

Clarke[®]

METALWORKER

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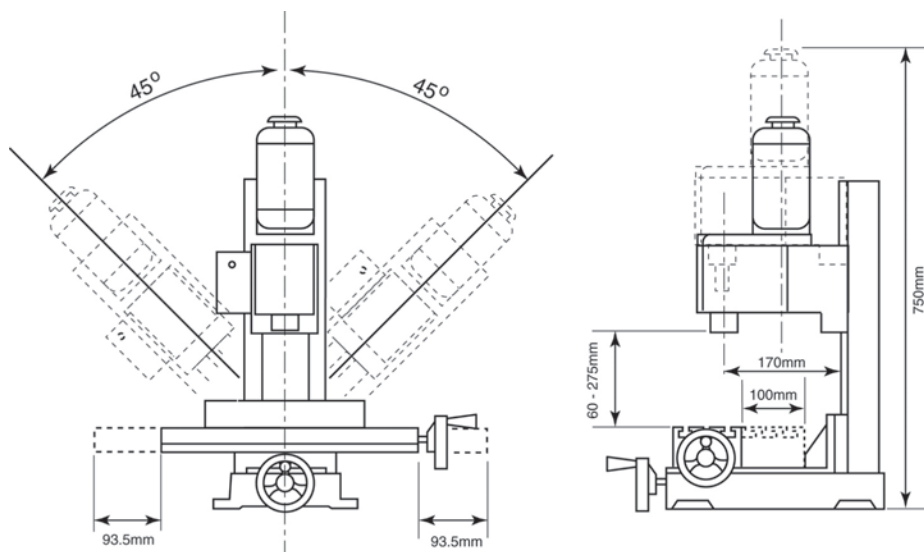
MILLING/DRILLING MACHINE

MODEL No. CMD300
Part No. 7610860

OPERATING AND MAINTENANCE INSTRUCTIONS

Specifications

Model :	CMD300
Part No :	7610860
Voltage :	230VAC
Motor :	470W
Fuse Link Rating :	5amp
Weight unpacked:	51Kg
Operating Temperature :	0°-40°
Sound Pressure Level:	82 dB (A)
Max Drill Capacity :	13mm
End Mill Capacity :	16mm
Face Mill Capacity :	30mm
Mill/Drill Head Angle :	-45° to 45°
Spindle Taper :	MT3
Table Effective Size :	92mm x 400mm
Table Cross Travel :	100mm
Table Longitudinal Travel :	235mm
Spindle to Column :	170mm
Dimensions DxWxH :	514 x 506 x 756mm
Spindle Speeds :	0-2500



Please note that the details and specifications contained herein are correct at the time of going to print. However CLARKE International reserve the right to change specifications at any time without prior notice. Always consult the machines data plate.

Please read these instructions carefully before using this machine

Thank you for purchasing this **CLARKE** Milling/Drilling Machine, designed for drilling, deep milling and face milling of small workpieces, with maximum dimensions of 300mmx200mmx200mm.

Before using the machine, you must read this manual thoroughly and carefully follow all instructions given. This is for your own safety and that of others around you, and is also to help you achieve a long and trouble free service from your new machine.

CLARKE GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not affect your statutory rights.

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When disposing of this product, do not dispose of with general waste. It must be disposed of according to the laws governing Waste Electrical and Electronic equipment, at a recognised disposal facility.

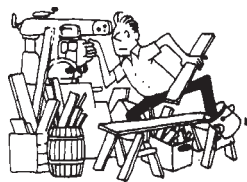
General Safety Precautions



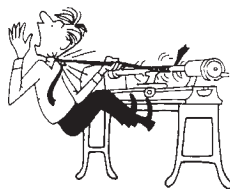
WARNING:

As with all machinery, there are certain hazards involved with their operation and use. Exercising respect and caution will considerably lessen the risk of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator or damage to property, may result.

1. **ALWAYS** learn the machines' applications, limitations and the specific potential hazards peculiar to it. Read and become familiar with the entire operating manual.
2. **ALWAYS** use a face or dust mask if operation is particularly dusty.
3. **ALWAYS** check for damage. Before using the machine, any damaged part, should be checked to ensure that it will operate properly, and perform its intended function. Check for alignment of moving parts, breakage of parts, mountings, and any other condition that may affect the machines' operation. Any damage should be properly repaired or the part replaced. If in doubt, **DO NOT** use the machine. Consult your local dealer.
4. **ALWAYS** disconnect the tool/machine from the power supply before servicing and when changing accessories.
5. **ALWAYS** wear safety goggles, manufactured to the latest European Safety Standards. Everyday eyeglasses do not have impact resistant lenses, they are not safety glasses.
6. **ALWAYS** keep work area clean. Cluttered areas and benches invite accidents.
7. **ALWAYS** ensure that adequate lighting is available. A minimum intensity of 300 lux should be provided. Ensure that lighting is placed so that you will not be working in your own shadow.
8. **ALWAYS** keep children away. All visitors should be kept a safe distance from the work area, especially whilst operating the machine.
9. **ALWAYS** maintain machine in top condition. Keep tools/machines clean for the best and safest performance. Follow maintenance instructions.
10. **ALWAYS** handle with extreme care do not carry the tool/machine by its' electric cable, or yank the cable to disconnect it from the power supply.
11. **ALWAYS** ensure the switch is off before plugging in to mains. Avoid accidental starting.
12. **ALWAYS** concentrate on the job in hand, no matter how trivial it may seem. Be aware that accidents are caused by carelessness due to familiarity.
13. **ALWAYS** keep your proper footing and balance at all times, don't overreach. For best footing, wear rubber soled footwear. Keep floor clear of oil, scrap wood, etc.



14. **ALWAYS** wear proper apparel. Loose clothing or jewellery may get caught in moving parts. Wear protective hair covering to contain long hair.
15. **ALWAYS** use recommended accessories, the use of improper accessories could be hazardous.
16. **ALWAYS** remove plug from electrical outlet when adjusting, changing parts, or working on the machine.
17. **NEVER** operate machine while under the influence of drugs, alcohol or any medication.
18. **NEVER** leave machine running unattended. Turn power off. Do not leave the machine until it comes to a complete stop.
19. **NEVER** force the machine, it will do a better and safer job at the rate for which it was designed.
20. **NEVER** use power tools in damp or wet locations or expose them to rain. Keep your work area well illuminated.
21. **DO NOT** use in explosive atmosphere (around paint, flammable liquids etc.). Avoid dangerous environment.



Additional Precautions For Mill/Drills

1. **ALWAYS use** the appropriate cutter for the material being cut.
2. **ALWAYS** ensure the cutter is fully secured before use.
3. **ALWAYS** switch the machine OFF immediately the task is completed.
4. **ALWAYS** ensure safety guards etc., are in place and working correctly, if not **DO NOT** use the machine until rectified.
5. **DO NOT** use the machine if the electric cable, plug or motor is in poor condition.
6. **DO NOT** allow the ventilation slots in the machine to become blocked.
7. **DO NOT** touch the cutter immediately after use, allow time for it to cool.
8. **NEVER** leave chuck keys in situ, **Always** remove and store safely when finished tightening or loosening the chuck.
9. **NEVER** change from high to low speed and vice versa whilst the machine is still running, always ensure the machine has come to a complete stop before doing so.
10. **NEVER** change from forward to reverse and vice versa whilst the machine is still running, always ensure the machine has come to a full stop before doing so.
11. **NEVER** leave machine running unattended, **ALWAYS** ensure it is switched off and has come to a complete stop before leaving it.
12. **AVOID** accidental starting, by switching off and isolating from the main electrical supply by removing the plug from the socket.

Additionally, please keep these instructions in a safe place for future reference.

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Electrical Connections

This product is provided with a standard 13 amp, 230 volt (50Hz), BS 1363 plug, for connection to a standard, domestic electrical supply. Should the plug need changing at any time, ensure that a plug of identical specification is used.

WARNING ! THIS APPLIANCE MUST BE EARTHED

This machine must be wired up in accordance with the following colour code:



BLUE - **NEUTRAL**
BROWN - **LIVE**
GREEN/YELLOW - **EARTH**



- Connect the BLUE coloured cord to the plug terminal marked "N"
- Connect the BROWN coloured cord to the plug terminal marked "L"
- Connect the GREEN/YELLOW coloured cord to the plug terminal marked "E"

If this appliance is fitted with a plug which is moulded on to the electric cable (i.e. non-rewireable) please note:

1. The plug must be thrown away if it is cut from the electric cable. There is a danger of electric shock if it is subsequently inserted into a socket outlet.
2. Never use the plug without the fuse cover fitted.
3. Should you wish to replace a detachable fuse carrier, ensure that the correct replacement is used (as indicated by marking or colour code).
4. Replacement fuse covers can be obtained from your local dealer or most electrical stockists.



Fuse Rating

The fuse in the plug must be replaced with one of the same rating (**5 amps**) and this replacement must be approved to BS1362.

If in doubt, consult a qualified electrician. Do not attempt any electrical repairs yourself.

Cable Extension

Always use an approved cable extension suitable for the power rating of this tool (see specifications), the conductor size should also be at least the same size as that on the machine, or larger. When using a cable reel, always unwind the cable completely.

IMPORTANT :

If a cable extension is needed, it is essential to comply with the following data.

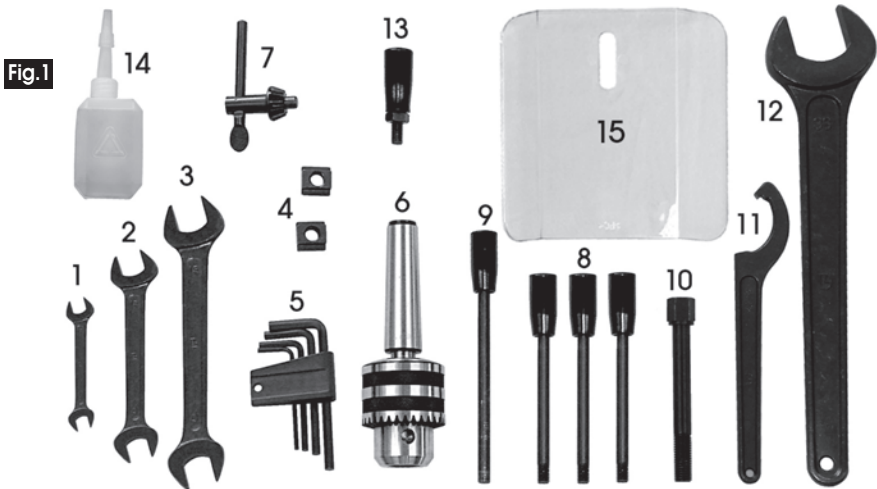
Voltage	Extension length	Cable section
230v	Up to 20M	2.5mm ²
230v	From 20 to 50M	4 mm ²

Installation

IMPORTANT: Careful consideration is required when choosing the location for the machine, with regard to table movement, Mill/Drill Head movement and location of power supply. Additionally, the workbench should be firm, flat and level. Avoid installing in damp or very dusty locations and ensure that adequate light is provided.

Your new machine is delivered fully assembled (except for handles which are contained in a bag of loose parts), and bolted to a board with four bolts. Various tools and accessories are also contained in the bag of loose parts - see Fig.1.

To remove the machine from the case, carefully lay the carton on its side and break the seal at the bottom. Fold the three flaps back and gently turn the carton so that it is upright. Tilt the carton in order to fold back the remaining flap then lift the carton from the machine and packing material.



List of Loose Items

1. Double open ended spanner 8 - 10mm AF
 2. Double open ended spanner 14 - 17mm AF
 3. Double open ended spanner 17 - 19mm AF
 4. 2 x 'T' nuts
 5. Set Hex. Wrenches. 3,4,5 & 6mm
 6. Drill Chuck w/taper shank
 7. Chuck Key
 8. 3 x Levers/Handles
 9. Tommy Bar
 10. Draw bolt for taper shank
 11. Peg Spanner
 12. Open ended spanner - 36mm AF
 13. 2 x handles for Wheel adjusters
 14. Oil Bottle
 15. Chuck Guard
- Not shown: 1x Spare Fuse. 3Amp.

Parts Identification

FIG-A

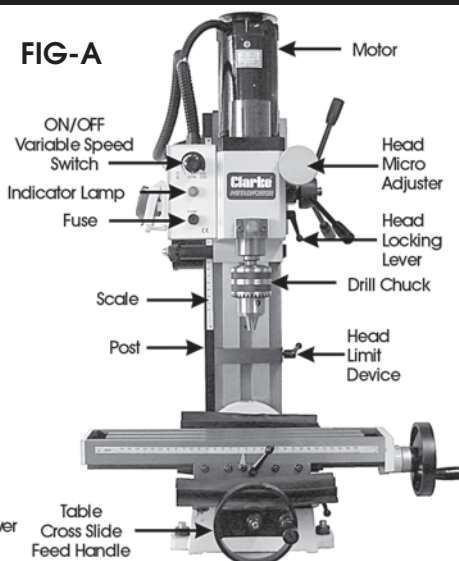


FIG-B

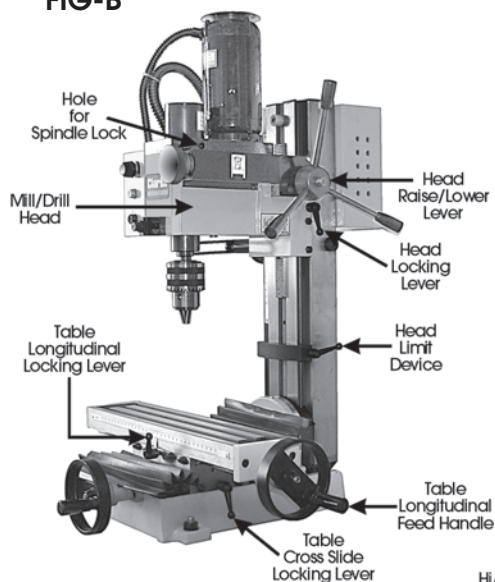
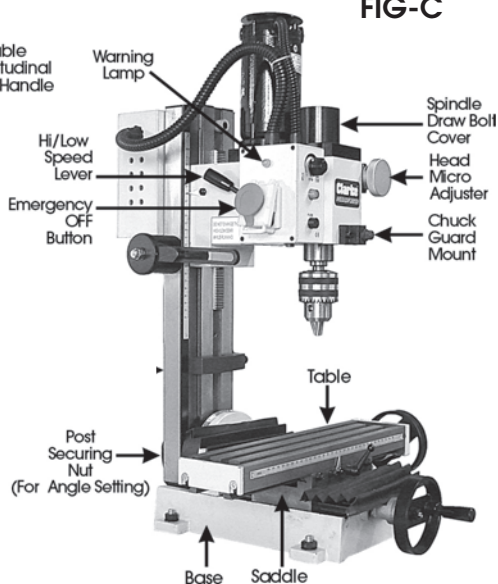


FIG-C



1. Remove all polystyrene packaging material, then, with assistance lift the machine on to a workbench. DO NOT attempt to do this single handedly.
2. Unbolt the machine from the board - 4 nuts with countersunk screws and washers, and, with assistance, carefully slide or lift into position on your workbench.
3. Before drilling the bench in order to secure the machine, ensure :
 - the head can be raised to its full height - 755mm from the table surface,
 - the head can be pivoted in either direction through 45° without fouling,
 - adequate clearance is available for the longitudinal travel of the cross slide.
4. Once satisfied, drill four holes corresponding with those in the machine base, and bolt the machine securely to the workbench using M10 nuts bolts and washers, (not supplied).
- 4a. Alternatively, the Mill/Drill may be mounted centrally on a board of at least 20mm (3/4") thickness, and of minimum size, 455x455mm (18"x18").

This allows the Mill/Drill to be moved to somewhere more convenient when not in use, in a small workshop. The board may then be clamped securely (with 'G' clamps) to a workbench when required for use.
5. Screw the three handles into the head raise/lower hub.
6. Screw a handle to each of the table cross feed and longitudinal feed handles, and secure with the locknuts provided.
7. If using the Drill chuck, attach the clear plastic chuck guard to its mount, using the single screw provided.
8. Any preservative must be cleaned off thoroughly using a solvent, then dried and a thin film of machine oil applied to all untreated surfaces. Take great care when using the solvent, do not to allow it to get into the motor or electrical components - switches etc.
9. Lightly lubricate all moving parts, handwheel threads etc., with machine oil.
10. Check to ensure the post is secure by attempting to tighten the post securing nut at the rear of the machine using the 36mm spanner provided.

Your Mill /Drill is now ready for use.

OPERATION

Ensure the work area is clean and tidy and all tools and accessories etc., are removed and stored safely, before plugging the machine into the electric supply.

Switch the power ON. At this point, the green indicator lamp on the switch panel on the front of the machine, will illuminate, indicating that power is being supplied to the machine.

When first using the machine, please use the following procedure.

1. Select LOW range, by moving the Lever, adjacent to the Emergency Stop, fully to the 'L' position.
2. Push the emergency OFF switch cover button (fig.2) upwards in direction of arrow. This will allow the cover to spring outwards, releasing the OFF button.
3. Start the machine by turning the rotary ON/OFF, variable speed switch, slowly clockwise to mid position, and allow to run for a minute or two before winding up to full speed, then allow to run for a further two minutes.
4. Switch OFF by turning the rotary switch fully anticlockwise, then move the Hi-Lo range lever to the 'H' - high position, and repeat the process.

Fig.2

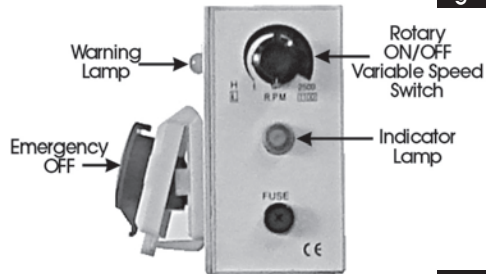


Fig.3



NOTE: In case of emergency, hit the switch cover quickly. The cover will latch down and the motor will be switched OFF.

The machine will not start when the emergency switch cover is closed.

If the emergency switch is used to switch OFF, when the rotary ON/OFF switch in the ON position, the machine will not start again when the emergency switch is released. The amber warning lamp will also illuminate.

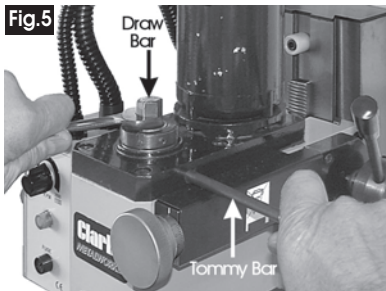
The rotary switch must first be turned OFF then turned ON again to start the machine.

Once the machine has been 'run up' check to ensure that the machine is secure on the bench or board, and check again to ensure the post is secure by attempting to tighten the post securing nut at the rear of the machine using the 36mm spanner provided.

A. Drilling

Fig.4

Fig.5



The machine is provided with a drill chuck and morse taper shank - Fig.4.

Insert the taper shank up into the spindle, sharply.

CAUTION. Take extreme care not to damage the taper in any way. Any burr or irregularity will render it unserviceable until it is properly repaired using a grind stone. Professional advice should be sought.



Pull off the spindle draw bolt cover from the head (see Parts ID, Fig-C on page 8s) and insert the draw bar . Screw it into the end of the taper shank and tighten using the spanner provided - see Fig.5.

In order to hold the spindle, insert the Tommy Bar into the hole in the side of the head so that it locates in the hole in the spindle, see Fig. 5. Hold the spindle still whilst nipping up the draw bolt. .

Place the drill chuck on to the end of the taper shank with a sharp upward movement.

The drill is lowered using the levers on the right side of the machine, however, in order to do so, it is first of all necessary to disconnect the Dog Clutch, shown in Fig. 6. Simply pull back on the hub to disconnect.

Now by turning the handles, the drill head may be lowered.

In order to ensure the drill chuck is firmly secured on the spindle, place a piece of wood on the table then lower the drill head so that the nose of the drill chuck comes into contact with it. Pull down sharply one time.

When drilling using a mill/drill machine, it must be remembered that without care, the drill bit could easily come into contact with the surface of the table.

Drill head travel must always be restricted therefore before proceeding to drill, otherwise damage to the table and/or drill bit could occur.

A limiting device is provided, mounted on the post slide, shown in Fig. 7.

When through drilling, wind the drill head, with drill bit installed, down to the maximum depth required, and hold in place whilst sliding the limit device up to meet it. Lock the limit device in place using its' locking lever.

The limit device is also used if you wish to drill to a predetermined depth.

Bring the drill bit down to touch the workpiece surface and note the reading on the scale on the post.

Move the workpiece away from the drill bit, using the longitudinal or cross slide handles, then lower the head once again to the depth previously noted, plus the depth of hole required. At this point, bring the limit device up to the head and lock firmly in place . Your drill depth is now set.

The workpiece must ALWAYS be firmly secured. This will normally be with the use of a vice which is securely clamped to the table. Alternatively, clamps may be used. A suitable vice, and a 'T' nut and clamp set designed specifically for this machine, are available from your Clarke dealer. Please refer to Accessories on page 22.

The table, carrying the workpiece, is manoeuvred using the longitudinal and cross slide adjusting handles. Once the workpiece is positioned, any further movement is avoided by locking both longitudinal and cross slides in place using the locking levers provided - see parts identification Fig-B, on page 8.

Drill speeds are effected by using either the High or Low ranges together with the variable speed rotary switch. See notes on cutting speeds on page 13.

Fig.6

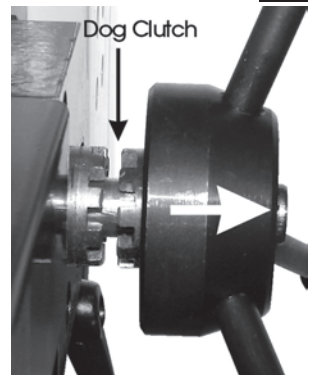
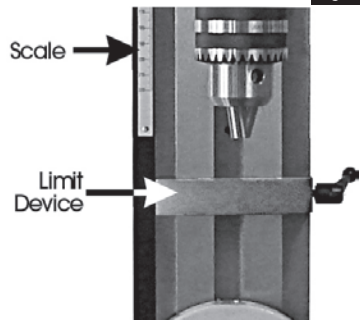


Fig.7



WARNING

Never attempt to change ranges until the machine has come to a complete stop

B. Milling

Vertical Milling is similar to drilling, except that instead of the workpiece being held stationary, it may be moved in 3 directions - a. vertically, and b. horizontally in both axis. Milling cutters are capable of cutting with their ends and their faces.

Several broad categories of end and face milling tools exist, such as centre cutting versus non-centre cutting (whether the mill can take plunge cuts), and categorisation by number of flutes, by helix angle, by material, and by coating material. Each category may be further divided by specific application and special geometry.

Please note that It is not within the scope of this manual to advise on types of cutter, it is assumed that the user is familiar with milling applications, cutters and techniques.

This machine is also capable of milling at any angle from vertical - 90°, to 45° left or right of vertical.

Installing the Cutter

If the chuck is installed, proceed as follows:

1. Insert the tommy bar into the hole in the side of the head so that it locates in the hole in the spindle.
2. Remove the draw bolt cover and with the spindle being held, undo the draw bolt by two complete turns only, using the spanner provided.
3. Strike the head of the draw bolt sharply with a soft faced mallet, or by placing a piece of wood on the head and striking the wood with a hammer. The taper shank will disengage, thereby allowing the draw bolt to be fully unscrewed and the drill chuck and taper shank to be withdrawn.

NOTE: It is possible that when the head of the draw bolt is struck, the chuck could become disengaged with the taper shank and drop on to the bed, with possible resultant damage. It is strongly advised therefore, that the operator holds the chuck with one hand whilst striking the head of the draw bolt, or a substantial piece of cloth is placed beneath the chuck, in order to avoid damage when it drops.

With the taper shank removed, the cutter may be installed in a similar manner to the drill chuck, please see the notes on pages 10/11.

Please note that a range of accessories, including collet sets and collet chuck sets which are used to secure the cutter, are available from your Clarke dealer - see Accessories on page s 20/21.

Using the Micro Feed

For Milling, the micro feed should always be used.

In order to use this device, it is first of all necessary to engage the dog clutch on the raise/lower hub assembly. Simply turn the raise/lower handles until the cutter is as near the workpiece as possible and the dogs become aligned, then push the hub IN fully.

In this mode, the handles cannot be used to raise or lower the head, only by turning the micro adjuster knob, will this be effected.

A scale on the adjuster sleeve may be used to determine the depth of cut.

Turn the adjuster so that the cutter just touches the workpiece, then zero the scale by holding the adjuster

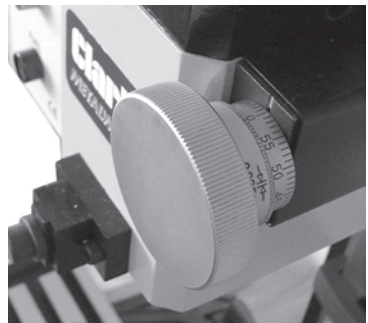


Fig.8

knob whilst grasping the knurled rim of the scale and turning until the zero on the scale lines up with the pointer. Back off slightly and start the machine.

Turn the adjuster once again until the zero mark lines up with the pointer and double check that the cutter is just touching the work - if not, make the necessary adjustment. Any further movement of the adjuster will commence cutting.

General Notes on Milling

Set up the workpiece in a similar manner to that for drilling.

- Slowly bring the cutter into contact with the work piece and start machining.
- DO NOT attempt to make too bigger cuts than the cutter and machine are capable of, it is much better and safer to make several small passes.
- Always use an appropriate cutting/cooling fluid whilst machining, which can be applied with a small brush etc., NOT FINGERS.
- DO NOT allow swarf to build up in the cutting area. Stop the machine and remove using a suitable implement, (brush etc.).
- When finished turn the machine OFF, return the cutter to its highest position and allow it to come to a complete stop before attempting to remove the work piece or tool.
- Always finish by cleaning and drying the machine, and storing all tools and accessories etc., safely.

Cutting Speeds

In order to drill, and particularly mill satisfactorily, it is most important that the correct cutting speed is used,

Cutting speed is the speed at which the cutting edge of the tool passes over the work. This is usually expressed in feet per minute or metres per minute.

For a given material there will be an optimum cutting speed for a certain set of machining conditions, and from this speed the spindle speed (RPM) can be calculated. Factors affecting the calculation of cutting speed are:

- The material being machined (steel, brass, aluminium etc. - see table below)
- The material the cutter is made from i.e. Carbon steel High speed steel (HSS), carbide, or ceramics.

Material type	meters per min	feet per min
Steel (tool)	15 - 18	50 - 60
Mild steel	30 - 38	100 - 125
Cast iron (medium)	18 - 24	60 - 80
Bronzes	24 - 45	80 - 150
Brass (soft)	45 - 60	150 - 200
Aluminum	75 - 105	250 - 350

A good rule of thumb is, the smaller the hole or depth of cut, and the softer the material to be machined etc, the faster the speed.

Please note that It is not within the scope of this manual to provide a tutorial on cutting speeds or the methods used to determine spindle speeds (RPM), for your particular application. It is assumed that the operator is familiar with these practices.

Maintenance

The amount of maintenance depends on the amount of use the machine gets. However, it is important to carry out routine maintenance to prevent premature wear and shortening the life of the machine.

1. Inspect and clean all non painted surfaces. Lubricate using a light machine oil. **Do Not** over lubricate. Oil can be applied to the work table and column etc., using a soft oil soaked cloth.
2. Inspect and clean all moving parts. Lubricate using machine oil. Check for smooth operation.
3. Inspect the machine for signs of wear or damage. Any faults should be rectified before continuing.
4. Check all nuts and bolts etc. are tight.

Slide Adjustments

With use, play may develop in the cross, longitudinal and the post slides. It is possible to adjust these components in order to eradicate any unnecessary movement.

Before making any adjustments, clean all friction surfaces. It is necessary to move the table and cross slide to both extremes to carry out the cleaning process correctly.

When finished cleaning, re-lubricate using a light machine oil.

Return both the table and cross slide to their central positions.

Adjustment is effected by means of Jib Strips. These are precision machined steel strips, positioned between the mating surfaces as shown in Fig.9. The strips are adjustable so as to apply pressure on these surfaces, sufficient for the parts to slide easily about each other without unnecessary slackness. The longitudinal slide for example carries four adjusters, shown in Fig.10.

To adjust, first ensure that the slides are lubricated with a thin film of machine oil as described previously.

Slacken off all adjuster locknuts, using the hex. wrench provided, and back off each adjuster by half a turn.

Screw IN each adjuster in turn until a slight resistance is felt.

Wind the slide through its full travel to check that there are no high spots, and travel is smooth throughout.

If the slide moves smoothly and all slack has been eliminated, hold the adjuster still and tighten all lock nuts.

Finally, wind the slide through its full length once again to double check. If there is any slack or tightness, readjust as described above.

Fig.9

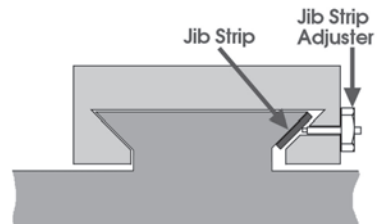
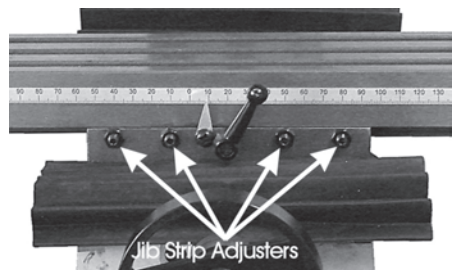
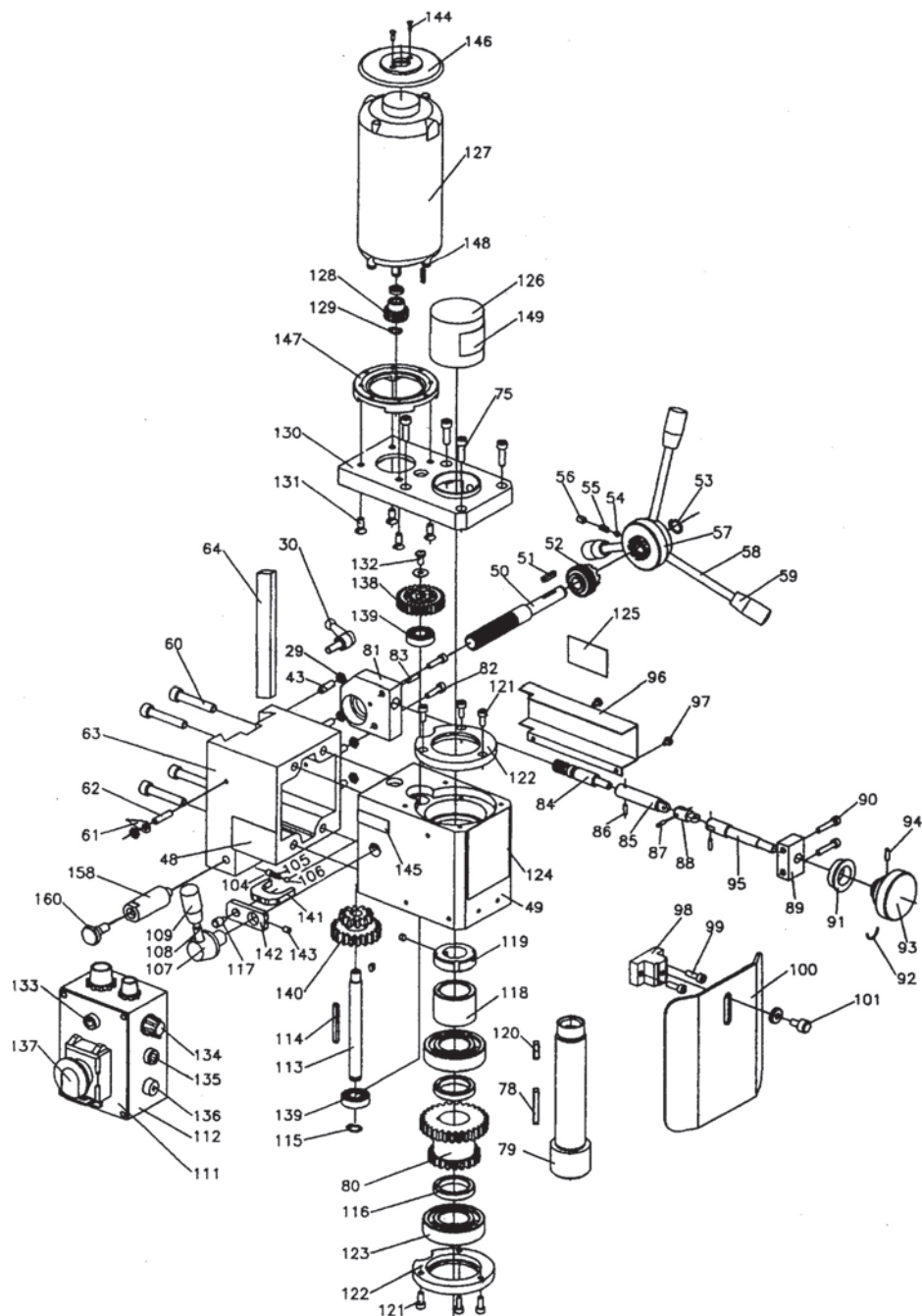


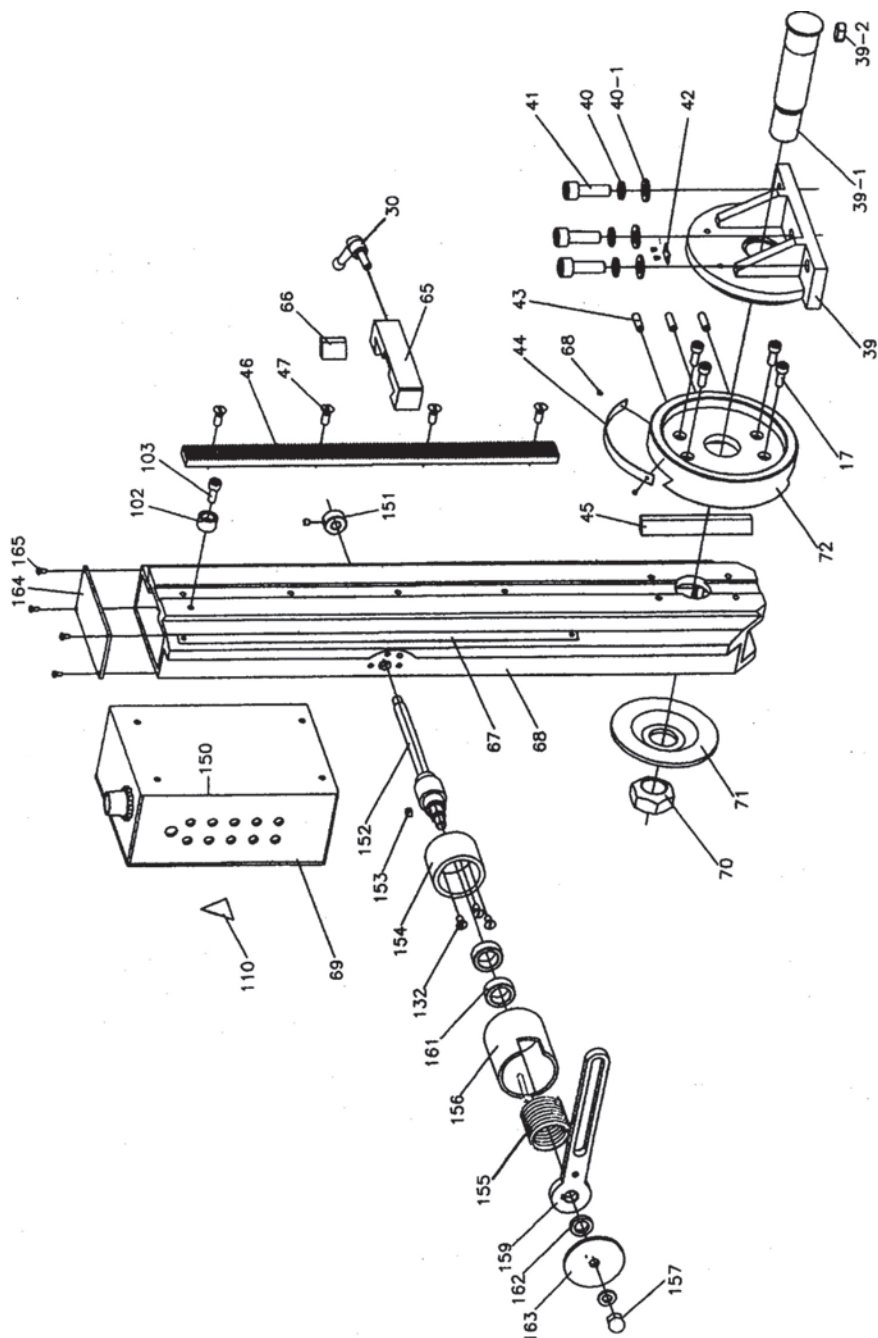
Fig.10



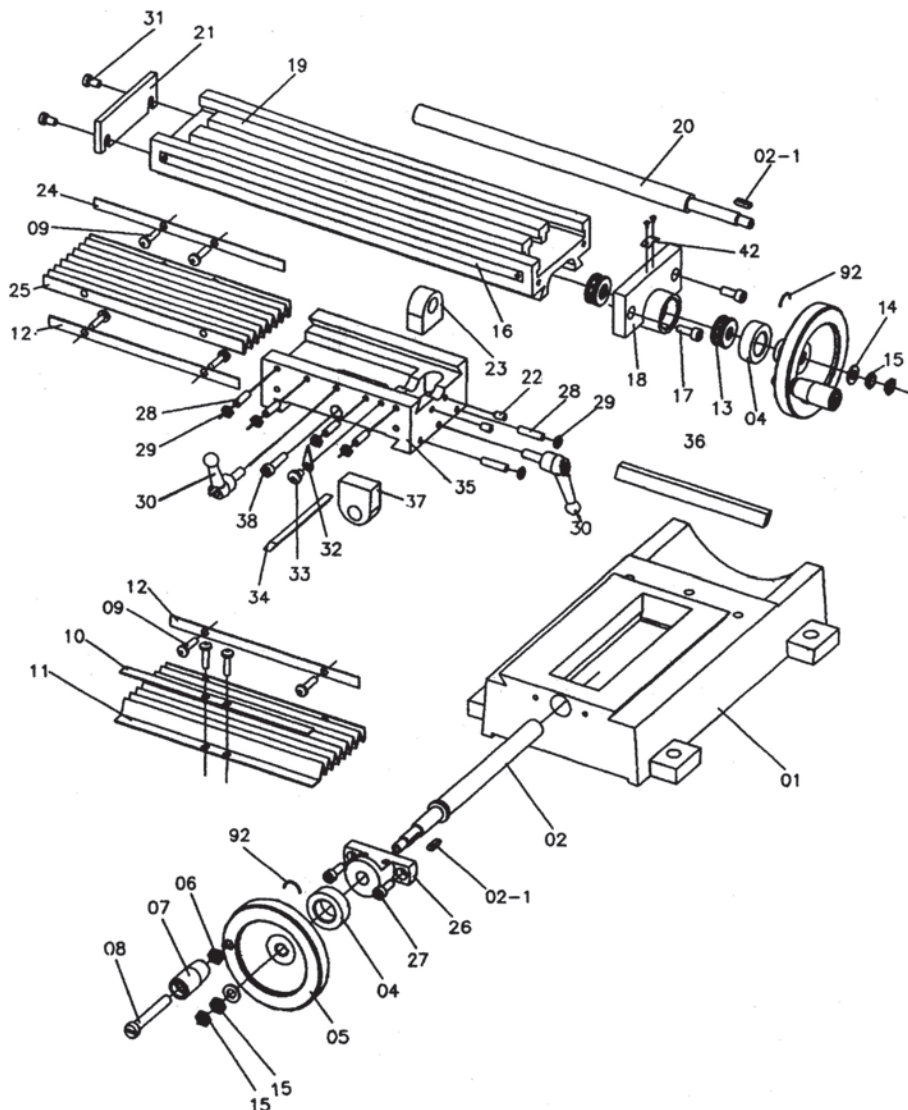
Parts Diagram



Parts Diagram



Parts Diagram



PARTS & SERVICE TEL: 020 8988 7400

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com

Parts List

Item	Description	Qty	Part No	Item	Description	Qty	Part No
1	Base	1	SGCMD300001	40	Spring washer 10	3	SGCMD300040
2	X-axis feed screw	1	SGCMD300002	40-1	Washer 10	3	SGCMD3000401
2-1	Key 4x16	2	SGCMD300003	41	Cap screw M10 x 30	3	SGCMD300041
4	Dial	2	SGCMD300004	42	Pointer	2	SGCMD300042
5	Hand wheel	2	SGCMD300005	43	Set screw M6 x 22	7	SGCMD300043
6	Nut M8	2	SGCMD300006	44	Scale	1	SGCMD300044
7	Knob	2	SGCMD300007	45	Jib Strip	1	SGCMD300045
8	Screw M8 x 55	2	SGCMD300008	46	Gear rack	1	SGCMD300046
9	Cap Screw M6x8	8	SGCMD300009	47	Cap screw M6 x 12	4	SGCMD300047
10	Plate (1)	1	SGCMD300010	48	Label	1	SGCMD300048
11	Dust guard cover	1	SGCMD300011	49	Spindle box	1	SGCMD300049
12	Plate (2)	2	SGCMD300012	50	Pinion	1	SGCMD300050
13	Ball bearing 8200	2	SGCMD300013	51	Key 4x25	1	SGCMD300051
14	Washer	2	SGCMD300014	52	Bevel gear	1	SGCMD300052
15	Nut M8	4	SGCMD300015	53	Retaining ring 12	1	SGCMD300053
16	Y-axis scale	1	SGCMD300016	54	Ball	1	SGCMD300054
17	Cap screw M6 x 16	4	SGCMD300017	55	Spring 0.8 x 0.8 x 10	1	SGCMD300055
18	Y-axis bearing seat	1	SGCMD300018	56	Screw 6 x 8	1	SGCMD300056
19	Work table	1	SGCMD300019	57	Handle Hub	1	SGCMD300057
20	Y-axis feed screw	1	SGCMD300020	58	Operating lever	3	SGCMD300058
21	End cover	1	SGCMD300021	59	Handle	3	SGCMD300059
22	Screw M6 x 10	2	SGCMD300022	60	Cap screw M8 x 25	4	SGCMD300060
23	Y-axis screw nut	1	SGCMD300023	61	Pointer	1	SGCMD300061
24	Holding plate (3)	1	SGCMD300024	62	Cap screw M6 x 25	1	SGCMD300062
25	Dust guard cover	1	SGCMD300025	63	Spindle box seat	1	SGCMD300063
26	Screw seat	1	SGCMD300026	64	Jib Strip	1	SGCMD300064
27	Cap screw M6 x 16	2	SGCMD300027	65	Limit block	1	SGCMD300065
28	Set screw M6 x 22	6	SGCMD300028	66	Jib Strip	1	SGCMD300066
29	Nut M6	13	SGCMD300029	67	Scale	1	SGCMD300067
30	Handle	3	SGCMD300030	68	Vertical Post	1	SGCMD300068
31	Screw M6 x 10	2	SGCMD300031	69	Electric box	1	SGCMD300069
32	Pointer	1	SGCMD300032	70	Lock nut M24	1	SGCMD300070
33	Screw M6 x 8	1	SGCMD300033	71	Large washer	1	SGCMD300071
34	X-axis Jib Strip	1	SGCMD300034	72	Connecting strut	1	SGCMD300072
35	Saddle	1	SGCMD300035	78	Key 5x5x40	1	SGCMD300078
36	Y-axis Jib Strip	1	SGCMD300036	79	Spindle	1	SGCMD300079
37	X-axis screw nut	3	SGCMD300037	80	Transmmission gear	1	SGCMD300080
38	Cap screw M6 x 25	2	SGCMD300038	81	Support Block	1	SGCMD300081
39	Vertical Post seat	1	SGCMD300039	82	Screw	2	SGCMD300082
39-1	Shaft	1	SGCMD3000391	83	Pin 4x78	1	SGCMD300083
39-2	Key 8 x 12	1	SGCMD3000392	84	Worm	1	SGCMD300084

Parts List

Item	Description	Qty	Part No	Item	Description	Qty	Part No
85	Sleeve	1	SGCMD300085	126	Cover	1	SGCMD300126
86	Pin 3x12	1	SGCMD300086	127	Motor	1	SGCMD300127
87	Pin 3x12	2	SGCMD300087	128	Motor gear	1	SGCMD300128
88	Adjustable union	1	SGCMD300088	129	Ring 9.0	1	SGCMD300129
89	Bracket	1	SGCMD300089	130	Motor seat	1	SGCMD300130
90	Screw M5x25	1	SGCMD300090	131	Screw M6 x 12	4	SGCMD300131
91	Dial	1	SGCMD300091	132	Round screw M5 x 8	4	SGCMD300132
92	Spring steel 1.0	3	SGCMD300092	133	Yellow lamp	1	SGCMD300133
93	Small hand wheel	1	SGCMD300093	134	Speed control knob	1	SGCMD300134
94	Screw M8 x 16	1	SGCMD300094	135	Green lamp	1	SGCMD300135
95	Small shaft	1	SGCMD300095	136	Fuse box	1	SGCMD300136
96	Cover	1	SGCMD300096	137	Emerg. stop switch	1	SGCMD300137
97	Screw M4 x 6	2	SGCMD300097	138	Gear	1	SGCMD300138
98	Dust cover support	1	SGCMD300098	139	Ball bearing 80101	2	SGCMD300139
99	Screw MS x 16	2	SGCMD300099	140	Transmission gear	1	SGCMD300140
100	Dust guard	1	SGCMD300100	141	Bar	1	SGCMD300141
101	Clamp bolt M6 x 12	1	SGCMD300101	142	Link board	1	SGCMD300142
102	Upper end washer	1	SGCMD300102	143	Set screw MS x 8	1	SGCMD300143
103	Upper end screw M6	1	SGCMD300103	144	Self-tapping Screw	2	SGCMD300144
104	Setscrew M6 x 6	1	SGCMD300104	145	Hi/Low label	1	SGCMD300145
105	Spring 0.8 x 4.8 x 10	1	SGCMD300105	146	Motor cover	1	SGCMD300146
106	Ball	1	SGCMD300106	147	Motor conn. flange	1	SGCMD300147
107	Handle seat	1	SGCMD300107	148	Screw M6 x 10	4	SGCMD300148
108	Double head bolt M8	1	SGCMD300108	149	Warning table	1	SGCMD300149
109	Knob	1	SGCMD300109	150	PC board	1	SGCMD300150
110	Warning label	1	SGCMD300110	151	Locking sleeve	1	SGCMD300151
111	Controller	1	SGCMD300111	152	Rotor shaft	1	SGCMD300152
112	Label	1	SGCMD300112	153	Key4x6	1	SGCMD300153
113	Shaft	1	SGCMD300113	154	Spring support	1	SGCMD300154
114	Double round hd key	1	SGCMD300114	155	Torsion spring	1	SGCMD300155
115	Internal Ring	1	SGCMD300115	156	Cover	1	SGCMD300156
116	Spacing Ring	2	SGCMD300116	157	Nut	1	SGCMD300157
117	Small shaft	1	SGCMD300117	158	Extension tube	1	SGCMD300158
118	Spacing Ring	1	SGCMD300118	159	Supporting arm	1	SGCMD300159
119	Spindle nut	1	SGCMD300119	160	Screw	1	SGCMD300160
120	Double round hd key	1	SGCMD300120	161	Washer	2	SGCMD300161
121	Cap screw M5 x 8	6	SGCMD300121	162	Internal ring 12	1	SGCMD300162
122	Bearing cover	2	SGCMD300122	163	Cover	1	SGCMD300163
123	Ball bearing 80206	2	SGCMD300123	164	Top Cover	1	SGCMD300164
124	Name label	1	SGCMD300124	165	Screw M 3 x 6	4	SGCMD300165
125	Fine feed label	1	SGCMD300125				

Accessories

1. Mill Chuck Set

Part Number: 7610866

A set comprising 7 collets, a chuck and 'C' spanner.

Collet sizes:

- 4 mm
- 6 mm
- 8 mm
- 10 mm
- 12 mm
- 14 mm
- 16 mm



1. Insert the shank of the chuck into the Mill Head Spindle and screw on to the end of the draw bolt. Tighten the draw bolt, holding the spindle steady by hand or by inserting the tommy bar provided in the hole in the side of the head and into the spindle.
2. Unscrew and remove the end collar 'A', insert the appropriate collet and reattach the end collar.
3. Insert the respective end mill into the collet and tighten the end collar using the 'C' spanner.

To remove the chuck, undo the draw bolt a turn or two, then tap its' head using a mallet to break the seal.

2. HSS End Mill (2-Fluted)

Part Number: 7610874

A set of 7 End Mills, of the following sizes, for use with the Mill Chuck or Collet Set

- 4 mm
- 6 mm
- 8 mm
- 10 mm
- 12 mm
- 14 mm
- 16 mm



3. Collet Set (MT3)

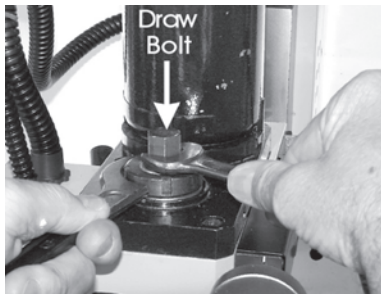
Part Number: 7610864

A set of 7 Collets for use with the HSS End Mills:

Insert the appropriate Collet into the spindle.

Insert the draw bolt, provided, into the spindle, from the top and screw on to the Collet a few turns.

Insert the appropriate Mill into the jaws of the Collet, and tighten the draw bolt.



Hold the spindle by means of the tommy bar, inserted in the hole in the side of the head, and into the hole in the spindle.

To remove the Collet, unscrew the draw bolt a few turns and tap its head with a mallet to break the seal between the Collet and spindle.

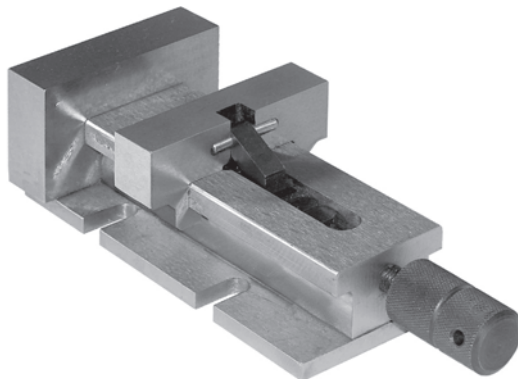
4. Quick Release Vice

Part Number: 7610868

'T' nuts are provided with the base machine

Maximum opening: 88mm

Effective Jaw size: 100x33mm



5. Indexable Carbide End Mill

Part Number: 7910870

Simply insert the shank of the mill into the spindle and screw on to the Draw Bolt.

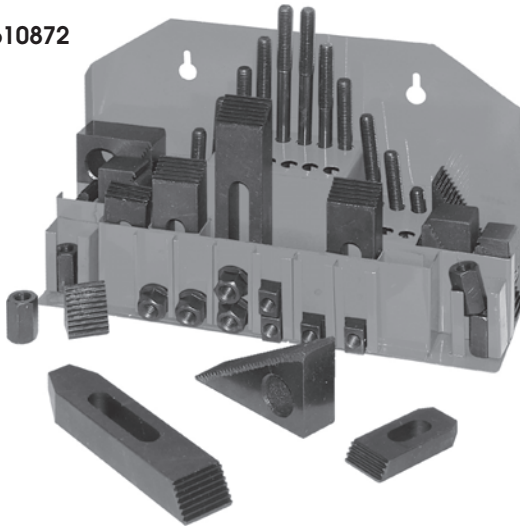
Tighten using the Tommy Bar in the hole in the side of the head, into the spindle, and spanner on the Draw Bolt head.

Disassemble in the same manner as for the drill chuck.

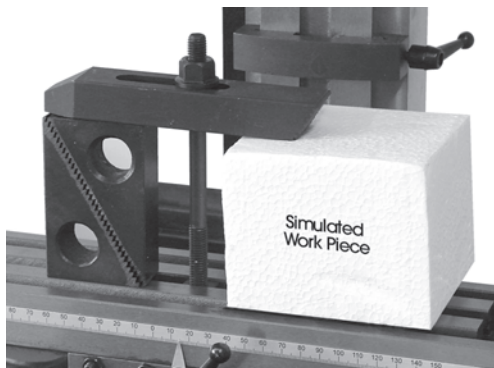


6. Clamp Set

Part Number: 7610872



An example of how the clamp set may be used:



Select the appropriate studs and slotted clamp. Screw the 'T' nut on to the stud and assemble as shown, using the appropriate

stepped blocks - adjust the blocks so that the clamp is horizontal.





This is an important document and should be retained

DECLARATION OF CONFORMITY



We declare that this product complies with the following standards/directives:

■ 98/37 EC

Description: Milling/Drilling Machine

Model No: CMD 300

Serial (Batch) No: See Machines Data Plate

Signed: 
Engineering Manager Sept, 2007

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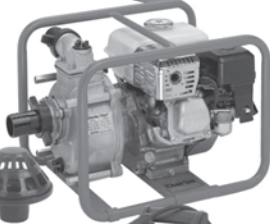
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