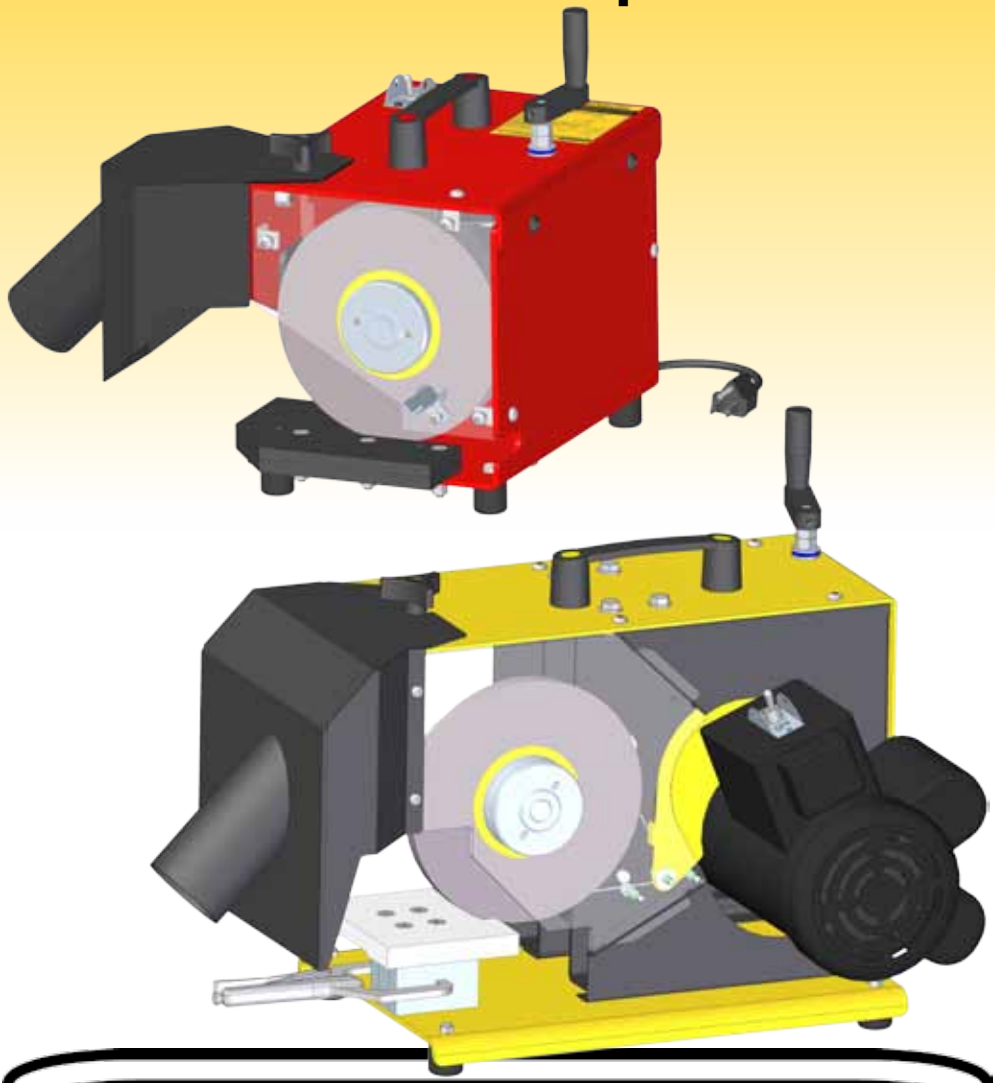
OPERATOR'S MANUAL

MAG-8000 SERIES [gen5]

MAG-9000 SERIES [gen7]

Lawn Mower Blade Sharpeners



MAGNA-MATIC®

High-Performance Service Tools for the OPE Industry

THANK YOU,

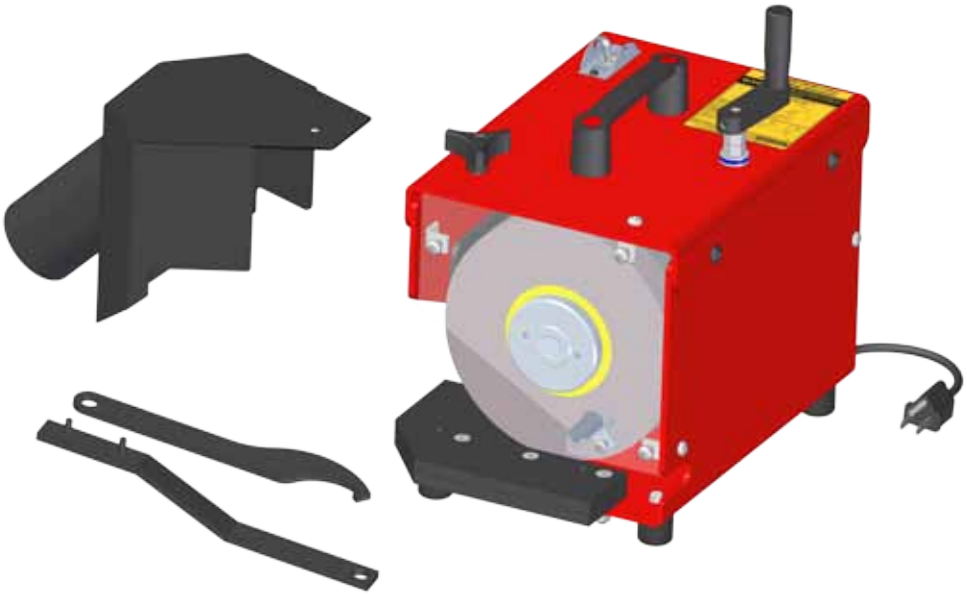
We sincerely appreciate your decision to make Magna-Matic your lawn mower blade sharpener. We understand there are other choices in the marketplace, and we are extremely confident that after the first few blades you sharpen, it will be evident you've chosen the best machine for the job. Rest assured that if you have a question or problem you will have complete customer support for all of our products.

800-328-1110 (USA & CANADA) or 920-564-2366
http://www.magna-matic.com

BOX INVENTORY

- **MAG-9000 sharpener main body**
- **Vacuum grit guard (9000-50)**
- **Grinding wheel (9000-23) mounted**
- **Spanner wrench (9000-21)**
- **Arbor wrench (9000-53)**

Please be sure all the items are in the box and inspect for shipping damage, or for missing parts. Contact Magna-Matic right away to remedy any problems due to shipping. 800-320-1110



BOX INVENTORY

- **MAG-8000 sharpener main body (with grit guard)**
- **Grinding wheel (9000-35)**
- **Grinding wheel (8000-30)**
- **Crank handle (clamped in worktable)**
- **Flat clamping worktable**
- **Spanner wrench (9000-21)**
- **Arbor wrench (9000-53)**

Please be sure all the items are in the box and inspect for shipping damage, or for missing parts. Contact Magna-Matic right away to remedy any problems due to shipping. 800-320-1110

IMPORTANT - There is a transport bolt that must be removed before use! The bolt goes through the two uprights and the pivot plate. If this bolt is not removed it will be impossible to adjust the grinding wheel. See page 6.

THE *SAFE WAY* IS THE *ONLY WAY* TO GRIND!

WARNING

WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY.

CAUTION

LAWN MOWER BLADES HAVE SHARP EDGES - ALWAYS WEAR PROTECTIVE GLOVES AND SAFETY GLASSES!

Before handling any equipment read and understand the instructions.

- ***Grounding Instructions*** - This tool must be grounded while in use to protect the operator from electric shock. The tool is equipped with an approved three conductor cord and three prong grounding type plug to fit the proper grounding type receptacle. The green (or green and yellow) wire is the grounding wire.
- ***Extension Cords*** - Use only three wire extension cords which have three prong grounding type plugs and three pole receptacles which accepts the tool's plug. Replace or repair damaged cords.
- ***Keep Work Area Clean*** - Cluttered areas and benches invite accidents.
- ***Consider Working Environment -*** Don't use power tools in damp or wet locations. Keep work area well lit. Don't expose power tools to rain. Do not use tool in presence of flammable liquids or gases.
- ***Keep Children Away -*** All visitors should be kept a safe distance from the work area. Do not let visitors have contact with the tool or the extension cord.
- ***Store Idle Tools -*** When not in use, tools should be stored in dry, high or locked-up places out of reach of children.
- ***Do Not Force Tool -*** It will do the job better and safer at the rate for which it was designed.
- ***Do Not Over-Reach -*** Keep proper footing and balance at all times
- ***Use Safety Glasses -*** Also face or dust mask-wrap around goggles, or other eye protection.

WARNING

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CAUTION

LAWN MOWER BLADES HAVE SHARP EDGES - ALWAYS WEAR PROTECTIVE GLOVES AND SAFETY GLASSES!

Before handling any equipment read and understand the instructions.

- ***Wear Proper Apparel -*** Do not wear loose clothing or jewelry that can get caught in moving parts. Gloves and non-skid footwear are required when working. Wear protective hair covering to contain long hair.

- ***Do Not Abuse Cord -*** Never carry tool by cord or pull it to disconnect
- from receptacle. Keep cord from heat, oil, and sharp edges.

- ***Disconnect Tool -*** When not in use; before servicing; when changing grinding wheels.

- ***Avoid Accidental Starting -*** Don't carry plugged in tool. Be sure switch is off when plugging in.

- ***Grinding Wheels -*** Use only grinding wheels having a maximum operating speed of 5500 RPM. KEEP GUARDS IN PLACE.

- ***Guard Against Electrical Shock -*** Prevent body contact with grounded surface. For example: pipes, radiators, etc.

- ***Stay Alert -*** Watch what you are doing. Use common sense. Do not operate tool when you are tired, or under the influence of any drugs or alcohol.

- ***Check Damaged Parts -*** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, breakage of parts, mounting and any other condition that effect its operation. All parts should be properly repaired or replaced. Do not use this tool if the switch does not turn it on or off.

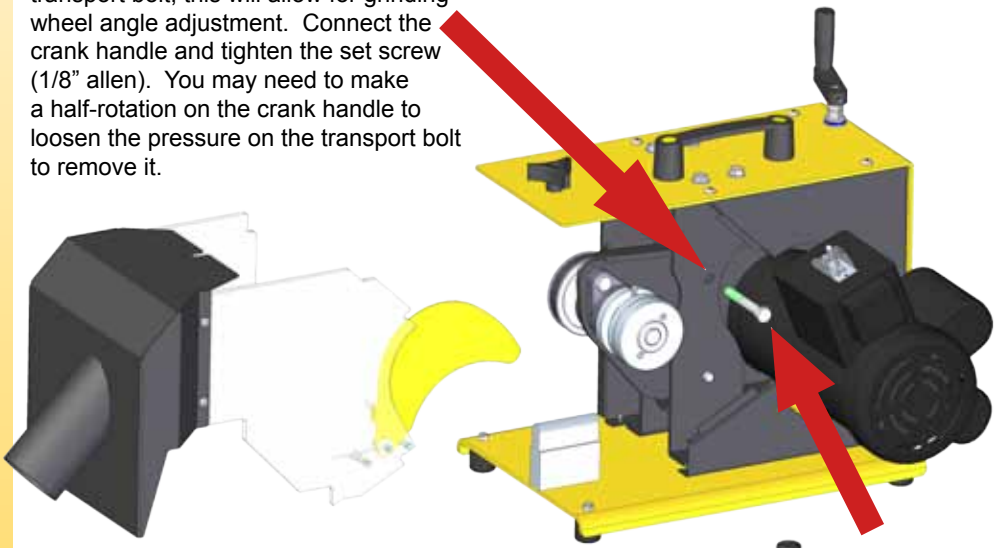
- ***Never Leave Tool Unattended -*** Turn the power off. Don't leave the tool until it comes to a complete stop.

- ***Read*** "A Primer on Grinding Wheel Safety" http://www.magna-matic.com

ASSEMBLY

IMPORTANT - There is a transport bolt that must be removed before use! The bolt goes through the two uprights and the pivot plate. **If this bolt is not removed it will be impossible to adjust the grinding wheel.** First remove grit guard, loosen the plastic knob, and pull the grit guard outward.

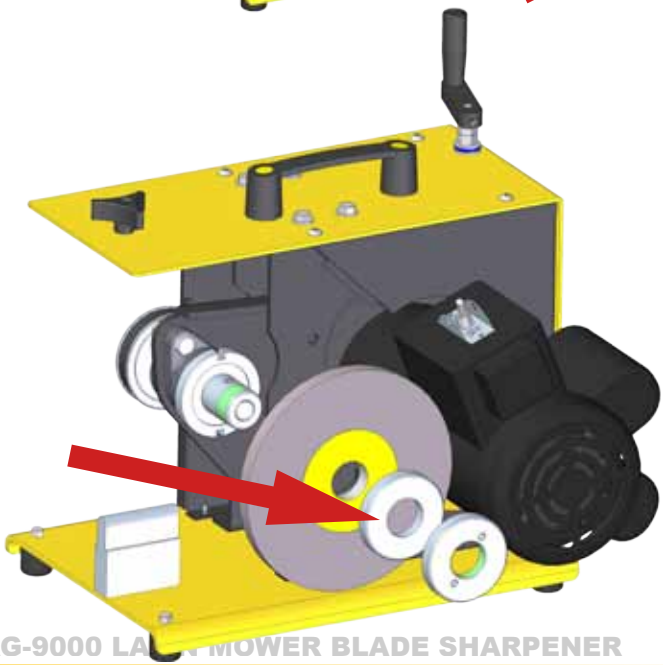
Use (2) 1/2” wrenches to remove the transport bolt, this will allow for grinding wheel angle adjustment. Connect the crank handle and tighten the set screw (1/8” allen). You may need to make a half-rotation on the crank handle to loosen the pressure on the transport bolt to remove it.



MOUNTING THE 1/2” WIDE WHEEL, for sharpening mulching blades.

The 1/2” wide grinding wheel requires the **arbor spacer.**

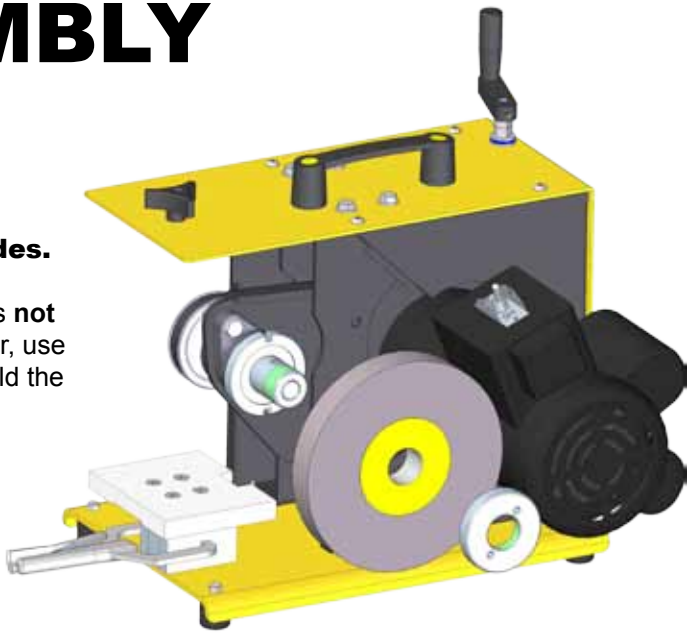
The 1/2” wide wheel will be **in-line** mulching blade worktable. Be sure the arbor spacer (8000-27) is used as shown in the image.



ASSEMBLY

MOUNTING THE 1" WIDE WHEEL, for sharpening straight-edged blades.

The 1" wide wheel does **not** require the arbor spacer, use only the arbor nut to hold the wheel.



Steps to connect the grit guard to the MAG-8000.

1. The yellow ACTIVE GUARD must be on the inside of the black steel guard by the motor.
2. The top lip of the grit guard must be on top of the yellow body plate of the MAG-8000.
3. Slide the grit guard assembly into the MAG-8000 and the interlocking tabs and lips will engage keeping the guards solid.
4. Screw the plastic knob into the threaded hole to hold the grit guard assembly in place.
5. See image on page 6 from when the transport bolt was removed.

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TESTING THE MAG-8000

Testing the unit first be sure the grinding wheel moves freely. Ensure the MAG-8000 ON/OFF switch is in the OFF POSITION, plug the MAG-8000 into a 20 amp, 110 volt outlet. Switch the ON/OFF switch to the ON POSITION to test the motor. The motor should achieve FULL speed in 1-2 seconds. If it does not, (see page 15) or contact MAGNA-MATIC (800-328-1110).

MULCHING BLADES

WARNING

NEVER WELD OR BEND A LAWN MOWER BLADE - YOU WILL CREATE FRACTURES OR WEAKEN THE HARDENING OF THE BLADE DISCARD BENT BLADES!

CAUTION

LAWN MOWER BLADES HAVE SHARP EDGES - ALWAYS WEAR PROTECTIVE GLOVES AND SAFETY GLASSES!

Be sure to wear protective clothing before handling and sharpening lawn mower blades. Wear safety glasses and protective gloves. Always de-burr the underside of blades.

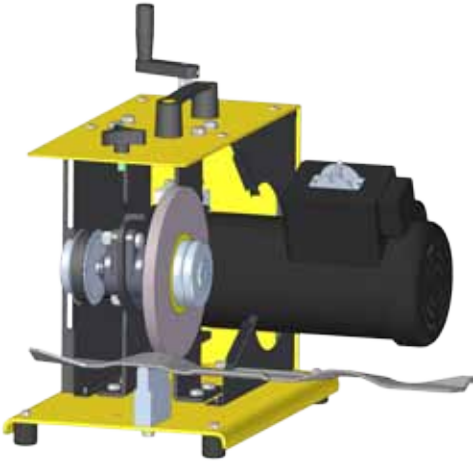
BLADE & SHARPENER PREPARATION

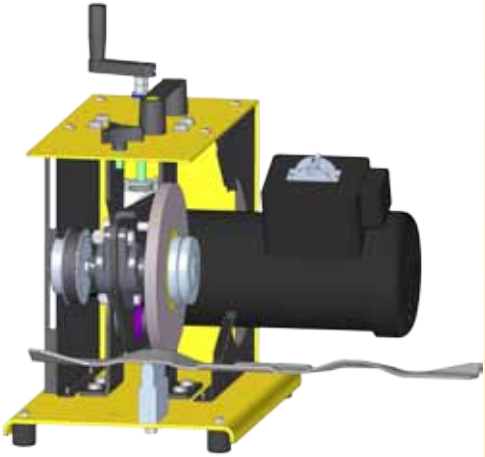
1. Clean the blade to its base material, using the MAG-12008 blade cleaner, or alternate cleaning process.
2. Check the straightness with the gauge rod of the MAG-1000 blade balancer (never straighten bent blades)
3. Obtain a balance reading from the MAG-1000 to indicate the light end of the lawn mower blade. Once the light end is sharpened, that end is complete. The heavy end is used to remove material for balance. See MAG-1000 instructions for more details on blade balancing.
4. The MAG-8000 will require the 1/2” wide grinding wheel to sharpen a mulching blade. Mount the 1/2” wide wheel on the MAG-8000.
5. The fixed 1/2” wide curved metal worktable will be used to sharpen a mulching blade, remove the clamp-able flat conventional blade table.
6. Lower the grinding wheel with the adjustment crank. When the grinding wheel is almost touching (1/16” space) the corner of the worktable you will produce a 30 degree angle. (see page 20 for more info on angle adjustment)

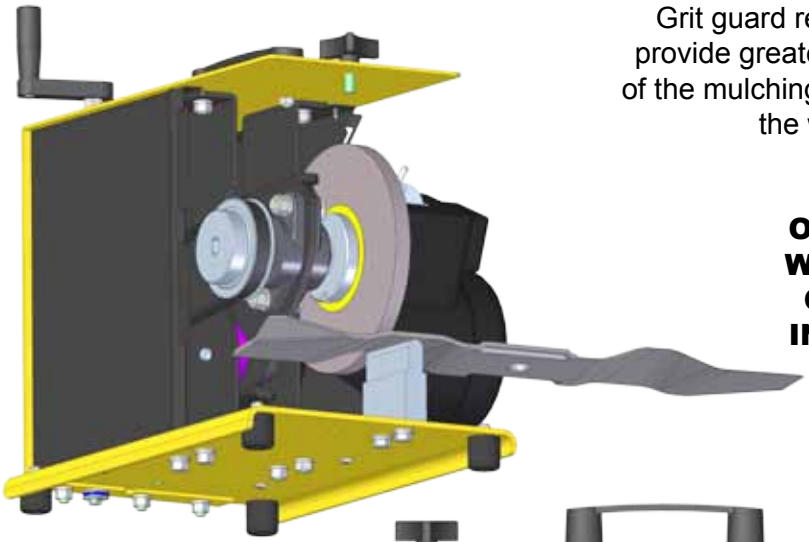
MULCHING BLADE SHARPENING

1. Switch the ON/OFF switch to ON position
2. When sharpening a mulching blade, you will start with the inside of the cutting edge and pull the blade out towards you, taking one pass at a time.
3. Pull the blade over the worktable, it is very important that you put more downward pressure on the blade, the underside of the blade **MUST** ride the curved worktable, this will follow its curves. Lessen the inward pressure so that the blade may move to and from the grinding wheel as the blade rides up and down the curved worktable. Do not use extreme pressure into the grinding wheel, let it ride over the curves.
4. Use even pressure to achieve an even stream of sparks.
5. When using the MAG-8000 for mulching blades keep the blade level, and perpendicular to the rotation of the grinding wheel. Pay close attention to the TIP of the blade, to create a pointed TIP see page 30. You may use the flat worktable for doing the TIPS of mulching blades, if you prefer.

MULCHING BLADES

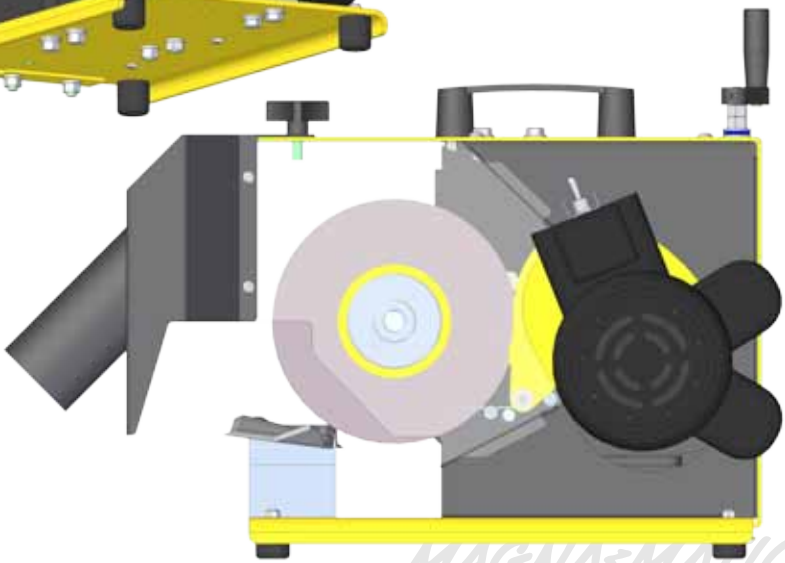






Grit guard removed to provide greater visibility of the mulching blade on the worktable.

NEVER OPERATE WITHOUT GUARDS IN PLACE



CONVENTIONAL BLADES

WARNING

NEVER WELD OR BEND A LAWN MOWER BLADE - YOU WILL CREATE FRACTURES OR WEAKEN THE HARDENING OF THE BLADE DISCARD BENT BLADES!

CAUTION

LAWN MOWER BLADES HAVE SHARP EDGES - ALWAYS WEAR PROTECTIVE GLOVES AND SAFETY GLASSES!

Be sure to wear protective clothing while handling and sharpening lawn mower blades. Wear safety glasses and protective gloves. Always de-burr the underside of blades.

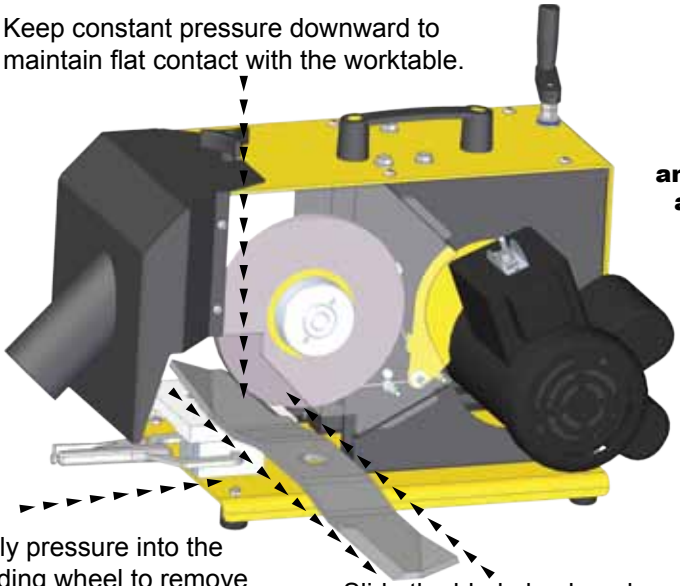
BLADE & SHARPENER PREPARATION

1. Clean the blade to its base material, using the MAG-12008 blade cleaner, or alternate cleaning process.
2. Check the straightness with the gauge rod of the MAG-1000 blade balancer (never straighten bent blades)
3. Obtain a balance reading from the MAG-1000 to indicate the light end of the lawn mower blade. Once the light end is sharpened, that end is complete. The heavy end is used to remove material for balance. See MAG-1000 instructions for more details on blade balancing.
4. It is best to use the 1” inch wide grinding wheel to sharpen a conventional blade. Mount the 1” wide grinding wheel on the MAG-8000. (note the 1/2” wide wheel can be used on conventional blades, but the 1” is more cost effective)
5. The flat removable worktable will be needed to sharpen a conventional blade, slide the clamp-able flat worktable over the rounded mulching table, and clamp it tight.
6. Lower the grinding wheel with the adjustment crank. Stop before you reach the table. When the grinding wheel is almost touching (1/16” space) the corner of the worktable you will produce a 30 degree angle. (see page 20 for more info on angle adjustment)

CONVENTIONAL BLADE SHARPENING

1. Switch the ON/OFF switch to ON position
2. Place the conventional blade on the worktable, you should push and pull the blade across the grinding wheel.
3. Keep firm downward pressure on the top of the blade so that contact is maintained with the worktable. This is important because the blade edge-angle is referenced off the worktable.
4. The force into the grinding wheel should be substantial resulting in a continuous stream of sparks and a deep smooth grinding sound.
5. The grinding process should be continuous without interruption until finished. (See page 30 for blade geometry info)

Keep constant pressure downward to maintain flat contact with the worktable.

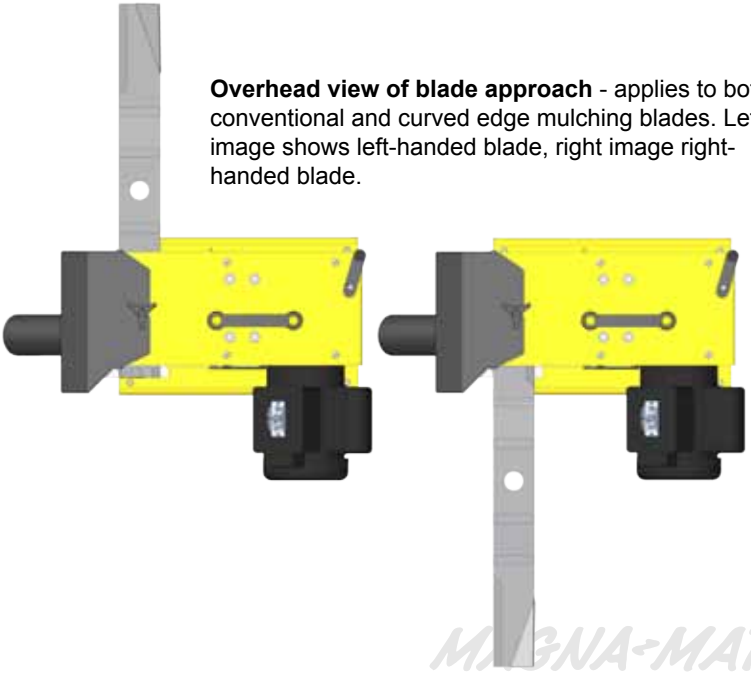


TIP: Use 3-4 of your fingers to apply the downward pressure, and your thumb to apply the inward pressure.

Apply pressure into the grinding wheel to remove material.

Slide the blade back and forth across the grinding wheel.

The above diagram shows the application of movement and force to the blade during sharpening of a conventional blade. Note, for curved edge mulching blades, it is the same except for the "forth" or inward fed motion.
You will maintain much more control if you only "pull" mulching blades across the grinding wheel. It is critical with both blade types that the operator keeps downward pressure on the blade, this will prevent chattering and keep the grinding wheel "true" or round.



Overhead view of blade approach - applies to both conventional and curved edge mulching blades. Left image shows left-handed blade, right image right-handed blade.

GRINDING WHEEL REPLACEMENT

CAUTION

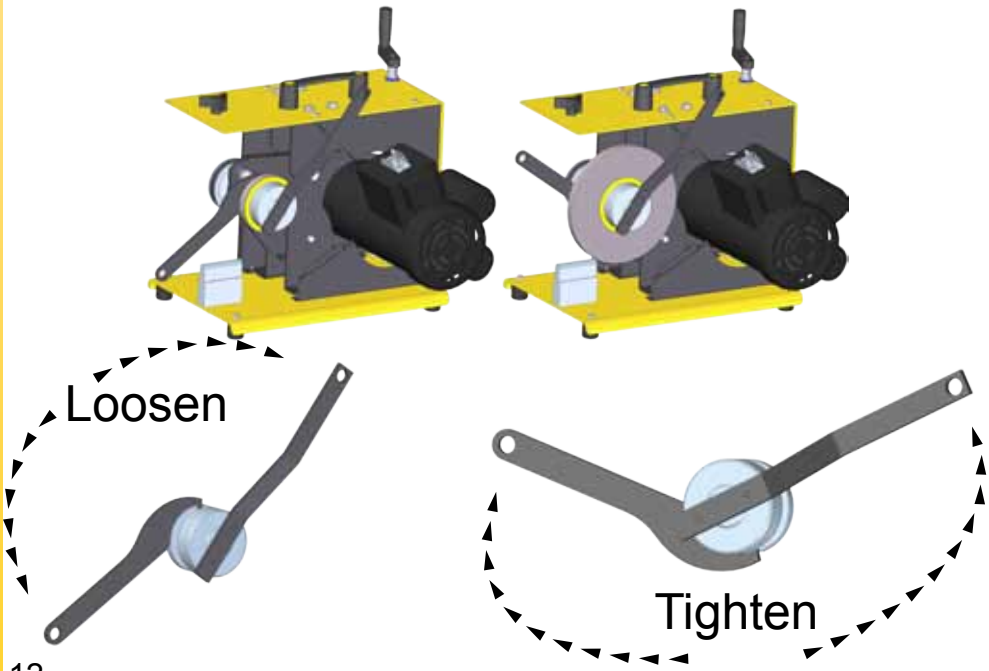
TURN OFF AND UNPLUG BEFORE SERVICING!

Be sure the MAG-8000 is unplugged. Remove the grit guard see (page 6.) Locate your spanner wrench and arbor wrench (both supplied by Magna-Matic.) The arbor wrench fits into a square notch in the arbor, behind the grinding wheel, and the spanner wrench fits into the two holes in the arbor nut. See diagrams below.

Always inspect grinding wheels for possible damage - never mount a cracked grinding wheel. **DO NOT OVER-TIGHTEN ARBOR NUT - ONLY LIGHT PRESSURE TO TIGHTEN.** The motor will tighten the arbor nut every time the sharpener is turned on.

For optimum performance use only grinding wheels specified by Magna-Matic. All NORTON® brand grinding wheels sold by Magna-Matic are speed tested for 5500 RPM

NOTE: Arbor has LEFT-HANDED THREADS.
MAG-8000 OEM WHEELS = 9000-35 & 8000-30



MAG-8000 SERVICE & CARE

CAUTION

TURN OFF AND UNPLUG BEFORE SERVICING!

GENERAL CARE:

Keep the MAG-8000 clean, use compressed air to blow the machine off periodically. Use mild soapy water to clean powder coated surfaces and Lexan® guards. Remove large build-ups of grit in the grit guard, and inside the MAG-8000.

OIL THREAD CLEANERS:

Once per season, apply general purpose oil to the felt washers above and below the adjustment block. These oiled felt washers act as a thread cleaner to prevent grit from damaging the adjustment.

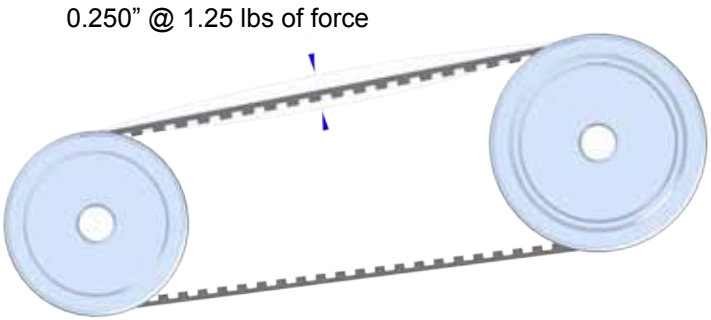
GREASING OF BEARING BLOCKS:

Care should be taken when greasing bearings to avoid overfilling. Overfilling can lead to excessive heat and or unseating of the seals. Grease should be introduced in small increments and under light pressure. The use of pneumatic greasing is not recommended unless low pressure is assured. Whenever possible, the shaft should be rotated during re-lubrication to insure proper grease distribution throughout the raceways.

3-6 Months OR 500-1000 Machine Hours - Fill with 2 grams (approx. 1/4 pump)

TIMING BELT REPLACEMENT

See the diagram below for proper belt tension. Tension can be applied either at the bolts of the motor or bearing blocks. There is slight play in the holes to apply or relieve belt tension. The belt should be tight enough, such that it does not vibrate, but not so tight that it creates a high-pitched sound.



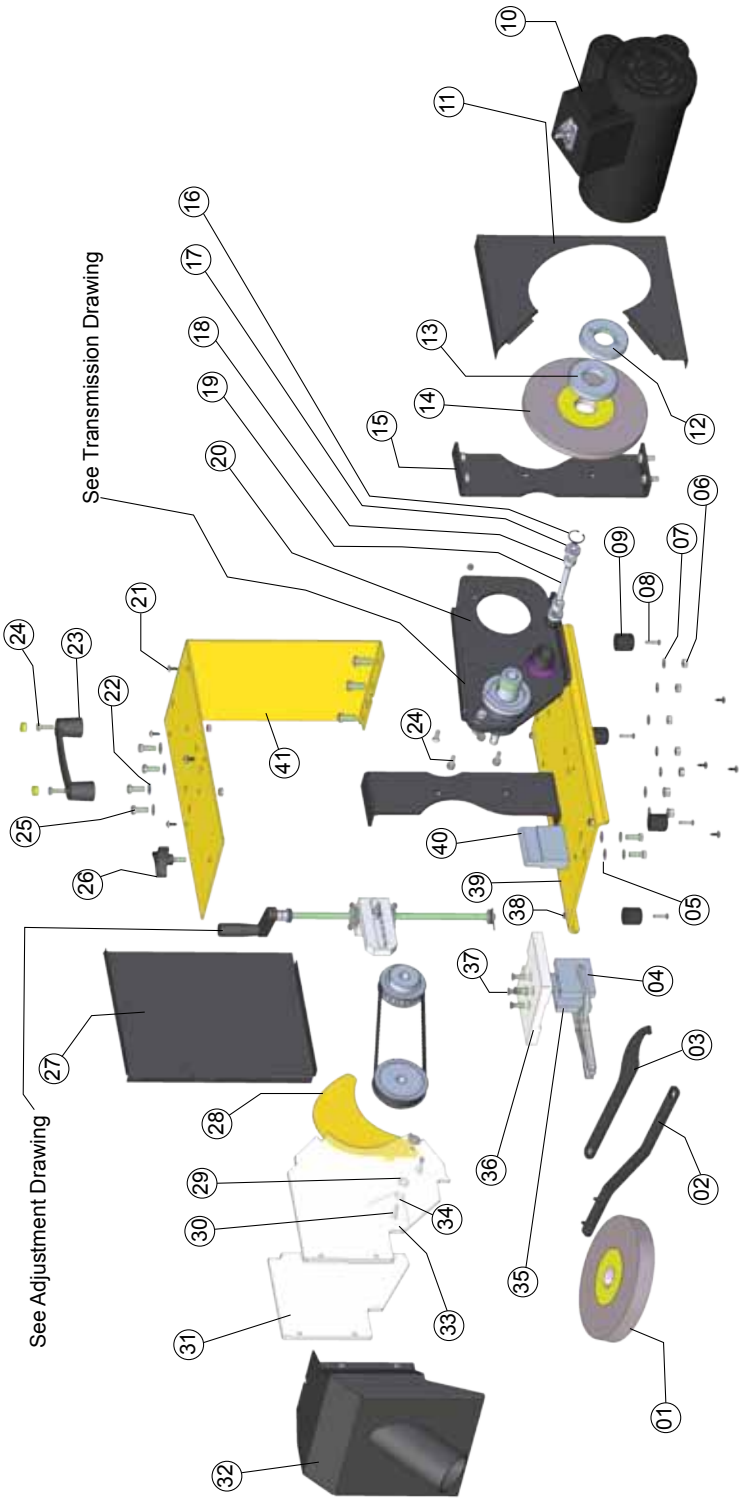
Timing Belt Tension

MAG-8000 SPECIFICATIONS

	MAG-8000	MAG-8000 (Euro)
LxWxH	24”x12”x17”	60.9x30.5x43.1cm
Weight	80 lbs	36 kg
Ship Weight 1 box	85 lbs	38 kg
Motor Specs	BALDOR® Electric	BALDOR® Electric
Horse Power	1	1
RPM	3450	2850
Duty Cycle	Continuous	Continuous
Hertz	60	50
Volts	115	220
Phase	Single	Single
Amps (start)	30	15
Amps (run)	10	5
Capacitors	Dual	Dual
Solid State Switch	Yes	Yes
Motor Type	Industrial - Totally Enclosed	Industrial - Totally Enclosed
Insulation	Class F	Class F
Direction	Single Direction	Single Direction
Fan Cooled	Yes	Yes
Transmission	Timing belt/pulley	Timing belt/pulley
Grinding Wheels	NORTON® Abrasives	NORTON® Abrasives
Wheel Dimensions	7” dia x 1” thick x 1-1/4” dia arbor 7” dia x 1/2” thick x 1-1/4” dia arbor	17.7 cm dia x 2.5 cm thick x 3.18 cm dia arbor 17.7 cm dia x 1.27 cm thick x 3.18 cm dia arbor

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Motor fails to start	Fan guard bent/damaged and contacting fan.	Replace fan guard, if possible, straighten it.
Motor has been running, then fails to start	Fuse or circuit breaker tripped.	Replace fuse or reset the breaker.
Motor has been running, then fails to start	Motor overloaded or load jammed.	Inspect to see that the load is free. Verify amp draw of motor versus nameplate rating.
Motor has been running, then fails to start	Capacitor may have failed.	First discharge capacitor. To check capacitor, set volt-ohm meter to RX100 scale and touch its probes to capacitor terminals. If capacitor is OK, needle will jump to zero ohms, and drift back to high. Steady zero ohms indicates a short circuit; steady high ohms indicates an open circuit.
Motor has been running, then fails to start	Starting switch has failed.	See wiring diagram and connect the black wire from the motor and the black wire from the cord to bypass the switch.
Motor runs but dies down	Voltage drop	If voltage is less than 10% of the motor's rating contact power company or check if some other equipment is taking power away from the motor. If motor is run using an extension cord, verify that this extension cord is properly sized for motor's current draw.
Motor takes too long to accelerate	Defective capacitor	Test capacitor per previous instructions.
Motor takes too long to accelerate	Bad bearings	Noisy or rough feeling bearings should be replaced.
Motor takes too long to accelerate	Voltage too low.	Make sure that the voltage is within 10% of the motor's nameplate rating. If not, contact power company or check if some other equipment is taking power away from the motor.
Motor overload protector continually trips	Ambient temperature too high.	Verify that the motor is getting enough air for proper cooling. Most motors are designed to run in an ambient temperature of less than 40°C. (Note: A properly operating motor may be hot to the touch.)
Start capacitors continuously fail.	Voltage to motor is too low.	Verify that voltage to the motor is within 10% of the nameplate value. If the motor is rated 110-125 V, the deviation must be calculated from 125 V.
MAG-8000 is vibrating	Grinding wheel is out-of-round	Dress the wheel and old lawn mower blade. Use a perfectly flat area, like around the mounting hole. Place it in the sharpener like you would normally, and slowly apply pressure into the wheel. Do not go back and forth, just apply even pressure, and let the wheel true itself.
MAG-8000 is vibrating	Bad motor bearings	Remove the grinding wheel, and run the MAG-8000. Inspect the motor shaft and bearings.
MAG-8000 is vibrating	Loose pulleys or bearing collars	Tighten set screws, locking agent should be used.
MAG-8000 is vibrating	Poor belt tension	Check and tension belt see page 13
MAG-8000 is vibrating	Bad drive shaft bearings	Check and replace the two flange bearings
MAG-8000 crank will not adjust the wheel up or down	Adjustment block jammed	Inspect the cam-follower bearing and adjustment block for foreign material, clean.
Unable to remove grinding wheel	Turning wrong direction	The arbor nut has left-handed threads. Turn clockwise to loosen. Use both the arbor and spanner wrench.
Difficult to remove grinding wheel	Extremely tight, wheel has not been changed in a long time.	Using both the spanner and arbor wrenches, Allow the arbor wrench to stop against the yellow body, Use a plastic hammer and tap the end of the spanner wrench, imparting vibration will shock the nut loose. In extreme situations you can apply heat, only to the arbor nut. Last resort, you can break the wheel off the arbor.


See Transmission Drawing
See Adjustment Drawing
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MAG-8000 PARTS KEY

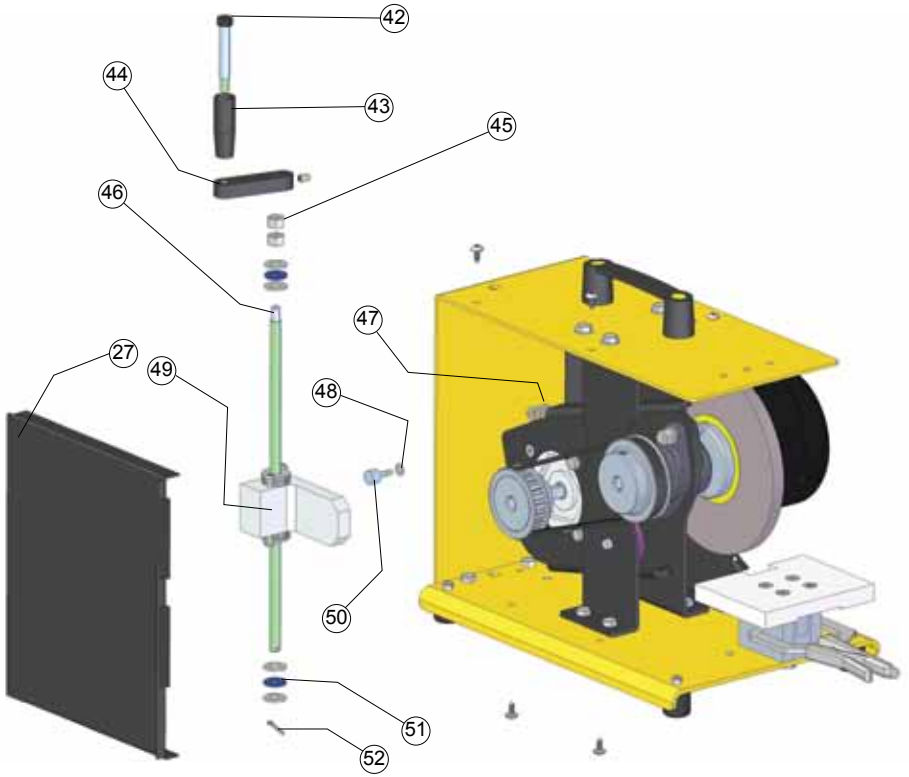
Key #	Part #	Description
1	9000-35	Grinding wheel 1” wide
2	9000-21	Spanner wrench
3	9000-53	Arbor wrench
4	8000-02	Worktable leg with vice grip
5	H-31WFZ	5/16 flat washer (8)
6	H-31CNFZ	5/16-18 nut (11)
7	H-31WLZ	5/16 lock washer (13)
8	H-18C75BSSss	#10-24x3/4 screw (8)
9	9000-11	Rubber foot (4)
10	8000-25	1 hp motor
11	8000-56	Steel guard (motor-side)
12	9000-19	Arbor nut
13	8000-27	Arbor spacer (required for use with 1/2” wide grinding wheel)
14	8000-30	Grinding wheel 1/2” wide
15	8000-45	Pivot angle full-height (2)
16	1000-22	Retaining ring (2)
17	1000-23	Bearing (2)
18	1000-20	Bearing collar (2)
19	8000-36	Pivot shaft
20	8000-23	Pivot plate
21	H-18N50SPT-Z/A	#10 sheet metal screw (8)
22	H-31WFZ	5/16 flat washer (15)
23	9000-58	Carry handle
24	H-25C75HSZ	1/4-20x3/4 bolt (5)
25	H-31C75HSZ	5/16-18x3/4 bolt (13)
26	8000-60	Knob (2)
27	8000-54	Steel guard (pulley-side)
28	8000-58	Active guard
29	H-25WFZ	1/4” flat washer (2)

Key #	Part #	Description
30	H-25N050KSS	1/4-20 x 0.50 long shoulder bolt (3)
31	8000-67	Lexan guard (pulley-side)
32	8000-74	Grit guard
33	8000-68	Lexan guard (motor-side)
34	8000-59	Torsion spring
35	8000-04	Worktable leg without vice grip
36	8000-03	Flat worktable
37	H-25C75PFZ	1/4-20x3/4 screw (5)
38	H-18CNINFZ	#10-24 nylon nut (8)
39	8000-24	Bottom plate
40	8000-01	Rounded worktable
41	8000-20	Top plate

MAG-8000 PARTS KEY

MAG-8000 Adjustment Parts Key

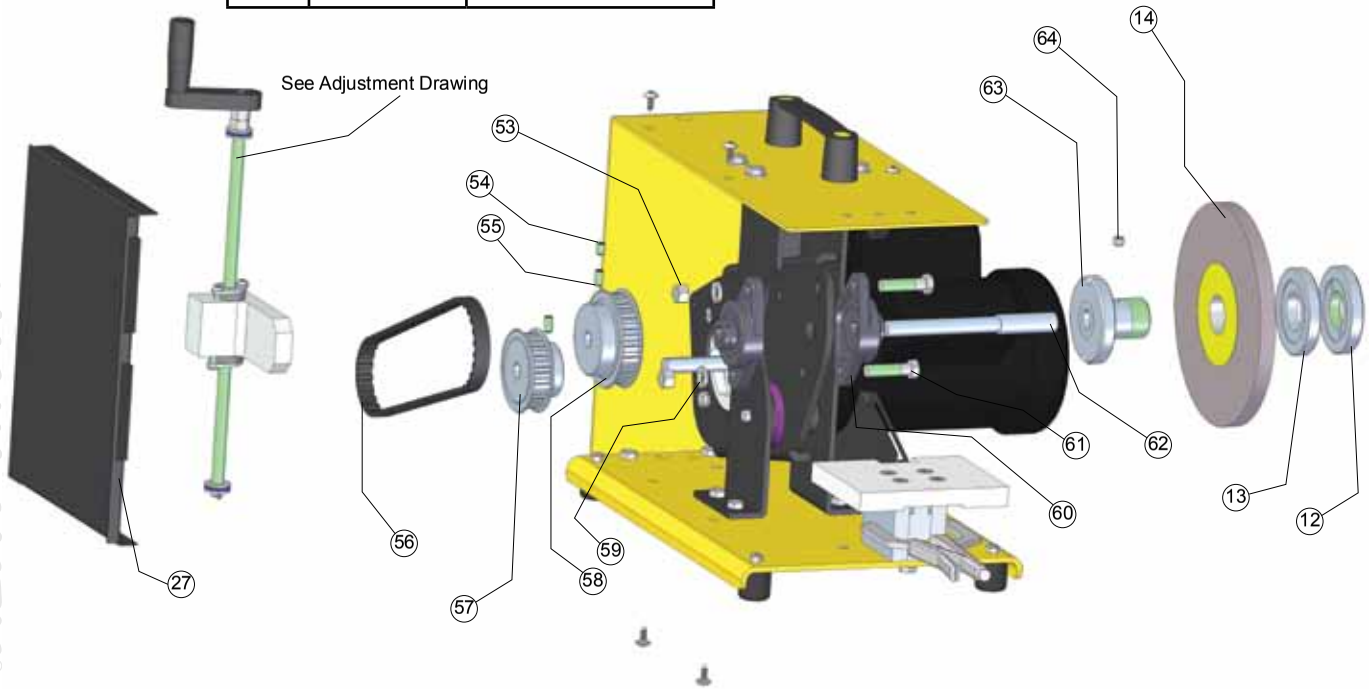
Key #	Part #	Description
42	H-37N200KSS	Shoulder bolt for crank handle
43	9000-14	Crank handle
44	9000-13	Crank base
45	H-37CNFZ	3/8-16 zinc nut (2)
46	9000-49	Threaded adjusting rod
47	H-18FNINFZ	#10-32 nylon nut
48	H-18WFZSS	#10 flat washer (3)
49	8000-46	Adjustment block
50	8000-47	Cam-follower
51	9000-37	Thrust bearing (2)
52	H-Cotter Pin	Cotter pin



MAG-8000 PARTS KEY

Key #	Part #	Description
53	H-37CNFZ	3/8-16 nut (2)
54	H-25C37SSS	1/4-20x3/8 set screw
55	H-25C50SSS	1/4-20x1/2 set screw (2)
56	8000-14	Timing belt
57	8000-13	20 tooth pulley
58	8000-15	24 tooth pulley
59	H-37WLZ	3/8 lock washer (2)

60	8000-09	Flange bearing (2)
61	H-37C150HSZ	3/8-16x1.5 bolt (2)
62	8000-07	Drive shaft
63	9000-20	Arbor
64	H-31F25SSS	5/16-24x1/4 set screw



ANGLE ADJUSTMENT

ADJUSTING THE EDGE ANGLE

(Applies to both MAG-8000 and MAG-9000)

30 Degree Reference Point - When the grinding wheel is lowered to the work table (almost cutting the work table corner) you will produce a 30 degree angle on the lawn mower blade. As the grinding wheel wears and reduces in diameter, continue to lower the grinding wheel to almost touch the work table to maintain a consistent 30 degree edge angle on a blade.

The edge angle can be varied plus or minus the 30 degree reference point via the adjusting crank.

Raising the grinding wheel will result in a lesser than 30 degree angle (a more shallow angle.)

Lowering the grinding wheel into the work table (grinding into the work table) will result in a greater than 30 degree angle (a steeper angle.) **Note:** you will be creating a new angle reference point. To make this steeper angle reference point you will grind into the worktable.

ANGLE DETERMINATION

(when sharpener is set to 30 degrees)

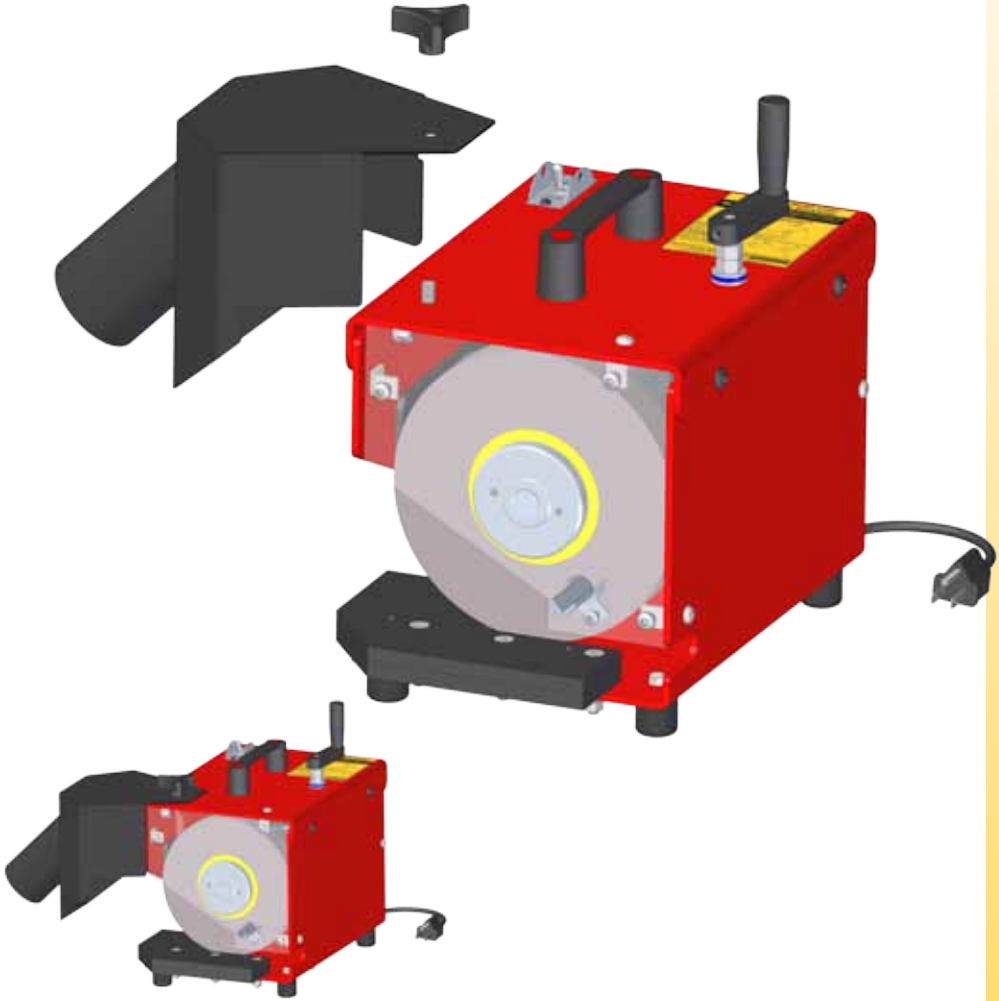
If the grinding wheel only grinds the TRAILING EDGE the angle is greater than 30 degrees.

If the grinding wheel only grinds the LEADING EDGE the angle is less than 30 degrees.

TIP: The cutting edge-angle is 30 degrees - when the cutting edge face width is twice the thickness of the blade. See page 30 for a diagram of the trailing and leading edges of a lawn mower blade.

ASSEMBLY

Assemble the grit guard to the sharpener with the plastic knob. The MAG-9000 comes mounted with the 1” wide grinding wheel.



WARNING

WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY.

TESTING THE MAG-9000

Testing the unit, be sure the grinding wheel moves freely. Ensure the MAG-9000 ON/OFF switch is in the OFF POSITION, plug the MAG-9000 into a 20 amp, 110 volt outlet. Switch the ON/OFF switch to the ON POSITION to test the motor. The motor should achieve FULL speed in 3-4 seconds. If it does not (see page 27 or contact MAGNA-MATIC - 800-328-1110).

CONVENTIONAL BLADES

WARNING

NEVER WELD OR BEND A LAWN MOWER BLADE - YOU WILL CREATE FRACTURES OR WEAKEN THE HARDENING OF THE BLADE DISCARD BENT BLADES!

CAUTION

LAWN MOWER BLADES HAVE SHARP EDGES - ALWAYS WEAR PROTECTIVE GLOVES AND SAFETY GLASSES!

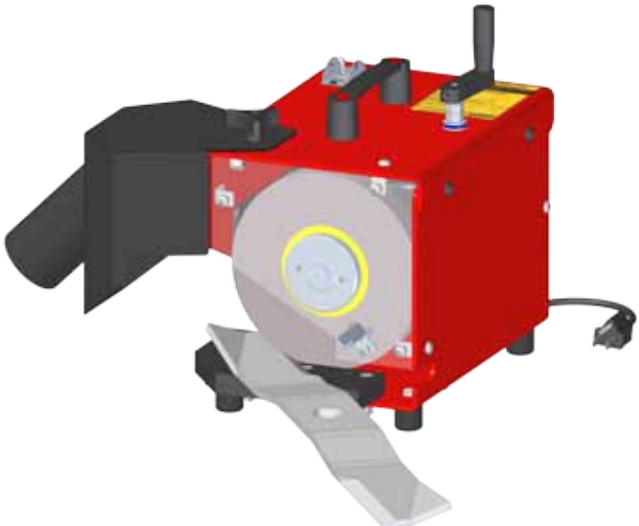
Be sure to wear protective clothing while handling and sharpening lawn mower blades. Wear safety glasses and protective gloves. Always de-burr the underside of blades.

BLADE & SHARPENER PREPARATION

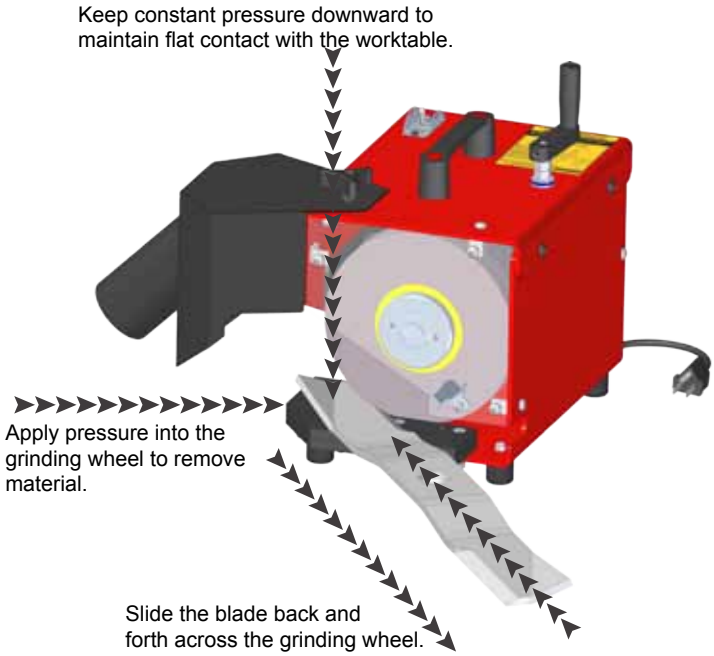
1. Clean the blade to its base material, using the MAG-12008 blade cleaner, or alternate cleaning process.
2. Check the straightness with the gauge rod of the MAG-1000 blade balancer (never straighten bent blades)
3. Obtain a balance reading from the MAG-1000 to indicate the light end of the lawn mower blade. Once the light end is sharpened, that end is complete. The heavy end is used to remove material for balance. See MAG-1000 instructions for more details on blade balancing.
4. Lower the grinding wheel with the adjustment crank. When the grinding wheel is almost touching (1/16” space) the corner of the worktable you will produce a 30 degree angle. (see page 20 for more info on angle adjustment)

CONVENTIONAL BLADE SHARPENING

1. Switch the ON/OFF switch to ON position
2. Place the conventional blade on the worktable, you should push and pull the blade across the grinding wheel.
3. Keep firm downward pressure on the top of the blade so that contact is maintained with the worktable. This is important because the angle is referenced off the worktable.
4. The force into the grinding wheel should be substantial resulting in a continuous stream of sparks and a deep smooth grinding sound.
5. The grinding process should be continuous without interruption until finished. (See page 30 for blade geometry info)

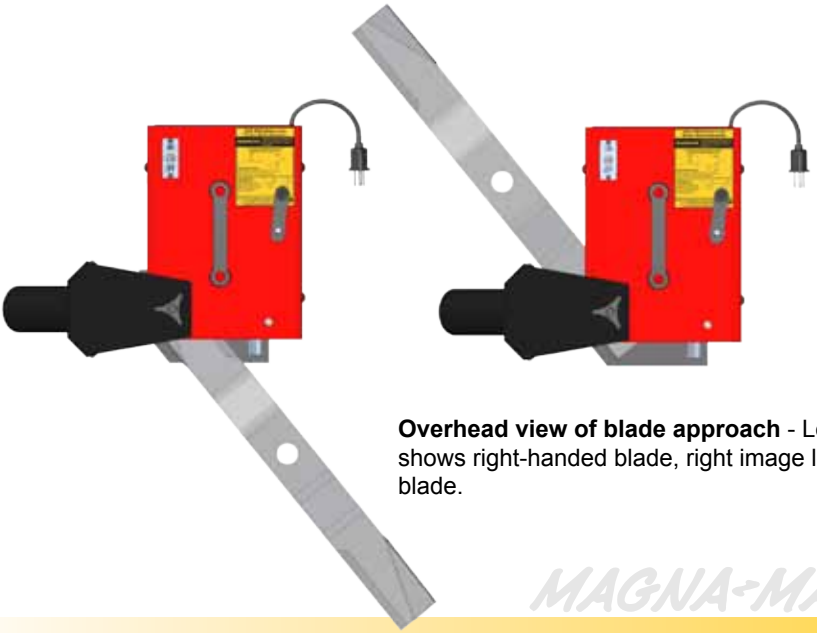


CONVENTIONAL BLADES



TIP: Use 3-4 of your fingers to apply the downward pressure, and your thumb to apply the inward pressure.

The above diagram shows the application of movement and force to the blade during sharpening of a conventional blade. It is critical that the operator keeps downward pressure on the blade, this will prevent chattering and keeps the grinding wheel "true" or round.



Overhead view of blade approach - Left image shows right-handed blade, right image left-handed blade.

GRINDING WHEEL REPLACEMENT

CAUTION

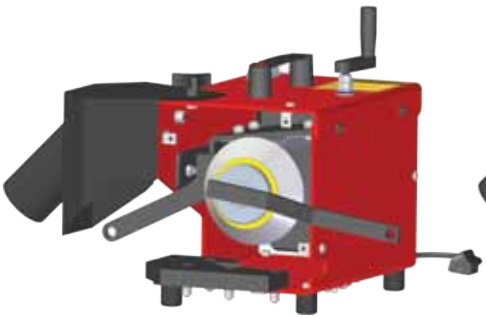
TURN OFF AND UNPLUG BEFORE SERVICING!

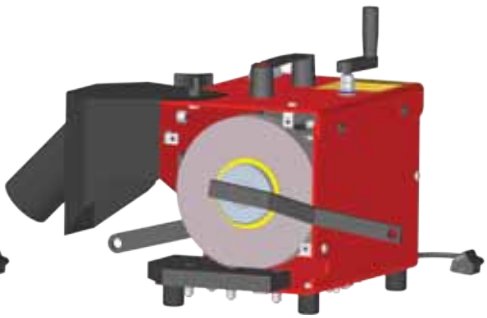
Be sure the MAG-9000 is unplugged. Using a 5/32" Allen wrench remove the (3) screws of the front Lexan® guard. Locate your spanner wrench and arbor wrench (both supplied by Magna-Matic.) The arbor wrench fits into a square notch in the arbor behind the grinding wheel, and the spanner wrench fits into the two holes in the arbor nut. See diagrams below.

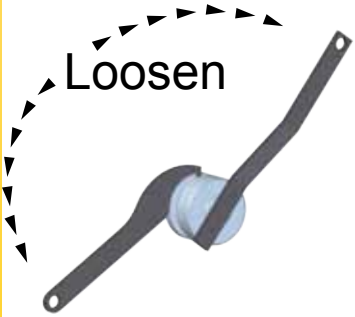
Always inspect grinding wheels for possible damage - never mount a cracked grinding wheel. **DO NOT OVER-TIGHTEN ARBOR NUT - ONLY LIGHT PRESSURE TO TIGHTEN.** The motor will tighten the arbor nut every time the sharpener is turned on.

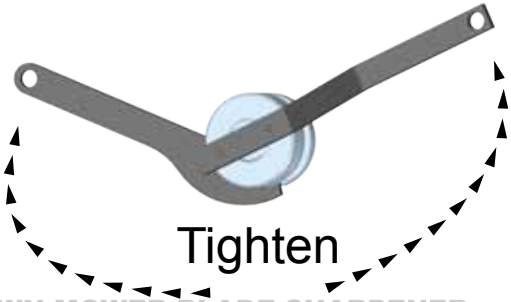
For optimum performance use only grinding wheels specified by Magna-Matic. All NORTON® brand grinding wheels sold by Magna-Matic are speed tested for 5500 RPM

NOTE: ARBOR HAS LEFT-HANDED THREADS.
MAG-9000 OEM WHEEL = 9000-23







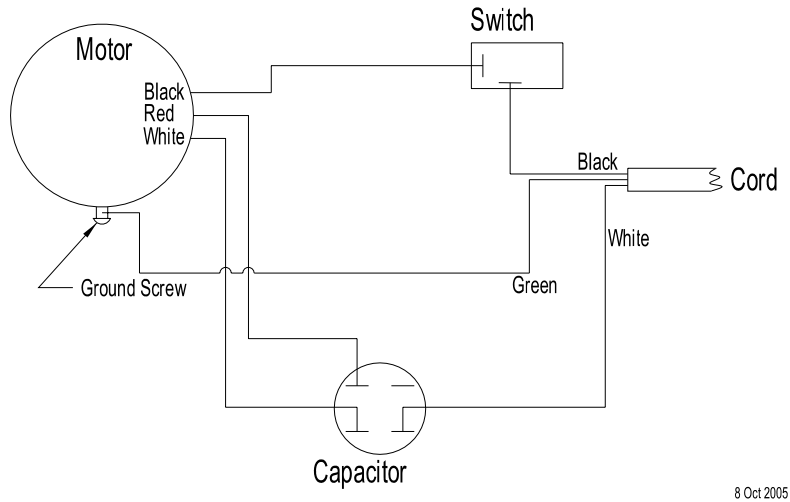


MAG-9000 WIRING DIAGRAMS

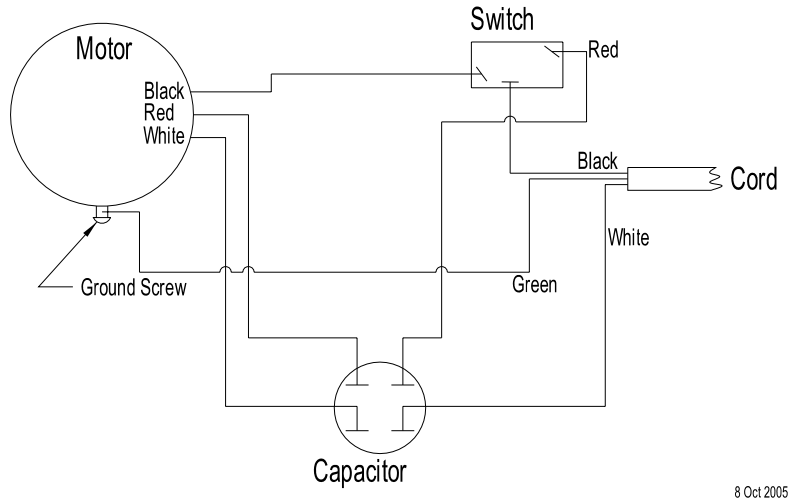
CAUTION

TURN OFF AND UNPLUG BEFORE SERVICING!

Mag-9000 Wiring Diagram For Metal Toggle Switch



Mag-9000 Wiring Diagram For Lit Rocker Switch

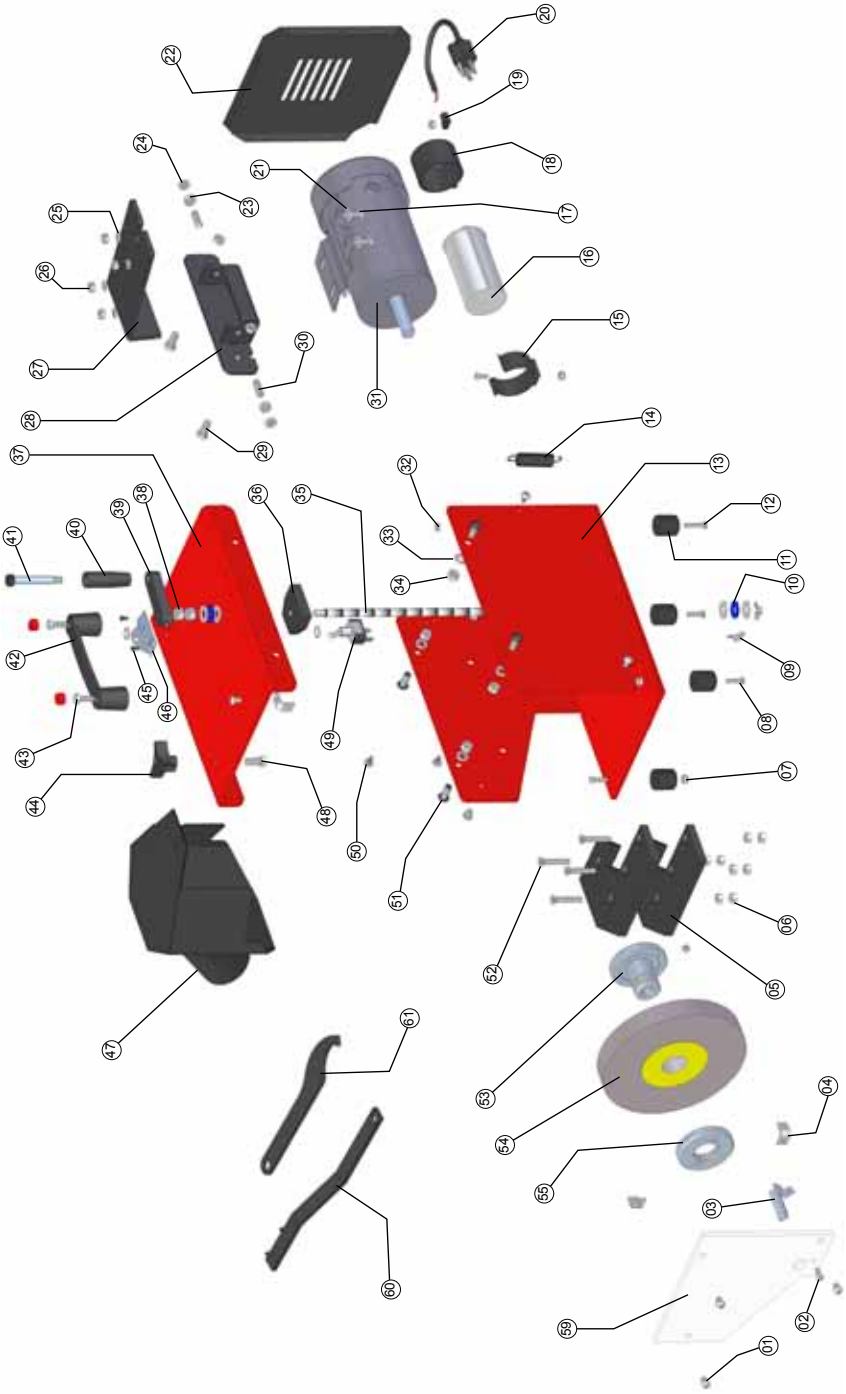


MAG-9000 SPECIFICATIONS

	MAG-9000	MAG-9000 (Euro)
LxWxH	12”x8”x8”	30.5x20.3x20.3cm
Weight	48 LBS	20 kg
Ship Weight 1 box	50 LBS	22 kg
Motor Specs	BALDOR® Electric	BALDOR® Electric
Horse Power	.75	.63
RPM	3450	2850
Duty Cycle	Std / Intermittent	Std / Intermittent
Hertz	60	50
Volts	115	220
Phase	Single	Single
Amps (start)	15	7.5
Amps (run)	7.7	4
Capacitors	Single	Single
Solid State Switch	No	No
Thermal Protection	Yes	Yes
Motor Type	Industrial - Totally Enclosed	Industrial - Totally Enclosed
Insulation	Class F	Class F
Direction	Single Direction	Single Direction
Fan Cooled	Yes	Yes
Transmission	Direct Drive	Direct Drive
Grinding Wheels	NORTON® Abrasives	NORTON® Abrasives
Wheel Dimensions	7” dia x 1” thick x 1-1/4” dia arbor	17.7 cm dia x 2.5 cm thick x 3.18 cm

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Motor fails to start	Fan guard bent/damaged and contacting fan.	Replace fan guard, if possible, straighten it.
Motor has been running, then fails to start	Fuse or circuit breaker tripped.	Replace fuse or reset the breaker.
Motor has been running, then fails to start	Motor overloaded or load jammed.	Inspect to see that the load is free. Verify amp draw of motor versus nameplate rating.
Motor has been running, then fails to start	Capacitor may have failed.	First discharge capacitor. To check capacitor, set volt-ohm meter to RX100 scale and touch its probes to capacitor terminals. If capacitor is OK, needle will jump to zero ohms, and drift back to high. Steady zero ohms indicates a short circuit; steady high ohms indicates an open circuit.
Motor has been running, then fails to start	Starting switch has failed.	See wiring diagram and connect the black wire from the motor and the black wire from the cord to bypass the switch.
Motor runs but dies down	Voltage drop	If voltage is less than 10% of the motor's rating contact power company or check if some other equipment is taking power away from the motor. If motor is run using an extension cord, verify that this extension cord is properly sized for motor's current draw.
Motor takes too long to accelerate	Defective capacitor	Test capacitor per previous instructions.
Motor takes too long to accelerate	Bad bearings	Noisy or rough feeling bearings should be replaced.
Motor takes too long to accelerate	Voltage too low.	Make sure that the voltage is within 10% of the motor's nameplate rating. If not, contact power company or check if some other equipment is taking power away from the motor.
Motor overload protector continually trips	Ambient temperature too high.	Verify that the motor is getting enough air for proper cooling. Most motors are designed to run in an ambient temperature of less than 40°C. (Note: A properly operating motor may be hot to the touch.)
Start capacitors continuously fail.	Voltage to motor is too low.	Verify that voltage to the motor is within 10% of the nameplate value. If the motor is rated 110-125 V, the deviation must be calculated from 125 V.
MAG-9000 is vibrating	Grinding wheel is out-of-round	Dress the wheel and old lawn mower blade. Use a perfectly flat area, like around the mounting hole. Place it in the sharpener like you would normally, and slowly apply pressure into the wheel. Do not go back and forth, just apply even pressure, and let the wheel true itself.
MAG-9000 is vibrating	Bad motor bearings	Remove the grinding wheel, and run the MAG-9000. Inspect the motor shaft and bearings.
MAG-9000 crank will not adjust the wheel up or down	Adjusting nut threads worn out	The 9000-18 adjusting nut over time will become worn out due to grit loading in the threads. It is a wear part.
Unable to remove grinding wheel	Turning wrong direction	The arbor nut has left-handed threads. Turn clock-wise to loosen. Use both the arbor and spanner wrench.
Difficult to remove grinding wheel	Extremely tight, wheel has not been changed in a long time.	Using both the spanner and arbor wrenches, Allow the arbor wrench to stop against the red body, Use a plastic hammer and tap the end of the spanner wrench, imparting vibration will shock the nut loose. In extreme situations you can apply heat, only to the arbor nut. Last resort, you can break the wheel off the arbor.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MAG-9000 PARTS KEY

Key #	Part #	Description
01	H-25C37BSSZ	1/4-20x3/8 screw (6)
02	H-18C50BSSZ	10-24x1/2 screw (2)
03	9000-29	Valve stem grinding guide
04	9000-26	Angle nut (3)
05	9000-22	Worktable (2)
06	H-25CNFZ	1/4-20 nut (10)
07	H-18CNINFZ	10-24 nylon nut (5)
08	H-18C75BSSss	10-24x3/4 screw (3)
09	H-Cotter Pin	Cotter pin (2)
10	9000-37	Thrust bearing (2)
11	9000-11	Rubber foot (4)
12	H-18C100BSSZ	10-24x1 screw
13	9000-17	Body
14	9000-25	Spring
15	9000-33	Capacitor clamp
16	9000-31	Capacitor
17	H-25F50HSZ	1/4-28x3/4 bolt (4)
18	9000-32	Capacitor rubber boot
19	9000-36	Cord clamp
20	9000-12	Cord set
21	H-25WFZ	1/4 washer (4)
22	9000-03	Rear motor cover
23	H-31FNFZ	5/16-24 nut (2)
24	H-31FNJZ	5/16-24 jam nut (4)
25	H-25WLZ	1/4 lock washer (4)
26	H-25FNFZ	1/4-28 nut (4)
27	9000-02	Motor pivot bracket
28	9000-01	Body pivot bracket
29	H-31F75HSZ	5/16-24x3/4 bolt (2)
30	H-31F100PSSS	5/16-24x1 pointed set screw (2)

Key #	Part #	Description
31	9000-24	Motor
32	H-18CNFZ	10-24 nut
33	H-31WLZ	5/16 lock washer (4)
34	H-31CNFZ	5/16-18 nut (4)
35	9000-16	Threaded adjusting rod
36	9000-18	Adjusting nut
37	9000-17	Body
38	H-37CNFZ	3/8-16 nut (2)
39	9000-13	Crank base
40	9000-14	Crank handle
41	H-37N200KSS	Shoulder bolt
42	9000-58	Carry handle
43	H-25C75HSZ	1/4-20x3/4 bolt (2)
44	9000-09	Knob
45	H-SR03065B	Push rivet
46	9000-55	Switch plate
47	9000-50	Vac grit guard
48	H-31C75BSSB	5/16-18x3/4 bolt
49	9000-54	On/off switch
50	H-18N50SPT-Z/A	10x1/2 sheet metal screw (3)
51	H-31C75BSSB	5/16-18x3/4 screw (4)
52	H-25C150PFZ	1/4-20x1.5 screw (4)
53	9000-20	Arbor
54	9000-23	Grinding wheel
55	9000-19	Arbor nut
59	9000-08	Front lexan guard
60	9000-21	Spanner wrench
61	9000-53	Arbor wrench

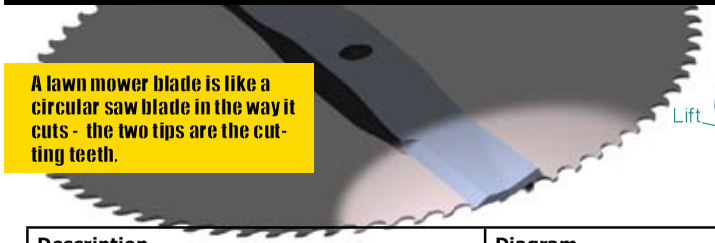
Blade Tip GEOMETRY

TIP

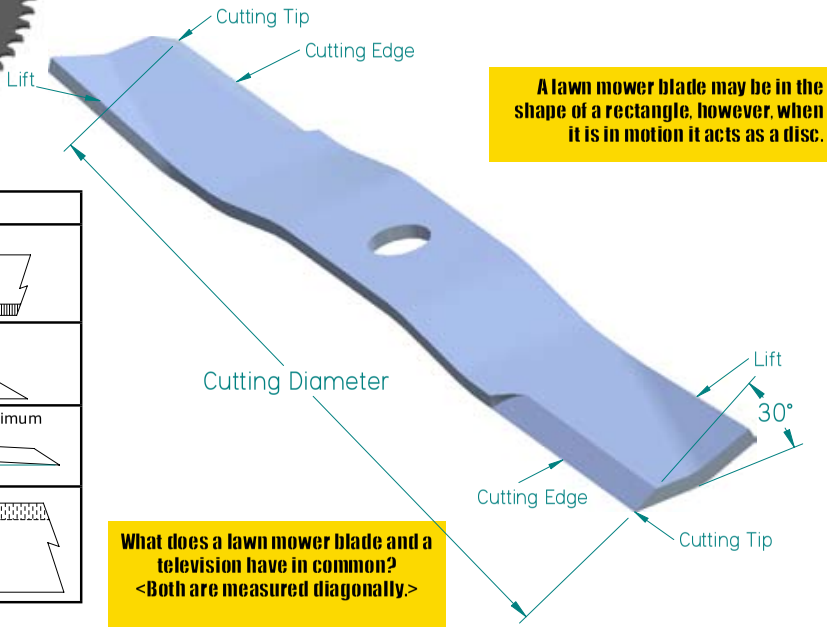
What part of a lawn mower blade cuts the grass?

Rotary lawn mower blades are measured from tip to tip, and the tip of the blade does the majority of the cutting work. Repeated observation of worn cutting edges shows that the first inch does the majority of the cutting work. To produce a cutting tip, three relief angles are necessary.

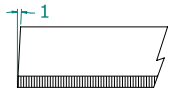
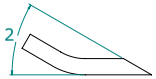
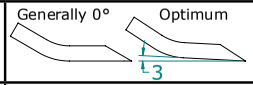
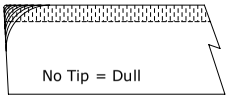
IMPORTANT NOTES:
Welding, straightening, sharp corners, and overheating the lawn mower blade may create fractures that break the blade under normal use and may cause injury.



A lawn mower blade is like a circular saw blade in the way it cuts - the two tips are the cutting teeth.



A lawn mower blade may be in the shape of a rectangle, however, when it is in motion it acts as a disc.

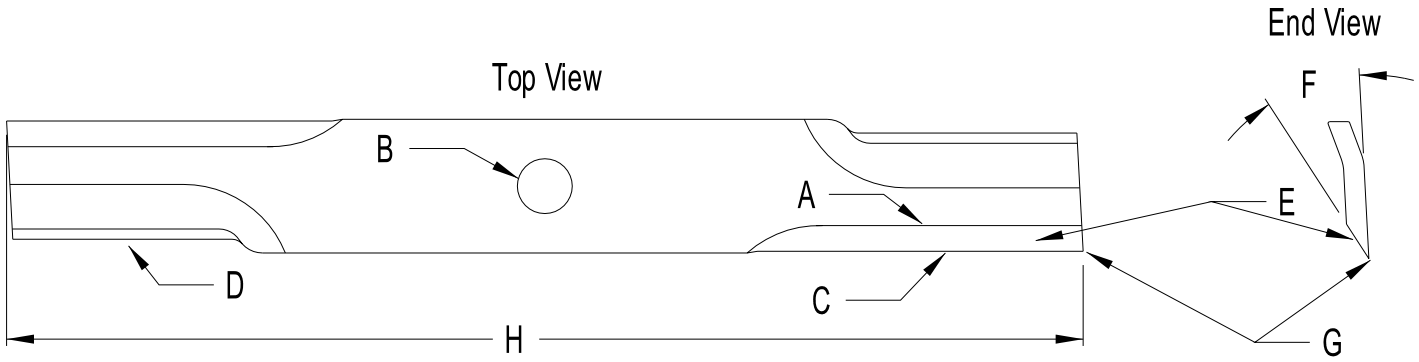
Description	Diagram
Relief Angle One: Top view - built into the blade (generally 2-5 degrees)	
Relief Angle Two: End view - To be re-sharpened (industry average is 30º)	
Relief Angle Three: End view - built into the blade	
Top View of Blade Landside: Worn Blade Edge Worn away bottom surface at tip. As shown, is a sign of poor blade maintenance. The blade will tear the grass, resulting in a poor looking lawn.	

What does a lawn mower blade and a television have in common?
<Both are measured diagonally.>

ANATOMY OF A LAWN MOWER BLADE

Use this diagram when asking questions to Magna-Matic representatives, or as it is referenced in this manual.

Key	Description
A	Trailing edge of the cutting edge face
B	Mounting hole
C	Leading edge of the cutting edge face
D	Lift
E	Cutting edge face
F	Cutting edge angle (30˚ shown)
G	Blade cutting tip (or tooth)
H	Overall cutting diameter



WARRANTY

This warranty is extended only to MAGNA-MATIC's commercial customers. To protect the quality of this tool, every step in its manufacture has been carefully controlled. It is constructed of only the finest materials by skilled craftsmen who take pride in their work. MAGNA-MATIC CORP. warrants the tools manufactured and/or repaired to be free of defects in material and workmanship for a period of 365 days after purchase. Any tool or part proved to MAGNA-MATIC's satisfaction to be defective during that period will be repaired or replaced at MAGNA-MATIC's option if returned prepaid. MAGNA-MATIC's sole obligation and your exclusive remedy under this warranty shall be limited to such repair or replacement. In no event shall MAGNA-MATIC be liable for any consequential or incidental damages. This warranty does not apply to parts (motor & grinding wheel) not manufactured by MAGNA-MATIC or failing due to ordinary wear, subjected to abuse, accidental damage, improper operations, maintenance or repair, or to other damage by circumstances beyond MAGNA-MATIC's control.

This warranty is exclusive and in lieu of all other expressed or implied warranties including without limitation, the implied warranties of merchantability and fitness for a particular purpose.

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High-Performance Service Tools for the OPE Industry

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