

AIPS
Airbus Industrie Process Specification

PRINCIPLE OF USE OF MANUAL CRIMPING TOOLS

M22520/1-01 replacing MS 3191

M22520/2-01 replacing MS 3198

M22520/7-01

M22520/5-01

M22520/10-01

Published and distributed by:

**AIRBUS INDUSTRIE
ENGINEERING DIRECTORATE
31707 BLAGNAC CEDEX
FRANCE**

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1 Scope

The purpose of this specification is to give Design and Quality requirements to manufacturers. Although the essential requirements of a process will be described in detail, the specification does not give complete in-house operating instructions, these shall be given in the manufacturers supporting work instructions.

This specification shall not be used as an inspection document unless parts or assemblies have been manufactured to this specification.

This document specifies the use of crimping tools listed below :

- Crimping tools, type M22520/1-01 (replacing MS 3191)
- Crimping tools, type M22520/2-01 (replacing MS 3198)
- Crimping tools, type M22520/5-01
- Crimping tools, type M22520/7-01
- Crimping tools, type M22520/10-01

2 Normative references

AIPS 07-02-001	General requirements for the stripping of electrical cables
AIPS 07-03-001	General requirements for the crimping of electric connections

3 Applicability, limitations and definitions

This document is applicable for any manufacture or installation of bundles and harnesses during the life time of the aircraft.

Only the practices defined in this document are authorized.

4 Requirements to be met by a process

4.1 Design requirements

See AIPS 07-03-001.

4.2 Quality requirements

See § 6.2.

5 Process qualification

Not applicable.

6 Process work and quality control instructions

6.1 Process work instructions

6.1.1 Principle of the process

Stripped cables are crimped in rear barrels of connection components.

Two types of crimping operations can be carried out, depending on the tools used:

- a) Cross crimp tools. (8 dies) Located 2 by 2 and laid out in a cross, they are actuated when the tools handles are squeezed.

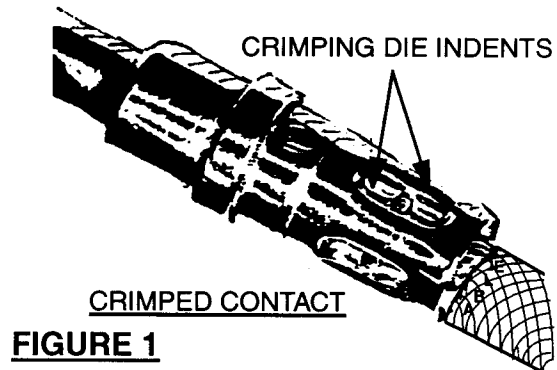


FIGURE 1

- b) Hexagonal crimp tools, used to crimp coaxial contact ferrules (these tools can be fitted with any kind of die set).

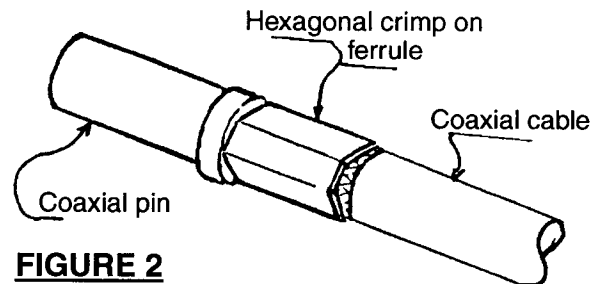


FIGURE 2

6.1.2 Means to be employed

Specific requirements relevant to crimping depth selector settings and cable stripping lengths are to be found in the AIPS applicable to the use of each end component.

6.1.3 Tools

All tools are equipped with a ratchet system which only allows the jaws of the tool to open once the handles have been fully depressed. Once the crimping operation reaches the stop position the handles can be opened. This principle guarantees complete crimping of the terminal or the contact.

Each type of tool has its own range of locators or dies. The locators are fitted on cross crimp tool. They enable limiting the contact insertion in the crimping head.

The reference number of the locator to be used is to be found in the AIPS applicable to the connection of each end component.

The setting of selector position is given in the relevant AIPS.

6.1.3.1 Type M22520/1-01 tool

These tools conform to MIL-C-22520 but can also be identified by the manufacturers part number.

For information, here are the reference numbers used:

DANIELS: A F 8

BUCHANAN: 615 708

Tools M22520/1-01 replace tools MS 3191.

These tools enable crimping size 26 to 12 conductors with a crimping depth adjustable to 8 positions.

To crimp the contact at the desired location, a locating turret, also called locator, must be fitted to the tools.
The most commonly used turret conforming to the majority of contact crimping standards is the M22520/1-02.

6.1.3.2 M22520/1-01 tool configuration

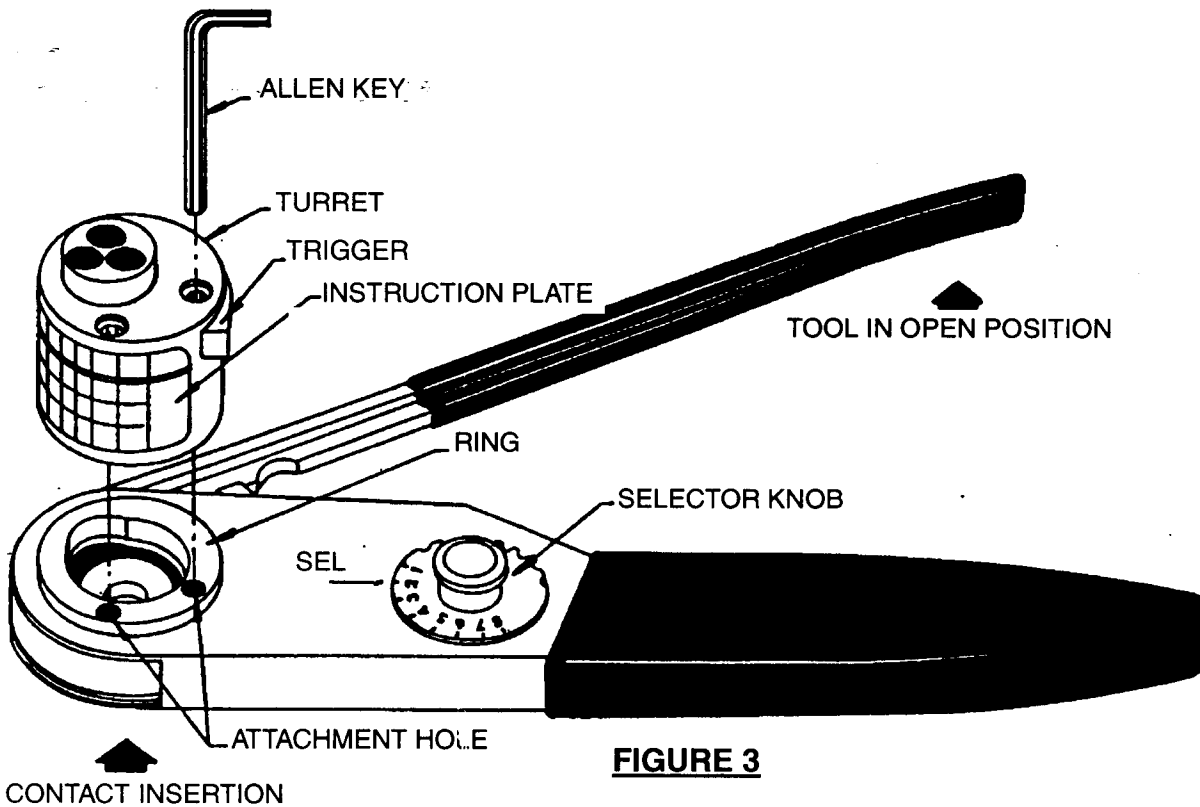


FIGURE 3

Instructions for turret installation

1. Press turret trigger to release locators.
2. Position turret on ring with screws opposite attachment holes.
3. When turret is positioned on ring, attach using 9/64 allen key.
4. All turrets (multiple, single or universal) are attached by means of 2 captive hollow hexagonal screws.

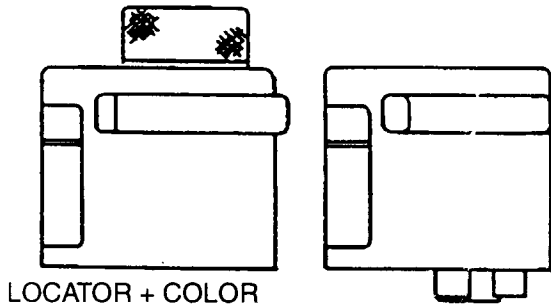
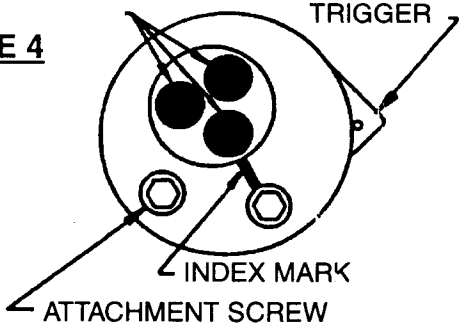


FIGURE 4

Instructions for locator selection on turrets

1. Press trigger to unlock locators.
2. Select locator with respect to color given on instruction plate.
3. Bring color selected opposite index mark.
4. Press and lock.



Instructions for indenter depth selection

1. Refer to the relevant AIPS for the setting.
2. Remove safety clip.
3. Open the tool before selecting.
4. Raise and turn selector knob to bring figure selected opposite selection index.
5. Put safety clip back in place.
6. Repeat the operation every time wire or contact is changed.

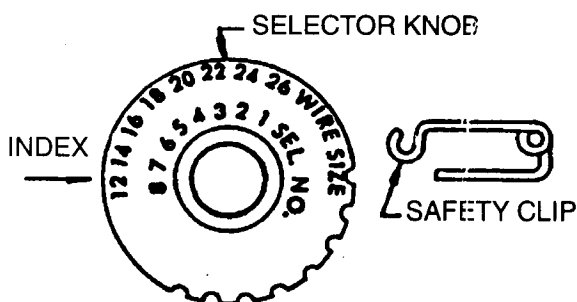


FIGURE 5

6.1.3.3 Use of tool

1. Insert the conductor into the contact and check that it can be seen through the inspection hole and make sure that no strands are outside the barrel.
2. Insert contact between indents in locator.
3. Fully close the tool until the ratchet releases.
4. Remove the crimped assembly and check it in accordance with § 6.2.3.

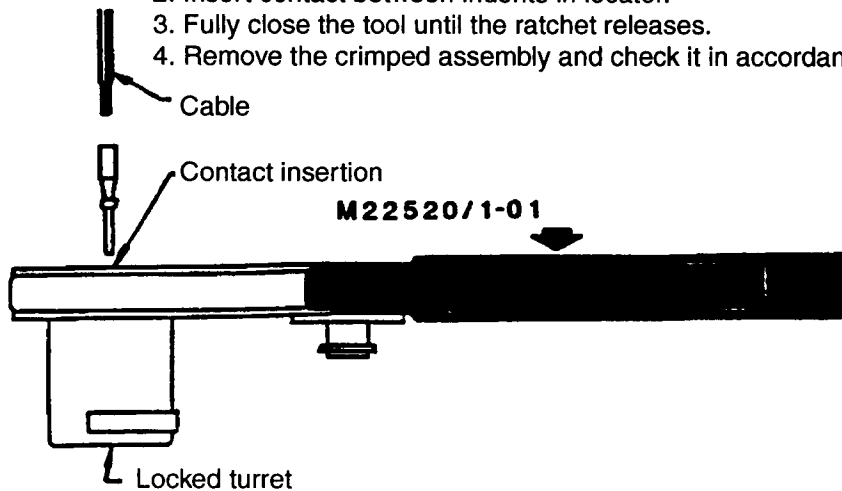


FIGURE 6

6.1.3.4 Specific case of tools M22520/1-01 used with turret M22520/1-04

For series production purposes, when tools M22520/1-01 are used fitted with turret M22520/1-04, the crimping selector will be modified:

- On the selector, the "CABLE SIZE" option will be masked or removed. Only the position option (notches from 1 to 8) will be maintained and used as a reference.
- Refer to the relevant AIPS for the selector setting.

The tools will be identified with label

/1-04

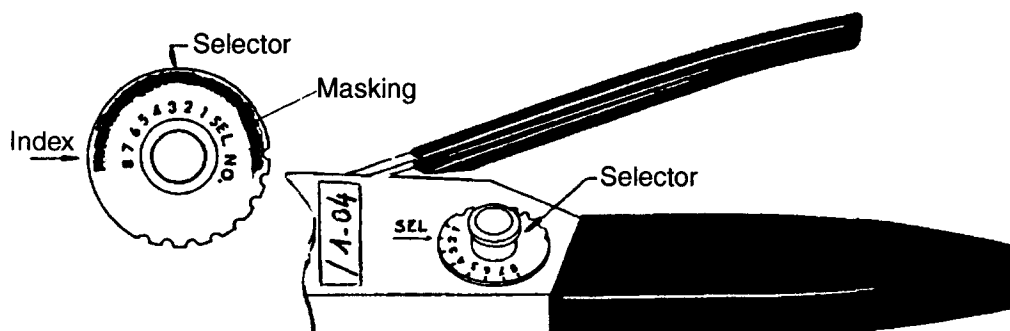


FIGURE 7

6.1.3.5 Type M22520/2-01 tool

Tools M22520/2-01 replace tools MS 3198.

These tools enable crimping size 20 to 28 conductors with a crimping depth adjustable to 8 positions.

The tools reference numbers are different, depending on the suppliers. They are given below (for information only):

DANIELS	AFM 8
BUCHANAN	615 717

To crimp the contact at the desired location, a locator must be fitted to the tools.

Locators for tools MS 3198 and locators for tools M22520/2-01 are interchangeable. The locators to be used are given in the AIPS applicable to the connection of each end component.

6.1.3.6 M22520/2-01 tool configuration

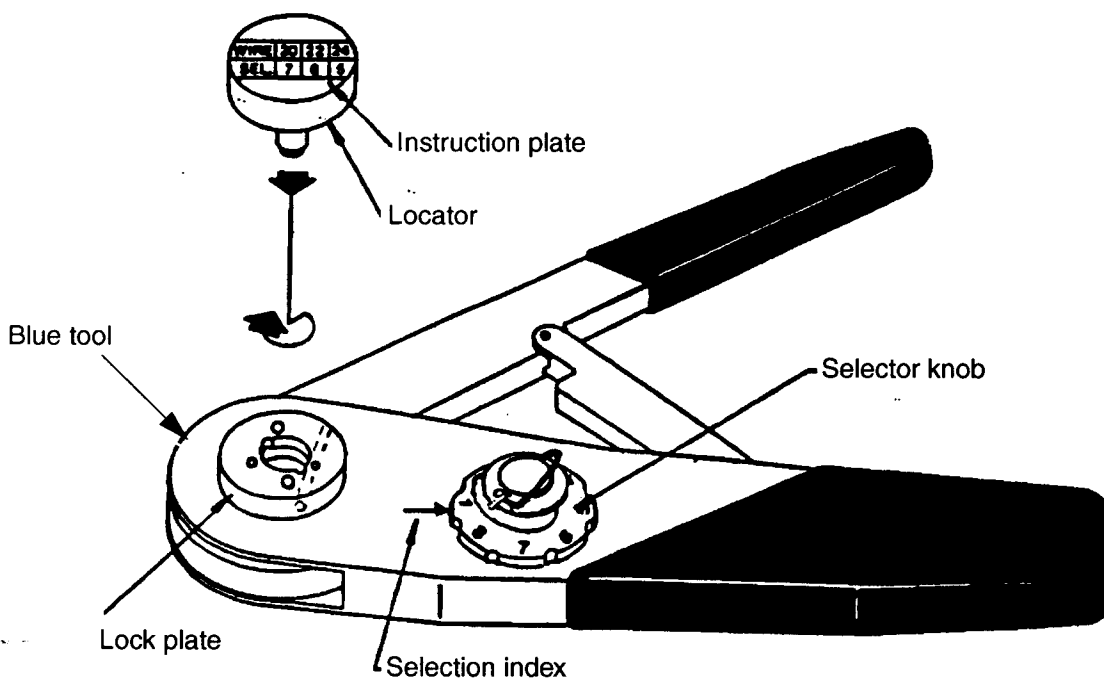


FIGURE 8

Instructions to change locators

1. Select locator appropriate for contact to be crimped.
2. Position locator on the lock plate. Push the locator in and turn it through 90° to lock it in place.
3. Determine selector setting from the relevant AIPS.
4. Raise selector knob and bring setting selected opposite index.

6.1.3.7 Use of tool

1. Insert contact between dies in locator.
2. Insert stripped cable against contact stop and make sure that no strands are outside the crimping barrel.
3. Fully close the tool until the ratchet releases.
4. Remove the crimped assembly and check it in accordance with § 6.2.3.

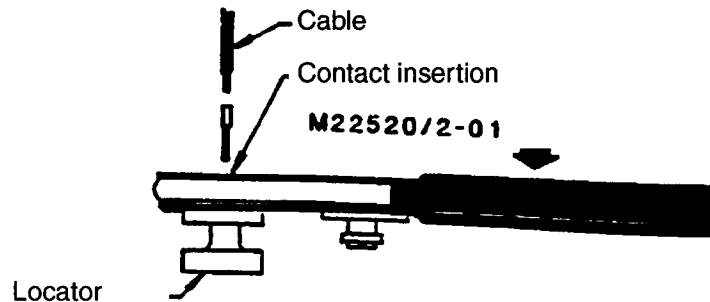


FIGURE 9

6.1.3.8 Use of locator

a) Installation of locator and setting

- Remove the safety clip from the retaining ring.
- Take the locator appropriate for the contacts to be crimped and position it in the retaining ring with the locator studs opposite the ring slots.
- Push in and rotate the locator through 90° clockwise until it is locked in place.
- Re-install the safety clip.
- Set the selector to the position given in the relevant AIPS.
- Depending on the type of tools, this setting is performed:
 - either by rotating a self-locking knob through a complete turn with the number displayed in a window on the side (BUCHANAN),
 - or by raising, rotating and aligning the mark. The setting is locked when the knob is released with the knob slot opposite the stud (DANIELS).

b) Use of tool

1. Insert contact between dies in locator.
2. Insert stripped cable against contact stop and make sure that no strands are outside the crimping barrel.
3. Fully close the tool until the ratchet releases.
4. Remove the crimped assembly and check it in accordance with § 6.2.3.

6.1.3.9 Type M22520/7-01 tool

Tools M22520/7-01 enable:

- crimping size 28 to 16 cables in size 22, 20 or 16 contacts with a crimping depth adjustable to 8 positions.
- crimping the contacts correctly using the locator appropriate for the contact to be crimped.

The tools reference numbers are different, depending on the suppliers. They are given below (for information only) DANIELS MH 860.

6.1.3.10 Tool configuration

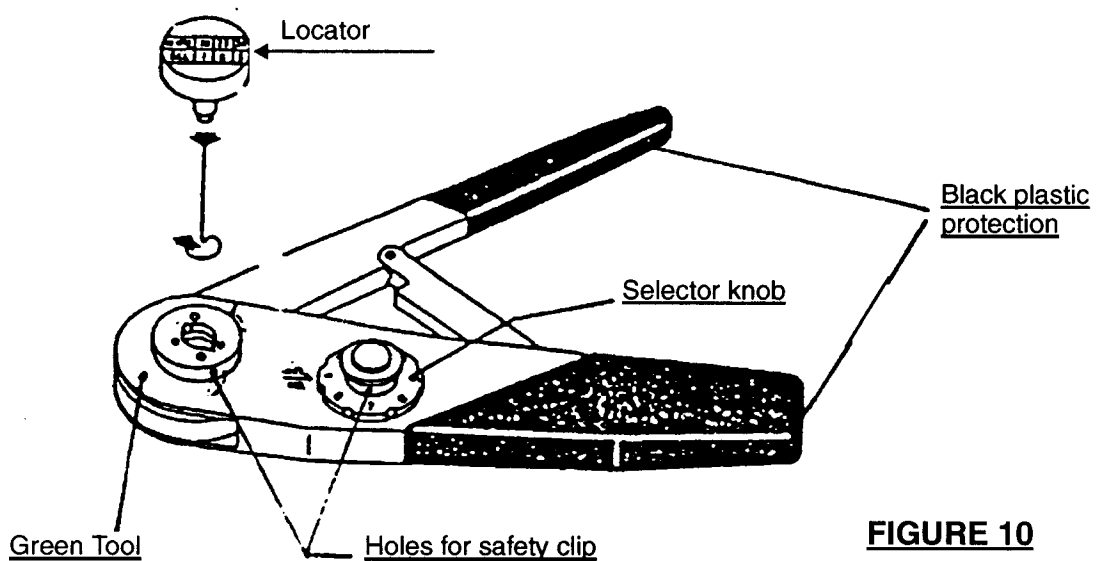


FIGURE 10

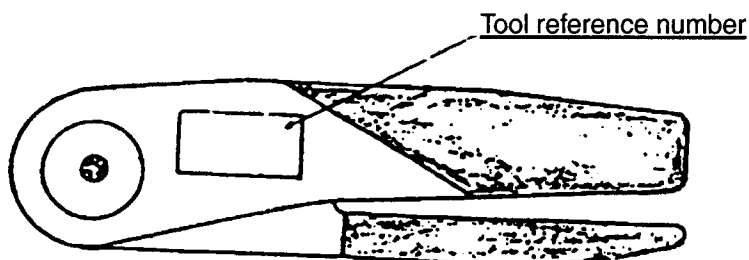


FIGURE 11

6.1.3.11 Use of tool

These tools are operated in the same way as tools M22520/2-01.

6.1.3.12 Type M22520/5-01 and M22520/10-01 tools

They are delivered from several suppliers in various sizes to the same approved standard. They can be equipped with a large variety of dies with one, two or three indenters on each die.

The reference number of the dies to be fitted to the tools is to be selected with respect to the use to be made.

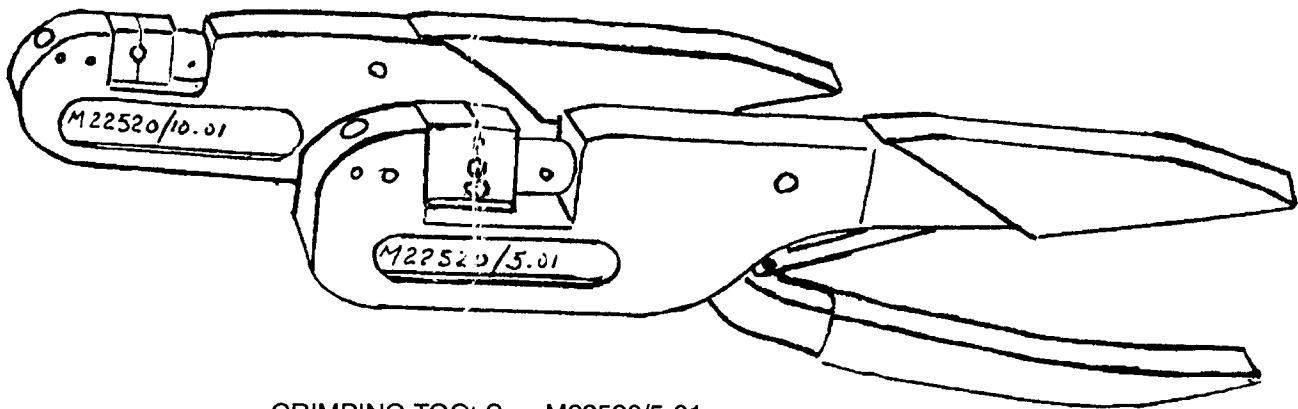
M22520/5-01

These are used with interchangeable dies of 1, 2 or 3 hexagonal or circular indenters.

M22520/10-01

These tools are smaller than the M22520/5-01 and used when there are difficult access points. They are used with interchangeable dies of 1 or 2 hexagonal indenters.

6.1.3.13 Configuration of tools



CRIMPING TOOLS M22520/5-01
M22520/10-01

FIGURE 12

6.1.3.14 Use of tools

- Open the tools fitted with the appropriate dies.
- Place the contact to be crimped in the cavity appropriate for its size.
- Fully close the tools until they are released to enable opening.
- Remove the crimped assembly and check it in accordance with § 6.2.3.

6.1.3.15 Dies exchange

1. Open tool - position dies with grooves in key. Close the tool (fig. 13).
2. For upper die, position extraction tool (fig. 14) and hit top of tool.
3. For lower die, position extraction tool (fig. 15) and force tool to open.

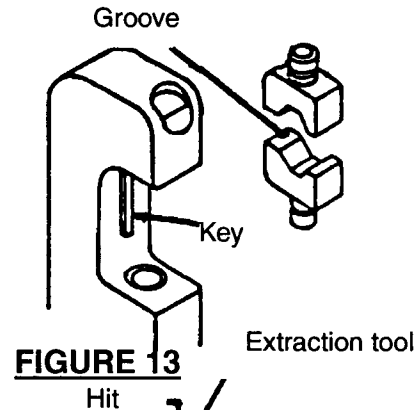


FIGURE 13

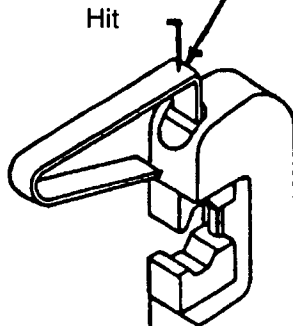


FIGURE 14

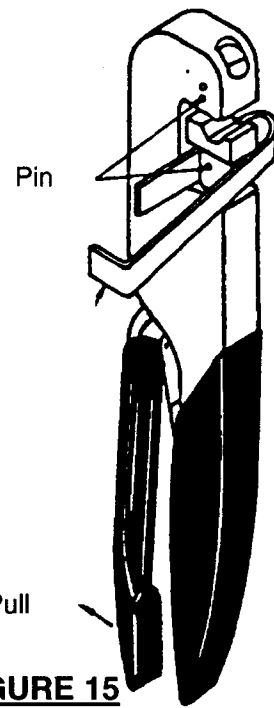
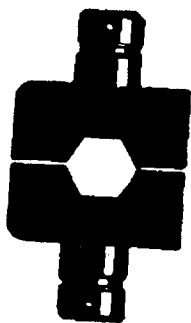


FIGURE 15

Note: Always make sure the pins are removed before disassembly.

Example of dies configuration



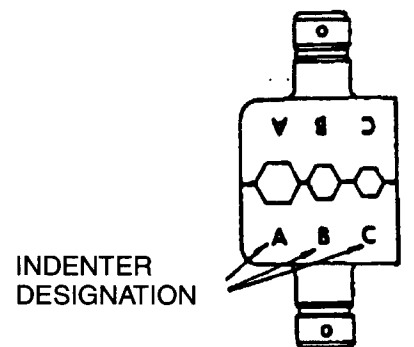
M22520/5-01

FIGURE 16



M22520/10-01

FIGURE 17



1, 2 OR 3 INDENTERS
HEXAGONAL DIE

FIGURE 18

6.2 Quality control instructions

General: refer to AIPS 07-03-001

6.2.1 Periodic checks

Checks that the crimping tools and their indentors have undergone periodic calibration checks as defined by local documentation.

6.2.2 Before crimping

- Check the cable stripping (refer to AIPS 07-02-001).
- Check that the stripping length matches the end fitting to be crimped.
- Check that the crimping head and the dies are in good condition.
- Check that the tool is correctly set up.

6.2.3 After crimping

Check the crimped components are in accordance with requirements detailed in AIPS 07-03-001.

7. Health and safety

This specification does not necessarily detail all the precautions necessary to meet the requirements of health and safety.

It is the responsibility of the user of this specification to consult and establish appropriate Health and Safety precautions and the method should be operated only by trained personnel.