LUDGER GLAAP & FRITZ BRINKMANN
Machines GmbH & Co.KG

Original - MIXMAN Operation Manual

MIXMAN

Model D4 / D4B / D4BS / D5 / D5B / D5BS

STAGE EU · HATZ DIESEL · Atlas Copco · Made in Germany · AL-KO

LUDGERGLAAP &
FRITZBRINKMANN
Machines GmbH & Co.KG

„Quality has a new name, GB Machines“ Mr. Fritz Brinkmann und Ludger Glaap

Fritz Brinkmann
Managing Director

Ludger Glaap
Managing Director

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Machines GmbH & Co.KG

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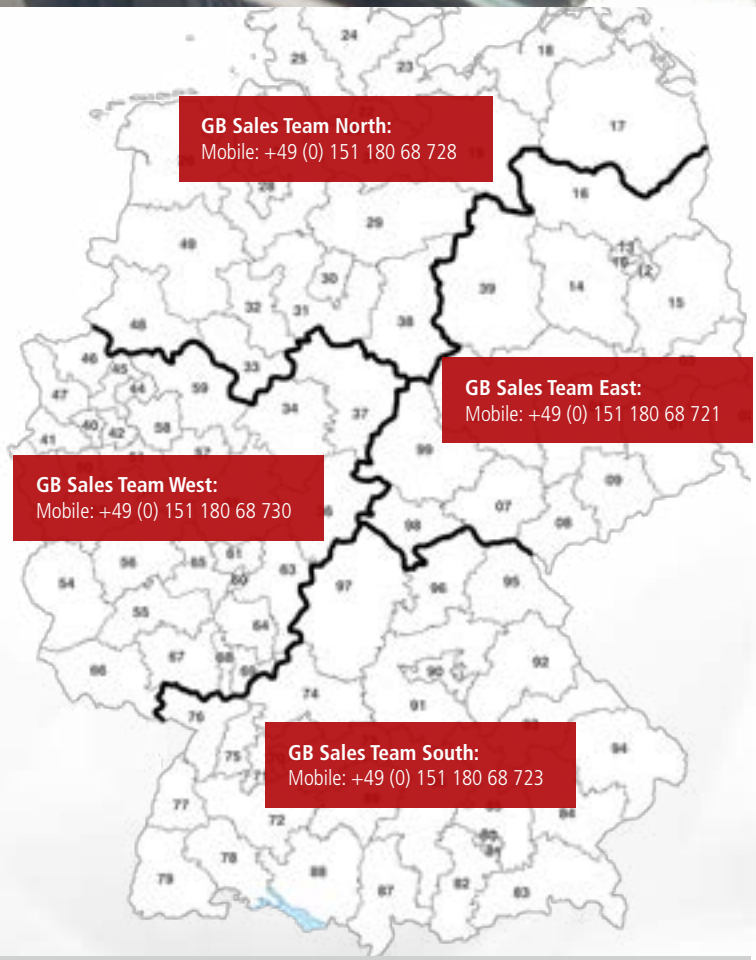
GCB

OUR SALES DEPARTMENT. **FOR THE CUSTOMER - WITH THE CUSTOMER**

GB MACHINES. **PHILOSOPHY**

Customer loyalty, reliability and fairness are the focus of our daily activities at Ludger Glaap & Fritz Brinkmann Machines GmbH & Co. KG. Therefore, we rely on a strong and competent sales team, which always acts according to these principles and supports our customers and partners, answering all questions about our screed machines and automated systems.

Our sales team is characterized by excellent service paired with a special closeness to the customer. Our employees always have an open ear for the concerns of our partners and customers.
Mutual exchange about our machines is just as important to us, in order to align them to the requirements and needs of our customers.



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MIXMAN Compressed air feeder introduction

1.1 Foreword

In these operating instructions, you will learn how to operate the machine properly and how to implement its intended use specifications.

These operating instructions contain extremely important information to ensure correct operation. With regard to dangers, the operating instructions serve as preventive reading.
To avoid long downtimes and to increase reliability and service life, always follow the operating instructions.
The operating instructions must always be carried with the machine.
In the event of changes to national regulations in the area of accident prevention and environmental protection, the operating instructions must be amended immediately.

The operator of the machine must allow everyone who works with or on the machine unrestricted access to these operating instructions.
The operating instructions must be read by everybody who works on and around the machine.

In addition to the operating instructions, the country-specific safety regulations must be met.

If you have any questions or suggestions, please tell us the following:

- Machine type
- Chassis number
- Year of manufacture
- Type of use

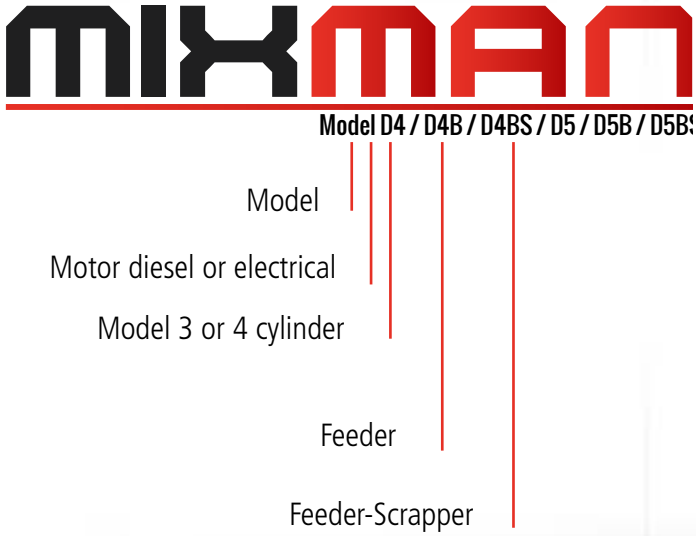
Please contact Ludger Glaap & Fritz Brinkmann Machines GmbH & Co.KG.

In Schloß Holte on +49 (0) 5207 924730

1.2 Technical data and explanation

This chapter focuses on a general explanation of the MIXMAN components. Ensure that also optional components are mentioned.

1.2.1 General description of the diagrams



1.2.2 Technical specifications and overview MIXMAN D4/D5

Execution	Standard	Feeder	Feeder-Scraper
Drive	3-cylinder Hatz diesel engine - D5 4-cylinder Hatz	3-cylinder Hatz diesel engine- D5 4-cylinder Hatz	3-cylinder Hatz diesel engine- D5 4-cylinder Hatz
Compressor	ATLAS COPCO	ATLAS COPCO	ATLAS COPCO
Pressure mixing tank	200 litres net capacity	200 litres net capacity	200 litres net capacity
Filling level	890 mm	425 mm	425 mm
Tank capacity	59 litres	59 litres	59 litres
Road approval	80 km/h - 100 km/h, technically possible up to 140 km/h[2]	80 km/h - 100 km/h, technically possible up to 140 km/h[2]	80 km/h - 100 km/h, technically possible up to 140 km/h[2]
Weight	1700 / 1740 kg[1]	1810 / 1850 kg[1]	1890 / 1930 kg[1]
Dimensions (LxWxH) in mm	4850 x 1580 x 1550	5000 x 1580 x 2450	5000 x 1580 x 2450

[1] Depending on model, without operating media

MIXMAN Compressed air feeder introduction

1.2.3 Performance data of the components

Here the most striking individual components of the MIXMAN series are described

1.2.3.1 Compressor / Motor

	> MIXMAN D4	> MIXMAN D4B	> MIXMAN D4BS
Execution	Standard	Feeder	Feeder / Scraper
Drive	3-cylinder Hatz 3H50TICD, direct injection		
Compressor	ATLAS COPCO approx. 4.3 m^3 to 4.9 m^3 at approx. 7 bar supply pressure		

	> MIXMAN D5	> MIXMAN D5B	> MIXMAN D5BS
Execution	Standard	Feeder	Feeder / Scraper
Drive	4-cylinder Hatz 4H50TICD, direct injection		
Compressor	ATLAS COPCO approx. 5.2 m^3 at approx. 7 bar supply pressure		

1.2.3.2 Operating supplies

Shown is an overview of the operating materials of the MIXMAN.

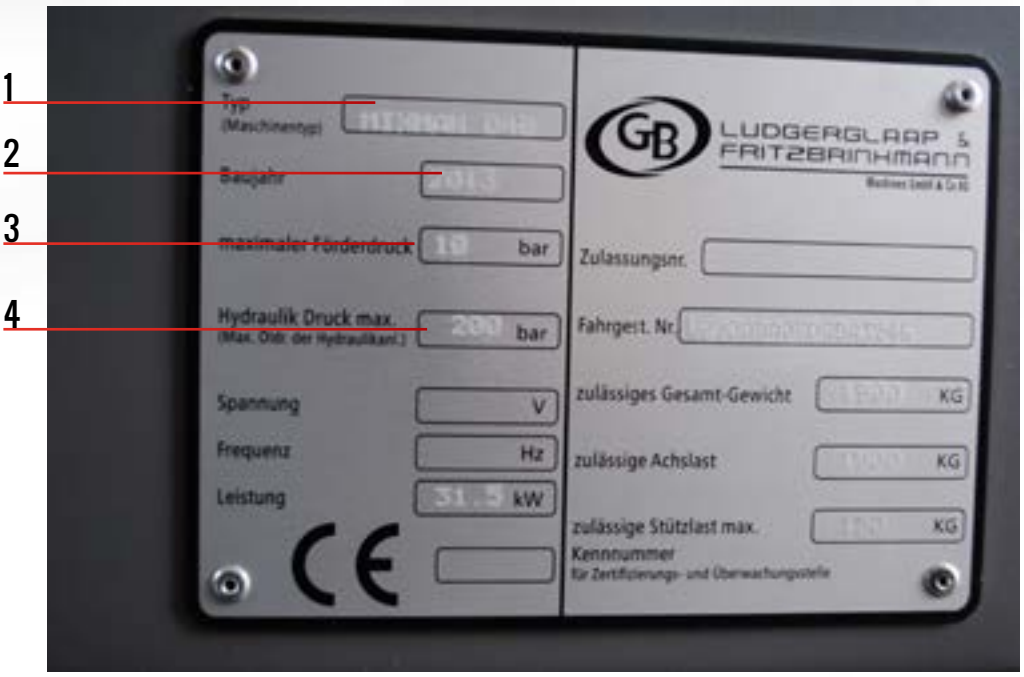
	Standard	Feeder	Feeder-Scraper
Operating material			
Engine oil	ACEA E6 (recommended), ACEA E9, ACEA C3/C4 approx. 5 l		
Gear oil	Texaco Meropa 680/ 3l		
Compressor oil	BP Energol HLP - HM 46 /6.5 l		
Fuel	Brand diesel fuel / 59 l		
Hydraulic oil	HLP / 12 l		
Coolant	H50 Coolant /5 l		

1.2.3.4 Serial equipment

The MIXMAN is equipped as standard with:

- Automatic central lubrication system
- Emergency off switch
- Safety cover
- Safety grating shut-off

1.2.3.3 Nameplate



- **(1) Name of the machine type**
- **(2) Model year**
- **(3) Max. Feed pressure**
- **(4) Max. Hydraulic pressure**

1.2.3.5 Scope of delivery upon machine issue*

- Operating manual
- Light base
- Trailer connection or DIN towing eye
- Tool package
- 2 rechargeable batteries, charger, remote control (optional only for D4BS, D5BS)

* The scope of delivery can vary for special modifications

1.2.4 Optional modifications or upgrades

Find out more about product upgrades or modification skits.
Ask your GB Machines representative or an authorised GB Machines dealer.

More information at: www.gb-machines.de

MIXMAN Compressed air feeder introduction

1.2.5 Functional description - funding principle

Screed conveyors use the principle of plug conveyance, which results in discontinuous conveyance. After the mixing vessel has been filled, the mix is mixed with the rotating mixing blades.
After the set mixing time has elapsed, the air generated by the compressor transports the mix to its destination.
The upper air presses the mix from above, while the lower air flows into the delivery hose. As a result of this combination, the material to be mixed is carried into the delivery hose, as shown in Figure 1, and is transported using the appropriate pressure.
At the end of the delivery hose is the discharge stand, which brings the mix safely to the ground.

Plug-flow-conveying

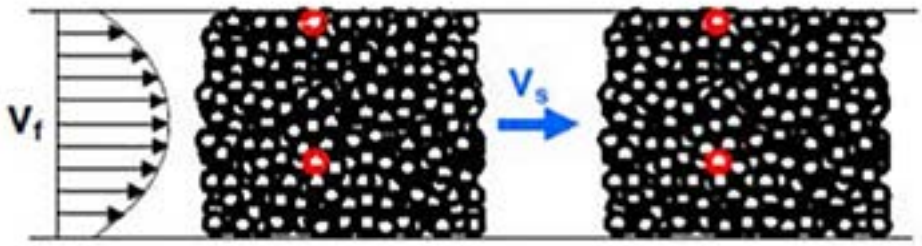


Fig. 1

1.2.6 Function description - mixing vessel

The mixing vessel is a pressure tank that drives the mixing blades with the help of a mixing shaft. The power of the mixing shaft is transmitted to the mixing blades by the drive (engine - gearbox), which mix the added components together. After a sufficient mixing time, the material to be mixed is pressed into the delivery hose by the mixing blades and the open top air.

Fig. 2

1.2.7 Functional description - compressor unit - motor

After the engine has started, the compressor builds up the system pressure and runs at the preset speed. Due to the maximum pressure generated, approx. 8-9 bar in operation, the system is switched off and regulated down. At a lower pressure, the compressor switches on automatically so that you can pump without any problems.

If the pressure drops below about 2 bar, the compressor switches off automatically. When the engine is switched off, the compressor is automatically vented. The release from pressure is thus established.

Fig. 3

1.2.8 Function description - central lubrication

The fully automated lubrication system ensures the constant and regular lubrication of the front and rear seals of the mixing shaft.
The lubrication system is started automatically via the feed button. One filling of the system is sufficient for approx. 450-500 operating hours. Please note the min-max markings on the container.

Fig. 4

MIXMAN Compressed air feeder introduction

1.2.9 Function description - protective grille

The filling dome of the mixing vessel is secured with a protective grille. The grille allows material to be poured in without any problems, while protecting the operator. If the protective grille is folded up, the machine stops. The motor switches off automatically. If the machine is switched off and the grille is up, it cannot be started.
This safety device serves as protection for the user.

Fig. 1

1.2.10 Function description - feeder

The feeder is a hydraulic loading device for the mixing vessel. The operator can very easily load the feeder from behind. The low filling height makes the work easier. The feeder can be prepared for another filling while it is being conveyed.

Fig. 2

1.2.11 Function description - scraper

The scraper shovel is also a facilitation for the operator. The scraper is pulled towards the machine by means of a cable winch. This process enables the user to easily fill sand into the feeder bucket from a shallow pile.
The scraper is controlled by a radio remote control. This is located on the scraper shovel, while the receiver is attached under the hood. The transmitter is splash-proof and must be dismantled during transport.

Fig. 3

1.2.12 Function description - control

The new digital control for the MIXMAN always offers the user an overview of the most important functions of the machine. The color display is robust and user-friendly. The most important functions, such as mixing and conveying, are controlled via tried and tested waterproof buttons. The arrow keys below allow the user to navigate through the menu, where significant data such as service intervals and hours of use can be read out. You can find out more in chapter 5.6.

Fig. 4

MIXMAN Compressed air feeder introduction

1.3 Legends /Symbols

Danger
Danger, there is a Danger here. Notice to avoid accidents.
Font is in italic an always bordered.

Suspended load
Warning of loads which can fall down. Font is in in Italics.
This block is always bordered.

Crushing Danger
Here persons can be injured from crushing Dangers.
Font is in in Italics. This block is always bordered.

Power current
Danger from electrical shock.
Font is in in Italics. This block is always bordered.

Notice
Notice or tip for usage.
Font is in in Italics. This block is always bordered.

Environment
Here you must take environmental protection into account.
Font is in in Italics. This block is always bordered.

This chapter focuses on the major safety regulations.
It is essential that every employee be familiar with this chapter and its contents.
Notice Cf. 2-1

Safety regulations which are based on special work can be found under the Operation item. You can find individual country-specific safety regulations or environmental protection guidelines in the country-specific operating manual
Applicable safety standards:
Machine Directive 98/37/EC
Pr EN 12001, Feed, injection and distribution machines for concrete and mortar

2.1 Special safety symbols

Safety helmet
Wear head protection to protect from following loads

Safety gloves
Protect your hands from caustic materials

Safety gloves
Protect your hands from caustic materials

Safety shoes
Protects you from crushing from falling loads

Safety goggles
Protects your eyes

Hearing protection
Protects you from noise in the direct machine proximity

Crash safety
Protects you from falls from great heights

General safety regulations

2.2 Basics in dealing with safety

The machine may only be used in a technically perfect condition. All the provisions of the operating instructions must be observed and followed.

If the machine is impaired, these impairments must be eliminated beforehand by qualified personnel.

The machine must be checked for safety when commissioning. If deficiencies or impairments are found, these must be reported to the supervising person immediately.

In the event of serious safety deficiencies, operations must be stopped immediately.
Always ensure that the safety-relevant parts are properly arranged.

The safety devices must not be dismantled or impaired in any other way.

All safety elements are to be reassembled according to the regulations after repairs.

Use only fully intact delivery hoses that are intended for this purpose. The same must be observed for couplings etc. Conveying hoses are wear parts, which have a service life depending on use and can therefore be variable.

Conveyor hoses must be checked for weak points before use.

The machine must be operated in accordance with the industrial safety regulations.

Danger
Always observe the rules of use for the machine as there is a risk of injury.

Note
Observe the safety regulations. It is for your benefit and that of your employees.

2.3 Proper usage

The MIXMAN machine is built state-of-the-art according to today's safety regulations.

Here the operating manual must always be complied with and followed. When using the machine, Dangers for life and limb can still result.

Service and inspection intervals are to be complied and only performed by authorised qualified personnel. Please contact your relevant consultant or your local GB Machines dealer.

The machine is to be checked annually (BetrSichV §10). This check is to arranged by the operator. This inspection and service work must be performed by the owner.

Any changes to the machine are only to be performed in coordination with the manufacturer. All safety and protective devices must be mounted and activated during continuous operation. The machine may only be operated if all protective and safety devices work properly.

The machine is a compressed air feeder for screed.
This creates a volumetric flow through compressed atmospheric air. Other purposes or changes to the default settings are considered improper usage.

Danger
Any modifications to the machine can lead to dangerous situations.

Note
Always observe the correct use of the machine. Otherwise it can affect the warranty.

2.4 Improper usage

Alternative purposes or purposes which go beyond this scope are not considered proper.

Damages which have resulted from improper usage are not included in the warranty.

Here the risk lies with the owner/user.

The following is considered an example of improper usage:

- Any tool drive with compressed air
- The compressed air may not be used for commercial purposes such as the cleaning of driveways or filling oxygen bottles etc

Note
The owner is liable for improper usage.

2.4.1 Modifying the machine.

The operator/user is not allowed to perform modifications or retrofits which constitute a safety or security risk.

Modifications can only be performed by qualified personnel.

Note
Ensure that only trained personnel may perform repairs or modifications.

2.4.2 Liability and exclusion from liability

The generally applicable safety and accident prevention regulations of the following institutions are to be followed:

- PA (Professional Association)
- The applicable laws of the respective country of application
- Company obligation

Accidents or incidents which can be attributed to a failure to follow the instructions of the operating manual or applicable safety and accident prevention regulations will be made the responsibility of the operating/supervisory staff in accordance with the law.

The company Ludger Glaap & Fritz Brinkmann is not liable for damages which have occurred due to improper usage

Negligent or grossly negligent actions also result in a loss of the warranty.

Exceeding the service and inspection periods also results in an invalidation of the warranty.

Danger
Modifications or non-compliance with maintenance intervals lead to an increased risk of accidents.

General safety regulations

2.5 Safety in dealing with compressed air tanks

Compressed air tanks are subject to chronological test cycles. The owner is obligated to carry out these recurring tests on time and accordingly.

The commissioning of compressed air tanks is reserved for specialised organisations

In Germany, they are performed by TÜV, Dekra etc.

A separate operating manual is included with the MIXMAN. Here you will find all relevant testing timeframes.

These timeframes are geared toward the Pressure Device Directive 97/23/EC and according to the Danger analysis according to AD2000.

These timeframes are determined by the operator according to the Operational Safety Ordinance (Betriebssicherheitsverordnung)

The following tests have been successfully performed by the company Ludger Glaap und Fritz Brinkmann Machines GmbH & Co.KG.

- Pressure and acceptance check

will receive all documents upon delivery of the machine.

Danger
There is a risk of injury when handling pressure vessels.

Note
The owner is responsible for carrying all documents.

2.6 Work area and work range

The work area is defined according to the lengths of the feed pipe. It includes all feeder hoses and the area around the discharge stand.

The area around the discharge stand is to be assigned to the screed layer. The space for the operator or the person doing the execution is next to the machine at the control box.

The operator is responsible in the area around the machine. He must ensure that no one is put in danger by the machine and unauthorised persons are prohibited access.

2.7 Working on the hydraulic/pneumatics system

All work in this area may only be performed by qualified personnel. Sufficient safety closing should be worn.

There is a risk of being scalded by leaking, hot hydraulic oil.
Eye protection, facial protection and gloves must be worn

Safety gloves
Protect your hands from caustic materials

Breathing face protection
Protects you from facial injuries and against the inhalation of building material particles

Safety goggles
Protects your eyes

Note
Only trained technicians may work on electric or hydraulic machines.

General safety regulations

2.7.1 Hydraulic lines

All hydraulic lines must be reviewed before all commissioning.
If no deformations can be detected, a maximum service life of six years still applies to all hydraulic lines.

Here the decisive factor is the manufacture date of the hoses.

2.8 Environmental protection / noise protection

Make sure that no operating fluids or other lubricants escape.
These substances can get directly into the groundwater and cause considerable damage.

If this happens and you notice a loss of fuel or oil, notify the responsible authorities immediately.

The machine causes a certain amount of noise in the immediate vicinity. This can lead to permanent hearing damage.

When working with the machine, hearing protection must always be worn.

Protective gloves
Protects your hands against corrosive substances

Safety shoes
Protects you from being crushed by falling loads

Environment
Do not allow dangerous substances to escape.

Ear protection
Protects you especially in the vicinity of the machine.

2.9 Operation of pressure vessels

The operator of pressure vessels is obliged to carry out and document one-off and recurring tests in good time. These tests must be carried out and documented by an expert (TÜV, etc.).

- Internal audit (every 5 years)
- Pressure test (every 10 years)

The tests are to be carried out according to the pressure vessel regulation §10. These deadlines apply in Germany. Please note the respective national regulations.

2.10 Spare parts

The spare parts must comply with the manufacturer's technical guidelines. This quality standard is always guaranteed only with original spare parts.

Danger
Use only tested spare parts as there is a risk of injury.

Transport and assembly of the machine

This chapter focuses on transport of the machine. Furthermore, installation measures are described which are essential for safe operation.

For proper transport, always follow the operating manual and the respective fundamentals of your company.

3.1 Before driving

Checklist before moving in traffic:

- Tyre pressure check
- Hand brake released
- Hood closed and locked
- The cover of the mixing vat must be open, funnel on the filling mandrel (standard version)
- Check the brake system and the run-out device
- The breakaway cable is attached to the trailer hitch of the traction vehicle.
- Light moulding is properly attached and function check
- The trailer device is on green and is ready to function.
- The support wheel is folded up and secured
- Brake wedges/wheel chocks were removed
- The work headlight was properly stowed
- Air removal is closed
- The mixing vat is pressure-free
- Feeder (optional) was started and secured.
- The scraper shovel (optional) was suspended and secured in the holder.

Note
Always work on this. This is the only way safe transport is possible.

3.2 General travel operations

A general operating permit is enclosed with the machine. You will receive this upon delivery.
The registration papers must always be carried with you during transport.

The machine is subject to road traffic regulations when it is in traffic. This also gives the maximum speed.

The machine must not be used to transport loads. Always observe the permissible maximum weight and the regulations for towing a trailer.

Check the maximum drawbar load of the towing vehicle. The machine must not be moved if the drawbar load is negative. (min. 25kg)

In Germany, the machine is required to have an official registration number. Furthermore, this includes the obligation of a 24-month TÜV inspection.

You will receive the registration number upon presentation of the official papers at your responsible registration office.

Please note that there are different regulations for general travel operation in other countries.

Note
Always observe the respective national regulations.

Transport and assembly of the machine

3.3 Loading

Public law responsibility (safe loading) A large number of laws, ordinances, directives and administrative provisions apply to the transport of goods on public roads. The provisions of the Road Traffic Regulations are important for securing loads, which the shipper/sender is legally obliged to do. The § 22 German Road Traffic Act regulates, among other things, the responsibilities of load securing for the public sector and not only applies to the driver as a road user, but also to everyone who is responsible for the load. This means that the manufacturers of (loaded) goods, as well as the sender/ dispatcher, are responsible: § 22 Para. 1 German Highway Code: Load
The load, including equipment for securing the load and loading equipment, must be stowed and secured in such a way that, even in the event of emergency braking or sudden evasive movements, they cannot slip, fall over, roll back and forth, fall down or generate avoidable noise. The recognized rules of technology must be observed.

According to the jurisprudence, the content of the VDI guideline series 2700 load securing on road vehicles should currently apply as recognized rules of technology. In the accident prevention regulation for vehicles (BGV D29), similar requirements can be found especially in § 37 (loading and unloading).

Anyone who does not want to face public responsibility in road traffic and does not fulfill their duty to secure loads can be punished with fines or entries in the central traffic register and the central trade register. In the event of negligence or the willful disregard of rules, criminal proceedings can also be initiated. This applies to the driver, vehicle owner and carrier, as well as to the shipper or sender.

Danger
There is a risk of injury when handling pressure vessels.

Note
The operator is responsible for taking all papers with them.

Suspended load
Be careful when loading it with a crane. There is a risk of falling.

3.4 Installation and correct coupling

This chapter focuses on the structure of the machine which should make you familiar with the particular aspects.
You will get an overview on the structure of the chassis and the proper connection of the machine to the traction vehicle.

3.4.1 Chassis base structure

- **(1)** **Trailer coupling** – here you can choose between 2 models. Either a towing eye according to DIN 74054 or a ball coupling
- **(2)** **Overrun device** – By braking the traction vehicle, the tension rod is pushed into the overrrun device and the ma chine brakes.
- **(3)** **Horizontal adjustment** – due to the horizontal adjustment you can adjust the height of the pole to your traction vehicle.
- **(4)** **Hand brake** – The hand brake prevents the machine from rolling away when set.
- **(5)** **Pole** – the pole must always be parallel to the road when driving
- **(6)** **Support wheel** – The support wheel is turned upward during a run and must be secured.
- **(7)** **Frame** – The frame ensures a comfortable and stable road position. This is a special model

Transport and assembly of the machine

3.4.1.1 Ball head coupling and support load

The ball head version of the machine has a red-green snap-in indicator.
Snap-in indicator
The snap-in indicator has a red-green display. When the clutch is open, the display is red. It is not permitted to drive.

If the coupling has been correctly coupled, the display switches to green and the machine is ready for transport.

Support load

You can find the maximum support load on the embossing on the ball head coupling.

3.4.1.2 Tire care

Damage to the tires can occur after long periods of non-use. Check the condition of the tires at regular intervals and ensure that the tread is sufficiently deep.

- Check the tires for deformation
- Tighten the wheel nuts
- Check the profile

Danger
Never drive if the machine has not been correctly coupled.

3.4.2 Connecting the machine properly

In preparation for transport, the machine must be properly hitched to the traction vehicle. The horizontal adjustment must be carried out and the trailer hitch must be locked.

- **(1) Lever**
- **(2) Lock in display**

Machines with DIN towing eyes must be coupled according to the manufacturer's instructions.

Machines with a ball & socket coupling must be coupled as follows.

- Suspend the breakaway cable in/to the device provided (cf. Chapter 3.4.3 Breakaway Cable)
- The lever (Fig.1) must be in the suspended position. The lock-in position must be displayed in red.
- Place the traction vehicle with the ball coupling directly under the trailer hitch, lower it over the support wheel of the machine. The trailer hitch locks in completely through the support load. Then turn the support wheel upward. The lock-in display must change from red to green. Then turn the support wheel high up and secure it.
- Press the lever down and check whether it is completely down.
- Check the connect between the light mount and the traction vehicle.

Danger
Always make sure that the machine is correctly coupled as there is a risk of accident!

Notice
Never drive if the lock-in display is still on red.

Transport and assembly of the machine

3.4.3 Disconnecting the machine properly

Try to get as close to the machine's application site as possible. There is an increased risk of an accident with manual motion due to the machine's own weight.

Machines with DIN towing eyes have to be disconnected according to manufacturer specifications.

Machines with a ball coupling are to be disconnected as follows.

- Disconnect the connection between the light mount and the traction vehicle.
- Turn down the support wheel so that it has contact with the floor and the stress is taken off the trailer hitch of the traction vehicle.
- Pull the lever upward until the display changes from green to red.
- Hang the machine down from the traction vehicle.
- Remove the looks of the breakaway cable from the trailer hitch.

3.4.4 Particulate filter - diesel engine

Carbon-containing fine dust has long been considered especially harmful, as this is not soot particles made of pure carbon, but rather an agglomerations (caking) of soot particles with other harmful substances such as PAHs (polycyclic aromatic hydrocarbons) and much more. Modern diesel engine technology with common rail injection also ensures finer particles that are easier to inhale. These extremely small fine particles are particularly harmful to health.

Environmental groups have therefore been calling for diesel particulate filters for decades. However, since this technology is very complex and expensive, it was not until the turn of the millennium that a reliably working system could be developed to the point of series production.
The particle filter is located in a protected place under the machine.

Danger
Always ensure that the machine is correctly coupled and uncoupled. There is a risk of accident!

3.4.5 Breakaway cable

The breakaway cable (Fig. 1) is an emergency braking device. This comes into play in the event of unwanted uncoupling. When the breakaway cable is pulled, the handbrake is applied and leads to emergency braking.

Attaching the breakaway cable to a DIN drawbar eye:

- Pull the breakaway cable (Fig. 1) through the eyelet provided for this purpose. You close the resulting loop with the carabiner of the breakaway cable (Fig. 1), creating a closed loop.

Attaching the breakaway cable to a ball head coupling:

- Place the breakaway cable shaped into a loop around the towing vehicle's ball head coupling.

- **(1) Breakaway cable**

Note
Never drive when the snap-in indicator is still red or the breakaway cable has not been attached correctly.

Transport and assembly of the machine

3.4.6 Support wheel - until 2018

The support wheel must be raised during transport.
Before commissioning, lower the support wheel and bring it into the correct working position by turning.

Extending the support wheel

- Turn the crank on the support wheel counterclockwise until it clicks into place and continue until there is contact with the ground. If the support wheel reaches the floor before it engages, please lift the towing device so that it can be locked.

Retracting the support wheel

- Turn the crank on the support wheel clockwise until the crank becomes noticeably stiff. Now hold the towing device (secure against sagging) and turn the crank as far as it will go.

Danger
Only drive with the support wheel raised, otherwise there is a risk of accident.

3.4.6.1 Support wheel - from 2018

The support wheel must be raised during transport.
Before commissioning, lower the support wheel and bring it into the correct working position by turning.

Extending the support wheel

- Turn the crank on the support wheel counterclockwise until it clicks into place and continue until there is contact with the ground. If the support wheel reaches the floor before it engages, please lift the towing device so that it can be locked.

Retracting the support wheel

- Turn the crank on the support wheel clockwise until the crank becomes noticeably stiff. Now hold the towing device (secure against sagging) and turn the crank as far as it will go.

Danger
Only drive with the support wheel raised, otherwise there is a risk of accident.

Transport and assembly of the machine

3.4.7 Horizontal adjustment - until 2018

The drawbar of the machine must be parallel to the ground during transport. In order to ensure that the overrun brake works properly, the height of the machine must be set to match the trailer coupling.

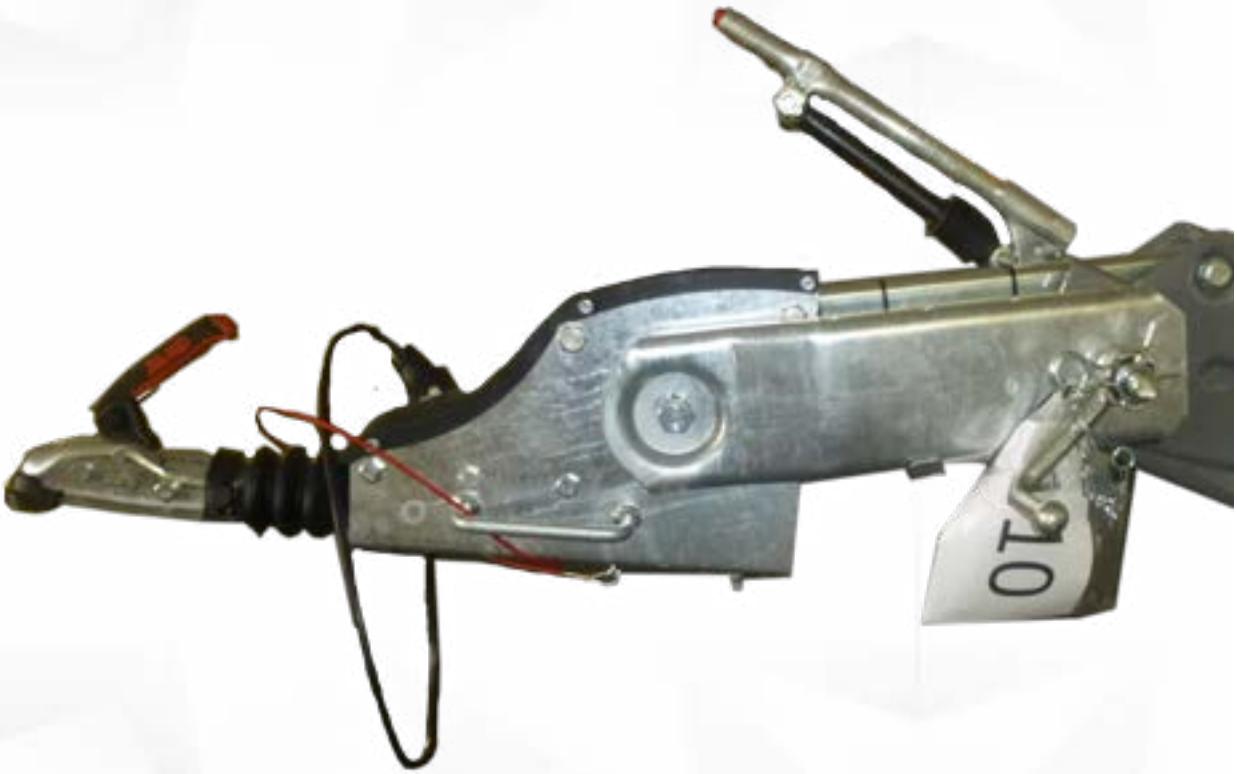
How to set the horizontal adjustment:

- Adjust the horizontal adjustment so that the drawbar of the machine is parallel to the ground.
- Pull the spring split pin out of the locking toggle and turn the locking toggle counterclockwise.
- Use the handle to adjust the horizontal adjustment and set it according to the vehicle height.
- Turn the locking knob clockwise again to a fixed position.
- Fix it with the spring split pin to create a lock.

Note
The drawbar must be parallel to the ground during transport.

3.4.7.1 Horizontal adjustment - from 2018

The drawbar of the machine must be parallel to the ground during transport. In order to ensure that the overrun brake works properly, the height of the machine must be set to match the trailer coupling.



How to set the horizontal adjustment:

- Adjust the horizontal adjustment so that the drawbar of the machine is parallel to the ground.
- Pull the spring split pin out of the locking toggle and turn the locking toggle counterclockwise.
- Use the handle to adjust the horizontal adjustment and set it according to the vehicle height.
- Turn the locking knob clockwise again to a fixed position.
- Fix it with the spring split pin to create a lock.

Note
The drawbar must be parallel to the ground during transport.

Transport and assembly of the machine

3.4.8 Handbrake

The handbrake prevents the machine from rolling away. Pull this to the top position to secure the machine. If the machine continues to roll, the handbrake is automatically applied.

Applying the handbrake

- Pull the lever up firmly to create a lock.

Releasing the handbrake

- Loosen the lever until it is parallel to the drawbar. Bring the lever to the zero position.

Note
Never drive with the handbrake on.

3.4.9 Wheel chocks

Wheel chocks secure the machine against rolling away on the construction site or on uneven terrain.

You will find the wheel chock on the side of the machine in a holder provided for this purpose.

Make sure that the wheel chock is in the holder while driving.
Lock and secure the wheel chock.

3.4.10 Underrun guard

This reform is mandatory for all manufacturers from 01/11/2014.

Our experienced engineers have come up with an innovative and practical idea. The underrun guard developed also serves as a support system and stabilizes the machine.
With the help of the bolts, lock the position of the supports. Before starting work, make sure that both supports have secure contact with the ground.

When you have finished working, fold both supports back into a horizontal position; this is the only way the machine is ready for use.

Installation and commissioning

The goal of this chapter is to provide you with the fundamentals on the installation and commissioning of the machine. You will learn how to find the right location and which criteria and to be met.

4.1 Erecting the machine

The installation location must be selected in such a way that the machine cannot sink in any way. Ensure that the filling mandrel has a clean edge.

The operator assumes the responsibility for the proper erection of the machine.

4.2 Location of the machine

The location of the machine should meet the following requirements:

- No explosive materials or gases may be suctioned in.
- No feed pipes may lay over each other.
- The feed pipes should be kept minimal in length.
- The machine must be accessible for service work.
- Keep a distance from walls or outdoor walls
- Do not place the machine under floating loads.
- Not in closed rooms

Danger
Engine exhaust gases are produced so only position the machine in well-ventilated places as there is a danger to life.

Danger
There is a risk of an accident with an incorrectly selected location. The owner is responsible for a secure location

Suspended load
Never place the machine under suspended loads.

4.3 Aligning the machine

The optimal alignment of the machine is to bring it into as horizontal a position as possible.
You can do this by using the support wheel to adjust the position as horizontally as possible.

4.4 Delivery hoses

Here we explain important criteria for the selection, design and connection of delivery hoses. The outlet on the mixing vessel must correspond to the nominal widths of the delivery hoses. The special feature of connections with stone traps is that larger grain sizes get caught in it and thus do not enter the mix or clog the conveyor line.

Couplingwiththestonetrap

4.4.1Selectionofthedeliveryhoses

The selection of the delivery hoses must always be performed in connection with the material to be delivered. The most important specification is the grain size of the aggregate.
The coarser the grain, the larger the nominal diameter of the hoses must be.
The nominal diameter of the delivery hoses also depends on the delivery distance (large distance = large nominal diameter)

Please note that delivery hoses and couplings are subject to natural wear.
Before each use, check the hoses for weak points.

We recommend using original GB Machines delivery hoses. You can always order these in the spare parts shop.
Alternatively, please only use approved hose material.

Note
The delivery rate depends on the delivery properties of the material.

Note
We recommend using GB Machines delivery hoses.

Installation and commissioning

4.4.2 Laying out the feed hoses

Feed pipes can only be used with a discharge stand!
To securely operate the machine, it is essential for feed pipes to be properly laid.

Always lay any standpipes which are present in such a way that all resulting forces are absorbed by the reinforcement.
GB Machines hose clamps made of textile or leather are particularly suited to transfer the resulting forces.

Always lay the pipes in such a way that they are not taken into account by your own weight or the feed materials.

Danger
Caution with feed pipes - they can beat out under some circumstances. Danger of death!

Danger
Check whether a discharge stand was disconnected. The machine may only be operated with a connected discharge stand.

4.4.3 Hose couplings

The nominal dimension of the feed pipe changes depending on the material to be fed.

Here it should be ensured that a changing nominal diameter can affect the choice of the hose couplings.

We recommend that you always connect feed pipes of the same nominal diameter.
Otherwise, clogs occur quickly and faults occur more quickly.

Nominal size 50

Coupling MT / VT 70

Coupling MT 70

4.4.4 Tips for laying feed hoses

Feed pipes are to be kept as short as possible.
Only use the feeder hoses which are absolutely in proper order and correspond to the feeder pressure.

Always try to create large radii in curves and you can thereby avoid any clogs
For optimum horizontal feeding, we recommend the use of axle stands.

Place an axle stand every 20m.

Danger
Always lay delivery lines so that the forces can be absorbed by the structure.

Danger
Always only couple delivery hoses with the same nominal width, otherwise you will not have an optimal delivery rate and blockages can occur.

4.4.5 Connection of the discharge stand

It is necessary to connect a discharge stand at the end of the feed pipe. Discharge stands are available for nominal dimensions.

Please ask your GB Machines Partner for the specifications of the respective discharge stands.

All versions and types are available at GB Machines.

- **Discharge stand**

Danger
When conveying the discharge, the stand must be firmly on the ground. Danger to life.

Danger
Never work without a discharge stand! Danger to life.

4.5 Commissioning the machine

This chapter is dedicated to the commissioning of the machine. Here you will learn how the routine check of the machine is done.

4.5.1 Preparation

Check to ensure the machine is standing securely and that the selected location is secure.

Perform a visual inspection. The feed pipes, V-belts and the mixing shaft in particular should be checked. Furthermore, all lubricants must be checked to determine if they are sufficiently lubricated.

Always check the filling of the central lubrication system inside of the machine. There must always be sufficient grease in the container.

Check whether all safety devices are attached and activated.
A discharge stand must be connected.

4.5.2 Refueling the machine

Only refuel the machine with commercially available branded diesel fuel.
You can find the filler neck under the engine hood.

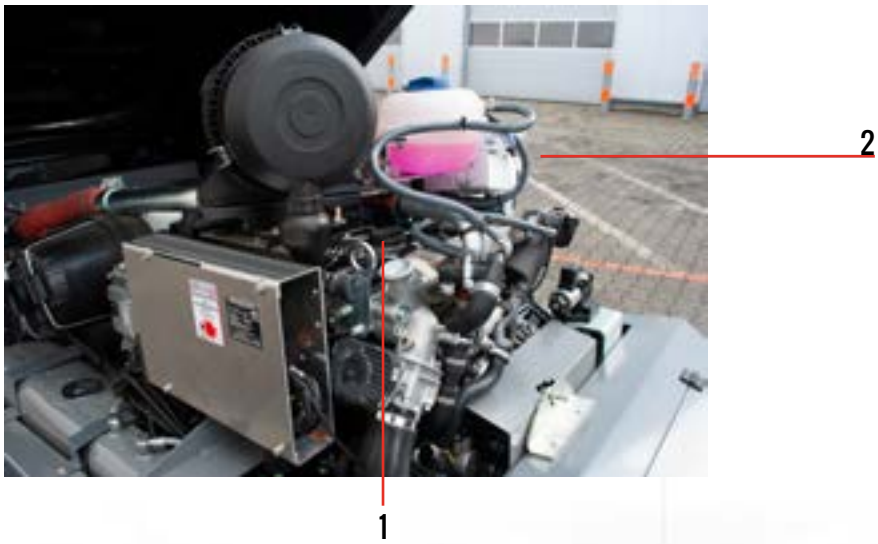
- **(1) Filler neck**

Danger
The operating materials may be harmful.
Never open the filler neck of the compressor while the compressed air tank is still under pressure.

4.5.3 Check the oil level, cooling water and air filter

Check the operating material levels. The engine oil level, cooling water, compressor oil level and, in the case of the MIX-MAN 4/5 B/BS, the hydraulic oil levels must be checked.

Always make sure that no oil level is below the min. mark. This can lead to considerable damage. Also check the cooling water level, it must not be below the min. mark.
Check the air filter for contamination. Depending on the degree of soiling, clean it or replace it.



- **(1) Oil filler neck**
- **(2) Cooling water tank**

Note
Never start the engine without an air filter. Damage can occur from flying dirt.

Danger
Smoking is prohibited while refueling.

Note
Never let the engine run dry. Always refuel in good time.

Environment
Only refuel at the designated places. Do not allow any diesel fuel to escape.

Installation and commissioning

4.5.4 Check of the mixing blades

Before commissioning the machine, you must check the machine blades in the following manner:

- The distance of the mixing blades to the wearing plates may not be greater than 15 mm.
- Check the mixing blades for damage (bent or broken off)

4.5.5 Check of the mixing shaft bearing

Check the mixing shaft bearings for damages or wear.

- If you should detect cracks in the sealing shims or other damages, immediately have them repaired by GB Machines service.

Danger
Never reach into the mixing vat during operation. Danger of death.

4.5.6 Check of the wearing plates

Perform a visual inspection. If the wearing parts should show damage, they must be replaced.
Contact GB Machines service.

Damages can include holes, fringes or bent plates.

4.5.7 Test run

After you have performed all tests, you can now start the machine for a test run and do the final tests.

Check the following functions/applications for proper function:

- Emergency off switch
- Safety grating shut-off
- Protective cover over V-belt
- Protective grating attached to the filling mandrel
- Safety devices correctly attached

Danger
The machine may only be operated with a closed hood.

Danger
If defects should occur during an inspection, they must be remedied immediately.

Danger
All safety devices must be activated and work well.

Installation and commissioning

4.5.8 Testing the emergency off button

If you have started the machine and have activated the emergency shut-off button, the motor must be switched off and the pressure tank ventilated.

The same effect occurs when the safety grating is flipped up.

Danger
The mixing vat is not automatically ventilated by pressing on the emergency shut-off button.

Danger
Only reach into the mixing vat when the machine has been stopped and the battery has been disconnected.

Danger
Never reach into the mixing vat during operation. Danger of death

4.5.9 Stopping the machine

This is how to stop the machine:

- Switch off the motor through the motor from the button
- Switch off the controller by pressing the main switch
- Close the hood and lock it
- Close and secure the safety cap on the controller

4.5.10 Winter operation

Shutting down the machine works as follows:

- Remove the battery in cold weather
- Fill with winter diesel, which remains fluid longer thanks to additives.
- Do not use frozen material
- Use compressor oil whose viscosity is adapted to the temperature.

4.5.11 Corrosion protection

Corrosion protection: Freezing temperatures affect construction machines and sometimes push them to their limits. De-icing salts also cause problems for machines that are used in winter. Above all, salts penetrate into even the smallest cracks and cavities. This promotes corrosion. Effective protection against this is to treat the construction machine, including its body and underbody, with anti-corrosion agents, cavity preservatives and spray wax before using it in winter.

Danger
Never reach into the mixing vessel during operation. Danger to life.

Operation

5.1 Operational safety

The machine was built according to the state of the art, but it can still pose a risk to life and limb.

If the device is used for a purpose for which it is not intended, the following hazards may arise:

- Danger of scalding from escaping oils
- Risk of injury from tripping hazards (hoses etc.)
- Danger of injury through improper use
- Hearing damage due to noise
- Electric shocks
- Inhalation of dust particles
- Risk of burns from hot machine parts
- Risk of crushing and collision
- Eye and skin injuries

Furthermore, the machine is only to be used as intended.

- Only use the machine if it is in perfect technical condition.
- Follow the rules of the employers' liability insurance association and local authorities.
- Only use materials that are suitable for the purpose of the machine.
- Use the necessary protective clothing

Safety gloves
Protect your hands from caustic materials

Breathing protection
Protect yourself from facial injuries and against the inhalation of construction material particles.

Safety shoes
Protects you from crushing from falling loads

Safety goggles
Protects your eyes

Hearing protection
Protects you from noise in the direct machine proximity

5.2 Conduct during an emergency

If an incident should occur, the following steps must be taken:

- Activate emergency shut-off immediately
- Administer first aid
- Report a malfunction immediately and follow the necessary guidelines
- Troubleshooting the machine. Follow the safety guidelines

- **(1) emergency shut-off**

Danger
The mixing vat is not automatically ventilated by pressing the emergency shut-off button.

Note
Familiarise yourself with the position of the emergency shutoff switch so that there is a short reaction time.

5.3 Safety instructions

The operator must have read the operating manual and know the safety rules for handling the machine.
The machine was built according to the latest technology and all recognized safety rules. Nevertheless, various residual dangers cannot be avoided. The human factor plays a major role, so follow the general safety rules.

- Adhere to the rules and regulations of the supervisory institutions (BG etc.)
- Only process and convey materials that are suitable for the intended purpose.
- Always wear the appropriate protective clothing. The materials to be processed can be dangerous to your health.
- Only use the machine in a technically perfect condition.

The operator is responsible for safety in the work area.

5.4 Starting the machine

Before starting the machine, carry out the steps described in chap. 4.

To start the machine:
- Raise the hood
- Press the main switch
- Close the hood
- Press the engine start button Cmp. Control panel in 5.6

Note that the machine may only be operated with the hood closed. The repetition lock of the motor A switch is switched every 30 s.

The following lamps light up as a control:
The oil pressure and charge control must light up, only then has the self-test been carried out successfully.

The indicator lights must go out after the machine has started.

Danger
Before the engine starts, all covers must be closed.

5.4.1 Switching off the machine

To turn off the machine:

- Switch off the conveying air
- Switch off the mixer
- Press the engine off button on the control unit.

5.4.2 Work interruptions

In the event of a work interruption, it is very likely that the existing screed in the mixing vessel will harden quickly and make delivery impossible.
In the event of an interruption, you should make sure that the mixing vessel has been emptied and that the delivery hoses are also free of mix.

5.4.3 Behavior when handling additives

If there is an incident involving the binder/cement, the following should be done:

- Press the emergency stop button.
- Rinse out the eyes.
- Go to an ophthalmologist.

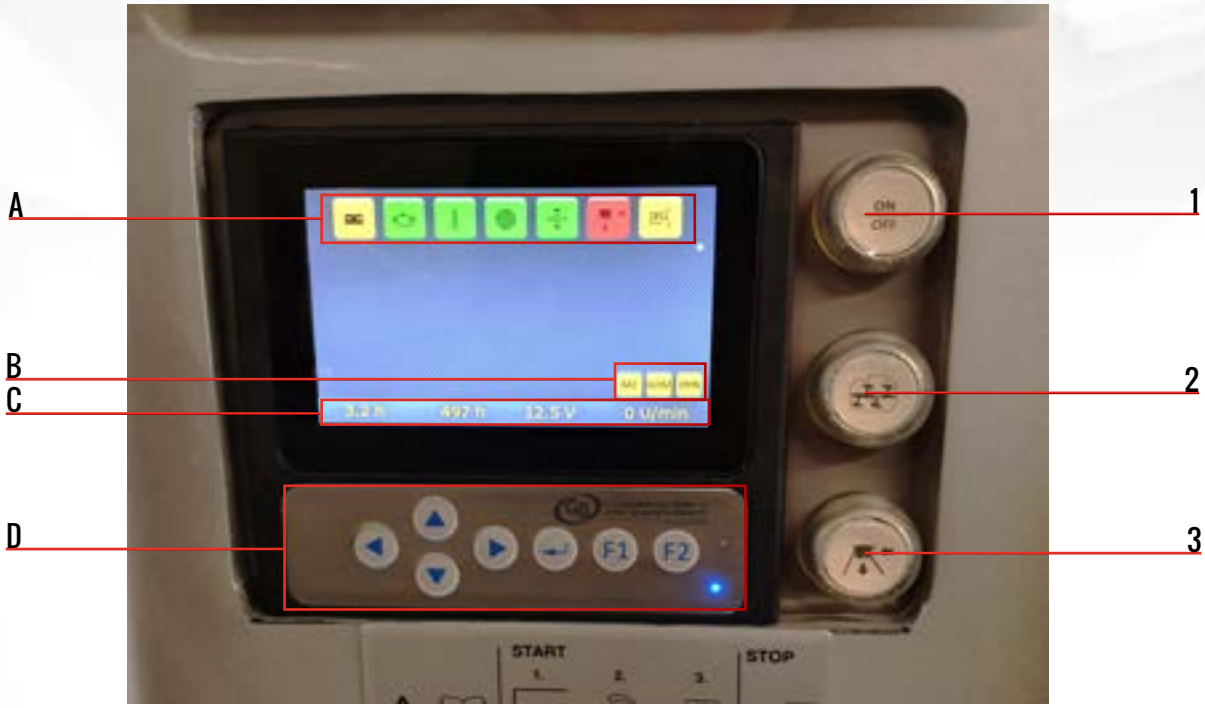
5.5 Switching off the machine at the end of work

- Check whether the mixing vessel has depressurized. See chapt. 5.8.
- Turn off the compressor
- Turn off the mixer engine
- Raise the hood
- Turn off the main switch to 0
- Close and lock the hood.

Danger
The mixing vessel is not automatically vented by the emergency stop button. Watch the pressure gauge and carefully vent it by hand.

Operation

5.6 Control of the machine

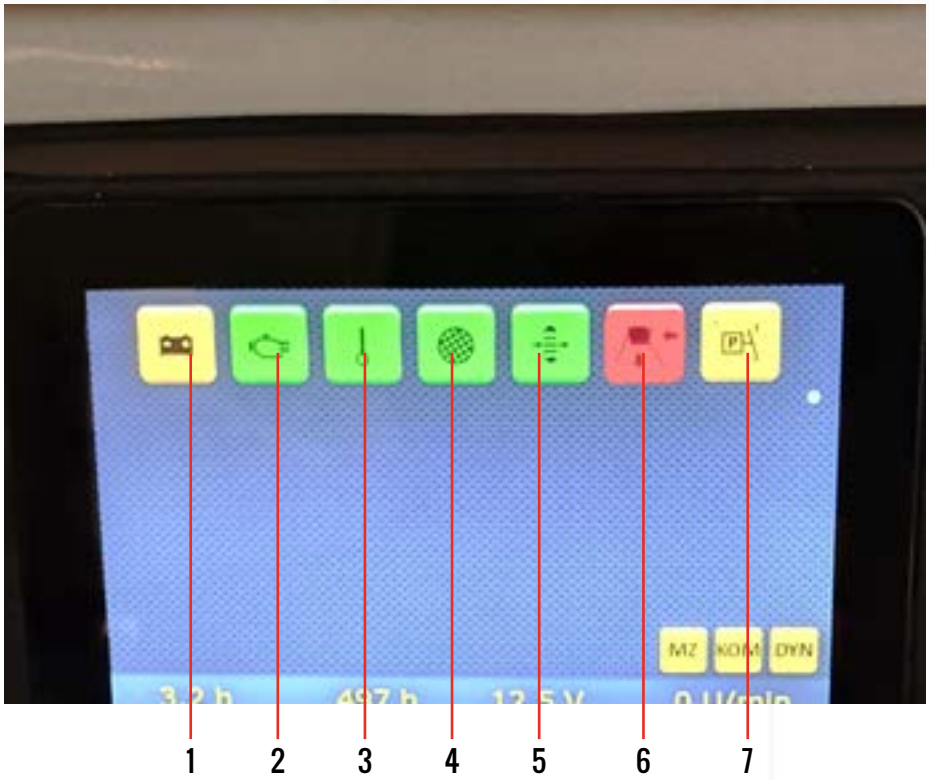


- (A) **Control Series A** - The explanation of the icons in this series can be found in chapter 5.6.1
- **(B) Control Series B** - The explanation of the icons in this series can be found in chapter 5.6.2
- **(C) Control Series C** - the explanation of symbols in this series can be found in Chapter 5.6.3
- **(D) Control Series D** - the explanation of symbols in this series can be found in Chapter 5.6.4
- **(1) Engine on / off** - Switches the machine on and off, press longer when switching on.
- **(2) Mixer on / off** - Switches the mixer on or off manually.
- (3) **Conveyor on / off** - Switches the conveyor on or off manually.

Note

Protect the monitor from damage, as otherwise it will not display the symbols correctly and the machine itself could be damaged.

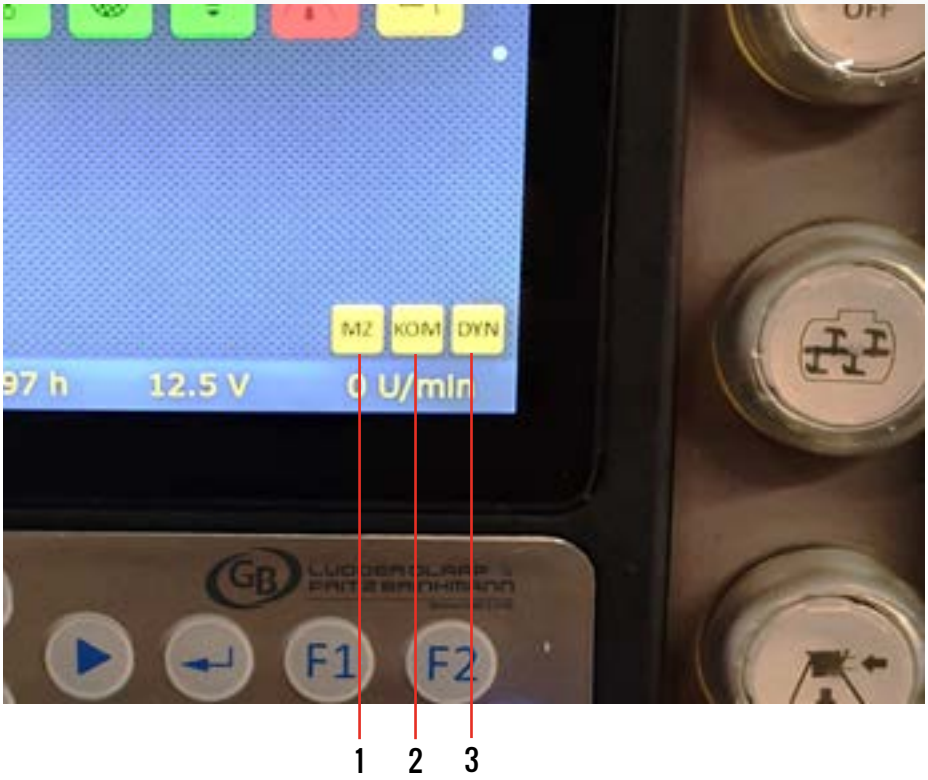
5.6.1 Series A control



- (**1) Battery symbol** - If the voltage is sufficient, the symbol is green; if the voltage is low, it turns yellow, and if the voltage is insufficient, it turns red.
- **(2) Engine icon** - The engine control icon is green during normal operation, turns red when the engine temperature is too high or the engine oil pressure is too high.
- **(3) Compressor temperature symbol** - Green during normal operation, turns red when the compressor temperature is too high. The compressor is in danger of overheating.
- **(4) Protection grid icon** - Green when the protective grille is closed and red when it is open.
- **(5) Air filter icon** - Green during normal operation and turns red when it is clogged.
- **(6) Conveying symbol**- Green when the conveyor is active, otherwise red. In addition, "conveyor on" is displayed under the symbols when funding is active.
- (**7) Vessel pressure symbol** - When the vessel pressure has reached 2 bar, this display turns green, otherwise it is yellow.

Note
Always pay attention to the symbol colors, which show you the current status of your machines. Red symbols always indicate danger.

5.6.2 Series B control - customer-specific equipment

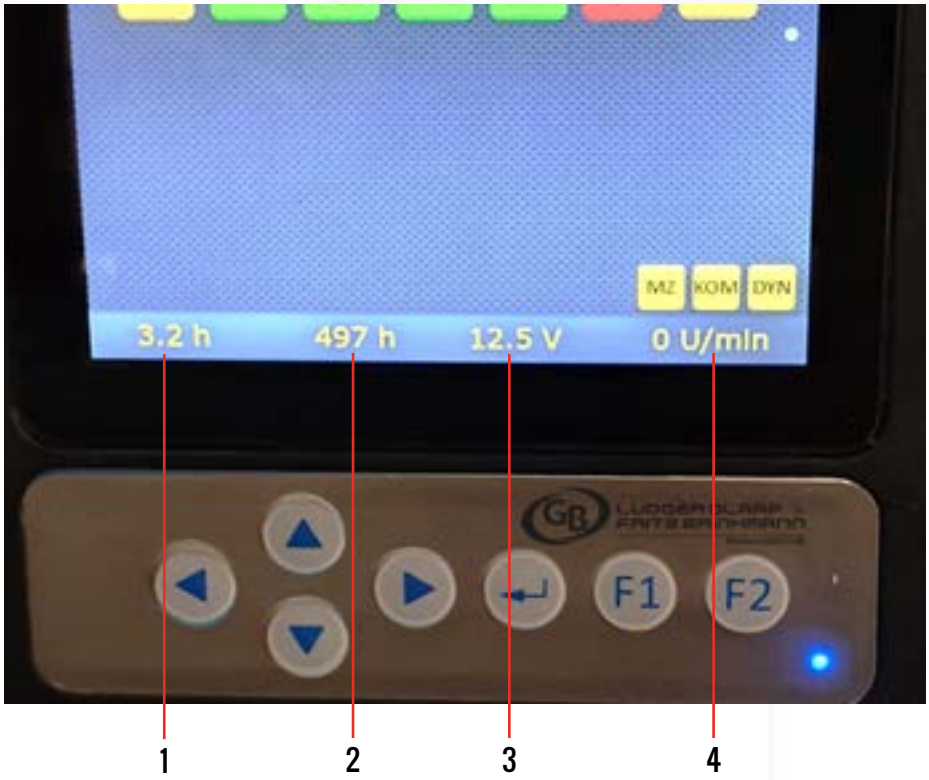


- **(1) Mixing time symbol** - The automatic mixing time has been activated. For more about setting this feature, see 5.6.5
- **(2) Comfort function icon** - automatic start stop is activated. For more about setting this feature, see 5.6.5
- (**3) Dynamic function icon -** Performance increase is activated. For more about setting this feature, see 5.6.5
- (**4) Ecomatic function icon -** Energy saving function is activated. For more about setting this feature, see 5.6.5 (not illustrated)

Environment
The comfort function leads to lower diesel consumption.

Environment
The Ecomatic function reduces the noise level.

5.6.3 Series C control

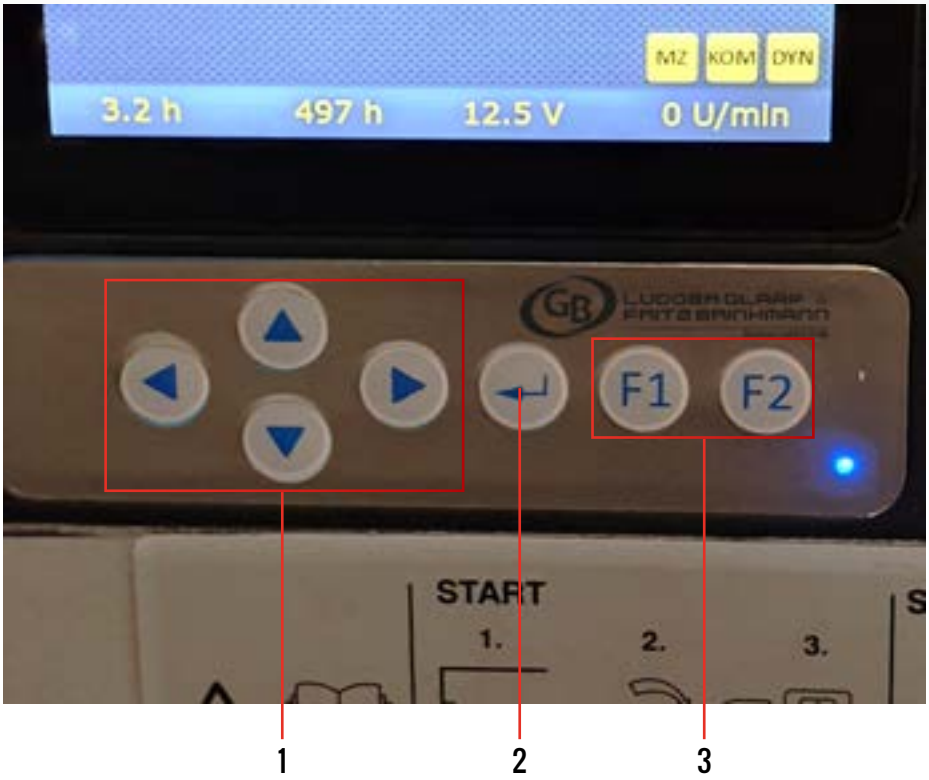


- (**1) Operating hours counter** - Counts the active operating hours of the machine as soon as the engine is running.
- **(2) Inspection interval** - Operating hours until the next inspection is due.
- **(3) Battery voltage** - Displays the current voltage of the battery.
- **(4) Engine speed** - Current engine speed

Danger
Due to the increased power, the hoses can start moving more. There is a risk of colliding with them.

Operation

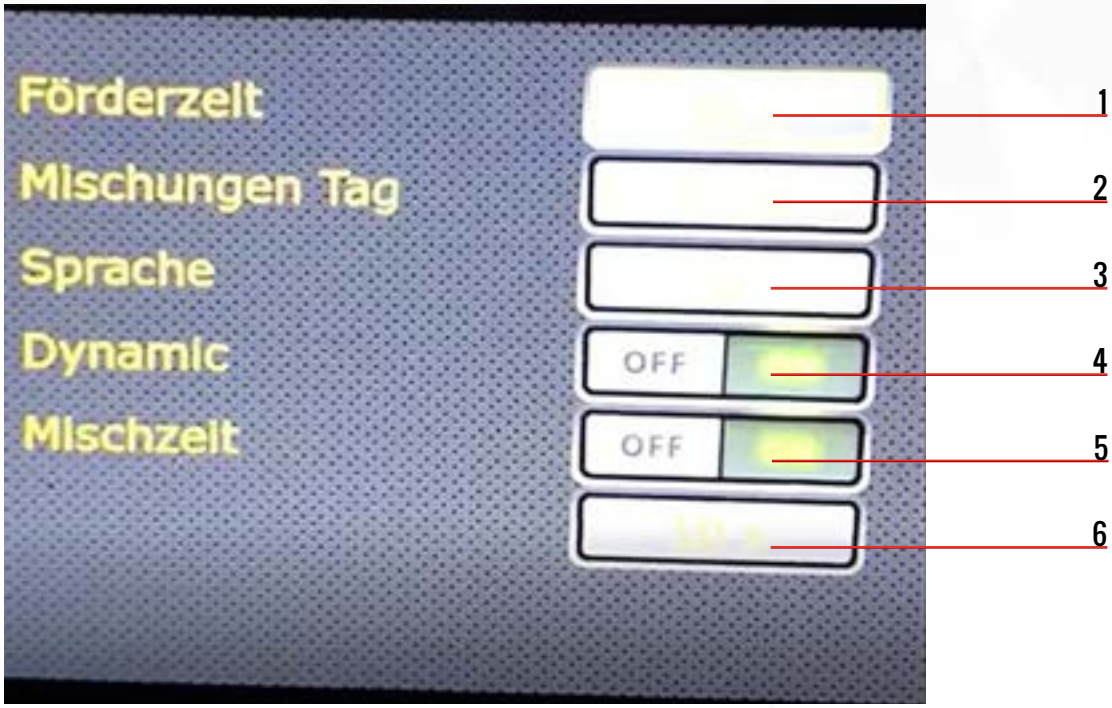
5.6.4 Series D control



- **(1) Arrow keys** - Navigation buttons for the menu
- **(1.1) Arrow key to the right** - Use the right arrow key to access the customer menu.
- **(1.2) Arrow key to the left** - Use the left arrow key to access the previous menu.
- **(1.3) Arrow key up** - One line up.
- **(1.4) Arrow key down** - One line down.
- **(2) Confirmation key** - currently without function.
- (**3) Function keys** - Function keys F1 and F2 currently have no function.

Environment
The comfort function leads to lower diesel consumption.

5.6.5 Control customer menu



Press the right arrow key once to access the customer menu. Here you will find the selection options and additional features of your machine.

- (**1) Conveyor time** - Here you can use the arrow keys to set the delivery time.
- **(2) Mixtures per day** - Here you can see the current number of mixes made per day
- **(3) Language** - Choose your country's menu language
- **(4) Dynamic function** - With switching on this function, your machine will see an increase in performance by increasing the motor speed. We recommend only using this for long conveying distances when it is really needed.
- **(5) Mixing time** - Here you can select the automatic mixing time and set it to suit your needs. After the mixing time has elapsed, conveying starts automatically.
- **(6) Mixing time** - Input mixing time
- **(x) Ecomatic function** - The Ecomatic function reduces the performance of your machine and helps you save fuel. Especially over short distances, the power can be slowed to reduce noise and pollutant emissions. **(Without illustration, depending on the machine equipment)**
- **(x) Comfort function** - This function is to be understood in the same way as an automatic start-stop in the automotive industry. In the event of longer standstills or breaks, the engine automatically switches off; when the machine is operated again, the engine switches on again automatically. **(Without illustration, depending on the machine equipment)**

Operation

5.6.6 DPF Regeneration

Fig. 1

Fig. 2

Dynamic regeneration (Level 1)
This regeneration is carried out during normal operation. The engine control unit performs this automatically in the background. The operation of your machine is not affected.

Dynamic regeneration (Level 2)
This regeneration is carried out during normal operation. The engine control unit performs this automatically in the background. The operation of your machine is not affected.

- (**Fig. 1)** - A DPF standstill regeneration is necessary.
- (**Fig. 2)** - Note to the user - start the engine on a firm, non-flammable surface.

Danger
The diesel particulate filter can emit a lot of heat. Be careful with dynamic regeneration as it can cause burns.

Environment
The machine must stand on a solid, non-flammable surface

5.6.6 DPF Regeneration

- The active regeneration is shown on the display.
- As soon as the regeneration is completed, the last status is overwritten.
- The engine is switched off.
- As soon as the engine comes to a standstill, the memory is reset.
- The display switches back to normal operation.
- You may continue working.

Danger
At high temperatures, burns can occur in the event of contact. Keep the necessary distance from the machine.

Note
If the exhaust gas temperature is too high during cleaning, this is immediately displayed.

Operation

5.7 Operation of the feeder

You can operate the hydraulic loading device for the mixing vat as follows:

The feeder can be loaded with the new mixture while feeding is underway.

- You can swivel the feeder downward by unlocking the lever and press downward.
- You can swivel the feeder upward by unlocking the lever and push it upward.

Danger
Ensure that there are no persons behind or under the feeder. Danger of death!

Note
The mixing vat must be open if the feeder is swivelled up. The light mounts may not be at the back of the machine. Remove the scraper.

Note
The feeder can only be operated when the mixing shaft is activated.

5.7.1 Operation of the scraper

Der Schrapper ist funkfernbedient. Der Sender wird direkt am Schrapper angebracht.

The scraper is remote radio activated. The transmitter is attached directly to the scraper.

The recipient is under the hood and is thereby protected from splashing water. The pulley which pulls the scraper shovel is located on the feeder.

Try to centre the sand mound behind the machine so that the tensile device pulls in the scraper as straight as possible. This reduces abrasion and wear.

- The scraper rope rolls down. Just pull the scraper shovel into the desired position.
- By pressing on the button on the scraper remote control, the cable winch is pulled in.

Note
Do not move any material to the side with the scraper into the feeder. The tensile device could be damaged

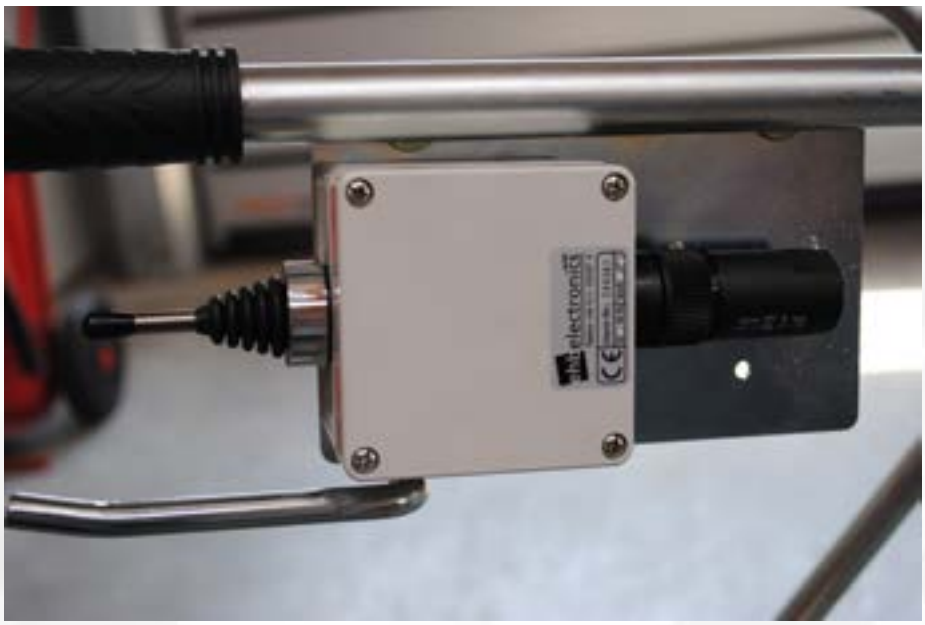
Note
The scraper can only be operated when the mixing shaft is activated.

Operation

5.7.2 Radio remote control

The scraper's cable winch is operated via the radio remote transmitter attached to the scraper shovel. Please observe the following safety instructions in these operating instructions.

- Malfunctions or damages must be rectified immediately
- Repairs must be carried out by qualified personnel
- The radio transmitter has been tested according to the latest guidelines (EMC guidelines) and can be used in the industrial sector.
- Always be careful when handling the scraper, especially if you are still inexperienced.
- Only authorized persons are allowed to operate the scraper.
- Do not change the technical constructions
- Use only original parts and accessories.
- If a defect is detected, the radio transmitter must be shut down immediately
- Protect the charger from dirt.
- Do not cover the charger while charging (heat build-up)
- Pay attention to the correct use of the charger and the remote control.
- Clean the parts of the radio system with a brush or a microfiber cloth.



Note
Always follow the above regulations and be careful when handling the scraper.

5.8 Properly feed the mixing vat

The fed product is combined in the mixing vat with the mixing blade. Aggregates, water and binders are mixed together.

Please ensure that the mixing vat can only be operated with an activated mixing shaft.

This is how to feed the mixing vat:

- Unfold the funnel onto the filling mandrel
- Add the aggregate to the mixing vat
- Pour in the binder according to manufacturer instructions.
- Do not fill the mixing vat over the maximum marking.
- Pour in water (if necessary pour in water for consistency problems)
- Fold up the funnel and close the cover, mix the conveyed product for approx. another 90s with a closed cover.

Note
You can only feed the mixing vat with an activated mixing plant.

Operation

5.9 Close/Open the mixing vat cover Version 1

Please note the following when closing the mixing vat cover:

- Ensure that the filling mandrel has a clean edge.
- Close the cover onto the mandrel of the mixing vat.
- The locking handle should be pulled over the platform
- Pull down the ventilation lever. Pull down the lever until it locks into place.
- The cover is now sealed. No pressure is built up

Note
As soon as you notice the cracks in the rubber gasket, they should be replaced immediately.

5.9.1. Open the mixing vat cover Version 1

Ensure that the mixing vat cover is depressurised. Never open a tank which is still under pressure.

To open the cover, go in the reverse order for closing.

Check on the pressure gauge if the mixing vat is really pressure free. If this is not the case, ventilate the cover manually.

Danger
Never open the cover as long as it is under pressure. Always check the pressure gauge to determine whether the mixing vat is ventilated.

5.9.1.1 Ventilate the mixing vat cover Version 1

The machine cover does not ventilate automatically. Perform the following steps for manual ventilation:

- Ventilation after the pumping process
- Pull on the ventilation lever.
- Stop the air supply on the mixing vat.
- Mixing vat is ventilated

Operation

5.9.2 Close/Open the mixing vat cover Version 2 automatic cover

Please keep the following in mind while closing the mixing cover:

- Keep the edge of the filling dome clean.
- Attach the cover on the mixing vat dome.
- Pull the toggle closure over the connecting rod and close the cover.
- Keep the ventilating lever closed manually. The pressure build-up will cause it to close automatically.
- The cover will now close and the machine will start with an increase in pressure.

NOTE
Replace the rubber gaskets as soon as you discover any cracks in them.

5.9.2.1 Open the mixing vat cover Version 2 automatic cover

The vessel is automatically ventilated once the pumping stops. During the pumping, the pressure is reduced to a lower degree and the ventilating lever will open.

To open the cover, work in the reverse order to the closing procedure.

Using a manometer, check whether the mixing vat is really free of pressure. Open the cover only once you have reassured yourself.

Danger
Never open the cover if it still pressurized. Always check the manometer to see whether the mixing vessel is ventilated.

5.9.2.2 Ventilate the mixing vat cover Version 2 automatic cover

The machine cover ventilates automatically. The steps below are for automatic ventilation:

- Lift up the ventilation lever
- Open the toggle closure for the connecting rod.
- Lift up the cast cover.
- The mixing vessel can be filled again.

Operation

5.9.3 Close/Open the mixing vat cover Version 3

Please keep the following in mind while closing the mixing cover:

- Keep the edge of the filling dome clean.
- Attach the cover on the mixing vat dome.
- Pull the toggle closure over the connecting rod.
- Pull down the lever towards the user. Press the lever down as far as it can go.
- The cover will now lock and no pressure will build up.

NOTE
Replace the rubber gaskets as soon as you discover any cracks in them.

5.9.3.1 Open the mixing vat cover Version 3

Ensure that the mixing vat cover is without pressure. Never open the container that is under pressure.

To open the cover, work in the reverse order to the closing procedure.

Using a manometer, check whether the mixing vat is really free of pressure. If not, ventilate the cover manually.

Danger
Never open the cover if it still pressurized. Always check the manometer to see whether the mixing vat is ventilated.

5.9.3.2 Ventilate the mixing vat cover Version 3

The machine cover does not ventilate automatically. The steps below are for manual ventilation:

- Ventilate after pumping
- Pull the ventilating lever
- Stop the mixing vat air supply.
- The mixing vat will be ventilated.

5.9 General instructions regarding the cover plate

Three different kinds of cover plates are available for you to choose. They work on the basis of three different locking systems.

Please check the type of cover your machine has and work according to the instructions of the cover type above.

5.10 Feeding mixed products/ Establishing vat pressure

In order to feed the mixing product, the cover must be closed because otherwise there can be no feed.

Follow the safety guidelines. This is geared toward the nominal diameter of the feeder hoses. Furthermore, the pipe length and the type of feed should be noted.

For this purpose, see chapter 5.11

5.10.1 Switching off mixing shaft manually

You can manually switch the mixing shaft on and off with the Mixing Shaft button. When the mixing shaft is activated, the mixing shaft pilot light is illuminated.

If you have a D4/D5 B or a D4/D5 BS, ensure that the mixing shaft must be activated if you want to operate the feeder

5.10.2 Manual feeding

The Feed button triggers the activation of the manual feed air. The feed air is activated when the pilot light is on. Repeat pushing causes a manual shutdown.

5.11 Setting the upper and lower air

The setting for the upper and lower air depends on three major factors:

The feed hose nominal dimension, the feed hose length and the type of feed are the decisive factors.

Also the composition of the mixed goods has an effect on the air settings.

5.11.1 Position of the air valves

- A completely vertical position means that the valve is completely open.
- A horizontal position means that the valve is closed.

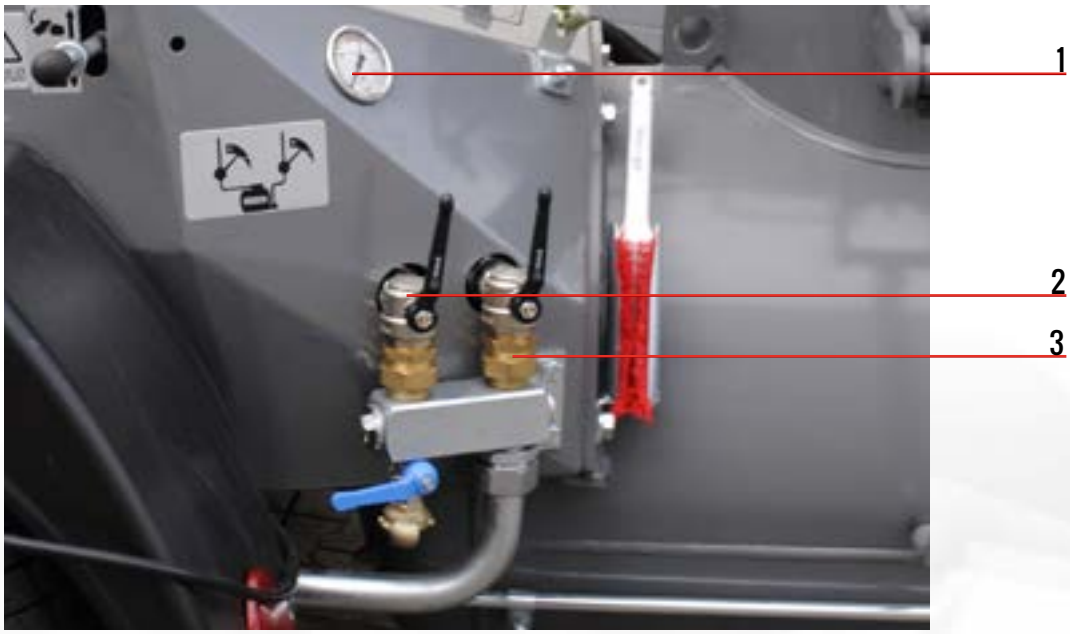
If you should have problems when setting, please contact your GB Machines partner.

Operation

5.11.2 Upper and lower air - basic setting for conveying

The basic set-up for a new conveying situation is as follows:

- Open the upper air tap (Fig. 2) and the lower air tap (Fig. 3), each by half. You can readjust both settings according to your method of conveying.
- If the pumping does not start, close the lower air tap to build up pressure in the mixing vessel. By closing the lower air, no air can escape via the delivery lines.
- For conveying to **higher floors**, a delivery pressure of **approx. 4 - 5.5 bar** is recommended
- For conveying to **lower locations**, a delivery pressure of **approx. 2 - 3 bar** is recommended
- For conveying at **ground level**, a delivery pressure of **approx. 3 - 4 bar** is recommended



- (**1) Pressure gauge** - Pressure display for vessel pressure.
- **(2) Upper air tap** - Controls the upper air, which pushes the mix from above in the mixing vessel.
- **(3) Lower air tap** - Controls the lower air that is introduced directly into the delivery hoses.

Danger
Always watch the pressure gauge as high pressure in the machine can lead to dangerous situations. Always work in the permitted pressure range!

5.12 Short-term conveyance interruption

If you want to briefly interrupt the feed, for example during a machine fault, proceed as follows:

- Close the valves for upper and lower air and press the Feed button (stop feed)
- Ventilate the vat

Conveyance is stopped.

5.13 Work end

The following actions must be completed at the end of the day:

- Empty the feed pipes and the mixing vat
- Immediately switch off the feeder air.
- Ventilate the mixing vat
- Close the valves
- Switch the motor off.
- For electrical drive, turn the switch to "0"
- Close the hood and lock
- Close the flap of the control board and secure it.

5.14 Blockages - delivery standstill

Blockages can repeatedly shut down production for a number of reasons. We call it a blockage when the mix gets stuck in the delivery hoses or is no longer being conveyed.
In the following points you will find the most common reasons for blockages.

- Wrong nominal width of the delivery lines. The hoses are not suitable for the mix to be conveyed.
- Too little water in the mix. The mix is too dry to be conveyed, resulting in blockages in the hoses.
- Defective or dirty hose couplings

Protective gloves
Protect your hands against corrosive substances

Safety goggles
Protects your eyes

Operation

5.14.1 Finding and removing blockages

As long as the mixing vessel is under pressure, the delivery hoses are also under pressure. Due to the high pressure, the delivery hoses are very hard in front of the blockage; after the blockage, the hoses can usually be deformed easily.

In the case of simple clogs, try to remove it by shaking, bending and tapping the line.

If the blockage is in the vessel outlet, the entire delivery line can be deformed. Stubborn blockages cannot be removed simply by moving the lines.

- Shut down the machine
- The mixing vessel must be depressurized. The vent lever must be in the open position. Check on the pressure gauge whether the mixing vessel is really depressurized.
- If the blockage is the result of a defect in the hose coupling, it must be replaced immediately.

Danger
Never loosen hose couplings before the machine has been shut down. Mix and loose parts could fly around under pressure and injure people.

Danger
Never use compressed air to remove blockages from the hoses. There is a risk of an explosion in the hoses. Danger to life.

Protective helmet
Head protection against falling loads

Protective gloves
Protect your hands against corrosive substances

Breathing face protection
Protects you against facial injuries and against the inhalation of building material particles

Safety goggles
Protects your eyes

5.14.2 Resumption of work after a blockage

When you have found and removed the blockage, you can resume work. Proceed as follows to put the machine back into operation:

Protective equipment must be used in all operations involving tampering.

- Reconnect the delivery hoses to the machine.
- Unlock the emergency stop button.
- Turn on the machine.
- Start the engine.
- Top up the mix and start working.

Danger
Blockages can be life-threatening, so always pay close attention. Lines under pressure can thrash around in an uncontrolled manner.

Protective helmet
Head protection against falling loads

Protective gloves
Protect your hands against corrosive substances

Breathing face protection
Protects you against facial injuries and against the inhalation of building material particles

Safety goggles
Protects your eyes

Cleaning

The machine is also to be cleaned when work is finished or during extended interruptions of work.

Clean and empty the feed hoses when work is complete. Only these measures ensure virtually seamless operation.

6.1 General cleaning processes

General machine cleaning will always indicate care instructions in order to always operate a cleaner and more orderly machine.

You should follow the cleaning instructions below:

- All openings of machine parts which do not come into contact with water are to be closed off or sealed off. This particularly applies if you perform the cleaning with a high-pressure cleaner or a similar device.
- Never clean with caustic substances
- After cleaning, use GB Machines Maschinenpflege (Machine Care). It prevents corrosion and preserves the machine. Any soft parts, such as rubber gaskets, are not taken into account.
- After cleaning, all utensils attached for cleaning are to be completely removed.
- Otherwise, the machine can be damaged.

Note
Ask your GB Machines representative about the appropriate cleaning utensils.

Protective Gloves
Protect your hands from caustic materials

6.2 Cleaning the delivery hoses

Use a hose ball to get the remaining dirt out of the delivery hose. Uncleaned delivery lines can contain hardened mortar residues and become unusable.

Carry out cleaning as follows:

- Vent the mixing vessel
- Loosen the hose coupling on the vessel outlet
- Insert a well-moistened hose ball into the hose
- Reconnect the hose coupling to the vessel outlet
- Fill the mixing vessel with water and close the cap
- Press the conveyor button and the ball will be blown through the hose.
- Clean the ball with water
- Uncouple the hoses and clean the connections
- Check the delivery lines for damage. If you find any damage, replace them immediately.

6.3High-pressurecleaner(optional)

The high-pressure cleaner is an optional function that is not part of the standard version. External cleaning is made immensely easier with this option.

To connect a high-pressure cleaner, proceed as follows:

- Connect the water supply to the quick coupling.
- Connect the cleaning lance to the connection provided and tighten it.

Danger
Never point the cleaning lance at people. The high pressure can cause serious injuries so always wear protective equipment.

Note
The water pump must not run dry as this can cause damage. Use protective gloves.

Note
Never loosen the hose couplings while the machine is still under pressure. The machine must be shut down and vented.

Cleaning

6.4 Cleaning of the upper and lower air

Close the service valve of the machine. The machine must be idled! The following steps must be carried out to clean the upper and lower air:

- Idle the machine.
- Open the service valve on the rear of the machine.
- Disconnect the hoses from the hose couplings
- Remove the hoses
- Clean the hoses with sufficient water
- Clean the control valves
- Reconnect the hoses
- Close the service valve
- Ensure that the hoses are properly connected.

Danger
The machine must be idled. Check on the pressure gauge whether the mixing vat is ventilated.

Note
Connect the hoses properly The upper air valve must be connected to the mixing vat.

6.5 Cleaning the mixing vat

Ensure that the machine is stopped.
Perform the cleaning as follows:

- Stop the machine and protect the machine against any activation.
- Close the safety grating on the filling mandrel
- Clean the inside of the mixing vat with sufficient water Remove any mortar reside from the walls. No encrustations of mortar residue may form on the mixing shaft. Caking can result in damages to the gaskets.
- Position the discharge stand at a location where the waste cannot cause any damages. The feed pipes should be ground-level and parallel to the ground
- Close the safety grating
- Put the machine back into operation. To do this, start the motor.
- Close the cover of the mixing vat.
- Ensure that the discharge stand is affixed by a second person because the waste water will escape from the discharge stand with increased pressure.
- Close the ventilation lever. Pressure is built up and the waste water escapes.
- Repeat the process until the mixing vat is free of residual mortar.

Danger
Ensure that the discharge stand is held by a second person. This could otherwise beat out

Danger
The motor and main switch must be switched off. Do not reach into the mixing vat if the battery is still connected.

Troubleshooting Guide - FAQs

Listed below, you will find details of possible causes of faults and how to rectify them. Please comply with the General Safety Regulations (Section 2) at all times when working on the machine.

Danger
Never loosen the hose couplings if the machine is not at a complete standstill. Also make sure you vent the boiler. There is a possibility that the supply hoses will still be under pressure once the boiler is vented, which may cause them to deflect when they are detached.

Danger
Never reach into the machine when it is still in motion. This can lead to serious injury.

Danger
Hydraulic and electrical work should only be performed by suitably qualified personnel.

Protective Gloves
Always wear protective gloves when working on the machine.

Respiratory safety mask
When you open the hose couplings, material may leak out and injure your face.
For this reason, always make sure you wear a safety mask.

Safety Glasses
Always wear safety glasses. Material that escapes may splash into your eyes.
If it does, rinse your eyes thoroughly with clean water and consult an ophthalmologist.

Note
If problems persist, please contact the GB Machines Customer Service.

7.1 General causes of faults on the machine

The motor starts, but shuts down again on its own after a few moments	
Possible Cause	**Rectification**
Sensors defective or faulty wiring.	Check if they are functioning and attached correctly; replace if necessary
Control unit is defective	Replace control unit, perform emergency shut-down. This brings the motor to a standstill
Air filter control lamp is on	Clean clogged air filter and replace if necessary.
Motor defective	The engine has a technical fault and needs to be repaired.
Engine warning lamp illuminates, Compressor lamp flashes	Compressor sensor (temperature) has an emergency shut-down function, which is triggered owing to critical levels.
Error in the compressor temperature	Check the lines, filter, oil level and oil separator on the compressor. Replace defective lines and clean all parts. Replenish the compressor oil.

Charging control indicator lamp illuminates when the motor is on	
Possible Cause	**Rectification**
Check the V-belt	check the V-belt and replace if necessary
Alternator is faulty	Visit the Service Center and replace the alternator

No response when the remote control for the scraper is pressed	
Possible Cause	**Rectification**
Receipt indicator lamp is on	The remote-control signals are processed if the receipt indicator lamp is on. If the lamp is flashing, receipt is interrupted and transfer is restricted.
Receipt indicator lamp illuminates, but the remote control commands fail to function	The mixer needs be switched on and the mixer indicator lamp should illuminate. Check the connector on the control unit.
Receipt indicator lamp flashes Battery low	Charge battery. Or use the replacement battery as an alternative
Receipt indicator lamp flashes, radio reception is jammed or restricted	Radio reception is massively impaired by a jamming source. Check the antenna and replace if necessary.

The control unit on the machine does not function	
Possible Cause	**Rectification**
EMERGENCY stop button has been pressed.	Pull and rotate the EMERGENCY stop button to unlock it. Start the machine again.
Control unit is defective	Replace the control unit, perform emergency shut-down. This brings the motor to a standstill.
Main switch is off	Turn on the main switch and start the machine again
Control unit fuse is defective	. Replace fuse. Only use material authorised by GB Machines.

Troubleshooting Guide - FAQs

Starter motor fails to react when the motor button key is pressed. (start motor)

Possible Cause	Rectification
Automatic restart protection	Restart protection is activated. Wait for about 40 sec. and start the motor again.
EMERGENCY stop button has been pressed	Pull and rotate the EMERGENCY stop button to unlock it. Start the machine again.
Motor button (switch on motor) defective	Check if the button functions correctly, check the control unit and replace button if necessary.
Battery charge too low	Check the battery for voltage and charge/replace.
Starter solenoid switch defective	Replace solenoid switch
Safety guard indicator lamp flashes – Guard is open.	Close the safety guard. When electrical problems occur, check the wiring and wiring connections. If worn, replace them.

The motor indicator lamp fails to illuminate briefly after starting the machine. The motor temperature and oil pressure sensors are switched off (no protective shut-down)!

Possible Cause	Rectification
The sensor is faulty/defective	Replace the sensors affected.
Wiring is faulty	Check the wiring and replace it.

The charging indicator lamp fails to illuminate briefly after starting the machine. Motor cannot be started.

Possible Cause	Rectification
Check the alternator	Check the V-belt and replace if necessary.
Alternator is faulty	Visit the Service Center and replace the alternator.
Check the cable connections for contact and damage.	Check the connections and replace if necessary.
Battery too weak or defective	Check the battery voltage and charge/replace.
Battery terminals are corroded	Inspect and replace.

The control does not work - display problems

Possible cause	Approach to problem solving
Defective control fuse	Replace fuse.
Effects of light	Protect the display from the effects of light
Emergency stop button pressed	Unlock the emergency stop button
Main switch of the machine not switched on	Open the hood and flip the switch.
Switch not in the working position - electric machine (Electro drive)	Reversing the switch to position 1 or 2

Troubleshooting Guide - FAQs

The motor starts, but shuts down again after a few moments.

Possible Cause	Rectification
Problem with the motor oil pressure or motor temperature	Check the oil level, oil filter and oil lines. Clears blockages and replenish lubricant. Inspect the radiator and check for correct functioning. Clean the radiator and replace any defective parts.
Motor indicator lamp flashes	The motor sensors deliver critical or unusual values. The oil pressure and temperature values cause a safety shut-down.
Check the cable connections for contact and damage	Check the connections and replace if necessary.
Battery too weak or defective	Check the battery voltage and charge/replace.
Battery terminals are corroded	Inspect and replace

No response when the remote control for the scraper is pressed

Possible Cause	Rectification
No radio reception	The radio reception is massively impaired by a jamming source. Check the antenna and replace it if necessary.
Remote control turned off	Press the toggle switch and make sure the remote control is switched on.
Transmitter is incorrectly assigned	You are using the wrong scraper channel. Each machine is fitted with just one transmitter, contact the Service Center at GB Machines.
Battery flat or defective	Charge the battery and check if the antenna is defective.
Receipt lamp does not illuminate	No radio link
Remote control defective	Contact Customer Service at GB Machines

The compressor does not supply enough air; the pressure increase is disproportionately high

Possible Cause	Rectification
The exhaust filter is clogged	Contact the GB Machines Service Center

Mixing shaft does not function/stops

Possible Cause	Rectification
Mixture is too dry	Remove the mixture from the tank and clean. Apply the correct mixing ratios.
Power belt is faulty/defective	Check the power belt and replace if necessary
Mixing tank is overfilled	Empty the mixing tank and clean. Do not exceed the maximum level when refilling it.
The mixing tank contains foreign matter (e.g. a stone) which causes interference	Remove the source of interference and ensure that the mixing shaft can move freely. On feeder-loader scraper machines the mixing shaft's direction of rotation changes.

Troubleshooting Guide - FAQs

The compressor pressure is below the normal value

Possible Cause	Rectification
Problem with the motor speed	Check the motor speed control unit and have it adjusted if necessary.
Air filter is clogged	The motor sensors deliver critical or unusual values. The oil pressure and temperature values cause a safety shut-down.
The exhaust filter is clogged	Contact the GB Machines Service Center.
Air is released through the exhaust valve	Contact the GB Machines Service Center.
Air consumption exceeds capacity	Check all systems downstream from the compressor (air lines, mixing tank, tank outlet, any air consumers)

Motor runs at max. speed; the compressor no longer limits the speed.

Possible Cause	Rectification
The safety valve opens very quickly/is defective	Contact the GB Machines Service Center and have it repaired.
The control system is leaking air	Contact the GB Machines Service Center and have it repaired.
Defective control valve	Contact the GB Machines Service Center.

Tank pressure is above 5 bar. No or slow feed

Possible Cause	Rectification
Various blockages impair the feed in the feed hoses, thus stopping the transport of large volumes.	Clean the feed hoses with HD equipment and hose balls. Remove any residue inside the hoses and reconnect them. Start the feed procedure using upper air and then add lower air to control the pressure.

The machine starts to convey although the automatic lever has not been operated.

Possible cause	Approach to problem solving
Proximity switch is defective	Have the proximity switch replaced. Go to a workshop.

Compressor is overheated

Possible Cause	Rectification
Ventilator is defective/not working	Replace the defective ventilator and start the procedure again.
Clogged compressor filter	Replace the compressor cooling unit filter.
Clogged fine oil mist separator	Contact the GB Machines Service Center.
Clogged oil cooler	Clean the oil cooler.
Compressor oil level too low	Check the oil level and replenish.
Compressor cooling unit fails	Improve the thermal characteristics of the installation site; make sure adequate external cooling is available.

Troubleshooting Guide - FAQs

Oil mist escapes from valve openings. High compressor oil consumption

Possible Cause	Rectification
Incorrect oil in use	Only use oil authorised by GB Machines.
Defective oil removal filter	Contact the GB Machines Service Center.
Defective suction control valve	Contact the GB Machines Service Center.
Compressor oil level above maximum level	Drain off the oil until it reaches the max. level.
Defective oil line or check valve	Clean the oil lines and inspect the check valve, replace if damaged.

Blockage / Mixing tank at over 6 bar. Transport no longer takes place

Possible Cause	Rectification
Entire feed hose lengths are soft	The blockage is located at the tank outlet. Caution while cleaning, acute danger to life. Blockages represent a huge risk to personnel.
Feed hoses are hard up to a certain point	Locate the blockage and unblock. Caution, acute danger to life. Clean the hoses to proceed with the work.

Large quantities of oil escape from the air filter (machine is idle)

Possible Cause	Rectification
Incorrect oil in use	Only use oil authorised by GB Machines. (Prevents the formation of foam).
Faulty relief valve	Repair or replace the relief valve.

The cable winch does not respond to the scraper remote control

Possible cause	Approach to problem solving
The machine cannot execute the control command	Check the cabling at the transmitter/receiver, check for broken cables. The mixer must be switched on!
Low battery / defect	Swap / replace the battery
Disturbed radio reception	Check the cabling and change the location if necessary
Compressor oil level above maximum	Drain the oil until it reaches the maximum mark.
Defective oil line or check valve	Clean the oil lines and control the check valve, replace it if it is defective.

No transport despite vent lever being pressed down

Possible Cause	Rectification
Defective solenoid valve - Problem with the feed air	Check the solenoid valve and renew the wiring if necessary.
Blockage	Mix has caused a blockage. Locate the blockage and unblock.
Mixing shaft at a standstill	The mixer needs to be turned on to transport the mix. Press the mixer button.

Troubleshooting Guide - FAQs

7.2 General causes of errors on the chassis

Ball coupling is not connected to the trailer hitch. (Large amount of play between the two)	
Possible Cause	**Rectification**
Connect the tow-bar to the vehicle	Have it replaced at your vehicle workshop
The turning radius has been exceeded resulting in the tow-bar being bent	Have the damage repaired at a specialist vehicle workshop of your choice

Handling erratic, braking not fluid	
Possible Cause	**Rectification**
Too much play/Large distances on the brake	Have the damage inspected/repaired at a specialist vehicle workshop of your choice
Brake applies as soon as you slow down/Shock absorbers flat	Have the damage inspected/repaired at a specialist vehicle workshop of your choice

Brake blocks on reversing	
Possible Cause	**Rectification**
Braking too tight/Brakes too hard	Have the damage inspected/repaired at a specialist vehicle workshop of your choice.
Handbrake applied, not fully released	Release the handbrake.

Handbrake does not work or is too weak	
Possible Cause	**Rectification**
Handbrake not applied	Apply the handbrake fully.
Brake pads lock	Replace the brake pads. Have the brake pads replaced at a specialist workshop.
The handbrake is incorrectly set	Have the handbrake adjusted at a specialist workshop
Friction losses very high	Re-lubricate the mechanisms, ensure they can move freely. Have the damage inspected/repaired at a specialist vehicle workshop of your choice
Brake pads do not retract	Problem should be solved by a braking a couple of times.

Brake overheats	
Possible Cause	**Rectification**
Handbrake not released	Release the handbrake.
Brake is set incorrectly	Have the damage inspected/repaired at a specialist vehicle workshop of your choice.

Troubleshooting Guide - FAQs

Mechanism stiff on the parallel adjustment

Possible Cause	Rectification
Joints are stuck/corroded	Perform thorough cleaning and lubricate the parts.
Adjustment toggle is stuck	Have the damage inspected/repaired at a specialist workshop of your choice

Overrun brake does not brake/hardly brakes

Possible Cause	Rectification
Brake pads do not retract	Problem should be solved by a braking a couple of times.
Brake pads lock	Replace the brake pads. Have the brake pads replaced at a specialist workshop.
Brake pads damaged	Have the damage inspected/repaired at a specialist vehicle workshop of your choice
Draw-bar corroded	Have the damage inspected/repaired at a specialist vehicle workshop of your choice

Ball coupling does not engage

Possible Cause	Rectification
Inside of the coupling is defective	Clean the coupling and lubricate. If the problem persists, consult a specialist workshop.
Tow ball on the trailer hitch is too large	Replace the vehicle's hitch.

Clattering noises while driving

Possible cause	Approach to problem solving
Scraper not properly fixed	Fix the scraper in the designated places
Hood rattles	Close the hood again until it locks noticeably.
Control flap open	Press firmly on the flap
Underride guard not fixed	Lock the underride guard

Light carriers not working

Possible cause	Approach to problem solving
Turn signals or other lamps do not work	Check the lamps for function, otherwise replace them
Pins in the connector defective	Check the connector, try to make contacts
The lead of the vehicle is defective	Go to a workshop
Wiring harness is defective	Check the wiring harness for damage and go to a workshop.

8 Maintenance

This chapter is intended to familiarise you with the maintenance procedure of the MIXMAN. The maintenance intervals are very important for the functionality of the MIXMAN.
It explains what to look out for and what needs to be taken into account urgently.

We would like to emphasise that you should carry out all controls, tests and maintenance particularly conscientiously. Otherwise we will reject any liability or guarantee.

8.1 Safety instructions

The general safety instructions from chapter 2 apply in this chapter. Only service the machine when it has been shut down, depressurized and secured against being switched on.
If a running engine is required for a maintenance mode, this is explained in the respective chapter.

Please note the following points:

- Only use original parts
- Only use undamaged and suitable tools
- Always pay attention to cleanliness and never rub the machine with flammable liquids. Always wear protective clothing and make sure that no dirt gets into closed systems.
- Never weld on the pressure vessel or modify the machine.
- Make sure that all parts that are only relevant for maintenance are removed again.
- Do not remove any system-relevant parts - e.g. the sound-insulating parts of the hood
- Before commissioning, test the machine to ensure that it is working properly.

Danger
Never reach into the mixing vessel if the machine has not been shut down. Press the emergency stop button and switch off the main switch. DANGER TO LIFE Disconnect the electrical machine from the power.

Breathing face protection
When opening the hose couplings, splashes of mix can escape and injure your face. Therefore, always wear a face guard.

Safety goggles
Always wear safety goggles. Escaping splashes of mix could get into your eyes. If this happens, rinse your eyes with clean water and see an ophthalmologist.

8.2 Maintenance intervals

The due dates and activities of the maintenance can be looked up in the following tables.
The necessary maintenance steps can be found in the following chapter.

Daily maintenance work	
Tasks	**Approach and means**
Check the mixing vessel seal	If the seal is porous or if the material is pressed in too much, replace it.
Check the hoses and couplings	Replace immediately if there are any signs of damage, otherwise every 3 months at the latest.
Check all safety devices	Check function of all safety devices.
Visual inspection	Check according to chapter 8.8.
Treat the lubrication points	Lubricate all points regularly. Notes in Chapter 8.9.
Check the compressor oil level	Check and top up if necessary, see Section 8.16.
Check the engine oil level	Check and top up if necessary, see Section 8.15.
Check the central lubrication system fill level	Check the fill level and, if necessary, refill, see chapter 8.10
Secure the feeder and scraper before driving	Secure the scraper and feeder with the holding devices.
Lock the hood before driving	The hood must be latched and locked.
Check the light carriers	Check the light carriers for function, replace bulbs or cables if necessary.
Check the air filter	Clean it and replace if necessary, see chapter 8.12.
Sufficient fuel	Refill fuel.

After every 40 hours of operation (in addition to daily work)	
Tasks	**Approach and means**
Work through all the weekly lubrication points	Lubricate all points regularly. Notes in chapter 8.9.
Check the check valves	Clean the springs, sealing rings etc. or replace the entire valve, see chapter 8.16.
Check the lines for upper and lower air	If necessary, clean the lines, see chapter 6.
Check the vents for damage	Clean the parts; replace parts if damaged. Notes in Chapter 8.17
Check the condition of the mixer	Check the mixing blades for damage and replace if necessary.
Check the function of the central lubrication system	Check the fill level and function. Notes in Chapter 8.10
Check the tire pressure	
Check the brakes, overrun hitch, breakaway cable and clutch.	
Check the power and V-belts	Retension or replace

Note
Have the first maintenance carried out by a GB Machines service partner. A skilled machinist should be present to learn the processes.

Maintenance

After every 500 hours of operation (in addition to daily work)

Tasks	Approach and means
Lubricate all lubrication points	Lubricate all points regularly. Notes in Chapter 8.9.
Change the engine oil filter and engine oil (diesel)	Use 10W-40 oil, see chapter 8.15
Change the fuel and prefilter (diesel)	Change the fuel filter, only use suitable models.
Change the air filter and cartridge	Change the air filter, see chapter 8.12
Change the sealing cone and hose on the automatic cap	Have it changed by the service partner.
Change wear plates	Have it changed by the service partner.
Replace the sealing washer on the oil separator.	Have it changed by the service partner
Measure the pressure drop across the exhaust filter.	If the pressure drops below 0.8 bar, have it replaced by your service partner.
Change the power belt	Have it changed by the service partner.
Check electrics / cables	Have the service partner change or replace them if damaged.
Change the transmission oil	Have it changed by the service partner.
Replace the mixing vessel seal	
Clean the filter insert for the fuel tank	
Replace the seal ring and spring of the check valves.	Have it changed by the service partner.

After every 1000 hours of operation (in addition to daily work)

Tasks	Approach and means
Work safety check by an authorized body	Have it changed by the service partner.
Change the hydraulic oil filter	Use 10W-40 oil, see chapter 8.15
Check the safety valve on the pressure vessel	Have it changed/adjusted by the service partner.
Change the exhaust filter from the oil separator	Have it changed by the service partner.
Change the compressor oil filter and oil.	Use HLP 46, see chapter 8.16
Check the hydraulics of the feeder/scraper	Have it changed by the service partner.
Have the valve clearance from the diesel engine adjusted	Have it changed by the service partner
Have all V-belts changed	Have it changed by the service partner.
Have the toothed belt changed	Have it changed by the service partner.
Change the transmission oil every 18 months	Have it changed by the service partner.
Every 2 years (TÜV / pressure vessel test)	TÜV / pressure vessel regulation
Every 3 years	Change the damper of the overrun hitch, change the toothed belt of the engine, have the injection valves adjusted.
Every 5 years	Internal inspection of the mixing vessel by an authorized body.
Every 10 years	Strength test of the mixing vessel by the authorities.

Maintenance work on the chassis	
Tasks	**Approach and means**
After the first 50 km / wheel change	Retighten the wheel nuts and observe the tightening torques
Adjust the braking system after the first 100-200 km	Have it changed by the service partner.
Check the fastening screws every 10,000-15,000 km	Observe the tightening torques and retighten if necessary. Notes in Chapter 8.4
Check the shock absorbers and overrun device every 10,000-15,000 km. Oil loss.	Have it changed by the service partner.
Check the gas spring of the overrun device every 10,000-15,000 km.	Have it changed by the service partner.
Check the brake system and the wear on the brake pads every 10,000-15,000 km	Have it changed by the service partner.
Check the parking brake for leaks and function every 10,000-15,000 km	Have it changed by the service partner
Check the play of the drawbar on the overrun device every 10,000-15,000 km.	Have it changed by the service partner.
Check the fastening of the breakaway cable and function every 10,000-15,000 km	Have it changed by the service partner.
Functional check of the support wheel every 10,000-15,000 km	Have it changed by the service partner.
Check the axial bearings of the wheel bearings every 10,000-15,000 km.	Have it changed by the service partner.
Check the attachment of the towing eye or ball head coupling every 10,000-15,000 km	Have it changed by the service partner.
Check the ball head coupling for wear and function every 10,000-15,000 km.	Have it changed by the service partner.

8.3 Welding works

Do not carry out any welding work on your own without consulting GB Machines. Various welding processes can damage electronic components of the machine.

When carrying out welding work, note the following points:

- Shut down the machine.
- Pull out the connector of the control
- Disconnect the battery.

Danger
Welding work may only be carried out by trained specialists. Observe the safety regulations. There is a risk of explosion.

Danger
Never weld or make modifications to a pressure vessel.

8.4 Tightening torques

The tightening torques depend on the material quality. The following table contains guide values for the standard torques.

If other values are given for the torques at specific points in the operating instructions, these must be observed.

Please note the following points:

- Only use original parts
- Only use undamaged and suitable tools
- Always pay attention to cleanliness and never rub the machine with flammable liquids. Always wear protective clothing and make sure that no dirt gets into closed systems.
- Never weld on the pressure vessel or modify the machine.
- Make sure that all parts that are only relevant for maintenance are removed again.
- Do not remove any system-relevant parts - e.g. the sound-insulating parts of the hood
- Before commissioning, test the machine to ensure that it is working properly.

Regular threads				
Dimensions [mm]		Tightening torque Ma (Nm)		
M	SW	8.8	10.9	12.9
M 4	7	3.0	4.4	5.1
M 5	8	5.9	8.7	10
M 6	10	10	15	18
M 8	13	25	36	43
M 10	17	49	72	84
M 12	19	85	125	145
M 14	22	135	200	235
M 16	24	210	310	365
M 18	27	300	430	500
M 20	30	425	610	710
M 22	32	580	820	960
M 24	36	730	1050	1220
M 27	41	1100	1550	1800
M 30	46	1450	2100	2450

Fine thread				
Dimensions [mm]		Tightening torque Ma (Nm)		
M	SW	8.8	10.9	12.9
M 8x1	13	27	39	46
M 10x1.25	17	52	76	90
M 12x1.25	19	93	135	160
M 12x1.5	19	89	130	155
M 14x1.5	22	145	215	255
M 16x1.5	24	225	330	390
M 18x1.5	27	340	485	570
M 20x1.5	30	475	680	790
M 22x1.5	32	630	900	1050
M 24x2	36	800	1150	1350
M 27x2	41	1150	1650	1950
M 30x2	46	1650	2350	2750

Note
If you need to replace screws, only use screws of the original quality.

8.5 Operating materials

Here you can find out which operating materials the machine needs to function properly. We will be happy to answer any questions you may have about operating materials.

Operating material	
Section	**Operating material / use**
Drive engine fuel (diesel engine)	Use commercially available diesel fuel as fuel
Engine oil	ACEA E6 (recommended), ACEA E9, ACEA C3/C4 approx. 5 l
Compressor	Mineral oil for the hydraulic systems HLP 46
Gear box	Gear oil 85W-90 viscosity class: OR SAE 85W
Hydraulics	Hydraulic oil HLP 46, viscosity class: ISO VG 46
Machine maintenance	Use the machine care of GB Machines
Lubrication grease	Multipurpose grease K 2 K -30
Storage of lubricants	Do not store outdoors.
Coolant	H50 Coolant /5 l

8.6 Shutting down the machine

Moving parts and pressurized containers pose significant hazards. Always make sure that the machine is shut down before starting any work.
Please follow the points below:

- Press the emergency stop switch, the compressed air tank will automatically vent. Check the pressure gauge.
- The mixing vessel must be vented before you open the cap. The vent lever must be in the upper position. Check the pressure gauge to see whether the pressure vessel has depressurized.
- Close the upper and lower air taps
- Close the control cover
- Turn off the main switch on the control.
- Press the emergency stop button
- Disconnect the battery or disconnect the machine from the mains

Danger
Make sure that the mixing vessel and pressure vessel are depressurized. Always press the emergency stop switch for maintenance work.

8.7 Maintenance kits

GB Machines has compiled maintenance kits for each maintenance interval. The maintenance kits can be obtained from GB Machines. The maintenance kits contain the respective parts required. Use only original parts. If non-original spare parts are used, GB Machines does not accept any liability.

Maintenance Kit - HATZ

Compressed air conveyor

Quantity	Description	Item number
1x	Maintenance Kit Hatz - Engine 500 h	00271645
	Maintenance Kit 500h MIXMAN D4B D4BS D5B D5BS	00277976
	Maintenance Kit 1000h MIXMAN D4 D5	00277977
	Maintenance Kit 1000h MIXMAN D4B D4BS D5B D5BS	00277978

Maintenance kits - Deutz

Compressed air conveyor

Quantity	Description	Item number
1x	Maintenance Kit MIXMAN D4, 500 h	00274275
1x	Maintenance Kit MIXMAN D4, 1000 h	00274273
1x	Maintenance Kit MIXMAN D5, 500 h	00274276
1x	Maintenance Kit MIXMAN D5, 1000 h	00274274

8.8 Maintenance card - visual inspection

The table below tells you everything about the visual inspection maintenance card. This maintenance card is for the visual inspection before daily use. Constant visual inspection is also always advisable during operation, and pay attention to all defective cables and potential damage. This attention is necessary to ensure work safety.

Maintenance card - visual inspection - steps	
Task	**What is to be done**
Preparation	Open the hood, check the lines, start the machine for 2 minutes and check for leaks
Safety equipment	Check the protective grille, check the emergency stop switch, check protective covers
Lines / oil	Check the lines for damage, check for leaks
Gaskets	Check seals, note tightness
Cooler	Check whether the fan is working
Covers	If all covers are attached
Cleanliness	Check the cleaning and cleanliness of the machine. These increase longevity.
Rust spots	Check for rust spots and have them removed. Use appropriate machine maintenance
Operating pressure	Check the function of the pressure gauges
Machine noise	Pay attention to any unusual noises. Stop the machine immediately.

Note
The visual inspection is part of the daily work and serves your safety. The visual inspection does not replace maintenance work.

8.9 Maintenance card - lubrication plan

In the following table, you can find out everything about the maintenance card lubrication plan. Here you can find the lubrication points of the machine. These are to be greased with a grease gun according to the following table. If your machine has a central lubrication system, the mixer shaft seals are automatically lubricated.

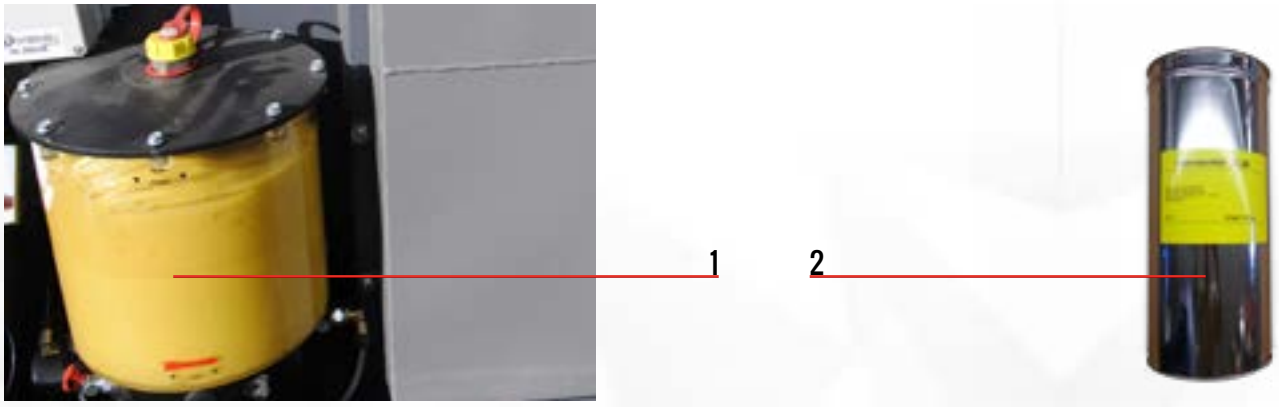
Maintenance card - lubrication plan - steps	
Task	**What is to be done**
Daily lubrication points	Vent lever (1 position), only cap without automatic
Weekly lubrication points	Points on the vessel dome [5 places (protective grille, filling funnel, cap, toggle lock)] and the feeder system (6 places)
Annual lubrication points	Overrun hitch (4 places) - on the inside - storage horizontal adjustment

Note
All lubrication points are provided with red nipples. Lubricate the areas with a grease gun and make sure that you reattach the red nipples afterwards

8.10 Maintenance card - central lubrication system

In the following table, you can find everything about the central lubrication system maintenance card. Here you can find out how the central lubrication system is refilled. One grease filling is enough for about a year. Always watch the system's level indicator.

Maintenance card - central lubrication system - steps	
Task	**What is to be done**
Refilling the system	Open the turnbuckle Open the cap Open the cap of the grease cartridge Pull the opening tab of the grease cartridge Press the grease down with the exposed handle Remove the empty cartridge and close the container
Function check of the central lubrication system	Start the engine and switch on the mixer Press the central lubrication system button until grease emerges from the mixer shaft. Turn off the machine.



- (**1**) **Central lubrication system** - Min and Max display on the container.
- **(2) Grease cartridge** - Use only the specified equipment.

Note
Always use original GB Machines grease cartridges.

8.11 Maintenance card - battery

The table below tells you everything about the battery maintenance card. This card describes the maintenance work on the battery (diesel machine). Please pay attention to the maintenance periods for the machine.

Maintenance card - central lubrication system - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Check the acid level	Put on protective equipment Visually inspect the battery cells Top up with distilled water if necessary Close the cells
Charge the battery	Disconnect the battery Put on protective equipment Connect the charger according to the charger instructions When the battery is charged, disconnect the charger Check the acid levels Connect the battery
Caring for the battery	Store the battery in a dry place Do not place tools on the battery or grease contacts. Remove the battery when not in use and store the battery in a dry place Maintain the electrolyte level at approx. 10-15 mm above the lead plates

Protective gloves
Protect your hands against corrosive substances

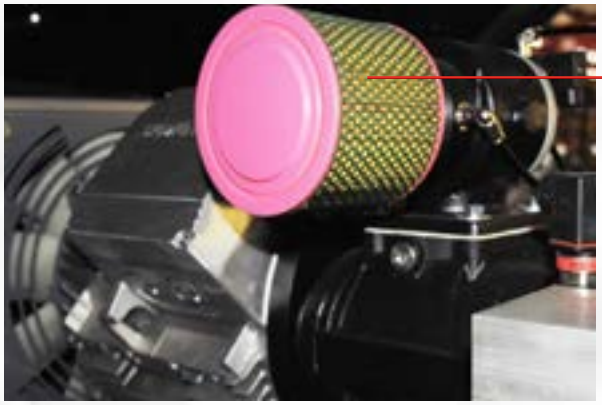
Safety goggles
Protects your eyes

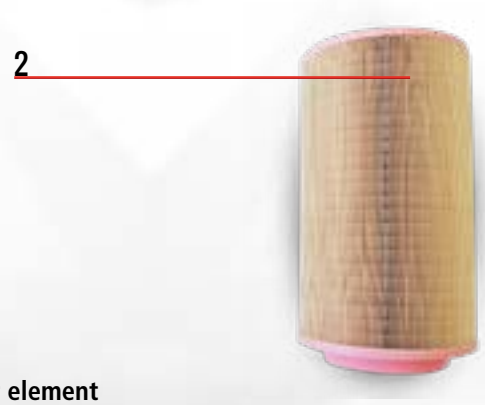
Danger
Watch out for leaking battery acid. It is corrosive and can lead to serious injuries.

8.12 Maintenance card - air filter - E-machine compressor

The table below tells you everything about the air filter maintenance card. This card describes the maintenance work on the air filter. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine; if you work in an extremely dusty environment, these can vary.
Always check the filter for damage and only work with undamaged air filter elements.

Maintenance card - air filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Clean the dust collector	Press the dust discharge valve several times By kneading it several times, the coarse dirt will trickle out.
Clean the air filter element	Open the two clamps and push them outwards Take down the dust collector Cover the air intake opening. Remove the air filter element and clean it with compressed air. Work against the current. Check the element for damage. Clean the filter housing, sealing surfaces and dust collector with a damp cloth. Reassemble the air filter.
Change the air filter element	Open two clamps and push them outwards Take down the dust collector Check the element for damage. Clean the filter housing, sealing surfaces and dust collector with a damp cloth. Insert a new air filter element, only using original accessories





- **(1) Dust collector**
- **(2) Engine air cleaner element**

Protective gloves

Protect your hands against corrosive substances

Danger

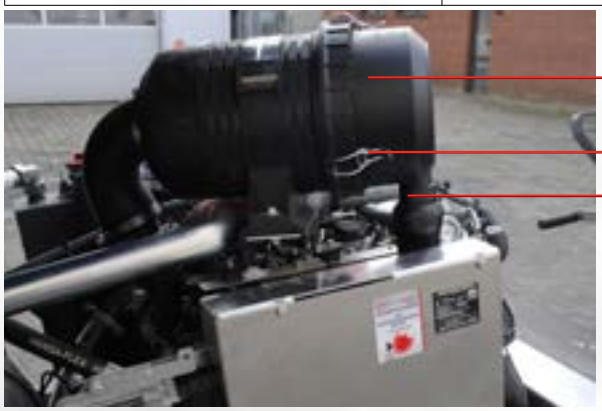
Never use flammable liquids when cleaning. Make sure that no foreign bodies get into the air filter system as this can result in damage.

Maintenance

8.12.2 Maintenance card - air filter - compressor diesel machine

The table below tells you everything about the air filter maintenance card. This card describes the maintenance work on the air filter. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine; if you work in an extremely dusty environment, these can vary.
Always check the filter for damage and only work with undamaged air filter elements.

Maintenance card - air filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Clean the dust collector	Press the dust discharge valve several times By kneading it several times, the coarse dirt will trickle out.
Safety cartridge	If the safety cartridge is dirty, the air filter element and safety cartridge must be replaced.
Clean the air filter element	Open two clamps and push them outwards Take down the dust collector Cover the air intake opening. Remove the air filter element and clean it with compressed air. Work against the current. Check the element for damage. Clean the filter housing, sealing surfaces and dust collector with a damp cloth. Reassemble the air filter.
Change the air filter element	Open two clamps and push them outwards Take down the dust collector Check the element for damage. Clean the filter housing, sealing surfaces and dust collector with a damp cloth. Insert a new air filter element and a new safety cartridge, only using original accessories.



- (1) Dust collector
- (2) Clamping bracket
- (3) Dust discharge valve
- (4) Engine air cleaner element
- (5) Safety cartridge

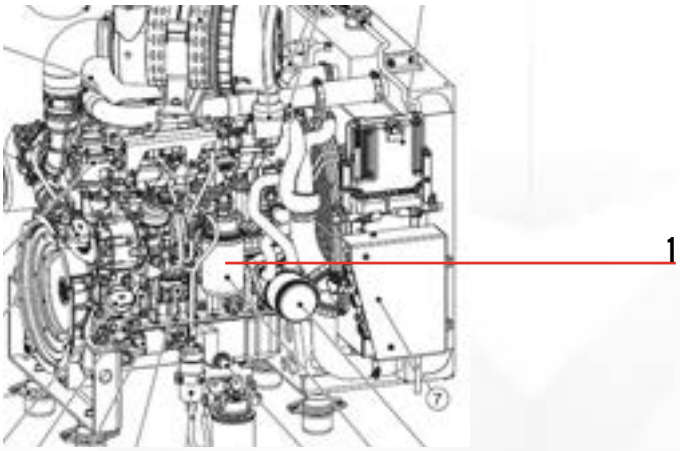
Protective gloves
Protect your hands against corrosive substances

Danger
Never use flammable liquids when cleaning. Make sure that no foreign bodies get into the air filter system as this can result in damage.

8.13 Maintenance card - fuel filter - diesel machine

The table below tells you everything about the fuel filter maintenance card. This card describes the maintenance work on the fuel filter. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - fuel filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Change the fuel filter	Look for a suitable collecting container. Unscrew the fuel filter with a filter wrench. Empty the fuel tank above the collecting container. Clean the sealing surface with a microfiber cloth. Oil the sealing surface of the new fuel filter and fill the container with some diesel. Unscrew the new fuel filter by hand. Tighten the fuel filter.
Leak check	Start the machine and let it run for 2 minutes Check for fuel leaks. If something does leak, stop the leaks.



- **(1) Fuel filter**

Environment
Do not allow dangerous substances to escape.

Protective gloves
Protect your hands against corrosive substances

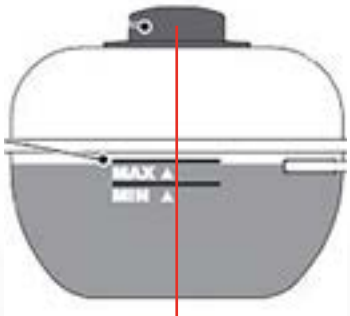
Danger
Avoid naked flames when working with fuels. Make sure that no foreign objects get into the fuel system.

Maintenance

8.14 Maintenance card - coolant - diesel machine

The table below tells you everything about the coolant maintenance card. This card describes the maintenance work on the coolant reservoir. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - coolant - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Drain the cooling system	Look for a suitable collecting container. Open the cap of the expansion tank. Unscrew the drain plug and drain the liquid. Screw in the drain plug with a new sealing ring.
Rinse the cooling system (only if it is dirty)	Rinsing the cooling system is only necessary if impurities are found in the cooling liquid. Since impurities in the coolant could be a major problem, we recommend that the cooling system be rinsed by trained specialists.
Fill the cooling system	Fill the expansion tank up to the mark with a suitable coolant.



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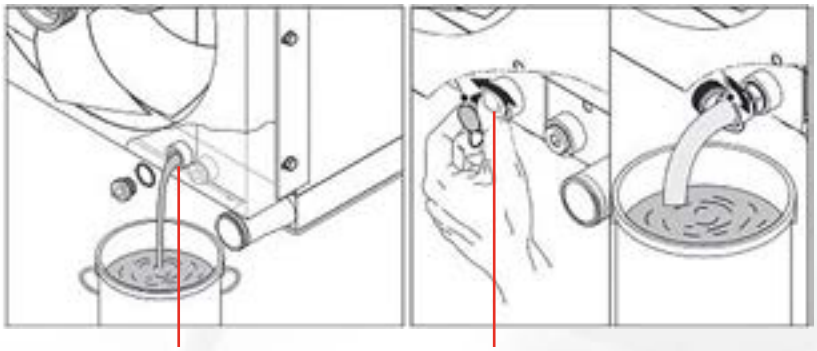


2 3

- **(1) Sealing screw for collecting container**
- **(2) Drain plug on the radiator**
- **(3) Screw plug for valve (version with a drain valve)**

Environment
Do not allow dangerous substances to escape.

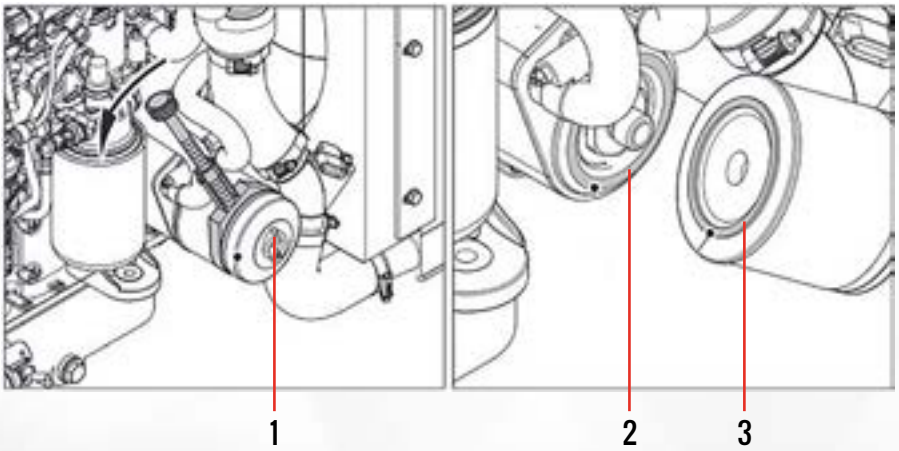
Protective gloves
Protect your hands against corrosive substances

Danger
Caution, there is a risk of burns as the coolant could still be hot. Always allow the machine to cool down before changing it.

8.14 Maintenance card - engine oil / engine oil filter - diesel machine

The table below tells you everything about the engine maintenance card. This card describes the maintenance work on the engine. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - engine oil / engine oil filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Change the oil filter	Look for a suitable collecting container. Unscrew the oil filter with a filter wrench. Empty the oil filter above the collecting container. Clean the sealing surface with a microfiber cloth. Oil the sealing surface of the new oil filter and fill the container with some diesel. Unscrew the new oil filter by hand. Tighten the oil filter.
Leak check	Start the machine and let it run for 2 minutes Check for oil leaks. If something does leak, stop the leaks.



- **(1) Oil Filter**
- **(2) Sealing surface**
- **(3) Sealing ring**

Environment
Do not allow dangerous substances to escape.

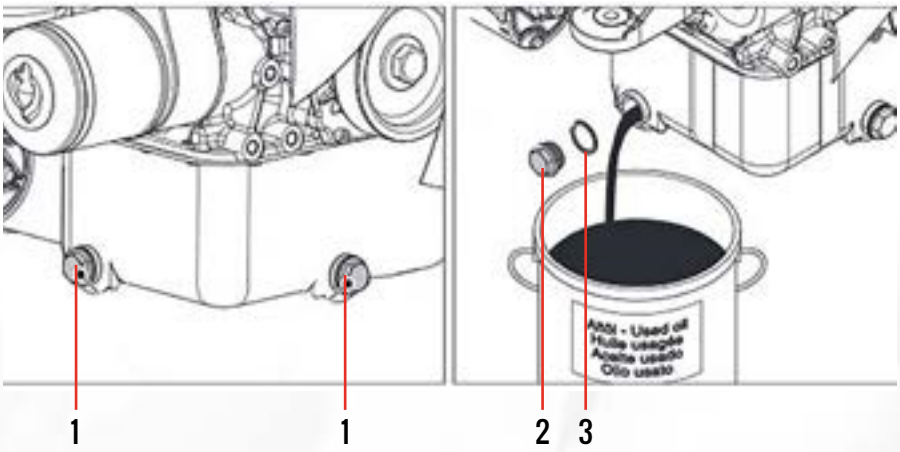
Protective gloves
Protect your hands against corrosive substances

Maintenance

8.14.1 Maintenance card - engine oil / engine oil filter - diesel machine

The table below tells you everything about the engine maintenance card. This card describes the maintenance work on the engine. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - engine oil / engine oil filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Drain the oil	Look for a suitable collecting container. Unscrew the oil drain plug and position the container underneath. Wait until the oil stops flowing. Clean the screw and screw in with a new sealing ring.
Leak check	Start the machine and let it run for 2 minutes Check for oil leaks. If something does leak, stop the leaks.



- **(1) Oil drain plug - front or side**
- **(2) Oil drain plug**
- **(3) Sealing ring**

Danger
Never run the engine without oil. The machine sustains considerable damage.

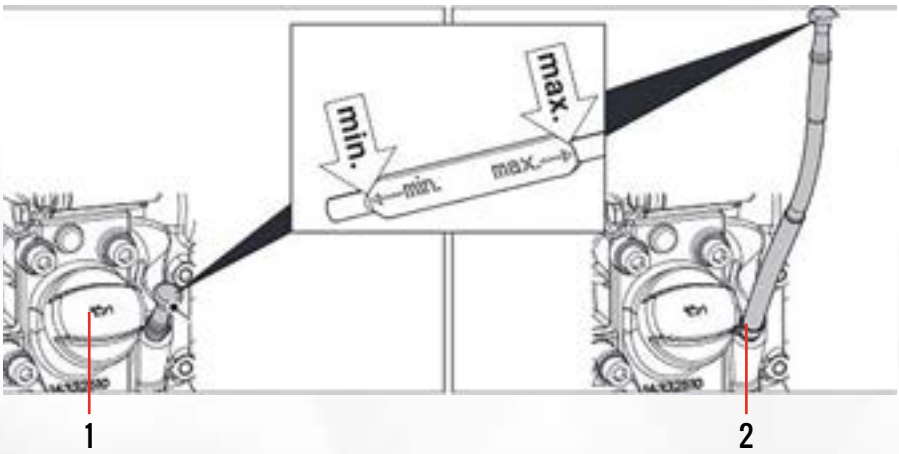
Environment
Do not allow dangerous substances to escape.

Protective gloves
Protect your hands against corrosive substances

8.14.2 Maintenance card - engine oil / engine oil filter - diesel machine

The table below tells you everything about the engine maintenance card. This card describes the maintenance work on the engine. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - engine oil / engine oil filter - steps	
Task	**What is to be done**
Preparation	Shut down the machine
Fill with oil	Unscrew the oil cap. Pull out the dipstick. Fill with oil according to the specifications, observe viscosity. Insert the dipstick. Fill with the appropriate engine oil. Note the maximum marking.
Trial run	After a short test run, check the engine for leaks. If you notice a leak, retighten the screws.



- **(1) Oil - filler neck**
- **(2) Dipstick**

Environment
Do not allow dangerous substances to escape.

Protective gloves
Protect your hands against corrosive substances

Maintenance

8.15 Maintenance card - compressor

The table below tells you everything about the compressor maintenance card. This card describes the maintenance work on the compressor. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - compressor - steps	
Task	**What is to be done**
Preparation	Set up the machine horizontally. Measure the compressor oil level when it is warm. Let the machine run for about 20 minutes. Shut down the machine.
Check the compressor oil level	Check the compressor oil level. This should be in the upper green area.
Refill with compressor oil	Check whether the compressed air tank has depressurized. Open the filler neck for the compressor oil by half a turn so the residual pressure can escape. Open the filler neck completely.
Change the compressor oil	Start the machine and let it run for approx. 3 minutes without load. Check whether the compressed air tank has depressurized. Look for a suitable collecting container. Unscrew the oil drain plug. The old oil drains off. Screw in the oil drain plug with a new sealing ring and tighten it. Pour new compressor oil into the filler neck and check the oil level. Close the filler neck and check for leaks.
Change the compressor oil filter	Shut down the machine. Check whether the compressed air tank has depressurized. Look for a suitable collecting container. Loosen and remove the filter cartridge with a suitable tool. Catch any escaping oil. Dispose of the old filter cartridge. Clean the sealing surface of dirt. Oil the new filter cartridge and screw it on lightly by hand until the seal is in contact with the sealing surface. Tighten the cartridge a further half turn, then check the oil level and leaks.
Leak check	Start the machine and let it run for approx. 3 minutes without load. Check the oil drain plug for leaks. Shut down the machine. Check whether the compressed air tank has depressurized. If necessary, repair leaks. Check the compressor oil level.

Danger
Caution, there is a risk of burns as the oil could be hot. Never open the pressure vessel before it has depressurized. Never work on the compressor system before the pressure vessel has depressurized.

Environment
Do not allow dangerous substances to escape.

Protective gloves
Protect your hands against corrosive substances

8.15.1 Maintenance card - compressor - explanations - arrangements

- **(1) Sight glass - compressor oil stick**
- **(2) Filler neck**
- **(3) Compressor oil filter**
- **(4) Oil drain plug - compressor (pressure vessel)**

Danger

Caution, there is a risk of burns as the oil could be hot. Never open the pressure vessel before it has depressurized. Never work on the compressor system before the pressure vessel has depressurized.

Environment

Do not allow dangerous substances to escape. Collect old oil.

Protective gloves

To protect your hands against corrosive substances, wear appropriate protective equipment.

8.16 Maintenance card - hydraulics

The table below tells you everything about the hydraulics maintenance card. This card describes the maintenance work on the hydraulics on the feeder scraper machines. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - hydraulics - steps	
Task	**What is to be done**
Preparation	Set up the machine horizontally. If the machine is cold, start the engine and let it warm up; this makes the hydraulic oil more fluid. Swing the feeder down. Shut down the machine.
Check the hydraulic oil level	Pull out the dipstick and wipe it clean. Reinsert this and measure the result - should be close to the maximum mark - reinsert the dipstick into the machine.
Refill with hydraulic oil	Loosen the filler cap of the hydraulic oil. Red cap. Open this and refill the corresponding operating fluid. Measure the oil level again using the dipstick.
Change the hydraulic oil	Look for a suitable collecting container. Loosen the filler cap. Pull out the filter element and catch the oil that escapes. Dispose of the old filter Insert the new filter. Close the filter cap. Carry out a function and leakage check.
Function check	Turn on the machine Swing the feeder upwards slowly and carefully. Pay attention to the tightness of the machine. If the feeder can be swiveled without any problems, move it up and down several times. Lower the feeder and pull out the scraper a little and let it roll up again using the remote control. Check the oil level and top up if necessary.
Leak check	Shut down the machine. Check whether the compressed air tank has depressurized. Visual inspection for leaks. Repair any leaks, as needed. Check the hydraulic oil level.

Danger
Caution, there is a risk of burns as the oil could be hot. Never open the pressure vessel before it has depressurized. All work on the hydraulics must be carried out by authorized specialists.

Environment
Do not allow dangerous substances to escape.

Protective gloves
Protect your hands against corrosive substances

8.16.1 Maintenance card - hydraulics - explanations - arrangements

- **(1) Filler cap - hydraulics**
- **(2) Dipstick - hydraulics**
- **(3) Oil drain plug - compressor**

Danger

Caution, there is a risk of burns as the oil could be hot. Never open the pressure vessel before it has depressurized. Never work on the compressor system before the pressure vessel has depressurized.

Environment

Do not allow dangerous substances to escape. Collect old oil.

Protective gloves

To protect your hands against corrosive substances, wear appropriate protective equipment.

8.17 Maintenance card - check valves

The table below tells you everything about the check valve maintenance card. This card describes the maintenance work on the check valves of the machine. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine.

Maintenance card - check valves - steps	
Task	**What is to be done**
Preparation	Shut down the machine.
Arrangement of the check valves	The check valves are located under the maintenance flap. No mixed material reaches the upper and lower air taps through the check valves.
Cleaning the check valves	Loosen the screw connection of the cap of the check valve and remove the cap. If necessary, remove the sealing piston and pressure springs. Remove soft dirt with a cloth. Scrape out stubborn dirt with a scraper. Reinstall the sealing piston and pressure springs and close the cap.
Change sealing piston and compression springs	Loosen the screw connection of the cap of the check valve. Remove the old sealing piston and pressure springs. Replace them with new ones. Close the cap tightly again.

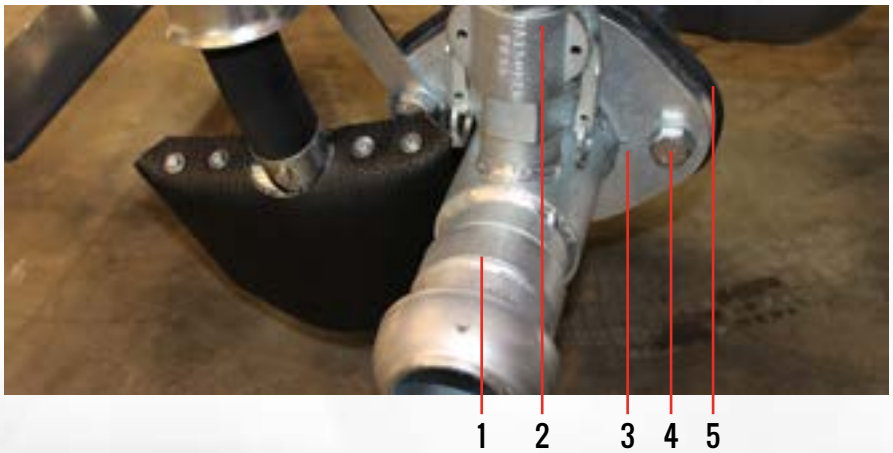
- **(1) Cap screw connection**
- **(2) Check valve**

Danger
Note that the machine must be shut down before you start working on the air system. There is a risk of pressure equalization and flying parts.

8.18 Maintenance card - vessel outlet

The table below tells you everything about the vessel outlet maintenance card. This card describes the maintenance work on the machine's vessel outlet. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine. Please note that the vessel outlet is a wear part and must be replaced when air starts to escape.

Maintenance card - vessel outlet - steps	
Task	**What is to be done**
Preparation	Shut down the machine. Make sure that the mixing vessel is vented. Carefully loosen the hose couplings. Clean the mixing vessel.
Change the vessel outlet	Unscrew the connection piece and check it for wear. Twist off the lower air hose. Unscrew the screws on the vessel outlet and remove it. Check the seals and, if defective, replace immediately. Screw on the new vessel outlet allowing the lower air connection to point upwards. Screw on the lower air hose. Mount the connection piece.
Leak check	Visual inspection for leaks. If necessary, repair leaks.



- **(1) Connection piece**
- **(2) Lower air hose**
- **(3) Vessel outlet**
- **(4) Screw - 2 pieces -**
- **(5) Gasket**

Danger
Never loosen hose couplings until the machine has been shut down and vented. There is a risk to life. Always check on the pressure gauge whether the machine is really pressure-free. Pay attention to the appropriate protective clothing as the mix can escape.

8.19 Maintenance card - hose lines

The table below tells you everything about the hose lines maintenance card. This card describes the maintenance work on the machine's hose lines. Please note the maintenance intervals for the machine. The specified change intervals assume normal use of the machine. Use leak detection spray for air-carrying hoses.

Maintenance card - check valves - steps	
Task	**What is to be done**
Preparation	Start the machine and let it run. Leaks in the air system are only visible when the engine is running. You can find a leak in an oil hose by looking for freshly leaking oil. Do not reach into moving parts while the machine is running. Do not touch hot surfaces. Shut down the machine when you locate the leaks.
Check the hose lines	Carry out an intensive visual inspection. Watch out for leaking oil or other abnormalities. Operate the machine only briefly with the hood open. Shut down the machine when you have located the leaks.
Changing hose lines	Make sure that the pressure vessel has depressurized. Drain the oil from the affected system. Collect it in a suitable container. Replace the defective hose. Install the new hose.
Leak check	Start the machine and let it run. Perform a visual inspection of the repaired hoses. Repair leaks, as needed.

Danger
Note that the machine must be shut down before you start working on the air system. There is a risk of pressure equalization and flying parts.

9 EC declaration of conformity

According to the EC Machinery Directive 2006/42/EC of May 17, 2006, Annex II

We hereby declare that the designated machine of type:

MIXMAN D4 / D4B / D4BS / D5 / D5B / D5BS

complies with the basic requirements of the EC Directive 2006/42/EC.

Manufacturer / authorized representative

Ludger Glaap & Fritz Brinkmann Machines GmbH & Co.KG
An der Heller 4-12
33758 Schloß Holte

Compliance with the directives is declared

- **2014/68/EU** **Pressure Equipment Directive**
- **2006/95/EC** **EC Low Voltage Directive**
- **2004/108/EC** **Electromagnetic compatibility**

Applied harmonized standards

- **EN 12001 -** **Conveyors, spraying and distribution machines**
- **EN 1829** **High-pressure cleaner. High-pressure water jet machines**

Details of the signatory

Ludger Glaap & Fritz Brinkmann Machines GmbH & Co.KG
An der Heller 4-12
33758 Schloß Holte

Datum: 18.03.2020 Geschäftsführer Ludger Glaap

10. General Business Conditions

General terms and conditions of sale and delivery of LUDGER GLAAP & FRITZ BRINKMANN Machines GmbH & Co. KG (as of 07/2020) „Supplier"

I. Validity

1. The following general terms and conditions of sale and delivery apply exclusively to enterprises, legal entities under public law or special funds under public law within the meaning of Paragraph 310 (1) of BGB (German Civil Code). Conditions of the purchaser that contradict or differ from our terms of sale and delivery will not be recognized unless explicitly agreed upon in writing.
2. These conditions of sale also apply to all future business with the customer, insofar as they are legal transactions of a related nature.

II. Prices

1. The prices apply to the scope of services and delivery listed in the order confirmations. Additional or special services shall be charged separately. The prices stated are in EURO, EX Works; packaging, statutory VAT, postage, customs duties for export deliveries and fees and other public taxes shall also be charged additionally (EXW).
2. Engineering services, if necessary or requested, as well as assembly costs and commissioning, will be charged separately, unless otherwise agreed upon in writing.
3. Should the order be changed at the request of the purchaser, the supplier is entitled to charge the costs incurred up to that point, such as costs of : demonstrations, deliveries, insurance or other services as well as the amount of the depreciation resulting from aging and use plus 20.0% of the original price. We reserve the right to demand immediate payment in such cases, although it may be contrary to the initial agreement.

III. Conclusion of the contract

1. The supplier can accept orders or commissions within fourteen (14) days upon receipt. All offers of the supplier are subject to change and non-binding, unless expressly marked as binding or containing a specific acceptance period.
2. The written purchase contract („confirmation"), including these general terms and conditions of sales and delivery, is solely decisive for the legal purposes. It fully reflects all agreements between the both parties of the contract. Verbal commitments made by the supplier prior to the conclusion of this contract are not legally binding and verbal agreements between the contracting parties are replaced by the written contract, unless expressly stated that they shall continue to apply.
3. Any additions and changes to the agreements made, including these General Terms and Conditions of Delivery, must be made in writing to be effective. The supplier's employees, with the exception of managing directors or authorized signatories, are not entitled to make oral agreements that differ from the written ones. In order to maintain the written form, transmission via email is sufficient, provided a copy of the signed declaration has been issued.
4. Information provided by the supplier about the product or service (e.g. weight, dimensions, load capacity, tolerances and technical data) as well as our drawings and illustrations are only approximate, unless the intended usage requires an exact match. They are not guaranteed characteristics, but descriptions or characterization of the product or service. Customary deviations and changes that occur due to legal regulations or represent technical improvements, as well as the replacement of components by equivalent parts, are permissible, provided they do not impair the intended usage.

5. The supplier reserves the right of ownership and copyright to all offers and cost estimates as well as drawings, illustrations, calculations, brochures, catalogs, models and other documents and aids made available to the client. The purchaser may not, without the express consent of the supplier, make these items available to third parties, either as such or in terms of content, or make them known, use or reproduce them himself or through third parties. These items shall be returned to us at any time upon request in full, any copies made shall also be destroyed if no longer required in the ordinary course of business or if negotiations have not resulted in the conclusion of a contract. It shall not apply to the storage of electronically provided data for the purpose of normal data backup.
6. The transported goods can be insured on the desired amount upon buyer's written request. The purchaser bears the costs of the insurance.

IV. Delivery terms, default in acceptance, withdrawal from the contract, supplier's claims for damages
1. All deliveries are to be understood EX WORKS. All delivery dates and deadlines are only approximate unless a fixed period or date has been expressly promised or agreed upon. The delivery time or deadline is met if dispatch has taken place within time frame agreed upon or purchaser has been informed about seller's readiness to dispatch before the set deadline. If the order consists of several articles, and some of them are not in stock, upon buyer's request the available articles can be delivered as quickly as possible, however he / she has to incur the costs of delivery of the remaining articles, unless dispatch of these goods takes place after 7 (seven) working days since the initial shipment.
2. The supplier cannot be held liable for being unable to deliver, or for delays in delivery, if those are caused by force majeure or other events that were not foreseeable at the time the contract was concluded (e.g. operational disruptions of all kinds, difficulties in material procurement, transport delays, shortage of workers, difficulties in procurement of the official permits, incorrect or late delivery by suppliers). Should such events make delivery significantly more difficult or impossible for the supplier, and the hindrance is not only of temporary nature, the supplier is entitled to withdraw from the contract. Should the obstacles be temporary, the delivery deadlines are extended or postponed by the period of the obstacle plus a reasonable start-up period. If the purchaser can no longer reasonably be expected to accept the delivery as a result of the delay, he can withdraw from the contract by means of an immediate written declaration.
3. The assumption of risk shall pass to the purchaser at the latest upon dispatch of the delivery item. This shall apply regardless of where the goods are dispatched from, or who bears the freight costs. No liability is assumed for providing the most inexpensive shipment available or the fastest transport times.
4. If the purchaser is responsible for the delay in delivery, dispatch or receipt of the delivery item, all risks are transferred to the purchaser upon notification of readiness for dispatch or notification of completion (in the case of collection).
5. If the purchaser is in default of acceptance or if he culpably violates other obligations to cooperate, he must compensate the proven losses incurred by the supplier (such as storage costs) as well as any additional expenses.
6. If the object of the contract is not accepted, or if acceptance or collection is refused, we are entitled to withdraw from the contract and claim damages after a reasonable grace period has been granted and brought no results. The same applies if the purchaser does not adhere to the terms of payment. As compensation for damages we can demand a flat rate of 15.0% of the purchase price for series products and 30.0% of the purchase price for individual production without any proof. Shall the purchaser disagree with these terms, he is the one to bear the burden of proof that the damage did not occur or that it occurred in a significantly lesser extent than the flat rate.

V. Payment and Default

1. Invoice amounts are to be paid within seven (7) calendar days without any deduction, unless otherwise agreed in writing. The date of receipt by the supplier is decisive for the date of payment. If the purchaser is in default of payment, the outstanding amounts shall be paid with an interest of 5% above the base rate from the due date; the assertion of higher interest and further damage in the event of default remains unaffected.
2. The purchaser may offset against counterclaims or withhold payments only if these counterclaims are undisputed or have been legally established and results from the same contractual relationship.
3. The supplier is entitled to carry out outstanding deliveries or services against prepayment or security if, after the conclusion of the contract, he becomes aware of circumstances that are likely to significantly reduce the purchaser's creditworthiness and may have influence on his ability to fulfill the contractually regulated financial obligations (including other individual orders for which the same framework agreement applies).

VI. Reservation of proprietary rights

1. The delivered items (reserved goods) remain our property until all claims to which we are entitled have been met. If the value of all security rights, to which we are entitled exceeds the amount of all secured claims by more than 10%, we will release a corresponding part of the security rights at the request of the purchaser. We are entitled to choose between different security rights when releasing them.
2. Should the delivered item be resold to a third party, the purchaser transfers his rights and financial obligations to the said third party, without the need for any further special declarations. The cession includes all balance claims, but only up to the amount corresponding the price of the delivered entity. The portion of the claim assigned to us is to be satisfied in the first place. Until further notice, the purchaser is authorized to collect the claims assigned to us and will immediately forward payments made. In certain cases, especially if a significant deterioration in the purchaser's creditworthiness shall come to our notice, we are entitled to revoke this authorization to collect. In addition, we can disclose the assignment of security after notification with a reasonable period.
3. Have the proprietary rights of the goods not been passed to the purchaser yet, he is obliged to treat the purchased item with utmost care. In particular, he is obliged to insure them adequately at replacement value at his own expense against: theft, fire and water damage. If maintenance and inspection work is to be carried out, the purchaser must perform it in good time, at his own expense. If the purchaser is not a specialist dealer and service workshop at the same time, the purchaser must inform us in writing of any necessary maintenance and inspection work. It shall then be carried out by us or by a third party commissioned by us. The purchaser bears the costs.
4. As long as the proprietary rights have not been passed yet, we are to be notified immediately in writing if the delivered item is seized or exposed to other interventions by third parties. If the third party is unable to reimburse us for the judicial and extrajudicial costs of a lawsuit in accordance with paragraph § 771 ZPO, the purchaser is liable for the losses incurred.
5. Should the retention of title, the seizure or the assignment not be effective under the respective law of a country in which the purchaser is located, the legal regulations that come closest to the retention of title or the assignment in this country apply as agreed.

VII. Complaint and warranty

1. The purchaser is obliged to inspect the delivered item for defects immediately after receipt and inform us about them without delay in writing.
2. Claims for defects become statute-barred 12 months after dispatch or, upon collection, after receiving the notification of readiness for dispatch. The statutory limitation period applies to claims for damages in the event of intent and gross negligence on our part.
3. Should the goods show a defect, in spite of handling them with the utmost care, that had already been present at the time of the transfer of risk, we shall either repair or replace it at our discretion. We must always be given the opportunity to either carry out the necessary improvements or replace faulty items within a reasonable period of time. Prior to returning the goods our written permission is to be requested. If the subsequent repair attempt fails, the purchaser can - without prejudice to any claims for damages - withdraw from the contract or reduce the remuneration.
4. We shall reject complaints lodged due to insignificant or minor deviations from the agreed quality, or insignificant impairment of the usability. This also apply in case of natural wear and tear, as well as damage that had occurred after the transfer of risk as a result of incorrect or negligent handling, excessive use, unsuitable operating resources or due to special external influences. If improper repair work or changes are carried out by the purchaser or by a third party on his behalf, any claims for defects are deemed invalid.
5. Unauthorized subsequent improvements by the purchaser himself, or by third parties on his behalf, result in the loss of all claims for the defects. We shall not assume any costs of such adjustments without our prior written consent.
6. Used machines, devices or parts are sold under no guarantee. The statutory limitation period applies to claims for damages in the event of intent and gross negligence on our part.
7. Recourse claims remain unaffected by the above regulation without restriction. They shall apply to us as long as different arrangements have not been made by the purchaser with his customer.

VIII. Software

The purchaser is granted a non-exclusive right of the software's use intended only for the product delivered. Distribution, granting a thirdparty access to it, modification or expansion of the software are prohibited. All rights to the software remain with the seller, who is solely entitled to issue licenses or sub-licenses. The use of the software may only take place within the respective statutory provisions.

IX. Place of fulfilment, jurisdiction

1. The law of the Federal Republic of Germany shall apply exclusively to all legal transactions between the supplier and the purchaser, including the future ones. The UN Sales Convention (CISG)does not apply, unless otherwise agreed upon in writing.
2. The place of fulfillment and exclusive place of jurisdiction for all disputes arising from this contract is our place of business.

As of 07/2020

OPERATION MANUAL. MIXMAN SERIES
D4| D4B | D4BS | D5 | D5B | D5BS

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