



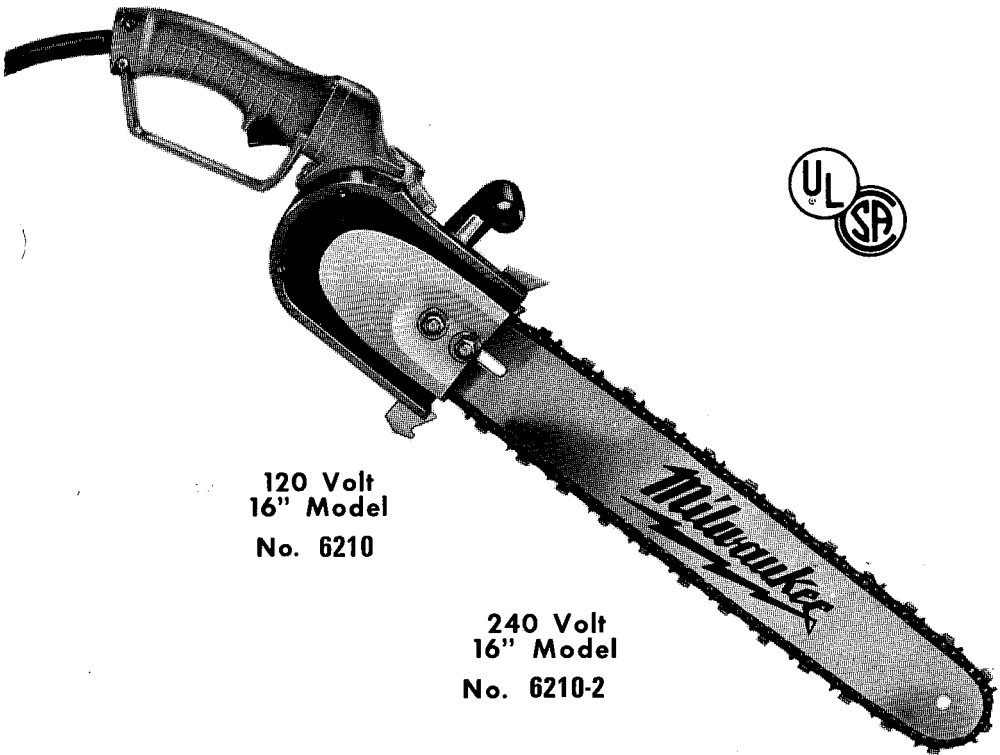
READ AND KEEP THIS FOR FUTURE REFERENCE

The Care and Operation of

Your New



**HEAVY-DUTY
16" and 20"
CHAIN SAWS**



120 Volt
16" Model
No. 6210

240 Volt
16" Model
No. 6210-2

120 Volt
20" Model
No. 6211

IMPORTANT-Before placing tool in operation, record the following information from name plate.

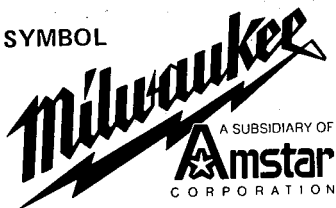
Model Number _____ Serial Number _____ Date of Purchase _____



MILWAUKEE ELECTRIC TOOL CORPORATION

13135 West Lisbon Road • Brookfield, Wisconsin 53005

THIS SYMBOL



IS YOUR ASSURANCE -

1. That every tool manufactured by MILWAUKEE is produced in accordance with applicable Standards for Safety of Underwriters' Laboratories and American National Standards (ANSI).
2. That compliance with applicable safety standards is assured by independent inspection and testing conducted by Underwriters' Laboratories (UL).
3. That every motorized tool manufactured by MILWAUKEE is fully inspected.
4. That every tool has with it adequate instructions and a list of safety rules for the protection of the user.

SAFETY INSTRUCTIONS FOR CHAIN SAWS

1. **KNOW YOUR POWER TOOL.** Read the owner's manual carefully. Learn its applications and limitations as well as the specific hazards peculiar to this tool.
2. **GROUND ALL TOOLS—UNLESS DOUBLE INSULATED.** If a tool is equipped with three-prong plug, it should be plugged into a three hole electrical receptacle. If adapter is used to accommodate two hole receptacle, the green adapter ear (or green wire) must be attached to a known ground. Never remove the third prong.
3. **CONNECT** the chain saw to the correct voltage source.
4. **DO NOT ABUSE CORD.** Never carry the chain saw by the cord or yank the cord to disconnect it from the receptacle. Keep cord from heat, oil and sharp edges.
5. **KEEP WORK AREA CLEAN.** Never start cutting until you have a clear work area, secure footing, and a planned retreat path from the falling tree.
6. **AVOID DANGEROUS ENVIRONMENT.** Do not expose chain saw to rain or use in damp wet, gaseous or explosive locations. Keep work area well lit.
7. **KEEP CHILDREN AWAY.** All bystanders and pets should be kept a safe distance from work area. Avoid any distractions.
8. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, high, or locked-up place out of reach of children.
9. **DO NOT FORCE TOOL.** Do not exceed the saw's capacity. It will do a better and safer job at the rate for which it was designed.
10. **WEAR PROPER APPAREL.** Wear snug fitting clothing, eye, ear, and head protection devices. Rubber gloves and footwear are recommended when working outdoors. Remove jewelry.
11. **DO NOT OVERREACH.** Keep proper footing and balance at all times.
12. **NEVER OPERATE A CHAIN SAW WHEN YOU ARE FATIGUED.** Watch what you are doing at all times. Take your time, pay attention to your work; you might get into trouble otherwise. Keep your eyes and mind on the saw, tree or log. Do not let other interests distract you.
13. **DO NOT OPERATE A CHAIN SAW IN A TREE** unless specifically trained to do so.

14. **DISCONNECT TOOLS.** When not in use, when adjusting or servicing, or when changing accessories. Always stop motor when cutting is delayed or when transporting from one cutting location to another. Be sure saw chain is completely stopped when trigger is released. Carry saw with bar and chain behind you. The use of a chain saw cover is recommended.
15. **MAINTAIN TOOL WITH CARE**

Keep the saw in good repair and safe operating condition.
Keep the chain sharp.
Be sure that the handles are clean, dry, and free of oil.
Clean the saw after each use. **CAUTION:** Do not use carbon tetrachloride.
Follow instructions for lubricating, adjustments, and changing accessories.
Replace damaged or defective power cord immediately.
Be sure that saw chain stops moving when the trigger is released.
Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled.
16. **AVOID ACCIDENTAL STARTING.** Do not carry plugged-in tool with finger on switch. Be sure switch is off when tool is plugged in.
17. **ACCESSORIES.** The use of any accessories other than those listed or recommended for this particular tool may be hazardous.
18. **KEEP HANDS AND ALL PARTS OF BODY AWAY FROM SAW CHAIN** and other moving parts.
19. **USE INSULATED SURFACES.** Always hold the chain saw firmly on the insulated handles provided. Always check the work area for live wires. A double insulated or grounded tool may be made live if it comes in contact with live wiring hidden in a wall, floor, or ceiling.
20. **BEWARE OF KICKBACK.** Kickback is the term used to describe the chain and bar jumping upward out of the cut when the chain at the nose of the guide bar contacts an object. Kickback can lead to dangerous loss of control of the chain saw and severe injury.
To avoid kickback;
 - Hold chain saw firmly with both hands.
 - Do not overreach.
 - Do not cut above shoulder height.
 - Let chain saw attain full speed before starting cut.
 - Do not let the nose of the guide bar contact a log, branch, ground, or any other obstruction.
 - Remove chain and guide bar from cut before releasing trigger.
 - Follow sharpening and maintenance instructions, dull or loose chain can cause kickback.
21. **NEVER CUT WITH CHAIN LUBRICATING SYSTEM NOT WORKING.** To check, hold the nose of the guide bar about 4 to 6 inches from the butt of a log. Depress oil lever several times while running at cutting speed for a second or two. If oil is thrown off the chain onto the log, the chain is getting oil.
22. **BE ESPECIALLY CAREFUL** when cutting short and/or light pieces of wood. The chain can grab and throw small pieces hard enough to cause injury. Stand to the left of the blade when cutting. Do not stand directly behind the blade in case the chain catches in a cut and kicks backward. Be sure bumper is against tree or log before starting. Have a predetermined safe place to go when tree begins to fall. Before felling (cutting down a tree), practice making cuts on small, fallen logs.
23. **OBEY ALL LAWS,** rules and regulations of all cutting areas. Follow such requirements and/or regulations carefully.

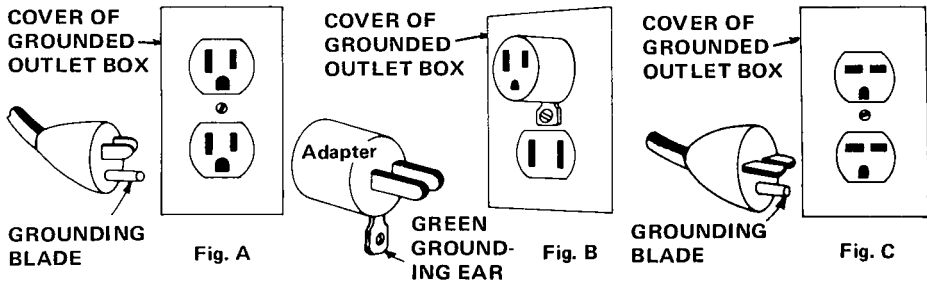
GROUNDING INSTRUCTIONS

This tool should 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 conductor in the cord is the grounding wire. Never connect the green wire to a live terminal. If your unit is for use on less than 150 volts, it has a plug that looks like Fig. "A". If it is for use on 150 to 250 volts, it has a plug that looks like Fig. "C".

NOTE

The use of 3-prong adapters in Canada is prohibited by the Canadian Electrical Code.

An adapter, Fig. "B" is available for connecting Fig. "A" plugs to two-prong receptacles. The green grounding ear extending from the adapter must be connected to a permanent ground such as to properly grounded outlet box. No adapter is available for Fig. "C" plugs.



NOTE: RECEPTACLE MUST BE GROUNDED FOR SAFE USE OF ADAPTER; IF IN DOUBT CALL A QUALIFIED ELECTRICIAN AND HAVE THE RECEPTACLE CHECKED FOR GROUND.

EXTENSION CORDS

Use only three-wire extension cords which have three-prong grounding-type plugs and three-pole receptacles which accept the tool's plug. Replace or repair damaged cords.

EXTENSION CORD CHART

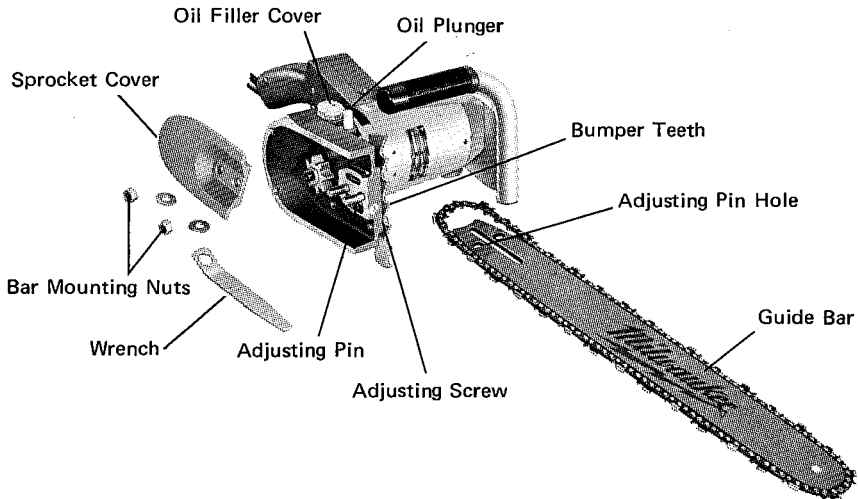
When an extension cord is used, it should also be a 3 wire cord to permit proper grounding of the tool. As the distance from the supply outlet increases, heavier gauge extensions are required. The use of extension cords of inadequate size wire causes a serious drop in voltage, loss of power and possible motor damage. This table is based on limiting line voltage drop to 5 volts at 150% of rated amperes.

Ampere rating (on Nameplate)	0- 2,00	2,10- 3,4	3,5- 5,00	5,10- 7,0	7,10- 12,0	12,1- 16,0	
Ext. Cable Length	Wire Size						
25 Ft.	18	18	18	18	16	14	Not normally available as flexible extension cord.
50 Ft.	18	18	18	16	14	12	
75 Ft.	18	18	16	14	12	10	
100 Ft.	18	16	14	12	10	8	
150 Ft.	16	14	12	12	8	8	
200 Ft.	16	14	12	10	8	6	
300 Ft.	14	12	10	8	6	4	
400 Ft.	12	10	8	6	4	4	
500 Ft.	12	10	8	6	4	2	
600 Ft.	10	8	6	4	2	2	
800 Ft.	10	8	6	4	2	1	
1000 Ft.	8	6	4	2	1	0	

IF USING EXTENSION CORD OUT OF DOORS, BE SURE IT IS RATED FOR OUTDOOR USE.

TO ASSEMBLE UNIT

Set motor on a flat surface in an operating position. Place chain in groove of guide bar so cutting edges of chain on the bottom of the bar face the motor. Take up all chain slack on the lower portion of the bar. Slip guide bar on to the adjusting pin and the chain around the sprocket (see diagram). Replace sprocket cover.



CHAIN ADJUSTMENT

Disconnect saw from power supply before servicing, adjusting blade tension or changing the chain, bar or sprocket.

It is recommended that chain tension be checked before using the saw. When handling the chain, wear gloves or use a cloth to protect the hands against the sharp cutting edges of the teeth.

1. Loosen the bar mounting nuts, hold tip of bar up.
2. Adjust tension screw until the bottoms of all tie straps and cutters just make contact with the bottom rails.
3. Continue to hold the tip of the bar up while tightening mounting nuts.

Lubricate chain by pumping the oiler while pulling chain around the bar by hand. If chain is warm, allow it to cool a few minutes. Raise chain from bar groove and let it snap back to straighten parts and provide maximum looseness. Tension is correct when chain moves freely around the bar when pulled by hand and tie straps touch the underside of bar rails. When breaking in a new chain, run saw without cutting for a short time to stretch chain. Recheck the tension before cutting. Periodically inspect chain for proper tension.

USE ONLY IDENTICAL REPLACEMENT PARTS

Parts List Available On Request.

When ordering, include Catalog No. and Serial No. of Tool.

Write: MILWAUKEE ELECTRIC TOOL CORP. SERVICE DEPT.
13135 W. Lisbon Rd. Brookfield, WI. 53005

OIL SUPPLY

To insure proper cutting action and to avoid excessive chain and guide bar wear, it is necessary to oil the chain regularly. The tool is equipped with an oil reservoir and a manually operated pump for this purpose. Never allow the oil reservoir to run dry before refilling.

To fill oil reservoir, remove "oil filler cover" and fill chamber to brim with SAE 20 or SAE 30 oil. Screw cover back on allowing fluid pressure to force oil into cylinder and to prime pump. The cover can be sufficiently tightened by hand.

When reservoir is full, depress plunger several times to be certain pump is primed. If pump fails to operate, remove sprocket cover plate, bar and chain and squirt oil into hole. Press plunger again.

When cutting in severe cold weather, the chain oil should be cut, half and half, with kerosene, or a lighter grade of oil should be used. With this mixture twice as much oil should be used during cutting.

POWER SUPPLY

It is especially important that a tool of this type be used as close to a power source as possible and that the right gauge extension cord be used. Any extension used with this saw must be heavy enough to carry full voltage. Power losses and motor damage may result from the use of inadequate extensions. The MILWAUKEE ELECTRIC TOOL CORPORATION furnishes a complete line of alternators for use where line power is not available. Any generator or alternator with a rating of 2500 watts or higher may be used with this saw.

OPERATION

Before starting cut, press oil plunger several times to oil chain. Press plunger again during the sawing operation as conditions demand. If the chain is receiving adequate lubrication, oil combined with fine chips of sawdust will be apparent between the chain and the upper part of the guide bar.

After oiling, hold bumper teeth tightly against work without making blade contact. With the left hand on the top handle, use right hand to lift up on trigger handle and start saw. Allow motor to reach full speed before starting cut. Do not apply excessive feed pressure as forcing the saw will not increase cutting speed and may cause unnecessary wear. As cutting progresses, take new bites with the bumper teeth for more effective operation.

Do not saw any materials containing nails, stones or metals of any kind. Sawing into earth as when cutting trees close to the ground will dull the chain. Keep the chain sharp for best results. A dull chain will cause the chain to slow or stop, overloading the motor.

CHAIN REPLACEMENT

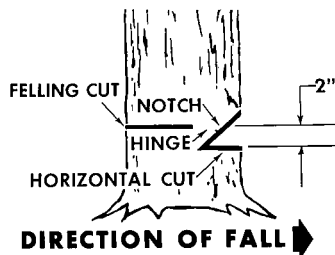
Before handling chain, always remove power plug from outlet. To remove chain, take off sprocket cover. Lift guide bar off of adjusting pin while slipping chain from sprocket. Chain can now be removed from guide bar. To remove sprocket, turn out left hand thread socket head screw and pull the sprocket off splined end of spindle. To replace chain, see "to Assemble Unit" and "Chain Adjustment".

The MILWAUKEE Electric Tool Corporation assumes no responsibility for any damage or accidents resulting from the use, misapplication, or nonadherence to safety precautionary measures.

FELLING TREES

Before felling a tree, survey the tree and decide where you want it to fall. Clear a sufficient work area around the tree so you will not trip or stumble while cutting. Check the tree for dead limbs or bark that might fall when you are cutting. Remove these hazards first. When work area and area the tree will fall are clear, you are ready to start cutting the tree.

First notch tree in the direction of fall. This consists of two cuts — a horizontal cut to a depth of about 1/3 the diameter of tree, and another cut at an angle above horizontal cut.

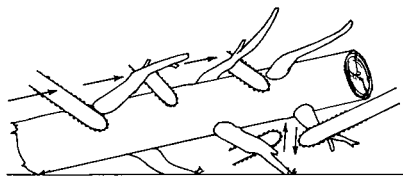


Clean the wood wedge out of undercut so tree will fall true. The final felling cut is made on the opposite side of the tree two inches above horizontal cut of notch. It is important to keep this cut parallel with the horizontal notching cut. Do not cut thru to notch. Leave enough wood to act as a hinge, this prevents twisting and falling in the wrong direction. When felling cut gets close to hinge, tree should begin to fall. If there is a chance tree might not fall in the desired direction, or may rock back and bind the saw chain, stop cutting before felling cut is completed. Use wedges made of wood, plastic or aluminum to open cut and drop tree along desired line of fall.

When tree starts to fall, operator should remove saw from cut, set it down and retreat at a 45° angle from the falling tree to a predetermined safe place.

LIMBING A TREE

Limbing is removing the branches from a fallen tree. When limbing, leave the larger lower limbs to support the log off the ground. Remove small limbs in one cut as illustrated. Branches under tension should be cut from the bottom up. This will avoid binding the saw chain.

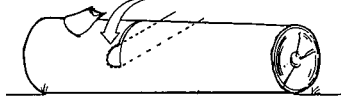


Do not remove supporting limbs until after log is bucked into lengths.

BUCKING

Bucking a log, cutting into lengths, it is important, if possible, to have the log raised and supported close to cut. This helps eliminate chances of binding.

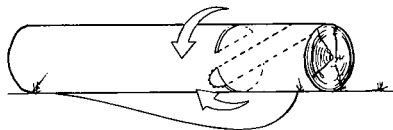
If log is supported along its entire length, cut from top and avoid cutting into earth. If possible, roll log over and complete cut.



If log is supported on one end, cut 1/3 of diameter from underside. Then make finish cut from top to meet the first cut.



If log is supported on both ends but too far from cut that binding can result, first cut is made at top, about 1/3 diameter, second cut from bottom to meet first cut.



If log is on a hill, always stand up hill from it. When near end of cut, ease pressure but maintain grip on saw. This will prevent saw from being pulled from your hands in case log rolls when cut is completed.

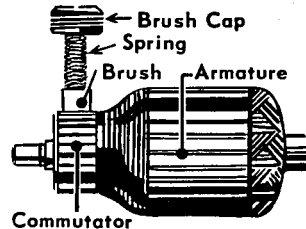
MAINTENANCE

All servicing other than recommended in this instruction manual must be done by an Authorized MILWAUKEE Service Station.

BRUSHES AND COMMUTATOR

To inspect the brushes, pull plug and unscrew the brush retainer caps located on the motor housing. Pull out retainer springs and brushes. Replace brushes when down to 1/4". Always replace both brushes at the same time.

When inspecting brushes, also check the commutator for wear. If rough, dirty or badly worn, send the complete tool to a MILWAUKEE Service Station for undercutting of commutator.



LUBRICATION

The MILWAUKEE Chain Saw is lubricated at the factory and requires additional lubrication only at intervals of 6 months to 1 year depending upon the amount of use. Tools used constantly on heavy-duty production jobs require lubrication more often. Tools which have not been used for extensive periods should be relubricated before being put back in service.

It is important to replace the gasket between the diaphragm and the gear case. Use only MILWAUKEE Cat. No. 43-44-0060 gasket.

Always remove brushes before removing gear case to prevent damage if armature is accidentally removed.

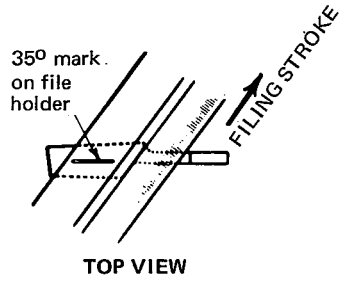
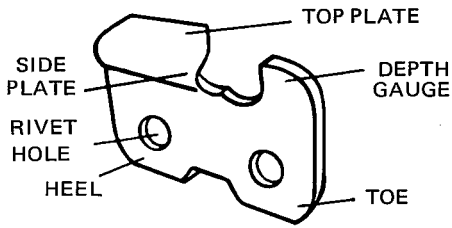
To lubricate, remove all oil from the oil reservoir. Remove the sprocket cover, guide bar and chain. Remove socket head screw, (left hand thread) from the sprocket, lift sprocket from spindle. The gear case can now be removed by removing the four screws which secure it to the motor housing. Hold the tool on the diaphragm, lightly tap the gear case to loosen it. If the diaphragm pulls free of the motor housing, the armature has pulled out of the back bearing. Replace the armature being sure the diaphragm is in the correct position with the spindle gear pocket to the front of the saw and is snug with the motor housing. Remove old grease from inside the diaphragm and gear case. Repack 1/2 full with MILWAUKEE Type "A" grease. Place new gasket on diaphragm and replace motor housing. When fully assembled, refill oil reservoir and prime oil pump. (See "Oil Supply".)

HOW TO SHARPEN CHAIN

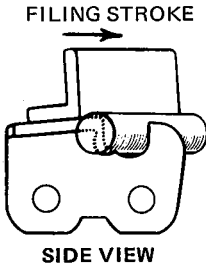
Before handling chain, always remove power plug from outlet. Tighten chain tension. Mark the cutter you will start with. With File and Holder No. 49-17-0100, line up the 35° mark on the Holder so it is parallel with the cutter. Press flat side of file holder firmly against top of cutter. Use a few firm, long, even strokes, always filing from yourself to put a keen edge on each tooth. File all cutters on one side of chain first, then on the opposite side.

Always maintain proper angles when filing cutters. See page 9.

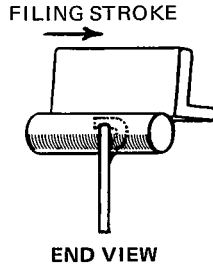
HOW TO SHARPEN CHAIN (Con't.)



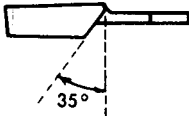
TOP VIEW



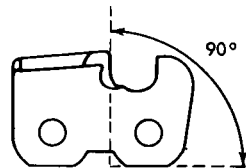
SIDE VIEW



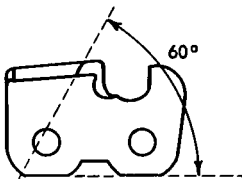
END VIEW



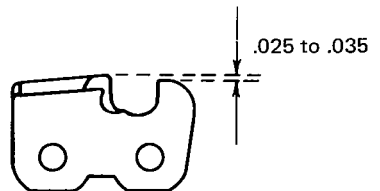
35° TOP PLATE FILING ANGLE



90° SIDE PLATE ANGLE



60° TOP PLATE CUTTING ANGLE

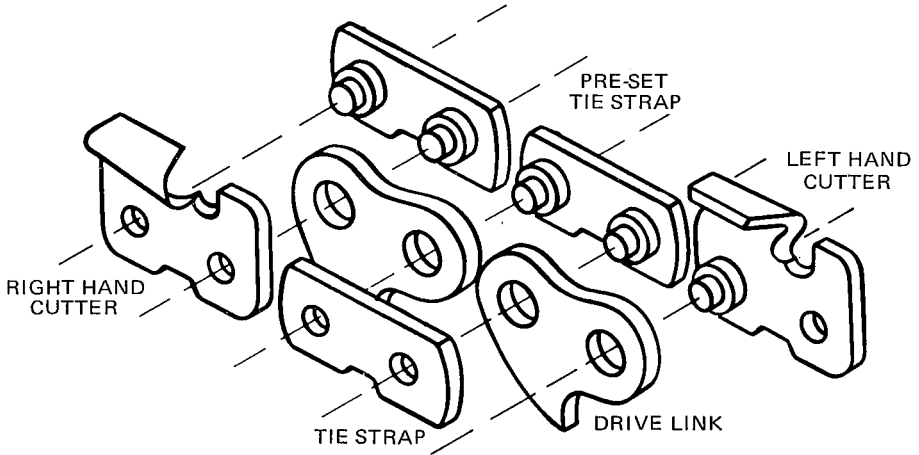


DEPTH GAUGE SETTING

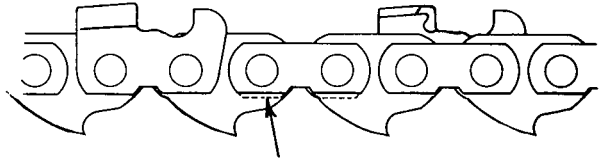
CHAIN REPAIR, KIT NO. 49-22-3010

To remove one or more links from chain, file or grind off rivet heads and drive out rivets with a punch. When installing drive links or cutter links, it is necessary to file down new links to correspond in size with surrounding worn links. If this is not done, cutting may be extremely rough and new chain damage may result. When replacing a cutter link, also replace its tie link. A worn tie link cannot properly support a cutter link. Use a ball peen hammer to replace rivets.

When drive links become badly worn, several new ones distributed about the chain will restore proper guide bar cleaning. Touching up cutting edges or sharpening chains is done easily with the MILWAUKEE File and Holder. If chain requires overall sharpening or repair, the services of a professional are recommended.



Rounded and Countersunk Edges Face Out

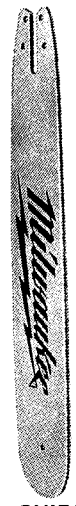


File bottoms of new Tie Straps to match worn parts

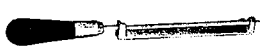
ACCESSORIES



CATALOG NUMBER	DESCRIPTION
48-09-5016	16" Guide Bar
48-09-5020	20" Guide Bar
48-58-0016	16" Chipper Chain
48-58-0020	20" Chipper Chain
49-17-0100	File and Holder (For use with 3/8" pitch chain)
49-22-3010	Chipper Chain Repair Kit (Includes tie straps and drive link)
49-96-6200	Chain Saw Wrench
49-08-0500	1/2 lb. Type "A" Grease
49-08-0800	1 lb. Type "A" Grease

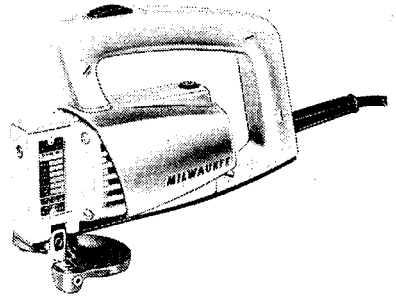
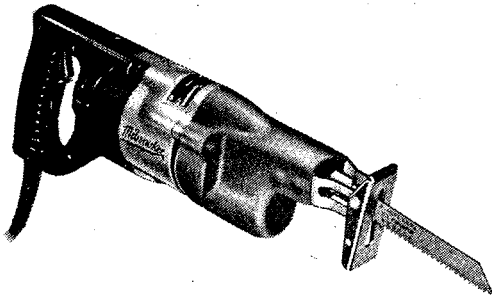


GUIDE BARS



FILE AND HOLDER

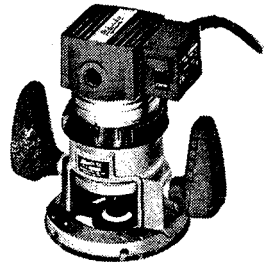
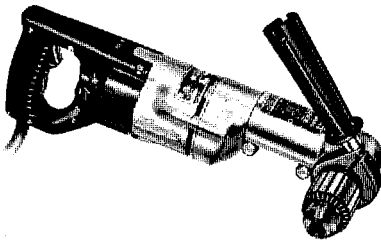
HEAVY-DUTY TOOLS FOR CONTRACTORS & INDUSTRY



LIMITED WARRANTY

Every MILWAUKEE Tool is thoroughly inspected and tested before leaving the factory. Should any trouble develop, return the complete tool prepaid to the Factory, Branch or nearest Authorized MILWAUKEE Service Station. If inspection shows the trouble is caused by defective workmanship or material, all repairs will be made without charge and the tool will be returned, transportation prepaid.

This warranty does not apply where: (1) repairs or attempted repairs have been made by persons other than Factory, Branch or Authorized Service Station personnel; (2) repairs are required because of normal wear; (3) the tool has been abused or involved in an accident; (4) misuse is evident such as caused by overloading the tool beyond its rated capacity; (5) the tool has been used after partial failure or (6) the tool has been used with an improper accessory. No other warranty written or verbal, is authorized.



MILWAUKEE ELECTRIC TOOL CORP.

13135 W. LISBON ROAD

BROOKFIELD, WISCONSIN 53005