item

Timing-Belt Reverse Unit 5 40 R10 with bore D12

Notes on Use and Installation

Content

General safety information

The data and the information contained in the Notes on Use and Installation are intended exclusively for product description and assembly. The information does not release the user from conducting their own assessments and checks. It should be noted that our products are subject to natural wear and tear as well as an aging process.
These Notes on Installation and Useinclude important information for the safe and appropriate use of the product. In the case of a sale, rent or other transmission of the product, the latter must be accompanied by the Notes on Use and Installation.
During the assembly, operation and maintenance of the driven linear unit, it must be ensured that all moving parts are secured against accidental switch-on or moving. Rotating and moving parts can lead to serious injury! Please make sure to read and observe the following safety precautions.

- Any work with or close to the driven linear unit must be performed under the motto “safety first”.
- Switch the drive unit off before you begin a task close to the driven linear unit.
- Secure the drive unit against accidental switch-on, e.g. by installing signs near the switch or remove the fuse from the power supply.
- Do not reach into the working area of the moving parts of the driven linear unit while it is operating.
- Secure the moving parts of the driven linear unit against accidental contact by installing protective devices and enclosures.
- Please take note of the applicable regulations for accident prevention and environmental protection in the country of use and the workplace.
- Use item products only in technically perfect condition.
- Non-use of original spare parts leads to the expiry of the warranty!
- Check if the product has obvious defects.
- Use the product exclusively within the range of performance described in the technical data.
- Make sure all the safety devices belonging to the product are available, suitably installed and fully functional.
- You are not allowed to change the position of, avoid or disable safety devices.

The driven linear unit described here corresponds to the state-of-the-art and respects the general principles of safety at the date of printing of the present Notes on Use and Installation. Nonetheless, the hazard for personal injury and damage to property remains when the fundamental safety instructions and warning notices mentioned in the present Notes on Use and Installation are not observed.We accept no liability for any damage that may arise from them. In the interest of further development, we reserve ourselves the right to technical changes. Keep the present Notes on Use and Installation readily accessible to all users. Please take notice of the superordinate instructions for use of the complete machinery or equipment.The general hazard warning refers to the whole life cycle of the partly completed machinery.

1. Transport

Please note the transport instructions on the packaging. Make sure to leave the product in the original packaging and protect it from humidity and damage until assembly. Please note that moving parts are fixed and can cause no damage during transport.

2. Assembly

Always switch the relevant system component off-circuit before you assemble the product or plug/unplug it. Secure the system against re-starting. Lay the cables and conducts so that they cannot be damaged and nobody can trip over them. Avoid places with risk of slipping, tripping or falling.

3. Putting into service

Let the product acclimatise for some hours before putting it into service.Make sure the partly completed machinery is tightly and safely integrated to the complete machinery. Only put fully installed products into service.

4. During operation

Allow the access to the direct operational area of the system only to people authorised by the operator. This also applies for downtimes of the system. Moving parts must not be accidentally actuated. In case of emergency, error or other irregularities, switch off the system and secure it against restarting. Make sure people cannot be shut in the system's danger zone.

5. Cleaning

Close all openings with appropriate protective devices so that no detergent can enter the system. Use no aggressive detergents. Do not use a high-pressure cleaner for the cleaning.

6. Putting into service and maintenance

Perform the required maintenance work in the time intervals described in the operating instructions. Make sure no connection line, connection or component is released until the system is under pressure and tension. Secure the system against restarting.

7. Disposal

Dispose of the product according to the national and international provisions of your country.

Correct use

The Timing-Belt Reverse Unit 5 40 R10 with Bore D12 is a mechanical component to built a linear driven unit. The driven linear unit is a product in accordance with the Machinery Directive 2006/42/EC (partly completed machinery). The driven linear unit can only be used in accordance with the technical data and safety regulations of the present documentation. The internal rules and guidelines of the country of use must be respected. Unauthorised structural changes to the driven linear unit are not permitted. We accept no liability for any damage that may arise from them.

You are authorised to assemble, operate and maintain the drive linear unit only if:

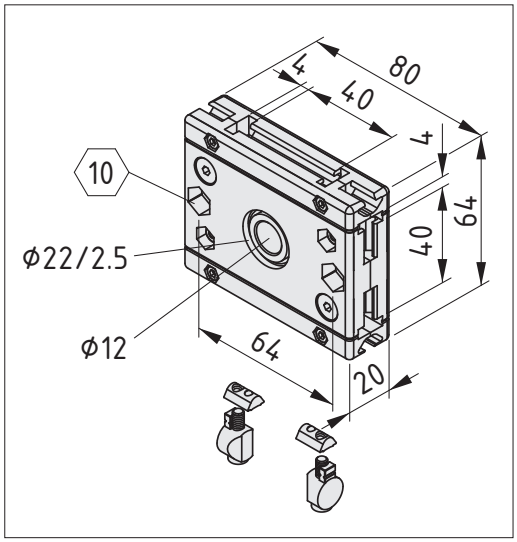
- The driven linear unit has been integrated to the complete machinery according to the intended applications and safety requirements.
- You have read the Notes on Use and Installation carefully and understood them.
- You are qualified.
- You have the authorisation of your company.
- You exclusively use the original accessories of the manufacturer.

In case of unsafe and inappropriate operation of the driven linear unit, there is a danger of serious injury from crush and shear points.

Improper use

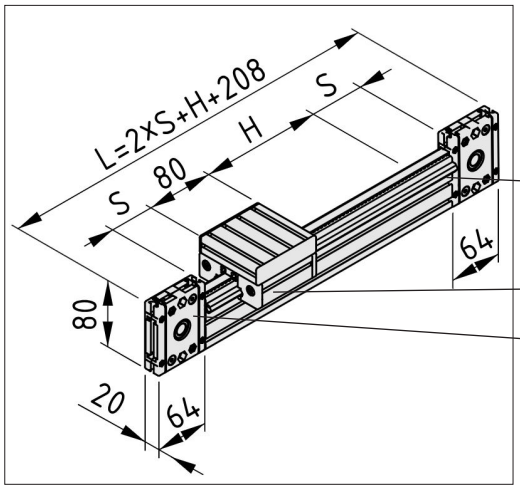
The improper use refers to applications differing from the use authorised by the Notes on Use and Installation and the appropriate use. We accept no liability for any damage that may arise.

Technical Data/Scope of Supply



Timing-Belt Reverse Unit, GD-Al, black
Ball-bearing timing pulley with ∅ 12 H7 bore
Hub length: 18 mm
One revolution equivalent to 140 mm
Effective radius r_e = 22,3 mm
Friction torque at 1‰ preload on timing belt:
T_F = 0,05 Nm
Max. load: T_D = 3,3 Nm
Belt length inside Reverse Unit in case of
90° reversal: 110 mm
180° reversal (emerging at 80 mm side): 135 mm
180° reversal (emerging at 64 mm side): 150 mm
2 Universal Fasteners 5, GD-Zn, zinc-plated
Pitch p = 5 mm
Number of teeth n = 28
m = 0,26 kg

Application options



Support profile,
e.g.: Profile 5 60x20

Guide,
e.g.: Roller guide D6

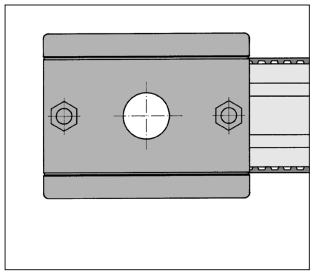
Drive,
e.g.: Timing Belt R10 T5 awnd
Timing-Belt Reverse Unit 5 40 R25 with bore D12

Fundamentally, a Linear Unit converts a rotary motion into a translational motion.
A Linear Unit is made up of:

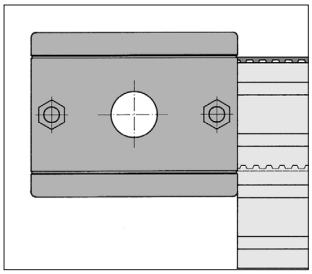
- Guide
- Drive
- Support profile

These components are picked for assembly and assembled in part or in full, depending on customer wishes.

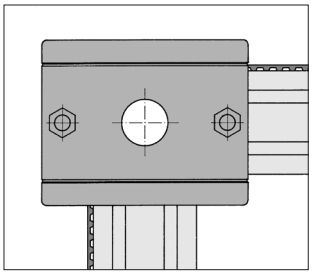
Timing-Belt Reverse Units 5 40 R10 with Bore for an expanding hub coupling are used to drive or reverse Timing Belt R10 T5 to build Linear Units combined with guides, Gearboxes and Drive Units.



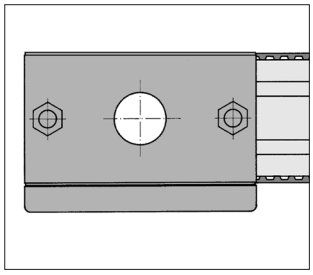
Timing belt turned around 180° on Line 5 profiles (height 40 mm): The timing belt is returned outside the profile.

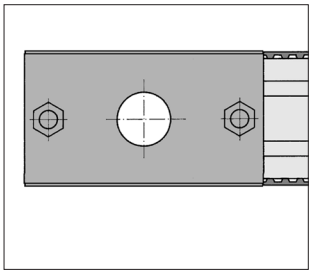


180° Timing belt deflection on series 5 profiles (series height 60 mm and greater): The Timing belt is returned in the profile cavity.



Timing belt turned through 90°.





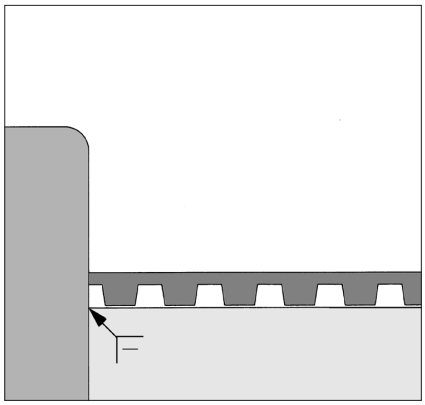
The upper and lower belt covers can be removed for applications with very limited space.

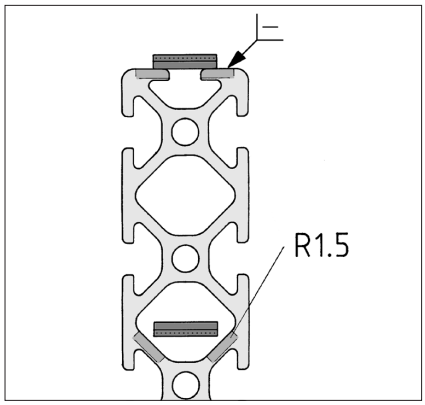
Installing the Timing Belt

It may be necessary to open Timing Belt Reverse Unit 5 40 R10 in order to insert the Timing Belt into it. To do this, remove all the screws.

Never use a screwdriver or similar tool to prise open the casing of Timing-Belt Reverse Unit 5 40 R10 at its joins, as you may unintentionally break off the belt cover.

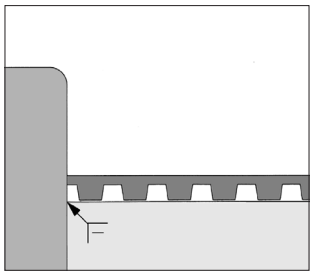
Separate the two halves of the casing by gently tapping the hub of the timing pulley (use plastic punches). Once the casing is open, thread the Timing Belt through and then close Timing Belt Reverse Unit 5 40 R10 again.



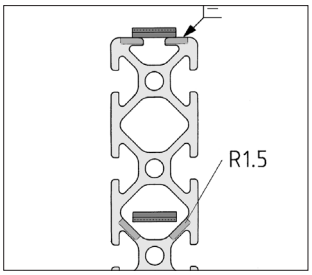


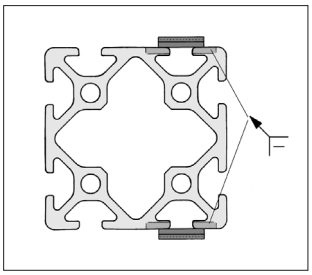
All the cut edges of the profile that face the Timing Belt must be chamfered to prevent irregular running caused by the belt getting snagged or damaged.

When feeding the Timing Belt back through the inside of profiles, ensure that the profile edges facing the back of the belt have been rounded.



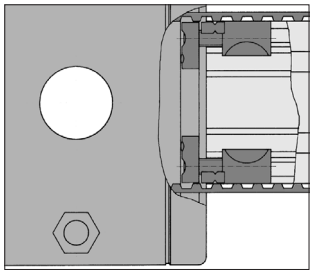
All cut profile edges facing the timing belt must be chamfered in order to prevent the belt from being damaged or sticking and running out of line.



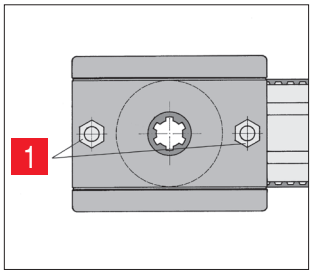


When running the belt back through the inside of profiles, the profile edge facing the back of the belt must be rounded.

Fastening Options



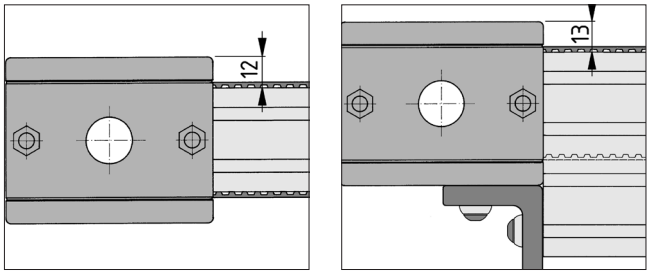
Mounting at a height of 40 mm in the groove of Profile 5 with Universal-Fastening Set 5.



Function of bores:

Housing bores 1 for securing the drive units, adapter flange, bevel gear box and ball screw units and/or for interconnecting Timing-Belt Reverse Units.

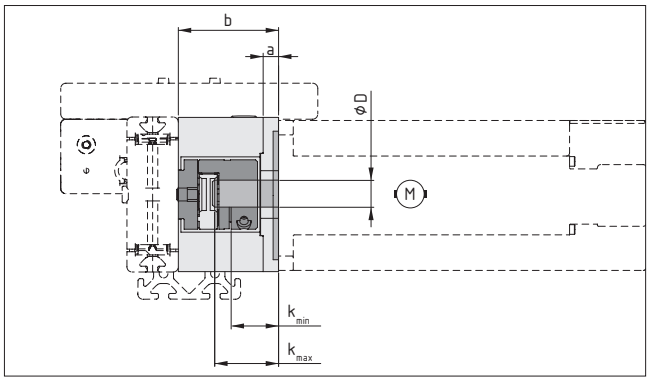
Alignment of Timing-Belt Reverse Unit to the Profile



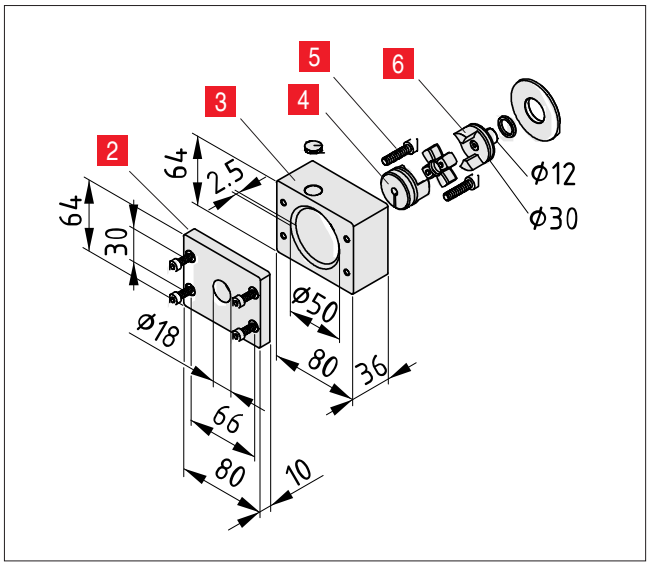
Fastening location of Timing-Belt Reverse Unit 5 40 R10 to different profiles, depending on the position of the return timing belt.

Connecting Drive Set 5 40 D30/D12 – 0.0.662.49

Drive Set 5 40 D30/D12 is used to connect any drive to the timing belt reverser 5 40 R10 with bore D15.
The prepared Coupling fits the drive shaft and transmits drive torque without backlash.



[mm]	8 40 D40/D15
∅ D	6-16
a	10
b	46
k_{min}	24
k_{max}	25,5



2 Adapter plate, for connecting a motor

3 Coupling Housing with hole (that can be sealed) to allow an Allen key through to generate the necessary clamping force on the drive shaft.

4 Coupling half that accommodates the drive shaft

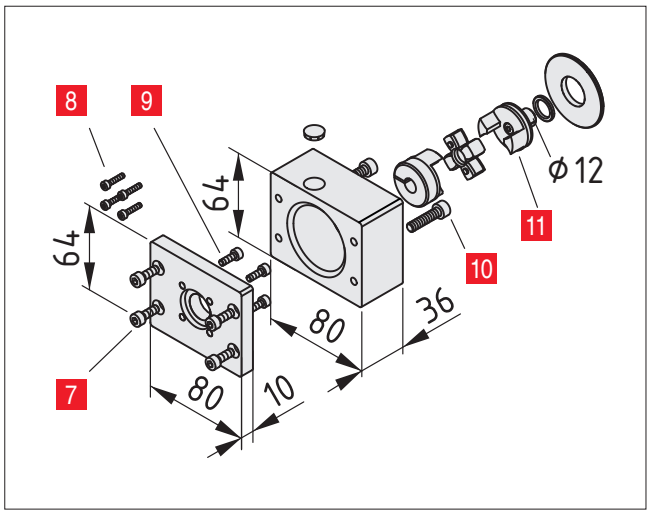
5 Zylinderkopfschraube DIN 912 M6x25 for connecting to a Timing-Belt Reverse Unit

6 Expanding hub coupling D30/D12

To do this, the Hexagon Socket Head Cap Screws DIN912 M6x25, supplied with the Drive Set, are screwed through the housing of the Drive Unit into the coupling housing of the Drive Set.
Tightening torque: M = 14 Nm

According to the specifications of the motor or gearbox used, the drive housing or adapter plate is machined and bolted to the motor or gearbox. The coupling half to be connected to the Drive Shaft is bored to the dimension of the Drive Shaft and fastened to the shaft.
The transmitted torques of the clamping connection take into account the maximum fitting clearance for shaft fits: Shaft k6 / Bore H7.
The power transmission of the coupling to the Drive Shaft is frictionally engaged. The bore of the clutch hub and the shaft must be degreased and cleaned to ensure a frictional connection of the Drive Shaft. The Hexagon Socket Head Cap Screws used must be secured against self-loosening.

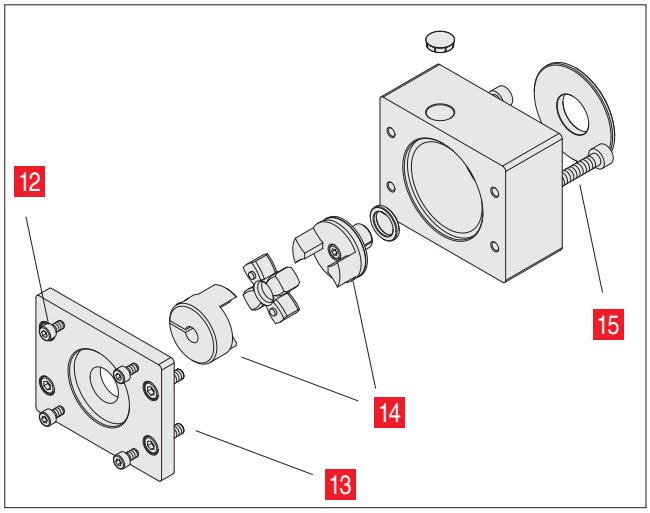
Connecting Drive Set 5 40 D30/D12 AP/WP 40 – 0.0.672.74



7 Hexagon Socket Head Cap Screw DIN912 M5x14
8 Hexagon Socket Head Cap Screw DIN912 M3x10 for connecting a motor
9 Hexagon Socket Head Cap Screw DIN912 M4x12 for connecting a gearbox
10 Hexagon Socket Head Cap Screw DIN912 M6x25 for connecting to a Timing-Belt Reverse Unit
11 Expanding hub coupling D30/D12

Drive Set 5 40 D30/D12 AP/WP 40 - 0.0.672.74 is used to connect the item Drives to Timing Belt Reverser 5 40 R10 with Bore D12. The entire Drive Set is prepared for mounting on the corresponding Linear Unit. The Drive Shaft transmits the drive torque backlash-free.
The transmitted torques of the clamping connection take into account the maximum fitting clearance of the shaft fits: Shaft k6 / Bore H7.
The power transmission of the coupling to the Drive Shaft is frictionally engaged. The bore of the hub and the shaft must be degreased and cleaned to ensure a frictional connection of the drive. The first half of the coupling is attached to the deflection, the Hexagon Socket Head Cap Screws used must be secured against loosening. Tensioning screw, M = 2.8 Nm.
The coupling housing of the Drive Set is screwed through the housing of the Drive Unit over the entire coupling using the Socket Head Cap Screws DIN912 M6x25, M = 14 Nm, supplied with the Drive Set.
The gearbox is then attached flush to the adapter plate of the Drive Set using the prepared centring piece. The Hexagon socket head cap screws DIN912 M4x12, M = 6 Nm, are used for this. Then screw the adapter plate to the coupling housing.
To attach the motor to the gearbox, DIN912 M3x14, M = 3 Nm socket head cap screws are included in the Drive Set.
The clamping screw, M = 2 Nm, of the clamping clutch half is frictionally connected to the Drive Shaft through the coupling housing.

Connecting Drive Set ZU 5 40 D30/D12 NEMA 24 – 0.0.715.42



12 Hexagon Socket Head Cap Screw DIN912 M4x14 for connecting a motor

13 Hexagon Socket Head Cap Screw DIN912 M5x14

14 Expanding hub coupling D30/D12

15 Hexagon Socket Head Cap Screw DIN912 M6x25 for connecting to a Timing-Belt Reverse Unit

The Drive Set ZU 5 40 D30/D12 NEMA 24 is used to connect stepper motors with a standardised NEMA 24 flange to item Linear Units LRE 5 D6 60x20 ZU 40 R10.
The coupling is supplied ready for installation complete with housing. The plug-and-play solution ensures backlash-free power transmission without machining and can be mounted directly on the Linear Unit.
The power transmission of the coupling to the Drive Shaft is frictionally engaged. The bore of the hub and the shaft must be degreased and cleaned for the friction-locked connection of the drive. The first half of the coupling is attached to the deflection; hexagon socket head cap screws used must be secured against self-loosening. Tensioning screw, M = 2.8 Nm.
The coupling housing of the Drive Set is screwed through the housing of the Drive Unit over the entire coupling using the socket head cap screws DIN912 M6x25, M = 14 Nm, supplied with the Drive Set.
A stepper motor is then attached flush to the adapter plate of the Drive Set using the centring piece. The hexagon socket head cap screws DIN912 M4x14, M = 6 Nm, are used for this. Then screw the adapter plate to the coupling housing.
The clamping screw, M = 2 Nm, of the clamping clutch half is frictionally connected to the Drive Shaft through the coupling housing.

Synchronising Sets LRE

Synchronising Sets from item can be used to operate two Linear Units in parallel with just one motor. They comprise shaft couplings that are tailored to the relevant Linear Unit and designed to compensate for slight misalignments and withstand the stated torque over long-term use. The couplings are pre-prepared to accommodate a Synchroniser Shaft. Besides featuring a compact design, expanding hub couplings are also easy to use. The friction-based connection is created by tightening the central screw with the specified tightening torque. An integrated pull-off thread makes them easy to dismantle. First, the central screw is removed, then a longer screw is driven into the same position to effortlessly relieve tension in the coupling.

How long a Synchroniser Shaft can be depends on its operating speed. To determine the maximum length for a given speed or the maximum speed for a given length, please consult the information contained in the diagrams..

Linear Unit	Art. No.	Synchronising Set	Art. No.	Accessories
Linear Unit LRE 5 D6 60x20 ZU 40 R10	0.0.666.89	Synchronising Set D30/D12	0.0.662.51	0.0.664.14

Maintenance

Suitable for use in dry conditions and over the temperature range -20°C to +70°C.

If operating conditions are unusual - e.g. special type of installation, dust, short stroke, influence of solvents etc. the lubrication intervals must be adapted accordingly.

This information does not discharge the user from the obligation to carry out his own assessments and checks.

It is important to bear in mind that our products are subject to a natural process of wear and ageing.

The Timing Belt is a maintenance-free drive element.

Check the tension on the Timing Belt after a running-in phase.

We recommend regular checks for damage and wear. These checks should be carried out weekly at first and then adjusted to account for environmental and operational conditions.

The Timing Belt may need to be replaced.

Ideal operating conditions:
Ambient temperature: 10°C ... 40°C
Load: < 5%

Product development and documentation

A process of continuous product development ensures that products from item Industrietechnik GmbH always exhibit a high standard of innovation. Consequently, there could be inconsistencies between this guide and the product you have acquired. item Industrietechnik GmbH can also not exclude the possibility of errors.

We therefore ask for your understanding that the information, illustrations and descriptions provided here cannot constitute an entitlement to any claims. You can find the latest version of this guide at www.item24.com.

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