



MODEL- LE-1338

**INSTRUCTION
AND
PARTS MANUAL**

IMPORTANT

Please read carefully page 1 to 31 of
this manual before operating the machine

This manual applies only to the machine having the
serial number shown: which is stamped in the plate,
fitted on the front of the end cover and it must
be quoted in all communications.

SERIAL NUMBER OF MACHINE _____

INSTRUCTION MANUAL

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Brief specification

Capacity & dimensions

Swing	Over bed	13"(330mm)
	Over cross slide	7-1/8"(182mm)
	In gap Diameter (Optional) ..	18-3/4"(476mm)
	Length (Optional)	4-1/2"(115mm)

Center	Height	6-1/2"(166mm)
	Admits between (1325GHE)	22" min.(560mm)
	(1336GHE)	33" min.(840mm)
	(1340GHE)	38" min.(966mm)

*It will be more 3/4"(20mm) than shown on above(w/D1-4" nose)
if A2-4" spindle nose is mounted.

Bed	Width	7-3/8"(187mm)
	Length (1325GHE)	49-1/8"(1248mm)
	(1336GHE)	60-3/8"(1535mm)
	(1340GHE)	65-1/8"(1655mm)
	Height	11-13/32"(290mm)

Drive	Motor via belts & pulley
Motor For main spindle	3HP, 3-ph
	or (Optional) .. 2HP, 1-ph or 3-ph pole changeable
For coolant pump	1/8HP, 3-ph or 1-ph

Headstock

Spindle Bore	1-3/8"(35mm)
Nose	D1-4" ASA std.
or	A2-4" International std. (ISO)
Taper in nose	No. 5 Morse
in sleeve	No. 3 Morse
Speeds Number	8
or (Optional)	16 (pole changeable motor)
Range	90-1500r.p.m. or 70-2000r.p.m.
or (Optional)	35-2000r.p.m.(pole changeable motor)

Carriage & compound

Cross slide	Width	4-5/8"(118mm)
	Travel	6-5/16"(160mm)
Compound rest	Width	3"(76mm)
	Travel	2-11/16"(68mm)
Lead screw	Diameter	7/8"(22mm)
	Thread	8 T.P.I. or 3mm pitch
Feed rod	Diameter	3/4"(19mm)
Cutting tool	Max. section	5/8"X5/8"(16mmX16mm)

Threads & feeds

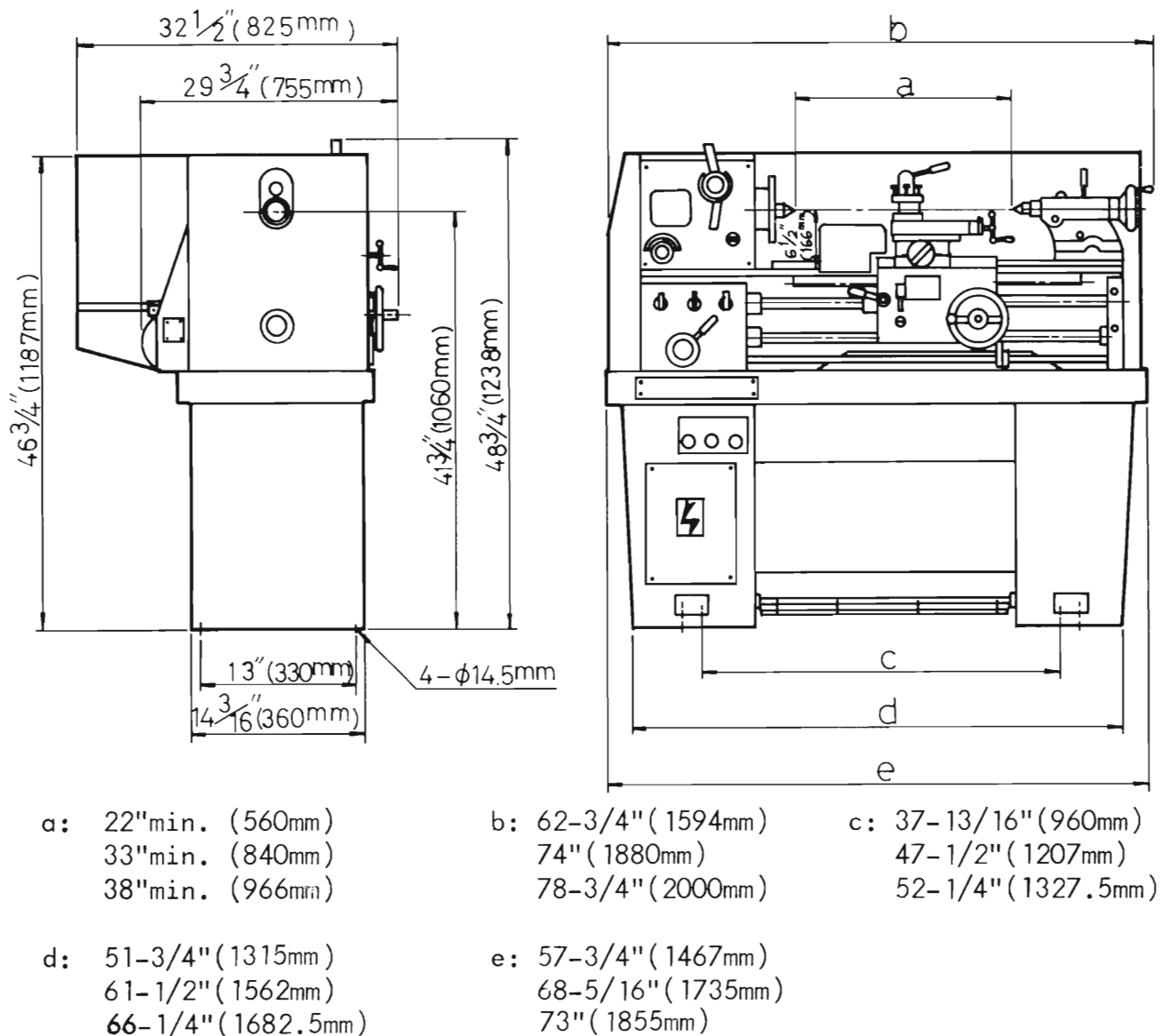
Threads	Imperial pitches	36 Nos. 8-112 T.P.I.
	Metric pitches	28 Nos. 0.2-5mm pitch
	Diametral pitches	36 Nos. 8-112 D.P.
	Module pitches	22 Nos. 0.2- 3 M.P.
Feeds	Longitudinal feeds	
	Imperial	36 Nos. .0019-.0273"/rev.
	Metric	36 Nos. 0.050-0.696mm/rev.
	Cross feeds	
	Imperial	36 Nos. .0006-.0094"/rev.
	Metric	36 Nos. 0.013-0.188mm/rev.

I. SPECIFICATION, EQUIPMENTS AND FEATURES

The 1325, 1336, 1340GHE Gear Head Type Precision Lathes are manufactured to Metric standard throughout, and a bed offered with gap for each model could be supplied by option.

A D1 cam lock or A2 type spindle nose, left or right hand apron handwheel and either Metric or Imperial drive screws (together with the appropriate micrometer dial) are optional variations.

Overall measurement



Tailstock

Quill	Diameter	1-21/32"(42mm)
	Travel	4-1/2"(114mm)
	Taper	No.3 Morse
Set	Over	±3/8"(10mm)

Weights & measures (Approx.))

	1325GHE	1336GHE	1340GHE
Machine			
Length	62-3/4"(1594mm)	74"(1880mm)	78-3/4"(2000mm)
Width	29-3/4"(755mm)	29-3/4"(755mm)	29-3/4"(755mm)
Height	48-3/4"(1238mm)	48-3/4"(1238mm)	48-3/4"(1238mm)
Packing dimensions & weights (unit: inch & kg)			
	63½"X33"X58½"	74"X33"X58½"	78½"X33"X58½"
	NW:480 GW:600	NW:520 GW:650	NW:560 GW:690

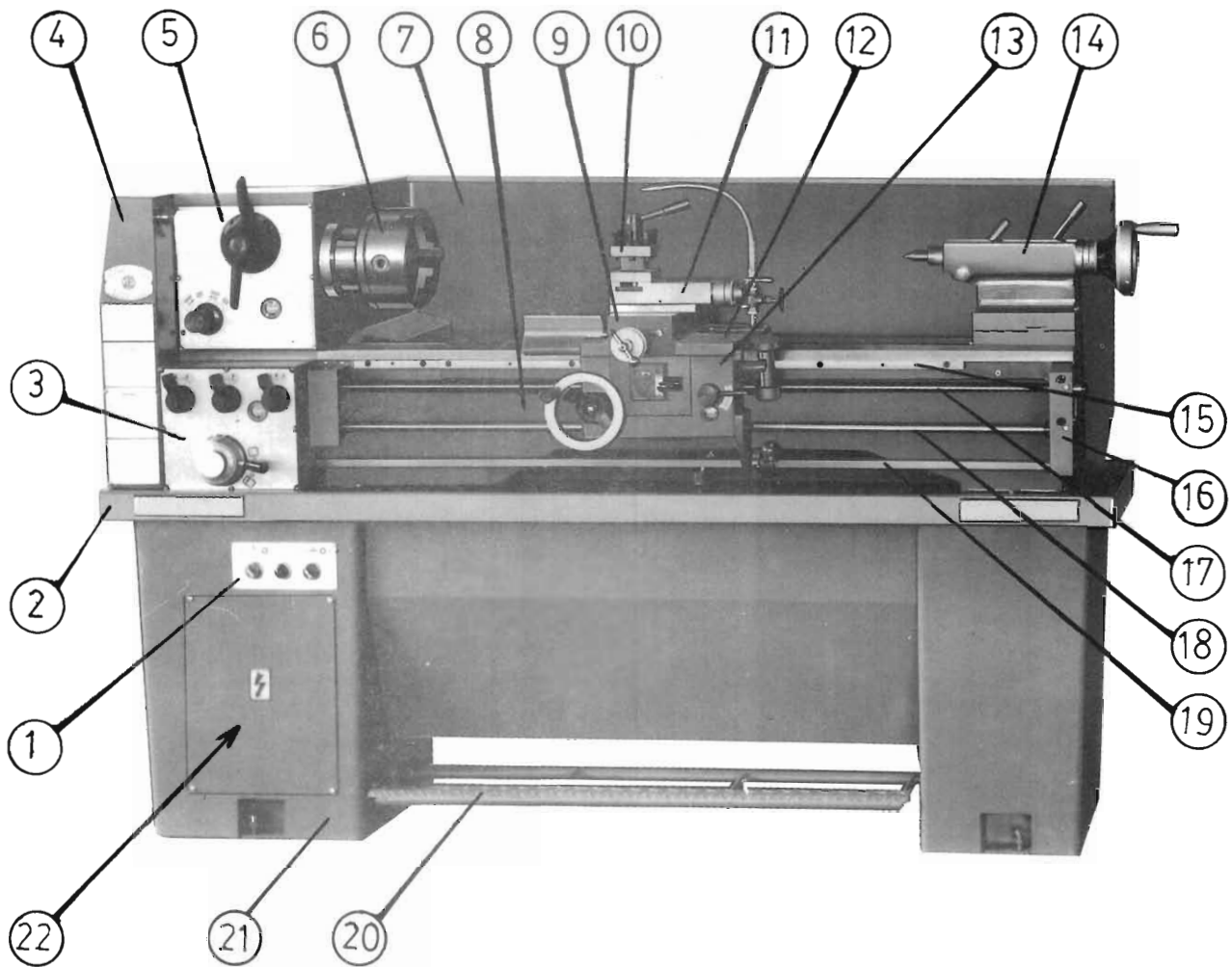
Standard accessories and equipment

1. Center sleeve, No.5/No.3 M.T.
2. 2 Centers, No.3 M.T.
3. Fourway tool turret
4. Tool post wrench
5. 2 V-belts
6. Metric change gears
7. Drive plate
8. 4 Mountings (bolts, washers & nuts)
9. Tool box & tool kits
10. Grease gun
11. Chip tray & stand
12. Motor pulley
13. Motor, 3HP 3-ph
14. Thread dial indicator
15. Complete electrical control & operation equipment
16. Foot operated brake
17. Third rod for spindle control
18. Safety overload clutch for feed rod
19. Safety torque limiting device for lead screw
20. Repair paint
21. Instruction & parts manual

Main features

- .Hardened and ground spindle mounted Cam lock D1-4" or A2-4" nose, 1-3/8"(35mm) bore.
- .Alloy steel hardened and ground gears
- .Enclosed type quick change gear box
- .Hardened ground bedway
- .Complete electrical control & operation equipment
- .Gated spindle control lever
- .Efficient foot operated brake
- .Safety overload clutch for feed rod
- .Safety torque limiting device for lead screw

II. MACHINE ASSEMBLY



- | | |
|--|-----------------------------------|
| 1. Operation panel | 13. Apron |
| 2. Chip tray | 14. Tailstock |
| 3. Enclosed type quick change gear box | 15. Rack |
| 4. End cover | 16. Bracket |
| 5. Headstock | 17. Lead screw |
| 6. Chuck & backplate (Optional) | 18. Feed rod |
| 7. Rear splash guard (Optional) | 19. Third rod for spindle control |
| 8. Bed | 20. Foot brake pedal |
| 9. Cross slide | 21. Cabinet stand |
| 10. Fourway tool turret | 22. Electrical control equipment |
| 11. Compound rest | (inside the cabinet stand) |
| 12. Saddle | |

III. INSTALLATION

Unloading

Unpack the wooden case first and use the bed clamping plates and eyebolts to sling the lathe. Posit the saddle and tailstock along with the bed to keep the balance. Make sure not to hit the leadscrew, spindle or other long rods and handwheels when the machine is unloaded.

Cleaning

Before operation and controls, use white spirit or kerosene (paraffin) to remove the anti-corrosion coating or grease from all slideways and gear train. Do not use lacquer thinner. Oil all bright machined surfaces immediately after cleaning; use heavy oil or grease on the change gears.

Setting up the machine

Foundation work of a lathe has so far been neglected. Locate the machine on a solid foundation, allowing sufficient area for easy work and maintenance. The machine may be used when it is free standing, but for maximum performance it should be bolted down.

- (1) Free standing, position the machine on its foundation and adjust each of the four levelling screws to take an equal share of the weight. Then use an engineer's precision level on the bed ways to make further adjustment for level conditions.
- (2) Fixed installation, position the machine over four 12mm($\frac{1}{2}$ ") diameter foundation bolts, set to suit the base. (SEE THE PICTURE OF PAGE 3)
Accurately level the machine as in (1), then tighten the foundation bolts evenly to avoid distortion and finally re-check for level condition.

Electrical supply

Power should be supplied through an external fused isolator—recommended fuses being 25 amp for 220 volts supply and 16 amp for 330 to 440 volts supply. (3-ph)

External wiring should be of a permanent character and be undertaken by a competent electrician. Electrical entry is at the rear left hand end of the cabinet.

Line connections should be to the isolator terminals and substantial earth continuity conductor must be connected to the earth terminal on the panel. (SEE ELECTRICAL WIRING DIAGRAM)

Main spindle rotation must be anti-clockwise (looking from tailstock) for a downward movement of the spindle control lever. Interchanging two line connections should rectify wrong direction of rotation.

CAUTION	
DISCONNECT POWER	
BEFORE WORKING WITHIN	
VOLTS <input type="text"/>	CYCLE <input type="text"/>
PHASE <input type="text"/>	AMPS <input type="text"/>
MAIN MOTOR H.P. <input type="text"/>	
PUMP MOTOR H.P. <input type="text"/>	
TOTAL H.P. <input type="text"/>	

Make sure that the motor is fitted to your power source in voltage, phase, and power cycle.

IV. LUBRICATION SYSTEM

Lubrication checks

(A) Head stock

Ensure that the headstock is filled to the level of the relevant oil sight glass with Tellus 32 of SHELL oil.

For exchanging the oil in headstock, remove all oil by taking off the drain plug, which is fitted at the bottom left hand end of the head stock, accessible after remove of the end cover and the change gears with swing frame. To fill the oil open the headstock cover. (SEE THE FIGURE 1 ON PAGE 10). Check oil level weekly and change the oil 3 months after first use, then change it once annually.

(B) Enclosed type quick change gearbox

Ensure that the gearbox is filled to correct the level of the oil sight glass as in (A).

For exchanging the oil in gearbox, remove all oil by taking off the drain plug, which is fitted at the bottom left-hand end of the gearbox, accessible after remove of the end-cover. Re-fill the oil by taking off the inlet plug, which is fitted on the top of the gearbox. (SEE THE FIGURE 1 ON PAGE 10)

Check oil level and change the oil same as the instruction in (A).

(C) Apron

Ensure that the apron is filled to the correct level of the oil sight glass with Tellus 32 of SHELL oil.

Check the oil level weekly and first oil change after 3 months use, further oil change once annually.

For exchanging the oil in apron, drain away all oil by taking off the drain plug, which is fitted on the bottom of the apron.

Fill the oil by taking off the inlet cap, which is fitted at the top on the right hand side of the apron. (SEE THE FIGURE 3 ON PAGE 11)

(D) Change gears

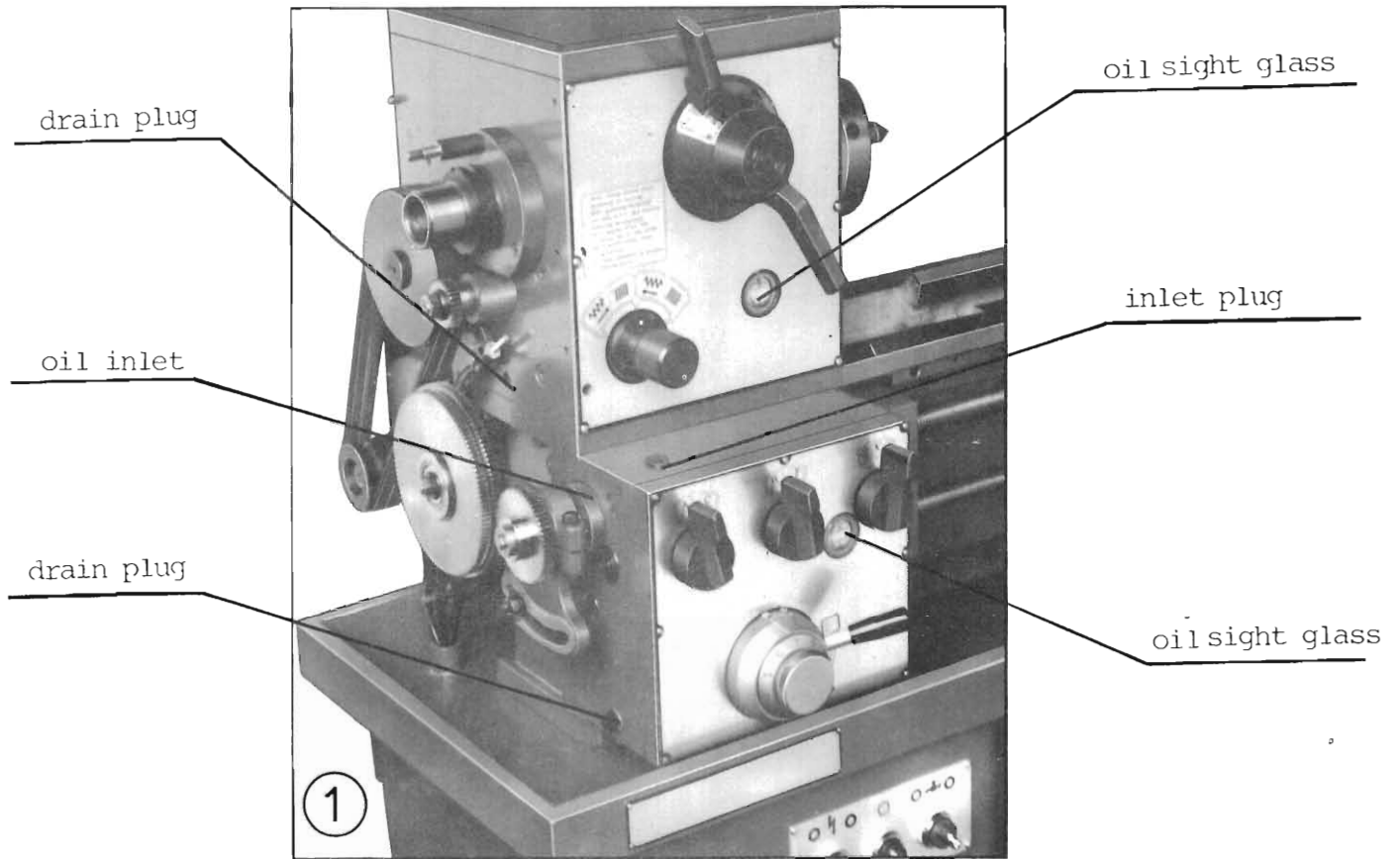
Lubricate the change gears with thick machine oil or grease once a month.

(E) Other portions

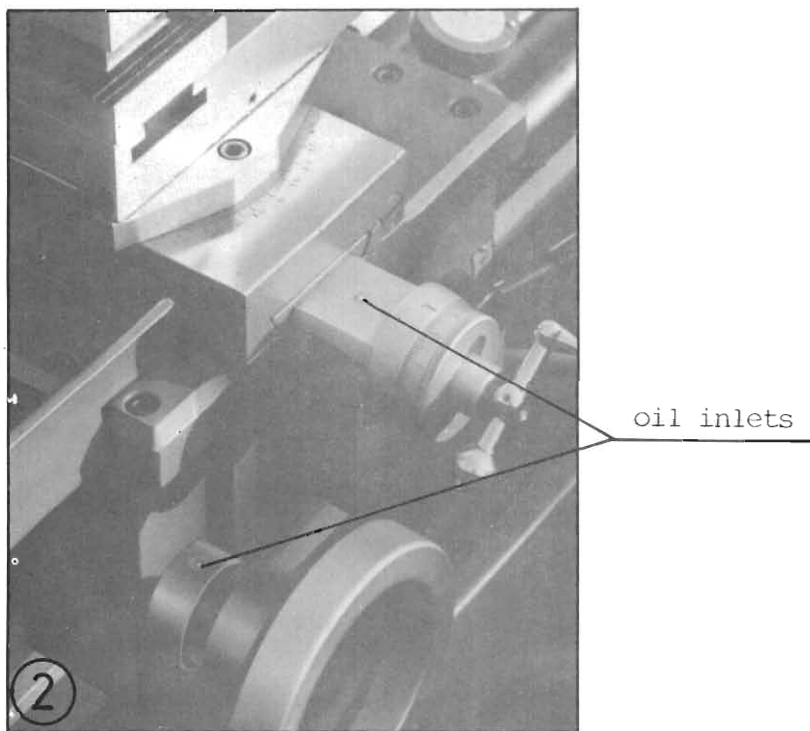
There are oil inlets on input shaft bracket of gearbox, hand-wheel bracket of apron, feed rod bracket of carriage, saddle, cross slide, compound rest, thread dial indicator, tailstock and the bracket which holds the leadscrew & feedrod; handing oiling is required from time to time.

Lubricate the apron worm & worm gear, half nut & lead screw twice a month. Apply a light oil film to the bed ways and all other blank parts such as tailstock quill, feed rod etc. once a day.

Lubrication Charts




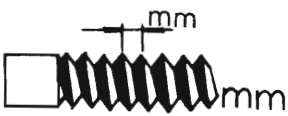

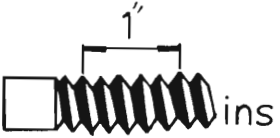
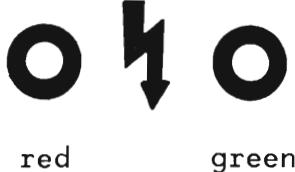




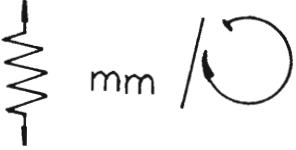

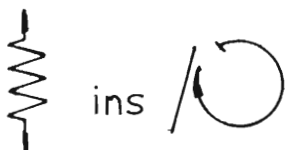
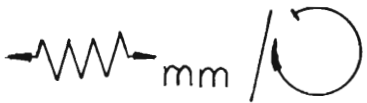

Lubrication of headstock and enclosed type quick change gear box
(See the item of lubrication checks (A), (B) on page 8 till 9)










Lubrication of carriage and apron (once a day)

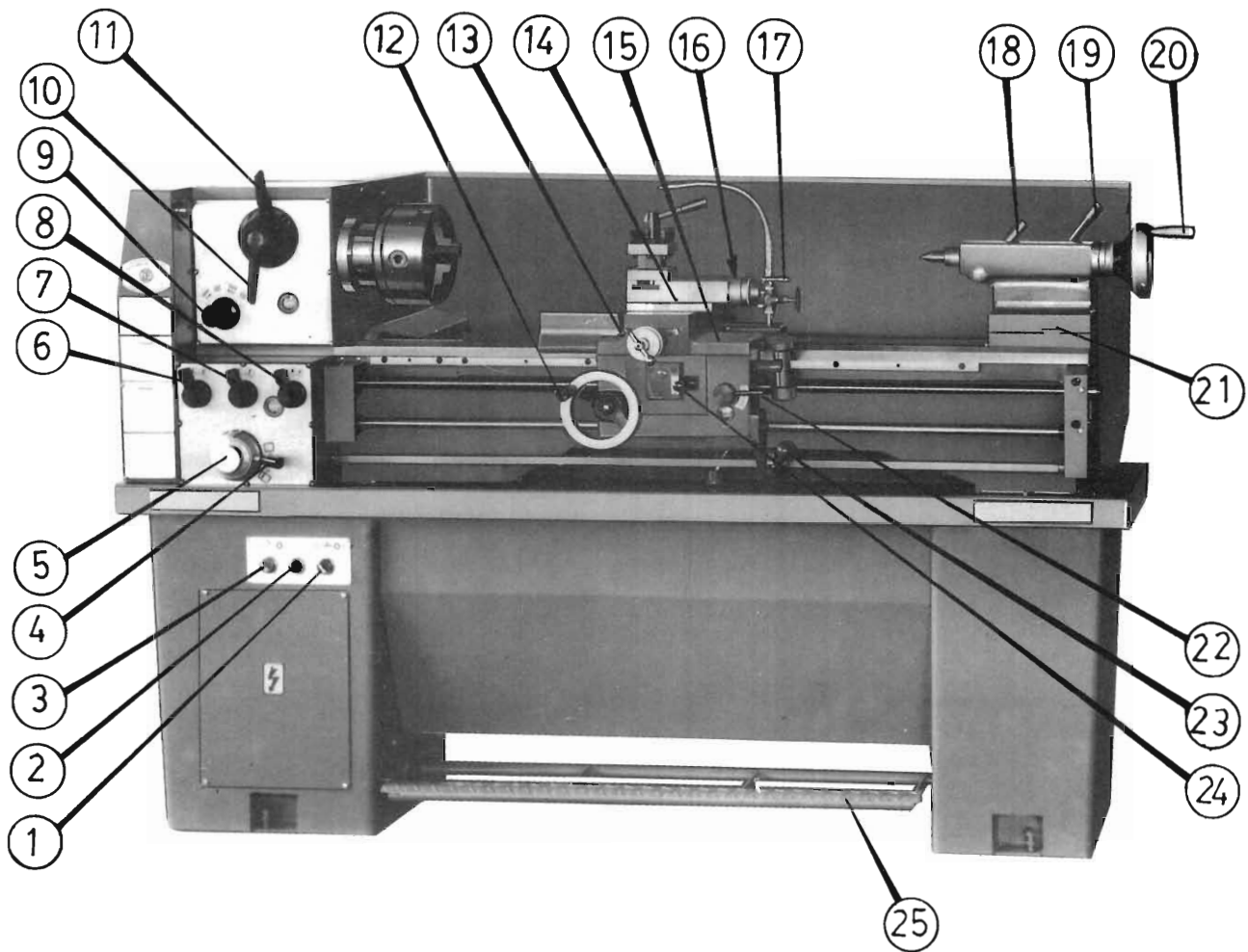
V. OPERATION

Symbols for operation

	Electrical (danger)		Metric thread
	Pilot lamp		Imperial thread
 red green	Power Green: on Red : off		Module pitch thread
 red green	Coolant Green: on Red : off		Diametral pitch thread
	Right-hand thread and Longitudinal feed toward the head- stock side		Cross feed per revolution in Metric
	Left-hand thread and Longitudinal feed toward the tail- stock side		Cross feed per revolution in Imperial
		Longitudinal feed per revolution in Metric	
		Longitudinal feed per revolution in Imperial	

	<p>The clamp lever must be kept at this position (upward); then the feed selector dial can be turned to choose the 9 steps of feed gears.</p>
	<p>The clamp lever must be set at this position (downward) while obtaining the thread cutting or feeding. (that is, it must be put downward after the 9 steps of feed gear is selected)</p>
	<p>Longitudinal feed engaged (upward) Both longitudinal and cross feed disengaged (neutral) Cross feed engaged (downward)</p>
	<p>Half nut opened</p>
	<p>Half nut closed</p>
	<p>Main spindle reverse rotation (clockwise rotation, looking from tailstock)</p>
	<p>Main spindle forward rotation (anti-clockwise rotation, looking from tailstock)</p>

Operating diagram



- | | |
|--------------------------------------|--|
| 1. Coolant supply selector(Optional) | 14. Compound rest lock |
| 2. "SUPPLY ON" pilot lamp | 15. Carriage lock |
| 3. Main switch(power) | 16. Cross slide lock (on right hand side of cross slide) |
| 4. Feed selector clamp | 17. Compound rest traverse handle |
| 5. Feed selector dial | 18. Quill lock |
| 6. Feed selector handle | 19. Tailstock clamp |
| 7. Feed selector handle | 20. Quill traverse handwheel |
| 8. Feed/thread selector | 21. Tailstock set-over screw |
| 9. Feed direction selector | 22. Thread cutting engagement lever |
| 10. Speed selector | 23. Spindle control lever |
| 11. Speed selector | 24. Feed axis selector |
| 12. Longitudinal traverse handwheel | 25. Brake pedal |
| 13. Cross traverse handle | |

Electrical control & operation

- (A) All electrical controls are fitted on to the operation panel, which is at the front left hand end of the cabinet stand. The "Supply-on" pilot lamp (2) will light on while the main switch (3) is on, if no light check the power source.
Coolant can be supplied while the coolant supply selector (1) is on, if the coolant attachment is mounted.

NOTE: Please re-read the paragraph "electrical supply" on page 8 and re-check the electrical supply is OK before operating the machine.

- (B) The complete electrical control & operation system consists of:
- (1) An electrical induction motor for spindle rotation; 3HP, 3-phase in standard supply.
 - (2) An operation panel mounted with main switch, supply on pilot lamp and coolant supply selector (optional).
 - (3) A complete electrical switch gear including two magnetic contactor, one thermal overload relay, one control relay and two micro switch for main spindle forward/reverse control; a limited switch for foot operated brake; a transformer for low-voltage control circuit and a listed fuse for short circuit protection. The switch gear can be seen by taking off the front cover of the left hand side cabinet stand.

Spindle speed control

(A) Identification before operation

- (1) Ensure that lubrication has been carried out in accordance with the lubrication charts.
- (2) When rotating the main spindle, it is mechanized to the gear box and apron. Check that the spindle control lever (23) is in the central (STOP) position; the feed axis selector (24) and the thread cutting engagement lever (22) are in disengaged positions. Under the circumstances, both the longitudinal traverse handwheel (12) and the cross traverse handle (13) can be easily operated by hand.

(B) Main spindle rotation

Put the spindle speed selectors (10), (11) in the required position according to the spindle speed chart. Then switch on the main switch (3) and the "Supply on" pilot lamp (2) will light on with it.

Start the spindle in the direction of rotation required by lifting (FOR REVERSE) or lowering (FOR FORWARD) the "gated" spindle control lever (23) on the apron.

Stop the machine by returning the spindle control lever (23) to its neutral (STOP) position or

Depressing the full length foot brake (25), of course, the latter action can stop the machine quickly in case of emergency. However the spindle control lever must be kept in the central position after working the brake pedal (25).

(C) Main spindle speed change

The spindle speed is changed by means of HIGH-LOW speed selector (11) and four steps speed selector (10). The spindle speed chart shows 4 gears speed in both high and low speed portion. We can choose a proper revolution by operating the speed selector (10) according to the spindle speed chart. When the speed selector (11) is in the high position, we can get the four speeds referring to the high speed portion of the graph.

Transference of the main spindle speed should be made after the spindle rotation is completely stopped.

(Engagement of the drive gears may be assisted by manually turning the spindle)

(D) Running in

For optimum bearing life and performance it is recommended that high spindle speeds be avoided during the initial life of the machine.

Alternatively a running-in procedure should be adopted as follows:

Make a low feed rate selection and run the machine light

for 3 hours at 460 r.p.m.

then for 2 hours at 755 r.p.m.

then for 1 hour at 1255 r.p.m.

Do the process of running-in if starting the machine for the first time.

Operational notes

Chuck - use only high speed types

Faceplate - maximum spindle speed no more than 1255 r.p.m.
for 10" (254mm) diameter.

Coarse feed range - (i.e. When the feed selector handle (6) is put in position C, the other feed selector handle (7) is put in position T at the same time.) Should not be used with spindle speeds above 755 r.p.m.

Others - Put the feed/thread selector (8) in neutral position (X) to keep disengagement both with the lead-screw and the feed rod when thread cutting or auto feeding are not in use, and for minimum wear the thread dial indicator should be disengaged by swinging the pinion out of mesh with the leadscrew when not in use.

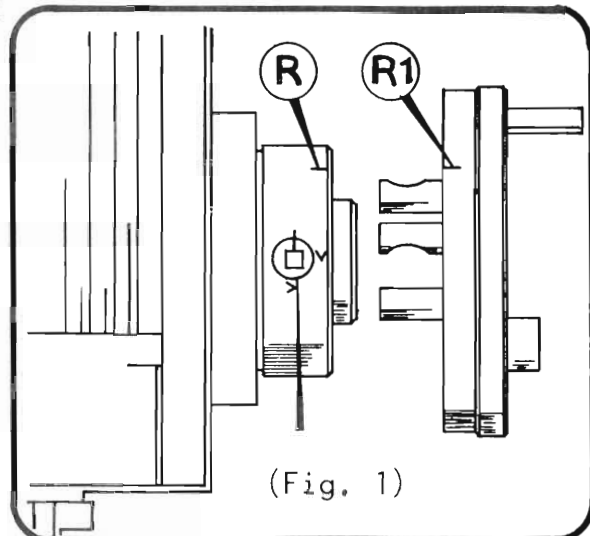
Spindle nose (Cam lock D1-4")

MOUNTING OF CHUCKS, FACEPLATES AND OTHER SPINDLE MOUNTED ATTACHMENTS.

Ensure that the location faces on both nose and attachment are scrupulously clean.

Check that all the cams are in the release position (fig. 1)

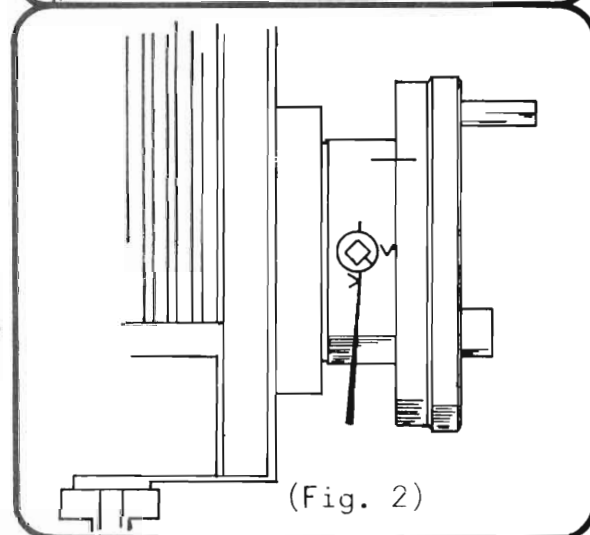
Mount the attachment on to the spindle nose and lock each cam by turning it clockwise using the key provided.



A reference line R 1 (fig. 1) should be scribed on each chuck or faceplate to coincide with the reference line R on the spindle nose. This assists subsequent re-mounting.

NOTE:

For correct locking conditions each cam must tighten with its index line between the two vee marks on the nose (fig. 2).



DO NOT INTERCHANGE CHUCKS OR OTHER SPINDLE MOUNTING ITEMS BETWEEN LATHES WITHOUT CHECKING EACH CAM FOR CORRECT LOCKING

TO ADJUST 'CAMLOCK STUDS'

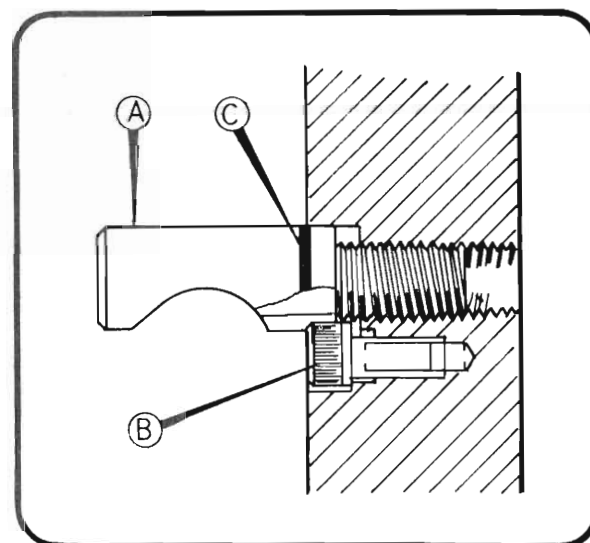
Remove Lockscrew (B)

Turn Stud (A) one full turn, in or out as required

Re-fit and tighten leadscrew (B)

NOTE:

A datum ring (C) is marked on each stud as a guide to the original or initial setting.



Feed and thread selection

All feeds and threads are given on the feed and thread tables, fitted on the front and inside of the end cover, by setting the feed selector handles (6), (7), and dial (5).

The change gears should be arranged by the instruction of the feed and thread tables in either Imperial or Metric systems.

(A) Hand feed operation

The movement of carriage is made by the longitudinal traverse handwheel (12), cross sliding by the cross traverse handle (13), and compound rest by the compound rest traverse handle (17). The carriage is anchored by turning the carriage lock screw (15) in clockwise direction.

(B) Replacement of change gears

Take off the end cover firstly, then loosen both the hexagon nut of the clamping bolt and the clamping screw of the swing frame to exchange the transmission shaft gear with another gear. And the change of driven gear is made by loosening the 120T and 127T gear shaft clamping nut. It is necessary for suitable back lash to intermediate the gears in both cases.

For any special threads not covered by the thread tables, our Engineering Department is available to specify the most convenient change gearing required.

(C) Automatic feed operation and feed change

Ensure that 30T change gear at the transmission shaft and 60T at the driven shaft are set with 127T intermediate gear as shown on the feed and thread tables. Then turn the feed direction selector (9) to left hand or right hand side according to the direction of feeding which you need and set the feed/thread selector (8) at 'W' position. Make sure the feed selector clamp (4) is downward. Thus the feed rod will rotate. When the feed axis selector (24) on the apron is pulled out and operated upward, we can obtain a longitudinal feed and a cross feed can be obtained by pushing the selector in and operating it downward. (MAKE SURE THE THREAD CUTTING ENGAGEMENT LEVER (22) at disengaged position before operating the feed axis selector.)

Feed direction can be changed by turning the feed direction selector (9) at headstock. 36 kinds of feed speeds each in longitudinal and cross feed can be obtained by means of the feed selector handles (6), (7), and dial (5).

(D) Feed and Thread tables

(1) Feed tables

(a) Longitudinal and cross feed table in Imperial system

ins

30x127x60

Feedrod:8TPI

PART NO. LEVER	1	2	3	4	5	6	7	8	9
C.T.W	.0273	.0243	.0230	.0219	.0199	.0190	.0182	.0168	.0156
A.T.W	.0094	.0084	.0080	.0075	.0068	.0066	.0062	.0058	.0054
C.R.W	.0137	.0122	.0115	.0109	.0099	.0095	.0091	.0084	.0078
A.R.W	.0047	.0042	.0040	.0036	.0034	.0033	.0031	.0029	.0027
	.0068	.0061	.0058	.0055	.0050	.0048	.0046	.0042	.0039
	.0024	.0021	.0020	.0019	.0017	.0016	.0015	.0014	.0013
	.0034	.0030	.0029	.0028	.0025	.0024	.0023	.0021	.0019
	.0012	.0011	.0010	.0009	.0008	.0008	.0007	.0007	.0006

(b) Longitudinal and cross feed tables in Metric system

mm

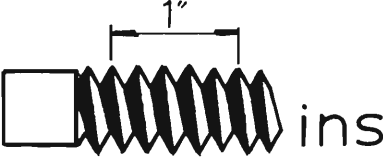
30x127x60


Feedrod:25mm


PART NO. LEVER	1	2	3	4	5	6	7	8	9
C.T.W	.696	.618	.586	.557	.506	.484	.464	.428	.398
A.T.W	.188	.167	.158	.151	.137	.131	.125	.116	.107
C.R.W	.348	.310	.293	.278	.253	.242	.232	.214	.199
A.R.W	.094	.084	.079	.076	.068	.065	.063	.058	.054
	.174	.155	.146	.139	.127	.121	.116	.107	.100
	.047	.042	.040	.038	.034	.033	.031	.029	.027
	.087	.077	.073	.070	.064	.061	.058	.053	.050
	.023	.021	.020	.019	.017	.016	.015	.014	.013


(2) Thread tables

(a) Thread tables for Imperial leadscrew

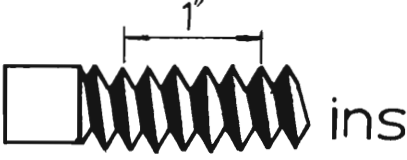
									
<div> <div>30x127x60</div> <div>8TPI</div> </div>									
PART NO. LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	8	9	9½	10	11	11½	12	13	14
A.T.Y	16	18	19	20	22	23	24	26	28
C.R.Y	32	36	38	40	44	46	48	52	56
A.R.Y	64	72	76	80	88	92	96	104	112

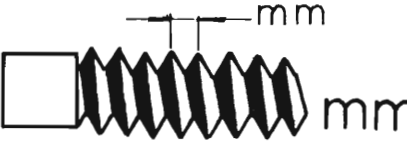
									
<div> <div>$\frac{a}{127} \times \frac{120}{60}$</div> <div>8TPI</div> </div>									
a	50	50	36	35	30	35	30	35	28
PART NO. LEVER	1	4	1	1	1	4	4	9	9
C.T.Y	5	4	3.5	3				2	1.6
A.T.Y	2.5	2	1.75	1.5		1.4	1.2	1	0.8
C.R.Y	125	1		0.75	0.9	0.7	0.6	0.5	0.4
A.R.Y		0.5			0.45	0.35	0.3	0.25	0.2


 dp									
$\frac{60}{120} \times \frac{157}{50}$ 8TPI									
LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	8	9	9½	10	11	11½	12	13	14
A.T.Y	16	18	19	20	22	23	24	26	28
C.R.Y	32	36	38	40	44	46	48	52	56
A.R.Y	64	72	76	80	88	92	96	104	112

 mp									
$\frac{60}{127} \times \frac{157}{50}$ 8TPI									
LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	3		2.5				2	1.85	
A.T.Y	1.5		1.25				1	0.9	0.85
C.R.Y	0.75	0.65		0.6	0.55		0.5	0.45	0.4
A.R.Y		0.35		0.3			0.25		0.2

(b) Thread tables for Metric leadscrew


 $\frac{30}{120} \times \frac{127}{60}$ 3mm									
PART NO. LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	8	9	$9\frac{1}{2}$	10	11	$11\frac{1}{2}$	12	13	14
A.T.Y	16	18	19	20	22	23	24	26	28
C.R.Y	32	36	38	40	44	46	48	52	56
A.R.Y	64	72	76	80	88	92	96	104	112

 ax127x60 3mm									
a	50	50	36	35	30	35	30	35	28
PART NO. LEVER	1	4	1	1	1	4	4	9	9
C.T.Y	5	4		3.5	3			2.0	1.6
A.T.Y	2.5	2		1.75	1.5	1.4	1.2	1.0	0.8
C.R.Y	1.25	1	0.9		0.75	0.7	0.6	0.5	0.4
A.R.Y		0.5	0.45			0.35	0.3	0.25	0.2

dp

$$\frac{55}{120} \times \frac{127}{35}$$
3m.m.

LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	8	9	9½	10	11	11½	12	13	14
A.T.Y	16	18	19	20	22	23	24	26	28
C.R.Y	32	36	38	40	44	46	48	52	56
A.R.Y	64	72	76	80	88	92	96	104	112

mp

$$\frac{55}{120} \times \frac{120}{35}$$
3m.m.

LEVER	1	2	3	4	5	6	7	8	9
C.T.Y	3		2.5				2		
A.T.Y	1.5		1.25	1.2	1.1	1.05	1	0.9	0.85
C.R.Y	0.75	0.65		0.6	0.55		0.5	0.45	
A.R.Y	0.4	0.35		0.3			0.25		0.2

(E) Thread cutting operation

In order to obtain the desired thread, all correct change gears must be installed in strict accordance with the chart. Failure to do so will give incorrect threads.

Rotate the leadscrew by operating the feed/thread selector (8) to 'Y' position and be sure the feed selector clamp (4) is engaged (downward). Operate downward the thread cutting engagement lever (22), and it will be engaged with the leadscrew to obtain the longitudinal travel of carriage, namely, the thread cutting feed. Make sure the feed axis selector is disengaged (at neutral position) before operating the thread cutting engagement lever, since there is an interlock mechanism between the auto feeding and thread cutting engagement.

Direction of thread cutting can be chosen by turning the feed directing selector (9) at the headstock. There are 36 Nos. of thread pitches each in Imperial and Diametral, 28 Nos. of Metric pitches and 22 Nos. of Module pitches those which can be obtained by turning the feed selector handles (6), (7) and dial (5).

Thread dial indicator

The thread dial indicator is installed on the right hand side of the apron. The indicator is used for thread cutting to engage with the leadscrew.

For minimum wear the thread dial indicator should be disengaged by swinging the pinion out of mesh with the leadscrew when not in use.

(A) IMPERIAL THREADS ON IMPERIAL LEADSCREW MACHINES or METRIC THREADS ON METRIC LEADSCREW MACHINES

For these threads it is recommended that the thread dial indicator be used - this allows the half nut of leadscrew to be engaged at the end of each thread cutting pass, provided that they are re-engaged in accordance with the indicator table mounted on the left hand side of the apron.

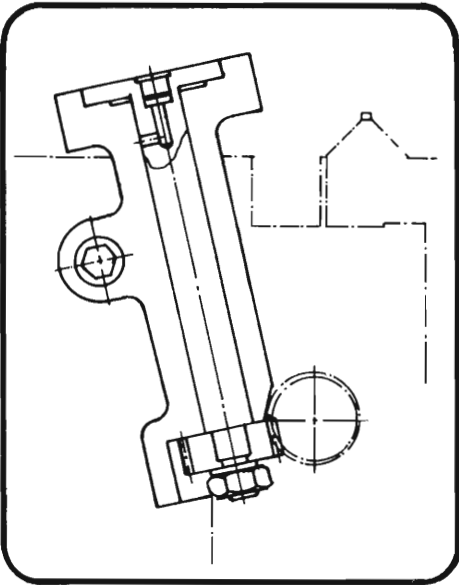
(1) IMPERIAL LEAD SCREW MACHINES
(IMPERIAL THREADS ONLY)

The table shows:

T.P.I.: Threads per inch
to be cut.

SCALE : The dial numbers
at which the half
nut of lead screw
may be engaged.

INDICATOR TABLE					
T.P.I	SCALE	T.P.I	SCALE	T.P.I	SCALE
8	1-8	20	1-4	48	1-8
9	1	22	1,3	52	1-4
9½	1	23	1	56	1-8
10	1,3	24	1-8	64	1-8
11	1	26	1,3	72	1-8
11½	1	28	1-4	76	1-4
12	1-4	32	1-8	80	1-8
13	1	36	1-4	88	1-8
14	1,3	38	1,3	92	1-4
16	1-8	40	1-8	96	1-8
18	1,3	44	1-4	104	1-8
19	1	46	1,3	112	1-8



(2) METRIC LEAD SCREW MACHINES
(METRIC THREADS ONLY)

The table shows:

in column 1. : millimeter pitch to be cut.

28T, 30T, 32T: The number of teeth in "pick-off
gear" arranged to mesh with the
lead screw (this being selected
from the stack, stored on the
bottom of the dial spindle)

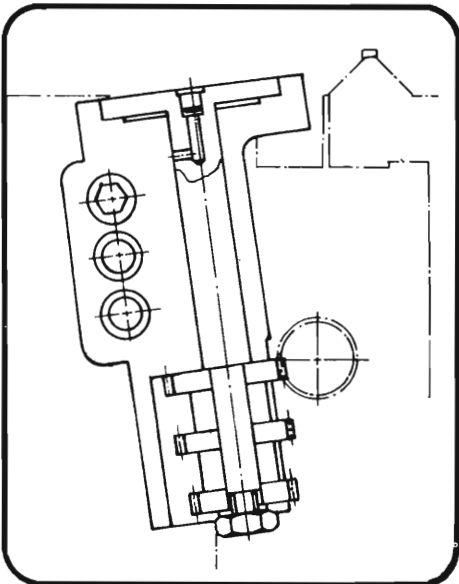
Dial graduation: The dial numbers at which
the half nut may be engaged
under the No. of teeth of
pick-off gear.

mm	INDICATOR TABLE		
	28T	30T	32T
	Dial Graduation		
0.20		1.3.5.7.9.11	
0.25		1.3.5.7.9.11	
0.30		1.3.5.7.9.11	
0.35	1.4.7.10		
0.40			1.4.7.10
0.45		1.7	
0.50		1.3.5.7.9.11	
0.60		1.3.5.7.9.11	
0.70	1.4.7.10		
0.75		1.3.5.7.9.11	
0.80			1.4.7.10
0.90		1.7	
1.00		1.3.5.7.9.11	
1.20			1.4.7.10
1.25		1.3.5.7.9.11	
1.40	1.4.7.10		
1.50		1.3.5.7.9.11	
1.75	1.4.7.10		
2.00			1.4.7.10
2.50		1.3.5.7.9.11	
3.00		1.3.5.7.9.11	
3.50	1.4.7.10		
4.00			1.4.7.10
5.00		1.3.5.7.9.11	

(B) IMPERIAL THREADS ON METRIC LEAD SCREW MACHINES
OR
METRIC THREADS ON IMPERIAL LEAD SCREW MACHINES
AND
DIAMETRAL PITCH, MODULE PITCH THREADS ON
IMPERIAL OR METRIC LEAD SCREW MACHINES

For these threads the half nut is kept engaged
throughout the cutting of any one thread. This
involves reversing the whole drive by means of
the spindle control lever (23) at each end of
the thread cutting pass whilst at the same time
relieving or increasing the cut as required.

(Threads 'A' may also be cut by this method)



Cross slide and compound rest

A solid compound rest is carried on a rotatable swivel table fitted as standard onto the cross slide, and the top of cross slide is graduated both $-45^{\circ} \sim 0$ and $0 \sim +45^{\circ}$ for accurate indexing of swivel table.

Handle dials are graduated in Imperial or Metric division to suit the operating feed screw and nut fitted.

Tail stock

Tail stock can be set over for the production of shallow tapers or for re-alignment by means of the tail stock set-over screws (21) which are mounted in each side of the tail stock body, a similar but 'location screw' is fitted in the rear face of the body.

Set-over adjustment is made as follows:

Unclamp the tail stock by operating the clamp lever (19) downward.

Slacken the rear 'location screw' (say one half turn)

Then- Alternatively slacken one set-over screw (21) and tighten the other until the required setting is achieved.

Tighten the rear 'location screw' and the set-over screw which is slackened before, and re-clamp the tail stock.

The quill of tail stock is locked by operating the lock lever (18) when it is in use.

VI. LATHE ALIGNMENT

With the lathe installed and running, it is recommended to do a check on machine alignment before commencing work. Check alignment and levelling at regular periods to ensure continued accuracy.

VII. MAINTENANCE

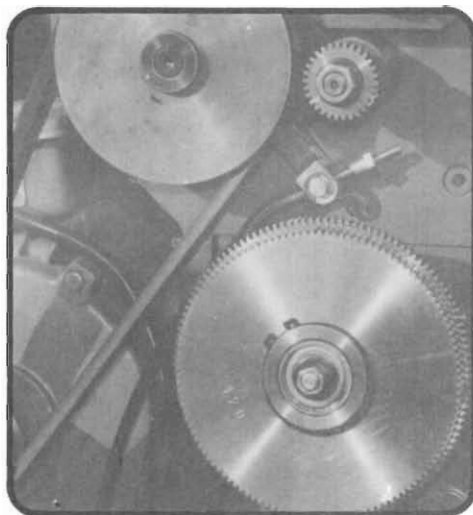


fig. 1

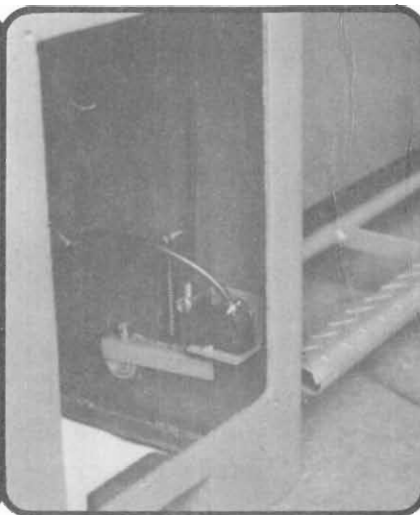


fig. 2



fig. 3

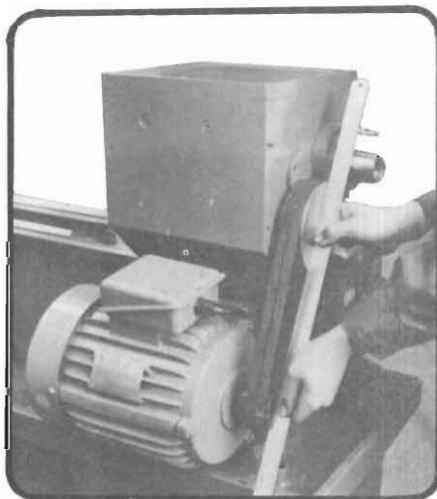


fig. 4

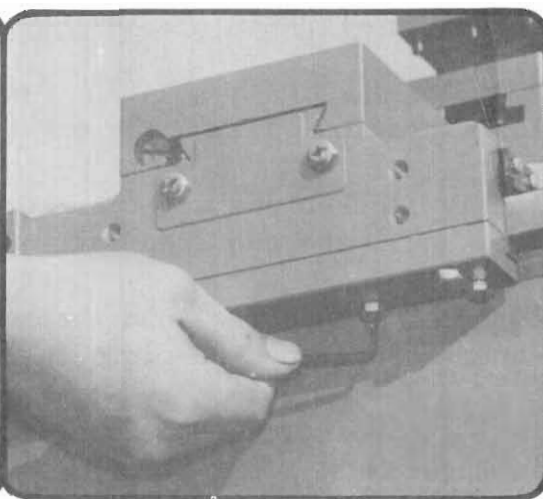


fig. 5

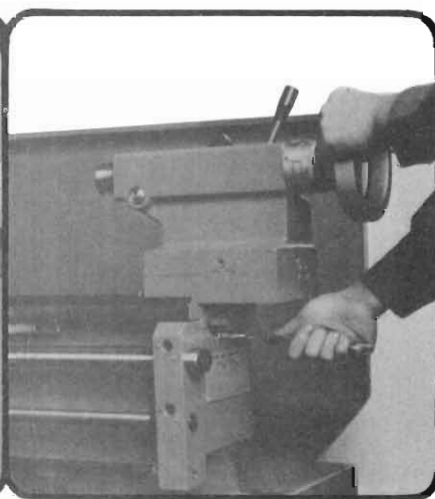


fig. 6

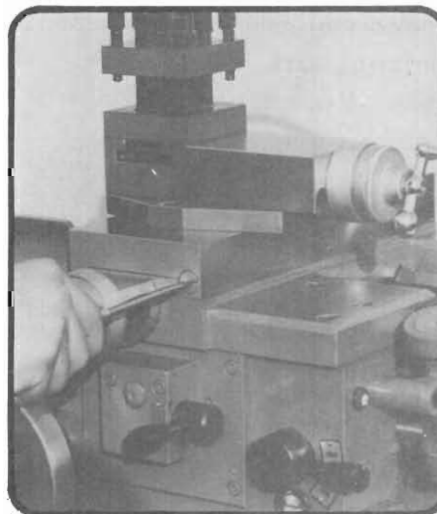


fig. 7

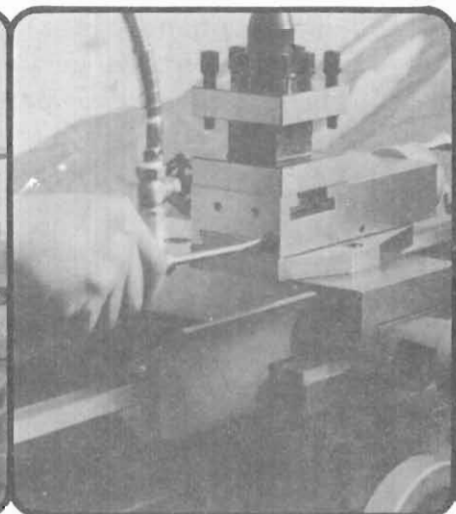


fig. 8

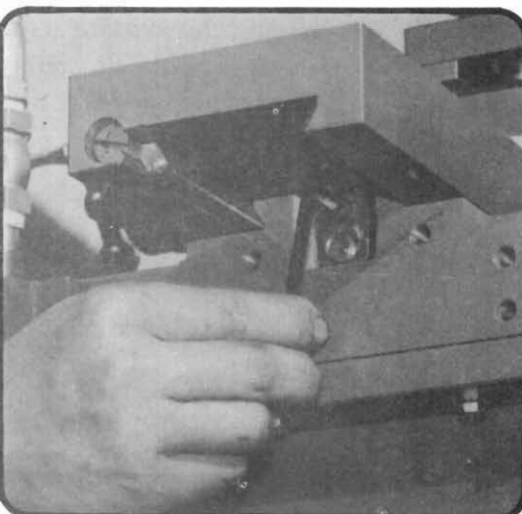


fig. 9

Brake adjustment (fig. 1 and 2)

Adjustment for wear on the brake shoe (which is mounted inside the headstock pulley) is made by the adjusting nut of the brake wire.

Take off the end cover firstly, then, loosen the hexagon nut of the clamping bolt and the clamping screw of the swing frame to lay the intermediate gear onto the clamping bolt.

Hold the screw end of the brake wire with right hand, and use left hand to depress the oscillating arm. Then, turn the adjusting nut in clockwise until required by the hand which held the screw end before. (Note: the turning of adjusting nut must be times of a half turn, i.e.; $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$ turns etc. in order to get the curve of the adjusting nut in mesh of the connecting pin.)

Release the oscillating arm and make sure the adjusting nut and the connecting pin are good in mesh.

A limit switch is mounted at inside of the left hand cabinet stand, (it can be seen by taking off the front cover) and a slight re-positioning of the limit switch may be necessary after adjustment for brake shoe wear.

NOTE: The function of the limit switch is to cut-out the motor drive when brake pedal is operated, i.e. the plunger should be depressed when the brake pedal is in its free position and released at the moment the brake pedal is operated.

Drive belts (Fig. 3 and 4)

Access to the vee belts is gained by removal of the rear splash guard (when fitted), end cover and motor pulley guard.

The drive motor is bolted to a slotted mounting plate which is vertically adjustable on the rear face of the bed. This is clamped by three hexagon head screws. Belt tension adjustment is achieved by operating the slotted head screw driver against the top edge of the mounting plate.

It is important that when making adjustments a straight edge be placed across the face of each pulley to ensure that correct alignment is maintained.

Saddle strip (fig. 5)

Wear on the rear saddle gib strip may be accommodated by adjustment of the socket head set screws.

The procedure for adjustment is to first take off the rear splash guard (when fitted), release the hexagon nuts and turn the socket head set screws slightly in clockwise and then re-clamp the hexagon nuts. Care should be taken to avoid over adjustment, a 45° turn at the socket head set screw approximately 0.125mm (.005") take up in the gib.

Tail stock bed clamp (fig. 6)

The angular lock position of the bed clamp **lever** is adjusted by means of the self-locking hexagon headed bolt located on the underside of the tailstock and between the bed ways.

Cross slide (fig. 7)

Wear on the taper-gib strip may be adjusted for by clockwise rotation of the slotted head screw on the front face of the cross slide. The procedure is to first slacken the similar screw at the rear then re-tighten this after adjustment to clamp the gib in its new position.

Compound rest (fig. 8)

It is the same procedure as cross slide. To take up for wear on the compound rest taper gib strip can adjust the slotted head screw on the tool post side of the compound rest by clockwise rotation. The procedure is to first slacken the similar screw at the opposite side then re-tighten this after adjustment to clamp the gib in its new position.

Cross slide nut (fig. 9)

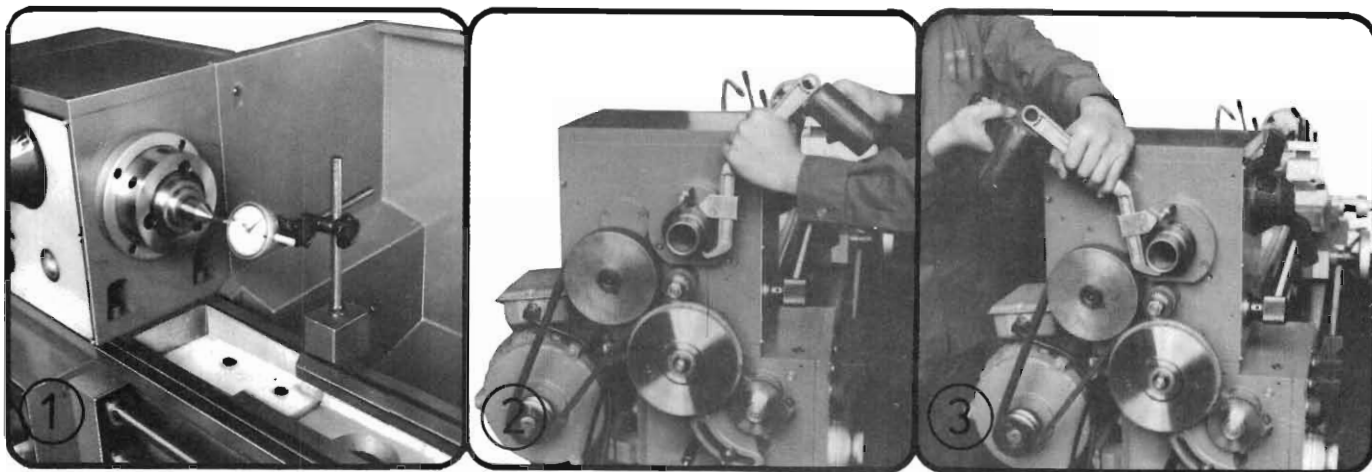
Provision is made for the elimination of back lash in the cross slide nut, the procedure for adjustment being as follows:

Take off the dust plate which is mounted on the rear face of saddle groove, turn the cross traverse handle by clockwise to move the cross feed nut until it reaches the end edge of the feed rod. Turn the socket head cap screw in a clockwise direction as required. Care should be taken to avoid over adjustment; a 45° turn at the socket head cap screw represents approximately 0.125mm (.005") taken up of back lash.

Electrical wiring

When wanting to check the electrical control circuit, cut off all electrical input power before opening the front cover of the left hand end of the cabinet.

The spindle bearing assembly



The spindle bearing assembly is carefully set before despatch of the Lathe from our Works which should ensure a high standard of performance without the need for further attention.

THE USER IS ADVISED NOT TO DISTURB THIS SETTING DURING NORMAL USE OF THE MACHINE AND TO CONSULT OUR SERVICE DEPARTMENT IN THE UNLIKELY EVENT OF A BEARING PROBLEM.

WHERE ADJUSTMENT IS UNDERTAKEN THEN IT IS ESSENTIAL THAT THE FOLLOWING PROCEDURES ARE STRICTLY COMPLIED WITH.

'A' TO CHECK FOR CORRECT SETTING:

Set up a dial test indicator having 0.0025mm(0.0001") divisions with the stylus registered on the nose-end of the headstock spindle. Preferably, locate the stylus centrally on a flat-nosed centre placed in the spindle bore. Fig. 1.

Take off the end drive cover and ROTATE THE SPINDLE by hand from the back of the headstock whilst pulling and pushing so that any end-float present can be read off the test indicator dial.

The correct setting of the bearings, with the headstock cold is when the end-float condition does not exceed two ten-thousandths of an inch (0.0002" or 0.0050mm) whilst THE SPINDLE REMAINS FREE TO BE TURNED BY HAND.

'B' TO RESTORE THE LIMITED END-FLOAT CONDITION:

Remove change gears swing frame. Release the locking nut Fig. 2 and push the spindle forward whilst rotating it in the hand to ensure that the bearing rollers are registering correctly on the inner ring thrust faces.

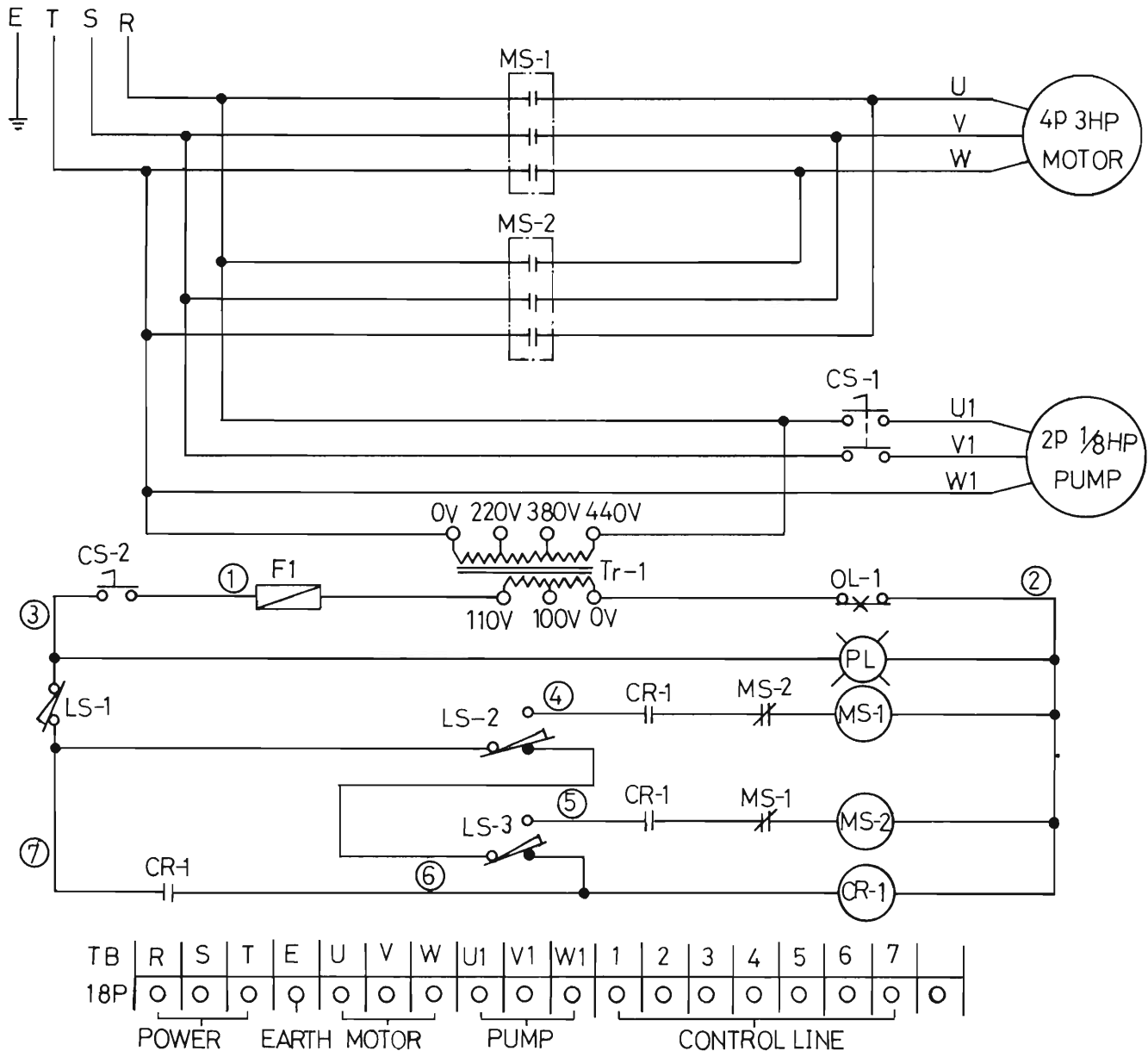
Whilst keeping watch on the indicator, tighten the locking nut using the special spanner provided Fig. 3 until the excessive end-float is taken up. Now ascertain the end-float by pushing and pulling upon the spindle and make any necessary slight adjustment required to provide the correct setting (0.0002" or 0.0050mm)

Tighten the locking nut and REPEAT PROCEDURE 'A' to be sure that no inadvertent alteration of the setting has taken place.

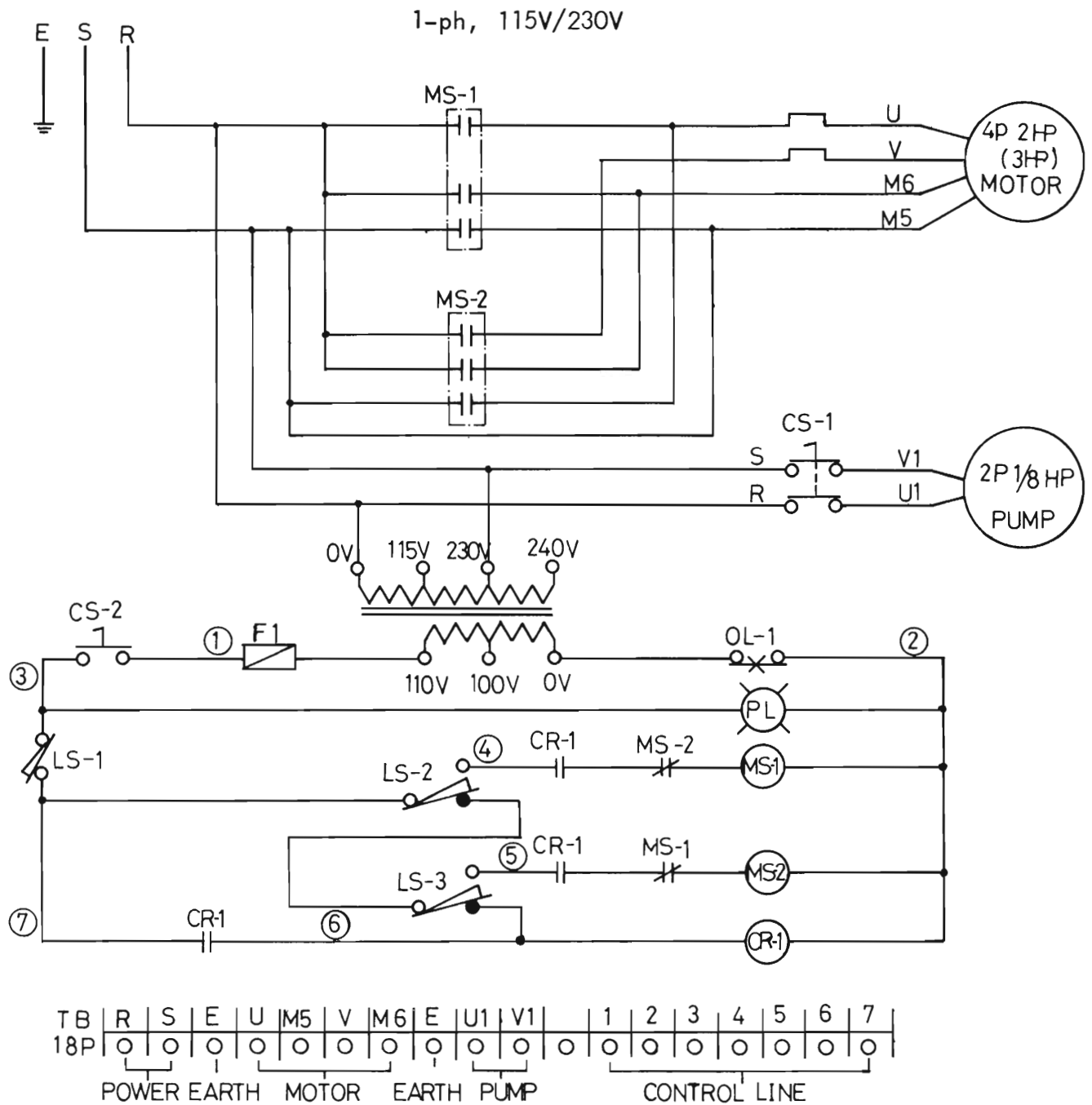
Refit the swing frame, change gears and end cover.

Electrical wiring diagram

3-ph, 220V/380V/440V



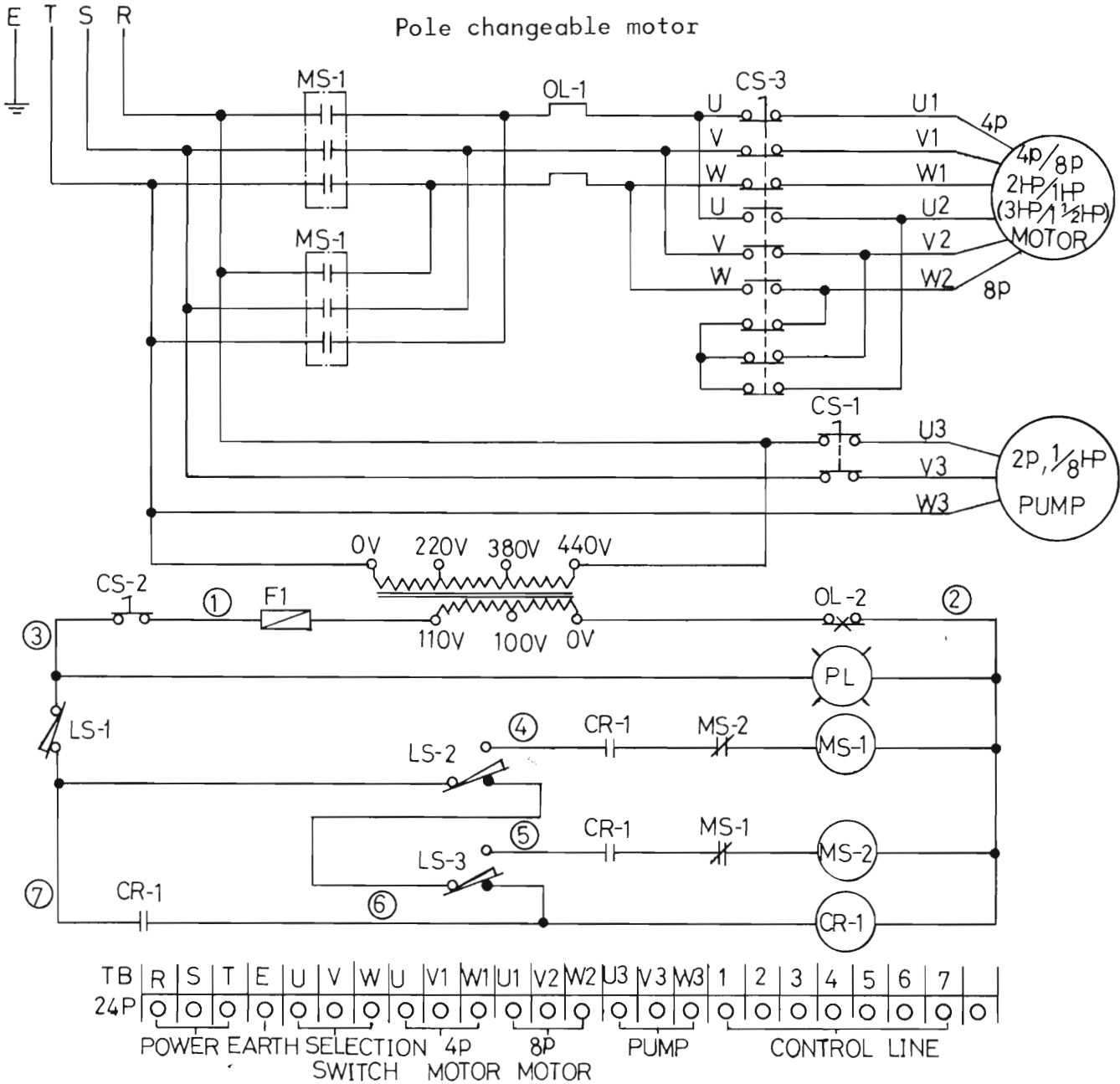
TYPE	SPECIFICATION	NAME
MS-1	220V 1.5KW C-16G 26A	Magnetic Contactor
MS-2	220V 1.5 KW C-16G 26A	Magnetic Contactor
OL-1	RH-11 220V 8-12A	Thermal Relay
Tr-1	VA100 60HZ/50HZ	Control Circuit
CS-1	6A 250VAC 2A	Coolant Pump Switch
CS-2	6A 250VAC	Main Switch
LS-1	15A 125,250 or 480VAC, Z-15GQ-B AM1307	Brake Limit Switch
LS-2	15A 125,250 or 480VAC, TM1704 (Z-15GW22B)	Forward Micro Switch
LS-3	15A 125,250 or 480VAC, TM1704 (Z-15GW22B)	Reverse Micro Switch
CR-1	C-11G AC1 20A	Control Relay
PL	100/110V	Pilot Lamp
F1	3A	Listed Fuse



TYPE	SPECIFICATION	NAME
MS-1	220V3.7KW C-25G 50A	Magnetic Contactor
MS-2	220V 3.7KW C-25G50A	Magnetic Contactor
OL-1	RH18/26 220V 21-31A	Thermal Relay
Tr-1	VA100 60HZ/50HZ	Control Circuit
CS-1	6A 250VAC 2A	Coolant Pump Switch
CS-2	6A 250VAC	Main Switch
LS-1	15A125,250or480VAC, Z-15GQ-B AM1307	Brake Limit Switch
LS-2	15A125,250or480VAC TM1704 (Z-15GW 22B)	Forward Micro Switch
LS-3	15A125 250or480VAC TM1704 (Z-15GW 22B)	Reverse Micro Switch
CR-1	C 11G AC1 20A	Control Relay
PL	100/110V	Pilot Lamp
F 1	3A	Listed Fuse

3-ph, 220V/380V/440V

Pole changeable motor



TYPE	SPECIFICATION	NAME
MS-1	220V 1.5KW C-16G 26A	Magnetic Contactor
MS-2	220V 1.5KW C-16G 26A	Magnetic Contactor
OL-1	RH11 220V 8-12A	Thermal Relay
OL-2	RH11 220V 8-12A	Thermal Relay
CS-1	6A 250VAC 2A	Coolant Pump Switch
CS-2	6A 250VAC	Main Switch
CS-3	6A 250VAC 6A3B	Selection Switch
LS-1	15A125,250or480VAC Z-15GQ-BAM1307	Brack Limit Switch
LS-2	15A125,250or480VAC TM1704(Z-15GW 22B)	Forward Micro Switch
LS-3	15A125,250or480VAC TM1704(Z-15GW22B)	Reverse Micro Switch
Tr-1	VA100 60HZ/50HZ	Control Circuit
F1	3A	Listed Fuse
CR-1	C-11G AC1 20A	Control Relay
PL	100/110V	Pilot Lamp

PARTS SECTION

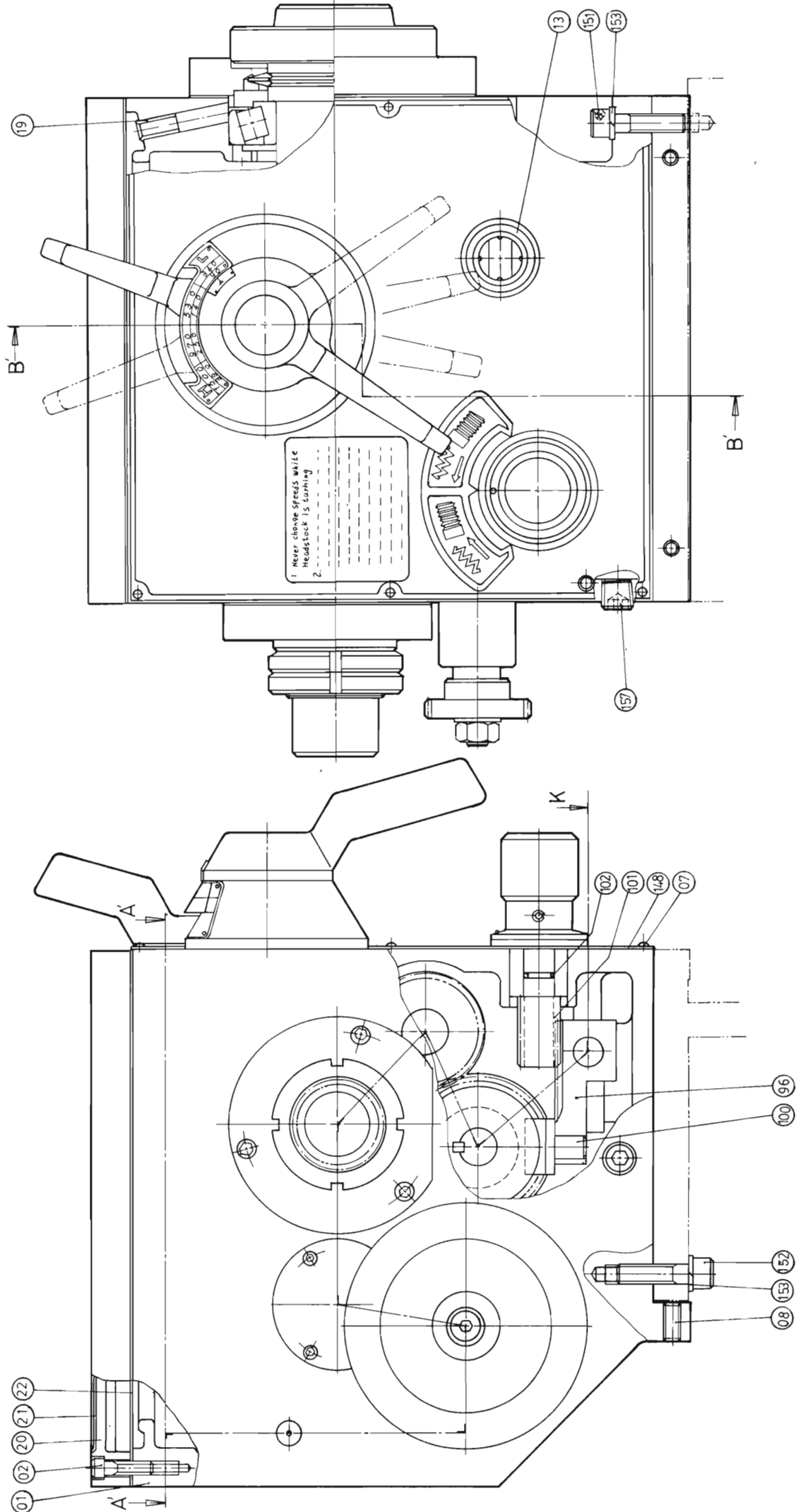
When ordering

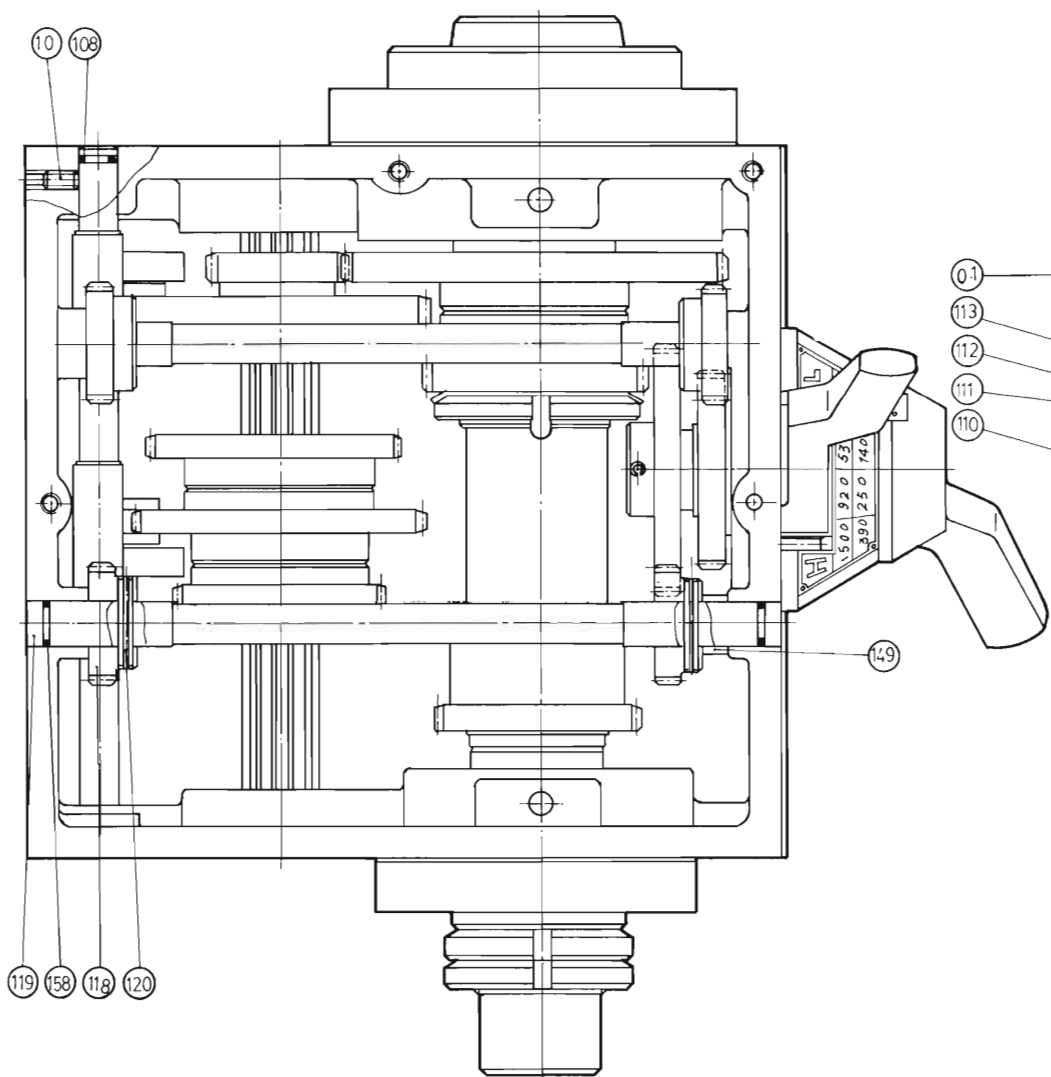
1. Quote componet order number and description against each parts illustration for all componet parts required.
2. Some parts are standard items which can generally be purchased locally; e.g. nut, bolts, screws, washers, pins, and bearings.
3. Always quote the lathe serial number in all parts order or technical enquiries. This number is stamped in the plate which is fitted on the front of the end cover.

PARTS MANUAL

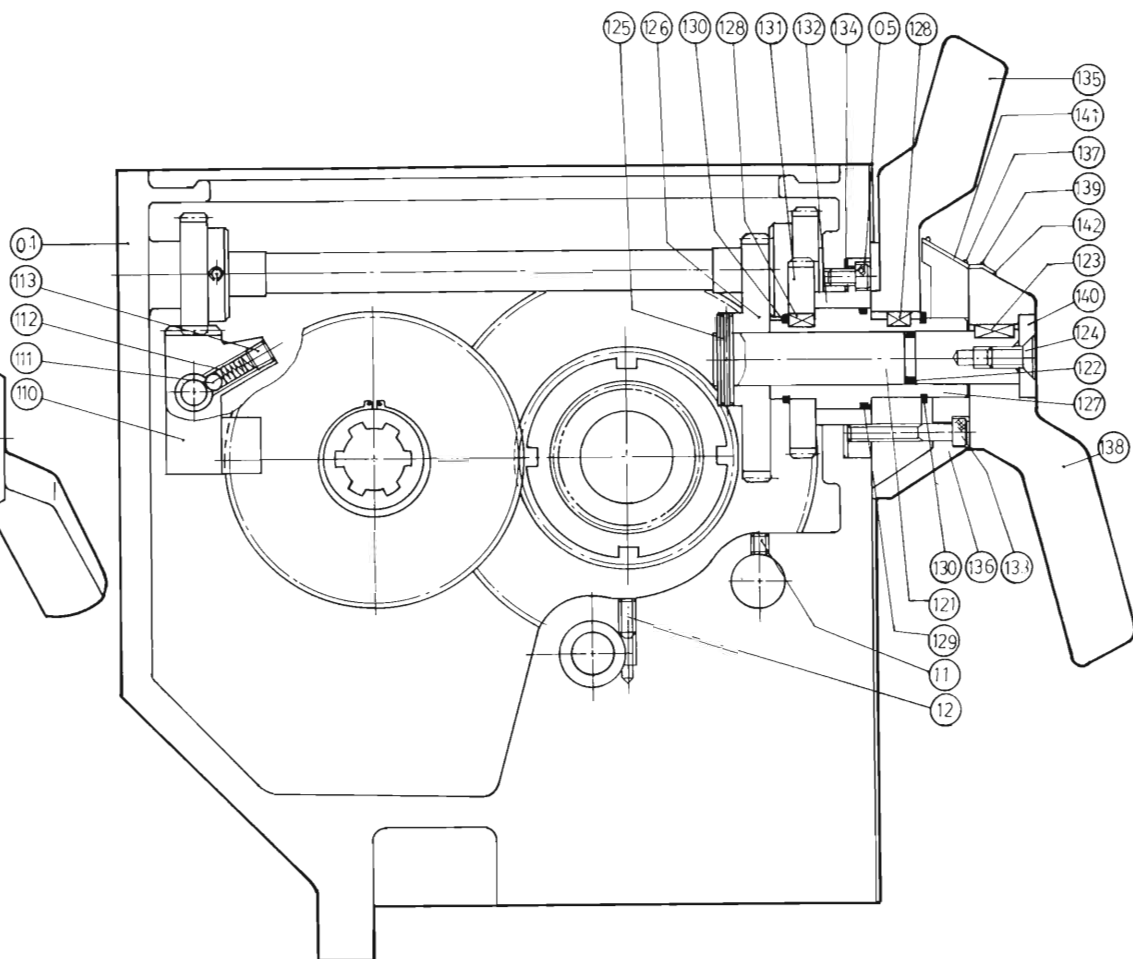
CONTENTS	Page No.
1. Head stock	37
2. Gear box	42
3. Carriage	44
4. Apron	48
5. Tail stock	52
6. Bed ass'y (bed, stand and chip tray)	54
7. Bed ass'y (change gears and guard)	56
8. Bed ass'y (shaft, bracket and switch linkage)	58
9. Bed ass'y (brake unit)	60
10. Bed ass'y (drive unit)	62

10 - 01 (1/4)
Head stock





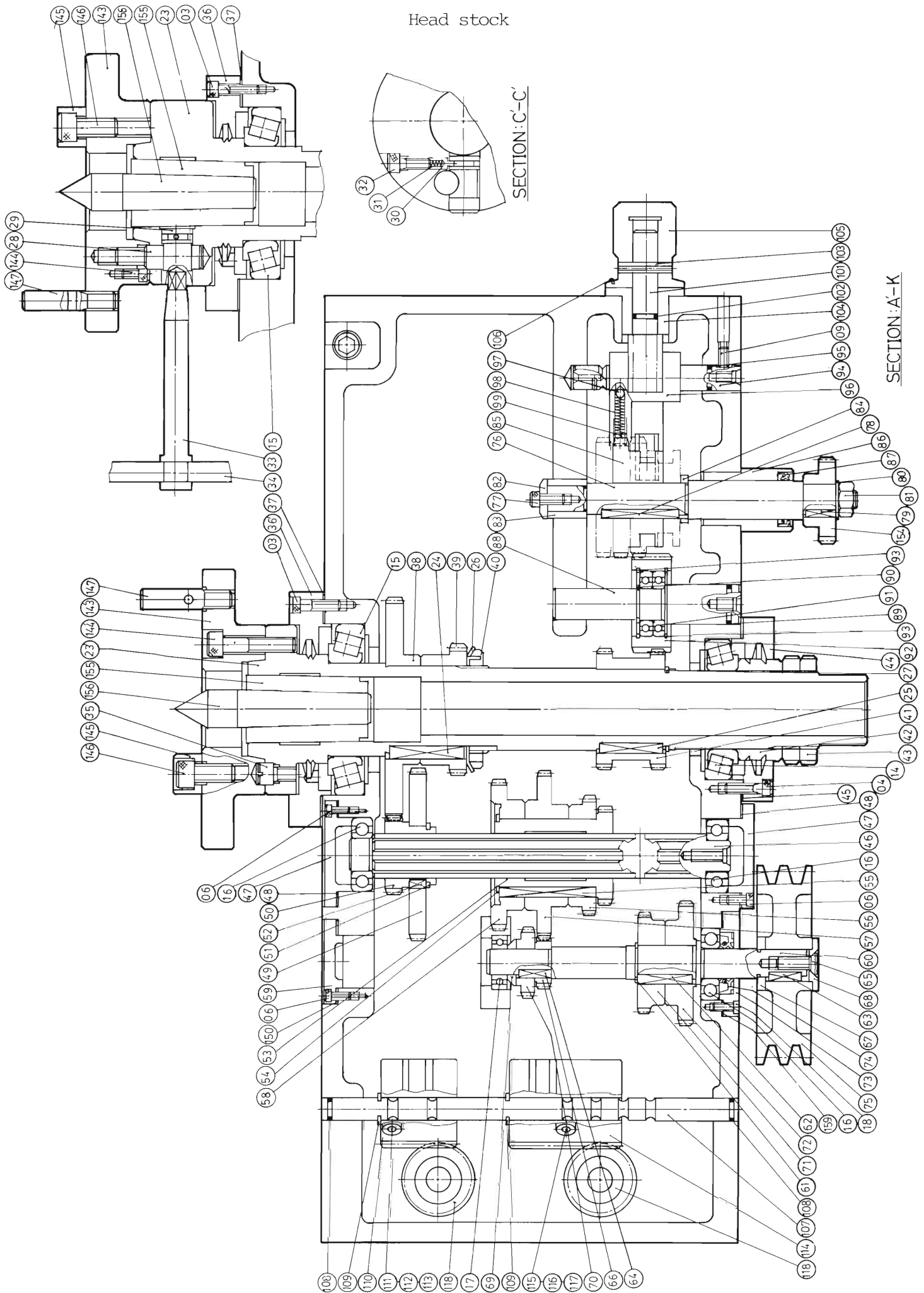
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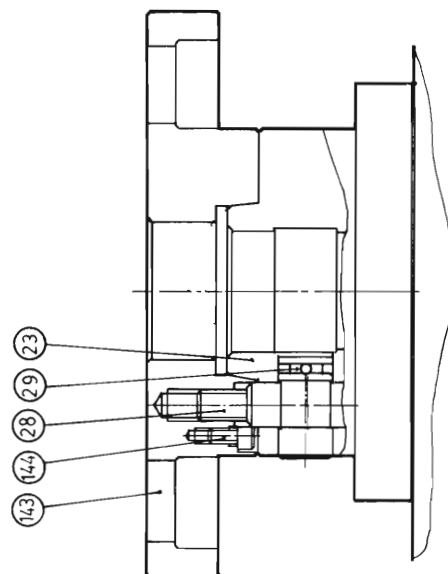
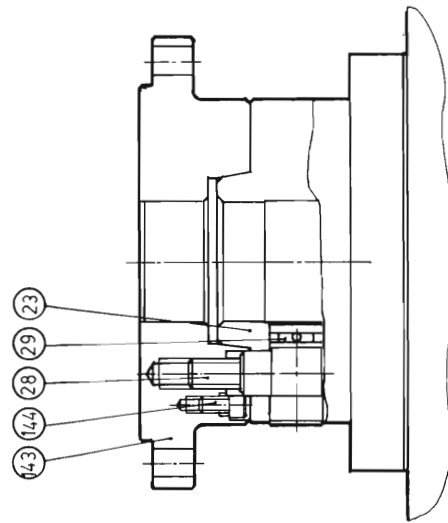
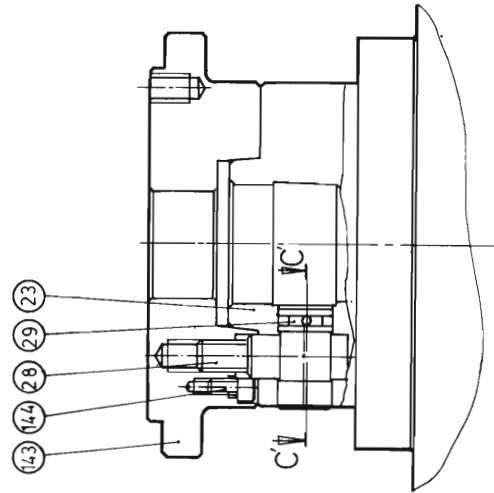
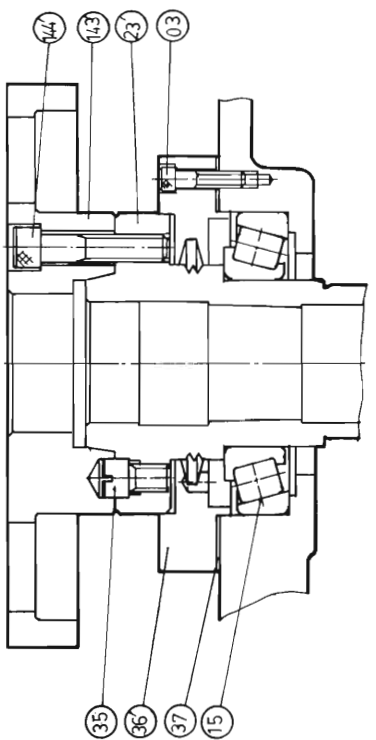
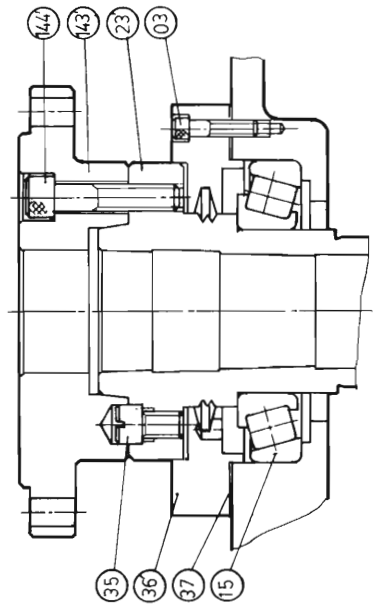
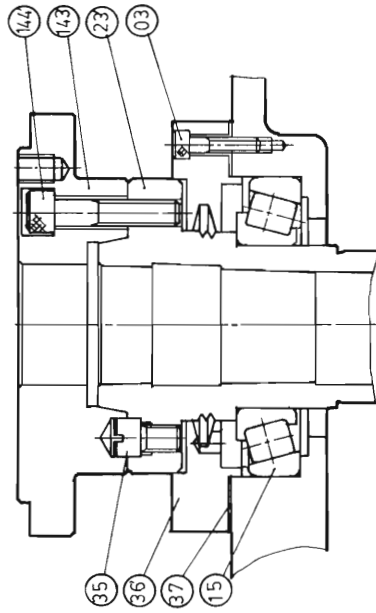
SECTION: B'-B'

10 - 01 (2/4)
Head stock

Head stock

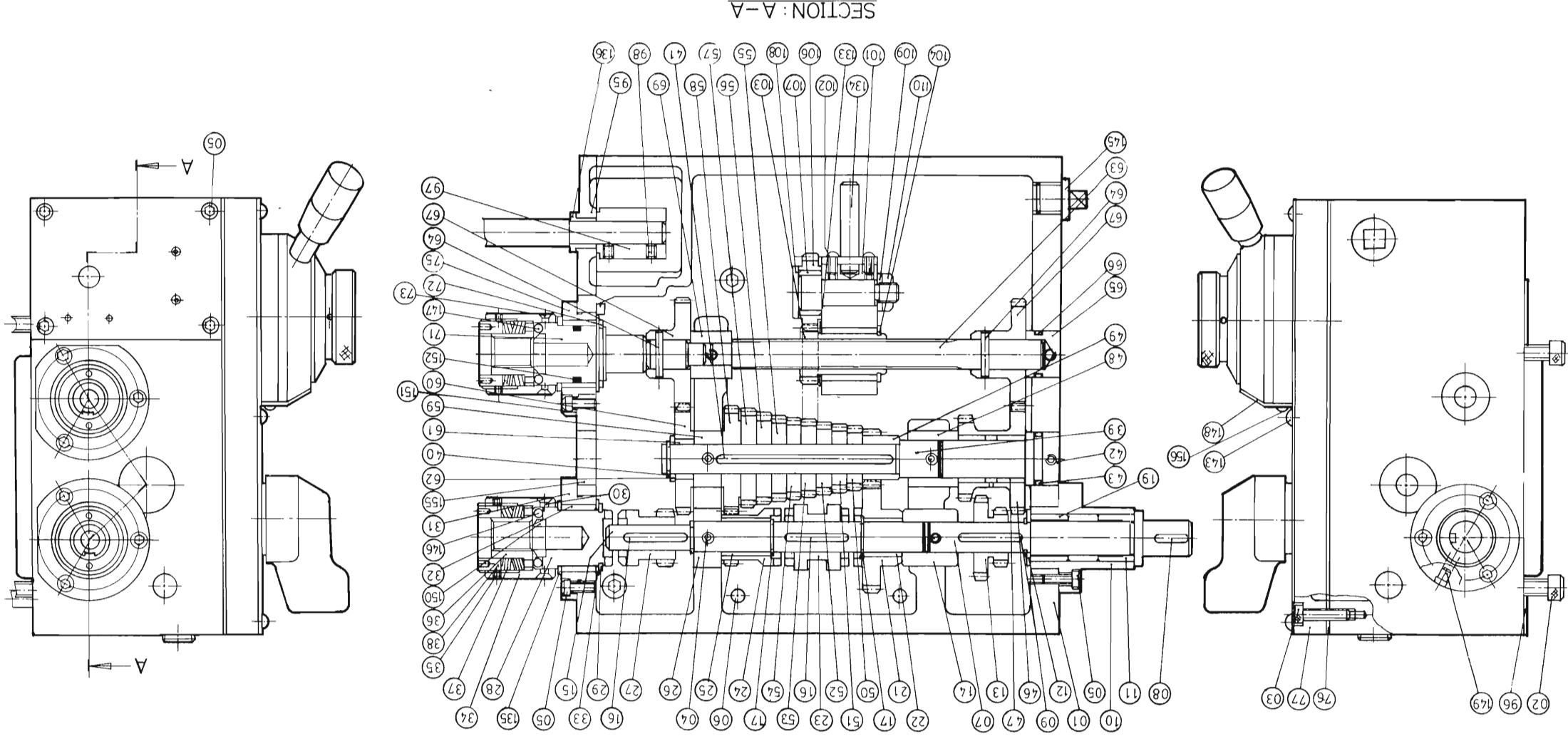


Head stock

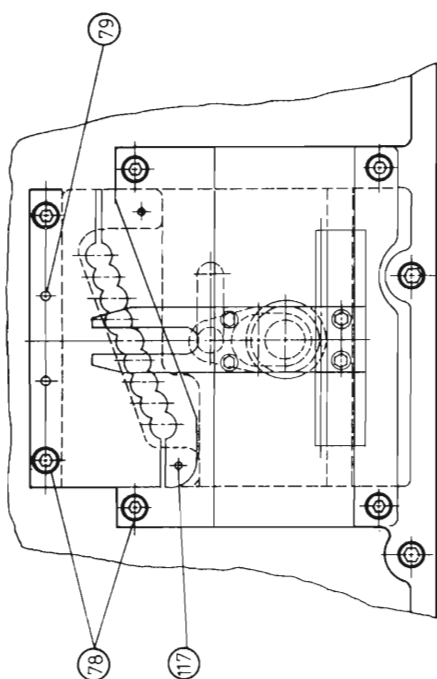


Head stock

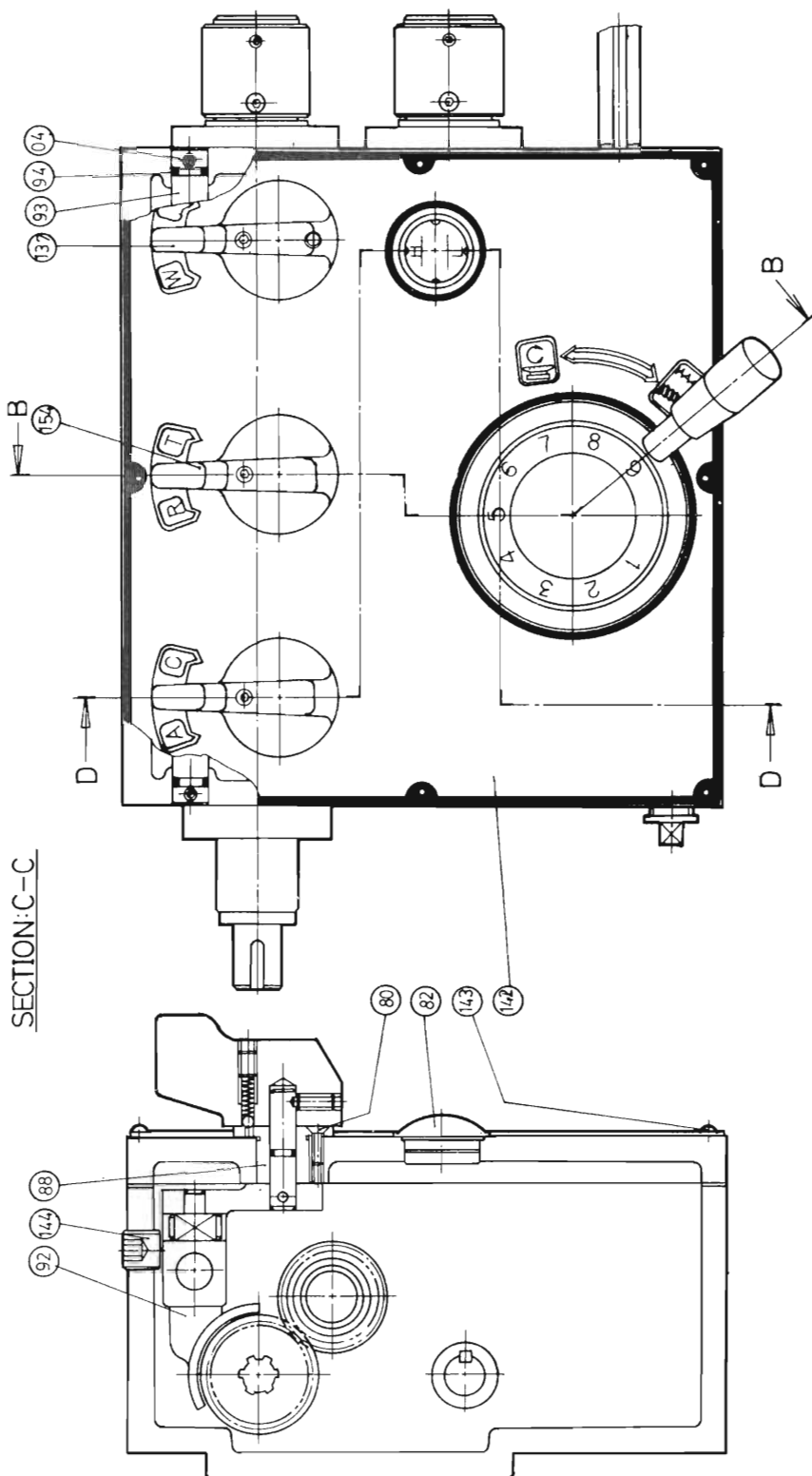
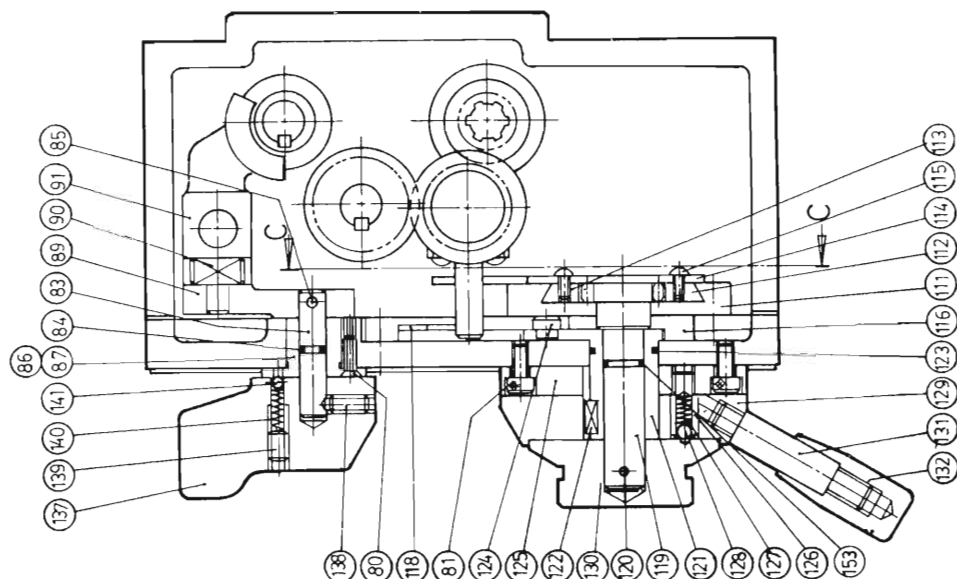
Ref. Parts No.	Description	No.	Ref. Parts No.	Description	No.
No.		OFF/MC	No.		OFF/MC
1.	10-0101-01	Head Stock Casting.....1	86.	10-0145-00	Bracket1
2.	10-0101-01-1	Socket Head Cap Screw(M6XP1.0X25L)....8	87.	10-0145-00-1	Oil Seal(TC 253509).....1
3.	10-0101-01-2	Socket Head Cap Screw(M6XP1.0X25L)....4	88.	10-0146-01	Shaft.....1
4.	10-0101-01-3	Socket Head Cap Screw(M6XP1.0X25L)....3	89.	10-0146-01-1	O-Ring(P21).....1
5.	10-0101-01-4	Socket Head Cap Screw(M6XP1.0X10L)....3	90.	10-0146-01-2	Retaining Ring (External, STW#20).....1
6.	10-0101-01-5	Socket Head Cap Screw(M4XP0.7X12L)....9	91.	10-0146-01-3	Deep Groove Ball Bearing(#16004).....2
7.	10-0101-01-6	Cross Recessed Head Screw(M3XP0.5X5L)....6	92.	10-0147-00	Gear(M1.5X40T).....1
8.	10-0101-01-7	Socket Head Set Screw(M8XP1.25X20L)....2	93.	10-0147-00-1	Retaining Ring (Internal, RTW#42).....2
9.	10-0101-01-8	Socket Head Set Screw(M6XP1.0X12L)....1	94.	10-0148-01	Shifting Rod.....1
10.	10-0101-01-9	Socket Head Set Screw(M6XP1.0X12L)....1	95.	10-0148-01-1	O-Ring(P12).....1
11.	10-0101-01-10	Socket Head Set Screw(M6XP1.0X8L)....1	96.	10-0150-00	Rack.....1
12.	10-0101-01-11	Socket Head Set Screw(M6XP1.0X14L)....1	97.	10-0150-00-1	Steel Ball(φ1/4").....1
13.	10-0101-01-12	Oil Sight Glass (φ30)1	98.	10-0150-00-2	Compression Spring.....1
14.	10-0101-01-13	Taper Roller Bearing(Rear, #30210)....1	99.	10-0150-00-3	Socket Head Set Screw(M8XP1.25X16L)....1
15.	10-0101-01-14	Taper Roller Bearing(Front, #30212)....1	100.	10-0151-00	Shifting Block.....1
16.	10-0101-01-15	Deep Groove Ball Bearing(#6204).....3	101.	10-0152-00	Pinion Shaft(M1.5X13T).....1
17.	10-0101-01-16	Deep Groove Ball Bearing(#6005).....1	102.	10-0152-00-1	O-ring(P12).....1
18.	10-0101-01-17	Socket Head Cap Screw(M6XP1.0X12L)....3	103.	10-0152-00-2	Spring Pin(φ6X35L).....1
19.	10-0101-01-18	Copper Pipe(3/8"X22L).....2	104.	10-0153-00	Bush.....1
20.	10-0102-01	Head Stock Cover1	105.	10-0154-00	Handle.....1
21.	10-0102-01-1	Rubber Pad1	106.	10-0154-00-01	Button Head Rivet(φ2X4L).....1
22.	10-0103-01	Packing1	107.	10-0155-00	Shifting Rod.....1
23'	10-0104A-01	Spindle(A2-4 Nose)1	108.	10-0155-00-1	O-Ring(P10A).....2
23.	10-0104B-01	Spindle(D1-4 Nose)1	109.	10-0155-00-2	Retaining Ring(External, STW#14).....2
24.	10-0104A/B-01-1	Double Round Head Key(8X8X48L).....1	110.	10-0156-00	Rack Fork.....1
25.	10-0104A/B-01-2	Double Round Head Key(6X6X40L).....1	111.	10-0156-00-1	Steel Ball (φ1/4").....1
26.	10-0104A/B-01-3	Lock Washer(M55).....1	112.	10-0156-00-2	Compression Spring(φ6X16L).....1
27.	10-0104A/B-01-4	Retaining Ring(External, STW#50).....1	113.	10-0156-00-3	Socket Head Set Screw(M8XP1.25X8L).....1
28.	10-0105-00	Cam Lock Stud.....3	114.	10-0157-00	Rack Fork.....1
29.	10-0106-00	Cam3	115.	10-0157-00-1	Steel Ball(φ1/4").....1
30.	10-0107-00	Detent Plunger.....3	116.	10-0157-00-2	Compression Spring(φ6X16L).....1
31.	10-0108-00	Detent Spring.....3	117.	10-0157-00-3	Socket Head Set Screw(M8XP1.25X8L).....1
32.	10-0109-00	Detent Screw.....3	118.	10-0158-00	Gear(M1.5X28T).....4
33.	10-0110-00	Cam Drive Key(For D1-4 Spindle only)....1	119.	10-0159-01	Shaft.....2
34.	10-0111-00	Key Grip(For D1-4 Spindle only).....1	120.	10-0159-01-1	Spring Pin(φ5X30L).....4
35.	10-0112-00	Position Setting Pin(For A2-4 Spindle)....1	121.	10-0160-01	Shaft.....1
36'	10-0113A-00	Bearing Cover(Front, A2-4 Spindle)....1	122.	10-0160-01-1	O-Ring(P16).....1
36.	10-0113B-00	Bearing Cover(Front, D1-4 Spindle)....1	123.	10-0160-01-2	Double Round Head Key(5X5X15L).....1
37.	10-0114-00	Packing1	124.	10-0160-01-3	Counter Sunk Flat Screw(M8XP1.25X15L)....1
38.	10-0115-00	Gear(M1.75X80T).....1	125.	10-0160-01-4	Spring Pin (φ5X30L).....1
39.	10-0116-00	Gear(M1.75X46T).....1	126.	10-0161-00	Gear(M1.5X60T).....1
40.	10-0117-00	Gear Locking Nut.....1	127.	10-0162-01	Change Speed Sleeve.....1
41.	10-0118-00	Gear (M1.5X50T).....1	128.	10-0162-01-1	Double Round Head Key(5X5X9L).....2
42.	10-0119-00	Spacer.....1	129.	10-0162-01-2	O-Rig(W2.0Xδ33.5).....1
43.	10-0120-00	Bearing Locking Nut.....2	130.	10-0162-01-3	Retaining Ring (External, STW#30).....2
44.	10-0121-00	Bearing Cover(Rear).....1	131.	10-0163-00	Gear(M1.5X48T).....1
45.	10-0122-00	Packing.....1	132.	10-0164-00	Bracket.....1
46.	10-0123-01	Spline Shaft.....1	133.	10-0164-00-1	Socket Head Cap Screw(M6XP1.0X45L).....2
47.	10-0124-01	Bearing Cover.....2	134.	10-0182-00	Packing.....1
48.	10-0125-00	Packing.....2	135.	10-0166-01	Speed Change Lever.....1
49.	10-0126-00	Gear(M1.75X62T).....1	136.	10-0169-00	Cover.....1
50.	10-0127-00	Gear(M1.75X28T).....1	137.	10-0169-00-1	Button Head Rivet(φ2X4L).....4
51.	10-0127-00-1	Retaining Ring(External, STW#38).....1	138.	10-0170-01	Speed Change Lever.....1
52.	10-0127-00-2	Double Round Head Key(6X6X11L).....1	139.	10-0170-01-1	Button Head Rivet(φ2X4L).....1
53.	10-0128-00	Gear(M1.5X40T).....1	140.	17-0414-00	Washer.....1
54.	10-0128-00-1	Retaining Ring(External, STW#48).....1	141.	10-0171A-00	Reading Speed Chart(8 Nos,90-1500rpm)....1
55.	10-0128-00-2	Double Round Head Key(6X6X61L).....1	141.	10-0171B-00	Reading Speed Chart(16 Nos,50-1560rpm)....1
56.	10-0129-00	Gear(M1.5X50T).....1	141.	10-0171C-00	Reading Speed Chart(16 Nos,60-2000rpm)....1
57.	10-0130-00	Gear(M1.5X71T).....1	142.	10-0172-00	Indicator.....1
58.	10-0131-00	Gear(M1.5X63T).....1	143.	10-0173-00	Chuck Back Plate(D1-4,6" 3-Jaw,Optional)
59.	10-0132-01	Cover.....1	143.	10-0174A-00	Chuck Back Plate(D1-4,6" 4-Jaw,Optional)
60.	10-0133A-01	Input Shaft.....1	143.	10-0174B-00	Chuck Back Plate(D1-4,8" 4-Jaw,Optional)
61.	10-0133A-01-1	Retaining Ring(External, STW#22).....1	143.	10-0177-00	Face Plate(300mm, D1-4, Optional).....1
62.	10-0133A-01-2	Double Round Head Key(6X6X35L).....1	143.	10-0183-00	Face Plate(D1-4, 10", Optional).....1
63.	10-0133A-01-3	Double Round Head Key(5X5X22L).....1	143.	17-0175A-00	Driving Plate (D1-4).....1
64.	10-0133A-01-4	Double Round Head Key(6X6X21L).....1	144.	17-0175A-00-1	Socket Head Cap Screw(1/4"-20UNC).....3
65.	10-0133A-01-5	Counter Sunk Flat Screw(M8XP1.25X25L)....1	143'	10-0175-00	Chuck Back Plate(A2-4,6" 3-Jaw,Optional)
66.	10-0133B-01	Gear(M1.5X21T).....1	143'	10-0176A-00	Chuck Back Plate(A2-4,6" 4-Jaw,Optional)
67.	10-0133C-01	Spacer.....1	143'	10-0176B-00	Chuck Back Plate(A2-4,8" 4-Jaw,Optional)
68.	10-0133D-01	Washer.....1	143'	10-0178-00	Face Plate(300mm,A2-4, Optional).....1
69.	10-0133E-01	Spacer.....1	143'	10-0184-00	Face Plate(A2-4, 10", Optional).....1
70.	10-0134-01	Gear(M1.5X29T).....1	143'	17-0175B-00	Driving Plate(A2-4).....1
71.	10-0135-00	Gear(M1.5X42T).....1	144'	17-0175B-00-1	Socket Head Cap Screw(M10XP1.5X56L)....4
72.	10-0136-00	Gear(M1.5X52T).....1	145.	17-0176-00	Driving Collar.....1
73.	10-0137-02	Bearing Cover(Normal use).....1	146.	17-0176-00-1	Socket Head Cap Screw(M12XP1.75X25L)....1
73'	10-0137B-00	Bearing Cover(For M/C with Brake only)....1	147.	17-0177-00	Driving Pin.....1
74.	10-0137-02-1	Oil Seal(TC 204007).....1	148.	10-0179B-01	Name Plate.....1
75.	10-0138-01	Pulley(Normal use).....1	149.	10-0180-00	Spacer.....1
75'	10-0138B-00	Pulley(For M/C with Brake only).....1	150.	10-0181-00	Packing.....1
76.	10-0140-00	Output shaft.....1	151.	10-0601-00-1	Socket Head Cap Screw(M10XP1.5X40L)....2
77.	10-0140-00-1	Socket Head Cap Screw(M6XP1.0X15L)....1	152.	10-0601-00-2	Socket Head Cap Screw(M10XP1.5X40L)....2
78.	10-0140-00-2	Double Round Head Key(6X6X50L).....1	153.	10-0601-00-3	Spring Washer(M10).....4
79.	10-0140-00-3	Double Round Head Key(5X5X18L).....1	154.	10-0607-00	Gear.....1
80.	10-0140-00-4	Washer(M12).....1	155.	11-0157B-00	Center Sleeve(MT#5/3).....1
81.	10-0140-00-5	Hexagon Nuts(M12XP1.75).....1	156.	11-0158B-00	Center(MT#3).....1
82.	10-0141-00	Washer.....1	157.	17-0273 -00	Drain Plug.....1
83.	10-0142-00	Bush.....1	158.	10-0159-01-2	O-Ring(P12).....4
84.	10-0143-01	Spacer.....1	159.	10-0185-00	Packing.....1
85.	10-0144-00	Gear(M1.5X50T).....1			



10 - 02
Gear box



SECTION: C-C



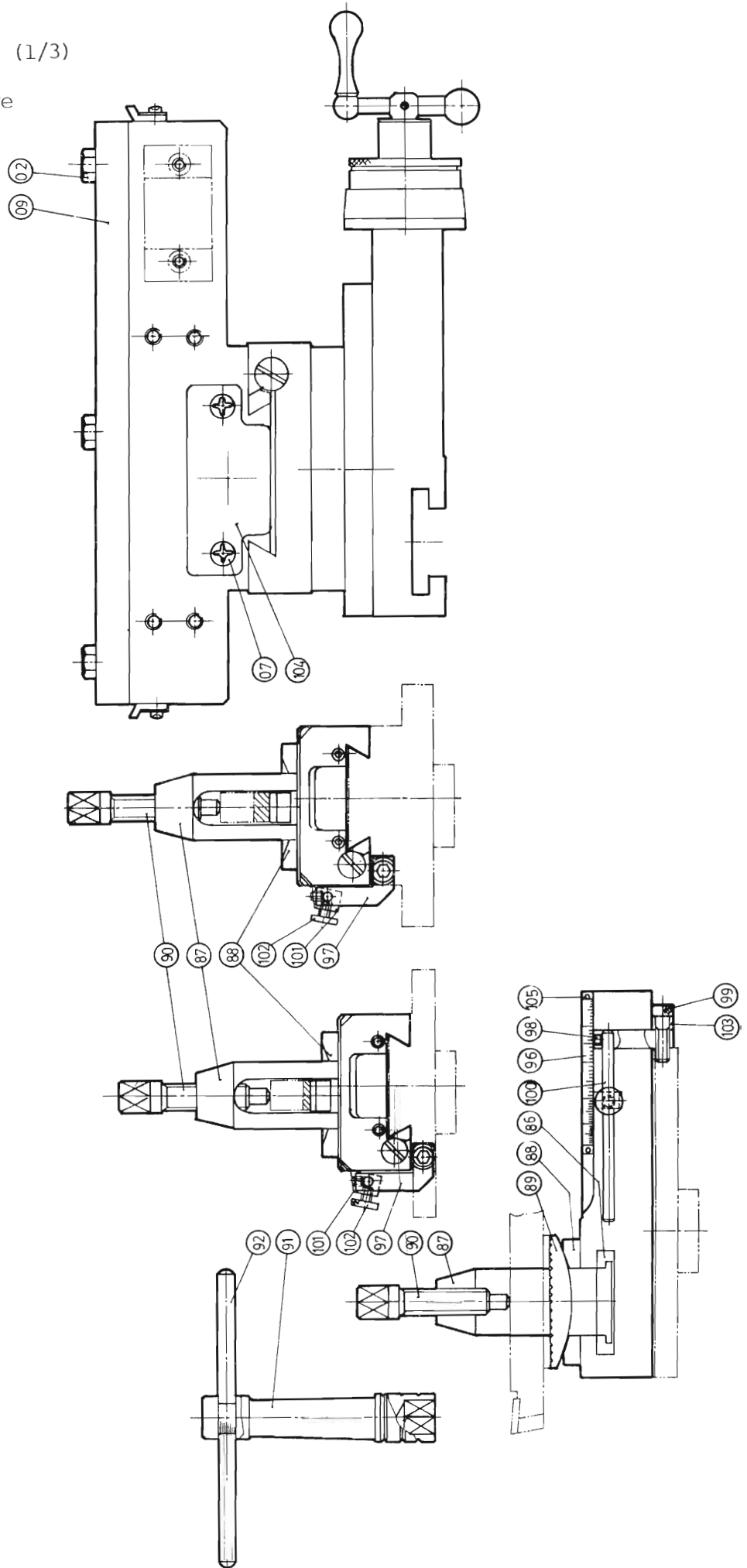
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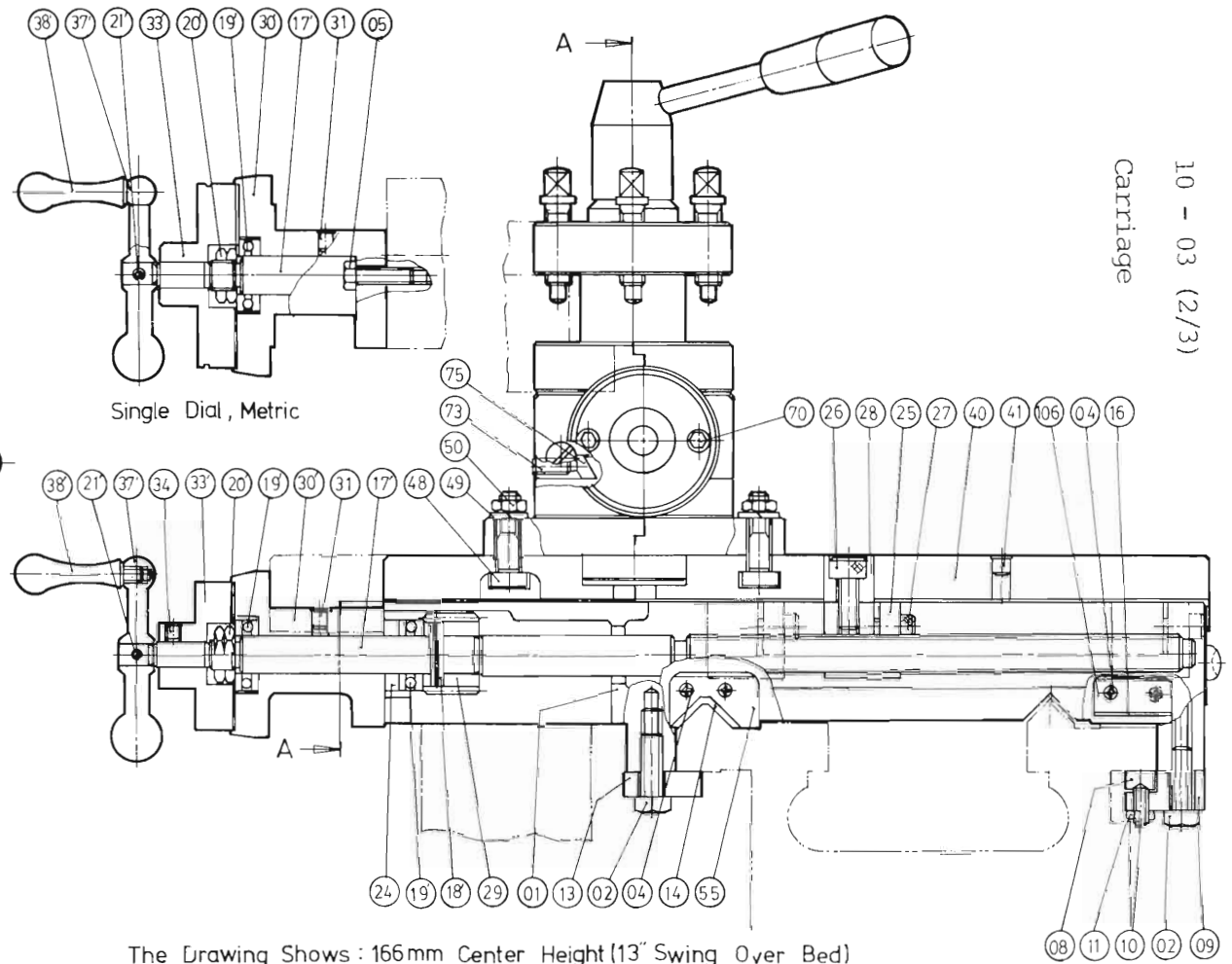
Gear box

Ref. No.	Parts No.	Description	No. OFF/MC	Ref. No.	Parts No.	Description	No. OFF/MC
1.	10-0201-00	Gear Box Casting	1	82.	10-0245-00-5	Oil Sight Glass(φ30)	1
2.	10-0201-00-1	Socket Head Cap Screw(M8XP1.25X30L) ...	4	83.	10-0246-00	Shaft	3
3.	10-0201-00-2	Socket Head Cap Screw(M6XP1.0X25L)	8	84.	10-0246-00-1	O-Ring(P7)	3
4.	10-0201-00-3	Socket Head Set Screw(M6XP1.0X10L)	9	85.	10-0246-00-2	Spring Pin(φ4X30L)	3
5.	10-0201-00-4	Socket Head Cap Screw(M5XP0.8X15L)	13	86.	10-0247A-00	Speed Changing Sleeve	1
6.	10-0201-00-5	Taper Pin(φ4X19L)	2	87.	10-0247B-00	Speed Changing Sleeve	1
7.	10-0202-02	Input Shaft	1	88.	10-0247C-00	Speed Changing Sleeve	1
8.	10-0202-02-1	Double Round Head Key (5X5X20L)	1	89.	10-0248-00	Speed Changing Arm	3
9.	10-0202-02-2	Double Round Head Key (5X5X35L)	1	90.	10-0249-00	Shifting Block	3
10.	10-0203A-01	Bracket	1	91.	10-0250-00	Shifting Fork	2
11.	10-0203B-01	Oilite Bush	2	92.	10-0251-00	Shifting Fork	1
12.	10-0204-00	Spacer	1	93.	10-0252-00	Shifting Rod	1
13.	10-0205-01	Gear (M1.75X16T, 24T)	1	94.	10-0252-00-1	O-Ring(P10)	2
14.	10-0206-01	Bush	1	95.	10-0253-00	Switch Cover	1
15.	10-0207A-01	Shaft	1	96.	10-0282-00	Packing	1
16.	10-0207A-00-1	Double Round Head Key (5X5X35L)	2	97.	14-0611-00	Cam	1
17.	10-0207A-00-2	Retaining Ring(External, STW#16)	4	98.	14-0611-00-1	Socket Head Set Screw(M5XP0.8X8L)	2
19.	10-0203C-00	Oilite Bush	1	101.	10-0254-01	Gear Bracket	1
21.	10-0209A-01	Clutch Gear (M1.75X32T)	1	102.	10-0254-01-1	Socket Button Head Screw(M5XP0.8X10L) ...	3
22.	10-0209B-00	Oilite Bush	1	103.	10-0255-00	Spline Gear (M1.75X16T)	1
23.	10-0210-00	Clutch	1	104.	10-0255-00-1	E-Ring(ETW#19)	1
24.	10-0211A-00	Clutch Gear (M1.75X16T)	1	106.	10-0257-01	Idle Gear (M1.75X16T)	1
25.	10-0211B-00	Oilite Bush	1	107.	10-0258-00	Oilite Bush	1
26.	10-0212-01	Bush	1	108.	10-0259-00	Shaft	1
27.	10-0213-00	Clutch Gear	1	109.	10-0259-00-1	Washer (M10)	1
28.	10-0214-01	Clutch Shaft	1	110.	10-0259-00-2	Hexagon Nut (M10XP1.25)	1
29.	10-0214-01-1	Retaining Ring(External, STW#30)	1	111.	10-0260-00	Rack Slide	1
30.	10-0214-01-3	Counter Sunk Flat Screw (M4XP0.7X10L) ..	2	112.	10-0261-00	Rack	1
31.	10-0215A-00	Bracket	1	113.	10-0262-00	Guide Piece	1
32.	10-0215B-00	Oilite Bush	2	114.	10-0263-00	Speed Changing Fork	1
33.	10-0216-00	Spacer	2	115.	10-0263-00-1	Socket Button Head Screw(M4XP0.7X8 L) ...	4
34.	17-0234-00	Sleeve	2	116.	10-0264-01	Engaging Base	1
35.	17-0234-00-1	Socket Head Set Screw(M4XP0.7X4L)	4	117.	10-0264-01-1	Socket Button Head Screw(M4XP0.7X5L) ...	2
36.	17-0236-00	Overload Sleeve	2	118.	10-0265-01	Depress Plate	1
37.	10-0286-00	Spring Leaf	36	119.	10-0266-00	Speed Changing Shaft	1
38.	17-0238-00	Lock Nut	2	120.	10-0266-00-1	Spring Pin (φ4X45L)	1
39.	10-0217-01	Shaft	1	121.	10-0267-00	Engaging Arm	1
40.	10-0217-01-1	E-Ring(ETW#15)	1	122.	10-0267-00-1	Double Round Head Key (5X5X12L)	1
41.	10-0217-01-2	Double Round Head Key (5X5X90L)	1	123.	10-0267-00-2	O-Ring(P21)	1
42.	10-0287-00	Shaft	1	124.	10-0268-00	Engaging Pin	1
43.	10-0287-00-1	O-Ring(G25)	1	125.	10-0269-00	Speed Changing Sleeve	1
46.	10-0221A-00	Gear (M1.75X24T, 32T)	1	126.	10-0270-00	Setting Bolt	1
47.	10-0221B-00	Oilite Bush	2	127.	10-0270-00-1	Compression Spring (φ1Xφ6X20L)	1
48.	10-0222-01	Bush	1	128.	10-0270-00-2	Steel Ball (φ6)	1
49.	10-0223-00	Gear (M1.75X16T)	1	129.	10-0271-00	Clamping Handle	1
50.	10-0224-00	Gear (M1.75X18T)	1	130.	10-0272-00	Selecting Dial	1
51.	10-0225-00	Gear (M1.75X19T)	1	131.	10-0273-00	Selecting Lever	1
52.	10-0226-00	Gear (M1.75X20T)	1	132.	10-0273-00-1	Knob	1
53.	10-0227-00	Gear (M1.75X22T)	1	133.	10-0274-00	Spacer	1
54.	10-0228-00	Gear (M1.75X23T)	1	134.	10-0275-01	Speed Changing Stud	1
55.	10-0229-00	Gear (M1.75X24T)	1	135.	10-0276-00	Spacer	2
56.	10-0230-00	Gear (M1.75X26T)	1	136.	14-0612-00	Bush	1
57.	10-0231-00	Gear (M1.75X28T)	1	137.	10-0278-00	Feed Direction Selector	1
58.	10-0232-00	Gear (M1.75X32T)	1	138.	10-0278-00-1	Socket Head Set Screw(M6XP1.0X16L)	3
59.	10-0233-00	Bush	1	139.	10-0278-00-2	Socket Head Set Screw(M6XP1.0X10L)	4
60.	10-0234A-00	Gear (M1.75X32T)	1	140.	10-0278-00-3	Compression Spring (φ0.8Xφ4.6X19L)	4
61.	10-0234B-00	Oilite Bush	1	141.	10-0278-00-4	Steel Ball (φ5)	4
62.	10-0235-00	Spacer	1	142.	10-0279-00	Thread Cutting Showing Chart	1
63.	10-0236-01	Spline Shaft	1	143.	10-0279-00-1	Cross Recessed Head Screw(M3XP0.5X5L) ...	1
64.	10-0236-01-1	Spring Pin (φ5X30L)	2	144.	17-0273-00	Inlet Plug	1
65.	10-0237-01	Copper Plug	1	145.	17-0274-00	Drain Plug	1
66.	10-0237-01-1	O-Ring(P21)	1	146.	10-0214-01-2	Steel Ball (φ6)	2
67.	10-0238-01	Gear (M1.75X32T)	2	147.	10-0242-02-2	Steel Ball (φ6)	2
69.	10-0240-01	Bush	1	148.	10-0283-00	Indicator	1
71.	10-0242-02	Shaft	1	149.	10-0203A-01-1	Ball Cup (φ1/4")	1
72.	10-0242-02-1	Retaining Ring(External, STW#32)	1	150.	17-0235-00	Spacer	2
73.	10-0242-02-3	Counter Sunk Flat Screw (M4XP0.7X10L) ..	2	151.	10-0284-00	Packing	1
75.	10-0243-00	Bracket	1	152.	10-0242-02-4	O-Ring(P22.4)	1
76.	10-0244-00	Packing	1	153.	10-0266-00-2	O-Ring(P11)	1
77.	10-0245-00	Gear Box Cover	1	154.	17-0165-00	Feed Selector Handle	2
78.	10-0245-00-1	Socket Head Cap Screw(M5XP0.8X10L) ...	6	155.	10-0285-00	Plug	1
79.	10-0245-00-2	Spring Pin (φ4X15L)	2	156.	10-0269-1	Cross Recessed Head Screw(M4XP0.7X6L) ...	2
80.	10-0245-00-3	Counter Sunk Flat Screw (M4XP0.7X10L) ..	6				
81.	10-0245-00-4	Socket Head Cap Screw (M6XP1.0X12L)	3				

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Carriage

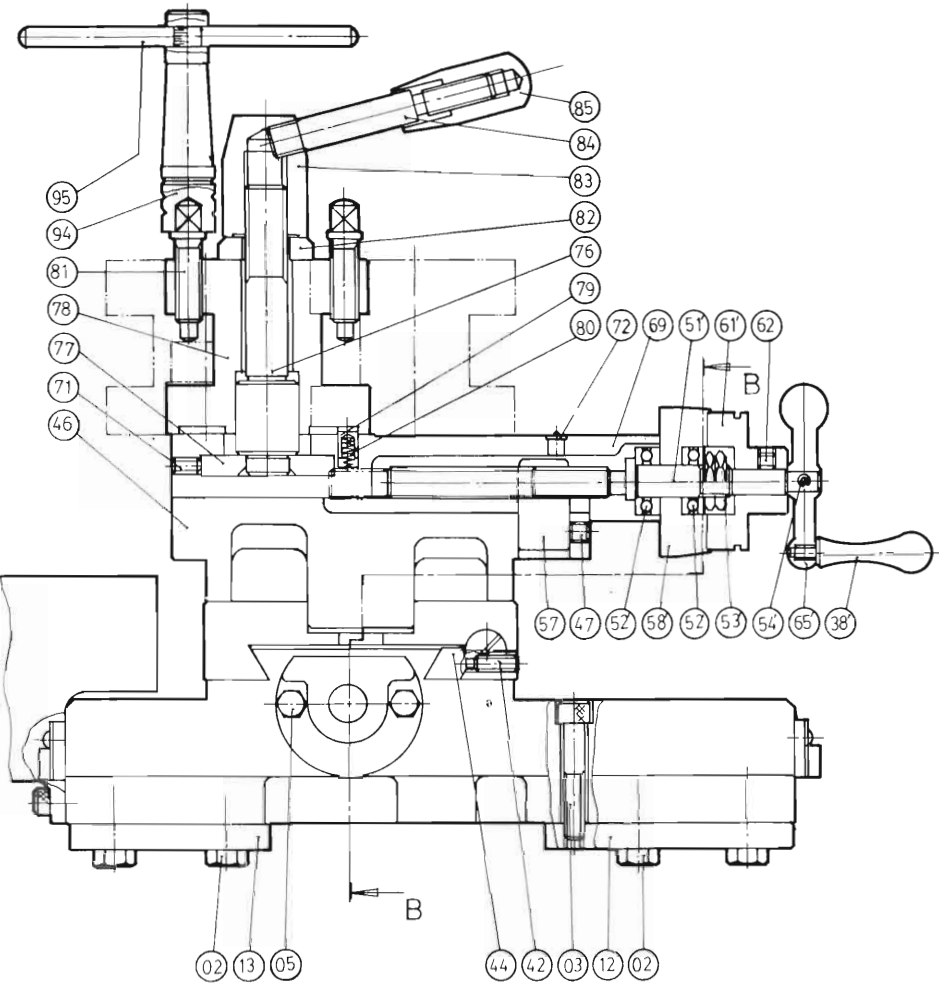


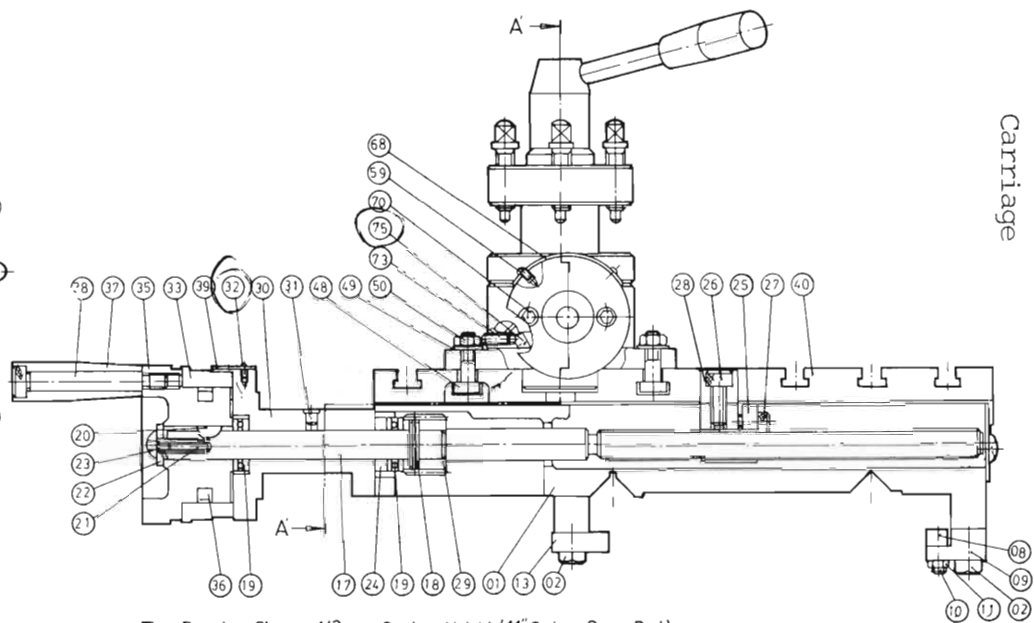


SECTION B-B

Single Dial, Metric

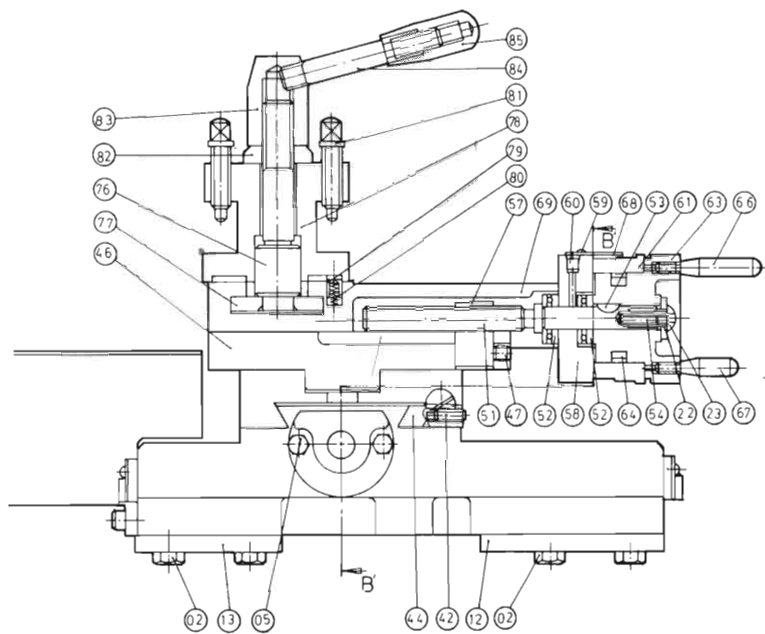
SECTION A-A





The Drawing Shows : 143mm Center Height (11" Swing Over Bed)
Dual Dial
T Slot Cross Slide

SECTION B-B

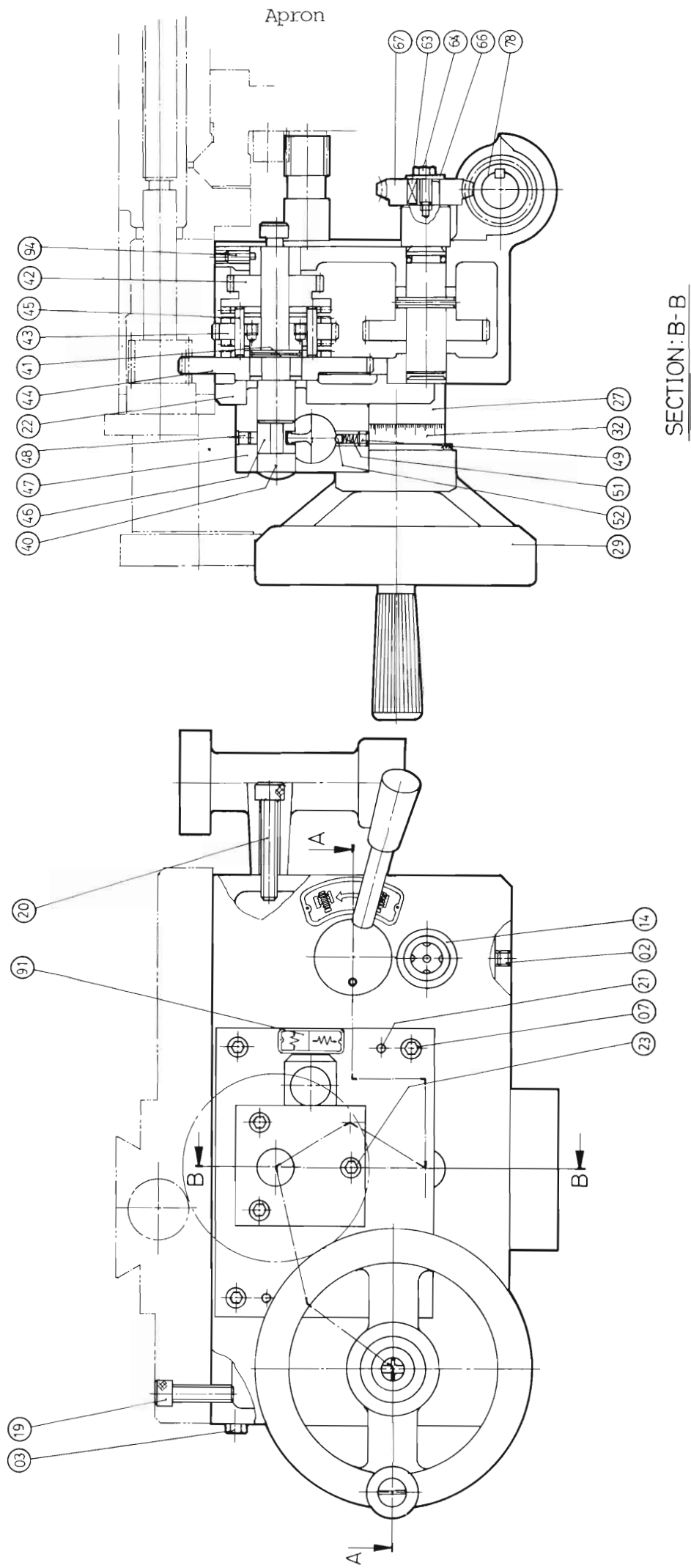


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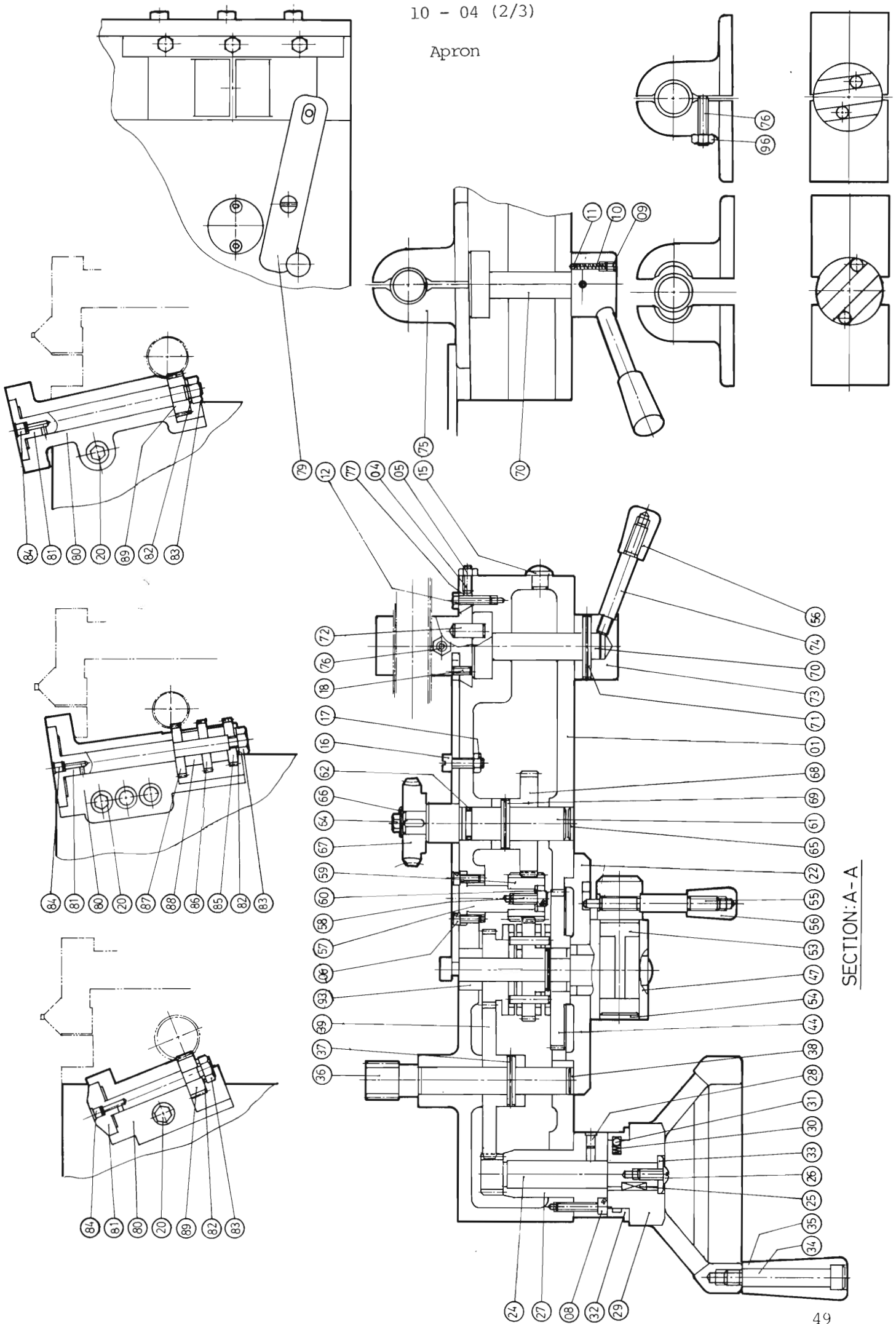
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Carriage

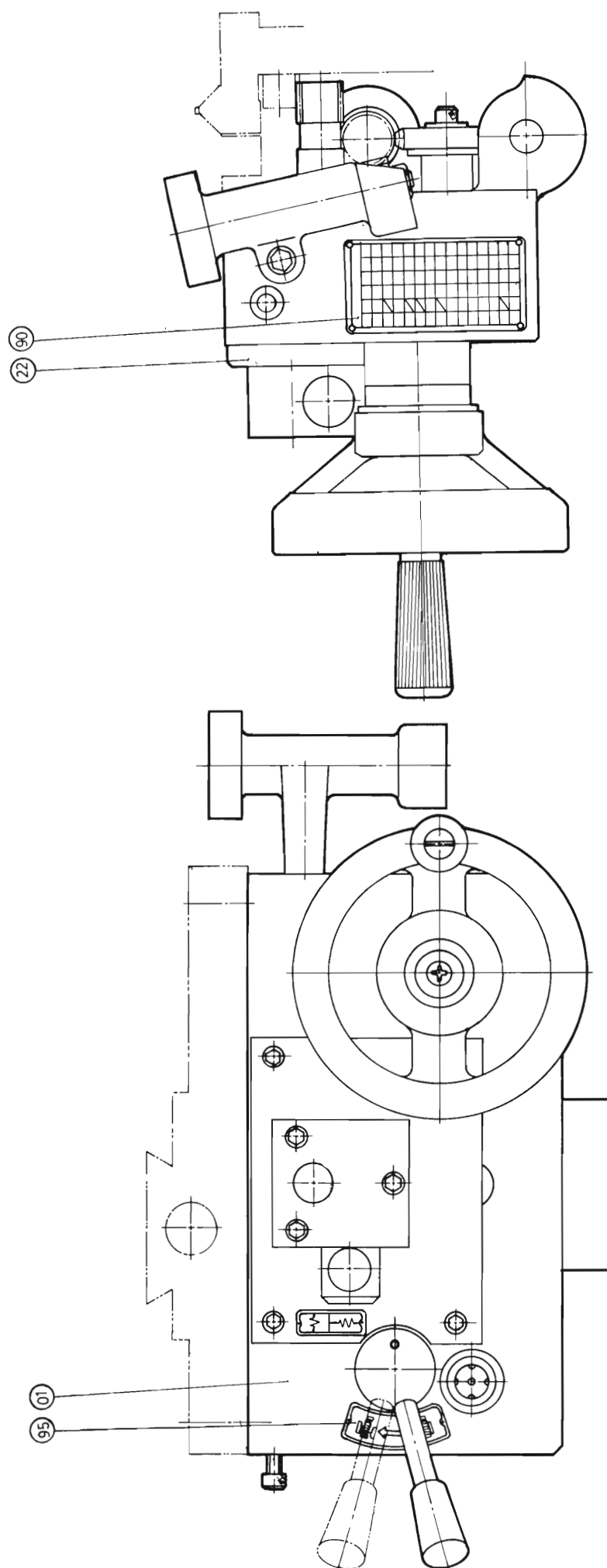
Ref. No.	Parts No.	Description	No. OFF/MC	Ref. No.	Parts No.	Description	No. OFF/MC
1.	10-0301-00	Saddle.....	1	52.	10-0327A-01-1	Thrust Bearing(#51101).....	2
2.	10-0301-00-1	Hexagon Head Screw(M8XP1.25X25L).....	7	53.	10-0327A-01-2	Woodruff Key(3X ϕ 13).....	1
3.	10-0301-00-2	Socket Head Cap Screw(M8XP1.25X45L).....	1	54.	10-0327A-01-3	Socket Head Set Screw(M4XP0.7X20L).....	1
4.	10-0301-00-3	Cross Recessed Head Screw(M4XP0.7X10L).....	8	51'	10-0327B1/2-00	Compound Feed Screw(For Single Dial,Metric).....	1
5.	10-0301-00-4	Hexagon Head Screw(M6XP1.0X22L).....	2	51'	10-0327B2/2-00	Compound Feed Screw (For Single Dial, Imperial).....	1
6.	10-0301-00-5	Ball Cup(ϕ 1/4").....	2	52'	10-0327B-00-1	Thrust Bearing(#51101).....	2
7.	10-0301-00-6	Cross Recessed Head Screw(M8XP1.25X10L).....	2	53'	10-0327B-00-2	Hexagon Nut (M12XP1.25X4t).....	2
8.	10-0302-00	Gib.....	1	54'	10-0327B-00-3	Spring Pin(ϕ 4X18L).....	1
9.	10-0303-00	Strip.....	1	55.	10-0372R-00	Bedway Wiper Plate.....	1
10.	10-0303-00-1	Socket Head Set Screw(M6XP1.0X16L).....	4	56.	10-0372L-00	Bedway Wiper Plate.....	1
11.	10-0303-00-2	Hexagon Nut (M6XP1.0).....	4	57.	10-0328-1/2-01	Compound Feed Nut(Metric).....	1
12.	10-0304-00	Strip.....	1	57.	10-0328-2/2-01	Compound Feed Nut(Imperial).....	1
13.	10-0305-00	Strip.....	1	58'	10-0329A-00	Bracket(For Single Dial only).....	1
14.	10-0306R-00	Bedway Wiper(Right side).....	1	58	10-0329B-01	Bracket(For Dual Dial only).....	1
15.	10-0306L-00	Bedway Wiper(Left side).....	1	59.	10-0329B-01-1	Cross Recessed Head Screw(M4XP0.7X5L).....	2
16.	10-0307-00	Bedway Wiper.....	2	60.	10-0329B-01-2	Ball Cup(ϕ 1/4").....	1
17.	10-0308A1/2-01	Cross Feed Screw(For Dual Dial,Metric).....	1	61.	17-0335-1/2-00	Dial(Dual, Metric).....	1
17'	10-0308A2/2-00	Cross Feed Screw(For Dual Dial,Imperial).....	1	61.	10-0330B-01	Dial(Dual, Imperial).....	1
18.	10-0308A-01-1	Spring Pin(ϕ 5X30L).....	1	61'	10-0330I	Dial(Single, Metric).....	1
19.	10-0308A-01-2	Thrust Bearing(#51102).....	2	61'	10-0330J-00	Dial(Single, Imperial).....	1
20.	10-0308A-01-3	Woodruff Key(3X ϕ 13).....	1	61'	10-0330K-00	Dial(Special, Single, Metric).....	1
21.	10-0308A-01-4	Socket Head Set Screw(M4XP0.7X20L).....	1	62.	10-0330K-00-1	Socket Head Set Screw(M6XP1.0X6L).....	1
17'	10-0308B1/2-00	Cross Feed Screw(For Single Dial,Metric).....	1	63.	17-0334-00	Hand Wheel(For Dual Dial only).....	1
18'	10-0308B2/2-00	Cross Feed Screw(For Single Dial,Imperial).....	1	64.	17-0527-00	Spring Leaf(For Dual Dial only).....	1
18'	10-0308B-00-1	Spring Pin(ϕ 5X30L).....	1	65'	10-0334-00	Handle.....	1
19'	10-0308B-00-2	Thrust Bearing(#51102).....	2	66.	10-0335-00	Grip(For Dual Dial only).....	1
20'	10-0308B-00-3	Hexagon Nut(M12XP1.25X4t).....	2	67.	10-0336-00	Grip(For Dual Dial only).....	1
21'	10-0308B-00-4	Spring Pin(ϕ 4X18L).....	1	68.	17-0355-1/2-00	Compound Dial Guard(For Dual Dial,Metric).....	1
22.	17-0306-00	Washer(M8).....	2	68.	17-0355-2/2-00	Compound Dial Guard (For Dual Dial, Imperial).....	1
23.	17-0504-00-2	Socket Button Head Screw(M8XP1.25X20L).....	2	69.	10-0337A-00	Compound Rest.....	1
24.	10-0309-01	Spacer.....	1	70.	10-0337A-00-1	Socket Head Cap Screw(M6XP1.0X25L).....	2
25.	10-0310-1/2-00	Cross Feed Nut(Metric).....	1	71.	10-0337A-00-2	Socket Head Set Screw(M6XP1.0X10L).....	2
25.	10-0310-2/2-00	Cross Feed Nut(Imperial).....	1	72.	10-0337A-00-3	Ball Cup(ϕ 1/4").....	3
26.	10-0310-00-1	Socket Head Cap Screw(M8XP1.25X20L).....	1	73.	10-0337A-00-4	Socket Head Set Screw(M6XP1.0X15L).....	1
27.	10-0310-00-2	Socket Head Cap Screw(M6XP1.0X15L).....	1	74.	10-0338-00	Adjusting Screw.....	2
28.	10-0311A-00	Setting Collar.....	1	75.	10-0339-00	Taper Gib Strip.....	1
29.	10-0312-00	Pinion(M1.5X19T).....	1	76.	10-0340-00	Centering Bolt.....	1
30.	10-0313A-01	Bracket(For Dual Dial only).....	1	77.	10-0341-00	Bottom Plate.....	1
31.	10-0313A-01-1	Ball Cup(ϕ 1/4").....	1	78.	10-0342A-00	Fourway Tool Post(For 11" Swing Over Bed).....	1
32.	10-0313A-01-2	Cross Recessed Head Screw(M4XP0.7X5L).....	2	78.	10-0342B-00	Fourway Tool Post(For 13" Swing Over Bed).....	1
30'	10-0313B-01	Bracket(For Single Dial, Metric).....	1	79.	10-0343-00	Position Setting Pin.....	1
30'	10-0313C-01	Bracket(For Single Dial, Imperial).....	1	80.	10-0344-00	Compression Spring.....	1
31.	10-0313C-01-1	Ball Cup(ϕ 1/4").....	1	81.	10-0345-00	Tool Post Screw.....	8
33.	17-0305-1/2-00	Dial(Dual, Metric).....	1	82.	10-0346A-00	Spacer(8.8mm).....	1
33.	10-0314B-01	Dial(Dual, Imperial).....	1	82.	10-0346B-00	Spacer(9.0mm).....	1
33'	10-0314M-00	Dial(Single, Metric).....	1	82.	10-0346D-00	Spacer(9.4mm).....	1
33'	10-0314H2/2-00	Dial(Special, Single, Metric).....	1	83.	10-0347-00	Clamping Handle.....	1
33'	10-0314J-00	Dial(Single, Imperial).....	1	84.	10-0348-00	Clamping Handle.....	1
34.	10-0314J-00-1	Socket Head Set Screw(M6XP1.0X6L).....	1	85.	11-0127-00	Knob.....	1
35.	17-0304-00	Hand Wheel(For Dual Dial only).....	1	86.	10-0350-00	Setting Plate.....	1
36.	17-0357-00	Spring Leaf(For Dual Dial only).....	1	87.	10-0351-00	Single Tool Post(American Style).....	1
37.	17-0307-00	Handle(For Dual Dial only).....	1	88.	10-0352-00	Bottom Plate.....	1
37'	10-0320-00	Handle(For Single Dial only).....	1	89.	10-0353-00	Tool Supporting Block.....	1
38.	17-0308-00	Bolt, Round Head(For Dual Dial only).....	1	90.	10-0354-00	Tool Post Screw.....	1
38'	10-0321-00	Grip (For Single Dial only).....	2	91.	10-0355-00	Wrench(For Single Tool Post only).....	1
39.	17-0356-1/2-00	Cross Dial Guard(For Dual Dial,Metric).....	1	92.	10-0356-00	Wrench Handle(For Single Tool Post only).....	1
39.	10-0317-2/2-00	Cross Dial Guard(For Dual Dial,Imperial).....	1	93.	10-0357-00	Chip Guard.....	1
40.	10-0322A1/2-00	Cross Slide(T-Slot).....	1	94.	10-0362-00	Wrench(For Fourway Tool Post only).....	1
40.	10-0322A2/2-00	Cross Slide(Normal).....	1	95.	10-0363-00	Wrench Handle (For Fourway Tool Post only).....	1
41.	10-0322A-00-1	Ball Cup(ϕ 1/4").....	3	96.	10-0364-00	Feed Indicating Rule(Optional).....	1
42.	10-0322A-00-2	Socket Head Set Screw(M6XP1.0X20L).....	1	97.	10-0365A-00	Bracket.....	1
43.	10-0322A-00-3	Socket Head Set Screw(M8XP1.25X10L).....	1	98.	10-0365A-00-1	Socket Head Set Screw(M5XP0.8X5L).....	1
44.	10-0323-00	Taper Gib Strip.....	1	99.	10-0365A-00-2	Socket Head Set Screw(M6XP1.0X22L).....	1
45.	10-0324-00	Adjusting Screw.....	2	100.	10-0366-00	Supporting Rod.....	1
46.	10-0325A-01	Swivel Table(For 11" Swing Over Bed).....	1	101.	10-0367-00	Indicator.....	1
47.	10-0325B-01	Swivel Table(For 13" Swing Over Bed).....	1	102.	10-0368-00	Locking Screw.....	1
47.	10-0325B-01-1	Socket Head Set Screw(M8XP1.25X8L).....	1	103.	10-0369-00	Washer.....	1
48.	10-0326A-01	Clamping Screw(For 11" Swing Over Bed).....	2	104.	10-0370-00	Dust Plate.....	1
48.	10-0326B-01	Clamping Screw(For 13" Swing Over Bed).....	2	105.	10-0364-00 -1	Button Head Rivet(ϕ 2X4L).....	2
49.	10-0326B-01-1	Spring Washer(M8).....	2	106.	10-0371-00	Bedway Wiper Plate.....	2
50.	10-0326B-01-2	Hexagon Nut (M8XP1.25).....	2	82.	10-0346C-00	Washer(9.2mm).....	1
51.	10-0327A1/2-01	Compound Feed Screw(For Dual Dial,Metric).....	1				
51.	10-0327A2/2-01	Compound Feed Screw(For Dual Dial,Imperial).....	1				



Apron

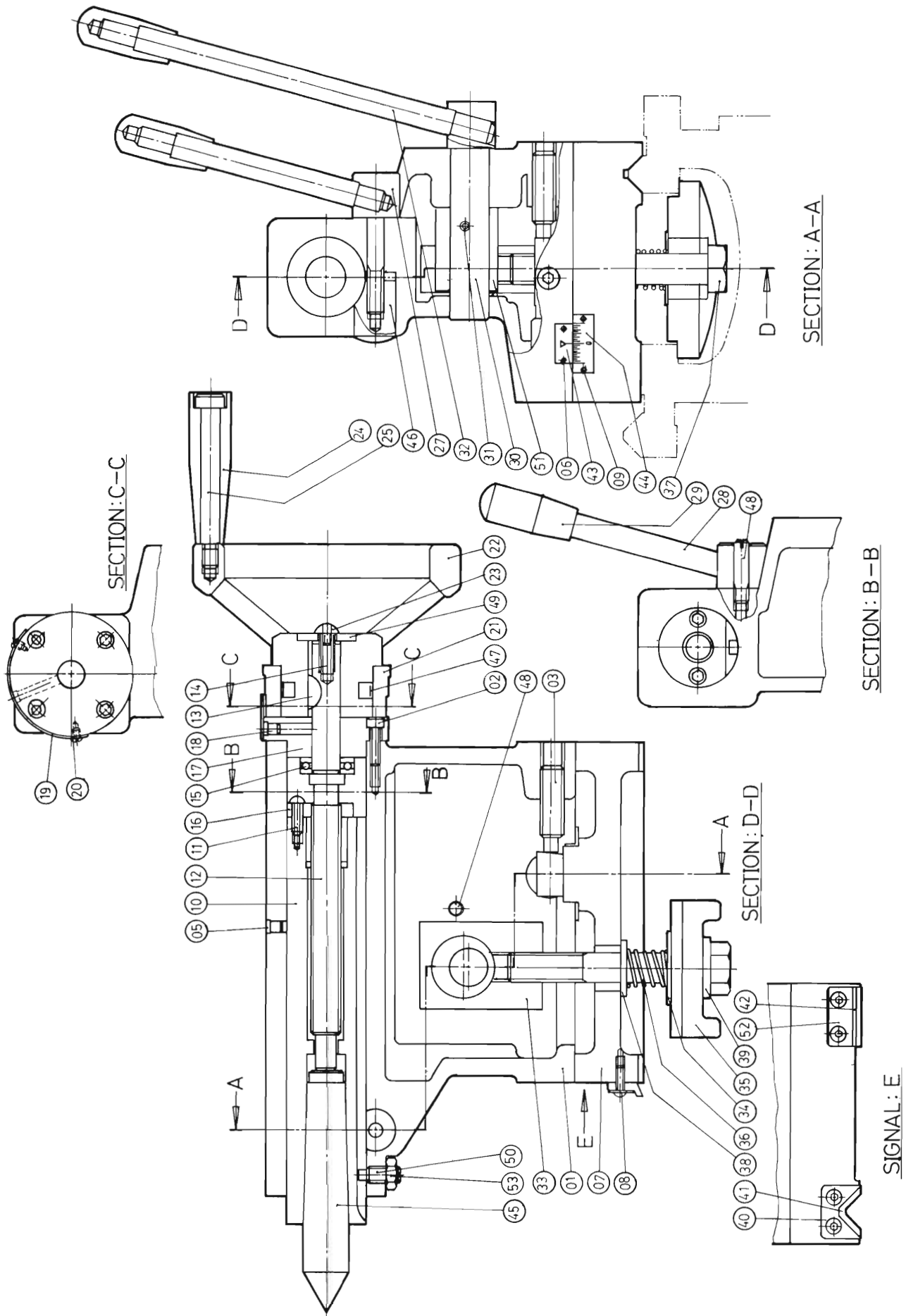


Apron



Apron

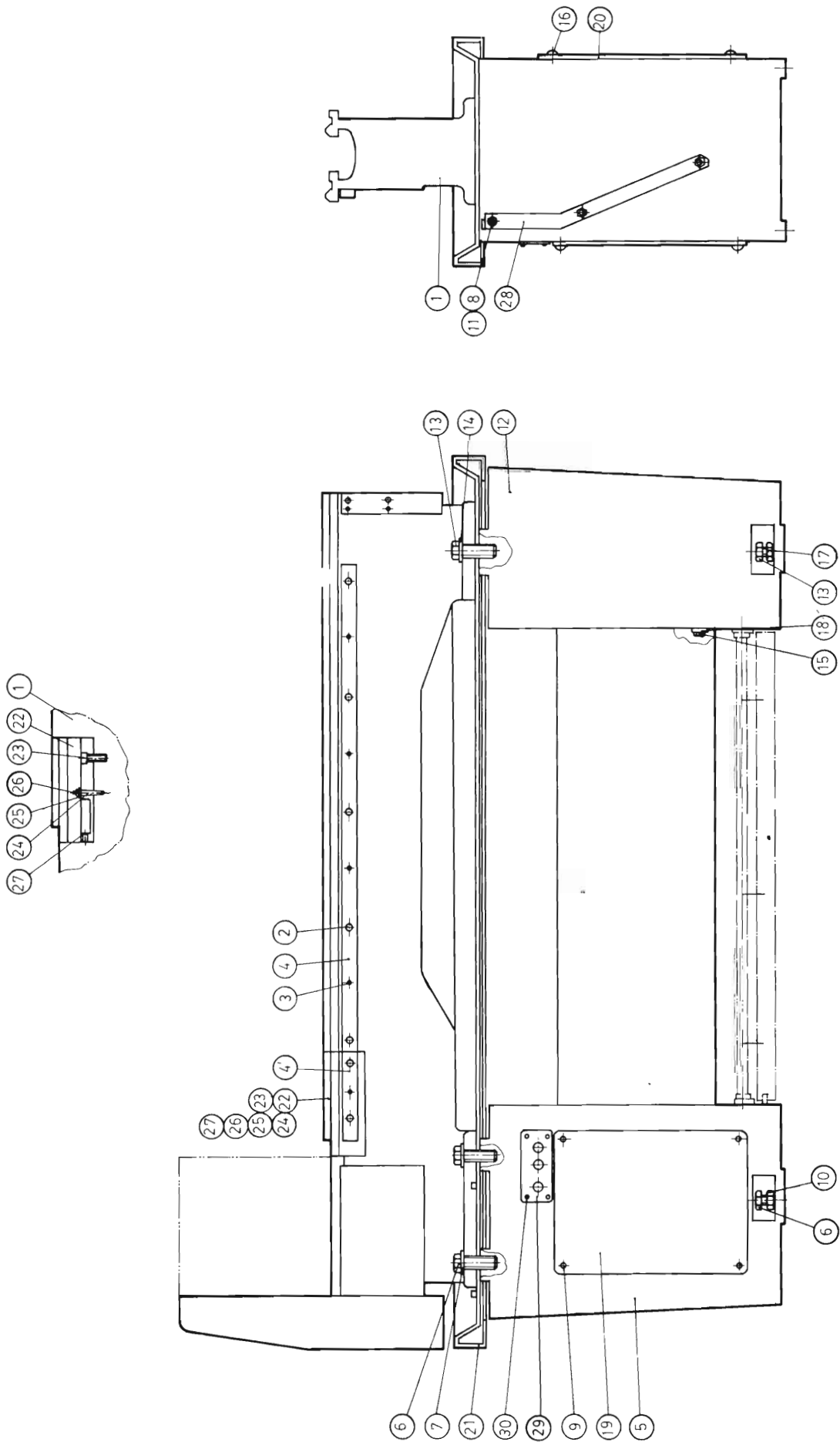
Ref. Parts No. No.	Description	No. OFF/MC	Ref. Parts No.	Description	No. OFF/MC
1.	10-0401BL-01	Apron(Left Hand).....1	56.	11-0246-00	Knob(M8XP1.25).....2
1.	10-0401BR-01	Apron(Right Hand).....1	57.	10-0423-00	Idle Shaft.....1
2.	10-0401B-1	Drain Plug(1/8PFX28X6L).....1	58.	10-0423-00-1	Socket Head Cap Screw(M6XP1.0X17L).....1
3.	10-0401B-2	Hexagon Head Screw(M6XP1.0X15L).....2	59.	10-0424-00	Gear(M1.5X18T).....1
4.	10-0401B-3	Socket Head Set Screw(M5XP0.8X16L).....3	60.	10-0425-00	Washer.....1
5.	10-0401B-4	Hexagon Nut(M5XP0.8).....3	61.	10-0426-00	Shaft.....1
6.	10-0401B-5	Socket Head Cap Screw(M5XP0.8X12L).....2	62.	10-0426-00-1	O-Ring(φ2.4Xφ20).....1
7.	10-0401B-6	Socket Head Cap Screw(M6XP1.0X16L).....4	63.	10-0426-00-2	Double Round Head Key(5X5X12L).....1
8.	10-0401B-7	Socket Head Cap Screw(M5XP0.8X25L).....3	64.	10-0426-00-3	Hexagon Head Screw(M6XP1.0X15L).....1
9.	10-0401B-8	Socket Head Set Screw(M6XP1.0X10L).....1	65.	10-0427-00	Plug(φ20X3.2t).....1
10.	10-0401B-9	Compression Spring(φ0.7Xφ4.4X25L).....1	66.	10-0428-00	Washer.....1
11.	10-0401B-10	Steel Ball(φ3/16").....1	67.	10-0429B-00	Worm Gear(Mn2X22T).....1
12.	10-0401B-11	Hexagon Head Screw(M5XP0.8X20L).....3	68.	10-0430-00	Gear(M1.5X40T).....1
14.	10-0401B-13	Oil Sight Glass(φ30).....1	69.	10-0430-00-1	Spring Pin(φ5X30L).....1
15.	10-0401B-14	Inlet Cap.....1	70.	10-0431-01	Cam Shaft.....1
16.	10-0401B-15	Pan Head Screw(M6XP1.0X20L).....1	71.	10-0431-01-1	Spring Pin(φ5X38L).....1
17.	10-0401B-16	Hexagon Nut(M6XP1.0).....1	72.	10-0432-00	Setting pin.....2
18.	10-0401B-17	Socket Head Set Screw(M5XP0.8X12L).....1	73.	10-0433-00	Lever Head.....1
19.	10-0401B-18	Socket Head Cap Screw(M8XP1.25X30L).....4	74.	10-0434-00	Lever.....1
20.	10-0401B-19	Socket Head Cap Screw(M8XP1.25X50L).....1	75.	10-0435BR-01	Half Nut(Right Hand,7/8", Metric).....1
21.	10-0401B-20	Taper Pin(#3X19L).....2	75.	10-0435BR-01	Half Nut(Right Hand,7/8", Imperial).....1
22.	10-0402AL-00	Front Cover(For Left Hand Apron).....1	75.	10-0435BL-01	Half Nut(Left Hand,7/8", Metric).....1
22.	10-0402AR-00	Front Cover(For Right Hand Apron).....1	75.	10-0435BL-01	Half Nut(Left Hand,7/8", Imperial).....1
23.	10-0402A-00-1	Socket Head Cap Screw(M6XP1.0X35L).....3	76.	10-0435BL-01-1	Socket Head Set Screw(M6XP1.0X20L).....1
24.	10-0403-00	Gear Shaft(M1.5X14T).....1	77.	10-0436-00	Gib.....1
25.	10-0403-00-1	Double Round Head Key(5X5X20L).....1	78.	10-0438B-00	Worm(Fitting w/19mm Feed Rod).....1
26.	10-0404-00-2	Cross Recessed Head Scerew(M6XP1.0X15L).....1	79.	10-0439-00	Interlock Piece.....1
27.	10-0404-00	Bracket.....1	80.	10-0440A-00	Thread Dial Body(For Metric use).....1
28.	10-0404-00-1	Ball Cup(φ1/4").....1	80.	10-0440B-00	Thread Dial Body(For Imperial use).....1
29.	10-0405-00	Hand Wheel.....1	80.	10-0440C-00	Thread Dial Body(Special use).....1
30.	10-0405-00-1	Compression Spring(φ4.7Xφ4.4X12L).....1	81.	10-0441A-00	Dial Indicator(For Metric use).....1
31.	10-0405-00-2	Steel Ball(φ3/16").....1	81.	10-0441B-00	Dial Indicator(For Imperial use).....1
32.	10-0406-00	Dial.....1	81.	10-0441C-00	Dial Indicator(Special use).....1
33.	10-0407-00	Washer.....1	82.	10-0441C-00-1	Washer(M8).....1
34.	10-0408A-00	Bolt.....1	83.	10-0441C-00-2	Hexagon Nut(M8XP1.25).....1
35.	10-0409-00	Handle.....1	84.	10-0441C-00-3	Ball Cup(φ1/4").....1
36.	10-0410-00	Pinion Shaft(M1.5X13T).....1	85.	10-0442-00	Helical Gear(C.P3X28T, For Metric).....1
37.	10-0410-00-1	Spring Pin(φ5X30L).....1	86.	10-0443-00	Helical Gear(C.P3X30T, For Metric).....1
38.	10-0411-00	Plug.....1	87.	10-0444-00	Helical Gear(C.P3X32T, For Metric).....1
39.	10-0412-00	Gear(M1.5X60T).....1	88.	10-0445-00	Spacer.....2
40.	10-0413-00	Shifting Shaft.....1	89.	10-0446A-00	Helical Gear(C.P3.175X24T,For Imperial)1
41.	10-0413-00-1	Spring Pin(φ5X30L).....1	89.	10-0446B-00	Helical Gear(C.P3.175X24T, Special use)1
42.	10-0414-00	Clutch Gear(M1.5X30T).....1	90.	10-0447A-00	Indicator Table(For Metric).....1
43.	10-0415-00	Clutch Gear(M1.5X40T).....1	90.	10-0447B-00	Indicator Table(For Imperial).....1
44.	10-0416-00	Clutch Gear(M1.5X63T).....1	90.	10-0447C-00	Indicator Table.....1
45.	10-0417-00	Guide Pin.....3			(For Metric, fitted w/Enclosed Gear Box)
46.	10-0418-00	Bush.....1	90.	10-0447D-00	Indicator Table(For Imperial ")1
47.	10-0419-00	Bracket.....1	91.	10-0448-00	Feed Direction Indicator.....1
48.	10-0419-00-1	Ball Cup(φ1/4").....1	92.	10-0449-00	Gear Tooth No. Indicator.....1
49.	10-0419-00-2	Socket Head Set Screw(M6XP1.0X6L).....1	93.	10-0450-00	Bush.....1
51.	10-0419-00-3	Compression Spring(φ0.7Xφ4.4X12L).....1	94.	10-0401B-01-21	Socket Head Set Screw(M6XP1.0X15L).....1
52.	10-0419-00-4	Steel Ball(φ3/16").....1	95.	14-0430A-00	Half Nut Indicator(Left Hand).....1
53.	10-0420-00	Cam Shaft.....1	95.	14-0430B-00	Half Nut Indicator(Right Hand).....1
54.	10-0421-00	Plug.....1	96.	10-0435B-01-2	Hexagon Nuts(M6).....1
55.	10-0422-00	Change Lever.....1			



Ref. Parts No. Description No. OFF/MC

1.	17-0501-00	Tailstock Body (For 13" Swing Over Bed, MT#3)	1
2.	17-0501-00-1	Socket Head Cap Screw (M5XP0.8X20L)	4
3.	17-0501-00-2	Socket Head Set Screw (M12XP1.75X45L)	3
5.	17-0501-00-4	Ball Cup (ø1/4")	1
6.	17-0501-00-5	Button Head Rivet (ø2X5L)	2
7.	13-0502-00	Tailstock Base	1
8.	13-0502-00-1	Cross Recessed Head Screw (M4XP0.7X12L)	4
9.	13-0502-00-2	Button Head Rivet (ø2X5L)	2
10.	17-0503-00	Guid (MT#3)	1
11.	17-0503-00-1	Socket Button Head Screw (M5XP0.8X16L)	2
12.	17-0504-1/2-00	Feed Screw (Metric)	1
12.	17-0504-2/2-00	Feed Screw (Imperial)	1
13.	17-0504-2/2-00-1	Wormnut Key (5Xø19)	1
14.	17-0504-2/2-00-4	Socket Head Set Screw (M5XP0.8X20L)	1
15.	17-0504-2/2-00-3	Thrust Bearing (#51102)	1
16.	17-0505-1/2-00	Feed Nut (Metric)	1
16.	17-0505-2/2-00	Feed Nut (Imperial)	1
17.	17-0506-00	Bracket	1
18.	17-0506-00-1	Ball Cup (ø1/4")	1
19.	17-0507-00	Dial Guard	1
20.	17-0507-00-1	Cross Recessed Head Screw (M4XP0.7X5L)	2
21.	17-0508-1/2-00	Dial (Metric)	1
21.	17-0508-2/2-00	Dial (Imperial)	1
22.	17-0509-00	Hand Wheel	1
23.	17-0504-00-2	Socket Button Head Screw	1
24.	17-0511-00	Handle	1
25.	17-0512-00	Bolt	1
27.	17-0514-00	Locking Rod	1
28.	17-0515-00	Locking Lever	1
29.	11-0127-00	Knob	2
30.	17-0516-01	Clamping Shaft	1
31.	17-0516-01-1	Spring Pin (ø5X25L)	1
32.	17-0517-00	Clamping Lever	1
33.	17-0518-01	Adjusting Block	1
34.	17-0519-00	Washer	1
35.	13-0520-00	Clamping Block	1
36.	17-0520-00	Compression Spring	1
37.	17-0520-00-1	Hexagon Head Screw (M16XP2.0X105L)	1
38.	17-0520-00-2	Washer (M16)	1
39.	17-0522-00	Washer	1
40.	17-0529-00	Bedway Wiper Plate	1
41.	17-0524-00	Bedway Wiper	1
42.	10-0307-00	Bedway Wiper	1
43.	10-0523-00	Indicator	1
44.	10-0524-00	Set-Over Indicating Chart	1
45.	11-0158B-00	Center (MT#3)	1
46.	17-0525-01	Locking Bush	1
47.	17-0527-00	Spring Leaf	1
48.	10-0525-00	Stud	2
49.	17-0510-01	Washer	1
50.	17-0501-00-4	Socket Head Set Screw	1
51.	17-0528-00	Eccentric Collar	1
52.	10-0371-00	Bedway Wiper Plate	1
53.	17-0501-00-5	Hexagon Nut (M12XP1.75)	1

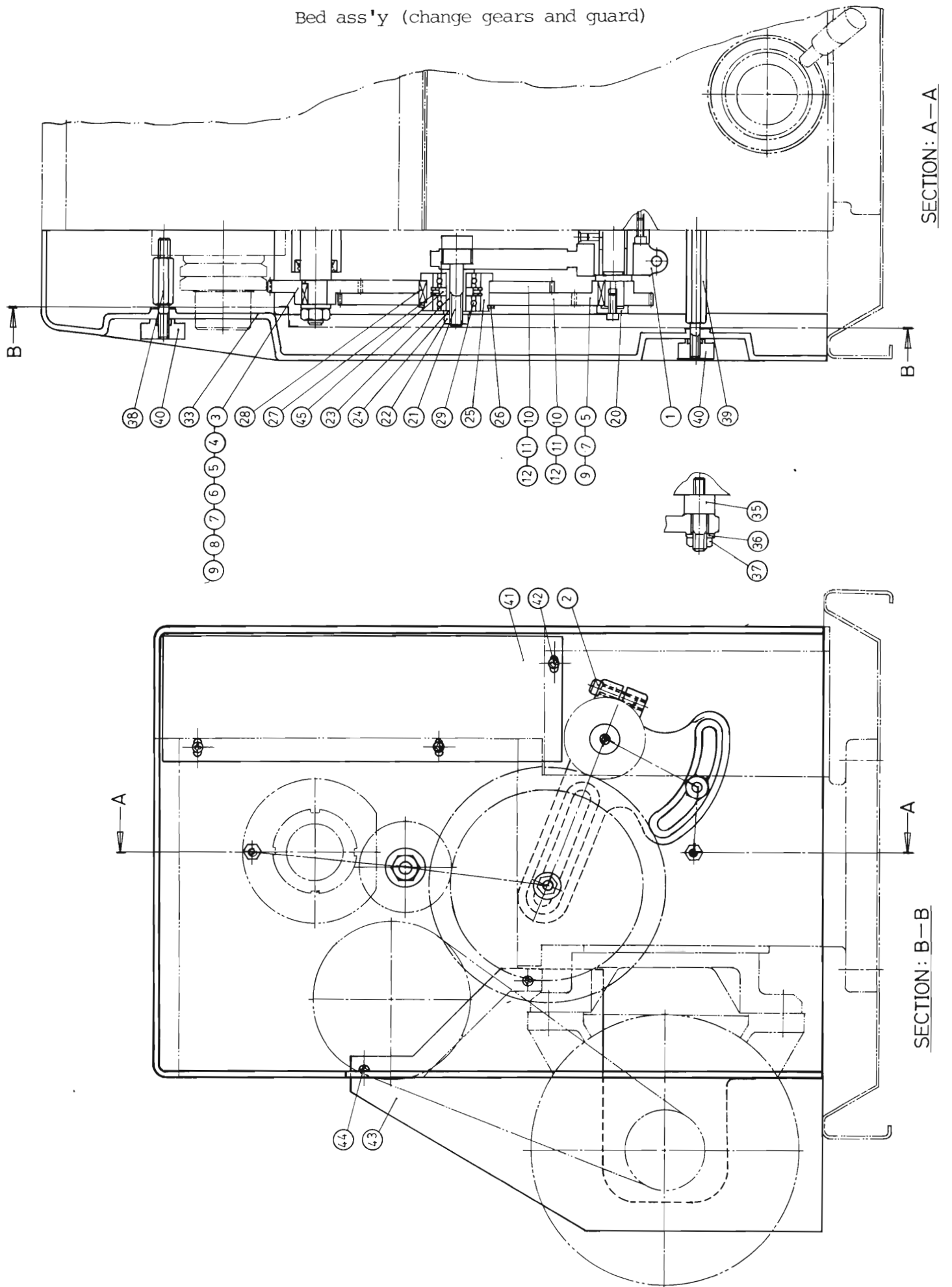
Bed ass'y (bed, stand and chip tray)



Bed ass'y (bed, stand and chip tray)

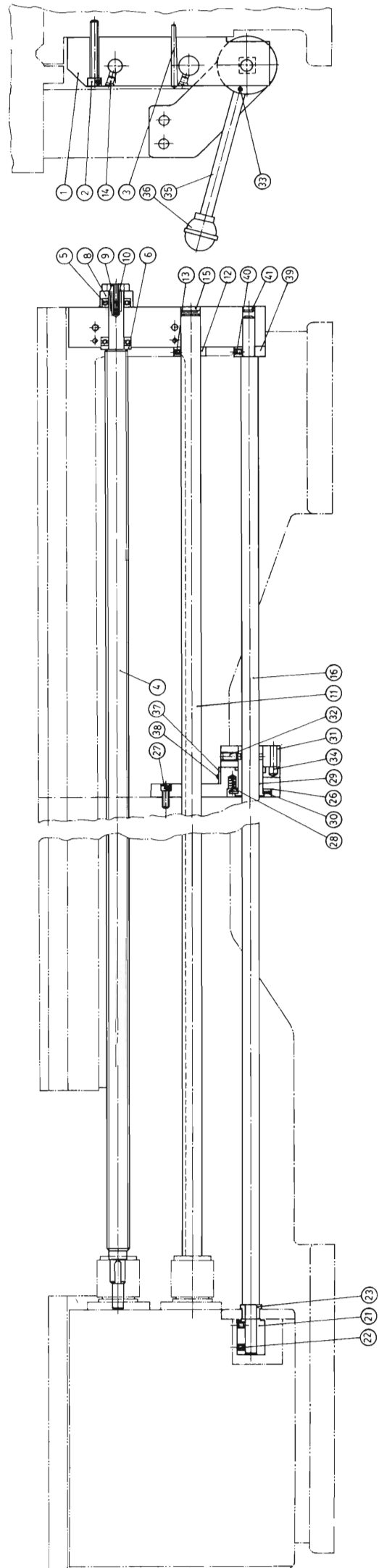
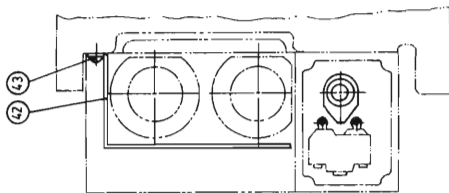
Ref. No.	Parts No.	Description	No. OFF/MC
1.	13-0601A1-00	Bed(40" Enclose Type)	1
1.	13-0601A2-00	Bed(40" Enclose Type, Gap Bed)	1
1.	11-0601B2-00	Bed(36" Enclose Type)	1
1.	11-0601D2	Bed(25" Enclose Type)	1
2.	11-0601D2-1	Socket Head Cap Screw(M6XP1.0X20L)	7
3.	11-0601D2-2	Spring Pin(ø5X30L)	5
4.	11-0605A-02	Rack(25")	1
4.	11-0605B-02	Rack(36")	1
4.	17-0615B-00	Rack(40", For Gap Bed, Right Hand)	1
4.	17-0615D-00	Rack(40")	1
4.	10-0615A-02	Rack(For Gap Bed only)	1
5.	10-0625-1/8-00	Left Side Cabinet(Casting)	1
6.	10-0625-1/8-00-1	Hexagon Head Screw(M12XP1.5X50L)	6
7.	10-0625-1/8-00-2	Spring Washer(M12)	4
8.	10-0625-1/8-00-3	Hexagon Head Screw(M6XP1.0X10L)	3
9.	10-0625-1/8-00-4	Cross Recessed Head Screw(M6XP1.0X8L)	4
10.	10-0625-1/8-00-5	Hexagon Nut(M12XP1.5)	2
11.	10-0625-1/8-00-6	Spring Washer(M6)	3
12.	10-0625-2/8-00	Right Side Cabinet(Casting)	1
13.	10-0625-2/8-00-1	Hexagon Head Screw(M12XP1.5X50L)	4
14.	10-0625-2/8-00-2	Spring Washer(M12)	2
15.	10-0625-2/8-00-3	Hexagon Head Screw(M6XP1.0X10L)	3
16.	10-0625-2/8-00-4	Cross Recessed Head Screw(M6XP1.0X8L)	4
17.	10-0625-2/8-00-5	Hexagon Nut(M12XP1.5)	2
18.	10-0625-2/8-00-6	Spring Washer(M6)	3
19.	10-0625-3/8-00	Front Cover(For Left Hand Cabinet)	1
20.	10-0625-4/8-00	Rear Cover(For Right Hand Cabinet)	1
21.	10-0626B-00	Chip Tray(36", Enclose Type)	1
21.	10-0626C-00	Chip Tray(25", Enclose Type)	1
21.	10-0626D-00	Chip Tray(40", Enclose Type)	1
22.	13-0634	Gap Block(For Gap Bed only)	1
23.	13-0634-1	Socket Head Cap Screw(M10XP1.5X20L)	4
24.	13-0634-2	Taper Pin with Thread(#3X45L)	2
25.	13-0634-3	Spring Washer(M10)	2
26.	13-0634-4	Hexagon Nut(M6XP1.0)	2
27.	13-0634-5	Socket Head Set Screw(M10XP1.5X12L)	1
28.	11-0630B	Connecting Plate(36")	1
28.	11-0630D	Connecting Plate(25")	1
28.	13-0637A-00	Connecting Plate(40")	1
29.	11-0771-00	Operation Panel	1
30.	11-0771-00-1	Cross Recessed Head Screw(M5XP0.7X8L)	4

Bed ass'y (change gears and guard)



10 - 06 (3/5)

Bed ass'y. (shafts, bracket and switch linkage)



Bed ass'y(change gears and guard)

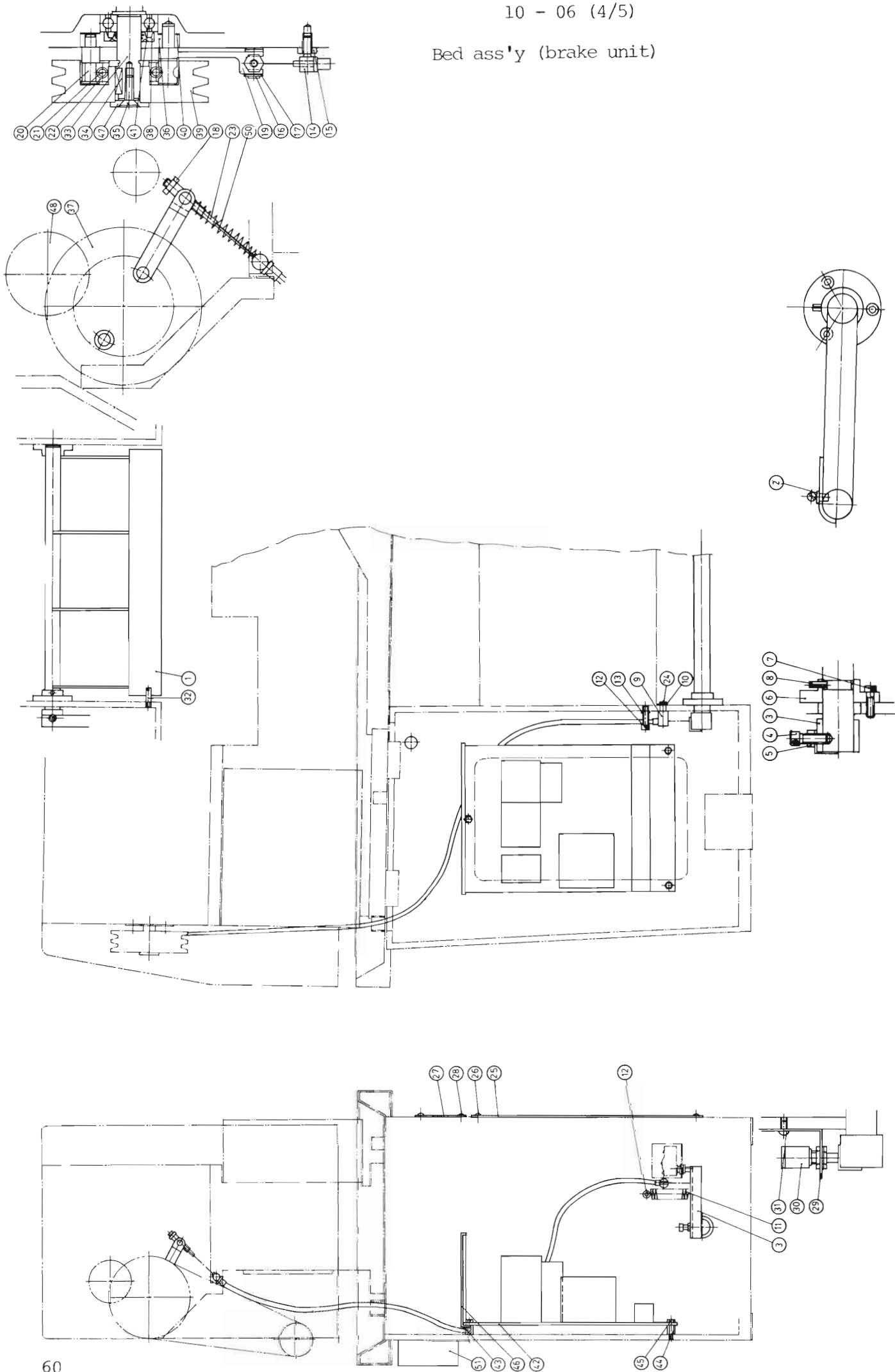
Ref. Parts No. No.	Description	No. OFF/MC
1.	10-0601-01	Swing Frame.....1
2.	10-0601-01-1	Socket Head Cap Screw(M8XP1.25X30L).....1
3.	10-0607G-01	Gear(M1.25X28T).....1
4.	10-0607A-01	Gear(M1.25X30T).....1
5.	11-0612D-00	Gear(M1.25X35T).....1
6.	11-0612A-00	Gear(M1.25X36T).....1
7.	11-0612C-00	Gear(M1.25X50T).....1
8.	10-0612C-01	Gear(M1.25X55T).....1
9.	10-0607E-01	Gear(M1.25X60T).....1
10.	11-0611C-00	Gear(M1.25X120T).....1
11.	11-0611D-00	Gear(M1.25X127T).....1
12.	11-0611E-00	Gear(M1.25X157T).....1
20.	10-0614-00	Washer.....1
21.	11-0608-00	Setting Bolt.....1
22.	11-0608-00-1	Hexagon Nut(M10XP1.5).....1
23.	11-0609-00	Sleeve.....1
24.	11-0610-00	Washer.....1
25.	11-0611A-00	Change Gear Bearing Housing.....1
26.	11-0611A-00-1	Retaining Ring(External, STW#55X2t).....1
27.	11-0611A-00-2	Retaining Ring(Internal, RTW#40X1.75t).....2
28.	11-0611A-00-3	Double Round Head Key(6X6X18L).....1
29.	11-0611A-00-4	Deep Groove Ball Bearing(#6203).....2
33.	10-0616B-00	End Cover.....1
35.	10-0613B-01	Clamping Bolt.....1
36.	10-0613B-01-1	Spring Washer(M10).....1
37.	10-0613B-01-2	Hexagon Nut(M10XP1.5).....1
38.	10-0619B-00	Positioning Stud(Upper).....1
39.	10-0619C-00	Positioning Stud(Under).....1
40.	17-0476B-00	Clamping Knob.....2
41.	10-0654B-00	Safety Switch Cover.....1
42.	10-0654B-00-1	Cross Recessed Head Screw(M5XP0.8X8L).....3
43.	10-0655B-00	Motor Pulley Guard.....1
44.	10-0655B-00-1	Cross Recessed Head Screw.....2
45.	11-0611B-00	Bearing Spacer.....1

Bed ass'y (shafts, bracket and switch linkage)

Ref.	Parts No.	Description	No.
1.	10-0602C-00	Bracket.....	1
2.	10-0602C-00-1	Socket Head Cap Screw(M8XP1.25X55L).....	2
3.	10-0602C-00-2	Taper Pin (#5X64L).....	2
4.	10-0603VB-00	Lead Screw.....	1
5.	10-0603VB-00-1	Thrust Bearing(#51102).....	2
6.	17-0618-00	Spacer.....	1
8.	17-0620-00	Bearing Cover.....	1
9.	17-0621-00	Lock Screw.....	1
10.	17-0621-00-1	Socket Head Set Screw(M6XP1.0X20L).....	1
11.	10-0604VB-00	Feed Rod.....	1
12.	10-0657-00	Setting Collar.....	1
13.	10-0657-00-1	Socket Head Set Screw(M5XP0.8X6L).....	1
14.	10-0602C-00-3	Ball Cup(ϕ 1/4").....	1
15.	11-0620B	Plug.....	1
16.	10-0656B-00	Started Rod(The Thrld Rod).....	1
21.	14-0611-00	Cam.....	1
22.	14-0611-00-1	Socket Head Set Screw(M5XP0.8X8L).....	2
23.	14-0612-00	Bush.....	1
26.	10-0639C-00	Bracket.....	1
27.	10-0639C-00-1	Socket Head Cap Screw(M8XP1.25X16L).....	2
28.	10-0639C-00-2	Compression Spring(ϕ 1.0X ϕ 7.3X20L).....	3
29.	17-0631-00	Sleeve.....	1
30.	17-0632-00	Thrust Piece.....	1
31.	17-0633-00	Gated Block.....	1
32.	17-0633-00-1	Socket Head Set Screw(M8XP1.25X20L).....	2
33.	17-0633-00-2	Spring Pin(ϕ 3X18L).....	1
34.	17-0634-00	Position Setting Pin.....	1
35.	17-0635-00	Spindle Control Lever.....	1
36.	10-0659-00	Spherical Knob.....	1
37.	17-0678-00	Indicator For Direction Of Spindle Revolution.....	1
38.	17-0678-00-1	Button Head Rivet(ϕ 2X5L).....	2
39.	10-0647-00	Setting Collar.....	1
40.	10-0647-00-1	Socket Head Set Screw(M5XP0.8X8L).....	1
41.	17-0629-00	Plug.....	1
42.	10-0653-00	Clutch Guard.....	1
43.	10-0653-00-1	Cross Recessed Head Screw(M5XP0.8X10L).....	2

No.
OFF/MC

Bed ass'y (brake unit)

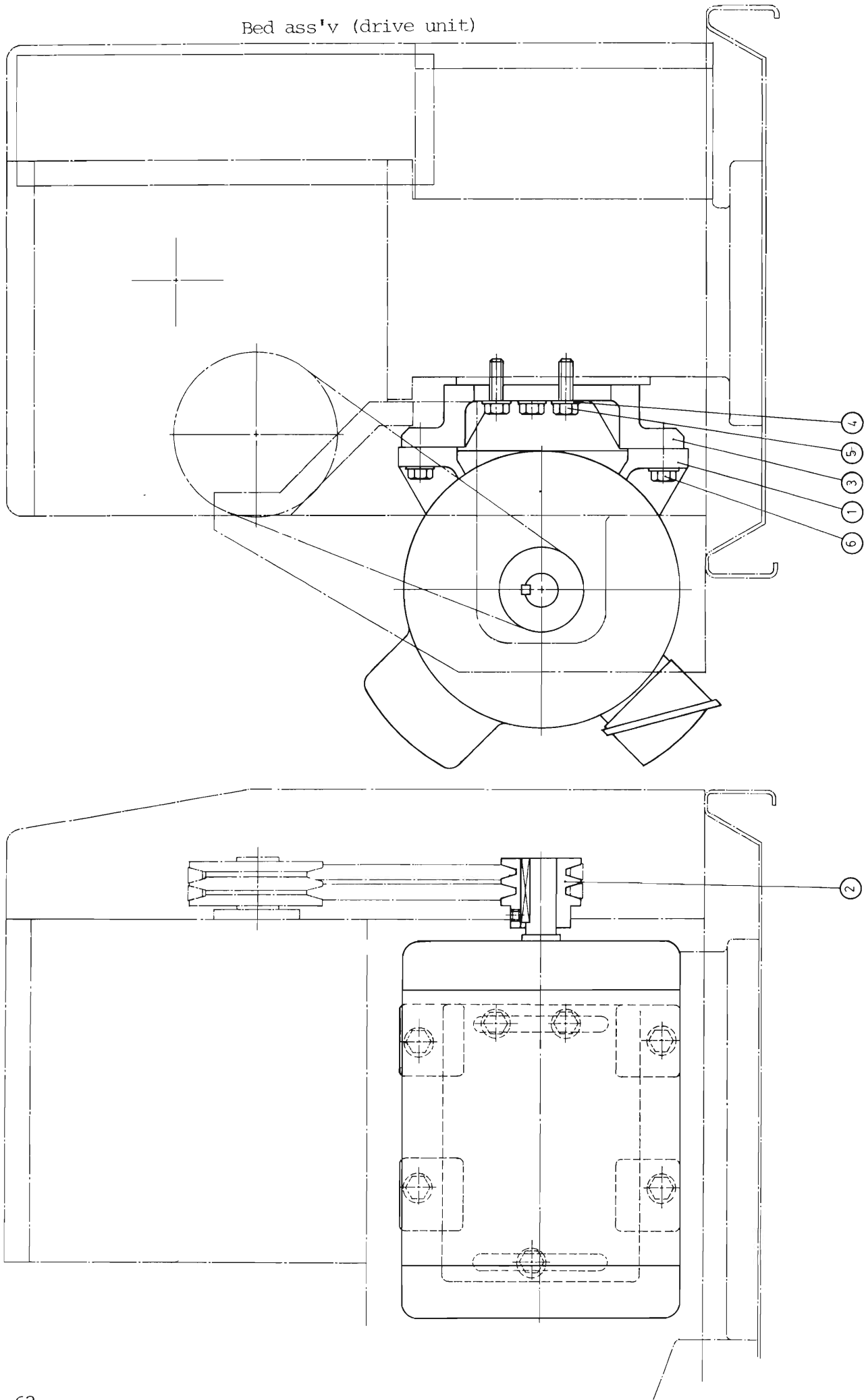


10 - 06 (4/5)
Bed assembly (brake unit)

Ref.	Parts No.	Description	No.
1.	10-0901B-00	Brake Pedal (For 1325GHR)	1
1.	10-0901C-00	Brake Pedal (For 1336GHR)	1
1.	10-0901D-00	Brake Pedal (For 1340GHR)	1
2.	10-0901D-00-1	Rubber Pad (φ6.5)	1
3.	10-0902-00	Brake Arm	1
4.	10-0902-00-1	Socket Head Cap Screw (M8XP1.25X25L)	1
5.	10-0902-00-2	Hexagon Nut (M8XP1.25)	1
6.	10-0903-00	Flange	2
7.	10-0903-00-1	Socket Head Cap Screw (M6XP1.0X16L)	6
8.	10-0903-00-2	Spring Pin (φ5X16L)	1
9.	10-0904-00	Strut	1
10.	10-0904-00-1	Spring Washer (M8)	1
11.	10-0905-00	Extension Spring	1
12.	10-0905-00-1	Socket Head Cap Screw (M8XP1.25X30L)	1
13.	10-0905-00-2	Hexagon Nut (M8XP1.25)	1
14.	10-0906-00	Fixing Screw	1
15.	10-0906-00-1	Hexagon Nut (M8XP1.25)	1
16.	10-0907-00	Connecting Pin	1
17.	10-0907-00-1	E-Ring (#8)	1
18.	10-0908-00	Adjusting Nut	1
19.	10-0909-00	Oscillation Arm	1
20.	10-0910-00	Supporting Pin	1
21.	10-0911-00	Extension Spring	2
22.	10-0912-00	Brake Shoe	2
23.	10-0913-00	Brake Wire	1
24.	10-09 4-00-2	Hexagon Nut (M8XP1.25)	1
25.	10-0625-3/8-00	Front Cover (For Left Hand Cabinet)	1
26.	10-0625-3/8-00-1	Cross Recessed Head Screw (M6XP1.0X8L)	4
27.	11-0771-00	Operation Panel	1
28.	11-0771-00-1	Cross Recessed Head Screw (M4XP0.7X5L)	4
29.	11-0752-00	Limiting Switch Supporting Plate	1
30.	11-0752-00-1	Limiting Switch (Z-15G-13, AM1307)	1
31.	11-0752-00-2	Cross Recessed Head Screw (M6XP1.0X8L)	2
32.	10-0525-00	Stopping Screw	1
33.	10-0133A-01	Input Shaft	1
34.	10-0133A-01-3	Double Round Head Key (5X5X22L)	1
35.	10-0133A-01-5	Counter Sunk Flat Screw (M8XP1.25X25L)	1
36.	10-0137B-00	Bearing Cover (For M/C with Brake only)	1
37.	10-0137B-00-1	Socket Head Cap Screw (M6XP1.0X12L)	3
38.	10-0137B-00-2	Oil Seal (TC 204007)	1
39.	10-0138B-00	Pulley (For M/C with Brake only)	1
40.	10-0183-00	Packing	1
41.	10-0101-01-15	Deep Groove Ball Bearing (#6204)	1
42.	11-0768-00	Switch Gear Mounting Plate	1
43.	11-0768-00-1	Cross Recessed Head Screw (M4XP0.7X7L)	2
44.	11-0769-00	Bolt	3
45.	11-0769-00-1	Hexagon Nut (M6XP1.0)	3
46.	11-0770-00	Switch Gear Guard	1
47.	10-0133D-01	Washer	1
48.	10-0124-01	Bearing Cover	1
50.	10-0914-00	Compression Spring	1
51.	11-0773-01	Wire Connecting Box	1

No.
OFF/MC

Bed ass'y (drive unit)



Bed ass'y (drive unit)

Ref. No.	Parts No.	Description	No. OFF/MC
1.	11-0716	Motor(3HP, 3-ph, 60HZ)	1
1.	11-0716	Motor(3HP, 3-ph, 50HZ)	1
1.	11-0716	Motor(2HP, 1-ph, 60HZ, Optional)	1
1.	11-0716	Motor(2HP, 1-ph, 50HZ, Optional)	1
1.	11-0716	Motor(2HP, 3-ph, Pole Changeable, 60HZ, Optional)	1
1.	11-0716	Motor(2HP, 3-ph, Pole Changeable, 50HZ, Optional)	1
2.	11-0742A	Motor Pulley(60HZ)	1
2.	11-0742C	Motor Pulley(50HZ)	1
3.	11-0772A-00	Motor Mounting Plate(2HP, 1-ph)	1
3.	11-0772B-00	Motor Mounting Plate(3HP, 3-ph)	1
3.	11-0772B-00	Motor Mounting Plate(2HP, 3-ph, Pole Changeable)	1
4.	11-0772B-00-1	Washer(M10)	3
5.	11-0772B-00-2	Hexagon Head Screw(M10XP1.5X30L)	3
6.	11-0772B-00-3	Hexagon Head Screw(M10XP1.5X35L)	4