



Installation manual **EN**

Add on clamping device

MANDO Adapt T211/T212

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1 General

1.1 Information about this manual

This manual enables safe and efficient handling of the clamping device.

The manual is a component of the clamping device and must be kept in the immediate vicinity of the clamping device where it is accessible for personnel at all times. Personnel must have carefully read and understood this manual prior to starting all tasks. The basic prerequisite for safe work is compliance with all the safety instructions and handling instructions in this manual.

Illustrations in this manual are provided for a basic understanding and may deviate from the actual model of the clamping device.

It is assumed that the reader is familiar with standard procedures, such as cleaning the mounting surfaces.

1.2 Description of variants

Two variants of the MANDO Adapt add on clamping device are presented in this manual:

- MANDO Adapt T211
- MANDO Adapt T212

If the variants differ in structure, installation, disassembly, and maintenance or fault correction, they will be described separately.

Based on the headers, sections and action steps can always be assigned to a specific variant.

1.3 Explanation of symbols

Safety instructions

Safety instructions are indicated by symbols in this operating manual. The safety instructions are introduced by signal words that express the scope of the hazard.

The safety instructions must be strictly adhered to. You must act prudently to prevent accidents, personal injury, and material damage.



DANGER

... indicates an imminent dangerous situation than can result in death or serious injury if it is not avoided.



WARNING

... indicates a possible dangerous situation that can result in death or serious injury if it is not avoided.



CAUTION

... indicates a possible dangerous situation that can result in minor or light injury if it is not avoided.



NOTE

... indicates a possible dangerous situation that can result in material damage if it is not avoided.

Tips and recommendations



... indicates useful tips and recommendations, as well as information for efficient and trouble-free operation.

1.4 Limitations of liability

All information and instructions in this operating manual have been provided under due consideration of applicable standards and regulations, the current state of technology, as well as our many years of experience.

The manufacturer assumes no liability for damage due to:

- Failure to follow the instructions in the manual
- Non-intended use
- Deployment of untrained personnel
- Unauthorized conversions
- Technical changes
- Use of non-approved spare parts

The actual scope of delivery can vary from the explanations and graphic representations provided in this manual in the case of special versions, if supplemental order options are desired, or on the basis of the latest technical changes.

The agreed obligations in the delivery contract, the general terms and conditions, as well as delivery conditions of the manufacturer, and the statutory regulations valid at the time the contract was concluded, apply.



CAUTION!

Our clamping devices are balanced with balance quality $G = 4$, in one level $n = 1$.

The data on the rotation balance refers to rotationally symmetrical workpieces.

The clamping of not rotationally symmetrical workpieces may not be clamped and/or only be clamped after consultation with the manufacturer.

Balancing bolts and balancing weights at the clamping devices may not be removed / disassembled!

1.5 Max. RPM



CAUTION!

The maximum permissible speed is marked on the product.

By the combination of a clamping device and an add on clamping device a reduction of the maximum permissible speed may be necessary.

- Of all RPMs of the groups specified, the **lowest given RPM** must always be used.

Note that the clamping force is influenced by the centrifugal force of the clamping elements.

- If necessary, adjust the machining force!

1.6 Copyright

This manual is protected by copyright and is provided exclusively for internal purposes.

Delivery of the operating manual to third parties, duplication in any form – including excerpts – as well as exploitation and/or communication of the content, are not permitted [except for internal use] without written approval from the manufacturer.

Actions to the contrary make damage compensation mandatory. We reserve the right to enforce additional claims.

1.7 Scope of delivery

1.7.1 MANDO Adapt T211

- MANDO Adapt T211
- Push-off ring
- Draw bolt
- Screws

1.7.2 MANDO Adapt T212

- MANDO Adapt T212
- Coupling rings
- Trimming sleeve
- Installation aid from mandrel size 2
- Screws

1.8 Spare parts



WARNING!

Safety risk if the wrong spare parts are used!

Incorrect or defective spare parts can cause damage, malfunction, or total failure; they can also impair safety.

- Only use manufacturer's original spare parts.

Only purchase spare parts from authorized dealers or direct from the manufacturer. Addresses are in the appendix.

1.9 Warranty terms

The warranty terms are included in the manufacturer's terms and conditions.

2 Safety

This section provides an overview of all the important safety aspects for optimal protection of personnel, as well as for safe and trouble-free operation.

2.1 Responsibility of the customer

The product is used in industrial applications. Consequently the owner of the product is subject to legal industrial safety obligations.

In addition to the safety instruction in this manual, generally valid safety and accident protection guidelines, and environmental protection guidelines as well as the machines' manual must be adhered to and complied with for the area of implementation of the device.

Note in particular that the status scans of the machine must be adjusted to the respective product.



DANGER!

Risk of injury due to thrown out parts!

Incorrect machine settings may lead to the throwing out of parts.

- The status scans the machine must be set to the respective clamping device.
- Regularly check the status scans of the machine, see chapter »Maintenance Schedule«.
- If the end position can not be reached the product may no longer be used.
- Observe the operating instructions of the machine.



WARNING!

Risk of injury!

Declining operating force, for example by declining energy supply, may cause serious personal injury.

- The product may be used only on machines where it is ensured, that during use, the operating force does not drop.



WARNING!

Risk of injury!

An incorrect media supply [hydraulic, pneumatic], e.g. by damaged or missing seals or pipes, can cause serious personal injury.

- Hydraulic and / or pneumatic tubes must be secured by the machine by check valves and a permanent pressure monitoring!

2.2 Personnel requirements



WARNING!

Danger of injury due to insufficient qualification!

Improper handling of the add on clamping devices can cause serious injury or material damage.

- Only have activities performed by personnel who are qualified to perform these activities.

The following qualifications are cited in the operating manual for the various activity areas.

■ **Specialized personnel**

are personnel who due to their specialized training, skills, and experience, as well as knowledge of the applicable regulations, are capable of executing the tasks assigned to them and of recognizing and avoiding possible hazards on their own.

■ **Hydraulic specialist**

The hydraulic specialist has been trained for the particular task area in which he is active and is familiar with the relevant standards and regulations. Due to his specialized training and experience the hydraulic specialist can perform tasks on hydraulic equipment and recognize and avoid possible dangers on his own.

Only persons from whom it can be expected that they reliably execute their work are considered as personnel. Persons whose capability to react is impaired, for instance through drugs, alcohol, or medication, are not approved.

- Comply with age-specific and job-specific regulations that are applicable at the installation site when selecting personnel.

2.3 Intended use

The add on clamping device is designed for installation in a machine tool according to CE compliant. Within the machine tool the add on clamping device is designed exclusively as set-up to a clamping device for quick conversion from external to internal clamping.

The add on clamping device should only be mounted, operated, maintained, and cleaned by instructed, specialized personnel.

Intended use also includes compliance with all the instructions in this manual.

Any use that extends beyond the intended use, or any other use of the add on clamping devices considered to be misuse and can cause dangerous situations.



WARNING!

Danger due to misuse!

Misuse of the add on clamping device can cause dangerous situations.

Particularly refrain from the following uses of the add on clamping device:

- Adaptation of the MANDO Adapt on clamping devices other than SPANNTOP nova, TOPlus, TOROK, MANOK plus, and HYDROK.
- Use in machines other than machine tools.
- Use in machine tools with technical data other than that specified on the add on clamping device.

Claims of any type due to damage arising from non-intended use are excluded.

2.4 Personal protective equipment

Wearing of personal protective equipment is required to minimize health hazards when working with the device.

- Always wear the protective equipment necessary for the respective task when working with the device.
- Follow the instructions that have been posted in the work area.

Always wear



For all tasks always wear:

Protective work clothing

is tight-fitting work clothing with low resistance to tearing, with tight sleeves, and without projecting parts. It is primarily used to protect against entanglement by moving machine parts.

Do not wear rings, chains, or other jewelry.



Safety footwear

for protection against heavy falling parts and slipping on slippery substrates.

For special tasks wear



Special protective equipment is required when executing special tasks. Separate reference is made to this equipment in the specific sections of this manual. This special protective equipment is explained below:

Hard hat

to protect against falling and flying parts and materials.



Protective goggles

to protect eyes from flying parts and liquid splashes.



Protective gloves

to protect hands from friction, abrasion, puncture wounds, or deeper injuries, as well as from contact with hot surfaces.

2.5 Special dangers

In the following section residual risks are cited that occur due to installation of the add on clamping device in a machine tool. In each case the residual risks that have been determined based on a risk analysis of the machine must be specified by the customer.

- Follow the safety instructions listed here and the warnings in the other sections of this manual to reduce health hazards and to avoid dangerous situations.

Moving parts



WARNING!

Danger of injury due to moving parts!

Rotating parts of the add on clamping device can cause serious injuries.

- Do not reach into moving parts or handle moving parts during operation.
- Pay attention to the clearance of moving parts.
- Do not open covers when the device is in operation.
- Be aware of after-run time:
Prior to opening the covers ensure that all parts have come to a standstill.
- Wear tight-fitting protective work clothing in the danger zone.



CAUTION!

Risk of injury!

A special use-dependent or job-based design can result in variations in the clamping strokes and thus the clamping force.

- The notes on the associated clamping situations or product drawing must always be observed

2.6 Further warnings



WARNING!

Risk of injury!

Never start rotating the clamping device without a clamped workpiece.

- For operation any available clamping position must be clamped with a suitable workpiece.



WARNING!

Risk of injury!

Never reach for the clamping device while the spindle is rotating. Before starting to work on the mandrel, make sure the machine spindle cannot be put in motion.



WARNING!

Risk of injury!

Falling down of the clamping device or its parts can cause severe bruises and fractures.

The dead weight of the clamping device or its parts can lead to high physical stress.



WARNING!

Risk of injury!

By repeated reworking or wear and tear of the clamping surfaces sharp edges and burrs may appear and lead to severe cutting damages.



WARNING!

Damage of clamping device!

The clamping device may be released exclusively in the standing condition!



WARNING!

Risk of injury!

By operating the clamping device without changing parts [clamping head, segmented clamping bushing, workpiece end-stop] there is an increased risk of crushing injuries by the stroke of the moving components of the clamping device.



NOTE!

Material damage due to use of the wrong cleaning agent/cleaner!

Seals and clamping elements can be damaged due to use of the wrong seals and clamping elements.

- Do not use any solvents that contain ester or polar solvents for cleaning purposes.



CAUTION!

Risk of injury!

Bending into the machine work area can cause severe head injuries.

Unexpected start up of the tool spindle can cause severe injury.

- Make sure that the system is pressure-free and that a restart of the machine can be excluded!



NOTE!

Malfunction of the safety device by incorrect machine setting!

By a missing or incorrect setting of the machine-side limit switch the clamping control can become invalid.

- In interfaces where no constructive idle stroke is taken into consideration, it must be ensured that the machine-side limit switch control is adjusted to the stroke of the clamping device.

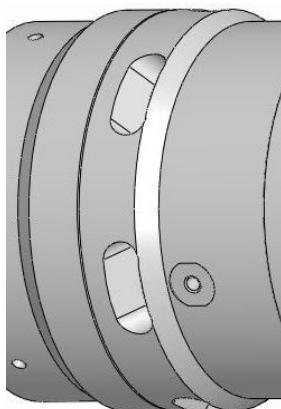


Fig. 1



CAUTION!

Risk of injury through slots and / or holes!

The clamping device can be provided with large slots and/or holes [e.g. chips drain holes].

- **Never** reach into the slots and/or holes, either during assembly / disassembly as well as during machining.



WARNING!

Risk of injury by falling components!

During the assembly / disassembly components may fall down and cause serious injury and property damage due to its weight and its size.

- For assembly / disassembly two people are required.
- To safely lift the clamping device or its individual parts always use a crane and suitable transport belts as well as a suitable assembling aid.
- Make sure that a moving or falling of the clamping device is excluded.
- For transporting with transport trolley place the clamping device and its individual parts on a non-slip pad.



NOTE!

In the product screws can be installed which are secured with sealing wax.

- The screws secured with sealing wax must not be opened.



Risk of injury!

Extra long clamping devices may be unstable during machining.

- For the clamping of long workpieces always use a tailstock and a clamping guard!



WARNING!

Risk of injury due to uncontrolled machine movement!

With manual loading of the clamping device with a workpiece uncontrolled machine movement can cause serious injury.

- The manual loading must be done in the jog mode!

2.7 Clamping force

The achieved clamping force can vary due to the maintenance condition of the clamping device [state of lubrication and degree of contamination] [see chapter »Maintenance«].

The clamping force must be checked at regular intervals. This requires the use of static clamping force measuring devices.



CAUTION!

Damages due to excessive draw and compressive force!

An excessive draw force and/or compressive force may damage the clamping device.

- The max. draw force and compressive force may not be exceeded.

2.8 Screws

Moving parts



WARNING!

Danger of injury due to screws and stud screws being accelerated out of the device!!

Screws and stud screws radially attached to the product can be accelerated out of the device and cause severe injuries.

- At the product radially mounted screws and stud screws which were loosened for assembly and maintenance must be re-tightened with the correct tightening torque!
The tightening torque is given at the product itself, near the screw or threaded pin, and/or given in chapter »Bolt torque«.
- All screws or stud screws that are not marked with a tightening torque specification are tightened with the prescribed tightening torque and locked [medium-strength bonding] in the factory and should only be unscrewed after consultation with the manufacturer. If in doubt you must contact the manufacturer immediately do determine the subsequent procedure.

2.9 Functionality



NOTICE!

With high contamination of the clamping device the functionality is no longer guaranteed.

- The cleaning and maintenance intervals must be observed.

2.10 Environmental protection



NOTE!

Environmental hazard due to incorrect handling!

Incorrect handling of environmentally hazardous substances, particularly improper disposal, can cause significant environmental damage.

- Always comply with the instructions cited below
- If environmentally harmful substances should inadvertently get into the environment, initiate suitable measures immediately. If in doubt notify the responsible municipal authority about the damage.

The following environmentally harmful substances are used:

Lubricants

Lubricants like greases and oils can contain toxic substances. Ensure that they do not get into the environment.

The device must be disposed of by a specialized disposal company.

To achieve trouble-free operational performance of the clamping device only use HAINBUCH lubricants. See the appendix for reference addresses.

3 Technical data

3.1 General information

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]
XXS	8-13	T212	SE mini pull-back	52	Ø 119 × 124,3	7000	3	42	10
				65	Ø 129 × 127,5	6000	4		
				100	Ø 183 × 143,5	5000	9		
			SE combi pull-back + modular	52	Ø 125 × 124,5	7000	3		
				65	Ø 145 × 127,5	6000	4		
				100	Ø 215 × 139	5000	10		
			RD	42	Ø 125 × 125	7000	3		
				52	Ø 125 × 125				
				65	Ø 145 × 127,5	6000	4		
				80	Ø 160 × 124,5	5500	5		
				100	Ø 215 × 139	5000	10		

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]					
XS	13-19	T212	SE mini pull-back	52	Ø 119 × 125	7000	3	42	10					
				65	Ø 129 × 128	6000	4							
				100	Ø 183 × 139,5		9							
			SE combi pull-back + modular	52	Ø 145 × 125	7000	3							
				65	Ø 145 × 128	6000	4							
				100	Ø 145 × 139,5	5000	10							
			RD	42	Ø 125 × 122	7000	3							
				52	Ø 125 × 125									
				65	Ø 145 × 135,5	6000	4							
				80	Ø 160 × 125	5500	5							
				100	Ø 215 × 140	5000	10							
			S	16-21	T212	SE mini pull-back	52			Ø 119 × 127	7000	3	42	10
							65			Ø 129 × 130	6000	4		
							100			Ø 183 × 141,5		9		
						SE combi pull-back + modular	52			Ø 125 × 127	7000	3		
65	Ø 145 × 130	6000					4							
100	Ø 215 × 141,5	5000					10							
RD	42	Ø 125 × 124				7000	3							
	52	Ø 125 × 127												
	65	Ø 145 × 130				6000	4							
	80	Ø 160 × 127				5500	5							
	100	Ø 215 × 141,5				5000	10							

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]
0	20-28	T211	SE mini pull-back	52	Ø 119 × 109	7000	2	42	10
				65	Ø 129 × 119	6000	3		
				100	Ø 183 × 129	5000	8		
			SE combi pull-back + modular	52	Ø 125 × 94	7000	3		
				65	Ø 144 × 119	6000	4		
				100	Ø 215 × 94	5000	9		
			RD	42	Ø 125 × 106	7000	4		
					Ø 125 × 109				
				65	Ø 144 × 119	6000	5		
				80	Ø 160 × 119	5500	6		
				100	Ø 215 × 129	5000	11		
			T212	SE mini pull-back	52	Ø 119 × 138	7000		
		65			Ø 129 × 141	6000	4		
		100			Ø 183 × 152,5	5000	9		
		SE combi pull-back + modular		52	Ø 125 × 138	7000	4		
				65	Ø 145 × 141	6000	5		
				100	Ø 215 × 157	5000	11		
		RD		42	Ø 125 × 135	7000	4		
					Ø 125 × 138				
				65	Ø 145 × 141,5	6000	5		
				80	Ø 160 × 138	5500	6		
				100	Ø 215 × 142,5	5000	11		

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]
1	26-38	T211	SE mini pull-back	52	Ø 119 × 119	7000	2,5	42	10
				65	Ø 129 × 129	6000	3,5		
				100	Ø 183 × 139	5000	8		
			SE combi pull-back + modular	52	Ø 125 × 119	7000	3		
				65	Ø 144 × 139	6000	4		
				100	Ø 215 × 139	5000	9		
			RD	42	Ø 125 × 116	7000	4		
				52	Ø 125 × 119				
				65	Ø 144 × 129	6000	5		
				80	Ø 160 × 129	5500	6		
				100	Ø 215 × 139	5000	11		
			T212	SE mini pull-back	52	Ø 119 × 139	7000		
		65			Ø 129 × 147,5	6000	4		
		100			Ø 183 × 158,5	5000	10		
		SE combi pull-back + modular		52	Ø 125 × 139	7000	4		
				65	Ø 145 × 147,5	6000	5		
				100	Ø 215 × 158,5	5000	11		
		RD		42	Ø 125 × 136	7000	4		
				52	Ø 125 × 139				
				65	Ø 145 × 147,5	6000	5		
				80	Ø 160 × 146,5	5500	6		
				100	Ø 215 × 158,5	5000	11		

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant	Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F _{rad} max. [kN]	Draw force F _{ax} max. [kN]	
2	36-54	T211	SE mini pull-back	52	Ø 119 × 139	7000	2,5	85	20
				65	Ø 129 × 149	6000	4		
				100	Ø 183 × 159	5000	9		
			SE combi pull-back + modular	52	Ø 125 × 139	7000	3		
				65	Ø 144 × 159	6000	4		
				100	Ø 215 × 159	5000	10		
			RD	42	Ø 125 × 136	7000	2,5		
				52	Ø 125 × 139		3		
				65	Ø 144 × 149	6000	5		
				80	Ø 160 × 149	5500	6		
				100	Ø 215 × 159	5000	11		
			T212	SE mini pull-back	52	Ø 119 × 155	7000		
		65			Ø 129 × 163,5	6000	5		
		100			Ø 183 × 174,5	5000	10		
		SE combi pull-back + modular		52	Ø 125 × 155	7000	4		
				65	Ø 145 × 163,5	6000	5		
				100	Ø 215 × 174,5	5000	11		
		RD		42	Ø 125 × 152	7000	2,5		
				52	Ø 125 × 155		3		
				65	Ø 145 × 163,5	6000	6		
				80	Ø 160 × 160	5500			
				100	Ø 215 × 174,5	5000	11		

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]
3	50-80	T211	SE mini pull-back	65	Ø 129 × 159	6000	4,5	105	25
				100	Ø 183 × 169	5000	9		
			SE combi pull-back + modular	65	Ø 144 × 159	6000	5		
				100	Ø 215 × 169	5000	10		
			RD	65	Ø 144 × 95	6000	5		
				80	Ø 160 × 95	5500	6		
		100		Ø 215 × 95	5000	11			
		T212	SE mini pull-back	65	Ø 129 × 170,5	6000	6		
				100	Ø 183 × 181,5	5000	11		
			SE combi pull-back + modular	65	Ø 145 × 173	6000	6		
				100	Ø 215 × 181,5	5000	12		
			RD	65	Ø 145 × 170,5	6000	5		
				80	Ø 160 × 168,5	5500	6		
		100		Ø 215 × 181,5	5000	11			

MANDO Adapt T211/T212 – Technical data

Size	clamping range [mm]	Variant		Adaptation size	Dimension [Ø x length in mm]	max. RPM [RPM]	Weight add on clamping device	Clamping force F_{rad} max. [kN]	Draw force F_{ax} max. [kN]
4	70-120	T211	SE mini pull-back	65	Ø 129 × 174	6000	5,5	150	35
				100	Ø 183 × 184	5000	10		
			SE combi pull-back + modular	65	Ø 144 × 174	6000	5		
				100	Ø 215 × 184	5000	11		
			RD	65	Ø 144 × 110	6000	6		
				80	Ø 160 × 110	5500	8		
	100	Ø 215 × 110		5000	11				
	69-100	T212	SE mini pull-back	65	Ø 138 × 180,5	6000	7,5		
				100	Ø 183 × 191,5	5000	12,5		
			SE combi pull-back + modular	65	Ø 145 × 180,5	6000	8		
				100	Ø 215 × 191,5	5000	14		
			RD	65	Ø 145 × 180,5	6000	8		
				80	Ø 160 × 176	5500	9		
	100	Ø 215 × 191,5		5000	14				



WARNING!

Risk of injury!

Using false technical data can lead to serious personal injury and property damage.

- The technical data [label on the product, assembly drawing] must be observed and may not be modified by the operator!

3.2 Operating conditions

Environment	Specification	Value	Unit
	Temperature range	15 - 70	°C

3.3 Power specifications



NOTE!

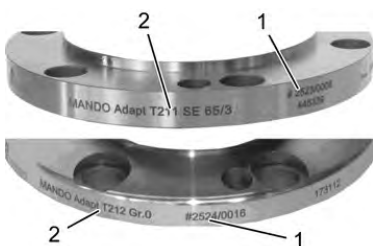
Material damage if the power specifications do not agree!

If the power specifications of add on clamping device and machine do not agree, severe damage extending to total damage can occur to add on clamping device and machine.

- Only operate add on clamping devices in machines with the same power specifications.

Information on maximum clamping force and draw-tube force is provided on the add on clamping device.

3.4 Type designation



The type designation is on the add on clamping device and includes the following information:

- 1 ID no. [marked with the # symbol]
- 2 Type designation and size

Fig. 2

4 Structure and function

4.1 Overview MANDO Adapt T211 RD

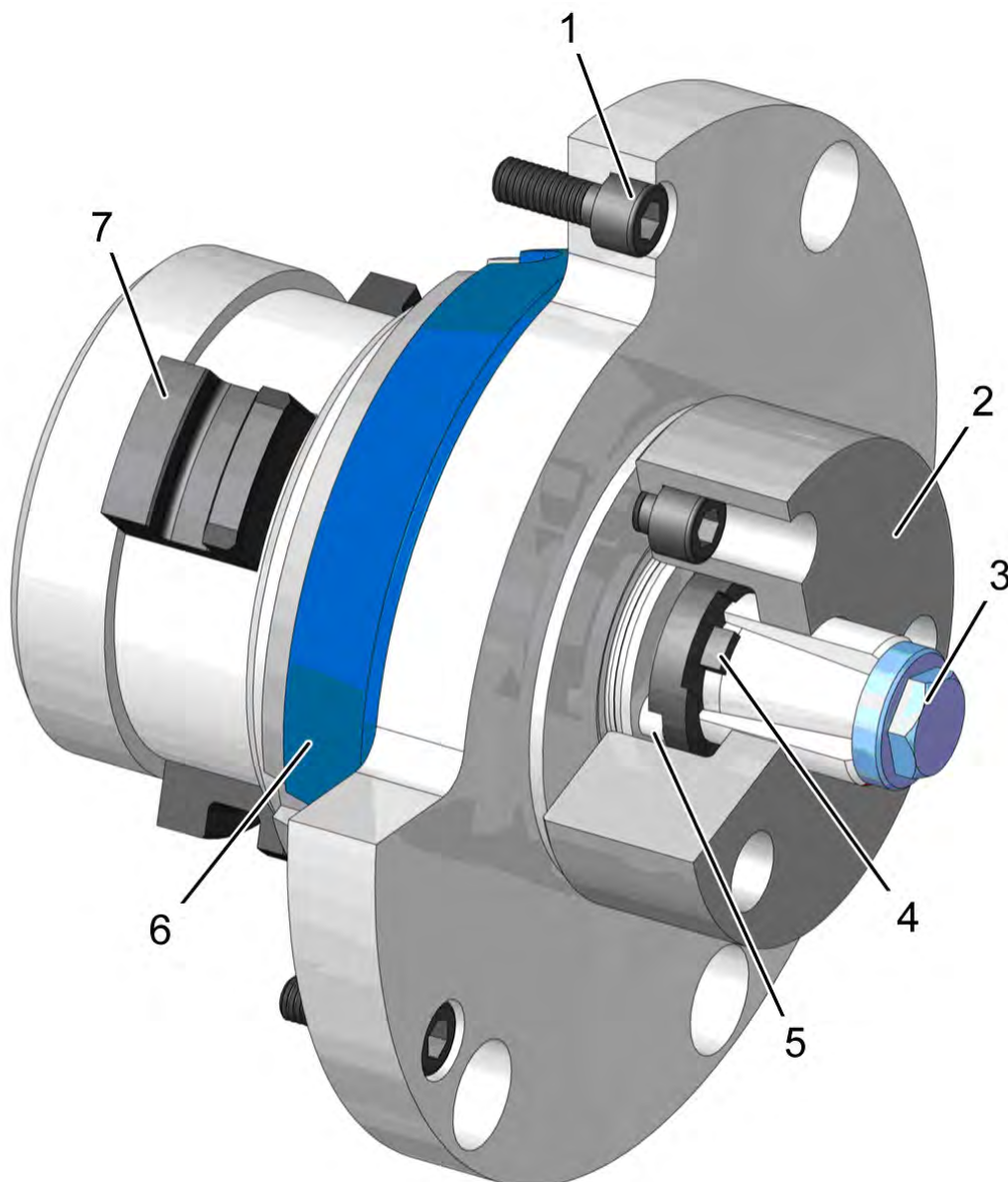


Fig. 3

- | | |
|-------------------------------|-----------------|
| 1. Mounting screws [3 pieces] | 5. Push-off pin |
| 2. Standard end-stop | 6. CENTREX |
| 3. Draw bolt | 7. Coupling |
| 4. Torsional safety | |

4.2 Overview MANDO Adapt T211 SE

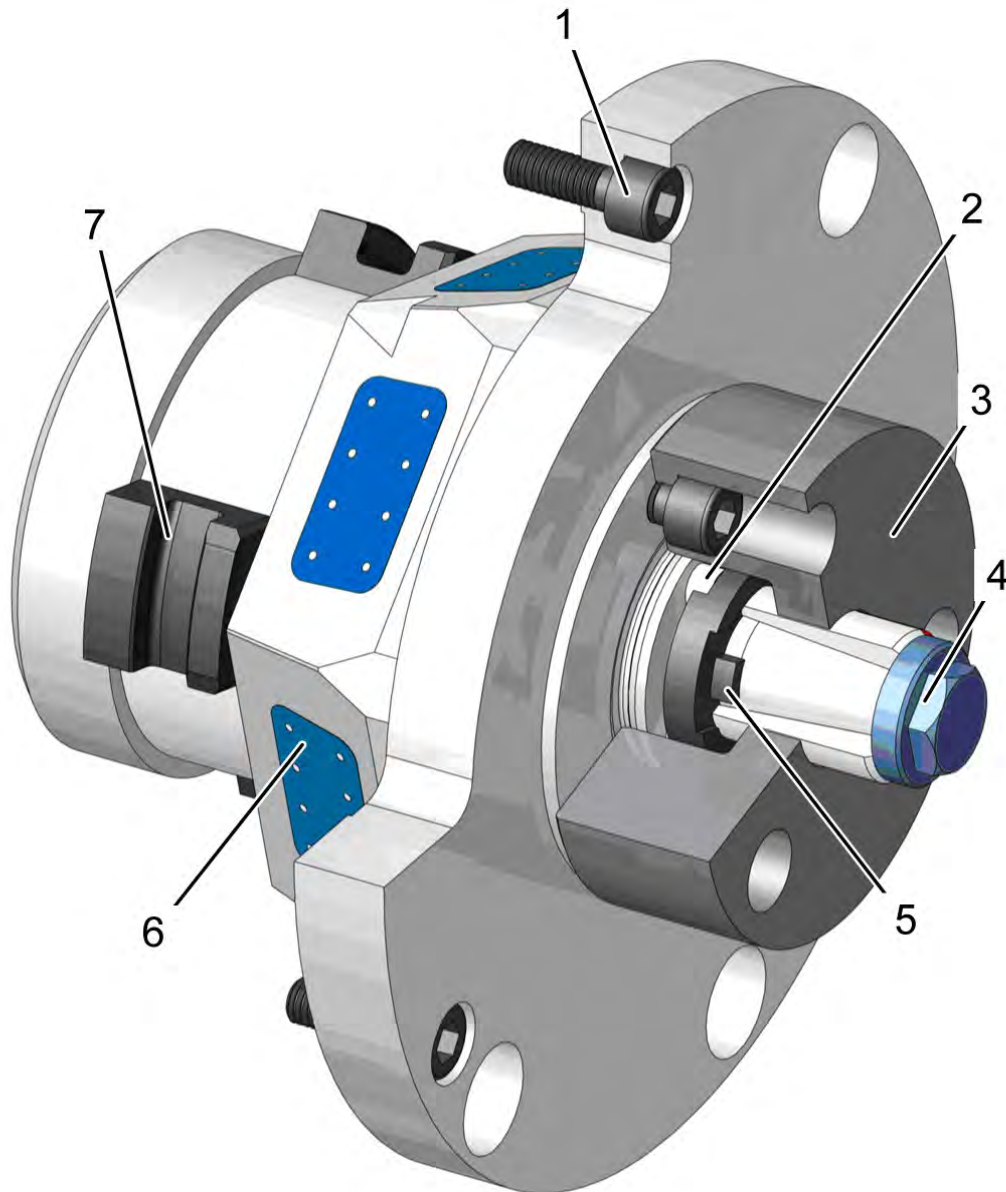


Fig. 4

- | | |
|-------------------------------|---------------------|
| 1. Mounting screws [3 pieces] | 5. Torsional safety |
| 2. Push-off pin | 6. CENTREX |
| 3. Standard end-stop | 7. Coupling |
| 4. Draw bolt | |

4.3 Overview MANDO Adapt T212 RD

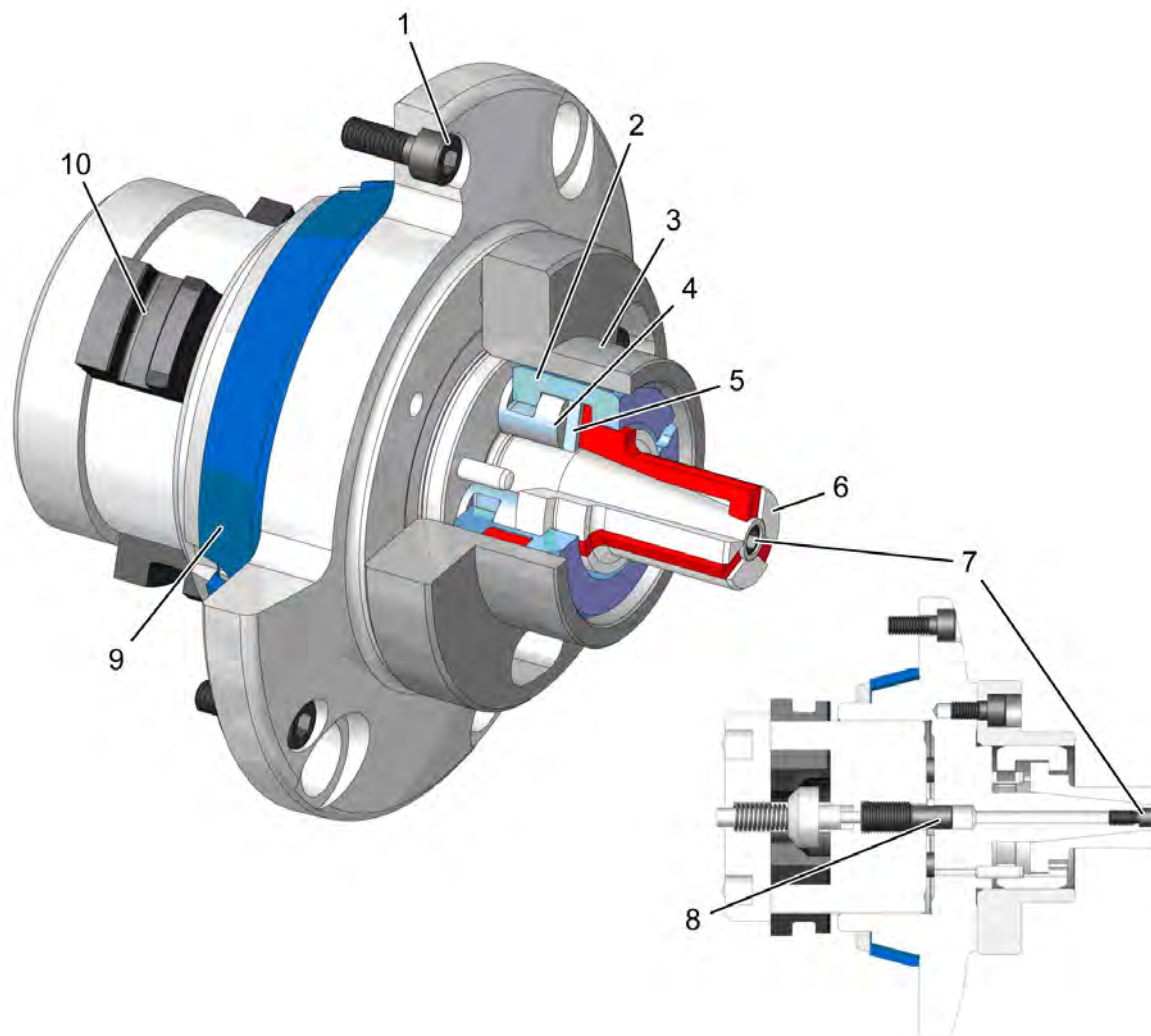


Fig. 5

- | | |
|---------------------------------------|-------------------------------|
| 1. Mounting screws [3 pieces] | 6. Segmented clamping bushing |
| 2. Coupling rings | 7. Stud screw |
| 3. Support ring for machining to size | 8. Locking screw |
| 4. Coupling carrier | 9. CENTREX |
| 5. Torsional safety | 10. Coupling |

4.4 Overview MANDO Adapt T212 SE

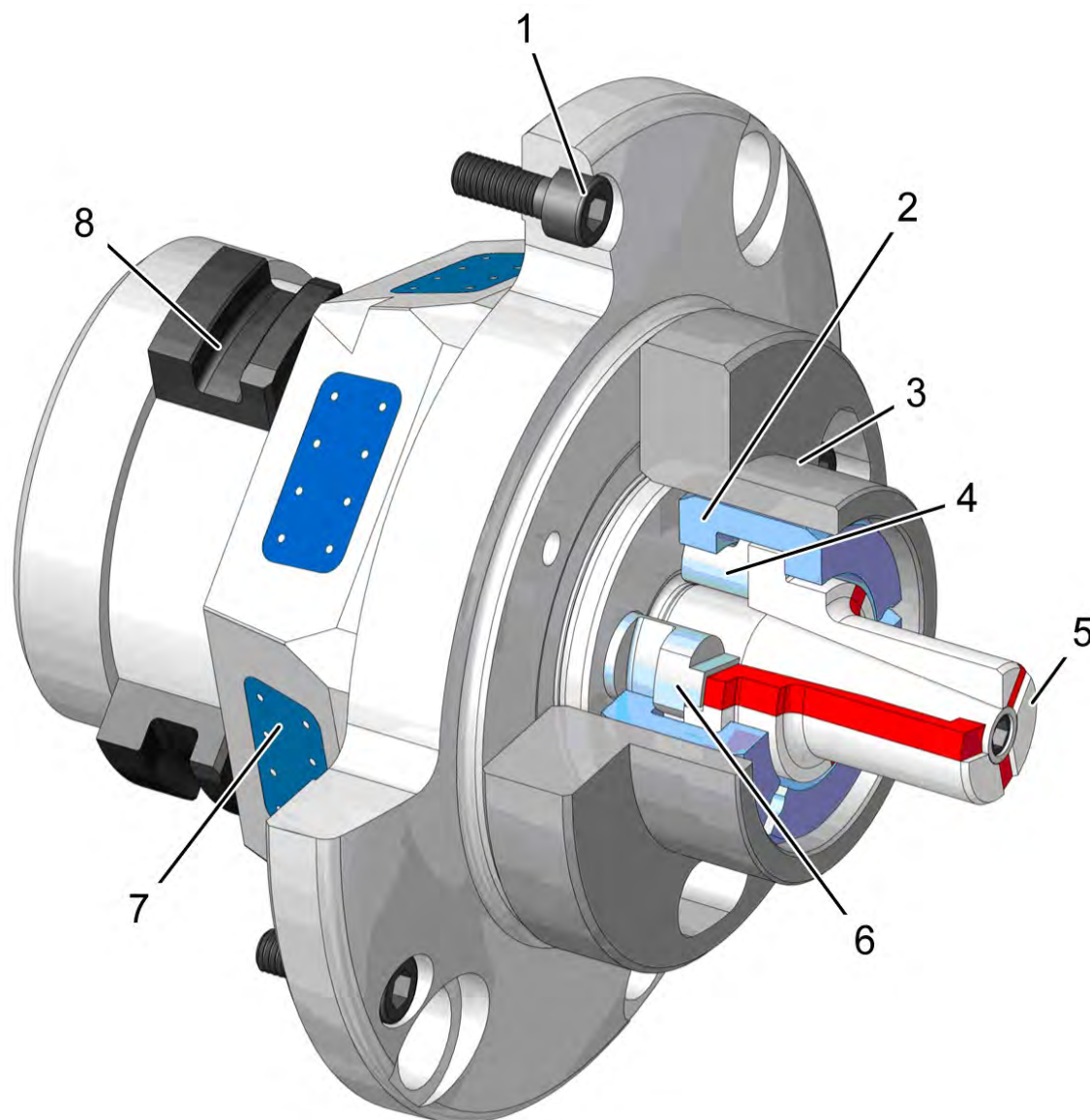


Fig. 6

- | | |
|---------------------------------------|--|
| 1. Mounting screws [3 pieces] | 5. Segmented clamping bushing |
| 2. Coupling rings | 6. Locking screw of the coupling carrier |
| 3. Support ring for machining to size | 7. CENTREX |
| 4. Coupling carrier | 8. Coupling |

4.5 Brief description MANDO Adapt T211/T212

The MANDO Adapt is intended as an optional adaptation mandrel for implementation of I.D. clamping for our clamping devices.

Through use of the MANDO Adapt it is not required to disassemble the respective basic clamping device. Also the MANDO Adapt does not require additional concentricity alignment.

Our CENTREX interface guarantees repeatability of less than 0.003 mm.

The segmented clamping bushings used are characterized by »parallel workpiece clamping«, high accuracy with uniformly minimal deformation of the workpiece, as well as fast set-up.

When clamping, due to the effects of the axial draw components, the workpiece is pulled tight onto the fixed end-stop. Thus extremely stable clamping of the workpiece is achieved even with the shortest clamping lengths.

An additional benefit is the tremendous rigidity of the entire clamping device, which greatly increases the tool life.

MANDO Adapt T211/ T212 can be adapted in the following clamping devices:

- SPANNTOP nova
- TOPlus
- TOROK
- MANOK plus
- HYDROK

4.6 Optional Accessories

The accessories described here are not included in the scope of delivery.

Specially developed segmented clamping bushings match to the respective maximum RPM are available for each clamping device. Trouble-free and precise function of HAINBUCH clamping devices is only ensured when using original HAINBUCH segmented clamping bushings.

Lubricating grease and grease gun are required for cleaning and preservation of the clamping device. The lubricating grease is also specially matched for protec-

tion of the vulcanized segments of the segmented clamping bushings and increase their service life and elasticity by a significant factor.

4.6.1 Segmented clamping bushing

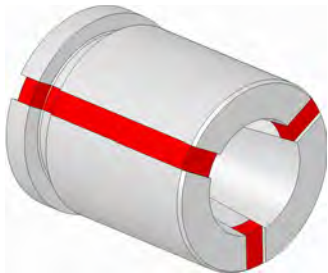


Fig. 7

The segmented clamping bushing is offered with a clamping diameter manufactured according to the customers needs.

4.6.2 Workpiece end-stop

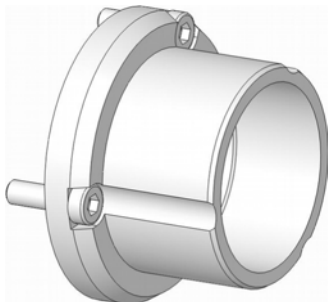


Fig. 8

The workpiece end-stop is manufactured with a end-stop dimension according to the customers request. In combination with the segmented clamping bushing and the segmented mandrel it provides a functional unit.

4.6.3 Grease



Fig. 9

The universal grease for chuck and mandrel lubrication is supplied in a 1000g can. The order number for the universal grease is 2085/0003; it can be ordered from HAINBUCH.

4.6.4 Grease gun



Fig. 10

The grease gun is filled with universal grease, which is pressed into the clamping device. The grease gun has a pointed mouthpiece. The order number for the grease gun is 2086/0004; it can be ordered from HAINBUCH.

5 Transporting, packaging and storing

5.1 Safety instructions for transporting

Improper transportation



NOTE!

Material damage due to improper transportation!

If the add on clamping device is transported improperly, material damage extending to total failure of the add on clamping device can occur.

- Always transport the add on clamping device with the utmost caution.
- Do not let the add on clamping device fall or expose it to other strong vibration.



Transport!

- For transport always use a suitable clamping means / crane.
- Make sure that a rolling / falling of the clamping device is not possible.

5.2 Symbols on the packaging



Fragile

Identifies packages with fragile or sensitive contents. Handle the packed goods with care; do not allow them to fall, and do not subject them to impact.



Protect from moisture

Keep packed goods dry and protected against moisture.

5.3 Transport inspection

Check delivery immediately upon receipt to ensure that delivery is complete and to identify any transport damage.

Proceed as follows if there is apparent external damage:

- Do not accept the delivery, or only accept it with reservation.
- Note the extent of transport damage on the transport documents or on the transport company's deliv-

ery ticket.

- Submit a complaint.



Report any defect as soon as it is detected. Claims for damage compensation can only be enforced during the applicable periods for giving notice of lack of conformity.

5.4 Unpacking and inner-company transport



Usually the clamping device is packed vertically.

For transporting with transport trolley the clamping device must be positioned in standing condition. Make sure that a non-slip pad has been laid.

All tools and accessories which are not in scope of delivery are marked as optional in the operating instructions.

- Two people are required for this task.
 1. Use a crane to carefully lift the clamping device out of the transport packaging and put it down on a stable, level substrate.
 2. Prevent the clamping device against rolling away.

5.5 Packaging

About the packaging

Individual packages are packed according to the expected transport conditions. Environmentally-friendly materials have been used exclusively for the packaging.

Packaging should protect the specific components from transport damage, corrosion, and other damage until installation. Therefore do not destroy the packaging, remove it just before installation.



The packed goods are sealed in foil airtight and packed in cartons. See the »Technical Data« section for the specific weight of the respective sizes.

Handling packaging materials

Dispose of packaging materials in accordance with the respectively valid statutory regulations and local guidelines.



NOTE!

Improper disposal causes environmental damage!

Packaging materials are valuable raw materials and in many cases they can be reused, or they can be effectively treated and recycled.

- Dispose of packaging materials in an environmentally responsible manner.
- Comply with locally applicable disposal guidelines. If necessary commission a specialized company to dispose of packaging.

5.6 Storing



Under certain circumstances instructions for storage and subsequent storage are affixed to the packages that extend beyond the requirements cited here. Comply with these instructions accordingly.

Storage of packages

Only store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free location
- Do not expose to aggressive media
- Protect from direct sunlight
- Avoid mechanical vibration
- Storage temperature: 15 to 35 °C
- Relative humidity: max. 60 %
- For storage periods longer than 3 months:
 - Check the general condition of all parts and the packaging at regular intervals.
 - Touch up or re-apply anti-corrosion agents as needed

Subsequent storage of the adaption clamping device

Only re-store the add on clamping device under the following conditions:

- Thoroughly clean the add on clamping device prior to subsequent storage [see section »Cleaning«]
- Thoroughly oil and grease the add on clamping device [see section »Cleaning«].
- Store the add on clamping device in airtight foil

6 Assembly



WARNING!

During the initial installation of the clamping device severe injuries may occur.

- The initial installation must be done only by qualified personnel.
- All screws remaining in the clamping must be tightened firmly.
- All tools and keys must be removed after installation.

6.1 Pre-consideration

- Screws are tightened according to the size of the screw and the general torque.
To avoid axis-parallel warpage under load and to get stiffness turn in the screws evenly.
- To avoid precision error clean the screw joint surfaces and also the mating surfaces, see »Maintenance«.
The ex works wetting of the plate surfaces and the clamping element is only corrosion protection. It's not functionally lubricated.
- The insertion of lubricant is provided only on the mechanical surfaces. Pay attention to the instructions for lubricants in the chapter »Maintenance«.
- Avoid too much lubricant on the bearing surface, as this can cause face runout.
- Seal rings [e.g. o-ring, quad-ring seal] and sealing surfaces must be lubricated.
Note the information in the chapter »Maintenance«.
- Note that the function surfaces [plate surface, mating surface, cone surface and seal surface] may not be damaged.



CAUTION!

Wear safety shoes during the assembly and maintenance work.

Make sure that the starting of the spindle is impossible.



WARNING

Risk of injury due to stored energy!

The clamping device can be designed with disc springs. These disc springs are under permanent tension! The release of the stored energy can cause injuries!

- By loosening the corresponding screws they have to be operated continuously alternately to reduce the clamping pressure to a minimum!
- Particularly cautious approach is required!
- For cleaning and maintenance disassemble the clamping device from the machine!
- Always wear personal protective equipment!

6.2 Preparations

The total weight of the add on clamping devices depends on the size and can be as much as 20 kg.

Depending on the weight, to safely lift the add on clamping device out of the package and position it in the machine it must be hooked into a crane.



WARNING!

Danger of injury due to falling components!

When mounting components can fall and cause severe injury and material damage.

- Two people are required for this task.

6.2.1 Preparing the machine for the assembly of the MANDO Adapt



Before assembling the MANDO Adapt the base end-stop of the clamping device has to be disassembled.

- Special tools required:
 - Allen wrench
 - Changing fixture

1. Remove the assembled clamping head [1] by using the changing fixture [2].

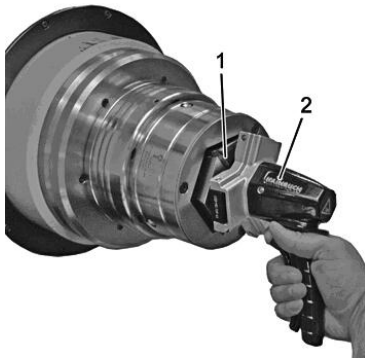


Fig. 11

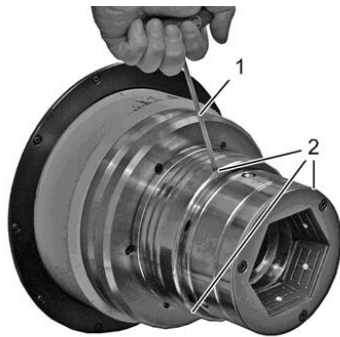


Fig. 12

2. Loosen the three clamping screws [2] at the circumference of the clamping device by using an allen wrench [1].



Fig. 13

3. Remove the base end-stop [1].

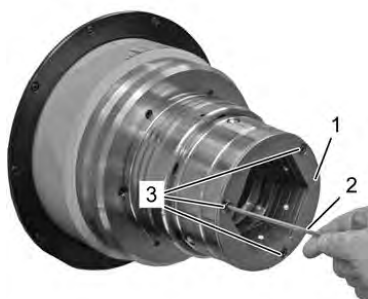


Fig. 14

4. Loosen the three countersunk screws [3] at the sheet metal [1] by using an allen wrench [2].
5. Remove the sheet metal [1].

6.2.2 Preparing the clamping device for reception of the MANDO Adapt



Fig. 15

The MANDO Adapt is designed for installation in

- SPANNTOP [nova] combi pull-back
- SPANNTOP [nova] modular
- SPANNTOP mini pull-back
- TOPlus combi pull-back
- TOPlus mini pull-back

The achievable concentricity of the MANDO Adapt depends primarily on the condition of the clamping cone and the flat contact surface of the clamping element reception of the chuck.



NOTE!

Make sure that the clamping device, especially the clamping cone and the flat contact surface, are cleaned and in good condition!

- If the surfaces in the chuck are already damaged, it is recommended to replace the clamping element reception.
- A possibly mounted base end-stop in the chuck has to be removed.

6.2.3 Preparation of the clamping device SPANNTOP mini for the reception of the MANDO Adapt

For the assembly of the MANDO Adapt T211/T212 on a clamping device SPANNTOP mini, in addition the assembly of a special adaptation ring is required.

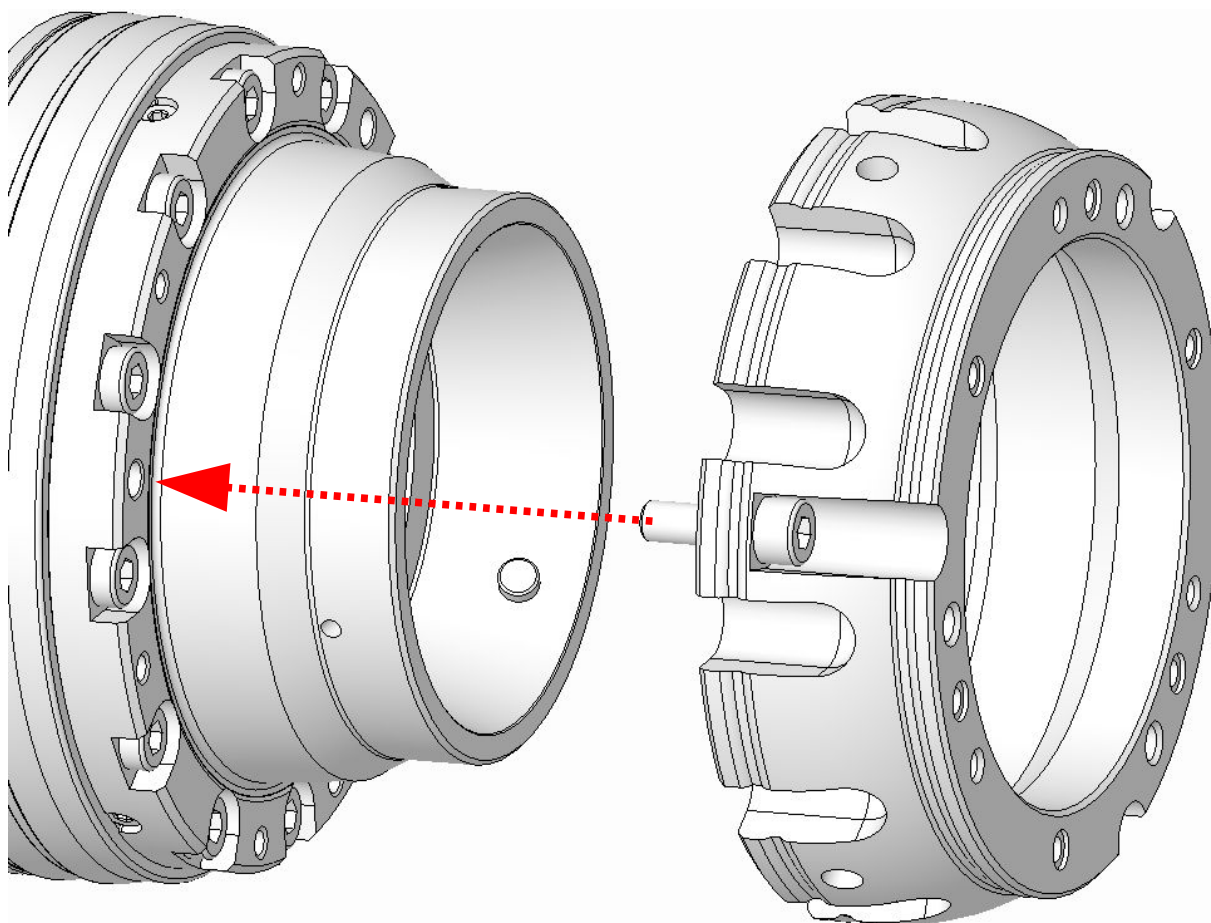


Fig. 16



Positioning!

The adaptation ring is assembled to the SPANNTOP mini by 3 screws. Therefore a special bolt hole circle is intended.

- Put the adaptation ring [option] onto the clamping device SPANNTOP mini.
- Screw in the corresponding cylindrical screws and tighten them firmly with the required tightening torque.

The SPANNTOP is prepared for the reception of the MANDO Adapt T211/T212.

6.2.4 Preparation of the add on clamping device MANDO Adapt T211



Fig. 17

1. Unscrew and remove the draw bolt [1] by hand.



Fig. 18

2. Remove the push-off ring [1].
3. Clean the MANDO Adapt T211 of fouling with a soft, lint-free cloth.

6.2.5 Preparation of the add on clamping device MANDO Adapt T212

- Special tools required:
 - Allen wrench SW 4

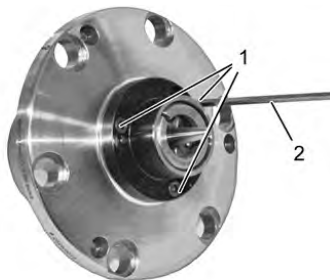


Fig. 19

1. Unscrew the three hex screws [1] on the support sleeve with SW4 allen wrench [2].
2. Turn the support sleeve [1] counter-clockwise and take it off.

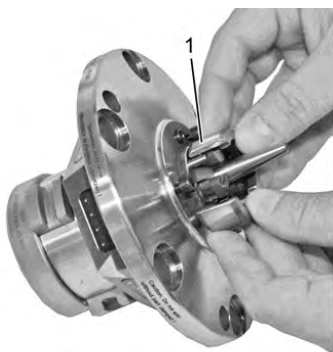


Fig. 20

3. Remove the coupling receptacles [1].

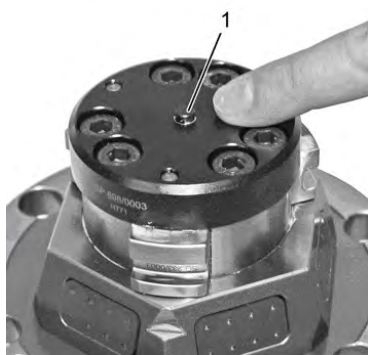


Fig. 21

4. Check whether the locking pin [Fig. 16/1] protrudes on the rear.



If the locking pin protrudes, unscrew the locking screw [1] until the locking pin no longer protrudes.

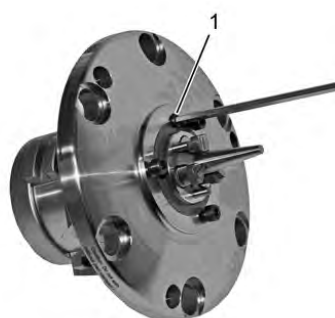


Fig. 22



For the smaller sizes the locking screw is on the side [1], for the larger sizes it is in the middle and inside [2].



Fig. 23



For the larger sizes in addition the screw plug [1] must be removed beforehand in order to reach the inside locking screw [Fig.22/2] with an allen wrench.

5. Clean the MANDO Adapt T212 of fouling with a soft, lint-free cloth.

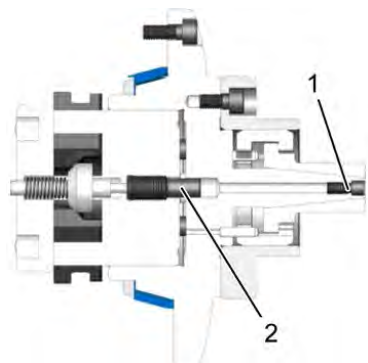


Fig. 24

6.3 Assembling the add on clamping device



WARNING!

Danger of injury due to unexpected start-up of the tool spindle!

Unexpected start up of the tool spindle can cause severe injury.

- Prior to switching on automatic mode close all protective doors or hoods that are present on the machine tool.
- Unscrew all ring nuts from the add on clamping device and remove them from the interior of the machine.
- Only run the machine tool in set-up mode or jog mode.



WARNING!

Risk of injury!

By operating the clamping device without changing parts [clamping head, segmented clamping bushing, workpiece end-stops ...] there is an increased risk of crushing injuries by the stroke of the moving components of the clamping device.

By uncontrolled discharge of the clamping process [e.g. by incorrect installation of the energy supply or faulty programming] there is an increased danger.



WARNING!

Risk of injury!

Bending in the working area of the machine can cause severe head injuries!



CAUTION!

Risk of injury!

Unexpected start up of the tool spindle can cause severe injury.

- Make sure that the system is pressure-free and that a restart of the machine can be excluded!



Risk of injury!

Contamination of the mechanism can influence/reduce the stroke, thus the clamping force is reduced and thus, the workpiece is not properly tightened and can be thrown out.

- Clean the product regularly [see chapter »Maintenance and service«].



Risk of injury!

If the clamping pressure is too low clamped workpiece may be thrown out.

If the clamping pressure is too high severe damages of the components of the clamping device may occur the throwing out of the workpiece.

- Before operation set the operation pressure back to operation level.
- The operating pressure should be checked and adjusted regularly!
- The dimension of the workpieces should be checked regularly [clamping- \emptyset]!



Transport!

- For transport always use a suitable clamping means / crane.
- Make sure that a rolling / falling of the clamping device is not possible.



WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work area when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

6.3.1 Assembling the MANDO Adapt T211



WARNING!

Danger of injury due to vertical hanging spindle!

Bending into the machine work area when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically hanging spindle always use a suitable mounting aid.

- Two people are required for this task
 - Special tools required:
 - Allen wrench SW5 [M6] for size 42–80
 - Allen wrench SW6 [M7] for size 100
1. Put the machine tool in set up mode.
 2. Remove all tools from the interior of the machine.
 3. Set the clamping pressure of the machine tool on the lowest setting.
 4. Move the drawtube of the machine tool into the front stop position.
 5. Insert MANDO Adapt T211 [2] in the clamping device [1]. In this process, ensure that the threaded holes [Fig. 20/3] are flush with the threaded holes on the clamping device [arrow].

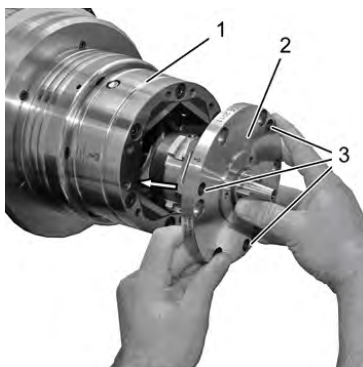


Fig. 25



If the threaded holes for the MANDO Adapt T211 SE are not flush with the threaded holes, remove MANDO Adapt T211 SE again and turn one »segment« further.

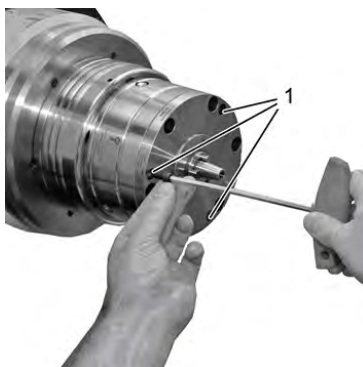


Fig. 26

6. Insert the screws [Fig. 21/1] and tighten with the allen wrench.

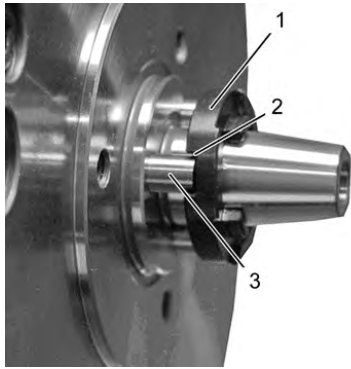


Fig. 27

7. Fit on the push-off ring [1] and slide it on in the direction of the clamping device. In this process ensure that the apertures on the push-off ring [2] engage above the push-off pins [3].

6.3.2 Assembling MANDO Adapt T212



WARNING!

Danger of injury due to vertical hanging spindle!

Bending into the machine work area when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
 - For assembly on a vertically hanging spindle always use a suitable mounting aid.
- Two people may be required for this task.
 - Special tools required:
 - Allen wrench AF5 [M6] for size [chuck] 42 - 80
 - Allen wrench AF6 [M7] for size [chuck] 100
 1. Put the machine tool in set up mode.
 2. Remove all tools from the interior of the machine.
 3. Set the clamping pressure of the machine tool on the lowest setting.
 4. Move the drawtube of the machine tool into the front stop position.
 5. Insert MANDO Adapt T212 [2] in the clamping device [1]. In this process, ensure that the threaded holes [3] are flush with the threaded holes on the clamping device [arrow].



Fig. 28



If the threaded holes for the MANDO Adapt T212 SE are not flush with the threaded holes, remove MANDO Adapt T212 SE again and turn one »segment« further.

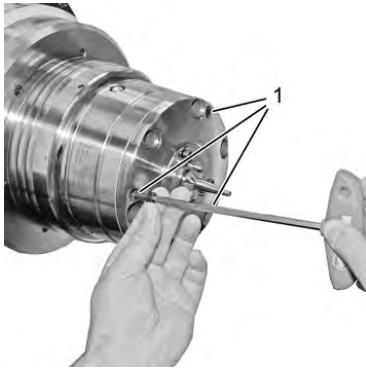


Fig. 29

6. Insert the screws [1] and tighten with the allen wrench.

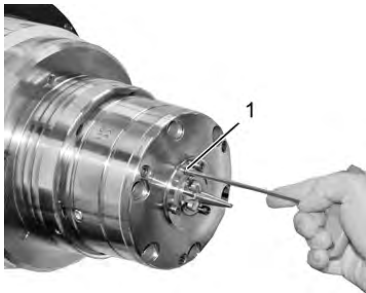


Fig. 30

7. Tighten the locking screw [1] with the allen wrench.

Size	Wrench size
XS to X	AF 4 [M5] [locking screw, exterior]
0	AF 4 [M5] [locking screw, exterior]
	AF 3 [M4] [locking screw, interior]
1 to 4	AF 5 [M6] [locking screw, exterior]
	AF 4 [M5] [locking screw, interior]

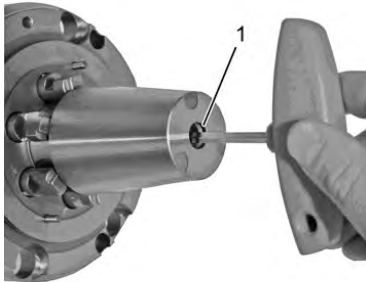


Fig. 31

i For the larger sizes, in addition the screw plug [1] must be removed beforehand in order to reach the inside locking screw [2] with an allen wrench.

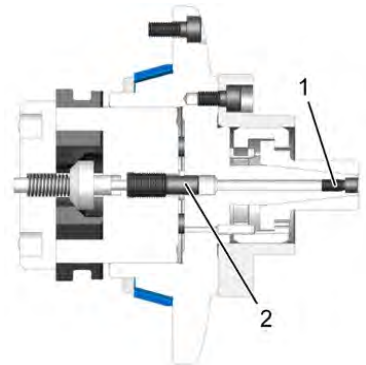


Fig. 32

6.3.3 Mount the workpiece specific workpiece end-stop and segmented clamping bushing on the MANDO Adapt T211



WARNING!

Danger of injury due to improper assembly of the segmented clamping bushing and of the workpiece end-stop

Improper assembly can result in dangerous situations due to components being accelerated out of the machine.

- Prior to switching on automatic mode close all protective doors or hoods that are present on the machine tool.
- Remove all loose screws and tools from the interior of the machine.
- Only run the machine tool in set-up mode or jog mode.
- Never switch on the machine tool without a workpiece being clamped in the machine, or never allow a tool spindle to rotate without a workpiece being clamped in the machine.

- Special tools required:
 - Jaw wrench AF13
 - Allen wrench SW4

1. Slide on the segmented clamping bushing [1].



The groove of the segmented clamping bushing must engage over the torsional safety of the push-off ring.

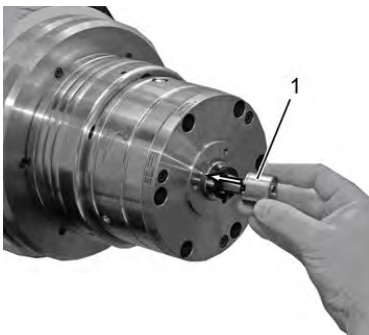


Fig. 33

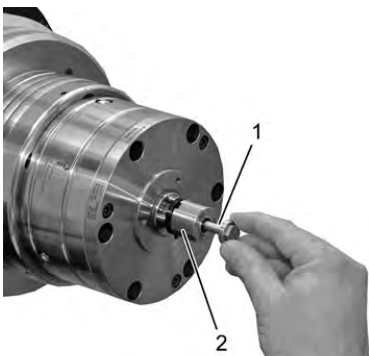


Fig. 34

2. Screw the draw bolt [1] through the segmented clamping bushing [2] into the mandrel taper.

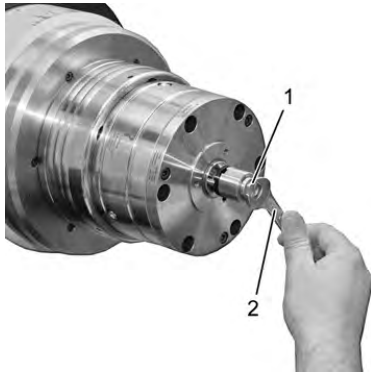


Fig. 35

3. Tighten the draw bolt [1] hand tight with jaw wrench AF13 [2].

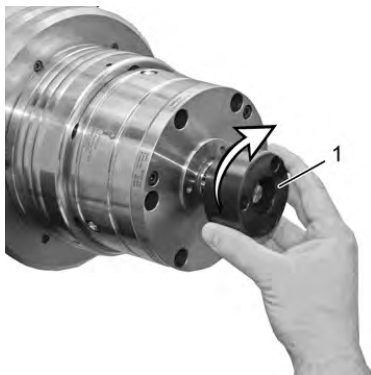


Fig. 36

4. Fit on workpiece specific workpiece end-stop [1] and lock by turning it counter-clockwise.



The workpiece specific workpiece end-stop is not part of the shipment and must be machined from HAINBUCH GmbH blanks in accordance with the on-site requirements.



Fig. 37

5. Tighten workpiece specific workpiece end-stop [1] with hex screws [3] and allen wrench AF4 [2] in accordance with the specified torque.

6.3.4 Mount the workpiece specific workpiece end-stop and segmented clamping bushing on the MANDO Adapt T212



WARNING!

Danger of injury due to improper assembly of the segmented clamping bushing and of the workpiece end-stop

Improper assembly can result in dangerous situations due to components being accelerated out of the machine.

- Prior to switching on automatic mode close all protective doors or hoods that are present on the machine tool.
- Remove all loose screws and tools from the interior of the machine.
- Only run the machine tool in set-up mode or jog mode.
- Never switch on the machine tool without a workpiece being clamped in the machine, or never allow a tool spindle to rotate without a workpiece being clamped in the machine.

- Special tools required:
 - Allen wrench SW4

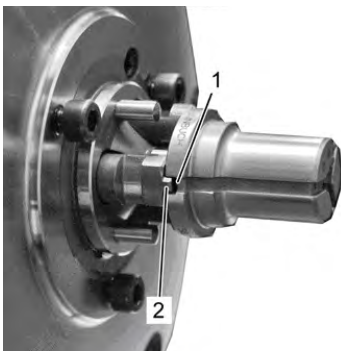


Fig. 38

1. Slide on the segmented clamping bushing [1]. In this process, ensure that the pins [2] on the receptacle are flush with the respective groove [1] on the segmented clamping bushing.



Fig. 39

2. With the palms of your hands press on the segmented clamping bushing [1] until it rests on the add on clamping device.

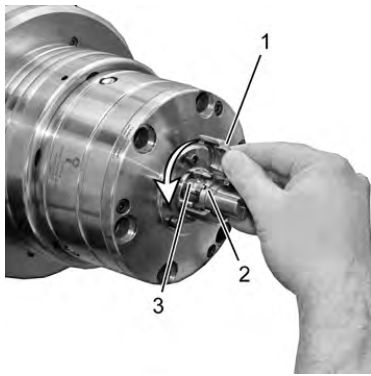


Fig. 40

3. Close the coupling receptacles [1] over the collar of the segmented clamping bushing [2] and groove of the coupling carrier [Fig. 35/3] and keep them closed.



Fig. 41

4. Fit on the workpiece specific workpiece end-stop [1] and slide it over the coupling receptacles [2].



The workpiece specific workpiece end-stop is not part of the shipment and must be machined from HAINBUCH GmbH blanks in accordance with the on-site requirements.



Fig. 42

5. Lock the workpiece specific workpiece end-stop [1] by turning it counter-clockwise.



Fig. 43

6. Tighten workpiece specific workpiece end-stop [2] with hex screws [1] and allen wrench AF4 in accordance with the specified torque.



WARNING!

Risk of injury!

Tools and gages that are thrown out of the machine can cause injury.

- Remove all tools and gages from the working area of the machine before the machine is started up.



Risk of injury!

If the clamping pressure is too low clamped workpiece may be thrown out.

If the clamping pressure is too high severe damages of the components of the clamping device may occur the throwing out of the workpiece.

- Before operation set the operation pressure back to operation level.
- The operating pressure should be checked and adjusted regularly!



WARNING!

Slipping danger due to escaping hydraulic fluid!

Escaping (sprayed out) hydraulic oil can cause serious injuries.

- Make sure that all o-rings/seals for the hydraulic / pneumatic interfaces are available and in undamaged condition.
- Make sure that the clamping device is empty and leakage of hydraulic fluid is avoided.

6.4 Workpiece



WARNING!

Risk of injury due to thrown out parts!

During clamping of the workpiece and the processing parts can be thrown and cause severe injuries and property damage.

- Check the clamping diameter of the workpiece.
- Tighten only workpieces that meet the dimensional requirements.
- For clamping very long workpieces use in addition a tailstock / a steady rest for support.
- Do not exceed the maximum permissible clamping force.
- Make sure that the applied clamping force is set correctly [neither too high nor too low].



CAUTION

Risk of injury!

When placing the workpiece:

- Make sure that the hands / fingers may not be clamped between the flange and the workpiece!

6.5 Tests



NOTE!

Material damage due to damaged add on clamping device!

A damaged, incomplete, or unbalanced add on clamping device can significantly damage or even destroy the machine tool and the workpiece.

- Only use complete and properly assembled add on clamping devices.
- If in doubt contact the manufacturer.

Ensure the following points prior to each installation and start-up of the add on clamping device:

- The add on clamping device must be undamaged.
- All cylindrical screws of the add on clamping device must be present and tightened with the proper tightening torque.
- The set RPM of the machine tool should not exceed the maximum permissible speed of the adaption clamping device; see chapter »Max. RPM«.
- The maximum drawtube force specified on the perimeter of the add on clamping device must not be exceeded.
- The clamping pressure of the machine is sufficiently high to clamp the workpiece securely.
Of all the specified draw forces and pressure forces the lowest values are always to be used.
- All assembly tools must be removed from the interior of the machine.
- Add on clamping device and workpiece must be compatible – check the clamping diameter regularly.
- The workpiece is clamped by a sufficient clamping force.

6.6 Control of the stroke position



WARNING!

Crushing danger from moving parts!

Crushing danger from moving parts during controlling the stroke position!

Gaps, caused while controlling the stroke position, can cause severe injury.

- Only do the controlling of the stroke position with assembled changing parts.
- Only run the machine in set-up mode or jog mode.
- Do not reach into moving parts or handle moving parts during operation.
- Note the gap dimensions of moving parts.
- Wearing of gloves / [PSA] is required!

6.7 Activities after production is concluded

1. Move the clamping device into unclamped position.
2. Switch off the machine tool and safeguard it from being switched on again.
3. Open the protective door or hood.
4. Clean the clamping device and a possibly mounted add on clamping device and adapter of chips and production residues using a soft, lint-free cloth and oil them lightly.
5. Close the protective door or hood.

7 Disassembly

If there is a break in production that lasts longer than 3 days, or if the machine will be changed over for other workpieces, the adaptation clamping device must be disassembled and properly stored in accordance with the manufacturer's specifications [see the section, »Transportation, packaging, storage«].

Prior to disassembling:

- Put the machine in set up mode.
- Remove fuels and auxiliary materials, as well as residual processing materials and dispose of these items in an environmentally-responsible manner.

7.1 Safety

Safeguarding against restart



DANGER!

Life-threatening danger if restarted without authorization!

When disassembling there is danger of the energy supply being switched on inadvertently. This poses a life-threatening hazard for persons in the danger zone.

- Prior to starting the tasks switch off all energy supplies and safeguard them from being switched on again.



WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work area when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.



WARNING

Risk of injury due to stored energy!

The clamping device can be designed with disc springs. These disc springs are under permanent tension! The release of the stored energy can cause injuries!

- By loosening the corresponding screws they have to be operated continuously alternately to reduce the clamping pressure to a minimum!
- Particularly cautious approach is required!
- For cleaning and maintenance disassemble the clamping device from the machine!
- Always wear personal protective equipment!



Transport!

- For transport always use a suitable clamping means / crane.
- Make sure that a rolling / falling of the clamping device is not possible.

7.2 Disassembling MANDO Adapt T211



WARNING!

Danger of injury due to vertical hanging spindle!

Bending into the machine work area when disassembling overhead can cause severe head injuries.

- Secure components prior to overhead disassembly.
- For disassembly on a vertically hanging spindle always use a suitable mounting aid.

Special tools required:

- Allen wrench AF4
- Jaw wrench AF13

1. Put the machine tool in set up mode.
2. Loosen three screws [3] on the workpiece specific base end-stop [1] with the allen wrench [2].



Fig. 44



Fig. 45

3. Unlock the workpiece specific base end-stop [1] by turning it counter-clockwise and take it off.

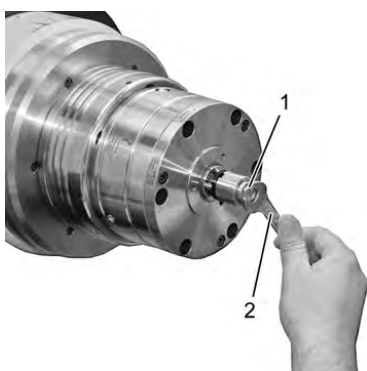


Fig. 46

4. Loosen the draw bolt [1] with jaw wrench AF13 [2] and remove it.

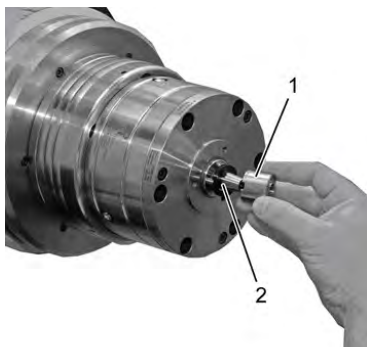


Fig. 47

5. Pull off the segmented clamping bushing [1] and push-off ring [2].

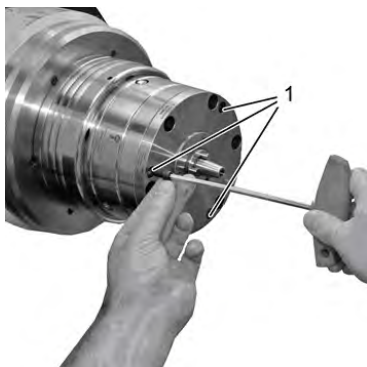


Fig. 48

6. Unscrew three screws [1] with AF 4 allen wrench.
7. Take MANDO Adapt T211 out of the clamping device.



NOTE!

If the MANDO Adapt T211 cannot be removed from the clamping device, it must be manually unlocked [section »Manually unlocking MANDO Adapt T211/T212«].

7.3 Disassembling MANDO Adapt T212



WARNING!

Danger of injury due to vertical hanging spindle!

Bending into the machine work area when disassembling overhead can cause severe head injuries.

- Secure components prior to overhead disassembly.
- For disassembly on a vertically hanging spindle always use a suitable mounting aid.

- Special tools required:
 - Allen wrench AF5 [M6] for size [chuck] 42 - 80
 - Allen wrench AF6 [M7] for size [chuck] 100
1. Put the machine tool in set up mode.
 2. Loosen three screws [1] on the workpiece specific base end-stop [2] with the allen wrench AF4.



Fig. 49



Fig. 50

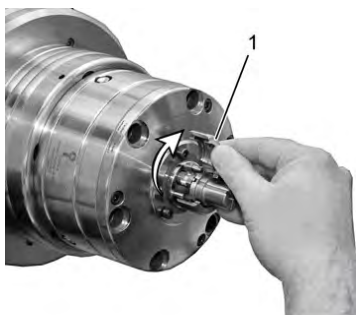


Fig. 51

3. Unlock the workpiece specific base end-stop [1] by turning it counter-clockwise and take it off.
4. Open coupling receptacles [1] and take them off.



Fig. 52

5. Pull off the segmented clamping bushing [1].

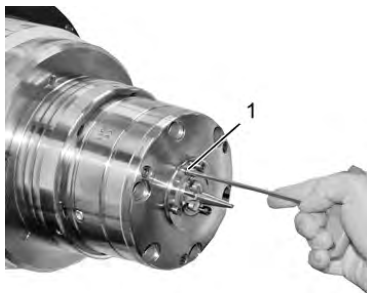


Fig. 53

6. Loosen the locking screw [1] with the allen wrench.

Size	Wrench size
XS to X	AF 4 [M5] [locking screw, exterior]
0	AF 4 [M5] [locking screw, exterior]
	AF 3 [M4] [locking screw, interior]
1 to 4	AF 5 [M6] [locking screw, exterior]
	AF 4 [M5] [locking screw, interior]

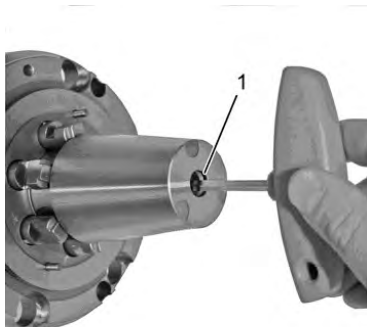


Fig. 54

7. Take MANDO Adapt T212 out of the clamping device.

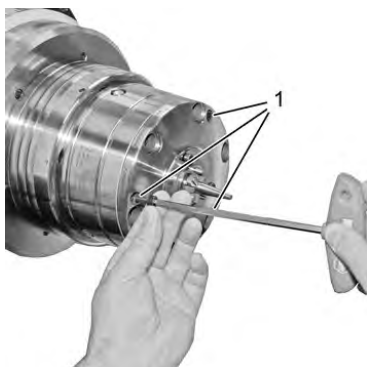


Fig. 55

8. Unscrew three screws [1] with allen wrench.

9. Take MANDO Adapt T212 out of the clamping device.



NOTE!

If the MANDO Adapt T212 cannot be removed from the clamping device, it must be manually unlocked [section »Manually unlocking MANDO Adapt T211/T212«].

7.4 Subsequent storage of the add on clamping device

The add on clamping device must be cleaned and treated with corrosion protection for subsequent storage [see section »Cleaning«].



NOTE!

The storage conditions are specified in the section »Transport, packing, and storing«.

7.5 Disposal

If a return or disposal agreement has not been concluded, then recycle disassembled components.



NOTE!

Improper disposal causes environmental damage!

Lubricants and other auxiliary materials are subject to treatment as special waste, and should only be disposed of by approved specialist companies!

Local municipal authorities or specialized disposal companies provide information on environmentally-responsible disposal.

8 Maintenance

Environmental protection

Comply with the following instructions for environmental protection when performing maintenance work:

- At all lubricating points where lubricant is applied by hand, remove escaping, used, or excess grease, and dispose of it in accordance with applicable local regulations.
- Collect used oil in suitable containers and dispose of it in accordance with applicable local regulations.

8.1 General

Cleanliness of the appropriate end-stop as well as the guidance diameters are conditions for reaching the concentricity and perpendicularity tolerances. Clean these surfaces with an appropriate cleaner.



CAUTION

Danger of injury due to improper handling of cleaners!

Improper handling of cleaners can cause health impairments.

- Always comply with the safety data sheets and guidelines provided by the manufacturer of the cleaning agent for handling/using the cleaners.



CAUTION

Danger of injury due to loss of clamping force!

Fouling of the clamping device can cause the clamping device to lose considerable clamping force.

- Always comply with the maintenance and cleaning intervals specified in this manual.
- In conjunction with the maintenance intervals, regularly check the maintenance status of the clamping device through clamping force measurements.



WARNING

Risk of injury due to stored energy!

The clamping device can be designed with disc springs. These disc springs are under permanent tension! The release of the stored energy can cause injuries!

- By loosening the corresponding screws they have to be operated continuously alternately to reduce the clamping pressure to a minimum!
- Particularly cautious approach is required!
- For cleaning and maintenance disassemble the clamping device from the machine!
- Always wear personal protective equipment!



Risk of injury!

Slipping while the lubricating with a grease gun can lead to severe cuts!

8.2 Cleaning



NOTE!

Material damage if cleaned with compressed air!

Cleaning the add on clamping device with compressed air can force metal chips into thread and grooves. This can damage or even destroy the add on clamping device.

- Never clean the add on clamping device with compressed air!
- Auxiliary material required:
 - Ester-free, non-polar cleaning agent
 - Soft, lint-free cloth
1. Clean all the components with cleaning agent and a cloth; remove all oil and grease residues.

8.3 Preserving the add on clamping device



Fig. 56

- Execution only by a specialist.
 - Special tools required:
 - Universal grease 2085/0003
 - Oil stone
 - Soft, lint-free cloth
1. Disassemble the add on clamping device [see section »Disassembly, subsequent storage, disposal«.
 - 2.hone all the bearing surfaces of the add on clamping device with an oil stone.
 3. Lightly grease all cylinder screws. Remove excess grease with a soft, lint-free cloth.
 4. Screw all cylindrical screws back into the add on clamping device and tighten them hand tight.
 5. Lightly grease all interior and outer surfaces of the add on clamping device. Remove excess grease with a soft, lint-free cloth.
 6. Pack the add on clamping device airtight in foil. Place it on a level, impact-free storage location and safeguard it from falling.

8.4 Use of lubricant

With the usage of lubricant you may only use grease that corresponds to the requirements concerning bond, pressure-stability and solubility in lubricating coolant. In addition no dirt particles may be in the grease; they cause run errors if they come in in-between two mating surfaces.

We recommend for this the following lubricant:

HAINBUCH grease

See optional Accessories

Alternatives:

Lubricant	Manufacturer	Product
Universal grease	OKS	OKS 265
	MicroGleit	GP 355
	Klüber	QNB 50
	Zeller & Gmelin	DIVINOL SD24440
	Bremer & Leguill	RIVOLTA W.A.P.
Special grease	Klüber	MICROLUBE GL 261

8.5 Maintenance schedule

Maintenance tasks are described in the sections above that are required for optimal and trouble-free operation.

If increased wear is detected during regular inspections, then reduce the required maintenance intervals according to the actual indications of wear.

Contact the manufacturer, [see the service address on the back] if you have questions concerning maintenance tasks and intervals.

Interval	Maintenance task
Daily	Visual inspection and complete cleaning in case of heavy contamination [see section »Cleaning«]
Weekly	Clean the add on clamping device [see section »Cleaning«]



For proper operation of the coolant feed a pre-filtering with duplex filter (mesh size 100 µm, PI 3754) is necessary. The duplex filter is mounted on the coolant cleaning system.

By using the clamping device in the 3-shift operating it should be maintained as follows:

- After **22 operation hours each**, the clamping element is to be taken from the clamping device and cone, coupling and clamping element (clamping element, segmented clamping bushing) are to be cleaned.

Special attention applies for the coupling area.

- A general **visual inspection**, particularly at the clamping area and the end-stop face, is to be done to ascertain early damages at the clamping device and at the rubber of the clamping element.
- During maintenance also the seals of the segmented clamping bushing must be checked for any damage, if necessary they must be replaced.
- Depending on contamination a complete cleaning of all mobile parts should be accomplished.
- Approx. **2 times annually** the clamping device is must be divided and cleaned completely.
- With storage the clamping device must be cleaned in principle by lubricating coolant and be protected from rust with preservative at the surface.

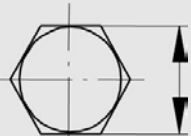
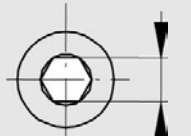
- **Daily and additional when needed** the coupling area must be cleaned.

8.6 Bolt torque

Metric ISO thread

The guide values for bolt tightening torque for achieving the highest permissible pre-tension for metric ISO thread are specified in Nm in the table.

- Total friction coefficient $\mu_{\text{tot}} = 0,12$

Diameter	 [mm]	 [mm]	Torque for screw quality 10.9 [Nm]
M 4	7	3	4
M 5	8	4	7
M 6	10	5	12
M 8	13	6	25
M 10	17	8	50
M 12	19	10	100
M 16	24	14	220
M 20	30	17	400
M 24	36	19	600

The table shows the prescribed values.

Knowledge of the applicable guidelines and configuration criteria are the prerequisites.

9 Trouble shooting

Possible fault causes and the tasks to correct these faults are described in the following section.

If faults occur more frequently, the maintenance intervals must be shortened to correspond to the actual system load.

Contact the manufacturer if there are faults that cannot be corrected by following the instructions below; see the service address on the back of this operating instruction.

9.1 Safety

Trouble shooting

The following always applies:

1. For faults that pose a direct danger for personnel and or property immediately execute the emergency-stop function of the machine.
2. Determine the cause of the fault.
3. If correction of the fault requires work in the danger zone, put the machine in set-up mode.
4. Immediately inform the responsible parties at the installation site of the fault.
5. Depending on the type of fault, either have authorized specialized personnel correct the fault, or correct it yourself.



The trouble shooting table provided below lists personnel who are authorized to correct the fault.

6. If there is a fault that was not caused by the clamping device the cause of the fault may be in the machine area. See the operating manual for the machine in this regard.

9.2 Trouble shooting table

Fault	Possible cause	Fault correction	Corrected by
Eccentric dimensional deviation on the workpiece	Concentricity error of the clamping device	Check the concentricity at the taper of the segmented mandrel, correct if necessary [see section »Assembly«].	Specialist
Clamping force is too low	Workpiece is under-dimensioned	Replace with a suitable segmented clamping bushing	Specialist
	Insufficient hydraulic pressure on the clamping cylinder	Check the machine-side hydraulic aggregate	Hydraulic specialist
	Defective clamping cylinder or blocked drawtube	Contact the machine manufacturer	Machine manufacturer
	Compression springs fatigued [at permanent tension]	Replace compression springs	Specialist
Dimensional deviation on the workpiece	Contaminated coupling area	Clean the coupling area of the clamping unit [see section »Cleaning«].	Specialist
Formal defect on the workpiece	Elastic deformation of feedstock that is subject to formal defects. After machining, the workpiece returns to its original form.	Use feedstock with fewer formal defects. Use a segmented clamping bushing with several sharp teeth in the clamping surface.	Specialist
Marks on the clamping surface	Point or linear workpiece clamping	Replace with a segmented clamping bushing that has a smoother clamping surface	Specialist
Concentricity error at the workpiece	Contaminated surfaces	Disassemble the segmented clamping bushing and clean the clamping taper [see section »Cleaning«].	Specialist

9.3 Unlock the MANDO Adapt manually



WARNING!

Danger of injury due to vertical suspended spindle!

Bending into the machine work area when assembling overhead can cause severe head injuries.

- Secure components prior to overhead assembly.
- For assembly on a vertically suspended spindle always use a suitable mounting aid.

- Two people are required for this task!
- Special tools required:
 - Allen wrench
 - Fork spanner
 - Crane/eye bolts from weight 15 kg of the clamping device

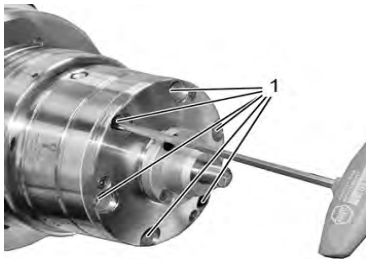


Fig. 57

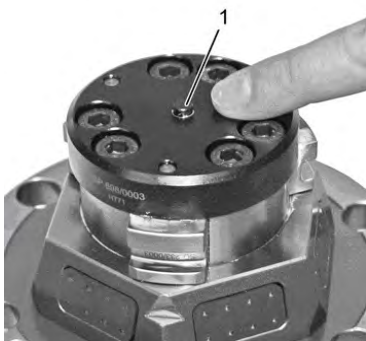


Fig. 58

1. Safeguard the clamping device against falling as specified in the assembly manual/information in section »Disassembling«.
2. Unscrew six screws on the clamping device with Allen wrench.
3. Take off and unscrew clamping device with MANDO Adapt. Place it safely and turn it to see the back side of the clamping device.
4. Press in the locking pin [1] on the rear.



NOTE!

The illustrations provided here provide a general understanding of the procedure and for identification of the locking pin. Pressing in the locking pin is executed from the rear through the clamping device that is still mounted on the MANDO Adapt.

5. Remove MANDO Adapt from the clamping device.

9.4 Start-up after corrected fault

After correcting the fault execute the following steps to start up again:

1. Reset the emergency-stop device
2. Acknowledge the fault on the machine tool controller
3. Ensure that no one is in the danger zone
4. Start the machine tool

10 Appendix

10.1 Service Hotline

Order Hotline

Quickly ordered and delivered. A call is all it takes:
+49 7144. 907-333

Schedule Hotline

Current status of your order? Just call:
+49 7144. 907-222

24h emergency call

Has there been a crash or other technical emergency?

Our experts are at your service around the clock:
+49 7144. 907-444

10.2 Representatives

The sales partners and service employees listed below are available for further consultation or support.

10.2.1 Europe

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HAINBUCH in Austria GmbH
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Pillweinstr. 16
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EC Declaration of conformity

EG-Konformitätserklärung im Sinne der EG-Richtlinie 2006/42/EG über Maschinen [Anhang II A] /

EC Declaration of conformity according to EC directive 2006/42/EC on machinery [Annex II A]

Original-Konformitätserklärung / Translation of original declaration of conformity

Hersteller / manufacturer: HAINBUCH GmbH Spannende Technik
Erdmannhäuser Straße 57
71672 Marbach
Deutschland

Diese Erklärung bezieht sich nur auf die Maschine in dem Zustand, in dem sie in Verkehr gebracht wurde; vom Endnutzer nachträglich angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt. Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Zustimmung umgebaut oder verändert wird.

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user. The declaration is no more valid, if the product is modified without agreement.

Hiermit erklären wir, dass die nachstehend beschriebene Maschine
Herewith we declare, that the machinery described below

Produktbezeichnung / **MANDO Adapt T211/T212**
product denomination:

allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.
is complying with all essential requirements of the Machinery Directive 2006/42/EC.

Angewandte harmonisierte Normen / Harmonised Standards used:

- EN ISO 12100:2011-03 Sicherheit von Maschinen – Allgemeine Gestaltungsleit-sätze
Safety of Machinery – Basic concepts
- DIN EN 1550:1997 Sicherheitsanforderungen für die Gestaltung und Konstruktion von Spannfuttern für die Werkstückaufnahme /
Safety requirements for the design and construction of work holding chucks

Bevollmächtigter für die Zusam- HAINBUCH GmbH Spannende Technik
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