Original-manual
GSB E-Drive

Version: 2.0

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Used symbols in this manual

Potential Danger

This symbol is for all safety instructions where can happen danger to persons or property. Note these hints and behave especially carefully.

Hot surface

This symbol you will find in this manual where can occur danger caused by hot surfaces. Attention: Risk of injury!

Hand protection

This symbol you will find in this manual where can occur danger caused by hand injury. For example, by changing the blade ware cut-resistant gloves.

Electrical danger

This symbol is for all safety instructions where can happen danger to persons or property. This danger is caused by electricity. Only qualified electrician is allowed to work at the electronics.

High pressure

This symbol is for all safety instructions where can happen danger caused by overpressure. This danger can occur by working with pneumatical equipment.

This symbol you will find in this manual where its necessary to wear eye protection.

Attention

This symbol is located to work steps of particular note. You have to strictly follow guidelines, regulations, hints and the correct procedure of the work steps.

Intended use

The GSB E-Drive for use in a customer 4-axis-cutting-machine and to cut different types of material.
For this the GSB E-Drive is mounted to the customer's machine.
Moreover, the GSB E-Drive is usable for a vacuum table because it has a defined cutting depth.
Only use the GSB E-Drive in the sense of the intended use.
You have to follow all the technical specifications in the section "***technical data***" as well without exception.
To use the GSB E-Drive as intended you have to strictly follow this manual and the intended application conditions.

Potential Danger

Observe Note!
You can't safely use the GSB E-Drive if you use it not in accordance to the regulations.
The user is responsible to all resulting Injures if the GSB E-Drive is not used as intended. In this case the manufacturer is not responsible.

Safety instructions


Potential Danger

Consider the following safety instructions as they can lower the risk of heavy injury's as well as electrical shocks.

- The GSB E-Drive may only put into operation by instructed staff
- To prevent injury's wear your personal protective equipment while operating with the GSB E-Drive
- Any manipulation of our products as well as their packaging for example, change, reworking, restamping is inadmissible and will violate our rights. Those manipulations can impair the characteristics of our products as well as it can lead to consequential damages to the periphery. GSB is not responsible for damages caused by non-authorized manipulations.
- The warranty is not for wear parts as well as damage caused by intent or negligence. The warranty expires if the manual and the requirements in this manual will be ignored. Moreover, the warranty will expire if any seal will be damaged.
- Work with the electrical equipment is only allowed to a trained electrical specialist! There is an increased danger of an electrical shock.
- Work with the pneumatical equipment is only allowed to a trained specialist! There is an increased danger of pneumatically high-pressure.
- Never dip the GSB E-Drive into water or any other liquid.
- Never use the GSB E-Drive if it has malfunction or it is damaged. In this case let the manufacturer check and repair it.
- Before operating with the GSB E-Drive remove all Materials, tools and further equipment from the working area which are used to install the GSB E-Drive to the customer machine.
- Disconnect the power of the GSB E-Drive if you don't use the device or want to clean it. Let the GSB E-Drive cool down before cleaning.
- Be sure that all connections are carefully assembled and firmly tightened.
- Ensure that the voltage values match to the values in the section "***technical data***".
- Ensure that no manual intervention is possible to the GSB E-Drive while machine is operating.
- Make worn-out devices immediately useless. Useless devices have to be disposed at intended disposal sites
- Store the manual at a safe place and make it accessible to others.


Attention

Observe note!
To not harm your safety or the lifetime of the device. Read the manual carefully and note the hints.

Components of GSB E-Drive

The GSB E-Drive and all components are delivered in a foam insert with a wooden cover. The foam insert serves for product fair storage of the device.

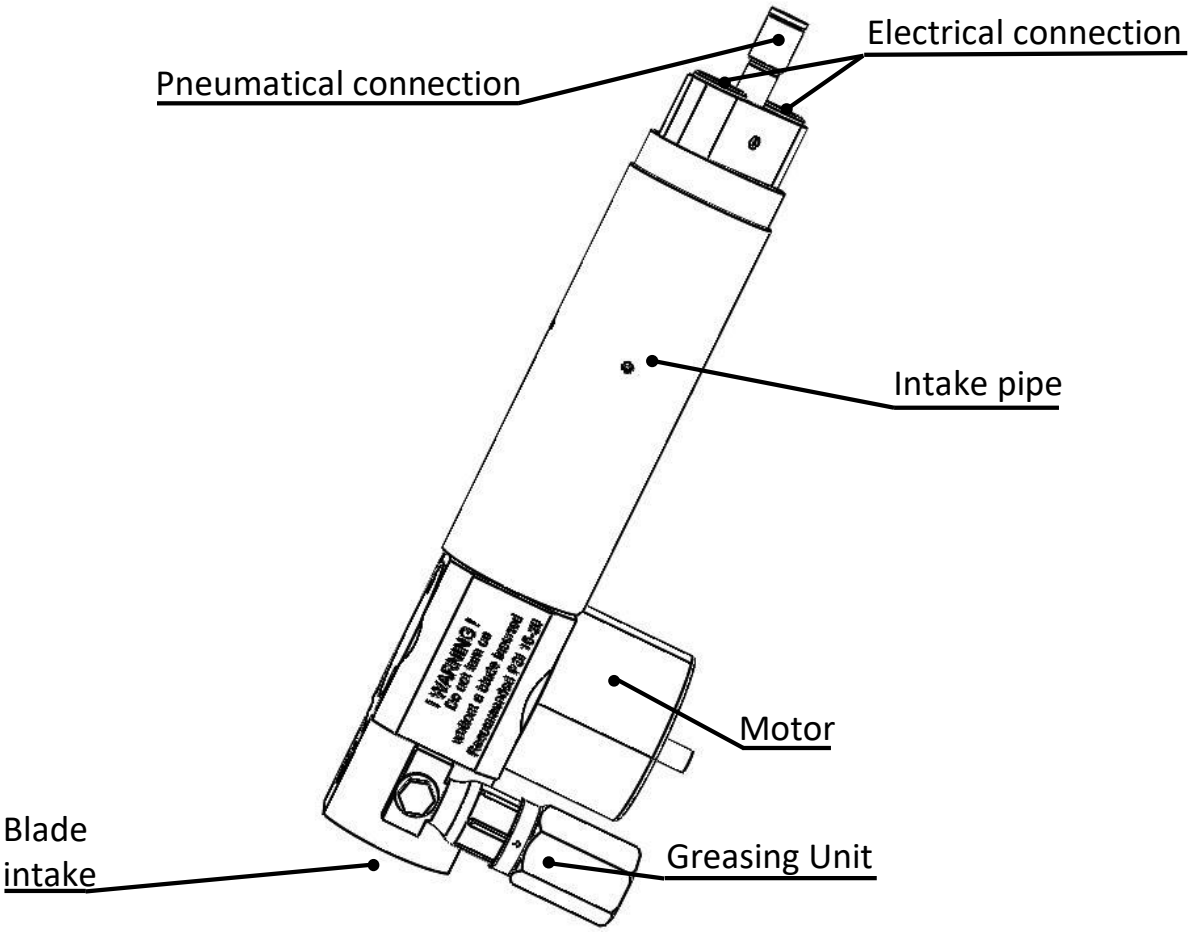


Figure 1: Elements of the GSB E-drive.

The following components are included:

- GSB E-Drive
- Driver Board
- Fixing nut (optional)
- Torque wrench
- Foam insert
- 2 x Motor connection cables
- Anti-twist unit
- E-Drive Tool
- Allen bit 3mm

Installation and application

- Take out all components of the GSB E-Drive from the package and verify that the delivery is complete.
- Ensure that all of the package is removed from the device.

For the installation of the GSB E-Drive to the Customer machine proceed as follows.

Optional (if already available, skip this point)

- Assemble the adapter-ring at the tool intake of the customer machine. Ensure that the guide pin of the tool intake fit's in the pinhole of the adapter-ring.

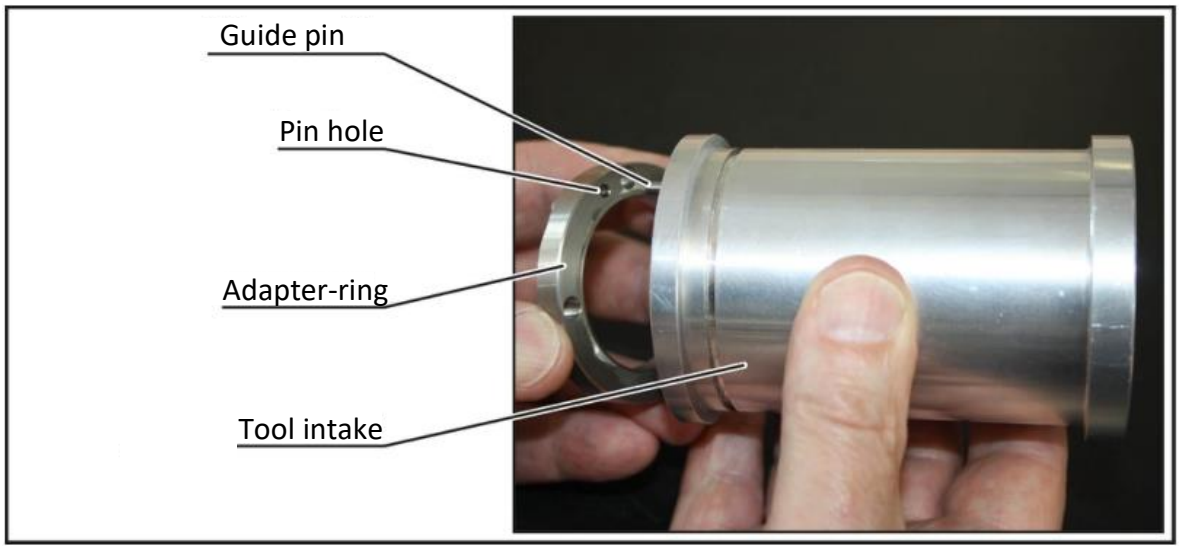


Figure 2: Assembling of the Adapter-ring (exemplary presentation).

- Push the intake pipe into the tool intake. **Ensure the E-Drive locks like shown on the picture**.

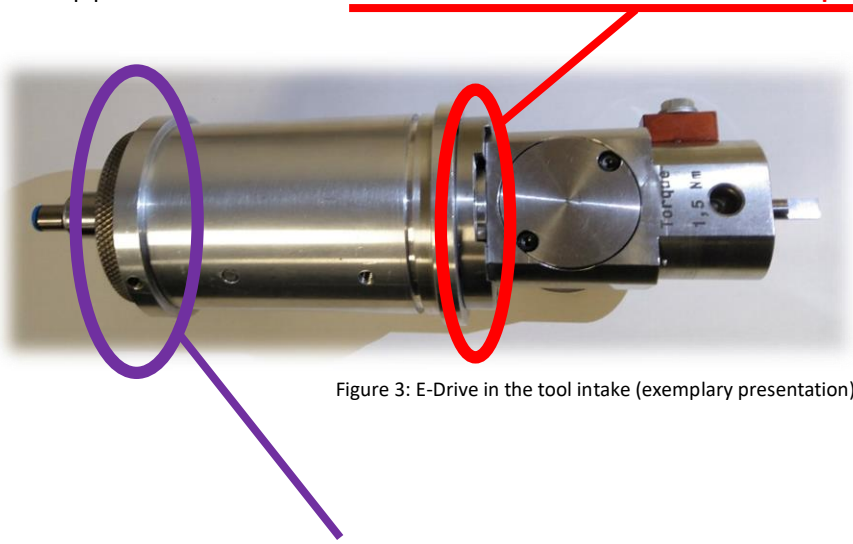


Figure 3: E-Drive in the tool intake (exemplary presentation).

- **Screw the fixing nut on the intake pipe till the E-Drive is tighten firmly.**

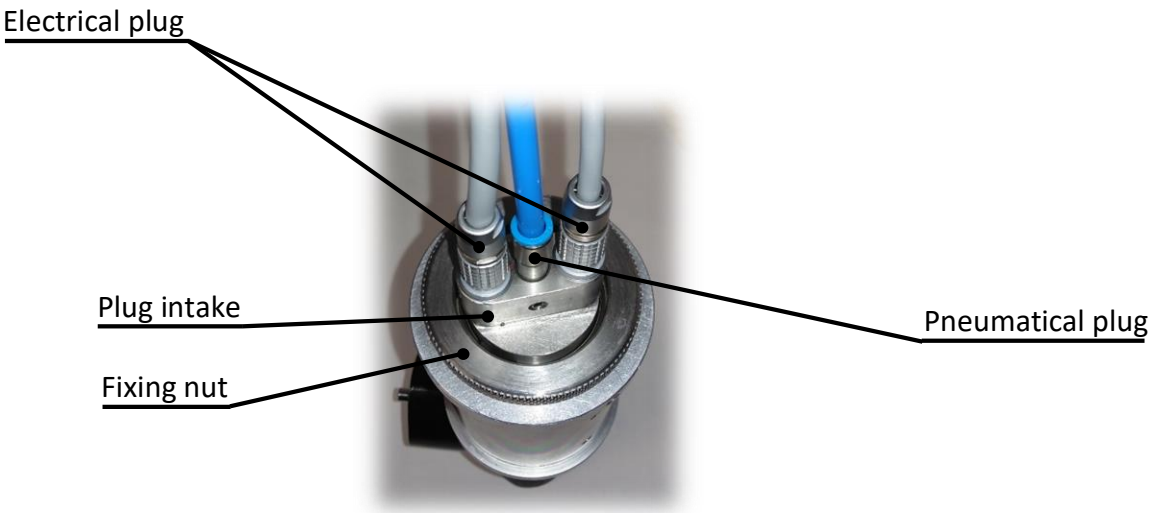


Figure 4: Plug intake (exemplary presentation).

- Insert the E-Drive into the customer's machine. The machine must have a Z-axis to dip into the material and lift up. Furthermore, the machine needs at least a 4-axis software (X-, Y-, Z- and C-axis).
- Connect the driver board to the customer machine according to the circuit diagram (***see attachment***).
- Connect the motor connection cable to the driver board. according to the circuit diagram (***see attachment***).
- Plug in the plug of the motor connection cable in the electrical plug of the E-Drive.


Potential Danger

Note labor regulations!
Work on electrical systems may only performed by trained electricians. Note there is an enlarged danger caused by electricity.


Attention

Note labor regulations!
The distance of driver board to the E-Drive may not be longer than 1000mm (length of motor connection cable). If the distance will be longer wire cross section are not enough. Also note the manuals and hints of components of third providers which are integrated in the customer machine.


Overpressure

Note labor regulations!
Work on pneumatic equipment may only performed by specialist staff. Note there is an enlarged danger caused by overpressure.


Hand protection

Note labor regulations!
To prevent cut injuries wear gloves while assemble and work with the E-Drive
Attention: Risk of injury!


Use Eye protection

Note labor regulations!
To prevent injuries, wear Eye protection while work with the E-Drive.
Attention: Risk of injury!

1. Establish pneumatical connection. Connect the customer pneumatic hose to the pneumatic intake. for this note the details the section "**Technical data**".

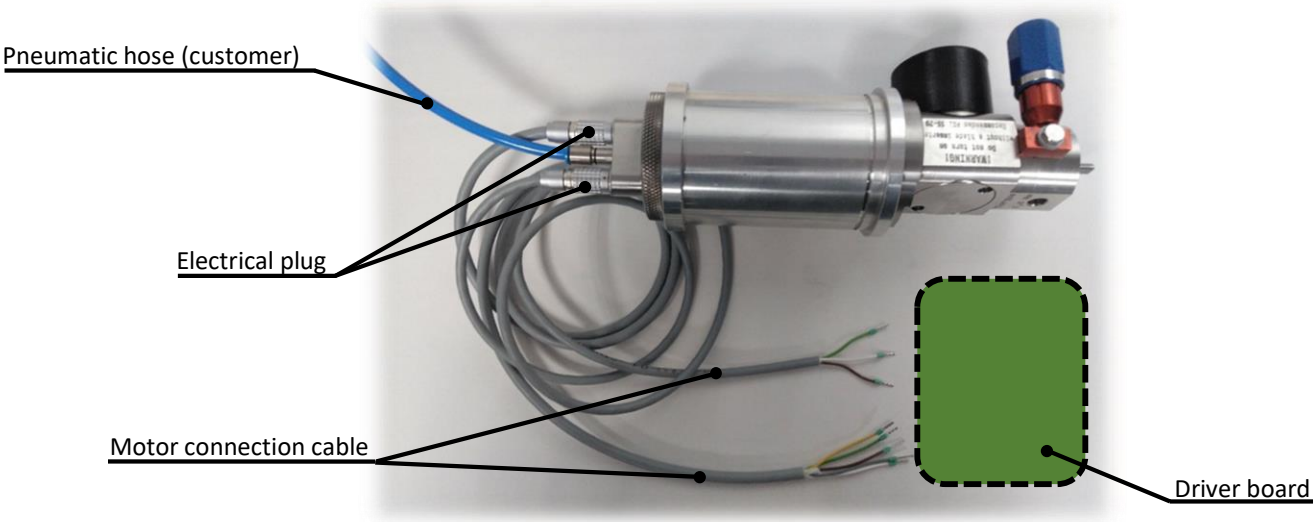


Figure 5: Establish pneumatical electrical connection (exemplary presentation).

For insert and change the blade proceed as follows:

1. Ensure the E-Drive is shot of and can't be switched on.
2. Untighten the screw with the included torque wrench and the 3 mm Allen bit (***Figure 7***)

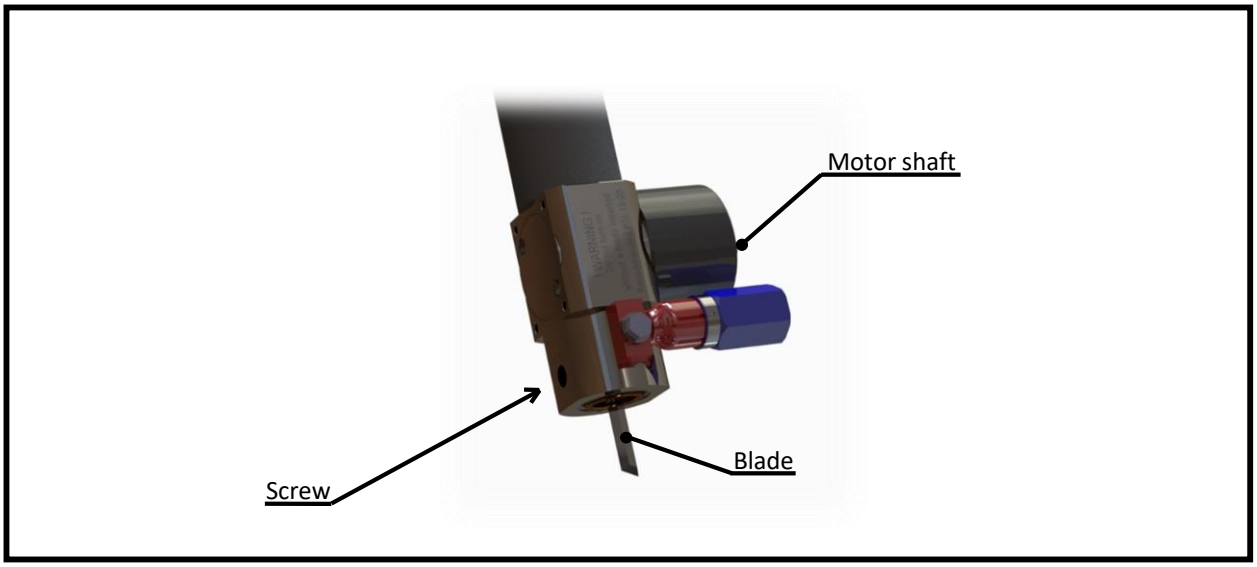


Figure 6: Rear key area and clamping element (exemplary presentation).

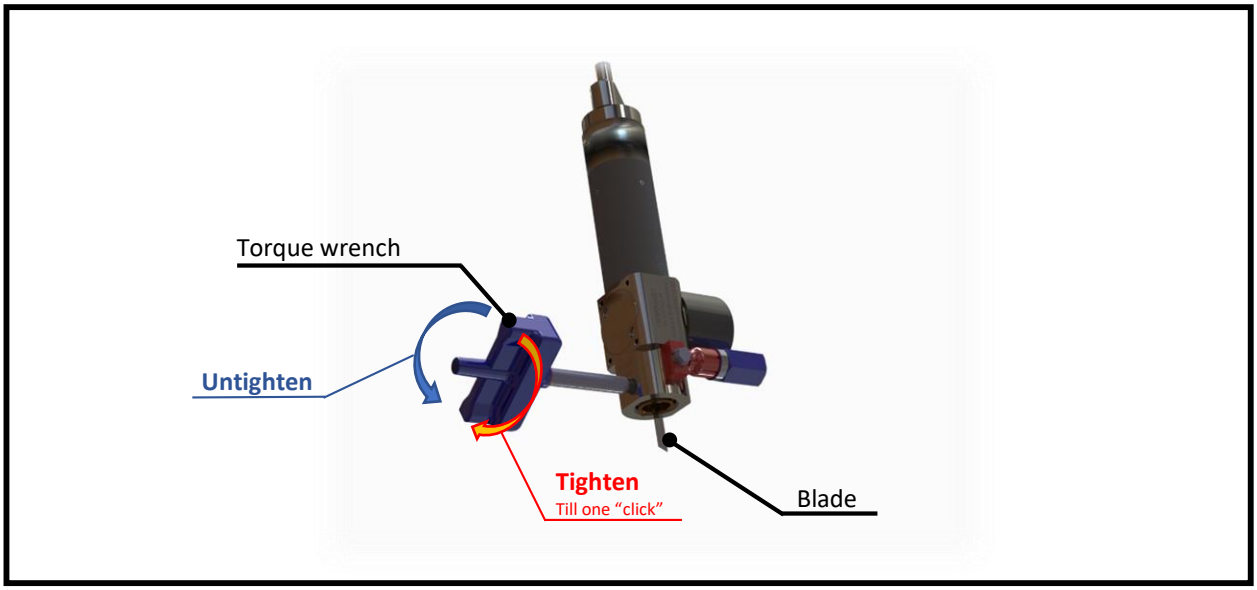


Figure 7: How to assemble / change a blade (exemplary presentation).

3. Carefully remove the blade from the blade intake.
4. Insert a new blade in the blade intake. (Check correct seat of the blade and the blade intake).

Hand protection

Note labor regulations!
Greatest caution offered while insert or change a blade. The blade is very sharp!
To prevent Injuries wear cut-resistant gloves. **Attention: Risk of injury**

Attention

Note labor regulations!
Pay attention that the blade has even contact to the blade intake and clamped correct by the screw. If the blade is assembled in a wrong way the screw can’t be tighten correct. This will lead to damage of the E-Drive and / or the blade.

Potential Danger

Note labor regulations!
Only use the E-Drive if the screw is tightened!
Check the blade before operate. Only use permissible blades listed in the section “***Technical data***”

5. Tighten the screw with the torque wrench and the 3 mm Allen bit.
   (Figure 7). Never touch the edge of the blade with your fingers. **Attention: Risk of injury!**
6. Remove torque wrench and the 3 mm Allen bit.
7. Check if Blade is oscillating well by turning motor shaft by hand.
8. Now adjust the cutting depth of the E-Drive with the new mounted blade with the costumer machine. (Page11 – **Adjust cutting depth**)
9. Make sure everything is mounted correct, like descripted. The E-Drive now is operational.

Potential Danger

Note labor regulations!
The operator is responsible that all of the protection devices are available and installed. Ensure that not intervention is possible while lifting, lowering and traversing of the customer machine. It is possible that parts will loosen (e.g. defect blade or cutting material) and fly around. **Attention: Risk of death!**

- The ant-twist-unit (optional) locks the plug intake and will be used if necessary

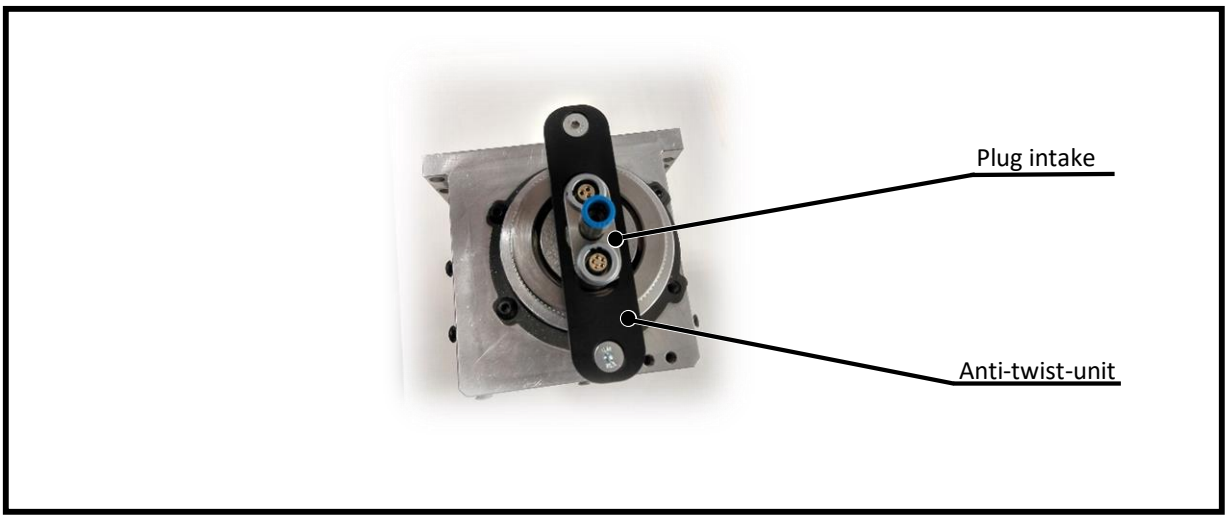


Figure 8: How to mount Anti-twist-unit (exemplary presentation).

Before contact support

Potential Danger

Note labor regulations!
In case of disfunctions it is necessary to consult qualified staff to determine the cause and rectify the fault. Always inform your supervisor in case of disfunctions. You are only allowed to determine such disfunctions as they are attributed to easy-, or maintenance error.

If the E-Drive has no function, please check the following points.

- The electrical and pneumatical plugs have to be connected properly.
- Check if the E-Drive is correctly set in the tool intake of the customer machine.
- The driver-board sends signal to customer machine, if there is an overload.
- If it is not possible to rotate the shaft of the motor easily by hand (index finger and thumb).

Attention

Observe Note!
If you can't rectify a fault at the E-Drive, don't hesitate to contact the support of GSB GmbH.

Maintenance and cleaning

Through the operation and external influences arise contaminants at the E-Drive.

- Remove those contaminants, foreign body's and production residues periodically and thoroughly. by doing this the E-Drive remain its performance and the safety is ensured.
- It is recommended to maintain the E-Drive periodically after 500 running hours.
- Frequently check the pneumatic at the E-Drive. The compressed air must be **dry, dust free and cleaned**.
- Pay attention if there are acoustically hints while operating with the E-Drive which may point to Dysfunctions like bearing issues. In this case let the manufacturer of the E-Drive check and repair the unit.
- The smooth-running of the blade intake is to check by rotate the shaft of the motor by hand (thumb and index finger). If the shaft rotates sluggishly it points to dirtying of the bearings of the blade intake and could lead to a replacement of the bearing unit. In this case let the manufacturer of the E-Drive check and repair.
- Frequently check the electrical connections of the E-Drive.
- Comply all the time with the maintenance intervals and also with the information's of servicing.
- After each maintenance and servicing remove all objects and materials out of the working area! Otherwise there might a risk of damaging the E-Drive and / or harm the operator.


Hot surface

Note the temperature!
Before starting maintenance or service ensure that all parts are cooled down equal to room temperature. Otherwise they might cause burns!
Attention: Risk of injury!


Attention

Cleaning!
It is forbidden to clean the E-Drive while a blade is inserted!!!
Only clean the E-Drive with fiber-free, not linting cleaning cloth. It is not allowed to use aggressive detergents.

Only use original spare parts of the manufacturer!
The manufacturer can only guarantee the function of the E-Drive if original spare parts are used.

Note labor regulations!
Maintenance intervals might increase or decrease and needs to be adapted to the circumstances.

By preventive maintenance and servicing disfunctions of the E-Drive can be avoid.
Replace wear parts before their lifetime is reached and the will fail. Plan a period for this in time for those Works.

Adjust cutting depth

To adjust the cutting depth, proceed as follows:

1. Make sure E-Drive is not operating
2. Rotate the shaft of the Motor (by index finger and thumb) till Adjust-Arrow points down. (***Figure9***)
3. Start the adjusting procedure of the CNC-Machine

Attention

Note the hint!
Only adjust cutting depth while E-Drive is in Low-Position (***Figure9***).
Adjust cutting depth in any other position may cause damage to the E-Drive, the blade and any other equipment

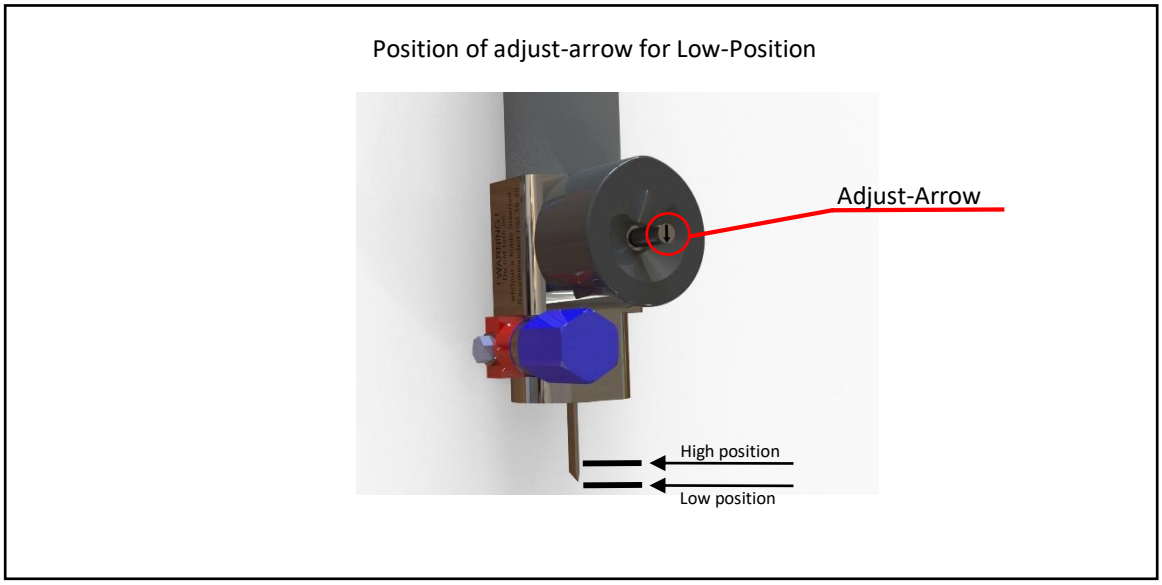


Figure 9: Adjust cutting depth (exemplary presentation).

Attention

Observe note!
To prevent damaging the blade, never adjust cutting depth with a hard surface (e.g. a steel plate). Note that different manufacturers of machines have different zero points at their machines.

Technical details

Product details		
Product	GSB E-Drive	
Item number	01200003	
Construction year	2018	
Weight	1,6 kg	
Material	Stainless steel	
Dimensions		
Length (overall)	Approx. 235 mm	-> 9,25 in
Length (Bridge to table)	Approx. 75 mm	-> 2,95 in
Width	Approx. 60 mm	-> 2,35 in
Height	Approx. 80 mm	-> 3,15 in
Electronical details		
Performance	70 W (rated capacity)	
Voltage	48V (DC)	
Ampere	6 A	
Pneumatical details		
Hose diameter	6mm	-> 0,24 in
Operating pressure	1,4 bar	-> 20 psi
Air consumption	50 l/min.	-> 1690 fl. oz. /min
Air quality	dry, dust free and cleaned	
Technical details		
Intake diameter	6 mm	-> 0,24 in
Strokes per minute	12000 min^{-1}	
Max. feedrate (depending on material and blade)	Max. 2500 mm/min	-> Max. 98,5 in/min
Warranty period		
Time	12 months	

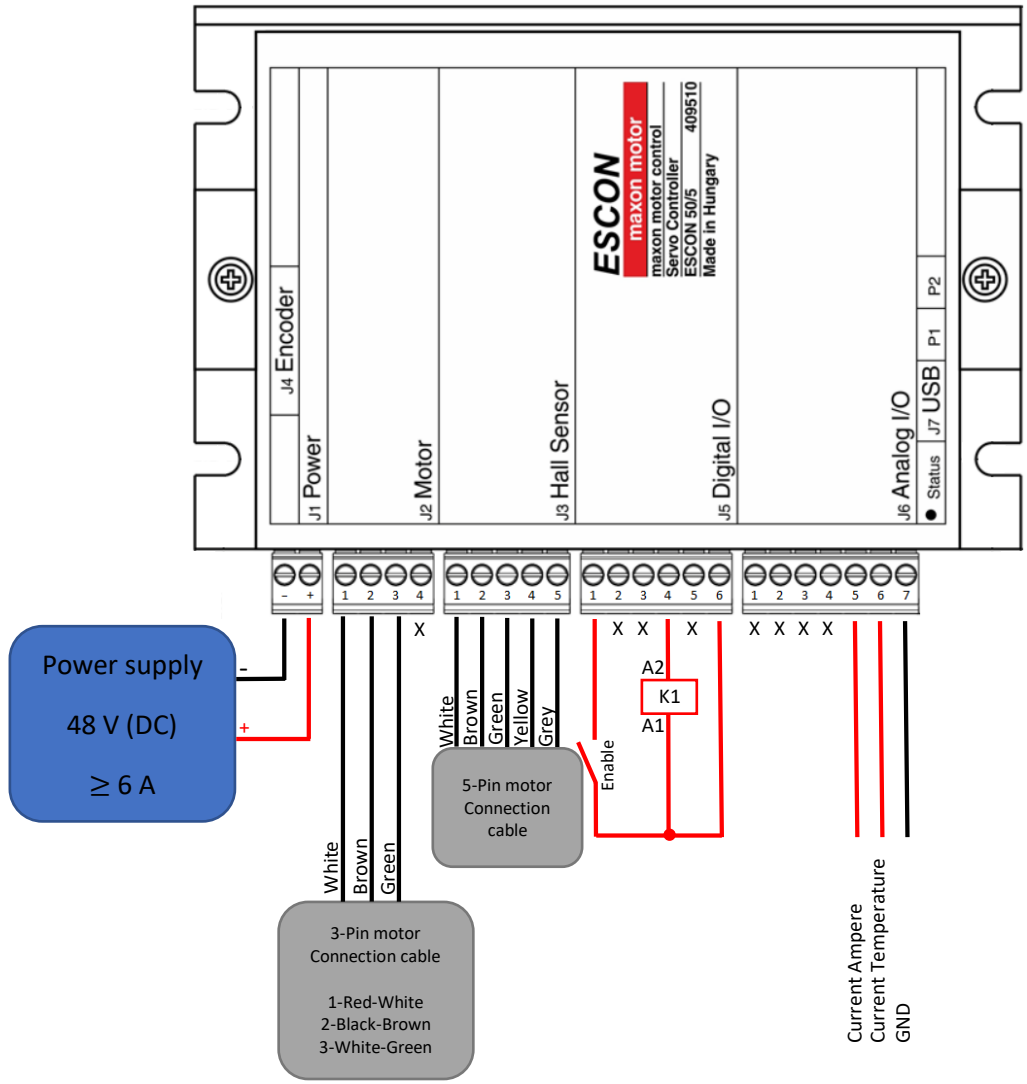
We reserve ourselves to do Changes which serve the technical progress of the E-Drive.

CE This product complies with the guidelines of the European Union.

Support address (manufacturer)

GSB GmbH
Steinstraße 35 d
D-25364 Brande-Hörnerkirchen / Germany
Tel. +49 / (0)4127 / 94229-00

Wiring diagram



Digl/O4:
K1 max. 500mA

AnOut5:
0V = 0A
4V = 12A

AnOut6:
0V = 0°C
4V = 100°C

The customer machine must be stopped by the following conditions to prevent damage to the unit, material, blade and the whole machine.

1. If rpm of the unit is ≤ than 9000 min^{-1}
➔ Enables K1 (K1 needs to be installed by machine manufacturer).
2. If temperature of the unit is ≥ 70°C
➔ Analog signal.

Both conditions need to be implemented by the machine manufacturer!