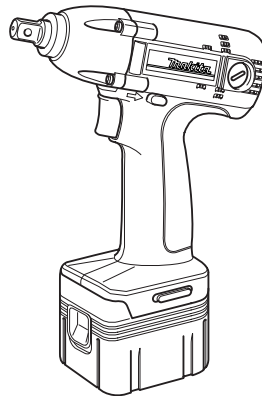




Cordless Impact Wrench

Equipped with Electric Brake
12.7 mm (1/2")
MODEL BTW120



002298

I N S T R U C T I O N M A N U A L

⚠ WARNING:

For your personal safety, READ and UNDERSTAND before using.
SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

www.makitatools.com

SPECIFICATIONS

Model		BTW120
Capacities	Standard bolt	M8 - M14 (5/16" - 9/16")
	High tensile bolt	M6 - M12 (1/4" - 1/2")
Square drive		12.7 mm (1/2")
No load speed (RPM)		0 - 2,300/min.
Impacts per minute		0 - 3,000
Max. fastening torque		120 N.m (88 ft.lbs)
Overall length		176 mm (6-15/16")
Net weight		1.5 kg (3.3 lbs)

Battery Cartridge	Voltage	Battery Charger	Input	Output	Charging time
BH1220	12 V	DC14SA	A. C. only 50 Hz - 60 Hz	D. C. 7.2 V - 14.4 V	30 min.
BH1233					50 min.

- Manufacturer reserves the right to change specifications without notice.
- Specifications may differ from country to country.

GENERAL SAFETY RULES

USA003-1

(FOR ALL BATTERY OPERATED TOOLS)

WARNING:

Read and understand all instructions. Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

SAVE THESE INSTRUCTIONS

Work Area

1. **Keep your work area clean and well lit.**
Cluttered benches and dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.

3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

Electrical Safety

4. **A battery operated tool with integral batteries or a separate battery pack must be recharged only with the specified charger for the battery.** A charger that may be suitable for one type of battery may create a risk of fire when used with another battery.
5. **Use battery operated tool only with specifically designated battery pack.** Use of any other batteries may create a risk of fire.

Personal Safety

6. **Stay alert, watch what you are doing, and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
7. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
8. **Avoid accidental starting. Be sure switch is in the locked or off position before inserting battery pack.** Carrying tools with your finger on the switch or inserting the battery pack into a tool with the switch on invites accidents.
9. **Remove adjusting keys or wrenches before turning the tool on.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
10. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enable better control of the tool in unexpected situations.
11. **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety

shoes, hard hat, or hearing protection must be used for appropriate conditions.

Tool Use and Care

12. **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
13. **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
14. **Do not use tool if switch does not turn it on or off.** A tool that cannot be controlled with the switch is dangerous and must be repaired.
15. **Disconnect battery pack from tool or place the switch in the locked or off position before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
16. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
17. **When battery pack is not in use, keep it away from other metal objects like: paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another.** Shorting the battery terminals together may cause sparks, burns, or a fire.
18. **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools with sharp cutting edge are less likely to bind and are easier to control.
19. **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.

20. **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may create a risk of injury when used on another tool.

SERVICE

21. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel may result in a risk of injury.

22. **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance instructions may create a risk of shock or injury.

SPECIFIC SAFETY RULES

USB025-2

DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to cordless impact wrench safety rules. If you use this tool unsafely or incorrectly, you can suffer serious personal injury.

1. **Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring.** Contact with a “live” wire will also make exposed metal parts of the tool “live” and shock the operator.
2. **Be aware that this tool is always in an operating condition, because it does not have to be plugged into an electrical outlet.**
3. **Wear ear protectors.**
4. **Check the socket carefully for wear, cracks or damage before installation.**
5. **Hold the tool firmly.**
6. **Always be sure you have a firm footing.**
7. **Be sure no one is below when using the tool in high locations.**
8. **The proper fastening torque may differ depending upon the kind or size of the bolt. Check the torque with a torque wrench.**

SAVE THESE INSTRUCTIONS

⚠ WARNING:
MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

SYMBOLS


USD302-1

The followings show the symbols used for tool.

V volts

.../min..... revolutions or reciprocation per minute

⎓ direct current

 number of blow

n₀ no load speed

IMPORTANT SAFETY INSTRUCTIONS FOR CHARGER & BATTERY CARTRIDGE

USC002-3

1. **SAVE THESE INSTRUCTIONS-** This manual contains important safety and operating instructions for battery charger.
2. Before using battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
3. **CAUTION -** To reduce risk of injury, charge only MAKITA rechargeable batteries marked on the charger label. Other types of batteries may burst causing personal injury and damage.
4. Do not expose charger to rain or snow.
5. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
6. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
7. Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
8. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:
 - a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
 - b. That extension cord is properly wired and in good electrical condition; and
 - c. That wire size is at least as large as the one specified in the table below.

Table 1: RECOMMENDED MINIMUM AWG SIZE FOR EXTENSION CORDS FOR BATTERY CHARGERS

Length of Cord (Feet)	25	50	100	150
AWG Size of Cord	18	18	18	16

9. Do not operate charger with damaged cord or plug - replace them immediately.
10. Do not operate charger if it has received a sharp blow, been dropped, or otherwise

-
- damaged in any way; take it to a qualified serviceman.
11. Do not disassemble charger or battery cartridge; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
 12. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
 13. The battery charger is not intended for use by young children or infirm persons without supervision.
 14. Young children should be supervised to ensure that they do not play with the battery charger.
 15. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
 16. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.



ADDITIONAL SAFETY RULES FOR CHARGER & BATTERY CARTRIDGE


1. Do not charge Battery Cartridge when temperature is BELOW 10°C (50°F) or ABOVE 40°C (104°F).
 2. Do not attempt to use a step-up transformer, an engine generator or DC power receptacle.
 3. Do not allow anything to cover or clog the charger vents.
 4. Do not short the battery cartridge:
 - (1) Do not touch the terminals with any conductive material.
 - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
 - (3) Do not expose battery cartridge to water or rain.
 5. Do not store the tool and Battery Cartridge in locations where the temperature may reach or exceed 50°C (122°F).
 6. Do not incinerate the Battery Cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
 7. Be careful not to drop, shake or strike battery.
 8. Do not charge inside a box or container of any kind. The battery must be placed in a well ventilated area during charging.
- A battery short can cause a large current flow, overheating, possible burns and even a breakdown.


SAVE THESE INSTRUCTIONS

SYMBOLS


The following show the symbols used for the charger. Be sure that you understand their meaning before use.


  Ready to charge

 Charging

 Charging complete

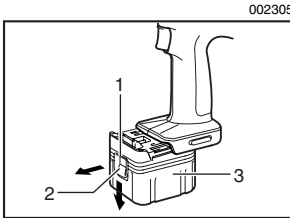
 Delay charge (Cooling)

 Defective battery

 Conditioning

 Cooling abnormality

FUNCTIONAL DESCRIPTION



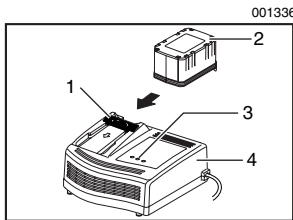
1. Red part
2. Button
3. Battery cartridge

⚠ CAUTION:

- Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

Installing or removing battery cartridge

- Always switch off the tool before insertion or removal of the battery cartridge.
- To remove the battery cartridge, withdraw it from the tool while sliding the button on the side of the cartridge.
- To insert the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Always insert it all the way until it locks in place with a little click. If you can see the red part on the upper side of the button, it is not locked completely. Insert it fully until the red part cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.
- Do not use force when inserting the battery cartridge. If the cartridge does not slide in easily, it is not being inserted correctly.



1. Terminal cover
2. Battery cartridge
3. Charging light
4. Battery charger

Charging

1. Plug the battery charger into the proper AC voltage source. Two charging lights will flash in green color repeatedly.
2. Insert the battery cartridge into charger until it stops adjusting to the guide of charger. Terminal cover of charger can be opened with inserting and closed with pulling out the battery cartridge.
3. When the battery cartridge is inserted, the charging light color will change from green to red and charging will begin. The charging light will keep lighting up lit steadily during charging. One red charging light indicates charged condition in 0 - 80% and two red ones indicates 80 - 100%.
4. With finish of charge, the charging lights will change from two red ones to two green ones.

-
5. If you leave the battery cartridge in the charger after the charging cycle is complete, the charger will switch into its “trickle charge (maintenance charge)” mode which will last approximately 24 hours.
 6. After charging, unplug the charger from the power source.

NOTE:

- The battery charger is for charging Makita battery cartridge. Never use it for other purposes or for other manufacturer's batteries.
- When you charge a new battery cartridge or a battery cartridge which has not been used for a long period of time, it may not accept a full charge. This is a normal condition and does not indicate a problem. You can recharge the battery cartridge fully after discharging it completely and recharging a couple of times.
- If you charge a battery cartridge from a just operated tool or battery cartridge which has been left in a location exposed to direct sunlight for a long time, the charging light may flash in red color. If this occurs, wait for a while. Charging will begin after the battery cartridge is cooled by the cooling fan installed in the charger. When the temperature on battery is more than approx. 70°C, two charging lights may flash in red color, and when approx. 50°C - 70°C, one charging light in red color.
- If the charging light flashes alternately in green and red color, charging is not possible. The terminals on the charger or battery cartridge are clogged with dust or the battery cartridge is worn out or damaged.

Cooling system

- This charger is equipped with cooling fan for heated battery in order to enable the battery to prove its own performance. Sound of cooling air comes out during cooling, which means no trouble on the charger.
- Yellow light will flash for warning in the following cases.
 - Trouble on cooling fan
 - Incomplete cool down of battery, such as, being clogged with dust

The battery can be charged in spite of the yellow warning light. But the charging time will be longer than usual in this case. Check the sound of cooling fan, vent

on the charger and battery, which can be sometime clogged with dust.

- The cooling system is in order although no sound of cooling fan comes out, if the yellow warning light will not flash.
- Always keep clean the vent on charger and battery for cooling.
- The products should be sent to repair or maintenance, if the yellow warning light will frequently flash.

Conditioning charge

Conditioning charge can extend the life of battery by automatically searching the optimum charging condition for the batteries in every situations.

The battery employed in the following conditions repeatedly, will be worn out shortly, and yellow warning light may flash.

1. Recharge of battery with its high temperature
2. Recharge of battery with its low temperature
3. Recharge of full charged battery
4. Over-discharge of battery (continue to discharge battery in spite of down of power.)

The charging time of such battery is longer than usual.

Trickle charge (Maintenance charge)

If you leave the battery cartridge in the charger to prevent spontaneous discharging after full charge, the charger will switch into its “trickle charge (maintenance charge)” mode and keep the battery cartridge fresh and fully charged.

Tips for maintaining maximum battery life

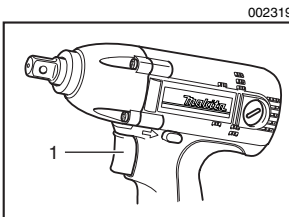
1. Charge the battery cartridge before completely discharged.
Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge.
Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10°C - 40°C (50°F - 104°F).
Let a hot battery cartridge cool down before charging it.
4. Charge the Nickel Metal Hydride battery cartridge when you do not use it for more than six months.

Refresh charging

Refreshing adapter (optional accessory) can refresh an inactive battery cartridge.

Refresh charging should be done once a week.

When you charge a new battery cartridge or a battery cartridge that has not been used for a long time, it may not accept a full charge. In this case, refresh charging must be done. The battery cartridge may decrease the tool performance, because the chemical substance of the battery cartridge is inactive.



1. Switch trigger

Switch action

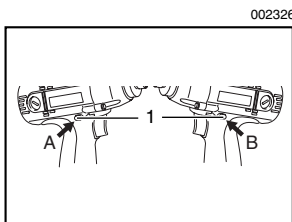
⚠ CAUTION:

- Before inserting the battery cartridge into the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.

To start the tool, simply pull the switch trigger. Tool speed is increased by increasing pressure on the switch trigger. Release the switch trigger to stop.

Electric brake

This tool is equipped with an electric brake. If the tool consistently fails to quickly stop after switch trigger release, have tool serviced at a Makita service center.



1. Reversing switch lever

Reversing switch action

This tool has a reversing switch to change the direction of rotation. Depress the reversing switch lever from the A side for clockwise rotation or from the B side for counterclockwise rotation.

When the reversing switch lever is in the neutral position, the switch trigger cannot be pulled.

⚠ CAUTION:

- Always check the direction of rotation before operation.
- Use the reversing switch only after the tool comes to a complete stop. Changing the direction of rotation before the tool stops may damage the tool.
- When not operating the tool, always set the reversing switch lever to the neutral position.

ASSEMBLY

⚠ CAUTION:

- Always be sure that the tool is switched off and the battery cartridge is removed before carrying out any work on the tool.

Selecting correct socket

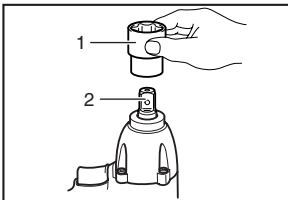
Always use the correct size socket for bolts and nuts. An incorrect size socket will result in inaccurate and inconsistent fastening torque and/or damage to the bolt or nut.

Installing or removing socket

To install the socket, push it onto the anvil of the tool until it locks into place.

To remove the socket, simply pull it off.

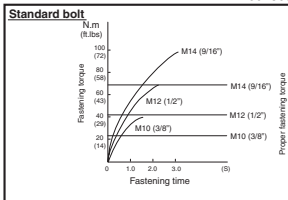
002334



1. Socket
2. Anvil

OPERATION

002363



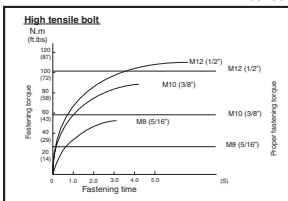
The proper fastening torque may differ depending upon the kind or size of the bolt, the material of the workpiece to be fastened, etc. The relation between fastening torque and fastening time is shown in the figures.

Hold the tool firmly and place the socket over the bolt or nut. Turn the tool on and fasten for the proper fastening time.

NOTE:

- When fastening screw M8 (5/16'') or smaller, carefully adjust pressure on the switch trigger so that the screw is not damaged.
- Hold the tool pointed straight at the bolt or nut.
- Excessive fastening torque may damage the bolt/nut or socket. Before starting your job, always perform a test operation to determine the proper fastening time for your bolt or nut. Especially for the bolt smaller than M8 (5/16''), perform the above test operation to prevent the trouble on socket or bolt, etc.

002364



-
- If the tool is operated continuously until the battery cartridge has discharged, allow the tool to rest for 15 minutes before proceeding with a fresh battery.

The fastening torque is affected by a wide variety of factors including the following. After fastening, always check the torque with a torque wrench.

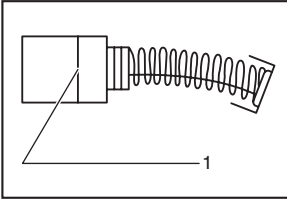
1. When the battery cartridge is discharged almost completely, voltage will drop and the fastening torque will be reduced.
2. Socket
 - Failure to use the correct size socket will cause a reduction in the fastening torque.
 - A worn socket (wear on the hex end or square end) will cause a reduction in the fastening torque.
3. Bolt
 - Even though the torque coefficient and the class of bolt are the same, the proper fastening torque will differ according to the diameter of bolt.
 - Even though the diameters of bolts are the same, the proper fastening torque will differ according to the torque coefficient, the class of bolt and the bolt length.
4. The use of the universal joint or the extension bar somewhat reduces the fastening force of the impact wrench. Compensate by fastening for a longer period of time.
5. The manner of holding the tool or the material of driving position to be fastened will affect the torque.
6. Operating the tool at low speed will cause a reduction in the fastening torque.

MAINTENANCE

CAUTION:

- Always be sure that the tool is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

001145

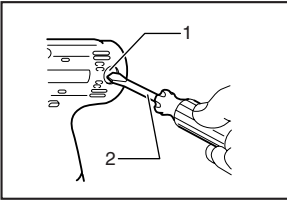


1. Limit mark

Replacing carbon brushes

Remove and check the carbon brushes regularly. Replace when they wear down to the limit mark. Keep the carbon brushes clean and free to slip in the holders. Both carbon brushes should be replaced at the same time. Use only identical carbon brushes.

002376



1. Brush holder cap
2. Screwdriver

Use a screwdriver to remove the brush holder caps. Take out the worn carbon brushes, insert the new ones and secure the brush holder caps.

After replacing brushes, insert the battery cartridge into the tool and break in brushes by running tool with no load for about 1 minute. Then check the tool while running and electric brake operation when releasing the switch trigger. If electric brake is not working well, ask your local Makita service center for repair.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized or Factory Service Centers, always using Makita replacement parts.

ACCESSORIES

⚠ CAUTION:

- These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita service center.

- Extension bar
- Universal joint
- Bit adapter
- Screw bits
- Protector
- Refreshing adapter
- Shoulder strap
- Plastic carrying case

Cut



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Required

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without proper
postage.

Makita U.S.A., Inc.
14930 Northam Street
La Mirada, CA 90638-5753



Fold

MAIL THIS PORTION

Your answers to the following questions are appreciated.

1. This product was purchased from:

- Home Center Other ()
 Hardware/Lumber Store
 Tool Distributor
 Industrial Supply
 Construction Supply

3. How did you learn about this product:

- Magazine Radio
 From Dealer Exhibition
 Newspaper From Friend
 Store Display Previous Usage
 Catalog Other ()

2. Use of the product is intended for:

- Construction Trade
 Industrial Maintenance
 Home Maintenance
 Hobby
 Other ()

4. Most favored points are:

- Design Repair Service
 Features Durability
 Size Power
 Price Other ()
 Makita Brand

5. Any comments:

DATE PURCHASED			MODEL NO.														
MONTH		DAY		YEAR		SERIAL NO.											
INTL. LAST NAME / COMPANY NAME											STATUS		SEX				
											Married Single		M F				
STREET ADDRESS																	
CITY																	
STATE		ZIP CODE			PHONE			AREA CODE									
AGE:		<input type="checkbox"/> Under 19		<input type="checkbox"/> 20-29		<input type="checkbox"/> 30-39		<input type="checkbox"/> 40-49		<input type="checkbox"/> 50-60		<input type="checkbox"/> Over 60					

BE SURE TO COMPLETE THE CUSTOMER'S PORTION OF THIS FORM AND RETAIN FOR YOUR RECORDS.

Please return this portion by facsimile or mail.

Facsimile No: (714) 522-8133

FACTORY SERVICE CENTERS

1-800-4-MAKITA

RETAIN THIS PORTION FOR YOUR RECORDS

ARIZONA

3707 E. Broadway Rd., Ste. 6
Phoenix, AZ 85040
(602) 437-2850

CALIFORNIA

41850 Christy St.
Fremont, CA 94538-5107
(510) 657-9881

14930 Northam St.
La Mirada, CA 90638-5753
(714) 522-8088

1970 Fulton Avenue
Sacramento, CA 95825
(916) 482-5197

7674 Clairemont Mesa Blvd.
San Diego, CA 92111
(858) 278-4471

16735 Saticoy St., Ste. 105
Van Nuys, CA 91406
(818) 278-2440

COLORADO

11839 E. 51st Ave.
Denver, CO 80239-2709
(303) 371-2850

FLORIDA

750 East Sample Road
Pompano Beach, FL 33064
(954) 781-6333

GEORGIA

4680 River Green Parkway NW
Duluth, GA 30096
(770) 476-8911

ILLINOIS

1450 Feehanville Dr.
Mt. Prospect, IL 60056-6011
(847) 297-3100

MARYLAND

7397 Washington Boulevard,
Suite 104 Elkridge, MD 21075
(410) 476-4401

MASSACHUSETTS

232 Providence Hwy.
Westwood, MA 02090
(781) 461-9754

MINNESOTA

6427 Penn Ave. South
Richfield, MN 55423
(612) 869-5199

MISSOURI

9876 Watson Road
St. Louis, MO 63126-2221
(314) 909-9889

NEBRASKA

4129 S. 84th St.
Omaha, NE 68127
(402) 597-2925

NEVADA

3375 S. Decatur Blvd.
Suites. 22 - 24
Las Vegas, NV 89102
(702) 368-4277

NEW JERSEY

251 Herrod Blvd.
Dayton, NJ 08810-1539
(609) 655-1212

NEW YORK

4917 Genessee Street
Cheektowaga, NY 14225
(716) 685-9503

OREGON

828 19th Avenue, N.W.
Portland, OR 97209
(503) 222-1823

PENNSYLVANIA

1704 Babcock Blvd.
Pittsburgh, PA 15209
(412) 822-7370

PUERTO RICO

200 Guayama St.
Hato Rey, PR 00917
(787) 250-8776

TENNESSEE

1120 Elm Hill P.
Suite 170 Nashville, TN 372
(615) 248-3321

TEXAS

12801 Stemmons Fwy Ste. 809
Farmers Branch, TX 75234
(972) 243-1150

12701 Directors Dr.
Stafford, TX 77477-3701
(281) 565-8665

3453 IH-35 North, Ste. 101
San Antonio, TX 78219
(210) 228-0676

WISCONSIN

Lincoln Plaza Shopping Ctr.
2245 S. 108th St. West Allis, WI
53227
(414) 541-4776

CUSTOMER'S RECORD

<p>When you need service: Send complete tool (prepaid) to one of the Makita Factory Service Centers listed, or to an Authorized Makita Service Center. Be sure to attach a letter to the outside of the carton detailing the problem with your tool.</p>	Date Purchased
	Dealer's Name & Address
	Model No.
	Serial No.

WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead-based paints,
- crystalline silica from bricks and cement and other masonry products, and
- arsenic and chromium from chemically-treated lumber.

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

MAKITA LIMITED ONE YEAR WARRANTY

Warranty Policy

Every Makita tool is thoroughly inspected and tested before leaving the factory. It is warranted to be free of defects from workmanship and materials for the period of ONE YEAR from the date of original purchase. Should any trouble develop during this one year period, return the COMPLETE tool, freight prepaid, to one of Makita's Factory or Authorized Service Centers. If inspection shows the trouble is caused by defective workmanship or material, Makita will repair (or at our option, replace) without charge.

This Warranty does not apply where:

- repairs have been made or attempted by others:
- repairs are required because of normal wear and tear:
- the tool has been abused, misused or improperly maintained:
- alterations have been made to the tool.

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