

HOLBROOK

MODEL 'H' PRECISION LATHES

Catalogue Sheet H313



The name **HOLBROOK**

is traditionally associated with craftsmanship and the Model 'H' range of precision lathes has been designed to continue this tradition and satisfy the exacting requirements of today's craftsmen.

Built in a modern plant to the highest standards of quality and accuracy, these lathes are the outcome of continuous research and progressive development. The Holbrook operator can confidently approach the turning problems that arise in the Engineering Laboratory, Experimental Department, Tool Room and Precision Production Workshop.

The specification of a Holbrook Lathe permits the machining of high-tensile steels, tool steels or non-ferrous materials to fine finish and accuracy of form.

The current Holbrook Model 'H' range consists of the H.15 (15½" swing), the H.17 (17¼" swing) and the H.20 (20" swing).

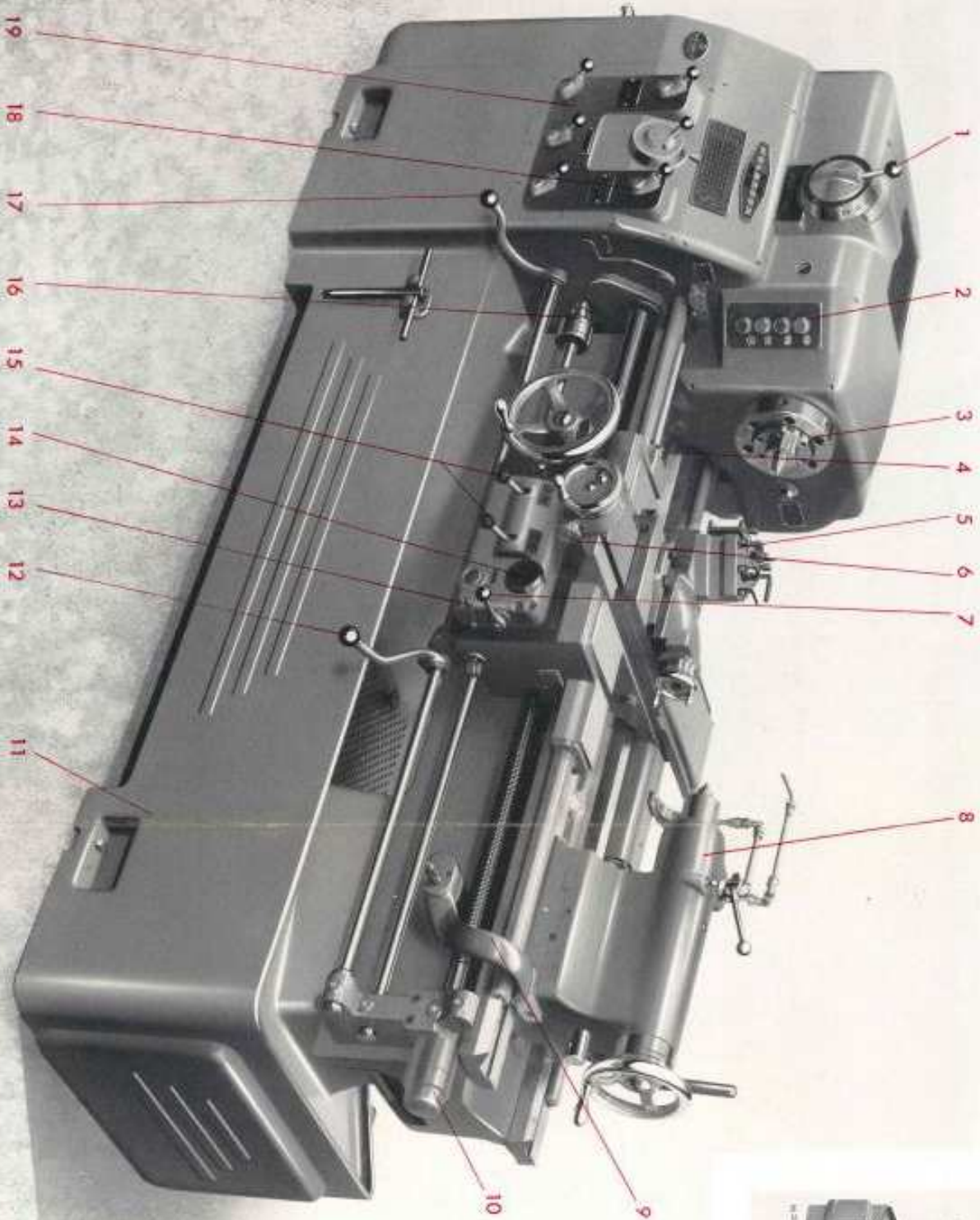
Features

The salient features of the range include:—

- ... a range of sixteen reversible spindle speeds, any one of which is selected by operation of a single, conveniently-placed lever.
- ... a well-proportioned spindle, with Cam-Lock nose, which runs in precision taper-roller bearings and is driven by a single helical gear mounted adjacent to the front journal.
- ... a totally-enclosed quick-change gearbox which provides sixty direct threading pitches and corresponding feeds through dial and lever operation.
- ... the Holbrook Precision Leader, used for screwcutting only, is mounted in a self-compensating thrust unit, an exclusive feature of the Holbrook range.
- ... all Holbrook lathes are provided with very substantial bases for the preservation of alignments. The bed is arranged with double diagonal bracing to ensure great rigidity with minimum impedance to swarf. As shown in the smaller illustration on page 4, the cabinet is also designed for the easy removal of swarf.

To Order

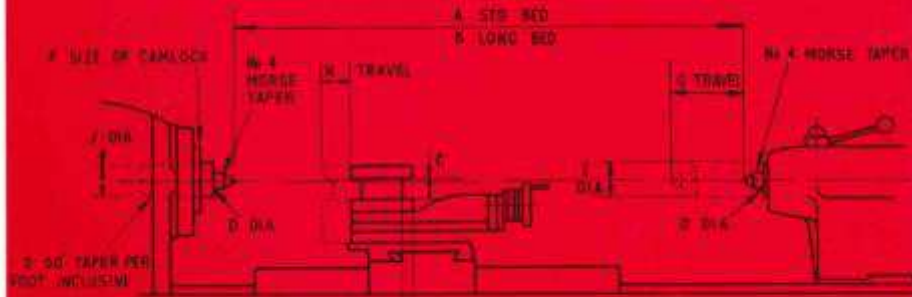
A wide range of attachments is available. Machines with centre distances 24" (610 mm.) greater than standard can be built to order and the machines can be arranged with alternative spindle speed ranges, see page 6. **All speed ranges in geometrical progression.** The standard electrical equipment supplied is suitable for 380/420 volts, 3 phase, 50 cycles supply but this can be varied if requested at time of ordering.



1. Speed selection lever
2. Positioning controls for forward or reverse spindle rotation, emergency stop and coolant pump
3. Cam-lock spindle nose
4. Adjustable micrometer dead stop (extra equipment)
5. Multi-tool holder
6. Treading stop equipment
7. Leander engagement lever
8. Standard lathestock
9. Tailstock manual traverse unit (standard on Model H40 only)
10. Leander thrust compensation unit
11. Robot cabinet
- 12 & 17. Spindle forward, brake and reverse lever
13. Carriage lubrication lever
14. Traversing dial
15. Sliding and surfacing feed controls
16. Feed safety clutch
- 17 & 18. Spindle forward, brake and reverse lever
18. Feedstart/rewind selector
19. Factory-enclosed gearbox

M 20A

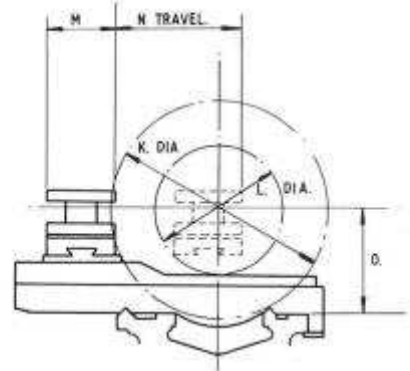
Capacity



£ 3500 approx

Centres

	H.15		H.17		H.20	
	English	Metric	English	Metric	English	Metric
A	36"	914.4 mm.	36"	914.4 mm.	42"	1066.8 mm.
B	60"	1524 mm.	60"	1524 mm.	66"	1696 mm.
C	1.375"	34.9 mm.	1.375"	34.9 mm.	1.75"	44.4 mm.
D	1.231"	31.27 mm.	1.231"	31.27 mm.	1.231"	31.27 mm.
E	0.75"	19 mm.	0.75"	19 mm.	0.875"	22.2 mm.
F	D.1 6"	152.4 mm.	D.1 6"	152.4 mm.	D.1 8"	203.2 mm.
G	6"	152.4 mm.	6"	152.4 mm.	6"	152.4 mm.
H	3"	76.2 mm.	3"	76.2 mm.	4.5"	114.3 mm.
I	2.5"	63.5 mm.	2.5"	63.5 mm.	3"	76.2 mm.
J	2.062"	52.4 mm.	2.052"	52.4 mm.	2.625"	66.67 mm.

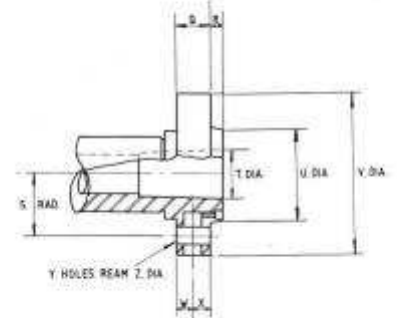


Swing

K	15.5"	393.7 mm.	17.25"	438.15 mm.	20"	508 mm.
L	8"	203.2 mm.	10"	254 mm.	10.75"	273 mm.
M	4.625"	117.4 mm.	4.625"	117.4 mm.	5.25"	133.3 mm.
N	10.5"	266.7 mm.	9.75"	248 mm.	11.625"	295.2 mm.
O	7.5"	190.5 mm.	8.5"	216 mm.	9.5"	241.3 mm.

Cam-lock Nose

Q	1.75"	44.45 mm.	1.75"	44.45 mm.	2"	50.8 mm.
R	0.5625"	14.29 mm.	0.5625"	14.29 mm.	0.625"	15.87 mm.
S	2.625"	66.67 mm.	2.625"	66.67 mm.	3.375"	85.72 mm.
T	2.625"	66.67 mm.	2.25"	57.15 mm.	2.875"	73 mm.
U	4.188"	106.37 mm.	4.188"	106.37 mm.	5.5"	139.7 mm.
V	7.125"	180.97 mm.	7.125"	180.97 mm.	8.875"	225.4 mm.
W	0.8125"	20.64 mm.	0.8125"	20.64 mm.	0.9375"	23.81 mm.
X	0.9375"	23.81 mm.	0.9375"	23.81 mm.	1.0625"	26.98 mm.
Y	Six		Six		Six	
Z	0.9063"	23.02 mm.	0.9063"	23.02 mm.	1.031"	26.18 mm.



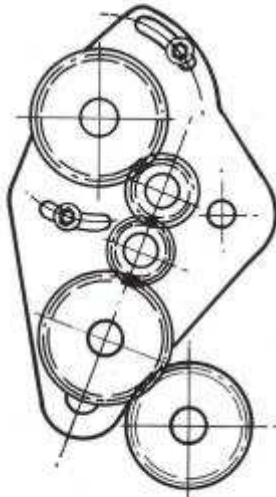
Threads and Feeds

THREADS AND FEEDS											MILLIMETRE PITCHES										
LEVERS	A	B	C	D	E	F	G	H	J	K	LEVERS	A	B	C	D	E	F	G	H	J	K
X	1	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3	5.25	5.5	5.75	6	6.5	7	8	9	9.5	
	2	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	2.5	2.75	3	3.25	3.5	4	4.5	4.75			
	3	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1.25	1.375	1.5	1.75	2	2.25	2.5			
Y	1	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3	5.25	5.5	5.75	6	6.5	7	8	9	9.5	
	2	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	2.5	2.75	3	3.25	3.5	4	4.5	4.75			
	3	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1.25	1.375	1.5	1.75	2	2.25	2.5			

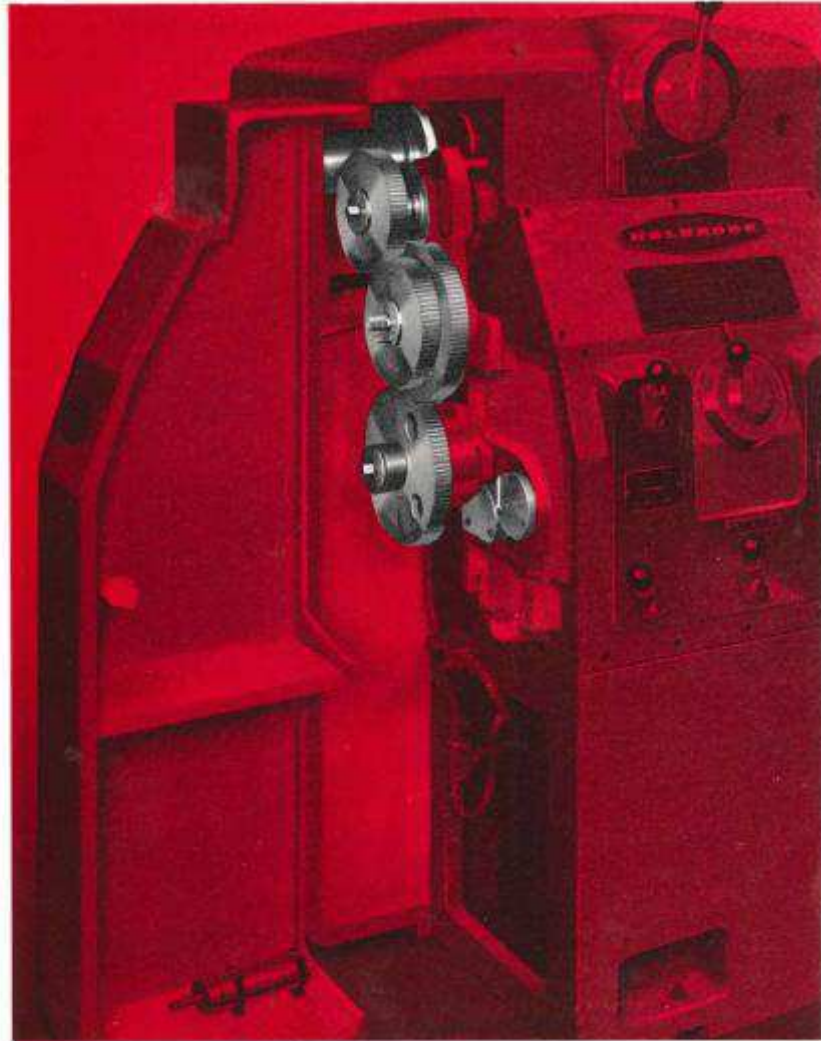
BEFORE MOVING THREAD DIAL SET LOWER L.H. LEVER TO "OUT"



Spindle arrangement showing single helical drive and Cam-lock nose to which can be fitted a centre, chuck or faceplate.



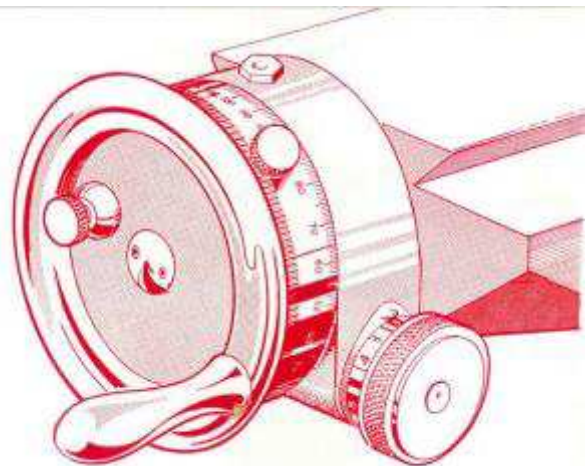
An alternative quadrant is available as extra equipment to increase the range of the gearbox especially where many special pitches are required.



Gearbox

Range	The totally-enclosed, quick-change gearbox allows a comprehensive range of sixty pitches and corresponding rates of feed to be directly obtained through dial and lever operation. Feeds are one tenth of corresponding threads shown on thread plate.
Metric	If the machine is required for the frequent production of Metric threads, a direct changeover unit can be built into the gearbox as additional equipment. Alternatively a set of change gears for the machine can be supplied at extra cost (see page 12).
Turning or Screwcutting	The position of the upper right-hand lever on the gearbox determines the engagement of either the feedshaft, for normal turning operations on the lathe, or of the leader which is used only for screwcutting purposes.

The Carriage



with considerable mating areas, traverses on raised vee-ways and flat ways. The complete unit is lubricated by operation of a lever on the apron. The guideways on the bed are protected by covers with wipers fitted at each end. All slides are fitted with adjustable taper gibs for the maintenance of accuracy and rigidity whilst still retaining an easy movement so essential on this type of machine.

Slides

The top slide can be swivelled through 360° and, as standard, is fitted with a multi-tool holder (see below). The cross- and swivel-slide motions are each controlled by a precision screw and handwheel with adjustable micrometer graduated dial.

Threading Stop

A threading stop incorporated in the surfacing motion allows the retraction of the tool and its subsequent return to a pre-set stop, the position of which can be varied by rotation of a dial graduated in thousandths of an inch. This feature is brought into operation by the application of the knurled knob set in the face of the surfacing motion handwheel, above right, and can be instantly disengaged when not required.

Apron

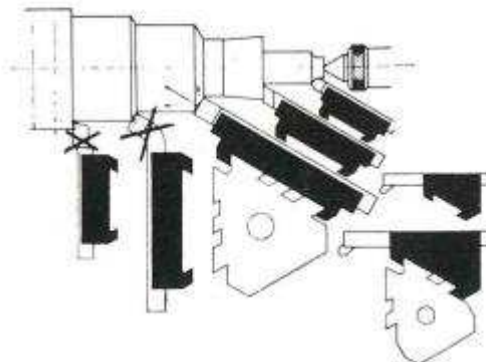
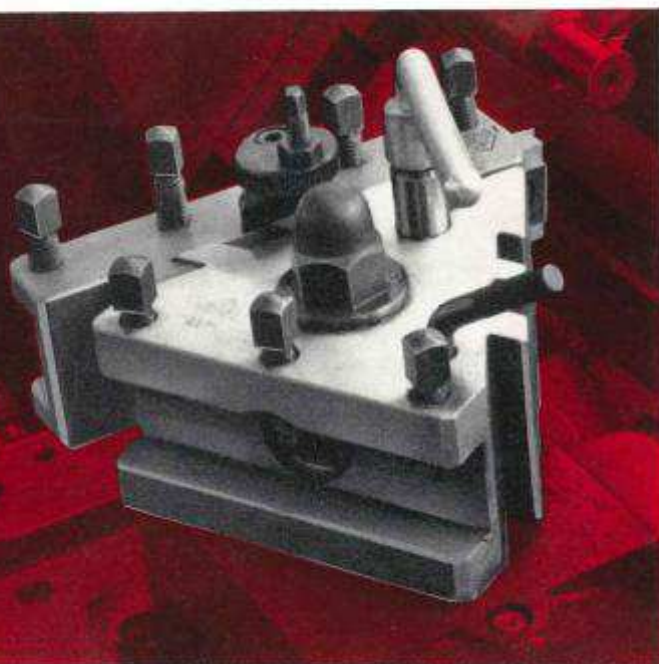
The double-walled apron incorporates sliding and surfacing feed controls designed for instantaneous and smooth engagement. The feed drive incorporates a master clutch which prevents damage through overloading and an interlock between the sliding and threading motions. The sliding motion handwheel can be disengaged for accurate thread production.

Leader

The Holbrook Precision Leader, used for threadcutting operations only, is engaged by pulling up the lever in the upper right face of the apron. This action causes the positive closing of the follower through a nut cam device. Leader thrust is absorbed by a Holbrook patented bearing mounted in the leader end bracket. The leader can be turned end for end. A threading dial, mounted on the face of the apron, can be used as an accurate guide for re-engagement of the threading tool after returning the carriage by hand.

Multi-tool Holder

The "Tripan" patented toolholder is fitted as standard and is of advantage in general centre-lathe work. The triangular clamping block is arranged to accommodate a wide range of interchangeable toolholders which allow rapid, positive re-location of a number of pre-set tools. As the holders can be adjusted vertically, the need for correct packing to obtain centre height is eliminated. The design of the toolholder affords maximum support to the tool which consequently can be used under heavy cutting conditions. As shown in the diagram below, the design of the holder minimises tool overhang and eliminates the necessity of cranked tools.



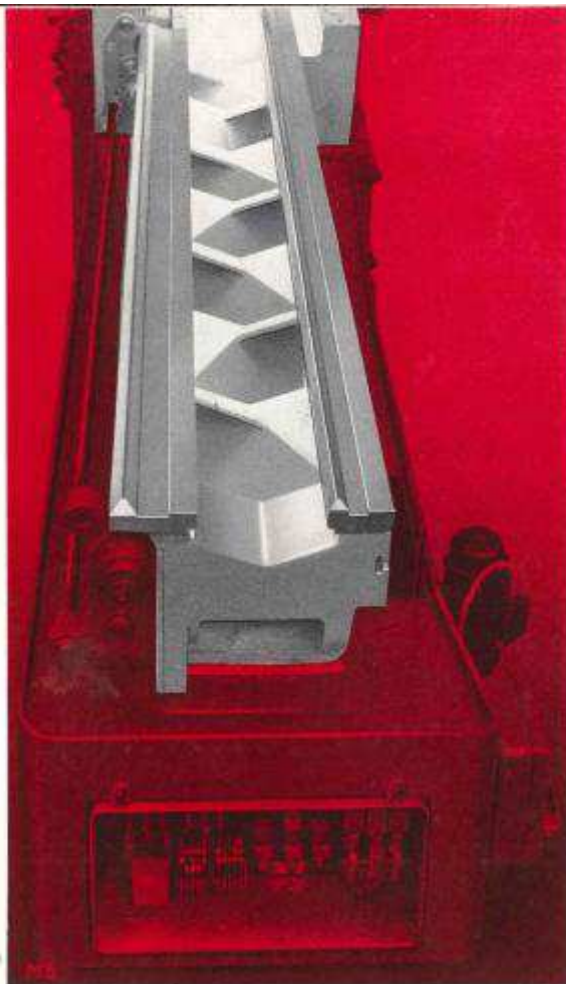
Base

Perhaps the most important single factor in the design of any precision machine is the provision of a substantial base, and in the Holbrook Model 'H' concept, this requirement is satisfied. As can be seen in the rear view of the machine (page 4) the upper surface of the cabinet is shaped to combine great strength with maximum ease of swarf removal. The large-capacity sump with removable strainer plate is centrally situated at the foot of three acutely-inclined, unobstructed surfaces.

The technically well-proportioned bed of the lathe incorporates double diagonal bracing designed to ensure maximum rigidity and to complement the good swarf clearance characteristics of the machine.

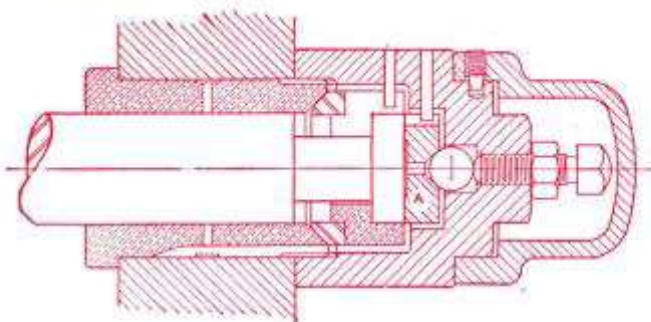
The combination double-vee and flat ways of the bed are induction hardened and profile ground to ensure lasting accuracy.

A substantial facing on the rear of the bed is provided for the accommodation of auxiliary attachments.



Leader Thrust Unit

Holbrook lathes are fitted with a leader thrust compensation unit. This patented device absorbs thrust and nullifies any inaccuracy in the leader thrust faces. It is self-compensating, runs in oil and can be easily adjusted by the square-headed nut in cast-iron collar 'A' shown in the diagram (right).



Tailstock

The standard tailstock accommodates a No. 4 Morse taper centre which is automatically ejected when the barrel is fully retracted. The quill has a stroke of 6" and is controlled through screw and handwheel. An adjustable micrometer graduated dial is fitted to the handwheel and on the H.20 machine the complete tailstock can be easily moved along the bed by rotation of a crank handle. This device can also be supplied for the H.15 and H.17 lathes as extra equipment. The dovetailed base of the tailstock allows a generous degree of set-over for the production of tapered work.



EXTRA EQUIPMENT

The general rigidity of Holbrook lathes allows the use of a wide range of attachments without detriment to precision. The principal items of additional equipment available are described in the following pages.

Electrics

The following electrical arrangements for 380/420 volts, 3 phase, 50 cycles, can be supplied if specified at time of order:

Equipment including $7\frac{1}{2}$ h.p. motor for speed ranges of 10-666 or 15-1000 rev/min.

Equipment including 10 h.p. motor for speed range of 15-1000 rev/min.

Taper-turning Equipment

consisting of an adjustable slide mounted on a robust bracket which bolts directly on to the rear of the machine bed. The slide can be set up to 30° included angle. Length capacity 12" (305 mm.) (Models H.15 and H.17) and 16" (406 mm.) (Model H.20).

Hydraulic Profiling Equipment

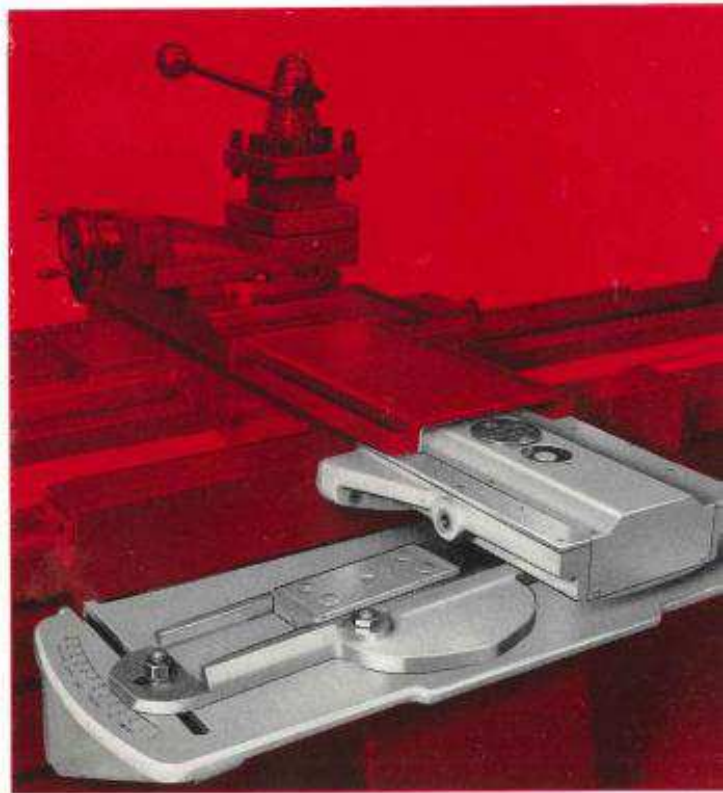
consisting of profile slide, swivel-mounted toolbox, rear beam with tailstock-type model carriers, pump set, etc., is available. Designed for accurate, economic production, the slide of the unit can be mounted at various angles to the axis of the lathe or set parallel to it and used for face profiling. The latter requires the use of a facing beam, set at right angles to the lathe axis, to secure flat templates to the saddle extensions.

Fitting of the equipment does not prevent the normal operation of the lathe.

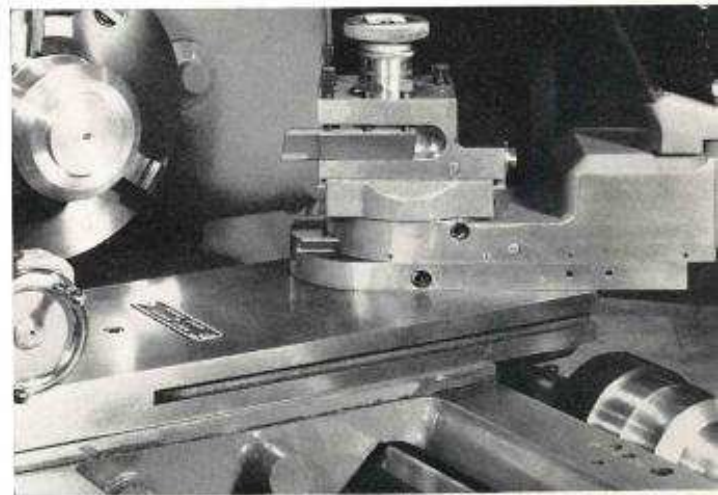
The toolbox accommodates a maximum section of $1" \times \frac{3}{4}"$ (25 mm. \times 19 mm.) and the tool can be mounted in three alternative positions. Micrometer adjustment is effective over a setting distance of 2" (51 mm.) and a heavy-duty slide lock clamps the toolbox during cutting.

The rear beam, on which model or template carriers are mounted, is supported by two brackets which are permanently affixed to the lathe bed. Adjustments can be made relative to the lathe centre line to compensate for change in stylus position due to swivelling through the range of angular settings of the profile slide assembly.

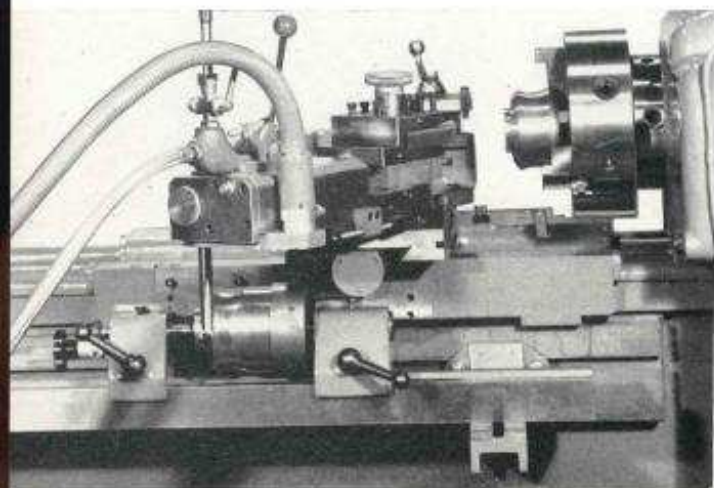
(Continued overleaf)



Taper Turning Slide



The Profile Slide



EXTRA EQUIPMENT (cont.)

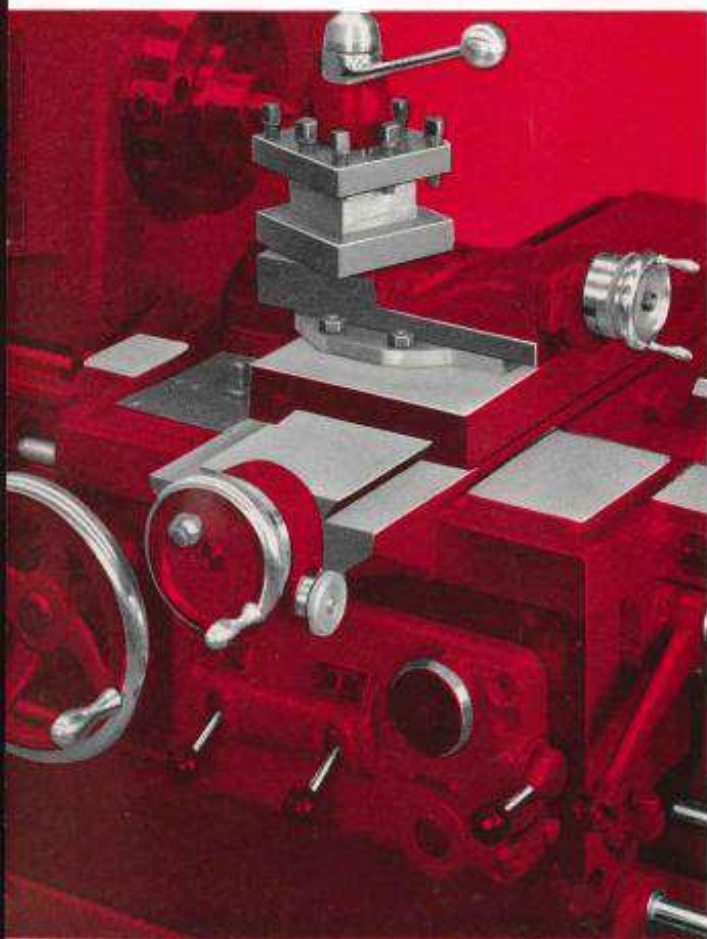
Hydraulic Profiling Equipment - continued

Tailstock-type model and template carriers can be fixed at any position throughout the beam length, thus making provision for models up to the full capacity of the lathe. One carrier incorporates a spring-loaded centre; the other has a screw-adjusted centre to allow final longitudinal setting of the model relative to the workpiece.

A six-station indexing stop turret can also be supplied for use with the hydraulic profiling attachment.

A Detachable Square Turret Toolpost

(illustrated lower left) can be supplied. On release of the locking lever the toolpost is automatically raised on its pivot to allow rotation in either direction and accurate re-location in any one of twelve positive positions.



Chucks, Guards and Collets

Three-jaw self-centring chucks (10" (254 mm.) for H.15 and H.17, 12" (305 mm.) for H.20) with two sets of jaws.

Four-jaw independent chucks (12" (305 mm.) for H.15 and H.17, 17" (432 mm.) for H.20) with reversible jaws.

Chuck guard.

Burnerd type KC15 collet chuck with twelve 'E' type collets EC2-13, range $\frac{1}{16}$ " (1.59 mm.) to $1\frac{1}{2}$ " (38 mm.), for round or hexagonal bar.

Burnerd type KC20 collet chuck with fourteen 'E' type collets ED4-17, range $\frac{1}{4}$ " (6 mm.) to 2" (50.8 mm.) for round or hexagonal bar.

Burnerd type KC25 collet chuck with sixteen 'E' type collets EE6-21, range $\frac{1}{2}$ " (12.7 mm.) to $2\frac{1}{2}$ " (63.5 mm.).

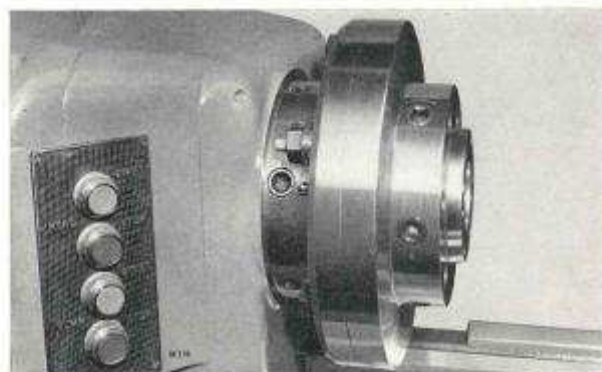
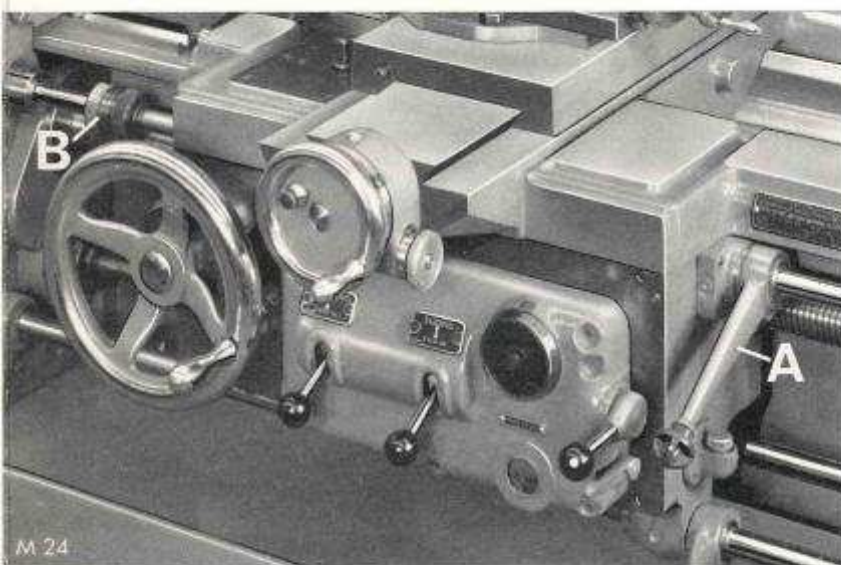
English/Metric Dials

Dual English/Metric dials on surfacing slide control.

Dual English/Metric dials on swivel slide control.

Combination Metric/English dial for longitudinal carriage movement.

Combination Metric/English dial for tailstock plunger movement.



EXTRA EQUIPMENT (cont.)

Ferranti Digiturn

A direct and continuous numerical read-out of cutting tool displacement in both lathe axes. Distances are measured and presented numerically in illuminated, easily-read digits on two displays. Carriage traverse (X axis) is shown in thousandths of an inch and cross-slide traverse (Y axis) in tenths of thousandths of an inch. All measurements refer to pre-set data and once established at any suitable location on the lathe these data are retained until the system is switched off.

For simplicity, the Y axis indicator is arranged to show diameter, not the radius and the direction of carriage travel is shown by an arrow on the numerical display indicator.

The equipment offers the operator accurate, direct reading of dimensions and removes the need for frequent stopping of the machine to allow gauging of components.

Carriage Spacing Equipment

(illustrated top left) including dial gauge, length rods and a micrometer-adjustable head. The equipment can be fitted to the right-hand side of the carriage and is designed to allow re-positioning of the saddle within 0.0001" (0.0025 mm.) by direct reading.

Micrometer-adjustable Dead Stop fitted between headstock and carriage.

Change-over Unit

giving limited range of standard metric pitches without the use of transposing gears.

A Built-in Unit

in addition to the standard reversing motion can be supplied for accurate control of thread machining length, e.g., on work involving shoulder and blind hole threading such as that illustrated above left. The unit consists of a single dog clutch actuated either by a lever ('A' illustrated left) or by automatic micrometer-adjustable stops ('B') which are operative throughout the carriage travel in either direction. When the apron contacts the stop, a reverse clutch is disengaged and the motion to the carriage is tripped. The clutch reverses the movement of the carriage, not the rotation of the main spindle, and incorporates a synchronising action to readily obtain correct "single position" engagement when threading. The relative position of the tool to the thread is not altered, irrespective of pitch or whether right- or left-hand threads are being cut.

Transposing Gears

for metric, module and diametral pitches.

Multi-index Plate

Allows direct, accurate indexing for the cutting of multi-start threads and is normally arranged with sixty divisions. The cam-lock spindle nose of the plate is identical with that of the lathe to allow the normal fitting of a chuck or fixture.

EXTRA EQUIPMENT (cont.)

Relieving

Equipment for the machining of relief on straight or spiral cutters, counterbores, etc. Designed as a compact unit, the equipment incorporates a sub-headstock spindle speed reduction unit and a relieving slide.

The reduction unit is fixed to the Cam-lock nose of the lathe spindle, and retained in position by a steel plate beneath the bed. The speed reduction ratio is 6 to 1 to provide the necessary slower speeds required and the unit incorporates a mechanism to allow positive indexing of the work to within 10' for the machining of multi-start threads.

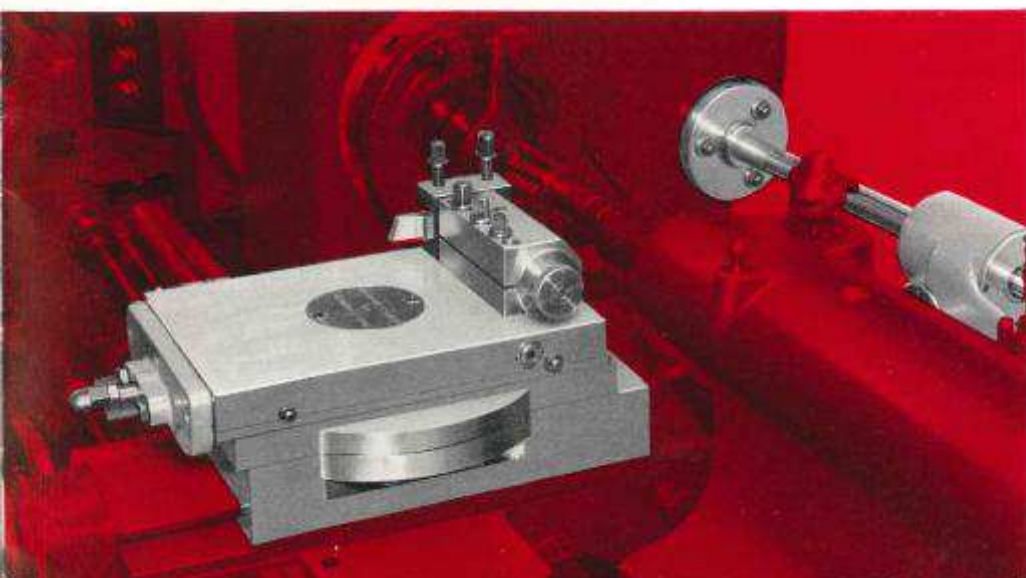
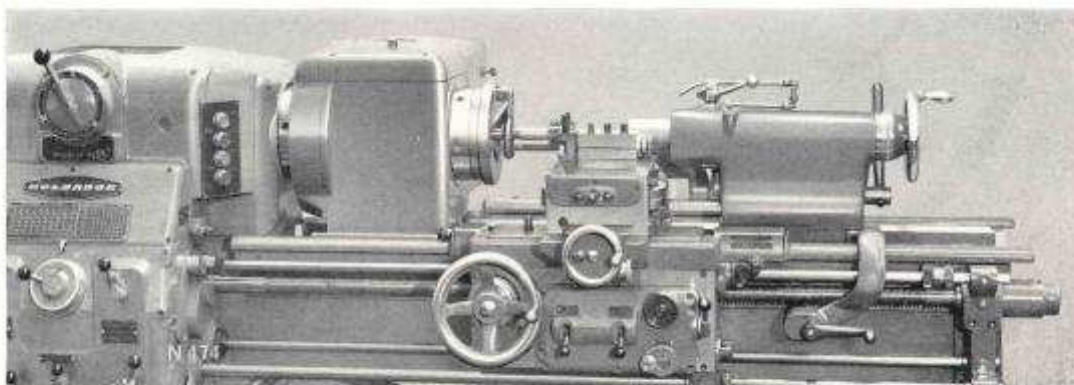
The relieving slide incorporates a vertically-mounted cam which, supported in upper and lower bearings, allows infinitely variable rise between up to $\frac{3}{8}$ ". The cam is situated in the centre of the slide to allow relieving at any angle in the horizontal plane and the slide is suitably engraved for setting purposes.

This arrangement also allows the equipment to be used for face relieving operations on right- or left-hand cutters or, by the use of the internal toolbox also available, internal relief can be machined.

The equipment can be used in conjunction with taper-turning equipment for the machining of taper relief.

To change a cam, the knurled collar on the end of the slide is tightened to release the spring load before removing the cam plate to allow access and simple removal of the cam. When locked in this position the slide can be used for intermediate turning operations.

The Sub-head Spindle Speed Reduction Unit can be supplied separately.



Relieving Equipment

EXTRA EQUIPMENT (cont.)

Hob Grinding

This equipment, designed for use with the relieving mechanism described on the previous page, includes a $\frac{1}{4}$ h.p. motor with universal aluminium bracket, driving pulley, balance arm, disc wheel grinding head, wheel dressing device and a special cam for clearing rear portion of relief.

The bracket supporting the motor is bolted to the spiral gear bracket of the relieving equipment which incorporates a machined face for this purpose.

The illustration right shows the dressing device in the normal position for the correction of the grinding wheel flanks. The slide controlling the diamond is set to the required angle and operated through a rack and pinion mechanism from a small handle.

The dial for setting of the slide is graduated through 90° each side of zero and the wheel can be dressed, without removal of the work from the lathe.

Principal Data of Hob Grinding

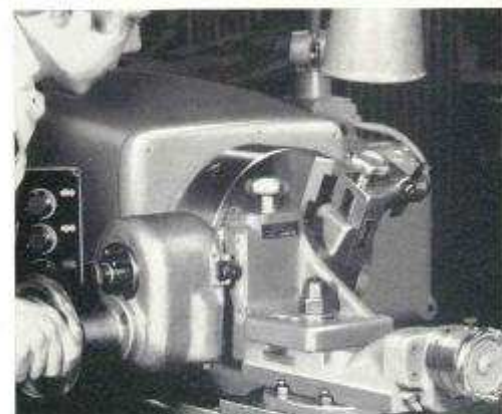
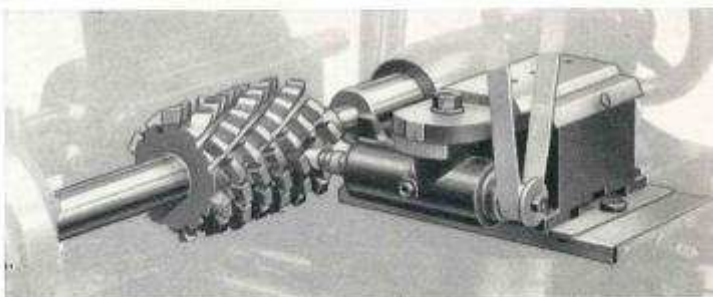
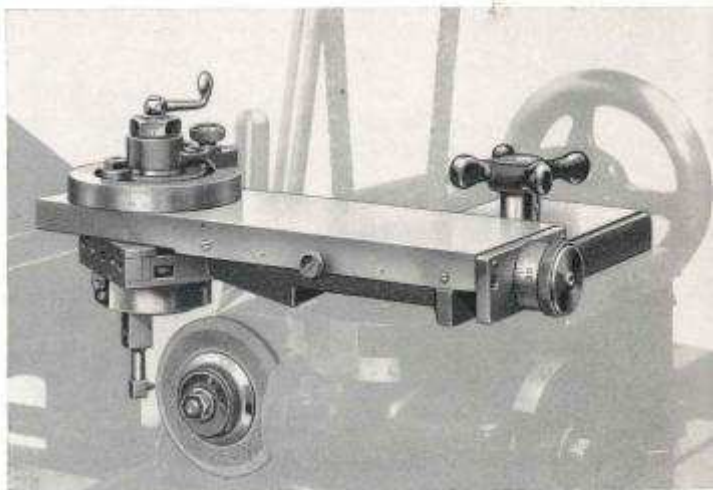
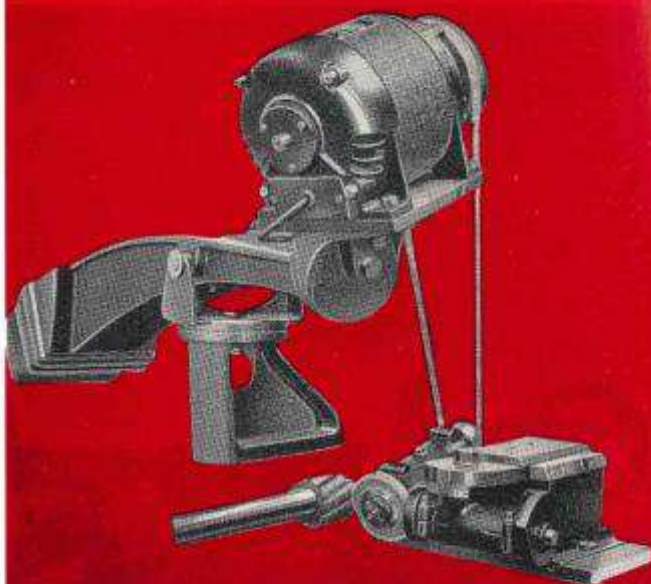
Motor h.p. and speed, $\frac{1}{4}$ h.p. at 2800 r.p.m.
Driving pulley dia. for disc wheel, $4\frac{5}{8}$ "
Speed of disc wheel, 7,400 r.p.m.
Maximum diameter of wheel, $3\frac{1}{4}$ "
Length of belt used with disc wheel, 45"
Driving pulley dia. for pencil wheel, 8"
Speed of pencil wheel, 25,600 r.p.m.
Length of belt used with pencil wheel, 50"

A pencil-wheel head (right) can be supplied for the grinding of acute reliefs or for cutters with narrow flutes. The increased speed necessary for this type of wheel is obtained through use of the larger aluminium pulley supplied with the equipment.

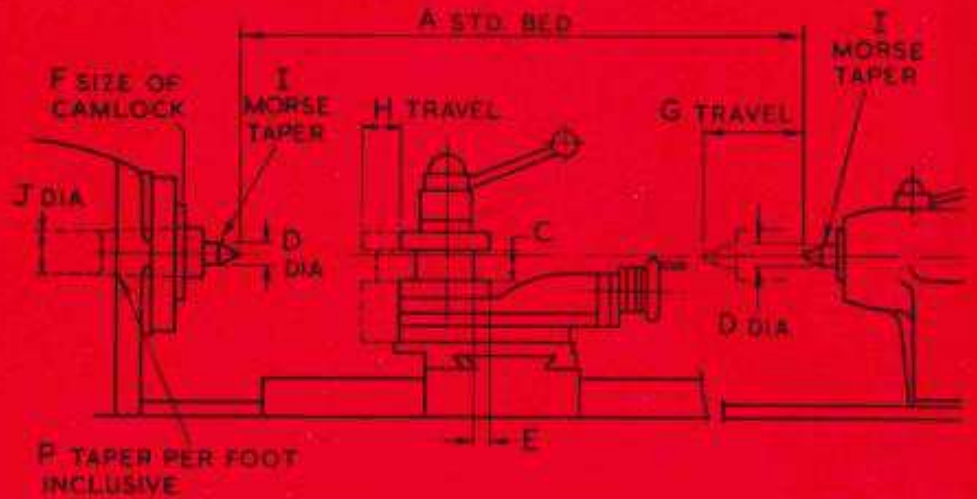
Spherical Turning Attachment

A robust unit which, using six interchangeable toolholders, is capable of machining concave or convex forms up to 12" (305 mm.) in diameter in most materials.

The capacity of each toolholder is as follows:
Convex diameters: 0" - $3\frac{1}{8}$ " (79 mm.), $1\frac{1}{2}$ " - 6" (38 - 152 mm.) and 4" - 12" (101 mm. - 305 mm.).
Concave diameters: 0" - 4" (101 mm.), 3" - 8" (76 - 203 mm.) and 7" - 12" (178 - 305 mm.).



Capacity



Centres

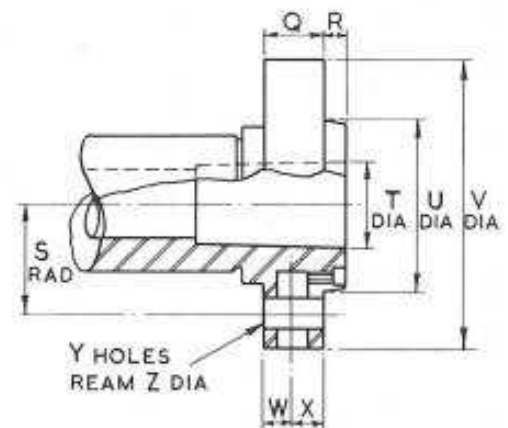
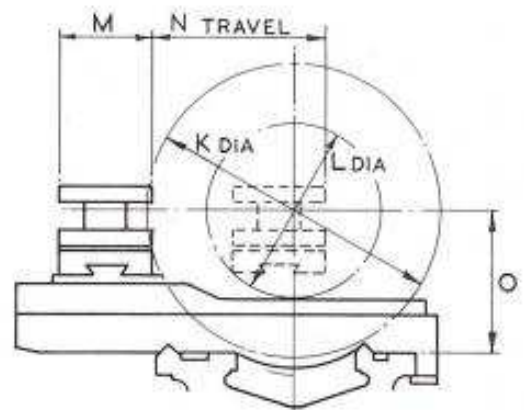
	'MAJOR'	
	English	Metric
A	24"	609.60 mm.
C	1 1/8"	28.57 mm.
D	.938"	23.82 mm.
E	7/8"	14.28 mm.
F	DI-5"	DI-127.0 mm.
G	5"	127.00 mm.
H	2 1/2"	63.50 mm.
I	No. 3	No. 3
J	1 1/2"	31.75 mm.

Swing

K	12 1/4"	311.15 mm.
L	6 1/2"	171.45 mm.
M	3 3/8"	95.25 mm.
N	8"	203.20 mm.
O	6"	152.40 mm.

Cam-lock Nose

P	.625"	15.875 mm.
Q	1 1/4"	44.45 mm.
R	3/8"	12.70 mm.
S	2 1/8"	52.38 mm.
T	1.4375"	36.51 mm.
U	3.250"	82.55 mm.
V	5 3/8"	146.05 mm.
W	1 5/8"	23.81 mm.
X	1 1/2"	20.63 mm.
Y	6"	6"
Z	3 3/8"	19.84 mm.



Threads and Feeds

THREADS AND FEEDS											MILLIMETRE PITCHES.											MAINS	
DIAL	A	B	C	D	E	F	G	H	J	K	DIAL	A	B	C	D	E	F	G	H	J	K		
3	2	2 1/2	3	4	5	6	8	10	12	16	1	1.6	2	2.5	3	4	5	6	8	10	12	START	
	3	3 1/2	4 1/2	6	8	10	12	16	20	24	2	2.5	3	4	5	6	8	10	12	16	20		
X	4	4 1/2	6	8	10	12	16	20	24	30	3	3.6	4.5	6	8	10	12	16	20	24	30	START	
	5	5 1/2	8	10	12	16	20	24	30	36	4	4.5	6	8	10	12	16	20	24	30	36		
1	8	9	12	16	20	24	30	36	48	60	6	7.2	9	12	15	20	24	30	36	48	60	START	
	10	11	15	20	24	30	36	48	60	72	8	9	12	15	20	24	30	36	48	60	72		
3	16	18	24	30	36	48	60	72	96	120	12	14.4	18	24	30	36	48	60	72	96	120	START	
	20	22.5	30	36	48	60	72	96	120	144	15	18	24	30	36	48	60	72	96	120	144		
Y	32	36	48	60	72	96	120	144	180	240	24	28.8	36	48	60	72	96	120	144	180	240	START	
	40	45	60	72	96	120	144	180	240	300	30	36	48	60	72	96	120	144	180	240	300		
1	64	72	96	120	144	180	240	300	360	480	48	57.6	72	96	120	144	180	240	300	360	480	START	
	80	90	120	144	180	240	300	360	480	600	60	72	96	120	144	180	240	300	360	480	600		
BEFORE MOVING THREAD DIAL SET LOWER L.H. KNOB TO OUT											GEAR DRIVE TO BE IN WHEN X RANGE T.P.I. AND PITCHES ARE REQUIRED												

EXTRA EQUIPMENT (cont.)

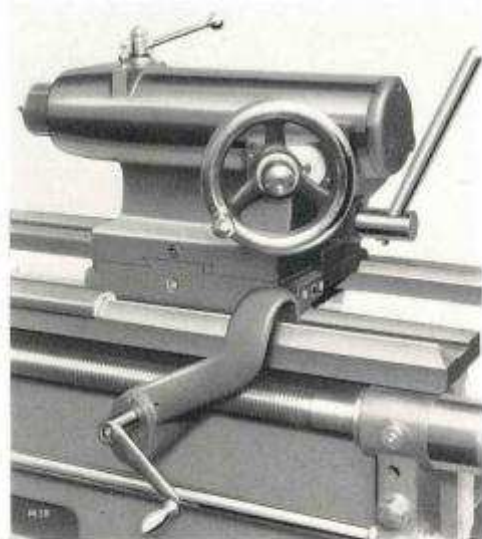
Power Traverse Apron

This is similar to the standard apron with the exception that the feed levers can be moved right or left to allow rapid movement of the carriage or the surfacing slide. The drive for this movement is taken from a separate splined shaft below the apron and the feature is of great advantage in the production of long components or when the hydraulic copying attachment is used. To avoid the risk of injury to the operator, the type of sliding motion handwheel fitted to this apron has no protruding handle.



Two-speed Tailstock

Recommended for production work, this tailstock (right) incorporates a large-diameter barrel which can be advanced or retracted rapidly or slowly, dependent on the position of the pull-out knob in the centre of the angular-mounted handwheel.



Tailstock Manual Traverse Unit

Rotation of the cranked handle shown in the illustration on the right causes rapid movement of the tailstock.

Ball Bearing Live Centre for Tailstock

Steadies

A bed-mounting three-point steady or a follow type which bolts directly on to the machined face of the carriage, can be supplied.

Electric Lamp

(adjustable) with low voltage transformer.

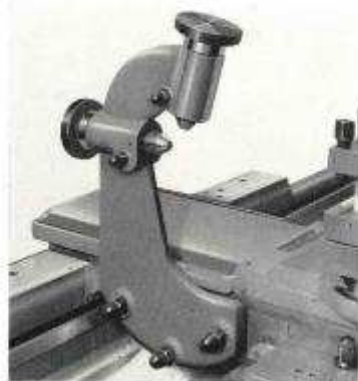
Edgwick Equipment Cabinet

designed for use with modern lathes. Comprising six open compartments and four drawers, the largest of which houses a baized-lined instrument tray, this cabinet incorporates a door-mounted spanner rack and a pocket for drawings, etc. The handle of the cabinet is fitted with a barrel-type lock for which two keys are provided.



Three point steady

Follow steady



Headstock

Drive

From the main motor, mounted on an adjustable bracket in the cabinet to allow tension control, the drive is transmitted to the spindle through four vee-ropes, gearing and multi-disc clutches which, controlled from levers on the apron and gearbox, allow forward or reverse spindle rotation and a braking action. All main drive gears are manufactured from nickel-chrome steel, hardened and tempered. Tooth profile is precision ground on the generating principle to ensure accuracy and, consequently, smooth operation. Gears and main bearings are constantly lubricated from a power pump and the flow of magnetically-filtered oil can be observed through a conveniently-placed sight glass on the headstock.

Spindle

The well-proportioned, forged spindle runs in two pre-loaded, precision-taper roller bearings at the nose end and two parallel roller bearings at the rear. The rear bearings float to permit expansion of the spindle due to temperature variations.

The single driven gear on the spindle is of helical form and is mounted adjacent to the front journal.

The Cam-lock flanged spindle nose allows the rapid removal and accurate replacement of chuck, faceplate or fixture.

Speeds

By operation of the single lever mounted on the headstock, any one of the range of sixteen direct spindle speeds can be selected. Each speed is reversible. The standard range is 15 to 1,000 r.p.m. Alternatively the H.15 and H.17 machines can be supplied with speed ranges of 10 to 666 r.p.m. or 22 to 1,500 r.p.m. The alternative range for the H.20 machine is 10 to 666 r.p.m.

