

**south  
bend**

**VERTICAL MILLING MACHINES**

BUILDERS OF PRECISION MACHINE TOOLS SINCE 1906

# South Bend®

## Vertical Milling Machines

The South Bend Vertical Spindle Precision Milling Machine is designed for maximum convenience and ease of operation with massive knee having wide dovetail bearings and long tapered gibs for both column and table.

The universal type head is mounted on a large flange on the end of the overarm and swivels full 360° for milling, drilling or boring at any angle. Convenient belt tension release permits changing speeds quickly and easily. Reversing switch controls direction of spindle rotation, permitting right or left-hand milling. Convenient mechanical brake permits stopping spindle quickly. Spindle lock is provided for easy changing of cutting tools. A dependable micrometer depth stop is graduated in thousandths and positive quill lock is provided.

Table has dual controls for operating from either end. Adjustable stops are provided for regulating the length of table feed. Three T-slots for clamping work or fixtures extend full length of table.

Equipment included consists of three phase, 60 cycle, 230/460 v. A.C. motor; reversing switch; master collet holder; wrenches and four collets having  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ " and  $\frac{3}{4}$ " capacities.

Catalog Number	Table Length	Motor	
		R.P.M.	H.P.
MIL3212	32"	1200	$\frac{3}{4}$ +
MIL3218	32"	1800	1
MIL4212	42"	1200	$\frac{3}{4}$ +
MIL4218	42"	1800	1

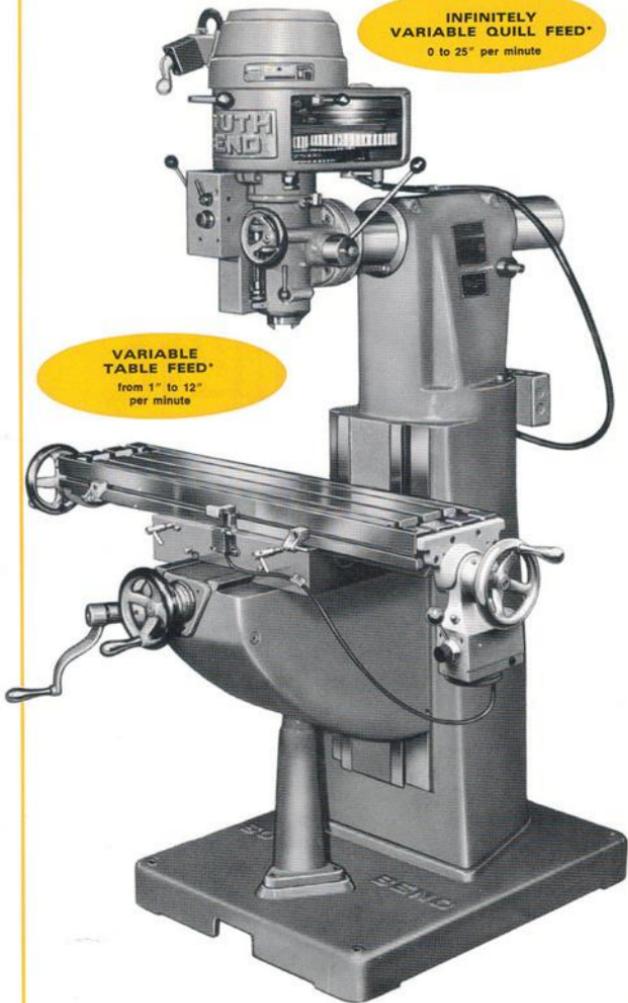
\*Note: 1 h.p. motor available also.  
Specify motor horsepower when ordering machine.

INFINITELY  
VARIABLE QUILL FEED\*

0 to 25" per minute

VARIABLE  
TABLE FEED\*

from 1" to 12"  
per minute



## ALTERNATE MOTOR

Below is shown an alternate single phase motor available in lieu of regular three phase motor of corresponding horse power and speed, when specified at time milling machine is ordered.

Cat. No.	H.P.	Phase	Cycles	Volts	R.P.M.
MIL2628B	1	1	60	115	1800

## VARIABLE FEED TO TABLE

A variable speed table drive is provided as an option. This feed is a light weight, self-contained unit, which mounts to one end of the table. Excellent response and power transmittal are obtained from one to twelve inches per minute. The unit will feed in either direction and is provided with positive stops.

The variable speed table drive can be installed quickly in the field with simple hand tools. The unit does not interfere with normal operation of the handwheel. Supplied with its own power cord to plug into 115 volt receptacle. With the use of this low cost option the versatility of the South Bend Milling Machine in your shop will be greatly increased.

**MIL3501.** Variable Power Table Feed in lieu of regular

## HYDRAULIC POWER QUILL FEED

Hydraulic power quill feed attachment can be supplied at extra cost when specified at time Milling Machine is ordered. A single control lever permits feeding the spindle in either direction, up or down, and also has neutral or off position. Rate of feed is infinitely variable 0 to 25" per minute. Rapid traverse lever permits positioning quill quickly. Length of travel can be accurately controlled by positive depth stop. The hydraulic feed quill also has the regular manual feed lever and manual fine feed handwheel. When ordering, specify phase, cycle and voltage of motor required.

**MIL7049.** Power feed spindle in lieu of regular

## CABINETS

This steel cabinet has two compartments, one for holding the hydraulic pump and reservoir for operating power spindle feed and the other for coolant pump and reservoir.

**MIL7052.** Cabinet for Milling Machine

## COOLANT EQUIPMENT

Coolant Pump Equipment for Milling Machine includes coolant pump, tubing, reservoir, 1/4 h.p. motor, and switch. If coolant pump equipment is purchased with the milling machine, piping will be assembled in place and necessary electrical connections made.

Catalog Number	Current	Motor		
		Phase	Cycle	Voltage
MIL7061B	A.C.	1	60	115
MIL7063DF	A.C.	3	60	230/460

Motors with other characteristics available. Contact your distributor.

## SWIVEL VISES



Have 360° swivel base. Vice jaws are 4" wide, 1 1/2" deep and open 4". Shipping weight 51 lbs.  
**MIL7450.** 4" Swivel Milling Machine Vise.

**MIL7014.** 6" Swivel Vise with Base. Same features as above. Jaws are 6" wide, 2" deep and open 6". Shipping weight 105 lbs.

## 4" SWIVEL VISES

Swivel is graduated 180° to permit setting vise at any angle with slots in machine table. Jaws are 4" wide, 1" deep and open 4". Shipping weight 18 lbs.

**CE9100.** Swivel Machine Vise



## QUICK-ACTING VISES

Have quick-acting adjustment for self-aligning jaw. Vise screw is wrench operated. Vise jaws are 5 1/2" wide, 2 1/4" deep and open 6 1/2". Shipping weight 40 pounds.  
**MIL7013.** 5 1/2" Quick-acting Milling Machine Vise.



## MILLING CUTTER ARBORS



Hold standard side milling cutters and dovetail cutters from 3" to 6" diameter with

1/8" to 3/4" face and either a 1" or 1 1/4" diameter arbor hole. Spacing collars are provided to accommodate various face widths. Shipping weight 3 pounds.

**MIL7035.** Side Milling Cutting Arbor.

## QUICK CHANGE TOOL HOLDERS



Fit into No. 30 MM taper to hold single end straight shank end mills, drills, boring bars, etc. No. MIL7016 will also hold double end mills. Shipping weight 4 lbs. each.

Cat. No.	Capacity	Cat. No.	Capacity
MIL7016	3/16"	MIL7020	3/8"
MIL7017	1/8"	MIL7021	1/2"
MIL7018	1/4"	MIL7022	5/8"
MIL7019	3/8"		

## MASTER COLLET HOLDERS



One is supplied with each milling machine. Additional holders are supplied as extras. Shipping weight 3 lbs.  
**MIL7000.** Master Collet Holder and Wrench.

## EXTRA COLLETS

These collets fit into master collet holder (standard equipment) to take straight shank milling cutters, boring tools, etc. Shipping weight 1 pound each.

Cat. No.	Capacity	Cat. No.	Capacity
MIL7001	1/16"	MIL7007	1/8"
MIL7002	1/8"	MIL7008	3/16"
MIL7003	3/16"	MIL7009	1/4"
MIL7004	1/4"	MIL7010	5/16"
MIL7005	5/16"	MIL7011	3/8"
MIL7006	3/8"	MIL7012	1/2"

# END VERTICAL MILLING MACHINES

## MORSE TAPER SLEEVES



Have No. 30 MM taper on the outside and a No. 2 Morse taper inside to receive taper shank drills, reamers, boring bars, end mills, etc. Shipping weight 1 pound.

**MIL7039.** No. 2 Morse Taper Sleeve for Milling Machine.

## OFFSET BORING HEADS



Also have No. 30 MM taper shank. Body is 2 3/4" diameter and maximum bar offset is 3/4". Offsetting screw has dial with graduations reading in thousandths. Bar or tool capacity is 3/8". Shipping weight approx. 4 1/2 lbs.

**MIL7043.** Offset Boring Head.

## BORING TOOL SETS

For use with Offset Boring Head described above. Consists of nine boring bars and boring tools for 3/8" and larger holes. 3/8" diameter shanks. Includes wood base. Shipping weight 3 1/2 lbs.

**MIL7044.** Boring Tool Set.

## MEASURING TRAYS AND RODS

Are attached to table and knee of machine. Used with 3/8" diameter end measuring rods and micrometers. Especially useful for jig boring operations. Dial indicators have 100 graduations reading in thousandths of an inch. Shipping weight approximately 35 pounds.

**MIL7040.** Measuring Trays and Indicators for 32" Table.

**MIL7041.** Measuring Trays and Indicators for 42" Table.

**MIL7042.** Set of Precision End Measuring Rods consisting of two 4" to 5" inside micrometers, one 10" solid rod, and two each solid rods 1", 2", 3", and 6" long. Packed in wooden case. Shipping weight 5 lbs.

## 90° MILLING HEADS



Clamp onto quill of machine and can be set at any angle. Have No. 30 MM taper and take same holders, arbors, or other tools normally used in regular spindles. Also supplied are draw-in collet attachments for the spindle and one 1/2" capacity No. 3 collet. Shipping weight 20 lbs.

**MIL7050.** 90° Milling Head.

## EXTRA COLLETS FOR 90° MILLING HEAD

Regular South Bend No. 3 steel collets. Any capacity 1/4" to 1/2" round in increments of 1/16". Shipping weight each 6 ozs.

**CE3050.** Steel Collet.



## CHUCK ADAPTER STUDS

Consist of machined base plate with threaded stud on which lathe chuck may be screwed. When ordering be sure thread on stud conforms with thread in back of chuck to be used. Includes bar for screwing stud into base plate but does not include clamps or bolts.

Catalog Number	Diameter of Plate	Thread Diameter	Threads per Inch	Shipping Weight
CE3445	6 1/4"	1 1/2"	8	7 lbs.
CE3447	7 1/2"	2 1/4"	8	13 lbs.

## WORK LIGHT

Can be permanently installed by drilling and tapping one hole in the milling machine column. Shipping weight 5 pounds. Bulb is not included.

**MIL7047.** Work light for milling machine.

## FLY CUTTERS

For use with Vertical Milling Machines. 3/8" shank and takes 3/8" cutter bit. (Cutter bit not included.)

**MIL 7058.** Fly Cutter.



## ANGLE PLATES



Sizes 4 1/2" x 3" x 2". Have six bolt holes. Shipping weight 4 pounds.

**CE9640.** Angle Plate.

## HYDRAULIC OIL

For use in Power Feed Quill of Vertical Milling Machines.

**CE7053.** 1 qt. can Hydraulic Oil.

**CE7054.** 1 gal. can Hydraulic Oil.

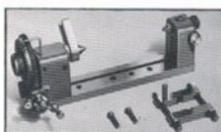
## ROTARY INDEXING TABLES

Used for accurately spacing holes, indexing clutch teeth, machining squares, hexagonal or octagonal shapes, milling circular grooves or T-slots, etc. Tables are 4 1/2" in diameter and have three T-slots for clamping work. Edge of table is graduated 360°. Table is turned by worm gearing having graduated collar and ball crank. Thumb screw on front of ball crank locks graduated collar in any position. Clamping device is provided for locking table in any position. Includes eight clamping bolts with nuts and washers. Shipping weight 14 lbs.

**CE9144.** Indexing tables.



## INDEXING CENTERS



Take work between centers up to 5" in diameter, 6" long. Revolving center has large dial graduated 360°. Center is turned by worm gearing having graduated collar and ball crank. Clamping device is provided for locking center in any position. Base has two bolt holes for clamping to machine table. Includes two clamping bolts. Shipping weight 12 lbs.

**CE9635.** Indexing Centers.

## UNIVERSAL TABLES

Both upper and lower slides have graduated swivels and may be turned through full 360°. The ground work surface is 4" x 8 1/2" and maximum travel is 4" for either slide. Tables have four slots for clamping work. Clamp bolts fit snugly into round slots in such a way that there is little danger of breaking out or otherwise damaging the slots. Supplied with base. **CE9156.** Universal Table complete with base, two slides, two graduated swivels, and eight clamp bolts with nuts. Shipping weight 43 lbs.



**CE9157.** Single Table with one graduated swivel and four clamp bolts with nuts. Shipping weight 19 lbs.



**CE9159.** Base only for adapting single table to South Bend milling machine or other machine tool. Shipping wt. 8 lbs.



## FEATURES

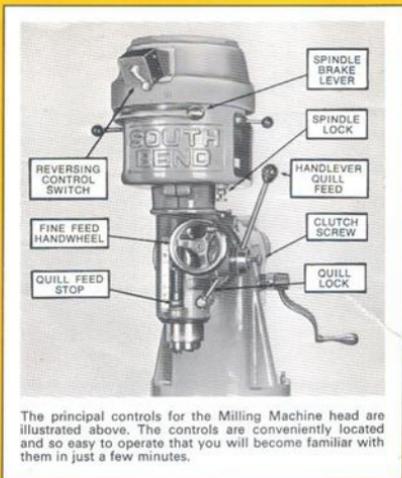
- Overarm has large key with tapered gib and rack and pinion adjustment for positioning head in or out without disturbing angular alignment of head.
- "Lo-Loss" combination timing belt and V-belt drive to spindle transmits full h.p. efficiently at all speeds. Convenient belt tension release is provided for quick and easy speed changes.
- Quill is ground and accurately fitted to semi-steel head casting. Quill bearing in head is bored and honed to a perfect precision fit with quill. Quill has lever operated fast feed and hand wheel operated slow feed as standard equipment. (Hydraulic power feed is available at extra cost.) Turnstile lever for rapid hand feed disengages when worm and worm gear fine feed is used.
- Spindle has dependable micrometer depth stop graduated in thousandths, and positive quill lock. Independent spindle lock is also provided.
- Spindle is made of hardened and ground alloy steel, has spline drive, takes No. 30 MM taper quill change individual holders.
- Spindle face has four  $\frac{1}{8}$ "-16 bolt holes for mounting face milling cutters, etc.
- Large diameter easy reading micrometer collars for positioning table have nonglare satin finish surface with black graduations.
- Lever locks for table, knee and saddle are conveniently located on front of machine. Chip guard between dovetails protects cross-feed screw from damage.
- Adjustable stops in T-slots are provided for regulating length of table travel.
- Manual longitudinal and cross-feeds to table are standard equipment. Power longitudinal feeds available at extra cost.

## SPECIFICATIONS

Table width	9"
Table lengths	32"-42"
Table travel, longitudinal	20"-30"
Table travel, cross	9½"
Table travel, vertical	18"
Table feed screws, Acme thread	1¼"-5"
Table to spindle, maximum	20"
Spindle to column, maximum	20"
Ram travel by rack and pinion	15"
Ram diameter	4½"
Head rotates	360°
Quill diameter	3¼"
Quill travel	4"
Collet capacity, maximum	¾"
Spindle taper	#30MM
Spindle speeds	8
r.p.m. with 1 h.p., 1800 r.p.m. motor	135, 220, 350, 560, 900, 1450, 2330, 3750
r.p.m. with ¾ h.p., 1200 r.p.m. motor	90, 150, 230, 375, 600, 965, 1550, 2500
Net weight, approx.	
With 32" Table	1635 lbs.
With 42" Table	1700 lbs.
Shipping weight crated, approx.	
With 32" Table	1950 lbs.
With 42" Table	2000 lbs.

†Note: 1 h.p. motor available also.  
Specify motor horsepower when ordering machine.

Specifications are subject to change without notice.

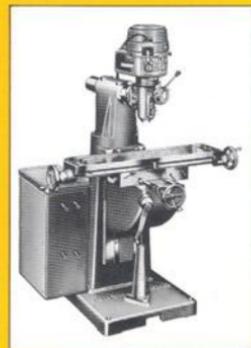


The principal controls for the Milling Machine head are illustrated above. The controls are conveniently located and so easy to operate that you will become familiar with them in just a few minutes.



## KEYED RAM SAVES TIME

This feature saves you the time and annoyance of resetting the head angle every time the ram is moved transversely. A large key fitted with adjustable tapered gib holds the ram and head assembly in angular alignment, even when ram lock is released for transverse movement of head. The head swivels on a large flange on the end of the ram. Vernier graduations and worm adjustment make angular setting precise and easy.



South Bend Vertical Mill is also available without power feeds as illustrated at left. Cabinet is extra. Easy to set-up, truly accurate and built to give you long years of service.



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