## Operating, Installation and Maintenance Instructions for

E-102 Mixer Standard,

optionally oil-filled,

optionally oil-filled and with mechanical seal

#### Please keep these instructions!

Should anything remain unclear after reading these Operating, Installation and Maintenance Instructions, please turn to the responsible BUSCHMANN Representative or contact us directly.

Status 15.02.2012

Karl Buschmann Maschinenbau GmbH, Industriestraße 18, 46499 Hamminkeln

Tel.: 02852-96690, Fax.: 02852-3862;

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#### 1. General

#### 1.1 General

We are delighted that you have chosen a BUSCHMANN SLURRY MIXER, and wish to thank you for placing your trust in us. We wish you improved operating success through the use of the mixer. Before putting the BUSCHMANN SLURRY MIXER into operation, the Operating Instructions must be read by the specialist personnel responsible.

The safety guidelines named in these Operating Instructions do not invalidate the general and specific regulations and standards. The accident prevention regulations and general technical rules must be observed.

#### 1.2 Completeness of delivery

Please first check that the delivery is complete. The delivery note contains all items pertaining to the delivery. Objections can only be considered if the missing items are directly recorded on the delivery note with the forwarders present, and countersigned. Otherwise, we are unable to accept complaints.

#### 1.3 Transport

During transport, the mixer must be secured against tipping over. The transport aids may only be loosened and removed once the mixer is standing in its permanent position.

If the mixer is attached to the back of a tractor, please observe the outreach in particular. When using public roads and paths, the German Traffic Act (StVO) must also be observed.

#### 2. Safety

#### 2.1. Prior to initial use

The BUSCHMANN SLURRY MIXERS are constructed in accordance with the latest technology standards and the recognised safety rules. The Operating, Installation and Maintenance instructions do not invalidate the general and specific regulations and standards. However, improper use can generate hazards involving bodily or lethal injuries to the user or to third parties, or impairments to the mixer and other material assets. The BUSCHMANN SLURRY MIXERS may only be used in a technically proper condition.

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Please read through these Operating Instructions prior to initial commissioning, and observe the listed points.

- 1. The operating company must allow the operator access to the Operating Instructions, and must ensure that the operator has read and understood all points.
- 2. You must obtain familiarity with the actuation devices prior to starting work on the machine.
- 3. Prior to starting work, check all protective equipment and that all screws fit tightly. Replace defective safety devices and machine parts.
- 4. Without exception, always use BUSCHMANN original spare parts. No liability shall be borne if external or reproduction parts are used.
- 5. Please observe that, if the machine is later forwarded on to other parties, the Operating Instructions must also be forwarded with the machine. Please also draw the other party's attention to the regulations.
- 6. Observe all operating and maintenance regulations. They represent the prerequisite for long-term, economic and problem-free use of the mixer. Incorrect operation or misuse can generate substantial hazards for people, animals and machines.

#### 2.2 Use in accordance with the intended purpose

This mixer is exclusively intended for the stirring and homogenisation of liquid manure and slurry in open and closed slurry tanks (intended purpose). Further fields of application are only permitted after contacting, and obtaining written permission from, Karl Buschmann Maschinenbau GmbH. Any use over and above this shall be considered not in accordance with the intended purpose. Karl Buschmann Maschinenbau GmbH shall not be held responsible for any damages resulting from use not in accordance with the intended purpose; the risks shall be borne exclusively by the user. The operating, maintenance and repair terms and conditions stipulated by the manufacturer must also be maintained for use in accordance with the intended purpose.

#### 2.3 Authorised operators

Only those people (who are at least 16 years of age) may be commissioned with assembly, maintenance and operation who are appropriately qualified and who have precisely understood and observe these Operating and Installation Instructions. Within the work area, the operator is responsible for third parties. This also applies to animals which are within the danger zone.

Non-observation of the safety guidelines may lead to the invalidity of any claims for damages. This is in your own interest, as you will lose any warranty claims for damages and consequential damages caused through operating or maintenance errors.

#### 2.4 Special safety regulations

Prior to starting work, the user must ensure that there are no solid objects such as wood, iron, concrete, cables, film etc. in the slurry. There is a risk of blade or shaft breakage.

If malfunctions occur, the mixer must be taken out of operation immediately.

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#### 2.5 Hazards generated through accessories

Please observe precisely the Operating Instructions and Safety Regulations by the manufacturer for additional attachment parts such as cardan shafts, reverse gear units etc.

#### 2.6 Safety guidelines for operation, maintenance and inspection work

Safety devices have been installed for the safety of the operator, and must under no circumstances be changed, removed or converted. If these parts are defective or missing, provide replacements.

The mixer may not be put into operation until the blade is fully submerged in the slurry. It must also be ensured that the blade is sufficiently far away from the ceiling, floor, wall, supports etc.

In order to avoid damage and hazards, no-one may be located between the mixer and the tractor.

Therefore, only connect the cardan shaft to the mixer if the mixer is in the stirring position and stirring operation is intended. Do not leave the machine unsupervised at any time during the stirring process, as playing children or animals may approach the source of danger.

Secure the tractor against rolling away during the stirring process. Pit openings and slurry tanks must be secured against falling in.

Maintenance, inspection and repair work must always be carried out when the machine is at a standstill and whilst the machine is secured against inadvertent operation.

#### 2.7 Hazards generated through slurry gases

Please observe that slurry gases are unpredictable. During stirring, highly-poisonous, flammable and explosive gases (ammonia, hydrogen sulphide, carbon dioxide and methane) are released. During a prolonged storage period without intermediate stirring, high gas concentrations may be generated as floating or settling layers suddenly break open. As with any other slurry storage, it must be observed that it is well-ventilated and that no damages may occur through slurry gases. If sufficient ventilation cannot be guaranteed during storage, operation, maintenance and repairs, suitable protective measures must be taken. The operator must wear respiratory protection during work. No other people or animals whatsoever may be allowed in the danger zone. Please refer to and observe the leaflet by the Landwirtschaftlichen BG Arbeitssicherheit Aktuell (Agricultural Employer's Liability Insurance Association Current News "Liquid Manure") and the accident prevention regulations on slurry storage, pits, channels and wells UVV (Accident Insurance Regulation) 2.8.

#### 2.8 Safety guideline signs and their meanings



Before starting up, read and observe the operating and safety instructions



Before repair, maintenance and cleaning work, activate repair switch and lock (disconnect motor from power supply)



Please refer to the accident prevention regulation "Safety and health signs" (VSG 1.5).

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#### 3. Assembly and installation dimensions

#### 3.1. Assembly and installation dimensions

The mixer is mainly used in forcible circulation systems, open pits and ground basins.

The mixer is delivered ready assembled. However, for reasons of transportation, it may be necessary to screw on attachment parts such as the three-point linkage or cage on reaching the location of use. Adjustment settings are welded onto the outer tube, whereby the position is clearly stipulated.

On the mixer with mechanical seal, the blade is divided. The blade and hub are already assembled at the factory and secured with an M 24 self-locking nut. The hub, which is tightly screwed on, may only be loosened in case repairs are required, as the mechanical seal is prestressed with the hub.

If the mixer is delivered without the blades assembled onto it, please proceed as follows:

Prior to assembly of the mixer blade, the transportation lock, a round disc which is screwed on with 2 cylinder head screws, must be removed. This disc is merely for protection against damage to the VA deflector plate, and is no longer required after disassembly. Then the 4 M 12 threaded bores in the mixer blade hub must be completely degreased, and the contact surface of the mixer blade must be cleaned. The contact surface of the mixer blade hub must also be cleaned. After cleaning the contact surfaces, they must be oiled slightly. Here it is important that no oil gets into the threaded bore. Then the mixer blade can be pushed onto the hub. The four M 12 x 35 cylinder head screws must be degreased, secured using Loctite Threadlocker, and then screwed in tight using the four spring rings. Then the mixer blade

On mixers with oil filling, please ensure that the M5 ventilation screw is slightly loosened after assembly. This ensures that no pressure can build up in the tube, or, depending on the equipment and application, a self-opening ventilation valve can be mounted here.

#### 4. Operation, maintenance and repairs

#### 4.1 General information on operation

is ready for use.

The machine may only be operated, serviced or repaired by authorised persons who are familiar with the respective work and who have been informed of the related hazards involved. Operators must have reached the end of their sixteenth year. They must also have read and understood the Operating Instructions. (responsibility of the operating company).

The operator is responsible both for people and for animals remaining within the danger zone of the slurry mixer location of use. The relevant accident prevention regulations and the other generally recognised safety, occupational medical and legal road traffic rules must be observed.

If possible, check all screws again for tight fit and, if applicable, inspect the oil level. Please also ensure that the mixer does not impact or become stuck in the shaft during lifting, lowering and insertion, as the enormous lever effect may damage the mixer, the three-point linkage or the installation box.

During the stirring process, the tractor must not be moved, as this may destroy the cardan shaft and the mixer.

Start up or stop the mixer during prolonged operation, so that the load on the mixer shaft remains as small as possible. Sudden acceleration and braking may lead to shaft breakage. Always ensure gentle start-up or stopping.

The blade must be submerged at least 600 mm from the upper edge into the slurry during stirring. If the submersion depth is lower, the mixer will suck in large quantities of air and will be unable to develop its full power, or the lower seal will be destroyed due to insufficient cooling.

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#### 4.2 Technical data

- The max. permitted shaft speed of the mixer totals 1000 1/min.
- The mixer is equipped as a standard measure with a 560 mm suction or pressure blade. With a normal medium and drive via the tractor, a power of approx. 60 to 70 KW at 540 1/min is transferred onto the blade.
- Optionally, the mixer can also be oil-filled (during stationary operation)
- Optionally, the mixer can also be equipped with a highly wear-resistant seal (during stationary and permanent operation)
- The mixer is independent in terms of rotational direction. Optionally, a reverse gear unit can be mounted
- The total length of the mixer incl. the guard cone is orientated on the pit depth

All other data can be found in the delivery note or the brochure.

#### 4.3 Oil level inspection (only for oil-filled mixer and mixer with mechanical seal)

If the mixer is installed horizontally, the screw plug must be screwed out for the oil level inspection. The entire shaft in the tube must be covered with oil.

If the mixer is installed with a floor inclination, an oil expansion chamber must be mounted. The oil expansion chamber must be mounted higher than the highest point of the mixer. The oil level is shown in the sight glass, or 1/3 of the chamber must be filled. If oil is missing in the tube or the expansion tank, SAE 20 or W 20 oil must be filled up to the abovementioned height.

#### 4.4 Maintenance, inspection and assembly work

Once the stirring process is finished, spray down the mixer with water (not using a high-pressure cleaner, as this may destroy the seals). Grease the PTO shaft profile and the liner at the front and, if applicable, check the oil level. See point 4.3. on oil level inspection. Check that all screws fit tightly.

▶ In the standard design Type E-102 (mixer with closed roller bearings, without oil filling), the shaft sealing rings must be regularly greased on the mixer blade bearing (lower bearing). The lubricating nipple is located under the mixer blade hub, and can be accessed via the hole in the blade hub.

Once the stirring process is finished, check the blade and the tube and remove any foreign objects. Replace defective parts and safety devices.

All work may only be carried out at a standstill and by trained specialist personnel.

Karl Buschmann Maschinenbau GmbH shall not bear liability for unauthorised conversion and spare parts manufacture. The use of other parts can render the liability for resulting consequences and damages null and void - this also includes other affected components.

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#### 4.5 Oil change mixer tube

The first oil change must take place after approx. 50 operating hours, and then each year or after 100 operating hours. To do this, the oil plug at the upper end of the mixer must be removed, and the oil must be suctioned off or drained out through the lower screw. Then the mixer must be refilled with SAE 20 or W 20 oil. Please find the exact filling level in Point 4.4.

#### 4.6 Corrosion through foreign objects in slurry

The pH value of slurry usually lies in the neutral range at 7.0. If additional cleaning agents from the milking plant, whey, feed additives containing copper sulphate, silage effluent, mineral fertilisers, hoof disinfection agent, concrete additives, acids and lyes are added to the slurry, the pH value will change and the zinc layer will be destroyed within a short time. It is highly important that this aggressive wastewater is not fed into the slurry at all.

Damages caused for the abovementioned reasons shall remain excluded from any warranty. If the abovementioned substances are found in the medium, please contact us.

#### 4.7 Use with the cardan shaft

Due to the multiple tractor connection dimensions, the length of the cardan shaft must be adapted especially for each tractor. Please find information on adaptation of the cardan shaft in the Operating and Maintenance Instructions by your cardan shaft manufacturer. Depending on the operation angle, a normal cardan shaft can be used here. During the stirring process, it is essential to ensure that both universal joints are evenly angled. If necessary, the tractor must be realigned to the mixer. If the joints are differently angled, the mixer will run extremely unevenly, and material fatigue may occur on the tractor, cardan shaft or mixer. You must observe the manufacturer information (operation angle, speed and the max. power to be transferred) of the cardan shaft.

If the joints cannot be evenly angled or if the operation angle is larger, please work using a one-sided wide-angle PTO shaft or a double-sided wide-angle PTO shaft. Here every operation must be considered separately. Whatever the case, the cardan shaft must be greased at regular, short intervals due to the high torsion loads and angling.

Always observe the operating and maintenance regulations by the cardan shaft manufacturer.

#### 4.8 Use of a reverse gear unit

If using a reverse gear unit, observe the separate Operating and Maintenance Instructions.

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#### 5. 5Liability and warranty

#### 5.1 Manufacturer's liability

The manufacturer shall not be held liable for any damages generated through improper transport and operation of the mixer and through non-observance of the safety regulations and these Operating Instructions.

Unauthorised modifications and conversion to the machine are prohibited for safety reasons, and shall lead to expiry of the warranty and exclusion of the manufacturer bearing liability for resulting damages. Costs for conversion work or malfunctions generated due to particularities of operating conditions shall not be borne by the manufacturer.

We shall only bear the costs of repairs to defects undertaken by the purchaser themselves or a third party if we have issued our written consent to these repairs.

#### 5.2 Warranty conditions

The manufacturer shall provide a warranty of 1 year from the date of delivery under the following conditions:

- Maintenance of all guidelines, instructions and regulations in the Operating Instructions by the operator of the device.
- Maintenance of all obligations in accordance with the transfer declaration for the Operating Instructions by the operator of the device.
- Warranty cases must be reported to the manufacturer within 8 days in writing. This can also take place through the authorised dealer.
- The warranty extends to the repair or replacement of defective parts. The decision as to whether repair or replacement should take place shall be made by the manufacturer.
- We shall only bear the costs of the remedy of defects undertaken by the purchaser themselves or by third parties if we have issued our written consent for such repairs.
- Repairs can be undertaken by a workshop / dealer authorised by the manufacturer. The wage cost reimbursement shall take place according to the manufacturer's fixed rates.
- The recipient shall bear the freight costs for spare parts deliveries.
- Defective parts shall be returned free to the manufacturer for inspection purposes.
- Normal wear on the mixer shaft, blades, seals and shaft bearings are excluded from the warranty.
- The warranty does not extend to working hours or travel or transport costs, and not to consequential damages and accidents with damage to people and property which have been generated due to non-observance of the safety precautions or incorrect operation.

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#### 6. Appendix

#### 6.1 Declaration of conformity

### **EC** Declaration of conformity

Acc. Appendix II A of the EC Machinery Directive 2006/42/EC (MaschR)

Manufacturer: Karl Buschmann Maschinenbau GmbH

Industriestraße 18 46499 Hamminkeln Deutschland

We hereby declare that the mixer Type: E-102

accords with the following relevant conditions:

Machinery Directive RL 2006/42/EC, EMC Directive or Directive 2004/108/EC (including changes)

#### Applied harmonised European standards:

DIN EN ISO 12100-1, DIN EN ISO 12100-2, DIN EN ISO 13857, EN 349 (1993+A1), Amendment to DIN EN 349 (2008-09), EN ISO 13850, EN 983 +A1, DIN EN ISO 14121-1, DIN EN ISO 13849-1, DIN EN ISO 13849-2, EN 1037 (1995 + A1) (2008), EN 1088 (2008-10), DIN EN 60204-1 (2006)

German Equipment and Product Safety Act (GPSG) in the respective valid version, Ordinance on the German Equipment and Product Safety Act, in particular and if applicable the Ordinance on Electrical Equipment, Machine Noise Information Ordinance, Machinery Ordinance, other regulations from the EU Council if applicable and if not yet converted into national law, and all individually applicable harmonised European standards.

Karl Buschmann Maschinenbau GmbH hereby declares that the mixer has been developed, designed and manufactured in concordance with the abovementioned regulations.

This declaration of conformity shall lose validity should unauthorised modifications be made.

Hamminkeln, 15.02.2012

Karl Buschmann

Manufacturer's authorised signatory

Karl Buschmann Maschinenbau GmbH, Industriestraße 18, 46499 Hamminkeln

Karl Bisdua

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#### **6.2** Tips on stirring

- The medium must be fluid enough so that the mixer can work well. Depending on the consistency, the addition of fluid can accelerate the stirring process.
- There must be no scum layer on the pit cover or on the girders, otherwise this cannot rotate.
- Multiple stirring processes over the year prevents large layers of scum and sediment.

#### **6.3 Conclusion**

Should you still have questions on these Operating, Installation and Maintenance Instructions, please turn to your BUSCHMANN specialist dealer or contact BUSCHMANN directly.

If you keep to the Operating, Installation and Maintenance Instructions, the BUSCHMANN SLURRY MIXER will provide a good stirring performance over a long period of time.

**Karl Buschmann Maschinenbau GmbH**, Industriestraße 18, 46499 Hamminkeln Tel.: 02852-96690, Fax.: 02852-3862;

Internet: <a href="www.guelleruehrwerke.de">www.guelleruehrwerke.de</a>, E-mail: karl.buschmann@guelleruehrwerke.de

#### **6.4 Suggestions**

Karl Buschmann

We continuously endeavour to improve our products and product information. Should questions arise or should you have suggestions on operation of the mixer or after working with these Operating Instructions, please copy this page and send or fax it, filled in, to:

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Karl Buschmann Maschinenbau GmbH, Industriestraße~18,~46499~Hamminkeln

Tel.: 02852-96690, Fax.: 02852-3862;

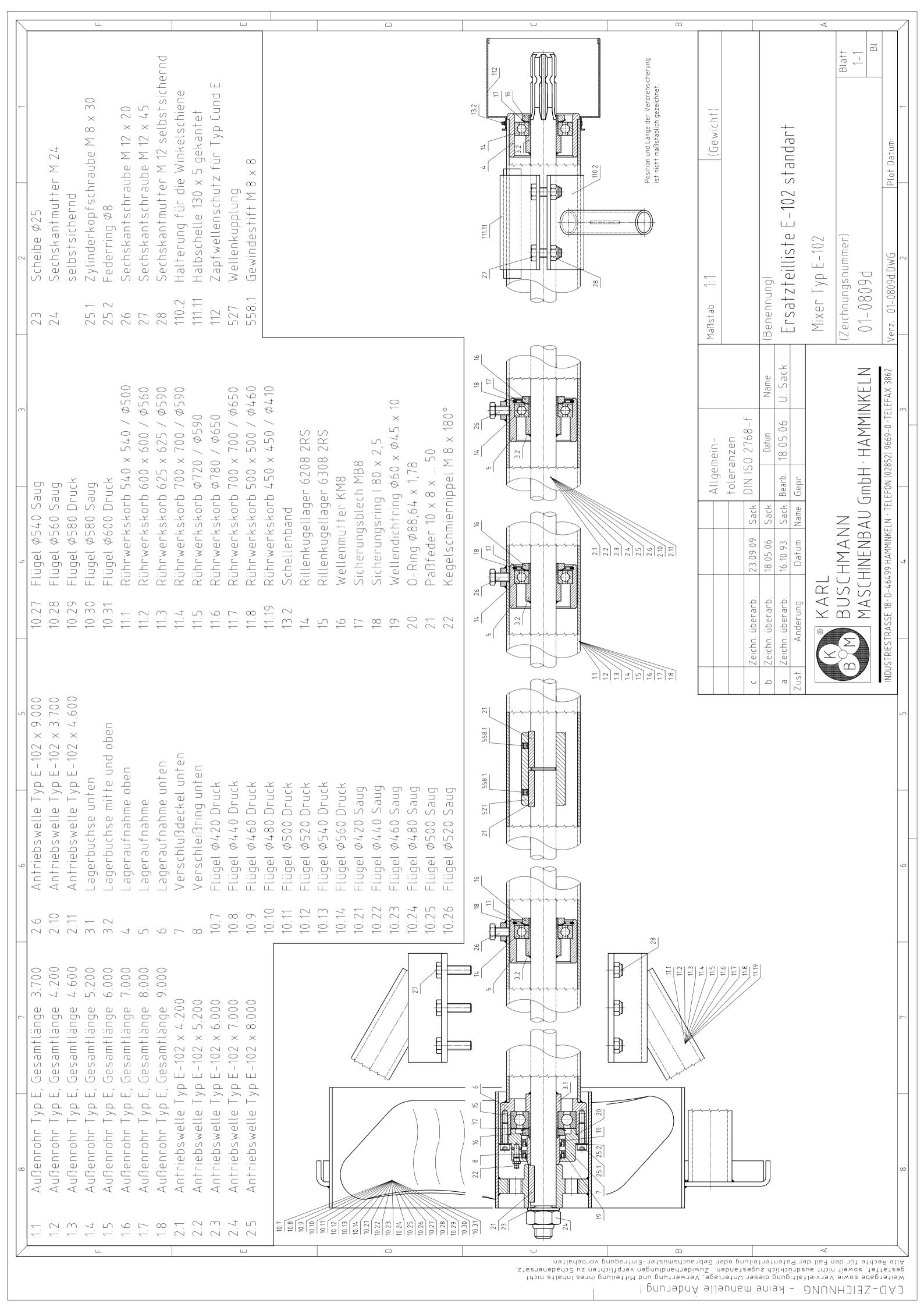
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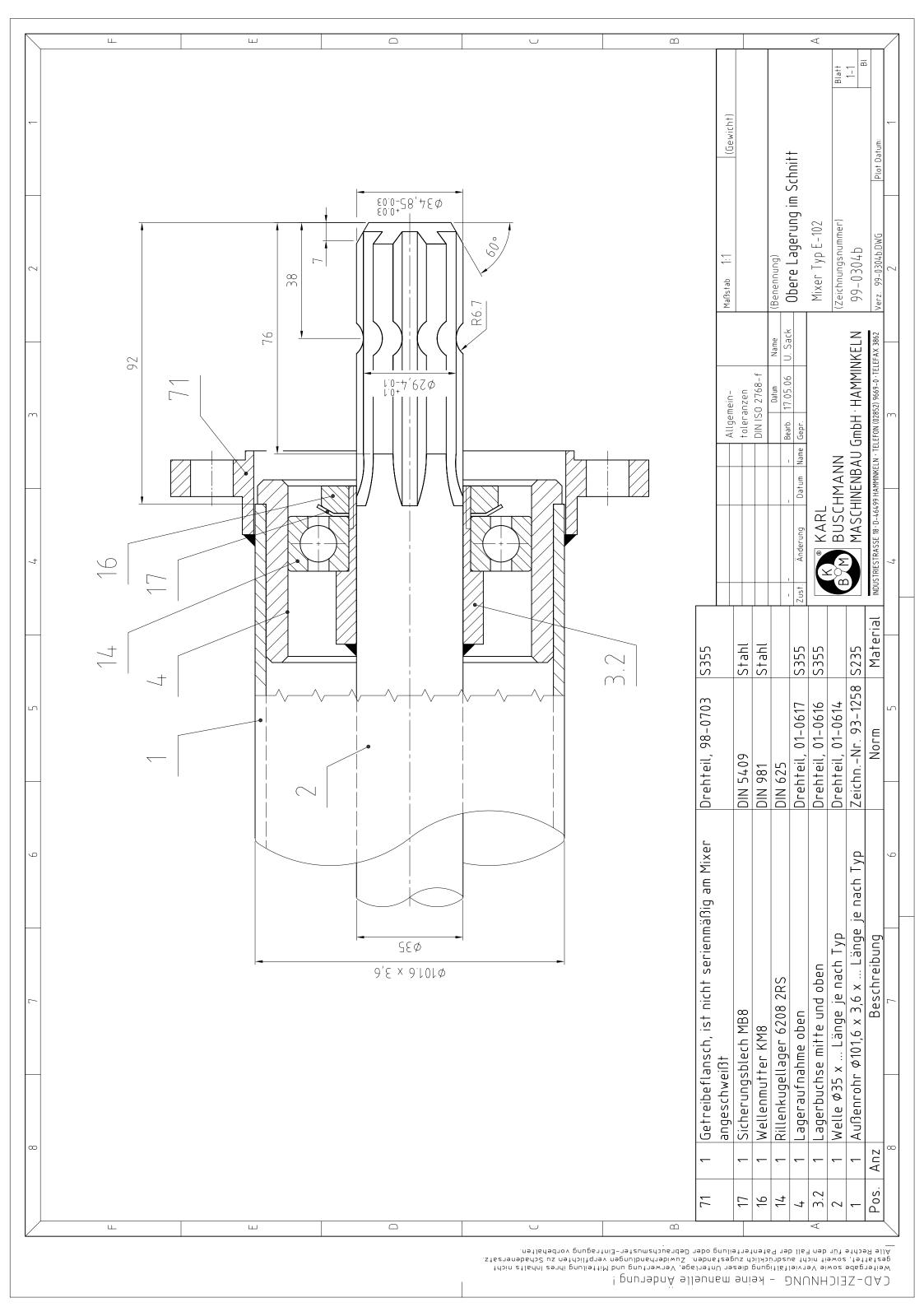
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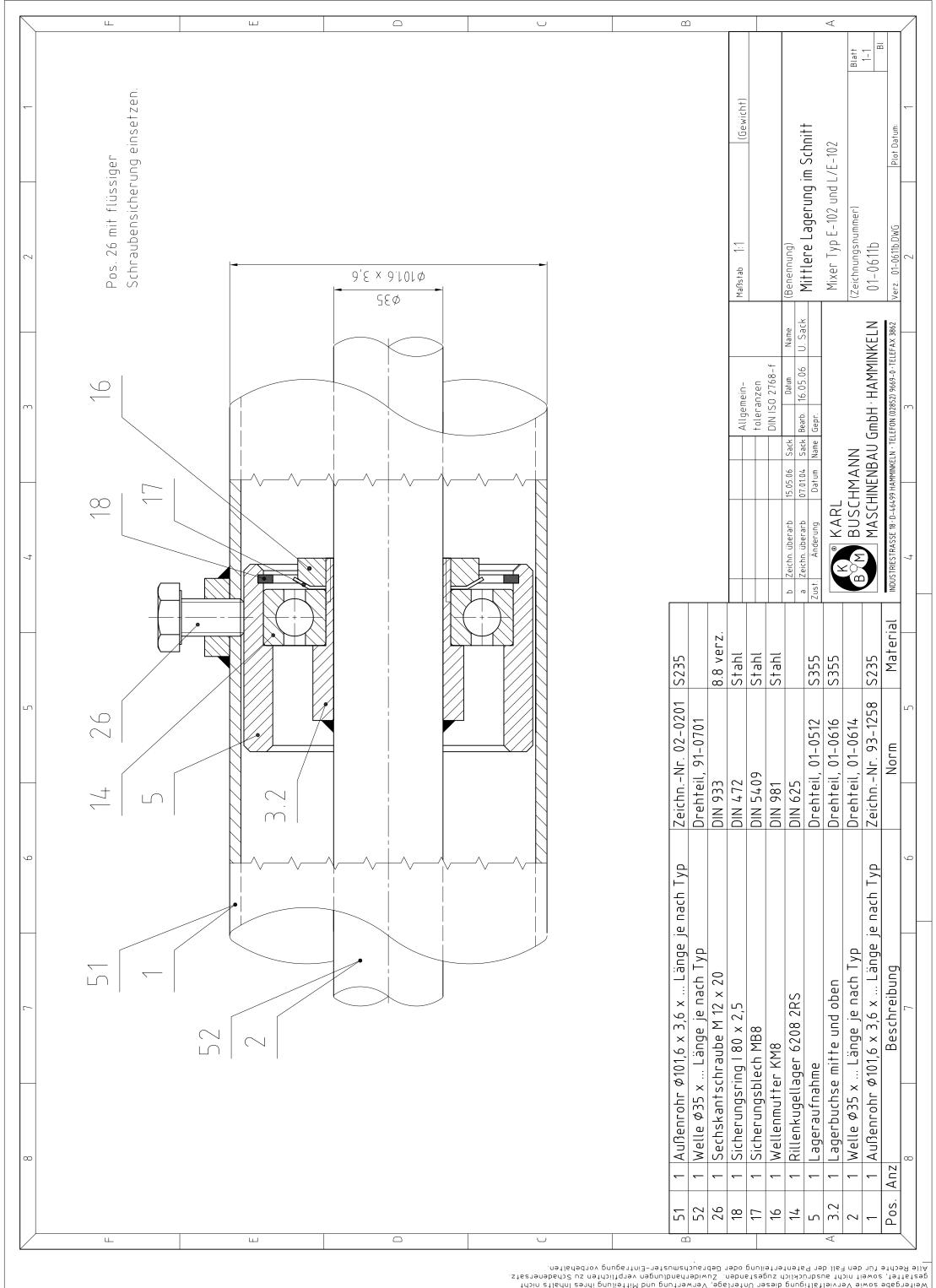
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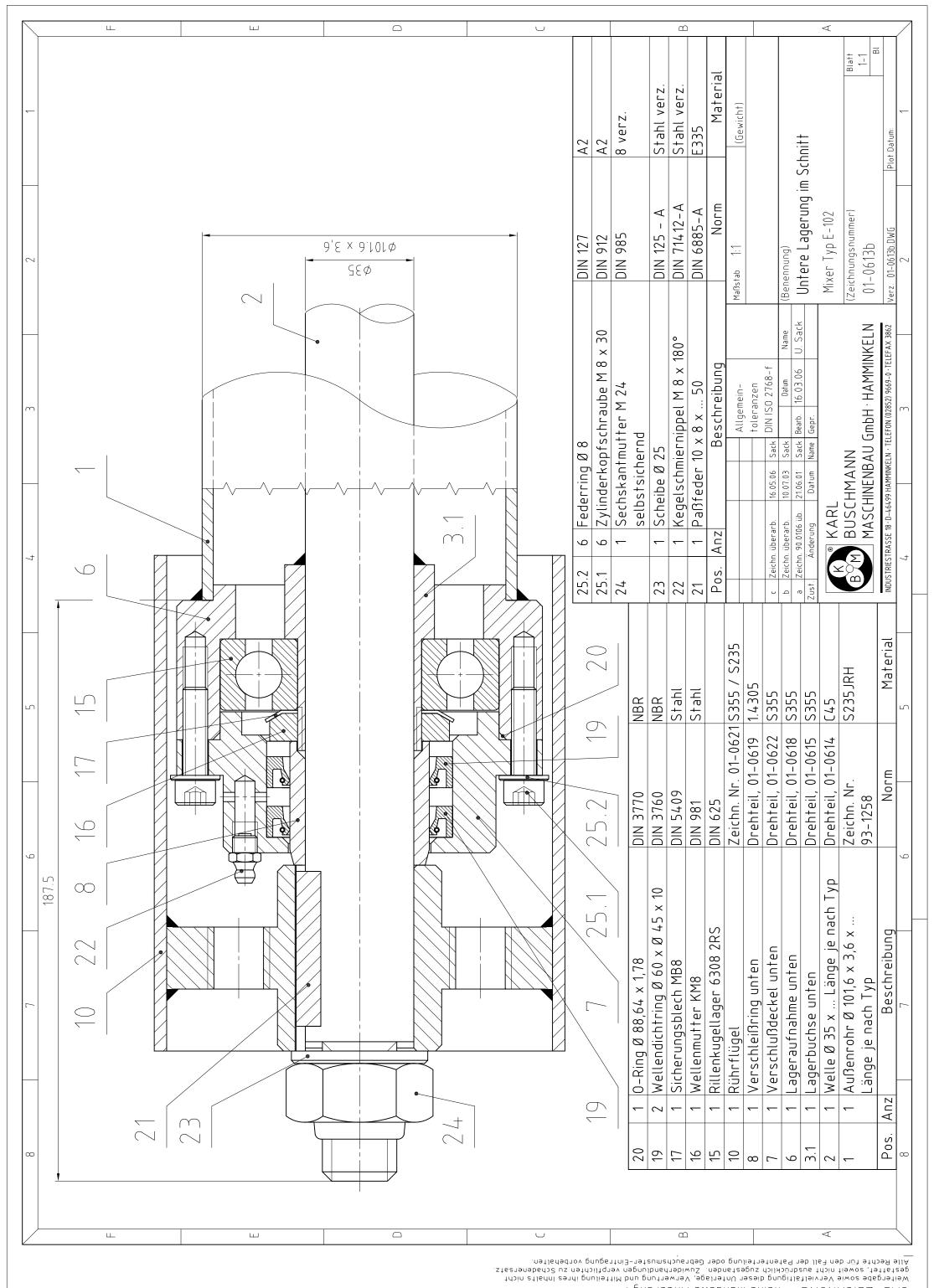
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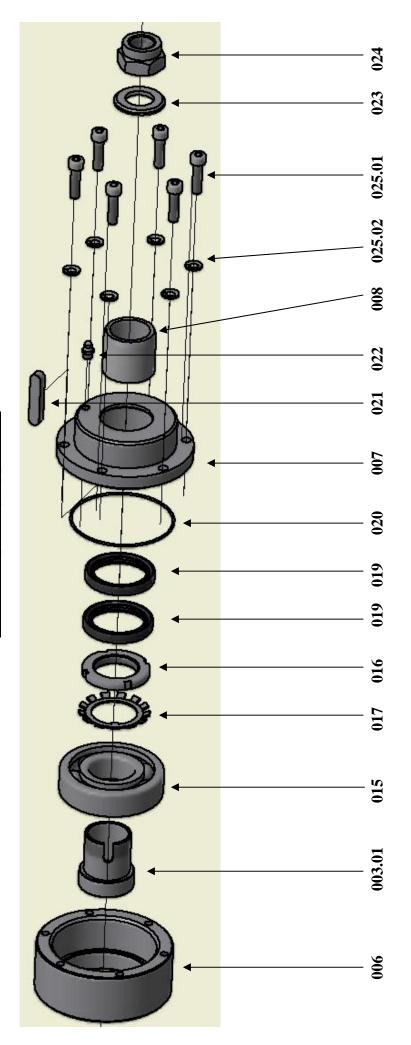


CAD-ZEICHNUNG - keine manuelle Anderung!



# KARL BUSCHMANN MASCHINENBAU GMBH GÜLLERÜHRWERKE

Untere Lagerung Typ E-102

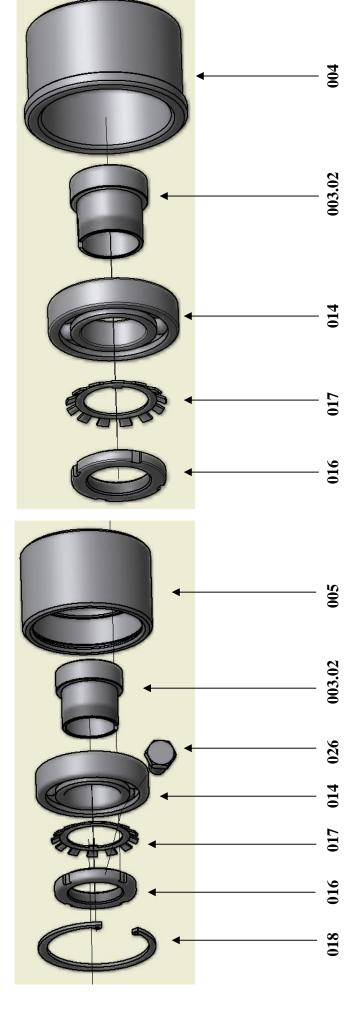




# KARL BUSCHMANN MASCHINENBAU GMBH GÜLLERÜHRWERKE

Obere Lagerung Typ E-102 (Schlepperseitig)

Mittlere Lagerung Typ E-102 (Anzahl längenabhängig)

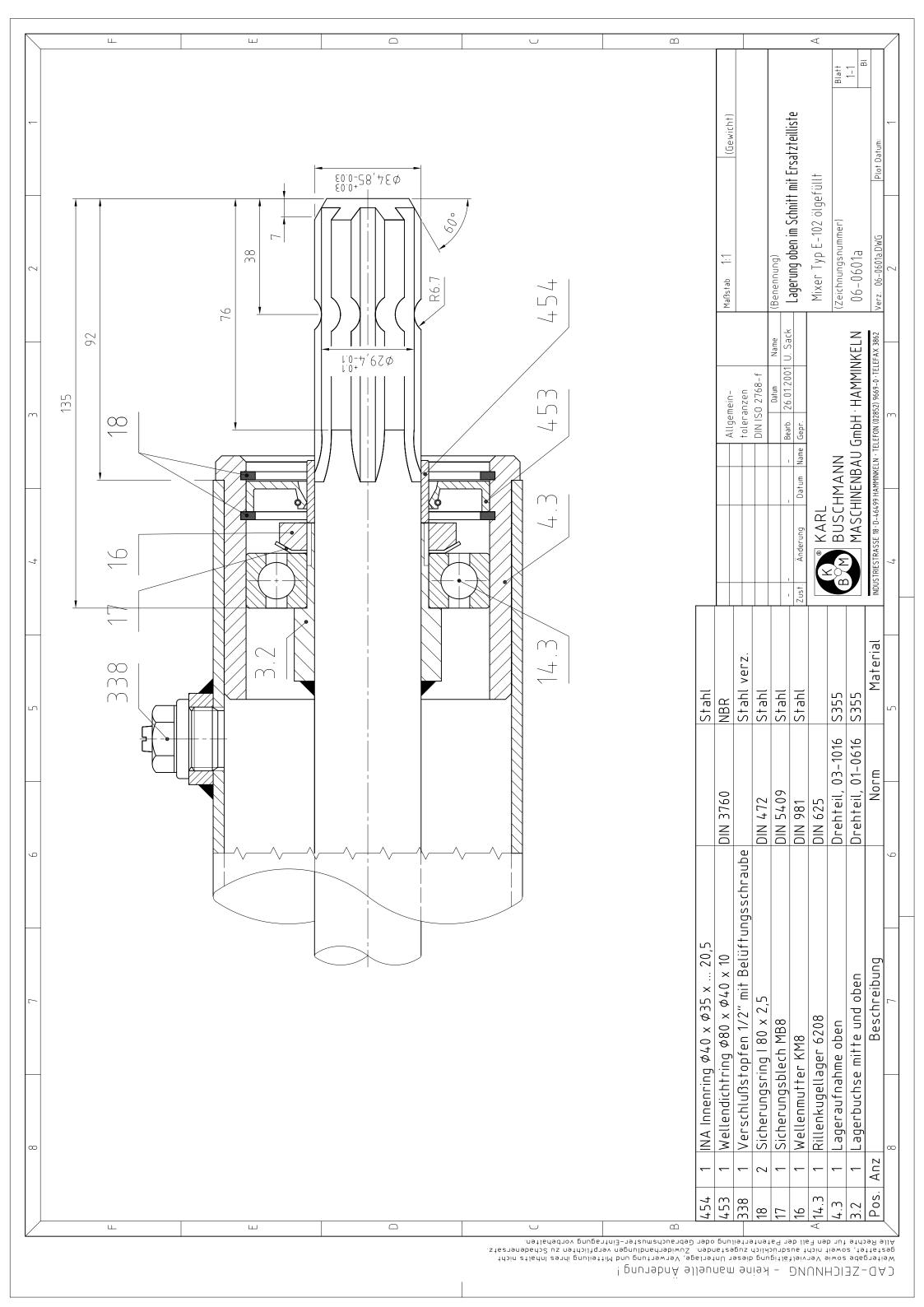


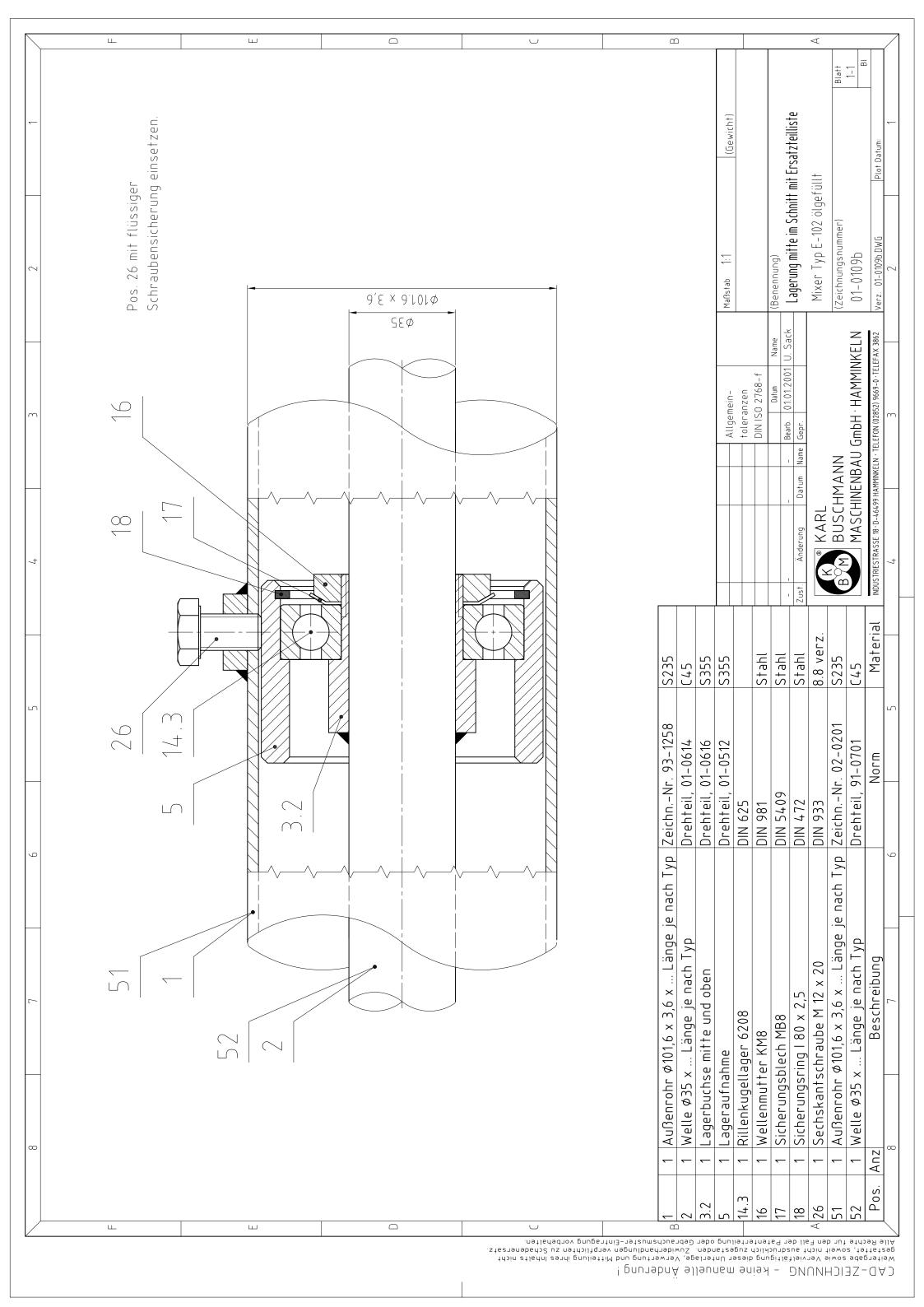
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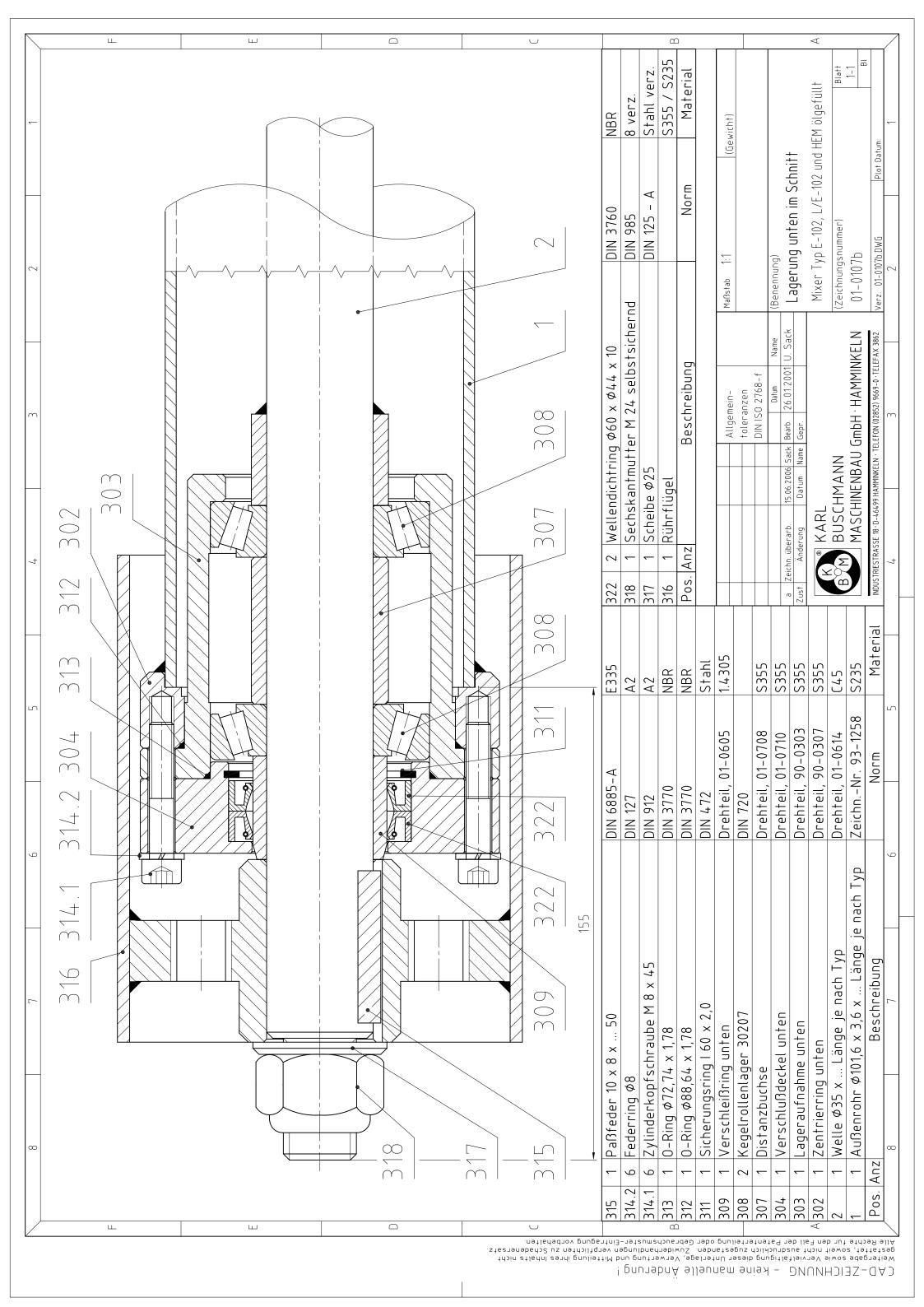
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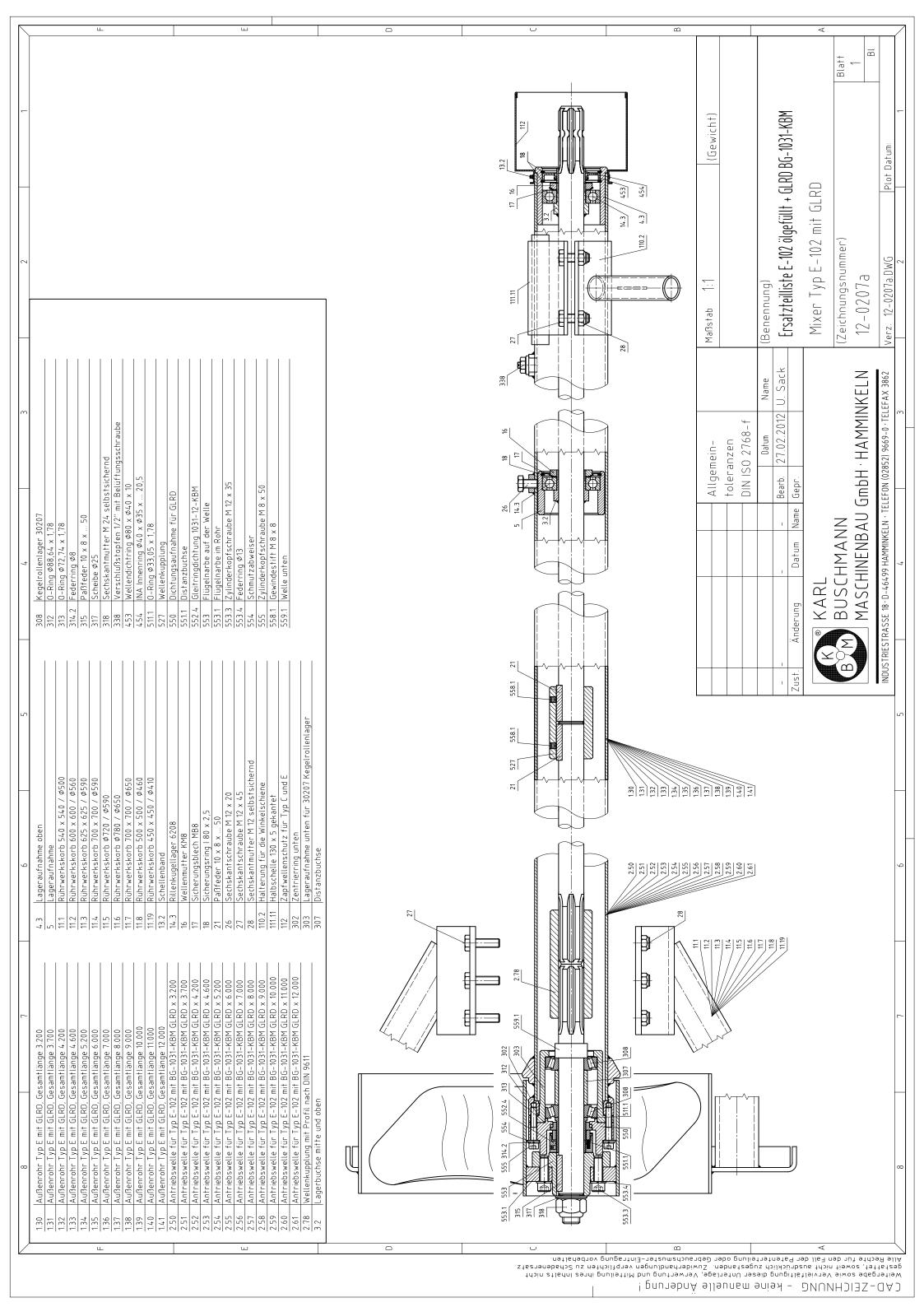


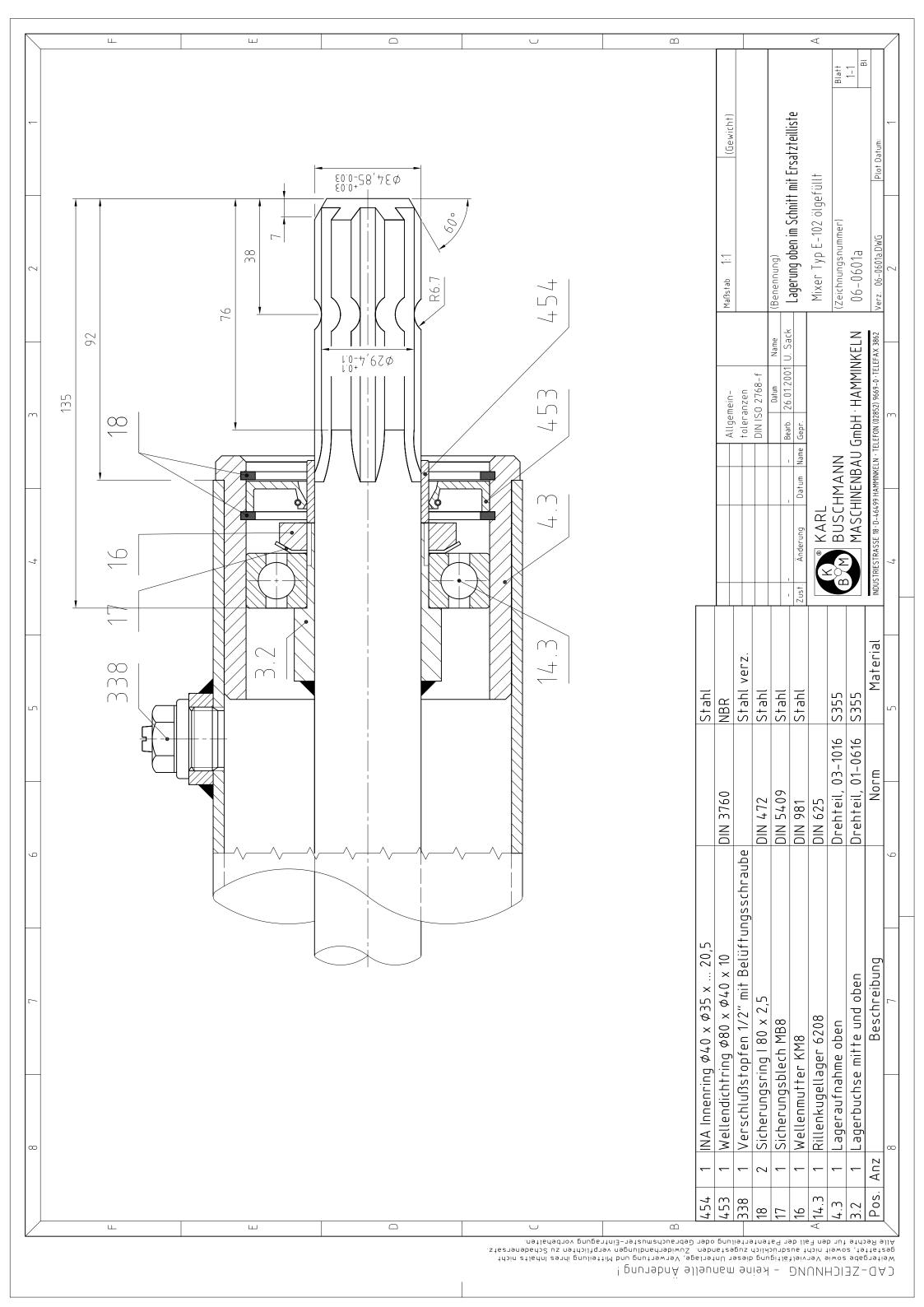


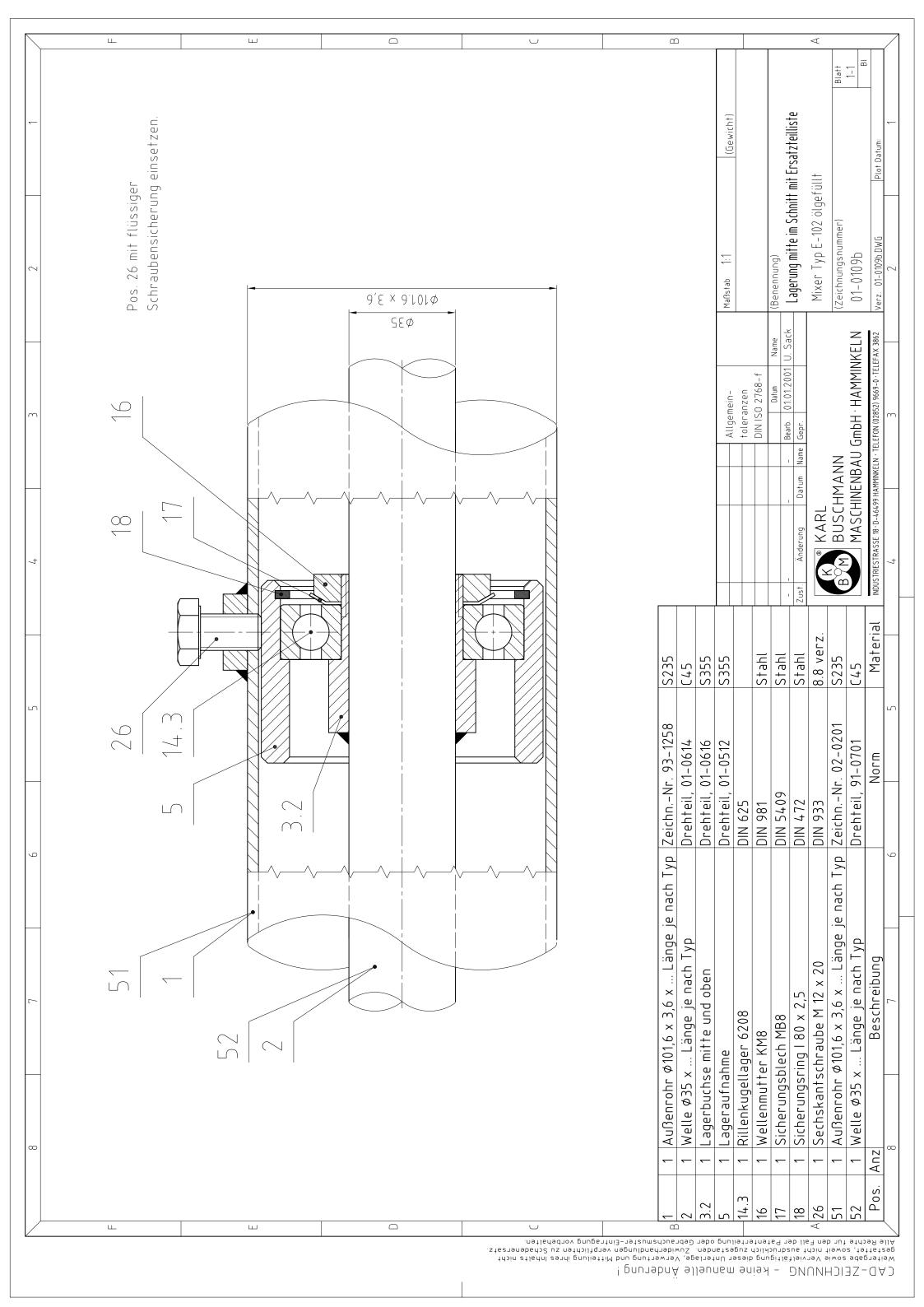
## **Detail drawings**

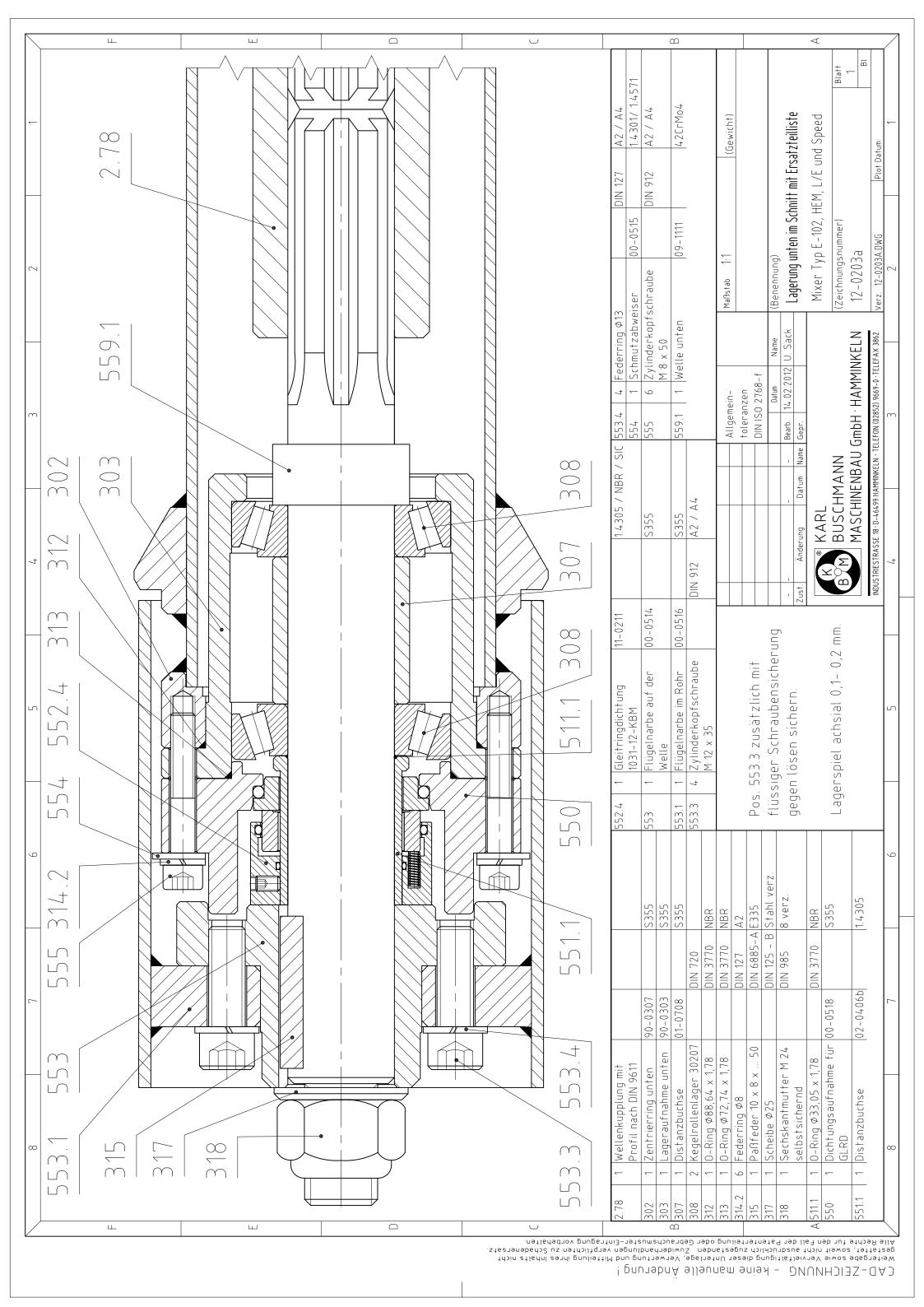
Type *E-102* 

## Design Oil filling with mechanical seal









<b>6.17 Notes</b>		

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