



CLAMPING. SCREWING. CLOSING.

1570 INSTALLATION MANUAL

AMF-MARKER MEDIUM MM



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GENERAL INSTRUCTIONS

This installation manual will assist you in becoming familiar with your new product. For that reason, we recommend that you read the documentation carefully and follow all instructions.

If you require additional information, we would ask you to contact our Technical Service.

THIS MANUAL

Please consider this installation manual as an important constituent part of the delivered system. It should be well taken care of during the entire time the system is in use.

A copy of this installation manual must be made available to the installation, operating and maintenance personnel.

Please ensure that all additional documents delivered are integrated into this manual. If you transfer your system to a third party, please also pass on this manual.

SAFEKEEPING OF THE MANUAL

This manual must always be handled with care.

It is not permitted to tear out pages or make changes.

Please keep these documents protected from heat and humidity.

Andreas Maier GmbH & Co. KG reserves the right to replace parts of the instructions contained herein at any time in the course of product improvement, or if construction or commercial changes so demand, without immediately providing a new edition.

Andreas Maier GmbH & Co. KG, as the originator of this manual, hereby prohibits any reproduction, either in whole or in part, and disclosure of this manual to third parties without its written consent. Any modification of the product requires the manufacturer's consent.

0. INTRODUCTION

CAUTION:



The original configuration of this system must not be altered under any circumstances.

Using this system for purposes other than those which the manufacturer intended can damage the system or harm the operator. The manufacturer's consent must be obtained before working on materials other than those described in these instructions.

Symbols used



Machining processes, which represent a risk and which can cause injuries or harm to health, if they are not properly performed.



Machining processes that may be performed only by qualified specialist personnel. The possibility of residual risks cannot be ruled out.

0.1 Operating personnel

As already mentioned above, certain operations must be performed exclusively by qualified or trained personnel. The following standard features are used to describe the qualification level:

Qualified personnel possess the technical knowledge and/or the operating experience required for detecting and preventing potential hazards (engineers and technicians).

Trained personnel are adequately instructed and/or supervised by qualified persons to enable potential hazards to be detected and prevented (personnel familiar with operation or maintenance). They must have the following qualifications:

1. They must be trained and authorised to safely operate the product, to feed or interrupt the operating pressure, and to label the equipment in accordance with the standard safety provisions.
2. They must be trained in the correct procedure for maintaining and using the safety equipment in accordance with the standard safety provisions.

Before commissioning the equipment, the customer is obliged to make sure:

1. That the personnel have received, read, and understood the installation manual;
2. That the personnel observe the given instructions.

0.2 Trained personnel

MACHINE OPERATORS: One or more persons who, on the basis of appropriate instructions from the owner of the product described here, are assigned and authorised to operate this product and the equipment connected to it. Another prerequisite is the complete knowledge and unrestricted understanding of the contents of this manual.

0.3 Individual protective equipment



The personnel mentioned in the paragraph above must wear the appropriate protective clothing, which is required for use of the machine, on which the system described here is installed.

Safety shoes are required; the need to wear hearing protection, safety helmets and safety goggles must be judged by the operating company.

The wearing of loose clothing, which could become caught in the moving machine components, is not permitted.

0.4 General safety instructions



The following regulations and recommendations correspond to the applicable legal regulations and are largely based on the observance of such safety regulations.

ANDREAS MAIER GMBH & CO. KG is not liable for any harm to persons or property, which can be traced back to a disregard for the applicable safety regulations and/or the instructions contained in this manual. The latest version of the installation manual shall apply.

All operators concerned are therefore urged to follow and apply the instructions below, and to strictly comply with the applicable accident protection regulations of the country, where the system is installed and used.

All ordinary and extraordinary maintenance steps must be undertaken with the pressure supply cut off.

Prior to connecting the pressure, it is necessary to check whether the operating pressure matches the maximum permitted operating pressure.

Transport, installation, operation, as well as ordinary and extraordinary maintenance of the system described here, may only be performed by personnel with the qualifications listed in paragraphs 0.1 and 0.2.

0.5 Behaviour in emergencies



In case of emergencies, we recommend applying the procedures in the operating and maintenance manual for the machine, on which the system described here is installed.

In particular, measures must be taken so that no danger to persons or property can arise in case of a defect.

In case of fire, the extinguishing equipment provided must be used, and steps must be taken to ensure that there is no longer any operating pressure.

0.6 Restrictions on use



The system described here may be used only for the purposes described in the operating manual, and only in conjunction with the components recommended and approved by ANDREAS MAIER GMBH & CO. KG.

Permissible use of the AMF Marker: The AMF Marker is a mechanical marking system mounted onto the machine spindle by means of a tool holder. It is designed for marking workpieces and may be used only within the boundaries of its technical data. The maximum loads specified by the manufacturer must not be exceeded. All other types of use must be agreed with the manufacturer.

0.7 Type plates

A label or the type plate of the manufacturer is affixed to the system described here.



CAUTION:

Labels must not be removed under any circumstances, even if the equipment is to be resold.

Should any label be damaged or become detached, please contact ANDREAS MAIER GMBH & CO. KG to obtain a copy.

Please quote the model, which is stamped on the label, in all communication with ANDREAS MAIER GMBH & CO. KG. Disregard for the above mentioned provisions releases ANDREAS MAIER GMBH & CO. KG from any liability for damage or accidents caused thereby. In this case, the operating company is solely liable to the authorities.

1. TRANSPORT

Each AMF Marker is tested thoroughly prior to shipping. On receipt of the goods, please check the integrity of the packaging and the content (in the absence of any instructions to the contrary from ANDREAS MAIER GMBH & CO. KG), in order to ensure that the goods have not been damaged during transportation and that the shipment corresponds to the specification on the order. Please report any defects or damage immediately to ANDREAS MAIER GMBH & CO. KG and the carrier, who is liable for the transport damage.



CAUTION:

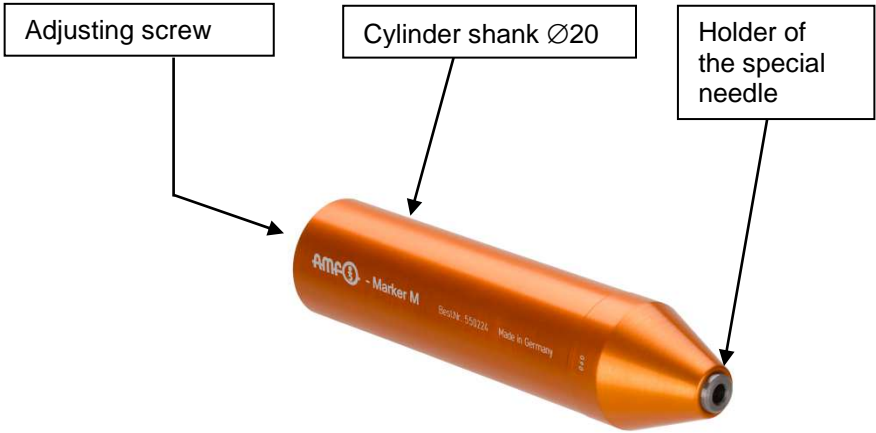
Any defects or damage must be claimed within 10 days of the receipt of the product.

2. DESCRIPTION OF THE SYSTEM

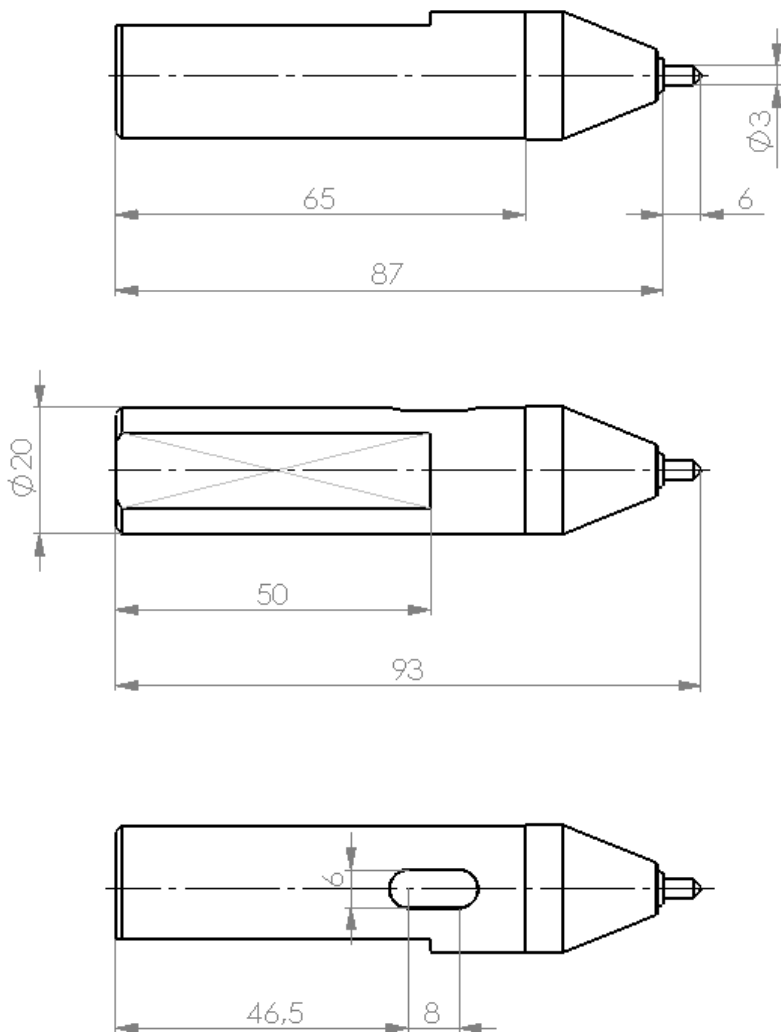
Technical data sheet:

	Unit	Marker MM
Tool fixture		Collet chuck / Weldon
Shank diameter	[mm]	20
Weight	[g]	78
Compensation of workpiece unevenness	[mm]	0 - 6
Max. spindle speed	[rpm]	8000

2.1 Design



2.2 Dimensions



2.3 Operation and instructions for use

The AMF Marker is a high quality marking tool for CNC machines that can permanently mark surfaces up to 55 HRC and level uneven surfaces up to 6 mm.

In principle, with this tool you can mark as fast as your tool machine is able to move around the contour of the marks. Permanent marking is achieved by a kind of curling, i.e. a combination of material compression and material displacement using the special needle. During rotary swaging, the material is additionally forced out for maintaining a clearer and deeper marking by turning the tool in conjunction with an eccentrically ground needle.

The "function check" function is not integrated in this marker.

The AMF Marker can be used in any CNC machine with or without automatic tool change, in software for engraving as well as on suitable robots. It is suitable for marking a diverse range of materials, from plastics to aluminium and titanium to highly-alloyed steels. This tool can be used to evenly mark finished or rough surfaces, including cast iron.

The AMF Marker MM is mounted in the tool holders with a 20 mm collet chuck or Weldon holder.

But if the tool has to be seated in a Weldon tool fixture, the following torques must be complied with:

Clamping screw M6:	1.8 Nm
Clamping screw M8:	2.3 Nm
Clamping screw M10:	2.9 Nm
Clamping screw M12:	3.5 Nm

There is a choice of 2 marking methods.

Rotary swaging - with an eccentric needle:

External cooling is recommended during the marking.

The marking speed as well as the spindle speed used can be adapted to the marking according to your own individual wishes and requirements. Select between 3 marking needles: 0.1 mm / 0.2 mm / 0.3 mm eccentricity.

Rolling - with centric needle:

External cooling is not necessary during the marking.

The maximum marking speed: Approximately maximum feed.

Select between 2 marking needles: 0.5 mm / 1 mm radius at the needle tip (R1).

2.4 Setting the marking depth

The marking depth, depending on the surface hardness, can be determined by turning the inner adjusting screw from 1-15. The higher the setting, the greater is the force and depth of the marking. We recommend starting with a setting of 5. The setting is controlled using the depth gauge of a vernier calliper. If you use an eccentric needle, the higher the eccentricity and the higher the spindle speed (or the lower the feed) chosen, the deeper is the marking.

The following rule of thumb applies for a clean text:

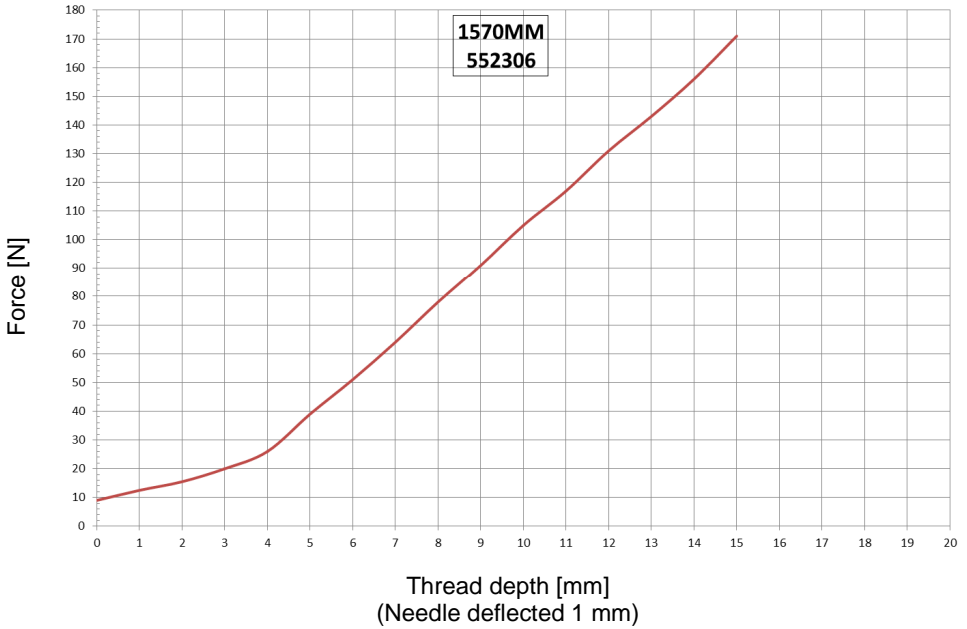
Feed (mm/min) x 10 = Spindle speed (rpm)

Because this tool has to be removed from the holder in order to be set, it is optimally suited for large-scale production.

After the first attempt, increase or decrease the setting according to your needs. The length of the AMF Marker does not change by adjusting the adjusting screw.

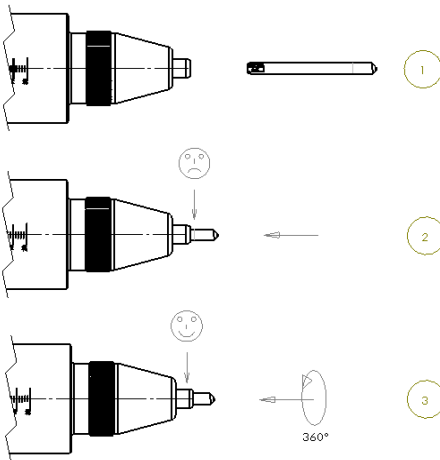
If burr accumulates on the marking line, you have selected a setting that is too high. In this case, turn the adjusting screw back slightly.

2.5 Force diagram



2.6 Special needle

The needle is made from a special steel and finished. The needle is changed by removing from the front. Use flat pliers or another suitable tool for this, if necessary. When inserting the needle again, make sure it is inserted up to the stop. For this purpose, simultaneous turning and pressing is necessary (360°) until the needle is inserted completely; the control ring of the needle must not be visible afterwards.



**CAUTION:**

Non-observance can cause the needle to break and damage the tool.

Available Marking Needles for the Marker Medium**Needles for rotary swaging:**

- MMN-90R10 Ex01 -> Radius at the needle tip 1.0 mm,
eccentricity 0.1 mm
- MMN-90R10 Ex02 -> Radius at the needle tip 1.0 mm,
eccentricity 0.2 mm
- MMN-90R10 Ex03 -> Radius at the needle tip 1.0 mm,
eccentricity 0.3 mm

Needles for stylus stamping:

- MMN-90R10 Ex00 -> Radius at the needle tip 1.0 mm,
eccentricity 0.0 mm
- MMN-90R05 Ex00 -> Radius at the needle tip 0.5 mm,
eccentricity 0.0 mm

2.7 Service life of the special needles

Experience shows that the service life of the needle is several years under normal conditions and with normal material hardness. Please note that only the special needles we produce guarantee the desired marking quality.

3. INSTALLATION

3.1 General

The AMF Marker can be inserted in holders with a 20 mm hole. Please make sure that the permitted tool length is not exceeded.



CAUTION:

The AMF Marker may only be integrated in a tool machine by qualified specialist personnel.

Follow the installation manual for the machine tool

3.2 Programming instructions

Most manufacturers of machine tool controllers, including Siemens and Heidenhain, have already integrated engraving programs. In the absence of a program, i.e. a suitable sub-routine of the controller manufacturer, we recommend that you obtain a convenient marking program, e.g. from FASTNC or 4U Computer Systeme.

If programs have already been used up until now for marking, these can also be used with the AMF Marker with minor modification.

The following modifications are recommended:

- Increase the feed to the maximum possible feed speed (in the case of rotary swaging, do not increase to max feed).
- Unlike milling tools, the plunge depth does not match the scribing depth. You should therefore program a spindle position adapted to the tool length that causes the special needle to deflect to a depth of approx. 1 to 2 mm.

3.3 Tolerances

The concentricity of the AMF Marker must be ensured, particularly if the marking takes place with spindle rotation.

The concentricity tolerance of the needle is 0.1 mm.

When using eccentric needles in conjunction with spindle speed (rotary swaging), the concentricity tolerance of the marker can be ignored.

4. MAINTENANCE

4.1 Introduction

Appropriate maintenance is important for a long service life of the system and its components under proper functional and operating conditions, and it also guarantees the required operating safety over the long term.

4.2 Safety during maintenance



CAUTION:

All maintenance activities may be performed only by ANDREAS MAIER GMBH & CO. KG.

All repair work must only be performed by ANDREAS MAIER GMBH & CO. KG.

Send the product to be maintained/repared to ANDREAS MAIER GMBH & CO. KG.

Only in this way can trouble-free functionality of the AMF Marker be guaranteed.

4.3 Daily maintenance

Visual inspection for damage

4.4 Monthly maintenance

None

5. POSSIBLE PROBLEMS AND HOW TO REMEDY THEM

The information contained in this section supports the user in identification of malfunctions that can occur during operation of the system.

With centric needle:

Malfunction	Cause	Remedy
The text is unclear or scrawly	Needle concentricity out of tolerance (only use with spindle rotation)	-Send tool in for inspection -Check concentricity of the needle -Reduce spindle speed to 0
	Needle worn	Replace needle
	Machine unable to follow the programmed contour (at full feed rate)	Retract feed slightly
Burr on the marking line	Scale setting too high	Turn back knurled screw
	Deflection depth too great during marking	Reduce needle retraction

With an eccentric needle:

Malfunction	Cause	Remedy
The text is unclear or scrawly	The selected spindle speed is too low	Increase spindle speed or decrease feed
	The needle is not properly inserted in the Marker	Insert needle into the Marker using a suitable tool by turning and pressing until the ring of the needle is no longer visible
	The selected feed is too high	Decrease feed or increase spindle speed
	Needle worn	Replace needle
	Machine unable to follow the programmed contour (at full feed rate)	Retract feed slightly
Burr on the marking line	Scale setting too high	Turn back knurled screw
	Deflection depth too great during marking	Reduce needle retraction

6. DECOMMISSIONING AND DISPOSAL

6.1 Decommissioning

If the system is no longer to be used, it must be removed from the production machine.

6.2 Placing into storage

Store the system in a dry environment at 10 °C to 55 °C.

6.3 Disposal

If the system is to be scrapped, the lubricant it contains must be completely removed and disposed of in accordance with the legal regulations applicable in the country concerned.

The remaining parts of the system should be separated according to materials and then also disposed of in accordance with the legal regulations.



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