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benchmaster

MILLING MACHINE

INSTALLATION

UNCRATING: Remove crating carefully to guard against damage to the machine. In the event of damage in transit, immediately notify the carrier making delivery.

SHORTAGES: Check shipment carefully against packing list attached to the crate, before discarding packing material. In case of any shortage, notify your dealer immediately.

CLEANING: Thoroughly clean rust preventative from all exposed parts of the machine. Then finish with a light application of oil.

INSTALLING: A clearance hole must be provided in table or work bench for the proper operation of the lead screw. Place the Mill in position. Then move table and saddle to to center position, leveling machine with a spirit level placed on surface of table. Then fasten securely to bench or work table, making certain the base is properly shimmed to prevent distorting the base when bolted.

MOTOR INSTALLATION: Place motor mount on machine. Set motor in proper position for belt alignment. Mark and drill bolt holes. Bolt motor to mount. Place mounted motor on machine in position, giving proper belt tension. Lock in position.

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OVERARM: The overarm bracket should be placed in position on the horizontal spindle assembly, between the two clamps at top of column. This should be done at the time the spindle assembly is installed. The overarm bar should be put into position, followed by the arbor and out-board support.

CONVERSION

To convert from *Horizontal* to *Vertical* milling, proceed as follows: Remove spindle pulley, loosen the two cap screws at top of column, and SLIDE OUT spindle assembly. Then install *Vertical* spindle assembly in SAME POSITION, making certain that it is properly indexed before locking in place. Mount motor bracket on end of spindle assembly, adjust belt, and lock motor bracket in place.

To convert from *Vertical* to *Horizontal* milling, reverse the procedure described above.

When Benchmaster Mills are ordered with a Vertical Spindle Assembly, the Assembly is accurately located, indexed and has a locating pin installed before leaving our plant. When the Vertical Spindle Assembly is ordered and installed at a later date, make certain that it is ACCURATELY LOCATED, and that the Spindle itself is *square* in relation to the table surface. Then, lock it in place securely. A hole should be drilled thru clamp and into spindle support, and a pin installed for easy relocating.

OPERATION

SPINDLE SPEEDS: 4-step cone pulleys provide spindle speeds of 450, 850, 1400 and 2100 RPM with a 1725 RPM motor. Spindle speeds on vertical spindle may be changed

quickly by lifting hinged motor mount and moving belt to proper step. On horizontal spindles, belt must be moved from step to step to the proper position.

COLLETS AND ARBORS: Clean arbors, collets and spindle taper thoroughly before mounting. Collets and arbors are locked into spindle by drawbar furnished with each spindle. All spindles have a No. 2 Morse taper. BENCH-MASTER collets are available in 1/16th" variations from 1/8th" to 1/2"; Arbors are available in 7/8th" and 1" diameters. To avoid springing of arbor, do NOT tighten nor loosen arbor nut unless arbor support *is in position*.

TABLE STOPS AND CLAMPS: Each machine is provided with adjustable table stops working against side of the saddle. Each stop is provided with a set screw and lock nut for fine adjustment. Each gib is provided with a locking screw enabling more rigid support for working.

MAINTENANCE

LUBRICATION: Spindle bearings have been greased and sealed at the factory. Use a light grease on spindle bearing and a light oil on the screws. Clean and lubricate ways and lead screws periodically to assure the maximum service.

INSPECTION: Keep all operating parts of machine as clean as possible at all times. Inspect periodically to insure proper adjustment.

GIB ADJUSTMENT: All gibs are adjustable by means of set screws and lock nuts.

Position center gib until slight drag is felt in motion of saddle, table or knee. Set outer screws to eliminate side play and to provide proper alignment.

LEAD SCREW ADJUSTMENT: An adjustable thrust collar has been provided to regulate end play of the lead screws. Adjusting collar will be found under the dial, after removing the hand-wheel and dial. Loosen collar set screw, and turn collar to the RIGHT to reduce end play. Reset screw and check end play for freedom of motion of the screws.

SPINDLE END PLAY ADJUSTMENT: End play adjustment is provided by an adjusting collar at rear of spindle. Loosen collar set screw, and turn to RIGHT to reduce end play. Tap spindle lightly on both ends while adjusting. This is important to insure proper seating of bearings. When setting with indicator, allow approximately .0003 end play. Check adjustment by turning spindle by hand. **IMPORTANT! DO NOT ADJUST TOO TIGHTLY.**

SPECIFICATIONS

SPINDLE: No. 2 Morse Taper. $\frac{3}{8}$ " hole through spindle. Mounted in Timken Precision Tapered Roller Bearings. Individually checked for run-out.

SPEEDS: Choice of 4: 450, 850, 1400; 2100 rpm. Vee belt drive. Check with factory for slower speeds for horizontal milling.

COLUMN: Slides dovetailed, individually ground, spotted and fitted for close accuracy.

TABLE TRAVEL: Longitudinal $12\frac{1}{2}$ ", Transverse $5\frac{1}{2}$ ", Vertical (horizontal mill) $9\frac{1}{2}$ ", (vertical mill) $8\frac{1}{2}$ ".

TABLE SIZE: 6" x 18" ground surface. Equipped with three $\frac{3}{8}$ " Tee slots on surface and one $\frac{1}{4}$ " Tee slot on front face. Table lock included. Longer tables to 30" on special order!

KNEE: Sturdy box-type construction.

SADDLE: Precisely dovetailed and hand scraped to insure parallelism of table to column ways. Locking clamp provided.

SLIDING SURFACES are all spotted for lubricant distribution.

OVER-ALL HEIGHT: All models 28".

NET WEIGHT: 225 lbs. (less motor).

DOMESTIC SHIPPING WEIGHT: 250 lbs. All mills complete with motor bracket, pulley, drawbar and V-belt.

benchmaster



World's largest
manufacturer of small punch
presses and mills.

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