

Operation manual

Excision Magnex 100 RL-E

EN Metal Core Drilling Machine

Prod.-No. 18628



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Before use read and save these instructions!

Dear customer,

Thank you for purchasing an EXCISION product. Read these operation instructions closely before using your device for the first time and keep them for later reference.

Safety Instructions

During work with this machine, improper handling and/or poor maintenance may result in significant danger which could lead to the machine's destruction and serious accidents with considerable injuries. Observe all safety instructions in this operation manual and contact the manufacturer if you have any questions.

Always...



- completely activate the switchable permanent magnet
- activate the magnet on metallic, ferromagnetic materials
- use the whole magnetic surface for working
- work on plane surfaces
- clean the magnetic surface and keep it clear of dirt, swarf, metal shavings and welding sputter
- set the core drilling machine down gently to prevent damage to the magnetic surface
- secure the machine with a safety belt when drilling on walls or ceilings
- check connection cables for damage
- make sure the mains voltage matches the machine's capacity
- follow the instructions in the operation manual
- familiarize new users with the safe use of the machine
- wear safety goggles and ear protection during work
- use a protective shield, if supplied
- observe local and country-specific guidelines
- use and store in a dry place



Never...



- begin drilling without activating the magnet first
- work on round or curved objects
- drill several work pieces on top of one another
- modify the core drilling machine or remove signs
- use the core drilling machine when damaged or when parts are missing
- strain or damage the underside of the magnet through heavy impact or blows
- use the core drilling machine without having been properly instructed
- operate the machine without having read and understood the complete operation manual
- use the core drilling machine to support, lift or transport persons or loads
- carry out electric welding work on the work piece at the same time as using the core drilling



- machine
- store or operate the core drilling machine at temperatures above 50°C (122°F)
 - leave the machine hanging unsupervised
 - allow the machine to come into contact with corrosive materials



People with cardiac pacemakers or other medical appliances may only use this machine following approval by their physician.



Never touch rotating parts! Keep hands and fingers away from the work area while the motor is running! Failure to do so can result in severe injuries!

Proper Use

This magnetic core drilling machine with switchable magnetic clamp is intended for drilling with core or solid drills on ferromagnetic work pieces. It may only be used in a dry environment which is protected from the weather. The machine may be used horizontally, vertically or overhead.

Technical Data

Prod.-no. and designation: 18628 MAGNEX 100 RL-E

Power consumption: 1800 Watt

On-load speed: 50-110 / 75-175 / 105-245 / 165-385 min⁻¹

Tool holder: MT 3

Voltage: 230 V 50/60 Hz 110 V 50/60 Hz
(according to type plate)

Max. drilling Ø in steel

- Core drill: 100 mm 3 1/7"
- Twist drill: 32 mm 1 1/4"

Stroke: 190 mm 7 1/2"

Cutting depth: 50 mm / 110 mm 2" / 4,3"

Tapping: up to M30

Size of magnetic base: 94 x 255 mm 3,7" x 10,04"

Magnetic holding force: 20000 N

Weight: 22,6 kg 49,8 lbs

Noise emission: 92 dB(A) @ 300 mm distance from the motor 92 dB(A) @ 12" distance from the motor

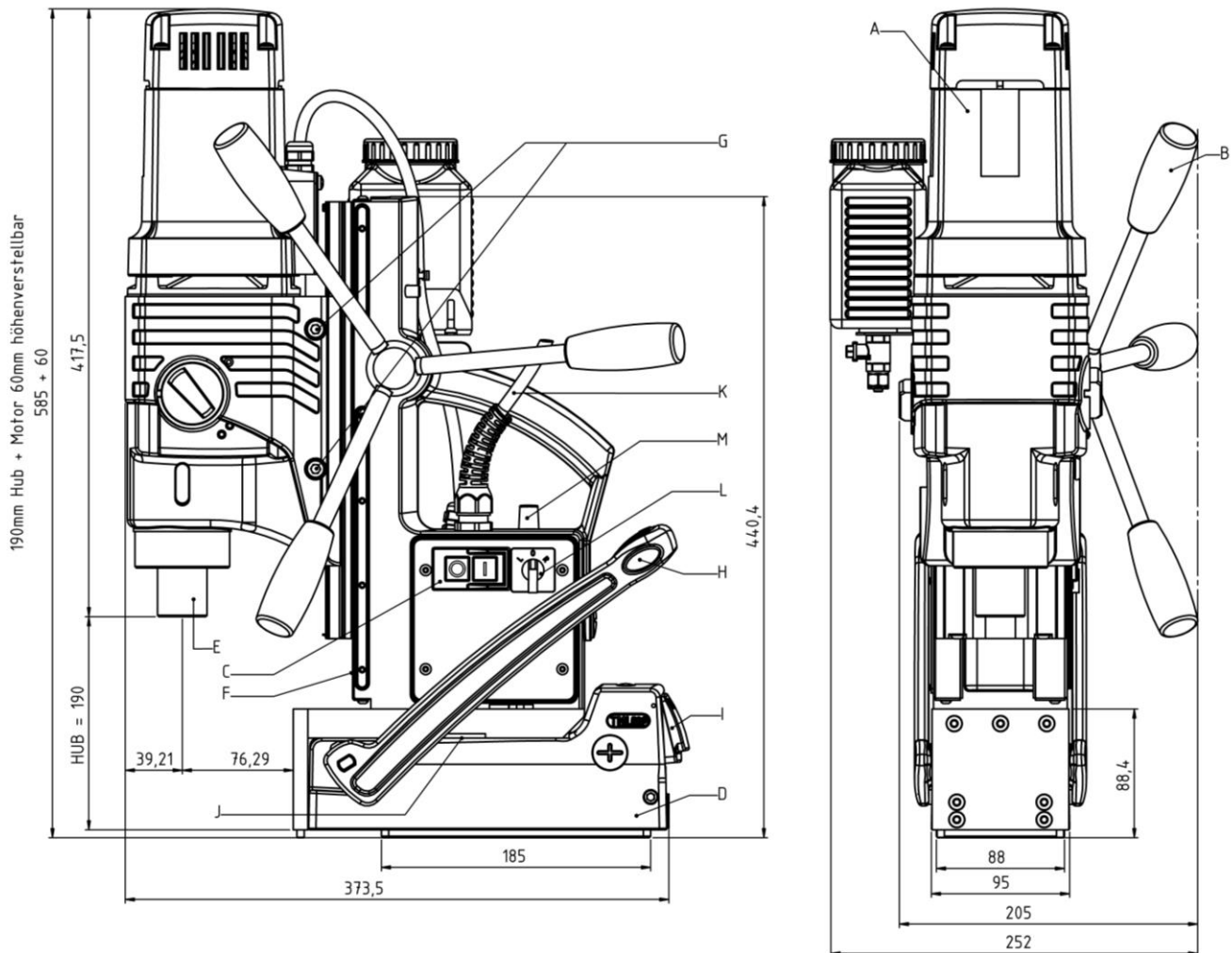
Vibration on the handle: AC=3.5 mm/s² and VC=3.2 mm/s

Available Accessories

- Transport Case (Prod.-no.: 18633)
- Coolant Unit (Prod.-no.: 189412029)
- Quick-change Adapter MT 3 incl. internal cooling (Prod.-no.: 18651)
- Coolant Spray ALFRA 4000 (Prod.-no.: 21040)
- Safety Belt (Prod.-no.: 189490501)
- Allen Wrench 2,5 mm DIN911-2,5
- Allen Wrench 4,0 mm DIN911-4
- Allen Wrench 6,0 mm DIN911-6
- Swarf Hook (Prod.-no.: 189480022)

Description

The magnetic core drilling machine can be attached to ferromagnetic work pieces using the installed mechanically switchable permanent magnet. For this purpose, the magnetic lever must be pressed downwards and the safety tab must latch into place correctly. The motor can be turned on and off using the large switch on the side. A self-adjusting linear guide which the motor is attached to, can be vertically adjusted using the rotary handle. The model-plate and an attachment possibility for the allen wrench included can be found on the back of the machine.



Rotabest 80SP RL-E

- | | |
|--|---------------------------|
| A) Driving Motor | H) Lever for Magnet |
| B) Rotary Handle | I) Safety Tab |
| C) Motor Switch | J) Recess for Safety Belt |
| D) Magnetic Base | K) Power Cord |
| E) MT 3-Arbor | L) Right / Left Switch |
| F) Screws for Adjusting Slide | M) Rotation Speed Control |
| G) Allen Screws for Adjusting the Motor's Stroke Range | |

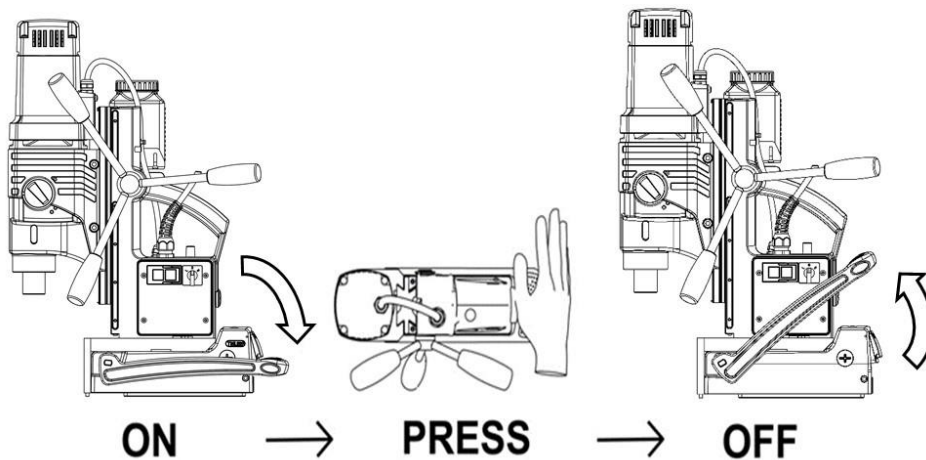
Start-up

You have received a completely assembled magnetic core drilling machine and detailed operation manual. Please check the condition of the machine on receipt for any transport damage, and make sure the delivery is complete. Otherwise contact the manufacturer immediately.



Read the operation manual before using the device for the first time!

1. First, check the cable and plug for damage and plug the machine in the power socket.
2. Insert the core drill in the tool holder on the spindle of the motor and check the stability and exact position of the tool.
3. The lever is pointing upwards meaning the switchable permanent magnet is deactivated so that you can position the machine. A slight magnetic pre-tension helps with aligning the machine on walls or ceilings.
4. Secure the drilling unit using the safety belt when working on walls and ceilings.
5. Press the lever down as far as it will go and make sure the safety tab audibly latches into place.



6. After lowering the lever you can activate the driving motor via the side motor switch by pressing the green ON switch.
7. By turning the rotary handle, lower the motor and the rotating drill slowly to the work piece. Ensure sufficient cooling during the drilling process.
8. When you have finished drilling, move the motor upwards and deactivate it with the red OFF switch on the motor switch unit.
9. Once the motor has come to a complete standstill, remove the swarf, metal shavings and the other drilling waste using a swarf hook.
10. To deactivate the permanent magnet, press the black safety tab inwards using the ball of your thumb and lift the lever up.
11. Only then clean the underside of the magnet of swarf, metal shavings or any other residue stuck to it wearing leather working gloves.

Special Information On Handling Switchable Permanent Magnets

The magnetic surface is located on the underside of the magnetic core drilling machine and generates the magnetic holding force through magnetic flux when activated. The magnet can be activated independently from the mains voltage by pressing the lever down. For the magnet to be released, the black safety tab must be pushed by using the ball of your thumb and pulling the lever upwards. The machine will remain attached to the workpiece even in the event of a power failure.

Material thickness

The magnetic flux of the TML permanent magnet requires a minimum material thickness of 8 mm (approx. 0.315 inches) to flow completely through the workpiece. If this material thickness is not given, the maximum holding force is reduced in accordance with the material thickness. Conventional electric or permanent magnets have a deeply penetrating magnetic field similar to a tree's tap roots and require a large material thickness of more than 25 mm (approx. 0.984 inches) to achieve the maximum holding force. The compact magnetic field of the TML magnets is similar to shallow roots and achieves maximum holding force even with low material thickness, so that drilling can be done with sufficient holding force even on thin sheets of only 3–4 mm (approx. 0.118 to 0.157 inches).

Material

The load-bearing capacity of the permanent magnets is determined by using S235 material. Steel with a high carbon content or whose structure has been changed by heat treatment has a low holding force. Foamed or pore-flawed cast parts also have a lower holding force.

Material	Magnetic force in %
Unalloyed steel (0.1-0.3% C content)	100
Unalloyed steel (0.3-0.5% C content)	90-95
Cast steel	90
Grey cast iron	45
Nickel	11
Stainless steel, aluminium, brass	0

Surface quality

If an air gap is created between the magnet and the work piece it reduces the holding force. In the same way, paint, rust, scale, surface coatings, grease or similar substances all form an air gap between the work piece and the switchable magnet, reducing the holding force.

Temperature

The high-power permanent magnets installed in the TML-magnet irreversibly lose their magnetic properties at temperatures preceding 80°C (176°F). The full holding force is never reached again even after the magnets have cooled down.

Adjustment Of Rotation Speed

The machine has a transmission with four gears and full-wave electronic.

First, you must make the correct mechanical adjustments. Afterwards, you set the rotation speed with the help of the electrical rotation speed regulator.

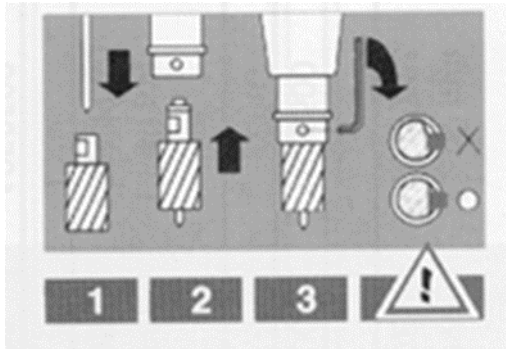
If possible, always choose the adjustment with low gear shifting and high engine speed. This way, the motor is set at a high torque protecting it against overheating due to mechanical overload.

Thermo Protection

Thermo protection automatically stops the motor when it's overheated. In order to cool the machine down, let it run with high rotation speed and in neutral for about two minutes.

Working With Annular Cutters (Weldon Shank)

- Mount the tool holder MT 3 in arbor.
- Push the ejector pin (center pin) through the head of the annular cutter.
- Mount the ROTABEST rotary cutter according to drawing. The setscrew must be positioned in the center of the lateral flat side of the Weldon shank. Fix tightly.



- First place the annular cutter with ejector pin on a grained spot or technical crack.
- Spot-drill until the entire cut edge is formed as a circle. Drilling with ALFRA ROTABEST cutters does not require much expenditure of force.
- During the drilling process, the cutter should constantly be cooled. Optimal cooling is possible by internal cooling with our coolant unit.
- Do not stop the motor during the drilling process. After the process, draw the cutter back with the motor running.
- Remove chips and core after each drilling.



Remove chips with chip-remover. Do not touch with bare hands. Danger of injury!

Working With Twist Drills

1. Insert the drill chuck with the adapter in the arbor.
2. Insert the twist drill in the drill chuck and tighten with a drill chuck wrench.
3. Twist drills with MT 3 shanks can be inserted directly into the arbor.

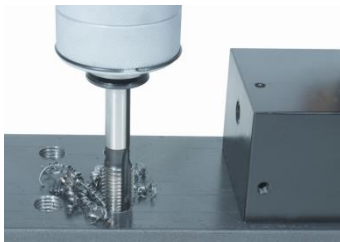


The motor can continuously be adjusted on the slide by releasing the allen screw (for maximum stroke range when using twist drills, drill chucks and tapping attachments).

Tapping

With the quick-change tapping adapter, there is the possibility to tap threads from M3 up to M 30.

- Insert the quick-change tapping adapter (1) in the arbor of the machine. Make sure it fits in tightly.
- Mount the tap (3) in the tap insert (2).
- Now mount the tap insert (2) including tap (3) in the quick-change tapping adapter (1).
- Adjust the motor to the corresponding cutting speed.



Make sure the tap is placed exactly on the drill hole.

When stopping the forward motion proceed as follows:

- Switch off motor.
- Turn the switch to “L” (left)
- Turn motor on
- Lead back tap to original position
- Switch motor off after tap is completely led back.



The motor rotates only in left and right direction after turning the switch to L (left) or R (right).
If the switch is left on “0”, no rotational movement of the machine will occur.

Tapping: the tap must be adjusted on the prepared boring in the workpiece. Put down spindle, until the tap touches the surface and the process can be started. Please comply with below chart for metric ISO thread.

Bore Hole Chart metric ISO-thread

Dimension	Thread Pitch	drill-Ø
M3	0,5	2,5
M4	0,7	3,3
M5	0,8	4,2
M6	1	5
M8	1,25	6,8
M10	1,5	8,5
M12	1,75	10,2
M14	2	12
M16	2	14
M18	2,5	15,5
M20	2,5	17,5

Metric Fine Thread

Dimension	Thread Pitch	drill-Ø
M8x1	1	7
M10x1	1	9
M12x1	1	11
M12x1,5	1,5	10,5
M14x1	1	13
M14x1,5	1,5	12,5
M16x1	1	15
M16x1,5	1,5	14,5
M20x1	1	19
M20x1,5	1,5	18,5

Tips for tapping

1. Clearance Hole

For Clearance Holes we recommend alongside mentioned taps, which safely conveys the chips out of the hole. The specially shaped grinding guarantees a safe re-mounting, when the tap opted out of the thread hole and returns in left hand rotation.

2. Tapped Blind Holes

For Tapped Blind Holes we recommend alongside mentioned taps. The chips are conveyed out of the hole contrary to the cutting direction. Important: do not run aground with tap, as otherwise the automatic return run won't be activated. A correspondingly larger pre-drilling depth must be carried out.

In case of a disregard, the tap must be manually released.

3. Pocket Holes up to 1,5 x D

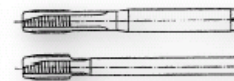
Taps according to alongside mentioned image are suitable. Here as well, the chips are conveyed out of the hole contrary to the cutting direction. Important: do not run aground with tap. A correspondingly larger pre-drilling depth must be carried out.

In case of a disregard, the tap must be manually released.

Beside our taps with reinforced shanks, other taps according to DIN 376 with taper shank are suitable as well

Please work with sufficient recommended for tapping by the corresponding manufacturer.

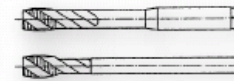
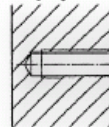
Chip ejection downwards trough the bore



DIN 371 with reinforced shank Shape B, with spiral face inclination, 3,5 to 5 convolutions.

DIN 376 with taper shank Tap depth 3 x D

Chip ejection alongside the tool



DIN 371 with reinforced shank spiral grooved, ca. 35° right hand twist, Section chape C, ca. 3 convolutions

DIN 376 with taper shank Tap depth 2,5 x D

Chip ejection alongside the tool



DIN 371 with reinforced shank spiral grooved, ca. 17° right hand twist, Selection C, ca. 2 to 3 convolutions

DIN 376 with taper shank Tap depth 1,5 x D

Cleaning And Care

Pull plug prior to cleaning to avoid injuries by unintentionally switching motor on.

- Clean the outside of the motor with dry compressed air.
- Check connecting power cords for damages.
- Clean and grease sliding surfaces regularly. Should lateral play arise by wear of the linear guide, this can be corrected by adjusting the laterally positioned set screws (F) - page 15-.
- Carbon brushes should be replaced after approx. 250 hours running time.
- After finishing work, we recommend storing the metal core drilling machine in the transport case in a lying position.
- Check the underside of the magnet for scratches, pressure points or cracks. Have the magnet repaired by the manufacturer if necessary
- Check the blocking function of the safety tab on the lever

Maintenance And Repair

Maintenance, check-ups and repairs are only to be made by electronics specialists according to the valid regulations of the respective country.



Only use original ALFRA spare parts.



A spare-part list is at the end of this operation manual.

The metal core drilling machine ALFRA ROTABEST should be serviced after approx. 250 hours running time by our ALFRA workshop or appointed dealers. The gear oil (Lubcon, Turmogearoil PE 150 300ml) should be exchanged as well as the carbon brushes.

EC Declaration of conformity

We,

Alfra GmbH
2. Industriestr. 10
68766 Hockenheim

hereby declare that the metal core drilling machine

EXCISION MAGNEX 100 RL-E

corresponds with the following directives:

Machinery Directive: 2006/42/EC
Low Voltage Directive: 2014/35/EU
Electro-magnetic compatibility (EMC): 2014/30/EU
RoHs Directive: 2011/65/EU

Following directives or normative documents were applied:

Machinery Directive:
EN 61029-1:2009

Low Voltage Directive:
EN 60204-1:2006+A1:2009
EN 60034-1:2010
EN 60034-5:2001+A1:2007

EMC Directive:
EN 55014-1:2006+A1:2009+A2:2011
EN 55014-2:1997+A1:2001+A2:2008
EN 61000-3-2:2006+A1:2009+A2:2009
EN 61000-3-3:2008

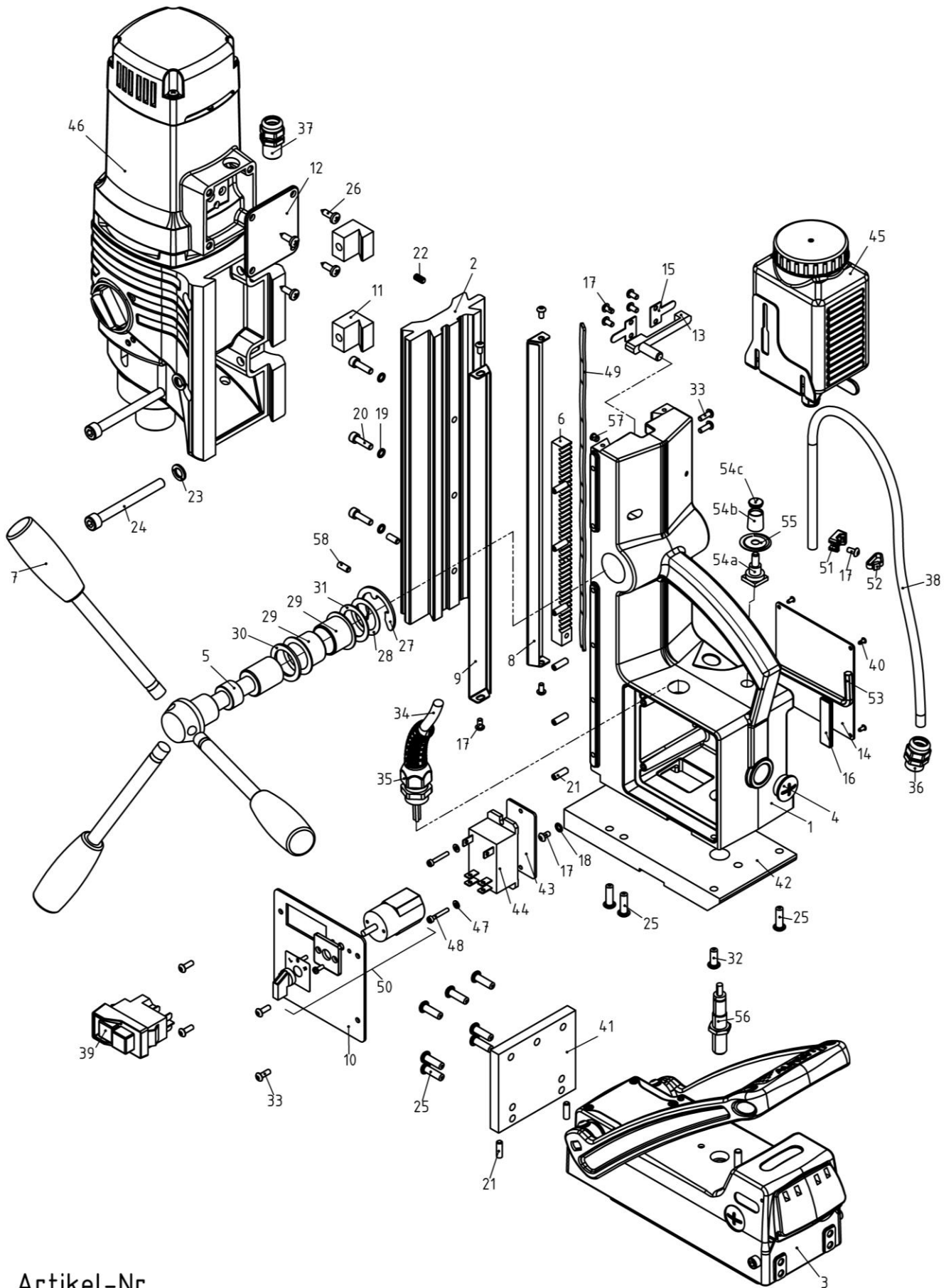
RoHs Directive:
EN 50581:2012

Authorized for the compilation of the documents:

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Hockenheim, 19.10.2018

Spare Parts



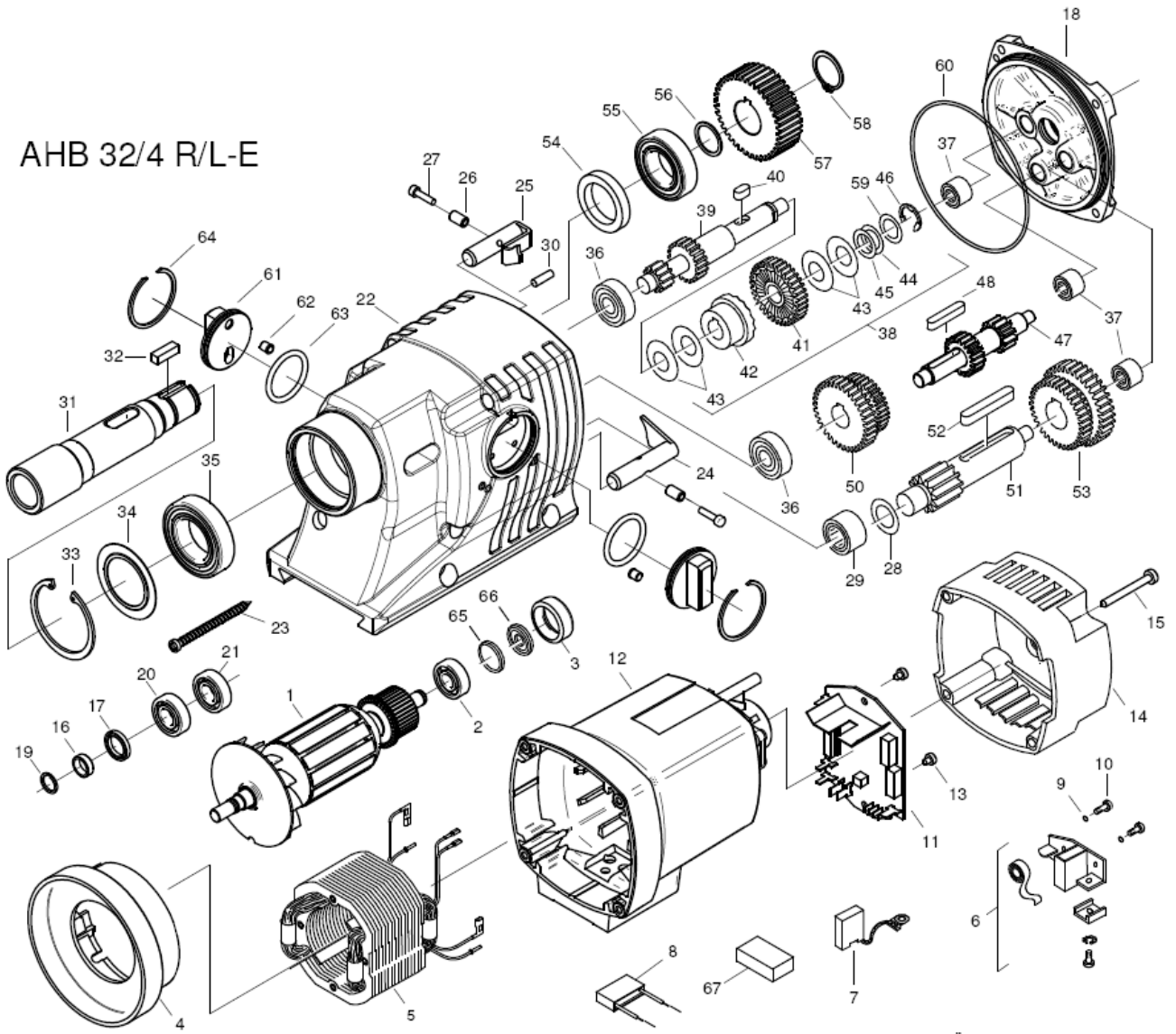
Artikel-Nr.
gültig ab Serien-Nr.

Pos.	Stck.	Art.-Nr.	Description
1	1	189414515	housing
2	1	189412052	slide
3	1	189414522	magnetic base
4	1	189414129	blind bolt
5	1	189501056	pinion shaft
6	1	189501073	rack
7	3	189601074	spoke
8	1	189412057	brass guide rail,
9	1	189412056	brass guide rail,
10	1	189414287	switch plate
11	2	189501076	motor fixing part
12	1	189601101	flange piece
13	1	189501078	Slide
14	1	189414523	plate (safety instructions)
15	2	189412055	Sheet metal for slider
16	1	189412070	Magnet for Allen
17	10	ISO7380-M4x8-10.9	mushroom head screw
18	1	DIN6798-A4,3-FST	serrated lock washer
19	3	DIN7980-5-ST	lock washer
20	3	DIN912-M5x18-8.8	socket cap screw
21	8	DIN913-M5x16-45H	set screw
22	1	DIN915-M5x12-45H	set screw
23	2	DIN7980-8-ST	lock washer
24	2	DIN912-M8x80-8.8	socket cap screw
25	13	ISO7380-M6x20-10.9	mushroom head screw
26	4	DIN7981-M5,5x16	lens head screw
27	1	DIN6799-D19,0	lock washer
28	1	DIN988-25x35x0,5	washer
29	2	189490503	Plain bearing
30	1	DIN988-25x35x2,0	washer
31	1	DIN988-25x35x1,0	washer
32	1	ISO7380-M6x16-10.9	mushroom head screw
33	6	ISO7380-M4x12-10.9	mushroom head screw
34	1	189412071	supply cable
35	1	189490604	protection sleeve
36	1	189490605	corrugated pipe fitting
37	1	189490605	corrugated pipe fitting
38	1	189301081	cable conduit
39	1	189411057	motor switch
40	4	ISO8746-2,5x8	grooved drive stud
41	1	189412142	front plate
42	1	189412141	intermediate plate
43	1	189414518	retaining plate for relays
44	1	189412145	relay RB80SP 230V
44	1	189412145.110	relay RB80SP 110V
45	1	189412029	coolant unit complete
46	1	18037	Motor AHB 32/4-RL-E (230V)
46	1	18037.110	Motor AHB 32/4-RL-E (110V)
47	2	DIN125-A3,2	grommet
48	2	DIN912-M3x20-8.8	socket cap screw

49	1	189412054	spring steel sheet
50	1	189414516	left / right switch
51	1	189412069	cable fixture
52	1	189490607	lacing cord
53	1	DIN911-6	hexagon wrench key
54a	1	189612023	pre-set potentiometer
54b	1	189491702	knob
54c	1	189491703	Cover for knob
55	1	189491704	scale
56	1	189414517	inductive proximity switch
57	1	189301080	resilient pressure piece
58	2	DIN913-M5x12-45H	set screw

Spare Parts Motor

AHB 32/4 R/L-E



03/09

Änderungen vorbehalten!

Pos.	Stk	Art.Nr.	Description
1	1	189852119	armature, compl. 230 V
1	1	189852119.110	armature, compl. 110 V
2	1	189622011	deep groove ball bearing
3	1	189622013	bearing cap
4	1	189813081	fan shroud
5	1	189852120	field, compl. 230 V
5	1	189852120.110	field, compl. 110 V
6	2	189622005	carbon brush holder
7	2	189622012	carbon brush 230V
7	2	189622012.110	carbon brush 110V
8	1	189502065	anti-interference capacitor
9	4	189622009	spring discs
10	4	189622010	screws
11	1	189612015	printed circuit board 230V
11	1	189612015.110	printed circuit board 110V
12	1	189813050	motor housing, compl.
13	2	189601008	screw 3,9 x 9,5
14	1	189813051	cap for motor housing
15	4	189622018	screw 4,8 x 45
16	1	189813080	bearing ring
17	1	189502087	rotary shaft seal
18	1	189813077	gear box flange
19	1	189813082	retaining ring
20	1	189852121	deep groove ball bearing
21	1	189813083	retaining ring
22	1	189813061	gear box
23	4	189813075	tapping screw 5,5
24	1	189813062	coupling bolt 2
25	1	189813063	coupling bolt 1
26	2	189813064	bush
27	2	189813065	hexagon socket screw
28	1	189812030	washer for needle bearing
29	1	189812031	needle bearing 4900
30	1	189601049	dowel pin
31	1	189812038	motor spindle
32	1	189812043	feather key
33	1	189812034	retaining ring
34	1	189812033	washer for ball bearing
35	1	189812032	deep groove ball bearing 6006.2RS
36	2	189601035	deep groove ball bearing 6000
37	3	189601020	needle bearing
38	1	189813044	coupling, cpl.
39	1	189813039	intermediate shaft 1
40	1	189601040	feather key
41	1	189813045	coupling gear
42	1	189601041	coupling half
43	4	189601043	disk spring
44	1	189611051	pressure washer
45	1	189622052	washer
46	1	189601022	retaining washer
47	1	189812047	intermediate shaft 2
48	1	189622055	feather key
49	-	---	
50	1	189812050	gear block 1
51	1	189812044	intermediate shaft 3
52	1	189812046	feather key
53	1	189812045	gear block 2
54	1	189813073	rotary shaft seal
55	1	189812039	deep groove ball bearing S
56	1	189812040	washer
57	1	189812041	spindel gear
58	1	189812042	retaining ring

59	1	189601023B	pressure washer
60	1	189813066	o-ring
61	2	189852123	gear shift knob
62	2	189813068	spring-loaded thrust pad
63	2	189813069	o-ring
64	2	189813070	CIRCLIP
65	2	189852124	power wire
66	2	189852125	resistance wire
67	1	189813072	filling part
68	1	189852126	carbon brush wire
69	1	189852127	carbon brush wire
70	1	189852128	pressure washer
71	1	189852129	ring magnet

Use only;

Excision Core Drills

- 100% made in Germany
- Geometry perfected for smooth, easy and precise cutting
- High Speed Steel with 5% cobalt:
 - Longer lasting
 - Will drill harder materials



Excision Coolants

- Made in Australia
- Made especially for the tough cutting of steel
- 2 options available:
 - XDP1000 – Mix with water for the coolant tank
 - XDP905 – Use neat

XDP1000



XDP905

