

# **Operator's Handbook and Spare Parts List**

# **Union**

## **GRADUATE 6in. WOODTURNING LATHE**

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**T. S. HARRISON & SONS LTD. P.O. BOX 20 HECKMONDWIKE YORKSHIRE ENGLAND**

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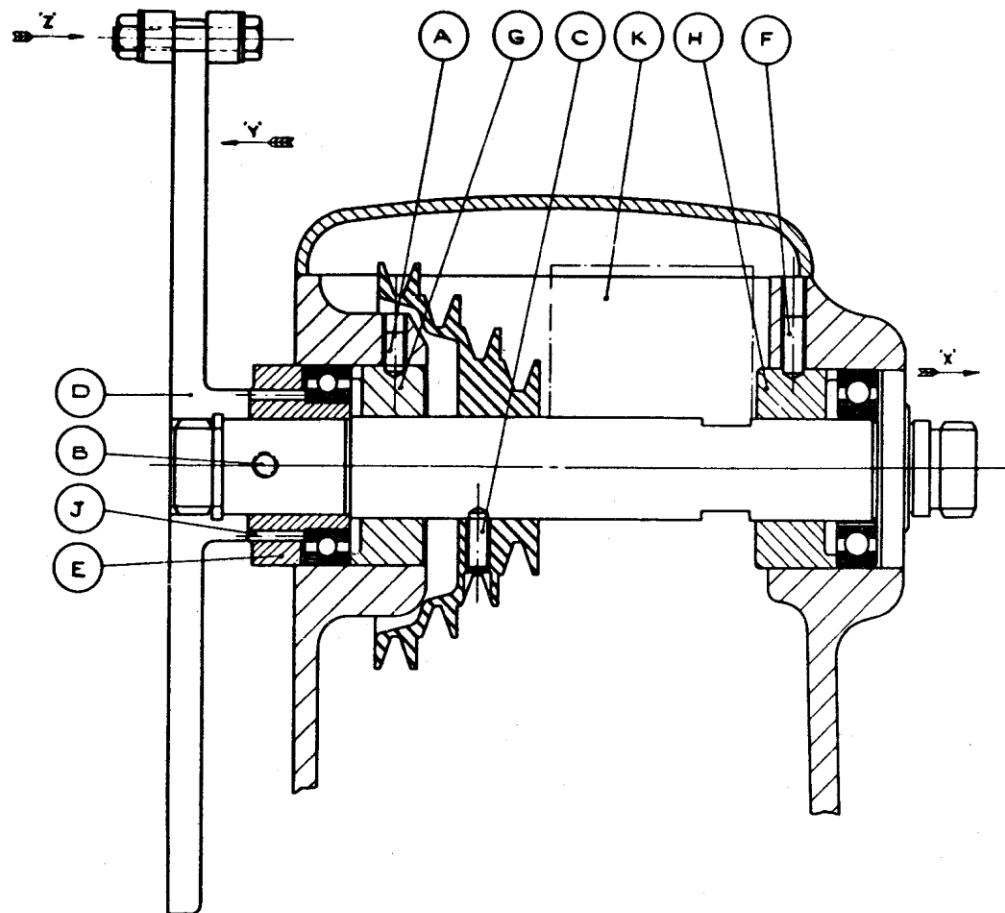
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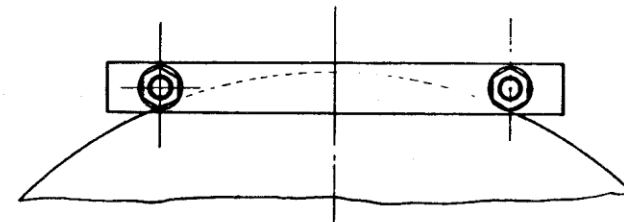
## INSTRUCTIONS FOR ORDERING SPARES

When ordering spare parts always quote the Machine No. which is stamped on the bed at the tailstock end.

Spares can be obtained through your usual machinery dealer, or direct from the manufacturers.



SCRAP VIEW IN DIRECTION OF ARROW 'Z'



#### LUBRICATION

Lubricate main spindle bearings each day by turning grease caps. Ensure the caps are kept well filled. **Do not overgrease.**

Oil tailstock screw daily and lightly smear the spindle with oil.

Oil motor platform turnbuckle screws and pivot points occasionally.

Clean and oil the bed ways and outer rest arm top face, frequently.

Recommended Lubricants: "Shell" Alvania Grease 3, "Shell" Tellus 33 Oil, or equivalent.

**(1) TO REPLACE OLD TYPE SPINDLE WITH NEW**

Remove faceplate (D). File off any burrs which may be on the end of the spindle. Release set screws (B) and (C). Place a wood block (K) in the position shown and withdraw spindle in direction of arrow (X). The pulley will slide off the spindle when it abuts against the wood block. If any difficulty is experienced the spindle should be given a sharp knock.

Re-assemble new spindle, passing it through the front bearing and spacer (H), through the pulley and rear spacer (G) and through the bearing sleeve (E) until the shoulder of the spindle is up against the bearing sleeve (E). Tighten screw (B) and line up head pulley with motor pulley and tighten screws (C).

**(2) TO REPLACE BEARINGS**

Remove faceplate (D), release set screws (B) and (C) and withdraw spindle and front bearing in direction of arrow 'X' (same method as instruction (1)).

Remove sleeve complete with rear bearing in direction of arrow 'Y', if bearings are tight in housings release set screws (A) and (F) and lightly tap spacers (G) and (H) until the bearings are ejected.

To remove rear bearing from its sleeve use pins through the ejector holes (J) then fit new bearing. Re-assemble front spacer (H) and clamp set screw (F) in dimple. Re-assemble rear spacer (G)—Do not as yet clamp set screw (A). Re-assemble spindle complete with new front bearing.

Re-assemble rear bearing and sleeve up to shoulder on spindle and clamp set screw (B). Adjust rear spacer (G) to remove side play then clamp set screw (A). Care should be taken with this final adjustment to prevent overloading of bearings. Line up head pulley with motor pulley and clamp set screw (C).

**(3) TO REMOVE END PLAY**

Release set screw (A) and adjust spacer (G) slightly in direction of arrow 'Y' then re-clamp screw (A). Care should be taken to prevent overloading of bearings.

**(4) TO REPLACE VEE BELT**

Remove faceplate (D) and release set screws (B) and (C).

Slacken tension on vee belts.

Withdraw spindle in direction of arrow 'X' sufficiently to allow vee belt to be replaced. Replace spindle, line up head pulley with motor pulley and clamp set screws (B) and (C).

Tension vee belts.

Replace faceplate (D).

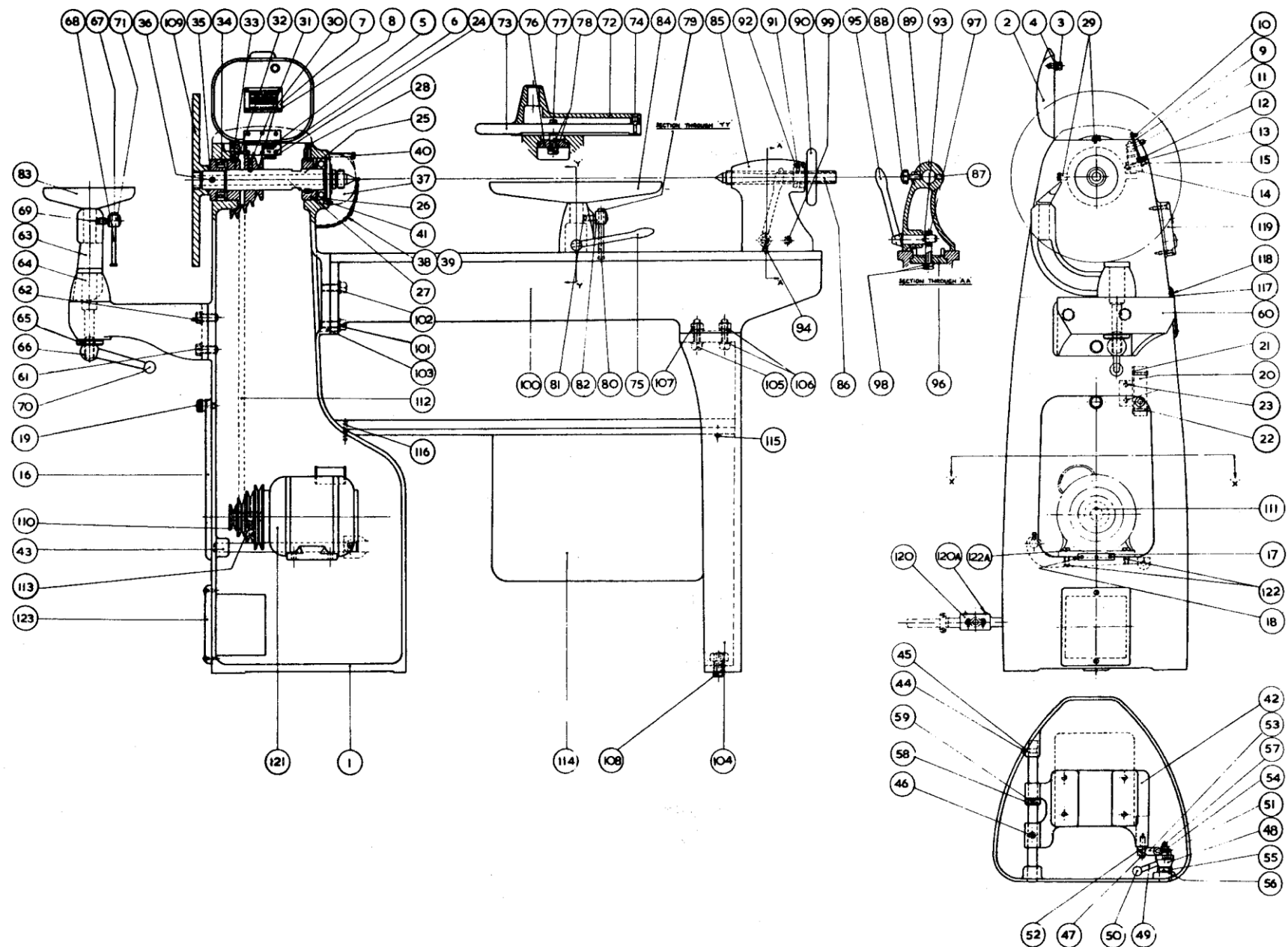
**(5) TO REMOVE FACEPLATES WHICH HAVE BECOME LOCKED ON SPINDLE**

Take two pieces of steel bar  $\frac{3}{4}$ " x  $\frac{1}{2}$ " section  $7\frac{1}{4}$ " long and drill two  $\frac{13}{32}$ " dia. holes in each at  $5\frac{9}{16}$ " centres. Clamp these blocks onto the faceplate by means of two  $\frac{3}{8}$ " dia. nuts and bolts. With the spanner on the flats of the spindle, and locating against the main body casting, strike the steel clamps with a hammer, on the appropriate end to release the faceplate.

NOTE: Faceplates, driver plates and chucks should be removed from the spindle at regular intervals to reduce risk of jamming.

Before attaching face plates, the spindle nose should be cleaned and well-lubricated to prevent seizing.

# Standard Machine



# Standard Machine *(illustrated opposite)*

Item No.	Part No.	Description	No. Off	Item No.	Part No.	Description	No. Off
1	JL-308	Motor Leg	1	36	$\frac{5}{16}$ " FX $\frac{5}{8}$ "	Socket Set Screw, Dog Point	1
2	JL-312	Cover	1	37	JL-341	Spindle Nose Cover	1
3	$\frac{5}{16}$ " FH $\frac{1}{2}$ "	Hexagonal Head Set Screw	1	38		Brass Chain (13" long)	1
4	$\frac{5}{16}$ " FW	Washer	2	39	$\frac{3}{16}$ " FR- $\frac{1}{2}$ "	Round Head Set Screw	2
	$\frac{5}{16}$ " FL	Locknut	1	40	JL-348	Fixing Screw	1
5	JL-66	Hinge	1	41	$\frac{1}{4}$ " PR $\frac{3}{4}$ "	Straight Pin	1
6	$\frac{3}{16}$ " FV $\frac{3}{8}$ "	Socket Countersunk Set Screw	6	42	JL-287C	Motor Platform (Brook T10 Three Phase; C12 Single Phase)	1
7	104	Speed Plate	1				
8	$\frac{3}{32}$ " dia.	Rivet	4	43	JL-318	Platform Spindle	1
9	SG 170	Spring	1	44	$\frac{3}{8}$ " FX $\frac{3}{4}$ "	Socket Set Screw. $\frac{1}{2}$ Dog Point	1
10	JL-400	Latch	1	45	$\frac{3}{8}$ " FL	Locknut	1
11	JL-335	Button	1	46	$\frac{5}{16}$ " FX $\frac{3}{8}$ "	'Wedglok' Socket Set Screw. $\frac{1}{2}$ Dog Point	1
12	$\frac{3}{16}$ " FY $\frac{3}{8}$ "	Socket Head Cap Screw	1	47	JL-319	Stud	1
13	Mk. 3BR	Micro-Switch	1	48	JL-320A	Eccentric Shaft	1
14	4 BA FN	Nut	2	49	JL 376	Handle	1
15	4 BA FT			50	BB-4	Bakelite Ball	1
	$1\frac{1}{2}$ "	Countersunk Head Screw	2	51	$\frac{3}{16}$ " PR $\frac{1}{2}$ "	Straight Pin	1
16	JL-329	Door	1	52	JL-321	Turnbuckle Stud	1
17	JL 66	Hinge	1	53	JL-322	Turnbuckle	1
18	$\frac{3}{16}$ " FV $\frac{3}{8}$ "	Socket Countersunk Set Screw	6	54	JL-321 B	Turnbuckle Stud	1
19	JL-401	Stud	1	55	JL 328	Collar	1
20	Mk. 3			56	2BA FX $\frac{1}{4}$ "	Socket Set Screw. Cup Point	1
	BR-MS	Micro Switch	1	57	JL-381	Pin	1
21	JL-345	Bracket	1	58	JL-408	Fixing Collar	1
22	4 BA FE			59	$\frac{5}{16}$ " FX $\frac{3}{8}$ "	'Wedglok' Hollow Set Screw. Knurled Cup Point	1
	$1\frac{1}{4}$ "	Cheese Head Set Screw	2				
23	$\frac{1}{4}$ " FH $\frac{3}{8}$ "	Hexagonal Head Set Screw	1	60	JL-309A	Outside Rest Arm	1
24	SP-300	Water—Slide Transfer	1	61	$\frac{1}{2}$ " FH $1\frac{1}{2}$ "	Hexagonal Head Set Screw	3
25	JL-323	Main Spindle	1	62	$\frac{1}{2}$ " FW	Washer	3
26	LJ-40	Ball Journal, Light Type, Metric	1	63	JL-311 A	Swivel Arm	1
27	JL-326	Spacer Bush	1	64	JL-315 A	Locking Stud	1
28	$\frac{3}{8}$ " FX $\frac{3}{4}$ "	Socket Screw, Dog Point	1	65	JL-316	Plate	1
29	$\frac{1}{8}$ " Gas	Brass Grease Cup, No. 0	2	66	JL-28	Locking Lever	1
30	JL-324	Head Pulley	1	67	JL-391	Flange	2
31	$\frac{3}{8}$ " FX $\frac{3}{4}$ "	'Wedglok' Socket Set Screw, Half Dog Point	1	68	JL-393	Lever	1
32	JL-326	Spacer Bush	1	69	JL-382	Die Piece	1
33	$\frac{3}{8}$ " FX $\frac{1}{2}$ "	Socket Set Screw, Cup Point	1	70	BB-1	Bakelite Ball 1" dia. White	1
34	XXLJ-50	Ball Journal, Extra Light Type, Metric	1	71	JL 392	Nipping Stud	1
35	JL-327	Bearing Bush	1				

# Standard Machine *(illustrated on page 6)*

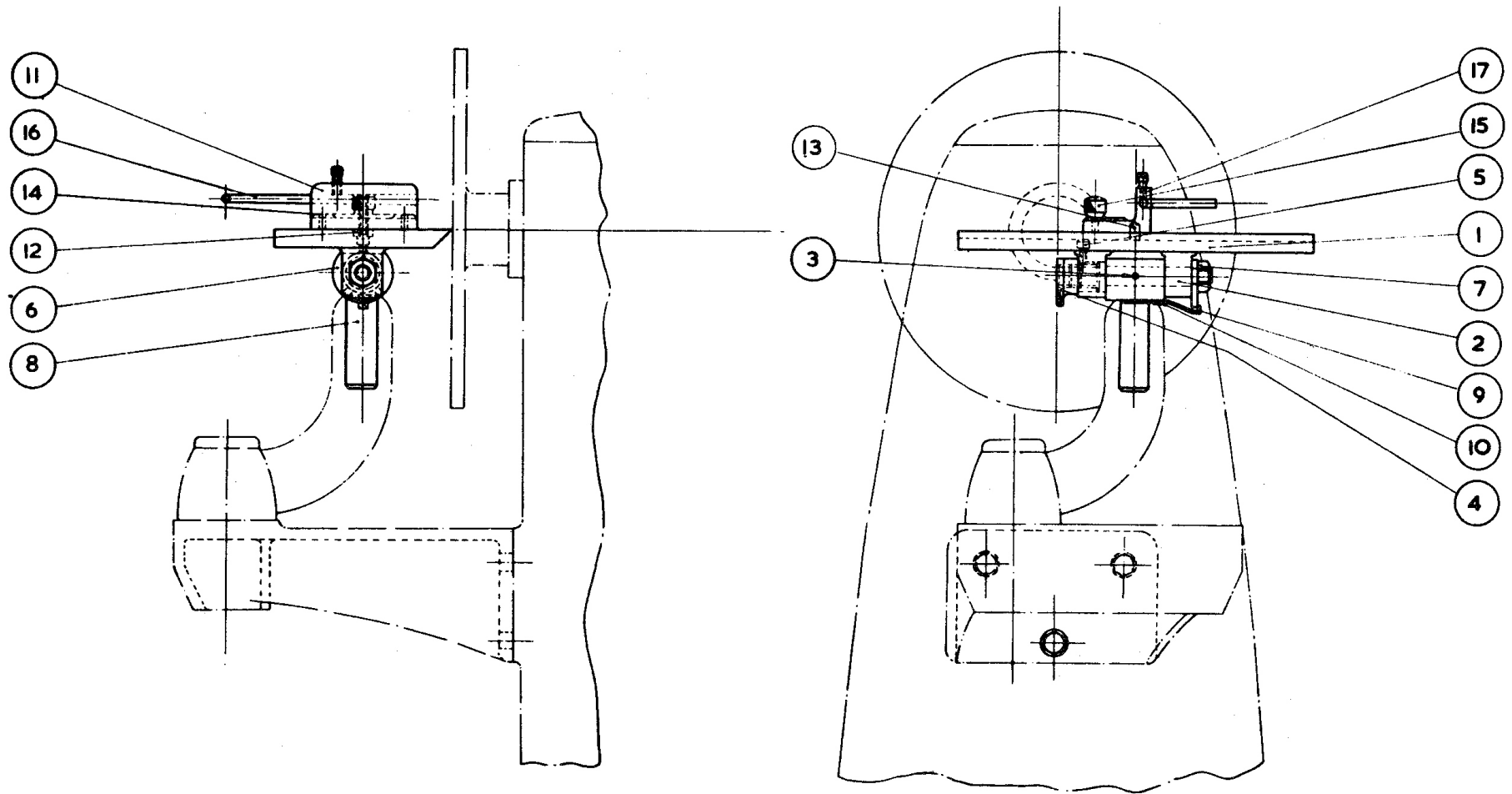
Item No.	Part No.	Description	No. Off	Item No.	Part No.	Description	No. Off
72	JL-334	Handrest Base	1	109	JL-138	Outside Faceplate (14" dia.)	1
73	JL-46	Eccentric Shaft	1		JL-367	Driver Plate (8" dia.). Not illustrated	1
74	$\frac{3}{8}$ " FO $\frac{3}{4}$ "	Grub Screw. Dog Point	1	110	JL-73	Motor Pulley (Brook T.10, T.250, C.350, C.12)	1
75	JL-300	Locking Lever	1	111	$\frac{3}{16}$ " KS $1\frac{1}{2}$ "	Square Key	1
76	L2A-48	Holding Down Plate	1	112	A-66	Premium Vee Belt	1
77	L2A-62	Eye Bolt	1	113	$\frac{1}{4}$ " FX $\frac{5}{8}$ "	'Wedglok' Socket Set Screw. Cup Point	1
78	$\frac{1}{2}$ " FL	Locknut	2	114	JL-343	Tool Tray	1
79	JL-391	Flange	2	115	$\frac{1}{4}$ " PR 1"	Straight Pin	2
80	JL-393	Lever	1	116	$\frac{1}{4}$ " PR $1\frac{1}{4}$ "	Straight Pin	1
81	JL-382	Die Piece	1		JL-273 A	Drawing Holder (Standard). Not illustrated	1
82	JL-392 A	Nipping Stud	1		JL-273	Drawing Holder (When rack operated, tool slide is fitted). Not illustrated	1
83	JL-313	Short Tee	1		$\frac{5}{16}$ " FH $\frac{3}{4}$ "	Hexagonal Head Set Screw. Not illustrated	2
84	JL-314	Long Tee (14")	1	117	262	Name Plate	1
85	JL-333	Tailstock	1	118	$\frac{3}{32}$ " dia.	Rivets	4
86	JL-133 A	Spindle	1	119	2CSC/FO	Push Button "On" and "Off" Switch	1
87	$\frac{3}{8}$ " FO $\frac{3}{4}$ "	Grub Screw. Dog Point	1		2397	Junction Box	1
88	JL-298	Locking Screw	1	120		Junction Box Lid	1
89	JL-299	Die Piece	1	120A	$\frac{3}{16}$ " FR $\frac{1}{2}$ "	Round Head Set Screw	6
90	JL-135 A	Handwheel	1		$\frac{3}{4}$ " FL	$\frac{3}{4}$ " Conduit Locknut. Not illustrated	3
91	L2A-58	Collar	1			Brass Bush. Not illustrated	1
92	$\frac{3}{16}$ " FO $\frac{3}{4}$ "	Grub Screw	1			Brass Gland. Not illustrated	1
93	L2A-60	Eccentric Stud	1			Flexible Nipple. Not illustrated	4
94	$\frac{3}{8}$ " FO $\frac{1}{2}$ "	Grub Screw. Dog Point	1			Tee Joint. Not illustrated	2
95	JL-300	Locking Lever	1			$\frac{3}{4}$ " Conduit Screwed Nipple. Not illustrated	2
96	L2A-48	Holding Down Plate	1		MJ-2	2 way Block Connector, large. Not illustrated	1
97	L2A-66	Eye Bolt	1		MJ-1	1 way Block Connector, small. Not illustrated	2
98	$\frac{1}{2}$ " FL	Locknut	2		T-10	Brook $\frac{3}{4}$ hp. 1500 r.p.m. 3 ph. 50 cycles A.C. Protected Type Motor	1
99	L6-7-41	Stop Pin	1			Brook $\frac{3}{4}$ hp. 1500 r.p.m. 3 ph. 50 cycles Totally enclosed, fan cooled motor	1
100	JL-6G	Bed (to admit 30")	1	121	T-10	Brook $\frac{3}{4}$ hp. 1500 r.p.m. 1 ph. 50 cycles A.C. Capacitor, protected type motor (Condenser loose with 10" leads)	1
	JL-6H	Bed (to admit 42")	1		C-12	Hexagonal Head Set Screw	4
	JL-6J	Bed (to admit 54")	1			Washer	4
101	$\frac{1}{2}$ " FH $1\frac{1}{2}$ "	Hexagonal Head Set Screw	2		122	$\frac{5}{16}$ " FH 1"	4
102	$\frac{1}{2}$ " FW	Washer	2		122A	$\frac{5}{16}$ " FW	4
103	$\frac{1}{4}$ " PR $1\frac{1}{2}$ "	Straight Pin	2		CT 10	Danfoss Starter with Auto. reset (when ordering please state voltage)	1
104	JL-331	Outer Leg	1				
105	$\frac{1}{2}$ " FH $1\frac{1}{2}$ "	Hexagonal Head Set Screw	2				
106	$\frac{1}{2}$ " FW	Washer	4				
107	$\frac{1}{2}$ " FN	Hexagonal Nut	2				
108	L5-1-42	Jacking Screw	2				

# Standard Machine *(illustrated on page 6)*

Item No.	Part No.	Description	No. Off
123	4BA x $\frac{3}{4}$ "	Cheese Head Screws	2
	G20-215A	Starter Mounting Plate	1
	$\frac{3}{16}$ " BSW x $\frac{1}{2}$ "	Raised Countersunk Screws (chromed)	2
	G20-216	Protective Box	1
	$\frac{3}{16}$ " BSW x $\frac{1}{2}$ "	Round Head Screws	4
		$\frac{3}{4}$ " Flexible Tubing. Not illustrated. 4' 0" long	1
		Metalflex. Not illustrated. 3' 6" long	1
		3 Core Cable. Not illustrated. 2 $\frac{1}{2}$ yards	
		3/.029 Cable. Black. Not illustrated. 3' 6" long	
		3/.029 Cable. Red. Not illustrated. 1 yard	
	L5-10-193	Fork Centre	1
	L5-875	Cup Centre	1
	L5-585	Cone Centre	1



# Sanding Table



# Sanding Table *(illustrated opposite)*

Item No.	Part No.	Description	No. Off
1	JL-189	Sanding Table	1
2	JL-105	Swivel Stud	1
3	$\frac{3}{16}$ " PT $1\frac{3}{8}$ "	Taper Pin	1
4	JL-106	Indexing Nut	1
5	JL-107	Stop	1
6	JL-111	Indexing Washer	1
7	$\frac{1}{2}$ " FN	Nut	1
8	JL-191A	Adjustable Column	1
9	JL-112	Index Pointer	1
10	$\frac{3}{32}$ " dia.	Rivet	2
11	JL-192	Mitre Gauge	1
12	JL-193	Tenon Piece	1
13	JL-205	Pivot Pin	1
14	JL-204	Nipping Stud	1
15	JL-203	Nipping Nut	1
16	JL-207	Length Gauge	1
17	2BA FY $\frac{3}{4}$ "	Socket Head Cap Screw	1

# Lampstand Boring Attachment (methods showing deep hole boring)

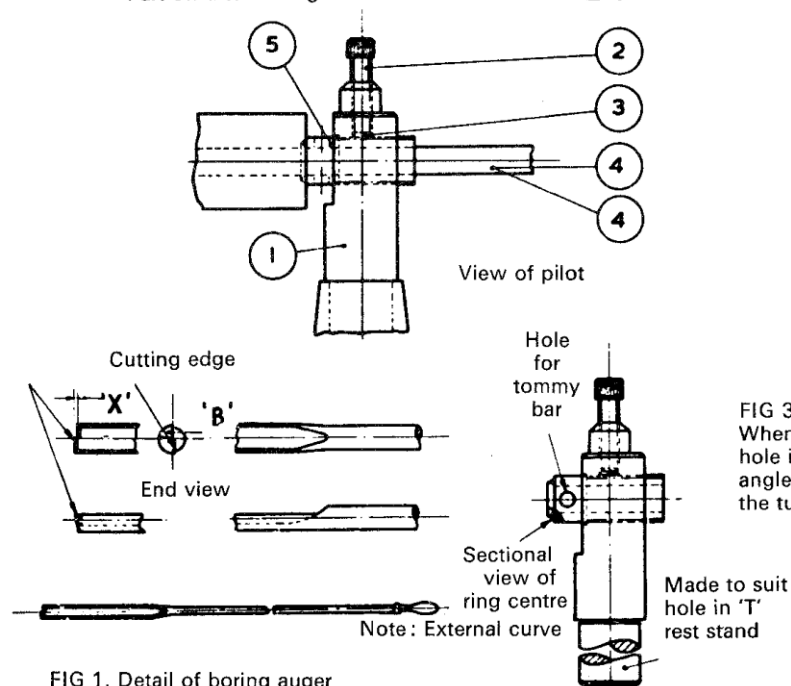
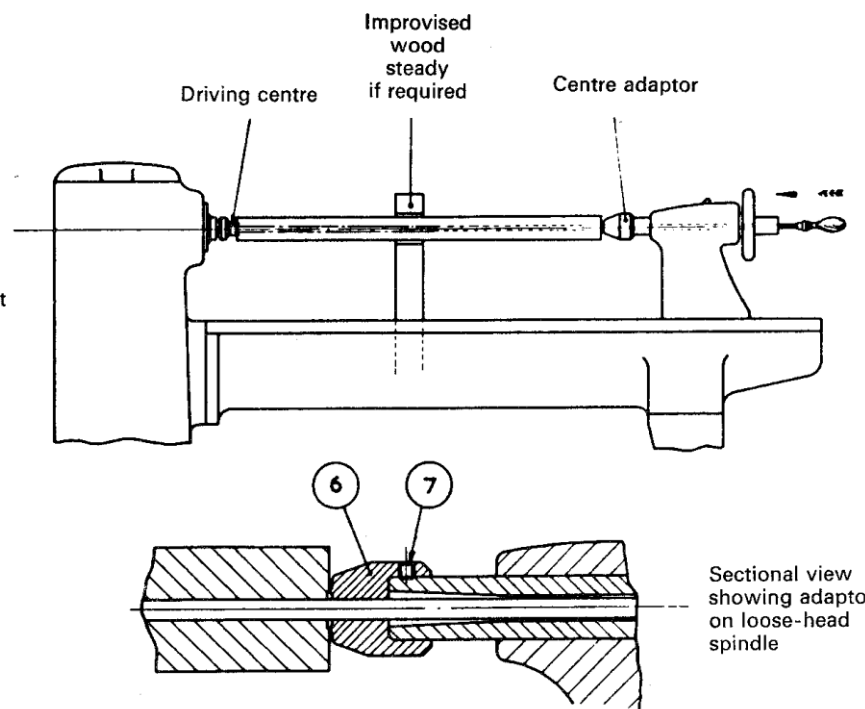
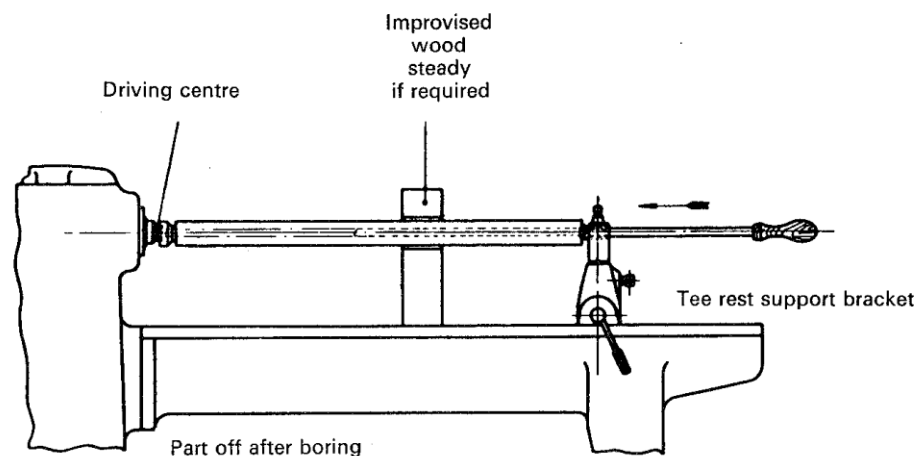


FIG 1. Detail of boring auger for lamp standards, etc. Distance 'X' gives thickness of cut. The rubbing portion 'B' prevents the tool from digging in.

FIG 2. Appliance for boring. The threaded tube is revolved so that it fits up to the wood and forms the back centre, being locked with the bolt at the top. The shaft at the bottom fits the 'T' rest stand.

FIG 3. Auger at start of cut. When the auger is smaller than the hole in the tube it is started at an angle to save wobble. For this reason the tube should not be too long.

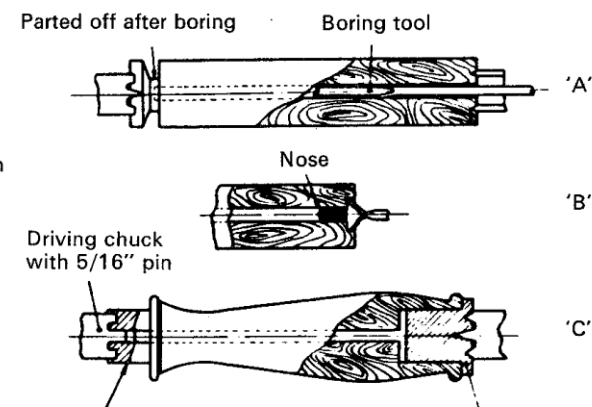


FIG 4. Stages in boring and turning a shaft. 'A' shows the boring operation. 'B' gives the method of counter-boring with plug on nose of bit. 'C' is the 1" plug which fits in the back centre. Note also the special driving chuck.

## Lampstand Boring Attachment *(illustrated opposite)*

[illegible]

# Harrison Products

HARRISON LATHES	13in. Swing (M300) 16in. Swing (M400) 21in. Swing (M500) 21in. Swing (M540)
HARRISON AUTOMATIC CHUCKING LATHES	Model 1A Model 1B
HARRISON HORIZONTAL MILLING MACHINES	30in. x 8in. Table
HARRISON UNIVERSAL MILLING MACHINES	30in. x 8in. Table
HARRISON VERTICAL MILLING MACHINES	30in. x 8in. Table
'UNION' GRINDING MACHINES	10in. to 16in.
'GRADUATE' WOODTURNING LATHES	6in. centre height
'GRADUATE' BOWL TURNING PEDESTAL	
'UNION' ENGINEERING ACCESSORIES	Angle Plates Adjustable Angle Plates Box Tables Marking Out Tables Surface Plates Testing Centres Tilting Tables Vee Blocks Vices Parallel Packings

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