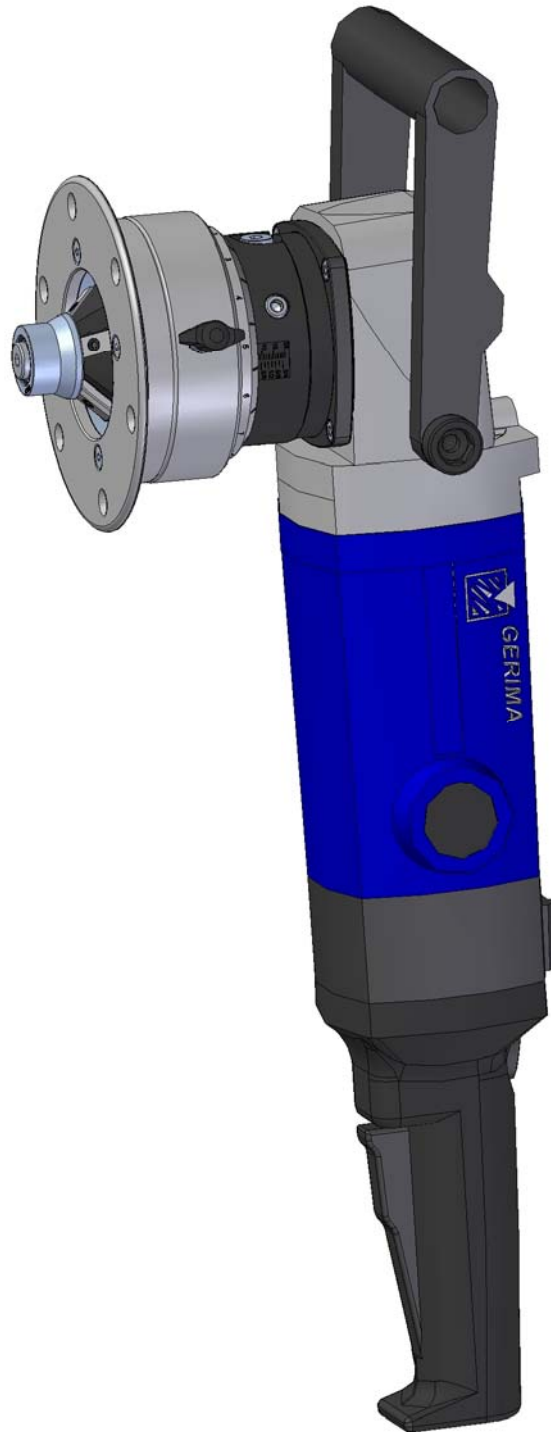




GERIMA SMA 50-E12



SMA 50-E12



Dear Customer,

Congratulations, you have purchased a high-quality bevel milling machine that will help you to achieve outstanding results in your hand beveling applications.

To ensure that the machine is used safely and effectively, please read this operating manual carefully in order to become properly acquainted with the tool. Please instruct your co-workers and employees so that they also become acquainted with the machine. Learning to use the machine properly will save you time and money, will save your employees time and effort, and will improve the quality of your products.

Your machine was subjected to thorough inspection and testing before being packed and shipped.

Should you need to contact us for assistance, please always have the machine identification number available.

The machine identification number is printed on the machine's rating plate.

Machine identification no.



The machine identification number is also engraved on the gear flange.

1. Operating issues

If you have questions regarding the use or operation of the machine, or if you need our support or advice regarding specialized applications, our team of specialist retailers and application technicians would be pleased to offer their assistance.

2. Servicing and repair issues

If you need to make a guarantee claim, if the machine needs to be repaired or if you need to order spare parts, please contact our specialist retailers for help.

3. Sales

Our specialist retailers are also the people to contact if you wish to purchase additional **GERIMA** machines, accessories or consumable items.

To help us provide quick and efficient assistance, please always have your machine identification number to hand.

We hope you enjoy working with your precision-made **GERIMA** machine.

The **GERIMA** Team



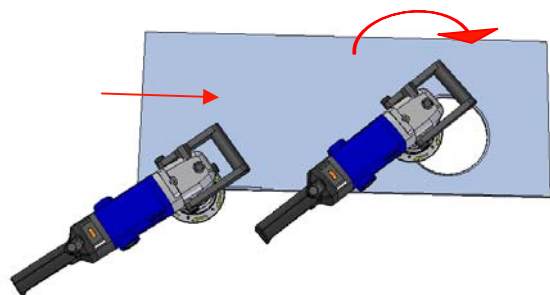
1. Quick reference guide	Adjusting the bevel height	4
	Changing the milling head	4
	Changing the guide bearing	5
	Replacing the indexable inserts	5
2. Safety information	General safety information	6
	Specific safety instructions	7
3. Description of machine	Functional components	8
	Intended use	8
	Technical data	9
	Power-on time	11
4. Machine adjustments	Adjusting the bevel height	12
	Indexable cutting inserts for milling bevels	14
	Indexable cutting inserts for radius milling	17
5. Machine operation	Working with the machine	22
6. Maintenance	Maintenance plan	24
	Servicing	25
7. Replacing the milling head and guide bearing	Changing the milling head and the DL/DS guide bearings	26
8. GERIMA spare parts	Radius milling cutter	28
	Adapter	32
	Guide stop	34
	Grinding systems	35
9. Consumables	Overview of indexable cutting inserts	37
10. Spare and wearing parts	Gear unit	39
	Drive motor	42
11. Guarantee	Guarantee	45
12. EC Declaration of Conformity	EC Declaration of Conformity	46



1. Quick reference guide

Working direction:

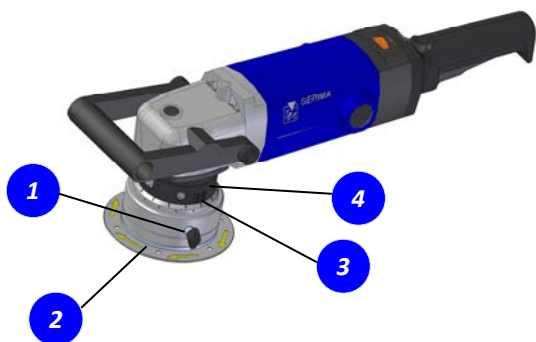
Always mill against the direction of rotation of the milling head ('up-cut milling')



Move machine **ONLY** in the direction of the arrow!

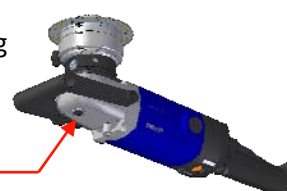
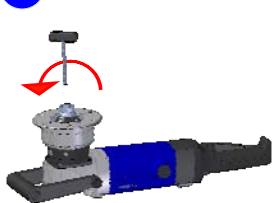


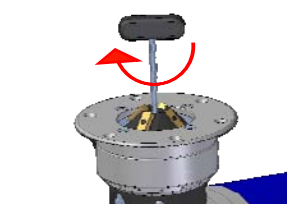
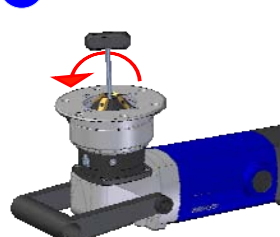
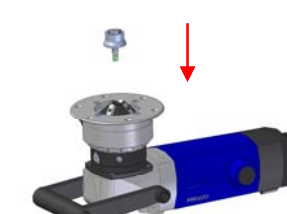
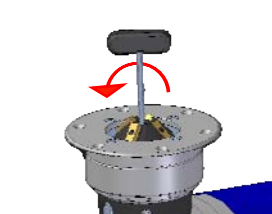
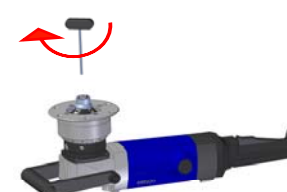
Adjusting bevel height (a):

The bevel height (a) – see page 12 – is set by adjusting the height of the machine's guide plate. The height setting can be read from the fixed main scale and the vernier collar.



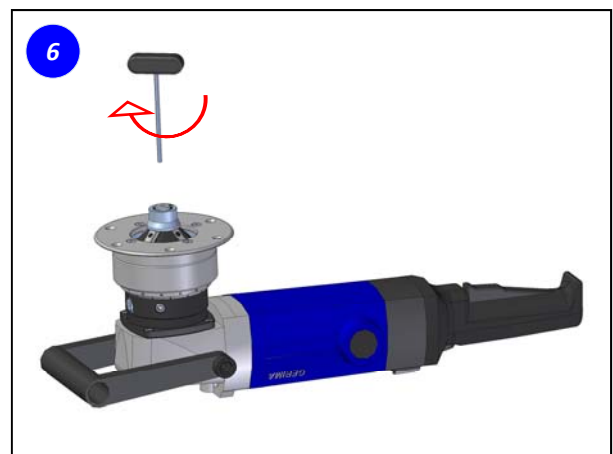
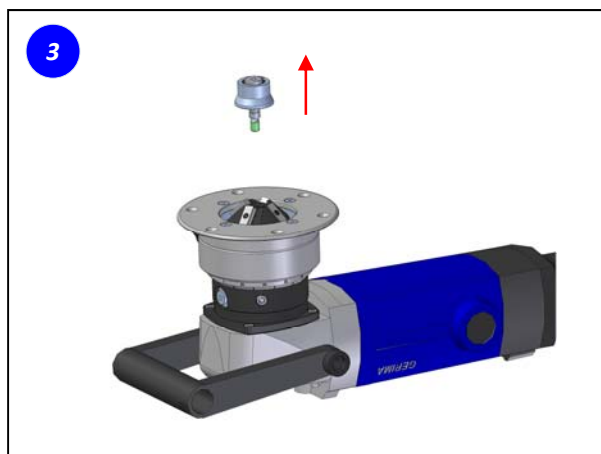
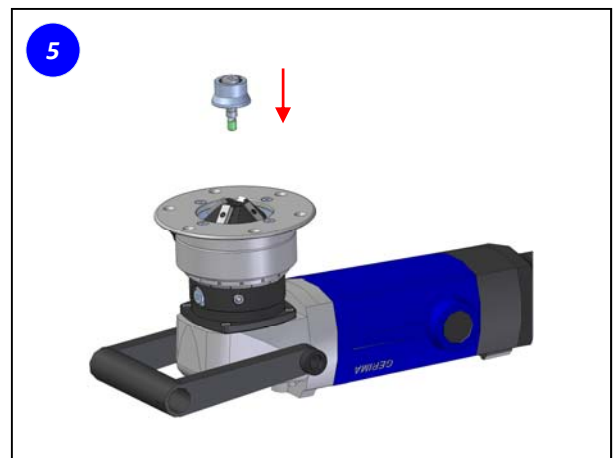
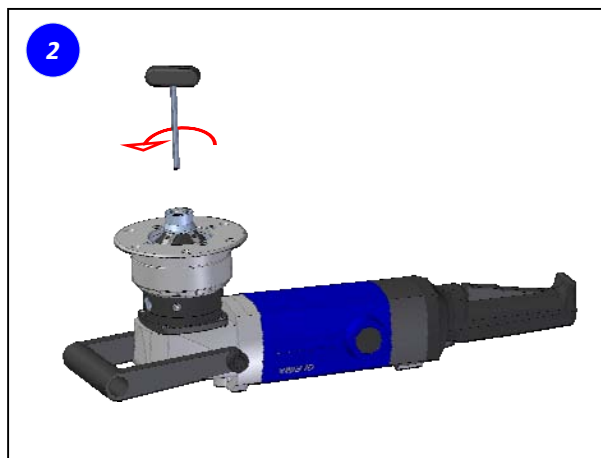
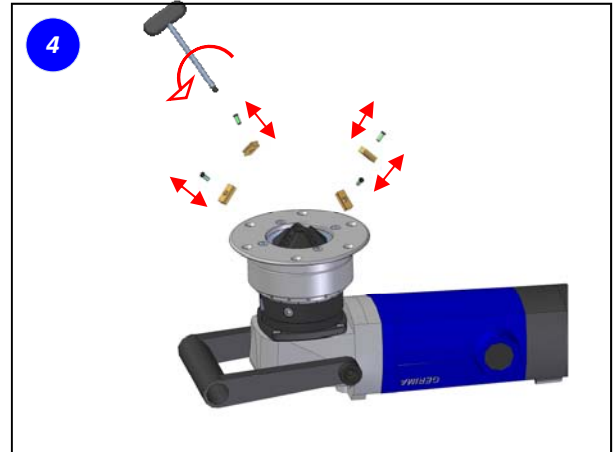
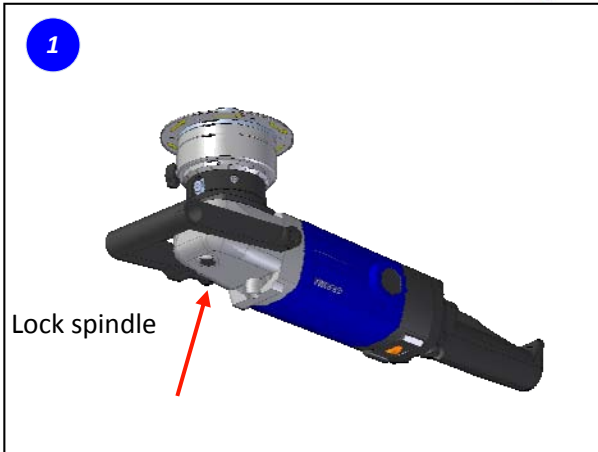
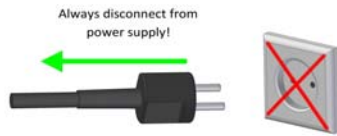
1. Release clamping screw **1**
2. Rotate the guide plate **2** until the required bevel height has been set as shown by the fixed main scale **4** in combination with the vernier collar . **3**
3. Re-tighten locking screw . **1**
4. Check bevel height on workpiece and readjust as necessary.



<p>1</p> <p>Changing the milling head:</p> <p>Lock spindle</p> 	
<p>2</p> 	<p>6</p> 
<p>3</p> 	<p>7</p> 
<p>4</p> 	<p>8</p> 
<p>5</p> 	<p>9</p> 



Changing the guide bearing and the indexable cutting inserts:





2. Safety information

General safety information:



Before using the machine, the operating manual and safety information must have been read and understood in their entirety. The instructions contained therein must be followed.

Safety regulations such as DIN, VDE, CEE, AFNOR and others applicable in the country of use must be observed.

These instructions cover the operation and handling of the machine, including tools, accessories and machine maintenance.

Failure to comply with these established safety recommendations can cause serious hazards. The machine operator must have properly understood the following safety advice and must have access to these instructions at all times.

To prevent improper handling of the machine and to prevent accidents, the operator must comply with the safety precautions set out below.

Hand hat.



Installation:

The machine must only be connected to an electrical power source with a voltage equal to that specified for the machine.



Electrocution hazard!

- Always disconnect the machine from the power supply before servicing.
- Before each use, always check the plug, cable and machine for signs of damage.
- The machine must be kept dry. Do not use in damp locations or humid environments.
- If used out of doors, the machine must be protected by a residual-current circuit-breaker with a maximum tripping current of 30 mA.



Improper use can cause serious injury!

- Always wear safety goggles, ear protectors, gloves and safety shoes when working with the machine.
- Insert power plug only when machine is switched off. Disconnect machine from the power supply after use.



Improper use can damage equipment and property!

- Never lift or carry the machine by its power cable.
- Make sure the cable is directed behind and away from the machine. Do not lay the cable over sharp edges.
- Servicing and testing must only be carried out by appropriately qualified technicians.

**Specific safety instructions:**

Warning

Risk of injury to hands!

- Do not place your hand near the milling head.
- Always hold the machine with two hands.



Caution

Improper use can damage equipment and property!

- Risk of machine being damaged or destroyed.
- Never lift or carry the machine by its power cable.
- Make sure the cable is directed behind and away from the machine. Do not lay the cable over sharp edges.
- Servicing and testing must only be carried out by appropriately qualified technicians.
- **Always use genuine GERIMA spare parts and accessories.**



Warning

Risk of injury from hot metal chips

- **Hot chips are ejected from the machine at high speed.**
- Use the chip bin.



Warning

Improper use can cause serious injury!

- Make sure you always have a firm footing when working with the machine.
- Never touch the milling head when the machine is running.
- Never use the machine above head height.
- The machine should only be used for conventional up-cut milling.

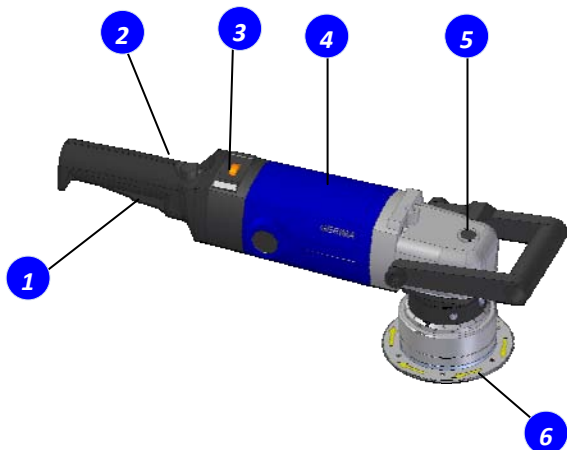


Important

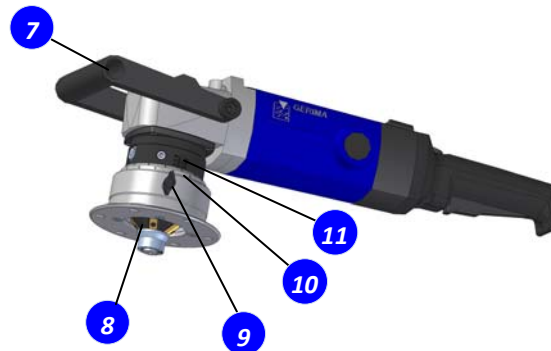
The manufacturer reserves the right to make technical changes.



3. Description of machine



- 1 On/Off switch
- 2 Switch lock
- 3 Speed adjustment
- 4 Motor
- 5 Spindle lock
- 6 Guide plate



- 7 Grip
- 8 Milling head with DL guide bearing
- 9 Height clamping screw
- 10 Vernier scale on collar
- 11 Main scale

Intended use:

To avoid injury and damage to health, please observe the following:

The machine may only be used for work and materials described in the section 'Intended use'.

Do not use the machine to work on materials containing asbestos.

The *GERIMA SMA 50-E* is a hand-held, electrically powered milling machine intended:

- for machining workpieces made of steel, cast steel, fine-grained steel, stainless steel, aluminium, aluminium alloys, brass and plastics;
- for commercial use in industrial settings and in the skilled trades;
- for preparing K, V, X and Y-shaped welding grooves;
- for creating visible edges in plant and mechanical engineering work;
- for edge rounding to prepare materials for painting or coating or as impact protection



Technical data



<u>Technical data:</u>	<u>SMA 50-E22</u>	<u>SMA 50-E12</u>
Line voltage	230 V	110/120 V
Mains frequency	50/60 Hz	50/60 Hz
Rated power consumption	2.200 W	1.800 W
Motor speed when idling	2.400 -7.500 U/min min	2.400 -7.500 U/ min
Weight (approx.)	9,0 kg	9,0 kg
Bevel width (material-dependent)		
Aluminium	1-15 mm	1-15 mm
Steel	1-12 mm	1-12 mm
Stainless steel	1- 8 mm	1- 8 mm
Minimum thickness of workpiece	3 mm	3 mm
Smallest contour radius (bevel-dependent)	12-20 mm	12-20 mm
Smallest bore diameter (bevel-dependent)	45-60 mm	45-60 mm
Edge radius	2 - 8 mm	2 - 8 mm

Do not overload! (see page 11)

The manufacturer reserves the right to make technical changes.


**Noise emission values in accordance with the
 DIN EN 60745-1 standard**

Noise emission
Emission sound pressure level (in idle mode, speed setting: 4 of 6)
Peak emission sound pressure level at workplace (during milling operations)
Sound power level

	Value	Uncertainty
L _{pA} in dB(A)	83	3
L _{pGpeak}	101	3
L _{WA} in dB(A)	94	3

Vibrations:

Total vibration value (tri-axial vector sum)
Work process: - 30° milling head - - 5 mm bevel width (C) in 12 mm steel sheet (S 355) - speed setting: 5 of 6

Measured vibration emission value a _h = 3.0 m/s ²
Uncertainty K = 1.5 m/s ²

Total vibration value (tri-axial vector sum)
Work process: - 30° milling head - 8 mm bevel width (C) in 12 mm steel sheet (S 355) - speed setting: 5 of 6

Measured vibration emission value a _h = 6.0 m/s ²
Uncertainty K = 1.8 m/s ²

Note:

The measured values listed above depend on the materials and operating procedures used and may therefore be exceeded under other operating conditions.

Using the machine to create bevels with a width greater than that permitted will result in a disproportionately large reduction in the machine's on-time and the service life of the indexable cutting inserts. The vibration and noise emission values will increase accordingly.

The power-on periods listed on page 11 have taken the vibration values into account. To prevent overloading the machine and to avoid operator fatigue it is very important to observe the maximum power-on periods especially when machining wide bevels or high-strength materials.



To avoid damaging the machine, it is essential to be monitor how long the machine has been operating continuously ('power-on time').

All electric brushed motors generate large amounts of heat in the rotor and stator. Although the machine is fitted with a fan cooler that dissipates the heat produced, if the machine is subjected to extreme loads (e.g. milling large bevels, very hard or tough materials) and/or is run continuously for a long period of time, the cooling system may not be able to cope with the amount of heat generated. If the operator continues to use the machine, the rotor (armature) may overheat to such an extent that the winding insulation melts causing a short circuit.

Material strength
Aluminium, copper, brass or plastics
Steel up to 400 N/mm²
Steel up to 600 N/mm²
Steel up to 900 N/mm²
Stainless steel

The power-on time is always expressed as a percentage of one hour.

Example:

If the power-on time is specified as 50%, then you can use the machine to mill bevels for a maximum of 30 minutes in an hour and must then leave the machine to cool for 30 minutes. If the machine is subjected to heavy loads, the power-on time might be 20%, which means it can be used for 12 minutes in any hour and must be left to cool for 48 minutes. Before completely switching off the machine, we recommend running the machine for one or two minutes in idle mode (unloaded) so that fan can continue to draw cool air through the machine.

Power-on time		Speed adjustment
bevel width		Speed setting
< 10mm	> 10mm	
80%	60%	6
60%	35%	6
50%	25%	5
40%	20%	4
40%	20%	2-4

Do not overload the machine!

The machine can become overloaded if, for example, it continues to be used even though the bevel being cut is too large for the material being milled, or if the cutting inserts have become blunt and therefore unable to penetrate the material.

Such conditions can lead to large machine vibrations or even machine breakdown if the armature in the motor is bent to such an extent that

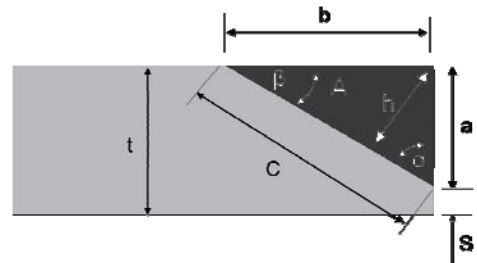
the rotor and stator rub against each other, overloading the windings and blowing the motor.

To prevent this sort of damage when milling large bevels and/or hard materials, never try to machine the bevel in a single pass, always use multiple passes, and do not forget to change the cutting inserts before they become blunt or worn.



4. Machine adjustments

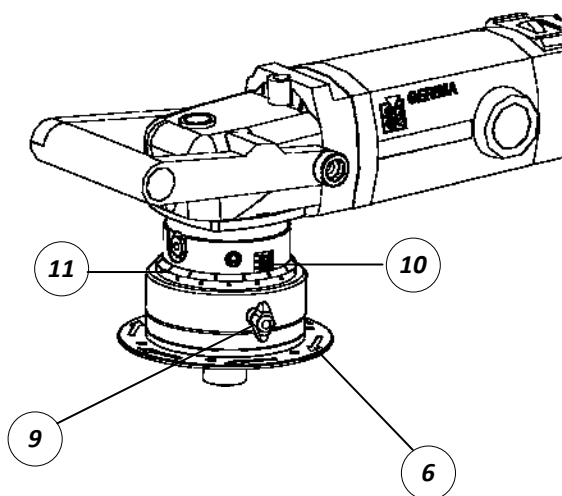
Material and tensile strength	Bevel height (a)			Bevel width c
	$\alpha = 30^\circ$	$\alpha = 45^\circ$	$\alpha = 60^\circ$	
	mm	mm	mm	mm
Aluminium	1 – 13.0	1 – 10.6	1 – 7.5	1.2 – 15.0
Steel up to	1 – 13.0	1 – 10.6	1 – 7.5	1.2 – 15.0
Steel up to	1 – 11.3	1 – 9.2	1 – 6.5	1.2 – 13.0
Steel up to	1 – 8.7	1 – 7.1	1 – 5.0	1.2 – 10.0
Stainless steel	1-6,9	1-5,7	1-4,0	1,2-8,0



- a length of adjacent leg = bevel height (a)
- b length of opposite leg = bevel height (b)
- C bevel width
- α bevel angle
- β opposite angle
- A volume of material removed
- h bevel depth
- S base
- t material thickness

The values specified are typical but without implied guarantee.

In some materials, flame, plasma and laser cutting techniques can lead to hardening of the edges of the workpiece being machined. This can result in significant deviations from the specified reference values.



The bevel height (a) is set by adjusting the position of the guide plate. The height setting can be read from the fixed main scale (10) and the vernier collar (11)

Release clamping screw (9)

Rotate the guide-plate unit (6) until the required bevel height has been set as shown by the fixed main scale (10) in combination with the vernier scale on the collar . (11)

Re-tighten clamping screw (9)

Once the bevel height has been set, a bevel should be milled on a test sample to check whether further height adjustments are required. These may be necessary because the precision of the scale is approximately ± 1 mm, depending on the type of milling head fitted.



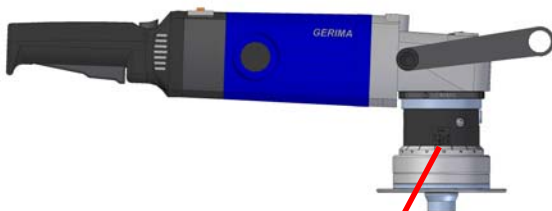
Adjusting the bevel height



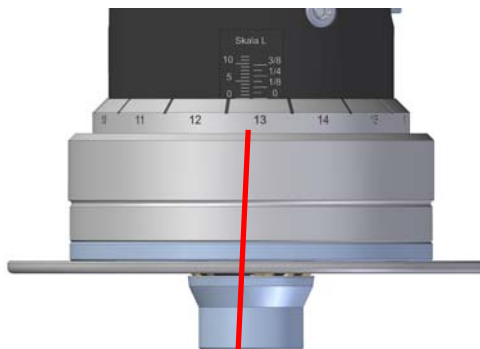
Large guide bearing (DL)

If you have fitted the large guide bearing (DL), please use the fixed main scale L ('Skala L') to determine the bevel height.

With the DL guide-bearing fitted, type M cutting inserts can be indexed a total of eight times.



Fixed main scale L



Large guide bearing



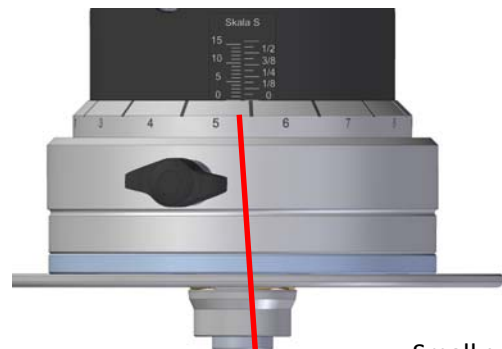
Fixed main scale L
Graduated scale in millimetres and inches; Scale range for DL: 0 – 12 mm and 0 – 3/8 inch.

Small guide bearing (DS)

If the small guide bearing has been fitted, please use the fixed main scale S ('Skala S') to determine the bevel height. With the DS guide-bearing fitted, the cutting inserts can be indexed only four times, however it permits the machining of larger bevel widths or smaller bore holes.



Fixed main scale S



Small guide bearing



Fixed main scale S
Graduated scale in millimetres and inches; Scale range for DS: 0 – 15 mm and 0 – 5/8 inch.



Eight-fold indexable cutting inserts:

The eight-fold indexable cutting inserts are the actual tools that perform the bevelling and deburring operations. They can be used to machine plastic, steel, stainless steels and non-ferrous metals such as copper aluminium and brass. They are suitable for cutting bevels at a variety of angles.

Our universal B02 coating is a useful general-purpose coating that can cope with all the above materials.

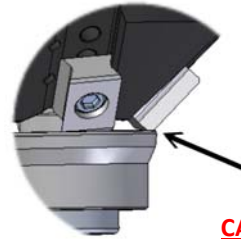
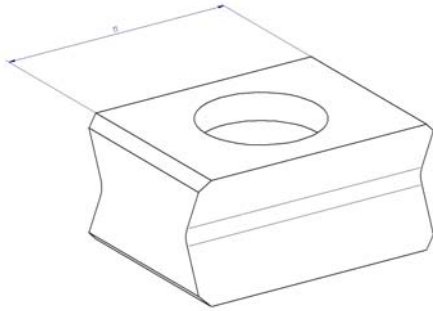
We also offer inserts with special coatings for machining other more specialized materials. Please contact us for details.

Material strength	Indexable cutting
	Type
Plastic	M
Aluminium, copper or brass	M
Steel up to 400 N/mm ²	M
Steel up to 600 N/mm ²	M
Steel up to 900 N/mm ²	M
Stainless steel	M

	Type of coating
	B 00
	B 00
	B 02
	B 02
	B 05
	B 02



Adjusting the eight-fold indexable cutting inserts:

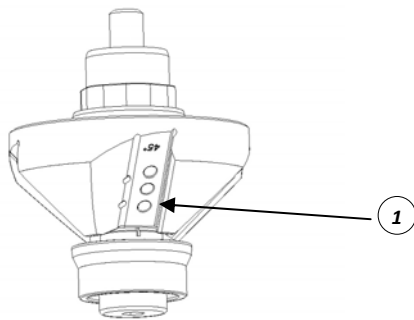


CAUTION!

It is extremely important to ensure that the lower corner of the cutting insert is always covered by the guide bearing DL or DS.

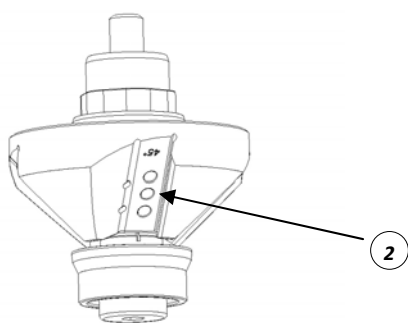
The cutting inserts for milling edges must be fastened to the mounting seat on the milling head by means of the original locking screws (max. tightening torque: 4.0–5.0 Nm).

As each insert has four cutting edges, it can each be indexed a total of four times before requiring replacement.



Locating hole 1

As the inserts are each approximately 11 mm long, each insert can be indexed four times while fastened via the lower locating hole (1) and a further four times while fastened via the middle locating hole (2) provided that the width of the bevel being cut is less than or equal to 5.0 mm. Therefore, if the width of the bevels being milled is not greater than 5 mm, each insert can be used a total of eight times before requiring replacement.



Locating hole 2

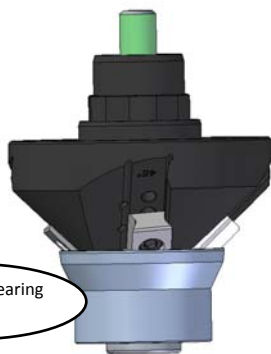
To facilitate the milling of tight contours and small bores, a small guide bearing (DS) is also available as an accessory to each milling head. When the DS guide bearing is fitted, the cutting inserts can be used a total of four times.



Positioning of inserts on the milling head:

The type M indexable inserts have four cutting edges each 11 mm long. Our new technique of 'rotating, flipping and shifting' the inserts makes it possible to index each insert eight times if machining bevels with widths of up to about 5 mm. If machining bevel widths greater than 5 mm, the cutting inserts can be indexed four times in total.

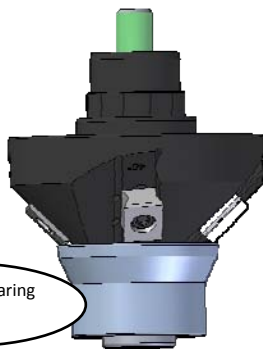
1



Large guide bearing DL

Large guide bearing DL fitted to milling head and cutting inserts fastened via locating hole 1. This configuration can be used to mill bevels with widths of up to 5.0 mm.

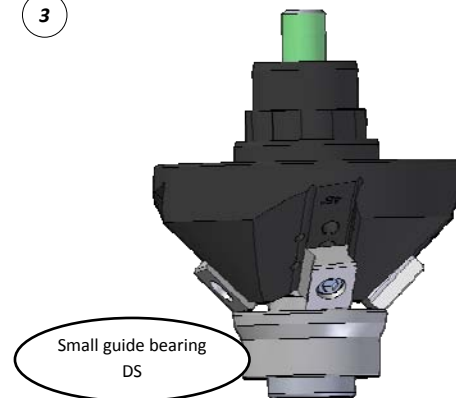
2



Large guide bearing DL

Large guide bearing DL fitted to milling head and cutting inserts fastened via locating hole 2. This configuration can be used to mill bevels with widths of up to 5.0 mm (eight-fold indexing of insert possible) or for milling bevels with widths of up to 10.0 mm (four-fold indexing of insert).

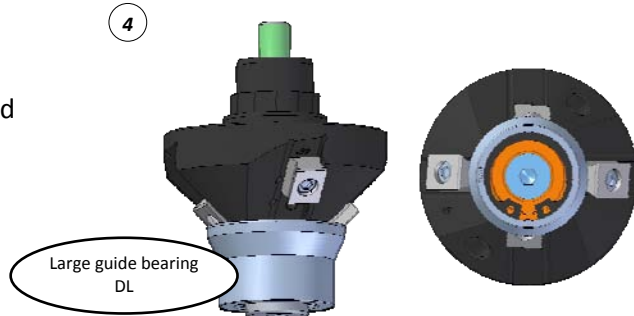
3



Small guide bearing DS

The small guide bearing DS is used for milling contours and drilled holes with diameters ≥ 45 mm and for bevel widths in the range 1–10.0 mm.

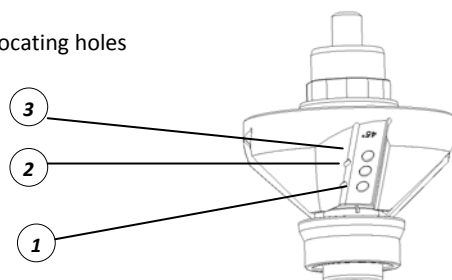
4



Large guide bearing DL

Another option is to stagger the arrangement of the cutting inserts. By fixing the inserts alternately in locating holes 1 and 2, bevels up to 15.0 mm in width can be milled in hard materials; by fixing the inserts alternately in locating holes 1 and 3, bevels up to 20 mm in width can be milled in soft materials.

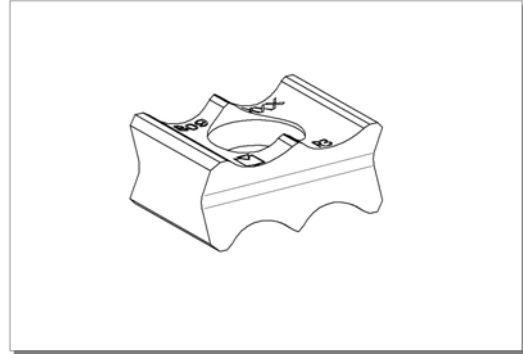
5 Locating holes





Eight-fold indexable radius-milling inserts:

The new indexable inserts used for radius milling operations can also be indexed a total of eight times before requiring replacement. They can be used for machining plastic, steel, stainless steel, as well as non-ferrous metals such as aluminium, copper and brass.



Material strength	Type
	RM
Plastic	
Aluminium and aluminium alloys up to 250 N/mm ²	
Steel up to 600 N/mm ²	
Steel up to 900 N/mm ²	
Stainless steel	
Edelstahl	

Radius					
2	3	4	5	6	8
Type of coating					
B 00	B 00	B 00	B 00	B 00	B 00
B 00	B 00	B 00	B 00	B 00	B 00
B 02	B 02	B 02	B 02	B 02	B 02
B 02	B 02	B 02	B 02	B 02	B 02
B 05	B 05	B 05	B 05	B 05	B 05
B 02	B 02	B 02	B 02	B 02	B 02



Radius: 2.0 mm and 3.0 mm

The indexable radius-milling inserts RM 2 and RM 3 are designed with eight cutting edges. Our new technique of ‘rotating, flipping and shifting’ the inserts makes it possible to index these cutting inserts a total of eight times.

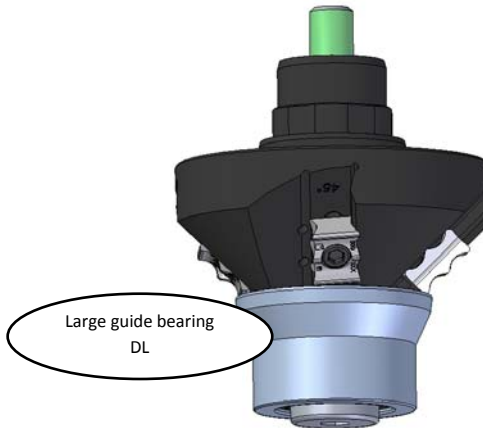
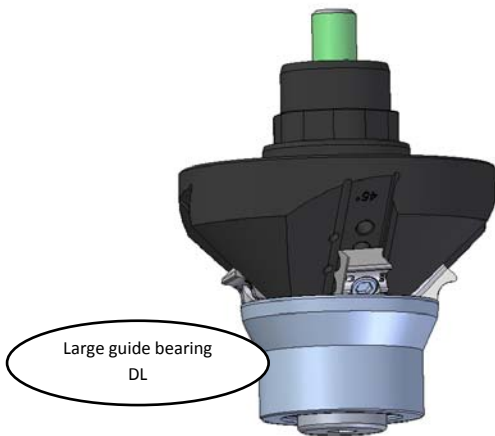
Always use the original locking screws to fasten the radius-milling inserts to the mounting seat on the milling head (max. tightening torque: 4.0–5.0 Nm).



Radius 2 mm/RM 2



Radius 3 mm/RM 3

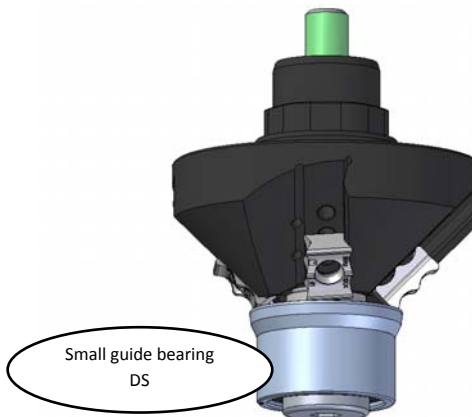


After shifting the radius-milling inserts from locating hole 1 to locating hole 2, the inserts can then be rotated and flipped a further four times.

Radius-milling inserts fastened via locating hole 1 can be rotated and flipped a total of four times.

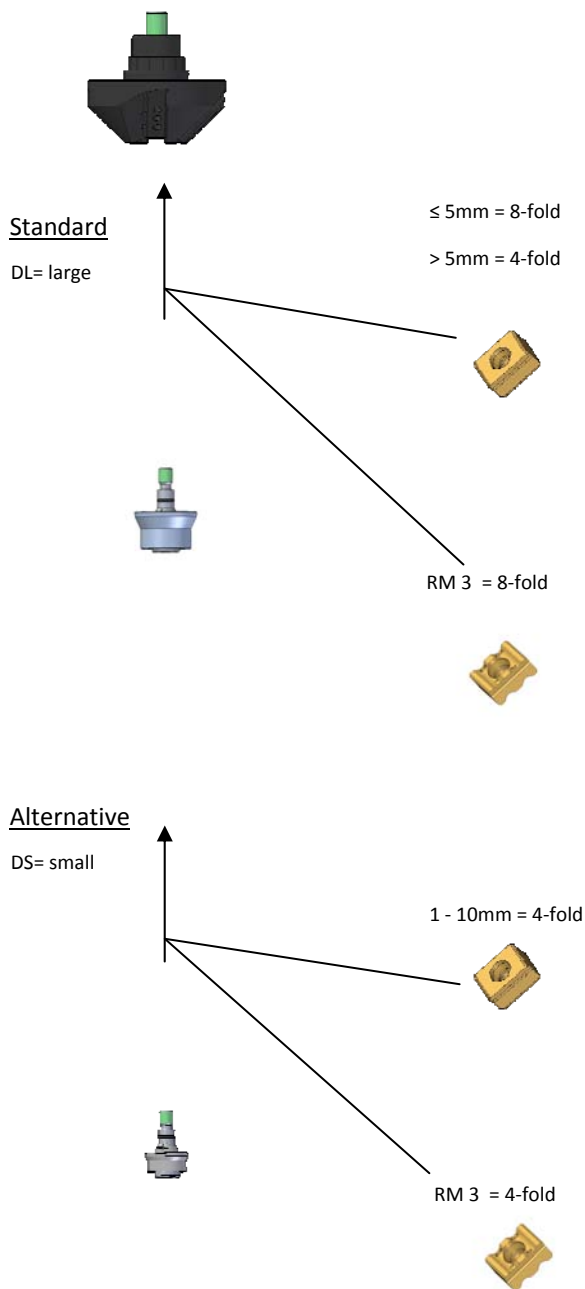


When performing radius milling work, it is essential that the correct guide bearing is attached to the milling head.



With the small guide bearing DS fitted, smaller inner contours or smaller diameter drill holes can be milled.

In this case, however, the radius-milling inserts can only be indexed a total of four times.



Important!

To ensure the proper formation of the radius on the workpiece end face, the machine must be fitted with correct guide bearing.

To ensure the smooth and precise transition from the milled radius to the upper surface of the workpiece, the height of the guide plate must be set precisely.

Milling head MH-45/R3-A43.1

To mill 45° bevels, combine with a DL-45/R3-A43-1 guide bearing and fit type M indexable cutting inserts. To mill 3 mm radii, combine with the same guide bearing but fit RM 3 radius-milling inserts.

45° bevel, large guide bearing DL

Combining the large DL-45/R3-A43.1 guide bearing with type M indexable cutting inserts, enables the inserts to be indexed a total of eight times if the bevel widths being machined are ≤ 5 mm, or indexed four times if the bevel widths are > 5 mm.

or

Radius: 3.0 mm

The same DL guide-bearing is used with the eight-fold indexable RM 3 radius-milling inserts.

45° bevel, small guide bearing DS

If the small DS-45/R3-A43.1 guide bearing is combined with type M indexable cutting inserts, the inserts can be indexed four times if the bevel being machined is between 1 and 10 mm wide; if the inserts are arranged in a staggered pattern, bevels with widths of up to 20 mm can be machined.

or

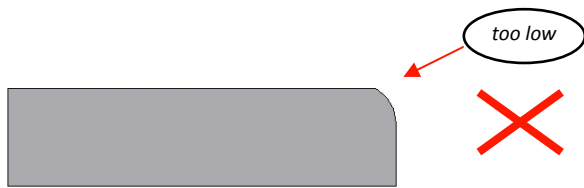
Radius: 3.0 mm

The same DS guide-bearing is chosen when the RM 3 radius-milling inserts are used for milling tight contours or smaller diameter drill holes. In this case the inserts can be indexed a total of four times.



Adjusting the radii:

Please note that only the position of the upper edge of the radius can be adjusted by rotating the guide plate. The lateral position of the radius on the workpiece end face is determined by the guide bearing fitted and cannot be altered.



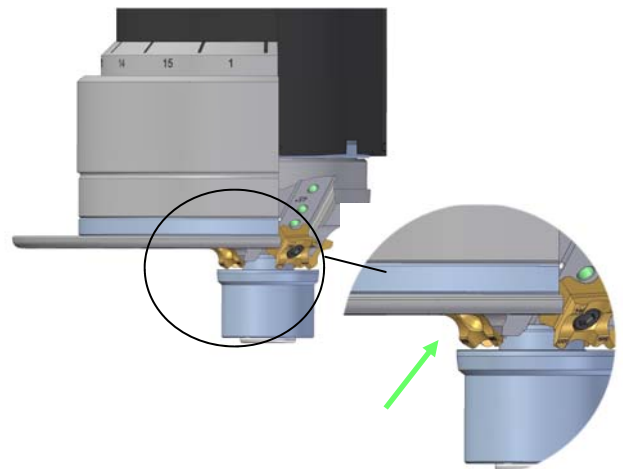
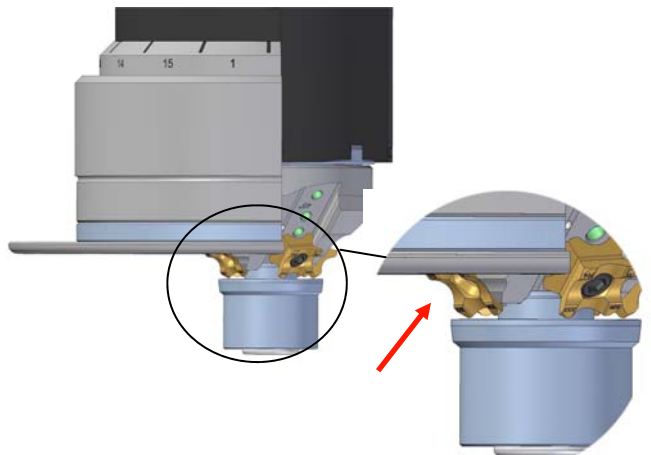
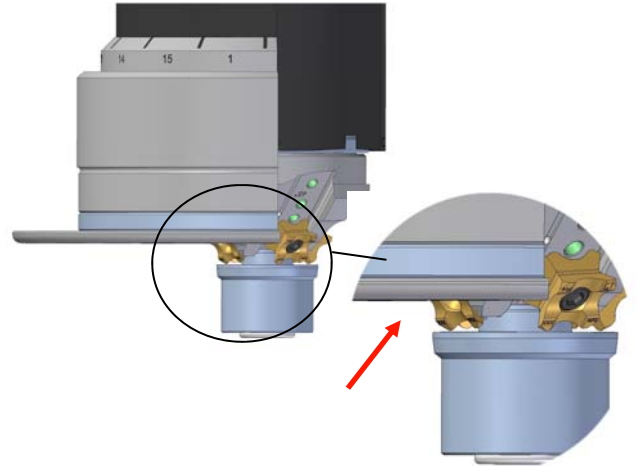
Guide plate set too low
(Radius incomplete)



Guide plate set too high
(Radius cuts into material)



Guide plate set correctly
(Radius fully formed with smooth transition to workpiece surfaces)





Notes on radius milling:

Choosing the right guide bearing to ensure the correct lateral position of the radius is just as important as setting the correct height of the guide plate.

If the wrong guide bearing is used, the machined radius will not form a smooth transition with the end face of the workpiece.

If the guide bearing used is too large, the appearance of the resulting radius is similar (but rotated by 90°) to that created when the guide plate is set too low.

If the guide bearing used is too small, the appearance of the resulting radius is similar (but rotated by 90°) to that created when the guide plate is set too high.

The same phenomenon arises if the end and upper faces of the workpiece are not aligned at right angles to one another.

If the edge of the workpiece to be machined was created by cutting a larger plate with a plasma cutter, the upper and end faces of the workpiece may be out of rectangular alignment by as much as 7°. This type of misalignment will result in a radius that is either incomplete or that cuts too far into the material depending on whether the upper or lower surface of the workpiece is being machined.

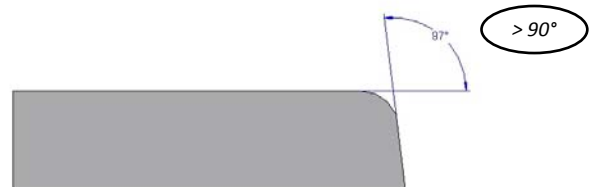
Although our conically shaped guide bearings are designed to butt up against the workpiece immediately below the cutting inserts and can therefore minimize the problem, they cannot eradicate it entirely. Machining a correct radius therefore requires a 90° angle between the adjacent faces of the workpiece.



Guide bearing too large (radius incomplete)



Guide bearing too small (radius cuts into material)



Angle greater than 90° (radius incomplete)



Angle less than 90° (radius cuts into material)



5. Machine operation

Damage to equipment from incorrect supply voltage!

- Check the mains (line) voltage. The mains voltage must agree with the details on the machine's rating plate.

Improper use can cause serious injury!

- Make sure you always have a firm footing when working with the machine.
- Never touch the milling head when the machine is running.

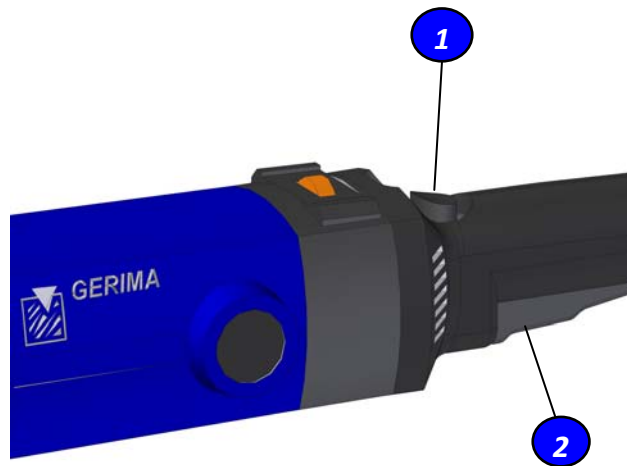
Risk of damage to equipment and property!

- Working with worn or damaged indexable cutting inserts or milling heads will cause the machine to fail.
- Avoid collisions when working with the machine.

Electromagnetic interference (110 V)

- The machine may switch off if subjected to electromagnetic interference over an extended period. Once the interference has died down, the machine can be used again.

Working with the bevelling machine:



Push the switch lock **1** to the front of the machine and then depress the on/off switch **2** until it clicks into place.

Motor starts

Bring the machine slowly into contact with the workpiece only after the selected tool speed has been reached.

Machining the workpiece

When cutting a bevel always move the machine from left to right against the direction of rotation of the milling head (up-cut milling).

When machining bore holes, always work in a clockwise direction (up-cut milling).

The arrows on the guide plate represent the direction of rotation of the milling head at the machining point.



Two-handed operation:

Whatever the position of the machine, **always** use two hands to control the machine.

Ensure that the workpiece is securely clamped!

- for safety reasons
- to improve the service life of the cutting inserts
- to prevent damage to the milling machine.

Important!

Before you begin machining the workpiece, make sure that it is securely clamped so that it cannot slip. This should be done to ensure safe working so that the workpiece does not slip or even fly off when being milled, and to prevent unnecessary vibrations in the workpiece material.

The less vibration generated in the workpiece, the longer the service life of the cutting inserts.

As well as offering conventional clamping and welding tables with a wide range of quick-release and special-purpose clamps, we also can supply magnetic and vacuum clamping systems for rapid, simple and professional fastening of your workpieces.

If you would like to learn more, please contact us for details.



When working with the machine, make sure that the machine is always held with two hands and in such a way that both hands are kept away from the machining point.

Remove the machine from the workpiece.

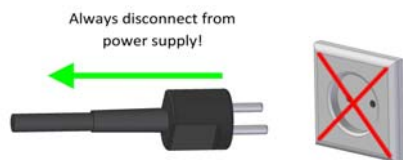
Release the locking switch (2)

Once the motor is switched off, wait for it to come to a standstill before placing the machine down on a surface.

To become acquainted with the machine, you must start by machining a small bevel with a width of no more than 2 mm and remember to advance the machine slowly at first. Bevels of maximum width can only be machined safely and reliably once you have become used to handling the machine.



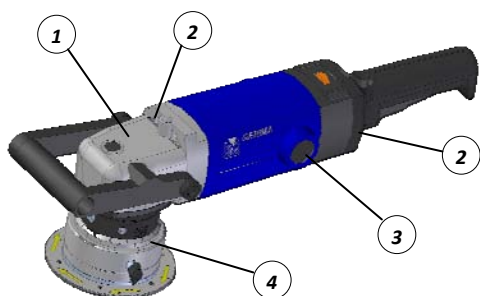
6. Maintenance



Before changing the cutting tools or servicing the machine, always disconnect the machine from the power supply by removing the power cable from the socket.

Hot cutting inserts and milling head!

- Burn hazard!
- Wear protective gloves when changing the milling head.



Blunt tools can cause damage!

- Blunt cutting tools can overload the machine.
- Inspect cutting tools regularly for signs of wear.
- Wear protective gloves when replacing or readjusting the indexable cutting inserts.

Improperly repaired machines are a hazard!

- Increased risk of injury!
- Machine does not function correctly.

Repairs must only be carried out by a GERIMA-trained technician.

Maintenance plan

Part to be serviced	Type of maintenance work	Servicing to be carried out by	Maintenance procedure	Materials required	Order no.
Mitre gear 1	Re-grease every 1000 operating hours	certified GERIMA service agent	Disassemble milling head see page 25	Lubricating grease	0101.204.04-00018
Ventilation slots 2	Clean as required	Machine operator	Clean ventilation slots	Brush, cloth, compressed air	
Carbon brushes 3	Replace as necessary	Electrical technician	See page 25	Set of carbon brushes	0101.323.07-00007
Height-adjuster thread 4	Clean and lubricate as necessary	Trained technician	Disassemble guide plate unit see page 25	Teflon spray	0901.100.04-00010
Indexable cutting inserts	Rotate or replace as necessary	Machine operator	See page 27		See page 37 + 38

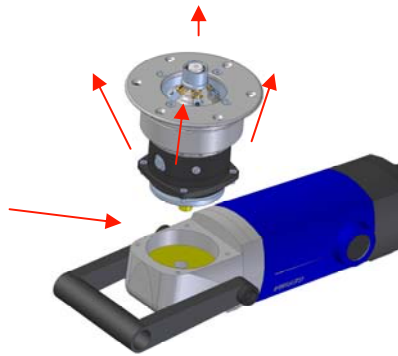


Service procedure 1

Re-greasing



45 g grease



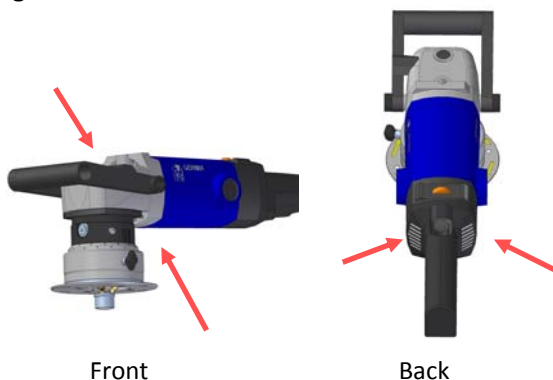
Caution!

The guarantee will be void if re-greasing is carried out by anyone other than a certified *GERIMA* service technician.

Replenish with about 45 g of the high-performance lubricating grease 0101.204.04-00018.

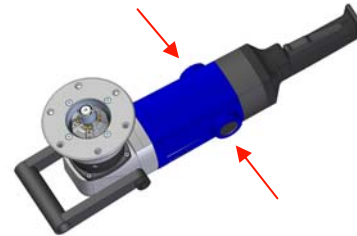
Service procedure 2

To ensure that the machine can be cooled properly, the ventilation slots must be kept clean. To avoid damaging the motor windings, it is important that no foreign matter (e.g. chippings) enter the motor compartment. Clean the motor compartment regularly by blowing compressed air through it.

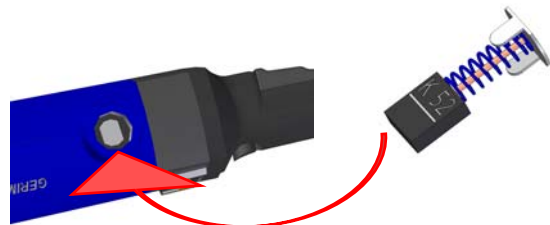


Service procedure 3

Replacing the carbon brushes

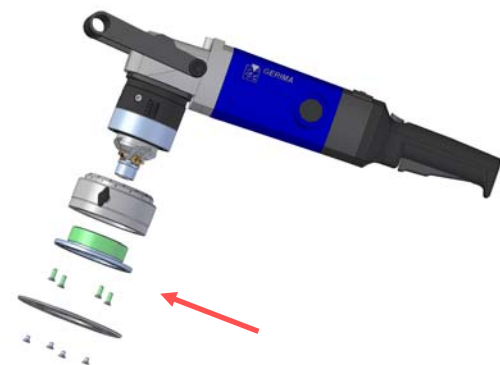


Unscrew the brush holder caps.



Use a screwdriver to lever out the old brushes and then insert the new brushes. Reclose the opening by screwing the brush holder caps back into place.

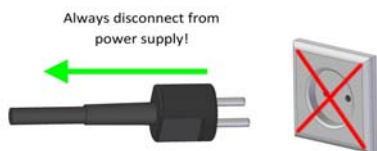
Service procedure 4



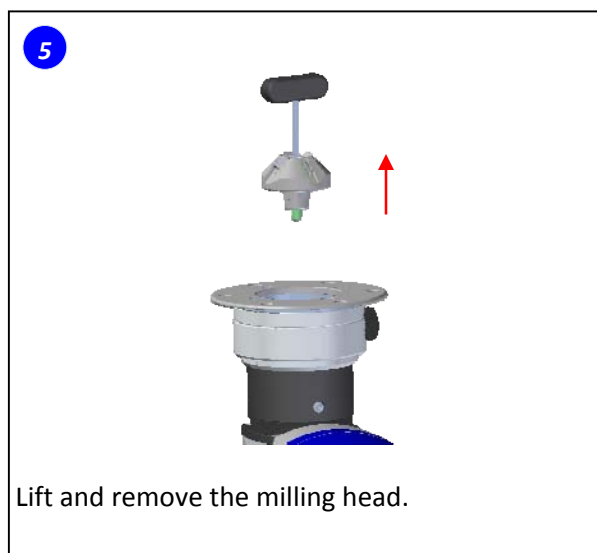
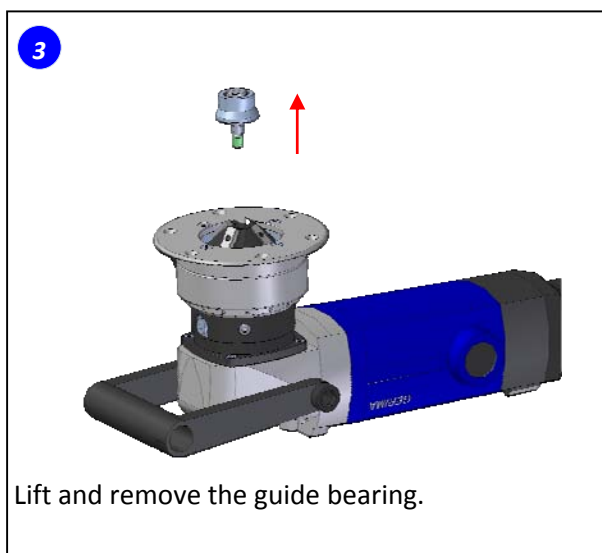
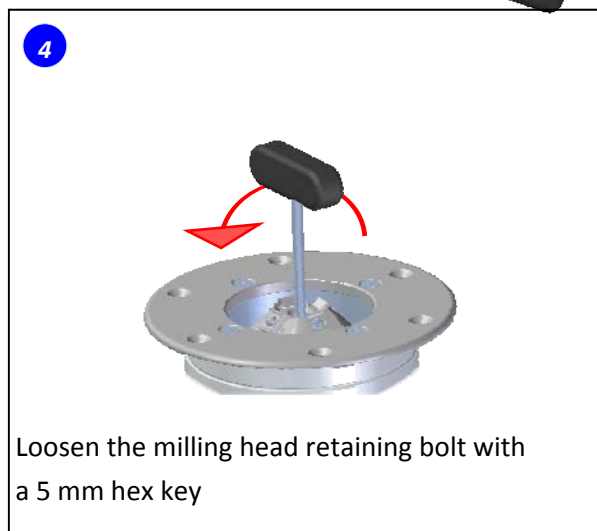
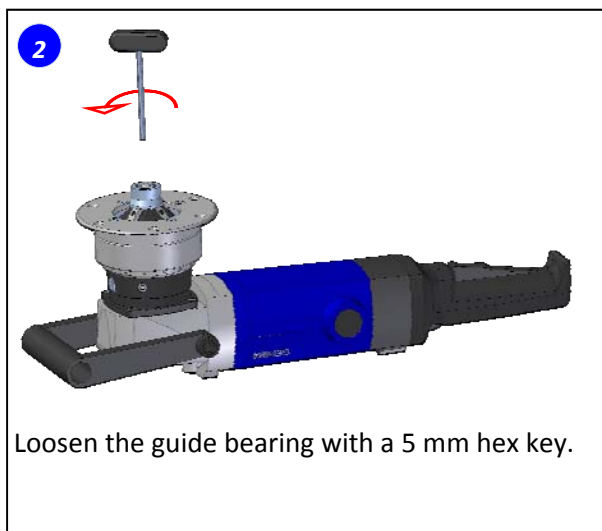
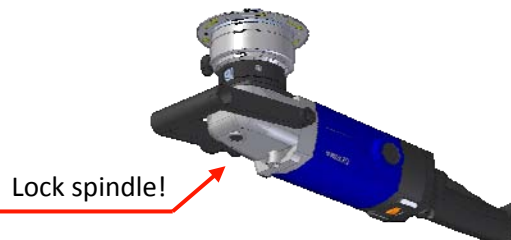
Unscrew and remove the guide plate, rotate and remove the guide-plate mounting flange, clean the mounting thread, lubricate the thread with teflon spray and then re-assemble in reverse order.



7. Replacing the milling head and guide bearing



1



Tip:

To make it easier to lift the milling head off the drive shaft proceed as follows: After having loosened the milling head retaining bolt, temporarily replace the guide bearing back onto the milling head and then rotate the guide bearing a few turns so that the central fitting bolt reengages with the milling head. You can now grip the guide bearing and use it to lift out the milling head.



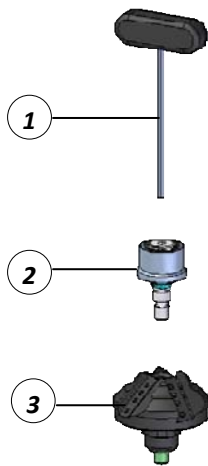
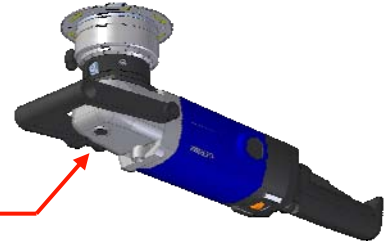
Changing the guide bearing



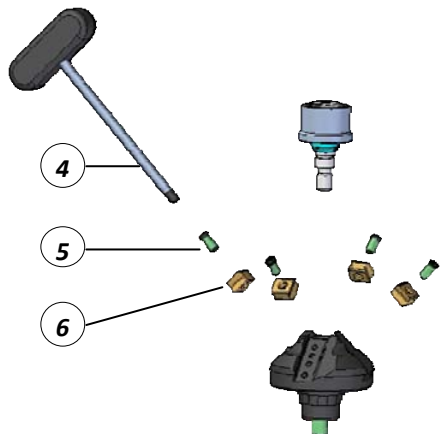
Changing the guide bearing



Lock spindle!



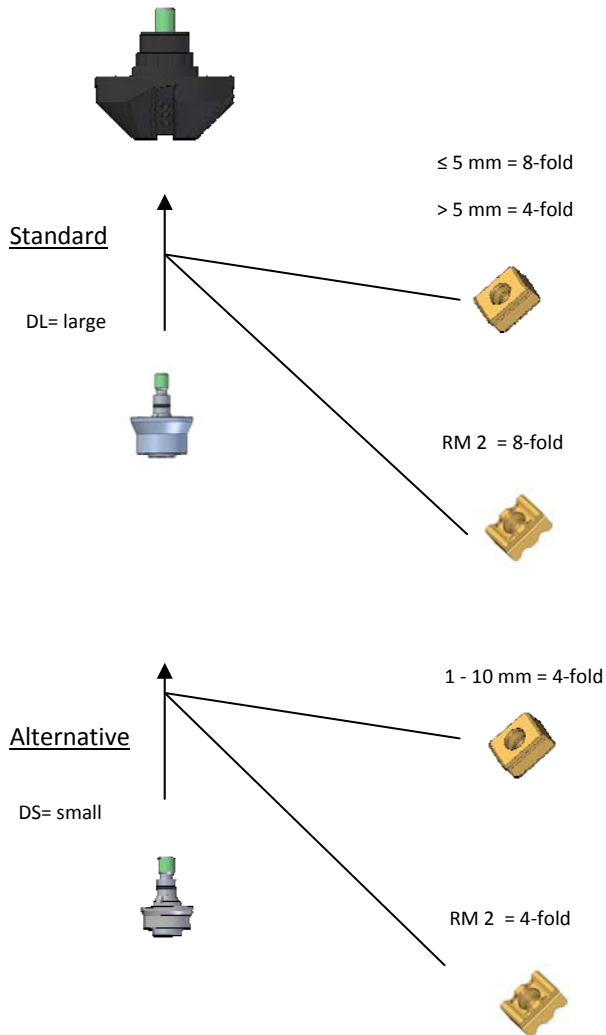
- 1 Hex key (5 mm)
- 2 Guide bearing
- 3 Milling head



- 4 Torx key
- 5 Locking screws
- 6 Indexable cutting inserts



8. GERIMA spare parts



Milling head MH-45/R2-A43.1

Can be combined with a DL-45/R2-A43-1 guide bearing and fitted with type M indexable cutting inserts for milling 45° bevels, or fitted with RM 2 radius-milling inserts for milling 2 mm radii.

45° bevel, large guide bearing DL

Combining the large DL-45/R3-A43.1 guide bearing with type M indexable cutting inserts, enables the inserts to be indexed a total of eight times if the bevel widths being machined are ≤ 5 mm, or indexed four times if the bevel widths are > 5 mm.

Or

Radius: 2.0 mm

The same DL guide bearing is used with the eight-fold indexable RM 2 radius-milling inserts.

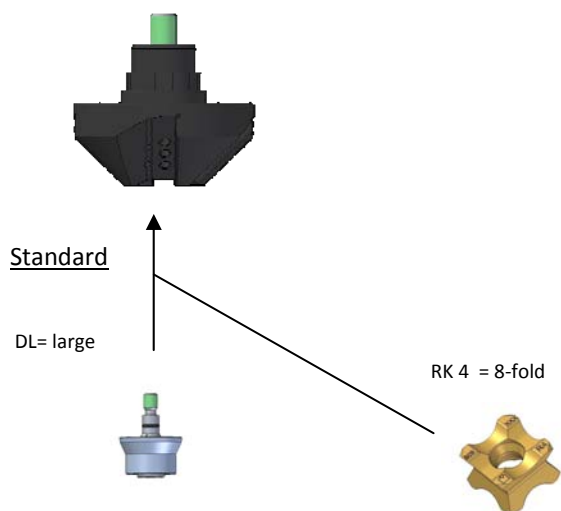
45° bevel, small guide bearing DS

If the small DS-45/R2-A43.1 guide bearing is combined with type M indexable cutting inserts, the inserts can be indexed four times if the bevel being machined is between 1 and 10 mm wide.

Or

Radius: 2.0 mm

The same DS guide bearing is chosen when the RM 2 radius-milling inserts are used for milling tight contours or smaller diameter drill holes. In this case the inserts can be indexed a total of four times.



Milling head MH-45-R4-A44.1

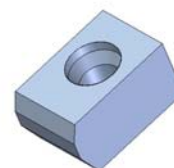
fitted with a DL-R4-A44.1 guide bearing and RK 4 radius-milling inserts for cutting 4 mm radii.

Radius: 4.0 mm

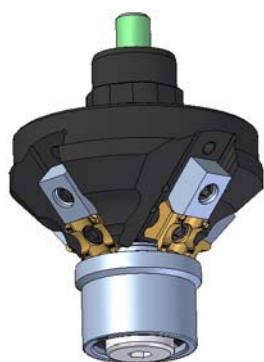
DL-R4-44.1 guide bearing used with the eight-fold indexable RK 4 radius-milling inserts.



Radius 4 mm



RP 4 alignment plate



Milling head fitted with RK 4 cutting inserts and RP 4 alignment plates.

Fitting instructions:

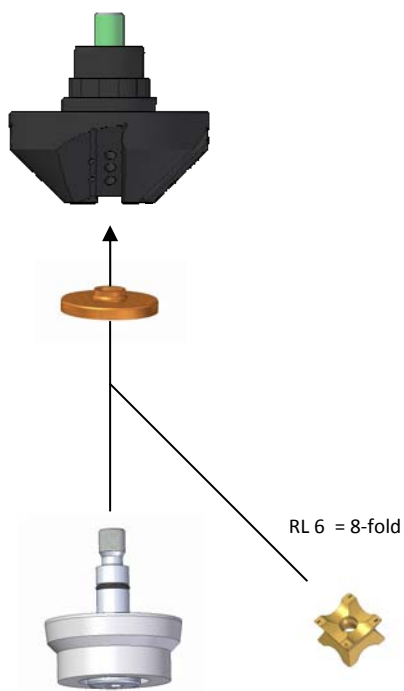


First attach the alignment plates to the milling head by screwing them into locating hole (2) so that they alignment plates are centred but not screwed down tightly. Then fasten each of the RK 4 cutting inserts to the milling head via locating hole (1) taking care to press each insert against its alignment plate as it is tightened down. Finally, screw the alignment plates tightly into place.



Standard

DL= large



Milling head MH-R6-A45.1

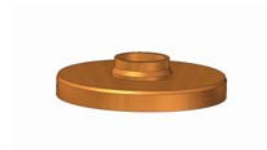
fitted with a DL-R6-A45.1 guide bearing and RL 6 radius-milling inserts for cutting 6 mm radii.

Radius: 6.0 mm

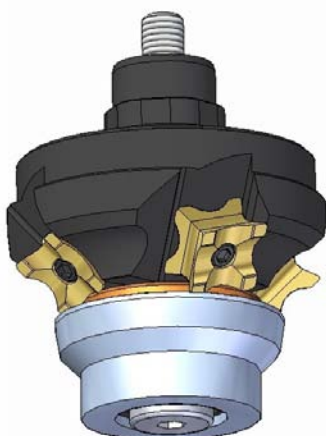
DL-R6-A45.1 guide bearing used with the eight-fold indexable RL 6 radius-milling inserts



Radius 6 mm



Alignment disc RS 6



Fitting instructions:

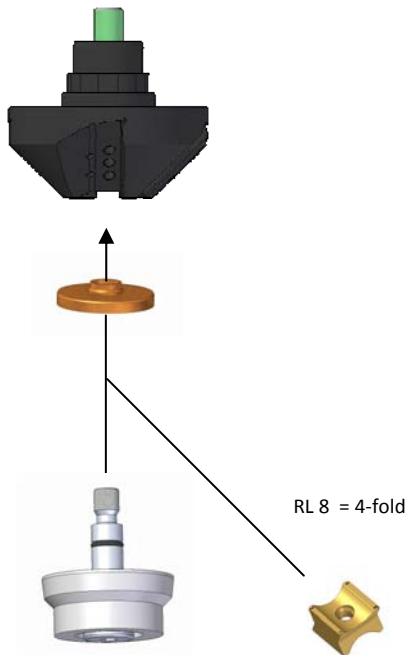
The alignment disc is used to centre the fitting bolt and for the exact positioning of the radius-milling inserts.

Start by mounting the DL guide bearing with the alignment disc onto the milling head. Then fasten each of the RL8 cutting inserts to the milling head via locating hole (1) taking care to press each insert against the alignment disc RS8 as it is tightened down. This ensures that the radius-milling inserts are exactly and accurately aligned.



Standard

DL= large

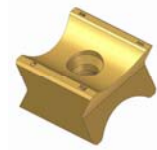


Milling head MH-R8-A45.1

fitted with a DL-R8-A45.1 guide bearing and RL 8 radius-milling inserts for cutting 8 mm radii.

Radius: 8.0 mm

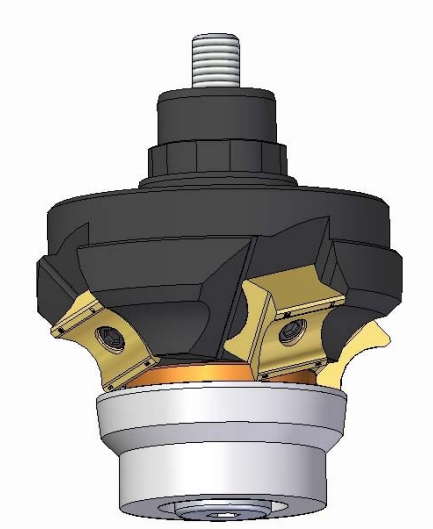
DL-R8-A45.1 guide bearing used with the four-fold indexable RL 8 radius-milling inserts.



Radius 8 mm



Alignment disc RS 8



Fitting instructions:

The alignment disc is used to centre the fitting bolt and for the exact positioning of the radius-milling inserts.
Start by mounting the DL guide bearing with the alignment disc onto the milling head. Then fasten each of the RL8 cutting inserts to the milling head via locating hole (1) taking care to press each insert against the alignment disc RS8 as it is tightened down. This ensures that the radius-milling inserts are exactly and accurately aligned.

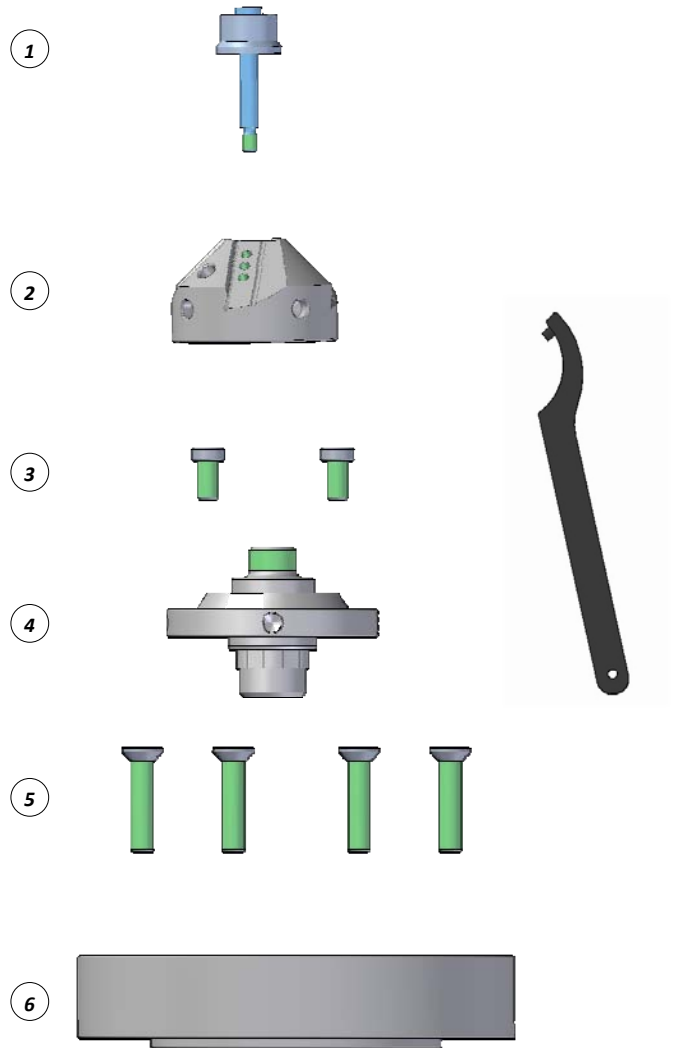
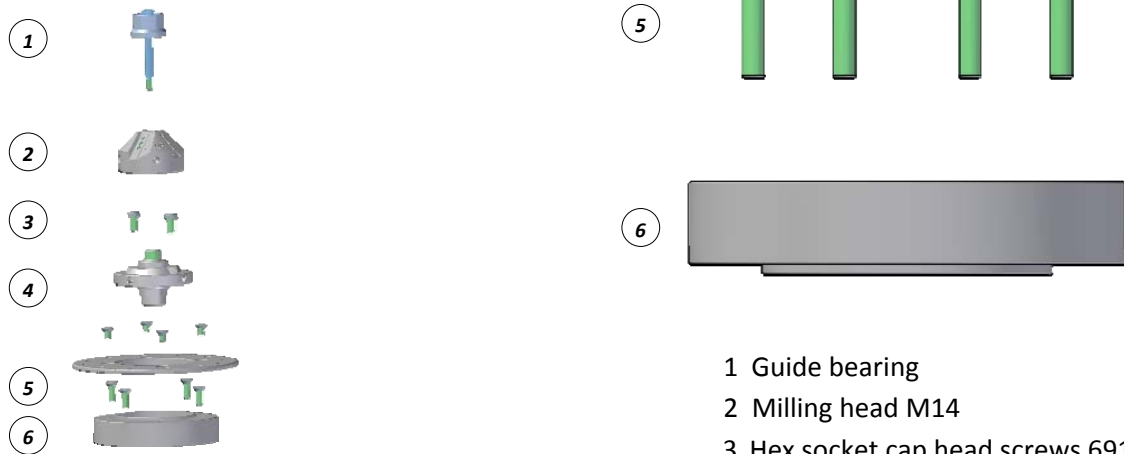


Adapter SK21.9 / M14

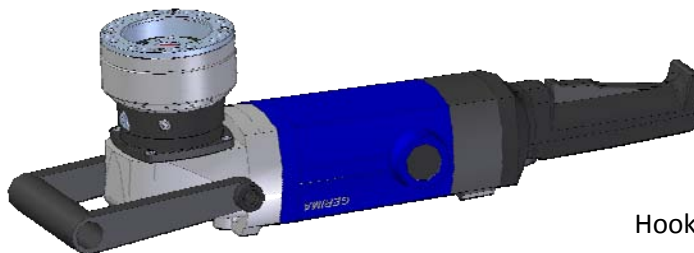
An adapter is required if special milling heads or milling heads with a M14x1 threaded mount are to be used with the machine. The hexagonal adapter post is pushed into the socket that forms part of the drive shaft and then attached to the shaft by two hex socket cap screws. (3)

By using the adapter, the former standard milling heads with a M14x1 threaded mount are compatible with the new push-on connection system.

In order to adjust the height correctly and to be able to use the scale when the adapter is fitted, the 20-mm spacer ring (6) must also be fitted.



- 1 Guide bearing
- 2 Milling head M14
- 3 Hex socket cap head screws 6912 - M6 x 10
- 4 Adapter SK21.9/M14
- 5 Countersunk-head screws M5x25
- 6 Spacer ring 20 mm



Hooks spanners must be used to assemble and disassemble the milling head.

Order no. for SK21.9/M14 adapter
with spacer ring 0109.107.09-00001

See page 33



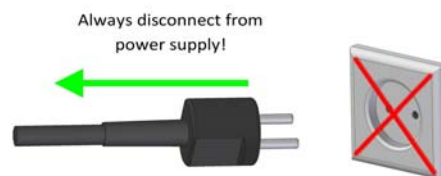
Attaching the adapter:

1. Loosen the four countersunk head screws on the guide-plate and remove it from the adjuster ring. Place the 20-mm spacer ring on the adjuster ring and secure it by tightening the four screws. Now fasten the guide-plate unit onto the spacer ring.
2. Loosen the screws at the side of the guide plate unit and lift it off from the gear housing.
3. Place the adapter into the hexagonal socket that forms part of the drive shaft and fasten by means of the two hex socket cap screws. To ensure a safe and secure fitting, use a medium-strength thread locking sealant when tightening the screws.
4. Once the adapter has been fitted, place the milling head with the M14x1 threaded mount into position and tighten using the two hook spanners. Insert the required guide bearing through the milling head and screw it tightly to the adapter.
5. Replace the guide plate unit onto the gear housing and screw it tight.
6. Release the clamping screw and adjust the guide plate to the required height.

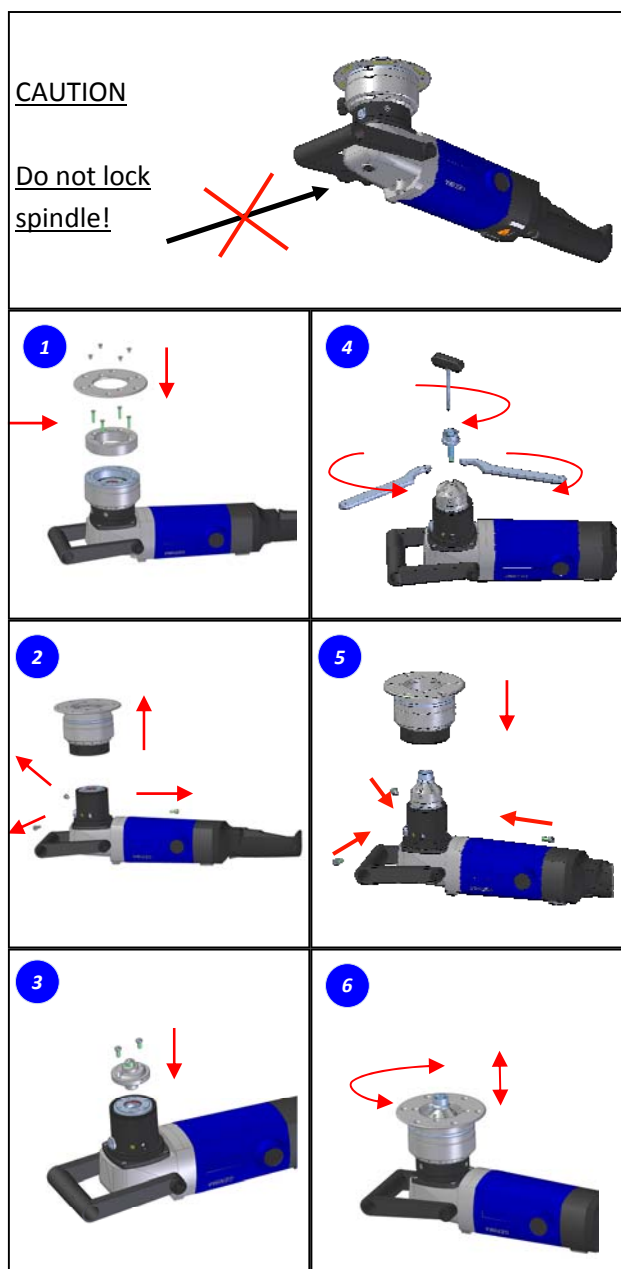
Important!

To disassemble, perform steps in reverse order. Please note that the guide bearing must be loosened first before attempting to remove the milling head with the hook spanners.

Do not use the spindle locking button! This is not designed for these types of loads.



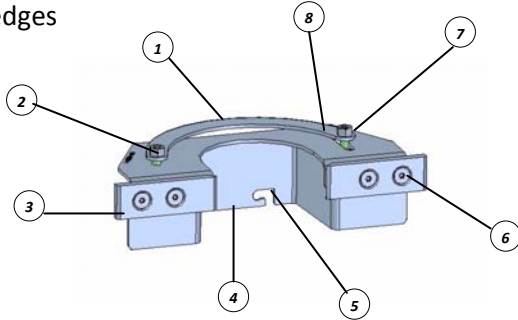
Always disconnect from the power supply before working on the machine!



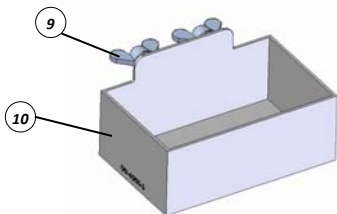


Guide stop

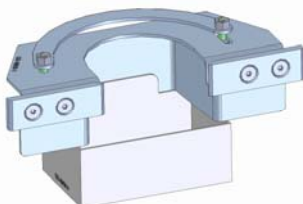
The guide stop is used when milling bevels at an angle in the range 0°–80° on straight workpiece edges



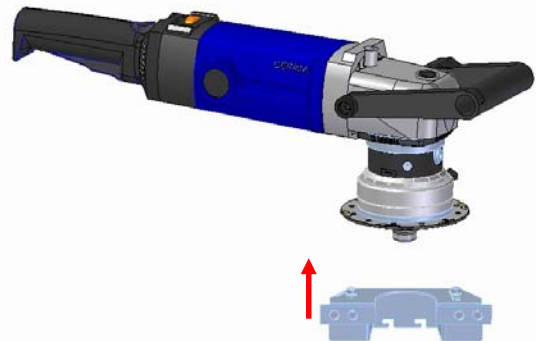
- 1 Retaining bracket
- 2 Fixed retaining screw
- 3 Hardened stopping plates
- 4 Chip protector
- 5 Cutouts for fixing chip collector pan
- 6 Fastening screws for the stopping plates
- 7 Adjuster screw
- 8 Slot for distance adjustment



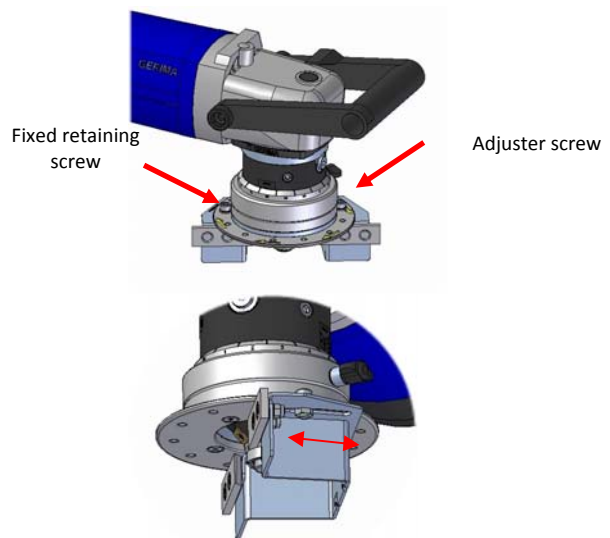
- 9 Wing bolts
- 10 Chip collector pan



Guide stop with chip collector pan attached



Guide stop is simply and easily mounted on the guide plate.



The guide stop, which replaces the guide bearing, has to be fitted when the machine is used to mill a bevel on a straight workpiece that will leave only a small base or no base on the end face (see page 12). When the guide stop is fitted, the bevel width is also set by adjusting the height of the guide plate.

The guide stop is also useful when machining the end face only (0° bevel) as it allows precise adjustment of the amount of material being removed.

When machining very small bevels with the guide stop fitted and with the height of the guide plate accurately adjusted, the cutting inserts can be indexed multiple times allowing the full length of the cutting edges to be used.



1. Grinding adapter B (GAB 2.0)



- comprising:**
- grinding adapter GAB-2.0
 - grinding quill 40 mm
 - locking bolt S2

2. Sleeve mounting drum (BB)



BB 38/40



BB 45/40

3. Abrasive sleeves – grain size: ZK40 (AB)



AB 38/40/ZK40



AB 45/40/ZK40

4. Abrasive sleeves – grain size: ZK80 (AB)

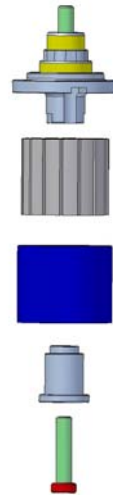


AB 38/40/ZK80



AB 45/40/ZK80

5. Grinding head B – single



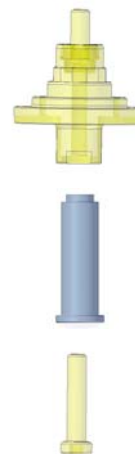
- Grinding adapter B (GAB-2.0)
with grinding quill 40 mm
with 1 x sleeve mounting drum
BB 45/40
with 1 x abrasive sleeve
AB- 45/40/ZK40

=



6. Grinding head B - double

We can also supply the grinding adapter B with an 80 mm grinding quill that allows two sleeve mounting drums (BB) and two abrasive sleeves (AB) to be positioned on top of each other and thus permits grinding of edges up to 80 mm in width.



- Grinding adapter B (GAB-2.0)
with grinding quill 80 mm GAB-2.1
with 2 x sleeve mounting drum BB-38/40
with 2 x abrasive sleeves AB-38/40/ZK40

+

+

=





1. Grinding adapter GAD-1.0



comprising:

grinding adapter D (GAD)



locking bolt S1

3. Diamond grinding head

Possible configurations

comprising:

grinding adapter GAD-1

diamond crown DC 0/28



=



2. Diamond crown (DC)



DC 0/28



DC 0/60



DC 30/46



DC 45/60



DC 60/60



DC 45/R3



9. Consumables

Overview and order numbers

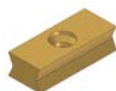
Indexable cutting inserts



Type M indexable cutting insert

Name of part	Type	Coating
M-B00-A1.1	M	B 00
M-B02-A1.1	M	B 02
M-B05-A1.1	M	B 05

Material strength				
Aluminium Copper Brass	Steel up to 600 N/mm ²	Steel up to 900 N/mm ²	Stainless steel	Order number
X				0101.404.09-00001
	X		X	0101.404.09-00002
		X		0101.404.09-00003



Type T indexable cutting insert

Name of part	Type	Coating
T-B00-A1.1	T	B 00
T-B02-A1.1	T	B 02
T-B05-A1.1	T	B 05

Material strength				
Aluminium Copper Brass	Steel up to 600 N/mm ²	Steel up to 900 N/mm ²	Stainless steel	Order number
X				0101.404.09-00004
	X		X	0101.404.09-00005
		X		0101.404.09-00006



Overview and order numbers

Indexable cutting inserts



Radius-plate RM 2

Name of part	Coating
RM2-B00-A1.1	B 00
RM2-B02-A1.1	B 02
RM2-B05-A1.1	B 05



Radius-plate RM 3

RM3-B00-A1.1	B 00
RM3-B02-A1.1	B 02
RM3-B05-A1.1	B 05



Radius-plate RK 4

RK4-B00-A1.1	B 00
RK4-B02-A1.1	B 02
RK4-B05-A1.1	B 05



Radius-plate RL 6

RL6-B00-A1.1	B 00
RL6-B02-A1.1	B 02
RL6-B05-A1.1	B 05



Radius-plate RL 8

RL8-B00-A1.1	B 00
RL8-B02-A1.1	B 02
RL8-B05-A1.1	B 05

Material strength				
Aluminum Copper Brass	Steel up to 600 N/mm ²	Steel up to 900 N/mm ²	Stainless steel	Order number
x				0101.404.09-00007
	x		x	0101.404.09-00008
		x		0101.404.09-00009

x				0101.404.09-00010
	x		x	0101.404.09-00011
		x		0101.404.09-00012

x				0101.404.09-00013
	x		x	0101.404.09-00014
		x		0101.404.09-00015

x				0101.404.09-00016
	x		x	0101.404.09-00017
		x		0101.404.09-00018

x				0101.404.09-00019
	x		x	0101.404.09-00020
		x		0101.404.09-00021



10. Spare and wearing parts

Spare parts list

SMA 50-E12.1

page 1 to 4

Mechanical parts

28.01.2010

0101.153.09-00012 Gear unit SMA 50-E02

Exploded drawing number	GERIMA Order no.	GERIMA Name of part	Number required
1	0101.143.09-00035	Countersunk-head screw M5x8	4
2	0101.143.09-00002	Guide plate 40-E02 / 50-E02	1
3	0101.143.09-00034	Countersunk-head screw M5x16	4
4	0101.143.09-00003	Guide-plate mounting flange 40-E02 / 50-E02	1
5	0101.143.09-00004	Locking ring 40-E02 / 50-E02	1
6	0101.143.09-00005	Steel bushing 40-E02 / 50-E02	1
7	0101.143.09-00006	Guide-plate seat 40-E02 / 50-E02	1
8	0101.143.09-00007	Drive shaft, lower section 40-E02 / 50-E02	1
9	0101.153.09-00011	Drive shaft – Connector 50-E02	1
10	0101.143.09-00009	Collar bush 40-E02 / 50-E02 / 60-E02	1
11	0101.153.09-00002	Drive shaft, upper section 50-E02	1
12	0101.153.10-00001	Bearing case 50-E02	1
13	0101.143.09-00023	Threaded insert M6x14	3
14	0101.153.09-00004	Gear flange cover 50-E02	1
15	0101.153.09-00005	Bevel gear wheel 50-E02 / 60-E02	1
16	0101.153.09-00006	O-ring 81x2.5	1
17	0101.143.09-00018	Spacer ring 0.2	1
18	0101.153.09-00007	Spacer ring 0.3	1
19	0101.153.09-00008	Lock nut 50-E02 / 60-E02	1
20	0101.153.09-00009	Cap head screw M5x16	4

More mechanical parts on page 40



Spare parts list

SMA 50-E22

page 2 to 4

Mechanical parts

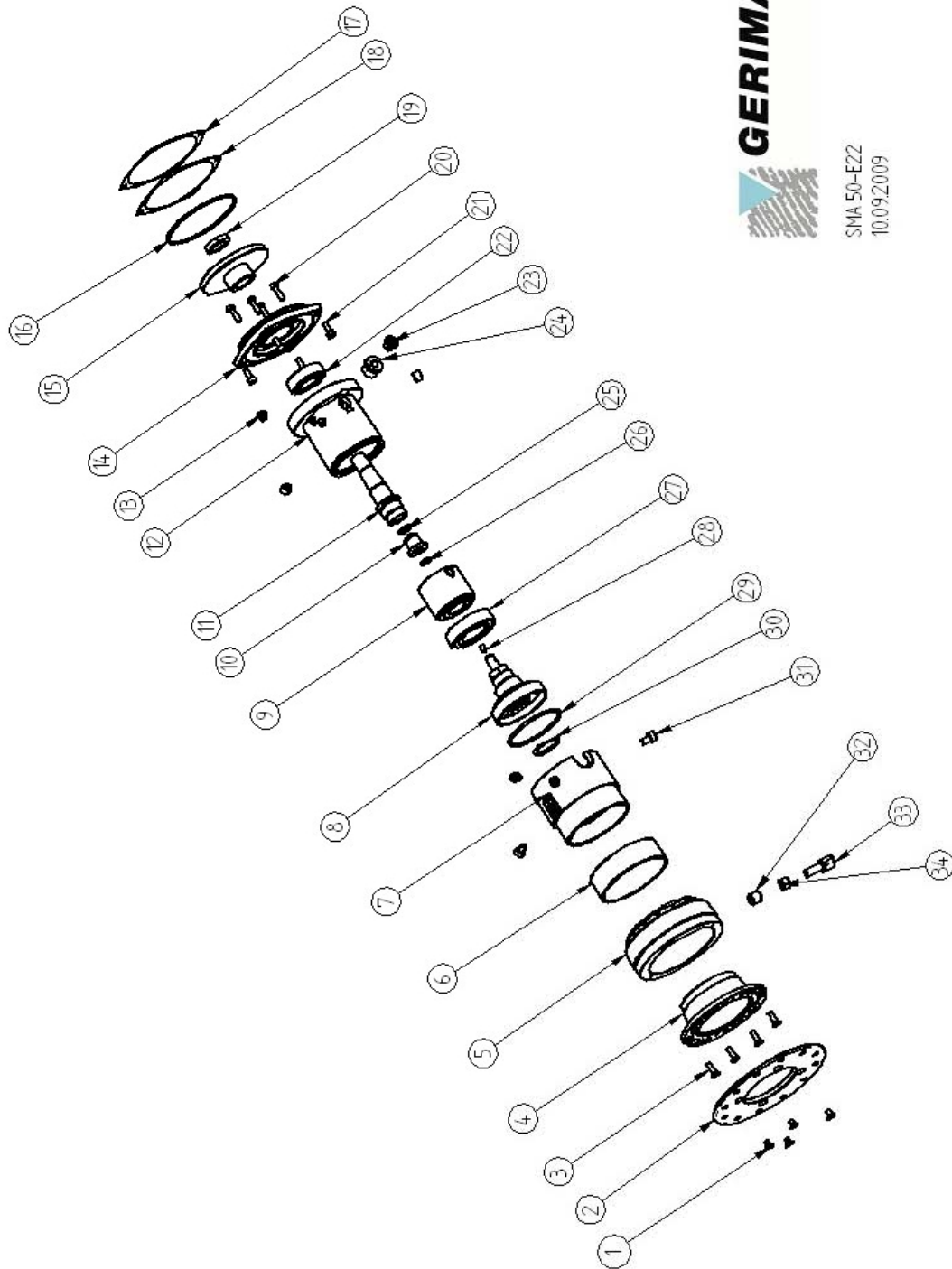
28.01.2010

Exploded drawing number	GERIMA Order no.	GERIMA Name of part	Number required
21	0101.143.09-00021	Cap head screw M5x12	4
22	0101.153.09-00010	Bearing 6004	1
23	0101.143.09-00013	Blanking plug	1
24	0101.143.09-00012	Adapter bushing 40-E02 / 50-E02	1
25	0101.143.09-00024	O-ring 13x1.5	1
26	0101.143.09-00025	O-ring 9.5x1.6	1
27	0101.143.09-00026	Bearing 6006	1
28	0101.143.09-00027	Set screw M5x8	1
29	0101.143.09-00029	O-ring 59.99x2.62	1
30	0101.143.09-00028	O-ring 26.64x2.6	1
31	0101.143.09-00030	Cap head screw M6x10	3
32	0101.143.09-00033	Threaded insert M8x15	1
33	0101.143.09-00031	Wing bolt M8x20	1
34	0101.143.09-00032	Spacer ring	1

See exploded drawing on page 41



Exploded drawing of the gear unit

**GERIMA**SMA 50-EZZ
10.09.2009



Spare parts – Drive motor



Spare parts list

SMA 50-E12

page 3 to 4

Electromechanical parts

28.01.2010

0101.293.08-00002 Drive unit SMA 50-E1

Exploded drawing number	GERIMA Order no.	GERIMA Name of part	Number required
100	0101.203.08-00073	Cap head screws M14x30	2
101	0101.203.04-00023	Bow-type handle	1
102	0101.203.04-00087	Guide bearing bushing	1
103	0101.203.04-00091	Gear head	1
104	0101.203.04-00086	Raised countersunk head screws	4
105	0101.203.04-00083	Retainer stud	1
106	0101.203.04-00084	Compression spring	1
107	0101.203.04-00085	O-ring for retainer stud	1
108	0101.203.04-00092	Nut	1
109	0101.203.04-00094	Spiral bevel gear Type II + R	1
110	0101.203.04-00096	Sealing bush	1
111	0101.203.04-00097	Deep-groove ball bearing	1
112	0101.203.04-00098	Sealing ring	1
113	0101.203.04-00099	Cover	1
114	0101.203.04-00100	Retainer screw	2
115	0101.323.07-00005	Rotor -110 V-	1
116	0101.203.04-00101	Fan	1
117	0101.203.04-00103	Deep-groove ball bearing	1
118	0101.203.04-00063	Magnetic ring	1
119	0101.203.04-00105	Bearing ring	1
120	0101.203.04-00104	Fastening bolt	2
121	0101.203.04-00106	Flow guide	1
122	0101.323.07-00006	Stator -110 V-	1
123	0101.323.07-00003	Motor housing -110 V-	1
124	0101.203.04-00108	Carbon brush holder caps	2
125	0101.323.07-00007	Set of carbon brushes - 110 V-	1

More Electromechanical parts on page 43



Spare parts list

SMA 50-E22

page 4 of 4

Electromechanical parts

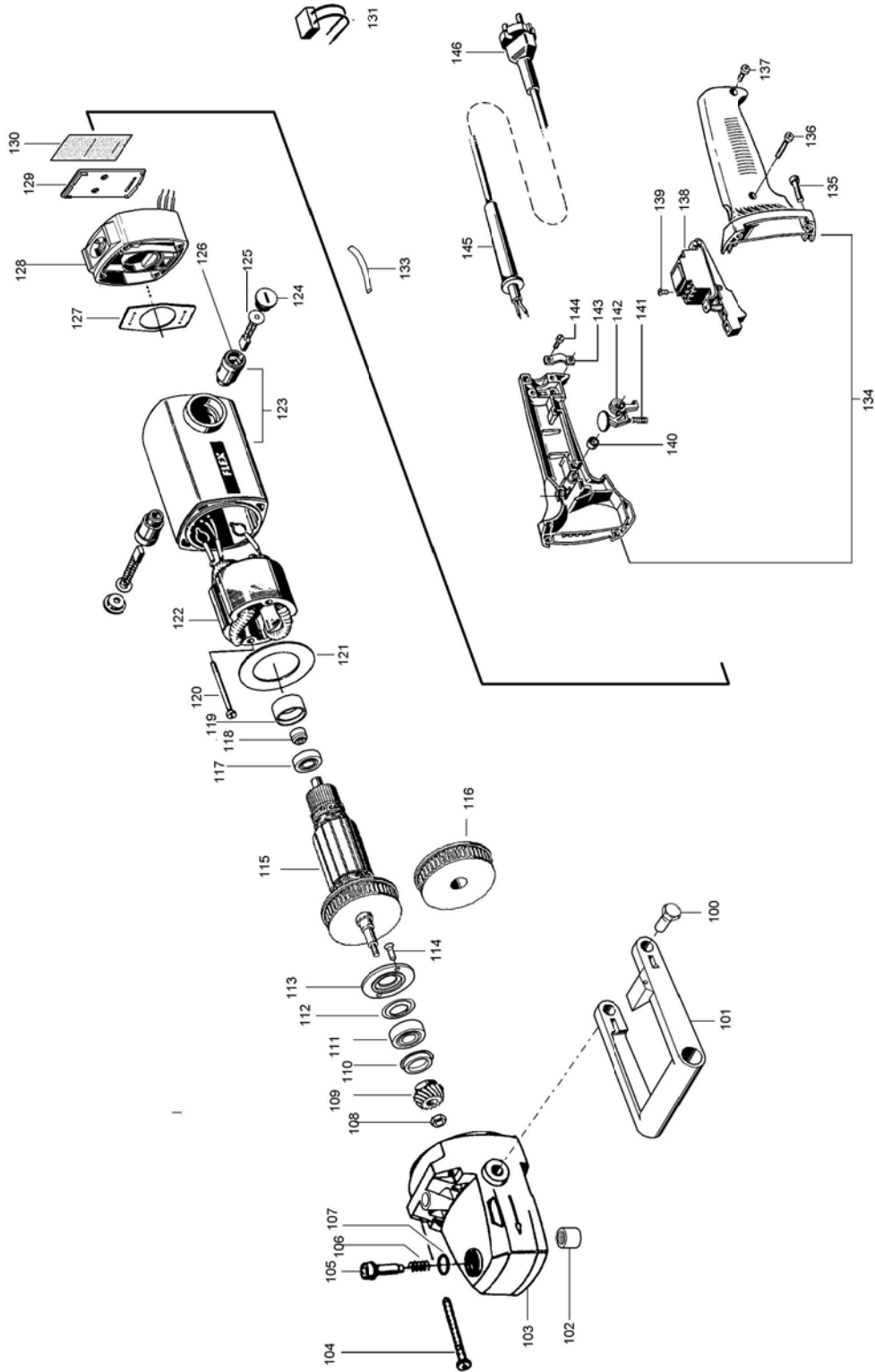
28.01.2010

Exploded drawing number	GERIMA Order no.	GERIMA Name of part	Number required
126	0101.323.07-00004	Brush holder - 110 V-	2
127	0101.203.04-00112	Gasket	1
128	0101.323.07-00001	Intermediate casing with control electronics	1
129	0101.203.04-00173	Cover plate	1
130	0101.203.04-00174	Sealing plate	1
131	-----	-----	1
132	0101.323.07-00008	Capacitor -110 V -	---
133	0101.203.04-00176	Cable protector sleeve	1
134	0101.203.04-00115	Grip casing	1
135	0101.203.04-00104	Screw	4
136	0101.203.04-00124	Screw	1
137	0101.203.04-00120	Screw	2
138	0101.203.04-00178	Rocker switch	1
139	0101.203.04-00179	Screw	4
140	0101.203.04-00116	Switch lock – ring	1
141	0101.203.04-00117	Helical compression spring	1
142	0101.203.05-00029	Switch lock	1
143	0101.203.04-00119	Cable clamp	1
144	0101.203.04-00120	Screw	2
145	0101.203.04-00135	Cable protector sleeve	1
146	0101.323.07-00002	Power cable -110 V-	1

Exploded drawing – see page 44



Exploded drawing of the drive motor



Alme Gerima 03/08
GERIMA SMA 60 R - 220 V.



11. Guarantee

GERIMA shall guarantee a new machine for a period of twelve months beginning on the date the machine was purchased from the *GERIMA* production facility in 66606 St. Wendel, Germany.

Any further guarantees shall require the prior written agreement of both the machine owner and the manufacturer.

The guarantee provides that the machine is free from defects in materials and/or workmanship. Any performance data contained in information or promotional materials or included in quotations are understood to be for guidance only and are not guaranteed, as these values depend very strongly on the material worked and the particular machining operation used.

Any guarantee claim submitted must state the machine identification number and must be accompanied by the relevant delivery note or invoice.

Repairs under guarantee may only be carried out by *GERIMA* or by one of its authorized specialist retailer or representatives.

Guarantee claims can be made only for genuine *GERIMA* parts and if the machine was used for its intended purpose. The guarantee does not cover, in particular: operational wear and tear; improper use; partially or wholly disassembled machines;

damage arising from overloading the machine or from the incorrect use of the grinding tool; the use of non-genuine, unauthorized or defective parts; damage caused by the machine to the workpiece; use of excessive force; consequential damage arising from improper or inadequate maintenance by the customer or a third-party; damage caused by unauthorized third-parties or by the presence of foreign matter; damage arising from a failure to comply with the manufacturer's operating instructions, e.g. connecting the machine to the wrong power supply.

Services provided under the guarantee are understood to be 'ex works' (66606 St. Wendel, Germany).

Any additional costs, such as travel costs for technical personnel, shipping costs etc. are not covered by the guarantee and will be charged.

After receiving a defective machine, *GERIMA* shall compile a cost estimate of the repairs and shall provide notification of the extent to which these repairs are covered by the guarantee.

Once accepted, the machine will be repaired and then either dispatched with invoice or stored ready for collection.



12. EC Declaration of Conformity

In accordance with the EC Machinery Directive 2006/42/EC.

We hereby declare that the equipment conforms to the relevant fundamental safety and health requirements of the EC Machinery Directive, both in its basic design and construction as well as in the version marketed by us.

This declaration will cease to be valid if any modifications are made to the machine without our express approval.

The equipment complies with the essential requirements of the following

EC directives: 2006/42/EC.



Dipl. Ing. Stephan Rieth

Managing Director

ALME-GERIMA GmbH

Weimarer Str. 12

66606 St. Wendel

Germany