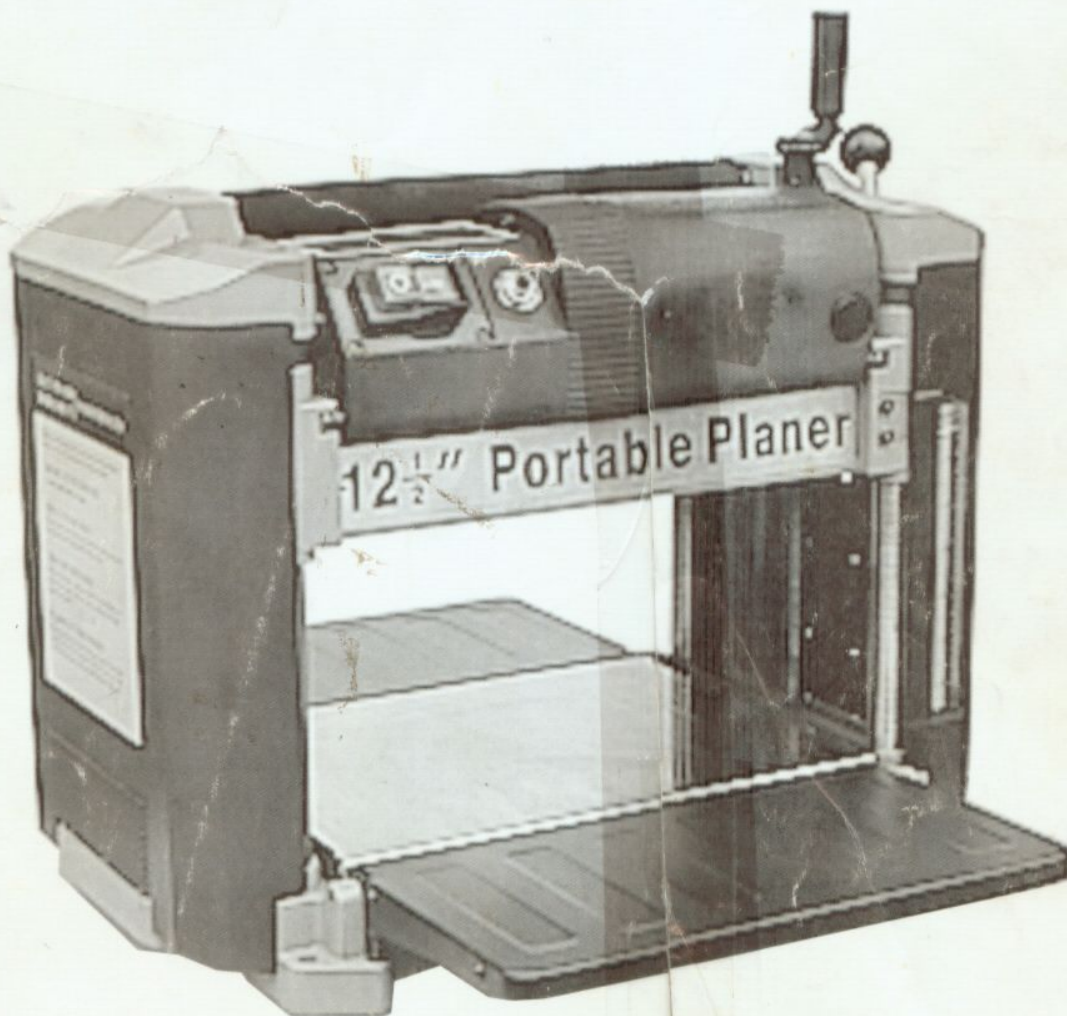


# **12 $\frac{1}{2}$ " Portable Planer**

## **Instruction Manual**



# ADDITIONAL SAFETY RULES FOR PLANERS

1. **WARNING:DO NOT** operate your planer until it is completely assembled and installed according to the instructions.
2. **IF YOU ARE NOT** thoroughly familiar with the operation of planers,obtain advice from your supervisor,instructor or other qualified person.
3. **MAKE SURE** wiring codes and recommended electrical connection instructions are followed,and that the machine is properly grounded.
4. **MAKE** all adjustments with the power off.
5. **DISCONNECT** machine from power source when making repairs.
6. **NEVER** turn the planer"ON" before clearing the table of all objects(tools,scraps of wood,etc.).
7. **KEEP** knives sharp and free of all rust and pitch.
8. **NEVER** perform any planing operation with guard removed.
9. **KEEP** fingers and hands away from cutting area.
10. **NEVER** reach under the cutterhead while the machine is running.
11. **KEEP** fingers and hands away from chip exhaust opening.The cutterhead rotates at extremely high speeds.
12. **NEVER** feed the work into the outfeed end of machine.
13. **ADEQUATELY** support the workpiece at all times.
14. **WHEN** planing extra long workpieces,MAKE SURE the material is supported at the infeed and outfeed end at table height.
15. **NEVER** start the machine with the workpiece in contact with the cutterhead.
16. **MAKE SURE** the workpiece is free from nails and other foreign objects which could cause injury or damage to the blades.
17. **MAKE SURE** the blades are properly secured in the cutterhead,as explained in the instruction manual, before turning on power.
18. **ALWAYS** allow the cutterhead to reach full speed before using.
19. **IF DURING OPERATION** there is any tendency for the tool to tip over,slide or walk on the supporting surface,MAKE SURE TOOL IS SECURED TO THE SUPPORTING SURFACE.
20. **DO NOT** perform planing operations on material shorter than 10 inches,narrower than 3/4 inches,wider than 12 1/2 inches,or thinner than 3/16 inches.
21. **BEFORE LEAVING** the machine,make sure the work area is clean.
22. **SHOULD** any part of your planer be missing, damaged or fail in any way,or any electrical component fail to perform properly,shut off switch and remove plug from power supply outlet.Replace missing,damaged or failed parts before resuming operation.
23. **SAVE THESE INSTRUCTIONS.**Refer to them frequently and use them to instruct other users.



# UNPACKING AND CLEANING

Carefully unpack the machine and all loose items from the shipping container. Peel Protective film from the table surface. Figures 2 and 3 illustrate the planer and all loose items supplied with your machine. Refer to the section of this manual entitled **"Replacing Knives"** and remove the cutterhead guard. Remove the protective coating from the cutterhead. This coating may be removed with a soft cloth moistened with kerosene (**do not use acetone, gasoline or lacquer thinner for this purpose**). **CAUTION: CARE MUST BE TAKEN WHEN CLEANING THE CUTTERHEAD, AS THE KNIVES ARE IN THE CUTTERHEAD AND THESE KNIVES ARE VERY SHARP.** After cleaning cutterhead, replace the cutterhead guard.

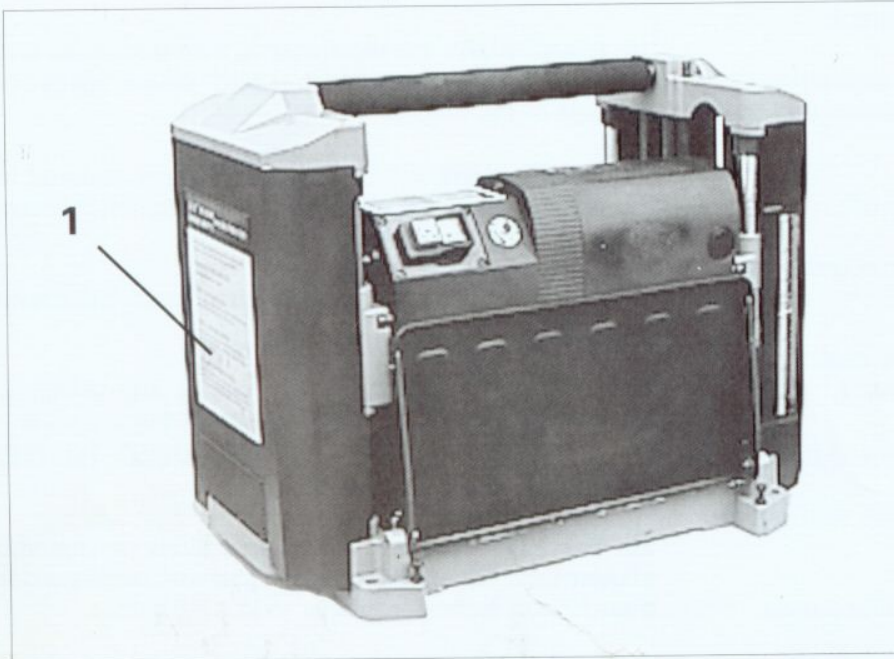


Fig.2

1-12 1/2" Portable Planer

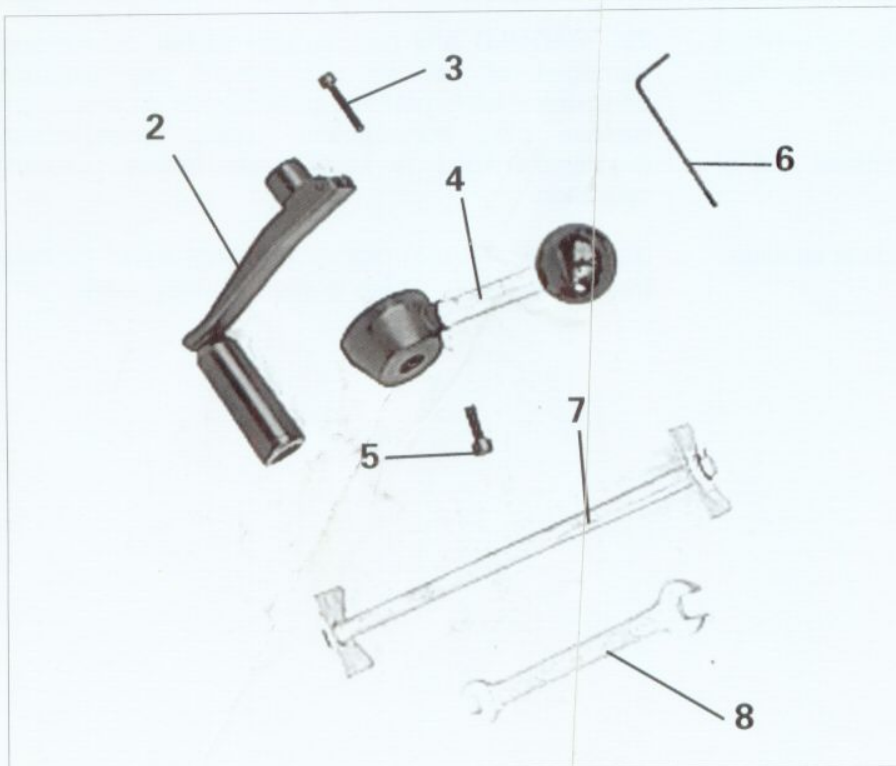


Fig.3

2-Cutterhead Raising and Lowering Handle

3-M5x20mm Hex Soc Scr.

4-Cutterhead Lock Handle

5-M6-20mm Hex Soc Scr.

6-2.5mm Allen Wrench

7-Knife Setting Gauge

8-8-10mm Open End Wrench

# ASSEMBLY INSTRUCTIONS

## LOWERING EXTENSION TABLES

The infeed and outfeed table extensions (A) Fig.4, are shipped attached to the machine and rotated to the "UP" position. Simply rotate both table extensions (A) to the down position as shown. The top surface of the table extensions (A) should be level with the planer table. To check and adjust if necessary, refer to the section of this manual entitled "LEVELING TABLE EXTENSIONS."

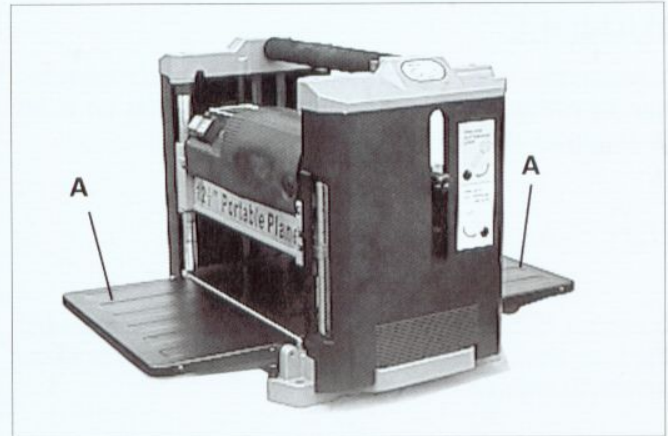


Fig.4

## ASSEMBLING CUTTERHEAD LOCK HANDLE

1. Assemble the cutterhead lock handle (A) Fig.5, to shaft (B).

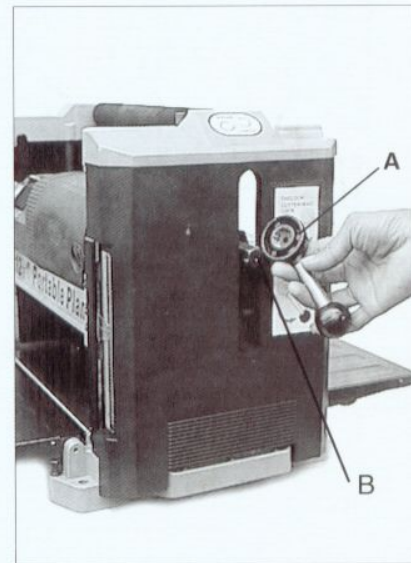


Fig.5

2. Fasten cutterhead lock handle (A) Fig.6, to the shaft using the M6-20mm special hex socket head screw (C).



Fig.6



## ASSEMBLING CUTTERHEAD RAISING AND LOWERING HANDLE

1. Assemble the cutterhead raising and lowering handle(A) Fig.7, to shaft(B), making certain flat on shaft is engaged with flat in handle.

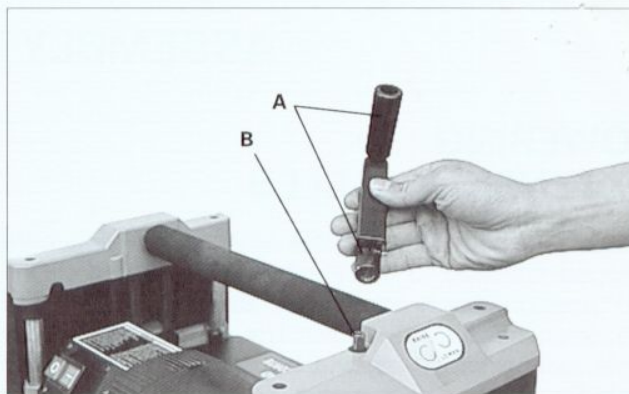


Fig.7

2. Fasten cutterhead raising and lowering handle (A) Fig.8, to shaft using the M5x20mm hex socket head screw(C) with wrench supplied.

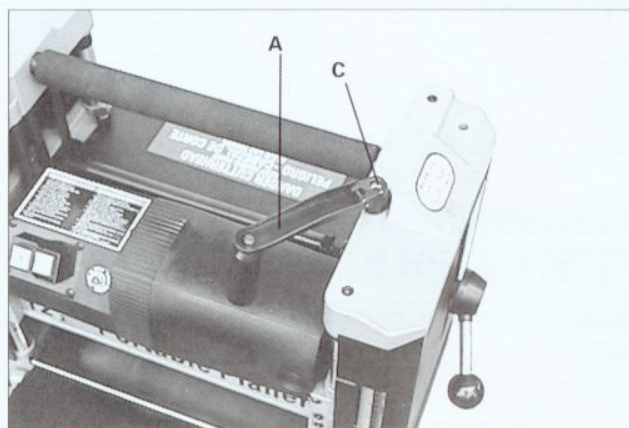


Fig.8

3. Rotate handle(A) to the operating position as shown in Fig.9, and tighten set screw(D).

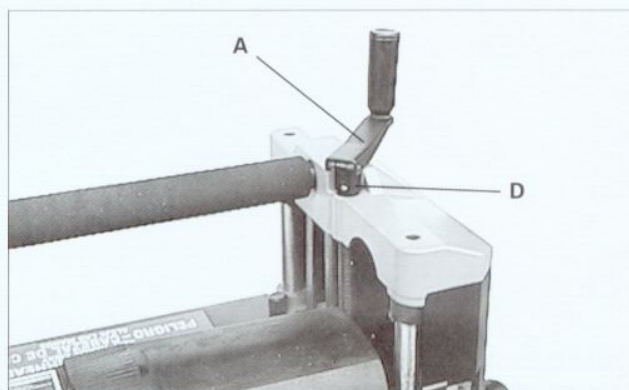


Fig.9

## FASTENING PLANER TO SUPPORTING SURFACE

If during operation there is any tendency for the planer to tip over, slide, or walk on the supporting surface, the planer must be secured to the supporting surface using the four holes in the base of the machine, two of which are shown at (A) fig.10.

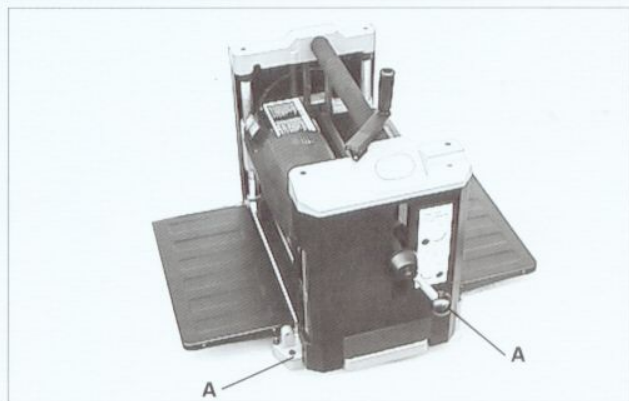


Fig.10

# CONNECTING PLANER TO POWER SOURCE

## ATTENTION

Through poor conditions of the electrical MATNS. Shortly voltage drops can appear when starting the EQUIPMENT. This can influence other equipment (eg Blinking of a lamp). If the MAINS-IMPEDANCE  $Z_{max} < 0.475 \text{ OHM}$ . Such disturbances are not expected. (In case of need. You may contact your local supply authority for further information.)

## GROUNDING INSTRUCTIONS

**CAUTION: THIS TOOL MUST BE GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM ELECTRIC SHOCK.**

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The motor is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided—if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.

Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-hole receptacles that accept the tool's plug, as shown in Fig. 11.

Repair or replace damaged or worn cord immediately.

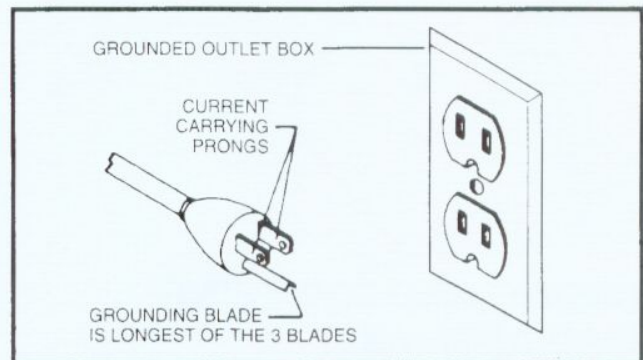


Fig. 11

This tool is intended for use on a circuit that has an outlet and a plug that looks like the one shown in Fig. 11. A temporary adapter, which looks like the adapter illustrated in Fig. 12, may be used to connect this plug to a 2-pole receptacle, as shown in Fig. 12, if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. **THIS ADAPTER IS NOT APPLICABLE IN CANADA.** The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground, such as a properly grounded outlet box, as shown in Fig. 12.

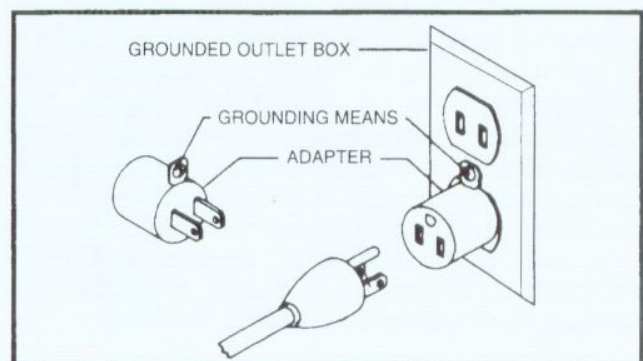


Fig. 12

**CAUTION: IN ALL CASES, MAKE CERTAIN THE RECEPTACLE IN QUESTION IS PROPERLY GROUNDED. IF YOU ARE NOT SURE, HAVE A CERTIFIED ELECTRICIAN CHECK THE RECEPTACLE.**



## EXTENSION CORDS

Use proper extension cords. Make sure your extension cord which has a 3-prong grounding type plug and a 3-hole receptacle which will accept the tool's plug. When using an extension cord, be sure to use one heavy enough to carry the current of the planer. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Fig. 13 shows the correct size to use depending on cord length. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

TOTAL LENGTH OF CORD IN FEET	GAGE OF EXTENSION CORD TO USE
0-25	14 AWG
26-50	12 AWG
51-100	Not Recommended
101-150	Not Recommended

Fig. 13

## OPERATING CONTROLS AND ADJUSTMENTS

### STARTING AND STOPPING PLANER

The on/off switch (A) Fig. 14, is located on the front of the planer motor. To turn the machine "ON", move the switch (A) to the up position. To turn the machine "OFF", move the switch (A) to the down position.

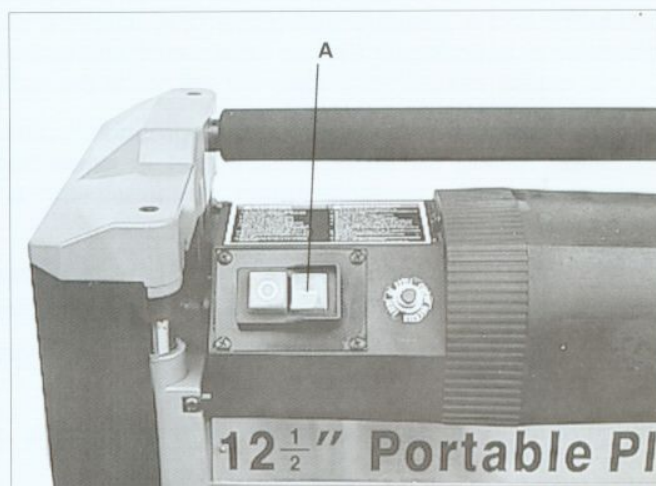


Fig. 14

### RAISING AND LOWERING HEAD ASSEMBLY

The head assembly (A) Fig. 15, contains the cutterhead, feed rolls, chip deflector and motor. Raising and lowering the head assembly (A) controls the depth of cut on your planer. To raise or lower the head assembly, rotate the cutterhead lock handle (B) counterclockwise to unlock the cutterhead and turn the cutterhead raising and lowering handle (C) clockwise to raise or counterclockwise to lower the cutterhead (A). One revolution of handle (C) will move the cutterhead up or down 3/32". **FOR BEST RESULTS, ALWAYS LOCK THE CUTTERHEAD IN PLACE, BY ROTATING HANDLE (B) CLOCKWISE BEFORE PLANING.**

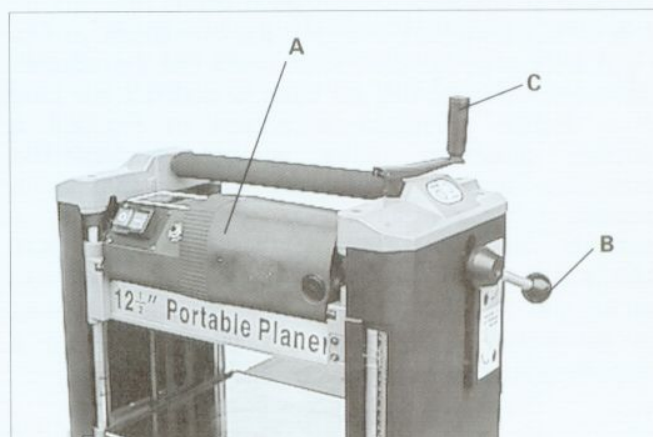


Fig. 15

## SCALE AND POINTER

A dual English/Metric scale (D) Fig.16, and pointer (E) is conveniently located on the front of the machine and indicates the thickness of the finished workpiece. Adjustment to the pointer (E) can be made by running a piece of wood through the machine. Measure the thickness of the workpiece and if an adjustment is necessary, loosen two screws (F) and adjust pointer (E) accordingly. Then tighten two screws (F).

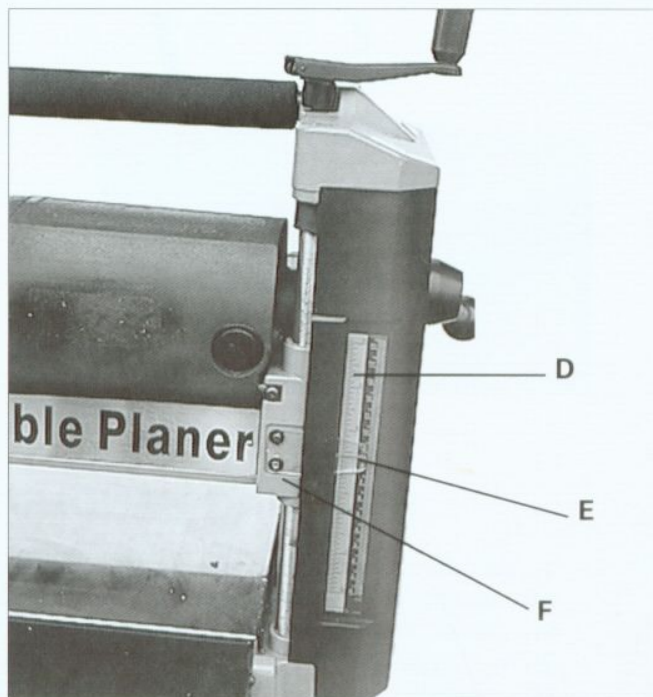


Fig.16

## RECOMMENDED DEPTH OF CUT

**NOTE:**One revolution of the raising and lowering handle will move the cutterhead up or down  $3/32$  of an inch.

A  $3/32$ " depth of cut can be made in soft woods on stock up to 8" wide and in hard woods on stock up to 7" wide; see chart in Fig.17.

For 10" and 12" wide soft wood, we recommend a maximum depth of cut of  $1/16$ ". For 10" and 12" wide hard wood, a maximum depth of cut of  $3/64$ " is recommended; see chart in Fig.17.

**IMPORTANT:** A  $3/32$ " DEPTH OF CUT CAN BE MADE IN 10" AND 12" WIDE SOFT AND HARD WOODS; HOWEVER, CONTINUOUS OPERATION AT THIS DEPTH CAN CAUSE PREMATURE MOTOR FAILURE.

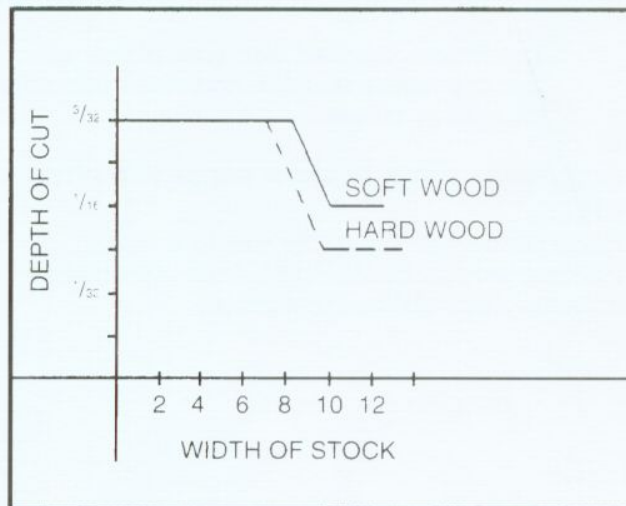


Fig.17

## CORD STORAGE

1. Wire hangers (D) Fig 18, are provided underneath the outfeed table extension to store the planer power cord when the machine is not in use or when transporting the machine from job to job.

2. Figure 18 illustrates the planer power cord (E) wrapped around the wire hangers.

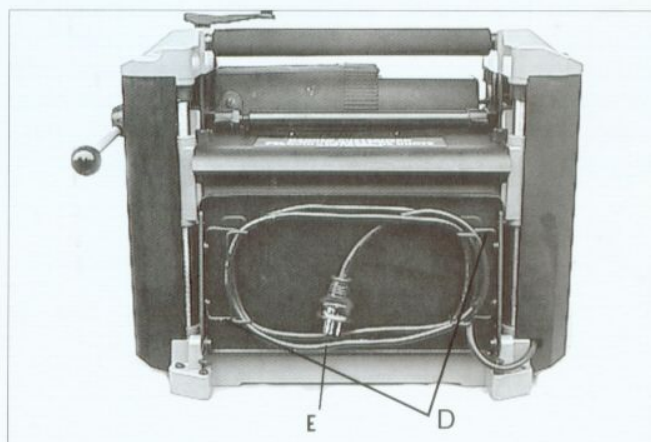


Fig.18





Fig.19

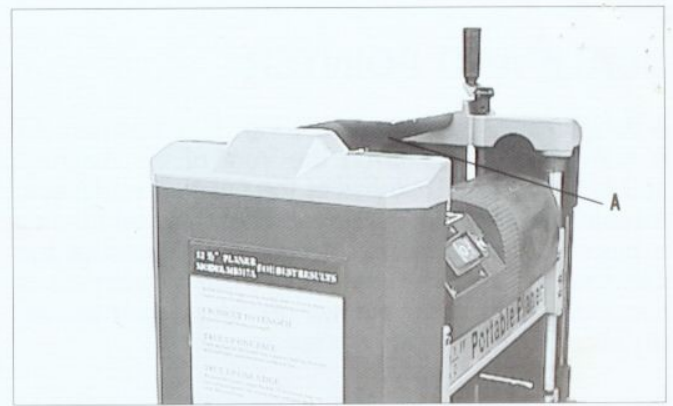


Fig.20

## CARRYING HANDLE/STOCK TRANSFER BAR

1. Your planer is provided with a foam covered carrying handle (A) Fig.19 located on top of the machine, for ease in transporting the planer. Carrying handles are also provided at the base of the planer on each side which allow you to lift the machine with ease.

2. The carrying handle (A) Fig.20, also doubles as a stock transfer bar transferring stock from the outfeed to infeed end of the machine. This is helpful when planing long material, as the workpiece can easily be transferred back to the infeed end of the machine for additional cuts.

## REPLACING KNIVES

The knives supplied with your planer are double edged and reversible, which enables you to turn the knives end-for-end when one edge becomes dull or chipped. To change the knives, proceed as follows:

### 1. DISCONNECT THE PLANER FROM THE POWER SOURCE.

2. Raise head assembly all the way to the top.
3. Remove two screws (A) Fig.21, and remove cutter-head guard (B) by pulling it straight out.

4. Figure 22 illustrates the cutterhead guard removed, exposing the cutterhead (C).

5. Using the wrench supplied, rotate cutterhead by inserting end of wrench into the hex hole supplied on end of cutterhead. Access to this hex hole is available through the opening on the right side of the machine. Rotate cutterhead until the cutterhead lock (D) engages and locks the cutterhead (C) in place.



Fig.21

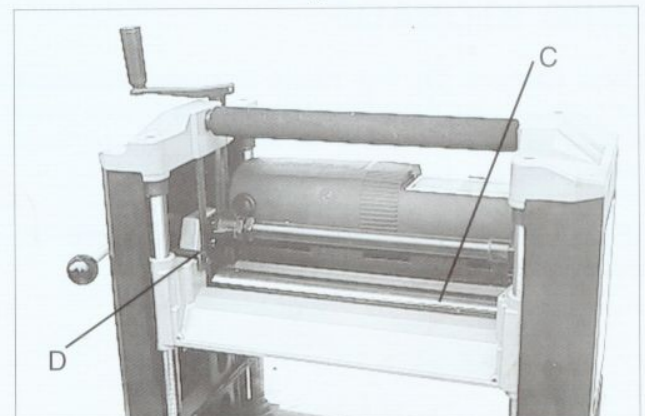


Fig.22



# ADJUSTING AND REPLACING KNIVES

## ADJUSTING KNIVES

To check and adjust the knives, proceed as follows:

1. **DISCONNECT THE MACHINE FROM THE POWER SOURCE.**

2. Lower the head assembly by turning the raising and lowering handle.

3. Remove chip deflector (A) Fig.23

4. Carefully place knife setting gage (B) Fig.24, on the cutterhead so the rounded sections are directly over the knife as shown. When adjusted correctly, the knife should just contact the bottom of the center portion at each end of gage (B). Check the other knife in the same manner.

5. If an adjustment to one or both knives is necessary, slightly loosen the seven locking screws, six of which are shown at (C) Fig.25, by turning the screws **CLOCKWISE** into the knife locking bar just enough to relieve stress in the cutterhead and not disturb the knife setting.

6. With the knife setting gage (B) Fig.24, still in place on the cutterhead, continue to adjust the knife that must be reset, by turning the seven knife locking screws (C) Fig.25, **CLOCKWISE** until the knife locking bar becomes loose. Lifter springs located under the knife will automatically raise the knife until it comes in contact with gage (B). Then snug up the knife locking bar by lightly turning the seven locking screws (C) **COUNTERCLOCKWISE**. **IMPORTANT: AT THIS TIME, ONLY TIGHTEN THE KNIFE LOCKING BAR JUST ENOUGH TO HOLD THE KNIFE IN POSITION INSIDE THE CUTTERHEAD SLOT.**

7. If the other knife needs adjusted, repeat STEP 6.

8. After both knives are positioned in the cutterhead with the knife locking screws snug, turn each of the seven screws, six of which are shown at (C) Fig.25, **COUNTERCLOCKWISE** until the knife is secure in the cutterhead. **NOTE:** When tightening knife locking screws, tighten the end screws first, then inward toward the center of the cutterhead.

9. Replace chip deflector (A) Fig.23.

## REPLACING AND RESETTNG KNIVES

If the knives are to be removed for sharpening or replacement, extreme care must be taken as the knives are very sharp. To replace and reset the knives, proceed as follows:

1. **DISCONNECT THE MACHINE FROM THE POWER SOURCE.**

2. Lower the head assembly by turning the raising and lowering handle.

3. Remove chip deflector (A) Fig.23

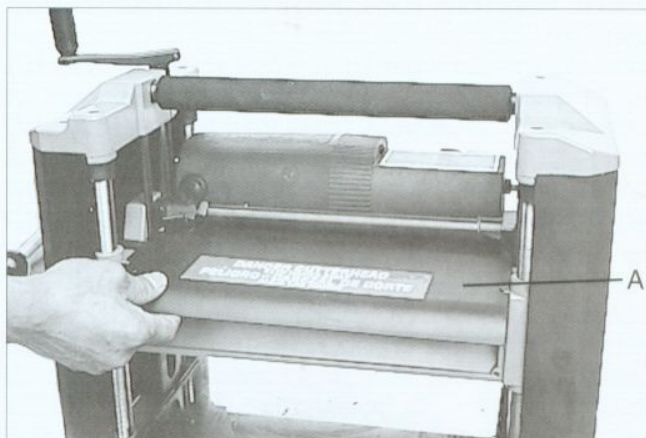


Fig.23

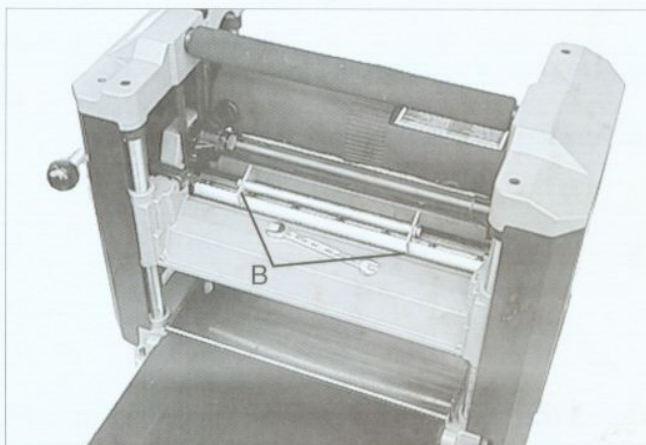


Fig.24

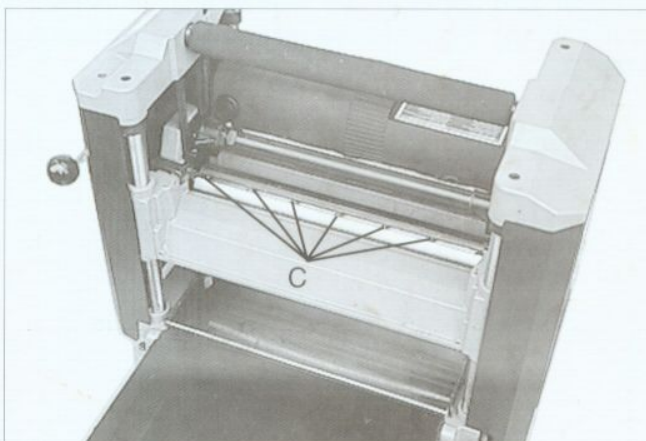


Fig.25

4. Carefully place knife setting gage (B) Fig.24, on the cutterhead so the rounded sections directly over the knife as shown.

5. Loosen the knife locking bar by turning the seven knife locking screws, Six of which are shown at (C) Fig.25, **CLOCKWISE** and carefully remove knife locking bar (D) Fig.26, knife (E), and springs (not shown) which are located under the knife.

6. Remove the remaining knife in the same manner.



7. Thoroughly clean the knife slots, knife locking bars and screws. Check the screws. If the threads appear worn or stripped or if the heads are damaged, replace them.

8. Carefully replace the springs (not shown), knives (E) Fig. 26 knife locking bars (D), into both slots of cutterhead (F). **IMPORTANT: WHEN REPLACING KNIFE LOCKING BARS (D) AGAINST KNIVES (E), AS SHOWN IN THE CROSS SECTIONAL ILLUSTRATION FIG. 26, MAKE CERTAIN THE BARS ARE INSTALLED AS SHOWN, WITH SCREWS (C), POSITIONED AT THE TOP OF KNIFE LOCKING BARS (D), AND ANGLED DOWNWARD HOLDING THE KNIVES (E) PROPERLY INSIDE THE CUTTERHEAD SLOTS. TURN KNIFE LOCKING SCREWS, ONE OF WHICH IS SHOWN AT (C), COUNTERCLOCKWISE JUST ENOUGH TO HOLD BOTH KNIVES (E) IN THE CUTTERHEAD (F).**

9. Adjust both knives as explained in section **ADJUSTING KNIVES, STEPS 6, 7 and 8.**

10. Replace chip deflector (A) Fig. 23

11. Replace cutterhead guard (B) Fig. 27, making sure cutterhead lock (D) is depressed and underneath guard (B) as shown. Slide guard (B) in as far as possible and replace two screws, one of which is shown at (A) Fig. 28, These screws were removed is **STEP 3.**

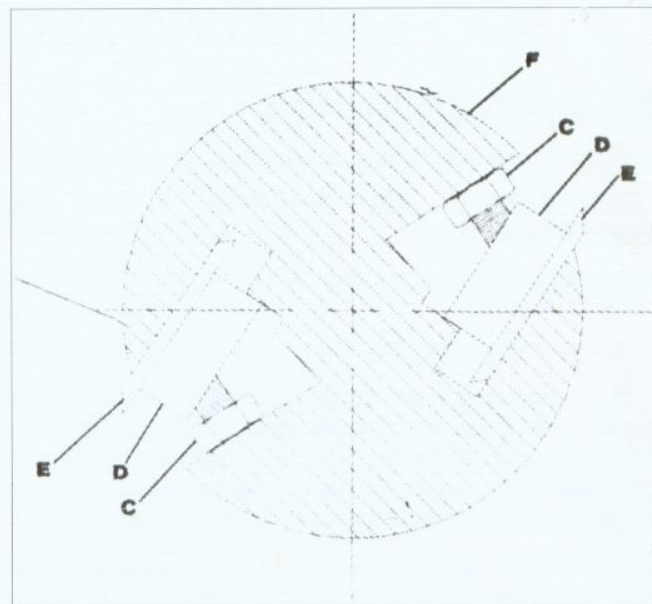


Fig. 26

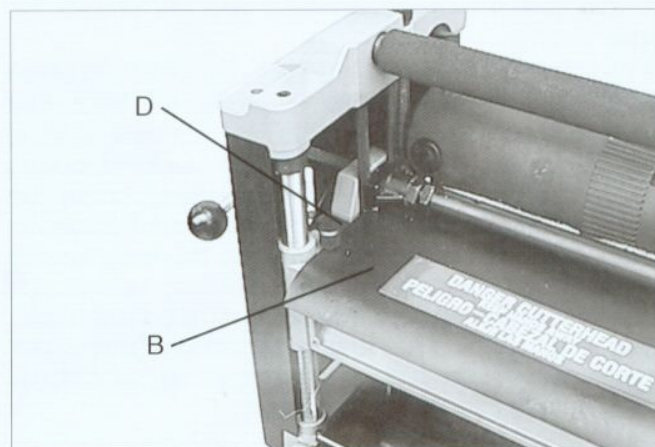


Fig. 27

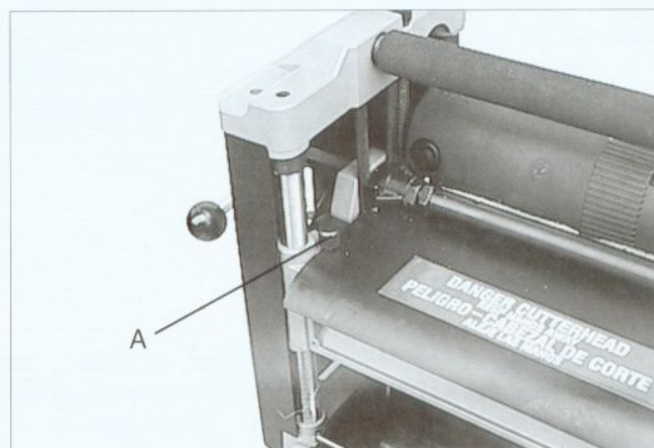


Fig. 28

# MAINTENANCE

## BRUSH INSPECTION AND REPLACEMENT

**CAUTION:BEFORE INSPECTING THE BRUSHES, DISCONNECT THE MACHINE FROM THE POWER SOURCE.**

Brush life varies.It depends on the load on the motor. Check the brushes after the first 50 hours of use for a new machine or after a new set of brushes has been installed.After the first check,examine them after about 10 hours of use until such time that replacement is necessary.

The brush holders,one of which is shown at (A) Fig. 29,are located on the motor housing opposite each other.Fig.30,illustrates one of the brushes removed for inspection.When the carbon (B) on either brush is worn to 3/16" in length or if either spring (C) or shunt wire is burned or damaged in any way,replace both brushes.If the brushes are found serviceable after removing,reinstall them in the same position as removed.

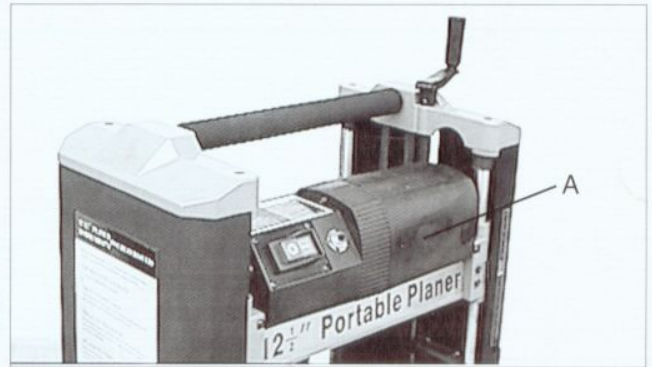


Fig.29

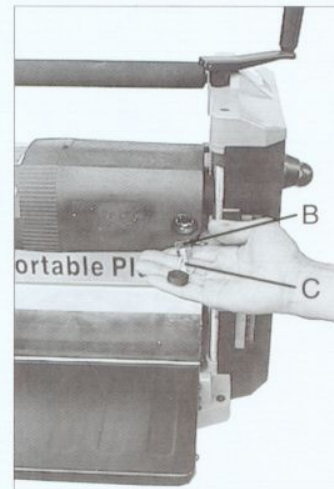


Fig.30

## LUBRICATION

The gears in the gear box and the feed roller bushings should be lubricated periodically,as follows:

**1.DISCONNECT THE MACHINE FROM THE POWER SOURCE.**

2.Remove two screws (A) Fig.31,located on bottom of left side cover of planer,and remove left side cover (B).

3.Place grease on the teeth of gears (C) Fig.32,and replace the side cover.

4.Lay the planer on its back and squirt oil on the feed roller bushings (D) Fig.33,at each end of the feed rolls.

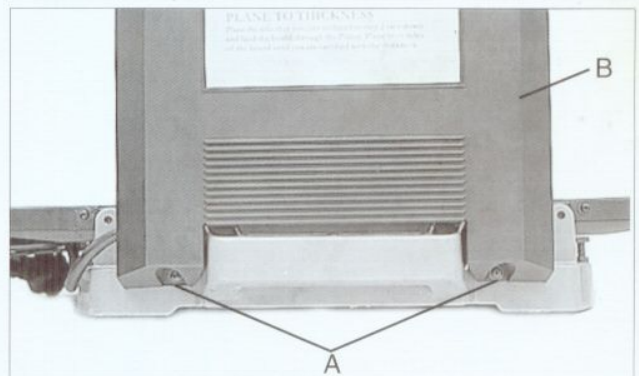


Fig.31

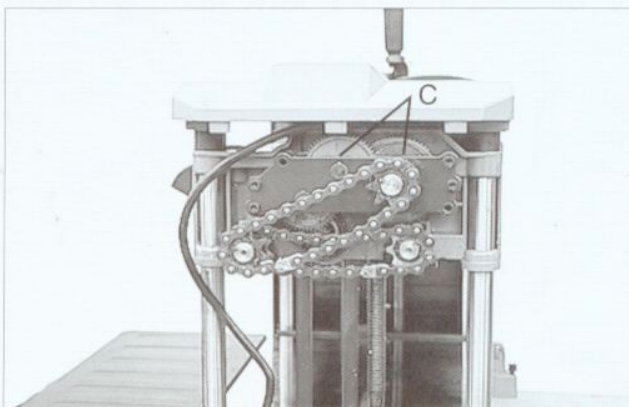


Fig.32

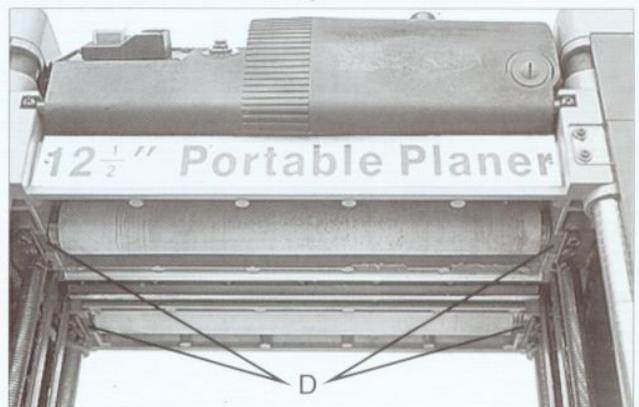
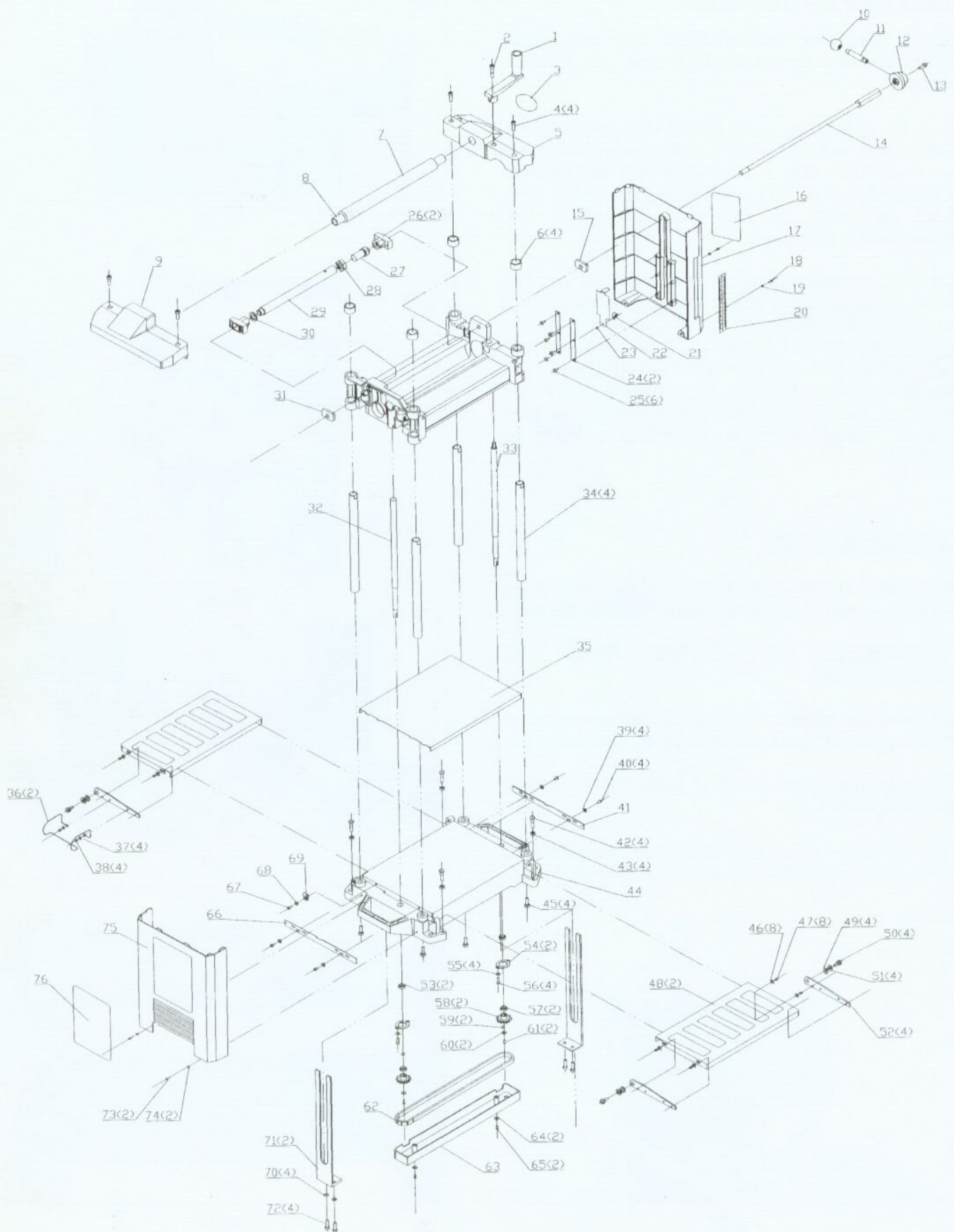


Fig.33



# 12<sup>1</sup>/<sub>2</sub> Portable Planer



## REPLACEMENT PARTS

---

### NO. Description

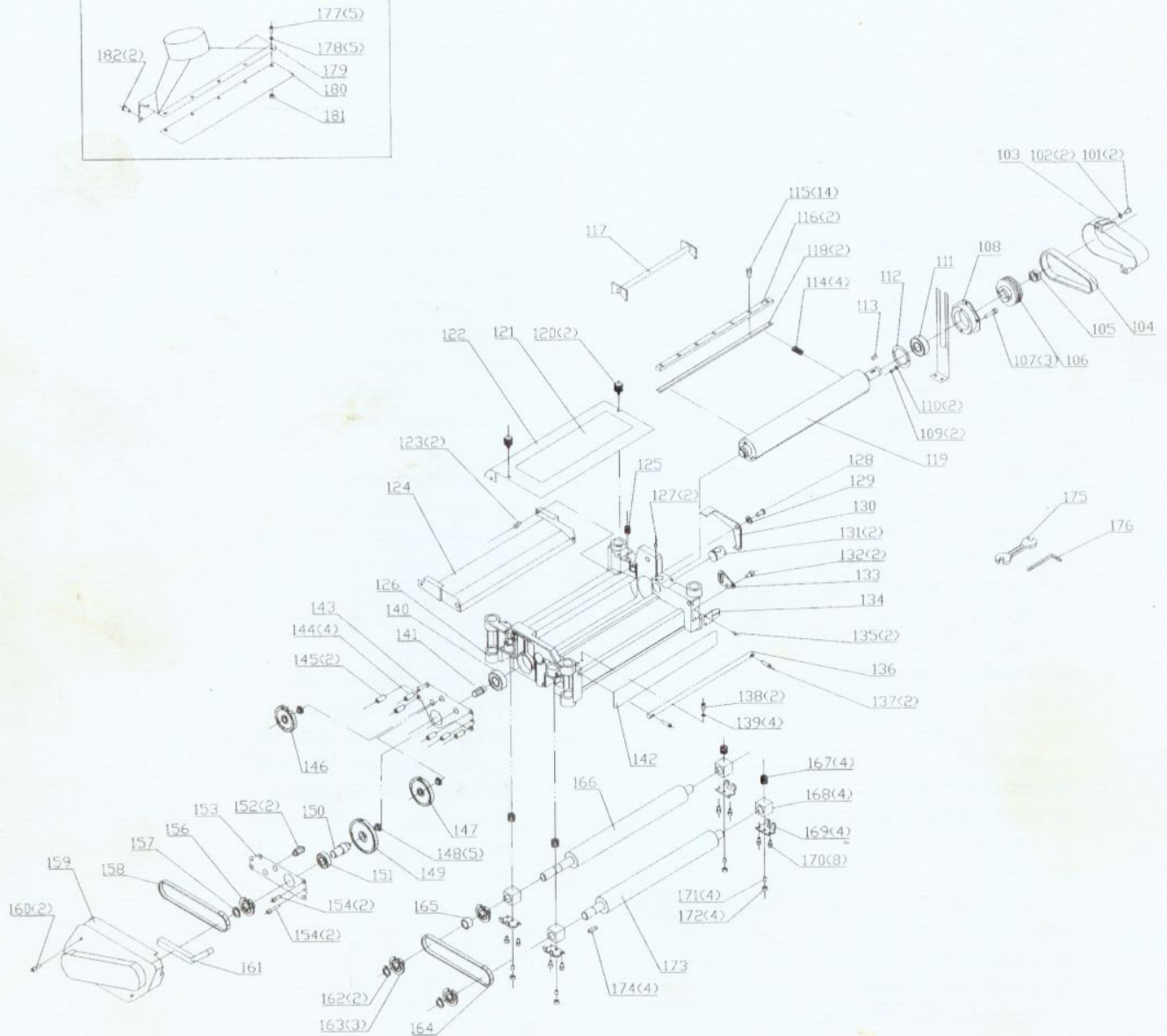
- 1 Handle Assy.
- 2 M5X25mm Hex Soc. Hd. Screw
- 3 Up/Down Indicate Label
- 4 M6x20mm Hex Soc. Hd. Scr.
- 5 Right Top Cover
- 6 Buffer
- 7 Sleeve
- 8 Handle
- 9 Left Top Cover
- 10 Handle Knob
- 11 Stud
- 12 Hub
- 13 M6x20mm Hex Soc. Hd. Scr
- 14 Lock Rod Assy
- 15 Long Flat Washer
- 16 Lock/Unlock Label
- 17 Right Side Cover
- 18 M4x12mm Pan Hd. Scr.
- 19  $\phi$  4mm Flat Washer
- 20 Scale
- 21 Spring
- 22 Guard Plate
- 23  $\phi$  2x3 Rivet
- 24 Guide Plate
- 25 M4x10mm pan Hd. Scr.
- 26 Head Lock Shoe
- 27 Tube
- 28 M16x8mm Hex Nut
- 29 Tube
- 30 Flat Washer
- 31 Jam Nut
- 32 Left Elevating Scr.
- 33 Right Elevating Scr.
- 34 Column
- 35 Table
- 36 Cord Wrap
- 37  $\phi$  4mm Flat Washer
- 38 M4x8mm Pan Hd. Scr.
- 39  $\phi$  4mm Flat Washer
- 40 M4x12mm Pan Hd. Scr.
- 41 Right Guide Rail
- 42 M6x25mm Hex Hd. Bolt

### No. Description

- 43 M6mm Hex Nut
- 44 Base
- 45 M10x35mm Hex Hd. Bolt
- 46  $\phi$  4mm Flat Washer
- 47 M4x8mm Pan Hd. Scr.
- 48 Table Extension
- 49  $\phi$  8mm Flat Washer
- 50 Screw
- 51  $\phi$  8 Wave Washer
- 52 Table Support
- 53  $\phi$  26x8 Ball Bearing
- 54 Spindle Rail
- 55  $\phi$  5mm Lock Washer
- 56 M5x12mm Hex Soc. Hd. Scr.
- 57 Spacer
- 58 Down Sprocket
- 59 3x12mm Flat Washer
- 60  $\phi$  4mm Flat Washer
- 61 M4x12mm Pan Hd. Scr.
- 62 Chain
- 63 Sprocket Guard
- 64  $\phi$  4mm Flat Washer
- 65 M4x12mm Pan Hd. Scr.
- 66 Left Guide Rail
- 67 M4x12mm Pan Hd. Scr.
- 68  $\phi$  4mm Flat Washer
- 69 Clamp
- 70  $\phi$  6mm Lock Washer
- 71 Head Lock Plate
- 72 M6x20mm Hex Soc. Hd. Scr.
- 73 M4x12mm pan Hd. Scr.
- 74  $\phi$  4mm Flat Washer
- 75 Left Side Cover
- 76 Indicate Label



AS A STANDARD ACCESSORY



## REPLACEMENT PARTS

---

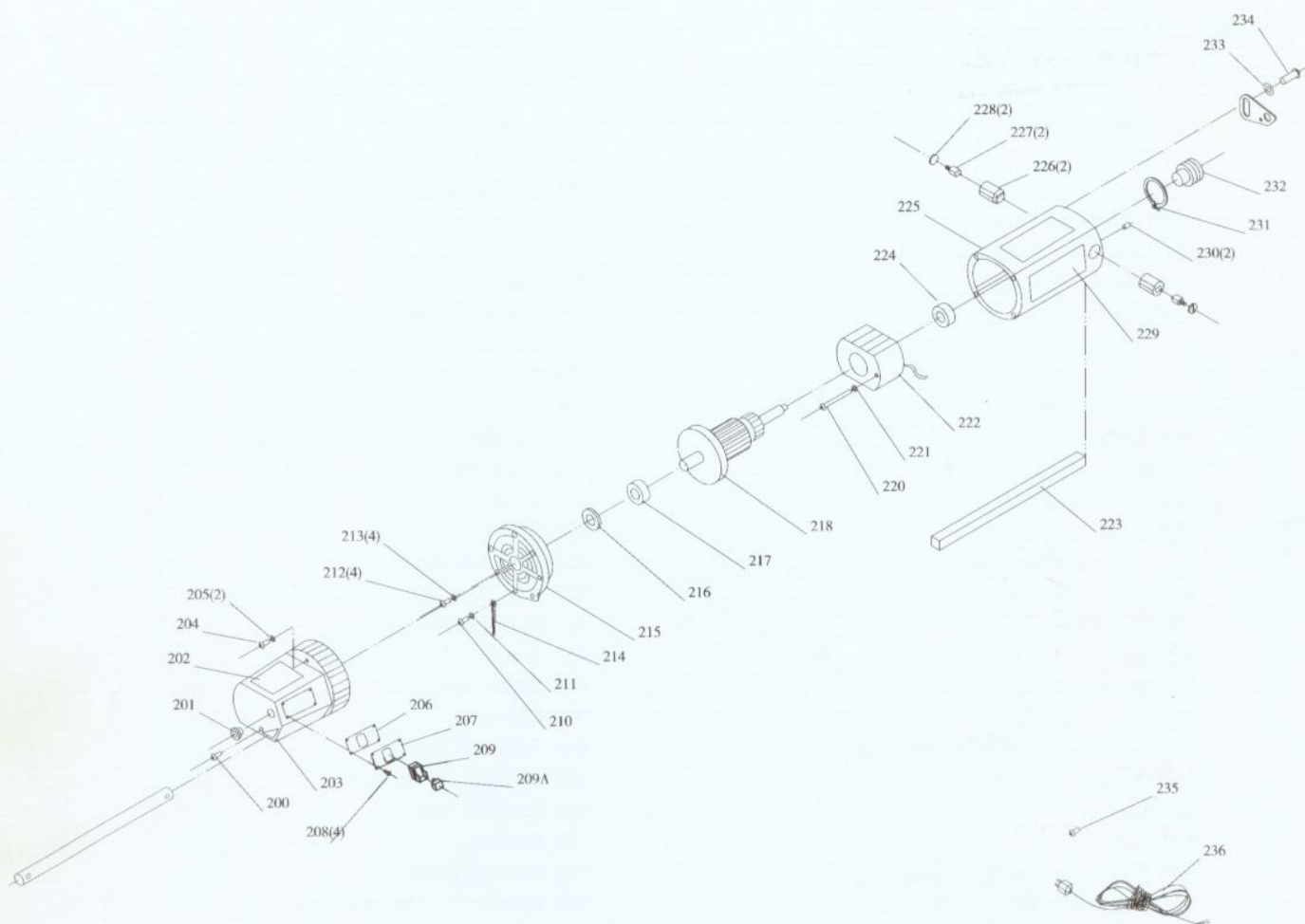
### NO. Description

101 M4x12mm Pan Hd. Scr.  
102  $\phi$  4mm Flat Washer  
103 Belt Guard  
104 Belt  
105 Nut  
106 Cutterhead Pulley  
107 M5x12mm Hex Soc. Nut  
108 Bearing Bracket  
109 M3x6mm Pan Hd. Scr.  
110  $\phi$  3mm Ext. Tooth Ring  
111  $\phi$  40x  $\phi$  17x12mm Bearing  
112 Bearing Retaining  
113 5x12mm Key  
114 Blade Spring  
115 Knife Setting Scr.  
116 Knife Locking Bar  
117 Knife Setting Gauge  
118 Knives (Set of 2)  
119 Cutterhead  
120 Screw  
121 Warning Label  
122 Dust Plate Assy.  
123 M6x12mm Hex Soc. Hd. Scr.  
124 Exhaust Manifold Assy.  
125 Spring  
126 Head  
127 M4x6mm Hex Soc. Setting Scr.  
128 M5x12mm Pan Hd. Scr.  
129 Washer  
130 Plate  
131 Spindle Nut  
132 M6x12mm Hex Soc. Hd. Scr.  
133 Motor Mounting Plate  
134 Pointer  
135 M3x8mm Pan Hd. Scr.  
136 Shaft  
137 M5x18mm Pan Hd. Scr.  
138 M5x12mm Pan Hd. Scr.  
139  $\phi$  5 Ext. Tooth Ring  
140  $\phi$  40X  $\phi$  17x12mm Bearing  
141 Gear  
142 Nameplate

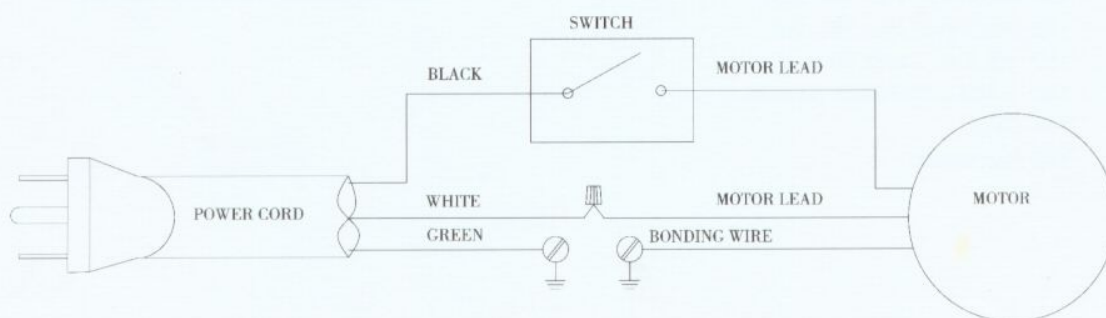
### NO. Description

143 Inside Gearbox Plate  
144 Retainer  
145 Spacer  
146 Small Gear  
147 Intermediate Gear  
148 Bushing  
149 Large Gear  
150 shaft  
151  $\phi$  32x  $\phi$  15x9mm Bearing  
152 Sprocket  
153 Outside Gearbox Plate  
154 M5x25mm Hex Soc. Hd. Scr.  
155 M5x30mm Hex Soc. Hd. Scr.  
156 Upper Sprocket  
157  $\phi$  14mm Retaining Ring  
158 Chain  
159 Sprocket Guard  
160 M5x40mm Hex Soc. Hd. Scr.  
161 Sprocket Washer  
162  $\phi$  14mm Retaining Ring  
163 Upper Sprocket  
164 Chain  
165 Sprocket Spacer  
166 Outfeed Roller Assy.  
167 Bushing Spring  
168 Bushing  
169 Bearing Block  
170 M5x12mm Hex Soc. Scr.  
171 M5x8mm Hex Soc Setting Scr.  
172 M5x2.7mm Hex Nut  
173 4x12 Key Dust Chute  
177 M4x12mm Pan Hd. Scr.  
178 M4x12mm Pan Hd. Scr.  
179 Dust Chute  
180 Dust Chute Extender  
181 M4mm Hex Nut  
182 M6x12mm Hex Soc. Hd. Scr.





## WIRING DIAGRAM



## REPLACEMENT PARTS

---

### NO. Description

• MOTOR ASSY COMPLETE.CONST OF:

- 200 M5 X 40MM PAN HD SCR
- 201 HEYCO BUSHING 5/8"
- 202 WARNING LABEL
- 203 HOUSING
- 204 M5X50MM PAN HD SCR
- 205  $\phi$  5 LOCK WASHER
- 206 INSULATOR
- 207 SWITCH COVER
- 208 M5X12MM PAN HD SCR
- 209 SWITCH,INCL:
- 209 A SWITCH KEY
- 210 M5X10MM PAN HD SCR
- 211 M5 EXT.TOOTH WASHER
- 212 M4X20MM PAN HD SCR
- 213  $\phi$  4 LOCK WASHER
- 214 BONDING WIRE
- 215 MOTOR END CAP
- 216 WAVE WASHER
- 217 BALL BEARING
- 218 ARMATURE
- 220 M5X72MM PAN HD SCR
- 221  $\phi$  5 LOCK WASHER
- 222 FIELD
- 223 SEAL
- 224 BALL BEARING
- 225 MOTOR HOUSING
- 226 BRUSH HOLDER
- 227 BRUSH
- 228 BRUSH CAP
- 229 NAMEPLATE
- 230 M5XBMM HEX SOC SET SCR
- 231 INT RET RING
- 232 MOTOR PULLEY
- 233 M8 FLAT WASHER
- 234 M8X16MM BUTTON HD SCR
- 235 WIRE NUT
- 236 MOTOR CORD