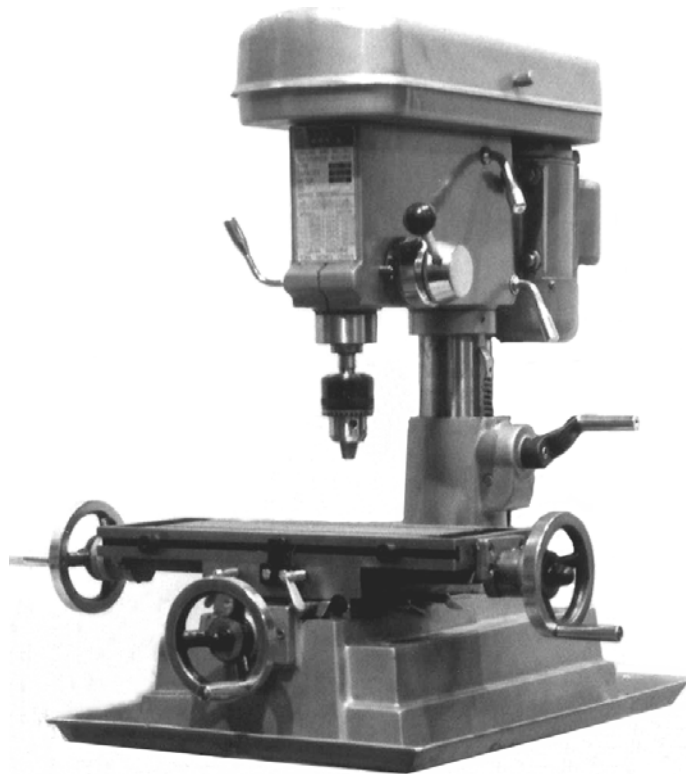


**CENTRAL MACHINERY**

®

# 12 Speed Drill / Mill Machine

**Model 42976**



**Assembly & Operating Instructions**

**Distributed Exclusively by**



3491 Mission Oaks Blvd. / Camarillo, CA 93011

**[www.HarborFreight.com](http://www.HarborFreight.com)**

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**For technical questions and replacement parts, please call 1-800-444-3353.**

SPECIFICATIONS			
Motor:	120V/60Hz Single Phase	Drill Capacity:	5/8"
	1/2 HP, 8.5 Amps with Load	Face Mill Capacity:	1-1/2"
12 Speeds (rpm):	300-400-540-720-900-	End Mill Capacity:	5/8"
	1040-1500-1740-2100-2260-3100-3840	Max. Chuck to Table:	10"
Motor rpm's:	1700	Column Diameter:	2.830"
Drive Type:	V-belt / Pulley	Table Slots:	1/2" x 2
Spindle Taper:	MT-2, Diameter: 1.265"	Head Rotation:	360°
Spindle Stroke:	3-3/8"	Net Weight:	470 Lbs.

INCLUDED ACCESSORIES	
4, 5 and 6mm Hex Wrenches	Chuck Key
Drift Pin	Stand Assembly
Drill Chuck	Precision 0-70° vise

### FEATURES

1. This machine may be used for surface cutting, drilling, milling, and tapping.
2. The high quality of this machine, and its ease of operation makes it suitable for use by students, amateurs, and home hobbyists, as well as skilled technicians.
3. Drilling and milling may be done using hand operated feeding. Milling is done with the quill locked via Clamp Handle (#83) \*.
4. Many of the adjustable nuts are bronze, for adjusting thread clearance and reducing wear. These bronze parts also allow screws to rotate smoothly and improve accuracy.
5. The vertical column is very strong and stiff, which makes the machine very stable and improves accuracy of manufactured parts.
6. The machine head is cast steel, and has been heat-treated, stress-relieved, and precision machined.
7. Machine gears are precision ground for smooth operation.
8. Speeds can be easily changed.
9. Thread tapping operations can be done in either rotation, and working depth can be controlled using a positive stop gauge.

### SAVE THIS MANUAL

You will need the manual for the safety warnings and cautions, assembly instructions, operating procedures, maintenance procedures, trouble shooting, parts list, and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep both this manual and your invoice in a safe, dry place for future reference.

### NOTICE

**The Warnings, Cautions, and Instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.**

\* For fine adjustment, use a dial test indicator (not included) mounted either to the table or workpiece, and reference a point on the chuck or quill colar that is convenient. Loosen the Clamp Handle (#83) slightly, then tap the chuck feed lever lightly, as you observe the indicator dial.

## **SAFETY WARNING & CAUTIONS**

### **READ ALL INSTRUCTIONS BEFORE USING THIS TOOL!**

1. **KEEP WORK AREA CLEAN.** Cluttered areas invite injuries.
2. **OBSERVE WORK AREA CONDITIONS.** Do not use tools in damp, wet, or poorly lit locations. Don't expose to rain. Keep work area well lit. Do not use electrically powered equipment in the presence of flammable gases or liquids.
3. **KEEP CHILDREN AWAY.** Children must never be allowed in the work area. Do not let them handle machines, tools, or equipment.
4. **STORE IDLE EQUIPMENT.** When not in use, tools must be locked up in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **DO NOT FORCE THE TOOL.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool's capacities.
6. **USE THE RIGHT TOOL FOR THE JOB.** Do not use a tool for a purpose for which it was not intended.
7. **DRESS PROPERLY.** Do not wear loose clothing or jewelry, as they can be caught in moving parts. Non-skid footwear is recommended. Wear restrictive hair covering to contain long hair. Always wear appropriate work clothing.
8. **USE EYE, EAR AND BREATHING PROTECTION.** Always wear ANSI approved impact safety goggles if you are producing metal filings or wood chips. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists. Use ANSI approved ear protection when working in a loud or noisy environment.
9. **DO NOT ABUSE THE POWER CORD.** Protect the power cord from damage, either from impacts, pulling or corrosive materials. Do not yank machine's cord to disconnect it from the receptacle.
10. **DO NOT OVERREACH.** Keep proper footing and balance at all times. Do not reach over or across running machines.
11. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect power cord periodically and, if damaged, have it repaired by an authorized technician. Inspect all hydraulic seals for leaks prior to use. Control handle and power switch must be kept clean, dry, and free from oil and grease at all times.
12. **REMOVE ADJUSTING KEYS AND WRENCHES.** Be sure that keys and adjusting wrenches are removed from the tool or machine work surface before operation.
13. **AVOID UNINTENTIONAL STARTING.** Be sure that you are prepared to begin work before turning the start switch on.

14. **STAY ALERT.** Watch what you are doing. Do not operate this machine when you are tired.
15. **DO NOT OPERATE THIS MACHINE WHILE UNDER THE INFLUENCE OF ALCOHOL, DRUGS, OR PRESCRIPTION MEDICINES.**
16. **CHECK FOR DAMAGED PARTS.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts, any broken parts or mounting fixtures, and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.
17. **REPLACEMENT PARTS AND ACCESSORIES.** When servicing, use only identical replacement parts intended for use with this tool. Replacement parts are available from Harbor Freight Tools. Use of any other parts will void the warranty.
18. **USE THE RIGHT TOOL FOR THE JOB.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
19. **MAINTENANCE.** For your own safety, maintenance should be performed regularly by a qualified technician.

### **SPECIAL WARNINGS WHEN USING THIS DRILLING / MILLING MACHINE**

*Using this machine may create special hazards.*

*Take particular care to safeguard yourself and those around you.*

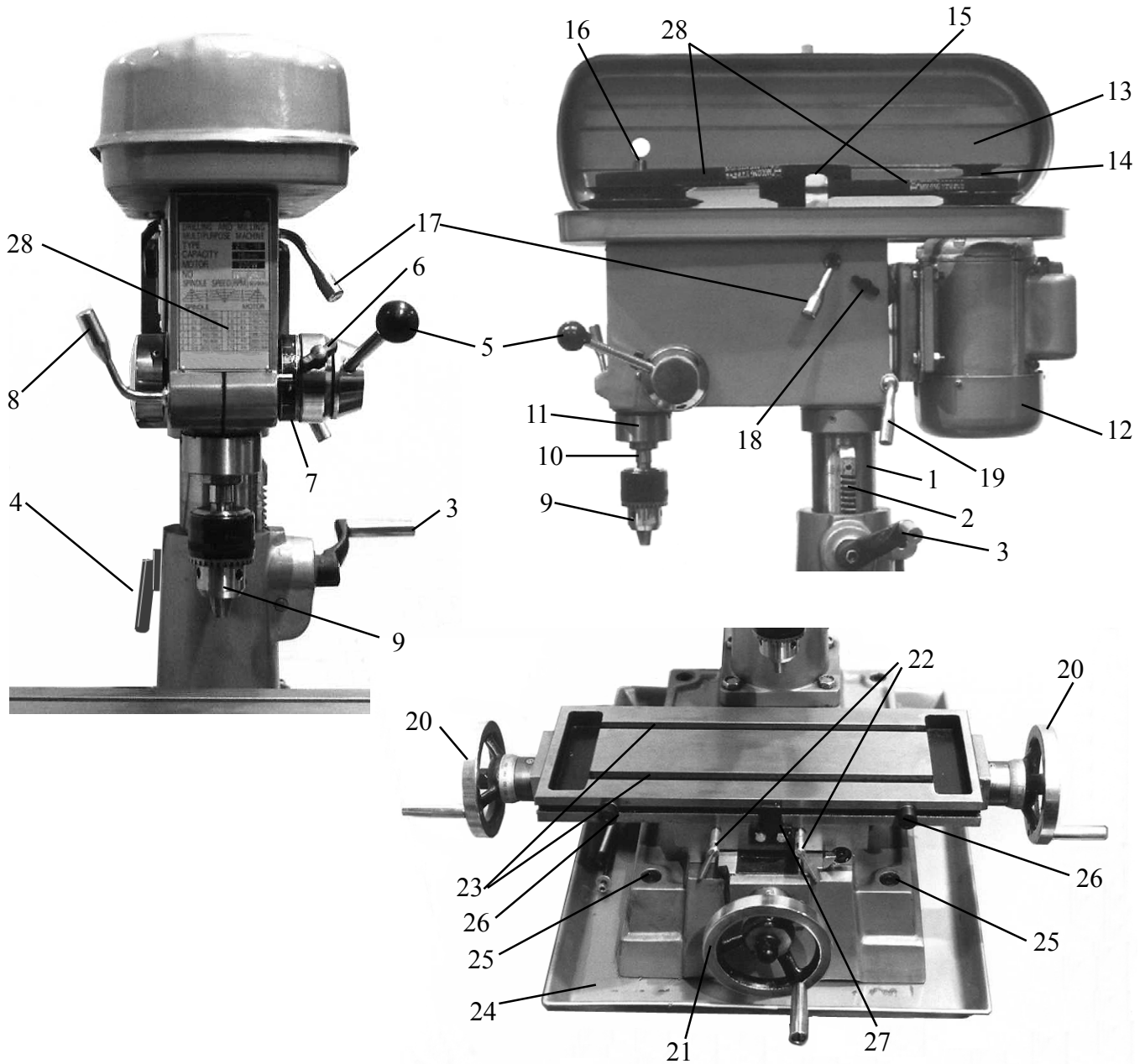
**Electrical Safety.** *Never operate any tool if there is an electrical hazard.* Never operate an electrical tool in wet conditions. Never operate a tool with an improper electrical cord or extension cord. Never operate an electrical tool unless you are plugged into a properly grounded outlet, which supplies 110-120 Volts at 60 Hz. We recommend you use a circuit which is protected by an appropriate circuit breaker.

**Ejected Material.** *Use safe practices to avoid injury from ejected material.* Because milling tools and workpieces turn at high speed, there is a danger of being injured by materials that may be ejected. Always wear ANSI-certified eye protection. Never attempt to machine any item if it is not adequately held. Always stand to one side of the plane in which the materials are spinning, to avoid being hit if an item is ejected. Never allow bystanders to be in the proximity of this machine while in operation.

**Entanglement.** *Use extreme caution to prevent loose materials from being caught in the machine.* Never operate this machine with loose clothing, long hair, jewelry, or other items which may become caught in the tool or workpieces. In case of entanglement, press the OFF switch immediately.

***NOTICE: No list of warnings can be all inclusive. The operator must supply common sense, and operate this tool in a safe manner.***

## FEATURES AND CONTROLS OF THE #42976 DRILL / MILL MACHINE



- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>1. Column</li> <li>2. Gear Strip</li> <li>3. Head Crank</li> <li>4. Vertical Head Lock</li> <li>5. Chuck Feed Lever</li> <li>6. Chuck Travel Limit Screw</li> <li>7. Reference Scale</li> <li>8. Chuck Fixing Lever</li> <li>9. Chuck</li> <li>10. Chuck Spindle</li> </ul> | <ul style="list-style-type: none"> <li>11. Chuck Spindle Collar</li> <li>12. Motor</li> <li>13. Drive Belt Cover</li> <li>14. Motor Pulley</li> <li>15. Transfer Pulley</li> <li>16. Drive Pulley</li> <li>17. Drive Belt Tension Lever</li> <li>18. Drive Belt Tension Fixing Bolt</li> <li>19. Head Rotation Control Lever</li> <li>20. Horizontal Control Wheels (2)</li> </ul> | <ul style="list-style-type: none"> <li>21. Cross Feed Control Wheel</li> <li>22. Butterfly Table Lock Bolts (4)</li> <li>23. T-Slots (2)</li> <li>24. Tray</li> <li>25. Mounting Bolts (4)</li> <li>26. Table Travel Stops (2)</li> <li>27. Table Travel Limiter</li> <li>28. Drive Belt Speed Chart</li> <li>29. Drive Belts (2)</li> </ul> |
|--|--|--|

## UNPACKING AND INSTALLATION

1. Remove protective crating and skids carefully. In the event of damage in transit, contact Harbor Freight Tools immediately.
2. The machine is carefully inspected and tested in operation before it leaves the factory. If any defects are found on delivery, contact us immediately.
3. Read the owner's manual and become familiar with the parts and controls on the drawings before using this machine, as familiarity with the controls will enhance your ability and safety in using it.

## ASSEMBLY

1. After removing the machine from the crate and cleaning it, it must be mounted before use.
2. This machine can be mounted directly on a worktable, optional Stand (#42977), or floor.
3. The drill chuck must be installed.

## INSTALLATION

1. It is important that the machine be located on a hard, solid, level floor, worktable, or optional base, which is capable of supporting this heavy machine and the workpieces that are produced. Find a location that supplies easy access to 120 Volt electrical service. Make sure this machine is located in a well lighted and well ventilated area. The floor should be resistant to vibration.
2. *Warning: Drill/Mill machines are inherently top heavy.* Before moving the machine, be sure the head is fixed on the column. Before moving, lower the head as much as possible to lower the center of gravity. When moving the machine be careful to keep it balanced; do not allow it to topple over.
3. To set the machine on a solid concrete foundation, it's advisable to apply a little grout to touch up any unevenness in the concrete in order to get a solid foundation at all points.
4. When setting machine on a floor or worktable that has any surface irregularities, shims should be used to correct this condition to the greatest extent possible.
5. There are 4 holes in the base for mounting the machine permanently to a smooth, solid, and level floor, worktable, or optional stand (#42977).

## CLEANING AND LUBRICATION

1. Thoroughly clean the machine with a commercial degreaser. Do not use gasoline, kerosene or other flammable liquids. Avoid getting solvent on rubber parts, or into the electrical controls or motor.
2. After cleaning, coat all bright metal with a light lubricant to prevent corrosion.
3. Lubricate all gears and moving parts with a medium consistency machine oil.

## LEVELING THIS MACHINE

1. Before operation, it is critical to level the work table both lengthwise and crosswise, using a precision level. It will not be possible to maintain accuracy of machined parts if the mill is not properly leveled.

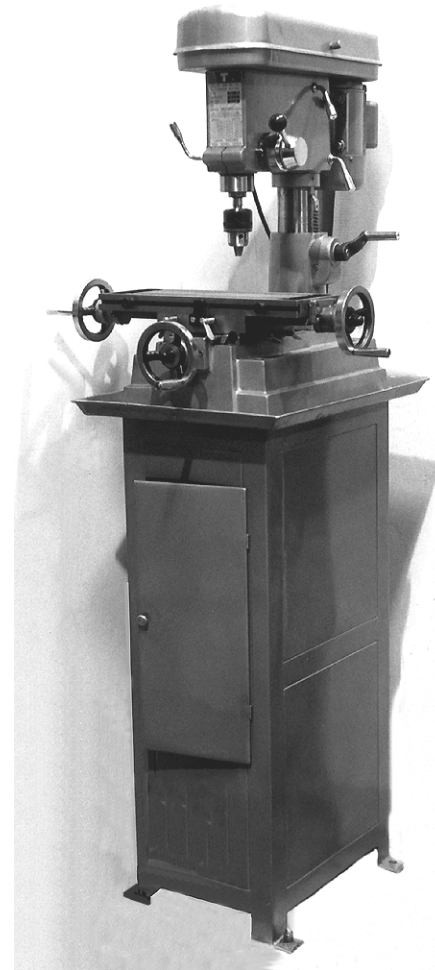


Figure 1. Shown with optional stand.  
P/N #42977

## EXTENSION CORDS

*Note: Performance of this tool may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.*

Your tool has a three-prong plug, therefore you must use a three-prong extension cord. Only use rounded jacket extension cords listed by the Underwriters Laboratories (UL). Improper use of extension cords may cause inefficient operation of your tool which can result in overheating. Be sure your extension cord is rated to allow sufficient current flow to the motor.

If you are using the tool outdoors, use an extension cord rated for outdoor use (signified by “WA” on the jacket).

The extension cord must have a minimum wire size depending on the amperage of the tool and the length of the extension cord. This size is determined by its AWG (American Wire Gauge) rating. The smaller the gauge, the greater the cable’s capacity. The amount of cords used does not matter: Total length determines the minimum AWG rating. Every cord must meet the AWG rating. Use the chart below to determine what AWG rating is required for your situation. Cord length is rated in feet. **Harbor Freight Tools can supply UL listed and outdoor rated cords in most AWG ratings as needed.**

<i>AWG RATING CHART</i>								
<i>CORD LENGTH</i>	<i>25'</i>	<i>50'</i>	<i>75'</i>	<i>100'</i>	<i>125'</i>	<i>150'</i>	<i>175'</i>	<i>200'</i>
<i>AMPS</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>	<i>AWG</i>
<i>0-10.0</i>	18	18	16	16	14	14	12	12
<i>10.1-13.0</i>	16	16	14	14	14	12	12	12
<i>13.1-15</i>	14	14	12	12	12	12	12	---
<i>15-18</i>	14	12	12	12	12	12	---	---

## GROUNDAGE/VOLTAGE WARNING

Common household current is 110-120 volts. As long as the outlet used with the Power Table Feed is rated from 110-120V there will be no complications using it with household receptacles. Plug the tool into a 110-120V properly grounded outlet protected by a 15-amp, dual element time delay or circuit breaker.

NEVER try to plug a 110-120V tool into a 220-240V circuit or serious complications and possible injury to the operator may occur. The plugs have different shapes to prevent this.

This tool has a three-prong plug. The third (round) prong is the ground. Cutting off the ground will result in a safety hazard and void the warranty.

If the outlet you are planning to use is the two-prong type, do not remove or alter the grounding prong in any manner. Use an adapter and always connect the grounding lug to a known grounding source. It is recommended that you have a qualified electrician replace the two-prong outlet with a properly grounded three-prong outlet.

## BASIC OPERATION

For reference numbers mentioned in these instructions, please see page 5.

**WARNING: Unplug the drill from its power source before changing bits or attempting any repairs, adjustments or maintenance.**

### Basic Controls

1. Raise and lower the Head by using the Head Crank (#3).
2. Feed the Chuck (#9) using the Chuck Feed Lever (#5). Chuck movement may be limited using the Chuck Travel Limit Screw (#6).
3. Move or feed the Table from side to side using either Horizontal Feed Control Wheels (#20).
4. Move the Table front to back using the Cross Feed Control Wheel (#21).
5. Attach workpieces to the Table using jigs or fixtures (not included) or the included precision 70° vise attached to the T-slots (#23).
6. The machine can be turned ON and OFF by using the power switch located on the left side of the Head. The upper Switch marked **I** turns the machine ON. The lower switch marked **●** turns the machine OFF.

**WARNING: The machine will continue to run as long as the power cord is plugged in, and the switch is turned ON. Never leave the machine unattended while it is running.**



Figure 2. Drill Head Controls

### Installing the Chuck

The Chuck and Chuck Spindle both have a self-centering MT-2 taper.

1. Wipe a small amount of grease onto the spindle to prevent corrosion.
2. Place the chuck onto the spindle, pressing it upward with a twisting motion. Tap the chuck gently home, using a soft-faced mallet.
3. If desired, fine tune the chuck using a dial indicator. To do this, mount a dial indicator firmly on the table. Place the dial indicator pointer in contact with the chuck, and adjust the dial to zero. Slowly rotate the chuck and read any out of center on the indicator. Carefully tap the chuck with a mallet upward and to the side as needed to center the chuck. Continue this process until you are satisfied with the adjustment.

**To insert and remove drill or milling bits, use the chuck key provided.**

1. Insert the Chuck Key into one of the holes in the Chuck, so that it meshes with the cogs on the Chuck.
2. Turn the Chuck Key counterclockwise to open the flanges in the Chuck. Continue to turn the Chuck Key until the opening is large enough to accept the Bit.

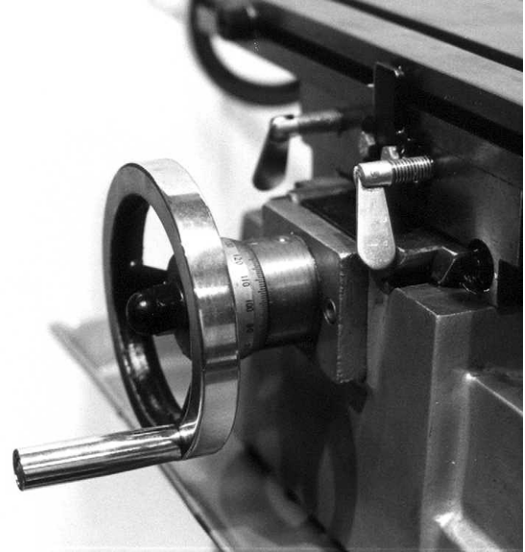
**NOTE: the largest bit size capacity of this Chuck is 5/8" diameter.**

3. Insert the Drill Bit into the Chuck.
4. Turn the Chuck Key clockwise to tighten the jaws around the drill bit shaft. Ensure that the drill bit is seated securely before starting.
5. Remove the Chuck Key, and replace it in its holder before starting.



### ***Preparing for Drilling***

1. The Chuck (#9) is installed on the Spindle (#10) using a Morris Taper. This is a self-centering design.
2. Rotate the Chuck Fixing Lever (#8) counterclockwise to loosen the Spindle for vertical travel.
3. You can move the Spindle and Chuck vertically by operating the Chuck Feed Lever (#5).
4. Vertical movement of the Chuck and Spindle can be limited by setting the Chuck Travel Limit Screw (#6). A Reference Scale (#7) indicates the relative travel of the Chuck.
5. For drilling blind holes (which do not pass through the workpiece), set the Chuck Travel Limit Screw (#6). To do so, first determine the desired depth. Then adjust the Limit Screw so that the distance from the tip of the drilling bit to the end of the gauge is equal to the desired depth.
6. For drilling holes that pass through the workpiece, loosen the Limit Screw so it does not interfere with the vertical travel of the spindle.
7. Be sure that the Vise or other fixture used to hold the workpiece is properly attached to the table, and aligned with the drill bit. Adjust alignment using the vertical and cross table control wheels. The table can be locked into position using the four Butterfly Lock Bolts (#22) which are located under the Table on the right side, and above the Cross-Feed Control Wheel.



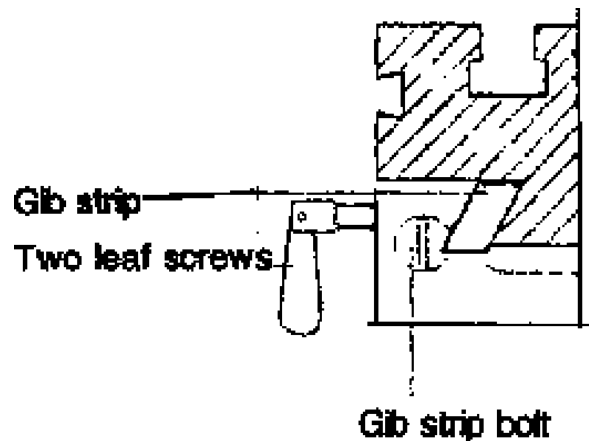
*Figure 3. Table Control Wheel and Butterfly Lock Bolts.*

### ***Adjusting the Head***

1. To raise or lower the head, loosen the Vertical Head Lock (#4). Use the Head Crank (#3) to raise or lower the head on its Gear Strip (#2) and Column (#1).
2. The head may be rotated on the column by loosening the Control Lever (#19). Adjust the head to the desired angle, then fix the Control Lever. Periodically check the tightness of this lever, especially during prolonged use of the machine.

### ***Adjusting Table Slack and Compensating for Wear***

1. Your machine is equipped with gib strip adjustment to compensate for wear and excess slack on cross and horizontal travel.
2. Rotate the gib strip bolt slightly counterclockwise to tighten the gib strip. Rotate it slightly clockwise to loosen the gib strip.
3. Adjust the gib strip bolt until very slight drag is felt when moving the table.



*Figure 4. Gib Strip Adjustment.*

### ***Preparing for Milling***

1. Loosen the Chuck Travel Limit Screw (#6).
2. Install the cutting bit needed to perform the intended milling operation.
3. Using the Chuck Feed Lever (#5), adjust the bit to approximately the correct height. Tighten the Chuck Fixing Lever (#8).
4. Set the final vertical adjustment using your milling jig or fixture (not included) or the included 70° precision vise.
5. Set the horizontal adjustment using the Horizontal (#20) or Cross Feed Control Wheels (#21).
6. Depending on whether the cut will be made in the X-axis (left or right) or the Y-axis (front to back) one dimension of the table can be locked into place using one of the two pairs of Butterfly Lock Bolts (#22) located under the Table on the right side or above the Cross Feed Control Wheel.

### ***Moving the Table***

1. The table can be moved horizontally and front to back by using the Control Wheels.
2. If the table is to be moved in one direction only, it can be prevented from moving in the other by tightening the butterfly bolts under the right side or front of the table. The table can also be locked in both directions, for example when drilling.
3. The table travel from left to right can also be limited by adjusting the position of the Table Stops (#26).

### ***Changing Machine Speed***

1. Turn the power off and unplug the power cord.
2. To select the proper speed, loosen the Drive Bolt Tension Fixing Bolt (#18), then loosen the Drive Belt Tension Lever (#17).
3. Open the Drive Belt Cover (#13).
4. Following the speed chart which is mounted on the front of the head, position the two drive belts on the pulleys to achieve the desired speed.
5. Tension the belts by moving the Drive Belt Tension Lever (#17). Secure the belt tension by tightening the Fixing Bolt (#18).



*Figure 5. Machine Speed Drive Belt Settings.*

## **TROUBLE SHOOTING**

***WARNING! Never perform trouble shooting or maintenance unless the tool is turned OFF and unplugged from its power supply.***

*The motor overheats, or there is insufficient power.*

1. The machine is overloaded. Reduce the feed rate, and/or increase the spindle speed.
2. The voltage supply is too low. If you have an unreliable power supply, check with a qualified electrician to repair it.
3. The motor carbon brushes may be worn or cracked. Check them and replace if needed.
4. There may be a poor electrical connection. Have a qualified electrician check the wiring and power supply.
5. The motor may be burned out. After a long period of heavy use, the motor may burn out. If so, replace the motor.
6. The drill bit or cutting blade may be worn. Sharpen or replace the bits as needed.

*The machine doesn't run when the power switch is turned ON.*

1. The power cord is not plugged in.
2. The chuck spindle may be bound by the workpiece, cutting bit or fixture.
3. If there is a surge in the current, the circuit breaker may have opened. Press the circuit breaker back in, if it is in the open position.
4. The belt tension may not be tight. Adjust the tension lever and lock it in place.

*The spindle bearing is very hot.*

1. There is insufficient lubrication. Turn off the power, and check the bearing for lubrication. If necessary, apply a medium weight bearing grease.
2. The spindle bearing is worn, or is fixed too tight. Turn off the power, unplug the electrical connection, and rotate the spindle by hand. Be sure it turns freely. If not, check the bearing adjustment. If you feel unevenness in the bearing, you will have to replace it.
3. The spindle has been turning at high speed for a long time. After long use, turn the machine off for a while to give it a rest, and allow it to cool off.

*The table travel is not balanced*

1. The spindle taper gap is too wide. Adjust the arbor bolt properly.
2. One of the leaf bolts may be loose. Check and tighten them if necessary.
3. The feed is too deep. Reduce the depth of the cut, and make several passes to reach the required depth.
4. The gib strip may be out of adjustment. Check it and adjust it if necessary.

*There is a vibration, and the cut is not smooth*

1. The spindle bearing may be improperly adjusted or is worn. Check it and adjust or replace as necessary.
2. The spindle is loose up and down. Check the adjustment of the two inner bearing covers. Adjust them so there is no free play in the taper bearing, and the bearing turns freely. Tighten them against each other to save this adjustment.
3. The gap of the taper sliding plate is too wide. Adjust the bolt tension.
4. The chuck is loose. Tighten the chuck.
5. The drill bit or cutter is dull. Sharpen or replace it. Be sure to use cutting fluid to preserve tool life.
6. The workpiece is not held firmly. Check the clamps or vise you are using, and assure that the workpiece cannot move.

*The workpiece is not machined accurately*

1. A heavy workpiece may be out of balance. Check to see that heavy workpieces are held in balance. Out of balance pieces may shift when being machined.
2. A hammer has been used on the workpiece. Never strike the workpiece with a hammer.
3. The table may not be level. Check the table with a spirit level to be sure it is level both side to side and front to back.
4. The machine may not be stable in the floor. Check to be sure the machine is firmly mounted to the floor.

## MAINTENANCE

### *After each use:*

1. Turn off the power switch and unplug the machine from its power source.
2. Remove any tool bits, clean and lubricate them, and return them to their storage case.
3. Using a stiff bristle brush, brush off all chips and shavings left from the machining operation.
4. Using a rag, wipe off any excess or dirty oil or cutting fluid left on the machine.
5. Lubricate geared, moving and machined metal parts. Apply light grease or oil to all unpainted metal to prevent corrosion.
6. Cover the machine to prevent dust or dirt contamination when not in use.

### *Daily Maintenance:*

1. Check the tightness of the mounting bolts holding the head in place.
2. If overheating is observed, or unusual noises are produced, stop the machine immediately to check for lack of lubrication, faulty adjustments, dull tool bits, or other deficiencies. Correct any problems before resuming work.
3. Keep the work area clean. If chips or shavings accumulate on the table or fixtures, shut off the power and clean the chips away with a stiff bristle brush. Re-check the lubrication before continuing.

### *Weekly Maintenance:*

1. Clean and coat the lead screws with oil.
2. Check the lubrication of the sliding parts of the table. Apply light grease if needed.

### *Monthly Maintenance:*

1. Adjust the accuracy of the slides on both the cross and longitudinal feeds.
2. Lubricate the bearings, worm gear and worm shaft with light grease.

### *Yearly Maintenance:*

1. Adjust the table to assure that it is level in all directions.
2. Check the electrical cord, plug, circuit breakers and related connections to assure that they are secure and safe.

***NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.***

### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY: NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT: IN FACT THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

**DRILL / MILL MACHINE, TABLE AND BASE PARTS LIST**

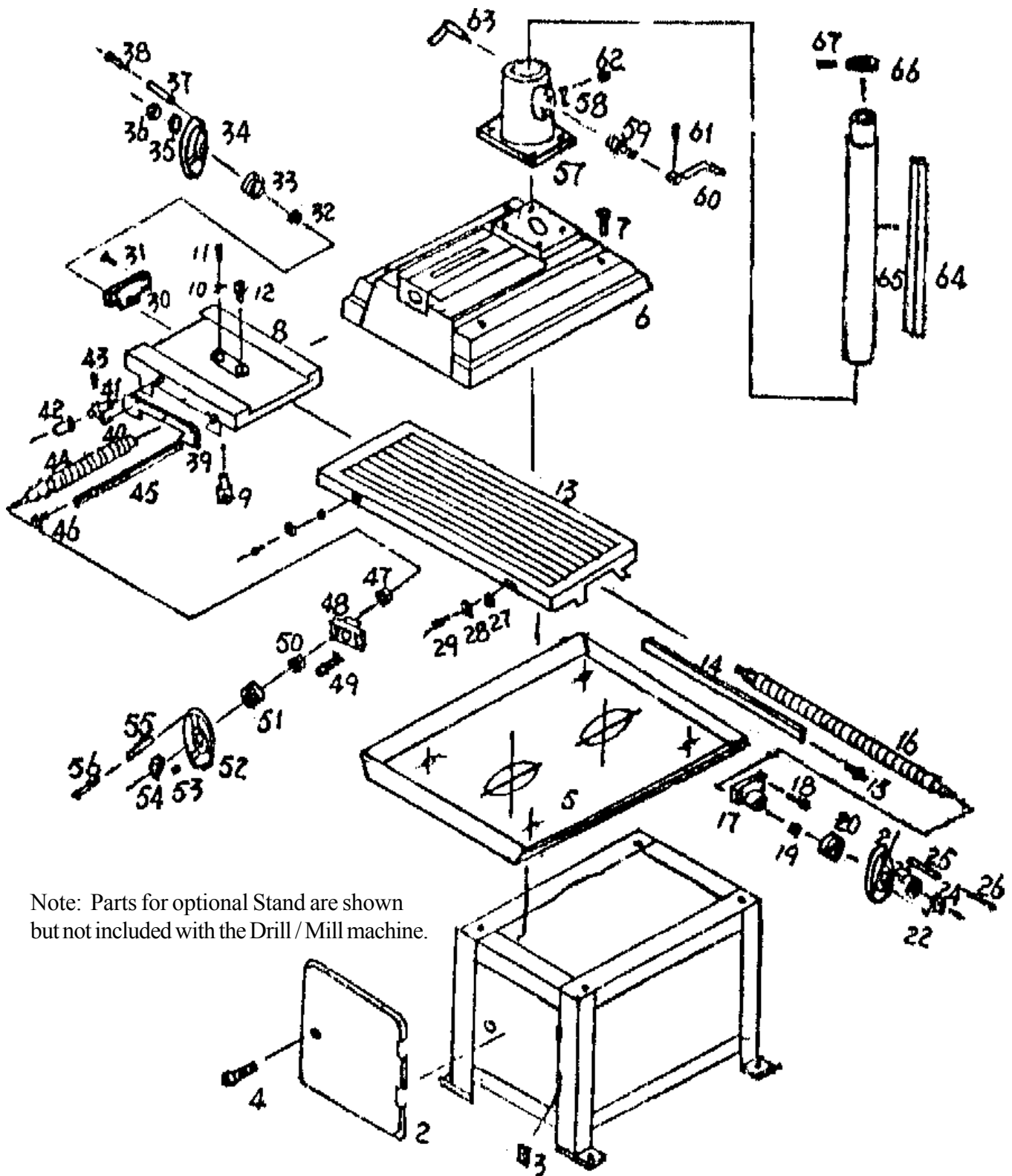
*Please refer to Parts Diagram on Page 14.*

<b>P/N</b>	<b>Description</b>	<b>Quantity</b>	<b>P/N</b>	<b>Description</b>	<b>Quantity</b>
1	Base (Not Included)	1	34	Handle Wheel	1
2	Door (Not Included)	1	35	Washer	1
3	Hinge (Not Included)	2	36	Nut	1
4	Screw (Not Included)	1	37	Handle Collar	1
5	Oil Tray	1	38	Handle	1
6	Base	1	39	Cover	1
7	Screw	4	40	Screw	3
8	Saddle	1	41	Screw	2
9	Nut	1	42	Handboard	2
10	Washer	1	43	Pin	2
11	Screw	1	44	Crosswise Lead Screw	1
12	Nut	1	45	Short Gib	1
13	Table	1	46	Adjustment Screw	1
14	Long Gib	1	47	Ball Bearing	1
15	Adjustment Screw	1	48	Support	1
16	Longitudinal Lead Screw	1	49	Screw	4
17	Support	1	50	Ball Bearing	1
18	Screw	4	51	Scale Ring	1
19	Ball Bearing	1	52	Handle Wheel	1
20	Scale Ring	1	53	Key	1
21	Handle Wheel	1	54	Nut	1
22	Key	2	55	Handle Collar	1
23	Washer	1	56	Handle	1
24	Nut	1	57	Support (Rest)	1
25	Handle Collar	1	58	Screw	4
26	Handle	1	59	Worm Gear	1
27	Screw Bracket	2	60	Handle	1
28	Dog	2	61	Pin	1
29	Screw	2	62	Gear	1
30	Support	1	63	Clamp Handle	1
31	Screw	4	64	Rack	1
32	Ball Bearing	1	65	Column	1
33	Scale Ring	1	66	Dust Cover	1
			67	Screw	1

***NOTE: Parts # 1 - 4 represent the optional stand # 42977, which is not included in item # 42976.***

# #42976 DRILL / MILL MACHINE, TABLE AND BASE PARTS DIAGRAM

Please refer to Parts List on Page 13.



Note: Parts for optional Stand are shown but not included with the Drill / Mill machine.

**#42976 DRILL / MILL MACHINE, HEAD PARTS LIST***Please refer to Parts Diagram on Page 16*

<b>P/N</b>	<b>Description</b>	<b>Quantity</b>	<b>P/N</b>	<b>Description</b>	<b>Quantity</b>
68	Body	1	104	Headless Set Screw	1
69	Screw	2	105	Nut	1
70	Shifter Bar	1	106	Nut	1
71	Pin	1	107	Slide Bar	2
72	Pin	1	108	Pulley Cover	1
73	Feed Shaft	1	109	Washer	4
74	Pin	1	110	Screw	4
75	Scale Ring	1	111	V-Belt	1
76	Handle Body	1	112	Nut	1
77	Scale	1	113	Spindle Pulley	1
78	Screw	1	114	Spring Sleeve	1
79	Handle Bar	3	115	Retaining Ring	1
80	Knob	3	116	Ball Bearing	1
81	Screw	1	117	Collar	1
82	Screw	1	118	Ball Bearing	1
83	Clamp Handle	2	119	Retaining Ring	1
84	Spring Seat	1	120	Nut	1
85	Spring Plate	1	121	Washer	1
86	Spring Cap	1	122	Ball Bearing	1
87	Screw	1	123	Sleeve	1
88	Screw	1	124	Ball Bearing	1
89	Screw	2	125	Dust Cover	1
90	Switch	1	126	Spindle	1
91	Wire	1	127	Spindle Bar	1
92	Screw	2	128	Drill Chuck	1
93	Rubber Bushing	1	129	Wedge Shifter	1
94	Wire Clip	1	130	Key	1
95	Shaft	1	131	Center Pulley Shaft	1
96	Pin	1	132	Ball Baring	1
97	Screw	1	133	Collar	1
98	Nut	4	134	Ball Bearing	1
99	Washer	4	135	Retaining Ring	1
100	Motor Base	1	136	Retaining Ring	1
101	Motor	1	137	Center Pulley	1
102	Screw	4	138	V-Belt	1
103	Motor Pulley	1	139	Pulley Cover	1

#42976 DRILL / MILL MACHINE, HEAD PARTS DIAGRAM

Please refer to Parts List on Page 15.

