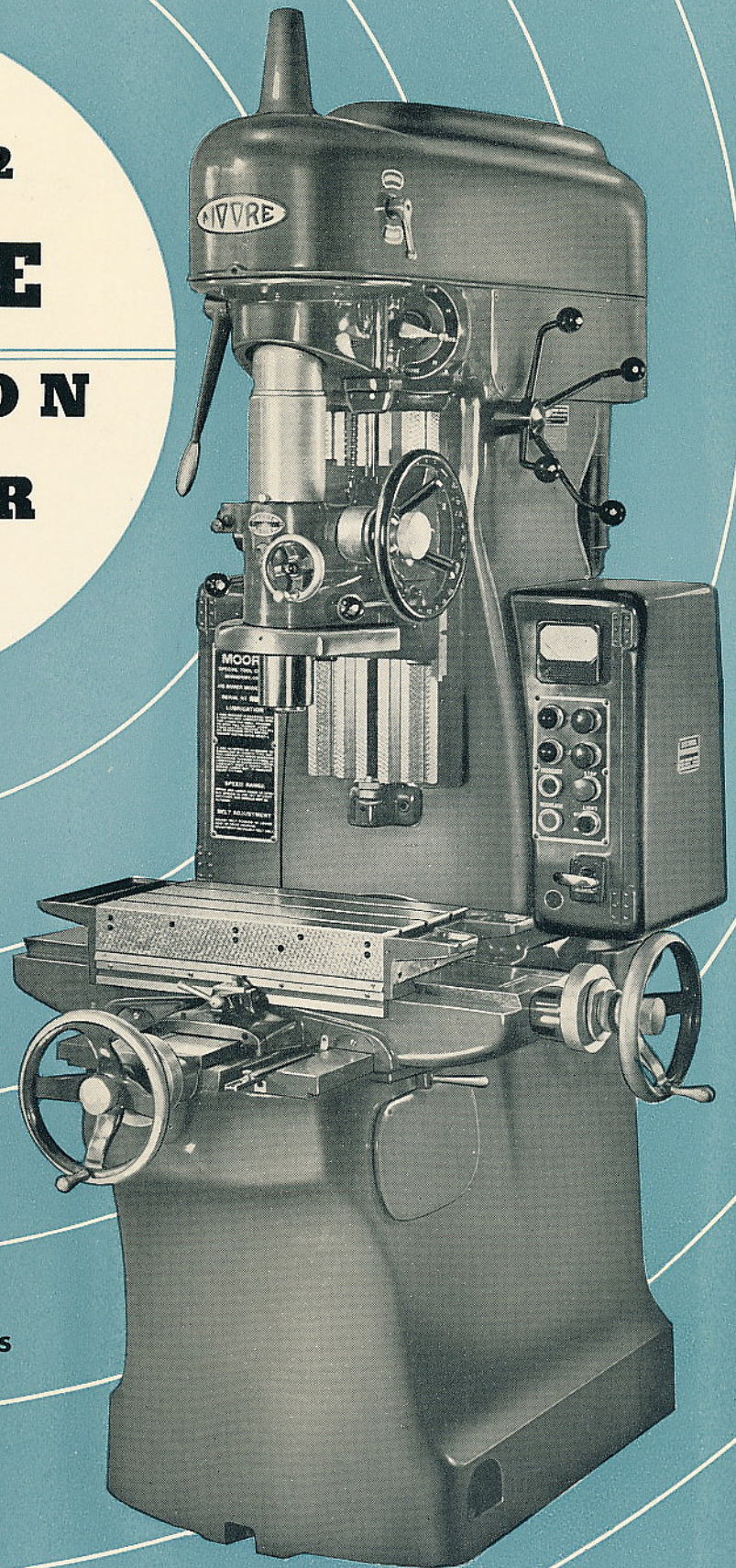


MODEL NO. 2

MOORE

PRECISION

JIG BORER



- **Increased Capacity and Size**
- **Infinitely Variable Spindle Speeds**
- **3 Power Feed Ratios**
- **Centralized Control Panel**

Here's why we call this "the last word" Jig Borer

You've purchased 1,100 Moore Jig Borers during the last 15 years. So outstanding is their performance record that impartial judges call the Moore Jig Borer "The best machine tool for the money built in the United States."

In answer to popular demand, Moore now consolidates this extensive experience into a larger model, and incorporates in it the ultimate in jig borer construction for the carbide era of the 1950's. You will find in the new No. 2 Model all the features that have made the Moore Jig Borer such an outstanding success—hardened, ground and lapped lead screws for precise, rapid table settings within .00015" by coordinate location (see page 13); hardened, ground and lapped quill supported by hardened, ground and lapped bushings; pre-loaded super-precision ball bearing spindle with totally enclosed spindle and quill; all controls within easy reach of operator's sitting position.

To these fundamental, time-tested methods, first introduced by us, we have added many significant advantages, designed to offset the high cost of labor, learned from 15 years of watching our own jig borers at work in many plants and experimenting with them in our own tool room. These include, among others, the features listed at the right.

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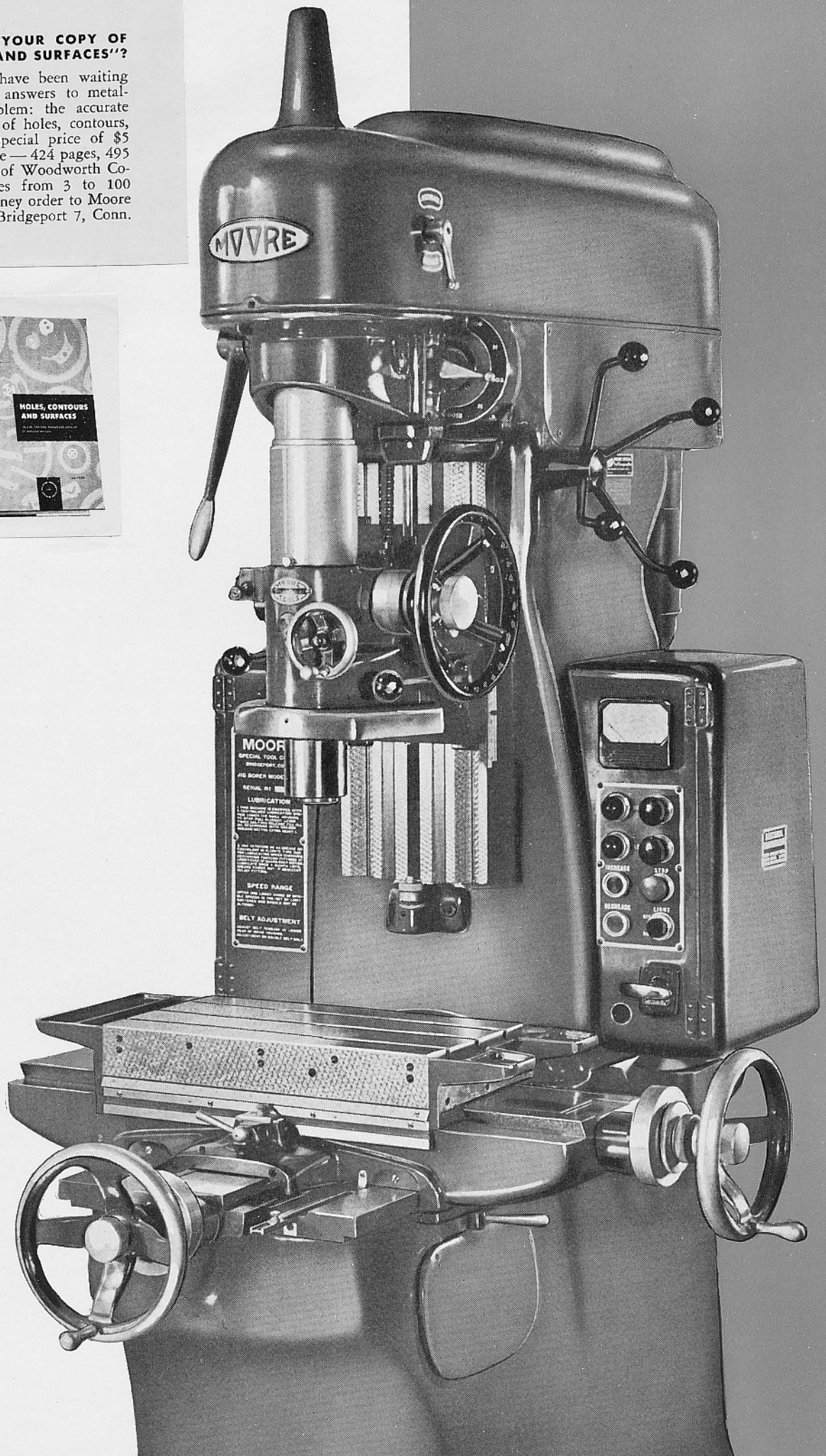
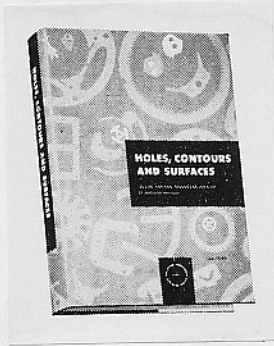
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We reserve the right to improve, change or modify the construction of this jig borer or its attachments or any part thereof. This does not incur any obligation to make like changes on Moore Jig Borers or attachments previously sold.

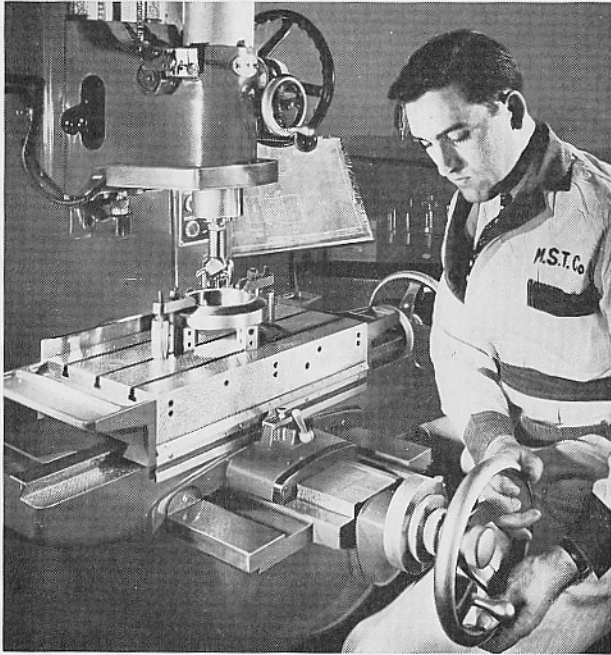
- 1. Increased capacity and size — heavier cuts, larger holes: to 7" in mild steel or cast-iron.**
- 2. Infinitely variable spindle speeds, push-button controlled; range from 75 to 2400 RPM.**
- 3. Three power fed ratios, .0015", .003" and .006", per revolution of spindle in either direction.**
- 4. Centralized control panel (and tachometer) for spindle speeds and one-shot lubrication.**
- 5. Disconnect clutch for easy indicating.**
- 6. Satin hard-chrome finish on all dials and hand-wheels eliminates glare, rust, and scratching.**
- 7. Trip mechanism prevents jamming of lead screw nuts through over-travel.**
- 8. Totally enclosed drive mechanism—no open belts or sheaves.**

**HAVE YOU BOUGHT YOUR COPY OF
"HOLES, CONTOURS AND SURFACES"?**

Here is the book you have been waiting for! Gives you all the answers to metal-working's toughest problem: the accurate locating and machining of holes, contours, surfaces. Available at special price of \$5 in U. S. A.; \$6 elsewhere — 424 pages, 495 illustrations; 184 pages of Woodworth Coordinate Location Tables from 3 to 100 holes. Send check or money order to Moore Special Tool Co., Inc., Bridgeport 7, Conn.



THESE TIME SAVING FEATURES



Setting lead screws — The table is accurately positioned with little effort. Moore's time-proven method of built-in precision lead screws, accurate to .0002" in 16 inches of travel (see page 13), eliminates the need for end-measures or eye-strain on precision scales. The operator merely glances at the heavy lines on the reference scales and double-checks his positions.

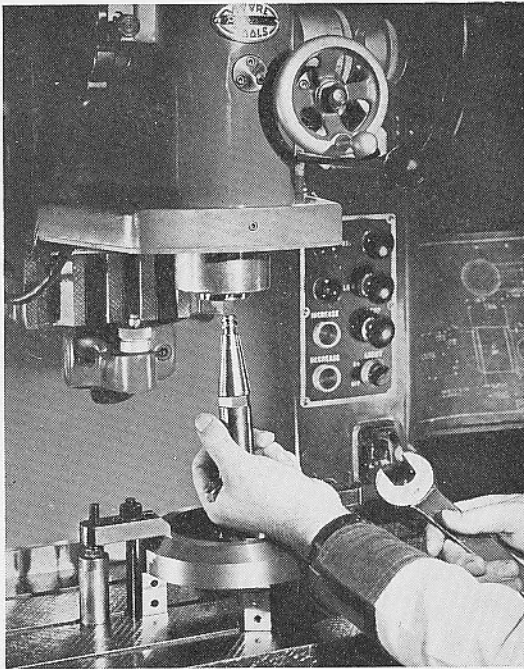


Any speed (75 to 2400 RPM) by a push of the button — Just as you operate the accelerator of your car to increase or decrease speed, so here by a push of the button on the control panel you get exactly the speed you want . . . and can read it easily on the tachometer. There are no auxiliary back gears, switches or levers to be concerned about.

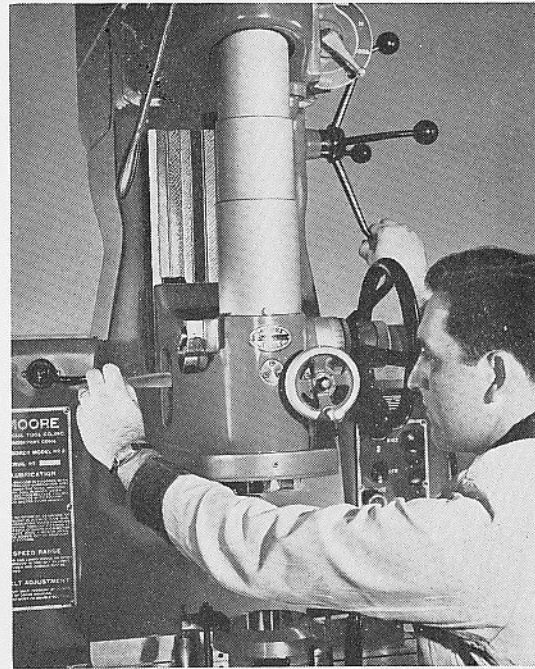


One-shot lubrication — Simply pull out plunger and release. This lubricates cross-slide, longitudinal slide, lead screws and nuts, lead screw bearings, all quill housing parts and quill, V-ways on column. Spindle is grease-sealed for bearing life. Compare this with about half-hour for hand-lubricating, which should be done twice daily.

WILL CUT YOUR LABOR COSTS



Quick-tool changes — “Moore’s Shank” is recognized as the fastest, most accurate system of changing tools in a jig borer. Tool-room application, with variety of hole sizes, requires constant tool-changing. Quick tool-changing is also a “must” on production jobs.

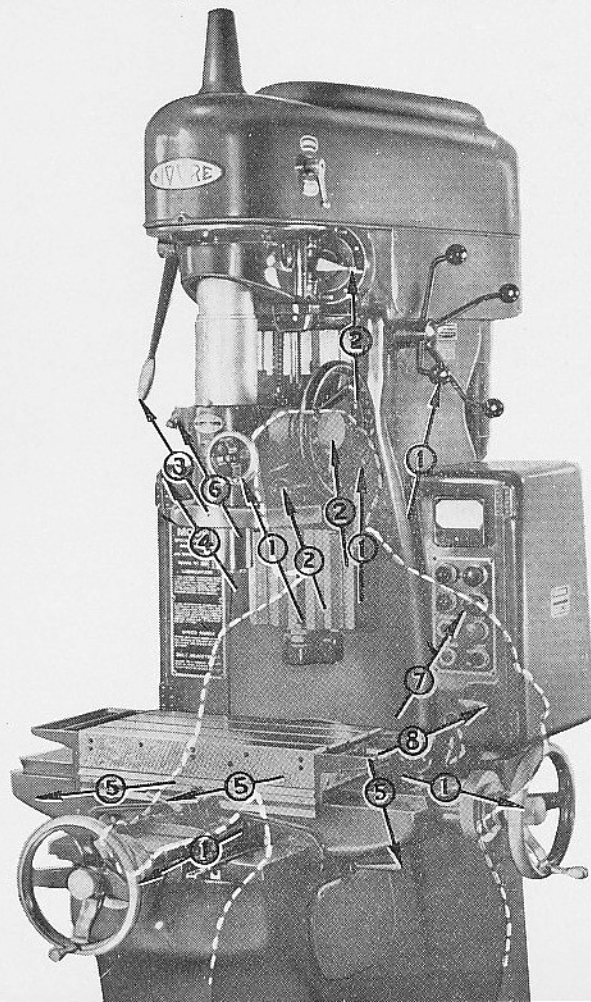


Moving Quill Housing — Our double V-way construction and central single T-slot enable the operator to release the quill housing with one clamp. Looseness can never occur as there are no gibs to wear. Clamping and unclamping will not change spindle location.

CONVENIENCE OF ALL MAIN CONTROLS

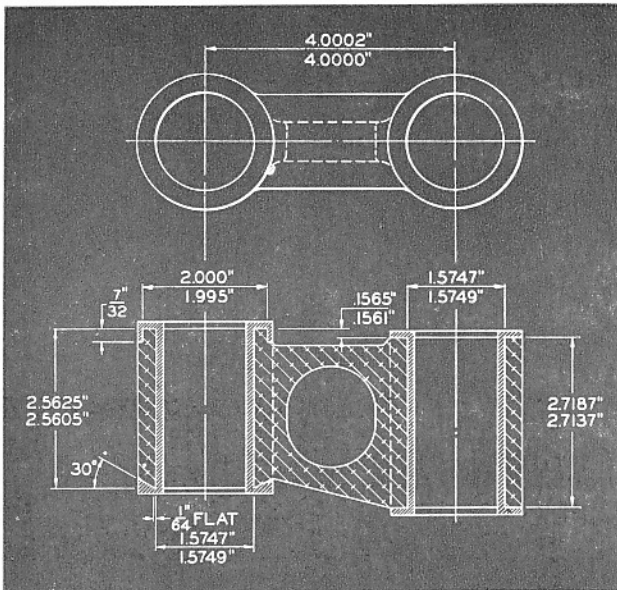
Operator from normal sitting position can reach all controls as follows:

1. All handwheels
2. Feed control and clutch
3. Brake
4. Quill housing clamp
5. Table and slide clamps
6. Adjustable stop for hole depths
7. Speed control
8. I-shot lubrication



A Typical Production Job for a Jig Borer

Total Time: 22 minutes



Different views of the parts after being finished.

100 parts per lot — This aluminum part involved machining two accurate holes, three flat faces, one beveled face, and one *outside turning* operation to produce a shoulder. It was necessary to face off a surface on the two ribs to provide a clamping surface. The decision was to do it in our No. 2 Jig Borer *complete*.

A fixture was "assembled" from some parallel set-up blocks (page 22) a standard "shop" angle iron and a mild steel "C" washer clamp. The latter was made to suit the job.—Time for operator to complete fixture—4.5 hrs.

All tooling consisted of *standard accessories* from stock, including tool holders and carbide boring bits.

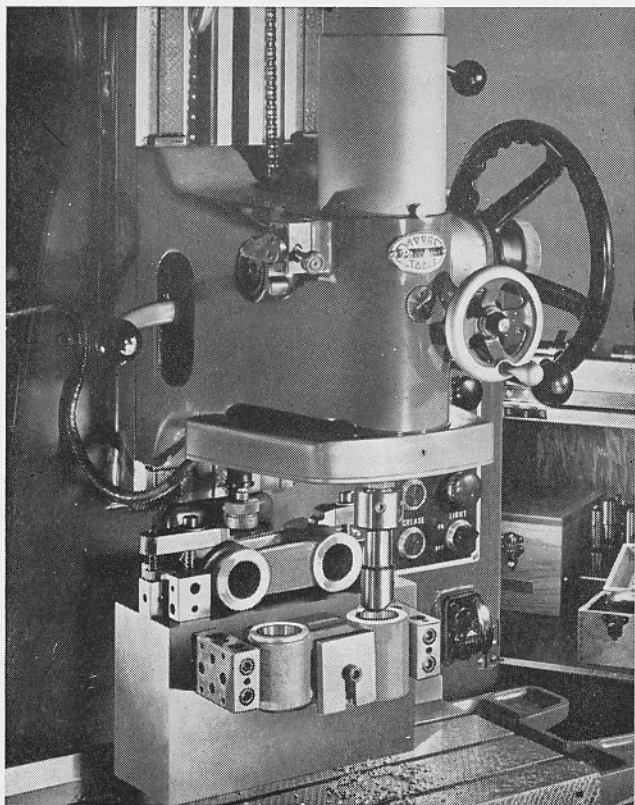
All depths were maintained by using various stops, provided on our No. 2 Jig Borer, including the scale on side of column and graduated dial on hand wheel for vertical travel.

The operator spent 6½ hours fixing up the tool bits, setting stops and getting tools to cut the right size and making the first piece. Total time for the 100 parts — as follows:

Angle Iron Fixture	4.5 Hrs.
Setting Up, etc.	6.5 "
100 Pcs. at 22 Min. Each	36.6 "
TOTAL TIME	47.6 Hrs.

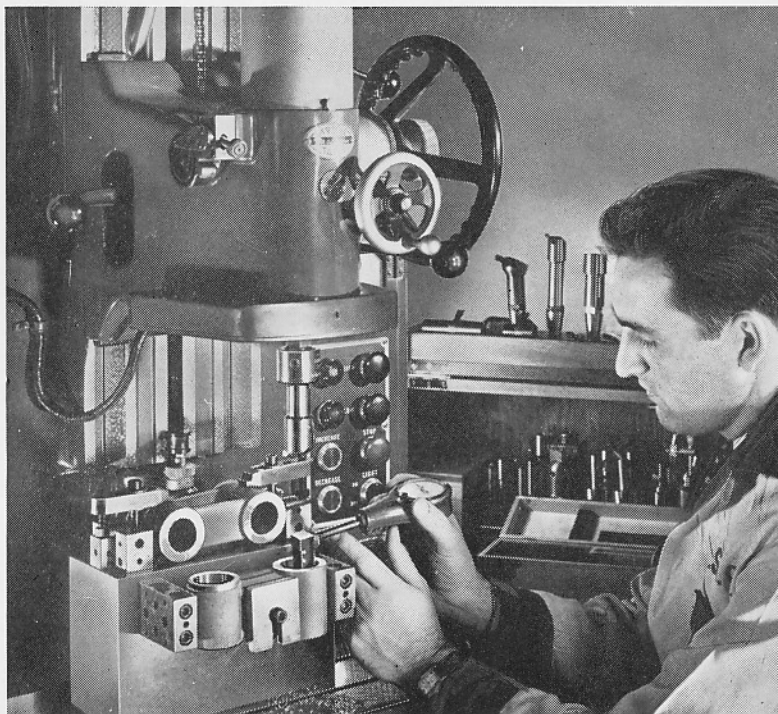
Oper. No.	Operation Name	R.P.M.	Feed	Min	Sec.
1	Load and mill ribs — Single Point fly cutter	1000	H	1	00
2	Set Up and rough bore — two holes	2000	.0015	2	10
3	Rough face two top surfaces Single Point fly cutter — Remove part to cool —	1000	H	1	35
4	Load and second rough bore two holes	2000	.003	1	50
5	Finish bore two holes	2000	.0015	2	40
6	Check two holes for size			1	00
7	Rough and finish 30° bevel	800	H	3	00
8	Rough and finish one bottom face	800	H	1	00
9	Finish face two top surfaces Out-feed chuck	800	.0025	4	35
10	Rough and finish 2" diameter shoulder	400	H	3	00
TOTAL TIME				21	50

How else could you do it as efficiently and simply?



Job set up in machine showing simple fixture with *two positions* provided — one for milling (operation #1), one for boring.

Operator checks the hole size. Hole size is easily controlled to .0002" by using the Micro setting boring bar. Note the convenience of cutting tools on accessory cabinet.



Cutting tools used, left to right:

2½" solid boring bar used for operations 1-3

1¼" solid boring bar used for roughing two large holes—operation 2

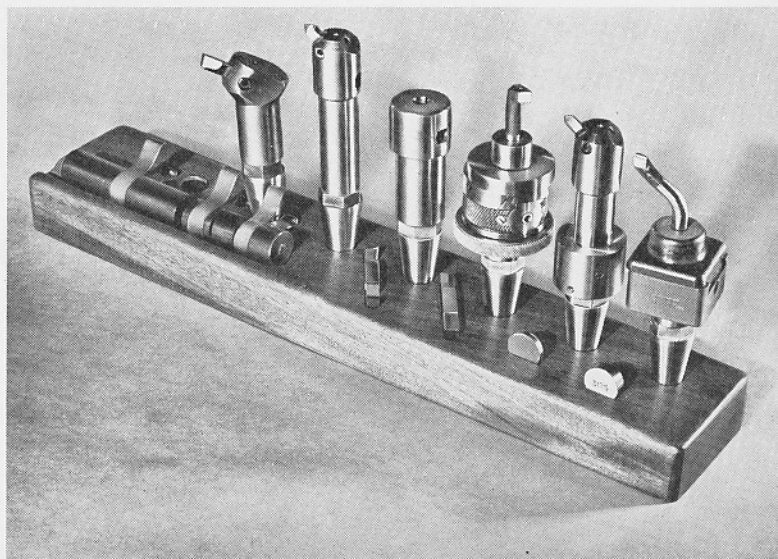
1½" sweep tool (Hole Hog) used for operations 7-8

Chandler "out-feed" chuck used to do operation 9

1¼" Micro setting boring bar used to size—two large holes operation 5

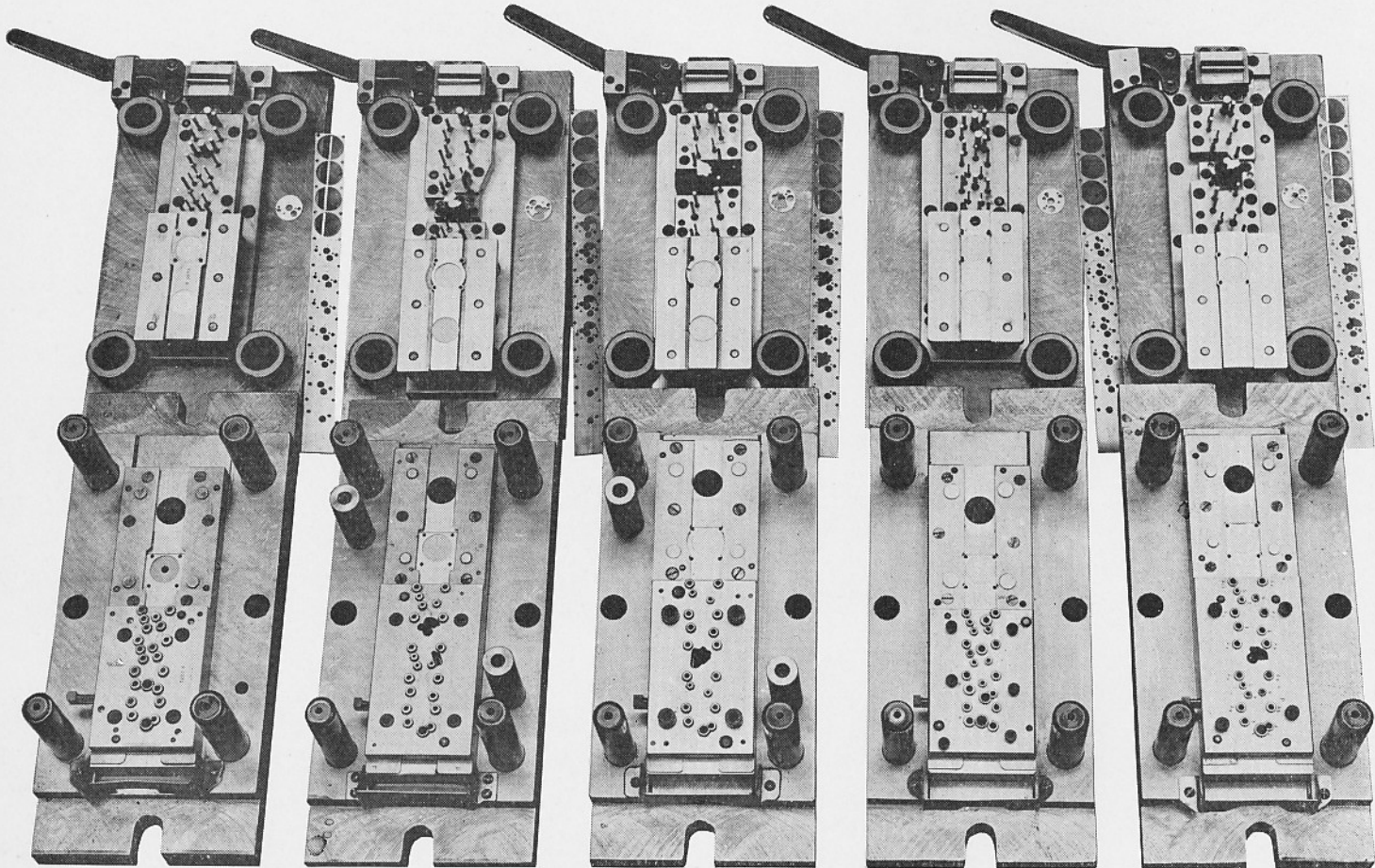
2" Criterion Chuck used to finish shoulder operation 10

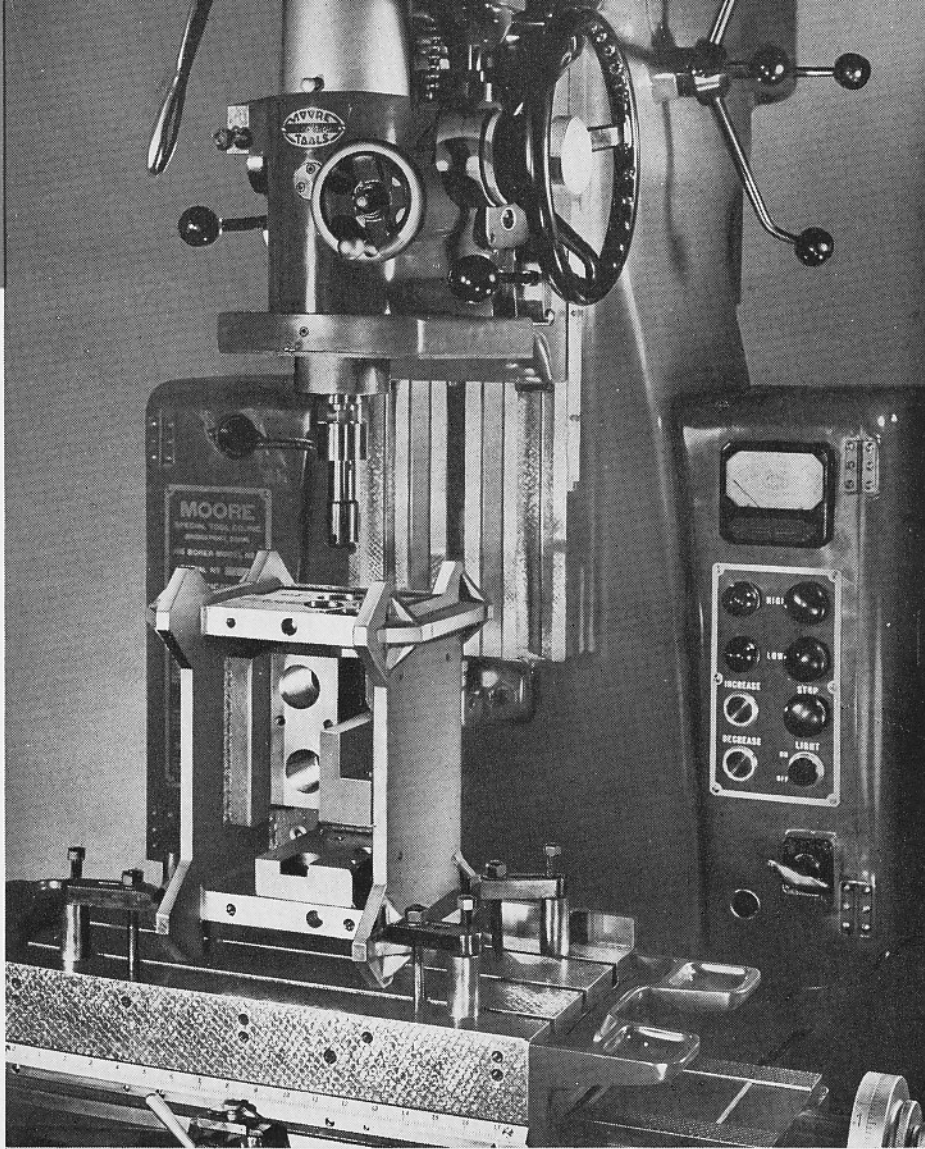
In the foreground are the stop blocks, tool bits and size blocks used.



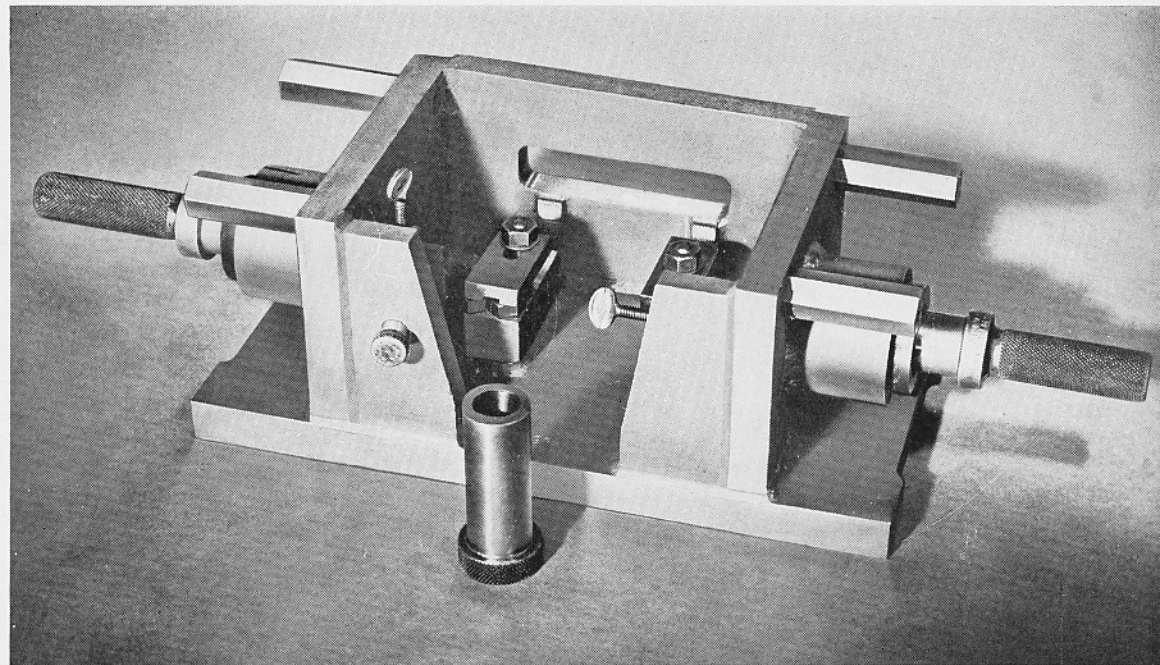
TYPICAL TOOLROOM JOBS

Work of this kind is made to order for the No. 2 Jig Borer — Showing 5 Progressive dies to pierce, shave, gut and blank some timing device parts. Holes are precision jig bored in punch plate and stripper, insuring accuracy of location and lineup. Holes in die were jig ground in Moore Jig Grinder. A job of this kind can be done in a minimum of hours with the help of the time-saving features of the Moore Jig Borer.





Large box-type jig, the holes in which must be located to .0002" tolerance. This jig is 14" in height and demonstrates the value of our 20" space from table to spindle nose, leaving ample room for cutting tool.



Fixture for checking hole location by plugs through bushings. Tolerance is .0002".

Summary of Outstanding Features found in No. 2 Moore Jig Borer

1 Hardened, thread-ground, lapped lead screws, stabilized for permanent accuracy. Tripping device prevents over-travel of nuts on screws. Large, counter-balanced handwheels are positioned by dials read against verniers graduated in "tenths." Reference scales are graduated in inches and $\frac{1}{10}$ of an inch, adjustable within 1" range.

2 All parts influencing the accuracy of the machine are stress-relieved, hardened, seasoned, ground and lapped to a perfect fit.

3 Hardened, ground and lapped quill is supported by two hardened and ground tool steel bushings. These are line-lapped to insure true co-axiality, accurate size, roundness and a maximum of 10 micro-inch finish.

4 Quill housing is cast from Minvar, a 36% nickel iron. This has a linear coefficient of thermal expansion approximately one-sixth that of any cast material, including gray iron; it controls the effect of temperature-increase during operation.

5 Spindle assembly is totally enclosed and mounted in super-precision, pre-loaded ball bearings, which are lubricated for life.

6 The entire spindle is of extremely heavy construction, high-tensile strength alloy steel, heat-treated at tool end.

7 Within quill housing is a reversing mechanism for power-feeding of quill and spindle. Operated by hand lever, it controls and reverses the direction of feed and establishes a neutral.

8 Handfeed of quill may be engaged or disengaged by a knob-type friction clutch within handwheel.

9 Vertical positioning of quill housing is measured by a reference scale and by means of a micrometer stop attached to column face, graduated in .001"ths.

10 Vertical movement of quill and spindle is read on a dial and vernier graduated in .001"ths. A positive stop, adjustable

for any vertical position, is also incorporated on the pinion shaft for positioning bottom travel limit of quill and spindle anywhere within its range.

11 A fluorescent light in a reflector is so mounted at lower end of quill housing, surrounding quill bore, that shadowless light shows on work surface, yet is always in position and does not hinder operation.

12 Castings of base, cross-slide and table assembly are of Meehanite iron, free of blow-holes on all finished surfaces.

13 Speed selection on 2-speed, 2-winding motor—rated at 2 HP @ 1800 RPM and 1 HP @ 90 RPM—is controlled by means of three push-buttons on control panel at right of machine. Marked high, low and off, they are matched by pilot lights indicating which winding is energized.

14 An electric gear motor is energized by push-buttons, so wired as to permit it to be run in either direction. This motor only operates while operator continues to press either of the control buttons mounted on panel and marked "Increase Speed", "Decrease Speed." Removal of finger pressure from button will cause speed setting to remain constant at any range desired.

15 Spindle speed is read directly on electric tachometer on control panel and is increased or decreased by push-button. As desired RPM is reached, button is released. Scale of tachometer is printed in two colors, red and green, to match two pilot light colors, thus indicating correct scale for corresponding motor.

16 All ways and moving surfaces are lubricated by a manually operated, one-shot manifolded system, except spindle bearing and drive bearings, which are lubricated for life.

17 Surfaces of dials, handwheel rims, scales, knobs, handles, guard around spindle and similar members are hard-chrome plated and hydraulically sandblasted to produce a non-glare, wear-resisting surface.

OUR POWER PLANT

The Moore VEE drive is based on the essentially simple mechanical principle of variable pitch sheaves.

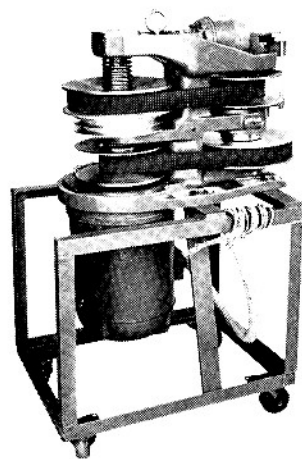
As adapted to the VEE drive this consists of two pairs of such sheaves so connected as to produce a compounded ratio between the motor shaft and the machine spindle, giving a range of 15:1. By the use of two speed motor this range is expanded to cover speeds from 75 RPM to 2400 RPM.

Speed variation is accomplished by positive displacement of sheave halves through a ratio-motor, which in turn is controlled through a push button station and read directly on a tachometer.

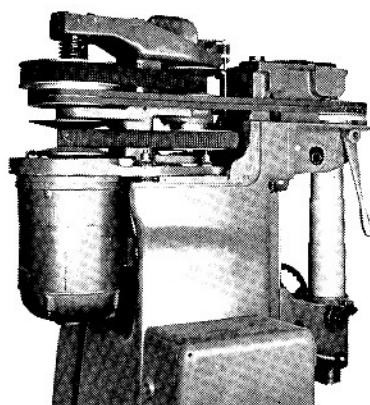
The advantages of this type of drive are:

1. Smooth, stepless control through entire range.
2. Inherent simplicity and accessibility of all parts.
3. Ample capacity to transmit full motor horsepower and torque.
4. Entire drive and motor form a readily detachable unit for purpose of servicing or adjustment.

Just as you operate the accelerator of your car to increase or decrease speed, so here by a push of the button on the control panel you get exactly the speed you want . . . and read it on the tachometer. No auxiliary back gears, switches or levers.

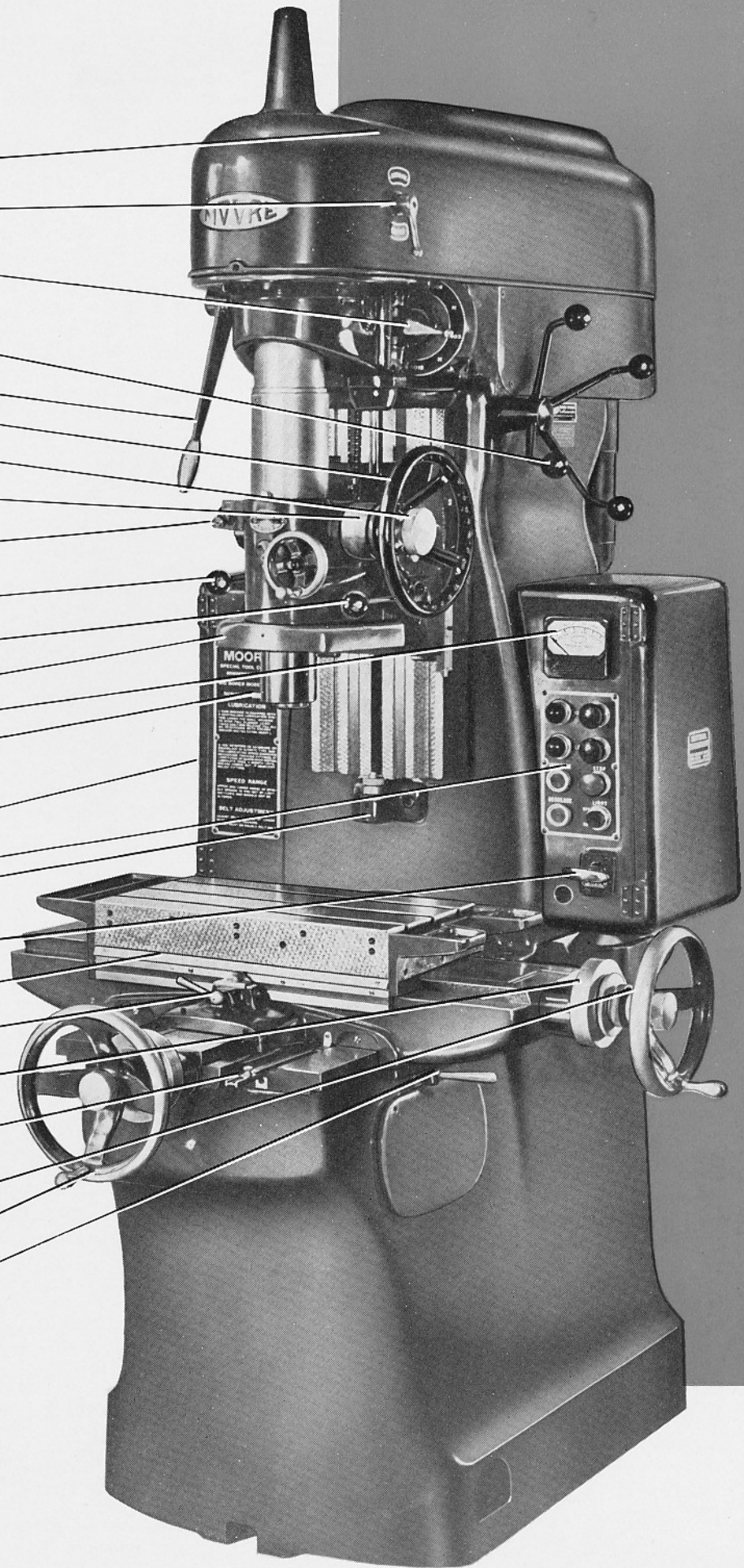


Drive dismounted and set on test stand.



Drive on machine, with guard removed.

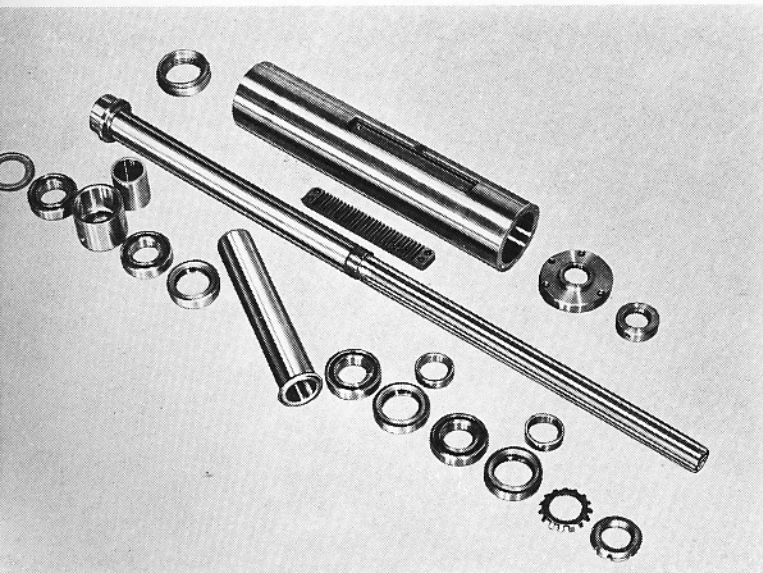
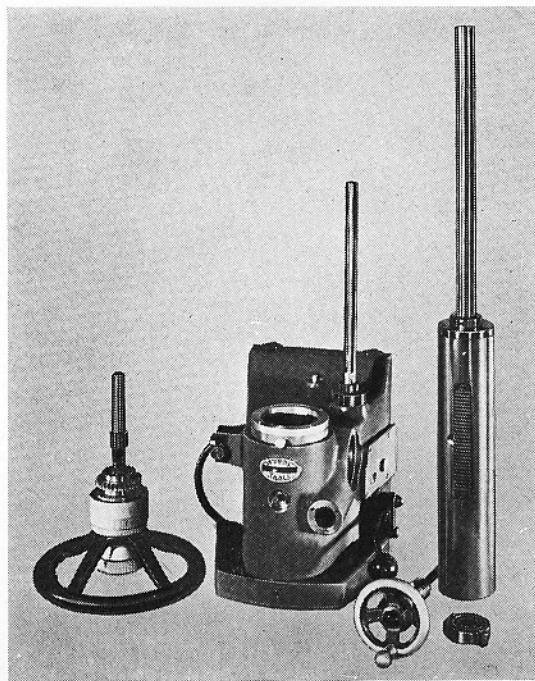
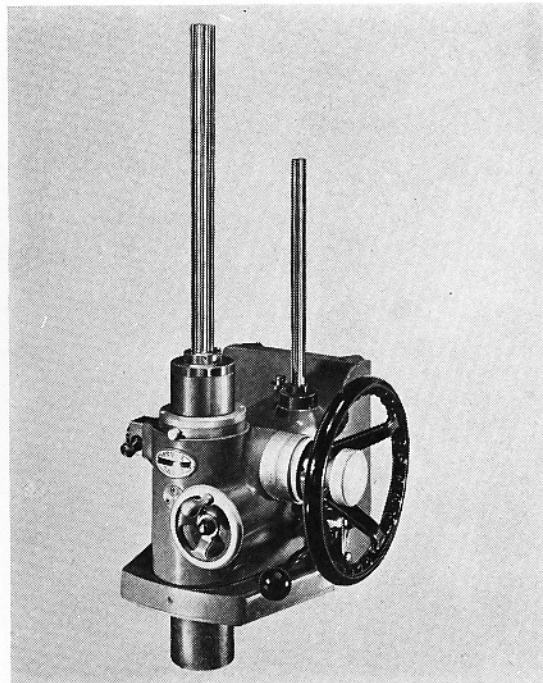
- Variable pitch pulley drive
- Disconnect clutch
- Feed selector lever
- Quill housing vertical positioning handle
- Brake lever
- Rapid feed hand wheel
- Friction clutch power feed
- Graduated dial-downfeed
- Adjustable stop for hole depths
- Quill housing clamp handle
- Power feed clutch up or down
- Fluorescent lighting fixture
- Electric tachometer
- Serial number
- Electric control box, left hand
- Electric control box, right hand
- Micrometer stop
- Lubricating pump handle
- Longitudinal reference scale
- Table clamp
- Graduated dials
- Cross travel reference scale
- Longitudinal lead screw hand wheel
- Cross lead screw hand wheel
- Cross slide clamp
- (2)



SPINDLE, QUILL AND SPINDLE HEAD

This assembly is probably the most vital unit of any jig borer, because it cannot at the same time be heavy and sensitive. Therefore, the parts must all be made light and strong, and they must be fitted close. The spindle head of the Moore is of outstanding construction embodying some features entirely new in jig borer construction as outlined below.

1. The spindle is made of high grade oil hardening tool steel, hardened at the nose end, seasoned and ground all over.
2. The spindle is mounted on four super-precision specially selected ball bearings, all pre-loaded, two of them mounted $1\frac{1}{2}$ " apart at the bottom and the other two close together at the top. These two pairs of bearings are clamped together as one single unit, with a long sleeve between them. They are assembled under a pressure of about 200 lbs. pre-load.
3. This ball bearing and spindle unit is assembled in a hardened, ground and lapped quill and is well sealed from dirt.
4. The quill itself is fitted with two hardened, ground, and lapped bushings, one of them pressed into the top and the other one into the bottom of the quill housing.
5. The necessity of cutting a clearance slot down through the hole for guiding the quill has been eliminated by "setting-in" the rack below the circumference of the quill. This construction increases the bearing surface and allows true and perfect lapping of the holes. This feature, which can be seen in the above cut, is new and adds greatly to the stiffness of the spindle and quill. Furthermore, the quill will never score, and wear is eliminated to the point where no provision for adjustment is necessary.



Spindle dis-assembled — The tool end of this $1\frac{3}{8}$ " dia. spindle is hardened to 58-60 Rockwell C. The remainder is selectively treated for maximum strength. When it is assembled it is pre-sealed for bearing life.

MEASURING WITH ACCURATE LEAD SCREWS

Accuracy of positioning, or location, is the most important function of a jig borer. This accuracy is a resultant of several factors in addition to the inherent accuracy of its measuring system, such as squareness and parallelism of all surfaces and directions of movement. The sum of the possible errors from these sources is proportional to the range of travel in any specific instance.

The following guarantee of accuracy of location includes the above factors:

Accuracy within an area 1" x 1"—0.000075"
" " an area 6" x 8"—0.00015"
" " entire range of
10½" x 16½"—0.00025"
* * *

Accuracy of location, one direction only:
Within one inch—.00005"
Over entire travel of long screw—.0002"
Over entire travel of transverse screw—0.0015"

Three distinct principles of measuring are commonly used in machines.

1. The graduated scale.
2. The size block or end measure.
3. The lead screw or micrometer screw.

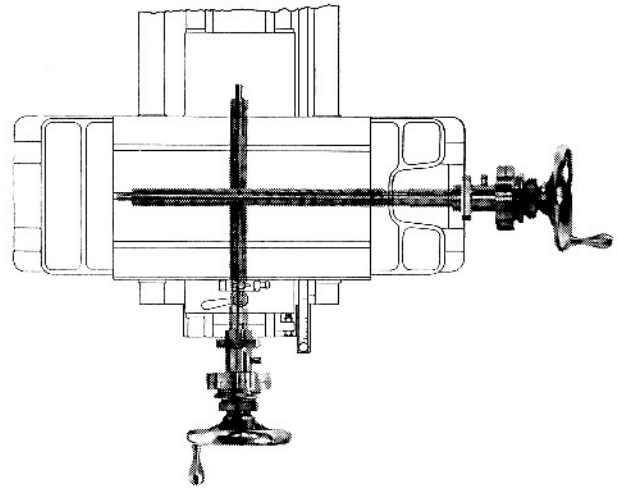
All three have their advantages and disadvantages.

The scale has the advantage of not being subject to wear. However, working in "tenths" requires extremely fine lines and optical provision for reading. This is slow and impractical, because of the exacting strain on the operator.

The end-measure method will produce accurate results provided all conditions are right, but these conditions are many:

1. Blocks alone are insufficient. A micrometer screw, to break up the inches into "tenths", and a constant pressure dial indicator are required.
2. To prevent expansion or contraction, temperature of end-measures must be held constant.
3. Small particles of dirt will alter settings. Contact of blocks must be perfect. Dust and abrasive particles created by grinding render this difficult.
4. The end-measure method is complicated and requires the most skill.
5. It is the slowest because of the many motions required for a single setting.

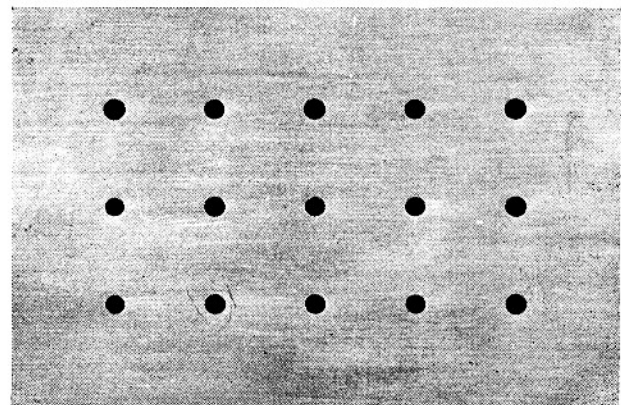
As a result of progress in the technique of accurate thread-grinding, the third method, i.e., lead screws, offers the greatest advantages.



Lead screws are fast to set, accurate, and so simple to read as to eliminate errors and the need of great skill. Enclosed in the body of the machine, they are not subject to temperature fluctuations affecting exposed blocks or scales.

Initial accuracy of lead in these screws is attained by painstaking control of all steps in their manufacture. All operations, including thread-grinding, are performed in the Moore plant under stringent inspection.

Tests made on lead screws of Moore machines in constant use for long periods reveal that wear on the screws is negligible for 10 years or more. Several factors contribute to this: movement of table and slide is almost frictionless, resulting in very low pressure against the threads; since they are completely enclosed and lubricated through felt filtering plugs, the screws are kept constantly clean. The screws can be checked periodically, and, if wear is found, they can be replaced at nominal costs. This could not begin to overshadow the advantages of lead screws, even if replacement were necessary more often.



This template is of 1/8" ground stock and has fifteen 3/32" holes spaced evenly .500" apart. These holes were spotted, drilled and reamed to limits of ± .0002" in less than 15 minutes; in other words, the holes were accurately located in less than one minute per hole.

DEPTH MEASURING

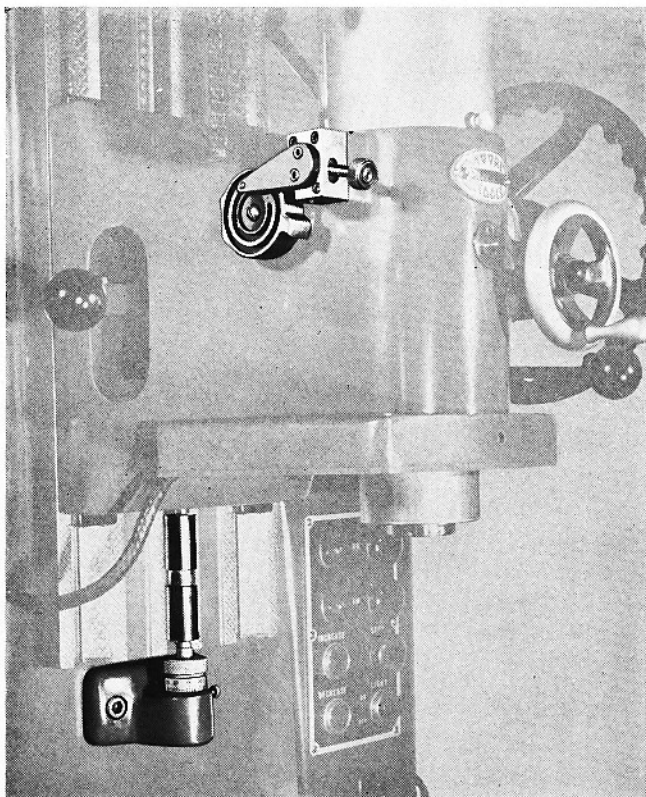


PHOTO A

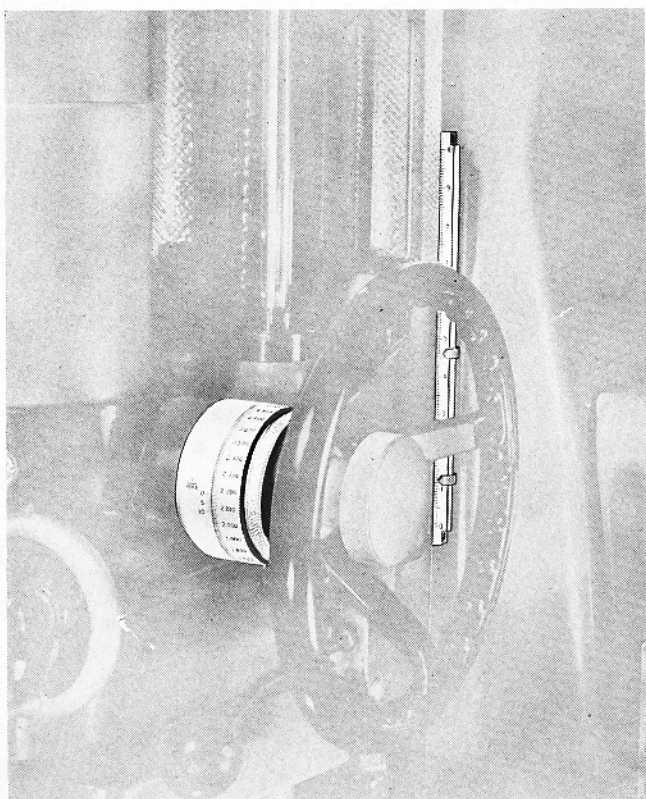


PHOTO B

The Jig Borer has four distinct devices for measuring and controlling the depth of holes.

1. Adjustable positive stop (A) is on left end of pinion shaft, with micro adjustment. This type of stop enables the operator to use the full travel without the usual interference, since a pin in the spiral groove of the stop itself swings the limiting screw clear on the up-stroke. Micro adjustment is attained by turning the limiting screw.
2. Micrometer Stop on column is shown with a 5" block in place (Photo A).
3. Graduated dial and vernier on pinion shaft, reading .001", can be seen in the photograph "B" between the large handwheel and the quill housing. The dial, which can be set to zero at any position of vertical travel is graduated in hundredths and reads, by means of vernier, in thousandths.
4. This scale, shown behind the power feed hand wheel (B), gives operator a quick visual reference for all depth locations. Roughing operations can be done from the scale. Note two sliding clips for marking positions; as many of these clips as needed can be added.

MOORE Jig Borer Accessories



MOORE
SPECIAL TOOL CO., INC.
BOSTON, MASS.
JIG BORER MODEL NO. 2
SERIAL NO. 10000
LUBRICATION
SPEED RANGE
MULTI-ADJUSTMENT

MOORE JIG BORER ACCESSORIES



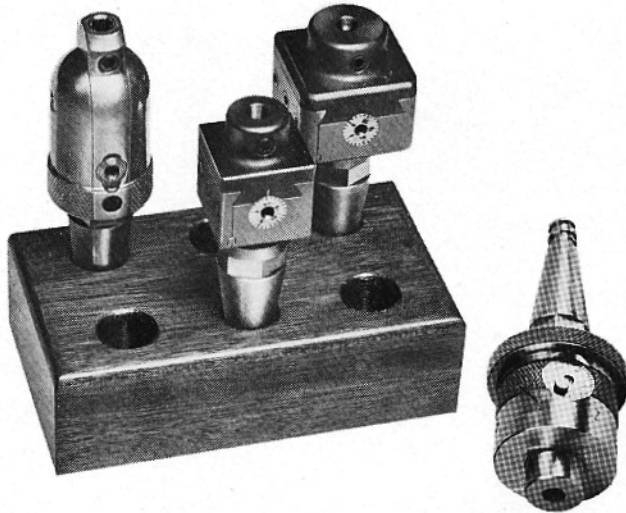
Moore is not satisfied to provide the customer with just a Jig Borer. We also concern ourselves with giving him a *complete Jig-Boring service*. This includes a full complement of small tools required for the three basic steps in the hole-locating process—locating, cutting and inspecting.

The accessories on the following pages illustrate this thoroughness in working out operational details for the Moore Jig Borer. We have spent much time and thought on them, and we firmly believe that we have the handiest and most complete set of accessories included with

any Jig Borer on the market.

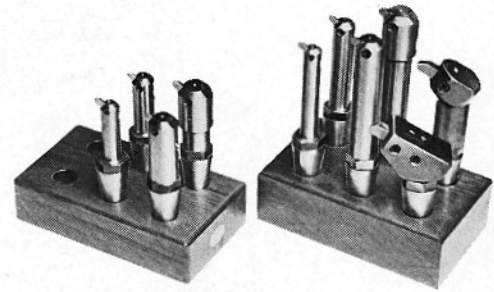
Since a major consideration in overall Jig Borer efficiency is convenience, a handy storage place for tools is an important feature. The large desk-type cabinet, shown above, is recommended. This provides a place for each necessary accessory, including bolts and straps, rotary table, angle plate, small cutting tools, workpieces, or any other parts which may accumulate. A single lock and key closes all drawers and doors. Note adjustable rack for holding blueprints or sketches.

ACCESSORIES...CUTTING TOOLS



ECCENTRIC BORING CHUCKS

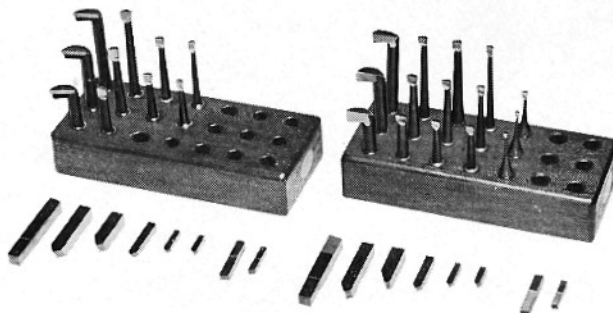
L. to R.: Solid swivel-type, range .060" to 27/8". 1 1/2" Criterion dovetail type, range .060" to 2 1/2". 2" Criterion dovetail type, range .060" to 3 1/4"; Chandler out-feed chuck, Model J. (All four take 3/8" diameter round shank bits—see below)



SOLID TYPE BORING BARS WITH SHANK

FURNISHED IN FOLLOWING SIZES:

Short Bars "Thousandth" Setting				Long Bars "Thousandth" Setting			
Dia.	Hole Depth	Min. Dia.	Max. Dia.	Dia.	Hole Depth	Min. Dia.	Max. Dia.
5/8	2 1/8	1 3/8	1	5/8	3 5/8	1 3/8	1
3/4	2 1/8	1	1 1/4	3/4	3 5/8	1	1 1/4
1	2 1/4	1 1/4	1 1/2	1	4 5/8	1 1/4	1 1/2
1 1/4	2 1/4	1 1/2	1 7/8	1 1/4	4 5/8	1 1/2	1 7/8
				1 3/4	3 7/8	2 1/4	2 7/8
				2 1/2	2 3/8	2 1/2	3 3/4



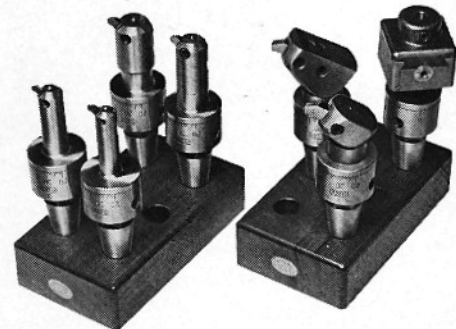
BORING BITS

Left Block — Set of 10 carbide-tipped boring bits, range from 1/4" to 2 7/8".

Right Block — Set of 15 high-speed steel boring bits, range from .060" to 2 7/8".

Front — Square boring bits and sweep tool bits furnished in high-speed steel and carbide for use in solid-type boring bars and sweep tools.

Sheet No. M-113, covering complete dimensions of high-speed steel and carbide-tipped boring bits, will be provided on request.



"MICRO"-SETTING BARS WITH SHANK

FURNISHED IN FOLLOWING SIZES:

"Micro" Bars — "Tenth" Setting

Dia.	Hole Depth	Min. Dia.	Max. Dia.
5/8	2 1/8	1 3/8	1
3/4	2 1/8	1	1 1/4
1	2 1/4	1 1/4	1 1/2
1 1/4	2 1/4	1 1/2	1 7/8
1 3/4	3 1/2	2 1/4	2 7/8
2 1/2	3 1/2	2 1/2	3 3/4

NOTE: Tool at extreme right in photo is 1 1/2" Criterion-type boring chuck mounted on micro ("tenth"-setting) shank; range .050" to 2 1/2".

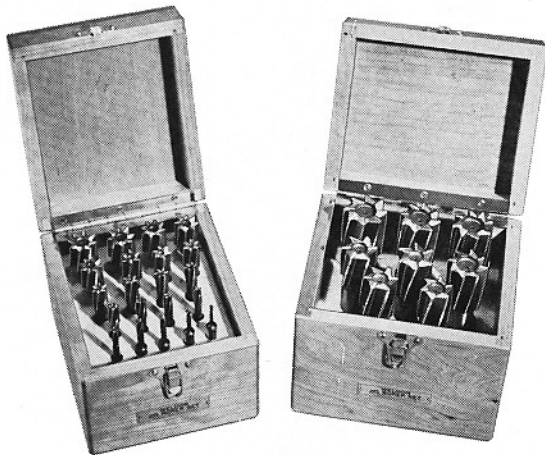
ACCESSORIES...CUTTING TOOLS



DRILL CHUCKS WITH SHANK

Only the best precision selected chucks are supplied. Recommended are one Chuck each of $\frac{1}{8}$ " , $\frac{3}{8}$ " , $\frac{1}{2}$ " , and $\frac{3}{4}$ " capacity.

$\frac{1}{8}$	— range	.0 to $\frac{1}{8}$
$\frac{3}{8}$	— "	.040 to $\frac{27}{64}$
$\frac{1}{2}$	— "	.040 to $\frac{33}{64}$
$\frac{3}{4}$	— "	.191 to $\frac{25}{32}$



STRAIGHT-SHANK END REAMERS

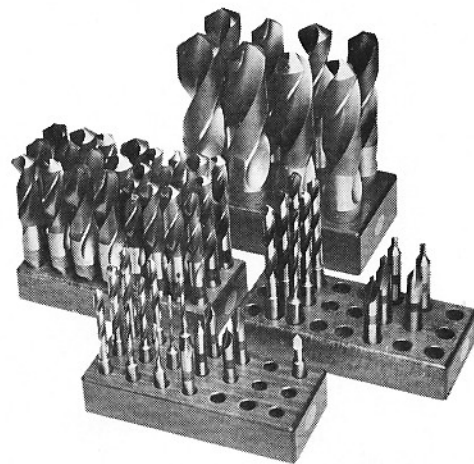
Left Set — Complete set of 21 end reamers with $\frac{3}{8}$ and $\frac{1}{2}$ shank, from $\frac{1}{8}$ to $\frac{1}{2}$ in increments of $\frac{1}{32}$; from $\frac{9}{16}$ to 1 in increments of $\frac{1}{16}$.

Right Set — Complete set of 8 end reamers with $\frac{5}{8}$ straight shank, in increments of $\frac{1}{16}$ from $\frac{11}{16}$ to $\frac{11}{2}$. Price list MB-103 furnished on request.



COLLETS FOR STRAIGHT-SHANK END REAMERS

$\frac{3}{8}$	— for end reamers	$\frac{1}{8}$ to $\frac{3}{8}$
$\frac{1}{2}$	— " " "	$\frac{13}{32}$ to 1
$\frac{5}{8}$	— " " "	$\frac{11}{16}$ to $\frac{11}{2}$
$\frac{49}{64}$	— for drills	$\frac{11}{16}$ to $\frac{11}{2}$



DRILLS AND SPOTTING TOOLS

Straight-Shank Drills

Two Front Blocks—15 reamer drills for end reamers from $\frac{1}{8}$ " to $\frac{1}{2}$ ".

Center-Left Block—24 special short drills, 5" long, with $\frac{33}{64}$ straight shank, in $\frac{1}{64}$ increments from $\frac{17}{32}$ to 1.

Rear Block—8 short drills, 7" long, with $\frac{49}{64}$ straight shank in $\frac{1}{16}$ increments from $\frac{11}{16}$ to $\frac{11}{2}$.

Straight-Shank Spotting Tools

One complete set, consisting of 10 spotting tools, includes:

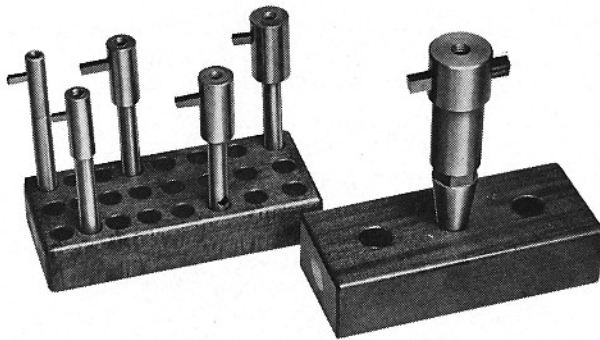
$\frac{3}{8}$ Shank — 3" O/A Length: $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$.

$\frac{1}{2}$ Shank — 3 $\frac{1}{2}$ " O/A Length: $\frac{1}{8}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{9}{32}$.

1 special size for very small holes, $\frac{3}{8}$ " shank.

Price Sheet No. MB-103 will be furnished on request.

ACCESSORIES...CUTTING TOOLS



SWEEPING TOOLS FOR FACING WITH BIT

Left: Set of 5, all shank diameters 33/64, includes:

	Max. Dia.
1/2" O/A Length 5"	1 3/4"
5/8" O/A Length 5"	1 3/4"
3/4" O/A Length 5"	2 1/2"
7/8" O/A Length 5"	2 1/2"
1" O/A Length 5"	3"

With Std. Toolbit

Note Hole Hog at Right—1 1/2" diameter, 3 1/8" long (hole depth), with Moore Shank; used for sweeping faces of enlarging holes from 1 1/2" to 2 1/2".



SPOTTERS, DRILLS AND END REAMERS

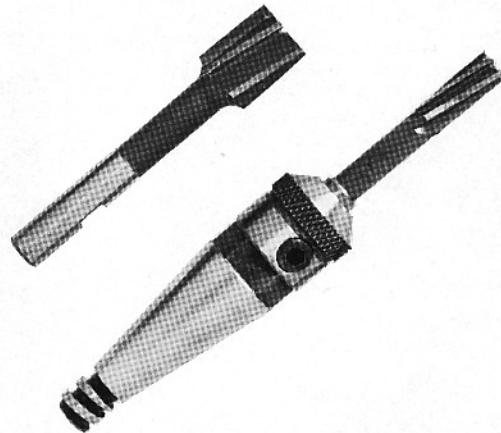
Much time can be saved with the Moore Straight Shank method by using Spotters, Reamer Drills and End Reamers, each with the same size straight shank. Each tool is held in the collet with a set screw and it is not necessary to change this collet between the operations; each tool can be quickly withdrawn and replaced. This method represents the fastest system of locating, drilling and reaming holes on a jig borer.

These tools, with the exception of the Special Reamer Drills above 1/2", come with 3/8" or 1/2" Straight

Shanks only, for use with the corresponding collets as described below.

End Reamers are supplied in dimensions from 1/8" up to 1 1/2". In cases where hole spacing and hole diameter need not be lower than $\pm .0005"$, the Moore Straight Shank method as explained can be further speeded up by using special under-sized Reamer Drills; these are from .005" to .015" below size and permit reaming to final size by means of End Reamers.

This results in savings from half to three quarters of the time otherwise required. These Reamer Drills are furnished in assortments, in 1/32" divisions, from .120" for 1/8" holes up to .490" for 1/2" holes, with 3/8" and 1/2" shanks, and in 1/64" divisions from 17/32" for 9/16" up to 1", with special 33/64" shanks, 1 1/16" to 1 1/2" in increments of 1/16" with 49/64" shanks, for use in Drill Chucks.



COLLETS FOR ABOVE TOOLS

Collets, for 3/8", 1/2", 5/8" and 49/64" straight shank tools as listed above, are furnished to fit the Moore spindle; these are hardened, ground and lapped to run concentric within a limit of .0001".



WAHLSTROM AUTOMATIC CHUCK

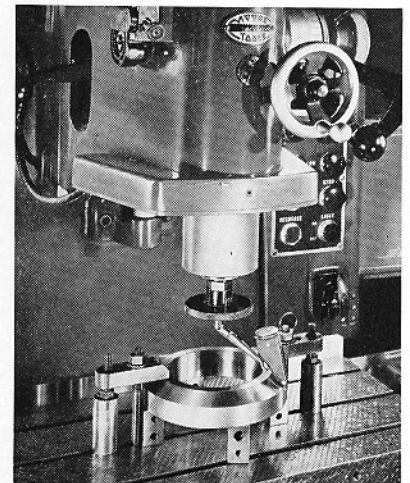
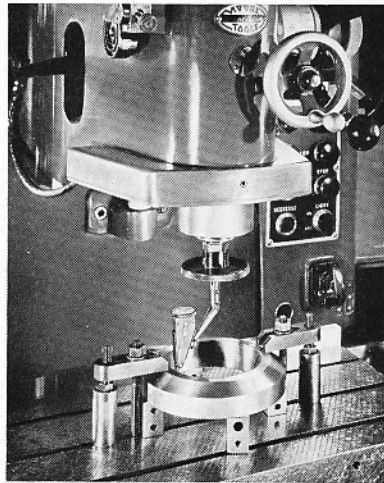
With this Wahlstrom Chuck you can change cutting tools—from 1/32" to 1/2"—in a second while the spindle is running. No keys, collets or wrenches are needed. Here's all there is to changing tools:

1. Grip sleeve—pull down—jaws open automatically—tool is released.
2. Insert new drill—push up tapered part—tool is locked in place.

ACCESSORIES NECESSARY FOR



A grouping of accessories. The jig borer is shown here equipped with rotary table on micro-sine table. Note workpiece resting on parallel set-up blocks, held in place by bolts and straps.



The Indicator Holder. These 2 photographs show its wide range. It stays firmly in any position as each joint has a stiff friction adjustment.

INDICATOR SET IN BOX

This set consists of one "Last Word" or "Federal" Indicator with holder, one Edge-Finder and one Center or Line-Finder, all nicely set in a velvet-lined box.

The "Last-Word" or "Federal" indicators are standard makes, common in toolrooms and need no further description. These indicators mounted on Moore holders combine maximum range with minimum amount of space. Holes from $\frac{3}{16}$ " to $7\frac{1}{2}$ " diameter can be indicated, yet when holes must be indicated close to a shoulder or other projection, this can be done. Furthermore, due to the jointed construction of our holder a hole can be indicated deep down in a box jig or similar work. We can furnish indicators with dials reading in .001" or .0001".

The Edge-Finder is used when it is desired to locate a hole at an exact distance from the edge of the work.

The Line-Finder is not uncommon in a tool maker's kit, and is convenient for picking up a scribed line on the work.

This set is all that is needed for locating or checking on a Moore Jig Borer.



DIVERSIFIED JIG BORER WORK

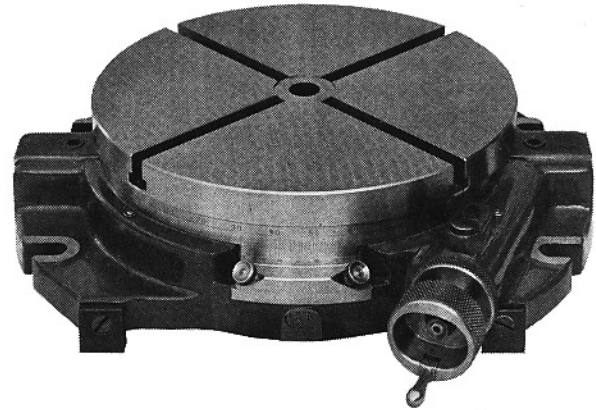
The 10" Rotary Table is especially designed for spacing holes accurately in a circle. It is sturdily built; the base is semi-steel, the top is solid forged steel, both carefully seasoned and scraped. A hardened, ground and lapped bushing is inserted in the center, making it easy to locate a piece centrally on the table. The hole in this bushing runs concentric with the axis of the table within a limit of .0001".

This Table is most accurately graduated in one-half degrees and, by means of a vernier, reads direct in increments of one minute. The lines are extremely fine and, therefore, close settings are possible. Holes can be spaced on this Table within limits of plus or minus .0002" on an 8" diameter.

Worm can be disengaged from worm wheel by large knurled collar, allowing the table to spin freely for indicating purposes. The vernier plate can be adjusted $1\frac{1}{2}$ degrees each side of the center, by means of two knurled screws in front. This facilitates starting with a zero reading.

Available also are an angle plate for tilting the Rotary Table at 90 degrees and an extension plate making it possible to locate holes on a circle as large as 22" in diameter.

ROTARY TABLE

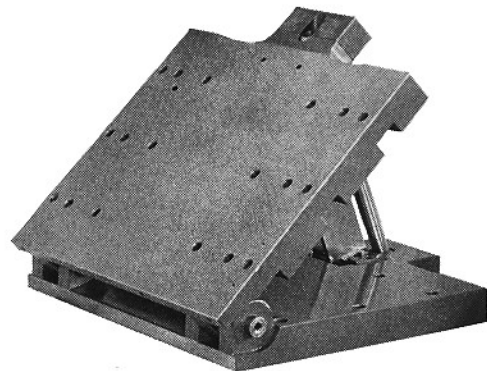


This Table is used for holding the Rotary Table at any desired angle. It can also be used to hold jobs where angular holes are to be matched.

The angle is determined and set according to the sine bar principle, using gage blocks. The table will swivel from zero to 90 degrees.

The advantage of having the Rotary Table and Sine Table in 2 units is that either the Rotary Table or the Sine Table can be used alone, thereby getting the maximum of useful machine height when using either unit separately. The Sine Table surface is 10" x 12 $\frac{1}{2}$ ".

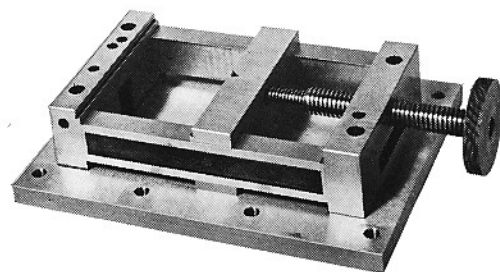
MICRO-SINE TABLE



A valuable accessory for holding work too small for bolts and straps, equipped with stepped jaws eliminating the need of parallels and a "V" slot for round work. The Vise is also useful for small-lot production by means of stops, where jigs would otherwise be necessary.

The base plate is ground square and parallel to stationary jaw facilitating quick and accurate line-up against straight edge. The Vise has a capacity of 6" long x 5 $\frac{1}{2}$ " wide and is 2" high, with a base dimension of $\frac{5}{8}$ " x 8" x 10 $\frac{3}{4}$ " and a weight of 31 lbs.

6" PRECISION VISE



ACCESSORIES NECESSARY FOR

PARALLEL SET-UP BLOCKS



These blocks are available in sets of six of each of two sizes. The large blocks measure 1" x 2" x 3" and the small ones 7/8" x 1 1/4" x 1 1/2". These dimensions are maintained within $\pm .0001$ ", and all sides square within $.0002$ ". As illustrated, they are neatly packed in a mahogany box, together with a large assortment of bolts and special nuts, for attachment to the Jig Borer table.

They are useful in many ways:

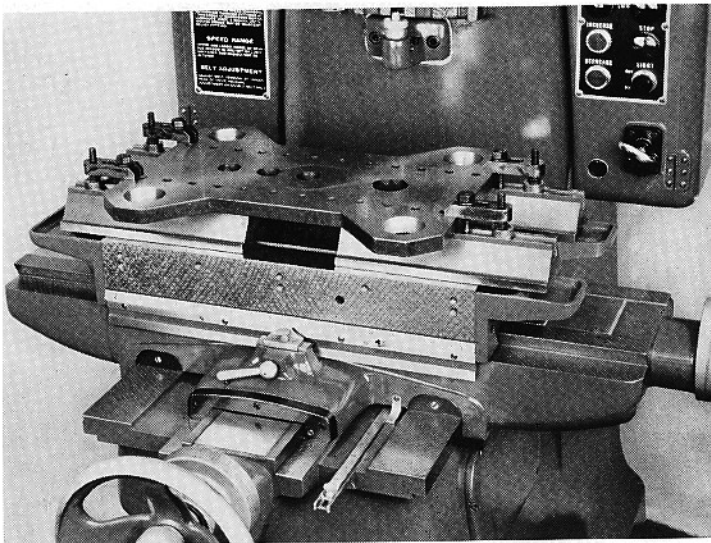
1. Setting up jobs on Jig Grinder or Jig Borer. They can be employed to hold parts too small to hold by means of the regular bolts and straps. Their height enables the operator to measure the *bottom* of a hole, inaccessible with ordinary low parallels. Instead of using a single pair of ordinary parallels under a circular plate, it is often more accurate to use four or six of these uniformly spaced around. They are useful as end-stops, or for repeating locations, as in the case of production work.
2. Layout and Inspection. Since these blocks are perpendicular and held to accurate dimensions, they can be used as measuring devices or angle blocks. Close dimensional tolerances insure interchangeability in case more than one set is purchased.

EXTENSION PARALLELS

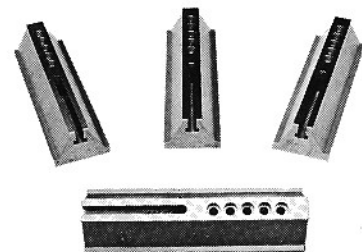
Moore Extension Parallels give you drill clearance and T-slots for holding. They are made of close-grained Meehanite 2" x 3" x 10" dimensions and following tolerances:

thickness	2.0000"
	2.0003"
width	3.000"
	3.002"
length	10"

Mounted on Moore 10" Rotary Table, you can hold rings over 20" in diameter.



Holding a large stripper that is longer and wider than the table.



DIVERSIFIED JIG BORER WORK

LEAF TAPER GAGES

Moore Direct Reading Leaf Taper Gages provide a simple, effective solution to the ever-present problem of measuring the *exact* size of trial cuts in bringing a hole up to size during boring or grinding.

Thirty-six individual leaf gages, graduated in thousandths, enable the operator to quickly read hole sizes in infinite increments from .095" to 1.005" directly from the gage without reference to another standard.

Here's all he has to do to keep track of stock removal as he goes along: insert the gage into the hole and read its diameter directly from the gage.

SPECIFICATIONS

Hardened, spring-tempered steel.

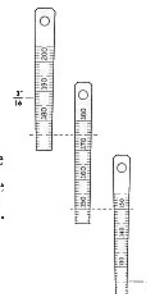
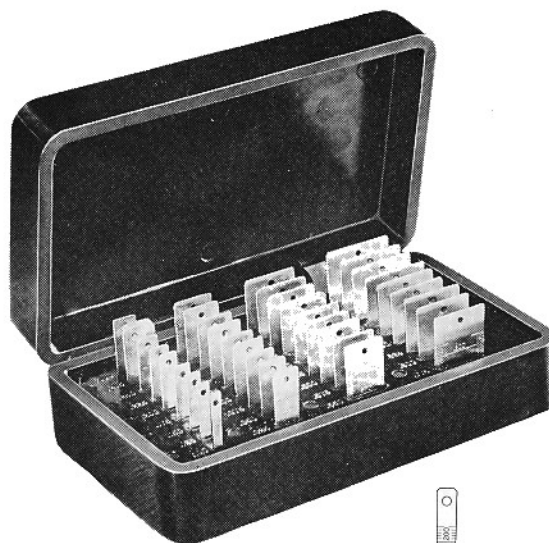
Length, each leaf: $1\frac{1}{2}$ ".

Accurate to $\pm .00025$ ".

Leaves graduated in thousandths.

Range of measurement—.095" to 1.005", each leaf overlaps the next by .010".

36 leaves in set, packed in plastic box with marked pocket for each leaf.



Graduations on each size Moore Leaf Taper Gage overlap the next by .010".

LOCATING MICROSCOPE

In the Moore Microscope the image is not inverted as is the case with standard compound microscopes. This means the operator sees the work in the same position through the microscope as without it, and that table settings can be made instinctively without the confusion of transposing reversed or inverted table movements. An optically engineered precise roof prism enables the Moore Microscope to be read as easily as an optical comparator. Less chance for error is the result. Accurate performance does not depend on operator skill or experience.

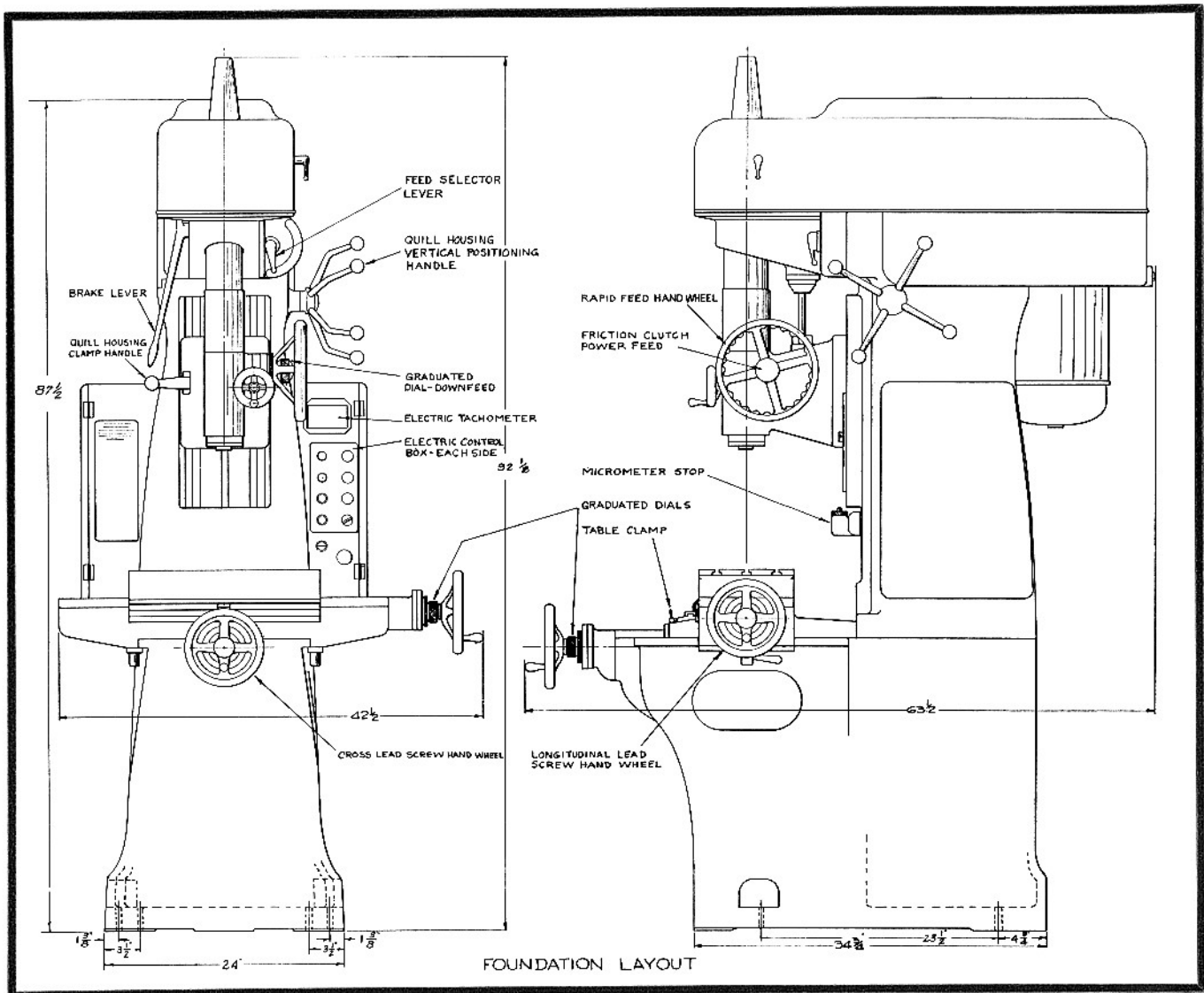
The Moore Locating Microscope, readily interchanged between the Moore Jig Borer and Jig Grinder, extends their usefulness by converting them to inspection machines for hole location, contour shapes, finish or surface conditions.

Locational accuracy is quickly and accurately determined by substituting the microscope for the cutting tools or grinding heads. Work may be checked before disturbing the setup. Simply retrace table settings, and compare positions of holes with original dimensions while the workpiece is still in the machine.

With a suitable shank or adapter, the Moore Locating Microscope may be attached to any machine or inspection tool requiring an optical pickup device.

Specifically designed for the Moore Jig Borer, this advanced optical method locates and checks points inaccessible to indicators, wigglers or edge finders. Mechanical errors and parallax are eliminated or minimized.





SPECIFICATIONS

RANGE

Table working surface	10" x 19"
Table travel longitudinal	16 1/2"
Table travel crosswise	10 1/2"
Table top to spindle end	Min. 5" Max. 20"
Vertical adj. of quill housing	10"
Spindle quill travel	5"
Spindle center to column ways	10"
Spindle center to column below ways	11 1/2"
Max. Boring Capacity:—	
Tool steel:	5", Soft steel:
Soft steel:	7"
Spindle sensitive enough for drilling small holes	
Spindle speeds	
with two-speed motor	85-2400 RPM
Spindle Feed: 3 feeds—.0015", .003", .006"	
per spindle revolution.	

WEIGHTS AND FLOOR SPACE

Machine with regular equipment,	
including motor	3275 lbs.
Shipping weight, domestic and export	3875 lbs.
Floor space	48" x 52" x 7' high

STANDARD EQUIPMENT

Includes 2 speed, 2 winding motor, rated at 2 H.P. 1800 R.P.M., 1 H.P. 900 R.P.M., 220 or 440 or 550 volts, 50 or 60 cycles, 2 or 3 phase; internal wiring, Stop-Slow-Fast push button switch, ratio motor for changing spindle speeds, magnetic relay with thermal overload and undervoltage protection, transformer to step-down current to 110 volts for controls and lighting; straight edge for back of table, micrometer stop, necessary wrenches, machine ready to be connected to electrical power line.

Moore Special Tool Co., Inc. BRIDGEPORT 7, CONN.

JIG BORERS • JIG GRINDERS • PANTO-CRUSH WHEEL DRESSERS • DIE FLIPPERS • MOTORIZED CENTERS • HOLE LOCATION ACCESSORIES



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