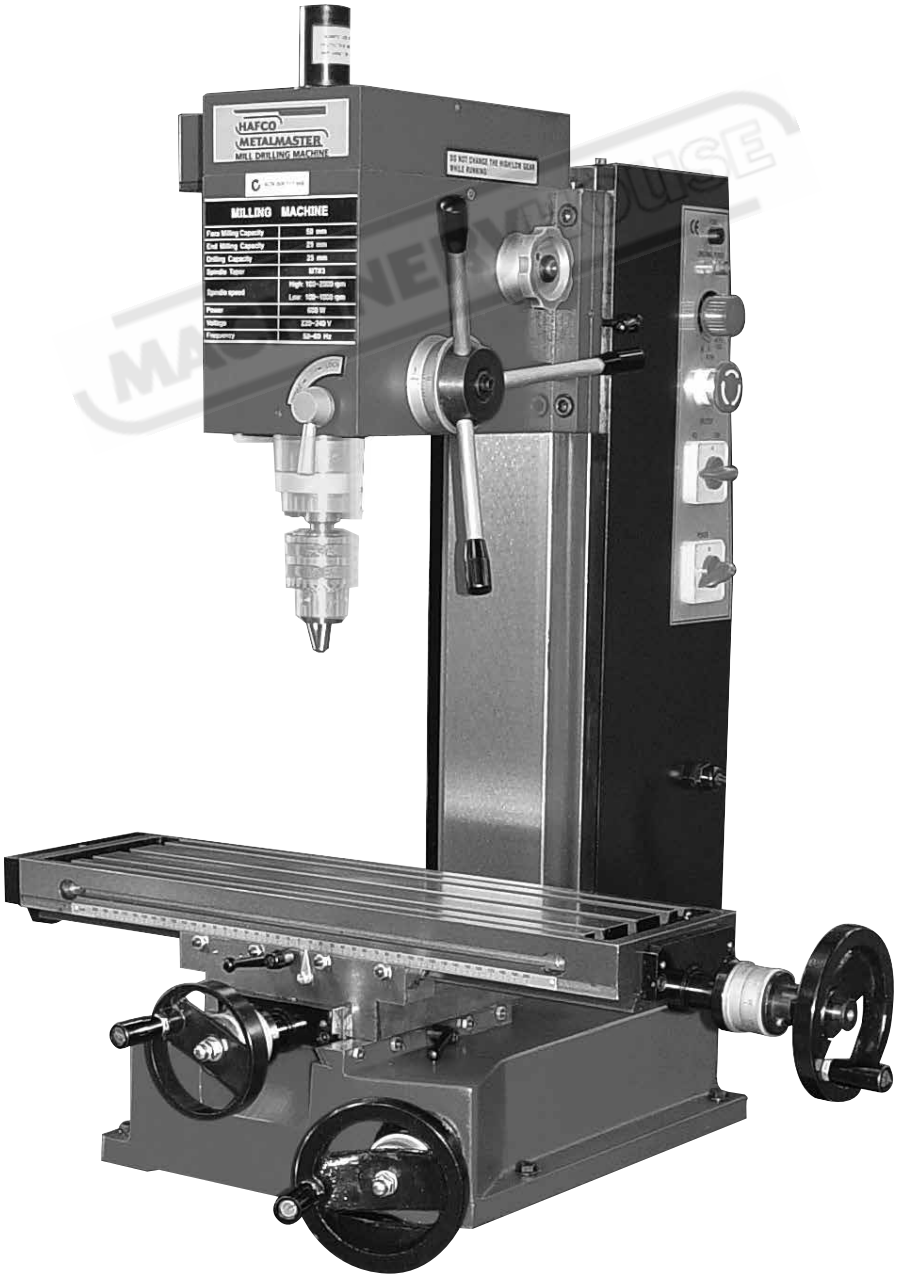
# INSTRUCTION MANUAL

## SIEG X3

## Mill Drill - Geared Head (240V)

## (X) 400mm (Y) 150mm (Z) 350mm

## Dovetail Column




M153

# IMPORATANT SAFETY INSTRUCTION

## *READ ALL INSTRUCTIONS AND WARNINGS BEFORE USING THIS TOOL*

**Operator**

PLEASE REMEMBER:

1. When using electric tools, machines or equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury.
2. Keep work area clean. Cluttered areas invite injuries.
3. Consider work area conditions. Do not use machines or power tools in damp, wet, or poorly lit locations. Do not expose equipment to rain, keep work area well lit. Do not use tools in the presence of flam-mable gases or liquids.
4. Keep children away, all children should be kept away from the work area.
5. Guard against electric shock. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
6. Stay alert. Never operate if you are tired.
   Do not operate the product if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes might be impaired.
8. Do not wear loose clothing or jewelry as they can be caught in moving parts.
9. Wear restrictive hair covering to contain long hair.
10. Use eye and ear protection. Always wear.
11. Keep proper footing and balance at all times.
12. Do not reach over or across running machines.

**Before operations**

1. Be sure the switch is OFF when not in use and before plugging in.
2. Do not attempt to use inappropriate attachments in an attempt to exceed the tool's capacity. Approved accessories are available from the dealer or machine maker.
3. Check for damaged parts, before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of all moving parts, broken parts or mounting fixtures and any other condition that may affect proper operation. Any part that is damaged should be prop early repaired or replaced by a qualified technician.
5. Do not use the tool if any switch does not turn off and properly

**Operation**

1. Never force the tool or attachment to do the work of a larger industrial tool. It is designed to do the job better and more safely at the rate for which it was intended.
2. Do not carry the tool by its power cord.
3. Always unplug the cord by the plug. Never yank the cord out of the wall.
4. Always turn off the machine before unplugging.

*IF THERE IS ANY QUESTION ABOUT A CONDITION BEING SAFE OR UNSAFE, DO NOT OPERATE THE TOOL!*

### Grounding Instructions

This machine has a three prong plug, the third prong is the ground. Plug this cord only into a three-prong receptacle. Do not attempt to defeat the protection the ground wire provides by cutting off the round prong. Cutting off the ground will result in a safety hazard and void the warranty.

**DO NOT MODIFY THE PLUG IN ANY WAY. IF YOU HAVE ANY DOUBT, CALL A QUALIFIED ELECTRICIAN.**

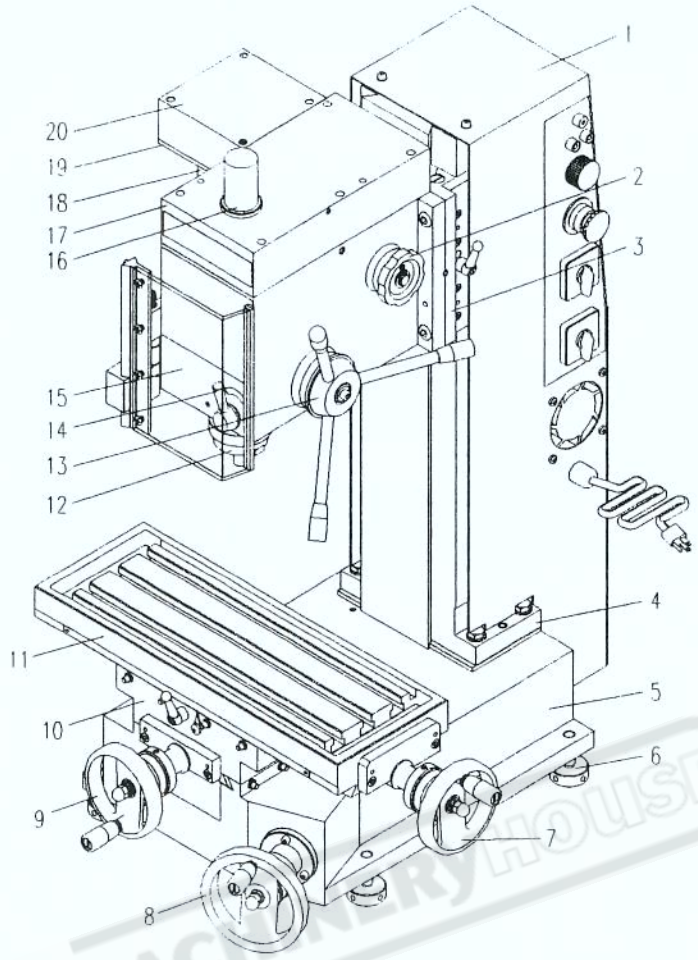
## Specifications

| | | |
|---|---|---|
| Drilling capacity | | 25 mm |
| End mill capacity | | 25 mm |
| Face mill capacity | | 50 mm |
| Max spindle stroke | | 80 mm |
| Throat | | 232 mm |
| Max distance spindle to table | | 250 mm |
| Spindle taper | | MT#3 |
| Spindle speed | High range | 100- 2000 rpm ± 10% |
| | Low range | 100- 1000 rpm ± 10% |
| T-slot size | | 12 mm |
| Table effective size | | 550 x 160 mm |
| Table longitudinal travel | | 400 mm |
| Table cross travel | | 160 mm |
| Motor output power | | 600W |
| Weight (net/gross) | | 135 kg/ 160kg |

## Unpacking &Preparing for use

Before unpacking you must check the package carefully, to find whether it is damaged, if it's damaged and may have effect on the machine, please connect with the distributor in advance.

Unpacking carefully, check the species of standard accessories and the quantity to find whether it is as same as the packing list in the package.




| | | | |
|---|---|---|---|
| 1 | Cover of column | 11 | Worktable |
| 2 | High/Low speed change lever | 12 | Spindle |
| 3 | Vertical slide | 13 | Handle for spindle moving |
| 4 | Column | 14 | Handle for spindle locking |
| 5 | Base | 15 | Dust cover (optional accessory) |
| 6 | Adjustable screw | 16 | Cover of spindle |
| 7 | Longitudinal feed hand wheel | 17 | Cover of headstock |
| 8 | Lifting hand wheel | 18 | Motor |
| 9 | Cross feed hand wheel | 19 | Fixed plate of motor |
| 10 | Saddler | 20 | Cover of motor |

## Installation

**CAUTION!**

**DO NOT ATTEMPT TO USE THE MACHINE UNTIL INSTALLTION IS COMPLETED, AND ALL PRELIMINARY CHECKS HAVE BEEN MADE IN ACCORDANCE WITH THIS MANUAL.**

### MOUNTING THE MACHINE

The machine should be mounted on a strong, heavy workbench, of sufficient height so that you do not need to bend your back to perform normal operations.

Ensure the location is adequately lit and that you will not be working in your own shadow.

We strongly recommend that the machine bolted firmly to a strong workbench using the tapped holes used to secure the feet to the machine. This is to provide added stability and consequently, additional safety.

To do this, first drill four M12 clearance holes in a worktop, at the dimensions shown in the diagram opposite, and with appropriate length M12 bolts, or screws, with flat washers. (not supply)

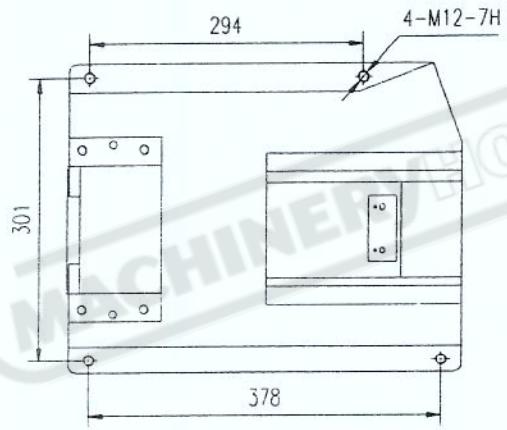



Fig 2

## Starting procedure

### INITIAL START (ref. Fig.3)

1. Taking all precautions previously stated, set the High-Low range lever to LOW.
2. Select FORWARD, use the Forward/Off/Reverse (F/O/R) switch (F).
3. Release the Emergency Stop switch (E) by rotating its cover clockwise, the cover should jump out automatically.
4. Set the Main Power switch(G) to 1, at the mean time the Power Indicating lamp(B) will light (green). If the Fault Indicating lamp(C) lights (yellow) too, Switch off the Variable Speed control knob(D) .
5. Switch on the machine by GENTLY turning the Variable Speed control knob(D), clockwise. A click will be heard as power is turn on, but the spindle will not rotate until the knob is turned clockwise a little further,
   Speed will increase progressively the further the knob is turned.
6. Run for a total of five minutes during which time gradually increase spindle speed to its maximum.

Run for at least two minutes at this speed before stopping the machine and disconnecting from the mains supply.

7. Check that all components are still secure and working freely and correctly. Check also to ensure the mountings are secure.
Repeat the procedure at the HIGH range setting.

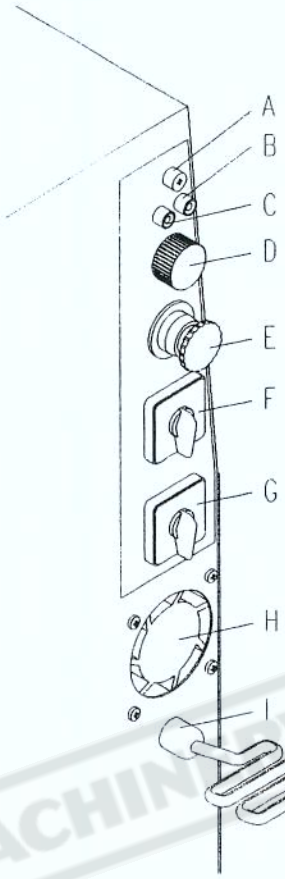





**Fig 3**

**A – Fuse box B – Power indicating lamp C - Fault Indicating lamp D – Variable speed control knob E – Emergency stop switch F – Forward/Off/Reverse switch G – Main power switch H – Cooling fan I – Power cord w/plug**

**CAUTION!**

**NEVER attempt to change from HIGH to LOW range with the machine running.**

**OVER-LOAD protection(ref. Fig.3)**

When the feeding speed is too fast, or the strength you press is too big, that will cause the machine beyond its capacity, machine would stop automatically for safety, at this time, the Fault Indicating lamp(C) lights (yellow). If you want to start again, just switch off the Variable Speed control knob(D) then switch it on. The machine will start again.

### Wedge adjustment

When the machine has operated for a long time, you should adjust the wedge of the worktable and the position of the saddle.

The needed adjusted position of the wedge, e.g.

1. The cross wedge between the worktable and the saddle.
2. The longitudinal wedge between the saddle and the base.

The way of the adjustment is, adjusting the screws of wedge till the handle moving smoothly, then tighten the nuts for locking these screws.

## Maintenance

For maximum performance, it is essential that the machine is properly maintained.

### Before use

Always inspect before use. Any damage should be repaired and maladjustment rectified. Damage to machined surfaces should be repaired with an oil stone. Test by hand to ensure smooth operation of all parts before use.

Inject a few drops of oil to the oilways at bearings and once or twice during the day if used continuously

### After use

Remove all swarf from the machine and thoroughly clean all surfaces.

Worktable should be dry, and all machined surfaces should be lightly oiled.

Always remove drill bits, cutting tools, and store in a safe place.

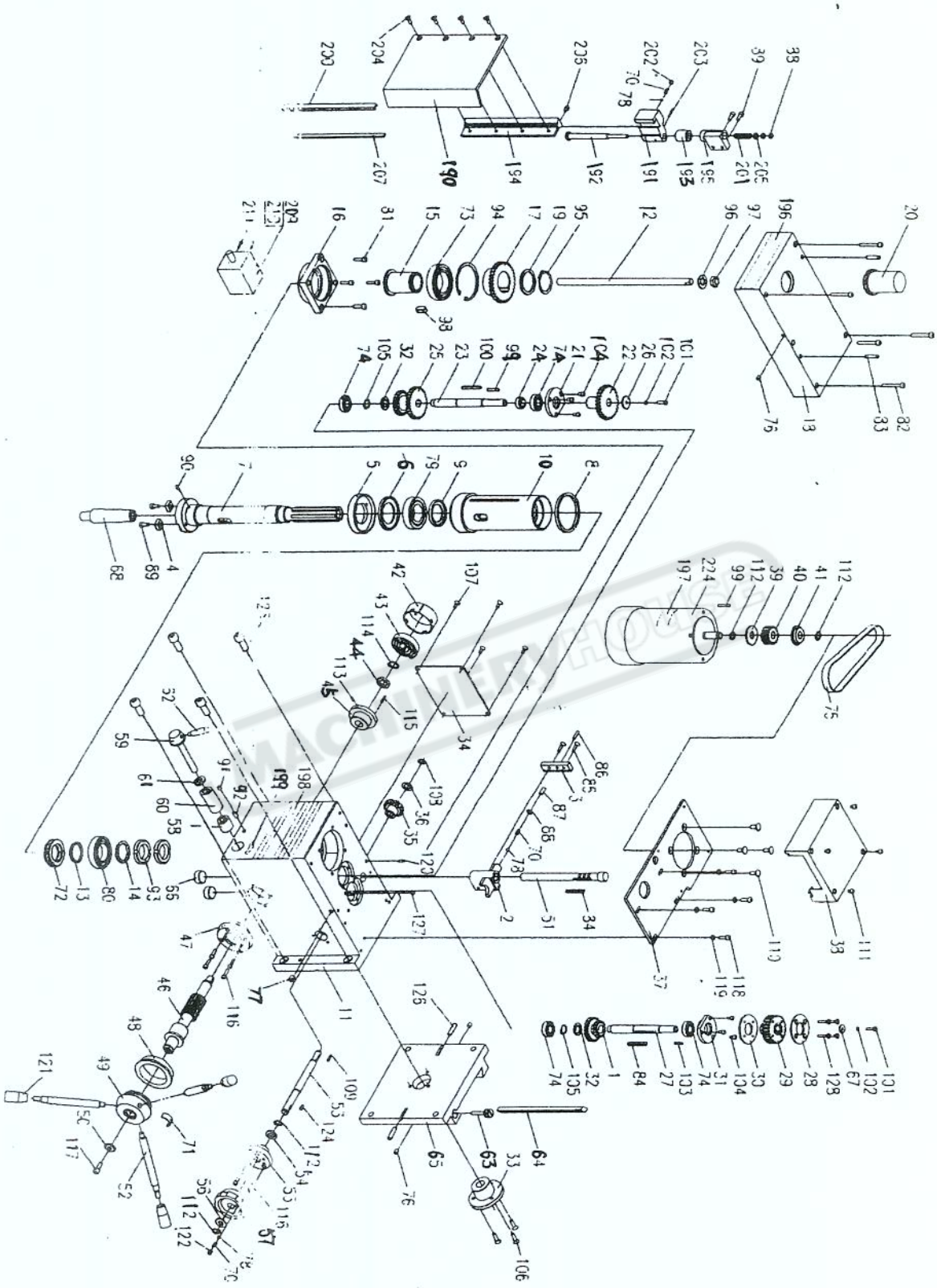
### Motor brush

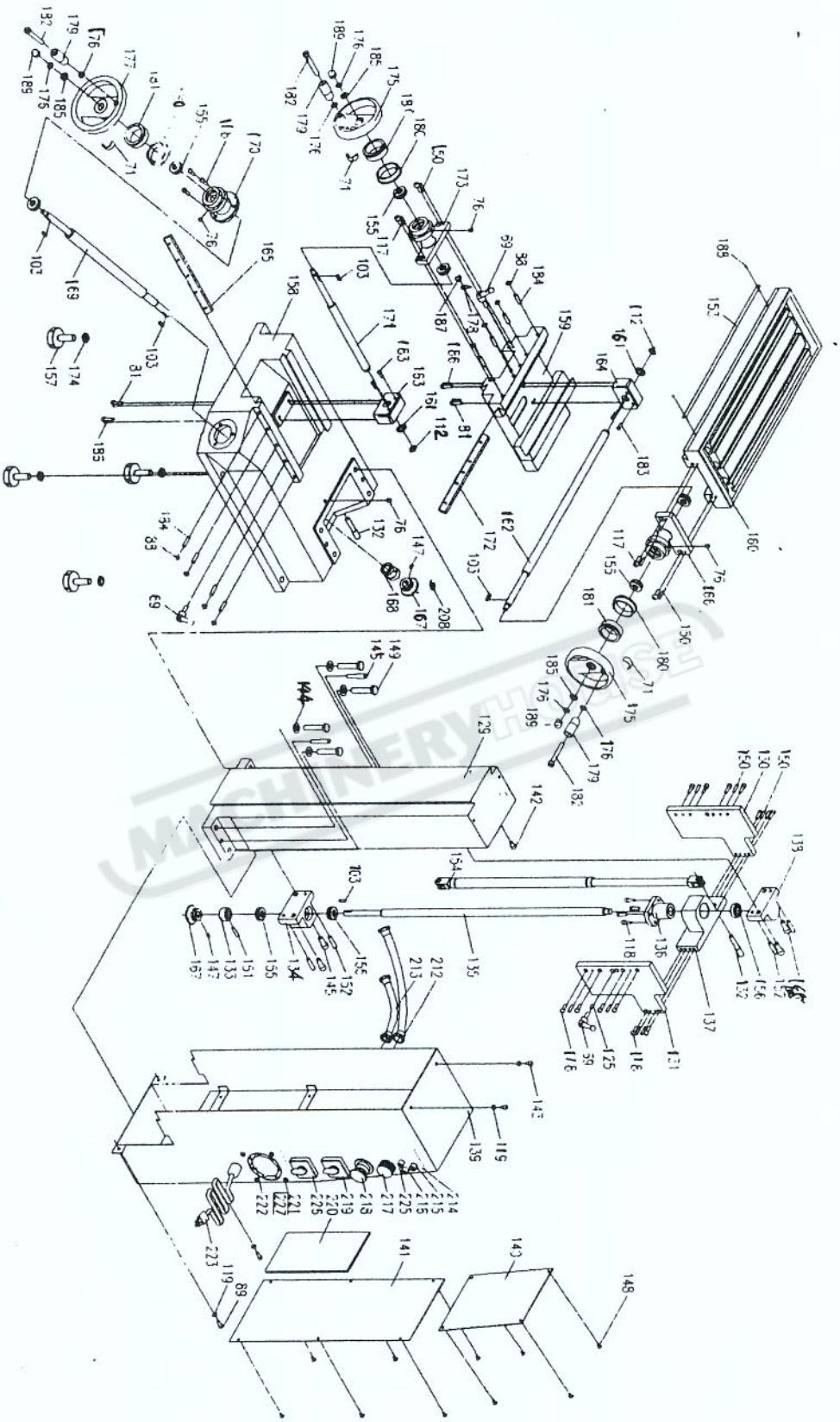
The motor brushes could be changed by unscrewing the caps, visible at the top of the motor.

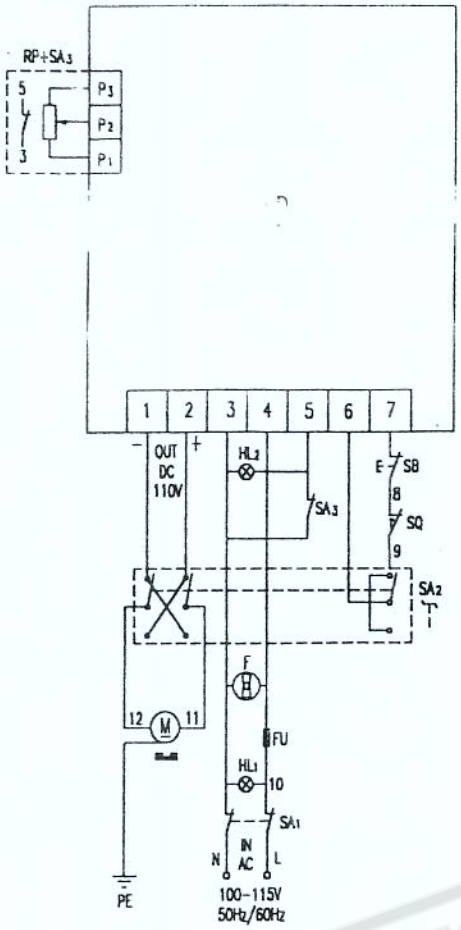
| No | Description | Qty | No | Description | Qty |
|---|---|---|---|---|---|
| 1 | Transmission gear | 1 | 43 | Clockwork spring | 1 |
| 2 | Dial fork | 1 | 44 | Adjust washer | 1 |
| 3 | Small gear rack | 1 | 45 | Left support flange | 1 |
| 4 | key block | 2 | 46 | Pinion | 1 |
| 5 | Protecting flange of spindle | 1 | 47 | Right support flange | 1 |
| 6 | Under oil seal I | 1 | 48 | Big dial | 1 |
| 7 | Spindle | 1 | 49 | Big handle seat | 1 |
| 8 | Sleeve limit pad | 1 | 50 | Washer | 1 |
| 9 | Under oil seal II | 1 | 51 | Dial fork shaft | 1 |
| 10 | Spindle sleeve | 1 | 52 | Handle shank | 3 |
| 11 | Spindle box | 1 | 53 | Move shaft | 1 |
| 12 | Draw Bar | 1 | 54 | Adjust washer | 1 |
| 13 | Washer I | 1 | 55 | Right support flange | 1 |
| 14 | Washer II | 1 | 56 | Adjust washer | 1 |
| 15 | Inside spline sleeve | 1 | 57 | Rotate handle | 1 |
| 16 | Square bearing seat | 1 | 58 | Spindle lock sleeve II | 1 |
| 17 | Spindle out gear | 1 | 59 | Spindle lock handle | 1 |
| 18 | Spindle box cover | 1 | 60 | Spindle lock sleeve I | 1 |
| 19 | Adjustment pad | 1 | 61 | Washer | 1 |
| 20 | Protecting pad of spindle | 1 | 62 | Small handle | 1 |
| 21 | Bearing seat | 1 | 63 | Adjust Screw | 1 |
| 22 | Flange | 1 | 64 | Wedge | 1 |
| 23 | II shaft | 1 | 65 | Verticality table | 1 |
| 24 | Washer of II shaft | 1 | 66 | End cap | 1 |
| 25 | Transmission gear | 1 | 67 | Washer | 1 |
| 26 | Washer | 1 | 68 | Slanting shaft | 1 |
| 27 | I shaft | 1 | 69 | Small handle | 3 |
| 28 | Up press loop | 1 | 70 | Pressing spring | 3 |
| 29 | Big Timing belt | 1 | 71 | Spring piece | 4 |
| 30 | Under press loop | 1 | 72 | Bearing 8106 | 1 |
| 31 | Bearing seat | 1 | 73 | Bearing 80107 | 1 |
| 32 | Washer | 2 | 74 | Bearing 80101 | 4 |
| 33 | Center finding shaft | 1 | 75 | Timing belt | 1 |
| 34 | Side cover of spindle box | 1 | 76 | oil cup 6 | 7 |
| 35 | Move gear | 1 | 77 | Oil cup 8 | 1 |
| 36 | Washer | 1 | 78 | Steel ball 5 | 3 |
| 37 | Motor fixed tray | 1 | 79 | Bearing Z007106 | 1 |
| 38 | Motor encloser | 1 | 80 | Bearing 80106 | 1 |
| 39 | Under press loop | 1 | 81 | Screw M5*20 | 8 |
| 40 | Motor pulley | 1 | 82 | Screw M5*40 | 5 |
| 41 | Up press loop | 1 | 83 | Pin 6*25 | 2 |
| 42 | Spring encloser | 1 | 84 | Key 4*40 | 2 |

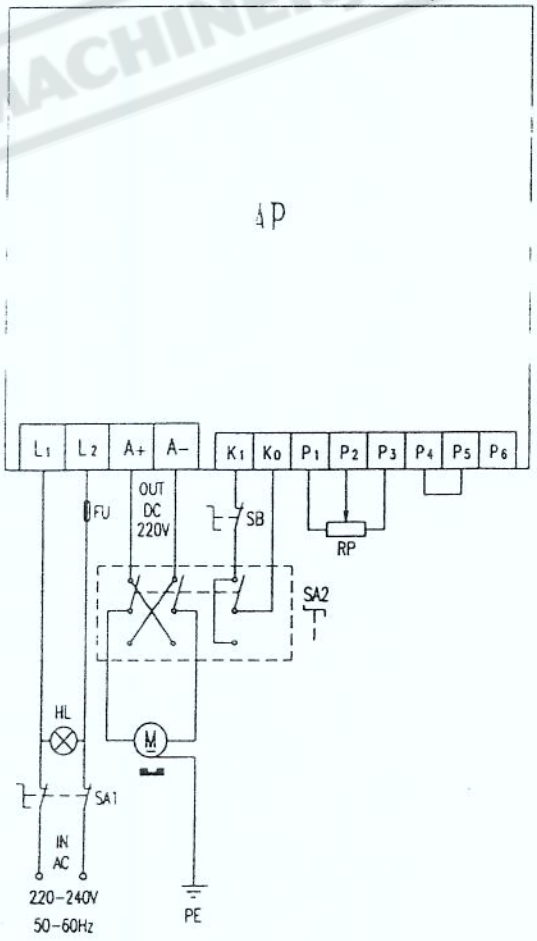
| | | | | | |
|---|---|---|---|---|---|
| 85 | Screw M4*16 | 2 | 128 | Screw M4*20 | 4 |
| 86 | Pin 4*16 | 1 | 129 | Verticality lead rail | 1 |
| 87 | Screw M6*16 | 1 | 130 | Side plate II | 1 |
| 88 | Nut M6 | 11 | 131 | Side plate I | 1 |
| 89 | Screw M5*12 | 6 | 132 | Screw thread shaft | 2 |
| 90 | Pin 4*8 | 1 | 133 | Limit sleeve | 1 |
| 91 | Screw M6*8 | 1 | 134 | Under bearing seat | 1 |
| 92 | Screw M6*12 | 1 | 135 | Verticality lead screw | 1 |
| 93 | Small round nut M27*1.5 | 2 | 136 | Verticality leadscrew nut | 1 |
| 94 | Check ring 62 | 1 | 137 | Support | 1 |
| 95 | Check ring 35 | 1 | 138 | Up Bearing seat | 1 |
| 96 | Washer 12 | 1 | 139 | Back canopy hood | 1 |
| 97 | Nut M12 | 1 | 140 | Cover board I | 1 |
| 98 | Key 8*20 | 1 | 141 | Cover board II | 1 |
| 99 | Key 4*25 | 2 | 142 | Screw M6*10 | 1 |
| 100 | Key 5*40 | 2 | 143 | Screw M5*8 | 2 |
| 101 | Screw M4*16 | 2 | 144 | Washer 10 | 4 |
| 102 | Spring 4 | 2 | 145 | Screw M8*20 | 4 |
| 103 | Key 4*16 | 6 | 146 | Pin 8*45 | 2 |
| 104 | Screw M4*8 | 6 | 147 | Screw M5*8 | 2 |
| 105 | Check ring | 2 | 148 | Screw M4*5 | 10 |
| 106 | Screw M5*16 | 3 | 149 | Bolt M10*50 | 4 |
| 107 | Screw M4*8 | 4 | 150 | Pin 4*20 | 12 |
| 108 | Check ring 10 | 1 | 151 | Pin 4*26 | 1 |
| 109 | Key 3*16 | 1 | 152 | Pin 6*30 | 2 |
| 110 | Screw M6*16 | 4 | 153 | Ruler | 1 |
| 111 | Screw M4*6 | 4 | 154 | Cushioning cylinder | 1 |
| 112 | Check ring | 6 | 155 | Bearing 8101 | 8 |
| 113 | Pin 3*10 | 1 | 156 | Bearing 80101 | 1 |
| 114 | Check ring 16 | 1 | 157 | Adjust screw | 4 |
| 115 | Pin 4*16 | 1 | 158 | Base | 1 |
| 116 | Screw M4*16 | 7 | 159 | Saddle | 1 |
| 117 | Screw M6*16 | 5 | 160 | Worktable | 1 |
| 118 | Screw M5*16 | 23 | 161 | Washer | 2 |
| 119 | Washer 5 | 8 | 162 | Y-axis feeding screw | 1 |
| 120 | Pin 4*10 | 1 | 163 | X-axis screw nut | 1 |
| 121 | Long handle sleeve | 3 | 164 | Y-axis screw nut | 1 |
| 122 | Screw M6*6 | 1 | 165 | X-axis wedge | 1 |
| 123 | Screw M10*25 | 4 | 166 | Y-axis baering seat | 1 |
| 124 | Key 4*12 | 1 | 167 | Gear | 2 |
| 125 | Pin 5*10 | 1 | 168 | Sleeve | 1 |
| 126 | Pin 6*26 | 2 | 169 | Rotate shaft | 1 |
| 127 | Screw M5*6 | 1 | 170 | Support flange | 1 |

| | | |
|---|---|---|
| 171 | X-axis feeding screw | 1 |
| 172 | Y-axis wedge | 1 |
| 173 | X-axis bearing seat | 1 |
| 174 | Nut M12 | 4 |
| 175 | Hand wheel | 2 |
| 176 | Nut M8 | 6 |
| 177 | Hand wheel | 1 |
| 178 | Finger | 1 |
| 179 | Handle sleeve | 3 |
| 180 | Inlay ring | 3 |
| 181 | Dial | 3 |
| 182 | Screw M8*55 | 3 |
| 183 | Screw M4*12 | 4 |
| 184 | Screw M6*25 | 8 |
| 185 | Washer 8 | 3 |
| 186 | Pin 3*20 | 4 |
| 187 | Screw M6*6 | 1 |
| 188 | Rivet 2*3 | 2 |
| 189 | Cap nut | 3 |
| 190 | Splash guard | 1 |
| 191 | Lead rail rotate body | 1 |
| 192 | Small rotate shaft | 1 |
| 193 | Thick washer | 1 |
| 194 | Protective cover lead rail | 1 |
| 195 | Support Bracket | 1 |
| 196 | Caution label | 1 |
| 197 | Motor lable | 1 |
| 198 | Main label | 1 |
| 199 | Lock Label | 1 |
| 200 | Inlay strip | 1 |
| 201 | Spring | 1 |
| 202 | Screw M6*6 | 1 |
| 203 | Pin 3*18 | 1 |
| 204 | Screw M5*10 | 4 |
| 205 | Washer 6 | 1 |
| 206 | Screw M4*5 | 1 |
| 207 | Inlay strip 8*3*200 | 1 |
| 208 | Fine lead wire 1*85 | 1 |
| 209 | Microswitch | 1 |
| 210 | Microswitch Protective cover | 1 |
| 211 | Screw M3*10 | 2 |
| 212 | Lead tube connect | 4 |
| 213 | Lead tube | 2 |
| 214 | Switch label | 1 |
| 215 | Fuse box | 1 |
| 216 | Power indicating Lamp | 1 |
| 217 | Potentiometer with Switch | 1 |
| 218 | Emergency stop Switch | 1 |
| 219 | Reverse/Off/Forward Switch | 1 |
| 220 | PC Board | 1 |
| 221 | Screw M4*35 | 4 |
| 222 | Cooling fan | 1 |
| 223 | Power cord | 1 |
| 224 | Motor | 1 |
| 225 | Fault indicating lamp | 1 |
| 226 | Power switch | 1 |
| 227 | Nut M4 | 4 |







# Packing List

| No. | Name | Description | Q'ty |
|---|---|---|---|
| 1 | Drill chuck with key | 13 mm | 1 |
| 2 | Double end wrench | 8*10, 14*17, 17*19 | Each 1 |
| 3 | L Hex. Wrench | S: 3, 4, 5, 6 | Each 1 |
| 4 | Oil can | | 1 |
| 5 | Draw bar | | 1 |
| 6 | Taper shank | MT#3 | 1 |
| 7 | Nut | M12 | 1 |
| 8 | Washer | 12mm | 1 |
| 9 | T-nut | | 2 |
| 10 | Oblique wedge | | |
| | | | |

# P' NT SAFETY PROGRAMI

## NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

**Stock Code:** M153

**Description:** Milling Machine **Model:** X3 3mt **Brand:** HAFCO

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

| Item No. | Hazard Identification | Hazard Assessment | Risk Control Strategies (Recommended for Purchase / Buyer / User) |
|---|---|---|---|
| A | ENTANGLEMENT | HIGH | Eliminate, avoid loose clothing / Long hair etc. |
| B | CRUSHING | LOW | Secure & support workpiece on mill table. |
| C | CUTTING, STABBING, PUNCTURING | MEDIUM | Isolate power to machine prior to any checks or maintenance being carried out.<br>Do not adjust or clean machine until the machine has fully stopped. |
| D | SHEARING | MEDIUM | Make sure all guards are secured shut when machine is on.<br>Isolate power to machine prior to any checks or maintenance. |
| F | STRIKING | MEDIUM | Ensure tooling is secure in chuck.<br>Wear safety glasses.<br>Stand clear of moving parts on machine.<br>Remove all loose objects around moving parts.<br>Ensure correct spindle direction when milling. |
| H | ELECTRICAL | MEDIUM | All electrical enclosures should only be opened with a tool that is not to be kept with the machine.<br>Machine should be installed & checked by a Licensed Electrician. |
| M | HIGH TEMPERATURE | LOW | Wear appropriate protective clothing to prevent hot swarf. |
| O | OTHER HAZARDS, NOISE. | LOW | Wear hearing protection as required. |
| Plant Safety Program to be read in conjunction with manufactures instructions | | | |

HARE & FORBES MACHINERYHOUSE
ABN 96 000 286 957

*"THE JUNCTION" 2 WINDSOR ROAD, NORTHMEAD NSW 2152*
***Phone (02) 9890 9111 Fax (02) 9890 3888***

Authorised and signed by:
Safety officer: .....
Manager: .....
Date: Mar-02