

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 used.

It is absolutely necessary to use the correct mandrels.

The air tool TERMI-POINT may 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 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	
▶	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.

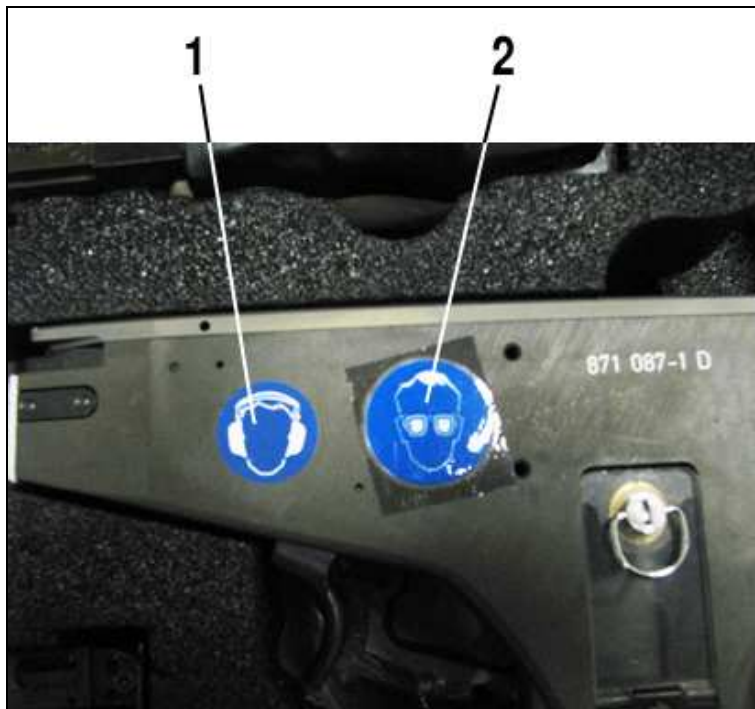


Fig. 1: Pictograms

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.

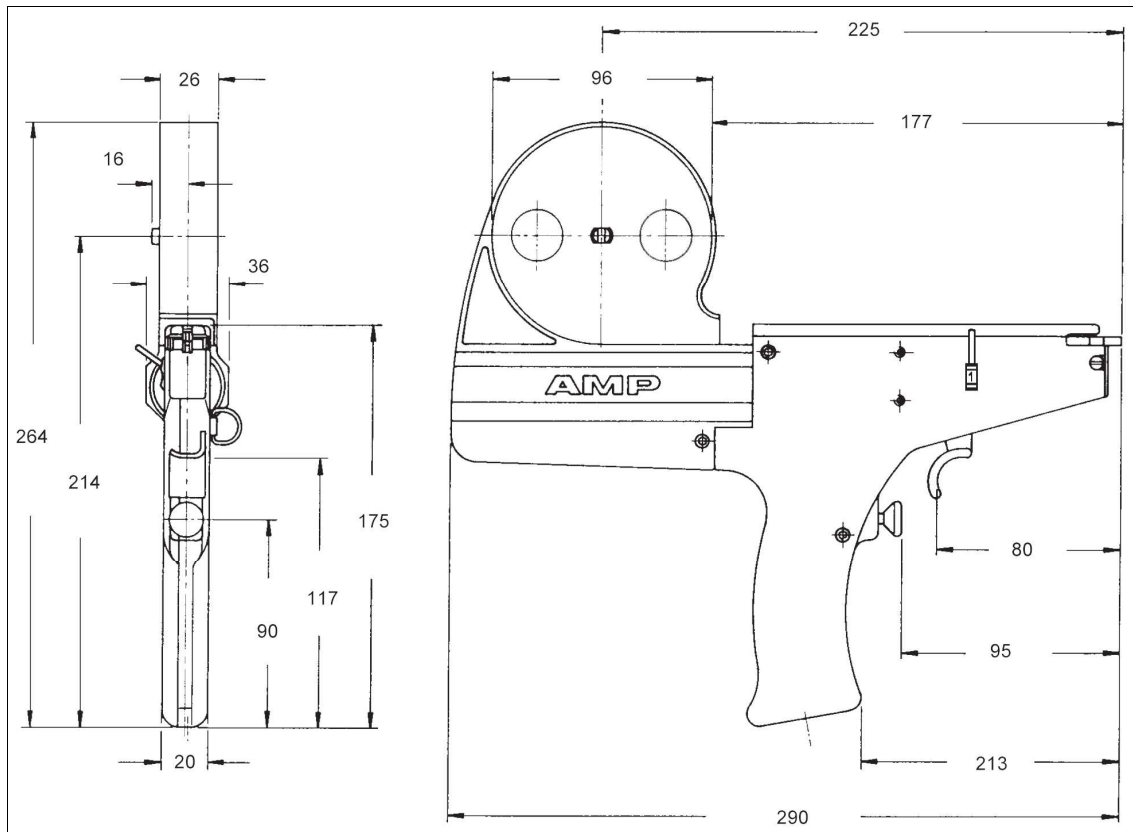


Fig. 2: Dimensional sheet

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).

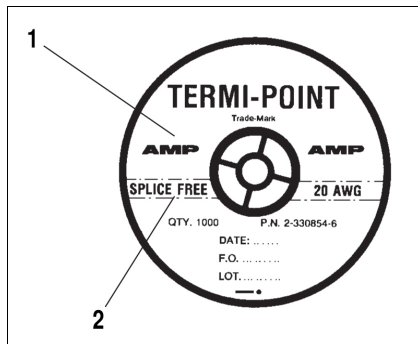


Fig. 4: Codification clip reel

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

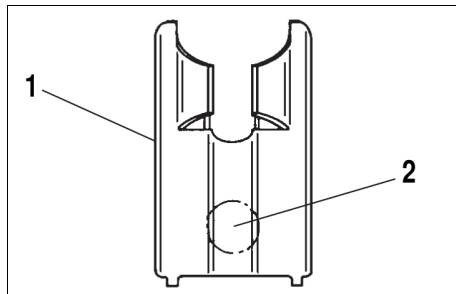


Fig. 5: Codification Clip

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

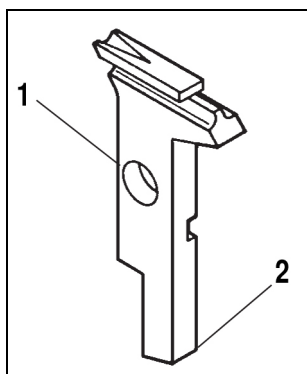


Fig. 6: Codification mandrel

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- \emptyset	Mandrel 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 - \emptyset	Mandrel 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 - \emptyset	Mandreal Part-No.	Clips (250/Reel) Finish Part-No.	Mandrel and Clip Color Code
AWG	[mm ²]	[mm]		<i>hot dip tin.</i>	
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 - \emptyset	Mandreal 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 Abisolierereinsatz 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

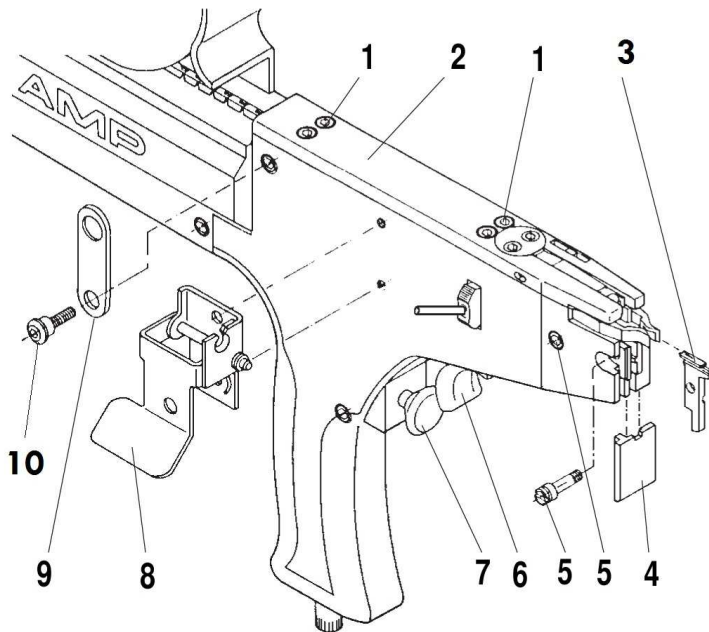


Fig. 7: Tool Preparation

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“.

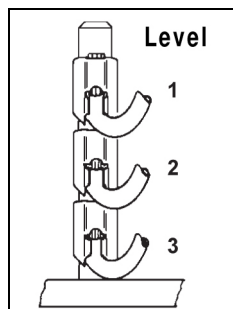


Fig. 8: Clip Level

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

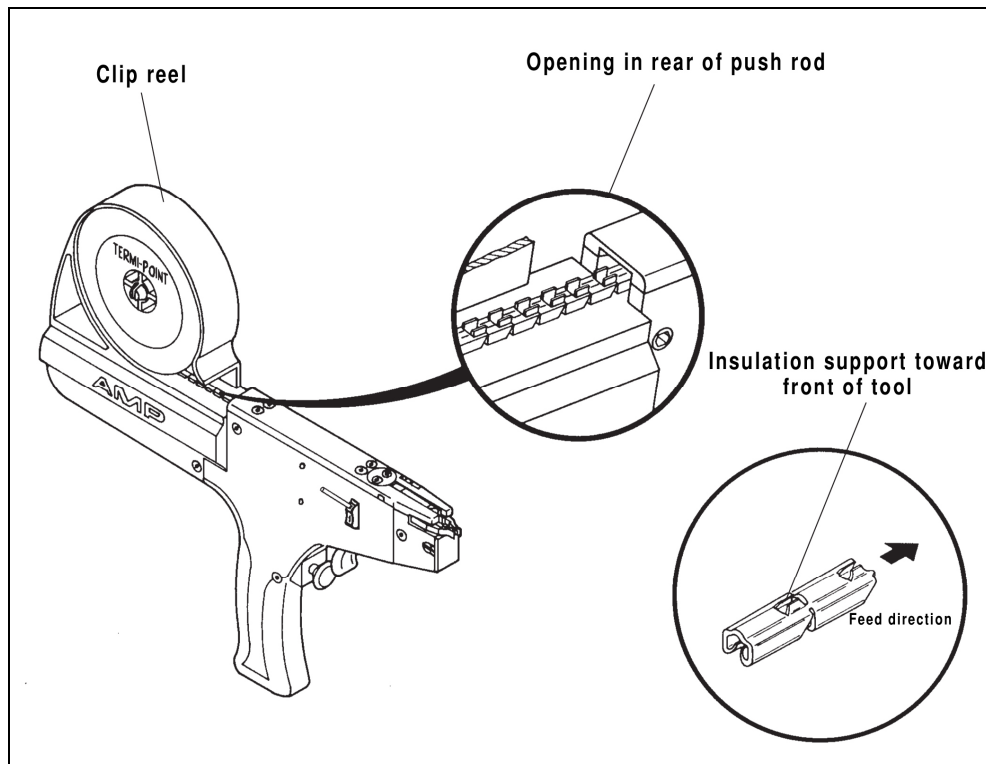


Fig. 9: Loading the Tool

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).

7 Transport and Storage

7.1 Transport

The TERMI-POINT Air Tool is supplied in a packet. Given the limited weight (approximately 1kg) there are no specific problems on handling the tool. The following precautions must be followed to ensure safety:

- The staff involved with handling the tool must wear safety goggles.

7.2 Storage

If the tool is not used, it must be stored by taking the following precautions:

- Store the tool indoors;
- Grease unpainted parts;
- Protect the tool from knocks or stresses;
- Protect the tool from high levels of humidity and from big temperature changes;
- Prevent the tool from coming into contact with corrosive substances.

8 Operation

8.1 General

1. Set clip positioner for setting required for desired clip level (section 9.1 „Clip Positioning Adjustment“).
Ensure that positioner dial is engaged in detent with selected letter at top of dial.

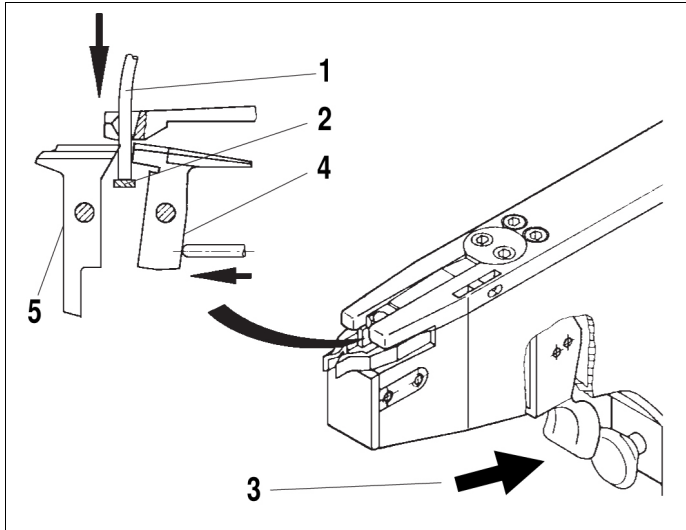


Fig. 10: Clip Positioning Adjustment

2. Pull wire funnel lever to pull wire funnel (3) back: do not release lever.
3. Insert end of wire (unstripped) through wire funnel into opening between clip guide anvil and mandrel until wire bottoms.
4. Release lever (3); wire is clamped in place.

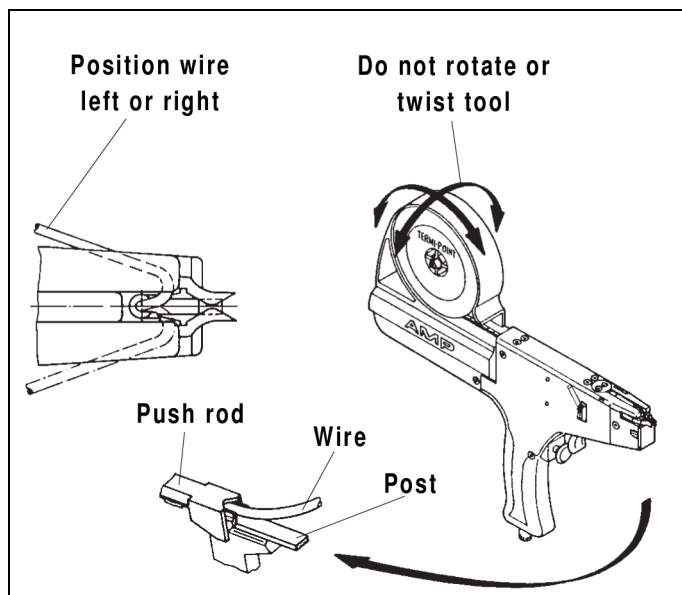


Fig. 11: Alignment of Mandrel Tool

5. Position post pickups of tool over selected post on pc board or panel and visually align mandrel of tool with post (ref. Fig. 11), insert post into post pickups until it is positioned against mandrel (Fig. 11).
6. Hold tool firmly against end of post: apply appx. 3 kg of pressure and - keeping tool in alignment with post - squeeze trigger with index finger; maintain trigger pressure until forward motion of push rod stops (clip positioned at selected level on post) and then pull tool away from pc board or panel before releasing trigger.

NOTE

A pressure of appx. 3 kg must be applied by the operator against the post while terminating the clip. This pressure is needed to overcome the recoil action of the tool when the clip is applied to the post.

7. Inspect termination.
A properly terminated post should appear as shown in Fig. 12.
For operator's quality check procedure, refer to GP 2019 (appendix).

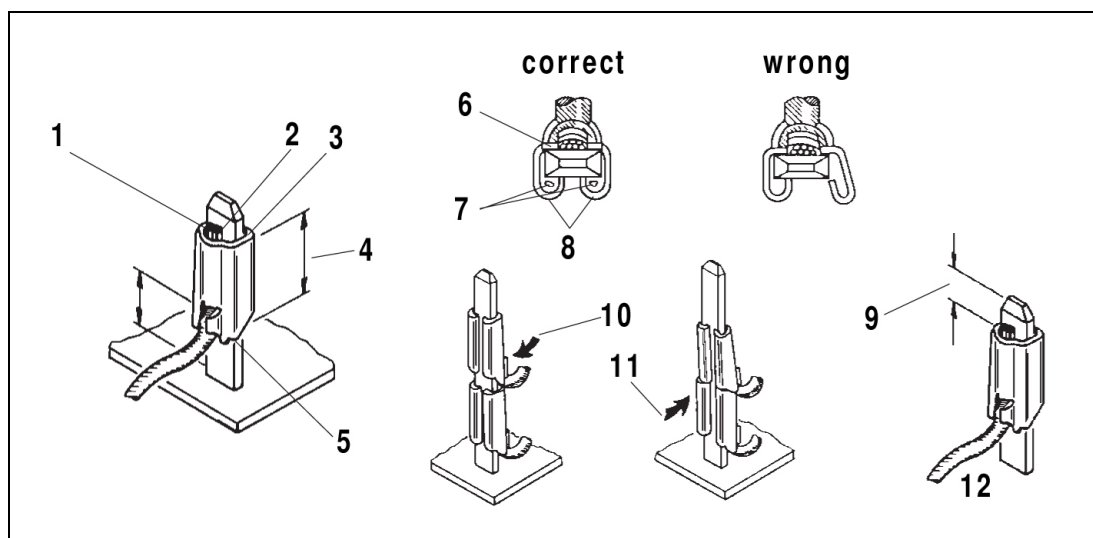


Fig. 12: Correct Clip Termination

- 1 No insulation between wire and post at contact area
- 2 Conductor must be visible
- 3 Back end of clip
- 4 Metal-to-metal-contact between wire and post
- 5 Front end of clip
- 6 No insulation silvers permitted
- 7 Insulation silvers permitted
- 8 Full length of clip curls must grip post
- 9 Distance
- 10 Correct
- 11 Clips must not override
- 12 Last clip on post

NOTE

Wire insulation strippings are collected in container of tool and should be removed periodically (Fig. 13).

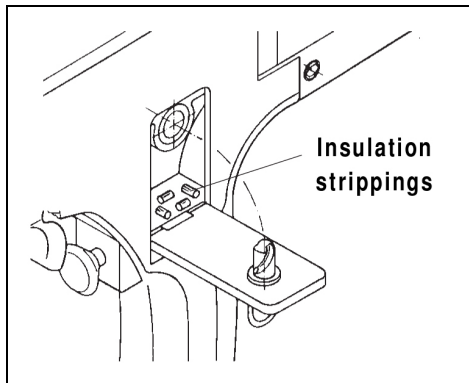


Fig. 13: Removal of Container

9 Adjustment

9.1 Clip Positioning Adjustment

The clip positioning adjustment consists of a positioner dial marked with the numbers 1, 2 and 3 (Fig. 8).

The setting of the positioner dial determines the distance the clip covers as it is applied to the post. Having selected setting 1, the clip is positioned on the upper, using setting 3 on the lower level of the post (Fig. 8).

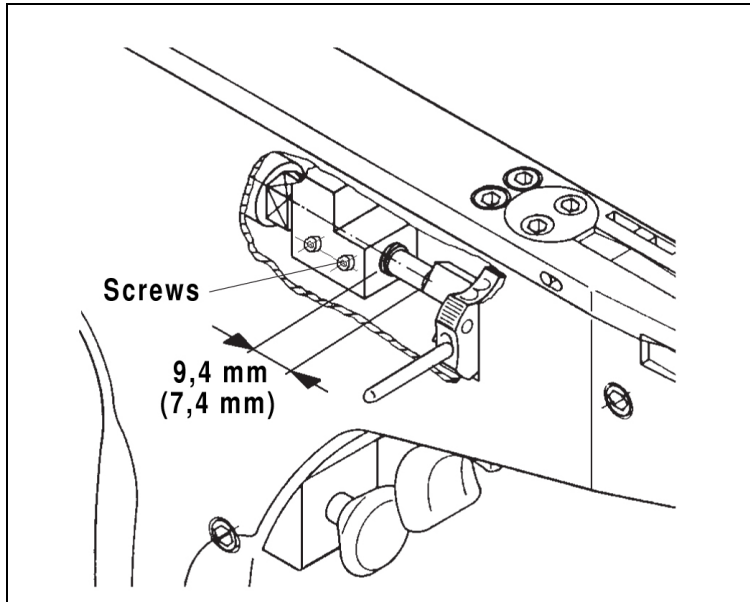


Fig. 14: Clip Positioning Adjustment

NOTE

Type 4-871087-1 (spezial model) includes a reduced slide-on measure of 7.4 mm!


NOTE

Ensure that positioner dial is properly positioned before squeezing trigger.

10 Maintenance and Repair

10.1 Preventive Maintenance



 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 eye injuries due to the clips, which were shot out
	▶ Wear protective goggles!

10.1.1 Introduction

To ensure proper operating efficiency of your TERMI-POINT air tool, check the following items periodically (weekly, minimum).

Minor repairs, adjustments and parts replacement instructions are provided in section 13 „Repairing / Replacement of Wear Parts“.

For major repairs, replacement, and factory service contact customer service at **Tyco Electronics AMP GmbH**.

10.1.2 Tool Check (weekly)

1. Ensure that all holding screws are tight (Fig. 15).

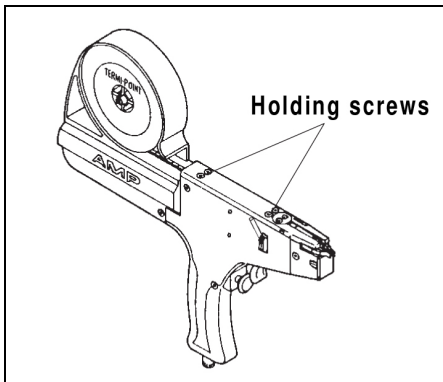


Fig. 15: Holding Screws Check

2. Remove insulation strippings once a day (Fig. 16).

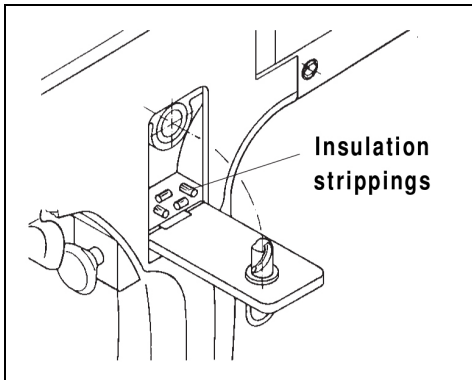


Fig. 16: Removal of Container

3. Remove (section 6.5 "Removal of Mandrel").
Ensure that passageway for insulation strippings is clear.
Check mandrel and clip guide anvil for burrs or nicks (Fig. 17).

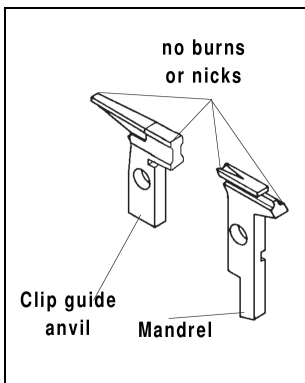


Fig. 17: Mandrel & Clip Guide Anvil Check

11 Disposal

Careless disposal of the applicator lead to pollution of the environment.
In case of disposal, please send the hand tool back to the address specified in section 15.6 „Address After Sales Serviced“.

12 Troubleshooting

TERMI-POINT air tools are thoroughly tested before being shipped and should be in good operating condition when received by the customer. If a tool does not function properly or requires adjustment, refer to the following troubleshooting chart and subsequent paragraphs to locate and correct troubles and/or to perform required adjustments.

Assembly drawings and parts list are included for parts identification (ref. section 15.1 „List of spare parts“).

Replacement and spare parts can be purchased from **Tyco Electronics AMP GmbH**.

If problems occur that cannot be corrected with the aid of the troubleshooting chart, please contact customer service at **Tyco Electronics AMP GmbH** (section 15.6 „Address After Sales Serviced“).

Symptom	Cause	Possible Remedy
Clip does not feed onto mandrel	Clips distorted or not loaded properly Worn or broken push rod (item 27, Fig. 18)	Unload tool (6.3) and reload it (section 6.2) Replace push rod (section 14.1)
	Damaged clips jamm against rear of clip guide anvil (item 6, Fig. 18)	Unload tool (section 6.3), break real off and discard damaged clips, then reload tool (section 6.2)
	Worn or broken catch springs (Item 10 + 11, Fig. 18)	Replace catch springs (section 13.4)
Clip is mangled or distorted when applied to post	Wrong clip, wire, or mandrel	Ensure that correct clip, wire, and mandrel combination is used (ref. section 5.2)
	Wrong or damaged post	Replace post with proper size post forclip and mandrel being used
	Incorrect alignment of tool to post	Refer to section 8.1 for proper operating procedure
	Worn or damaged push rod (item 27, Fig. 18)	Replace push rod (section 14.1)
	Worn or damaged clip guide anvil (item 6, Fig. 18)	Replace clip guide anvil (section 8.1)
Wire is not completely stripped	Wire not bottomed in mandrel	Refer to section 8.1 for proper operating procedure
	Wrong clip, wire or mandrel	Ensure that proper combination of clip, wire and mandrel is used. Refer to section 5.
	Mandrel worn or damaged in wire stripping area	Install new mandrel (Refer to section 6.4)
	Worn or damaged push rod	Replace push rod (Refer to section 14.1)
Insulation does not eject	Trigger is squeezed too short	Hold trigger for 1second each cycle. For proper operation refer to section 8.1.
	Clogged insulation receiver	Remove insulation strippings from receiver (section 10.1.2)
	Wire lead placed wrong in mandrel Air blast tube defect	See section 8.1 for correct operation Replace air blast tube
Nicked or cut conductor	Wrong clip, wire or mandrel	Ensure that proper combination of clip, wire and mandrel is used (refer to section 5.2)
	Wrong or damaged post	Use proper size post for clip and mandrel being used. Replace damaged post
	Worn or broken mandrel	Replace mandrel, refer to section 6.4.
Tool operates sluggishly	Wrong air line pressure	Adjust for correct air line pressure (section 5)
	Wrong clip, wire or mandrel	Ensure that proper clip, wire, and mandrel combination is used (section5.2)
	Damaged pneumatic cylinder assembly	Replace or repair pneumatic cylinder (section 14.5)
	Pneumatic hoses may not be airtight	Check hoses, joints, replace defective parts
Clip has low tensile strenght on post	Wrong clip application	Carefully follow operation instructions in section 8.1.
	Wrong clip, wire, or mandrel	Ensure that proper clip, wire, and mandrel combination are used (see section 5.2)
	Wrong or damaged post	Replace post - take care for proper size
	Worn or broken push rod	Replace push rod (see section 14.1)
	Tool held at angle	See section 8.1 for correct operation
Tool feeds two or more clips when cycled	Worn or broken front catch	Replace front catch (section 14.4)
	Fatigued or broken front catch spring	Replace spring (section 14.4)

Table 1: Troubleshooting chart

13 Repairing / Replacement of Wear Parts

All replacement processes refers to assembly drawing Fig. 18.

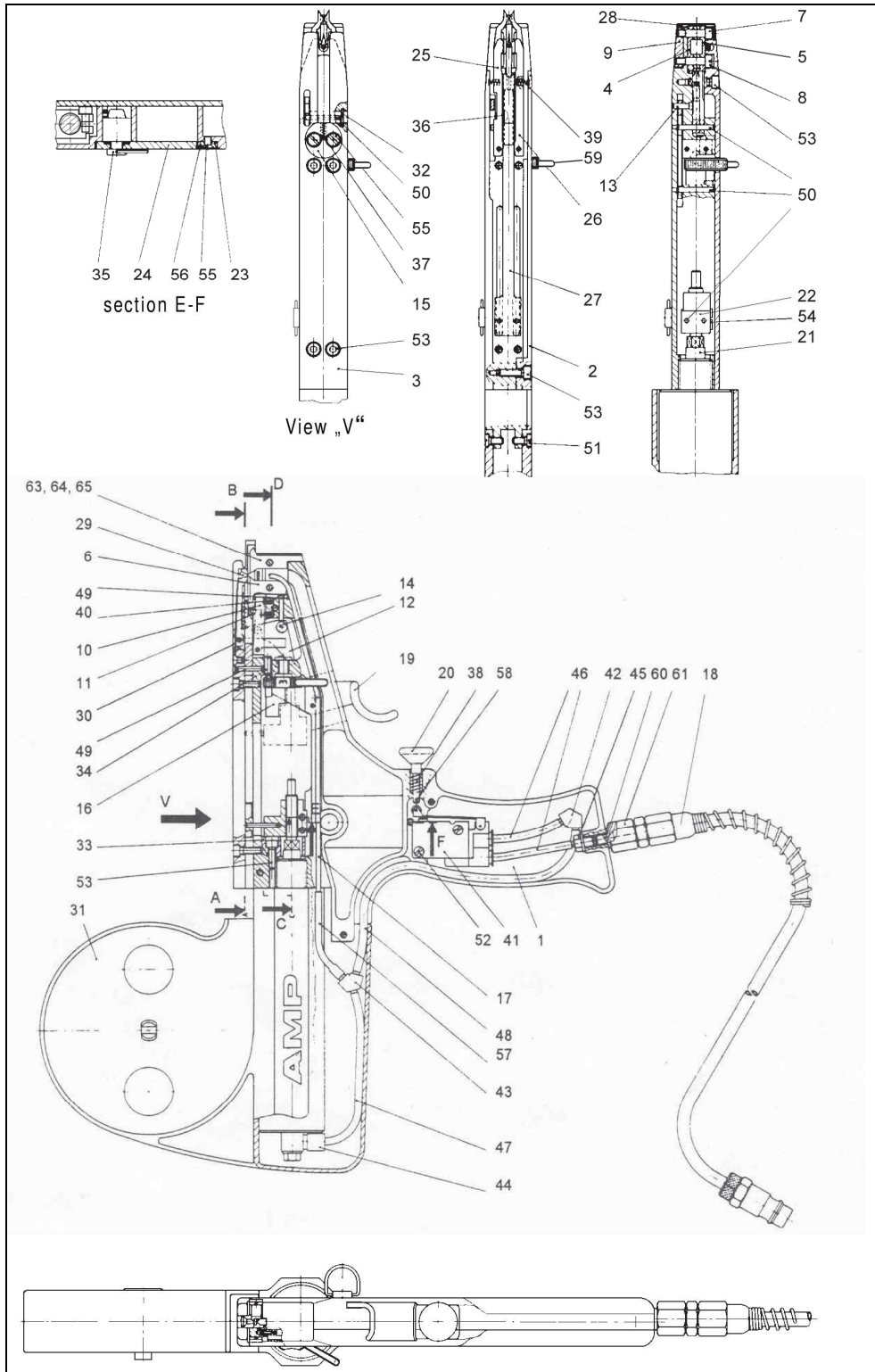


Fig. 18: Assembly Drawing

Perform the following steps as specified in each paragraph to prepare the tool for repair and/or part replacement.

! 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.

13.1 Push Rod and Saddle Spring Replacement

1. Remove screws from side cover (2) and remove side cover; use care not to lose spring (39)!
2. Remove four screws (39) holding top cover to tool.
3. Remove push rod from its drive pins (27).
4. Saddle spring (36) may now be replaced, if necessary you can also exchange the push rod.
5. Perform steps 4 thru 1 in reverse order.

13.2 Clip Guide Anvil Replacement

When clips jam on rear area of clip guide anvil, the clip guide anvil may be worn or broken.

1. Perform steps 1 thru 5 as described in section. 13.1"Push Rod and Saddle Spring Replacement.
2. Remove the right post pickup (25) by lifting it from its pin; use care not to damage the tubing.
3. Break clip train at a convenient point feeding back the rest into reel. Carefully remove jammed clips from clip guide anvil.
4. Remove screws (7; 8), tooling foot (28) and attachment key (9).
5. Remove the complete block (Fig. 19) containing left and right guide plates (4; 5).

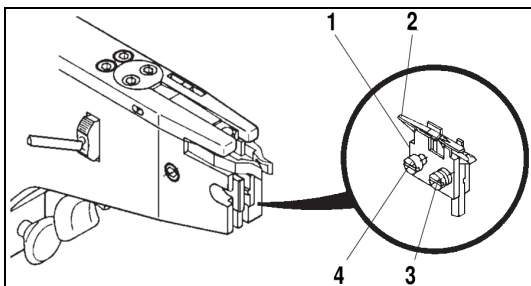


Fig. 19: Clip Guide Anvil Replacement

- | | | | |
|---|--------------------------|---|----------------|
| 1 | Block | 3 | Screw (item 7) |
| 2 | Rear of clip guide anvil | 4 | Screw (item 8) |

6. Remove the two screws (7; 8), and replace the clip guide anvil if required (Fig. 20).

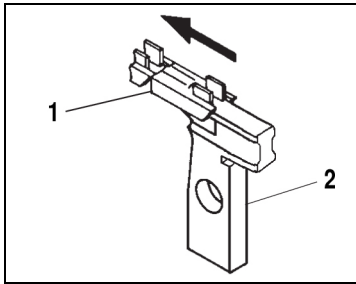


Fig. 20: Clip Guide Anvil Replacement 2

- 1 Rear of clip guide anvil
- 2 Clip guide anvil)

7. Reassemble the block and install it; use care that front and rear catches are in correct position.
8. Insert attachment key (9) in slot at left side of tool and tighten screw (8).
9. Slide the tooling foot (28) in its end-position and tighten screws (7).
10. Assemble the tool by performing steps in reverse order.
11. Der Zusammenbau erfolgt in umgekehrter Reihenfolge.
12. Load clips into tool (section 6.2 "Loading the Tool").

13.3 Post Pickups Replacement

1. Remove screws from side cover (2), remove side cover; use care not to lose spring (39).
2. Remove screws holding top cover (3) of tool.
3. Carefully remove tubing (17) from right post pickup (25) and lift right post pickup from its pin.
4. Remove push rod from its drive pins.
5. Lift left post pickup from its pin; use care not to lose spring.
6. Replace each post pickup (25; 26) and perform steps 4 thru 1 in reverse order; carefully dress the tubing in its space.

13.4 Front / Rear Catch and Spring Replacement

1. Perform steps 1 thru 5 as described in section 13.1 "Push Rod and Saddle Spring Replacement".
2. Remove push rod (27).
3. Carefully remove tubing from right post pickup and lift it from its pin.
Take care not to damage plastic tube.
4. Break clip train at a convenient point behind clip guide anvil and feed the clip train back into reel holder. Carefully remove clips from anvil.
5. Remove both screws (7; 8) and tooling foot, the attachment key may be taken away.
6. Remove the complete block containing left and right guide plate (4; 5).
7. For removing the compression springs, front and rear catch have to be lifted.
8. If both catches must be replaced use care not to lose the springs. Drive out pin (50) and install replacement catches (10; 11) by carefully driving pin through catches. Insert spring in retaining holes and return front and rear catches to operating position.
9. Insert block by pushing front and rear catch down; make sure that rear part of guide anvil holds catches down.
10. Tighten screw (8) after having placed the attachment key.
11. Replace right post pickup and carefully place plastic tube (section 13.3 "Post Pickups Replacement").
12. Replace push rod and compression spring (39), tighten cover (3) by 4 screws and replace side cover. Take care that compression spring (39) is placed correctly.

13.5 Air Cylinder Replacement

1. Break clip train at a convenient point between tool top cover and reel bracket.
2. Remove both screws (51) and reel holder (31) from tool body.
3. Remove screws from side cover (2) and remove side cover; use care not to lose spring (39)!
4. Loosen screws (54) (Fig. 19).
5. Unscrew screwing "L" (44); do not lose the gaskets. Now remove air cylinder from tool.
6. Carefully screw replacement air cylinder into the tool by simultaneously pulling and screwing until air cylinder reaches its end-position. Check that dimension "9.4 mm" is ok (Fig. 21)!

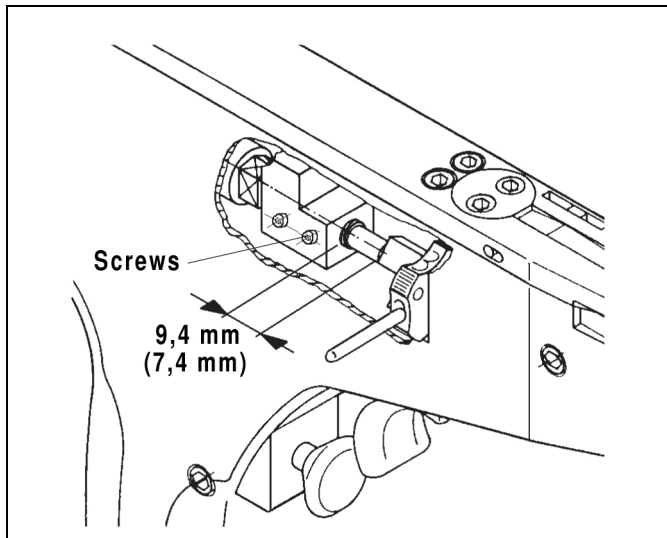


Fig. 21: Dimension check

NOTE

Type 4-871087-1 (spezial model) includes a reduced slide-on measure of 7.4 mm!

7. Perform steps 6 thru 2 in reverse order.
8. Connect tool to air supply and perform unloading procedure by draining clip train (section 6.3 "Unloading the Tool").
9. Load clips into tool (Kap. 6.2 "Loading the Tool").

13.6 Replacement of Miniature Valve / Actuator

1. Remove screws from side cover (2) and remove side cover; use care not to lose spring (39).
2. Remove screws (52) and both hoses (46).
3. Exchange air valve (41) and perform steps 3 thru 2.
4. If the actuator must be replaced (20; 38; 58) perform steps 1 and 2.
5. Remove pin (58) and pull actuator (20) completely with spring out. Replace it.

13.7 Replacement of Air Filters

This pneumatic tool requires use of air line filters, do not take any lubricants.

You may get this equipment in trade.

The position of recommended equipment is shown in Fig. 22. If air pressure exceeds 6.5 bar an air regulator should be installed.

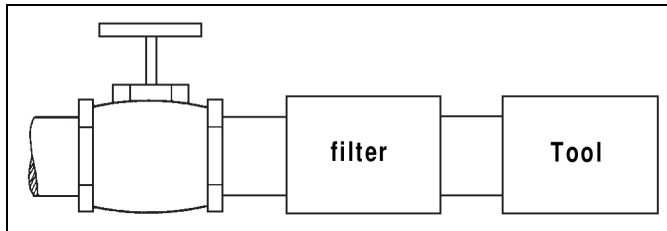


Fig. 22: Air Filter

14 Technical Data

The following specifications are applicable for all tools:

Air Supply Pressure: 5.5 bar (min.) to 6.5 bar (max.)

Tool Weight: approx. 1 kg incl. mandrel, fully loaded reel and air line

Air Volume Required: 5 cu. per cycle

15 Appendix

15.1 List of spare parts

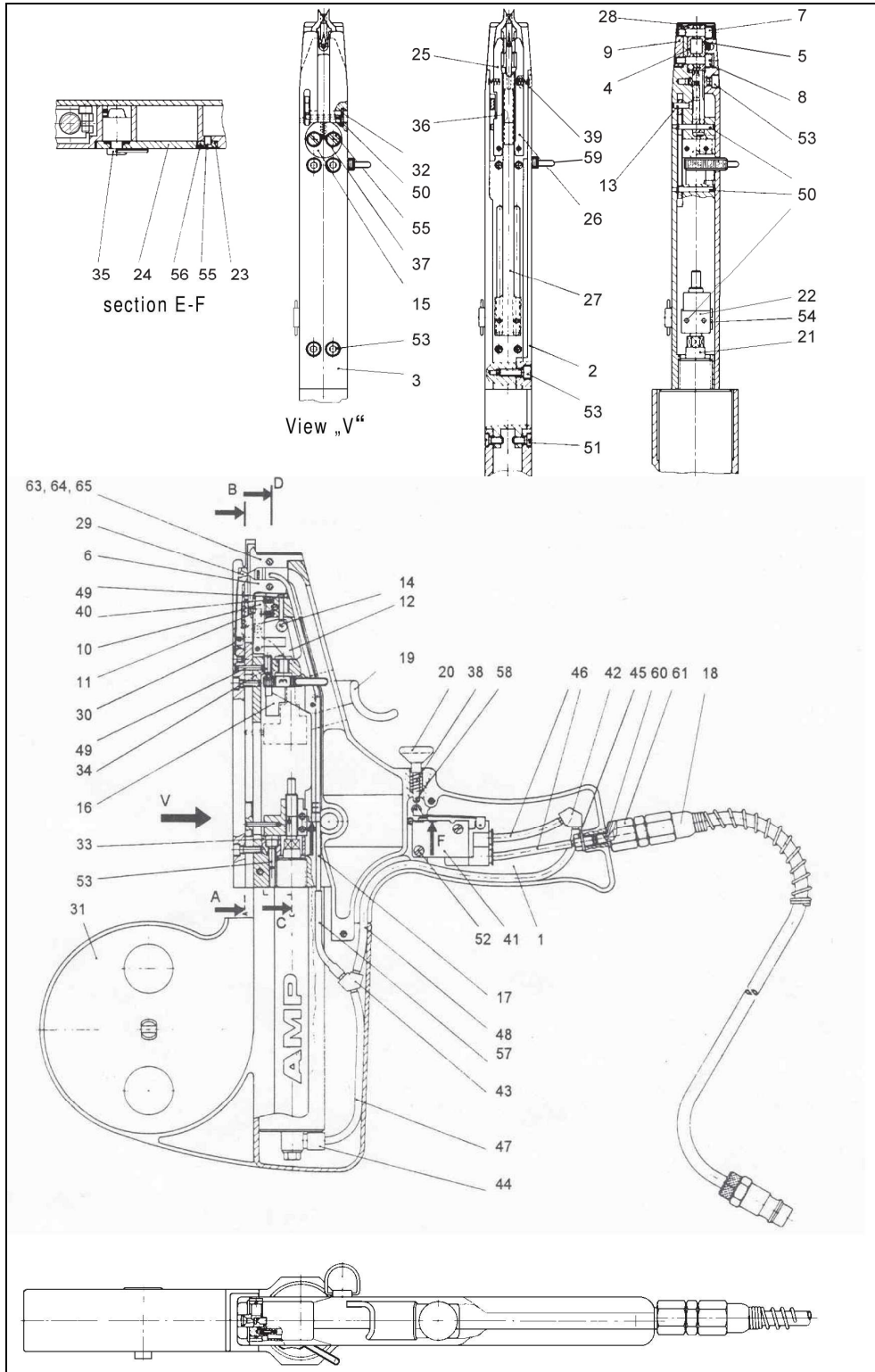


Fig. 23: List of Spare parts

15.1.1 Air Tool TERMI-POINT 871087-1

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-1	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-1	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-1	1	Catch, front
11	871301-1	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-1	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-1	1	Post pickup, left
26	871316-1	1	Post pickup, right
27	871317-1	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-1	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-1	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	871326-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	659417-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-1	1	Stripper insert AWG 20
64*	871295-2	1	Stripper insert AWG 24
67*	871330-1	1	Wire cutter
68*	871331-1	1	Balance holder

*sold separately / not part of toolin equipment]

15.1.2 Air Tool TERMI-POINT 871087-2

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-1	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-1	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-2	1	Catch, front
11	871301-2	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-2	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-1	1	Post pickup, left
26	871316-2	1	Post pickup, right
27	871317-2	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-2	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-2	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	311-071-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	659417-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-3	1	Stripper insert AWG 20
64*	871295-4	1	Stripper insert AWG 24
65*	871295-5	1	Stripper insert AWG 26
67*	871330-1	1	Wire cutter
68*	871331-1	1	Balance holder

15.1.3 Air Tool TERMI-POINT 1-871087-1 (special model)

This type of tool applies for pin layouts 90°turne d.

The following table only shows parts differing from the standard version 871087-1 (page 42).



Fig. 24: Special Model

Item	Part No.	Pcs.	Description
1	1-871290-1	1	Main frame
2	1-871291-1	1	Cover, side
12	1-871302-1	1	Shift lever
19	1-871309-1	1	Lever
42	656543-3	3	Hose connector "V"
50	1-519051-1	7	Pin, dowel
55	519005-9	5	Flat head screw
69	1-871290-2	1	Main frame, grip
70	1-871291-2	1	Cover, grip
71	508496-1	1	Stage selector switch
72	508497-1	1	Spool piece
73	508498-1	1	Cover
74	519004-3	3	Countersunk screw

15.1.4 Air Tool TERMI-POINT 1-871087-2 (special model)

This type of tool applies for pin layouts 90°turne d.

The following table only shows parts differing from the standard version 871087-1 (page 42).

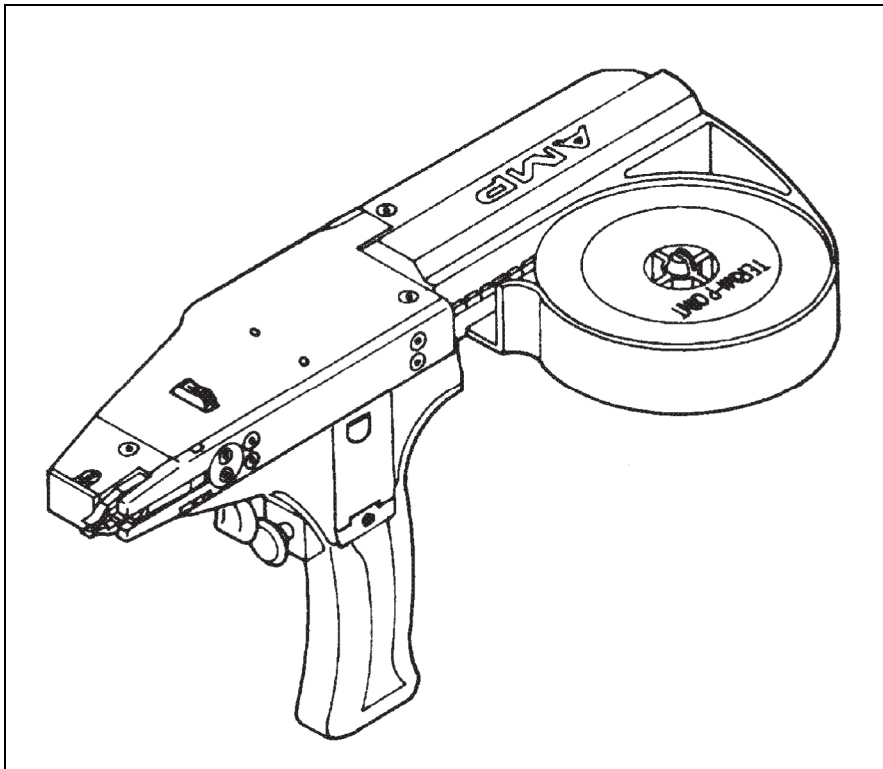


Fig. 25: Special Model

Item	Part No.	Pcs.	Description
1	1-871290-1	1	Main frame
2	1-871291-1	1	Cover, side
12	1-871302-1	1	Shift lever
19	1-871309-1	1	Lever
42	656543-3	3	Hose connector "V"
50	1-519051-1	7	Pin, dowel
55	519005-9	5	Flat head screw
69	1-871290-2	1	Main frame, grip
70	1-871291-2	1	Cover, grip
71	508496-1	1	Stage selector switch
72	508497-1	1	Spool piece
73	508498-1	1	Cover
74	519004-3	3	Countersunk screw

15.1.5 Air Tool TERMI-POINT 2-871087-1 (special model)

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-3	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-1	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-1	1	Catch, front
11	871301-1	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-1	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-1	1	Post pickup, left
26	871316-1	1	Post pickup, right
27	871317-1	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-3	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-2	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	871326-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	659417-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-1	1	Stripper insert AWG 20
64*	871295-2	1	Stripper insert AWG 24
67*	871330-1	1	Wire cutter
68*	871331-1	1	Balance holder

15.1.6 Air Tool TERMI-POINT 2-871087-2 (special model)

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-2	1	Cover, top
4	871293-2	1	Guide plate, left
5	871294-2	1	Guide plate, right
6	871296-5	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-2	1	Catch, front
11	871301-2	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-2	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-2	1	Post pickup, left
26	871316-2	1	Post pickup, right
27	871317-3	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-2	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-2	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	311-071-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	659417-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-3	1	Stripper insert AWG 22
67*	871330-1	1	Wire cutter
68*	871331-1	1	Balance holder

15.1.7 Air Tool TERMI-POINT 2-871087-3 (special model)

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-2	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-1	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-1	1	Catch, front
11	871301-1	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-1	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-2	1	Post pickup, left
26	871316-2	1	Post pickup, right
27	871317-3	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-4	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-1	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	871326-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	656543-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-7	1	Stripper insert AWG 22
67*	871330-1	1	Wire cutter

15.1.8 Air Tool TERMI-POINT 2-871087-4 (special model)

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-4	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-6	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-1	1	Catch, front
11	871301-1	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-1	1	Clip positioner
17	2030758-8	1	Tubing
18	871308-3	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-1	1	Post pickup, left
26	871316-1	1	Post pickup, right
27	871317-1	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-2	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-1	1	Base
34	2079326-1	1	Contact trigger
35	871325-1	1	Fastener
36	871326-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	2030375-1	1	Micro air valve
42	993843-1	1	Hose connector "V"
43	993844-1	1	Hose connector "Y"
44	2079044-1	1	Screwing "L"
45	2030331-1	2	Fitting
47	2030409-3	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction

15.1.9 Air Tool TERMI-POINT 4-871087-1 (special model)

NOTE

Type 4-871087-1 (spezial model) includes a reduced slide-on measure of 7.4 mm!

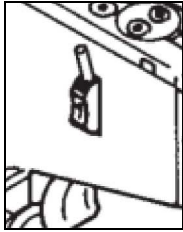


Fig. 26: Clip position „1“

If using Weidmüller-clips SAK und KMVT only clip position „1“ (see Fig. 26) is allowed.

Because the tool is not mechanically secured against improper tool justification, the user has to take care for the correct justification.

Tool 4-871087-1 is exclusively authorized for using Weidmüller clips SAK T / TT 0.8x2.4 + KMVT RE 2.4 EP/SW only and therefore the use of other clips than described above is not allowed.

Clip positions “2” and “3” must not be used.

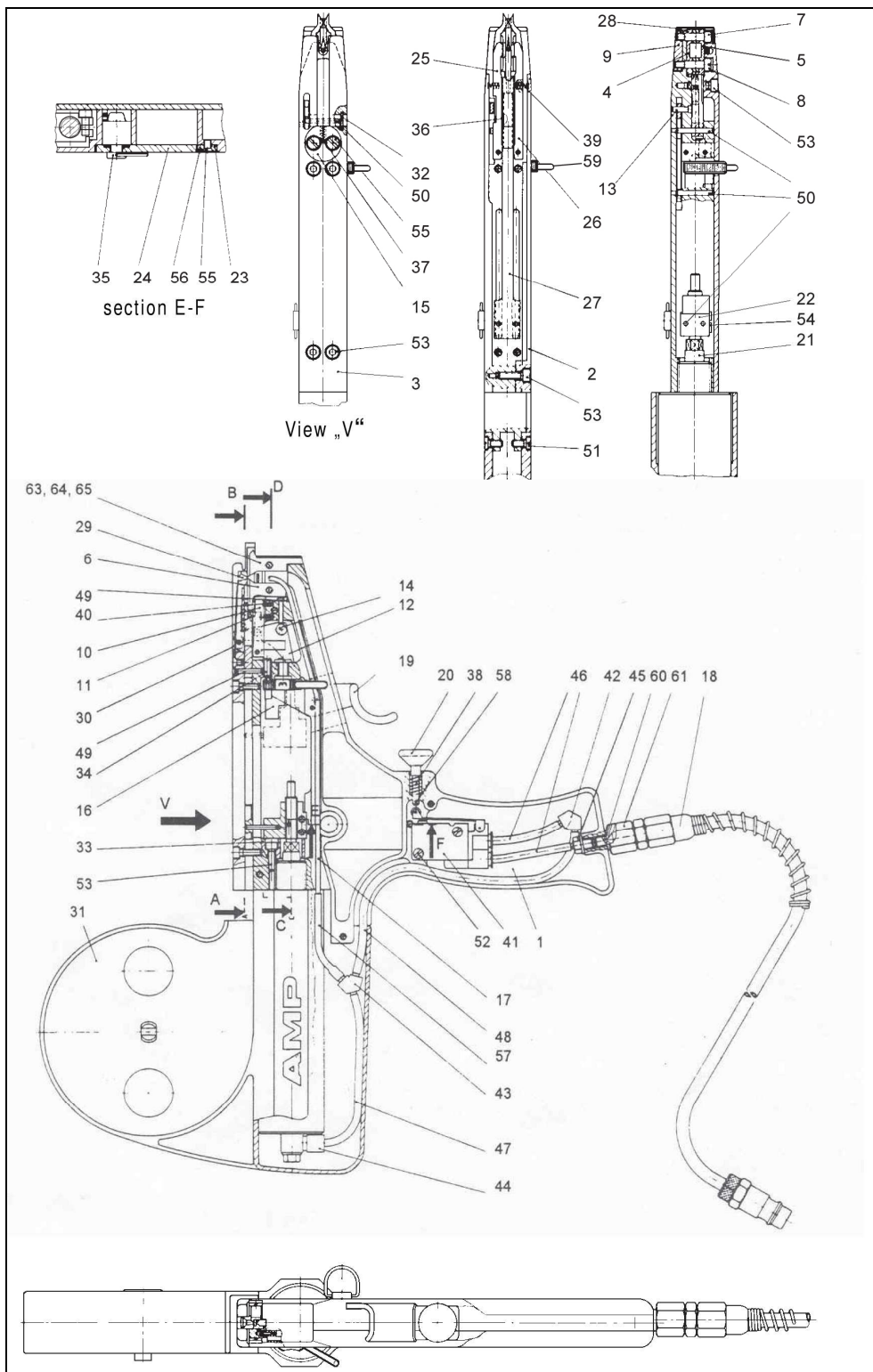


Fig. 27: Special Model

Item	Part No.	Pcs.	Description
1	871290-1	1	Main frame
2	871291-1	1	Cover, side
3	871292-1	1	Cover, top
4	871293-1	1	Guide plate, left
5	871294-1	1	Guide plate, right
6	871296-1	1	Guide anvil clip
7	871297-1	1	Screw, sholder
8	871298-1	1	Screw, sholder
9	871299-1	1	Attachment key
10	871300-1	1	Catch, front
11	871301-1	1	Catch, rear
12	871302-1	1	Shift lever
13	871303-1	1	Flange bolt
14	871304-1	1	Thread bolt
15	871305-1	1	Cover
16	871306-1	1	Clip positioner
17	871307-1	1	Tubing
18	871308-1	1	Subassy, air tube
19	871309-1	1	Lever
20	871310-1	1	Actuator
21	871311-1	1	Air cylinder
22	871312-1	1	Head
23	871313-1	1	Hinge joint
24	871314-1	1	Window
25	871315-1	1	Post pickup, left
26	871316-1	1	Post pickup, right
27	871317-1	1	Rod, push
28	871318-1	1	Tooling foot
29	871319-1	1	Wire dresser
30	871320-1	1	Spring special r
31	871321-1	1	Reel holder
32	871322-1	1	Fitting spring
33	871323-1	1	Base
34	871324-1	1	Contact trigger
35	871325-1	1	Fastener
36	871326-1	1	Spring saddle
37	9-653861-9	1	Spring, compression
38	3-653861-4	1	Spring, compression
39	9-653861-8	2	Spring, compression
40	3-659650-4	2	Spring, compression
41	659417-2	1	Micro air valve
42	656543-3	1	Hose connector "V"
43	656543-4	1	Hose connector "Y"
44	1-656524-0	1	Screwing "L"
45	658256-1	1	Fitting
46	1-658455-2	2	Pneumatic hose
47	657583-4	1	Pneumatic hose
48	657583-5	1	Pneumatic hose
49	519051-9	3	dowel
50	1-519051-1	5	dowel
51	2-519003-2	2	Screw
52	2-519003-5	2	Screw
53	1-519000-3	8	Screw
54	1-519000-2	2	Screw
55	519005-9	3	Flat head screw
56	871328-1	1	Hinge bolt
57	871329-1	1	Heat shrink tubing
58	519056-4	1	Tightening Pin
59	871328-3	1	Pin
60	657728-9	1	O-ring
61	871337-1	1	Reduction
63*	871295-1	1	Stripper insert AWG 20
64*	871295-2	1	Stripper insert AWG 24
67*	871330-1	1	Wire cutter
68*	871331-1	1	Balance holder

[*sold separately / not part of toolin equipment]

15.2 Operator's Quality Check Procedure

15.2.1 Quality Control Procedure for TERMI-POINT Clip Applications

(per GP 1920, Rev. Germany 3/86)

NOTE

Refer to Publication IS 1933, GP 1935 and GP 2019!

The following recommended procedure is intended as a guide in establishing quality control criteria for TERMI-POINT clip when applied to **Tyco Electronics AMP GmbH** posts with TERMI-POINT tooling. Individual requirements will dictate the extent of the quality control program.

15.2.1.1 Initial Process Qualification

1. Make certain that proper clip, wire post and application tooling are used. Refer to Publication GP 1935.

NOTE

Beachten Sie dazu das Datenblatt GP 1935!

2. Apply at least 15 samples to posts in accordance with instruction material packaged with application tool.
3. Remove samples from post and inspect for proper insulation stripping or wire damage that is:
 - a. No insulation between clip and wire.

NOTE

Insulation silvers are permitted in other areas as shown on GP 2019.

- b. Metal-to-metal contact must be maintained between clip and wire and between wire and post.
 - c. No missing or nicked wire strands.
4. If requirement 3 is met, apply 50 samples to posts, 2 clips per piece, in accordance with instruction material packaged with
5. Check samples per Publication GP 2019; if requirements are met, tensile tests should be made using the following procedure:
 - a. Use a Hunter Spring Gauge L 10 M, or equivalent. The gauge must be calibrated and provide consistent results.

- b. Pull all samples as shown in Fig. 21 and record tensile value. The rate of pull should be slow and uniform (do not jerk). Each sample pulled should move a distance of at least one half clip length with only the peak tensile value recorded.

NOTE

Samples should be pulled by hand.

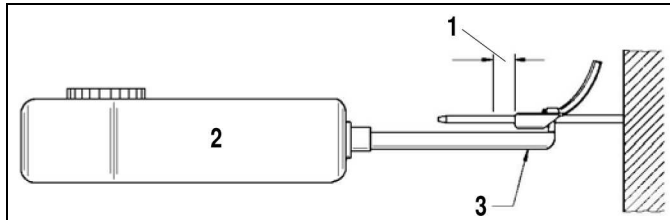


Fig. 28: Making Samples

- 1 Pull clip ½ length
- 2 Hunter spring gauge 50 N
- 3 Test tool Tipp adapted to hunter gauge

- c. The average and minimum acceptable tensile values shown in the table.

Wire size		0,8 x 2,4 mm Clips 330854er Series		0,8 x 1,6 mm Clips 330495er Series	
		Retention		Retention	
AWG	[mm ²]	minimum [N]	average [N]	minimum [N]	average [N]
20	0,56	11	16 - 25	-	-
22	0,32	-	-	11	16 - 25
24	0,20	11	16 - 25	11	16 - 25
26	0,12	-	-	11-0	16 - 25

15.2.1.2 Production Test

The following procedure is recommended by **Tyco Electronics AMP GmbH** to assure a satisfactory level of quality for TERMI-POINT clip applications:

1. Visual Examination
Each operator should make a visual inspection of all terminations per Publication GP 2019, item numbers 1 thru 3.
2. Tensile Pull Test
 - a. The first 5 terminations produced by each operator on every shift should be checked by using the AMP nondestructive pull test tool. See Instruction sheet IS 1933.
 - b. Whenever a reel of clip or a spool of wire is changed, proceed according to item a.

15.2.1.3 Process Requalification

The process should be requalified in accordance with section 1 whenever one of the following conditions occurs:

1. Application tool has been cycled 100.000 times.
2. Application tool parts like mandrel, pushrod assembly have been replaced or larger repairs have been taken place.

15.3 Pull Test Tool Part-No. 69358-2

Part No 69 544-1 (per IS 1933, Rev. Germany 3/86)

15.3.1 Introduction

The Pull Test Tools, Part No. 69358-2 as well as Test Tip 69544-1 are used to make non-destructive tests of the termination's mechanical quality.

15.3.1.1 Testing Procedure

1. Pull Test Tool, Part. No. 69358-2
 - a. Hook tool squarley against end of Clip with tip engaging end of curls on clip (Fig. 29)

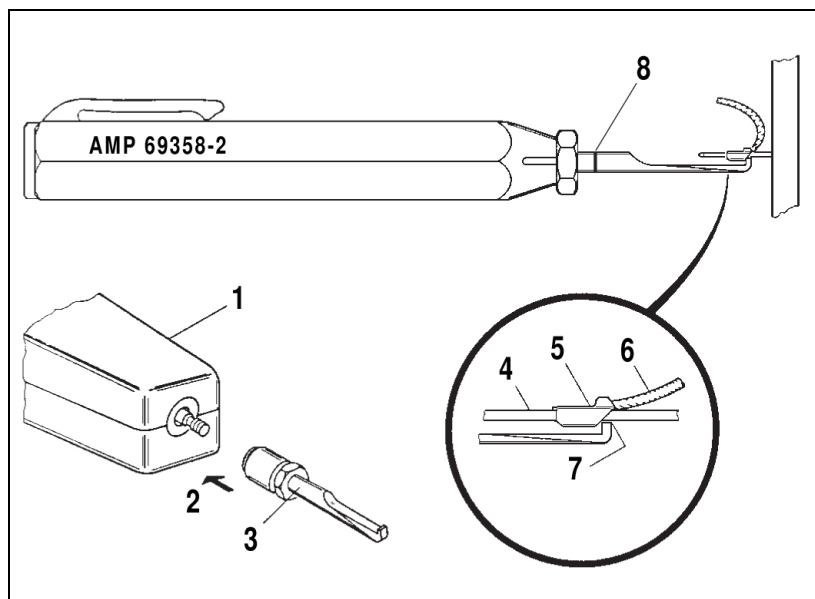


Fig. 29: Tool Qualification Test

- | | |
|---------------------------------------|---|
| 1 Hunter L-10-M mechanical force gage | 5 Clip |
| 2 Thread Tipp onto gage | 6 Wire |
| 3 Test tip | 7 Top of tool engages ends of curls on clip |
| 4 Post | 8 Indicator ring |

- b. Maintain alignment of tool with post and slowly pull until the indicator ring is in line with front of tool (Fig. 29).
- c. Clip may slide before indicator ring is visible but at least a half of the clip length (Fig. 30 / Example A).

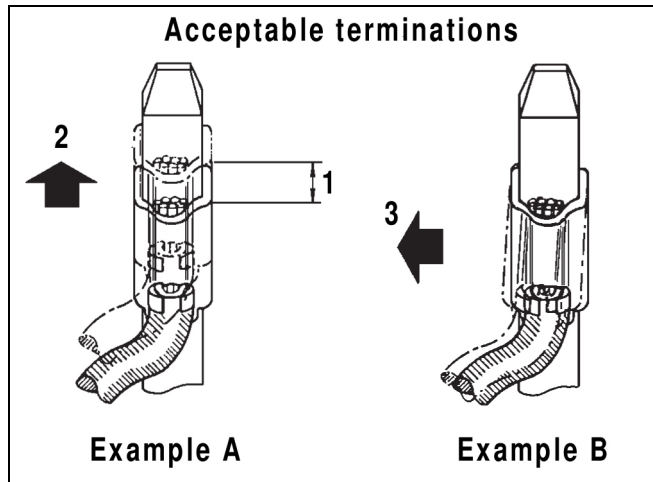


Fig. 30: Acceptable terminations

- 1 ½ clip length
- 2 Slide
- 3 Lateral movement

- d. Lateral clip movement during test (Fig. 30/ Example B) does not affect the quality of termination.
2. Test Tip Tool, Part No. 69544
 - a. Thread tip onto Hunter mechanical force gage.
 - b. Hook tip squarely against ends of clip with tip engaging end of curls on clip (Fig. 29).
 - c. Maintain alignment of gage with post and pull slowly, until gage reaches its maximum reading (Fig. 29). Gage must be set in "Lock" position to record maximum reading.
 - d. Clip may slide no more than a half of clip length before reading is obtained (Fig. 30 / Example A).
 - e. Lateral clip movement during test (Fig. 30 / Example B) does not affect the quality of termination.

NOTE

(applies to 15.3.1.1. too)
Clips that move more than 1/2 of the clip length should be rejected, test should be repeated with a new clip!

15.3.1.2 Tool Qualification Test

A periodic tool qualification test should be made to make certain that tool no. 69358 maintains the proper calibration. Use the following procedure to check tool calibration:

1. Connect TERMI-POINT test tool to an accurate mechanical force gage.
A typical setup using a Hunter L 5 M force gage and adapter is shown in Fig. 31.

NOTE

Gage must be set in "Lock" position to record maximum reading !

2. Force gage and test tool must be held in a horizontal plane and be aligned when making the test.
Be careful to prevent binding between shaft and end of test tool (Fig. 31).

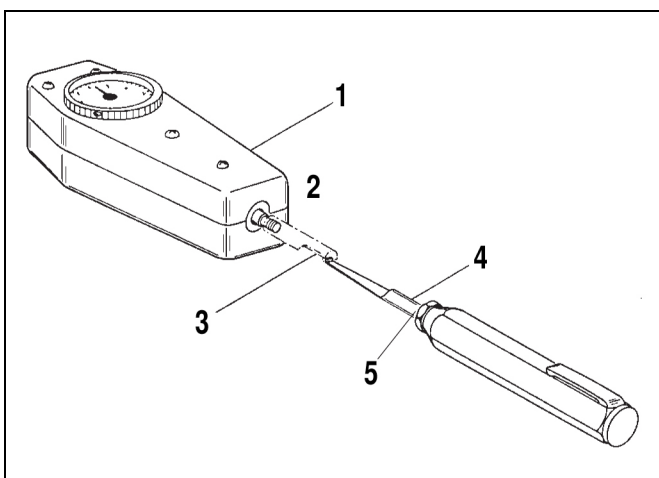


Fig. 31: Tensile Test

- | | | | |
|---|---|---|-------------|
| 1 | Hunter L-5-M Federwaage oder Äquivalent | 4 | Schaft |
| 2 | Zugstrecke 13mm / sec. | 5 | Anzeigering |
| 3 | Adapter (nicht im Lieferumfang) | | |

3. Pull tool while using a rate of 0,5 inches per second.
4. Gradually decrease pull rate until indicator ring is in line with front of tool. Check gage reading.
5. If gage reading is not satisfactory, test tool should be returned to **Tyco Electronics AMP GmbH**.

Post size	Test force	Indicator ring color	Pin Part No..	Clip Part No.	Test-Tip Part No
[mm]	[N]				
0,8 x 1,6	11	gelb	69358-2	X-330 495-X	69544-1
0,8 x 2,4				X-330 854-X	

15.4 Operators's Quality Check Procedure for TERMI-POINT

(per GP 2019, Rev. Germany 3/86)

15.4.1 Introduction

This publication is intended for use by tool operators as an inprocess inspection procedure for TERMI-POINT clip applications. To assure a satisfactory level of quality during clip applications, the tool operator should visually inspect every clip application and should perform non-destructive clip retention (tensile pull) tests as described in the following procedure.

NOTE

Tyco recommends use of this procedure as an essential part of an effective quality control program, although it may not substitute such a program. Refer to publication GP 1920 for additional information.

15.4.2 Clip Application

Post Size:

0.8 mm x 1.6 mm and
0.8 mm x 2.4 mm

15.4.2.1 Check Termination

Refer to Fig. 32 and check clip application for the following criteria:

1. Stripped wire must be visible at end of clip but must not extend more than appx. 1.5 mm.
2. There should be no insulation between wire and post at contact area (back end of clip).
3. Insulation support at front end of clip must retain wire.
4. Between wire and post you should recognize metal-to-metal-contact.
5. Full length of clip curls must grip the post.

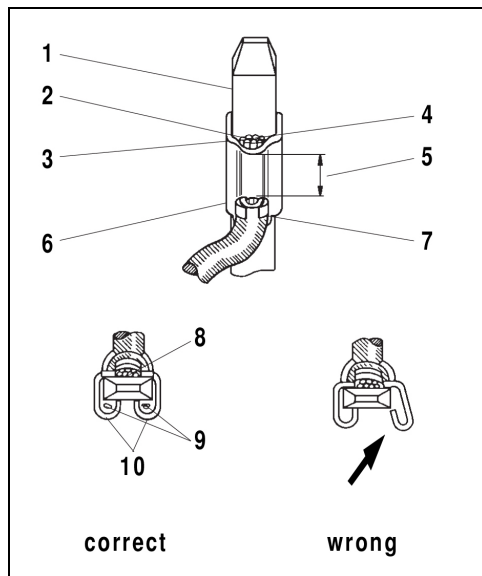


Fig. 32: Termination check

- | | |
|---|---|
| 1 Post | 6 Front end of clip |
| 2 No insulation between wire and post at contact area | 7 Insulation support must retain wire |
| 3 Back end of clip | 8 No insulation silvers permitted |
| 4 Stripped wire must be visible | 9 Insulation silvers permitted |
| 5 Metal to metal-contact between wire and post | 10 Full length of clip curls must grip post |

15.4.2.2 Check Clip Position

Refer to Fig. 33 and check clip position on post for the following criteria:

1. First clip on post must not bottom on panel or on chamfer of post.
2. At least isolation diameter serves as free space for first clip on post.
3. Additional clips on post may seat on each other but must not override.
4. Last clip on post must not be positioned closer than 1.6 mm (ref.) and 1.2 mm (min.) to top of post.

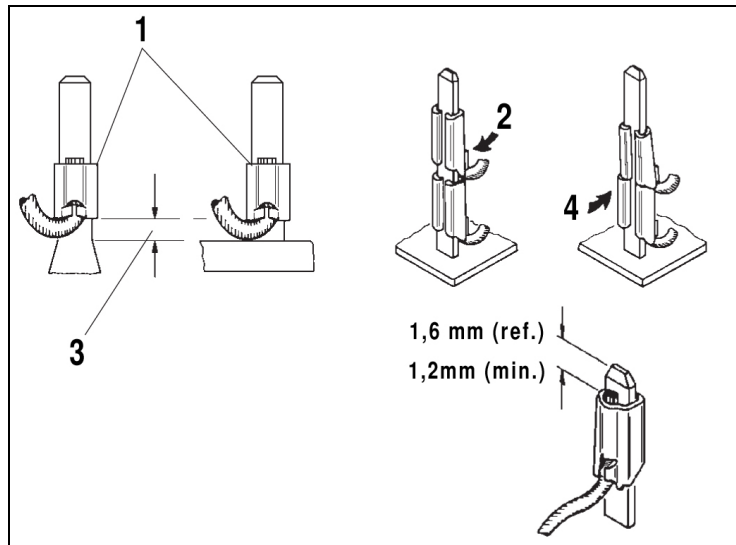


Fig. 33: Clip Position Check

- 1 Back end of clip
- 2 Clips may seat on each other
- 3 Clearance equal to or greater than insulation diameter
- 4 Clips must not override

15.4.2.3 Check Clip Retention (Pull Test)

The first 5 clip terminations applied by each operator on every shift should be checked with nondestructive pull test tool, part no. 69358-2.

Whenever a reel of clips or a spool of wire is changed, when a clip splice is encountered, each operator should again pull test the first 5 terminations applied.

NOTE

Refer to IS 1933, supplied with pull test tool for tool particulars.

1. Hook tip of test tool squarely against ends of curls at front end of clip (Fig. 34).
2. Maintain alignment of tool with post and pull slowly until yellow indicator ring on tool is in line with front of tool. This represents a pull test force of 11 N.
Clip may slide, but there must be no more space than 1/2 clip length before indicator ring appears.

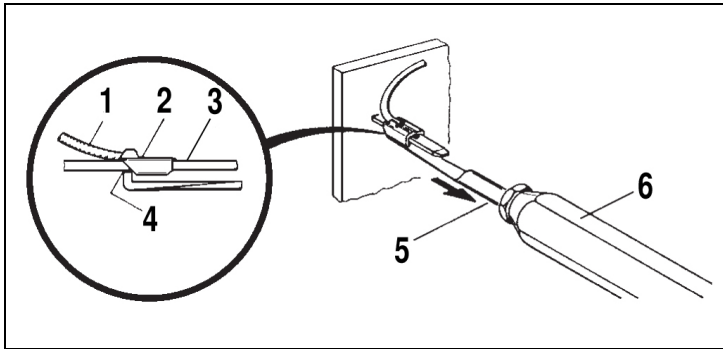


Fig. 34: Clip Retention Check

- | | |
|--------|---|
| 1 Wire | 4 Tip of tool engages end of curls on clip |
| 2 Clip | 5 Pull tool slowly until indicator ring appears |
| 3 Post | 6 Pull test tool part no. 69 358-2 |

NOTE

Lateral movement of clip during test does not affect quality of termination, provided that full length of clip curls continue to grip the post. Clips that move more than 1/2 clip length during test should be rejected, a new clip applied, and the pull test repeated.

15.5 Extraction Tool Part No. 69357-3

(per IS 1942, Rev. Germany 386)

15.5.1 Introduction

Tools listed in table are used to remove TERMI-POINT clips. Clips may be individually removed without damaging other clips on the same or adjacent posts. Tool no. 69357-3 is a dual purpose tool that may be used to advance clips previously applied to a lower position on the post. This will allow an additional clip to be placed on the post.

	Clip No.	Tool-No.
Series	330495	69357-3
	330854	

15.5.2 Extraction Procedure

1. Hold tool perpendicular to panel.
Hook the tip of the extraction tool under curl on clip (Fig. 35).

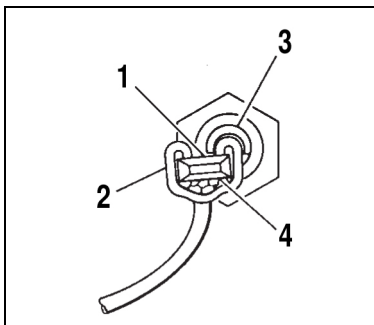


Fig. 35: Extraction Procedure

- 1 Open portion of clip
 - 2 Termi-Point clip
 - 3 Tip of extraction tool
 - 4 Post
2. Twist tool in clockwise direction away from open portion of TERMI-POINT clip until clip is free (Fig. 36).

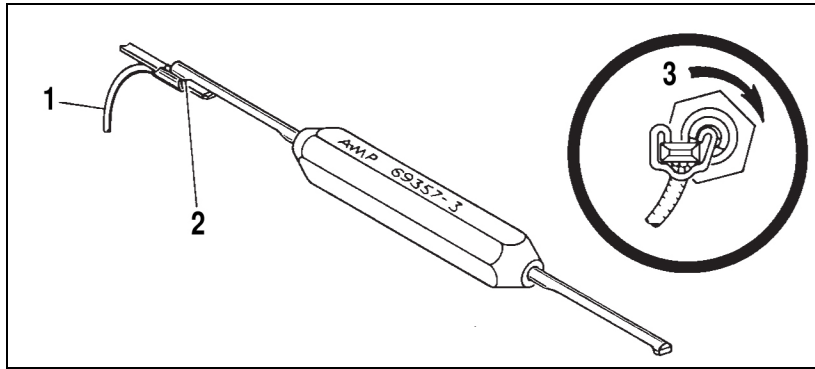


Fig. 36: Extraction Procedure 2

- 1 Wire
- 2 Twist
- 3 Hook tip of tool under curl of clip and twist clockwise

3. Remove clip from post.
4. Repeat above steps for each clip to be removed.

NOTE S

Removed clips cannot be used again .

15.5.3 Clip Positioning Procedure

1. After removing a termination (not top termination) it will become necessary to advance the existing clips toward the panel to permit the installation of additional clips.
2. Position flat tip of tool against clip on post (Fig. 37).
To insure contact reliability, this tool should not be used to push more than one clip at a time.
Carefully push clip to desired position on post.

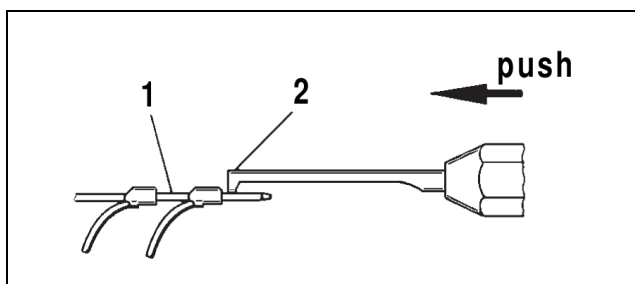


Fig. 37: Clip Positioning Procedure

15.6 Address After Sales Serviced

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