

RUD TECDOS TMB

Operating Instructions Workbench with Turning Table for Prototype Tools



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1. Foreword

1.1 General information

This Foreword will help you use the RUD TECDOS TMB safely, properly and economically. By applying the information in this Instruction Manual, you will:

- increase the reliability and service life of the RUD TECDOS TMB,
- prevent hazards from arising and
- reduce repairs and system down times.

These Instructions must:

- always be available at the location at which the machine is being used
- be read and complied with by everyone who works with the RUD TECDOS TMB.

The RUD TECDOS TMB has been manufactured using the latest technological developments and the approved technical safety regulations. However, there may be a risk to life and limb for the user or a third party, or a risk of physical damage to the TECDOS TMB and other equipment, if material is not processed correctly, or if the TECDOS TMB is not used correctly.

Spare parts must meet the technical requirements defined by RUD Ketten. This is guaranteed in the case of original spare parts, as they undergo constant quality control supported by an ISO 9001-certified quality management system. Third party spare parts can in some circumstances change the system's properties, as defined in the design phase, and cause major defects for which RUD Ketten shall accept no liability.

Use suitable workshop equipment for maintenance. Only personnel authorized by the manufacturer can provide perform technically sound maintenance or repair.

These Instructions have been created with the greatest possible care. However, if you need additional information, please contact:

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1.2 Main components of the TECDOS TMB

1.2.1 Overview display

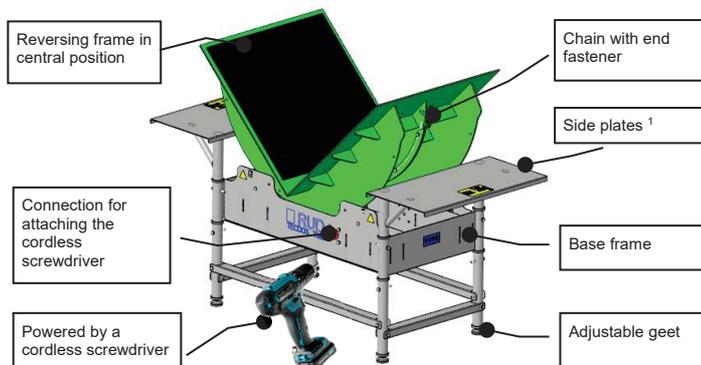


Figure 1

The figures are functional or indicative. The figures refer to the TECDOS TMB 08/08-2,5 Expert.

1.2.2 Detailed illustration of base frame

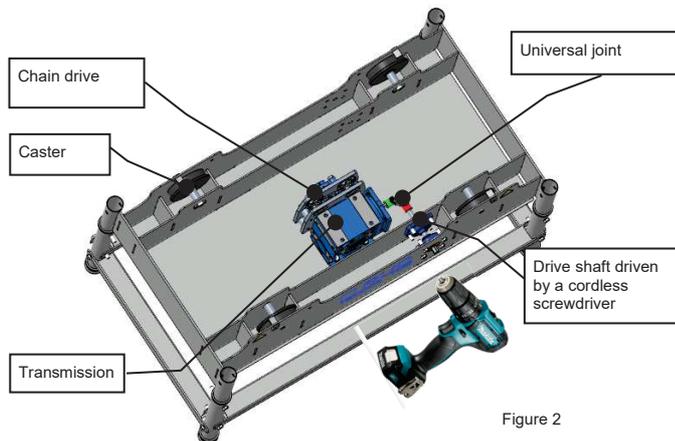


Figure 2

1.3 Operational limits of the TECDOS TMB

1.3.1 Intended use

The TECDOS TMB is designed to rotate prototype tools safely through 90° without damaging them. Servicing and maintenance tasks can be performed on prototype tools when they are positioned at one of the two end positions on the turning frame. There is no need for operators to step onto the TECDOS TMB to do so. The TECDOS TMB can be used almost anywhere indoors. It can be moved easily from one location to another, using suitable handling equipment (for example, a forklift truck) or a crane. The TECDOS TMB is usually installed in factory halls. It must not be used outdoors. Usual operating temperatures: between 10°C and 30°C.

1.4 TECDOS TMB personnel

1.4.1 Operators

The TECDOS TMB must only be used by operators who have the appropriate authorisation to move these loads. Operators must also have been properly instructed in how to use the TECDOS TMB and their managers must ensure that they have read and fully understood these Operating Instructions.

¹ Optional accessories

1.4.2 Staff involved with transportation

If the TECDOS TMB is to be transported with a forklift truck, the forklift truck driver must have the appropriate training certificates. Transportation by crane must only be performed by operators with the appropriate specialist training who also have permission to work with lifting gear, hoists and attachment fittings.

2. Safety instructions

2.1 Explanation of symbols and instructions

	Failure to comply with the relevant safety instructions can cause danger to life or considerable damage to property.
Warning!	Failure to comply with the relevant safety instructions can result in unexpected events or situations.
	Warning of danger of crush injuries

2.2 General information

These Operating Instructions describe the RUD TECDOS TMB and how to use it. Compliance with these Operating Instructions is a requirement for problem-free operation and the meeting of any claims under warranty that might arise. You must read these Operating Instructions before using the TECDOS TMB.

Compliance with these Operating Instructions is a requirement for operating the TECDOS TMB safely and for ensuring that the specified features and performance are achieved. RUD Ketten accepts no liability for personal injuries or any damage to property and assets arising from failure to comply with these Operating Instructions. In such cases, any liability for material defects is excluded.

These Operating Instructions are to be read by properly qualified personnel who are tasked with operating, maintaining, and fixing the TECDOS TMB.

Ensure that replacement parts are disposed of safely and in a way that does not damage the environment.

Welding, naked flame and sanding tasks must not be performed on the machine.

Climbing up onto the TECDOS TMB is not permitted!

For safety reasons, no unauthorised conversions or changes to the TECDOS TMB are permitted.

RUD Ketten reserves the right to make changes to these Operating Instructions. All the information and instructions in these Operating Instructions have been created in accordance with generally recognised technical regulations. However, the information and instructions are non-binding. Please contact RUD if you require additional information or clarification.

Generally applicable legal and other binding regulations for preventing accidents and protecting the environment, which supplement the Operating Instructions, must be noted and complied with. They describe how to handle hazardous materials or the provision and wearing of personal protective equipment, for example. The operating firm is liable for damage caused by a failure to comply with these Operating Instructions.

2.3 Maintenance and servicing

Before starting maintenance work, the operator must ensure that no-one else is present in the machine's safety zone.

The TECDOS TMB must be inspected for damage by properly trained personnel every six months. The most important components to be checked are the chain, the chain-end attachments and the pocket wheels.

For maintenance and cleaning, move the TECDOS TMB to its middle position (see figure 3).

Before starting maintenance work, block off access to the machine's working area to keep out unauthorised people. Display a sign that clearly states that maintenance work is in progress.

3. Description

3.1 General information

The TECDOS TMB consists of the following assemblies, as shown in the figures in section 1.2 of these Operating Instructions:

- the base frame, with integrated gear box with chain drive
- the turn-over frame used to rotate the prototype tool

The TECDOS TMB is supplied as a fully assembled function-tested unit.

Warning! As the TECDOS TMB consists of a number of individual, independent products, you must comply with the following Operating Instructions and documents in addition to these Operating Instructions (for example the TECDOS Operating Instructions, the acceptance report for the gear box, etc.).

Warning! A high-performance TECDOS chain drive is used to move the turn-over frame. Comply with the general TECDOS component operating instructions for this chain drive.

3.2 Functional description

The TECDOS TMB is designed to operate in a factory hall at ambient temperature. It is designed to rotate a prototype tool safely through 90°, without damaging the tool, for maintenance, assembly and disassembly.

The prototype tool is usually lifted onto the TECDOS TMB by a crane. Ensure the prototype tool is lowered onto the TECDOS TMB slow and carefully, to prevent damage either to the turning frame or the prototype tool itself.

Next, the operator must check the area behind and around the TECDOS TMB to make sure no-one else is present in the danger zone around the TECDOS TMB (see figure 6 in section 4.2). When the operator is sure that there is no person in the danger zone, he starts the turning process by attaching and operating the cordless screwdriver (for more information, see section 4.3).

By operating an external device, e.g., cordless screwdriver, the TECDOS TMB moves as can be seen in the image sequence (see figure 3). Make sure that the turning process is finished when the table has reached the horizontal position. Other tasks can then be performed on the prototype tool.

Example of a rotation process:

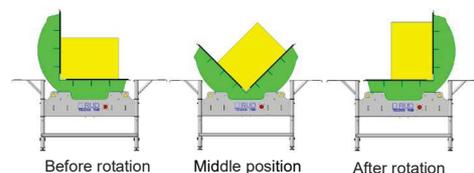


Figure 3

4. Commissioning

4.1 Transportation

Das Wendegestell der TECDOS TMB ist für den Transport immer in Mittelposition (V-Stellung) zu bringen. Vor dem Transport ist die TECDOS TMB zu entladen.

For safety reasons, the TECDOS TMB must only be transported when it is empty. There must not be a prototype tool on the TECDOS TMB while it is being transported.

The transport is carried out using an industrial truck (Figs. 4 and 5); the forks are pushed centrally under the TECDOS TMB. When lifting, make sure that the center of gravity of the TECDOS TMB is between the forks.

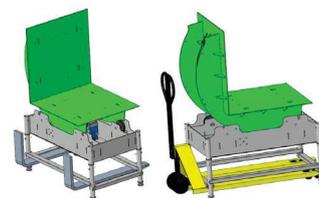


Figure 4

Figure 5

Make sure that the means of transport is selected according to the weight of the TECDOS TMB (see table 2).

Comply with all the general health and safety regulations stated in DGUV R 500 or local equivalent for working with handling equipment and lifting gear. Areas below suspended weights must also be secured appropriately.

4.2 Installation location and space requirement

The installation site must have a clean, dry, level horizontal surface, suitable for a load equal to at least the TECDOS TMB's own weight plus the total operating load. The workplace must have adequate lighting. The TECDOS TMB must be installed under cover (a roof) to protect it from the weather. The ceiling height should at least three or four times greater than the machine's table length (see table 2). The installation site should be large enough to ensure the TECDOS TMB can be surrounded by a safety zone in which the TECDOS TMB stands at the centre, as shown in figure 6. The highest levels of safety must be provided in this safety zone during rotation processes. The TECDOS TMB operator must ensure no-one else is present in this safety zone when the machine is operating.

Size	Safety Zone „Y“ (Minimum)
TMB 08/08-2,5 Expert / Basic	2,4 m

Table 1

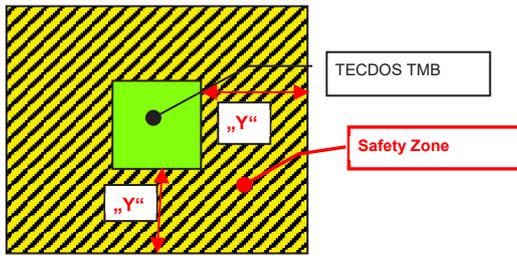


Figure 6

4.3 Commissioning the TECDOS TMB

For first-time use, it is important to test the functions of the TECDOS TMB without load.

4.4 Accident or fault procedure

If an accident or fault occurs, stop the TECDOS TMB immediately and secure it to prevent it from being accidentally switched on again. If there is an accident, apply first aid and call the emergency services. The fault must be resolved by technical staff. Do not operate the TECDOS TMB again until the technical staff have authorised you to do so.

5. Handling the TECDOS TMB

5.1 Loading the TECDOS TMB

The TECDOS TMB is usually loaded by crane. The crane must be capable of lifting at least the TECDOS TMB's operating load (compare the crane manufacturer's data plate with the TECDOS TMB data plate). Only authorised and designated lifting gear are to be used. Comply with all the general health and safety regulations stated in DGUV R 500 or local equivalent for working with lifting gear. Areas below suspended weights must also be secured appropriately.

Warning! When loading the machine, ensure the prototype tool is positioned in the centre of the horizontal face of the turning frame and that its flat side faces the vertical face of the turning frame (see figure 3, "Before rotation").

Failure to comply with this instruction could result in the prototype tool tilting and becoming damaged while it is rotating on the turn-over frame. In some circumstances, this uneven loading could cause the prototype tool to judder and put the prototype tool and the TECDOS TMB itself at risk of tipping.

Warning! The surface of the turning frame (PE/PU coating or steel plate) must not be dirty or contaminated. Dirt and contaminants could cause the prototype tool to slide or make it more susceptible to damage. Always clean the surfaces of the turning frame thoroughly and protect them against contaminant.

Warning! To prevent damage and avoid burns, the temperature of the prototype tools to be used with the TECDOS TMB must never exceed 40° Celsius.

- Do not use the TECDOS TMB to empty out drums of liquids or gases.
- Do not use the TECDOS TMB as an emptying machine.
- Do not use the TECDOS TMB to empty out containers of bulk material.
- To avoid risk of injury and damage, do not use the TECDOS TMB to rotate round or cylindrical parts (e.g.: cable drums, coiled metal sheet or coiled wire) or parts that might not sit securely on the turn-over frame (e.g.: convex cast or forged parts or similar) unless suitable extra equipment and fixtures are also used to prevent these objects from sliding or moving unexpectedly.



Do not use TECDOS TMB machines to handle or move prototype tools that exceed the limits specified in Table 2. In case of doubt, contact RUD Ketten. It may be possible to define special regulations for particular types of use and enable the machines to be used in specific, pre-agreed conditions.

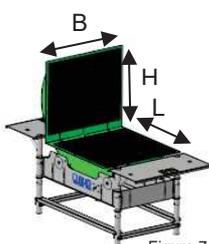


Figure 7

Size	Operating load ¹⁾	L [mm]	H [mm]	B [mm] ²⁾	Unit weight [kg]
TMB 08/08-2,5 Basic	up to 2,5 t	800	800	800	265
TMB 08/08-2,5 Expert	up to 2,5 t	800	800	800	310

*1): Requirement: the load touches both table tops!
*2): Requirements: same overhang on left and right

Table 2

Warning!

Long, thin prototype tools and those that are generally unstable, may behave unexpectedly and tip over when being rotated with the TECDOS TMB. However, these tools can be turned over if properly secured with suitable additional equipment, such as wedges and lashing straps.



The prototype tool's centre of gravity should be positioned so that it lies securely on the TECDOS TMB.

Warning!

Concerns model TMB Expert: When placing assembly tools or accessories on the side table surfaces, ensure that they are suitably secured so that they cannot roll off.

The manufacturer accepts no liability for damage caused by improper use. All risk is assumed by the user.

5.2 Turn-over



Before starting the turn-over process, the operator must ensure no-one else is present in the TECDOS TMB's safety zone (see also figure 6).

The turning process begins when the operator presses the cordless screwdriver with the corresponding attachment into the recess required for this purpose. The pushbutton of the cordless screwdriver must be kept pressed until the end of the turning process, as the turning process is interrupted if the contact is interrupted. The turning process is only continued by repeatedly pressing the pushbutton.



The operator must remain at a safe distance from the TECDOS TMB throughout the turn-over process. They must monitor the process carefully and be ready to interrupt it immediately if a problem occurs. If the operator gets too close to the TECDOS TMB, there is the risk that parts of their body or their clothing might get caught up in the moving parts.

5.3 Servicing prototype tools on the TECDOS TMB

Warning!

When cleaning and polishing prototype tools, ensure that the auxiliary materials do not affect or damage the surfaces of the TECDOS TMB (corrosion, abrasion or damage to the impact protection mat). Do not climb up onto the TECDOS TMB when performing maintenance or other tasks.

5.4 Unloading the TECDOS TMB

Warning!

After rotating through 90°, the TECDOS TMB can be unloaded. Like the loading process, the unloading process is usually performed with a crane.

Attach the crane's stop chain to the prototype tool and then carefully lift it off the TECDOS TMB. Raise the prototype tool slowly and carefully to prevent it being damaged.

Make sure that the mold is always in a stable position, otherwise it may tip over. If necessary, it must be secured by means of lashing straps.

5.5 Lubricating instructions and recommended lubricants

Individual links in the chain bend and rub against each other as they pass over the wheels. This causes wear due to abrasion and leads to an increase in pitch. If the chain is lubricated regularly, it can withstand between 15 and 20 times more load cycles than an unlubricated chain. We strongly recommend that the chain is lubricated thoroughly at regular intervals.

The chain must be lubricated along its entire length prior to commissioning. To prevent premature wear, do not miss out even a single link.

The chain must not be under load when it is being lubricated. Ensure the lubricant penetrates all the chain links that are subject to wear. We recommend that lubricant is applied with a brush or as a spray.

The chains must be lubricated at regular intervals, depending on how often they are used. A chain that is used frequently will have to be lubricated more often than one that is only used occasionally. If the required lubrication schedule cannot be defined based on previous experience, when starting a new task, we recommend that the chains are lubricated every 6 weeks. Lubricant should also be reapplied if the chain starts making grating noises as it runs over the wheels. This is an indication that the coating of lubricant has worn off the link.

Change-over links must be lubricated especially thoroughly. When the travel distance is constant, and the direction of movement is reversed, change-over links are the ones that come to a stop at or very close to the infeeds of the drive wheels and deflection wheels. These chain links are subjected to extremely high loads due to dynamic vibration and therefore must be lubricated thoroughly and more often to prevent premature wear.

We recommend these lubricants:

Optimol Viscogen KL300

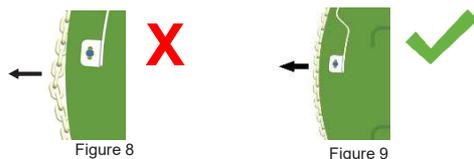
Castrol Industrie GmbH
Friedenstraße 10
81671 Munich, Germany

Silicone-free, high viscosity synthetic lubricant. Extremely durable and resistant to hot water. Has excellent adhesive and penetrating properties. Cannot be washed away with water. Temperature-stable at application temperatures ranging between -40°C and +200°C. The highest load cycles have been achieved with this synthetic lubricating oil. Extremely suitable for use in normal industrial environments and for offshore applications. This oil can be purchased from the world-wide BP sales network and is available as a spray or in open containers.

5.6 Setting and tensioning the chain strands

Before using the TECDOS TMB for the first time, check the tension of the two chain strands and adjust them if necessary.

Check the chain tension on the loaded and unloaded sides. No tools required. Simply pull on the chain at less than 90° to the contact surface. If you can pull the chain to the side or lift it up from the contact surface, it must be retensioned using the TECDOS chain-end attachments (figure 8). The tension on both chain strands should be as even as possible and be tight enough to ensure the chain cannot be lifted off the contact surface (figure 9). Then check the chain tension under load.



Check the chain tension at regular intervals, depending on how often the machine is used.

6. Replacing Worn Parts

6.1 Replacing the chain

To unmount the chain, rotate the turn-over frame to its middle position (V-position). Then secure the turn-over frame to prevent it from moving unexpectedly before starting work on the TECDOS TMB (see section 2.3). You can also attach a 4-strand stop chain to the turn-over frame so that the chains do not hang slack in the attachment points.

Then disconnect the chain-end attachments from the drive chain. You can then use a crane to lift the turn-over frame out of the TECDOS TMB. You can now thread in the new chain. Reverse the sequence of steps to assemble the machine again. Comply with the appropriate general operating instructions for TECDOS components.

6.2 Replacing a track wheel (support rollers) and the flanged bearings

The first part of this process is identical to the process described in section 6.1 described. The turn-over frame can be removed once the drive chain has been disconnected from the chain-end attachments. Then, undo the safety bolts on the flange bearings so that the axis and the track wheel can be removed. You can then replace the flanged bearings and the track wheel. To reassemble, perform these steps in reverse order.

We recommend you task RUD Ketten with performing maintenance on the TECDOS TMB. Our highly trained and professional service team are always happy to help if you have any queries.

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