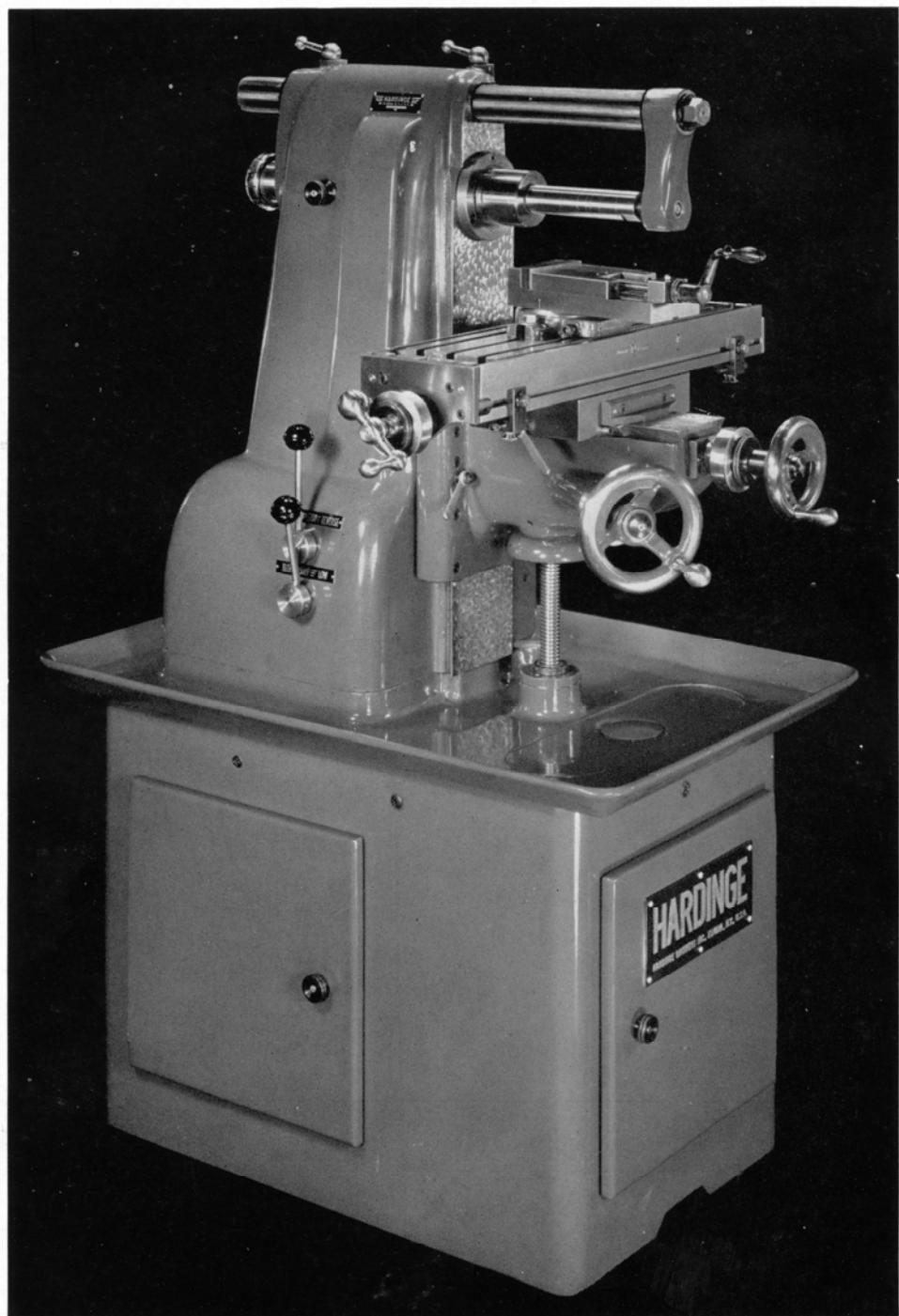


# HARDINGE

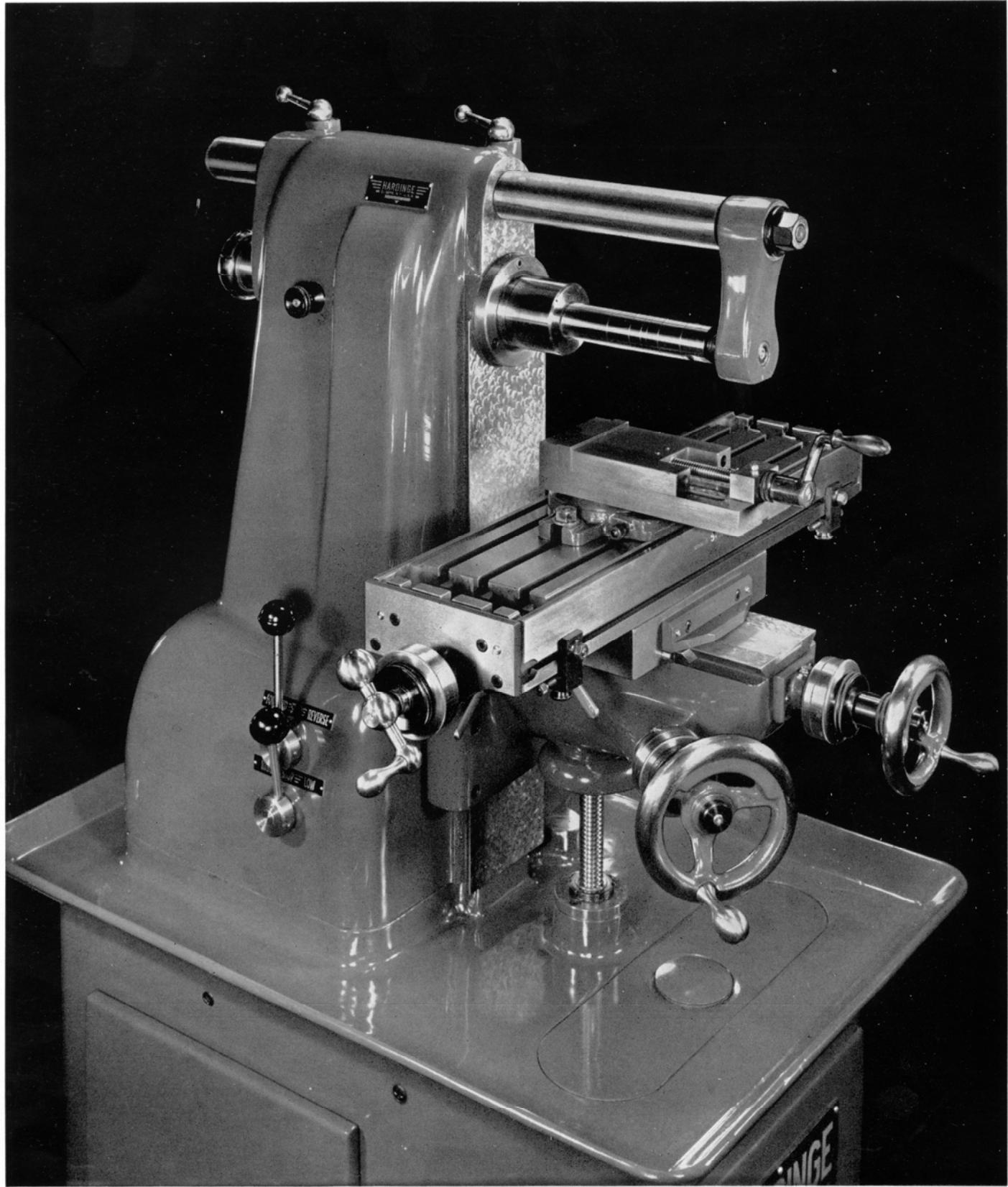
## PRECISION TOOL ROOM MILLING MACHINE



**HARDINGE BROTHERS, INC., ELMIRA, N. Y.**

*"Performance has established leadership for Hardinge"*

# HARDINGE PRECISION TOOL ROOM MILLING MACHINE



ACCURACY - FINE FINISH - HIGH SPEEDS  
WITH  
HARDINGE PRECISION PRELOADED BALL BEARING SPINDLE CONSTRUCTION

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# HARDINGE BROTHERS, Inc., ELMIRA, NEW YORK

THE HARDINGE PRECISION MILLING MACHINE was designed to meet a definite need in the tool room and laboratory. The construction, along modern lines, combines ruggedness with extreme accuracy for ease of operation. Reflection will indicate that larger milling machines are expensive and cumbersome for the majority of milling operations completed in the tool room and laboratory. The TM model has a plain table for Universal Plain Index Centers while the UM model has a swiveling table for Universal Spiral Index Centers.

## — FEATURES —

1. High spindle speeds—correct cutting speed with greater accuracy and better finish.
2. Compact dimensions with features for ease of operation—a combination to make a responsive time saver in milling operations.
3. Feed screws have large friction dials graduated in thousandths of an inch. Hand wheels for transverse and vertical feed have clutch throw-out.
4. Enclosed column with "Connected Bearing" design—has maximum rigidity for proper mounting of precision spindle bearings.
5. Properly proportioned table, knee and saddle with positive locks and adjustable stops.
6. Sturdy table with large working surface. Table has three slots for T-bolts to take attachments and fixtures.
7. Enclosed vee belt drive with conveniently located lever speed control. Driving unit does not employ gears, clutches or loose pulleys.
8. Overarm of solid steel, hardened and ground. Ball bearing arbor support affords greater rigidity for the arbor to permit higher speeds.
9. Knee section fully enclosed around vertical feed screw bevel gears to exclude dirt and chips. Precision ball bearing absorbs thrust on vertical feed screw.
10. Pedestal base tool compartment with collet board for clean, handy storage of accessories.

## — SPECIFICATIONS —

### Spindle

Collet round capacity (5C HARDINGE) . . . . .	1"
Eight speeds { Low speed . . . . .	110 r.p.m.
High speed . . . . .	1850 r.p.m.

### Range

Longitudinal . . . . .	14"
With Longitudinal Power Feed for Table . . . . .	11-1/2"
Transverse . . . . .	5-1/2"
Vertical . . . . .	13-1/4"
Top of table to center of spindle, maximum . . . . .	12"

### Table

Working surface . . . . .	20-3/4" x 6-1/2"
Including oil pockets . . . . .	25" x 6-1/2"
3 T-slots . . . . .	7-1/2"

### Power Feed (Optional)

Number of feeds . . . . .	32
Range . . . . .	1/8" to 13" per minute
Drive . . . . .	Belt

### Overarm Arbor Support

Diameter . . . . .	2"
Center of spindle to underside of overarm . . . . .	3-3/4"

### Arbor

Diameter . . . . .	1"
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### Motor

Constant torque . . . . .	3/4 h.p.
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### Floor Space

Considering longitudinal travel . . . . .	47" x 56"
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### Weight

Weight . . . . .	870 lbs.
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**Driving Unit:** The base is of heavy, rugged construction and well ventilated. Base fully encloses a standard two-speed reversing motor, vee belt connected to a four step pulley to give eight forward and eight reverse speeds as listed above. The levers conveniently located on the column operate electric motor controls for Low-Stop-High and Forward-Stop-Reverse speeds. The levers are provided with stops for immediate location of speed positions. Oil pump and piping supplied at extra cost.

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## —REGULAR EQUIPMENT—

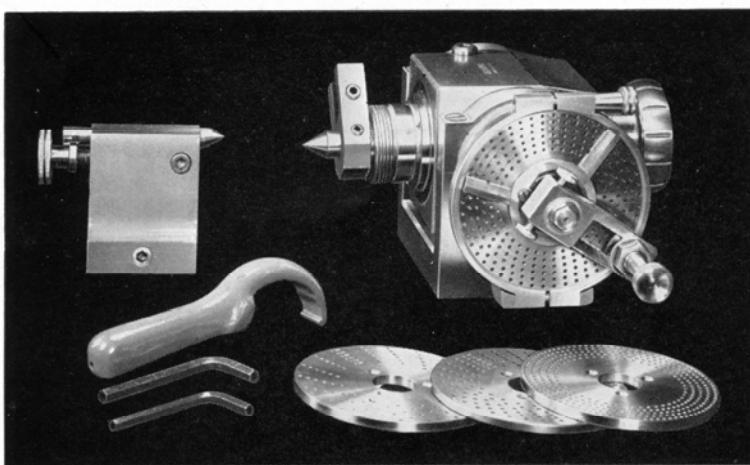
Milling Machine complete with stops and micrometer dials for feed screws; speed change levers; draw spindle and overarm support; pedestal drive complete with motor and controls for 220 volt, 440 volt or 550 volt, 60 cycle, 3 phase current—completely assembled and wired when shipped.

## — ATTACHMENTS —

**Power Feed:** A belt driven power feed is available for longitudinal travel of the table. The feed range is  $\frac{1}{8}$ " to 13" per minute. Power feed box has automatic disengagement by adjustable stops. *If power feed is required, it must be ordered when the machine is purchased.*

**Coolant System:** When specified, a pump and piping can be supplied for cutting oils. The machine has a built-in sump and while the coolant system can be added at a later date, it is best to order when the machine is purchased.

**Universal Plain Index Centers for TM Model:** The Hardinge Index Centers were designed for extreme accuracy and maximum convenience in operation. The sturdy construction is shown by the accompanying illustration.

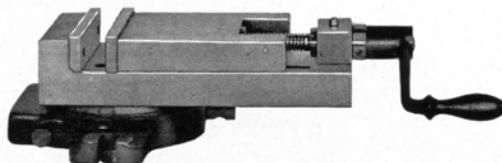


spindle nose is 2-3/16" diameter—10 threads N.S.R.H. There is a 4 to 1 ratio for rapid indexing of the spindle from the crank through spiral gears. Four index plates are furnished giving all divisions up to 50, all even number divisions and 75 up to 100. The table supplied shows all divisions obtainable up to 360 inclusive. The tongues and bolts fit a T-slot 7/16" wide. Equipment: Index head, tailstock, 4 index plates and table chart.

**Universal Spiral Index Centers For UM Model:** This type is the same as described above with the addition of a worm wheel and worm with gearing for drive from the table feed screw for cutting spirals. By use of a gear bracket and change gears any one of 90 leads can be cut from .600" to 42.656".

**Swivel Vise:** The vise is solidly built. The compact construction minimizes the overall height, giving the greatest degree of accuracy and rigidity for milling operations.

The slide is adjustable to compensate for wear and is controlled by an accurate twelve-pitch acme thread screw. The jaws are hardened and then ground in place. The vise may be swiveled to any angle and has both a steady and a positive lock to hold the desired position. The graduated section is an integral part of the base. Overall length less handle 10-3/4". Overall height 3-1/4". Base 7-1/2" x 5-3/8" with hand scraped surface. Jaws 4-1/8" wide x 1" deep. Jaws open 2-1/2".



**Arbor:** The arbor has a 1" diameter stud for cutters and is integral with collet shank for use in milling machine spindle. Arbor is supplied with proper spacers and nut.

**Vertical Attachment:** Overarm attached, high speed type with preloaded ball bearing spindle construction. Individual 1/4 h. p. motor drive arranged for speeds of 465-675-1000-1500-2140-4250 r.p.m. Head is graduated and swivels to 360°. Spindle takes standard 1/2" round capacity 2VB HARDINGE Collets.

When ordering a vertical attachment, always specify the electrical current on which it will be operated—usually 110 or 220 volt single phase.

**Jaw Chuck For Index Head:** We may furnish a 5" 3 jaw universal chuck, with an integral mount for index head—provided with set of inside and outside jaws.

**Collets:** Standard collets are available from stock in any fractional hole size—see separate bulletin covering collets which we supply for all makes of lathes and milling machines. HARDINGE Collets have been recognized for accuracy and durability since 1890.