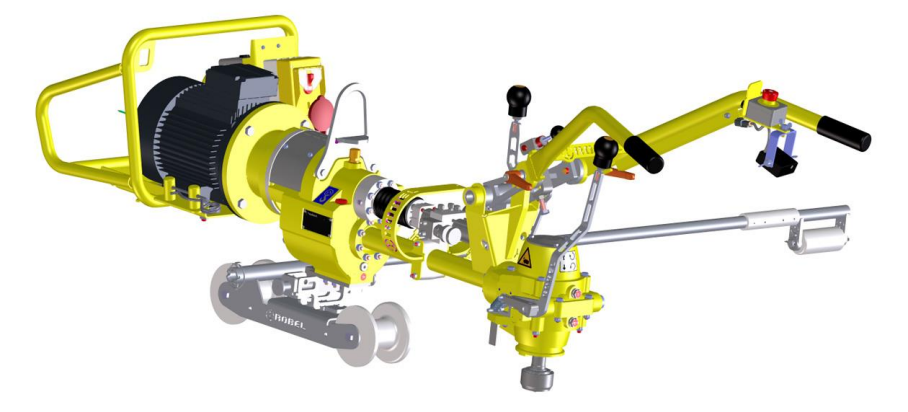
OPERATING MANUAL

ROWRENCH E
30.82HKS Vers. 22

Universal Power Wrench



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These operating instructions were issued taking into consideration
the latest technology at the time of printing.
They are subject to change due to new developments.
Dimensions and weights are approximate.
Some photos show special designs.

Content

1. General Information

Staff operating and maintaining this product must have read and understood these operating instructions.

All those involved must have access to the operating instructions at all times.

1.1 About these instructions

The following symbols are used to mark operating procedures, lists and other elements of these instructions:

Symbol	Explanation
1. Action 2. Action	**Operating procedure** - the sequence of actions must not be changed.
• List 1 – List 1.1 • List 2	**List** - Sequence may be changed.
► Measure ► Measure	**Measure** - the sequence must not be changed.

1.2 General Regulations

Appropriate legal requirements and accident prevention measures for use of this product must generally be observed. If they are not observed, the operator of the appliance takes responsibility for any legal consequences.

In the event of differences between prevailing regulations that apply to use of the product and the manufacturer's or subcontractor's specifications, whichever limitations are the most stringent must apply.

The buyer must provide all necessary machinery, equipment and material resources for putting the delivered product into operation and training staff. He must also make available unrestricted, safe and sufficiently long track and work sections, on which staff can learn how to operate and use the delivered product and practise these tasks. Since the manufacturer or supplier of the product has no influence over the buyer's particular staffing and operating circumstances, no responsibility is accepted for the effectiveness of the instructions.

ROBEL Bahnbaumaschinen GmbH together with its customer service organizations are however happy to provide further advice, training or other consultative services. Further details and conditions can be obtained separately.

1.3 Intended Audience for this Operating Manual

This manual contains the information needed to use the product they describe correctly.

The manual has been written exclusively for technically qualified personnel. Qualified personnel in this context are:

- Personnel who can prove that they are qualified to use this product either through training or experience,
- Personnel familiar with the safety concepts that relate to machinery and equipment,
- Maintenance and service personnel who are specially trained to repair machines, appliances and its accessories.

Only persons who can read and understand this manual are allowed to use the product. They should sign to indicate that they have read and understood the manual.

Replacement, maintenance and operation of the product should only occur where official regulations are strictly followed for its use and safety, especially where they relate to safety and protection of the workplace and environment as well as the operating, maintenance and safety regulations or other instructions supplied by the manufacturer or supplier.

1.4 Liability Exclusions

The manufacturer declares himself to be exempt from any responsibility for damage arising when the product is not used in a designated way. This also includes use of the machine without safety mechanisms.

Any use of the product other than that specified above is not designated and endangers the lives and health of operating and maintenance personnel as well as the material property of the operator. The manufacturer of the product declares himself free from liability for damage to people or property belonging to the operator or a third party if:

- the product is not used as specified,
- operating and maintenance personnel have not read and understood the aforementioned directions and have used the product for other purposes,
- operating or maintenance personnel are not sufficiently qualified
- the product has been used under conditions exceeding limiting values,
- the product has not been serviced within the time specified,
- the product has not been serviced using other than original spare parts,
- product components or attachments have been altered without authorisation.

These exclusions from liability for damage to people or material property do not affect other exclusions.

1.5 Copyright

Specific characteristics and particular attributes of the product are the intellectual property of ROBEL Bahnbaumaschinen GmbH. The copyright on its use remains with ROBEL Bahnbaumaschinen GmbH. It may not be reproduced either in full or in part, published or otherwise exploited for competitive purposes, whether for payment or not. Its contents may not be passed by company employees to anyone outside the business.

1.6 Acceptance, Equipment and Operating Licence

It is the buyer's responsibility to check that the condition, fittings, performance and especially the safety features of the goods delivered match the relevant specifications agreed and to take account of the regulations specified in the contract.

The buyer must equip the goods delivered with all fittings necessary to meet relevant operational and safety regulations, norms, statutory regulations or other regulations, e.g. fire extinguisher, first aid box, signal and telecommunications equipment, additional warning devices, protective clothing, safety notices etc.

Unless otherwise agreed, no fittings of this nature are provided with the goods delivered.

Furthermore it is the buyer's responsibility to demonstrate that the goods delivered have been accredited for use by the appropriate authority. Any documentation to be provided by the manufacturer or supplier (descriptions, proof, attestations, etc.) to enable this should be specified in the contract of supply.

Any additional measures and costs required to achieve operational accreditation must be borne by the buyer.

1.7 Validity of these instructions

These operating instructions apply to products with the following EDP no.:

- EDP-No. 832 990 0096
- EDP-No. 832 990 0101 (single handed operation)

2. Safety

2.1 Designated use

The Universal Power Wrench ROWRENCH E 30.82HKS has been designed and manufactured for all wrenching work arising in track construction and maintenance.

2.2 Foreseeable missuse

Currently there is no known misuse.

2.3 Conventions of layout

These instructions make use of the following warning texts and symbols to keep the operator safe and injury-free and prevent damage to the material assets of the operating company:

DANGER

Indicates that non-compliance with the instructions will result in death or severe (irreversible) injuries of the operating personnel.

WARNING

Indicates that non-compliance with the instructions may result in death or severe (irreversible) injuries of the operating personnel.

CAUTION

Indicates that non-compliance with the instructions may result in minor (reversible) injuries of the operating personnel.

NOTICE

Points out that non-compliance with instructions may result in damage to the product or other assets of the operating company.

Contains important information about the product, its operation or about a section of the instructions on hand.

Structure of the warnings

The warnings are structured as follows:

SIGNAL WORD

Type and source of danger!

(Possible) consequences when ignoring the danger.

► Measure to avoid the danger.

2.4 Design changes, original parts

The manufacturer will not be liable if any unauthorised changes to product components and attachments are made.

Original parts and accessories have been designed specifically for this product. The use of non-approved spare parts may result in structural features of the product being changed or impaired.

The manufacturer is not liable for any damage which is proven to be attributed to the use of such parts or inferior operating fluids.

2.5 Protective devices

Danger to life for the operator and others from manipulation of the safety devices.

► The operator is obliged to actually fit the designated protective devices during operation or to leave them in the predetermined factory position.

► The person commissioned to carry out maintenance must refit the protective devices after completing his work.

2.6 Safety regulations

The necessary requirements for protecting life, health, material property and the environment when handling the product must take precedence.

► Before using the product, make sure you can prove that all personnel affected have been made aware of the following relevant regulations and provisions:

- Statutory national safety regulations
- Provisions of the respective building code and works rules
- Provisions of the respective professional and trade associations
- Occupational and environmental health and safety regulations
- Approvals regulations
- Company-internal regulations
- All other applicable regulations, in addition to and in concert with the manufacturer's safety and operating regulations

If necessary, the office in charge of operation must lay down additional regulations and measures geared to the special

tasks of the product to ensure that all safety requirements are met.

In addition to the information mentioned above the specific safety regulations must be observed and adhered to.

2.7 Qualifications of staff

Operator

The operator was trained by the operating company in the tasks assigned to him and informed of the potential dangers arising from inappropriate behaviour.

Requirements for the operator

- Comprehensive training on the product
- Knowledge of content of these operating and maintenance instructions
- Knowledge of content of operating and maintenance instructions of suppliers' and additional equipment
- Knowledge of national regulations and laws concerning the product and additional equipment
- Physical and mental fitness
- Power of concentration, sense of responsibility, reliability
- Necessary national requirements (qualifications, minimum age)
- No influence of alcohol, medicines, drugs or fatigue, etc.

2.8 Personal protective equipment

The approved personal protective equipment has to be used when operating and maintaining the product.

► Wear protective gloves.

► Wear ear protection.

► Wear appropriate, close-fitting clothing that cannot be caught by rotating machine parts of saw blades.

► Wear steel-capped work shoes.

► Remove rings and necklaces, etc.

The protective equipment is determined by:

- These instructions
- National safety rules
- Rules of the professional trade associations
- etc.

► If there are differences between the prevailing regulations within the operating company's scope of validity and those of the manufacturer and his suppliers, whichever regulations are the most stringent shall be applied.

2.9 Information on particular types of dangers

Danger due to manual handling

If the permissible per-person lifting weight is exceeded when lifting or carrying, there is a risk of injuring muscles, tendons, joints or bones.

- ► Prior to transportation, ensure that the pathway is free of obstructions or trip hazards.
- ► When lifting or carrying machinery or equipment, adhere to the permissible per-person lifting weight.

It is the responsibility of the operating company to ensure that the national safety regulations and guidelines of the trade associations in the respective countries are observed. The values stated in the warning notices of these operating instructions relate to regulations in Germany.

- ► Ensure that a risk assessment has been carried out and that the following aspects with regard to operators and the transport task have been considered:
  - Frequency of transport
  - Age
  - Gender
  - Operator's state of health
  - Uneven flooring
  - Poorly lit worksites
  - Bad weather
  - Working under time pressure
  - etc.
- ► Observe the relevant guidelines on lifting and transporting heavy machinery or equipment.
- ► Mechanical aids to lifting are always the preferred method of handling where possible, e.g. hoists, tail lift, rail trolleys etc.
- ► Always use the handles to lift the modules.
- ► Always use two hands and address the modules symmetrically.
- ► Do not twist the spine when handling.
- ► Do not carry any of the modules more than 10 meters without a rest, or without using a mechanical aid.
- ► Contact your Health and Safety Advisor for more information.

Danger due to unergonomic operation

With some activities there is a risk of injuring muscles, tendons, joints or bones if the necessary caution is not exercised with the controls. An example is starting the engine by means of the recoil starter.

- ► Pull the recoil starter vigorously but avoid jerky movements.
- ► Avoid adverse movements and poor posture.
- ► Avoid static postures of the thumb and hand when using the controls.

Danger from rotating parts

Risk of clothing getting caught in and wound onto rotating parts (grinding disk, socket etc.).

- ► Wear suitable close-fitting clothing that cannot get caught in rotating parts of the machinery or saw blades.

Danger from heat

Risk of injury from touching hot parts.

- ► Do not touch heated parts.
- ► Prior to work on heated parts, switch off engines and allow hot parts to cool down for at least 30 minutes.

Danger from noise

Permanent damage, especially to hearing, if the operator does not constantly wear personal hearing protection.

- ► Wear ear protection

Danger from electrical voltage

Some parts may be live and may cause severe to fatal injuries when getting in contact with them.

- ► Work on the electrical system only by authorised electrical engineers.
- ► Rectify faults (contact faults, external damage to cables or housings, etc.) straight away.
- ► Before working on the electrical system: Shut off the power supply to the system, switch off the drive and disconnect the power supply.
- ► During work on the electrical system: Do not touch any live lines.
- ► Check earthing cables are securely seated and complete.
- ► Check that the connecting surfaces of the earthing cables are clean and free from corrosion.

Danger from vibration

The transmission of vibrations to the human body causes adverse health effects. Although the operating guide handle is vibration cushioned via rubber buffers, a complete decoupling of vibrations is unachievable.

- ► Wear padded gloves.
- ► During the work process, incorporate vibration-free activities with mainly dynamic demands on muscles.

Risk of environmental damage

Most of the components and parts of which the product is made come under special regulations with regard to the disposal of waste.

- ► Sort the component parts into groups according to their material (steel, plastics, oils etc.) and dispose of them properly.
- ► Collect and dispose of old oil and hydraulic fluid in accordance with the relevant regulations.

Danger arising from unauthorised start-up

Unauthorised start-up and misuse can result in dangers and damage of any kind.

► Unauthorised start-up by unauthorised persons is strictly prohibited.

► It is up to the operating company to assess this risk.

► It is the responsibility of the operating company to implement appropriate measures against unauthorised start-up.

2.10 Accident prevention

The accident prevention regulations of the Civil Engineering association also find application in these operating instructions and are to be carefully read and adhered to.

► Always observe the general and internal accident prevention regulations.

► Consider the potential risks of accidents in association with the special tasks of the product and provide for appropriate training.

► Check that the product is in proper working order before putting it into service:

- Equipment, devices, tools, accessories, safety equipment, etc. are complete and intact.
- Inspection and maintenance work has been carried out professionally and on schedule.
- Operating fluids have been topped up (fuel, lubricants, etc.)
- All prerequisites for carrying out work safely have been met with regard to you and other persons, material property and the environment.

► Beware of the particular dangers of the product and your work area, especially:

- persons and obstacles,
- adherence to safety clearances,
- traffic on adjacent tracks,
- secure fitting of all protective equipment,
- compliance with all operationally necessary safety measures.

► Leaking operating fluids (oil, grease, etc.) must be removed immediately to prevent a fire hazard or risk of slipping. Keep suitable oil binding agents and cleaning agents at hand.

► Before leaving the product perform the following checks:

- It has been shut down properly.
- It is secured against moving unintentionally.
- Tools and accessories are stowed away safely.

► Use only machines, appliances and tools that work properly.

► Rectify smaller faults straight away in order to avoid larger faults.

First Aid Ensure the following to be able to provide First Aid in an emergency:

- ► Make sure that the First Aid kit is in proper condition, complete and clean at all times.
- ► Consult the medical service or doctor at your office regarding First Aid measures and appropriate equipment.
- ► Immediately replenish used up material.
- ► Store First Aid equipment (First Aid kit, blankets etc.) and fire extinguishers within easy reach.
- ► Carry material for securing accident sites.

2.11 Fire safety

Toxic fumes are released when fuels, oils, paints or varnishes catch fire.

In addition, all measures required to prevent the development or spreading of a fire must be taken in individual cases.

With smouldering fires in electrical equipment toxic vapours are released from charring cables, also with fires of fuels, oil or paints.

- ► Everybody is obliged, as far as possible and reasonable to refrain from any actions that may cause a fire or favour the spreading of a fire. In addition, all measures required to prevent the development or spreading of a fire must be taken in individual cases.
- ► In general, any fires that occur are to be fought only with powder extinguishers.

General The following fire safety measures must be adhered to.

- ► Use only approved fire extinguishers (powder-type extinguishers) of the prescribed fire protection class.
- ► Check the fire extinguishers periodically and ensure that they are provided with an inspection label (at least every 2 years, check the expiry date!).
- ► After using a fire extinguisher, replace it straight away.

3. Technical data

3.1 Drive

Three-phase asynchronous motor, 400V/50Hz

Speed	2,750 rpm
Output at 2,750 rpm	4 kW

3.2 Spindle

Tightening/Loosening

Speed of fast gear	150 rpm
Speed of slow gear	55 rpm
Max. torque setting (fast gear)	300 Nm
Min. torque setting (slow gear)	140 Nm
Max. torque wit torque control (fast gear)	450 Nm
Max. torque without torque control	1,000 Nm

3.3 Dimensions

Length (handles in working position)	1,911 mm
Length (handles in transport position)	1,501 mm
Width	475 mm
Height (handles in working position)	600 – 800 mm
Height (handles in transport position)	575 mm

3.4 Weight

Version for single hand operation, without carriage, petrol tank empty	119 kg
Version for two hand operation, without carriage ohne Fahrwerk, petrol tank empty	120kg
Extension arm for track gauge 1,435 mm	4 kg
Single-rail travelling gear	7 kg
Transverse carriage Depending on gauge and fitments (steel or synthetic rollers, deadman's brake etc.)	from 25 to 45 kg
+ transport box (Option)	approx. 13.5 kg

3.5 Filling quantities

Reduction gear: Gear oil SAE 80	approx. 2 l
Reversing gear: Gear oil SAE 80	approx. 0.25 l
Torque control: Panolin HLP 46 Synth hydraulic oil	approx. 0.2 l

3.6 Environmental conditions

Temperature range operation	-10 °C to 40 °C
Temperature range transport	-20 °C to 50 °C
Temperature range storage	-20 °C to 50 °C

3.7 Spindle extension, to order

Straight square, for two-part, articulated sockets

Single-rail travelling gear	EDP No. 501 895 0001
Transverse carriage with additional height (Lenght 100 mm)	EDP No. 501 895 0007
Transverse carriage with additional height (Lenght 140 mm)	EDP No. 501 895 0008

Crowned, for one-piece, rigid sockets

Single-rail travelling gear	EDP No. 501 895 0005
Transverse carriage with additional height (Lenght 100 mm)	EDP No. 501 895 0010
Transverse carriage with additional height (Lenght 140 mm)	EDP No. 501 895 0011

3.8 Noise emission and vibration

The person-related assessment depends on the particular working environment of every single employee (e. g. positioning at various places and/or machines).

3.8.1 Noise emission

Since the noise-level criterion for personnel is exceeded during drilling, suitable ear protection must be used (see also national statutory regulations as well as basic health and safety requirements).

Emission Sound Pressure Level L_{pA}	70.0 dB(A)
Measurement uncertainty of Emission Sound Pressure Level K_{pA}	1 dB(A)
Sound Power Level L_{WA}	85.1 dB(A)
Measurement uncertainty of Sound Power Level K_{WA}	1,5 dB(A)

3.8.2 Vibration

Vibration Total Value	2.94 m/s²
Measurement uncertainty of Vibration Total Value	1.3 m/ s²

3.9 Digital Tach/Hour Meter

Range

Value	Range
Operating hours	0...99,999 hours (h)

Resolution

Value	Resolution
Operating hours	0.1 hour (h)

3.10 Structure gauge

3.10.1 With outrigger

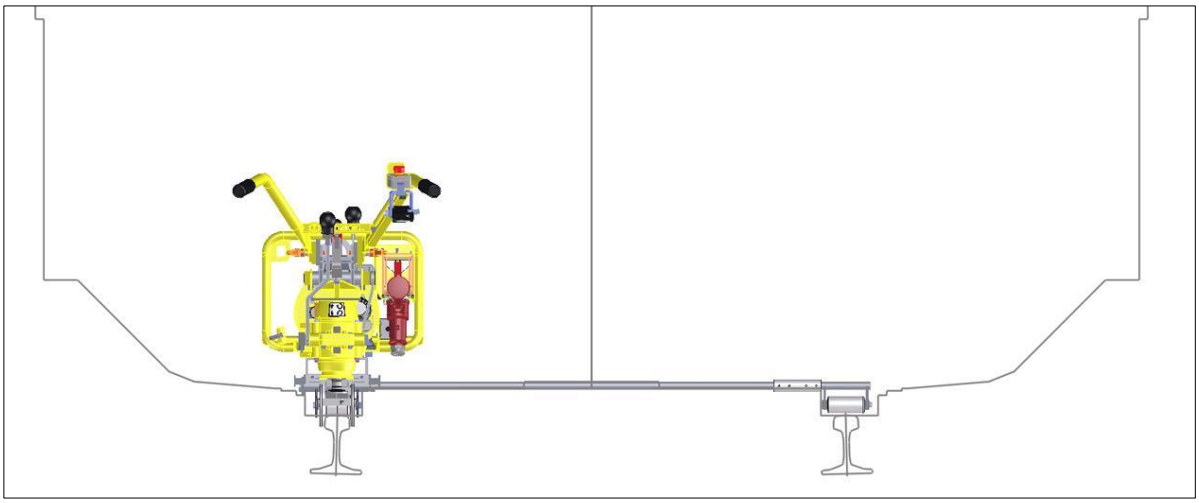

Fig. 1: Structural gauge (with outrigger)

3.10.2 With transverse carriage

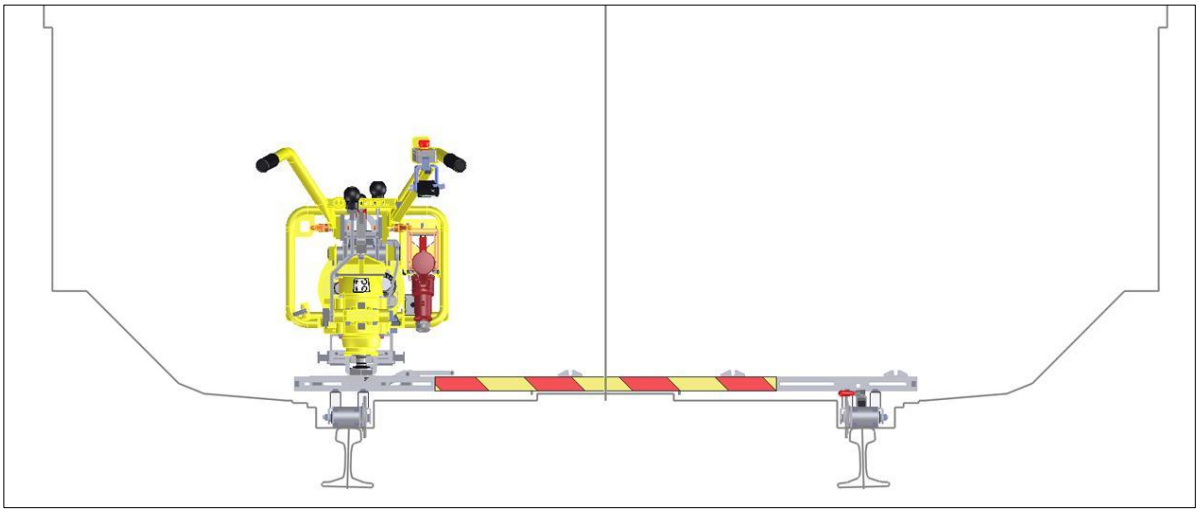

Fig. 2: Structural gauge (with transverse carriage)

4. Description of machine

4.1 Structure

The practical design has the following features:

- Drive engine
- Reduction gear (fast / slow)
- Reversing gear for tightening/loosening
- All gearwheels are made of high-quality steel
- Metal cone clutch (hard wearing)
- Hydraulically supported torque adjustment:
  The torque can be set accurately via an adjustable hydraulic valve and read off on a torque indicator (readable up to 300 Nm). The torque indicator can be calibrated
- Non-tiring ergonomic working due to height-adjustable guide handles, version for single handed operation and two handed operation available
- 3 carriage options:
  - Monorail trolley, bearing-mounted, with wheels of insulating material, insulated extension arm, suitable for fitting on either side
  - Transverse carriage
  - Carriage with rubber wheels
- Quick-changing chuck
- Two mounts for spare sockets (optionally extendable to 4)
- LED lighting

Due to its low centre of gravity, work is also possible without the extension arm.

An CEE-socket plug (400V; 16A) is attached to the motor, above an On/Off switch.
The electric parts are insulated and have been built to provide protection from splash-back and dust. They are maintenance free, as is the electric drive IP55 (built to VDE1) guidelines.

4.2 Machine overview

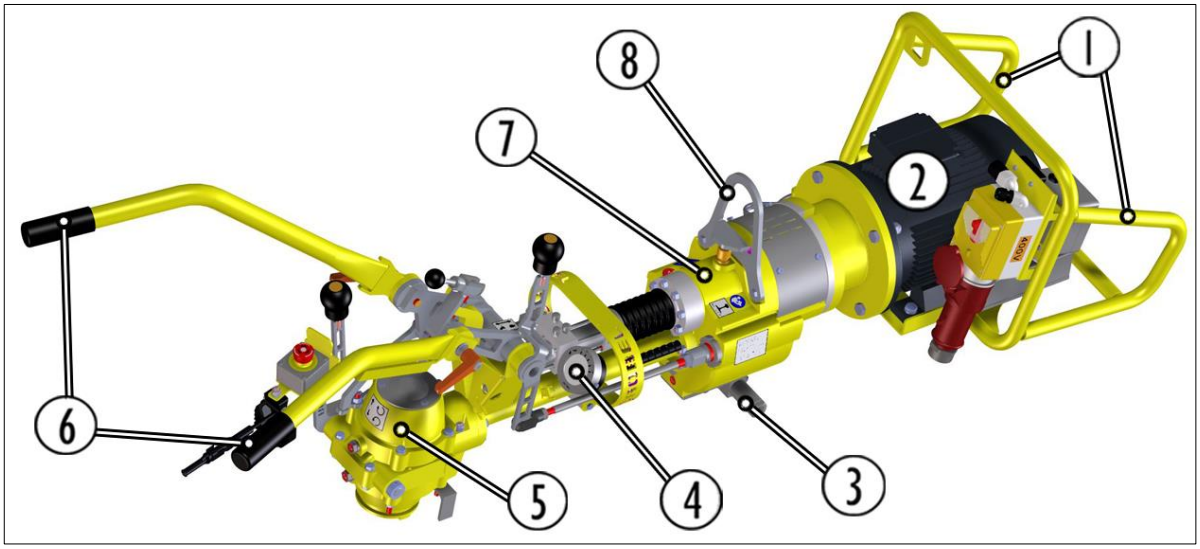

Fig. 3: Machine overview

1	Lifting handles	5	Wrenching module with reverse gear (see following page)
2	Drive engine, inside Engine protection frame	6	Adjustable guide handles (see detail below)
3	Carriage mount	7	2-speed reduction gear
4	Manometer for torque (with hoop guard)	8	Lifting eye

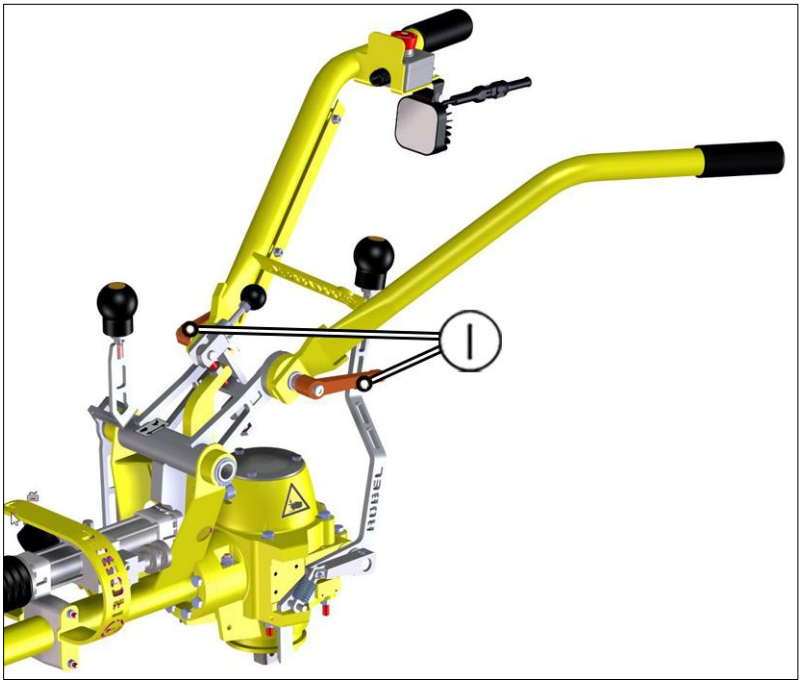

Fig. 4: Tommy screws for adjustable guide handles

1	Tommy screw

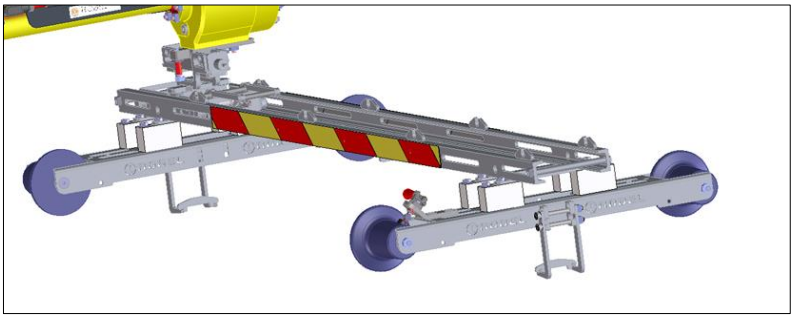

Fig. 5: Transverse carriage (option)

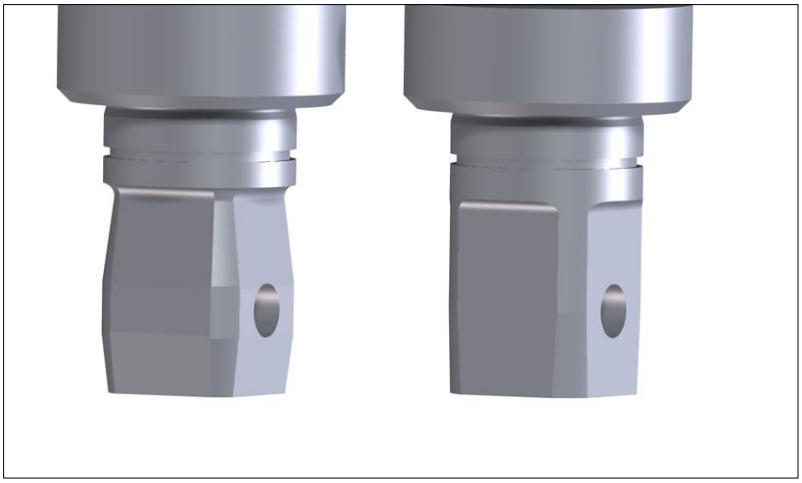

Fig. 6: Spindle drive crowned (left) and straight square (right)

4.3 Operating and display elements

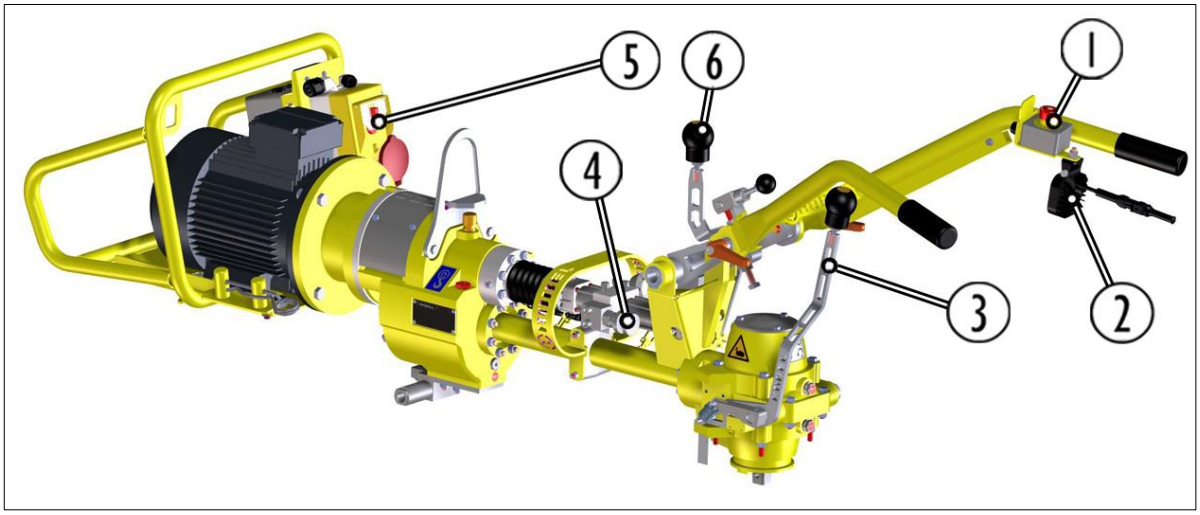

Fig. 7: Operating and display elements left side

1	Engine Stop button	4	Torque setting (pressure control valve)
2	Ligthing	5	Engine switch
3	Reversing gear lever	6	Reduction gear lever

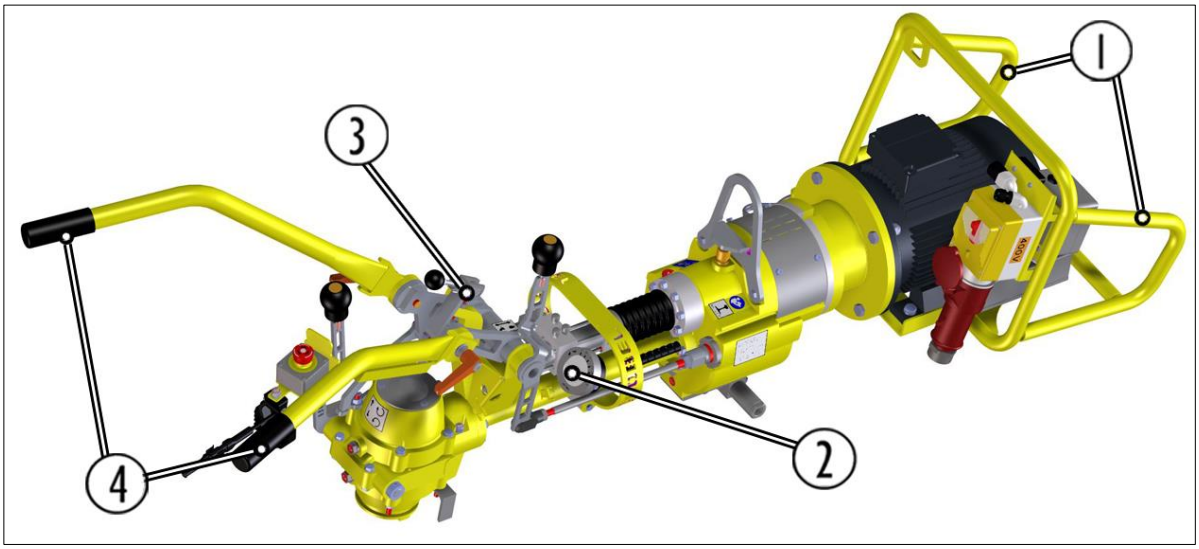

Fig. 8: Operating and display elements right side

1	Lifting handles	3	Lever for maximum torque
2	Manometer for indicating tightening torque	4	Guide handles

4.3.1 Engine switch

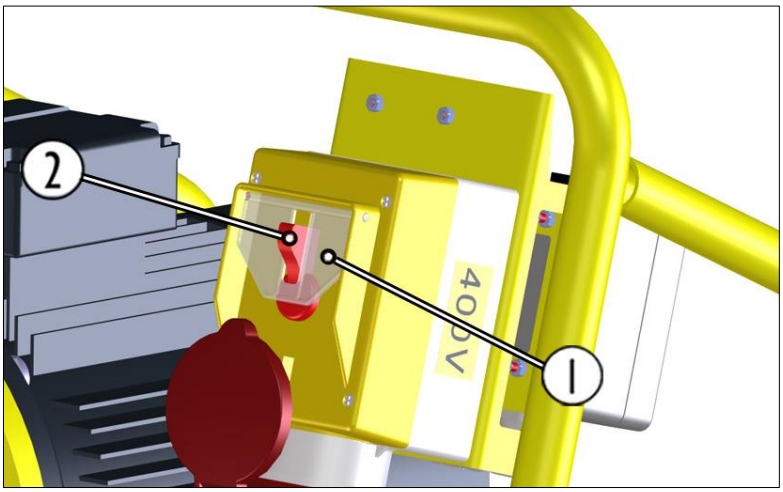

Fig. 9: Engine switch ON/OFF

1 Protective cover
2 Switch

4.3.2 Lighting

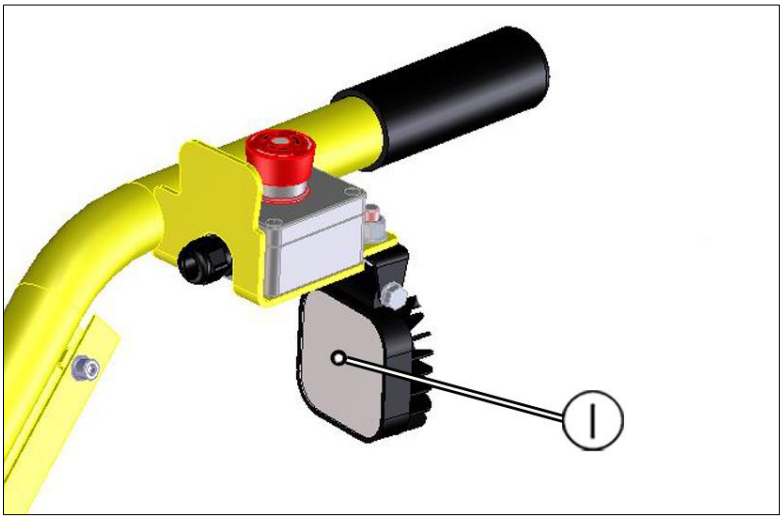

Fig. 10: Lighting

The energy-saving LED lighting (1) is on as soon as and as long as the engine is running.

4.4 Mechanical control elements

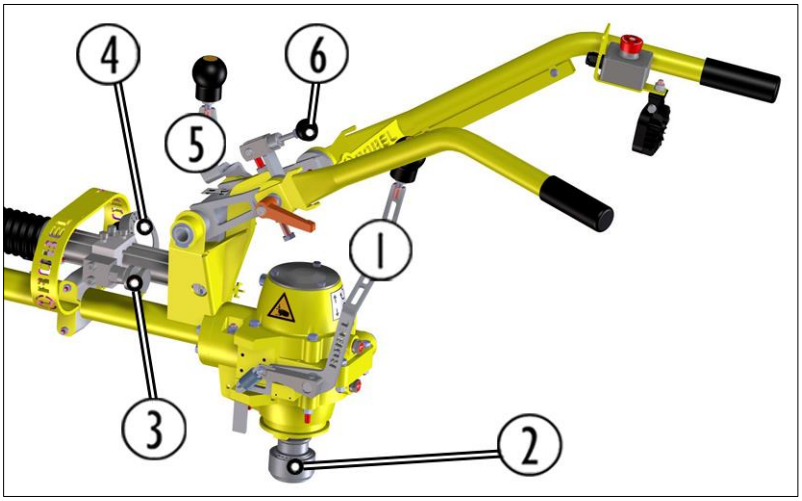

Fig. 11: Mechanical control elements

1	Shift lever for reverse gear (at rear – as shown – in position "Unfastening", at front ni position "Fastening")	2	Quick changing chuck
3	Torque setting (Pressure control valve)	4	Manometer for tightening torque
5	Shift lever for 2-speed reduction gear slow/fast	6	Shift lever for max. torque

4.4.1 Shift lever for reduction gear

Viewed from the left:

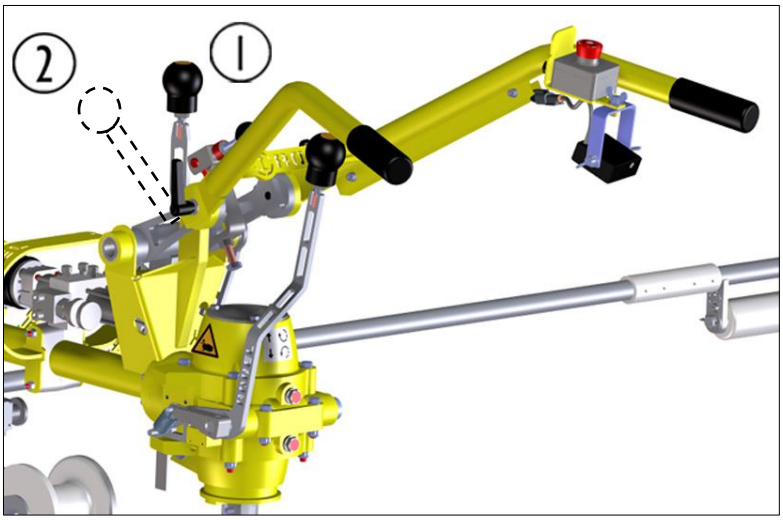

Fig. 12: Reduction gear lever (Gear selection)

1 Position “fast”

2 Position “slow”

4.4.2 Shift lever for reversing gear

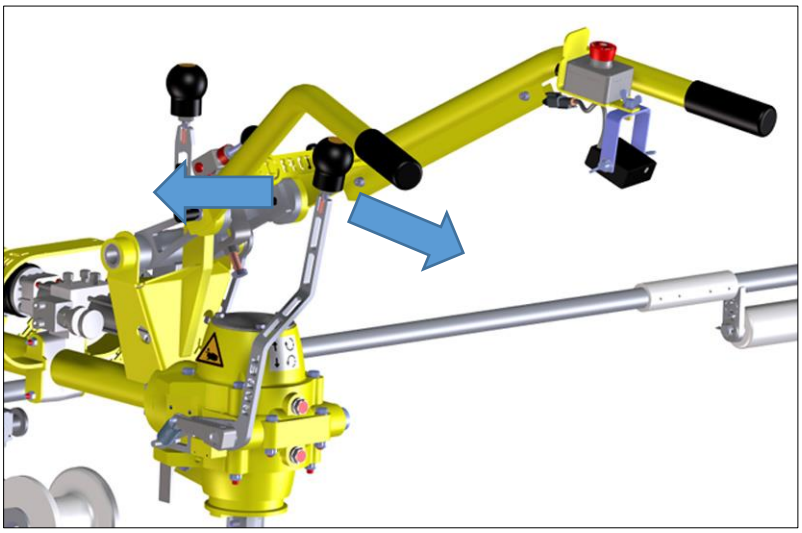

Fig. 13: Reversing gear lever

- to the left (as depicted, lever away from operator) = tightening
- To the right (as depicted, lever towards the operator) = loosening

4.4.3 Shifting lever for max. torque

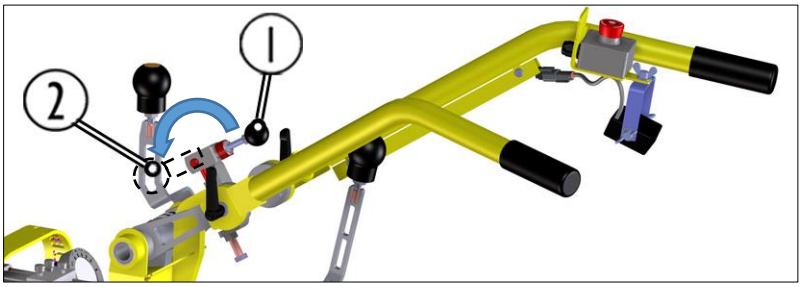

Fig. 14: Shifting lever for max. torque

1 Position „controlled torque”
2 Position „max. torque”

This lever is used to set the maximal torque available, e.g. for loosening jammed screws.

4.4.4 Height adjustment

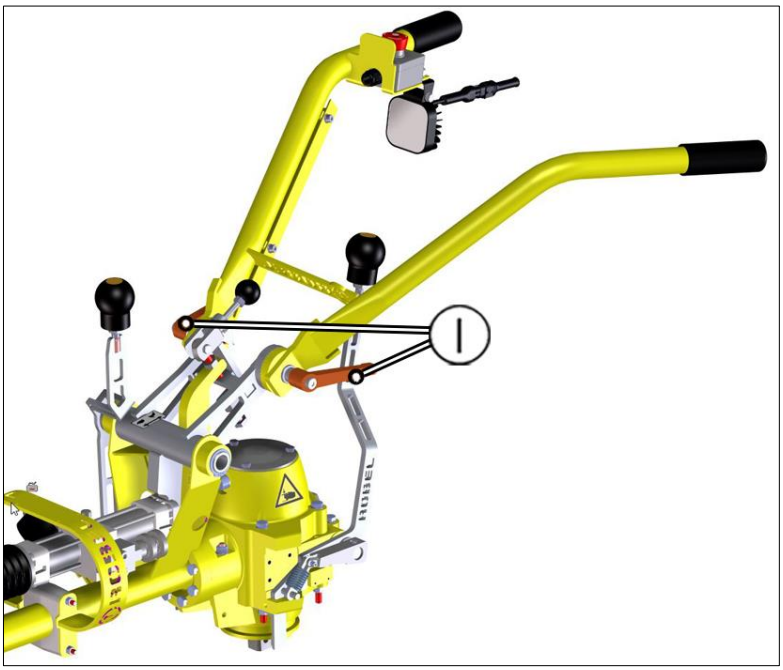

Fig. 15: Clamping lever for height adjustment

These clamping levers (1) are used for height adjustment of the handles (see also chapter 6.3).

4.4.5 Torque setting

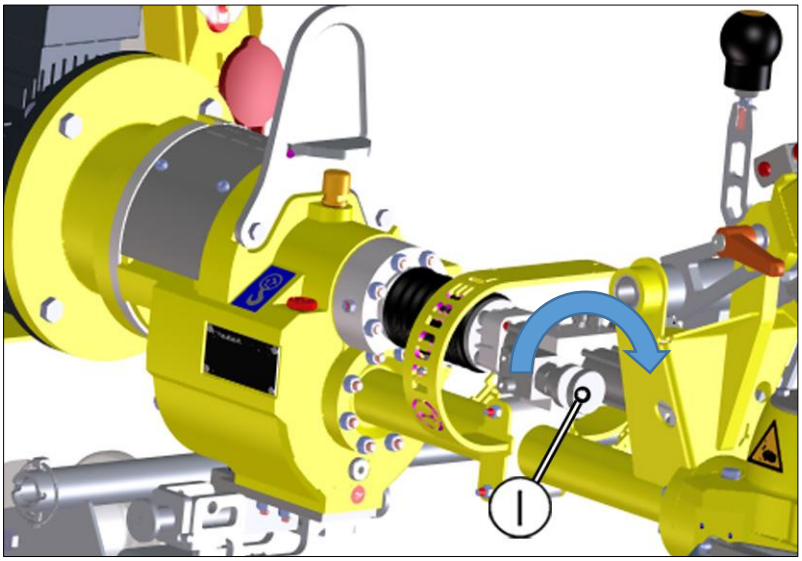

Fig. 16: Setting screw for torque control (Pressure control valve)

The setting screw (1) is used to set the torque.

- clockwise/right turning: increase torque
- anticlockwise/left turning: decrease torque

4.4.6 Engine switch

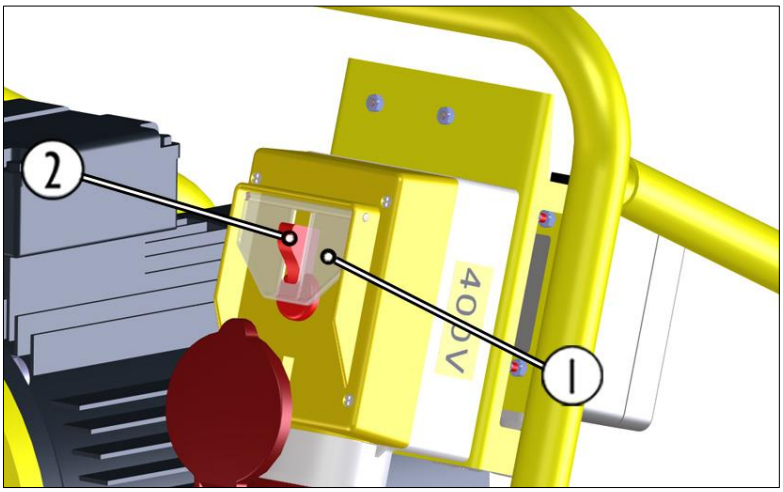

Fig. 17: Engine switch

1 Protective cover
2 Switch

The engine switch is used to switch the engine on and off.

The protective cover prevents inadvertent operation.

4.4.7 Digital Tach/Hour Meter

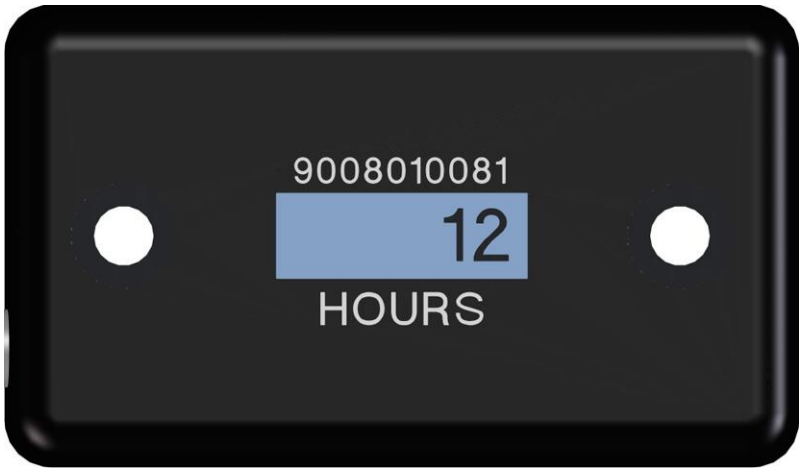

Fig. 18: Example: display operating hours

4.4.8 Two-handed operation

The standard version uses both guide handles (1) which are mechanically coupled: If they are pressed downwards, the screwing process is initiated.

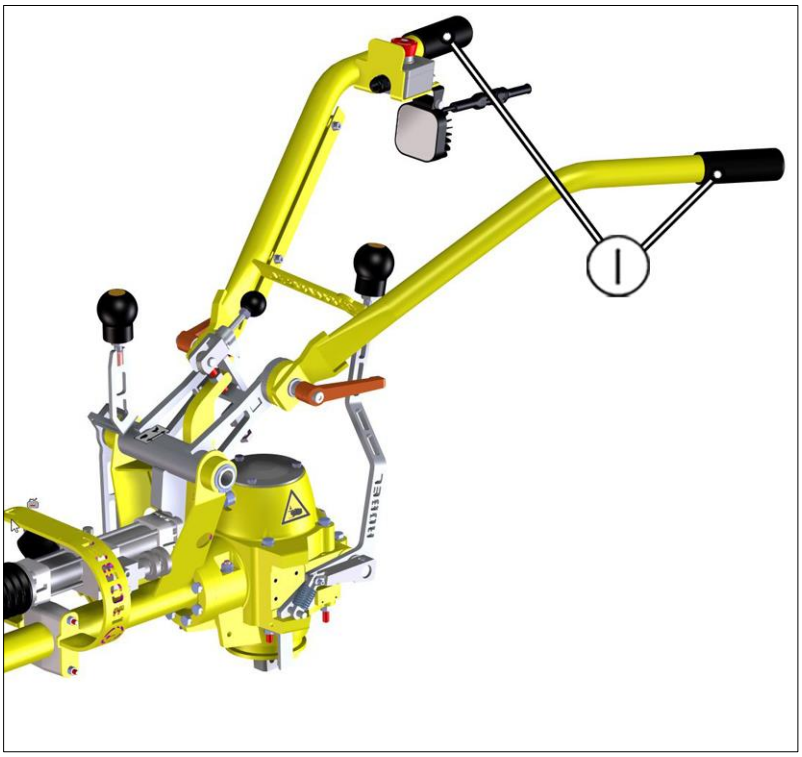

Fig. 19: Two-handed operation

4.4.9 Single handed operation

In contrast to the two-handed version, the machine with single-handed operation uses only on guide handle to initiate the screwing process: Only the operating guide handle (2) must be pressed downwards to initiate the screwing process.

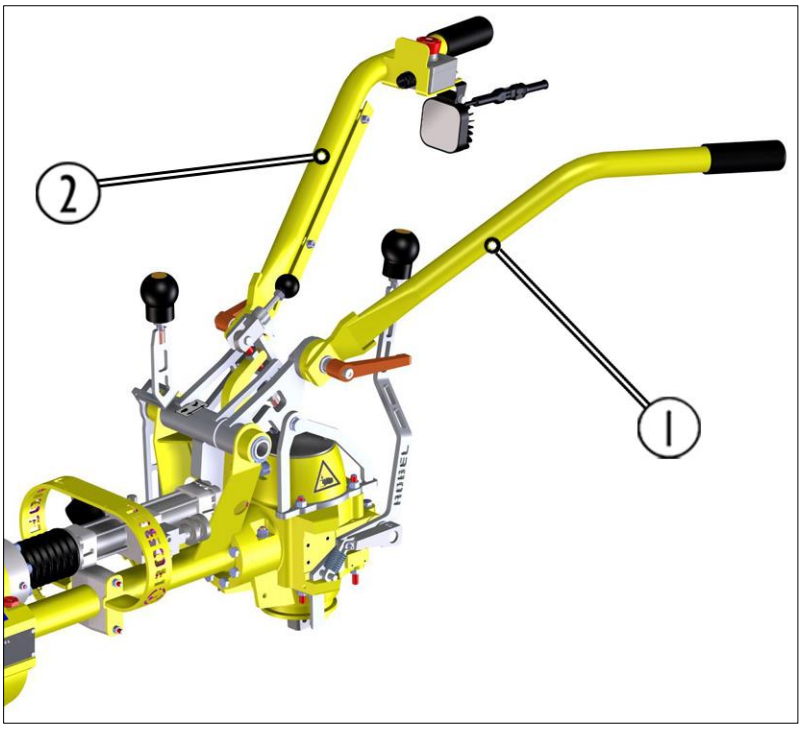

Fig. 20: Single handed operation

1 Fixed guide handle
2 Operating guide handle

4.5 Signs and labels

4.5.1 Signs and Labels used

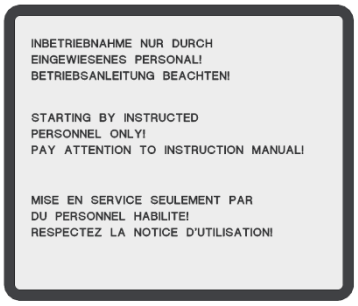

Fig. 21: Label “Instructed personnel only”

Fig. 22: Type label (Example)

Fig. 23: Label “Read and obey instruction”

Fig. 24: Label “Crushing hazard”

Fig. 25: Label “High Voltage”

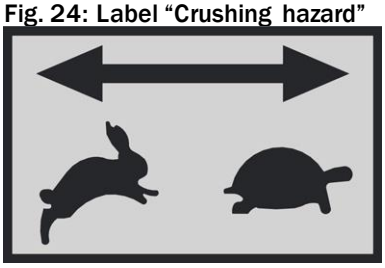

Fig. 26: Label “Fast/Slow”

Fig. 27: Label “EN 13977”

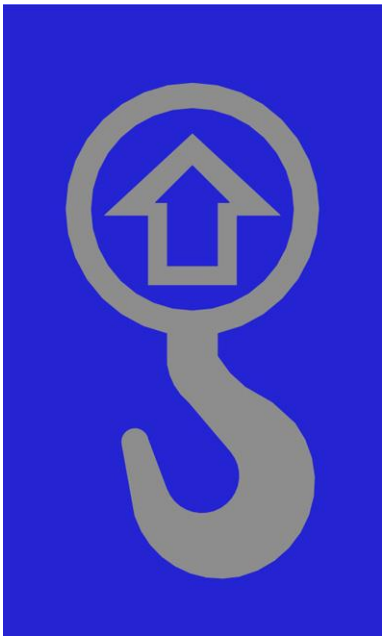

Fig. 28: Label “Lift here”

Fig. 29: Label “400 V”

Fig. 30: Manufacturer logo

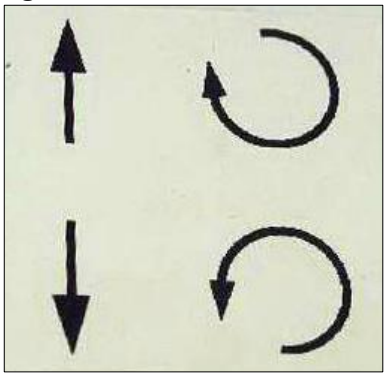

Fig. 31: Label “Direction of rotation”

Fig. 32: Label “Oil”

Fig. 33: Label „Direction of rotation of motor“

4.5.2 Position on the produkt

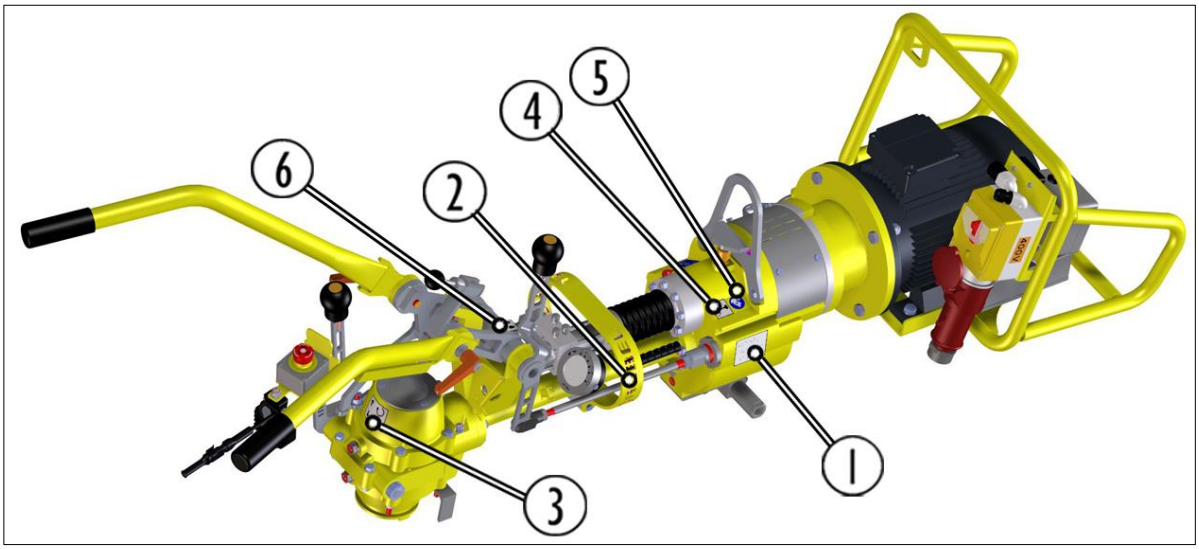

Fig. 34: Right side

1	Label “Instructed personnel only”	4	Label “EN 13977”
2	Manufacturer logo	5	Label “Read and obey instruction”
3	Label “Direction of rotation”	6	Label “fast/slow”

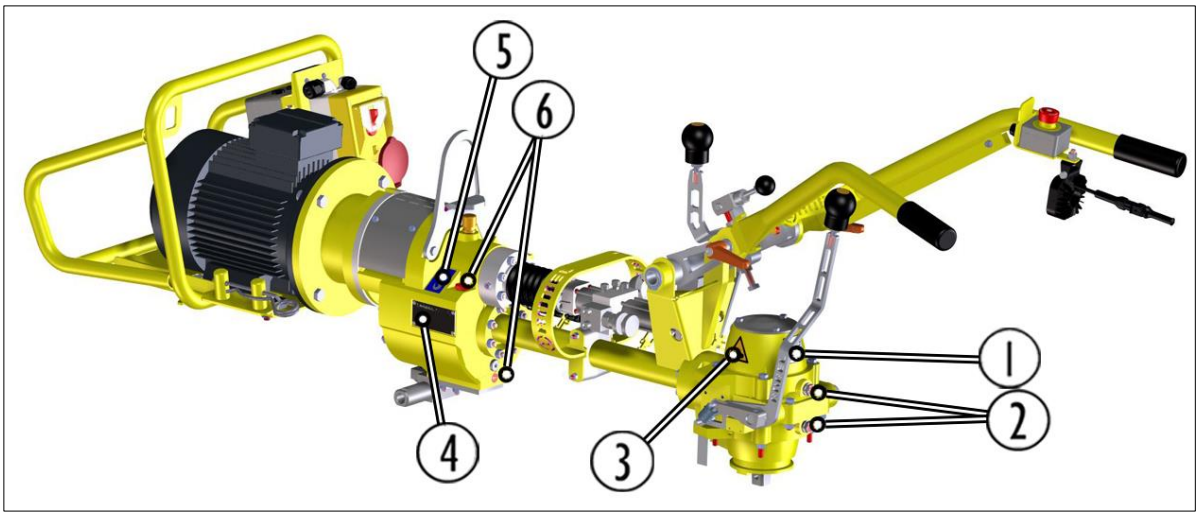

Fig. 35: Left side

1	Label “Direction of rotation”	4	Type label
2	Label “Oil”	5	Label “Lift here”
3	Label “Crushing hazard”	6	Label “Oil”

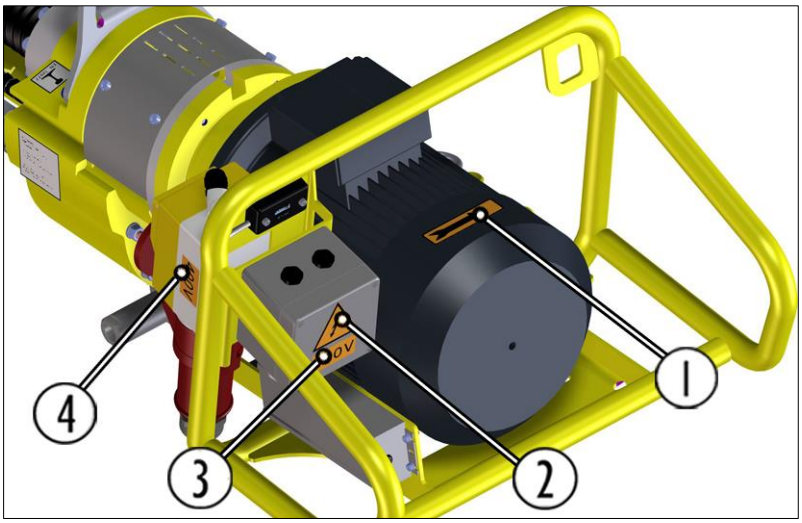

Fig. 36: Labels on motor

1 Label “Direction of rotation of motor”
2 Label “High Voltage”
3 Label “400 V”
4 Label “400 V”

4.6 Accessory

4.6.1 Scope of delivery

- Tool roll
- Screwdriver
- Open-ended wrench (4x)

4.6.2 Upon request

Holders for tool inserts on reversing gear

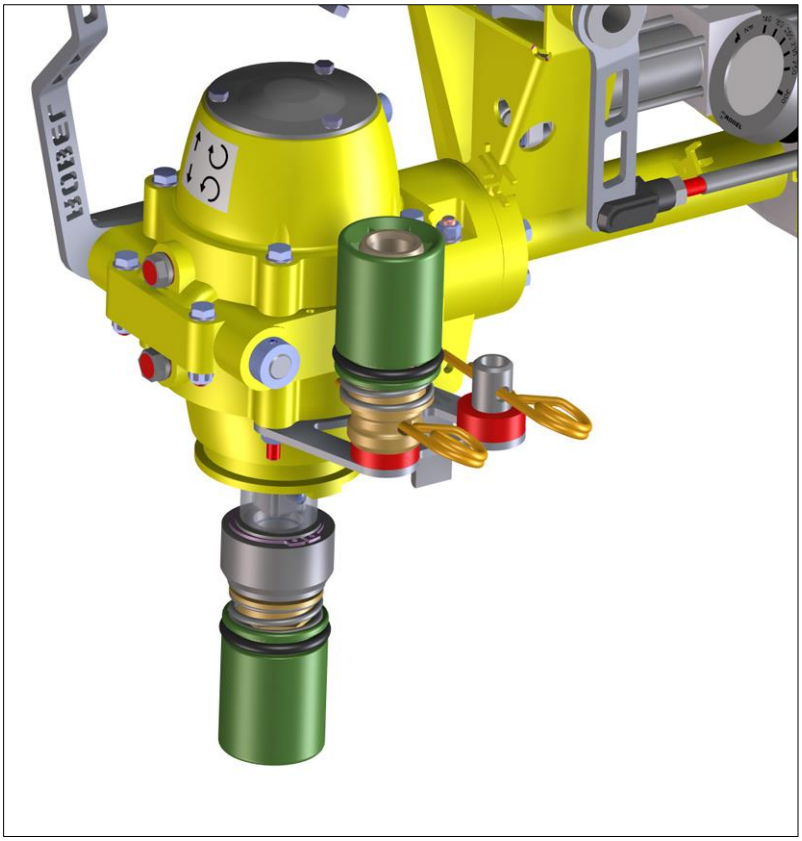

Fig. 37: Holders for tool inserts on reversing gear

For placing two sockets onto the reversing gear in the immediate vicinity of the workplace. This allows the socket to be changed faster.

Order No.:

EDP No. 832 890 0004

Additional folding handles for two persons on the lifting bow

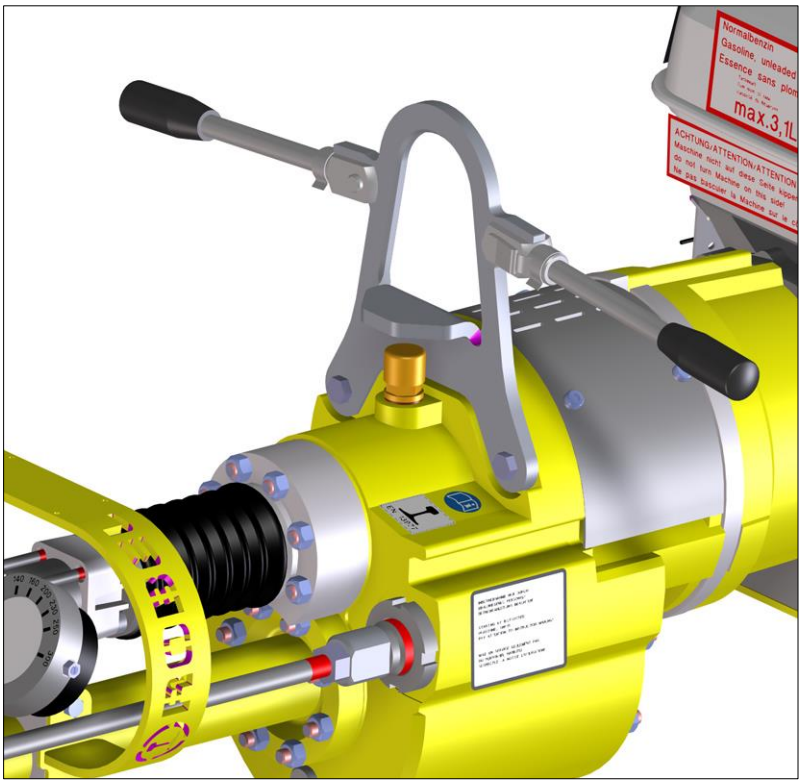

Fig. 38: Additional folding handles for two persons

Lifting bow with two additional folding handles for safe and ergonomic transport over the last metres to the work site.

Order No.:

EDP No. 832 157 0120

Fish bolt wrench

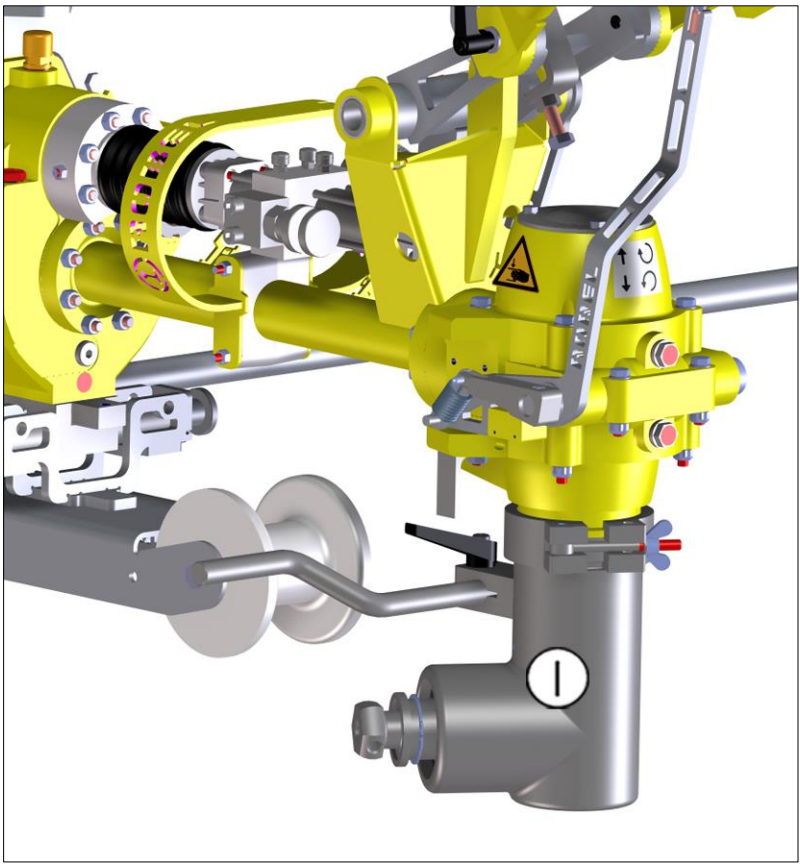

Fig. 39: Fish bolt wrench

Fish bolt wrench ((1), without socket) for tightening fish bolts.

Order No.:

EDP No. 800 318 2001

Spindle extension

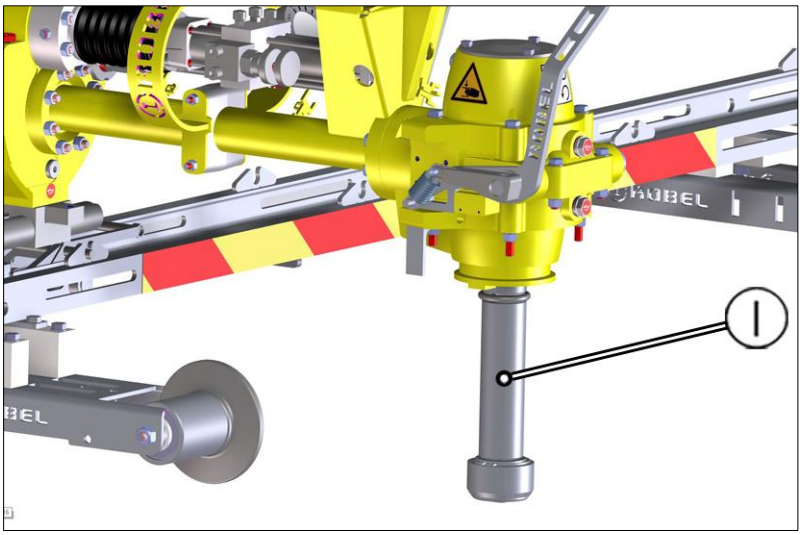

Fig. 40: Spindle extension

The spindle extension (1) is needed, e.g. when using the transverse carriage.

Straight square, for two-part, articulated sockets

Single-rail travelling gear	EDP No. 501 895 0001
Transverse carriage with additional height (Lenght 100 mm)	EDP No. 501 895 0007
Transverse carriage with additional height (Lenght 140 mm)	EDP No. 501 895 0008

Crowned, for one-piece, rigid sockets

Single-rail travelling gear	EDP No. 501 895 0005
Transverse carriage with additional height (Lenght 100 mm)	EDP No. 501 895 0010
Transverse carriage with additional height (Lenght 140 mm)	EDP No. 501 895 0011

Carriage with rubber wheels

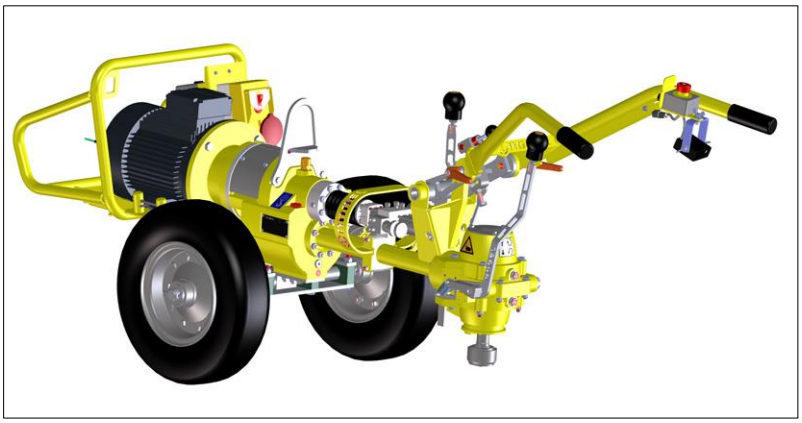

Fig. 41: Carriage with rubber wheels

For driving on sleepers without rails or ballastless track (tram)

Order No.:

EDP No. 832 082 0001

4.7 Workplace

The operator normally stands behind the machine and holds both handles.

5. Comissioning

WARNING

Risk of electrocution!

Damaged or freely exposed power cables or damaged electric parts may carry dangerous voltage. This may also cause the machine frame to carry dangerous voltage.

- ► The machine must be stowed correctly to avoid damage (blows) to both electrical parts and the whole machine.
- ► If electrical parts are defective due to environmental damage (cracks in the housing, ripped cables etc), they must be replaced to guarantee further safe use.
- ► For further safety regulations, see manual of the motor and EN norms.

If a phase drops out during operation, the switch does not automatically return to the 0-position! The electronics are not a phase failure protector.

5.1 Connecting the electric motor

Terminal assignment

L1; L2; L3 = 3-phase connection

N = Neutral

P = Protective conductor (earthed)

5.2 Check/change sense of rotation

If the motor turns in the wrong direction, this must be changed by an electrical specialist!

6. Preparing the machine

1. Make sure the machine is standing horizontally.

WARNING

Risk of injury!

When performing checks, there is a danger of the machine toppling over if it is not transferred onto the rails with the outrigger mounted.

► For safety reasons, place the machine onto the rails before putting it into service or checking it.

► Mount outrigger or transverse carriage.

6.1 Digital Tach/Hour Meter

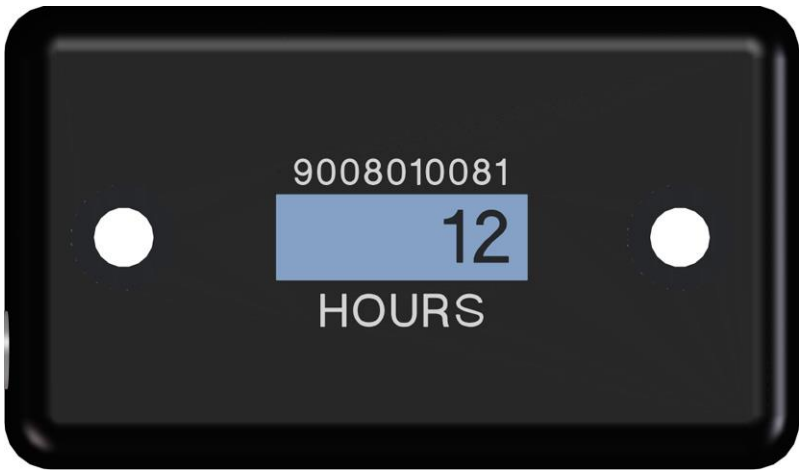

Fig. 42: Digital Tach/Hour Meter

6.2 Checking the machine

6.2.1 Electric connection

1. Check that the voltage and frequency stated on the motor are the same as those locally available.
2. Check that the correct plug is fitted to the electricity supply cable.

Specification for phase sequence indicator

- Nominal voltage 400V 50 Hz
- Phase sequence indicator for the tree phases
- LED (next to main switch, see arrow

Function

Indication	meaning
LED off	All three phases present and rotary field OK
LED red, flashing	One phase missing
flashing 1x (fast)	L1 missing
flashing 2x (fast)	L2 missing
flashing 3x (fast)	L3 missing
LED red, permanent	Rotary field incorrect

If a phase drops out during operation, the switch does not automatically return to the 0-position! The electronics are not a phase failure protector.

If the motor turns in the wrong direction, this must be changed by an electrical specialist!

6.2.2 Oil level of gears

Reduction gear

1. Unscrew the dipstick (1) and wipe it clean.

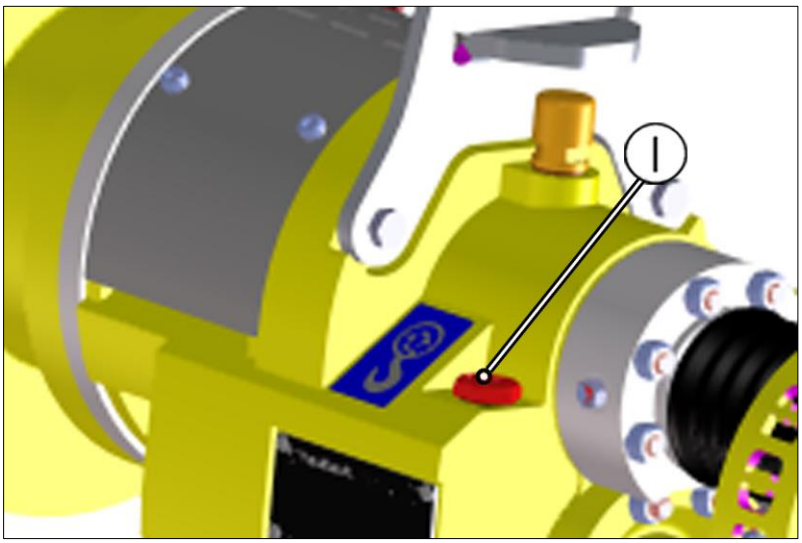

Fig. 43: Dipstick of reduction gear

2. Insert the dipstick (1) without screwing it in and then remove it again.
3. Check that the oil level is between the bottom end of the stick and the “MAX” mark, see arrow in following figure.

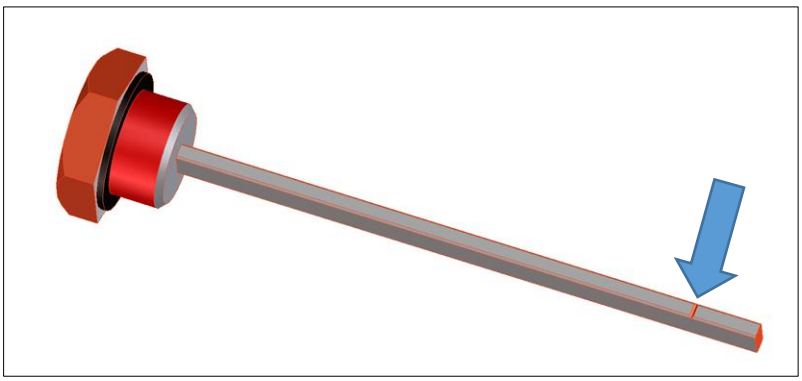

Fig. 44: Dipstick: “MAX” mark (arrow)

4. If the oil level is too low, unscrew the oil filling screw (1) and top up the oil.

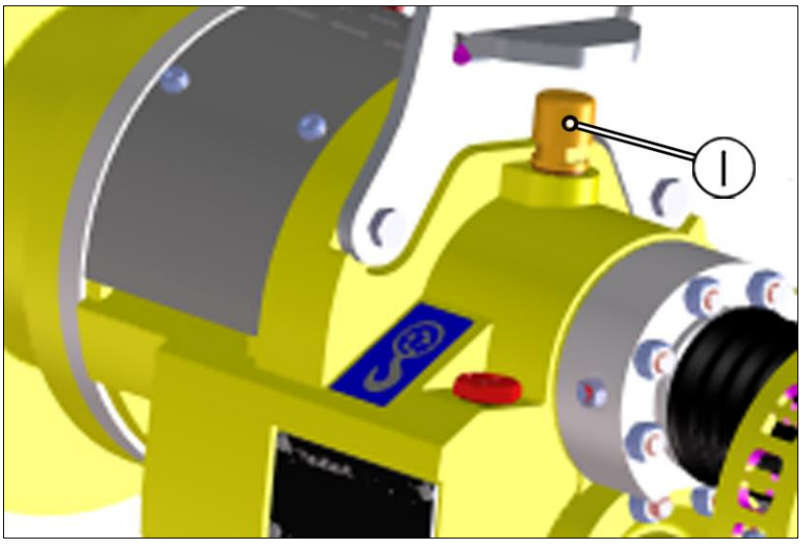

Fig. 45: Oil filling screw reduction gear

1 Oil filling screw reduction gear

Recommended type of oil: Gear oil SAE 80

5. Check that the oil level is between the lower end of the dipstick and the “MAX”-mark.
6. Re-insert dipstick and tighten.
7. Re-insert filling screw (1) and tighten.

Reversing gear

1. Unscrew the oil level checking screw (2).

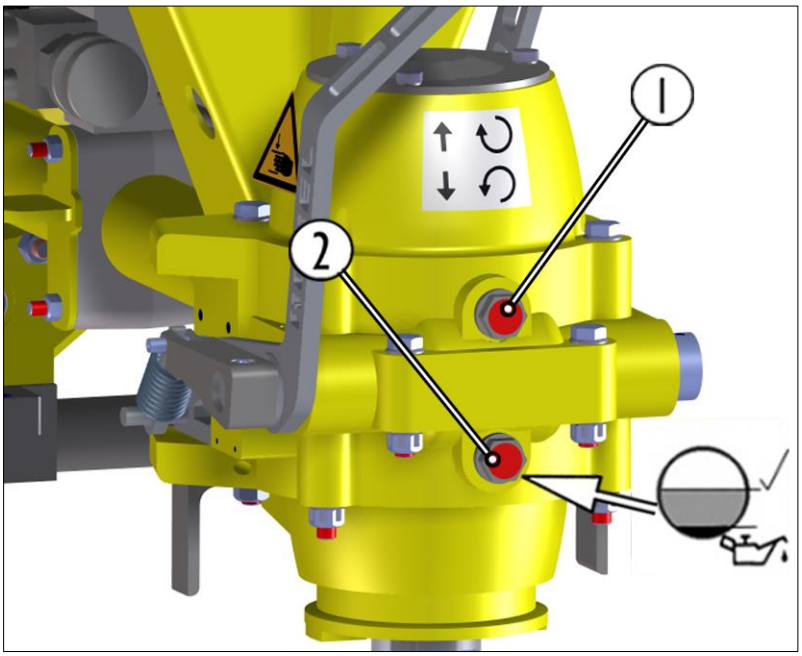

Fig. 46: Reversing gear

2. Check that the oil reaches at least the bottom edge of the thread.
3. If the oil level is too low, undo screw (1) and add oil until the bottom edge of the thread on the oil level checking screw (2) is reached.

   Recommended type of oil: Gear oil SAE 80
4. Re-insert and tighten the checking screw (2).
5. Re-insert filling screw (1) and tighten.

6.3 Adjusting the handle height

The height of the handle can be adjusted by about +/-200 mm to the height of the operator.

1. Loosen both height adjustment tommy screws (1) anti-clockwise so that the Hirth toothing is disengaged.

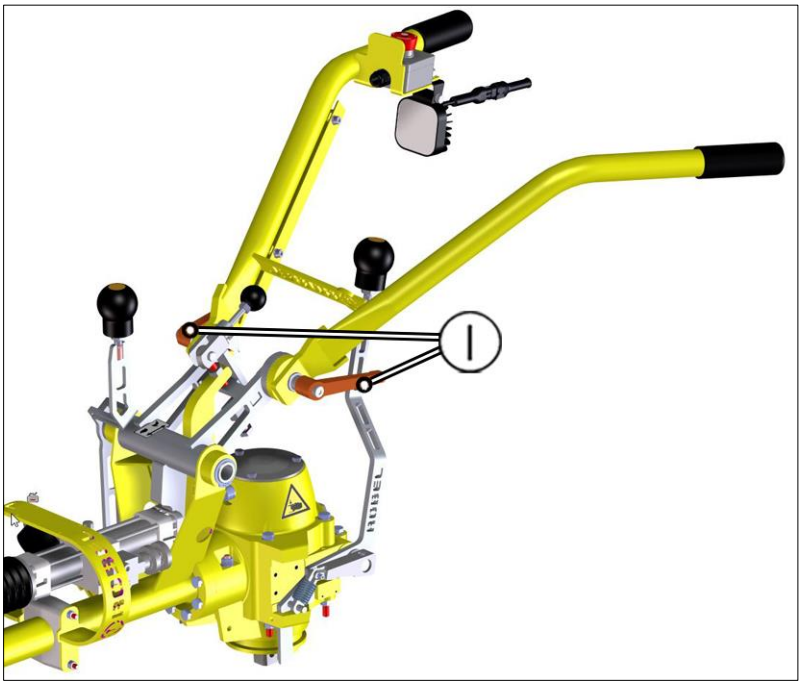

Fig. 47: Adjusting the handle height

2. With one hand, hold the guide handle at the desired height.
3. With the other hand, tighten the tommy screw clockwise.
4. Tighten the second tommy screw in the same manner.

7. Operation

WARNING

Danger to life due to electrical shock!

Excessive exposure to sun can cause the machine to heat up to more than +70 °C. Electrical safety is endangered by housing distortion.

► Make sure that the machine is not exposed to direct sunlight for a long time.

CAUTION

Risk of tripping!

Cable may lead to tripping hazard. This could result in falls and bruises.

► Ensure that cables are not causing tripping hazard.

7.1 Assembling the machine

The machine is supplied unassembled in component parts of (depending on the version ordered) power wrench, trolley and outrigger or power wrench, traversing trolley and spindle extension. Depending on the carriage option, the machine is assembled before or after re-railing.

7.2 Re-railing the machine

WARNING

Risk of injury!

The machine is too heavy for one person alone.

► Only transport machine with suitable lifting gear, crane or at least a **six-man team**.

► Hook a suitable sling into the lifting bow and use a suitable lifting device to set the power wrench into the trolley.

7.2.1 With monorail trolley and outrigger

1. Detach the outrigger from the monorail trolley when re-railing/unrailing: Withdraw the cotter pin (4) and pull the outrigger out of the holder (2).

Assembling the monorail trolley

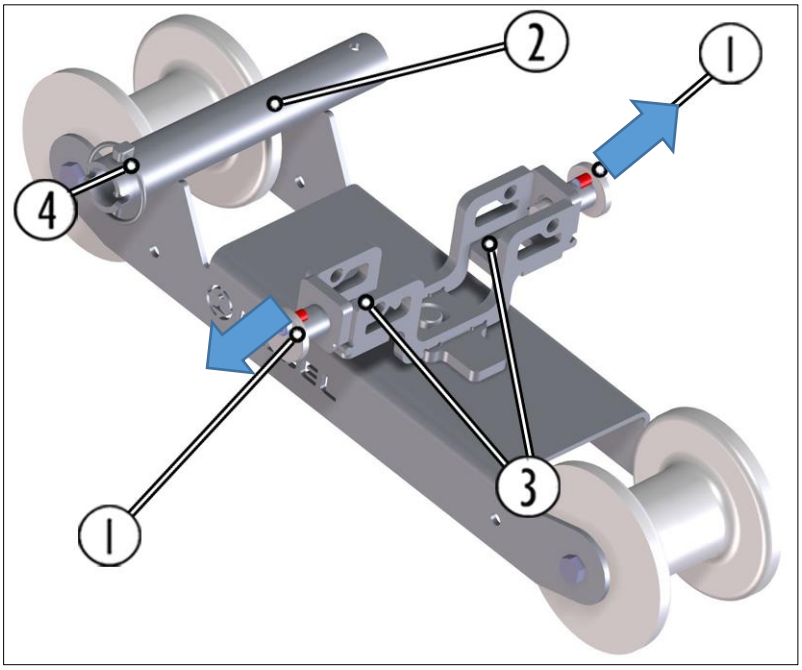

Fig. 48: Monorail trolley

1	Spring bolt
2	Holder for outrigger
3	Support
4	Cotter pin

2. Pull out the two spring bolts (1) (see arrows) and turn by a small angular amount.

   The locking bolts are opened, and the machine can be placed into the carriage.
3. As a six-man team or using lifting gear, place the machine onto the trolley (support (3)).
4. Turn back both spring bolts by a small angular amount until they engage.
5. Ensure that the spring bolts engage in the holes on the power wrench.
6. Place the machine onto the rail with the monorail trolley.
7. Insert the outrigger into the holder (2) and secure it with the cotter pin (4).

Due to the low weight of the monorail trolley, this can remain on the machine for re-railing/unrailing.

7.2.2 With transverse carriage

► Detach the machine from the trolley when re-railing/unrailing.

1. Place the transverse carriage onto the track and secure it against rolling away.

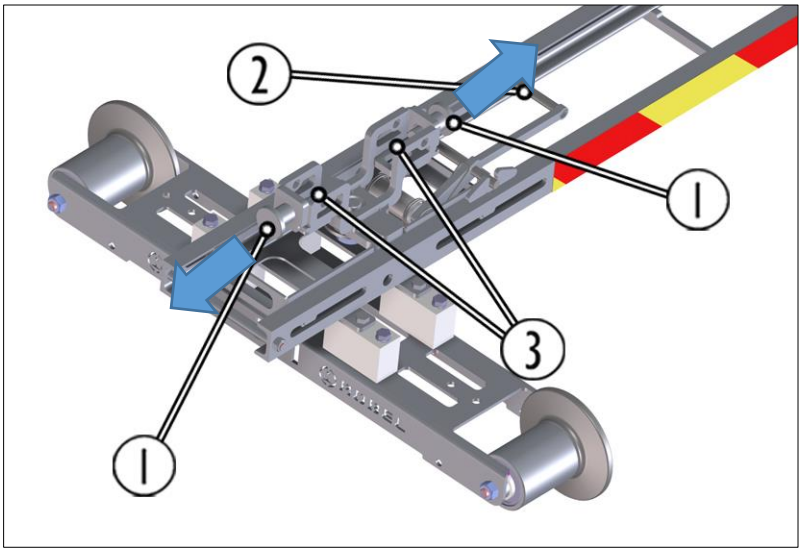

Fig. 49: Re-railing the transverse carriage

1 Spring bolt
2 Brake lever for travel along transversal carriage
3 Support

2. Pull out the two spring bolts (1) (see arrows) and turn by a small angular amount.

   The spring bolts are opened, and the machine can be placed into the transverse carriage.
3. As a six-man team or using lifting gear, lower the machine onto the transverse carriage (support (3)).
4. Turn back both spring bolts by a small angular amount until they engage.
5. Ensure that the spring bolts engage in the holes on the power wrench.

   The machine is re-railed and assembled.

7.2.3 With transverse carriage and roll-away protection

► Detach the machine from the carriage when re-railing/unrailing.

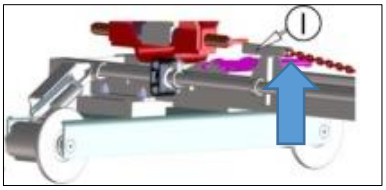

Fig. 50: Roll-away protection

1 T-plug

1. Put the transverse carriage with roll-away protection onto the rails and pull out the T-plug (1).

   The transverse carriage is braked.

2. Pull out the two spring bolts (see arrows in illustration below) and turn by a small angular amount.

The spring bolts are opened, and the machine can be placed into the transverse carriage.

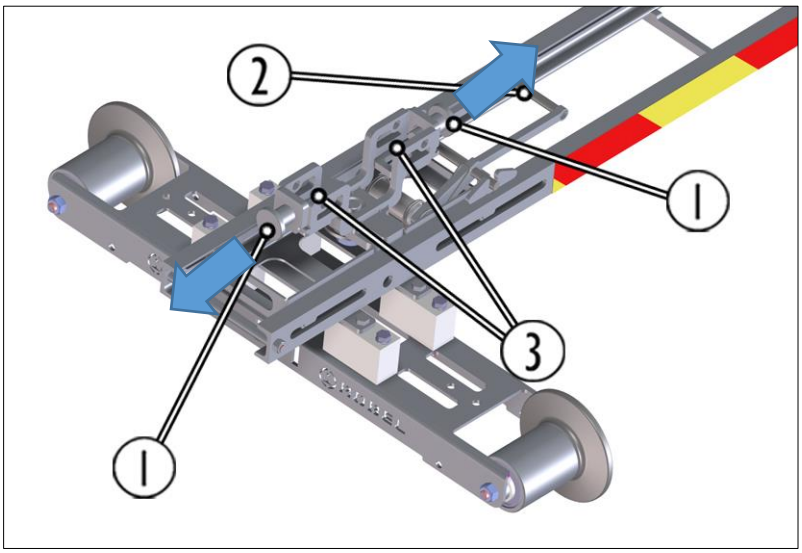

Fig. 51: Re-railing the transverse carriage

1 Spring bolt
2 Brake lever for travel along transversal carriage
3 Support

3. As a six-man team or using lifting gear, lower the machine onto the transverse carriage (support (3)).
4. Turn back both spring bolts by a small angular amount until they engage.
5. Ensure that the locking bolts engage in the holes on the power wrench.

6. Fasten the chain (2) with locking pin (1) to the machine.
7. After the machine is mounted on the transverse carriage, insert the T-plug (locking pin) as far as the stop.

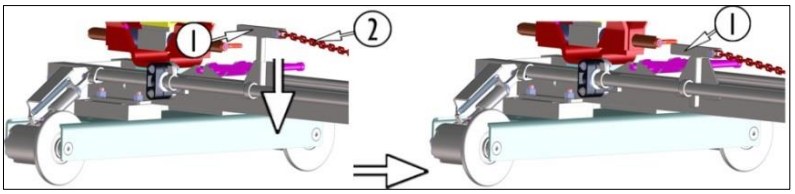

Fig. 52: Roll-away protection

1 Locking pin

2 Securing chain

The roll-away protection s no longer active, the machine can be moved with the transverse carriage.

Should the transverse carriage roll away when being unrailed, the T-plug is pulled via the securing chain and the transverse carriage is braked.

7.3 Changing/ removing socket

WARNING

Risk of injury!

If the operator uses one hand to grasp the quick-change chuck and the other to simultaneously hold the handle of the machine, there is a risk of pressing a button and starting the spindle rotating. Severe injuries to the hand may result. If gloves are worn, there is a danger of being coiled on.

► Stop the engine whenever the socket needs to be changed (Engine switch to "OFF").

Removing socket

1. Lift the machine slightly at the guide handle.
2. Slide ring of quick changing chuck down (see figure: black arrow).

   Socket will fall out.

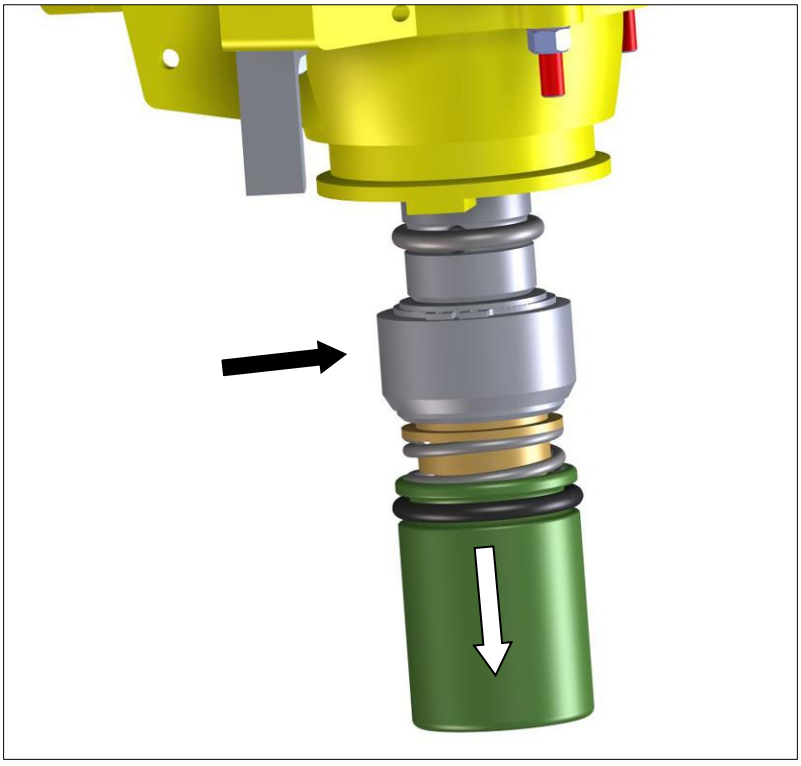

Fig. 53: Changing the socket

Inserting replacement socket

NOTICE

Risk of damage!

Damage will be caused to the machine if unsuitable sockets are used.

- ► For spindle drives with a straight square output: Use only articulated (two-part) sockets.
- ► For spindle drives with a crowned square output: Use only one-part sockets.

See following figures:

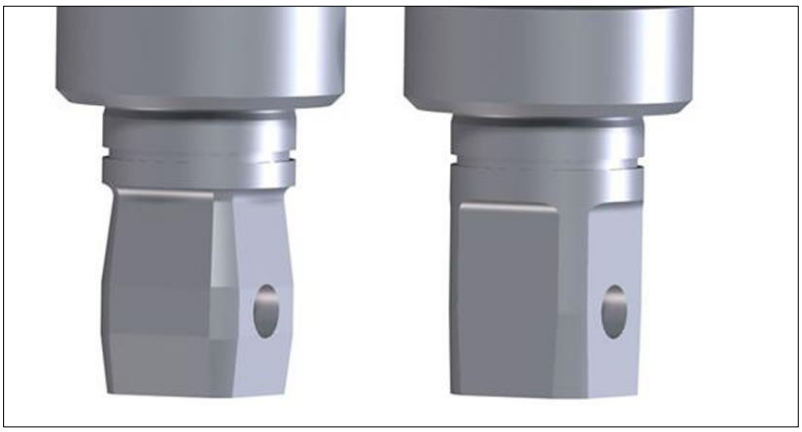

Fig. 54: Crowned spindle drive (left) and straight square (right)

Fig. 55: (1) Sockets

1 Articulated socket (two-part) without an ejector
2 Articulated socket (two-part) with an ejector
3 One-part socket

3. Slide ring of quick changing chuck down (see figure: black arrow

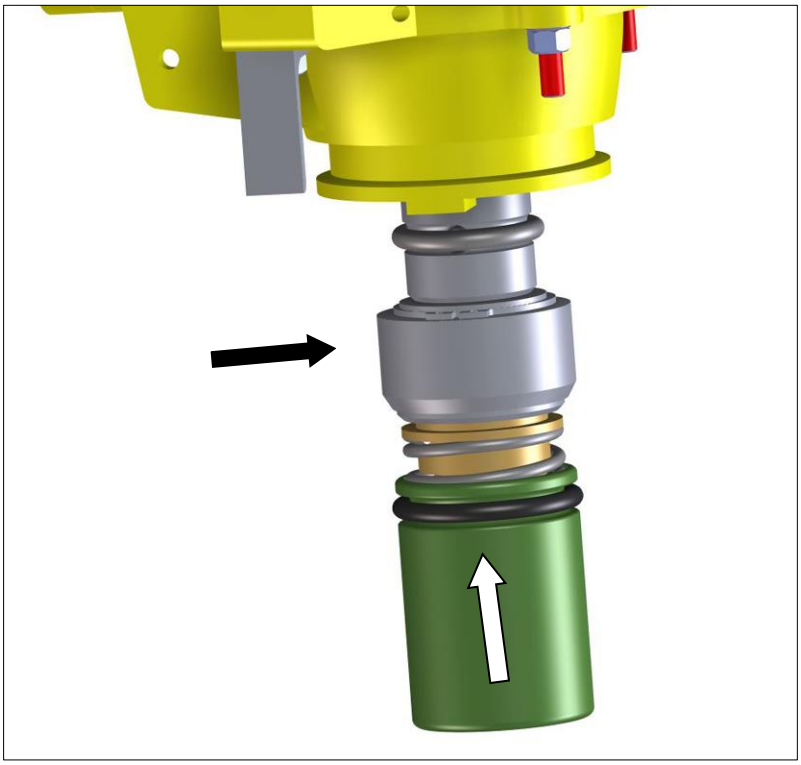

Fig. 56: Insert replacement socket

4. Insert the replacement socket into the quick-change chuck from below (white arrow).
5. Release the ring.

   Replacement socket is centre fitted.

7.4 Starting the engine

CAUTION

Risk of tripping!

Cable may lead to tripping hazard. This could result in falls and bruises.

► Ensure that cables are not causing tripping hazard.

WARNING

Fire hazard!

If the motor is covered it may overheat. The engine will be damaged and parts could catch fire.

► Do not cover the electric motor.

► Ensure that there are no persons within the danger area of the engine or the machine and that all protection devices have been fitted.

1. Lift protective cover (3)
2. Turn the engine switch (2) to “ON” (see dotted position (1))

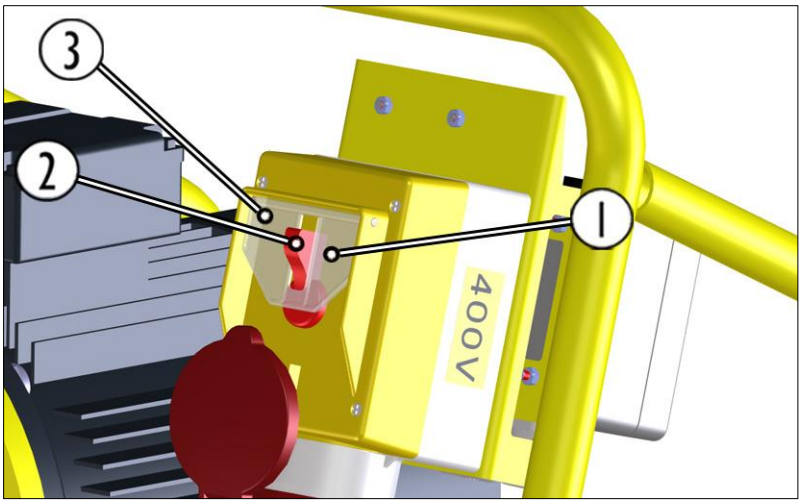

Fig. 57: Turn the engine switch to “ON”

1 Protective cover
2 Engine switch
3 Position “ON”

Engine starts.

7.5 Preparing for wrenching

7.5.1 Setting reduction gear

The ideal working temperature of the reduction gear is approx. above (hand warm).

► Allow the engine to warm up before starting work, see chapter. 7.4.

NOTICE

Risk of damage to the gearbox!

The reduction gear may suffer damage if it is shifted under load.

► Only shift the reduction gear when the wrench spindle is stationary and not under load.

Slow gear

- Push the shift lever forward (away from the operator).

Fast gear

- Pull the shift lever backward (towards the operator).

1. Make sure that the gear shift engages.
2. If the “tooth-on-tooth” position occurs, initiate wrenching process briefly.

7.5.2 Setting reversing gear

Tightening

- Push the shift lever forward (away from the operator).

Loosening

- Pull the shift lever backward (towards the operator).

The gear shift engages automatically due to pretension.

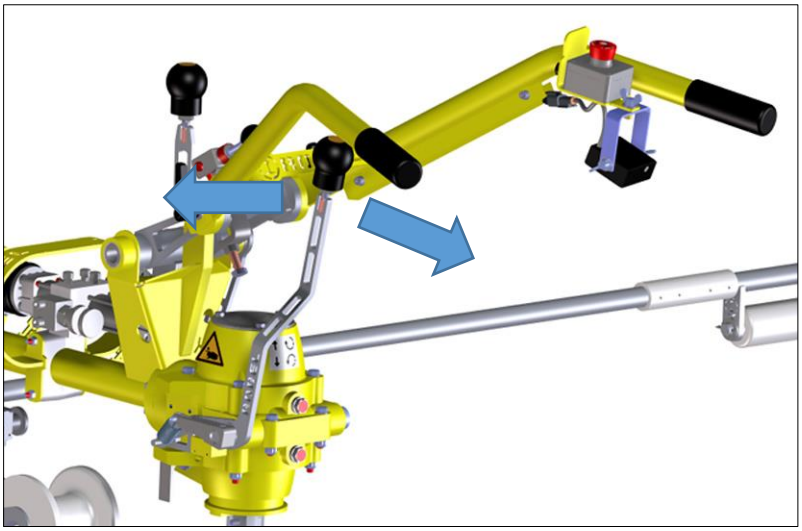

Fig. 58: Lever reversing gear

7.5.3 Setting the torque

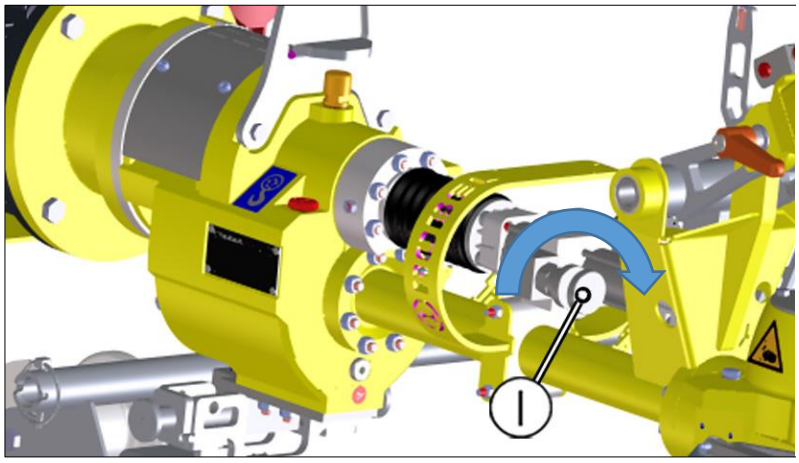

Fig. 59: Adjusting screw for setting the torque (pressure control valve)

- Turn the adjusting screw (1) clockwise to increase the torque
- Turn the adjusting screw (1) counter-clockwise to reduce the torque

1. Set the desired torque.
2. Secure the valve by turning the second knurled nut.

7.6 Tightening

NOTICE

Danger of incorrect torque values and irreparable damage to the track superstructure (property damage).

If the machine is not calibrated, incorrect torque values may cause irreparable damage to the track superstructure as well as increased wear to the machine.

► Check the calibration before starting work at each new site or whenever the type of (superstructure) screw connection or the nominal torque changes. If necessary, re-calibrate the machine, see chapter 7.12.

1. Get engine to operating speed.
2. Switch reversing gear to desired direction of rotation (Tightening: forward away from the operator).
3. Switch reduction gear to “fast”.
4. Place socket onto screw.
5. Press the guide handles downwards and observe the manometer: Keep the guide handles pressed downwards until the desired tightening torque is reached.

   The wrenching operation is thereby completed.

Stopping tightening

6. Release the wrenching button.

   The wrenching operation stops.

7.7 Loosening

To facilitate fast working, ROBEL recommends leaving the reduction gear in the “fast” position.

It is not necessary to set the torque if the shift lever for maximum torque is used.

1. Switch the reversing gear into the desired rotary direction (tightening: shift lever backwards towards the operator.)
2. Set the reduction gear to the “fast” position.
3. Fold the shift lever for maximum torque forwards.
4. Place the socket onto the bolt.
5. Press the guide handles downwards and keep them pressed down until the bolt is released or fully unscrewed.

Stopping loosening

6. Stop pressing the guide handles downwards.

   The wrenching operation stops.

7.8 Loosening or tearing off seized bolts

1. If bolts cannot be released with the “fast” setting of the wrench, shift the reduction gear into the “slow” position.
2. Fold the shift lever for maximum torque forward

   The maximum torque is then available.
3. Press the guide handles downwards and keep them pressed down until the bolt is released or torn off.

Stopping loosening

4. Stop pressing the guide handles downwards.

   The wrenching operation stops.

7.9 Removing the torn-off bolt head

If, when unscrewing a tight superstructure union, the bolt or nut is torn off, the latter may get stuck in the spindle socket.

WARNING

Risk of injury!

If the operator uses one hand to grasp the quick-change chuck and the other to simultaneously hold the handle of the machine, there is a risk of pressing a button and starting the spindle rotating. Severe injuries to the hand may result. If gloves are worn, there is a danger of being coiled on.

► Stop the engine whenever the socket needs to be changed.

1. Set the engine switch to the “OFF/0” position.

   The engine stops.
2. Remove the socket from the quick-change chuck.
3. Bang the socket against a hard surface to release the wedged nut or bolt.

   Torn off part falls out.
4. Fit the socket into the quick-change chuck.
5. Set the engine switch to the “ON/1” position.
6. Start the engine.

   The machine is ready for operation again.

7.10 Shutting down the engine

1. Turn the engine switch to “OFF/0”.

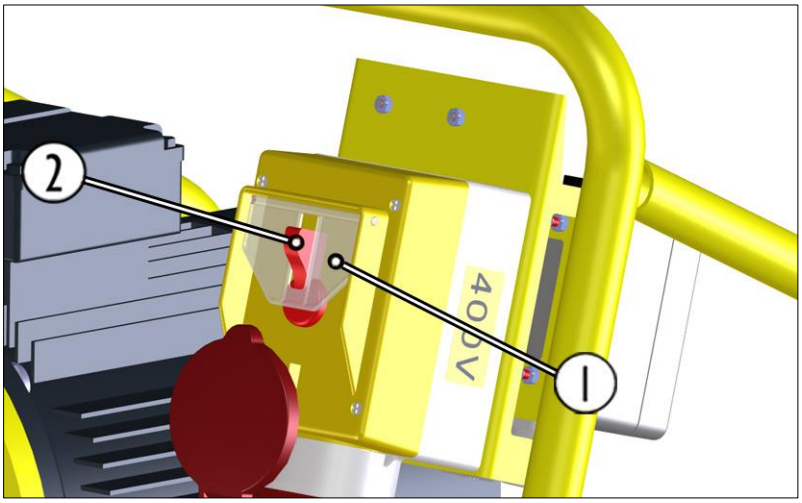

Fig. 60: Engine switch “OFF”

   Engine stops.
2. Fold down the protection cover (1).

The engine secured against unintentional switching on.

Bei einer Stromunterbrechung wird der Hauptschalter automatisch in Position “0“ geschaltet!

WARNING

Risk of accident!

Unlike machines equipped with internal combustion engines, electric drives are generally potential danger sources even if the engine is not running.

- ► Disconnect the electricity supply to the machine after use to stop un-qualified persons from handling the machine (danger of accident).
- ► The machine must be stowed correctly to avoid damage (blows) to both electrical parts and the whole machine.
- ► If electrical parts are defective due to environmental damage (cracks in the housing, ripped cables etc), they must be replaced to guarantee further safe use.
- ► For further safety regulations, see manual of the motor and EN norms.

7.11 Remove the machine from the rails and dismantle for transportation

WARNING

Risk of injury!

The machine is too heavy for one person alone! Risk of spinal injury.

- ► Only transport the machine with suitable lifting gear or at least a **six-man team**!
- ► Hook a suitable sling into the machine lifting bow and use a suitable lifting device to remove it from the rail.

Depending on the trolley/carriage option, the machine is dismantled before or after unrailing.

7.11.1 With monorail trolley and outrigger

1. Detach the outrigger from the monorail trolley for unrailing: Withdraw the cotter pin and pull the outrigger out of the holder (3).

Due to the low weight of the monorail trolley this can also remain on the machine for re-railing/unrailing.

Dismantling the monorail trolley

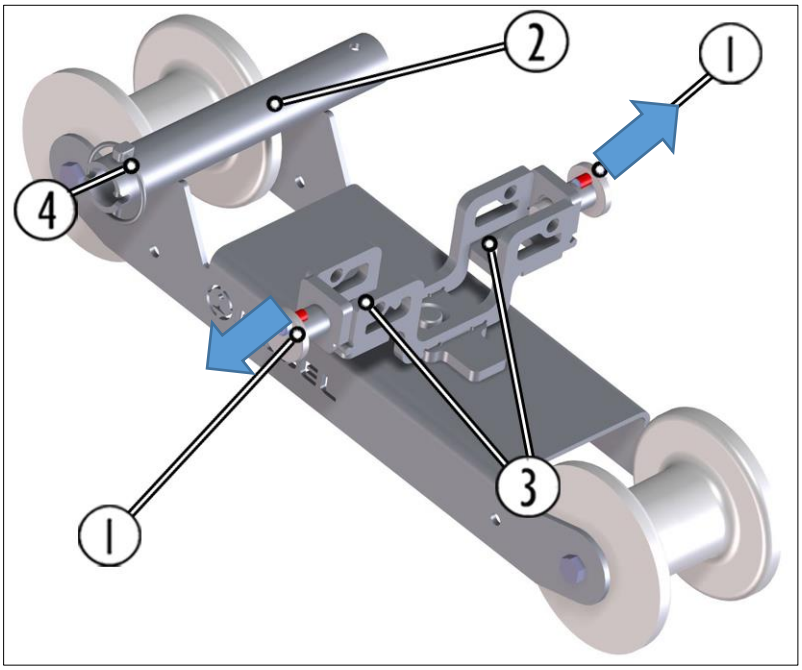

Fig. 61: Monorail trolley

1 Spring bolt
2 Holder for outrigger
3 Support
4 Cotter pin

2. Pull out the two spring bolts (1) (see arrows) and turn by a small angular amount.

   The locking bolts are opened, and the machine can be lifted out of the trolley.

Unrailing the machine

3. As a six-man team or using lifting gear, lift the machine from the rails.
4. Lift the trolley from the rail.

7.11.2 With transverse carriage

► Detach the machine from the carriage when re-railing/unrailing.

1. Secure the transverse carriage against rolling away.
2. Pull out the two spring bolts (1) (see arrows) and turn by a small angular amount.

   The spring bolts are opened, and the machine can be lifted from the transverse carriage.

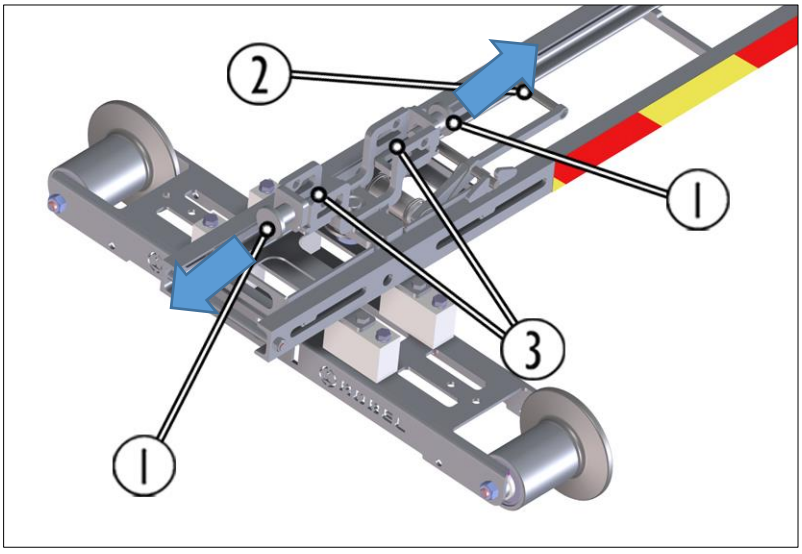

Fig. 62: Re-railing the transverse carriage

1	Spring bolt
2	Brake lever for movement along the transverse carriage
3	Support

3. As a six-man team or using lifting gear, lift the machine from the support (3).
4. Lift the transverse carriage from the rail.

7.11.3 With transverse carriage and roll-away protection

► Detach the machine from the carriage for re-railing/unrailing.

1. T Pull out the T-plug (1) on the transverse carriage.

   The transverse carriage is braked.

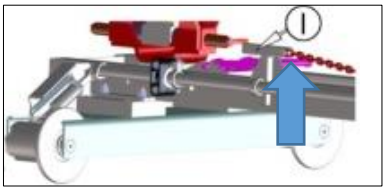

Fig. 63: Roll-away protection

1 T-plug

2. Detach securing chain with T-plug from the machine.
3. Pull out the two spring bolts (1) (see arrows in illustration below) and turn by a small angular amount.

   The spring bolts are opened, and the machine can be lifted from the carriage.

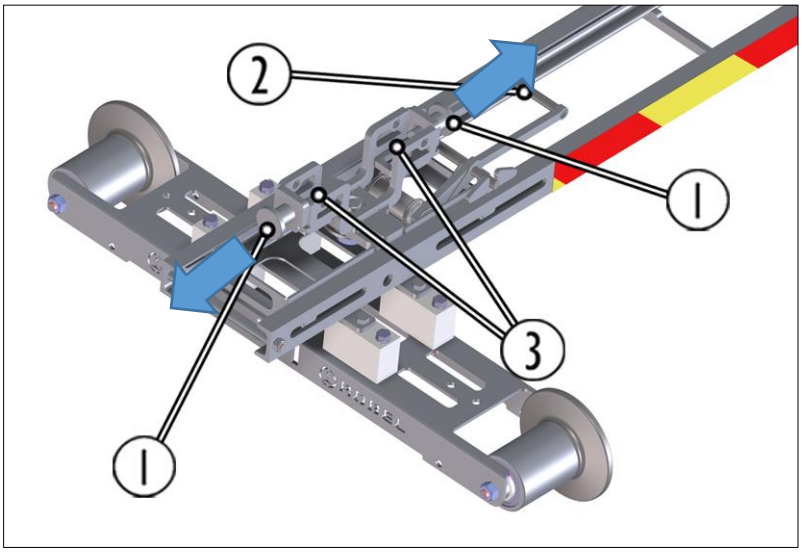

Fig. 64: Re-railing the transverse carriage

1 Spring bolt
2 Brake lever for movement along the transverse carriage
3 Support

4. As a six-man team or using lifting gear, lift the machine from the support (3).
5. Lift the transverse carriage from the rail.

7.12 Calibrating the torque control

NOTICE

Danger of damage to property!

If the torque control is not calibrated, an accurate torque is not achieved during tightening of the track screw connections! The result may be that a large number of screw connections must be released again and re-tightened.

If the torque is too large, the track may be destroyed.

► Ensure that the torque control is calibrated.

► Calibrate the torque control in the following cases:

- at each new work site
- when the track changes
- when the type of screw connection (screw, spring clip, sleeper, etc.) changes
- when the nominal torque changes

Calibration of power wrenches is a complex procedure where ambient temperatures, temperatures of the test equipment and of the wrench to be calibrated have a considerable effect. Further important factors result from the type of screw connection (dowel or hooked bolt, rusty or oiled, type of sleeper, etc.)!

► Observe all the following information

- Only calibrate when the machine is at operating state temperature!
- For testing by means of a torque measuring device please ensure that the driving hexagon of the measuring device is loosened by a minimum of 2 rotations.
- Repeat these measurements several times.

Torque measuring devices available on the market heat up during operation and display internal deviations of up to 50 Nm (in the measuring device!) with temperature fluctuations of between 10 °C and 45 °C.

7.12.1 Checking the calibration

Carry out the following torque test on the track:

1. Get the machine up to working temperature.
2. Set desired nominal torque (watch reading of pressure gauge).
3. Tighten several screws.
4. Mark the position of the screw using a pen.
5. Loosen the screw manually by ½ of a turn and tighten in one go using a calibrated torque spanner.

   The torque spanner must click close to the pen mark.
6. If this is not the case, calibrate the coupling.

7.12.2 Calibrating the torque control

When calibrating, the correction value is in principle adjusted until a test as described in chapter 7.12.1 indicates that the nominal value set in the control system is reached.

1. Trigger wrenching mode and perform a complete wrenching operation.
2. Check the calibration as shown in chapter 7.12.1.
3. If necessary, adjust the graduated dial until the nominal torque displayed matches the torque wrench setting.

Fig. 65: Pressure gauge

Adjusting the graduated dial

1. Loosen the lock nut of the grub screw with an open-ended spanner.
2. Loosen the grub screw with a flat-tip screwdriver.
3. Adjust the graduated dial appropriate to the measured torque.
4. Tighten the grub screw.
5. Tighten the lock nut.

8. Transport and Storage

8.1 Transport

WARNING

Risk of injury!

The machine is too heavy for one person alone. Risk of irreversible spinal cord injuries.

► Only transport machine with suitable lifting gear, crane or at least a **six-man team**!

Centre of gravity

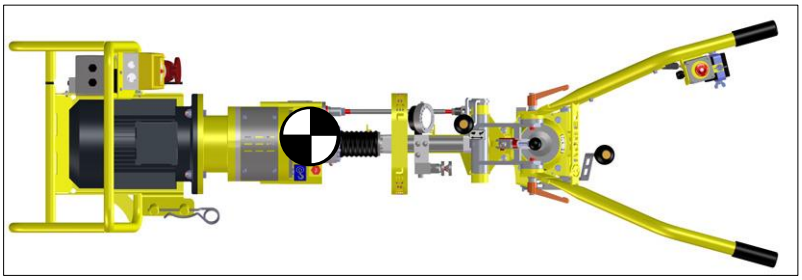

Fig. 66: Centre of gravity

The temperature range for transport is –20 °C to +50 °C.

If the product is placed in its original packaging and properly lashed down, it can be transported by any means of transport without damage.

Recommendation for handling

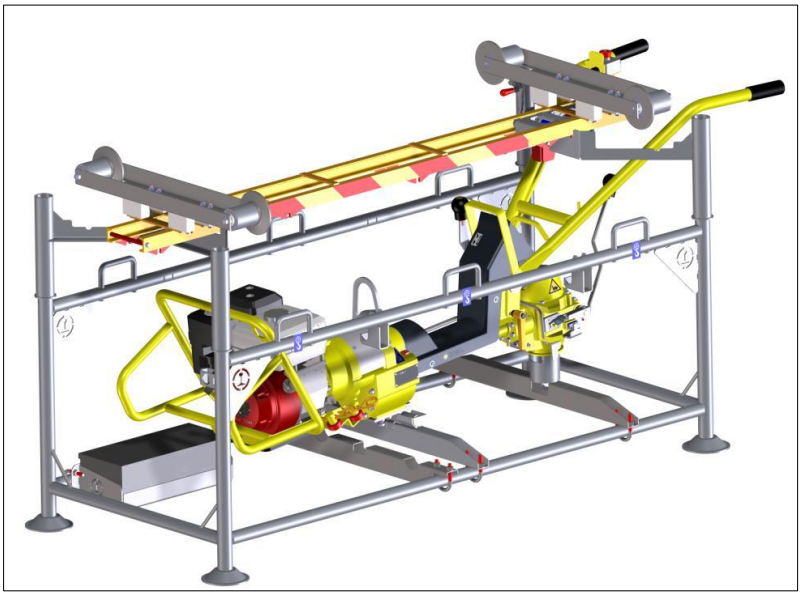

Fig. 67: Transport rack (schematic)

Transport rack

EDP No.: 773 896 0001

8.2 Storage

The temperature range for storing the machine is -20° C to +50° C.

1. Ensure that the place of storage is dry and dust-free.
2. Cover the engine to keep out dust.

9. Maintenance

WARNING

Risk of electrocution and risk of severe injury!

The engine can start unintentionally during maintenance work if the machine is connected to mains power supply/battery.

► Disconnect machine from mains power supply/battery prior to any maintenance work.

CAUTION

Risk of burns!

When in operation, the motor and parts of the machinery become hot.

► Do not touch hot parts.

► Allow the machine to cool down for at least 30 minutes before performing maintenance work.

NOTICE

Risk of engine damage!

There is a risk of engine damage if the spare parts used do not meet the specified quality requirements.

► Use only original spare parts or parts of equivalent specification.

1. Use only the recommended lubricants and, when carrying out repairs, use only original spare parts.

This is important, firstly for warranty cases and secondly to enhance the operational reliability of the product.

Correct ordering of spare parts is an essential contribution to a speedy delivery of spare parts and consequently to the economic viability of the machine.

2. When you order spare parts from us please provide the following information:

- Type of machine
- Number of the machine
- Assembly
- Description and number of spare part
- Quantity
- Shipping method
- Dispatch address

3. Follow the recommended maintenance intervals.
4. Adhere to the country-specific safety and environmental regulations when carrying out maintenance work.

5. Regular servicing contributes to a long service life. The required maintenance intervals and type of maintenance work that has to be carried out are described in the table in chapter 9.1 (see also the engine manufacturer's original operating instructions).

9.1 Maintenance schedule

9.1.1 Gear

Interval	Maintenance work
Daily	Check oil level of reversing gear, top up if necessary, see Chap. 6.2.2
	Check oil level of reduction gear, top up if necessary, see Chap. 6.2.2
Once after the first 150 hours (1)	Change reversing gear oil, see Chap. 9.6.1
	Change reduction gear oil(1), see Chap. 9.6.1
After 500 operating hours	Change reduction gear oil, see Chap. 9.6.1
	Change reversing gear oil, see Chap. 9.6.1
Every 2 years	Change hydraulic oil, see Chap. 9.4

(1) Also perform an oil change after replacing the clutch.

9.1.2 Engine

Interval	Component	Maintenance work
Daily	Cooling fins	Check, clean if bnecessary, see Chap. 9.9
	Electric components (Switches, cables etc.)	Visual check, replace if necessary.

9.1.3 Machine

Intervall	Component	Maintenance work
Monthly	Signs and labels	Check/repace, see ch. 9.10

9.2 Wear parts

Part designation	EDP No.
Coupling cone	832 202 0120
Clutch bell	832 202 0110
Bearing for clutch bell	900 600 3043
Self-locking hexagon nuts for gear flange (6 pieces required)	990 985 0800

9.3 Electric motor

NOTICE

Risk of damage!

Improper maintenance or the use of spare parts which are not of equivalent quality may damage the engine.

- ► Use only genuine spare parts or their equivalent.
- ► The electric engine may only be serviced by Customer Service or an electrical specialist.

1. Check for ripped cables prior to comissioning (visual check).

The electric motor is maintenance-free.

9.4 Filling the hydraulic cylinder and bleeding

Change oil every year.

Tools, means, material:

- Pump-action oil can
- Three pieces of plastic hose, approx 30 cm long
- Open end spanner AF 9
- Allen key AF 5
- Filling quantity: approx. 0.2 litres of Panolin HLP 46 Synth hydraulic oil

1. Tilt up the limit stop on the guide handle in position (2).

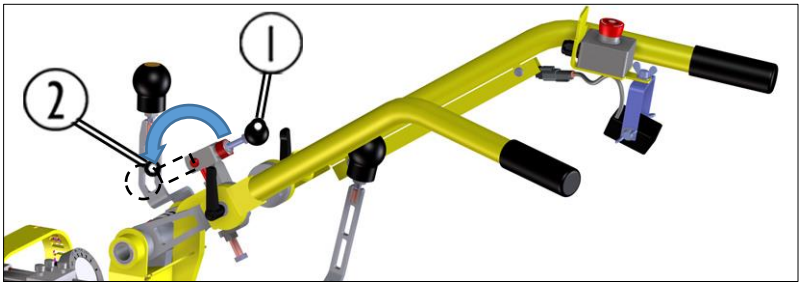

Fig. 68: Tilt up the limit stop on the guide handle to the front

2. Remove safety caps from filler valve (left) and the bleed valves.

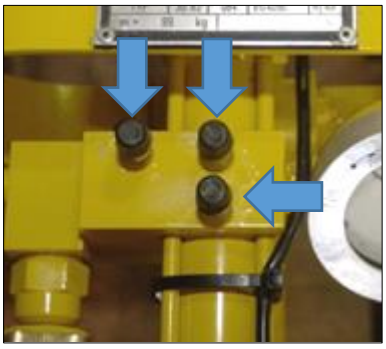

Fig. 69: Remove safety caps

3. Connect pump-action oil can to filler valve with a piece of hose.

Fig. 70: Connect pump-action oil can

4. Place hose pieces onto bleed valves.

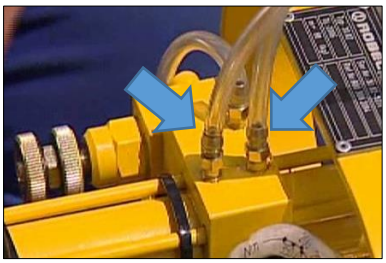

Fig. 71: Place hose pieces onto bleed valves

5. Open the bleed valves and the filler valve.

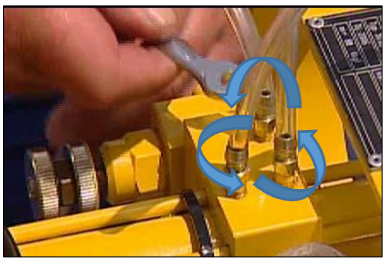

Fig. 72: Open the bleed valves and the filler valve

6. Open the pressure control valve (counter clockwise).

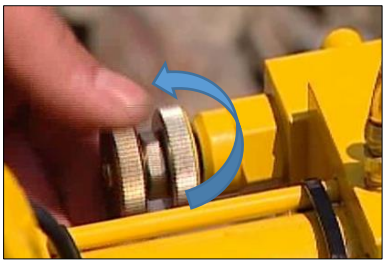

Fig. 73: Open the pressure control valve

7. Fill with oil until oil emerges bubble-free from both bleed valves.

Fig. 74: Fill with oil

8. Close the bleed valves and the filler valve.

Fig. 75: Close valves

9. Detach the hose piece and oil can.

NOTICE

Risk of damage!

If the pointer deflects beyond the 7 o'clock position, the pressure gauge may suffer damage.

► Ensure that the pointer only reaches the 7 o'clock position.

► Follow the steps for adjusting the pressure control valve.

10. Carefully operate the guide handle several times and check whether the manometer responds well (the pointer must react immediately.

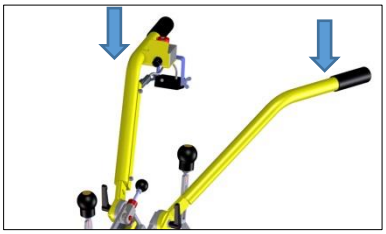

Fig. 76: Operate the guide handle (press down)

11. Close the pressure control valve in stages, in between always operate the guide handle carefully, observing how far the pointer is deflected.

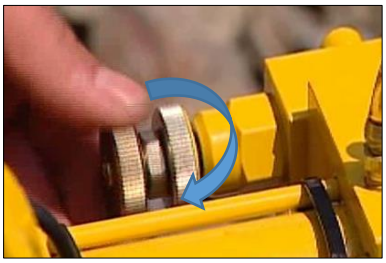

Fig. 77: Close the pressure control valve in stages

If the manometer pointer is deflected further than the 7 o'clock position, there is too much oil in the system.

12. If this is the case, either drain off a little oil at the bleed valves or adjust the knurled screw of the pressure control valve accordingly (with a hex key and open-ended spanner).

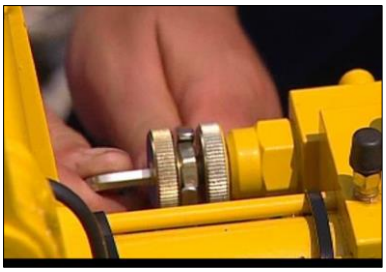

Fig. 78: adjust the knurled screw of the pressure control valve

13. Once again check that there are no air bubbles in the system. Do this by carefully opening the rear bleed valve and checking whether pressure arises immediately.

    Any air bubbles present can escape through this.

Fig. 79: Check that there are no air bubbles

14. Close the valve again and repeat the procedure on the second (= front) bleed valve.
15. Once again check the manometer response; the pointer must deflect no further than the 7 o'clock position.

Fig. 80: “7 o'clock position”

9.5 Changing the clutch

Tools, means, material:

- Approx. 2 L Gear oil
- Allen key AF 6
- Allen key AF 5
- Open end spanner AF 22
- Open end spanner AF 13
- Collecting tray
- Coupling cone
- Bearing for coupling cone
- Depending on state of wear: Clutch bell

Recommended gear oil: see Chap. 3.5

Drain the oil

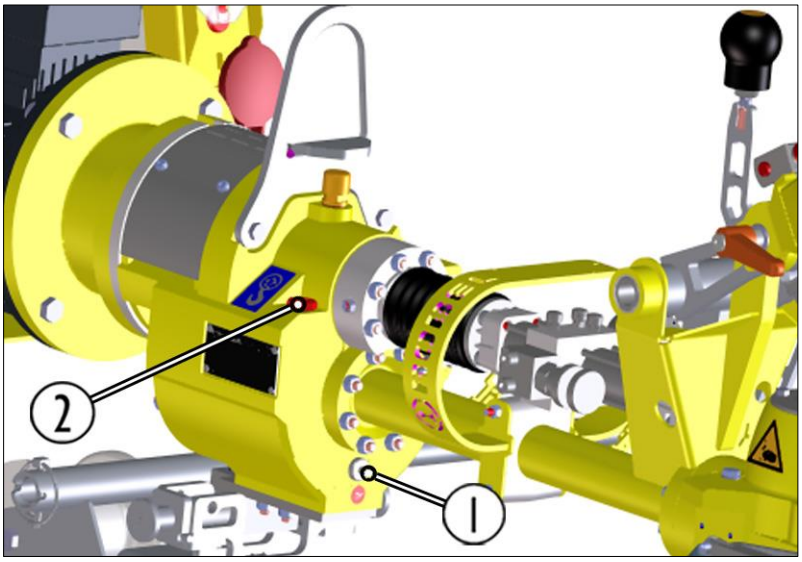

Fig. 81: Drain the oil (reduction gear)

1 Oil drain screw
2 Dipstick

1. Prepare a collecting tray.
2. Unscrew the dipstick (2).
3. Undo the oil drain screw (1).
4. Drain the oil into the collecting tray.
5. Screw in and tighten the oil drain screw.

Dismantling the housing

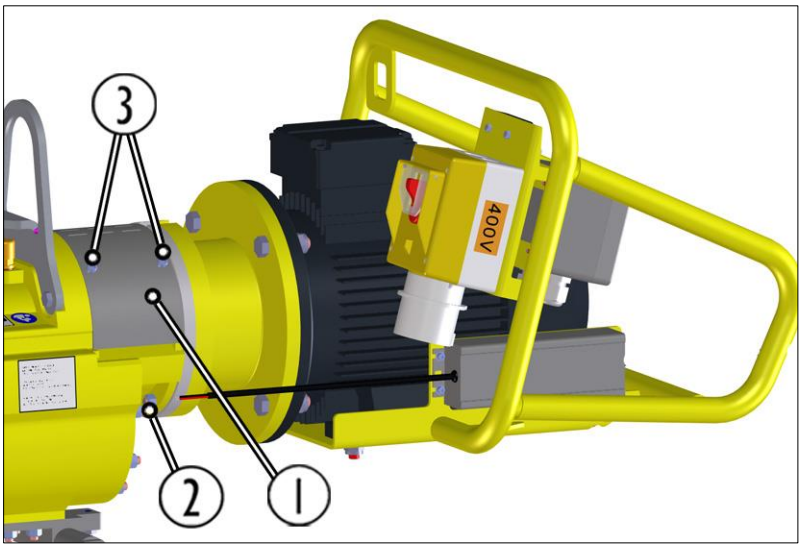

Fig. 82: Dismantling the housing

1 Cover
2 Hexagonal nut for gear flange (6x)
3 Fastening screw cover (4x)

6. Unplug connector (4).
7. Undo 4 screws (3).
8. Remove cover (1).
9. Unscrew 6 hexagon nuts (2) on the flange.

WARNING

Risk of injury!

The engine assembly is too heavy for one person alone (49 kg). Risk of spinal injury.

► Lift or transport the engine assembly only with suitable lifting tackle, the crane or at least **as a three-men team**.

10. Remove engine.

The clutch elements are now accessible, with parts (1), (2), (3) and (4) remaining on the engine shaft while parts (5) and (6) remain in the gearbox.

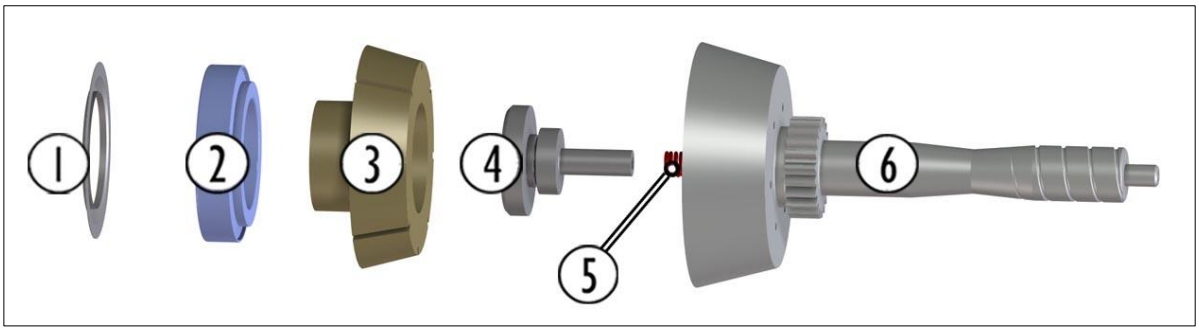

Fig. 83: Exploded view of clutch elements

1	Sealing washer	4	Release bearing
2	Thrust bearing	5	Compression spring
3	Coupling cone	6	Clutch bell

11. Pull the clutch bell (6) out of the gearbox and examine it: Replace the clutch bell if it shows extensive signs of wear or if marked discolouration has occurred due to overheating.
12. Push the clutch bell back into the gearbox, ensuring the journal at the gearbox end engages in the gearbox bearing.
13. Ensure that the compression spring (5) is located properly in the clutch bell.
14. Remove the release bearing from the clutch cone.
15. Pull the coupling cone and thrust bearing together off the engine shaft.
16. If the thrust bearing is to be re-used, pull it off the coupling cone.
17. Replace the thrust bearing if it is worn.
18. Push the bearing onto the new coupling cone.
19. Push the coupling cone onto the engine shaft.
20. Dispense some grease into the recess of the coupling cone and insert the release bearing.
21. Clean the sealing surfaces of the housing flanges.
22. Re-join the engine to the gearbox. When doing so, ensure the compression spring (5) is in the clutch bell and the studs on the engine are aligned in the holes on the gearbox flange.

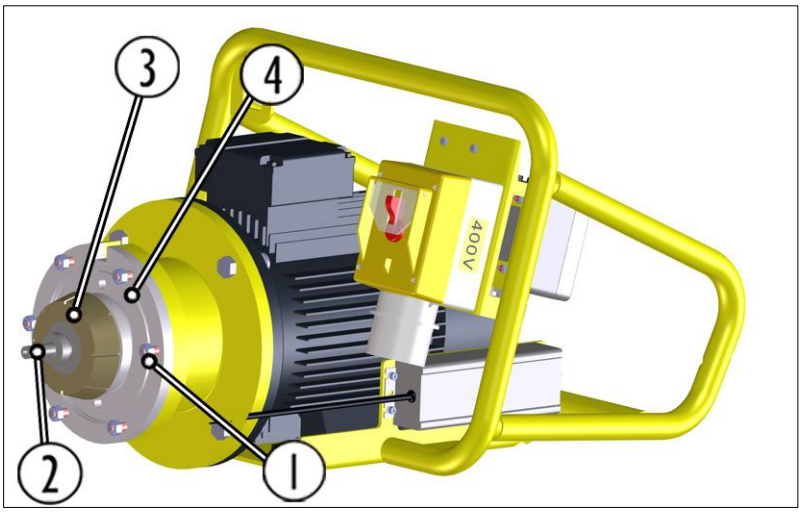

Fig. 84: Preparing for assembly

1 Hexagon nut for flange
2 Release bearing
3 Coupling cone
4 O-ring

Do not re-use hexagon nuts!
(EDP-No.: 990 985 0800)

23. Screw six new nuts onto the studs and tighten them.
24. Fit the cover and fasten it with 4 screws and lock washers.

Filling with oil

25. With the aid of a funnel, pour the recommended quantity of gearbox oil into the dipstick hole.

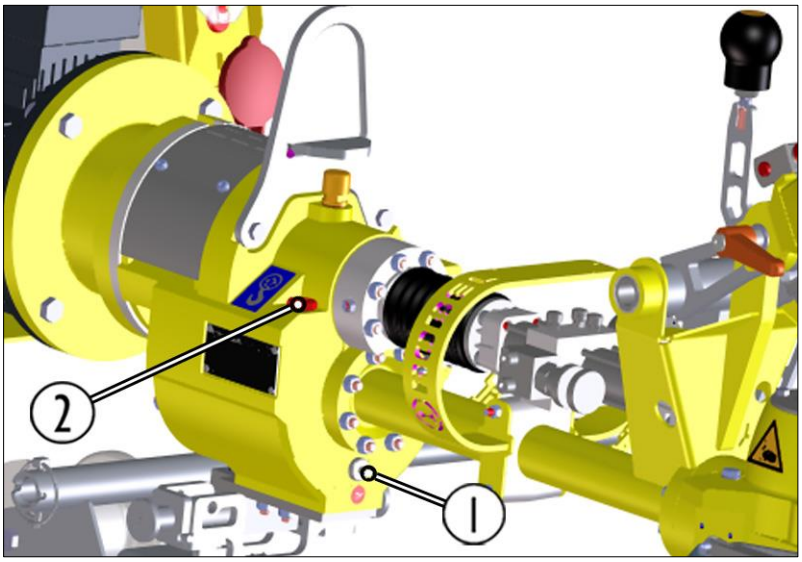

Fig. 85: Fill with oil

1 Oil drain screw
2 Dipstick

26. Check the oil level, replenish if necessary, see Chap. 6.2.2.

Plug connector

27. Plug connector for lighting and Engine Stop button.

Functional test

28. Start the engine and perform a number of wrenching operations while watching out for possible leaks at the gearbox.

29. Calibrate the coupling, see Chap. 7.12

9.6 Lubrication

The 30.82 universal power wrench has an oil bath lubrication for the multi-disc clutch and its bearing points.

1. Maintenance of gearboxes: see lubrication plan Chap. 9.1.
2. Check, adjust, clean and lubricate all other moving parts as required.
3. All information on spare part drawings must be observed.

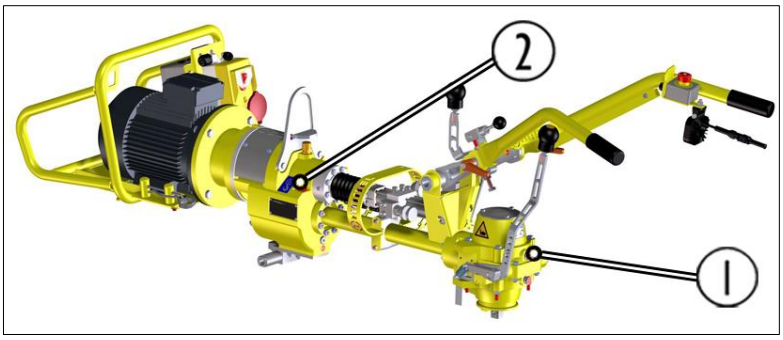

Fig. 86: Lubrication points

1 Reversing gear
2 Reduction gear
3 Engine oil for drive engine (see Chap. 3.5)

9.6.1 Check gear oil level

Reduction gear

1. Check oil level daily and replenish if necessary, see Chap. 6.2.2.

Reversing gear

2. Check oil level daily and refill up to lower screw plug if required, see Chap. 6.2.2.

9.6.2 Oil change

Oil change for reduction gear

- ► First oil change after 150 hours of operation.
- ► Oil change also after each clutch replacement.

Tools, means, material:

- Approx. 2 L gear oil
- Allen key AF6
- Open end spanner AF22

Recommended gear oil: see Chap. 3.5

1. Oil change after every 500 hours of operation.

Filling quantity: approx. 2 L.

Draining the oil

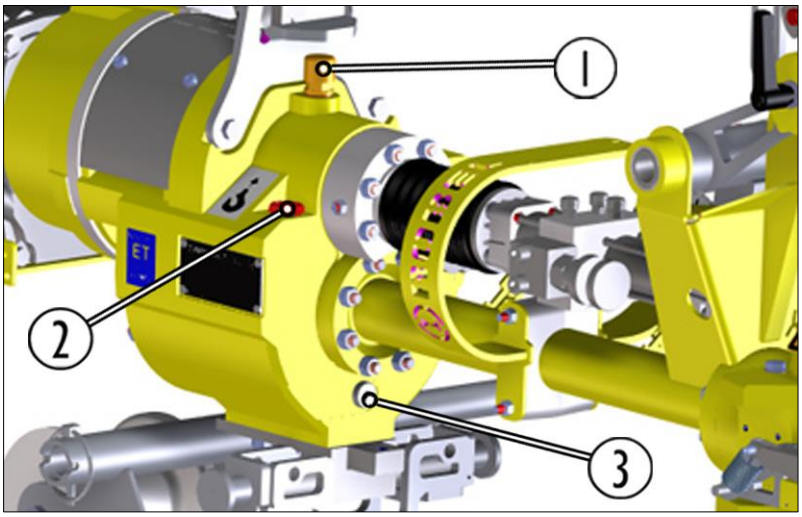

Fig. 87: Oil change reduction gear

1	Filling screw
2	Dipstick
3	Oil drain screw

1. Prepare a collecting tray.
2. Undo the filling screw (1).
3. Undo the oil drain screw (3).
4. Drain the oil into the collecting tray.
5. Screw in and tighten the oil drain screw.

Filling with oil

6. With the aid of a funnel, pour the recommended quantity of gearbox oil into the upper opening (1).

Checking the oil level

7. Unscrew the dipstick (2) and wipe it clean.
8. Insert the dipstick but do not screw it in, then pull it out again.
9. Check that the oil level lies between the lower end of the dipstick and the “MAX” mark, see arrow in illustration below.

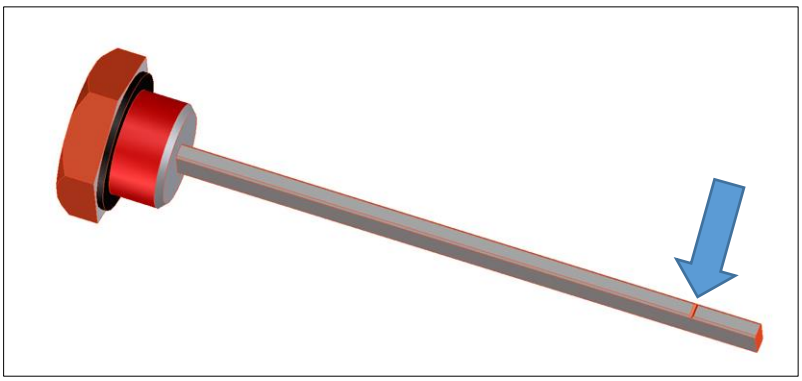

Fig. 88: Oil dipstick: “MAX” mark (arrow)

10. the oil level is too low, top up the oil.
11. Check that the oil level lies between the lower end of the dipstick and the “MAX” mark.
12. Re-insert and tighten the dipstick.
13. Re-insert and tighten the filling screw (1).

Oil change for reversing gear

1. Oil change after every 500 hours of operation.

Tool, means, materials:

- Approx. 0.25 L gear oil, recommended oil see Chap. 3.5
- Open-ended spanner AF 17
- Large container (pan)
- Funnel

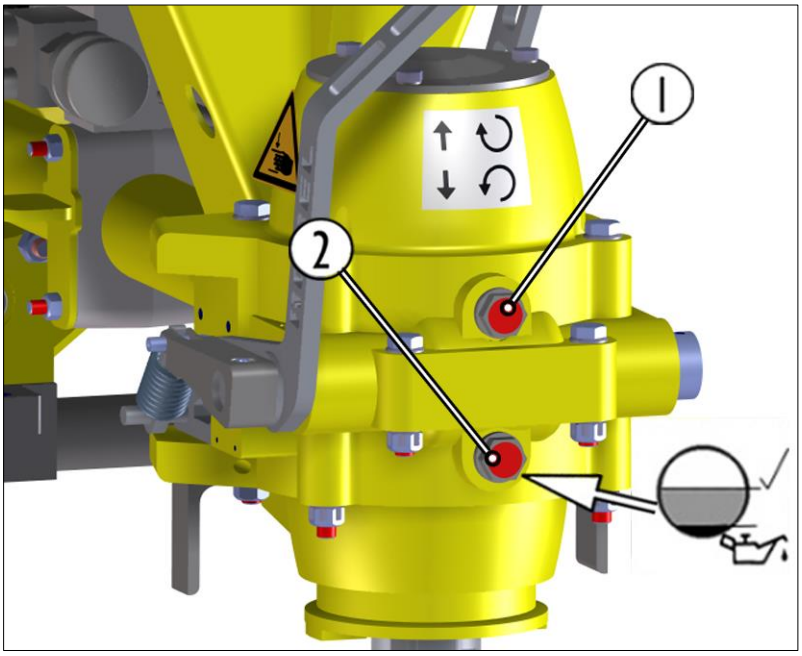

Fig. 89: Reversing gear

Draining the oil

2. Prepare a collecting tray.
3. Undo the filling screw (1).
4. Undo the inspection screw (2) and remove the oil filling plug and drain screw to drain the oil.
5. Drain the oil into the collecting tray.
6. Screw back in and tighten the inspection screw.

Filling with oil

7. With the aid of a funnel, pour the recommended quantity of gearbox oil into the upper opening.

Checking the oil level

8. Undo the inspection screw and check the oil level reaches at least the bottom edge of the thread.
9. If the oil level is too low, undo screw (1) and top up the oil as far as the bottom edge of the thread on the inspection screw (2).
10. Re-insert and tighten the inspection screw (2).
11. Re-insert and tighten the filling screw (1).

9.7 Re-adjusting the lever for maximum torque

When the clutch has become increasingly worn, it may be necessary to re-adjust the lever for maximum torque.

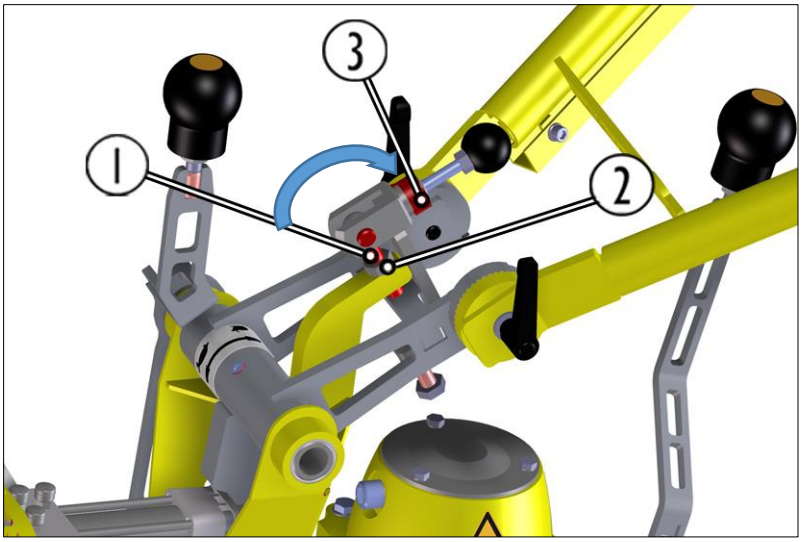

Fig. 90: Adjusting the lever for max. torque

1 Eyebolt
2 Lock nut
3 Circlip

1. Loosen the lock nut (2).
2. Turn lever with eyebolt (1):

- If the max. torque is not achieved: Turn the lever with the eyebolt clockwise as shown.
- If the clutch already slips without operating the guide handles: Turn the lever with the eyebolt counter-clockwise.

3. Tighten the lock nut (2).

If only half a screw-turn of the eyebolt is desired, remove the circlip (3) and fit the lever turned through 180°.

9.8 Changing the fuse in the terminal box

WARNING

Risk of death due to electrocution!

Lethal voltage is present inside of the terminal box.

► Disconnect the machine from mains supply and prevent it from being switched back on before changing the fuse.

1. Disconnect machine from mains supply.
2. Loosen the 4 screws of the cover of the terminal box.

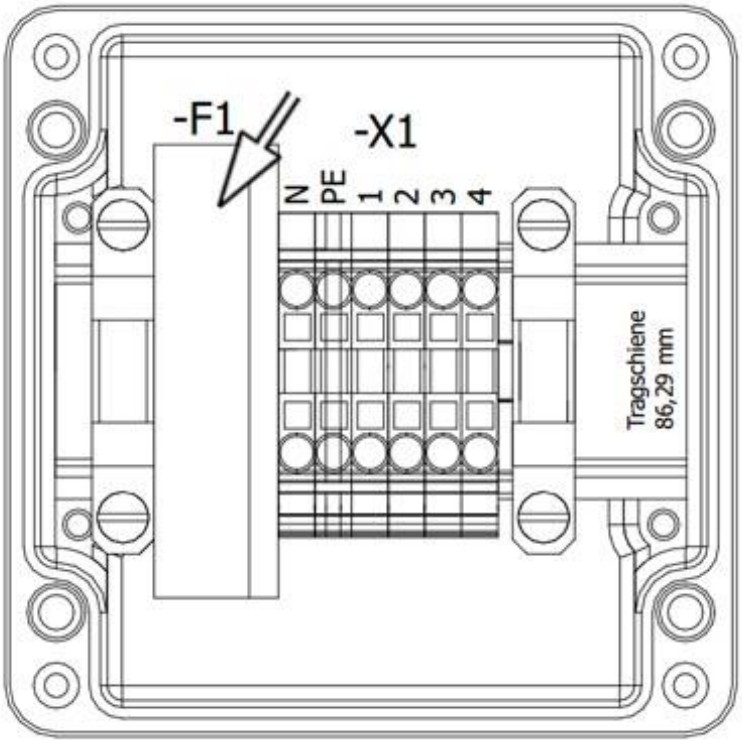

Fig. 91: Terminal box

3. Remove cover.
4. Replace fuse (see arrow).
5. Put the cover back onto terminal box.
6. Tighten the 4 screws of the cover oft he terminal box.

   The fuse has been renewed.

9.9 Cleaning and care

NOTICE

Risk of damage!

Cleaning the product with solvents, aggressive or combustible cleaning agents may result in damage.

The use of high-pressure washers can result in damage caused by water getting into the motor and articulated joints of the product.

- ► Do not use any solvents or aggressive, combustible cleaning fluids.
- ► Do not use petrol for cleaning.
- ► Do not use a jet of water or a high pressure washer.

1. Clean the product regularly so that it does not suffer a production outage due to dirt.
2. Only use a damp cloth to clean the product. Only use water and, if necessary, a mild detergent without any chemical additives.

NOTICE

Risk of damage!

Dirt or dust adhering to the cooling fins of the electric motor can cause the motor to overheat because heat cannot be dissipated.

- ► Keep the cooling fins free of dust or dirt.
- ► Do not cover motor.

9.10 Checking signs and labels

- ► Regularly check that all signs and labels are present and intact.
- ► Replace signs and labels if necessary.

10. Troubleshooting

10.1 Troubleshooting chart

Error	Cause	Remedy
Engine does not start	Motor switch is “OFF”	► Set motor switch to “ON”
	Engine Stop button engaged	► Disengage Engine Stop button
Engine is turning in the wrong direction	Rotary field incorrect	► Reverse rotary field (skilled electrician)
Torque deviates from the set value	Torque control is not calibrated	► Calibrate torque control, see Chap. 7.12
	Metal cone coupling worn	► Change coupling
	Machine has not reached operating temperature	► Allow the machine to warm up by tightening/loosening several screws
	Readjust lever for max. Torque	► See Chap. 9.7
	Loss of fluid from the hydraulic system	► Refill or repair if necessary
Impossible to shift reversing gear	”Tooth on tooth” position of reversing gear	► Press down the handles briefly to initiate a wrenching process so that the gear teeth come into a suitable position
No pointer deflection on the manometer	Too little hydraulic fluid	► Refill hydraulic system and vent, see Chap. 9.4
	Pressure gauge defective	► Replace
	high overpressure Manometer damaged due to high overpressure	► Replace
	Air in the hydraulic system	► Vent the hydraulic system, see Chap. 9.4
Lighting does not come on	Faulty cable connection	► Check cable connection from engine to lighting, repair if necessary
	Illuminant is faulty	► Replace illuminant

11. Environmental protection and disposal

11.1 Environmental protection

- While working on or with the product, comply with the legal regulations for waste prevention and proper recycling/ disposal and also follow the environmental laws applicable in the user country.
- Particularly, make sure that during the repair and maintenance work, water polluting substances such as greases and oils do not pollute the ground or get into the drains.

11.2 Disposal

The disposal of the product (including machine parts, engine oil and fuel) will depend upon the local regulations for waste disposal.

If the product reaches the end of its life cycle, ensure a safe and proper disposal, particularly of parts or substances which are harmful for the environment. These include, among others, fuel, lubricants, and plastics.

- Since there is a risk of potential environmental pollution, have the product disposed of by an approved specialist firm.
- In any case, check which materials can be used for recycling. Have these disposed of by appropriate waste management companies.

12. Appendix

CE-Declaration of conformity

ROBEL

CE

EG-Konformitätserklärung (deutsche Originalfassung)
EC Declaration of Conformity (English translation)
Déclaration „CE" de Conformité (Traduction française)

gemäß Maschinen-Richtlinie 2006/42/EG, Anhang II A
as defined by the Machinery Directive 2006/42/EC Annex II A
conformément à la directive „CE" relative aux machines 2006/42/CE, Annexe II A

Hersteller (Name und Anschrift): Manufacturer (name and address): Fabricant (nom et adresse):	ROBEL Bahnbaumaschinen GmbH Industriestraße 31 D-83395 Freilassing
Hiermit erklären wir, dass die Herewith we declare that the model Par la présente, nous déclarons, que le modèle fourni par	Universal-Schraubmaschine Universal Power Wrench Tirefonneuse universelle ROWRENCH Typ 30.82HKS
folgenden einschlägigen Bestimmungen entspricht: complies with the following provisions applying to it: correspond aux dispositions pertinentes suivantes:	2006/42/EG
Angewandte harmonisierte Normen: Applied harmonized standards: Normes harmonisées appliquées:	DIN EN ISO 12100: 2011 DIN EN 13977: 2011
Bevollmächtigt für die techn. Dokumentation: Responsible person for technical documentation: Personne chargée pour la documentation technique:	Mag. Bernhard Lair Abt. Technische Dokumentation Industriestraße 31, D-83395 Freilassing

Freilassing, 31.10.2018

Otto Widlroither
Leiter HMG/Head of HGM/ Direct. gestion de mach.

Wolfgang R. Fally
Geschäftsführer/Managing Director/ Gérant

Ort, Datum
Place, date / Lieu, date

Unterschrift, Angabe der Funktion im Unternehmen
Signature, acting in the company / Signature, en qualité de

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Fig. 92: CE-Declaration of Conformity