JEPSON POWER® GERMANY
Leading Through Innovation

Magnetic Drilling Machine

MAGPRO 100M30

OPERATOR'S MANUAL

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GERMANY

CONTENTS OF THE MANUAL.

	List of Contents with Magnetic Drill Unit	CheckList
1	Operator's Manual	YES/NO
2	Coolant Bottle	YES/NO
3	Arbor--MT3 (3/4" bore)	YES/NO
4	Pilot Pin of6.35 dia. for cutting1" depth	YES/NO
5	Pilot Pin of6.35 dia. for cutting2" depth	YES/NO
6	Pilot Pin of7.98 dia. for cutting1" depth	YES/NO
7	Pilot Pin of7.98 dia. for cutting2" depth	YES/NO
8	6mm Hexagon Key	YES/NO
9	Drill drift	YES/NO


SPEED
MIN
MAX
MAGNET
ON
OFF
FUSE

[1] SPECIFICATIONS OF MAGNETIC DRILLING MACHINE [MAGPRO100M30]

Maximum hole cutting capacity in .2/.3C steel

=Cutting 100mm dia. x 75mm deep,

Motor Unit	
Voltages	220/240V(100/110V),50/60Hz
Power Consumption (input)	2,000 W
Magnet Size	210 x 105 x 70 mm
Magnet Force at 20°C with 20mm minimum plate thickness The use on any material less than 20mm thick will progressively reduce the magnetic performance. If possible, substitute material should be positioned under the magnet and work piece to equate to a suitable material thickness. If this is not possible, an alternative secure method of restraining the machine MUST be used.	1,850kgf
Overall Dimensions	
Height	490mm (750mm)
Width (including Hand wheel)	205mm
Length Overall	300mm
Stroke	260mm
RPM (NO LOAD)	1st. 80,
	2nd. 140
	3rd. 310,
	4th. 500
Net Weight	26.5kgs
Maximum hand/arm vibration magnitude (measured at handle during operation in accordance with ISO5349, using a 22mm cutter through 13mm MS plate)	0.82 m/s²
Average noise level during cutting at operators ear position.	89dB(A)

READ BEFORE USING THE MACHINE

[2] SAFETY PROCEDURES

•When using electrical tools, basic safety precautions should always be followed to reduce the risk of electric shock, fire, and personal injury.

•Do **NOT** use in wet or damp conditions. Failure to do so may result in personal injury.

•Do **NOT** use in the presence of flammable liquids or gases. Failure to do so may result in personal injury.

•ALWAYS SECURE THE MACHINE WITH THE SAFETY CHAIN WHEN WORKING VERTICALLY OR OVERHEAD BEFORE STARTING TO OPERATE.

•Always wear approved eye and ear protection when the equipment is in operation. Failure to do so may result in personal injury.

•Disconnect from the power source when changing cutters or working on the machine.
•When changing cutters, or removing swarf, ALWAYS wear approved gloves.

•ALWAYS ENSURE CUTTER RETAINING SCREWS ARE SECURE – they sometimes vibrate loose when the machine is in continuous use.

•Regularly clear the work area and machine of swarf and dirt, paying particular attention to the underside of the magnet base.

•With a gloved hand, and after switching off, remove any swarf which might have gathered around the cutter and arbor before proceeding with the next hole.
•Before operating the machine, always remove tie, rings, watches and any loose adornments which might entangle with the rotating machinery.
•Should the cutter become 'fast' in the workpiece, stop the motor immediately to prevent personal injury. Disconnect from the power source and turn arbor to and fro. DO NOT ATTEMPT TO FREE THE CUTTER BY SWITCHING THE MOTOR ON AND OFF.

•If the machine is accidentally dropped, always thoroughly examine the machine for signs of damage and check that it functions correctly before trying to drill a hole.

•Regularly inspect the machine and check that nuts and screws are tight.

•Always ensure when using the machine in an inverted position that only the minimum amount of coolant is used and that care is taken to ensure that coolant does not drip on to the motor unit.

•On completion of the cut, a slug will be ejected. DO NOT operate the machine if the ejected slug may cause injury.

[3] OPERATING INSTRUCTIONS

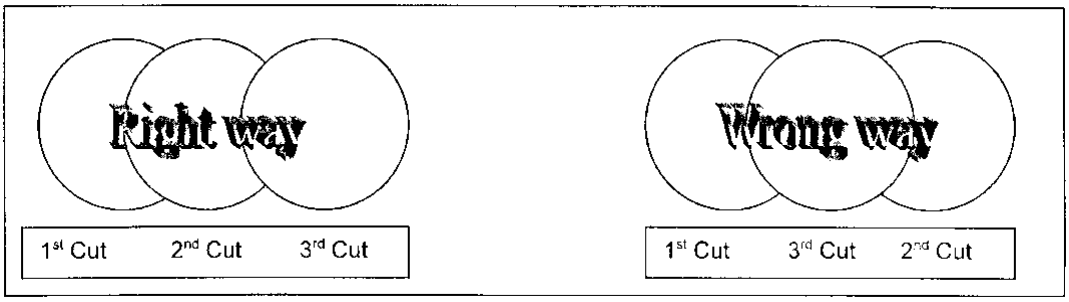
•Keep the inside of the cutter clear of swarf. It restricts the operating depth of the cutter.
•Ensure that the coolant bottle contains sufficient cutting oil to complete the required operating duration. Refill as required.

•Occasionally depress the pilot to ensure cutting fluid is being correctly metered.

•To start the machine, first switch on the magnet. And then start the motor by depressing the GREEN start button.

•Apply light pressure when commencing to cut a hole until the cutter is introduced into the work surface. Excessive pressure is undesirable, it does not increase the speed of penetration.

•Always ensure that the slug has been ejected from the previous hole before commencing to cut the next.



(Right) (Wrong)

•Always cut overlapping holes as illustrated above –do not use excessive pressure and ensure cutting fluid is reaching teeth of the cutter.

•If the slug sticks in the cutter, move the machine to a flat surface, switch on the magnet and gently bring the cutter down to make contact with the surface. This will usually straighten a cocked slug and allow it to eject normally.

•Cutter breakage is usually caused by insecure anchorage and a loosely fitting slide. (Refer to routine maintenance instructions).

[4] EXTENSION CABLE SELECTION

The machines are factory fitted with a 2 metre length of cable having three conductors 1.5mm² LIVE, NEUTRAL and EARTH.

If it becomes necessary to fit an extension cable from the power source, care must be taken in using a cable of adequate capacity. Failure to do so will result in a loss of traction by the magnet and a reduction of power from the motor.
Assuming a normal AC supply of the correct voltage, it is recommended that the following extension lengths shall not be exceeded:

For 110v supply: 3.5metres of 3 core x 1.5mm²

For 230v supply: 26metres of 3 core x 1.5mm² or
17metres of 3 core x 1.0mm²

ALWAYS DISCONNECT THE MACHINE FROM THE POWER SOURCE WHEN CHANGING CUTTERS.

[5] MOUNTING OF CUTTERS

The machine has been made to accept MT3 Arbor.
The following procedure is to be used when mounting cutters.
- Take appropriate pilot and place through hole in shank of cutter.
- Insert shank of cutter into 3/4" dia. (or 1 1/4") bore of arbor, ensuring alignment of two drive flats with socket screws.

- Arbor Selection

For cutters of 11mm ~ 60mm dia. : 3/4" dia. bore of arbor.
For cutters over 60mm dia. : 1 1/4" dia. bore of arbor.

- Tighten both screws using hexagon key.

[6] REMEDIES FOR HOLE MAKING PROBLEMS

Problem	Cause	Remedy
1) Magnetic base won't hold effectively	Material being cut may be too thin for efficient holding of magnet	Attach an additional piece of metal under work-piece where magnet will be located, or mechanically clamp magnetic base to work-piece
	Swarf or dirt under magnet	Clean magnet
	Irregularity on magnet face or work-piece	Use extreme care, file only imperfections flush to surface
	Insufficient current going to magnet during drilling cycle	Confirm power supply and output from control unit.
2) Cutter skips out of centre-punch mark at initiation of cut	Magnetic base is not holding effectively.	See causes and remedies above.
	Too much feed pressure at start of cut.	Light pressure until a groove is cut. The groove then serves as a stabilizer.
	Cutter is worn, chipped or incorrectly sharpened	Replace or re-sharpen. Sharpening service is available.
	Poor centre-punch mark; weak pilot spring; pilot not centred in centre-punch mark.	Improve centre-punch and/or replace worn parts.
	Worn or bent pilot, worn pilot hole	Replace parts.

Problem	Cause	Remedy
3) Excessive drilling pressure required.	Incorrectly re-sharpened, worn or chipped cutter	Re-sharpen or replace
	Coming down on swarf lying on surface of work-piece	Clean work-piece. Take care not to start a cut on swarf
	Gibs out of adjustment or lack of lubrication	Lubricate gib and/or adjust grub screws
	Swarf accumulated (packed) inside cutter	Clear cutter
	Incorrect speed selection.	Select appropriate speed.
4) Excessive cutter breakage	Steel swarf or dirt under cutter	Remove cutter, clean part thoroughly and replace
	Incorrectly re-sharpened or worn cutter	Always have a new cutter on hand to refer to for correct tooth geometry, together with instruction sheet
	Cutter skipping	See causes and remedies (2)
	Slide-ways need adjustment	Tighten slide-way
	Cutter not attached tightly to arbor	Retighten

	Insufficient use of cutting oil or unsuitable type of oil	Fill arbor with an oil of light viscosity and check to be sure oil is being metered into cutter when pilot is depressed. If not, check pilot groove and arbor internally for dirt or apply oil externally. Even a small amount of oil is very effective.
	Incorrect speed selection.	Select appropriate speed.
5) Excessive cutter wear	Incorrectly re-sharpened cutter.	Refer to instructions and a new cutter for proper tooth geometry
	Insufficient or spasmodic cutting pressure	Use sufficient steady pressure to slow the drill down. This will result in optimum cutting speed and chip load.

[7] SPEED SELECTION—Speed Adjustable with volume switch

1. Method of Gear Change

The machines are equipped with a mechanical four-speed gearbox.
Please just turn the lever to the right or left to change gear.
It is not necessary to set the gear in neutral to change gear.(patented)

2. Gear Selection

1st -70/105

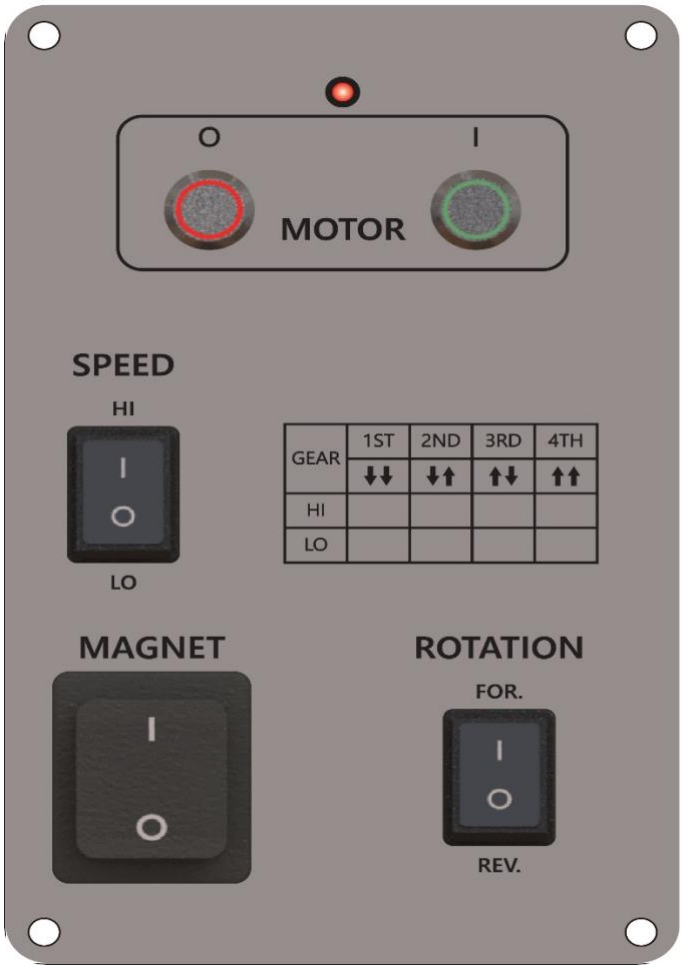
2nd -135/200

3rd- 230/350

4th–440/650

--NO LOAD RPM of each gear--

[8] CONTROL PANEL



① **MAGNET SWITCH** : Main switch of Machine

②**SPEED** :

- HI: GEAR RPM
- LO : Electronic RPM, About 75% of HI

③ **ROTATION SWITCH**

- FOR : Forwarding (CW:Clock Wise)
- REV.: Reverse (CCW:Counter Clock Wise)

④ **LED : Over Current indication**

[9] CIRCUIT

Mag Drill Circuit Diagram

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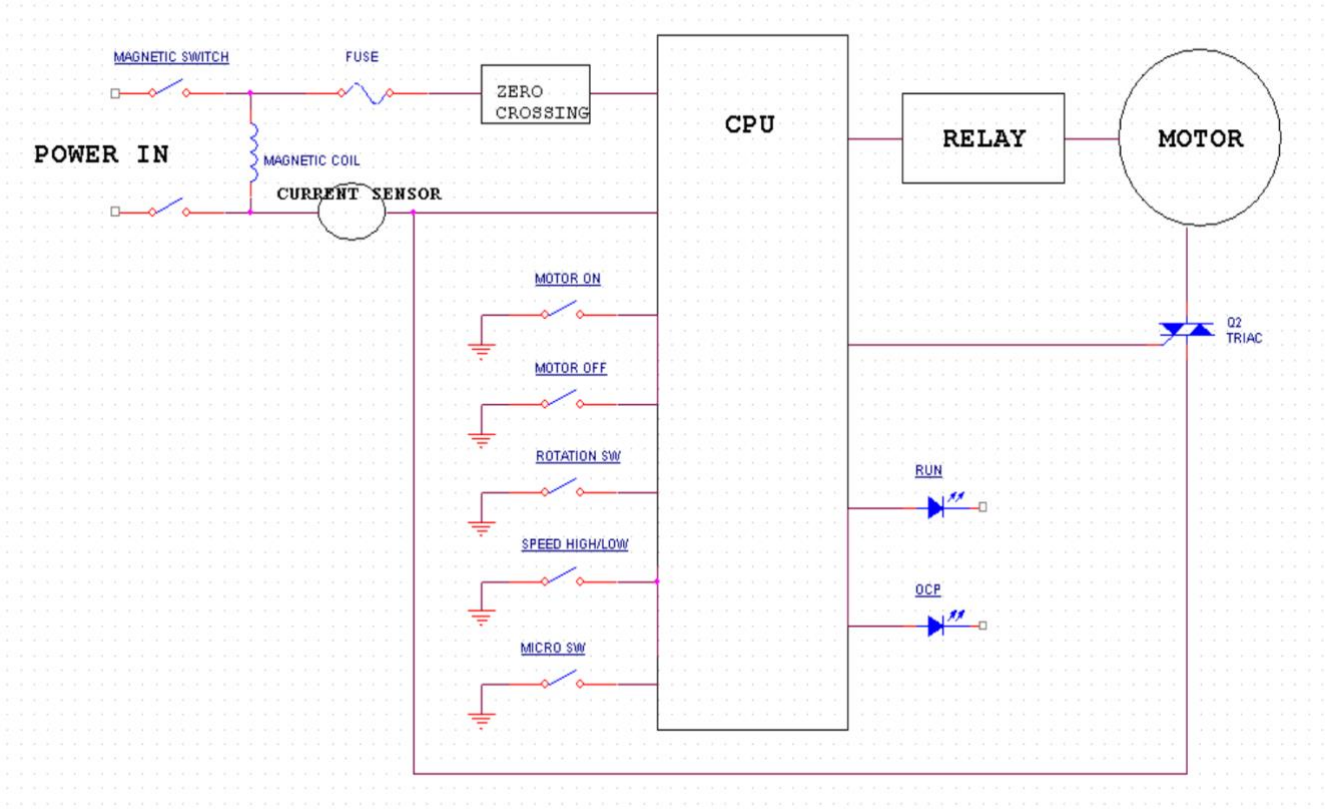


WARNING – THIS APPLIANCE MUST BE EARTHED!

Insulation Resistance Test

With the magnet switch in the ON position, apply a voltage of 1.5kv between the live connection on the mains plug and the frame of the machine for a duration of 7 seconds. The reading obtained should not fall below infinity. Should a fault be indicated, it **must be found and rectified**.

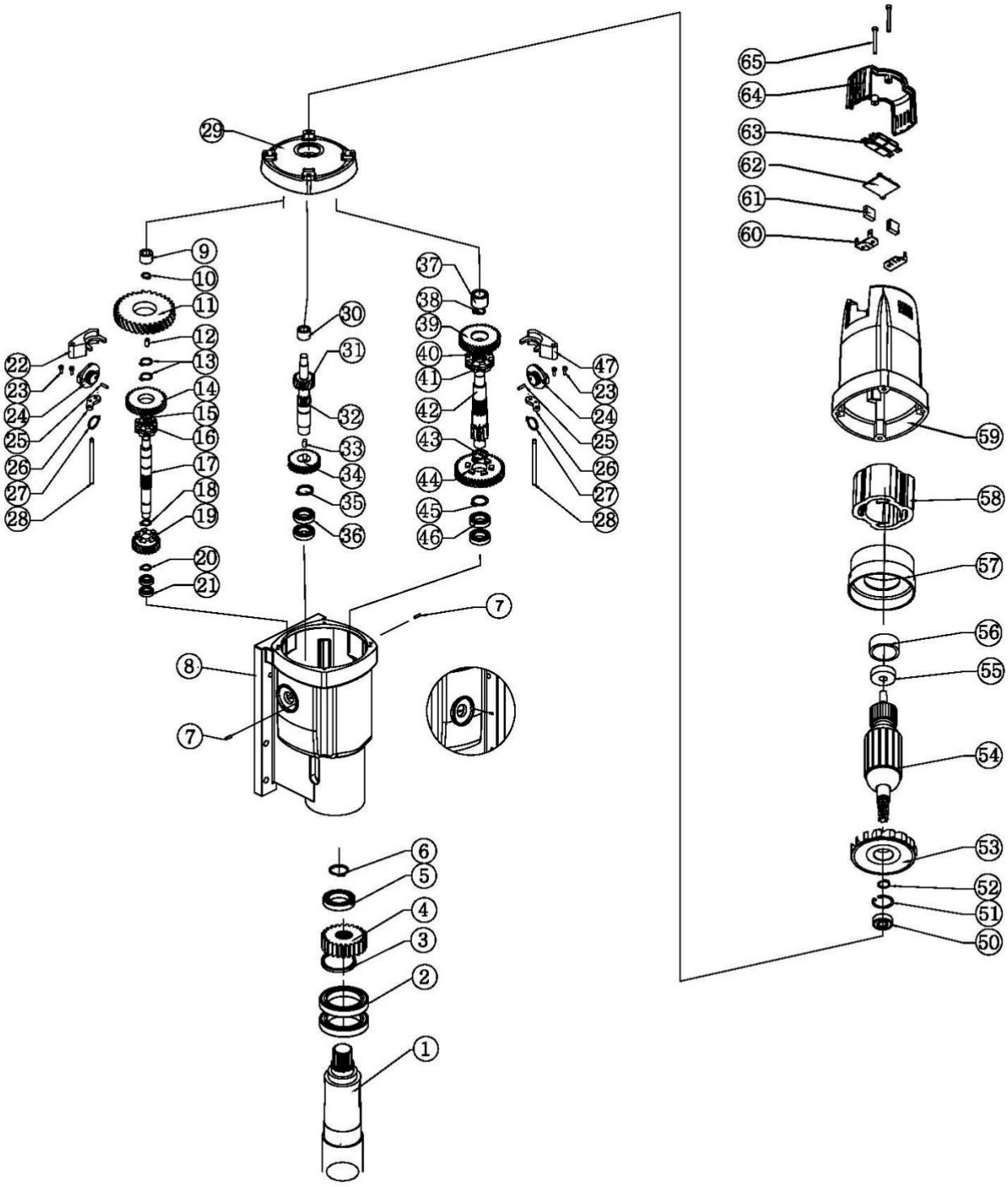
[10] SLIDE & GIB ADJUSTMENT -- Patented

1. New Sliding System : Machines have very exotic and stable sliding system. It consists of 3 main parts ; Slide Board, Precisely ground Rail Bar & Adjustment Gib.
Basically it has very wear-resistent structure and keeps first condition as time goes.
It helps to cut comparatively bigger holes easier than normal dove-tail system without any bad movement in sliding area.

2. Gib Adjustment : Adjust the Gib using side bolts loose or tight, if necessary.

[11] PART LIST

[PART1]



PART 1-PART LIST

NO.	PART NO.		PART NAME	Q'ty
1	MA100M30	A01	SPINDLE	1 no
2	MA100M30	A02	BALL BEARING 6907 ZZ	2 nos
3	MA100M30	A03	OIL SEAL	1 no
4	MA100M30	A04	MAIN GEAR 38T	1 no
5	MA100M30	A05	BALL BEARING 6005 2RSC3	1 no
6	MA100M30	A06	SNAP RING	1 no
7	MA100M30	A07	PIN	2 nos
8	MA100M30	A08	GEAR BOX	1 no
9	MA100M30	A09	NEEDLE BEARING NK 1012	1 nos
10	MA100M30	A10	SNAP RING	1 no
11	MA100M30	A11	FIRST GEAR 42T	1 no
12	MA100M30	A12	KEY	1 nos
13	MA100M30	A13	SNAP RING	2 no
14	MA100M30	A14	FIRST GEAR H33T	1 no
15	MA100M30	A15	SNAP RING	1 no
16	MA100M30	A16	FIRST CLUTCH	1 no
17	MA100M30	A17	FIRST PINION	1 no
18	MA100M30	A18	SNAP RING	1 no
19	MA100M30	A19	FIRST GEAR L 22T	1 no
20	MA100M30	A20	SNAP RING	1 no
21	MA100M30	A21	BEARING 6800ZZ	2nos
22	MA100M30	A22	FIRST CHANGE BLOCK	1 no
23	MA100M30	A23	SOCKET BOLT M3	4 nos
24	MA100M30	A24	GEAR CHANGE KNOB	2 nos
25	MA100M30	A25	PIN Φ3*8L	2 nos
26	MA100M30	A26	GUIDE BRACKET	2 nos
27	MA100M30	A27	SNAP RING	2 nos
28	MA100M30	A28	GUIDE PIN	2nos
29	MA100M30	A29	INNER COVER	1 no
30	MA100M30	A30	NEEDLE BEARING NK 1012	1 no
31	MA100M30	A31	SECOND PINION GEAR 16T	1 no

NO.	PART NO.		PART NAME	Q'ty
32	MA100M30	A32	SECOND PINION	1no
33	MA100M30	A33	KEY	1no
34	MA100M30	A34	SECOND GEAR 27T	1 no
35	MA100M30	A35	SNAP RING	1 no
36	MA100M30	A36	BEARING 6800 ZZ	2 nos
37	MA100M30	A37	NEEDLE BEARING NK1012	1 no
38	MA100M30	A38	SNAP RING	1 no
39	MA100M30	A39	THIRD GEAR H 36T	1 no
40	MA100M30	A40	SNAP RING	1 no
41	MA100M30	A41	THIRD CLUTCH	1 no
42	MA100M30	A42	THIRD PINION	1 no
43	MA100M30	A43	SNAP RING	1 no
44	MA100M30	A44	THIRD GEAR L 42T	1 no
45	MA100M30	A45	SNAP RING	1 no
46	MA100M30	A46	BEARING 6901 ZZ	2 nos
47	MA100M30	A47	THIRD CHANGE BLOCK	1 no
48	MA100M30	A48	======	-
49	MA100M30	A49	=======	-
50	MA100M30	A50	BEARING 6201 RSC3	1 no
51	MA100M30	A51	SNAP RING	1 no
52	MA100M30	A52	SNAP RING	1 no
53	MA100M30	A53	FAN	1 no
54	MA100M30	A54	ARMATURE ASS'Y	1 no
55	MA100M30	A55	RUBBER BUSHING	1 no
56	MA100M30	A56	BEARING 6200 ZZC3	1 no
57	MA100M30	A57	FAN GUIDE	1 no
58	MA100M30	A58	STATOR	1 no
59	MA100M30	A59	MOTOR HOUSING	1 no
60	MA100M30	A60	CARBON BRUSH HOLDER	2 nos
61	MA100M30	A61	CARBON BRUSH	2 nos
62	MA100M30	A62	CONNECTOR MOUNT	2 nos
63	MA100M30	A63	WIRING CONNECTOR	2 nos

NO.	PART NO.		PART NAME	Q'ty
64	MA100M30	A64	HOUSING CAP	4 nos
65	MA100M30	A65	HEX SOCKET BOLT M4	1 no

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[PART2]

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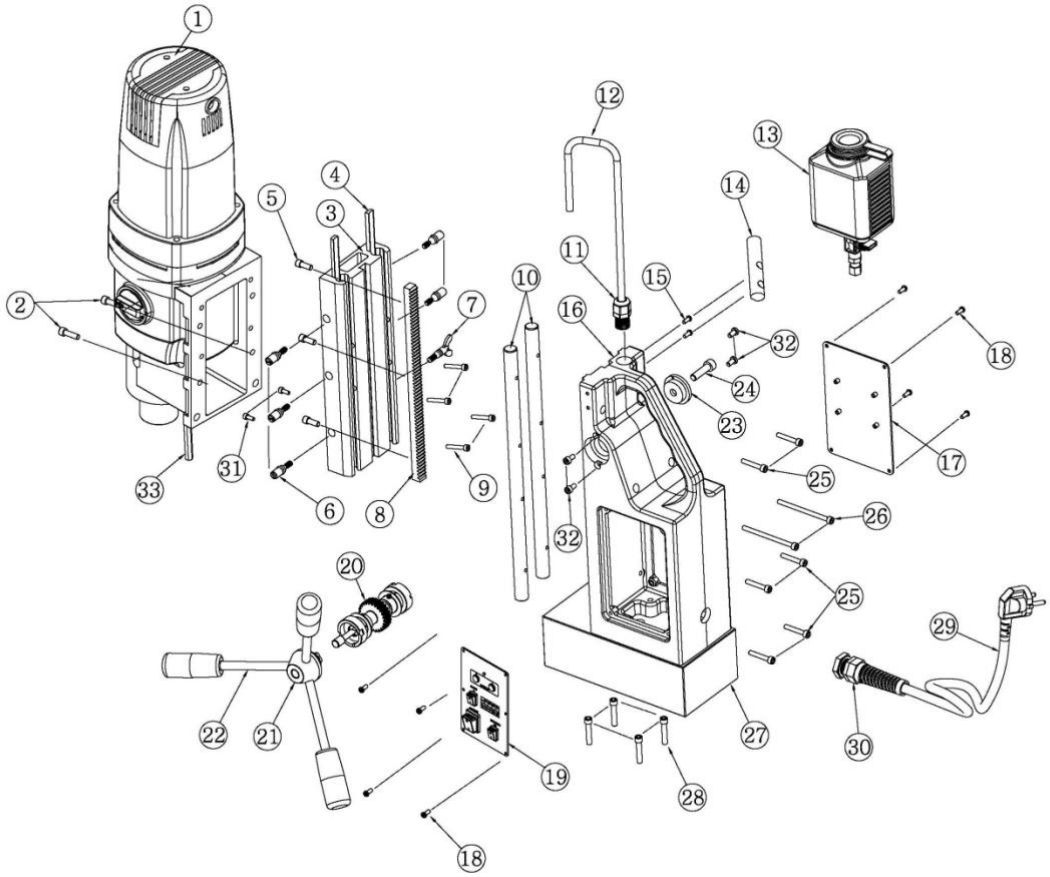

MAGPRO100M30 PART2				
NO	**PART NO.**		**PART NAME**	**Q'ty**
1	MA100M30	B01	MOTOR & GEARBOX ASS'Y,	1
2	MA100M30	B02	HEX SOCKET BOLT M6-L20	2
3	MA100M30	B03	SLIDE	1
4	MA100M30	B04	GIB	2
5	MA100M30	B05	HEX SOCKET BOLT M6-L15	3
6	MA100M30	B06	O-RING ASSEMBLED STOPPER BOLT	5

NO	PART NO.		PART NAME	Q'ty
7	MA100M30	B07	WINGBOLT ASS'Y M6-L10	1
8	MA100M30	B08	RACK GEAR	1
9	MA100M30	B09	HEX SOCKET BOLT M6-L15	4
10	MA100M30	B10	RAIL BAR	2
11	MA100M30	B11	CABLE GLAND	2
12	MA100M30	B12	CABLE	1
13	MA100M30	B13	COOLANT TANK ASS'Y	1
14	MA100M30	B14	COOLANT HANGER	1
15	MA100M30	B15	ROUND HEAD BOLT M4-L10	2
16	MA100M30	B16	MAIN FRAME	1
17	MA100M30	B17	WARNING PANEL	1
18	MA100M30	B18	TRUSS HEAD BOLT M4-L10	8
19	MA100M30	B19	CONTROL PANEL ASS'Y	1
20	MA100M30	B20	HANDLE GEAR ASS'Y	1
21	MA100M30	B21	HANDLE JOINT	1
22	MA100M30	B22	HANDLE BAR ASS'Y	3
23	MA100M30	B23	HANDLE REAR CAP	1
24	MA100M30	B24	HEX TIGHTENING BOLT M8-L30	1
25	MA100M30	B25	HEX SOCKET BOLT M5-L30	6
26	MA100M30	B26	HEX SOCKET BOLT M5-L75	2
27	MA100M30	B27	ELECTROMAGNET	1
28	MA100M30	B28	HEX SOCKET BOLT M6-L30	4
29	MA100M30	B29	POWER CABLE	1
30	MA100M30	B30	CABLE GLAND ASS'Y	1
31	MA100M30	B31	HEX SOCKET BOLT M4-L10	2
32	MA100M30	B32	HEX WRENCH BOLT M5-L10	4
33	MA100M30	B33	ARBOR STOPPER	1