MK Diamond Products, Inc.

www.mkdiamond.com

MK-MANTA III
OWNER'S MANUAL PARTS LIST & OPERATING INSTRUCTIONS

Revision 202	08.2012
Manual Part# 161117	

Caution: Read all safety and operating instructions before using this equipment. This parts list **MUST** accompany the equipment at all times.

MK Diamond Products, Inc.

INTRODUCTION

Congratulations on your purchase of a MK-Manta III Core Drill. We are certain that you will be pleased with your purchase. MK Diamond takes pride in producing the finest construction power tools and diamond blades in the industry.

Operated correctly, your MK-Manta III Core Drill should provide you with years of service. In order to help you, we have included this manual. This owners manual contains information necessary to operate and maintain your MK-Manta III Core Drill safely and correctly. Please take the time to familiarize yourself with the MK-Manta III Core Drill by reading and reviewing this manual before operating it.

Read and follow all safety, operating and maintenance instructions.

If you should have questions concerning your MK-Manta III Core Drill, please feel free to call our friendly customer service department at: (800) 421-5830.

Regards,

MK Diamond

NOTE THIS INFORMATION FOR FUTURE USE:

MODEL NUMBER:	
SERIAL NUMBER:	
PURCHASE PLACE:	
PURCHASE DATE:	

NOTE: For your (1) one year warranty to be effective, complete the warranty card (including the Serial Number) and mail it in as soon as possible.

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RULES FOR SAFE OPERATION

DANGER

Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following guidelines should always be used when operating the core drill.

SAFETY MESSAGE / ALERT SYMBOLS

A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety alert symbol (⚠) and one of three words: **DANGER**, **WARNING**, or **CAUTION**.

DANGER

You **WILL** be **KILLED** or **SERIOUSLY INJURED** if you do not follow directions.

WARNING

You **CAN** be **KILLED** or **SERIOUSLY INJURED** if you do not follow directions.

CAUTION

You **CAN** be **INJURED** if you do not follow directions. It may also be used to alert against unsafe practices.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury. Other important messages are preceded by the word **NOTICE.**

NOTICE

You can cause **PROPERTY DAMAGE** to your machine if you don't follow directions.

The safety labels should be periodically inspected and cleaned by the user to maintain good legibility at a safe viewing distance. If the label is worn, damaged or illegible, it should be replaced. Contact MK Diamond or your dealer for replacement.

CAUTION

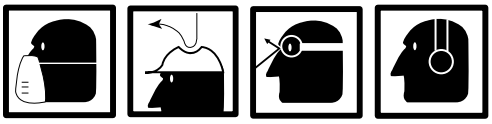
Always keep alert. Do not allow familiarity (gained from frequent use) to cause a careless mistake. Always remember that a careless fraction of a second is sufficient to inflict serious injury.

GENERAL SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual. Read and understand all warnings, instructions and controls on the machine.
- This equipment should not be operated by persons under 18 years of age.

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.

- **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.
- **NEVER** operate this equipment under the influence of drugs or alcohol.
- Whenever necessary, replace nameplate, operation and safety decals when they be come difficult to read.
- **ALWAYS** check the machine for loose bolts and parts before starting.



- **ALWAYS** wear proper respiratory, head, ear and eye protection equipment when operating this machine.
- Use the right tool. Do not use a tool or attachment to do a job for which it is not recommended. Do not alter the tool. Maintain all tools with care for the safest and best performance.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.
- **ALWAYS** insure that the switch is off before plugging unit into electrical power.
- **NEVER** leave the drill running unattended. Turn power off.
- **DO NOT** over reach, maintain control. Keep proper footing and balance at all times. Maintain a firm grip.
- Should any part of this drill become missing or damaged, or any component fail to perform properly, shut off the drill and unplug the power source. Replace the missing, damaged, and/ or failed part before resuming operations.

ELECTRICAL SHOCK

NEVER touch electrical wires or components while the engine is running. They can be sources of electrical shock which could cause severe injury or burns.

ACCIDENTAL STARTS

Before starting the equipment, be sure the ON/OFF switch is in the “OFF” position to prevent accidental starting. Place the ON/OFF switch in the OFF position before performing any service operation.

ROTATING PARTS

Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate the motor with covers, shrouds, or guards removed.

SILICA DUST WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow respiratory precautions.

Use appropriate NIOSH-approved respiratory protection where dust hazard may occur. Paper masks or surgical masks without a NIOSH approval number are not recommended because they do little to protect the worker. For more information about respirator programs, including what respirators have received NIOSH approval as safe and effective, please visit the NIOSH website at:
http://www.cdc.gov/niosh/topics/respirators

Observe OSHA regulations for respirator use (29 C.F.R.§1910.134 and §1503.1).
Visit *http://www.osha.gov* for more information.

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
- Arsenic and chromium, from chemically treated lumber

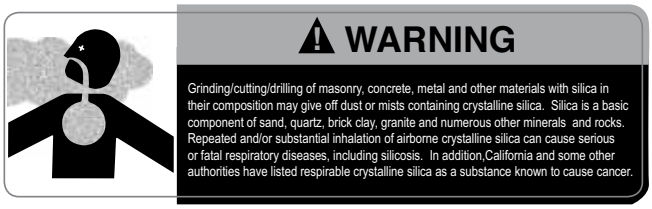
For further information, consult the following sources:
http://www.osha.gov/dsg/topics/silicacrystalline/index.html
http://www.cdc.gov/niosh/docs/96-112/
http://oehha.ca.gov/prop65/law/P65law72003.html
http://www.dir.ca.gov/Title8/sub4.html

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 dust masks that are specially designed to filter out microscopic particles.

SAFETY LABEL LOCATIONS

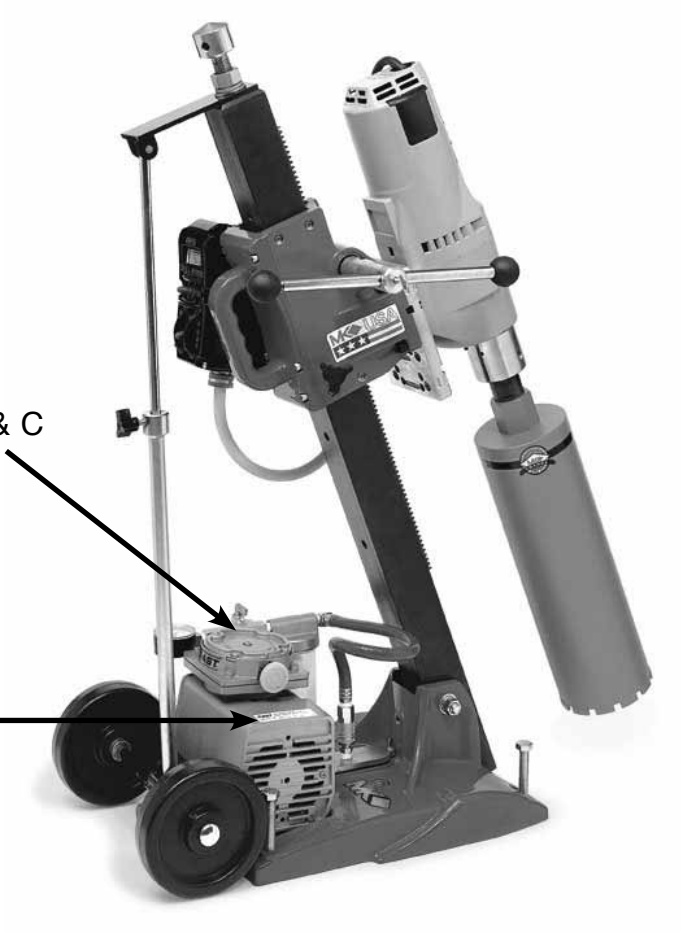
Safety labels contain important safety information. Please read the information contained on each safety label. These labels are considered a permanent part of your saw. If a label comes off or becomes hard to read, contact MK Diamond or your dealer for a replacement.

Label A



Label B

Label C



Decal/Label	Location	Description
A	Base - Top	Warning Silica
B	Vacuum - Top	Service or Warranty
C	Vacuum - Top	Read Manual

MK-MANTA III CORE DRILL

The MK-Manta III Core Drill is a powerful all-purpose drilling rig that is designed to drill holes, up to 12 inches in diameter (14 inches with the 2 inch spacer), in all types of concrete slabs, floors, walls, and ceilings. The MK-Manta III Core Drill is designed for easy anchoring using masonry anchors. A vacuum pump is provided to facilitate quick and easy anchoring to smooth floor surfaces.

MOTOR

The MK-Manta III Core Drill is designed for use with a variety of motors. All motors are powerful two or three speed units that provide the correct cutting speed over a range of diamond drill sizes.

CARRIAGE, COLUMN AND BASE

The carriage, column and base assembly of the MK-Manta III Core Drill is the strong, sturdy drilling platform that provides the rigidity needed to quickly drill accurately placed, straight, smooth holes in all types of concrete. The MK-Manta III's base is slotted to provide easy anchoring of the drill, in a variety of drilling situations, with a single masonry anchor. The slot also allows more than one hole to be drilled from a single anchor location. The base contains four leveling screws to insure accurate hole alignment even on uneven concrete surfaces. The carriage also has a handle and the base has 6" wheels to provide easy transport. The carriage travel is controlled by a strong rack and pinion gear-system, that can be locked at any point on the column. The single spoked sliding handle allows that operator to easily control the drilling pressure and speed. At the top of the column is a strong jack-screw that allows for additional bracing to overhead or opposite surfaces.

VACUUM PUMP

The vacuum pump provides quick and reliable mounting to smooth concrete slab and floor surfaces. The powerful vacuum pump provides 25 PSI of holding power which equates to over 1800 pounds of force, holding the MK-Manta III Core Drill securely, for safe, accurate drilling. The pump has a quick disconnect connector on the hose at the base.

WATER SYSTEM

The water system for the MK-Manta III Core Drill is a simple hose hook-up and shut-off valve that provides water under pressure to the diamond drill bit. The water travels to the center of the bit through the water swivel and spindle to insure that water is supplied to the cutting end of the bit, even is deep drilling operations.

General Specifications	
Motor	120V
Bit Capacity	1/2" to 14" (16" with motor spacer)
Bit Feed	27"
Motor Spindle	1 - 1/4" - 7
Column	2 -1/2" x 2 - 1/2" adjustable rack and pinion
Weight-combo Base	109 lbs. (including pump)
Weight-Combo Tilt Base	114 lbs (including pump)
Weight-Anchor tilt Base	95 lbs.
Size L x W x H L x W x H (mm)	19" x 24" x 46" 480 x 610 x 1170

UNPACKING

Open the accessory pack and check each item with the contents list, making certain that all items are accounted for and in good condition before discarding any packing material. If there are any missing or damaged parts, call our toll free number 1-800-421-5830 for instructions before proceeding with the assembly.

Contents of the carton: It varies depending on model. MK-Manta III Core Drill (including column, carriage, base and motor), Vacuum Pump and Accessory Pack.

Contents of the Accessory Pack: Control box, meter box knob, leveling screw (4), feed handle (1) and knobs (2), water valve, vacuum base gasket, wrench, MK-Manta III manual, MK Diamond warranty card, motor manual and motor warranty card.

MK-Manta III

Owners Manual

Vacuum Pump (Combination Models Only)

Accessory Pack

Control Box

Warranty Card

ASSEMBLY

Feed Handle and Meter Box

WARNING For your own safety and protection, do not attempt to operate this drill until it is completely assembled and installed according to these instructions, and until you understand the machines capabilities and the potential hazards associated with it.

Step 1: Slide carriage assembly onto column. Assemble handle and hub.

Vacuum Gasket

Turn the vacuum base over. Press the gasket into the groove in the underside of the base. The gasket is cut at the factory to the correct length so that the two ends will butt together once the gasket is installed.

Step 2: Assemble the two pieces of the water valve, and install the valve into the water swivel on the motor, just above the spindle (see Milwaukee literature).

Final Assembly

Plug the cord from the motor into the upper outlet on the meter box (the one opposite the motor on-off switch). The other outlet on the meter box is for use with the vacuum pump.

DRILLING OPERATIONS

Electrical Requirements

The MK-Manta III Core Drill rig has been equipped with a Milwaukee motor. The drill should be used on an electrical circuit, separate from other loads, and protected by a 30 amp circuit breaker. the MK-Manta III Core Drill has been provided with a 20 Amp plug (NEMA 15-20) or a 30 Amp (NEMA 15-30) locking plug depending on the model.

Grounding

The MK-Manta III Core Drill is marked “Grounding Required” and has a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet (see figure below). If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electrical shock.

The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the toll’s grounding systems and must never be attached to an electrically live terminal.

Your tool must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances.

WARNING Improperly connecting the grounding wire can result in the risk of electric 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 the tool. Never remove the grounding prong from the plug.

EXTENSION CORDS

Do not use the tool if the cord or plug is damaged. IF damaged, have it repaired by an authorized service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician. The use of a circuit protected by a ground fault interrupter (GFCI) is highly recommended.

Use extension cords of the proper cable size, referring to the following chart.

EXTENSION CORD MINIMUM GAGE FOR LENGTH			
	TOTAL LENGTH OF CORD IN FEET		
Cord Length	**25 ft. AWG**	**50 ft. AWG**	**75 ft. AWG**
Wire Size (AWG)	#10	#8	#6

WARNING Never use a extension cord smaller than shown in the chart. Be sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it. Protect your extension cords from sharp objects, excessive heat and damp or wet areas.

NOTICE: Using an extension cord with inadequately sized wire causes drop in voltage, resulting in loss of power and possible tool damage.

SECURING THE RIG: RECOMMENDED METHODS

A. 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 and tighten the lock nuts on the leveling screws before tightening the anchor. Using a concrete anchor, insert a bolt through the slot located on the base and tighten the bolt firmly in the anchor.

WARNING 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. Always test the anchor for firm attachment before drilling.

B. VACUUM BASE. The MK-Manta III Comb Core Drill Rig is equipped with a vacuum pump. This pump is designed to provide approximately 1800 pounds of total holding power. In order to provide the most rigidity to your core rig the unit should be used on a relatively smooth surface such as concrete. If the surface is too porous or rough the vacuum mount may not hold securely.

1. Turn the vacuum pump on and step on the vacuum base until a vacuum is created and the base adheres to the work surface.
2. Level the rig using the leveling bolts. Use a minimum amount of adjustment to the leveling bolts to avoid breaking the vacuum seal.

The vacuum gauge should read approximately 25 pounds per square inch (PSI) of pressure. If the gauge reads 20 PSI less, check the work surface for conditions which may interfere with adequate suction such as cracks, dirt or debris on a porous surface.

WARNING Do not drill if the gauge reads less than 20 PSI. Do not use vacuum base on cracked, uneven, porous or vertical surfaces.

C. ADDITIONAL SUPPORT. For added rigidity, you may use a telescoping extension assembly in conjunction with a concrete anchor or vacuum base. To use a telescoping assembly, first level the rig with the leveling screws. Secure the rig with an anchor or the vacuum base. Place the top flange of the extension against a ceiling or wall and place the other end on the jack screw of the column. The assembly is adjustable up to 14 feet. Specifications for the different motors are listed in the table below.

DRILLING SPEEDS

Bit Capacity	1/2" to 14"
Spindle	1-1/4"-7
Bit Feed	27"
L x W x H (inches) L x W x H (mm)	19" x 24" x 46" 480 x 610 x 1,170

	Motor	Milwaukee 4004	Milwaukee 4090	Milwaukee 4094	Milwaukee 4096	Milwaukee 4097-20
	Volts / Amps	120V / 20A	120V / 15A	120V / 20A	120V / 20A	120V / 15A
	Clutch	Slip Clutch	Shear Pin	Shear Pin	Slip Clutch	Slip Clutch
	Motor RPM	300/600	375/750	450/900	450/950	500/1,000
	Horsepower	1 HP	1 HP	1 HP	1 HP	1 HP
Combination Base Drill Stand* Includes Vacuum	Weight	109 lbs.	109 lbs.	109 lbs.	109 lbs.	109 lbs.
	Part#	158639	158641	157449	157448	158640
Combination Tilt Base Drill Stand Includes Vacuum	Weight	114 lbs.	114 lbs.	114 lbs.	114 lbs.	114 lbs.
	Part#	158647	158649	158644	158645	158648
Anchor Tilt Base Drill Stand	Weight	–	95 lbs.	95 lbs.	95 lbs.	95 lbs.
	Part#	–	158657	158652	158653	158656
Anchor Base Drill Stand	Weight	–	74 lbs.	74 lbs.	74 lbs.	74 lbs.
	Part#	–	167324	167325	167326	167327

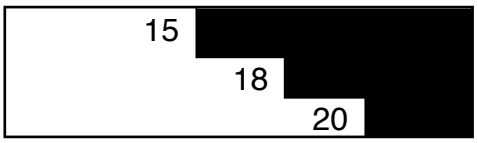
The MK-Manta III Core Drill, with Milwaukee motor will operate in either a high or low gear speed. This speed combined with applied pressure provides the cutting action for the core bit. Speed selection and pressure are determined by hardness of material, aggregate size and grade of diamond core bit. Generally, harder material and larger aggregates require more speed and pressure. Use low speed for large diameter bits and high speed for small diameter bits. Changing of the speeds is accomplished by using the speed shift lever built into the gear case.

NOTICE: Change the gears only when the motor is off.

All building materials and work surfaces are composed of aggregates of various size. Aggregates are materials such as gravel or crushed stone. The size of the grains and the hardness of the material affects the speed of drilling. Most building materials contain some type of steel reinforcements. All MK-Manta III bits are designed to cut through these types of reinforcing steel. However, bits should never be used for drilling solid steel plates. Proper selection of the diamond core bit should be based on material to be drilled and performance requirements.

DRILLING PRESSURE AND THE AMMETER

Steady, even pressure assures accurate holes and longer bit life. Always maintain consistent pressure so that the bit is constantly cutting.



NOTICE: Too much pressure will damage the bit and motor. Too little pressure will glaze over the diamonds, reducing cutting efficiency and prematurely wearing the bit. The ammeter is the gauge on the Control Box. It provides pressure feedback information during drilling, allowing the operator to help prevent motor overload and premature bit wear. The green areas are the operating range, and the red area is the overload range. Generally, the operator should keep the ammeter needle in the upper area of the operating range for large diameter bits, and in the lower green area for small diameter bits. If the bit contacts steel reinforcing rods, the needle on the ammeter may jump slightly showing a heavier load. If this occurs, do not decrease pressure or you may damage the diamonds. The MK-Manta III Core Drill may be operated with the ammeter needle into the red area for the short period of time that it takes to cut through a steel rod.

WATER SUPPLY

An adequate supply of clean water is necessary for drilling. Connect the water supply hose to the hose fitting on the output of the core drill motor. Take precautions that the water supply will not be interrupted during the drilling operations.

NOTICE: If a bit is run dry it can be ruined in a few seconds.

CARRIAGE RIGIDITY

It is essential that the carriage fits snugly on the column to prevent the motor or bit from wobbling during drilling. Through normal use the carriage may loosen from the column and begin to wobble. Before drilling, always make sure the carriage is rigid by trying to wiggle it with your hand. If the carriage is secure it should not move. If it does move, tighten the adjustment. Tighten only enough to remove the play. Do not over tighten.

SHEAR PIN AND CLUTCH PROTECTION

The MK-Manta III Core Drill uses either a shear pin or a friction clutch to protect the gear and motor against overload. The shear pin drives the outer portion of the drive spindle. If the motor should overload the pin will shear. Extra shear pins are supplied or can be ordered from MK Diamond's Customer Service. Tighten only enough to remove the play, do not over tighten. Another model features a friction clutch rather than a shear pin to protect the motor and gears. If the motor overloads the clutch will begin to slip and the bit will stop rotating. The clutch is factory-set and does not require adjustments. However, under normal use, the clutch may start to slip at low torque. If this happens, refer to the motors Owner's Manual.

MOUNTING BITS

Bits with permanently attached adapters simply screw directly onto the threads of the drill spindle. Ensure that the end of the bit butts up squarely against the shoulder on the spindle.

- Thread anti-clockwise to attach core bit.
- Thread clockwise to loosen.

WARNING The MK-Manta III Core Drill, equipped with either the Millwaukee motor, has a 1 -1/4" - 7 thread. For bits with other threads, use a shaft coupling. After a bit has been mounted, turn the power on and check that there is a minimum of run-out or wobble.

WARNING To reduce the risk of injury, always unplug tool before attaching or removing accessories. Only use specifically recommended accessories. Others may be hazardous.

DRILLING PROCEDURE

When drilling through concrete floors, the core will generally drop from the diamond bit. Caution should be provided for people and property below the drilling area.

1. Ensure that you have read and fully understand the complete operation of the Manta III Core Drill you have purchased prior to commencing drilling operations.

2. Select and install a diamond core bit appropriate for the job.

NOTE: Grease the bit threads to help prevent the bit from seizing on the spindle due to surface corrosion.

3. Select either high or low gear speed according to the chart in the Drilling Speeds section of this manual. (Do not shift speed when motor is on.)

4. Connect water hose to water swivel.

5. Secure the rig as described in the Securing the Rig section of this manual.

WARNING If using the vacuum base, do not continue operations unless the vacuum gauge reads more than 20 PSI. Normally, the gauge will read 23 inches or more.

6. Turn the motor switch on the control box on. Turn the water on so that an adequate flow of water is supplied through the water swivel to the bit. Hold the sliding handle and slightly loosen the carriage lock knob. Slowly rotate the handle to lower the bit into the work piece - apply steady even pressure.

NOTE: To prevent the bit from wandering, always use a light lead to start the hole and wait for the diamond tip of the bit to penetrate the work surface before increasing the load.

7. Use consistent pressure so that the bit cuts consistently, Insufficient pressure will cause the diamond core bit to glaze over. Too much pressure will overload the motor and crush the diamonds. Use the ammeter on the control box as a guide for proper pressure.

CAUTION If the rig shifts during drilling, stop the motor, reposition the rig, and resume drilling.

8. Monitor the water flow. If the water flow is adequate, the water leaving the cut should be slightly sludgy. When cutting metal rebar, the water should have a gray metal coloring.

NOTICE: When drilling into prestressed concrete the bit may cut into the hardened steel cable under tension. As the bit cuts through each strand, the tension in the cable is released. The diamond segments on the bit crown can be damaged by the loose wires. The best prevention for bit damage is to use a core bit designed especially for drilling in prestressed concrete.

9. When the cut is complete, keep the drill motor on and rotate the sliding handle to bring the bit up out of the hole. The bit may become stuck if the motor is turned off before the bit is completely clear of the hole. Once the bit is clear of the hole, tighten the carriage lock knob, turn off the motor and the water supply.

NOTE: Normally the core will drop out of the bit, and remain in the hole. However, in cases where the core sticks in the bit, it is sometimes necessary to push the core up and down with the water running to allow the core to drop out. Sometimes very light tapping on the barrel of the bit with a piece of wood will loosen the core.

CAUTION Perform the above action only with the motor turned off and the unit unplugged to prevent accidental starting and injury. Exercise extreme caution in hand placement when removing a stuck core, as the core can be heavy and inflict injury.

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.

MAINTENANCE

Periodic maintenance, including cleaning, lubrication and inspection for wear and damage are routine servicing procedures. Following the procedures as outlined can prevent serious damage or malfunctioning of the machine, and aid in preserving the useful life of core drill bits.

CAUTION Before performing any maintenance to the MK-Manta III Core Drill, always unplug the unit from the electrical power source. Ensure the On-Off switch is in the Off position, after servicing, and before plugging the unit back in.

CLEANING

Clean the machine after use, being careful to remove dust and slurry from the motor, vents, carriage and column. Keep tool handles clean, dry and free of oil and grease. Use only mild soap and a damp cloth to clean this tool since certain agents and solvents are harmful to plastics and other insulated parts.

WARNING Never use flammable or combustible solvents around tools.

VACUUM BASE GASKET

Through normal use, the rubber gasket on the underside of the vacuum base can become worn, requiring replacement. Periodically check the gasket for wear. If replacement is required, clean the groove in the base before installing a new gasket.

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 in steel reinforcement.	Adjust drilling parameters to recommendations for reinforcement.
	2. Check motor speed range.		Speed not correct for the bit size used.	See recommended speeds.
	3. Check wear picture of bit face.	Bit worn out		Replace with new bit.
		Diamond without exposure. (flush with bond matrix)	Insufficient bit load.	Increase bit load.
			Rotated with high RPM on reinforcement	Reduce RPM, or resharpen 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 dry 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 abrasive concrete block. Reduce RPM.
		Wear picture of polished 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. Borehole is getting undulated.	Adjust guidance on carriage.
			Protruding steel. Spindle is offset. Bit out of true.	Adjust guidance on carriage. Nicks or dirt on mounting faces.
		Heavy Wear.	Bit is deformed.	Replace bit.
			Poor cleaning of abrasive cuttings.	Improve flushing.
			Crown clearance worn out.	Replace bit.

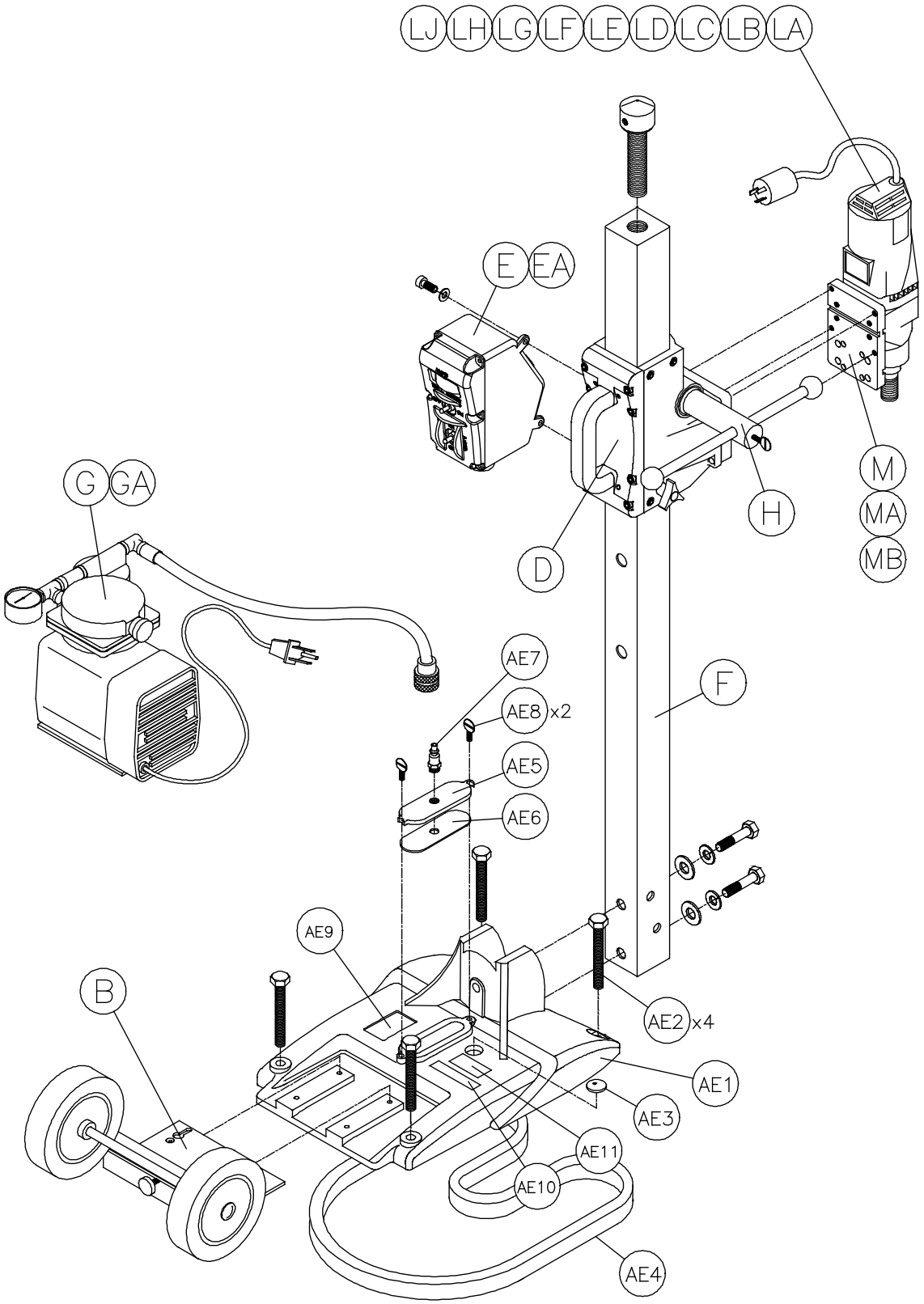
TROUBLESHOOTING

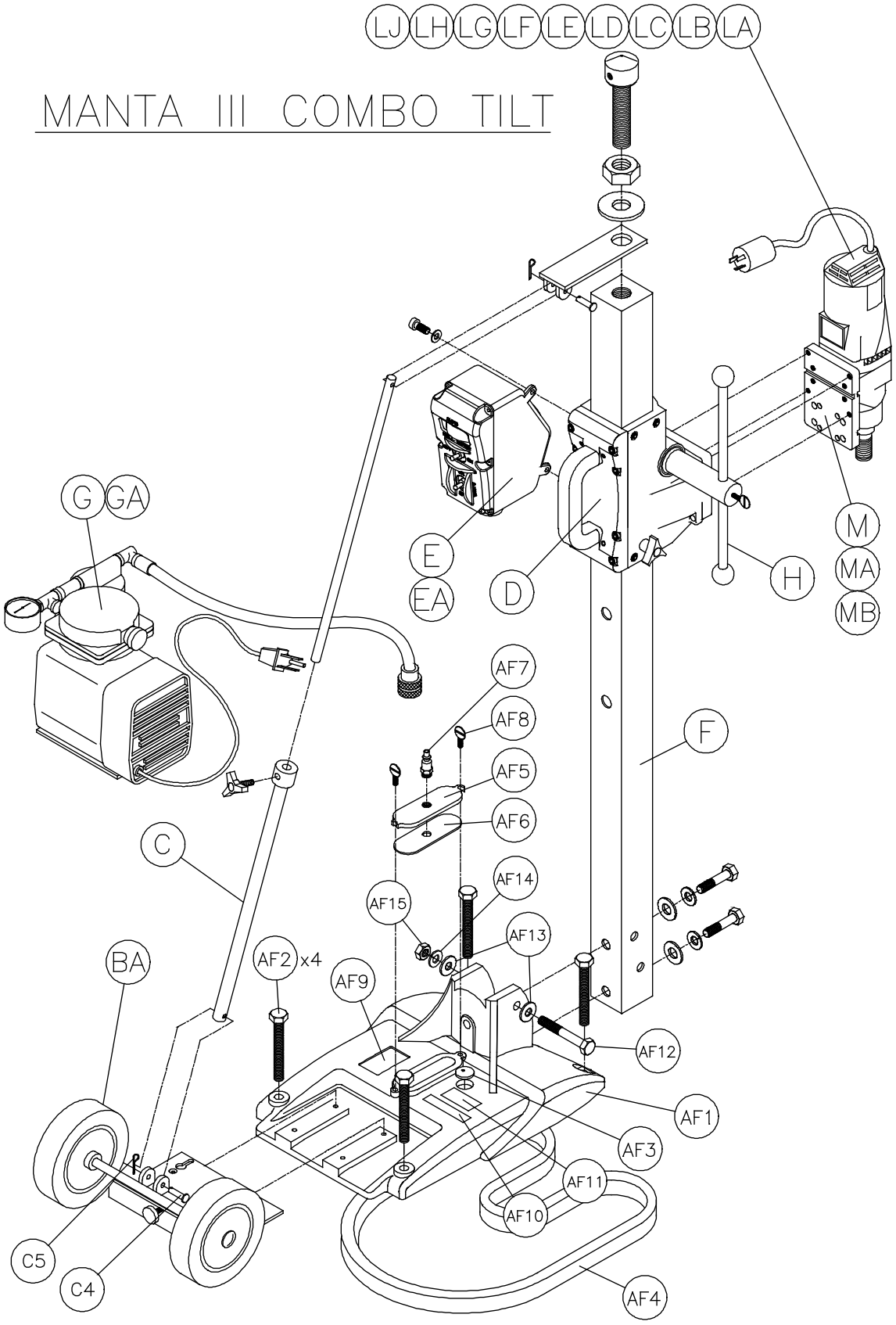
PROBLEM	WHAT TO DO?	INDICATION	CAUSE	SOLUTION/ RECOMMENDATIONS
No return of fluid	Check where fluid is leaking.			If Leaking can be tolerated, continue drilling with increased attention.
Bit Stuck	1. Try to raise bit, if possible. 2. Stop rotation.	Loose material (cut steel or aggregates) is blocking between core and bit or between borehole 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 then the stuck bit.
		Drill moved during drilling (poor fastening)		Disconnect bit and remove, break core. Start over with improved fastening of machine.
		Bit deviates, guide ways on cradle have too much clearance.		Disconnect machine, adjust guidance.
Shear Pin Fail	1. Stop rotation. 2. Raise bit.	No clearance between tube I.D. or O.D. and crown I.D. or O.D.		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.

ACCESSORIES

ITEM	NUMBER	DESCRIPTION	
1	www.MKDiamond.com	**Core Bits MK-Black**- *Supreme Grade for Concrete & Asphalt* Excellent performance in applications associated with moderate to high steel reinforcement. *Available Diameters 1/2" - 16"*	
2	www.MKDiamond.com	**Core Bits MK-Orange**- *Premium Grade for Concrete & Asphalt* MK-Orange is a premium bit designed for wet drilling applications that include light to moderate steel reinforcement. *Available Diameters 1" - 16"*	
3	www.MKDiamond.com	**Core Bits MK-Yellow**- *Standard Grade for Concrete & Asphalt* MK-Yellow is an excellent choice for all types of general wet drilling. *Available Diameters 1" - 14"*	
4	www.MKDiamond.com	**Core Bit Extensions** Multiple tube extensions may be used extending the drilling depth in increments of 12". *Available Diameters 1 - 1/4" to 6 /14"*	
5	304149 304150	**Shaft Extensions** easily attach to the core bit and allow for a deeper drilling capacity. 12" Length 5/8" - 11 Male / 5/8" 11 Female 1 - 1/4" - 7 Male / 1 - 1/4" - 7 Female	
6	159620	**Motor Spacer** kit for Manta IIII core drill rigs with Milwaukee motors. Allows rigs to use 16" bits.	

MANTA III COMBO




MANTA III COMBO TILT
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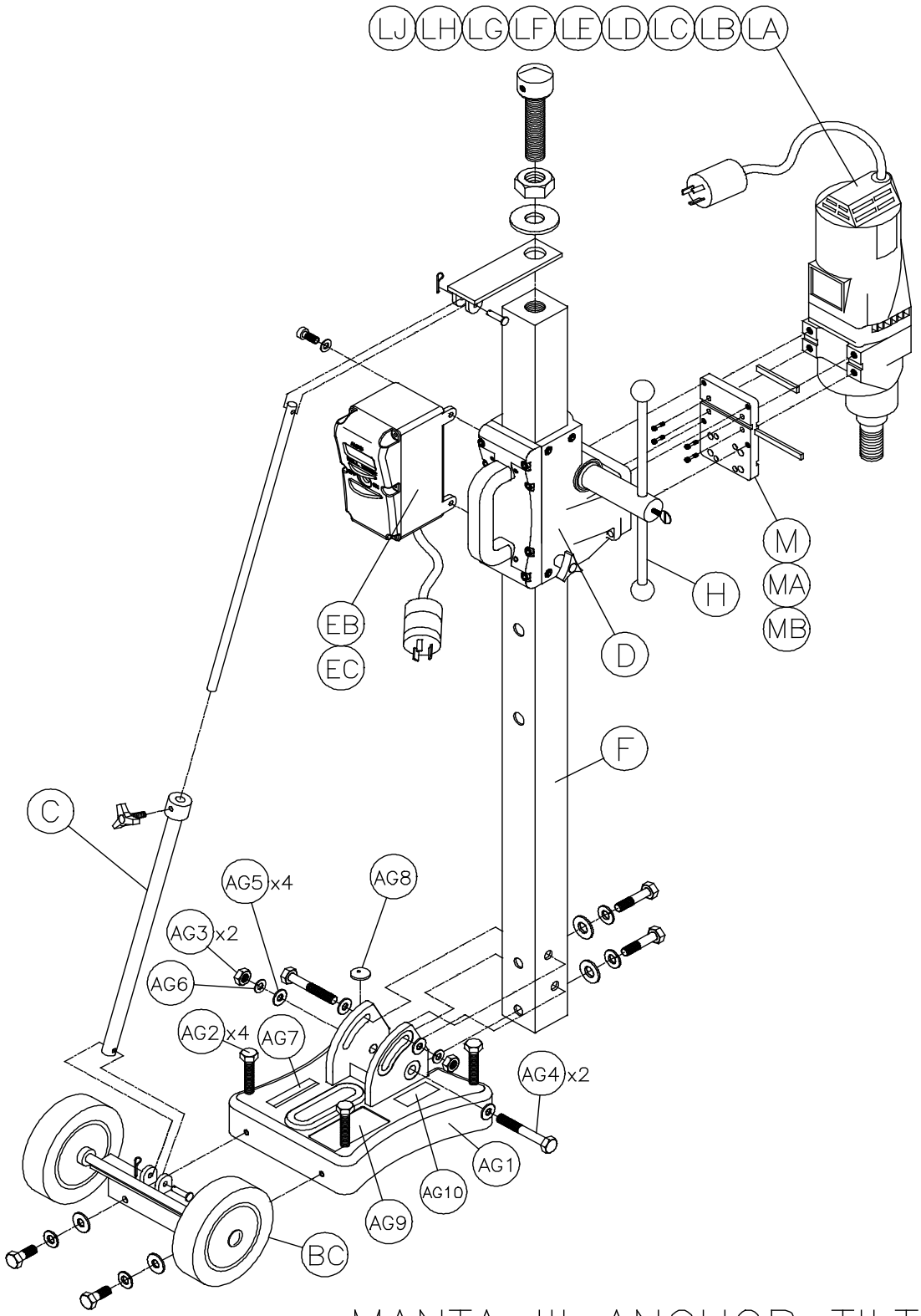
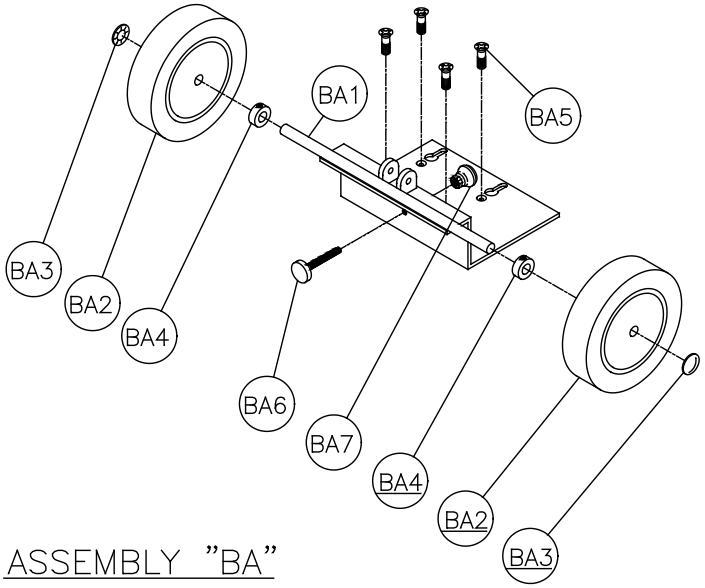


MANTA III ANCHOR TILT



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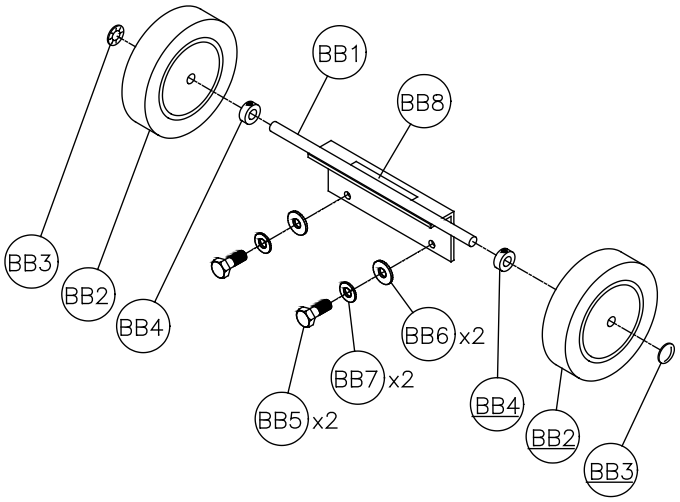

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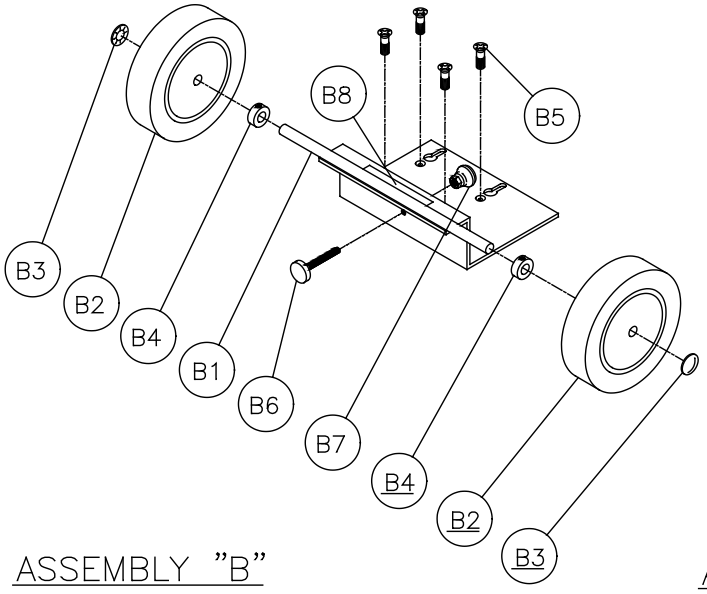

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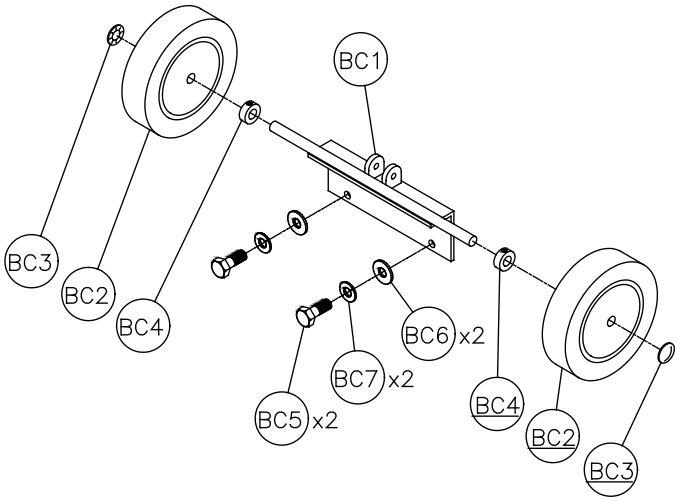

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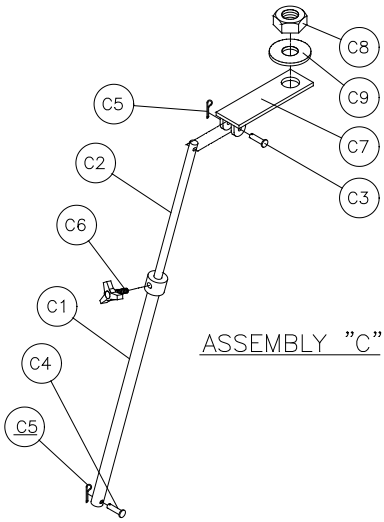

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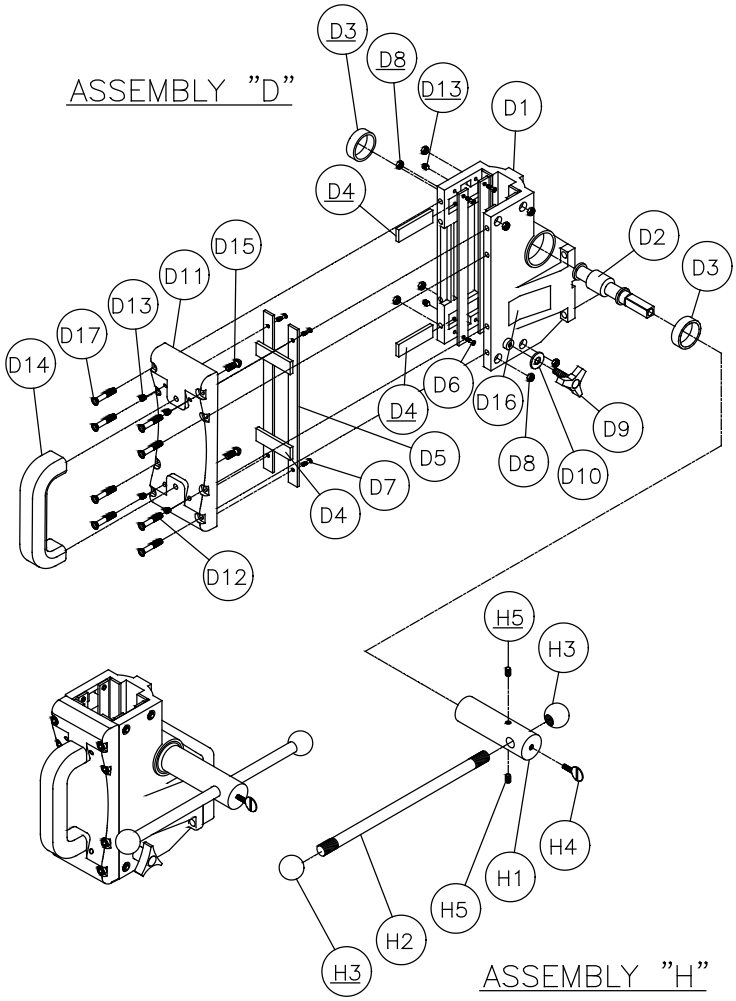
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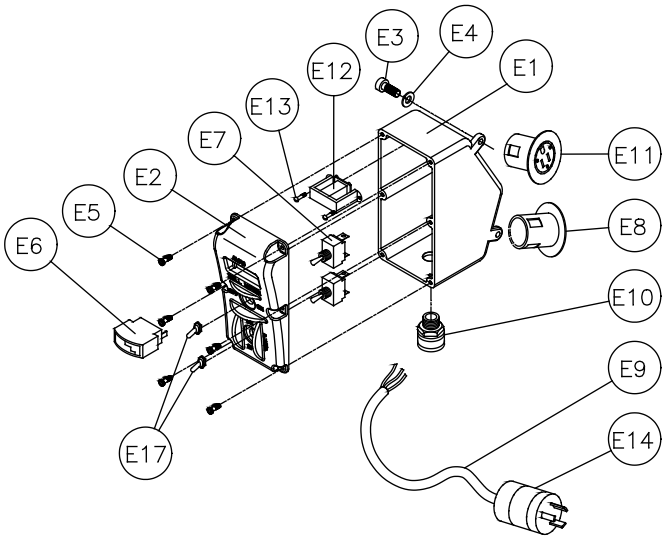
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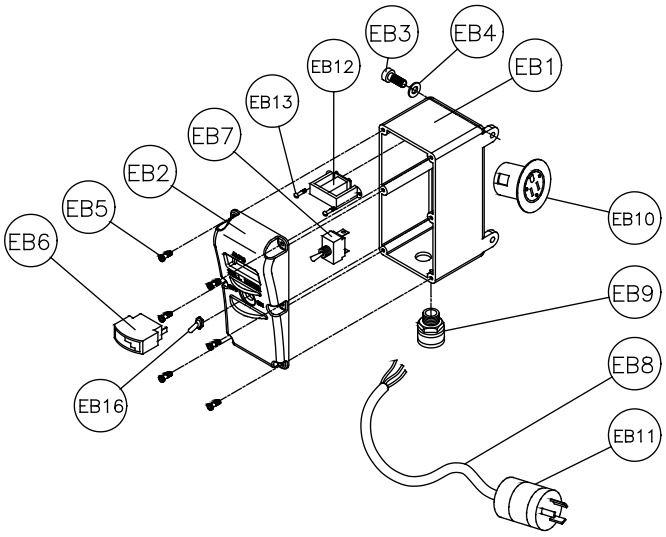
ASSEMBLY "E & EA"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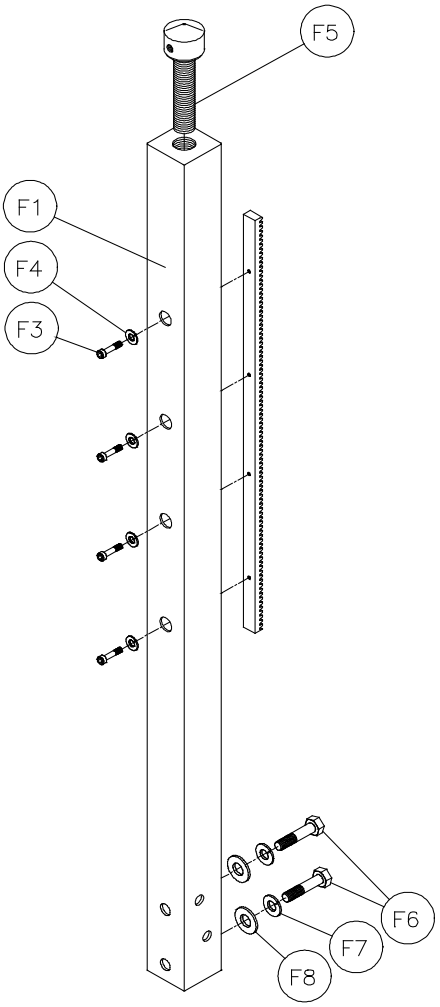
ASSEMBLY "EB & EC"



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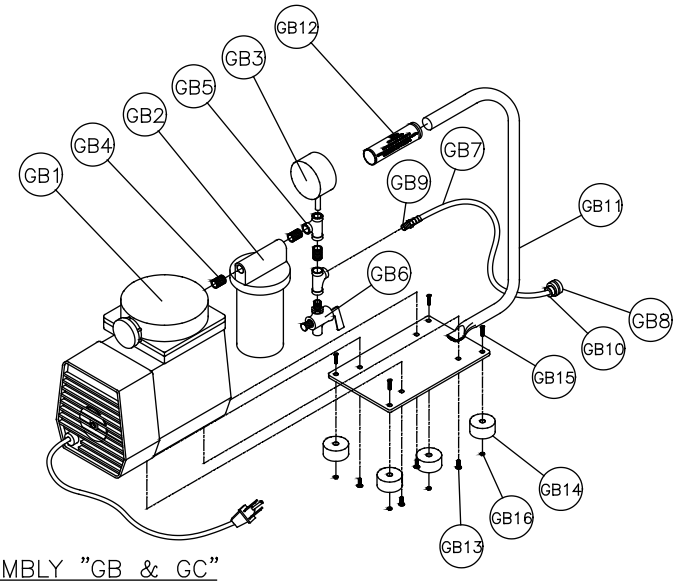

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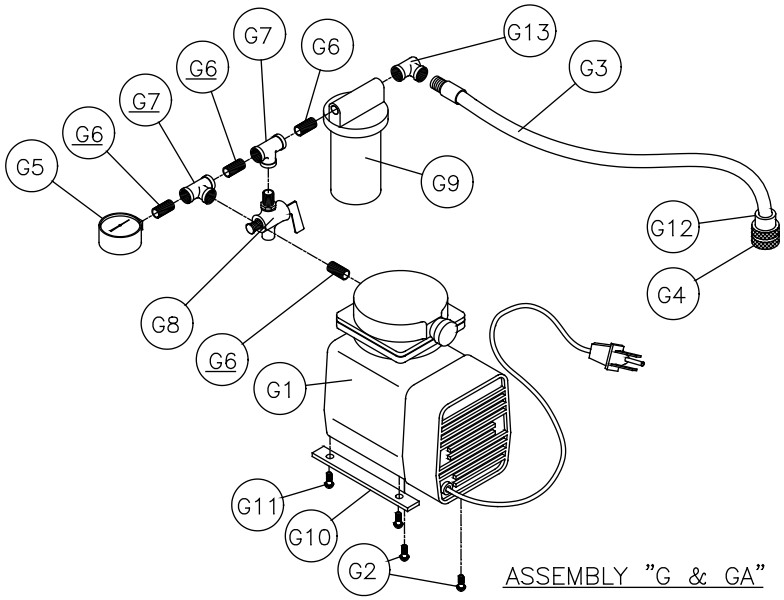

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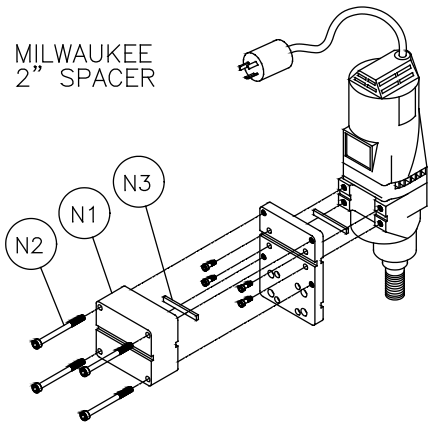

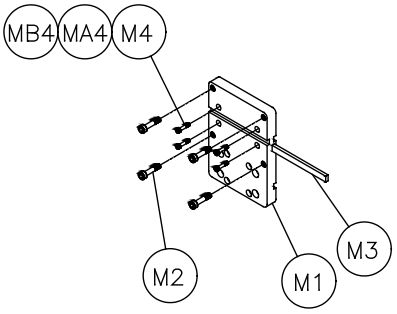

ASSEMBLY "M, MA & MB"

Item	Description	Qty	Part #
AE	Assembly, M3 Base, Combination	1	n/a
AE1	Base, M3 Combination	1	157427
AE2	Screw, ½-13 x 3 ½ Hex Hd. Cap, Full Thread	4	158284
AE3	Level, Circular Bubble	1	157429
AE4	Gasket, Neoprene size 1" x ½ x 47.8"	3.98'	154543
AE5	Plate, Air Seal	1	157430
AE6	Gasket, 1/8" Neoprene Rubber	1	157431
AE7	Fitting, ¼ MNPT x 3/8 Barb	1	154659
AE8	Screw, Spade Hd. Thumb ¼-20 x ¾ w/ Shoulder	2	157432
AE9	Label, Manta Serial Tag	1	157730
AE10	Label, Caution, Safety	1	155576
AE11	Label, MK, Adhesive	1	157914
AF	Assembly, M3 Base, Combination Tilt	1	n/a
AF1	Base, M3 Combination Tilt	1	158393
AF2	Screw, ½-13 x 3 ½ Hex Hd. Cap, Full Thread	4	158284
AF3	Level, Circular Bubble	1	157429
AF4	Gasket, Neoprene size 1" x ½ x 47.8"	3.98'	154543
AF5	Plate, Air Seal	1	157430
AF6	Gasket, 1/8" Neoprene Rubber	1	157431
AF7	Fitting, ¼ MNPT x 3/8 Barb	1	154659
AF8	Screw, Spade Hd. Thumb ¼-20 x ¾ w/ Shoulder	2	157432
AF9	Label, Manta Serial Tag	1	157730
AF10	Label, Caution, Safety	1	155576
AF11	Label, MK, Adhesive	1	157914
AF12	Screw, ½-13 x 4-½ Hex Hd. Cap	1	158397
AF13	Washer, ½ SAE Flat	2	150924
AF14	Washer, ½ Split Lock	1	153524
AF15	Nut ½-13 Hex	1	151282
AG	Assembly, M3 Base, Anchor Tilt	1	n/a
AG1	Base, M3 Anchor, Tilt	1	157413
AG2	Screw, ½-13 x 3 ½ Hex Hd. Cap, Full Thread	4	158284
AG3	Nut, ½-13 Hex Hd.	2	151282
AG4	Screw, ½-13 x 4 ½ Hex Hd. Cap	2	158397
AG5	Washer, ½ SAE Flat	4	150924
AG6	Washer, ½ Split Lock	2	153524
AG7	Label, Caution, Safety	1	155576
AG8	Level, Circular Bubble	1	157429
AG9	Label, Manta Serial Tag	1	157730
AG10	Label, MK, Adhesive	1	157914
AG11	Label, For Information on Service	1	155038
B	Assembly, M3 Wheel Bracket, Combo		n/a
B1	Bracket, Wheel, Combo	1	158392
B2	Wheel 6" x 1 ½ x ½ axle	2	157434
B3	Cap, Push ½" Stainless Steel	2	157435
B4	Collar, ½ I.D. x 1" O.D. x 7/16	2	157518
B5	Screw, ¼-20 x ¾ Flat Head Socket	4	154657
B6	Knob, Knurled Head ¼-20 x 2 ½	1	157436
B7	Pad, Toggle ¼-20	1	157437
B8	Label, Manta 1-1/4 x 5 1/8	1	155388
BA	Assembly, M3 Wheel Bracket, Tilt Combo		n/a
BA1	Bracket, Wheel, M3 Tilt Combo	1	158321
BA2	Wheel 6" x 1 ½ x ½ axle	2	157434

Item	Description	Qty	Part #
BA3	Cap, Push ½" Stainless Steel	2	157435
BA4	Collar, ½ I.D. x 1" O.D. x 7/16	2	157518
BA5	Screw, ¼-20 x ¾ Flat Head Socket	4	154657
BA6	Knob, Knurled Head ¼-20 x 2 ½	1	157436
BA7	Pad, Toggle ¼-20	1	157437
C	Assembly, Telescoping Support		n/a
C1	Tube, Telescoping Support	1	158340
C2	Rod, Telescoping Support	1	158341
C3	Clovis Pin ∅1/4 x 1 ¼	1	158452
C4	Clovis Pin ∅1/4 x 1 5/8	1	158453
C5	Pin, Cotter 1/16 x 5/8	2	158451
C6	Knob, Tri Plastic, 5/16-18 x ¾	1	158456
C7	Bracket, Telescoping Rod Support	1	158342
C8	Nut, M22 x 1.5	1	158455
C9	Washer, M22 Flat	1	158454
D	Assembly, Carriage 2 ½"	1	n/a
D1	Body, Carriage	1	155757
D2	Shaft, Gear, Short	1	158348
D3	Bearing	2	137711
D4	Plate, Adjustment	3	157317
D5	Slide, Carriage	8	157318
D6	Screw, 6-32 x 1/2 Flat Head Phillips Machine	8	154448
D7	Screw, 6-32 x 3/8 Flat Head Phillips Machine	8	157521
D8	Nut, 6-32 Nylok Hex	8	157519
D9	Knob, Davies ¼-20 x ¾	1	151681
D10	Washer, ¼ SAE Flat	1	151915
D11	Back, Carriage	1	157438
D12	Screw, 1/4-20 X 1 Socket Head Cap	4	151049
D13	Screw, ¼-20 x 5/16 Socket Head Set	6	154226
D14	Handle, Carriage	1	157440
D15	Screw, 1/4-20 X ¾ Pan Head Phillips	2	157523
D16	Label, MK USA	2	154334
D17	Screw, 1/4-20 X 1 ¼ Socket Head Cap	4	159336
E	Assembly, Control Box, Fixed, Dual Switch 120V	1	158428
E1	Box, Fixed Dual Switch Control	1	158274
E2	Cover, Fixed Dual Switch Control Box	1	158276
E3	Screw, ¼-20 x ¾ Socket Head Cap	2	152587
E4	Washer, ¼ Split Lock	2	152591
E5	Screw, 10-24 x 5/8 Self Tapping	6	153681
E6	Ammeter 120V	1	154489
E7	Switch, 30A Toggle	2	154491
E8	Receptacle, Flanged 15A / 125V	1	154473
E9	Cord, Power SOWA 12/3 Yellow	3'	154494
E10	Connector, Cord ½	1	151307
E11	Receptacle, Flanged Twist-lock 20A / 125V	1	157375
E12	Transformer, Current 120 V AC	1	154490
E13	Screw, 6-32 x ½ Pan Head	2	153459
E14	Plug, Twist-lock, 125V / 20A	1	154556
E15	Wire Harness (not shown)	1	154715
E17	Cover, Toggle Switch	2	154301
EB	Assembly, Control Box, Single Switch 120V	1	158430
EB1	Box, Single Switch Control	1	158385

Item	Description	Qty	Part #
EB2	Cover, Single Switch Control Box	1	158387
EB3	Screw, ¼-20 x ¾ Socket Head Cap	2	152587
EB4	Washer, ¼ Split Lock	2	152591
EB5	Screw, 10-24 x 5/8 Self Tapping	6	153681
EB6	Ammeter 120V	1	154489
EB7	Switch, 30A Toggle	1	154491
EB8	Cord, Power SOWA 12/3 Yellow	3’	154494
EB9	Connector, Cord ½	1	151307
EB10	Receptacle, Flanged Twist-lock 20A / 125V	1	157375
EB11	Plug, Twist-lock, 125V / 20A	1	154556
EB12	Transformer, Current 120 V AC	1	154490
EB13	Screw, 6-32 x ½ Pan Head	2	153459
EB14	Wire Harness (not shown)	1	154715
EB16	Cover, Toggle Switch	1	154301
F1	Assembly, Column		n/a
F1	Manta, Core Drill Column (w/Gear Rack)	1	158425-2
F3	Screw, 10-32 X ½ Socket Hd. Cap	4	157525
F4	Washer, #10 Split Lock	4	153684
F5	Screw, M22 x 1.25 Jack	1	157445
F6	Screw, 1/2-13 X 3 ½ Hex Head Cap	2	154574
F7	Washer, 1/2 Split Lock	2	153524
F8	Washer, 1/2 SAE Flat	2	150924
G	Assembly, M3 Vacuum Pump 120V	1	158530
G1	Pump, Vacuum 120V	1	154475
G2	Screw, 10-32 X ¾ Slotted Truss Head	2	157526
G3	Hose, 3/8 I.D., Air	12”	154656
G4	Fitting, ¼ FNPT	1	154617
G5	Gauge, Vacuum	1	154477
G6	Nipple, ¼ NPT X Close Galvanized	4	152598
G7	Tee, 1/4 NPT Galvanized	2	154497
G8	Valve, ¼ NPT X Petcock	1	154488
G9	Filter, Water	1	154476
G10	Bracket, Pump Hold Down	1	157446
G11	Screw, ¼-20 x ½ Phil. Flat Head	2	157527
G12	Ferrel, Crimp	2	154660
G13	Fitting, 90° ¼ Street	1	154615
GB	Assembly, Vacuum Pump w/ Handle 120V	1	154741
GB1	Pump, Vacuum 120v	1	154475
GB2	Filter, Water	1	154476
GB3	Gauge, Vacuum	1	154477
GB4	Nipple, 1/4 MNPT X Close	3	152598
GB5	Fitting, 1/4 FNPT X 1/4 FNPT X 1/4 FNPT Tee	2	154497
GB6	Valve, 1/4” Pettcock	1	154488
GB7	Hose, 3/8 I.D. Air	6’	154656
GB8	Coupler Body, 1/4 FNPT	1	154617
GB9	Fitting, 1/4 MNPT X 3/8 BARB	2	154659
GB10	Ferrell, Crimp	2	154660
GB11	Base, Vacuum Pump	1	154495
GB12	Handgrip, 3/4 X 4 9/16 Black	1	139949
GB13	Screw, 10-32 X 1/2 Phillips Pan Head Cap	4	151052
GB14	Foot, Rubber	4	154496

Item	Description	Qty	Part #
GB15	Screw, 1/4-20 X 3/4 Flat Head Phillips Cap	4	154657
GB16	Nut, 1/4-20 Hex	4	151893
H	Assembly, Handle, Slip	1	n/a
H1	Hub, Slip Handle	1	157321
H2	Spoke, Slip Handle	1	157322
H3	Knob, Ball ½-20 Female	2	154486
H4	Screw, 1/4-20 X ¾ Thumb	1	157432
H5	Screw, ¼-20 X 1/4 Socket Head Set	2	157528
K	Assembly, Accessory Pack (not shown)	1	n/a
K1	Carton, Accessory Pack	1	157323
K2	Owner's Manual, MK-Manta 3 Series Core Drill	1	161117
K3	Card, Warranty	1	155859
K4	MK Sell Sheet	1	155333
LA	Assembly, Motor, Milwaukee 4094	1	n/a
LA1	Motor, Milwaukee 4094, Shear Pin, 20A/120V	1	154633
LB	Assembly, Motor, Milwaukee 4096	1	n/a
LB1	Motor, Milwaukee 4096, Slip Clutch, 20A/120V	1	155540
LD	Assembly, Motor, Milwaukee 4004	1	n/a
LD1	Motor, Milwaukee 4004, Slip Clutch, 20A/120V	1	159263
LE	Assembly, Motor, Milwaukee 4097-20	1	n/a
LE1	Motor, Milwaukee 4097-20, Slip Clutch, 15A/120V	1	159264
LF	Assembly, Motor, Milwaukee 4090	1	n/a
LF1	Motor, Milwaukee 4090, Shear Pin, 15A/120V	1	155976
LJ	Assembly, Motor, Eibenstock EBM 300/3 P	1	n/a
LJ1	Motor, Eibenstock EBM 300/3/P, Slip Clutch, 20A/120V	1	158754
M	Assembly, ¾" Motor Mount Plate, Hybrid, Milwaukee	1	n/a
M1	Motor Mount Plate, Hybrid	1	158412
M2	Screw, 3/8-16 x 1 ¼, Socket Hd. Cap	4	157529
M3	Key, 3/8 x 3/8 x 5	1	157520
M4	Screw, ¼-20 x 1.0, Socket Hd. Cap	4	151049
MA	Assembly, ¾" Motor Mount Plate, Hybrid, CB748	1	n/a
MA1	Motor Mount Plate, Hybrid	1	158412
MA2	Screw, 3/8-16 x 1 ¼, Socket Hd. Cap	4	157529
MA3	Key, 3/8 x 3/8 x 5	1	157520
MA4	Screw, ¼-28 x 1 ½ , Socket Hd. Cap	4	154684
MB	Assembly, ¾" Motor Mount Plate, Hybrid, Ebinstock	1	n/a
MB1	Motor Mount Plate, Hybrid	1	158412
MB2	Screw, 3/8-16 x 1 ¼, Socket Hd. Cap	4	157529
MB3	Key, 3/8 x 3/8 x 5	1	157520
MB4	Screw, M8 x 1.25 x 25mm, Socket Hd. Cap	4	157530
N	Assembly, 2", Spacer Block Milwaukee (optional)	1	n/a
N	Spacer Block, 2" Milwaukee	1	154721
N2	Screw, 3/8-16 x 3 ¼, Socket Hd. Cap	4	161118
N3	Key, 3/8 x 3/8 x 5	1	157520

ORDERING INFORMATION

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

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

NOTE: There is a $25.00 minimum order when ordering direct from MK Diamond. A $5.00 charge will be added to orders having a net billing value under $50.00. All purchases must be made using VISA, MasterCard or American Express.

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 motor and Support Assembly
- Dry the drill before shipping
- When packing, include the following: Core Drill, Vacuum Pump and Accessory Pack
- 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 too you or visit our web site at www.mkdiamond.com. For technical questions, call – 800 474-5594.

CONTACT

Please contact MK Diamond Products, Inc. Customer Service Department with any questions you might have regarding distributors, parts or service.
Telephone: **(800) 421-5830**
Fax: **(310) 539-5158**
E-mail: **Customer_Service@MKDiamond.com**
Customer Service Hours: **Monday through Friday, 6AM-4PM PST**

MK Diamond Products, Inc.
1315 Storm Parkway
Torrance, CA 90501

MK DIAMOND PRODUCTS, INC. LIMITED WARRANTY

MK DIAMOND PRODUCTS, INC. will guarantee every machine they build, to be free from defects in material and workmanship for (1) one year from date of purchase. The obligation of MK DIAMOND PRODUCTS, INC. under this warranty is limited to the repair or replacement of any parts which, under normal use, prove to be defective in material or workmanship. The parts involved or the unit in question should be returned to MK DIAMOND PRODUCTS, INC. or to a point designated by us, transportation prepaid.

This warranty does not obligate us to bear the cost of labor or transportation charges in connection with replacement or repair of defective parts. Likewise, it shall NOT apply to any unit which has been subjected to misuse, neglect or accident. This warranty does NOT apply to any machine which has been repaired or altered outside our factory.

This warranty does NOT obligate MK DIAMOND PRODUCTS, INC., with respect to items not of our manufacture, such as engines, motors, hydraulics, etc., which are subject to their own guarantees and warranties.

We shall in no event be liable for consequential damages or contingent liabilities arising out of failure of any equipment or parts to operate properly.

This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

The information and specifications included in this publication were in effect at the time of approval for printing.

MK-MANTA CORE DRILL III
OWNER'S MANUAL & OPERATING INSTRUCTIONS

MK Diamond Products, Inc.

MK Diamond Products, Inc.
1315 Storm Parkway
Torrance, CA 90501

Toll-Free: (800) 421-5830
Phone: (310) 539-5221
Fax: (310) 539-5158
www.mkdiamond.com