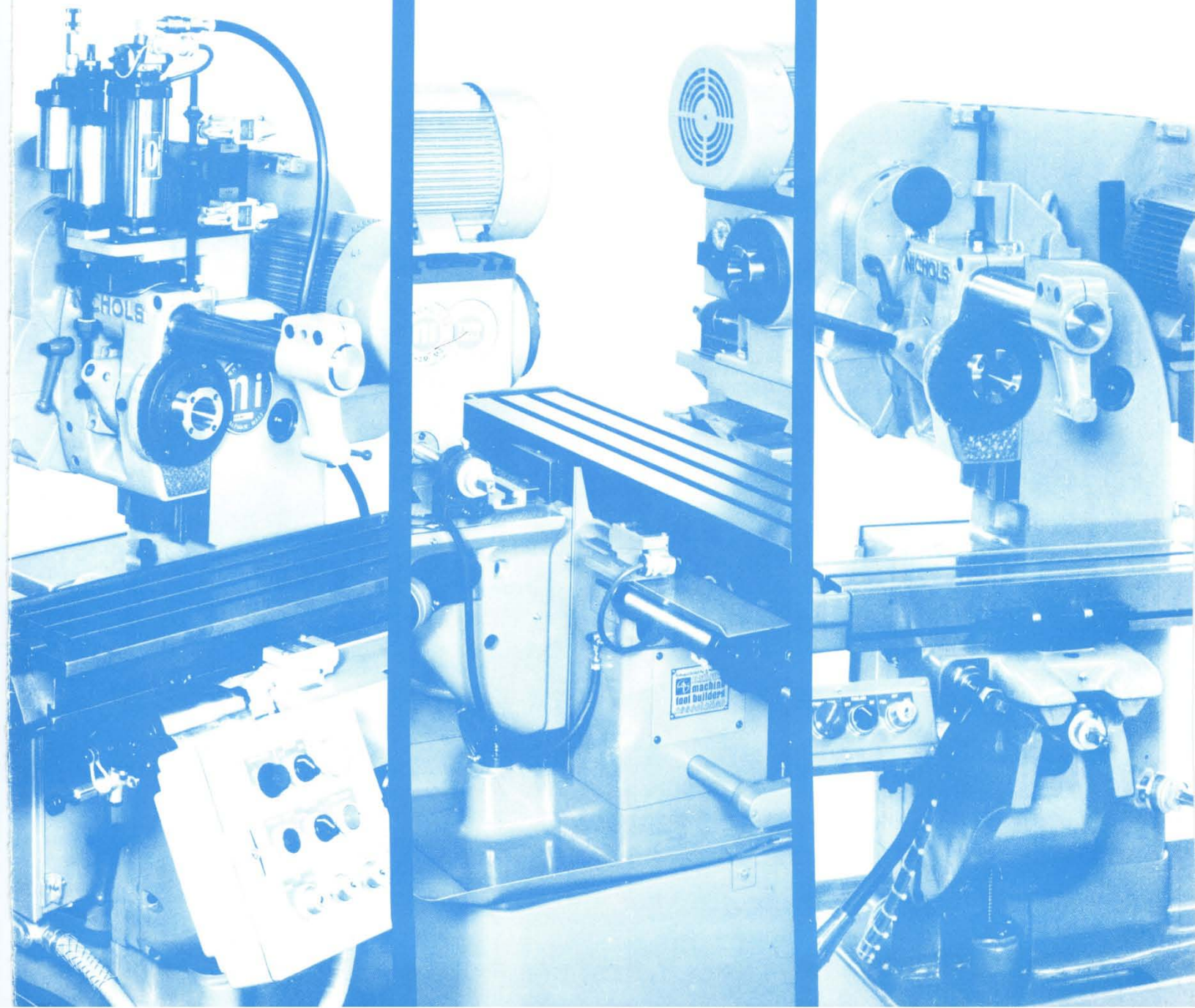
Nichols Precision Milling Machines

FOR PRODUCTION
TOOLROOM AND
LABORATORY



NICHOLS – the Millers that use their heads

NICHOLS SINGLE SPINDLE MILLERS are high precision, knee type horizontal milling machines with sliding spindle head. The sliding spindle head greatly expands machine applicability, permitting the cutter to be brought down to or up and away from the work. This versatile construction speeds up plunge cutting operations such as keyseating, keyway milling and squaring; it simplifies milling operations on long or cumbersome workpieces; and it provides form following capability.

Every NICHOLS MILLER is built to produce work to tolerances in "tenths." This high degree of precision, combined with rugged construction, provides operating conditions that ensure maximum life for expensive cutters while doing a better than ordinary milling job.

The wide range 16 SPEED DRIVE provides eight speeds (60-385) through gearing, and eight higher speeds (460-2875) via direct drive. It employs only two interchangeable 4-step vee pulleys, each of which is mountable on motor shaft, countershaft, or spindle. The lubrication system is self-contained.

Adjustable Knee and Saddle construction allows greater working and tooling space than is available on bed type production millers. The Saddle Cross Feed Screw and the Knee Elevating Screw are equipped with micrometer dials to assure precise setup in a fraction of the time required for setting up bed type machines. A further benefit of Knee and Saddle design is that the Milling Spindle need not be mounted in an adjustable quill, thus increasing spindle rigidity, accuracy and cutting capacity.

The RISE AND FALL SPINDLE HEAD on all models is closely scraped-in to a long dovetail slide and a heavy bolted-in gib. The adjustable depth stop is easily set without wrenches.

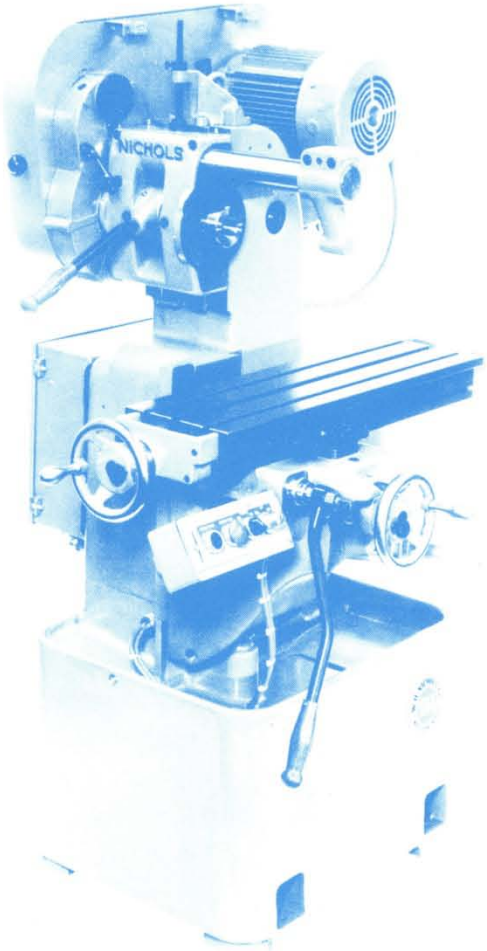
The spindle head may be floated for form-following operations, or securely locked. Rise and Fall motion is by gear segment engaging a vertical rack attached to the column. An overarm with anti-friction arbor support for NICHOLS standard piloted arbors is furnished. Constant center distance is maintained between drive motor and spindle without power-absorbing idlers or belt-tensioning devices. The motor counterbalances the Rise and Fall Head.

TABLES are sturdy box sections, furnished in various sizes. Table tops are ground to a high finish; dovetail engagement with the saddle and a heavy bolted-in gib are hand-scraped for greatest accuracy and smooth movement.

SADDLES give generous support to the milling table, are scraped in to a precision fit with the knee top dovetail and a bolted-in gib.

The KNEE and COLUMN are heavy box sections with long scraped gib and dovetail engagement. The elevator screw has a ball thrust bearing for easy movement. The Knee is equipped with a locking device.

LUBRICATION. All semi-automatic millers are equipped with Automatic Lubrication Systems with *adjustable control.* Lubrication of the Tool Room model is provided for by grease fittings and hand gun, with optional provision for a one-shot lubrication system at extra cost. Both Spray-Mist and Flood Coolant systems are available on all models.



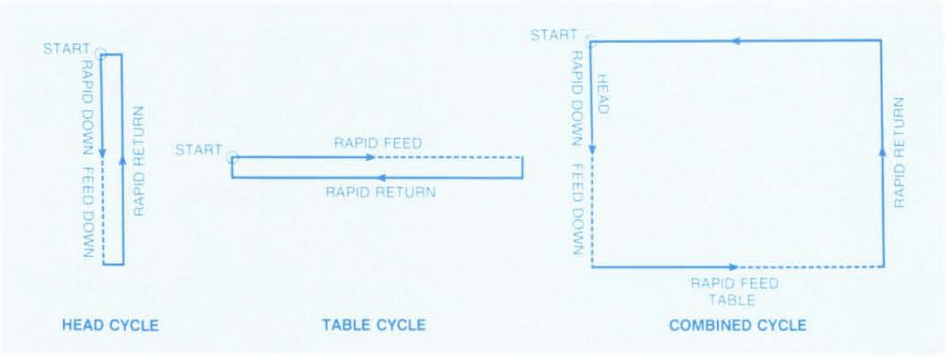
The TOOL ROOM MODEL gives the tool room a compact, rugged miller with extreme accuracy and utmost flexibility. This model has hand screw feed, a generous table surface of 8½" x 30", and 19" travel. Precision feed screws have oversize, easy-reading, adjustable micrometer dials, providing the element of "feel" for precision milling. Lever table feed is optional.

Production Milling Centers

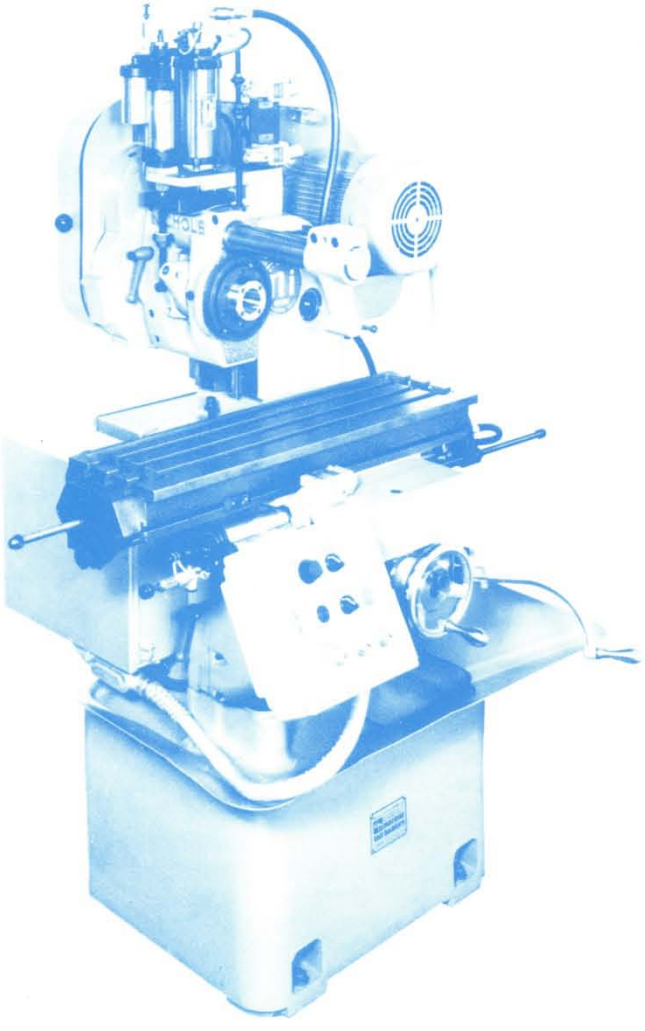
NICHOLS PRODUCTION MILLING CENTERS are basic Semi-Automatic Millers to which have been added automatic cycling of the Rise-and-Fall Spindle Head and versatile Selector Control Centers. This arrangement provides instantaneous command for (1) independent automatic cycling of the Miller Table; (2) independent automatic cycling of the Spindle Head; (3) combined and synchronized cycles of *both* Head and Table. Production Milling Centers handle the widest variety of small parts milling to the closest tolerances. Keyseating, keyway cutting, pocket milling, facing, plunging, fluting, straddling, squaring, slotting, slicing, slabbing — all these conventional milling capabilities are built into these versatile machine tools — employing end mills, face mills, side mills and every other type of milling cutter. Addition of the NICHOLS Vertical Milling Head virtually doubles this tremendous applicability.

WORK CYCLES. The basic design of NICHOLS Horizontal Milling Machines provided machine motions best described as Up or Down, Left or Right, In or Out. Any or all of these motions can be automated, and controlled by electrical switch gear to permit a tremendous selection of combined and synchronized rapid traverse and cutting movements. This flexibility allows the cutter to be brought to the work, or the work to the cutter; or this choice of methods can be combined to mill parts faster at minimum cost.

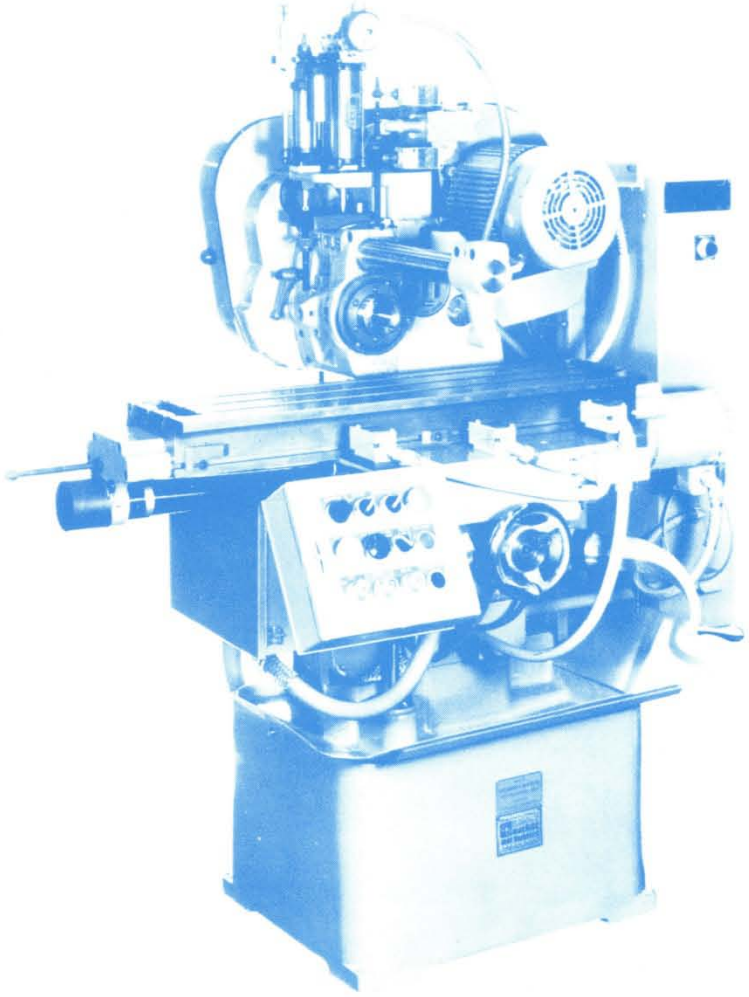
Cycles included as Standard Equipment on both the 8PMC and 12 PMC:



Additional special cycles can be furnished to satisfy workpiece requirements.



The Model 8-PMC incorporates automatic head and table feed through the use of a pneumatic-hydraulic system.



Climb Milling is recommended in the use of the 12PMC by means of a preloaded ball screw and DC drive arrangement.

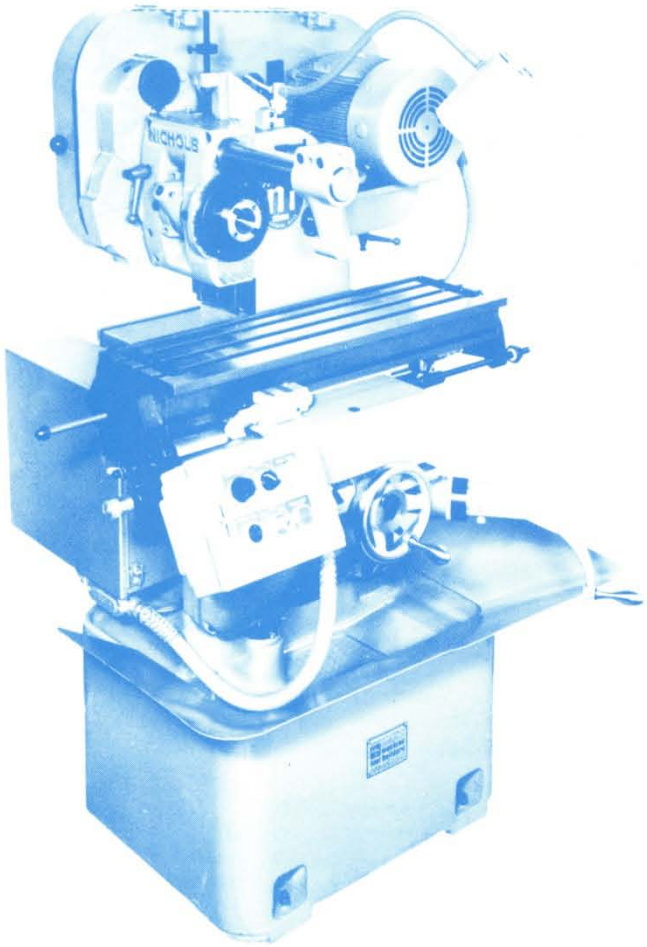
Semi-Automatic Models

NICHOLS SEMI-AUTOMATIC MILLERS are designed for small parts milling at high production rates to tolerances in "tenths." These models are equipped with electric push-button controlled automatic table feed cycles that allow rapid return to loading position. Work cycles are easy to set up or change without the use of gears or cams. Fingertip control permits instantaneous cutting feed variation from zero to 50" per minute; rapid traverse rate is adjustable to 200" per minute. Automatic lubrication for all power-fed sliding members ensures retention of original accuracy and long productive life.

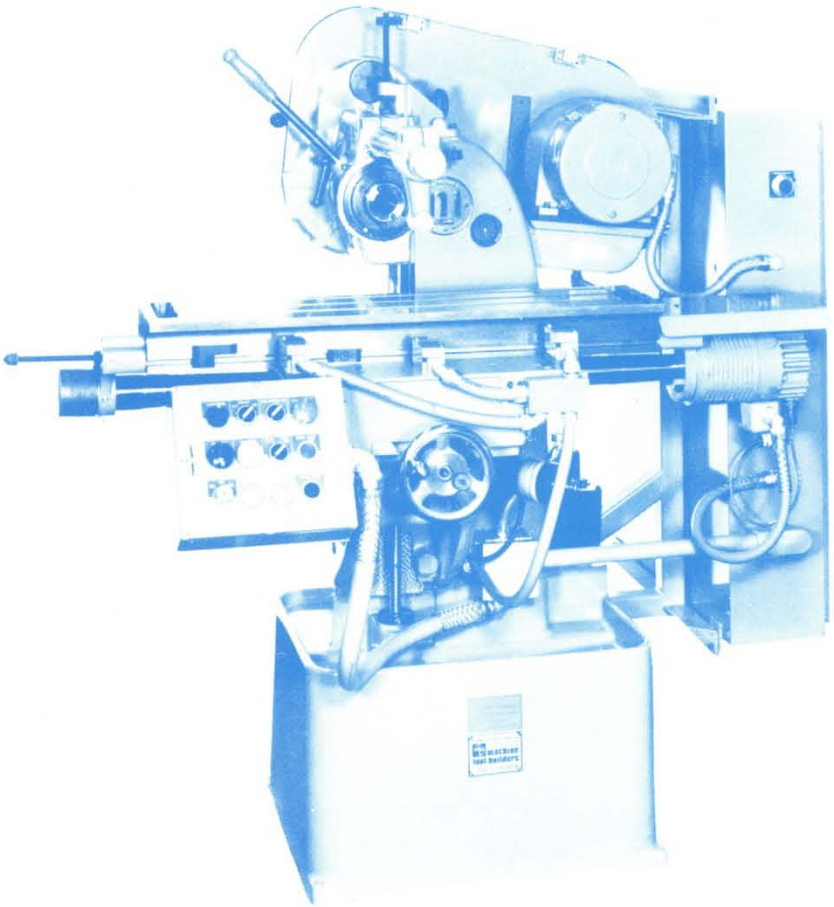
Semi-Automatics are built in two basic models, the 8SA and 12SA, which have the same base, column, and spindle head construction. The essential differences are in the saddle and table assemblies and the table drive systems.

The electrical equipment regularly furnished with NICHOLS Millers meets standards established by NMTBA and the National Electrical Code. All electrical control components are housed in safe dust-tight enclosures. The control panel is centralized for convenience and operating ease.

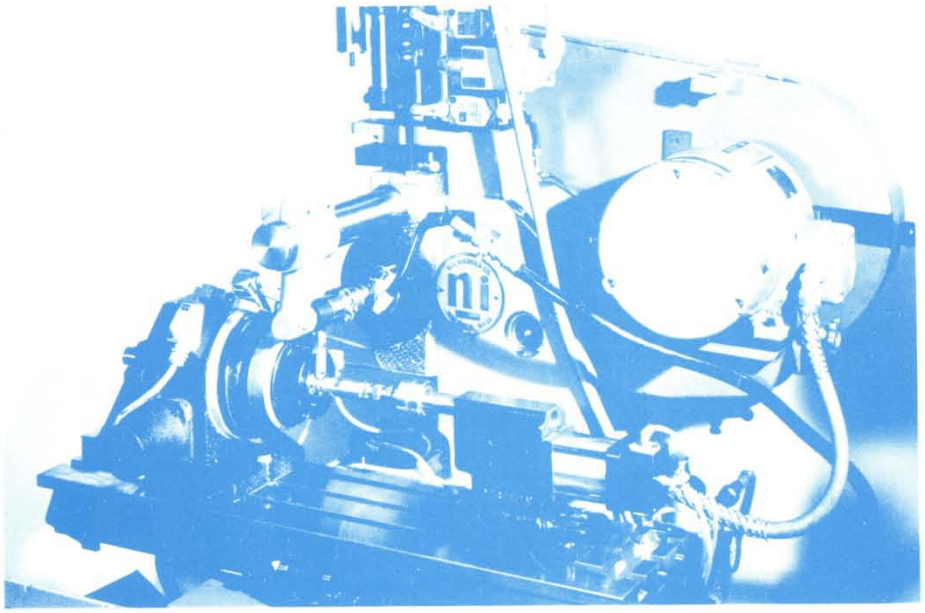
The Spindle, hardened and ground alloy steel, revolves on opposed 2" bore precision ball bearings widely spaced to assure rigidity. Its carefully balanced construction permanently eliminates all spindle shake and end play permitting end milling operations with unparalleled speed and accuracy. Spindle has No. 40 NMT taper and 1" bore for standard draw-in bar or draw-in collet attachment.



The Model 8SA SEMI-AUTOMATIC Miller Table has 8½" x 30" working surface, three tee slots, and 14" maximum adjustable stroke powered by pneumatics and hydraulics. Lever or screw feed for the table of this model are not available.

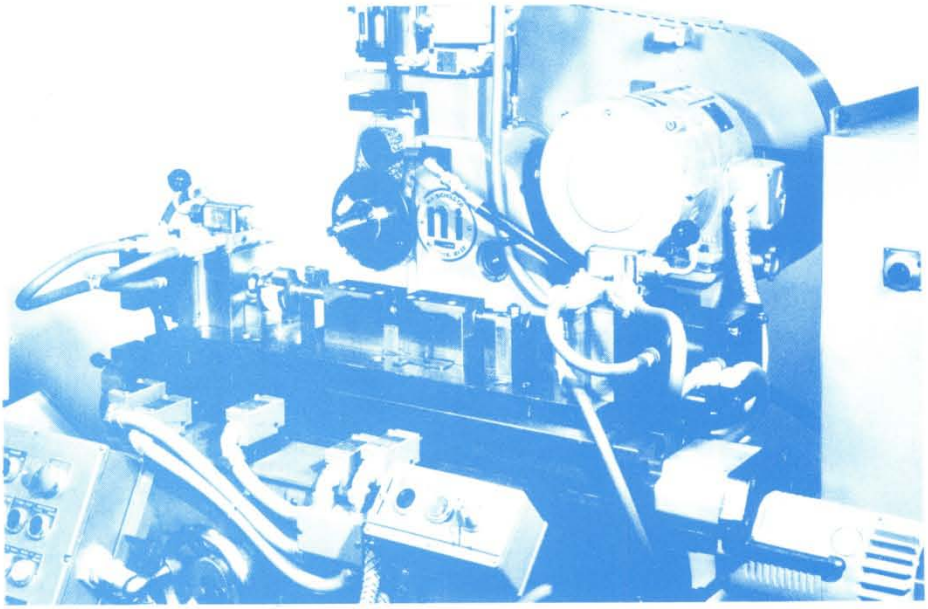


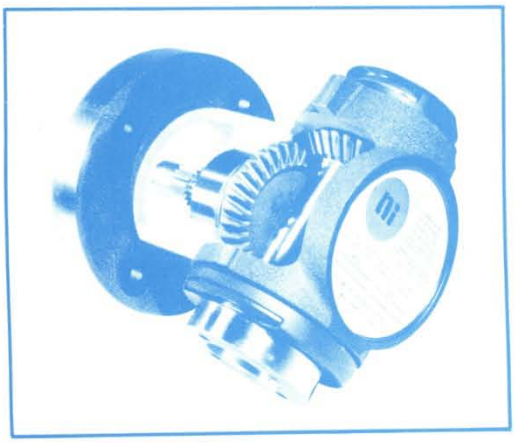
The Model 12SA SEMI-AUTOMATIC Miller Table has 8¾" x 36" working surface, three tee slots, and 20" maximum feed length powered by a Variable Speed DC Motor driving a pre-loaded ball feed screw. This model has Climb Milling capability.



The operation shown is being done on a Model 8PMC, with fixture synchronization. Four radial slots are milled with formed carbide cutters; location within ± 15 minutes, parallelism of .001" with center of shaft, controlling depth to ±.002". Cycle time of 40 seconds per piece.

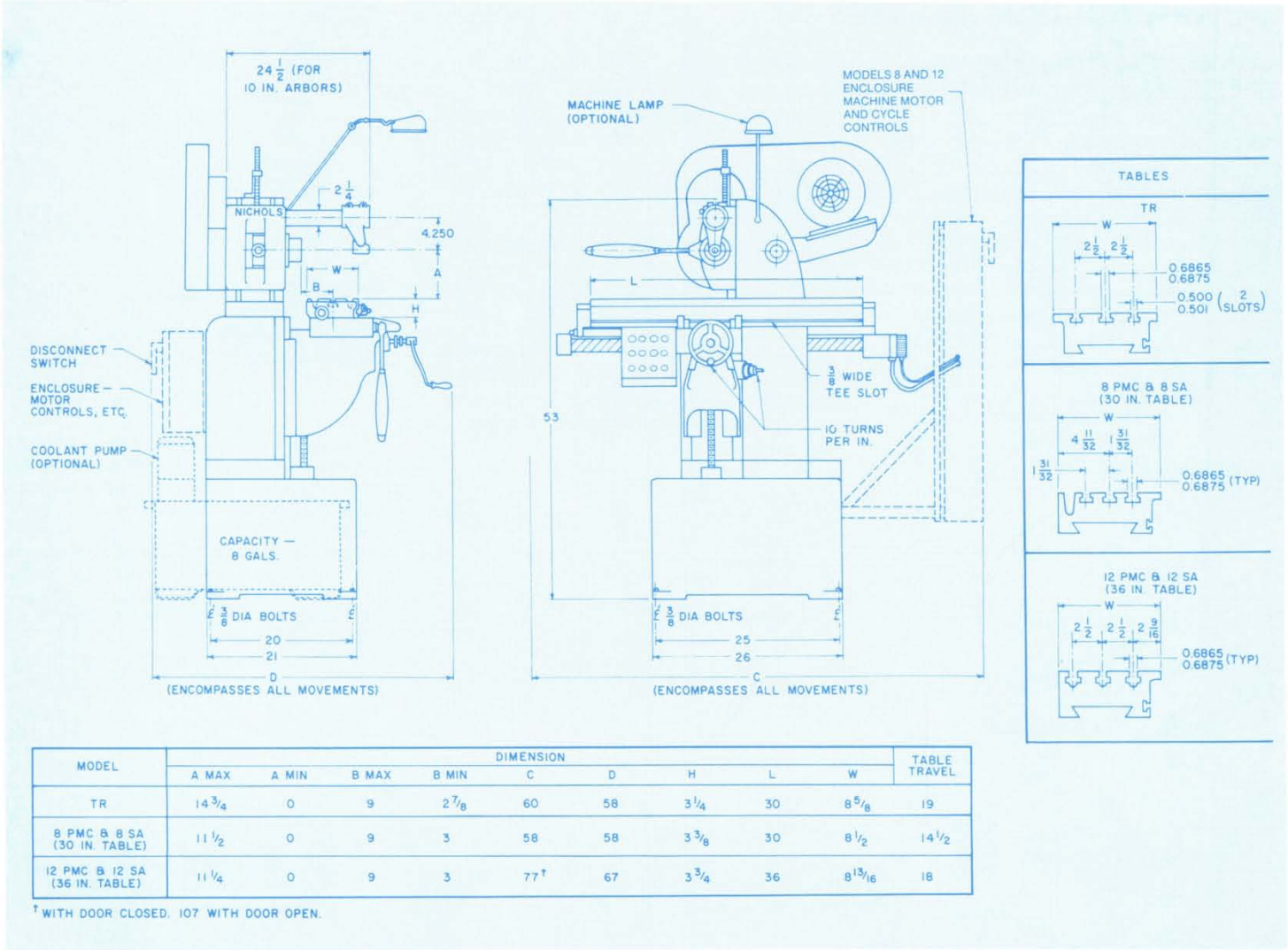
Illustration shows the 12PMC and the use of a double work holding fixture. Keyways are milled in each shaft with the cycle originating in a central position. Electrical interlocks are provided for operation safety.





NICHOLS VERTICAL HEAD — A sturdy, accurate accessory which fits all models. Drive is taken from the horizontal spindle through a ball-bearing drive shaft, and transmitted by gearing to the precision vertical spindle. The spindle nose and No. 40 Taper bore are identical to those of the horizontal spindle.

Machines depicted with fixtures and tooling have guards removed for illustrative purposes only.



MODEL	DIMENSION									TABLE TRAVEL
	A MAX	A MIN	B MAX	B MIN	C	D	H	L	W	
TR	14 3/4	0	9	2 7/8	60	58	3 1/4	30	8 5/8	19
8 PMC & 8 SA (30 IN. TABLE)	11 1/2	0	9	3	58	58	3 3/8	30	8 1/2	14 1/2
12 PMC & 12 SA (36 IN. TABLE)	11 1/4	0	9	3	77†	67	3 3/4	36	8 13/16	18

† WITH DOOR CLOSED. 107 WITH DOOR OPEN.

Spindle Speeds — All Models
8 — through gears — 60, 75, 100, 135, 175, 230, 310, 385
8 — through belts — 460, 570, 765, 1000, 1325, 1705, 2325, 2875

Rise & Fall Motion on all Models ..... 4 1/2"
Controlled Rise & Fall Motion on Production Milling Centers ..... 4"

	TOOL ROOM	8SA	8PMC	12SA	12PMC
Net weight (approx.) lbs.	2000	2400	2450	2450	2500
Crated weight (approx.) lbs.	2200	2600	2650	2650	2700
Crated for export lbs.	2300	2900	2950	2950	3000

Standard Equipment for Tool Room Model:
3HP Main drive reversing motor and controls, depth stop for sliding head, built-in Vertical Head Adapter on spindle nose, adjustable micrometer dials on transverse and elevating feed screws. Longitudinal Feed Screw; hand wheels with oversize adjustable micrometer dials for longitudinal and transverse screws. Lever table feed is optional. Two plain table stops, arbor draw bolt for spindle, overarm and needle bearing arbor support. Vee belt, belt guard and illustrated parts list.

Accessories and Extra Equipment:
Braking, One Shot Lube, Micrometer Stop Screws.

Standard Equipment for Semi-Automatic Models:
3HP reversing motor drive with selector control station, automatic lubrication for table ways, complete air-hydraulic (8SA) or Variable DC Motor (12SA) table drive system, built in vertical head adapter on spindle nose, depth stop for sliding head, adjustable micrometer dials on transverse and elevating feed screws, arbor draw bolt, sliding head feed lever, overarm and needle bearing arbor support, Vee belt, belt guard, dynamic braking, two hand start and illustrated parts list.

Standard Equipment for Production Milling Centers:
Same as furnished with Semi Automatic Model, PLUS: complete air-hydraulic feed system to sliding head.

Accessories and Extra Equipment:
Arbors, adapters, Vertical Head, flood or mist coolant system, collet equipment, automatic cross feed and special synchronized work cycles.

For factory direct parts and service please contact us at the address below.

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