HAFCO METALMASTER




Edition : 1.0
Date: (11/26)

# Instruction Manual

## INDUSTRIAL GEARED HEAD
# DRILLING MACHINE
## GHD-22A

Order Code: (D171)

## MACHINE DETAILS

| | |
|---|---|
| **MACHINE.** | DRILLING MACHINE |
| **MODEL NO.** | GHD-22A |
| **SERIAL NO.** | |
| **DATE OF MANF.** | |

IMPORTED BY

AUSTRALIA

HARE&FORBES MACHINERYHOUSE

www.machineryhouse.com.au

NEW ZEALAND

MACHINERYHOUSE

www.machineryhouse.co.nz

***NOTE:***

***This manual is only for your reference. At the time of the compiling of this manual every effort to be exact with the instructions, specifications, drawings, and photographs of the machine was taken. Owing to the continuous improvement of the HAFCO METALMASTER machine, changes may be made at any time without obligation or notice.***

***Please ensure the local voltage is the same as listed on the specification plate before operating any electric machine.***

***SAFETY SYMBOLS:***

***The purpose of safety symbols is to attract your attention to possible hazardous conditions.***

⚠WARNING ***Indicates a potentially hazardous situation causing injury or death***

⚠CAUTION ***Indicates an alert against unsafe practices.***

***Note: Used to alert the user to useful information***

***NOTE:***

***In order to see the type and model of the machine, please see the specification plate. Usually found on the back of the machine. See example (Fig.1)***

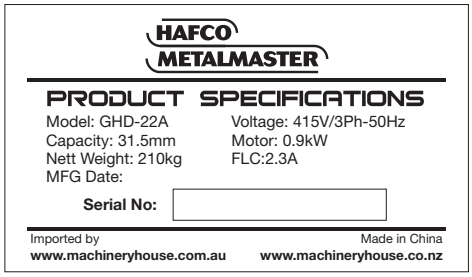



FIG.1

## CONTENTS:

1. GENERAL MACHINE INFORMATION
1.1 Specifications..... 4
1.2 Included Accessories..... 4
1.3 Identification..... 5
1.4 Outline Dimesions..... 6

2. SAFETY
2.1 General Metalworking Machine Safety..... 7
2.2 Specific Safety For Drill Press..... 10

3. POWER SUPPLY
3.1 Electrical Installation..... 11
3.2 Full Load Current..... 11

4. SETUP
4.1 Unpacking..... 12
4.2 Clean Up..... 12
4.3 Site Preparation..... 12
4.4 Lifting Instructions..... 13
4.5 Anchor To The Floor..... 13
4.6 Assembly..... 13
4.7 Controls..... 14
4.8 Test Run..... 16

5. OPERATION
5.1 Positioning The Table..... 17
5.2 Positioning The Head..... 17
5.3 Setting The Spindle Speed..... 18
5.4 Automatic Drill Ejector..... 19
5.5 Tapping Operation..... 19

6. MAINTENANCE
6.1 Schedule..... 20
6.2 Spindle Adjustment..... 20
6.3 Troubleshooting..... 21

SPARE PARTS..... 22
Drill Head..... 23
Gearbox..... 24
Motor Shaft..... 25
Gearbox 2nd & 3rd Shafts..... 26
Column, Table & Spindle..... 28
Electrical Diagram..... 32

Risk Assessment Sheets..... 35

## 1.1 SPECIFICATIONS

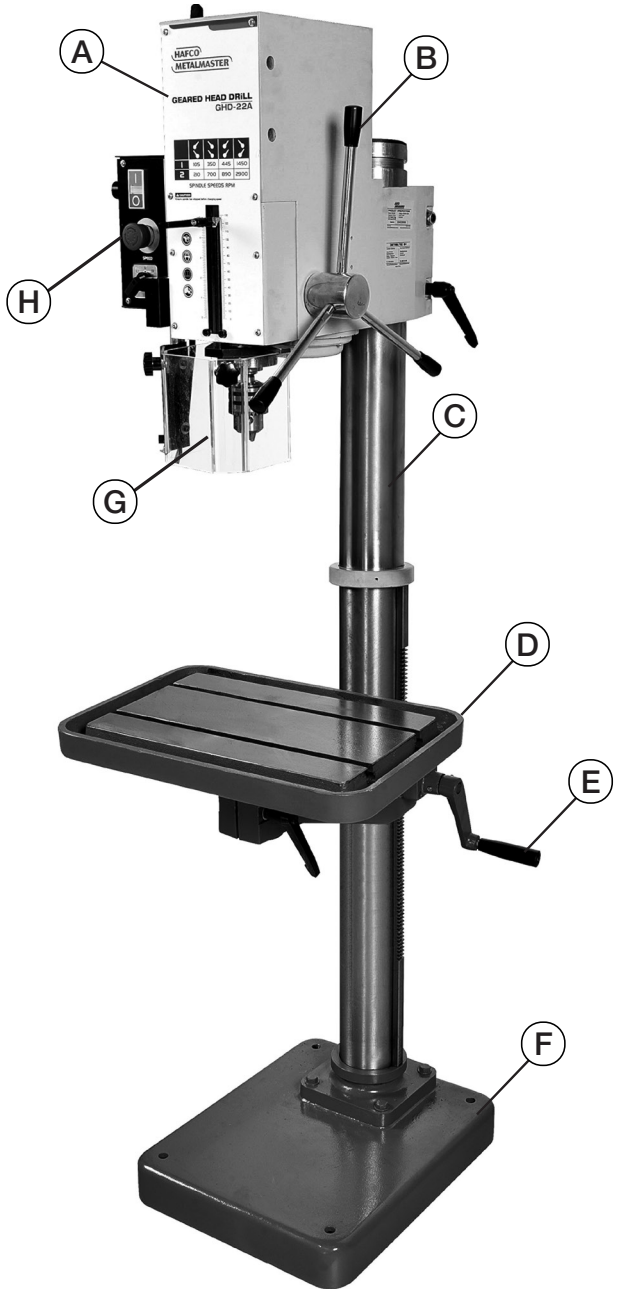
| Order Code | D171 |
|---|---|
| **Model** | **GHD-22A** |
| Drilling Capacity (mm) | Ø25 |
| Spindle Taper (MT) | 3 |
| Spindle Travel (mm) | 125 |
| Throat Depth (mm) | 255 |
| Quill Diameter (mm) | 55 |
| Column Diameter (mm) | 100 |
| Spindle To Table (mm) | 830 |
| Spindle To Base (mm) | 1220 |
| Tapping Capacity In Steel (mm) | 10 |
| Tapping Capacity In Cast Iron (mm) | 16 |
| Table (Type) | Rectangle |
| Table Size (mm) | 340 x 500 |
| T-Slot Size (mm) | 14 |
| Spindle Speed Steps (No.) | 8 |
| Spindle Speed Range (rpm) | 105 ~ 2900 |
| Motor Power (kW / hp) | 0.9 / 1.2 |
| Footprint (mm) | 600 x 350 |
| Full Height (mm) | 1710 |
| Voltage (V ) | 415 |
| Amperage (amp) | 10 |
| Nett Weight (kg) | 190 |

## 1.2 ACCESSORIES

- 16mm keyed drill chuck and arbor
- Chuck key to suit
- Drill drift tool to remove drill chuck or taper shank drills
- Interlocked spindle safety guard

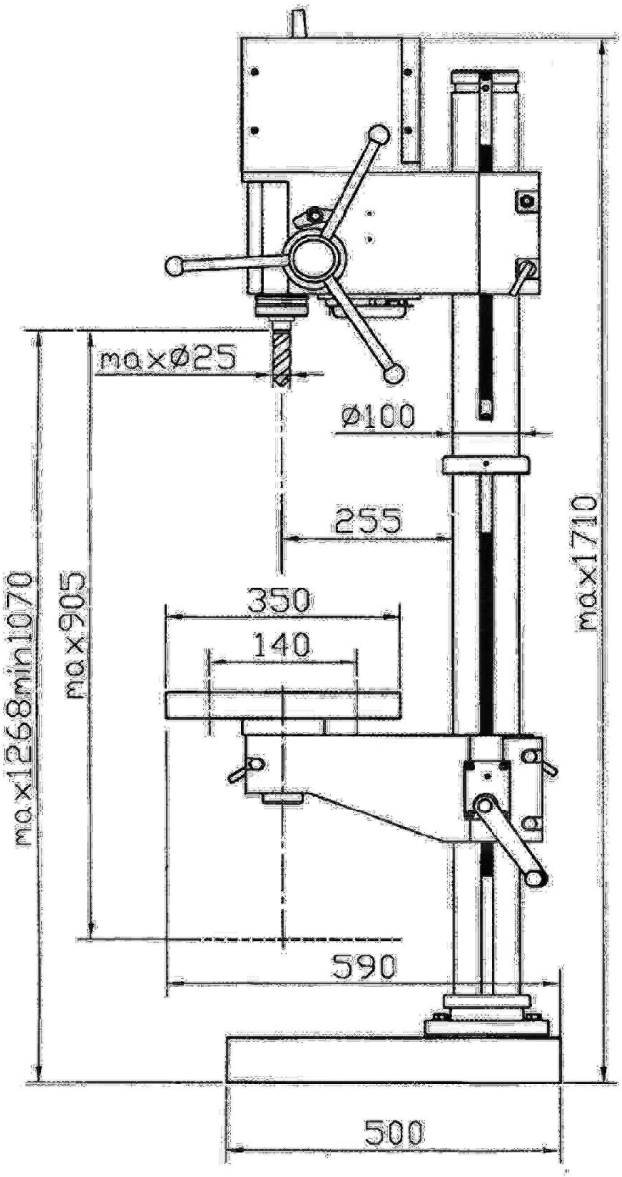
## 1.3 IDENTIFICATION

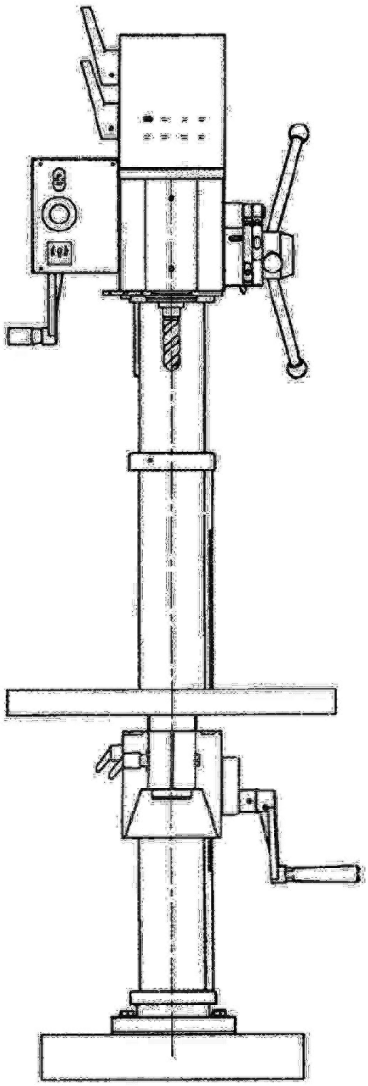
Become familiar with the names and locations of the controls and features shown below to better understand the instructions when mentioned later in this manual.

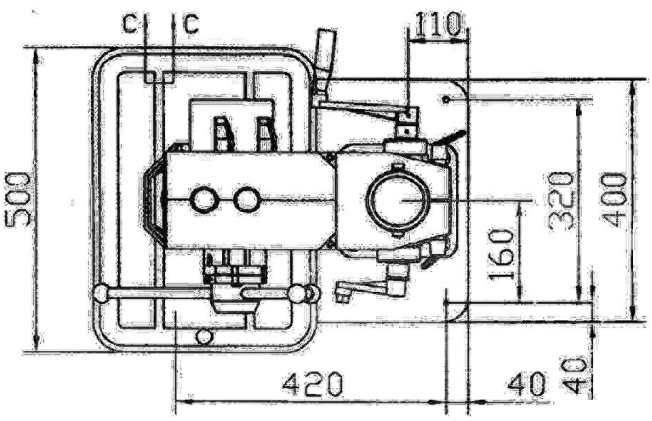


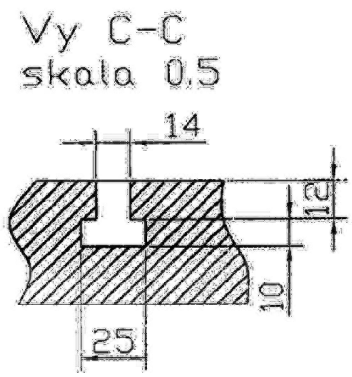

| | | | |
|---|---|---|---|
| **A** | Head and Motor | **E** | Table Height Crank Handle |
| **B** | Spindle Handles | **F** | Base |
| **C** | Column | **G** | Spindle Safety Shield |
| **D** | Table | **H** | Control Panel |

## 1.4 OUTLINE DIMENSIONS





## 2. IMPORTANT INFORMATION

### 2.1 GENERAL METALWORKING MACHINE SAFETY

DO NOT use this machine unless you have read this manual or have been instructed in the safe use and operation of this machine.

**WARNING**

This manual provides safety instructions on the proper setup, operation, maintenance, and service of this machine. Save this manual, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine is solely responsible for its safe use. This responsibility includes, but is not limited to proper installation in a safe environment, personnel training and authorization to use, proper inspection and maintenance, manual availability and comprehension, of the application of the safety devices, integrity, and the use of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.



- ✓ Always wear safety glasses or goggles.
- ✓ Wear appropriate safety footwear.
- ✓ Wear respiratory protection where required.
- ✓ Gloves should never be worn while operating the machine, and only worn when handling the work piece.
- ✓ Wear hearing protection in areas > 85 dBA. If you have trouble hearing someone speak from one metre (three feet) away, the noise level from the machine may be hazardous.
- ✓ DISCONNECTION THE MACHINE FROM POWER when making adjustments or servicing.
- ✓ Check and adjust all safety devices before each job.
- ✓ Ensure that guards are in position and in good working condition before operating.
- ✓ Ensure that all stationary equipment is anchored securely to the floor.
- ✓ Ensure all machines have a start/stop button within easy reach of the operator.
- ✓ Each machine should have only one operator at a time. However, everyone should know how to stop the machine in an emergency.

## 2.1 GENERAL SAFETY REQUIREMENTS CONT.

- ✓ Ensure that keys and adjusting wrenches have been removed from the machine before turning on the power. Appropriate storage for tooling should be provided.
- ✓ Ensure that all cutting tools and blades are clean and sharp. They should be able to cut freely without being forced.
- ✓ Stop the machine before measuring, cleaning or making any adjustments.
- ✓ Wait until the machine has stopped running to clear cuttings with a vacuum, brush or rake.
- ✓ Keep hands away from the cutting head and all moving parts.
- ✓ Avoid awkward operations and hand positions. A sudden slip could cause the hand to move into the cutting tool or blade.
- ✓ Return all portable tooling to their proper storage place after use.
- ✓ Clean all tools after use.
- ✓ Keep work area clean. Floors should be level and have a non-slip surface.
- ✓ Use good lighting so that the work piece, cutting blades, and machine controls can be seen clearly. Position any shade lighting sources so that they do not cause any glare or reflections.
- ✓ Ensure there is enough room around the machine to do the job safely.
- ✓ Obtain first aid immediately for all injuries.
- ✓ Understand that the health and fire hazards can vary from material to material. Make sure all appropriate precautions are taken.
- ✓ Clean machines and the surrounding area when the operation is finished.
- ✓ Use proper lock out procedures when servicing or cleaning the machines or power tools.

### DO NOT

- × Distract an operator. Horseplay can lead to injuries and should be strictly prohibited.
- × Wear loose clothing, gloves, neckties, rings, bracelets or other jewelery that can become entangled in moving parts. Confine long hair.
- × Handle cuttings by hand because they are very sharp. Do not free a stalled cutter without turning the power off first. Do not clean hands with cutting fluids.
- × Use rags or wear gloves near moving parts of machines.
- × Use compressed air to blow debris from machines or to clean dirt from clothes.
- × Force the machine. It will do the job safer and better at the rate for which it was designed.



***CAUTION !***

***A prepared list of safety guidelines can never be complete. Every workshop environment is different. Always consider Safety first, as it applies to your individual working conditions. Use this machine and other machinery with caution and respect. Failure to do so could result in serious Personal injury, damage to the equipment, or poor work results.***

## 2.1 GENERAL SAFETY REQUIREMENTS CONT.

**HAZARDS ASSOCIATED WITH MACHINES** include, but are not limited to:

- Being struck by ejected parts of the machinery.
- Being struck by material ejected from the machinery.
- Contact or entanglement with the machinery.
- Contact or entanglement with any material in motion.

**Health Hazards** (other than physical injury caused by moving parts)

- Chemicals hazards that can irritate, burn, or pass through the skin.
- Airborne items that can be inhaled, such as oil mist, metal fumes, solvents, and dust.
- Heat, noise, and vibration.
- Ionizing or non-ionizing radiation. (X-ray, lasers, etc.)
- Biological contamination and waste.
- Soft tissue injuries (for example, to the hands, arms, shoulders, back, or neck) resulting from repetitive motion, awkward posture, extended lifting, and pressure grip.

**Other Hazards**

- Slips and falls from and around machinery during maintenance.
- Unstable equipment that is not secured against falling over.
- Safe access to/from machines. (access, egress)
- Fire or explosion.
- Pressure injection injuries from the release of fluids and gases under high pressure.
- Electrical Hazards, such as electrocution from faulty or ungrounded electrical components.
- Environment in which the machine is used. (in a machine shop, or on a work site)



**WARNING**

***The machine is the sole responsibility of the owner for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training, proper inspection and maintenance, manual availability and comprehension. The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.***



***WARNING!***

***Machines are safeguarded to protect the operator from injury or death with the placement of guards. Machines must not be operated with the guards removed or damaged.***

## 2.2 SPECIFIC SAFETY FOR DRILL PRESS

DO NOT use this machine unless you have been instructed in its safe use and operation and have read and understood this manual



*Safety glasses must be worn at all times in work areas.*



*Long and loose hair must be contained.*



*Gloves must not be worn when using this machine.*



*Sturdy footwear must be worn at all times in work areas.*



*Close fitting/protective clothing must be worn.*



*Rings and jewellery must not be worn.*

### PRE-OPERATIONAL SAFETY CHECKS

- ✓ Locate and ensure you are familiar with all machine operations and controls.
- ✓ Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
- ✓ Check workspaces and walkways to ensure no slip/trip hazards are present.
- ✓ Ensure the chuck key (if used) has been removed from the drill chuck.
- ✓ Follow correct clamping procedures to ensure work is secure.
- ✓ Erect a barricade if the job obstructs the walkway.
- ✓ Adjust the spindle speed to suit drill or cutter diameter.

### OPERATIONAL SAFETY CHECKS

- ✓ Before making adjustments or before cleaning swarf accumulations, switch off and bring the spindle to a stop.
- ✓ Feed downwards at a sufficient rate to keep the drill cutting.
- ✓ Feed with care as the drill breaks through the underside of the work.
- ✓ Use a safe working posture.

### ENDING OPERATIONS AND CLEANING UP

- ✓ Switch off the machine when work completed.
- ✓ Leave the machine in a safe, clean and tidy state.

### DON'T

- × Do not use faulty equipment. Immediately report suspect equipment.
- × Never leave the machine running unattended.
- × Do not hold the item being drilled with your hands. Use a clamp.

### POTENTIAL HAZARDS AND INJURIES

- ❑ Hair/clothing getting caught in moving machine parts.
- ❑ Flying swarf and chips.
- ❑ Eye injuries.
- ❑ Sharp edges and burrs.



***CAUTION***

***It is impossible to cover all possible hazards. All workshop environments are different. These are designed as a guide to be used to compliment training and as a reminder to users prior to equipment use. Always consider safety first, as it applies to the individual working conditions.***

## 3. POWER SUPPLY

### 3.1 ELECTRICAL REQUIREMENTS

Place the machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, or other hazards. Make sure there is access to a means of disconnecting the power source. The electrical circuit must meet the requirements for 415V. To minimize the risk of electrocution, fire, or equipment damage, these machines should be hard wired with installation work and electrical wiring done by a qualified electrician.

***NOTE : The use of an extension cord is not recommended as it may decrease the life of electrical components on your machine.***

ELECTRICAL REQUIREMENTS

Nominal Voltage..... 415V
Cycle..... 50 Hz
Phase..... Three Phase
Power Supply Circuit..... 10 Amps
Full Load Current..... 5.2 Amps

(Full load current rating is also on the specification plate on the motor.)

### 3.2 FULL-LOAD CURRENT RATING

The full-load current rating is the amperage a machine draws when running at 100% of the output power. Where machines have more than one motor, the full load current is the amperage drawn by the largest motor or a total of all the motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating for this machine can be found on the motor nameplate.

It should be noted that the full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating and if the machine is overloaded for a long period of time, damage, overheating, or fire may be caused to the motor and circuitry.

This is especially true if connected to an undersized circuit or a long extension lead. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the requirements.






# 4 SET-UP

## 4.1 UNPACKING

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. If items are damaged, please contact your distributor.

***NOTE: Save all the packaging materials until you are completely satisfied with the machine and have resolved any issues with the distributor, or the shipping agent.***

When unpacking, check the packing list to make sure that all parts shown are included. If any parts are missing or broken, please contact your distributor.

## 4.2 CLEAN - UP

The unpainted surfaces of the machine have been coated with a waxy oil to protect them from corrosion during shipment. Remove the protective coating with a solvent cleaner or a citrus based degreaser.

Optimum performance from your machine will be achieved when you clean all moving parts or sliding contact surfaces that are coated with rust preventive products.

It is advised to avoid chlorine based solvents, such as acetone or brake parts cleaner, as they will damage painted surfaces and strip metal should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

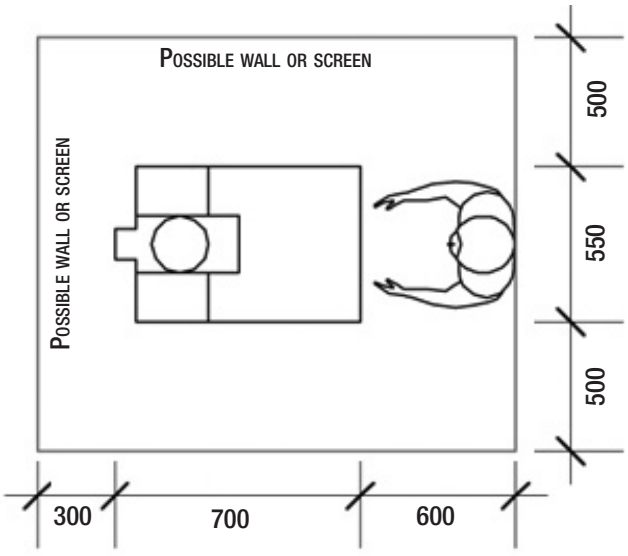
## 4.3 SITE PREPARATION

When selecting the site for the machine, consider the largest size of workpiece that will be processed through the machine and provide enough space around the machine for operating the machine safely.

Consideration should be given to the installation of auxiliary equipment. Leave enough space around the machine to open or remove doors/covers as required for the maintenance and service as described in this manual.

It is recommended that the machine is anchored to the floor to prevent tipping or shifting. It also reduces vibration that may occur during operation.

**Safe Working Area**



## 4.4 LIFTING INSTRUCTIONS

**⚠WARNING** ***This machine is extremely heavy. Serious personal injury may occur if safe moving methods are not followed. To be safe, you will need assistance and power equipment when moving the shipping crate and removing the machine from the crate.***



On the day that the machine arrives, make sure that a forklift or lifting device, with sufficient capacity is available to unload the machine from the vehicle. Ensure access to the chosen site is clear and that doors and ceilings are sufficiently high and wide enough to receive the machine.

## 4.5 ANCHORING TO THE FLOOR

The machine is best mounted on a concrete slab. Masonry anchors with bolts are the best way to anchor machinery, because the anchors sit flush with the floor surface, making it easy to unbolt and move the machine later if needed. (Fig. 4.1)

| ⚠ *WARNING* | |
|---|---|
| ***SAFETY FIRST***   | ***The safety instructions given in this manual can not be complete. The environment in every shop is different. Always consider your safety first as it applies to your individual working conditions.*** |

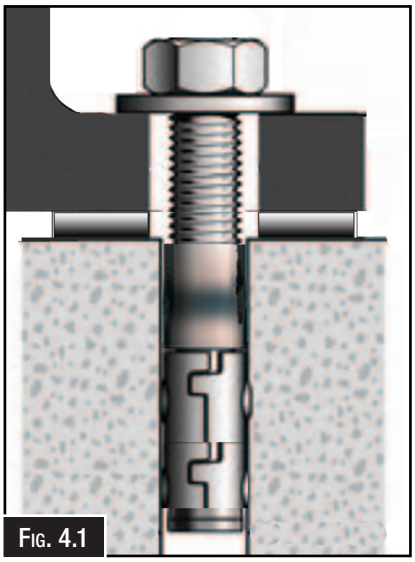


FIG. 4.1

## 4.6 ASSEMBLY

The machine must be fully assembled before it can be operated. First clean any parts that are coated in rust preventative to ensure the assembly process can proceed smoothly.

### SPINDLE HANDLES

Spindle Handle (1 of 3): Moves the spindle down when pulled down. The Spindle automatically returns to top position when released.

Screw the 3 spindle handles into the spindle hub.(Fig. 4.2)

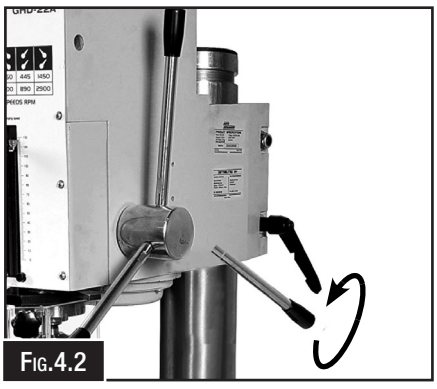


FIG.4.2

### TABLE HEIGHT CRANK

Table Height Crank: Raises/lowers the table on the column. Slide the crank handle onto the shaft and secure with the grub screw. (Fig. 4.3)

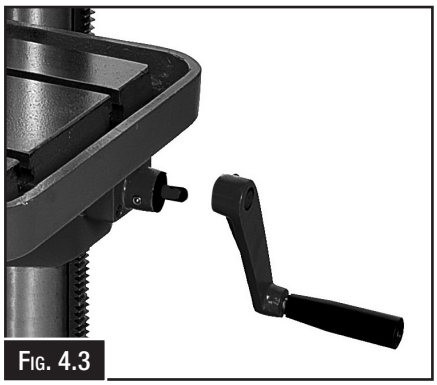


Fig. 4.3

## 4.7 CONTROLS

The purpose of this control overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, and the machine controls and what they do. It also helps the operator to understand if they are discussed later in this manual.

***NOTE: DO NOT start the machine until all of the setup instructions have been performed. Operating a machine that is not setup may result in malfunction or unexpected results that can lead to serious injury, death or damage to the machine or property.***

A. **ON/OFF Buttons:** Switches the motor ON or OFF. (Fig. 4.4)

B. **Emergency Stop Button:** When pressed disconnects power to the motor. The power remains disconnected until the button is reset and the ON button is pressed again.

C. **High/Low Speed Switch:** Switches the motor between High and Low speed, and forward or reverse.

D. **Depth Stop Lever:** The lever adjusts the position of the spindle depth stop.

E. **Safety Guard Clamp:** Used to set the height of the safety guard then clamps it in the position.

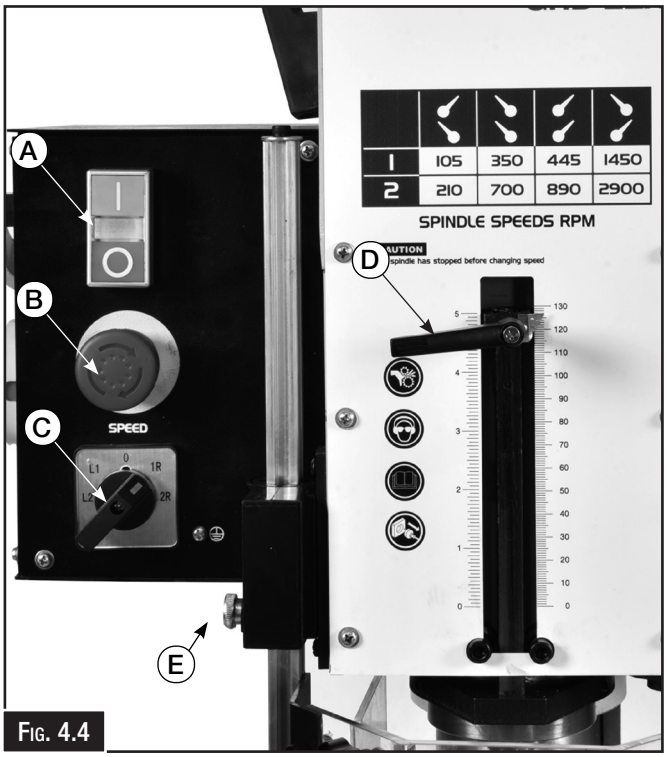



Fig. 4.4

## 4.7 CONTROLS Cont.

**F. Gearbox Speed Levers:** Sets the speed of the spindle gearbox (Fig. 4.5)

**G. Main Isolating Switch:** Isolates the power from the machine.

**H. Head Crank Handle:** After the head clamps are loosen, moves the head up and down on the rack.

**I. Spindle Operating Levers:** Used to move the spindle up and down. (Fig. 4.6)

**J. Head Clamping Lever:** Clamps the head to the column. Should be used after the head is moved.

**K. Table Swivel Clamp:** When loosened allows for the table to be swivelled by hand.

**L. Table Crank Handle:** After the table clamps are loosened, moves the table up and down on the rack.

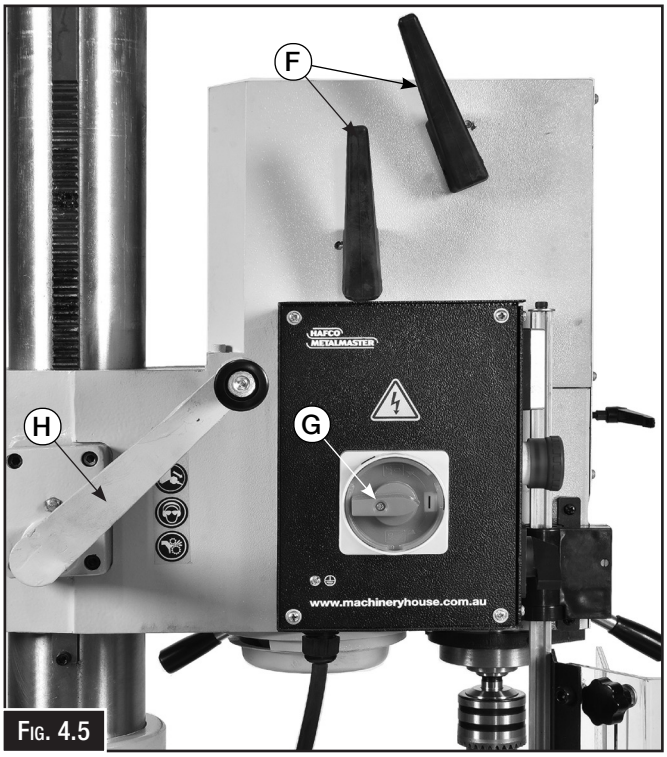


FIG. 4.5

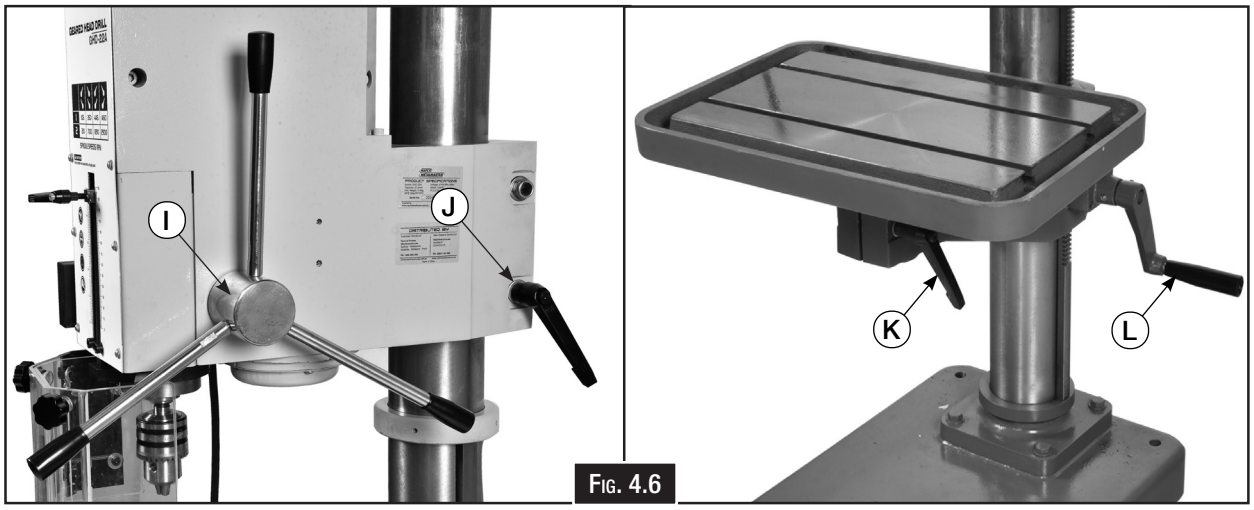


FIG. 4.6

***WARNING***

***DO NOT operate any machine before it is fully assembled and all guards have been fitted and secured. Failure to do so may cause death or injury.***

## 4.8 TEST RUN

Once assembly is complete, test run the machine to ensure it is properly connected to the power and safety components are functioning correctly. Check that the direction of the motor is correct and make sure that the machine rotates in the correct direction.

If the direction is incorrect, isolate the machine and have the electrician make changes to the wiring.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The Troubleshooting table in the Maintenance section of this manual may be able to help. If the problem persists then contact your dealers service technician.

**To test run the machine:**

1. Connect the machine to the power supply.
2. Make sure that the manual has been read and that the safety instructions at the beginning of the manual are understood. Make sure the machine has been setup correctly
3. Make sure all tools and objects used during set up have been cleared away from the machine.
4. Turn the machine ON.
5 Make sure that the machine is travelling in the correct direction, according to the High Low switch, and the forward and reverse settings.
6. Listen to and watch for abnormal noises or actions. The machine should run smoothly with little or no vibration or rubbing noises.
7. Any strange or unusual noises should be investigated and corrected before operating the machine again. Always disconnect the machine from power supply when investigating or correcting potential problems. The troubleshooting chart in the maintenance section may be helpful in rectifying a problem.

**Testing The Emergency Stop Button**

Make sure that the emergency button is working correctly

1. Twist the top of the Emergency Stop button to ensure that it is in the raised position.
2. Start the machine and then press the emergency stop button. The machine should stop and the power should be cut off. If the machine cannot be started then the emergency stop is working correctly.
3. To reset the Emergency Stop twist the red top until it pops up. The machine should now work again.



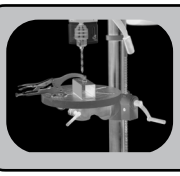
## 5. OPERATION

This machine may perform many types of operations that are beyond the scope of this manual. Many of these operations may be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. If at any time you are experiencing difficulties performing any operation, stop using the machine!

If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced operator before performing any unfamiliar operations.

**Above all, your safety should come first!**



***WARNING***

***Make sure the work piece has been securely clamped before commencing to drill. Use leather gloves when handling swarf. Cuttings are sharp and can cause deep cuts.***

### 5.1 POSITIONING THE TABLE

The table for the GHD-22A drill press moves vertically and the table rotates 360 degrees. The table also rotates around the column to accommodate larger workpieces.

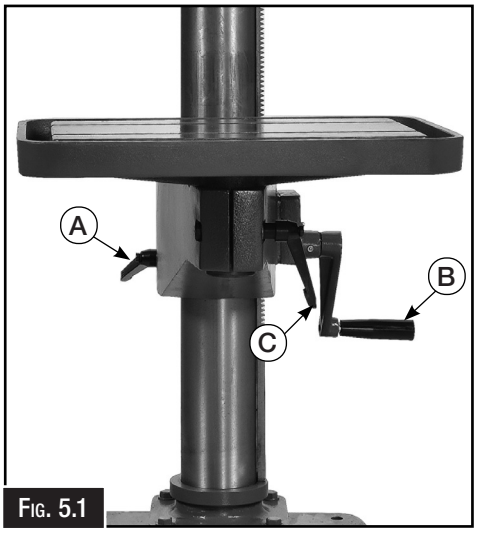


Fig. 5.1

**Raising or Lowering the table**

1. Remove all tools from the table surface.
2. Loosen the lock handle. (A in Fig. 5.1)
3. Adjust table height by rotating height adjustment crank. (B in Fig. 5.1)

**Rotating The Table.**

1. Loosen the table lock handle. (C in Fig. 5.1)
2. Rotate the table by hand until the required position is reached.
3. Lock the table lock.

### 5.2 POSITIONING THE HEAD

The head for the GHD-22A drill press moves vertically allowing the cutter to be positioned closer to the workpiece.

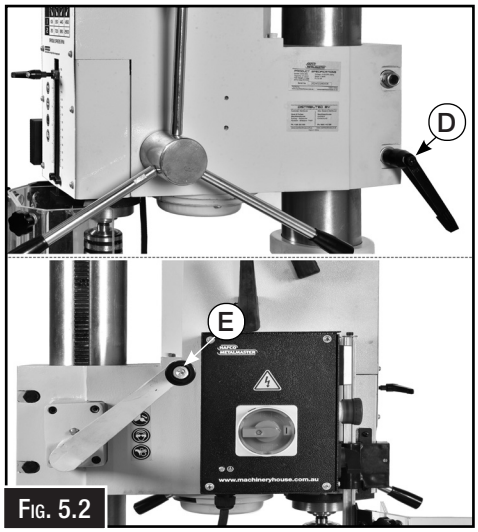


Fig. 5.2

**Raising or Lowering the head**

1. Loosen the head lock handle. (D in Fig. 5.2)
2. Adjust head height by rotating height adjustment crank. (E in Fig. 5.2)
3. Lock the head lock handle.

## 5.3 SETTING THE SPINDLE SPEED

Drill speed, also known as spindle speed or cutting speed, is a key factor in how fast materials are removed and the quality of the drilling.

Choosing the right drill speed can make tools last longer, improve hole quality, and boost the productivity. This works for materials like mild steel and aluminium. A typical drill press often has an RPM limitations. If the drill chart specifies a higher RPM than your machine is capable of, it should not cause a problem to run at a lower RPM. For instance, many people drill 1.5mm holes at less than 10,000 RPM with no problems.

***Note: The speeds in the table below are only suggestions and may be change subject to different conditions***

| Drill Dia. (mm) | Drill Speed (rpm) | | | |
|---|---|---|---|---|
| | Steel | Cast Iron | Iron | Alum. & Copper |
| 3 | 1580 | 2580 | 2580 | 2580 |
| 4 | 1350 | 2180 | 2180 | 2580 |
| 5 | 1290 | 1580 | 1580 | 2580 |
| 6 | 830 | 1350 | 1350 | 2580 |
| 7 | 830 | 1290 | 1290 | 2580 |
| 8 | 830 | 1290 | 1290 | 2580 |
| 9 | 540 | 830 | 830 | 2180 |
| 10 | 500 | 830 | 830 | 2180 |
| 11 | 500 | 830 | 830 | 1580 |
| 12 | 420 | 830 | 540 | 1580 |
| 13 | 420 | 540 | 540 | 1350 |
| 14 | 420 | 540 | 500 | 1350 |
| 16 | 320 | 500 | 500 | 1290 |
| 18 | 320 | 420 | 420 | 1290 |
| 20 | 280 | 320 | 320 | 1290 |
| 22 | 210 | 320 | 280 | 830 |
| 25 | 210 | 280 | 210 | 830 |

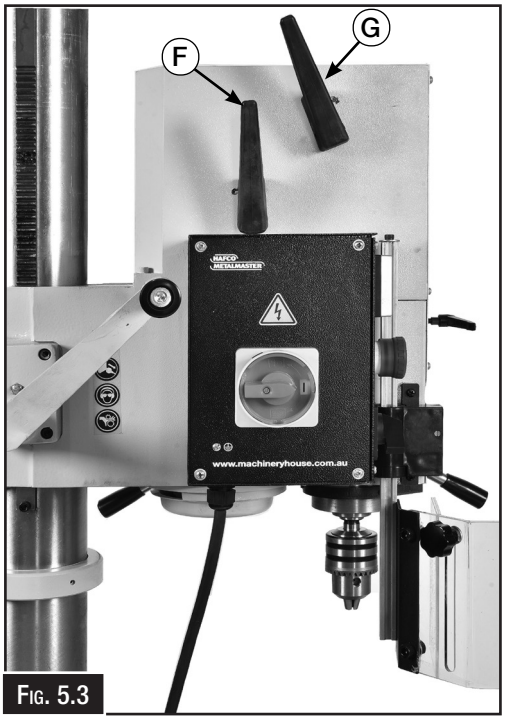


FIG. 5.3

To select 105 rpm move the top lever to the right (F in Fig. 5.3) and the bottom lever to the left position. (G in Fig. 5.3)

Move the High Low switch to the right (R1 in Fig. 5.4) This rotates the spindle to the right when viewed from the top of the machine.

To turn the spindle to the left (reverse as viewed from the top of the machine.) then move the switch to L1 in Fig. 5.4.

***Note: When selecting speeds pick the speed closest to the speed listed in the chart.***

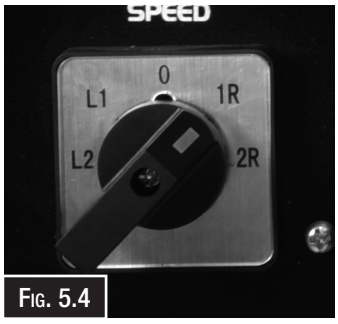
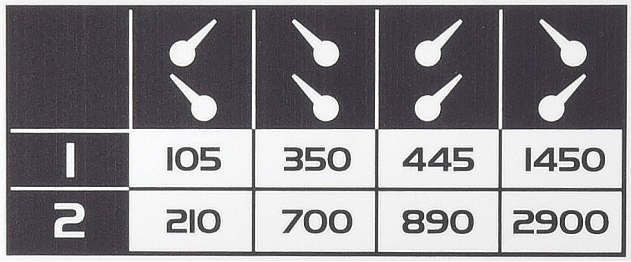


FIG. 5.4

**⚠ WARNING**




***To avoid damaging gears, ALWAYS make sure the spindle is completely stopped BEFORE moving the spindle speed levers.***



## 5.4 AUTOMATIC DRILL EJECTOR

When the drill needs to be ejected, the pivoting finger stop can be swung outward away from the spindle by pressing the short extended section,

This allows the quill unit to be raised an extra 6mm The drill or chuck shank is then ejected from out of the spindle by giving a light jerk on the feed handle.

The pivoting finger stop is in the “IN” position, (H in Fig. 5.5) prevents the quill unit from returning completely into the quill housing. This prevents the tang on the drill shank from contacting the drill ejector during normal use.

It sometimes occurs that the drill or chuck shank may stick in the taper socket, making it difficult to eject. Do not use force to loosen it, as this may damage both the spindle shaft and the bearing. In such cases use the standard type of drill drift by lowering the spindle until the drift slot is below the spindle housing.

It is essential for efficient use of the built-in drill ejector, that drills and chuck shanks are provided with standard tapers and tangs. If the tang is too short the drill can only be removed by using a drift by the method listed above. If the tang is longer than normal, the drill will be removed even if the pivoting finger stop is in the “IN” position. This can, however, be easily remedied by grinding down the head of the tang until it clears the ejector.

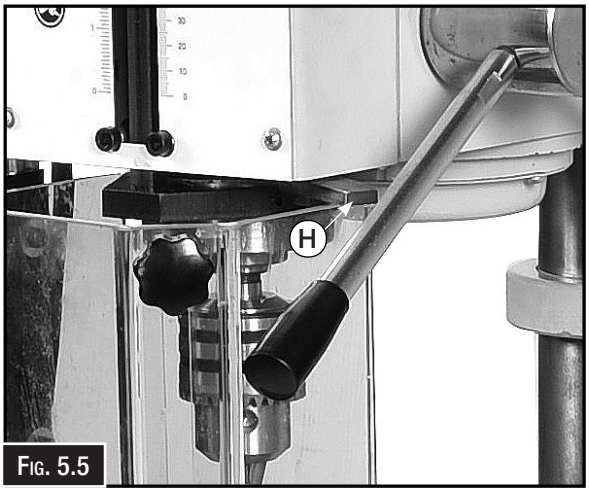
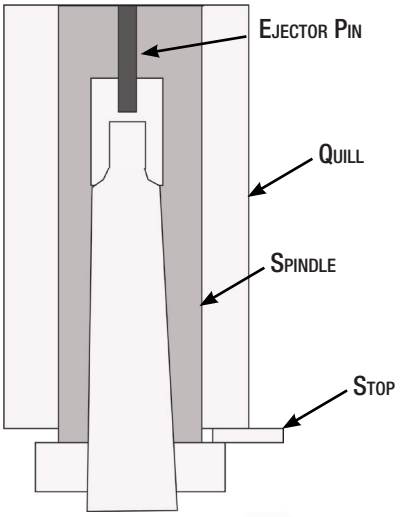


Fig. 5.5




## 5.5 TAPPING OPERATION

The GHD-22A drill press can be used for manual tapping operations. The machine **WILL NOT** auto reverse the spindle at the end of the stroke but needs to be manually reversed with the switch. It is not recommended that blind hole tapping operation are attempted unless using a holder fitted with a clutch. For through hole tapping please use a fixed tapping holder such as (T004B).


3 MT Fixed Tapping Chuck
Order Code (T004B)

***WARNING***

***Always check the capacity of the machine. Exceeding the capacity of the machine may result in sudden breakage that ejects dangerous metal debris at the operator or bystanders***

## 6. MAINTENANCE

**⚠ WARNING** ***Before maintaining or cleaning the machine, turn off the circuit breaker, or disconnect the machine from the power supply.***

***Post a sign to inform other workers that the machine is under maintenance.***

For optimum performance from the machine, it is important that the machine is well cleaned and maintained. Follow the maintenance schedule listed in the following section and refer to any specific instructions given.

### 6.1 SCHEDULE

Daily Check
- Loose mounting bolts.
- Worn or damaged wires.
- Check/adjust lubrication.
- Any other unsafe condition.

Cleaning
Cleaning the machine is relatively easy. Wipe down all unpainted and machined surfaces daily to keep them rust free and in top condition. This includes any surface that is vulnerable to rust if left unprotected. Use ISO 68 machine oil or any other quality metal lubricant.

### 6.2 SPINDLE ADJUSTMENT

The spindle is mounted in the quill by a taper roller bearing at the bottom and by a radial ball bearing at the top. At the top end of the spindle there is a nut where any play in the taper bearing can be adjusted. This nut can be reached, when the quill is removed from the machine.

Hold the spring housing by co-locating a hex key in the centre of the housing and loosen the screw in the housing to relieve the pressure on the spring. The quill will then automatically go to its lowest position.

Remove the stop and loosen the screw, which keeps the feed shaft in its position. Hold the quill with one hand and push the feed drive shaft so far to the right to disengage the teeth from the quill feed rack. Then remove the quill.

When re-assembling, the keys on the spindle are to coincide with the key ways in the spindle shaft. Take care to avoid damaging the keys when sliding the quill into position.



***WARNING***

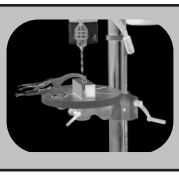
***Disconnect all power from the machine before servicing. There may be multiple power sources present. Remove the plug from the power point or remove the fuse if hardwired. Failure to do may cause death or injury.***

## 6.3 TROUBLESHOOTING

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts then follow the procedure in beginning of the spare parts section or if additional help with a procedure is required, then contact your distributor.

***Note: Make sure you have the model of the machine, serial number,and manufacture date before calling.***

| Symptom | Possible Cause | Possible Solution |
|---|---|---|
| Excessive Vibration. | 1. Motor out of balance.<br>2. Faulty Motor. | 1. Balance or replace motor.<br>2. Replace faulty motor. |
| Motor Stalls. | 1. Feed to great.<br>2. Dull drill.<br>3. Motor not building up to running speed.<br>4. Faulty motor. | 1. Reduce feed rate.<br>2. Sharpen the drill or replace.<br>3. Replace or repair motor. Check fuses on each leg of the power.<br>4. Replace Motor. |
| Noisy Operation. | 1. Excessive vibration.<br>2. Improper quill adjustment.<br>3. Noisy spline.<br>4. Noisy motor. | 1. Find vibration and correct condition.<br>2. Adjust quill.<br>3. Lubricate spline.<br>4. Check motor bearings or loose fan. |
| Drill or Tool heats up or burns work. | 1. Excessive speed.<br>2. Chips not clearing the hole.<br>3. Dull drill.<br>4. Feed rate too slow.<br>5. Rotation of drill incorrect.<br>6. Lack of cutting oil or coolant. | 1. Reduce the spindle speed.<br>2. Use pecking operation to clear chips.<br>3. Sharpen tool or replace.<br>4. Increase feed rate enough to clear chips.<br>5. Reverse spindle rotation.<br>6. Use cutting oil or coolant. (Steel) |
| Drill leads off. | 1. No spot drill.<br>2. Cutting lips on the drill off centre.<br>3. Quill loose in head.<br>4. Bearing play. | 1. Centre punch or centre drill the workpiece.<br>2. Regrid the drill.<br>3. Tighten the quill.<br>4. Adjust or replace spindle bearings. |
| Excessive drill run-out or wobble. | 1. Failure to clamp the workpiece.<br>2. Drill bent.<br>3. Dirt in the spindle taper. | 1. Clamp the workpiece to the table.<br>2. Replace the drill.<br>3. Eject drill and clean the spindle and drill taper. |
| Workpiece comes loose or spins. | 1. Workpiece not clamped correctly.<br>2. Drill jamming. | 1. Securely clamp the workpiece to the table.<br>2. Ensure the drill is sharpen and the hole is not running off centre. |



***WARNING***

***Make sure the work piece has been securely clamped before commencing to drill. Use leather gloves when handling swarf. Cuttings are sharp and can cause deep cuts.***



***WARNING!***

***Machines are safeguarded to protect the operator from injury or death with the placement of guards. Machines must not be operated with the guards removed or damaged.***

# DRILLING MACHINE
## GHD-22A

**Order Code: (D171)**

The following section covers the spare parts diagrams and lists that were current at the time this manual was originally printed. Due to continuous improvements of the machine, changes may be made at anytime without notification.

**HOW TO ORDER SPARE PARTS**

1. Have your machines model number, serial number & date of manufacture on hand, these can be found on the specification plate mounted on the machine.
2. A scanned copy of your parts list/diagram with required spare part/s identified.

**NOTE: SOME PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY**

3. Go to www.machineryhouse.com.au/contactus and fill out the inquiry form attaching a copy of scanned parts list.



***WARNING!***

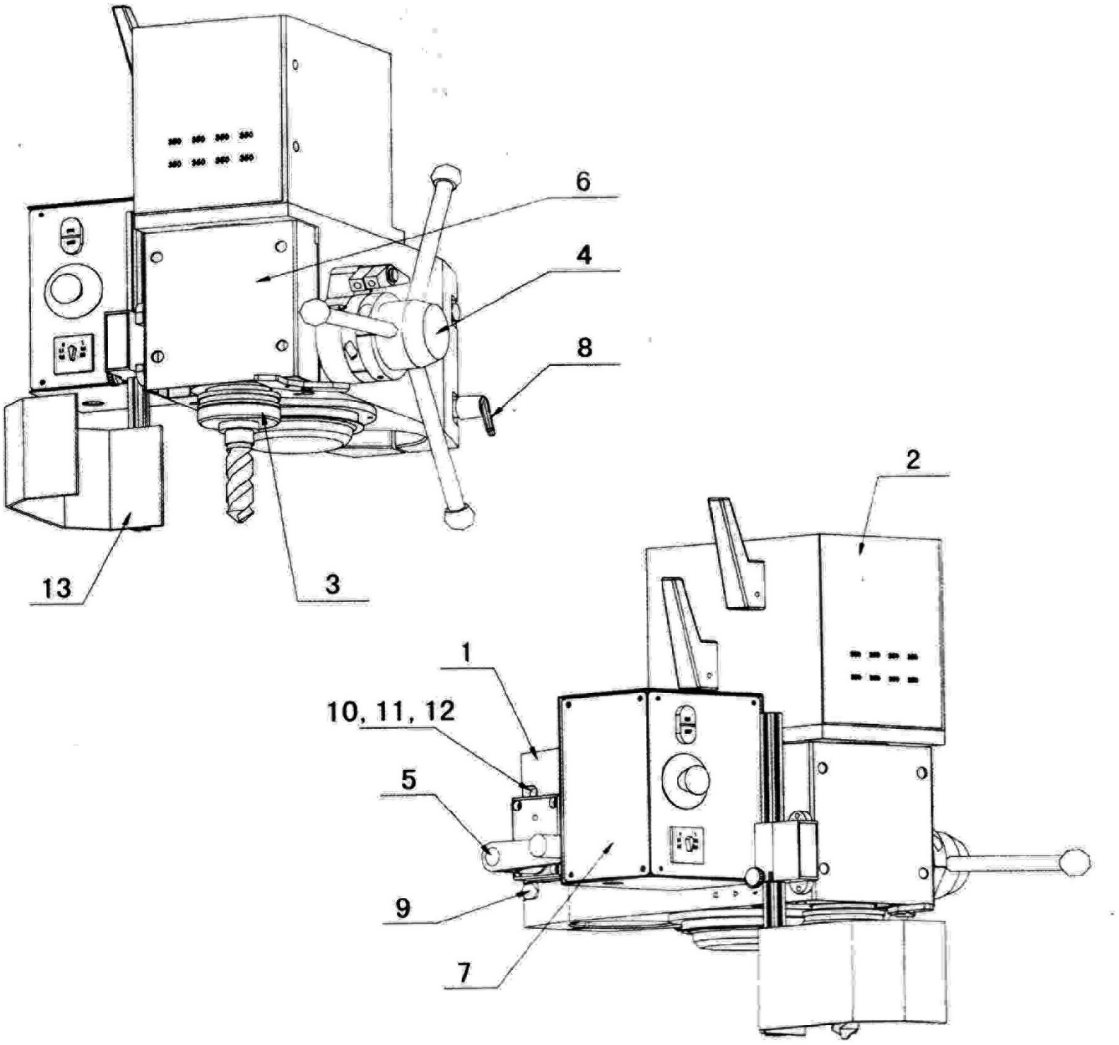
***Electricity is dangerous and could cause death.***
***All electrical work must be carried out by a qualified electrician.***



***CAUTION***

***It is impossible to cover all possible hazards Every workshop environment is different. These are designed as a guide to be used to compliment training and as a reminder to users prior to equipment use. Always consider safety first, as it applies to the individual working conditions.***

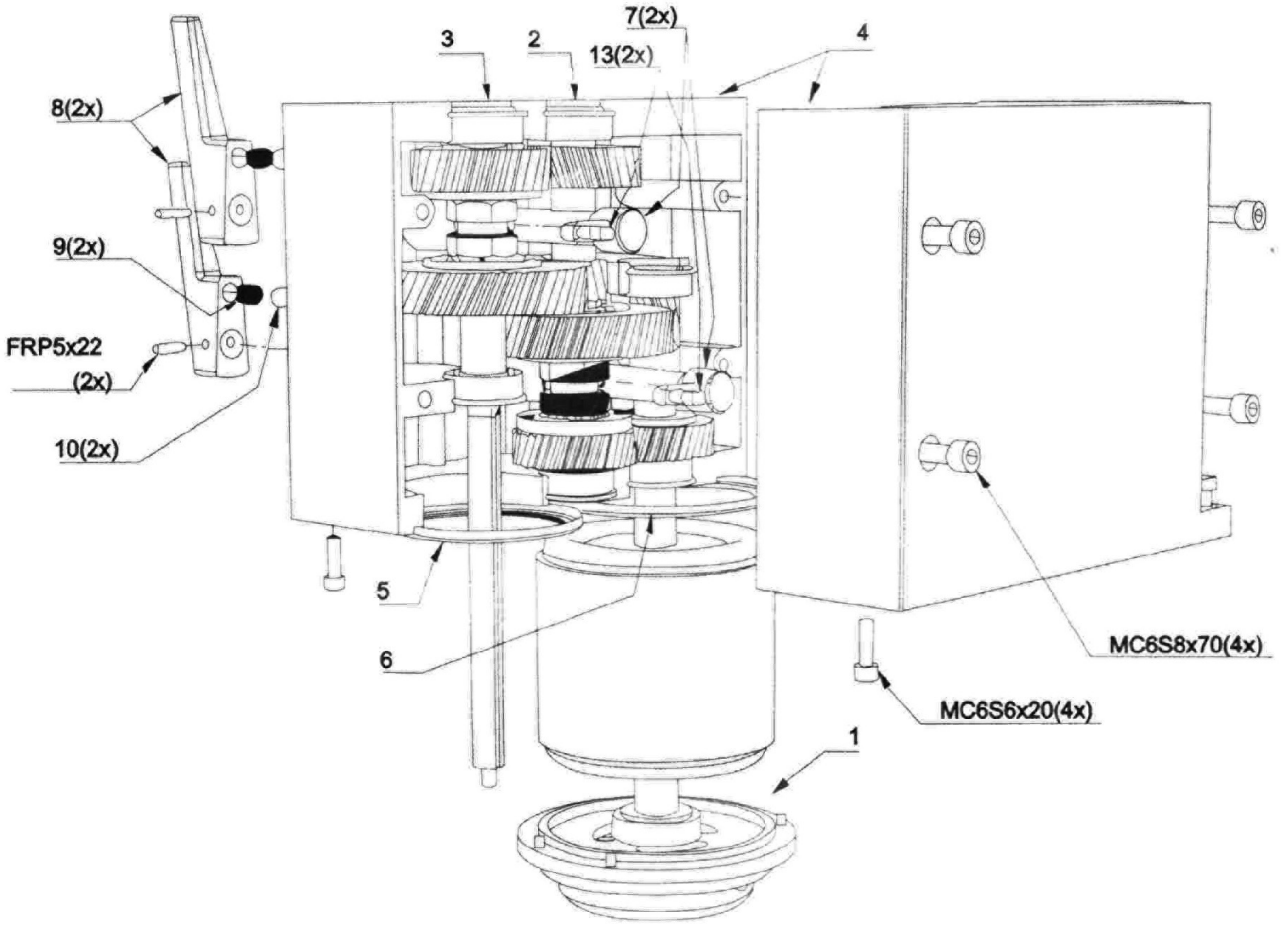
## DRILL HEAD SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| I. | T25-2020 | Spindle housing | |
| 2. | 2X08404 | Gearbox | |
| 3. | 2X087 I 9 | Spindle sleeve | |
| | T25A | Spindle sleeve | |
| 4. | 2X08740-5 | Feedshaft Assembly | |
| | T25A | Feedshaft Assembly | |
| 5 | 2X08720 | Worm unit | |
| 6. | T251-1002 | Front cover | |
| | T25A-3027 | Front cover | |
| 7. | T25-4000 | Electric box cover | |
| 8. | 3R000I4 | Locking lever | |
| 9. | 3S02556 | Screw | M12 x 130 |
| 10. | 3S02558 | Screw | M12 x 120 |
| I I. | 3M09I22 | Locking Nut | M12 |
| 12. | 3804178 | Washer | M12 |
| 13. | | Chuck Guard | |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

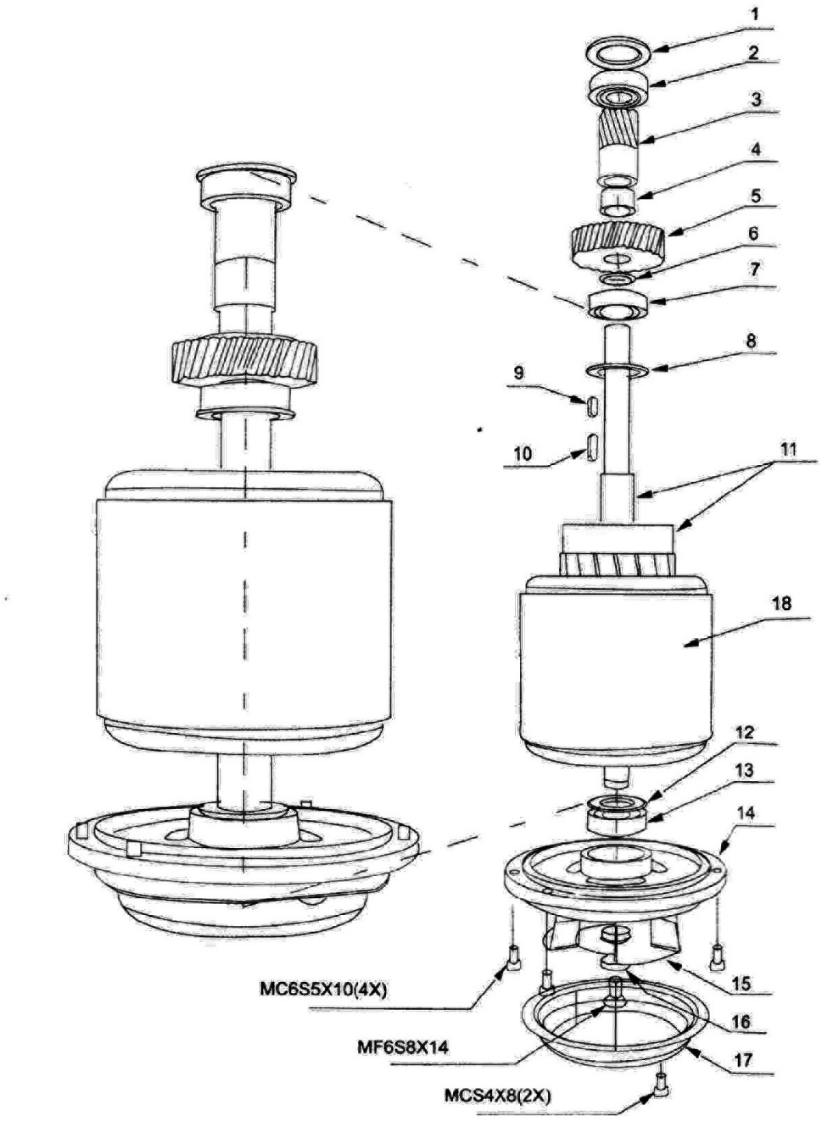
## GEARBOX SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| I. | | Rotor Shaft | |
| 2. | 2X08404-2 | 2nd Shaft complete | |
| 3. | 2X08404-3 | 3rd Shaft complete | |
| 4. | 2X08422 | Gear box complete | |
| 5. | 4B00174 | Ring | |
| 6. | 4B00173 | Ring | |
| 7. | 2X08536 | Gear selector arm | |
| 8. | 4RS0653-I | Gear lever | |
| 9. | 4(02921 | Gear | |
| 10. | 3T04028 | Steel ball | |
| I 3. | 4T04 I 68 | Shift pin | |

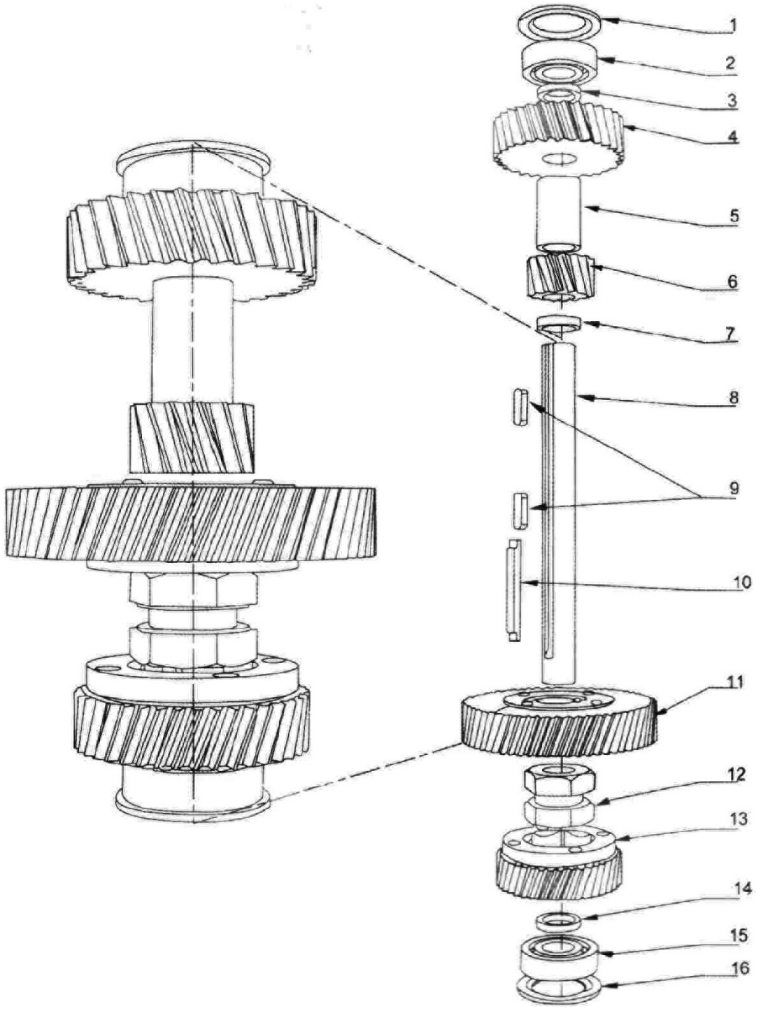
***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

## MOTOR SHAFT SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| 1 | 4800137 | Washer | |
| 2 | 3LI 1003 | Ball bearing | 6203 |
| 3 | 2H07969 | Gear | 15-1,5 |
| 4 | 2D17014 | Spacing sleeve | I7xI4 |
| 5 | 2H07972 | Gear | 39-1,5 |
| 6 | 2D17002 | Spacing sleeve | 17x2 |
| 7 | 3LI 1003 | Ball bearing | 6203 |
| 8 | 4800137 | Washer | |
| 9 | 3K00I84 | Key | 5x5xI4 |
| 10 | 3K00I87 | Key | 5x5x20 |
| 11 | 2X08405 | Rotor shaft | |
| 12 | 4F06203 | Washer | FB 6203 |
| 13 | 3LII003 | Ball bearing | 6203 |
| 14 | 2N0I889 | Bearing cover | 8-18 9 |
| 15 | 4800175 | Fan | 8-175 |
| 16 | 2803449 | Washer | C-3449 |
| 17 | 4801890 | Fan cover | C-1890 |
| 18 | 3E80103 | Stator 80/2-4-70 | 380-440 |

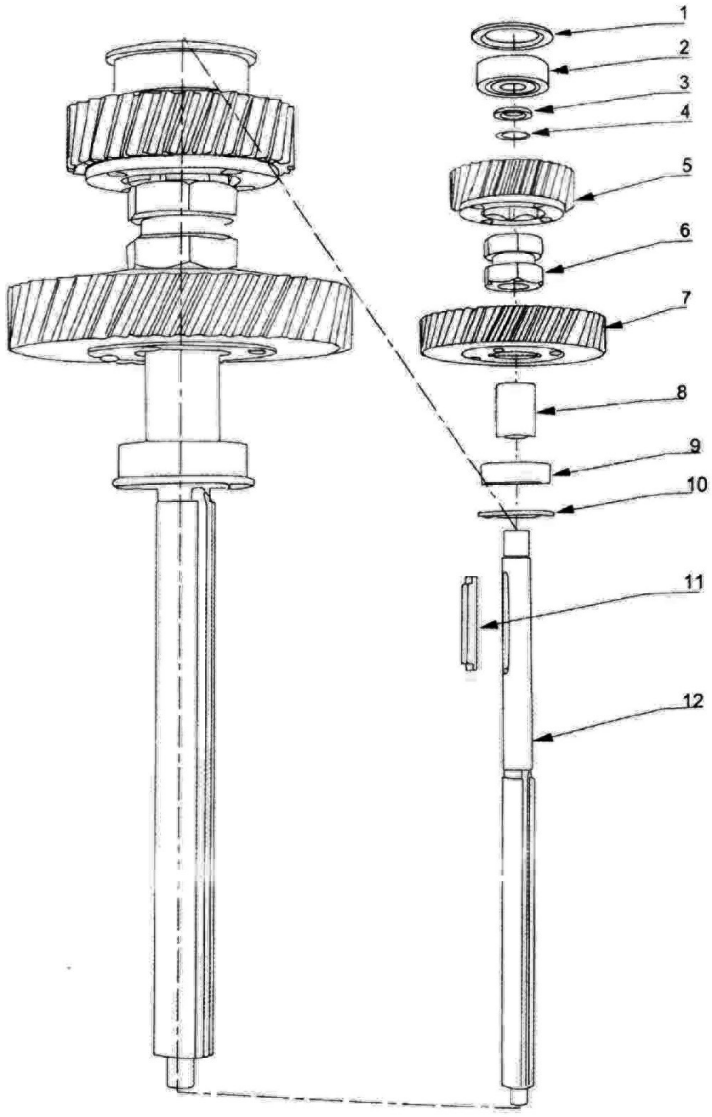
## 2ND SHAFT GEARBOX SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| 1 | 4B00138 | Washer | C-138 |
| 2 | 3LI 1003 | Ball bearing | 6203 |
| 3 | 2D00009 | Spacing sleeve | 17x3.5 |
| 4 | 2H07971 | Gear | 32-2 |
| 5 | 2D17038 | Spacing sleeve | 17x38 |
| 6 | 2H07970 | Gear | 15-2 |
| 7 | 2D17005 | Spacing sleeve | 17x5 |
| 8 | 2A04871 | 2nd Shaft | C-4871 |
| 9 | 3K00187 | Key | 5x5x20 |
| 10 | 2T06615 | Key | C-6615 |
| 11 | 2X08408 | Gear complete | 64-I,5 |
| 12 | 2T04254 | Clutch | C-4254 |
| 13 | 2X08406 | Gear complete | 40-1,5 |
| 14 | 2D00009 | Spacing sleeve | I 7x3,5 |
| 15 | 3LI 1003 | Ball bearing | 6203 |
| 16 | 4B00l38 | Cover | C-138 |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

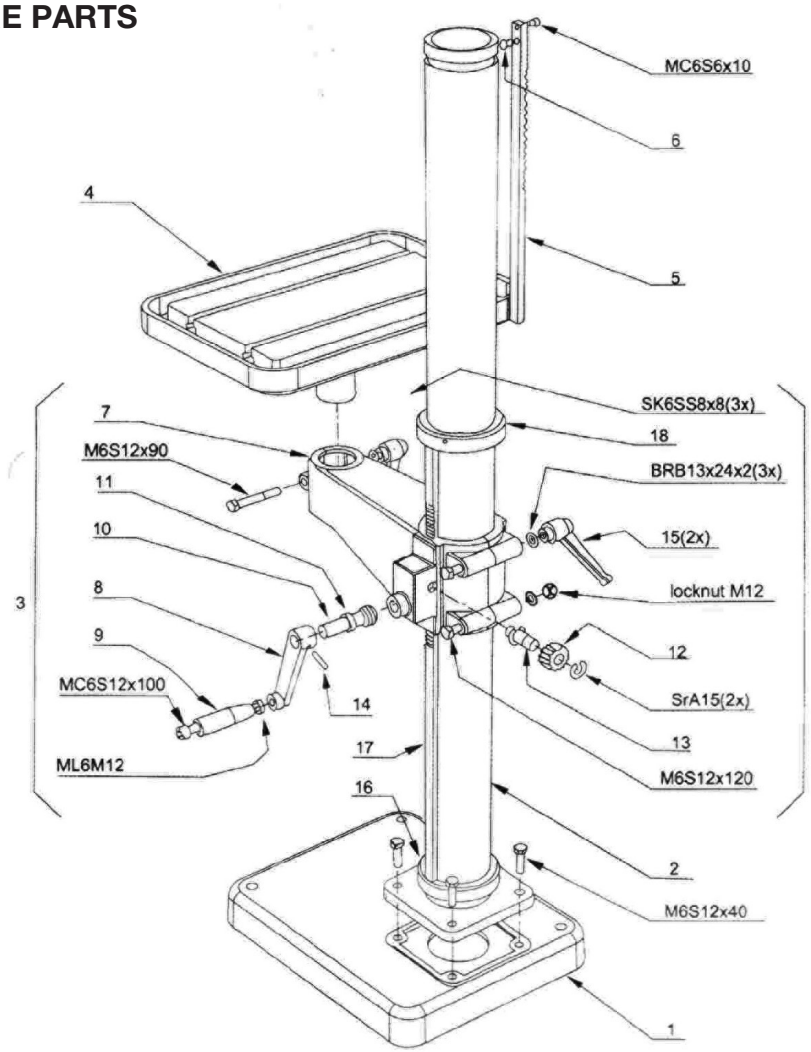
## 3RD SHAFT GEARBOX SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| I. | 4800138 | Cover | C-138 |
| 2. | 3LI6002 | Ball bearing | 6302 |
| 3. | 3D15002 | Spacing sleeve | 15x2 |
| 4. | 3C0I I 17 | Cir-clip | SgA 15 |
| 5. | 2X08413 | Gear complete | 32-2 |
| 6. | 2T04254 | Clutch | C 4254 |
| 7. | 2X0841 I | Gear complete | 49-2 |
| 8. | 2D00006 | Spacing sleeve | I 7x31,5 |
| 9. | 3LI 1003 | Ball bearing | 6203 |
| 10. | 4800137 | Cover | C-137 |
| 11. | 2T06615 | Key | C-6615 |
| 12. | 2A08410 | 3rd Shaft | B-8410 |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

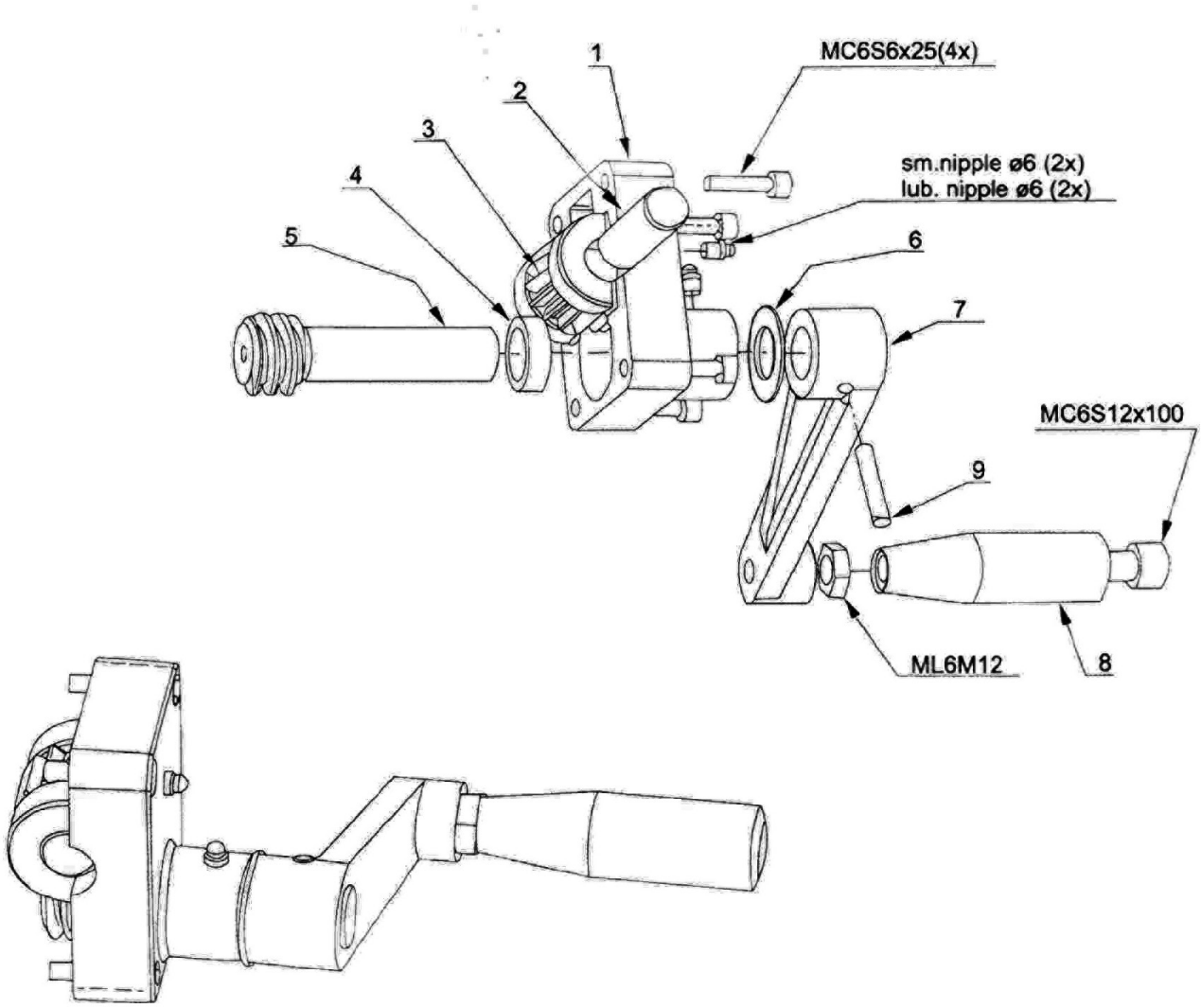
## COLUMN SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| 1 | 2W07802 | Base plate | |
| 2 | 4X08300 | Column | L=1500 |
| 3 | 2X08723 | Table arm complete | |
| 4 | 2WSI231 | Table | |
| 5 | 2X08445 | Rack | |
| 6 | 2107146 | Pin | |
| 7 | 2Y08723 | Table arm | |
| | 2X08"20-I | Worm gear complete | |
| 8 | 2RSI 182 | Crank handle | |
| 9 | 3R0II06 | Handle | |
| 10 | 2ISI203 | Worm shaft | |
| 11 | 2020008 | Spacer | |
| 12 | 2HSI201 | Gear | |
| 13 | 2AS1202 | Shaft | SK6SS 8x8 |
| 14 | 3S04444 | Stop screw | |
| 15 | 3R00014 | Locking handle | |
| 16 | 2N00186 | Lower ring | |
| 17 | 2103598 | Rack | |
| 18 | 2N03668 | Upper ring | |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

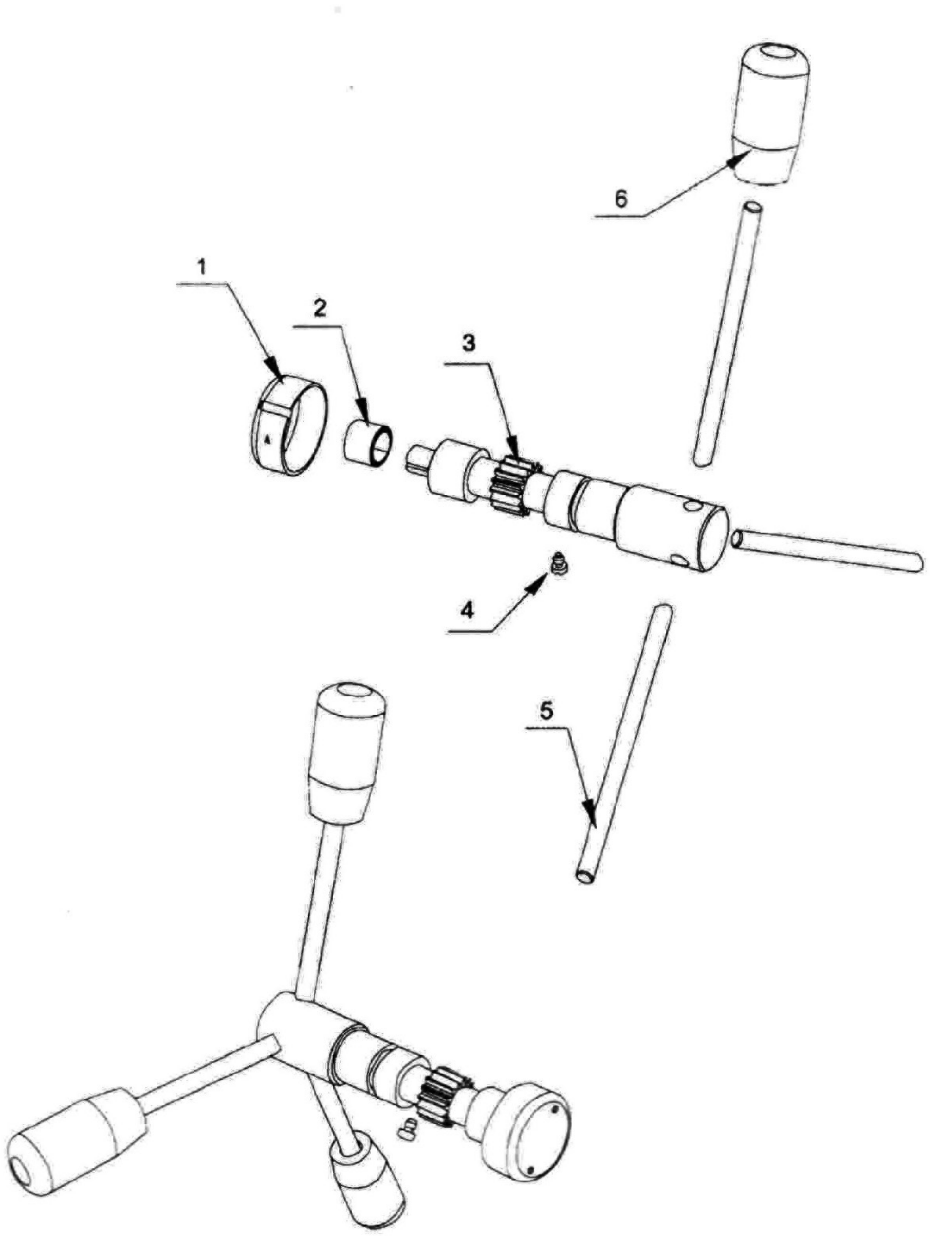
## CRANK ASSEMBLY SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| 1 | 2N08720 | Worm gear box | |
| 2 | 2AS1202 | Shaft | |
| 3 | 2HS1201 | Gear | |
| 4 | 2D20008 | Spacer | 20x8 |
| 5 | 21S1203 | Worm shaft | |
| 6 | 3L00021 | Washer | |
| 7 | 2RS1182 | Crank | |
| 8 | 3R01106 | Handle | |
| 9 | 3S04444 | Screw | SK6SS 8x8 |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

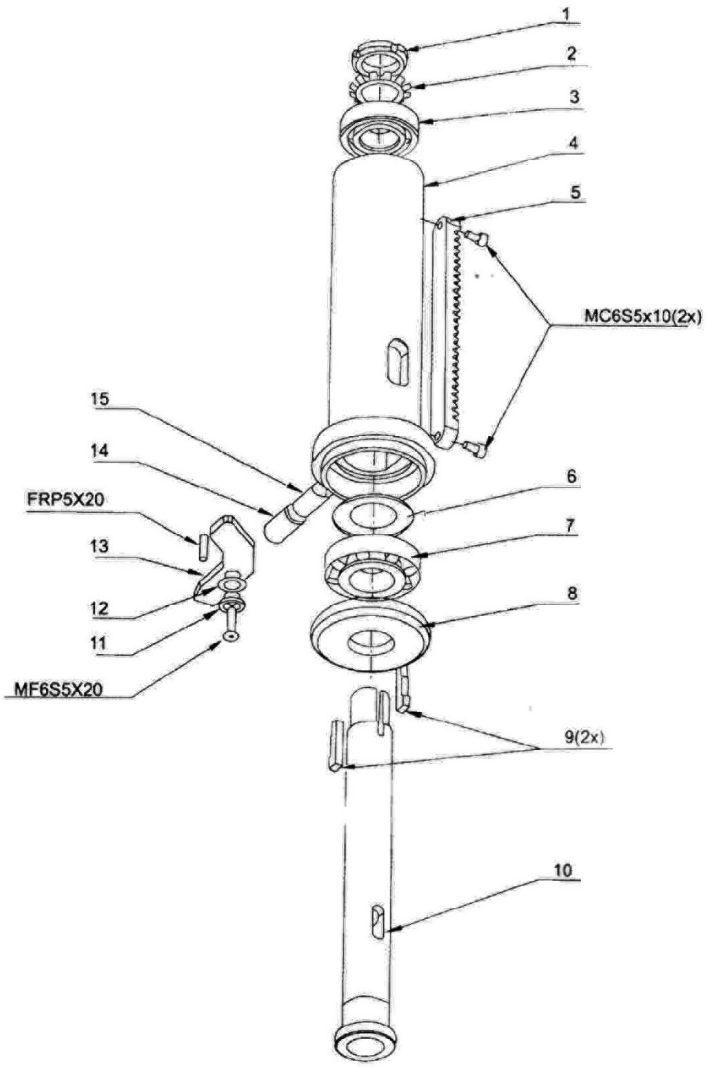
## FEED SHAFT SPARE PARTS




| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| I. | 4T08715 | Spring housing | |
| 2. | 4C03026 | Spring | |
| 3. | 2108708 | Feed shaft | |
| 4. | 4S04211 | Screw | |
| 5. | 2E08722 | Feed lever | |
| 6. | 3R02003 | Handle ball | |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

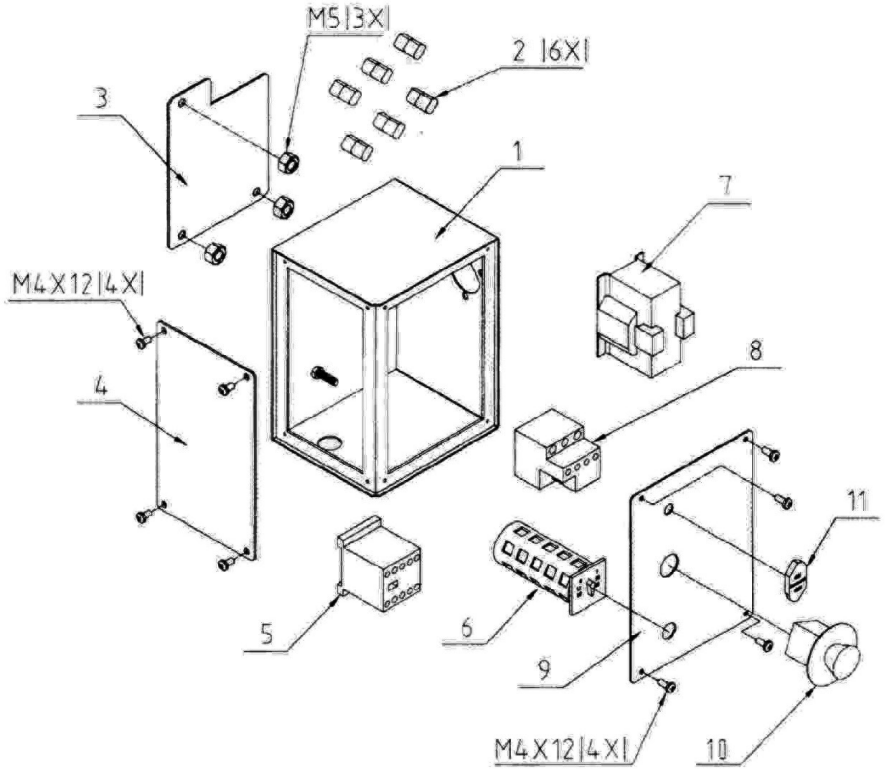
## SPINDLE SLEEVE SPARE PARTS

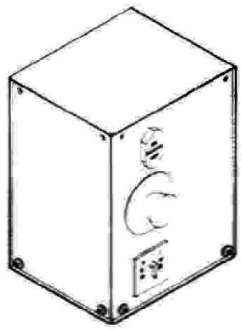



| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| 1 | 3M06005 | Nut | MKS |
| 2 | 4800155 | Locking washer | |
| 3 | 3LI 1005 | Ball bearing | 6205 |
| 4 | 2G08709 | Spindle sleeve | |
| 5 | 2I08420 | Rack | |
| 6 | 4803769 | Washer | |
| 7 | 3L51006 | Taper roller bearing | 30206 |
| 8 | 2TSII06 | Roller bearing cover | |
| 9 | 2T08386 | Key | |
| 10 | 2A08418-I | Spindle | |
| 11 | 2T08593 | Spacing sleeve | |
| 12 | 3B06003 | Washer | |
| 13 | 4T08547 | Stop | |
| 14 | 3S08622 | Screw | p6s 16x 25 |
| 15 | 4T08714 | Collet jaw | |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

## ELECTRICAL BOX SPARE PARTS

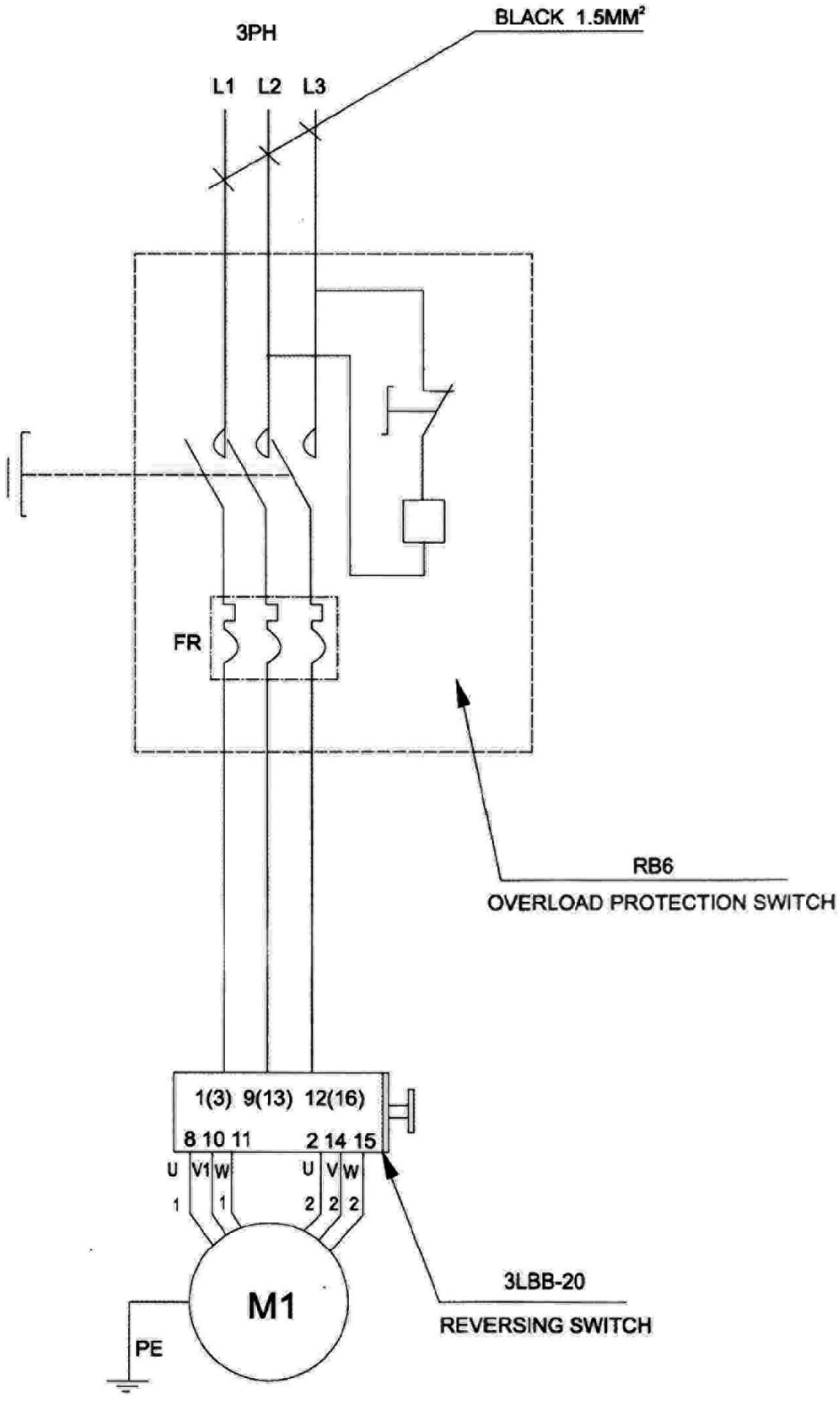


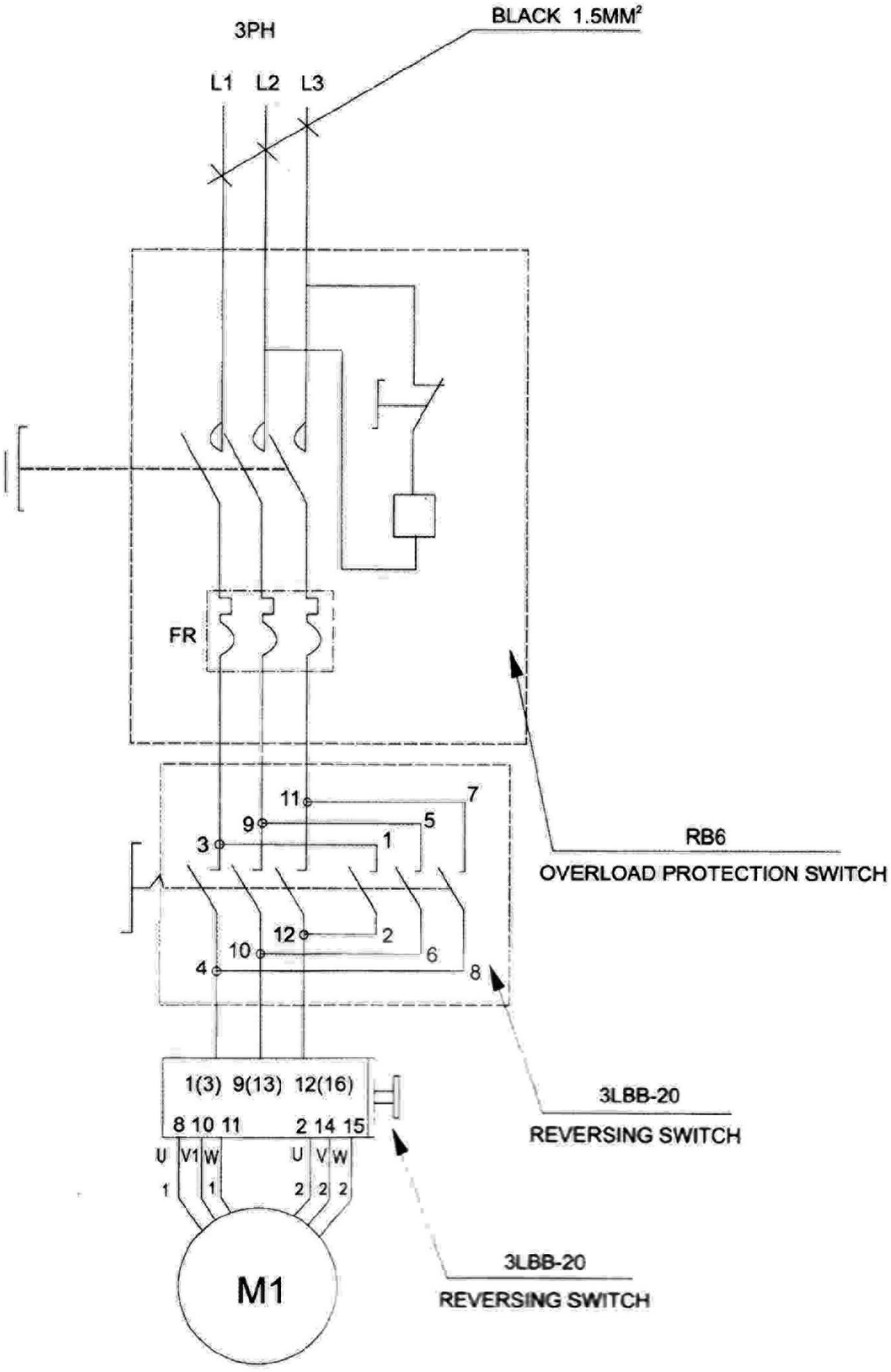
| Item | Fig. No. | Description | Spec. |
|---|---|---|---|
| I. | T251-4001 | Electric Box cover | |
| 2. | | Fuse wire | |
| 3. | T251-4004 | Motor Protection | |
| 4. | T25-4002 | Side cover | |
| 5. | | A.C. contactor | |
| 6. | | Change over switch (Three types) | |
| 7. | | Transformer | |
| 8. | | Thermo relay | |
| 9. | T25-4003 | Plate | |
| 10. | | Emergency Stop Switch | |
| 11. | | ON/OFF Switch | |

***NOTE: SOME INDIVIDUAL PARTS MAY ONLY BE AVAILABLE AS AN ASSEMBLY***

## ELECTRICAL DIAGRAM



## ELECTRICAL DIAGRAM 2



# NOTES:



**ENVIRONMENT PROTECTION**

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

Imported by

HARE&FORBES MACHINERYHOUSE

**Australian Distributor**

Hare & Forbes
Machineryhouse
Sydney - Melbourne
Adelaide - Brisbane - Perth

Ph: 1300 202 200
**www.machineryhouse.com.au**

MACHINERYHOUSE

**New Zealand Distributor**

Machineryhouse
Auckland
Christchurch

Ph: 0800 142 326
**www.machineryhouse.co.nz**