



KAISER

S2 Gator 4x4

Operating- and Maintenance Instructions

Type: KAISER S2 Gator 4x4

Serial number: _____

Year of construction: 1999

Produced by: Kaiser Aktiengesellschaft
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Dear customer,

Congratulations on your purchase of the Kaiser S2 Gator.
You have bought a quality product with most up-to-date technology and all-purpose application possibilities.

Before you put the new machine into operation, please read this instruction manual carefully.
Please keep it in a safe place in your new walking-mobile excavator, so that you can look up also in future.

KAISER AG
FAHRZEUGWERK



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CONGRATULATIONS...

... on your purchase of the new S2 Gator, you are now among an elite group who operate the finest walking excavator in the world.

This manual contains information and helpful tips, please study it carefully to ensure you enjoy a safe and productive time with your machine.

Due to the versatile nature of the machine and creative uses that are continually discovered, we urge you to use this manual as a guide and direct any specific questions to the factory as to suitability and application procedures.

1. Product description

1.1 General information

The Kaiser S2 Gator, is a member of the Kaiser family of all terrain walking excavators. A 360 degree excavator uppercarriage supported by a geometrically advanced undercarriage consisting of four "legs" each capable of individual positioning in both horizontal and vertical planes. The machine is completely hydraulically powered for all functions including the powerful drive system.

1.2 Range of applications

The Kaiser S2 Gator will carry out the excavating procedures of any similar sized conventional track or rubber tired hoe style excavator. It will also perform these tasks where the above mentioned cannot gain access, e.g. steep slopes, boggy swamp areas, in water covered areas etc. The ability to continually re configure the undercarriage allows operation in all these areas the capacity of the Kaiser S2 Gator as a tool carrier and range of accessory items available allows almost unlimited application potential.

1.3 Forbidden applications would include, but not limited to; -

- **working the machine in dangerous environments, eg,**
steep slopes with loose unstable ground or smooth slick surfaces, consult the factory for methods of safe anchoring techniques per instance.
in swamps, snow bridges and areas where the weight of the machine cannot be supported.
- **working the machine with attachments and not following attachment rules, eg,**
hammer application requires extender boom to be fully retracted before use.
mower application require all guards on mower and operator protection installed before use.
- **working the machine in an abusive and damaging manner, eg,**
using the boom and/or swing as a hammer.
using the legs as excavating or hoisting devices.
- **working the machine as transport device for people or material, eg,**
giving rides to people, using the machine to move people to higher or lower elevations, carrying materials may fall or exceed safe travel practice.

**Operator training is available and is strongly
recommended to ensure safe and productive performance.
(certain countries mandatory training is required please check local laws)**

2. Safety specifications

2.1. Operator overview:

Because of the variety of work and work places the Kaiser S2 Gator is expected to perform in, a tremendous amount of responsibility falls on the operator. A skilled operator places safety as priority number one when planning a job. As a Kaiser S2 Gator operator you are responsible not only for yourself but also for the people and property around you. Never operate the machine in an unsafe condition, never attempt a manoeuvre that you consider unsafe or work in an unsafe environment.

Do not accept instructions or be cajoled into doing anything you consider unsafe, you cannot be fired for refusing to carry out an unsafe procedure, but you will be held responsible if someone is hurt because of it. The pre-trip inspection and safety check sheet is provided as a reminder for key points - it does not absolve the operator from acting on his own good sense.

Tipping and sliding is probably the greatest concern of the Kaiser S2 Gator operator, although the machine is very stable and designed to work at steep angles the machine can and will tip given the opportunity by incorrect set up and operating procedures. Examples of machines

rolling down a mountain or slipping off the edge of a cliff are usually traced back to operator error and often time the operator is not a novice but an experienced operator with a lot of stick time who has grown complacent. The machine sliding is similar to a car skidding, if all points of contact are sliding then the operator has no control of the machine and gravity determines the direction of travel, careful inspection of the job site can often prevent this happening. If the machine is going to be working on steep slopes and mountains the undercarriage winch is strongly advised.

Cave ins and washouts are another hazard the operator has to be aware of, the safety requirements for trenching are well documented, washouts are of concern for Kaiser S2 Gator operators as often times the working area is in a ditch and the operator has "feel" the bottom to ensure a safe and stable base. A place that was solid yesterday may have washed out today.

As a condition of sale it is understood that the purchaser, upon receipt of this machine, will fill out and send the warranty registration card to the factory. The purchaser must help assure the safety of the machine's operators as well as bystanders by instructing and warning all operators of this machine related to the operational procedures and safety instructions as stated in the Owner's/Operator's Manual.

Safety is first priority with Kaiser and should also be first with you. In addition to the design and configuration of the equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of this machine. The safety instructions and warnings in this manual must be reviewed carefully and regularly to help insure the safety of personnel and property.

To assure the safety of operators and bystanders, this industrial tractor must be operated only by properly trained and supervised operators. As a condition of sale, the owner has accepted the obligation of training and supervising all operators of this mower in accordance with the safety and operation sections of this manual. Personnel supervising, operating, servicing or maintaining this machine must be instructed in the safe operation of the equipment before they operate this machine and at least annually thereafter. All operators must read and have access to this manual. Should any operator not be able to read or understand this manual, it will be necessary to have someone read and explain it to him or her. Do not attempt to use the machine other than in the way(s) explained in this manual.

Modifications or alterations should never be made to Kaiser machines unless prior written authorization has been obtained from the Kaiser factory. Changes which may appear quite logical can cause very serious safety and/or functional problems. The factory has spent years developing this machine - **DO NOT MAKE MODIFICATIONS!**

All references to this machine when ordering parts, or requesting service will require the model and serial numbers for proper identification. Be sure that the serial number is properly noted in your records and that the serial nameplate on the machine is maintained in its proper location.

2.1.1 Guarantee and liability

Basically our sales- and delivery conditions which are included in the contract are valid. From the day the employer signs the contract he is aware of these conditions. Guarantee- and liability claims are out of question if the the following points are the reason for troubles:

- Non respective usage of the machine
- Non respective commissioning, operation or maintenance of the machine.
- Working with defective resp. wrongly mounted safety- or protection cover.
- Ignoring the advice in the hand book respectively transport, storage, assembly, commissioning, operation, maintenance and attachments set up.
- Own changes of the construction.
- Own changes of transmission ratio (power and r.p.m).
- Bad supervision of machine parts, which have high wear.
- Non correct done repair jobs
- Damages through acts of god

2.2 Symbols

In this manual we use the following signs to emphasize very important messages.



This symbol means that it is quit dangerous for life and health of persons.

Disregarding these instructions might cause injuries and damages to health and machine.



This symbol means that maybe there it is dangerous for life and health of persons.

Disregarding these instructions might cause injuries and damages to health and machine.



This symbol means that there might be a dangerous situation.

Disregarding these instructions might cause damages to health and machine.



This symbol gives you very important informations about the right handling of the machine.

Disregarding these instructions might cause damages to machine and properties..



This symbol means that there are very important and helpful tips and information about the machine.

They can help you to optimize the use of the machine.

2.3 Organization information

- The required personal protective equipment has to be provided by the employer.
- All protective equipment has to be checked in regular time intervals.

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2.4 Safety equipment

- Before every commissioning of the machine all the safety equipment has to be mounted in the right position and has to work properly.
- It is only allowed to remove the safety equipment when the machine is secured against restarting respectively moving any dangerous parts.
- After delivery of components the employer is in charge of the safety equipment being mounted in the right position

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2.5 General safety arrangements

- This manual is to be kept always with the machine.
- Also take care of the accident specifications and the conservation of the working area
- All safety stickers on the machine must be in good condition.

2.6 Employees training

- Only trained persons are allowed to work with the machine.
- Every worker must be trained for his special job on the machine. (Repairing, commissioning, operating, preparing and maintenance.)
- New workers are only allowed to work at/with the machine under supervision.

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2.7 Safety specification by standard work

- Operate the spyder only when all safety equipment is working.
- Take care before starting that nobody can be in danger.
- Check min. once a day the machine for damages
- Check min. once a day the safety equipment of the machine.



2.8 Danger from hydraulic pressure

- Only special trained persons with experience are allowed to work on the hydraulic components of the machine.
- Before starting repair work on hydraulic components open the filler cap of the hydraulic tank.
- Exchange hydraulic hoses in appropriate intervals, even if there are no damages visual.



2.9 Special danger points

See 6.14

2.10 Maintenance and repair tips

- Make inspections, maintenance and adjustments in the appropriate intervals.
- Inform operators before maintenance or inspection.
- Make sure that nobody can start the spyder during inspection / maintenance
 - * Turn main switch off and take the key off
 - * Place a sign on the machine against restarting
- During work on hydraulic components always open the filler cap of the hydraulic tank.
- When changing heavy parts make sure that they are secured during lifting.
- Check safety equipment after maintenance
- Check bolt connections
- After repair job check safety equipment.



2.11 Changes at the machine

- It is not allowed to change anything on the machine without authorization by Kaiser AG. This includes also welding on the machine.
- Before changing you need a written permission from Kaiser AG.
- Parts in bad condition have to be changed promptly.
- Use only original spare parts.



2.12 Cleaning and recycling

- Handle and recycle used materials properly - in particular
 - * material from the grease system
 - * material from cleaning



2.13 Noise level

- The measured noise level of the machine : $L_{pA} = 78 \text{ dB(A)}$, $L_{WA} = 98 \text{ dB(A)}$
- Depending on the usage and the area of the machine the noise level can rise. In this case the workers must wear safety equipment against health damages.
- At a noise level over 85 dB/A the workers must wear ear protection.

2.14 Declaration of conformity**EG - Declaration of conformity**

EG-guide line 98/37/EG

We Kaiser AG, Fahrzeugwerk
 Fl-9486 Schaanwald, Fürstentum Liechtenstein

declare that the product

Walking - mobile excavator S2 Gator**Serial number:** _____

complies with the following regulations:

- * EG guide line 98/37/EG [89/392/ EWG with
updated guide line 91/368/EWG, 93/44/EWG and 93/68/EWG]
- * EMV 89/336/EWG
- * European norm EN 292 Part 1 and Part 2, EN 474-1 / EN 474-5/
ISO 10626 and ISO 3471

First name: Ott

Last name: Walter

Production manager

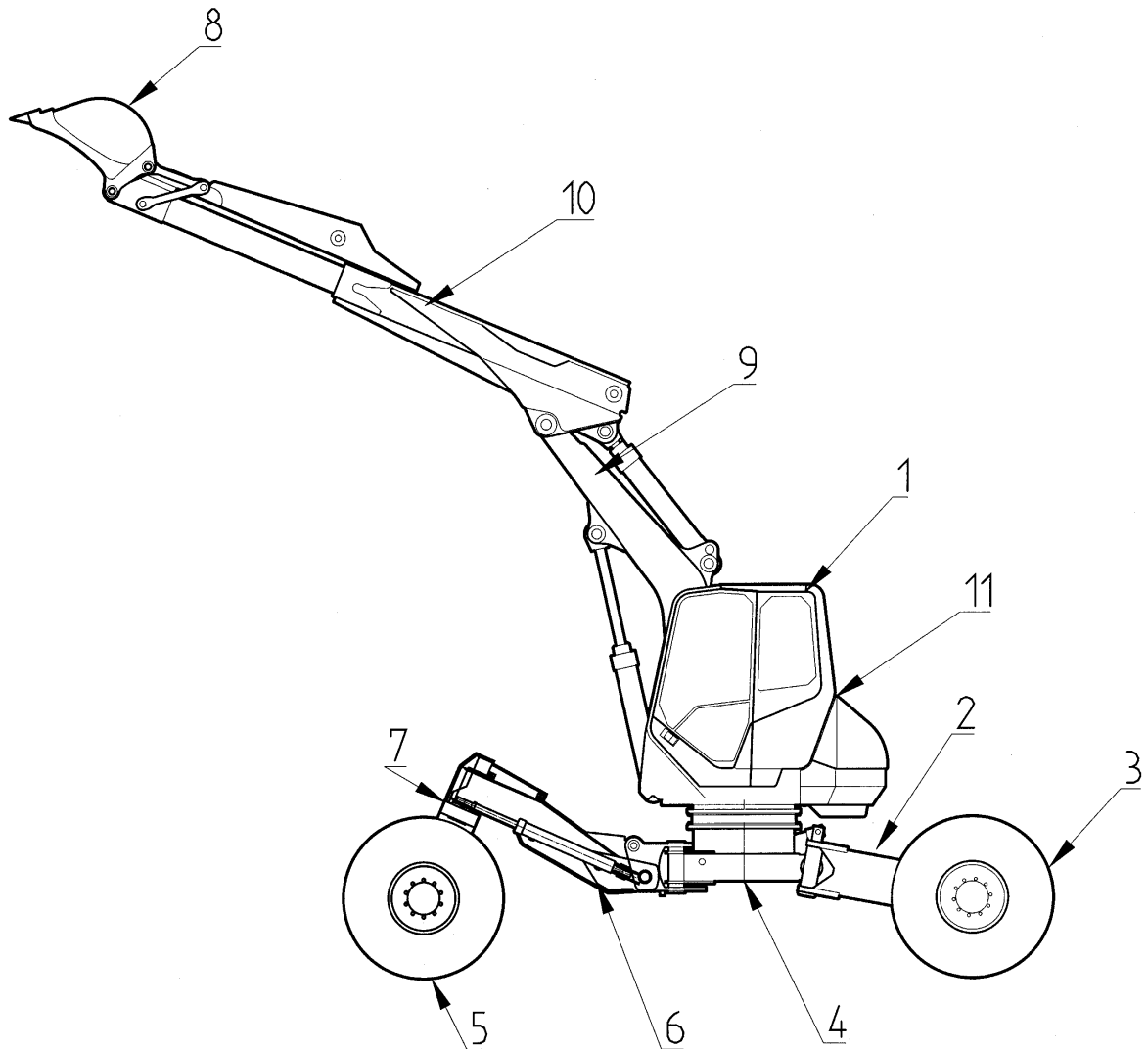
Schaanwald, 27.5.98

Signature:



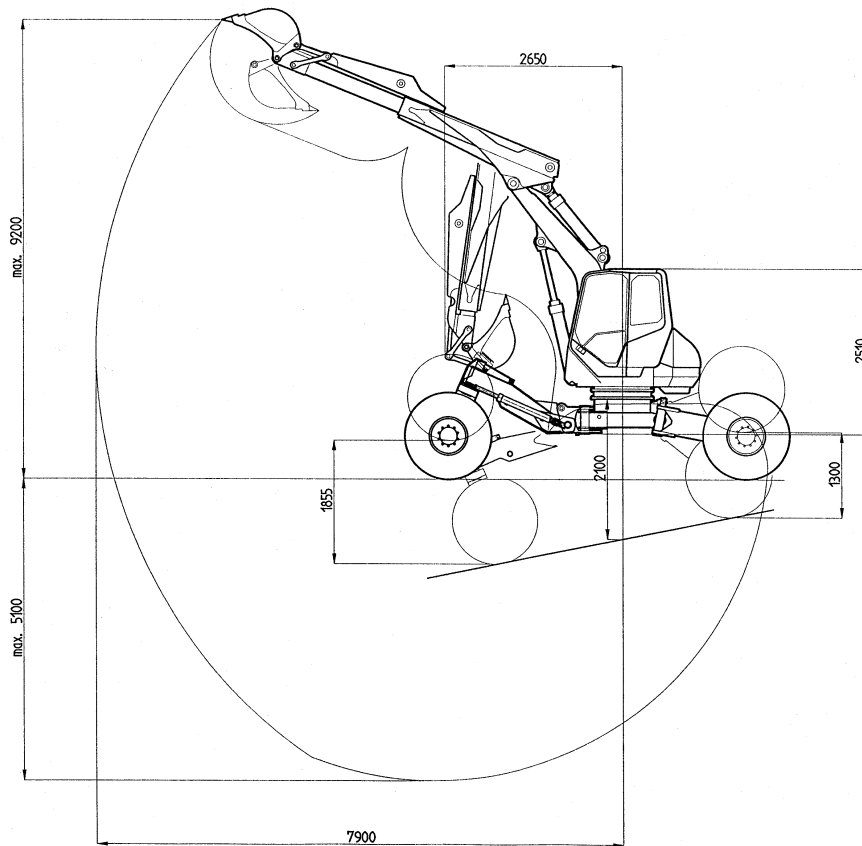
3. Design and function

3.1 Components



- 1 Cab
- 2 Wheel leg
- 3 Wheel
- 4 Undercarriage
- 5 Steering wheels
- 6 Leg
- 7 Steering device
- 8 Bucket or grapple bucket
- 9 Main boom
- 10 Extender boom
- 11 Uppercarriage

3.2 Mass , weight and lifting power



Max. digging depth
5100mm (200 inch)

Max. digging height
9200 mm (362 inch)

Max. reach
7900 mm (311 inch)

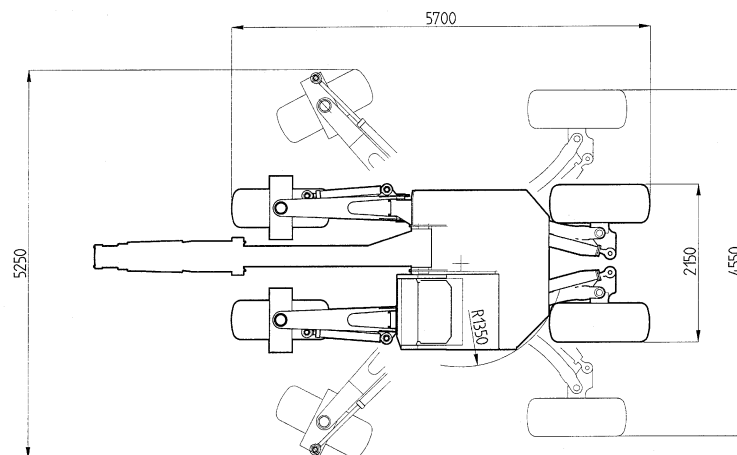
Min. slewing radius
2650 mm (104 inch)

Dimensions

Height: 2550 mm
(100 inch)

Width: 2150 mm
(85 inch)

Length: 6300 mm
(248 inch)



- Weight (standard spyder) 8.850 kg (19510 lb)
- Diesel engine 4 cylinder turbo charged diesel 91 kW (122 HP), at 2300 rpm
adjusted at 1900 rpm with 82 kW (111 HP)
- Hydraulics conveying capacity 0-180 liter/min, (0-47 gal/min)
max. operating pressure 250 bar. (3675 PSI)
- Cab Rops and Fops tested ISO 3471/1 and ISO 1062
- Tensile strength 51 kN (5.200 kp)
- Break-away force 64 kN (6.525 kp)
- Fuel tank 120 litres (31,7 gal) and 150 litres (39,7 gal) in the spare tank
- Hydraulic oil tank approximately 140 litres (37 gal)

3.2 Lifting power

This schedule shows 87 % of the possible hydraulic lift power (ISO 15567)

Distance from turning point [m] [inch]		Lifting power [kN]
3.0	118	56
4.0	157	38
5.0	196	28
6.0	236	23
7.0	276	16

3.3 Identification

Each spyder is equipped with a Kaiser plate where you can find the name of the producer, serial number, year of construction and net weight.



The identification plate features the Kaiser logo and company details: KAISER Fahrzeugwerk AG, FL-9486 Schaanwald, Fürstentum Liechtenstein, with contact numbers for telephone and telefax. It includes four input fields for 'Typ', 'Fabr. Nr.', 'Baujahr', and 'Eigengew.', followed by a CE mark.

This plate is mounted at the uppercarriage under the oil tank.
The serial number is also engraved into the frameplate of the oil tank.

3.4 Technical description

3.4.1 Diesel engine

- 122 HP (91 kW) Perkins Intercooler TD – the ultimate in power for excavating!
 - 4-litres industry engine – long life and few maintenance intervals
 - Low noise level
 - Type 1004-40 TW, 4-cylinder, watercooled
 - Governed to 82 kW / 111 HP at 1900 rpm
- Exhaust emission specs comply with OFF-Highway Limits, grade 1.

3.4.2 Hydraulics

- Load-independent pressure distribution allows sensitive and convenient excavator operation
 - Hydraulic cylinder with end position dampening ensuring soft braking
 - Load-independent pressure distribution (LUDV) Rexroth for all functions of the excavator
 - Variable displacement piston pump with pressure, oil flow and power regulation
 - Max. Oil flow 180 l/min (47,5 gpm) - system pressure 250 bar (3625 psi)
 - Hydraulic cylinder with safety valve
- Vertical leg operation via cockpit joystick

3.4.3 Hydrostatic drive

- Separate, closed circuit for utmost driving performance without overheating the hydr. oil.
- Driving and working functions can be operated simultaneously
- Sensitive driving behaviour through output regulation
 - 3 speed planetary gearbox and wet disk brakes
 - Infinitely variable speed adjustment 0 – 6,5 km/h
 - Max. feed 135 lt/min (35,6 gpm) - excellent hill climbing ability (50 %)

3.4.4 Slew

- Torque-controlled drive (42 kNm - 31'000 lb.ft.) ensuring jerk-free starting
- Slew speed continuously adjustable from 0 - 9 rpm, as well as a possibility of switching over to 0 - 4 rpm for most sensitive positioning
- - 2 speed planetary gearbox, variable displacement piston swing motor and wet disk brakes

3.4.5 Cylinder

Boom,- dipper-, telescopic- and bucket cylinder are equipped with internal hydraulic damping system at the end of a cylinder stroke.

All the cylinders in the undercarriage are equipped with leakproof check valves.

3.4.6 Tires:

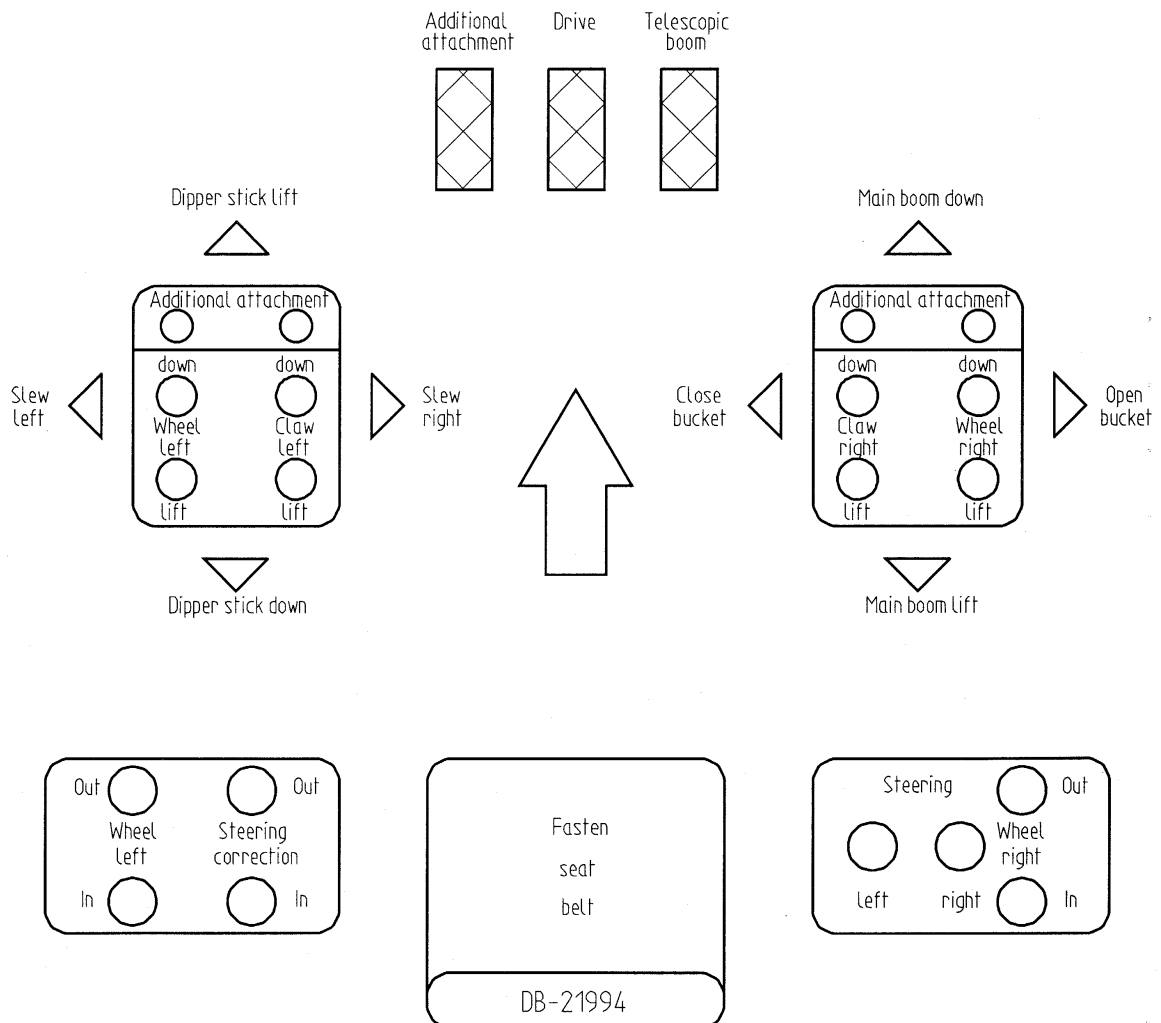
Drive - and steering wheels	1300 x 530 - 533	12 Ply / 3,5 bar (51,5 PSI)
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3.4.7 Standard equipment

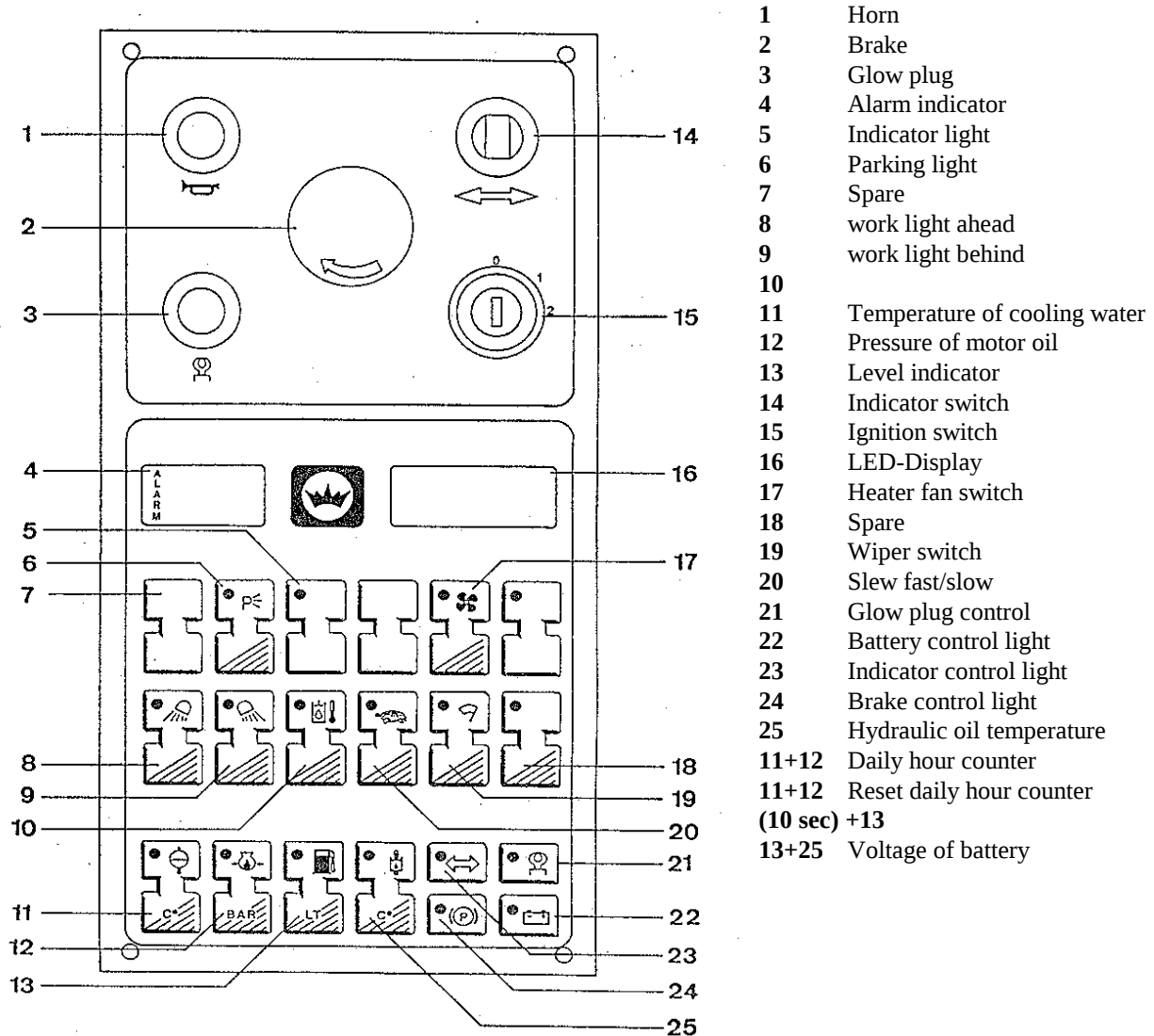
- ROPS cab with all around visibility, can be tilted forward
Rops / Fops tested ISO 3471/1 and ISO 10262
- Adjustable seat with oil hydraulic dampers
- The cab is equipped with
 - * warm water heater
 - * radio cassette player
 - * fuel level gauge
 - * water- and hydraulic temperature gauge
 - * hour counter
 - * plug for flashing alarm lamp
- outside: 2 working lights, horn and wiper blade
- engine cover, side-cover and cab door can be locked.
- 2 diesel fuel tanks: a.) uppercarriage 120 litres (31,7 gal)
b.) undercarriage 150 litres (39,7 gal)

4. Operator and display elements

4.1 Operator elements

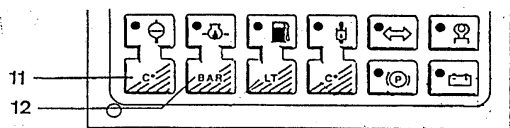


4.2 Dashboard

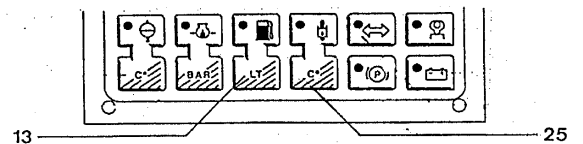


Special functions

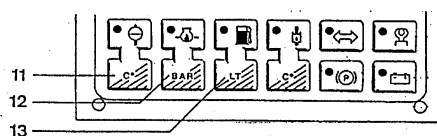
Daily hour counter
 Press 11+12 at the same time



Voltage of battery
 Press 13+25 at the same time



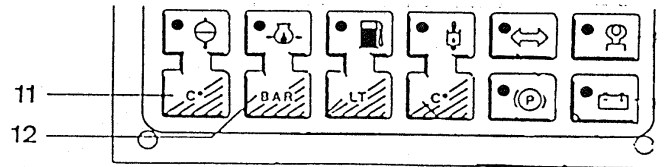
Reset daily hour counter
 Press 11+12 at the same time until the display is flashing;
 then press 13. The display shows 0000.



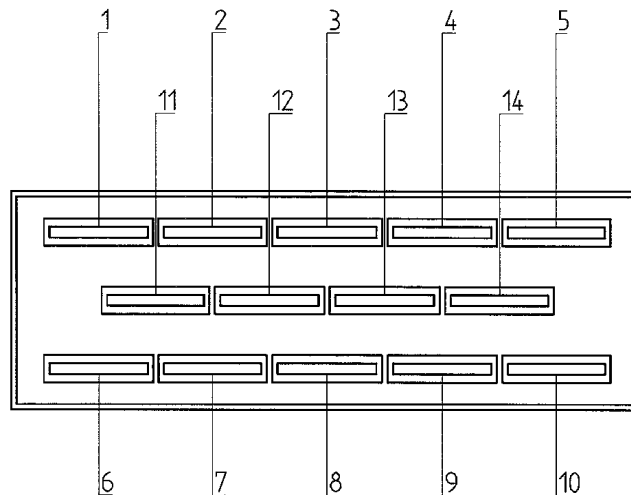
Choice between the "European" and the "American" version:

Europe: temperature display in C°
America: temperature display in F°

Press buttons 11+12 until the display is flashing; press button 12 again. The display shows now L000 (European version). Press now button 11 to change into the American version. The display shows now L001. You leave the menu by pressing button 12. The last choice is now installed.



4.3 Fuses

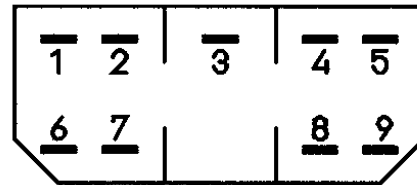


1	15 A	spare	8	15 A	spare
2	7,5 A	swing	9	7,5 A	horn, brake button
3	7,5 A	wiper	10	30 A	starter
4	7,5 A		11	7,5 A	engine stop, battery power
5	7,5 A	parking light	12	7,5 A	work light ahead
6	7,5 A	dashboard	13	7,5 A	work light behind
7	7,5 A	flash relay	14	15 A	blower

4.4 Plug connections

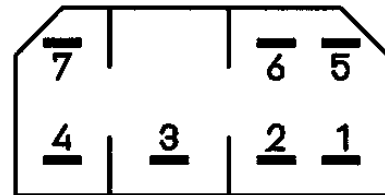
4.4.1 Plug connection for controls

- 1 ground
- 2
- 3 fuel level
- 4 cooling water temperature
- 5 hydraulic oil temperature
- 6 +12V ignition power
- 7 +12 V battery
- 8 motor oil pressure
- 9 D+ alternator (control light)



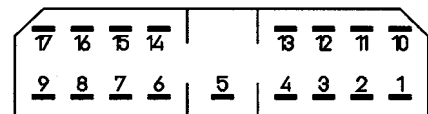
4.4.2 Plug connection for operation

- 1 +12V battery
- 2 flash light control light
- 3 glow plug control light
- 4 break control light
- 5 +12V ignition power
- 6 ground
- 7 D+alternator (battery control light)



4.4.3 Plug connection for operation

- | | |
|---------------------|---------------------|
| 1 Parking light | 10 blower |
| 2 blower | 11 parking light |
| 3 work light behind | 12 spare |
| 4 work light behind | 13 spare |
| 5 swing | 14 swing |
| 6 front work light | 15 front work light |
| 7 | 16 |
| 8 wiper | 17 |
| 9 wiper | |



5 Operation

5.1 Check points before operation

Don't take any heavy parts into the cab of the machine.
(pins, tools, spare parts,...) These parts can handicap the operator when operating the machine.

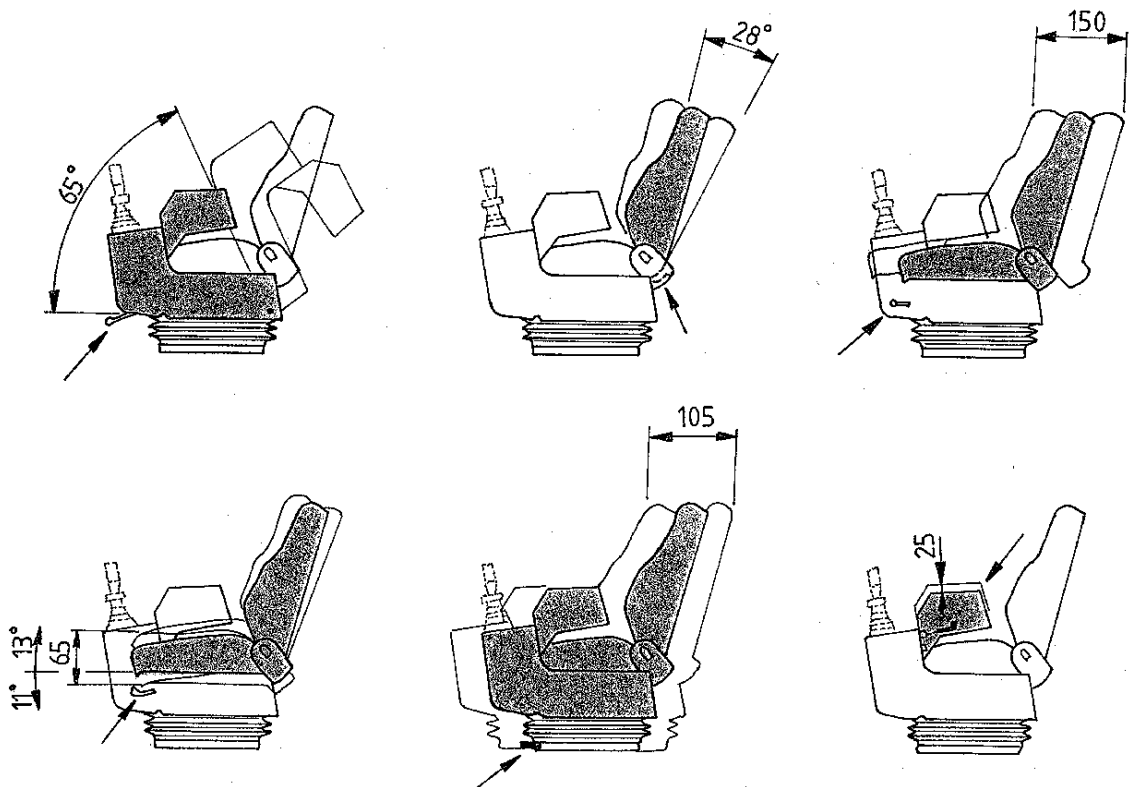


Disregarding these instructions might cause critical injuries and damages to machine and health.

Before operation get used to the machine. First the operator has to know which lever is for which command.

The seat has to be adjusted for the right weight of the operator.

The S2-Gator seat has following adjustment possibilities:



When adjusting the seat take care that

- it is comfortable to operate the joysticks
- it is comfortable to reach and operate the pedals
- the operator has a good visibility all around

There is a safety switch included in the armrest for the Pilot controls. When the arm rest is turned upwards nothing can be moved when the operator climbs in and out of the machine.

Before operating the machine make sure nobody is in the danger zone. If necessary use the horn to show them that they have to leave the danger zone.



6. Operation

6.1 Start engine

At low temperatures(+5°C/41°F to -15°C/5°F) it is necessary to use the installed glow plugs.

Instructions by using the glow plugs:

- 1.) Turn the starter approximately 2 sec.
- 2.) Press button Nr. 3 until control light Nr. 21 is on (See 4.2)
- 3.) give full power
- 4.) turn the ignition (approximately 5 sec.) until the engine starts. As soon as the engine starts throttle the r.p.m to idle speed.



Adapt the r.p.m of the engine always the work itself. This helps you to save diesel fuel. The optimal r.p.m is about 1500 - 1600 rpm.

6.2 Stop engine

Important!!! The diesel engine should not be switched off immediately after work. Let the engine run for some minutes at idling r.p.m. to cool the engine down and to decrease the turbo r.p.m..



6.3 Joysticks and pedals

Avoid jerky movements of joysticks and pedals. This can cause damages of health and machine.

The valves in the valve blocks on this machine are made of precise parts which enable the smooth operation of the spyder.



6.4 Getting in and out of the excavator

Fasten seat belt when operating the S2 Gator !!



Disregarding these instructions might cause injuries and damages of health till death.

- Before leaving the spyder you have to
- let the boom all the way down
 - stop engine
 - take the ignition key with you



Before leaving the machine let the undercarriage all the way down.
When getting in or out of the excavator always use the step and handrail.
Never jump off the S2 Gator!!



6.5 Diesel refuelling

Before refuelling, park the machine in horizontal position. Let the undercarriage all the way down.

There are following possibilities to refuel the machine:

- refuelling the uppercarriage with the built in electric fuel pump
- refuelling the undercarriage with the built in electric fuel pump
- pump the diesel of the undercarriage into the uppercarriage with the built in electric fuel pump

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IMPORTANT!! Do not overfill both tanks!

6.6 Cab

The front window of the cab can be opened forward.

There is a lever on both sides to lock the window.

The warm water heating system in the cab has a one step switch. There is also a valve under the blower to regulate from warm to cool air.

During the hot weather season this valve should be closed. So the warm water cannot run through the heating hoses in the cab.

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With the 5 adjustable nozzles inside the cab the warm air can be adjusted to match operator requirements.

6.7 Transportation methods of the excavator

6.7.1 Transport on the truck

When transporting the excavator on the truck you have to secure the boom against lowering with a chain or rope. Also the the spyder itself has to be secured against any moving.

Check the height before driving !!

The load has to correspond to the traffic rules of the country where you transport the excavator!!



6.7.2 Towing

The drive gear can be disengaged mechanically by pulling the sunwheel off the drive gear out over the press out disc. A special tool is in the tool box in order to effect this.

To engage the drive gear you only have to lift the wheel off the ground and to press the disc in.



IMPORTANT!! Take care of the correct position of the safety slot. Otherwise the tooth system inside the drive gear can be damaged.
If you can't press the disc back in easily turn the wheel until the disc is all the way in and locked.



Max. towing speed approx. 20 km/h (12 miles/hour)

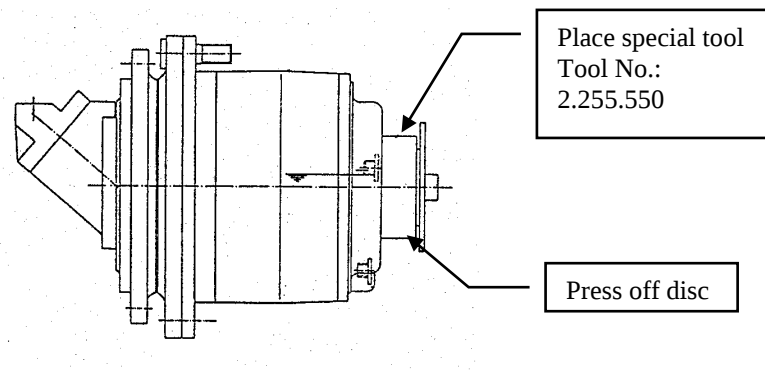
Excess speed can cause damage to the drive hub.



ATTENTION!! When drive hub is disengaged the multiple disc brakes are not working. **Secure the excavator before disengaging.**



Disregarding these instructions might cause injuries and damages of health till death.



6.8 Working in steep slopes

The slew gear on the Kaiser S2 Gator has a very high torque which enables work in steep terrain.

In order to prevent wear and breakdown on the slew gear observe as follows:

As soon as the slowdown of the slew at high speed mode is too slow for efficient working it is necessary to change to slow speed mode.

This increases the acceleration and the slowdown torque. The electric switch is situated on the dashboard.

Do not push the joystick in opposite direction to slowdown the slew, because too high torque can suffer damage.



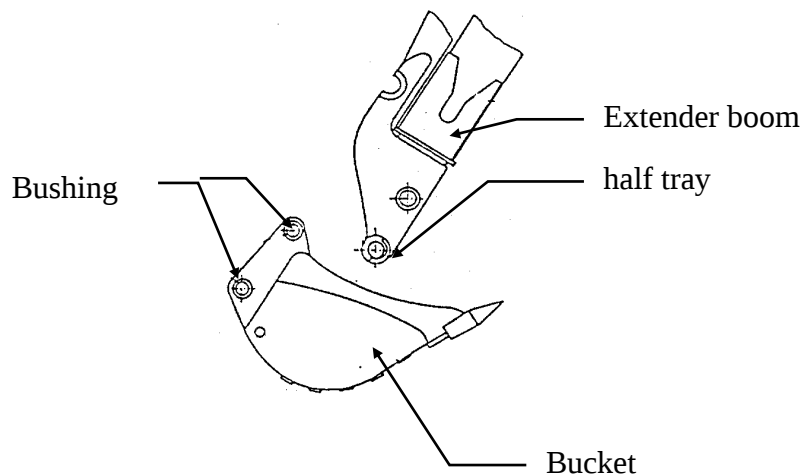
6.9 Instructions and tips to change the bucket

To disconnect the bucket of the boom you have to pull the two pins all the way out.

Both pins are secured against dropping out.

To reconnect the attachment there are two half trays on the extender boom. These half trays help you to center the bucket.

First lift the bucket with help of these half trays. Then place the pins in its right position. **(See picture below)**



6.10 Accessories

On the Kaiser S2 Gator the flow quantity can be adjusted to the required maximum. This has to be adjusted from our mechanics or a mechanic from our dealers. So the required efficiency on the attachment is guaranteed.

An additional pressure relief valve has to be mounted onto the attachment which is adjusted under 280 bar. (4116 PSI).

An additional (standard) return line brings the oil passing the filter back into the tank.

i

Enquire at Kaiser AG or authorized Kaiser dealers if the additional equipment fits to the S2 Gator.

(Mass, weight, size, volume flow, pressures)

If you disregard these instructions, we don't guarantee any warranty.

i

INFORMATION!! It makes it a lot easier to connect the quick connectors of the attachment to the machine when the hydraulic hoses are depressurized. For this you have to unpressure the hydraulic hoses before disconnecting the attachment.



1. Stop engine
2. Switch on the ignition arm rest in working position
3. Operate functions for attachments

ATTENTION!!

It is forbidden to mix the hydraulic oil with any other kind of oil or liquid!!

i

6.11 Lifting operation

During lifting follow these instructions:

1. The bottom side of the boom cylinder must be equipped with a pressure regulated check valve.(ISO 8643).
2. The legs of the S2 Gator must be in the widest position as possible. This guarantees protection against falling over compared to a standard excavator with chains.
3. The load has to be moved as close as possible to the ground.
4. The overload indicator must be switched on.
5. The load may not make any movements during lifting.



6. Helpers or other Persons around the machine must be on a place where the operator can see them.
7. Loads can only be lifted when the ground is quite even.
8. Helpers may work on the load only when the operator advises him and the machine stands still.
9. Follow the instructions of the lifting laws.

**Disregarding these instructions might cause injuries
and damages to health till death.**



6.12 Window protection

If the machine is working in a rough area we also offer a window protection.



6.13 Additional safety specifications when operating the S2 Gator

When working in very steep slopes where the ground is loose, the machine has to be secured.

Check that the ropes and chains are in good condition and strong enough.

The tensile force can be several times higher than the weight of the machine itself.



The legs and wheels must be placed on solid ground to improve the stability of the machine. Also the legs have to be placed in the widest position as possible to prevent any uncontrolled movements of the machine.



Keep the machine from any holes so far away that there is no danger for operator and machine.

Take care that the machine is not placed on undermined ground.



The safety instructions of the competent trade association are also to be followed.

Parking the S2 Gator in steep slopes causes a hydraulic leaking position. Please pay attention that the machine cannot overturn or fall down.



7. Maintenance

7.1 General

Careful maintenance keeps the machine ready for operations at all times and ensures a long service life.

An easy access facilitates these tasks considerably

- tiltable cab
- tiltable engine cover
- tiltable side cover

ATTENTION!! Open engine cover and fan protection only when the engine is not running.

Put the fan protection in front of the fan when engine is not running.



When washing the machine make sure that no water gets into sensitive parts, for example hydraulic valves, electric parts, diesel injection pump etc.

After washing the machine all lubricating points have to be lubricated thoroughly to press out remaining water. Defective lubricating nipples must be replaced immediately.



ATTENTION!!

Repair and maintenance jobs must only be done when the system is depressurized and the wheels secured.

Depressurize means: lower the boom to the ground (diesel engine switched off) and press all hydraulic control levers until the hydraulic control system is depressurized.

The hydraulic oil tank can be pressurized up to 0,4 bar (5,9 PSI)

For depressureization remove fillercap, hydraulic dip stick and return filter when the oil is cold.

Also depressurize the hydraulic tank when making repairs at the hydraulic system.



ATTENTION:

If you have to charge the battery you have to use a charger with a voltage regulator.
Take care of the following informations:

Charge the battery at room temperature

Normal charging:

Voltage 13,6 - 14,6V

Power limit max. 10A

Maintenance charging

Voltage 13,5 - 13,8V

Fast charging:

Do only if it is really necessary and be carefull.

The voltage must be under 14,6 - 14,9 Volt.

The battery is not suitable for low power output !

ATTENTION: Never overcharge the battery until the safety pressure valve opens.
You cannot refill lost fluid.



Short circuit and overcharging damages the battery !!!



7.2 Tilt the cab

On the left side under the engine cover there is a small hand hydraulic pump. With help of this pump it is very easy to lift the cab.

On the top of this pump there is a lever where you can switch up or down.

When the lever shows to the left side you can lift the cab and when the lever shows to the right side the cab comes down.

The extension to operate the pump is placed under the engine cover.

ATTENTION!! It is very important to secure the cab with the safety rod when the cab is all the way up.

**Instructions to lift the cab:**

- open the lock mechanism
- lift the cab
- swing the safety rod in position

Instructions to lower the cab:

- swing the safety rod down
- switch the lever on the hand pump to the right side
- let the cab all the way down
- pump until the cylinder is all the way in
- check the lock mechanism

7.3 Daily maintenance work

If necessary repair - fill up - replace

1	Check oil level of diesel engine (See operator manual PERKINS 1004-40T)
2	Check air filter on dusty sites, (See operator manual PERKINS 1004-40T)
3	Check cooling water level at expansion tank. Only open radiator cap when water is cold. (See operator manual PERKINS 1004-40T)
4	Check diesel level
5	Check hydraulic oil level.
6	Check for leaks at the hydraulic system (cylinder, hoses, pipes, connections, valvebanks, pumps, valves and hydraulic motors)
7	Check electric system and signal devices.
8	Check manoeuvrability of control levers.
9	Lubricate according to lubricate plan (damaged grease nipples have to be removed immediately)
10	Check general condition of machine (pins, bushings, boom, legs, wheels,...)

7.4 Weekly maintenance work

If necessary repair - fill up - replace - clean

1	Check and drain any water in the pilot diesel filter
2	Check tyre pressure 0,7 bar (10,3 PSI) on steering wheels; 3,5 bar (51,5 PSI) on driven wheels)
3	Lubricate turntable This is preferably also done before a period of non-operation in order to permit a resistant lubrication film to build up
4	Check and drain any water in the diesel tank Drain plug underneath the tank and fuel-water separator, check filter glass for cleanliness

7.5 Every 250 hours

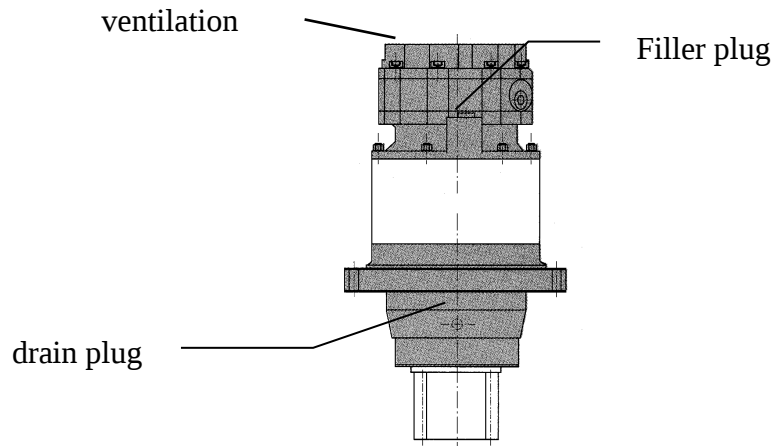
1	Check and clean/replace air filter (See operator manual PERKINS 1004-40T)
2	Clean radiator (See operator manual PERKINS 1004-40T)
3	Retighten wheel nuts (torque 350 Nm)
4	Check tension of the V-belt

7.6 Every 500 hours**Maintenance duty**

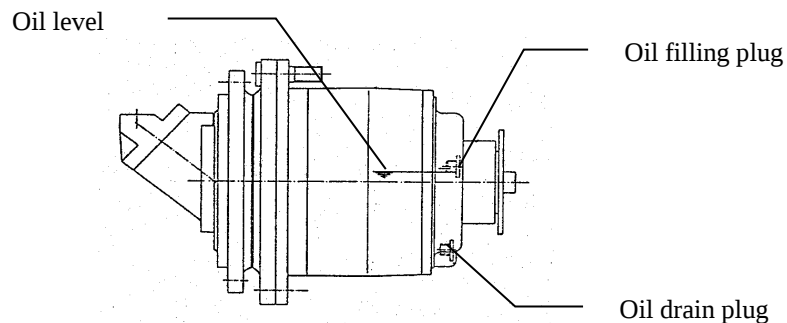
1	Change motor oil (See operator manual PERKINS 1004-40T) Capacity: approx. 8,0 ltr (2,1 gal)
2	Change motor oil filter (See operator manual PERKINS 1004-40T) First change after 40 hours
3	Change fuel filter (See operator manual PERKINS 1004-40T) First change after 40 hours
4	Change air filter (See operator manual PERKINS 1004)
5	Clean fuel pump and strainer (See operator manual PERKINS 1004-40T)
6	Check quality of hydraulic oil
7	Adjust valve clearance (See operator manual PERKINS 1004-40T)
8	Check non freezing fluid
9	Check bolts at the exhaust manifold.

7.7 Every 1000 hours (or once a year)

1	Change lubrication oil in slew gear.
----------	--------------------------------------



2	Clean fuel tank inside (both tanks!!)
3	Change oil return filter
4	Change lubrication oil in wheel hub drive



5	Check hydraulic oil and send a sample to our service department Has to be done from Kaiser personal or authorised Kaiser dealers.
6	Clean hydraulic oil with special filter. Has to be done from Kaiser personal or authorised Kaiser dealers.

7.8 Every 2000 hours

1	Check and clean turbo charger (See operator manual PERKINS 1004-40T)
2	Check alternator and starter (See operator manual PERKINS 1004-40T)
3	Check injection nozzles - replace if necessary (See operator manual PERKINS 1004-40T)
4	Check tappet clearance - adjust if necessary (See operator manual PERKINS 1004-40T)
5	Change fuel filter on the Perkins engine (See operator manual PERKINS 1004-40T)

7.9 Lubrication to be used**7.9.1 Oil**

For the engine, the slew gear and the hub drives we recommend the multi-grade oil SAE 15 W40 or SAE 10 W40.

(Minimum MIL-L-2104D, API SF/CD, Viscosity: at -10° C / 14°F max. 1200 cSt
at -15° C / 5°F max. 3000 cSt

Hydraulic oil**Biologically degradable hydraulic oil:**

Panolin	HLP Synth 46
Motorex	Oekosynth 3268 H-LP

ATTENTION!!**Do not mix biologically degradable hydraulic oil with any other oil or liquid!!**

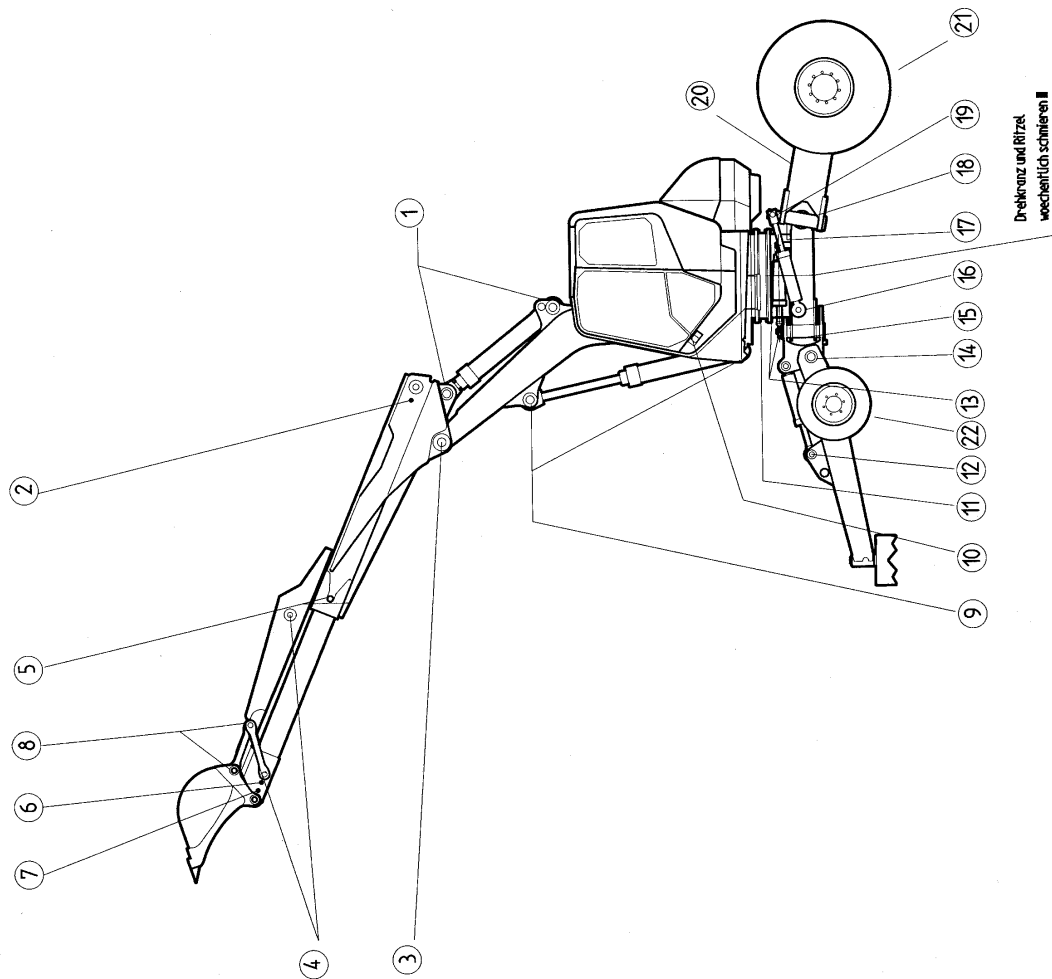
7.9.2 Grease for lubrication points

- Autol Top 2000
- Motorex 2000
- or similar grease lubricants

7.9.3 Filling quantities

- | | | |
|-----------------------------------|--------------------|----------------|
| - Diesel engine oil | approx. 8,0 litres | (2,1 gal) |
| - Lubrication oil slew gear | approx. 2,5 litres | (0,7 gal) |
| - Lubrication oil wheel hub drive | approx. 2,5 litres | (0,7 gal) each |
| - Hydraulic oil (complete system) | approx. 180 litres | (47,5 gal) |

7.9.4 Lubrication plan



Schmierplan KAISER S2

Nr.	Bezeichnung	Anzahl der Schmier nipples
1	Pendelzylinder	je 1 Nippel
2	Teleskoparmführung hinten	4 Nippel
3	Hauptbolzenlager	2 Nippel
4	Kübelzylinder	je 1 Nippel
5	Teleskoparmführung vorne	3 Nippel
6	Scherenlager	1 Nippel
7	Kübellager	1 Nippel
8	Pleuel	3 Nippel
9	Hubzylinder	je 1 Nippel
10	Hauptarmlager	2 Nippel
11	Drehkranz	4 Nippel
12	Tatzenzylinder	je 2 Nippel
13	Tatzenausstellzylinder	je 2 Nippel
14	Fusslagerung	je 1 Nippel
15	Fusslagerung Unterwagen	je 1 Nippel
16	Fusszylinder	je 2 Nippel
17	Gelenkfaust	je 1 Nippel
18	Gelenkfaustlager	4 Nippel
19	Fusszylinder gabel	je 1 Nippel
20	Radausstellzylinder	je 2 Nippel
21	Achse	je 1 Nippel
22	Achsstummel vorne	je 1 Nippel

Kleingelenke und Scharniere nach Bedarf schmieren.

8. Repair tips

8.1 General

During repair work on the hydraulic system it is very important to keep everything clean !!



- When working on the electric system of the machine always unplug the battery.
- Also unplug the main plug on the engine.
- Adjustments on the hydraulic system are only allowed with permission from Kaiser AG.

Only original Kaiser spare parts may be used.

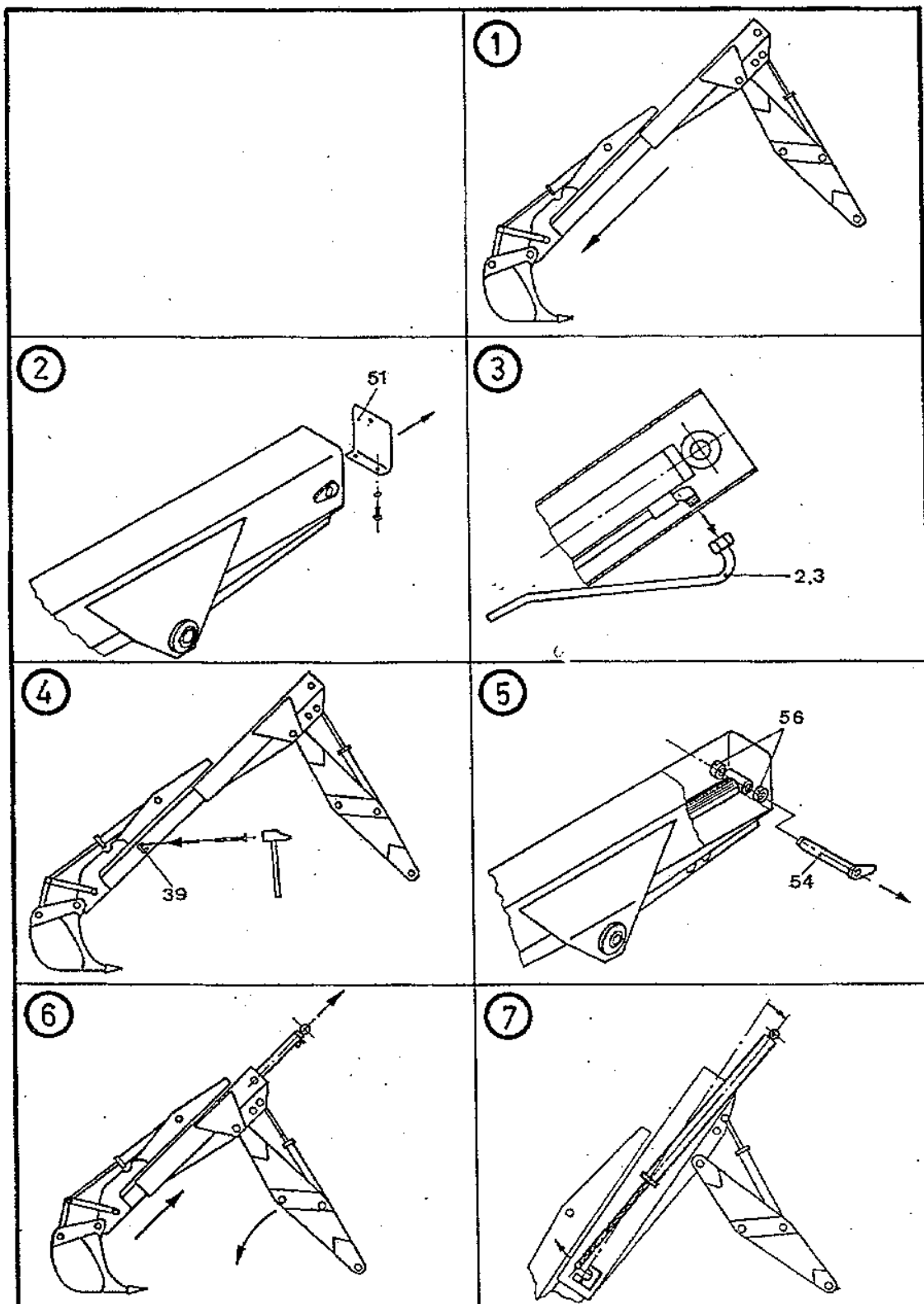


8.2 Disassembly of extender cylinder

1. Extend cylinder - or if defective slide it out all the way.
2. Remove cover. (Pos 51)
3. Remove hydraulic pipe. (Pos2+3)
4. Hammer out split pin. (Pos 39)
5. Remove pin (Pos 54); make sure that the spacer (Pos 56) does not drop into the extender.
6. Drive extender cylinder in by lowering main boom slowly.
(The extender cylinder comes out rear)
7. To unhook the piston rod pin pull the cylinder pipe towards the excavator.

See page 39

Disassembly of extender cylinder



10 Spare parts

When ordering spare parts please give the following details:

1. Number of excavator
(It is engraved on the right side of the superstructure front and also given on the first page of this manual.
2. For cylinder parts please give the number engraved in the rod guide and in the cylinder tube.
3. Name of spare part and part number.
4. Number of units ordered, way of shipping and full address.
5. For hydraulic hoses please give us the number engraved into the fitting on the hose end.

11. Copyright

Kaiser AG has the copyright for this machine. The operator manual is determined only for the owner and the operator of this machine.

This manual includes information and instructions which must not be

- **copied**
- **distributed or**
- **be given to other persons than machine owner**

Disregarding these instructions can lead to prosecution.

If you have any queries about the S2 Gator, please contact our representative.

We hope that you enjoy working with the Kaiser „S2 Gator“ and wish you many successful hours.

Best Regards,

**KAISER AG
Schaanwald**

KAISER *S2*

Walking-Mobile-Excavator

Translation of the original
Operator's Manual



Operator's and Maintenance Manual

Order number	12000281
DOK-ID	86874
Revision	N
Version	-





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B The manual

The Operator's and Maintenance Manual is part of the machine's basic equipment.

Read the Manual BEFORE using the machine!

These instructions will allow error-free and safe use of the machine.

Read the Manual carefully and attentively; the information provided will ensure safety of work.

In case of any questions or suggestions, please contact your authorized dealer or the manufacturer directly.

Our machines are designed and built such that they will provide maximum performance with low consumption and easy and safe handling and operation. Prior to their delivery, they are carefully checked and tested to guarantee a reliable product for the customer.

Regular maintenance is absolutely required for the machine's optimum functioning and safety in operation and use. Such maintenance is described in detail in the appropriate sections of the Manual.

Moreover, it is essential to know within which safety limits work can be performed without risk for the operator or the environment.

The manufacturer does not allow the use of non-original spare parts; thus, there will be no liability for any resulting damages.

The machine carries a warranty according to the terms included in the purchase contract; however, no warranty is provided in case of non-compliance with the standards and instructions in this Manual.

B.1 Updating the Manual

To improve the product, the manufacturer reserves the right to make changes without prior notification.

Without the manufacturer's consent, any reprint of this Manual is prohibited.

B.2 Safekeeping the Manual

Please keep this Manual safely in an easily accessible place, for example in the pouch (Abb. 1, Abb. 2) behind the driver's seat and on the cab door.

The Manual must be safely kept until disassembly of the machine; please hand it over to potential new owners.

If the Manual is lost and/or destroyed, or in bad condition, please request a copy from your dealer or directly from the manufacturer, indicating the machine's identifying characteristics.

Abb. 1



Pouch behind driver's seat

Abb. 2



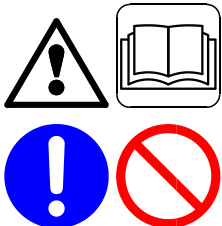
Pouch on cab door

B.3 Using the Manual

“ **Boldface** ” is used for basic concepts or for sections deserving special attention.

“ *Italics* ” is used for reference to guidelines or texts from other documents, as well as for captions.

“ **NOTE** ”: The “NOTE” contains additional information on the subject.

	System of the standard symbols “ATTENTION”
	ATTENTION: The triangle with an exclamation mark symbolizing the word ATTENTION is usually followed by a symbol giving the reason for it and round symbols making reference to regulations or prohibitions.

THIS SYMBOL  means:
ATTENTION! BE CAREFUL! Your safety is at stake

	ATTENTION: This symbol signifies a directly impending danger for the life and health of persons, animals or objects. It emphasizes compliance with operating or maintenance instructions. It signals dangerous or prohibited work processes. <i>Non-compliance with the instructions provided for this symbol can result in serious accidents and in damage to the machine.</i>
---	--

	ATTENTION: This symbol signifies a potentially impending danger for the life and health of persons. <i>Non-compliance with these instructions can result in serious adverse health effects, up to and including life-threatening injuries.</i>
	ATTENTION: This symbol signifies a potentially dangerous situation . <i>Non-compliance with these instructions can result in minor injuries or material damage.</i>
	This symbol provides information on proper handling of the machine. <i>Non-compliance with this information can result in disorders of the machine or the environment.</i>
	Under this symbol, you will find application tips and particularly useful information. They will help you to optimally use all functions of your machine.

B.4 Additional documents

Additional documentation with regard to details or third-party manufactured parts will be included with this Manual to provide a maximum of information for the operator as well as for the maintenance service.

B.5 Description of symbols on the machine

On the machine, there are various symbols indicating risks, dangers and situations requiring special caution, as well as those making reference to obligatory or prohibited work processes.

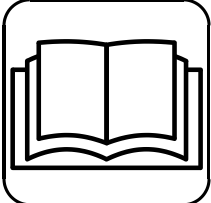
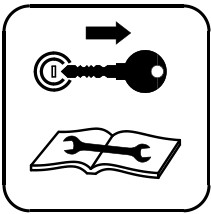
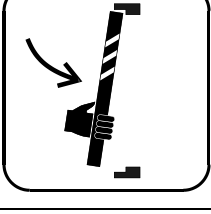
Signals meaning **DANGER** are **white on a red background**.

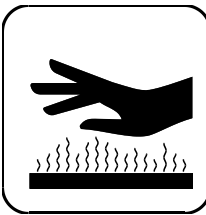
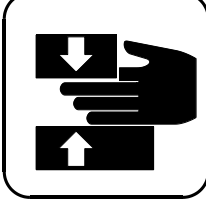
Signals meaning **CAUTION** are **black on a yellow background**.

Signals meaning **REGULATION** are **white on a blue background**.

Signals meaning **PROHIBITION** are **black on a white background** within a **round plate with a red diagonal**.

You will find the following symbols on our machine:

SYMBOL	DESCRIPTION
	Meaning: Depending on the color, this symbol means DANGER, ATTENTION or CAUTION and is usually combined with one of the following symbols
	Meaning: CHECK MANUAL
	Meaning: TURN OFF ENGINE AND CHECK MANUAL Meaning: REMOVE KEY PRIOR TO MAINTENANCE OR REPAIR WORK
	Meaning: DANGER FOR HANDS OR FINGERS; ENGINE FAN WHEEL, BELT, PARTS OF THE MACHINE ARE MOVING
	Meaning: DANGEROUS OR CAUSTIC LIQUIDS; RISK OF BURNS ON HANDS AND FINGERS
	Meaning: SECURE THE ENGINE'S HOOD PRIOR TO ANY INSPECTION IN THE INTERIOR Meaning: SECURE CYLINDER FOR TILTING CAB OR HOOD PRIOR TO ANY INSPECTION IN THE INTERIOR
	Meaning: SECURE THE ENGINE'S HOOD PRIOR TO ANY INSPECTION IN THE INTERIOR Meaning: SECURE CYLINDER FOR TILTING CAB OR HOOD PRIOR TO ANY INSPECTION IN THE INTERIOR

SYMBOL	DESCRIPTION
	Meaning: VERY HOT SURFACE, RISK OF BURNING
	Meaning: PASSAGE PROHIBITED – DO NOT STEP WITHIN THE MACHINE'S REACH
	Meaning: DO NOT MAKE ANY REPAIR OR MAINTENANCE WHILE WORKING PARTS ARE IN MOTION
	Meaning: RISK OF SQUASHING OR CUTTING HANDS OR FINGERS; WORKING PARTS IN MOTION
	Meaning: KEEP A SAFE DISTANCE

B.6 Liability

In case of personal or material damage, the manufacturer is liable only for the model standard and the machine's safety if design errors can be proven.

No liability is assumed for improper use, operation, maintenance, non-original spare parts, unauthorized or irregular changes.



C Environment

	This symbol is presented in front of information generally referring to the environment and to environmentally acceptable work processes.
	This symbol is presented in front of information generally referring to the environment, to the disposal or the recycling of harmful substances.

Always comply with valid regulations for storage and disposal of environmentally harmful materials or substances.

If local laws do not provide for the treatment, storage and disposal of harmful substances, please take suitable environmentally-conscious actions and measures.

The following information may be helpful for you:

 	Never throw lubricants, fuels, acids, hydraulic oils or similarly harmful substances into the environment (rivers, ground/soil, sewage systems, etc.).
   	Dangerous and noxious substances. Avoid contact with skin or eyes. When handling noxious substances, protect your eyes and hands and use suitable clothing.
 	Never fill tanks via canisters and do not use any pressure-proof tank systems because noxious fuels might thus escape.
 	Never burn lubricant and hydraulic oils in heating systems or outdoors. Store these substances and dispose of them in accordance with applicable regulations.
 	Never mix different types of liquids. Store them separately and dispose of them in accordance with applicable regulations.
 	Immediately repair any leaks or defects of engines and the hydraulic systems. A defective system presents a potential danger for humans and the environment.
 	Do not increase the pressure of a system which might cause an explosion of parts thereof or of hoses and thus result in harmful substances escaping.



 	Don't do any welding work; you might damage the hoses at great danger for humans and the environment. Have overhaul work exclusively performed by a maintenance service authorized by the manufacturer.
 	Waste resulting from maintenance or overhaul must be disposed of in accordance with valid regulations.
 	For decommissioning and scrapping the machine or some of its parts, please comply with the instructions specified in Section Q.



D Guidelines

D.1 Safety guidelines

In terms of safety, this construction machine was designed and built in accordance with EU Guidelines owing to the convergence of legislation in the member states; in particular:

2006/42/EG	Machine directive, Annex II A
2006/95/EG 2006	Directive concerning electrical resources for use within special voltage limits
2002/96/EG 2003	Directive about old electrical and electronics equipment (WEEE)
2000/14/EG	Directive on the noise emission in the environment by equipment for use outdoors
2004/108/EG 2004	Directive about electromagnetic compatibility and regarding the cancellation of Directive 89/336/EWG

Additionally, the following harmonized standards and specifications have been applied:

EN 474-1/A1 : 1998	Earth-moving machinery – Safety - Part 1: General requirements (Amendment)
EN 474-5 : 1996	Earth-moving machinery — Safety — Part 5: Requirements for hydraulic excavators
EN ISO 12100-1 : 2003	Safety of machines – Basic terms; general design guidelines - Part 1: Basic terminology, methodology
EN ISO 12100-2 : 2003	Safety of machines – Basic terms; general design guidelines - Part 2: Technical guidelines
EN 1050 : 1996	Safety of machines – Guidelines for risk assessment
EN 60204-1 : 1997	Safety of machines – Electrical equipment of machines - Part 1: General requirements
EN 60529 : 2000	Protection types by housing IP-Code) (IEC 60529: 1989+A1:1999)
EN ISO 3744/3746:1995	Acoustic-determination of sound power level, accuracy 2/3
EN 982 : 1996	Safety of machines – Technical safety requirements of technical fluid systems and their components – Hydraulics

D.2 Intended use

The **KAISER S2** can be used as a normal excavator with a rotary superstructure which can also be used on steep terrain, in swamps, forests (with accessory equipment) or in demolition work (with accessory equipment).

D.3 Prohibited use

- Do not excavate on very steep slopes where the ground is slippery or smooth.
- Excavate in swampy areas only after having made sure that the soil pressure (kg/cm²) will safely support the weight of the machine.



When working with the demolition hammer, make sure that the telescope extension has been completely retracted.

- The excavator boom may not be used as a hammer.
- Transportation of persons and material is not allowed.

Using the machine requires good know-how. Upon request, KAISER AG, organizes courses in which drivers/operators will be familiarized with the most important prerequisites of the excavator.

D.4 Safety regulations

D.4.1 Basic safety information

D.4.1.1 Compliance with information in the Operator's Manual

- Knowing the basic safety information and safety regulations is the basic prerequisite for the excavator's trouble-free operation and for handling it in accordance with safety requirements.
- This Operator's Manual includes the most important information to operate this excavator in accordance with safety requirements.
- This Operator's Manual – especially the safety information – must be complied with by all persons working on and with the excavator.
- Moreover, valid rules and regulations at the site of work for the prevention of accidents must be complied with.

D.4.1.2 Duty of operating company

The operating company agrees to let only persons work on and with the excavator who:

- are familiar with the basic regulations on occupational safety and the prevention of accidents and who have been instructed on excavator handling.
- have read and understood the safety chapter and the warning information in this Operator's Manual.

The personnel's safety-conscious work is to be checked and reviewed at regular intervals.

D.4.1.3 Duty of personnel

All persons who are instructed to work with this excavator agree to the following before starting to work:

- Comply with the basic regulations on occupational safety and the prevention of accidents.



- Read the safety chapter and the warning information in this Operator's Manual.

D.4.1.4 Dangers in handling the excavator

This excavator is built in accordance with the state-of-the-art and the recognized safety engineering regulations. Yet, in case of improper use, dangers can arise for the life and limb of the user or third parties, or, respectively, impairments on the machine or other tangible assets. This excavator should only be utilized:

- for its intended use
- in perfect safety-engineering condition

Any disturbances or trouble which might jeopardize safety must be remedied immediately.

D.4.1.5 Not intended use

This excavator is exclusively intended for work in accordance with chapter D.2 Intended use / page D-15. Any other use or any use in excess thereof is considered not in accordance with the intended use. KAISER AG is not liable for any resulting damage.

Part of the intended use also includes.

- compliance with all information in the Operator's Manual, and
- compliance with the inspection and maintenance work.

D.4.1.6 Warranty and liability

Our general Terms of Sales and Delivery are applicable on principle. They are available to the operating company at the latest since contract conclusion. Warranty and liability claims for personal and material damages are excluded in particular if they are due to one or several of the following causes:

- Machine not operated according to its intended use.
- Improper assembly, commissioning, operation and maintenance of the excavator.
- Operation of the machine with defective safety equipment or with improperly installed or nonfunctioning safety and protective equipment.
- Non-compliance with information in the Operator's Manual regarding transportation, storage, assembly, commissioning, operation, maintenance and fitting of the excavator.
- Unauthorized structural changes to the excavator.
- Unauthorized change of drive conditions (power, torque, pressures, etc.).
- Unauthorized removal of seals.
- Inadequate supervision of machine parts which are subject to wear.
- Improperly performed repairs.
- Disaster events due to the effect of foreign matter and force majeure.

**D.4.1.7 Organizational measures**

- The operating company has to provide the required personal protective equipment.
- All available safety devices have to be regularly checked and inspected.

D.4.1.8 Protective equipment

- Prior to any commissioning of the machine, all protective equipment must be properly applied and functioning.
- Protective equipment may only be removed after the machine is at a standstill and protected against re-starting.
- When partial components are supplied, the protective equipment is to be mounted and checked by the operating company according to regulations

D.4.1.9 Informal safety measures

- The Operator's Manual must be permanently kept safely at the machine's site of work.
- In addition to the Operator's Manual, compliance is required with generally valid as well as local regulations on the prevention of accidents and environmental protection.
- All safety and danger information on the machine must be kept in legible condition.

D.4.1.10 Training of personnel

- Only trained and instructed personnel is allowed to work on and with the machine.
- Responsibilities of the personnel must be clearly specified – for assembly, commissioning, operation, fitting, maintenance and repair.
- Personnel to be trained may only work on the machine under the supervision of an experienced person.

D.4.1.11 Safety measures in normal operation

- Operate the machine only if all protective equipment is fully operational.
- Before starting the machine, make sure that nobody can be put at risk due to the starting machine.
- At least once per shift, check the machine for visible external damage and also check the operability of the safety equipment.

**D.4.1.12 Dangers due to hydraulic energy**

- Only personnel with special know-how and experience in hydraulic is allowed to work on hydraulic equipment.
- System sections and pressure lines to be opened must be depressurized before starting repair work.
- Aging hoses or those with mechanical damage can slowly become leaky. We urgently advise to replace "sweating" hoses.
- If a hydraulic unit breaks, hydraulic oil may run out. On the one hand, leaking hydraulic oil will contaminate the environment; on the other hand, dangerous conditions will result on road pavement.
- Basically, the contaminated area must be cordoned off and cleaned as fast as possible. Oil-absorbing agents must be used. In case of non-compliance with the above, there will be the risk of road traffic accidents with casualties or serious injuries due to hydraulic oil running out. In any event, local authorities must be informed of the incidence.

D.4.1.13 Maintenance and repair, troubleshooting

- On-time performance of prescribed adjustment, maintenance and inspection work.
- Information of operating personnel before starting maintenance and repair work.
- Securing against unintentional starting all system parts and operating media, such as e.g. hydraulics, which come before or after the machine.
- For all maintenance, inspection and repair work, the machine must be de-energized and the ignition secured against unexpected re-starting.
 - Turn off the ignition
 - Remove the ignition key
 - Set up a sign warning against re-starting
- When working on the hydraulic system, the tank lid must always be opened!
- When replacing major components, carefully secure and fasten them on hoists or lifting gear.
- Check screw connections for firm seating.
- During welding work on the excavator or on attached equipment, please comply with the instructions by PERKINS to prevent damage to the electronic engine controls Please see the appropriate chapter in the PERKINS Operating and Maintenance Manual for Diesel Engine 1104D-E44TA
- After termination of maintenance work, the safety equipment must be checked for proper functioning.

**D.4.1.14 Structural changes on the machine**

- Make no changes, additions or modifications to the machine without the manufacturer's approval. This also applies for welding on load-bearing parts.
- All modification measures require a written confirmation by the manufacturer.
- Machine parts which are not in perfect condition must be replaced immediately.
- Only original or manufacturer-approved spare and wear parts may be used. For parts from external sources, it cannot be ensured that they are designed and manufactured in accordance with the required load and safety conditions.

D.4.1.15 Work in forestry, in demolition or in special application areas

- Additional safety precautions are required when the excavator is used in forestry or in demolition work.
- The driver's cab is to be protected against falling objects by means of an additional protective screen. FOPS protective equipment (see chapter N.3 FOPS protective roof / page N-96.
- In addition, locally valid safety regulations for the particular work must be observed and complied with.

D.4.1.16 Cleaning and disposal

- Properly handle and dispose of used substances and materials, in particular:
 - when working on lubricating systems and lubricating equipment
 - when cleaning with solvents

D.4.1.17 Noise

- At the operating location, the machine's emission level has an acoustic pressure level $L_{pA} = 75 \text{ dB(A)}$, the acoustic power level is $L_{WA} = 99 \text{ dB(A)}$.
- Depending on local conditions, the acoustic pressure level may be higher which would result in impaired hearing due to noise. In this case, the operating personnel is to be protected with corresponding protective equipment or protective measures.
- At an acoustic pressure level over 85 dB(A), ear muffs should be worn.

**D.4.1.18 EC-Declaration of Conformity****EC Declaration of Conformity****As defined by EC Directives**

2006/42/EG	Machine directive, Annex II A
2006/95/EG 2006	Directive concerning electrical resources for use within special voltage limits
2002/96/EG 2003	Directive about old electrical and electronics equipment (WEEE)
2000/14/EG	Directive on the noise emission in the environment by equipment for use outdoors
2004/108/EG 2004	Directive about electromagnetic compatibility and regarding the cancellation of Directive 89/336/EWG

Design of the machine

Make:	Walking-Mobile-Excavator
Type:	KAISER S2
Serial number:	S2 – 4 – _____

has been developed, designed and manufactured in compliance with the above specified EC directives at the sole responsibility of

Company: **Kaiser AG Fahrzeugwerk
Vorarlbergerstrasse 220
FL-9486 Schaanwald**

The following harmonized standards and specifications have been applied:

EN 474-1/A1 : 1998	Earth-moving machinery - Safety - Part 1: General requirements (Amendment)
EN 474-5 : 1996	Earth-moving machinery — Safety — Part 5: Requirements for hydraulic excavators
EN ISO 12100-1 : 2003	Safety of machines - Basic terms; general design guidelines - Part 1: Basic terminology, methodology
EN ISO 12100-2 : 2003	Safety of machines - Basic terms; general design guidelines - Part 2: Technical guidelines
EN 1050 : 1996	Safety of machines – Guidelines for risk assessment
EN 60204-1 : 1997	Safety of machines – Electrical equipment of machines - Part 1: General requirements
EN 60529 : 2000	Protection types by housing IP-Code) (IEC 60529: 1989+A1:1999)
EN 982 : 1996	Safety of machines – Technical safety requirements of technical fluid systems and their components – Hydraulics
EN ISO 3744/3746:1995	Acoustic-determination of sound power level, accuracy 2/3
99 dB(A)	Measured sound power
102 dB(A)	Guaranteed sound power

Schaanwald, 5.2.2013
Location, Date

René Geiger
Head of technology Department / Authorized
Representative to compile the relevant technical
documentation

The Operator's Manual provides instructions on proper use as designated. The Declaration of Conformity expires in case of improper use and in case of any design change not confirmed in writing by us as the manufacturer.

Schaanwald, 5.2.2013
Location, Date

Markus Kaiser
Managing Director



E Description and Identification

E.1 Description of the machine

The Walking Mobile Excavator KAISER S2 is a construction machine with fully hydraulic individually controlled articulated legs and an all-around 360° revolving superstructure. Owing to its properties, this machine can also be used under difficult conditions, e.g. on very steep terrain or muddy ground.

In case of any misuse of the machine, the manufacturer rejects any responsibility for any resulting damage to materials or animals, as well as any injuries to persons.

Abb. 3



Nameplate or CE label

E.2 Identification of the machine

The type plate (Abb. 3) will be completed by the manufacturer prior to the excavator's delivery and is considered the machine's identification card.

Abb. 4



Location of Serial number

 KAISER	
Typ	
Fabr. Nr.	
Baujahr	
Motorleistung	kW
Partikelfiltersystem	
Gewicht	kg
Garantiegewicht	kg
Achslast vorne	kg
Achslast hinten	kg

6.788.206



KAISER Aktiengesellschaft Fahrzeugwerk
LI-9486 Schaanwald • Fürstentum Liechtenstein
Tel. +423 - 377 21 21 • www.kaiser.li

Abb. 5



Location of nameplate or, respectively, CE label

E.3 CE Label

The manufacturer provides identification for every machine by the “ LABEL” and the nameplate, respectively (Abb. 3), indicating the type, production number, year of make, weight, guaranteed weight, front axle load, rear axle load, and manufacturer's company name.

E.4 Location of the excavator number

The excavator number on the KAISER S2 KAISER S2 is struck on the end face of the base plate of the superstructure to the left of the main arm (Abb. 4, Abb. 5).

The excavator number is always indicated in the  label as well.



F Product information: Basics

F.1 The movements

Main feature of the KAISER S2 Walking Mobile Excavator is its ability to move anywhere without any problem.

The KAISER S2 works on 4 articulated legs which can be individually hydraulically controlled.

The standard model has wheels provided on the rear wheel legs, each with a hydraulic motor so that the excavator can walk on any terrain.

In addition to the wheels used for traveling, the excavator is equipped with steel gripper pads on the front legs. They provide greater ground stability and enable the excavator to work even on steep slopes.

The superstructure rotates 360° all-around so that the excavating arm can reach all points around the excavator.

Abb. 6



The movements



F.2 Excavating under difficult operating conditions

The Walking-Mobile-Excavator KAISER S2 can work under operating conditions, otherwise considered impossible for excavators with a wheel or tracklaying chassis.

The 4 articulated, individually controllable legs provide stability for the machine even in rough, virtually impassible, muddy and steep terrain. Diesel engine power is transmitted via a hydraulics system to the legs and the digging components.

The superstructure has continuous 360° maneuverability.

These features allow the machine to move around without any problems during excavating work. The superstructure can be horizontally adjusted to make work more comfortable for the operator in the cab.

Abb. 7



Working under extreme conditions



F.3 New potential applications / models

A broad range of accessories, tools and equipment contribute to the excavator's versatility.

F.3.1 Model KAISER S2

The special hydraulic telescopic front legs of the KAISER S2 allow easy maneuvering over terraces and steps. Their great range of adjustment increases the machine's stability in the terrain and also ensures small dimensions for loading.

F.3.2 Model KAISER S2 4x4

The KAISER S2 4x4 has been especially designed for steep road passages. Its permanent all-wheel drive allows the machine to travel easily in terrain where other machines would have long given up already. With its *Knickfuss* extension, the machine can be securely anchored even in difficult terrain. Quick positional changes will thus be child's play.

F.3.3 Model KAISER S2 4x4 Cross

The KAISER S2 4x4 Cross is specifically used for forestry work, with its tremendous power, its permanent all-wheel drive and its four large wheels. The machine runs effortlessly through root work, tree stumps, hollows and ravines, etc. The extremely extended *Knickfuss* extension ensures safe work even in the steepest terrain.

The tremendous diesel engine power even allows the operation of powerful harvester heads.

Abb. 8



Model KAISER S2

Abb. 9



Model KAISER S2 4x4

Abb. 10



Model KAISER S2 4x4 Cross



F.3.4 Model KAISER S2 4x4 Gator

The KAISER S2 4x4 Gator is especially designed for use in swampy terrain and marshland. With its permanent all-wheel drive and its four large wheels, the machine can travel even in great depths of water. The specially designed front legs in form of a yoke reduce resistance when moving on swampy ground.

F.4 Options / accessories

Various options and accessories are available for your KAISER S2. Please contact your dealer or the manufacturer directly.

Abb. 11



Model KAISER S2 4x4 Gator



G Technical Data

G.1 Characteristics of the machine

G.1.1 Overall dimensions

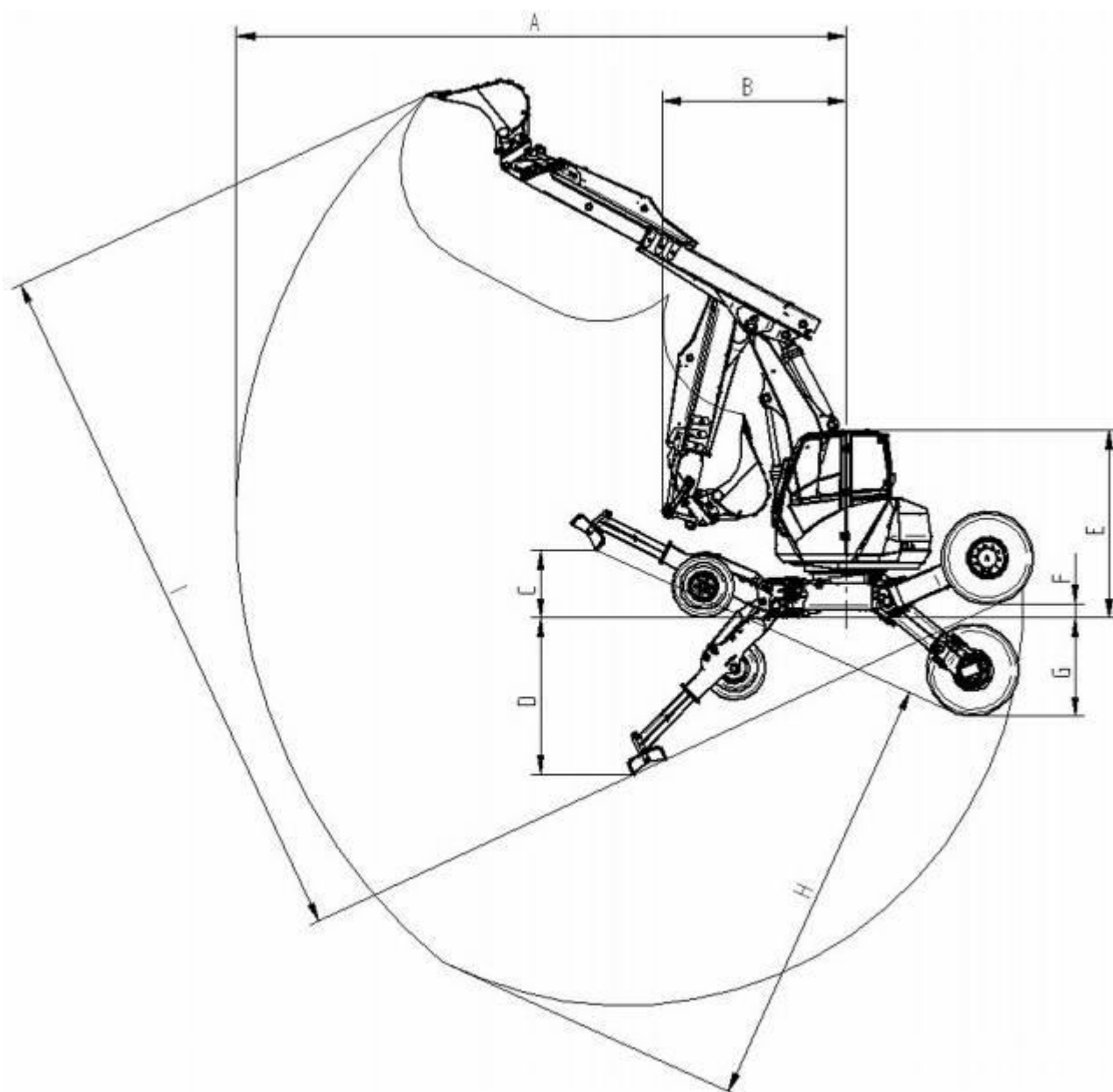


Abb. 12

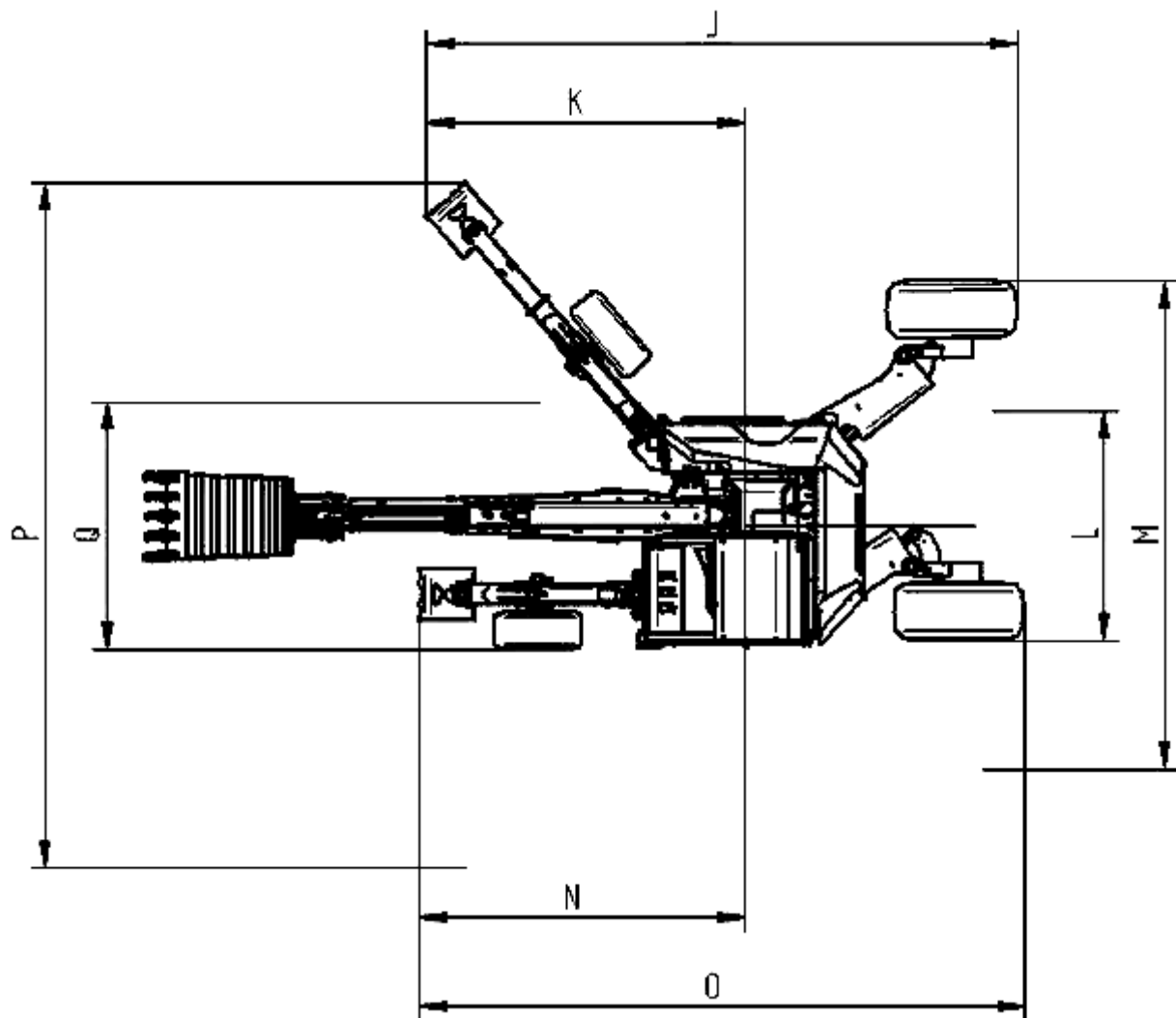


Abb. 13

**G.1.2 Technical data for the graphic presentation**

Reference to the graphic in Chapter G.1.1 Overall dimensions / page G-27.

Dim		Unit	S2 4x2	S2 4x2 TF	S2 4x4	S2 4x4 Cross	S2 4x4 Gator
	Weight	kg	9760	9980	10230	10500	10500
	Biting force according to ISO 6015	kN	69	69	69	69	69
	Break-out force according to ISO 6015	kN	92	92	92	92	92
A	Reach	mm ft in	8220 26.97 232.6	8220 26.97 232.6	8220 26.97 232.6	8220 26.97 232.6	8220 26.97 232.6
B	Min. slewing radius	mm ft in	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6
C	Upward leg adjustment	mm ft in	740 2.42 29.13	910 2.98 35.82	980 3.21 38.58	1300 4.26 51.18	20 0.065 0.78
D	Downward leg adjustment	mm ft in	1800 5.90 70.86	2110 6.92 83.07	2260 7.41 88.97	2500 8.20 98.42	2020 6.62 79.52
E	Min. loading height	mm ft in	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6	2530 8.3 99.6
F	Upward wheel leg adjustment	mm ft in	190 0.62 7.48	190 0.62 7.48	190 0.62 7.48	190 0.62 7.48	190 0.62 7.48
G	Downward wheel leg adjustment	mm ft in	1380 4.52 54.3	1380 4.52 54.3	1380 4.52 54.3	1380 4.52 54.3	1380 4.52 54.3
H	Max. digging depth	mm ft in	5900 19.35 232.28	5910 19.38 232.67	6060 19.88 238.58	5360 17.58 211.02	5160 16.92 203.14
I	Min. digging height	mm ft in	9330 30.61 367.32	9480 31.10 373.22	9940 32.61 391.33	9830 32.25 387	9820 32.21 386.61
J	Min. bracing length	mm ft in	5310 17.42 209.05	5400 17.71 212.59	5400 17.71 212.59	5980 19.61 325.43	5000 16.40 196.85
K	Min. distance tilting edge (1)	mm ft in	2730 8.95 107.48	2830 9.28 111.41	2830 9.28 111.41	3450 11.31 135.82	2470 8.10 97.62
L	Min. loading width (2)	mm ft in	2170 7.11 85.43	2170 7.11 85.43	2170 7.11 85.43	2170 7.11 85.43	2170 7.11 85.43
M	Max. bracing width, wheel leg	mm ft in	4610 15.12 181.49	4610 15.12 181.49	4610 15.12 181.49	4610 15.12 181.49	4610 15.12 181.49
N	Min. distance tilting edge (3)	mm ft in	3510 11.51 138.18	3670 12.04 144.48	3670 12.04 144.48	3840 12.59 151.18	3120 10.23 122.83
O	Min. loading length	mm ft in	6150 20.17 242.12	6310 20.70 248.42	6310 20.70 248.42	6440 21.12 253.54	5720 18.76 225.19
P	Max. bracing width, leg	mm ft in	5830 19.12 229.52	6090 19.98 239.76	6090 19.98 239.76	5790 18.99 227.95	5140 16.86 202.36
Q	Min. driving width (4)	mm ft in	2330 7.64 91.73	2330 7.64 91.73	2450 8.03 96.45	2440 8.00 96.06	1840 6.03 72.44

(1) ... with max. extension of legs

(2) ... depending on tires (data for standard tires)

(3) ... with min. extension of legs

(4) ... for Gator model: min. driving width is equivalent to min. loading width(dimension L)

**G.1.3 Lifting power**

Reach	Lifting power
3 m / 9.84 ft / 118.11 in	56 kN (5.6 t)
5 m / 16.40 ft / 196.85 in	28 kN (2.8 t)
Max.	22 kN (2.2 t)

**G.1.4 Characteristics of the machine**

Cap	Safety	According to ROPS- and FOPS-Regulations
	Acoustic pressure	L_{pA} 75 dB(A)
	Acoustic power	L_{WA} 99 dB(A)
Engine	Type	Diesel PERKINS 1104D-E44TA, four cylinder turbo diesel with intercooler
	Cubic capacity	4400 cm ³ (268 cu in)
	Cooling	Water and charge air
	Load power, max	106 kW (144 PS) at 2200 rpm 102 kW (139 PS) at 2000 rpm adjusted
	Nominal speed	2200 rpm (adjusted to 2000 rpm)
	Engine oil capacity	Approx. 7 l (1.8 gal) (oil level control) Multigrade SAE 15W-40 / Multigrade SAE 10W-30
Pumps of the hydraulics system	Slewing	70 l/min (18.5 gal/min) – 230 bar (3335 psi) Variable displacement pump with power control
	Excavating	290 l/min (76.6 gal/min) – 300 bar (4350 psi) Variable displacement pump with power control
	Traveling	142 l/min (37.5 gal/min) – 400 bar (5800 psi) Variable displacement pump in closed circuit
	Legs	25 l/min (6.6 gal/min) – 250 bar (3625 psi) Variable displacement pump with power control
Traveling	Speed	From 0 to 6.5 km/h (4 mph) Optional: 10 km/h (6.2 mph) with change-over fast/powerful
	Type	Hydraulic drive with two-stage planetary reduction gear
	Brakes	<i>Multiple-disk brakes in oil bath</i>
	Reduction gear oil	ca. 2,0 l (0.53 gal) PANOLIN IG CLP220 PANOLIN EP GEAR SYNTH
Slewing	Type	Hydraulic drive with two-stage reduction gear
	Brakes	<i>Multiple-disk brakes in oil bath</i>
	Reduction gear oil	2,1 l (0.55 gal) PANOLIN IG CLP220 PANOLIN EP GEAR SYNTH
Hydraulic cylinder	First and second arm, telescopic arm, bucket	Hydraulic limit position damping
	Legs	With safety valves
Electric fuel pump	Capacity	40 l/min (10.6 gal/min)
Fuel tank	Main tank (in super-structure) Capacity	120 l (31.7 gal)
	Auxiliary tank (in undercarriage) capacity	276 l (72.9 gal)
Coolant circuit	Capacity	22 l (5.8 gal)
Hydraulic oil tank	Capacity	140 l (37 gal) Brand (Please refer to Chapter O Maintenance / page O-98)
	First filling	200 l
Electrical system	Voltage	12 VDC / 65 A
	Battery (2)	12 V – 70 Ah – 760 A



G.2 Component parts of the machine

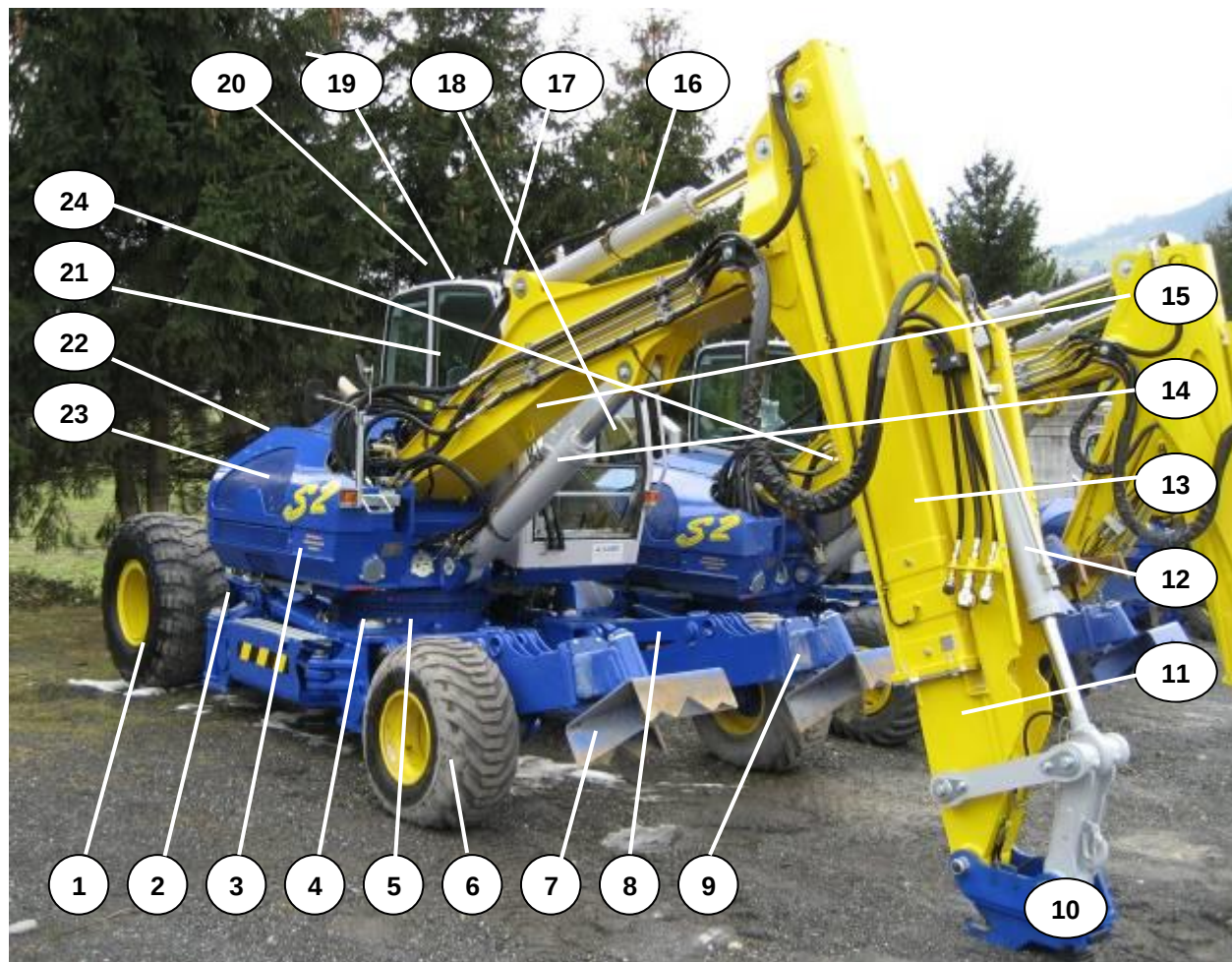


Abb. 14

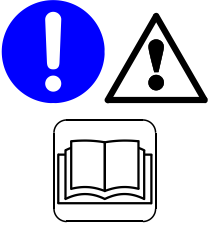
Pos.	Description
1	Drive wheels
2	Wheel legs
3	Superstructure
4	Spare fuel tank
5	Undercarriage / Rotation crown wheel
6	Leg wheels
7	Gripper pads (various designs)
8	Leg cylinder
9	Telescopic leg
10	Bucket
11	Telescopic arm – inside tube
12	Bucket cylinder

Pos.	Description
13	Telescopic arm – outside tube
14	Lifting cylinder
15	Main arm
16	Pendulum cylinder
17	Working floodlight
18	Cab pane
19	Protective screen, roof pane (optional)
20	Rotary beacon (optional)
21	Cab
22	Covering hood, rear
23	Covering hood, lateral
24	Auxiliary floodlight



H Loading and transport of the machine

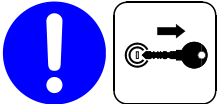
H.1 Information

	• Traffic regulations must always be complied with when measures are taken for moving the excavator. • Handling excavators on public roads requires additional retrofitting of the KAISER S2. • Driving the self-powered excavator without additional retrofitting of public road equipment is only allowed in the construction site area. • For longer distances, we recommend transporting the excavator by means of a suitable vehicle with a loading platform, having adequate dimensions and carrying capacity.
---	--

H.2 Transport of the machine

H.2.1 Precautionary measures in transport

During transport, the machine is to be kept in inoperative position and:

	• The machine is to be turned off. For safety reasons, the ignition key should be removed from the ignition. • Prior to the beginning of transport, the residual pressure of the dynamic oil system is to be discharged in accordance with the instructions in section H.2.5 Releasing residual pressure / page H-38 of this Manual. • When loading the excavator on a transport vehicle, always check whether the machine has been properly set down on and fastened to the loading platform.
---	--



H.2.2 Loading the excavator onto a transport vehicle

	• The vehicle on which the excavator will be loaded must be parked in a completely level position. • On loose or uneven ground, do not take any actions for loading up the excavator.
	• Regarding preparatory measures and the commissioning of the excavator, please refer to Chapter K Commissioning of the machine.
	• One operator can handle loading the KAISER S2 onto the loading platform of the transport vehicle. The presence of 2 persons is recommended to increase safety.

H.2.3 Movable equipment components

- 1 Superstructure, cab, frame top
- 2 Undercarriage
- 3 Legs and wheels, driven
- 4 Legs, gripper pads and wheels
- 5 Main arm
- 6 Teleskopic arm
- 7 Bucket

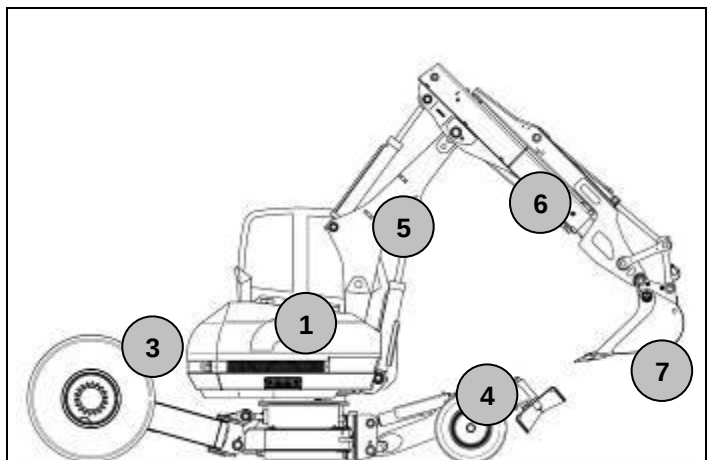


Abb. 15
Basic drawing



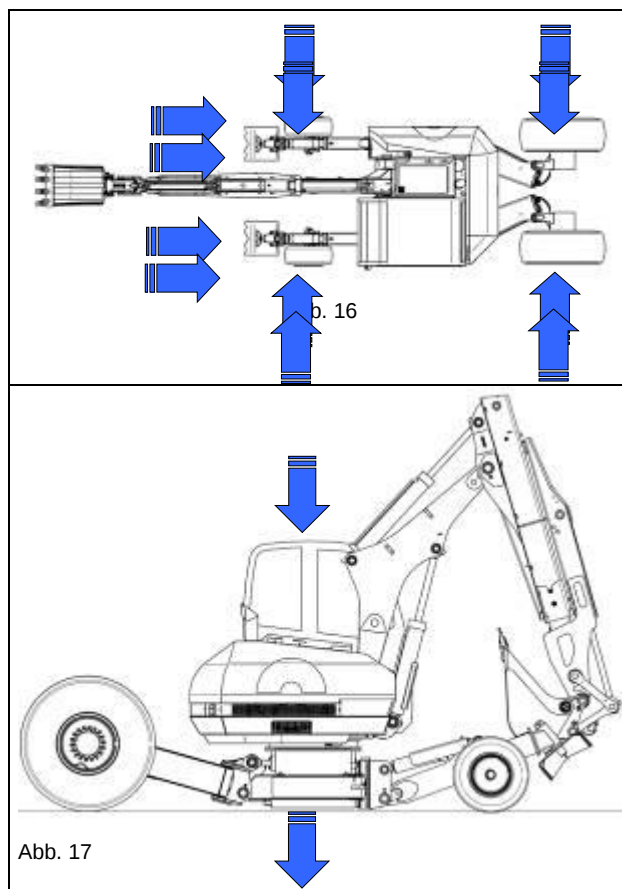
H.2.4 Loading an excavator with rear drive wheels



The transport vehicle must have its brakes applied and be parked in a completely level position.

H.2.4.1 Adjustment

- 1) Front and rear legs of excavator must be closed.
 - 2) Gripper pads of front legs are to be kept in fully retracted position.
 - 3) The wheels are to be positioned in parallel, in one line with the arm.
 - 4) The boom must be pulled upward.
-
- 5) Move the excavator into the vicinity of the transport platform. The distance between the large wheels of the rear legs and the edge of the loading platform should be 30-40 cm (11.8 – 15.7 in).
 - 6) For height adjustment, let down the excavator so far that the undercarriage nearly rests on the ground.





H.2.4.2 Loading work steps

- 1) Set down the boom on the loading platform with a distance of approx. 1 m (39.37 in) to the platform edge.

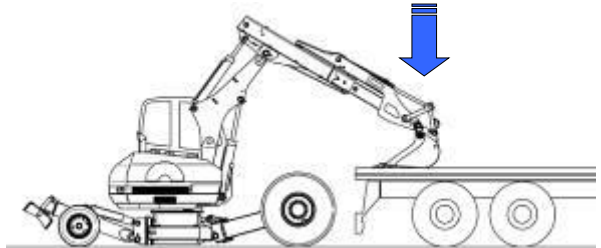
1

Abb. 18

- 2) Lower the main arm until the large wheels of the rear legs are at the same height with the transport platform.

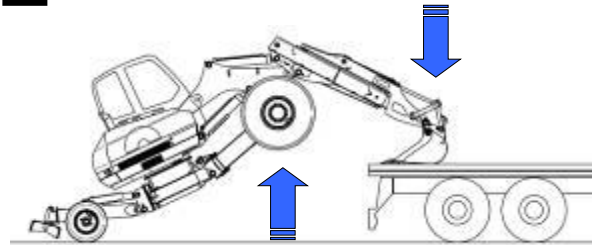
2

Abb. 19

- 3) Lower the main arm until the excavator moves forward so far that the large wheels of the rear legs get onto the loading platform.
- 4) As soon as the wheels of the rear legs are on the transport platform, raise the main arm slowly so that the wheels come firmly to a rest on the platform.

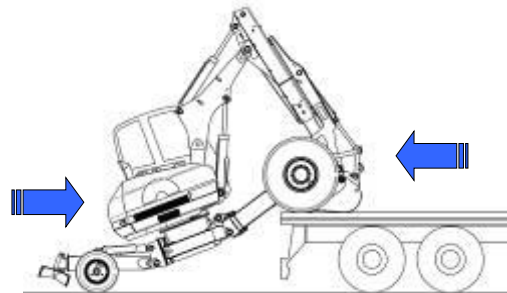
3

Abb. 20

- 5) When loading up on loose ground, it is recommended – for safety reasons – to let the front legs down so far that the gripper pads are firmly anchored in the ground.
- 6) Lift main arm and the boom.

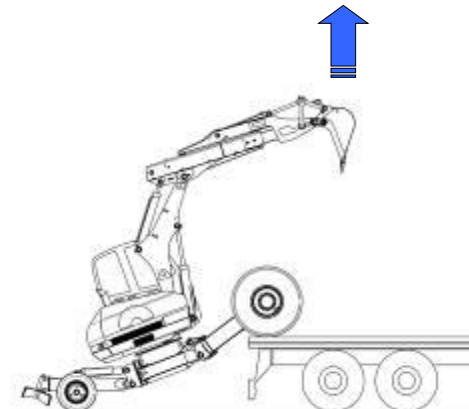
4

Abb. 21



- 7) Rotate the superstructure by 180° to re-align the boom with the legs again. While rotating, pull boom up as close as possible to the superstructure (narrow slewing radius).
- 8) Position the boom at wheel height between the front legs and rest it on the ground.

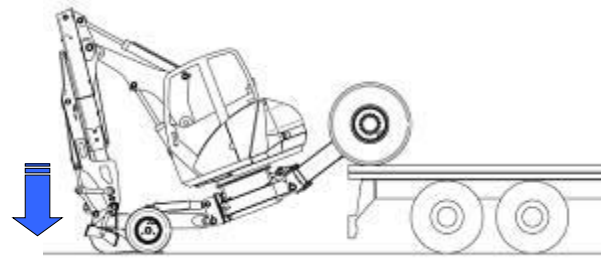
5

Abb. 22

- 9) Lower the main arm and simultaneously lift the boom so that the entire excavator will be lifted up to the height of the transport platform. Lowering the main arm causes the excavator to be raised and then tends to move forward. Slight lifting of the boom has the effect that the wheels keep a firm stand on the transport platform.

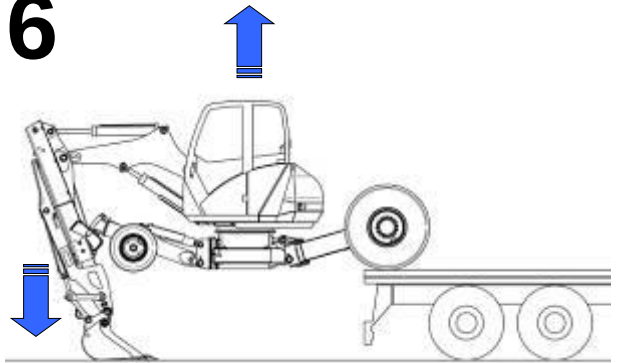
6

Abb. 23

- 10) Simultaneously, lift and extend the boom and activate the wheel drive until the excavator is completely on the transport platform.
- 11) Make sure that the wheels or the gripper pads of the front legs rest completely on the transport platform before the main arm and the boom are retracted.

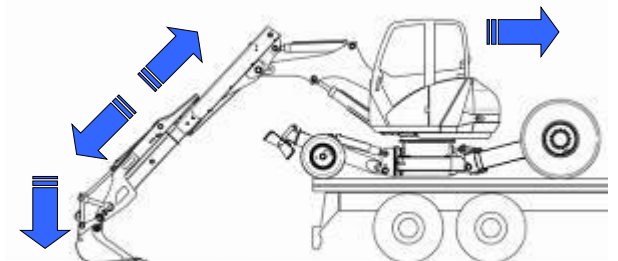
7

Abb. 24

- 12) By means of the wheel drive, the excavator can now be moved on the transport platform to the desired transport position.
- 13) Lower the main arm, the boom and the excavator onto the transport platform.
- 14) Turn off the engine by turning the ignition key.
- 15) Release residual pressure from the dynamic oil system in accordance with the instructions of Section H.2.5 Releasing residual pressure / page H-38 of this Manual.

8

Abb. 25



H.2.5 Releasing residual pressure

For some time after the engine is turned off, some hydraulic system components still remain under pressure.

To park the excavator under secure conditions, this residual pressure on hydraulic oil components must be released.

**ATTENTION!**

The following is a safety measure.

It is dangerous to leave the residual pressure in the hydraulic system of the turned off excavator.

To release the residual pressure of the dynamic oil system, please proceed as follows:

- 1) Turn the ignition key to the first stop, merely to activate the excavator's electrical system (control lights are on), without starting the engine.
- 2) Fold down the driver's seat armrest into working position.
- 3) Slowly operate the pedal and servo controls.
For a short time, your activated control commands are partly executed.
Operate the pedal and servo controls until you no longer trigger any excavator movement which means that the residual pressure has been completely released from the dynamic oil system.
- 4) Shut off the electrical system by turning the ignition key.

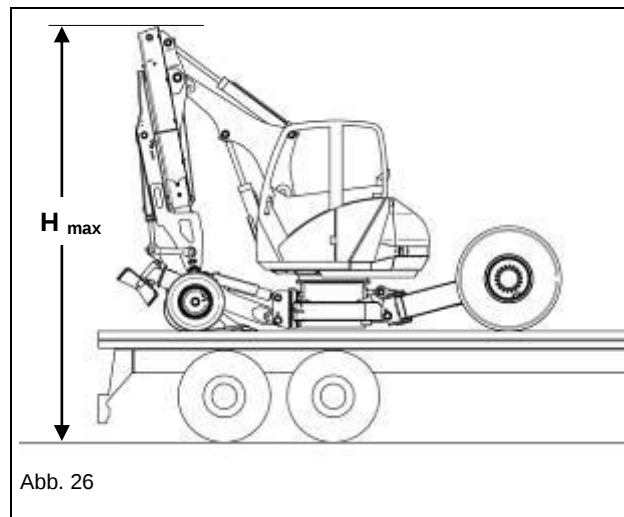


H.2.6 Setting down the boom for transport

In the following, two possibilities are presented of how to position the boom for transport.

H.2.6.1 Setting down the boom

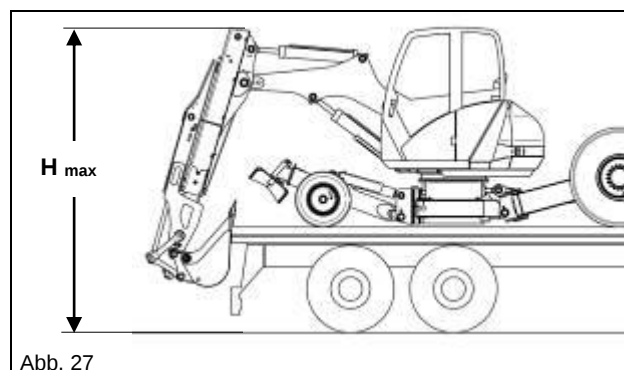
- 1) Lower the bucket so far that it closes toward the boom.
- 2) Lower main arm and boom down to the platform to reduce the parking surface for the excavator.
- 3) Secure the excavator by means of holders and chains on the loading platform to prevent that it moves or tilts during transport.
- 4) Make sure that the maximum loading height " $H_{\max}$ " allowed by traffic laws will not be exceeded (in the EU: 4.00 m).



Comply with loading height!

H.2.6.2 Boom outside of the loading platform

- 1) As far as legally permitted, the boom can be set down outside of the platform edge to reduce the length required by the excavator.
- 2) After setting down, the arm must be secured by means of steel cables or chains on the transport platform.
- 3) The load extending beyond the platform must be marked in accordance with the respectively valid regulations.





H.3 Towing the construction machine

 	Do NOT tow the excavator since the drive gears would be damaged without a mechanical disengagement device; instead, it must be loaded onto a suitable transport vehicle. The transport vehicle must have the necessary prerequisites and be registered to permit transportation of the total weight and mass of the excavator.
 	Comply with the maximum permissible height and the maximum permissible weight!
 	For additional information regarding transport and/or loading of the excavator, please refer to Chapter H Loading and transport of the machine and the following chapters.



I Safety measures for using the machine

I.1 Precautionary measures and information



ATTENTION: Safe use of the machine requires appropriate prior knowledge.
Corresponding training is required prior to using the machine.

Versus other assessments or interests, the operator must always give priority to his own wholesomeness and safety, as well as that of third parties who might be affected by his actions. The operator must always act with common sense and with a sense of responsibility.

All information included in this Manual are necessary for the correct use of the machine.

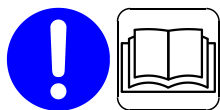
We recommend that even those who already have some experience with this type of machine should read this section.

In case of doubt regarding the excavator functions or the use of the machine, please contact your dealer immediately.

I.2 Clothing

For safety reasons, we recommend that you wear tested work clothes provided with reflector areas.

I.3 Precautionary measures for the excavator

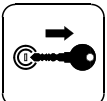


Only appropriately trained personnel is allowed to use the machine.
Carefully read the Manual before using the machine.
Before beginning to work, always make the necessary checks.



To avoid damages, make sure that no persons, animals or objects are within reach of the machine.
The digging arm is a powerful and fast tool; it can reach places which are several meters away from the operator's location. Thus, make sure that nobody approaches during your digging work.



   	ATTENTION! VOLTAGE DANGER! In the vicinity of electrical lines, it is strictly prohibited to raise the digging arm or perform digging work. Touching an electrical line presents great danger.
 	It is prohibited to climb onto the exterior housing of the excavator. Any overhaul work must be exclusively done at authorized workshops which have all the required safety equipment. It is prohibited to transport persons or objects with the excavator.
	Never use fuels, thinners or similar substances for cleaning the machine.
 	Always fasten your safety belts when you work.
	Keep safety signs clean and replace them as needed.
	It is recommended to form work teams of at least two persons who will be able to help each other immediately in an emergency.
 	Never leave the excavator unattended with the engine running. Never leave the key in the ignition or in the immediate vicinity. The operator must take the key with him or keep it safely at a secure place.
 	Make sure that the rear hood is locked. The operator must take the key with him or keep it safely at a secure place.



I.4 Tires

The following types of tires listed below are generally used.

It is important to use them with the correct air pressure and to check the pressure periodically depending on the type of work performed. Please find the corresponding information also in the table below.

Tires	Type designation	Manufacturer	Max. tire pressure [bar]	Max. load: [kg]
Axle stub:				
	Rubbermec GG4 30x11	Bandenmarkt	7.0	5.100
	Flotagrip 385/45-14.25	Bandenmarkt	6.0	5.000
	414 400/55-17.5	Trelleborg	4.0	2.050
Wheel leg:				
	BN 3 52x20.5-20	Bandenmarkt	4.0	9.000
	BN 3 1300x530-533	Bandenmarkt	6.0	5.500
	ELS-2 600/50-22.5	Nokian	3.5	5.160
	ELS-2 600/50-26.5	Nokian	3.5	6.240
	600/55-22.5	Alliance	3.6	8.010
	600/55-26.5	Alliance	3.6	8.770



I.5 Emergency pushbutton

I.5.1 Function and activation of emergency pushbutton

The emergency pushbutton (Abb. 28) brings the diesel engine to a standstill. Turning off the engine interrupts all excavator functions. To activate the emergency pushbutton, press down firmly (Abb. 29).

The emergency pushbutton must always be used in impending danger!

Abb. 28



Emergency pushbutton

Abb. 29



Activate emergency stop

I.5.2 New commissioning of the machine

After actuation of the emergency pushbutton, the entire system must again be put into operation by turning the pushbutton clockwise (Abb. 30).

Actuation of the emergency pushbutton interrupts any running work cycle; for subsequent commissioning, all cycles must be restarted.

Abb. 30



Cancel emergency stop

I.5.3 Location of the emergency pushbutton

The emergency pushbutton has a red color and is in a highly visible position on the dashboard in the cab (Abb. 31).

Due to its functional position, the emergency pushbutton is always easily accessible for the operator.

Abb. 31



Location of emergency pushbutton in the cab



J Operating components

J.1 Cab

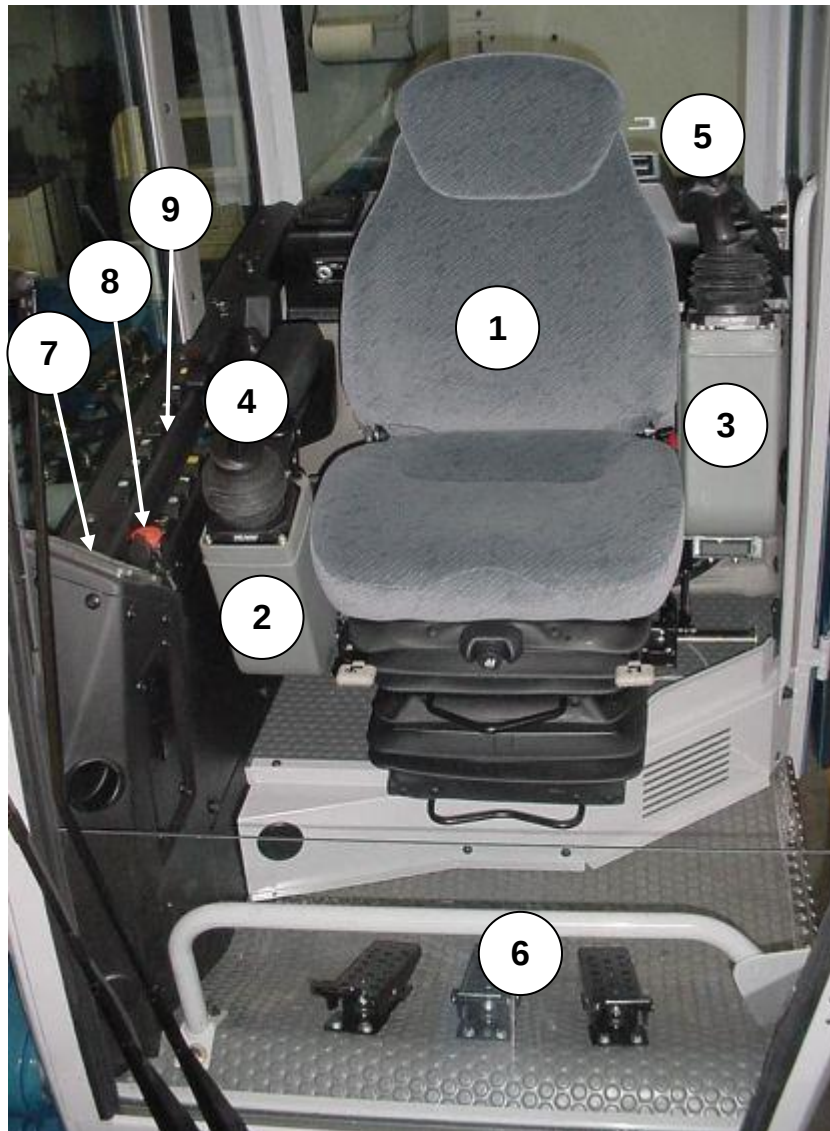


Abb. 32

Pos.	Description
1	Adjustable driver's seat
2	Right armrest
3	Left armrest
4	Right joystick
5	Left joystick

Pos.	Description
6	Operating components at pedal controls
7	Control panel
8	Emergency pushbutton
9	Dashboard



J.1.1 Access to cab

To enable safer access to the cab, the left armrest (Abb. 33 / Pos.1) must be pulled up before the cab is left last. Proceed as follows:

- 1) Pull the release grip of the left armrest upward, as shown (Abb. 33 / Pos.1).
- 2) Lift armrest (Abb. 34) and leave it up.



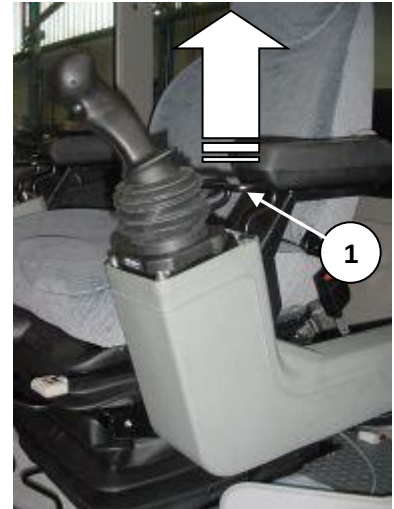
Never leave the excavator without this safety measure .

Access to the cab:

- 1) Access cab and take your seat.
- 2) Push down the armrest (Abb. 35). It engages automatically.
- 3) Before beginning your excavation work, fasten your seat belt.

The armrest actuates a safety sensor which blocks the operating components if the armrest is pulled up or if it is not properly engaged.

Abb. 33



Release armrest

Abb. 34



Armrest after release

Abb. 35



Armrest in working position



J.2 The dashboard

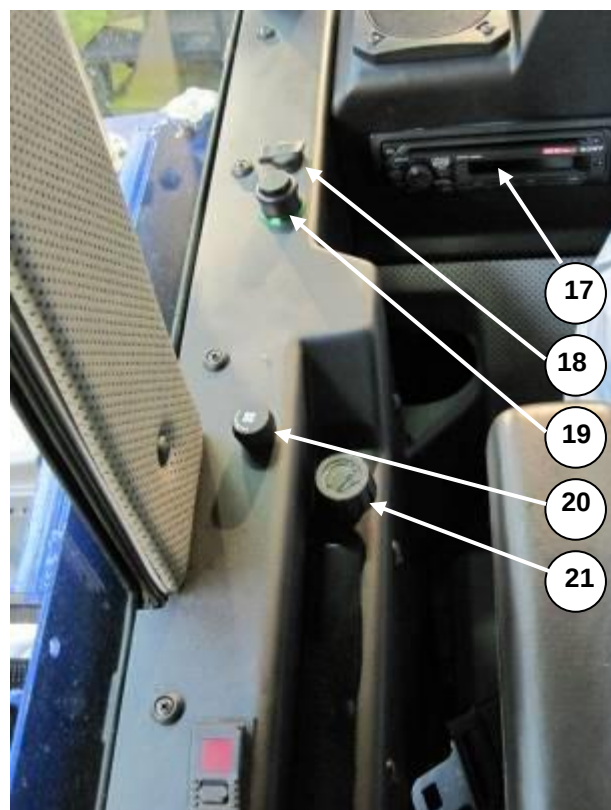
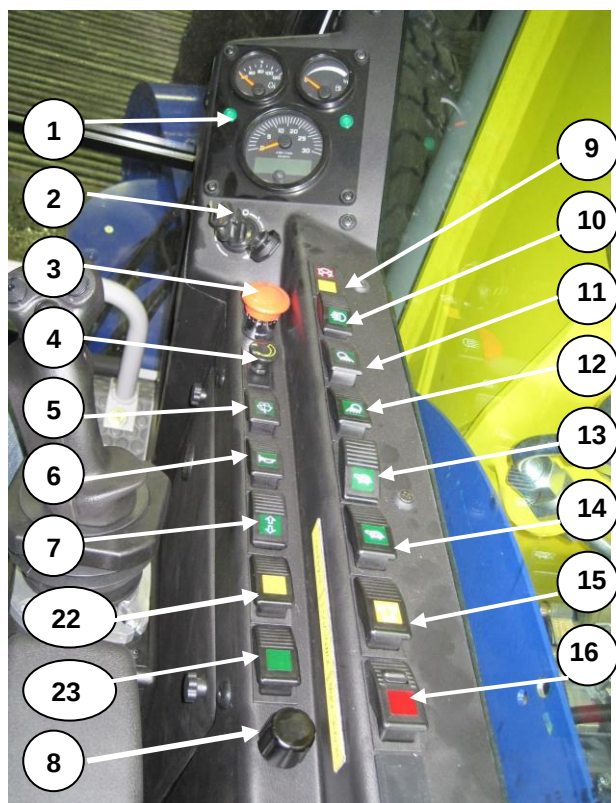


Abb. 36

Dashboard, operating components and indicators

Pos.	Description	Allocation
1	Control panel	N201
2	Ignition lock	S201
3	Emergency stop	S215
4	Window wiper interval	K205
5	Window wiper / washer system	S206
6	Horn	S204
7	Blinker (option)	S210
8	Variable speed adjustment	R201
9	Control/warning light	
10	Parking / front light	S207
11	Working light rear	S208

Pos.	Description	Allocation
12	Working light, boom (option)	S209
13	Driving, slow speed	S213
14	Slewing, slow speed (option)	S212
15	Rotary beacon (option)	S214
16	Quick change (option)	S218
17	Radio	A201
18	Additional outlet	X202
19	Cigarette lighter	X201
20	Blower speeds, cab	S205
21	Heater valve actuation, cab	-

For Power Unit I + II (option):

Pos.	Description	Allocation
22	Sensitivity	S219
23	ECO/POWER mode	S220



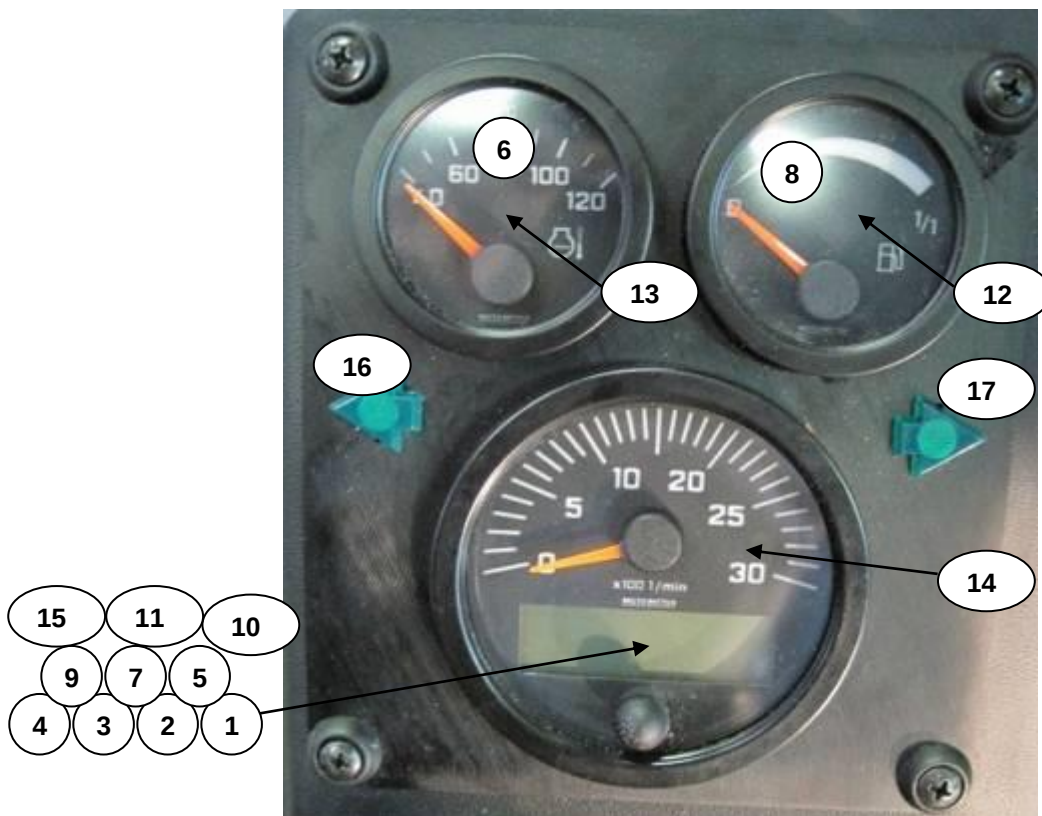
**J.2.1 Control panel**

Abb. 37 Control Panel

Pos.	Description
1	Charge control (Display)
2	Engine oil pressure indicator (Display)
3	Preheating indicator (Display)
4	Air filter clogging indicator (Display)
5	Safety indication boom overload (Display)
6	Engine cooling water temperature
7	Hydraulic oil temperature (Display)
8	Fuel level
9	Display operating hours / daily hours / rev counter (Display)

Pos.	Description
10	Indicator operating hours (Display)
11	Indicator rev. counter (Display)
12	Diesel tank reserve indication (Control lamp)
13	Engine cooling water excess temperature indication (Control lamp)
14	Hydraulic oil excess temperature indication (Control lamp)
15	Emergency pushbutton activated (Display)
16	Blinker indicator, left
17	Blinker indicator, right
18	



J.2.2 Ignition key

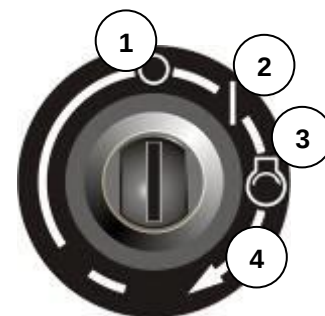
Abb. 36 / page J-47 with reference to Position 2.

- 1) The engine stands still when the key is in Pos.1 (Abb. 38).
- 2) Turning the key to Pos.2 will switch on all electrical control and operating systems, the display panel and the safety devices.
- 3) Turning the key to Pos.3 starts the preheating phase. From this position, the key will return to Pos.2 as soon as it is released. When the preheating control is extinguished (Abb. 37/ Pos.3 / Seite J-48), the preheating phase will be completed.
- 4) Turning the key to Pos.4 starts the engine. From this position, the key will return to Pos.2 as soon as it is released.

Abb. 38



	• If the engine does not start up, wait at least 10 seconds until the 2nd try. • If the engine does not start up even on the 2nd try, extend the waiting period to one minute.
--	--



J.2.3 Emergency pushbutton

Abb. 36 / page J-47 with reference to Position 3.

Actuating the emergency pushbutton (Abb. 39) results in the engine being turned off.

Engine turn-off results in a standstill of all movement functions of the machine.

A detailed description of the emergency pushbutton and its possible applications is included in Chapter I Safety measures for using the machine.

Ignition key

Abb. 39



Emergency pushbutton

		Carefully read the section about the emergency pushbutton.
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J.2.4 Window wiper interval switch

Abb. 36 / page J-47 with reference to Position 4.

Use the button (Abb. 40) to select the window wiper interval.

Abb. 40



Window wiper interval

J.2.5 Window wiper/washer switch

Abb. 36 / page J-47 with reference to Position 5.

This switch (Abb. 41) is used to operate the window wiper.



Before you use this switch, make sure that the front window is closed.

Setting 1: Window wipers are activated
Setting 2: Window wiping water is activated

Abb. 41



Window wiper

J.2.6 Switch horn

Abb. 36 / page J-47 with reference to Position 6.

This switch (Abb. 42) is used to sound the horn.

Abb. 42



Horn

J.2.7 Switch blinker

Abb. 36 / page J-47 with reference to Position 7.

This switch (Abb. 58) is used to operate the blinkers.
On the control panel (Abb. 37 / page J-48) indicators Pos.16 and Pos. 17 show which blinker is activated at the moment.

Abb. 43



Blinker



J.2.8 Variable speed switch /sensitivity (option)

Abb. 36 / page J-47 with reference to Position 8.

Depending on the application and the power demand, the variable speed step can be (pre)set by means of this switch (Abb. 42). The hydraulic system for power transmission is designed such that each of the variable speeds can be used for working. In practice, the operator is free to adjust the speed to the appropriate working conditions. Factory shipment is provided with a maximum operating speed of 2,200 rpms. The speed is shown on the display of the control panel (Abb. 37 / Pos. 10 / page J-48).

The change from idling speed to a higher speed is activated by forward tipping the center pushbutton of the right joystick (Abb. 79 / Pos.5 / page J-67). In activated condition, it can be directly changed into the speed by means of the switch (Abb. 44). Tipping again will result in a reset to the idling speed.

Abb. 44



Switch for variable speed steps or sensitivity (option)

J.2.9 Control / Warning Light

Abb. 36 / page J-47 with reference to Position 9.

When yellow light switched out after turning the ignition key into position 2 (about 4-5 seconds) the engine can be started.

Abb. 45



Control / Warning Light



Stop the engine immediately when red lamp flash.

J.2.10 Switch parking / front light

Abb. 36 / page J-47 with reference to Position 9.

This switch (Abb. 46) is used to switch between parking light and front light.

Setting 1: Parking light
Setting 2: Front light

Abb. 46



Parking / Front light



J.2.11 Switch for rear working floodlight

Abb. 36 / page J-47 with reference to Position 10.

This switch (Abb. 47) is used to switch the rear working light on and off.

Abb. 47



Rear working flood light

J.2.12 Switch for working light, boom

Abb. 36 / page J-47 with reference to Position 11.

This switch (Abb. 48) is used to switch the working light on the boom (option) on and off.

Abb. 48



Working light, boom

J.2.13 Switch for driving, slow speed

Abb. 36 / page J-47 with reference to Position 13.

This switch (Abb. J-18) is used to switch the drive gear to slow speed.

Abb. 49



Switch for driving, slow speed

J.2.14 Switch for slewing, slow speed

Abb. 36 / page J-47 with reference to Position 14.

This switch (Abb. 50) is used to switch the slewing gear to slow speed.

Abb. 50



Switch for slewing, slow speed



J.2.15 Switch, rotary beacon

Abb. 36 / page J-47 with reference to Position 15.

This switch (Abb. 51) is used to switch on the rotary beacon (option).

Abb. 51



Switch, rotary beacon

J.2.16 Quick change switch

Abb. 36 / page J-47 with reference to Position 16.

This switch (Abb. 52) is used to fix the bucket on the quick change (option).

Abb. 52



Quick change switch

J.2.17 Radio

Abb. 36 / page J-47 with reference to Position 17.

We make reference to the Operating and Service Manual by the radio manufacturer BLAUPUNKT.

Abb. 53



Radio

J.2.18 Additional outlet

Abb. 36 / page J-47 with reference to Position 18.

The additional outlet (Abb. 54) can supply 12 volt direct current at 10 amps max. (fuse no. 10).

This outlet can supply various accessory parts, such as e.g. chargers for cell phones.

Abb. 54



Additional outlet



J.2.19 Cigarette lighter

Abb. 36 / page J-47 with reference to Position 19.

The cigarette lighter (Abb. 55) is used for lighting cigarettes. When you remove the lighter plug (Abb. 55) you can tap 12 volt direct current with 10 amps max. (fuse no. 10).

This connection is used to supply various accessory parts, such as e.g. chargers for cell phones.

Abb. 55



Cigarette lighter

J.2.20 Blower speed switch

Abb. 36 / page J-47 with reference to Position 20.

This rotary switch (Abb. 56) regulates, with three selectable settings, the amount of air supplied through the ventilation slots to the cab.

Abb. 56



Blower speed switch

J.2.21 Heater valve control button

Abb. 36 / page J-47 with reference to Position 21.

This switch (Abb. 57) regulates the temperature of the fresh air provided through the ventilation slots in the cab.

Abb. 57



Heater valve control button

J.2.22 Switch sensitivity (option)

Abb. 36 / page J-47 with reference to Position 22.

For the Power Unit I + II option. This switch (Abb. 58) is used to select the sensitivity (fine, medium, dynamic).

Abb. 58



Sensitivity switch



J.2.23 ECO/POWER mode switch (option)

Abb. 36 / page J-47 with reference to Position 23.

This switch (Abb. 59) is used with the PowerUnit I + II option to select the Power or ECO mode.

Air conditioning control, see Chapter N.7 Air conditioning / page N-96.

Abb. 59



Switch for ECO / POWER mode
(option)

J.3 Pedals

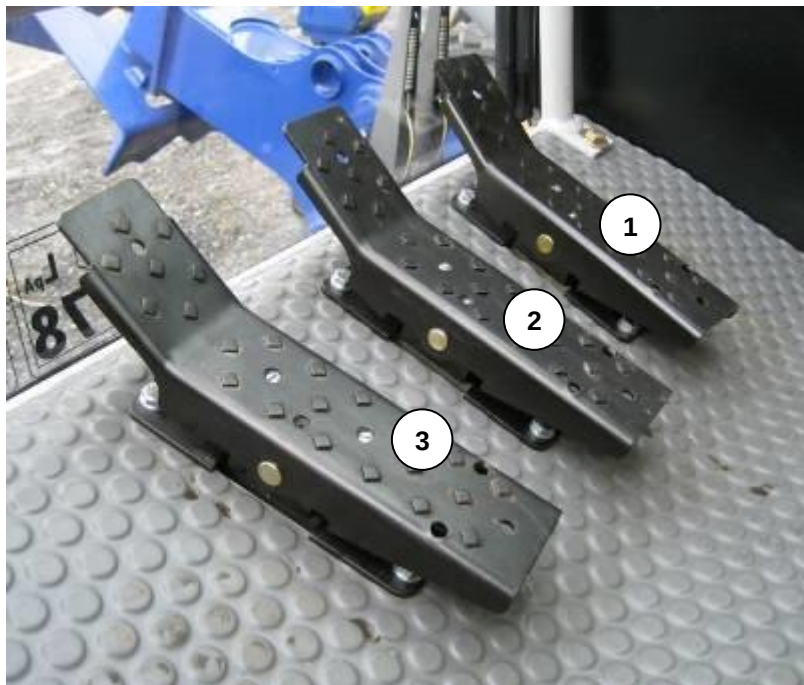


Abb. 60
Pedal control

Pos.	Description
1	Control of the telescopic arm
2	Control of the wheel drives

Pos.	Description
3	Control of other accessory parts



J.3.1 Operation of the telescopic arm

Abb. 60 / page J-55 with reference to Position 1

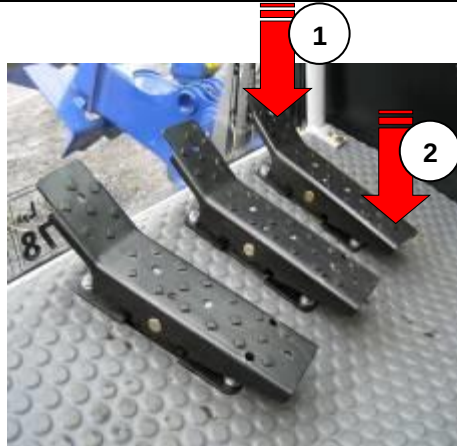
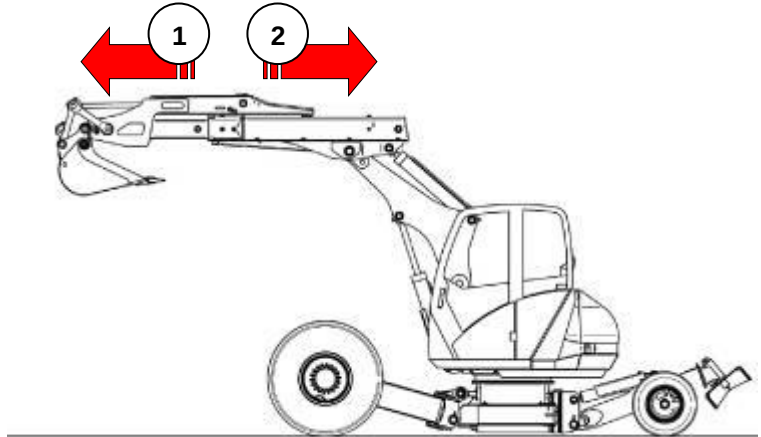


Abb. 61
Operation of the telescopic arm (basic drawing)



The first pedal from the right controls extension and retraction of the telescopic arm.

J.3.2 Operation of drive wheels

J.3.2.1 Forward travel

Abb. 60 / page J-55 with reference to Position 2.

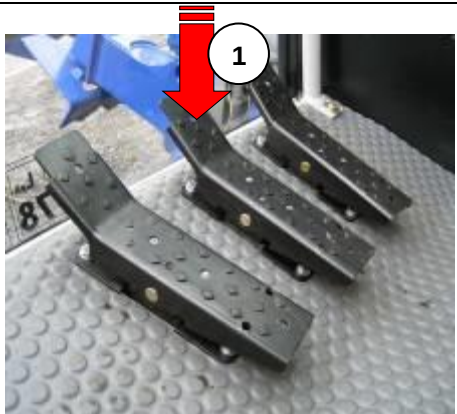
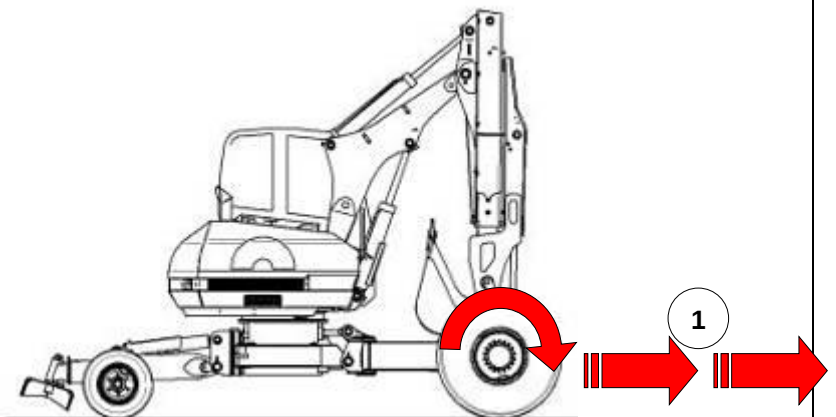


Abb. 62
Operation of drive wheels (basic drawing)





J.3.2.2 Reverse travel

Abb. 60 / page J-55 with reference to Position 2.

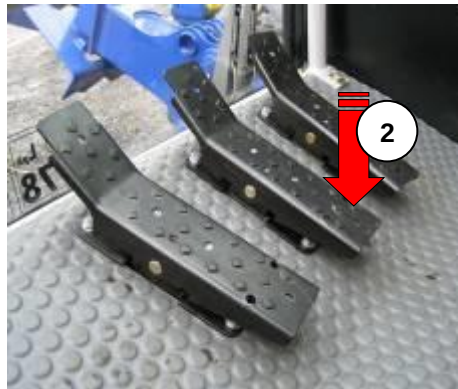
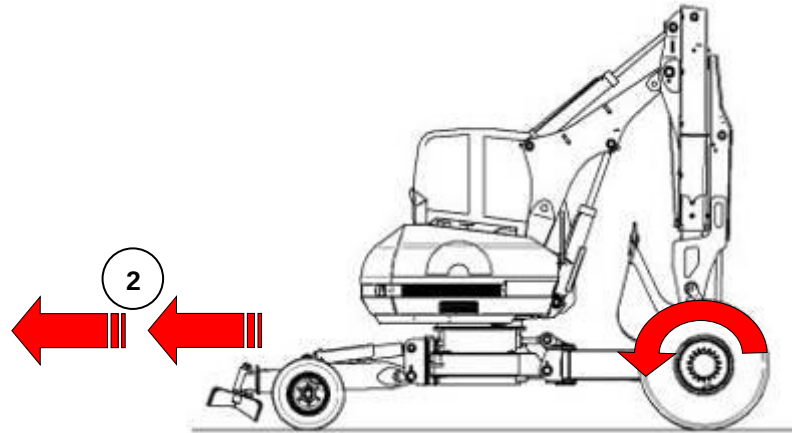


Abb. 63
Operation of drive wheels (basic drawing)



Operate the drive system of the drive wheels by using the pedal (Abb. 63 / Pos. 2) at the pedal control.

To utilize the driving force of the wheels, the boom must show in the direction of the wheels. The boom's weight provides optimum tire grip.

Activation of the wheel brake pushbutton (Abb. 70 / Pos.5 / page J-61) can increase the braking effect of the wheel drives.

The diode lights up upon activation.



While traveling, the boom should always show in the direction of the drive wheels since there is otherwise the risk of slipping.



J.3.2.3 Attachments

Abb. 60 / page J-55 with reference to Position 3.

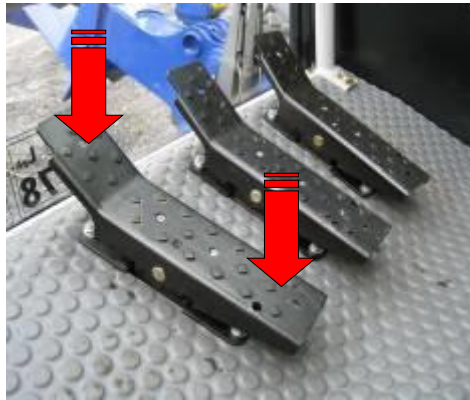


Abb. 64
Operation of attachments (basic drawing)

Attachments:

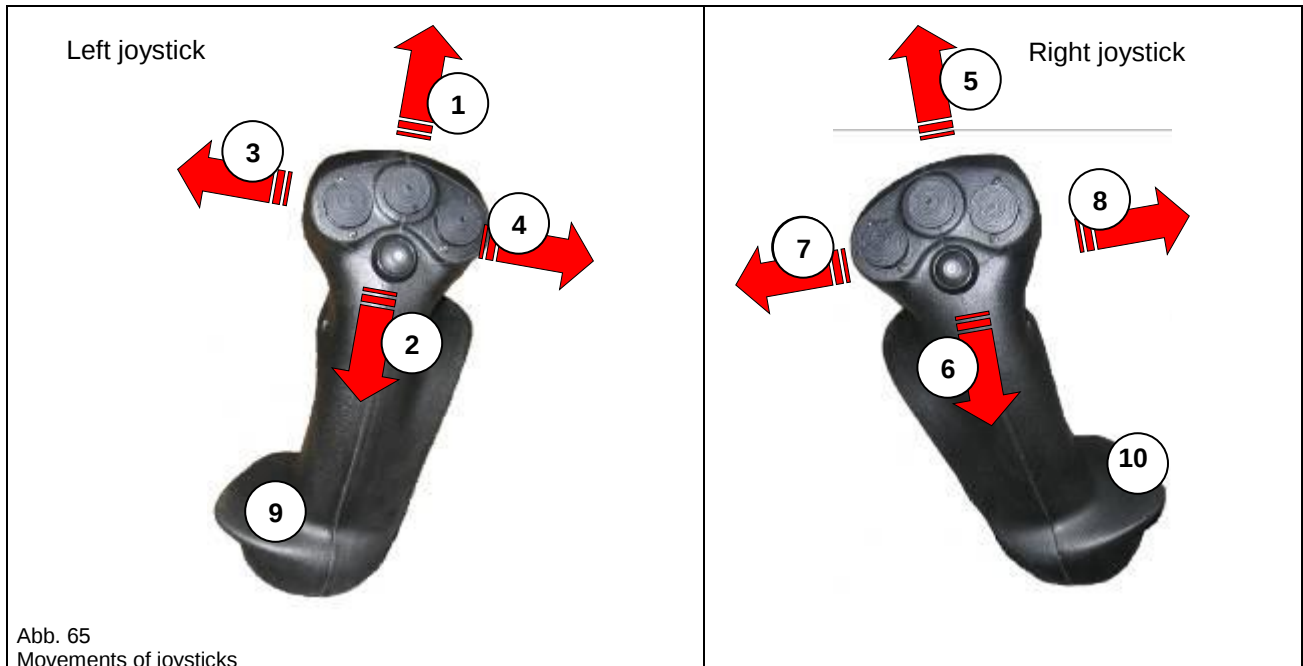
- Turning gripper OPEN / CLOSE
- Demolition hammer
- Tilttable humus bucket RIGHT / LEFT
- Powertilt RIGHT / LEFT

Connection at boom on the left side

Please refer to Chapter M Installation of accessories.



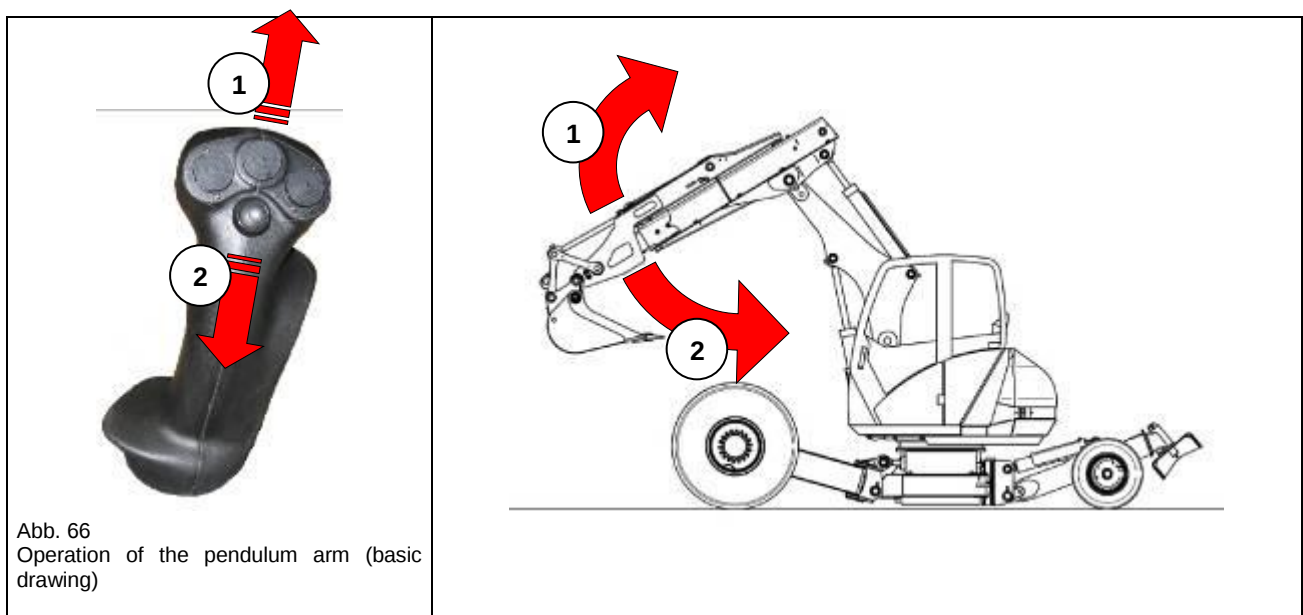
J.4 Joysticks



Pos.	Description
1	Extend pendulum arm
2	Retract pendulum arm
3	Rotating the superstructure to the left
4	Rotating the superstructure to the right
5	Lower main arm

Pos.	Description
6	Raise main arm
7	Close bucket
8	Open bucket
9	Left handrest
10	Right handrest

J.4.1 Operation of the pendulum arm



Pushing the left joystick forward will push the pendulum arm forward (up).

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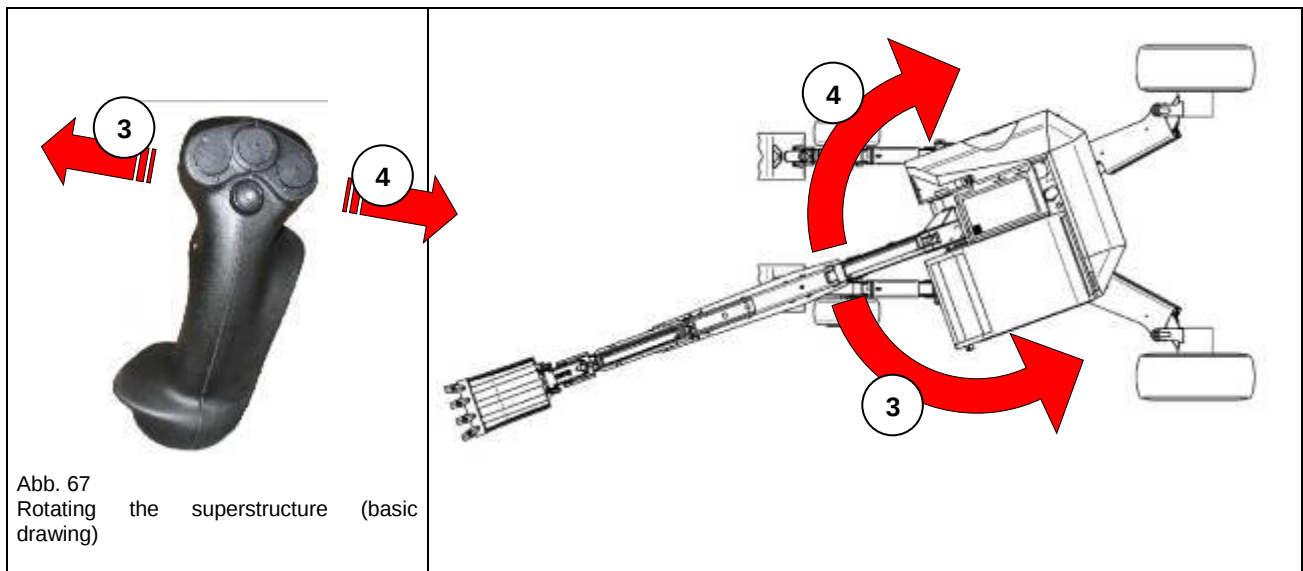
Order number: 12000281 // validity: from KB-2095

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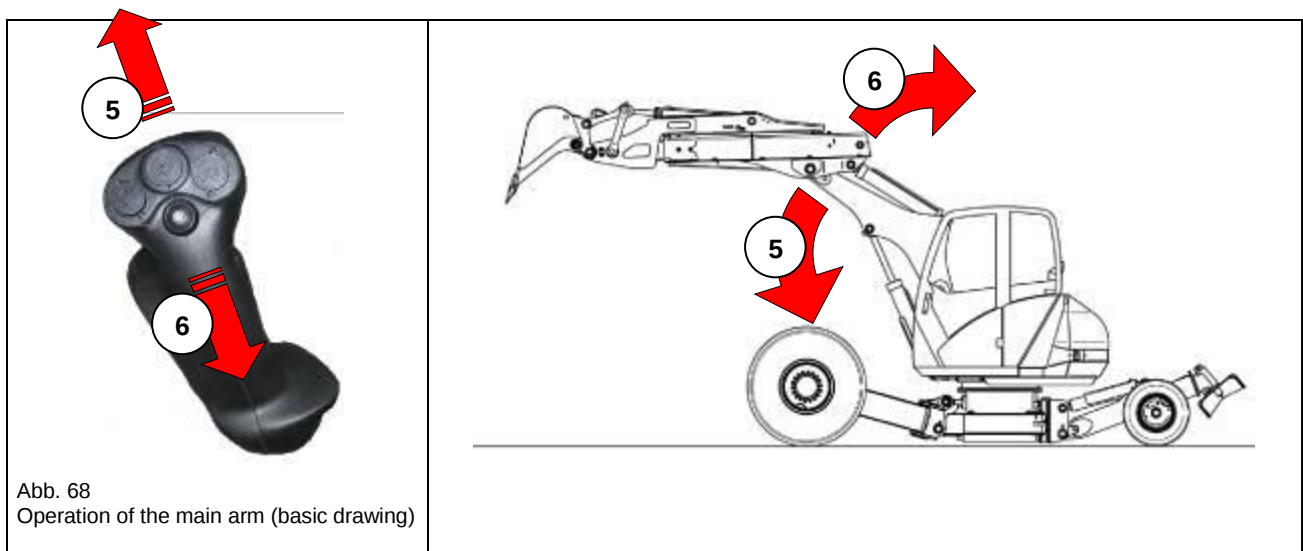
Pulling the left joystick backward will retract the pendulum arm (down).

J.4.2 Rotating the superstructure



Moving the left joystick to the left will rotate the superstructure to the left (counterclockwise).
Moving the left joystick to the right will rotate the superstructure to the right (clockwise).

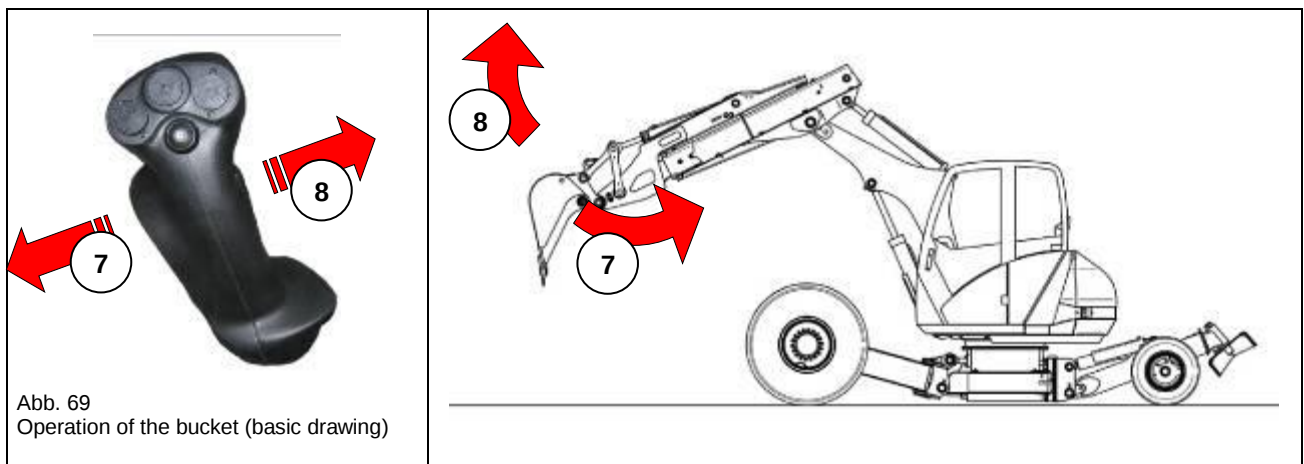
J.4.3 Operation of the main arm



Pushing the right joystick forward will lower the main arm.
Pulling the right joystick backward will lift the main arm.

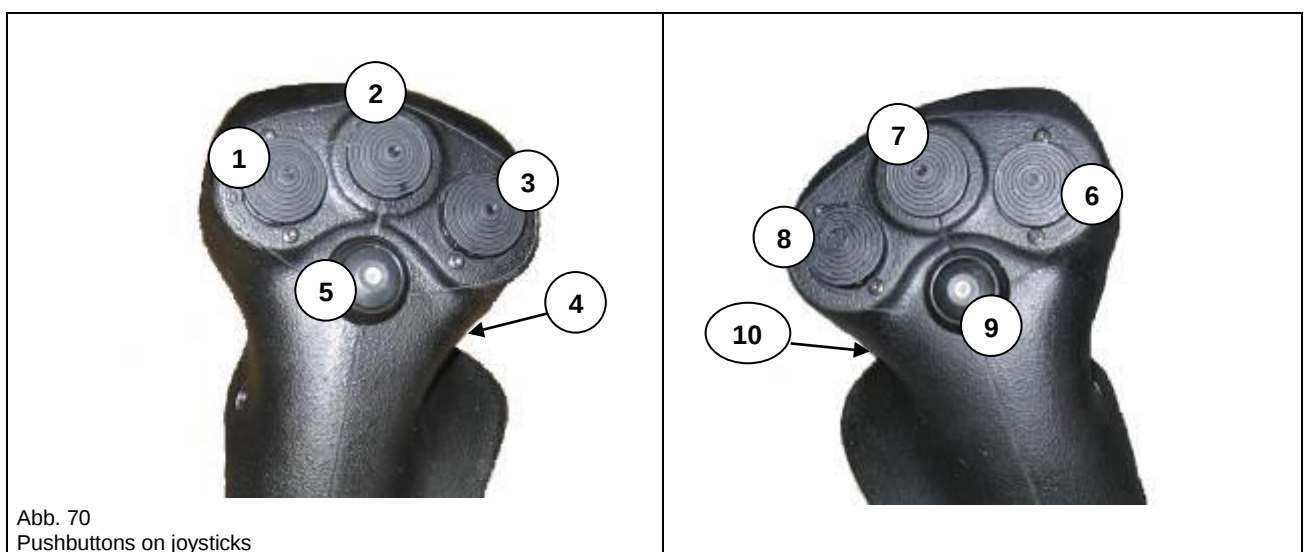


J.4.4 Operation of the bucket



Pushing the right joystick to the left will retract the bucket (closed).
Pushing the right joystick to the right will extend the bucket (opened).

J.5 Pushbuttons on both joysticks

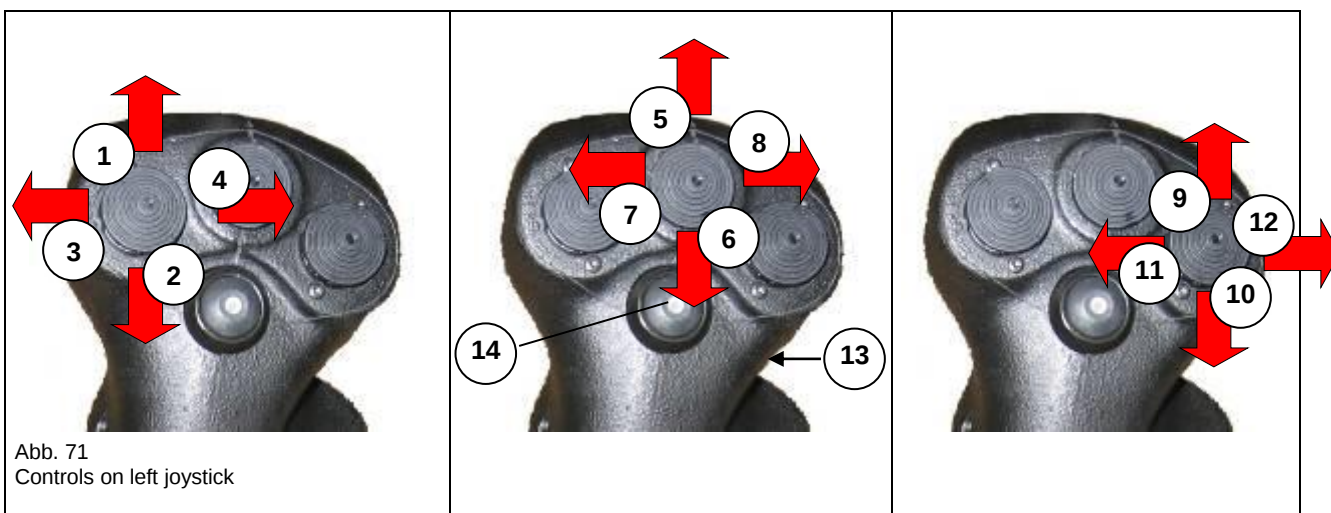


Pos.	Description
1	Left wheel leg
2	Winch
3	Left pad leg / <i>Telefuss</i> left
4	Attachment
5	Wheel brake

Pos.	Description
6	Right wheel leg
7	Steering, display selection
8	Right pad leg / <i>Telefuss</i> right
9	Change second level
10	Attachment



J.5.1 Left joystick



J.5.1.1 Without changeover effected

Pos.	Description
1	Left wheel leg down
2	Left wheel leg up
3	Left wheel leg out
4	Left wheel leg in
5	Winding off winch
6	Winding up winch
7	Extend left wheel parallel

Pos.	Description
8	Extend right wheel parallel
9	Left pad leg down
10	Left pad leg up
11	Left pad leg out
12	Left pad leg in
13	Accessory
14	Wheel brake

J.5.1.2 With changeover effected

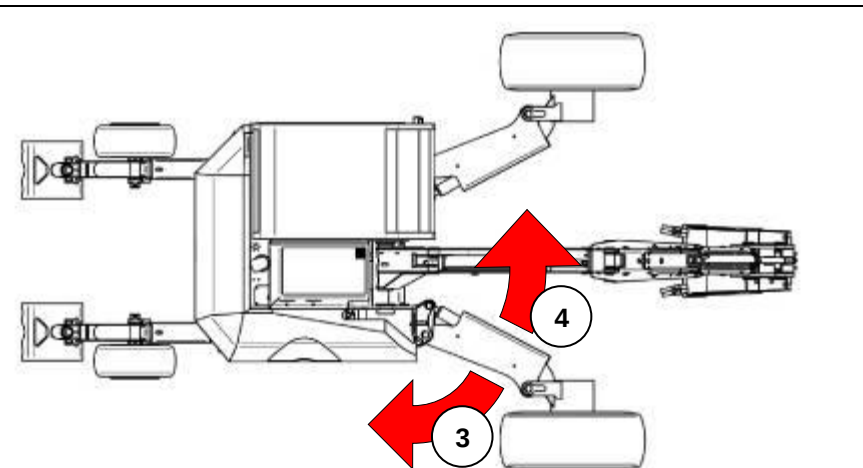
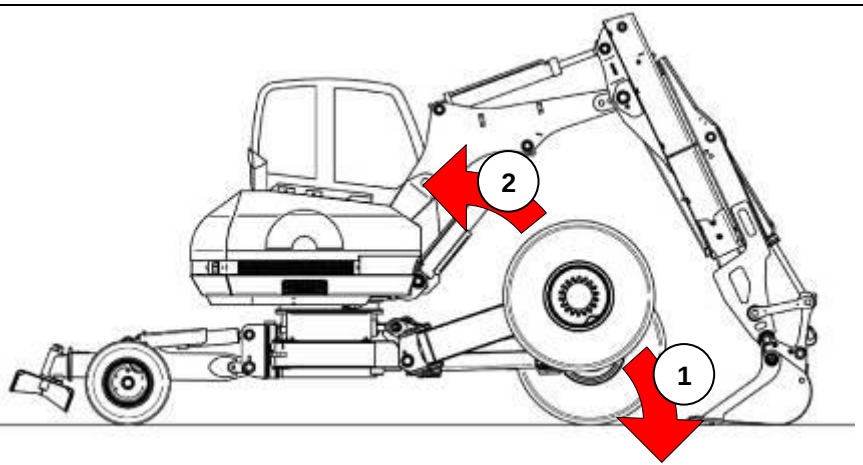
To this end, press the pushbutton for changeover to level 2 (Abb. 71 / Pos. 14 / page J-62).

Pos.	Description
1	Not assigned
2	Not assigned
3	Steering left individual wheel right (option)
4	Steering left individual wheel left (option)
5	Not assigned
6	Not assigned
7	Auxiliary steering, wheel leg left (option)

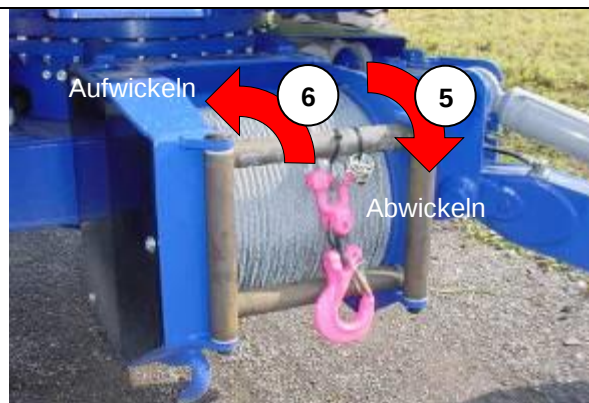
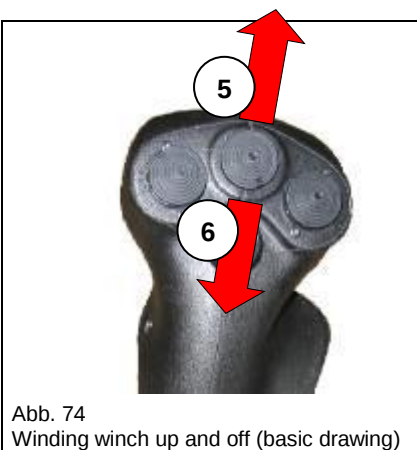
Pos.	Description
8	Auxiliary steering, wheel leg right (option)
9	Extend <i>Telefuss</i>
10	Retract <i>Telefuss</i>
11	Pad leg left out
12	Pad leg left in
13	Turning gripper to the left
14	Wheel brake



J.5.1.3 Operation left wheel leg



J.5.1.4 Operation of the winch





J.5.1.5 Operation left pad leg / wheel

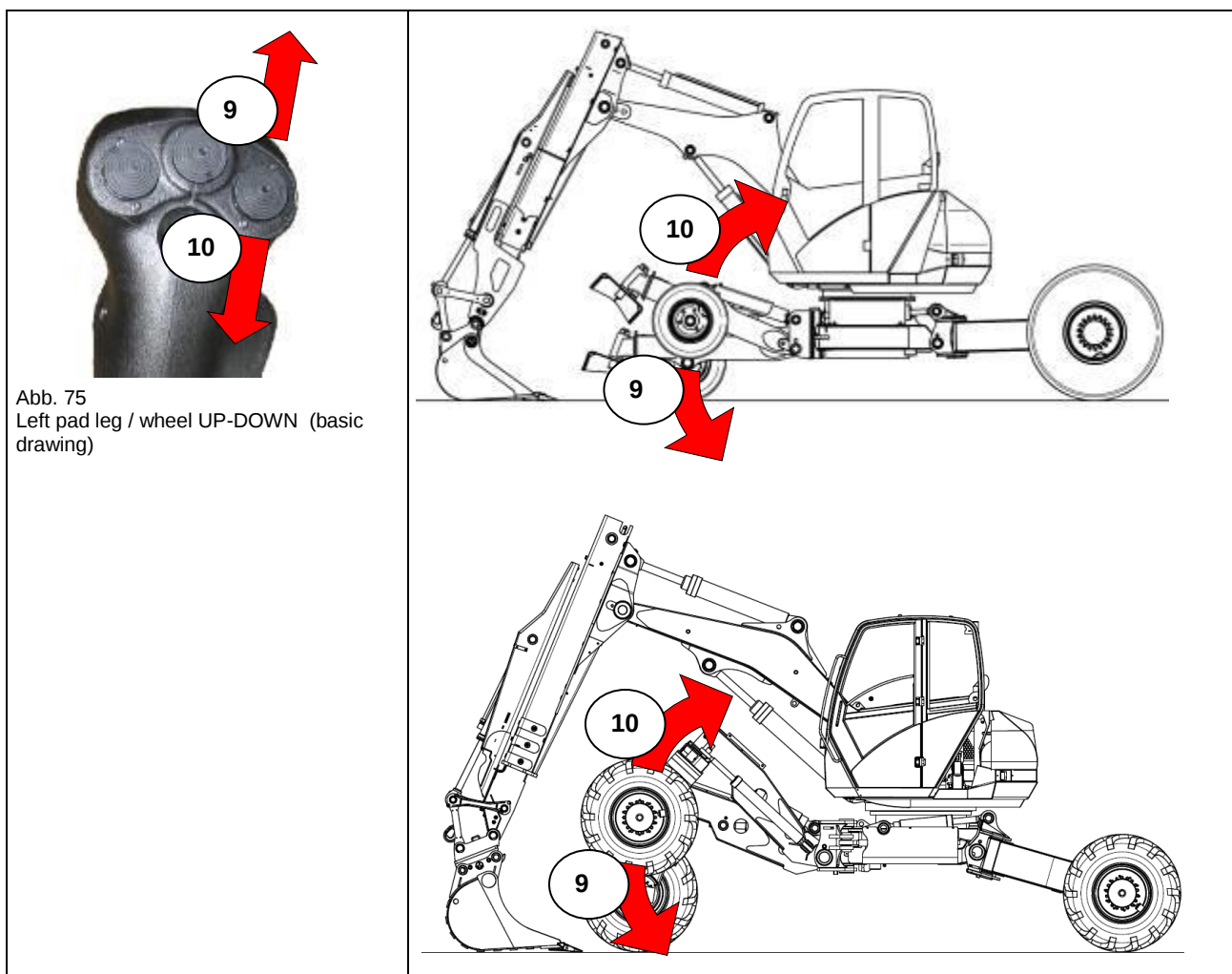
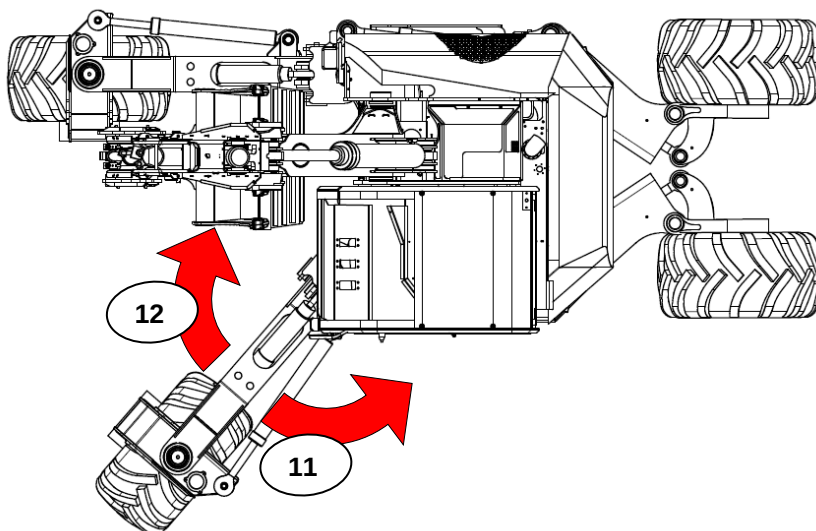
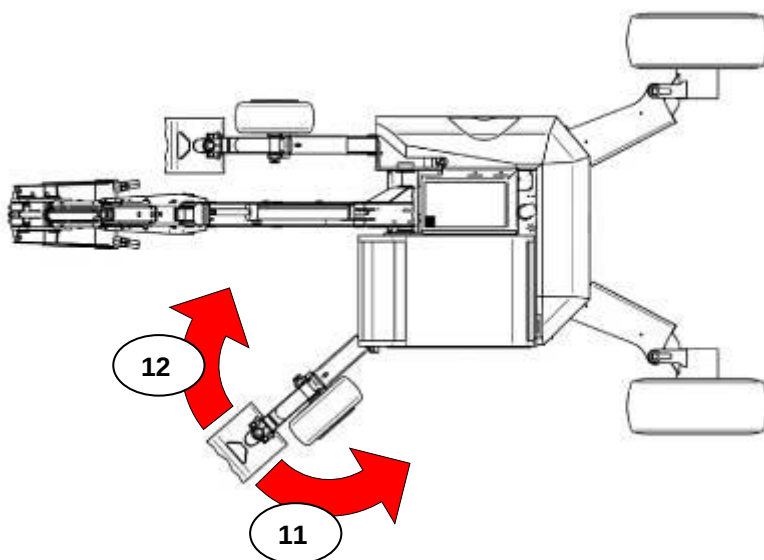


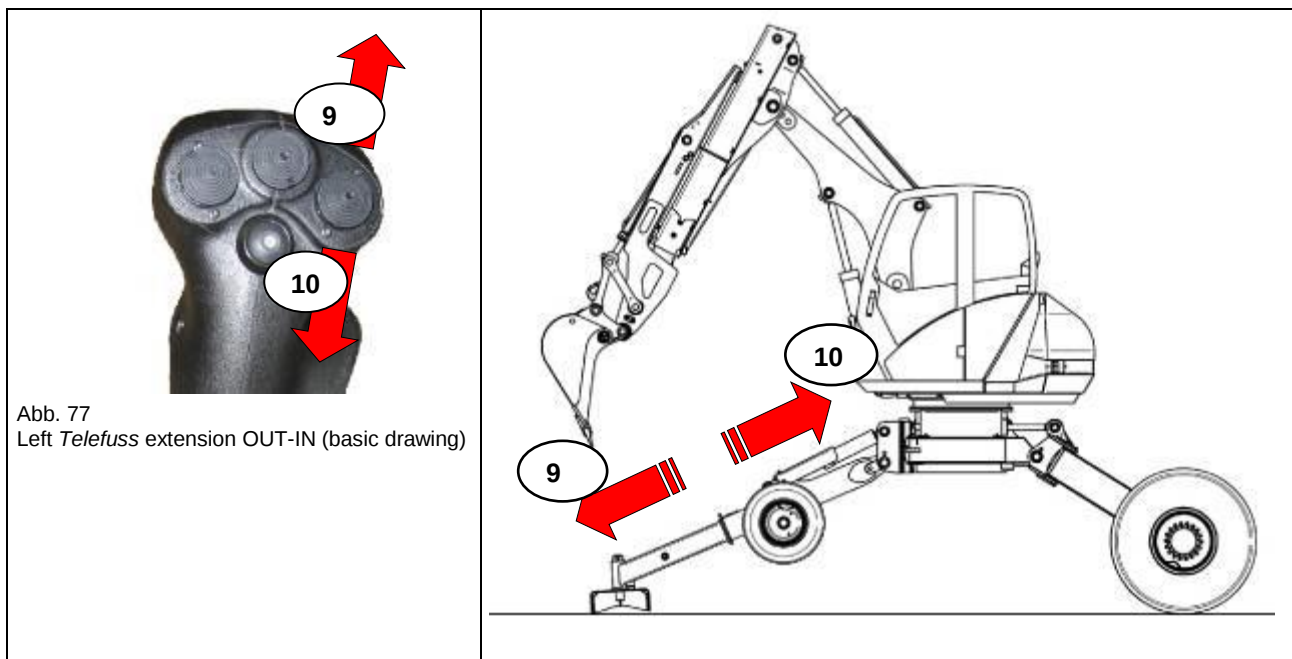


Abb. 76
 Left pad leg / wheel OUT-IN (basic drawing)



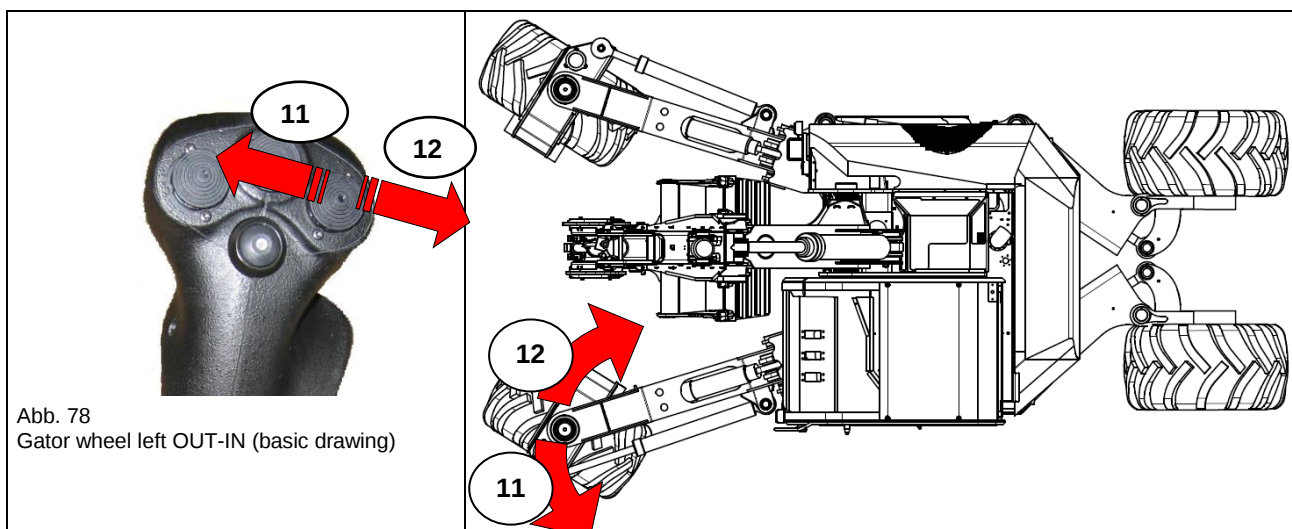
J.5.1.6 Operation of left *Telefuss*, retraction/extension

To this end, press the pushbutton for changeover to level 2 (Abb. 71 / Pos. 14 / page J-62).



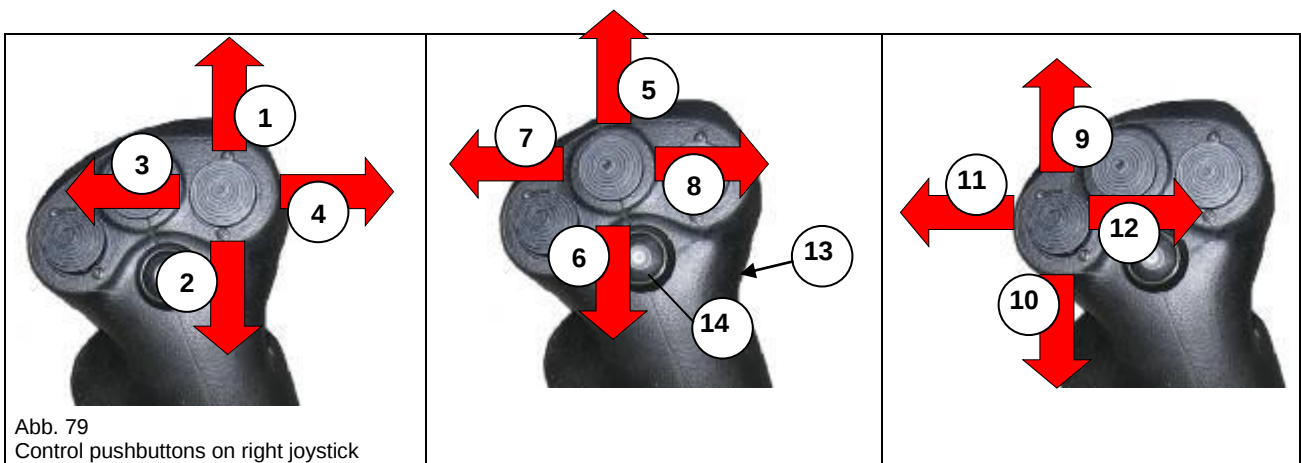
J.5.1.7 Operation of left Gator wheel

To this end, press the pushbutton for changeover to level 2 (Abb. 71 / Pos. 14 / page J-62).





J.5.2 Right joystick



J.5.2.1 Without changeover effected

Pos.	Description
1	Right wheel leg down
2	Right wheel leg up
3	Right wheel leg in
4	Right wheel leg out
5	Activate speed step
6	Display selection
7	Steering, left

Pos.	Description
8	Steering right
9	Right pad leg down
10	Right pad leg up
11	Right pad leg in
12	Right pad leg out
13	Attachment
14	Change second level

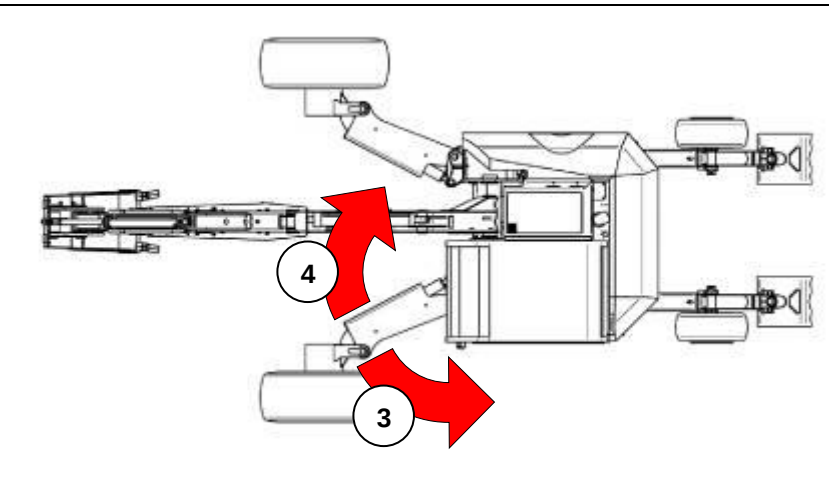
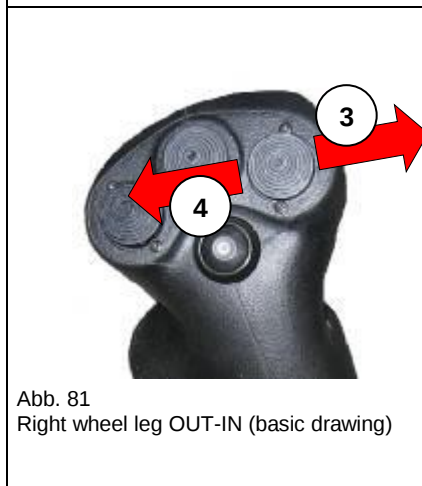
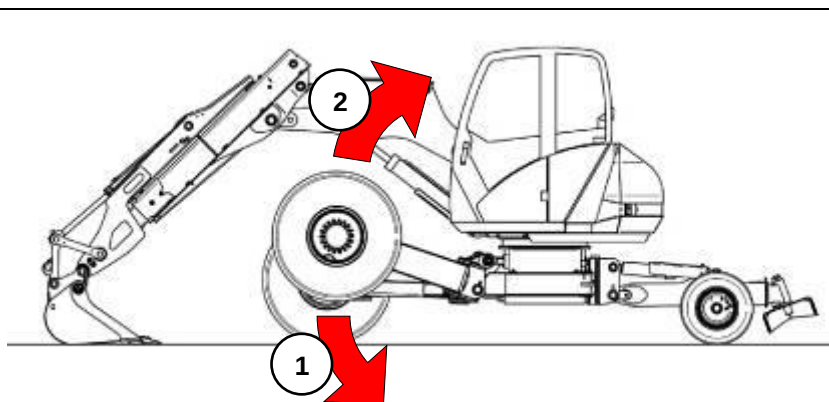
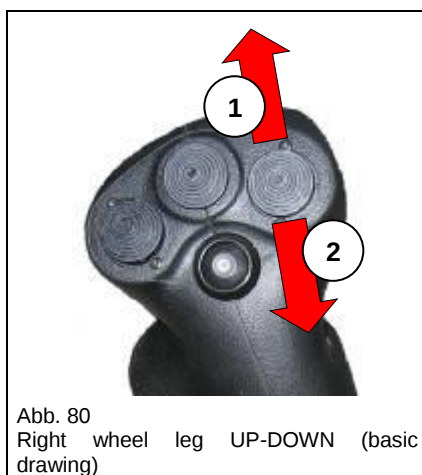
J.5.2.2 With changeover effected

To this end, press the pushbutton for changeover to level 2 (Abb. 79 / Pos. 14 / page J-67).

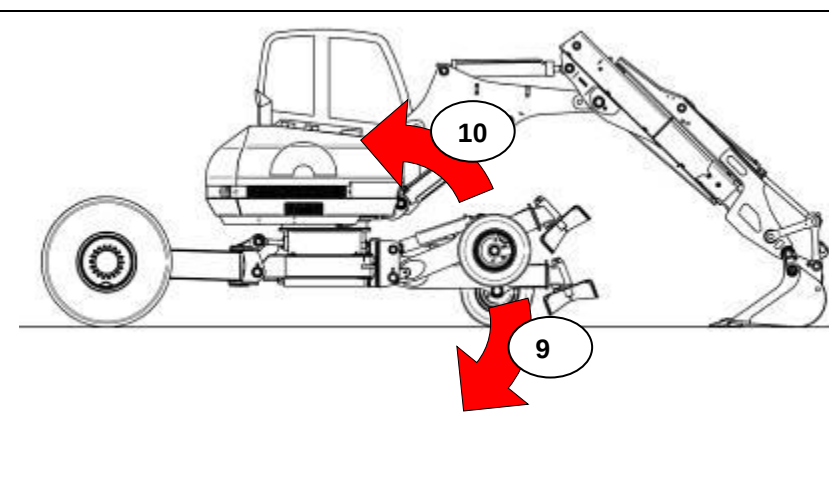
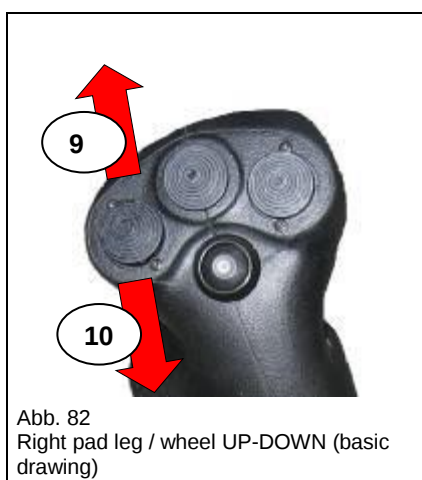
Pos.	Description
1	Right wheel leg down
2	Right wheel leg up
3	Steering pad leg left
4	Steering pad leg right
5	Activate speed step
6	Not assigned
7	Not assigned

Pos.	Description
8	Not assigned
9	Telescopic pad leg out
10	Telescopic pad leg in
11	Wheel Gator
12	Wheel Gator
13	Turning gripper to the right
14	Not assigned

J.5.2.3 Operation right wheel leg



J.5.2.4 Operation right pad leg



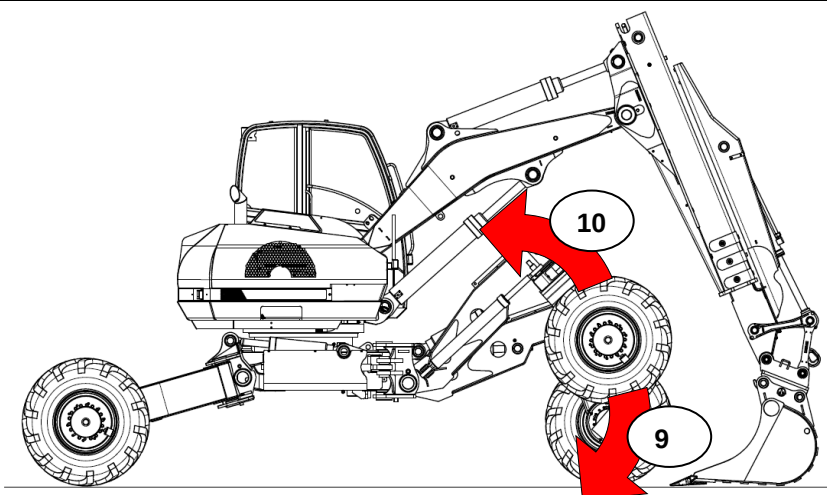
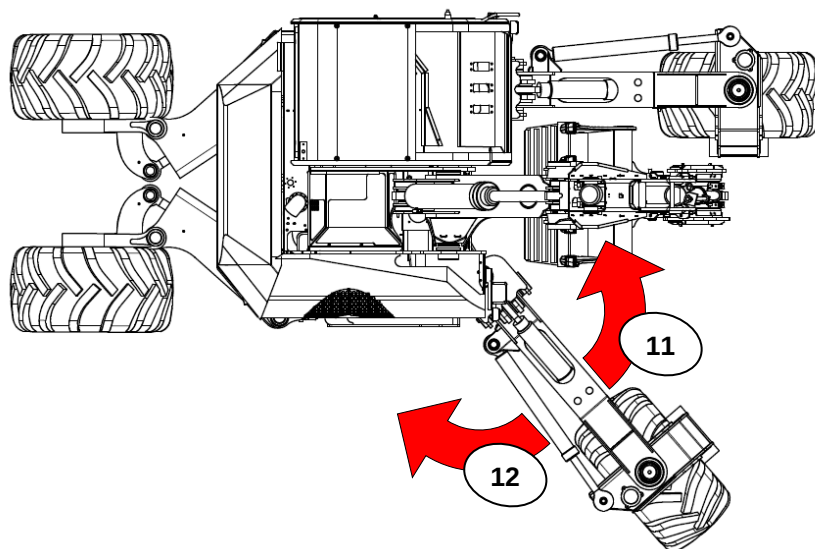
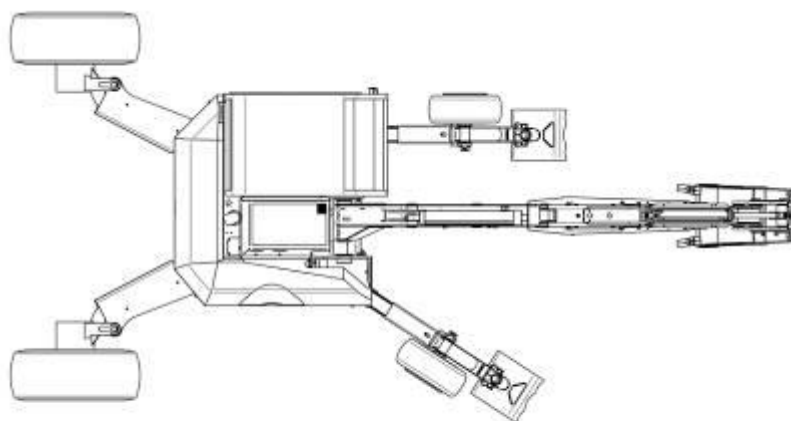


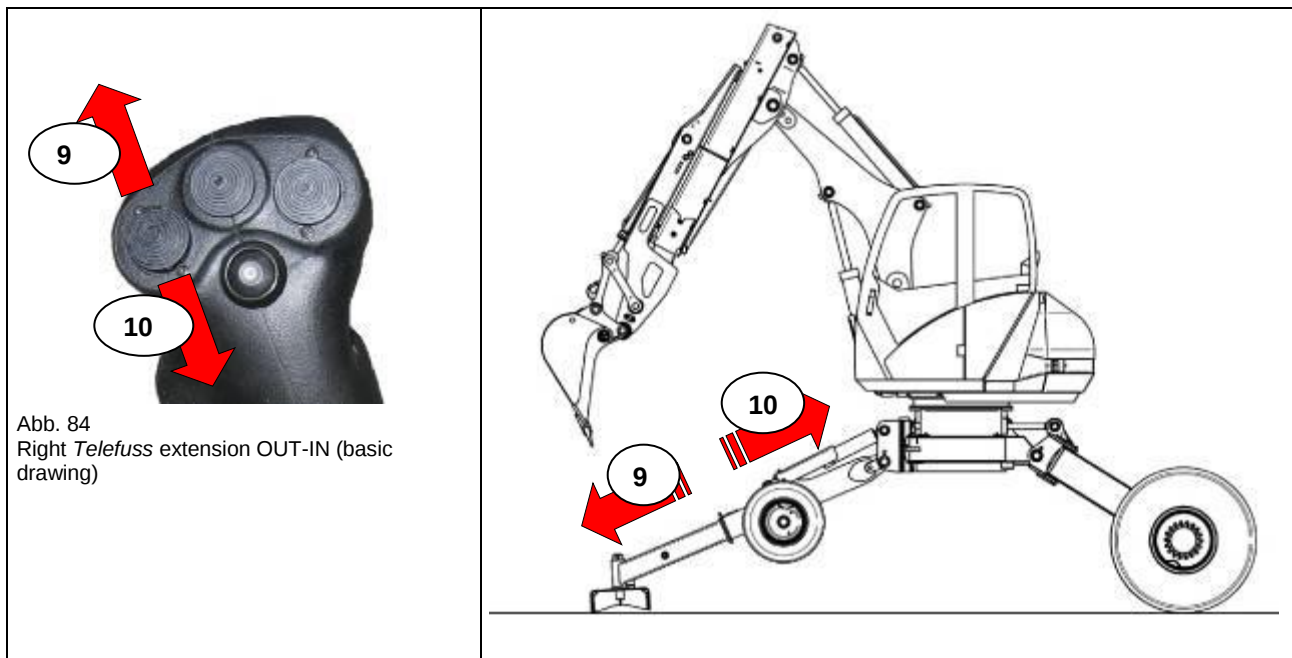
Abb. 83
Right pad leg / wheel OUT-IN (basic
drawing)





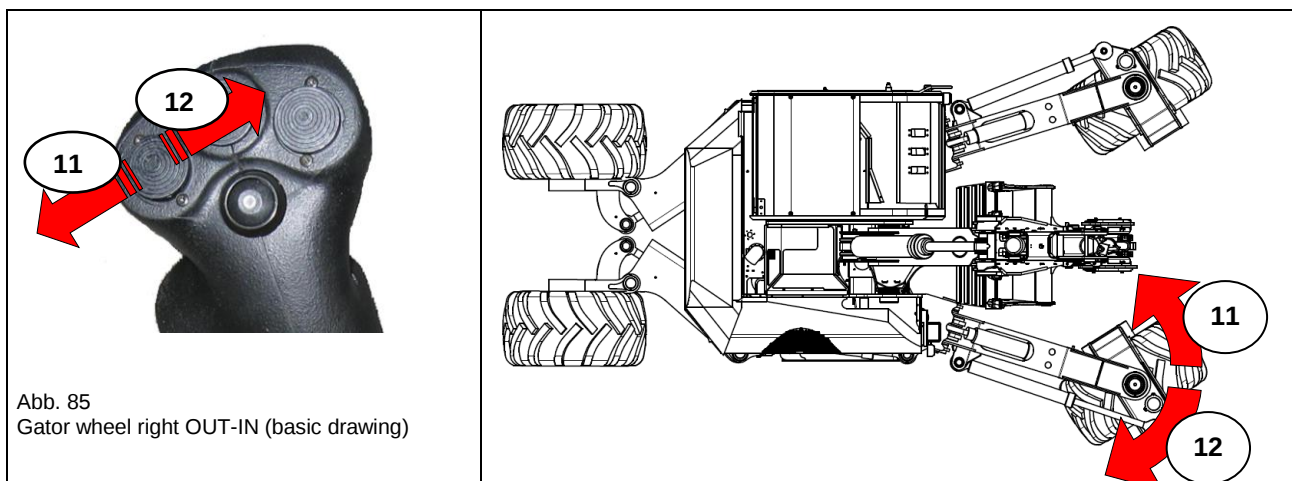
J.5.2.5 Operation of right *Telefuss*, retraction/extension

To this end, press the pushbutton for changeover to level 2 (Abb. 79 / Pos. 14 / page J-67).



J.5.2.6 Operation of right Gator wheel

To this end, press the pushbutton for changeover to level 2 (Abb. 71 / Pos. 14 / page J-62).



This operation can also be applied for the other models:

- **Knickfuss 4x4**
The *Knickfuss* extension can be moved up and down.
- **Cross 4x4**
The *Knickfuss* extension can be moved up and down.



J.5.2.7 Functions selector switch on display



Abb. 86 Wählen von Funktionen am Display (Prinzip-Skizze)

This pushbutton (Abb. 86) changes functions on the display of the control panel. The following functions are available:

- 1) Time
- 2) Total operating hours (→ standard setting when starting the machine)
- 3) Operating hours and minutes, partial (day counter)
- 4) Hydraulic oil temperature

Every time the device is pressed, the display shows the next function.

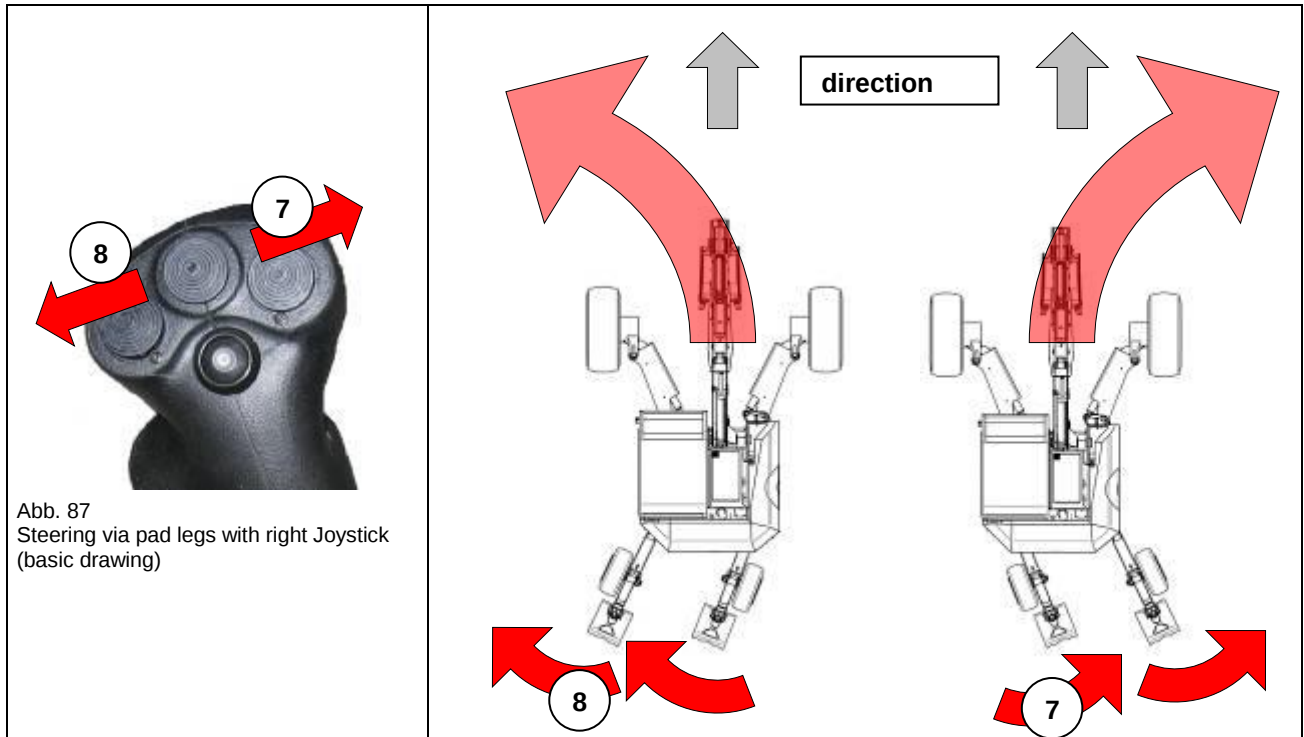
J.5.2.8 Zero setting of partial hours meter

To set the partial operating hours meter to zero, proceed as follows:
When the display shows total operating hours, press the button "functions selector" for 3-4 seconds until the digits 00.00 appear.
The partial operating hours meter is now set to zero; it will run until the next zero setting.



J.6 Steering operation

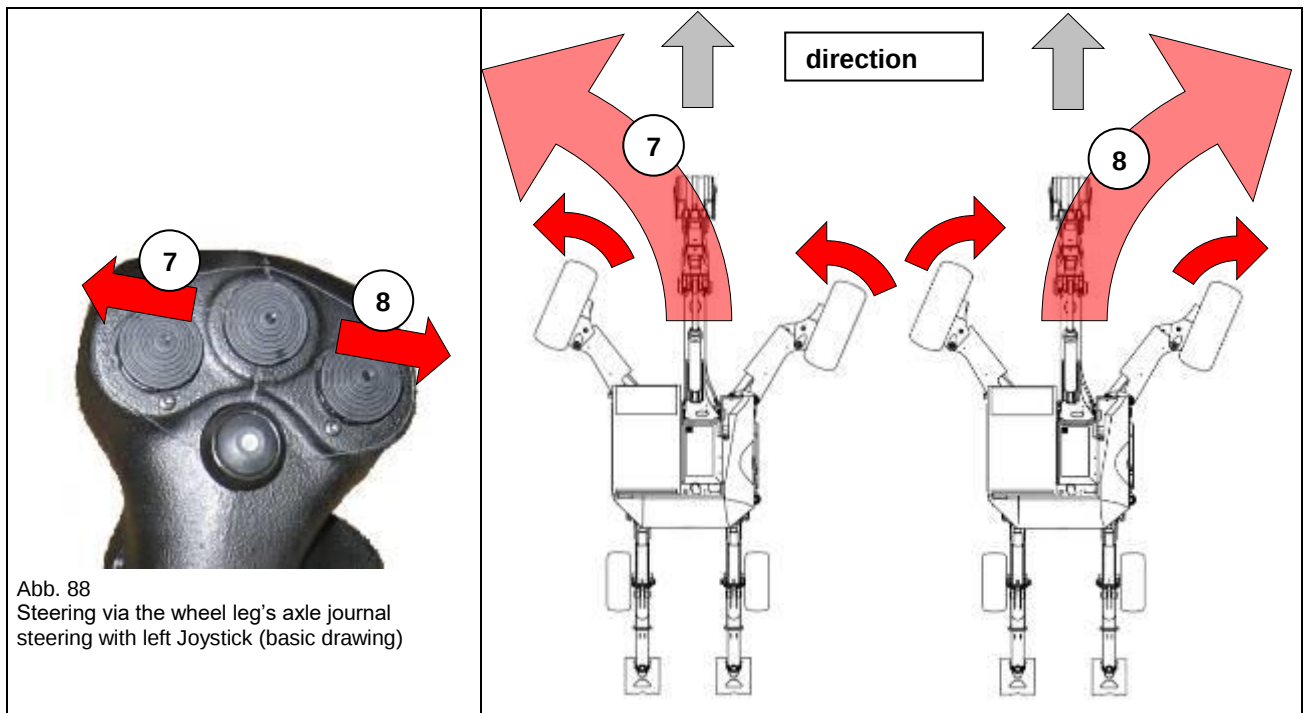
J.6.1 Parallel steering





J.6.2 Axle journal steering

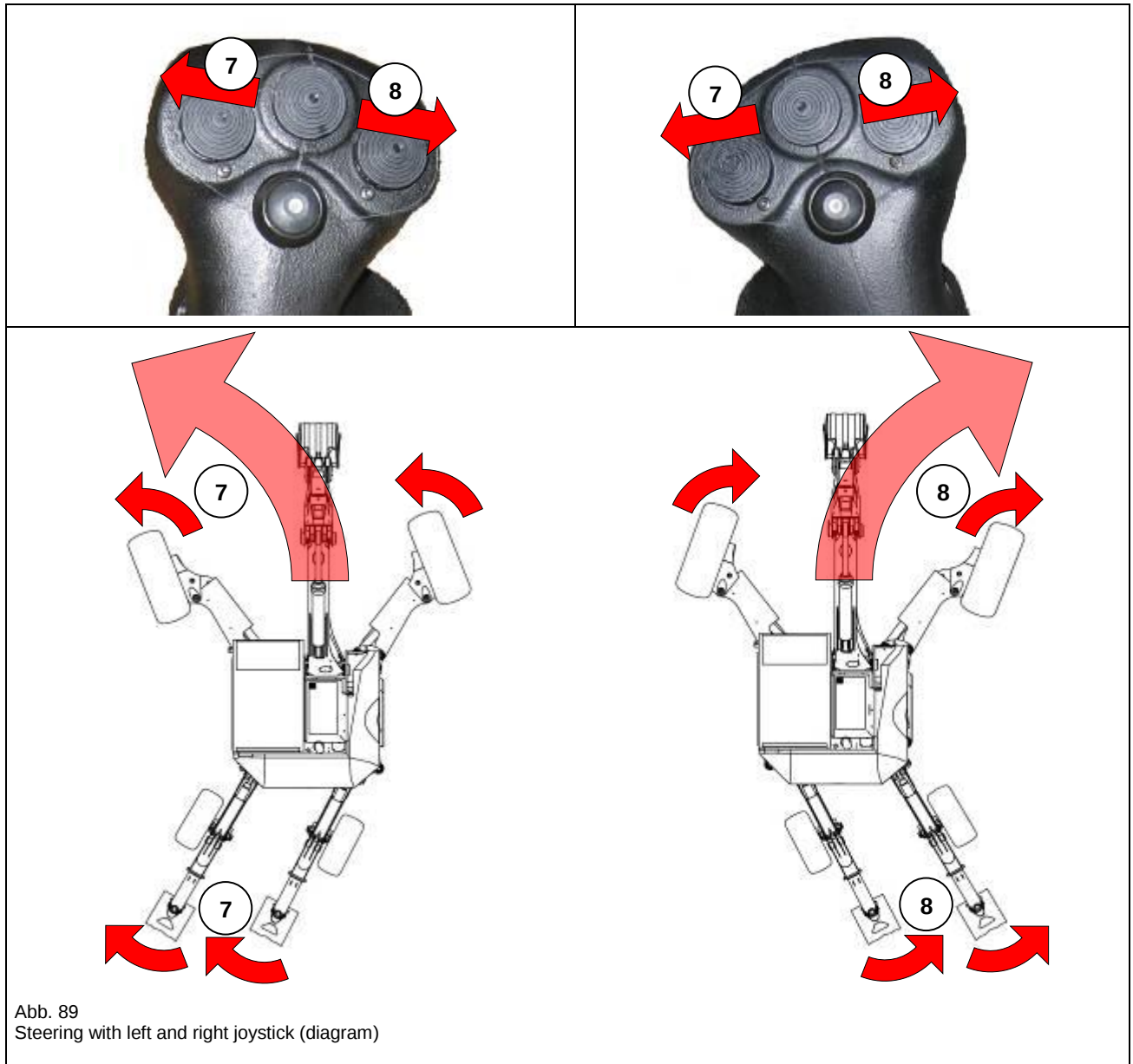
To this end, press the pushbutton for changeover to level 2 (Abb. 79 / Pos. 14 / page J-67).

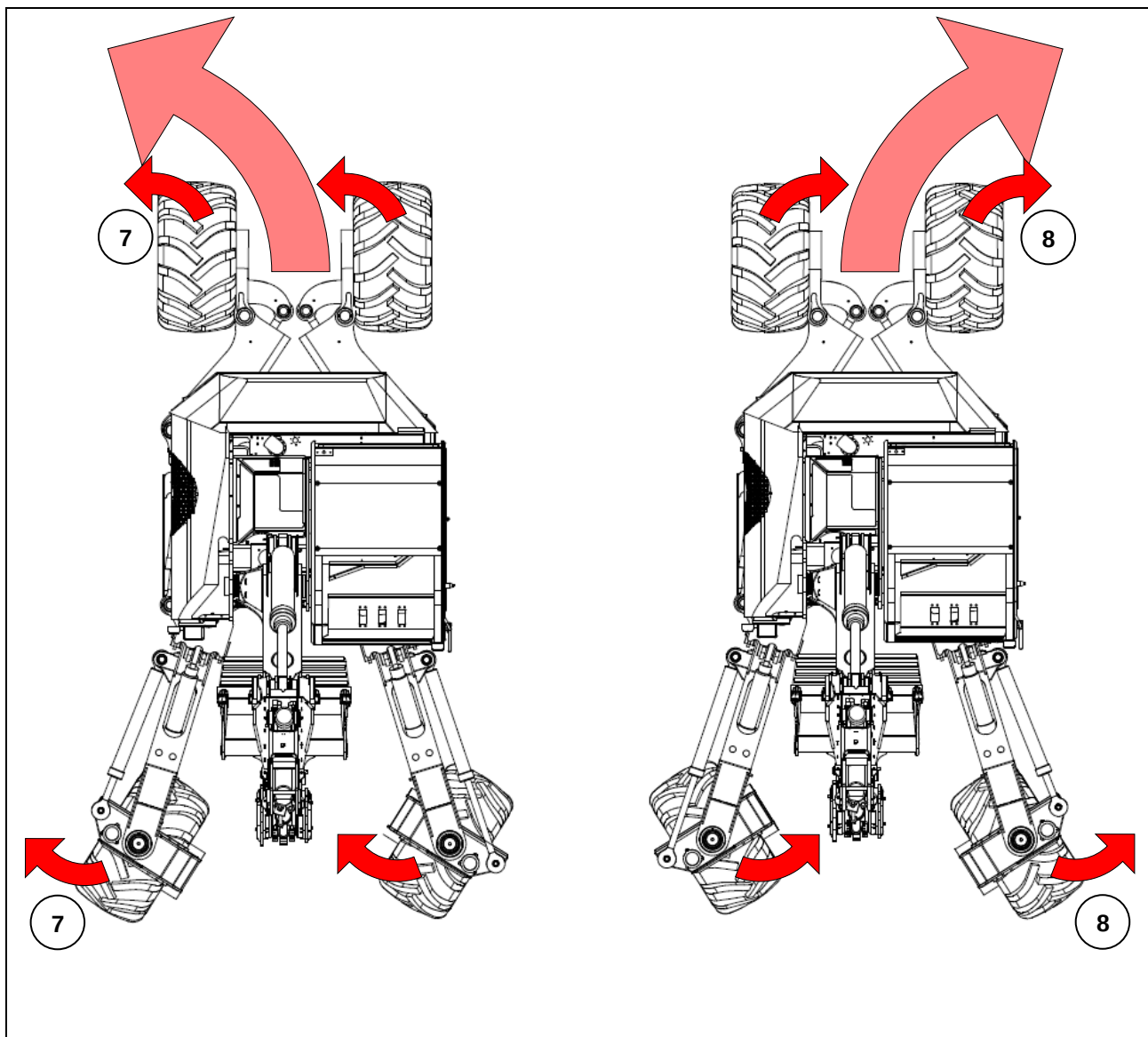




J.6.3 All-wheel drive

To this end, press the pushbutton for changeover to level 2 (Abb. 79 / Pos. 14 / page J-67).





Due to the all-wheel drive and with the door open, it is possible – in extreme cases – that the cab door rests against the large drive wheel and is hung. The cab door must be closed in confined conditions.



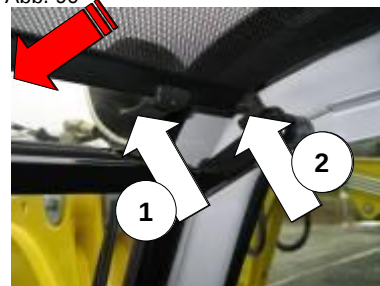
J.7 Sun blind

To be able to pull out the sun blind, the front window must be closed but not locked.

Use the flaps to pull the sun blind evenly towards the front on both sides (Pos.1 / Abb. 90) and hang it up laterally in the holders (Pos.2 / Abb. 90) on the cab.

To roll it back up, proceed in reverse order.

Abb. 90



Sun blind



K Commissioning of the machine



Carefully read this section before commissioning the machine

This section will provide you with all the necessary information for the machine's proper and correct use.

Even if you are already experienced in handling construction machinery of this type, we urgently recommend you to read this section.

In case of uncertainties regarding the excavator operating function, please contact your dealer or the manufacturer directly.

Careful checking of the excavator during the run-in phase is the primary condition for obtaining the machine's optimum performance specified by design and construction.

K.1 Preliminary checkup

The following steps ensure the machine's operating safety and must always be taken into account before commissioning.

	Make sure that all danger and safety plates, labels and informative signs on the machine are intact and clean. If damaged, please exchange them as required.
	Inspect all connections, plug-in bolts, bushings, etc. and, if necessary, lubricate all points designated by labels.
	Make sure that all protective and safety equipment and devices are activated and fully operable.
	ATTENTION: Only perform checkups, lubrications, maintenance work or adjustments when the engine is at a standstill.



	For any kind of interventions, the machine must be parked in a secure place; the bottom part of the frame and the arm must rest on the ground.
	Do not take any heavy objects with you into the cab (such as bolts, tools, spare parts, etc.); they get in your way when you operate the controls, especially the pedals.
	For checking fluid levels, the machine must be on level ground.
	The driver's seat should be adjusted and positioned for your height and weight. You can thus prevent to feel cramped and tense.
	Waste must be disposed of in accordance with valid regulations.

K.2 Daily checks

	ATTENTION: Always wear goggles or a protective face mask to protect your eyes against dust or splinters.
--	---

Please refer to Chapter O Maintenance / page O-98 for a complete description of these checks.

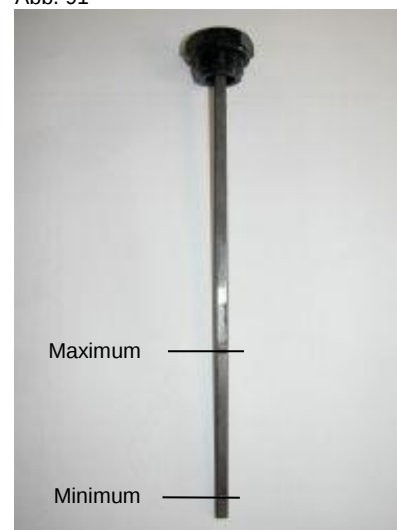
Chapter O Maintenance also provides instructions for opening and closing the machine hoods.

K.2.1 Hydraulic oil level

Check the hydraulic oil level in the tank by means of the oil dipstick (Abb. 91).

The level must be between the markings.

Abb. 91



Oil dipstick to check the hydraulic oil level

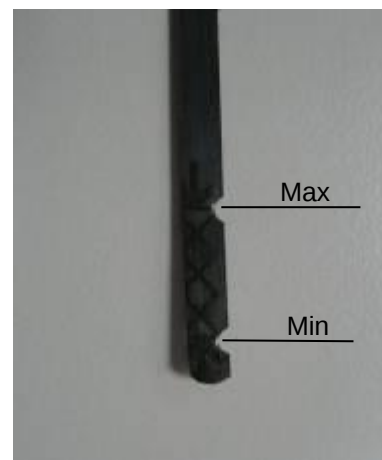


K.2.2 Engine oil level

To check the engine oil level, open the rear hood of the machine and pull out the engine dipstick.

The level must be between the markings (Abb. 92).

Abb. 92



Oil dipstick to check the engine oil level

K.2.3 Cleaning the radiators

When working in dusty areas, the radiator water level must be checked daily. Please refer to Chapter K.2.4 Coolant level / page K-79.

When dirt has deposited on radiators (intercooler and/or water-oil cooler), it must be removed with compressed air (Abb. 93) or by means of a water jet cleaner with a maximum pressure of up to 7 bar (kg/cm²). Take care not to bend the radiator ribs, and direct the air or water jet correctly through the radiator block (Abb. 93). Straighten up any possibly bent radiator ribs.

Please refer to Chapter O Maintenance / page O-98 for a detailed description to clean the radiators (intercooler, water-oil cooler).

Abb. 93

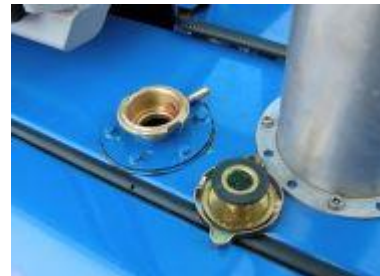


Cleaning the radiator by means of compressed air

K.2.4 Coolant level

When the engine is cold, remove cover of the coolant tank (Abb. 94) and check the coolant level. The liquid must reach the "LEVEL" mark. If necessary, fill missing liquid through the filler (Abb. 94). Refill only when the engine is cold!

Abb. 94



Coolant tank



K.3 Startup and commissioning

The machine may only be started after all checks and controls described in Section K.2 Daily checks / page K-78 have been performed.

Please see the appropriate chapter in the PERKINS Operating and Maintenance Manual for Diesel Engine 1104D-E44TA.

K.3.1 Starting the engine

The operator must perform the described steps from the cab.

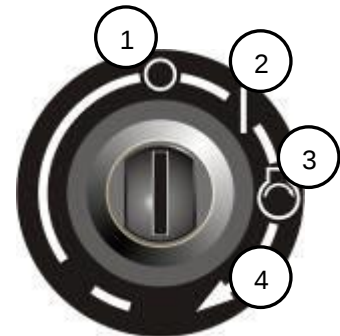
- 1) Release left armrest and pull up (Abb. 95).
- 2) Insert ignition key and activate system by turning to position 2 (Abb. 96).

Abb. 95



Release of the armrest

Abb. 96



Ignition lock

- 3) Turn key to position 3 (Abb. 96) and leave it in this position for the preheating phase.

In this key position, the control light of the preheating system



lights up on the control panel Pos. 1 (Abb. 97).

- 4) Leave the key for about 10 to 15 sec. in Pos. 3 (Abb. 96) while the control light Pos. 1 (Abb. 97) lights up.
- 5) Start the engine by turning the key to Pos. 4 (Abb. 96).
- 6) As soon as the engine starts running, let go of the key.

Abb. 97



Control panel

	This key position activates all electrical instrumentation and control systems, displays and indicators, as well as the safety equipment. Commissioning of the system is additionally indicated by a warning signal so that persons in the machine's working range will comply with the specified security distance. Otherwise give a horn signal and show the persons concerned that they must get out of the danger zone.
--	--

	Fuel supply and speed setting are electronically adjusted; accordingly, any speed increase is not necessary. Should the engine not start, stop the start process after approx. 30 seconds and turn back the key to Pos.1 (Abb. 96). Repeat the start process after two minutes. This waiting period is necessary for the starter to cool down.
--	---



K.3.2 Controls and precautionary measures with the engine running

The following work steps ensure the machine's operability and safety. These steps must always be performed before the machine is used.

K.3.2.1 Control panel upon commissioning



Make sure that no control light is lit on the control panel.

K.3.2.2 Request of Diagnostic Blinking Codes

In this respect, please also see the corresponding chapter of the Operating and Service Instructions for the PERKINS Diesel Engine 1104D-E44TA.

In case of failure, the diagnostic lamp lights up (Pos.7 / Abb. 36 / page J-47). The diagnostic codes provide information on causes; they record events, or limit engine operation and/or engine power to prevent major damage.

When requesting the diagnostic codes, the key switch must be switched twice from position **0** to **1** within 3 seconds.

The blinking characters (yellow) of the speed step switch (Pos.7 / Abb. 36 / page J-47) present the message by system diagnostics in the form of a 3-digit code. The code is determined by counting the blinking characters per sequence. The break between the individual sequences is 2 seconds. Additional blinking codes follow after another break and are determined in the same manner.

The table "Industrial Engine Blinking Codes" in chapter P.1 Diesel engine / page P-128 lists the active blinking codes together with a brief description. Code "551" indicates that no errors occurred since the start switch was set to position 1. No blinking code is indicated for code 001.

Active codes are automatically extinguished after fault correction. The codes recorded by self-diagnostics (excessive speed, low engine oil pressure, and high temperature of engine coolant) can only be deleted by authorized service points with a works password from the memory of the electronic control device.

K.3.2.3 Preheat engine and hydraulic system



After starting, let the engine run at minimal speed to bring engine and oil in the hydraulic system circuit to the correct temperature. This prevents engine wear and reduces exhaust gas emissions.



K.3.2.4 Position of the machine upon commissioning

- Make sure that the excavator is parked on completely level ground.
- The boom must rest on the ground.

K.3.2.5 Safety sensor at left armrest

Check the safety sensor operability on the left armrest.

- Make sure that the left armrest (Abb. 98) is released and pulled upward.
- Try to move the bucket by excursion of the right joystick (Abb. 99) to the right and the left.

This operation may not trigger any bucket movement.

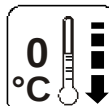


If the bucket moves, the sensor position must be adjusted or, if defective, it must be replaced. The sensor is located below the left armrest (Abb. 100).

Proceeding with extreme caution, check all other joystick and pedal functions.

These operations may not trigger any machine movements either; otherwise, the sensor position must be adjusted or the sensor is to be replaced, if it is defective.

K.3.2.6 Starting at low temperatures



ATTENTION! At low temperatures of under 0°, do not exceed the engine speed of 1400 rpm during the first work actions or when slewing the superstructure. This rule should also be applied in temperatures close to the freezing point to go easy on the diesel engine.

K.3.2.7 Shutting off the diesel engine

To achieve sufficient lubrication of the hydrodynamically balanced turbo wheel loader, the diesel engine must run on idling for approx. 1 min. before the machine is shut off.

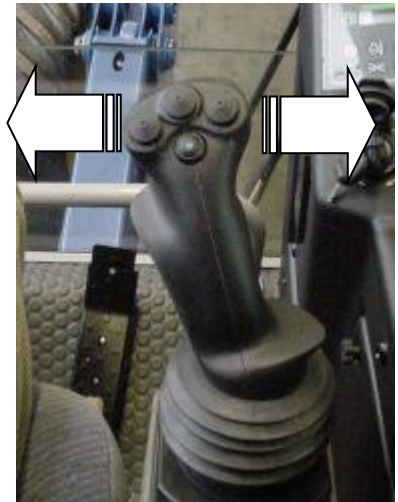
This will also provide for a more even temperature balance.

Abb. 98



Released armrest

Abb. 99



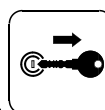
Checking the safety sensor by moving the bucket

Abb. 100



Safety sensor

**K.4 Safety in commissioning**

 	Operation of the machine is exclusively reserved to sufficiently trained personnel who is aware of the responsibility taken over.
 	The excavator may not be misused, for other than its intended purposes.
 	It is prohibited to start the engine or activate the operating components from the ground. Before you perform any function, take your seat and fasten your seat belt.
 	To get into and out of the cab, always use the available steps and the handles provided on the side of the door. Always keep the steps clean and mud-free to prevent slipping when entering the cab.
 	Never leave the cab while the engine is running. Remove the ignition key. Move the superstructure into parking position so that superstructure and undercarriage are parallel. Before leaving the cab, lower the boom and the undercarriage down to the ground. Before leaving the cab, make sure that the excavator remains in a safe parking position. Then, you can safely step down the machine via the step on the undercarriage.
 	Always keep the cab window clean. Good vision is a basic prerequisite for safe working conditions.
 	Transport of persons is strictly prohibited.
 	Do not leave any freely moving objects in the cab which – in case of sudden movements – might cause unintentional or wrong operations or hit the operator.

Caution and knowledge of the machine are the best guarantee for preventing accidents.

Serious accidents can be caused due to insufficient compliance with safety regulations, wrong operations and absent-mindedness.

The following sections provide the operator with an introduction to the machine's use as well as the precautionary measures to be applied for the safety of work.



K.5 Working with the excavator

K.5.1 Machine adjustment

The excavator must be in a safety position. Reference to Abb. 101:

- Extend wheel legs to their maximum.
- Extend pad legs to their maximum.
- The extensions of pad legs (*Telefuss* extension or *Knickfuss* extension) must be completed extended.



Make sure that the working area is not unsurfaced or slippery.
Check to make sure that the site ground will safely carry the excavator weight under all working conditions.

K.5.2 Maximum inclination

The excavator's angle of inclination toward the front or the rear may be a maximum of 20°.

The excavator's maximum lateral tilt angle is 5°.



ATTENTION!

Do not exceed the excavator's maximum inclinations allowed.

The maximum slope incline is 20° which can be compensated by the leg movements.

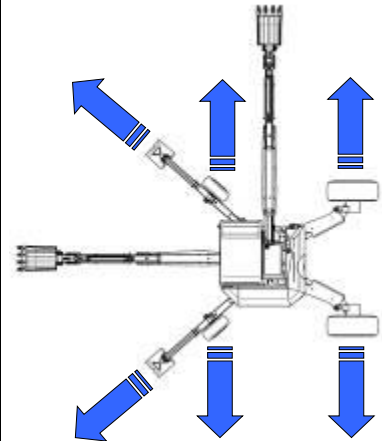
This inclination plus the maximum inclination of the excavator results in a total of a 40° slope at maximum at the site of work (Abb. 102).



ATTENTION!

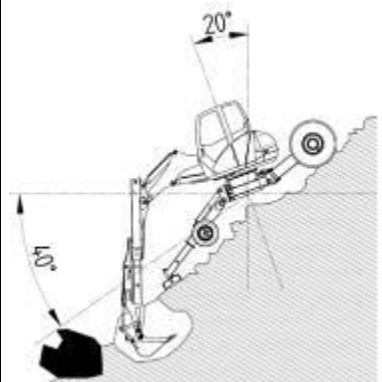
An inclination of 40° maximum is only allowed when the pad legs (gripper pads) are positioned on the downhill side of the slope.

Abb. 101



Maximum extension of legs

Abb. 102



Maximum allowed inclination in slope position



K.5.3 Slewing the superstructure

K.5.3.1 Slewing in slope position

Slewing the superstructure on the downhill side of the gradient is only to be done with the boom pulled as close to the cab as possible (Abb. 103).

This will increase the machine's balance and stability.

Also, take care that the boom is kept as low as possible.

This provides more safety if the machine threatens to tip over.

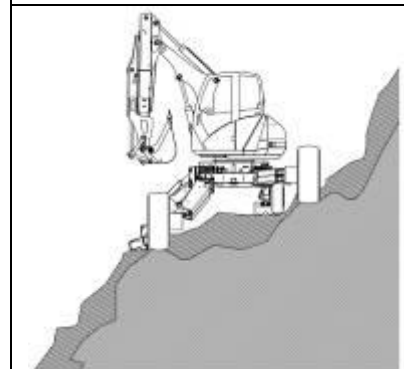
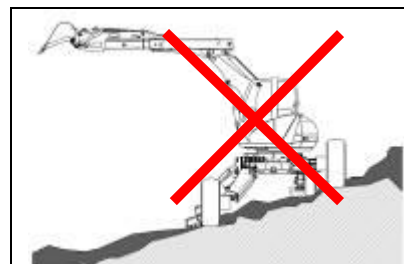


Abb. 103
Slewing the superstructure on a slope

K.5.3.2 Slewing with closed legs

Slewing the superstructure with closed legs is only to be done with the excavator arm pulled up to the cab as close as possible (Abb. 104). This will increase the machine's balance and stability.

	ATTENTION! Dangerous situations may result when slewing the superstructure in a critical machine position or with the boom extended far out.
	ATTENTION! No slewing actions of the superstructure when legs are closed and the boom is extended far out.

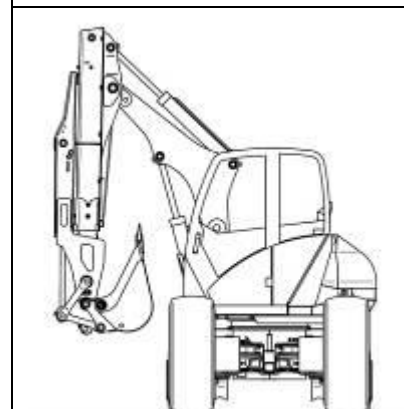
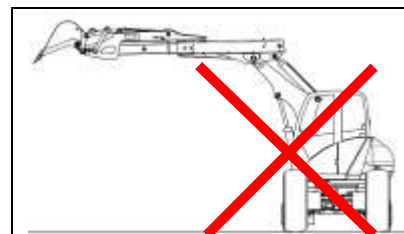


Abb. 104
Slewing the superstructure with closed legs



K.6 Filling the tank

The machine has the standard equipment of a fuel pump (Abb. 105), a fuel tank in the upper carriage (Abb. 106) and an extra tank in the undercarriage (Abb. 108).

K.6.1 Fuel pump

The fuel pump (Abb. 105) is operated by the switch on the fuel pump (Abb. 107). Around the fuel pump, the fuel hoses are rolled up on holders (Abb. 105).

 	ATTENTION: Never fill the tank while the engine is running. Before filling the tank, shut off the engine and remove the ignition key from the ignition lock.
  	ATTENTION: Wear protective goggles and gloves to avoid skin or eye contact with operating liquids. Monitor the filling action. Risk of fuel spillage. The risk of fuel spillage also applies when working on steep slopes.

K.6.2 Filling action

1. Remove fuel cap of the tank to be filled: Main diesel tank in the superstructure (Abb. 106) or spare diesel tank in the chassis (Abb. 108).
2. Remove fuel cap of the vessel from which the fuel will be pumped:
 - a) Fuel canister
 - b) Fuel barrel
 - c) Spare diesel tank in the chassis (Abb. 108)
3. Unroll fuel hoses (Abb. 105) and remove the protective caps on the hose ends.
4. Insert fuel hoses deeply into the vessel to be filled.
5. Insert fuel hoses deeply into the vessel from which the fuel is taken.
6. Turn the switch (Abb. 107) to the ON position to start the filling process of the fuel pump. This process must be supervised until filling is complete to ensure that the pump can draw in fuel. In case of a dry run, the fuel pump will be damaged.
7. After tank filling is completed, screw the tank cap back on again and, after putting the protective caps back on, roll the fuel hoses back up on the holders provided.

Abb. 105



Hoses and fuel pump

Abb. 106



Filler on fuel tank in superstructure

Abb. 107



Switch of fuel pump

Abb. 108



Filler of spare diesel tank

Abb. 109



Refueling from spare diesel tank to main diesel tank



L Adjustments at the workplace

L.1 Ergonomics guidelines

Adjustment of seat and operating consoles

To utilize the machine potentials and to be able to do your work as comfortably as possible, it is important to familiarize yourself with the adjustments of seat and operating consoles. In the following, we will provide you with information on the correct adjustments of your workplace. You can easily change most of the adjustments even during your work. You will need a socket wrench for the armrest height adjustment and for changing the inclination of the joysticks.

It pays to take your time to properly adjust your workplace.

The following table will provide you with information on a healthy posture.

	• The neck should be straightened and more or less vertical. Avoid a posture in which the body is forwardly inclined and the neck is bent backwards. • The elbows should not be too far away from the body and the arms should be supported as much as possible. An excessively high armrest causes pulled up shoulders which in turn can bring on cramps. • When handling the joystick, avoid extreme positions of the wrist and the finger joints. • The angles of hips and knees should be about the same and between 90° and 110°. A large knee angle with a small hip angle will later affect the posture of the back. • Thighs should be supported as much as possible.
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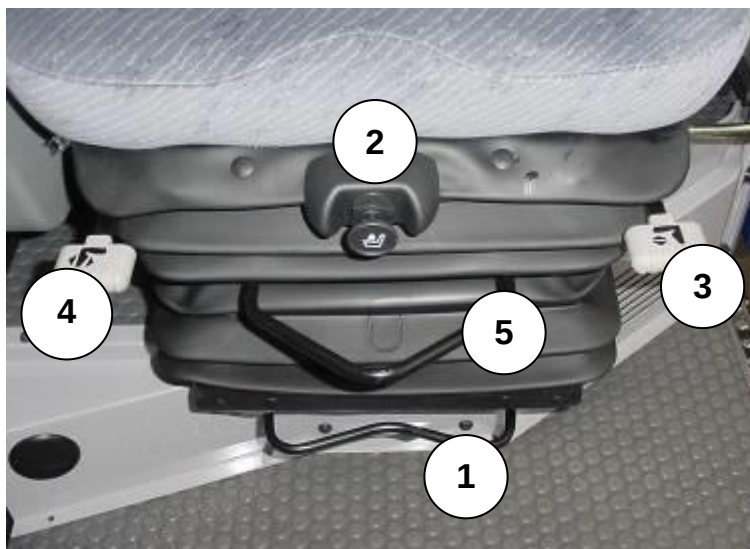
**L.2 Adjustment of the driver's seat**

Abb. 110

Pos.	Description
1	Distance seat – pedals
2	Weight
3	Height of seat
4	Backrest
5	Distance to joysticks

What	How
Distance seat – pedals	Adjust the seat position so that you will have the correct distance to the pedals.
Weight	Adjust the weight so that the seat has a comfortable suspension for you and does not buckle!
Height and inclination of seat	Seat higher: Press the lever down and at the same time push the backrest toward the rear. Let the front of the seat come up so far that you can still reach the pedals well. Now lift the lever up and lift up with your other arm the rear side of the seat until you have a comfortable inclination of the seat. You can later adjust the inclination of the backrest. Seat lower: Simultaneously press down the lever and the front side of the seat. Lower the seat front so far that you can reach the pedals well. Then pull up the lever and push the rear side of the seat down until you have a comfortable inclination of the seat. Try out various adjustments until you find a comfortable working position.
Inclination backrest	Pull up the lever and adjust the inclination of the backrest. The inclination need not always be the same. For some work, it might be more comfortable e.g. to have seat and back inclined.
Distance to the joysticks	Adjust the distance so that you can comfortably grip the joysticks while your elbows – in a side view – are approx. next to your body or only slightly in front of it. Try to have your forearms rest horizontally.
Arm support	Adjust your armrests so that your forearms have a straight support. You will need a socket wrench for this.
Joystick position	To avoid extreme positions of the wrist, you can still change the home position of the joysticks. Find a comfortable position for yourself. You will need a socket wrench for the adjustment.



M Installation of accessories

M.1 Connections on undercarriage

The **KAISER S2** undercarriage has three hydraulic connections for supplying the winch (Abb. 111, Abb. 112).

Abb. 112	Connection Schematic	Size	Pressure [bar]	Flow [l/min]	Flow [gal/min]
Pos. 1	1/2"/16s	1/2"/16s	0,3(*)	38(**)	10(**)
Pos. 2	1/2"/16s	1/2"/16s	250	38/58	10/15,3
Pos. 3	1/2"/16s	1/2"/16s	250	38/58	10/15,3

(*) Bias pressure of hydraulic oil tank
(**) max. flow rate of the leakage oil line

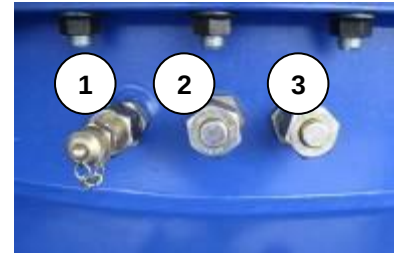
Control is via the left joystick. Please refer to Chapter J Operating components / page J-45.

Abb. 111



Winch connections - General view

Abb. 112



Winch connections - Detail

M.2 Connections on boom, left side

The left side of the **KAISER S2** boom has two hydraulic connections for supplying the accessories.
These connections are provided with quick couplings (Abb. 113, Abb. 114).

Only those accessories may be used which have been released by **KAISER AG**. The use of a new accessory is only permitted after consultation with **KAISER AG**!

Abb. 114	Connection Schematic	Size	Pressure [bar]	Flow [l/min]	Flow [gal/min]
Pos. 4	A5	1" M	300 (*)	75	19,8
Pos. 5	B5	1" V	300 (*)	75	19,8

(*)Secondary protection 350 bar



ATTENTION!

Pressure adjustments for accessories may only be made in agreement with company **KAISER AG**.

The connections Pos. 4 and Pos. 5 (Abb. 114) are for the main functions:

- Gripper OPEN - CLOSE (Pos.4 / 5)
- Demolition hammer (P Pos.5)
- Slew bucket RIGHT-LEFT

Control is via the left pedal. Please refer to Chapter J.3 Pedal / page J-55.

Connections A2 and B2 are for the turn function:

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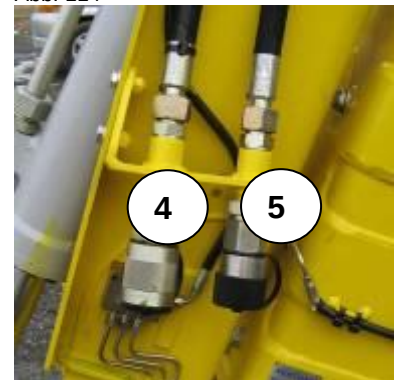
Order number: 12000281 // validity: from KB-2095

Abb. 113



Connection at boom on the left side - General view

Abb. 114



Connection at boom on the left side - Detail



- Turning gripper
- Turning power tilt

Control is via the front pushbutton on the right joystick.
Please refer to Chapter J Operating components / page J-45.

M.3 Connections on boom, right side

On the right side on the boom of the **KAISER S2** there are three hydraulic connections for the supply of accessories.
These connections are provided with quick couplings (Abb. 115).

Only those accessories may be used which have been released by **KAISER AG**. The use of a new accessory is only permitted after consultation with **KAISER AG**!

Abb. 116	Connection Schematic	Size Coupling	Pressure [bar]	Flow [l/min]	Flow [gal/min]
Pos. 6	A2	½" V	250	38	10
Pos. 7	T	1" M	6 (**)	75	19.7
Pos. 8	B2	½" M	250	38	10

(**)Return filter bypass protection

Connections Pos. 6, Pos 7, Pos.8 (Abb. 116), Pos.9 and Pos.10 (Abb. 117) are for the following functions:

- Turning gripper / Turning power tilt (Pos.6)
- Runback hammer (Pos.7)
- Turning gripper / Turning power tilt (Pos.8)
- Demolition hammer (T Pos.8)
- Open quick change (Pos.9)
- Close quick change (Pos.10)

Control is via the front operating pushbuttons on the two joysticks.
Please refer to Chapter J Operating components / page J-45.

Abb. 115



Connection at boom on the right side

Abb. 116



Connection at boom on the right side

Abb. 117



Additional connections on boom, right
rechts



M.4 Permitted accessories

M.4.1 Listing

No.	Art.No.	Description
1	12413222	Bucket 400mm
2	12413224	Bucket 600mm
3	12413226	Bucket 800mm
4	12413228	Bucket 1000mm
5	12410012	Humus bucket 1350mm rigid
6	12410502	Humus bucket 1350mm hydr.
7	12417841	Clamshell bucket KGL-15, complete
8	12417205	Stone pickup bucket KG15, complete
9	12405974	Rotor TT09
10	12600025	Kaiser <i>Blitz</i> quick changer
11	12600358	Kaiser <i>Rotor-Blitz</i> quick changer
12	12418505	Kaiser winch II + guide pulley device
13	12980901	Slotted bucket, hydraulic with conversion set S2

**ATTENTION!**

Other accessories may only be used after consultation with **KAISER AG** and if it has been released for use by **KAISER AG**!

M.4.2 Possible combination

S2 Accessory		Combinability		
		Rotor	Blitz quick change	Rotorblitz quick change
Description	Art.Nr.	12405974	12600025	12600358
Bucket 400mm	12413222	•	•	○
Bucket 600mm	12413224	•	•	○
Bucket 800mm	12413226	•	•	○
Bucket 1000mm	12413228	-	•	-
Humus bucket 1350mm rigid	12410012	-	•	-
Humus bucket 1350mm hydr.	12410502	•	•	○
Slotted bucket with conversion set S2	12980901	-	-	-

- suitable
- conditionally suitable
- not allowed

**ATTENTION!**

Due to the unfavorable ratio of forces (lever principles), excavator walking with long accessory equipment (e.g. gripper, demolition hammer, etc.) may cause secondary valves to respond (consequence: bucket cylinder yielding or giving way), thus resulting in life-threatening situations in steep terrain.

**ATTENTION!**

The use of a **Griffy cutter without Power Tilt** is not provided for and **not allowed** since there might be a collision of the Griffy cutter with the bucket cylinder in the most adverse case. Damage to the bucket cylinder would result.



N Options and accessories

N.1 Hoisting application

It is principally prohibited to use earthwork machinery as hoisting equipment (crane operation).

Hoisting applications are the lifting, transporting and/or lowering of loads by means of a sling (rope, chain, etc.), with one person (slinger) required for fastening and loosening of the loads.

If the **KAISER S2** is used as hoisting means, the machine must be equipped with the optionally available hoisting equipment. The following is required as a minimum:

Hose rupture safety on the lifting cylinder (accessory)

Overload warning device with an acoustic signal in accordance with ISO 8643 (accessory)

We recommend you to provide the entire boom with hose rupture safeties to ensure the best possible safety.

Please contact your dealer in this regard.

Before any hoisting operation, the excavator driver must check the accordingly required safety equipment.



Check the safety equipment **before** every hoisting operation!
Comply with safety instructions!

Further to be noted in hoisting operation:

The slinger must remain in the excavator driver's range of vision

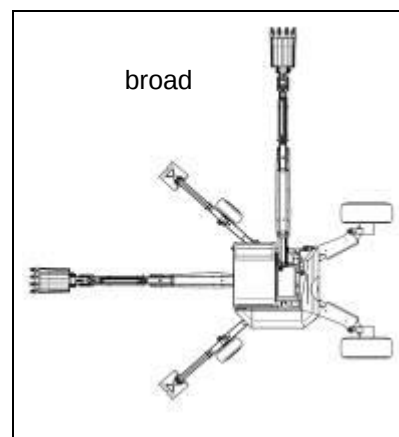
Only with the excavator driver's consent, the slinger may approach the work equipment, and only from the side – with the device at a standstill and the work equipment not moving.

The excavator driver must keep the loads as close to the ground as possible



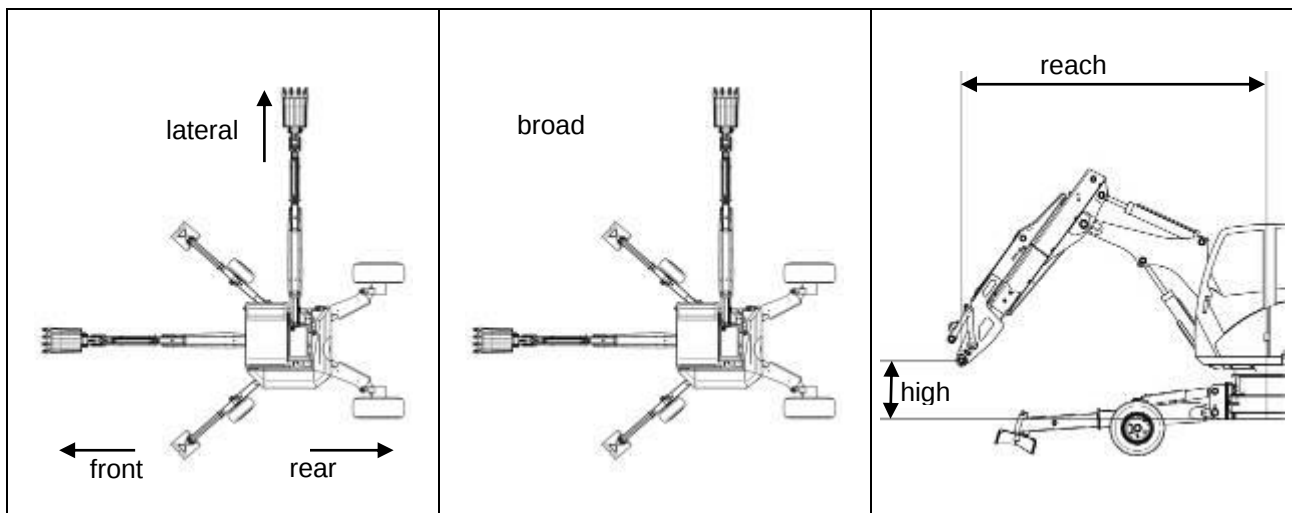
ATTENTION!

The overload warning device has been factory-adjusted to the maximum possible lifting load. Accordingly, the excavator may only be operated in the broadest position (see illustration on the side) to ensure proper functioning of the overload warning device.





N.1.1 Carrying load sectors



N.1.2 Carrying load table

Carrying load values are indicated in kg (1 kg = 2.205 lb). The maximum carrying loads in the corresponding sector or position, respectively (front, rear, lateral and broad) are emphasized in boldface. If no carrying loads are indicated in the table field, this particular position cannot be reached to lift a load.

N.1.2.1 Reach 1m to 2m

Reach [m]	1.0				2.0			
high [m]	front	lateral	rear	broad	front	lateral	rear	broad
5								
4.5								
4								
3								
2								
1					6733	2274	6733	6733
0	5130	3220	5130	5130	9917	2414	9917	9917
-1	4594	4594	4594	4594	10394	2414	10394	10394
-2	7788	5414	7788	7788	8891	2414	8891	8891
-3	8618	5414	8618	8618	6924	2414	6924	6924

**N.1.2.2 Reach 3m to 4m**

Reach [m]	3.0				4.0			
high [m]	front	lateral	rear	broad	front	lateral	rear	broad
5					2063	933	2063	2063
4					1906	885	1906	1906
3					1986	933	1986	1986
2					2464	933	2464	2464
1	4105	1439	4105	4105	3127	933	3127	3127
0	5308	1439	5308	5308	3652	933	3652	3652
1	5649	1439	5649	5649	3777	933	3777	3777
-2	4961	1439	4961	4961	3157	933	3157	3157
-3	3434	1439	3434	3434	2334	933	2334	2334
-4					2128	908	2128	2128

N.1.2.3 Reach 5m to 6m

Reach [m]	5.0				6.0			
high [m]	front	lateral	rear	broad	front	lateral	rear	broad
5.5	1354	615	1354	1354				
5	1603	629	1603	1603				
4	2018	629	2018	2018	1560	414	1560	1560
3	2226	629	2226	2226	1807	414	1807	1807
2	2381	629	2381	2381	2052	414	2052	2052
1	2632	629	2632	2632	2268	414	2268	2268
0	2800	629	2800	2800	2315	414	2315	2315
-1	2615	629	2615	2615	2262	414	2262	2262
-2	2380	629	2380	2380				
-3	2193	629	2193	2193				

N.1.3 Maximum reach

Reach [m]	Maximum reach				
high [m]	front	lateral	rear	broad	m
5	1476	539	1476	1476	5.5
4	1490	386	1490	1490	6.2
3	1457	337	1457	1457	6.6
2	1486	325	1486	1486	6.8
1	1578	325	1578	1578	6.8
0	1742	331	1742	1742	6.7
1	2018	349	2018	2018	6.4
-2	2198	422	2198	2198	5.9
-3	2124	588	2124	2124	5.2
-4					



N.2 Limit of lift

Work in the railroad area often requires limits of lift so that the boom cannot be extended further. The limit of lift will limit the maximum digging height so that the railroad's clearance gauge is not exceeded.

N.3 FOPS protective roof

Specifically for use in quarries, in demolition or forestry work, a protective roof is available which provides additional protection for the operator.

N.4 Front screen

Specifically for use in quarries, in demolition or forestry work, a front screen is available which provides additional protection for the operator.

N.5 Safety glass for forestry work

A special safety glass is available, featuring high flexibility and optimum break safety.

N.6 Central lubrication

Please refer to the Operator's and Maintenance Manual by the central lubrication manufacturer.

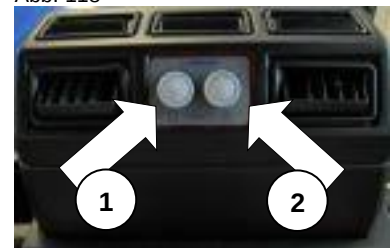
N.7 Air conditioning

Prerequisites for operation of the air conditioning:

1. Motor is running (see chapter K.3 Startup and commissioning / page K-80)
2. Heater valve closed (see chapter J.2.21 Heater valve control button / page J-54)

The air conditioning is switched on/off by means of switch Pos.1 (Abb. 118). By selecting the blower speeds 1-3, the fresh air volume will be controlled (Pos.2, Abb. 118).

Abb. 118



Switch for air conditioning

The air conditioning system should be serviced once a year by expert personnel. It is recommended to check the air conditioning condenser for contaminations once a week; and in case of severe contamination, the device should be removed and cleaned, if necessary; at least, however, twice a year.

N.8 Particle filter

Please refer to the Operator's and Maintenance Manual by the particle filter manufacturer Johnson Matthey GmbH.



N.9 Power Unit I (Option)

For PowerUnit I, the large hydraulic pump A11VO145 is available for work applications to optimize the speed range with adequate power available and thus save fuel.



Power mode, speed, and sensitivity are to be adjusted to the work application. For reasons of economy, the lowest speed, the ECO mode and the sensitivity step FINE are to be used without any deterioration of working conditions.

N.10 Power Unit II (Option)

For PowerUnit II, the large hydraulic pump A11VO145 is available for work applications to optimize the speed range with adequate power available and thus save fuel, especially when using accessories requiring high amounts of hydraulic oil.



Power mode, speed, and sensitivity are to be adjusted to the work application. For reasons of economy, the lowest speed, the ECO mode and the sensitivity step FINE are to be used without any deterioration of working conditions.

N.11 Road traffic permit (CH)

The excavator must be provided with additional equipment to be able to run on public roads in CH.

Aside from the equipment with blinkers, lights and rear-view mirrors, an "MFK" switch is also installed in the left armrest (Abb. 119), which prevents that the superstructure can be slewed toward the oncoming traffic lane during the excavator's road travel. This "MFK" switch must always be switched on when the excavator travels on public roads.

Abb. 119



MFK-Switch

N.12 Special

This is only a short excerpt of what has already been realized. For special requirements, please contact our customer service offices directly.



O Maintenance

O.1 Information and precautionary measures

	ATTENTION: Perform checks, lubrications, maintenance work or adjustments only when the engine is turned off. Remove the ignition key and keep it in a safe place. Put up a sign on the dashboard "Maintenance work – Do not start machine". Wait with your maintenance work until the machine and its components have cooled down; otherwise, you risk burns.
	ATTENTION: Always wear safety goggles and gloves to avoid eye or skin contact with the machine's operating liquids.
	For interventions of any kind, the machine must be parked in a safe place; the bottom part of the frame and the arm must rest on the ground.
	For fluid level checks, the machine must be on level ground.
	Always use original spare parts to ensure excavator performance.
	Dispose of waste in accordance with valid regulations.



O.2 Opening / closing the cab door

Open the cab door so far that the locking bolt (Abb. 120) engages in the door lock (Abb. 121) on the outside of the cab (Abb. 122).

To close the opened cab door from the outside, the door release lever must be pulled upward (Abb. 123). This will loosen the locking mechanism and the door can be closed. The door release lever is provided on the bottom left next to the driver's seat.

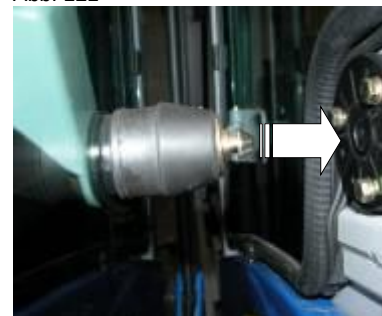
Please proceed analogously when closing the opened cab door from the inside.

Abb. 120



Locking bolt

Abb. 121



Engaging the locking bolt

Abb. 122



Door locking on the outside of the cab

Abb. 123



Door release lever in the cab

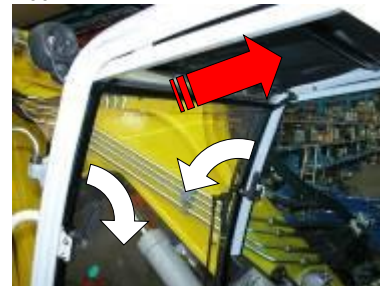


O.3 Opening the cab's front window

To open the front window (Abb. 124) loosen the lock on both sides by turning the levers by 90° to the middle. Then, using both hands, push the front window over your head towards the rear until it engages in the lateral guide rails.

To close it, first push the front window upward to lift it from the catch (Abb. 125). Subsequently, proceed in reverse order of opening.

Abb. 124



Loosen catch of the front window

Abb. 125



Catch



O.4 Opening the engine hood



Before opening the hoods, turn off the engine, remove the ignition key and keep it in a safe place.

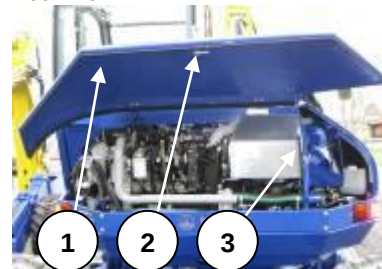
To make engine and interior rooms accessible, open the engine hood (Abb. 126 / Pos.1).

After opening the lock (Abb. 126 / Pos.2) the engine hood must be pushed manually upward. Take the support (Abb. 126 / Pos.3) from the mount, let it engage laterally in the recess of the chassis and relieve engine hood.

Only the engine hood needs to be opened for daily maintenance work or checks. All other maintenance points are well accessible without the need to open other hoods or covers.

For closing the hood, lift the engine hood slightly, remove the support laterally from the recess (Abb. 127) and return it to the mount in the engine hood (Abb. 126 / Pos.3). Push engine hood in position with the lock (Abb. 128).

Abb. 126



Engine hood

Abb. 127



Opening the engine hood

Abb. 128



Closing the engine hood



O.5 Opening the coarse filter

The coarse filter must be removed to get access to the slewing gear, the intercooler or the control block. The coarse filter is inserted on one side and fixed in position with two twist locks.

To remove the coarse filter, the twist locks must be opened (Abb. 129). The corresponding key is provided in the toolbox in the engine room. After opening, the coarse filter can be pulled out forward and removed (Abb. 130).

You now have free access to the central excavator components.

Abb. 129



Opening the twist locks

Abb. 130



Removing the coarse filter



O.6 Opening the radiator cover

To be able to remove the radiator cover, the engine hood must first be opened and the coarse filter removed.

For this, please refer to Chapter O.4 Opening the engine hood / page O-101 and Chapter O.5 Opening the coarse filter / page O-102.

The radiator cover is fixed in position in four places. Loosen the screw connection on the front (Abb. 131) and rear (Abb. 132), as well as the clip-on strip (Abb. 133) and lift the radiator cover up from the excavator (Abb. 134).

During the maintenance work, keep the radiator cover in a safe place. Make sure that the covering hood will be protected against mechanical damage.

After removal of the radiator cover, you will have access to the hydraulic pumps, to the control block, to the four-circuit cooler (hydraulic oil cooler, engine oil cooler, air conditioning and diesel cooler), as well as to the ventilator drive.

Abb. 131



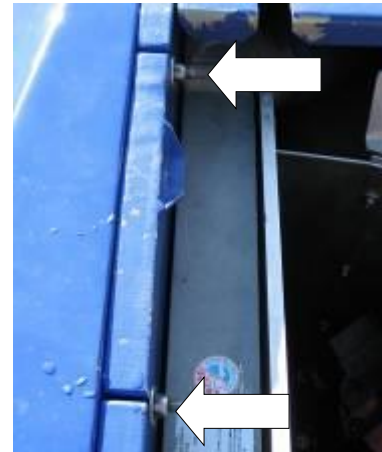
Front fastening of the radiator cover

Abb. 132



Rear fastening of the radiator cover

Abb. 133



Clip-on strip of the radiator cover

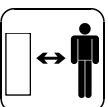
Abb. 134



lifting of the radiator cover



O.7 Tilting up the cab

 	Before tilting the cab, shut off the engine, remove the ignition key and keep it in a safe place.
 	The machine must be parked in a safe place; the bottom part of the frame and the arm must rest on the ground.
 	This work must be performed by a single person; however, the presence of a second operator is recommended – but at a safe distance.

Most hydraulic systems for the machine's control and movements are located underneath the cab, as well as the batteries and part of the electrical system.

To make them accessible, the cab must be tilted up as follows.

O.7.1 Tilt up

- 1) Make sure that no objects can fall down or slide away in the cab.
- 2) Close the cab door.
- 3) Open engine hood. To do this, please refer to Chapter O.4 Opening the engine hood / page O-101.
- 4) Pull the lever of the manual pump (Abb. 135) from its storage place in the cab.
- 5) Screw in the pump lever on the cab tilt pump (Abb. 136).
- 6) Set the lever of the manual pump to **LIFT** (Abb. 137).

Abb. 135



Storage place of the pump lever for the cab tilt pump

Abb. 136



Insert the pump lever

Abb. 137



Set manual pump to LIFT



- 7) Tilt up the cab by operating the pump lever (Abb. 138).
- 8) Pump until the cab is inclined entirely toward the front and the safety rod can be easily moved over.
- 9) Do not pump further when the cab is tilted up all the way.
- 10) After the cab is tilted up, move the safety rod over to mechanically secure the cab against uncontrolled lowering (Abb. 139).

O.7.2 Lowering



ATTENTION!

Before beginning the steps listed below, it is imperative to close the cab door; otherwise, the door might collide with the operating lever.

1. Fold in the safety rod (Abb. 139).
2. Set manual pump to **LOWERING**, i.e. turn lever around (Abb. 140).
3. Continue to pump (Abb. 141) until the cab is lowered all the way down and securely engaged in the cab lock. If the cab is successfully locked, you will hear a metallic clicking of the release mechanism.
4. Remove the pump lever from the manual pump and return it to its storage place in the cab (Abb. 135 / page O-104).

Abb. 138



Operating the pump lever

Abb. 139



Safety rod

Abb. 140



Set manual pump to LOWERING

Abb. 141



Operating the pump lever



O.8 Maintenance intervals

The following maintenance schedules are valid for the first interval reached (operating hours or months).

A	Every 8 operating hours or daily	D	Every 1,000 operating hours or 24 months
B	Every 100 operating hours or monthly	E	Every 3,000 operating hours or 6 years
C	Every 500 operating hours or 12 months	F	Every 8,000 operating hours

DESCRIPTION ● checking ▲ cleaning ■ replacing — adjusting	OPERATING HOURS						
	150h	A	B	C	D	E	F
Check coarse filter for contamination (clean, if necessary)		●					
Check fine filter for contamination (clean, if necessary)		●					
Check intercooler for contamination (clean, if necessary)		●					
General check-up of engine, safety components and steel structure (visual daylight check) for cracks and defects	●	●					
Lubricate excavator (see Lubricating Plan) or weekly	●	●					
Functional check of the central lubricating system (optional)	●	●					
Check coolant level in compensation tank	●	●					
Check engine for engine oil and coolant leakages	●	●					
Check tension and condition of V-belt(s)	●	●					
Fuel system – Drain main filter and water separator	●	▲					
Check fuel line filter for contamination (replace, if necessary)	●	●					
Check engine oil level		●					
Check engine oil level at the oil pressure gauge	●	●					
First oil change of drive and slewing gear	■						
Check air filter clogging indicator (replace filter insert, if necessary)		●					
Check lines of the hydraulic system	●		●				
Check the tightness of all screws and bolts of the drive and slewing gear			●				
Drain condensation water from water separators	●		▲				
Fuel tank – Water and sediment to be drained every 50 operating hours or weekly	●		▲				
Check and lubricate gear toothing of rotation crown wheel, pinion, slide plates	●		●				
Replace hydraulic oil filter	■			■			
Change oil of the drive and slewing gear				■			
Check and tighten screw connections	●			●			
Replace engine oil (2)(3)(5)				■			
Replace oil filter cartridge (2)(3)(5)				■			
Replace intake air filter cartridge (see clogging indicator)	▲			■			
Fuel system – Replace main filter element (water separator)				■			
Fuel system – Replace safety filter				■			
Fuel system – Check/replace hoses and hose clamps				●			
Check specific density of coolant (1)(4)				●			
Check all hoses and connections	●			●			
Check all cables and connections of the electrical system	●			●			
Clean intercooler				▲			
Air conditioning system to be serviced and, if necessary, cleaned by specialized personnel	●			●			
Clean oil and water cooler				▲			
Check valve clearance and adjust, if necessary (1)				—	●		
Emission maintenance (country-specific)					●		
Check Bio-hydraulic oil HLP SYNTH 46-quality (analyze oil sample)*					●		
Replace Universal-hydraulic oil HLP UNI 46 (mineral oil)**					■		



Replace hydraulic hoses	●					■	
Replace closed crankcase ventilator	●						■

* see Chapter O.9.26 Maintenance of BIO hydraulic oil / page O-120

** see Chapter O.9.27 Replacement of Universal hydraulic oil / page O-121



KAISER AG or an authorized service point/workshop shall perform an inspection service after the first 150 operating hours. Service and maintenance work after 500h or 1000h shall also be performed on time by **KAISER AG** or an authorized service point/ workshop, and such work shall be confirmed in the service booklet; otherwise the guarantee will expire.

- 1) Only appropriately trained personnel
- 2) The oil change interval depends on the fuel's sulfur content. It does not affect the replacement interval for the oil filter cartridge or component. Please refer to "Fuel Specifications" in the Operator's Manual of the Perkins 1104D-E44TA.
- 3) Please refer to "Engine oil Specifications" in the Operator's Manual of the Perkins 1104D-E44TA.
- 4) Renew anti-freeze every 2 years. If an anticorrosion agent is used – instead of an anti-freeze – renew it every 6 months. Coolant must be changed if combustion gases have penetrated the cooling system.
- 5) A maintenance interval of 250 operating hours or 12 months, respectively, is required for engines with high load factors (e.g. drill rigs, harvester operation, mulch operation, etc.).
- 6) For a detailed description of diesel engine maintenance, please refer to the Operator's Manual of the Perkins 1104D-E44TA.



O.9 Maintenance work

O.9.1 Check levels of operating materials

Check levels of operating materials at the following excavator position:

- 7) Undercarriage in drive position
- 8) Undercarriage parked on level ground
- 9) Pendulum arm completely extended (pendulum cylinder retracted)
- 10) Telescope completely retracted
- 11) Bucket completely folded out (bucket cylinder retracted)
- 12) Boom set down on ground (lifting cylinder retracted)



The following generally applies:
When checking the level of operating materials, all cylinders should be retracted as far as possible!

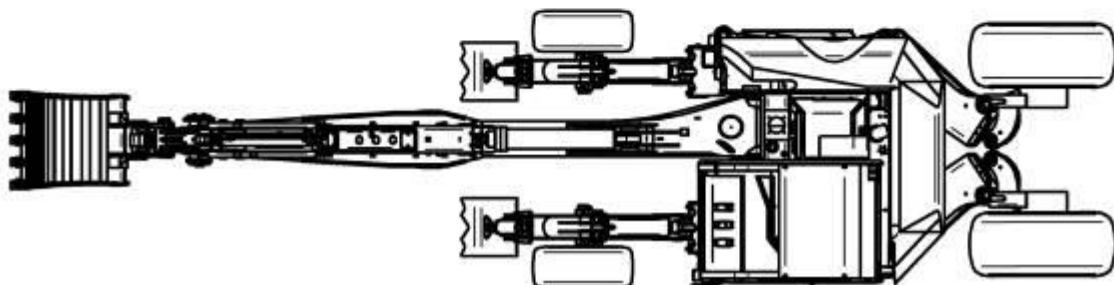
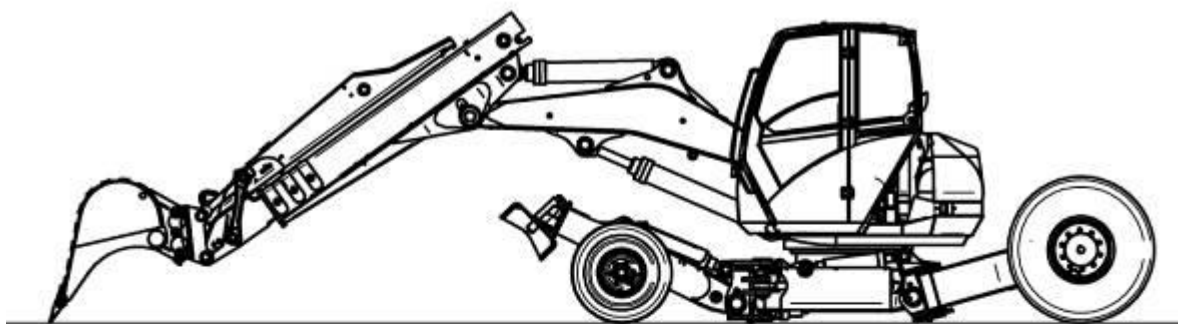


Abb. 142



O.9.2 Check hydraulic oil level

Check the hydraulic oil level by means of the level gauge on the oil tank (Abb. 143) The level must be between the markings. If necessary, refill the missing volume through the filler shown in Abb. 144. Hydraulic oil properties are specified in Chapter O.10.4 Properties of the hydraulic oil / page O-124 angegeben.

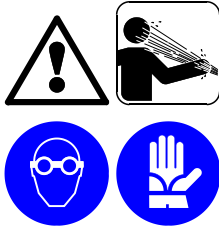
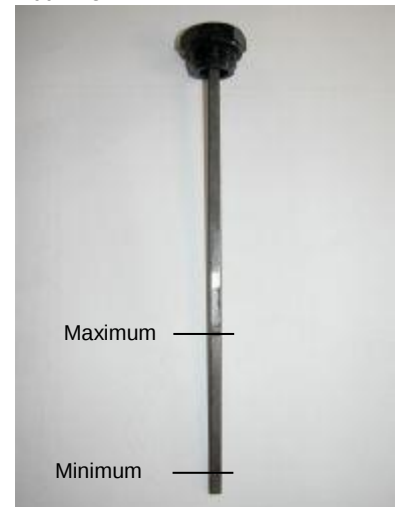
	ATTENTION: The system is under pressure. To remove the filler cap when the fluid is hot, do not forget: 1) to wear safety goggles and gloves to avoid eye or skin contact with the machine's operating fluids. 2) to slowly unscrew the cap so that the residual pressure in the system is slowly reduced.
---	--

Abb. 143



Hydraulic oil level gauge

Abb. 144



Hydraulic oil filler cap

O.9.3 Check engine oil level

Please refer to the corresponding chapter in the Operator's and Maintenance Manual by the diesel engine 1104D-E44TA from PERKINS.

To check the oil level, lift up the engine hood and take out the oil dipstick (Pos.1 / Abb. 145).

The level must be between the markings (Abb. 146).

If necessary, fill up the necessary amount through the filling hole (Pos.2 / Abb. 145).

Engine oil properties are specified in Chapter O.10.2 Properties of the engine oil / page O-124.

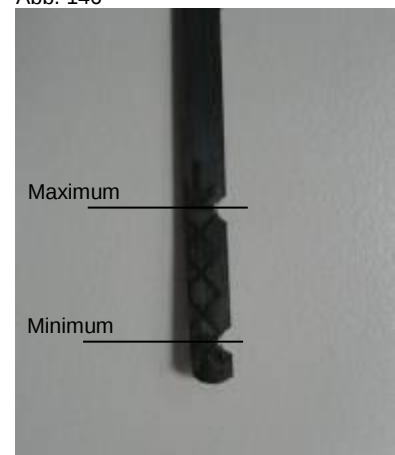
	Do not exceed the MAX mark when refilling engine oil. The excess would be burnt in the exhaust with useless and harmful smoke.
---	---

Abb. 145



Engine oil filler cap

Abb. 146



Oil dipstick (engine oil)



O.9.4 Cleaning the radiator

When working in dusty areas, check the radiator condition daily.

O.9.5 Cleaning coarse filter

The perforation in the coarse filter (see Chapter O.5 Opening the coarse filter / page O-102) serves as a coarse filter (Abb. 147). The coarse filter keeps larger objects away from the cooling system. This includes pine needles, grass, wood chips, etc.

If the coarse filter is dirty, it can be cleaned by brushing it, washing or hosing it down.

Abb. 147



Coarse filter

O.9.6 Cleaning fine filter

The fine filter is inserted in front of the charge cooler. The fine filter can be removed by pulling it up evenly (Abb. 148).

The fine filter is cleaned by manually tapping the dirt off or by brushing it with a fine brush.

Reinstall the fine filter before starting up the machine again.

Abb. 148



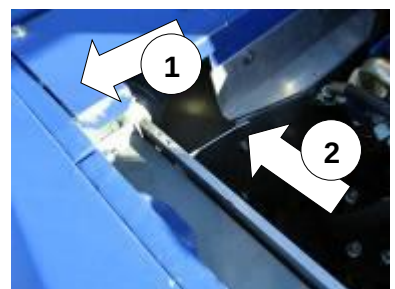
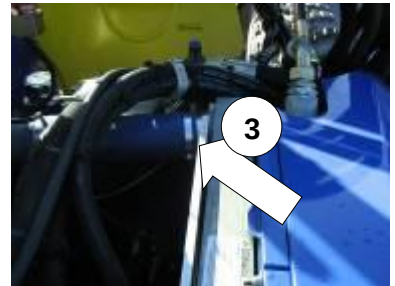
Removing fine filter

O.9.7 Cleaning intercooler

The intercooler must be disassembled before cleaning. Please proceed as follows:

- 1) Remove the fine filter (Abb. 148).
- 2) On the rear (cooling water tank), remove the cover in the area of the charge cooler hose (Pos.1 / Abb. 149) and the separation to the engine room (Pos.2 / Abb. 149).
- 3) Remove the intercooler hoses (inlet and outlet) Pos.3 / Abb. 149).
- 4) Pull up the intercooler evenly.
- 5) Cover up well the connections of the intercooler so that no dirt can get into the radiator.
- 6) The intercooler can now be cleaned by means of compressed air or high water pressure (7 bar maximum).
- 7) Re-assembly in reverse order.

Abb. 149



Removing intercooler



Please take care that the radiator ribs will not bend, and direct the air or water jet properly through the radiator block (Abb. 150). Straighten up any possibly bent radiator ribs, as needed.



ATTENTION: Always wear goggles or a protective face mask to protect your eyes against dust or splinters.

Abb. 150



Cleaning the radiator

O.9.8 Changing engine oil filter

Please refer to the corresponding chapter of the Operator's Manual for the Perkins 1104D-E44TA diesel engine. Please follow the steps below:

- 1) Open the engine hood (see chapter O.4 Opening the engine hood / page O-101).
- 2) Remove engine oil filler cap.
- 3) Remove the protective plate under the engine and place a vessel for the spent oil underneath it.
- 4) Unscrew drain plug (quick lock).
- 5) Loosen oil filter with standard tool and unscrew.
- 6) After the oil has drained, screw the drain plug on again.
- 7) Clean any dirt from the sealing area of the filter carrier.
- 8) Lightly oil rubber seal (Abb. 151) of the new filter.
- 9) Screw filter on by hand until the seal fits.
- 10) Tighten filter by another half turn.
- 11) Have engine running and check filter seal for tightness
- 12) After turning off the engine and letting it cool down, check the engine oil level with the oil dipstick and refill engine oil, as needed.
- 13) Check oil pressure
- 14) Remove vessel and dispose of old oil

Abb. 151

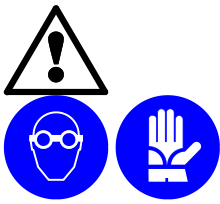


Filter seal

Refill oil according to the table listed below. Properties of the oil to be used are specified in Chapter O.10.2 Properties of the engine oil / page O-124.

	Oil volume
With filter change	~ 9 Liter
Without filter change	~ 8.5 Liter



	ATTENTION: Always wear safety goggles and gloves to avoid eye or skin contact with the machine's operating fluids. Make sure that the system stands on level ground to obtain a correct dipstick reading.
	Note: Dispose of oil and filter in accordance with valid regulations.

O.9.9 Check V-belt

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the 1104D-E44TA diesel engine.

O.9.10 Clean fuel tank

To ensure optimum operation of the engine, remove – at regular intervals – the water and the contamination depositing on the tank bottom.

Proceed as follows for draining water:

- 1) The fuel level in the tank must be approximately at the MIN mark.
- 2) Open the rear engine hood. Please refer to Chapter O.4 Opening the engine hood / page O-101.
- 3) Open the fuel filler cap (Abb. 152).
- 4) Place a vessel under the drain plug of the diesel tank (Abb. 153). The drain plug can be seen when looking from below onto the superstructure plate.
- 5) Slowly unscrew the drain plug (Abb. 153) and let the water or the contamination drain.
- 6) When clean fuel runs off the tank, turn the drain plug back in again (Abb. 153).
- 7) Refill fuel through the filler cap (Abb. 152) and subsequently close the cap.

Abb. 152



Filter cap, fuel tank

Abb. 153



Drain bolt fuel tank



  	ATTENTION: For water and deposit drainage, make sure: - to wear safety goggles and gloves to avoid eye or skin contact with the machine's operating fluids. - to slowly unscrew the drain plug to avoid sudden jets of fuel.
 	Dispose of waste in accordance with valid regulations.

O.9.11 Cleaning the water/fuel separator

Please see the appropriate chapter in the PERKINS Operating and Maintenance Manual for Diesel Engine 1104D-E44TA.

For perfect operability of the engine, it is indispensable to clean the water/fuel separator ().

The device is provided with a transparent dish which shows the deposit of water and contamination in the fuel.

Proceed as follows to clean the separator:

1. Place vessel under the water separator to catch any fuel running out
2. Connect suitable hose to the drain device (Abb. 155). Open drain and let the liquid flow into the vessel.
3. Manually tighten the drain device (Abb. 155).
4. Remove hose and dispose of drained liquid according to the applicable regulations.
5. Following this process, vent air from the fuel system according to the PERKINS Operating Manual for Diesel Engine 1104D-E44TA.

Abb. 154



Water/fuel separator

Abb. 155



Water/fuel separator

Abb. 152



Water/fuel separator

  	ATTENTION: To clean the separator: - to wear safety goggles and gloves to avoid eye or skin contact with the machine's operating fluids. - to slowly unscrew the drain plug to avoid sudden jets of fuel.
 	Dispose of waste in accordance with valid regulations.



O.9.12 Change filter to water/fuel separator

Please see the appropriate chapter in the PERKINS Operating and Maintenance Manual for Diesel Engine 1104D-E44TA.

The water/fuel separator is provided with an additional fuel filter (Pos. 1 / which should be changed every 500 operating hours or every 12 months.

Proceed as follows when changing the filter:

- 1) Place vessel under the water separator to catch any fuel running out. Clean water separator on the outside.
- 2) Connect suitable hose to the drain device (Abb. 155). Open drain and let the liquid flow into the vessel. Remove hose.
- 3) Manually tighten the drain device (Abb. 155).
- 4) Hold glass vessel firmly, remove screw (Abb. 156). Remove glass vessel from housing (filter).
- 5) Dispose of filter and old gaskets, clean glass vessel.
- 6) Manually tighten new filter.
- 7) Install glass vessel with setting screw (torque 5 Nm). Use new gaskets and take care that the gaskets are properly inserted.
- 8) Remove vessel and dispose of fuel according to the applicable regulations.
- 9) When the main filter is replaced, the safety filter must also be replaced.
- 10) Vent fuel system in accordance with the PERKINS Operating Manual for Diesel Engine 1104D-E44TA.

Abb. 156

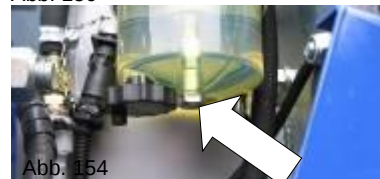


Abb. 154



Water/fuel separator

Abb. 152



Water/fuel separator

	ATTENTION: When changing the filter, it is absolutely necessary to: • to wear safety goggles and gloves to avoid eye or skin contact with the machine's operating fluids. • to slowly unscrew the drain plug to avoid sudden jets of fuel.
	Dispose of waste in accordance with valid regulations.



O.9.13 Venting the fuel system

  	ATTENTION! Fuel system lines are under high pressure! After the engine has come to a standstill, wait for 60 seconds for the pressure to be relieved before beginning any maintenance work on the fuel system
  	Contact with fuel under high pressure may cause penetration of liquid and burns. Fuel squirting out may cause fire. Non-compliance with the instructions for inspection/testing, maintenance and service will result in risk of injury and even cause mortal danger

Please take the following items into account with the fuel system:

- Never pre-fill fuel filter.
- Use only the filters approved by PERKINS. Contaminations will cause damage to the engine.
- Absolutely avoid letting the the fuel tank run dry.
- Never loosen high-pressure lines for venting.

Please see the appropriate chapter in the PERKINS Operating and Maintenance Manual for Diesel Engine 1104D-E44TA.



O.9.14 Lubrication

Lubricate all points marked in red or designated by the label shown in Abb. 157.

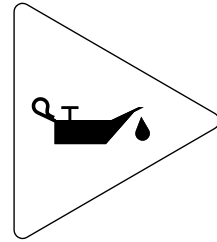
Continue to lubricate until you feel strong resistance when working the pump.

Lubricating grease properties are specified in Chapter O.10.7 Properties of lubricating grease / page O-126.



ATTENTION: Regular lubrication of plug-in bolts, bushings, etc. is absolutely indispensable for the machine's perfect operating performance and safety.

Abb. 157



Symbol for lubricating point

Especially important:

- Lubricate the arm at the designated points.
- Lubricate the rotation crown wheel from the outside via the grease nipples.

General lubricating interval:  **once daily**
Rotation crown wheel, bearing race system

Under special conditions of use, e.g. on sandy soil, lubrication intervals must be shortened to achieve self-cleaning of the bearing points.

Additional lubricating points:  **after 100 operating hours**

- Door lock
- Rotation crown wheel, gear toothing
- Door hinges
- Cover hinges

O.9.15 Check lines of the hydraulic system

To ensure the excavator's operability and safety, the condition of hoses in the hydraulic system must be checked regularly and, if necessary, worn hoses must be replaced.



ATTENTION:
For safety reasons, hydraulic hoses must generally be replaced every 6 years at the latest.



O.9.16 Battery check

The excavator has two maintenance-free batteries. No maintenance work is required.

O.9.17 Replacement of the air filter

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine. To replace the air filter, proceed as follows:

- 1) Tilt up the cab (see chapter O.7.1 Tilt up / page O-104).
- 2) Remove cap (Abb. 158).
- 3) Remove filter (Abb. 159).
- 4) If the filter is too dirty or damaged, it must be replaced.
- 5) Install the (clean or new) filter and close the cap again (Abb. 158 or Abb. 159).



ATTENTION: Always wear goggles or a protective face mask to protect your eyes against dust or splinters.

Abb. 158



Engine air filter

Abb. 159



Engine air filter

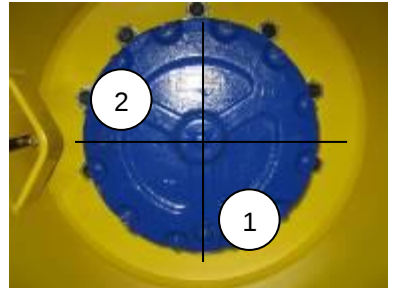
O.9.18 Filling the drive gear

When filling the drive gear, the drain plug (Abb. 160 / Pos.1) must be positioned vertically under the gear axis; the fill opening (Abb. 160 / Pos. 2) must be positioned horizontally to the gear axis. Fill drive gear with corresponding filling container up to overflow (filling volume approx. 2 liters). Use specified gear oil (see Chapter O.10.5 Properties of the drive gear oil / page O-125).

O.9.19 Filling the slewing gear

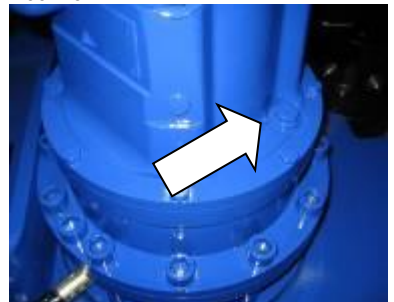
Upon filling, the slewing gear must be vertically positioned. Fill slewing gear with corresponding filling container up to 10mm below the fill opening (Abb. 161) ((filling volume approx. 2.1 liters). Use specified gear oil (see Chapter O.10.6 Properties of the slewing gear oil / page O-125).

Abb. 160



Filling the drive gear

Abb. 161



Filling the slewing gear



O.9.20 Changing hydraulic oil filter

The hydraulic oil filters are located on the hydraulic oil tank under the flange shown in Abb. 162. To replace the filters, proceed as follows:

- 1) Remove the coarse filter of the excavator (see Chapter O.5 Opening the coarse filter / page O-102).
- 2) Loosen screws and remove filter housing cover (Abb. 162).
- 3) Remove the filter inserts and check the seals for cleanliness and operability. Replace, if necessary.
- 4) Push in filter insert, provide the new seals, if necessary, and screw the filter housing cover back on again. Note markings (arrows) for correct positioning of the housing cover.

Abb. 162



Hydraulic oil filter

 	ATTENTION: Before beginning this work, put on appropriate gloves to protect your hands.
	NOTE: Always use original spare parts to ensure the excavator's performance.
 	ATTENTION: Dispose of waste in accordance with valid regulations.

**O.9.21 Checking the screw connections**

Check all screw connections for their tight fit.

The table below specifies the torques which are to be re-adjusted by means of a torque wrench.

Description	Standard part description	Tightening torque [Nm]
Wheel motors / drive gear	Hexagon nut DIN 930-M16x30-8.8 (Product no. 6.160.301) Retaining washer NL16-F (Product no. 6.717.050)	200
Wheel motor	Lug M16x1.5 (Product no. 2.257.011)	200
Rotation crown wheel - superstructure	Hexagon nut DIN 931-M16x100-10.9 (Product no. 6.161.001) Retaining washer NL16-F (Product no. 6.717.050)	300
Rotation crown wheel - undercarriage	Special screw M16x145-10.9 (Product no. 6.161.250) Counter nut BN2789 (Product no. 6.416.802)	300
Slewing drive - superstructure	Hexagon socket screw DIN 912-M16x90-10.9 (Product no. 6.160.905) Retaining washer NL16-F (Product no. 6.717.050)	270
Rotary transmission leadthrough - terminal block	Hexagon socket screw DIN 912-M12x45-8.8 (Product no. 6.120.452)	85
Rotary transmission leadthrough - undercarriage	Hexagon screw DIN 931-M16x60-8.8 (Product no. 6.106.000) Retaining washer NL16-F (Product no. 6.717.050)	170
Rotary transmission leadthrough - safety plate	Hexagon collar screw MF14x1.5x40 FK100 (Product no. 6.140.404) Nut MF14x1.5 (Product no. 6.414.705)	170
Diesel engine - catch plate	UNF 3/8"x 1/4" Hexagon nut ASA B18.2-8.8 (Product no. 6.538.022)	45
Diesel engine flange – hydr.pump	Hexagon socket screw DIN 912-M12x40-8.8 (Product no. 6.120.403)	85
Diesel engine mounting, pump	Hexagon socket screw DIN 912-M12x35-12.9 (Product no. 6.120.356)	130
Piston rod guide - Lifting cylinder - Pendulum cylinder	Hexagon socket screw DIN 912-M12x75-12.9 (Product no. 6.120.751)	130



ATTENTION: In load conditions or during extreme assignments, tightening torques must be checked every 250 operating hours to ensure correct and safe operation.



ATTENTION: Check tightening torque of wheel nuts 20 and 40 hours after commissioning and/or wheel change and retighten, if necessary.



O.9.22 Adjust valve clearance

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine.

To ensure optimum engine performance, regular valve clearance adjustment is required.

This work must be performed by qualified personnel.

O.9.23 Defective injection nozzles

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine.

ATTENTION: Defective injection nozzles may only be replaced by correspondingly trained persons.

This work must be performed by qualified personnel.

O.9.24 Ignition timing of the injection system

To ensure optimum engine performance, it is recommended to check the ignition timing of the injection system at regular intervals.

This work must be performed by qualified personnel.

O.9.25 Checking engine lines

It is recommended to check or, respectively, replace the lines of the oil system for the entire engine to prevent functional deficiencies or defects.

This work must be performed by qualified personnel.

O.9.26 Maintenance of BIO hydraulic oil



ATTENTION: Never mix different types of oil. This may result in premature aging of the oil.

Regular oil analysis will counteract premature change of the hydraulic oil.

Inspection interval after initiation / oil change	Normal use	Difficult use
1. check after	50 h	50 h
2. check after	500 h	250 h
3. check after	1000 h	500 h
Following checks after	1000 h or at least 1x / year	500 h or at least 1x / year

**Hydraulic oil change according to the analysis of oil sample and lab report.**

Your oil sample will be analyzed at the laboratory of the oil producer and, if necessary, countermeasures for further use of the hydraulic oil will be specified. Admixture of additives or filtering the hydraulic oil are precautions against a change of the hydraulic oil.

With this preventive action, the replacement interval for the hydraulic oil can be reduced to a minimum.

This work must be performed by qualified personnel.

O.9.27 Replacement of Universal hydraulic oil

ATTENTION: Never mix different types of oil. This may result in premature aging of the oil.

Regular oil analysis will counteract premature change of the hydraulic oil.

Inspection interval after initiation / oil change	Normal use	Difficult use
1. check after	50 h	50 h
2. check after	500 h	250 h
3. check after	1000 h	500 h
Following checks after	1000 h or at least 1x / year	500 h or at least 1x / year

Hydraulic oil change according to the analysis of oil sample and lab report.

Your oil sample will be analyzed at the laboratory of the oil producer and, if necessary, countermeasures for further use of the hydraulic oil will be specified. Admixture of additives or filtering the hydraulic oil are precautions against a change of the hydraulic oil.

With this preventive action, the replacement interval for the hydraulic oil can be reduced to a minimum.

This work must be performed by qualified personnel.



O.9.28 Battery change

If batteries must be changed, please proceed as follows:

- 1) Tilt up cab of excavator (see Chapter O.7.1 Tilt up / page O-104 or, respectively, remove coarse filter (see Chapter O.5 Opening the coarse filter / page O-102).
- 2) First undo the negative poles of **both** batteries; only then loosen the positive pole terminals.



ATTENTION:

Before removing one positive pole of a battery, always remove first the negative poles of **both** batteries. Otherwise, there is the risk of electrical short-circuiting when a positive pole has contact with metal parts of the surroundings!

- 3) Remove the clamping device of the batteries (Pfeile Abb. 163, Abb. 164)
- 4) Remove the defective batteries from their mount and dispose of them in accordance with valid regulations
- 5) Clean bearing surfaces of the battery mounts
- 6) Place new batteries in the mounts and fix in position with the clamping devices; take care of the correct position of the poles (Abb. 163, Abb. 164)
- 7) Connect the pole terminals to the batteries in reverse order, i.e. first both positive poles, then the negative poles.



ATTENTION: Always wear gloves when doing this work to avoid unintentional contact of electrolyte and skin.



ATTENTION: Dispose of the battery in accordance with valid regulations.

For prolonged downtimes of the engine, the battery should be disconnected as a precautionary measure to prevent a battery discharge.

Abb. 163



Position of battery 1

Abb. 164



Position of battery 2



O.9.29 Replacement of fuse links

The excavator's push-on fuses are located in the cab on the side under the display, and in the engine room on the side of the fuel tank. .

Fuse links in cab (Abb. 165, Abb. 166).

Fuse	Funcio	Ampere
1	Starter	30 A
2	Preheating control	10 A
3	Central lubrication system (optional)	10 A
4	Horn and radio	10 A
5	Joystick electronics with hydraulic valves	20 A
6	Additional work floodlights	15 A
7	Automatic adjustment of the driver's seat	15 A
8	Front and rear work floodlights	20 A
9	Reserve	10 A
10	Interior light, cigarette lighter, radio	10 A
11	Fan motor, wiper motor	15 A
12	Reserve	15 A
13	Rotary beacon, blinkers (optional) and parking lights (optional)	15 A
14	Display cab and emergency stop	15 A

Push-on fuses in the engine room (Abb. 167) on the right side of the fuel tank.

Fuse	Funcio	Ampere
1	Preheating device	80 A

O.9.30 Emission maintenance / Switzerland

To ensure the diesel engine's emission stability, the emission maintenance must be performed every 24 months at the latest and recorded in the emission maintenance document. However, we recommend to perform this emission maintenance more frequently – with every engine service. After successful testing, the emission stamp is renewed.

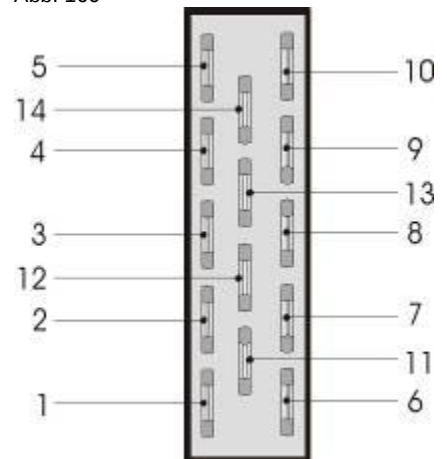
With regard to this, please contact the customer service of company Kaiser AG Fahrzeugwerk or your nearest dealer.

Abb. 165



Fuses in cab

Abb. 166



Position of fuses (cab)

Abb. 167



Location of fuse (engine room)



O.10 Summary tables of operating liquids

O.10.1 Fuel properties

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine.

O.10.2 Properties of the engine oil

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine.

Note: We recommend the multigrade oils SAE 15W-40, 10W-40 or SAE 10W-30 because they cover a broad temperature range and can thus be used all year long.

Approved API oils: CG-4 minimum
Approved ACEA oils: E3 minimum

O.10.3 Properties of the coolant

Please refer to the corresponding chapter in the Operator's and Maintenance Manual for the PERKINS 1104D-E44TA diesel engine.

O.10.4 Properties of the hydraulic oil

The quality of the hydraulic oil used – which must not have any impurities – is of essential importance for the system's efficiency and service life.

The following tables include a few recommended products and their performance level.

O.10.4.1 Biodegradable hydraulic oils

Manufacturer	Description
PANOLIN	HLP SYNTH 46 mat.no. 16800005 ISO 15380 HEES / Blauer Engel (ecolabel <i>Blue Angel</i>) RAL-UZ 79 / OECD 301 B
MOTOREX	OEKOSYNTH 46 HEES mat.Nr. 16800011
BANTLEON	PE-B50 mat.Nr. 16800022 HVLPD HC DIN 51524 part 3 HEPR ISO 6743 part 4
NILS	ANTARES ES
YORK	777 BIO



ATTENTION: Other hydraulic oils may only be used after prior consultation with the manufacturer. In this case, the oil supplier must provide a written guaranty statement, as well as a warranty takeover statement for claims.

O.10.4.2 Mineral hydraulic oils

Manufacturer	Description
PANOLIN	HLP UNI 46 mat.no. 16800002 DIN 51524 part 3 // HLVP
MOTOREX	COREX HV 46
BANTLEON	PE-B50 mat.Nr. 16800022 HVLDP HC DIN 51524 part 3 HEPR ISO 6743 part 4



ATTENTION: Other hydraulic oils may only be used after prior consultation with the manufacturer. In this case, the oil supplier must provide a written guaranty statement, as well as a warranty takeover statement for claims.

O.10.5 Properties of the drive gear oil

Performance level: CLP 220 LS 2 (Lohmann&Stolterfoht)
CLP HC as DIN 51502 (L&S)
API GL-5 (O&K)

Manufacturer	Mineral oil API GL-5	Synthetic oil
PANOLIN	IG CLP 220 mat.no. 16800015	EP GEAR SYNTH 220 mat.no.16800016
MOTOREX	GEAR COMPOUND PLUS 220	SYNTEC CLP 220

O.10.6 Properties of the slewing gear oil

Performance level: CLP 220 LS 2 (Lohmann&Stolterfoht)
CLP HC as DIN 51502 (L&S)
API GL-5 (O&K)

Manufacturer	Mineral oil	Synthetic oil
PANOLIN	IG CLP 220 mat.no.16800015	EP GEAR SYNTH 220 mat.no.16800016
MOTOREX	GEAR COMPOUND PLUS 220	SYNTEC CLP 220



O.10.7 Properties of lubricating grease

For lubrication with lubricating grease, use products on a lithium saponification base with a consistency of NLGI 2; some products are indicated below.

Manufacturer	Description
AUTOL	TOP 2000 Longtime NLGI Class 2 Cartridge mat.no. 16800073
AGIP	LUBRISINT
NILS	ATOMIC
PANOLIN	SPIAL GREASE 2

To lubricate the rotation crown wheel with lubricating grease, use products on a lithium saponification base with a consistency of NLGI 2-3; we recommend:

Manufacturer	Description
MOLYKOTE	165 LT

For the installation of **bolts** and **bushings**, we recommend to grease the bearing points with the following grease.

Manufacturer	Description
GLEITMO	GLEITMO WSP 5040 Product no. 6.800.081



ATTENTION: Regular lubrication of plug-in bolts, bushings, etc. is absolutely indispensable for the machine's perfect operating performance and safety.



O.11 Lubricating plan

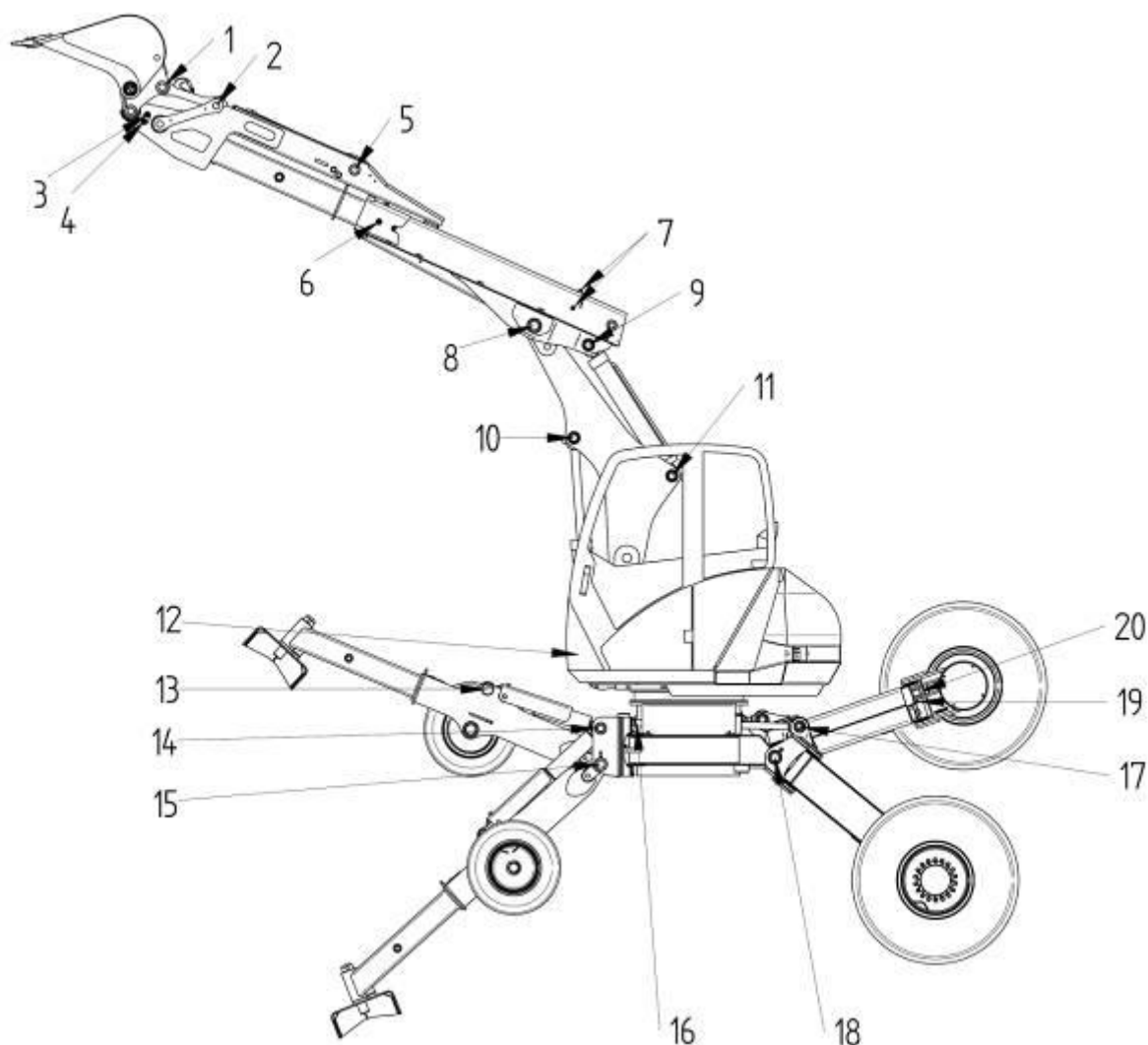


Abb. 168
Lubricating plan

General lubrication interval	Once daily
	Under spezial conditions of use, e.g. on sandy soil, lubrication intervals must be shortened to achieve self-cleaning of the bearing points.
Additional lubrication points	Once weekly
	Rotation crown wheel, bearing race system Rotation crown wheel, gear toothing Door hinges Cover hinge



P Faults: Causes and remedy

P.1 Diesel engine

FAULT	POSSIBLE CAUSE	REMEDY
When turning the ignition key, the control lamp(s) do(es) not light up.	Control lamp(s) defective. Plug-in fuse interrupted. Fault in the electrical system and/or in the sensors.	Replace control lamp(s). Replace push-on fuse. Contact customer service.
Oil level control lamp glows.	Oil level too low. Oil of unsuitable viscosity. Clogged oil filter. Fault in the electrical system and/or in the sensors.	Refill oil. Use oil of correct viscosity. Replace oil filter. Contact customer service.
Coolant control lamp glows.	Clogged radiator block. Coolant level too low. Losses from the cooling system. Cap of the expansion vessel defective. Clogged cooling system. Fan speed too low. Abnormal performance of the cooling system pump. Fan impeller does not fit properly. Thermal short circuit. Fault in the electrical system and/or in the sensors.	Clean radiator block. Refill coolant. Determine losses and remedy. Replace cap. Clean cooling system. Check fan speed. Contact customer service. Re-adjust correct distance between fan impeller and radiator. Attach side covers. Contact customer service.
Battery control lamp glows.	Belt worn or slack. Fault in the electrical system and/or in the sensors.	Replace belt or check its tension. Contact customer service.
Engine does not start / or only sluggishly.	Wrong start procedure. Emergency pushbutton switched on. Lack of fuel.	Follow instructions for starting. Switch off emergency pushbutton. Check fuel level.



FAULT	POSSIBLE CAUSE	REMEDY
	Fault in the starter solenoid.	Check both solenoids for their proper functioning.
	Air in the fuel system.	Bleed air from the system.
	Unsuitable viscosity of the engine oil.	Use oil of suitable viscosity.
	Fuel unsuitable for operating temperature.	Use fuel suitable for the operating temperature.
	Soiled fuel system.	Clean fuel system.
	Clogged fuel filter.	Replace filter cartridge.
	Fault in the injection nozzle.	Contact customer service.
Engine does not run and/or stops.	Clogged fuel filter.	Replace filter cartridge.
	Soiled fuel system.	Clean fuel system.
	Fault in the injection nozzle.	Contact customer service.
	Overload of engine.	Reduce overload.
	Soiled and/or clogged air filter.	Clean or replace air filter.
	Functional deficiency in the starter solenoid.	Contact customer service.
	Clogged fuel filter.	Replace filter cartridge.
Engine expels excessive amounts of black smoke.	Engine overload.	Reduce overload.
	Soiled and/or clogged air filter.	Clean or replace air filter.
	Unsuitable fuel.	Use suitable fuel.
	Fault in the injection nozzle.	Contact customer service.
Engine expels excessive amounts of white smoke.	Unsuitable fuel.	Use suitable fuel.
	Fault in the injection nozzle.	Contact customer service.
	Combustion of lubricating oil.	Contact customer service.
Excessive fuel consumption.	Unsuitable fuel.	Use suitable fuel.
	Soiled and/or clogged air filter.	Clean or replace air filter.
	Wrong valve clearance.	Contact customer service.
	Fault in the injection nozzle.	Contact customer service.
Excessive oil consumption.	Engine oil level too high.	Reduce oil level.
	Loss of oil.	Find reason for loss and remedy.
	Combustion of lubricating oil.	Contact customer service.



Industrial Engine Blinking Codes								
Diagnostic Blinking Code		Effect on Engine Power ⁽¹⁾				Recommended Action		
		Misfiring	Low Power		Misfiring	Low Power		Misfiring
111	Cylinder 1 error	X	X				X	
112	Cylinder 2 error	X	X				X	
113	Cylinder 3 error	X	X				X	
114	Cylinder 4 error	X	X				X	
133	Error – intake manifold temperature sensor	X					X	
137	Fuel injection control pressure		X	X		X		
141	Error – main sensor for speed / reference mark			X			X	
142	Error – emergency sensor for speed / reference mark						X	
143	Error – control time adjustment	X						X
157	Error – oil pressure sensor ⁽⁵⁾		X				X	
159	Error – fuel rail pressure sensor		X				X	
162	Error – High pressure fuel pump		X	X			X	
169	Error – coolant temperature sensor			X				X
177	Error – boost pressure controller solenoids			X				
197	Error – intake manifold temperature sensor		X				X	
415	Wrong engine software			X	X		X	
422	Interruptions of power supply from the battery to the electronic control unit (ECM)	X	X		X		X	
439	Error – key switch							X
516 517	Error – sensor supply voltage ⁽⁵⁾		X					X
527	Check customer-specific or system parameters ⁽⁵⁾		X	X				X
(1)	"X" indicates that an active code can have effects on the engine power.							
(2)	Shut off engine. Handle engine carefully. Have engine serviced immediately. May cause major engine damage.							
(3)	Driver should contact the nearest location where a qualified service program is available.							
(4)	Planning maintenance: The problem must be investigated when the operator has access to a qualified service program.							
(5)	These diagnostic blinking codes affect the system only in specific environmental conditions, such as starting the engine at low ambient temperatures and operation in cold climates at great heights.							

**P.2 Hydraulic system**

FAULT	POSSIBLE CAUSE	REMEDY
The dynamic oil system does not function properly.	Hydraulic oil level too low. Armrest safety switch not engaged. Clogged oil filter of the dynamic oil system.	Refill hydraulic oil. Press left armrest completely down. Clean or replace filter of the dynamic oil system.
Overheating oil in the dynamic oil system.	Oil level too low or too high. Clogged radiator block. Fan impeller does not fit properly. Clogged filter cartridge in the dynamic oil system.	Correct oil level. Clean radiator block. Re-adjust correct distance between fan impeller and radiator. Replace filter cartridge in dynamic oil system.
Control of the hydraulic system does not function or only sluggishly.	Armrest of seat raised high. Fault in the limit switch actuated by the armrest. Fuse link on control panel disrupted.	Lower armrest of seat. Check limit switch for proper functioning and/or replace. Replace fuse link.
Machine and arm do not move or only sluggishly.	Fault in the main pump of the hydraulic system. Fault in joysticks. Fault in the dynamic oil main control block.	Check proper functioning of the pump and contact customer service. Contact customer service. Contact customer service.
Machine does not move or only sluggishly.	Fault in the reduction gear(s) for moving the machine. Functional deficiency of the control device (pedal) for moving the excavator.	Contact customer service. Contact customer service.
Legs do not move or only sluggishly.	Fault in the hydraulic system pump. Fault in control block for moving the legs.	Check pump performance and contact customer service. Contact customer service.
Superstructure does not slew or only sluggishly.	Fault in pump for slewing the superstructure. Fault in slewing motor. Fault in control block for slewing the superstructure.	Check pump performance and contact customer service. Contact customer service. Contact customer service.
Hydraulic oil overheating (fan is running too slow).	Fan valve clogged. Check by pulling off the temperature sensor plug – fan must adjust to max. speed.	Contact customer service.

**P.3 Electrical system**

FAULT	POSSIBLE CAUSE	REMEDY
Electrical system does not work.	Discharged batteries.	Check batteries voltage.
	Batteries clamps corroded or loose.	Clean and/or close clamps.
Starter does not function properly.	Discharged batteries.	Check batteries voltage.
	Batteries clamps corroded or loose.	Clean and/or close clamps.
	Fault in starter.	Contact customer service.
Battery charge control signal glows.	Fault in the AC generator.	Contact customer service.
	Fault in the electrical system and/or in the sensor.	Contact customer service.
	Worn or slack belt.	Check voltage or replace belt.
Horn does not work.	Horn defective.	Replace horn.
	Push-on fuse no. 4 on control panel disrupted.	Replace push-on fuse.
Additional working floodlights do not work.	Light bulbs defective.	Replace light bulbs.
	Push-on fuse no. 6 on control panel disrupted.	Replace push-on fuse.
Pneumatically-controlled seat adjustment, if available, does not work.	Push-on fuse no. 7 on control panel disrupted.	Replace push-on fuse.
	Functional deficiency of air compressor in seat.	Contact customer service.
Front and rear working floodlights do not work.	Light bulbs defective.	Replace light bulbs.
	Push-on fuse no. 8 on control panel disrupted.	Replace push-on fuse.
Legs do not move or only sluggishly.	Push-on fuse no. 5 on control panel disrupted.	Replace push-on fuse.
	Fault in the legs' electronic control housing.	Contact customer service.
Interior light in cab and/or cigarette lighter and/or radio do not work.	Push-on fuse no. 10 on control panel disrupted.	Replace push-on fuse.
Window wiper and/or hot air impeller do not work.	Push-on fuse no. 11 on control panel disrupted.	Replace push-on fuse.
	Fault in window wiper motor.	Replace motor.
	Fault in hot air impeller motor.	Replace motor.
Yellow rotary flashing light and/or blinkers (if available) and/or parking lights do not work.	Push-on fuse no. 13 on control panel disrupted.	Replace push-on fuse.
	Light bulbs defective.	Replace light bulbs.
	Fault in rotary flashing light.	Replace rotary flashing light.
	Fault in control housing of parking lights.	Contact customer service.



FAULT	POSSIBLE CAUSE	REMEDY
Display in cab and/or starter solenoid do not work.	Push-on fuse no. 14 on control panel disrupted.	Replace push-on fuse.
	Fault in cab display.	Contact customer service.
	Fault in starter solenoid.	Contact customer service.
Failures in ventilator speed control – permanently high speed (red LED lights up)	Control unit defective	Contact customer service.
	Temperature sensor defective	Replace temperature sensor and contact customer service.
	Cable rupture	Contact customer service.
Failures in ventilator speed control – permanently high speed	Voltage supply interrupted	Check push-in fuses (1A/8A)



Q Decommissioning and scrapping

For proper decommissioning and scrapping, the following materials must be separated:

- Hydraulic and lubricating oils
- Parts made of rubber or plastic
- Parts made of steel, aluminum and cast iron

They must be disposed of in accordance with valid regulations.



Never throw environmentally harmful liquids or solid materials into the environment. Contact a specialized service for the disposal, treatment and recycling of the various liquids and the materials resulting from scrapping.



R Copyright

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This Manual is only intended for the operating company and its personnel. The information contained therein is valid at the time of printing.

This Manual includes regulations and information which may not be

- Duplicated,
- distributed, or
- otherwise disclosed, either wholly or in parts.

Any violation can result in criminal prosecution.

In case of any questions arising with regard to your **KAISER S2** excavator, please contact the manufacturer or his authorized dealer immediately.

We hope you will enjoy working with our **KAISER S2**.

KAISER AG



S Spare parts ordering

Damit Sie zu den richtigen Ersatzteilen kommen, die Sie bestellen, bitten wir Sie, bei jeder Bestellung folgende Angaben zu machen:

1. Manufacturing number
Please refer to Chapter E Description and Identification / page E-22.
2. For hydraulic cylinder components, also indicate the cylinder identification number, which is struck into the cylinder tube.
3. Indicate the name of the spare part, as well as the pertinent product number and the desired quantity.
4. Please specify the shipping mode and your exact address. Our staff in the spare parts sales department will be pleased to advise you with regard to the possible modes of shipping.

Example:

Manufacturing number	KAISER S2
Name of spare part	Insert for hydraulic return filter
Product number	12180650
Quantity	1 piece
Shipping mode	by mail
Delivery address	Hans Muster Mustergasse 12 CH-1234 Musterort Contact person: Hans Muster Phone:
Invoice address	Hans Muster Mustergasse 12 CH-1234 Musterort Contact person: Hans Muster Phone:



T Technical Service

Maintenance and service work is provided by dealers and service centers authorized by the manufacturer, or directly by **KAISER AG**.

KAISER AG

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Fürstentum Liechtenstein (The Principality of Liechtenstein)

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Fax: +423 377 21 10 (Switchboard)

Fax: +423 377 21 07 (Service)

Fax: +423 377 21 08 (Spare Parts Sales)

E-Mail: kaiserag@kaiser.li

Internet: <http://www.kaiser.li>



S2

Ab/from KB-2497

Maschinentyp – Machine type – Type de la machine
Tipo della macchina

73024 / T

(Dok-ID / Revision)



KAISER Aktiengesellschaft
LI-9486 Schaanwald / Liechtenstein
T +423 377 21 21
kaiserag@kaiser.li, www.kaiser.li

Ersatzteilliste

Spare parts list

Catalogue de pièces de rechanges

Lista dei pezzi di ricambio

Erläuterung zur Ersatzteilliste

Aufbau

A	B	C	D	E	F	G
Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
10	20014518	1	Pleuel	connecting rod	bielle	biella
20	20014517	2	Schere	scissors	ciseaux	cesoie
30	20014515	2	Bolzen	bolt	boulon	bullone
40	12601574	4	Scheibe	disc	rondelle	disco
50	16717054	11	Unterlagsscheibe	disc	rondelle	disco

A	Positionsnummer	D	Deutsche Bezeichnung	G	Italienische Bezeichnung
B	KAISER-Materialnummer	E	Englische Bezeichnung		
C	Anzahl	F	Französische Bezeichnung		

Ersatzteilbestellung

Bitte machen Sie bei jeder Bestellung folgende Angaben:

- Maschinentyp (S10, S10HP, S12 4x4, ...)
- Fabrikationsnummer
- Motornummer (bei Motorenteile)
- KAISER-Materialnummer
- Stückzahl

Allgemeine und technische Hinweise

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Explanation of spare parts list

Structure

A	B	C	D	E	F	G
Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
10	20014518	1	Pleuel	connecting rod	bielle	biella
20	20014517	2	Schere	scissors	ciseaux	cesoie
30	20014515	2	Bolzen	bolt	boulon	bullone
40	12601574	4	Scheibe	disc	rondelle	disco
50	16717054	11	Unterlagsscheibe	disc	rondelle	disco

A	Item No.	D	German designation	G	Italian designation
B	KAISER Material No.	E	English designation		
C	Quantity	F	French designation		

Spare Parts Order

Please always state the following when ordering:

- Vehicle type (S10, S10HP, S12 4x4, etc.)
- Serial No.
- Engine No. (in the case of engine parts)
- KAISER Material No.
- Quantity

General and Technical Notes

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Customers should consult their nearest KAISER distributor or agent in order to be sure that they receive exact, detailed and up-to-date information.

The Material Nos. stated in this catalogue are correct at the time of going to print. KAISER's corporate policy provides for continuous improvement throughout the production period of this model; this can lead to subsequent changes in diagrams and Material Nos.

Explications concernant la liste pièces détachées

Conception

A	B	C	D	E	F	G
Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
10	20014518	1	Pleuel	connecting rod	bielle	biella
20	20014517	2	Schere	scissors	ciseaux	cesoie
30	20014515	2	Bolzen	bolt	boulon	bullone
40	12601574	4	Scheibe	disc	rondelle	disco
50	16717054	11	Unterlagsscheibe	disc	rondelle	disco

A	N° de position	D	Désignation allemande	G	Désignation italienne
B	N° de matériel KAISER	E	Désignation anglaise		
C	Nombre	F	Désignation française		

Commande de pièces détachées

Lors de votre première commande, merci de préciser:

- Type de la machine (S10, S10HP, S12 4x4, ...)
- N° de fabrication
- N° de moteur (pour des pièces de moteur)
- N° de matériel KAISER
- Nombre

Consignes généraux et consignes techniques

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Un client devrait consulter son distributeur ou représentant KAISER le plus proche pour être certain d'obtenir des informations précises, détaillées et actuelles.

Les N° de matériel cités dans ce catalogue sont d'actualité au jour de la publication. La politique d'entreprise de KAISER prévoit, pendant la durée de production de ce modèle, des améliorations permanentes ; ceci peut conduire à des modifications ultérieures au niveau des illustrations et des N° de matériel.

Spiegazione dell'elenco dei pezzi di ricambio

Composizione

A	B	C	D	E	F	G
Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
10	20014518	1	Pleuel	connecting rod	bielle	biella
20	20014517	2	Schere	scissors	ciseaux	cesoie
30	20014515	2	Bolzen	bolt	boulon	bullone
40	12601574	4	Scheibe	disc	rondelle	disco
50	16717054	11	Unterlagsscheibe	disc	rondelle	disco

A	Numero di posizione	D	Denominazione tedesca	G	Denominazione italiana
B	Numero di materiale KAISER	E	Denominazione inglese		
C	Quantità	F	Denominazione francese		

Ordine dei pezzi di ricambio

Indicare i seguenti dati in ogni ordine:

- Modello di macchina (S10, S10HP, S12 4x4, ...)
- Numero di produzione
- Numero di motore (nei pezzi di motore)
- Numero di materiale KAISER
- Quantità di pezzi

Indicazioni generali e tecniche

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I numeri di materiale indicati in questo catalogo sono corretti alla data di pubblicazione. La politica aziendale di KAISER contempla il miglioramento continuo di questo modello durante il periodo di produzione, e ciò potrà comportare modifiche successive nelle illustrazioni o nei numeri di materiale.

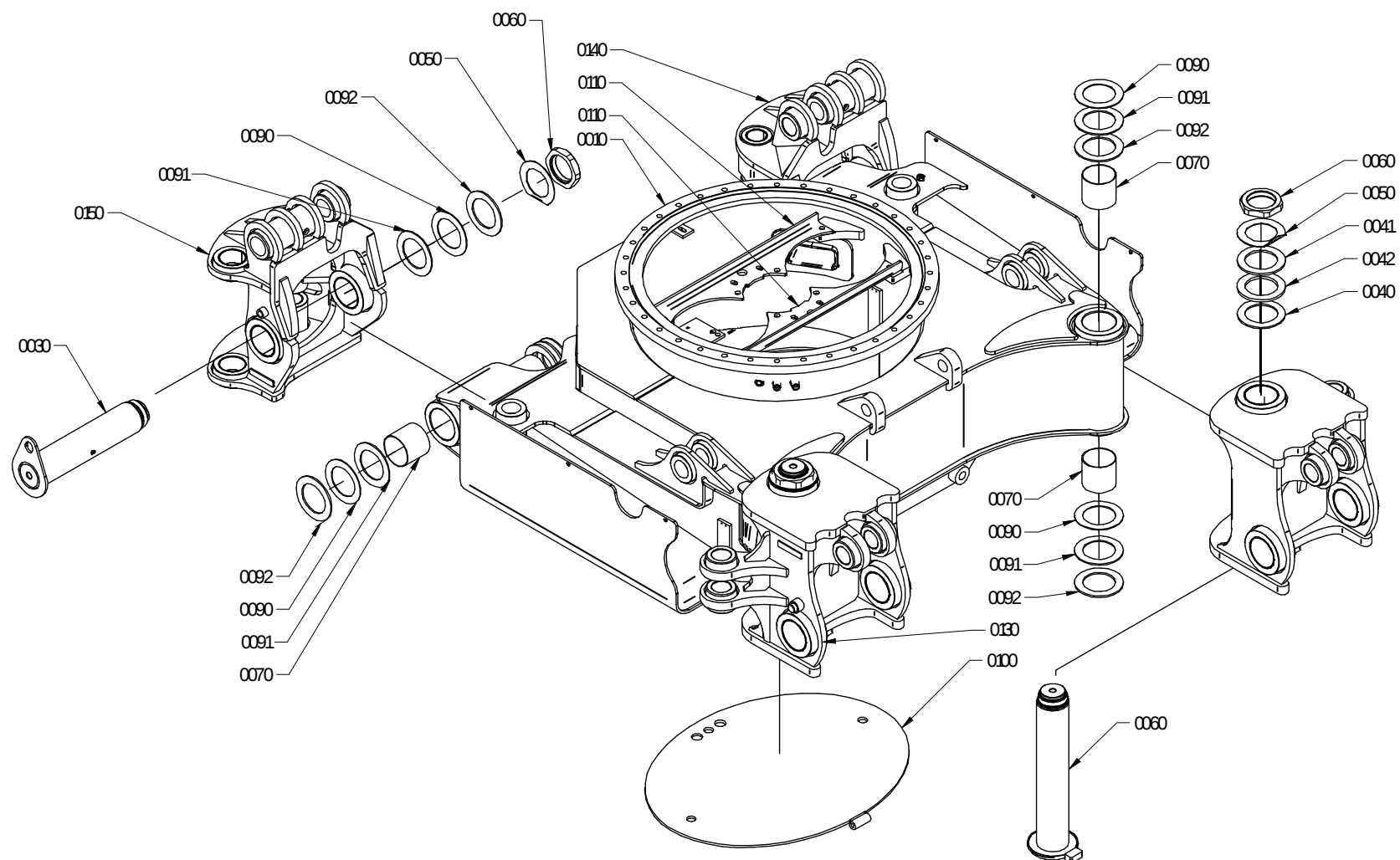
Unterswagen	10	Steuerblock	111	Teleskoparm	141
Unterswagen	20	Schnellwechsler.....	115	Schnellwechsler	151
Telefuss	38	Abdeckung	117	Halterung PowerUnit I	153
Spurstange.....	50	Oberswagen PowerUnit I	119	Umbausatz PowerUnit II.....	155
Unterswagen	52	Dieselmotor	121	Hauptarm.....	157
Fahrgetriebe.....	56	Auspuff.....	126	Werbetafel.....	160
Geländetätze	60	Klimaanlage.....	128	Einbau PowerUnit I	162
Bereifung	62	Pumpe	130	Beschriftungssatz.....	164
Oberswagen	64	Kabine	132		
Halterung Beleuchtung.....	109	Kabine	139		

Directory

undercarriage.....	10	control block	111	telescopic arm	141
undercarriage.....	20	quick changer	115	quick changer.....	151
telescopic leg.....	38	cover.....	117	holder PowerUnit I	153
track rod	50	upper carriage PowerUnit I	119	conversion kit PowerUnit II	155
undercarriage.....	52	diesel engine	121	main arm	157
drive gear.....	56	exhaust.....	126	advertising panel	160
cross-country paw	60	air conditioning.....	128	installation PowerUnit I	162
tires	62	pump.....	130	labeling kit.....	164
upper carriage.....	64	cabin.....	132		
holder lighting.....	109	cabin.....	139		

train de roulement	10	bloc de contrôle	111	bras télescopique	141
train de roulement	20	coupleur rapide	115	coupleur rapide	151
jambe télescopique	38	couverture	117	montage PowerUnit I	153
tirant d'ancrage	50	superstructure PowerUnit I	119	kit de conversion PowerUnit II	155
train de roulement	52	moteur diesel	121	bras principal	157
transmission	56	echappement	126	conseil de la publicité	160
pattes de terrain	60	climatisation	128	installation PowerUnit I	162
pneus	62	pompe	130	kit d'étiquetage	164
superstructure	64	cabine	132		
montage éclairage	109	cabine	139		

basamento inferiore.....	10	blocco idraulico controllo	111	braccio telescopico	141
basamento inferiore.....	20	attacco rapido benna	115	attacco rapido benna.....	151
piede telescopico	38	copertura	117	staffa PowerUnit I.....	153
braccetto.....	50	carrello superiore PowerUnit I.....	119	kit di conversione PowerUnit II.....	155
basamento inferiore.....	52	motore diesel.....	121	braccio principale	157
riduttore traslazione.....	56	scappamento.....	126	cartellone	160
appoggio della zampa.....	60	aria condizionata	128	impianto PowerUnit I	162
pneumatici.....	62	pompa	130	kit di etichettatura.....	164
carrello superiore.....	64	cabina.....	132		
staffa illuminazione	109	cabina.....	139		



12206005

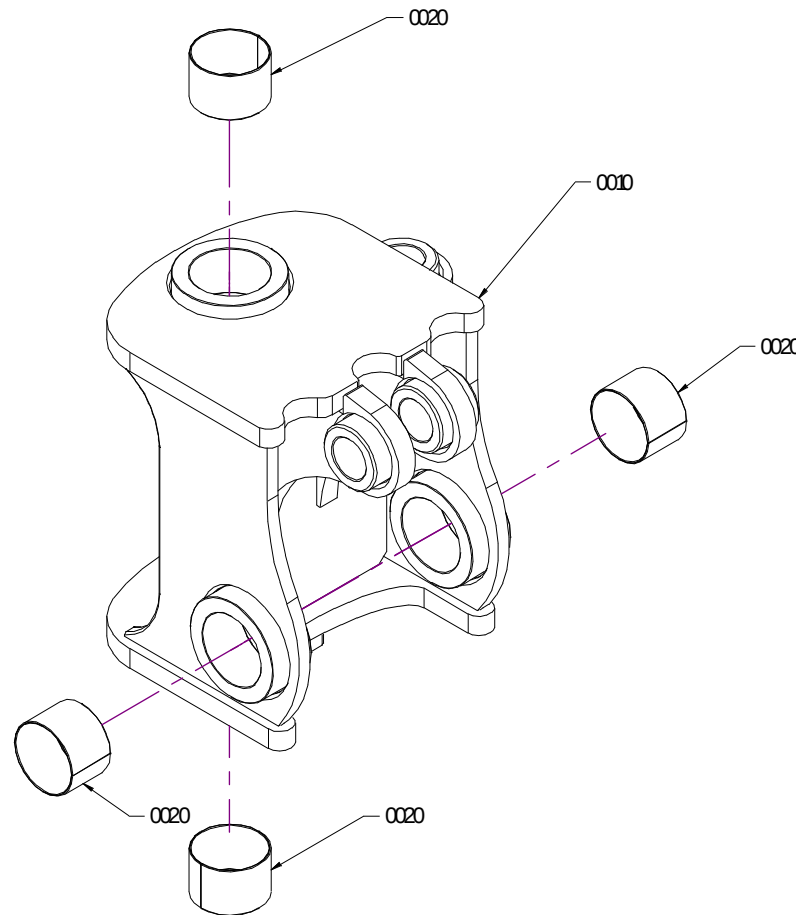
Unterwagen

undercarriage

train de roulement

basamento inferiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12206000	1	Unterwagen	undercarriage	train de roulement	basamento inferiore
0020	12206650	2	Bolzen	pin	bolt	perno
0030	12206660	2	Bolzen	pin	bolt	perno
0040	12206674	4	Scheibe	disk	disque	rondella
0041	12206676	4	Scheibe	disk	disque	rondella
0042	12206678	4	Scheibe	disk	disque	rondella
0050	12206680	4	Verdrehsicherung	locking element	sécurité de torsion	dispositivo antitorsione
0060	12206670	4	Mutter	nut	écrou	dado
0070	12206960	8	Büchse	bushing	fournure	boccola
0080	12206965	1	Büchse	bushing	fournure	boccola
0090	12206121	8	Scheibe	disk	disque	rondella
0091	12206123	8	Scheibe	disk	disque	rondella
0092	12206125	8	Scheibe	disk	disque	rondella
0100	12206070	1	Deckel	lid	couverture	coperchio
0110	12206060	2	Halterung	holder	montage	staffa
0120	12206702	1	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfere
0130	12206602	1	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfere
0140	20009694	1	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfere
0150	20009695	1	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfere



EVD/910023383/000/02

12206702	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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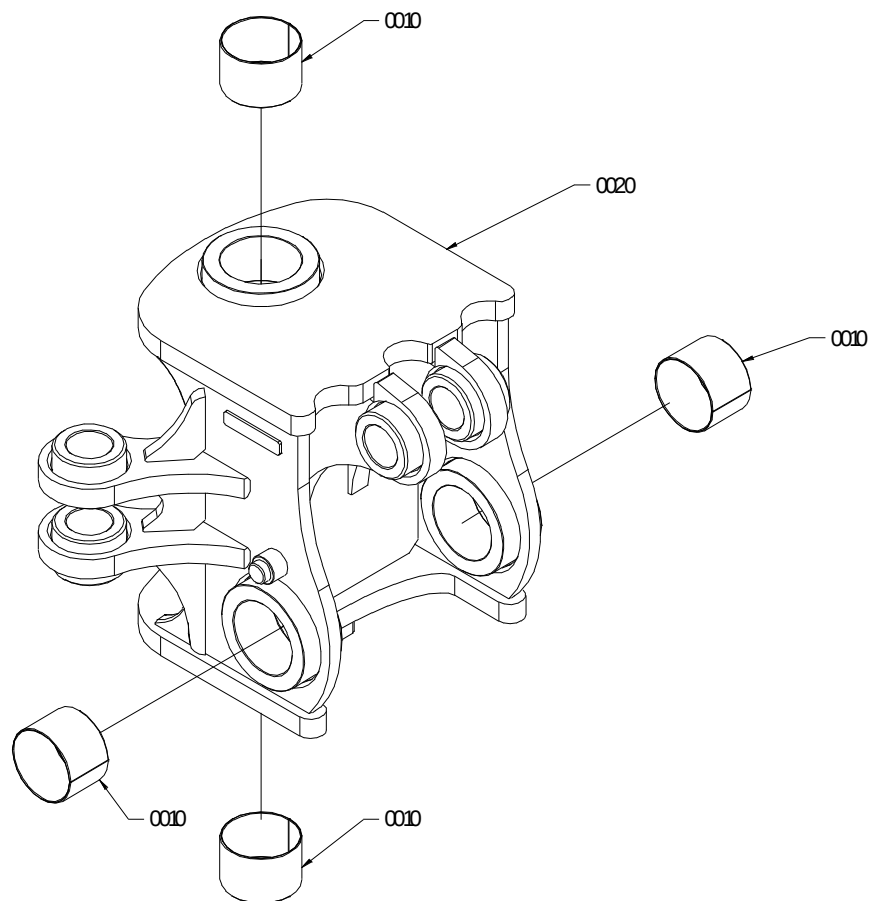
12206702	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206702	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206702	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206702	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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[illegible]



12206602	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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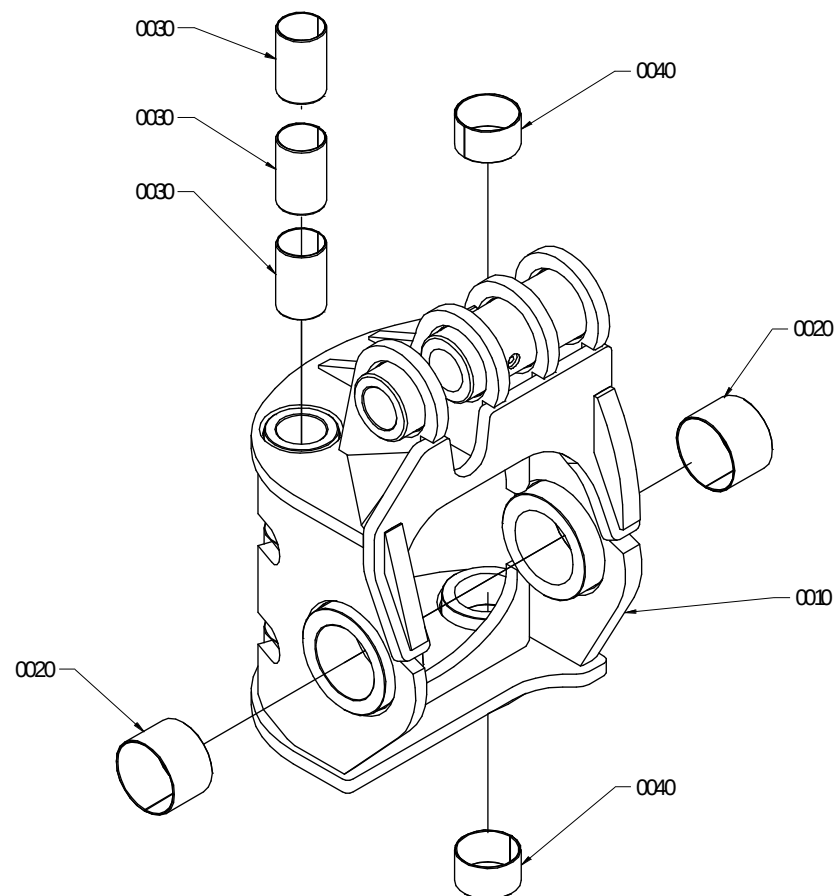
12206602	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206602	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206602	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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12206602	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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[illegible]



20009694	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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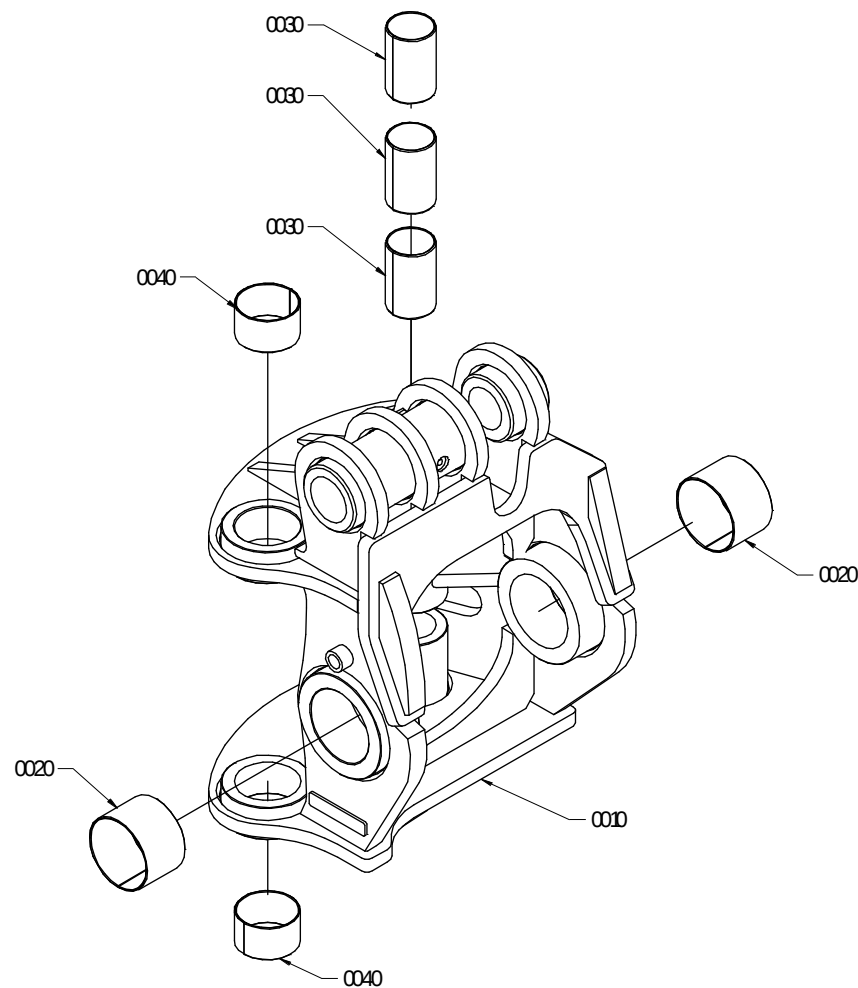
20009694	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009694	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009694	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009694	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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[illegible]



20009695	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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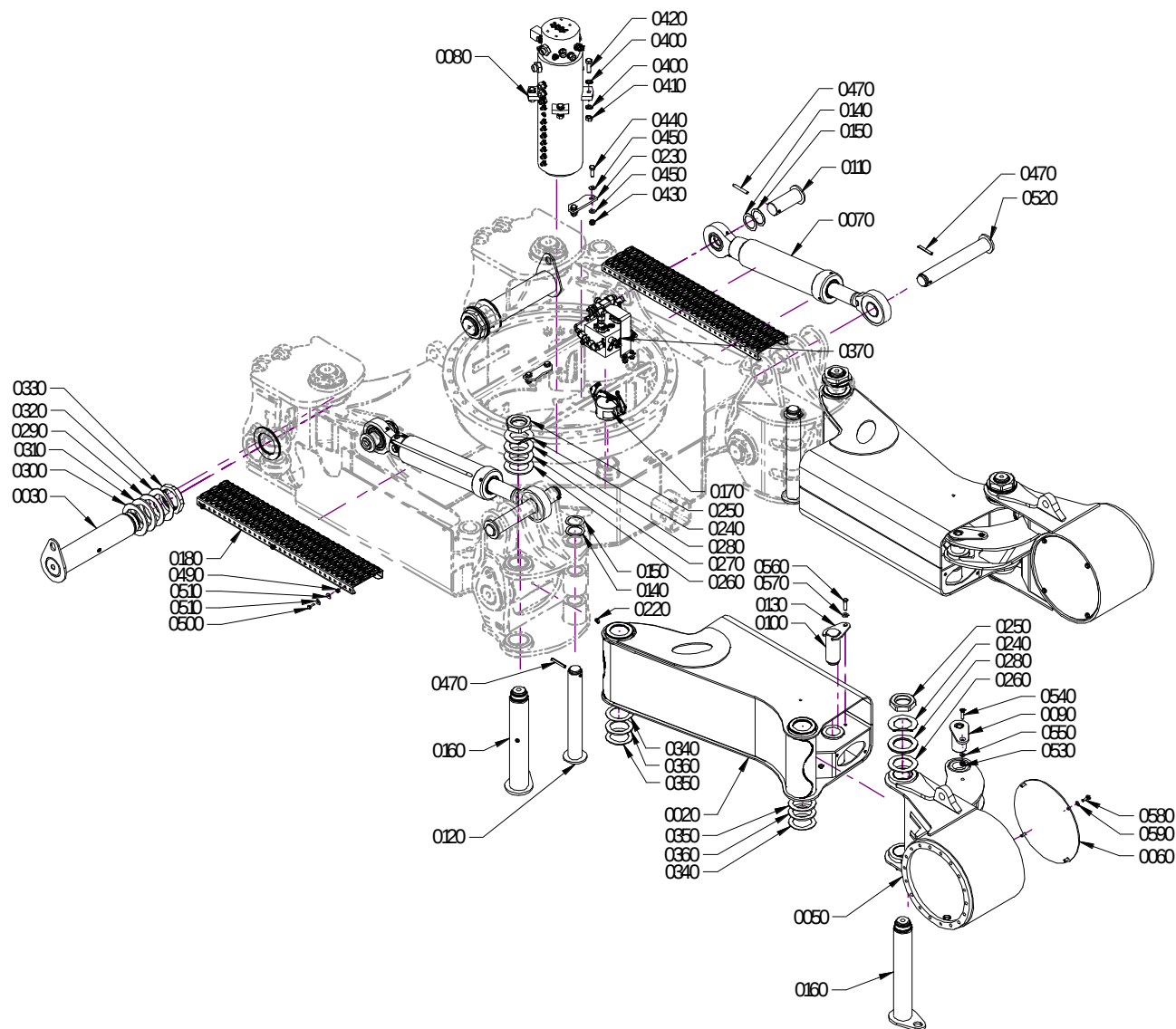
20009695	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009695	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009695	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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20009695	Gelenklager	joint bearing	appuis sphériques	cuscinetti a sfera
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[illegible]



12207000

Unterwagen

undercarriage

train de roulement

basamento inferiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12206351	1	Radlafette	wheel carriage	support pour vélo	zampa con ruota
0020	12206401	1	Radlafette	wheel carriage	support pour vélo	zampa con ruota
0030	12206660	2	Bolzen	pin	bolt	perno
0040	20024219	1	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
0050	20024221	1	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
0060	12206764	2	Deckel	lid	couverture	coperchio
0070	12207010	2	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
0080	20002403	1	Drehdurchführung	rotary feedthrough	transmission rotative	distributore rotante
0090	12206300	2	Bolzen	pin	bolt	perno
0100	12206292	2	Bolzen	pin	bolt	perno
0110	12206274	2	Bolzen	pin	bolt	perno
0120	12206286	2	Bolzen	pin	bolt	perno
0130	12206290	2	Lasche	lug	onglet	coprigiunto
0140	20002725	4	Scheibe	disk	disque	rondella
0150	12047670	4	Scheibe	disk	disque	rondella
0160	12206550	4	Bolzen	pin	bolt	perno
0170	16510189	1	Tankdeckel	tank lid	couvercle du réservoir	coperchio serbatoio
0180	12206114	2	Trittbrett	running board	conseil d'administration	pedana
0190	12206121	2	Scheibe	disk	disque	rondella
0200	12206123	2	Scheibe	disk	disque	rondella
0210	12206125	2	Scheibe	disk	disque	rondella
0220	16500250	2	Schmiernippel	grease nipple	graisseur	ingrassatore
0230	12001405	2	Verdrehsicherung	locking element	sécurité de torsion	dispositivo antitorsione
0240	12206570	4	Verdrehsicherung	locking element	sécurité de torsion	dispositivo antitorsione
0250	12206560	4	Mutter	nut	écrou	dado
0260	12206564	4	Scheibe	disk	disque	rondella
0270	12206566	4	Scheibe	disk	disque	rondella
0280	12206568	4	Scheibe	disk	disque	rondella

12207000

Unterwagen

undercarriage

train de roulement

basamento inferiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0290	12206674	2	Scheibe	disk	disque	rondella
0300	12206676	2	Scheibe	disk	disque	rondella
0310	12206678	2	Scheibe	disk	disque	rondella
0320	12206680	2	Verdrehsicherung	locking element	sécurité de torsion	dispositivo antitorsione
0330	12206670	2	Mutter	nut	écrou	dado
0340	12206127	8	Scheibe	disk	disque	rondella
0350	12206129	8	Scheibe	disk	disque	rondella
0360	12206131	8	Scheibe	disk	disque	rondella
0370	20026060	1	Traktionsmodul	traction module	module de traction	modulo di trazione
0380	16012410	1	Stopfen	plug	stopper	spina
0390	12168000	1	Entlüftungskappe	venting cap	bouchon de ventilation	tappo di sfiato
0400	16717050	8	Scheibe	disc	rondelle	disco
0410	16416000	8	Sechskantmutter	hex nut	écrou hexagonal	dado esagonale
0420	16160510	4	Schraube	bolt	vis	vite
0430	16414700	4	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0440	16140401	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0450	16718181	8	Unterlegscheibe	flat washer	laveuse	rondella per vite
0460	16160550	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0470	16701080	6	Schwerspannstift	heavy-duty spring pin	goupille robuste	spina elastica
0480	16718200	8	Unterlegscheibe	flat washer	laveuse	rondella per vite
0490	16408000	6	Sechskantmutter	hex nut	écrou hexagonal	dado esagonale
0500	16080251	6	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0510	20002140	12	Unterlegscheibe	flat washer	laveuse	rondella per vite
0520	12206276	2	Bolzen	pin	bolt	perno
0530	16412700	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0540	20003672	2	Senkschraube Innensechskant	countersunk screw hex socket	vis à tête fraisée à six pans creux	vite testa svasata esagono incassato
0550	16718120	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0560	16120451	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale

12207000	Unterwagen	undercarriage	train de roulement	basamento inferiore
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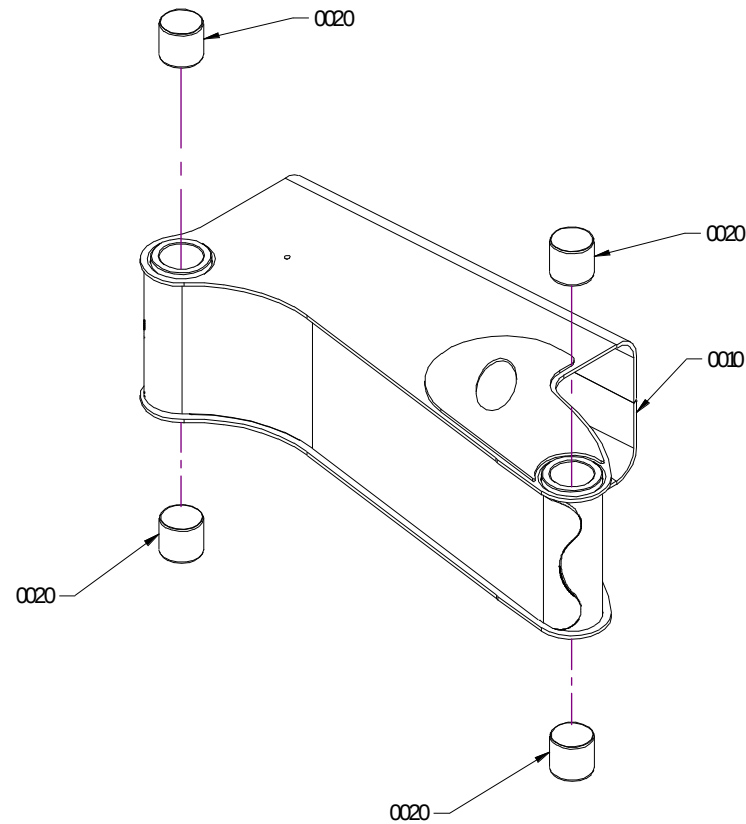
12207000	Unterwagen	undercarriage	train de roulement	basamento inferiore
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12207000	Unterwagen	undercarriage	train de roulement	basamento inferiore
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12207000	Unterwagen	undercarriage	train de roulement	basamento inferiore
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12207000	Unterwagen	undercarriage	train de roulement	basamento inferiore
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[illegible]



12206351	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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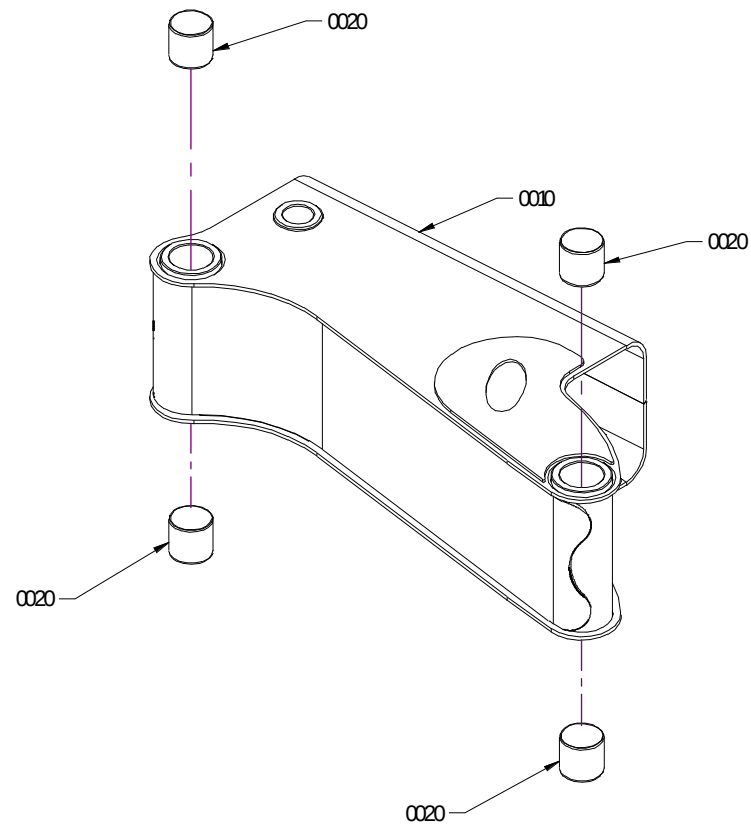
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12206351	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206351	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206351	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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[illegible]



12206401	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206401	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206401	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206401	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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12206401	Radlafette	wheel carriage	support pour vélo	zampa con ruota
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[illegible]

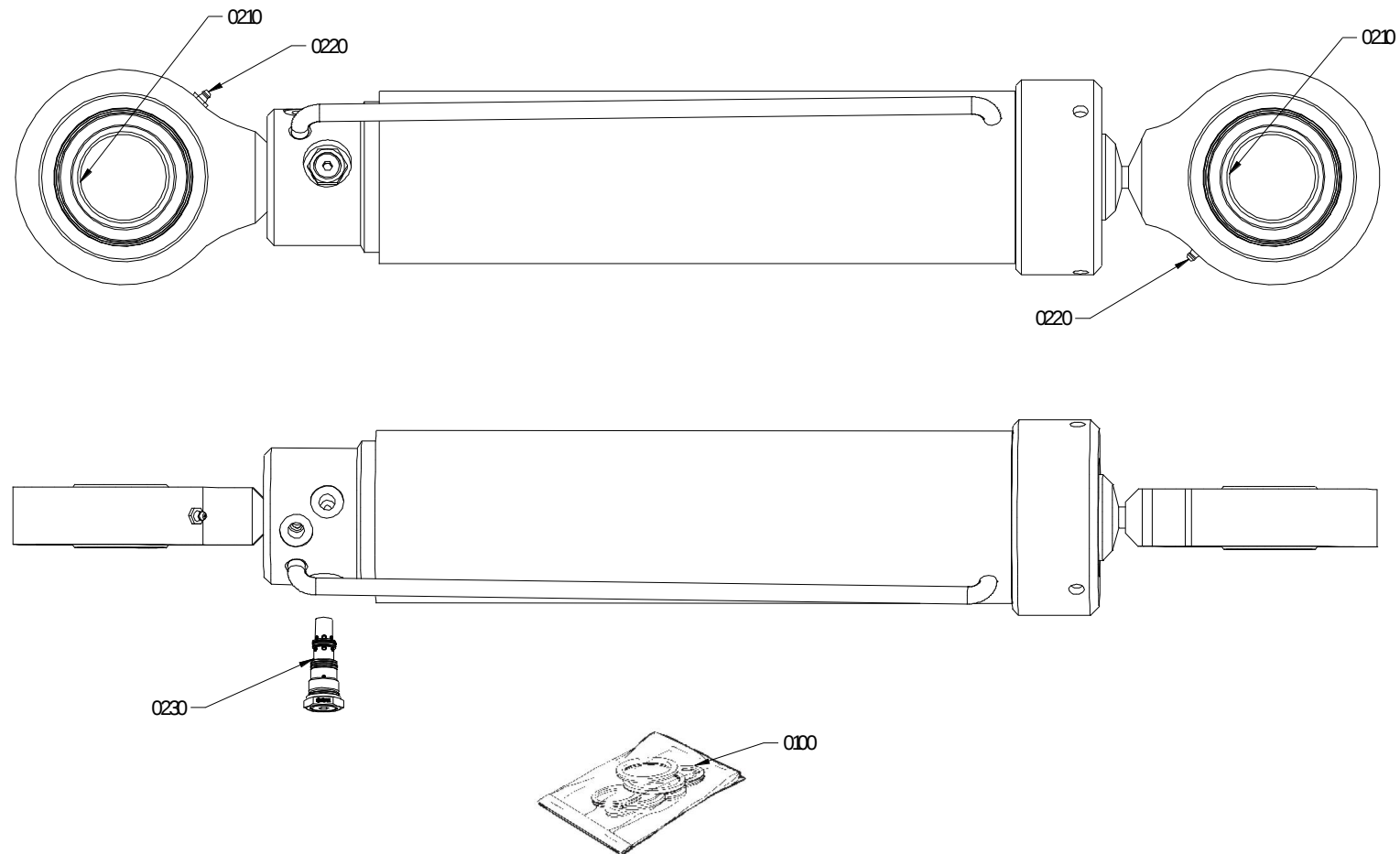
12207010

Hydraulikzylinder

hydraulic cylinder

cylindre hydraulique

cilindro idraulico



EMD/10000031854/000/00

12207010	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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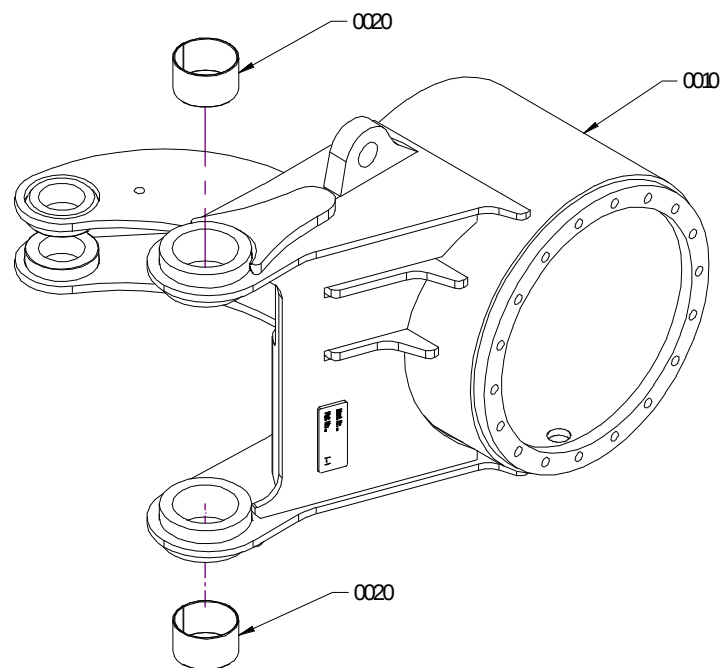
12207010	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12207010	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12207010	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12207010	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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[illegible]



20024221	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
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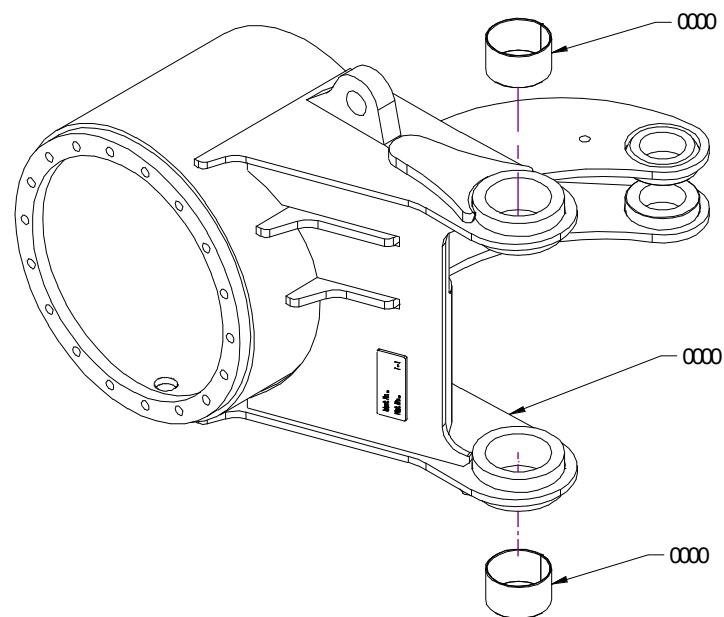
20024221	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
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20024221	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
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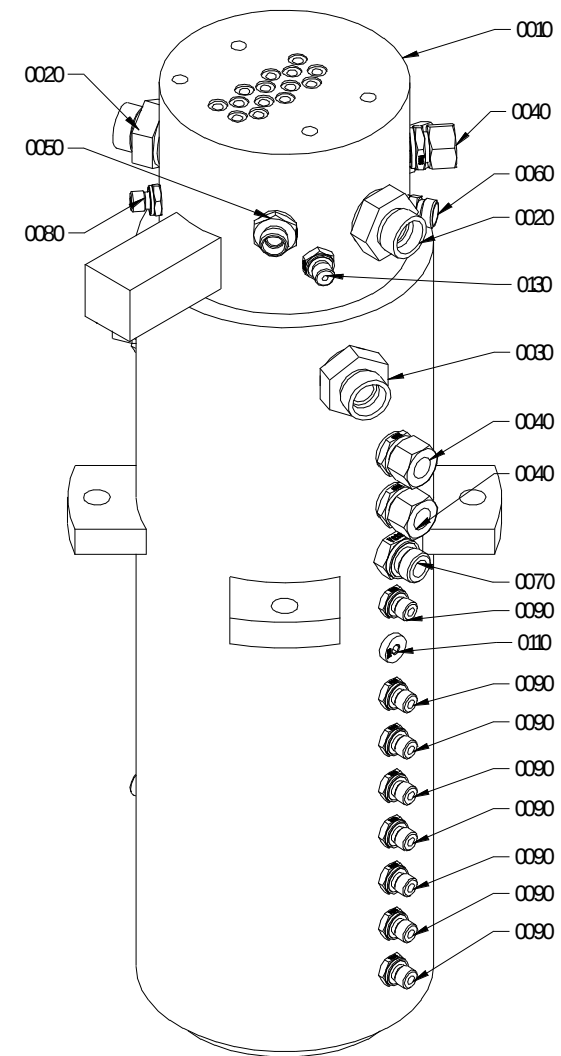
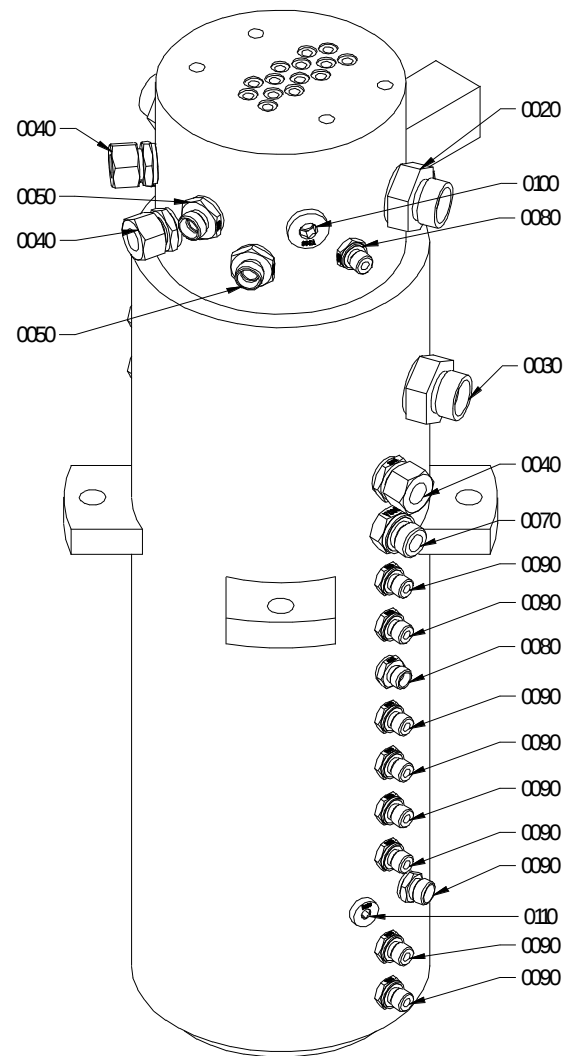
20024221	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
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20024221	Radmotoraufnahme	wheel motor mounting	support de moteur de roue	montaggio motore ruota
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[illegible]

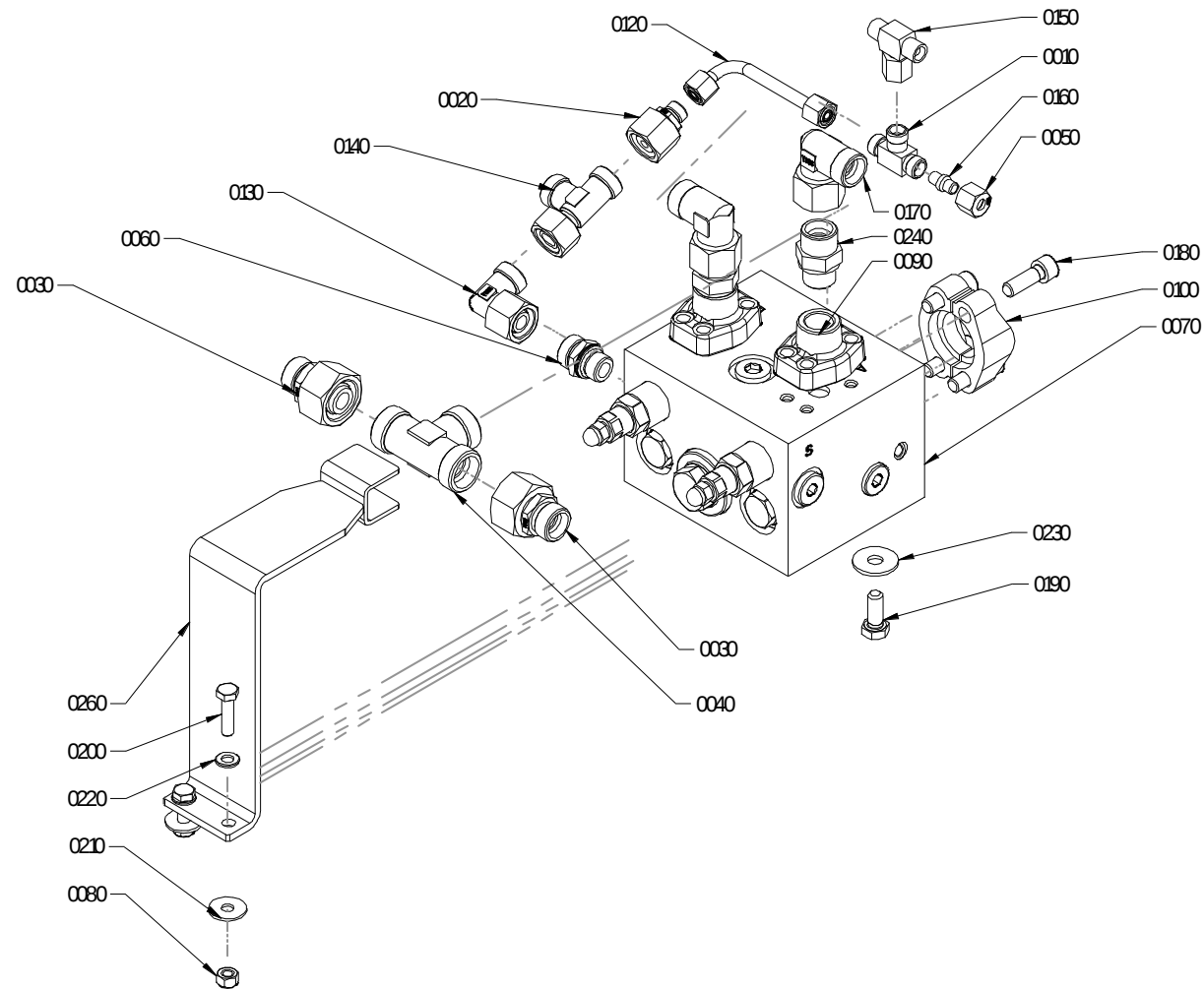


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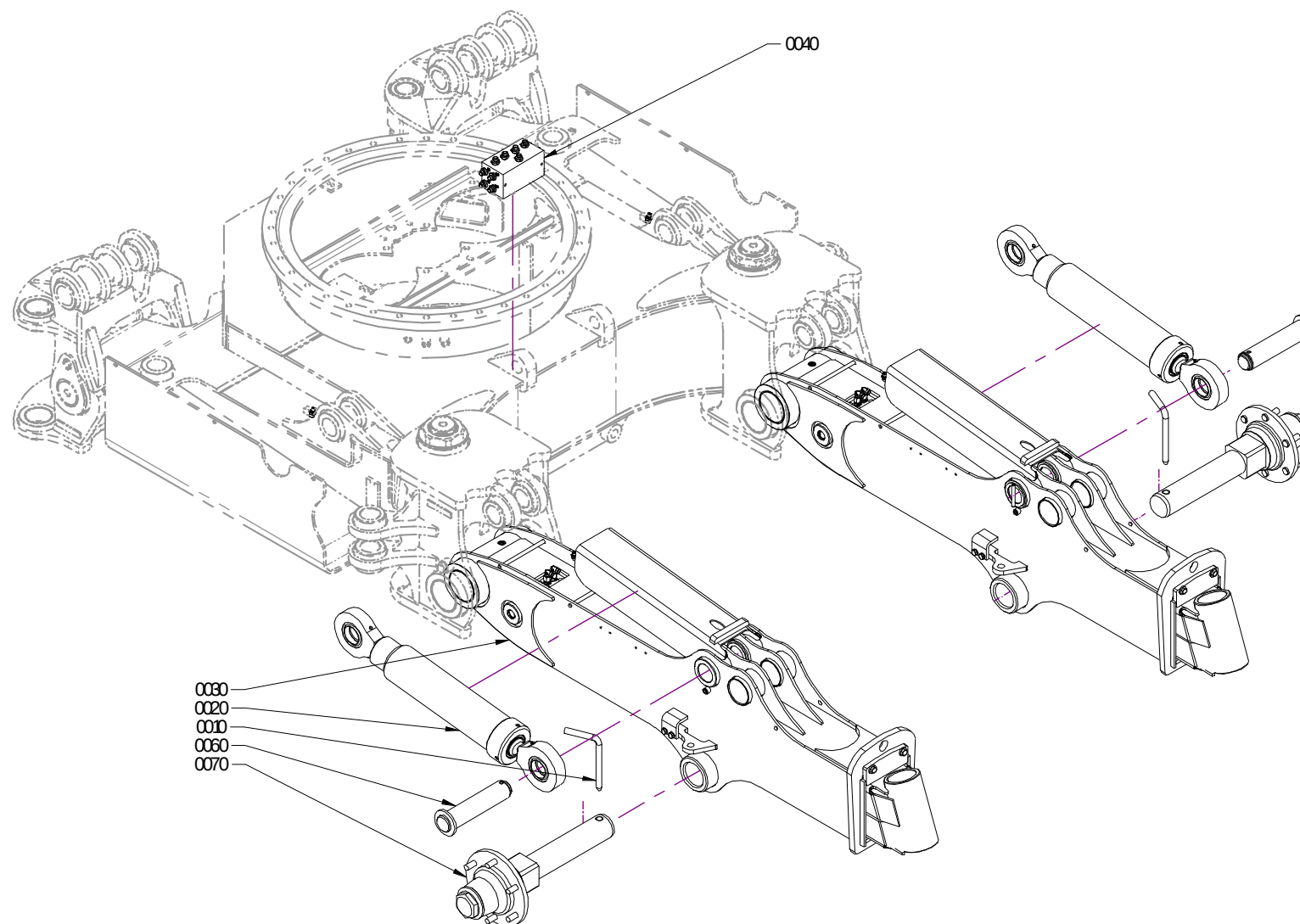


EMD/10000031828/000/00

[illegible]



Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	16520220	1	Winkelverschraubung	elbow union	raccord coudé	raccordo a gomito
0020	16520543	1	Reduziereinsatz	reducing insert	encart de réduction	inserto riduttore
0030	16520755	2	Reduziereinsatz	reducing insert	encart de réduction	inserto riduttore
0040	16520780	1	Winkelverschraubung	elbow union	raccord coudé	raccordo a gomito
0050	16531080	1	Überwurfmutter	cap nut / nut	écrou-raccord / écrou	dado per raccordi / dado
0060	20001170	1	Verschraubung	fitting	raccord	raccordo filettato
0070	20001709	1	Traktionsmodul	traction module	module de traction	modulo di trazione
0080	16408700	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0090	20014980	2	Einschraubflansch	screwin flange	bride à visser	flangia filettata femmina
0100	12017160	2	Flanschhälfte	flange half	demi bride	flangia metà
0120	20026425	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
0130	16520565	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0140	16520567	1	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile
0150	16520223	1	Einst. T-Verschraubung	adjustable T-fitting	raccord en T orientables	T di estremità laterale orientabile
0160	16520145	1	Verschlussstopfen	seal plug	bouchon de fermeture	tappo
0170	16520605	2	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0180	16100303	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0190	16100251	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0200	16080301	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0210	16718070	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0220	16718060	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0230	16718106	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0240	16521690	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0260	20026441	1	Halterung	support	attache	attacco



EMD10000032031/000/00

12207210

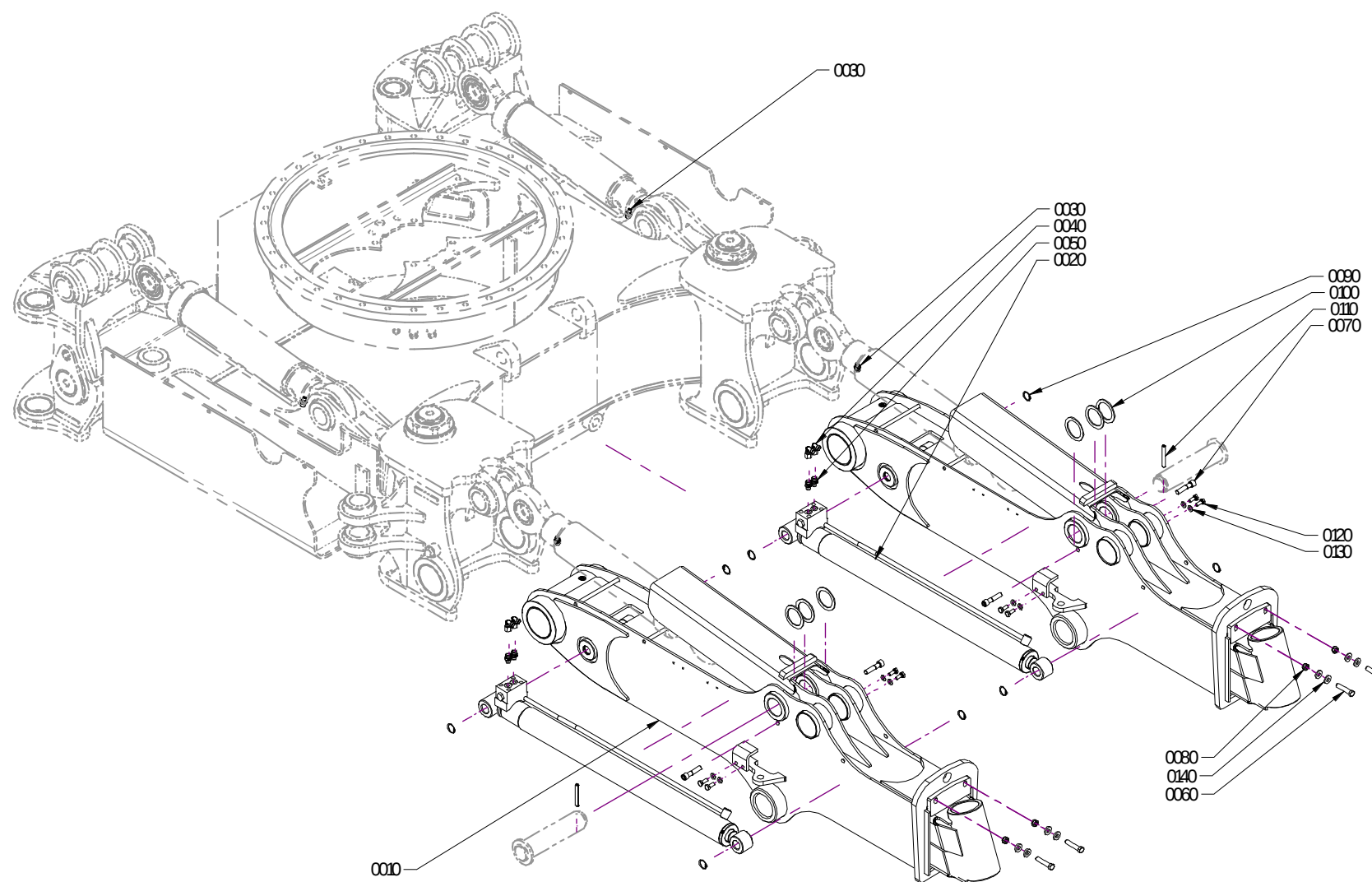
Telefuss

telescopic leg

jambe télescopique

piede telescopico

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0020	16525440	2	Nippel	nipple	tétines	nipplo
0040	12601562	2	Lasche	lug	onglet	coprigiunto
0050	12601574	6	Scheibe	disk	disque	rondella
0090	12079300	1	Staubstecker	dust-proof plug	connecteur antipoussière	connettore a tenuta di polvere
0100	12079350	2	Staubstecker	dust-proof plug	connecteur antipoussière	connettore a tenuta di polvere
0110	12079400	1	Abdeckung	cover	recouvrement	copertura
0120	12079450	1	Abdeckung	cover	recouvrement	copertura
0170	16525490	1	Nippel	nipple	tétines	nipplo
0190	12079150	1	Kupplung	clutch	embrayage	giunto
0200	12079100	1	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0230	16525550	2	Nippel	nipple	tétines	nipplo
0260	12079250	2	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0270	12079200	1	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0280	12164506	1	Pleuel	connecting rod	bielle	biella
0290	12165553	1	Bolzen	pin	bolt	perno
0300	12163506	2	Schere	scissors	ciseaux	forbice
0310	12063146	2	Bolzen	pin	bolt	perno
0330	12205790	1	Bolzen	pin	bolt	perno
0340	20007478	1	Halterung	support	attache	attacco
0360	12160070	2	Rohr	tube	pipe	tubo
0370	16717054	7	Scheibe	disc	rondelle	disco
0380	16240400	8	Schraube	bolt	vis	vite
0400	16521740	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0410	16521896	1	Gerader Aufsteckstutzen	straight slip-on socket	connecteur droit à enficher	adattatore diritto maschio
0420	12063150	2	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
0440	16521591	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0450	16521920	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0460	12205370	2	Reduzierung	reduction	réduction	riduzione



12207214	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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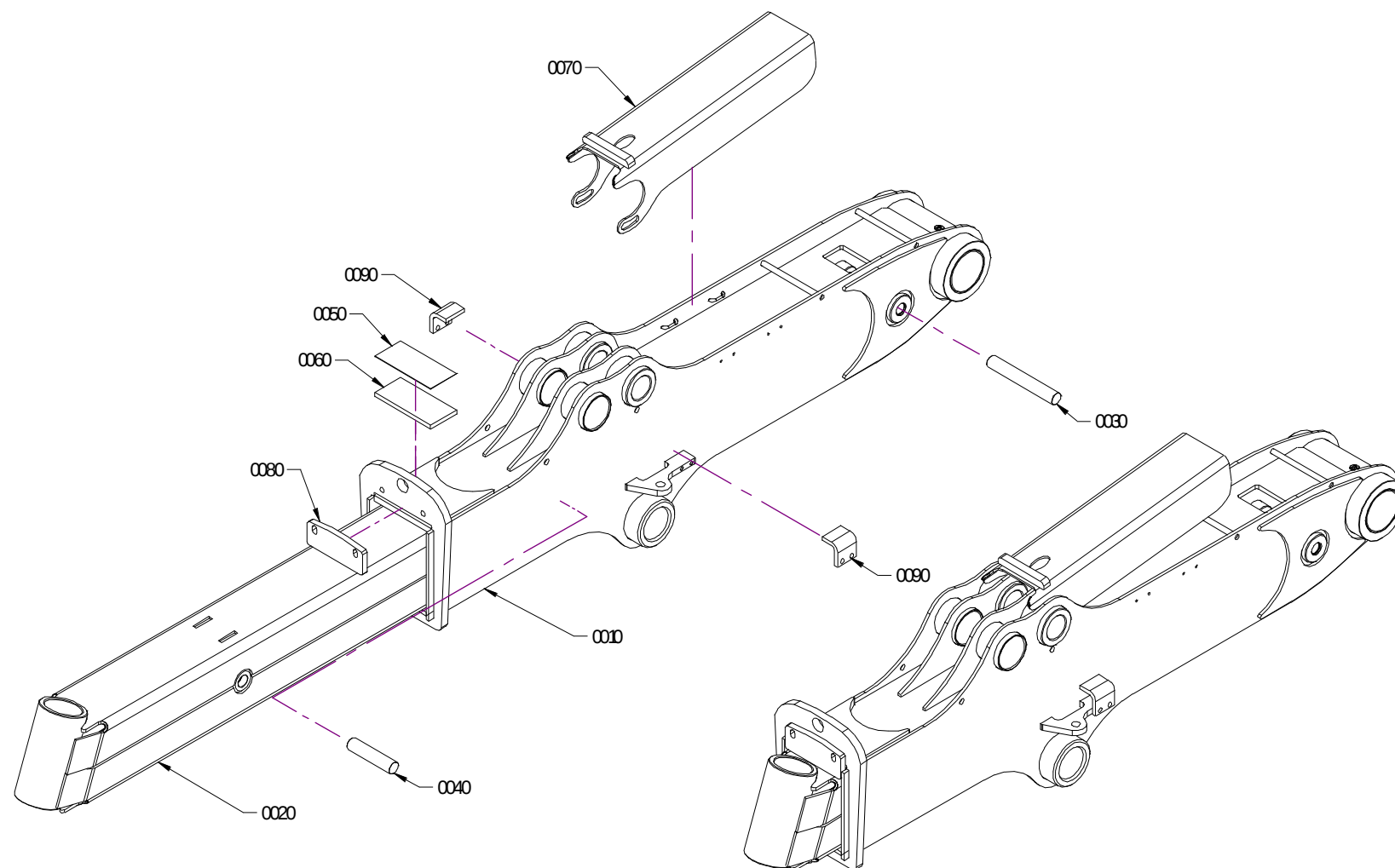
12207214	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12207214	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12207214	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12207214	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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[illegible]



EMD9100228333/000/02

12039633	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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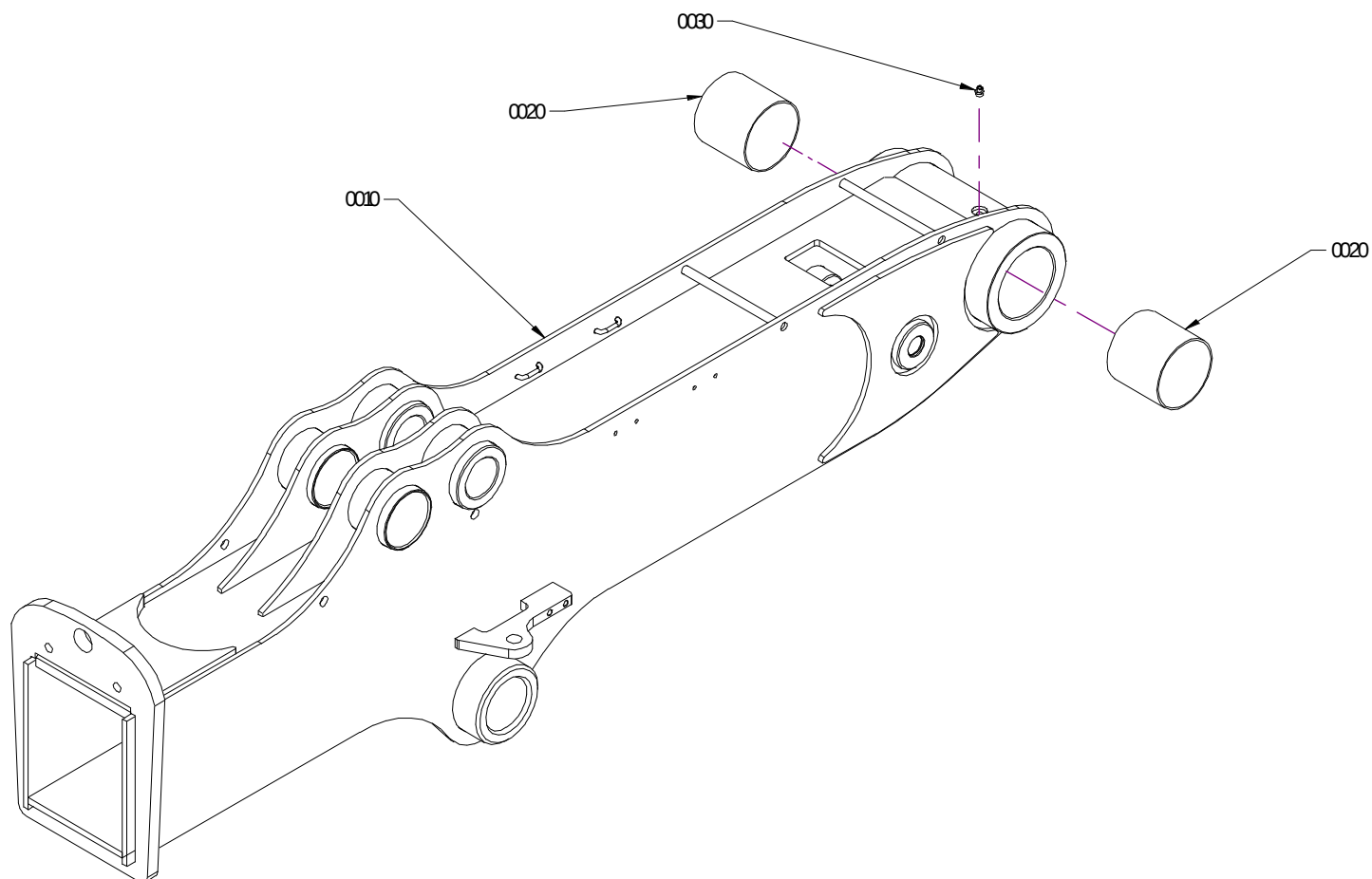
12039633	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12039633	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12039633	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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12039633	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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[illegible]



20009927	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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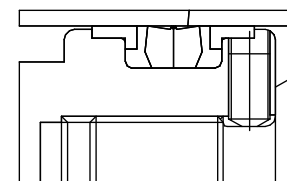
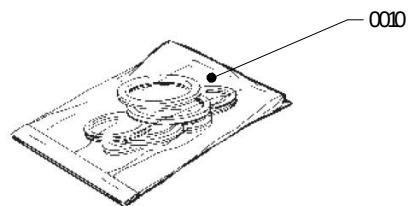
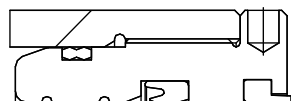
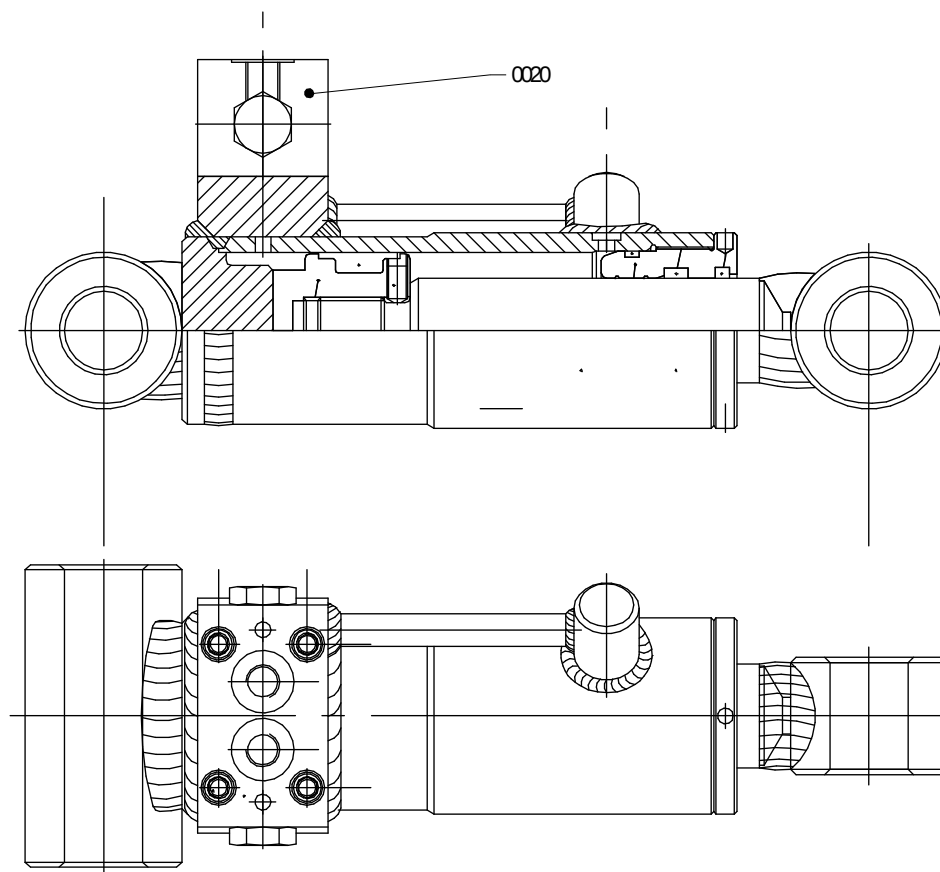
20009927	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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20009927	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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20009927	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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20009927	Telefuss	telescopic leg	jambe télescopique	piede telescopico
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[illegible]



EMD/9100296522/000/02

12039645	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12039645	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12039645	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12039645	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12039645	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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[illegible]

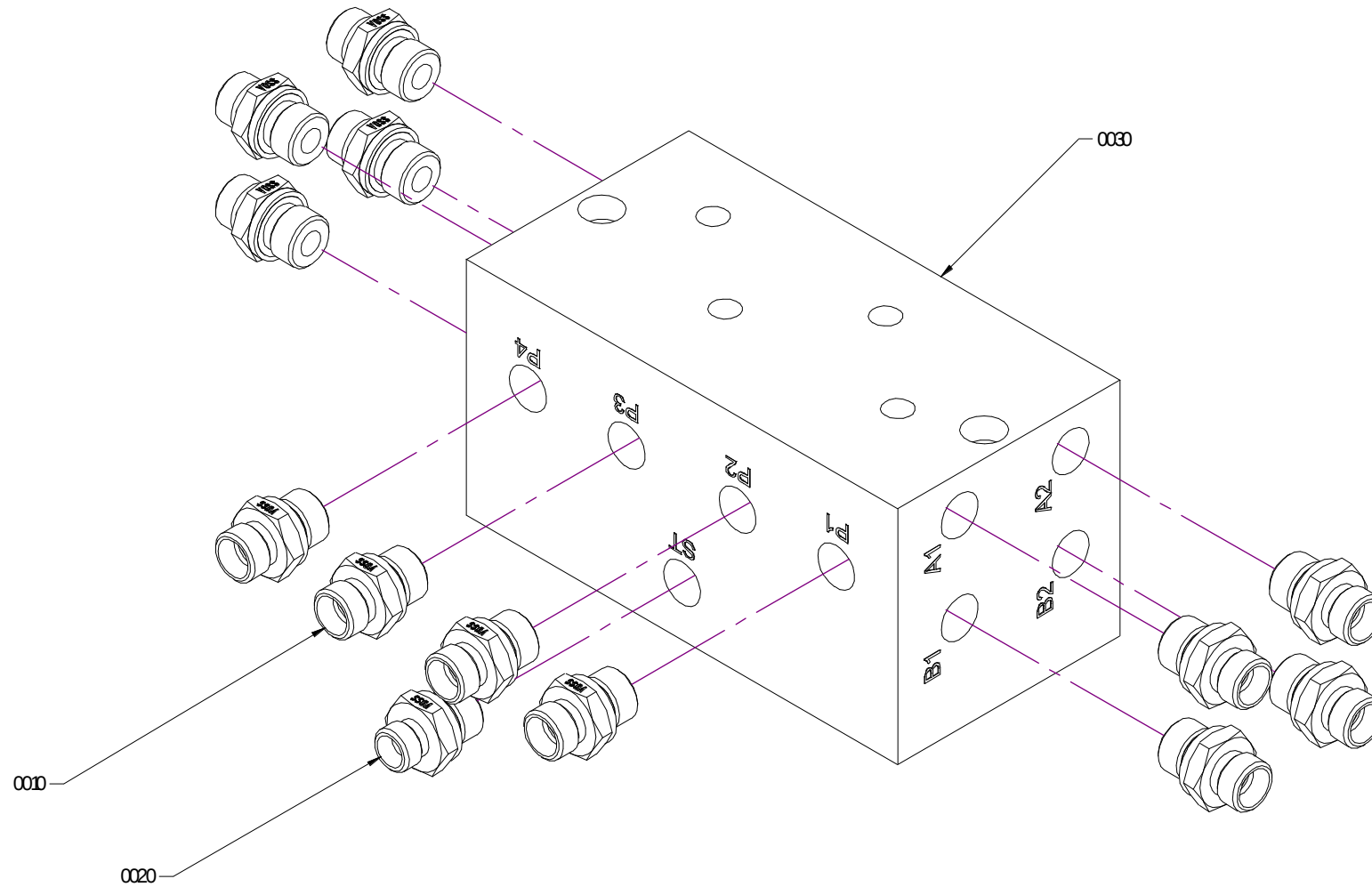
12207212

Telefuss Hydraulikanlage

telescopic leg hydraulic
system

jambe télescopique système
hydraulique

piede telescopico sistema
idraulico



EMD/1000032017/000/00

12207212	Telefuss Hydraulikanlage	telescopic leg hydraulic system	jambe télescopique système hydraulique	piede telescopico sistema idraulico
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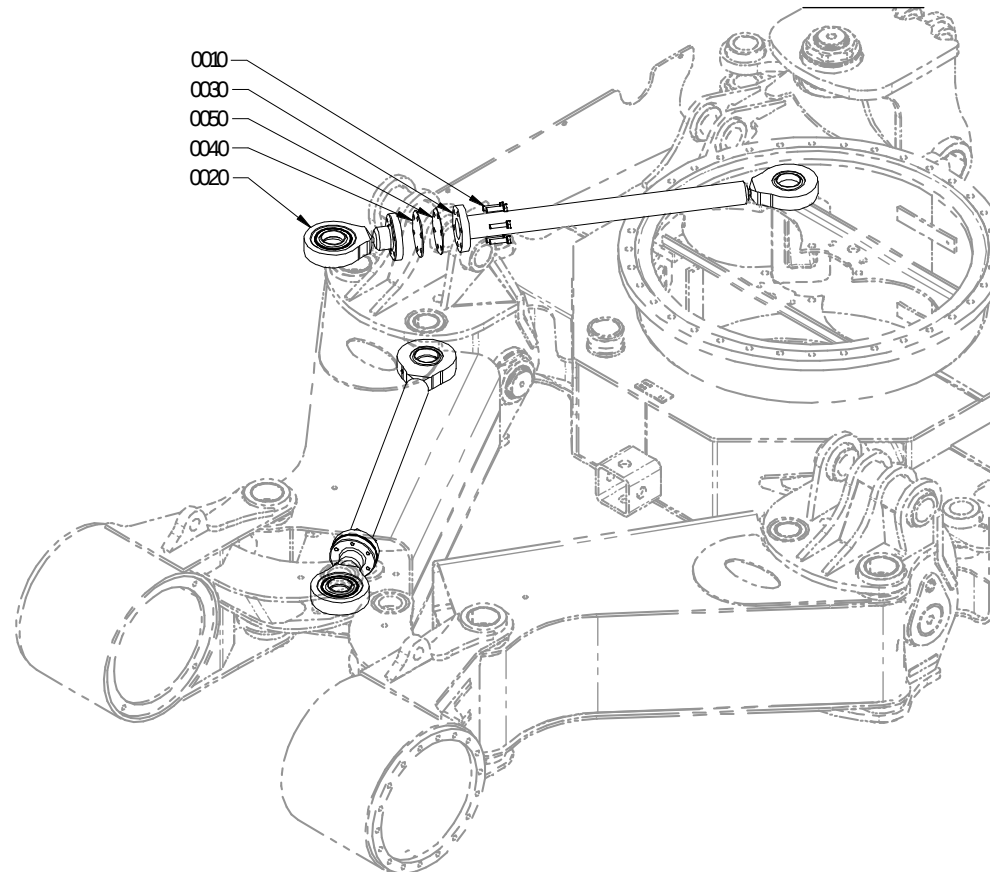
12207212	Telefuss Hydraulikanlage	telescopic leg hydraulic system	jambe télescopique système hydraulique	piede telescopico sistema idraulico
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12207212	Telefuss Hydraulikanlage	telescopic leg hydraulic system	jambe télescopique système hydraulique	piede telescopico sistema idraulico
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12207212	Telefuss Hydraulikanlage	telescopic leg hydraulic system	jambe télescopique système hydraulique	piede telescopico sistema idraulico
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12207212	Telefuss Hydraulikanlage	telescopic leg hydraulic system	jambe télescopique système hydraulique	piede telescopico sistema idraulico
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[illegible]



12206306	Spurstange	track rod	tirant d'ancrage	braccetto
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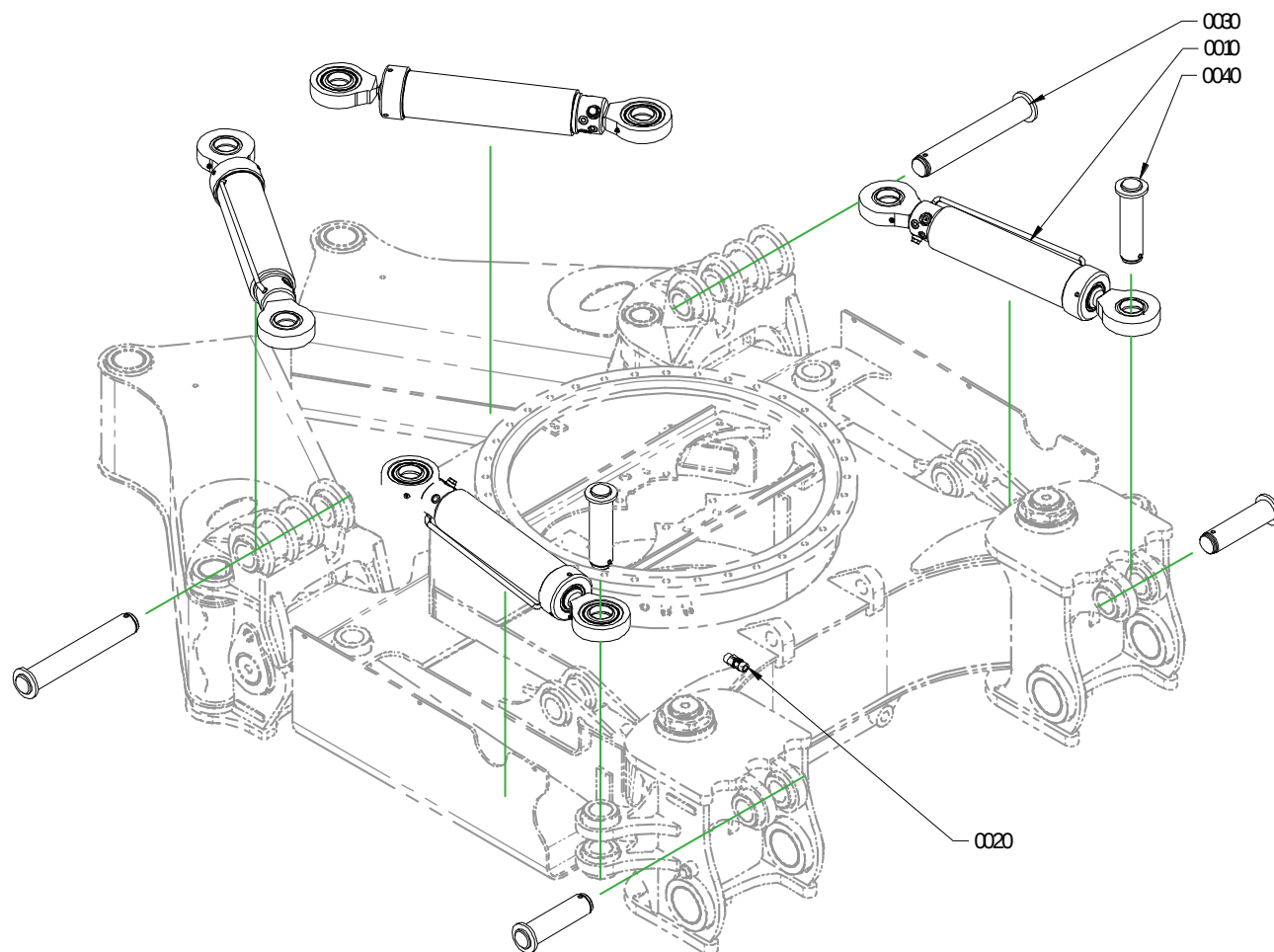
12206306	Spurstange	track rod	tirant d'ancrage	braccetto
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12206306	Spurstange	track rod	tirant d'ancrage	braccetto
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12206306	Spurstange	track rod	tirant d'ancrage	braccetto
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12206306	Spurstange	track rod	tirant d'ancrage	braccetto
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[illegible]



20000675	Unterwagen	undercarriage	train de roulement	basamento inferiore
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20000675	Unterwagen	undercarriage	train de roulement	basamento inferiore
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20000675	Unterwagen	undercarriage	train de roulement	basamento inferiore
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20000675	Unterwagen	undercarriage	train de roulement	basamento inferiore
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20000675	Unterwagen	undercarriage	train de roulement	basamento inferiore
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[illegible]

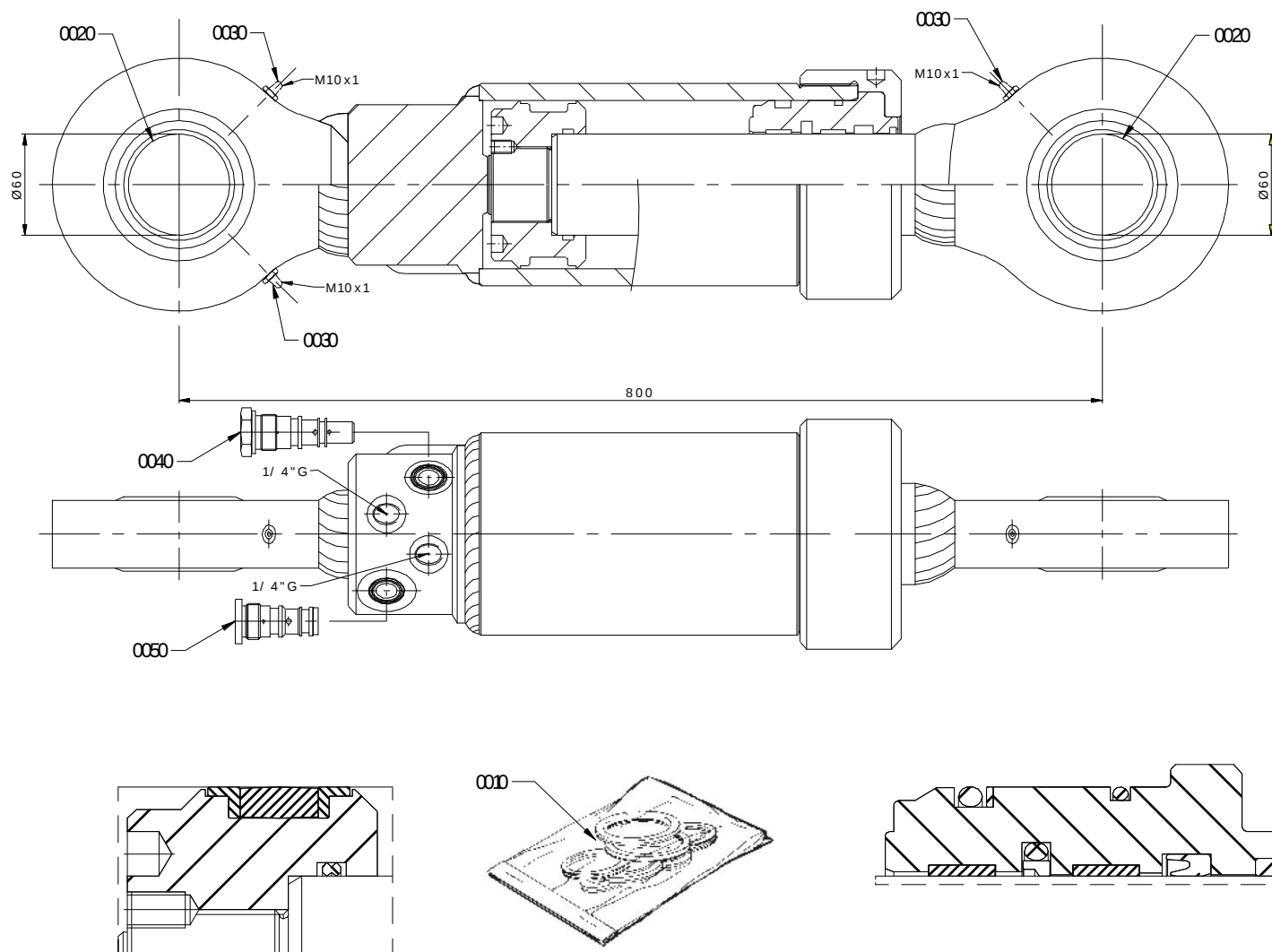
12207020

Hydraulikzylinder

hydraulic cylinder

cylindre hydraulique

cilindro idraulico



EMD/9100247510/000/03

12207020	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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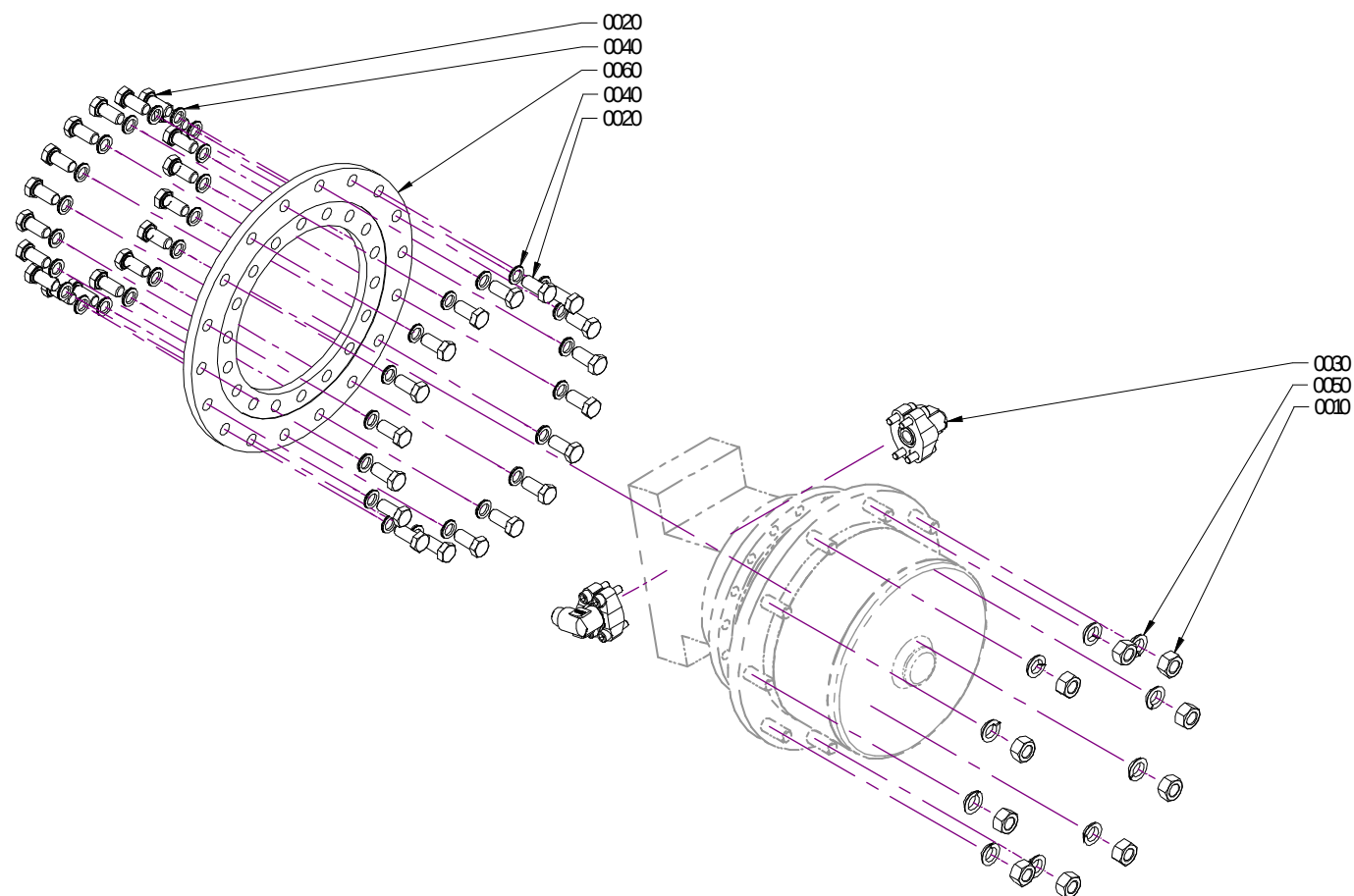
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12207020	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12207020	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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12207020	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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[illegible]



12207810	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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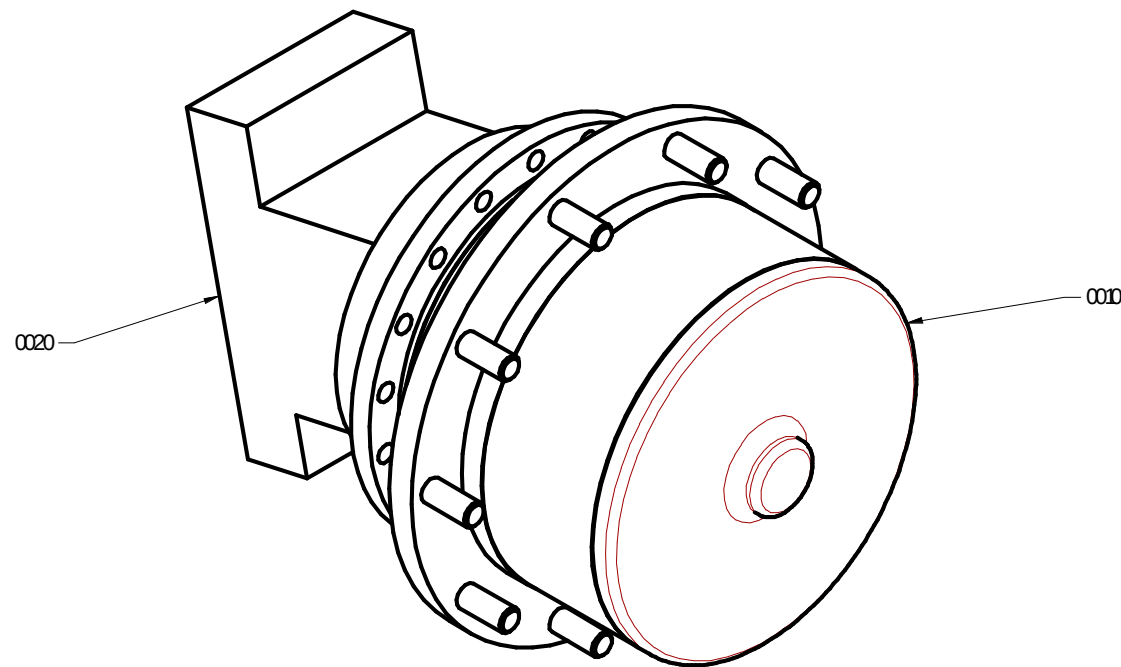
12207810	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12207810	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12207810	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12207810	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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[illegible]



12255025	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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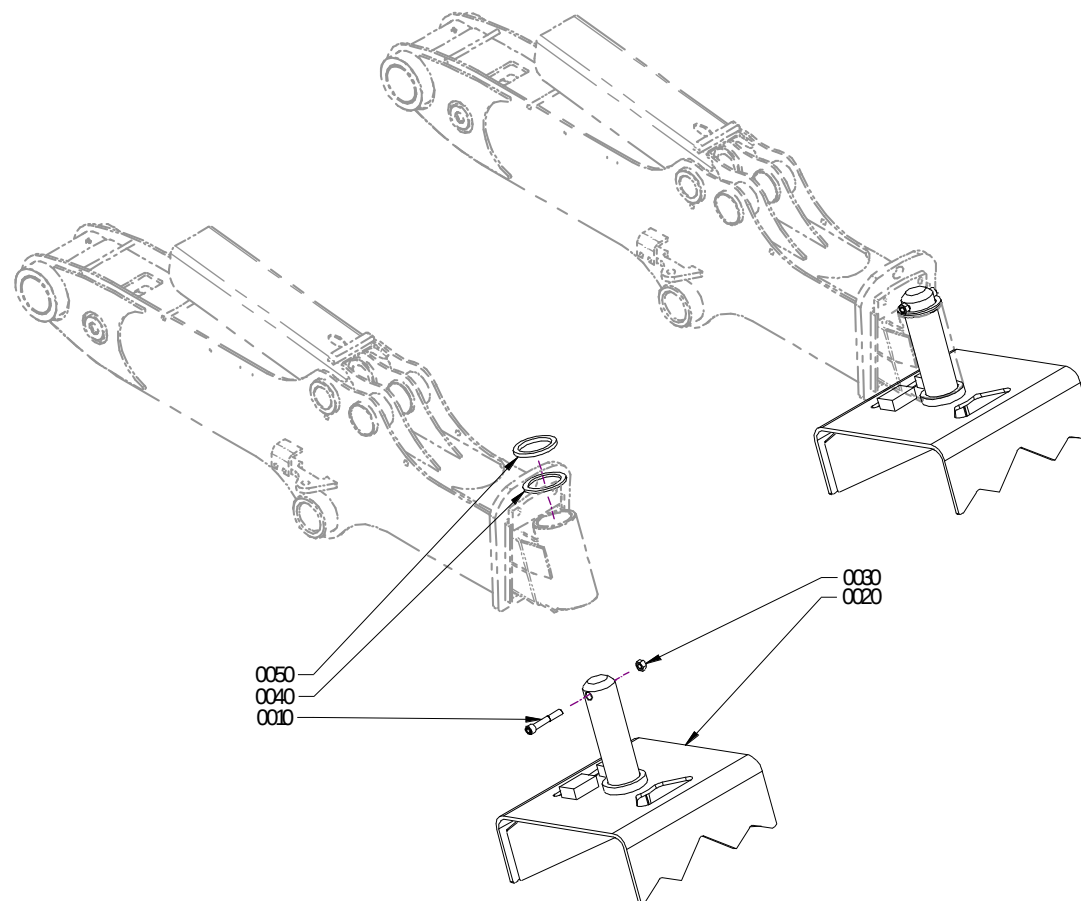
12255025	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12255025	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12255025	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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12255025	Fahrgetriebe	drive gear	transmission	riduttore traslazione
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[illegible]



12602414	Geländetatze	cross-country paw	pattes de terrain	appoggio della zampa
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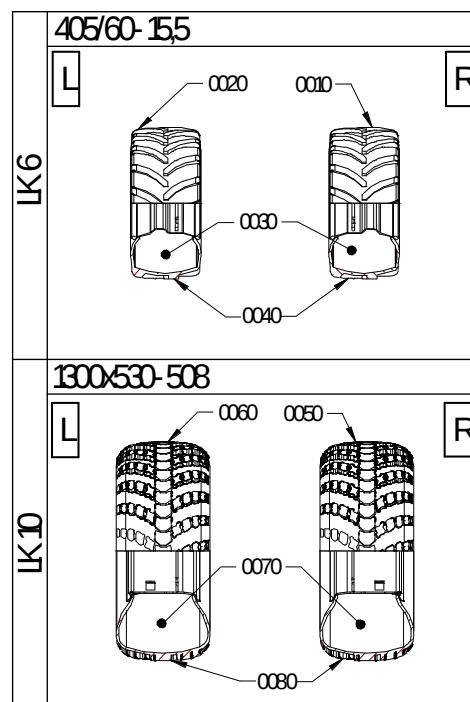
12602414	Geländetatze	cross-country paw	pattes de terrain	appoggio della zampa
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12602414	Geländetatze	cross-country paw	pattes de terrain	appoggio della zampa
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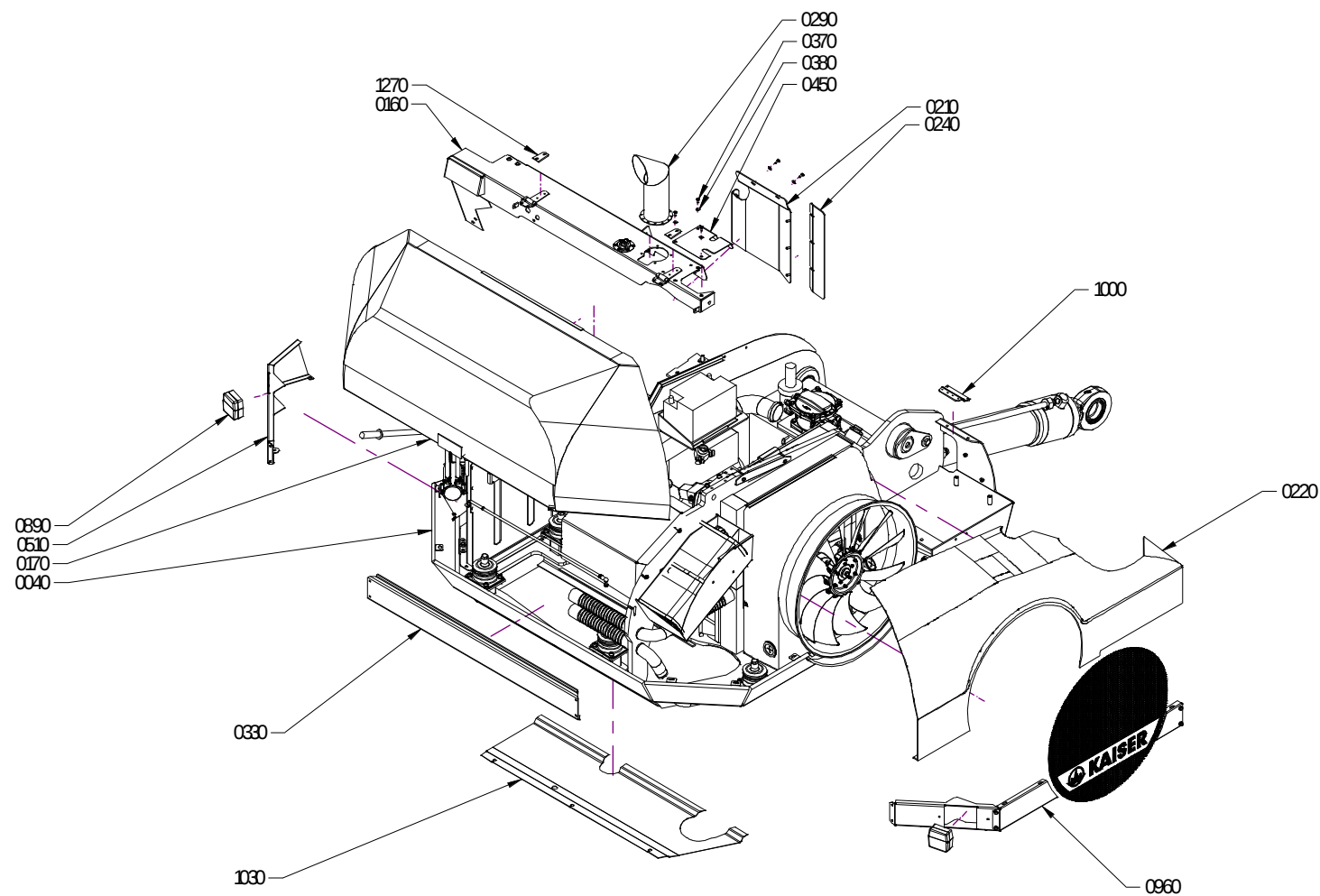
12602414	Geländetatze	cross-country paw	pattes de terrain	appoggio della zampa
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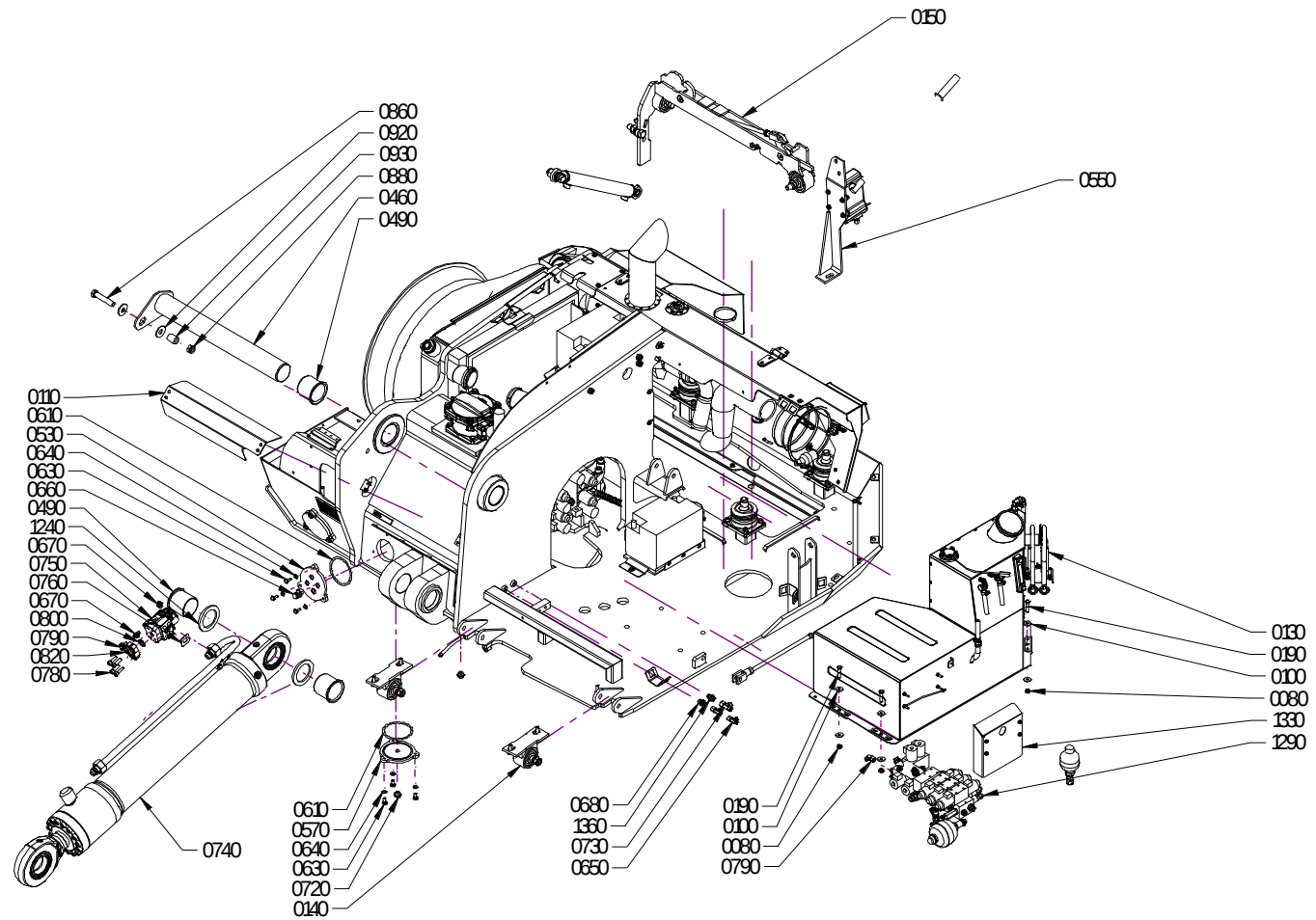
12602414	Geländetatze	cross-country paw	pattes de terrain	appoggio della zampa
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[illegible]

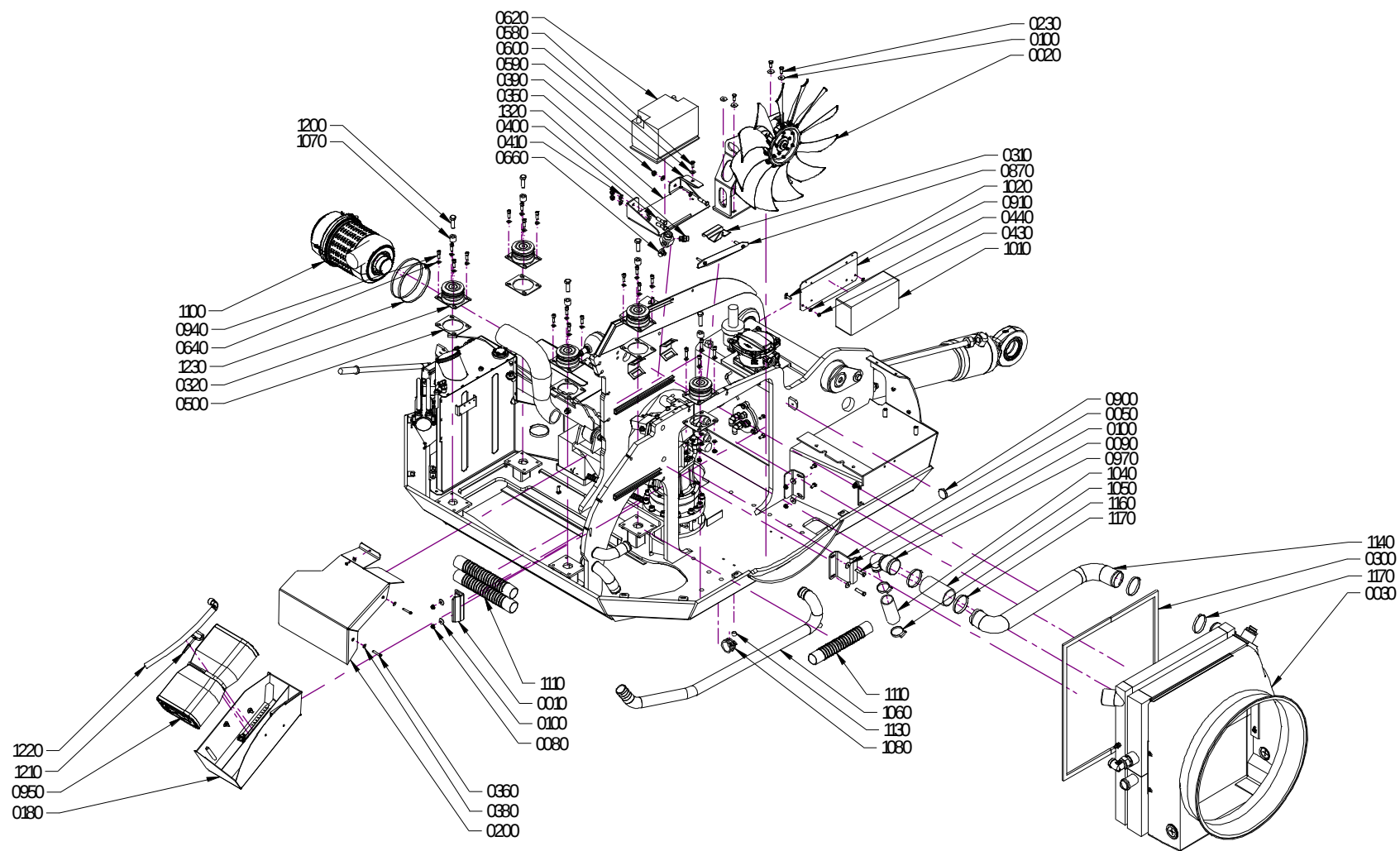


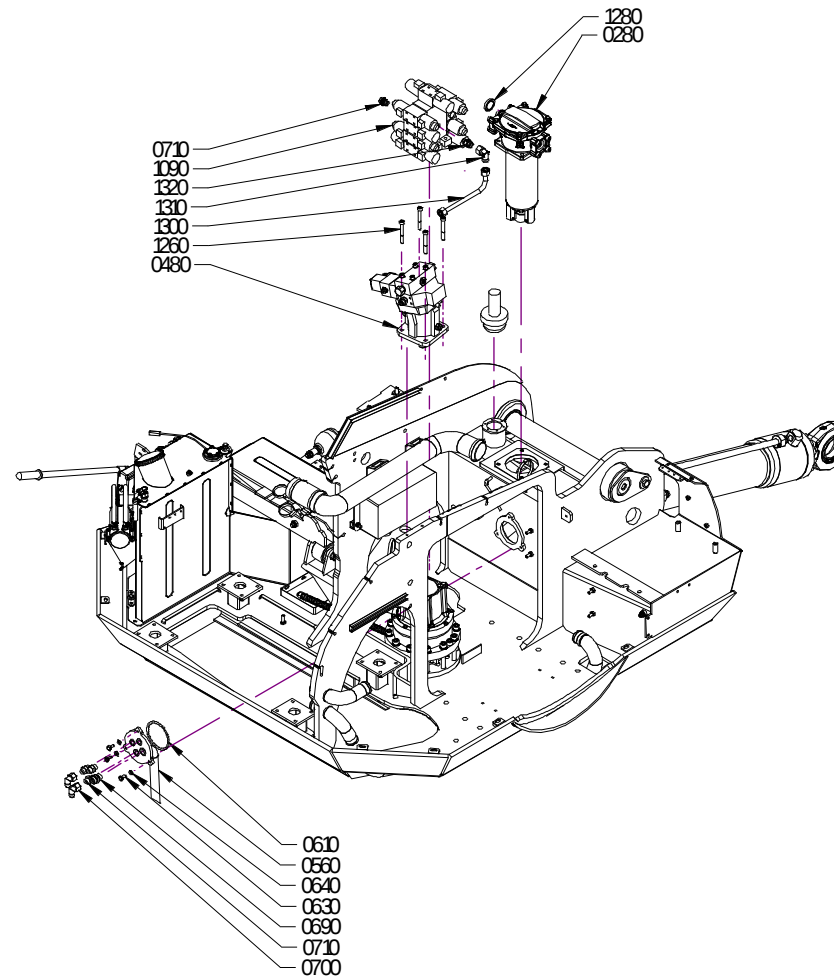
[illegible]





EMD10000032673/000/00





EMD10000032673/000/00

20004845

Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12090466	1	Halterung	support	attache	attacco
0020	20004005	1	Ventilator	ventilator	fan	ventilatore
0030	20003989	1	Kühlung	cooling	refroidissement	refrigerazione
0040	20003997	1	Schwenkgetriebe	swing gearbox	boîte de vitesses à fraction de tour	riduttore per rotazione
0050	12090464	1	Halterung	support	attache	attacco
0060	12090440	1	Halterung	support	attache	attacco
0070	12090461	1	Halterung	support	attache	attacco
0080	16410700	29	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0090	16100500	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0100	16718106	20	Unterlegscheibe	flat washer	laveuse	rondella per vite
0110	12090448	1	Abdeckung	cover	recouvrement	copertura
0120	12090442	1	Anschraubplatte	screw-on plate	plaque à visser	piastra avvitabile
0130	12207824	1	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
0140	12602525	2	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
0150	12602515	1	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
0160	12207801	1	Rahmen	frame	cadre	cornice
0170	12207802	1	Motorhaube	bonnet	bonnet	cofano motore
0180	20008021	1	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
0190	16100450	3	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0200	12207850	1	Abschirmblech	shielding plate	plaque de blindage	lamiera schermatura
0210	12207856	1	Abschirmblech	shielding plate	plaque de blindage	lamiera schermatura
0220	20004026	1	Kühlerhaube	radiator hood	bonnet	convogliatore aria
0230	16100251	3	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0240	12207854	1	Abschirmblech	shielding plate	plaque de blindage	lamiera schermatura
0250	12628103	1	Belüftungsfilter	ventilation filter	filtre respiratoire	filtri di aerazione
0260	12906398	1	Verschluss	locking device	fermeture	dispositivo di bloccaggio
0270	12205827	1	Abstützung	support	soutien	stabilizzatore
0280	12180625	1	Rücklauffilter	return filter	filtre retour	filtro di ritorno

20004845

Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0290	12205216	1	Auspuff	exhaust	échappement	scappamento
0300	20007845	2	Schutzgitter	protective grill	garde de sécurité	griglia protezione
0310	20007799	1	Blech	plate	plaque	piastra
0320	12090500	5	Lager	bearing	palier	cuscinetto
0330	12602190	1	Blende	orifice	ouverture	orifizio
0350	12207852	1	Halterung	holder	montage	staffa
0360	16060450	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0370	16060161	6	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0380	16718050	10	Unterlegscheibe	flat washer	laveuse	rondella per vite
0390	16412700	3	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0400	16120500	3	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0410	16718120	6	Unterlegscheibe	flat washer	laveuse	rondella per vite
0430	16408700	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0440	16718060	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0450	12207863	1	Abdeckung	cover	couverture	copertura
0460	12205780	1	Bolzen	pin	bolt	perno
0480	12100562	1	Hydraulikmotor	hydraulic motor	moteur hydraulique	motore idraulico
0490	12047706	4	Büchse	bushing	fourniture	boccola
0500	20008019	5	Platte	plate	plaque	piastra
0510	12207746	1	Blende	orifice	ouverture	orifizio
0520	12180654	1	Flachdichtung	flat seal	joint plat	guarnizione piatta
0530	12090474	1	Flansch	flange	bride	flangia
0550	12602591	1	Kippsystem	tilting system	système de basculement	sistema basculante
0560	12208014	1	Putzlochdeckel	cleaning hole cover	nettoyage du couvercle du trou	flangia ispezione pulizia
0570	12115105	1	Putzlochdeckel	cleaning hole cover	nettoyage du couvercle du trou	flangia ispezione pulizia
0580	16080251	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0590	12207864	2	Arretierung	detent	latching	bloccaggio
0600	20002140	2	Unterlegscheibe	flat washer	laveuse	rondella per vite

20004845

Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0610	12056926	3	O-Ring	O-ring	o-ring	anello OR
0620	12155003	2	Batterie	battery	batterie	pila
0630	16100201	9	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0640	16718100	37	Unterlegscheibe	flat washer	laveuse	rondella per vite
0650	16520222	2	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile
0660	16521850	2	Verschraubung	fitting	raccord	raccordo filettato
0670	16521680	3	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0680	16521840	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0690	16521590	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0700	16520565	2	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0710	16521780	4	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0720	20009792	2	Verschlussschraube	locking screw	vis de verrouillage	vite di bloccaggio
0730	16520426	1	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile
0740	20044913	1	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
0750	20092921	1	Rohrbruchsicherung	pipe rupture protection	protection contre la rupture des tuyaux	dispositivo sicurezza rottura tubo
0760	12056027	1	Platte	plate	plaque	piastra
0780	20026386	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0790	16520237	2	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0800	10934270	1	O-Ring	O-ring	o-ring	anello OR
0820	12017160	2	Flanschhälfte	flange half	demi bride	flangia metà
0830	12207422	1	Abstützung	support	soutien	stabilizzatore
0840	12205854	1	Winkel	angle	angle	angolo
0850	16100351	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0860	16181000	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0870	12205228	1	Befestigungsschiene	fastening rail	rail de fixation	guida di fissaggio
0880	16418700	1	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0890	12194900	1	Beleuchtungssatz	lighting kit	kit d'éclairage	kit luci
0900	12053072	1	Auflage	rest	edition	disteso

20004845

Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0910	12106777	1	Anbauplatte	mounting plate	plat de support	giunto di supporto
0920	16718235	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0930	12205760	1	Hülse	jacket	douille	manicotto
0940	16100303	16	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0950	12601142	1	Werkzeugsatz	tool kit	boîte à outils	kit attrezzi
0960	20004847	1	Abdeckung	cover	couverture	copertura
0970	12207835	1	Ladeluftrohr	charge air duct	tuyau d'air de suralimentation	condotto aria sovralimentazione
0980	16100402	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0990	12600411	1	Kollektor	collector	collectionneur	collettore
1000	12207873	1	Halterung	support	attache	attacco
1010	20003103	1	Verteilerkasten	distribution box	boîte de jonction	scatola distribuzione
1020	16102130	2	Aufhängeschraube	suspension bolt	vis de suspension	perno di supporto
1030	12090388	1	Abdeckung	cover	couverture	copertura
1040	12017014	1	Silikonschlauch	silicone tube	tuyau en silicone	tubo in silicone
1050	12017013	1	Silikonschlauch	silicone tube	tuyau en silicone	tubo in silicone
1060	12090494	1	Kühlrohr	cooling tube	tube de refroidissement	tubo raffreddamento
1070	12013900	5	Hülse	jacket	douille	manicotto
1080	16583148	1	Rohrschelle	pipe clamp	collier de serrage	cavallotto fermatubo
1090	12009801	1	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
1100	12680305	1	Luftfilter	air filter	filtre à air	filtro aria
1110	12908317	3	Kühlerschlauch	radiator hose	tuyau de radiateur	tubo flessibile radiatore
1120	12090481	1	Formschlauch	molded hose	tuyau formé	tubo flessibile stampato
1130	12603016	1	Hülse	jacket	douille	manicotto
1140	12207836	1	Ladeluftrohr	charge air duct	tuyau d'air de suralimentation	condotto aria sovralimentazione
1150	16583153	1	Schlauchschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
1160	16583250	2	Schlauchschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
1170	16583350	6	Schlauchschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
1180	12680307	1	Drucksensor	pressure sensor	pressostat	sensore della pressione

20004845

Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
1190	16160603	1	Schraube	bolt	vis	vite
1200	16160510	4	Schraube	bolt	vis	vite
1210	11031781	1	Schlüssel	key	clef	chiave
1220	20015690	1	Ölablassschlauch	oil drain hose	tuyau de vidange d'huile	tubo scarico olio
1230	16583540	2	Bride	shackle	bride	staffa per molla
1240	12022010	2	Scheibe	disk	disque	rondella
1250	16788206	1	Schild	plate	panneau	lama
1260	16120902	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
1270	12601089	2	Platte	plate	plaque	piastra
1280	16522122	1	Blindflansch	blind flange	bride aveugle	flangia cieca
1290	12115185	1	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
1300	12087467	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
1310	16520605	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
1320	16521690	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
1330	12207821	1	Abdeckung	cover	couverture	copertura
1340	20040845	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
1350	12680278	1	Gewindebolzen	threaded bolt	boulon fileté	bullone filettato
1360	16521700	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
2000	12087478	1	Schlauchsatz	hose kit	jeu de tuyaux	kit tubi
2010	12087495	1	Schlauchsatz	hose kit	jeu de tuyaux	kit tubi
2020	12087217	1	Hydraulikschlauch konfektioniert	hydraulic hose customized	tuyau hydraulique assemblé	tubo idraulico assemblato
2030	12087218	1	Hydraulikschlauch konfektioniert	hydraulic hose customized	tuyau hydraulique assemblé	tubo idraulico assemblato
2040	12205592	1	Sicherung	fuse	sauvegarde	fusibile
2050	10920761	22	Riemen	belt	courroie	cinghia
2060	12155581	1	Batteriekabel	battery cable	câble de batterie	cavo batteria
2070	12155582	1	Batteriekabel	battery cable	câble de batterie	cavo batteria
2080	12155583	1	Batteriekabel	battery cable	câble de batterie	cavo batteria
2090	12155584	1	Batteriekabel	battery cable	câble de batterie	cavo batteria

20004845

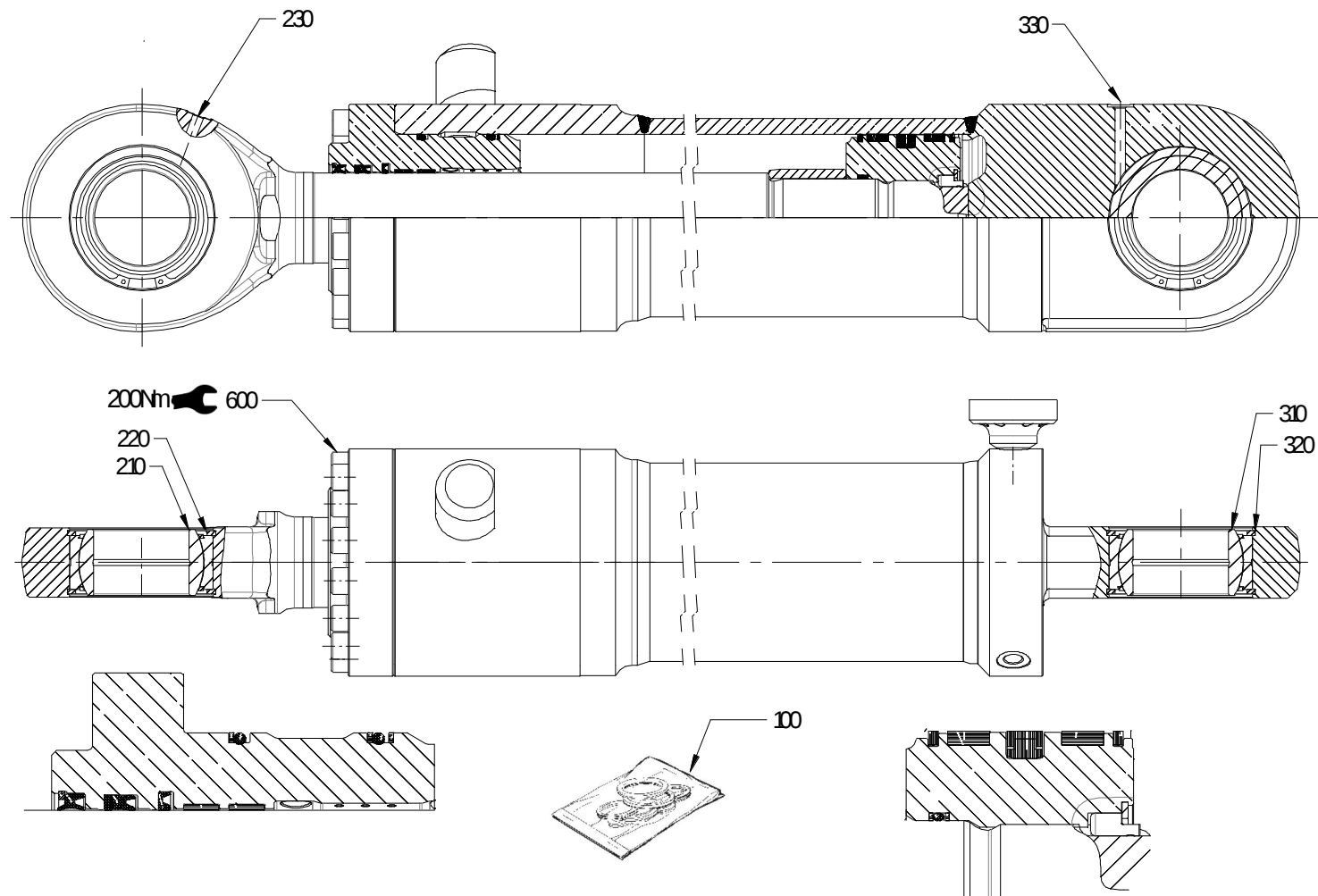
Oberwagen

upper carriage

superstructure

carrello superiore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
2100	12086054	1	Hydraulikschlauch konfektioniert	hydraulic hose customized	tuyau hydraulique assemblé	tubo idraulico assemblato
2110	16790478	0.90	Kühlerschlauch	radiator hose	tuyau de radiateur	tubo flessibile radiatore
2120	16502305	7.50	Dichtung	seal	joint	guarnizione
2130	12086934	29.00	Schlauchsenschutz	hose protection	protection des tuyaux	protezione tubo
2140	12541011	2.00	Kantenschutz	edge protector	protection des bords	paraspigoli
2150	12541014	0.60	Kantenschutz	edge protector	protection des bords	paraspigoli
2160	16501500	1.45	Kantenschutz	edge protector	protection des bords	paraspigoli
2170	12086930	3.00	Schlauchschutz	hose protection	protection des tuyaux	protezione tubo
2180	12205273	1	Schlauch	hose	tuyau	tubo flessibile
2190	10955372	1	Einbaustecker	panel connector	connecteur intégré	connettore impianto
2200	10955362	2	Einbaustecker	panel connector	connecteur intégré	connettore impianto
2210	10951908	7.00	Kabelschuttschlauch	cable protection conduit	conduit de protection des câbles	guaina protezione cavi
2220	16501510	1.50	Dichtung	seal	joint	guarnizione
2230	16502200	2.00	Moosgummi	sponge rubber	mousse de caoutchouc	gommapiuma
2240	12207827	1	Seitenverkleidung	side paneling	panneau latéral	rivestimento laterale
2250	17001018	0.50	Isolierschlauch	insulating tube	tube isolant	tubo isolante
2260	12174280	2	Masseband	ground strap	sangle de terre	treccia in rame
2270	12086946	9.00	Schlauchschutz	hose protection	protection des tuyaux	protezione tubo
2280	16580681	10	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
2290	16583190	2	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
2300	16583590	8	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
2310	16583154	7	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
2320	16583400	2	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
2330	16583320	2	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile



EMD/10000023210/000/00

20044913	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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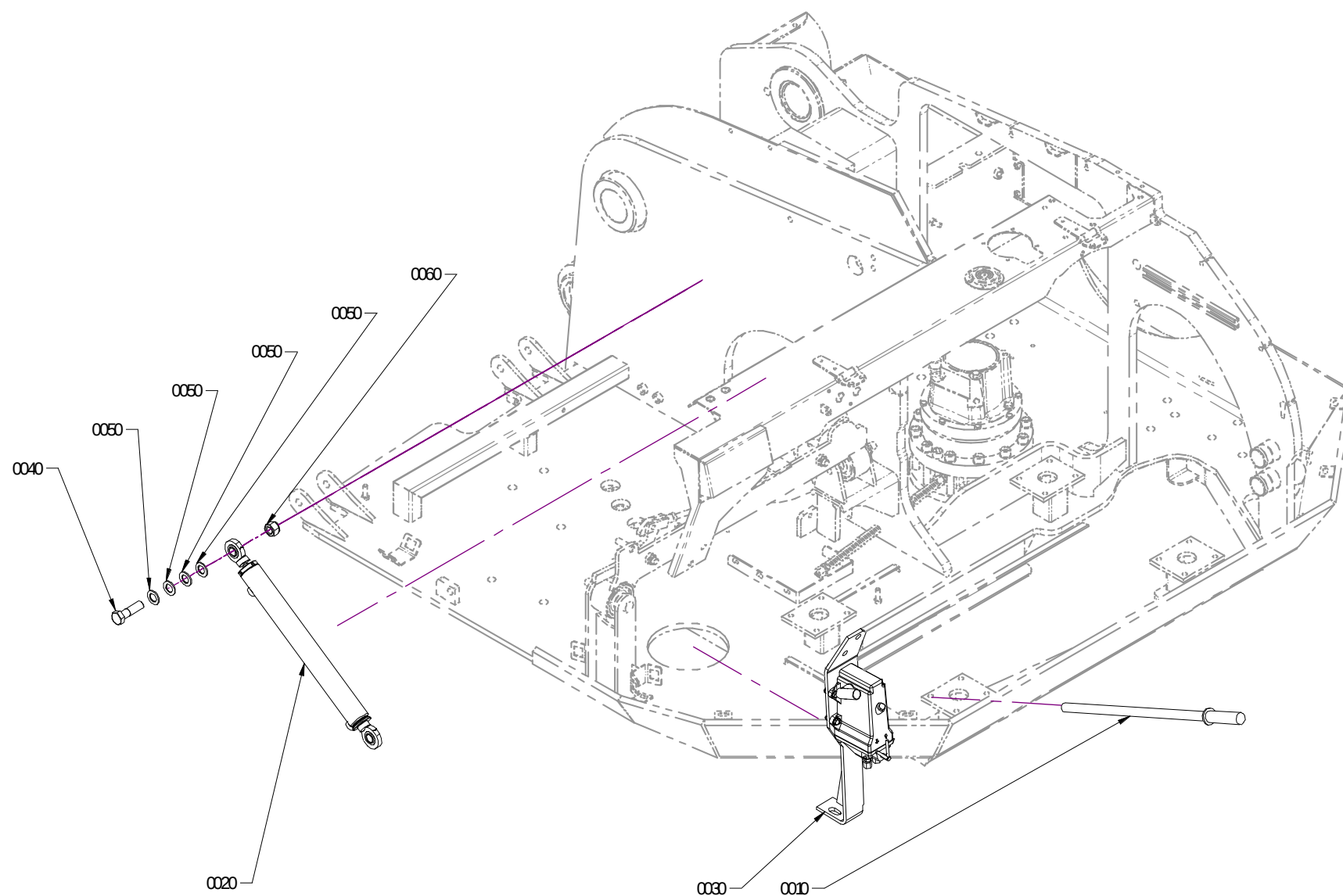
20044913	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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20044913	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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20044913	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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20044913	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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[illegible]



12602591	Kippsystem	tilting system	système de basculement	sistema basculante
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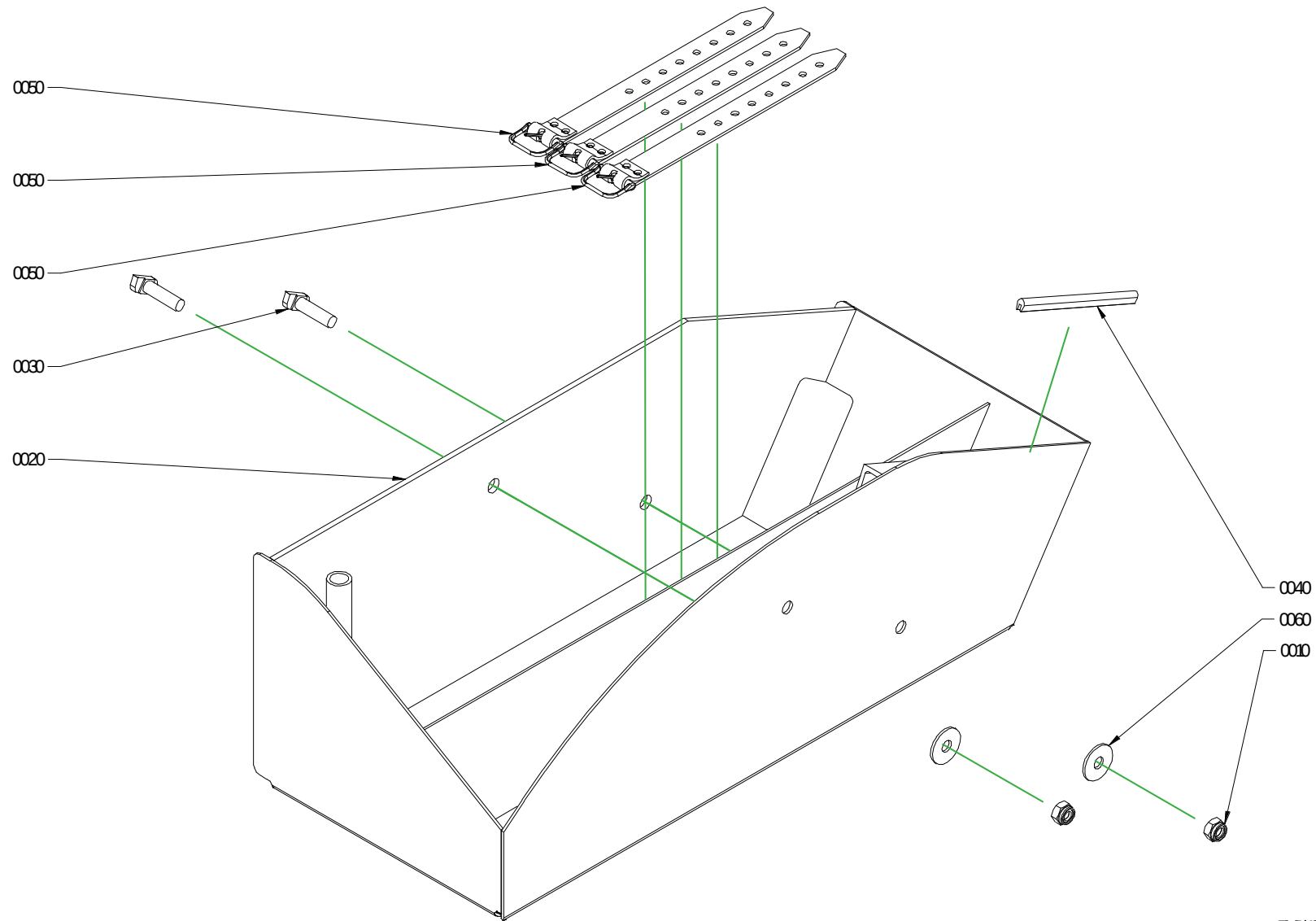
12602591	Kippsystem	tilting system	système de basculement	sistema basculante
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12602591	Kippsystem	tilting system	système de basculement	sistema basculante
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12602591	Kippsystem	tilting system	système de basculement	sistema basculante
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12602591	Kippsystem	tilting system	système de basculement	sistema basculante
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[illegible]



EMD10000030979/000/00

20008021	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
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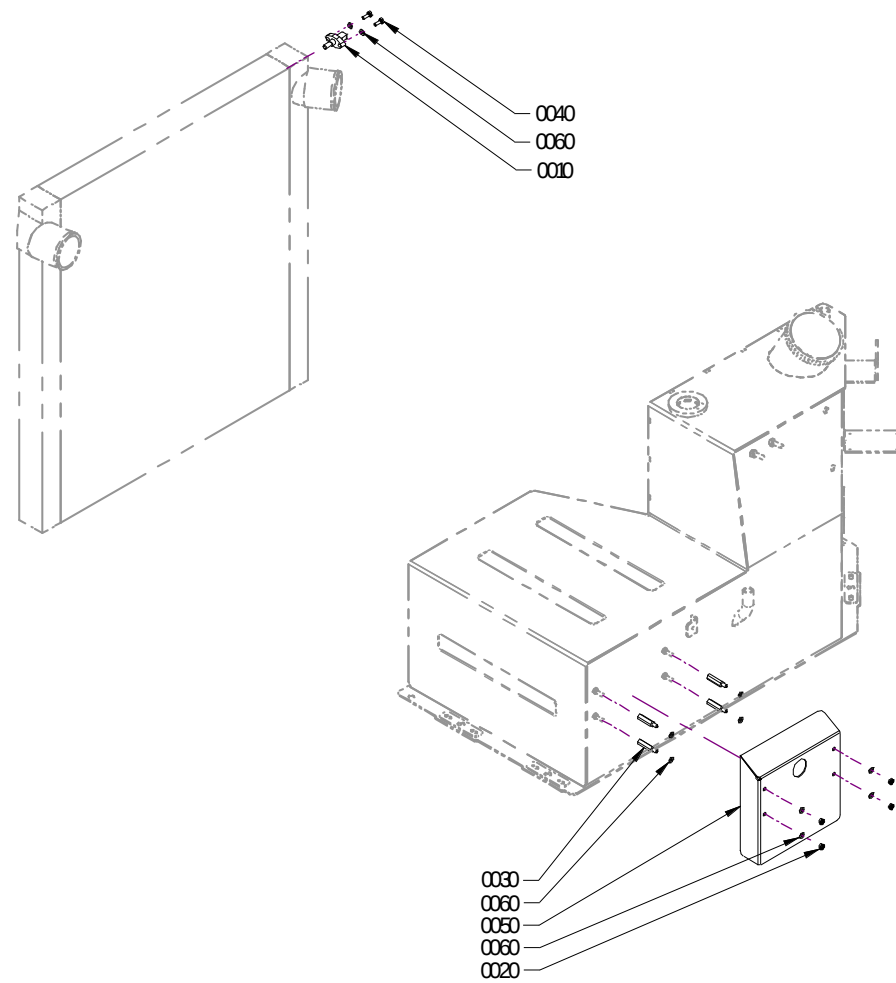
20008021	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
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20008021	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
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20008021	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
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20008021	Werkzeugkiste	tool box	boîte à outils	porta attrezzi
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[illegible]



12207821	Abdeckung	cover	couverture	copertura
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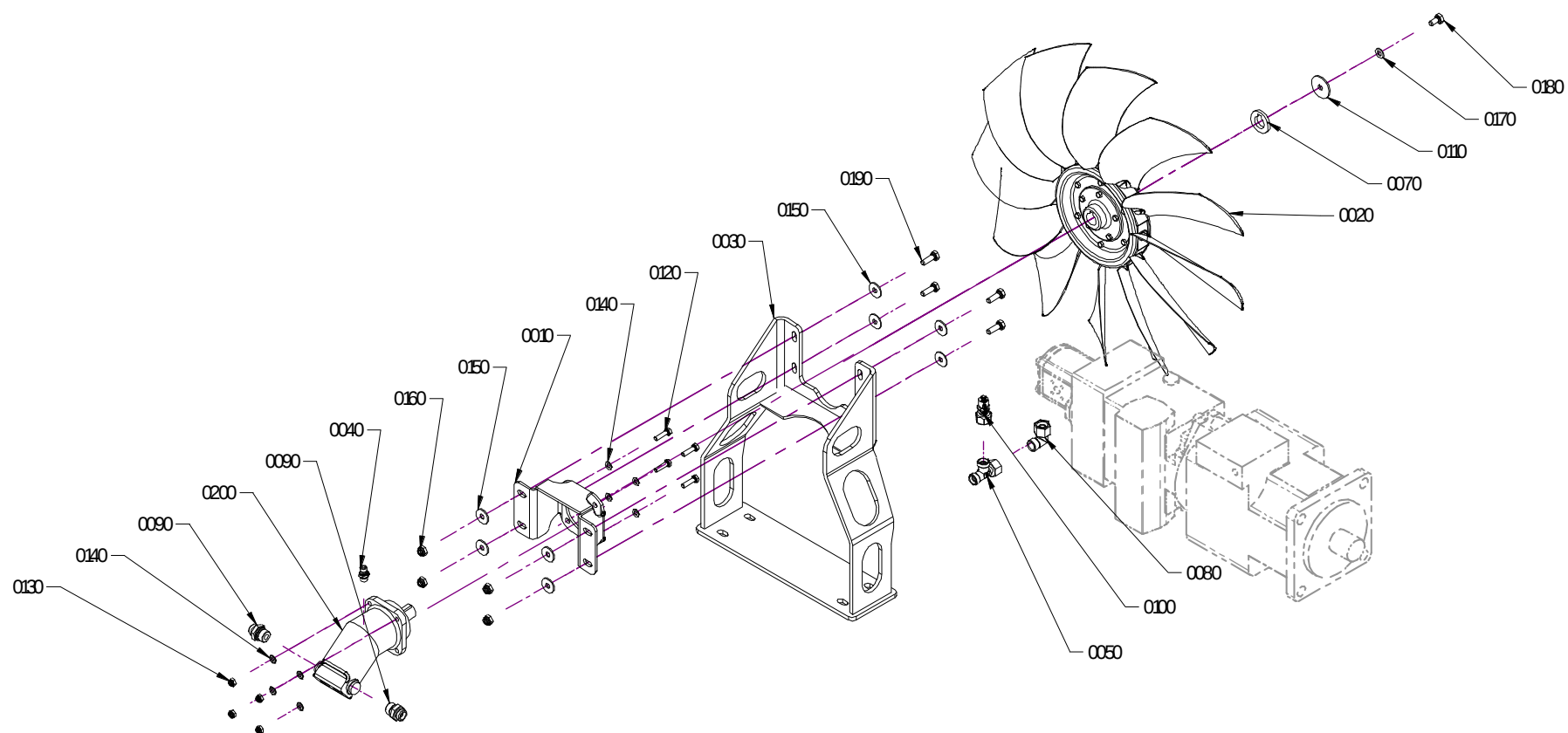
12207821	Abdeckung	cover	couverture	copertura
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12207821	Abdeckung	cover	couverture	copertura
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12207821	Abdeckung	cover	couverture	copertura
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12207821	Abdeckung	cover	couverture	copertura
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[illegible]



20004005

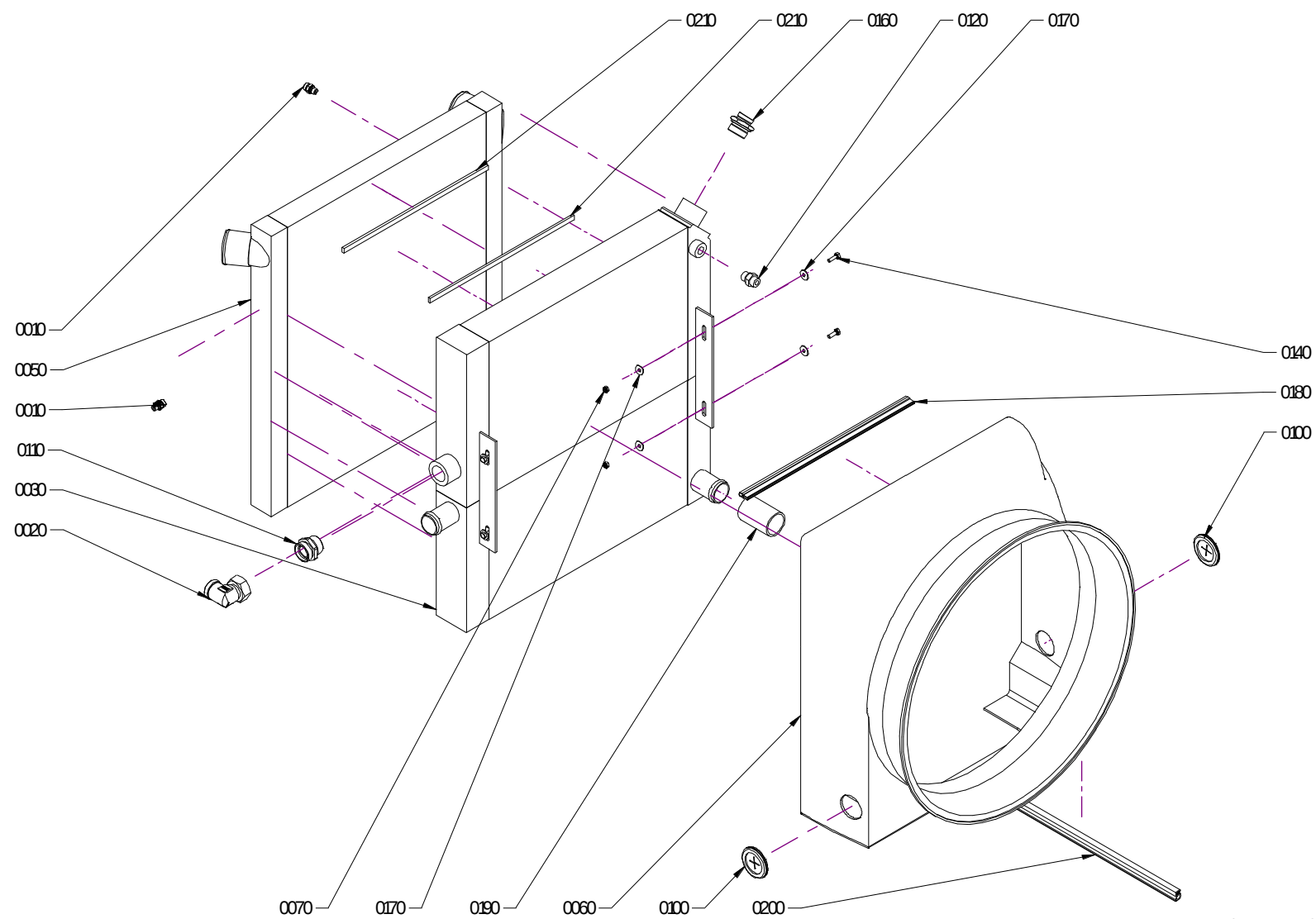
Ventilator

ventilator

fan

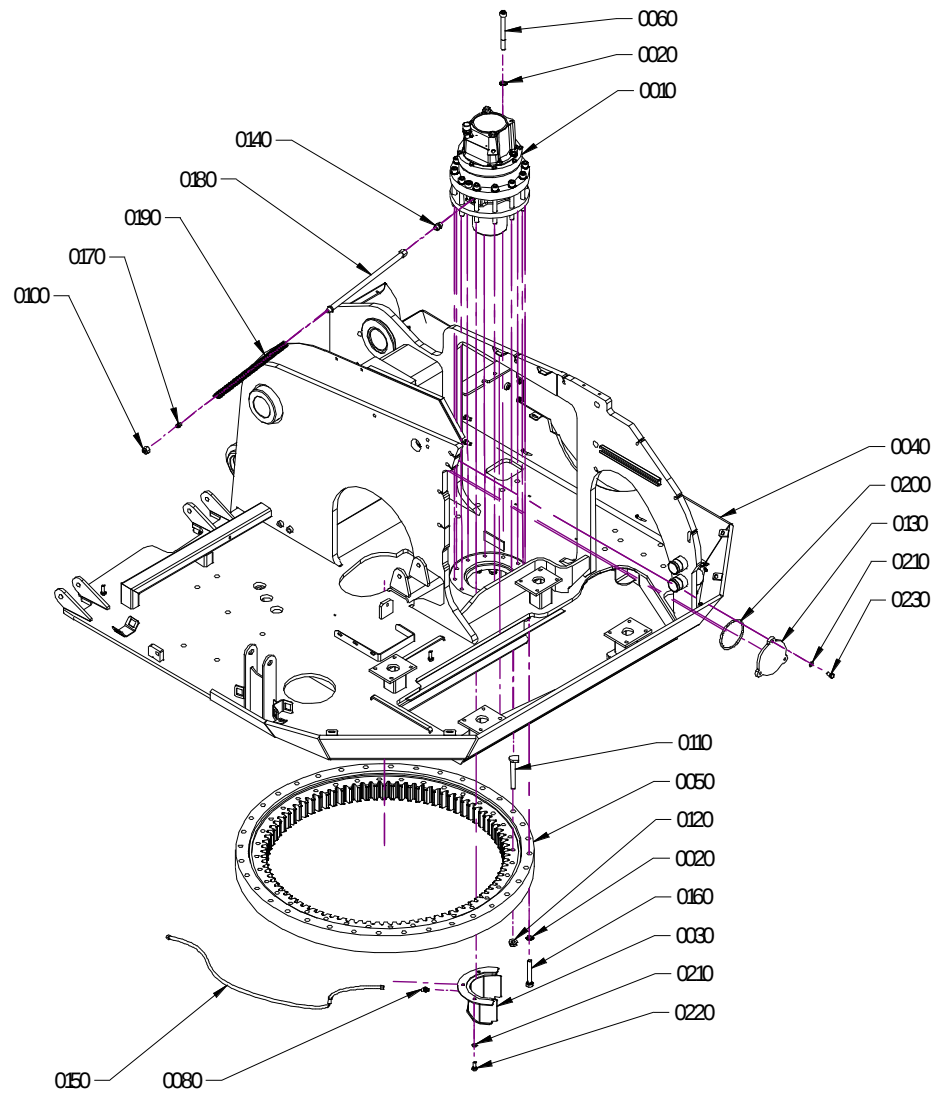
ventilatore

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12115188	1	Halterung	support	attache	attacco
0020	20002808	1	Lüfterrad	fan wheel	roue de ventilateur	ventola
0030	20003988	1	Halterung	support	attache	attacco
0040	16521710	1	Verschraubung	fitting	raccord	raccordo filettato
0050	16520567	1	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile
0070	12205921	1	Ring	ring	bague	anello
0080	16520565	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0090	16521800	2	Verschraubung	fitting	raccord	raccordo filettato
0100	16516220	1	Verschraubung	bolting	vissage	collegamento a vite
0110	11033271	1	Scheibe	disk	disque	rondella
0120	16080301	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0130	16408700	4	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0140	16718060	8	Unterlegscheibe	flat washer	laveuse	rondella per vite
0150	16718106	8	Unterlegscheibe	flat washer	laveuse	rondella per vite
0160	16410700	4	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0170	16718100	1	Unterlegscheibe	flat washer	laveuse	rondella per vite
0180	16100201	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0190	16100301	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0200	12270450	1	Hydraulikmotor	hydraulic motor	moteur hydraulique	motore idraulico



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[illegible]



EMD10000031390/000/00

20003997

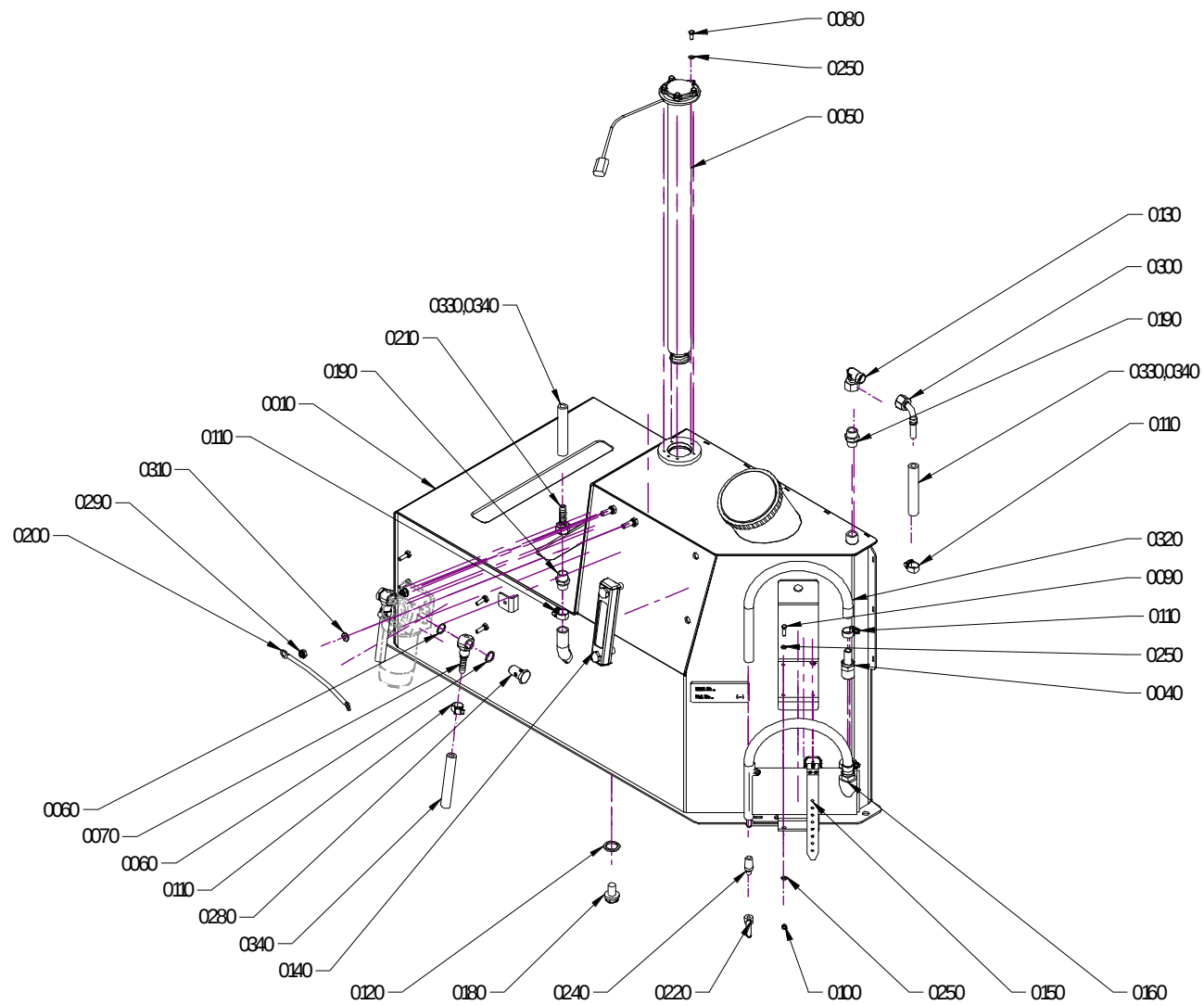
Schwenkgetriebe

swing gearbox

Réducteur à fractionnement

riduttore per rotazione

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12103540	1	Schwenkgetriebe	swing gearbox	boîte de vitesses à fraction de tour	riduttore per rotazione
0020	16717050	48	Scheibe	disc	rondelle	disco
0030	12205812	1	Abdeckung	cover	recouvrement	copertura
0040	20003990	1	Oberwagen	upper carriage	superstructure	carrello superiore
0050	12013005	1	Kugeldrehkranz	ball slewing ring	bague d'orientation à billes	ralla di rotazione
0060	16161502	12	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0080	16520038	1	Verschraubung	fitting	raccord	raccordo filettato
0100	16531012	1	Überwurfmutter	cap nut / nut	écrou-raccord / écrou	dado per raccordi / dado
0110	16161250	36	Spezialschraube	special screw	vis spéciale	vite speciale
0120	16416802	36	Mutter	nut	écrou	dado
0130	12016650	1	Putzlochdeckel	cleaning hole cover	nettoyage du couvercle du trou	flangia ispezione pulizia
0140	16521700	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0150	12087534	1	Hydraulikschlauch konfektioniert	hydraulic hose customized	tuyau hydraulique assemblé	tubo idraulico assemblato
0160	16161001	36	Schraube	bolt	vis	vite
0170	16520247	1	Verschlussstopfen	seal plug	bouchon de fermeture	tappo
0180	12086054	1	Hydraulikschlauch konfektioniert	hydraulic hose customized	tuyau hydraulique assemblé	tubo idraulico assemblato
0190	12086934	1.00	Schlauchschutz	hose protection	protection des tuyaux	protezione tubo
0200	12056926	1	O-Ring	O-ring	o-ring	anello OR
0210	16718100	6	Unterlegscheibe	flat washer	laveuse	rondella per vite
0220	16100251	3	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0230	16100201	3	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale



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12207824

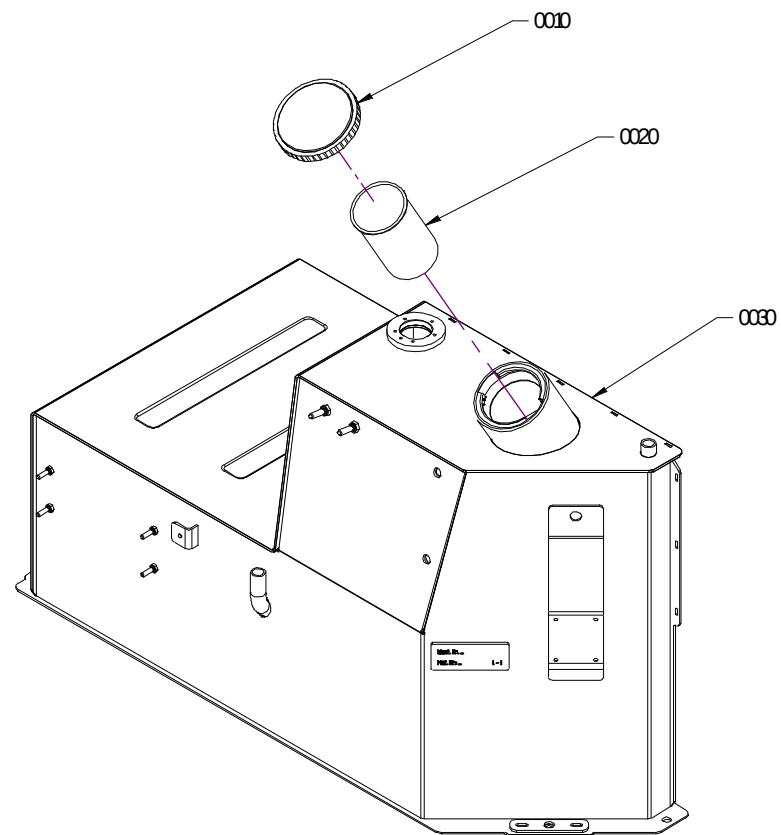
Dieseltank

diesel tank

réservoir de diesel

serbatoio gasolio

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12207825	1	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
0040	16013435	2	Schlauchtülle	hose sleeve	bouchon de tuyau	bussola tubo flessibile
0050	20016781	1	Tankgerät	refueling equipment	dispositif de remplissage du réservoir	apparecchiatura per rifornimento
0060	12028785	4	Kupferring	copper ring	anneau de cuivre	anello di rame
0070	12158050	2	Nippel	nipple	nipple	nipplo
0080	16050121	5	Schraube	bolt	vis	vite
0090	16050161	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0100	16405700	4	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0110	16583155	6	Schlauschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
0120	12611780	1	Dichtung	seal	joint	guarnizione
0130	16520377	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0140	12118850	1	Ölstandanzeige	oil level gauge	indicateur de niveau d'huile	indicatore del livello dell'olio
0150	10920761	1	Riemen	belt	courroie	cinghia
0160	10950992	1	Dieselförderpumpe	diesel feed pump	pompe d'alimentation en Diesel	pompa di alimentazione gasolio
0180	12202350	1	Schraube	screw	vis	vite
0190	16521700	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0200	12115280	1	Massekabel	ground cable	câble de terre	cavi di terra
0210	16526715	1	Pressnippel	press nipple	tétons de presse	nipplo pressa
0220	10920549	2	Ringmutter	ring nut	anneau	golfare femmina
0240	12115164	2	Stopfen	stopper	bouchon	tappo
0250	16718020	13	Unterlegscheibe	flat washer	laveuse	rondella per vite
0280	12158002	2	Hohlschraube	banjo screw	banjo bolt	bullone a banjo
0290	16408700	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0300	16526725	1	Pressnippel	press nipple	tétons de presse	nipplo pressa
0310	16718060	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0320	16790187	5.00	Schlauch	hose	tuyau	tubo flessibile
0330	12086946	4.00	Schutzschlauch	protective hose	tuyau de protection	tubo flessibile protezione
0340	16790481	11.37	Schlauch	hose	tuyau	tubo flessibile



12207825	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
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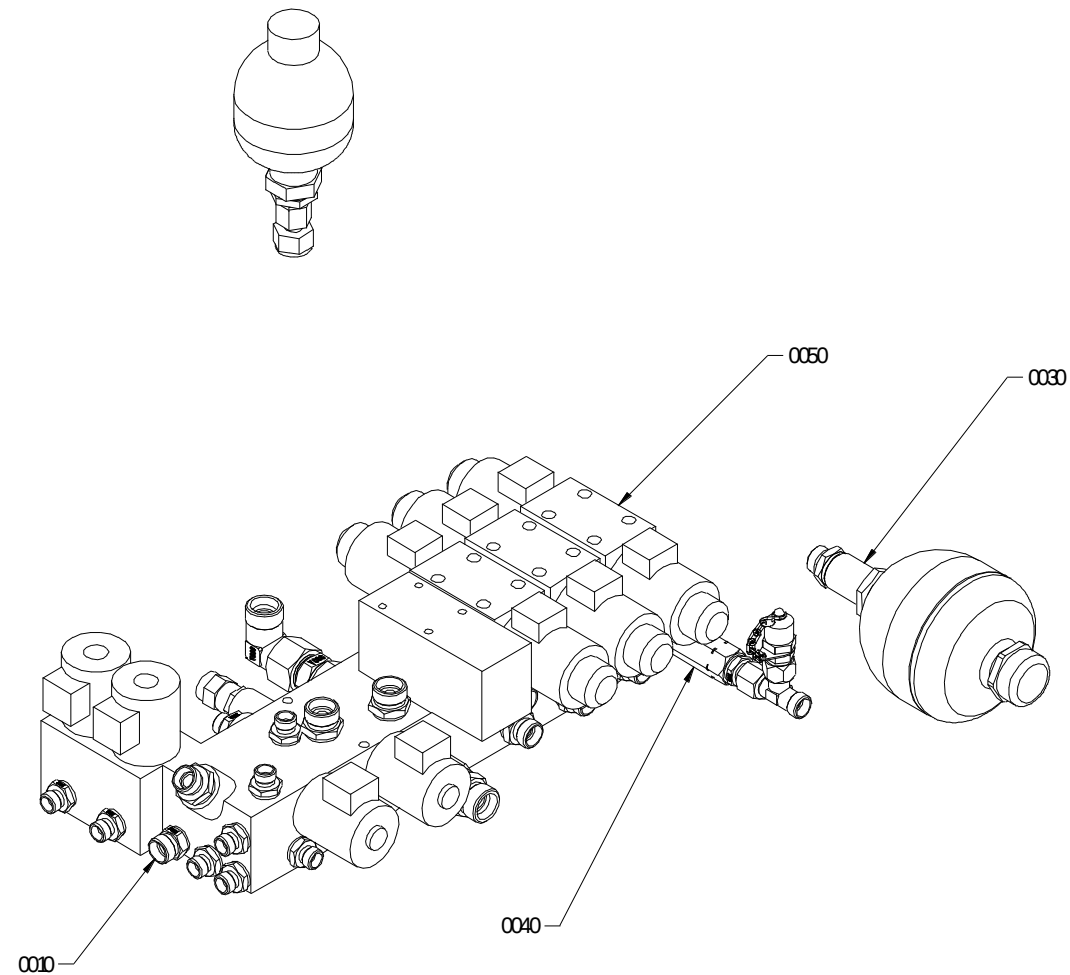
12207825	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
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12207825	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
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12207825	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
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12207825	Dieseltank	diesel tank	réservoir de diesel	serbatoio gasolio
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[illegible]



12115185	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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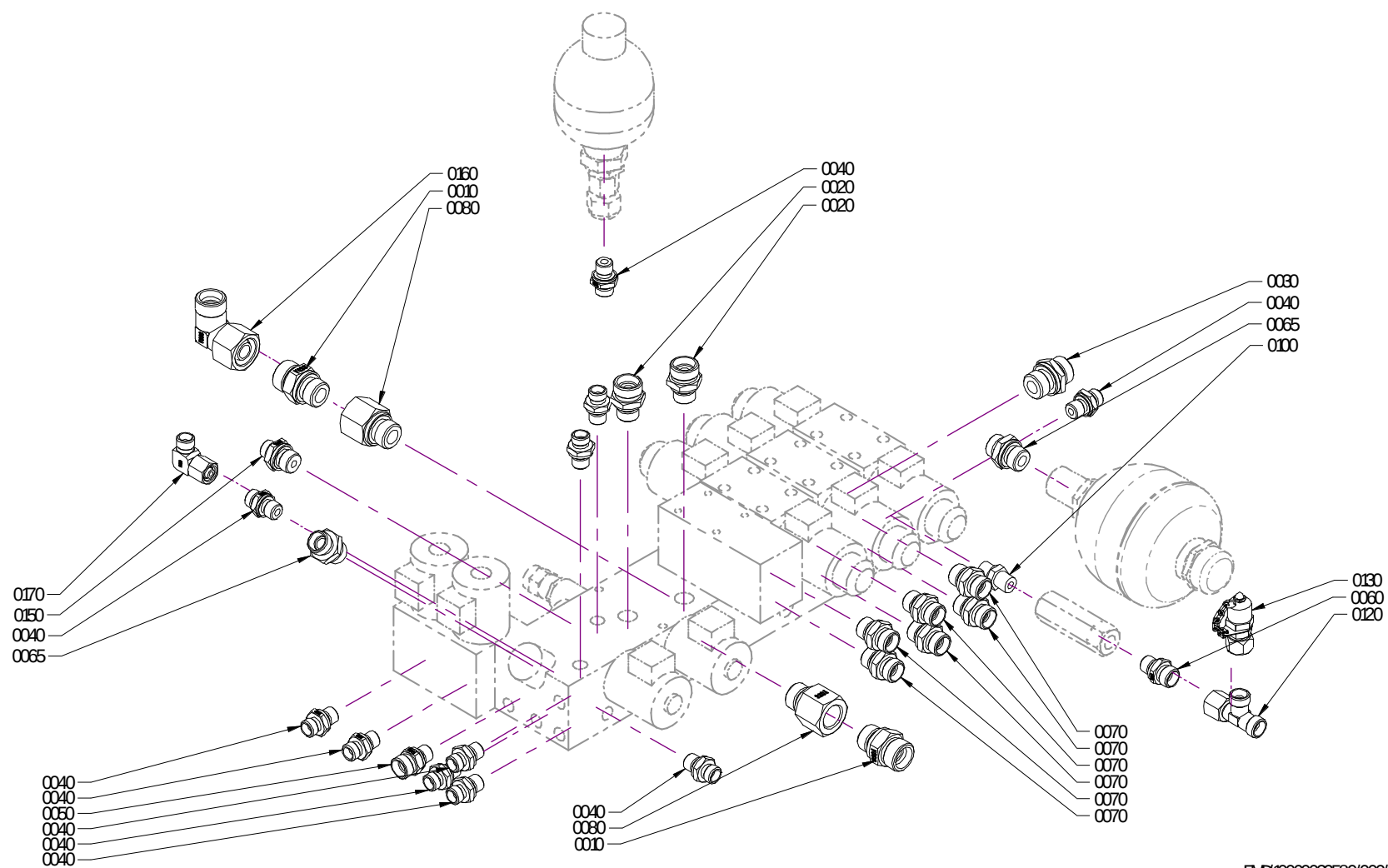
12115185	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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12115185	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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12115185	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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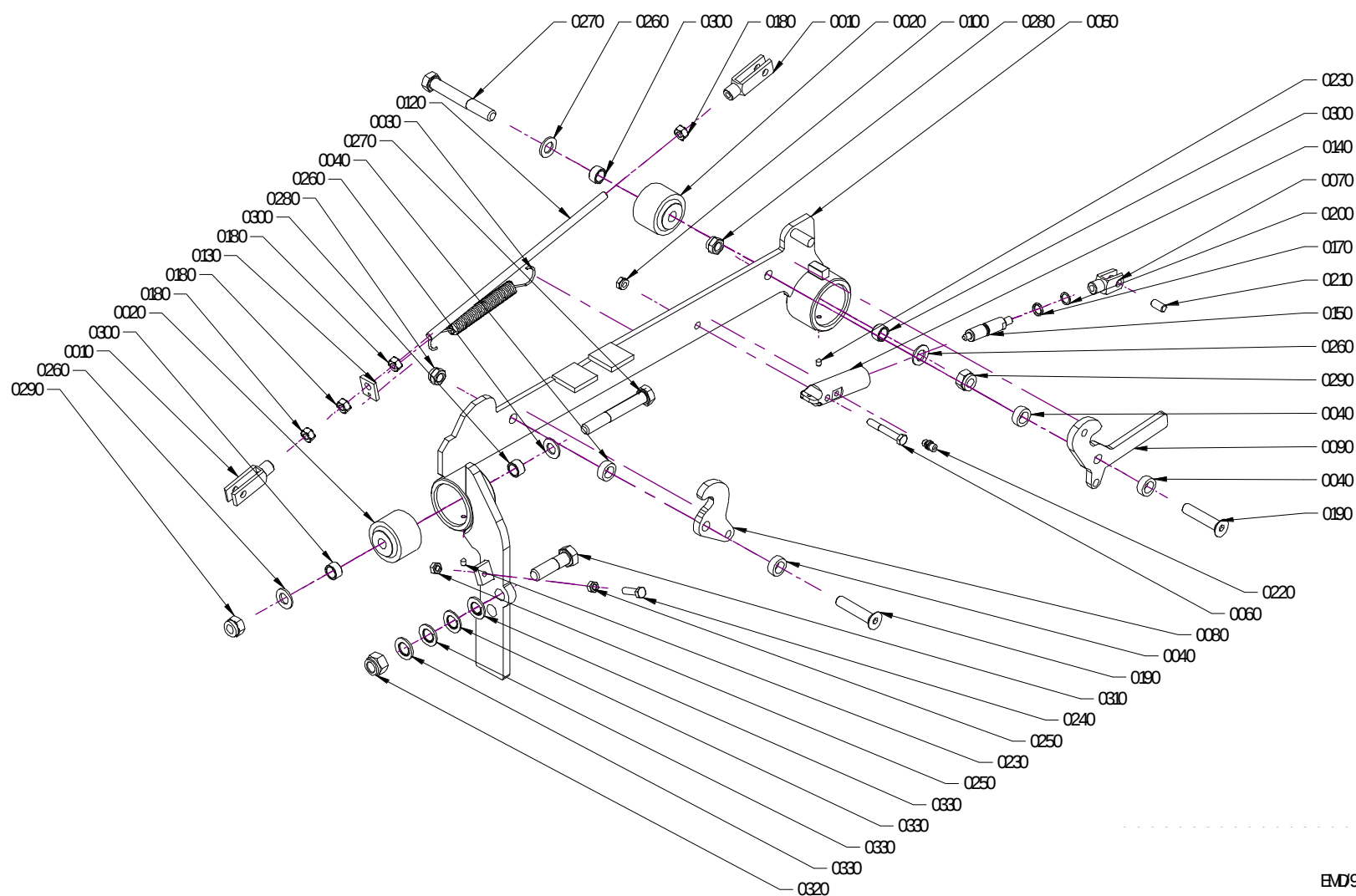
12115185	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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[illegible]



EVD10000032589/000/00

[illegible]



EMD/9100109888/000/02

12602515

Kabinenlagerung

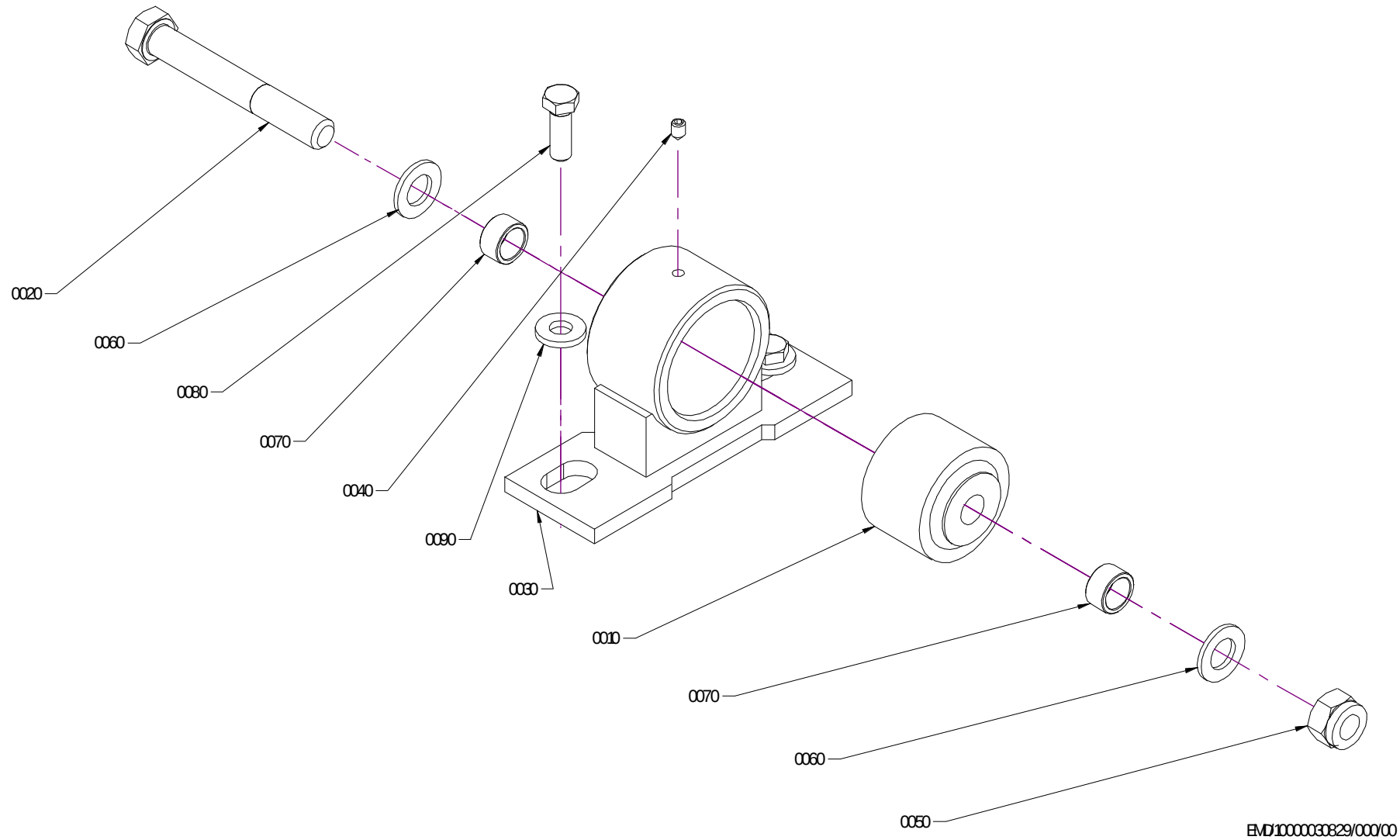
cab mounting

suspension de la cabine

montaggio cabina

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	16598025	2	Gabelkopf	fork head	clevis	testa forcella
0020	12197650	2	Lager	bearing	palier	cuscinetto
0030	11040642	1	Feder	spring	ressort	molla
0040	12197042	4	Distanzhülse	spacer sleeve	manchon d'espacement	manicotto distanziatore
0050	12602511	1	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
0060	16100700	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0070	16598020	1	Gabelkopf	fork head	clevis	testa forcella
0080	12602504	1	Haken	hook	hook	gancio
0090	12602506	1	Haken	hook	hook	gancio
0100	16410700	1	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0120	12197646	1	Gewindestange	threaded rod	tige filetée	barra filettata
0130	12197652	1	Ring	ring	bague	anello
0140	12602481	1	Zylinderrohr	cylinder tube	tube de cylindre	canna cilindro
0150	12602483	1	Kolben	piston	pistons	pistone
0170	12106655	1	O-Ring	O-ring	o-ring	anello OR
0180	16412000	4	Sechskantmutter	hex nut	écrou hexagonal	dado esagonale
0190	16321681	2	Schraube	bolt	vis	vite
0200	12257021	1	Stützring	support ring	anneau de soutien	anello di supporto
0210	16598021	1	Bolzen	bolt	boulon	bullone
0220	16520038	1	Verschraubung	fitting	raccord	raccordo filettato
0230	16535011	2	Gewindestift	threaded pin	vis sans fin	grano
0240	16100351	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0250	16410000	2	Sechskantmutter	hex nut	écrou hexagonal	dado esagonale
0260	16718230	4	Unterlegscheibe	flat washer	laveuse	rondella per vite
0270	20006001	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0280	20029438	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0290	16418700	2	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0300	12602547	4	Distanz	distance	distance	distanza

[illegible]



12602525	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
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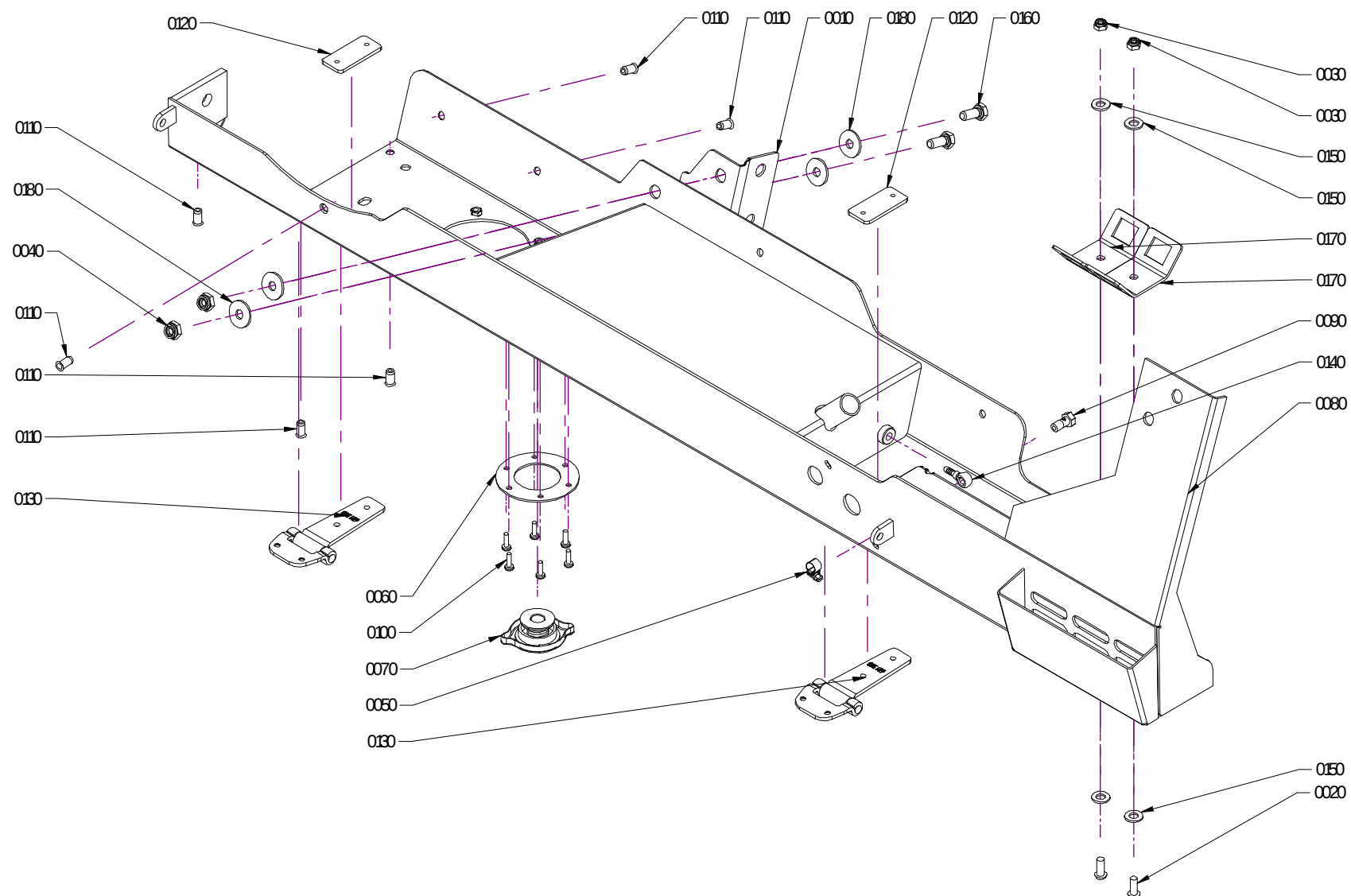
12602525	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
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12602525	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
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12602525	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
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12602525	Kabinenlagerung	cab mounting	suspension de la cabine	montaggio cabina
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[illegible]



EMD1000030965/000/00

12207801	Rahmen	frame	cadre	cornice
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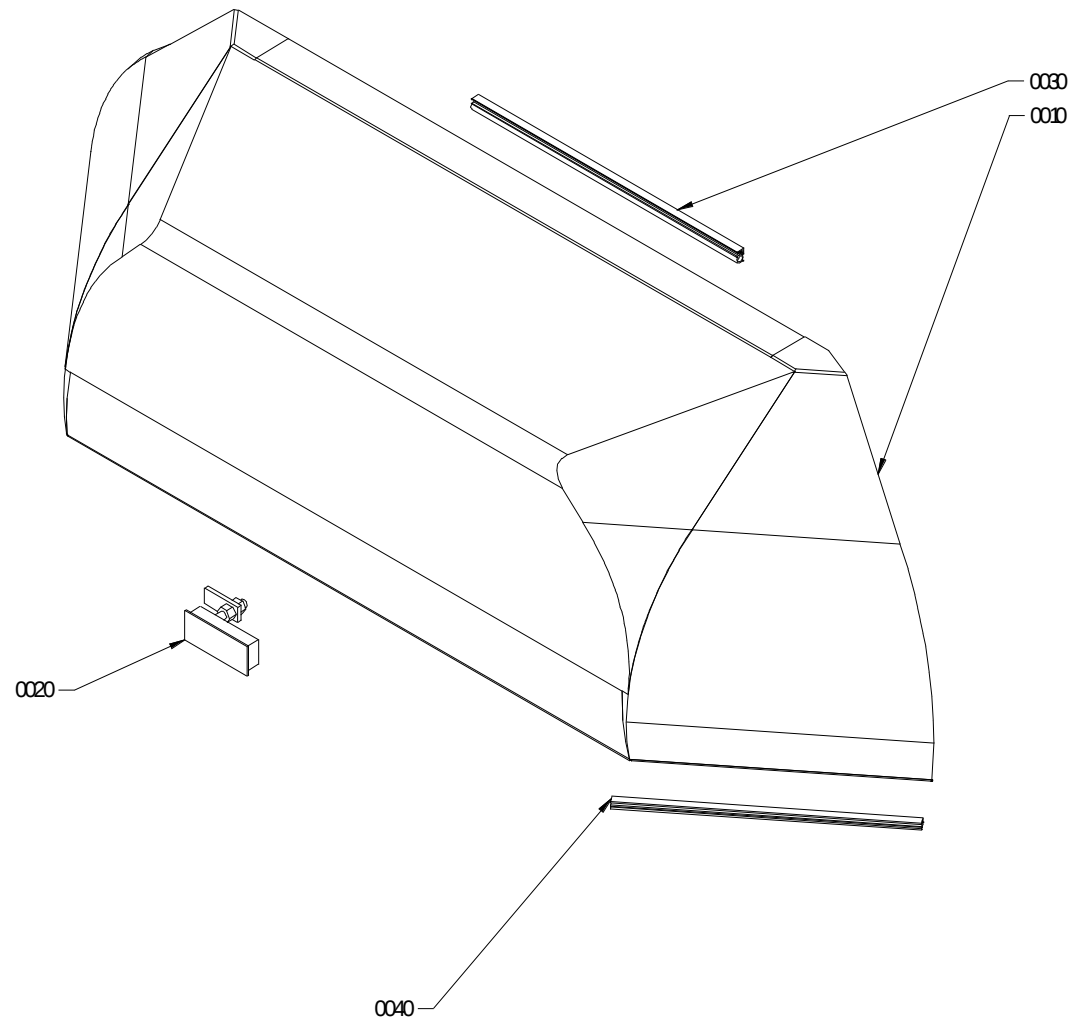
12207801	Rahmen	frame	cadre	cornice
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12207801	Rahmen	frame	cadre	cornice
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12207801	Rahmen	frame	cadre	cornice
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12207801	Rahmen	frame	cadre	cornice
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[illegible]



12207802	Motorhaube	bonnet	bonnet	cofano motore
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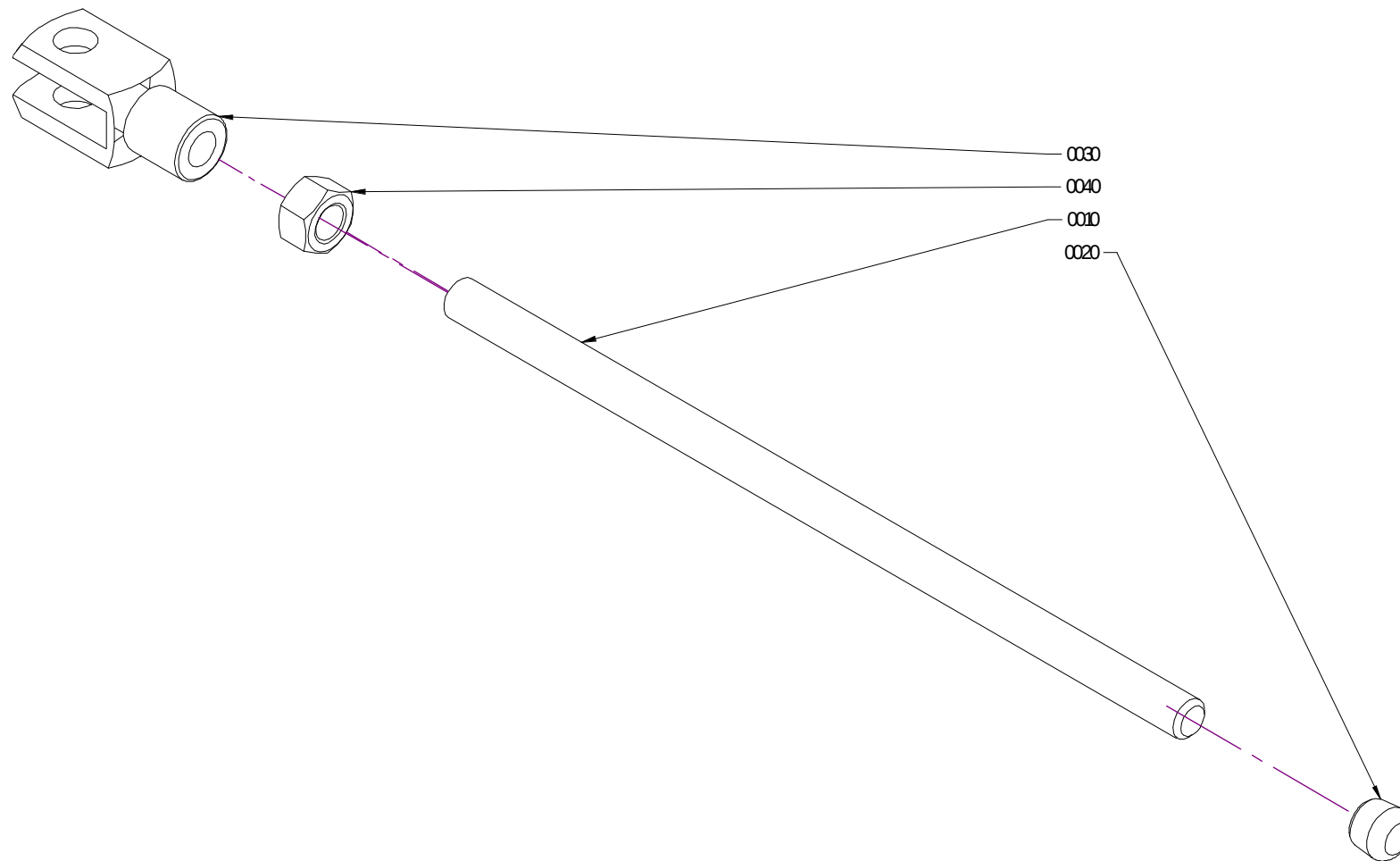
12207802	Motorhaube	bonnet	bonnet	cofano motore
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12207802	Motorhaube	bonnet	bonnet	cofano motore
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12207802	Motorhaube	bonnet	bonnet	cofano motore
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12207802	Motorhaube	bonnet	bonnet	cofano motore
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[illegible]



EMD10000030706/000/00

12207802	Abstützung	support	soutien	stabilizzatore
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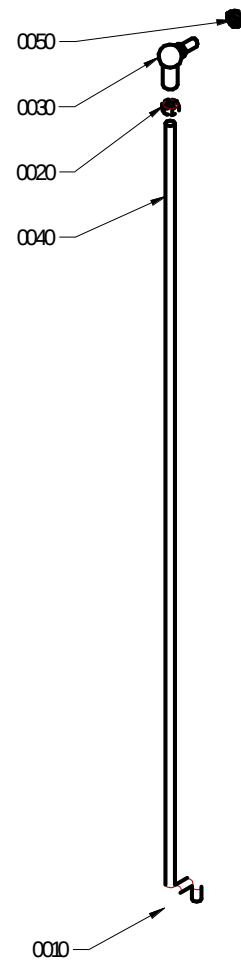
12207802	Abstützung	support	soutien	stabilizzatore
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12207802	Abstützung	support	soutien	stabilizzatore
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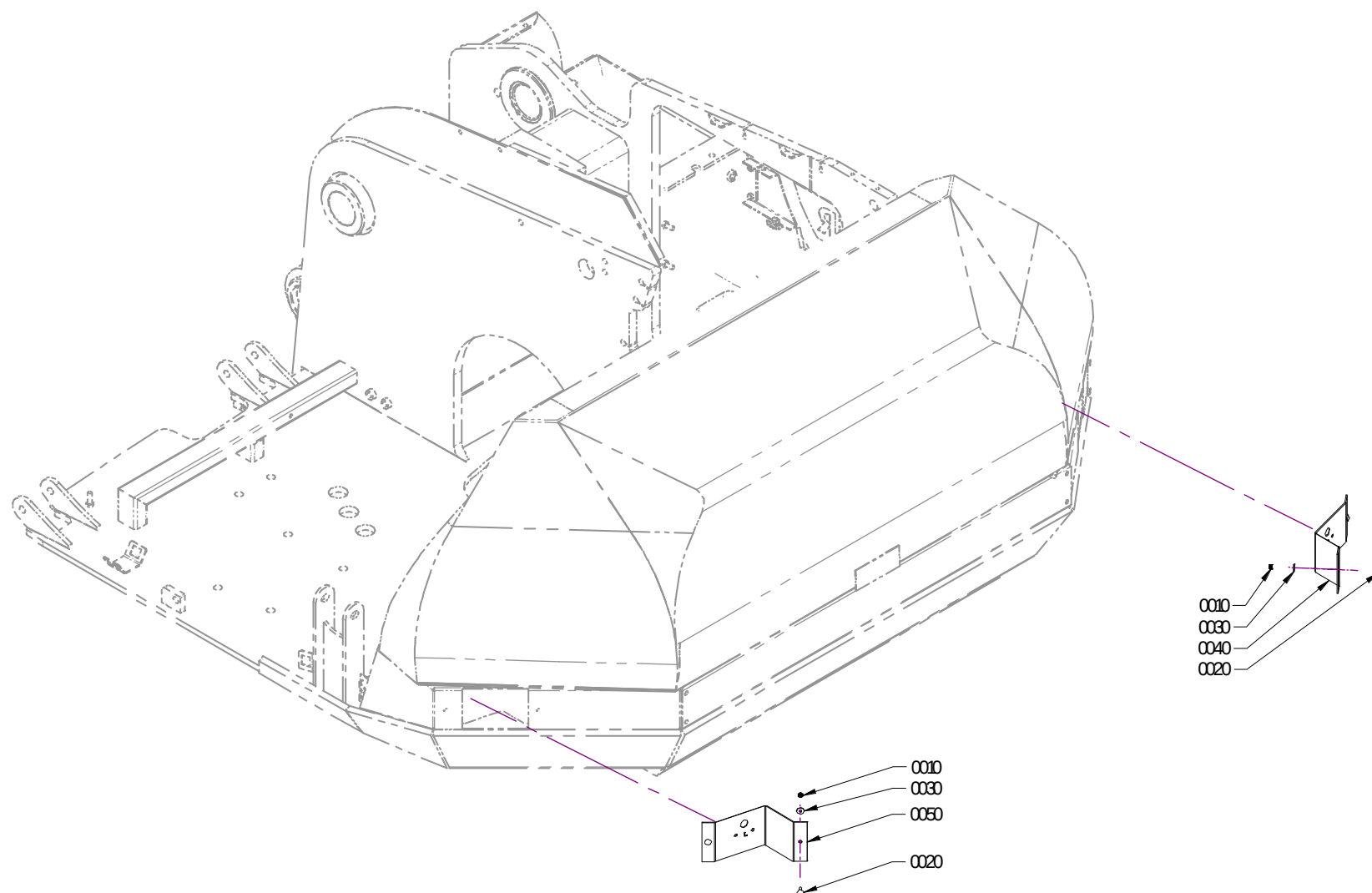
12207802	Abstützung	support	soutien	stabilizzatore
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12207802	Abstützung	support	soutien	stabilizzatore
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[illegible]



[illegible]



EMD10000032667/000/00

12602455	Halterung Beleuchtung	holder lighting	montage éclairage	staffa illuminazione
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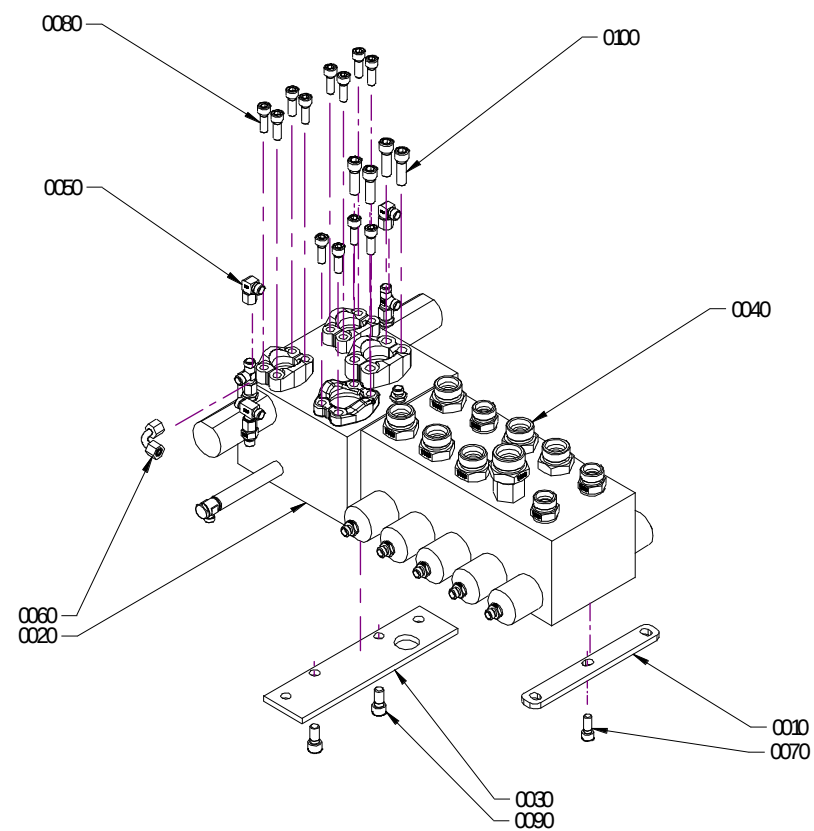
12602455	Halterung Beleuchtung	holder lighting	montage éclairage	staffa illuminazione
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12602455	Halterung Beleuchtung	holder lighting	montage éclairage	staffa illuminazione
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12602455	Halterung Beleuchtung	holder lighting	montage éclairage	staffa illuminazione
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12602455	Halterung Beleuchtung	holder lighting	montage éclairage	staffa illuminazione
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[illegible]



12119254	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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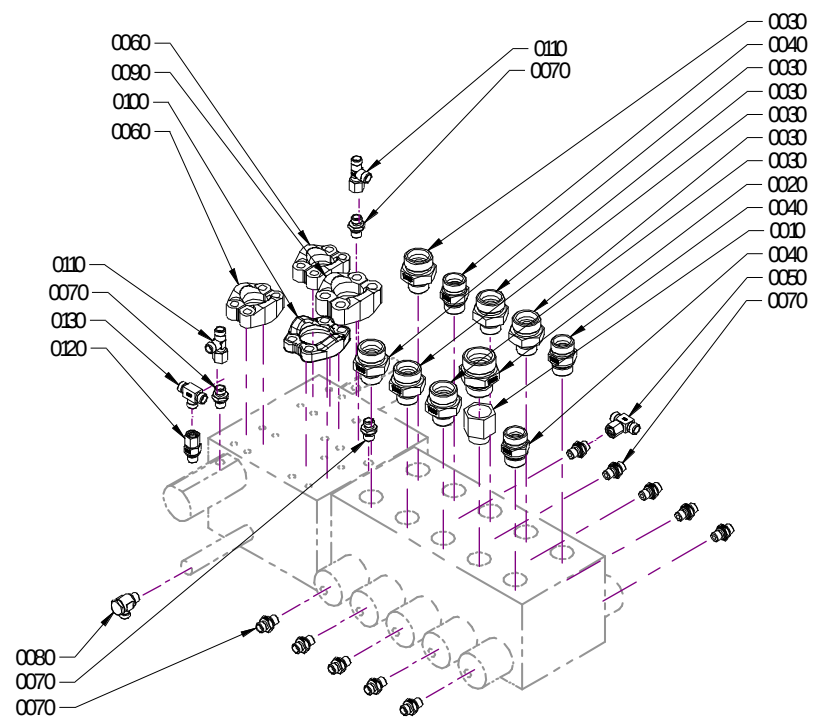
12119254	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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12119254	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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12119254	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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12119254	Steuerblock	control block	bloc de contrôle	blocco idraulico controllo
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[illegible]



12115337	Verschraubung	fitting	raccord	raccordo filettato
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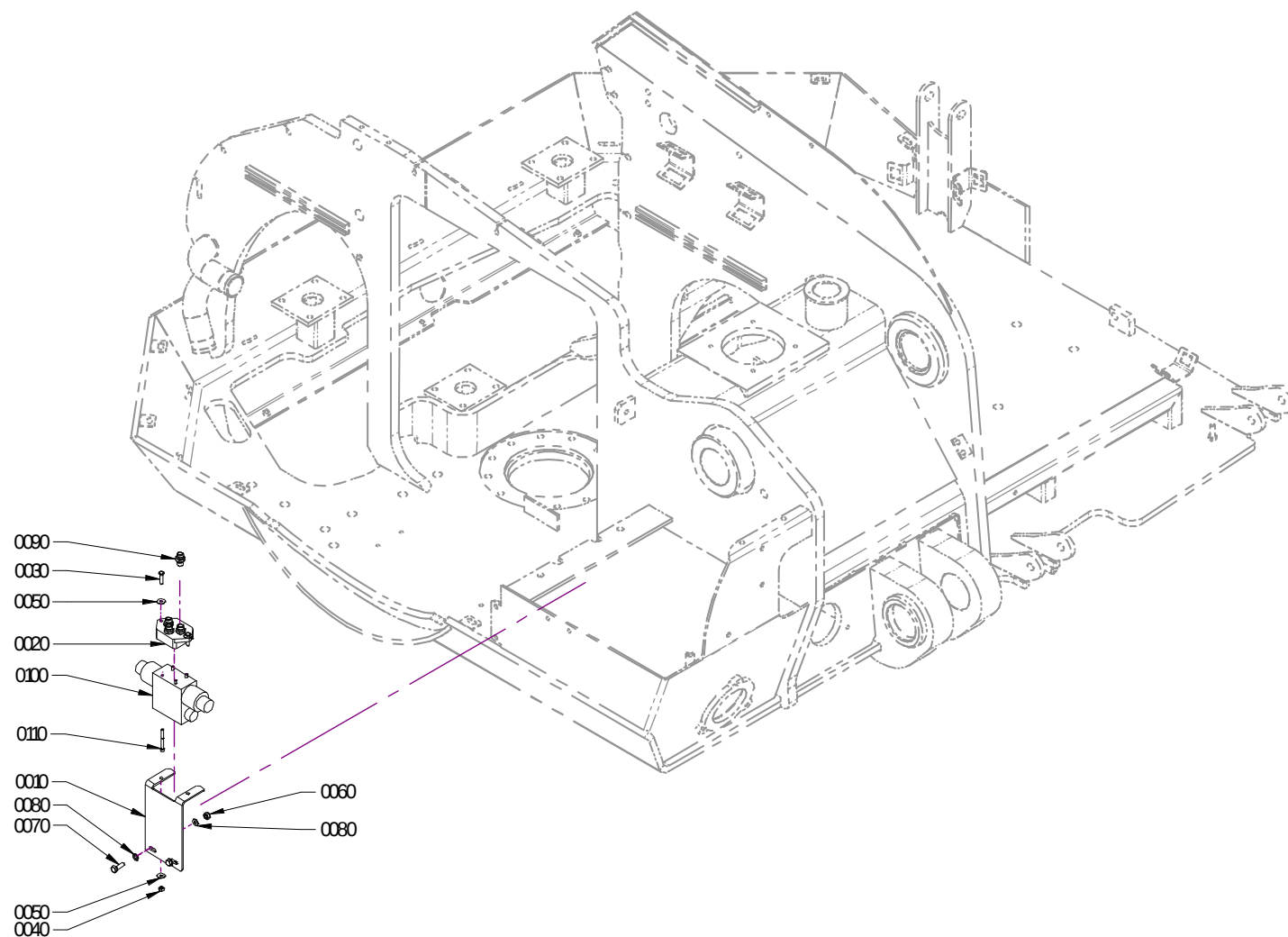
12115337	Verschraubung	fitting	raccord	raccordo filettato
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12115337	Verschraubung	fitting	raccord	raccordo filettato
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12115337	Verschraubung	fitting	raccord	raccordo filettato
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12115337	Verschraubung	fitting	raccord	raccordo filettato
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[illegible]



12207620	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
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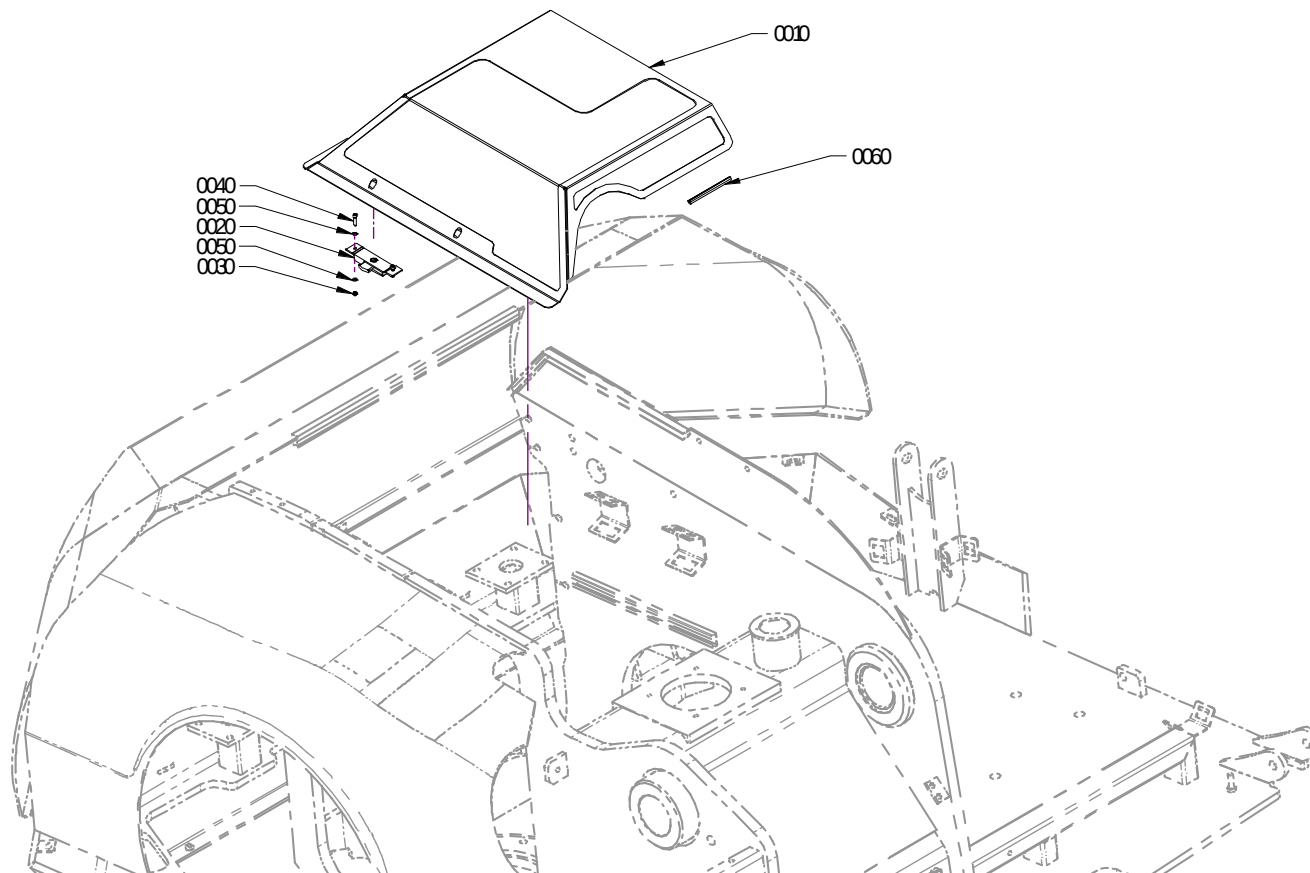
12207620	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
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12207620	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
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12207620	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
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12207620	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
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[illegible]



12207907	Abdeckung	cover	couverture	copertura
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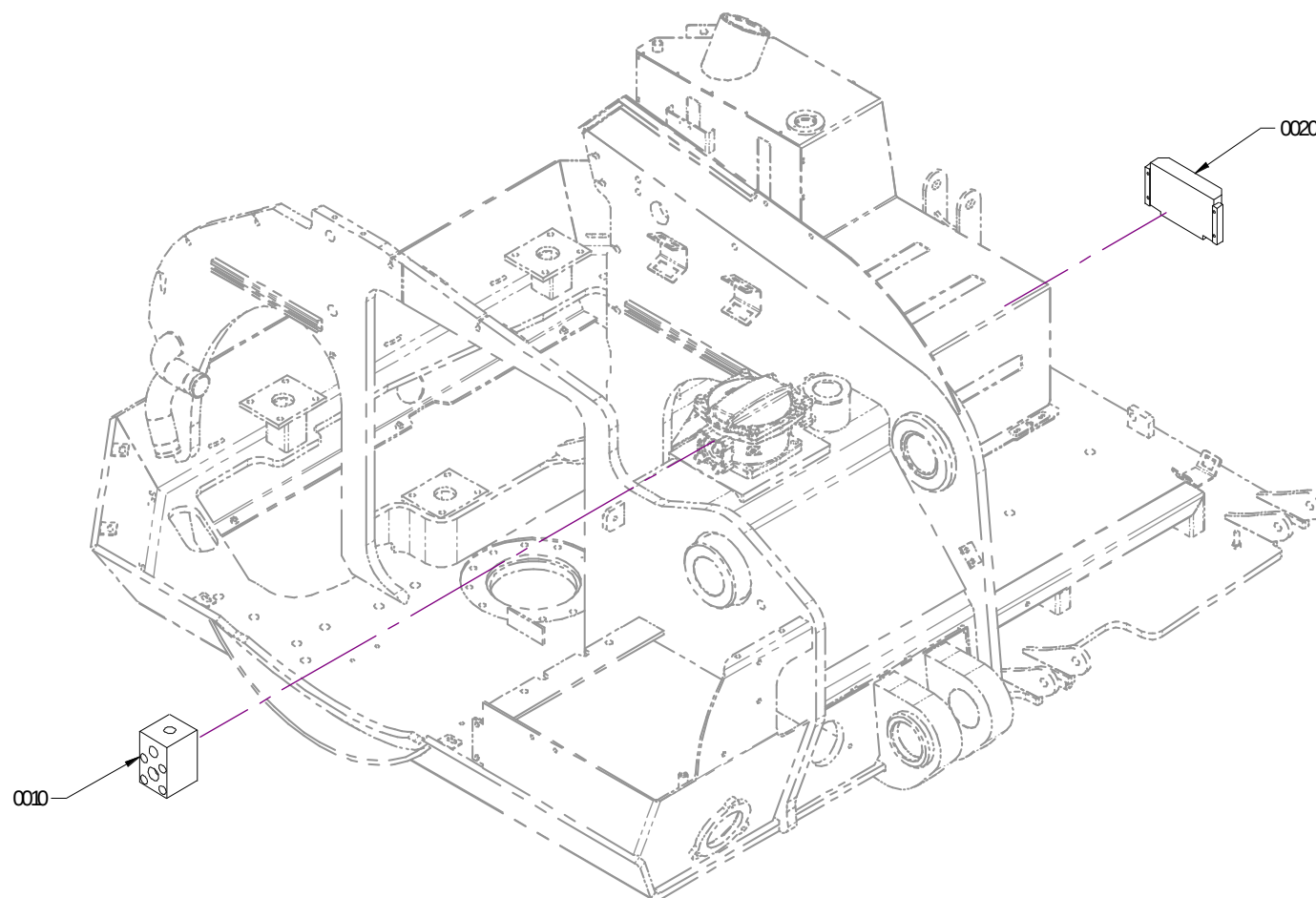
12207907	Abdeckung	cover	couverture	copertura
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12207907	Abdeckung	cover	couverture	copertura
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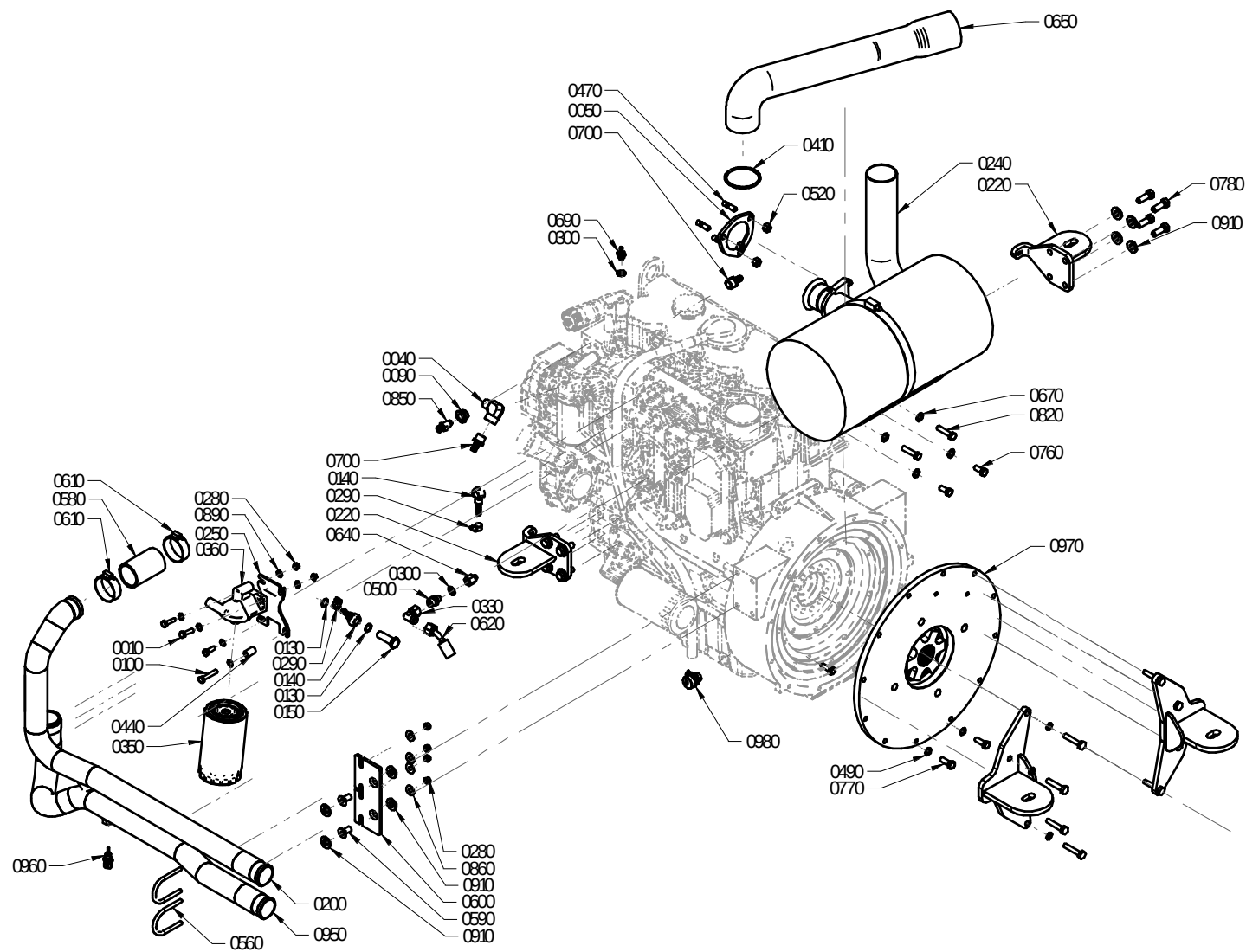
12207907	Abdeckung	cover	couverture	copertura
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12207907	Abdeckung	cover	couverture	copertura
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[illegible]



[illegible]



EMD910021492/000/03

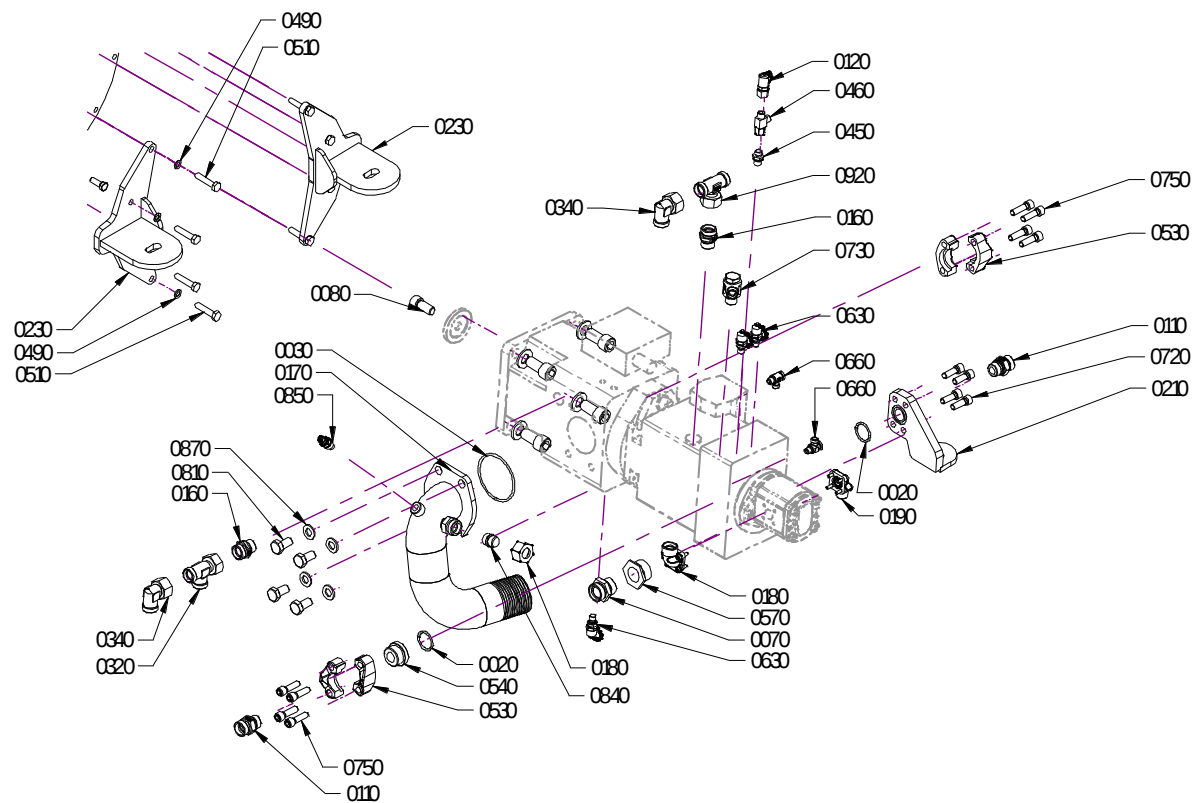
12090288

Dieselmotor

diesel engine

moteur diesel

motore diesel



EMD/9100211492/000/03



12090288

Dieselmotor

diesel engine

moteur diesel

motore diesel

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	16080301	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0020	16522202	2	O-Ring	O-ring	o-ring	anello OR
0030	16730840	1	O-Ring	O-ring	o-ring	anello OR
0040	16525360	1	Nippel	nipple	tétines	nipplo
0050	12207732	1	Auspuffflansch	exhaust flange	bride d'échappement	flangia di scarico
0070	16521901	1	Verschraubung	fitting	raccord	raccordo filettato
0080	16160353	1	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0090	12090426	1	Reduzierung	reduction	réduction	riduzione
0100	16080450	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0110	16521740	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0120	12012870	1	Messverschraubung	measuring screw fitting	raccord de mesure	raccordo presa pressione
0130	12028785	2	Kupferring	copper ring	anneau de cuivre	anello di rame
0140	12158050	2	Nippel	nipple	nipple	nipplo
0150	20028385	1	Hohlschraube	banjo screw	banjo bolt	bullone a banjo
0160	16521742	2	Verschraubung	fitting	raccord	raccordo filettato
0170	12207845	1	Ansaugleitung	suction line	ligne d'aspiration	linea aspirazione
0180	12012150	2	Anschluss	connection	connexion	connessione
0190	12012160	1	Anschlussblock	terminal block	bloc de raccordement	blocco di congiunzione
0200	12207840	1	Rohrbogen	elbow	coude de tuyauterie	curva del tubo
0210	12207844	1	Abstützung	support	soutien	stabilizzatore
0220	12090334	2	Halterung	holder	montage	staffa
0230	12090340	2	Lager	bearing	palier	cuscinetto
0240	12208122	1	Auspuff	exhaust	echappement	scappamento
0250	20008412	1	Halterung	holder	montage	staffa
0280	16408700	6	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0290	16583154	2	Schlauchschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
0300	12600534	2	Dichtungsring	sealing ring	anneau d'étanchéité	anello di tenuta
0320	16520863	1	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile

12090288

Dieselmotor

diesel engine

moteur diesel

motore diesel

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0330	16520377	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0340	16520786	2	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0350	20008159	1	Ölabscheider	oil separator	séparateur d'huile	separatoro d'olio
0360	20008157	1	Filter	filter	filtre	filtro
0410	16730771	1	O-Ring	O-ring	o-ring	anello OR
0420	16200403	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0440	20008415	1	Distanz	distance	distance	distanza
0450	16521830	1	Verschraubung	fitting	raccord	raccordo filettato
0460	16520222	1	Einst. L-Verschraubung	adjustable L-fitting	raccord en L orientables	gomito orientabile
0470	16535059	3	Stiftschraube	stud bolt	boulon à goujon	prigioniero
0490	16718090	11	Unterlegscheibe	flat washer	laveuse	rondella per vite
0500	16521770	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0510	16100500	8	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0520	16410800	3	Mutter	nut	écrou	dado
0530	16522145	4	Flanschhälfte	flange half	demi bride	flangia metà
0540	12205310	1	Flansch	flange	bride	flangia
0560	12058650	2	Rohrschelle	pipe clamp	collier de serrage	cavallotto fermatubo
0570	12205308	1	Reduzierung	reduction	réduction	riduzione
0580	16790491	2.00	Kühlerschlauch	radiator hose	tuyau de radiateur	tubo flessibile radiatore
0590	16321226	2	Schraube	bolt	vis	vite
0600	12603108	1	Halterung	support	attache	attacco
0610	16580681	4	Schlauchschelle	hose clamp	collier de serrage	fascetta stringitubo regolabile
0620	16526724	1	Pressnippel	press nipple	tétons de presse	nipplo pressa
0630	16516225	3	Verschraubung	bolting	vissage	collegamento a vite
0640	12207878	1	Reduzierung	reduction	réduction	riduzione
0650	20028812	1	Formschlauch	molded hose	tuyau formé	tubo flessibile stampato
0660	16521266	2	Schwenkverschraubung	swivelling screw fitting	raccord pivotant	raccordo girevole vite
0670	16718100	4	Unterlegscheibe	flat washer	laveuse	rondella per vite

12090288

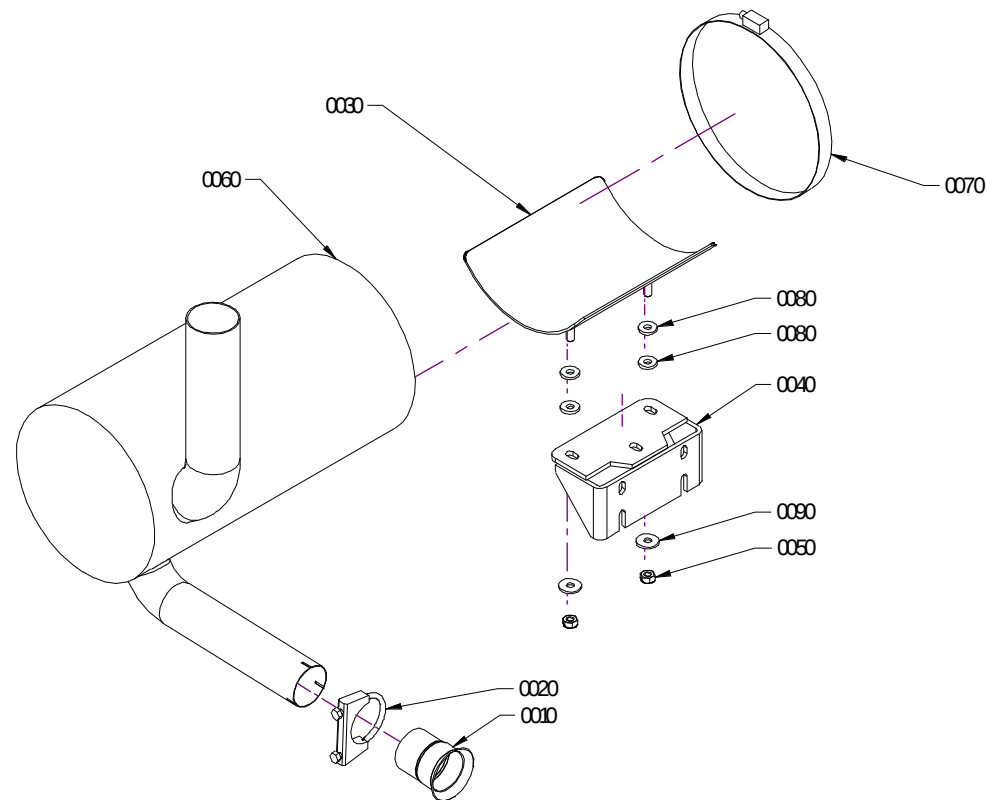
Dieselmotor

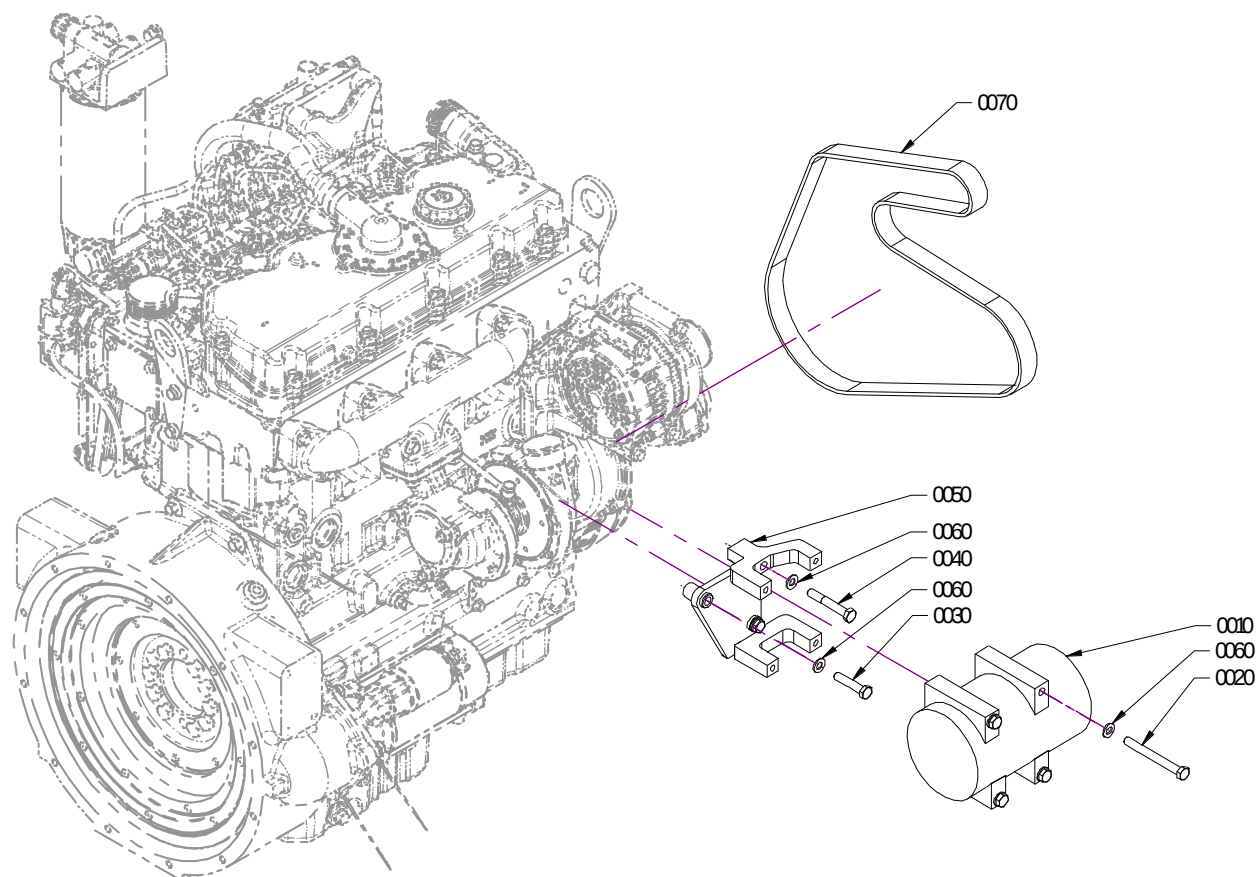
diesel engine

moteur diesel

motore diesel

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0690	16013587	1	Schlauchnippel	hose nipple	tétine de tuyau	nipplo tubo
0700	16013588	2	Schlauchnippel	hose nipple	tétine de tuyau	nipplo tubo
0710	16538022	1	Schraube	bolt	vis	vite
0720	16120356	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0730	16520555	1	Verschraubung	fitting	raccord	raccordo filettato
0750	16120403	8	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0760	16100251	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0770	16100301	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0780	16120351	8	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0790	16080251	1	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0810	16160301	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0820	16100450	2	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0840	16520842	1	Verschlussstopfen	seal plug	bouchon de fermeture	tappo
0850	12906107	2	Temperatursensor	temperature sensor	capteur de température	sensore della temperatura
0860	16718070	4	Unterlegscheibe	flat washer	laveuse	rondella per vite
0870	16718200	4	Unterlegscheibe	flat washer	laveuse	rondella per vite
0880	16718250	4	Unterlegscheibe	flat washer	laveuse	rondella per vite
0890	16718060	6	Unterlegscheibe	flat washer	laveuse	rondella per vite
0910	16718130	12	Unterlegscheibe	flat washer	laveuse	rondella per vite
0920	16520862	1	Einst. T-Verschraubung	adjustable T-fitting	raccord en T orientables	T di estremità laterale orientabile
0940	20093862	1	Anschlusskabel	connection cable	câble de connexion	cavo collegamento
0950	12207841	1	Rohr	pipe	tuyau	tubo
0960	12270430	1	Temperatursensor	temperature sensor	capteur de température	sensore della temperatura
0970	20021860	1	Kupplung	coupling	couplage	giunto
0980	20015688	1	Ölablassschraube	oil drain screw	bouchon de vidange d'huile	tappo scarico olio





EMD/10000032403/000/00

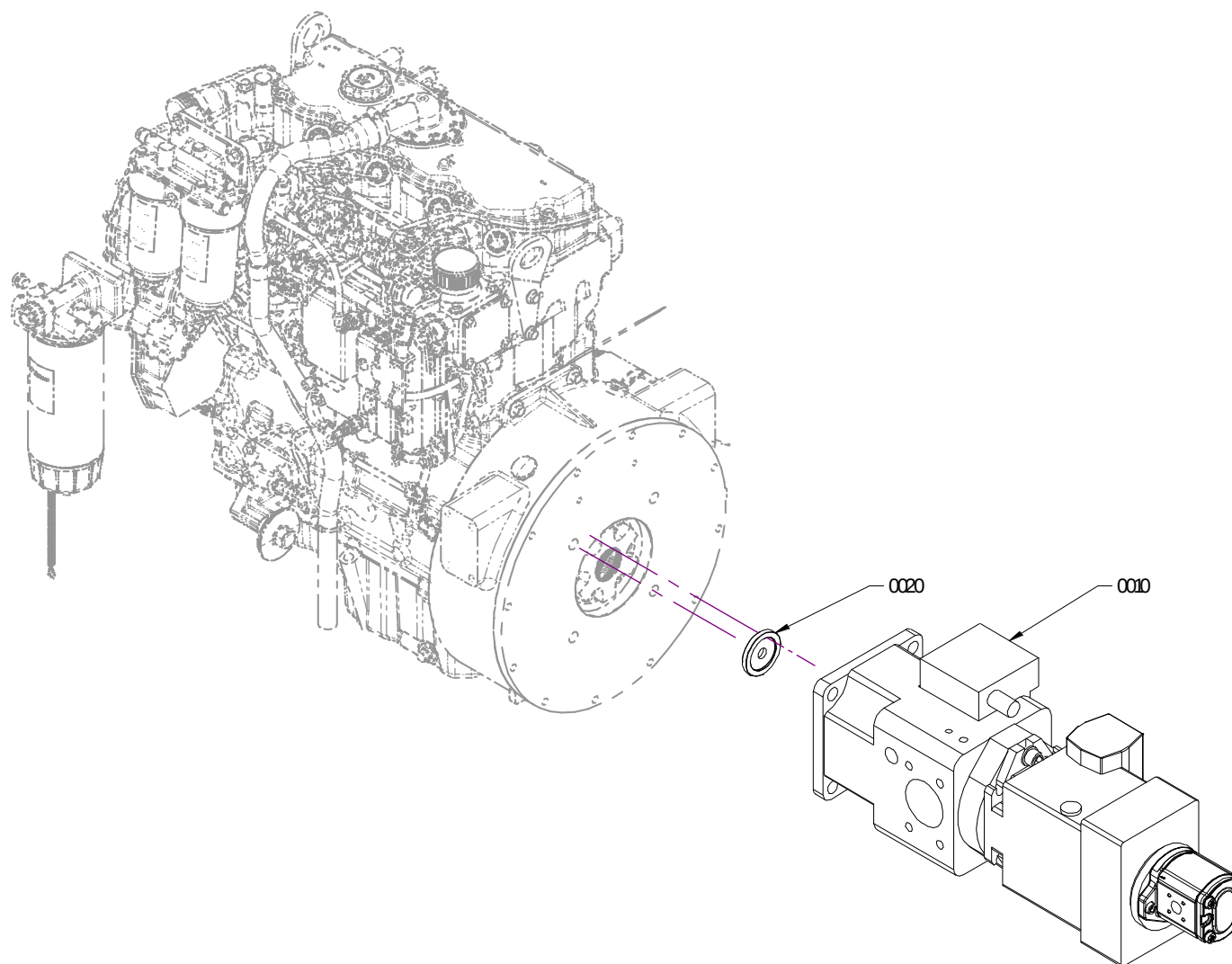
12207638

Pumpe

pump

pompe

pompa



EMD10000032527/000/01

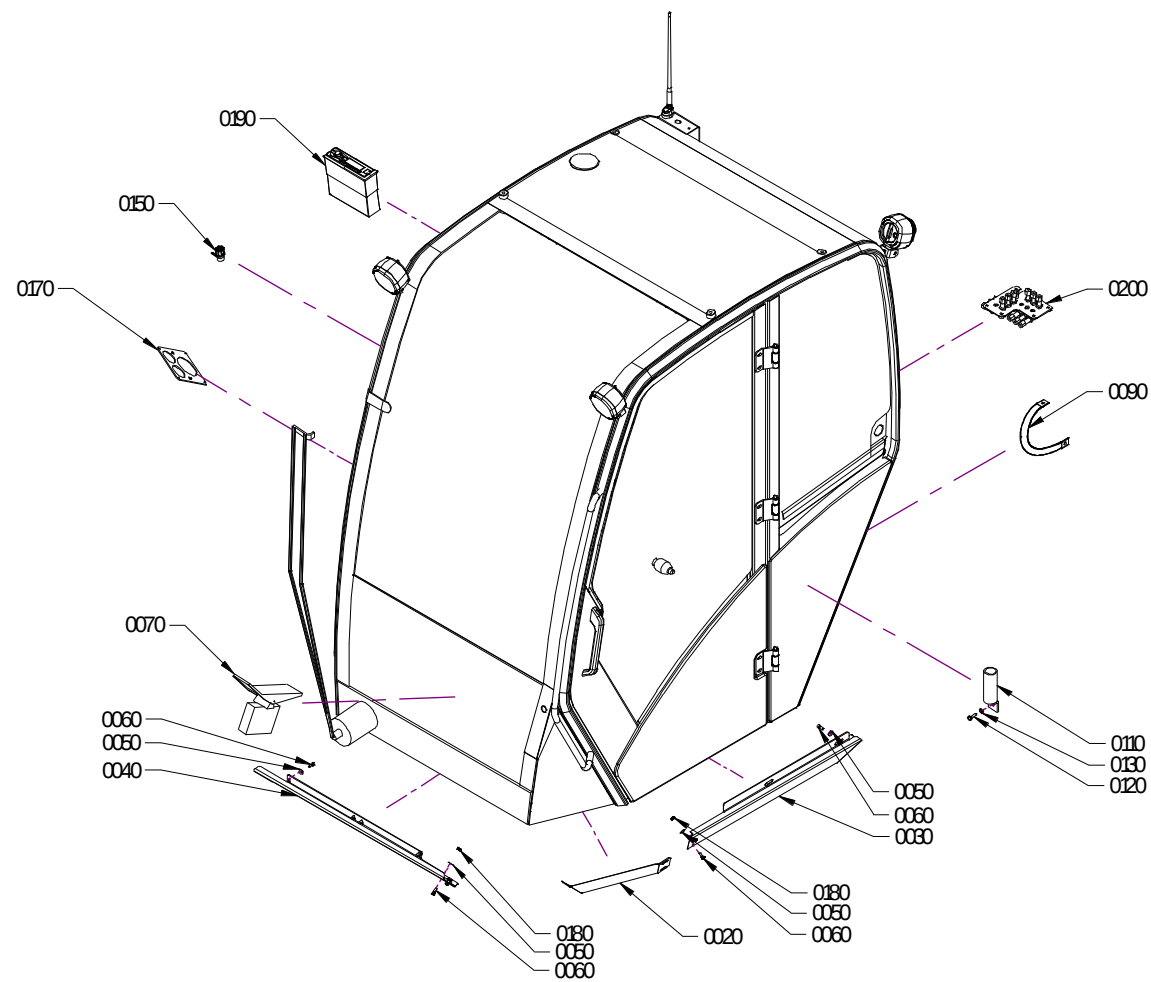
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12207638	Pumpe	pump	pompe	pompa
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12207638	Pumpe	pump	pompe	pompa
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12207638	Pumpe	pump	pompe	pompa
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12207638	Pumpe	pump	pompe	pompa
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12600984	Kabine	cabin	cabine	cabina
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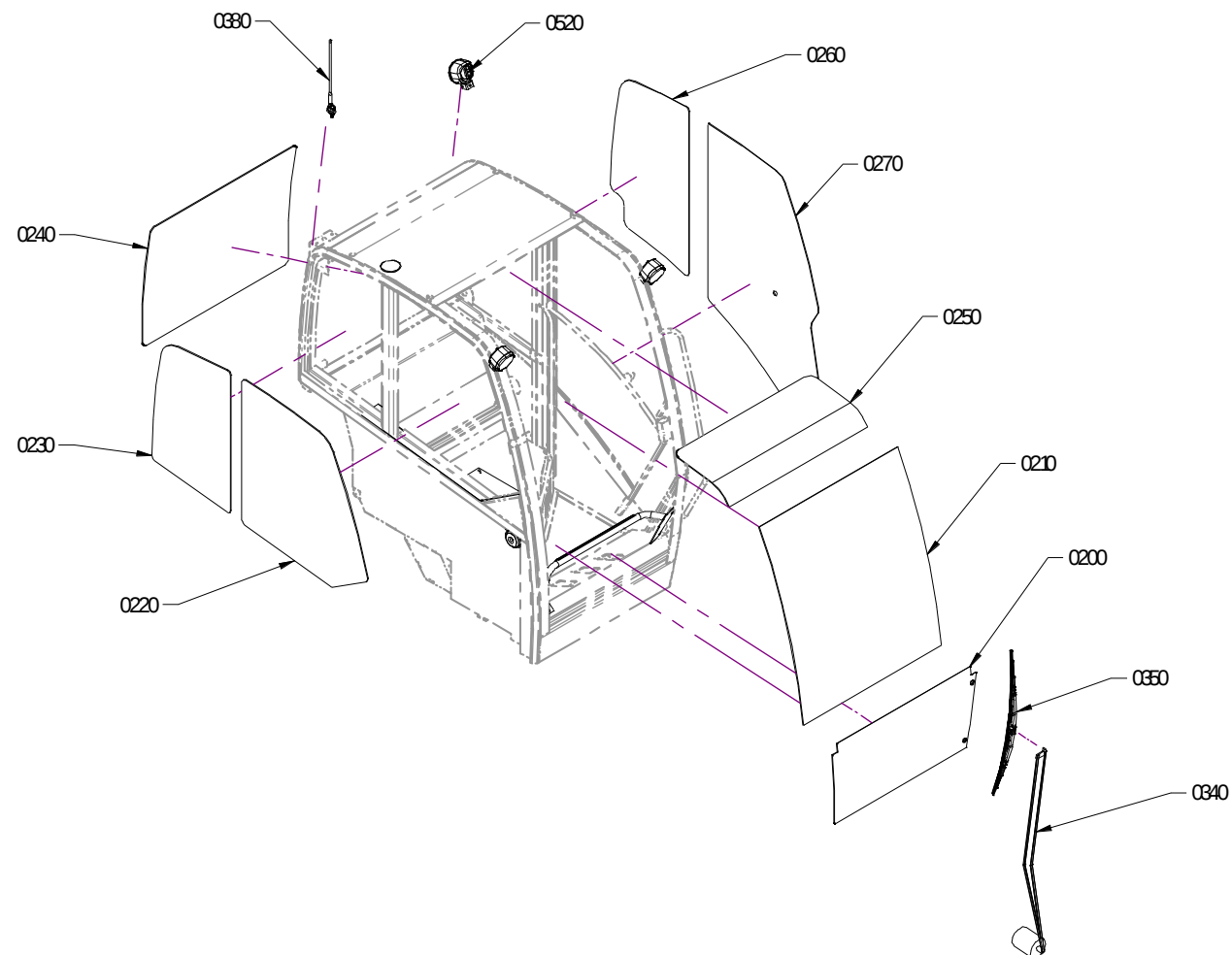
12600984	Kabine	cabin	cabine	cabina
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12600984	Kabine	cabin	cabine	cabina
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12600984	Kabine	cabin	cabine	cabina
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12600984	Kabine	cabin	cabine	cabina
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[illegible]



12106780

Kabine

cabin

cabine

cabina

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12197349	1	Puffer	buffer	tampon	tampone
0020	12197205	1	Türe	doors	portes	porte
0030	12197206	1	Frontscheibe	windshield	pare-brise avant	parabrezza
0040	12197411	1	Führung	guiding	visite guidée	guida
0050	12197412	1	Führung	guiding	visite guidée	guida
0060	12197208	1	Griff	grip	poignée	maniglia
0070	12197320	1	Bügel	bracket	parenthèse	barra di sostegno
0080	12197322	1	Halterung	holder	montage	staffa
0090	12197324	1	Bodenmatte	floor mat	tapis de sol	tappetino
0100	12197325	1	Bodenmatte	floor mat	tapis de sol	tappetino
0110	12197326	1	Abdeckung	cover	couverture	copertura
0120	12197327	1	Abdeckung	cover	couverture	copertura
0130	12197397	1	Verkleidung	paneling	foire	pannellatura
0140	12197398	1	Verkleidung	paneling	foire	pannellatura
0150	12197400	1	Verkleidung	paneling	foire	pannellatura
0160	12197401	1	Verkleidung	paneling	foire	pannellatura
0170	12197402	1	Verkleidung	paneling	foire	pannellatura
0180	12197403	1	Verkleidung	paneling	foire	pannellatura
0190	12197404	1	Verkleidung	paneling	foire	pannellatura
0200	12197231	1	Scheibe	disc	rondelle	disco
0210	12197230	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0220	12197232	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0230	12197233	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0240	12197236	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0250	12197237	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0260	12197234	1	Fensterscheibe	window pane	vitre de fenêtre	vetro della finestra
0270	12197235	1	Scheibe	disc	rondelle	disco
0280	12197328	1	Distanzhülse	spacer sleeve	manchon d'espacement	manicotto distanziatore

12106780

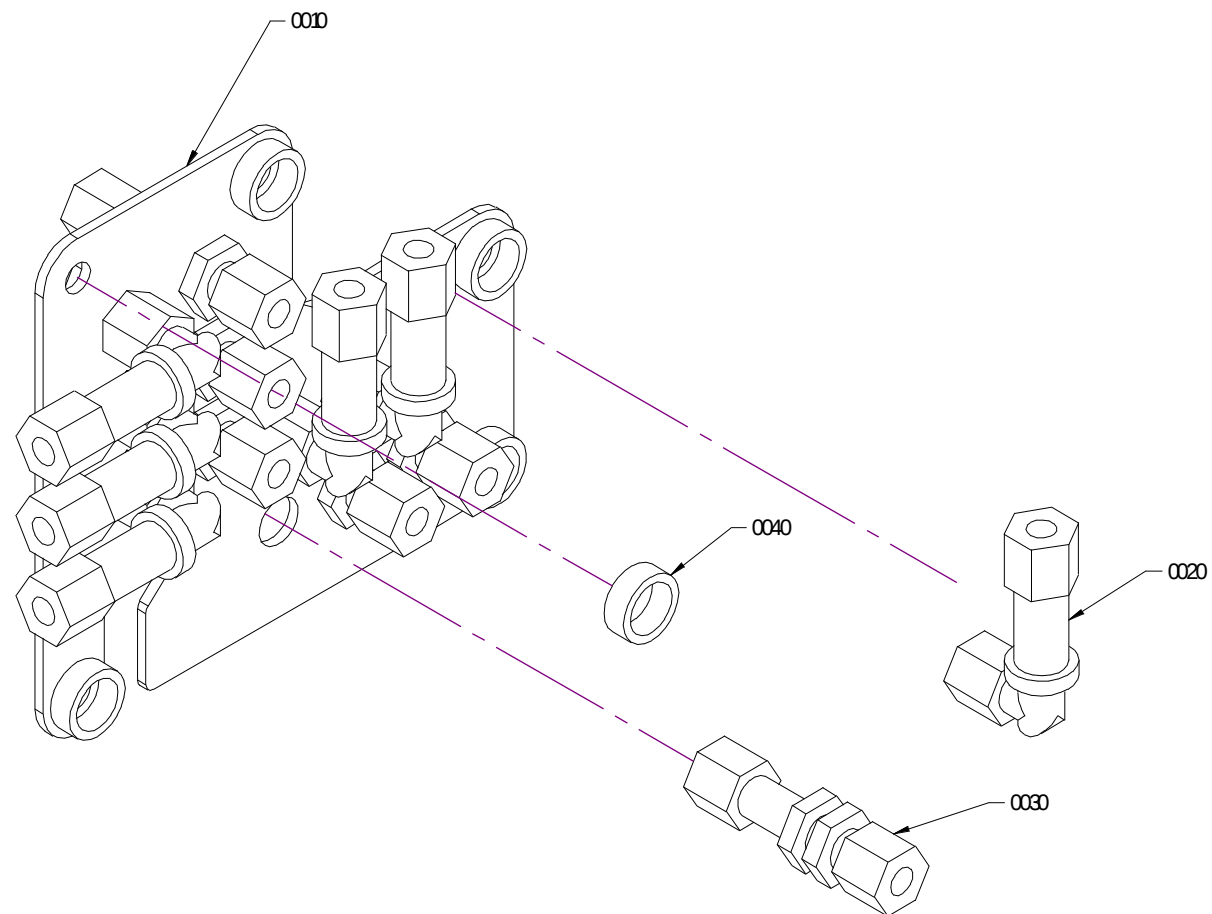
Kabine

cabin

cabine

cabina

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0290	12197330	1	Dichtung	seal	sceau	guarnizione
0300	12197336	1	Dichtung	seal	sceau	guarnizione
0310	12197338	1	Dichtung	seal	sceau	guarnizione
0320	12197334	1	Schloss	lock	verrou	serratura
0340	12197295	1	Wischerarm	wiper arm	bras d'essuie-glace	braccio tergicristallo
0350	12197294	1	Wischerblatt	wiper blade	balai d'essuie-glace	spazzola tergicristallo
0360	12197355	1	Spitzdüse	pointed nozzle	buse pointue	ugello a punta
0370	12197348	1	Rohr	tube	pipe	tubo
0380	12197356	1	Antenne	antenna	antenne	antenna
0390	20003653	1	Hupe	horn	horn	avvisatore acustico
0400	12197367	1	Scharnier	hinge	charnière	cerniera
0410	20009842	1	Verkleidung	paneling	foire	pannellatura
0420	20009843	1	Verkleidung	paneling	foire	pannellatura
0430	12106798	1	Armatur	fitting	armature	armatura
0440	12207352	1	Fussraster	foot rest	repose-pied	poggiapiede
0450	13809690	1	Modem	modem	modem	modem
0470	20053577	1	Kabine	cabin	cabine	cabina
0480	12116354	1	Adapterplatte	adapter plate	plaque d'adaptation	piastra adattatore
0500	20054774	1	Massblatt	dimension drawing	feuille de mesure	foglio misure
0520	12197218	3	Scheinwerfer	headlight	projecteur	proiettore



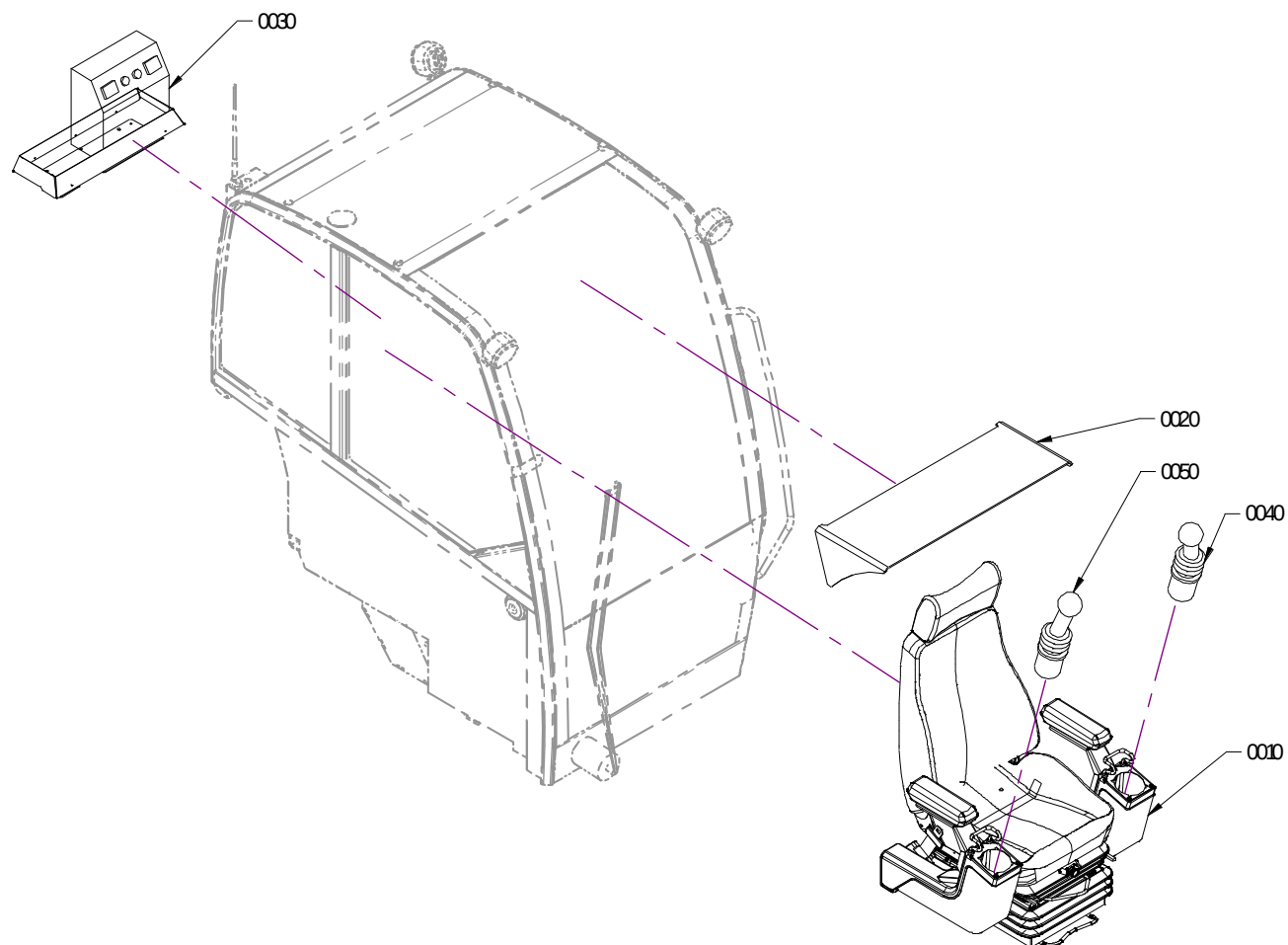
12602293	Blende	orifice	ouverture	orifizio
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12602293	Blende	orifice	ouverture	orifizio
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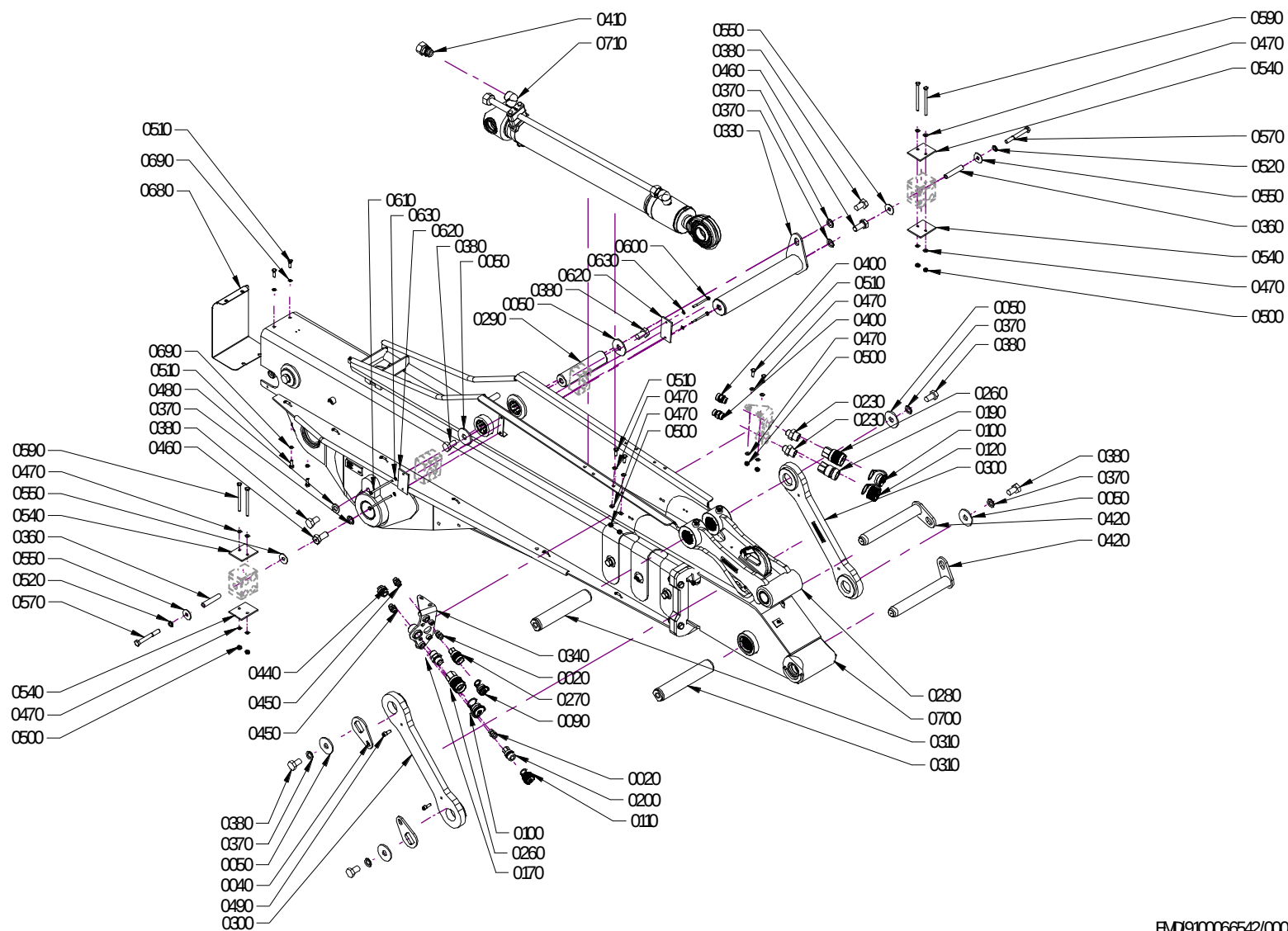
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12602293	Blende	orifice	ouverture	orifizio
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12602293	Blende	orifice	ouverture	orifizio
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EMD1000032443/000/00



EMD9100066542/000/02

12165018

Teleskoparm

telescopic arm

bras télescopique

braccio telescopico

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0020	16525440	2	Nippel	nipple	tétines	nipplo
0040	12601562	2	Lasche	lug	onglet	coprigiunto
0050	12601574	6	Scheibe	disk	disque	rondella
0090	12079300	1	Staubstecker	dust-proof plug	connecteur antipoussière	connettore a tenuta di polvere
0100	12079350	2	Staubstecker	dust-proof plug	connecteur antipoussière	connettore a tenuta di polvere
0110	12079400	1	Abdeckung	cover	recouvrement	copertura
0120	12079450	1	Abdeckung	cover	recouvrement	copertura
0170	16525490	1	Nippel	nipple	tétines	nipplo
0190	12079150	1	Kupplung	clutch	embrayage	giunto
0200	12079100	1	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0230	16525550	2	Nippel	nipple	tétines	nipplo
0260	12079250	2	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0270	12079200	1	Schraubkupplung	screw coupling	accouplement à vis	accoppiamento a vite
0280	12164506	1	Pleuel	connecting rod	bielle	biella
0290	12165553	1	Bolzen	pin	bolt	perno
0300	12163506	2	Schere	scissors	ciseaux	forbice
0310	12063146	2	Bolzen	pin	bolt	perno
0330	12205790	1	Bolzen	pin	bolt	perno
0340	20007478	1	Halterung	support	attache	attacco
0360	12160070	2	Rohr	tube	pipe	tubo
0370	16717054	7	Scheibe	disc	rondelle	disco
0380	16240400	8	Schraube	bolt	vis	vite
0400	16521740	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0410	16521896	1	Gerader Aufsteckstutzen	straight slip-on socket	connecteur droit à enficher	adattatore diritto maschio
0420	12063150	2	Schnellwechsler	quick changer	coupleur rapide	attacco rapido benna
0440	16521591	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0450	16521920	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0460	12205370	2	Reduzierung	reduction	réduction	riduzione

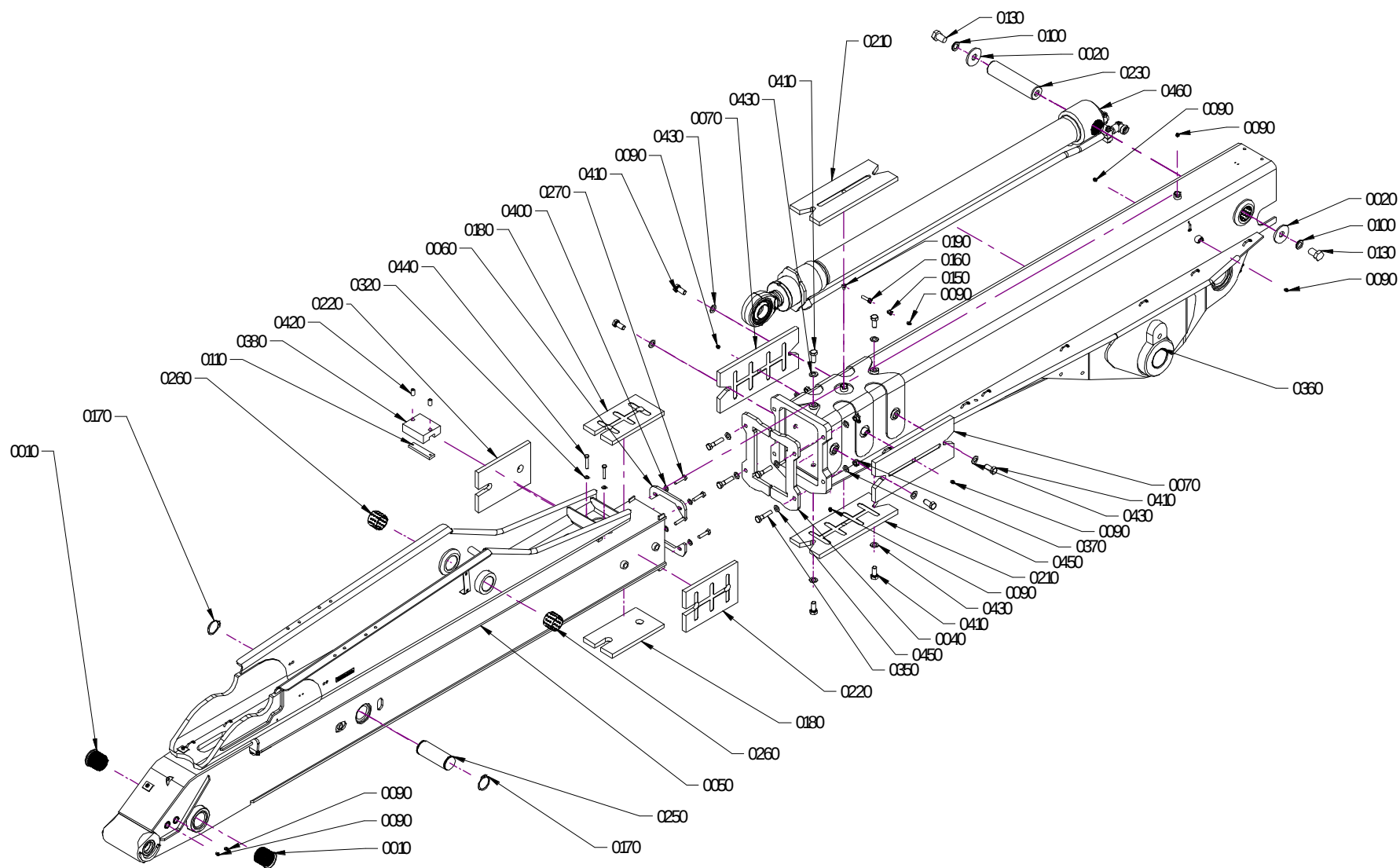
12165032

Teleskoparm

telescopic arm

bras télescopique

braccio telescopico



EMD/9100066460/000/02

12165032

Teleskoparm

telescopic arm

bras télescopique

braccio telescopico

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	12600874	2	Büchse	bushing	fourniture	boccola
0020	12601574	2	Scheibe	disk	disque	rondella
0040	12165534	2	Anschlag	end stop	stop	fermo
0050	12165850	1	Teleskop Innenrohr	telescope inside tube	tube intérieur télescopique	telescopio tubo interno
0060	12165506	2	Anschlag	end stop	stop	fermo
0070	12165538	2	Gleitplatte	sliding plate	plaque coulissante	piastra scorrevole
0090	16500100	9	Schmiernippel	grease nipple	graisseur	ingrassatore
0100	16717054	2	Scheibe	disc	rondelle	disco
0110	12069410	1	Leiste	strip	baguette	listello
0130	16240400	2	Schraube	bolt	vis	vite
0150	12350467	1	Verlängerung	extension	extension	prolunga
0160	12350481	1	Verlängerung	extension	extension	prolunga
0170	16710061	2	Sicherungsring	retaining ring	circlip	anello di sicurezza
0180	12165544	2	Gleitplatte	sliding plate	plaque coulissante	piastra scorrevole
0190	12350468	1	Verschraubung	bolting	vissage	collegamento a vite
0210	12165542	2	Gleitplatte	sliding plate	plaque coulissante	piastra scorrevole
0220	12165537	2	Gleitplatte	sliding plate	plaque coulissante	piastra scorrevole
0230	12165553	1	Bolzen	pin	bolt	perno
0250	12063144	1	Bolzen	pin	bolt	perno
0260	12164542	2	Büchse	bushing	fourniture	boccola
0270	16120500	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0320	16718100	2	Unterlegscheibe	flat washer	laveuse	rondella per vite
0350	16160700	4	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale
0360	20021808	1	Aussenrohr	external tube	tuyau extérieur	tubo esterno
0370	20029438	4	Sechskantsicherungsmutter	hex locking nut	écrou de blocage hexagonal	dado di bloccaggio esagonale
0380	20040444	1	Gleitplatte	sliding plate	plaque coulissante	piastra scorrevole
0400	16718120	4	Unterlegscheibe	flat washer	laveuse	rondella per vite
0410	16180400	8	Sechskantschraube	hex screw	vis à tête hexagonale	bullone esagonale

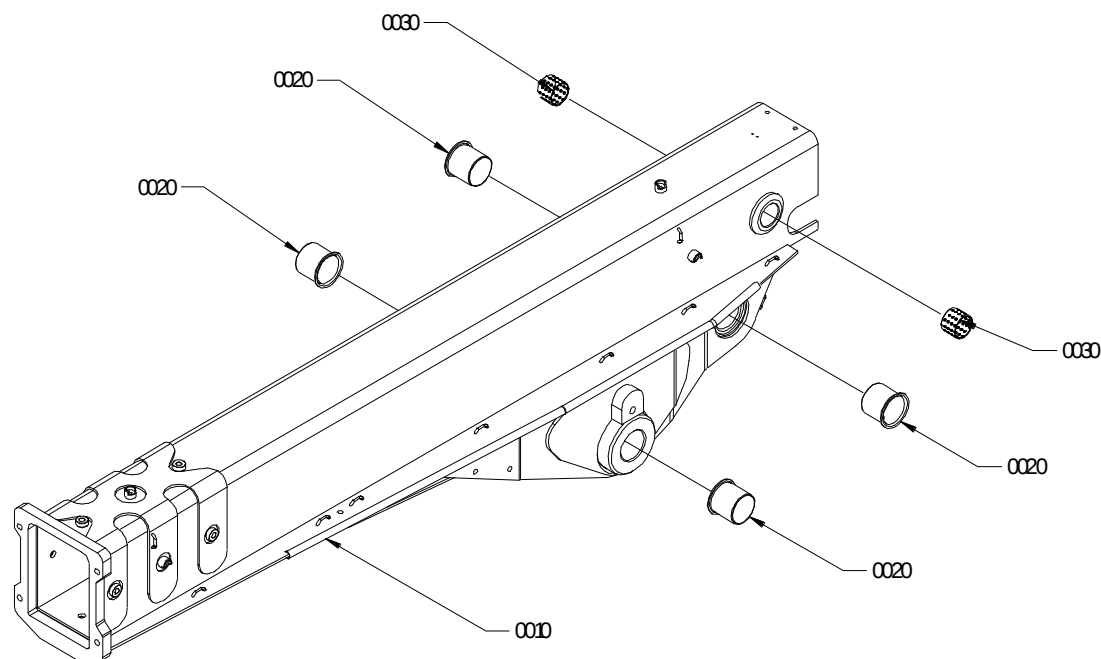
12165032	Teleskoparm	telescopic arm	bras télescopique	braccio telescopico
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12165032	Teleskoparm	telescopic arm	bras télescopique	braccio telescopico
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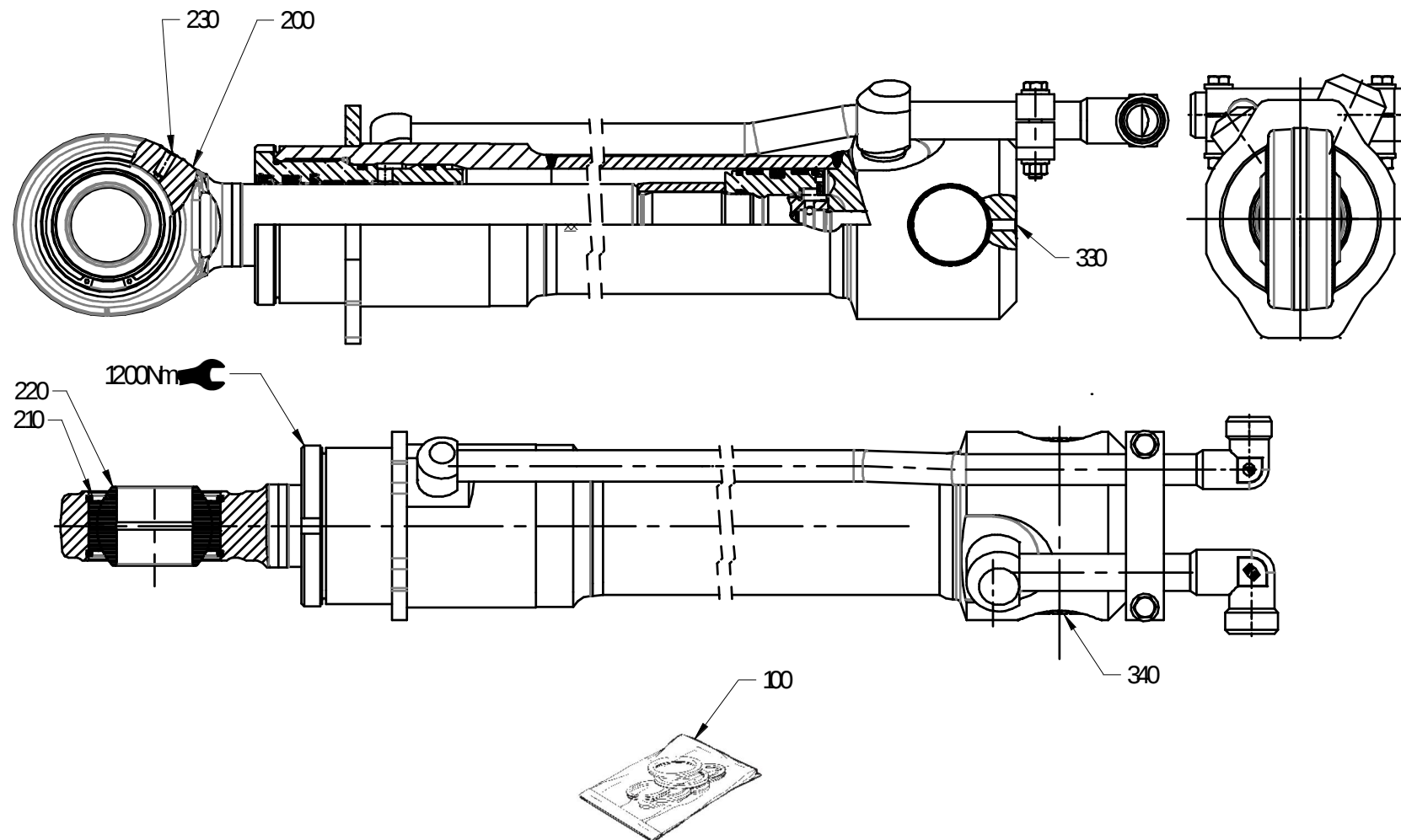
12165032	Teleskoparm	telescopic arm	bras télescopique	braccio telescopico
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12165032	Teleskoparm	telescopic arm	bras télescopique	braccio telescopico
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12165032	Teleskoparm	telescopic arm	bras télescopique	braccio telescopico
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[illegible]



20043028	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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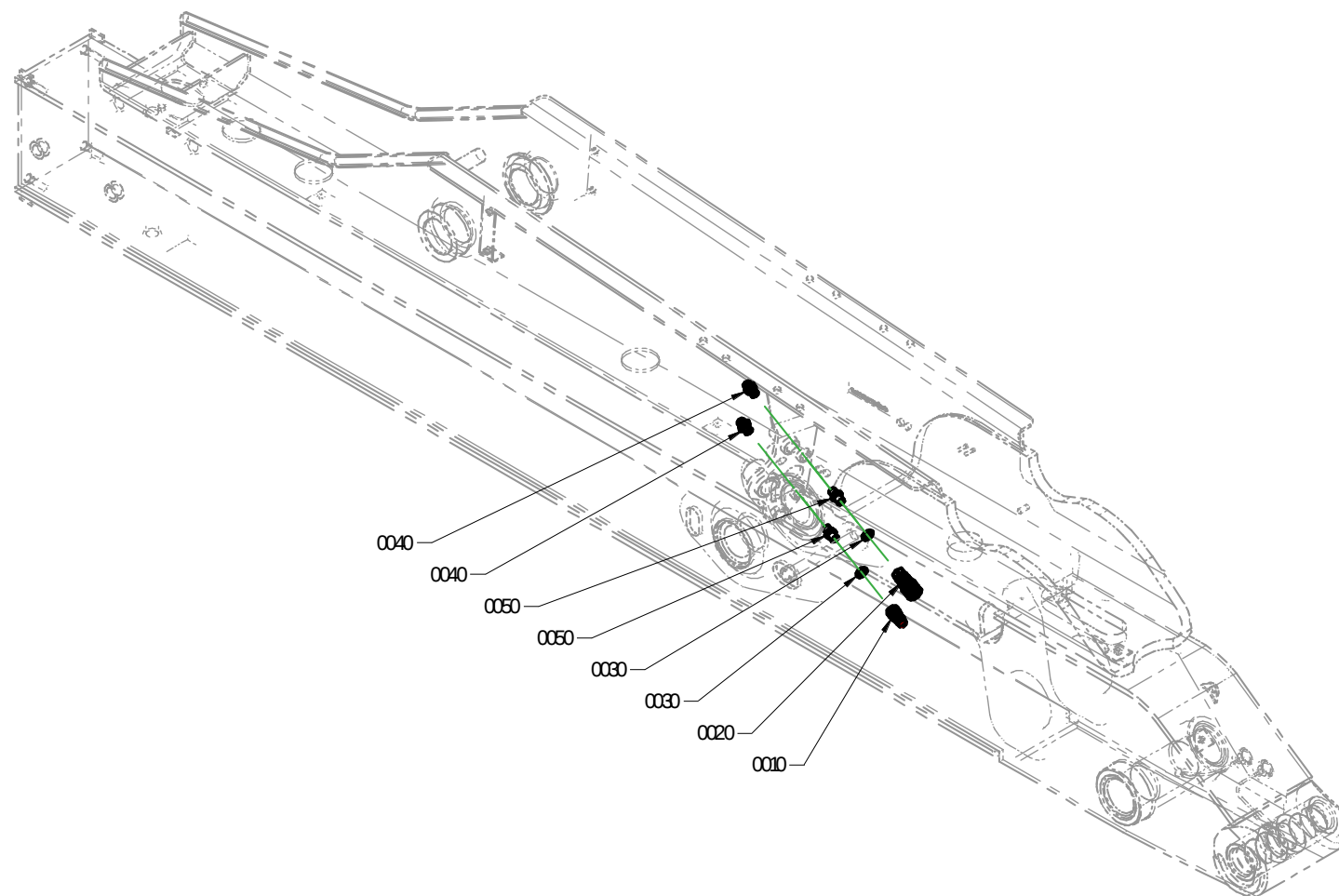
20043028	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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20043028	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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20043028	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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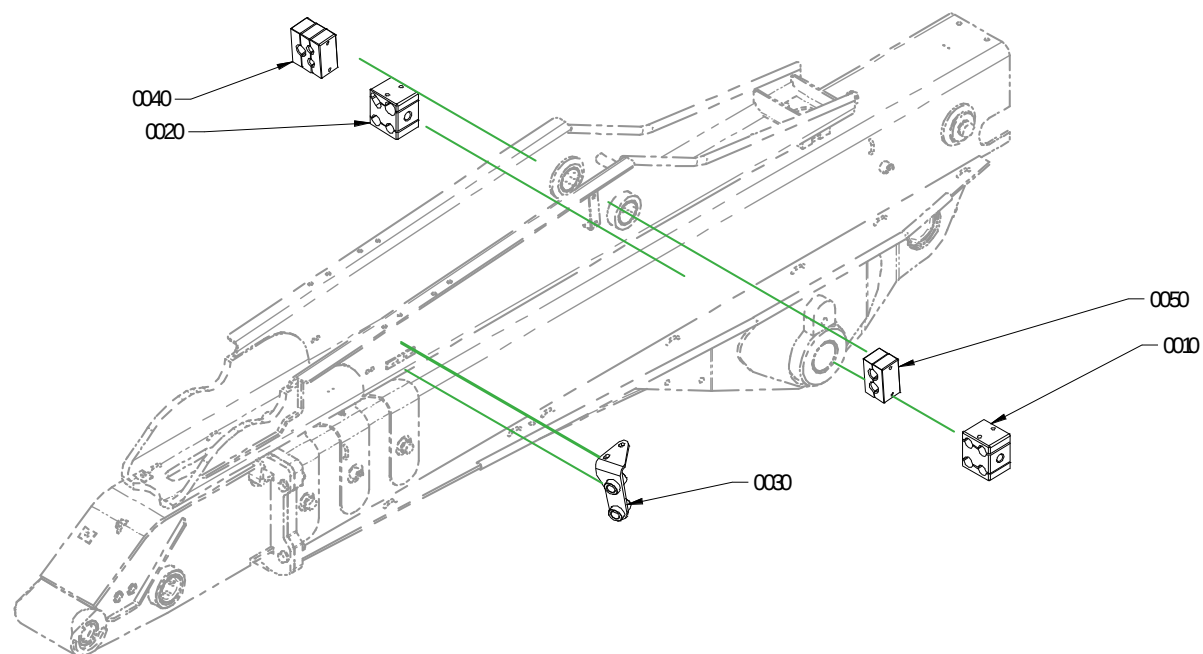
20043028	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	cilindro idraulico
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[illegible]



EMD1000030583/000/00

[illegible]



12207640	Halterung PowerUnit I	holder PowerUnit I	montage PowerUnit I	staffa PowerUnit I
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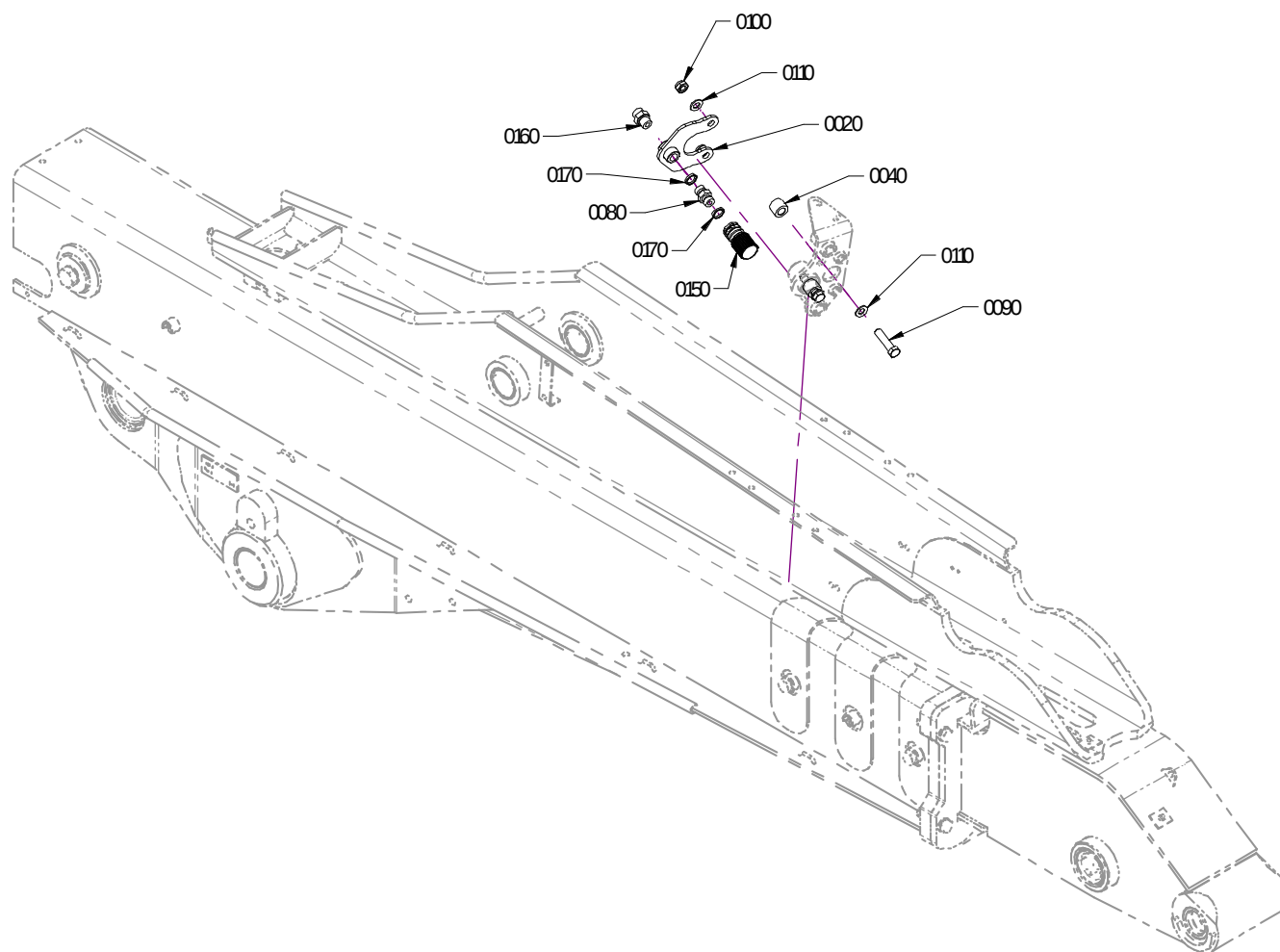
12207640	Halterung PowerUnit I	holder PowerUnit I	montage PowerUnit I	staffa PowerUnit I
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12207640	Halterung PowerUnit I	holder PowerUnit I	montage PowerUnit I	staffa PowerUnit I
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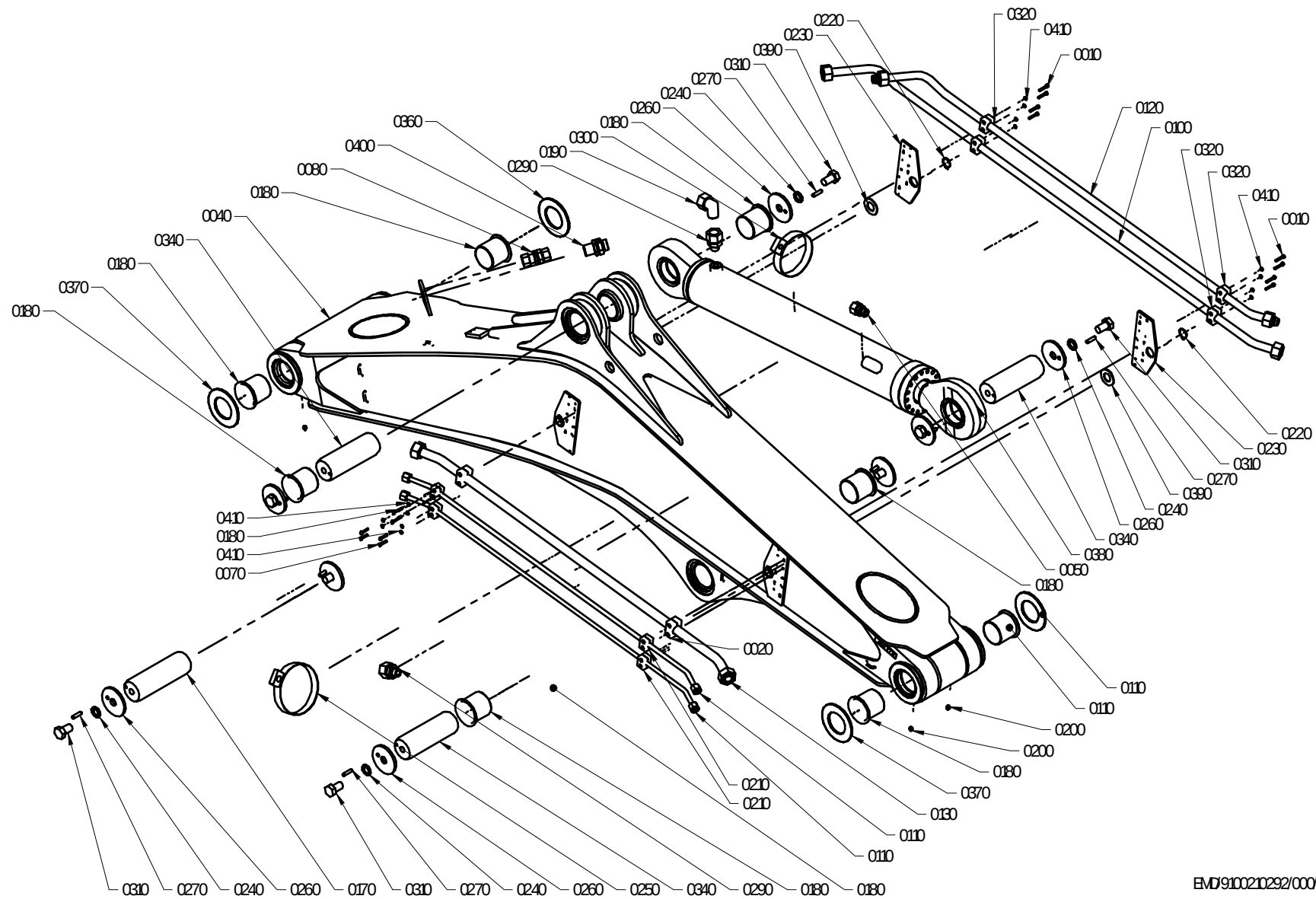
12207640	Halterung PowerUnit I	holder PowerUnit I	montage PowerUnit I	staffa PowerUnit I
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12207640	Halterung PowerUnit I	holder PowerUnit I	montage PowerUnit I	staffa PowerUnit I
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[illegible]



[illegible]



EMD/9100210292/000/02

12165018

Hauptarm

main arm

bras principal

braccio principale

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0010	16060352	8	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0020	16580430	2	Rohrschelle	pipe clamp	collier d'attache pour tuyaux	fascetta stringi-tubo
0030	16060402	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0040	12205998	1	Hauptarm	main arm	bras principal	braccio principale
0050	16521740	1	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0060	20092921	1	Rohrbruchsicherung	pipe rupture protection	protection contre la rupture des tuyaux	dispositivo sicurezza rottura tubo
0070	16060302	8	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0080	16521220	1	Verschraubung	bolting	vissage	collegamento a vite
0090	20026386	4	Zylinderschraube Innensechskant	head cap screw hex socket	vis à tête creuse à six pans creux	vite testa cilindrica esagono incassato
0100	12207896	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
0110	12207892	2	Hydraulikrohr	hydraulic tube	tuyau hydraulique	tubo idraulico
0120	12207899	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
0130	12207891	1	Hydraulikrohr	hydraulic pipe	tuyau hydraulique	tubo idraulico
0150	16520237	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0160	16521680	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto
0170	12205794	1	Bolzen	pin	bolt	perno
0180	12047706	8	Büchse	bushing	fourniture	boccola
0190	16520947	1	Einst. 45°-Winkelverschraubung	adjustable 45° elbow fitting	raccord coudé 45°	gomito 45° orientabile
0200	16500100	4	Schmiernippel	grease nipple	graisseur	ingrassatore
0210	16580214	4	Rohrschelle	pipe clamp	collier d'attache pour tuyaux	fascetta stringi-tubo
0220	16710034	4	Sicherungsring	retaining ring	circlip	anello di sicurezza
0230	12205695	4	Halterung	support	attache	attacco
0240	16717054	8	Scheibe	disc	rondelle	disco
0250	16582018	1	Rohrschelle	pipe clamp	collier d'attache pour tuyaux	fascetta stringi-tubo
0260	12205796	8	Scheibe	disk	disque	rondella
0270	16701040	8	Schwerspannstift	heavy-duty spring pin	goupille robuste	spina elastica
0280	10934270	1	O-Ring	O-ring	o-ring	anello OR
0290	16520915	2	Gerade Verbindung	straight connection	connexion directe	raccordo diritto

12165018	Hauptarm	main arm	bras principal	braccio principale
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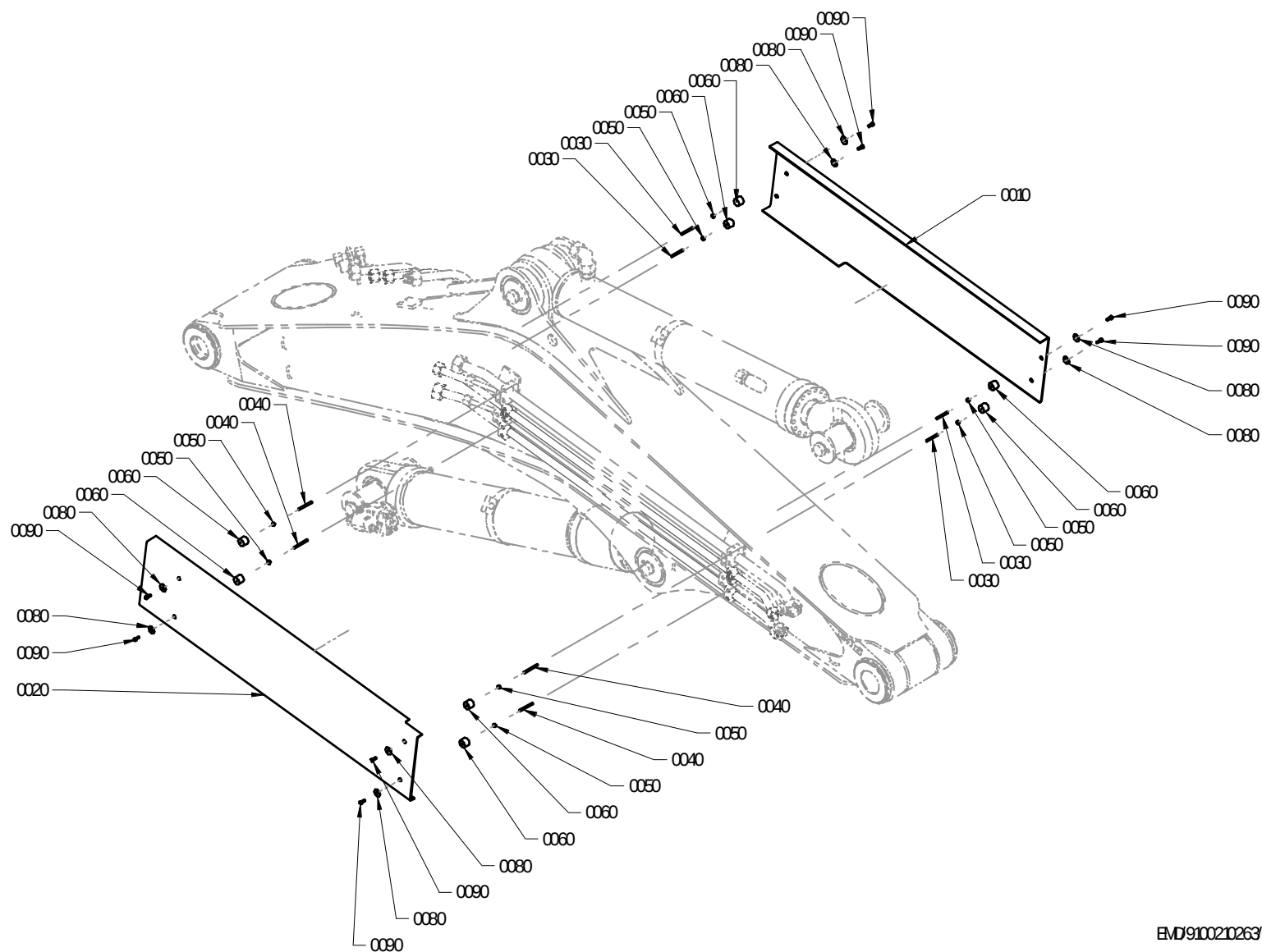
12165018	Hauptarm	main arm	bras principal	braccio principale
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12165018	Hauptarm	main arm	bras principal	braccio principale
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12165018	Hauptarm	main arm	bras principal	braccio principale
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12165018	Hauptarm	main arm	bras principal	braccio principale
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[illegible]



EMD/9100210263/000/02

12205581	Werbetafel	advertising panel	conseil de la publicité	cartellone
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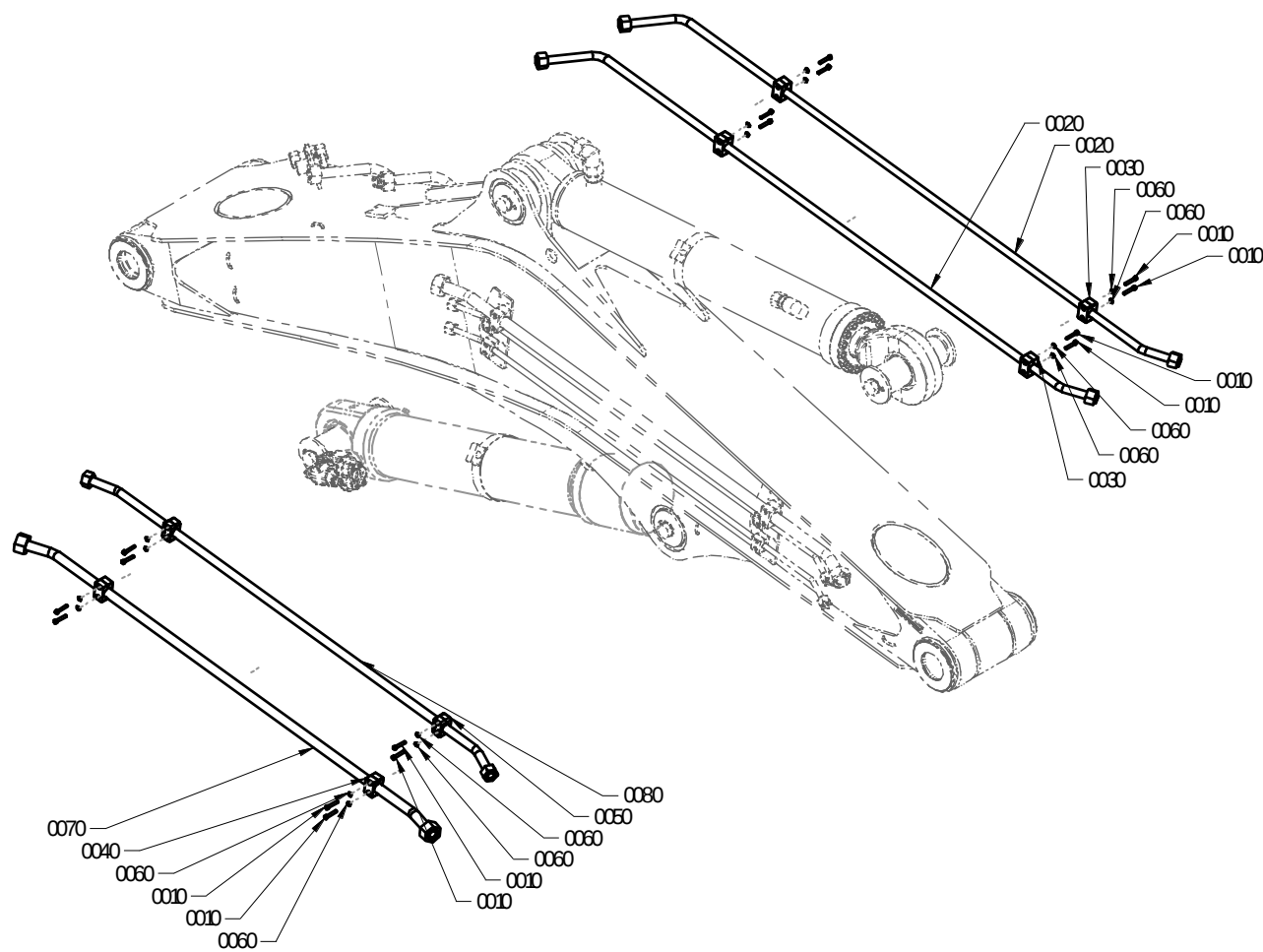
12205581	Werbetafel	advertising panel	conseil de la publicité	cartellone
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12205581	Werbetafel	advertising panel	conseil de la publicité	cartellone
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12205581	Werbetafel	advertising panel	conseil de la publicité	cartellone
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12205581	Werbetafel	advertising panel	conseil de la publicité	cartellone
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[illegible]



EMD/9100210259/000/02

12207637	Einbau PowerUnit I	installation PowerUnit I	installation PowerUnit I	impianto PowerUnit I
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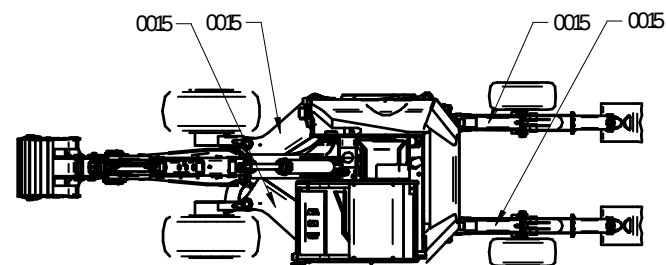
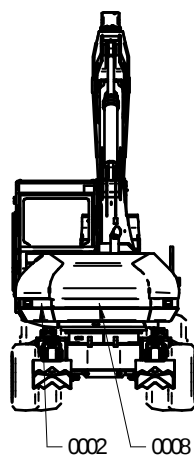
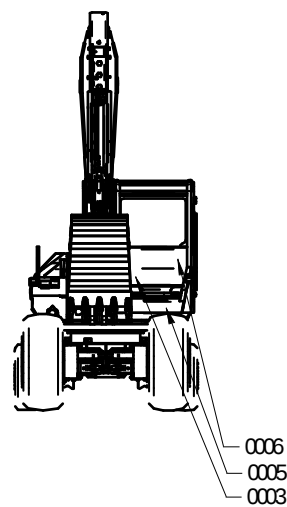
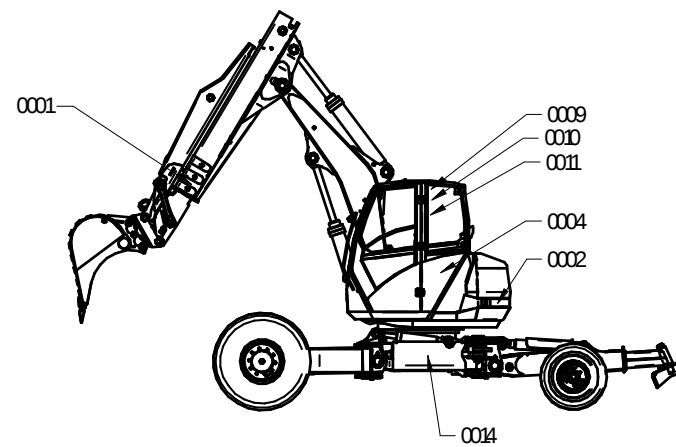
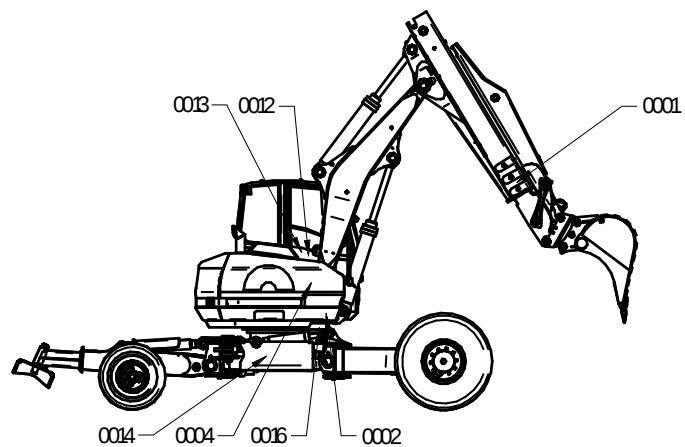
12207637	Einbau PowerUnit I	installation PowerUnit I	installation PowerUnit I	impianto PowerUnit I
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12207637	Einbau PowerUnit I	installation PowerUnit I	installation PowerUnit I	impianto PowerUnit I
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12207637	Einbau PowerUnit I	installation PowerUnit I	installation PowerUnit I	impianto PowerUnit I
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12207637	Einbau PowerUnit I	installation PowerUnit I	installation PowerUnit I	impianto PowerUnit I
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[illegible]



16788184

Beschriftungssatz

labeling kit

kit d'étiquetage

kit di etichettatura

Pos	Material Nr Order Nr	Stück Piece	Bezeichnung	Description	Designation	Descrizione
0001	16788801	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0001	16788803	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0001	16788806	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0001	16788809	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0002	16788129	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0002	16788136	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0002	16788152	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0002	16788125	2	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0003	16788948	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0004	16787972	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0004	16787973	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0005	16788110	1	Werbetafel	advertising panel	conseil de la publicité	cartellone
0006	16788181	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0008	16788274	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0009	16788195	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0009	16788194	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0009	16788163	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0010	16788191	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0010	16788192	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0010	16788193	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0011	16788161	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0012	16788795	1	Schild	sign	bouclier	cartello
0013	16788794	1	Klebeschild	adhesive label	étiquette adhésive	etichetta adesiva
0014	12197115	2.00	Klebeband	adhesive tape	ruban adhésif	nastro adesivo
0015	10950886	5.00	Klebeband	adhesive tape	ruban adhésif	nastro adesivo
0016	16788206	1	Schild	plate	panneau	lama

KAISER Mobilschreitbagger

