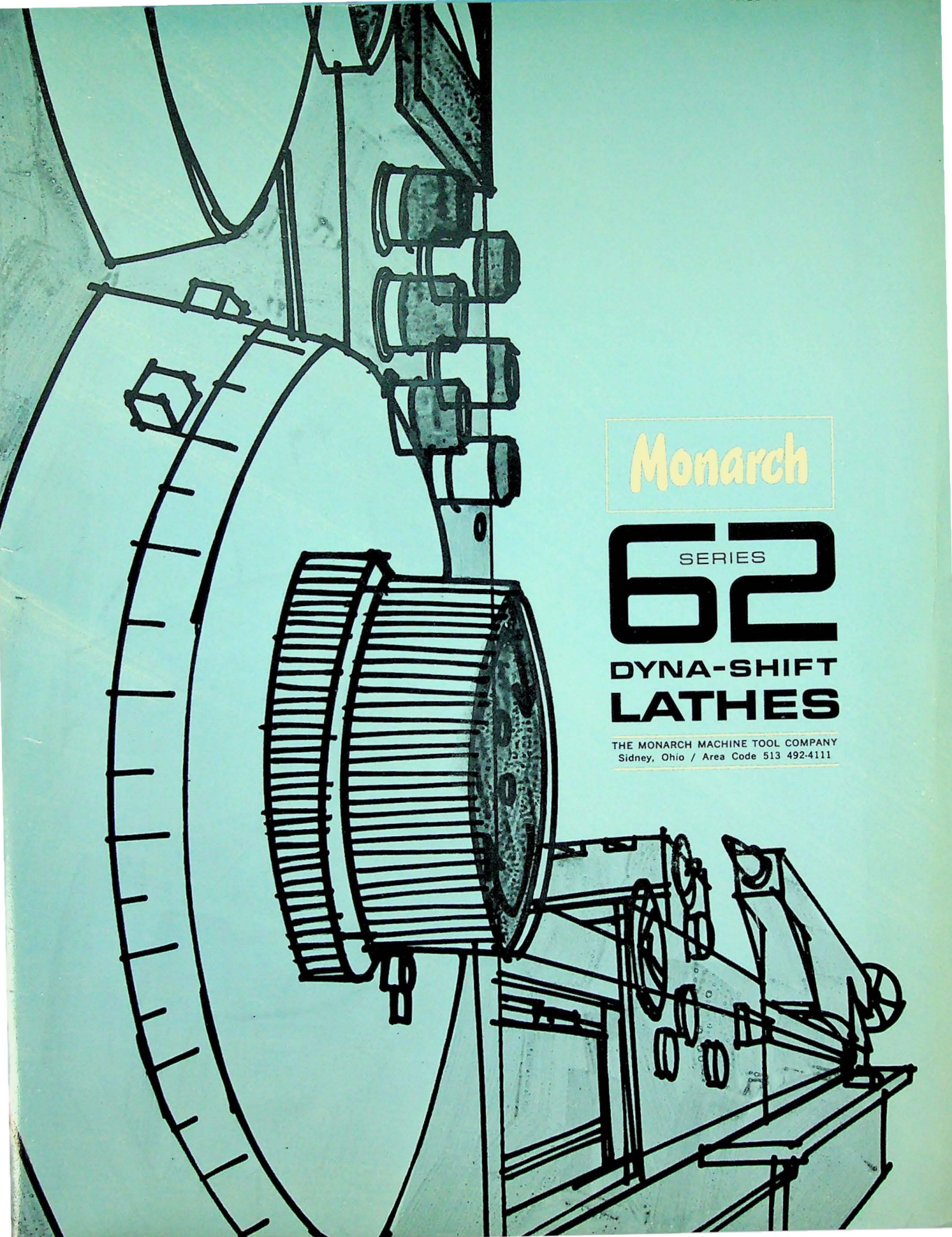


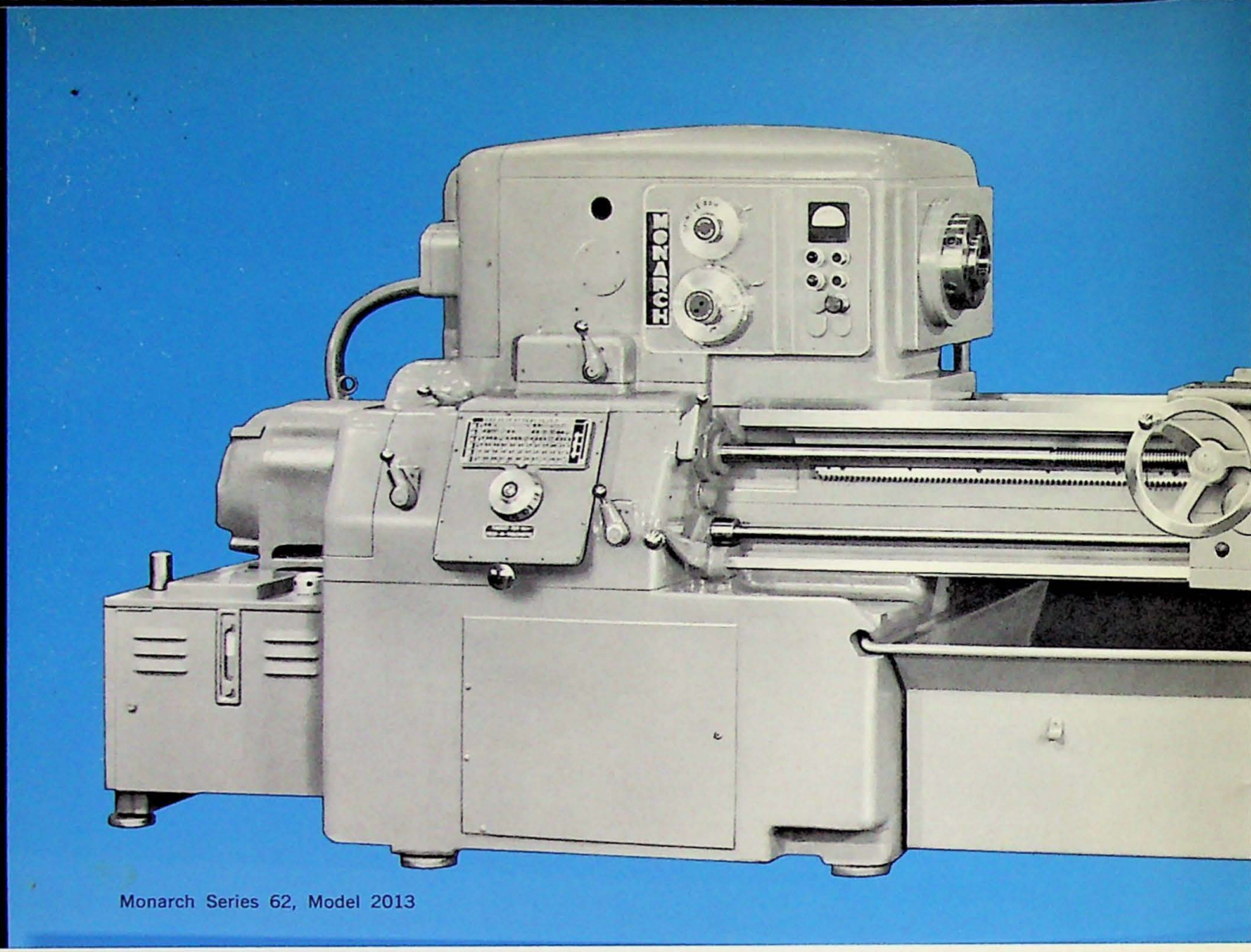
Monarch

SERIES

62

DYNA-SHIFT LATHES

THE MONARCH MACHINE TOOL COMPANY
Sidney, Ohio / Area Code 513 492-4111



Monarch Series 62, Model 2013

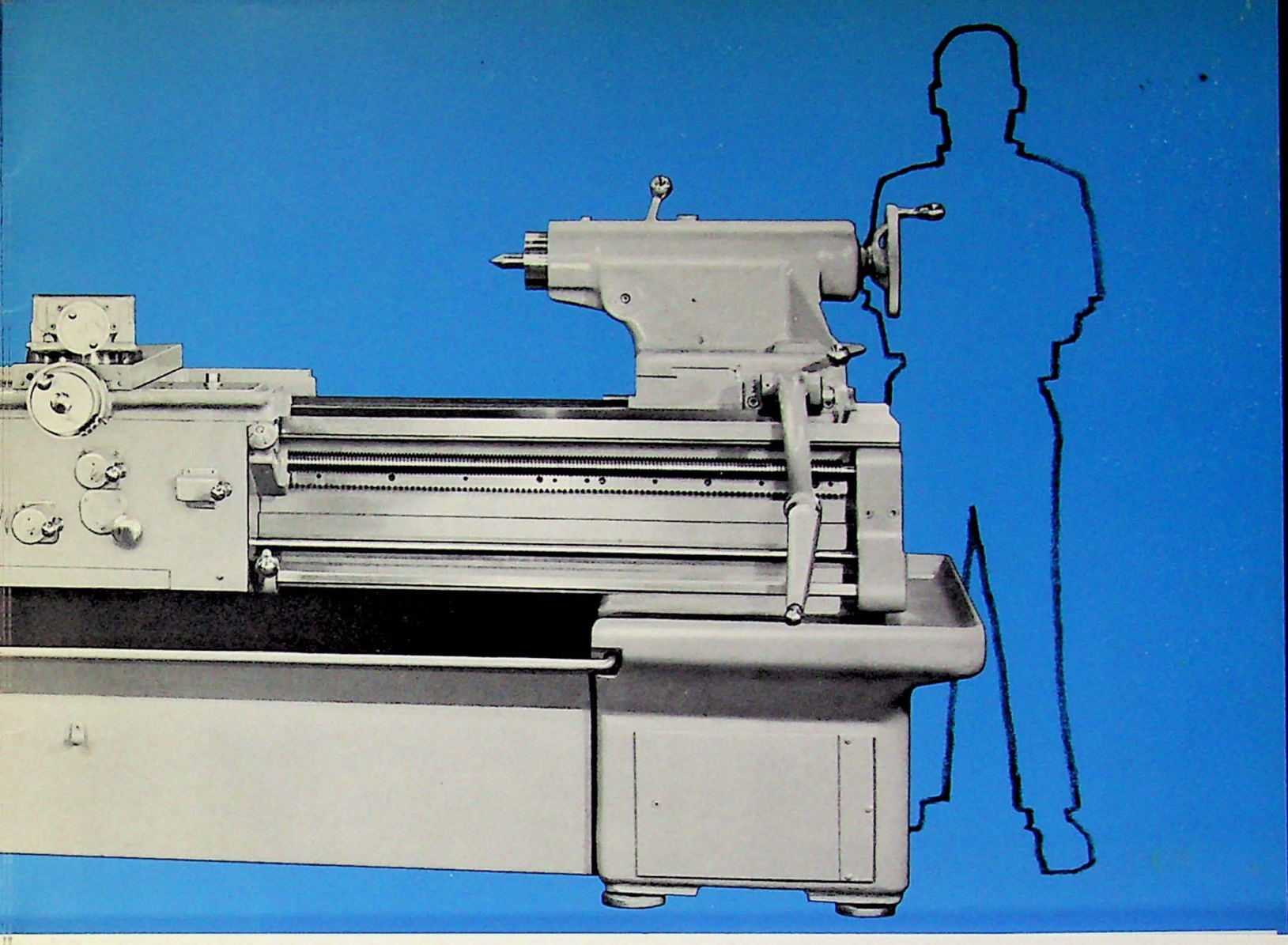
Monarch

SERIES

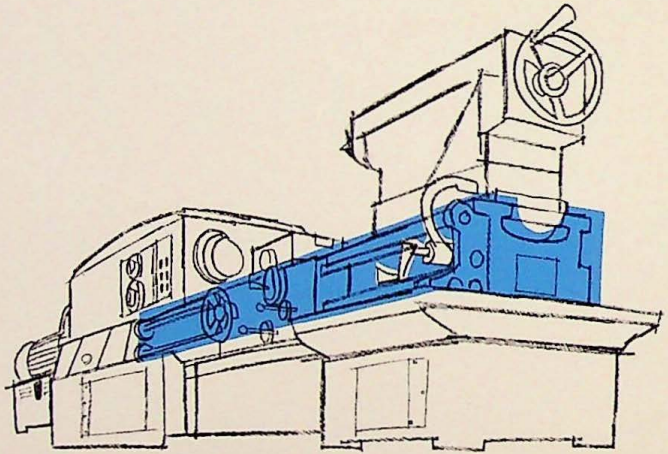
62

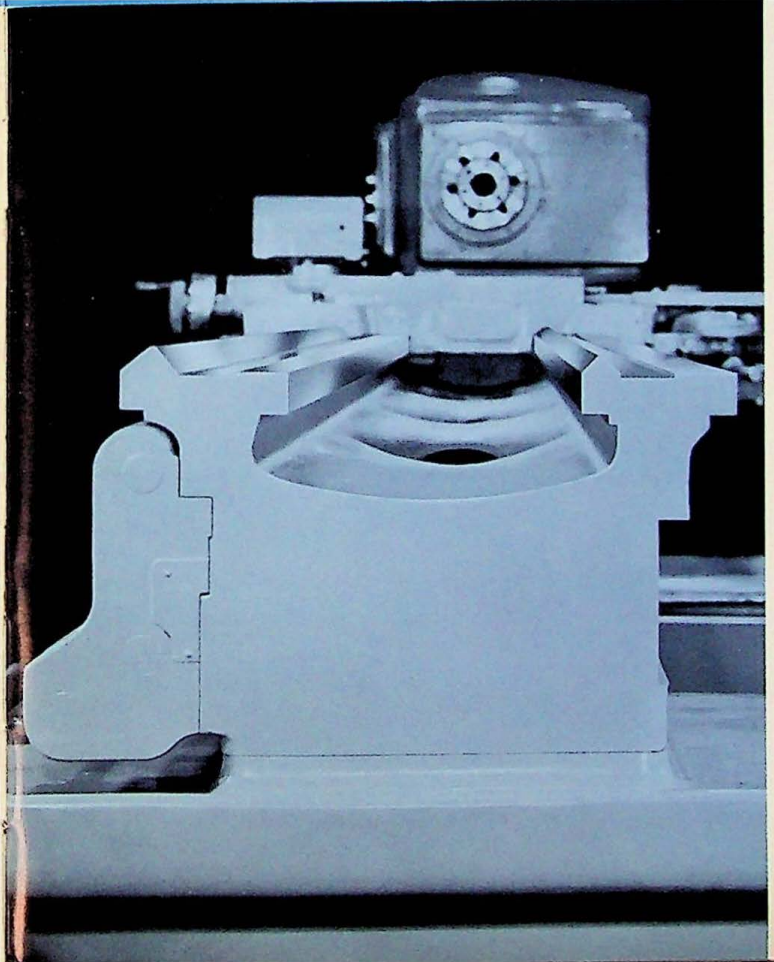
DYNA-SHIFT LATHES

MODELS 1610 / 2013 / 2516



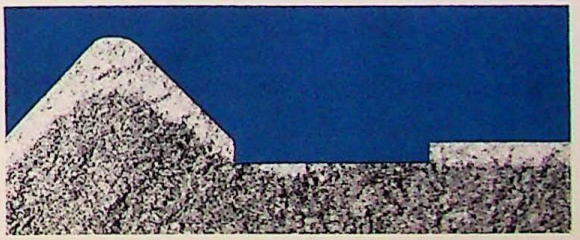
MONARCH SERIES 62 LATHES are the most versatile lathes you can use. And the most profitable. Reason: Every Series 62 is equipped with *Preselector Dyna-Shift.* This unique power shift headstock lets you *preselect* cutting diameters and automatically selects the correct spindle speed for each diameter. Result: You make faster speed changes, fewer steps. You remove more metal in less time than with any other lathe. And with the Series 62's remarkable inspection limits, you can handle all but the most extreme job requirements.



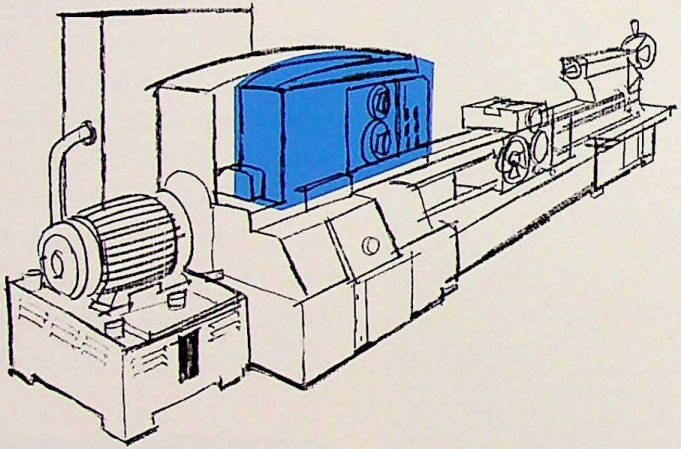


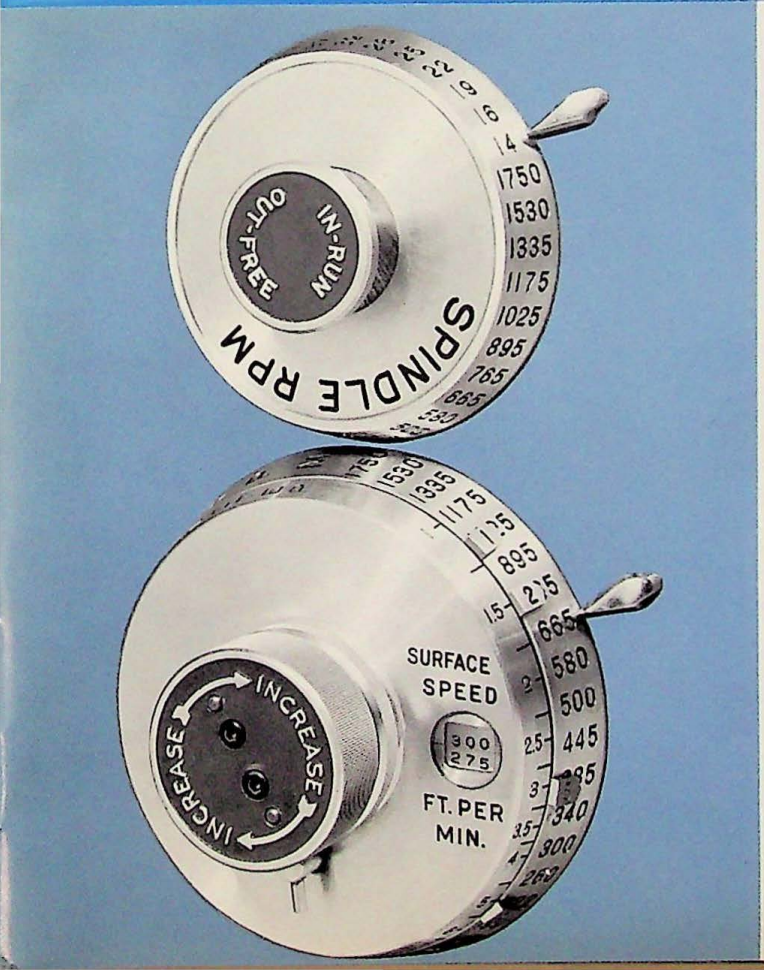
BED

Cast from metallurgically controlled cast iron with an exceptionally rigid, triangulated girth construction designed to nullify vibration. All four ways are integrally cast with the bed and ground to .0005-inch tolerance overall. Both carriage and tailstock ways are flame hardened to a depth of ⅛-inch and a Scleroscope reading of 70 to 72. (Benefit: You're assured original accuracy for the life of your lathe and lubricant on all ground way surfaces.) Cutting forces on large components are within front bed V.



Unretouched photograph of bedway after flame hardening.

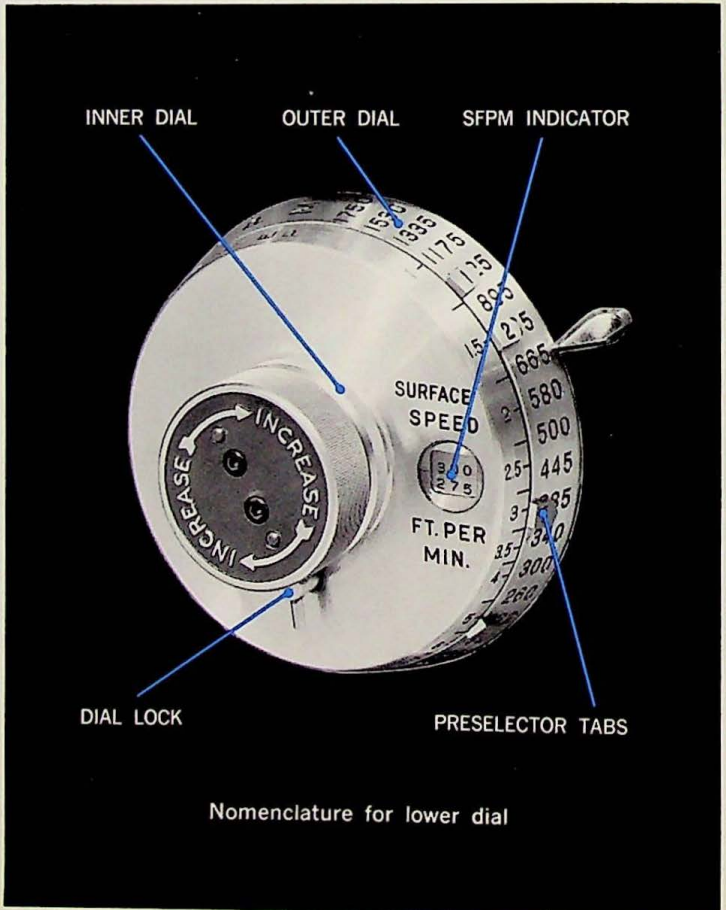




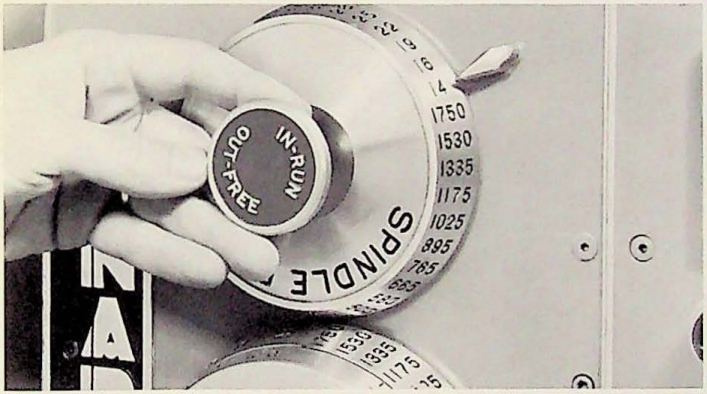
DYNA-SHIFT HEADSTOCK

Your Series 62 is equipped with a power shift headstock that thinks for itself. It allows you to preselect cutting diameters *while the machine is under cut*, then automatically calculates, selects and sets up correct spindle speed for each diameter and indicates each surface cutting speed on a dial for your reference. (A built-in load meter also indicates when machine is performing at maximum productivity.) Hardened forged steel spindle is carefully adjusted at the factory — no bearing adjustment necessary for high speed operation. Both bearings and gears lubricated by filtered mist-splash method. 36 spindle speeds of 14 to 1750 rpm and a ratio of 1 to 125 provide an unusually wide speed range for ideal surface cutting speeds over all work diameters. Turn the page to see how this easy-to-use preselector headstock removes more metal per minute than any other lathe.

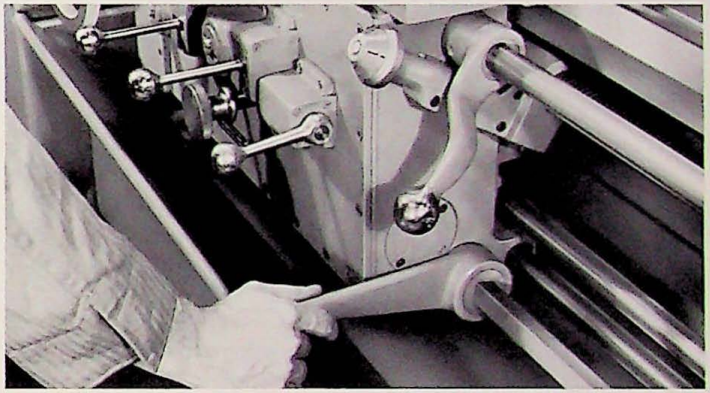
1 Loosen dial lock. **2** Select desired surface cutting speed by turning inner dial until correct sfpm shows in window. **3** Lock dial lock, after which inner and outer dials will turn as one. **4** Preselector tabs may now be pre-set, enabling successive cuts to be quickly set at uniform sfpm. **5** Start spindle by pushing down spindle control lever. **6** During cut, select second cutting speed by turning lower dial to #2 tab position. **7** To make second cut, raise spindle control lever to shift position. Upon release, spring-loaded lever drops into brake position. Spindle automatically stops and gears are shifted into new position. By depressing lever, clutch can now be engaged for second cut. Third and fourth cuts are made in the same way. Built-in safety features: Spindle cannot be started until shift has been completed. Clutch cannot be engaged with spindle in free position. Gears cannot be shifted while spindle is rotating. Leadscrew reverse lever cannot be shifted at high speeds. There is no speed step-up in a gear pair at any time. Shifting, braking and clutching are hydraulically actuated. Manifolded circuitry eliminates piping and tubing, provides permanent, uniform responses. Helical type gears on final drive provide smooth transmission of power.



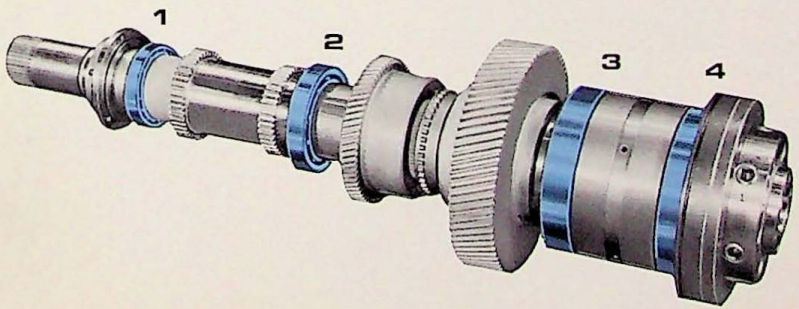
Nomenclature for lower dial



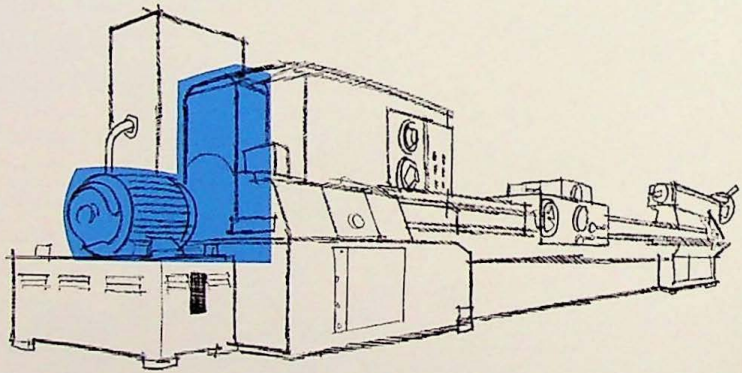
Pull out upper dial to disconnect spindle from gear train. Permits easy rotation during setup.

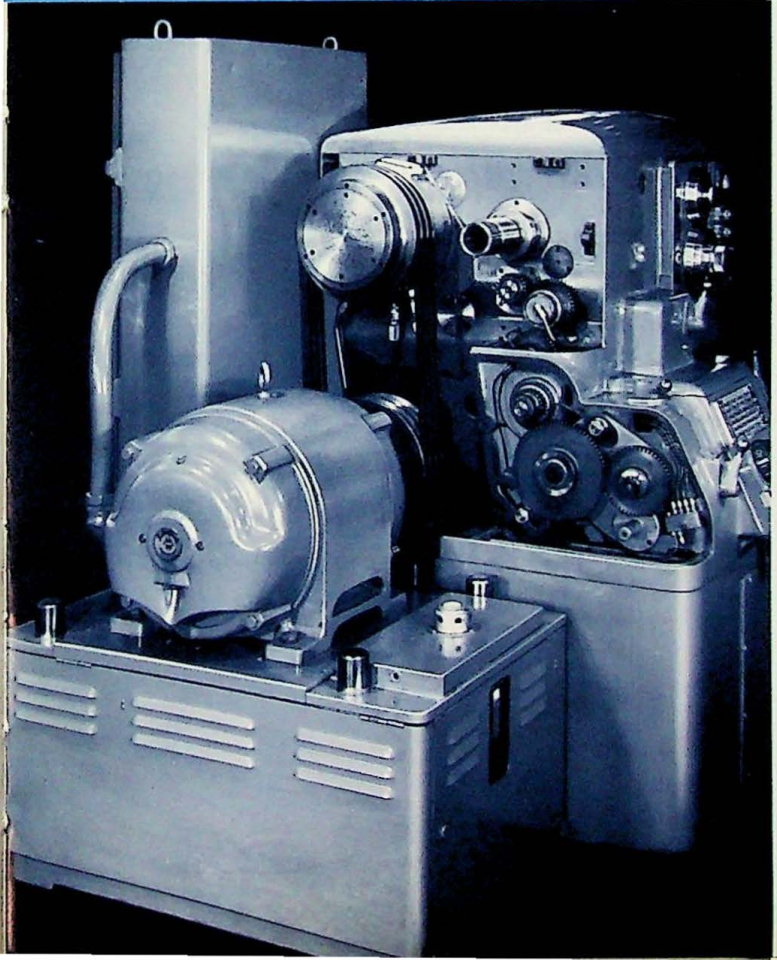


For operator convenience, spindle speed may be controlled by apron lever (above) or by separate lever beside gear box.



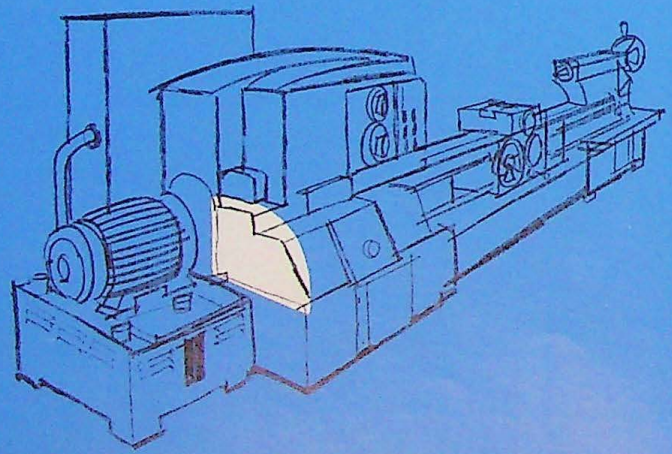
Your Series 62 headstock spindle assembly is rigidly supported by four large precision bearings. Numbers 3 and 4 are roller bearings; numbers 1 and 2 are ball bearings. All final drive gears are helical type, either shaved and flame-hardened or through-hardened and ground for longer life and superior performance. Note, too, the small amount of spindle nose overhang.

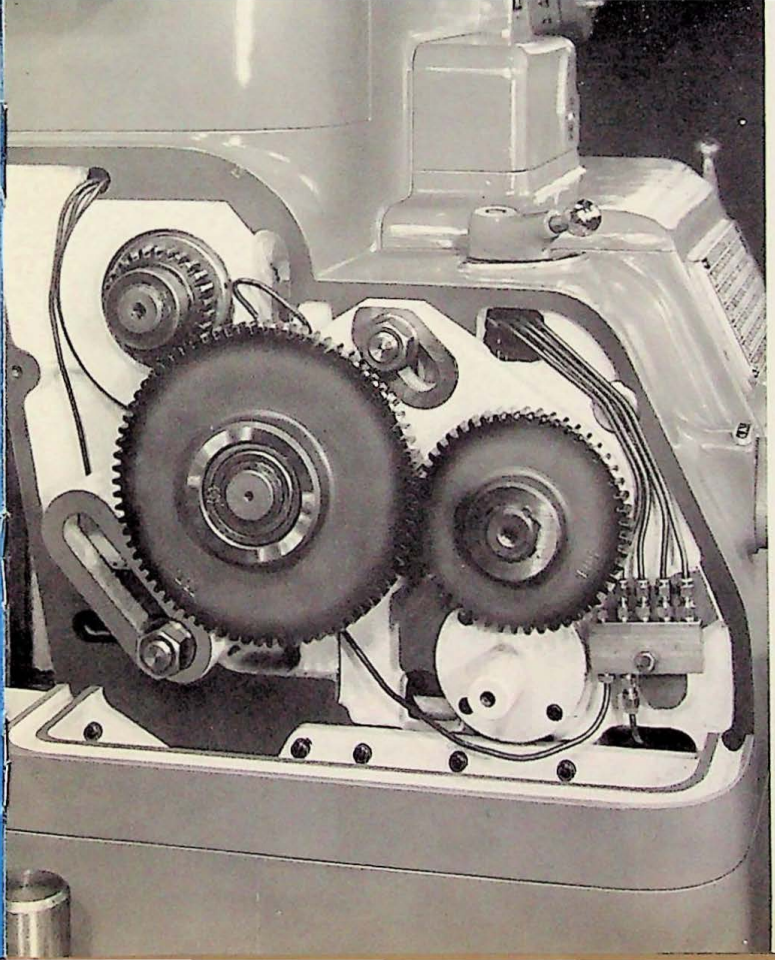




MAIN DRIVE

Motor and electrical controls (supplied to either NMTBA or JIC standards) are mounted externally for easier maintenance. Main drive motor base has hydraulic pump and oil sump (with filler cap that does double duty as visual oil level gauge) for powering headstock elements and lubricating headstock, end gearing and gear box. Multiple V-belt drive is easily adjusted. Cabinet legs beneath headstock and tailstock have hinged doors for easy access to levelling screws. Roomy chip pan. One or more box type center legs are provided on longer bed machines.



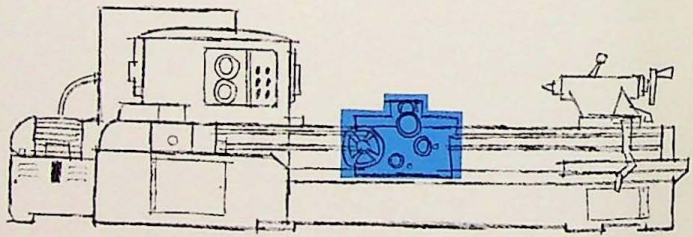


GEAR BOX AND END GEARING

Both automatically lubricated and completely enclosed to seal out dirt and chips. Gear box settings are made by a single large dial and highly legible index plate. 66-thread range covers all U.S. Standard and fine threads plus 11½ and 27 threads per inch required for pipe threading. Fixed center, quadrant mounted idler gear facilitates quick gearing changes for chasing odd leads or substitution of Metric end gearing.

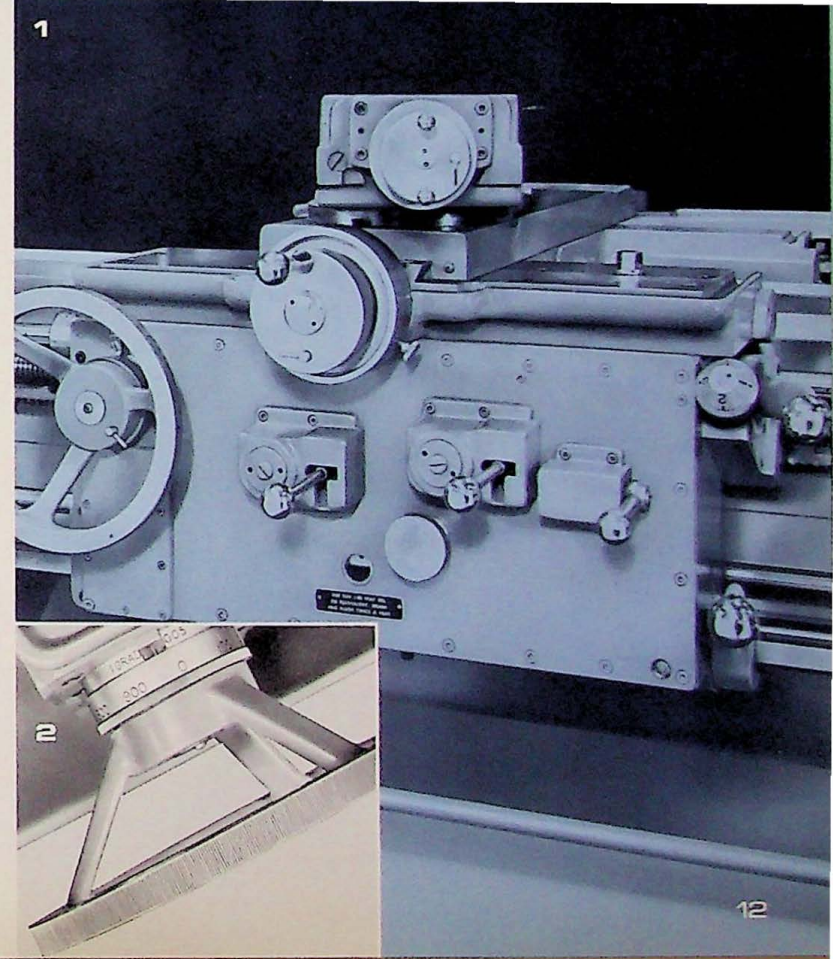
APRON

Three-position spindle control lever provides unusually smooth starting, stopping, jogging and speed changing. Duplicate lever at headstock end also provided. Both longitudinal and cross feeds are through large, cone type friction clutches. To preserve original accuracy of leadscrew for threading only, leadscrew and feed rod cannot be engaged simultaneously. Automatic travelling rod carriers are provided on long-bed lathes, assuring proper rod support at all times. Both leadscrew and feed rod are reversed by lever at headstock. (Apron controlled leadscrew reverse standard on all toolroom models.) All apron moving parts, bed and carriage bearings, are automatically lubricated.



OPTIONAL POWER RAPID TRAVERSE APRON

Provides rapid traverse in two directions, to both carriage and cross slide, reducing tool adjustment time by 50% in some types of work. Traverse is controlled through longitudinal and cross feed friction levers and a safety clutch disengages automatically on overload. Carriage moves one inch for each rotation of positive length dial located behind apron handwheel. Dial is graduated in .005 inches. Rapid traverse apron also has all features of standard Monarch apron.

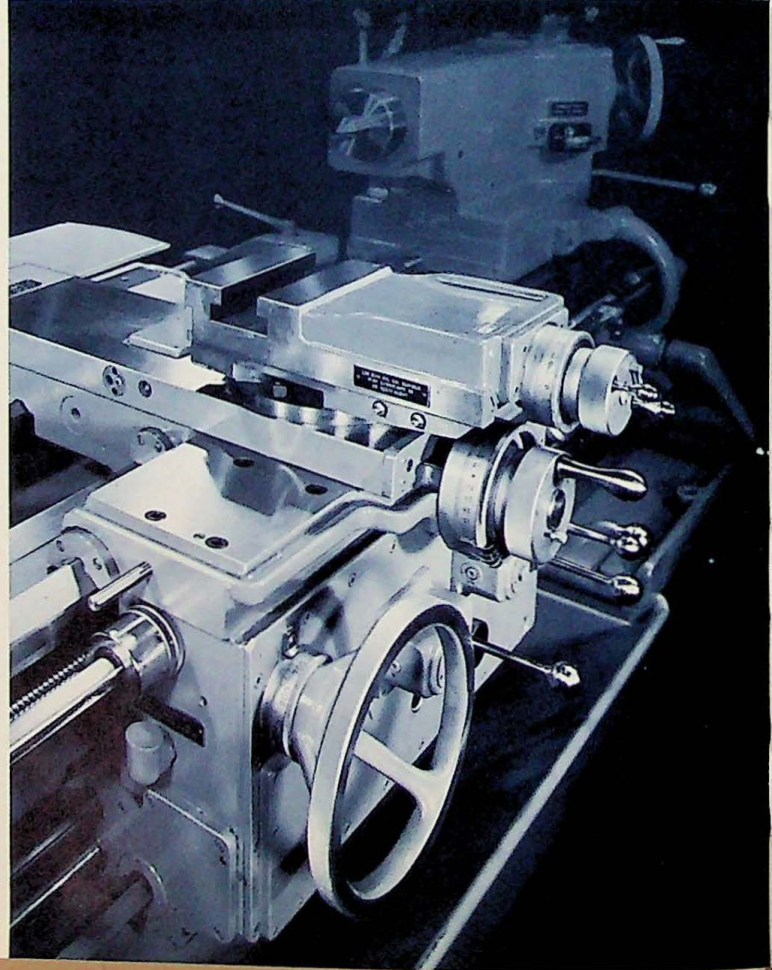


1. Power rapid traverse is easily controlled by longitudinal and cross feed friction levers. Note how the Series 62's individual levers permit traverse movement in two directions simultaneously.

2. Top view of built-in, positive, length dial graduated in .005 inch readings.

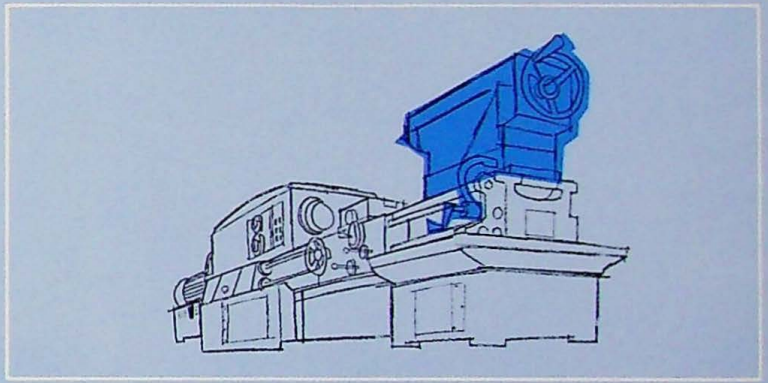
CARRIAGE, CROSS SLIDE AND COMPOUND

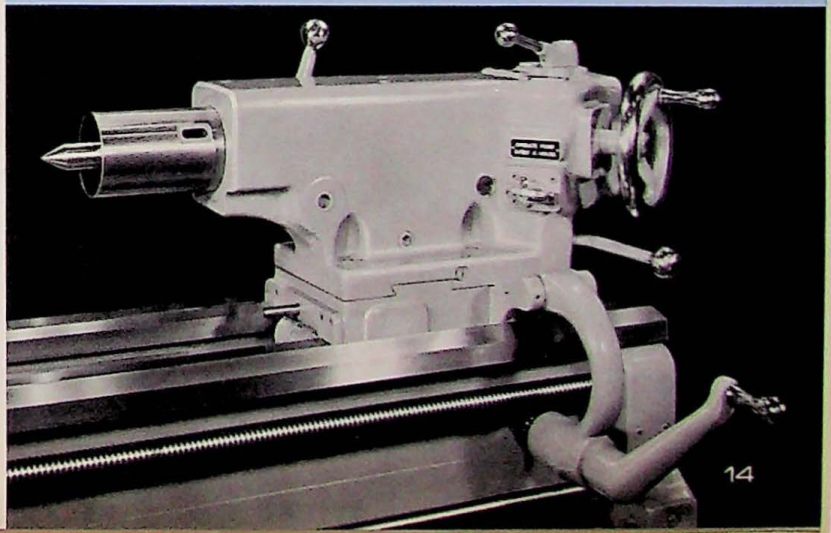
Both cross feed and compound operate on precision screws. Hardened cross feed screw is rigidly anchored to carriage in a preloaded angular bearing and in tension for all turning operations. Chromium plated cross feed and compound micrometer dials are large size and graduated in thousandths for easier reading in diameter. Compound may be rotated through 360 degrees. Built-in cross feed chasing stop permits quick tool withdrawal and repositioning to depth of last cut when threading. (Handy hint: Stop may also be used for *internal* threading.) Front wings of carriage and top of compound are specially designed to lead coolant away from front of machine to prevent spillage.



TAILSTOCK

Complete with hardened and ground alloy steel dead center spindle as standard. (Anti-friction spindle with drilling adaptor optional.) Massive tailstock provides a solid work support and is designed to clamp quickly onto bed. Auxiliary clamping nut provided for use with heavy cuts. Large spindle scale is graduated in sixteenths for easier drilling operations. Crank and pinion type conveyor positions tailstock along bed. Optional 2-speed range tailstock has spindle controlled by angular handwheel. 6-to-1 spindle speed reduction provides two ranges: fast, for quick positioning; slow, principally for drilling. Available with either anti-friction or dead center spindle.

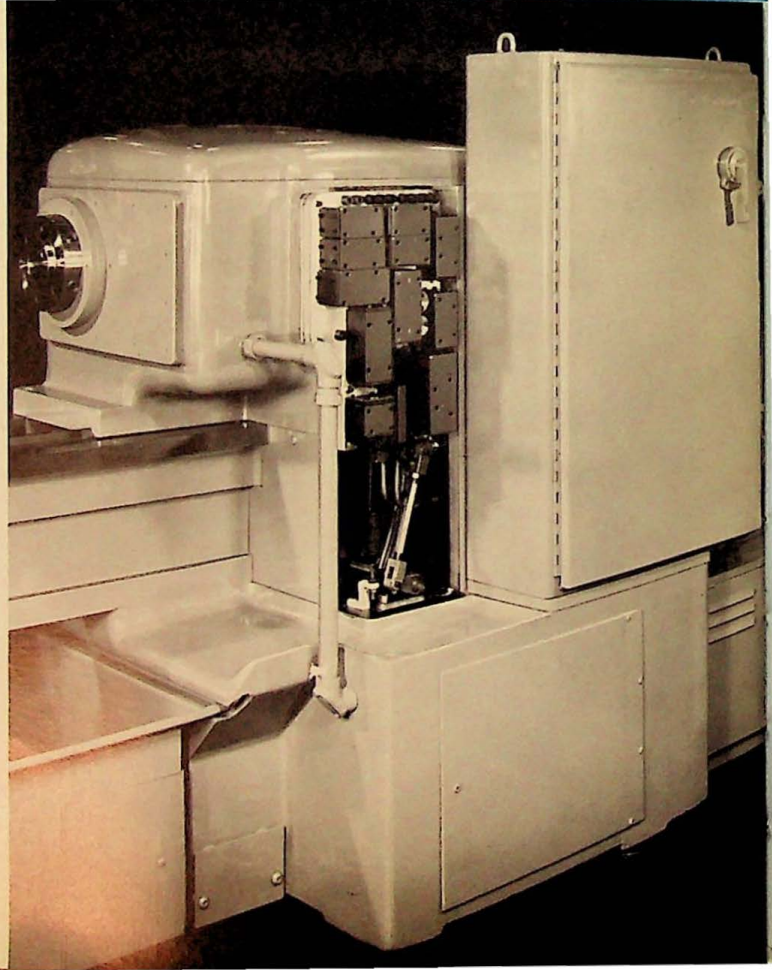




Optional 2-speed tailstock has two speeds: Fast, for traversing spindle; and slow, for drilling or positioning center.

MANIFOLD VALVING

All valving components have a high finish for low leakage, longer maintenance-free life. All critical points are protected by individual filters. This extra care in construction means your Series 62 will require virtually no maintenance. Yet, servicing is simple should it ever be necessary. If you ever need to remove a valve, just remove a cover, then four screws and the valve is in your hand. And, it's impossible to replace them incorrectly. Like radio tubes, they only go back in one way. We've minimized your lathe maintenance time other ways, too. Note the generous size chip pan. Its wide mouth lets you scoop out chips in minutes, from the rear of the lathe. No need to stop your lathe to remove chips.



SERIES 62 TOOLROOM MODELS

To increase the versatility of your Model 62 lathe, it may be ordered with a complete complement of accessories for toolroom use. Identified by the suffix "T" (1610T, 2013T, 2516T), toolroom models are equipped with apron controlled leadscrew reverse, steady rest, face plate, plus all accessories listed at right except the headstock — located reverse lever.

SERIES 62 PLUS-SWING MODELS

To obtain increased swing without increased lathe capacity, your Series 62 may be ordered with a specially engineered plus-swing. Models (1610-13, 2013-16, 2516-19) are identified by two additional digits which indicate the increased swing over the cross slide. Plus-swing is accomplished in the sand. No blocks are used.

ALL SERIES 62 LATHES INCLUDE

- 36-speed Preselector Dyna-Shift headstock with ASA cam lock 6" D-1 spindle nose
- Screw operated tailstock with dead spindle
- Centers and center sleeve
- Four flame hardened and ground bedways
- Leadscrew and feed rod reverse at headstock
- Dog plate
- Round tool post
- Thread chasing dial
- Automatic rod carriers on all machines 72 inches or longer between centers

OPTIONAL ACCESSORIES

Taper Attachment: Ball bearing construction with permanent lubrication. Maximum taper per foot: 4 inches. Maximum included angle: 18 degrees. Maximum length at one setting: 12 inches on Model 1610, 18 inches on Models 2013 and 2516. (Fig. 1)

Steady Rests: Regular and oversize with renewable tip jaws. Roller jaw rests with anti-friction bearings are available (fig. 2).

Stops: Wide variety to cover all normal requirements. Included are micrometer carriage stop (fig. 3), multiple automatic feed stops, dial indicator type carriage stops (fig. 4), and multiple positive carriage stop (fig. 5).

Connected Compound and Plain Block Rear Rest: Often used for turning operations done by front rest tool, and with necking, facing or forming operations done by rear rest tool (fig. 6).

Coolant Pan: Large capacity and extends to floor. Interchangeable with chip pan. Exceptionally easy to clean.

Coolant System: Required when coolant must be used. Pump mounted externally at headstock for easy accessibility.

Follow Rests: Regular and oversize with renewable tip jaws. Roller jaw rests with anti-friction bearings also available.

Multiple Indexing Face Plate: Designed primarily for toolroom use. Indexing plate has graduations for engaging index gear teeth for 2, 3, 4, 6 and 8 multiple start threads.

Heavy-Duty Tool Post: Recommended when heavy cuts are taken. Standard on all machines equipped with Air-Gage Tracer.

Micro-Gauging Dial: Mounted on cross feed screw to facilitate multiple diameter turning and boring.

Sub-Headstock: 6-to-1 speed reducing unit bolted to bed and driven directly by headstock spindle. A necessity when chasing extremely coarse threads.

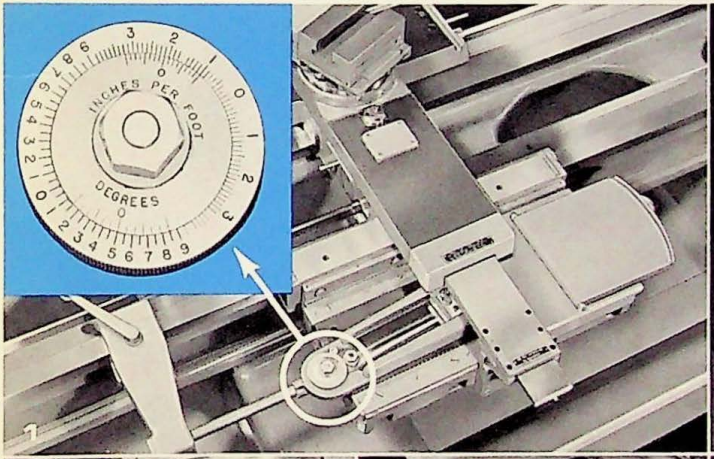
Direct Length Reading Dial: Valuable for multiple diameter turning and boring, particularly blind hole boring.

Tool Cabinet: Provides storage for smaller accessories.

Work Light: May be positioned for properly lighting work area.

Turrets, Jaw Chucks, Collet Chucks, Collets And Air Chucks are available to handle virtually any turning requirement.

Air-Gage Tracer: Provides a template controlled method for turning multiple shafts and turning, boring or facing contours. Ask for illustrated booklet.



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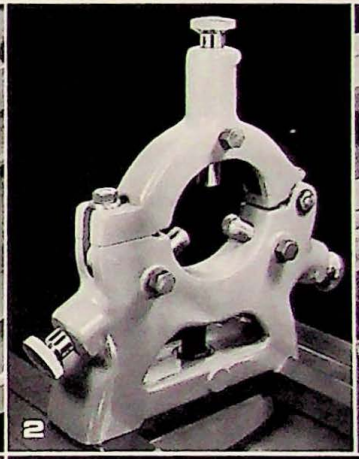
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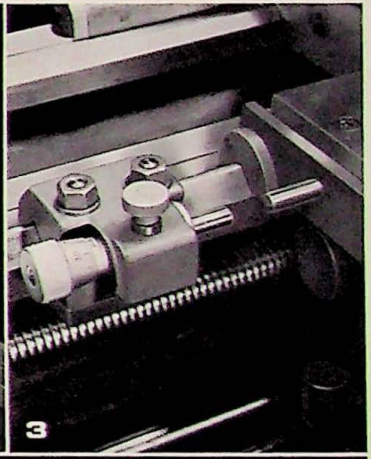
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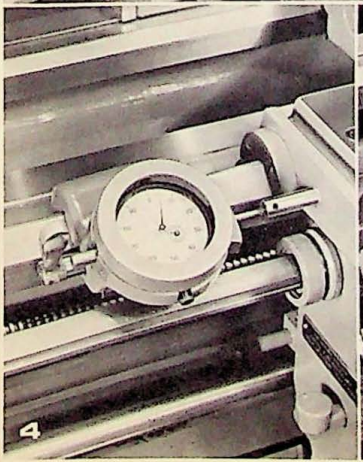
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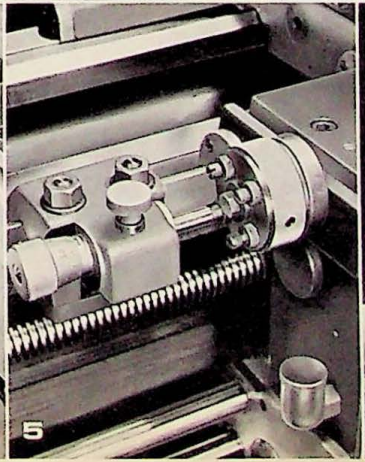
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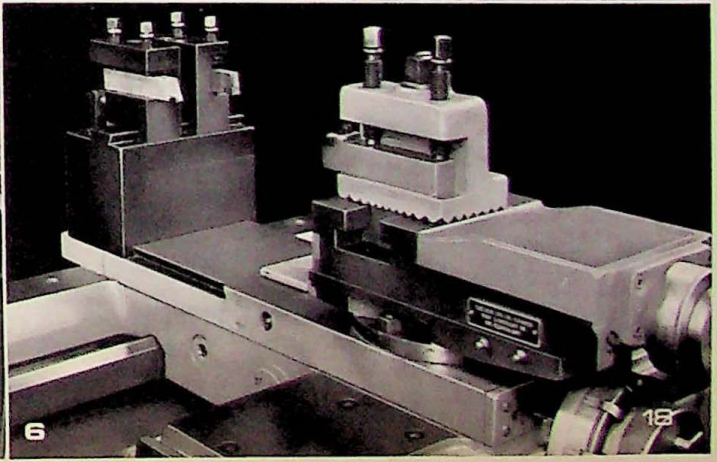
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SPECIFICATIONS

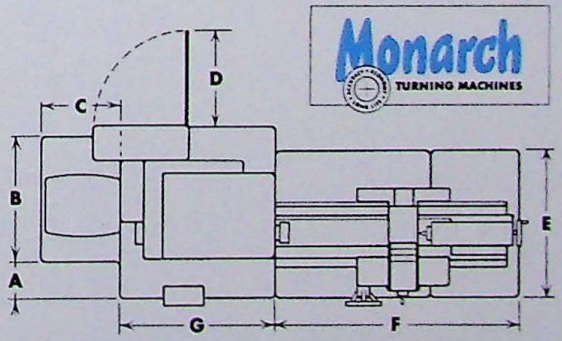
GENERAL	Model 1610	Model 2013	Model 2516
Swing over bed and carriage wings	16″	20″	25″
Swing over cross slide	10″	13″	16″
Takes between centers, base length	30″	30″	48″
Center distance increases in increments of	24″	24″	24″
HEADSTOCK			
Hole through spindle	2 1/16″	2 1/16″	2 1/16″
Center, Morse taper	No. 4	No. 4	No. 5
American standard Camlock spindle nose	6″—D-1	6″—D-1	6″—D-1
Number of speeds	36	36	36
Spindle speed range, R.P.M.	14, 16, 19, 22, 25, 28, 32, 37, 42, 48, 56, 64, 75, 85, 98, 113, 128, 146, 169, 192, 222, 260, 300, 340, 385, 445, 500, 580, 665, 765, 895, 1025, 1175, 1335, 1530, and 1750.		
GEAR BOX			
Leadscrew diameter and threads per inch	1¼″-4 thd.	1½″-4 thd.	1½″-4 thd.
Range of threads per inch	2 to 120	2 to 120	2 to 120
Range of feeds per revolution	.0013″-.082″	.001″-.068″	.001″-.068″
Thread and feed changes	66	66	66
Threads cut	2, 2¼, 2⅜, 2½, 2¾, 2⅞, 3, 3¼, 3⅜, 3½, 3¾, 4, 4½, 4¾, 5, 5½, 5¾, 6, 6½, 6¾, 7, 7½, 8, 9, 9½, 10, 11, 11½, 12, 13, 13½, 14, 15, 16, 18, 19, 20, 22, 23, 24, 26, 27, 28, 30, 32, 36, 38, 40, 44, 46, 48, 52, 54, 56, 60, 64, 72, 76, 80, 88, 92, 96, 104, 108, 112, and 120.		
TAILSTOCK			
Spindle diameter	4″	4¼″	4½″
Spindle travel	6″	7″	9″
Center	Morse No. 4	Morse No. 4	Morse No. 5

CARRIAGE AND COMPOUND	Model 1610	Model 2013	Model 2516
Carriage bearing on bed	21¼"	25½"	25½"
Carriage bridge width	7"	8"	9"
Compound rest top slide travel	3¼"	5"	5¼"
Lathe tool-shank size for round tool post	⅝" x 1⅜"	¾" x 1⅝"	⅞" x 1¾"
BED			
Width of bed	13½"	17"	19½"
MOTOR DATA			
Main drive motor Note—Other motors applicable for special requirements.	15 H.P.	20 H.P.	30 H.P.
WEIGHT			
Net, with average accessory equipment, including all electrical equipment—base length	7065 lbs.	9890 lbs.	10940 lbs.
Domestic shipping weight, as above	7465 lbs.	10390 lbs.	11480 lbs.
Net weight, each additional two feet	390 lbs.	430 lbs.	550 lbs.

FLOOR SPACE REQUIREMENTS

MODEL	A	B	C	D	E	F*	G
1610	5"	34"	23"	24"	34"	60"	39"
2013	9"	34"	23"	26"	40"	66"	43"
2516	9"	34"	23"	26"	40"	90"	43"

*This dimension applies to the base center distance machine only. Add 2' for each additional 2' increment in center distance.



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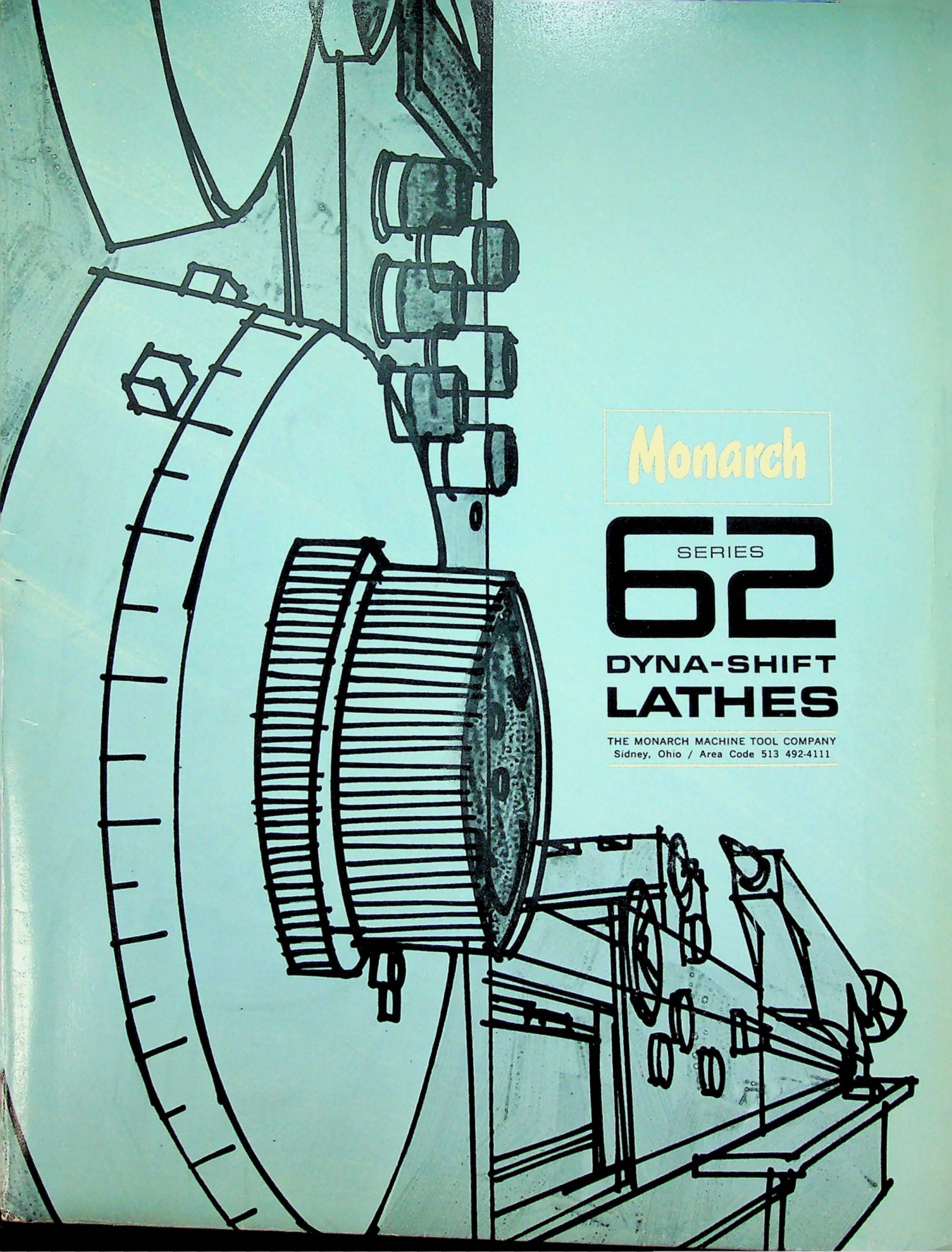

Monarch

SERIES

62

DYNA-SHIFT LATHES

THE MONARCH MACHINE TOOL COMPANY
Sidney, Ohio / Area Code 513 492-4111