

panel fitted insert fastening screws



screws for second earth terminal



description

part No.

part No.

to be fitted instead of the current insert fastening screws

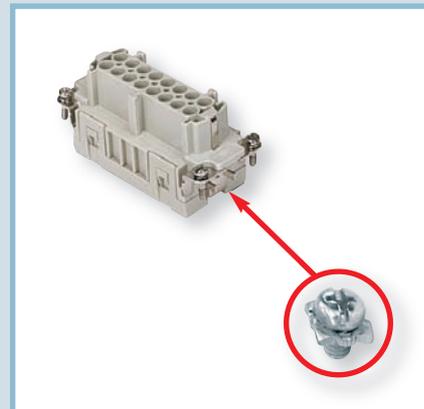
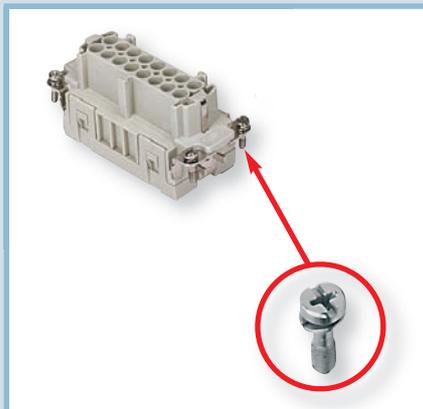
CRIC M3 *

- for CDA/CDC inserts
- for CD 15/25, CDD 38 inserts
- for CD 40/64, CDD 24/42/72/108, CQE, CNE, CSS, CX 8/24, CCE, CSE, CMSE, CME, CMCE, CSH inserts
- for CP, CX 12/2, CX 6/36, CX 4/0, CX 4/2 inserts

- CR VATG**
- CR VDTG**
- CR VNTG**
- CR VPTG**

ILME will not be responsible for any different mounting applications. It is the responsibility of the installer to ensure the correct coupling and earth contact of the inserts.

* The approved method of mounting inserts is by fixing the four screws in an ILME enclosure or housing.



dimensions shown are not binding and may be changed without notice

support for rail mounting
DIN EN 60715



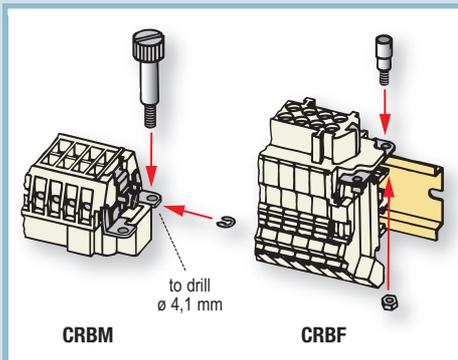
CT/CTS/CTSE inserts coupling screws
cable-clamping plates



description	part No.	part No.
supports for CT, CTS, CTSE inserts	CT APE	
bush for CT, CTS, CTSE inserts		CRBF
screw pin for CD, CNE, CCE, CSE, CSH inserts		CRBM
straight cable clamping plate		CRAD
angled cable clamping plate		CRAS

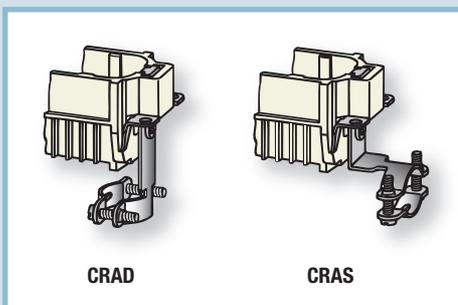
Coupling screws for CT/CTSE inserts

The use of CRBF (female) and CRBM (male) coupling screws is recommended to guarantee a stable and safe coupling between inserts (without enclosures) with terminal blocks and inserts without terminal blocks.



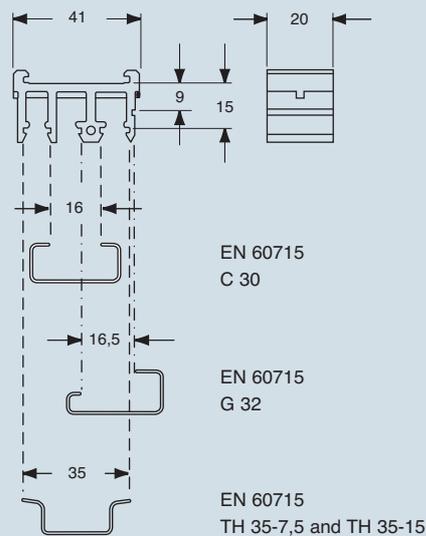
Use of cable-clamping plates

In accordance with the recommendations of standard IEC 60352-2, the weight of the conductor groups or multipolar cables must not cause any stress on the contacts inside the inserts. It is therefore advisable to use cable-clamping plates in those inserts without enclosures.



dimensions in mm

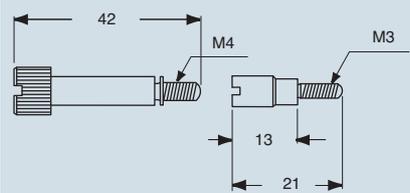
CT APE



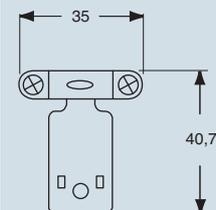
dimensions in mm

CRBM

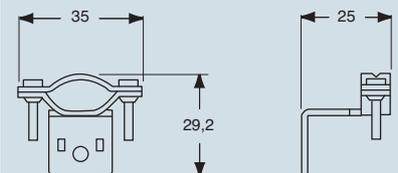
CRBF



CRAD



CRAS

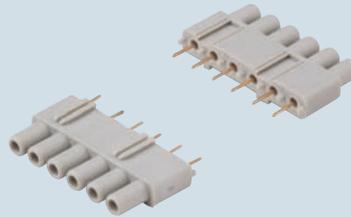


Note:
for conductor groups or cable with Ø min = 12 mm and Ø max = 23 mm

dimensions shown are not binding
and may be changed without notice

inserts:	page:
CDD 24 poles + ⊕	67
CDD 42 poles + ⊕	69
CDD 72 poles + ⊕	70
CDD 108 poles + ⊕	72
CX 8/24 poles + ⊕	169
CX 6/36 poles + ⊕	170
CX 12 (MIXO) 12 poles	194

interface for printed circuit



6A contacts for interface silver and gold plated



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

interface module with 6 female contacts (gold)
- for up to 2,4 mm thick PCB
interface module with 6 female contacts (silver)
- for up to 2,4 mm thick PCB

CIF 2.4
CIF 2.4 A

6A female contacts for female inserts with terminal Ø 1 mm

6A male contacts for male inserts with terminal Ø 1 mm

CDFA 6A	silver plated	CDFD 6A	gold plated
CDMA 6A		CDMD 6A	

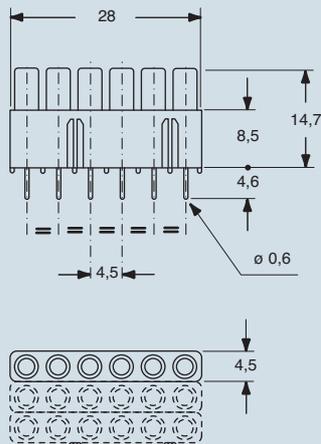
CIF interface

The interface block is made according to the multipole connector used by assembling a suitable number of CIF modules (see table).

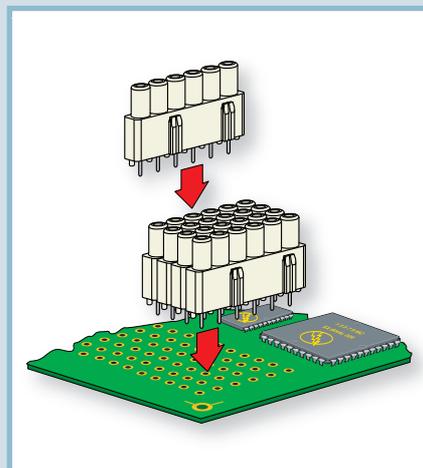
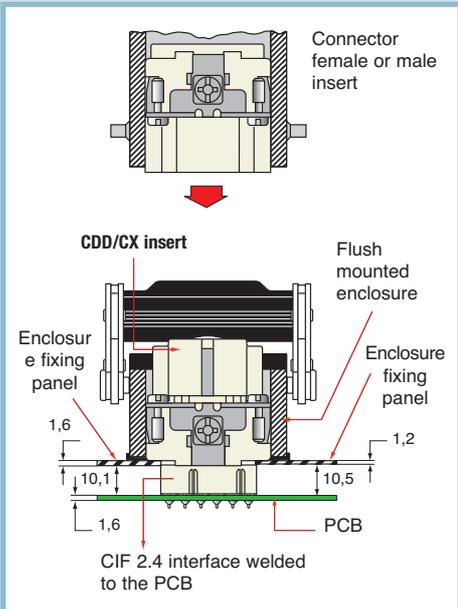
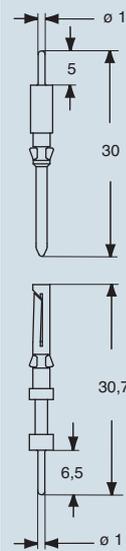
inserts serie	poles n°	modules "CIF" n°
CDD	24	4
CDD	42	7
CDD	72	12
CDD	108	18
CX	8/24	4
CX	6/36	6
CX (MIXO)	12	2

The block is then welded on the printed circuit on which the multipole connector (female or male) equipped with coupling contacts will then be inserted.

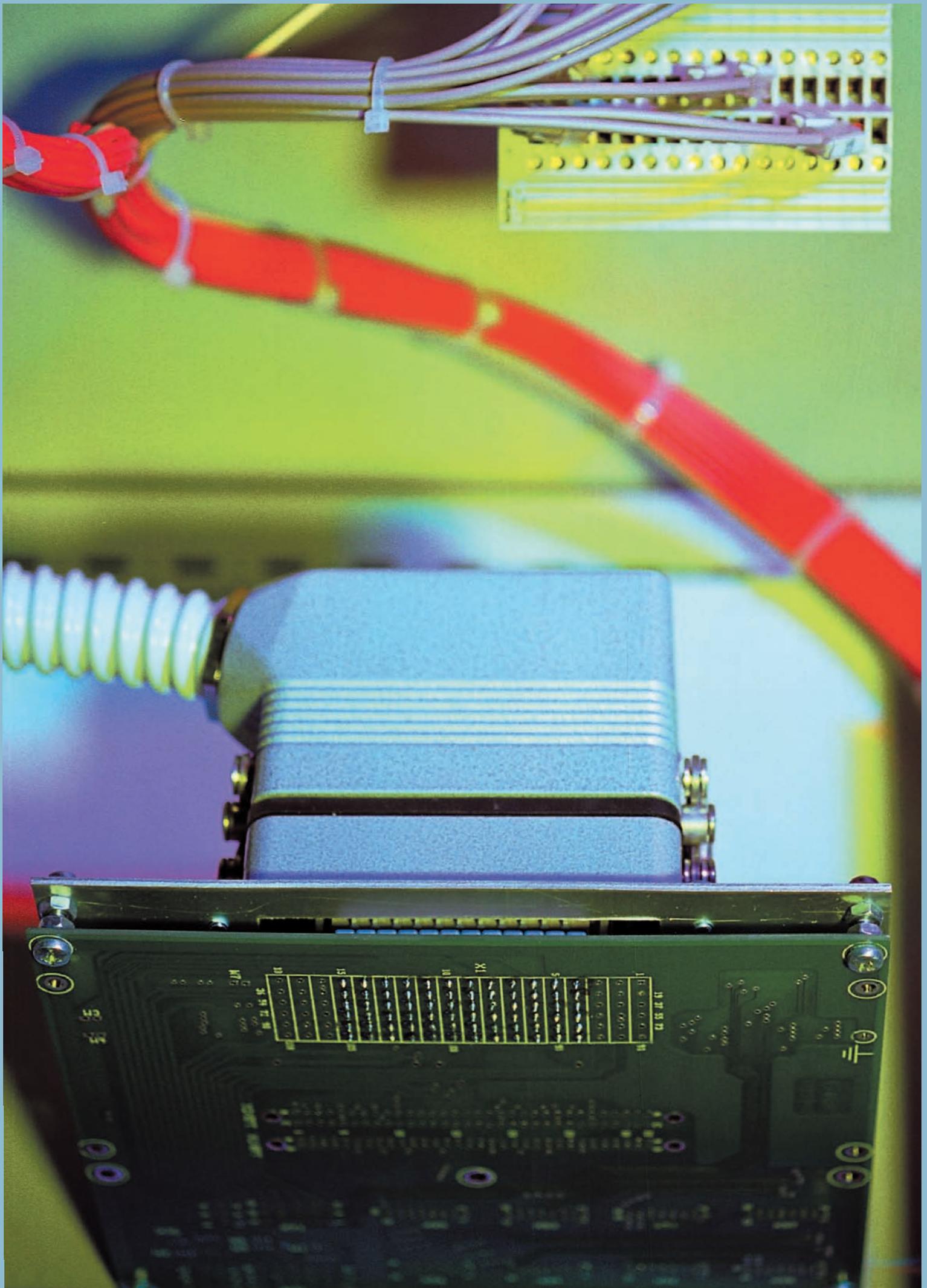
dimensions in mm



dimensions in mm



dimensions shown are not binding and may be changed without notice



inserts:	page:
CDC	10, 16 poles + ⊕ 99 and 101
CCE ..	6, 10, 16, 24, 32, 48 poles + ⊕ 110-115
CQE ..	10, 18, 32, 46, 64, 92 poles + ⊕ 138-143
CQEE	40, 64 poles + ⊕ 146-147
CMCE .	3+2, 6+2, 10+2, 16+2, 12+4, 20+4, 32+4 .. poles + ⊕ 148-160
CQ	5 poles + ⊕ 166
CX	8/24 poles + ⊕ 169
CX	6/6 poles + ⊕ 175
MIXO	(16A) 189-199

**constantan (Cu Ni)
crimp contacts**



**iron (Fe)
crimp contacts**



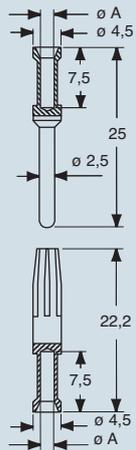
description	part No.	part No.
16A, 0,3 mm ² , AWG 22 female contacts	CCFC 0.3	CCFF 0.3
16A, 0,3 mm ² , AWG 22 male contacts	CCMC 0.3	CCMF 0.3
16A, 0,5 mm ² , AWG 20 female contacts	CCFC 0.5	CCFF 0.5
16A, 0,5 mm ² , AWG 20 male contacts	CCMC 0.5	CCMF 0.5

Note:
A mixed combination of standard Iron, Constantan and silver and gold plated contacts can be fitted in the same insert.

- for crimp contacts, see the crimp tool section (16A, CCF and CCM series contacts) pages 534, 538, 544, 546, 548
- for thermocouples compliant with DIN IEC 584 type J
- contact resistance ≤ 1 Ohm

dimensions in mm

CCF and CCM

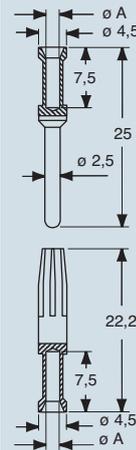


CCF and CCM contacts

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length (mm)
0,3	1,1	7,5
0,5	1,1	7,5

dimensions in mm

CCF and CCM



CCF and CCM contacts

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length (mm)
0,3	1,1	7,5
0,5	1,1	7,5

dimensions shown are not binding and may be changed without notice

insert:	page:
CD (10A)	53-61
CDD (10A)	67-74
CQ (10A)	165 and 168
CX 8/24 (16A/10A)	169
CX 6/36 (10A)	170
CX 12/2 (10A)	171
MIXO (10A)	185-203

**10A crimp contacts
high thickness gold plating**



NEW

**10A crimp contacts
basic gold plated**



NEW

description	part No.	part No.
10A female contacts		
0,14-0,37 mm ² AWG 26-22 identification No. 1	CDF2D 0.3	CDFJD 0.3
0,5 mm ² AWG 20 identification No. 2	CDF2D 0.5	CDFJD 0.5
0,75 mm ² AWG 18 identification No. ②	CDF2D 0.7	CDFJD 0.7
1,0 mm ² AWG 18 identification No. 3	CDF2D 1.0	CDFJD 1.0
1,5 mm ² AWG 16 identification No. 4	CDF2D 1.5	CDFJD 1.5
2,5 mm ² AWG 14 identification No. 5	CDF2D 2.5	CDFJD 2.5
10A male contacts		
0,14-0,37 mm ² AWG 26-22 identification No. 1	CDM2D 0.3	CDMJD 0.3
0,5 mm ² AWG 20 identification No. 2	CDM2D 0.5	CDMJD 0.5
0,75 mm ² AWG 18 identification No. ②	CDM2D 0.7	CDMJD 0.7
1,0 mm ² AWG 18 identification No. 3	CDM2D 1.0	CDMJD 1.0
1,5 mm ² AWG 16 identification No. 4	CDM2D 1.5	CDMJD 1.5
2,5 mm ² AWG 14 identification No. 5	CDM2D 2.5	CDMJD 2.5

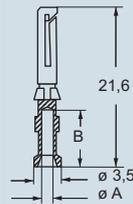
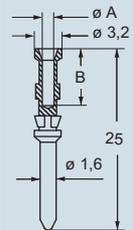
gold plated

gold plated

The new gold plated contacts provide:
 - corrosion resistance (according to EN 60068)
 - mechanical life: ≥ 500 coupling cycles
 - in compliance with EN 61984:2010-4, IEC 60512, EN 60352-2: 1994
 - compliant to directive RoHS
 - contact resistance: ≤ 3 mΩ
 - certifications: UL

dimensions in mm

CDF2 and CDM2

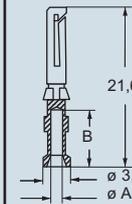
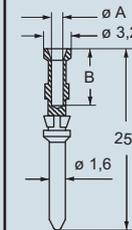


contacts CDF2 and CDM2

conductor section mm ²	conductor slot $\varnothing A$ (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

dimensions in mm

CDFJ and CDMJ



contacts CDFJ and CDMJ

conductor section mm ²	conductor slot $\varnothing A$ (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

dimensions shown are not binding and may be changed without notice

insert:	page:
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (16A)	166-167
CX 8/24 (16A/10A)	169
CX 6/6 (16A/10A)	175
MIXO (16A)	189-199

**16A crimp contacts
high thickness gold plating**



NEW

**16A crimp contacts
basic gold plated**



NEW

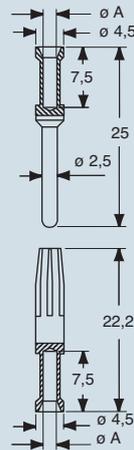
description	part No.	part No.
<p>16A female contacts</p> <p>0,14-0,37 mm² AWG 26-22 one groove</p> <p>0,5 mm² AWG 20 with no grooves</p> <p>0,75 mm² AWG 18 one groove (back side)</p> <p>1,0 mm² AWG 18 one groove</p> <p>1,5 mm² AWG 16 two grooves</p> <p>2,5 mm² AWG 14 three grooves</p> <p>3,0 mm² AWG 12 one wide groove</p> <p>4,0 mm² AWG 12 with no grooves</p>	<p>CCF2D 0.3</p> <p>CCF2D 0.5</p> <p>CCF2D 0.7</p> <p>CCF2D 1.0</p> <p>CCF2D 1.5</p> <p>CCF2D 2.5</p> <p>CCF2D 3.0</p> <p>CCF2D 4.0</p>	<p>CCFJD 0.3</p> <p>CCFJD 0.5</p> <p>CCFJD 0.7</p> <p>CCFJD 1.0</p> <p>CCFJD 1.5</p> <p>CCFJD 2.5</p> <p>CCFJD 3.0</p> <p>CCFJD 4.0</p>
<p>16A male contacts</p> <p>0,14-0,37 mm² AWG 26-22 one groove</p> <p>0,5 mm² AWG 20 with no grooves</p> <p>0,75 mm² AWG 18 one groove (back side)</p> <p>1,0 mm² AWG 18 one groove</p> <p>1,5 mm² AWG 16 two grooves</p> <p>2,5 mm² AWG 14 three grooves</p> <p>3,0 mm² AWG 12 one wide groove</p> <p>4,0 mm² AWG 12 with no grooves</p>	<p>CCM2D 0.3</p> <p>CCM2D 0.5</p> <p>CCM2D 0.7</p> <p>CCM2D 1.0</p> <p>CCM2D 1.5</p> <p>CCM2D 2.5</p> <p>CCM2D 3.0</p> <p>CCM2D 4.0</p>	<p>CCMJD 0.3</p> <p>CCMJD 0.5</p> <p>CCMJD 0.7</p> <p>CCMJD 1.0</p> <p>CCMJD 1.5</p> <p>CCMJD 2.5</p> <p>CCMJD 3.0</p> <p>CCMJD 4.0</p>

The new gold plated contacts provide:

- corrosion resistance (according to EN 60068)
- mechanical life: ≥ 500 coupling cycles
- in compliance with EN 61984:2010-4, IEC 60512, EN 60352-2: 1994
- compliant to directive RoHS
- contact resistance: ≤ 1 mΩ
- certifications: UL

dimensions in mm

CCF2 and CCM2

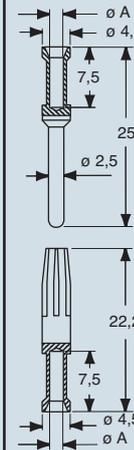


contacts CCF2 and CCM2

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	7,5
0,5	1,1	7,5
0,75	1,3	7,5
1,0	1,45	7,5
1,5	1,8	7,5
2,5	2,2	7,5
3,0	2,55	7,5
4,0	2,85	7,5

dimensions in mm

CCFJ and CCMJ



contacts CCFJ and CCMJ

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	7,5
0,5	1,1	7,5
0,75	1,3	7,5
1,0	1,45	7,5
1,5	1,8	7,5
2,5	2,2	7,5
3,0	2,55	7,5
4,0	2,85	7,5

dimensions shown are not binding and may be changed without notice

enclosures:

MIXO seriesfrom page 180

CX 01 YF/YM/YPEF/YPEM, CX 02 GF/M, CX 02 HF/M:
only with CR 24 ATD

N.B.:
size 44.27 and 57.27 cannot be used with T-TYPE series

ground terminals for shielded cables (for MIXO series)
clamps for cables Ø 5 mm and Ø 10 mm



anchorages for several earth connections cables (for MIXO series)



description	part No.	part No.
in zinc iron, to be mounted on MIXO frames in bulkhead mounting housings and high construction hoods - enclosures "44.27" and MIXO frames for 2 inserts - enclosures "57.27" and MIXO frames for 3 inserts - enclosures "77.27", "77.62" and MIXO frames for 4 inserts - enclosures "104.27", "104.62" and MIXO frames for 6 inserts	CR 06 ST CR 10 ST CR 16 ST CR 24 ST	
to be mounted on CR..ST ground terminals clamp for shielding cables Ø 5 mm clamp for shielding cables Ø 10 mm	CR 05 CA CR 10 CA	
in zinc iron, to be mounted on MIXO frames in bulkhead mounting housings and high construction hoods - enclosures "44.27" and MIXO frames for 2 inserts - enclosures "57.27" and MIXO frames for 3 inserts - enclosures "77.27", "77.62" and MIXO frames for 4 inserts - enclosures "104.27", "104.62" and MIXO frames for 6 inserts - enclosures "104.27", "104.62" and MIXO frames for 6 inserts		CR 06 AT CR 10 AT CR 16 AT CR 24 AT CR 24 ATD

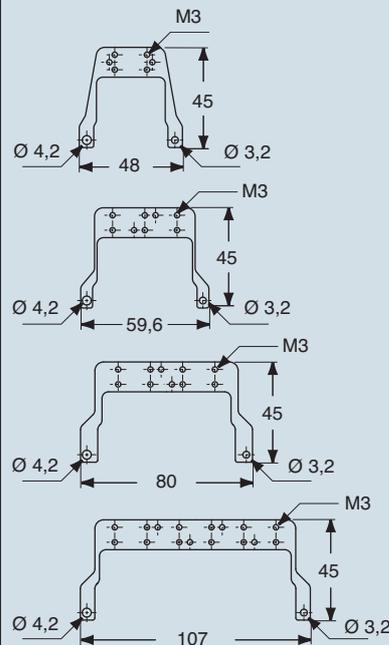
Anchorage CR .. ST are designed for installation on the frames of the MIXO modular connectors, for earth connecting the screening braid of shielded cables.

With the CR..ST anchorages we advise you to use high construction hoods top entry.

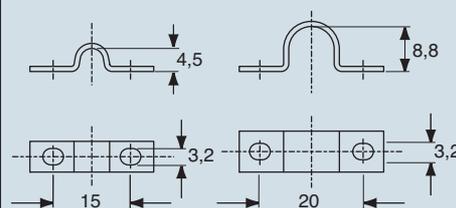
Anchorage CR .. AT / ATD are designed for installation on the frames of the MIXO modular connectors for earth connecting several cables.

dimensions in mm

CR...ST

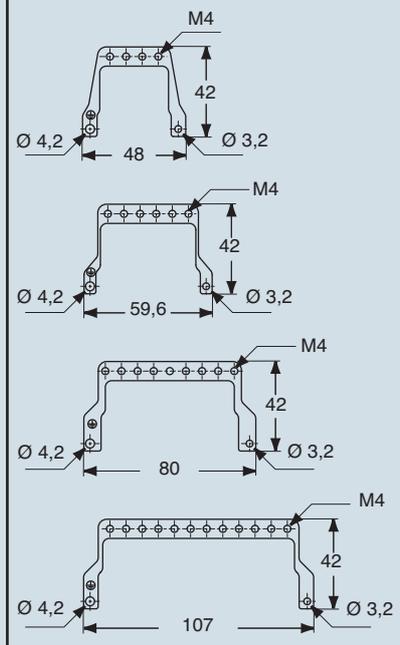


CR...CA

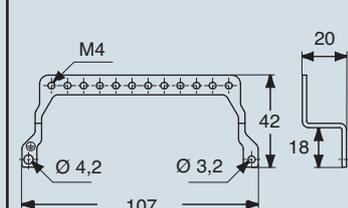


dimensions in mm

CR...AT



CR...ATD



dimensions shown are not binding and may be changed without notice

inserts:	page:
CD 40, 64 poles + ⊕ 57 and 59	
CDD 24, 42, 72, 108 poles + ⊕	67-72
CDS 9, 18, 27, 42 poles + ⊕	78-81
CSH 6, 10, 16, 24 poles + ⊕	91-94
CNE, CSE.. 6, 10, 16, 24 poles + ⊕	104-107
CCE 6, 10, 16, 24 poles + ⊕	110-113
CSS 6, 10, 16, 24 poles + ⊕	122-125
CQE 10, 18, 32, 46 poles + ⊕	138-141
CQEE 40, 64 poles + ⊕	146-147
CMSH 3+2, 6+2, 10+2 (aux) poles + ⊕	149-153
CP 6 poles + ⊕	162
CX 8/24, 6/36, 12/2 poles + ⊕	169-171

screw fixing centre distance:
44 x 27 mm, 57 x 27 mm,
77,5 x 27 mm, 104 x 27 mm

N.B.:
 size 44.27 and 57.27 cannot be used with T-TYPE series

ground terminals for shielded cables and for several earth connections clamps for cables Ø 5 mm and Ø 10 mm



description

in zinc plated iron, to be fitted on connectors in bulkhead housings, high hoods and COB series enclosures

- "44.27" enclosures and inserts
- "57.27" enclosures and inserts *
- "77.27", "77.62" enclosures and inserts
- "104.27", "104.62" enclosures and inserts
- CSS "104.27" enclosures and inserts **

part No.
CR 06 SC
CR 10 SC
CR 16 SC
CR 24 SC
CR 24 SCA

to be fitted on CR..SC anchors
 U-bolt for Ø 5 mm cable screening
 U bolt for Ø 10 mm cable screening

CR 05 CA
CR 10 CA

* The high construction hoods with side entry cannot be used.

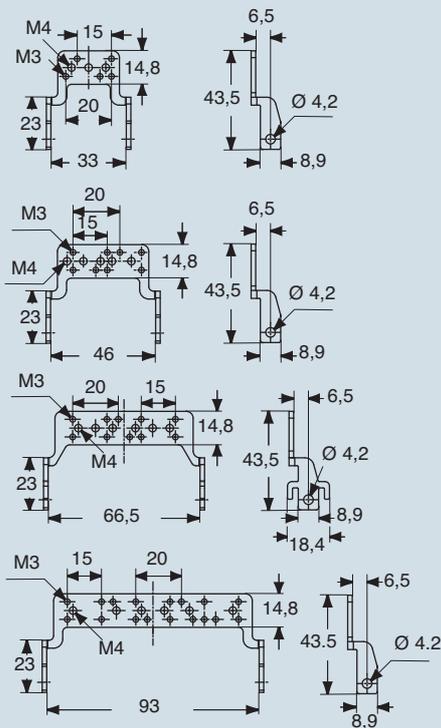
** Can be used only in bulkhead housings.

The CR... SC anchors are fitted on connectors for connecting to earth multiple cables and screened cables braids.

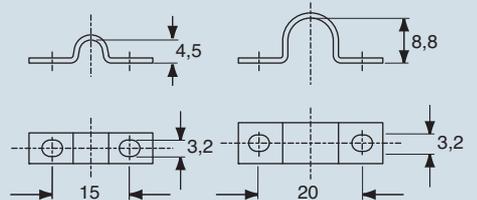
With the CR.SC anchorages, we advise you to use high construction hoods top entry.

dimensions in mm

CR...SC



CR...CA



dimensions shown are not binding and may be changed without notice

The CR..FS series anchorages are employed for use of connector inner fittings (normal or MIXO modular) without enclosures and enable securing cables with clamps to prevent transmitting friction forces to contacts. CR..SS anchorages (with grip to facilitate detachment) are used for earth connecting several conductors and/or of the screen of shielded cables.

* except CT, CTS and CTSE

grip panels for cables outside enclosure equipped with fixing screws and rings



supports, screws and clamps for grip panels of cables outside enclosure



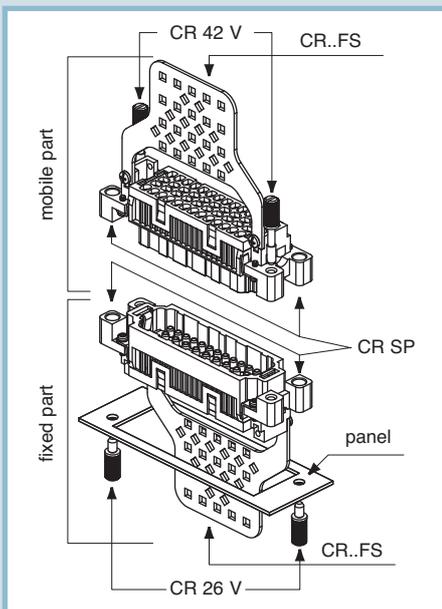
description	part No.	part No.
in zinc iron, to be mounted on: - inserts size "44.27" * and MIXO frames for 2 inserts - inserts size "57.27" * and MIXO frames for 3 inserts - inserts size "77.27" * and MIXO frames for 4 inserts - inserts size "104.27" * and MIXO frames for 6 inserts	CR 06 FS CR 10 FS CR 16 FS CR 24 FS	
for shielded cables, to be mounted on: - inserts size "77.27" * and MIXO frames for 4 inserts - inserts size "104.27" * and MIXO frames for 6 inserts	CR 16 SS CR 24 SS	
supports in die-cast zinc N° 2 pieces equipped with fixing screws and rings for earth connecting		CR SP
short screws in zinc iron, N° 2 pieces long screws in zinc iron, N° 2 pieces		CR 26 V CR 42 V
to be mounted on CR..SS anchorage clamp for shielding cables Ø 5 mm clamp for shielding cables Ø 10 mm		CR 05 CA CR 10 CA

* Except CT, CTS, and CTSE

In the fixed part, a pair of CR SP supports is fitted on the connector, using its securing screws. A CR..FS or CR..SS anchorage is fitted on the supports, using the supplied securing screws and washers. All parts are secured on the rear panel with the pair of CR 26 V viton screws.

In the mobile part too, a pair of CR SP supports are fitted on the connector and a CR..FS or CR..SS anchorage is secured on it. The pair of CR 42 V screws fasten the mobile part to the fixed part.

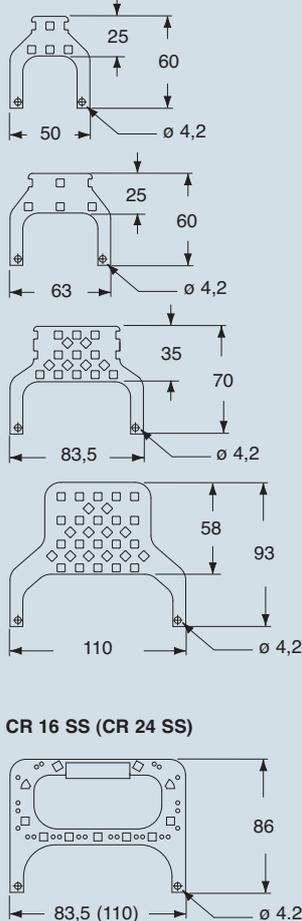
Note: By unscrewing the CR 26 V panel screws, the whole assembly (mobile part + fixed part) can be removed from the panel for inspection.



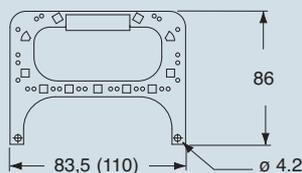
dimensions shown are not binding and may be changed without notice

dimensions in mm

CR...FS

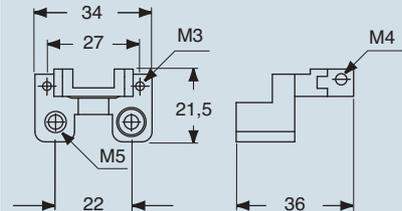


CR 16 SS (CR 24 SS)

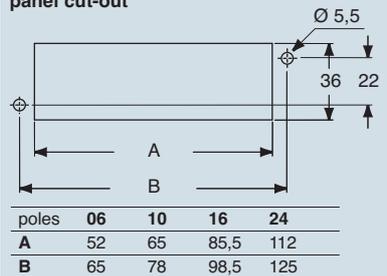


dimensions in mm

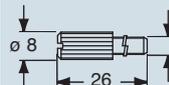
CR SP



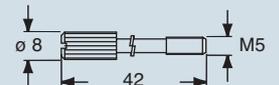
panel cut-out



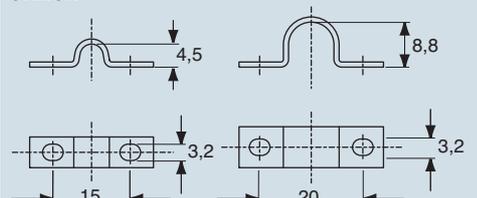
CR 26 V



CR 42 V



CR...CA



Technical specifications

- materials
 - floating frame, inserts: stainless steel
 - fixing screws: zinc-plated steel
- mechanical endurance: ≥ 500 cycles
- compensation range:
 - x axis: $\pm 1,5$ mm
 - y axis: $\pm 1,5$ mm

Caution:

-As the frames are floating, **the PE earthing connection of the metal surfaces on which they are mounted (mounting bases) must be performed separately** and cannot be done by connecting the PE earthing contact to the corresponding connector inserts.

Note:

- The supply includes 1 frame and 4 shoulder screws with cylindrical head and notch to fix the frame in place.

self-centering floating frame



NEW

description

part No.

in stainless steel, to be mounted on:

- inserts size "44.27" * and MIXO frames for 2 inserts
- inserts size "57.27" * and MIXO frames for 3 inserts
- inserts size "77.27" * and MIXO frames for 4 inserts
- inserts size "104.27" * and MIXO frames for 6 inserts

CR 06 DF
CR 10 DF
CR 16 DF
CR 24 DF

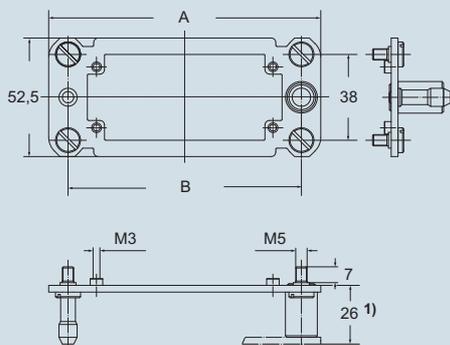
* Except CT, CTS and CTSE

For use with MIXO inserts CX 04 X, please contact ILME SpA.

Characteristics

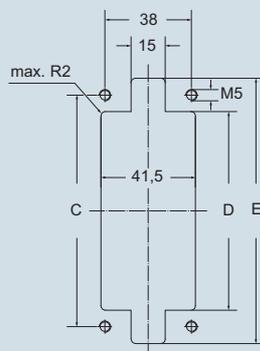
- Suitable, depending on size, for all MIXO connector inserts and frames, except series CT, CTS and CTSE.
- Designed to be used in the transportation, printing and power electronic industries (for example boxes for rack cabinets) and in all industrial applications that require, during assembly or maintenance, the connection of connectors without possibility of controlling the alignment.
- Enables the **self-centering coupling of two corresponding** connectors without the use of enclosures; they freely move on their base plate ($\pm 1,5$ mm on both axes) ensuring the **alignment of the coupling**.

dimensions in mm



1) distance for electric and fibre optic contacts: max 27 mm
distance for pneumatic contacts: max 26,5 mm

panel cut-out in mm



part No.	A	B	C	D	E
CR 06 DF	86	69	69	54,5	84
CR 10 DF	99	82	82	67,5	97
CR 16 DF	119,5	102,5	102,5	88	117,5
CR 24 DF	146	129	129	114,5	144



dimensions shown are not binding and may be changed without notice

single code pins
for 6 codings



selectivity using single code pins



description	part No.	part No.
single code pin (not for MIXO inserts)	stainless steel CR 20	zinc plated iron CR 20 D
single code pin (for MIXO inserts only)	stainless steel CR 20 CX	zinc plated iron CR 20 CX D

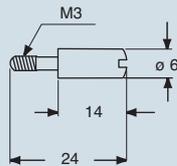
CR 20/CR 20 D and CR 20 CX/CR 20 CX D code pins

Each series of connector inserts is made in such a way as to make incorrect coupling between inserts of different series impossible. When a number of identical connectors with different functions are mounted closely together these must be selected in such a way as to prevent the coupling of a mobile part on a non-corresponding fixed part and consequent damage and breakdown.

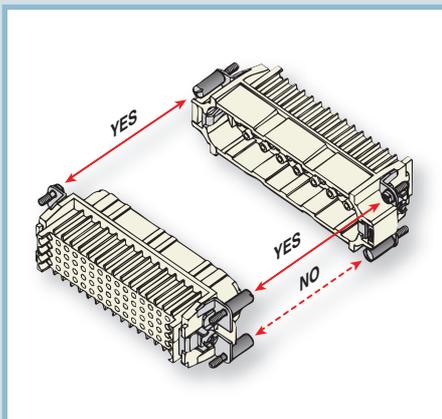
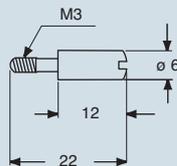
Code pins are supplied to apply in place of the normal insert fastening screws (see example below). In this way the coupling of identical connectors is assured. The combination of code pins makes it possible to obtain a high number of selective couplings.

dimensions in mm

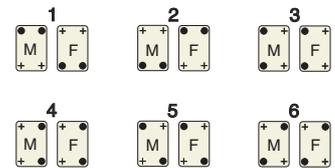
CR 20 / CR 20 D



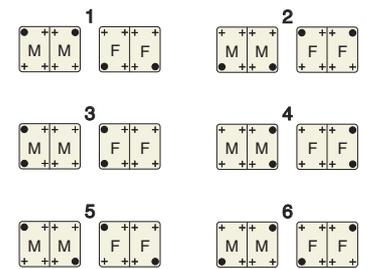
CR 20 CX / CR 20 CX D



Application with single insert



Application with double inserts



- code pin
(CR 20/CR 20 D and CR 20 CX/CR 20 CX D)
- + normal fixing screw
- M = male insert
- F = female insert

dimensions shown are not binding
and may be changed without notice

double coding and guide pins, for 16 codes

selection is made by using double coding and guide pins

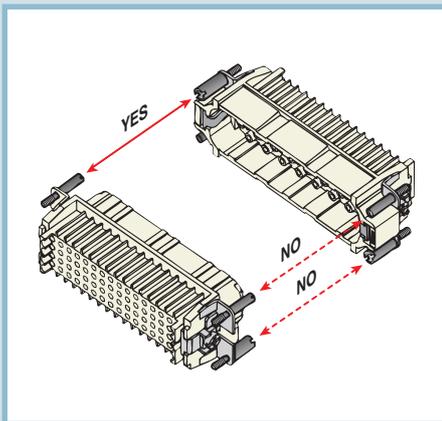


description	part No.	part No.
double coding pins (excluding MIXO inserts) - male pin - female pin	stainless steel CRM CRF	zinc plated iron CRM D CRF D
double code pins (for MIXO inserts only) - male pin - female pin	stainless steel CRM CX CRF CX	zinc plated iron CRM CX D CRF CX D

Code pins
- CRM/CRM D and CRF/CRF D
- CRM CX/CRM CX D and CRF CX/CRF CX D

Each series of connector inserts is made in such a way as to make incorrect coupling between inserts of different series impossible. When a number of identical connectors with different functions are mounted closely together these must be selected in such a way as to prevent the coupling of a mobile part on a non-corresponding fixed part and consequent damage and breakdown.

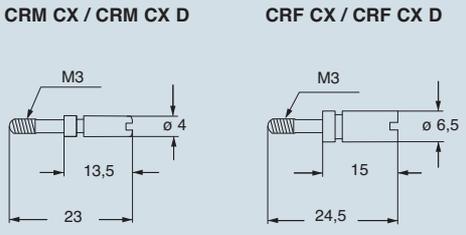
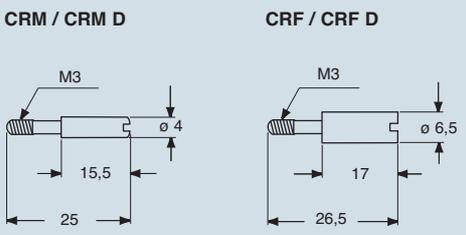
Code pins are supplied to apply in place of the normal insert fastening screws (see example below). In this way the coupling of identical connectors is assured. The combination of code pins makes it possible to obtain a high number of selective couplings.



Even when coding is not required, it is recommended to use CRM and CRF pins with CD and CDD inserts to reduce movements when fitting and removing the connectors and to avoid contact damages. Within this scope, the standard DIN 43 652 requires a maximum angular longitudinal fluctuation of $\pm 5^\circ$.

dimensions shown are not binding and may be changed without notice

dimensions in mm



Application with single insert

Application with double inserts

- female code pin (CRF/CRF D and CRF CX/CRF CX D)
- male code pin (CRM/CRM D and CRM CX/CRM CX D)
- + normal fixing screw
- M = male insert
- F = female insert

coding and guide pins, for 72 codes

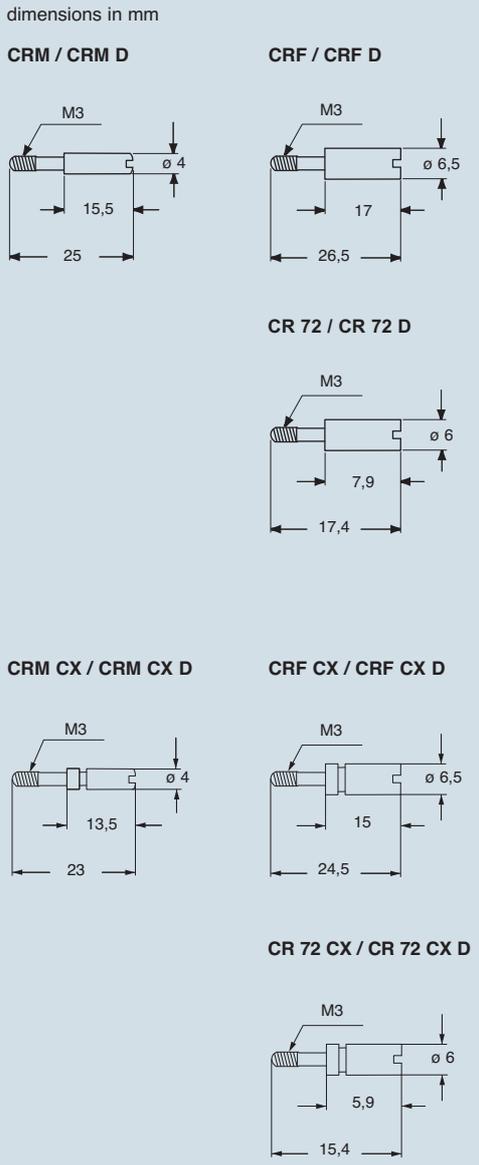


description	part No.	part No.
double coding pins (excluding MIXO inserts) - male pin - female pin - single code pin	stainless steel CRM CRF CR 72	zinc plated iron CRM D CRF D CR 72 D
double coding pins (for MIXO inserts only) - male pin - female pin - single code pin	stainless steel CRM CX CRF CX CR 72 CX	zinc plated iron CRM CX D CRF CX D CR 72 CX D

Code pins
- CRM/CRM D, CRF/CRF D and CR 72/CR 72 D
- CRM CX/CRM CX D, CRF CX/CRF CX D and CR 72 CX/CR 72 CX D

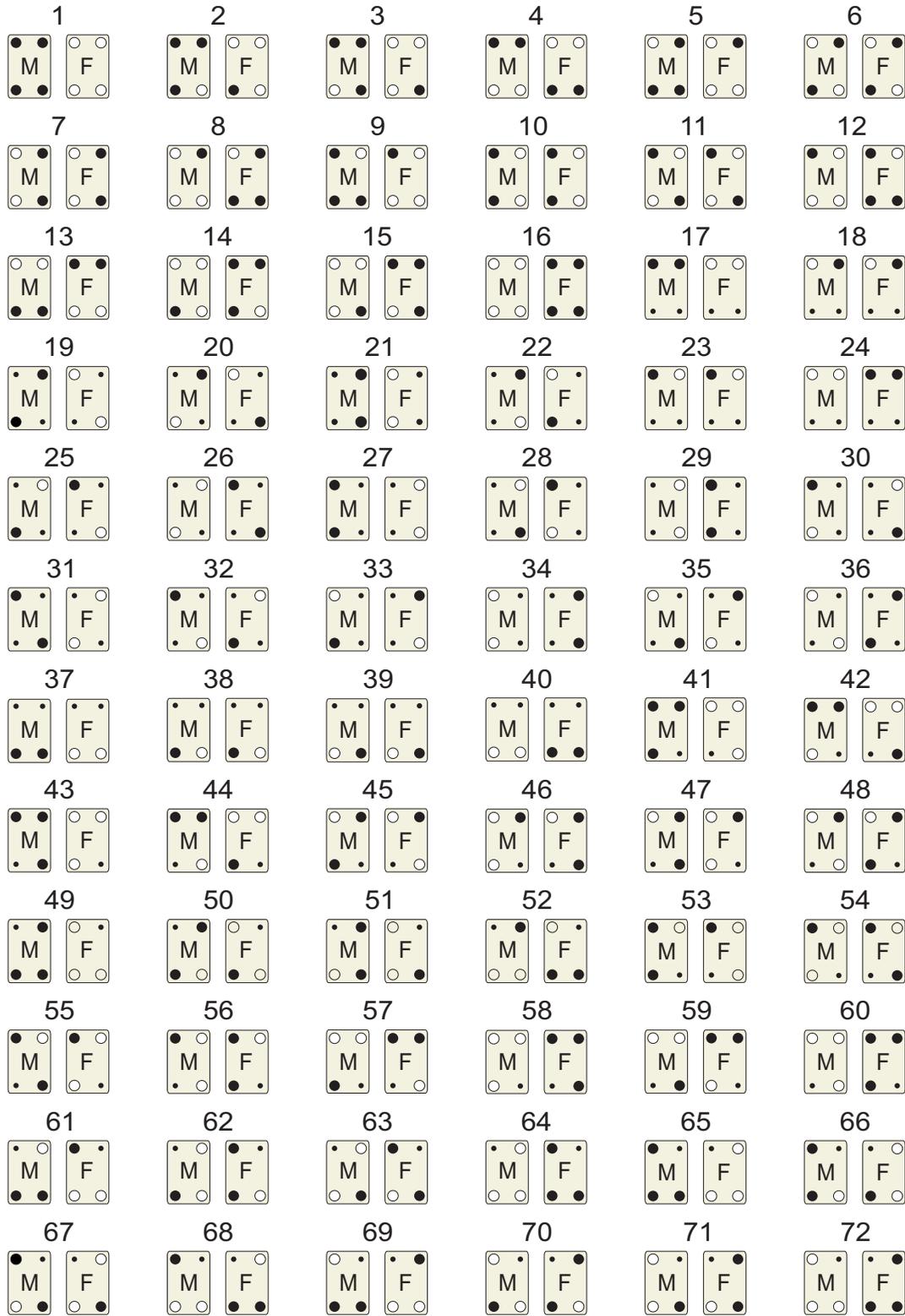
Each series of connector inserts is made in such a way as to make incorrect coupling between inserts of different series impossible. When a number of identical connectors with different functions are mounted closely together these must be selected in such a way as to prevent the coupling of a mobile part on a non-corresponding fixed part and consequent damage and breakdown.

Code pins are supplied to apply in place of the normal insert fastening screws. In this way the coupling of identical connectors is assured. The combination of code pins makes it possible to obtain a high number of selective couplings.



dimensions shown are not binding and may be changed without notice

Coding selection using the three coding pins



- female code pin (CRF/CRF D and CRF CX/CRF CX D)
- male code pin (CRM/CRM D and CRM CX/CRM CX D)
- single code pin (CR 72/CR 72 D and CR 72 CX/CR 72 CX D)
- M = male insert
- F = female insert

plain coding pins
for CK / CKS 03 inserts



NEW

plain coding pins
for CK / CKS 04 inserts



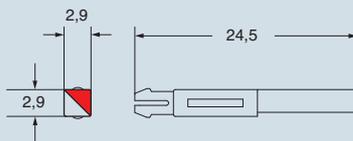
NEW

description	part No.	part No.	part No.
coding pins for CK/CKS 03 inserts	CR K03	red CR K04R	yellow CR K04G
coding pins for CK/CKS 04 inserts			



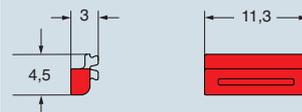
dimensions in mm

CR K03

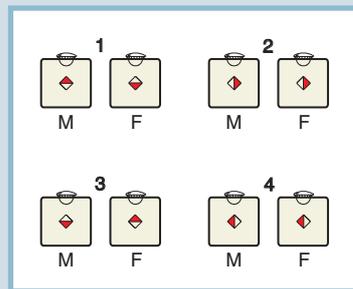
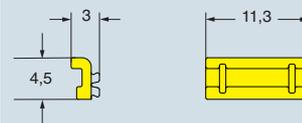


dimensions in mm

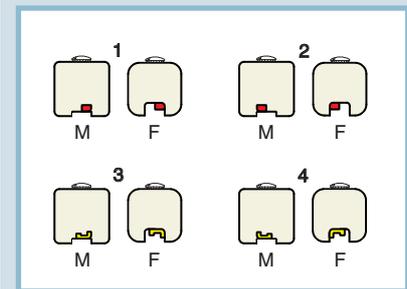
CR K04R



CR K04G



M = male insert
F = female insert



M = male insert
F = female insert

dimensions shown are not binding
and may be changed without notice

plain coding pins
for crimp inserts



plain coding pins
for CQ 12 inserts



description	part No.	part No.
coding pins for CDC, CQ, CQE, CCE, CMCE, MIXO (16A) inserts - pin to be inserted into one contact cavity of the female insert instead of the crimp contact, the corresponding contact cavity of the male insert must be left empty	CR CPQ	
coding pins for CD and CDD inserts - plastic pin, to be inserted into one contact cavity of the female insert instead of a crimp contact, the corresponding contact cavity of the male insert must be left empty	CR CP	
coding pins for CQ 12 inserts		CR Q12

Code pins

Each series of connector inserts is made in such a way as to make incorrect coupling between inserts of different series impossible.

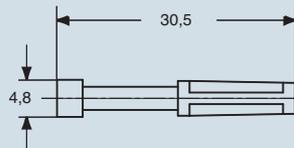
When a number of identical connectors with different functions are mounted closely together these must be selected in such a way as to prevent the coupling of a mobile part on a non-corresponding fixed part and consequent damage and breakdown.

Within this scope, special coding pins have been manufactured in order to restrict or avoid mating identical multiple connectors.

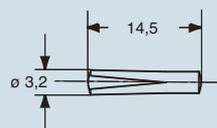
By combining multiple coding pins, a high number of selected matings can be produced.

dimensions in mm

CR CPQ

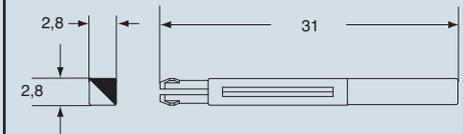


CR CP

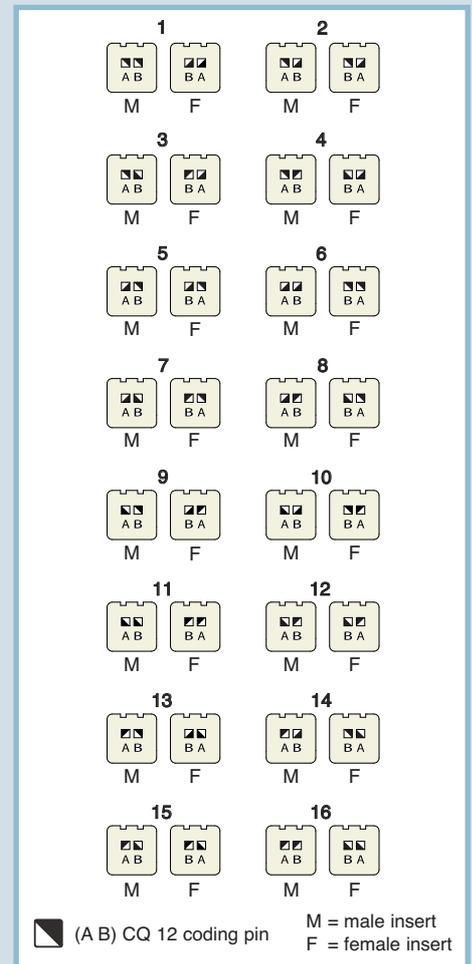


dimensions in mm

CR Q12



CR Q12



dimensions shown are not binding and may be changed without notice

terminal connector
for CKF 03 inserts

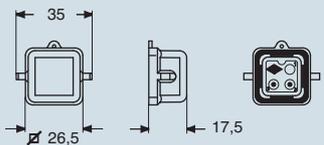


description	part No.
with pegs and seal, connects pole 2 with pole 3 with pegs and seal, connects pole 1 with pole 2	CKM 03 T1 CKM 03 T3

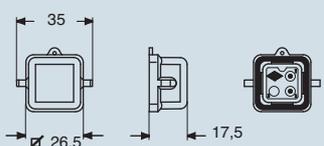
When the terminal connector is mated with a CKF/CKSF 03 insert (complete with an enclosure with lever), it performs a dual function:
- connects two socket insert poles
- acts as a cover (IP65 protection rating compliant with EN 60529 standard, with lever closed).

dimensions in mm

CKM 03 T1



CKM 03 T3

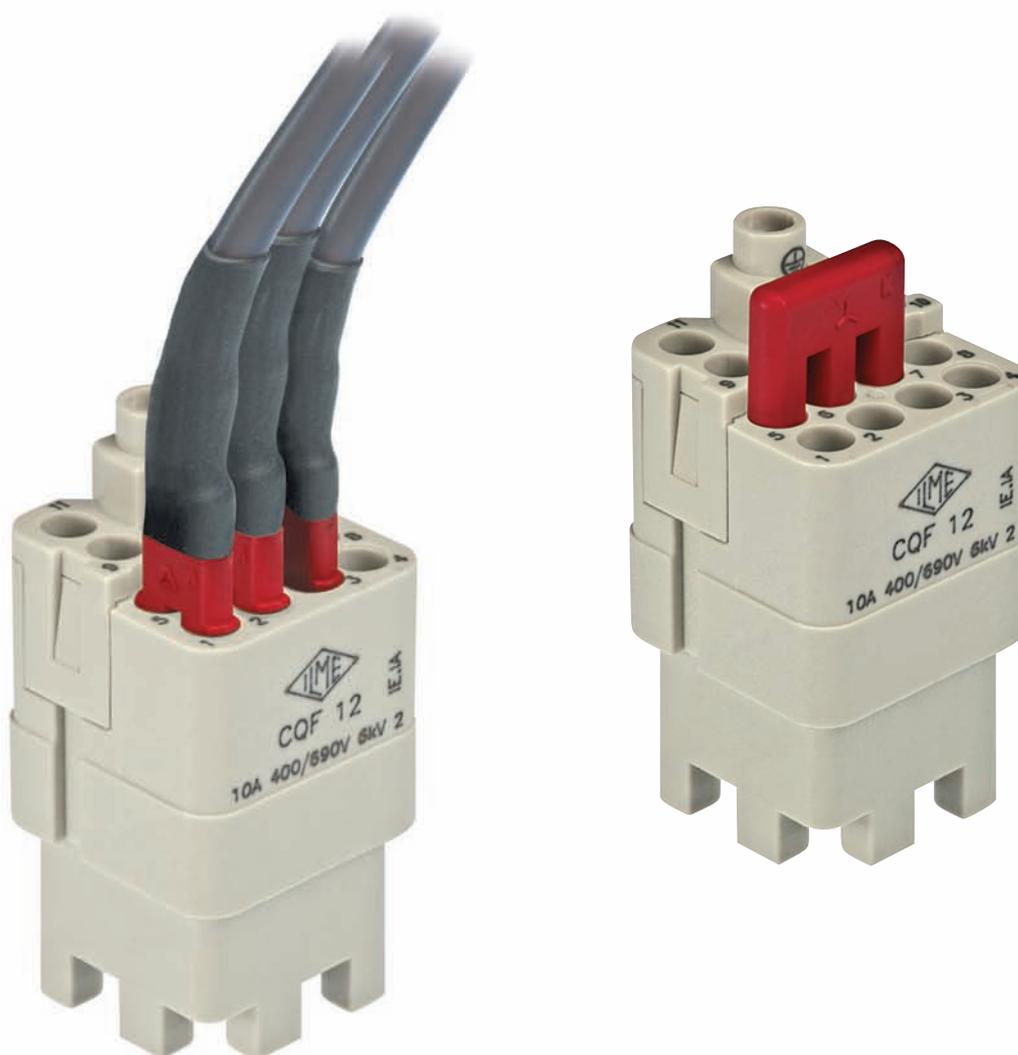


- interconnected male contacts

dimensions shown are not binding
and may be changed without notice

Bridges

for delta or star connection



CR bridges for delta or star connection



inserts:

- CQF * 12 poles + ⊕
- CDDF 24, 42, 72 (144), 108 (216) poles + ⊕

* for enclosures C-TYPE series (CKA/MKA.../VS) only

For wires with cross-section ranging from 1,5 to 2,5 mm² (16-14 AWG), crimp connection with **CRPZ** pliers (model CEMBRE IDT) and **CRD** matrix.



bridges for delta connection



description

bridge with 2 female 10A contacts, silver plated and open type crimp barrel

Part No.

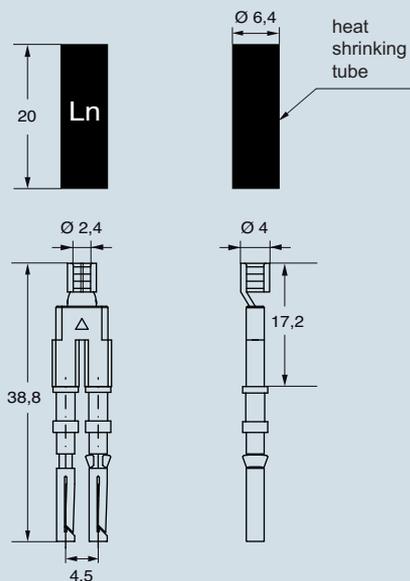
CR BDE

NOTE:

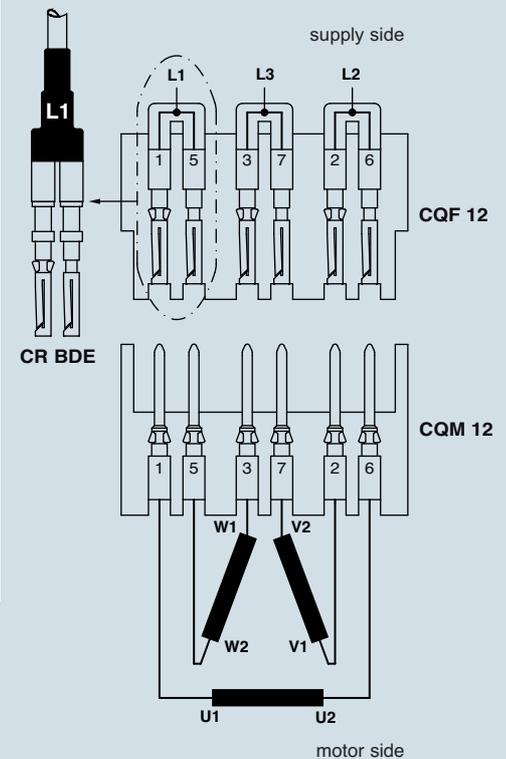
The typical use of the product requires three bridges each with its shrinking tube with L1 / L2 / L3 marking to identify the phases in the wiring.



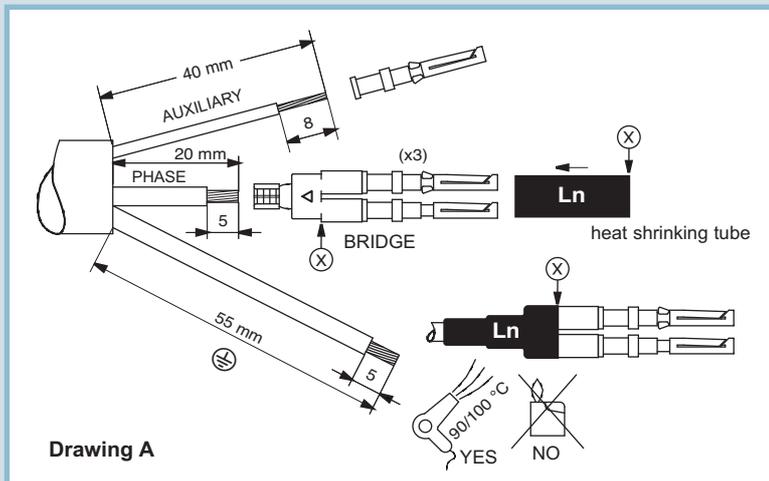
dimensions in mm



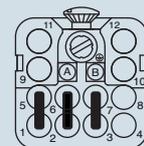
Example of DELTA connection using inserts CQ 12



- 1 - Cut and strip the wires as shown in **Drawing A**.
- 2 - Crimp the contacts on the auxiliary wires and the bridge end to the phase wires (3 units) using CRPZ pliers and CRD matrix (position 2,5).
- 3 - Insert the insulating heat shrinking tubes on the bridges, their end must be aligned with the position ⊗. Then heat them at 90/100 °C till they shrink over the wires.
- 4 - Insert the 3 bridges according to the **Drawing B**.



Drawing B



CQF 12
(termination side)

1-5	BRIDGE L1 (winding U1/W2)
2-6	BRIDGE L2 (winding V1/U2)
3-7	BRIDGE L3 (winding W1/V2)
4	auxiliary circuit
8	auxiliary circuit
9	auxiliary circuit
10	auxiliary circuit
11	auxiliary circuit
12	auxiliary circuit
⊕	protective earth

dimensions shown are not binding and may be changed without notice

CR bridges for delta or star connection



inserts:

- CQF 12 poles + ⊕
- CDDF 24, 42, 72 (144), 108 (216) poles + ⊕

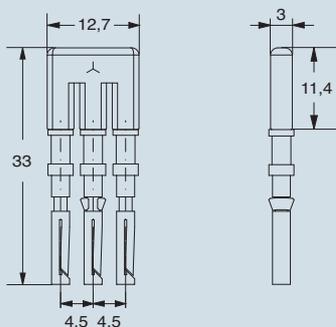
bridges for star connection



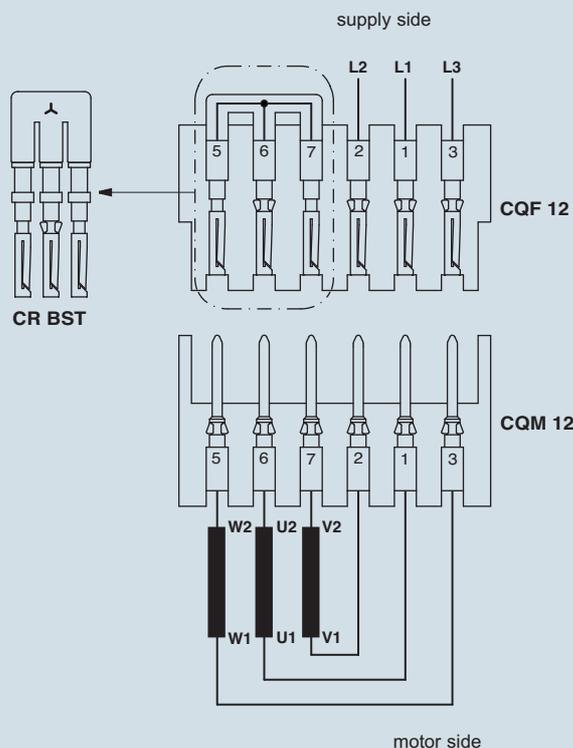
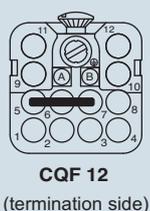
description	Part No.
bridge with 3 female 10A contacts, silver plated	CR BST



dimensions in mm



Example of STAR connection using inserts CQ 12



5-6-7	BRIDGE W2-U2-V2
1	L1
2	L2
3	L3
4	auxiliary circuit
8	auxiliary circuit
9	auxiliary circuit
10	auxiliary circuit
11	auxiliary circuit
12	auxiliary circuit
⊕	protective earth

dimensions shown are not binding and may be changed without notice

Accessories

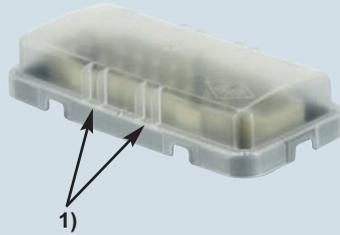
enclosures:

size "44.27", "57.27", "77.27", "104.27"

for versions:

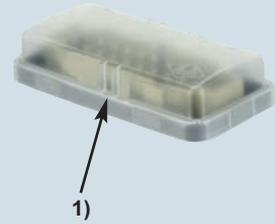
- C-TYPE IP65/IP66
- C7 IP67 stainless steel lever
- V-TYPE IP65/IP66 stainless steel lever
- BIG hoods
- W-TYPE for aggressive environments
- EMC
- 180 °C
- central lever
- insulated 830V
- LS-TYPE

dust protection cover



NEW

painting protection cover 2)



NEW

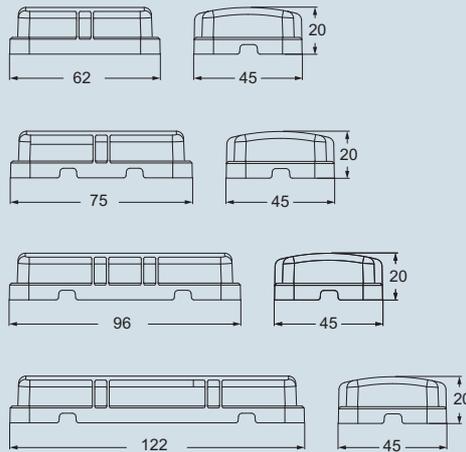
description	part No.	part No.
for housings and hoods with 1 or 2 levers, with 2 or 4 pegs - size "44.27" - size "57.27" - size "77.27" - size "104.27"	CHCP 06 CHCP 10 CHCP 16 CHCP 24	CHCP 10 V

1) Possibility of using cable ties to increase the retention of the insulating cover on the hood.

2) For housings and hoods with gasket only.

dimensions in mm

CHCP



dimensions in mm

CHCP 10 V



dimensions shown are not binding and may be changed without notice

for versions:

- IP68:

size "21.21", "44.27", "57.27", "77.27", "104.27"

dust protection cover,
for housings



dust protection cover,
for hoods



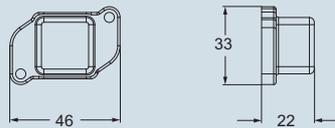
description	part No.	part No.
for housings and hoods - size "21.21" - size "44.27" - size "57.27" - size "77.27" - size "104.27"	CGKCP FX CGCP 06 FX CGCP 10 FX CGCP 16 FX CGCP 24 FX	CGKCP MB CGCP 06 MB CGCP 10 MB CGCP 16 MB CGCP 24 MB

1) Possibility of using cable ties to increase the retention of the insulating cover on the hood.

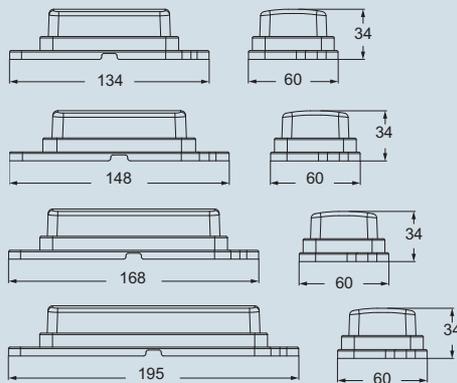
2) possibility to fix by crew:
 - CGKCP FX: 2xM3
 - CGCP FX: 2xM6

dimensions in mm

CGKCP FX

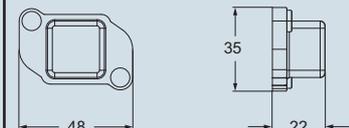


CGCP FX

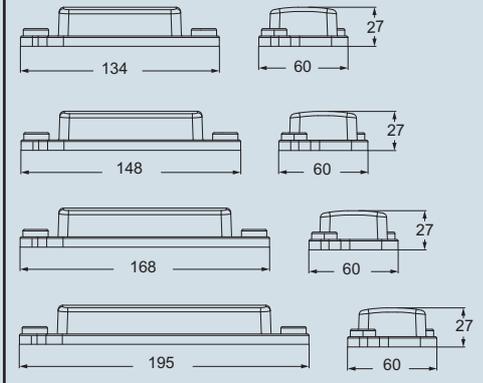


dimensions in mm

CGKCP MB



CGCP MB



dimensions shown are not binding and may be changed without notice

insert joining block



metal replacement handles



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

made of die cast aluminium alloy to mate two inserts (see below)

CBGF

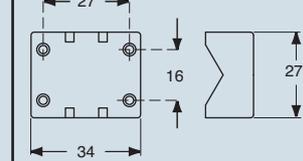
to replace thermoplastic handles
2 component kit for dual lever enclosures ¹⁾

CR TM-1

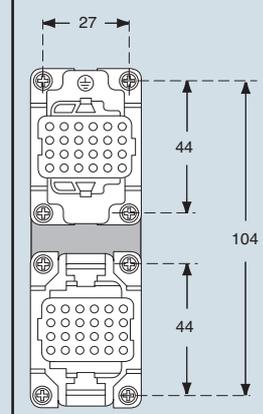
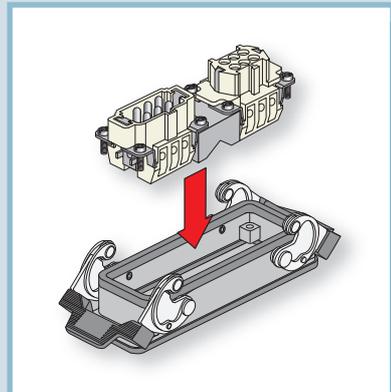
¹⁾ can only be used on dual lever enclosures sizes 57.27, 77.27 and 104.27

dimensions in mm

- CBGF combination block**
- Allows two "44.27 size" inserts to be inserted in "104.27 size" enclosures and on the following COB series items: COB TCQ, COB 24 BC, COB TSF, COB TSFS, COB 24 CMS
 - Allows female contacts and male contacts in the same enclosure or mounting
 - Allows mixed type contacts in the same enclosure or mounting (for example, 6 poles 16A CNEF + 24 poles 10A CDDF)



- C-TYPE enclosures (with two levers only):
- size "57.27" from page 244
 - size "77.27" from page 250
 - size "104.27" from page 258



enclosures :
size "104.27" from page 258

panel supports:
COB page 462 - 463

inserts with screw fixing centre distance:
(2x) 44 x 27 mm

dimensions shown are not binding and may be changed without notice

enclosures:
size "104.27" from page 258

temporary protection cover
for transportation

pliers for uncoupling connectors



description

part No.

part No.

for housings and hoods
- with 1 or 2 levers, with 2 or 4 pegs

CPT 24 *

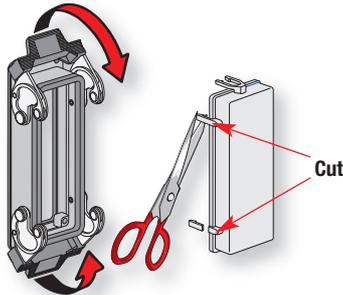
for housings and hoods
- with 2 levers and 4 pegs

CPES

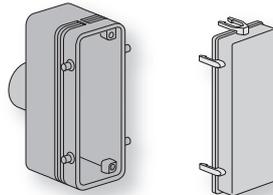
* Cannot be used with T-TYPE series

USE

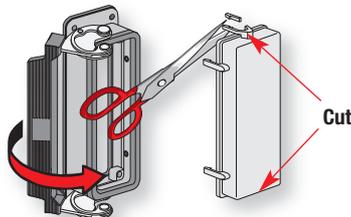
CPT 24 for enclosures with 2 levers



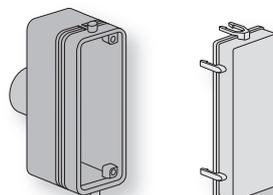
CPT 24 for enclosures with 4 pegs



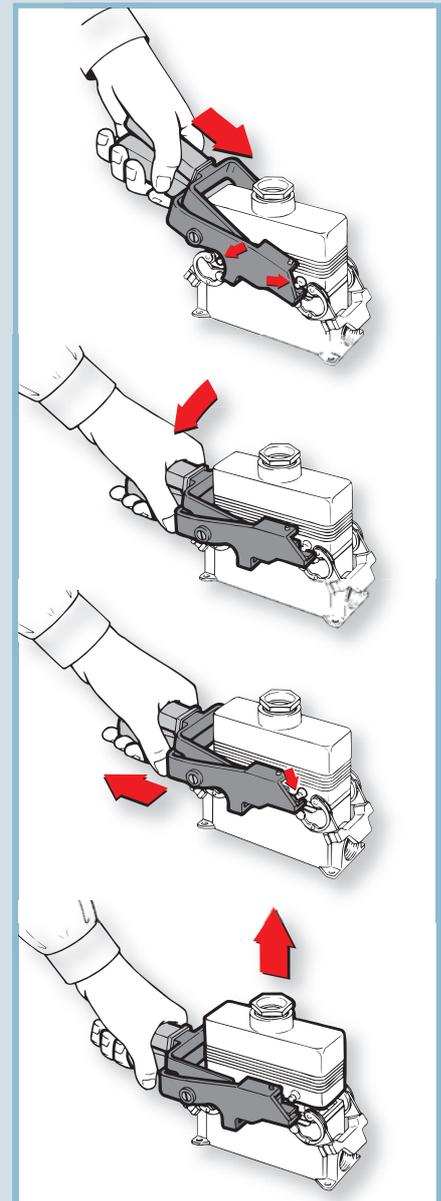
CPT 24 for enclosures with 1 lever



CPT 24 for enclosures with 2 pegs



USE



enclosures:

- size "49.16" from page 230
- size "66.16" from page 233
- size "44.27" from page 240
- size "57.27" from page 244
- size "77.27" from page 250

Use M3 passing screws tightened with nut and washer (not included).
Verify connection continuity of coupled connectors

plates for D-SUB inserts (IEC 60807-2)
CZ / MZ / MZF enclosures



plates for D-SUB inserts (IEC 60807-2)
CH / CA and MH / MA / MF enclosures



description	part No.	for enclosures size	part No.	for enclosures size
for 1 D-SUB insert 9 poles (not included)	CR 09 AD	"49.16"	CR 09 AD1	"44.27"
for 1 D-SUB insert 15 poles (not included)	CR 15 AD	"49.16"	CR 15 AD1	"44.27"
for 1 D-SUB insert 25 poles (not included)	CR 25 AD	"49.16"	CR 25 AD1	"57.27"
for 1 D-SUB insert 37 poles (not included)	CR 37 AD	"66.16"	CR 37 AD1	"77.27"
for 1 D-SUB insert 50 poles (not included)	CR 50 AD	"66.16"	CR 50 AD1	"77.27"
for 2 D-SUB inserts 9 poles (not included)			CR 09 AD2	"44.27"
for 2 D-SUB inserts 15 poles (not included)			CR 15 AD2	"44.27"
for 2 D-SUB inserts 25 poles (not included)			CR 25 AD2	"57.27"
for 2 D-SUB inserts 37 poles (not included)			CR 37 AD2	"77.27"
for 2 D-SUB inserts 50 poles (not included)			CR 50 AD2	"77.27"

Plates CR...AD, CR...AD1 and CR...AD2

For machinery or command equipment that need connection with programming and control electronic devices. The plate housings have notches for the rear insertion of cabled D-SUB inserts.

CR...AD

mounting on bulkhead housings and hoods
one-way mounting in bulkhead housings or hoods.

CR...AD1 and CR...AD2

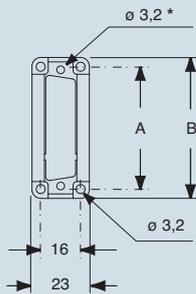
mounting on bulkhead housings (Figure 1)
The D-SUB connector must be mounted on the side marked with the letter "A"

mounting on hoods (Figure 2)

The D-SUB connector must be mounted on the side marked with the letter "T"

dimensions in mm

CR...AD



* For passing screws type M3

The electrical continuity is guaranteed only if mounted in our enclosures.

part No.	A	B
CR 09 AD	49,5	56,5
CR 15 AD	49,5	56,5
CR 25 AD	49,5	56,5
CR 37 AD	66	73,5
CR 50 AD	66	73,5

dimensions in mm

CR...AD1

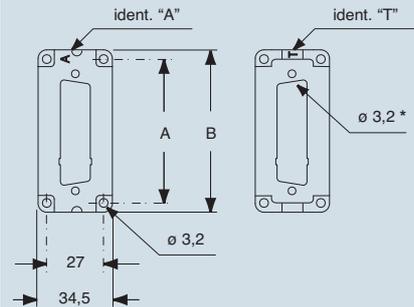


Figure 1

Figure 2

CR...AD2

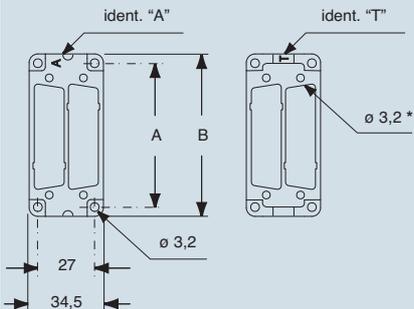
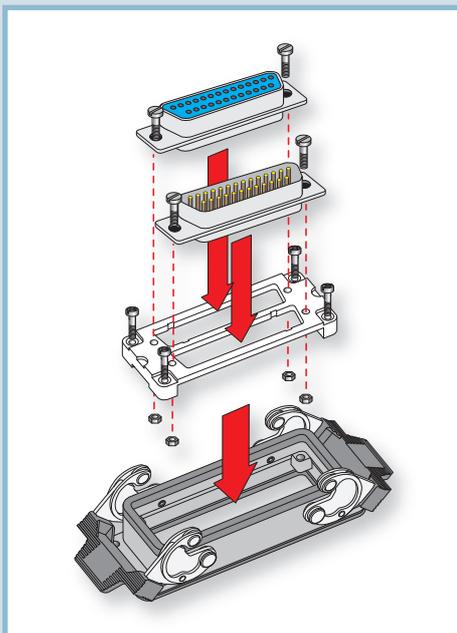


Figure 1

Figure 2

* For passing screws type M3

part No.	A	B
CR 09 AD1 / 2	44	51,5
CR 15 AD1 / 2	44	51,5
CR 25 AD1 / 2	57	64,5
CR 37 AD1 / 2	77,5	85
CR 50 AD1 / 2	77,5	85



dimensions shown are not binding
and may be changed without notice

enclosures *):
size "104.62"

page:

C-TYPE IP65/IP66 271

* normally bulkhead type

**kit for control equipment
plate only**



**kit for control equipment
plate with enclosure**



description	part No.	for enclosure	part No.
with Schuko® socket 16A and 2 seats for: CR 09 AD, CR 15 AD, CR 25 AD plates	SDS	CHI 48 LS	
with Schuko® socket 16A and 2 seats for: CR 09 AD, CR 15 AD, CR 25 AD plates			CHSDS

Kit for control equipment

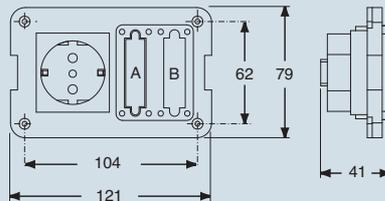
For machinery or command equipment that need connection with programming and control electronic devices.

The kit includes the Schuko® socket and 2 seats for the CR...AD plates (not included) for D-SUB inserts (not included).

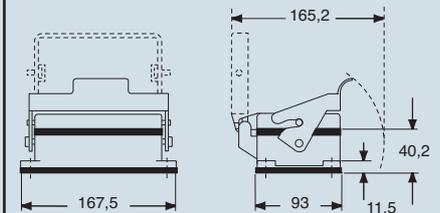
Personal computers, notebooks or printers can be power supplied using a 16A socket.

Monitors, printers and other peripheral devices may be interfaced using D-SUB connectors

dimensions in mm



dimensions in mm

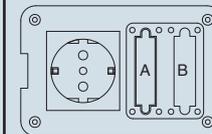


CR...AD plates usable

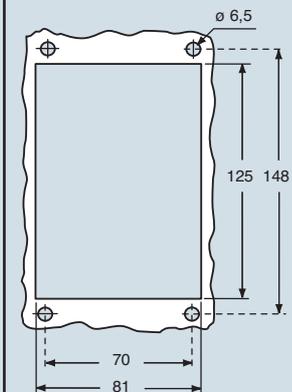
part No.	
CR 09 AD	for 1 D-SUB insert 9 poles (not included)
CR 15 AD	for 1 D-SUB insert 15 poles (not included)
CR 25 AD	for 1 D-SUB insert 25 poles (not included)

Closed seat "A" for use with one insert only. The closing is achieved by means of a plastic membrane that can easily be removed if the second seat is required.

CR.. AD plates to be ordered separately



housing panel cut-out in mm



dimensions shown are not binding and may be changed without notice

enclosures:

- size "44.27" from page 240
- size "57.27" from page 244
- size "77.27" from page 250
- size "104.27" from page 258

24 pole closure or reduction plate



extraction tool for MIXO BUS connectors

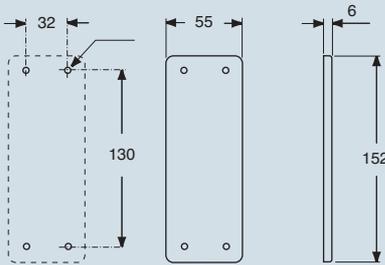


description	part No.	part No.
in autoextinguishing thermoplastic resin with gasket in vinyl-nitrile elastomer	CRH 24	
in self-extinguishing thermoplastic resin with gasket in vinyl-nitrile elastomer - for bulkhead mounting housings * size "44.27" - for bulkhead mounting housings * size "57.27" - for bulkhead mounting housings * size "77.27" - for bulkhead mounting housings * size "104.27"	CRZ 06 CRZ 10 CRZ 16 CRZ 24	
for the extraction of the BUS shielded connectors from the MIXO BUS insert		CX BES

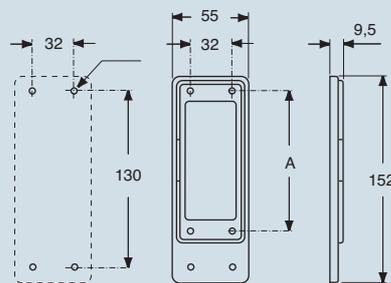
* Cannot be used with T-TYPE series and IP68 series

dimensions in mm

CRH 24



CRZ



CRZ	A
06	70
10	83
16	103
24	130

dimensions shown are not binding and may be changed without notice

enclosures:
size "21.21"

page:

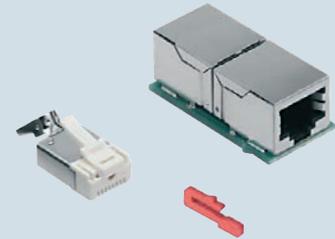
insulating type 526 - 527
(CK IN, CKG/MKG VN/VAN)

metallic type 528 - 529
(CKAX I, CKAG/MKAG V/VA)

IP68 416 - 418
(CGK I, CGK/MGK V)

adaptor for RJ45 connectors

RJ45 connectors



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

without RJ45 connector (to be ordered separately)
- adaptor for RJ45 female connector in fixed enclosures

CJ KF

- RJ45 female connector with 8 data contacts
- RJ45 female connector with 8 data contacts / 2 power contacts

CX 8 JF *
CX 8/2 JF *

without RJ45 connector (to be ordered separately)
- adaptor for RJ45 male connector ¹⁾

CJ KM

- RJ45 male connector with 4 data contacts
- RJ45 male connector with 4 data contacts / 2 power contacts
- RJ45 male connector with 6 data contacts / 2 power contacts
- RJ45 male connector with 8 data contacts
- RJ45 male connector, 4 data contacts cat. 5e profiNET®

CX 4 JM
CX 4/2 JM

CX 6/2 JM

CX 8 JM
CX 4E JM

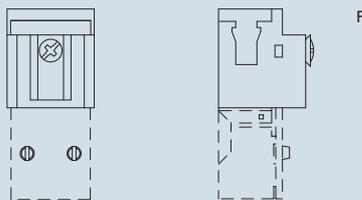
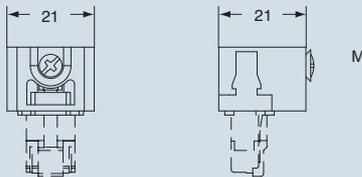
¹⁾ to be used with hoods

* 4 pole version on request, part No. **CX 4 JF** and **CX 4/2 JF** with "crossover" link

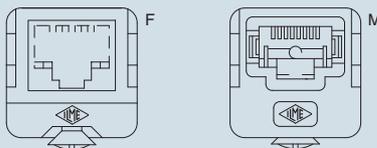
RJ45 connector features:

- RJ45 insert, Class 5 Ethernet
- rated current: 2,1A at 70 °C
- rated voltage: 50VDC / 35VAC
- IDC terminals:
- for 0,22 mm² (AWG 24/7) data contacts **CX 4 JM**
- for 0,14 mm² (AWG 26/7) or 0,22 mm² (AWG 24/7) data contacts **CX 4/2 JM**
- for 0,34 mm² (AWG 22/7) or 0,38 mm² (AWG 22/19) power contacts
- for 0,14 mm² (AWG 26/7) data contacts **CX 6/2 JM**
- for 0,25 mm² (AWG 23/19) power contacts
- for 0,14 mm² (AWG 26/7) data contacts **CX 8 JM**
- for 0,34 mm² (AWG 22/7) data contacts **CX 4E JM**
- /7 = 7-strands wire
- /19 = 19-strands wire
- Ø_{max} insulating conductors 1 mm (data), 1,4 mm (power and CX 4E JM)
- Ø_{max} complete cable 7 mm (CX 8 JM: 6,9 mm)
- temperature range: from -40°C to 120 °C
- nickel plated brass screening
- insert coding pin: **CR KC**
- self-extinguishing properties: to UL 94V-0
- crimp pliers: **CJPZY**
- screened cable stripper: **CJST**
- for crimping a male connector, see the crimp tool section page 553

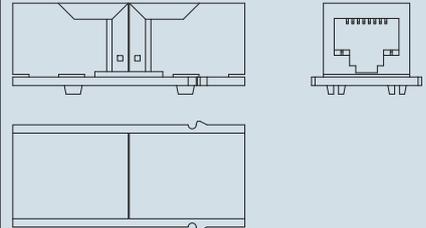
dimensions in mm
CJ KF, CJ KM



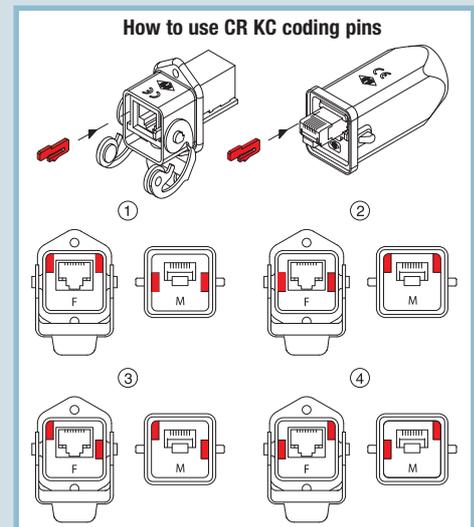
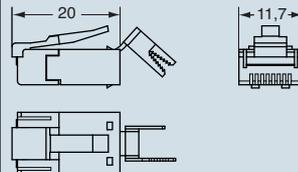
contacts side (front view)



dimensions in mm
CX 4 JF, CX 4/2 JF, CX 8 JF, CX 8/2 JF



CX 4 JM, CX 4E JM, CX 4/2 JM, CX 6/2 JM, CX 8 JM



dimensions shown are not binding
and may be changed without notice

- IP65 / IP67 degree of protection (EN 60529)
- insert RJ45, Class 5 Ethernet
- rated current: 2.1A at 70 °C
- rated voltage: 50V DC / 35V AC
- temperature limit: -40 °C, +120 °C
- nickel-plated brass screening
- insert code pin: CR KC
- self-extinguishing: UL 94V-0
- insulating enclosures in black self-extinguishing thermoplastic material
- hoods with cable gland
- female insert with two connected entries

IP65 / IP67 connector in bulkhead housing, female inserts

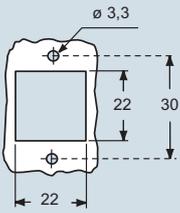


patch cord with 2 RJ45 connectors, male inserts

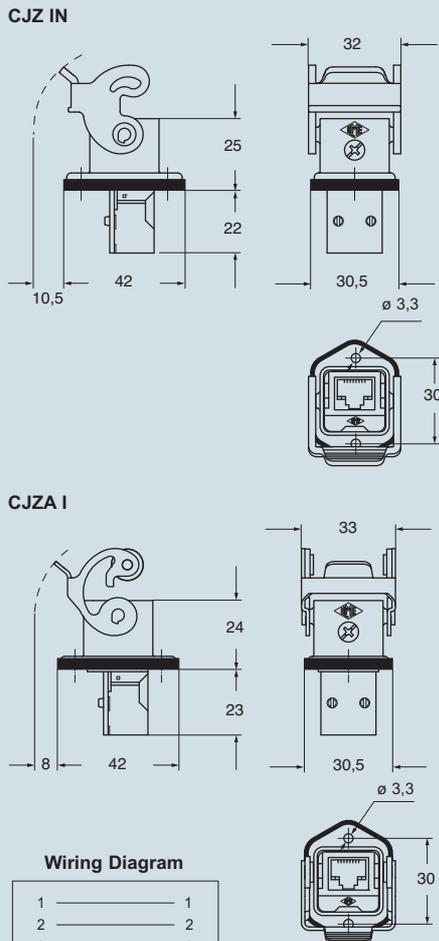


description	part No.	part No.	(L) metre
connector in insulating enclosure and insert with 8 data contacts	CJZ 8 IN		
connector in metal enclosure and insert with 8 data contacts	CJZA 8 I		
RJ45 connector 8 data contacts, in insulating enclosure		CWK 2 J2M8	2
		CWK 5 J2M8	5
		CWK 10 J2M8	10
RJ45 connector 8 data contacts, in metal enclosure		CWKA 2 J2M8	2
		CWKA 5 J2M8	5
		CWKA 10J2M8	10

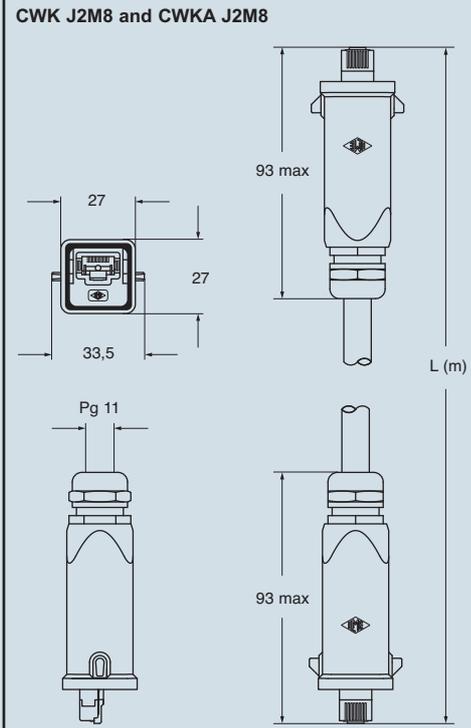
panel cut-out for bulkhead mounting housings in mm



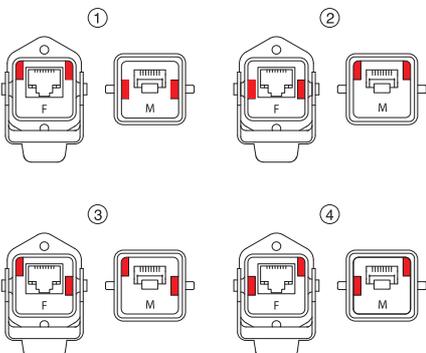
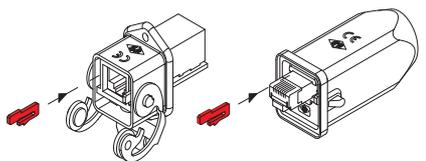
dimensions in mm



dimensions in mm



CR KC code pins



Wiring Diagram

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
VS	VS

Wiring Diagram

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
VS	VS

dimensions shown are not binding and may be changed without notice

Allows two complete portable RJ45 connectors to be joined, IP65/IP67 version

**insulated version coupling,
for RJ45 connectors**

**metal version coupling,
for RJ45 connectors**



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

- female RJ45 coupling, 8 data contacts
- female RJ45 coupling, 8 data contacts / 2 power contacts

CYG 8 JF *
CYG 8/2 JF *

- female RJ45 coupling, 8 data contacts
- female RJ45 coupling, 8 data contacts / 2 power contacts

CYG 8 JFA *
CYG 8/2 JFA *

RJ45 connector features:

- RJ45, Class 5 connector
- nominal current: 2.1A at 70 °C
- nominal voltage: 50VDC / 35VAC
- temperature range: from -40 °C to +120 °C
- nickel plated brass screening
- insert coding pin: **CR KC**
- self-extinguishing properties: to UL 94V-0
- die cast zinc alloy metal enclosures
- black self-extinguishing thermoplastic insulated enclosures.

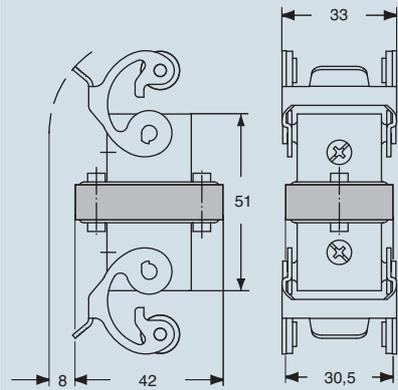
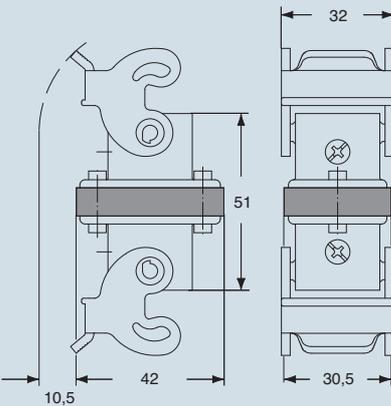
* 4 pole version on request, part No. **CYG 4 JF, CYG 4/2 JF, CYG 4 JFA and CYG 4/2 JFA** with "crossover" link

dimensions in mm

dimensions in mm

CYG 4 JF, CYG 4/2 JF, CYG 8 JF, CYG 8/2 JF

CYG 4 JFA, CYG 4/2 JFA, CYG 8 JFA, CYG 8/2 JFA

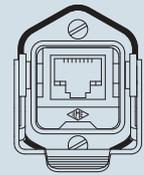
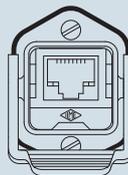


contacts side (front view)

contacts side (front view)

side with reference arrow ▲

side with reference arrow ▲



dimensions shown are not binding
and may be changed without notice

enclosures: size "21.21" page:

insulating type 526 - 527
(CK IN, CKG/MKG VN/VAN *)

metallic type
(CKAX I, CKAX/MKAX IAP/AP/VG) 223 and 528
(CKAG/MKAG V/VA *) 529

IP68 416 - 418
(CGK I, CGK/MGK IAP, CGK/MGK V)

* angled enclosures cannot be used with CX 8 J6IM

- characteristics according to EN 61984:

- 1A 50V 0,8kV 3**
- insulation resistance: $\geq 10 \text{ G}\Omega$
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life: ≥ 500 cycles
- temperature range: from $-40 \text{ }^\circ\text{C}$ to $+70 \text{ }^\circ\text{C}$
- we recommend to fix the cable with cable tie

**adapters for RJ45 male connectors,
RJ45 female connectors**



NEW

**RJ45 male connectors,
crimp IDC termination**



NEW

description	part No.	part No.
<ul style="list-style-type: none"> - socket insert with 1 RJ45 female connector, - plug inserts for 1 RJ45 male crimp connector, 8 data contacts (without RJ45 connector, to be ordered separately) - plug insert for 1 RJ45 male IDC connector, 8 data contacts (without RJ45 connector, to be ordered separately) 	<p>CJK 8FT CJK 8MT</p> <p>CJK 8IMT</p>	
<ul style="list-style-type: none"> - RJ45 male crimp connector, 8 data contacts - RJ45 male IDC connector, 8 data contacts 		<p>CX 8 J6M CX 8 J6IM</p>
<p>CJK 8FT technical data:</p> <ul style="list-style-type: none"> - RJ45 female insert, Cat. 6 Class E_A (Telegärtner) - shielding housing: zinc diecast - housing finish: nickel-plated - current carrying capacity at 50 °C: 1A - adequate for Power over Ethernet: PoE according to IEEE 802.3af - connectors: IEC 60603-7-5 - adequate for 10 Gigabit Ethernet: 10 Gigabit Ethernet acc. to IEEE 802.3an - custom-designed cabling systems: PROFINET Installation Guideline - generic cabling systems: ANSI/TIA/EIA-568-C.2 ISO/IEC 11801 EN50173-1 ISO/IEC 24702 EN 61918 - class E_A (channel): ISO/IEC 11801, EN 50173-1 	<p>dimensions in mm CJK 8FT</p> <p>F</p>	<p>dimensions in mm CX 8 J6M (can be used with CJK 8MT)</p>
<p>CX 8 J6M technical data:</p> <ul style="list-style-type: none"> - RJ45 male crimp connectors Cat. 6_A (Telegärtner) - crimp pliers: CJPZ T - screened cable stripper: CJST - Cu-conductor diameter solid: 0,40 - 0,51 mm (AWG 26/1 - 24/1) stranded: 0,46 - 0,61 mm (AWG 27/7 - 24/7) - insulation diameter: 0,85 - 1,05 mm - cable diameter: 5,0 - 7,0 mm - connectors: IEC 60603-7-5 - 10 Gigabit Ethernet acc. to IEEE 802.3an: adequate for 10 Gigabit Ethernet - category 6_A: ISO/IEC 11801; EN 50173-1 - class E_A: ISO/IEC 11801; EN 50173-1 - category 6_A: ANSI/TIA/EIA-568-C.2 	<p>CJK 8MT¹⁾</p> <p>M (CRIMP)</p>	<p>CX 8 J6IM (can be used with CJK 8IMT)</p>
<p>CX 8 J6IM technical data:</p> <ul style="list-style-type: none"> - RJ45 male IDC connectors Cat. 6 Class E_A (Telegärtner) - Cu-conductor diameter solid: 0,41 - 0,64 mm (AWG 26/1 - 22/1) stranded: 0,48 - 0,76 mm (AWG 26/7 - 22/7) - insulation diameter: 0,85 - 1,6 mm - cable diameter: 5,5 - 8,5 mm - connectors: IEC 60603-7-5 - category 6_A: ISO/IEC 11801; DIN EN 50173-1 - wrenches pliers for CX 8 J6IM: CJPW K - 10 Gigabit Ethernet acc. to IEEE 802.3an: adequate for 10 Gigabit Ethernet - category 6_A: ISO/IEC 11801; EN 50173-1 - class E_A: ISO/IEC 11801; EN 50173-1 - category 6_A: ANSI/TIA/EIA-568-C.2 - custom-designed cabling systems: according to PROFINET Installation Guideline 	<p>CJK 8IMT¹⁾</p> <p>M (IDC)</p> <p>¹⁾ to be used with hoods</p>	<p>How to use CR KC coding pins</p>

dimensions shown are not binding and may be changed without notice

with 2 RJ45 male connectors



NEW

description	part No.	(L) meter
RJ45 male connector with 8 data contacts	CW 1 J2M87	1
	CW 2 J2M87	2
	CW 3 J2M87	3
	CW 5 J2M87	5
	CW 7.5J2M87	7,5
	CW 10 J2M87	10
	CW 15 J2M87	15

RJ45 patch cord technical data (Telegärtner):

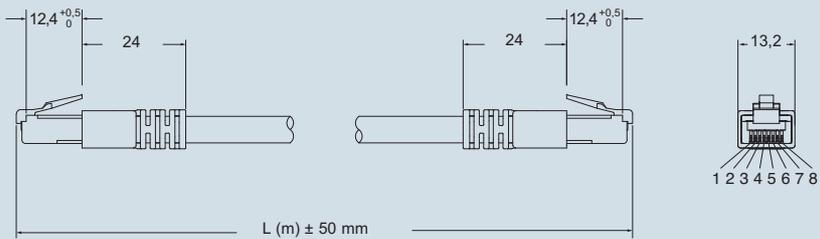
- S/FTP Cat. 7 PUR
- temperature range: from -40 °C + +75 °C
- nickel plated brass screening
- green RAL 6018 colour

Can be used with:

- MIXO RJ45 CX 01 J8M male inserts
- CJK 8MT adaptors

dimensions in mm

CW...J2M87



CJK 8MT male assembly

CJK 8FT to be used in VG or IAP enclosures

dimensions shown are not binding and may be changed without notice

CLK series

Main features

Adaptor CLK 04 SC

The new adaptor **CLK 04 SC** enables use of **fibre optic SC contacts**, up to 4 SC contacts per connector, for indoor or outdoor heavy duty industrial applications, with ILME connector enclosures size "21.21" series **CKA** (IP66/IP67, metallic, both C-TYPE, grey-painted, for normal environments, and W-TYPE black-painted, for aggressive environments, only the hood models provided with sealing gasket), series **CGK/ MGK** (IP66/IP68, metallic, either Pg or metric-threaded cable outlet) and series **CK** (IP66/IP67, insulating, only the hood models provided with sealing gasket).

The **fibre optic SC contacts** (genderless, to be purchased separately) are available both for multi-mode fibres (50/125 µm or 62,5/125 µm) and single-mode fibre (9/125 µm). The fibre optic SC contacts are also available for the hard-clad silica (HCS) or polymer-clad fibre (PCF) 200/230 µm fibre optic cables and for the less demanding, with shorter transmission distance covered, but more cost effective POF Ø 1 mm applications, available with crimp technique version (crimping tool required).

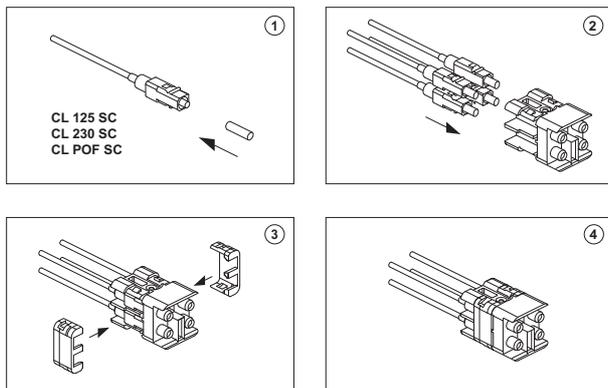
NOTE

Due to the higher skill and training required to produce an effectively performing fibre optic junction for a single-mode type fibre-optic cable than for a multi-mode one, dedicated contacts for single-mode are available only upon request. Contact our Commercial Department for a quotation. It is more practical in such case to equip the CLK 04 SC adaptor with ready-to-use fibre optic patch cords. Quick assembly technique version (tool-less) for POF Ø 1 mm cables are also available only upon request, please send inquiry to our Commercial Department.

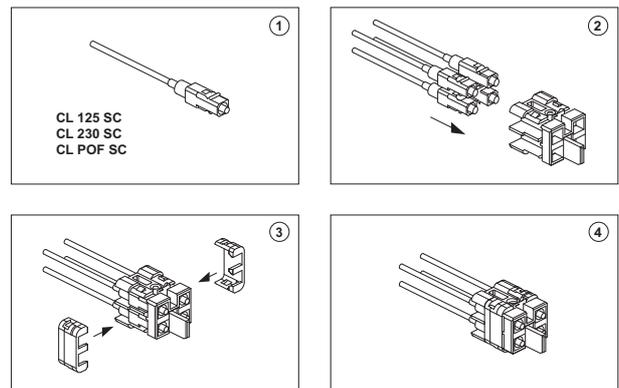
The female adaptor inserts are provided with 4 **ceramic** (zirconia) type **split alignment sleeves**, for minimal insertion loss (e.g. critical network connections) and best suitable for single-mode F/O cable connections. As optional accessory, **metallic** (phosphor bronze) **split alignment sleeves** are also available for more durable (less prone to cracking) applications, but less demanding precision alignment, thus most suitable for multi-mode fibre applications.

Part No. of adaptor inserts		CLK 04 SC
No. of seats/poles	seats for optical contacts	2
ambient temperature limit (°C)	min	-40
	max	+70
degree of protection	with enclosures (according to type)	IP66/IP67, IP66/IP68, IP69K
conductor connections		crimp
mechanical endurance (rating cycles)		≥ 500
self-extinguishing capacity UL 94		V0

FEMALE



MALE



enclosures: page:
size "21.21"

insulating type 526 - 527
(CK IN, CKG/MKG VN)

metallic type
(CKAX I, CKAX/MKAX IAP/AP/VG) 223 and 528
(CKAG/MKAG V) 529

IP68 416 - 418
(CGK I, CGK/MGK IAP, CGK/MGK V)

adaptor insert for SC connectors



NEW

crimp FO contacts



NEW

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

adaptor insert with seats for 4 SC contacts
- female insert, with ceramic sleeve
- female insert, with metallic sleeve
- male insert

CLK 04 SCF
CLK 04 SCF-H
CLK 04 SCM

CL 125 SC
CL POF SC

SC contact for GI FIBRE 50/125 µm or 62.5/125 µm
SC contact for 1 mm Ø POF

dimensions in mm

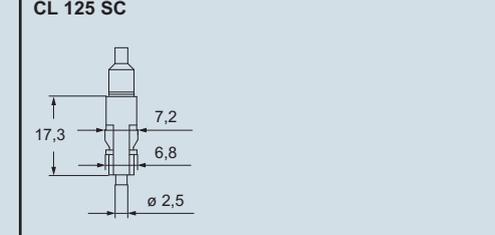
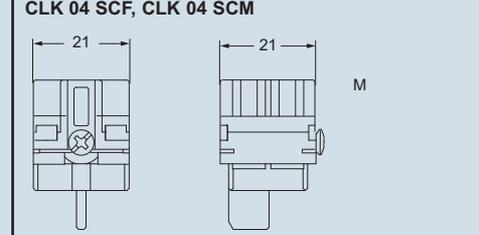
dimensions in mm

- adaptor insert fitted with fixing screw and gasket, suitable for installation in enclosures
- adaptor insert designed to be used with SC contacts
- SC contact for SI FIBRE (HCS®) 200/230 µm: **CL 230 SC** (on request)

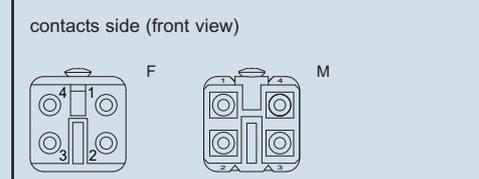
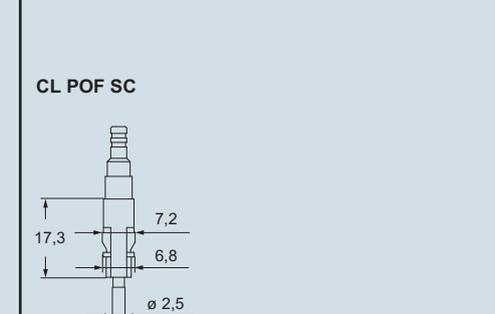
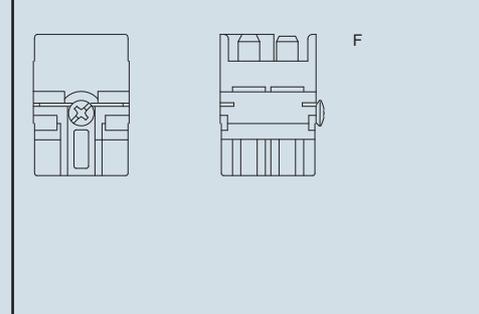
CLK 04 SCF, CLK 04 SCM

CL 125 SC

- base equipment for SC contact GI FIBRE:
CLKZ 125 SC
If this application is required, please contact ILME SpA.



- supplementary set for POF:
CLKZ POF
(to be ordered with CLKZ 125 SC)
If this application is required, please contact ILME SpA.



dimensions shown are not binding and may be changed without notice

SC duplex patch cord



NEW

SC duplex patch cord



NEW

description	SC duplex patch cord		SC duplex patch cord	
	part No.	(L) meter	part No.	(L) meter
SC duplex patch cord, GL fibre E9/125 (YELLOW)	CW 1 SC9	1		
	CW 2 SC9	2		
	CW 3 SC9	3		
	CW 5 SC9	5		
	CW 10 SC9	10		
SC duplex patch cord, GL fibre G50/125 (ORANGE)			CW 1 SC50	1
			CW 2 SC50	2
			CW 3 SC50	3
			CW 5 SC50	5
			CW 10 SC50	10
SC duplex connector, GL fibre G62,5/125 (ORANGE)			CW 1 SC62	1
			CW 2 SC62	2
			CW 3 SC62	3
			CW 5 SC62	5
			CW 10 SC62	10

- operating temperature: from -5 °C + +55 °C
- storage temperature: from -30 °C + +70 °C
- installation temperature: from -5 °C + +50 °C
- flame retardancy: IEC 60332-1
- halogen-free acc. to: IEC 60754-2.

dimensions shown are not binding
and may be changed without notice

CX BD series

Main features

To be able to use round shielded connectors series MIXO BUS (multiaxial, for balanced cables with multiple pairs) or coaxial connectors (for coaxial cables) even in compact enclosures size "21.21" **CKA/MKA** or **CGK/MGK**, it is necessary to purchase the new **adaptor insert CX 1/2 BD**.

This insert can be used to assemble MIXO coaxial connectors part No. **CX 01 BM/BF** for coaxial cables with a typical impedance of 75 Ω and **CX 01 BCM/BCF** for coaxial cables with a typical impedance of 50 Ω, or **MIXO BUS CX 04 BM/BF** multiaxial shielded connectors with 4 poles + shield and the new **CX 08 BM/BF** shielded connectors with 8 poles + shield, in addition to providing **seats for 2 additional optional contacts** series CD for the connection of a SELV (very low safety voltage) supply line. The connector section of this adaptor has rated values compliant with

standard EN 61984 and equivalent to **10A 50V 0.8kV**.

Adaptor insert **CX 1/2 BDM/BDF** is fitted with multiaxial and coaxial MIXO BUS shielded connectors and is designed to be used only with the models specified below of the following enclosures: **CKA/MKA** (IP66/IP67) or **CGK/MGK** (IP66/IP68) **with gasket**. The cable shielding is electrically separated from the earthing connection of the metal enclosure. If used with MIXO BUS CX 04 BM/BF shielded connectors, the connector is able to support all field bus protocols with 4 conductors.

MIXO BUS multiaxial and coaxial connectors are compatible with shielded cables with a section ranging from 3 mm and 9,5 mm.

The operating temperature for connectors resulting from the use of CX 1/2 BD adaptor inserts is -40 °C / +70 °C.

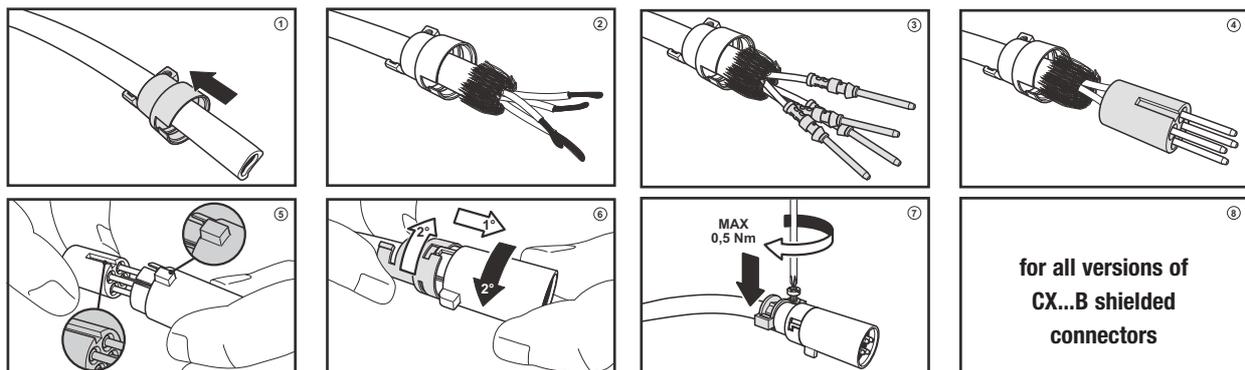
Part No. of adaptor inserts		CX 1/2 BD
No. of seats/poles	seats for shielded connector ¹⁾	1
	seats for auxiliary contacts	2
rated current ²⁾	shielded connector	depending on type: 5A, 10A, 16A
	auxiliary contacts	10A
EN 61984 pollution degree 3	rated voltage	50V
	rated impulse withstand voltage	0.8kV
	pollution degree	3
UL 1977 / CSA C22.2 N°187.3	rated voltage (a.c./d.c.)	50V
contact resistance	shielded connector	depending on the type of contact used
	auxiliary contacts	≤ 3 mΩ
insulation resistance		≥ 10 GΩ
ambient temperature limit (°C)	min	-40
	max	+70
degree of protection	with enclosures (according to type)	IP66/IP67, IP66/IP68, IP69K
	without enclosures	IP20
conductor connections		crimp
conductor section	shielded connector (mm ² /AWG)	depending on the type of contact used
	auxiliary contacts (mm ²)	0,14÷2,5
	auxiliary contacts (AWG)	26÷14
conductors stripping length		depending of contact
mechanical endurance (rating cycles)		≥ 500
self-extinguishing capacity UL 94		V0

1) Depending on the selected shielded connector, which must be ordered separately, the number of poles + shield could be 1 (coaxial connectors), 4 (4-way multiaxial connector for 2 pairs) or 8 (8-way multiple connector, for example for 4 pairs).

2) It is generally necessary to refer to the loading curves of the inserts to determine the actual operating current limit for a specific ambient temperature.

These curves are not required for MIXO BUS / coaxial shielded connectors, because these are signal connectors designed to be used by the transmission protocols to transmit currents in fractions of amperes.

The current capacity specified is the maximum current traditionally assigned to contacts, not the one assigned to the shielded connector when in use.



for all versions of
**CX...B shielded
connectors**

enclosures:
size "21.21"

page:

metallic type

(CKAX I, CKAX/MKAX IAP/AP/VG) 223 and 528
(CKAG/MKAG V) 529

IP68 416 - 418
(CGK I, CGK/MGK IAP, CGK/MGK V)

adaptor insert for shielded connectors



10A crimp contacts, silver or gold plated



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

adaptor insert with seats for 1 shielded connector + 2 aux contacts 10A
- female insert, 1 seat for BUS connector and 2 seats for 10A female contacts (CDF)
- male insert, 1 seat for BUS connector and 2 seats for 10A male contacts (CDM)

CX 1/2 BDF
CX 1/2 BDM

10A female contacts

0,14-0,37 mm ²	AWG 26-22	identification No. 1
0,5 mm ²	AWG 20	identification No. 2
0,75 mm ²	AWG 18	identification No. ②
1 mm ²	AWG 18	identification No. 3
1,5 mm ²	AWG 16	identification No. 4
2,5 mm ²	AWG 14	identification No. 5

10A male contacts

0,14-0,37 mm ²	AWG 26-22	identification No. 1
0,5 mm ²	AWG 20	identification No. 2
0,75 mm ²	AWG 18	identification No. ②
1 mm ²	AWG 18	identification No. 3
1,5 mm ²	AWG 16	identification No. 4
2,5 mm ²	AWG 14	identification No. 5

CDFA 0.3
CDFA 0.5
CDFA 0.7
CDFA 1.0
CDFA 1.5
CDFA 2.5

silver plated

CDFD 0.3
CDFD 0.5
CDFD 0.7
CDFD 1.0
CDFD 1.5
CDFD 2.5

gold plated 1)

CDMA 0.3
CDMA 0.5
CDMA 0.7
CDMA 1.0
CDMA 1.5
CDMA 2.5

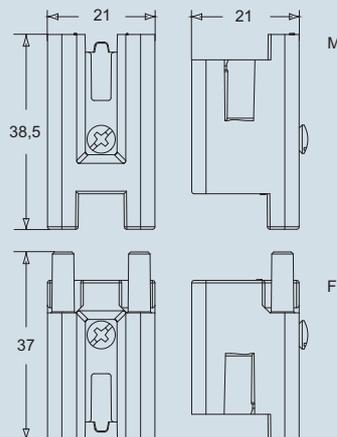
CDMD 0.3
CDMD 0.5
CDMD 0.7
CDMD 1.0
CDMD 1.5
CDMD 2.5

- characteristics according to EN 61984:
adaptor insert CX 1/2 BD (2 aux contacts)

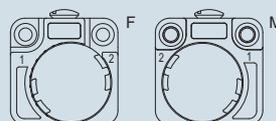
10A 50V 0.8kV 3

- certifications: cUL (UL for USA and Canada)
- for contact crimping, see the crimp tool section (10A contacts, CDF and CDM series) on pages 534, 538, 544, 546, 548
- extraction tool for BUS/coax shielded connectors from adaptor insert CX 1/2 BD part No. CX BES see page 502
- contact resistance adaptor insert, 2 aux contacts: ≤ 3 mΩ
- adaptor insert fitted with fixing screw and gasket, suitable for installation in enclosures
- adaptor insert designed to be used with CX 01 BF/M, CX 04 BF/M; CX 08 BF/M and CX01 BCF/M shielded connectors

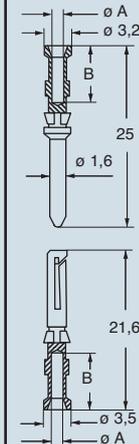
dimensions in mm
CX 1/2 BDF, CX 1/2 BDM



contacts side (front view)



dimensions in mm
CDF and CDM



CDF and CDM contacts

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

1) basic or high thickness gold plating page 480

dimensions shown are not binding and may be changed without notice

- characteristics according to EN 61984: shielded connector **10A 50V 0,8kV 3**
- for contact crimping, see the crimp tool section (10A contacts, CDF and CDM series) on pages 534, 538, 544, 546, 548
- extraction tool for BUS/coax shielded connectors from adaptor insert CX 1/2 BD part No. CX BES see page 502
- contact resistance shielded connector CX 04 B: $\leq 3 \text{ m}\Omega$
coaxial connector CX 01 B: $\leq 3 \text{ m}\Omega$
- coaxial connector CX 01 B **cables with a typical impedance of 75 Ω**
- CX 04 B multiaxial connector for STP cables with 2 pairs and terminations compliant with EN 50173-1 Cat. 5 (100 MHz), compatible with 4-wire field bus protocols

shielded connectors



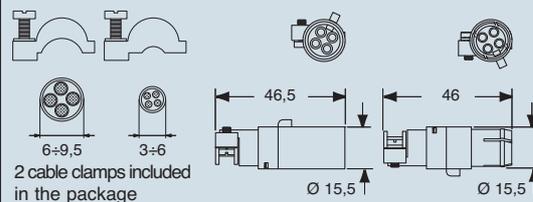
10A crimp contacts, silver or gold plated



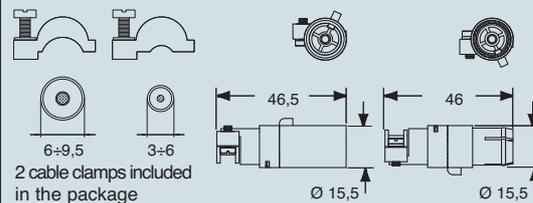
description	part No.	part No.	part No.
shielded BUS multi axial connectors, 4 poles + shield - female insert, 4 contact seats 10A (CDF) + shield - male insert, 4 contact seats 10A (CDM) + shield	CX 04 BF CX 04 BM		
shielded BUS coaxial connectors, 1 pole + shield - female insert, 1 contact seat 10A (CDF) + shield - male insert, 1 contact seat 10A (CDM) + shield	CX 01 BF CX 01 BM		
10A female contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5		silver plated	gold plated 1)
10A male contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5		CDMA 0.3 CDMA 0.5 CDMA 0.7 CDMA 1.0 CDMA 1.5 CDMA 2.5	CDMD 0.3 CDMD 0.5 CDMD 0.7 CDMD 1.0 CDMD 1.5 CDMD 2.5

dimensions in mm

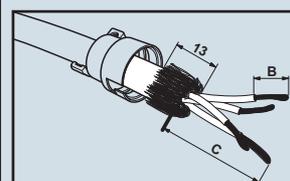
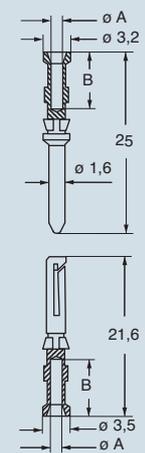
CX 04 BF, CX 04 BM



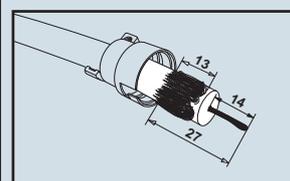
CX 01 BF, CX 01 BM



CDF and CDM



cable clamp	C (mm)
3÷6	20
6÷9,5	25



CDF and CDM contacts

conductor section	conductor slot	conductors stripping length
mm ²	Ø A (mm)	B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

1) basic or high thickness gold plating page 480

dimensions shown are not binding and may be changed without notice

- characteristics according to EN 61984:
 - CX 08 B shielded connector
 - 5A 50V 0,8kV 3**
- contact resistance
 - CX 08 B shielded connector: $\leq 4 \text{ m}\Omega$
- max. \varnothing of insulation for contacts CI series (CX 08 B shielded connector): 2,4 mm
- for crimp 5A contacts CI series using: CIPZ D crimping tool + CIP D turret head
- insertion / removal tool contacts CI series: part No CIES

shielded connectors



5A crimp contacts, gold plated

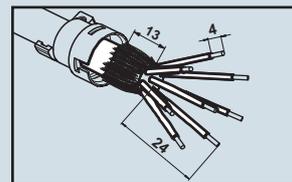
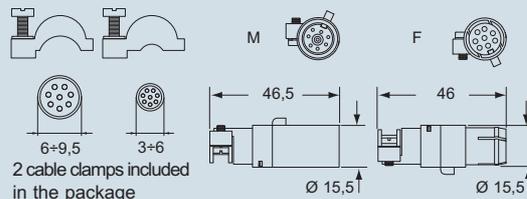


description	part No.	part No.
shielded BUS multi axial connectors, 8 poles + shield - female insert, 8 contact seats 5A (CIF) + shield - male insert, 8 contact seats 5A (CIM) + shield	CX 08 BF CX 08 BM	
5A female crimp contacts 0,08-0,21 mm ² AWG 28-24 0,13-0,33 mm ² AWG 26-22 0,33-0,52 mm ² AWG 22-20		CIFD 0.2 CIFD 0.3 CIFD 0.5
5A male crimp contacts 0,08-0,21 mm ² AWG 28-24 0,13-0,33 mm ² AWG 26-22 0,33-0,52 mm ² AWG 22-20		CIMD 0.2 CIMD 0.3 CIMD 0.5

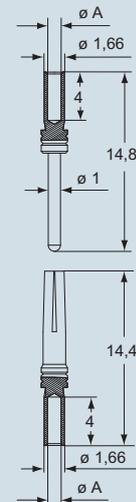
gold plated

dimensions in mm

CX 08 BF, CX 08 BM



CIF and CIM



CIF, CIM contacts

conductor section mm ²	conductor slot $\varnothing A$ (mm)	conductors stripping length (mm)
0,08-0,21	0,64	4
0,13-0,33	0,90	4
0,33-0,52	1,12	4

dimensions shown are not binding and may be changed without notice

- characteristics according to EN 61984:

CX 01 BC shielded connector

16A 50V 0,8kV 3

- for information on the crimping of contacts series CC (CX 01 BC shielded connector) and on the insertion / removal tools, see the section related to crimping tools (16A contacts, CCF and CCM series) on pages 534, 538, 544, 546, 548

- contact resistance

CX 01 BC shielded connector: $\leq 1\text{ m}\Omega$

- CX 01 BC shielded connector for **cable with a typical impedance of 50 Ω**

shielded connectors



16A crimp contacts, silver or gold plated



description

part No.

part No.

part No.

shielded BUS coaxial connectors, 1 pole + shield
 - female insert, 1 contact seat 16A (CCF) + shield
 - male insert, 1 contact seat 16A (CCM) + shield

CX 01 BCF
CX 01 BCM

16A female contacts

0,14-0,37 mm ²	AWG 26-22	three grooves
0,5 mm ²	AWG 20	with no grooves
0,75 mm ²	AWG 18	one groove (back side)
1 mm ²	AWG 18	one groove
1,5 mm ²	AWG 16	two grooves
2,5 mm ²	AWG 14	three grooves
3 mm ²	AWG 12	one wide groove
4 mm ²	AWG 12	with no grooves

16A male contacts

0,14-0,37 mm ²	AWG 26-22	three grooves
0,5 mm ²	AWG 20	with no grooves
0,75 mm ²	AWG 18	one groove (back side)
1 mm ²	AWG 18	one groove
1,5 mm ²	AWG 16	two grooves
2,5 mm ²	AWG 14	three grooves
3 mm ²	AWG 12	one wide groove
4 mm ²	AWG 12	with no grooves

silver plated

CCFA 0.3
CCFA 0.5
CCFA 0.7
CCFA 1.0
CCFA 1.5
CCFA 2.5
CCFA 3.0
CCFA 4.0

gold plated 1)

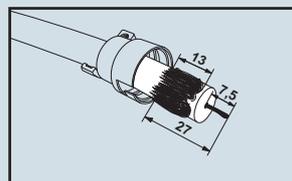
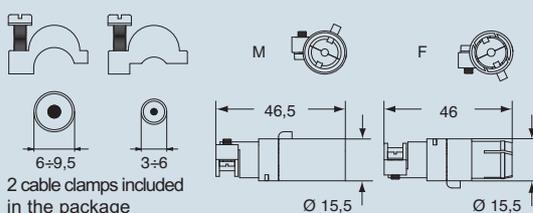
CCFD 0.3
CCFD 0.5
CCFD 0.7
CCFD 1.0
CCFD 1.5
CCFD 2.5
CCFD 3.0
CCFD 4.0

CCMA 0.3
CCMA 0.5
CCMA 0.7
CCMA 1.0
CCMA 1.5
CCMA 2.5
CCMA 3.0
CCMA 4.0

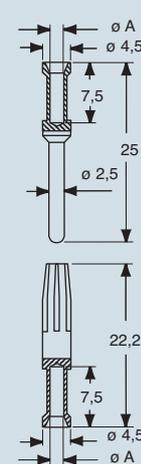
CCMD 0.3
CCMD 0.5
CCMD 0.7
CCMD 1.0
CCMD 1.5
CCMD 2.5
CCMD 3.0
CCMD 4.0

dimensions in mm

CX 01 BCF, CX 01 BCM



CCF and CCM



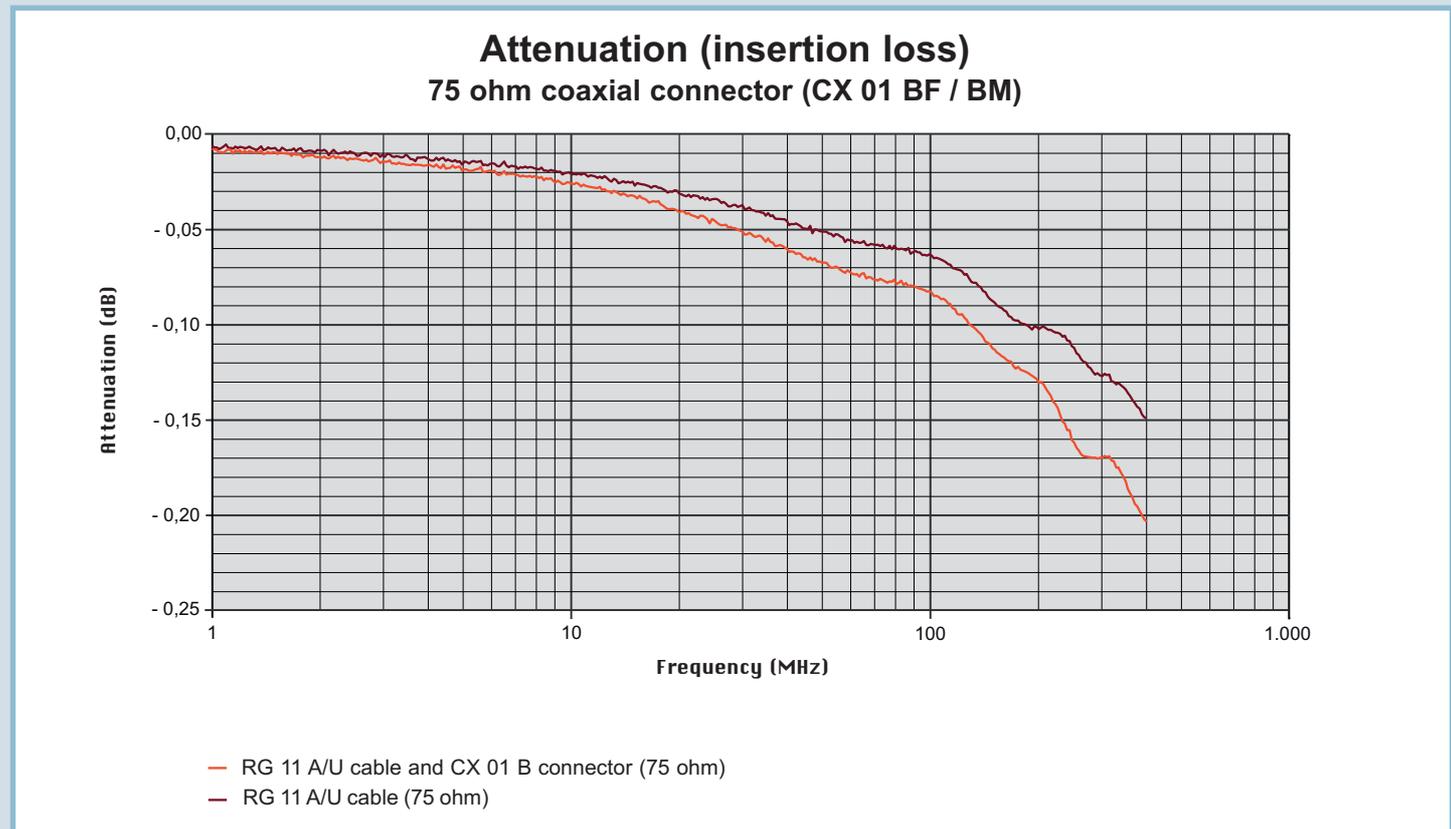
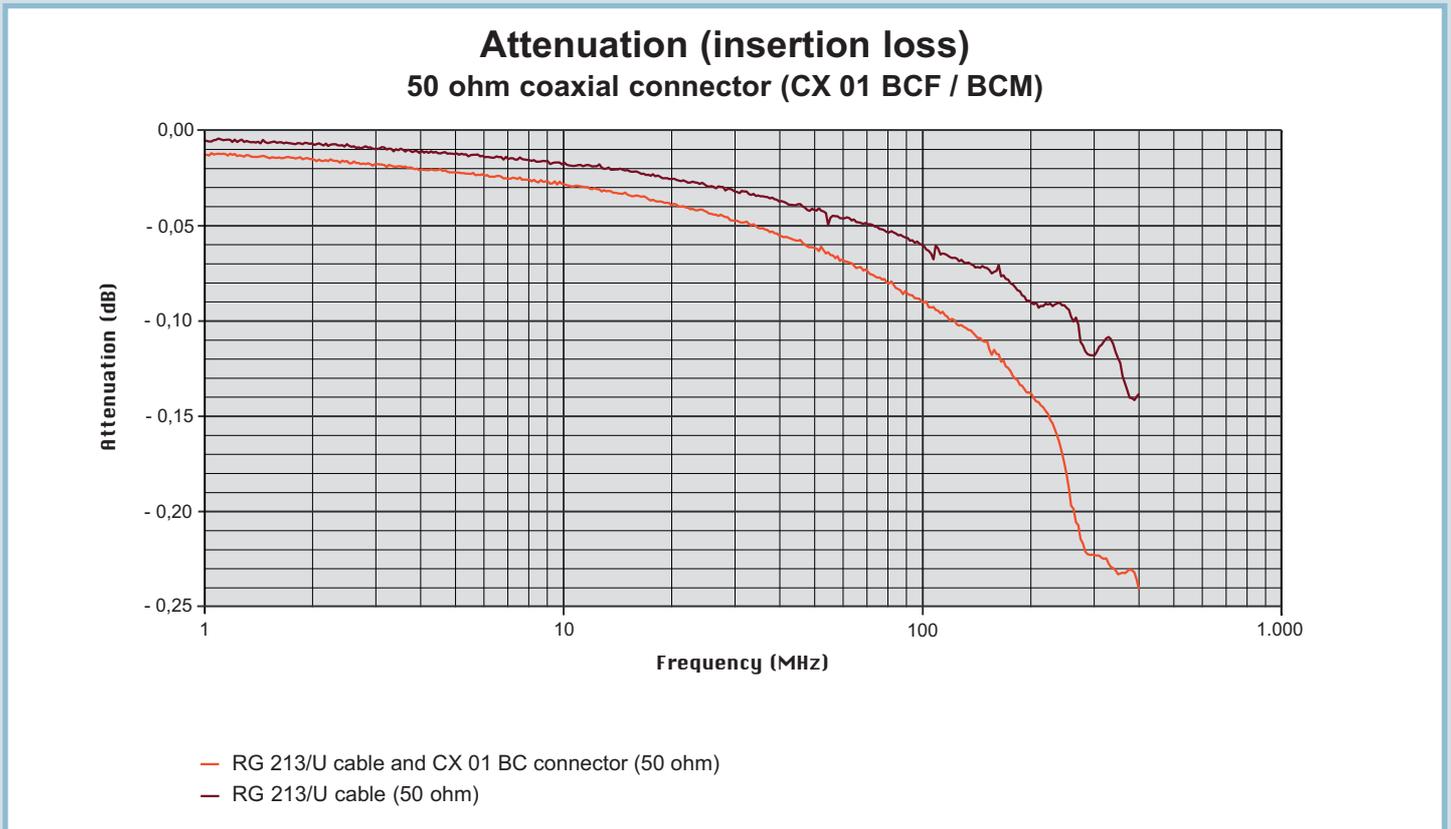
CCF and CCM contacts

conductor section	conductor slot	conductors stripping length
mm ²	ø A (mm)	(mm)
0.14-0.37	0.9	7.5
0.5	1.1	7.5
0.75	1.3	7.5
1.0	1.45	7.5
1.5	1.8	7.5
2.5	2.2	7.5
3	2.55	7.5
4	2.85	7.5

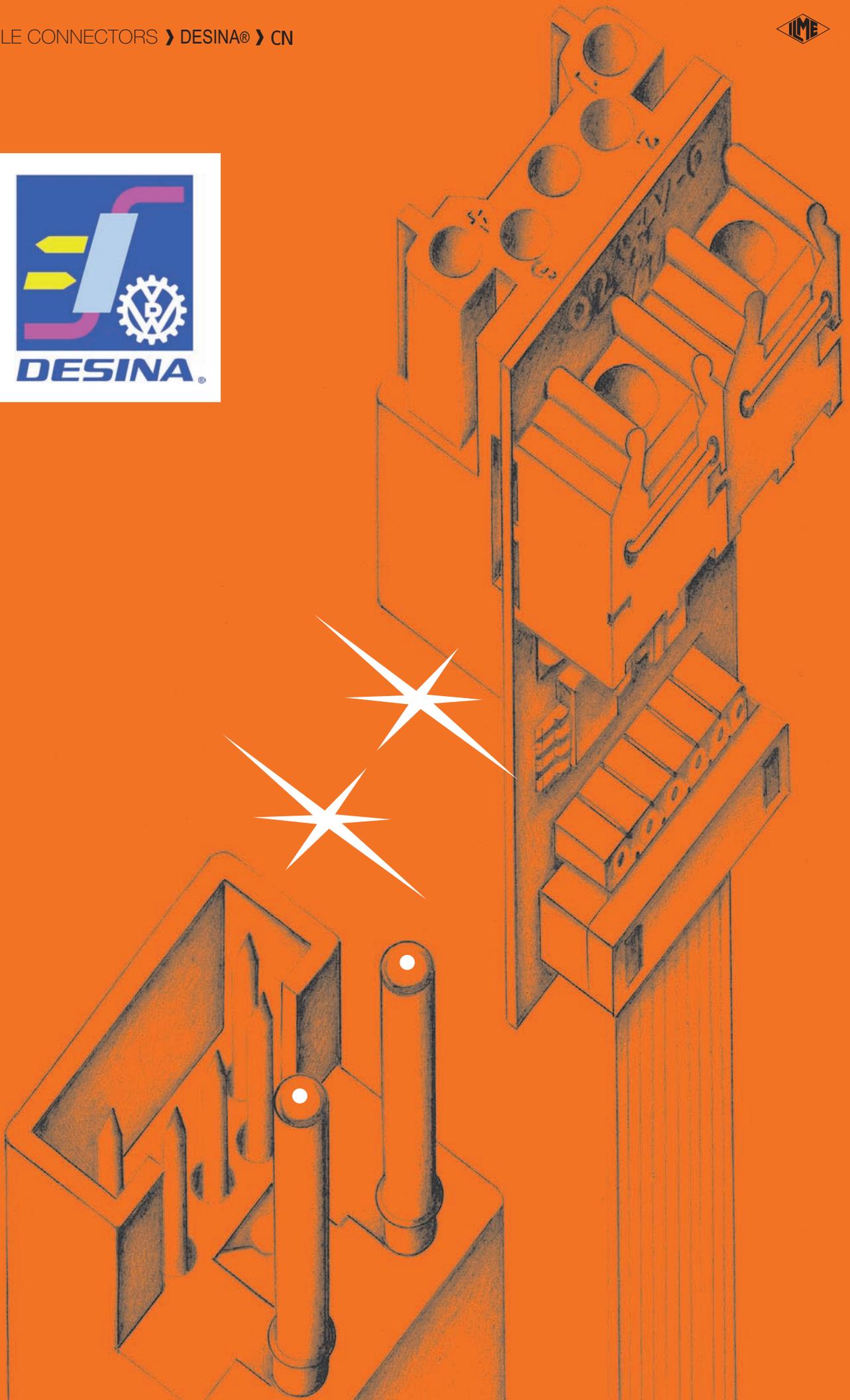
1) basic or high thickness gold plating page 481

dimensions shown are not binding and may be changed without notice

Test performed in accordance with IEC/EN 60512-25-2 (2002), 4.1.3.2 (coaxial cable only) and 4.2.2.2 (coaxial cable and connector).



Attenuation



Accessories

DESINA®

Main features

Connectors compliant with DESINA® standard

DESINA® (which stands for **DE**centralised and Standardised **IN**stallation technology) is an innovative installation concept behind a study headed by the German manufacturers of machine tools association (VDW), with the co-operation of users (including German automotive manufacturers) and component manufacturers, which has led to the introduction of a specification aimed to standardise electrical, hydraulic and pneumatic components and their interconnection on common platform for CNC controlled machine tools and manufacturing lines.

In the last few years, the DESINA® specification has been successfully enclosed in the ISO TC 184/SC 1 "Industrial automation systems and integration / Physical device control" as an ISO standard.

This work has recently been completed, and the following standards have now become available:

ISO 23570-1 Industrial automation systems and integration – Distributed installation in industrial applications: Part 1 – Sensors and actuators.

ISO 23570-2 Industrial automation systems and integration – Distributed installation in industrial applications: Part 2 – Hybrid communication bus.

ISO 23570-3 Industrial automation systems and integration – Distributed installation in industrial applications: Part 3 – Power distribution bus.

Normally, production systems are controlled by various field buses available on the market such as PROFIBUS, CAN, INTERBUS, etc. DESINA® decentralised approach and interface and connector standardisation, which allows a single distributed control system to be independent from the bus communication protocol selected by the final user, ensure lower installation costs.

The availability of diagnostic capabilities in all the system components ensures a speedier diagnosis in the event of faults and an easier and quicker reset operation, which may be carried out by less specialised staff. DESINA® connection topology requires a **control bus** and a **power bus**.

The hybrid (optical/electrical) control bus provides a serial connection for the devices by using a cable consisting of two fibre optics and four power lines. The devices are fitted with 2 hybrid connectors (and matching flush mounted enclosures) for bus entry and exit. The hybrid connectors include an interface circuit which

turns the TX electrical signal to optical signal with TTL levels and the RX signal from optical to electrical signal with TTL levels.

In other words, the interface is independent from the selected field bus protocol, and simply converts the electrical signals into optical signals and vice versa; by doing so, the physical connection between the devices can be used for different bus protocols and can reach a 50 m range by using POF plastic fibres or 300 m by using HCS® fibreglass (Hard Clad Silica – Spectran Corporation registered trademark). The highest baud rate is 12 Mbit/s, compatible with the most advanced field buses.

Another variance is also available, which is based on transmitting data on a pair of screened copper cables (instead of fibre optics); in this case, however, the system can only be used for PROFIBUS or CAN buses with RS 485 TX signals.

In both cases, the connector is fitted with housings for 5, 10A auxiliary contacts (CD series crimp contacts), which allow all connected devices to receive a permanent direct voltage of 24V (to supply circuits) and a 24V non permanent power supply (only used to open the contactors after operating an emergency switch or a safety switch), as well as a contact available for an optional earth.

The **power bus** provides a serial connection for drives, controls and power supplies and, more specifically, is suitable to supply power to motors and to their control units.

The standard connector to control motors is the **CQM/F 08** which, with 8 poles + ⊕ 16A 500V, and CC series crimp contacts, not only provides a power connection, but also connects the motor brake and safety thermistor.

Another variant is available in the same sizes as the enclosure: **CQM/F 04/2** featuring 4 poles + ⊕ 40A 400/690V and 2, 10A 250V auxiliaries.

For the motor side connection, the connector **CNEM/F 10** (10P + ⊕ 16A 500V 6kV 3, with screw terminals) should be used; with the option to make a star or a delta connection on the connector, the **CSSM/F 10** connector (10P + ⊕ 16A 500V 6kV 3, with spring terminals, two per pole) should be used.

ILME connectors are manufactured to DESINA® specifications and in compliance with ISO 23570-2 and 23570-3 standards.



DESINA®

Main features

Hybrid socket and plug connectors for field buses compliant with DESINA® specifications and with ISO 23570-2 standard

The hybrid connectors for field buses are listed below:

- optical field bus **plug**
- optical field bus **socket**

electrical auxiliary female contacts

- CXL 2/4 PF** (for plastic fibre optics POF)
- CXL 2/4 PFH** (for glass fibre optics HCS®)
- CXL 2/4 SF**

electrical auxiliary male contacts

- CXL 2/4 PM** (for plastic fibre optics POF)
- CXL 2/4 PMH** (for glass fibre optics HCS®)
- CXL 2/4 SM**

The hybrid inserts for **socket** type optical field buses can only be fitted inside **fixed enclosures**. The **plug** types, on the other hand, can only be fitted inside **portable enclosures**.

The enclosures and matching accessories available are listed below:

Construction details

- fixed, flush mounted enclosure:
- portable, straight enclosures:
- portable, angled enclosures:
- cover:

Material: PLASTIC

- CK 03 IN**
- CKG 03 VN** (Pg 11)
- MKG VN20** (M20)
- CKG 03 VAN** (Pg 11)
- MKG VAN20** (M20)
- CKG 03 CN**

Material: METAL

- CKAX 03 I**
- CKAG 03 V** (Pg 11)
- MKAG V20** (M20)
- CKAG 03 VA** (Pg 11)
- MKAG VA20** (M20)
- CKAG 03 C**

The portable enclosures and the covers are fitted with an additional seal in order to achieve **IP65/IP67** (IEC/EN 60529) protection rating. With these accessories, the enclosures achieve **IP69K** protection rating (tightness to pressurised hot water jets) established by the German standard DIN 40050-9 for use on board of road vehicles, currently being approved to be included in ISO standards and being studied by IEC.

1 Specifications

1.1 Interface

hybrid electrical-optical connector insert consisting of 2 connectors for fibre optics and 4 contacts for electrical wires; an interface circuit built into the optical socket converts the electrical signals into optical signals and vice versa.

1.2 Optical parts

- transmitter (T): Agilent (HP) Versatile Link HFBR-1525, or equivalent
 - receiver (R): Agilent (HP) Versatile Link HFBR-2525, or equivalent
 - male optical contact: Agilent (HP) Versatile Link HFBR-4531, or equivalent, Simplex snap-in type (without crimping) for POF plastic fibre optics; HFBR-4521, or equivalent, crimp contact, for HCS® glass fibre optics
- note: POF is a plastic fibre optic with a 1000 µm diameter for red light and wavelength = 660 nm.
HCS® is a Hard Clad Silica glass fibre optic with a 200 µm diameter for red light with wavelength = 660 nm.

Optical parts: laser class I

1.3 Electrical contacts

4 maximum current 10A, gold or silver plated brass crimp contacts, cable section 0,14...2,5 mm² (CD series); live wire end female. Nominal voltage 24V.

Electrical data in compliance with EN 61984: **10A 25V 0.8kV 3**

1.4 Protection ratings:

IP65 / IP67 compliant with EN 60529 (if a cable clamp with IP67 protection rating is used)
IP69K compliant with DIN 40050-9 (with suitable cable clamp)

1.5 Temperature range: -40 °C / +70 °C

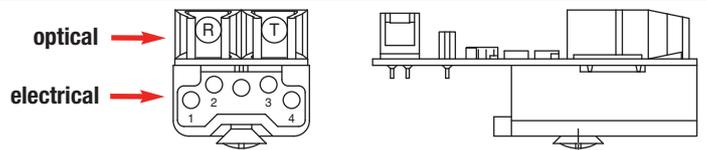
1.6 Data transmission/reception rate (Data rate): up to 12 Mbit/s

2 Designation of auxiliary electrical contacts

designation of auxiliary electrical contacts (male and female) in the hybrid socket connector with optical TX system:

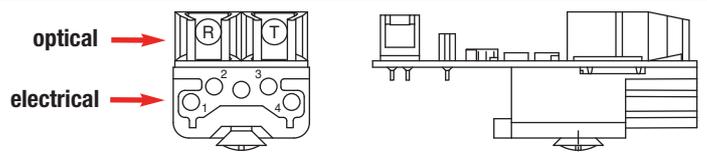
Socket connector with male auxiliary electrical contacts CXL 2/4 SM

Pos.	Function
1:	+ 24V not switched
2:	0V (reference for contact 1)
3:	0V (reference for contact 4)
4:	+ 24V switched



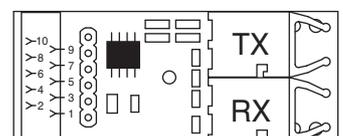
Socket connector with female auxiliary electrical contacts CXL 2/4 SF

Pos.	Function
1:	+ 24V not switched
2:	0V (reference for contact 1)
3:	0V (reference for contact 4)
4:	+ 24V switched



Insulation displacement connector (IDC) for ribbon flat cable on printed circuit

Pos.	Function	Pos.	Function
1:	earth	6:	TXD
2:	RXD	7:	earth
3:	RXD	8:	+5V DC
4:	earth	9:	+5V DC
5:	TXD	10:	earth



The contacts in the hybrid socket connector are numbered in a clockwise direction. With reference to this, the contacts in the field bus hybrid plug connector are numbered anticlockwise.
"R" Data reception (beam exit)
"T" Data transmission (beam entry).

DESINA®

Main features

Socket and plug connectors for power buses compliant with DESINA® specifications and with ISO 23570-3 standard

The connector inserts on the power bus for a motor controller are as follows:

- **CQM 08** plug
- **CQF 08** socket

The connector inserts for the motor controller may be fitted inside the following enclosures:

Construction details

- | | |
|----------------------------------|-------------------------|
| - flush mounted fixed enclosure: | CQ 08 I |
| - portable straight enclosure: | CQ 08 V (Pg 21) |
| - portable angled enclosure: | CQ 08 VA (Pg 16) |
| - socket cover: | CQ 08 C |
| - plug cover: | CQ 08 CA |

The enclosures ensure **IP65/IP67** protection rating (IEC/EN 60529) as well as **IP69K** protection rating (tightness to pressurised hot water jets) required by the DIN 40050-9 German standard for use on board of road vehicles, currently being approved as ISO standard and being studied by IEC.

1 Specifications

1.1 Connection

9 contacts (8 + ⊕)

The male connectors (plugs) are used for termination of connecting cables; the female connectors (sockets) are fitted on the motor controller.

1.2 Electrical contacts

9 maximum current 10A, gold or silver plated crimp contacts, cable section 0,5...2,5 mm² (20 AWG -14 AWG) CC series.

1.3 Protection ratings:

IP65 / IP67 compliant with EN 60529 standard (if a cable clamp with IP67 protection rating is used)
IP69K compliant with DIN 40050-9 standard (with suitable cable clamp)

1.4 Temperature range:

-40 °C / +125 °C

1.5 Electrical data

compliant with EN 61984: **16A 500V 6kV 3**

1.6 Self extinguishing properties

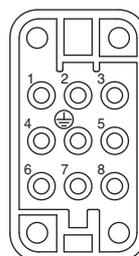
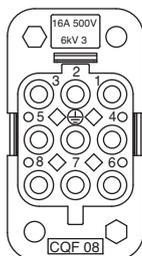
94V-0 compliant with UL 94 standard

glow-wire 960 °C compliant with IEC/EN 60695-2-11 standard

2 Designation of contacts

The designation of contacts for motor controller outlet is as follows:

contact	designation
1	live L1
2	
3	live L3
4	brake (0 V)
5	temperature sensor
6	brake (+24V c.c.)
7	live L2
8	temperature sensor
PE	earth



Socket and plug connectors for power buses in compliance with DESINA® specifications and with ISO 23570-3 standard

The connector inserts on the power bus for a motor controller are as follows:

- **CQM 08** plug
- **CQF 08** socket

These connector inserts can be fitted inside the following enclosures:

Construction details

- | | |
|----------------------------------|-------------------------|
| - flush mounted fixed enclosure: | CQ 08 I |
| - portable straight enclosure: | CQ 08 V (Pg 21) |
| - portable angled enclosure: | CQ 08 VA (Pg 16) |
| - socket cover: | CQ 08 C |
| - plug cover: | CQ 08 CA |

The enclosures ensure **IP65/IP67** protection ratings (IEC/EN 60529) as well as **IP69K** protection rating (tightness to pressurised hot water jets) required by DIN 40050-9 German standard for use on board of road vehicles, currently being approved as ISO standard and being studied by IEC.

1 Specifications

1.1 Connection

5 (4 + ⊕) power contacts + 2 auxiliary contacts

The male connectors (plugs) are used for termination of connecting cables; the female connectors (sockets) are fitted on the motor controller.

1.2 Electrical contacts:

5 maximum current 40A (3P+N+⊕) gold or silver plated crimp contacts, cable section 1,5...6 mm² (16 AWG -10 AWG) CX series.
2 maximum current 10A, gold or silver plated crimp contacts, cable section 0,14...2,5 mm² (26 AWG -14 AWG) CD series.

1.3 Protection ratings:

IP65 / IP67 compliant with standard EN 60529 (if a cable clamp with IP67 protection rating is used)
IP69K compliant with DIN 40050-9 standard (with suitable cable clamp)

1.4 Temperature range:

-40 °C / +125 °C

1.5 Electrical data

compliant with EN 61984: **40A 400/690V 6kV 3**.

DESINA®

Main features

1.6 Self extinguishing properties

94V-0 compliant with UL 94 standard
 glow-wire 960 °C compliant with IEC/EN 60695-2-11 standard

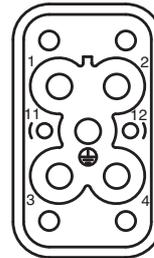
2 Designation of contacts

The designation of contacts for motor controller outlet is as follows:

contact	designation
1	live L1
1	live L1
2	live L2
3	live L3
4	neutral
PE	earth
11	aux
12	aux



F



M

Socket and plug connectors for power buses compliant with DESINA® specifications and with ISO 23570-3 standard

The connector inserts on the power bus for a motor controller are as follows:

	screw type with cover	spring type dual terminal for pole
- plug	CNEM 10 T	CSSM 10
- socket	CNEF 10 T	CSSF 10

To be installed in the enclosures illustrated in this catalogue or equivalent, with single lever (directed towards the motor).

The enclosures ensure **IP65/IP67** protection rating (IEC/EN 60529) as well as **IP69K** protection rating (tightness to pressurised hot water jets) required by the DIN 40050-9 German standard for use on board of road vehicles, currently being approved as ISO standard and being studied by IEC.

1 Specifications

1.1 Connection

10 contacts + ⊕

1.2 Electrical contacts

10 screw type contacts (CNE series) or spring type (CSS series), maximum current 16A, silver plated, wire section 0,5...2,5 mm² (20 AWG -14 AWG)

1.3 Protection ratings

IP65 / IP67 compliant with EN 60529 standard (if a cable clamp with IP67 protection rating is used)

IP69K compliant with DIN 40050-9 standard (with suitable cable clamp)

1.4 Temperature range

-40 °C / +125 °C

1.5 Electrical data

compliant with EN 61984: **16A 500V 6kV 3**

1.6 Self extinguishing properties

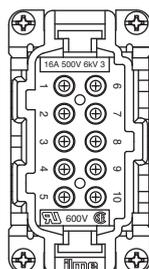
94V-0 compliant with UL 94 standard

glow-wire 960 °C compliant with IEC/EN 60695-2-11 standard

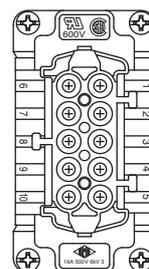
2 Designation of contacts

The designation of contacts for motor connector is as follows:

contact	designation
1	winding U1 - L1
2	winding V1 - L2
3	winding W1 - L3
4	brake (0 V)
5	brake (+24V cc)
6	winding W2
7	winding U2
8	winding V2
9	temperature sensor
10	temperature sensor
PE	earth



F



M



DESINA®

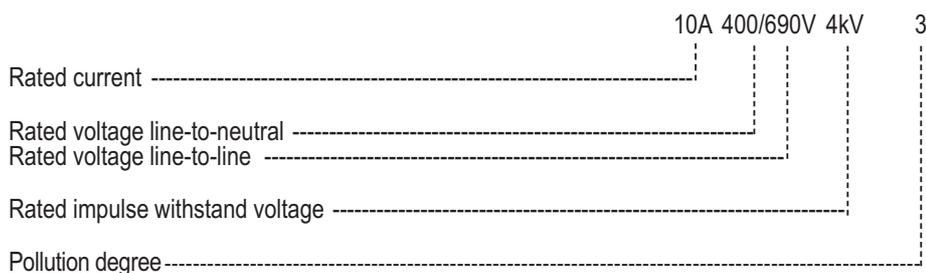
Feature of inserts for multipole connectors

inserts series	No. of poles	auxiliary contacts	EN 61984 (2001-11) pollution degree 3			EN 61984 (2001-11) pollution degree 2			certification UL/CSA
			rated voltage	rated impulse withstand voltage	pollution degree	rated voltage	rated impulse withstand voltage	pollution degree	
code	main contacts		rated voltage AC or DC						
CXL 2/4	2		contacts for plastic fibre optics (POF) Ø 1mm						
		4 (+⊕)	25V	0,8kV	3				50V
CXL 2/4...H	2		contacts for HCS® fibre optics ø 200 µm						
		4 (+⊕)	25V	0,8kV	3				50V
CQ 08	8 (+⊕)	---	500V	6kV	3	400/690V	6kV	2	600V
CQ 04/2	4	---	400/690V	6kV	3				600V
		2	250V	4kV	3				600V
CNE	10 (+⊕)	---	500V	6kV	3	400/690V	6kV	2	600V

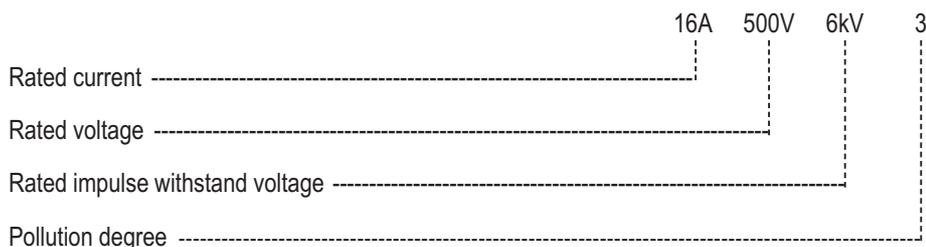
Nominal Data

Nominal data complies with requirements of EN 61984 standard.

Marking example to be applied only in a mains power supply with insulated neutral or with neutral to earth in a corner (see Table 5, EN 61984):



Marking example to be applied in any mains power supplies, including those with insulated neutral and the delta power supplies with earth in a corner (see Table 5, EN 61984):



DESINA®

Feature of inserts for multipole connectors

inserts series	max rated current ¹⁾	contact resistance mΩ	insulation resistance GΩ	ambient temperature limit (°C)		protection rating		wirer connection ²⁾					certifications	
				min	max	with enclosures	without enclosures	screw	spring	connection block at 45°	crimp	snap-in		
CXL 2/4	---	---	---	-40	+70	IP65/IP67	IP20						✓	cUL ^{A)} , UL, EAC
	10A	3 mΩ	10 GΩ	-40	+70	IP65/IP67	IP20					✓		
CXL 2/4...H	---	---	---	-40	+70	IP65/IP67	IP20						✓	cUL ^{A)} , UL, EAC
	10A	3 mΩ	10 GΩ	-40	+70	IP65/IP67	IP20					✓		
CQ 08	16A	1 mΩ	10 GΩ	-40	+125	IP65/IP67	IP20						✓	cUL ^{A)} , CSA, CCC, EAC
CQ 04/2	40A	0,3 mΩ	10 GΩ	-40	+125	IP65/IP67	IP20						✓	cUL ^{A)} , CSA, EAC
	10A	3 mΩ	10 GΩ	-40	+125	IP65/IP67	IP20						✓	
CNE	16A	1 mΩ	10 GΩ	-40	+125	IP65	IP20	✓						dUL ^{A)} , CSA, CCC, GL, EAC

1) See the insert load curves to establish the actual maximum operating current according to the ambient temperature

2) For the wire electrical connection data, see from page 30

A) UL for USA and Canada

10A max contacts - CD serie

conductor section (mm ²)	AWG	identification number
0,14 - 0,37	26 - 22	
0,5	20	
0,75	18	
1	18	
1,5	16	
2,5	14	

Contacts can be supplied in the silver or gold plated version

40A max contacts - CX serie

conductor section (mm ²)	AWG	identification
1,5	16	hole Ø 1,75 mm
2,5	14	hole Ø 2,25 mm
4	12	hole Ø 2,85 mm
6	10	hole Ø 3,5 mm

Contacts are supplied in the silver plated version only

16A max contacts - CC serie

conductor section (mm ²)	AWG	throat identification
0,14 - 0,37	26 - 22	
0,5	20	
0,75	18	
1	18	
1,5	16	
2,5	14	
3,0	12	
4	12	

Contacts can be supplied in the silver or gold plated version.

Male contacts can also be supplied in the "advanced" version and iron/constantan contacts for thermocouples type J.

enclosures:
 size "21.21" page :
 insulating type 526 - 527
 metallic type 528 - 529



inserts, crimp connections



**10A crimp contacts
 silver and gold plated**

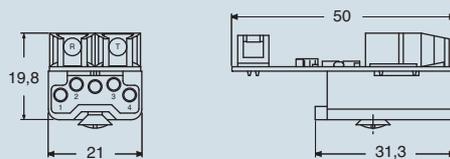


description	part No.	part No.	part No.
inserts for fixed enclosures, complete with electro-optical interface* without contacts (to be ordered separately) socket inserts for female contacts plug inserts for male contacts	CXL 2/4 SF CXL 2/4 SM		
without electro-optical interface for fixed enclosures without contacts (to be ordered separately) socket inserts for female contacts plug inserts for male contacts	CXL SF CXL SM		
10A female contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5		CDFA 0.3 CDFA 0.5 CDFA 0.7 CDFA 1.0 CDFA 1.5 CDFA 2.5	silver plated CDFD 0.3 CDFD 0.5 CDFD 0.7 CDFD 1.0 CDFD 1.5 CDFD 2.5
10A male contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5		CDMA 0.3 CDMA 0.5 CDMA 0.7 CDMA 1.0 CDMA 1.5 CDMA 2.5	gold plated 1) CDMD 0.3 CDMD 0.5 CDMD 0.7 CDMD 1.0 CDMD 1.5 CDMD 2.5

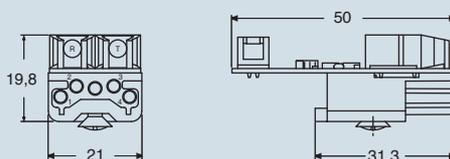
* fitted with IDC connector for TTL to bus connection ribbon cable

dimensions in mm

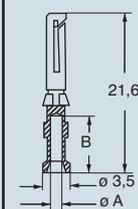
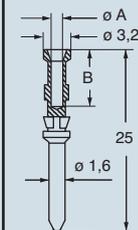
CXL 2/4 SM



CXL 2/4 SF



dimensions in mm



CDF and CDM contacts

conductor section mm ²	conductor slot ø A (mm)	conductors stripping length B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

1) basic or high thickness gold plating page 480

dimensions shown are not binding and may be changed without notice



enclosures:
 size "21.21" page :
 insulating type 526 - 527
 metallic type 528 - 529



**inserts, snap-in (POF)
 or crimp (HCS®) optical connection
 electrical crimp connection**



**10A crimp contacts
 silver and gold plated**



description	part No.	part No.	part No.
inserts for portable enclosures with: 4 + 1 crimp 1,5 mm ² contacts (included) + 2 snap on contacts for 1 mm ¹ plastic (POF) fibre optics socket inserts with CDFA 1.5 female contacts plug inserts with CDMA 1.5 male contacts	CXL 2/4 PF CXL 2/4 PM		
inserts for portable enclosures with: 4 + 1 crimp 1,5 mm ² contacts (included) + 2 crimp contacts for 0,2 mm ² HCS® fibre optics socket inserts with CDFA 1.5 female contacts plug inserts with CDMA 1.5 male contacts	CXL 2/4 PFH CXL 2/4 PMH		
inserts for portable enclosures with: 4 + 1 crimp contacts (not included – CDF and CDM series) + 2 snap on or HCS® fibre optic contacts (not included) ¹⁾ socket inserts with female contacts plug inserts with male contacts	CXL PF CXL PM		
10A female contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5 10A male contacts 0,14-0,37 mm ² AWG 26-22 identification No. 1 0,5 mm ² AWG 20 identification No. 2 0,75 mm ² AWG 18 identification No. ② 1 mm ² AWG 18 identification No. 3 1,5 mm ² AWG 16 identification No. 4 2,5 mm ² AWG 14 identification No. 5		CDFA 0.3 CDFA 0.5 CDFA 0.7 CDFA 1.0 CDFA 1.5 CDFA 2.5	CDFD 0.3 CDFD 0.5 CDFD 0.7 CDFD 1.0 CDFD 1.5 CDFD 2.5
		silver plated	gold plated 1)
		CDMA 0.3 CDMA 0.5 CDMA 0.7 CDMA 1.0 CDMA 1.5 CDMA 2.5	CDMD 0.3 CDMD 0.5 CDMD 0.7 CDMD 1.0 CDMD 1.5 CDMD 2.5

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¹⁾ for POF fibre preparation, the polishing kit Agilent HFBR-4593 (CXL POL) is available on request

²⁾ for HCS® connection preparation, the Crimp & Clear cabling kit (without glue or polishing kit) for simplex connectors for 200/300 μm HCS® fibre optics is available on request.

The (CXL KCC) kit consists of:

- No. 1 scissors for kevlar cutting
- No. 1 cable stripper
- No. 1 fibre stripper
- No. 1 calibrated pliers
- No. 1 precision fibre optics cutter with diamond blade.

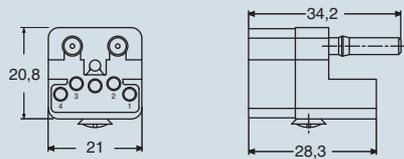
All accessories are stored in a hard carrying case

³⁾ see data on page 519

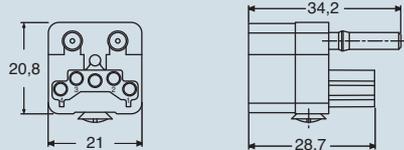
- temperature range: from -40°C to +70°C
- for crimp contacts, see the crimp tools section (10A contacts, CDF and CDM series) on pages 534, 538, 544, 546, 548

dimensions in mm

CXL 2/4 PM and PMH

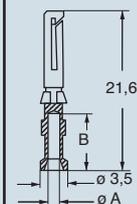
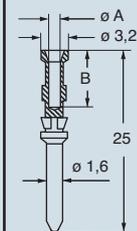


CXL 2/4 PF and PFH



- 8 mm wire stripping
- POF 7 mm fibre stripping

dimensions in mm



CDF and CDM contacts

conductor section	conductor slot	conductors stripping length
mm ²	ø A (mm)	B (mm)
0,14-0,37	0,9	8
0,5	1,1	8
0,75	1,3	8
1,0	1,45	8
1,5	1,8	8
2,5	2,2	6

1) basic or high thickness gold plating page 480

dimensions shown are not binding and may be changed without notice



inserts:	page:
CJ KF	503
CJ K8FT	506
CLK 04 SC	509
CXL 2/4 SF.....	524
CXL 2/4 SM.....	524
CXL SF.....	524
CXL SM.....	524

bulkhead mounting housings

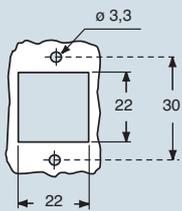


cover



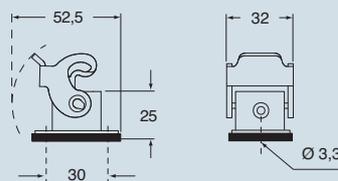
description	part No.	part No.
with lever	CK 03 IN (black)	
with pegs and gasket		CKG 03 CN (black)

panel cut-out for enclosures, in mm



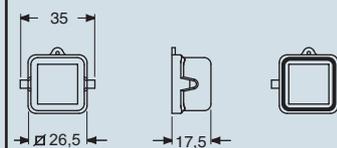
dimensions in mm

CK IN



dimensions in mm

CKG CN



Note:
CXL, CJ K and CLK inserts are already supplied with seal and screw, which ensure IP66/IP67 protection rating.



CAUS® Type 4/4X/12

dimensions shown are not binding and may be changed without notice

inserts:	page:
CJ KM	503
CJK 8MT	506
CJK 8IMT *	506
CLK 04 SC *	509
CXL 2/4 PF	525
CXL 2/4 PFH	525
CXL 2/4 PM	525
CXL 2/4 PMH	525
CXL PF	525
CXL PM	525

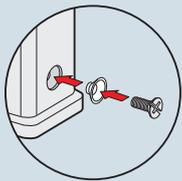
* cannot be used with angled enclosures
(part No. CKAG 03 VA / MKAG VA20)

hoods



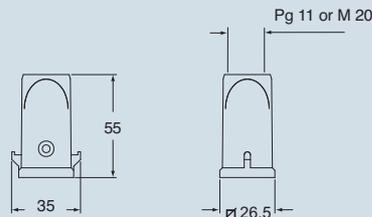
description	part No. (entry - Pg 11)	part No. (entry - M 20)
with pegs and gasket, top entry	CKG 03 VN (black)	MKG VN20 (black)
with pegs and gasket, side entry	CKG 03 VAN (black)	MKG VAN20 (black)

Note:
CXL, CJ K and CLK inserts are already supplied with seal and screw, which ensure IP66/IP67 protection rating.

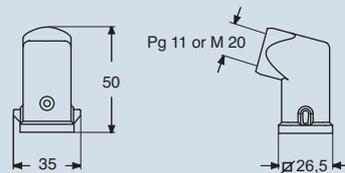


dimensions in mm

CKG VN and MKG VN



CKG VAN and MKG VAN



CALUS® Type 4/4X/12

dimensions shown are not binding
and may be changed without notice



inserts:	page:
CJ KF	503
CJ K8FT	506
CLK 04 SC	509
CX 1/2 BD	512
CXL 2/4 SF.....	524
CXL 2/4 SM.....	524
CXL SF.....	524
CXL SM.....	524

bulkhead mounting housings cover



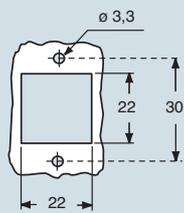
bulkhead mounting housings with cover



NEW

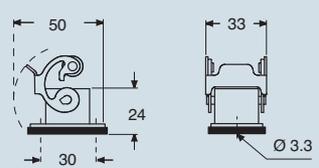
description	part No.	part No.
with stainless steel lever	CKAX 03 I	
with pegs and gasket	CKAG 03 C	
with stainless steel lever, for female inserts		CKAX 03 ILS

panel cut-out for enclosures, in mm

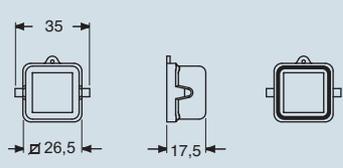


dimensions in mm

CKAX I

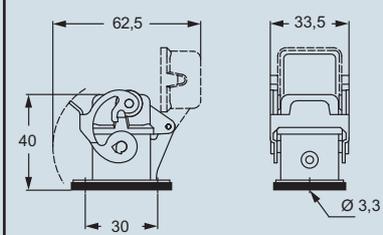


CKAG C

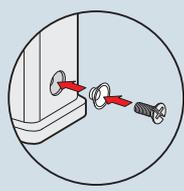


dimensions in mm

CKAX ILS



Note:
CXL, CX 1/2 BD, CJ K and CLK inserts are already supplied with seal and screw, which ensure IP66/IP67 protection rating



CAUS® Type 4/4X/12

dimensions shown are not binding and may be changed without notice

Accessories



inserts:	page:
CJ KM	503
CJK 8MT	506
CJK 8IMT *	506
CLK 04 SC *	509
CX 1/2 BD *	512
CXL 2/4 PF	525
CXL 2/4 PFH	525
CXL 2/4 PM	525
CXL 2/4 PMH	525
CXL PF	525
CXL PM	525

* cannot be used with angled enclosures
(part No. CKAG 03 VA / MKAG VA20)

hoods



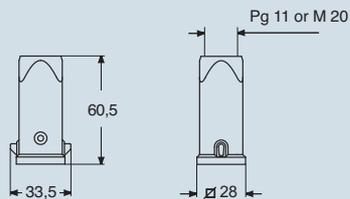
description	part No. (entry - Pg 11)	part No. (entry - M 20)
with pegs and gasket, top entry	CKAG 03 V	MKAG V20
with pegs and gasket, side entry	CKAG 03 VA	MKAG VA20

Note:
CXL, CX 1/2 BD, CJ K and CLK inserts are already supplied with seal and screw, which ensure IP66/IP67 protection rating

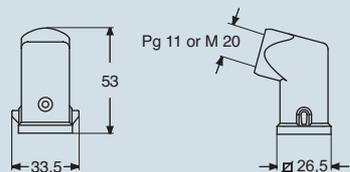


dimensions in mm

CKAG V and MKAG V

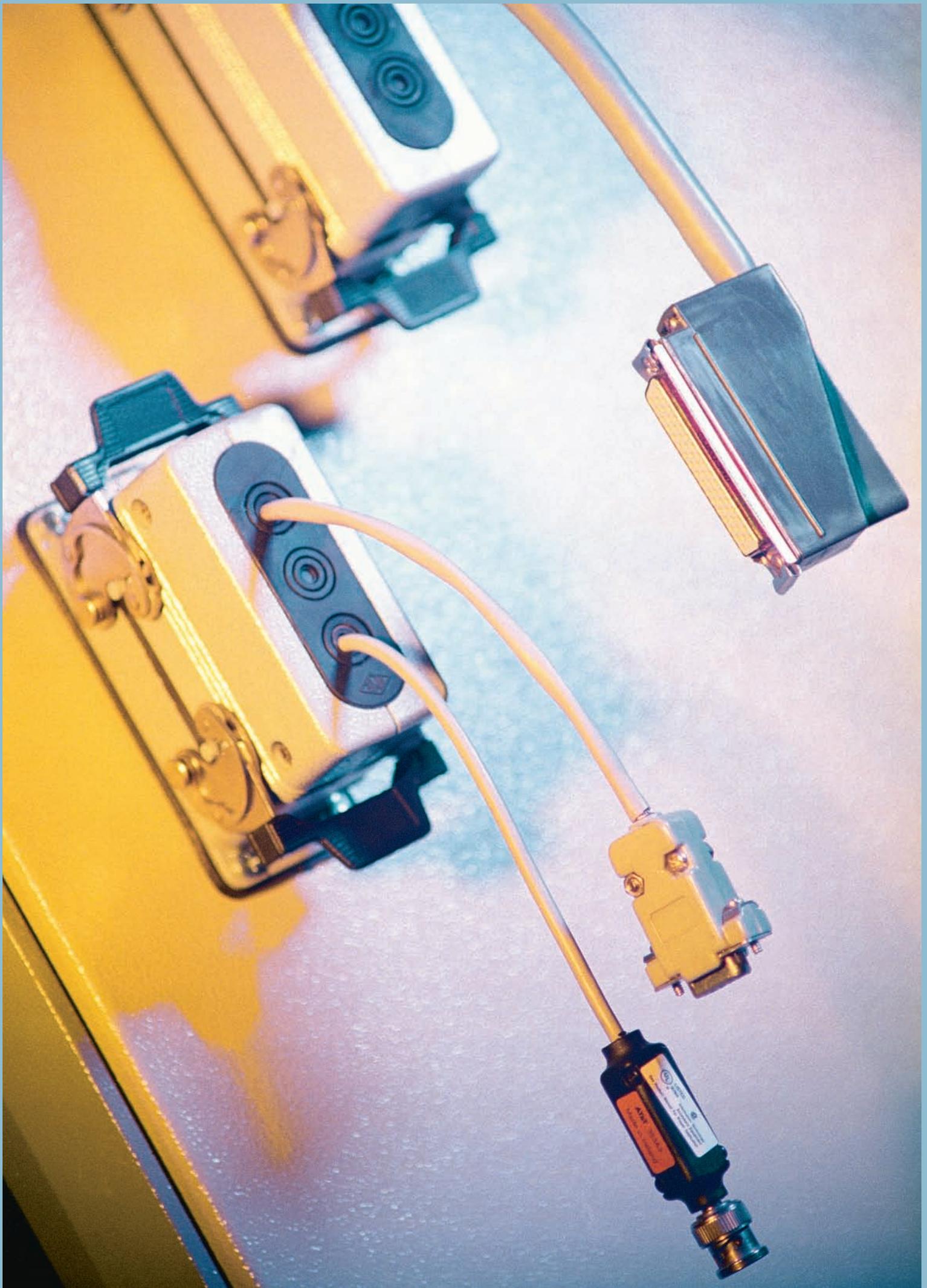


CKAG VA and MKAG VA



CAUS® Type 4/4X/12

dimensions shown are not binding
and may be changed without notice



Crimping tools

Tools and accessories for crimp contacts

The crimping concept

The crimp connection is an irreversible connection between one or two conductors and a crimp contact. The crimp connection is obtained by pinching or pressing the contact metal - or shaft - firmly with the crimping tool.

A good crimp connection is provided by a suitable combination between the crimping base, the crimping part of the contact metal, i.e. the crimp contact, firmly with and the section of the conductor.

These comments refer to crimped connections carried out with copper flexible conductors in class 5 (flexible) or 6 (extra flexible) according to standards IEC 60228 and IEC 60228-A (Italian standard CEI 20-29).

Solid copper conductors (class 1) or in other materials (aluminium, iron, etc) often require special precautions for contacts and for crimping tools, to be agreed with the manufacturer. The main technical advantages provided by crimping connections over soldered connections are:

- The process does not use heat and does not require materials.
- Perfect connection is acquired that is intrinsic with cold soldering.
- 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 upon connection.
- No conductors with burned, discoloured or overheated insulating material.
- Excellent reproducibility of the performances of the electrical and mechanical connections.
- Facilitated production controls.

Other advantages obtained by crimping connections over screw terminal connections are:

- Less drop of currency in the connector contacts.
- High stability in time even in the presence of vibrations.
- High duration in presence of corrosion (gastight).
- 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 substitution 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 mm² 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 guide, which lists the following main points.

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

To ensure a good quality crimped connection, an essential parameter is the wire mechanical retention in the contact. The standard makes a distinction between the closed crimp shaft, inherently stronger, and the open crimp shaft. ILME crimp contacts are closed crimp shaft contacts, with inspection hole which ensures a higher mechanical performance compared to the open shaft crimp contacts, such as better mechanical sturdiness and stability during operation.

They have been machine turned, thus ensuring a better electrical performance (better conductivity). 2002 Amendment 2 of the previous IEC standard issue controversially unified the minimum resistance to tensile stress values established for open shaft contacts (curve B of old Figure 5) and closed shaft contacts (curve A of old Figure 5) by lowering them to the

values (shown in curve B), which can be achieved by open shaft crimp contacts. This has controversially relaxed the suitability requirements both for closed crimp shaft, typically large, machine turned and for crimp tools specially made for these contacts. Several industries continue to prefer the higher performance ensured by closed shaft crimp contacts, the only ones 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 shaft crimp contacts, used with flexible copper wires, featuring a section included in the ranges shown and correctly crimped with the recommended tools, ensure breakage resistant connections at least equal to the values shown in the table shown below (for reference, the corresponding R_f/S unified tensile stress load value is also shown [N/mm²]).

Section S		Resistance to traction R _t (N)	R _f /S (N/mm ²)
AWG	mm ²		
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

NOTE - For 10 mm² wire sections, the resistance to tensile stress shown in *italics* are those specified in the NF F 61-030 standard (for 10 mm², the value in brackets).

The basic criteria used for the resistance to tensile stress values required by EN 60352-2 standard is that such resistance is at least equal to 60% of the breakage unified load of the same annealed copper wire.

This applies to wire sections up to about 1,5 mm²; above this section, the ratio is slightly lower as retention is also affected by friction, which increases linearly with the housing diameter, whilst the section increases by the square.

IEC/EN 60352-2 standard, which targets the electronics industry, restricts its requirements to crimp connections for wires with a maximum section of 10 mm². For sections higher than 10 mm², up to 70 mm², 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 mm² and 300 mm², EN 61238-1:2003 standard can be referred to. This standard requires constant R_f/S values equal to 60 N/mm², lower than those established by the above mentioned French standard.

Crimping tools

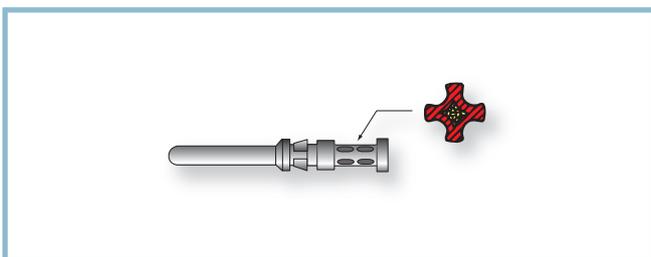
Tools and accessories for crimp contacts

Selecting the crimping tool and relevant controls

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

- a) The crimping tools and the contacts used must be supplied by the same manufacturer, otherwise the user must 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 must 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 must 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 impression crimp (see figure) in conformity with standard EN 60352-2. Periodic control of the wear of the crimping matrixes can be carried out with the appropriate "go - no go" gauges (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 **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 work loads. The **CCPZ RN** (for 10A, 16A and 40A crimp contacts) manual crimping tool is also suitable for low or medium-low work loads. 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 work loads. 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 work loads. 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 work loads. 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. However, the positioner must be changed in order to change over from male to female contacts.

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 work loads. 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 preset 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.

Crimping tools

Crimping

The crimping operation

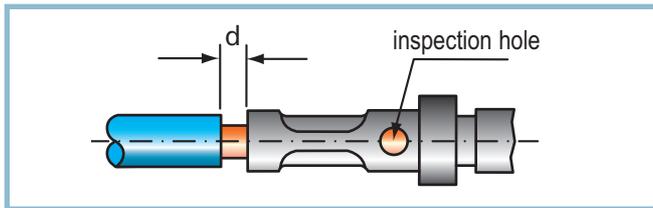
The practical guide in standard EN 60352-2 supplies further general information regarding crimp contacts for multipole connectors.

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 mm²) and + 2 mm (for sections from 1 to 10 mm²) *. 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 stripping, 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

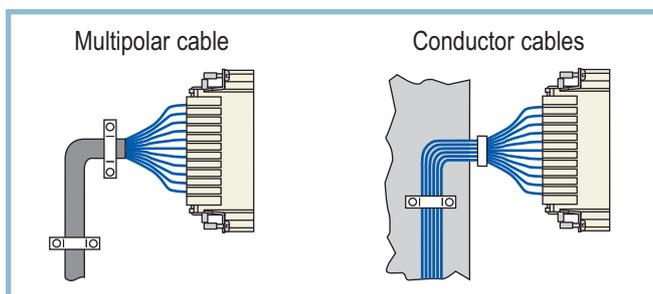
It is recommended that the crimped contacts be perfectly straight and inserted within the contact slots in a single operation and without excessive force until a clicking sound is heard. The correct retention of the contact should be verified with a light pulling of the wire. Non alignment of the crimped 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

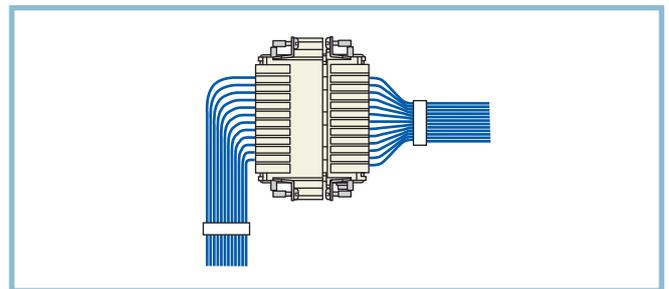
In the case of incorrect insertion or wiring substitution, inserted contacts may only be removed using the removal tools specified by the manufacturer.

4. Mounting and flexure of multiwired 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 herebelow.

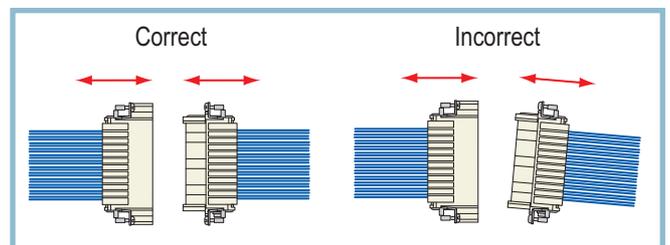


If the conductor bundles or the multipolar cables have to be immediately folded over on the back of the connector insert, it is recommended not to use any mechanical force in the axial direction with respect to the coupled contacts. The figure herebelow shows a correct bending and clamping of the multiwire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



5. Coupling and uncoupling of multipolar connectors with crimp contacts

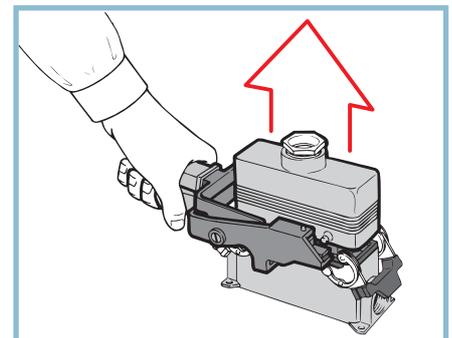
In order to prevent stress on the crimp contacts, the connectors must be coupled and uncoupled in the axial direction with respect to the contacts, without touching the conductor bundles or cables. Standard DIN 43652 (incorporated into specification EN 175301-801) that applies to the ILME inserts of 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).



for contacts of insert series:	page:
CD (10A)	53-61
CDD (10A)	67-74
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (10A/16A)	165-168
CX 8/24 (16A/10A)	169
CX 6/36 * (10A)	170
CX 12/2 * (10A)	171
CX 6/6 * (16A)	175
MIXO (10A/16A)	185-203

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

manual crimping tool turret heads - gauge



insertion tool - removal tools - replacement tip



description	part No.	part No.
crimping tool for 10A and 16A contacts DANIELS AF8 model (turret excluded)	CCPZ MIL	
turret heads (see note) - for 10A contacts (CDF and CDM series) - for 16A contacts (CCF and CCM series)	CCTP 10 CCTP 16	
"go / no go" control gauge to verify indenter closure (see note)	CCPNP	
insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0.75 mm ²		CCINA
removal tools for the extraction of contacts from the inserts - for 10A contacts ¹⁾ - for 16A contacts ²⁾		CCES CQES
replacement tip for CCES removal tool		CCPR RN

- 1) for CQ, CD, CDD, CX inserts (10A auxiliary contacts) and MIXO module (10A)
- 2) for CQ, CQE, CQEE, CCE, CMCE inserts (excluded 16+2), MIXO module (16A), CX6/6 (16A) and CDC. For CMCE (16+2), CX inserts (contacts 16A insert CX 8/24) using a flat 3 mm screwdriver.

Notes:

Positioning turret

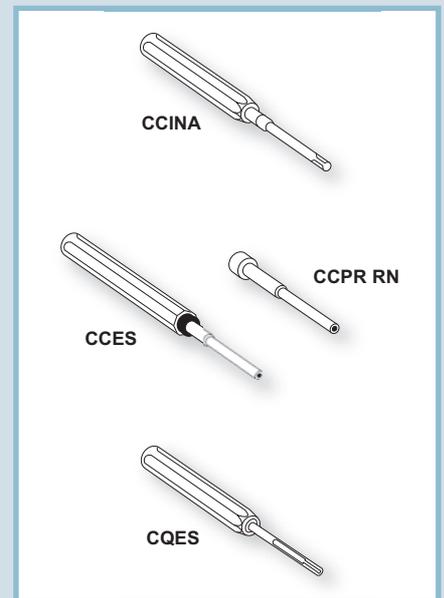
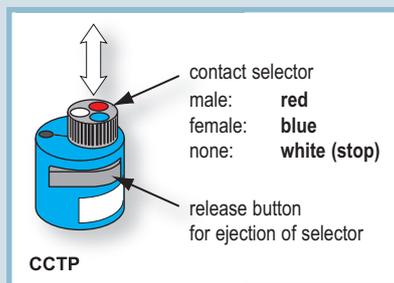
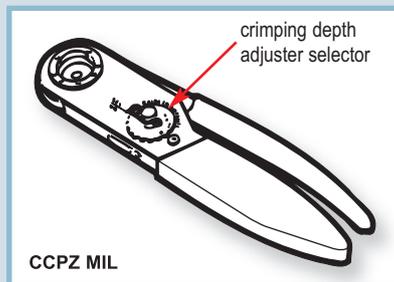
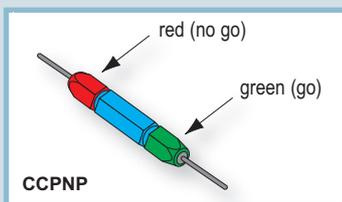
conforms to international standard MIL-C-22520/1

- 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.



CCMA - CCFA CCMD - CCFD		0,14 mm ²	0,25 mm ²	0,34 mm ²	0,5 mm ²	0,75 mm ²	1,0 mm ²	1,5 mm ²	2,5 mm ²	3,0 mm ²	4,0 mm ²	conductor section
red male	blue female	26	24	22	20	18	17	16	14	12	12	AWG
0,3	0,3	5	5	6								
0,5	0,5		6	7								
0,7	0,7			6	7							
1,0	1,0			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	

crimping depth
adjuster selector
CCTP 16

CDMA - CDFA CDMD - CDFD		0,14 mm ²	0,25 mm ²	0,34 mm ²	0,5 mm ²	0,75 mm ²	1,0 mm ²	1,5 mm ²	2,5 mm ²	conductor section
red male	blue female	26	24	22	20	18	17	16	14	AWG
0,3	0,3	5	5	6						
0,5	0,5			6						
0,7	0,7				6					
1,0	1,0					6				
1,5	1,5						6			
2,5	2,5							7		
									7	

crimping depth
adjuster selector
CCTP 10

General specifications

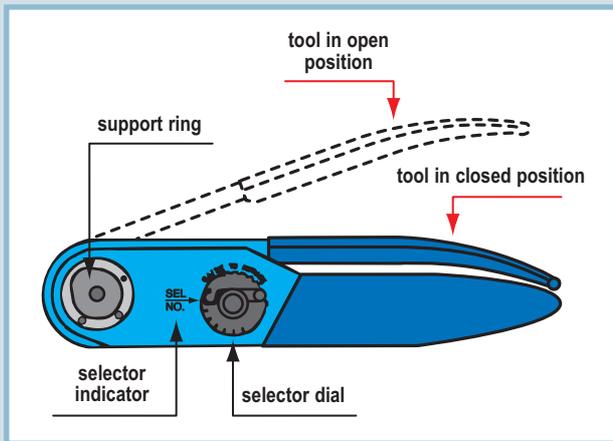
The CCPZ MIL crimping tool conforms to the international standard MIL-C-22520/1. Crimping is performed with 8 pressure points. The tool is equipped with a geared mechanism to control the complete crimping cycle. **The tool must be equipped with an interchangeable turret (CCTP) according to the series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

Crimping range

Wire section: dimension from 0,12 mm² (26 AWG) to 4 mm² (12 AWG).

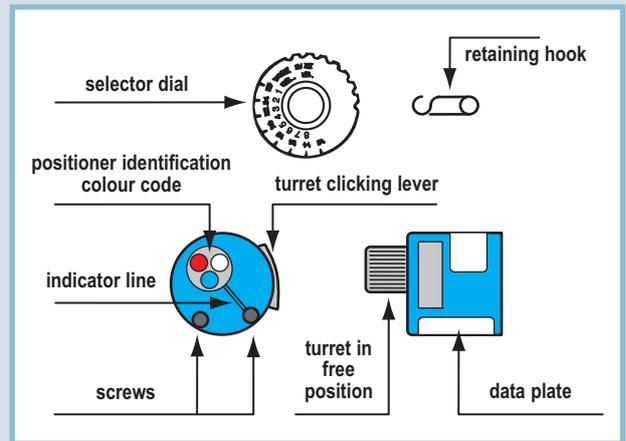
Caution!

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.



CCTP turret installation

1. The crimping tool must be in the open position.
2. Press the clicking lever that releases the turret in the adjustment position.
3. Position the previously selected CCTP turret 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 turret positioned against the support ring, tighten the socket head screws with the 3.5 mm Allen wrench (supplied with the kit).
5. Refer to the data plate on the CCTP turret. 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 turret 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 turret. 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 selector dial. Lift the selector dial and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).



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.

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.

Removing the CCTP turret

With the crimping tool in the open position, to disassemble the turret, loosen the socket head screws using the 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.

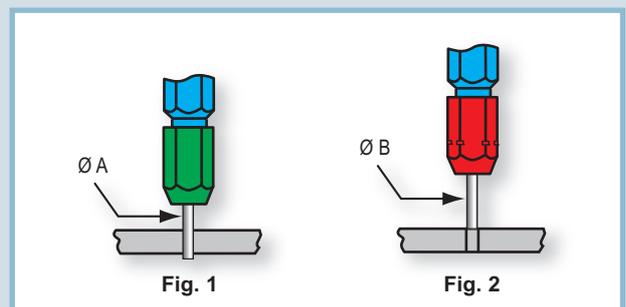
Instructions to check calibration

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

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)



for contacts of insert series:	page:
CX 6/36 * (40A)	170
CX 12/2 * (40A)	171
MIXO (40A)	184-188

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

***) On request is possible to supply the pneumatic crimping tool version (part. No. **CXPZP D**), please contact us for further details.

manual crimping tool **) turret heads - gauge



removal tool



description	part No.	part No.
crimping tool for 40A DANIELS M309 model (turret excluded)	CXPZ D	
turret heads (see note) - for <u>male</u> contacts 40A - for <u>female</u> contacts 40A	CXTP 40 M CXTP 40 F	
"go / no go" control gauge to verify indenter closure (see note)	CXPNP	
removal tool for the extraction of contacts from the inserts - for 40A contacts		CXES

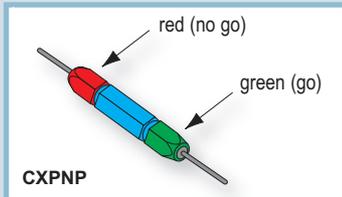
Notes:

Positioning turret

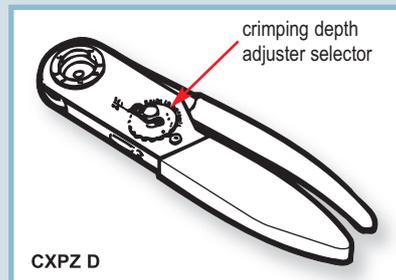
- An interchangeable and indispensable accessory of the CXPZ D crimping tool, it precisely positions the contact where crimping is performed. Each series of contacts (male or female) requires its own turret.

"go / no go" control gauge

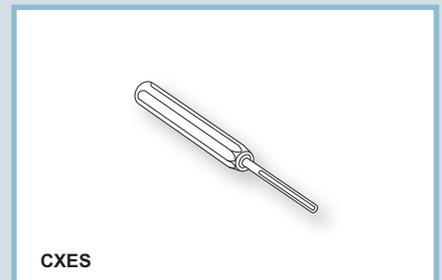
- A tool used to periodically check that the crimping tool meets standard requirements.



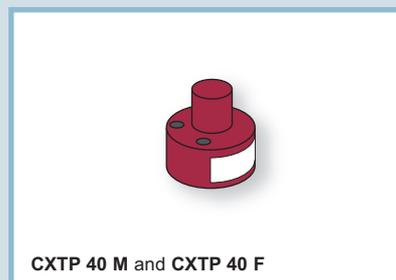
***) On request is possible to supply the pneumatic crimping tool version (part. No. **CXPZP D**), please contact us for further details.



CXPZ D



CXES



CXTP 40 M and CXTP 40 F

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.

Crimping range

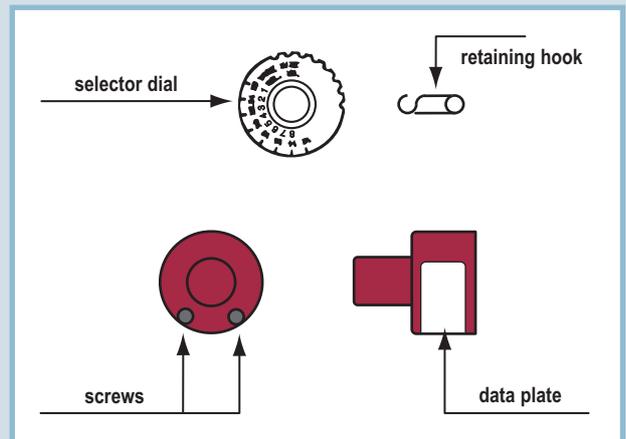
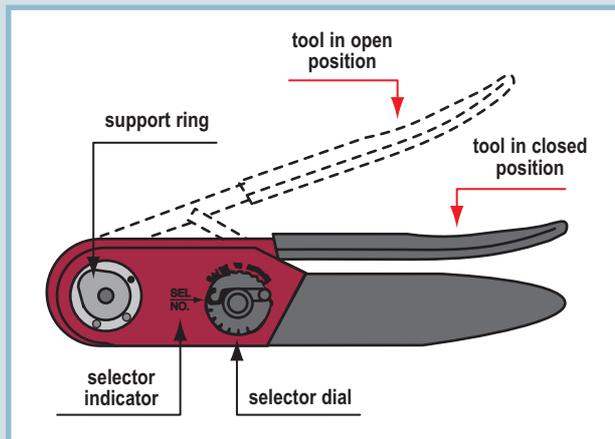
Wire section:
dimension from 1,5 mm² (16 AWG) to 6 mm² (10 AWG)

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.

CXTP turret installation

1. The crimping tool must be in the open position.
2. Choose the turret to be used, according to the contacts that should be crimped (male or female).
3. Position the previously selected CXTP turret 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 CXTP turret positioned against the support ring, tighten the socket head screws with the 3.5 mm Allen wrench (supplied with the kit).
5. Refer to the data plate on the CXTP turret. 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 selector dial. Lift the selector dial and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).



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.

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.

Removing the CXPT turret

With the crimping tool in the open position, to disassemble the turret, loosen the socket head screws using the 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.

Instructions to check calibration

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

Calibration check

Put the crimping tool in the completely closed position.

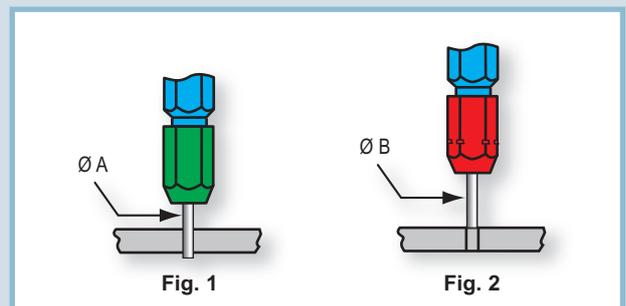
“GO” - Insert the end (green) of the gauge as shown (Fig. 1).

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)



for contacts of insert series:	page:
CD (10A)	53-61
CDD (10A)	67-74
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (10A/16A)	165-168
CX 8/24 (16A/10A)	169
CX 6/36 (40A/10A)	170
CX 12/2 (40A/10A)	171
CX 6/6 * (16A)	175
MIXO (40A/16A/10A)	184-203

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

manual crimping tool gauge



insertion tool - removal tools - replacement tip



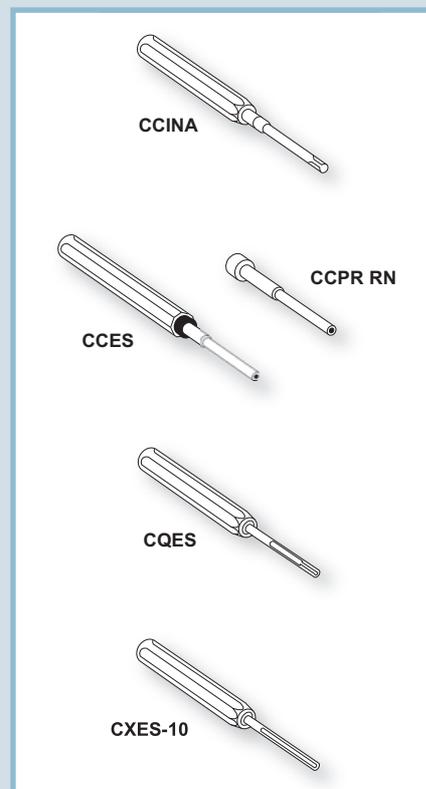
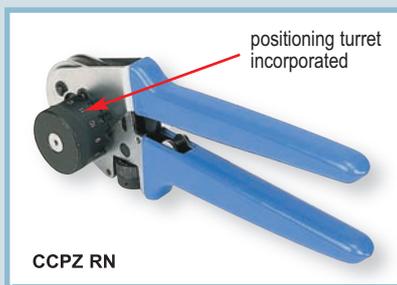
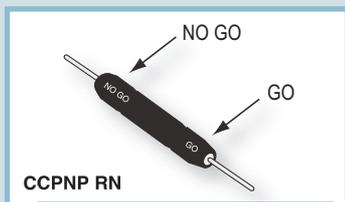
description	part No.	part No.
crimping tool for 10A, 16A and 40A contacts RENNSTEIG model (turret included)	CCPZ RN	
"go / no go" control gauge to verify indenter closure (see note)	CCPNP RN	
insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0.75 mm ²		CCINA
removal tools for the extraction of contacts from the inserts - for 10A contacts ¹⁾ - for 16A contacts ²⁾ - for 40A contacts ³⁾ and cables Ø < 5 mm - for 40A contacts ⁴⁾ and cables Ø < 7.5 mm		CCES CQES CXES CXES-10
replacement tip for CCES removal tool		CCPR RN

- 1) for CQ, CD, CDD, CX inserts (10A auxiliary contacts) and MIXO module (10A)
- 2) for CQ, CQE, CQEE, CCE, CMCE inserts (excluded 16+2), MIXO module (16A), CX6/6 (16A) and CDC. For CMCE (16+2), CX inserts (contacts 16A insert CX 8/24) using a flat 3 mm screwdriver.
- 3) for CX inserts (40A contacts) and MIXO module (40A)
- 4) for MIXO module CX 03 4B and contacts 10 mm²

Notes:

"go / no go" control gauge

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



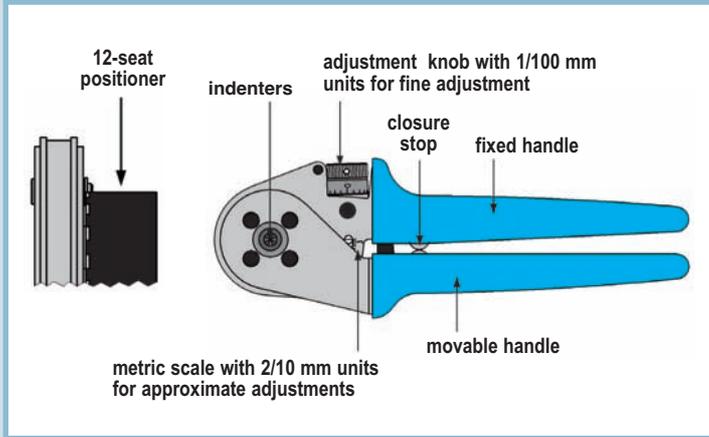
Crimping tools

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 (40A max).

Crimping range

Wire section: dimension from 0,14 mm² (26 AWG) to 10 mm² (8 AWG)

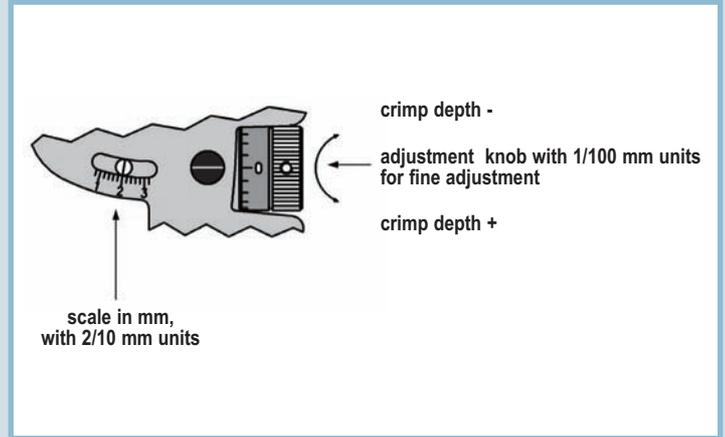


Adjustment of crimp depth

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

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).



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).

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.

Adjustment tool

Positioner seat = M1 (male) - F2 (female)		
CDMA/D (male)	Section (mm ²)	Crimp depth (mm)
GDFA/D (female)	0,14	1,3
	0,25	
	0,37	
	0,5	
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 (male)	Section (mm ²)	Crimp depth (mm)
CCFA/D (female)	0,14	1,2
	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 = M4 (male) - F6 (female)		
CXMA/D (male)	Section (mm ²)	Crimp depth (mm)
CXFA/D (female)	1,5	1,55
	2,5	1,8
	4,0	2,0
	6,0	2,5
	10,0	2,3

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.

Calibration check

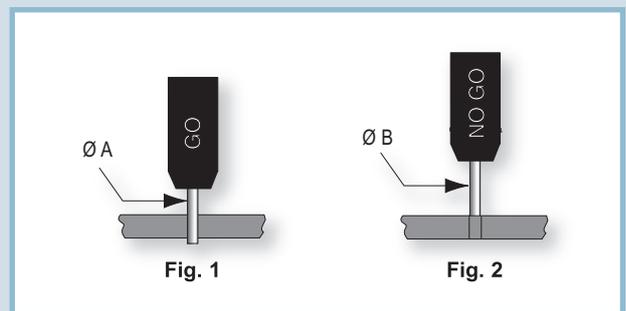
The crimping tool is adjusted in the manufacturer's plant. To ensure correct calibration, we advise you to check the tool with a gauge every working day. This is easily done with the CCPNP RN cylindrical gauge in the 2,0 mm Ø position. **ATTENTION! Do not crimp the gauge.** Crimping depth of 2 mm can 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 pos. No.	Ø A GO	Ø B NO GO
CCPNP RN	2	1,94 (mm)	2,06 (mm)



for contacts of insert series: page:
MIXO (CI contacts, 25 poles) 196
MIXO (CI contacts, 8 poles) 198 and 514

**manual crimping tool
 turret head**



insertion / removal tool



description	part No.	part No.
crimping tool for CI contacts DANIELS AFM8 model (turret excluded)	CIPZ D	
turret head - for CI contacts (CIFD and CIMD series)	CITP D	
insertion tool: for insertion of the contacts into the inserts, and removal tool: for the extraction of contacts from the inserts - for CI contacts (CIFD and CIMD series)		CIES

N.B.:
CITP D turret head (to be ordered separately)

for contacts of insert series:
MIXO..... (D-SUB)

page:
 206

**manual crimping tool
 turret head**

insertion / removal tool



description

part No.

part No.

crimping tool for **5A** contacts
 DANIELS AFM8 model (turret excluded)

CIPZ D

turret head
 - for **5A** D-SUB contacts (CIVFD and CIVMD series)

CIVTP D

insertion tool:
 for insertion of the contacts into the inserts, and
 removal tool:
 for the extraction of contacts from the inserts
 - for **5A** D-SUB contacts (CIVFD and CIVMD series)

CIVES

N.B.:
CIVTP D turret head (to be ordered separately)

for contacts of insert series: page:
CX 6/6 (100A) 175
MIXO (200A/100A/70A) 180-183

manual crimping tool crimp matrixes



removal tool



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

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. **CCPZ CF:**
Manual crimping tool carrying case (CGPZ VLG) complete with crimp matrixes (CGD/CYD), locator (CX7PZ LOC, CGPZ LOC, CYPZ LOC) and removal tool (C7ES).

part No.	punching	contacts	mm ²	AWG min (mm ²)	AWG max (mm ²)
CGD 10 C	ME 2	CX7MA 10, CX7FA 10	10	8 (8,4)	7 (10,6)
CGD 16 C	ME 3	CX7MA 16, CX7FA 16	16	6 (13,3)	5 (16,8)
CGD 25 C	ME 5	CX7MA 25, CX7FA 25	25	4 (21,2)	3 (26,7)

part No.	punching	contacts	mm ²	AWG min (mm ²)	AWG max (mm ²)
CGD 10 C	ME 2	CGMA 10, CGFA 10	10	8 (8,4)	7 (10,6)
CGD 16 C	ME 3	CGMA 16, CGFA 16 CGT 16	16	6 (13,3)	5 (16,8)
CGD 25 C	ME 5	CGMA 25, CGFA 25	25	4 (21,2)	3 (26,7)
CGD 35 C	ME 7	CGMA 35, CGFA 35	35	-	2 (33,6)

part No.	punching	contacts	mm ²	AWG (mm ²)
CGD 25 C	ME 5	CYMA 16, CYFA 16	16	6 (13,3)
CYD 35 C	ME 9	CYMA 25, CYFA 25 CYMA 35, CYFA 35	25 35	4 (21,2) 2 (33,6)
CYD 50 C	ME 12	CYMA 50, CYFA 50	50	1 (42,4)
CYD 70 C	ME 17	CYMA 70, CYFA 70	70	2/0 (67,4)

Crimping tools

General specifications

The **CPPZ C** crimping tool are 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 16** adaptor.

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 mm² 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 CX7, CG and CY series crimp contacts already fitted on the moving part of the pliers head by means of the Allen screw provided.

This locator is available on request if it needs replacing.

NOTE: It is possible to use the CPPZ C pliers with the CX7 70A, CG 100A and CY 200A contact series, by simply fitting the CY7PZ LOC, CGPZ LOC or CYPZ LOC locator and crimping matrixes to be purchased separately.

WARNING: For crimping the CGT 16 adaptor, 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 542.

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 mm² 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 (22) outwards until the matrix support (21) 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 (21), the other one in the matrix pusher support (26). (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 (36) 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 adaptor) 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 adaptor, 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 (50) 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.

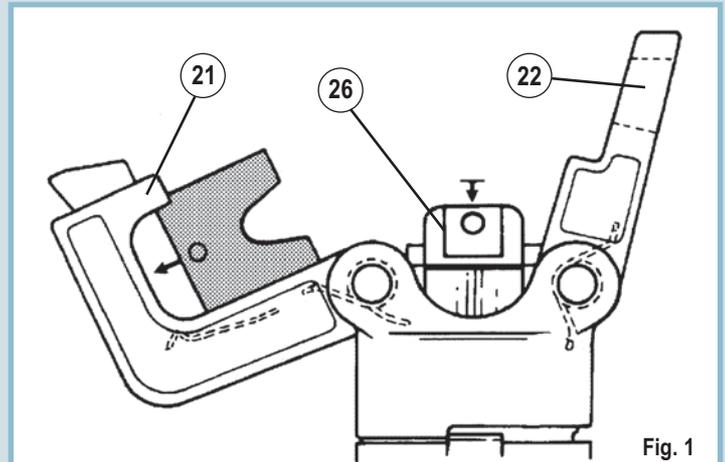


Fig. 1

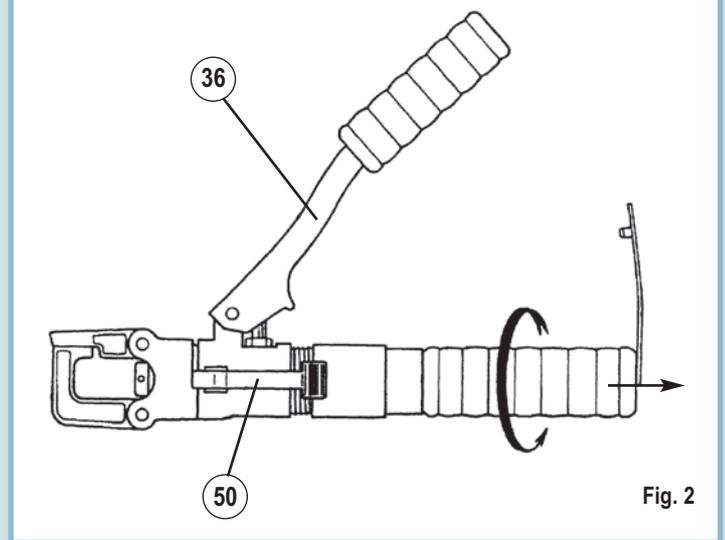


Fig. 2

CGPZ VLG carrying case



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

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

for contacts of insert series:	page:
CD (10A)	53-61
CDD (10A)	67-74
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (10A/16A)	165-168
CX 8/24 (16A/10A)	169
CX 6/36 * (10A)	170
CX 12/2 * (10A)	171
CX 6/6 * (16A)	175
MIXO (10A/16A)	185-203

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

pneumatic crimping tool turret heads - gauge



insertion tool - removal tools - replacement tip



description	part No.	part No.
pneumatic crimping tool for 10A and 16A contacts model DANIELS WA27F (turret excluded)	CCPZP	
turret heads (see note) - for 10A contacts (CDF and CDM series) - for 16A contacts (CCF and CCM series)	CCTP 10 CCTP 16	
support for CCPZP pneumatic crimping tool	CCSPZP	
pneumatic foot valve	CCVPP	
"go / no go" control gauge to verify indenter closure (see note)	CCPNP	
insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0.75 mm ²		CCINA
removal tools for the extraction of contacts from the inserts - for 10A contacts ¹⁾ - for 16A contacts ²⁾		CCES CQES
replacement tip for CCES removal tool		CCPR RN

¹⁾ for CQ, CD, CDD, CX inserts (10A auxiliary contacts) and MIXO module (10A)
²⁾ for CQ, CQE, CQEE, CCE, CMCE inserts (excluded 16+2), MIXO module (16A), CX6/6 (16A) and CDC. For CMCE (16+2), CX inserts (contacts 16A insert CX 8/24) using a flat 3 mm screwdriver.

Notes:

Positioning turret

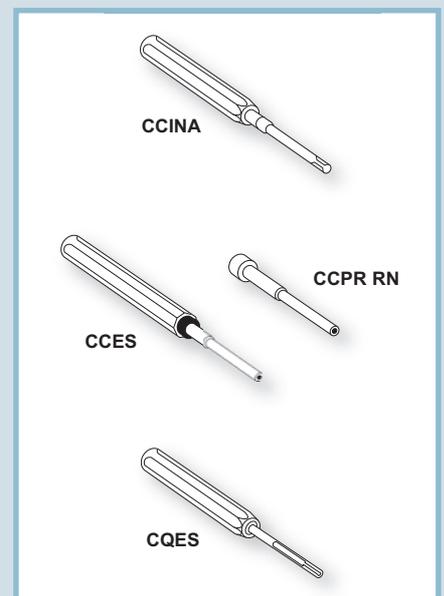
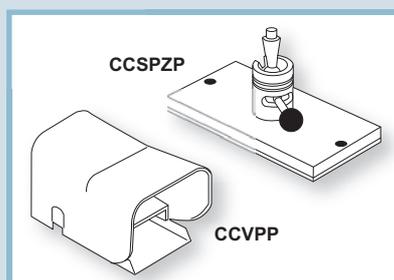
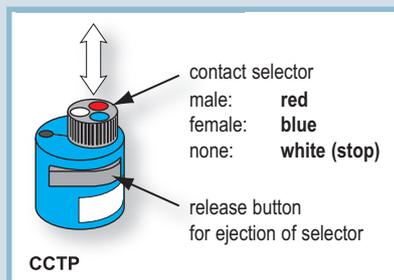
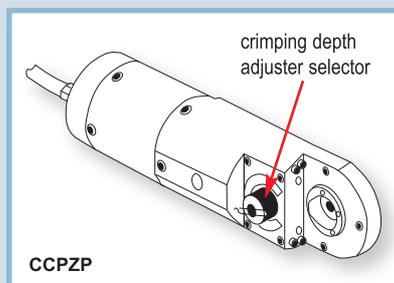
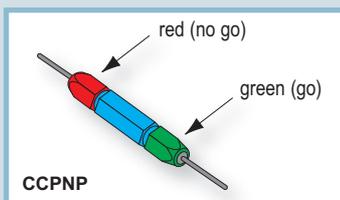
conforms to international standard MIL-C-22520/1

- 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 to international standard MIL-C-22520/3

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



General specifications

This is the pneumatic version of the crimping tool. 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 (CCTP) 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 a lubrication, adjustment and air filtering unit.

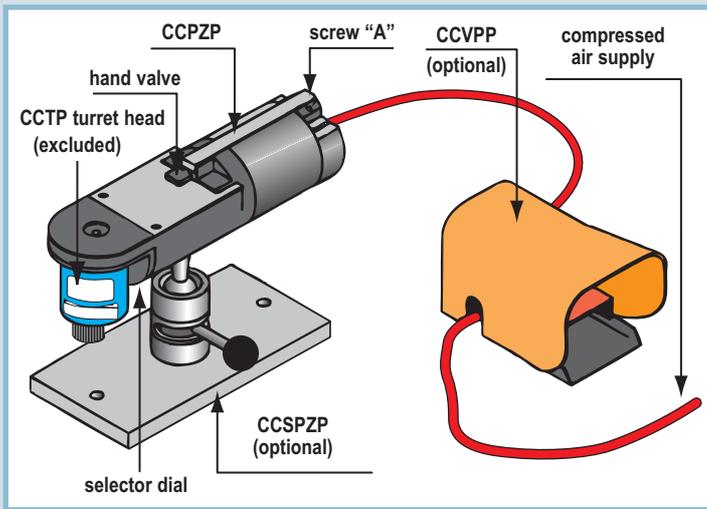
Crimping range

Wire section: dimension from 0.12 mm² (26 AWG) to 4 mm² (12 AWG).

Operation with foot valve (optional)

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

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



Checking the crimping complete cycle control mechanism

Correct operation can be checked based on the following procedure:

1. Install a CCTP turret.
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 mm², 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.

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 optional 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.

Crimping tool maintenance

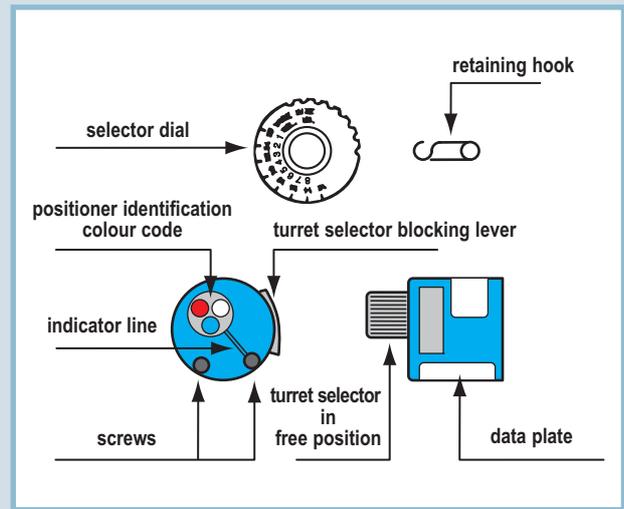
No maintenance is required. However, it is good practice to keep the indenter tips free from residual deposits of the coloured band (some types of crimp contacts as per MIL standards are identified by coloured bands in the crimping area) and any other debris. A metal brush may be used for this purpose.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

CCTP turret installation

1. Position the previously selected CCTP turret 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 turret positioned against the support ring, tighten the socket head screws with the 3.5 mm Allen wrench (supplied with the kit).
3. Refer to the data plate on the CCTP turret. 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 turret 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 turret. 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 selector dial. Lift the selector dial and turn it until the selector number is aligned with the indicator (SEL.NO.). Replace the retaining hook (if necessary).



Removing the CCTP turret

With the crimping tool in the open position, to disassemble the turret, loosen the socket head screws using the 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.

Releasing a partially crimped contact

To release a partially crimped contact, do the following:

1. 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.
2. Turn the selector dial clockwise to the highest lockable setting (the selector dial 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.

Instructions to check calibration

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

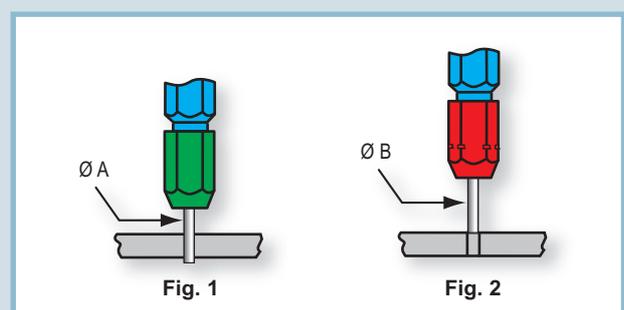
Calibration check

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
CCNP	4	0,991 (mm)	1,118 (mm)



for contacts of insert series:	page:
CD (10A)	53-61
CDD (10A)	67-74
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (10A/16A)	165-168
CX 8/24 (16A/10A)	169
CX 6/36 * (10A)	170
CX 12/2 * (10A)	171
CX 6/6 * (16A)	175
MIXO (10A/16A)	185-203

* 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)	CCPZPA	
positioner inserts (see note) - male contacts 10A (CDM series) - female contacts 10A (CDF series) - male contacts 16A (CCM series) - female contacts 16A (CCF series)	CCTPADM CCTPADF CCTPACM CCTPACF	
"go / no go" control gauge to verify indenter closure (see note)	CCPNP	
insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0.75 mm ²		CCINA
removal tools for the extraction of contacts from the inserts - for 10A contacts ¹⁾ - for 16A contacts ²⁾		CCES CQES
replacement tip for CCES removal tool		CCPR RN

- 1) for CQ, CD, CDD, CX inserts (10A auxiliary contacts) and MIXO module (10A)
- 2) for CQ, CQE, CQEE, CCE, CMCE inserts (excluded 16+2), MIXO module (16A), CX6/6 (16A) and CDC. For CMCE (16+2), CX inserts (contacts 16A insert CX 8/24) using a flat 3 mm screwdriver.

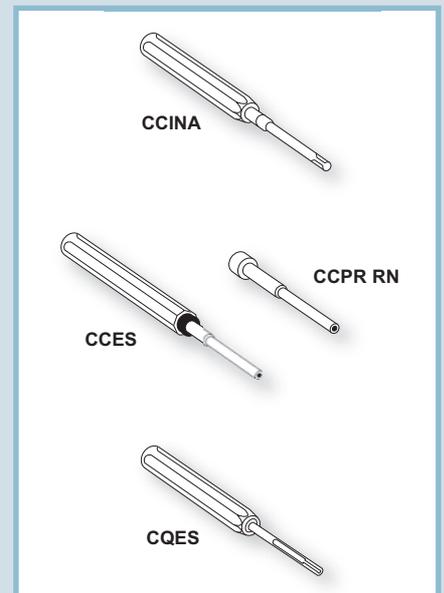
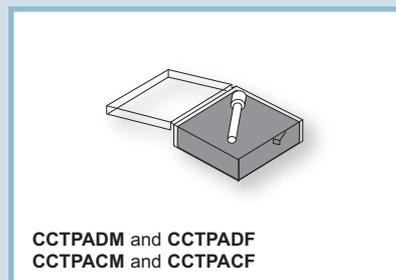
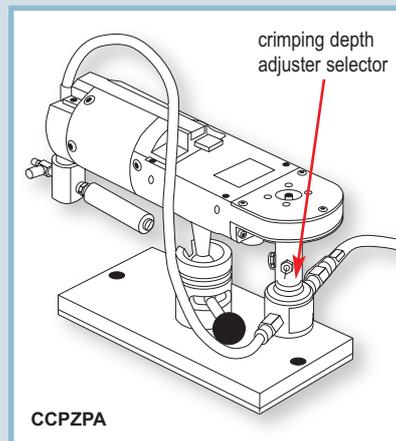
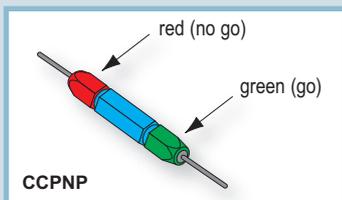
Notes:

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 (10A or 16A) and the kind (male or female).

"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.



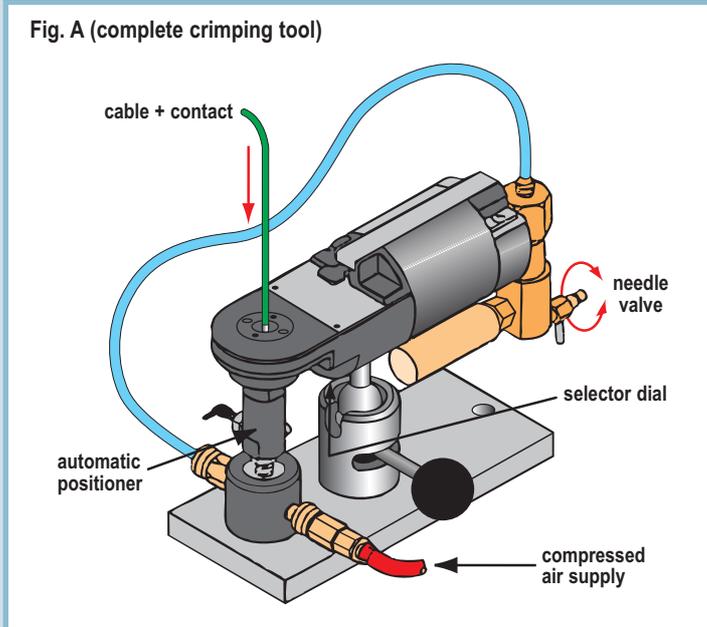
General specifications

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 a lubrication, adjustment and air filtering unit.

Crimping range

Wire section: dimension from 0,12 mm² (26 AWG) to 4 mm² (12 AWG).

Fig. A (complete crimping tool)



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 mm², 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.

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 selector dial 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 mm² (24 AWG) up to 0,08 mm² (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.

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:

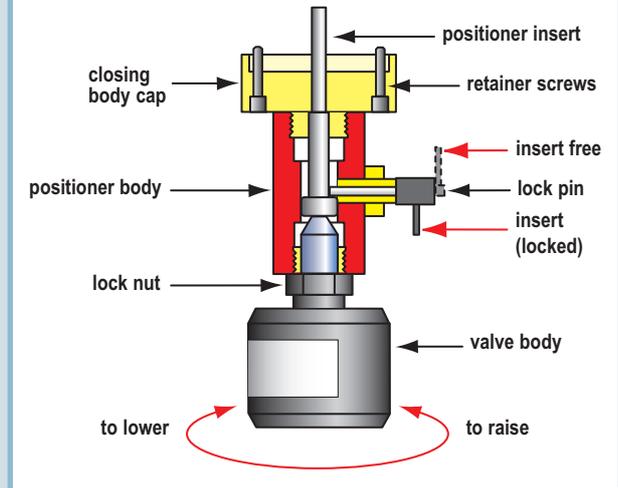
1. DO NOT immerse the tools in a solution to clean them.
2. DO NOT brush oil in the tools to lubricate them.
3. DO NOT try to disassemble the tool or repair it.

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

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 3,5 mm Allen wrench (supplied with the kit), to separate the automatic positioner from the crimping tool.
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.

Fig. B (automatic positioner)



Crimping position adjustment (Fig. B)

1. Release the automatic positioner from the crimping tool body (see points 1 and 2 "Installation replacement of a positioner insert").
2. While holding the positioner body 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.
4. If the pin doesn't lock, unscrew the valve body toward the bottom.
5. With the pin locked, tighten the valve body 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.

Instructions to check calibration

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

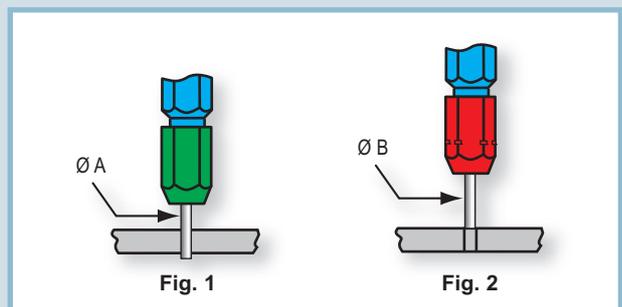
Calibration check

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)	1,118 (mm)



for contacts of insert series:	page:
CD (10A)	53-61
CDD (10A)	67-74
CDC (16A)	99-103
CCE (16A)	110-115
CQE (16A)	138-143
CQEE (16A)	146-147
CMCE (16A)	148-160
CQ (10A/16A)	165-168
CX 8/24 (16A/10A)	169
CX 6/36 * (10A)	170
CX 12/2 * (10A)	171
CX 6/6 * (16A)	175
MIXO (10A/16A)	185-203

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

stripping - crimping machine



insertion tool - removal tools - replacement tip



description	part No.	part No.
stripping, crimping machine Zoller+Fröhlich AM-03 Universal model	ZFU-CD	
insertion tool for insertion of the contacts into the inserts for crimped contacts up to 0.75 mm ²		CCINA
removal tools for the extraction of contacts from the inserts - for 10A contacts 1) - for 16A contacts 2)		CCES CQES
replacement tip for CCES removal tool		CCPR RN

1) for CQ, CD, CDD, CX inserts (10A auxiliary contacts) and MIXO module (10A)

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

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 ² (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... (10A max)						CC... (16A max)				
conductor section (mm ²)	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	0,5 mm / 1,0 mm						0,5 mm / 1,0 mm				
left/right											
contact holder / pins	A (M)						B				
contact holder / bushes	A (F)										
contact stop	A						B				

Preset stripping and contact crimping programs

	CD... (10A max)						CC... (16A max)				
conductor section (mm ²)	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 contact series
- 1 vibrating conveyor feeder bowl for male CC contact series
- 1 vibrating conveyor feeder bowl for female CC contact series
- 1 feeder tube (contact passage from vibrating conveyor to machine) for CD contact series
- 1 feeder tube (contact passage from vibrating conveyor to machine) for CC contact series
- 1 contact holder (in crimping position) for male CD contact series
- 1 contact holder (in crimping position) for female CD contact series
- 1 contact holder (in crimping position) for CC contact series
- 1 contact stop for CD contact series
- 1 contact stop for CC contact series
- 1 wire holder for 0.34 mm² cables
- 1 wire holder for 0.5 to 1.5 mm² cables
- 1 wire holder for 2.5 mm² 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** series (10A max) and **CC** series (16A max) contacts in a single run.

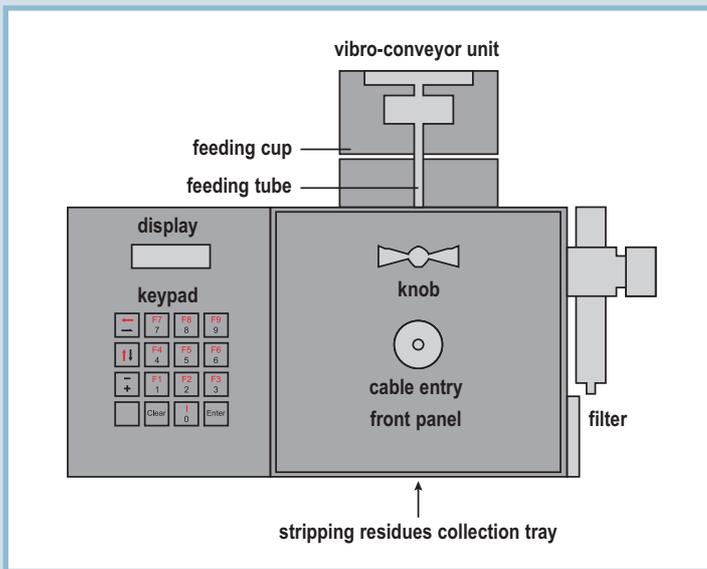
The contacts are automatically fed by means of a vibro-conveyor unit fitted on the top section of the machine.

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 mm² (AWG 26) to 2,5 mm² (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 548) 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 10A, 2,5 mm² crimp contacts with 6 mm stripping length.

This program is therefore unsuitable for ILME CD 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 548.

- For CD series male and female crimp contacts (10A max), the feeding cup A must be fitted onto the machine, whilst for CC series crimp contacts (16A 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 series contacts and B for CC series contacts respectively.
- The wire holders which support the wire during the stripping stage feature three different sizes for CD contacts and two sizes for CC contacts.
- The contact holders are two (A (M) for male contacts and A (F) for female contacts) for CD 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 series contacts.
- The contact holder is A for CD series contacts and B for CC 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.

for contacts series: page:
CX PLF/PLM 209
CX MLF/MLM 209

manual crimping tool



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



description	part No.	part No.
crimping tool for POF CX PL and MOST CX ML contacts RENNSTEIG model *	CLPZ R	
polishing disc (RATIOPLAST 910 PS 0SC 00 001) - for POF ** and MOST *** 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 ** and MOST *** fibre optic with PA jacket - fibre stripper (RATIOPLAST 910 AB 001 00 001) for POF ** fibre optic		CLSG CLSP
cable cutter (RATIOPLAST 910 SW 001 00 001) for Ø 2,3 mm max, for POF ** and MOST *** fibre optic		CLTE

* on request tool **CLPZ** RATIOPLAST 910 CZ 001 00 008 for contacts POF **/MOST *** crimping on the back
**** POF = POLYMER OPTICAL FIBRE**
***** 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)
- 1) mix the two components on a sheet (just a drop/each)
 - 2) the stripped ca. 5 mm POF ** (that means the inner fibre) has to be dipped in the glue (just 5 mm)
 - 3) the POF ** has to be pushed now in the contact/ferrule
 - 4) min. one night to hard/dry the glue
 - 5) finally the POF ** has to be polished (polishing disc)



Crimping tools

General specifications

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

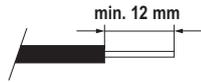


Fig. 1 - Example of cable stripping for male crimp contact

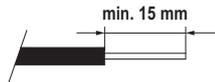
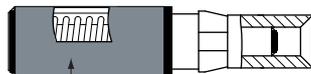


Fig. 2 - Example of cable stripping for female crimp contact

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 reflex 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 fiber as far as possible into the contact sleeve so that it protrudes approx. 1 mm from the tip of the contact.



Back of contact



Contact/fibre crimping area

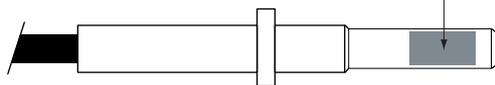


Fig. 3 - Female contact/fibre crimping area



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.

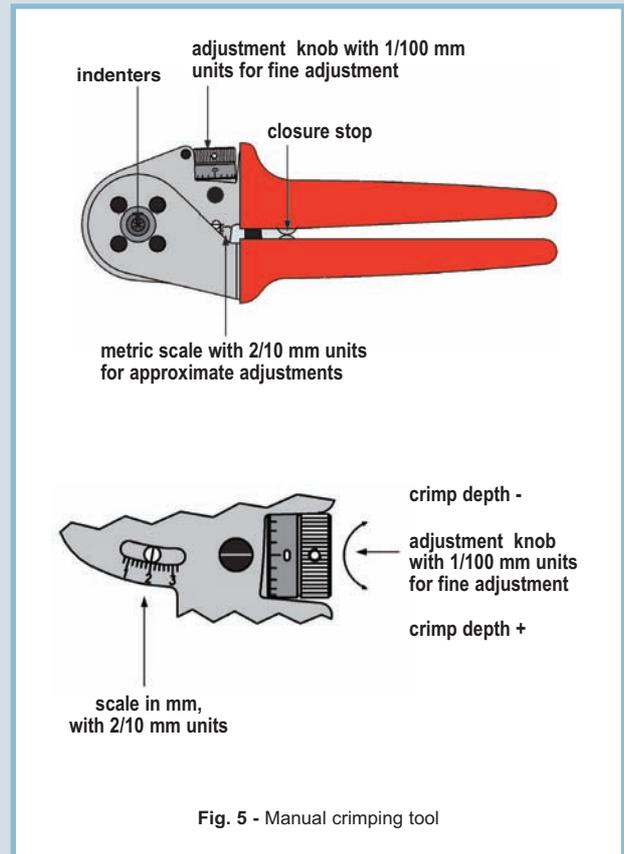


Fig. 5 - Manual crimping tool

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.

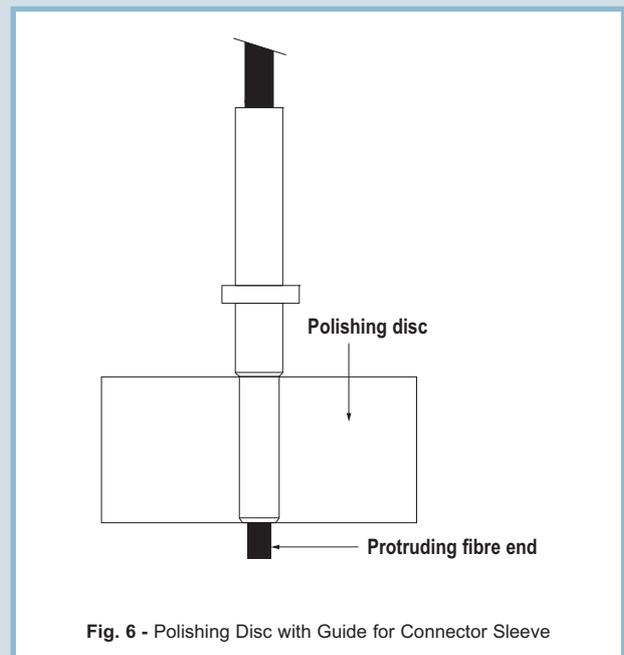


Fig. 6 - Polishing Disc with Guide for Connector Sleeve

Final mounting instructions

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

for contacts series:	page:
CX 50 F/M	210
CX 75 F/M	210

manual crimping tool



removal tool



description	part No.	part No.
crimping tool for CX 50 F/M and CX 75 F/M coaxial contacts	COPZ	
removal tool for the extraction of contacts from the CX L inserts		CLES

Crimping instructions

- 1) Strip the cable as per drawing (page 210).
- 2) Crimp the central contact of coaxial connector in the correct crimping area with the position 0,7 of crimping tool COPZ.
- 3) Insert the central contact in the coaxial connector, put the braid shield around the back cylinder of contact.
- 4) Insert the brass back end on the braid shield.
- 5) Crimp the ferrule with position 3,25 of crimping tool COPZ.

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

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

Crimping tools



CX 50 F/M and CX 75 F/M coaxial contacts

for contacts series:

CJ (RJ45)
MIXO (RJ45)

page:
 503
 202-203

manual crimp pliers



screened cable stripper



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

How to use the RJ45 plug insert crimp pliers

The diagram illustrates the 11 steps for using the RJ45 plug insert crimp pliers:

- Strip the outer jacket of the cable by 35 mm, leaving 6-7 mm of insulation on the individual wires.
- Strip the insulation from the individual wires.
- Twist the individual wires together.
- Strip the outer jacket of the plug insert by 25 mm, leaving 6-7 mm of insulation on the individual contacts.
- Strip the insulation from the individual contacts of the plug insert.
- Insert the twisted wires into the corresponding contacts of the plug insert.
- Check the alignment of the wires in the plug insert.
- Use the crimp pliers to crimp the wires onto the contacts of the plug insert.
- Use the crimp pliers to crimp the wires onto the contacts of the plug insert.
- Use the crimp pliers to crimp the wires onto the contacts of the plug insert.
- Use the crimp pliers to crimp the wires onto the contacts of the plug insert.

Crimping tools

inserts:

MIXO (RJ45) CX 8 J6M

page:

200

manual crimp pliers



shielded cable stripper



description

RJ45 CJ series plug insert crimp pliers

cable stripper
cuts the cable sheath and
releases the wires in a single operation

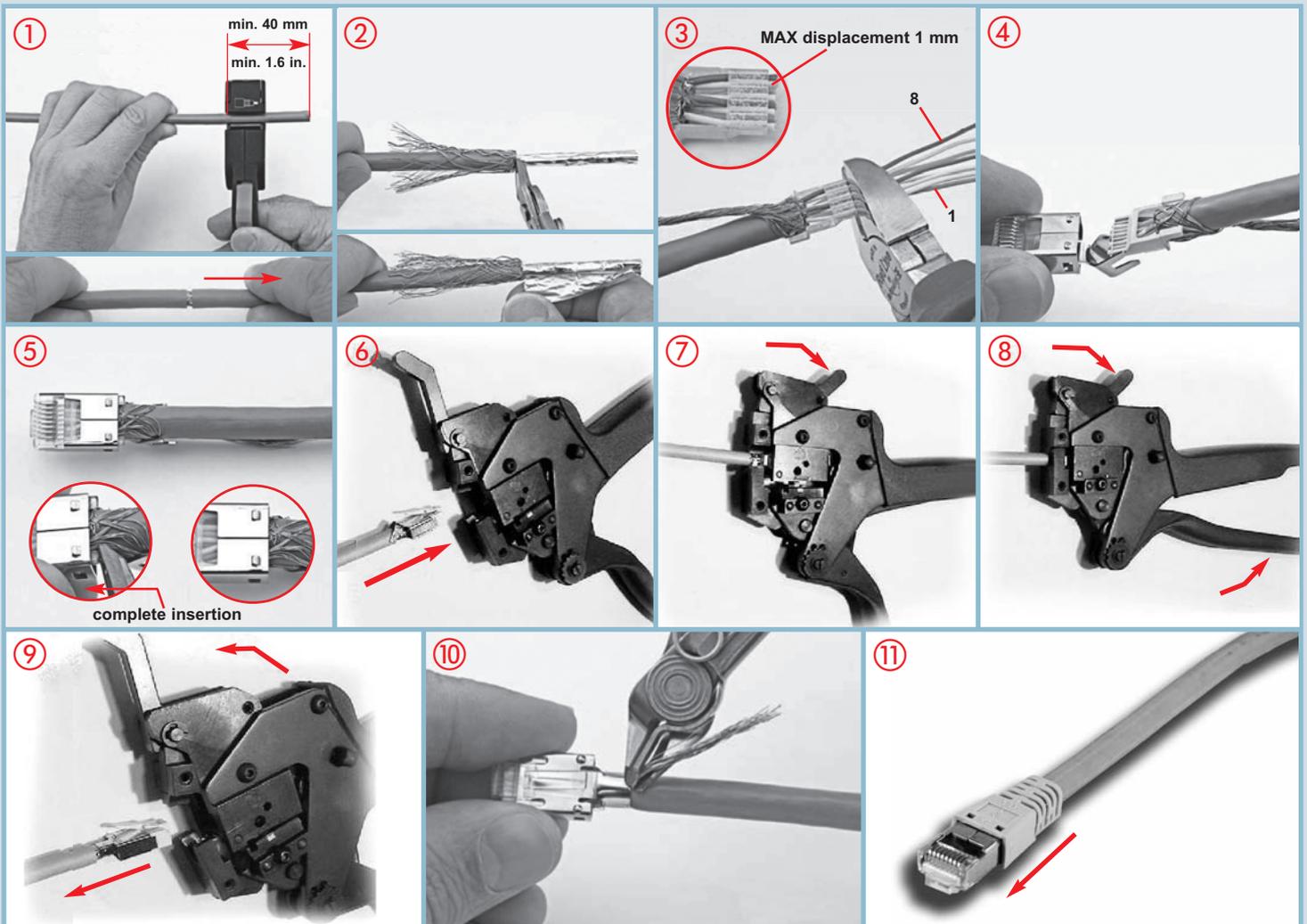
part No.

CJPZ T

part No.

CJST

How to use the RJ45 plug insert crimp pliers



Crimping tools

inserts:
MIXO (RJ45) CX 8 J61M

page: **manual IDC pliers**
200

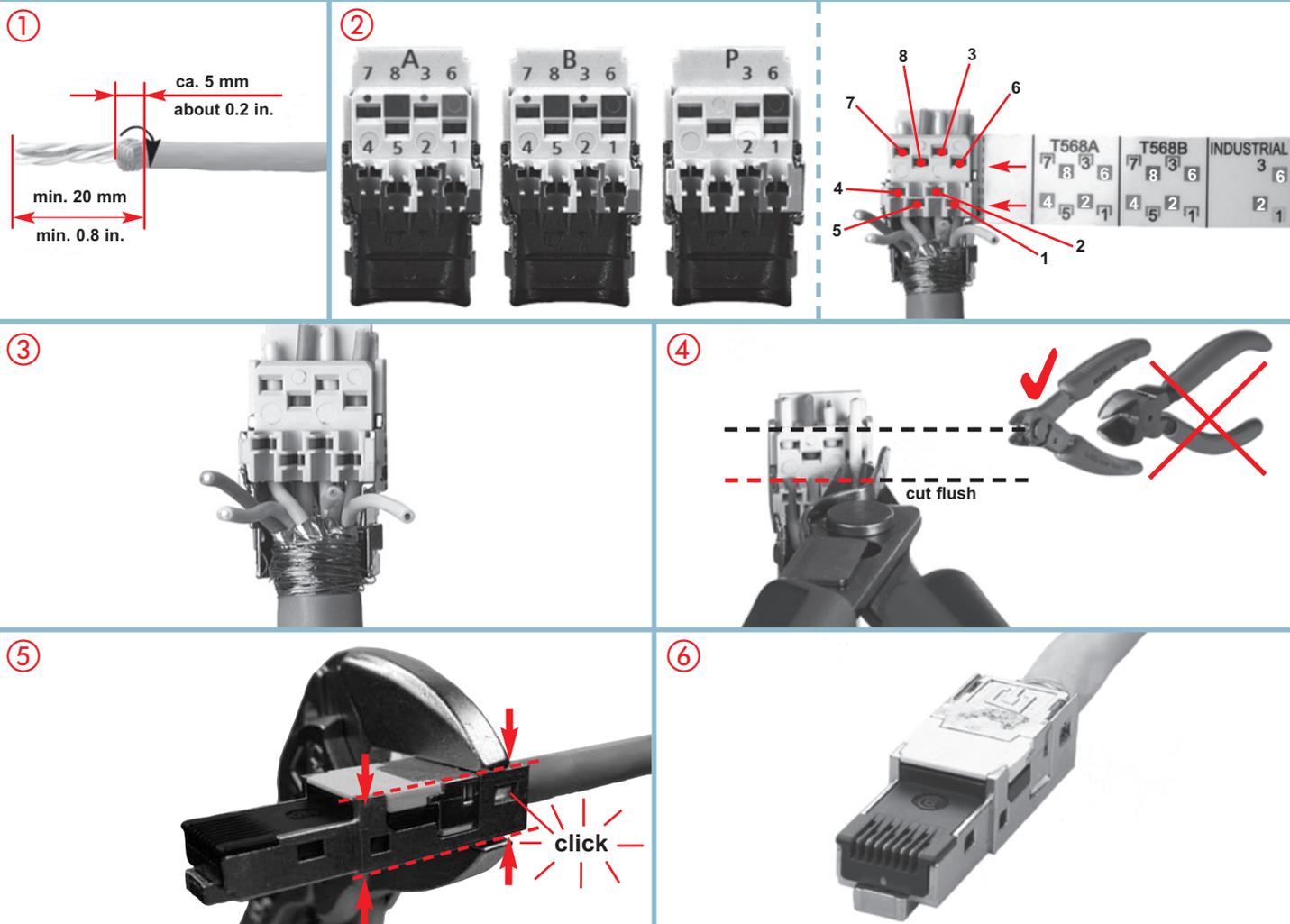


description

part No.

wrenches pliers
for CX 8 J61M

CJPW K



Crimping tools

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