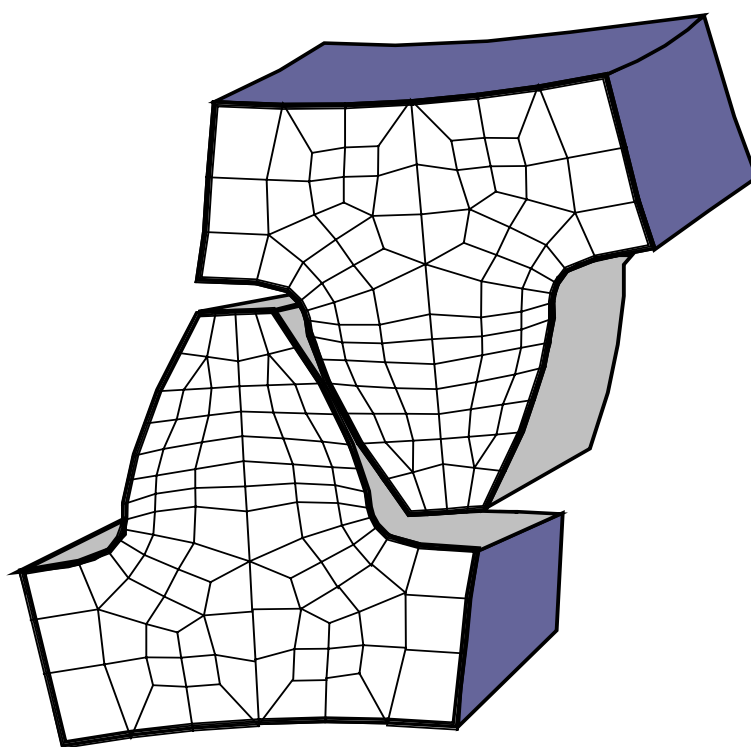


Planetary Gearbox EP – 45



Part number: G 46700X

Gearbox type: 2-stage planetary gearbox EP - 45

Model: 2002

Ref. No.: 20.0917

Gearbox number: 20096 / 20097

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1 Introduction

1.1 The Gearbox

Identification

Part number:	G 46700X
Model:	2002
Gearbox type:	2-stage planetary gearbox EP - 45

Manufacturer

EICKHOFF Maschinenfabrik GmbH
Hunscheidtstr. 176
D-44789 Bochum

Proper Use

The gearbox is designed exclusively for proper use as defined in this operating manual (see chapter 3.4 *Designated Use*).

Improper Use

The gearbox must not be used for applications other than provided for in the chapter on *Proper Use*. Any other use is classified as improper use and may lead to:

- injury to persons or death
- damage to the system
- damage to other material property

Liability

The information, details and notes contained in this operating manual reflect the latest state on the day of issue. Technical modifications are reserved within the bounds of the further development of the gearbox. No claims shall therefore be raised for already delivered gearboxes on the grounds of specifications, illustrations or descriptions contained in this operating manual.

No liability is assumed for damage or functional disorders caused by:

- disregard of the operating manual
- operator's mistakes
- improper work on and with the gearbox
- use of other than genuine OEM spare parts or accessories of Eickhoff Maschinenfabrik GmbH
- unauthorized conversions or modifications of the gearbox by the user or his/her personnel

EICKHOFF Maschinenfabrik GmbH accepts liability for faults and omissions within the bounds of the warranty obligations entered into according to the main contract. Claims for damages, from whatever legal grounds they may be deduced, are excluded therefrom.

Warranty

Warranty claims shall be brought to the notice of EICKHOFF Maschinenfabrik GmbH immediately after the fault or defect has been detected, by indicating the part number, the gearbox type and the serial number.

Wear parts are excepted from the warranty. The warranty expires in the case of:

- improper use of the gearbox
- improper work on and with the gearbox
- use of inadmissible operating means
- use of other than genuine OEM spare and wear parts of EICKHOFF Maschinenfabrik GmbH
- opening the gearbox during the warranty period
- draining oil from the gearbox in the case of damage

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1.2 The Operating Manual

The details and notes contained in the present operating manual shall enable the active personnel to work safely, properly and efficiently on and with the gearbox. It is only when the contents of the operating manual is fully understood and observed that

- hazards are avoided
- repair cost and downtimes are kept to a minimum and
- reliability and service life of the gearbox are increased.

For easy reference, the following paragraphs explain the systematics and rules as well as the textual and pictorial definitions applied in this manual.

Definition of Terms

This operating manual uses a number of important terms which are defined below:

Gearbox

The term "gearbox" as used in this manual shall mean the complete gearbox (see chapter 3.1 *Scope of Supply*).

Eickhoff

Eickhoff Maschinenfabrik GmbH is the manufacturer of the gearbox and shall be called Eickhoff hereinafter.

User

The user shall be every natural or legal person who operates the gearbox or gives instructions to operate the gearbox on his/her behalf.

Operating Personnel

Operating personnel shall be persons who have been charged with and instructed in the operation of the gearbox. The operating personnel is authorized to carry out simple maintenance such as cleaning the gearbox on the outside.

Persons shall be deemed instructed when they have been

- informed of the tasks assigned to them and have received corresponding training, as necessary.
- warned of the potential hazards arising from improper handling
- made familiar with the necessary safety devices, safety precautions, accident prevention regulations, pertinent rules and service conditions.

For the required instruction duties and authority, see chapter *2.1 General Safety Instructions*.

Skilled Personnel

Skilled personnel shall be persons with

- qualifications as machine fitters (recognized occupation: industrial mechanic) or equivalent qualifications **and**
- the ability to assess and perform, in a professional way, the tasks assigned to them owing to their professional training, knowledge and experience.

The skilled personnel shall be familiar with the accident prevention regulations, pertinent rules and service conditions.

EICKHOFF Maschinenfabrik GmbH Personnel

EICKHOFF personnel shall be skilled personnel employed by EICKHOFF.

Remaining Hazards

Remaining hazards shall be defined as latent risks arising from the use of the gearbox.

Example:

Hazard of burns from hot components after the gearbox has been switched off.

Protective Clothing

Protective clothing shall be the personal protective gear that protects the human body against the hazards arising at work. The protective clothing must comply with the requirements of the Equipment Safety Act.

The circumstances under which protective clothing must and shall be worn are defined in the applicable local accident prevention regulations.

Pictorial Representations and Textual Displays

The following pictograms and symbols are used in this operating manual to give salience to important information.

General Hazard

Makes reference to safety instructions which must by all means be observed to avoid injury to persons and to which no specific pictogram (e.g. one of the following) can be assigned.



High Electric Voltage

Warns of the hazard of electric shock



Hot Components

Warns of the hazard of burns from hot system components.



Ecologically Harmful Substances

Warns of the hazards arising from chemical substances unless the said substances are disposed of in accordance with the applicable environmental rules and regulations.



Safety Related Note

Makes reference to statements on how to work safely on and with the gearbox.



Supplementary Information

Makes reference to practical hints and useful information.



Three different symbols are used in this operating manual:

This symbol refers to individual work instructions which must be executed precisely in the given order.

- This symbol refers to enumerations, the contents of which is of equal priority.
 - This symbol refers to enumerations of subsidiary points which are subordinate to the enumerations and the contents of which is also of equal priority.

Structure and Contents of the Safety Instructions

All safety instructions contained in this operating manual are of uniform structure.

Essential Elements of a Safety Instruction

Each safety instruction contains several essential elements:

- a pictogram
- a signal word referring to the level of the hazard
- a statement on the type of hazard and
- a statement on how to avert the hazard.

The following signal words refer to the level of the hazard:

Danger

warns of a direct hazard to life and health of human beings.

Possible consequences: death or serious injuries

Warning

warns of a potential hazard to life and health of human beings.

Possible consequences: death or serious injuries

Attention

warns of a potential hazard to persons or material property.

Possible consequences: Slight injuries to persons or damage to material property.

Note

warns of a potentially hazardous situation for material property or the environment.

Possible consequences:

- damage to the gearbox itself
- damage to the material property surrounding the gearbox
- pollution of the environment

Hint

refers to supplementary information on how to make work easier and more efficient (practical hints).

2 Safety Instructions

2.1 General Safety Instructions

The gearbox has been built in accordance with the state-of-the-art standards applicable at the time of ordering and is deemed operationally safe as a whole.

Nevertheless, the use of the gearbox may constitute a risk when

- unauthorized and non-instructed personnel is working on and with the gearbox or
- the gearbox is subject to improper use.

In such a case the following are at risk:

- persons
- the gearbox and
- other material property of the user

Safety of the Gearbox

The following must be observed when working on and with the gearbox:

- the applicable rules and regulations (e.g. VDE standards)
- the applicable accident prevention regulations (UVV)
- the pertinent directives
- the applicable environmental protection laws

The gearbox must be used in a perfect condition only. This includes the prerequisite that safety devices of the gearbox are in place and fully functional. In the event of functional disorders or defects, the gearbox must be withdrawn immediately from service and the said malfunction must be reported to the user's authorized supervisor.

The gearbox must not be restarted until the perfect function of the gearbox is re-established.

The safety devices must neither be removed nor deactivated. Where safety devices have to be removed for maintenance after all, they must be refitted immediately upon completion of the work. All safety devices must be checked for proper operation before the gearbox is started.

Note

Additions to and/or modifications and conversions of the gearbox which may affect safety are prohibited in general unless EICKHOFF's written consent has been obtained. The same applies to the installation and calibration of safety devices and to welding load bearing components.

Use only genuine O.E.M. spares for gearbox component changes. Only O.E.M. spares keep the gearbox fully functional and safe.

Operating Manual

The present operating manual primarily aims at ensuring safety-conscious working on and with the gearbox. It contains safety instructions which must by all means be observed.

Besides the general safety instructions contained in this chapter, the specific safety instructions set out in the other chapters must be observed as well. These specific safety instructions are related to specific work instructions and warn of an imminent hazard.

The operating manual must

- be read and understood by all persons working on and with the gearbox before starting work
- always be at hand at the place of use of the gearbox and stowed at a designated location
- always be complete and kept in a legible condition.

Should this operating manual or parts thereof not be fully understood, work shall not be started. Ask the skilled personnel of

- the user or
- EICKHOFF

before you risk exposing yourself to a potentially hazardous situation.

Duties of the User

The user has to fulfil a number of duties towards his/her personnel.

The user is bound

- to supplement the operating manual with instructions containing the national accident prevention regulations and environmental protection laws
- to familiarize the personnel with all relevant regulations, directives and laws, as necessary
- to verify that all relevant regulations, directives and laws are observed
- to have the personnel instructed in the proper way of working on and with the gearbox
- to clearly define the responsibilities for assembly, starting-up and maintenance of the gearbox
- to verify that the defined responsibilities are actually respected
- to verify at regular intervals that his/her personnel operates the gearbox in a safety- and danger-conscious manner in accordance with the operating manual and
- to make sure that the personnel has read and understood the operating manual, and the chapter on *Safety Instructions* in particular. The user of the gearbox should seek a written confirmation to this effect from the personnel.

Active Personnel

Only authorized and instructed personnel shall be allowed to work on and with the gearbox. Unauthorized persons must be prohibited from operating the gearbox. The following work must be performed by skilled personnel only:

- assembly
- starting-up
- maintenance.

The responsible superior shall instruct the operating personnel in safety at work matters at regular intervals not exceeding one year. The successfully completed instruction course shall be placed on record and signed by the instructed personnel.

The operating personnel is bound to report any anomalies in the operating behaviour of the gearbox immediately to the responsible superior. Compliance with this requirement is absolutely imperative in cases where the safety of the gearbox is no longer ensured.

The personnel working on and with the gearbox must have long hair tied back or otherwise secured. Garments must be close-fitting, and jewellery - such as rings - must not be worn. The personnel must use their personal protective gear as necessary and as prescribed by the applicable rules.

2.2 Safety Instructions for Transport

Warning Hazard by falling transport objects

- The transport of the gearbox must be carried out by skilled personnel only.
- Use only transport equipment and transport aids which
 - comply with the safety requirements and
 - are designed for the respective loads.
- The gearbox must be lifted and transported exclusively at the marked attachment points provided for this purpose.
- Before initiating transport to the customer's site, it must be ensured that all transport routes are clear of obstacles.



Note Damage to the gearbox by temperature variations

Do not expose the gearbox to excessive temperature variations during transport in order to avoid condensing. Protect the gearbox against humidity using tarpaulins for transport.



2.3 Safety Instructions for Assembly

Attention **Hazard by improper work on the gearbox**
 Assembly, installation and test run (commissioning) of the gearbox must be carried out by skilled personnel only.



Danger **Hazard by high electric voltage**
 Assembly and installation of the electrical components and their testing must be carried out by skilled personnel (electrical engineers) only.



Note
 Before starting up the gearbox, check all lines and bolted connections for tight fit, leakage and externally discernible damage.



2.4 Safety Instructions for Starting-up

Warning **Hazard by improper work on and with the gearbox**
Hazard by improper use of the gearbox

- Starting up of the gearbox must be carried out by authorized and instructed skilled personnel only.
- The gearbox must be used in a perfect condition only. All safety devices of the gearbox must be in place and fully functional. In the event of defects or functional disorders, the gearbox (or the system in which the gearbox is integrated) must be immediately withdrawn from service and secured against restarting.
- The gearbox (or the system) must not be put into service until all defects or functional disorders are rectified and the gearbox is fully functional.



Attention **Damage to the gearbox by strewn tools or other objects**
 Make sure that no tools or other objects, which are foreign to the system, are within the functional reach of the safety devices of the gearbox.



Warning **Danger by the starting gearbox**
 Before starting up the gearbox make sure that no persons are exposed to danger arising from the starting gearbox.



2.5 Safety Instructions for Maintenance

Danger Hazard by improper maintenance of the gearbox

- Maintenance of the gearbox must be carried out by skilled personnel only.
- The maintenance work and intervals specified in this operating manual must be strictly observed so that the gearbox is maintained in its operationally safe condition and provides a long service life.
- Switch off the system in which the gearbox is integrated, as prescribed and secure it against restarting (e.g. by locking the key-operated switch or by removing the fuses in the power supply).
- Affix a warning label to the switch-on location to the effect that work is being performed on the gearbox.
- Do not remove any safety devices from the gearbox. Where safety devices need to be removed for maintenance, they must be refitted upon completion of the work and checked for proper operation.
- Bolted connections separated for maintenance must always be firmly retightened and secured with Loctite.



Note Damage to the gearbox by improper cleaning

- Do not use any aggressive detergents.
- Use only non-fraying cleaning rags.
- Clean the gearbox from oil and contamination before starting maintenance.
- Do not clean the oil filling area or the elastomeric shaft seals by means of a high pressure cleaner.



2.6 Safety Instructions for Waste Disposal

Note Pollution of the environment by improper waste disposal

- Keep proper collecting pans and receptacles ready to hand to collect any leaking operating fluid or spillage (such as gear oil).
- All operating fluids, consumables and replacement parts must be disposed of in a safe and environmentally protective manner in accordance with the applicable environmental rules and regulations.



3 Technical Description

3.1 Scope of Supply

Depending on the order specifications, the gearbox is either a single unit or comprises a number of components which may not yet be mounted to the gearbox upon delivery. The following enumeration identifies the components which the complete gearbox is composed of:

- 2-stage planetary gearbox EP - 45

The supplied gearbox shall be checked for completeness upon receipt. Any transport damage and/or missing components shall be reported immediately in writing.

3.2 State as Supplied

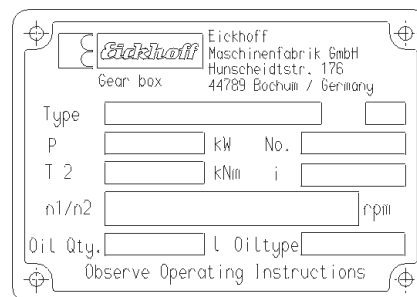
The gearbox is supplied in the following state:

- The gearbox is supplied ready for operation, but without oil filling and without the external add-on parts being mounted.
- The gearbox has been coated with a preservative prior to delivery. This preservation is adequate for a storage period not exceeding 12 months from readiness for despatch and transport, subject to indoor storage.
- Labyrinth seals are already packed with grease ex works.
- The gear housing and the housing parts are coated, internally and externally, with paint.
- Vent holes, oil filling holes, oil drain holes, the oil level indicator and any lubricating points have a colour identification.
- Shaft extensions and hollow shaft holes are coated with anti-rust paint. The anti-rust paint is saltwater-proof and tropicalized for a period of 12 months.

3.3 Type Plate

The gearbox type and the serial No. indicated on the type plate and the part number stated in this operating manual (see chapter 1 *Introduction*) should always be quoted in the case of enquiries. The type plate is securely fixed to the gearbox and contains the following details:

- Gearbox type with part number and type designation
- Model (column to the right of the type designation)
- Serial No. (No.)
- Power (P)
- Operating torque (T_2)
- Ratio (i)
- Input speed (n_1)/Output speed (n_2)
- Oil quantity
- Oil type



The diagram shows a rectangular type plate with a border. At the top left is the Eickhoff logo. To its right, the text reads: "Eickhoff Maschinenfabrik GmbH, Hunscheidstr. 176, Gear box 44789 Bochum / Germany". Below this, there are several rows of fields: "Type" with a large empty box; "P" with a small box followed by "kW" and "No." with a small box; "T₂" with a small box followed by "kNm" and "i" with a small box; "n₁/n₂" with a large box followed by "rpm"; "Oil Qty." with a small box followed by "l" and "Oil type" with a large box. At the bottom, it says "Observe Operating Instructions".

3.4 Designated Use

The gearbox is designed for power transmission between the electric motor and the chain conveyor.

The rotational speed of the motor is reduced to the required speed of the chain conveyor.

Any other use or any use beyond the above limits is classified as improper use, in which case EICKHOFF shall not be held liable for resultant damage of any kind whatsoever.

Proper use also takes it for granted that all instructions and details of the present operating manual be observed.

3.5 Design and Principle of Operation

Principle of Operation

The gearbox is pushed with its solid output shaft on the sprocket shaft with clearance. The housing that is used as a torque arm is rigidly attached to the conveyor frame.

The electric motor is connected to the input shaft of the gearbox through a well ventilated coupling lantern. The input shaft drives the wheel of the first planetary gear stage.

The self-aligning sun gear of the planetary gear stage ensures an even load distribution on the planet gears which in turn support themselves in the ring gear.

The planet gears transmit their rotary motion to the solid-shaft planet carrier of the output stage that is supported in the housing and connected to the machine shaft via a splined output shaft 4/8 pitch B.S. 3555:1963.

Gearwheels

The gearwheels are case-hardened and ground.

Bearings

All shafts are supported by rolling bearings.

Lubrication

The gearwheels and rolling bearings are splash lubricated.

Sealing

The shaft exits are sealed by shaft seal rings and additionally by grease-filled grooved seals.

3.6 Limits of Application

The temperature rise of the gearbox varies as a function of the operating conditions. At ambient temperatures ranging from 0 °C to 30 °C, the normal continuous temperatures of the oil bath will lie between 50 °C and 90 °C.

For rolling bearing gearboxes with mineral oil lubrication, the continuous temperature of the oil bath may be 100 °C as a maximum. If higher temperatures are encountered which are, for example, due to elevated ambient temperatures or heat generated by external sources, special precautions must be taken. In such cases synthetic lubricants may be used but consult EICKHOFF first to have their compatibility with the provided sealings and paintings confirmed.

Ambient temperatures of less than - 10 °C require the use of controlled heaters and / or proper lubricants.

The thermal capacity and the operating range of the gearbox are based on the operating details specified in chapter 3.8 *Technical Details*.

We recommend that you should consult EICKHOFF before using the gearbox outside its contractual limits of application or under different operating conditions.

3.7 Quality Assurance

The EICKHOFF quality system is audited in accordance with DIN ISO 9001 - design/development, production, installation and servicing - and in accordance with the European Standard EN 29001 and the British Standards BS 5750.1.

The Certificate (Registration No. 2298-08 has been awarded to EICKHOFF by Deutsche Gesellschaft zur Zertifizierung von Qualitätssicherungssystemen mbH – DQS (German Association for the Certification of Quality Systems).

3.8 Technical Details

Use	Drive of a Chain Conveyor	
Identification	Gearbox version	2-stage planetary gearbox EP - 45
	Gearbox type	EP - 45
	Part number of the drive unit	G 46700X
	Part number of the gearbox	G 46700X
Size	Dimensions	see chapter 7.1 <i>Dimensioned Drawing</i> (for the packing dimensions see chapter 7.2 <i>Spare Parts Drawing</i>)
	Weight	see chapter 7.2 <i>Spare Parts Drawing</i>
Drive	Drive motor	electric motor
	Motor type	three-phase
	Nominal power	830 kW
	Speed	1 450 r.p.m.
Torques	Operating torque	5 466 Nm
	Nominal output torque	182 327 Nm (max. 500 000 Nm 3 sec./h)
Rotational speeds	Max. input speed	1 450 r.p.m.
	Max. output speed	43.474 r.p.m.
	Direction of rotation (when looking at the shaft end face of the drive shaft)	clockwise and counterclockwise
Reduction ratio	Gearbox	33.3529
Lubrication	Type of lubrication	splash lubrication
	Oil quantity	approx. 64 l
Oil type	ISO viscosity class	ISO VG 320
	Designation acc. to DIN 51517	CLP 320
	Designation acc. to ISO 3496	CC-320
	The DIN designation is indicated on the type plate of the gearbox.	
Noise level	Sound pressure level	
	Operating condition	
	Measurement methods	in accordance with DIN 45 635
Operating conditions	Place of erection	underground
	Ambient temperature	10° to +40°C
	Period of operation	16 h/day
	Duty cycle	70 %
	Starts per hour	6
Primer/paint	in accordance with the specification	
For oil coolers	Max. water pressure	25 bar
	Water quantity required	15 l/min.

4 Transport and Storage

4.1 Transport of the Gearbox

Warning **Hazard by falling transport objects**

- The transport of the gearbox must be carried out by skilled personnel only.
- Use only transport equipment and transport aids which comply with the pertinent safety requirements and offer an adequate load bearing capacity.
- The gearbox must be lifted and transported exclusively at the marked attachment points provided for this purpose.
- Secure the gearbox against tilting and slipping using adequate transport aids.



Warning **Risk of injury by falling objects**

Standing or working under suspended loads is strictly prohibited.



Note **Damage to the gearbox**

Under no circumstance must the gearbox be lifted and transported on its shafts. For lifting the gearbox, use the lifting eyes, lifting cams or 3-D load rings fitted to the housing, or lifting cables which are to be tied round the housing. See the spare parts drawing (chapter 7.2 *Spare Parts Drawing*) for the permissible attachment points.



Note **Damage to the gearbox by temperature variations**

Do not expose the gearbox to excessive temperature variations during transport in order to avoid condensing. Protect the gearbox against humidity using tarpaulins for transport.



4.2 Storage of the Gearbox

Note **Damage by improper storage**

- The state of the gearbox as supplied must be taken due note of for storage (see chapter 3.2 *State as Supplied*).
- Store the gearbox in a vibration-free place as otherwise damage to the bearings could occur.
- Stacking up the gearboxes is not permissible.



Storage Conditions

The gearbox must be stored indoors in general. If the actual storage period exceeds the period stated in chapter 3.2 *State as Supplied*, long-term preservation must be applied.

If storage extends over several years, further preservations may become necessary depending on the state of the gearbox.

After very long storage periods - but after 5 years at the latest - a general inspection must be conducted before starting up the gearbox.

Temporary Storage / Withdrawal from Service

If the gearbox is withdrawn from service for a period of more than 4 weeks after it has already been commissioned as an integral component of the system, it must be completely filled with gear oil.

Check the oil level at regular 1-month intervals and turn the gearbox by hand as far as practicable. If withdrawal from service lasts for more than 1 year, the gear oil must be changed before the gearbox may be put into service again (see chapter 6.3 *Changing the Gear Oil*).

Inspection

The said general inspection can be conducted by EICKHOFF upon request, either at their works or - when the gearbox is still integrated in the system - at the user's site.

5 Assembly and Starting-up

5.1 Safety Instructions

Attention **Hazard by improper work on the gearbox**

Assembly, installation and test run (commissioning) of the gearbox must be carried out by skilled personnel only.



Danger **Hazard by high electric voltage**

Assembly and installation of the electrical components and their testing must be carried out by skilled personnel (electrical engineers) only.



Note

Before starting up the gearbox, check all lines and bolted connections for

- tight fit
- leakage and
- externally discernible damage.



5.2 Assembly

Prerequisites for Assembly

The following prerequisites must be fulfilled for the assembly of the gearbox:

- Adequate transport equipment and transport aids must be available for transporting the gearbox. The transport routes to the place of erection of the gearbox must be clear of obstacles. See also the details contained in chapter 4 *Transport and Storage*.
- Gearboxes other than shaft-mounted gearboxes must be mounted on foundations. The foundation must be plane, nonyielding and torsionally rigid. Any surface faults of the foundation must be rectified.
- The place of erection of the gearbox must be clean and dry.

Mounting the gearbox

Hint

When mounting the gearbox be careful

- to keep the holes for venting, oil filling and draining as well as the oil level indicator easily accessible.



Mount the gearbox to the conveyor frame using adequate screws. For the diameters of the holes provided for this purpose see the dimensioned drawing contained in chapter 7.1 *Dimensioned Drawing*.

Note

The connection between the gearbox and the sprocket shaft must not be rigid. The spline of the coupling must have a clearance.



Converting the Gearbox to the Clockwise or Counterclockwise Direction of Rotation

If the gearbox is convertible to the clockwise or counterclockwise direction of rotation, corresponding information can be found on the dimensioned drawing contained in chapter 7.1 *Dimensioned Drawing*.

The following measures must be carried out for the conversion:

Drain the oil.

Change the angle piece with breather for the screw plug (the breather must be mounted above the oil level).

Change the oil sight glasses for the screw plugs.

Fill the gearbox with oil.

Aligning the Gearbox

Note

Additional loads by misalignment reduce the lifetime and may lead to premature failure of the gearbox. Oblique gearbox positions are only permissible with the explicit consent of EICKHOFF.



Align the gearbox without angular displacement to ensure smooth and low-vibration operation.

Hint

For the permissible angular and axial displacement tolerances of the ancillary units included in the scope of supply such as couplings, see the details of the respective manufacturers (see chapter 8 *Accessories*).



Mounting the Shaft Connections

The torque is transmitted via a coupling, shrink disk, parallel key, flange or other connecting elements depending on the order specifications and the gearbox type.

For parallel key connections:

Where parallel key connections are provided, grease the shaft and hole before establishing the connection.

Mounting the Ancillary Units

Hint

For the assembly of ancillary units, see the assembly and operating instructions of the manufacturers (see chapter 8 *Accessories*).



Mount the components supplied as loose items to the gearbox in accordance with the submitted drawings.

Clean the supplied components prior to assembly.

For Couplings, Hubs, Flanges ... :

Note

Under no circumstance must the rust preventative be rubbed off the shaft extensions or centre holes with emery.



Remove the rust preventative from the shaft extensions and centre holes using a solvent before mounting the connecting elements.

Mount the connecting elements exclusively using the front side threaded holes (to DIN 332) in the shaft ends.

For Backstops:

For gearboxes with mounted backstops attention must be paid to ensure that the motor and the gearbox have the same direction of rotation.

For Forced Lubricating Systems:

Gearboxes with forced lubricating systems have the oil pump directly flanged to the gearbox. Oil pumps with electric motors of their own are used in specific cases (see spare parts drawing contained in chapter 7.2 *Spare Parts Drawing*).

For Oil Coolers:

If the order specifies integrated coolers or separate oil coolers for the gearbox, the water ports (for fresh water which is low in calcium carbonate) must be connected according to the manufacturer's instructions.

For Oil Heaters:

If the order specifies an oil heater for the gearbox, the required connections must be established according to the manufacturer's instructions.

Electrical heating elements with cartridge-type heating insets below the oil level are used as oil heaters. The heating temperature is regulated and/or monitored by means of thermostats which are integrated in the heating element or positioned separately in the oil sump.

After Assembly

Check the corrosion preventative and the paint of the gearbox for damage and retouch where necessary.

Mount a proper guard to the gearbox when the latter is exposed to heavy contamination, dust, water, thermal effects or other adverse environmental effects.

Labels affixed to the gearbox such as the type label or arrows indicating the direction of rotation, must be taken due note of. They must be free of paint and dirt. Any missing labels must be replaced.

5.3 Starting-up

Prior to Commissioning

The gearbox is supplied without oil filling but with a preservative. The preservative need not be removed prior to commissioning as it dissolves when the oil is at operating temperature.

Fill the gearbox with the specified oil (see chapter 6.3 *Changing the Gear Oil*).

The greasing points of the gearbox are already packed with the specified grease quantity and quality ex works.

Make sure that the gearbox is only run in the permissible direction of rotation.

Check the gearbox for proper assembly.

Secure rotating parts (such as couplings, shafts, brakes)

Before pressurizing the hydraulic motor make sure that the multiple disk holding brake, if any, is vented hydraulically.

For Forced Lubricating Systems:

Hint

For adjusting the monitoring and control devices, see the operating instructions of the manufacturers.



For Oil Coolers:

Take care that the water pressure does not exceed the pressure specified in chapter 3.8 *Technical Details*.

For Oil Heaters:

Heat the gear oil to at least + 5 °C if the ambient temperature is lower than that. The same applies to existing additional oil reservoirs.

During the Running-in Period

Let the gearbox run at 30 % of the nominal load for 2.5 hours, thereafter at 60% of the nominal load for 2.5 hours and finally at 80% for another 2.5 hours.

Check the oil and bearing temperatures during the running-in period.

Note

The drive must be removed immediately from service when anomalies in the operating behaviour of the gearbox are found such as unusual gearbox noise or elevated bearing temperature.



6 Maintenance

6.1 Safety Instructions

Danger Hazard by improper work on and with the gearbox

- Maintenance of the gearbox must be carried out by authorized skilled personnel only.
- Do not remove any safety devices (such as guards for rotating parts) which are designed to prevent and avert hazards, from the gearbox. Where safety devices have to be removed for maintenance after all, they must be refitted immediately upon completion of the work and checked for proper operation.
- Bolted connections separated for maintenance must always be firmly retightened and secured with Loctite.



Attention Damage to the gearbox by strewn tools or other objects

Make sure following maintenance that no tools or other objects, which are foreign to the system, are within the functional reach of the safety devices of the gearbox.



Attention Damage to the gearbox by contamination

Proper operation and the service life of the gearbox as a whole are affected when contaminants penetrate into the oil circuit. Therefore pay attention during maintenance of the gearbox that no fibres of cleaning rags, sand or foreign material enter the oil circuit.



Note Damage to the gearbox by improper cleaning

- Clean the gearbox from oil or contamination before starting maintenance.
- Do not use any aggressive detergents.
- Use only non-fraying cleaning rags.
- Do not clean the oil filling area or the elastomeric shaft seals by means of a high pressure cleaner.



Note

- Make sure throughout maintenance that
- all external screws and nuts are tightened to the specified torques and secured with Loctite "LV"
- all internal screws and nuts are secured with Loctite "SV".
- After every disassembly
- the screws must be cleaned and re-inserted with Loctite (see chapter 7.5 *Use of Loctite*)
- the grooved seals and labyrinth seals of the shaft exits must be cleaned and repacked with grease. Use only lithium-saponified grease with a worked penetration of 220 to 250.
- the parting faces of the housing and the fitting surfaces of the covers must be cleaned and sealed again with the specified surface jointing compound (see chapter 7.2 *Spare Parts Drawing*).



Hint

Use only genuine O.E.M. spares as itemized in the pertinent spare parts list, for component changes (see chapter 7.3 *Spare Parts Lists*).



Hint

Do not open the gearbox during the warranty period without the explicit consent of EICKHOFF. Unauthorized repairs which are carried out within this period, invalidate the warranty.



Note **Pollution of the environment by improper waste disposal**

All operating fluids, consumables and replacement parts must be disposed of in a safe and environmentally protective manner in accordance with the applicable environmental rules and regulations.



6.2 Maintenance Table

Inspection		Interval			
		weekly	monthly	during the oil change	every 1 - 2 years
Lubricating system	Oil temperature	●			
	Oil level	●			
	Oil pressure	●			
	Oil filter	●			
	Internal state and function				●
Gearbox	Bearing temperature	●			
	Leakages	●			
	Noise	●			
	Vibrations	●			
	Mounting of units		●		
	Breather		●		
	External state	●			
	State of tooth flanks			●	
	Internal condition and function				●

Maintenance		Interval			
		weekly	monthly	during the oil change	every 1 - 2 years
	Change oil filter insert			●	
	Change gear oil	see chapter 6.3 <i>Changing the Gear Oil</i>			
	Change grease of gearbox	see chapter 6.4 <i>Changing the Grease Packing of the Gearbox and Rolling Bearings</i>			
	Regrease grease-packed rolling bearings				
	Clean screw plug magnets			●	
	Clean interior of the gearbox				●
	Clean oil circulating system				●

6.3 Changing the Gear Oil

Recommended Intervals for Mineral Oil Changes	
First oil change	after 300 – 500 hours of operation or after one month at the latest
All further oil changes	depending on the oil contamination level (oil sample analyses) but after 12 months at the latest
Guidelines for further oil changes as a function of the operating temperature	up to 70 °C every 8 000 hours of operation
	up to 80 °C every 5 000 hours of operation
	up to 90 °C every 3 000 hours of operation
	up to 100 °C every 2 000 hours of operation

The gear oil must be drained completely and replaced by new oil on expiry of the oil change interval.

The table of lubricants contained in chapter 7.4 *Table of Lubricants* specifies various gear oils in accordance with the recommendations of the respective producers. Equivalent premium oils of other producers may be used as well.

Regular oil sample analyses and/or the use of synthetic lubricants may extend the intervals for the oil change but consult EICKHOFF first before using synthetic lubricants.

Depending on the design of the gearbox, the **oil is drained** either through

- the oil drain plug or
- the oil drain cock

Depending on the design of the gearbox, the **oil is filled in** either through

- the hole of the breather or
- the hole(s) of the marked vent screw(s) or
- the hole of the inspection hole cover

Attention Hazard of burns from hot components or operating fluids

The oil bath may attain temperatures as high as 90 °C with the result that also the gearbox components may be subjected to a high temperature rise. Wear safety gloves where necessary when conducting the oil change.



Attention Damage to the gearbox by contamination

Proper operation and the service life of the gearbox as a whole are affected when contaminants penetrate into the oil circuit. Therefore pay attention during maintenance of the gearbox that no fibres of cleaning rags, sand or foreign material enter the oil circuit.



Remove the vent screw, the breather or the inspection hole cover from the gearbox.

Put an amply dimensioned collecting pan under the oil drain point of the gearbox (for the oil volume see chapter 3.8 *Technical Details*).

Hint

When unscrewing, you should firmly hold on to the oil drain plug with seal as otherwise the oil drain plug could fall into the collecting pan.



Unscrew the oil drain plug with seal from the gear housing or open the oil drain cock.

Drain the oil at operating temperature.

Clean the magnets of the oil drain plug and vent screw after the gear oil has been drained.

Screw the oil drain plug into the gearbox or close the oil drain cock.

Hint

The correct oil level is reached while the gearbox is at rest and in the horizontal mounting position, when the oil level has risen up to the mark of the oil level indicator, up to the lower edge of the oil level hole or up to a point between the marks on the dip rod. Consult EICKHOFF before selecting a different mounting position. If the acknowledgement of order provides for an oblique mounting position of the gearbox, the corresponding check marks are provided on the oil level indicator.



Fill the gearbox with the oil specified on the type plate of the gearbox (see also chapter 3.8 *Technical Details*). Observe the oil level indicator during filling. Overfilling beyond the specified oil level leads to additional heating and foaming of the oil.

Screw the vent screw or the breather into the gearbox or mount the inspection hole cover.

Note Pollution of the environment by improper waste disposal

All operating fluids, consumables and replacement parts must be disposed of in a safe and environmentally protective manner in accordance with the applicable environmental rules and regulations.



6.4 Changing the Grease Packing of the Gearbox and Rolling Bearings

If grease lubricated rolling bearings are used in the gearbox (for example in the case of vertical gearboxes), the grease type and the required quantity of the grease packing are stated on the spare parts drawing (see chapter 7.2 *Spare Parts Drawing*).

The rolling bearings in question are already packed with grease upon delivery. The grease packing is sufficient for the entire life of the bearings so that regreasing is not necessary. The grease, however, must be renewed in the case of disassembly or overhaul. For this purpose the gearbox and the bearings must be thoroughly cleaned with petroleum ether beforehand.

Attention **Explosion and fire hazard**
Provide for adequate ventilation. Do not smoke. Explosion hazard!



6.5 Sealing of the Input and Output Shafts

A shaft seal ring and a grease-filled grooved seal are provided on a hardened bush for sealing the input shaft, and a sliding ring seal is provided for sealing the output shaft.

The grooved seals must be refilled with grease every time the gearbox is cleaned and disassembled.

Use only lithium-saponified grease with a worked penetration of 220 to 250.

6.6 Sealing of the Housing Parting Faces and Covers

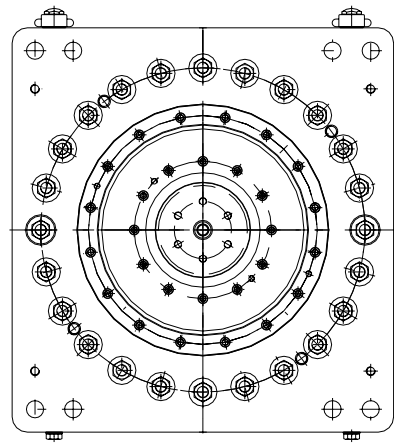
The parting faces of the housing and the fitting surfaces of the cover are sealed with LOCTITE 510 jointing compound against escaping oil.

All sealing surfaces must be cleaned and resealed with LOCTITE 510 or an equivalent jointing compound after every disassembly and reassembly.

7 Drawings and Tables

7.1 Dimensioned Drawing

7.2 Spare Parts Drawing



- 2x N 003907
- 2x N 006378
- 3x N 003907
- 3x N 006378
- 2x N 003907
- 2x N 006378

G 028016W
N 006378

- 2x N 003905
- 2x N 006327
- 2x G 036823
- 2x N 006378

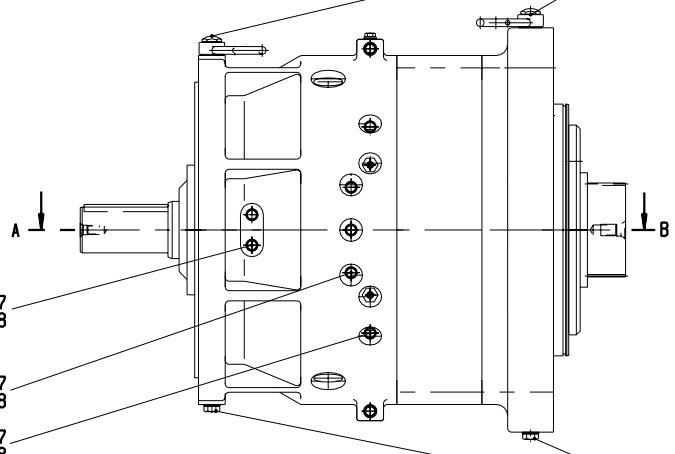
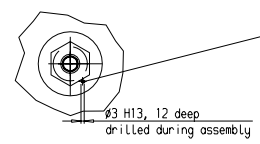
2x L 002545
2x PIPE 10x1, 400 L.

4x N 004996
4x N 006378

L 011797

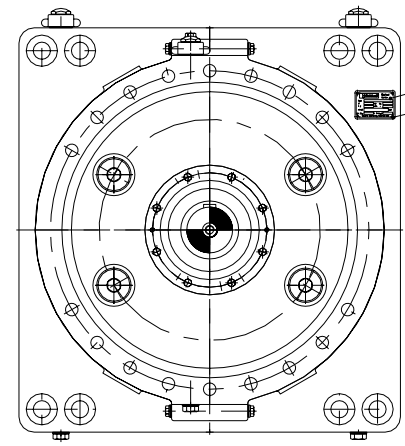
2x L 006722

Detail Y
1:2.5

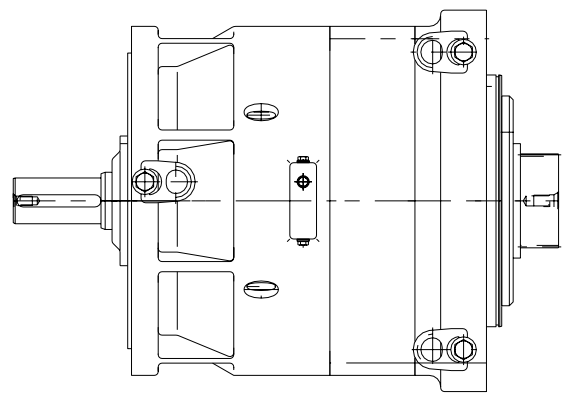


3x S 164787WA
Ma = 570 Nm

3x L 005513
3x L 000624



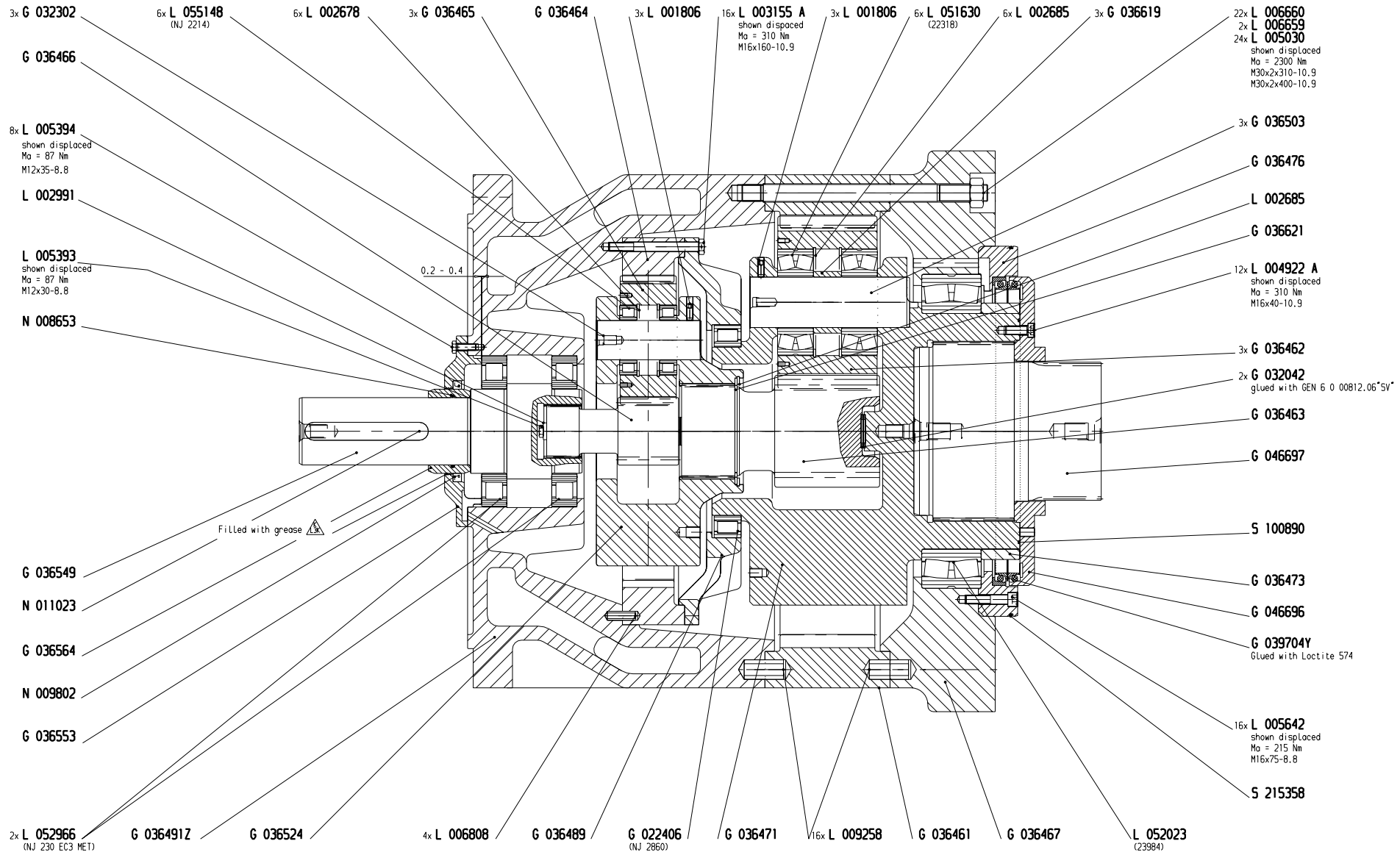
N 002948 B
4x L 001708 A





The assembly and setting instructions EG 005358 refer
 ● Attachment point
 Pipes bent during assembly
 A-B on sheet 2
 Cover and partition lines sealed by LOCTITE 510
 Screws secured acc. to GEN 6 0 00812.06"LV"
 Internal screws secured acc. to GEN 6 0 00812.06"5V" and by wire

Material:	Remark: ZA=32	NA:	Drawn: 18.12.01
Div.:		FEV:	Checked:
Scale: 1 : 7			
 Copyright: GIN 34	Designation:		
Weight kg:	PLANETARY GEARBOX	G 046700X	(e)
3495	l = 33.3529 ; 1		1/2
Type: EP-45	Register word No.: 2483 /		
Erz.-Gr.-Nr.: 383	Replacement for:	Similar No.:	

Packing dimensions
 Length: 1320 mm
 Width: 1000 mm
 Height: 1150 mm



Material:	Remark: ZA=32	Nr:	Drawn: 18.12.01
Div:		FEV:	Checked:
Scale: 1 : 3.5			
 Copyright: GIN 34	Designation: PLANETARY GEARBOX		
Weight kg: 3495	l = 33.3529 : 1	Part No.: G 046700X	(e)
Type: EP-45	Register word No.: 2483 /		2/2
Erz.-Gr.-Nr.: 383	Replacement for:	Similar No.: G 036450X	

7.3 Spare Parts Lists

INHALTSVERZEICHNIS TABLE OF CONTENTS					8
	G 046700X	PLANETENGETRIEBE PLANETARY GEARBOX			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
L	G 036491Z			FLANSCHGEHAEUSE FLANGE-TYPE HOUSING	
L	G 036822Y			GARNITUR ASSEMBLY	
L	G 039704Y			GARNITUR ASSEMBLY	

VT: 1 = spare part required for operation
2 = wear part
3 = spare part for general overhaul

ERSATZTEILLISTE SPARE PARTS LIST					8
L	G 046700X	PLANETENGETRIEBE PLANETARY GEARBOX			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
L	G 036491Z	1	St	FLANSCHGEHAEUSE FLANGE-TYPE HOUSING	
L	G 036822Y	2	St	GARNITUR ASSEMBLY	
L	G 039704Y	1	St	GARNITUR ASSEMBLY	
	G 022406	1	St	ZYL.ROLLENLAGER CYLINDRICAL ROLLER BEARING	3
	G 032042	1	St	ANLAUFSCHEIBE STOP DISC	1
	G 032042	1	St	ANLAUFSCHEIBE STOP DISC	1
	G 032302	3	St	BOLZEN PIN	
	G 036461	1	St	HOHLRAD HOLLOW SHAFT	
	G 036462	3	St	PLANETENRAD PLANETARY WHEEL	
	G 036463	1	St	DREHSTABRITZEL PINION SHAFT	
	G 036464	1	St	HOHLRAD HOLLOW SHAFT	
	G 036465	3	St	PLANETENRAD PLANETARY WHEEL	
	G 036466	1	St	DREHSTABRITZEL PINION SHAFT	
	G 036467	1	St	FLANSCHGEHAEUSE FLANGE-TYPE HOUSING	
	G 036471	1	St	PLANETENTRAEGER PLANETARY SUPPORT	
	G 036473	1	St	BUCHSE BUSH	
	G 036476	1	St	DURCHGANGSDECKEL THROUGH-COVER	
	G 036489	1	St	ZWISCHENFLANSCH INTERMEDIATE FLANGE	
	G 036503	3	St	BOLZEN PIN	
	G 036524	1	St	PLANETENTRAEGER PLANETARY SUPPORT	
	G 036549	1	St	ANTRIEBSWELLE INPUT SHAFT	

VT: 1 = spare part required for operation
2 = wear part
3 = spare part for general overhaul

ERSATZTEILLISTE SPARE PARTS LIST					8
L	G 046700X	PLANETENGETRIEBE PLANETARY GEARBOX			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	G 036553	1	St	DURCHGANGSDECKEL THROUGH-COVER	
	G 036564	1	St	LAUFBUCHSE BUSH	
	G 036619	3	St	BUCHSE BUSH	
	G 036621	1	St	SCHEIBE DISC	
	G 037034	1	St	TRANSPORTABDECKUNG TRANSPORT COVER	
	G 044642	1	St	BELUEFTUNGSFILTER BREATHER FILTER	
	G 046696	1	St	GLEITRINGDECKEL SLIDING RING COVER	
	G 046697	1	St	KUPPLUNGSSTUECK COUPLING PIECE	
	L 000624	3	St	SCHEIBE DISC	1
	L 001708 A	4	St	KERBNAGEL GROOVED DRIVE STUD	1
	L 001806	3	St	GEWINDESTIFT THREADED PIN	1
	L 001806	3	St	GEWINDESTIFT THREADED PIN	1
	L 002678	6	St	SICHERUNGSRING RETAINING RING	1
	L 002685	1	St	SICHERUNGSRING RETAINING RING	1
	L 002685	6	St	SICHERUNGSRING RETAINING RING	1
	L 002991	1	St	SCHEIBE DISC	1
	L 003155 A	16	St	SECHSKANTSCHRAUBE HEXAGON SCREW	1
	L 004922 A	12	St	ZYLINDERSCHRAUBE CYLINDRICAL SCREW	1
	L 005030	24	St	SECHSKANTMUTTER HEXAGON NUT	1
	L 005393	1	St	SECHSKANTSCHRAUBE HEXAGON SCREW	1
	L 005394	8	St	SECHSKANTSCHRAUBE HEXAGON SCREW	1

VT: 1 = spare part required for operation
2 = wear part
3 = spare part for general overhaul

ERSATZTEILLISTE SPARE PARTS LIST					8
L	G 046700X	PLANETENGETRIEBE PLANETARY GEARBOX			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	L 005513	3	St	SECHSKANTSCHRAUBE HEXAGON SCREW	1
	L 005642	16	St	ZYLINDERSCHRAUBE CYLINDRICAL SCREW	1
	L 006659	2	St	STIFTSCHRAUBE STUD SCREW	1
	L 006660	22	St	STIFTSCHRAUBE STUD SCREW	1
	L 006722	2	St	SPANNSTIFT DOWEL PIN	1
	L 006808	4	St	SPANNSTIFT DOWEL PIN	1
	L 009258	16	St	SPANNSTIFT DOWEL PIN	1
	L 011797	1	St	VERSCHLUSSSCHRAUBE CLOSING SCREW	1
	L 051630	6	St	PENDELROLLENLAGER SELF-ALIGNING ROLLER BEARING	3
	L 052023	1	St	PENDELROLLENLAGER SELF-ALIGNING ROLLER BEARING	1
	L 052966	2	St	ZYL.ROLLENLAGER CYLINDRICAL ROLLER BEARING	1
	L 055148	6	St	ZYL.ROLLENLAGER CYLINDRICAL ROLLER BEARING	1
	N 002948 B	1	St	LEISTUNGSSCHILD RATING PLATE	
	N 003907	7	St	VERSCHLUSSSCHRAUBE CLOSING SCREW	1
	N 004996	4	St	VERSCHLUSSSCHRAUBE CLOSING SCREW	1
	N 006378	12	St	DICHTRING SEAL RING	1
	N 008653	1	St	O-RING O-RING	1
	N 009802	1	St	WELLENDICHTRING SHAFT SEAL RING	1
	N 011023	1	St	PASSFEDER PARALLEL KEY	1
	S 100890	1	St	O-RING O-RING	1

VT: 1 = spare part required for operation
2 = wear part
3 = spare part for general overhaul

ERSATZTEILLISTE SPARE PARTS LIST					8
L	G 046700X	PLANETENGETRIEBE PLANETARY GEARBOX			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	S 164787WA	3	St	3-D-LASTRING 3-D LOAD RING	1
	S 213358	1	St	O-RING O-RING	3

VT: 1 = spare part required for operation
 2 = wear part
 3 = spare part for general overhaul

ERSATZTEILUNTERLISTE SPARE PARTS SUBLIST					8
L	G 036491Z	FLANSCHGEHAEUSE FLANGE-TYPE HOUSING			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	G 036491	1	St	FLANSCHGEHAEUSE FLANGE-TYPE HOUSING	
	L 001396	8	St	VERSCHLUSSCHRAUBE CLOSING SCREW	1

VT: 1 = spare part required for operation
 2 = wear part
 3 = spare part for general overhaul

ERSATZTEILUNTERLISTE SPARE PARTS SUBLIST					8
L	G 039704Y	GARNITUR ASSEMBLY			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	S 850208	1	St	GLEITRINGDICHTUNG SLIDING RING SEAL	3

VT: 1 = spare part required for operation
 2 = wear part
 3 = spare part for general overhaul

ERSATZTEILUNTERLISTE SPARE PARTS SUBLIST					8
L	G 036822Y	GARNITUR ASSEMBLY			
	Teilzeichen PART NUMBER	Menge QTY	ME	Benennung DESIGNATION	VT
	G 036823	2	St	ADAPTER ADAPTER	
	L 002545	2	St	VERSCHRAUBUNG SCREW JOINT	1
	N 003905	2	St	VERSCHLUSSSCHRAUBE CLOSING SCREW	1
	N 006327	2	St	DICHTRING SEAL RING	1
	N 006378	2	St	DICHTRING SEAL RING	1

VT: 1 = spare part required for operation
 2 = wear part
 3 = spare part for general overhaul

7.4 Table of Lubricants

The respective technical details of the gearbox as stated in this operating manual are decisive for the selection of a lubricant.

Gear Oils on Mineral Oil Base		Viscosity ISO-VG **	ARAL	BP	DEA	ESSO	Klüber	MOBIL	SHELL	Tribol	Castrol	Optimol	FUCHS
VG 680		VG 680	Degol BG 680	Energol GR-XF 680	Falcon CLP-680	SPARTAN EP 680	Klüberoil GEM 1-680	Mobilgear XMP-680	Omala Oil F 680	Tribol 1100/680		Optigear BM 680	Renolin CLP 680 Plus
VG 460		VG 460	Degol BG 460	Energol GR-XF 460	Falcon CLP-460	SPARTAN EP 460	Klüberoil GEM 1-460	Mobilgear XMP-460	Omala Oil F 460	Tribol 1100/460		Optigear BM 460	Renolin CLP 460 Plus
VG 320		VG 320	Degol BG 320	Energol GR-XF 320	Falcon CLP-320	SPARTAN EP 320	Klüberoil GEM 1-320	Mobilgear XMP-320	Omala Oil F 320	Tribol 1100/320	Alpha MW 320	Optigear BM 320	Renolin CLP 320 Plus
VG 220		VG 220	Degol BG 220	Energol GR-XF 220	Falcon CLP-220	SPARTAN EP 220	Klüberoil GEM 1-220	Mobilgear XMP-220	Omala Oil F 220	Tribol 1100/220	Alpha MW 220	Optigear BM 220	Renolin CLP 220 Plus
VG 150		VG 150	Degol BG 150	Energol GR-XF 150	Falcon CLP-150	SPARTAN EP 150	Klüberoil GEM 1-150	Mobilgear XMP-150	Omala Oil F 150	Tribol 1100/150	Alpha MW 150	Optigear BM 150	Renolin CLP 150 Plus
VG 100		VG 100	Degol BG 100		Falcon CLP-100	SPARTAN EP 100	Klüberoil GEM 1-100	Mobilgear XMP-100	Omala Oil F 100	Tribol 1100/100	Alpha MW 100	Optigear BM 100	Renolin CLP 100 Plus

(* designation acc. to DIN 51 502 ** acc. to DIN 51 519 at 40 °C)

The above gear oils on CLP mineral oil base comply with the minimum requirements as specified in DIN 51517 Part 3. They contain additives for improving the oxidation, corrosion, foaming and wear protection properties and are suited for operating temperatures ranging from – 10°C to + 100°C. Synthetic lubricants are used when different operating temperatures are encountered.

Greases for Gearboxes											
	ARAL	BP	DEA	ESSO	Klüber	MOBIL	SHELL	Tribol	Castrol	Optimol	FUCHS
	AralubFD 00FDP 00	Energrease HTO HT 00 EP	Orona 00Orona FG EP 0	Fibrax EP 370	Microlobe GB 00	Mobilplex 44	Alvania GL00	Molub-Alloy 00	CLS-Grease	Longtime PD 00	Calypsol SF7-047 00
Lithium Saponified Greases for Rolling Bearings											
	Aralub HL 2	Energrease LS 2	Glissando 30 Glissando	Beacon 3	Centoplex GLP 402	Mobilux 2Mobilux 3	Alvania R2	Molub-Alloy BRB 572	Spheerol AP2 LZV- EP	Longtime PD 2	

7.5 Application of Loctite

Hazard

As **none** of the Loctite products are LOBA approved, bolted connections which are secured with Loctite **243** but remain separable as defined in the section *For Bolted Connections*, must **never** be used for components to be mounted **underground**.



The Loctite products referred to in this operating manual are used when bolted connections shall be secured against unintentional loosening (for example due to vibrations or shock loads).

If the gearbox is designed for underground use, the bolted connections are secured with a similar product that is LOBA approved.

For Bolted Connections

Type of Connection	Nominal Thread $\varnothing d$	Product Information	Notes on the Drawing
Separable, medium-strength "LV" (connection can be separated using standard tools)	≤ 36	Loctite product 243 Colour: blau Break-away torque DIN 54454, M10 bolts: 14-34 Nm Suited for a temperature range of: - 55° to +150 °C	Secured as per GEN 6 0 00812.06 "LV" adjacent to the drawing title block
Hardly separable, high-strength "SV" (connection that need not be separated later on)		Loctite product 262 Colour: red Break-away torque DIN 54454, M10 bolts: 15-50 Nm Suited for a temperature range of: - 55° to +150°C	

Preparing the Surfaces

Hint

The slightly oiled surfaces need not be cleaned.



Applying the Adhesive

Apply the adhesive to a contact surface (preferably to that of the bolt thread). Take care that the entire thread length is wetted.

For Threaded Blind Holes:

For threaded blind holes it is essential that the adhesive is applied to the bottom of the threaded hole. The quantity of the adhesive shall be sufficient to ensure that the displaced adhesive extends over the entire thread length after assembly.

While screwing the bolt in, screw it back by some turns so that the entrapped compressed air can escape.

8 Accessories

9 Annex

9.1 Service

Eickhoff Maschinenfabrik GmbH offers its customers a 24-hour hotline at the following telephone number:

(02 34) 9 75 - 22 22

9.2 Company Address

Eickhoff Maschinenfabrik GmbH
Postfach 10 06 29
D-44706 Bochum
Hunscheidtstrasse 176
D-44789 Bochum
Telephone: (02 34) 9 75 – 0
Telefax EAT: (02 34) 9 75 – 25 79
E-Mail: getriebe@eickhoff-bochum.de

9.3 Agencies

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9.4 Manufacturer's Declaration

Manufacturer's Declaration for Machinery that is Not Ready for Use in the Sense of the EC Directive 98/37/EC, Annex II B

We hereby declare that the

Designation of the gearbox: 2-stage planetary gearbox EP - 45
Part number: G 46700X

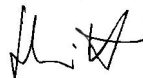
is designed for installation in a machine and that its putting into operation is prohibited until it has been ascertained on completion of the installation that the complete machine complies with the latest issue of the EC Directive.

The existing Manufacturer's Declaration confirms compliance with all Harmonized Standards published by the EC Commission in the Official Journal of the European Community, as far as they are applicable to our products.

These are in particular: EN 292/2
EN 563

Address: Eickhoff Maschinenfabrik GmbH
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Telefax EAT: (02 34) 9 75 – 25 79
E-Mail: getriebe@eickhoff-bochum.de

Date/ Place: 25.06.02 / Bochum



Particulars of the Signatory:

Dipl. Ing. Schritt
Head of the Power Transmission Division