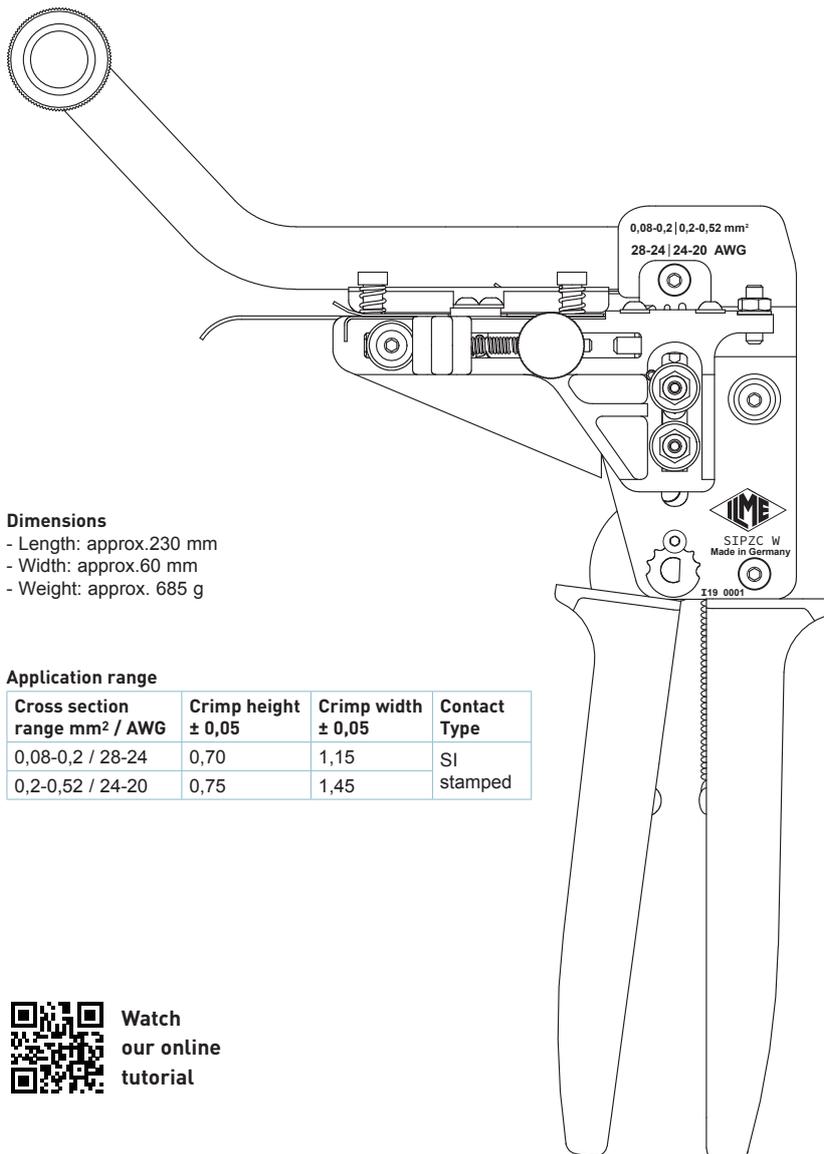
manual crimping tool for **SI** contacts (for coils)  
WEZAG CS 20 KTVR-D model

**SIPZC W**

extraction tool:  
for the insertion and removal of the contacts into the inserts  
- for **SI** contacts 0,08 - 0,52 mm<sup>2</sup>  
(SIF..D / SIM..D Series)

**CIES**

### SIPZC W Front view



**Dimensions**  
- Length: approx.230 mm  
- Width: approx.60 mm  
- Weight: approx. 685 g

### Application range

| Cross section range mm <sup>2</sup> / AWG | Crimp height ± 0,05 | Crimp width ± 0,05 | Contact Type |
|---|---------------------|--------------------|--------------|
| 0,08-0,2 / 28-24                          | 0,70                | 1,15               | SI           |
| 0,2-0,52 / 24-20                          | 0,75                | 1,45               | stamped      |



Watch our online tutorial

# Tools and accessories for crimp contacts

for 5 A CI and RI turned contacts of inserts series (as applicable)

pages:

|              |            |      |
|--------------|------------|------|
| CQ           | (21 poles) | 190  |
| MIXO         | (25 poles) | 284  |
| MIXO         | (36 poles) | 30 * |
| MIXO BUS     | (8 poles)  | 293  |
| MIXO D-SUB   | (9 poles)  | 296  |
| MIXO D-SUB   | (9 poles)  | 70 * |
| GIGABIT      | (8 poles)  | 286  |
| GIGABIT HNM  | (8 poles)  | 54 * |
| MEGABIT      | (8 poles)  | 44 * |
| MEGABIT HNM  | (8 poles)  | 46 * |
| SHIELDED     | (20 poles) | 36 * |
| SHIELDED HNM | (20 poles) | 38 * |

refer to CN.19 pages

\* refer to NEWS 2020 pages

pneumatic crimping tool positioner - gauge



insertion tool - removal tools



| description   | part No. | part No. |
|---|----------|----------|
| pneumatic crimping tool for turned 5 A contacts model DANIELS WA22 equivalent to CIPZ D (turret excluded)   | CIPZP D  |          |
| positioner (DANIELS K1450I) for 5 A contacts (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD Series)   | CITP D   |          |
| bench support for CIPZP D pneumatic crimping tool (DANIELS BM-2A)   | CCSPZP   |          |
| pneumatic foot valve (DANIELS WA10A)  | CCVPP    |          |
| "go / no go" control gauge to verify indenter closure (See notes below)   | CCPNP    |          |
| insertion and extraction tool: for the insertion and removal of the contacts into the inserts - for CI and RI contacts 0,2 - 0,5 mm <sup>2</sup> (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD Series) |          | CIES     |
| - for CI and RI contacts 0,75 mm <sup>2</sup> (CIFA - CIMA; CIFD - CIMD; CIF2D - CIM2D; CIFJD - CIMJD; RIFD - RIMD Series)  |          | CIES B   |

**Notes:**

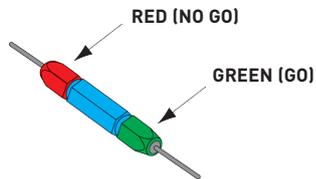
**Positioner**

conforms to international standard MIL-C-22520/1 - An interchangeable and indispensable accessory of the CIPZP D crimping tool, it precisely positions the contact where crimping is performed.

**"go / no go" control gauge**

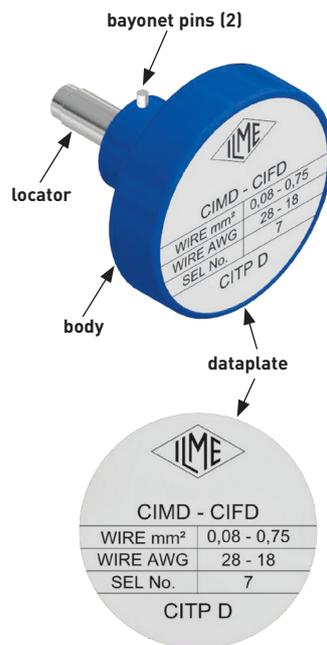
conforms with international standard MIL-C-22520/3 - A tool used to periodically check that the crimping tool meets standard requirements.

**CCPNP**



| Gauge | tool selector pos. No. | Ø A ± 0,00254 mm (GO) green | Ø B ± 0,00254 mm (NO GO) red |
|-------|------------------------|-----------------------------|------------------------------|
| CCPNP | 8                      | 0,991 (mm)<br>0,0390 (in)   | 1,118 (mm)<br>0,0440 (in)    |

**CITP D positioner**



# Tools and accessories for crimp contacts

for 10 A, 16 A and 40 A contacts of inserts series (as applicable)

pages:

|            |                  |           |
|------------|------------------|-----------|
| CD         | (10 A)           | 66 - 74   |
| CDD        | (10 A)           | 76 - 83   |
| CDC        | (16 A)           | 104 - 106 |
| CCE        | (16 A)           | 130 - 135 |
| CQE        | (16 A)           | 168 - 173 |
| CQEE       | (16 A)           | 176 - 177 |
| CMCE       | (16 A)           | 137 - 145 |
| CQ         | (10 A/16 A)      | 186 - 193 |
| CX 8/24    | (16 A/10 A)      | 194       |
| CX 6/36    | (40 A/10 A)      | 198       |
| CX 12/2    | (40 A/10 A)      | 199       |
| CX 6/6 **  | (16 A)           | 206       |
| CX 9/42    | (40 A/10 A)      | 20 *      |
| RD (HNM)   | (10 A)           | 208 - 209 |
| RDD (HNM)  | (10 A)           | 210 - 213 |
| RCE (HNM)  | (16 A)           | 214 - 217 |
| RQEE (HNM) | (16 A)           | 218 - 219 |
| MIXO       | (40 A/16 A/10 A) | 267 - 306 |

\*\* the underlined polarities indicate those contacts that require the tools shown in this page

refer to CN.19 pages

\* refer to NEWS 2020 pages

## pneumatic crimping tool



## insertion tool - removal tools replacement tip



CCPR RN

description

part No.

part No.

pneumatic crimping tool for 10 A, 16 A and 40 A contacts (standard version series CD, CC, CX and "HNM" version series RD, RC and RX) RENNSTEIG CM 25-3 model. Locator and pedal footswitch included

CCPZP RN

insertion tool

for insertion of the contacts into the inserts for crimped contacts up to 0,75 mm<sup>2</sup>

CCINA

removal tools

for the extraction of contacts from the inserts

for 10 A contacts (CD, RD) <sup>1)</sup>

for 16 A contacts (CC, RC) <sup>2)</sup>

for 40 A contacts (CX, RX) <sup>3)</sup> and cables Ø < 5 mm

for 40 A contacts (CX, RX) <sup>4)</sup> and cables Ø < 7,5 mm

CCES  
CQES  
CXES  
CXES-10

replacement tip

for CCES removal tool

CCPR RN

<sup>1)</sup> for CQ, CD, CDD, CX, RX inserts (10 A auxiliary contacts) and MIXO module (10 A)

<sup>2)</sup> for CQ, CQE, CQEE, CCE, RCE, CMCE inserts (excluded 16+2), MIXO module (16 A), CX 6/6 (16 A) and CDC. For CMCE (16+2), CX inserts (contacts 16A insert CX 8/24) using a flat 3 mm screwdriver.

<sup>3)</sup> for CX, RX inserts (40A contacts) and MIXO module (40 A)

<sup>4)</sup> for MIXO module CX 03 4B and contacts 10 mm<sup>2</sup>.

### Tool technical information

- Crimping force 25 kN
- Operating pressure 6 bar
- Air requirement 0,75 l per working stroke
- Size (l x h x w): 325 x 500 x 280
- Weight: 30,5 kg

### Indenter technical information

- For crimping turned male and female contacts according to MIL/SAE AS22520
- Indent settings in 0,01 mm increments, with digital setting and readout
- Electronic wear monitoring with warning function
- Setting functions in mm and inch

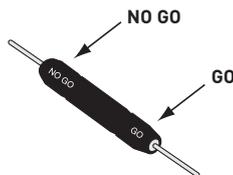


Digital indenter with incorporated positioner

### "go / no go" control gauge

- A tool used to periodically check that the crimping tool meets standard requirements.

CCPNP RN



| Gauge    | tool selector pos. No. | Ø A GO    | Ø B NO GO |
|----------|------------------------|-----------|-----------|
| CCPNP RN | 2,00 (mm)              | 1,94 (mm) | 2,06 (mm) |

### Tool adjustment

The reference matrix on the crimping tool indicates the correct seat of the positioner (POS M1, F2, M3, F4, M5, F6) to select, and the crimping depth (SET) to adjust for the contact to be crimped.

#### Positioner seat = M1 (male) - F2 (female)

| CDMA/D - RDM2D (male)   | Section (mm <sup>2</sup> ) | Crimp depth (mm) |
|-------------------------|----------------------------|------------------|
| CDFA/D - RDF2D (female) | 0,14                       | 1,3              |
|                         | 0,25                       |                  |
|                         | 0,37                       |                  |
|                         | 0,5                        | 1,55             |
|                         | 0,7                        | 1,55             |
|                         | 1,0                        | 1,55             |
|                         | 1,5                        | 1,55             |
|                         | 2,5                        | 1,55             |

#### Positioner seat = M3 (male) - F4 (female)

| CCMA/D - RCM2D (male)   | Section (mm <sup>2</sup> ) | Crimp depth (mm) |
|-------------------------|----------------------------|------------------|
| CCFA/D - RCF2D (female) | 0,14                       | 1,2              |
|                         | 0,25-0,37                  | 1,3              |
|                         | 0,5                        | 1,55             |
|                         | 0,7                        | 1,55             |
|                         | 1,0                        | 1,55             |
|                         | 1,5                        | 1,8              |
|                         | 2,5                        | 1,8              |
|                         | 3,0                        | 1,9              |
|                         | 4,0                        | 2,0              |

#### Positioner seat = M5 (male) - F6 (female)

| CXMA/D - RXM2D (male)   | Section (mm <sup>2</sup> ) | Crimp depth (mm) |
|-------------------------|----------------------------|------------------|
| CXFA/D - RXF2D (female) | 1,5                        | 1,55             |
|                         | 2,5                        | 1,8              |
|                         | 4,0                        | 2,0              |
|                         | 6,0                        | 2,5              |
|                         | 10,0                       | 2,3              |