

MICROMECH MFG. CORP.

SINCE 1952

300 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

OUR NEW AREA CODE 1(908)

Telephone: (201) 245-0505

FAX #: (201) 245-0504

INSTRUCTION MANUAL

MICRO-MATIC PRECISION WAFERING MACHINE

MODEL NO. WMSA-D

SERIAL NO. 612-3160-91093

This unit is wired for 220 Volts

1 Phase 60 Hz.. Operation.

WMSA INSTRUCTION MANUAL ASSEMBLY INSTRUCTIONS

SERIAL NUMBER WMSAD 62 3160-21093

- 1 COVER SHEET
- 2 WARRANTY
- 3 SPECIFICATIONS (Catalog sheet)
- 4 INSTALLATION & OPERATING INSTRUCTIONS (5 pages)
- 5 MAINTENANCE (Pages 6 & 7)
- 6 TABLE & SPINDLE DRIVE SPEED CONTROL INSTRUCTIONS
- 7 TROUBLE SHOOTING GUIDE
- 8 INSTRUCTIONS ON ADJUSTABLE TABLE STOPS/AUTOMATIC RETURN
- 9 SPINDLE DRIVE SPEED CONTROLS INSTRUCTIONS
- 10 (Optional) VARIABLE SPEED SPINDLE DRIVE
- 11 REPLACEMENT PARTS LIST
- 12 DRAWINGS:
- 13 SUPPLEMENTARY DATA:
 - Standard Brochure
 - Diamond Wheel Price Sheets
 - Mounting Block & Coolant Fluid Sheet

OPERATING INSTRUCTIONS
FOR
MICRO-MATIC PRECISION WAFERING MACHINE
MODEL WMSA # D-612

MANUFACTURER'S WARRANTY

The workmanship used in the manufacture of this exceptionally accurate and specialized item of equipment is of the best and highest quality possible of achievement, and the many component parts thereof are those of the best manufacture possible to obtain.

Micromech Mfg. Corp. does therefore warranty against faulty or defective materials, any and all parts manufactured by it, for a period of ninety(90) days after date of shipment. During this period Micromech Mfg. Corp. will replace all parts, failure of which is due to faulty materials, at no cost (labor involved not included) to the user.

All other component parts carry the warranty, if any of the manufacturers thereof. Such parts are motors, bearing, electrical apparatus, etc.

MICROMECH MFG. CORP.

1410 PINWOOD STREET
P.O. BOX 1124 • RAHWAY, N. J. 07065

-1-

Telephone: (201) 381-7272

INSTALLATION

After uncrating, the machine should be placed carefully upon and bolted to its floor stand.

Make electrical interconnections by inserting proper plugs in their respective sockets. Wire INPUT from wiring box provided to 220 volt, 1 phase, 60 Hz power source*.

The coolant pump and tank are shipped in a separate carton and are to be installed at the rear of the floor stand. A 110 volt, 1 phase, 60 Hz power source is provided at the rear of the machine to operate the coolant pump.

CONTROLS AND ADJUSTMENTS

SPINDLE DRIVE MOTOR SWITCH:

The spindle drive motor switch is located at the right front of the machine base and controls the spindle drive motor. The spindle drive has been factory set for a speed of 6-3800 RPM.

The table drive disconnect lever is located at the front and center of the longitudinal table. This control allows the table drive half-nuts to engage and disengage the table drive screw. Clockwise motion engages the drive screw; counter-clockwise motion disengage the drive screw.

*Machine is designed to operate with spindle rotating counter-clockwise. This is factory set on single phase models, but three phase models may require reversal of two input phase leads to secure the proper rotation.

TABLE DRIVE SPEED CONTROL:

The table drive speed control is located on the inside of the base. Rotating the potentiometer in a clockwise direction will increase the table speed through a range of zero to 29 1/2 inches per minute. The table drive control box also provides for a push button station.

COOLANT SYSTEM:

The coolant feed from the pump is connected through the coolant valve at the left rear of the machine. The coolant return is connected through a fitting at the left side of the longitudinal table to the coolant return tube at the tank.

The coolant feed tubes at the arbor end of the spindle are arranged so as to feed the coolant into drilled and slotted wheel flanges, and thence to work along the sides of the wheel by centrifugal force.

This machine will give longer trouble - free service if a coolant other than water is used. Any good grade of water soluble oil, or wax base coolant may be used with satisfactory results.

OPERATION

MOUNTING WHEEL:

In order to maintain accuracy in the alignment of the cut-off wheel in relation to the plane of the longitudinal table travel, the surface of the wheel(s) body and the flanges (or spacers) must be free from foreign matter. Observe this care in mounting the wheel(s). Always be sure wheel is securely locked in place.

Wheel Dressing (O.D. Type Wheels)

When any diamond wheel is first mounted on a spindle, it will be found that in most cases it rotates eccentrically, and its cutting action will be chopping with a small portion of the periphery. This slight eccentricity can be dressed out as follows:

A diamond wheel dressing stick (37Cl50-KV) should be mounted rigidly to the table transversely, and positioned directly under the wheel. With the wheel rotating at its normal R.P.M., it is lowered until it just touches the dressing stick. Then by rotating the crossfeed wheel, the dressing stick is moved transversely with respect to the wheel, with the wheel in contact over the entire length of the stick. This operation is done dry.

After one pass, stop the wheel rotation and observe how much of the wheel is not contacting the dressing stick. Repeat this dressing operation, lowering the wheel one or two thousandths per pass, until all the wheel edge is contacting the stick. This operation not only dresses the wheel concentrically, but also dresses it to a square edge.

After dressing the wheel, run your finger over the edge and feel the sharpness of the diamond particles. In subsequent cutting operation, the wheel should be dressed lightly, but bringing a dressing stick into contact with the edge and sides of the diamond portion whenever the edge loses this sharp feel. This dressing may also be done dry on metal bonded wheels.

SPLASH ENCLOSURE:

The splash enclosure is constructed of Plexiglas and is subject to scratching if improperly cleaned. The following is from an article taken from the manufacturer's instructions concerning Plexiglas:

"To clean Plexiglas, wash with plenty of soap and water, using the bare hand to feel and dislodge any caked dirt or mud. A soft cloth or sponge may be used, but only as a means of carrying water to the plastic. Dry with a clean damp chamois. Rubbing a

a dirty surface with dry cloth will scratch the material. In addition, rubbing builds up an electrostatic charge on Plexiglas so that it attracts dust particles from the air. Wiping with a damp chamois will remove this charge as well as the dust, and is therefore recommended. Remove oil and grease by rubbing lightly with cloth wet with kerosene (no aromatic content) or hexane."

"Do not use gasoline, alcohol, benzene, acetone, carbon tetrachloride, fire extinguisher or de-icing fluid, lacquer, thinner or glass window cleaning sprays, as they will soften the Plexiglas and may cause crazing."

MAINTENANCE

SPINDLE:

The spindle of the Micro-Matic Precision Wafering Machine is equipped with super precision ball bearings, grade ABEC #3. They are pre-lubricated and sealed in manufacture and require no additional lubrication. The spindle is "run-in" with the bearings during manufacturing process and are given a final adjustment before shipment.

OILING:

The WMSA is now provided with a one-shot oiling system which automatically distributes oil to the longitudinal ways, crossfeed ways, crossfeed screw and vertical screws. Use #10 light machine oil and activate the oil lever located on the upper right side of the vertical column, once a day for normal or light duty operation and twice a day for heavy duty operation.

The table drive screw, gears, bearing and half-nut engaging mechanism should be kept covered with a light grease of M24 density.

CLEANING:

In order to insure proper operation of this machine, cleanliness of operation must be observed. We recommend that at no time should coolant and sludge be allowed to accumulate on any part

of the machine. Any drippings should be removed immediately.

After any heavy, prolonged cutting, the splash enclosure should be flushed with clean coolant to prevent sludge from coating on surfaces of the cutting area, and in the splash guard tracks.

MICROMECH MFG. CORP.

SINCE 1952

OUR NEW
AREA CODE IS **908**
Please change your records.

600 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

Telephone: (201) 245-0505

MICROMECH SERVICE NOTE # 80-88

SUBJECT: VARIABLE SPINDLE SPEED OPTION POWER CONTROL

WARNING!

DANGER!

ATTENTION!

On Micromech Wafering Machines equipped with variable spindle speed options, DO NOT USE THE SPEED POTENTIOMETER TO START OR STOP THE SPINDLE SPEED. This switch only controls the speed of the rotation of the spindle motor. Do not use it to start or stop the spindle speed. Use the potentiometer only to increase or decrease speed. Failure to follow these instructions may result in too much inertia developing causing a burnout of the speed controller. Be careful!

To start and stop the spindle, a switch is provided marked Start in green and Stop in red, if it is a push button switch. If it is a rotary ball pilot switch with a handle, the enclosure of the switch will be marked on and off or start and stop. This is actually your power switch. It is to be used to control the current feed to the unit and the spindle motor.

Remember, the potentiometer controls the rate of speed. The Start/Stop switch controls the power.

MICROMECH MFG. CORP.

SINCE 1952

300 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

Telephone: (201) 245-0505

DOWNFEED SUPPLEMENT

YOUR OPTIONAL DOWNFEED IS CONTROLLED BY A VARIABLE TRANSFORMER CONTROLLER MOUNTED ON THE FLOOR MOUNTING BASE. THIS CONTROLLER CONVERTS THE 115 VOLT DC GEARMOTOR, SPEC. # 9429 TO AC CURRENT. YOU CAN VARY THE RATE OF SPEED ON THE DOWNFEED AND ITS RETURN BY USING THE CONTROLLER; THE SAME WAY THAT THE TABLE FEED SPEED IS VARIED.

THE SOLID STATE TIMER THAT CONTROLS THE RATE OF DROP ON THE DOWNFEED IS SET AT 10 SECOND INCREMENTS. THIS CAN BE CHANGED FROM 12 TO 30 SECONDS BY ADJUSTING THE SCREW AND THE MARKINGS.

A 90 VOLT CLUTCH WITH A DROPPING RESISTOR CONTROLS THE DOWNFEED ACTION. THIS CLUTCH WILL STOP AT INCREMENTS SET BY THE TIMER. THE DOWN BUTTON WILL NEED TO BE DEPRESSED AGAIN UNTIL THE PROPER DOWNFEED LEVEL IS REACHED. THIS WILL PRESERVE BLADE LIFE AND WILL ENABLE THE OPERATOR TO ELECTRICALLY CONTROL THE RATE OF DOWNFEED.

ADDITIONAL DOWNFEED REPLACEMENT PARTS

WMA-ID-15	DOWNFEED INDEX DRIVE CLUTCH (MODEL WMSA-D)
M-890 <i>Bellco</i>	BOEHM VARIABLE TRANSFORMER CONTROLLER (DCPM)
	SOLID STATE TIMER (CONSULT FACTORY FOR TIMER & SETTINGS)
	CONTROL TRANSFORMER W. FUSE BLOCK
	(SPECIFY VOLTAGE REQUIREMENTS (PRIMARY & SECONDARY))
MG-31N	VERTICAL FEED BEVEL GEAR (MG-33G)
MG-43	VERTICAL FEED PINION GEAR

MCS-801-1 PLUG-IN POWER SUPPLY

- Solid state circuitry
- Transient protection
- Silicon rectifier
- Arc suppression circuit to extend switch service life
- Contains fuse for overload protection
- Direct replacement for MCS-801



The MCS-801-1 is a plug-in power supply. It is used with an octal socket which is purchased separately and the wiring connections are made at the socket. A brake and clutch may be operated separately by this power supply — or two brakes or two clutches, one unit on at a time, or clutch and ER brake (90V), both units on at the same time.

SPECIFICATIONS:

INPUT	DC OUTPUT	DIMENSIONS (APPROX.)	MOUNTING	EXTERNAL SWITCHES (FURNISHED BY USER)
120 VAC 50-60 HZ	1.25 Amps 90 Volts full wave	MCS-801-1: 2½" high 2" wide 2" deep	Mounts on octal socket. Warner part no. 805-8001-001. Purchased separately.	Single pole, double throw. Minimum contact rating: 10 Amp, 28 volt DC resistive or 10 Amp, 120 volt AC inductive.* Double pole, double throw required when used with ER brake.

*Contact ratings given will operate all Warner brake and clutch units. However, switches with ratings less than those given may be used with fractional horsepower units provided the rating is equal to or greater than the coil current.

MCS-801-1 CONNECTION INSTRUCTIONS FOR USE WITH STANDARD CLUTCH/BRAKE COMBINATIONS

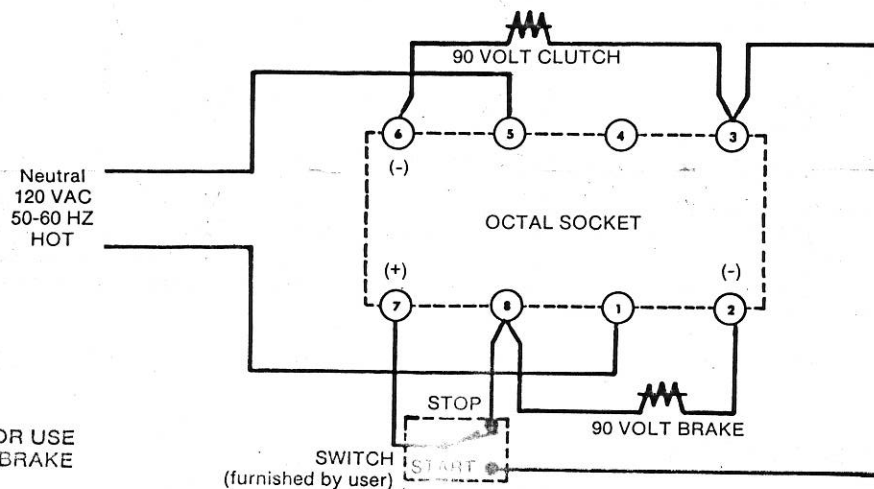


FIGURE A
WIRING DIAGRAM FOR USE
WITH STD. CLUTCH-BRAKE
COMBINATIONS

CONNECTION DIAGRAM

Note: Pins 2 and 6 of this power supply are connected within the power supply — therefore, external connections shown connected to socket terminal 2 could be connected to socket terminal 6 if desired.

CAUTION

The MCS-801-1 power supply is physically interchangeable but not electrically identical to other Warner power supplies. Do not install the MCS-801-1 until the external wiring conforms to the following procedure.

1. Connect the two wires from the brake to terminals 6 or 2 and 8 of the socket.
2. Connect the two wires from the clutch to terminals 3 and 6 or 2 of the socket.
3. The switch (furnished by user) is connected between socket terminals 3, 7 and 8 as shown in the connection diagram.
4. Connect the AC input to socket terminals 1 and 5. Note: The "hot line" must be connected to terminal 1. This line measures 120 VAC to conduit ground. The "neutral" line (color coded white or natural-gray) is grounded at the 120 VAC supply transformer and must be connected to terminal 5. This line measures zero VAC to conduit ground. A chassis ground should be provided as a non-current conducting ground wire (color coded green).

MCS-801-1 CONNECTION INSTRUCTIONS FOR USE WITH ER BRAKE-CLUTCH COMBINATION

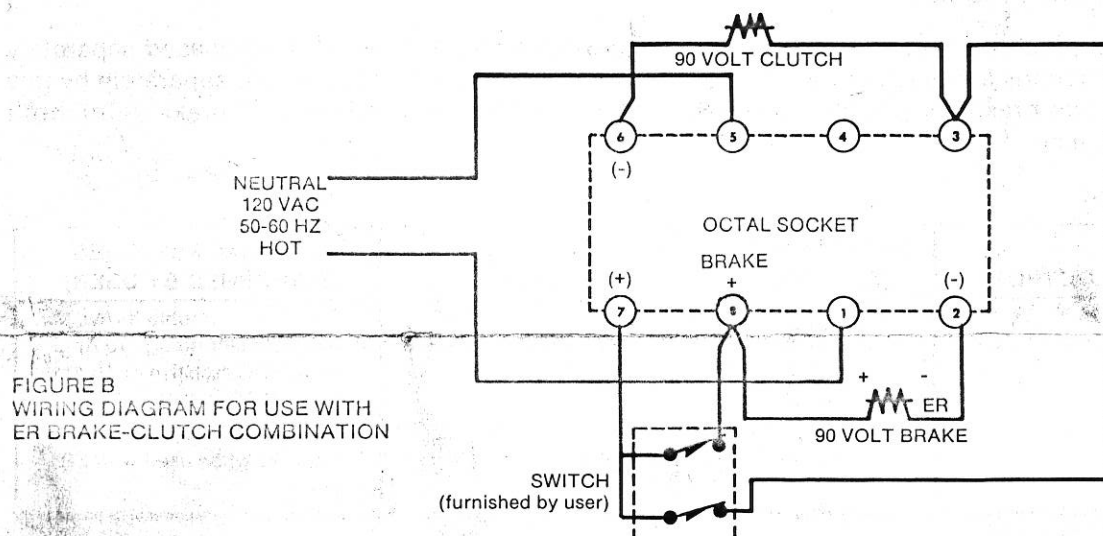


FIGURE B
WIRING DIAGRAM FOR USE WITH
ER BRAKE-CLUTCH COMBINATION

CONNECTION DIAGRAM

Note: Pins 2 and 6 of this power supply are connected within the power supply — therefore, external connections shown connected to socket terminal 2 could be connected to socket terminal 6 if desired.

CAUTION

The MCS-801-1 power supply is physically interchangeable but not electrically identical to other Warner power supplies. Do not install the MCS-801-1 until the external wiring conforms to the following procedure.

1. Connect the two wires from the brake to terminals 6 or 2 and 8 of the socket, brake (+) to terminal 8 and brake (-) to terminal 2 or 6.
2. Connect the two wires from the clutch to terminals 3 and 6 or 2 of the socket.
3. The switch (furnished by user) is connected between socket terminals 3, 7 and 8 as shown in the connection diagram.
4. Connect the AC input to socket terminals 1 and 5. Note: The "hot line" must be connected to terminal 1. This line measures 120 VAC to conduit ground. The "neutral" line (color coded white or natural-gray) is grounded at the 120 VAC supply transformer and must be connected to terminal 5. This line measures zero VAC to conduit ground. A chassis ground should be provided as a non-current conducting ground wire (color coded green).

Notes: High line conditions may result in ER brakes re-engaging. If this occurs, use MCS-103-1 Power Supply.



WARNER ELECTRIC



449 Gardner Street • South Beloit, IL 61080 • (815) 389-3771

MICROMECH MACHINE

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PRICE</u>
MG-34N-10	Crossfeed Screw (Model WMSA) 10TPI, Sq. Thd.	\$
MG-35N-10	Crossfeed Nut (Model WMSA) 10TPI, Sq. Thd.	
M-609	Crossfeed Screw (Model WMA-2) 10TPI,V-Thd.	
M-608	Crossfeed Screw Half Nuts (Model WMA-2) 10TPI	
MG-34N	Crossfeed Screw (Model WMA) 5TPI, Sq.Thd.	
MG-35N	Crossfeed Nut (Model WMA) 5TPI, Sq Thd.	
WMA-ID-11	Index Drive Cam Sleeve Bushing	
WMA-ID-10	Index Drive Crossfeed Screw Bearing (ALL MODELS)	
WMA-ID-15	Index Crossfeed Drive Clutch (Model WMA)	
WMA-ID-M	Index Drive Crossfeed Drive Motor--(3 Phase) 1 Phase)	
WMA-ID-7	Index Drive Gears	
WMA-ID-8	Index Drive Screw	
WMA-ID-9	Index Drive Screw Nut	
WM-TD-16	Table Drive Screw 18" (WMSA-612) 16TPI	
	Table Drive Screw 23" (WMSA-618/818/1018) 16TPI	
WM-TD-10	Table Drive Screw 18" (WMSA-612) 10 TPI	
	Table Drive Screw 23" (WMSA-618/818/1018) 10TPI	
WMA-TD	Table Drive Screw Roton with Ball Bearing Nut	
	Bracket Assembly (WMA-2) (WMA)	
M-854	Table Drive Half Nut Lever Assembly, less Half Nuts (Model WMSA)	
WMA-TD-1	Table Drive Half Nuts (Model WMSA, WMA-2) Crossfeed Reference Part # M-608	
WMA-TD-9	Table Drive Screw Bushings	
WMA-TD-10	Table Drive Half Nut Shoulder Screws	
M-511	Table Drive Bearing Blocks	
M-899	Table Drive Motor (SPECIFY RPM) (Boehm DC-115V, 100 RPM) (35RPM)	
WMA-TD-12	Table Drive Gears (SPECIFY NUMBER OF TEETH)	
M-890	Table Drive Speed Control	

***** SPINDLE MOTORS

M-901-1	3/4 HP 115/230/1/60 (Baldor Spe. 27A01-1224 Frame 53160) DC
M-901-2	1 HP 220/440/3/60 (Baldor Spec. 27101-W23 Frame 5320D) DC

Incandescent Work Light
 Fluorescent Work Light
 5/8 Slotted Nut for Ganging Arbor
 Slotted "T" Wrench
 Mounting Bracket
 SG-55 Spanner Wrench

*** 5 X 10 Eclipse Permanent Magnetic Chuck

*****FOR AC SPINDLE MOTORS REFER TO MG MOTORS
MINIMUM BILLING: \$

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PRICE</u>
	SPINDLE HOUSING	
WMA-SA-1	Spindle Shaft (Stainless Steel)	
WMA-SA-2	Spindle Bearings (Barden)	
WMA-SA-3	Spindle Bearing Lock-Nut	
WMA-SA-4	Spindle Splash Ring	
WMA-SA-5	Spindle Grease Retainer (Front)	
WMA-SA-6	Spindle Grease Cap (Rear)	
WMA-SA-7	Spindle Arbor Nut (Holds Wheel Flanges)	
M-900	Spindle Drive Flat Belts (1" X Specify)	
M-667B	Spindle Pulley (Specify Diameter - 2")	
M-667A	Motor Pulley (Specify Diameter - 3") (Specify Diameter - 4")	
M-890-S-110*	Spindle Motor Speed Control (Specify Motor HP)	
M-890-S-210*	Spindle Motor Speed Control (Specify Motor HP)	
<u>NOTE*</u>	S-110 is for 110 V S-210 is for 220 V	
WMA-SA-23	Cartridge Spindle Assembly, Complete	
WMA-SA-23R	Cartridge Spindle Refurbish Exchange	
WMA-SA-8	Spindle Vee Belt	
WMA-VF-1	Vertical Feed Screw	
WMA-VF-2	Vertical Feed Nut	
WMA-VF-3	Vertical Feed Bevel Gear	
WMA-VF-4	Vertical Feed Pinion Gear	
WMA-VF-5	Vertical Feed Pinion Drive Shaft	
WMA-VF-6	Vertical Feed Pinion Shaft Bushings (2)	
	Spacers (2-5/8" OD X .065" Thickness)	
M-765-1/5**	Splash Slides	
M-572-8/9	Splash Tracks	
M-904	Splash Enclosure, Complete	
M-904-A	Splash Guard Enclosure Ring & Washer (Sizes 1-1/2" & 2-7/8")	
	Coolant Pump Motor Only	
WMA-CF-1	Coolant Feed Spout (Single Blade) Use with Flanges	
WMA-CF-2	Coolant Feed Spout (Ganging Arbor) Use with Ganging Wheels)	
WMA-CF-3	Coolant Feed Tube with Valve (Middle)	
WMA-CF-4	Coolant Feed Tube (Lower)	
	Opar Limit Switch	
CIK	CIK Rectifier Tube (WMA, OLD WMA, OLD WMA-2)	
	"0" Belts (Set of 3) Specify Diameter & Thickness)	
	Ceramic Blcoks (2" X 5" X 5/16" Thickness) 100 pcs	
	Ceramic Blocks (2" X 5" x 1/2" Thickness) 100 pcs	
	Crystal Cement (Wax) 1 doz. per box	
	Coolant Fluid (Sodium Nitrate 20:1 Ratio) gal. pr.	
M-519	Crystal Orientation Grid	
	Chuck Stops or Guide	
	Floating Nuts	
	Floating Nut Bracket	
	CIB Rectifier Tube	
	5U4 Rectifier Tube	
	G.E. #1630 Lamp	
	Table Drive Motor Controller (Boehm)	
	G.E. #1460 (New)	

NOTE: **THERE IS A \$25.00 crating charge for Part # M-765-1/5
not refundableMINIMUM BILLING: \$

REMOVAL OF SPINDLE FOR OVERHAUL

MICROMECH MODELS WMSA & WMA-2

1. Remove the Plastic Enclosure (4 screws)
2. Remove the Coolant feed tube from the spindle housing
3. Remove the column covers (4 screws)
4. Remove left hand side slide bar (5 screws & 3 pins)
CAUTION: The left hand side is left as you face the machine from the front. Do not disturb the right hand slide bar. (where alignment is)
5. Remove 3 screws & 2 pins from the nut bracket (back of spindle housing)
6. Remove belt & motor bracket
7. Remove oil system (1 screw)
8. Do Not attempt to separate the spindle unit. It is press-fitted
9. The overhaul will be done at Micromech Manufacturing Plant.

MICROMECH MFG. CORP.

SINCE 1952

300 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

Telephone: (201) 245-0505

MICROMECH SERVICE NOTE NUMBER 7280 (WMSA & WMA-2)

REPLACEMENT OF TABLE DRIVE HALF NUTS AND SHOULDER SCREWS

It has been proven that replacement table drive half nuts should be replaced jointly with their table drive shoulder screws. Failure to do so results in a poor performance of the new half nuts and often rejection. The screws wear at approximately the same rate as the nuts. Therefore, it is recommended that both items be replaced together. Following these guidelines will save many hours of downtime. Many customers have experienced problems replacing worn out half nuts with new ones; only to find that they are not held properly in place by their equally as worn out shoulder set screws. Be sure to specify when ordering whether your half nuts are 10 or 16 pitch as many customers have made changes and adaptations from the originally furnished equipment in order to attain higher or lower speeds on their table feeds. Replace the half nuts with what you have as to switch requires a switch in table drive screw as well.

MICROMECH MFG. CORP.

SINCE 1952

300 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

Telephone: (201) 245-0505
FAX #: (201) 245-0504

MICROMECH SERVICE NOTE 61588

CAUTION - "HOT" MOTORS

Using your hand to test the running temperature of a motor can be a very painful experience:

NORMAL BODY TEMPERATURE	98.6 F
THRESHOLD OF PAIN CAUSED BY HEAT	120. F
AVERAGE TEMPERATURE OF HOT TAP WATER	140. F
AVERAGE TEMPERATURE OF HOT COFFEE	180. F
NORMAL OPERATING TEMPERATURE OF A FULLY LOADED ELECTRIC MOTOR, OPEN TYPE, 70 AMBIENT TEMPERA- TURE.	174.0 F

YOU CANNOT WASH YOUR HANDS IN 140 F WATER!

YOU CANNOT STIR A FRESH CUP OF COFFEE WITH YOUR FINGERS!

YOU CANNOT PLACE YOUR HAND ON A MOTOR THAT IS OPERATING
PROPERLY WITHOUT BURNING YOUR HAND.