

Handy-Mag II



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STEEL TOOL

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Handy-Mag II

Warranty

The Cleveland Steel Tool Company will, within one (1) year of date of purchase, replace or repair F.O.B. the factory, any goods, which are defective in materials and workmanship provided that the buyer returns the defective goods, freight prepaid, to the seller, which shall be the buyer's sole and exclusive remedy for the defective goods. THIS WARRANTY IS VOID IF YOU ATTEMPT REPAIRS YOURSELF. This warranty is void if the items have been damaged by accident, neglect, or other causes not arising out of defects in materials or workmanship. This warranty does not apply to machines and/or components which have been altered, changed or modified in any way, or subjected to use beyond recommended capacities and specifications. Electrical components are subject to respective manufacturer's warranties. In no event shall The Cleveland Steel Tool Co. be liable for loss or damage resulting directly or indirectly from the use of merchandise or from any other cause. The Cleveland Steel Tool Co. is not liable for any costs incurred on such goods or consequential damages. No officer, employee or agent of the Cleveland Steel Tool Co. is authorized to make oral representations or warranty of fitness or to waive any of the foregoing terms of sales and none shall be binding on The Cleveland Steel Tool Co.

Proof of purchase date required

This warranty does not apply to machines and/or components which have been altered, changed or modified in any way, or subjected to use beyond seller recommended capacities and specifications. In no event shall seller be liable for labor costs expended on such goods or consequential damages. Seller shall not be liable to the purchaser or any other person for loss, downtime, or damage directly or indirectly arising from the use of the goods from any other cause. The Cleveland Steel Tool Co. reserves the right to make improvements and design modifications to the machine without prior notice.

Company Name

Date of Purchase _____ **Serial #** _____



Handy-Mag II

SAFETY PRECAUTIONS

1. The operator of this machine should thoroughly understand this manual before starting any operation.
2. The area around the machine should be well lit, dry, and free from obstructions.
3. Wear eye and ear protection at all times.
4. All maintenance and repair work should be performed by a person familiar with the machine.
5. Do not use Handy-Mag II drilling machines on surfaces or materials being welded. Doing so can damage the machine's electrical components.
6. Disconnect the power from the machine before performing any maintenance or repair work. Turn power switch to the OFF position when changing tooling.
7. Always disconnect from the power source before moving. Be sure switches are off before connecting to a power source.
8. Magnet will not hold properly on thin materials (under 3/8") or rough and dirty surfaces.
9. Always use safety chain and chip shield provided with machine.
10. Assure all tooling is properly held in position before starting any operation. Periodically check all tooling for tightness.
11. Do not use dull or broken cutters.
12. Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and if damaged, have repaired by authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean and free from oil and grease.
13. Beware of slugs ejected at end of cut. They become HOT during the cut.
14. Keep bottom of magnet burr free and clear of chips and debris.
15. Drilling stacked material requires a special STACKED GEOMETRY cutter.

General Information

The Cleveland Steel Tool Handy-Mag II is a compact magnetic base drilling system that features:

- A capacity up to 2-1/16" diameter through 3" material
- Drilling stacked material requires a special STACKED GEOMETRY cutter.
- Positive slug ejection system
- Internal cutter lubrication for increased tool life
- Powerful 2 speed motor
- Adjustable motor slide ways
- Complete coolant system
- Safety Chain
- Chip shield
- Rugged carrying case

SPECIFICATIONS:

- Annular cutter range: 7/16" thru 2-1/16"
- Annular cutter depth range: 3"
- Twist drill capacity (with optional chuck & adapter): 5/8"
- Weight: 48 lbs.
- Height: Rack fully raised- 24"; Rack lowered- 20"
- Voltage: 110v AC, 15 amps, 1800 watts, grounded & double insulated
- Frequency: 50-60 HZ
- RPM No Load: 380 & 500 RPM
- Magnetic Holding Deadlift: 3500 lbs.
- Magnet dimensions: 3" x 8" base

Grounding Instructions

Warning:

Improperly connecting the grounding wire can result in the risk of electrical shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with tool. Never remove the grounding prong from the plug. Do not use tool if the cord or plug is damaged. Have it repaired before using. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician. The Handy-Mag II must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances. The rigid ear or lug extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box or receptacle. Simply remove the center screw from the outlet, insert the adapter and reattach the screw through the green grounding ear to the outlet. If in doubt of proper grounding, call a qualified electrician.

Extension Cords

Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool's plug. Replace or repair damaged cords. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. See table for the correct size to use depending on cord length and nameplate amperage rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Drip Loop: To help prevent fluids from traveling the power cord and contacting the power source, tie a drip loop in the power cord.

Getting Started

Your Handy-Mag II package should contain the following parts:

QTY	Part#	Description
1	HMII	Handy-Mag II
1		Carrying Case
1		Owners Manual
2	ME5091	Flat Washer
2	ME5092	Butterfly Bolt (M6 x 10)
1	ME5098	Coolant Tank
1	ME5046	Coolant Tube
1	ME5096	Chip Guard
1	ME5093	Wrench (M8)
1	ME5094	Hex Wrench (M2.5)
1	ME5095	Hex Wrench (M4)
3	ME5071	Crank Handle
1	ME5097	Safety Chain

Attach 3 crank handles (ME5071) to the crank spindle (ME5072). Attach the coolant tube (ME5046) to the coolant tank (ME5098). Attach the coolant tank to the Handy-Mag II to the top of the slide with screw provided. Attach open end of the coolant tube to the coolant connector (ME5010).

What You Need To Know

Type of material to be drilled, Brinell or Rockwell hardness, material thickness and position should all be determined to ensure proper selection of Handy-Mag II cutting tools, RPM, coolant and drilling time.

Remove any excessive mill scale or rust from the surface to be drilled.

When drilling materials under 3/8" thick, an additional steel plate may be required to achieve proper magnetic adhesion.

Drilling stacked material requires a special STACKED GEOMETRY cutter.

Material that has been flame cut may have become heat treated and therefore difficult to drill. Avoid drilling near such areas whenever possible.

Drilling with the Handy-Mag II in horizontal positions requires a special lubrication for Handy-Mag II cutters. Consult The Cleveland Steel Tool Co. for details.

Caution!

Do not use the Handy-Mag II for work other than it's intended use. The Handy-Mag II is designed to work only with the tooling provided. Use of other tooling may cause damage to the drill, cause personal injury and void the warranty.

Before the Cut

1. Select the correct pilot pin and place it in the cutter shank from the rear.
Align the flats on the cutter shank with the arbor body set screws.
Insert cutter shank into the arbor body.
2. Tighten the set screws securely on the cutter shank flats. Note: The set screws should be recessed in the arbor body when tight.
3. Attach chip guard (ME5096) to machine with butterfly bolts (ME5092).
4. Fill coolant tank with a water soluble coolant.
5. Place Handy-Mag II machine on work piece with pilot pin over the center of the hole to be drilled.



CAUTION: Always use safety chain. Failure to do so could result in personal injury and/or damage to the Handy-Mag II drilling machine.



6. Safety chain must be securely fastened to machine and around the work being drilled.
NOTE: Safety chain is intended to secure drill to work piece in case of emergency, such as a loss of power to the magnetic base.
7. Connect machine to power source.
8. Open coolant tap (ME5045) to release coolant. **NOTE:** Coolant flow starts when pilot pin contacts the work surface. Coolant flow can be stopped by lifting pin off work surface.

Gear Selection

Gear	No Load RPM	Cutter Size
1	380	1-9/16" to 2-1/16"
2	500	7/16" to 1-1/2"

Changing the Arbor to Optional Drill Chuck

To convert the Handy-Mag II from annular cutters to twist drill chuck:

1. Loosen the 2 hex screws located at the top of the arbor (ME5002) with hex wrench supplied and release the arbor.
2. Use the included hex wrench to remove the 3 arbor support screws and remove the arbor support bracket (ME5088)
3. Fit chuck adapter (MEHTA46) and drill chuck (MEHTA51) to Handy-Mag II in place of the arbor.

NOTE: Store arbor and arbor support bracket in the carrying case. To convert back to annular cutters, reverse the process.

Making the Cut

CAUTION: Always use chip shield.

1. Move magnet switch to “On” position, panel lamp should illuminate indicating power is on. Magnetic base should be firmly secured to work piece at this time.
2. Start drill motor by depressing green motor “On” button.
3. Using the feed handles, advance cutter into material until Handy-Mag II cutter has established an external groove in the material, during the remainder of cut apply, smooth constant pressure without overloading motor.

⇒ NOTE: Handy-Mag II cutters are designed for uninterrupted cutting, chips are evacuated during the cut. Do not peck drill when using Handy-Mag II cutters.

- CAUTION: If drill motor should stall or stop before a complete cut is made, always shut the motor off and remove the cutter from the hole before attempting to restart the motor. Failure to do so could result in personal injury and/or damage to the Handy-Mag II drilling machine or cutter.**

After the Cut

1. After the Handy-Mag II cutter has finished the cut, the “slug” or uncut center portion of material will be expelled when motor is returned to the full up position. Beware of slugs ejected at end of cut. They become HOT during the cut.
2. Return the machine to a full upright position and depress red motor “OFF “ button. Wait until motor completely stops.
3. Move magnet switch to “OFF” position when ready to release magnetic base from work surface.

Maintenance

Keep tool and electrical cord clean. In case of electrical or mechanical malfunction, immediately turn off tool and disconnect power supply.

1. Adjusting motor slide tension:

The motor slide assembly may become loose and require adjustment after the machine has been in service. Wrenches are provided in the tool kit for performing adjustments.

- Using the feed handles, position motor and slide assembly in the full up position.
- Loosen 6 jam nuts (ME5055) and equally tighten 6 adjustment screws (ME5056) using 2.5mm and 8mm combination wrench and hex key.
- Do not over tighten adjustment screws. Excessive slide tension can damage the machine. Properly adjusted, the motor/slide assembly should have no side to side movement and remain positioned without drifting down.

2. Inspecting magnet base:

Keep bottom of magnet clean, free of chips, burrs, nicks, oil and other contaminants. Inspect magnet face to insure surface is flat and square. A worn magnet surface dramatically reduces magnetic holding force.

3. Lubricating motor slideways:

Periodically clean and lubricate motor slide ways with lithium base grease.

4. Inspecting arbor support system:

Visually inspect arbor, sleeve and support bracket for wear.

⚠ Caution: Always remove cutter from arbor body before measuring runout, never use hands or fingers to rotate arbor or motor spindle.

5. Checking arbor runout:

Arbor runout should not exceed .0035 per revolution. This is most accurately measured by placing a dial indicator needle inside of arbor bore and rotating arbor while observing indicator.

6. Motor brush inspection:

Excessive sparking may indicate the presence of dirt in the motor or worn out carbon brushes. Periodically check brushes for wear and replace (ME5041) when they reach 1/4".

⚠ CAUTION: Never operate machine with worn or missing parts.

Troubleshooting

1. Magnetic base is not holding securely:

- Material being drilled must be a minimum of 3/8" thick for proper magnetic adhesion.
- Surface of material should be free of chips, debris, rust and mill scale.
- Verify size of cutter. It should not exceed machines capacity.
- Check magnet face for unevenness, nicks and burrs.
- Welding equipment should not be connected to material being drilled.

2. Drill motor is running, arbor and spindle is not turning:

- Woodruff key (ME5006) could be sheared.

3. Motor slows when drilling:

- Check extension cord requirements if one is being used. (pg. 4)
- Excessive downfeed pressure during drilling cycle will cause motor to slow and overheat.
- The cutting tool may need to be resharpened.

4. Coolant system not working:

- Coolant system is gravity dependent. Machine must be in an upright position to operate properly.
- Consistency of coolant mixture is too thick.
- Check for the correct pilot pin.

5. Slugs not ejecting from cutter:

- Lack of coolant can cause slugs to expand in cutter bore.
- Check for correct pilot pin.
- Check for broken internal arbor parts.
- * Drilling stacked material requires a special STACKED GEOMETRY cutter.

6. Breaking cutters:

- Coolant must be applied to the interior of the cutter.
- Excessive downfeed pressure when cutter contacts work surface can cause breaks.
- Confirm material hardness.
- Drilling stacked material with improper cutter. (Drilling stacked material requires special cutters)
- Dull cutters and dull or chipped cutting edges require excessive feed pressure resulting in breakage.
- Excessive arbor runout. (see pg.8 for maintenance)
- Motor spindle is bent or there is a worn arbor sleeve.
- Motor slide is improperly adjusted. (see pg.8)

7. Oversized or rough holes:

- Insufficient coolant.
- Excessive feed pressure.
- Dull cutter.
- Worn support bracket roller bearing or arbor body sleeve.
- Bent motor spindle.
- Motor slide improperly adjusted.

Parts List

Item	Description	Part No.	Qty Req.
1	Set Screw M5x6	MEX5001	2
2	Arbor Shaft-Complete (inc 104-110)	MEX5002	1
3	Water Seal	MEX5003	1
4	Spring	MEX5004	1
5	Main Drive Spindle	MEX5005	1
6	Woodruff Key M5x5x16	MEX5006	1
7	Oil Seal 22x32x7	MEX5007	2
8	Screw M5x80	MEX5008	4
9	Gear Case	MEX5009	1
10	Coolant Connector	MEX5010	1
11	Selector Spring	MEX5011	1
12	Selector Slider	MEX5012	1
13	Screw	MEX5013	1
14	Selector Fork	MEX5014	1
15	Bearing 6003ZZ	MEX5015	2
16	Snap Ring R-35	MEX5016	1
17	Circlip S-17	MEX5017	1
18	Driven Gear 39T	MEX5018	1
19	Circlip S-14	MEX5019	1
20	Bearing HK0810	MEX5020	3
21	Woodruff Key M5x5x50	MEX5021	1
22	Idler Gear Pinion	MEX5022	1
23	Idler Gear 30x33T	MEX5023	1
24	Bearing HK1010	MEX5024	1
25	First Gear Pinion 10x13T	MEX5025	1
26	Woodruff Key M4x4x10	MEX5026	1
27	First Gear 29T	MEX5027	2
28	Gear Plate	MEX5028	1
29	Bearing 609ZZ	MEX5029	1
30	Armature 110V	MEX5030	1
31	Screw M5x60	MEX5031	2
32	Spring Washer M5	MEX5032	2
33	Bearing 6200ZZ	MEX5033	1
34	Field Coil 110V	MEX5034	1
35	Motor Housing	MEX5035	1
36	Cord Clip	MEX5036	2
37	Screw M4x14	MEX5037	2
38	Motor Cable	MEX5038	1
39	Cable Protector Sheath	MEX5039	1

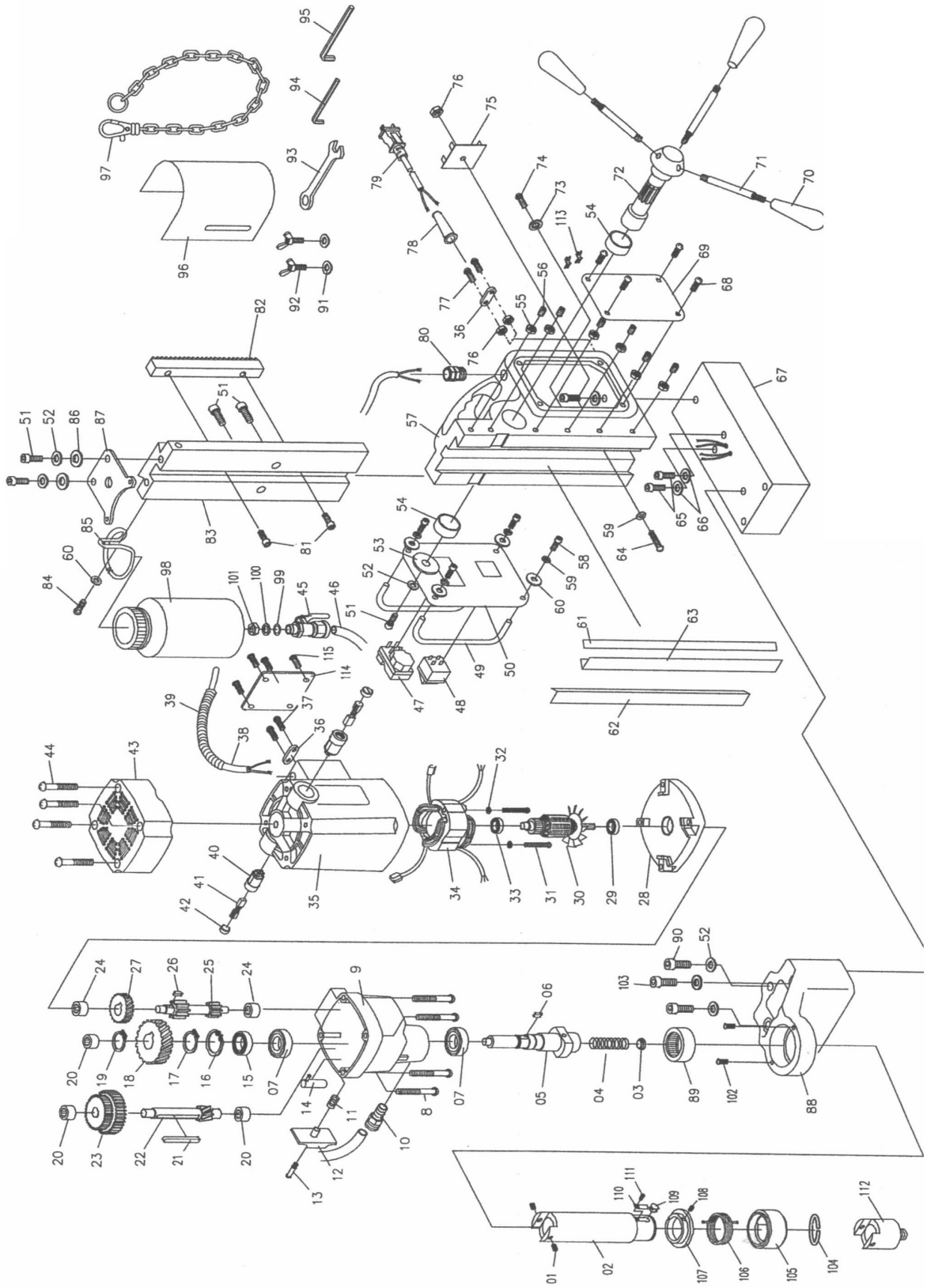
Parts List

Item	Description	Part No.	Qty Req.
40	Brush Holder	MEX5040	2
41	Carbon Brush	MEX5041	2
42	Brush Cap	MEX5042	2
43	Motor Tail Cover	MEX5043	1
44	Screw M5x45	MEX5044	4
45	Coolant Tap	MEX5045	1
46	Coolant Tube	MEX5046	1
47	Motor Switch 110V	MEX5047	1
48	Magnet Switch	MEX5048	1
49	Guard Bar	MEX5049	2
50	Switch Panel	MEX5050	1
51	Hex Bolt M8x16	MEX5051	5
52	Spring Washer M8	MEX5052	5
53	Flat Washer 40x8x2.5	MEX5053	1
54	Bushing 32x38x12	MEX5054	2
55	Nut M5	MEX5055	6
56	Set Screw M5x25	MEX5056	6
57	Body Assy.	MEX5057	1
58	Hex Bolt M4x16	MEX5058	4
59	Spring Washer M4	MEX5059	4
60	Flat Washer M4	MEX5060	4
61	Gib Tensioner	MEX5061	1
62	Gib Strip Left	MEX5062	1
63	Gib Strip Right	MEX5063	1
64	Screw M4x20	MEX5064	1
65	Hex Bolt M6x20	MEX5065	3
66	Spring Washer M6	MEX5066	3
67	Electro-Magent	MEX5067	1
68	Screw M4x8	MEX5068	4
69	Side Panel	MEX5069	1
70	Handle Grip	MEX5070	3
71	Crank Handle	MEX5071	3
72	Crank Spindle	MEX5072	1
73	Star Washer M4	MEX5073	1
74	Screw M4x6	MEX5074	1
75	Bridge Rectifier	MEX5075	1
76	Nut M4	MEX5076	3
77	Screw M4x25	MEX5077	2
78	Cord Armor	MEX5078	1

Parts List

Item	Description	Part No.	Qty Req.
79	Power Supply Cord	MEX5079	1
80	Conduit Gland	MEX5080	1
81	Hex Bolt M8x20	MEX5081	2
82	Gear Rack	MEX5082	1
83	Slide Plate	MEX5083	1
84	Screw M5x15	MEX5084	1
85	Coolant Tank Bracket	MEX5085	1
86	Flat Washer M8	MEX5086	2
87	Motor Fixing Plate	MEX5087	1
88	Arbor Support Bracket	MEX5088	1
89	Bearing HK3516	MEX5089	1
90	Hex Bolt M8x70	MEX5090	2
91	Flat Washer M6x13x1	MEX5091	2
92	Butterfly Bolt M6x10	MEX5092	2
93	Wrench M8	MEX5093	1
94	Hex Wrench M2.5	MEX5094	1
95	Hex Wrench M4	MEX5095	1
96	Chip Guard	MEX5096	1
97	Safety Chain	MEX5097	1
98	Coolant Tank	MEX5098	1
99	O-Ring 7.5x1.5	MEX5099	1
100	Flat Washer 12x24x2.5	MEX50100	1
101	Nut	MEX50101	1
102	Screw M4x10	MEX50102	2
103	Hex Bolt M8x60	MEX50103	3
104	Circlip	MEX50104	1
105	Collar	MEX50105	1
106	Return Spring	MEX50106	1
107	Spring Retainer Ring	MEX50107	1
108	Set Screw M3x12	MEX50108	1
109	Lock Pin	MEX50109	1
110	Flat Spring	MEX50110	1
111	Screw M3x6	MEX50111	1
112	Chuck Adaptor	MEXHTA46	1
113	Electrical Connector	MEX50113	2
114	Motor Back Cover Plate	MEX50114	1
115	Flat Head Screw	MEX50115	4

Parts Breakdown



Handy-Mag II

