SIGNODE®

BXT 2
BXT 2-19

Maintenance Manual

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1. Preface

The objective of this maintenance manual is to familiarize a skilled technician with the tools particular features and enable him to repair and maintain it independently.

Current issues of the operating instructions and the concerning product information sheets are essential elements of this manual and have to be checked as well.

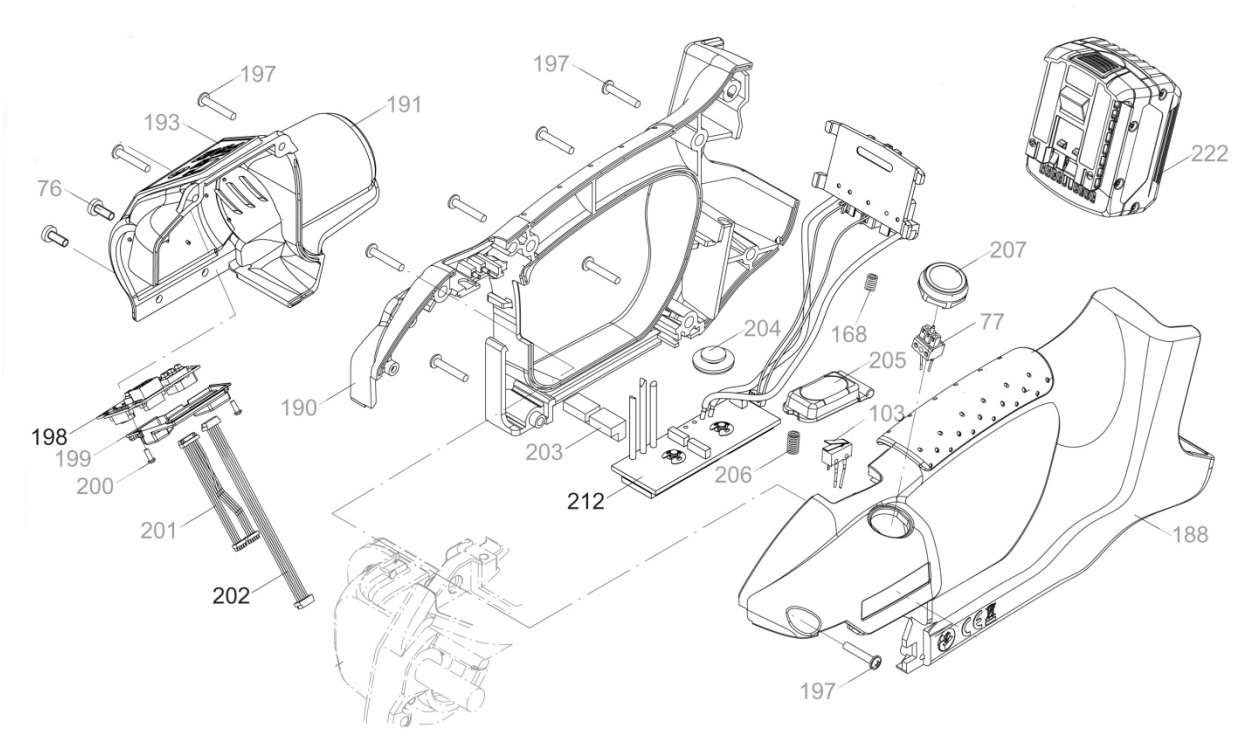
2. Basic Innovations

Following new technical features have been implemented in this tool generation:

Innovation	Advantage
Lithium-Ion battery technologie	• Increased energie density • negligible self discharging • no memory effect
Brushles DC Motor	• Higher Efficiency • Wear-free
Automatic welding	• Constant high sealing quality • Ergonomic benefits • Increased productivity
Rocker with floating tooth plate	• Improved characteristics in tensioning
Revised Tension release pawl	• Improved handling

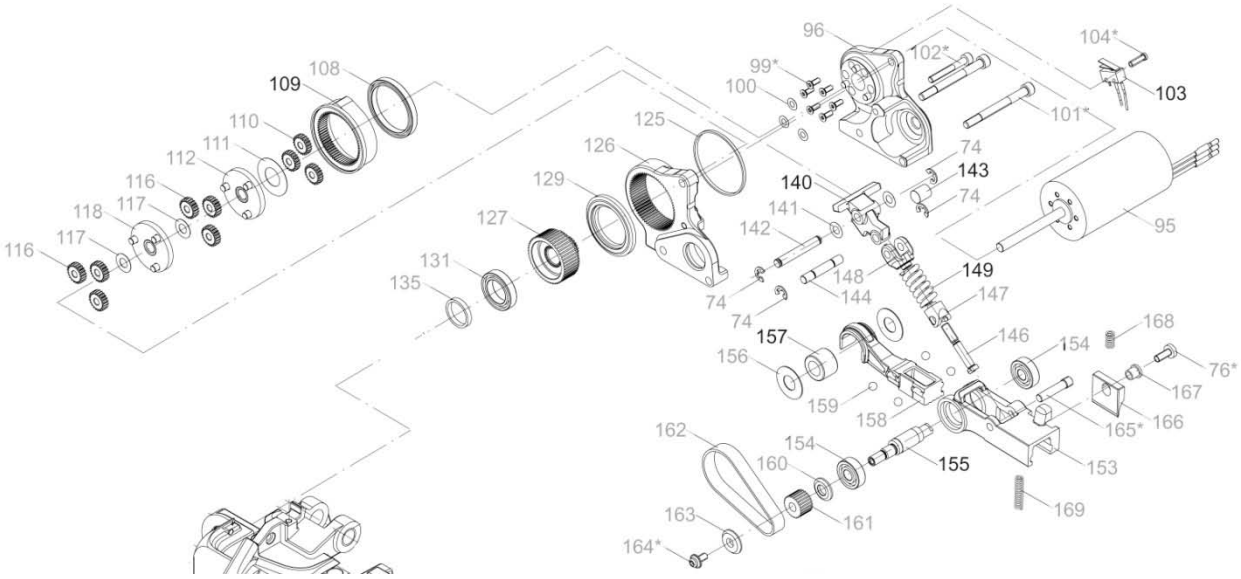
3. Tool Design

3.1. Housing/electrical components:



The housing is carried out in 3 pieces. All processes are controlled and monitored by the Printed circuit board (pos. 198). The PCB interacts via the signal cable (pos. 202) with the motor power electronics (pos. 212). The power electronics is required to run the brushless motor. You can find a schematic wiring diagram in chapter 13.

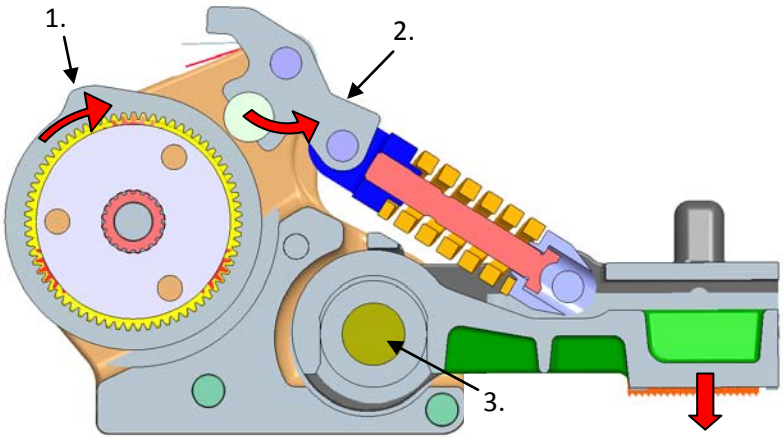
3.2. Welding unit



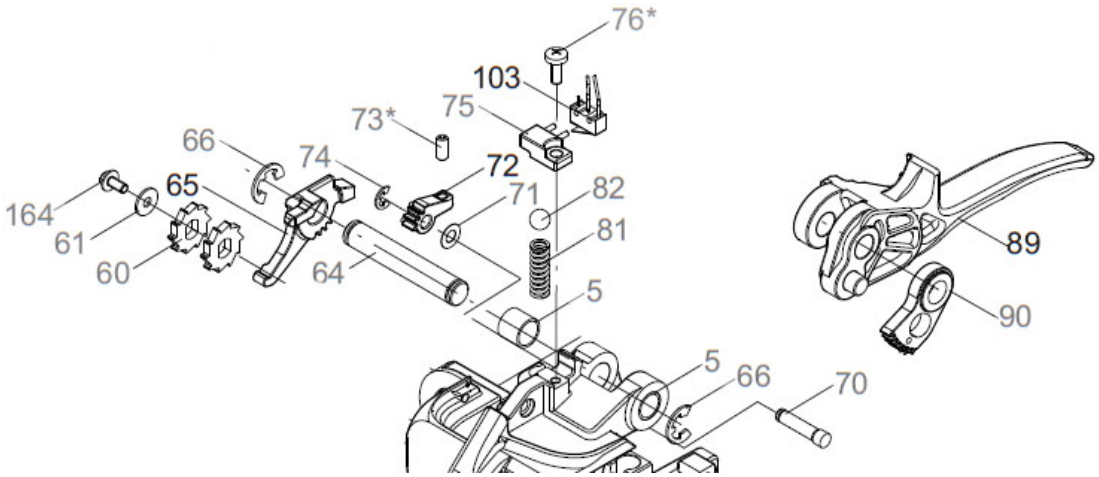
The unit is lowering automatically when the welding process is started. Depending on the direction of motor rotation (freewheels) this is taking place as follows:

1. The cam ring (pos 109) is turning towards the switching cam (pos. 140, 143).
2. This forces the switching cam to go up and to push the welding unit downwards.
3. The eccentric axe (pos.155) is driving the welding shoe via needle bearing (pos.157)

The position of the cam ring needs to be controlled by the PCB. The required information about its current position (reference point) is provided by the micro switch (pos. 103).

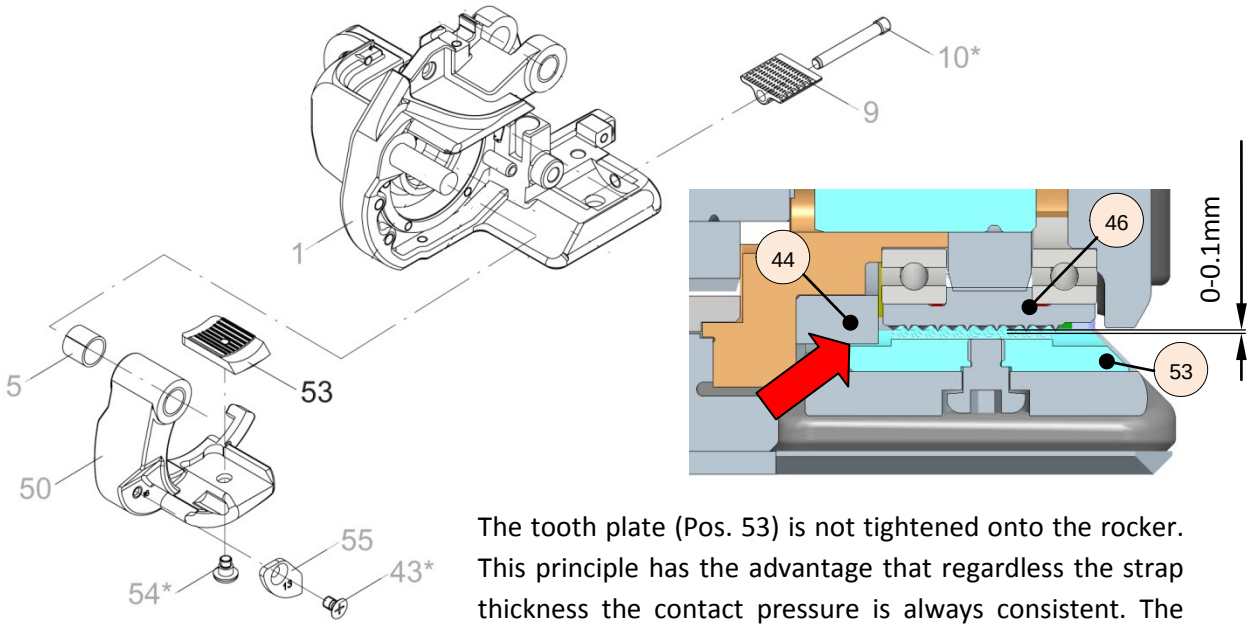


3.3. Rocker lever and reset



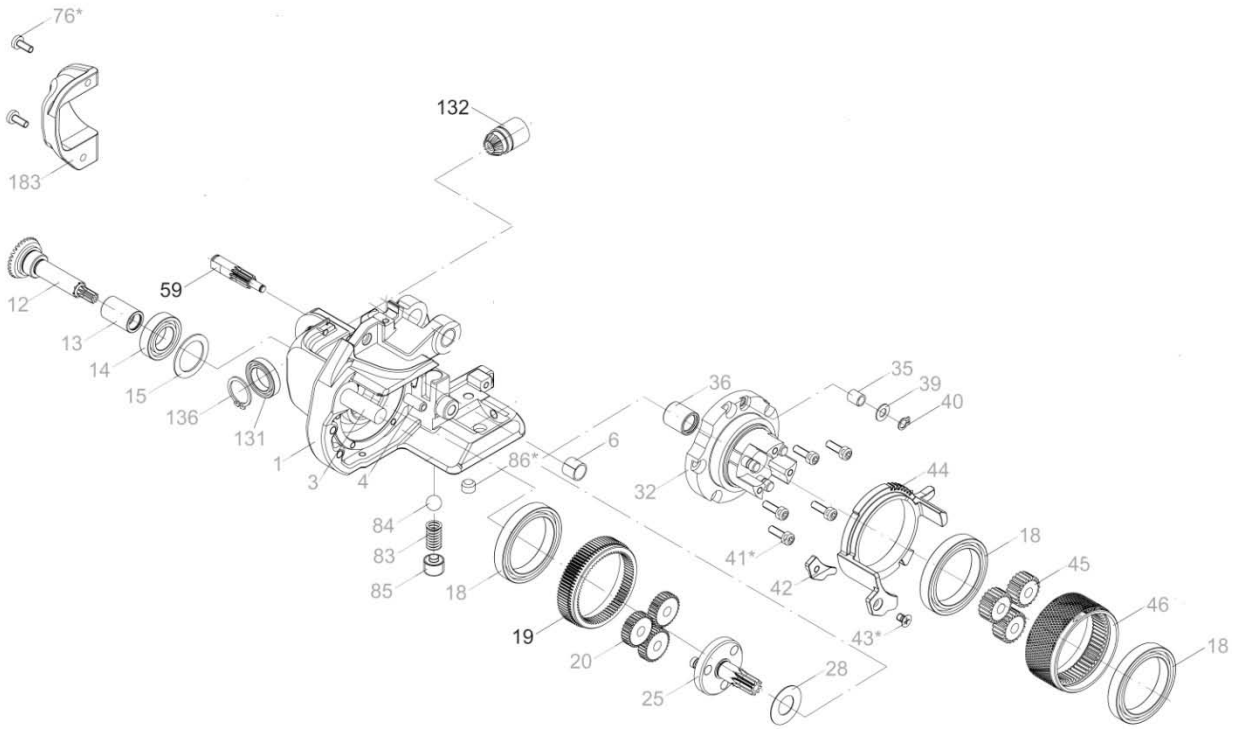
The Blocking Pawl (pos. 65) prevents the tension gear from turning backwards during tensioning. After strapping has taken place, the rocker lever (pos.89) is pulled, the pawl and therewith the tension is released. The reset cam (pos. 72) brings the welding unit back to its initial position.
The Micro switch (Part of pos. 103) scans the position of the rocker lever. When the lever is pulled, the PCB does not allow initiating any function.

3.4. Rocker and toothed plate



The tooth plate (Pos. 53) is not tightened onto the rocker. This principle has the advantage that regardless the strap thickness the contact pressure is always consistent. The gap between tooth plate and the tension wheel (Pos. 46) is ensured by a bedstop on the cam disk, (Pos.44) notice the arrow.

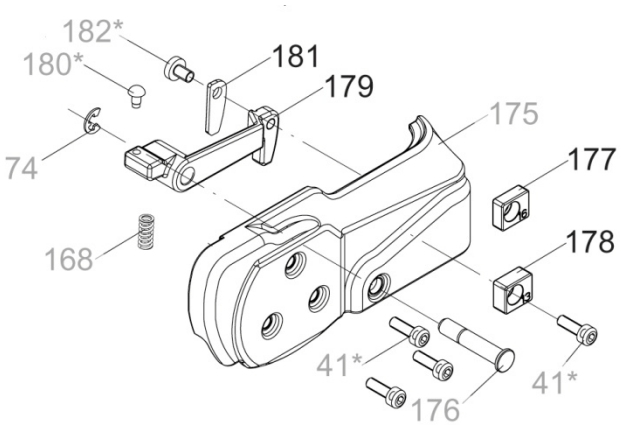
3.5. Tensioning gear



There is a free wheel integrated into the bevel gear pinion (Pos. 132). Provided the appropriate turning direction the free wheel delivers the torque to the 2 stage planetary gear and the tension wheel. To loose the tension the ring gear (Pos.19) is released by the pawl axle (Pos. 59). See also chapter 3.3).

3.6. Side cover with strap guides

The strap guide (Pos. 179) is integrated into the side cover. To set up the required strap width the shims (Pos. 177, 178, 181) have to be added or removed.



4. Wear parts

Tension wheel, toothed plate and knife are wear parts. In order to reduce costs for the enduser these parts can easily be replaced by themselves. The operating instructions provide the necessary information in chapter 7.1 – 7.3.

5. Diagnostic aids

Service technicians are supported in fault finding by the tools firmware. Faults in operating sequence or system errors are reported by acoustic signals or via the segment display by failure codes. Additionaly a service interface allows detailed diagnosis with the help of your computer.

5.1. Cycle counter

To readout the number of strapping's the tool has already accomplished, proceed as follows:

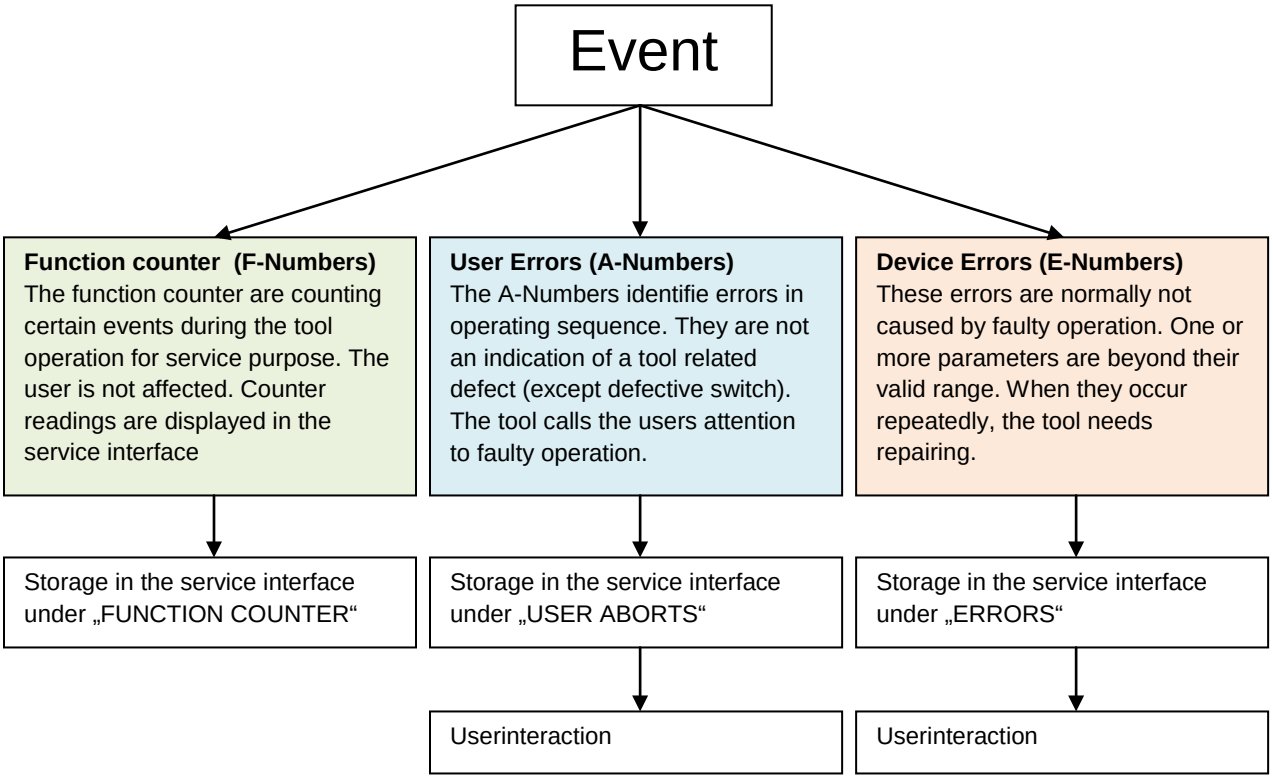
1. Press and hold the "**F**" button on the panel
2. Pull the Rocker lever

The number of cycles is indicated in the segment display:

- - 1 6 8 3 5 - - = 16'835 Cycles

5.2. Problem reports

The reporting of events is structured as follows:

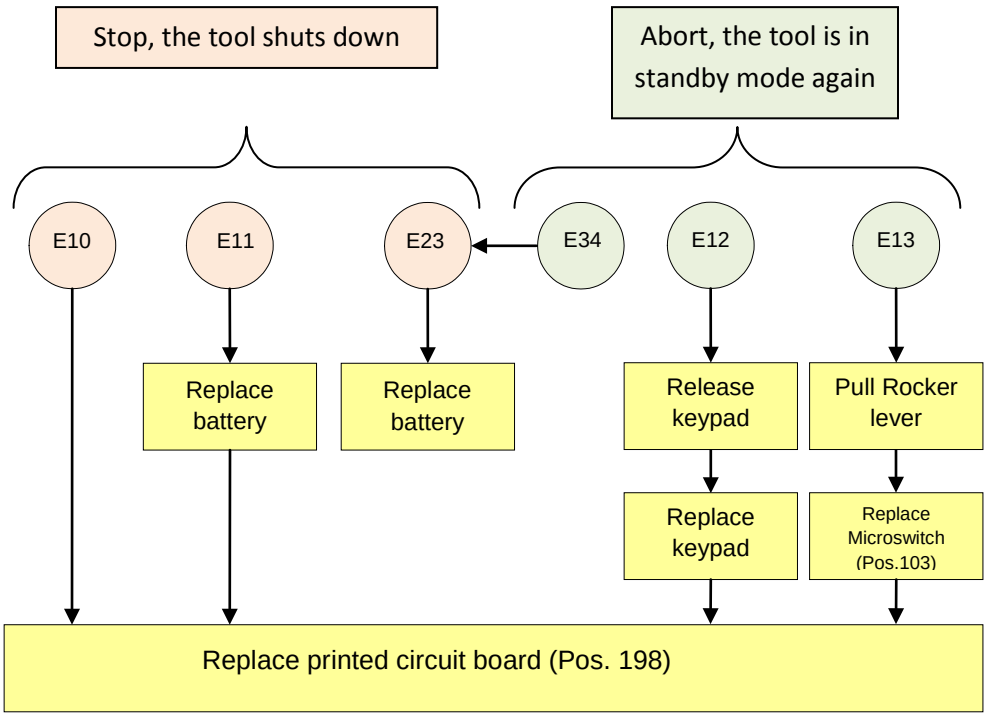


You will find a complete list with the failure codes and remedy in chapter 12 "Error codes".

Example of the event readout using the service interface:

```
|=============================================================================|
|                        Device History                                       |
|=============================================================================|
|                                                                             |
|-ERRORS:                                                                     |
|      E11 --> DEVICE_WRONG_BATTERY: 1                                        |
|-USER ABORTS:                                                                |
|      A22 --> abort by rocker while welding: 0                               |
|      A23 --> abort by rocker while cooling: 0                               |
|-FUNCTION COUNTER:                                                           |
|      F10 --> cycle counter overall: 1                                       |
|      F11 --> cycle counter B: 1                                             |
|      F12 --> cam reset: 0                                                   |
|-TEMPERATURE:                                                                |
|      Power stage temperature min: 23.1                                      |
|      Power stage temperature max: 25.5                                      |
|      Battery temperature min: 2.0                                           |
|      Battery temperature max: 25.0                                          |
|                                                                             |
|=============================================================================|
```

As per description above, tool faults are displayed as E-numbers. Following diagram shall help to simplify the fault finding:



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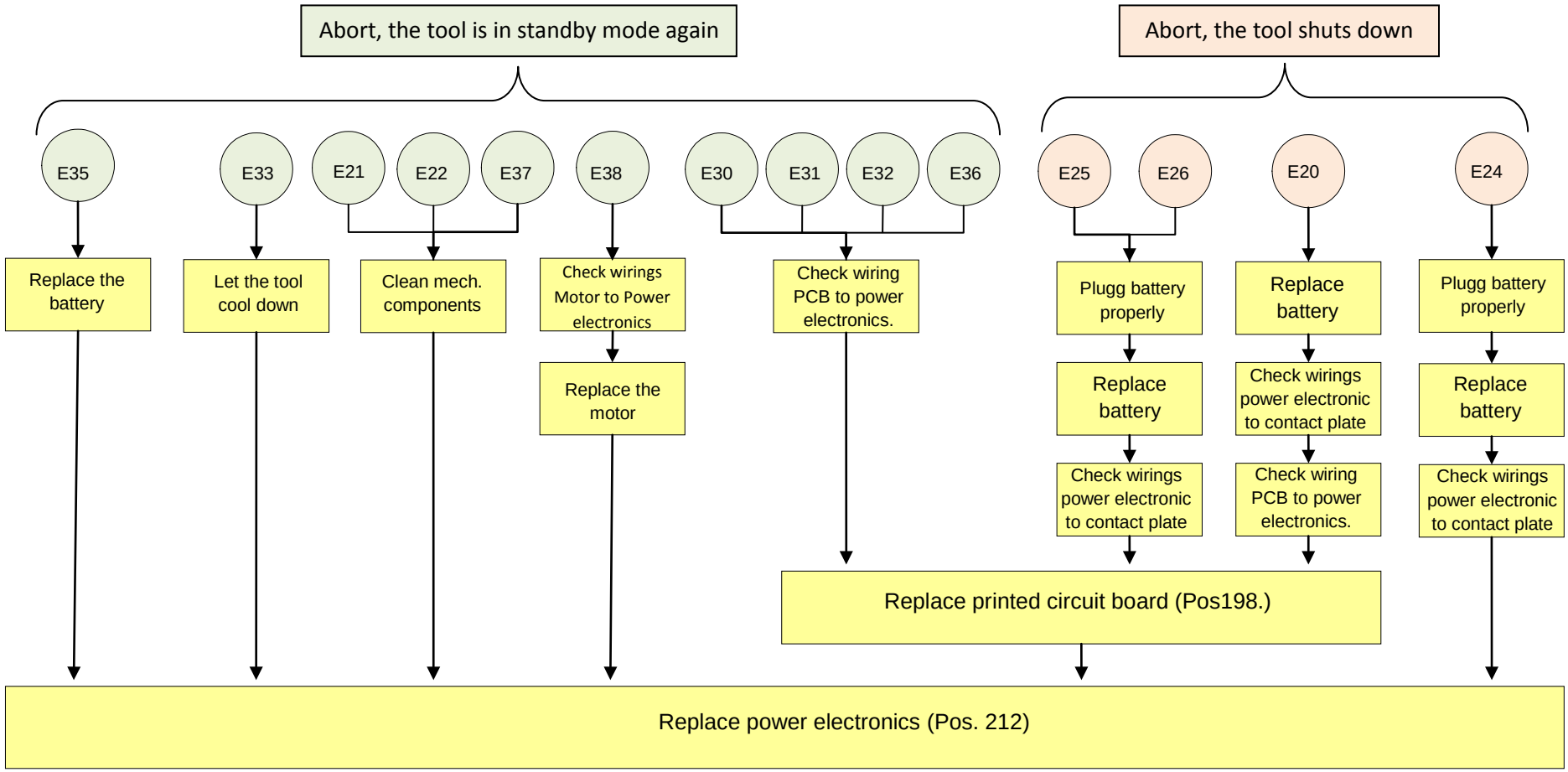
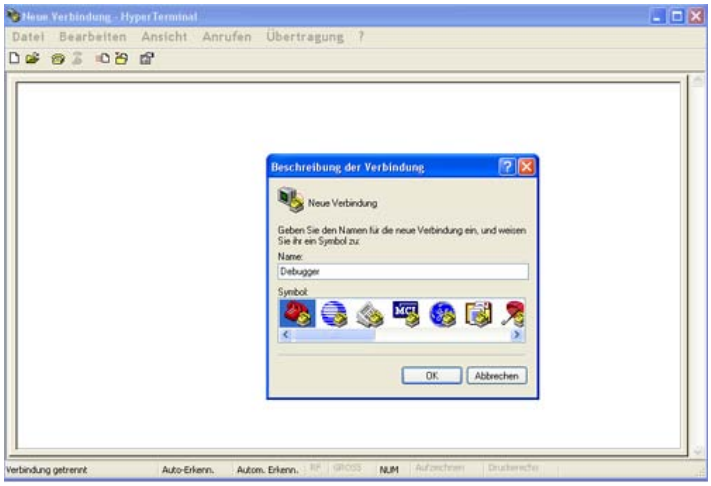

Abort, the tool is in standby mode again
Abort, the tool shuts down
E35
E33
E21
E22
E37
E38
E30
E31
E32
E36
E25
E26
E20
E24
Replace the battery
Let the tool cool down
Clean mech. components
Check wirings Motor to Power electronics
Check wiring PCB to power electronics.
Plugg battery properly
Replace battery
Plugg battery properly
Replace the motor
Replace battery
Check wirings power electronic to contact plate
Replace battery
Check wirings power electronic to contact plate
Check wirings power electronic to contact plate
Check wiring PCB to power electronics.
Replace printed circuit board (Pos198.)
Replace power electronics (Pos. 212)

5.3. Service Interface

As optional accessory a data cable (Art. Nr: 1821.163.153). for detailed fault diagnosis is available. Using this data cable allows to readout the most important tool parameters on your computer and helps debugging. Hyperterminal is required as user interface. Hyper terminal is already installed on every XP-Computer. For other operating systems without Hyper terminal get into contact with Orgapack.

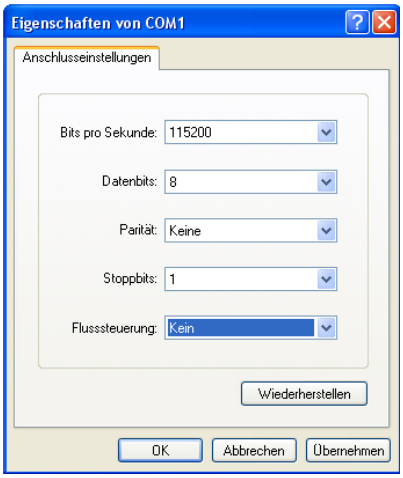
To set up Hyperterminal:

1. Start Programm →Path: All Programmes\ accessories\Communication\Hyper Terminal
2. Type in a name for the connection on which the set up will be saved. E.g. Debugger. Confirm by clicking „OK“ .

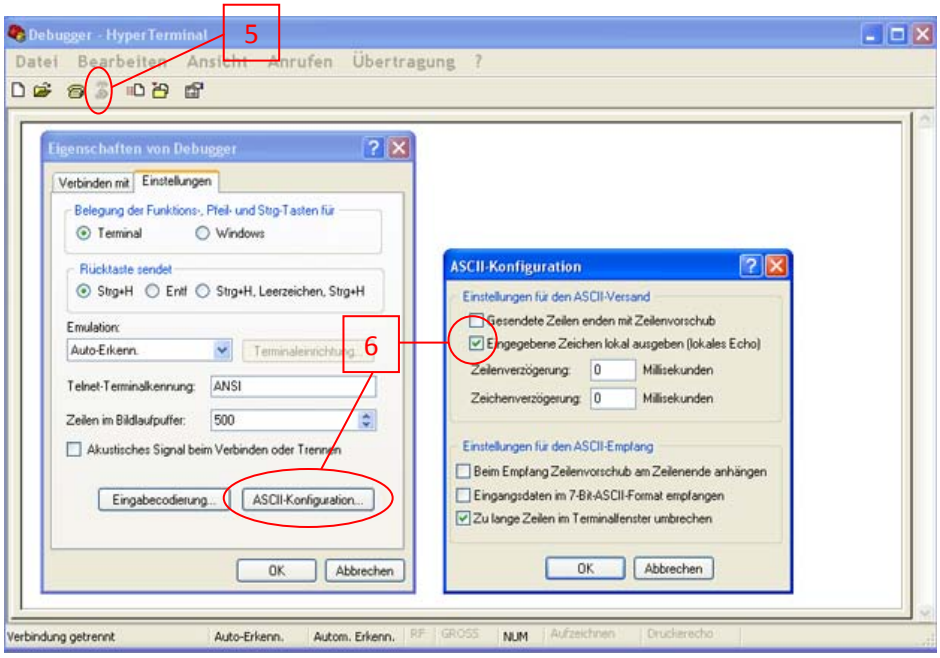


3. The window „Connect to“ will open. Chose Comm port, COM1 in most cases. Confirm by clicking„OK“.

4. Window „COM1 Properties“ will open. Make settings as enclosed in the illustration. Confirm by clicking „OK“.



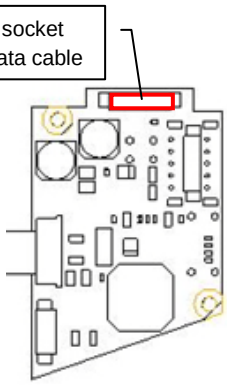
5. „Debugger“ Hyper Terminal will open. Cut the connection by clicking on Icon (5).

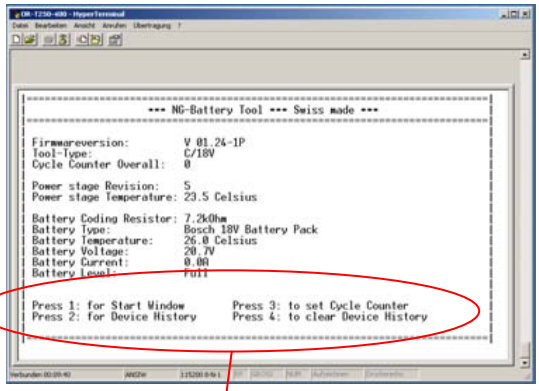


6. File/Properties/ASCII-Setup → . Check the box „Echo typed characters locally.
7. Save the settings (File/Save) and **close Hyper Terminal.**

Establish connection:

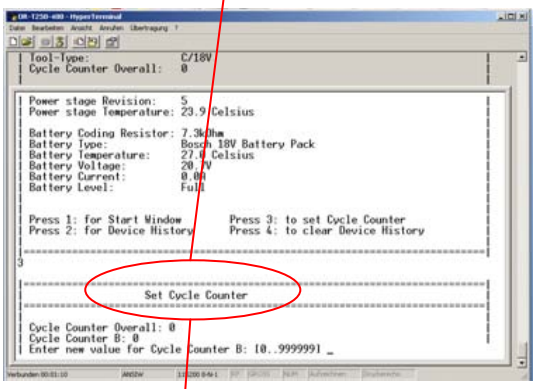
1. Plug the data cable to the serial interface(RS 232) of your computer. Should your PC or Laptop not be equiped with a serial interface, you have to purchase a virtual serial interface and connect via USB. Please follow the instructions of the interface manufacturer.
2. Remove the battery from the tool. Remove the screws of the motorhousing, untighten it and plug the data cable to data plug socket.
3. Start Hyper Terminal (saved configuration)
4. Insert the battery in the tool. The start screen will now be displayed (See illustration). All Program steps (e.g. when tension button is pressed) can now be monitored.
   Potential failures in operating sequence are displayed in plain text.



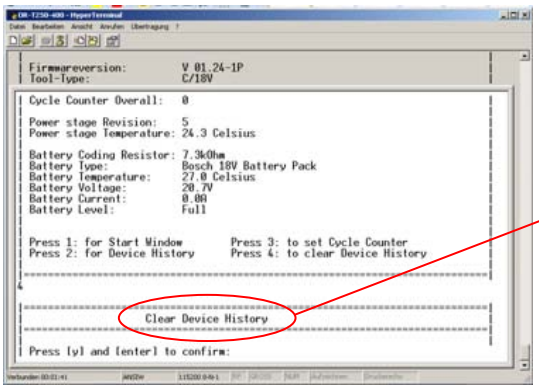


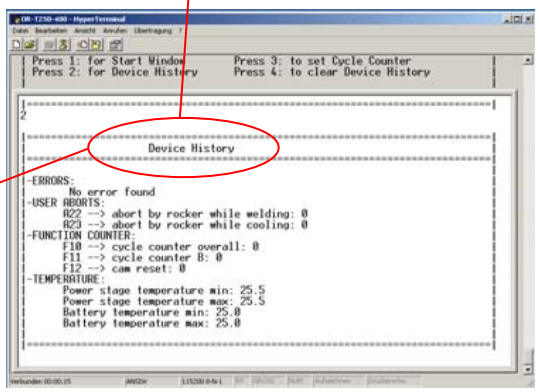
5. Following options are available by pressing key 2-4:
   - 2 → Device History
   - 3 → adjustable Cycle counter B e.g. to reset after maintenance work.
   - 4 → Reset of Device History, recommended after maintenance work.

   By pressing key 1 the start screen is displayed again.



6. Remove the battery before unplugging the tool.





6. Tool reset

In some rare cases, it may occur that it is not possible to bring the welding unit back to its initial position Also the rocker lever is blocked.

Important! **Never try to lift the rocker lever with force.**

Reason for this behavior may be:

- Interrupt of power supply during welding process (disconnection of battery?!)
- Pulling the rocker lever with force during welding process (to protect the motor, it switches off due to over-current consumption).
- Microswitch (Pos. 103) is defective → reparation is necessary.
- PCB or wirings are faulty → reparation is necessary.

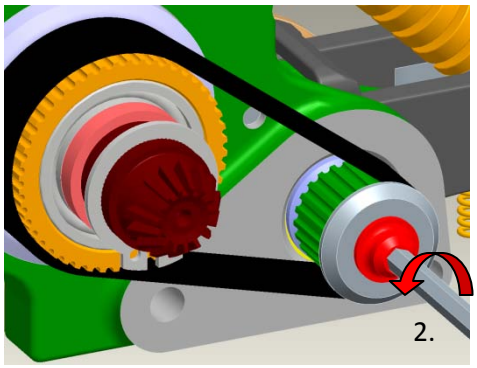
To debug the 2 possibilities given on top, the tool is equipped with a reset feature, as also stated in chapter 6.3 in the operating instructions:

1. Switch to fully automatic mode.
2. Press and hold the welding button, thereafter press the tension button.

The tool will now run the welding function and so turn the cam ring away from its inappropriate position. But probably the motors torque may not be sufficient to do so. Do not try to execute this process more than 3 times within a short period. Otherwise the motor may get damaged.
If you have not been successful so far, and the rocker lever is still blocked, proceed as follows:

1. Insert an Allen key (3mm) through the hole in front of the base plate and apply on cylinder head screw. Pos. 164.
2. Turn 10 revolutions **counterclockwise**. Moderate effort may be needed to do so.
3. Pull rocker lever → welding shoe must swing up.

1.



2.

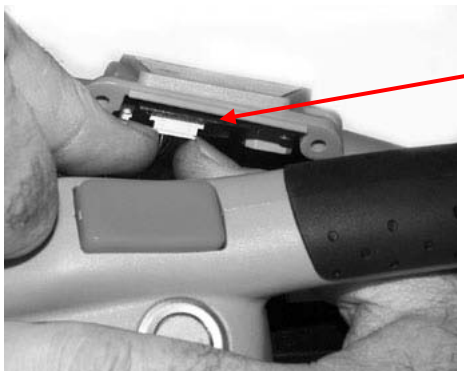
7. Disassembling

Please consider the explosion drawing which is printed on the last pages of the operating instructions. Purpose of this manual is only to draw the technician's attention to the most relevant issues.

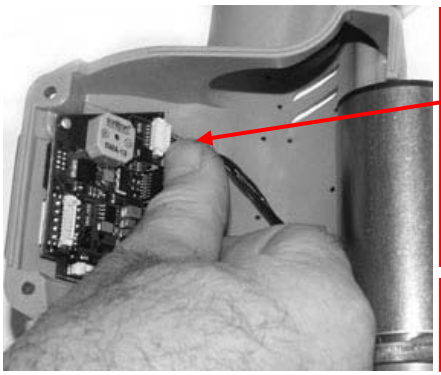
7.1. Housing/electrical components

Important! The connectors and cables have to be treated carefully. Never pull on the wiring to disconnect the connectors.

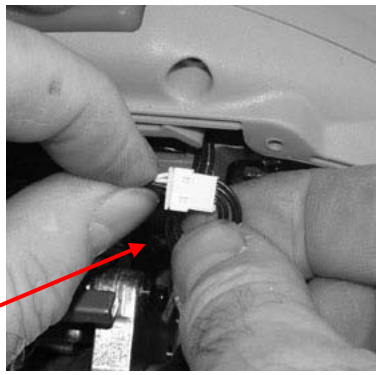
1. Remove the screws of the motor cover (Pos. 191) and pull it slightly backwards.



2. Disconnect the intermediate cable (Pos. 201)

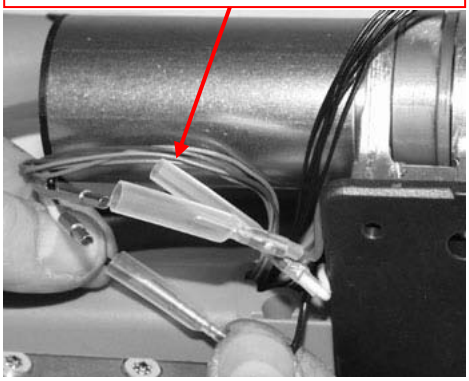


3. Disconnect the signal cable (Pos. 202) from the PCB. If the harness is secured with a cable tie, cut tit.
Remove the motor cover.

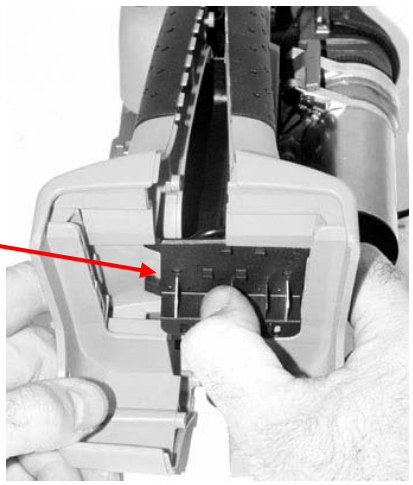


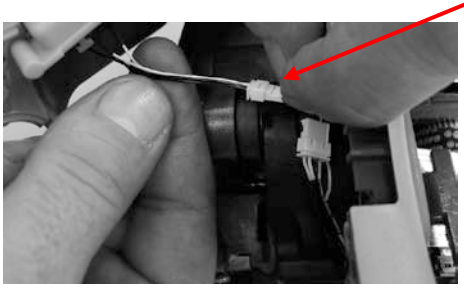
4. Disconnect and remove the intermediate cable (Pos. 201).

5. Disconnect the motor from the power electronics



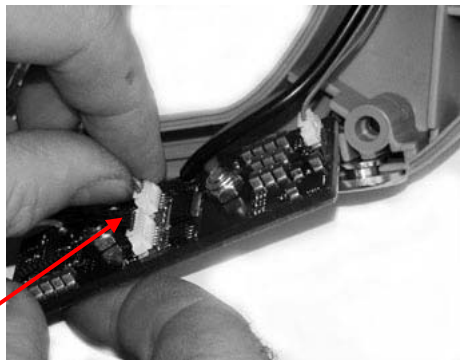
6. Remove side cover (Pos. 175), 4 x Screw M4 (Pos. 41). Loosen the screws of the housing, 7 x Pos.197.
Disassemble the housing (notice the picture). Pay attention to the wiring, the housing cannot yet be removed completely.





7. Disconnect the Intermediate cable (Pos. 201). Remove the left part of the housing

8. Disconnect the motor hall sensor wirings

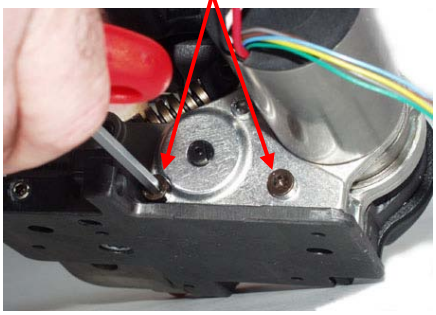


7.2. Welding unit

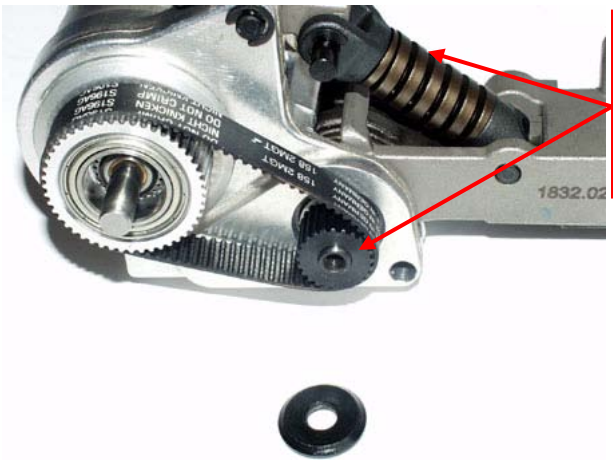
1. Remove cable tensioning (Pos. 103)

2. Remove set screw and compression spring (Pos. 86 & 169).

3. Loosen centering screws (2x Pos. 101) and remove them completely.



4. The whole welding unit can now be pulled backwards.

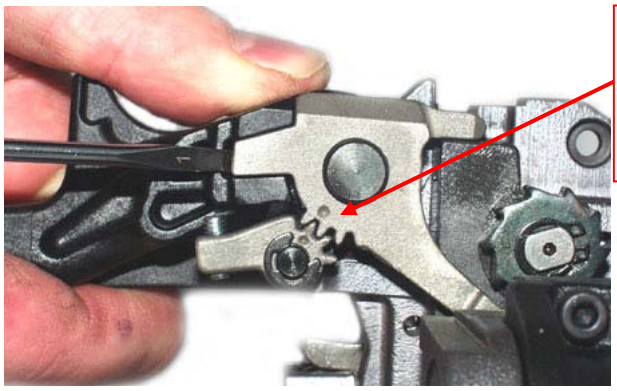


5. Remove washer (Pos.163). To do so, retain the excentric axe (Pos.155) with a 5mm wrench on its back side and loosen the screw (Pos. 164).

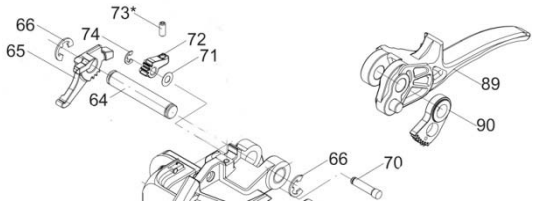
6. Pull out the toothed belt wheel (Pos. 127). Remove screw (Pos.102) and retaining rings (Pos. 74). The cover of the motor support (Pos. 126) can now be removed.

Important!: The motor is fixed to the motor support with **precote®**-coated screws. Should it become necessary to replace the motor the screws have to be warmed with a hot air fan to 80°C maximum.

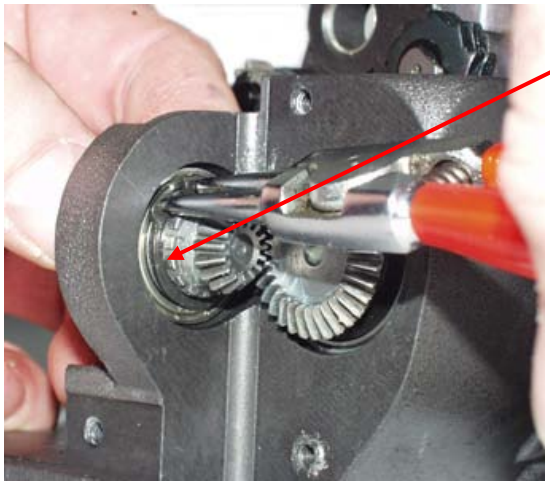
7.3. Rocker lever and reset



1. Remove retaining rings (Pos. 66 & 74). Loosen the blocking pawl with a screw driver and pull it off the lever. Remove the bolt (Pos.64).



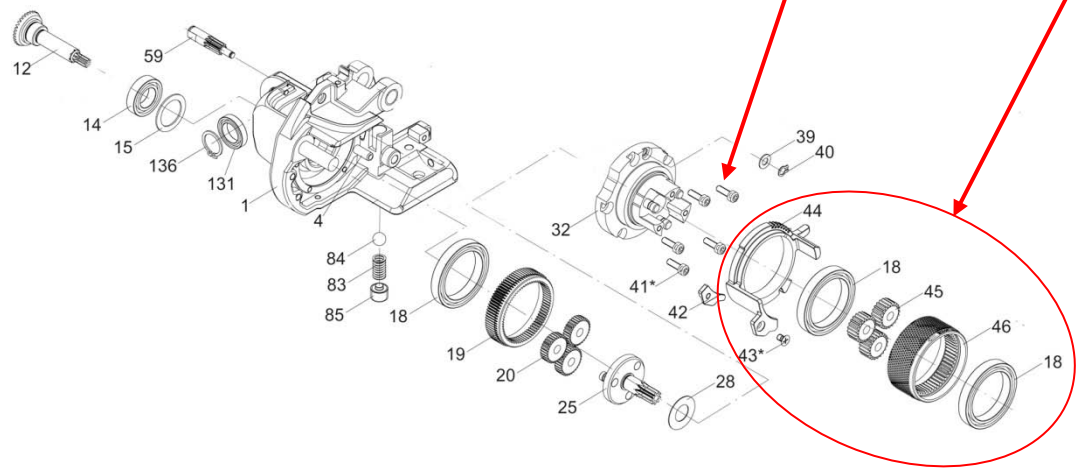
7.4. Tensioning gear



1. Remove retaining ring (Pos. 136). The bevel wheel complete is now free to be pulled out.

2. Remove the tension wheel, the planetary wheels and the cam disk (Pos. 44-46 & 18) from flange complete (Pos.32).

3. Loosen the screw connection (5xPos.41) and remove retaining ring (Pos 40). All other gear parts can now easily be removed.



8. Assembly

To assembly the tool, simply proceed in the opposite way. Please consider the explosion drawing which is printed on the last pages of the operating and safety instructions. All positions which are marked with * have to be secured. Most screwings are TufLok ® coated and secured. Do not use these screws several times. Replace them with new original screws or secure them with loctite.

Moving parts need to be lubricated. Please consider chapter 10.

Information about how to assemble the wiring and the housing can be found in chapter 11.

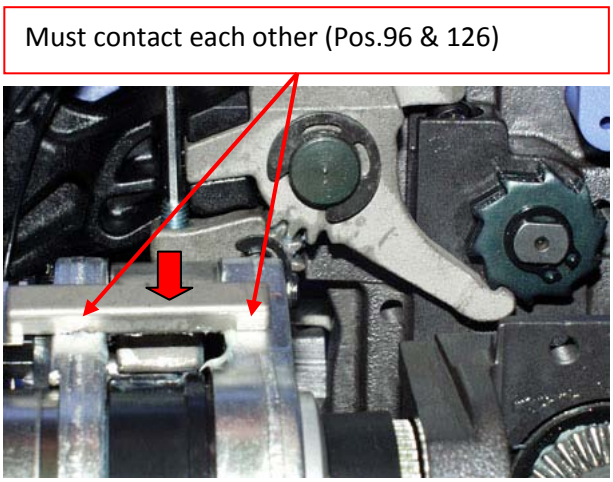
Screw with TufLok ®-coating

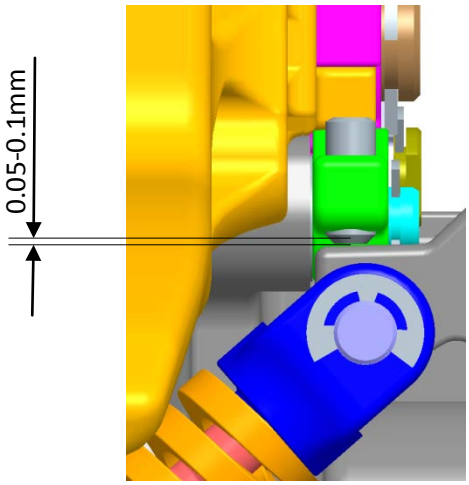
9. Adjustments

9.1. Adjustment of the welding reset

To avoid play in the reseting parts of the welding unit these parts can be adjusted by the set screw (pos. 73). This screw is adjusted when the tool is assembled in the factory. Normally readjustments are not necessary. When parts of this unit are replaced, it may become reasonable to check this setting. To do so proceed as follows:

1. Unscrew (Pos 73) until it is flush with the reset cam (Pos.72).
2. Push onto the switching cam (pos. 140) until the welding unit springs completely downwards.
3. Screw in the set screw until the switching cam starts to lift itself. Unscrew for a quarter revolution.
4. Check the setting with a feeler gauge (0.05 - 0.1mm).

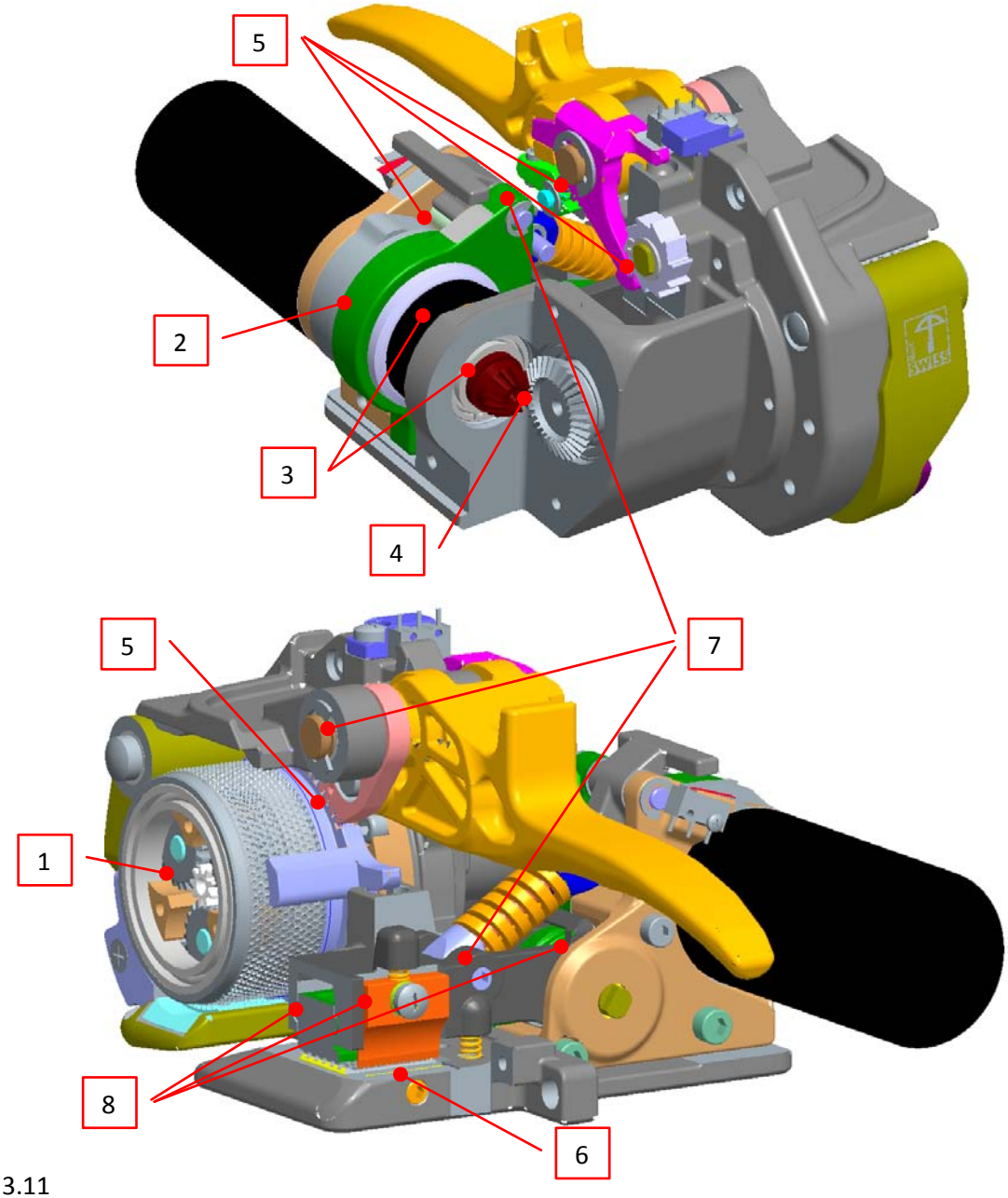




10. Lubricating chart

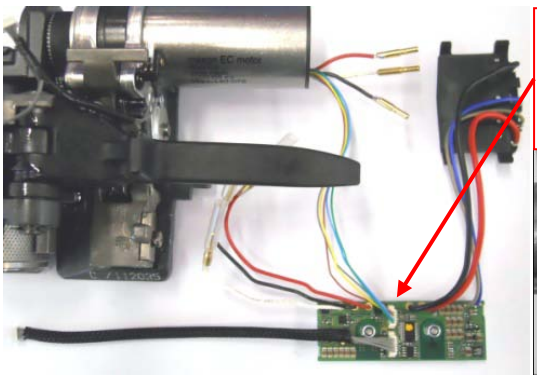
Recommended Lubrication:

	Description:	Lubricant:	Interval:
1	Planetary gear tensioning	Klüber Microlube GBU-Y 131	100‘000 Cycles
2	Planetary gear welding unit	Klüber Microlube GBU-Y 131	100‘000 Cycles
3	Freewheels (Pos. 127/ 132) **Important!** No grease!	Universal oil e.g. WD 40	100‘000 Cycles
4	Bevel gear	Klüber Microlube GBU-Y 131	50‘000 Cycles
5	Cam disk, reseting cam, switching cam	Klüber Microlube GBU-Y 131	50‘000 Cycles
6	Tooth plate, Set screw	Klüberpaste 46 MR 401	50‘000 Cycles
7	All other moving parts.	Pressure resistant lubricant spray, e.g. Würth HHS 2000	50‘000 Cycles
8	Ball guides at welding shoe, knife guide, excentric axle	Pressure resistant lubricant spray, e.g. Würth HHS 2000	25‘000 Zyklen

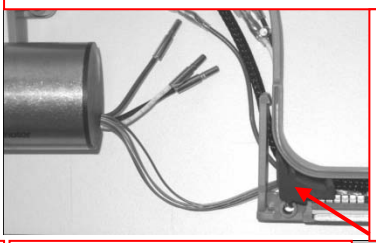


11. Wiring

The cables must be layed very accurate. Misplaced wiring could be damaged by moving parts inside the tool. Bad connections may lead to tool malfunction.

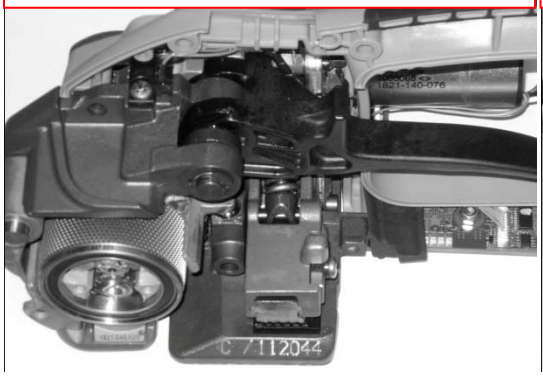


1. Prepare the power electronics for the assembly. Connect the hall sensor cables and the signal cable to the power electronics.

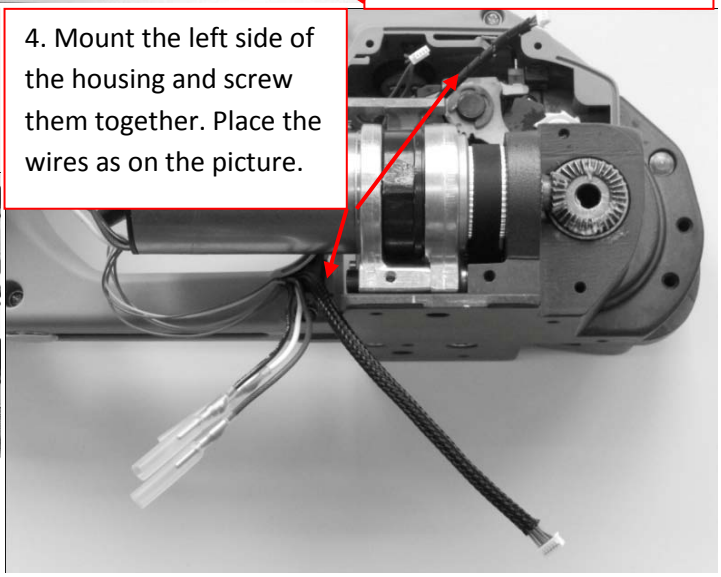


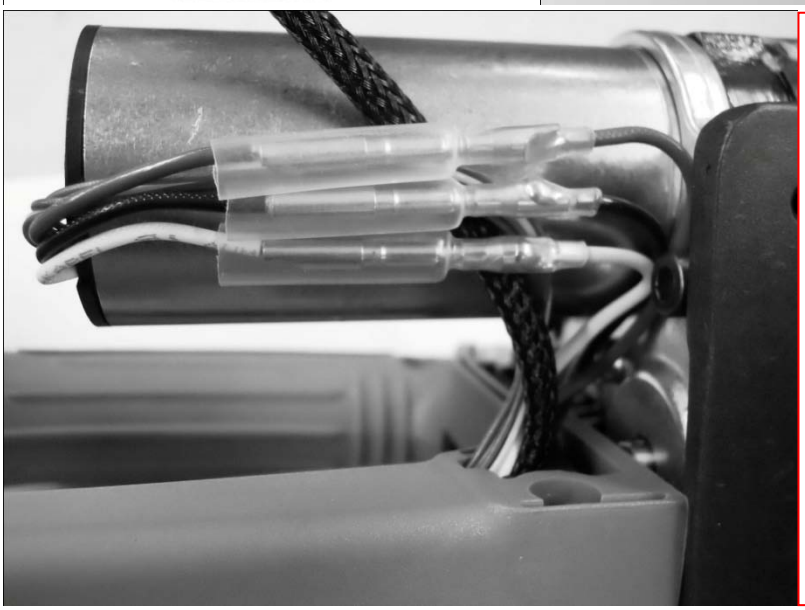
2. Insert the power electronics .into the right half of the housing. Place the wires according the picture. Don't forget the seal.

3. Mount the right half of the housing to the tool mechanics. Insert the contact plate with spring (Pos. 168) Take care .that the cables are laid accurately.



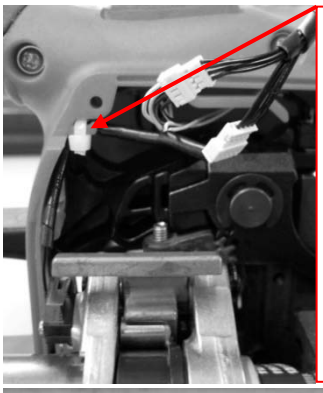
4. Mount the left side of the housing and screw them together. Place the wires as on the picture.



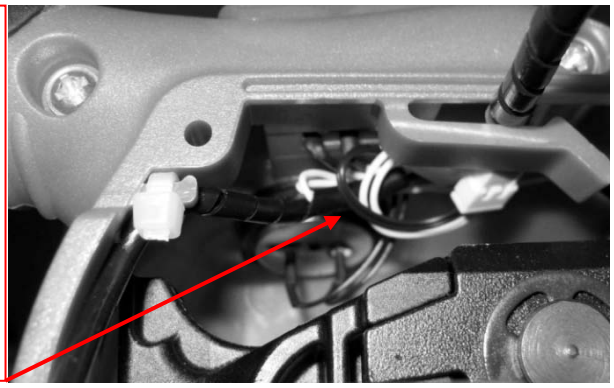


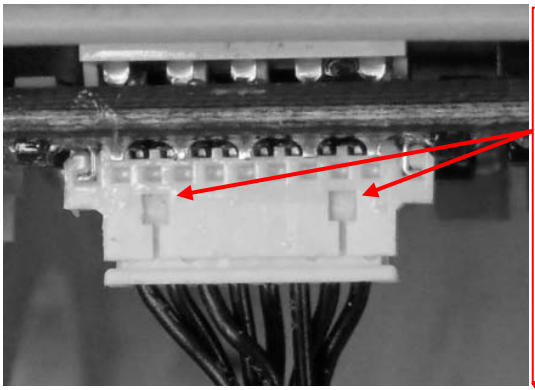
5. Plug the motor cables. You don't need a cable strap as the motor housing prevents them from disconnecting.

Place the signal cable and the hall sensor wires as on the picture.



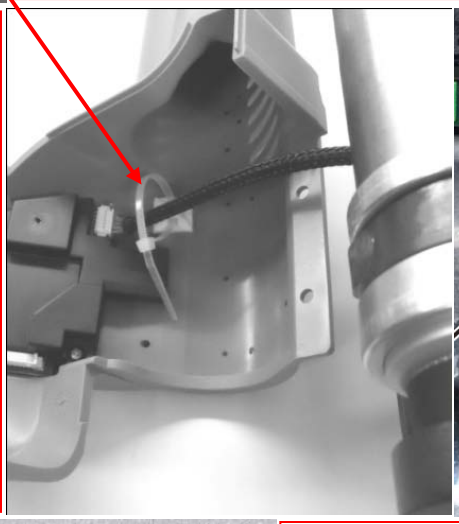
6. Secure cable (Pos. 103) with cable strap. Pay attention to strain relief to microswitch!
7. Mount intermediate cable (Pos. 201) and secure it at the retaining bracket.

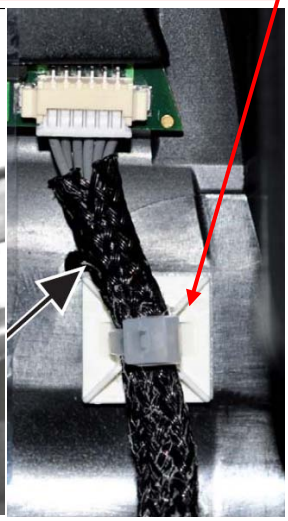


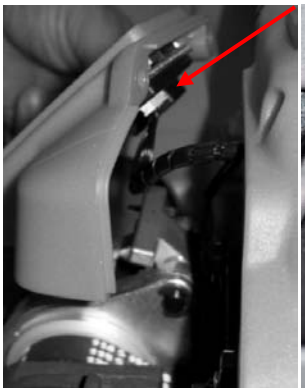


8. Now the motorhousing with Printed circuit board can be mounted. Pay attention to accurate fitting at all the connections.The 2 small pins on the connectors have to fit into their counterparts.
First the signal cable (Pos. 202) is connected. Best way to so is to place the tool at the edge of the table. Secure the cable with cable tie (consider product information 2, Nov 2010).

9. Put the motor housing over the motor and move it forward. Connect the intermediate cable to the PCB, click the housing into place and screw it on.







Important! Do not set the connections under tension while assembling. Connections might get loose due to vibrations during operation.
Mount the motor cover in a way that the signal cable rests in front of the first vent slot.

12. Error Code List

12.1. User Errors

Faults in operating sequence “User errors” are no indication of a tool related defect (except defective switch). The tool calls the users attention to faulty operation.

During Tensioning:

Nr.	Fault in operating sequence	System reaction	Error message	Rectification
A11	Tension with rocker lever pulled	Tensioning is not executed	Beep sound	Release rocker lever
A12	Rocker lever is pulled during tensioning	Tensioning is interrupted	None	Tensioning again
A13	In Automode: Rocker lever, tensioning button or welding button is activated during tensioning	Tensioning is interrupted	None	Start process again
A14	Tension button is pressed to many times	Tensioning is no longer executed	Beep sound	Execute welding or pull rocker lever
A15	Tension time out. →Adjusted tension force could not be reached	Tensioning is interrupted	„E“blinking, intermittent beep for 5s	Start process again
A16	Tensioning with cam switch activated	Tensioning is not executed	Beep sound	Pull rocker lever

Welding:

Nr.	Fault in operating sequence	System reaction	Error message	Rectification
A20	Try to weld without tensioning first	Welding is not executed	Beep sound	Press tension button before welding
A21	Try to weld with rocker lever pulled	Welding is not executed	Beep sound	Release rocker lever
A22	Interrupted welding process by pulling rocker lever	Welding process is completed but the seal is invalid.	„E“blinking, Intermittent beep for 5s	Repeat the strapping, Seal is not correct
A23	Interrupted cooling by pulling rocker lever	Cooling is interrupted	„E“blinking, Intermittent beep for 5s	Repeat the strapping, Seal is not correct
A24	Welding time out →cam position could not be detected (Micro switch Pos. 103)	Welding is interrupted	„E“blinking, Intermittent beep for 5s	Repeat the strapping, Seal is not correct

Failure Codes A22 and A23 are counted by the system. The number of failures is displayed when the data-cable is used (chapter **5.3**)

Error message „empty battery“:

The error code „empty battery“ depends on the mode which is currently in use.

Nr.	Battery empty	System reaction
	During welding/tensioning (Motor end phase switches off)	1. welding/tensioning process is interrupted 2. Error code E23 is displayed (see chapter **12.4**)
	Into Run Mode (within 30s)	1. 4 beep sounds and segment display is blinking 2. Tool switches off
	Into Idle Mode (within 5min)	1. 4 beep sounds and segment display is blinking 2. Tool switches off
	Into Sleep Mode (more than 5 min after last usage)	1. Tool switches off

12.2. Device Error control system

Error Reports in conjunction with the control system.

Nr.	System error	Description	System reaction
E10	DEVICE_UNKNOWN_DEVICE	**Description:** Device Type (14,4V, 18V) could not be detected **Possible cause:** • Wrong type of PCB (14,4 / 18V) • Wrong Firmware. (The Firmware does not support this tool type. • Hardware failure when reading coding resistors **Rectification:** 1. Try again, unplug and plug the battery 2. Replace PCB (Pos.198)	**Stop** The tool is switched off.
E11	DEVICE_WRONG_BATTERY	**Description:** Plugged Battery is known but not valid (Wrong voltage) **Possible cause:** • Wrong battery type. • Wrong type of PCB • Hardware failure on the power electronics. **Rectification:** 1. Replace battery 2. Replace PCB (Pos. 198)	**Stop** The tool is switched off.
E12	DEVICE_KEYPAD_ERROR	**Description:** Keypad reports consistent pressure on keys **Possible cause:** • Keys are pressed consistent • Keypad is defective **Rectification:** 1. Release keypad 2. Replace Keypad 3. Replace PCB, (Pos. 198)	**Interruption** Current process is interrupted. Tool goes in standby mode again.
E13	DEVICE_ORIGIN_ERROR	**Description:** Error at cam switch (Pos. 103) **Possible cause:** • Defective cam switch. (always on/off) **Behebung:** 1. Pull rocker lever to reset cam switch 2. Check cables and connections to cam switch 3. Replace cam switch **4.** Replace PCB, (Pos 198)	**Interruption** Current process is interrupted. Tool goes in standby mode again.

12.3. Device error battery

Error Reports in conjunction with the battery or the motor

Nr.	System error	Description	System reaction
E20	BATTERY_OVER-TEMPERATURE	**Description:** Temperature fuse of the battery. **Possible cause:** • Battery Temperatur >60°C • Battery temperature sensor is • Wiring power electronics to battery faulty • Wiring power electronics to PCB faulty • Temperature measurement on the power electronics is faulty. • Loop of temperature sensor via power electronics faulty **Rectification:** 1. Replace the battery or let it cool down 2. Check the wirings battery to power electronics 3. Check the wirings power electronics to PCB **4.** Replace the PCB (Pos. 198) **5.** Replace power electronics (Pos. 212)	**Stop** The tool is switched off..
E21	BATTERY_OVERLOAD	**Description:** Battery Current overload protection. **Possible cause:** • Battery was overloaded • Current measurement on power electronic is faulty **Rectification:** 1. Clean tool mechanics **2.** Replace power electronics (Pos. 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E22	BATTERY_MOTOR_ OVERLOAD	**Description:** Motor overload protection. **Possible cause:** • The tools mechanics is stucked • Current measurement on on the power electronic is faulty. **Rectification:** 1. Clean / repair the mechanical components 2. Replace power electronics (Pos. 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E23	BATTERY_UNDERVOLTAGE	**Description:** Undervoltage limit was reached during operation. Current tension/weld process is invalid. **Error code E34 is bypassed to this error!** **Possible cause:** • Battery is empty • Battery temperature to low <-10°C. **Rectification:** **1.** Replace or load battery	**Stop** The tool is switched off.
E24	BATTERY_CODING_ RESISTOR	**Description:** Battery coding resistor has an invalid value (Disconnection or short circuit) **Possible cause:** • Battery is not pluged properly • Batteries coding resistor is faulty • Resistance measurement on power electronics is faulty. • Wiring power electronics to contact plate is faulty • Water on the power electronics, tool was exposed to rain / water. **Rectification:** 1. Plug battery properly 2. Replace the battery **3.** Check wiring power electronics to contact plate **4.** Let the tool dry out **5.** Replace the power electronics (Pos.212)	**Stop** The tool is switched off..

E25	BATTERY_TEMPERATUR_ RESISTOR_ERROR	**Description:** Battery temperature sensor has an invalid value. (Disconnection or short circuit) **Possible cause:** • Battery is not plugged properly • Batteries temperature sensor is faulty • Wiring power electronic to contact plate is faulty • Loop of temperature sensor via power electronics faulty • Resistance measurement on power electronics is faulty **Rectification:** 1. Plug battery properly 2. Replace the battery **3.** Check wiring power electronics to contact plate **4.** Replace the PCB (Pos. 198) **5.** Replace the power electronics (Pos 212)	**Stop** The tool is switched off..
E26	BATTERY_UNKNOWN_ BATTERY	**Description:** Battery coding restistor has an invalid value which cannot be related to a known battery. **Possible cause:** • Battery is not plugged properly • Batteries coding resistor is faulty • Resistance measurement on power electronics is faulty • Battery is invalid • The firmware does not support this battery **Rectification:** 1. Plug battery properly 2. Replace the battery **3.** Check wiring power electronics to contact plate **4.** Replace the PCB (Pos. 198) **5.** Replace the power electronics (Pos 212)	**Stop** The tool is switched off..

12.4. Device Error Drive

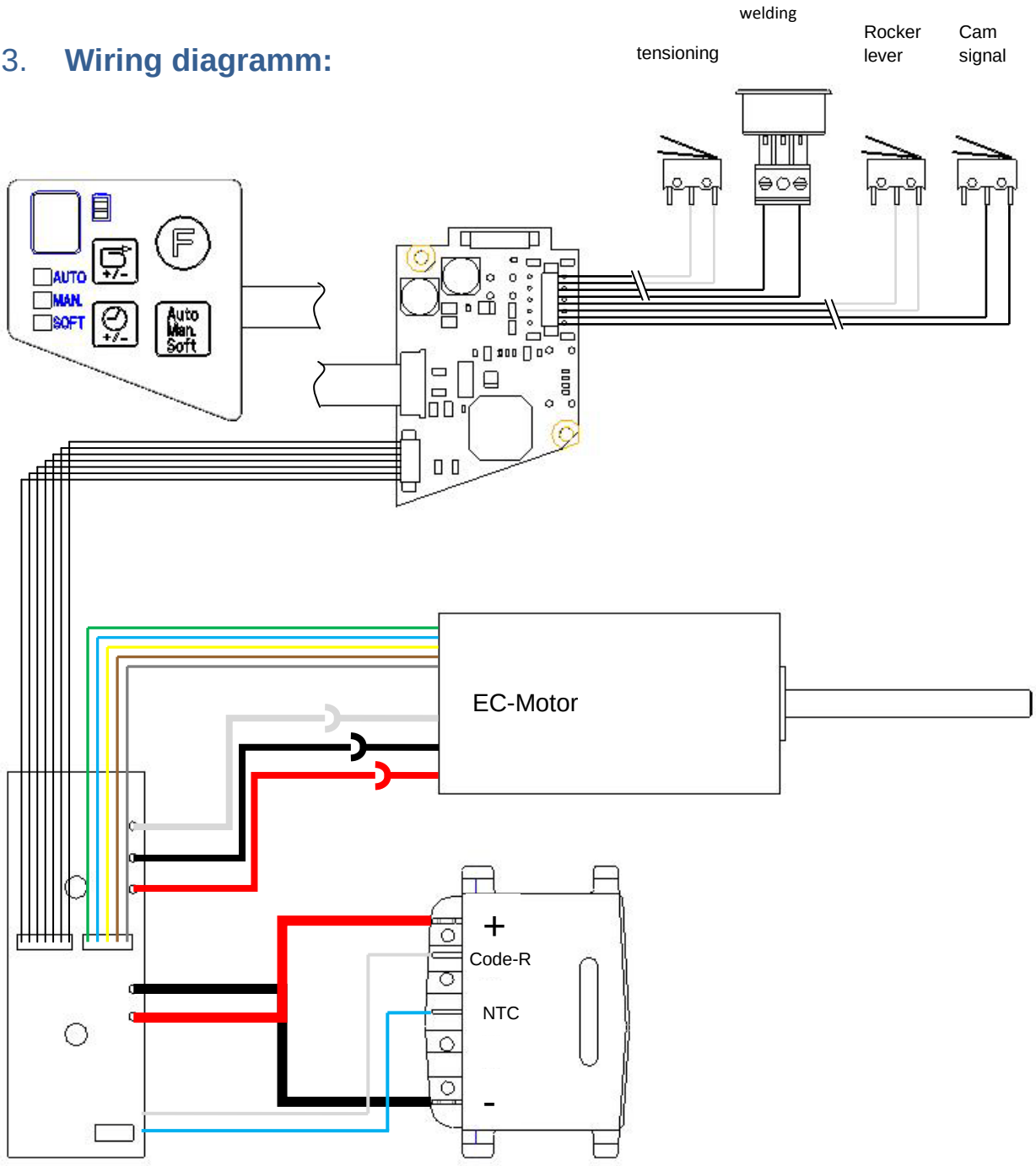
Error Reports in conjunction with the power electronics

Nr.	System error	Description	System reaction
E30	DRIVE_SENDCRCERROR	**Description:** CRC Error in communication with power electronic (send data) **Possible cause:** • Hardwarefailure, Wiring problems • EMV-Disorder **Rectification:** 1. Check the wirings power electronics to PCB 2. Replace the PCB (Pos. 198) **3.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E31	DRIVE_RECEIVECRCERROR	**Description:** CRC Error in communication with power electronic (receive data) **Possible cause:** • Hardwarefailure, Wiring problems • EMV-Disorder **Rectification:** 1. Check the wirings power electronics to PCB 2. Replace the PCB (Pos. 198) **3.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.

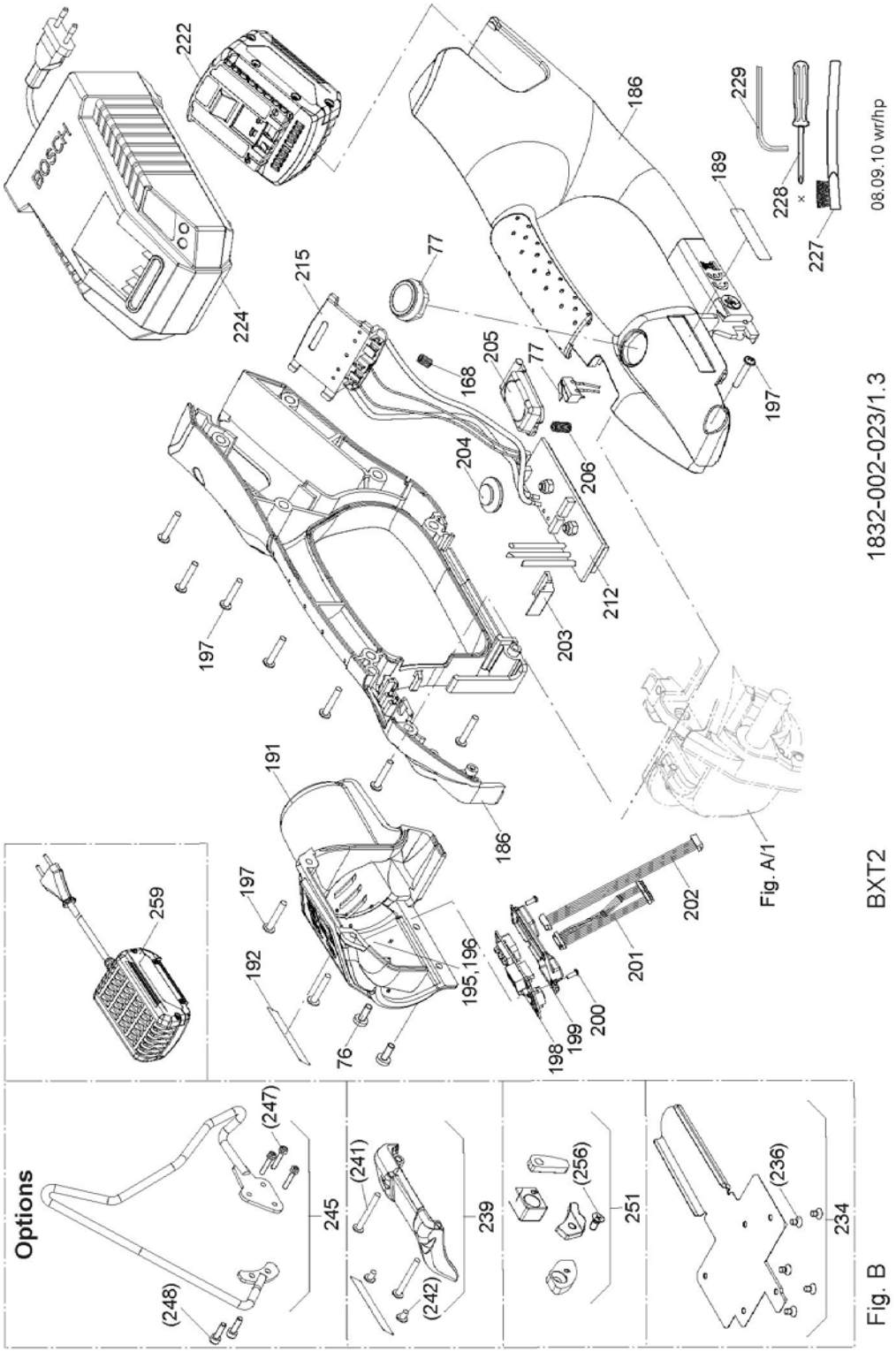
E32	DRIVE_TIMEOUTERROR	**Description:** Time out in communication with power electronics. **Possible cause:** • Power electronics is not switched on by the PCB • EMV-Disorder • Hardwarefailure, faulty wiring **Rectification:** 1. Check the wirings power electronics to PCB 2. Replace the PCB (Pos. 198) **3.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E33	DRIVE_OVER TEMPERATURE	**Description:** Over-temperatur of power electronic. **Possible cause:** • End-phase-temperatur above 105°C • End-phase-temperatur sensor defective **Rectification:** 1. Let tool cool down **2.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E34	DRIVE_UNDERVOLTAGE	**Description:** Under-voltage at drive end-phase This error code is bypassed to E23 **Possible cause:** • Temporary voltage drop (<8.5V) caused by high current consumption • Empty battery during operation **Rectification:** 1. See failure code E23	**Interruption** Current process is interrupted. Tool is in standby mode again.
E35	DRIVE_OVERVOLTAGE	**Description:** Over-voltage at drive end-phase **Possible cause:** • Batterie-voltage to high >24.5V • Voltage peaks • Voltage measurement on end-phase defective **Rectification:** 1. Replace Battery 2. Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E36	DRIVE_COMTIMEOUT	**Description:** Communication time-out with Controller (PCB). **Possible cause:** • Wiring faulty • Hardware defective **Rectification:** 1. Check the wirings power electronics to PCB 2. Replace the PCB (Pos. 198)	**Interruption** Current process is interrupted. Tool is in standby mode again.
E37	DRIVE_CURRENTLIMIT	**Description:** Short circuit (Overcurrent) during welding **Possible cause:** • Tool is blocked during welding • Current measurement on on the power electronic is faulty. **Rectification:** 1. Clean the tool, remove blockade **2.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.

E38	DRIVE_HALLSENSORERROR	**Description:** Hallsensor failure at power electronics **Possible cause:** • Motor hall-sensor defective • Wiring to hall-sensors faulty **Rectification:** 1. Check wiring motor to power electronics **2.** Replace the motor **3.** Replace the power electronics (Pos 212)	**Interruption** Current process is interrupted. Tool is in standby mode again.

13. Wiring diagramm:



14. Explosion drawing



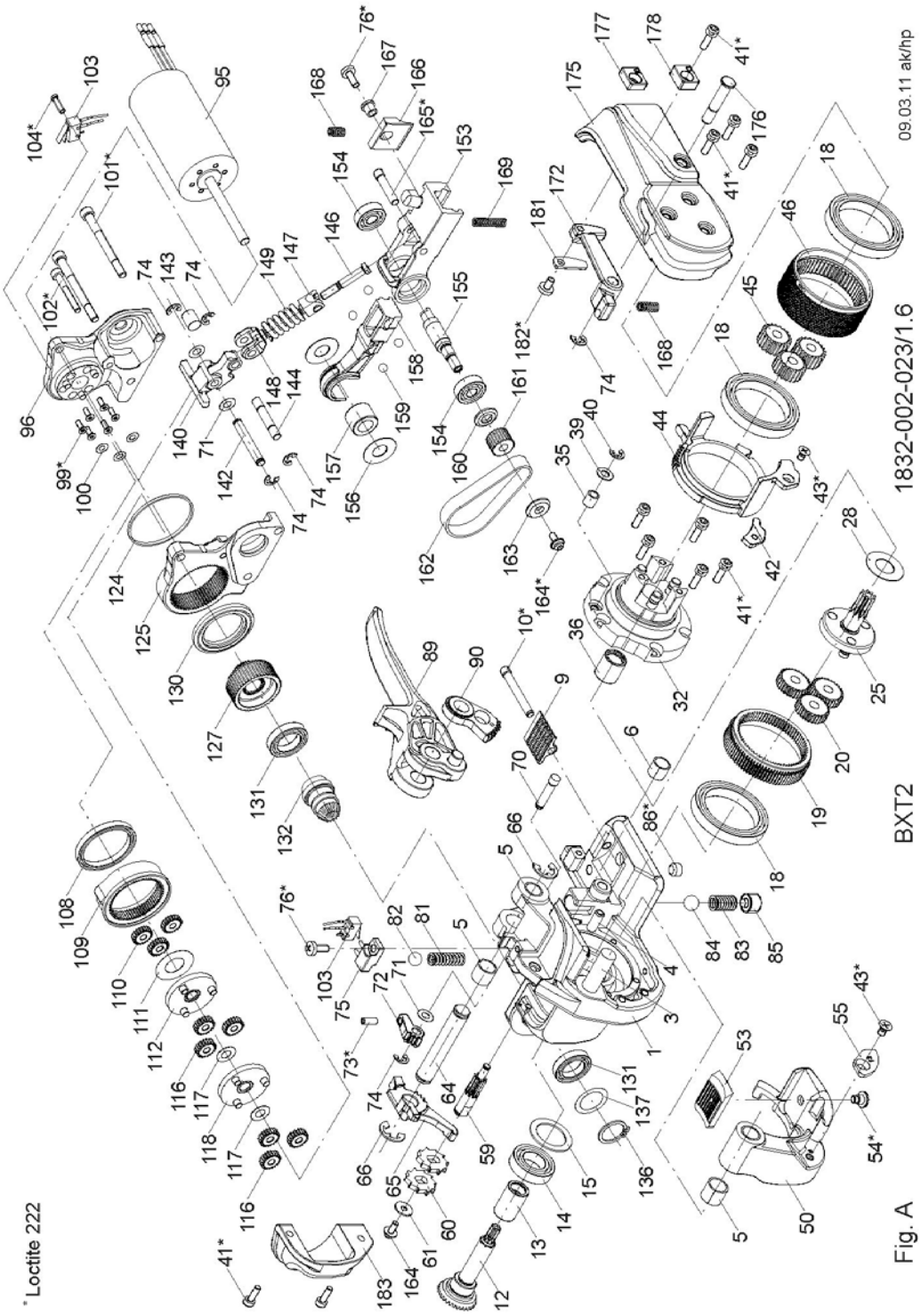

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Fig. A
* Loctite 222

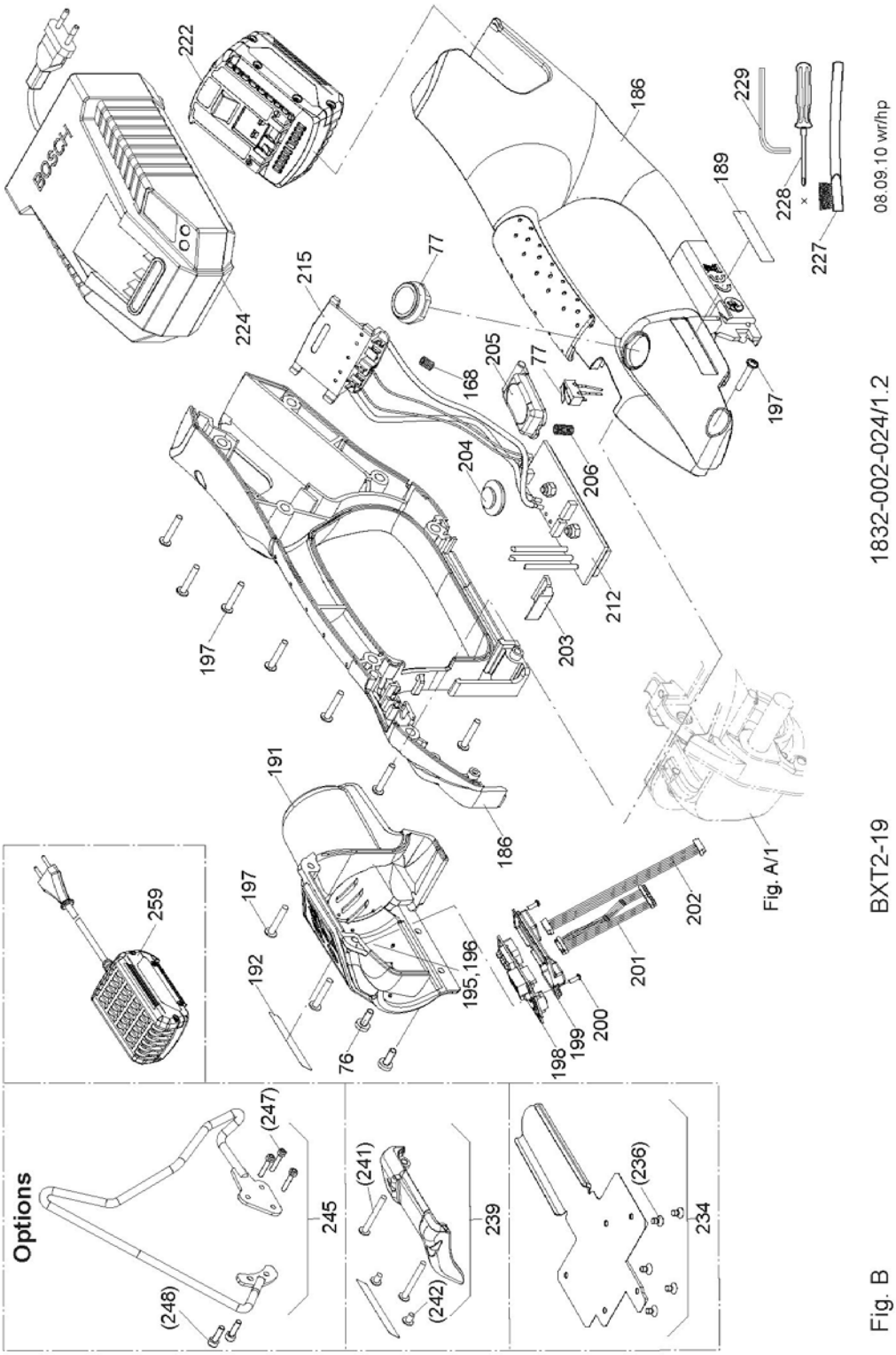
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Fig. A/1
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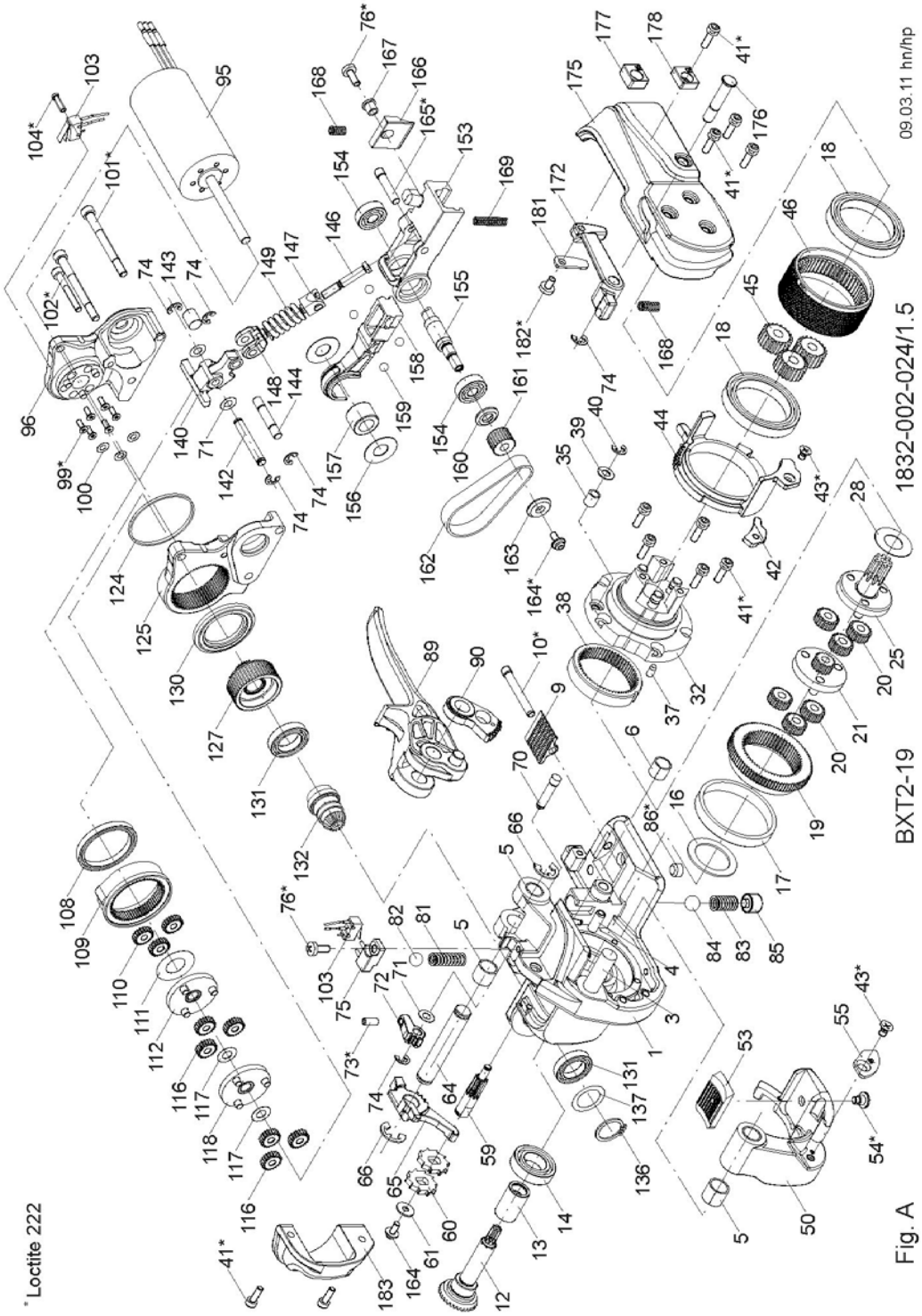
Fig. B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BXT2-19
Fig. A
*Loctite 222

15. Product information

Please consider the following product information releases (status April 2011):

- Nr.1, May 2010:
  - 1. Optimised housing parts Pos. 186
  - 2. Plug connection to welding button is no longer required (Pos. 77)
  - 3. Firmware update (Pos. 198)
  - 4. Plug connection to power electronics is no longer required (Pos. 212)
  - 5. New bevel wheel (Pos. 161)
  - 6. New Pan head screw (Pos. 54)
- Nr.2, November 2010:
  - 1. Optimized tooth plate (Pos. 53)
  - 2. New signal cable (Pos. 202)
  - 3. New gasket (Pos. 203)
  - 4. New protection plate (option, Pos. 234)
- Nr. 3, April 2011:
  - 1. New Bevel wheel complete (Pos. 132)
  - 2. Optimized Power electronics (Pos. 212)

16. Contact

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