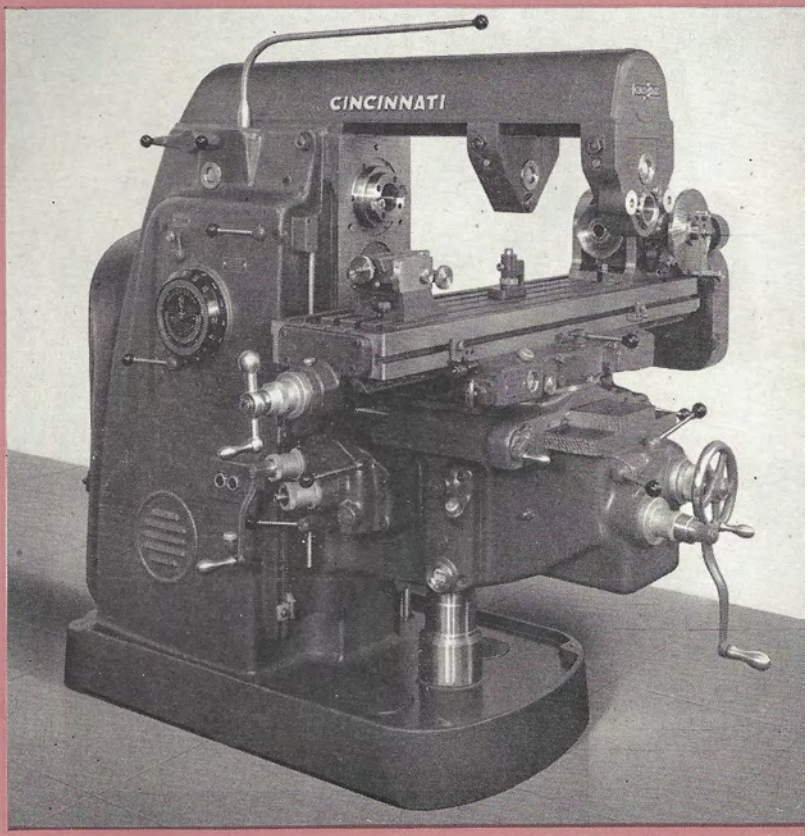
CINCINNATI

Dial Type
milling machines

Nos. 2, 3, 4
Plain, Universal, Vertical



THE CINCINNATI MILLING MACHINE CO. CINCINNATI,9 OHIO. U. S. A.

Publication No. M-1623-1

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CINCINNATI

DIAL TYPE MILLING MACHINES

A WIDE VARIETY OF WORK, manufactured in toolroom or moderate production quantities, may be assigned to CINCINNATI Dial Type Milling Machines. Some of the factors which contribute to the versatility of these machines are: Power feeds in the ratio of 32 to 1 or 192 to 1; power rapid traverse in three directions, independent of the feed rate being used. The Universals are equipped with a CINCINNATI Dividing Head and Driving Mechanism. Verticals are equipped with power feed to the head and a Four-Position Turret Stop for accurate boring and step-milling operations. All three styles are equipped with a DYNAPOISE unit (in the overarm of Plain and Universals; in the column of Verticals) to bring out the maximum in cutting ability imposed by the set-up.

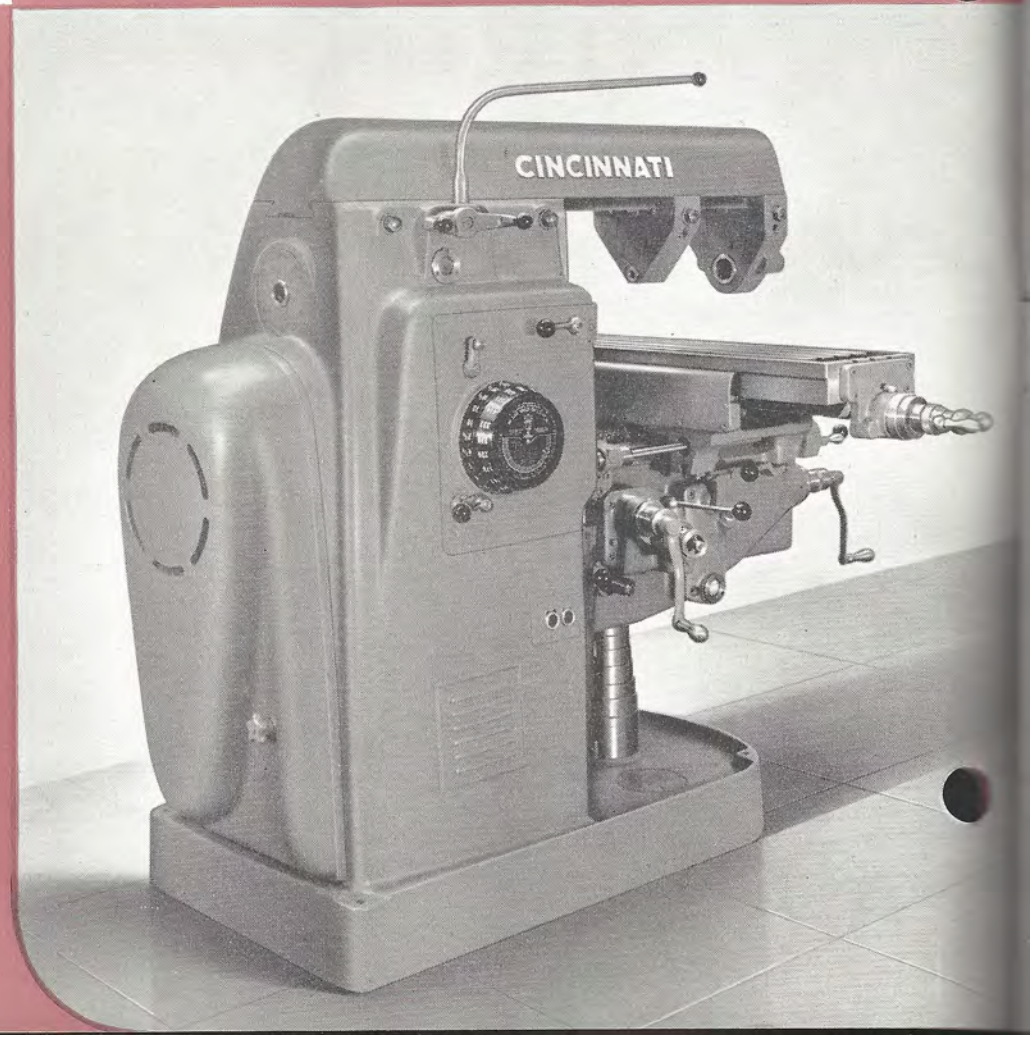
DIAL TYPE CONVENIENCE AND EASE OF OPERATION also contribute their share to the variety of work which may be assigned to these machines. Speeds and feeds, indicated on large direct reading dials nested together, are changed by power with a single finger-tip control lever. A speed calculator, on the face of the dials, enables the operator to determine the correct spindle speed before starting the cut. Control levers are directional, and are conveniently and comfortably located. Plain and Universal Dial Types are supplied with a complete set of control levers at the rear working position, so the operator can always see the cutting action.

THREE SIZES ARE AVAILABLE: Nos. 2, 3, and 4 . . . and three styles, Plain, Universal, and Vertical . . . each in two speed and feed ranges, Medium Speed and High Speed. Complete specifications will be found on the following pages.

CINCINNATI No. 2
Universal Dial Type
Milling Machine.

The Dial Type way of changing spindle speeds at the rear operating position. Both speeds and feeds are changed with the two-position finger-tip control lever in the operator's left hand. Here's how it works. When the lever is held in the "speed" position, the speed dial rotates, stopping momentarily at each numeral. Upon releasing the lever, the proper gears are in mesh for the speed indicated by the button.

CINCINNATI



Rear view of CINCINNATI No. 2 Plain High Speed Dial Type Milling Machine. Sturdy column and smooth, trim lines are evident in this picture. Complete rear controls, also evident in this view, enable the operator to change speeds and feeds, engage feeds or rapid traverse, and adjust the work to the cutter . . . while standing at the rear operating position.

HIGHLIGHTS OF DESIGN

AND ACCRUING BENEFITS

1. POWER SPEED AND FEED CHANGES AT FRONT AND REAR WORKING POSITIONS . . . controlled with single lever. Without walking, speeds and feeds may be changed to suit the job and cut.

2. WIDE RANGE OF SPINDLE SPEEDS AND FEEDS . . . many kinds of materials, from tough steel to aluminum, may be milled at correct speeds and feeds. (Medium speed machines also available.)

3. INDEPENDENT, DIRECTIONAL CONTROLS: LONGITUDINAL CROSS, VERTICAL . . . simplify operation for new men.

4. DUPLICATE SET OF CONTROL LEVERS AT OPERATOR'S REAR WORKING POSITION (Plain and Universal.) . . . when work-piece obscures cutter, operator may manipulate machine from rear of table; reduces spoilage.

5. HEAVY RECTANGULAR DYNAPOISE OVERARM . . . allows higher speed and feed rates to be used for unfavorable set-ups.

6. BUILT-IN PUSH BUTTONS AND ELECTRICAL CONTROLS . . . with disconnect switch, for protection of workmen, mechanically interlocked with electrical compartment door.

7. AUTOMATIC MOTOR CUT-OUT SWITCH . . . if operator forgets to shut off power, motor automatically stops when hinged cover at rear is opened.

8. HAND CRANKS AUTOMATICALLY DISENGAGED WHEN RELEASED . . . safer for the operator.

9. VERTICAL SCREW COVERED AND AUTOMATICALLY LUBRICATED . . . in bath of oil from individual reservoir. Keeps vertical screw cool and accurate when using vertical feed.

HIGHLIGHTS OF DESIGN

AND ACCRUING BENEFITS

10. TOUCH-CONTROL STARTING AND STOPPING . . . light touch of starting lever, front or rear, starts or stops spindle drive. Hydraulic mechanism engages clutch spool, relieving operator of majority of starting and stopping effort.

11. PULL-OUT QUICK-ADJUSTING MICROMETER DIALS . . . easy to set for hand adjustments; no thumbscrews to lose.

12. HEAVY MULTIPLE DISC CLUTCHES . . . heavy duty multiple disc starting clutch starts spindle drive instantly; plenty of reserve power for pulling the heaviest load; heavy duty multiple disc brake stops spindle instantly . . . safer for the operator.

13. POWER RAPID TRAVERSE: LONGITUDINAL, CROSS, VERTICAL . . . minimizes "cutting air"; saves time.

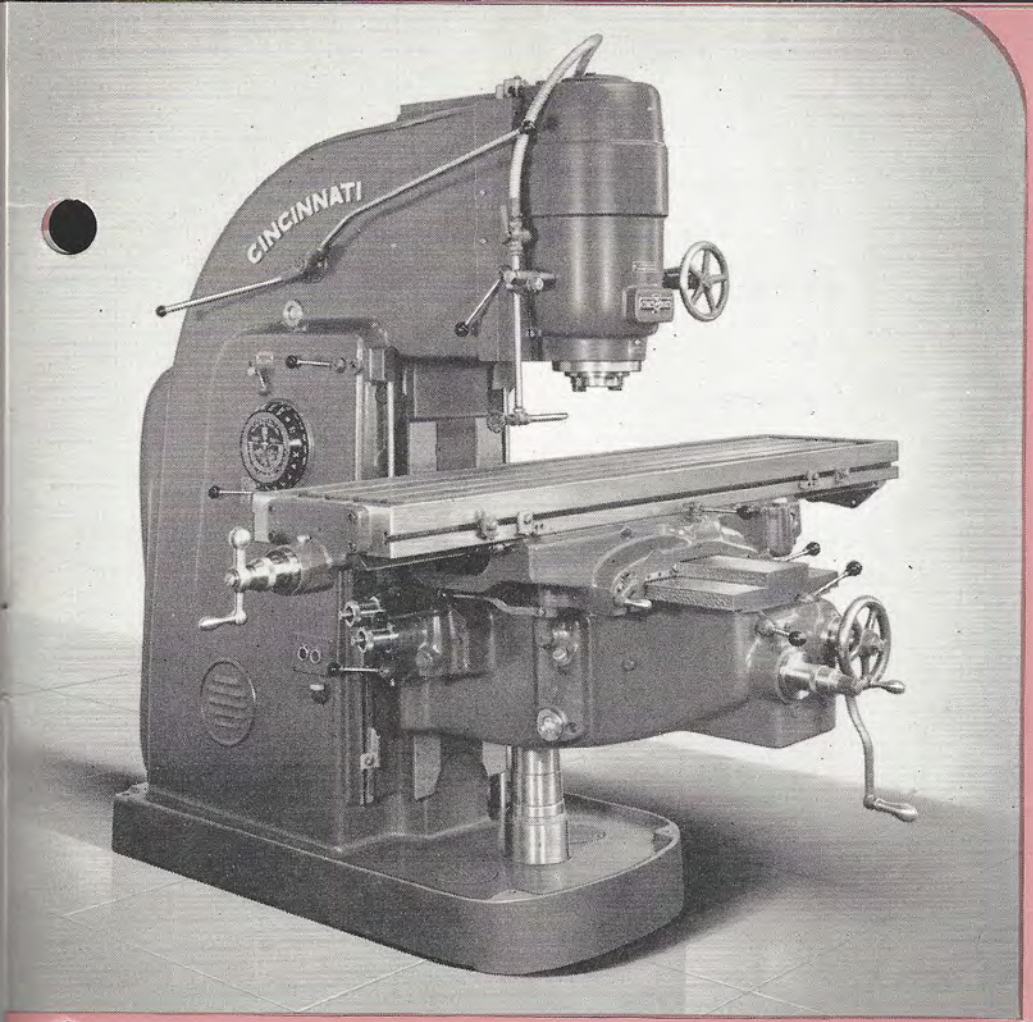
14. SMOOTH, STREAMLINED DESIGN . . . easy to keep clean.

15. SPEED CALCULATOR . . . for determining the correct spindle speed . . . lengthens cutter life.

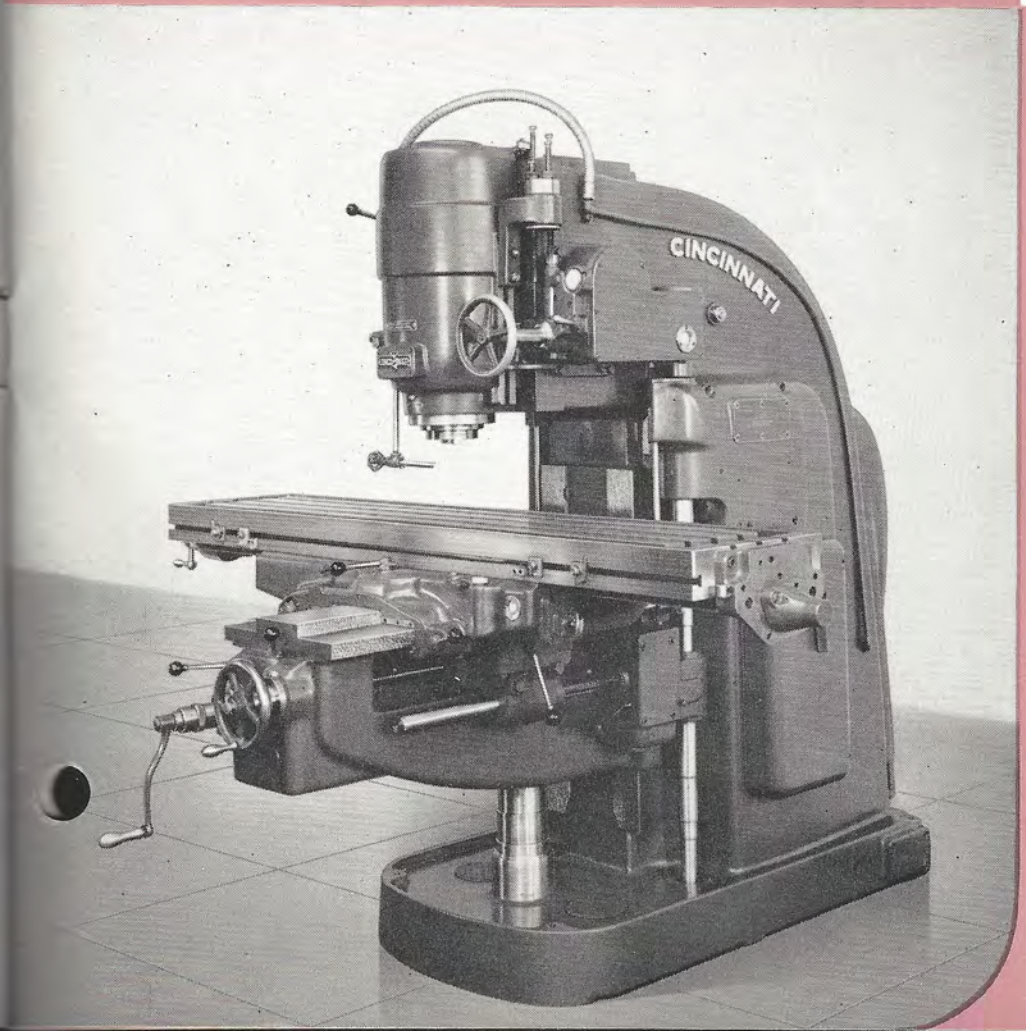
16. SIMPLE, EFFECTIVE LUBRICATION . . . principally automatic; prolongs machine life-span; daily requirements can be handled very quickly.

17. POWER FEED AND RAPID TRAVERSE WITH FOUR-POSITION TURRET STOP FOR VERTICAL HEAD . . . convenient for boring and die work.

18. DIVIDING HEAD WITH DRIVING MECHANISM. (UNIVERSAL) . . . safer for the operator. Provides leads of 2.5″ to 100″. (Leads from .010″ to 1000″ with special attachment.)

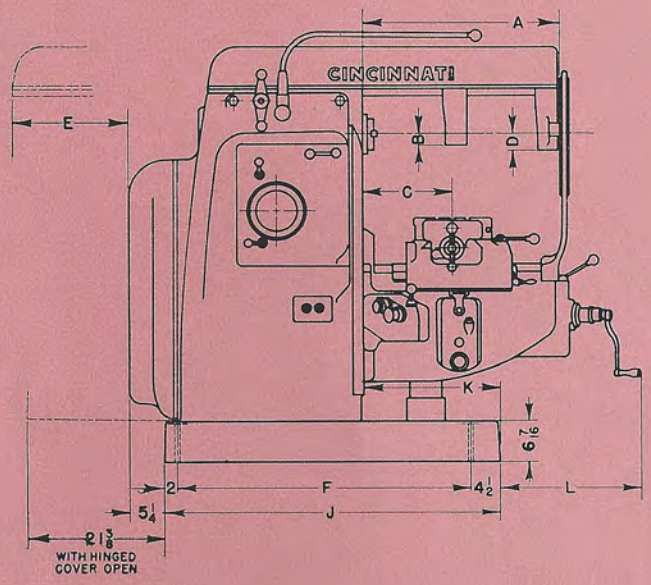


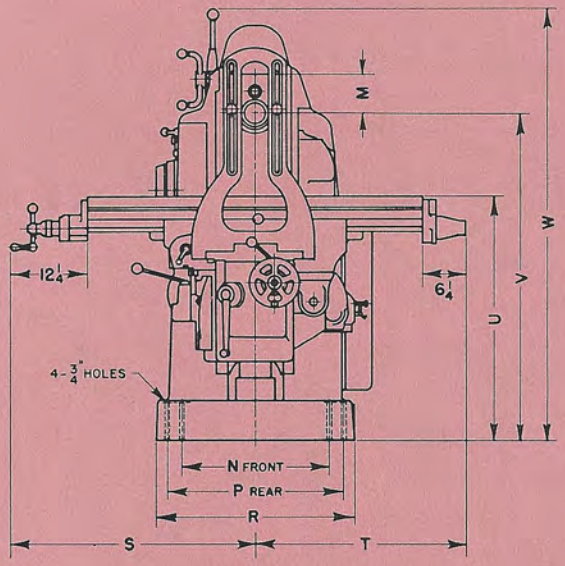
CINCINNATI No. 4 Vertical High Speed Dial Type Milling Machine. The telescopic tubes beneath the knee return the coolant to the reservoir in the base. Within these tubes, a smaller set of telescopic tubes protect the vertical screw. And the vertical screw is automatically lubricated from an individual reservoir.

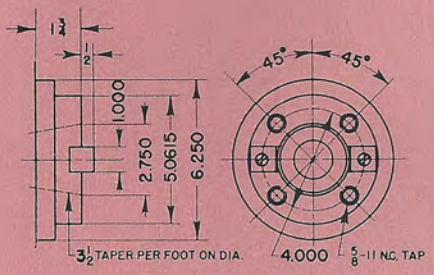


CINCINNATI No. 4 Vertical High Speed Dial Type Milling Machine. Built-in electrical controls, protected by a hinged cover at the side of the column, include a disconnect switch mechanically interlocked with electrical compartment cover.

DIMENSIONAL DRAWING







SPINDLE NOSE
STANDARD FLANGED END
WITH NO. 50 SERIES TAPER

SHADED AREA INDICATES MAXIMUM CUTTING AREA

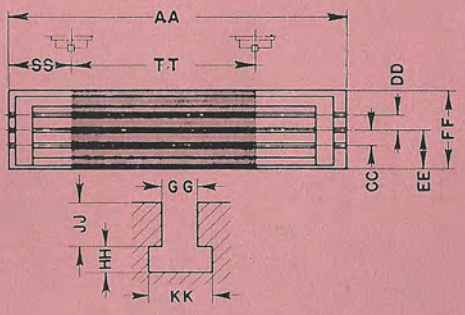
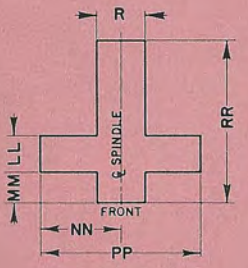


TABLE & TEE SLOT

PC-3036



FLOOR PLAN

Size of Machine	A	B	C Min.	C Max.	D	E	F	J	K	L	M	N	P	R	S Min.	S Max.	T Min.	T Max.	Size of Machine
No. 2 Plain	30 3/4	7/8	9 3/16	19 7/8	2 1/2	18 1/2	45 3/4	52 1/4	21	23 1/2	6 1/8	23	27 1/2	30 1/2	22 1/16	50 9/16	20 3/4	49 1/4	No. 2 Plain
No. 3 Plain	34	1 13/16	10 13/16	23 5/16	2 1/2	19 3/4	52 3/4	59 1/4	21	26 1/8	7 3/8	23	29 1/2	32 1/2	23 1/4	57 3/4	23 3/8	57 7/8	No. 3 Plain
No. 4 Plain	38 3/4	1 13/16	11 1/4	25 7/8	2 1/2	23 1/2	52 3/4	59 1/4	21	31 1/8	7 3/8	23	29 1/2	32 1/2	27 1/4	69 3/4	27 3/8	69 7/8	No. 4 Plain

Size of Machine	U Min.	U Max.	V	W	AA	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	RR	SS	TT	Size of Machine
No. 2 Plain	32 1/4	51 7/16	51 7/16	68 1/8	52 11/16	2 5/16	2 5/16	6	12 1/4	11/16	21/64	7/8	1 1/4	23	19	50 9/16	99 13/16	100	9 13/16	28	No. 2 Plain
No. 3 Plain	34	54 7/16	54 7/16	72 3/8	62 1/2	3 1/4	3 1/4	7 1/2	15 1/4	13/16	5/8	1	1 15/32	30	17	57 3/4	115 3/8	111	11	34	No. 3 Plain
No. 4 Plain	34	54 7/16	54 7/16	72 3/8	78 1/2	3 1/4	3 1/4	8	16 1/4	13/16	5/8	1	1 15/32	30 7/8	18 1/4	69 3/4	139 5/8	119	15	42	No. 4 Plain

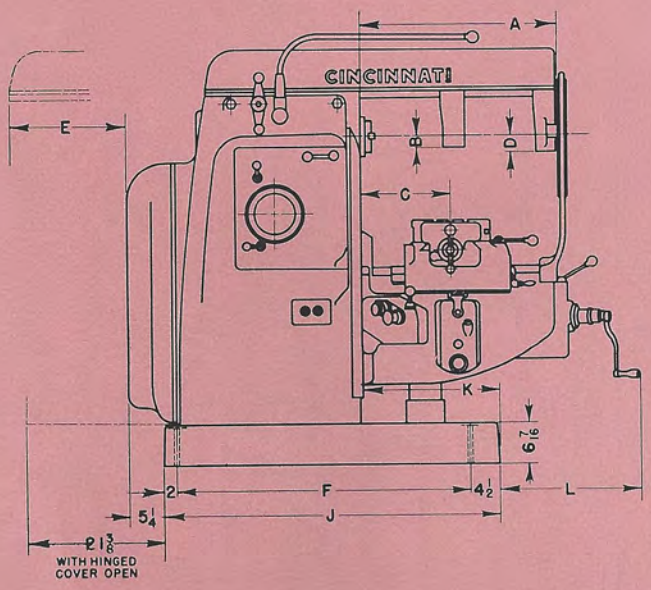
PLAIN DIAL TYPE MILLING MACHINES

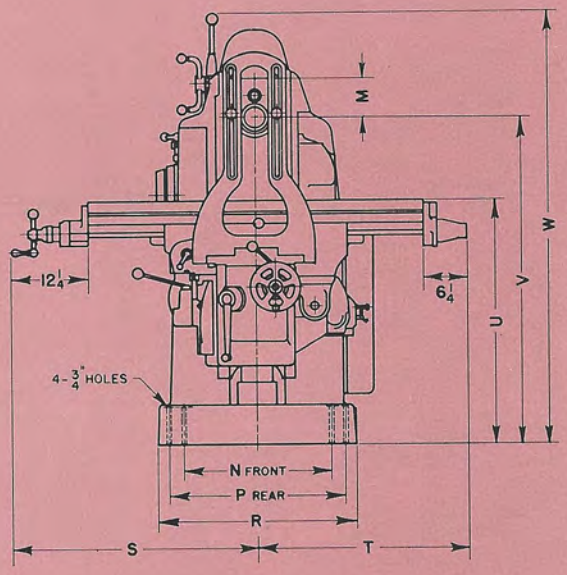
GENERAL SPECIFICATIONS

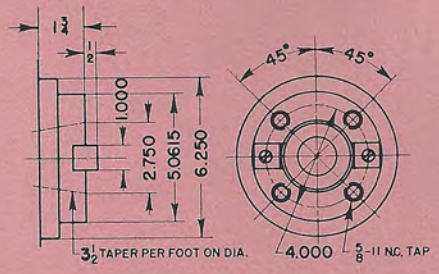
HIGH-SPEED AND MEDIUM SPEED	No. 2 Plain	No. 3 Plain	No. 4 Plain
TABLE			
Working surface	52 11/16"x12 1/4"	62 1/2"x15 1/4"	78 1/2"x16 1/4"
Size over all	52 11/16"x12 1/4"	62 1/2"x15 1/4"	78 1/2"x16 1/4"
T-slots (number and size)	Three—11/16"	Three—13/16"	Three—1 1/16"
Distance between T-slots	2 5/16"	3 1/4"	3 1/4"
RANGE			
Longitudinal	28"	34"	42"
Cross	10"	12"	14"
Vertical	19"	20"	20"
Maximum distance from centerline of spindle to top of table	19 3/16"	20 7/16"	20 7/16"
Minimum distance from centerline of spindle to top of table	0"	0"	0"
FULL WIDTH			
Column to brace	30 3/4"	34"	38 3/4"
Column to inside of outer arbor support bushing—with brace in place	26 3/8"	29 5/8"	34 3/8"
OVERARM—Rectangular			
Distance from under-side to centerline of arbor	6 1/8"	7 3/8"	7 3/8"
ARBOR SUPPORTS—Self-oiling. (See standard equipment list page 14)			
Number	2	2	2
SPINDLE—Chrome nickel steel			
Flanged end with standard taper hole	No. 50	No. 50	No. 50
Diameter of nose	5 1/16"	5 1/16"	5 1/16"
Size of hole through	1 1/16"	1 1/16"	1 1/16"
Reverse	Yes	Yes	Yes
POWER RAPID TRAVERSE RATES			
Longitudinal	100" per min.	100" per min.	100" per min.
Cross	100" per min.	100" per min.	100" per min.
Vertical	80" per min.	80" per min.	80" per min.
DRIVE			
Pulley speed	600 r.p.m.	600 r.p.m.	600 r.p.m.
Horsepower rating	7 1/2 h.p.	10 h.p.	15 h.p.
FLOOR SPACE			
Area	100"x99 1/16" = 69 sq. ft.	115 3/8"x111" = 89 sq. ft.	139 5/8"x119" = 115 sq. ft.
SHIPPING WEIGHTS AND DATA—All weights are for enclosed multiple "V" belt motor drive, including motor and control equipment	Medium Speed / High Speed	Medium Speed / High Speed	Medium Speed / High Speed
Net weight, lbs.	6490 / 6590	8680 / 8780	9385 / 9485
Gross weight, lbs., domestic	7490 / 7590	9730 / 9830	10735 / 10835
Gross weight, lbs., export	7690 / 7790	10080 / 10180	11135 / 11235
Approximate size of case	88"x74"x52"	94"x80"x52"	100"x84"x54"
Approximate cubic feet	196	227	263
CODE NAMES	NUWLP / MUALP	NUALP / MUBVE	NUENC / MUTIP
Enclosed multiple "V" belt drive, including motor (Supplied as standard equipment unless otherwise specified.)			
MEDIUM SPEED MACHINES			
SPINDLE SPEEDS (Sixteen in approximate geometrical progression)	20, 26, 32, 40, 47, 60, 74, 92, 116, 141, 179, 222, 262, 331, 414, 500 rpm	18, 22, 27, 33, 40, 51, 63 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm	18, 22, 27, 33, 40, 51, 63, 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm
FEEDS			
Number of feeds	16	16	16
Standard range—Table and cross feeds	5/8" to 20" per min.	5/8" to 20" per min.	5/8" to 20" per min.
5/8, 7/8, 1 1/8, 1 3/8, 1 3/4, 2 1/8, 2 5/8, 3 1/4, 4 1/4, 5 1/2, 6 3/4, 8 1/4, 10 1/2, 13 1/2, 16, 20 inches per minute.			
Vertical feeds are 8/10 of table and cross feeds given above.			
Optional low series: 1/16 to 10 inches per minute.			
Optional high series: 1 to 30 inches per minute.			
HIGH-SPEED MACHINES			
SPINDLE SPEEDS (Twenty-one in approximate geometrical progression)	20, 25, 32, 39, 47, 59, 74, 92, 114, 142, 178, 220, 270, 333, 414, 515, 635, 780, 970, 1200, 1500 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97. 122, 152, 188, 230, 286, 357, 445, 550, 675. 840, 1045, 1300 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97, 122, 152, 188, 230, 286, 357, 445, 550, 675, 840, 1045, 1300 rpm
FEEDS			
Number of feeds	24	24	24
Standard Range—Table and cross feeds	1/16" to 60" per min.	1/16" to 60" per min.	1/16" to 60" per min.
1/16, 1/16, 3/16, 1/16, 1/16, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3 1/4, 4, 5, 6 3/8, 7 3/4, 10, 13, 16 1/2, 20 1/2, 25 1/2, 32, 40, 49, 60 inches per minute.			
Vertical feeds are 8/10 of table and cross feeds given above			

STANDARD EQUIPMENT—Listed on Page 14
EQUIPMENT SUPPLIED AT EXTRA COST—Listed on Page 15

DIMENSIONAL DRAWING







SPINDLE NOSE
STANDARD FLANGED END
WITH NO. 50 SERIES TAPER

SHADED AREA INDICATES MAXIMUM CUTTING AREA

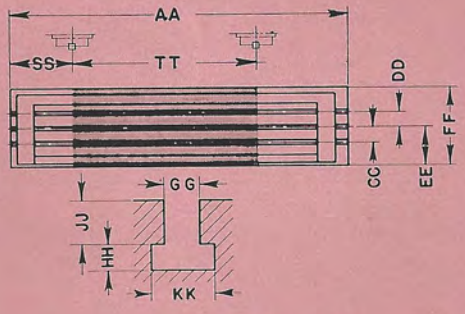
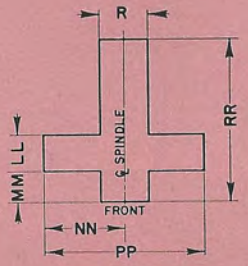


TABLE & TEE SLOT

PC-3036



FLOOR PLAN

Size of Machine	A	B	C Min.	C Max.	D	E	F	J	K	L	M	N	P	R	S Min.	S Max.	T Min.	T Max.	Size of Machine
No. 2 Univ.	30 3/4	7/8	9 5/16	19 7/8	2 1/2	18 1/2	45 3/4	52 1/4	21	23 1/2	6 1/8	23	27 1/2	30 1/2	22 7/16	50 13/16	20 3/8	48 7/8	No. 2 Univ.
No. 3 Univ.	34	1 13/16	10 13/16	23 5/16	2 1/2	19 3/4	52 3/4	59 1/4	21	26 1/8	7 3/8	23	29 1/2	32 1/2	23 1/4	57 3/4	23 3/8	57 7/8	No. 3 Univ.
No. 4 Univ.	38 3/4	1 13/16	11 1/4	25 7/8	2 1/2	23 1/2	52 3/4	59 1/4	21	31 1/8	7 3/8	23	29 1/2	32 1/2	27 1/4	69 3/4	27 3/8	69 7/8	No. 4 Univ.

Size of Machine	U Min.	U Max.	V	W	AA	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	RR	SS	TT	Size of Machine
No. 2 Univ.	33 1/4	51 7/16	51 7/16	68 1/8	52 11/16	2 5/16	2 5/16	6	12 1/4	11/16	31/64	7/8	1 1/4	23	19	50 9/16	99 13/16	100	9 13/16	28	No. 2 Univ.
No. 3 Univ.	35	54 7/16	54 7/16	72 3/8	62 1/2	3 1/4	3 1/4	7 1/2	15 1/4	13/16	5/8	1	1 13/32	30	17	57 3/4	115 3/8	111	11	34	No. 3 Univ.
No. 4 Univ.	35	54 7/16	54 7/16	72 3/8	78 1/2	3 1/4	3 1/4	8	16 1/4	13/16	5/8	1	1 13/32	30 7/8	18 1/4	69 3/4	139 5/8	119	15	42	No. 4 Univ.

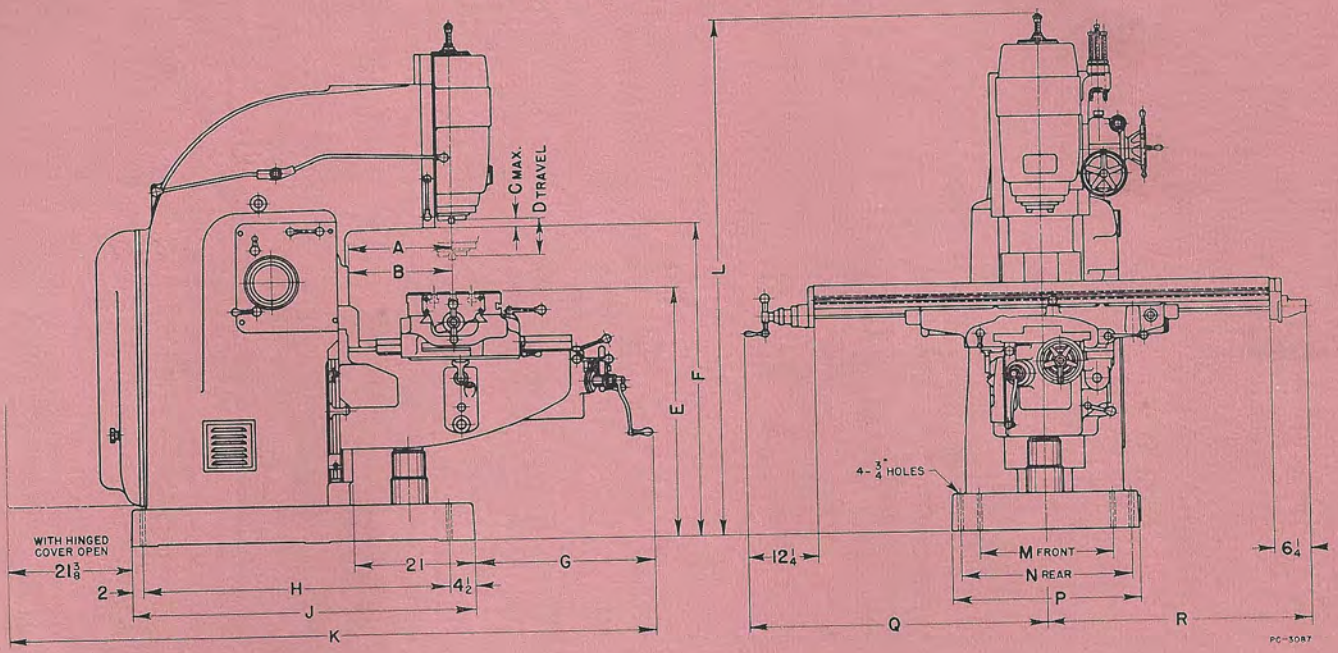
UNIVERSAL DIAL TYPE MILLING MACHINES

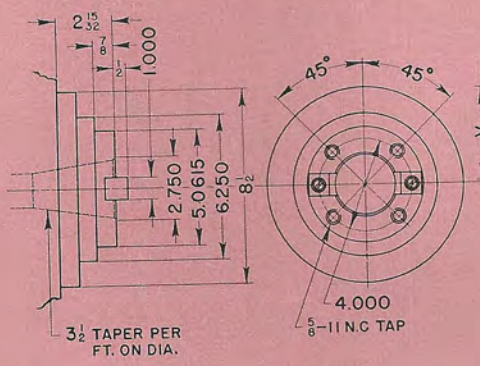
GENERAL SPECIFICATIONS

HIGH-SPEED AND MEDIUM SPEED	No. 2 Universal	No. 3 Universal	No. 4 Universal
TABLE			
Working surface	52 11/16"x12 1/4"	62 1/2"x15 1/4"	78 1/2"x16 1/4"
Size over all	52 11/16"x12 1/4"	62 1/2"x15 1/4"	78 1/2"x16 1/4"
T-slots (number and size)	Three—5/8"	Three—13/16"	Three—13/16"
Distance between T-slots	2 5/16"	3 1/4"	3 1/4"
Swivels—Right or left	45°	47°	49°
RANGE			
Longitudinal	28"	34"	42"
Cross	10"	12"	14"
Vertical	18"	19"	19"
Maximum distance from centerline of spindle to top of table	18 3/16"	19 7/16"	19 7/16"
Minimum distance from centerline of spindle to top of table	0"	0"	0"
FULL WIDTH			
Column to brace	30 3/4"	34"	38 3/4"
Column to inside of outer arbor support bushing—with brace in place	26 3/8"	29 5/8"	34 1/8"
OVERARM—Rectangular			
Distance from under-side to centerline of arbor	6 1/8"	7 3/8"	7 3/8"
ARBOR SUPPORTS—Self-oiling. (See standard equipment list page 14)			
Number	2	2	2
DIVIDING HEAD. (See standard equipment list page 14)			
Swing	10"	12"	14"
Maximum length of work	28"	36 1/2"	52 1/2"
Lead range with standard driving mechanism	2 1/2" to 100"	2 1/2" to 100"	2 1/2" to 100"
SPINDLE—Chrome nickel steel			
Flanged end with standard taper hole	No. 50	No. 50	No. 50
Diameter of nose	5 1/16"	5 1/16"	5 1/16"
Size of hole through	1 1/8"	1 1/8"	1 1/8"
Reverse	Yes	Yes	Yes
POWER RAPID TRAVERSE RATES			
Longitudinal	100" per min.	100" per min.	100" per min.
Cross	100" per min.	100" per min.	100" per min.
Vertical	80" per min.	80" per min.	80" per min.
DRIVE			
Pulley speed	600 r.p.m.	600 r.p.m.	600 r.p.m.
Horsepower rating	7 1/2 h.p.	10 h.p.	15 h.p.
FLOOR SPACE			
Area	100"x99 13/16" = 69 sq. ft.	115 3/8"x111" = 89 sq. ft.	139 5/8"x119" = 115 sq. ft.
SHIPPING WEIGHTS AND DATA—All weights are for enclosed multiple "V" belt motor drive including motor and control equipment.	Medium Speed / High Speed	Medium Speed / High Speed	Medium Speed / High Speed
Net weight, lbs.	6840 / 6940	9300 / 9400	10335 / 10435
Gross weight, lbs., domestic	7940 / 8040	10600 / 10700	11735 / 11835
Gross weight, lbs., export	8140 / 8240	10950 / 11050	12135 / 12235
Approximate size of case	88"x74"x52"	94"x80"x52"	100"x84"x64"
Approximate cubic feet	196	227	312
CODE NAMES			
Enclosed multiple "V" belt drive, including motor (Supplied as standard equipment unless otherwise specified.)	NUMUL / MUMUL	NUUVB / MUVEB	NUELD / MUPLE
MEDIUM SPEED MACHINES			
SPINDLE SPEEDS (Sixteen in approximate geometrical progression)	20, 26, 32, 40, 47, 60, 74, 92, 116, 141, 179, 222, 262, 331, 414, 500 rpm	18, 22, 27, 33, 40, 51, 63, 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm	18, 22, 27, 33, 40, 51, 63, 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm
FEEDS			
Number of feeds	16	16	16
Standard range—Table and cross feeds 5/8, 7/8, 1 1/8, 1 3/8, 1 3/4, 2 1/8, 2 5/8, 3 1/4, 4 1/4, 5 1/2, 6 3/4, 8 1/4, 10 1/2, 13 1/2, 16, 20 inches per minute. Vertical feeds are 8/10 of table and cross feeds given above.	5/8" to 20" per min.	5/8" to 20" per min.	5/8" to 20" per min.
Optional low series: 5/16 to 10 inches per minute.			
Optional high series: 1 to 30 inches per minute.			
HIGH-SPEED MACHINES			
SPINDLE SPEEDS (Twenty-one in approximate geometrical progression)	20, 25, 32, 39, 47, 59, 74, 92, 114, 142, 178, 220, 270, 333, 414, 515, 635, 780, 970, 1200, 1500 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97, 122, 152, 188, 230, 286, 357, 445, 550, 675, 840, 1045, 1300 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97, 122, 152, 188, 230, 286, 357, 445, 550, 675, 840, 1045, 1300 rpm
FEEDS			
Number of feeds	24	24	24
Standard Range—Table and cross feeds 5/16, 7/16, 9/16, 11/16, 13/16, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3 1/4, 4, 5, 6 3/8, 7 3/4, 10, 13, 16 1/2, 20 1/2, 25 1/2, 32, 40, 49, 60 inches per minute. Vertical feeds are 8/10 of table and cross feeds given above.	5/16" to 60" per min.	5/16" to 60" per min.	5/16" to 60" per min.

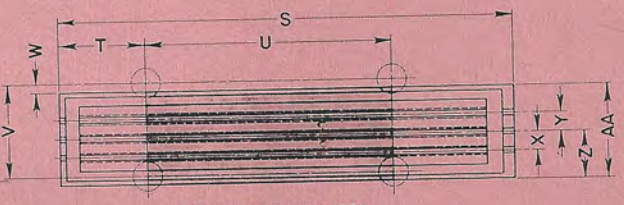
STANDARD EQUIPMENT—Listed on Page 14
EQUIPMENT SUPPLIED AT EXTRA COST—Listed on Page 15

DIMENSIONAL DRAWING





SPINDLE NOSE
STANDARD FLANGED END
WITH NO. 50 SERIES TAPER



SHADED AREA INDICATES
MAXIMUM CUTTING AREA

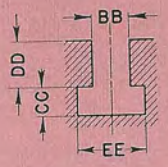
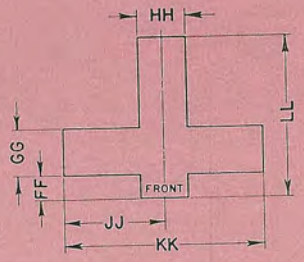


TABLE & TEE SLOT



FLOOR PLAN PC-3087

Size of Machine	A	B Min.	B Max.	C	D	E Min.	E Max.	F	G	H	J	K	L	M	N	P	Q Min.	Q Max.	R Min.	R Max.	Size of Machine
No. 2 Vertical	14	9 3/16	21 1/2	1 1/32	6 1/4	31 1/2	45	49 7/16	23 1/2	45 3/4	52 1/4	96 11/16	83 11/16	23	27 1/2	30 1/2	22 1/16	50 9/16	20 5/8	49 1/8	No. 2 Vertical
No. 3 Vertical	18	10 13/16	27 1/8	1 1/4	6 1/4	33 1/4	49 13/16	54 1/2	31 1/8	52 3/4	59 1/4	111 5/8	89 5/16	23	32 1/2	32 1/2	23 1/4	57 3/4	23 1/4	57 3/4	No. 3 Vertical
No. 4 Vertical	18	11 1/4	27 1/2	1 1/4	6 1/4	33 1/4	49 13/16	54 1/2	31 1/8	52 3/4	59 1/4	111 5/8	89 5/16	23	32 1/2	32 1/2	27 1/4	69 3/4	27 1/4	69 3/4	No. 4 Vertical

Size of Machine	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	*MM	Size of Machine
No. 2 Vertical	52 11/16	9 13/16	28 1/2	12 5/16	1 1/4	2 5/16	2 5/16	6	12 1/4	11/16	31/64	7/8	1 1/4	16 9/16	24 9/16	30 1/2	50 9/16	99 13/16	96 11/16	9 1/2	No. 2 Vertical
No. 3 Vertical	62 1/2	11	34 1/2	16 5/16	1 3/8	3 1/4	3 1/4	7 1/2	15 1/4	13/16	5/8	1	1 1/32	17 1/8	31 9/16	32 1/2	57 3/4	115 1/2	111 5/8	11 1/2	No. 3 Vertical
No. 4 Vertical	78 1/2	15	42 1/2	16 1/4	1 1/2	3 1/4	3 1/4	8	16 1/4	13/16	5/8	1	1 1/32	16 1/4	32 1/2	32 1/2	69 3/4	139 1/2	111 5/8	11 1/2	No. 4 Vertical

*Note—MM is maximum diameter cutter with head in uppermost position.

VERTICAL DIAL TYPE MILLING MACHINES

GENERAL SPECIFICATIONS

HIGH-SPEED AND MEDIUM SPEED	No. 2 Vertical	No. 3 Vertical	No. 4 Vertical
TABLE			
Working surface	52 11/16" x 12 1/4"	62 1/2" x 15 1/4"	78 1/2" x 16 1/4"
Size over all	52 11/16" x 12 1/4"	62 1/2" x 15 1/4"	78 1/2" x 16 1/4"
T-slots (number and size)	Three—11/16"	Three—11/16"	Three—11/16"
Distance between T-slots	2 5/16"	3 1/4"	3 1/4"
RANGE			
Longitudinal	28"	34"	42"
Cross	12"	16"	16"
Vertical	13"	16"	16"
Head travel	6"	6"	6"
Distance from spindle nose to top of table	18"	22"	22"
Throat distance, centerline of spindle to column	14"	18"	18"
SPINDLE—Chrome nickel steel			
Flanged end with standard taper hole	No. 50	No. 50	No. 50
Diameter of nose	5 1/16"	5 1/16"	5 1/16"
Size of hole through	1 1/8"	1 1/8"	1 1/8"
Reverse	Yes	Yes	Yes
POWER RAPID TRAVERSE RATES			
Longitudinal	100" per min.	100" per min.	100" per min.
Cross	100" per min.	100" per min.	100" per min.
Vertical	80" per min.	80" per min.	80" per min.
DRIVE			
Pulley speed	750 r.p.m.	750 r.p.m.	750 r.p.m.
Horsepower rating	7 1/2 h.p.	10 h.p.	15 h.p.
FLOOR SPACE	99 11/16" x 96 1/2"	115 1/2" x 111 5/8"	139 1/2" x 111 5/8"
Area	67 sq. ft.	89 sq. ft.	109 sq. ft.
SHIPPING WEIGHTS AND DATA—All weights are for enclosed multiple "V" belt motor drive including motor and control equipment.	Medium Speed / High Speed	Medium Speed / High Speed	Medium Speed / High Speed
Net weight, lbs	7290 / 7390	9500 / 9600	10185 / 10285
Gross weight, lbs., domestic	8440 / 8540	10400 / 10500	11035 / 11135
Gross weight, lbs., export	8640 / 8740	11100 / 11200	11785 / 11885
Approximate size of case	88" x 84" x 52"	100" x 90" x 54"	100" x 90" x 54"
Approximate cubic feet	223	282	282
CODE NAMES			
Enclosed multiple "V" belt drive, including motor (Supplied as standard equipment unless otherwise specified on order)	NUVEB / MUELT	NUEVE / MUOPT	NUMOL / MUQUI
MEDIUM SPEED MACHINES			
SPINDLE SPEEDS (Sixteen in approximate geometrical progression)	20, 26, 32, 40, 47, 60, 74, 92, 116, 141, 179, 222, 262, 331, 414, 500 rpm	18, 22, 27, 33, 40, 51, 63, 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm	18, 22, 27, 33, 40, 51, 63, 78, 96, 123, 151, 187, 223, 281, 350, 450 rpm
FEEDS			
Number of feeds	16	16	16
Standard range—Table and cross feeds 5/8, 7/8, 1 1/8, 1 3/8, 1 3/4, 2 1/8, 2 5/8, 3 1/4, 4 1/4, 5 1/2, 6 3/4, 8 1/4, 10 1/2, 13 1/2, 16, 20 inches per minute. Vertical feeds are 8/10 of table and cross feeds given above.	5/8" to 20" per min.	5/8" to 20" per min.	5/8" to 20" per min.
Optional low series: 1/16 to 10 inches per minute.			
Optional high series: 1 to 30 inches per minute.			
POWER TRAVERSE TO HEAD.			
Number of feeds	16	16	16
Feed range	5/16" to 8" per min.	5/16" to 8" per min.	5/16" to 8" per min.
Rapid traverse rate	40" per min.	40" per min.	40" per min.
HIGH-SPEED MACHINES			
SPINDLE SPEEDS (Twenty-one in approximate geometrical progression)	20, 25, 32, 39, 47, 59, 74, 92, 114, 142, 178, 220, 270, 333, 414, 515, 635, 780, 970, 1200, 1500 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97, 122, 152, 188, 230, 286, 357, 445, 550, 675, 840, 1045, 1300 rpm	18, 22, 27, 34, 41, 51, 63, 78, 97, 122, 152, 188, 230, 286, 357, 445, 550, 675, 840, 1045, 1300 rpm
FEEDS			
Number of feeds	24	24	24
Standard Range—Table and cross feeds 1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3 1/4, 4, 5, 6 3/8, 7 3/4, 10, 13, 16 1/2, 20 1/2, 25 1/2, 32, 40, 49, 60 inches per minute. Vertical feeds are 8/10 of table and cross feeds given above.	5/16" to 60" per min.	5/16" to 60" per min.	5/16" to 60" per min.
POWER TRAVERSE TO HEAD.			
Number of feeds	24	24	24
Feed range	1/8" to 24" per min.	1/8" to 24" per min.	1/8" to 24" per min.
Rapid traverse rate	40" per min.	40" per min.	40" per min.

STANDARD EQUIPMENT—Listed on Page 14
EQUIPMENT SUPPLIED AT EXTRA COST—Listed on Page 15

STANDARD EQUIPMENT (Supplied with the Machine)

Plain, Universal and Vertical Machines—High Speed and Medium Speed

COMPLETE ELECTRICAL EQUIPMENT for 50 or 60 cycle, 2 or 3 phase, 220 to 550 volts AC and wired in accordance with the "Machine Tool Electrical Standards." Motor: Open, normal torque, low starting current, N.E.M.A. frame, ball bearing.

Controls: Full voltage magnetic starter with overload and under-voltage protection including transformer and push buttons operated at 110 volts.

Disconnect Switch: Built in and mechanically interlocked with electrical compartment door.

Plain Machines—High Speed and Medium Speed

ARBOR SUPPORTS: No. 2 Millers—one Style "B" with 2⅛" adjustable arbor bushing and provided with lugs for brace—one Style "A" with adjustable arbor bushing for pilot end arbors. Nos. 3 and 4 Millers—one Style "B" with 2⅛" adjustable arbor bushing without lugs for brace—one style "B" with 2⅛" adjustable arbor bushing and provided with lugs for brace.

ARBOR SUPPORT BUSHING ADAPTER M-01 (includes adjustable bushing, nut, washer and screw) for Style "A" arbors, Nos. 3 and 4 Machines only.

STANDARD FEED RANGE—High speed machines, $\frac{5}{16}$" to 60" per minute. Medium speed machines, ⅝" to 20" per minute.

REAR HAND ADJUSTMENT AND REAR POWER FEED CONTROL—Longitudinal, cross, and vertical.

ADJUSTABLE ARBOR TIGHTENING ROD.

WRENCHES COOLANT PUMP.

OVERARM BRACE.

Universal Machines—High Speed and Medium Speed

ARBOR SUPPORTS: No. 2 Millers—one Style "B" with 2⅛" adjustable arbor bushing and provided with lugs for brace—one Style "A" with adjustable arbor bushing for pilot end arbors. Nos. 3 and 4 Millers—one Style "B" with 2⅛" adjustable arbor bushing without lugs for brace—one Style "B" with 2⅛" adjustable arbor bushing and provided with lugs for brace.

ARBOR SUPPORT BUSHING ADAPTER M-01 (includes adjustable bushing, nut, washer and screw) for Style "A" arbors, Nos. 3 and 4 Machines only.

STANDARD FEED RANGE—High speed machines, $\frac{5}{16}$" to 60" per minute. Medium speed machines, ⅝" to 20" per minute.

ADJUSTABLE ARBOR TIGHTENING ROD.

WRENCHES. COOLANT PUMP.

OVERARM BRACE.

STANDARD UNIVERSAL DIVIDING HEAD EQUIPMENT, including tailstock with 2-point adjustable center; steady rest; one plate for indexing through 40 to 1 reduction—all numbers up to and including 60, all even numbers and those divisible by 5 up to 120, and many beyond; one plate for direct indexing; one center for headstock; and provision for connecting head to enclosed driving mechanism segment. Sizes (nominal swing): 10" for No. 2 Machines; 12" for No. 3 Machine; 14" for No. 4 Machine.

ENCLOSED DRIVING MECHANISM SEGMENT, including change gears for spiral milling, leads range from 2½" to 100" (only) for Standard Universal Dividing Heads.

REAR HAND ADJUSTMENT AND REAR POWER FEED CONTROLS—longitudinal, cross, and vertical.

Vertical Machines—High Speed and Medium Speed

ADJUSTABLE ARBOR TIGHTENING ROD.

WRENCHES.

COOLANT PUMP.

REAR POWER FEED CONTROL—Longitudinal only.

STANDARD FEED RANGE—High speed machines, $\frac{5}{16}$" to 60" per minute. Medium speed machines, ⅝" to 20" per minute.

POWER FEED AND POWER QUICK TRAVERSE to the vertical head.

TURRET STOP, four position with dial indicator.

EQUIPMENT SUPPLIED AT EXTRA COST

(Not Included in Price of Standard (Basic) Machine)

For Medium Speed and High-Speed Machines

Plain, Universal and Vertical Machines

1. ELECTRICAL EQUIPMENT to meet "Automotive Standards" (includes totally enclosed motors).
2. ELECTRICAL EQUIPMENT for DC.
3. ELECTRICAL EQUIPMENT for 25 cycle AC.
4. WIDE RANGE DIVIDER (applied to Standard Universal Dividing Head) for divisions from 2 to 400,000, hundreds of them exact and others compensated for the fractional remainder.
5. VISES, CHUCKS AND CHUCK ADAPTERS.
6. ARBORS, ADAPTERS, COLLETS, QUICK CHANGE ADAPTERS, Etc.
7. STANDARD ATTACHMENTS, High-Speed Universal, Heavy Vertical, Universal Spiral, Rack Milling, Slotting, Circular Milling, Cam Milling, High Number Indexing Attachment for Dividing Head, Spiral Milling Head, etc.
8. INDEX BASES, RAISING BLOCKS, RIGHT ANGLE PLATES.
9. PRECISION MEASURING EQUIPMENT. (Recommended for short dimensions only.)
10. PUMP, CUTTER COOLANT, individually motor driven, including ¼ hp motor, manual starter and piping. Code Name....PUDIA
11. SPLASH GUARDS.

Plain and Universal Machines Only

1. ARBOR SUPPORTS:
   (a) Style "B" with 2⅛" adjustable arbor bushing without lugs for brace for use on No. 2 machines. Code Name.....ARBBS
   (b) Style "B" with 2⅛" adjustable arbor bushing without lugs for brace for Nos. 3 and 4 Machines. Code Name.....AJUSB
   (c) Style "A" with adjustable arbor bushing, for pilot end arbors: No. 3 Machine. Code Name.....ARTMY; No. 4 Machine. Code Name.....ARMMF

Plain and Vertical Machines Only

1. STANDARD UNIVERSAL DIVIDING HEAD AND EQUIPMENT, including tailstock with 2-point adjustable center; steady rest; one plate for indexing through 40 to 1 reduction—all numbers up to and including 60, all even numbers and those divisible by 5 up to 120, and many beyond those shown in the table of specification sheet; one plate for direct indexing; one center for headstock; and provision for connecting head to enclosed driving mechanism segment.
   10" size for No. 2. Code Name... HUTER
   12" size for No. 3. Code Name... HYDRA
   14" size for No. 4. Code Name... HEDPA
2. ENCLOSED DRIVING MECHANISM SEGMENT, including change gears for spiral milling leads ranging from 2½" to 100" (only) for Standard Universal Dividing Heads.
   No. 2 Machine. Code Name.....DREDT
   Nos. 3 and 4 Machines. Code Name, DREHS
3. AUTOMATIC BACKLASH ELIMINATOR (supplied at factory only).
   No. 2 Machine. Code Name .....LASHP
   No. 3 Machine. Code Name.....LASTO
   No. 4 Machine. Code Name.....LASFP

Vertical Machines Only

1. REAR HAND ADJUSTMENTS AND REAR POWER FEED CONTROLS: cross and vertical. Supplied at factory only. (Not supplied as standard equipment on Vertical Machines.)

Universal Machines Only

1. LONG AND SHORT LEAD ATTACHMENT with a range .010 to 1000 inches or .024 to 2400 centimeters. Must be installed at factory before machine is shipped.
   No. 2 Machine. Code Name.....LOSHO
   Nos. 3 and 4 Machines. Code Name, LONSH
2. AUTOMATIC BACKLASH ELIMINATOR (Supplied at factory only).
   No. 2 Machine. Code Name.....LASMU
   No. 3 Machine. Code Name.....LASUN
   No. 4 Machine. Code Name.....LASPU

MILLING MACHINES

BROACHING MACHINES

CUTTER SHARPENING MACHINES

OPTICAL PROJECTION PROFILE GRINDERS

FLAME HARDENING MACHINES

CUTTING FLUID

DIRECT FIELD ENGINEERING OFFICES IN THE PRINCIPAL MANUFACTURING CENTERS OF UNITED STATES. WORLD WIDE DISTRIBUTION THROUGH SALES REPRESENTATIVES.

THE CINCINNATI MILLING MACHINE CO., CINCINNATI 9, OHIO, U. S. A.

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