OPERATOR'S HANDBOOK

for the

WARCO VMC TURRET MILL

Warren Machine Tools Ltd
Warco House, Fisher Lane, CHIDDINGFOLD, Surrey GU8 4TD
Tel: 01428 682929 Fax: 01428 685870/685812
e-mail: warco@warco.co.uk
web: www.warco.co.uk

NOTE

The information contained in this handbook is intended as a guide to the operation of this machine and does not form part of any contract. The data it contains has been obtained from the machine manufacturer and from other sources. Whilst every effort has been made to ensure the accuracy of these transcriptions it would be impracticable to verify each and every item. Furthermore, development of the machine may mean that the equipment supplied may differ in detail from the descriptions herein. The responsibility therefore lies with the user to satisfy himself that the equipment or process described is suitable for the purpose intended.

NOTES

Index No.	Part No.	Description	Size
110	2012	Elevating Gear	
111	2009	Elevating Lead Screw	
112	2007	Elevating Lead Screw Journal	
113*	2059	Chip Guard	
114	2001	Base	
115	2089	Switch Unit	
116	2002	Bolt	X2
117	2097	Light Unit	
118	2069	Rubber Sheet	
119		Bolt	M6x25
120	2010	Bearing	6004z
121*		Key	6x15
122	2024	Washer	
123	2008	Bolt	M6x15
124*		Bolt	M6x35
125	2084	Bearing	6004Z
126		Snap Ring	S-18
127	2018	Oil Cup	
128		Key	5x5x20
129		Bolt	M5x10
130		Bolt	M6x45
131*		Bolt	M6x15
132		Snap Ring	S-18
133		Bolt	M10
134		Cover Plate	
135		Bolt	M6x8
136		Bolt	M8x25
137*		Washer	AW09
138		Key	7x7x20
139		Flexible Conduit	
140		Cable	
141		Terminal Contactor	
142		Cable Gland	

* Item not illustrated

The WARCO VMC TURRET MILL

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CONTENTS

LIST OF ILLUSTRATIONS

Index No.	Part No.	Description	Size
73	1073	Motor, 1hp, 4 Pole	
74	2006	Column	
75	2073	Table	
76	2062	Table Gib Strip	
77	2059	Adjusting Screw	
78	2082	Longitudinal Bearing Bracket	
79	2079	Longitudinal Feed Screw	
80	2084	Nut for Bearing	
81	2080	Longitudinal Feed Nut	
82	2081	Screw	M5x25
83	2087	Dial	
84	1060	Dial Positioning Screw	
85	2089	Hand Wheel	
86	2091	Handle Bar	
87	2103	Travel Adjusting Screw	
88	2104	Adjusting Screw Sleeve	
89	2068	Table Stop	
90	2060	Table Locking Screw	
91	2060	Saddle Locking Screw	
92	2057	Saddle	
93	2058	Saddle Gib Strip	
94	2069	Rubber Shield Strip	
95	2401	Cross Feed Screw	
96	2037	Cross Feed Nut	
97	2042	Cross Feed Bearing Bracket	
98	2068	Stop Block	
99	2102	Stop Block Slide	
100	2103	Cross Travel Adjusting Screw	
101*	2104	Adjusting Screw Sleeve	
102	2015	Knee	
103	2016	Knee Gib Strip	
104	2017	Knee Locking Screw	
105	2019	Gear Shaft Sleeve	
106	2020	Gear Shaft	
108	2029	Elevating Handle Clutch	
109	2030	Handle Arm	

Index No.	Part No.	Description	Size
37	1014	Draw Bar	
38		Rivet	C5x15
39		Screw	M5x10
40	T1089	Drive Cover Support Arm	
41		Nut	M5
42	1016	Washer for Bearing	
43	1003	Bearing	7207
44	1003	Bearing	6007ZZ
45	1003	Bearing	6206Z
46	1082	Bearing Cover	
47	1012	Snap Ring	R-75
48	1011	Bearing	6009Z
49	1052	Thrust Bearing	
50	1037	Quill Fine Feed Spring	
51	1020	Quill Lever Feed Spring	
52		Snap Ring	E-19
53	1038	Bolt	M6x15
54	1076	Centre Pulley Swivel Arm	
55	1075	Swivel Arm Stud	
56		Snap Ring	R-35
57	1079	Pulley Pivot Stud	
58	1080	Centre Pulley	
59	1080	Motor Pulley	
60	1067	Motor Fixed Mounting Plate	
61	1068	Motor Suspension Pivot Pin	
62	1070	Motor Movable Mounting Plate	
63	1072	Belt Tension Locking Pin	
64	1071	Belt Tension Unit, Male	
65	1071	Belt Tension Unit, Female	
66	1064	Vertical Head Adapter	
67	1067	Screw	
68		Washer	M10
69	1102	Vee Belt	A35
70		Nut	M10
71	1081	Bearing	6003Z
72	1101	Vee Belt	A32

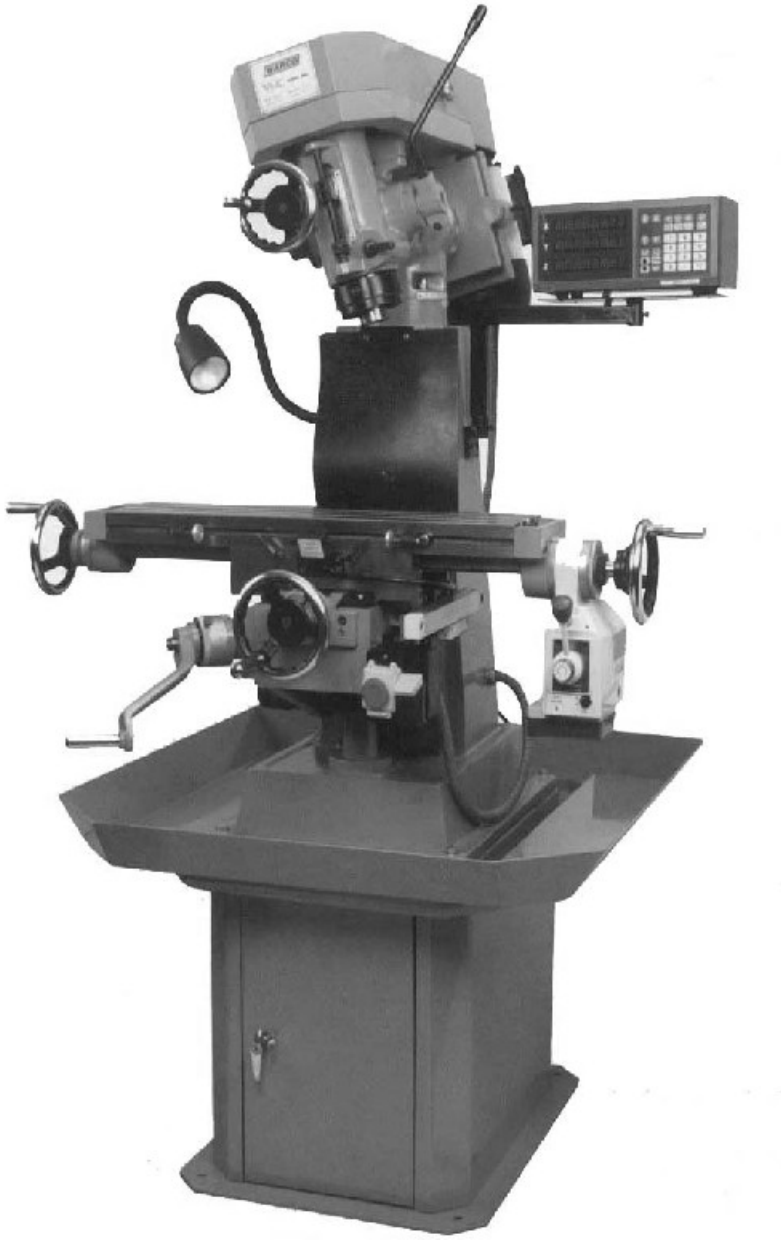


Figure 1 The VMC Turret Mill
(shown with optional powered table feed and digital read-out equipment)

INTRODUCTION

Your new Model VMC vertical milling/drilling machine is a solidly built precision machine tool.

With proper maintenance, correct operation and use this machine can provide you with years of accurate service.

Before using the machine, please read this manual carefully and familiarise yourself with all the controls and their purpose. Pay particular attention to safety of operation.

SPECIFICATION AND FEATURES

Motor (single phase)		1½ HP	
Spindle taper		No.3 MT or R8	
Spindle speeds, rpm (nine speeds)		200, 300, 430, 610, 1070, 1120, 1330, 1850, 2300	
Head swivel		360°	
Head tilt		±90°	
		mm	in.
Table travel,	longitudinal	370	14.5
	cross	152	6.0
Working area		600mm x 152mm (26in. x 6in.)	
Capacity	Drilling	35	1.375
	End Milling	20	0.75
	Face Milling	76	3.0
Max distance, spindle nose to table		345	13.6
Spindle stroke		89	3.5
Throat		165	6.5
Overall height		1702	67.0
Length (front to back)		1016	40.0
Overall width		1092	43.0
Net weight		415kg (915 lb)	

Index No.	Part No.	Description	Size
1	1001	Vertical Milling Head	
2	1095	Belt Drive Cover	
3	1005	Quill	
4	1010	Snap Ring	S-45
5	1007	Spring Washer	
6	1002	Vertical Spindle	
7		Quill Cover	
8	1008	Bearing Adjusting Nut	
9	1009	Spindle Sleeve	
10	1016	Pulley Locking Nut	
11	1018	Spindle Pulley	
12	1019	Quill Pinion Shaft	
13	1047	Screw	M5x10
14	1036	Clutch Worm Gear	
15	1039	Clutch	
16	1040	Clutch Adjusting Nut	
17	1046	Clutch Cover	
18	1021	Pinion Shaft Seat	
19	1032	Hand Lever Knob	
20	1028	Hand Lever Hub	
21	1030	Hand Lever	
22	1051	Worm Shaft	
23	1053	Worm Shaft Sleeve	
24	1055	Nut for Bearing	
25	1056	Dial	
26	1060	Dial Positioning Screw	
27	1057	Hand Wheel	
28	1061	Handle	
29	1048	Quill Locking Block	
30	1049	Quill Locking Bolt	
31	1042	Quill Stop Setting Screw	
32	1044	Quill Stop Setting Nut	
33	1045	Quill Stop Lock Nut	
34	1041	Quill Stop	
35		Screw	M8x20
36		Washer	M8

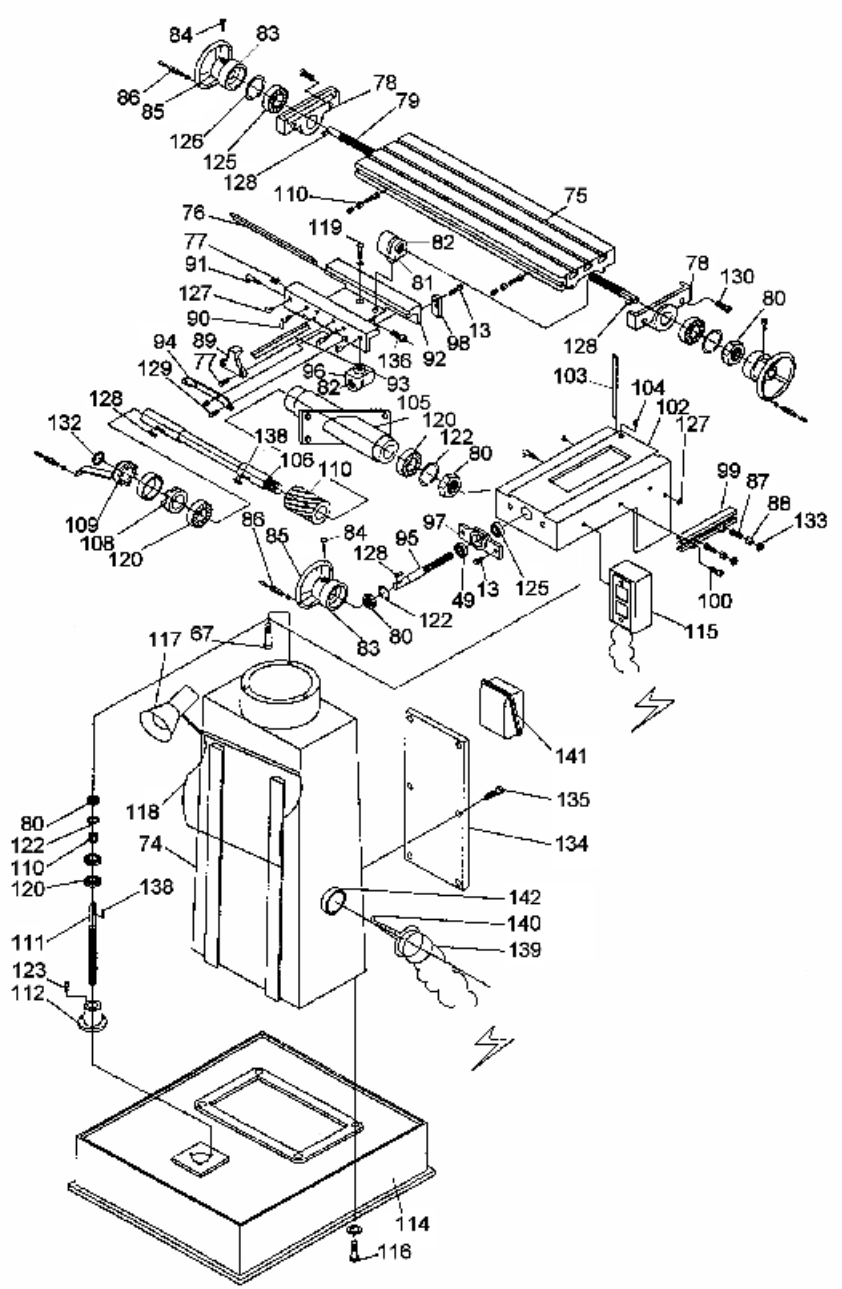


Figure 8 Parts Identification, Base Group

Optional accessories:

- Clamping kit to suit tee slots
- Collets
- Dividing head
- Independent coolant system
- Power table feed
- Precision milling vices
- Rotary table

The machine is eminently suitable for all regular milling operations, such as surfacing, end milling, compound angle milling, slot drilling and drilling. The vertical quill feed rate is selectable from rapid hand feed for drilling to worm feed for the slower movement required when milling.

The feed screws for table movement act through adjustable bronze nuts. These minimise the backlash due to thread clearance and reduce thread wear. They also provide for smoother operation.

Construction utilises precision castings in high-strength material. They are aged for a period of months, then normalised and tempered to minimise deformation and to provide accuracy. All sliding surfaces are hand scraped for perfect bearing and alignment; the table is precision ground. Speed changes are effected through a dual belt drive system, which is easily accessible via the head pulley guard.

SAFETY AND ACCIDENT PREVENTION

SAFETY ALERT SYMBOL. Throughout the handbook this symbol is used to denote items or operations that could involve danger to the operator, or to other persons nearby. Please read these messages carefully, have a full understanding of their importance and always abide by their requirements.

INSTALLATION

Before attempting to install the machine read these instructions carefully.

The machine weighs 415 kg (913 lb) as delivered; *the use of lifting gear is essential to effect safe installation*. The use of a workshop crane and slings, overhead hoist, block and tackle or jacking platform trolley equipment may be required. The complete machine is too heavy for manual installation to be attempted.

In most instances a workshop crane (e.g. an automobile engine crane) may be hired locally at a reasonable cost. However, should there be no lifting gear available, or the intended working space would preclude its use, then the machine should be dismantled into manageable components to permit manual installation. Be aware that *two persons* will be required to effect manual lifting, even in the dismantled state.

Continue to study the descriptive section of this manual, also the illustrated parts section, in conjunction with a thorough examination of the machine itself, in order to determine the most suitable sequence of dismantling and reassembly. Dismantling may be conveniently grouped into five major stages: the motor, head, table, column and base. Make a careful note of any dismantling sequence employed, especially if electrical connections have to be broken, to enable a correct and safe method of reassembly to be made.

Unpacking

As delivered the machine is bolted to a wooden pallet and enclosed in a wooden packing case.

Remove the steel straps that secure the corners of the case, then lever off the top of the case. Similarly remove the sides of the case and place the removed sections clear of the working area.

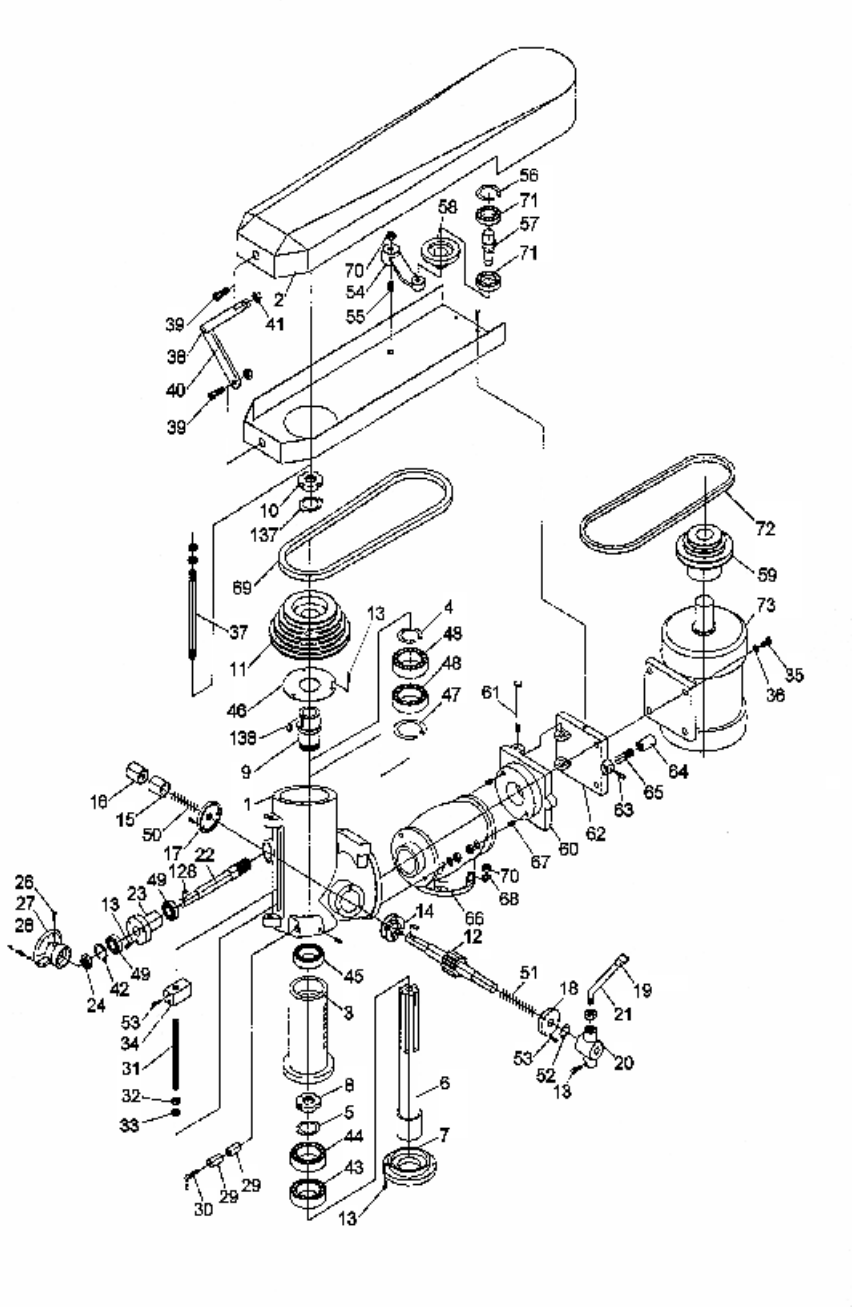


Figure 7 Parts Identification, Head Group

Cutter arbor or chuck insecure in drive socket - tighten arbor bolt.
Cutter damaged or in need of sharpening - renew or re-sharpen.
Workpiece insecurely held - tighten or rearrange clamp bolts.

Slow vertical feed not working correctly

Friction clutch not fully effective - tighten friction control knob.
Handwheel fixing screw loose - tighten.
Excessive wear on worm and/or wormshaft - replace defective component with new.

Lack of accuracy in cut

Workpiece out of balance or insecurely held - re-clamp to give more secure work holding.
Incorrect setting of gib strips on table movement - check and reset correct movement.
Use of hammer to reposition workpiece on table, thus transferring blows through workpiece to table and feedscrew - DO NOT USE HAMMER TO POSITION WORK.

Assembly

Before starting any assembly or installation sequence, first check that the intended location of the assembled machine is level and free from obstruction. Correct any irregularities of the floor surface by applying any screed as may be necessary, or by using suitable shims, to obtain a level and even mounting surface.

For preference, and to ensure rigidity, the machine should be bolted to the floor using foundation bolts of minimum size 9mm ($^{3}/_{8}$in.) diameter. These may be located through the pre-drilled holes in the base of the stand or, alternatively, placed outside the flange of the stand base and cross straps used to secure the stand. The latter method is preferred if the floor is not truly level and packing shims have been used to obtain the correct level.

Note that there are two holes in the upper sides of the column that have covers bearing the legend “Hoisting Point”, implying the insertion of a bar to which slings may be attached or use for the locating of hooks. This facility is used during manufacture and it is strongly recommended that this method of slinging is NOT used, due to instability under load. Instead, carefully position the lifting slings about the head centre section to provide the most direct lift when the hoist is operated. Begin lifting and be prepared to check any tendency to swing as the machine clears the pallet. Guide the machine carefully into position, then lower and secure it with the foundation bolts.

Electrical Installation

Your machine is supplied already fitted with a moulded fused plug and is ready for connection to an appropriate outlet having a rating of at least 13 amps. A normal domestic socket of this rating is suitable, but it is preferable that this socket should also be switched. If the machine is to be operated from a different type of supply connector it will be necessary to first remove the plug supplied by cutting the cable at a point close to the plug. The removed plug must then be discarded. Fit a suitable connector to the power lead on the machine to permit connection to your mains supply. Ensure that the

colour coding of the cables complies with the convention:

Live	Brown or Red
Neutral	Blue or Black
Earth	Green or Green/Yellow.

Do not switch on the supply to operate the machine until after the following cleaning and oiling tasks have been completed.

Machines requiring connection to a three-phase supply will have been supplied to a special order only; their description and electrical details are outside the scope of this manual.

Initial Cleaning and Oiling

When the machine is supplied it is covered by a heavy grease-like material, which has been applied to protect the surfaces during transit and storage. Before operating the machine it is necessary to remove completely all this protective material.

White spirit is an effective solvent for the grease but paraffin (kerosene) may also be used. The use of petrol (gasoline) or other high-volatility substances is not recommended. Clean lint-free rags soaked in the solvent will remove grease from the accessible surfaces but a small brush will be found to give better cleaning in the more awkward corners and crevices. Particular attention should be paid to the spindle internal taper as difficulty may be experienced later with mounting chucks etc if the preservative is not completely removed. The parts inside the guard cover should also receive attention as any foreign matter left on pulley grooves etc could cause slipping to take place.

Abide by all the usual precautions when using solvents and ensure that there is no solvent left on the machine when cleaning is complete.

Caution: Avoid getting any solvent on the drive belts or other rubber-based parts. The action of the solvent will rapidly decrease the life of the component.

Motor overheats and produces no power or power is diminished

An overload condition exists - reduce the rate of feed, depth of cut or cutting speed.
Vee belt tension too high - adjust for correct tension.
Supply voltage too high - adjust.
Incorrect power fuse allowing excess current to motor - switch off and replace with correct fuse.
Magnetic switch contacts eroded - renew.
Overload relay inoperative or open circuit - re-connect or renew.
Motor unserviceable - renew.

Spindle bearings becoming hot

Lack of lubricant - repack with grease.
Prolonged use at high speed - allow to cool and resume with light cuts.
Spindle bearings too tight (tightness of rotation may be felt by hand) - refer to dealer.

Main spindle revolves but lacks power

Vee belt tension too loose - adjust for correct tension.
Motor faulty - renew.

Table movement erratic producing chatter marks

Check rate of feed and depth of cut and adjust.
Check tension on gib strip adjustment screws - tighten if necessary.

Chatter marks other than through table movement

Spindle bearing – check adjustment of bearings and adjust if necessary.
Bearing covers – check for security.
Taper slide – check tension on gib strip adjustment screws and tighten if necessary.

Yearly

Check general condition of the machine, paying particular attention to electric cables, connectors and switches, which should be free from damage, wear or insecurity.

Note: The foregoing schedule is based on the assumption that the machine is in regular use throughout the year. If use is intermittent, the schedule may be varied at the discretion of the operator and the service attentions postponed or combined. However, they should not be overlooked. Where the machine is subjected to heavy use, a more frequent programme of maintenance attentions should be considered, particularly with regard to lubrication and cleanliness.

FAULT FINDING

Any malfunction should be investigated immediately and rectified. Any overheating or unusual noises from any source will indicate that some fault condition exists. The following details the most likely problems that may be experienced and the suggested remedy. Any faults not covered here should be referred to your dealer or direct to the distributor and advice sought.

Motor does not run when switched on

Spindle guard not closed – Check.
Cover safety microswitch operated – check cover fully closed and/or operating stop correctly set.
Supply fuse blown - check and replace if necessary.
Faulty connection at socket or junction box - check and remake connection.
Supply voltage incorrect - check and adjust (if applicable).
Overload relay tripped (the relay trips automatically if an excessive current is experienced) - press the reset button on the relay to restore the supply.

Apply a thin coat of lubricating oil to all exposed bright surfaces, paying particular attention to the spindle nose and slideways. Fill the oil reservoir container located on the left of the machine and operate the pump to apply lubricating oil to the oiling points.

Check the tension of the drive belts and rotate the spindle by hand to confirm free movement. Check that all controls and movements operate smoothly throughout their entire range.

DESCRIPTION

The Warco VMC milling/drilling machines are built to a very high specification and incorporate features normally associated with industrial production machines. Figure 1 shows a general arrangement of the machine operating controls and main components.

Electrical System

Each machine is supplied with an electrical control box with push button switches for START and STOP. A latching guard covers the switch buttons and this must be raised to permit operation of the START button. Located on the guard flap is a large red button which, when pressed, actuates the STOP switch without the need to first open the guard. When operated, this switch breaks the supply to the control unit, thus causing the 'start' circuit to be released. The button is released by opening the guard to prepare the circuit for further running. Pressing the START button arms the circuit to the motor by energising a relay, which self-holds via a feed from the STOP button (normally closed). The supply is fed to the motor via further contacts of the holding relay and thus the motor runs until the STOP button is pressed to break the circuit to the relay. A further switch for FORWARD and REVERSE running is located on the same box.

A microswitch is located under the drive pulley guard to inhibit the circuit to the motor whenever the guard is not fully closed. The spindle guard also incorporates a magnetic switch and this requires the guard to be fully closed to complete the motor circuit.

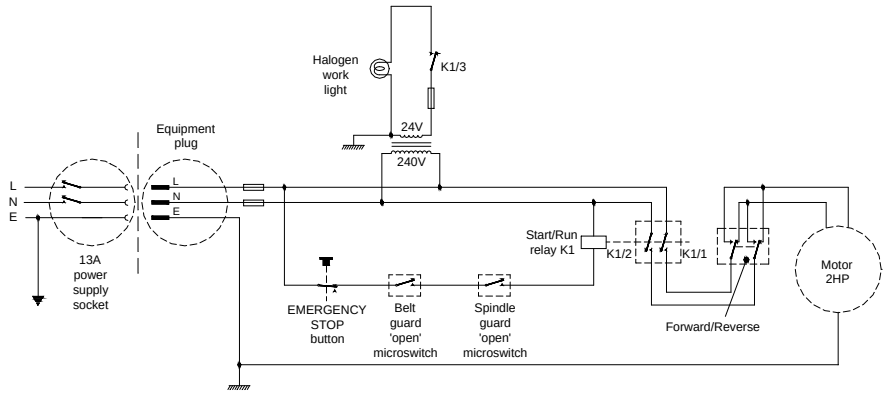


Figure 2 Wiring Diagram

Speeds and Feeds

The drive from the motor to the spindle employs a belt and pulley system, access to which is via the hinged guard on top of the machine. Changing the positions of the belts on the stepped pulleys gives a range of nine spindle speeds. The intermediate pulley axle is located on a pivoting arm to allow the tension on the drive belts to be relaxed when speed changing is required.

While the machine is supplied with the drive belt tension correctly set, after a period of use the belts will tend to stretch a little and lose some of their tension. The correct belt tension can be sensed by pressing a finger on the drive belt when, without applying undue pressure, a displacement of 10 to 12mm (approximately 0.5in.) should be noted.

faced hammer will release the taper. Support the drill by hand to prevent it falling and marking the table.

MAINTENANCE

Regular maintenance will ensure that the machine will continue to perform at its best and maintain its accuracy. The operator should undertake the following procedures at the suggested intervals.

Daily

1. Check the oil level within the reservoir is sufficient to keep all feed tubes filled; top up as required. Apply oil to all the oiling points by operating the hand pump before starting work each day. A single stroke of the pump will normally be sufficient.
2. Keep the work area clean, especially the table and slideways, and remove all swarf and cutting fluid at the end of the day's work. If the machine is located in an area where condensation and rust are a problem, apply moisture repellent oil to the exposed surfaces.

Weekly

1. Clean the feed screws and apply a fresh coating of oil.
2. Check the sliding surfaces for any abrasions; clean and apply a fresh coating of oil.

Monthly

1. Check the slideways for smooth operation. Remove any slackness by adjusting the gib strip screws.
2. Apply oil to the worm bearing, worm and shaft.

Face Mill or Cutter Arbor - Removal

1. Apply a spanner to the nut on the top of the arbor bolt and release it two whole turns.
2. Using a hide or nylon faced hammer give a sharp blow to the top of the arbor shaft to release the taper.
3. Hold the chuck arbor with one hand and use the other hand to turn the arbor shaft until it is clear of the arbor.
4. Place the arbor in a suitable stowage where it can be kept safe and ready for its next use.

Face Mill or Cutter Arbor - Installation

1. Ensure the taper socket of the spindle and the shank of the arbor is clean and free of any debris or swarf.
2. Insert the taper shank of the arbor into the socket of the spindle.
3. Engage the thread of the arbor bolt with the arbor and tighten the bolt sufficiently to lock the taper. Do not over-tighten.

Taper Shank Drills

Taper shank drills rely on the friction of the taper to retain them in the shaft socket. As with all taper tooling, it is essential that the mating tapers are clean and undamaged. Inserting the drill shank into the socket and hand pressing the drill against the taper is usually sufficient to establish the lock. If this is unsuccessful, however, further pressure may be obtained by placing a small block of wood beneath the point of the drill and applying pressure via the quill rapid feed lever. Do not use more force than is necessary to achieve the lock.

A tapered drift is used to force out the drill shank when removal is required. Position the quill shaft so that the oblong hole in the shaft is visible. Insert the narrow end of the drift through the slot against the tang of the drill. A light tap on the end of the drift with a soft-

OPERATING THE MACHINE

A machine of this type is perfectly safe provided it is used with reasonable care. However, there are a number of safety precautions - common to most workshop operations - that need to be taken. Therefore, before carrying out any form of machining operation the following safety considerations must be observed.

Wear protective goggles or shatterproof spectacles to protect the eyes from particles of swarf and dust that will be generated. In the event of any foreign matter entering the eye, stop the machine immediately and do not delay seeking first aid.

Do not wear loose items of clothing that could become entangled with the machine. Similarly, long hair should be tied back and any items of jewellery or other adornment removed. Long sleeved garments are preferred to provide some protection for the lower arms.

Do not wear light shoes or slippers when operating the machine. Wear boots or shoes, preferably with hard toecaps, which will protect against injury if heavy metal objects are dropped.

Always ensure that chuck keys are removed from chucks before starting the machine.

Check that the work piece or cutters are securely mounted in the chuck or collet.

Check that the tool holder and cutter or work piece is securely clamped to the table or machine vice.

Do not leave pieces of metal, tools etc laying on the machine table in such a position that they can move into a rotating cutter, or be allowed to fall on to the operator's foot.

Avoid reaching over the machine when the work or cutter is revolving.

Ensure that table feed is AGAINST the rotation of the cutter. If for any reason it becomes necessary to feed with the cutter rotation, take lighter cuts at a reduced feed rate. In this case be prepared for the likelihood of the cutter snatching and for a less satisfactory surface finish.

Ensure that the working area around and over the machine is adequately lit to prevent accidents through being unable to see.

Always wash after using any machine tool, particularly where cutting oils have been used, to avoid any danger of skin diseases. The use of a barrier cream before starting work is recommended.

GENERAL OPERATING DETAILS

At the start of each day's use operate the hand pump to apply oil to all the lubricating points. Ensure that the table and slideways are clean.

Observe all the safety requirements detailed above and select the drive belt configuration to give the rotational speed required for the material being worked and the cutting tool being used.

After completing operations for the day, disconnect the electricity supply to the machine and remove and store any cutters that have been used. Remove the workpiece and clamps or machine vice (unless further operations need to be performed at the same settings on the following day, when it may be left in position). Remove all swarf from the machine, check that all cutting fluid has been drained, and then thoroughly clean the working areas. Apply a film of oil to the working surfaces, then cover the machine to keep out dust.

Access to the drive belts for speed changes and adjustment is made via the hinged top cover of the head.

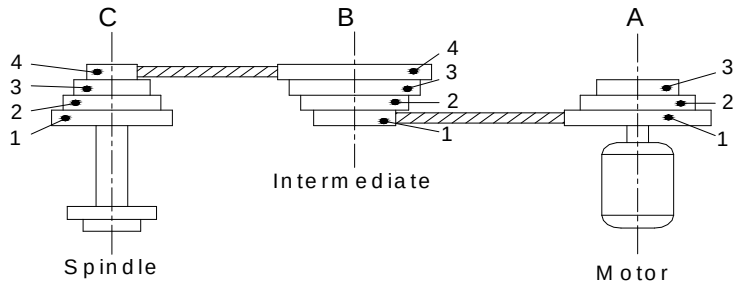
1. Switch off the motor and remove the power to the machine. An integral microswitch operates when the cover is opened and breaks the circuit to the motor. Ensure that the power cannot be reconnected while the adjustment is being made.
2. Open the top cover by raising it using the small knob on the right hand side; light pressure only is needed to release the spring catch from its clip.
3. Loosen the winged screw on the right side of the head, which clamps the motor mounting frame spigot to the head. The left side of the frame has two pivot bolts and these do not need to be adjusted.
4. Push the motor and frame towards the head; this will slacken the drive belts.
5. Refer to Figure 6, or to the belt position diagram and table attached to the cover, determine the required speed for the cutting operation to be performed and select the belt positions required giving the appropriate speed.
6. Place the drive belts on the relevant steps of the pulleys.
7. Tension the belts by pulling the motor mount towards the rear. Tighten the winged screw when correct tension is achieved, which is when either belt may be deflected through 10 to12mm (approximately 0.5 inch) at a point mid way between the pulleys.
8. Close the guard by lowering it gently until the spigot engages the catch.
9. Reconnect the power.

Changing Tooling

All tooling changes detailed below require the top guard to be opened to give access to the arbor bolt on the quill shaft. Observe the procedure detailed above under speed changes.

Speed Changing and Drive Belt Adjustment

Machine operating speeds are determined by the configuration of the drive belts and pulleys. The drive is divided with two vee belts and two four-step cone pulleys, one on the quill shaft and one on the idler shaft, and one three-step pulley on the motor shaft. The belt positions are shown in Figure 6 and on the label inside the guard cover.



	Stage 1	Stage 2
Spindle rev/min	Motor to Intermediate	Intermediate to Spindle
200	**3**	**1**
300	**3**	**2**
430	**2**	**1**
610	**3**	**4**
1070	**2**	**3**
1120	**1**	**2**
1330	**2**	**4**
1850	**1**	**3**
2300	**1**	**4**

Figure 6 Spindle Speed Selection

Figure 3 Single-Shot Lubrication Pump

Changing Between Milling and Drilling Operations

The vertical quill drive incorporates a friction device to the worm and wheel fine drive. When used for manual drilling this device is released by turning the knob at the end of the shaft counter-clockwise (Figure 4). Control of quill movement is then effected through the lever handle. Before drilling set the required depth for a blind hole on the positive stop depth gauge: for a through hole set the gauge to give adequate travel for the drill to clear the material.

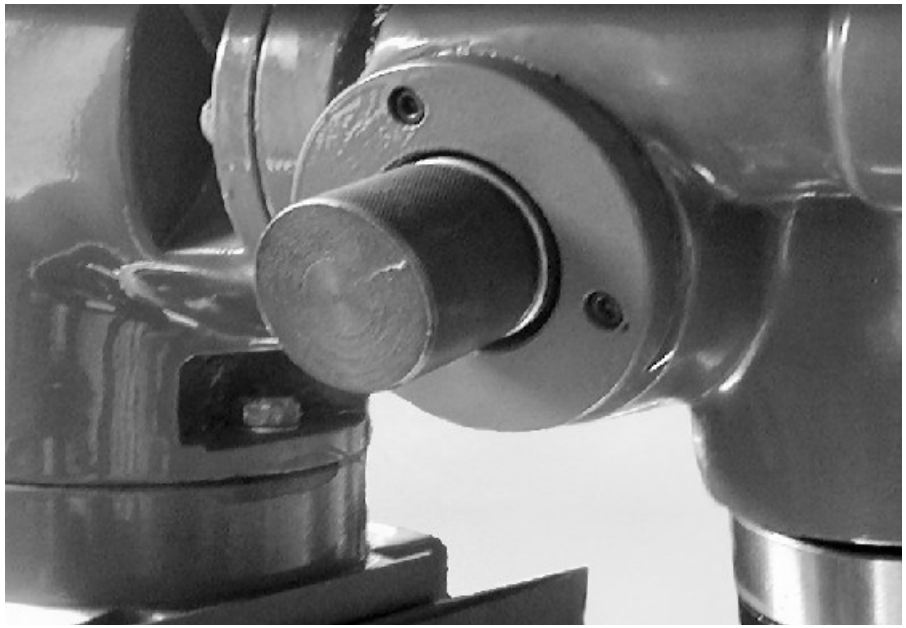


Figure 4 Spindle Feed Clutch Control

Figure 5 Spindle Feed Controls

To prepare for vertical milling the wormwheel friction device is engaged by turning the knob in a clockwise direction. Feed control is then effected through the handwheel on the front of the machine and the depth of cut read off on the friction dial on the handwheel shaft.

For either operation the quill feed may be locked in any desired position by applying the clamp bolt on the right side of the head.

Gib Strip Adjustment

Table movements incorporate tapered gib strips, which are adjustable to compensate for wear on the slides. Adjustment is effected through the winged screws, one on the cross feed and two on the longitudinal feed, which act on the gib strips. Turn the screws clockwise to tighten the gib strips and take up any play. Counter-clockwise rotation releases pressure on the gib strips.

Table Travel Stops

Two adjustable stops are provided on the front of the table to limit table travel. Similar stops are located on the right of the knee to limit cross travel. The stops are located in full-length slots and may be set anywhere within the range of the slot. It is recommended, however, that they are not set outside the feed screw travel to avoid the risk of a feed screw nut jamming against the end of its thread. To determine this maximum setting, turn the feed screw handle until the table reaches the limit of its travel on the screw, taking care to turn the handle slowly and carefully as it nears the limit of travel. When the limit is reached, turn back the handle at least one half turn to clear the nut from the end of the thread. Slacken the screw on the relevant table stop, position the stop hard against the fixed stop block and tighten the stop screw. Repeat this operation for the second stop.

The above procedure is used only when full travel of the table is required. Normally the stops would be used to provide a fixed range of movement for a particular cut. Determine the limits of travel required and position the stops against the stop block as described above.