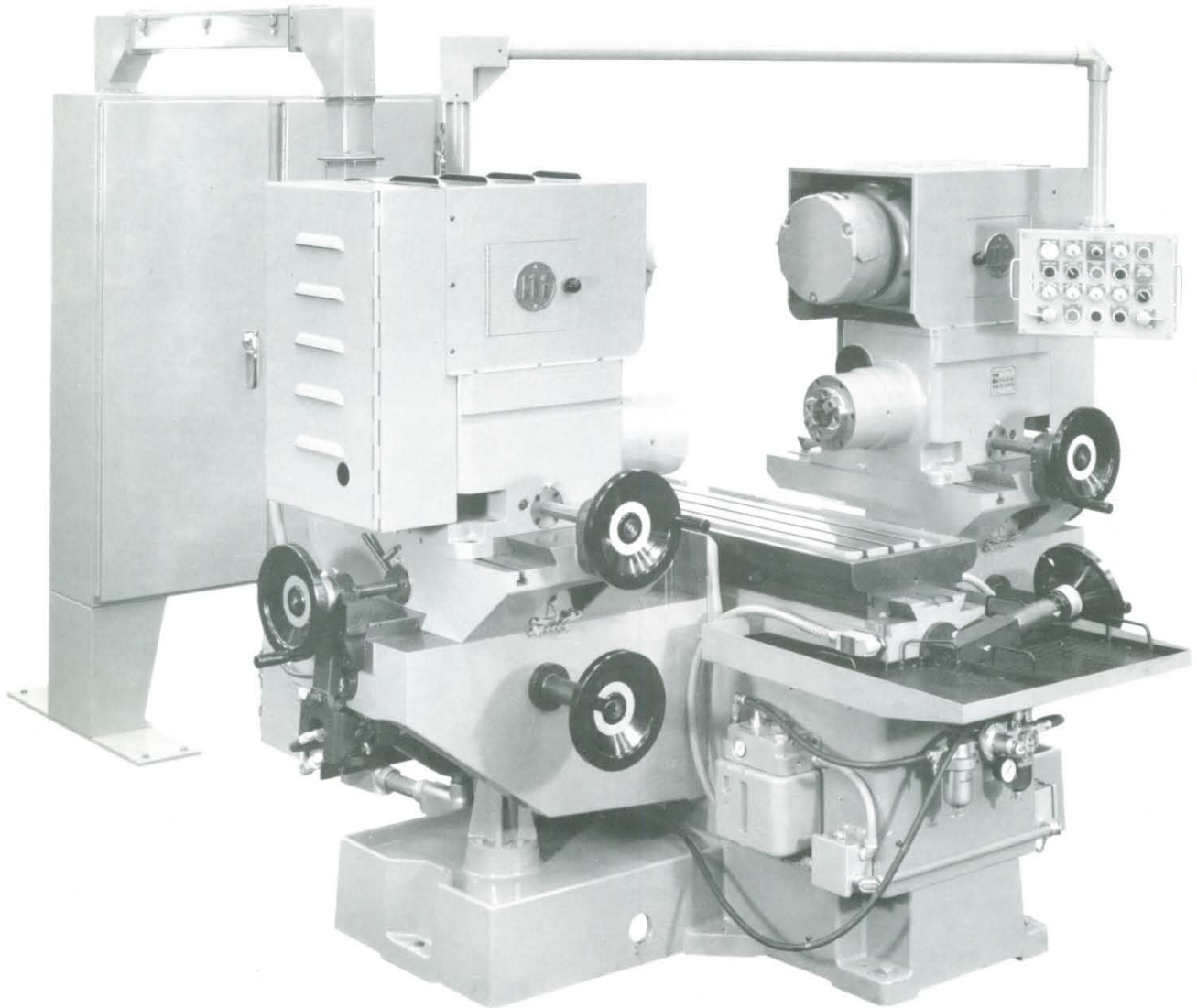


Nichols Twin Mills

The Millers that use their heads!



Two Models —

Standard & **BIG**

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

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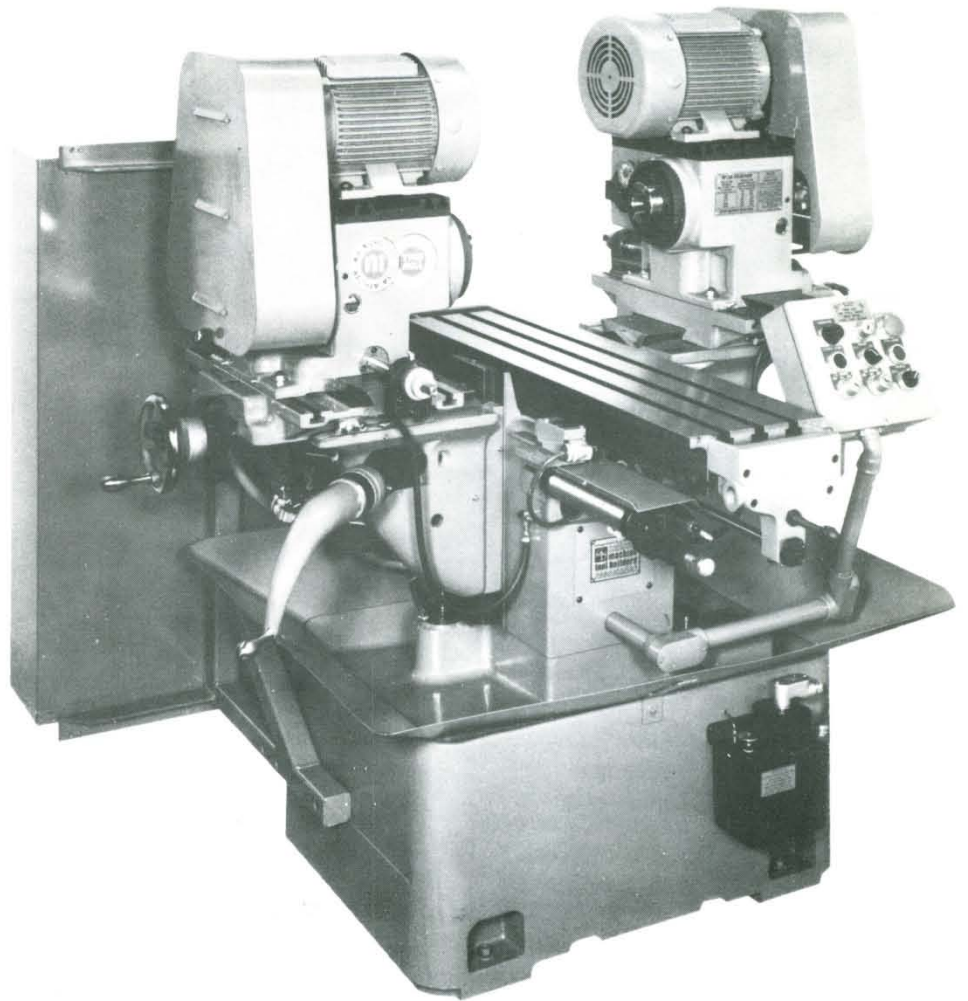
Standard Twin Mills

Nichols Twin Mills

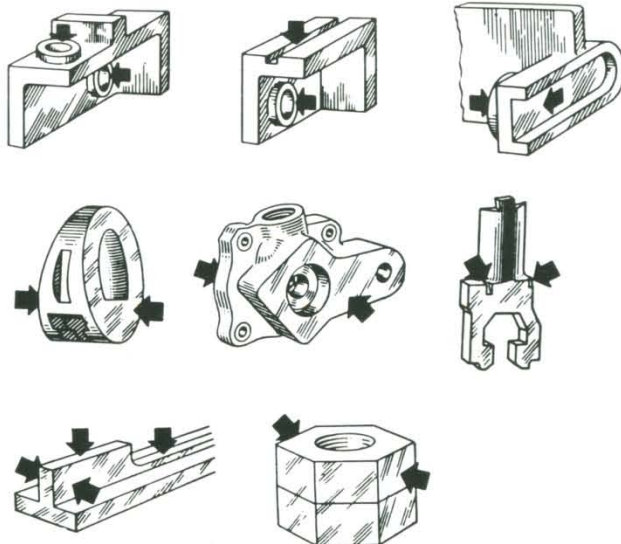
*Diversified High Output
at Less Cost*

Nichols Twin Mills bring new dimensions to duplex milling practice in terms of versatility and high accuracy. At the same time, they provide all the economic advantages of milling two or more surfaces simultaneously. These extraordinary milling machines have many original design concepts to make them far more useful than conventional limited purpose duplex milling machines. For example, each twin milling head is a completely independent, motor-driven precision unit which has quick adjustability in three planes via micrometer screws. It requires only seconds to position or reposition heads within .001", up or down, in or out, backward or forward. Wide-range spindle speed selections in an approximate ratio of 40 to 1 allow efficient milling of materials varying from tough tool steels to plastics. Again, it takes only seconds to select spindle speeds and it takes only seconds to dial in variable table feed rates. This capability for speedy, precise setup is augmented by other production improving features such as automatic cutter retraction on table return stroke, automatic double cycling for rough and finish milling, and provision for adaptation of vertical heads. As a result, Twin Mills are used throughout world industry for diversified milling on both short and long runs — holding workpiece dimensions to the closest tolerances while producing surface finishes which often eliminate secondary finishing operations.

The first Twin Mills with 1 HP milling heads were quickly superseded by the present 2 HP and 3 HP Standard models. Ultimately, the demand for even more power and more range led to the development of the massive Big Twins having up to 10 HP per milling head, weighing over 5 tons.



Typical Twin Mill Applications



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

Standard Twin Mills

Automatic Pneumatic Transverse Feed

Standard TWIN MILL with special provision for Automatic Pneumatic Transverse Feeds for the milling heads. Auxiliary air-powered slides serve as carriers for the heads, which may be synchronized individually or in unison with the automatic table feed for blind keyway milling and similar operations.

General Working Range

Automatic Transverse Stroke of Milling Heads. Air-powered, hydraulically checked — up 4".

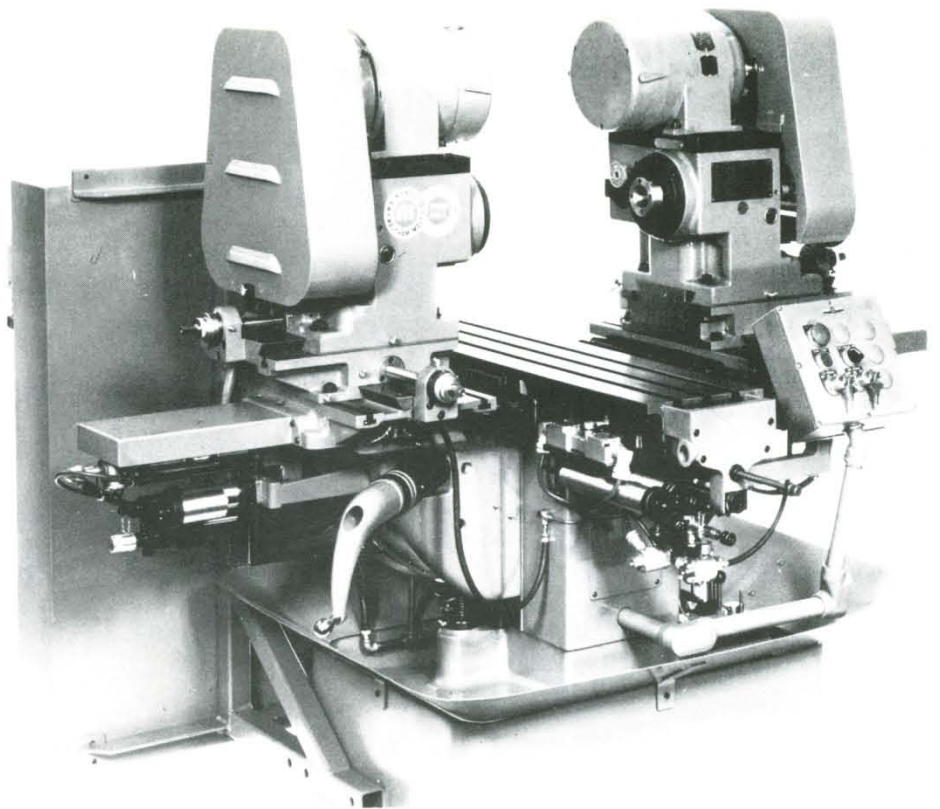
Height of Spindle Centerlines above Table — Minimum 6" — Maximum 14½".

Spindle Nose Separation — Minimum 4" — Maximum 24½".

Maximum Offset of Heads — 8¼".

Specifications otherwise same as Standard Twin Mills

Automatic Transverse Feeds not available on BIG TWIN.



Rise and Fall Twin Mill

This modified Standard TWIN MILL offers both Vertical and Horizontal automatic cutting cycles which may be utilized independently or in various synchronized modes. Simple belt driven Rise and Fall milling heads with ball bearing spindles are substituted for the geared Twin Milling heads.

General Working Range

SPINDLE RISE AND FALL — Air-powered, hydraulically checked — up to 4".

Height of Spindle Centerlines above table — Minimum 2" — Maximum 14½".

Spindle Nose Separation — Minimum 6" — Maximum 14".

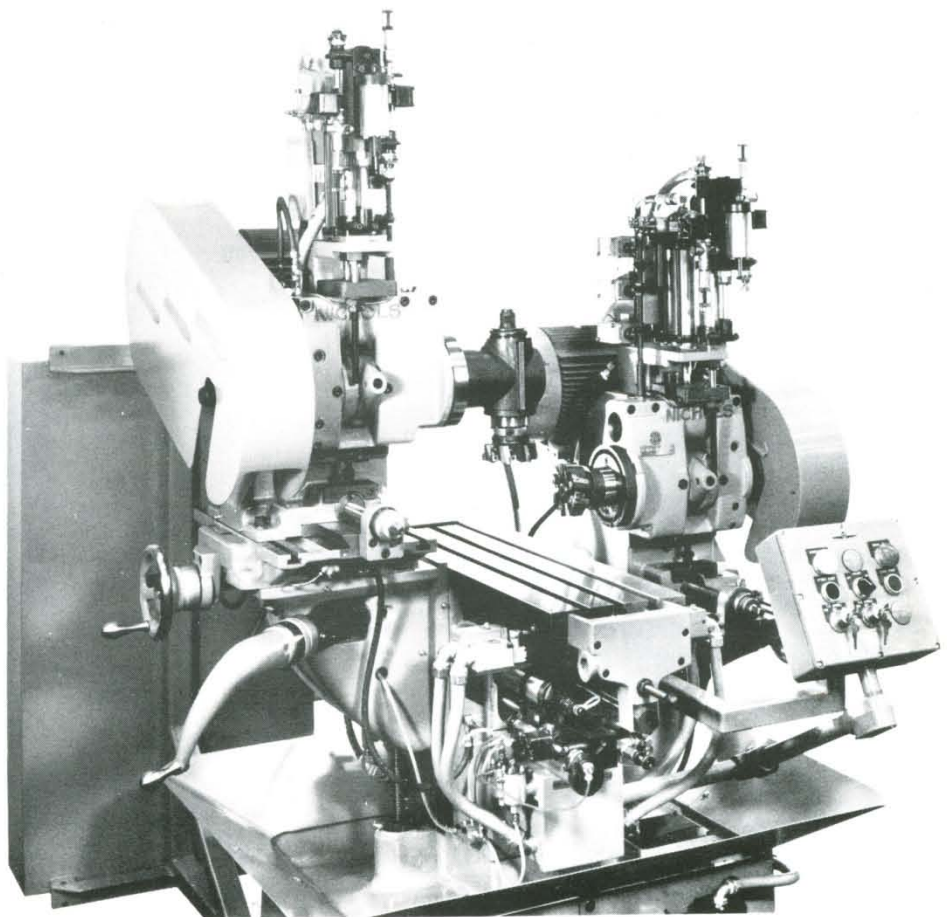
Maximum Offset of Heads — 8¼".

Motor Drive — Maximum 2 HP per Head.

8 Spindle Speeds via reversible step pulleys. Various ranges up to 4000 RPM.

Final specifications are governed by intended application for this special limited purpose Twin Mill.

Rise and Fall feature not available on BIG TWIN.



Precision Construction For Quality Output

TABLE — The Standard Twin Mill Table is a Meehanite casting, ribbed for stiffness, with three tee-slots. The table travels on a long dovetail guide block that is hand-scraped keeping wear to a minimum and prolonging accuracy.

The automatic pneumatic table drive is push-button controlled, with adjustable trips and limit switches to govern movements. Cutting feed is infinitely variable, governed by a hydraulic cylinder. Standard table cycling provides for rapid approach to the cutters, slow cutting feed, and rapid return to loading position. On special order, multiple or continuous table cycling can be furnished. Also available are Skip-Check arrangements which allow rapid traverse between two separated cutting positions, and arrangements for synchronizing table movements with fixture clamping and indexing.

A Bijur system automatically lubricates the table ways.

COLUMN, SADDLE, KNEES —

The box-type Column structure has integral vertical ways for the knee dovetails with heavy support ribs for resisting the thrust loads imposed during milling. On the top of the column is the hard chromed guideway for the table, and inside the column are mounted the table propulsion units.

The saddles are stiff ribbed castings with generous mounting areas for the milling heads. The long dovetail ways are hand-scraped and fitted with heavy gibs.

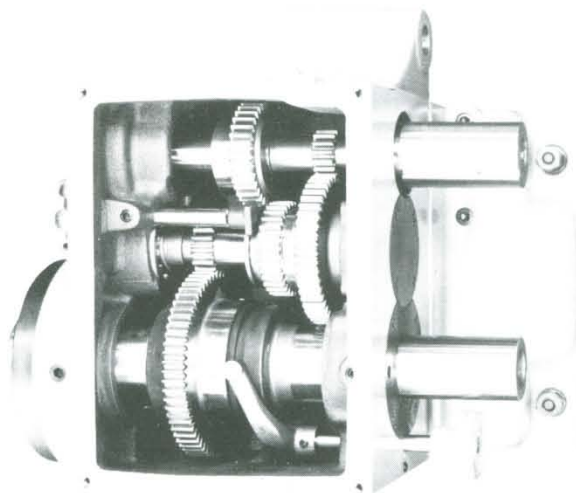
The knees are sturdy box type castings with long dovetail ways to give adequate support to the saddles and heads. The micrometer elevating screws have ball thrust bearings for easier movement. Supporting all is a heavy cast base which houses a sliding easily serviced coolant reservoir.

Specifications

Table Working Surface, Standard.....	10" × 30"
Table Working Surface, Special (D.C. Drive Only).....	10" × 36"
Spindle Noses bored.....	No. 40 Taper
Spindle Hole diameter.....	1"
Spindle Diameter in bearings.....	2"
Feed, Infinitely Variable.....	0 to 50 IPM
Rapid Traverse.....	up to 300 IPM
Air Pressure Required.....	75-120 PSI
Height of Spindle center lines above table.....	2" Min. 12" Max.
Spindle Nose Separation.....	5" Min. 16" Max.
Spindle Speeds: 55, 75, 100, 130, 165, 205, 270, 355, 460, 590, 700, 925, 1215, 1585, 2050 RPM	
Maximum Cutting Stroke, hydraulically governed —	
Standard.....	15"
Special.....	20"
Maximum longitudinal offset of Heads.....	8 1/4"
Maximum recommended cutter diameter.....	6"
Motors (2), 1750 RPM totally enclosed.....	3 HP
Net Weight, approximate.....	2000 lbs.
Domestic Shipping Weight.....	2200 lbs.

Standard Equipment

Complete electrical equipment and controls with fail-safe provision; complete air-hydraulic table feed equipment and controls, automatic table ways lubrication; chip pan for base; arbor draw bolts; necessary belts, guards and wrenches, service manual.



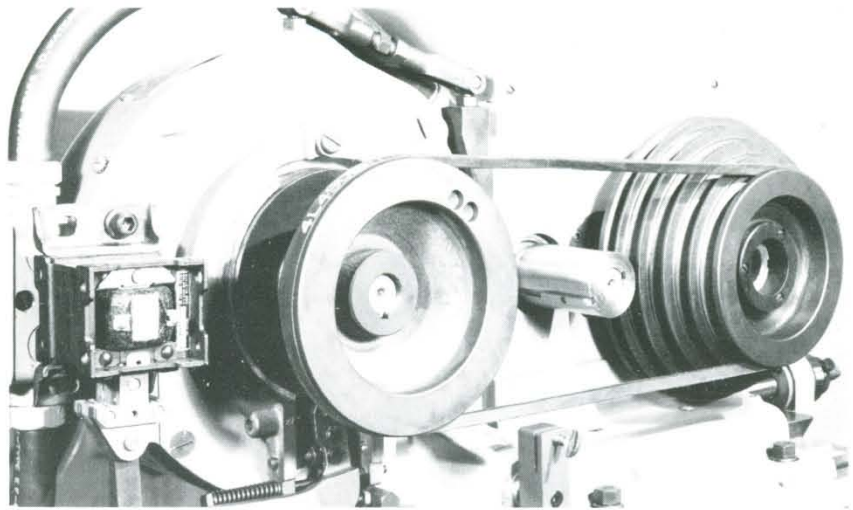
Inside view of Standard Twin Mill head. Hardened gears are Reischauer-ground to ensure smooth, quiet operation, and are lubricated by oil bath. Preloaded Ball Bearing Spindles have run-out held within plus or minus .000075".

Standard Twin Mills

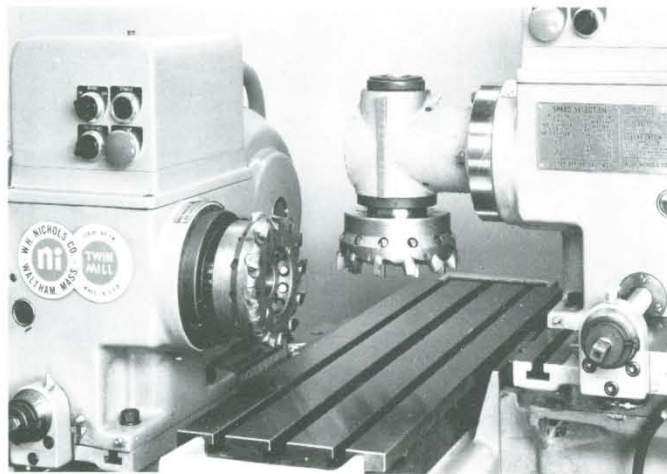
Extra Equipment

Brake motors, Motor driven coolant system, Bijur Spraymist coolant system, Automatic retraction of milling heads, Double table cycling feature, Vertical Heads, Arbors, adapters, vises, Collet equipment, Swiveling overarm arbor supports, Special high speed ranges, Automatic Transverse Feed arrangements, Special synchronizations of Feeds.

See Page 8 for Detailed Plan Views

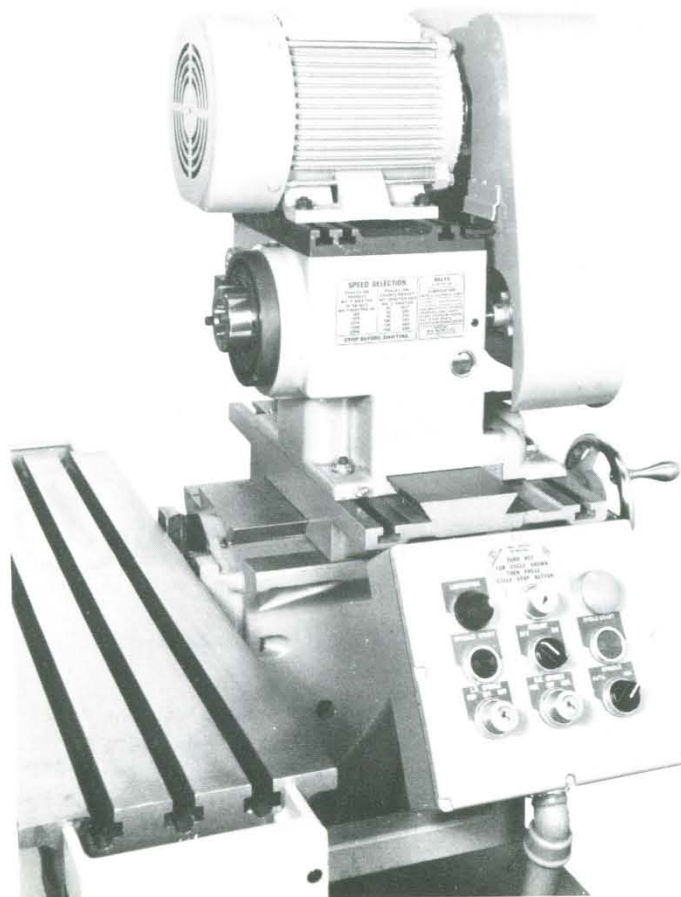


Simple efficient spindle drive arrangement. Driven pulley is mounted on gearshaft for lower speeds, as illustrated, or switched to spindle end for direct drive and high speeds.

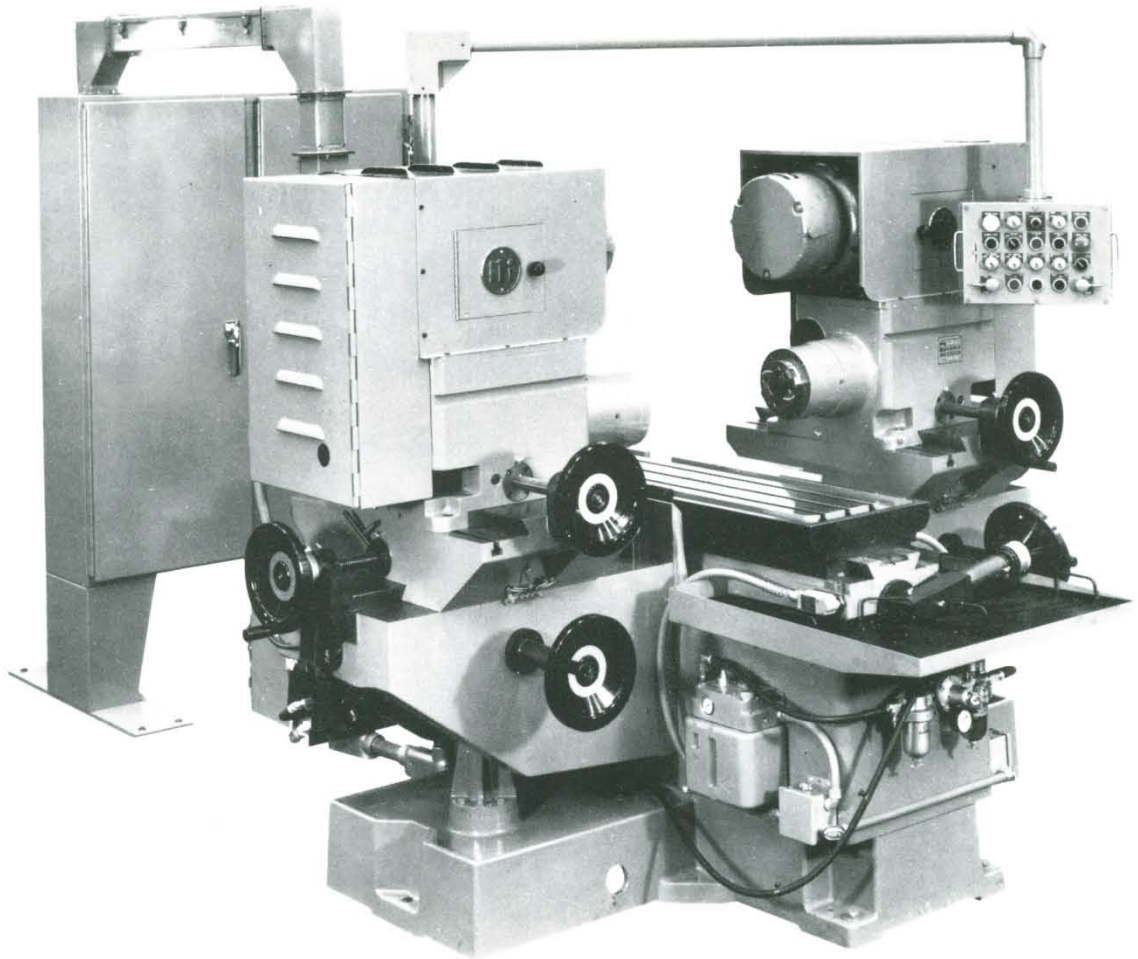


The NICHOLS precision Vertical Head with No. 40 Taper spindle bore is adaptable to either or both spindles. Useful speed range is 200 to 2000 RPM.

TWIN MILL Heads have individual reversible motor drives and controls with wide speed range secured through open belt and selective geared transmission. A compact control center at the operator's fingertips contains all necessary selector switches, pushbuttons, and a master STOP button. Automatic retraction of milling heads during the table return stroke is accomplished by means of powerful air-actuated mechanical linkages mounted inside the knees which carry the heads. These linkages can also be arranged to provide automatic double table cycling for rough and finish milling cuts.



Twin Mills Cut Milling Time In Half . . . Eliminate Second Operations



THE BIG TWINS, available in three power ranges, embody the same high accuracy and versatility built into the smaller Standard Twin Mills. A swiveling pendant control commands all machine functions, including table feed rate. To assure maximum applicability and production usage the following operational features are included with Standard equipment:

- Preload ball bearing spindles for wide speed range.
- Ball Screw variable feed table drive for regular or climb milling.
- Provision for cutting feed on table return stroke.
- Automatic Retraction of milling heads on table return stroke.
- Double table cycling for automatic rough and finish cuts.
- Motorized Knee elevation adjustment from control pendant.
- Brake Motors with selective control for automatic spindle stop.

General Specifications

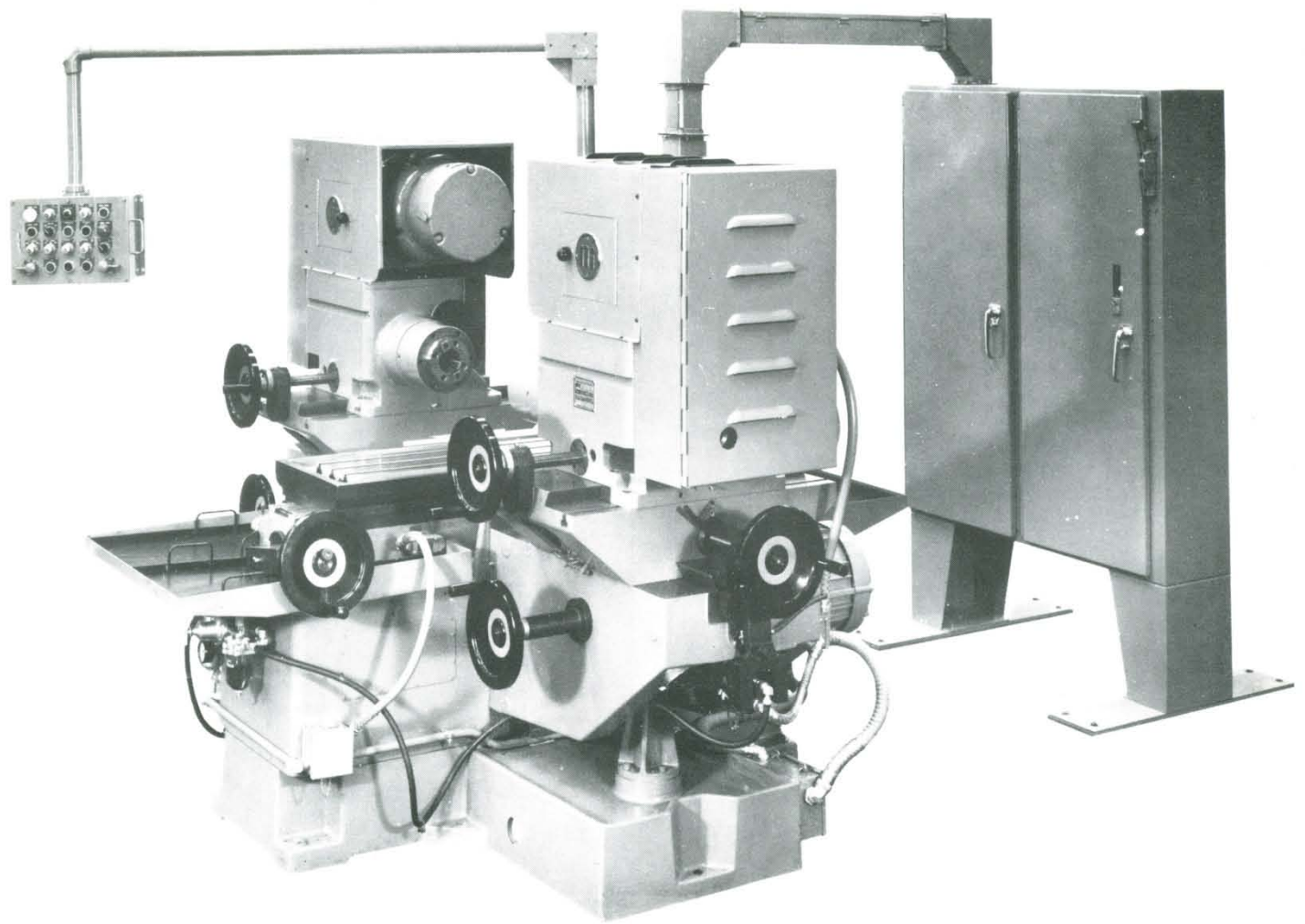
Table

Overall Working Surface	16" × 48"
Working Surface, excluding coolant troughs	10" × 42"
Tee-Slots (3)	11/16" wide
Distance between Tee-Slots	3/4"
Feeds — infinitely variable	1/2" to 200"/min.
Rapid Traverse	200"/min.
Feed Length, Ball Screw — Electric & Manual	36"
Drive — Ball Screw .250" lead, 1 1/2" dia., preloaded to 90 lbs., for backlash elimination, driven by D.C. variable speed motor, governed by tachometer feedback, s.c.r. control. Torque available, 12 ft. lbs. continuous at lead screw at cutting speeds; suitable for climb milling. Motor output at rapid traverse feeds 1.3 HP.	

Spindles

Separation — Spindle Noses	NMTB Std. #50 Max. 28" Min. 4"
Distance — Spindle center lines to top of table	Max. 16 1/2" Min. 4 1/2"
Maximum longitudinal offset of spindle heads	12"
Spindle Speeds	60-2360 RPM
Through gears: 60, 68, 80, 93, 109, 128, 150, 175, 182, 205, 213, 240, 250, 292, 342, 400, 467, 545, 640, 770.	
Through (2) open belts: 575, 672, 780, 920, 1075, 1230, 1440, 1720, 2015, 2360.	
Optional additional low speed range, 5 HP models only	15-190 RPM
Through gears: 15, 16, 19, 23, 27, 31, 36, 42, 44, 50, 51, 59, 60, 71, 83, 97, 113, 132, 155, 190.	

Big Twin Mills



Saddles

Maximum Transverse Travel — Manual..... 12"

Knees

Maximum Vertical Travel — Motor driven, 9" per minute 12"

Horsepower per Head 5, 7½ or 10

Electricals

Floor standing NEMA 12 box (J.I.C.) with connecting trough and swiveling pendant master control station; (2) Spindle Drive motors, foot mounted, 1200 RPM TEFC, 230/460 volts, 60 cycle, 3 phase; table drive motor and controls. Knee Elevating motors, 1½ HP, 900 RPM TEFC, pancake type, 230/460 volts, 3 phase, 60 cycle.

Floor Dimensions

Machine — 90" deep × 98" wide × 85" high
 Electrical Panel — 15" deep × 50" wide × 75" high
 Connecting Trough — 4" × 4" × 48" long

Weights and Measures

	Net Wt.	Boxed Wt.	Shipping Case
Machine only	9,200 lbs.	10,700 lbs.	102" × 110" × 98"
Electrics	1,000 lbs.	1,500 lbs.	62" × 27" × 87"

Standard Equipment

Complete electrical equipment and controls; complete table feed equipment and controls; automatic table ways lubrication; Automatic Retraction of Milling Heads, Double Table Cycling Feature, Brake Motors, Automatic Spindle Stop, Motor-Driven Knee Elevation; chip pan for base; removable splash and chip guard; necessary belts, guards and wrenches. Instruction and Parts Manual.

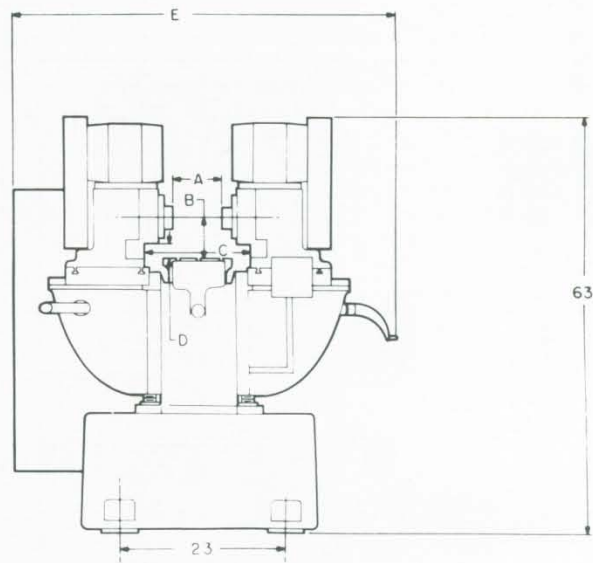
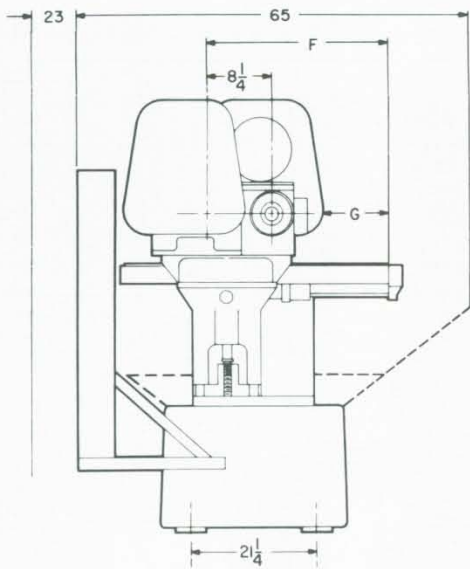
Extra Equipment

Motor-Driven Coolant System, BIJUR Spraymist Coolant System, Vertical Heads, Arbors, Adapters, Collet Equipment, Overarm and Outboard Arbor Supports.

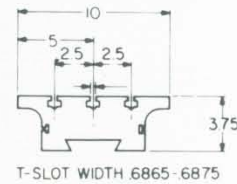
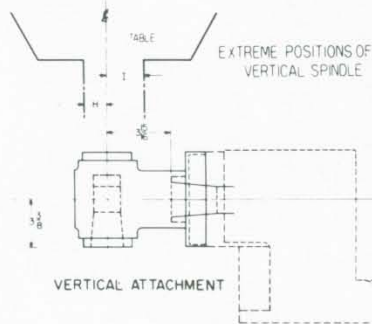
See Page 8 for Detailed Plan Views

Nichols Twin Mills — Floor Plans and Dimensions

Standard Twin Mills



DIM.	MAX.	MIN.
A	16	4
B	11.2	3.5
C	24	12
D	7.8	
E	65	STD. FEED
	74	TRANSV FEED
F	32.5	36" TABLE
	26.5	30" TABLE
G	20.7	36" TABLE
	14.7	30" TABLE
H	1.9	
I	4.1	



T-SLOT WIDTH 6865-6875

Big Twin Mills

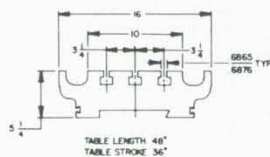
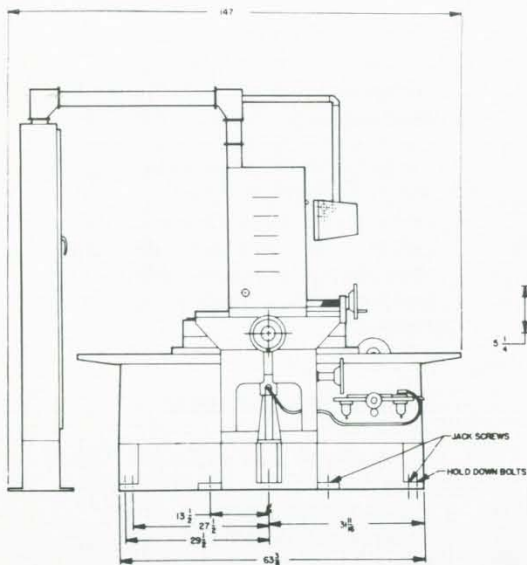
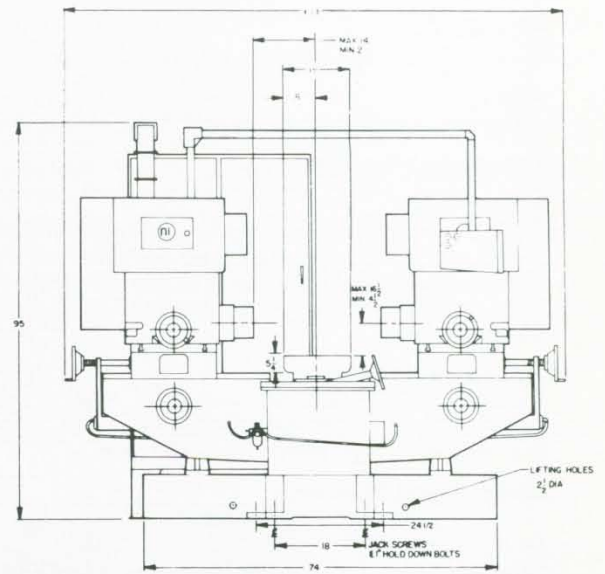


TABLE LENGTH 48"
TABLE STROKE 36"



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