KINSHOFER GROUP COMPANY

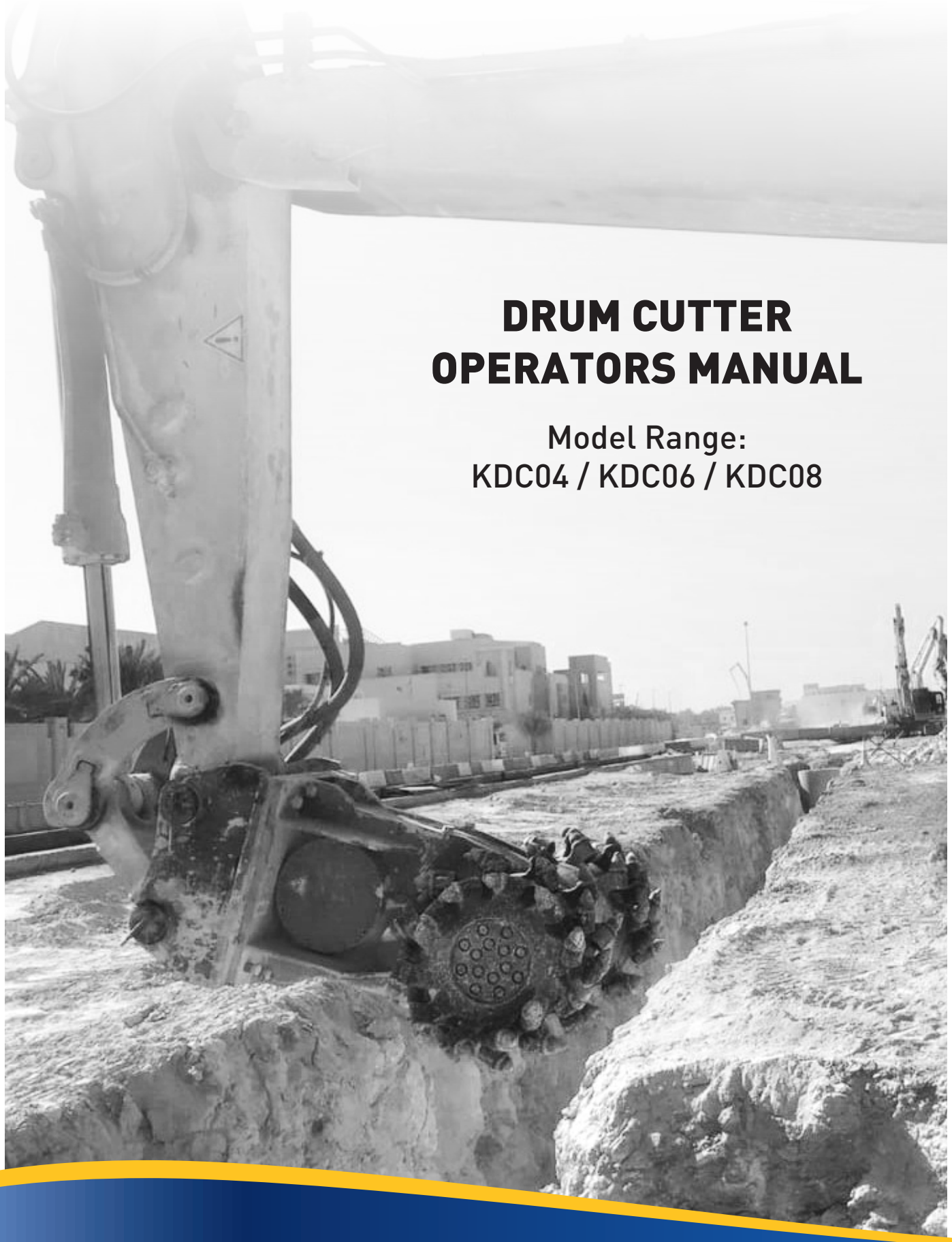
AUGERTORQUE
EARTHMOVING ATTACHMENTS

KINSHOFER GROUP COMPANY

KINSHOFER
crane and excavator attachments

99-95530001 - ISSUE 1-2

ENGLISH



DRUM CUTTER OPERATORS MANUAL

Model Range:
KDC04 / KDC06 / KDC08

Subject to changes that may arise in the course of constant product development and product improvement.

Issuer of the original operating instructions and manufacturer of the attachment:

Auger Torque Europe Ltd
Hazleton
Cheltenham
GL54 4DX
England
Tel: +44 (0) 1451 861652
Fax: +44 (0) 1451 861660
Email: sales@augertorque.com

Auger Torque Australia Pty Ltd
481 Boundary Rd
Dara
Queensland 4076
Australia
Tel: +61 (0) 7 3274 2077
Fax: +61 (0) 7 3274 5077
Email: sales@augertorque.com.au

Auger Torque USA LLC
2640 Jason Industrial Parkway
Winston, GA 30187
USA
Tel: (+1) 844 287 6300
Fax: (+1) 770 947 9916
Email: sales@augertorqueusa.com

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1. Important Information

Complete this form and keep it with the manual

Auger Torque Europe Ltd
Hazleton
Cheltenham
GL54 4DX
England
Tel: +44 (0) 1451 861652
Fax: +44 (0) 1451 861660
Email: sales@augertorque.com

Auger Torque Australia Pty Ltd
481 Boundary Rd
Dara
Queensland 4076
Australia
Tel: +61 (0) 7 3274 2077
Fax: +61 (0) 7 3274 5077
Email: sales@augertorque.com.au

Auger Torque USA LLC
2640 Jason Industrial Parkway
Winston, GA 30187
USA
Tel: (+1) 844 287 6300
Fax: (+1) 770 947 9916
Email: sales@augertorqueusa.com

MODEL NUMBER:
SERIAL NUMBER:
DATE OF MANUFACTURE:
SUPPLIER / DEALER:
DATE SOLD TO SUPPLIER / DEALER:
DATE SOLD TO ORIGINAL END USER:
OWNER OR OPERATOR:
PARENT MACHINE MAKE & MODEL:

2. Installation and commissioning report

Installation and commissioning report for cutter heads					
Dealer:					
Service address:					
Customer:					
Cutter head type:			**Cutter head serial no.:**		
Hydraulic motor type:	LD / MD / HD / XHD		**Excavator type / carrier machine:**		
			Vehicle serial no.:		
Commissioning Place/date:			**Excavator drive power:**		**kW**
Cutter head hydraulic connection:	Breaker control circuit Grab control circuit Other control circuit		**Oil quantity on hydraulic breaker/cutter head control circuit:**		**l/min (gpm)**
			Secondary protection for breaker control circuit:		**bar (psi)**
Engine drain line	YES □	NO □	**Combination of: return and drain line (according to operating instructions):**	YES □	NO □
				(Only permitted in exceptional cases!)	
Pressure/throughput setting for cutter head control circuit:	**Operating pressure**		**Hydraulic oil flow**		
	100 (1450)	**bar (psi)**			**l/min (gpm)**
	150 (2176)				
	200 (2901)				
	250 (3626)				
	300 (4351)				
	350 (5076)				
Back pressure in drain line (in outlet of cutter head)		**bar (psi)**	**Back pressure in return line (in outlet of cutter head)**		**bar (psi)**
Underwater use:	YES □	NO □	**If YES - gearbox - Ventilation filter covered (sealing plug):**	YES □	NO □
Additional information (area of application, ground structure, etc.):			**Miscellaneous:**		

This confirms receipt of the mounted cutter head in proper condition, receipt of the operating instructions and receipt of the instructions for proper operation and proper maintenance of the hydraulic cutter head and for the correct hydraulic connections and settings of the carrier machine (excavator).

Name / signature (customer service of dealer):	**Name / signature (customer):**
Place/date:	**Place/date:**

NOTICE
In order to assert warranty claims, this form must be filled in and signed to above service address of the manufacturer.

NOTICE
In the event of a modification, attachment or any other modification of the attachment or in the event of fitting to another carrier machine, a new log must be created.

3. Important notes

These instructions apply to the attachment pictured on the title page, which was developed and produced with the utmost dedication. Technical information, assembly and maintenance instructions are provided in this manual.

We will be happy to help if you have any questions about the product.
The telephone / fax numbers and the email / internet addresses are provided at the end of this operating manual.
In order to receive quick and accurate service, state the **serial number** of the attachment.

The serial number is provided on the data plate, on the delivery documents, on the receipt on the conformity declaration the attachment.

WARNING
If the delivered attachment is not properly installed, operated and maintained, the attachment and/or carried load could fall down causing serious injuries or damage to property.

Installation, operation and maintenance of the attachment may only be carried out by authorised, trained and experienced personnel.
Before beginning, these personnel must read and understand the following information:

- the operating and safety instructions for the attachment
- the instructions for the carrier and other equipment, such as a quick coupler

Failure to observe these instructions may lead to accidents, downtimes, and loss of warranty.

NOTICE
All instructions and safety guidelines of the manufacturer must be observed.
Other regional safety and environmental protection regulations must be observed.

3.1. Protection measures and safety

DANGER
Crushing / being struck by a load or attachment!
Warning of severe injury or death due to falling load.
- The danger zone must be **visibly marked** and **secured**.
- Only enter the danger zone **after setting down the attachment** and **switching off the carrier machine**.

WARNING
The installer, operator and maintenance personnel must wear **personal safety equipment** (**PSE**) and comply with the **safety regulations** in force in the country in which the attachment is used.

CAUTION
The manufacturer shall assume **no liability** in the event of accidents in which the fitter, operator or maintenance personnel does not wear suitable **personal safety equipment (PSE)**, does not maintain it properly or it is defective.

3.2. Statutory safety and accident prevention

The following regulations apply:

EC **European directives**
EC Directive 2006/42/EC
EC Directive 2003/37/EC

DIN EN ISO **Harmonised standards used:**
DIN EN ISO 4413 Hydraulic fluid power – General rules
DIN EN 474-1 Earth-moving machinery – Safety
DIN EN ISO 12100 Safety of machinery – General design principles
German standards used:
DIN 15428 Lifting equipment – Technical delivery conditions

BGR **Safety and health rules at work – BGR (Germany)**
BGR A1 Basic principle of prevention
BGR 137 Handling of hydraulic liquids
BGR 500 Operation of work equipment

LOCAL **Safety and health regulations for your country**

3.3.1. Safety directives for quick exchange systems

DIN EN **Regulation applied for quick couplers**
DIN EN 474 series - Earth-moving machinery - Safety -
Part 1: General requirements
Annex B: Quick change couplers

3.3.2. Safety guidelines for vibrations and noise emissions

EC **European Directive**
Directive 2002/44/EC - Vibration
Directive 2000/14/EC - Noise emission

DIN EN ISO **Harmonised standards used:**
DIN EN ISO 11200 Acoustics - Noise emitted by machinery and equipment
DIN EN ISO 3744 Sound pressure measurement - Noise power and noise energy levels

3.3.3. Work area guidelines for cutter head attachments

NOTICE
National work regulations are to be obtained from the competent authority.

As standard, the cutter head does not have a device to reduce dust generation. The low cutting speed and the type of rock layers to be cut together reduce the generation of dust to a minimum.
In environments and soil conditions where excessive dust arises, suitable measures must be taken such as:

- water spraying devices or
- mobile / stationary dedusting systems

WARNING
The following safety rules must be observed before and during cutting operations or during maintenance work:

- Under no circumstances should the cutter be touched when the cutter drums are rotating.
- No-one should be present in the work area before or during operation, because the cutter head produces small fragments that are projected in an uncontrolled manner and can lead to serious injuries.
- As soon as persons enter this work area, cutting operations must be stopped immediately.
- To do this, lower the cutter head to the floor and switch off the engine (see chapter **Maintenance and service**).

3.4. Explanation of symbols

Symbol classification

The following classifications are defined according to **ANSI Z535.6-2011** (based on **ISO 3864**) and provide immediate information on the degree of hazard.

NOTICE
In order to avoid personal injury and damage to property, all instructions following these safety signs must be followed.

Symbols	Description
	**DANGER** [signal word] **Extremely dangerous** situation in which non-observance of the safety instruction will result in **death or serious injury**.
	WARNING [signal word] **Dangerous** situation in which non-observance of the safety information can result in **death or serious injury**.
	CAUTION [signal word] **Dangerous** situation in which non-observance of the safety instruction can result in **minor injuries**.
	**NOTICE** [signal word] Indicates **improper handling** which can lead to **material damage**.
	This symbol indicates a **Notice** of important information.
	This symbol highlights **information** as well as useful **tips** and **recommendations** for efficient and trouble-free operation.

3.5. General safety sticker

Information, danger, **warning and prohibition signs** required for the use of the device, as well as **the legally prescribed signs**, must be positioned in a clearly visible and safe manner.

NOTICE
Signage damaged during transport or on site must be replaced immediately.

The signage below may be applied to the attachment - depending on the attachment type (see also **Position of the safety stickers chapter**).

General notice, warning, danger, and prohibition signs	
	**DANGER / WARNING / CAUTION** **Danger of injury and death** Hazardous situations.
 	**NOTICE** Read carefully and observe the operating instructions.
	NOTICE - Environmental damage: Materials hazardous to the environment.
 	**DANGER - Danger to life**: Electrical potential (electric shock).
	WARNING: Danger of injury: Hot surface (danger of burns).
 	Close off and secure the danger area. Keep a safe distance of **15 m** during operation.
	Warning: Danger to life: High-voltage lines safety clearance.
 	**Warning: Danger of injury:** Suspended and falling loads.
	WARNING: Danger of injury: Falling loads and materials.
 	**Warning: Danger of injury:** Before disconnecting the hydraulic connections, bleed the hydraulic pressure off of the lines.
	WARNING: Danger of injury: Danger of crushing
 	**WARNING: Danger of injury**: Close the protective screen/cabin - protection against stone impact.
	WARNING: Danger of injury: Do not operate/drive on terrain contours, steep gradients, or critical ground conditions - risk of tipping.
 	Greasing points
	WARNING: Danger of injury: DO NOT lubricate or adjust the machine during operation.

3.6. Safety sticker

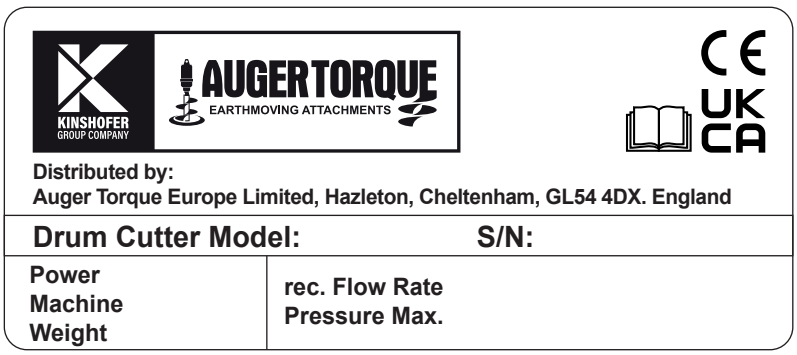
NOTICE
All safety stickers must remain legible.

Safety sticker


Symbol	Description	Symbol	Description
	**DANGER / WARNING / CAUTION** of hazardous situation: Pay attention to the risk of injuries, material or property damage. Follow the instructions.		Adhere to the safety clearance: At least 10 m / 30 ft.
	Before carrying out maintenance and repair work: Switch the machine off, read and comprehend the operating instructions and the safety instructions.		Warning of hand injuries: Do not guide the attachment by hand. Keep hands away from moveable / moving parts.
	Read the operating instructions, safety instructions and regional regulations carefully, and ensure you understand them to guarantee safe and proper operation and maintenance.		Warning of suspended load: Do not stand under the suspended load.

3.7. Serial plate - cutter head

NOTICE
The serial plate, as shown below or similar, is fastened to the attachment and must be kept clearly legible:

Serial plate cutter head


3.8. Personal safety equipment (PSE)

CAUTION
Personal safety equipment (**PSE**) serves to protect individuals' health and safety in the workplace. The **potential hazards** covered with the help of the personal safety equipment include:
» **Physical**, **chemical**, **biological** and **electrical** hazards,
» Hazards due to **heat**, **sparks** and **fire**
» As well as hazards due to **fine dust** in the air.

NOTICE
The following **mandatory signs** and **prohibition signs** used in this operating manual and on the machine indicate to the user that these safety measures are required and must be followed at all times during operation:

Symbol	Regulatory sign
	**Protective clothing** Protective clothing consists of a closely-fitting, non-flammable overall having low resistance to tearing, narrow sleeves, and without protruding parts. It is mainly designed to protect against being caught by moving components. Do not wear rings, chains or other jewellery over it.
	**Protective gloves** Wearing protective gloves protects the hands from liquids harmful to the skin, injuries such as grazes and minor cuts.
	**Safety shoes** Safety shoes protect the feet from crushing, from falling objects, and from slipping on slick surfaces.
	**Protective helmet** A protective helmet shields the head from falling objects, swinging loads, and collisions with fixed objects.
	**Safety glasses** Safety glasses serve to protect the eyes from flying objects and splattering liquids.
	**Face protection** The face protection protects the whole face from sparks, flying parts and from splashing oils, chemicals or other liquids.
	**Hearing protection** By wearing hearing protection, such as e.g. capsule hearing protection or protective plugs, permanent hearing damage caused by high sound levels (engine or machine noise) can be prevented.
	**Hair nets** For longer, loose hair, make sure that the operator or user wears a hair net. This prevents possible entanglement in moving, tilting or rotating machine parts.
Symbol	**Prohibition sign**
	**Open clothing** Care must be taken that no open, wide or loose clothing is worn, so that it cannot get caught in moving, turning, pivoting or rotating machine parts!

3.9. Requisite personnel

Insufficient qualifications

DANGER
Danger in case of insufficiently-qualified individuals!
Inadequately-qualified individuals cannot assess the risks of operating the machine; they place themselves or others in **danger of severe** or **fatal injury**!

- Permit only qualified personnel to perform all tasks.
- Keep all insufficiently-qualified individuals away from the work site.

Personnel qualifications

Various duties described in this operating manual present distinct challenges to associated personnel.
In choosing personnel, always follow applicable age- and job-related regulations!
Consider as personnel only those individuals who can be depended upon to do their work reliably.
Individuals whose reactions are compromised by use of drugs, alcohol, or medications are not authorized.

Instructed persons

Instructed persons are those individuals who have been thoroughly and verifiably instructed in the tasks entrusted to them and the possible dangers involved.

Instruction

Personnel are to be instructed at regular intervals. For improved tracking, create an instruction log containing at least: the following information:

- Date
- Trainee's name
- Type/subject of instruction
- Instructor's name
- Signature fields for the instructor and the trainee

Target groups

This operating manual is aimed at the following target groups:

- **Operating personnel**
  Personnel who have knowledge of country-specific accident prevention provisions.
- **Workshop and service personnel** (certified partners and manufacturers)
  Personnel who carry out the installation and commissioning work.
  They are professionally trained and have successfully completed manufacturer's training.
- **Maintenance personnel**
  Personnel who have knowledge of country-specific environmental protection provisions for the disposal of lubricants.

3.10. Damage to health due to vibrations

WARNING
Vibrations can cause damage to health.
The max. daily stipulated working shall not be exceeded.

EC Directive 2002/44/EC

Exposure limit values and **action levels** for full body vibrations (standardised to a reference time period of 8 hours daily):

1. **Exposure limit value** determined as **1.15 m/s**^{2}
   Or, if desired by a member state:
   Vibration exposure value determined as **21 m/s**$^{1.75}$.

2. **Action value** determined as **0.55 m/s**^{2}
   Or, if desired by a member state:
   Vibration exposure value determined as **9.1 m/s**$^{1.75}$.

Vibrations arising during operation and transferred to the carrier machine and the operator. The intensity of these vibrations varies depending on the material being processed.
The maximum working time for which the operator is permitted to be exposed to these vibrations in any given day, is stipulated in the following table:

Intensity of the vibrations	Max. daily working time [h]
Light	8
Moderate	6
Heavy	4

3.11. Residual risks

The following section identifies residual risks that were ascertained on the basis of a risk assessment.
To reduce the risk of personal injury and property damage and to prevent dangerous situations, this and ensuing sections present specific **safety information** to be taken into account.

DANGER

Suspended loads
Life-threatening danger from suspended loads!
Falling loads can lead to severe injury, including death.
- Never walk beneath suspended loads.
- Move loads only under supervision.
- Ensure that loads are balanced.
- Remove and secure the load before leaving the work site.
  Do not impede the machine in the work area.

NOTICE

Structural modifications
No structural modifications or changes to settings may be made to the attachment or its components!
Unauthorised alterations may lead to the loss of operational reliability, property damage, or may void the warranty.
- Follow directives as they are described in these operating instructions.
  - If you have additional questions, contact the manufacturer.
- Do not weld the attachment until after
  - you have consulted the manufacturer
  - and received welding instructions.
- Do not tamper with safety devices under any circumstances.

WARNING

Incorrect spare parts
Incorrect spare parts pose a danger of injury!
Incorrect or faulty replacement parts compromise on-the-job safety and can cause serious injury or lead to malfunctions, damage to the machine, or complete failure.
- Use only approved, **original spare parts**:
  - Order from distributors or directly from the manufacturer.
  - If you have any questions regarding the use of parts, accessories and spare parts:
    Contact personnel responsible on site or the manufacturer.

CAUTION

Noise
Hearing loss resulting from noise!
Operating noise can cause permanent damage to hearing.
- Always wear **hearing protection** when at work.
- During operation, see that no one is **within 10 meters** of the machine and the tool.
- Persons in the **danger zone**: **Stop work immediately!**

NOTICE

Environmental hazards
Incorrect handling or disposal of materials hazardous to the environment can cause significant environmental damage.

- Remove old or excess grease from lubrication points.
- Collect waste oil and grease in suitable containers.
- Observe local regulations for waste disposal.
- Immediately initiate suitable countermeasures if dangerous materials enter the environment, and inform the appropriate local authorities.

WARNING

Hydraulic system
Life-threatening danger from hydraulic energy!
Hydraulic energy can cause serious injury, including death. Hydraulically-actuated parts can move unexpectedly. Hydraulic fluid under high pressure can escape as a result of damage to individual components.

- Permit only trained personnel to work on hydraulic equipment.
- Before beginning work on hydraulic equipment, turn off the drive motor and secure it against restarting.
- Relieve pressure in all hydraulic conduits and check for absence of pressure.
- Remove all air from newly attached hydraulic components.
- Do not change pressure settings above the specified maximum values.
- Inspect and replace hydraulic hoses according to the maintenance check-list.

DANGER

Risk of injury due to high-pressure hydraulic fluid escaping!

- If **high-pressure hydraulic fluid** escapes, it can **penetrate the skin** - seek medical assistance immediately.
- **DO NOT use the fingers** to search for escaping oil.
- **NEVER position your face** close to possible exit points.

3.12. Transport, Unloading and Packaging

The attachment is carefully packed by the manufacturer in order to avoid damage during transportation.

WARNING
Personal injuries and damage to property can be caused by lifted loads falling down.

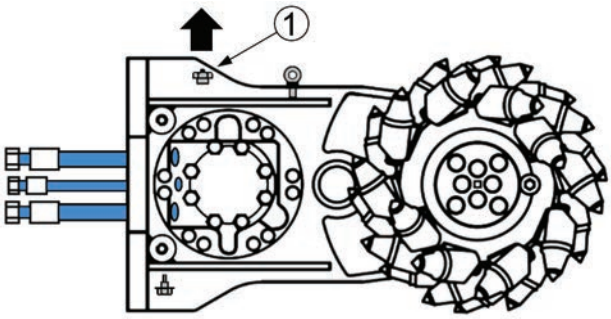
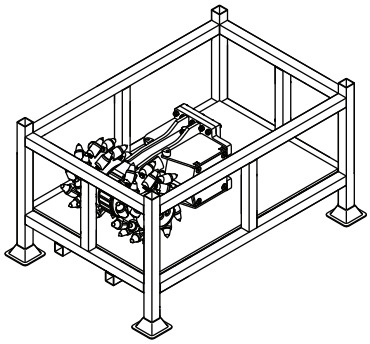
- Use lifting equipment with sufficient carrying capacity to unload the attachment from the transport vehicle.

3.12.1. Transport and packaging of cutter heads

The cutter heads are attached to a metal transportation stillage and protected with plastic film.

Secure the cutter head

- Make sure the cutter head is set down so that the vent plug (1) is at the top.
- Make sure that no hydraulic oil leaks out of the hydraulic motor.
- Lash the cutter head down tightly with tension straps.

Vent plug - top -	Transportation stillage
	

3.12.2. Transport options for the cutter head

Transport device

The cutter head is maneuvered on a transportation stillage with a **forklift.** The **"unpacked"**cutter head is transported with a suitable load belt or chain attached to the ring screw with a **loading crane** (electric lifting crane, workshop crane, etc.).The operator must be authorized to operate the transport device.

WARNING
Danger from suspended loads
If the cutter head falls this can cause serious injuries.

Load capacity of transport device

The minimum requirement regarding the load-bearing capacity of the transport device (forklift or crane) is based on the weight of the respective cutter head type (see chapter **Technical information**).

Transport with forklift

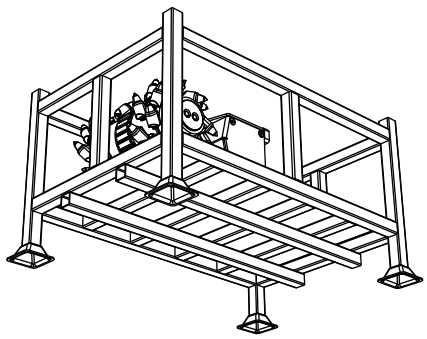
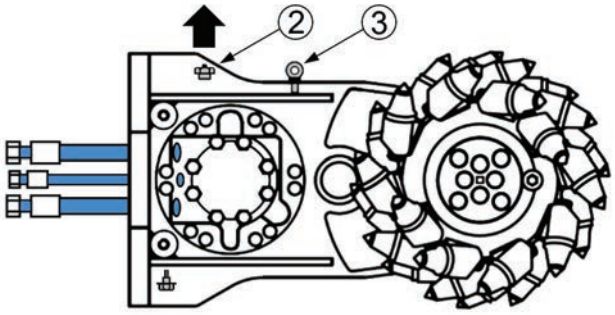
When transporting the packaged cutter head with a forklift, please note the following:

- The position of the centre of gravity must be determined by safety trained personnel during unloading and transport.
- Drive the forks of the forklift to the underside of the metal stillage (1).
- Raise the stillage a **max. of 10 cm** and check stability.
- Carefully drive the stillage to the installation site and lower it slowly and evenly.

Transport with crane

When transporting the unpackaged cutter head with a crane, please note the following:

- Use the ring screw **M12 DIN 580** (3) and suitable lifting gear for lifting the cutter head with a crane (see table **Weight of cutter heads**).
- Make sure that the vent plug (2) is at the top.
- Screw the ring screw (3) completely into the cutter head.
- Carefully drive the cutter head to the installation site and lower it slowly and evenly.

Transportation stillage	Ring screw
① 	

3.13. Incoming goods inspection

NOTICE
Unpack the delivered goods carefully so that no parts remain in the packaging. Immediately after unpacking, check:

- The attachment and any accessories included in the delivery for transport damage and defects.
- The completeness of the delivery with reference to the delivery note.

Use the original packaging for any return shipping. Dispose of the packaging in accordance with
the regional regulations.

3.14. Service link

- Spare parts
- Technical support
- Returns

Service link *sales@augertorque.com*
sales@augertorque.com.au
sales@augertorqueusa.com

4. Product information

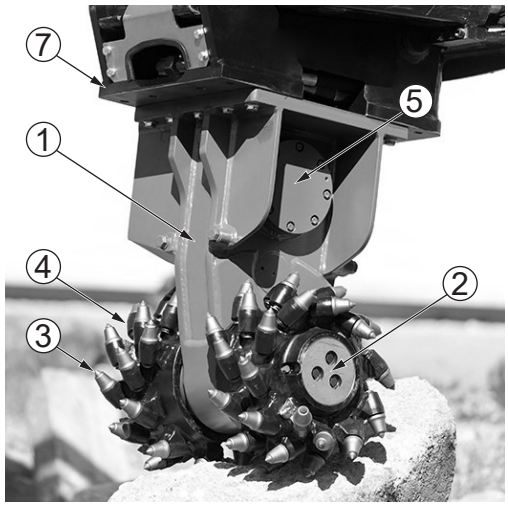
4.1. Product overview

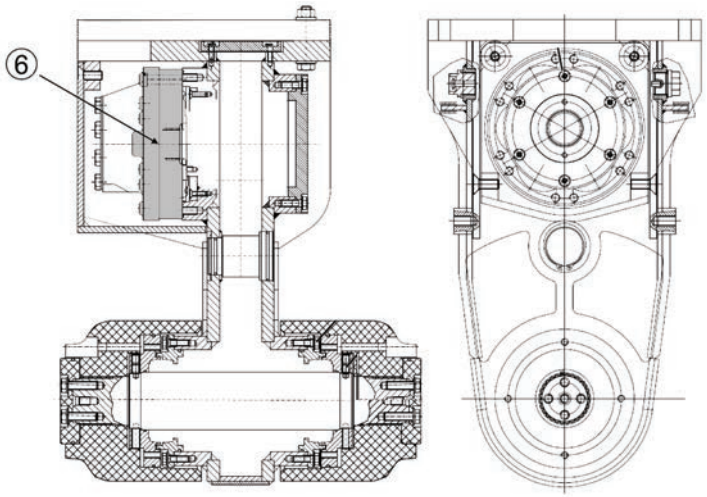
These operating instructions apply to the following **cutter heads**:

Type	KDC04	KDC06	KDC08
	[WS15]		

The version delivered can be found on the accompanying paperwork (e.g. delivery note).

Cutter head KDC04-06-08 [WS15]





No.	Description
1	Housing
2	Cutter drum (left/right)
3	Teeth
4	Tooth holders
5	Gearbox housing
6	Hydraulic motor (radial piston motor)
7	Flange for adapter

4.2. Intended use

The **KDC cutter head** is designed for use on the excavator with the following operating weights:

Type	KDC04	KDC06	KDC08
	[WS15]	[WS15]	[WS15]
Operating weight [t]	2 - 4	4 - 6	6 - 8

Cutter heads from **Auger Torque** are suitable for cutting stone, masonry, concrete, asphalt and in wet areas (in the water).
The cutter head is operated using an **adapter for rigid mounting** or a bolted adapter for the **quick coupler adapter** on the hydraulic excavator.

Various hydraulic motors are available for the cutter heads, depending on the excavator's oil flow (see chapter **Technical information - specifications.**).
Depending on the type of application, the cutting heads can be fitted with appropriate cutting drums, such as **profiling, excavating** or **demolition drums**
The cutting drums can be equipped with specific teeth depending on the type of use, the nature of the ground or the subsurface (see chapter **Cutting tools - tooth types).**

4.2.1. Improper use of the mounted cutter head

In order to avoid damage to the cutter head or the excavator, the following must be taken into account:

- Do not operate the cutter head at the end of the stroke of a hydraulic cylinder.
- Do not operate the cutter drum with damaged or missing teeth.
- Never operate the cutter head in the opposite direction of rotation.
- The excavator must not be driven during the cutting operation.
- Never set down the cutter head on the cutting surface before starting.
  Place the cutter head slowly on the surface during operation so that it does not become blocked.

4.3. Restrictions

WARNING
Danger of injury and property damage due to misuse.
Improper use of the attachment can lead to hazardous situations, operational interruptions and to the voiding of the warranty.
► Observe the uses that are described in chapter **Proper intended use**.

4.4. Foreseeable misuse

NOTICE
During daily work, it's possible that routines cause **operating errors to occur** or that instructions are ignored. This can be caused by inadequate attention or inadequate knowledge on the part of the operator.

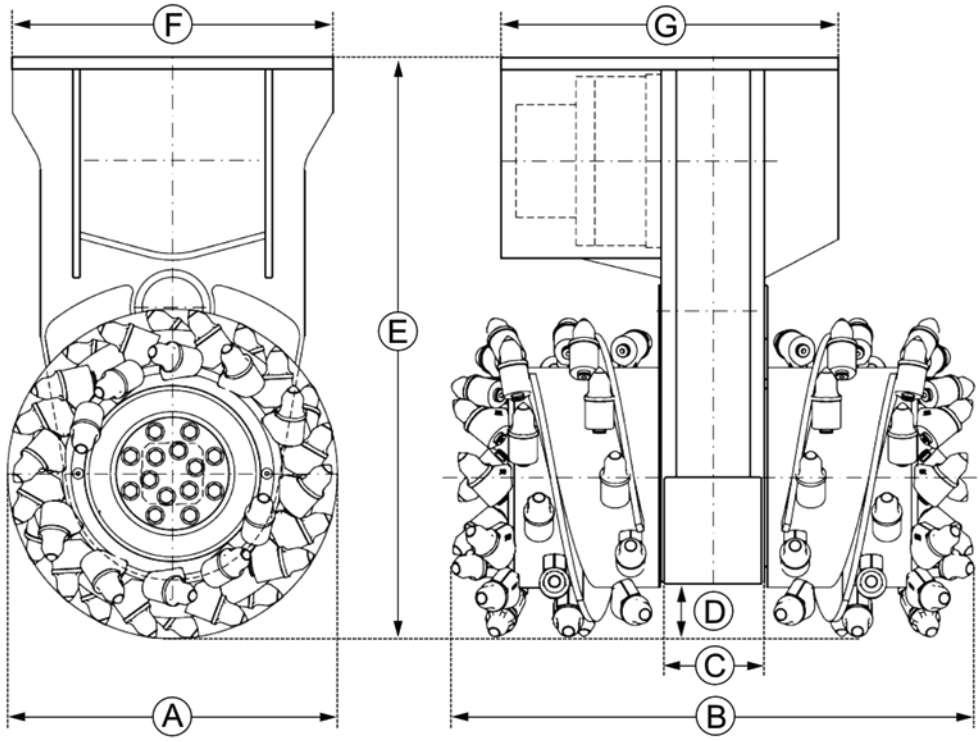
Examples of foreseeable misuse:

- Do not beat or break with the attachment to break up conglomerate rock or other material.
- Do not use the attachment for compacting material.
- For cardanically mounted attachment: Do not use the attachment to pull or push a load by applying lateral pressure.
- Do not operate the attachment in such a manner, in which external forces are caused that exceed the allowable loads and moments of the attachment.

5. Technical information

5.1. Dimensions - drum types

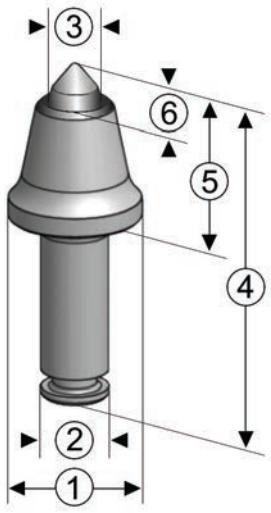
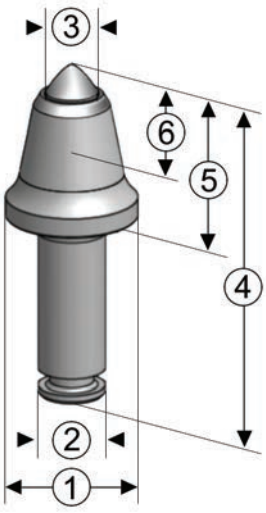
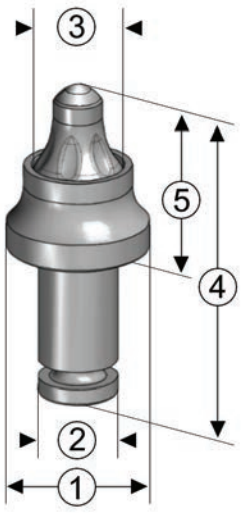
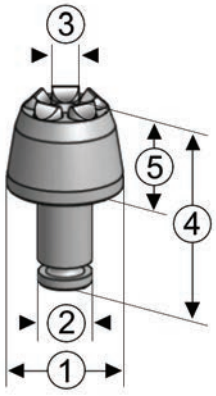
Dimensions KDC04-06-08



Drum-Type		Drum		Drive shaft	Cutting depth	Implement height	Connection top	Number of teeth
		Diameter	Width					
		A	B	C	D	E	F x G	
		Ø mm (in.)	mm (in.)					Units
KDC04	Excavating	350 (13.8)	500 (19.7)	90 (3.5)	65 (2.6)	700 (27.6)	320 x 310 (12.6 x 12.2)	2 x 22
	Profiling	230 (9.1)			53 (2.1)	690 (31.1)		2 x 43
	Demolition	350 (13.8)			65 (2.6)	700 (27.6)		2 x 22
KDC06	Excavating	350 (13.8)	500 (19.7)	90 (3.5)	65 (2.6)	700 (27.6)	320 x 310 (12.6 x 12.2)	2 x 22
	Profiling	230 (9.1)			53 (2.1)	690 (31.1)		2 x 43
	Demolition	350 (13.8)			65 (2.6)	700 (27.6)		2 x 22
KDC08	Excavating	350 (13.8)	500 (19.7)	90 (3.54)	65 (2.6)	700 (27.6)	320 x 310 (12.6 x 12.2)	2 x 22
	Profiling	230 (9.1)			53 (2.1)	690 (31.1)		2 x 43
	Demolition	350 (13.8)			65 (2.6)	700 (27.6)		2 x 22

5.2. Dimensions - tooth types / cutter tools

Depending on the type of use and the nature of the ground, different types of teeth are available for cutting work (see chapter **Operation - areas of application**):

Chisel types / cutting tools			
Standard teeth	**High performance teeth**	**Profiling teeth**	**Wood / peeling teeth**
			

Type	Code	Dimension						Cutting material
		1	2	3	4	5	6	
		Ø mm (in.)			mm (in.)			
Standard teeth Circlip	BC26 / SI36	38.0 (1.5)	19.4 (0.76)	16.0 (0.63)	100 (3.9)	46.0 (1.8)	13.3 (0.5)	Tarmac, salt, clay
High performance teeth Circlip	BC68 / SI36	38.0 (1.5)	19.4 (0.76)	15.0 (0.59)	100 (3.9)	46.0 (1.8)	25.0 (1)	Limestone, concrete
Profiling teeth Circlip	BM76 / SR90	35.0 (1.4)	20.0 (0.8)	19.0 (0.75)	88.5 (3.48)	48.0 (1.9)	-	Sandstone, blast furnace slag
Wood / peeling teeth Circlip	BM69 / SR90	30.0 (1.2)	14.0 (0.55)	7.0 (0.3)	51.0 (2)	25.0 (1)	-	Tree stumps

5.3. Requirements of the carrier machine

NOTICE
In order to operate the **cutter head attachment**, **1 single acting hydraulic circuit** and a separate drain line must be available on the carrier machine.

NOTICE
When **assembling** the hydraulic connections, make sure that the return line is always connected **first**.
When **dismantling**, always disconnect it **last**.

Requirements for the carrier machine

In order to operate the attachment correctly, set the values for the **operating pressure** and **oil flow** on the carrier machine.
The setting values are also described on the **serial plate**

NOTICE
A higher operating pressure on the carrier is not permitted and must be reduced.

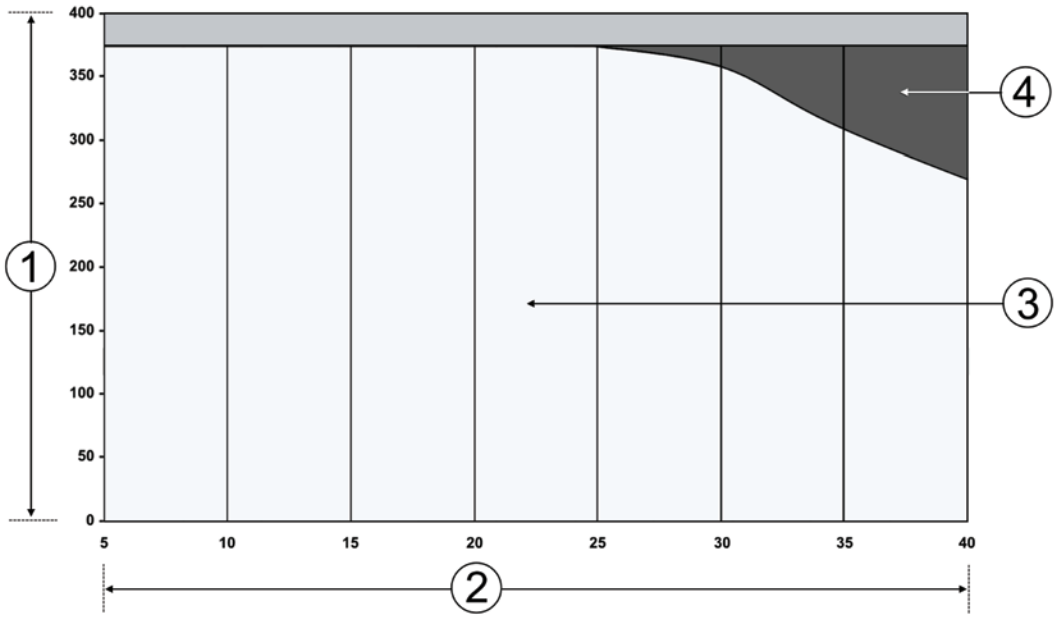
5.4. Operating pressure and oil flow

NOTICE
The mounted cutter head is to be used in the **nominal power range** (see chapter **Specification and performance chart**).
It is important to ensure that the cutter head is **not running at the same time** as the maximum
Pressure and maximum flow rate is operated, as this is the permissible
Rated output and can lead to material damage.

5.5. Specification and performance chart - KDC04-LD

Specification KDC04-LD [low displacement - 213 cm³ (84 inch³)]		
Rated power	**kW**	18
Peak power	**kW**	-
Displacement [low]	**cm³ (inch³)**	213 (84)
Oil flow [required]	**min. l/min - max. l/min (gpm)**	30 - 65 (7.9 - 17.2)
Oil flow [recommended]	**l/min at MPa/bar (gpm at psi)**	40 at 27/270 (10.6 at 3916)
Operating pressure [max./performance chart]	**MPa/bar (psi)**	37.5/375 (5439)
Gear ratio	**-**	2
Drive shaft torque	**kNm at MPa/bar (ft-lb at psi)**	2.3 at 35/350 (517 at 5076)
Drive shaft speed	**rpm at l/min (gpm)**	94 at 40 (94 at 10.6)
Tooth circumferential speed	**m/s at l/min (mph at gpm)**	1.5 at 40 (3.4 at 10.6)
Tooth force	**kN at MPa/bar (lbf at psi)**	16 at 35/350 (3597 at 5076)
Self weight depending on drum size [without adapter]	**kg (lb)**	210 - 230 (463 - 507)

Performance chart KDC04-LD [213 cm³ (84 inch³)]

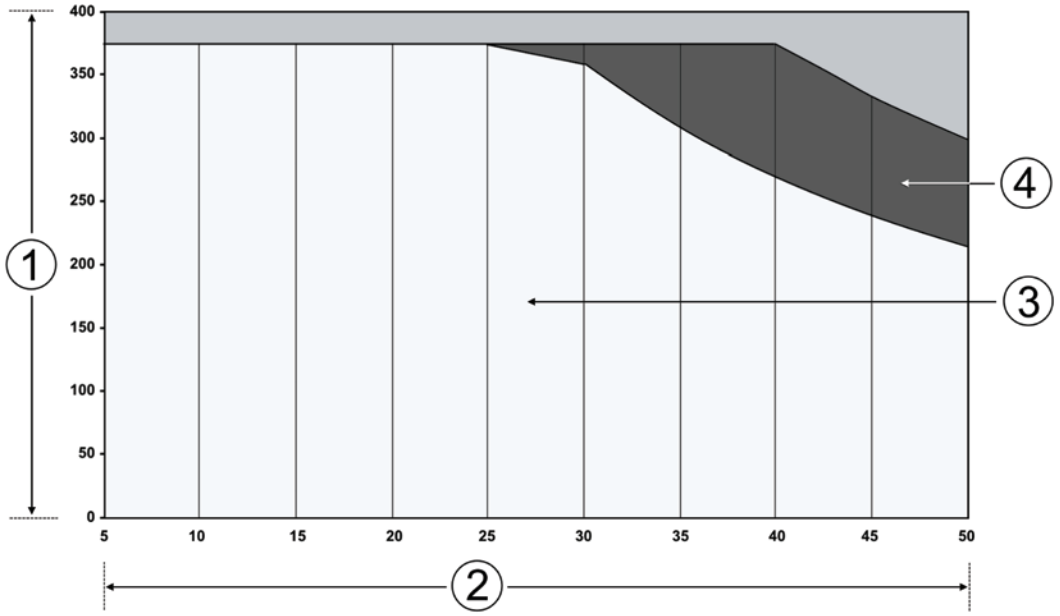


No.	Description
1	Operating pressure [bar]
2	Oil flow / flow rate [l/min.]
3	Rated power [kW]
4	Power [max.]

5.6. Specification and performance chart - KDC06-HD

Specification KDC06-HD [high displacement – 255 cm³ (100 inch³)]		
Rated power	**kW**	18
Peak power	**kW**	-
Displacement [high]	**cm³ (inch³)**	255 (100)
Oil flow [required]	**min. l/min - max. l/min (gpm)**	40 - 65 (10.6 - 17.2)
Oil flow [recommended]	**l/min at MPa/bar (gpm at psi)**	50 at 21.5/215 (13.2 at 3118)
Operating pressure [max./performance chart]	**MPa/bar (psi)**	37.5 / 375 (5439)
Gear ratio	**-**	2
Drive shaft torque	**kNm at MPa/bar (ft-lb at psi)**	2.8 at 35/350 (630 at 5076)
Drive shaft speed	**rpm at l/min (gpm)**	118 at 60 (118 at 15.9)
Tooth circumferential speed	**m/s at l/min (mph at gpm)**	1.85 at 60 (4.1 at 15.9)
Tooth force	**kN at MPa/bar (lbf at psi)**	19.6 at 35/350 (4406 at 5076)
Self weight depending on drum size [without adapter]	**kg (lb)**	210 - 230 (463 - 507)

Performance chart KDC06-HD 255 cm³ (100 inch³)]

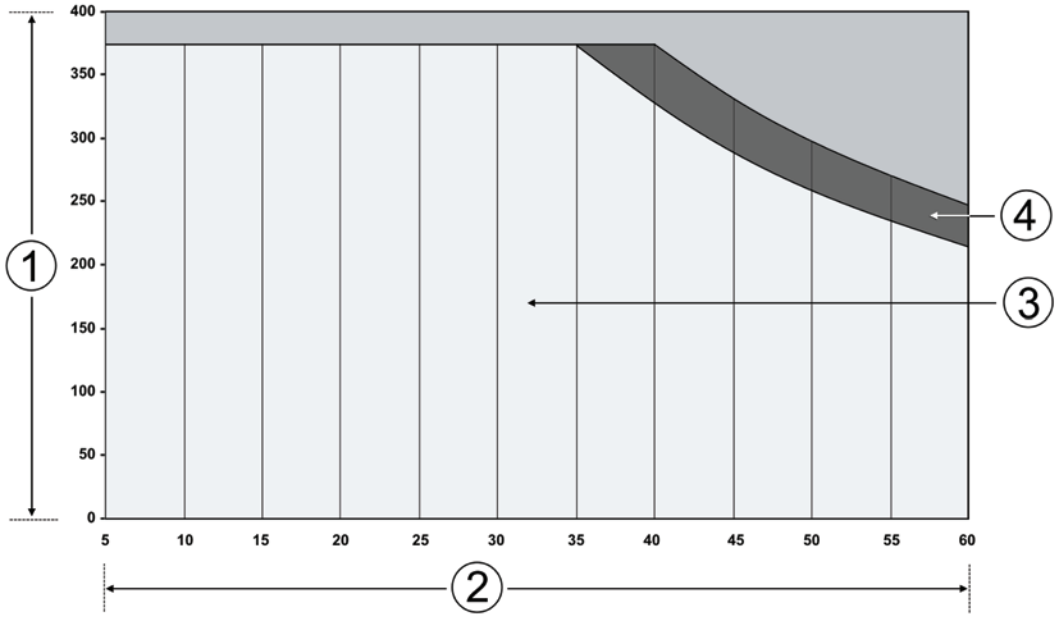


No.	Description
1	Operating pressure [bar]
2	Oil flow / flow rate [l/min.]
3	Rated power [kW]
4	Power [max.]

5.7. Specification and performance chart - KDC08-XHD

Specification KDC08-XHD [extra high displacement – 398 cm³ (157³ inch)]		
Rated power	**kW**	22
Peak power	**kW**	-
Displacement [extra high]	**cm³ (inch³)**	398 (157)
Oil flow [required]	**min. l/min - max. l/min (gpm)**	50 - 65 (13.2 - 17.2)
Oil flow [recommended]	**l/min at MPa/bar (gpm at psi)**	60 at 22/220 (15.6 at 3191)
Operating pressure [max./performance chart]	**MPa/bar (psi)**	37.5 / 375 (5439)
Gear ratio	**-**	2
Drive shaft torque	**kNm at MPa/bar (ft-lb at psi)**	3.9 at 35/350 (877 at 5076)
Drive shaft speed	**rpm at l/min (gpm)**	75 at 60 (75 at 15.9)
Tooth circumferential speed	**m/s at l/min (mph at gpm)**	1.27 at 60 (2.8 at 15.9)
Tooth force	**kN at MPa/bar (lbf at psi)**	26.6 at 35/350 (5980 at 5076)
Self weight depending on drum size [without adapter]	**kg (lb)**	210 - 230 (463 - 507)

Performance chart KDC08-XHD 398 cm³ (157³ inch)]



No.	Description
1	Operating pressure [bar]
2	Oil flow / flow rate [l/min.]
3	Rated power [kW]
4	Power [max.]

6. Installation and commissioning

Figure only for illustration purposes. Figure may differ from the attachment supplied.

6.1. Assembling onto the carrier machine

- Set the attachment down on a **level and firm surface** such that it is secure and cannot fall over.
- Make sure the **hydraulic connections** on the carrier machine are **clean**.
- Remove any **dirt particleswith utmost care**.
- Make sure all **contact surfaces** of the attachment adapter and quick coupler are clean.

NOTICE
Breakdowns and hydraulic oil leaks can be caused by incorrect installation.

6.1.1. Mechanical attachment

Mechanical attachment

Install the attachment on the carrier machine as per the ordered version:

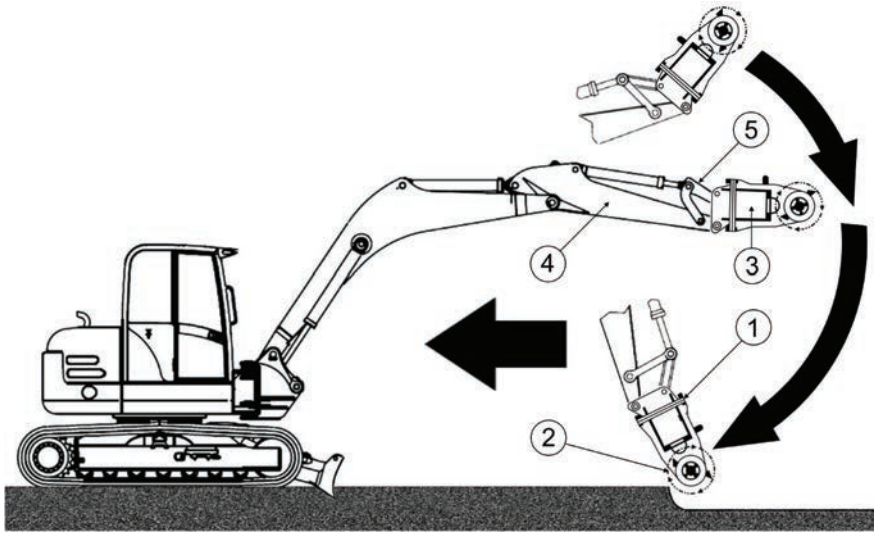
- By means of an **adapter as a rigid mounting** (integrated on the upper part of the attachment - depending on the excavator type)
- or a **hydraulic quick coupling**.

NOTICE
The **operating weights** of the carrier machines and attachments must be adapted to each other (see chapter **Technical data**).

Adapter plate for attachment

An adapter plate is required to attach the cutter head to an excavator. The adapter plate for the cutter head uses the existing bearings and pins of the excavator.
The cutter drums are designed for downward cutting, i.e. the hydraulic motor is on the right-hand side when viewed from the driver's cab.

KDC - adapter plate

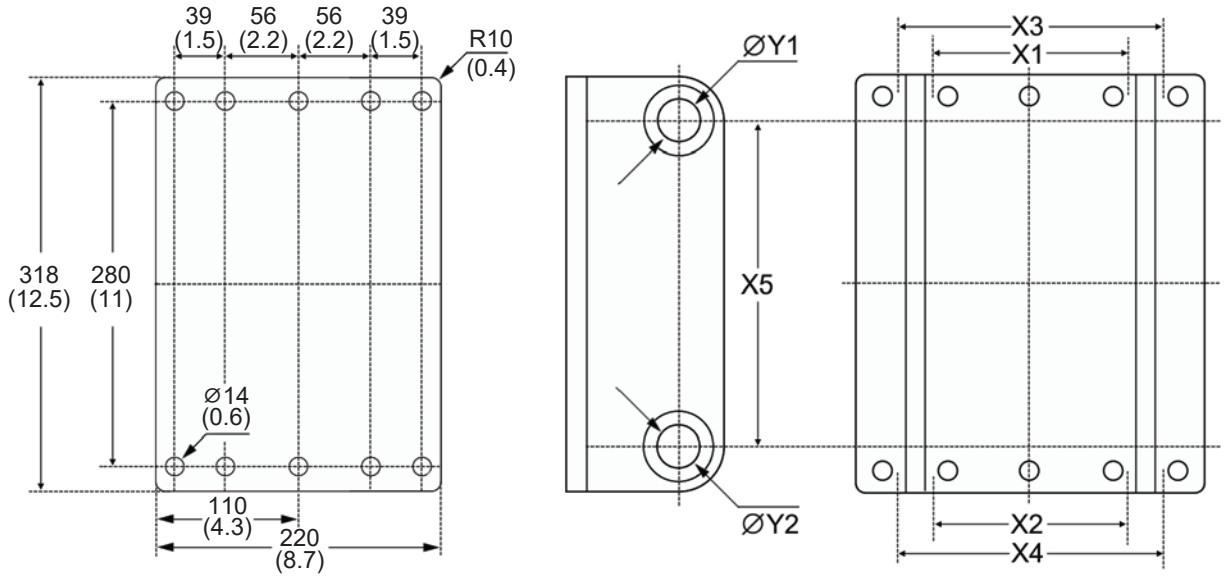


No.	Description
1	Adapter plate
2	KDC cutter head
3	Hydraulic motor
4	Dipper arm
5	Dipper rod

Adapter plate - hole pattern / dimensions

The adapter plate for **KDC04-06-08** cutter head types must have a thickness of **20 - 25 mm (0.79 - 0.98 in.)** and be professionally welded. The following dimensions are required for completion:

Adapter plate [KDC04-06-08] - hole pattern / dimensions, mm (inch)



Dimensions	mm (inch)
Width	220 (8.7)
Length	318 (12.5)
Radius [R]	10 (0.4)
Hole [Ø]	14, qty 10 (0.55)
Spacing Holes	280 [+/- 0.5] (11 [+/-0.02])
	39 (1.5)
	56 (2.2)

No.	Description
Y1	Dipper rod bolt diameter
Y2	Dipper arm bolt diameter
X1	Width dipper rod
X2	Width dipper arm
X3	Dipper rod bolt diameter (without safety overhang)
X4	Dipper arm bolt diameter (without safety overhang)
X5	Bolt spacing dipper rod/dipper arm

6.1.2. Connecting hydraulic lines

Hydraulic connection Connect the hydraulic connections of the attachment to the hydraulic terminals on the outrigger of the carrier.

NOTICE
Lay hydraulic lines/hoses such that they will not be chafed or crushed.

Procedure The following sequence must be observed when connecting the hydraulic lines:
1. Return line
2. Drain line
3. Pressure line

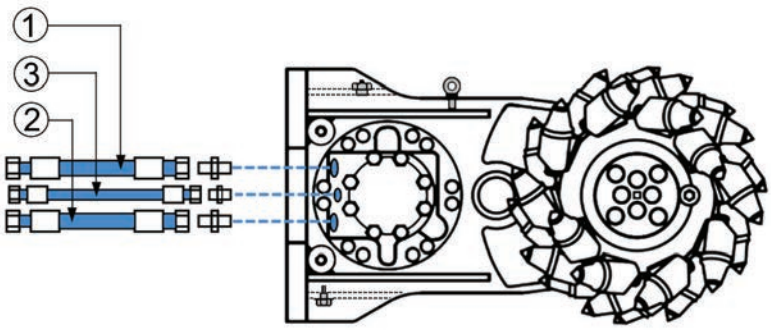
NOTICE
Incorrect connection of the hydraulic lines can cause operating faults or hydraulic oil leakage

NOTICE
If the pressure difference between the return pressure and the leakage oil pressure is too low, the running noise of the cutter head becomes very loud (rattling).
The back pressure on the drain line must not exceed **3 bar**.**(43.5 psi)**
The hydraulic motor can be damaged if the pressure difference is too low.

6.1.2.1. Connection of hydraulic lines

NOTICE
It must be ensured that the hydraulic motor of the mounted cutter head is completely filled with the prescribed oil in all operating and working conditions (see chapter **Oil and grease**).

Hydraulic lines and connections [KDC04-06-08]



No.	Description
1	Pressure line
2	Return line
3	Drain line / tank (**max. 3 bar (43.5 psi))**

Connection of hydraulic lines

The cutter head package consists of suitable hydraulic hoses, the pre-load valve and a leakage oil filter.

NOTICE

- The cutter head must never be operated without the pre-load valve, which is installed in the return line.
  Without a preload valve, the hydraulic motor can be severely damaged.

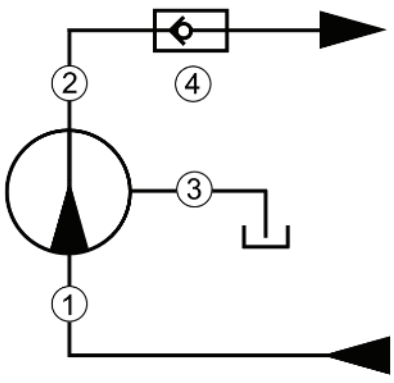
- The leak oil filter must be installed in the carrier machine near the hydraulic tank and integrated into the drain line.
  The filter serves as additional protection for the carrier machine in the event of damage to the hydraulic motor.

6.1.2.2. Hydraulic hoses

Connection		Connection Pressure and return line	Connection Drain line
Hydraulic motor	**inch**	size 1/2"	size 3/8"
Excavator	**metric**	Union nut 18-L; M26x1.5	Union nut 12-L; M18x1.5
Hose inner diameter	**Ø mm (in.)**	16 (0.63)	10 (0.4)
Operating pressure	**MPa / bar (psi)**	37.5 / 375 (5439)	Continuous operation: < 0.3 / 3 (43)
			Short-term pressure peak: < 1 / 10 (145)

6.1.2.3. Hydraulic diagram with preload valve

NOTICE
The pressure in the drain line (3) must not exceed **3 bar (43.5 psi)** in continuous operation and **10 bar (145 psi)** in brief pressure peaks.

Hydraulic diagram with preload valve [KDC04-06-08]	No.	Description
	**1**	Pressure line
	2	Return line
	3	Drain line
	4	Preload valve **5-10 bar (73-145 psi)**

6.2. Filling the hydraulic motor housing

Before the initial start-up, after repairs and in the event of leaks, the hydraulic motor housing must be filled with hydraulic oil (see chapter **Oil and grease**).

Motor housing capacity

KDC04-06-08 = approx. **0.8 litre (0.2 gallon)**

Contamination and filtration of the hydraulic oil

NOTICE
Heavy contamination of the hydraulic oil shortens the service life of the moving parts of the hydraulic motor (piston, distributor).

Degree of contamination

< Class 9 of NAS 1638

NOTICE
If the filtration is inadequate, the manufacturer's warranty cover for the hydraulic motor is restricted.

NOTICE
The drain line of the hydraulic motor must lead directly to the tank of the carrier machine without any obstructions or other restrictions.
Under no circumstances connect to other hydraulic lines or to any other hydraulic valve. If this is not possible - contact Technical Customer Service.

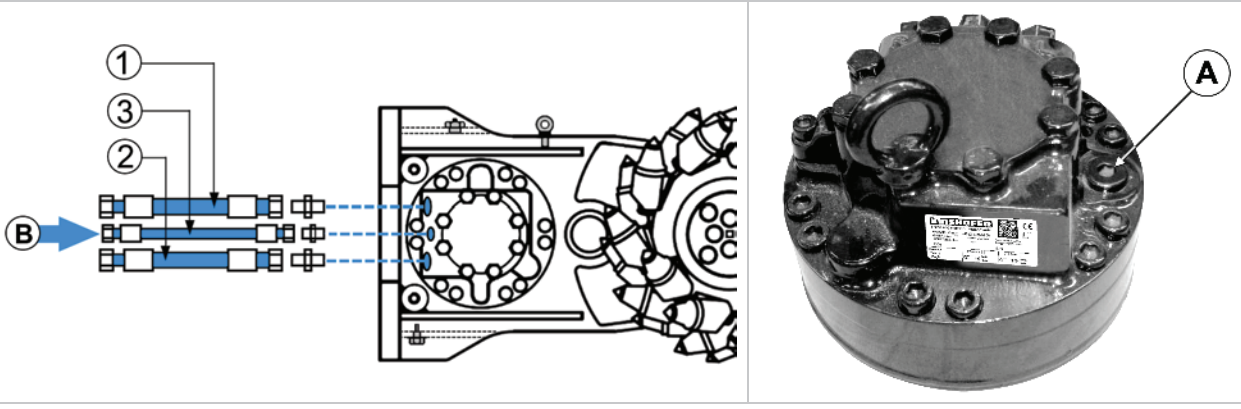
NOTICE
The oil level in the **hydraulic motor housing** must be checked before each start-up on the new carrier machine and after a repair.
If the hydraulic oil level is insufficient (see chapter **Oil and grease**), this can lead to severe engine damage.

It is **essential** that the following is carried out:

Procedure
Hydraulic oil filling

- Personal protective clothing (PPE) must be worn when filling the hydraulic system.
- The fill level must be checked while the cutter head is attached to the carrier machine.
- The hydraulic motor housing (**B**) is filled via the drain line (3).
- Disconnect the drain line (3) at the end of the excavator arm (in front of the filter on the carrier machine).
- Loosen the drain screw (**A**) on the hydraulic motor housing.
- Pour hydraulic oil directly into the hydraulic motor housing (**B**) via the drain line (3) until it emerges at the drain plug opening (**A**).
- Screw in the drain plug (**A**) again and tighten it.
- **NOTICE**: The hydraulic motor must then be vented.
- Reconnect the drain line (3) to the tank of carrier machine and screw tight.

Check and top up hydraulic motor oil



No.	Description
A	Hydraulic oil drain plug
B	Top up hydraulic fluid
1	Pressure line
2	Return line
3	Drain line

Alternative procedure Hydraulic oil filling

Alternatively, the hydraulic motor can also be filled with the gearbox lying on its side via the motor cover.

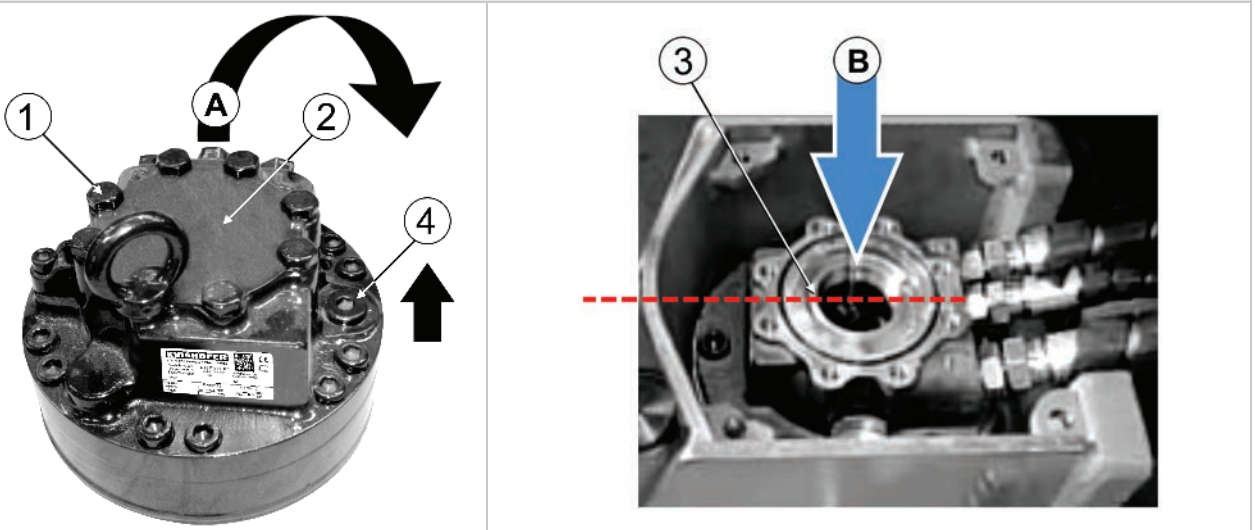
- [**8xM10**] Unscrew the hex. head cap screws (1) and remove the motor cover (2) (**A**).
- Fill the hydraulic motor housing with oil up to the upper edge (3) (**B**).
  NOTICE: Make sure that only clean oil is used and that no dirt can enter the engine compartment.
- Replace the motor cover with the 8 hex. head cap screws - make sure that the tightening torques are correct (see chapter **Screw connections - tightening torques**).

Checking oil level

After filling, the oil level must be checked. It must be ensured that no hydraulic oil can leak out of the hydraulic motor. The filling opening must be at the top.

- Unscrew the fill level control plug (4).
- As soon as oil flows out of the drain opening (4), the hydraulic motor housing is correctly filled and the level control screw can be tightened again.

Remove the hydraulic motor cover and top up with oil



No.	Description
A	Removing the hydraulic motor cover
B	Top up hydraulic fluid via crank housing
1	Hex. head cap screws motor cover
2	Hydraulic motor cover
3	Oil level up to the upper edge of the hydraulic motor housing
4	Level control screw

Checking condition of hydraulic motor

The oil quantity control and checking of oil flow of the hydraulic motor is carried out via the drain line.

NOTICE
The following check of condition of hydraulic motor may only be carried out by a responsible person who is familiar with the mode of operation of hydraulic systems.

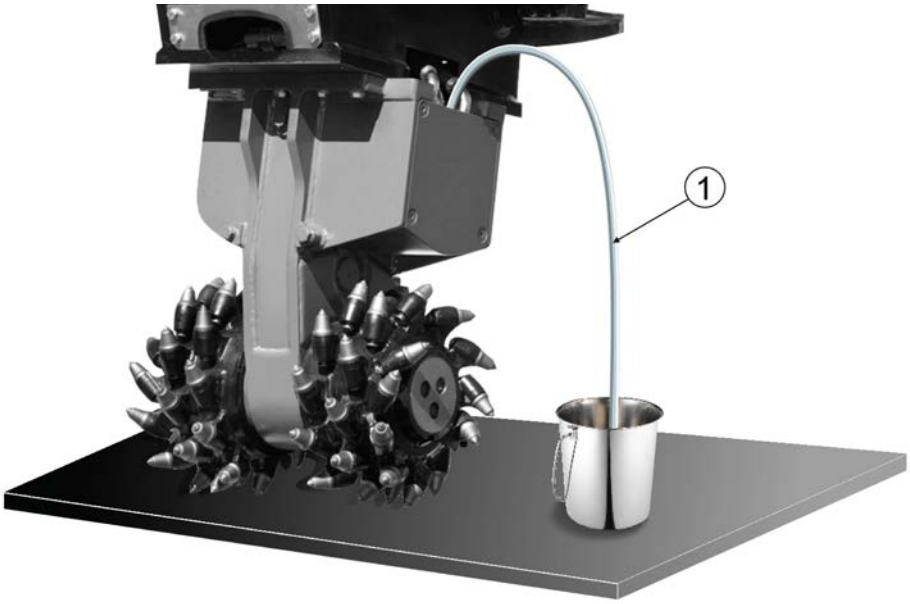
NOTICE
If the tank of the carrier machine is pressurised, hydraulic oil can escape before start-up.
The tank should therefore be vented.

Procedure

- Switch off engine of carrier machine.
- Make sure that the hydraulic oil is not too hot (see chapter **Operation - before using for first time**).
- Detach the drain line from the carrier machine
- Place the hose end of the drain line in a container with sufficient capacity (> 1.0 l (0.26 gal.)) (1).
- Start the hydraulic motor and let it run at low speed.
- **NOTICE**:
  If the oil flow is less than **< 0.05 l/min (< 0.013 gpm)**, increase the engine speed to full speed!
  Observe every increase in the oil flow. At full rotation speed, the leakage oil quantity may not exceed **0.4 l/min (0.1 gpm.)**!

If more oil flows, the hydraulic motor must be examined and, if necessary, replaced (see separate **Service and maintenance manual**).
A precise examination of the motor will be carried out by the manufacturer.

Oil quantity control



6.3. Gear oil filling

Gear oil fill quantity

KDC04-06-08 = approx. 3.0 litre (0.8 gal.)

NOTICE
If the gear oil level is too low (**< 3 l (0.8 gal.)**), the gear can be damaged failure to observe this will **void the manufacturer's warranty!**

Oil specification

High-performance industrial gear oil or alternatively a high-performance industrial Mineral oil-based gear oil (see chapter **Oil and grease**).

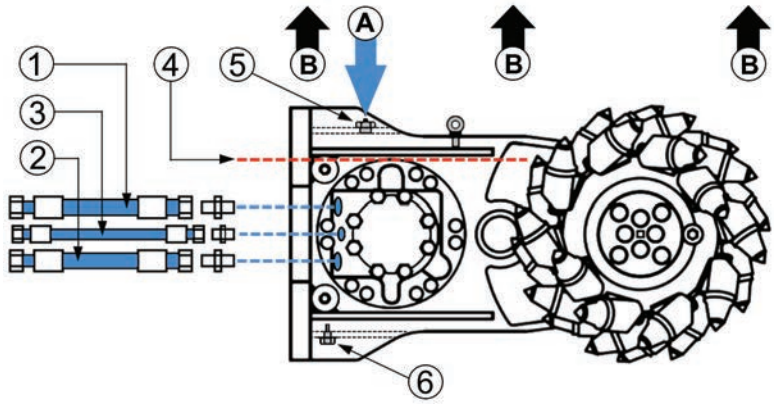
Check gearbox oil level

Check the **gear oil level** (1) of the attached cutter head - if the oil level is too low, the gear oil must be topped up (**A**).

Procedure Gear oil filling

- The gearbox is filled through the filling and venting opening (**A**).
- Position the gearbox (**B**) so that no oil can escape.
- Unscrew the vent plug (2) on the top of the gear unit and top up with oil.
- After filling, screw in the vent plug again.

Filling gear oil



No.	Description	No.	Description
A	Fill gear oil (filler opening)	**4**	Gearbox oil level
B	Gearbox positioning	**5**	Vent plug
1	Pressure line	**6**	Magnetic plug
2	Return line		
3	Drain line		

6.4. Assembly inspection

The following points must be fulfilled:

- The oil flow of the attachment and the carrier machine are the same.
- The hydraulic hose for the return line is connected to the tank without return pressure.
- The hydraulic hose for the pressure line is connected properly.
- The hydraulic quick couplings are fitted properly.
- The bolted connections are fully tightened.

CAUTION
Improperly connected return lines can lead to major damage and cause accidents.
- Make sure that the return line is properly connected.

NOTICE
Performing commissioning at temperatures below -10°C (14°F) can cause damage to seals and hydraulic components due to increased hydraulic pressure.
- Switch on the hydraulic pump of the carrier machine 5 to 10 minutes before commencing work to allow the hydraulic oil to warm up.

6.5. Before initial commissioning

Before commissioning, the maintenance work must be carried out and the torque settings checked (see chapter **Maintenance and service**).
- Do not allow the attachment to idle or run at full load.
- Make sure that the hydraulic circuit corresponds to the technical description of the device.
- The gearbox may not be subjected to load during the warm-up phase. Therefore, no work may be carried out until the operating temperature has been reached.
- Check the hydraulic oil temperature during the running-in period:
  A value between **50°C (122°F)** and **60°C (140°F)** is acceptable.
  The attachment must be taken out of service at temperatures over **80°C (176°F)**
  Action to be taken: Improve engine cooling or reduce work load.
- After the warm-up time, check the specified setting values and hydraulic pressure and readjust if necessary.
- The pressure in the hydraulic motor housing may not exceed **3 bar (43.5psi)** (corresponds to the pressure in the drain line).

6.6. Commissioning

WARNING
Assembly, operation, and maintenance of the attachment may only be carried out by **authorised** and **trained** personnel.
These personnel must read and understand the operating manual!

NOTICE
- Bring the carrier into a **secure working position**.
- **No persons are permitted inside the safety zone**.

DANGER
- Before each commissioning check **safety devices**.
- Carry out a **visual and functional inspection** to ensure correct seating after every locking procedure and before starting work.
- Before starting work, perform a complete **movement play** with the attachment.
- **No operating** when **visible defects** of the attachment.

6.7. Functional checks

Carry out a functional check of the attachment after assembly and after all related tasks have been completed.

Procedure

- Actuate the operating functions of the attachment and the rotary drive one after the other and hold in place for approx. 3 seconds.
- Ensure that all functions are working correctly.
- Check that all connected lines can move freely.
- In order to avoid wear, the lines must not rub against each other, nor be too short nor too long.
- Ensure that no hydraulic fluid escapes from the connections.
- Check that all mechanical and hydraulic connections are firmly seated and free of leaks.
- Tighten with permissible tightening torque as necessary (see chapter **Maintenance**).

6.8. Starting up the cutter head

The following must be checked **before starting the cutter head**:

1. Check oil flow

Check the **oil flow** in the excavator's breaker control circuit using a **flow meter**.

2. Check and adjust pressure

The **pressure** in the breaker control circuit of the carrier machine must be adapted to the cutter head (see the following model calculation for max.pressure):

NOTICE
Oil flow and **pressure** of the carrier machine must not exceed the nominal capacity of the attached cutter head!

The required maximum pressure is calculated as follows on the basis of the oil flow of the attached cutter head:

$$\frac{\textbf{Rated power}\ \text{cutter head [kW]} \times \textbf{600}\ \text{(constant)}}{\textbf{Oil flow}\ \text{litre (gallon)}} = \textbf{max. pressure}\ \text{bar (psi)}$$

Model calculation (KDC04):

The oil flow in the breaker control circuit (KDC04) = 60 litres per minute (i.e. max. effective output 22 kW):

$$\frac{\textbf{22}\ \text{[kW]} \times \textbf{600}}{\textbf{60}\ \text{litre (gallon)}} = \textbf{220}\ \text{bar (psi)}$$

3. Check gearbox oil level

If the oil level is too low, the gear oil (see chapter **Oil and grease**) must be refilled via the filler opening (see chapter **Gear oil filling**).

4. Checking/topping up hydraulic motor oil

The oil level in the **hydraulic motor housing** must be checked before every start (starting up the attached cutter head) and after a repair and, if necessary, topped up with hydraulic oil (see chapter **Oil and grease** and **Filling the hydraulic motor housing**).

5. As soon as the cutter head runs free - check:

- Check the correct **direction of rotation** of the cutter drums. Otherwise switch over the pressure line and the return line at the connection point of the auxiliary control circuit of the excavator (breaker) (see chapter **Connection of hydraulic lines**).
- Check the **pressure** in the return line and the drain line. If the pressure gauge is at the connection point of the breaker control circuit is built up and the cutter head runs freely:
  - **Drain line pressure**: as low as possible - not higher than **3 bar (43.5 psi)**.
  - **Return line pressure**: at least **5 - 10 bar (72.5 - 145 psi)** higher than in the drain line (= optimal operation of the hydraulic motor).
  - Hydraulic motor becomes noticeably loud during operation (rattling): Pressure in the return line is too low.
    Action to be taken: Install a pre-load valve **(5 - 10 bar) (72.5 - 145 psi)** in the return line (this pressure increase must take place in steps of **5 bar (72.5 psi)**).When the back pressure in the return line is increased **(> 15 bar) (> 218 psi)**, the hydraulic system heats up.
    Consequence: The power of the cutter head drops and the temperature of the hydraulic oil rises.

NOTICE
If the temperature of the hydraulic oil is too high **(> 80 °C) (>176°F)**, the hydraulic motor of the attached cutter head will be damaged.

NOTICE
In order to meet the guarantee conditions, the completed installation and commissioning report must be sent to **Auger Torque** (see chapter **Installation and commissioning report**).

6.9. Troubleshooting for cutter heads

Functional fault	Action to be taken	Person responsible
Cutter performance is impaired	» Check teeth and tooth holders for completeness. » Check the hydraulic motor (see chapter **Check the condition of the hydraulic motor**).	Operating personnel
	» Make sure that the hydraulic circuit of the carrier machine is working properly.	Customer service personnel
Cutter heads no longer rotate	» Check that the hydraulic quick couplings are correctly connected. » Check the cutter drums to see whether any material has become caught and is blocking rotation. » Check whether the cutter drums can be rotated by hand: » Switch off the carrier machine and the hydraulic motor. » Loosen hydraulic connections.	Operating personnel
	» Make sure that the hydraulic circuit of the carrier machine is working properly. » Rotating the cutter drums not possible: » Switch off the carrier machine and the hydraulic motor. » Loosen hydraulic connections. » Remove the hydraulic motor (see service manual **Removal of hydraulic motor**) and then check “rotating by hand”. » Rotating of the cutter drums possible → Hydraulic motor defective → replace. » Rotating the cutter drums still not possible: » Remove cutter drums (see Service manual **Removal of cutter drums**) and check if any material is caught thereby blocking rotation.	Customer service personnel
Gear oil leakage at cutter drums	» If there is oil leakage in the area of the cutter drums → cutter drum seals damaged → remove and replace (see Service manual **Replacement of the cutter drum seals and O-rings**).	
Hydraulic oil leaks from gearbox venting	» As the temperature of the transmission oil rises, a small amount of oil is exuded from the gearbox venting system. If oil is constantly escaping from the vent, the hydraulic motor is damaged at the gearbox seal damaged → replace (see Service manual **Replacement of the hydraulic motor and the Gearbox seal and the O-ring between the seal carrier and gearbox**). » After this repair → change the gearbox oil (see chapter **Gearbox oil change**).	
Leakage of hydraulic oil in vicinity of the hydraulic motor	» Check hydraulic connections for tight fit → tighten. » Check the screws on the hydraulic motor for tightness → tighten.	Operating personnel
	» In the event of oil leaking from the lower area of the hydraulic motor, the O-ring between hydraulic motor and housing damaged → replace (see Service manual **Replacement of the O-ring between hydraulic motor and housing**). » If oil leaks from the upper area of the hydraulic motor, the O-ring between the motor cover and the hydraulic motor is damaged → replace (see Service manual **Replacement of the O-ring of the motor cover**). » A leak at this point can be caused by a damaged motor cover. Excessive case pressure can cause the plate to bend. In this case, the condition of the engine leakage line and hydraulic circuit should be checked to ensure that the motor has been installed correctly (see chapter **Hydraulic connections**).	Customer service personnel
Rattling of the hydraulic motor	» A rattling noise from the hydraulic motor is caused by insufficient pressure difference between the return line and the → drain line of the hydraulic motor (see Service manual **Installation of hydraulic circuit**) .	
Damage / wear of the tooth holders	» An increased wear of the tooth holder results from worn or damaged teeth → replace (see chapter **Tooth replacement**). » Regular inspection of the teeth.	Operating personnel

7. Operation

WARNING
Assembly, operation, and maintenance of the attachment may only be carried out by **authorised** and **trained** personnel.
These personnel must read and understand the operating manual!

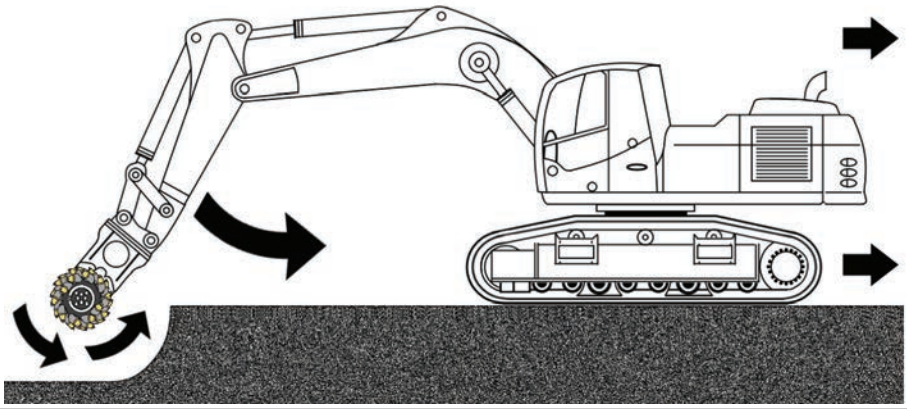
The cutter heads can work at full system pressure. Therefore the secondary pressure does not have to be set lower than the system pressure, which prevents the hydraulic system from overheating.

Although operations are generally quieter than other excavation methods, the operator must observe the guidelines for noise protection at work and if necessary, carry out a noise measurement.

- The machine may only be operated by operating and maintenance personnel with appropriate training/knowledge.
- Operate the control lever without sudden movements.
- If the cutter head stops, withdraw the boom of the excavator.
- Do not overload the teeth as this can damage the cutting device.
- Check at regular intervals whether the cutting head is free of deposits, as this will reduce the overall cutting performance and can increase tool wear.
- During all maintenance work, make sure that the cutter head and all components are properly attached.
- The cutter head may only be used in wet areas or in water after consultation with the Technical Service and after conversion (see Chapter **Areas of application**).

Optimum cutting operation is made possible when the drum of the mounted cutting head is guided in the direction of the carrier machine.
When pivoting the attachment cutter head to the side in order to achieve a larger cutting surface, make sure that no excessive force is exerted on the boom or arm of the carrier machine and on the cutting drum mounting.

Operation - cutting head in use



7.1. Areas of application

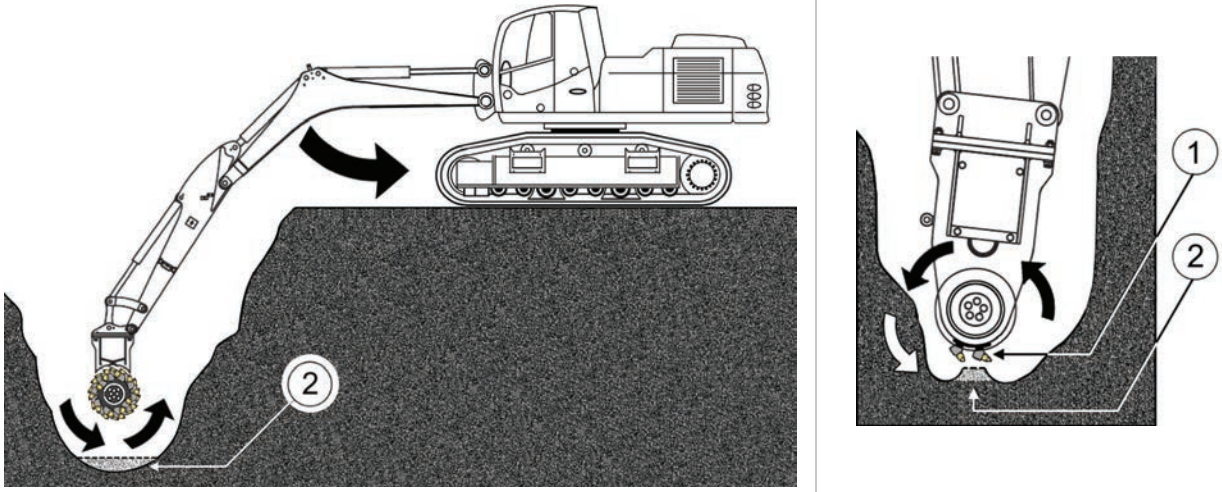
7.1.1. Using cutter heads in trenches

For **typical cutting operations in trenches**, set the direction of rotation of the attachment cutter head in the direction of the carrier machine.

Using cutter heads in narrow trenches

For use in **narrow trenches** where it is not possible to move the cutter heads to the side to cut the **central rise** (2), a **central fixing device with fixed teeth** (1) can be mounted on the gearbox neck and the remaining rock can be broken using the function of the excavator bucket cylinder.
If necessary, contact the responsible **Auger Torque** dealer.

Using cutter heads in trenches

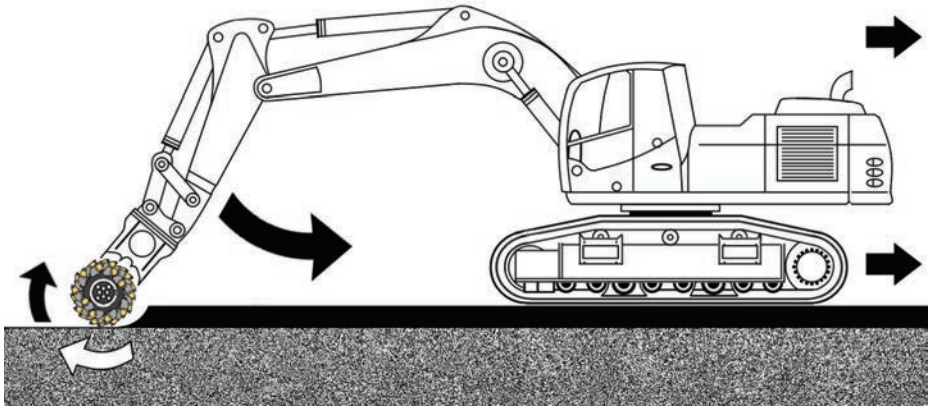


No.	Description
1	Central holder with rigid tooth comb
2	Rise remaining after cutting

7.1.2. Using cutter heads on tarmac

For cutting on tarmac, set the direction of rotation of the cutter head opposite to that of the carrier machine.
This prevents larger lumps from breaking out in an uncontrolled manner.

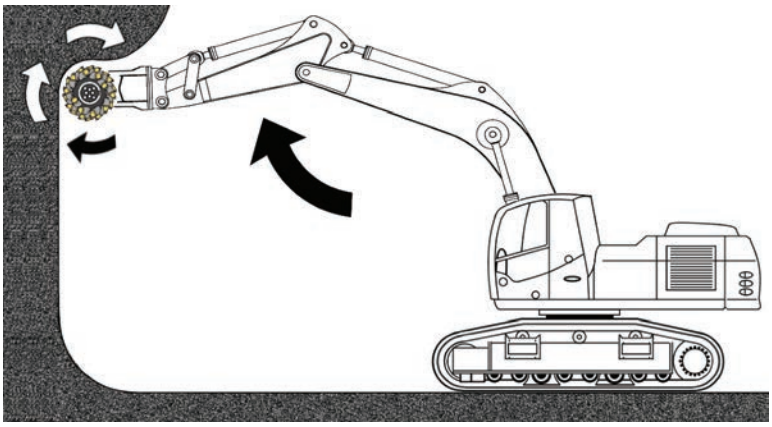
Cutting on tarmac [from above the ground surface]



7.1.3. Using cutter heads on walls

When using the cutter head on vertical surfaces such as walls, we recommend changing the direction of the cutter drum - reverse the cutter head.
This reduces vibrations and opposing forces during cutting and prevents the cutting head from “climbing”.

Using cutter heads on walls



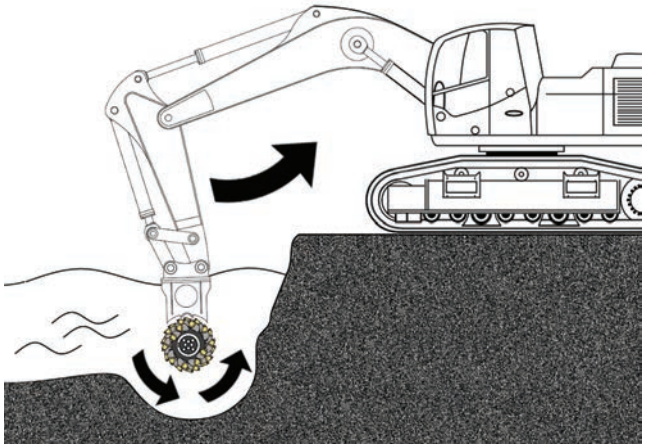
7.1.4. Using cutter heads in water

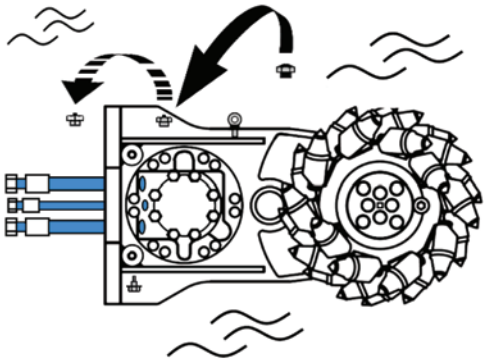
The cutter may only be used in wet areas or in water up to a **depth of 20m (66ft)** after consultation with the **Auger Torque** Technical Customer Service and **after retrofitting** for use in water.

NOTICE - The following must be observed when using the mounted cutter head:

- The **lubrication intervals** of the labyrinth seal system of the drums must be **tripled**. Use **biodegradable lubricating grease** (see chapter **Oil and grease**), as this can be rinsed out with water.
- **Conversion:** The **vent plug** (1) must be exchanged for the **sealing plug** (2) (see spare parts list).
- After the use in water, the vent plug must be reattached.

Cutter head use in wet areas or in water



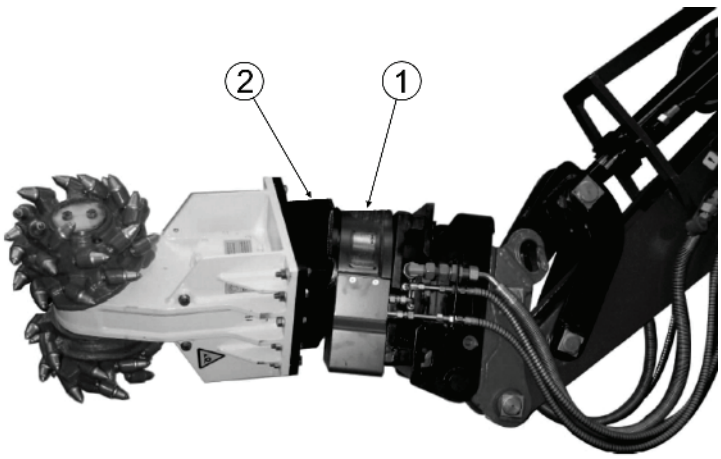


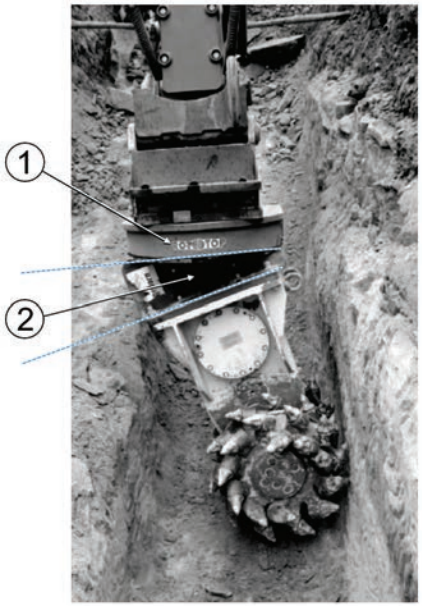
No.	Description
1	Vent plug
2	Sealing plug

7.1.5. Cutter head with rotator

A **rotator** (optionally available) can be used for precise and contoured cutting (1). With this the cutting head can be rotated infinitely (**360°**) in both directions. This means that you can precisely work to the required contour in corners, nooks and crannies as well as on wall surfaces (2).
To enable undercutting, a wedge piece (**15 - 20°**) is installed between the rotator and the cutter head (2). It can also be used without a wedge piece.

Cutter head with rotator

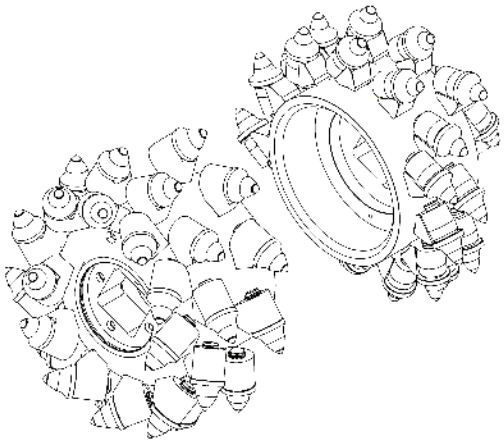
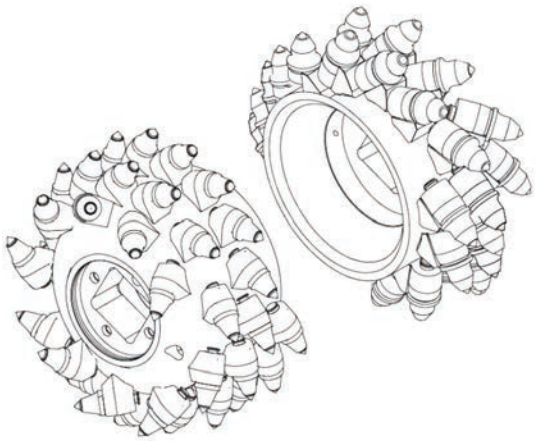
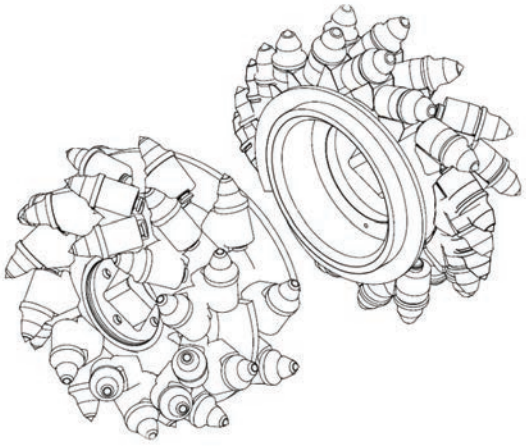




No.	Description
1	Rotator
2	Wedge piece

7.2. Selection of cutter head

The selection of the cutter drum and its teeth depends on the area of application and the nature of the ground (see also chapter **Cutter tools - tooth types**).

Excavating drum	Area of application
	**Excavating drums** (soft to medium-hard subsoil / rock) • The teeth are arranged to achieve the greatest possible cutting performance and thus maximum productivity. • **No cutting depth limit**, i.e. there is no spiral plate on this type of cutter drum to limit the cutting depth.
Profiling drum	
	**Profiling drums** (soft to medium-hard subsoil / rock) • The cutter drum type is particularly suitable for precise cutting on flat and smooth surfaces. • Due to the **high number of teeth**, accurate surface cutting with less vibration is achieved, but the cutting speed is lower.
Demolition drum	
	**Demolition drums** (medium-hard to hard subsoil / rock / concrete) • These cutter drums have a **wear-protected spiral plate** to limit the cutting depth. • This makes the cutting process smoother and reduces vibrations.

8. Shutting down and dismantling

8.1. Shut down

Procedure

1. Set the attachment down on a **horizontal** and **stable surface** before dismantling from the carrier machine.
2. **Switch off** the carrier's **drive**.
3. **Switch on the ignition**.
4. Actuate all hydraulic valves in the control circuits for the attachment until all of the pressure in the attachment or in the hydraulic lines has been dissipated - then check the system that it is **free of pressure**.
5. Secure the attachment or the carrier machine to prevent **erroneous** or **unauthorised** starting up.
6. **Disconnect** the mechanical and hydraulic **connections** to the carrier machine.

NOTICE
Observe further requirements for shutting down as described in the **shutting down chapter** as well as on the **safety instructions** sheet.

WARNING
Health risks and **environmental contamination** through **escaping oil**.
Hydraulic oil may escape from the lines on the attachment and the carrier machine during dismantling:

- Position a **suitable collecting tray** under the hydraulic connections to collect the oil.

8.2. Dismantling

Procedure

1. **Switch off** all **supply media**, if available, (e.g. hydraulic and electrical).
2. **Disconnect** the mechanical and hydraulic **connections** to the carrier.
3. Next, **close the hydraulic connections**.

WARNING
Health risk and **environmental pollution** due to **escaping oil**.
Hydraulic oil may escape from the lines on the attachment and the carrier machine during dismantling:

- Position a suitable **collecting tray** under the hydraulic connections to catch the oil.

9. Cleaning and care

- The cleaning of the **attachments** should be carried out on a suitable surface with an **oil separator**.
- Adjust the cleaning intervals to the operating conditions, at least **once weekly** (see chapter **Maintenance and service**)!

NOTICE
Paint damage, damage to seals and bearings, oil leaks and other damage are possible if cleaning is not carried out properly.

1. The attachment can be cleaned with the help of compressed air:
   - If the attachment is dry.
   - Max. **1 MPa** (10 bar) (145 psi) air pressure.
   - Min. **400 mm (15.75 in.)** nozzle distance.

2. The attachment can be cleaned with the help of a high pressure cleaner:
   - Max. **80°C (176°F)** water temperature.
   - Max. **7 MPa** (70 bar) (1015 psi) water pressure.
   - Min. **400 mm (15.75 in.)** nozzle distance.
   - Never clean seals and seal gaps directly with a pressure washer.
   - The paint requires **2 weeks** to harden completely after commissioning or after being repainted. Do not use a pressure washer during this period.

Lubrication and Functional checks

Every time after cleaning, the attachment must be lubricated and a functional check carried out, see chapter **Technical data / Overview greasing point** and chapter **Assembly and commissioning / Functional checks**.

10. Maintenance and service

WARNING
Switch off the carrier, depressurise and secure to prevent reactivation.

10.1. Maintenance

Checks and maintenance must be carried out in accordance with the maintenance check list in order to guarantee the safety, functional capability and long service life of the product.

- Maintenance work must be carried out by specially trained personnel.
- Pay attention to cleanliness when carrying out maintenance work.
- Before opening the hydraulic connections, these should be cleaned along with the immediate environment in order to prevent dirt getting in to the hydraulic system.
- Clean the greasing points before lubricating.

NOTICE
Use under intensified working conditions
All information relates to an 8 hour working day.

Maintenance intervals should be cut in half or performed every day with:

- Construction site operation where there are extreme levels of dirt.
- Increased operating times, e.g. multi-shift operation.
- Significant external influences.
- Frequent underwater use.

Replace hydraulic hoses every 2 years under these conditions.
Property damage, including destruction of the attachment can occur under these conditions if the attachment is not properly maintained!

NOTICE
In the event of damage, the attachment must not continue to be used!

WARNING

Danger of injury and crushing with:
- Maintenance work
- Repair work
- Cleaning work

In order to avoid health risks:
- Wear eye protection
- Wear hand protection
- Wear hearing protection

10.1.1. Maintenance plan for cutter heads

The following maintenance intervals serve as guidelines and must be adhered to.
Shorter maintenance intervals may be required under the local conditions of use.
Single shift operation: 8 h/day, 20 days/month, 12 months/year
Multi-shift operation: Reduce maintenance intervals accordingly.

Maintenance intervals - single shift operation	Person responsible	☑
Daily - BEFORE starting work		
» Check the attachment of the cutter head to the adapter plate and to the carrier machine [2].	Operating personnel	
» Check the gearbox for leaks.		
» Check gearbox oil level.		
» Make sure that the gearbox vent is free.		
» Check the hydraulic motor for leaks.		
» Check hydraulic hoses for leaks and damage.		
» Check teeth and tooth holders for damage. Replace worn teeth immediately.		
» Lubricate the seals on the cutter drums [1.3].		
Daily - AFTER work		
» Thoroughly clean the cutter head.	Operating personnel	
» Check teeth for freedom of movement.		
Every 100 h [2 weeks]		
» Check the condition of the hydraulic motor.	Operating personnel	
» Clean the magnetic plug.		
» Check tightening torques, retighten if necessary [2].		
» Lubricate the grease nipples [1.3].		
Every 500 h [1x yearly]		
» Change gear oil.	Customer service personnel	
» Check tightening torques, retighten if necessary [2].		
Mothballing [temporary decommissioning]		
» Thoroughly clean the cutter head. » Store the cutter in a dry place. » If necessary, remove teeth to avoid corrosion.	Operating personnel	
» It must be ensured that after removing the cutter head from the carrier machine no hydraulic oil can run out of the hydraulic motor. » The gearbox vent must be on top.		

See operating manual in chapter:
[1] Overview of greasing points
[2] Check screw fittings / tightening torques
[3] Oil and grease

Location, Date	Stamp with signature

10.1.2. Maintenance check list

Copy maintenance check list for regular checks.

Maintenance intervals	☑
Daily	
Lubricate grease nipples [1.3].	
Check hydraulic connections for leaks and tighten if necessary.	
Every 50 operating hours	
Check bolted connections and tighten if necessary [2].	
Check pinned joints and safety parts, tighten or replace if necessary.	
Check for external cracks, wear, corrosion and functional safety.	
Annually	
Carry out checks in accordance with the country-specific health and safety directives. Some **countries** or **directives for certain uses** may require more frequent inspections. Fill in the data under proof of inspection in chapter **Certificate of Inspection**.	
Crack checking by means of the penetrant testing according to EN 571 and EN ISO 3452.	
Every 2 years	
Replace hydraulic hoses under intensified working requirements, see also warning in chapter **Maintenance**).	
Every 6 years	
Replace hydraulic hoses, couplers and screwed connections.	
Commissioning after extended shut down (from 1 month)	
Lubricate grease nipples [1.3]	
Check bolted connections and tighten if necessary [2].	
Check pinned joints and safety parts, tighten or replace if necessary.	
Check hydraulic connections for leaks and tighten if necessary.	
Check for cracks, wear, corrosion and functional safety.	

See operating manual in chapter:
[1] Overview of greasing points
[2] Check screw fittings / tightening torques
[3] Oil and grease

Location, Date	Stamp with signature

10.1.3. Daily maintenance

1. Check the attachment for deformation, cracks, and wear.
2. Check all hydraulic connections and hydraulic lines for leaks and externally visible damage.
3. If necessary, replace all damaged parts to restore operational safety.
4. Use a grease gun to lubricate the grease nipple (see chapter **Greasing point overview**) until the grease emerges between the bearings.
   Use grease with properties as described in the chapter **oil and grease**.
5. Check bolted connections and tighten if necessary.

10.1.4. Inspection after one and after 50 operating hours

Inspection Each time after initial installation or re-installation (e.g. after a repair) and following
» the first operating hour,
» and then every 50 operating hours,
all fastening screws, nuts, and hydraulic connections must be check for stability.

Tightening If screws are loose, then these must be tightened to the prescribed tightening torques.

Cylinder and hexagon head cap screws/nuts [Friction coefficient 0.125]							
Quality class		8.8	10.9	12.9	8.8	10.9	12.9
Thread [metric]	SW [mm]	Tightening torques [Nm]			Tightening torques [ft-lbs]		
M5	8	5.8	8.1	9.7	4.3	6	7.2
M6	10	10	14	17	7.5	10.5	12.5
M8	13	24	34	40	20	25	30
M10	17	48	67	81	35	50	60
M12	19	83	117	140	60	85	105
M14	22	132	185	220	95	135	160
M16	24	200	285	340	150	210	250
M18	27	275	390	470	205	290	345
M20	30	390	550	660	290	405	485
M22	34	530	745	890	390	550	656
M24	36	675	950	1140	500	700	840
M27	41	995	1400	-	734	1032	-
M30	46	1350	1900	-	995	1400	-
M33	50	1830	2580	-	1350	1903	-
M36	55	2360	3310	-	1740	2440	-
M39	60	3050	4290	-	2250	3164	-
M42	65	-	4500	-	-	3320	-
M48	-	-	6500	-	-	4795	-

Locking screws/nuts [Friction coefficient 0.125]							
Type		Tensilock screws/nuts				Ribbed screws/nuts	
Quality class		Class 80		Class 100		Class 100	
Carrier material		Steel	Cast iron	Steel	Cast iron	Steel	Cast iron
Thread [metric]	SW [mm]	Tightening torques [Nm/ft-lbs]					
M6	10	16 / 11.8	13 / 9.6	21 / 15.5	16 / 11.8	19 / 14	16 / 11.8
M8	13	34 / 25.1	28 / 20.7	44 / 32.5	36 / 26.6	42 / 31	35 / 25.8
M10	17	58 / 42.8	49 / 36.1	75 / 55.3	64 / 47.2	85 / 62.7	75 / 55.3
M12	19	97 / 71.5	83 / 61.2	120 / 88.5	105 / 77.4	130 / 95.9	115 / 84.8
M14	22	155 / 114.3	130 / 95.9	185 / 136.4	170 / 125.4	230 / 169.6	200 / 147.5
M16	24	215 / 158.6	195 / 143.8	280 / 206.5	260 / 191.8	330 / 243.4	300 / 221.3

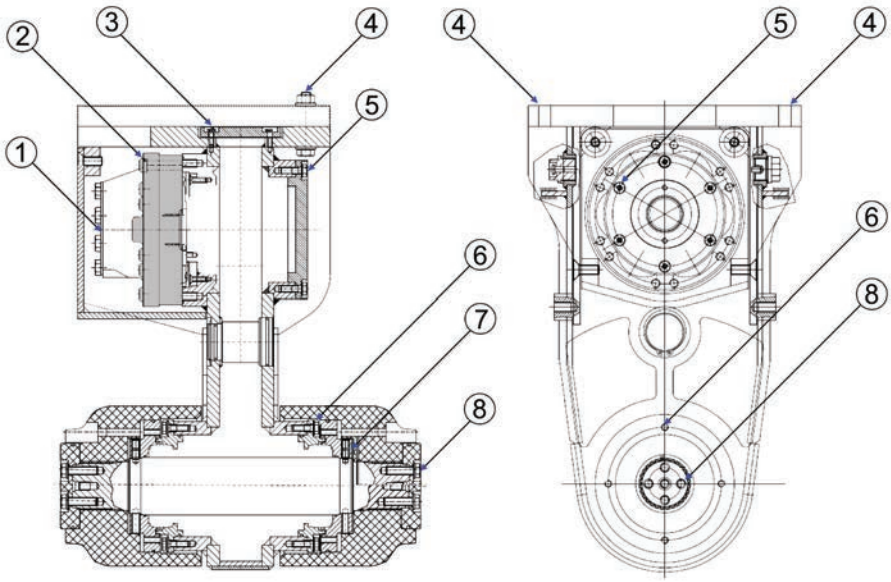
10.1.5. Internal threads of hydraulic fittings – BSP / metric thread

Tightening torques: BSP / metric thread					
Series	OD pipe	Screw thread			
		BSP	MA [Nm]	ISO thread [metric]	MA [Nm]
L	6	G1/8 A	25	M10 x 1.0	25
	8	G¼ A	50	M12 x 1.5	30
	10	G¼ A	50	M14 x 1.5	50
	12	G3/8 A	80	M16 x 1.5	80
	15	G½ A	160	M18 x 1.5	90
	18	G½ A	105	M22 x 1.5	160
	22	G¾ A	220	M26 x 1.5	285
	28	G1 A	370	M33 x 2.0	425
	35	G1¼ A	600	M42 x 2.0	600
	42	G1½ A	800	M48 x 2.0	800
S	6	G¼ A	60	M12 x 1.5	35
	8	G¼ A	60	M14 x 1.5	60
	10	G3/8 A	110	M16 x 1.5	95
	12	G3/8 A	110	M18 x 1.5	120
	14	G½ A	170	M20 x 1.5	170
	16	G½ A	140	M22 x 1.5	190
	20	G¾ A	320	M27 x 2.0	320
	25	G1 A	380	M33 x 2.0	500
	30	G1¼ A	600	M42 x 2.0	600
	38	G1½ A	800	M48 x 2.0	800

10.1.6. Screw connections – tightening torques

After detachment, the nuts and bolts must be replaced.
The use of **medium strength threadlocker*** is recommended as additional security.

Screw connections and tightening torques [KDC04-06-08]



No.	Description	Maintenance interval	Tightening torque	Dimensions	Number	Screw retainer*
		h	Nm (ft-lb)	metric		
1	Motor cover	100	67 (49)	M10-10.9	6	☑
2	Hydraulic motor on housing	100	79 (58)	M10-12.9	12	☑
3	Housing cover	500	10 (7)	M6-8.8	8	-
4	Fixing to the carrier machine	Daily	115 (85)	M12-10.9	10	-
5	Covering	100	34 (25)	M8-10.9	-	-
6	Seal carrier on the housing	500	34 (25)	M8-10.9	4	-
7	Seal carrier on the drive shaft	500	60 (44)	M10-10.9	8	☑
8	Dust cover/drum attachment	100	67 (49)	M10-10.9	8	-

10.1.7. Hydraulic connection - DKS

Metric connections

For hydraulic applications, metric connections with **sealing cones (24°)** in heavy-duty designs are widely used.
There are also connections that feature an **O-ring** as an additional sealing element (**DKOS**).

Tightening torque for hydraulic connections DKS/DKOS			
Nominal size	**Union nut thread**	**[Nm]**	**[ft-lbs]**
08S	M16 x 1.5	30 - 50	22.1 - 36.9
10S	M18 x 1.5	30 - 50	22.1 - 36.9
12S	M20 x 1.5	40 - 60	29.5 - 44.3
16S	M24 x 1.5	50 - 70	36.9 - 51.6
20S	M30 x 2.0	90 - 120	66.4 - 88.5

10.1.8. Annual maintenance

Testing according to regional regulations

Carry out an **expert inspection** for cracks, wear, corrosion and functional safety according to the country-specific health and safety directives. In Germany the test must be carried out per regulation **BGR 500, chapter 2.8, section 3.15.2**.

10.1.9. Commissioning after being shut down for 1 month or more

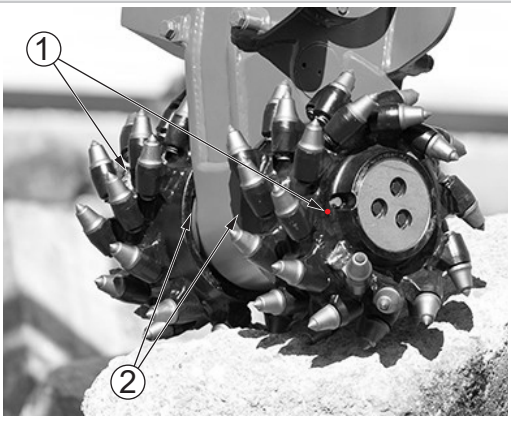
Carry out all maintenance work according to the **maintenance check list**.
If the attachment has been exposed to environmental influences and temperature fluctuations (e.g. storage outdoors), then exchange the seals.

10.1.10. Replace the hydraulic components every 6 years

Irrespective of the operating times, every **6 years** it is necessary to replace hydraulic hoses, hydraulic quick couplings and screwed connections on the attachment.

10.1.11. Greasing points

Lubrication prevents dirt or debris from entering the housing sealing system and causing damage.

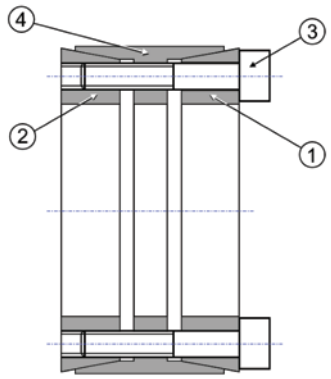
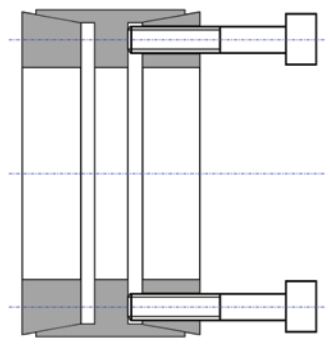
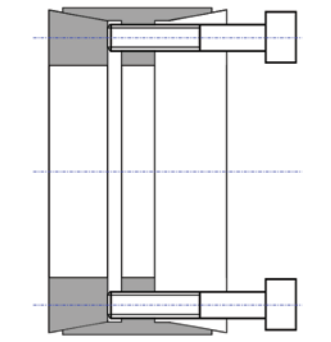
Greasing points	Description
	**Lubrication**: • Lubricate the labyrinth seals of the cutter drums with lubricating grease (see chapter **Oil and grease**) via both grease nipples (1). • Press in grease until it is exuded at the inner drum sides (2).

10.2. Drum change

10.2.1. Cone clamp

The following instructions must be read carefully and may only be carried out by trained customer service personnel.
If this is not observed, the guarantee can be rendered invalid.
If in doubt, contact the **Auger Torque** Technical Department.

Removal of the cutter head Before detaching the cutter head, it must be placed on a clean surface and cleaned thoroughly.

Cone clamp	Description
	**Mode of operation of cone clamp**: The torque between the cutter head and the gear output shaft is transmitted through a **cone clamp**. This consists of two inner rings (1 + 2) with an outer taper and the outer ring (4) with an inner taper, as well as clamping screws (3). **NOTICE** By tightening the clamping screws, the inner rings are pulled against each other. This creates radial clamping forces by means of the conical surfaces. The radial clamping forces press the outer ring into the hub bore of the cutter drum and the inner rings onto the drive shaft. As a result, the torque and/or an axial force can be transmitted between the shaft and the hub. • To make it easier to detach the cutter drum, grind and grease the faces at the threaded ends of the jacking screws. This reduces the friction loss. • Unscrew all tensioning screws completely from the conical clamp. • Screw the clamping screws into the forcing tapped holes until they touch the flange of the outer ring. • Tighten the screws in the forcing tapped holes crosswise and evenly in several stages until the front inner ring loosens. • Completely remove the inner ring. • Screw the clamping screws into the tapped holes until they touch the rear inner ring. • Tighten the screws in the forcing tapped holes crosswise and evenly in several stages until the rear inner ring loosens. • Remove the cutting drum together with the individual parts of the clamping unit from the shaft.
	
	

No.	Description
1	Front inner ring
2	Rear inner ring
3	Clamping screw
4	Outer ring

Attachment of the cutter head

- Before attachment, missing or damaged tensioning screws must be replaced with the same screws **quality 12.9**.
- Carefully clean the contact surfaces on the shaft and hub (free of oil and grease).
- Lightly oil the clamping unit.
  NOTICE: Do not use any grease or oil with molybdenum disulphide or high-pressure additives!
- Insert the clamping unit into the hub of the cutter drum and push it onto the gearbox output shaft. In doing so, only exert pressure on the clamping screw heads resting on the front inner ring.
  NOTICE: When used in blind bores or on shaft shoulders, it must be ensured that there is sufficient axial clearance for removal of the rear inner ring.
- Tighten the clamping screws crosswise by hand - align the hub.
  NOTICE: When tightening the clamping screws, do not start with the screws immediately to the right and left of the slot.
- Tighten clamping screws with a torque wrench once crosswise with half the tightening torque (full tightening torque **Ms = 73 Nm (53.8 ft-lb)**.
  Then tighten once with half the tightening torque clockwise.
- Tighten screws one after the other 2 - 3 times with the full tightening torque (**Ms 73 Nm (53.8 ft-lb)**).
  NOTICE: When tightening the clamping screws, do not start with the screws immediately to the right and left of the slot.

Maintenance note

- The cone clamping elements are maintenance-free - however, during operation it is possible that settling phenomena occur in the connection.
  It is therefore recommended that the tightening torques of the clamping screws are checked as part of the maintenance intervals for the cutter head attachment.

10.3. Changing chisels on the cutter drums

DANGER - Risk of crushing from the cutter head
Before repairs or assembly work, such as tooth changes, the mounted cutter head must be secured against slipping and falling over.

DANGER - Risk of injury from flying parts
Flying parts during repair work can cause serious eye injuries or loss of vision. Always wear **protective goggles** or **face protection** before carrying out repairs or assembly work on the cutter head attachment (see also chapter **Personal Protective Equipment, PPE**).

NOTICE
When changing the teeth, the following must be observed:

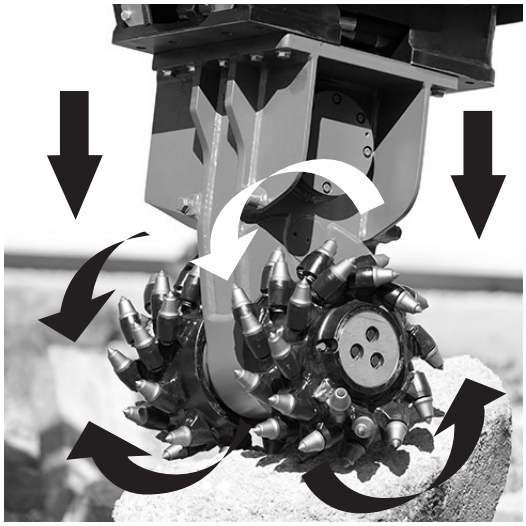
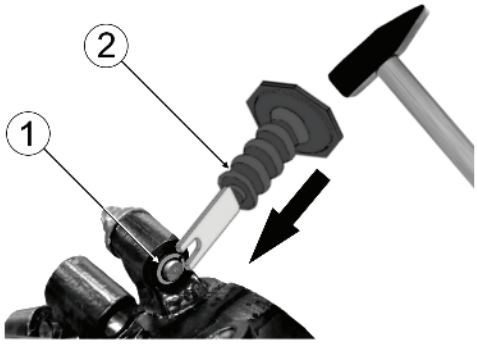
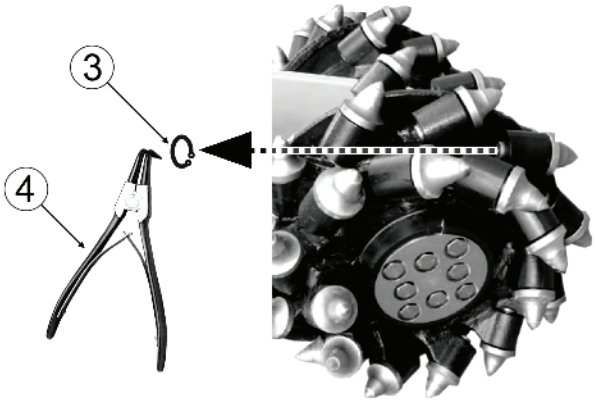
- Repairs or assembly work should only be carried out by trained customer service personnel.
- Thoroughly clean the cutter heads and the workplace.
- Only change the teeth with the tools provided for this purpose:

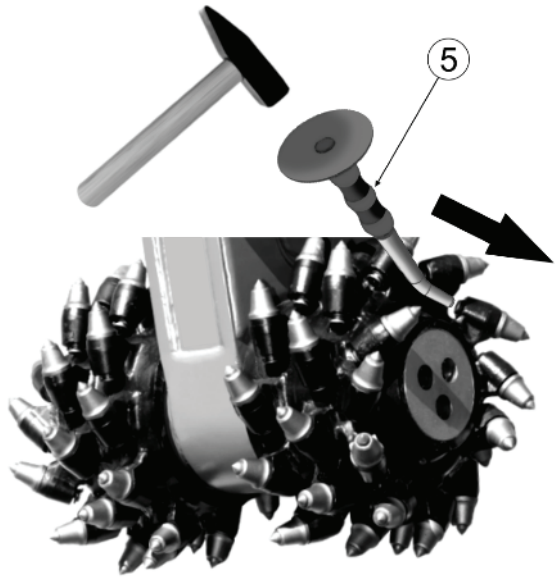
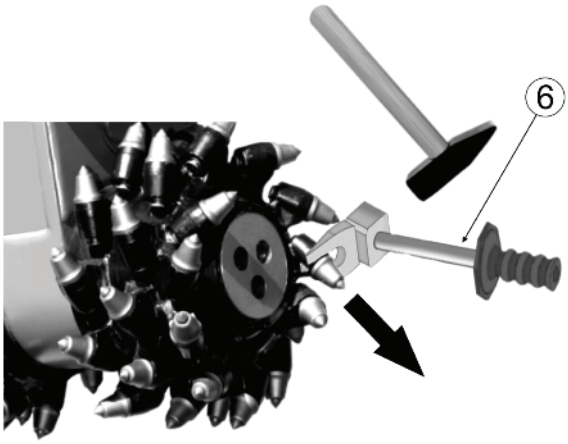
10.3.1. Tools for changing teeth

The following removal and fitting tools may be required (model dependent):-

No.	Tools	Code	Use
1	Taper drift punch	[BZ38]	Removal of all the teeth
2	Fitting tool	[BZ33]	C-lock washers Ø 20 + 25 + 30 mm (0.8 + 1 + 1.2 in.)
3	Removal tool	[BZ31]	Removal of jammed teeth Ø 20 + 25 + 30 + 38 mm (0.8 + 1 + 1.2 + 1.5 in.)
4	Drift punch	[KHP2]	C-lock washers Ø 20 + 25 + 30 mm (0.8 + 1 + 1.2 in.)
5	Locking ring clamp	-	Removal and fitting of Seeger circlips Ø 20 + 25 + 30 mm (0.8 + 1 + 1.2 in.)

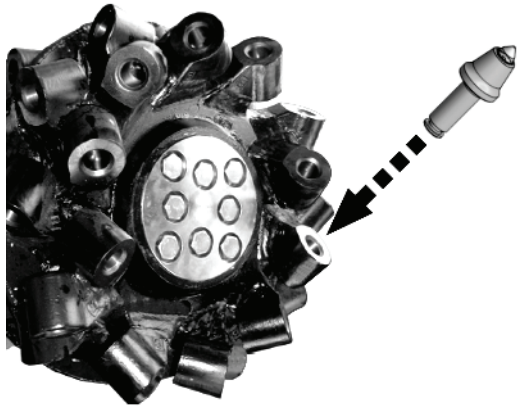
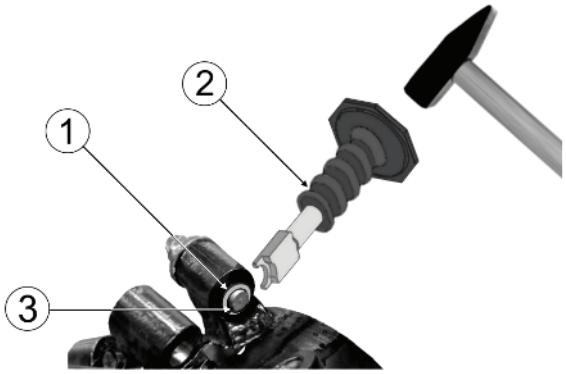
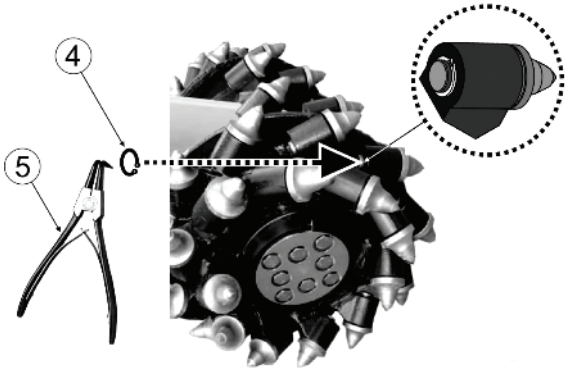
10.3.2. Tooth replacement - removal

Removal of teeth	Description
 Fig. 1	**Procedure for removing teeth** : • Set down the cutter head so that it rests firmly and securely (e.g. a block of wood) and the cutter drums can rotate freely (Fig. 1). • Switch off engine of carrier machine. • Knock the **C-locking ring** (1) out of the tooth groove with a **dismantling tool** (2) and a hammer (Fig. 2). or (if present): • remove **Seeger circlip** (3) with the **locking ring pliers** (4) (Fig. 3).
 Fig. 2	
 Fig. 3	

Removal of teeth	Description
 Fig. 4	**Procedure for removing teeth(contd.)** : • Knock the tooth out of the tool insertion hole of the tooth holder with the **drift punch** (5) and hammer (Fig. 4). • Repeat the procedure for all other teeth.
 Fig. 5	**Procedure for removing “jammed” teeth:** • Place the **taper drift punch** (6) in the gap between the chisel and the tooth holder and use a hammer to drive out the tooth (Fig. 5). • Repeat the procedure for all other “jammed” teeth.

10.3.3. Tooth replacement - fitting

NOTICE
Before fitting the tooth, the following must be observed:
- The tool insertion holes in the tooth holders must be cleaned thoroughly.
- Tooth fitting is to be carried out without lubricants (oil or grease).

Fitting chisels	Description
 Fig. 1	**Procedure for fitting teeth:** • Insert tooth into the tool insertion hole of the tooth holder (Fig. 1). • Drive the **C-locking ring** (1) into the **tooth groove** (3) using the **fitting tool** (2) and a hammer (Fig. 2) or (if present): • Insert the **Seeger circlip** (4) into the tooth groove with the **circlip pliers** (5) (Fig. 3). • Check that the locking ring and the tooth are firmly seated. **NOTICE** The tooth must be able to **rotate freely** in the tooth holder. • Repeat the procedure for all other teeth.
 Fig. 2	
 Fig. 3	

10.4. Oil and grease

Hydraulic fluid

The attachment may be operated with industry-standard mineral oils according to the information in the operating instructions for the carrier.

NOTICE
Because of the functional test completed by the manufacturer, residual material of the following **hydraulic oil** may still be present in the attachment:

HLP46 according to DIN 51524 Part 2 / ISO VG 46

In order to be able to use the attachment on ecologically sensitive terrain or in protected areas, the manufacturer authorises operation with the following quickly biologically degradeable **hydraulic oil**:

HEES according to ISO 15380 or OECD 301 B

NOTICE
Possible damage due to using non-homogeneous hydraulic oil.

- Do not mix hydraulic oils of differing standards under any circumstances.
- In case of doubt regarding the specification or mixture, replace the hydraulic oil completely.
- The proportion of foreign oil must not exceed **2%**.
- Hydraulic oils should be analysed every **500 operating hours** to avoid a premature oil change.

Observe the information in the operating instructions for the carrier.

Gear oil

High-performance industrial gear oil:

SAE 105 Grade

or high-performance industrial gear oil based on mineral oil with minimum requirements for lubricating oils:

CLP as per DIN 51517-3 and CKD as per ISO 12925-1

BP	ESSO	CASTROL	MOBIL
GRXP 320	SPARTA N EP320	ALPHAS P 320	GEAR SHC 320
SHELL	**TEXACO**	**TOTAL**	**FUCHS**
OMALA OIL 320	MEROPA 320	TRANS-GATE	POWER GEAR

Lubricating grease

Lubricate greasing points and surfaces with the following **multi-purpose grease**:

EP2 according to DIN 51825: KP2K-20 and ISO / DIS 6743-9: ISO L-XBCHB 2

NOTICE
Grease nipples as described in the **Maintenance - Overview of greasing points** chapter.

10.5. Disposal

Oil and grease Observe country-specific and regional disposal directives.

Attachment After proper shut down and removal of hydraulic oil and grease residues, the attachment can be disassembled and the materials recycled.

10.6. Repair and welding work

NOTICE
Loss of all warranty and liability claims through unauthorised modifications to the attachment. Possible damage to property and loss of functional safety.

- No structural modifications or changes to settings may be undertaken on the attachment or on components.
- Welding work only after consultation with the manufacturer and compliance with the:
  - Welding instructions.
  - Specification of the filler material

NOTICE
Loss of guarantee claims due to use of non-original parts. Possible loss of operating and functional safety.

- For repair work and replacement of wearing part only **original spare parts** from the manufacturer may be used in order to guarantee functionality and safety.

Exceptions include standardised parts such as screws and hydraulic fittings.

11. Warranty Statement

All Drum Cutter products are warranted to be free from defects in materials or workmanship for the periods summarised below:

- Gearbox - 18 Months
- Hydraulic Motor - 18 Months
- All Other Parts / Products (excluding wear parts) - 12 Months

The warranty periods will commence from Date of Sale by an authorised Auger Torque Dealer. Evidence of the date of sale may be required and for Gearbox and Hydraulic Motor warranties to be valid the product must be registered with Auger Torque within 4 weeks of the date of sale. Extended Warranty (>12 months) Products can be registered by returning the Registration Card or completing the form on page 7. This warranty is not transferable beyond the initial purchaser of the product.

A warranty claim should be reported to the Auger Torque Dealer who supplied the unit. The Dealer, with the technical backup of Auger Torque, will make an initial assessment.

The customer is responsible for returning the product for warranty inspection to the original supplying dealer's facility. Parts should not be delivered without the prior agreement of the dealer or Auger Torque.

During the warranty period Auger Torque, at its option, will repair or replace any parts free of charge determined as defective by Auger Torque. Such repairs will be undertaken by Auger Torque or its nominated representative at an Auger Torque facility or a location deemed suitable by Auger Torque. Auger Torque are not liable for any associated costs relating to a warranty failure.

Parts repaired or replaced by Auger Torque are then covered by this warranty for the remainder of the original warranty as if such parts were original parts.

Products or parts which, as determined by Auger Torques examination, show wear from normal use, have been improperly operated, damaged by accident or negligence, altered or modified are not considered defective and are not covered by this warranty.

This warranty is void if any attempt is made to make field repairs unless these have been pre-approved in writing by Auger Torque. This includes, but is not limited to, disassembly, modifications to internal components, or any physical changes to the product.

This warranty is void if any third-party products or accessories are used that are not certified or recommended by Auger Torque. This includes the installation of any components, peripherals, or attachments that have not been expressly approved by Auger Torque.

This warranty is void if the products are not serviced in-line with the instructions in the Operators Manual. Particular care should be taken to perform regular oil changes in gearboxes.

This warranty is exclusive and in-lieu of any other expressed warranties. There are no warranties of merchantability or fitness for a particular purpose. Auger Torque shall not be liable for any consequential, incidental or punitive damages, losses or expenses, including those resulting from or caused by any defects.

As you would expect from Auger Torque, with our extensive experience and product reliability we'll always go the extra mile to keep you working.

12. EC Declaration of conformity

Manufactured by Auger Torque Europe Limited

EU Declaration of Conformity

The responsible person:

Name	
Position	
Company Name	*Auger Torque Europe Ltd.*
Address	*Hazelton, Cheltenham, GL54 4DX, England*
Telephone	*++44 (0) 1451 861652*
Fax	*++44 (0) 1451 861660*

Declares that the product described:

Manufacturer	*Auger Torque Europe Ltd.*
Model	
Serial Number	

Conforms to the Machinery Directive 2006/42/EC.
It also complies with the essential health and safety requirements, national standards and the transposed harmonised standards appropriate for this product.

Signed by: Dated
(The responsible person)

Notes

Notes

YOUR DEALER IS

Auger Torque Europe Ltd
Hazleton
Cheltenham
GL54 4DX
England
Tel: +44 (0) 1451 861 652
Fax: +44 (0) 1451 861 660
Email: sales@augertorque.com

Auger Torque Australia Pty Ltd
481 Boundary Rd
Darra
Queensland 4076
Australia
Tel: +61 (0) 7 3274 2077
Fax: +61 (0) 7 3274 5077
Email: sales@augertorque.com.au

Auger Torque USA LLC
2640 Jason Industrial Parkway
Winston, GA 30187
USA
Tel: (+1) 844 287 6300
Fax: (+1) 770 947 9916
Email: sales@augertorqueusa.com

www.augertorque.com

Products and specifications subject to change without prior notice.
Some products may not be available in your country or region.

25-07-2024