

**MODEL MANTA IV
CORE DRILL
OWNER'S MANUAL
PARTS LIST &
OPERATING
INSTRUCTIONS**



CAUTION

**READ SAFETY
AND GENERAL
INSTRUCTIONS
CAREFULLY
BEFORE USING
SAW FOR THE
FIRST TIME.**



**PLEASE RECORD THE SERIAL NUMBER OF
YOUR SAW IN THIS BLOCK.**

SERIAL NUMBER

**FOR YOUR ONE (1) YEAR WARRANTY TO
BE EFFECTIVE, COMPLETE THE WARRANTY
CARD (INCLUDE THE SERIAL NUMBER) AND
MAIL IT IN AS SOON AS POSSIBLE.**

Manual Part No. 164588
Revision 08/06

MK-MANTA IV

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IMPORTANT NOTICE

Before placing equipment into operation, record the following information. As you will need it when ordering parts or for customer service.

Serial Number:		Model:
Manufacturer:	Motor Model:	
Address:		
City:	State:	Zip:
Telephone Number:		

SAFETY SYMBOLS AND DEFINITIONS

Safety Messages

A safety message informs you about potential hazards that could hurt you or others. Each safety message is preceded by one of the three words: Danger, Warning, or Caution.

 **WARNING** You CAN be KILLED or SERIOUSLY injured if you don't follow instructions.

 **CAUTION** You CAN be injured if you don't follow instructions.

Additional information as to the nature of the hazard is provided by the following hazards symbols which appear throughout the manual in conjunction with safety message alert symbols.

Damage Prevention Messages

Other important messages that are designed to help prevent damage to your MANTA IV Core Drill, other property, or the environment are preceded by the word notice.

Notice Your MANTA IV Core Drill or other property could be damaged if you don't follow instructions.

Hazard Symbols



Please read the instructions for use prior to operating the machine for the first time.



Warning Triangle



Wear Eye Protection



Wear Head Protection



Wear Breathing Protection



The Use of Ear Protection is Mandatory



Wear Safety Shoes



Wear Appropriate Clothing



Wear Protective Gloves

General Safety Instructions for the MANTA IV Core Drill



For your safety!

These safety precautions should be followed at all times. Failure to follow these safety precautions could result in injury to yourself and others.

This manual has been prepared to provide complete instructions for operation and maintenance of the MANTA IV CORE DRILL. For additional instruction concerning motor operations and care refer to the motor manufacturers instructions. **Before using this equipment, ensure that the person operating this machine has read and understands all instructions in this manual.** Precaution is the best insurance against accidents. Read and observe all safety precautions.

If the power cord gets damaged or cut during use, do not touch the live wires. When this happens pull the plug out of the socket immediately. Never use the tool with a damaged cable.

When drilling in ceilings or walls make sure you will not cut through electrical mains, gas or water pipes. Use metal detection devices if needed. Prior to start of your work, make sure to determine the exact drilling position so you do not drill on walls that have electrical connections.

If drilling through ceilings, secure the piece of material that will be cut out because it might fall downward.

The tool must not be used in rainy or wet conditions.

DO NOT operate this machine unless you have read and understood this operator's manual.

DO NOT leave this machine unattended while the motor is running.

DO NOT work on this machine while the motor is running.

DO NOT operate this machine when you are tired or fatigued.

DO NOT operate the machine if you are uncertain of how to run the machine.

DO NOT use damaged equipment.

DO NOT operate this machine in the vicinity of anything that is flammable. Sparks could cause a fire or an explosion.

DO NOT operate this machine unless you are specifically trained to do so.

DO NOT lay power cords in or near the water.

DO NOT operate this machine while using drugs or alcohol.

DO NOT use this machine standing on a ladder.

DO NOT drill into materials that contain asbestos.

DO NOT touch rotating parts.

DO NOT allow anybody under 16 years of age run the machine.

Modifications to this tool are prohibited.

If the machine stops for any reason, switch it off to avoid any sudden starts.

This machine has to go through visual inspection by a specialist on regular intervals.

When using water as coolant, DO NOT allow water to get into the motor.

Overhead drilling is allow only when suitable safety measures are taken (water collection)

Stop working if water starts dripping from overrunning bore hole. Take machine to be serviced.

If machine breaks down do not turn it on if the drill bit can be turned.

Wear eye, breathing, ear and head protection.

Contents

The carton box contains the following items:

- Diamond Core Drill
- Ball Valve
- GFCI protective switch
- Warranty Card
- Rig
- Water Connector
- User Manual

Application for Intended Purpose

- The diamond core drill is intended for professional use and may be used only by instructed personnel.
- The tool may be used only for wet cutting of concrete stone and masonry with an appropriate drill bit.
- The tool needs to be mounted before use.

MANTA IV Core Drill Technical Data

Technical data for the MANTA IV is listed in TABLE 1.

Diamond Drilling Unit	MANTA IV
Nominal Voltage	110/120 V ~
Rated Current	18 Amp.
Frequency	40-60 Hz
No-Load Speed	700 rpm
Max. Drilling Diameter	6 inch.
Collet	1 1/4" UNC
Net Weight	About 15.5 kg

TABLE 1

Set Up and Operating Instructions

Electrical Connections

For protection purposes the machine can only be operated when used with a GFCI. The machine is standard equipped with a GFCI switch in the cord which allows connecting the unit direct to a grounded socket.

Attention! The GFCI protective switch must not come in contact with water.
GFCI protective switches must not be used to switch the tool ON and OFF.
Check for proper function by pressing the TEST button before starting your work.

Use only three-wire extension cord with ground wire of sufficient gage. The usage of a smaller wire could lead to excessive overheating of the motor and the cable.

Extension Cord Minimum Gage for Length				
Volts	Total Length of Cord in Feet			
120 V	25	50	100	150
	AWG	AWG	AWG	AWG
	14	12	Not Recommended	

TABLE 2

Water Connections

Connect the tool to the water supply system or a water pressure vessel.

Attention! The maximum water pressure should not be more than 43 psi. Always make sure that the machine runs with enough water, as the seals can be damaged when running dry. This could lead to leakage of water into the gearbox housing.

Overload Protection

The MANTA IV is equipped with a mechanical and electronic overload protection. This is designed to protect the operator, the motor and the drill bit.

Mechanical: If the drill bit is suddenly blocked, a clutch will slip to disengage the bit from the motor.
Electronic: In case of overload due to a large feed force, the motor will be automatically switched off. After discharge, switch OFF and ON again and drilling can be continued.

Set Up Instructions (cont...)

Safety Clutch

The slip clutch should absorb shock and excessive stress. It is the drill's aid and not an absolute protection; therefore, you have to drill carefully. In order to keep in good condition, the clutch should slip for a very short time (max. 2 seconds) in each case. After excessive wearing, the clutch can be readjusted by an authorized service shop.

Fastening the Drill Rig

Use a concrete anchor. Use either a 1/2 or 5/8 concrete anchor to secure the base to the work surface. Always be sure to level the rig. Using a concrete anchor, insert a bolt through the slot located on the base and tighten the bolt firmly in the anchor.

It is essential to always secure the rig to the work surface to help prevent personal injury and also to protect the rig. An unsecured rig could rotate during drilling and possibly cause injury. It could also cause the bit to chatter against the work surface or bind in a hole, which can fracture the diamond segments.

Drilling

Adjust the flow of water with the ball valve to fully flush any excess material out of the bore hole.

If mud is depositing around the bore hole, increase the water flow.

In case the drill bit does not cut properly, use a grinding stone to sharpen it.

Make sure the drill bit does not vibrate.

Advance the tool according to bit diameter and machine power.

In case the drill bit gets jammed do not try to release it by switching the tool ON and OFF. Switch the tool OFF immediately and remove the drill bit using an appropriate open-end wrench. Pull the tool out from the hole with caution.

Deep Drilling

When drilling holes that are longer than the core bit, follow the steps below.

1. Begin drilling the hole as usual. When you have drilled to the length of the bit, retract the bit from the hole and turn off the motor and water as usual.
2. Break off the core by driving a chisel or slender wedge into the circular kerf. Remove the core using core tongs, bent music wire or anchor bolts.
3. After removing the core, insert the bit carefully into the hole, attach a bit extension to the bit and core drill rig, then continue drilling as usual.

Drill Bits

The diamond drill bits with a 1-1/4" UNC female thread can be screwed directly on the working spindle. Always use drill bits that are appropriate for the material you will be drilling. You can extend the life of your machine by using drill bits that are not damaged or deformed. Ensure that enough diamond is exposed in every segment of the drill bit in order to make the drilling more effective.

Drill Bit Changing

The drill bit has a right-hand thread. Use an open-end wrench SW 32 to hold the spindle in place.

Never hit the drill bit in order to remove it as the machine will be damaged.

If you want to remove the drill bit in an easier way, use grease in the drill bit thread.

Also, for easy removal of drill bit, a copper ring can be placed between the spindle and the drill bit.

MAINTENANCE

! WARNING Unplug the machine from its power source before performing any maintenance or repairs.

Machine:

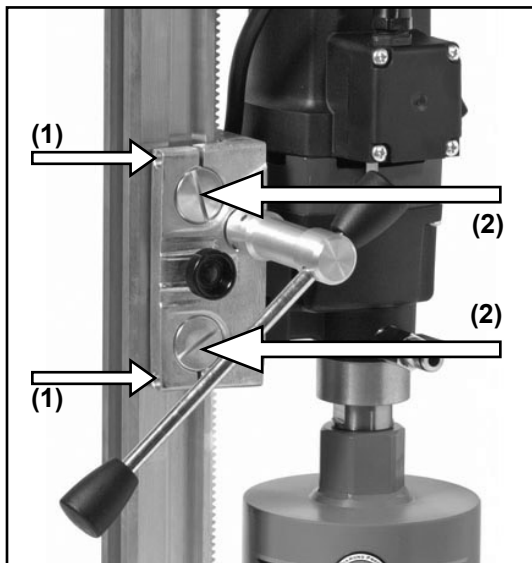
All repairs are to be performed by qualified and experienced personnel.
Due to its design, the machine requires a minimum of care and maintenance.
Follow the steps below to maintain your machine in good working conditions.

- Clean the machine after every use.
- Grease the drill bit thread on a regular basis.
- Make sure that the ventilation slits are clean and open.
- Make sure that water does not get into the motor during the cleaning process.
- Replace the gear oil after the first 150 hours of operation to increase the life of the tool.
- After 200 hours of operation, make sure to replace the carbon brushes. This needs to be done by a trained professional.
- The following components need to be checked in a quarterly basis: power cord, switch and plug.

Drill Stand:

- Always keep the drill stand and drill support clean. Pay special attention to the gear and the 4 sliding pieces in the holder of the machine.
- In order to allow free movement of the pinion shaft, keep well lubricated.

If the position of the holder has changed, it can be readjusted as follows:



- Loosen both Allen screws (1) using a 5 mm. Hexagon wrench
- Adjust the two positioning screws (2) with a screwdriver.
- Tighten the Allen screws (1) and check whether the holder moves smoothly.

Noise Emission



The A-rated acoustic pressure level of this machine is typically less than 70dB (A).
The level of acoustic pressure on a work site could exceed 85 dB (A). In cases when noise exceeds 85 dB (A) it is necessary to wear ear protection!

Hand and arm vibration is typically less than 8.2 ft/s².
The level of noise emission is measured after EN 50 144.

MAINTENANCE (cont...)

In Case of Malfunction

In case of malfunctions switch the machine OFF and pull the plug from the power source. Any repairs on the electric parts of the machine are to be performed by a trained professional.

California Proposition 65 Message:



Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contain chemicals known [to the State of California] to cause cancer, birth defects or other reproductive harm.

Some examples of these chemicals are:

- Lead, from lead-based paints
- Crystalline silica, from bricks and cement and other masonry products and
- Arsenic and chromium, from chemically treated lumber

For further information, consult the following sources:

<http://www.osha-slc.gov/SLTC/silicacrystalline/index.html>

http://www.oehha.org/prop65/out_of_date/6022kLstA.html

Your risk from these exposures varies depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

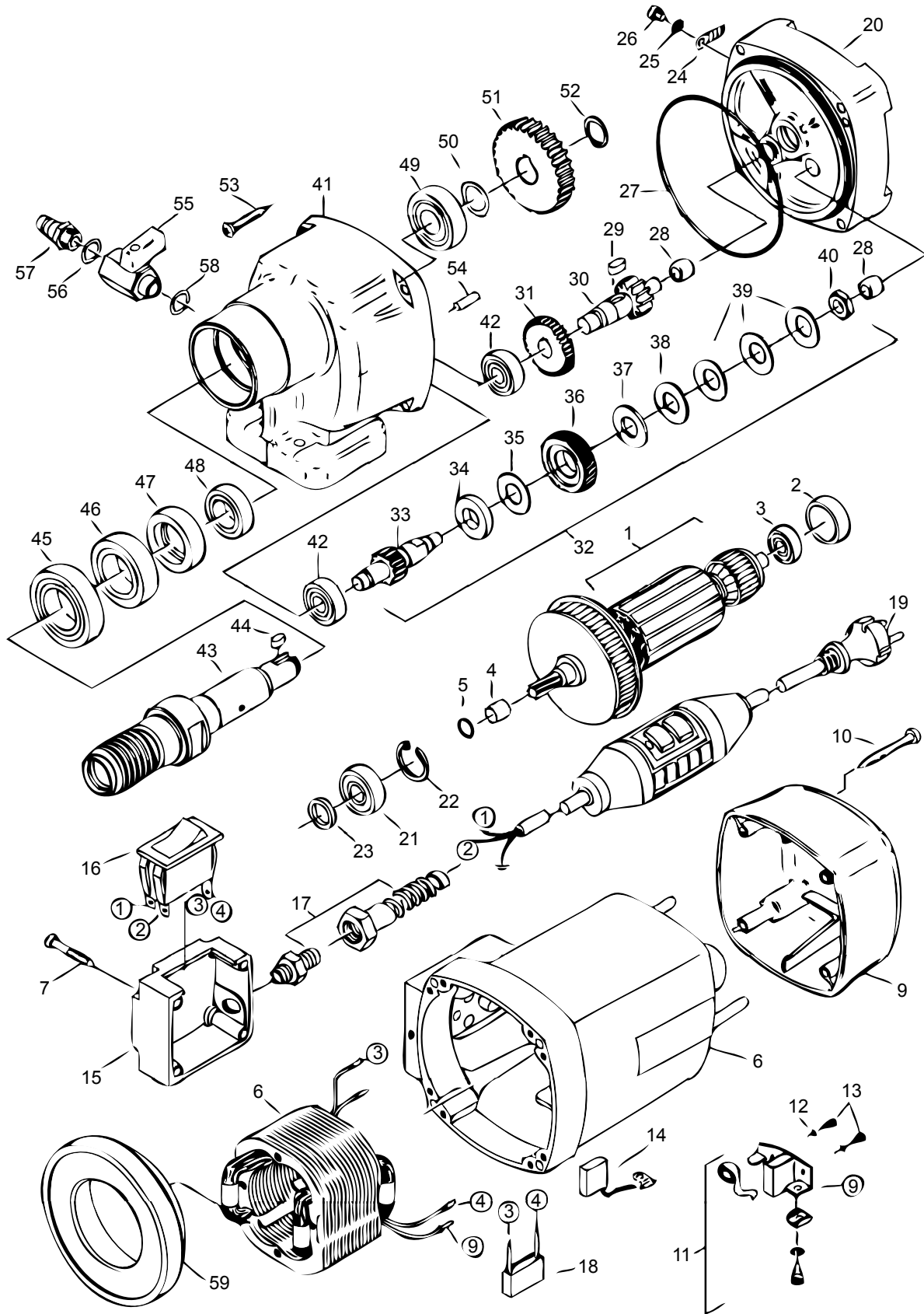
TROUBLESHOOTING

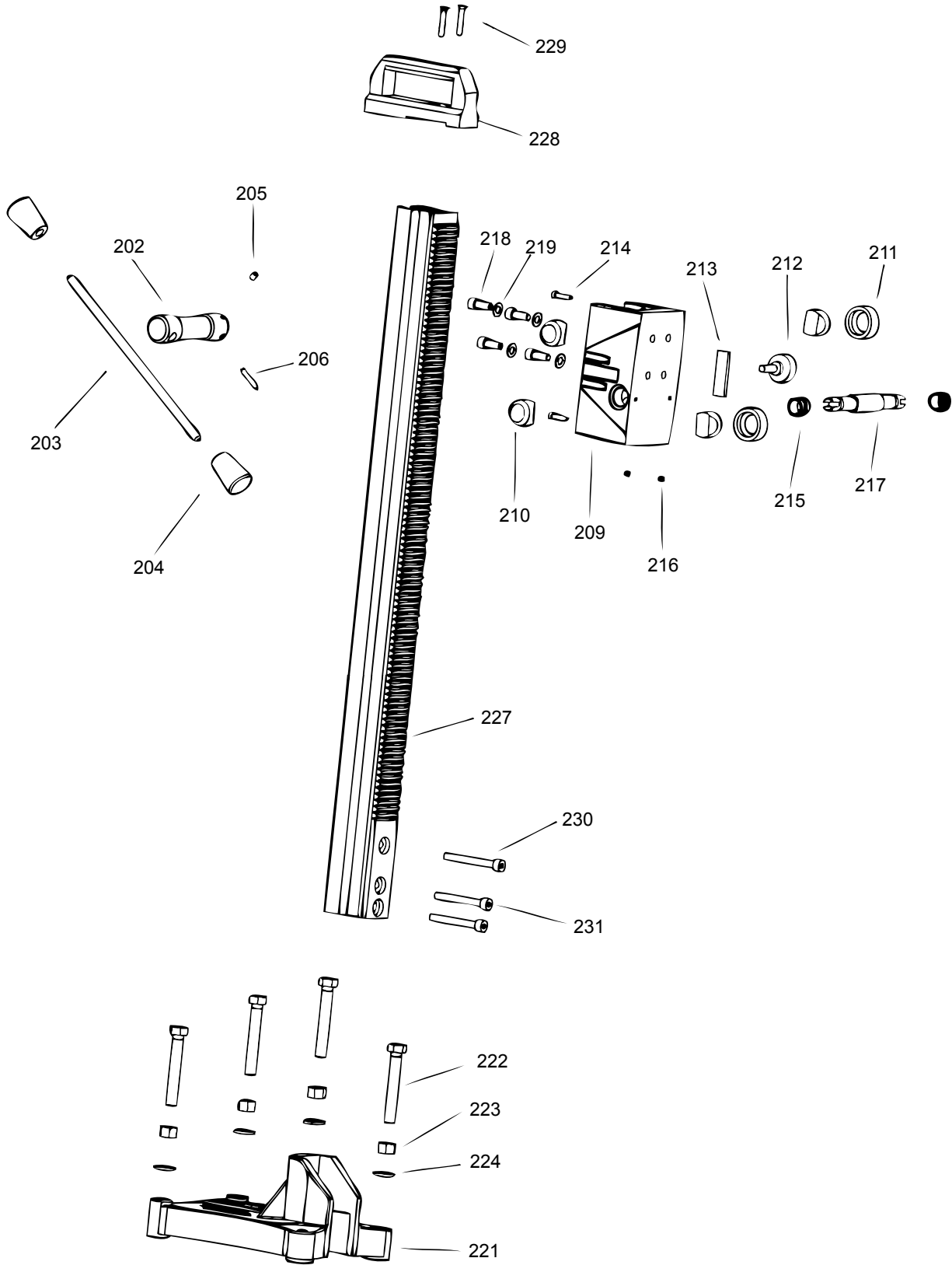
PROBLEM	WHAT TO DO?	INDICATION	CAUSE	SOLUTION/RECOMMENDATIONS	
Low penetration rate under prevailing drilling parameters	1. Check fluid return.	Fluid not muddy. Evidence of steel cuttings	Drilling rebar	Adjust drilling parameters to recommendations for rebar.	
	2. Check motor speed range		Speed not correct for the bit size used	See recommended speeds	
	3. Check bit wear		Bit worn out.		Replace with new bit
			Diamond without exposure. (flush with matrix)	Insufficient bit load	Increase bit load
				Rotate with high RPM on rebar	Reduce RPM, or sharpen bit
			Loose material at bottom of hole.	Break core, clean bottom of hole or reduce RPM and drill with increased bit load	
			Face of bit plugged with cuttings.	Not enough fluid pumped. Cuttings burnt to matrix. Diamonds prevented from cutting.	Clean bit face by sharpening methods such as drilling at low RPM in a concrete block 3/8" deep max. Increase water flow rate.
			Face of bit covered with steel. Steel cuttings stick to bit face.	Steel cuttings stick to bit face. Diamonds prevented from cutting.	Clean bit face by drilling in concrete block. Reduce RPM.
			Wearing of diamonds.	Bit load too low	Increase bit load
	Bit speed too high	Use lower speed: Increase bit load			
Heavy wear at Steel Tube		Deep grooves.	Worn or open guide ways on cradle. Bore-hole is getting undulated	Adjust guidance on carriage.	
			Protruding steel. pindle is offset. Bit out of true.	Adjust guidance on carriage Nicks or dirt on outting faces	
		Heavy Wear	Bit is deformed	Replace bit	
			Poor cleaning of abrasive cuttings.	Improve flushing.	
			Crown clearance worn out.	Replace bit	
No return of fluid	Check where fluid is leaking.			If leaking can be tolerated, continue drilling with increased attention.	
Bit Stuck	1. Try to raise bit, if impossible then, 2. Stop rotation	Loose material (cut steel or aggregates) is blocking between core and bit or between bore-hole and bit.		Step 1. Apply wrench and rotate bit in both directions while bit is under tension. If not successful:	
				Step 2. Try to over drill a hole slightly larger than the stuck bit.	
		Drill moved during drilling (poor fastening)		Disconnect bit and remove break core. Start over with improved fastening of machine.	
Shear Pin Fail	1. Stop rotation 2. Raise bit.	Bit deviates, guide ways on cradle have too much clearance.		Disconnect machine, adjust guidance.	
		No clearance between tube ID or OD and crown ID or OD		Replace bit.	
		Drill impacted to stall at lower speeds		Use recommended speed for the bit diameter used. Raise bit when it begins to load down. Feed bit slowly when chattering begins	

TABLE 3.

Warranty Information

If within one (1) year from the date of purchase, this MK Diamond drill fails due to a defect in material or workmanship, MK will repair it, free of charge, by returning the unit to the dealer where it was purchased. This warranty DOES NOT cover normal wear or damage resulting from operator abuse. In no event shall MK Diamond Products, Inc. be liable for consequential damages arising out of the failure of any product if operating improperly. Selected components such as motors/engines are excluded from this warranty and are subject to the manufacturer's warranty. Each manufacturer carries its own warranty conditions which are listed on the literature accompanying the motor/engine at the time of purchase. MK Diamond Products may act as a warranty station for the motor/engine repairs based on individual agreement with the manufacturer. This warranty is in lieu of all other warranties expressed or implied.





MANTA IV CORE DRILL PARTS LIST

PARTS LIST:

INDEX	DESCRIPTION	ITEM NO.	MK NO.
1	Rotor Complete	73631100	164447
2	Bearing Seal	73320315	164448
3	Ball Bearing See 100 579	80410021	164449
4	Bearing Ring	80420160	164450
5	C-Clip	80200748	164451
6	Field, 110 Volt	73511150	164452
7	Screw 4.2x16	80201292	164453
8	Motor Housing	73511200	164454
9	Cap	80900189	164455
10	Screw Replaces 050.0112	80201267	164295
11	Carbon Brush Holder	80201199	164283
12	Spring Disk 34	80201385	164456
13	Screw CM4x12	80201180	164457
14	Carbon Brush Replaces 8070019	80700040	160724
15	Switch Box	73511630	164458
16	Switch, ETA	80600157	164459
17	Cable Fitting	80600174	164460
18	Condenser-SEE #80500014	80500010	164479
19	Connecting Lead, 110 Volt for EBM 250/2P	73533262	164461
20	Transmission Bearing Plate	7B334610	164462
21	Bearing Replaces 80410101	107 832	164463
22	Locking Ring	80201351	164464
23	Shaft Seal	83000042	164465
24	Protective Grounding Connection	80601189	164466
25	Washer	80200752	164467
26	Screw	80201200	164468
27	O-Ring	83000092	164469
28	Needle Sleeve Replaces 050.0161	80420110	164302
29	Fitting Key	80200600	164470
30	Intermediate Shaft 2	73311500	164471
31	Idler Gear	73311470	164472
32	Clutch Complete	7B334493	164473
33	Intermediate Shaft 1	7B334490	164474
34	Thrust Washer	7B334499	164475
35	Clutch Washer	73331499	164476
36	Clutch Wheel	7B334550	164477
37	Disk	7332L499	164478
38	Driving Washer	73331496	164166
39	Spring Washer	80200716	160338
40	Nut, Hexagon 8m10 x 1	80201007	164069
41	Transmission Case	7B334400	164480
42	Bearing	80410020	164481
43	Spindle	73430420	164482
44	Parallel Key, Hardened	73430496	164483
45	Bearing	80410151	164484
46	Rotary Shaft Seal	83000072	164485
47	Shaft Seal	83000076	164486
48	Rotary Shaft Seal	83000162	164487
49	Bearing Replaces 050.0221	80410130	164488
50	Fitting Washer	80200507	164489

MANTA IV CORE DRILL PARTS LIST (cont...)

51	Spindle Wheel	73311430	164490
52	Snap Ring	80201323	164491
53	Tapping Screw	80201432	164492
54	Notched Pin 5x16	80200580	164493
55	Ball Valve, Mini	83000143	164494
56	Valve Ring-#52662&65205 #9 2126 0140 & 9 2126 0120	251 648	162852
57	Water Valve Replaces 83000124	256 573	164495
58	O-Ring	83000037	164496
59	Air Guiding Ring	73511141	164497
202	Handle Base	796UN740	164498
203	Arm	796UN746	164499
204	Knob	85000193	164500
205	Spring	85000157	164501
206	Pin	80200627	164502
209	Carriage	796UN792	164503
210	Bushing	796UN763	164504
211	Bushing Cap	796UN765	164505
212	Knob	85000158	164506
213	Clamping Piece	796UN779	164507
214	Screw	80201121	164508
215	Bushing	796UN770	164509
216	Set Screw	80200758	164510
217	Pinion	796UN730	164511
218	SCREW	80201147	164512
219	Lock Washer	80201309	164513
221	Base	796UN886	164514
222	Hexagon Screw	80201118	164515
223	Nut	80201014	164516
224	Washer	80201381	164517
227	Column	79620753	164518
228	Handle for Drill Stand	796UN816	164519
229	Screw	80201148	164520
230	SCREW, CYLINDER	80201156	164521
231	Screw	80201114	164522

ORDERING & RETURN INSTRUCTIONS

ORDERING INFORMATION

You may order MK Diamond products through your local MK Diamond distributor or, you may order direct from MK Diamond.

NOTE: There is a \$25.00 minimum order when ordering direct from MK Diamond. All purchases must be made using VISA or Master Card.

When ordering direct from MK Diamond, please have the following information ready before calling:

- The Model Number of the saw
- The Serial Number of the saw
- Where the saw was purchased and when
- The Part Number for the part(s) being ordered
- The Part Description for the part(s) being ordered

All parts may be ordered by calling toll free to – 800 421-5830 or 310 539-5221 and asking for Customer Service. For technical questions, call – 800 474-5594.

RETURN MATERIALS POLICY

To expedite the service relative to the return of a product purchased through MK Diamond, please observe the following:

NOTE: When returning all items, they must have been purchased within the previous twelve (12) months.

- Have the Model Number of the saw
- Have the Serial Number of the saw
- Have the location of where the saw was purchased
- Have the date when the saw was purchased
- Contact Customer Service for approval to return the item(s)
- Obtain a Returned Goods Number (RGA) authorizing the return
- Follow the packaging instructions in the following section
- Ensure your item(s) are prepaid to the destination

For returned items, call toll free to – 800 421-5830 or 310 539-5221 and ask for Customer Service. For technical questions, call – 800 474-5594 or 310 257-2845.

PACKAGING INSTRUCTIONS

- Remove the Blade guard and Support Angle Assembly
- Dry the saw before shipping
- When packing, include the following: Core Drill and accessories.
- Package the unit in its original container or one of comparable size (do not ship the unit partially exposed)
- Ensure all parts are secured in the packaging to prevent moving

AUTHORIZED SERVICE CENTERS

For quicker repair time, you may contact MK Diamond Customer Service, toll free, at 800 421-5830 or 310 539-5221 for the Authorized Service Center closest to you or visit our web site at www.mkdiamond.com. For technical questions, call – 800 474-5594.

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