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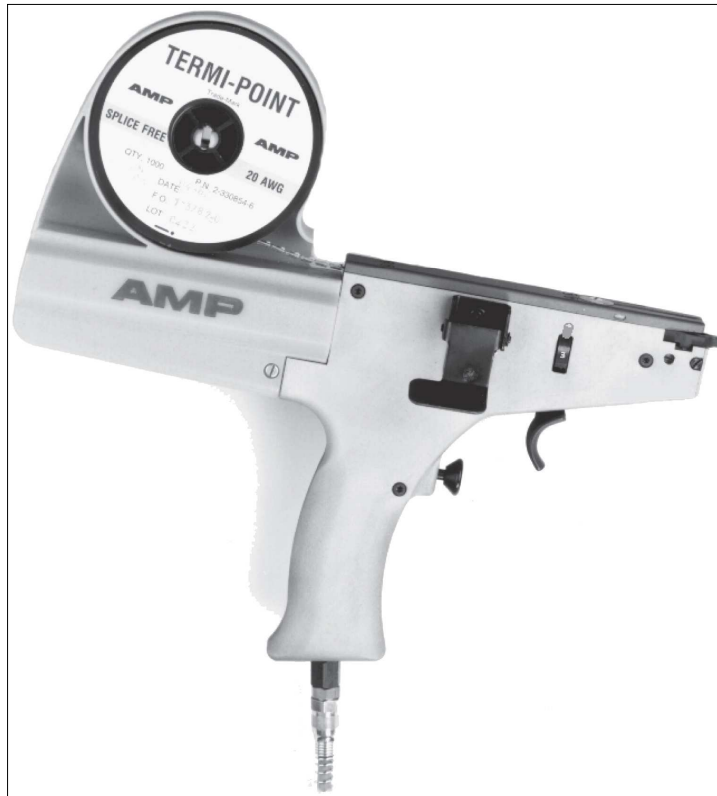
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Customer Manual

Air Tools TERMI-POINT (diverse types)

871087

Customer Manual No.:

412-18008 _Rev. D1

Language:

en (Translation of the original German version)

- The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging
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- The cover page shows a sample configuration. The delivered product may thus differ from the figure.
- The original operation manual is written in German.

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1 General information

1.1 Copyrights, industrial property rights

- © This document, as well as the data, specifications and other information set forth in it, are the exclusive property of **Tyco Electronics AMP GmbH**.
It may not be reproduced or given to third parties without its consent.
- This manual is exclusively meant for the carrier of the „Hand tool for AMP DUOPLUG 2.5™“ (in further course called “Hand tool”) and its personnel for internal use only.
- The additional device-specific manual includes descriptions, engineering drawings, instructions and references, that you may not copy, reproduce or distribute without written consent neither completely nor in parts.
- If the competition try for discover and inspect this manual, we do expect the same fairness, that you may expect from your customers in that case.

All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

Subject to change without notice. Errors and omissions excepted.

2 Using the operation manual

- These instructions contain important information on the safe and appropriate operation and simple troubleshooting of the hand tool.
- Read these instructions completely, especially section 3 „General safety instructions“, before working with the Hand tool.
- **Tyco Electronics AMP GmbH** decline to accept any liability for damages that are incurred due to the fact that the instructions in the operation manual have been disregarded.
- The user is responsible for supplementing the operation manual with any instructions resulting from current national regulations for accident prevention and protection of the environment.
- Also observe the generally applicable, legal or otherwise binding regulations of the European or national legislation and the rules for the prevention of accidents and for environmental protection applicable in your country.

2.1 Abbreviations used

Abbreviation	Meaning
PN	Part-No.
RoHS	Restriction of (the use of certain) hazardous substances

3 General safety instructions

Das Druckluftwerkzeug wurde gemäß den allgemein anerkannten Regeln der Technik hergestellt. Trotzdem besteht die Gefahr von Personen- und Sachschäden, wenn Sie die folgenden grundsätzlichen Sicherheitshinweise und die Warnhinweise vor Handlungsanweisungen in dieser Anleitung nicht beachten.

- ▶ Read these instructions completely and thoroughly before working with the hand tool.
- ▶ Keep these instructions in a location where they are accessible to all users at all times.
- ▶ Always include the operating instructions when you pass the hand tool to third parties.

RoHS Information

Information on the presence and location of any substances subject to RoHS (Restriction on Hazardous Substances) can be found at the following website:

- <http://www.tycoelectronics.com/customersupport/rohssupportcenter/>
- Click on “Find Compliance Status” and enter equipment part number.

3.1 Intended use

The tool is an electrically driven, manually tool: used to contact roll-fed clips with manually fed wire by means of various tool kits.

Individual lead positions may be singled out and omitted within the processing sequence.

Only approved wires may be used.

It is absolutely necessary to use the correct mandrels.

The air tool TERMI-POINT may be used exclusively with clips listed in section 5.2 „Tools, Mandrels and Clips“ with appropriate wires.

- ▶ The hand tool is not a product in terms of the EU-Machinery Directive 2006/42/EG.
- ▶ Intended use includes having read and understood these instructions, especially section 3 „General safety instructions“.

3.2 Improper use

Any attempt to use this hand tool other than described in section 3.1 „Intended use“.

3.3 Reasonably foreseeable misuse

Any attempt to use this hand tool with other than the specified connectors, described in section 5.2 „Tools, Mandrels and Clips“.

Moreover, the hand tool may be used exclusively within the limits of its intended use (section 3.1 „Intended use“).

3.4 Qualification of personnel

In order to ensure operating safety, these activities may therefore only be carried out by qualified technical personnel or an instructed person under the direction and supervision of qualified personnel. Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience, as well as their understanding of the relevant conditions pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area.




3.5 Safety instructions in this document

In these instructions, there are safety instructions before an instruction whenever there is a risk of personal injury or damage to the equipment. The measures described to avoid these hazards must be observed.




Safety instructions are set out as follows:

 SIGNALWORD
Type of risk <ul style="list-style-type: none"> ▶ Consequences ▶ Precautions ▶ Listing

- **Safety Sign: Draws attention to the hazard**
- **Signal word: Identifies the degree of hazard**
- **Type of danger: Identifies the type or source of the hazard**
- **Consequences: Describes the consequences of non-compliance**
- **Precautions: States how the hazard can be prevented**

Signal Word	Application
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will certainly result in serious injury or even death.
 WARNING	Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or even death.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment.
NOTE	If this information is disregarded, it may result in machine malfunction or breakdown.

3.6 Pictograms used

Pictogram	Meaning
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Wear ear protection (see Fig. 1 / Pos. 1)
	Wear protective goggles (see Fig. 1 / Pos. 2)

These pictograms are placed on the Hand tool.

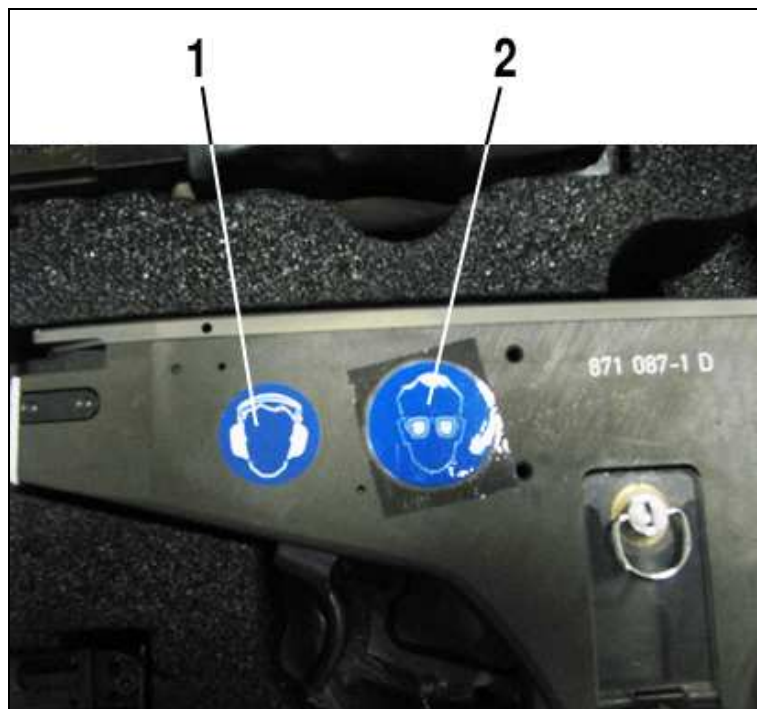


Fig. 1: Pictograms

3.7 Adhere to the following instructions

3.7.1 General instructions

- ▶ Observe the regulations for accident prevention and environmental protection for the country where the product is used and at the workplace.
- ▶ Exclusively use the hand tool in good technical order and condition.
- ▶ Check the hand tool for visible defects.
- ▶ You must generally not modify or retrofit the product.
- ▶ Only use the product appropriate to the intended use described in this manual.
- ▶ Person who assemble, operate, disassemble or maintain the machine must not consume any alcohol, drugs or pharmaceuticals that may affect their ability to respond.
- ▶ Before putting the hand tool into operation, it is always important to check whether all devices are at hand and functioning correctly.
- ▶ The warranty only applies to the delivered configuration. The warranty will not apply if the product is incorrectly assembled, not used as intended and/or handled improperly.
- ▶ If the hand tool is apparently damaged or do not work proper, you must send it in for repairs (section 15.6 „Address After Sales Serviced“).
- ▶ The warranty only applies to the delivered configuration. The warranty will not apply if the product is incorrectly assembled, not used as intended and/or handled improperly.

3.7.2 During operation

- ▶ Only persons who have been authorized by the operator may work with the air tool within the limits of the intended use.
- ▶ Do not exceed maximum air line pressure of 6.5 bar or tool damage may occur. If air pressure exceeds 6.5 bar use air regulator. For proper functioning of tool air line pressure should never fall below 5.5 bar during terminating cycle.
- ▶ Disconnect or turn off air pressure as instructed in procedures, when changing tooling or performing any maintenance on tool.
- ▶ Never hold nose of tool against hand or body when squeezing trigger. Being actuated, tool nose must be clear of all objects or properly positioned on terminal post.
- ▶ Never cycle tool without having side and top cover securely installed.
- ▶ Before operating, make sure that compatible post, clip, wire and wire insulation are being used.

3.7.3 During maintenance and repair

- It is absolutely essential that tool and equipment parts on which maintenance or service jobs have to be carried out are disconnected from the air supply, unless anything to the contrary is stated in the operating manual.

3.7.4 During disposal

- For environmentally friendly disposal please observe the notes in section 11 "Disposal".

3.8 Obligations and Responsibility of the Operator

3.8.1 Obligations of the Operator

The operator of the **Tyco Electronics AMP GmbH** products is bound to provide for personnel training on a regular basis regarding the following subjects:

- Observation and use of the operating instructions and the legal regulations.
- Intended use and operation of the hand tool.

3.8.2 Responsibility of the Operator

The operator personnel is responsible that:

- the machine is defended from unauthorized use
- the machine is only operated full functional and reliable
- the safety markers and instructions on the machine are in legible condition
- the machine is protected against unauthorised use
- wear the personal protective equipment;
- be skilled and introduced in operating and cleaning the machine;
- be familiar with and able to apply accident prevention regulations and safety instructions on the tool;
- Repairs are discussed with the manufacturer;
- to put the machine out of action, when there are established defects or abnormal operating states 0/ faults;
- Operations on the machine only be carried out, when the machine is disconnected and secured against resetting.

3.9 Obligations and Responsibility of the Carrier

3.9.1 Obligations of the Carrier

The service personnel has to:

- be skilled and introduced in operating and cleaning the machine;
- use the machine only conventional;
- wear the personal protective equipment;
- to put the machine out of action, when there are established defects or abnormal operating states 0/ faults;
- to report established defects or abnormal operating states / faults immediately

3.9.2 Responsibility of the Carrier

The carrier is responsible that:

- the tool is only used conventional
- the tool is only operated full functional and reliable
- the machine will be maintained as described under „Maintenance“.

3.10 Residual Risks

Attention must be paid to the following risks present when operating the machine and which cannot be removed:

- Risk of crushing due to insertion of the rod pushes
- Risk of cutting damage due to sharp edges at the housing of nippers

4 Scope of delivery

The scope of delivery includes following parts:

- 1 Air Tool TERMI-POINT (type as ordered)
- 1 operating manual

5 Product description

TERMI-POINT air tools with interchangeable mandrels as listed in the tool and clip selection chart, GP 1935 (section 5.2.2 "Per GP 1935 Rev. Germany 3/86"), are used to terminate TERMI-POINT rectangular posts with AMP TERMI-POINT clips as follows.

The clips are automatically fed from a reel into the tool in continuous strip form. Unstripped wires, either stranded or solid, is inserted into the tool mandrel and terminated to the post with a clip.

The hand-operated tools are typically illustrated in Fig. 2.

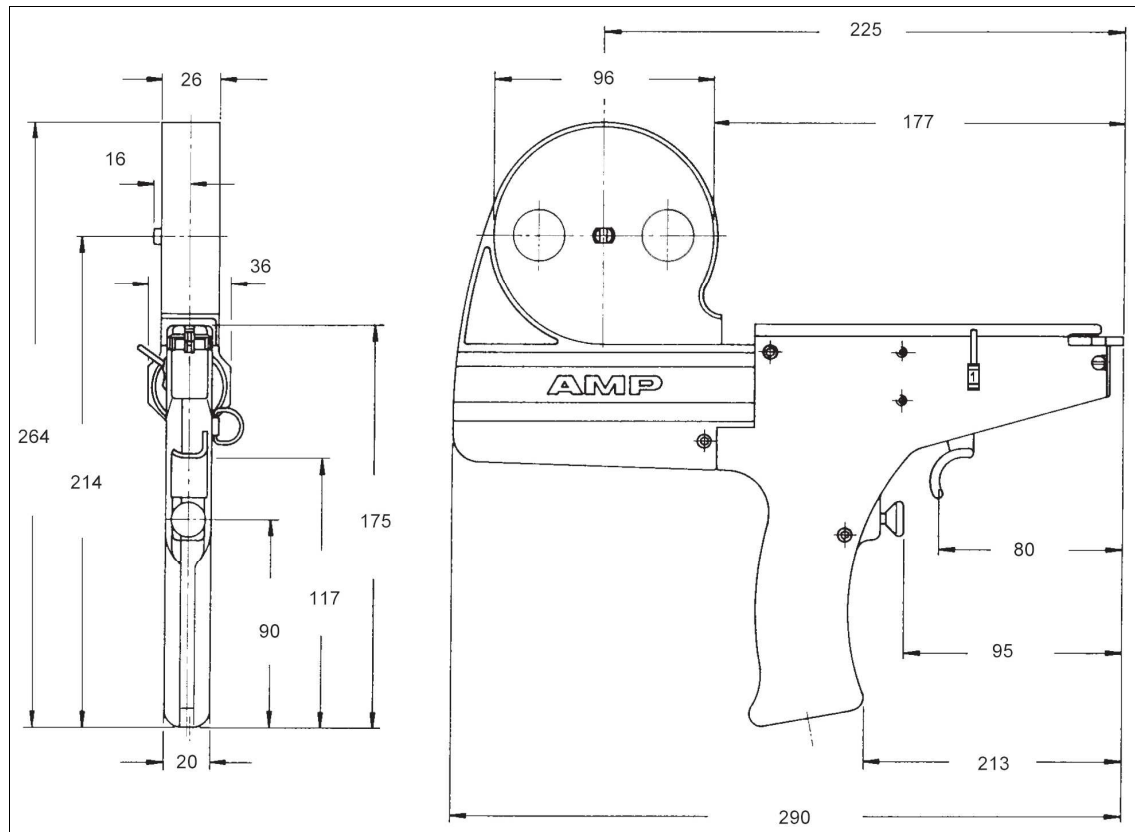


Fig. 2: Dimensional sheet

Post Size [mm]	Clip / Post	Part No.:
0,8 x 1,6 x 22	3 max.	871087-2
0,8 x 2,4 x 26	3 max.	871087-1

5.1 Identification of product



Fig. 3: Identification of product

An identification label is placed on the hand tool (arrow).
There you find following informations:

- | | |
|--------------------------------|-----------------------|
| 1 Manufacturing date (MM.YYYY) | 2 Work pressure [hPa] |
| 3 Part No. | 4 Product description |
| 5 CE - label | |

5.2 Tools, Mandrels and Clips

5.2.1 Introduction

TERMI-POINT mandrels, mandrel insert and clips are color coded to support the operator by matching clips and mandrel assemblies (refer to table).

Aufkleber (1) und Kennzeichnungen

Code Location

The color code will appear on label, containing part number and quantity affixed to the clip reel (Fig. 4).

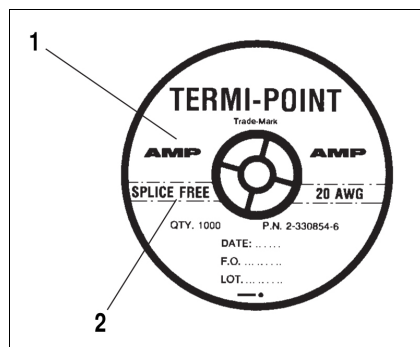


Fig. 4: Codification clip reel

The clip (1) is identified by a colored dot or stripe on the crown of the clip (Fig. 5).

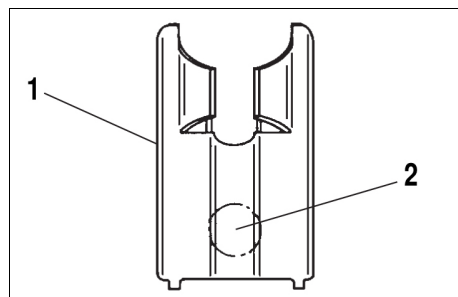


Fig. 5: Codification Clip

Mandrels and mandrel inserts (1) are color coded as shown in Fig. 6.

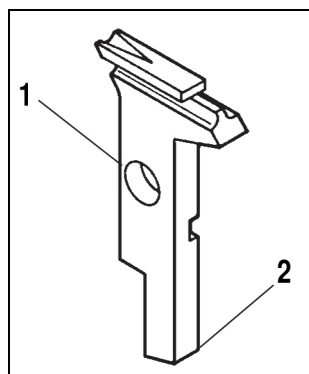


Fig. 6: Codification mandrel

5.2.2 Per GP 1935 Rev. Germany 3/86

Post Size 0.8 x 1.6 mm

Mechanical Tool Part.-No. 69526-2 (Customer Manual CM2002)

Wire Size solid or 7 strands		Insulation-ø	Mandreal Part-No.	Clips (1000/Reel) Finish Part-No.			Mandrel and Clip Color Code
AWG	[mm ²]	[mm]		hot dip tin.	Gold plated	Tin-ni. pl.	
22	0.32	0.87-1.23	69551-8	1-330495-4	6-330495-2	6-330495-7	orange
		1.14 – 1.65	1-69411-4				
24	0.20	0.74 – 1.23	69551-9	5-330495-2	1-330495-9	6-330495-3	red
		1.10 – 1.65	1-69411-3				
26	0.12	0.56 – 1.14	69551-6	3-30495-4	9-330495-8	8-330495-6	brown
		1.14 – 1.65	1-69411-9				
28	0.08	0.56 – 1.14	69551-5		330495-3	9-330495-0	black

Pneumatic Tool Part.-No. 871087-2

Wire Size solid or 7 strands		Insulation -ø	Mandreal Part-No.	Clips (1000/Reel) Finish Part-No.			Mandrel and Clip Color Code
22	0.32	0.91 – 1.65	871295-3	1-330495-2	4-330495-9	6-330495-8	orange
24	0.20	0.86 – 1.65	871295-4	2-330495-0	2-330495-2	6-330495-4	Red
26	0.12	0.76 – 1.40	871295-5	3-330495-3	1-330495-8	8-330495-4	brown

Post Size 0.8 x 2.4 mm

Mechanical Tool Part.-No. 69526-1 (Customer Manual CM2002-1)

Wire Size solid or 7 strands		Insulation -ø	Mandrel Part-No.	Clips (250/Reel) Finish Part-No.	Mandrel and Clip Color Code
AWG	[mm ²]	[mm]		hot dip tin.	
20	0.56	1.17 – 1.65	69561-0	2-330854-5	yellow
		1.68 – 2.16	69561-1		
24	0.20	1.17 – 1.65	69561-4	3-330854-0	red

Pneumatic Tool Part.-No. 871087-1

Wire Size solid or 7 strands		Insulation -ø	Mandrel Part-No.	Clips (250/Reel) Finish Part-No.	Mandrel and Clip Color Code
20	0.56	0.91 – 1.65	871295-1	2-330495-6	yellow
24	0.20	0.86 – 1.65	871295-2	2-330854-9	red

Accessories

Pull Test Tool

Clip Extraction Tool

Test Force	Color Indicator Ring	Post Size	Part-No.	Part-No.
[N]		[mm]		
11	gelb	0.8 x 1.6	69358,2	69357-3

5.2.3 Per GP 1944 Rev. Germany 3/86

Post Size 0.8 x 1.6 mm		
Wire Size solid or 7 strands		Mandrel and Clip Color Code
AWG	[mm ²]	
22	0.32	orange
24	0.20	red
26	0.12	brown
28	0.08	black

Post Size 0,8 x 2,4 mm		
Querschnittsbereich massiv oder Litze (7adr.)		Farbcodierung Abisoliereinsatz und Clip
AWG	[mm ²]	
20	0,56	yellow
24	0,20	red

6 Commissioning

WARNING

Risk Of Injury!

Risk of starting up!

- ▶ Separate the tool from the compressed air supply, if you have to do some adjustment work on the tool.



Risk Of Injury!

Risk of cutting damage at the housing of nippers.

- ▶ Wear protective gloves!

Risk Of Injury!

Risk of stumbling due to pneumatical hoses!

- ▶ Install the hoses so, that they are no risk!



Risk Of Injury!

- ▶ Risk of eye injuries due to the clips, which were shooted out!
- ▶ Wear protective goggles.

6.1 Tool Preparation

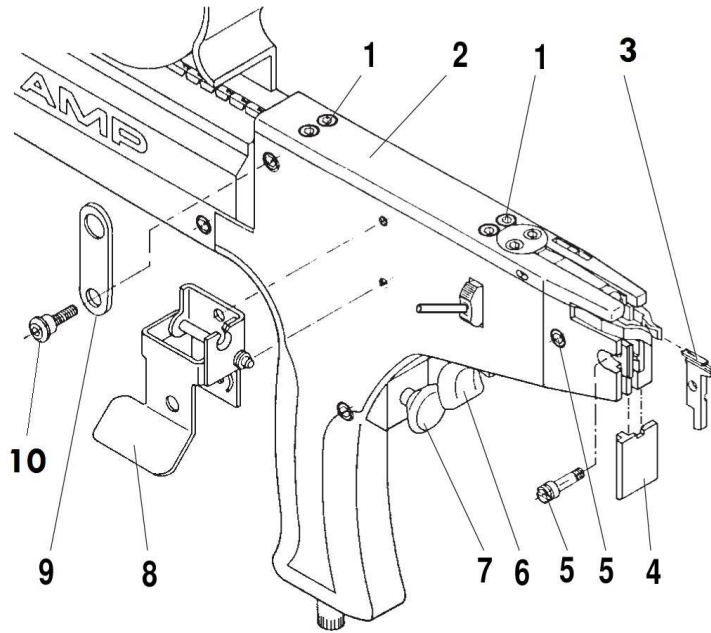


Fig. 7: Tool Preparation

- | | |
|----------------------------|---------------------|
| 1 Top cover holding screws | 6 Wire funnel lever |
| 2 Top cover | 7 Triggerr |
| 3 Mandrel | 8 Wire cutter |
| 4 Tooling foot | 9 Balancer mounting |
| 5 Mandrel holding screw | 10 Screw |

1. Hold tool securely with index finger positioned over trigger. Become familiar with weight and feel of tool, while practicing aiming movement.
2. Place index finger on wire funnel lever (directly above trigger, Fig. 7) and operate wire funnel lever several times. Note that as lever is pulled, wire funnel on top of tool (Fig. 7) moves back and, as lever is released, wire funnel moves forward. In operation, this permits wire to be properly positioned in tool and clamped in place for termination cycle.
3. With clips loaded (Fig. 8) and mandrel installed Fig. 7), connect tool to air supply and regard all applications in section 3 „General safety instructions“.

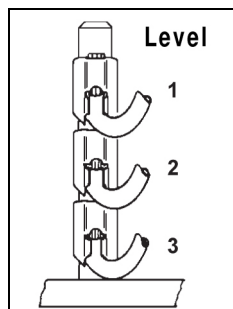


Fig. 8: Clip Level

4. Squeeze trigger firmly to initiate a termination cycle Hold trigger approx. 1 second before releasing it. Practice to achieve smooth trigger control and to overcome tendency to flinch. Note that termination cycle is completed each time trigger is squeezed
5. Refer to section 9.1 „Clip Positioning Adjustment“ for clip positioning.

6.2 Loading the Tool

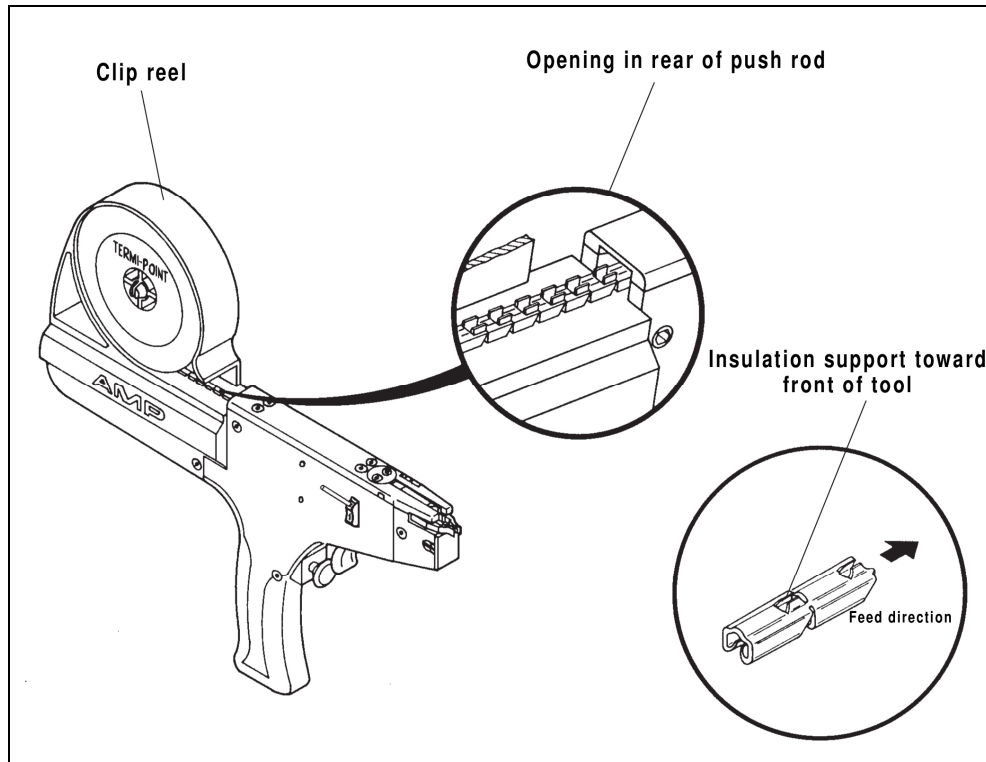


Fig. 9: Loading the Tool

1. Disconnect tool from air supply.
2. Obtain full clip reel of correct clips for tool, mandrel and wire being used. Refer to GP 1935 and GP 1944 (section. 5.2 „Tools, Mandrels and Clips“) and ensure that tool, mandrel, clips and wire size being used are compatible.
3. Free the exposed end of clip train on reel holder with clips feeding from bottom of reel. Ensure that clips are straight and that insulation supports on clips face toward front of tool (Fig. 9).
4. Feed clip train into opening in rear of push rod and continue to feed until clips cannot advance any further; do not force clip train.
5. Connect tool to air supply. Squeeze but do not release trigger. Push clips forward over rear catch until it "clicks" into position behind the first clip. Release trigger
6. Again squeeze the trigger. Push rod will move forward and, if tool is correctly loaded, will carry one clip with it. Check that clip is released from push rod and then release trigger. If tool has not been correctly loaded (no clip present in push rod) repeat steps 4 through 6, make sure that rear catch "clicks" into position behind the first clip.

6.3 Unloading the Tool

1. Break clip train at a convenient point between tool top cover and reel bracket.
2. With air supply connected, operate tool by squeezing trigger to advance clip train and continue until tool is unloaded (no more clips are transported).
3. Squeeze spindle of reel holder, insert fingers through holes provided in back of reel holder and push reel out.

6.4 Installation of Mandrel

1. Disconnect tool from factory air supply.
2. Select correct mandrel for wire size and clips being used. Check GP 1935 1935 (section.5.2.2 "Per GP 1935 Rev. Germany 3/86") for tool and clip selection and GP 1944 (section.5.2.3 "Per GP 1944 Rev. Germany 3/86") for component color code data to ensure that mandrel, clips and wire size being used are compatible
3. Remove mandrel holding screw (ref. Fig. 7) and loosen screw (10).
4. Remove tooling foot (4).
5. Open both post pickups and insert mandrel; align hole in mandrel with mandrel holding screw hole!

NOTE

Use care not to push against stripping ear area of mandrel so as not to damage cutting edge of mandrel!

6. Re-install tooling foot.
7. Release post pickups, insert and tighten mandrel holding shoulder screw (10).

6.5 Removal of Mandrel

1. Disconnect tool from factory air supply.
2. Remove mandrel holding shoulder screw (ref. Fig. 7) and screw (10).
3. Remove tooling foot (4).
4. Open both post pickups, grasp front of mandrel and carefully pull mandrel out of tool.

NOTE

Use care not to push against stripping ear area of mandrel; doing so may damage cutting edge of mandrel!

5. Release post pickups and insert mandrel holding shoulder screw, do not tighten it. Fix screw (10).