

# **ANGLEMASTER 1000**

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## **AM1000 Bedknife Grinder**



## **User's Guide & Instruction Manual**

Please read this manual carefully before using the Anglemaster.

This manual should be kept in a safe place so that it can be used for future reference.



# ANGLEMASTER 1000

## AM1000 Bedknife Grinder

You are now the owner/operator of an Anglemaster 1000 which, if cared for and operated correctly, will give you years of good service.

This manual will enable you to obtain the best results from your Anglemaster 1000 so please read it thoroughly before using your machine.

If you have any service or operational problems contact your distributor,

*or phone our*

**Technical Helpline (USA only) – 1-888 474 6348**

*or*

**Bernhard and Company Ltd, England – (44) 1788 811600**

*or email*

**techsupport@bernhard.co.uk**

*use the technical support feedback form on our web site*

**www.expressdual.com or www.bernhard.co.uk**

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# 1. Safety

- 1.1 Always wear eye protection when operating the machine.
- 1.2 Never leave rags or tools on the machine or wear loose clothing that could become caught up in the bedknife, grinding stone or shaft.
- 1.3 Never allow combustible materials to be placed on or around the machine.
- 1.4 Always ensure that all parts of the bedknife being ground are securely fixed.
- 1.5 Never use the machine for any purpose other than that for which it was designed.
- 1.6 If large units are to be ground, ear defenders should ideally be worn (The maximum noise, with a heavy cut on a 36" bedknife has been measured at 85 decibels).
- 1.7 Ensure that all electrical connections are sound and that cables are safely routed.
- 1.8 **NEVER** fit or use any grinding stone other than those supplied specifically for use on the ANGLEMASTER.
- 1.9 **NEVER** fit or use a grinding stone that has been dropped or damaged in any other way.
- 1.10 Extreme caution should be used when removing a bedknife from the Anglemaster 1000. Ideally protective gloves should be worn.

## 2. Installation

### 2.1 HANDLING

The weight of the machine is indicated on the plate on the side of the machine.

If the machine is supplied crated, it can be moved by a suitable fork lift or pallet truck under the crate base or skid.

Once the lid and sides of the crate have been removed, the machine remains bolted to the base (skid).

**LIFTING WITH CHAINS/STRAPS MUST NOT BE CARRIED OUT BY MEANS OF THE TRAVERSE GUIDE RAILS.**

### 2.2 INSTALLATION

The machine should be installed in a well-lit area, bolted to a solid workbench itself on a base of concrete or similar. Wooden floors should ideally be avoided.

Using a spirit level, laid across / along the traverse rails, the machine can be levelled easily, suitable metal packing may be placed under the chassis base.

If the **optional** leg support set is provided, the legs should be securely bolted together before the machine chassis is securely bolted to them and the whole assembly placed ideally on a concrete base or similar.

### 2.3 ELECTRICAL SUPPLY

#### USE A QUALIFIED ELECTRICIAN

The grinding motor is a 230v single phase, 50 Hz OR a 220v single phase, 60 Hz, induction motor (Depending upon region in which unit is to be used).

Electrical connection should be via the electrical cable/plug/socket provided.

The main grinding head motor is overload protected.

Ensure that any cable / conduit run to the machine constitutes no hazard to operator or other personnel.

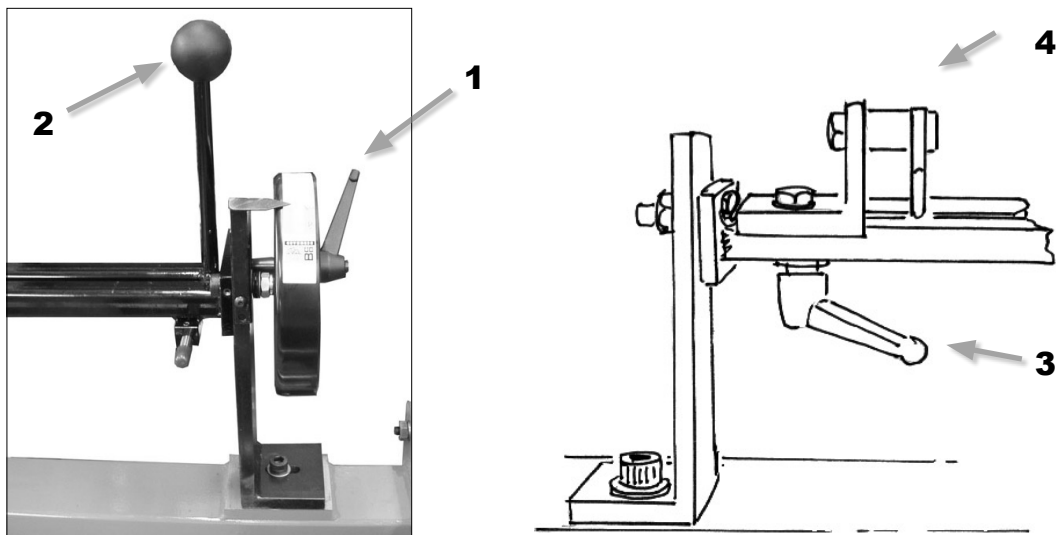
The machine **MUST BE EARTHED.**

A supply via a 16A breaker is recommended.

## 3. Setting Up

### 3.1 MOUNTING THE BLADE

3.1.1 Loosen locking lever (1) and using control lever (2) rotate the mounting bar and lock it in it's horizontal position.

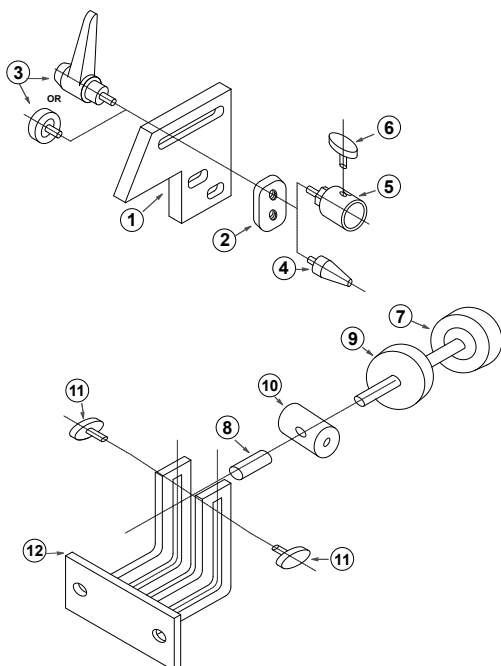


3.1.2 Undo locking levers (3) and slide the support brackets (4) to the opposite ends of the mounting bar.

### BRACKET ASSEMBLY

Attach support plate (2) through horizontal slot using adjustable “kip” lever.

Fix tapered pin (4) or cup (5) (depending upon bedknife to be mounted) to support plate [tapered pin fits bedbars that mount over a male pivot pin OR bolt on; Cup locates over bedbars where the pin is on the bedbar – such as Toro 216, 3500, 6500 etc].



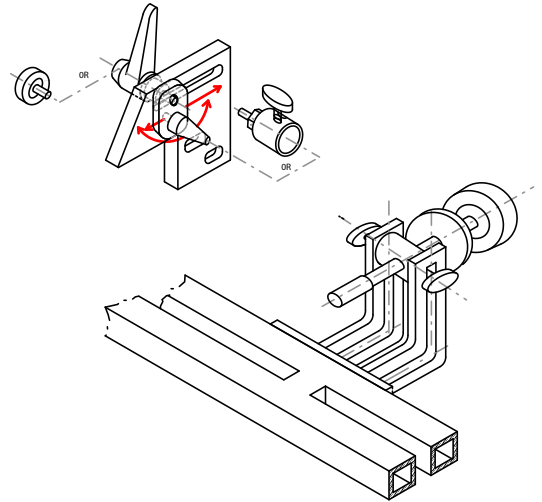
1. Bracket body
2. Adjustable support plate
3. Locking knob / Adjustable lever
4. Tapered support pin
5. Support cup
6. Locking knob
7. Central jacking screw
8. Jack screw extension
9. Lock nut
10. Trunnion
11. Locking knob
12. Support bracket (may be welded to mounting bar)

- 3.1.3 Place the bedknife assembly on the mounting bar so that the front edge of the blade overhangs by around ½" (12mm). Adjust the support brackets to the ends of the bedknife assembly, Locate the bedbar over the tapered pins OR into the cups. Lock the support brackets in place with locking levers (3).

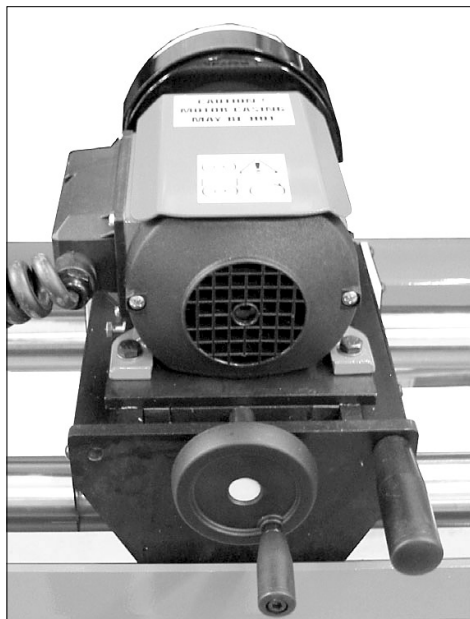
Lock the support plate (2) pin/cup position using locking lever (3).

Adjust the height and angle of the jacking screw assembly so that the end extension (8) touches a suitable point on the back of the bedbar. Lock position with knobs (11).

Loosen locking nut (9) and set the jacking screw against the rear of the bedknife assembly with just enough pressure to keep the bedbar against the mounting bar so that it will not swing when the bar is rotated. Retighten locking nut (9).



- 3.1.4 Rotate the mounting bar so that the top face of the bedknife faces the grindstone.

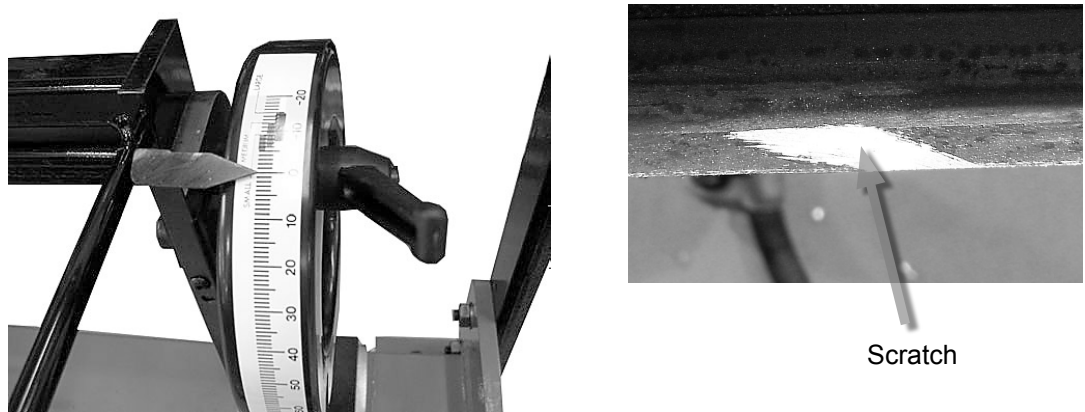


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- 3.1.5 Feed the grinding head forward so that the grind stone is close to the bedknife. Traverse the carriage along the length of the blade and adjust the mounting bar so that the face of the bedknife is the same distance from the grindstone at both ends. The mounting bar adjusts at the left hand end only by turning the handwheel (5).

### 3.2 GRINDING THE BLADE

- 3.2.1 Wind the grindstone in, using feed handwheel (6) and, with the grinding motor turned off scratch across the bedknife by hand. Adjust the mounting bar angle until the scratch is right across the worn top face. Set ZERO DEGREES on the protractor to the pointer. **Bedknife blade and machine are both now set to zero.**



- 3.2.2 Having set the protractor to zero, rotate the mounting bar to set the required top face (relief) angle to the bedknife. Tighten the locking lever (1).

APPLY:

|                      |                  |                   |
|----------------------|------------------|-------------------|
| <b>Small Blades</b>  | <b>-5 to -9</b>  | <b>Green zone</b> |
| <b>Medium Blades</b> | <b>-6 to -12</b> | <b>Red zone</b>   |
| <b>Heavy Blades</b>  | <b>-7 to -15</b> | <b>Blue zone</b>  |

In each case use the lowest angle for very clean conditions the highest angle for rough/dirty conditions.

On a brand new bedknife, instead of setting protractor to zero, set it to the relevant coloured zone on the protractor – The correct factory-produced angles. Add only a maximum 1 beyond the scratch.

- 3.2.3 Start the grinding motor. Apply a reasonable cut and manually traverse the blade back and forth to remove material.
- 3.2.4 When the blade face is almost finish ground, apply no more in-feed continue traversing the 'stone along the blade until "spark out" (only light and/or occasional sparks seen as grindstone passes the blade - no real metal removal). The ground face should be parallel all the way along.
- 3.2.5 Wind the grinding head back. Loosen the mounting bar locking lever (1) and rotate the mounting bar/bedknife back through zero and past 90 degrees so that the pointer aligns with -5 degrees (red line on the protractor drum).
- 3.2.6 Repeat stages 3.2.3 and 3.2.4 for the front face of the bedknife.
- Remove the bedknife assembly from the mounting bar.

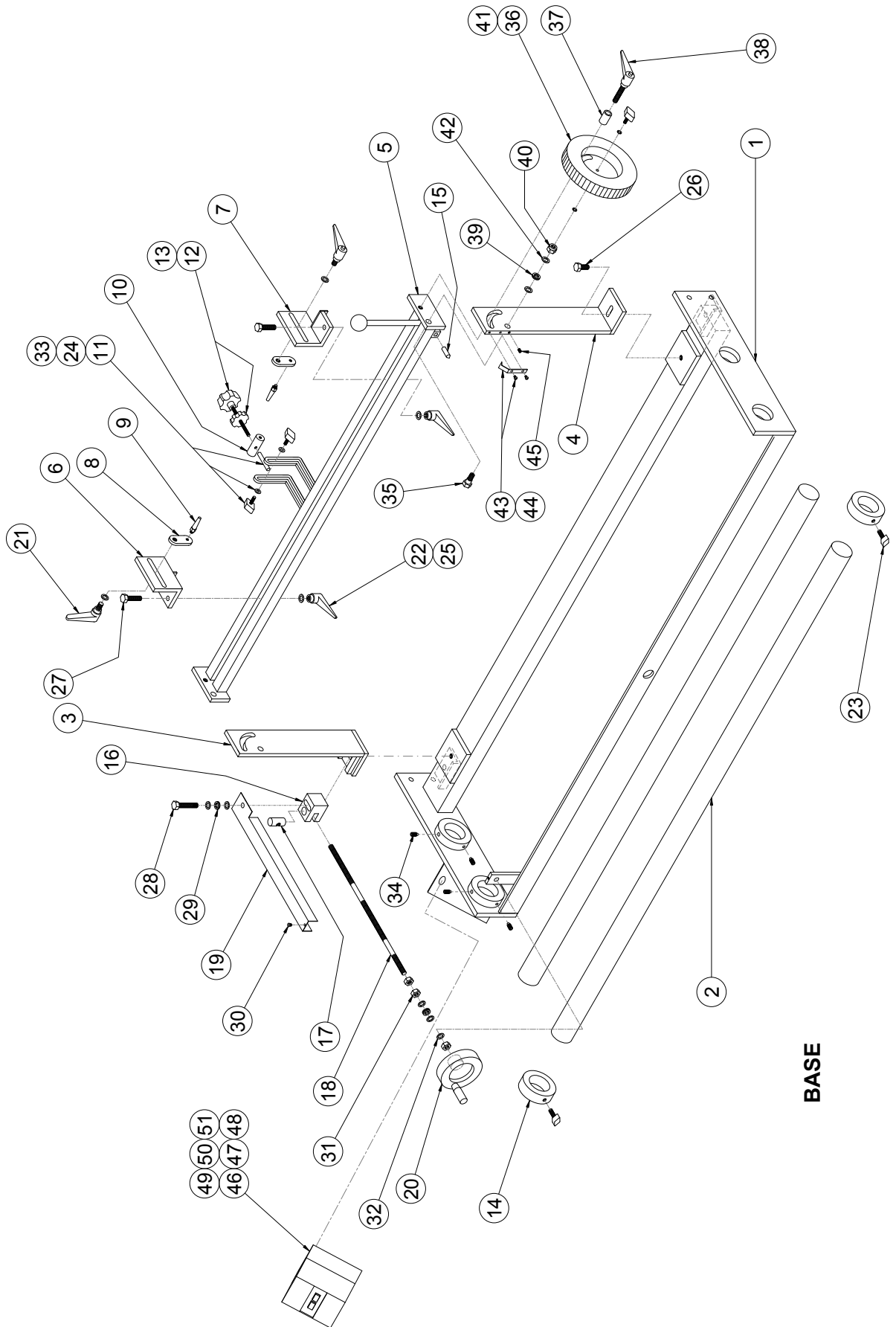




## 4. Parts List

| Ref #       | Name of Part                        | Qty. | Part # |
|-------------|-------------------------------------|------|--------|
| <b>BASE</b> |                                     |      |        |
| 1           | Main Frame .....                    | 1    | A4155  |
| 2           | Rail .....                          | 2    | A6717  |
| 3           | L.H. Mounting Bar Bracket.....      | 1    | A4221  |
| 4           | R.H. Mounting Bar Bracket .....     | 1    | A4222  |
| 5           | Mounting Bar .....                  | 1    | A4220  |
| 6           | L.H. Bedknife Bracket .....         | 1    | A9703  |
| 7           | R.H. Bedknife Bracket.....          | 1    | A9704  |
| 8           | Taper Pin Plate.....                | 2    | A4089  |
| 9           | Taper Pin .....                     | 2    | A9119  |
| 10          | Mounting Bar Bracket Boss.....      | 1    | A9198  |
| 11          | Thread Extension .....              | 1    | A9197  |
| 12          | Lobed Knob M8 x 80 .....            | 1    | A6171  |
| 13          | Locking Nut M8 .....                | 1    | A6179  |
| 14          | Traverse Stop Collar.....           | 2    | A9136  |
| 15          | Diamond Dresser .....               | 1    | A6737  |
| 16          | Mounting Bar Adjuster Block.....    | 1    | A4384  |
| 17          | Mounting Block Trunnion.....        | 1    | A9260  |
| 18          | Feedscrew M10 x 400 .....           | 1    | A5492  |
| 19          | Feedscrew Guard.....                | 1    | A6486  |
| 20          | Handwheel Ø100mm .....              | 1    | A6138  |
| 21          | Kip Lever M10 x 15.....             | 2    | A6181  |
| 22          | Kip Lever M10 (female) .....        | 2    | A6149  |
| 23          | Lobe Knob M8 x 20 .....             | 2    | A6146  |
| 24          | Wing Knob M6 x 15 .....             | 2    | A6129  |
| 25          | Washer M10 .....                    | 4    | A5310  |
| 26          | Hex Head Bolt M10 x 25.....         | 1    | A5703  |
| 27          | Hex Head Bolt M10 x 45.....         | 2    | A5706  |
| 28          | Hex Head Bolt M10 x 55.....         | 1    | A5708  |
| 29          | Double Coil Spring Washer M10.....  | 2    | A5309  |
| 30          | Button Head Screw M5 x 6 .....      | 1    | A5138  |
| 31          | Nut M10 .....                       | 1    | A5503  |
| 32          | Washer M10 .....                    | 5    | A5310  |
| 33          | Washer M6 .....                     | 2    | A5320  |
| 34          | Grub Screw M8 x 12.....             | 8    | A5203  |
| 35          | Special Hex Head Bolt M12 x 40..... | 1    | A9137  |
| 36          | Protractor Drum.....                | 1    | A4412  |
| 37          | Spacer .....                        | 1    | A9264  |
| 38          | Kip Lever M10 x 50.....             | 1    | A6165  |
| 39          | Double Coil Spring Washer M12.....  | 1    | A5313  |
| 40          | Nyloc Nut M12 .....                 | 1    | A5507  |
| 41          | Protractor Decal (scale) .....      | 1    | A6640  |
| 42          | Washer M12 .....                    | 2    | A5314  |
| 43          | Protractor Pointer .....            | 1    | A6485  |
| 44          | Button Head Screw M5 x 6 .....      | 2    | A5138  |
| 45          | Grub Screw M6 x 6 .....             | 1    | A5156  |
| 46          | Motor Starter .....                 | 1    | A8167  |
| 47          | Under Voltage Trip .....            | 1    | A8168  |
| 48          | Motor Starter Enclosure .....       | 1    | A8356  |
| 49          | Pan Head Screw M4 x 10.....         | 2    | A5411  |
| 50          | Washer M4 .....                     | 2    | A5317  |
| 51          | Nut M4 .....                        | 2    | A5511  |

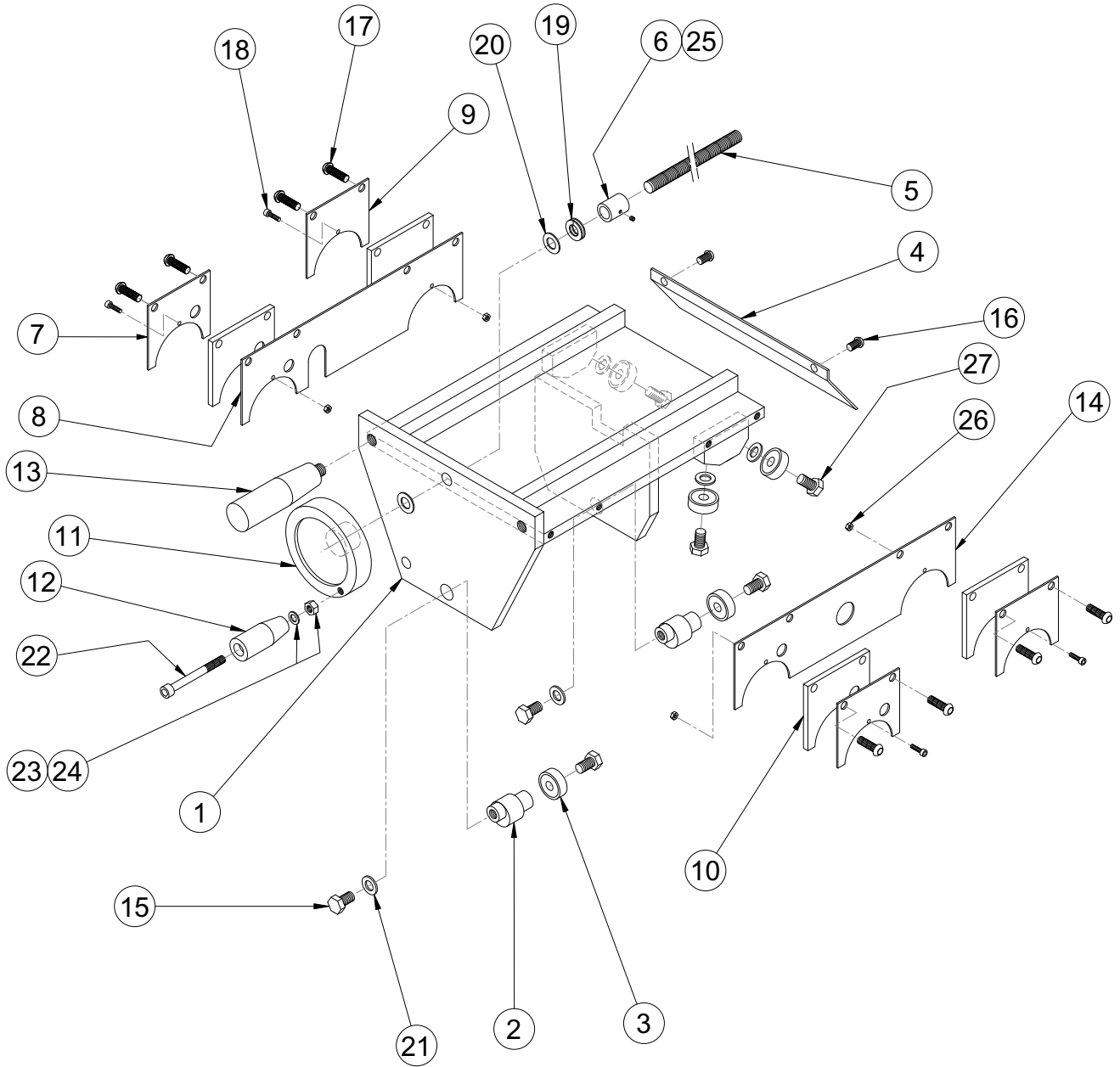
**4. Parts List (Continued)**



## 4. Parts List (Continued)

| Ref #           | Name of Part                    | Qty. | Part # |
|-----------------|---------------------------------|------|--------|
| <b>CARRIAGE</b> |                                 |      |        |
| 1               | Carriage Base .....             | 1    | A4241  |
| 2               | Eccentric Adjuster .....        | 2    | A4223  |
| 3               | Roller Bearing 628zz.....       | 6    | A7723  |
| 4               | Carriage Deflector Plate.....   | 1    | A6367  |
| 5               | Feedscrew .....                 | 1    | A9150  |
| 6               | Feedscrew Locking Bush .....    | 1    | A9151  |
| 7               | Outer Front Wiper Plate .....   | 2    | A6369  |
| 8               | L.H. Inner Wiper Plate.....     | 1    | A6371  |
| 9               | Outer Rear Wiper Plate.....     | 2    | A6370  |
| 10              | Wiper Felt.....                 | 4    | A6811  |
| 11              | Feedscrew Handwheel 80mm .....  | 1    | A6154  |
| 12              | Handle M6 x 20 .....            | 1    |        |
| 13              | Handle M10 x 20 dia.....        | 1    | A6170  |
| 14              | R.H. Inner Wiper Plate .....    | 1    | A6368  |
| 15              | Hex Head Bolt M8 x 18 .....     | 4    | A5731  |
| 16              | Button Head Screw M6 x 10 ..... | 2    | A5142  |
| 17              | Button Head Screw M6 x 18 ..... | 8    | A5148  |
| 18              | Cap Head Screw M3 x 12 .....    | 4    | A5181  |
| 19              | D' Coil Spring Washer M10 ..... | 1    | A5309  |
| 20              | Washer M10 .....                | 2    | A5310  |
| 21              | Washer M8 .....                 | 6    | A5321  |
| 22              | Cap Head Screw M6 x 60 .....    | 1    | A5157  |
| 23              | Washer M6 .....                 | 1    | A5320  |
| 24              | Nut M6 .....                    | 1    | A5516  |
| 25              | Grub Screw M3 x 4.....          | 1    | A5207  |
| 26              | Nut M3 .....                    | 4    | A5510  |
| 27              | Hex Head Bolt M8 x 20 .....     | 4    | A5726  |

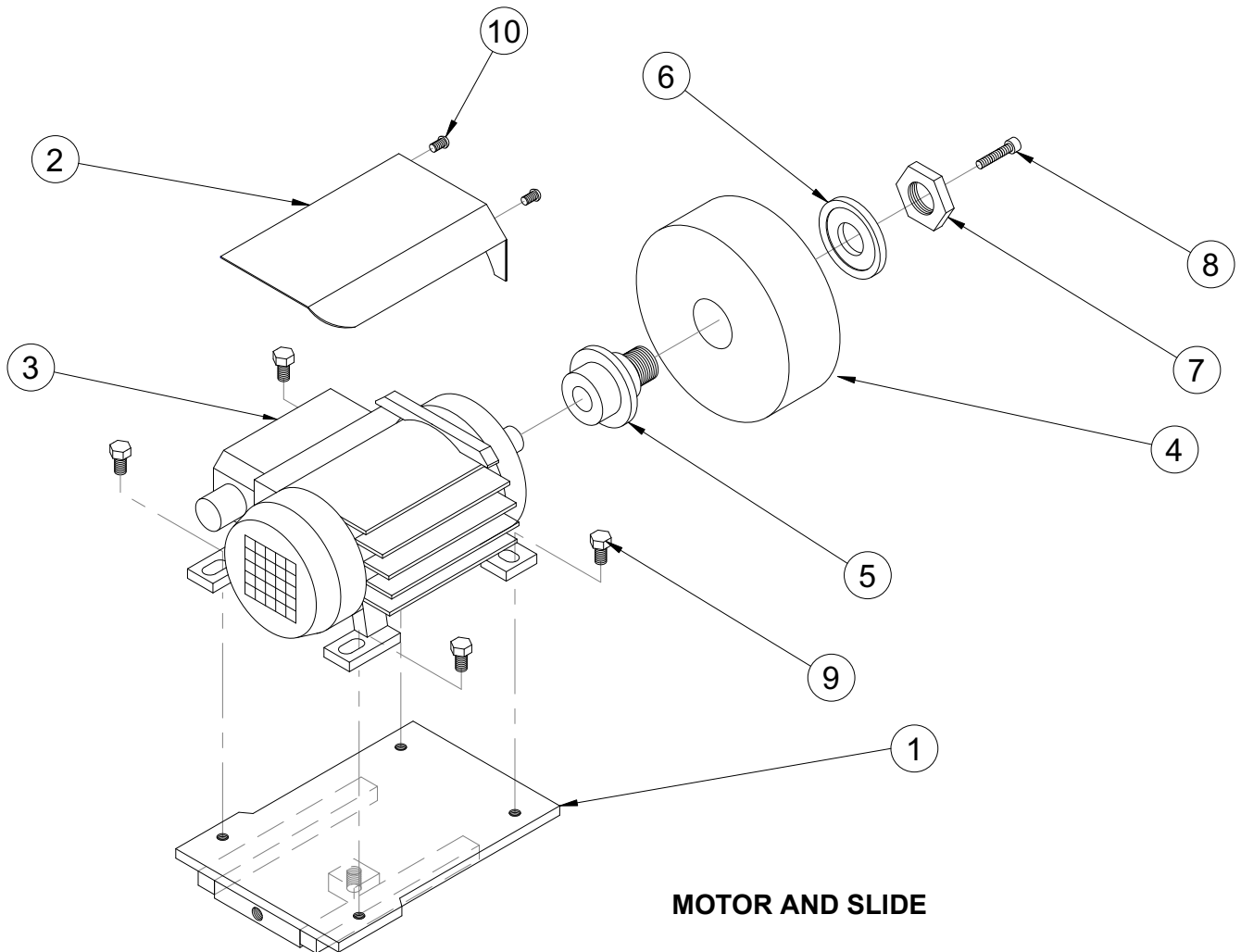
### 4. Parts List (Continued)



**CARRIAGE**

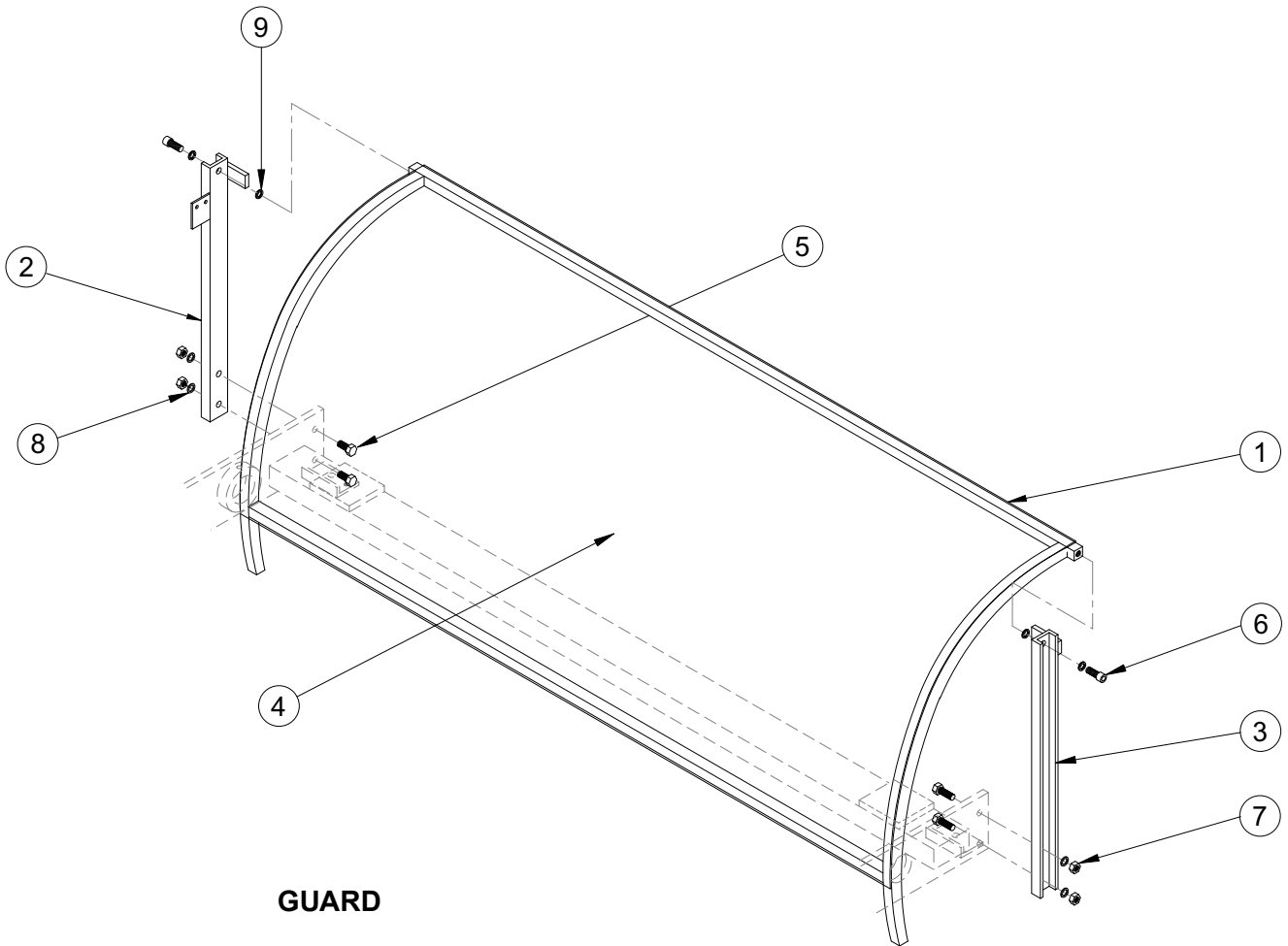
## 4. Parts List (Continued)

| Ref #                        | Name of Part                         | Qty. | Part #            |
|------------------------------|--------------------------------------|------|-------------------|
| <b>MOTOR AND SLIDE .....</b> |                                      |      |                   |
| 1                            | Cross Slide .....                    | 1    | A4244             |
| 2                            | Motor Cover .....                    | 1    | A6446             |
| 3                            | Main Motor 60Hz .....                | 1    | A6006             |
|                              | Main Motor 50Hz .....                | 1    | A6004             |
| 4                            | Grinding Wheel Parallel Cup .....    | 1    | A6507             |
|                              | Grinding Wheel Taper Cup .....       | 1    | A6520 (not shown) |
| 5                            | Grinding Wheel Extension Shaft ..... | 1    | A9053             |
| 6                            | Grinding Wheel Ext. Flange .....     | 1    | A9054             |
| 7                            | Grinding Wheel Ext. Nut .....        | 1    | A9055             |
| 8                            | Cap Head Screw M6 x 25 .....         | 1    | A5152             |
| 9                            | Hex Head Set Screw M8 x 12 .....     | 4    | A5742             |
| 10                           | Button Head Screw M6 x 10 .....      | 2    | A5142             |



## 4. Parts List (Continued)

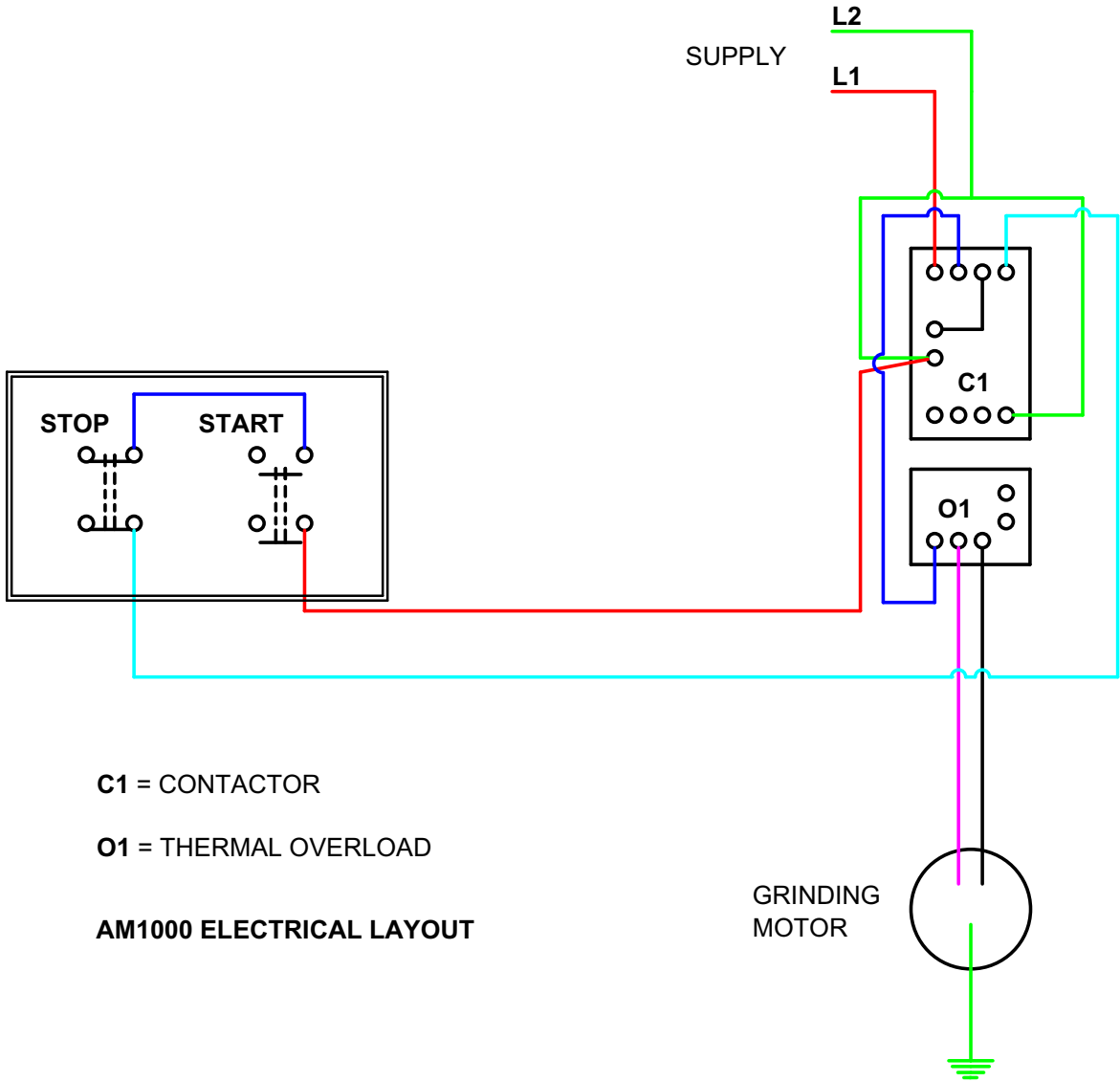
| Ref #              | Name of Part                 | Qty. | Part # |
|--------------------|------------------------------|------|--------|
| <b>GUARD</b> ..... |                              |      |        |
| 1                  | Guard Frame .....            | 1    | A4342  |
| 2                  | L.H. Upright .....           | 1    | A4343  |
| 3                  | R.H. Upright .....           | 1    | A4344  |
| 4                  | Polycarbonate Guard .....    | 1    | A6841  |
| 5                  | Hex Head Screw M10 x 20..... | 4    | A5702  |
| 6                  | Cap Head Screw M10 x 25..... | 2    | A5116  |
| 7                  | Nut M10 .....                | 4    | A5503  |
| 8                  | Washer M10 .....             | 4    | A5310  |
| 9                  | Washer M10 .....             | 4    | A5310  |



**GUARD**

# 5. Wiring Diagram

## Anglemaster 1000







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