

machine manual

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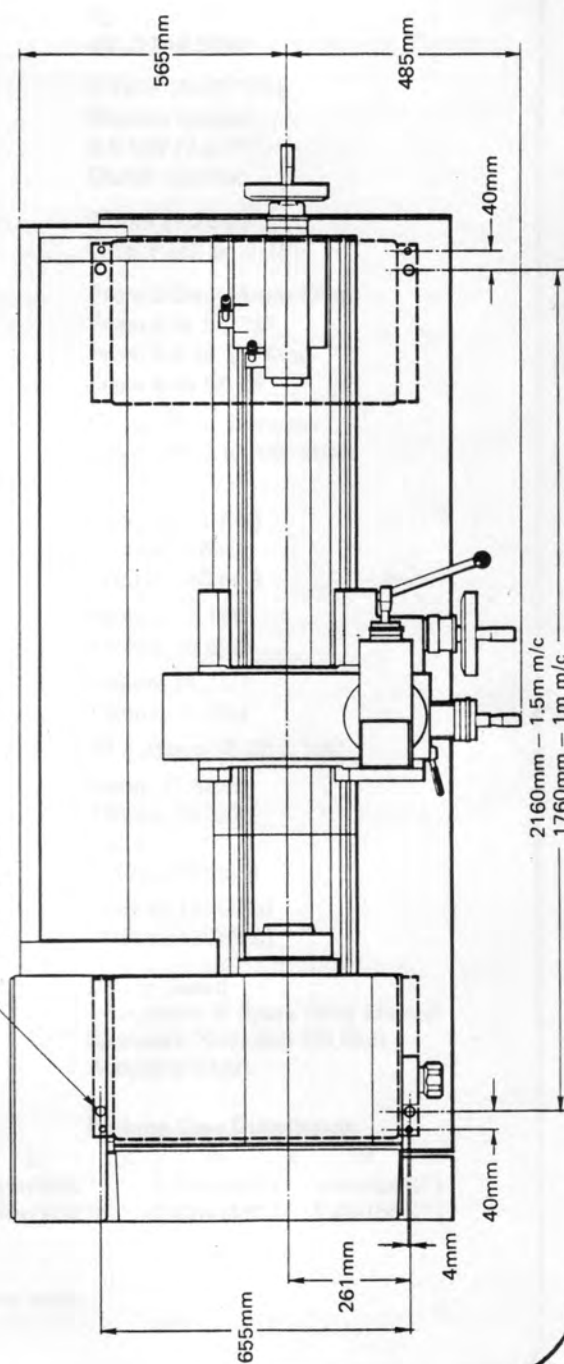
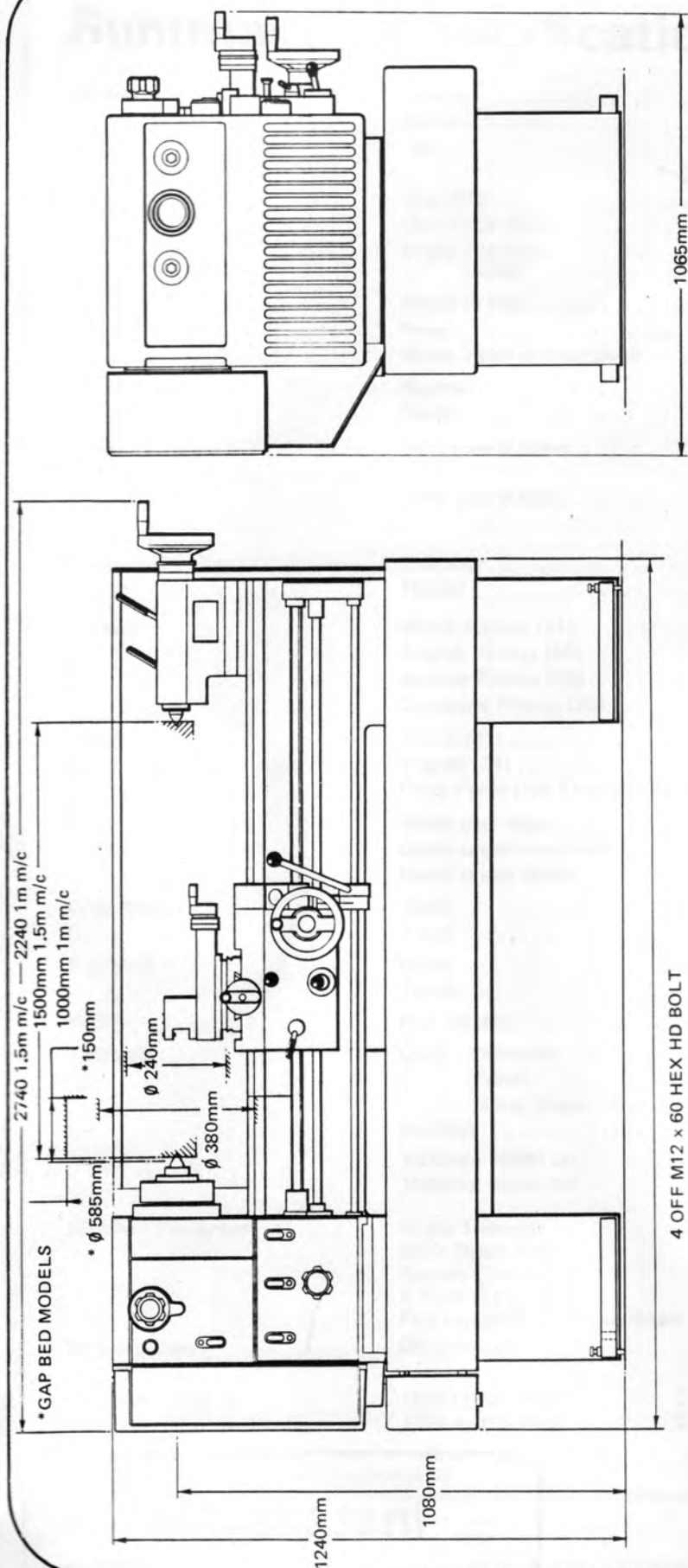
Summarised specification

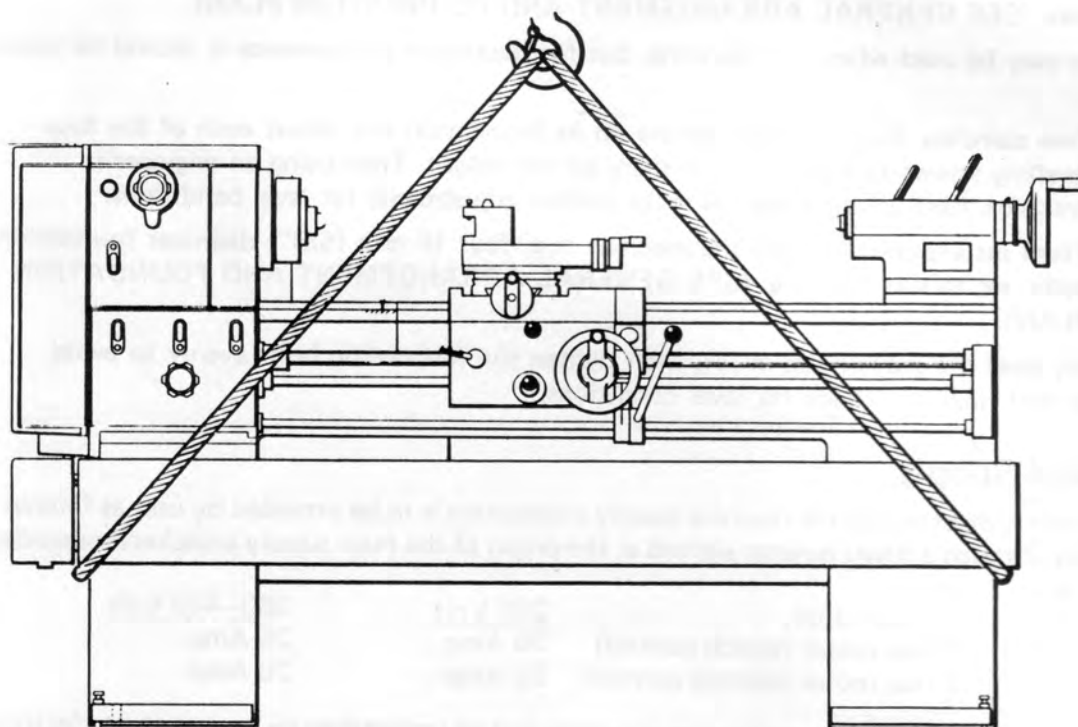
Centres	Height	190mm (7.5in)
	Admits between	1000mm (40in)
	or	1500mm (60in)
Swing	Over Bed	380mm (15in)
	Over Cross Slide	240mm (9.5in)
	In gap Diameter	585mm (23in)
	Length	150mm (6in)
Spindle	Bored to Pass	54mm (2.125in)
	Nose	D1-6 Camlock
	Morse Taper in Nose Bush	No. 4
Speeds	Number	12
	Range	40-2200 RPM
Motor	1500 rpm @ 50Hz	3.7KW (5HP) DOL
		Electric control
	1800 rpm @ 60Hz	5.5 KW (7.5HP)
		Clutch control
Leadscrew	Diameter	32mm (1.26in)
	Thread	6mm Pitch or 4 TPI
Threads	Metric Pitches (51)	From 0.2 to 14mm Pitch
	English Pitches (56)	From 2 to 56 TPI
	Module Pitches (20)	From 0.2 to 3.5 Mod
	Diametral Pitches (20)	From 8 to 56 DP
Feeds	Metric (31)	From .03 to 2mm/rev
	English (31)	From .0012 to .08 in/rev
	Cross Feeds Half Longitudinal Values	
Bed	Width over ways	300mm (11.8in)
	Depth under headstock	410mm (16in)
	Depth under saddle	270mm (10.6in)
Cross Slide	Width	180mm (7.1in)
	Travel	225mm (8.8in)
Top Slide	Width	106mm (4.1in)
	Travel	120mm (4.7in)
Tool	Max. Section	20 x 25mm (0.75 x 1in)
Tailstock	Quill - Diameter	63mm (2.48in)
	Travel	140mm (5.5in)
	Morse Taper	No. 4
	Set-Over	± 12mm (0.5in)
Weight	1000mm (40in) crs	1254 kg (2759lb)
	1500mm (60in) crs	1404 kg (3088lb)
Standard Equipment	Single Toolpost	Chuck Guard
	Work Driver Plate	Instruction & Spare Parts Manual
	Spindle Centre Bush	Spanners, Keys and Oil Gun
	2 No 4 MT Centres	Accuracy Chart
	Full Length Rear Splash Guard	
Shipping Data	Gross Weight	Packing Case Dimensions
		L x W x H
1000mm (40in) crs	1508 kg (3318lb)	2.24m(88¼") 1.22m(48") 1.4m(54¾")
1500mm (60in) crs	1759 kg (3870lb)	2.74m(108") 1.22m(48") 1.4m(54¾")

Illustrated or specified data is not binding in detail.

The manufacturers reserve the right to modify design, specification and price without notice.

Installation





Lifting

The approximate weights of the machine are:-

1000mm (40in) between centres model — 1254 kg (2759 lbs)

1500mm (60in) between centres model — 1404 kg (3088 lbs)

The machine should be lifted using rope slings as shown — with the rear splash guard removed and with the carriage and tailstock assemblies displaced (as despatched) towards the tail end of the bed to give an equilibrium condition under the lifting hook.

Cleaning

Bright surfaces are coated with an anti-corrosive compound at despatch and this must be completely removed using white spirit or paraffin (Kerosene) before operating the controls or moving the slides. **DO NOT USE CELLULOSE SOLVENTS.** Oil the bright surfaces and slideways **AFTER CLEANING** (see Lubrication Diagram).

Positioning and Levelling

Locate the machine on a solid foundation allowing sufficient area for operation and maintenance access. (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN).

The lathe may be used when 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 using an engineer's precision level on the bedways make further adjustments for level conditions.
- (2) **Fixed installation.** Position the machine over four 16 mm (5/8") diameter foundation bolts, set to suit the base. (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN).

Accurately level the machine as in (1), then tighten the foundation bolts evenly to avoid distortion and finally re-check for level conditions.

Electrical Supply

Over-current protection for the machine supply conductors is to be provided by user as follows (preferably through a fused isolator sighted at the origin of the main supply cable) recommended fuse being:—

	220 Volt	380—440 Volt
3 phase supply		
5.5kw motor (clutch control)	35 Amp	25 Amp
3.7kw motor (electric control)	25 Amp	20 Amp

External wiring should be of a permanent character and be undertaken by a competent electrician. Electrical entry is at the R.H. side of the control cabinet (looking from the rear of the machine).

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

Machine with clutch control — Motor direction must be CLOCKWISE looking on driving end, (SEE DIRECTION ARROW ON MACHINE FRAME).

Machine without clutch control — Motor direction must be anti-clockwise.

Lubrication (REFER TO THE LUBRICATION DIAGRAM)

On machine with clutch control headstock lubrication is by a pump from an oil reservoir mounted on the machine base. On machine with electric control headstock lubrication is of the splash type.

Ensure that the headstock, gearbox and apron are filled to the level of the relevant oil sight windows — operate the centralised slideway lubrication system by pulling and releasing the knob at the bottom corner of the apron and oil the cross-slide nut, dials and changewheel stud etc. through the appropriate oil nipples using the oil gun provided.

Machine with clutch control

On starting the main motor check for evidence of oil flow at the headstock sight glass.

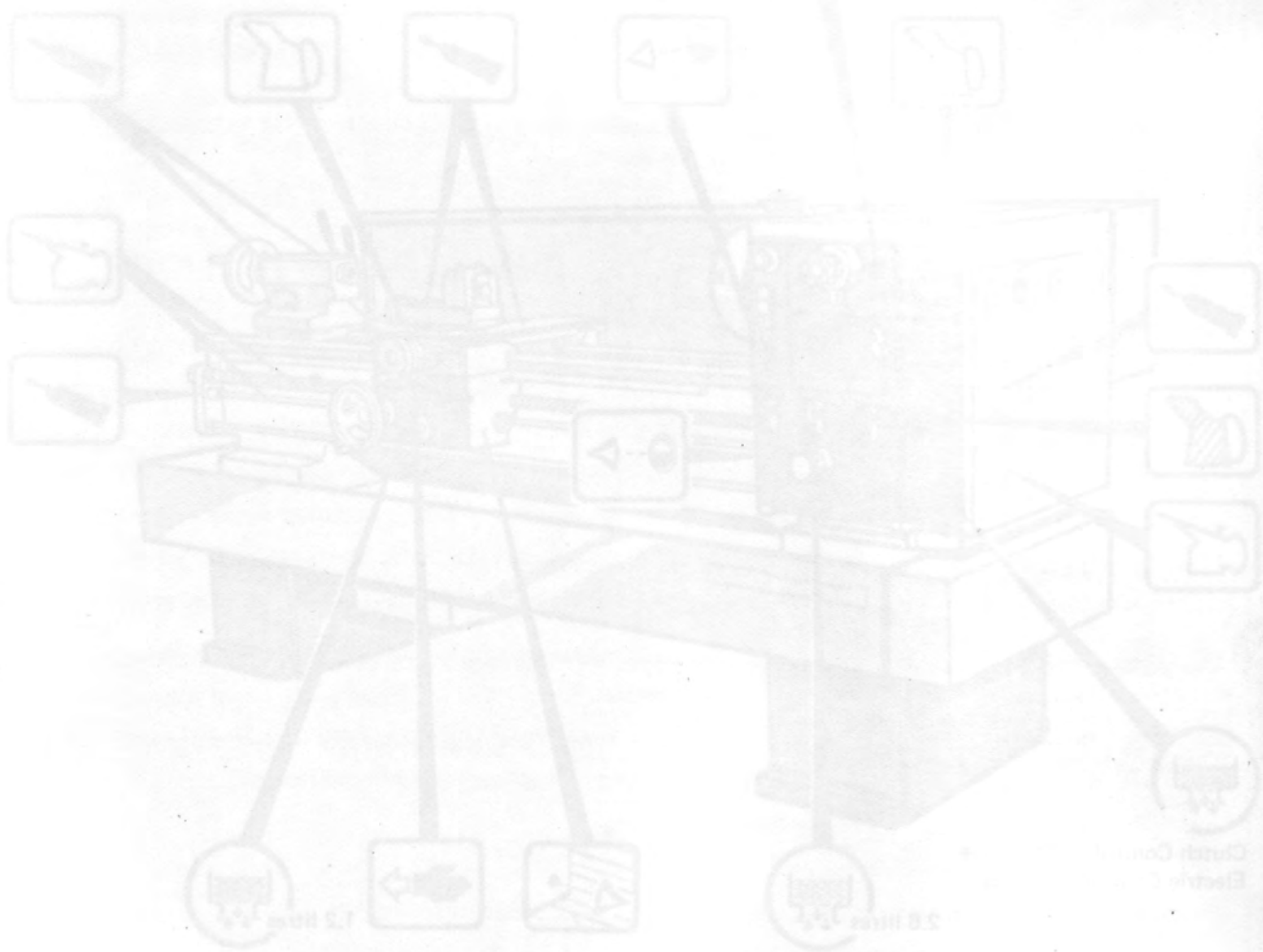
Running-in

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 520 rpm
then for 2 hours at 1080 rpm
then for 1 hour at 1530 rpm

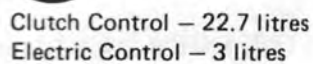
Check for flow when motor is running
 Durchfluss nachprüfen, wenn Motor läuft
 Vérifier le débit lorsque le moteur tourne



Model	BP	Castrol	Esso	Shell	Texaco
1.5 HP 1150	EVEROOL HLP 68	HYPIN AW 68	MOTUL HLP 68	AVIA HLP 68	AVIA HLP 68
2.0 HP 1150	EVEROOL HLP 68	ALPHA SN 220	AVIA HLP 68	AVIA HLP 68	AVIA HLP 68
2.5 HP 1150	EVEROOL HLP 68	ALPHA SN 220	AVIA HLP 68	AVIA HLP 68	AVIA HLP 68

Lubrication

Vérifier le débit lorsque le moteur tourne



2.6 litres

1 2 litres

Vérifier les regards et graisser quotidiennement

Operation

Lathe Safety

Every effort has been made in the design and production of the M350 lathe to comply with statutory safety requirements and to provide a fundamentally safe machine tool.

In the further interests of safety, attention should be given to the following notes:-

A. Machine Capacity

The dimensions of a component which can be accommodated on the M350 lathe are limited only by the physical restrictions of the machine itself but responsibility for the following points with respect to machining a component must inevitably rest with the user.

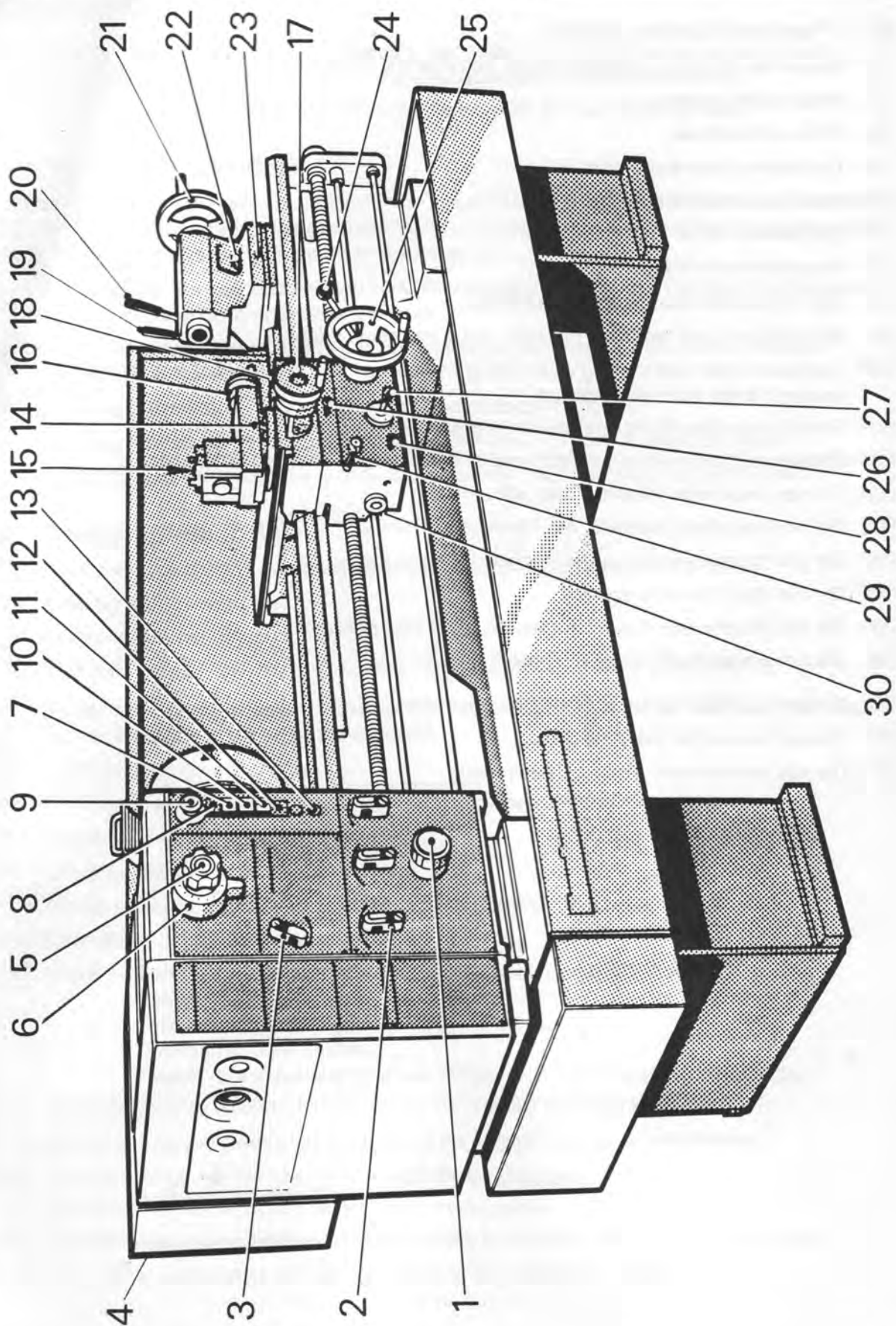
- (1) Ensuring that the operator has had suitable training and possesses the required degree of skill and experience to undertake the work.
- (2) Providing suitable work holding and/or supporting equipment, i.e. chucks, steadies, revolving centres, etc.
- (3) Ensuring that suitable tooling is provided and correctly mounted.
- (4) Ensuring that suitable feeds and speeds are selected (if in doubt select the lowest).
- (5) Providing suitable workpiece guards and ensuring that these are consistently used.

B. Lathe Safety Rules

- (1) Read and understand operation notes before attempting to use the machine.
- (2) Keep lathe work areas clean.
- (3) Keep area surrounding machine tidy.
- (4) **ENSURE YOU KNOW HOW TO STOP THE MACHINE BEFORE STARTING IT.**
- (5) Do not interchange chucks or other spindle mounting items between lathes without checking for correct locking (see operational notes).
- (6) Use only 'high speed' chucks.
- (7) Note maximum permissible speeds of faceplates (see operational notes).
- (8) Remove chuck key immediately after use.
- (9) Check load capacity of revolving centres.
- (10) Ensure workpiece guards are in position before starting machine.
- (11) **Do not** use cracked or chipped tools.
- (12) Check — Spindle control lever is in stop position before starting motors.
Spindle speed selected.
Feed rate selected.
Direction of feed, and that
Feed & thread cutting levers are disengaged before starting the spindle.
- (13) **STOP MACHINE IMMEDIATELY ANYTHING UNEXPECTED HAPPENS.**
- (14) Do not use coarse feed range on high spindle speeds (see operational notes).
- (15) **Do not** change spindle speeds when spindle is rotating.
- (16) **Do not** touch revolving chuck, spindle, or workpiece.
- (17) **Do not** remove work from the machine without retreating the tool to a safe position.
- (18) Stop motors and switch off isolator when leaving machine unattended.

C. Personal Safety Rules

- (1) Report any accident, however small, immediately it happens.
- (2) Wear safety glasses.
- (3) Wear safety shoes.
- (4) Use barrier creams provided.
- (5) Wear your overalls buttoned up.
- (6) Roll sleeves up, or button the cuffs.
- (7) Keep hair short or wear a cap.
- (8) Use the correct size spanners at all times.
- (9) Be careful of, and remove if possible, burrs and sharp edges.
- (10) Use the correct type of sling when lifting workpieces, of the correct safe working load and ensure it is not worn or damaged.
- (11) Stand clear when lifting workpieces or equipment by crane.
- (12) Obtain assistance when mounting heavy or awkwardly shaped workpieces.
- (13) **Do not** wear rings, watches, ties, etc.
- (14) **Do not** keep tools (scribers, etc.) in overall pockets.
- (15) **Do not** remove guards unless machine is stationary.
- (16) **Do not** wash hands in coolant.
- (17) **Do not** remove swarf with bare hands, use a rake or brush.
- (18) **Do not** manually lift heavy equipment.
- (19) **Do not** use files, scrapers, etc. without handles.
- (20) **Do not** lean on the machine.
- (21) **Do not** interfere with electrical equipment.



1. Feed Selector Dial
2. Feed Selectors (3)
3. Feed-Direction/Thread-Hand Selector
4. Mains Isolator (at Rear)
5. Speed Selector Dial
6. Speed Range Selector Lever
7. Start Pushbutton (Main Motor)
8. Stop Pushbutton (Main Motor)
9. Emergency-Stop Pushbutton
10. Brake-Release Pushbutton
11. Coolant-Pump Pushbuttons
12. Hydraulic-Pump(s) Pushbuttons*
13. Power-Chuck Pushbuttons*
14. Top-Slide Lock Screw
15. Cross-Slide Lock Screw
(on R.H. of Crossslide)
16. Top-Slide Traverse Handle
17. Cross-Slide Traverse Handle
18. Carriage Lock Bolt
19. Tailstock Quill Lock
20. Quill Traverse Handwheel
22. Tailstock Auxiliary Clamp Bolt
23. Tailstock Set-Over Screw
24. Spindle Control Lever
25. Carriage Traverse Handwheel
26. Feed Axis Selector
27. Feed Engage
28. Centralised Lubrication Knob
29. Threadcutting Engagement
30. Feed Trip Adjustment

*When fitted

On machine with electric control the above are identical with the exception of:—

7. not included
8. supply on lamp

Starting the Machine**

1. **Ensure that lubrication has been carried out in accordance with the Lubrication diagram.**
2. **Check** - that the spindle control lever (24) is in the central (stop) position, the feed engagement lever (27) and threadcutting engagement lever (29) are in the disengaged positions and that the changewheel guard is firmly secured in place.
- 3a. **Machine with clutch control**
Switch on the electrical supply — at the mains isolator (4) and press the main motor start pushbutton (7) — when 'motor running' will be indicated by this button becoming illuminated.
- 3b. **Machine with electric control**
Switch on the electrical supply at the mains isolator (4) when 'SUPPLY ON' will be indicated by the white lamp (8) mounted on the control station.
4. Select spindle speed (only when the spindle is stationary) by first turning the three position range selector lever (6) to present the appropriate speed range on the top segment of the dial, then turning the speed selector dial (5) to point to the required speed within this segment (engagement of the gears may be assisted by pressing the brake release pushbutton (10) and turning the spindle by hand.

NOTE: Brake release pushbutton (10) will become illuminated and flash when pressed, to indicate that the spindle is free — and may 'creep'. This condition may be cancelled by 'inching' the spindle control lever (24).
5. **Select** — Direction of feed — by means of the headstock lower selector handle (3).
6. **Select** — Feed Axis — ie cross or longitudinal by means of the apron push pull knob (26).
7. **Select** - feed rate*, by referring to the charts on the headstock and selecting (in the sequence listed) the appropriate positions on the feed selector dial (1) and levers (2) (engagement of the feed gears may be assisted by 'inching' the spindle using the spindle control lever (24)) or pressing the brake release pushbutton (10) and turning the spindle by hand.
8. **Start the spindle** - in the direction of rotation required by: lowering (for forward) or lifting (for reverse) the 'gated' spindle control lever (24) on the carriage.
9. **Start and Stop the feed motion** as required by means of the feed engage lever (27).
10. **Stop the machine** - by returning the spindle control lever (24) to its central (stop) position or: Press the emergency stop pushbutton.

NOTES

*Feed Selections from the Charts automatically disengage the leadscrew drive at the gearbox (i.e. by calling for selector position X) — and for minimum wear the thread indicator dial should be disengaged by swinging the pinion out of mesh with the leadscrew when not in use.

** See Installation Instructions (RUNNING-IN) if starting the machine for the first time.

Operational Notes

- CHUCKS — use only high speed types
- FACEPLATES — NOTE MAXIMUM SPEEDS
 - 740 rpm for 350mm dia
 - & 360 rpm for 550mm dia
- COARSE FEED RANGES — (i.e. when changewheels are inverted as in set up 'G' or 'H')
SHOULD NOT BE USED ON THE HIGH SPEED RANGE,
i.e. ABOVE 520 R.P.M.
- MICROMETER DIALS — are direct reading (for work piece diameter reduction on the
cross slide) and are of the friction-grip type for easy index settings
- TAILSTOCK SET-OVER ADJUSTMENT — is provided in the form of socket screws (23) mounted one each
side of the tailstock body — a similar but 'location-screw' is
provided in the rear face of the body.

Set-over adjustment is achieved as follows:
Unclamp tailstock-lever (20) and bolt (22). Slacken rear
'location-screw' (say one half turn) then simultaneously slacken
one 'set-over screw' and tighten the other until the required
setting is obtained. Retighten the rear 'location-screw'.
- CARRIAGE TRAVERSE HANDWHEEL (25) — may be disengaged by pulling it outwards from the carriage
face.
- FEED TRIP DEVICE — a trip device is incorporated in the carriage which affords
protection against accidental overload and also permits feeding up
to fixed stops with automatic dis-engagement; the trip load setting
is by means of the adjuster (30) on the apron.

It is recommended that the setting be selected to suit the
particular cutting load condition and not permanently adjusted to
its maximum load setting otherwise premature wear to the feed
drive components will ensue.

Adjustment of trip load is as follows:—
Stop spindle
Engage feed lever (27)
With a screwdriver push in adjuster rod (30) against the light spring
load and slowly turn until the dog is felt to engage the associated
nut and continue to turn to the required setting. Clockwise adjust-
ment increases the trip load. Ensure that when the screwdriver is
withdrawn the adjuster rod returns to the out position.

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).

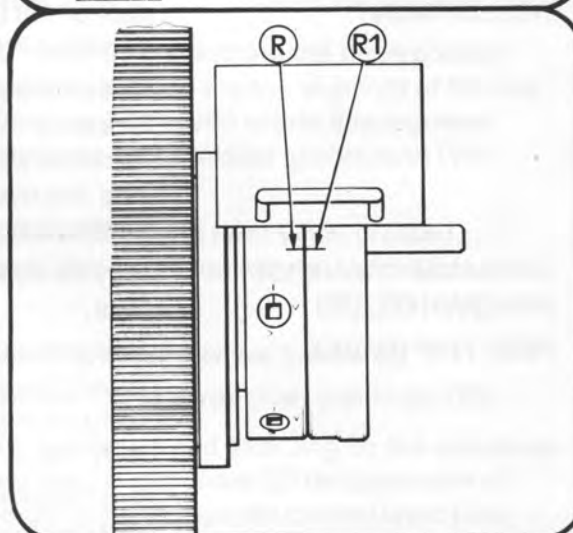
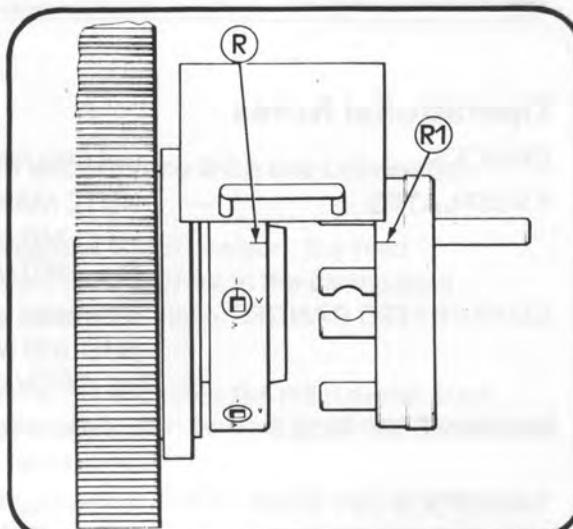
Mount the attachment on to the spindle nose and lock each cam by turning it clockwise using the key provided.

A reference line R1 (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'

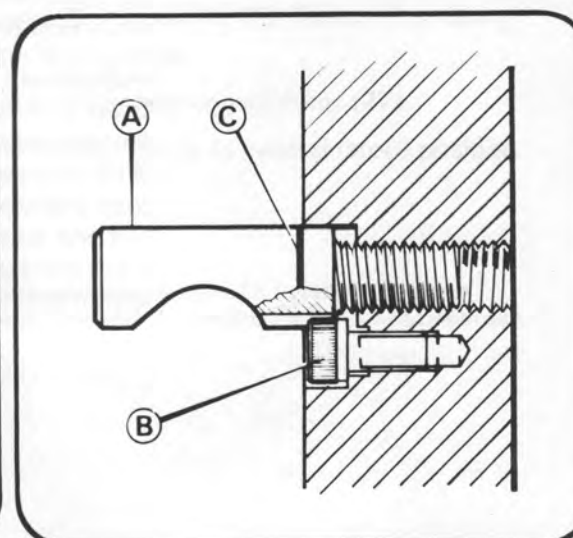
Remove Lockscrew (B).

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

Re-fit and tighten lockscrew (B).

NOTE:-

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



Spindle Nose

17

Machine Thread Plates



F		F		G		G	
.2	CR1W	1.1	CT4W	3.6	CT2W	9.0	BT2W
.225	CR2W	1.2	CT6W	4.0	CT3W	10	BT3W
.3	CR6W	1.25	BS3W	4.4	CT4W	11	BT4W
.35	CR8W	1.3	BT7W	4.5	BS2W	11.5	BT5W
.4	CS1W	1.4	CT8W	4.6	CT5W	12	BT6W
.45	CS2W	1.5	BS6W	4.8	CT6W	13	BT7W
.5	CS3W	1.75	BS8W	5.0	BS3W	14	BT8W
.55	CS4W	2.0	BT1W	5.2	CT7W		
.6	CS6W	2.25	BT2W	5.5	BS4W		
.65	CS7W	2.5	BT3W	5.6	CT8W		
.7	CS8W	2.75	BT4W	5.75	BS5W		
.75	BR6W	3.0	BT6W	6.0	BS6W		
.8	CT1W	3.25	BT7W	6.5	BS7W		
.9	CT2W	3.5	BT8W	7.0	BS8W		
1.0	BS1W			8.0	BT1W		



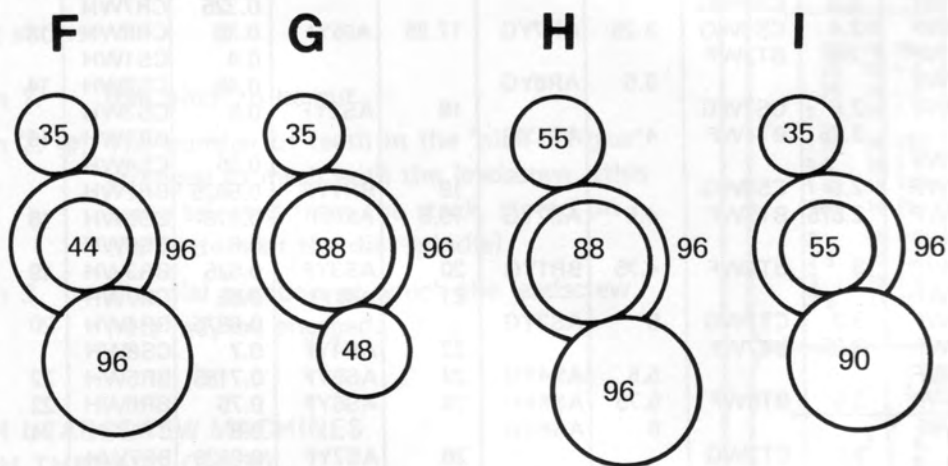
F		F		G		I	
56	AT8Y	18	AS2Y	7	AS8Y	42	AT8Y
52	AT7Y	16	AS1Y	6½	AS7Y	39	AT7Y
48	AT6Y	14	AR8Y	6	AS6Y	33	AT4Y
46	AT5Y	13	AR7Y	5¾	AS5Y	30	AT3Y
44	AT4Y	12	AR6Y	5½	AS4Y	27	AT2Y
40	AT3Y	11	AR5Y	5	AS3Y	21	AS8Y
36	AT2Y	11	AR4Y	4¾	AS2Y	19½	AS7Y
32	AT1Y	10	AR3Y	4	AS1Y	16½	AS4Y
28	AS8Y	9	AR2Y	3¾	AR8Y	15	AS3Y
26	AS7Y	8	AR1Y	3¼	AR7Y	13¾	AS2Y
24	AS6Y			3	AR6Y	10¾	AR8Y
23	AS5Y			2 7/8	AR5Y	9¾	AR7Y
22	AS4Y			2½	AR4Y	8¾	AR4Y
20	AS3Y			2½	AR3Y	7¾	AR3Y
19	BR1Y			2¼	AR2Y	6¾	AR2Y
				2	AR1Y		



H		H		H		H	
56	AT8Y	16	AS1Y	.2	CR1W	1.5	BS6W
48	AT6Y	14	AR8Y	.25	CR3W	1.75	BS8W
44	AT4Y	13	AR7Y	.3	CR6W	2.0	BT1W
40	AT3Y	12	AR6Y	.35	CR8W	2.25	BT2W
36	AT2Y	11	AR4Y	.4	CS1W	2.5	BT3W
32	AT1Y	10	AR3Y	.5	CS3W	2.75	BT4W
28	AS8Y	9	AR2Y	.6	CS6W	3.0	BT6W
26	AS7Y	8	AR1Y	.7	CS8W	3.5	BT8W
24	AS6Y			.8	CT1W		
22	AS4Y			.9	CT2W		
20	AS3Y			1.0	BS1W		
18	AS2Y			1.25	BS3W		

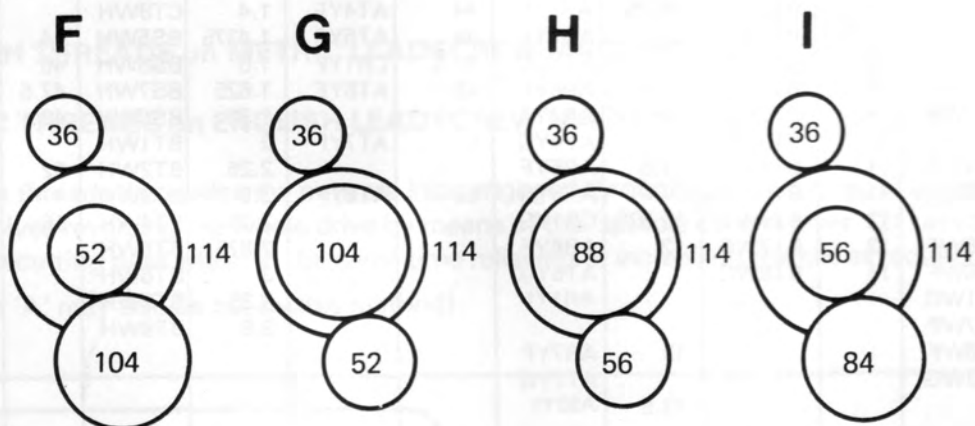
Changewheel Combinations

Fig. 2A for metric leadscrew machines.







6 mm. pitch Leadscrew

Fig. 2B for English leadscrew machines.



4 tpi. Leadscrew

THREAD CUTTING Fig. 3

 mm				 ins				 mod		 dp	
0.2	CR1WF	2	BT1WF	2	AR1YG	14	AR8YF	0.2	CR1WH	8	AR1YH
0.225	CR2WF			2.25	AR2YG		AT8YG	0.225	CR2WH	9	AR2YH
0.25	CR3WF			2.5	AR3YG	15	AS3YI	0.25	CR3WH	10	AR3YH
0.275	CR4WF	2.2	CS4WG	2.75	AR4YG			0.275	CR4WH	11	AR4YH
0.2875	CR5WF	2.25	BT2WF	2.875	AR5YG	16	AS1YF	0.2875	CR5WH	11.5	AR5YH
0.3	CR6WF			3	AR6YG	16.5	AS4YI	0.3	CR6WH	12	AR6YH
0.325	CR7WF	2.3	CS5WG					0.325	CR7WH		
0.35	CR8WF	2.4	CS6WG	3.25	AR7YG	17.25	AS5YI	0.35	CR8WH	13	AR7YH
0.4	CS1WF	2.5	BT3WF					0.4	CS1WH		
0.45	CS2WF			3.5	AR8YG			0.45	CS2WH	14	AR8YH
0.5	CS3WF	2.6	CS7WG			18	AS2YF	0.5	CS3WH		
		2.75	BT4WF	4	AS1YG				BR1WH	16	AS1YH
0.55	CS4WF							0.55	CS4WH		
0.5625	BR2WF	2.8	CS8WG			19	BR1YF	0.5625	BR2WH		
0.575	CS5WF	2.875	BT5WF	4.5	AS2YG	19.5	AS7YI	0.575	CS5WH	18	AS2YH
0.6	CS6WF							0.6	CS6WH		
0.625	BR3WF	3	BT6WF	4.75	BR1YG	20	AS3YF	0.625	BR3WH	19	BR1YH
0.65	CS7WF					21	AS8YI	0.65	CS7WH		
0.6875	BR4WF	3.2	CT1WG	5	AS3YG			0.6875	BR4WH	20	AS3YH
0.7	CS8WF	3.25	BT7WF			22	AS4YF	0.7	CS8WH		
0.71875	BR5WF			5.5	AS4YG	23	AS5YF	0.7185	BR5WH	22	AS4YH
0.75	BR6WF	3.5	BT8WF	5.75	AS5YG	24	AS6YF	0.75	BR6WH	23	AS5YH
0.8	CT1WF			6	AS6YG			0.8	CT1WH	24	AS6YH
		3.6	CT2WG			26	AS7YF	0.8125	BR7WH		
0.8125	BR7WF	4	BS1WG	6.5	AS7YG	27	AT2YI	0.875	BR8WH	26	AS7YH
0.875	BR8WF			6.75	AR2YI	28	AS8YF	0.9	CT2WH		
0.9	CT2WF	4.4	CT4WG	7	AS8YG			1	BS1WH	28	AS8YH
		4.5	BS2WG			30	AT3YI		CT3WH		
1	BS1WF	4.6	CT5WG	7.5	AR3YI	32	AT1YF	1.1	CT4WH		
		4.75	AT8WG	8	AR1YF	33	AT4YI	1.125	BS2WH	32	AT1YH
		4.8	CT6WG		AT1YG	34.5	AT5YI	1.15	CT5WH		
1.1	CT4WF	5	BS3WG	8.25	AR4YI	36	AT2YF	1.1875	AT8WH		
		5.2	CT7WG	8.625	AR5YI			1.2	CT6WH	36	AT2YH
1.125	BS2WF	5.5	BS4WG	9	AR2YF	39	AT7YI	1.25	BS3WH		
1.15	CT5WF	5.6	CT8WG		AT2YG	40	AT3YF	1.3	CT7WH		
		5.75	BS5WG		AR6YI	42	AT8YI	1.375	BS4WH	40	AT3YH
1.1875	AT8WF	6	BS6WG	9.75	AR7YI	44	AT4YF	1.4	CT8WH		
1.2	CT6WF	6.5	BS7WG	10	AR3YF	46	AT5YF	1.4375	BS5WH	44	AT4YH
		7	BS8WG		AT3YG	47.5	CR1YF	1.5	BS6WH	46	AT5YH
1.25	BS3WF	8	BT1WG	10.5	AR8YI	48	AT6YF	1.625	BS7WH	47.5	CR1YH
1.3	CT7WF	9	BT2WG	11	AR4YF			1.75	BS8WH	48	AT6YH
		10	BT3WG		AT4YG	52	AT7YF	2	BT1WH		
1.375	BS4WF	11	BT4WG	11.5	AR5YF			2.25	BT2WH	52	AT7YH
1.4	CT8WF	11.5	BT5WG		AT5YG	56	AT8YF	2.5	BT3WH		
		12	BT6WG	11.875	CR1YG			2.75	BT4WH	56	AT8YH
1.4375	BS5WF	13	BT7WG	12	AR6YF			2.875	BT5WH		
1.5	BS6WF	14	BT8WG		AT6YG			3	BT6WH		
1.6	CS1WG				AR1YI			3.25	BT7WH		
1.625	BS7WF							3.5	BT8WH		
1.75	BS8WF			13	AR7YF						
1.8	CS2WG			13.5	AT7YG						
					AS2YI						

(A) METRIC THREADS on METRIC LEADSCREW MACHINES
or
ENGLISH THREADS on ENGLISH LEADSCREW MACHINES

For these threads it is recommended that the "thread indicator dial" be used - this allows the leadscrew nuts to be disengaged at the end of each screwcutting pass, provided that they re-engaged in accordance with the chart mounted on the face of the dial unit.

METRIC LEADSCREW MACHINES
(METRIC THREADS ONLY)

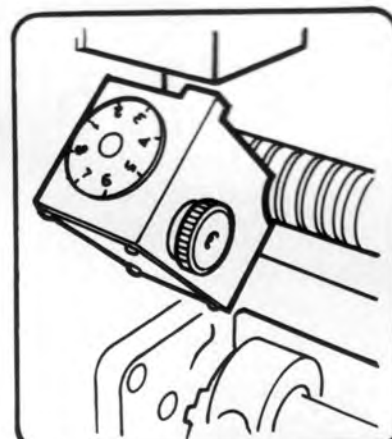
The chart shows: -

- in column 1. mm pitch to be cut.
- in column 2. (☼) The number of teeth in the 'pick-off gear' arranged to mesh with the leadscrew, (this being selected from the stack, stored on the bottom of the dial spindle).
- in column 3. The dial numbers at which the leadscrew nuts may be engaged.

ENGLISH LEADSCREW MACHINES
(ENGLISH THREADS ONLY)

The chart shows: -

- in column 1. T.P.I. to be cut.
- in column 2. Dial numbers at which the leadscrew nuts may be engaged.



 mm	
mm	mm
2.25	18 15
2.5	16 1-8
7.5	16 1-8
1	16 1-8
1.25	20 1357
1.5	16 1-8
1.6	16 1357
1.75	14 15
2	16 1-8
2.5	20 1357
3	16 1-8
3.5	14 15
4	16 1-8
4.5	18 15
5	20 1357
5.5	22 15
6	16 1-8
7	14 15
8	16 1357
9	18 15
10	20 1357
11	22 15
12	16 1-8
14	14 15

812

 ins			
2	1 8	8	1 8
2 ¹ / ₂	15	9	1357
2 ¹ / ₂	1	10	1 8
3	1357	11	1357
3 ¹ / ₄	1	11 ¹ / ₂	15
3 ¹ / ₂	15	12	1 8
4	1 8	13	1357
4 ¹ / ₂	15	14	1 8
5	1357	16	1 8
6	1 8	18	1 8
7	1357	19	1357
7 ¹ / ₂	15	20	1 8
813			

(B) ENGLISH THREADS on METRIC LEADSCREW MACHINES
or
METRIC THREADS on ENGLISH LEADSCREW MACHINES

For these threads the leadscrew nuts are kept engaged throughout the cutting of any one thread. This involves reversing the whole drive by means of the 'spindle control lever' (24) at each end of the screwcutting pass whilst at the same time relieving or increasing the cut as required.

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

Thread-cutting dial

Drive Belts (Fig. 1 and 2)

Access to the Drive Belts is gained by removal of the moulded End Guard, when Vee Belt tension may be assessed by applying finger pressure to each Belt in turn at a point midway between the two Pulleys (Fig. 1). For correct tension a deflection of about 10mm should be possible in each Belt.

To adjust the Vee Belt tension — release the Lock Nuts on the two Adjusting Screws (Fig. 2) and alternatively slacken one Screw and tighten the other against the Motor Platform until the correct tension is obtained then re-tighten the two Lock Nuts.

Machine with clutch

Drive to the lubrication pump is by link type belt and if adjustment becomes necessary one link should be removed.

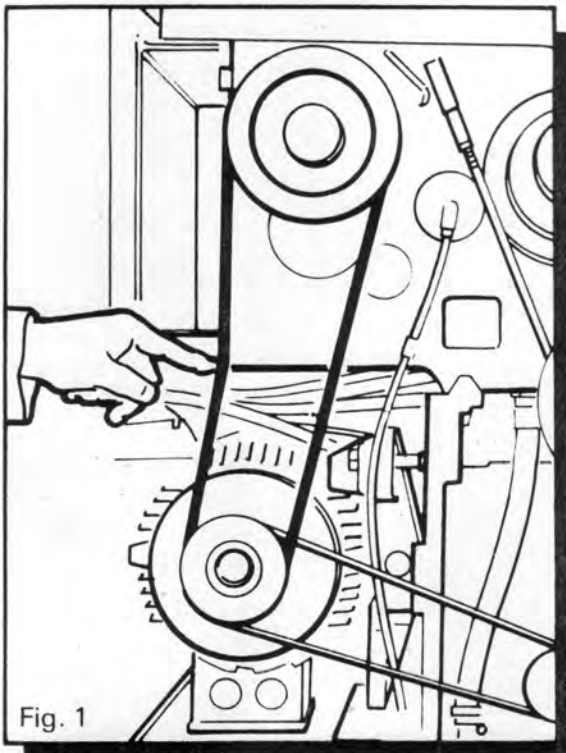


Fig. 1

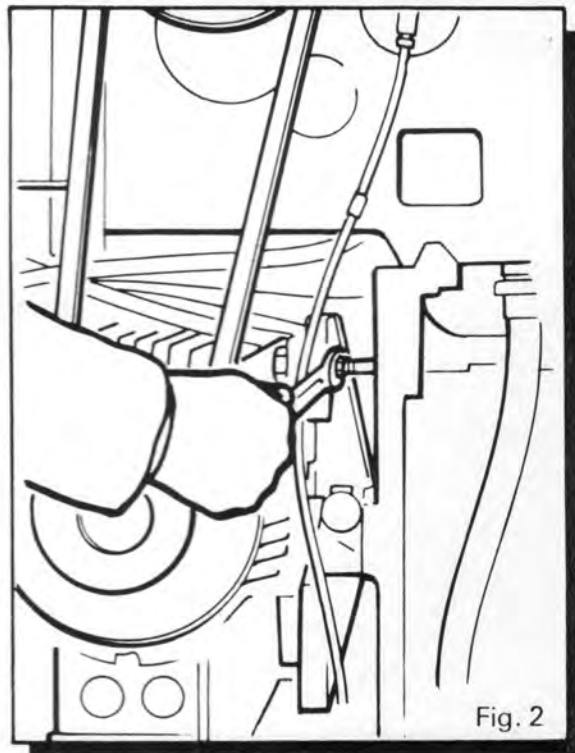


Fig. 2

Electro-Magnetic Brake

A considerable life expectancy is assured from the fail to safety electro-magnetically operated brake, this being determined by the duty cycle to which the lathe is subjected. Adjustment becomes necessary only when a noticeable diminution in braking torque is apparent and is as follows:

1. Stop spindle.
2. Remove rear splash guard.
3. Press brake release pushbutton and with feeler gauge check air gap between face of brake disc and flange plate.
4. Switch off power at isolating switch.
5. Remove cap head screws (3) to separate the brake and remove spacers (3).
6. Reduce length of spacers by an amount equal to the measured air gap less 0.15mm (.006").
To ensure that the spacers are of equal length it is recommended that this be done by surface grinding.
7. Re-assemble and re-check that air gap is 0.1/0.15mm (.004"/.006").
8. When the friction material on the faces of the brake disc has worn away then further adjustment is not possible and the disc must be replaced. It should be noted that included with a replacement disc will be a set of over length spacers which will require to be shortened to produce the air gap as described above.

Drive Clutches

Access

- (1) Disengage Clutches at Spindle Control Lever (24 on Controls Diagram). Switch off power supply at Mains Isolator.
- (2) Remove Headstock Cover as follows:-
Remove Rubber Mat.
Remove Fixing Screws.

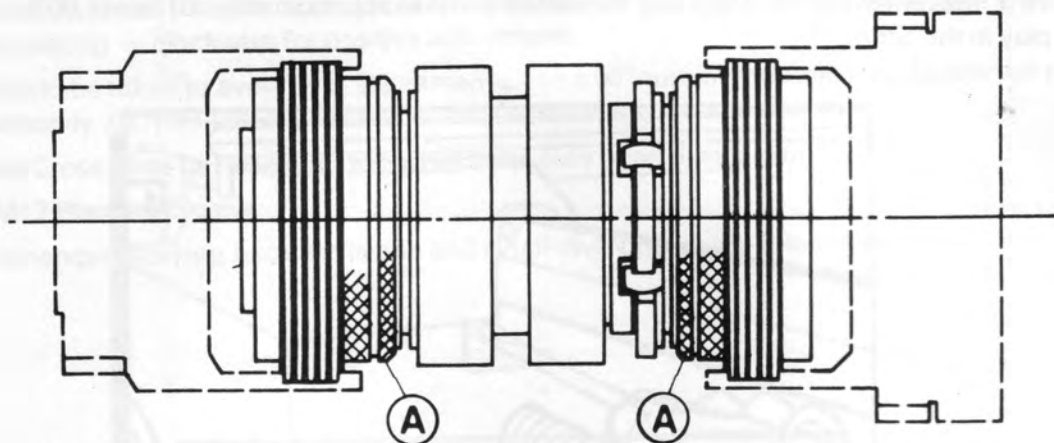


Fig. 3

Adjustment (Fig. 3 and 3a)

- (1) Select Clutch to be adjusted, i.e. R.H. for forward L.H. for reverse.
- (2) Slide back Knurled Lock Ring (A) and rotate one notch at a time in direction of arrow to tighten.
- (3) Reset lock ring.

NOTE: OVER ADJUSTMENT MAY CAUSE SERIOUS DAMAGE TO CLUTCHES.

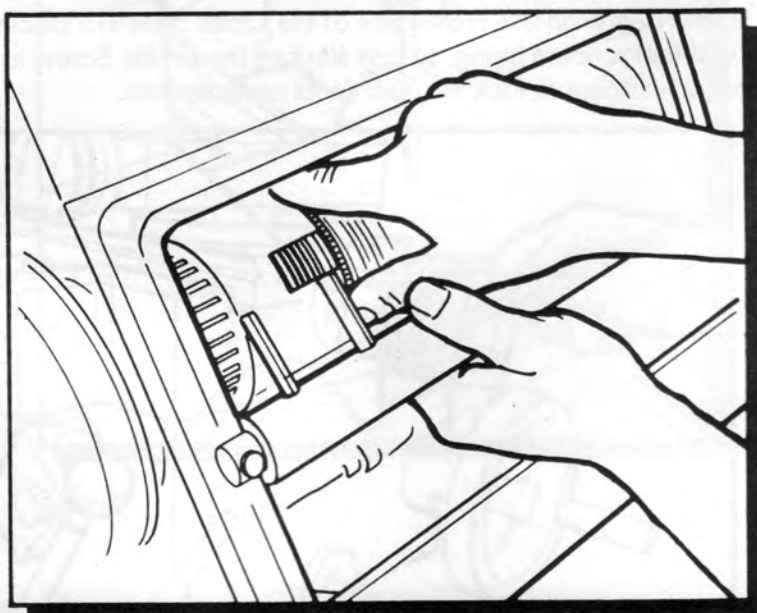


Fig. 3a

Saddle Keep Strips (Fig. 4)

Four self-locking Adjusting Screws are provided which operate independently. These are the Slotted Head Screws located under each end of both the front and rear Saddle Wings.

The procedure for adjustment being to turn each Screw in turn (clockwise to take up play) until required setting is obtained.

Traverse Saddle by hand over full travel at each adjustment to be sure of an even action.

Note 5° movement of the Adjusting Screw will provide approximately .017mm (.007in) take up of play in the Strip.

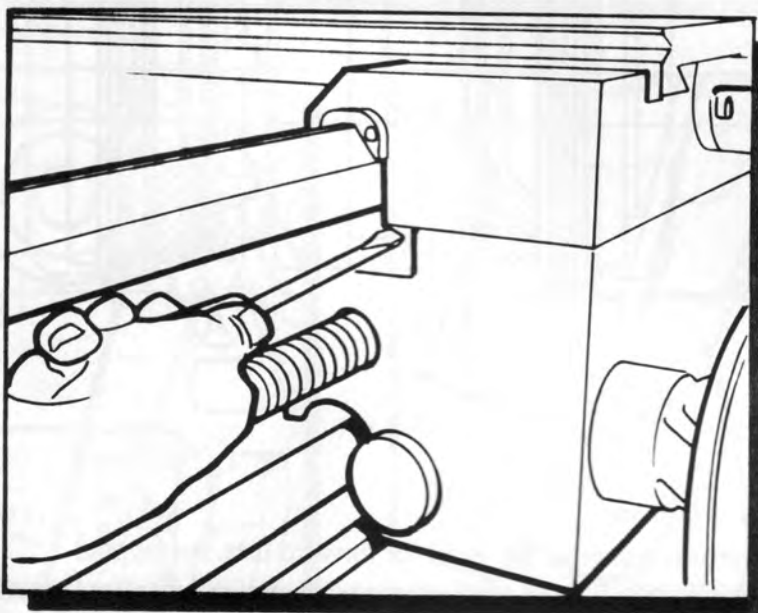


Fig. 4

Cross Slide Ways (Fig. 5)

Wear in the Cross Slide Ways must be adjusted for by means of the 'Taper-Gib Strip' as follows:-

Turn the Slotted Head Screw on the Front Face of the Cross Slide in a clockwise direction to tighten the 'Gib' — the procedure being, to first slacken the similar Screw in the Rear Face, then re-tighten this after adjustment to lock the 'Gib' in its new position.

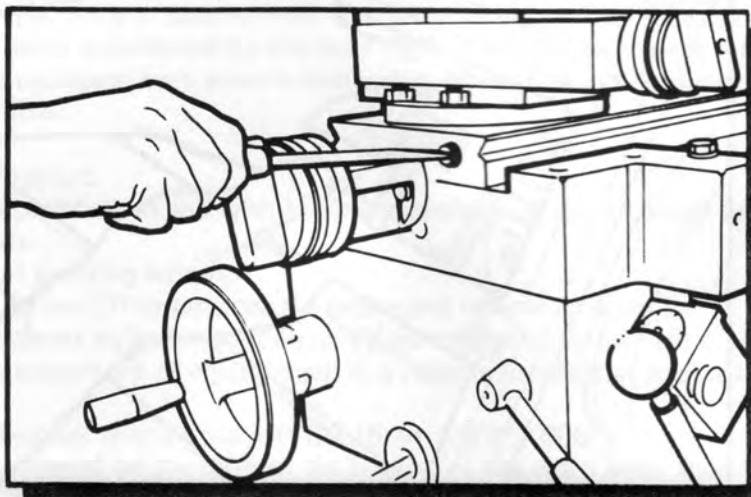


Fig. 5

Cross Slide Nut (Fig. 6)

Provision is made for the elimination of backlash in the Cross Slide Nut, the procedure for adjustment being as follows:-

Remove only the M12 'Blanking' Screw which is the L.H. Rear one of the group of three, in the top face of the Cross Slide.

Insert a screw driver into the tapped hole and turn the Captive Adjusting Screw to give the required setting — clockwise for positive adjustment.

Care should be taken to avoid over adjustment since a 90° turn of the Adjusting Screw will provide approximately .017mm (.007in) take up of backlash.

Traverse Cross Slide by hand over full travel to be sure of an even action.

Re-fit M12 Blanking Screw.

'Recommended working backlash is one and a half divisions on the Micrometer Dial'.

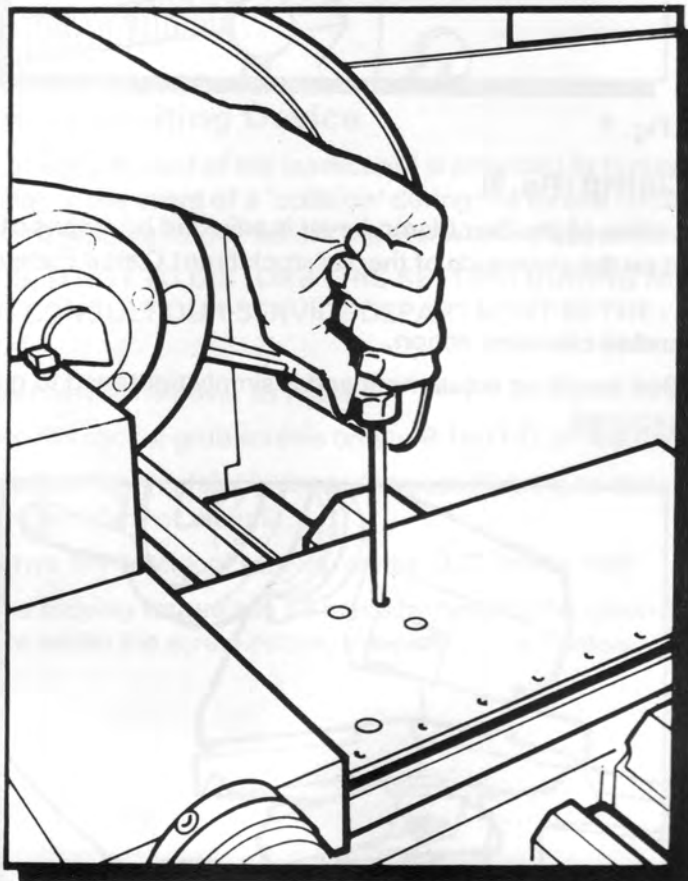


Fig. 6

Top Slide Ways(Fig. 7)

Wear in the Top Slide Ways may be adjusted for by means of the Taper-Gib Strip as follows:-

Turn the Slotted Head Screw at the 'Micrometer Dial end' in a clockwise direction to tighten the 'Gib' — the procedure being to first slacken the similar Screw at the opposite end, then re-tighten this after adjustment to lock the Gib in its new position.

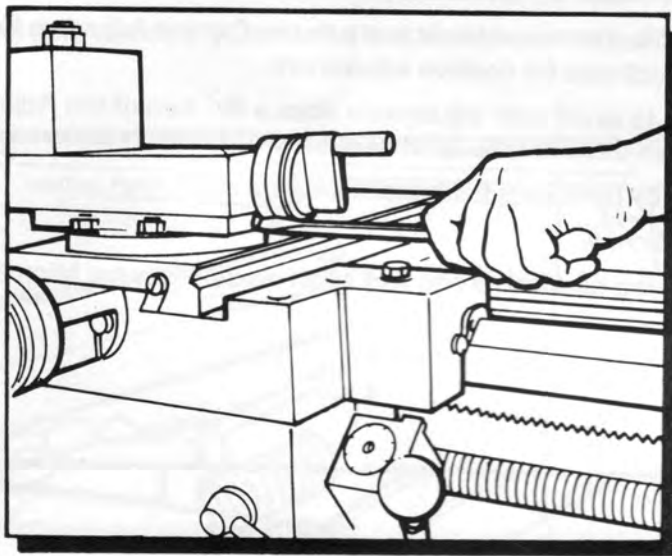


Fig. 7

Tailstock Bed Clamp (Fig. 8)

The Angular Lock Position of the Bed Clamp Lever is adjusted by means of the Self-Locking Hexagon Bolt located on the underside of the Tailstock Front Clamp Plate and between the Bedways.

Turn clockwise to increase clamping action.

The auxiliary Clamp Bolt needs no adjustment and is simply tightened to give an additional locking action when required.

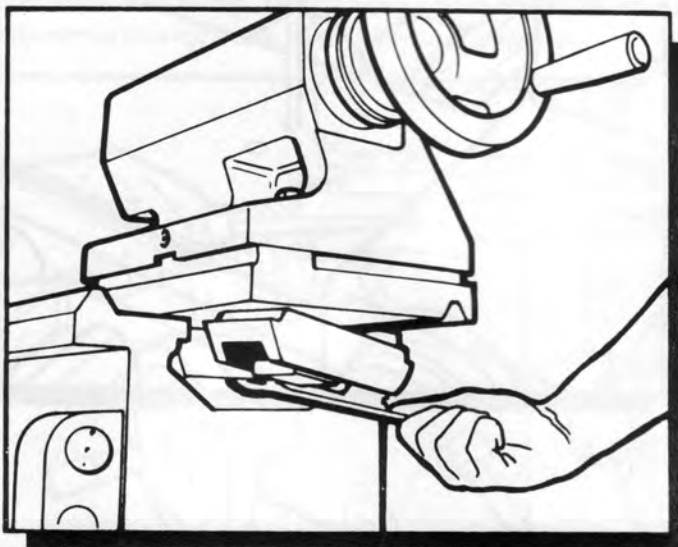
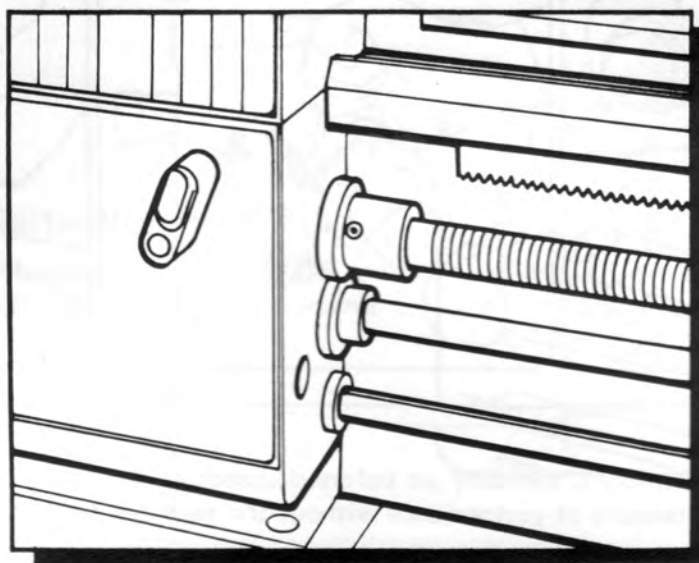


Fig. 8



Leadscrew Torque Limiting Device

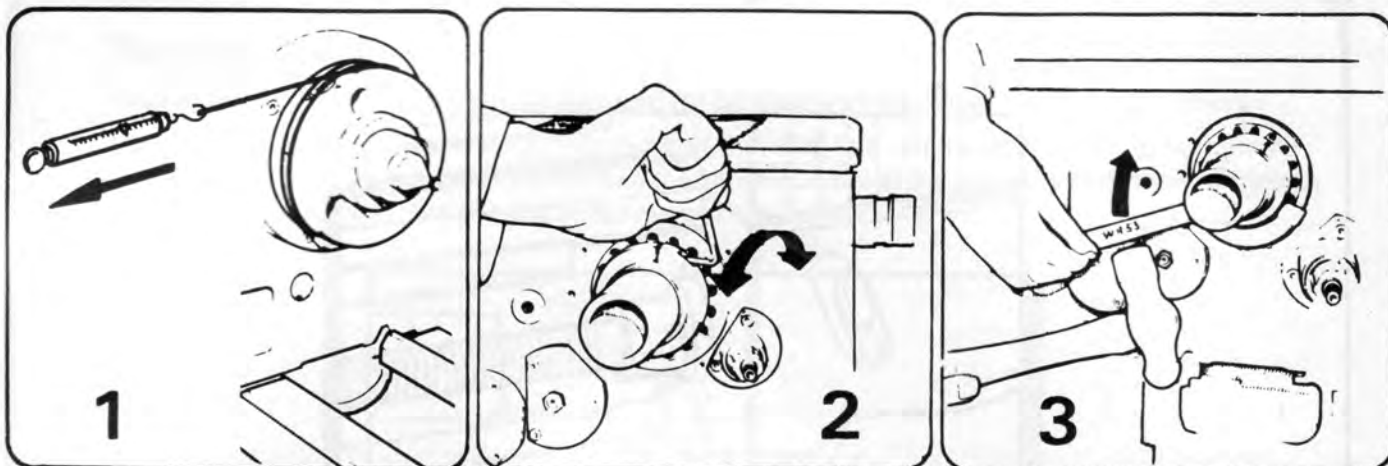
This unit (mounted at the L.H. end of the leadscrew) is provided to protect the gearbox and end drive from damage in the event of a 'collision' during the thread cutting cycle and is carefully set to a pre-determined slipping torque before the machine is dispatched from our works.

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

Adjustment may be achieved however as follows:

1. Slacken the two M4 socket grub screws on the R.H. O.D. of the unit.
2. Turn the inner adjusting ring (clockwise to increase slipping torque) by means of the two holes in the R.H. end face of the unit.
3. Re-tighten the two M4 'Locking' screws, on the O.D. of the shell.

An assessment of the slipping torque can be made by holding the apron handwheel in order to stop the saddle movement whilst the screw cutting traverse is in operation.



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.

TO CHECK FOR CORRECT SETTING

Checks should be carried out with the headstock in a warm condition achieved by running at a spindle speed of 800 rpm for approximately ten minutes.

The correct bearing torque setting is 1.69/1.92 Nm (15/17 in lbs) and can be determined as follows (Fig. 1):-

Wrap a length of string approximately three turns around the body of the chuck.

To the free end of the string attach a light spring balance and pull gently until spindle commences to turn, continuing to apply a steady load just sufficient to maintain the spindle in motion and noting the steady load registered on the balance.

Example: Using a 280 mm (10 in) chuck, the spring balance reading should be 1.36kg/1.59kg (3/3½ lbs).

BEARING ADJUSTMENT

Remove end drive guard and rear bearing cover.

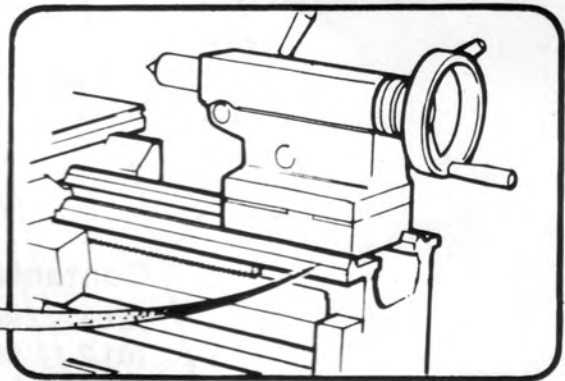
Release locking screw in the bearing adjusting nut, Fig. 2. With the pin-key provided adjust the nut as required - clockwise rotation to increase bearing load, Fig. 3. As over tightening will seriously impair the life of the bearings it is recommended that adjustment be made in increments not exceeding 3 mm (1/8 in) measured on the nut periphery. After each incremental adjustment, the spindle should be run for a few minutes and the bearing load re-checked, as described above.

Parts Ordering Procedure

1

Quote:
Machine Serial Number

which will be found stamped into the front face of the bedways at the tailstock end



2

Refer to the appropriate assembly and

Quote:
Individual Part Numbers taken direct from the Illustrations

NOTE: Quantity used (when other than one) is given in a circle following the Part Number itself.

Where part numbers change with machine bed length then the model number is given, vis.

1000

or

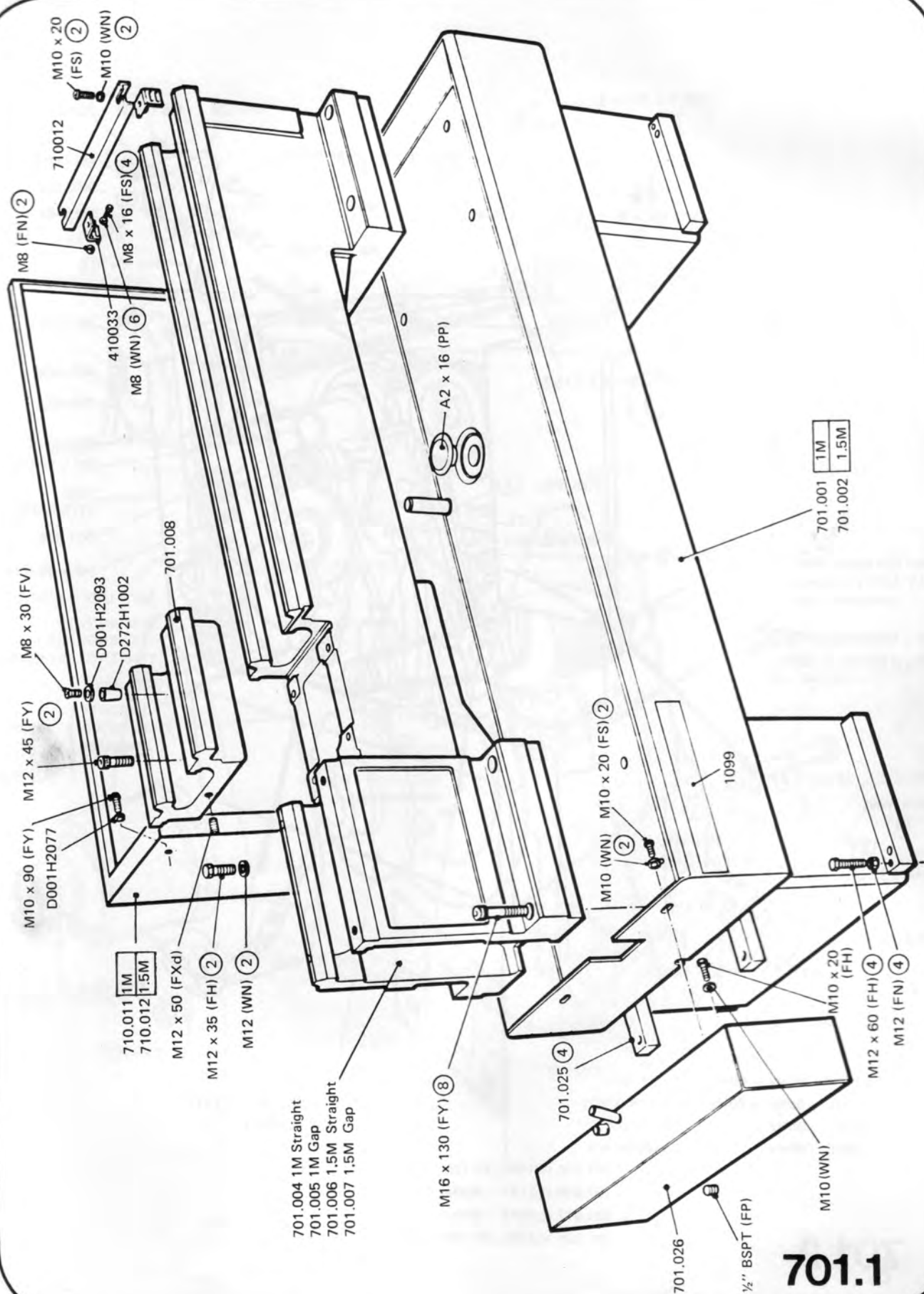
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Standard/Proprietary Parts (i.e. items which can be purchased from local Engineering suppliers) may be identified by the "bracketed" letter code included in the Part Number, and reference to the appendix at the end of this manual will provide a full description of such items.

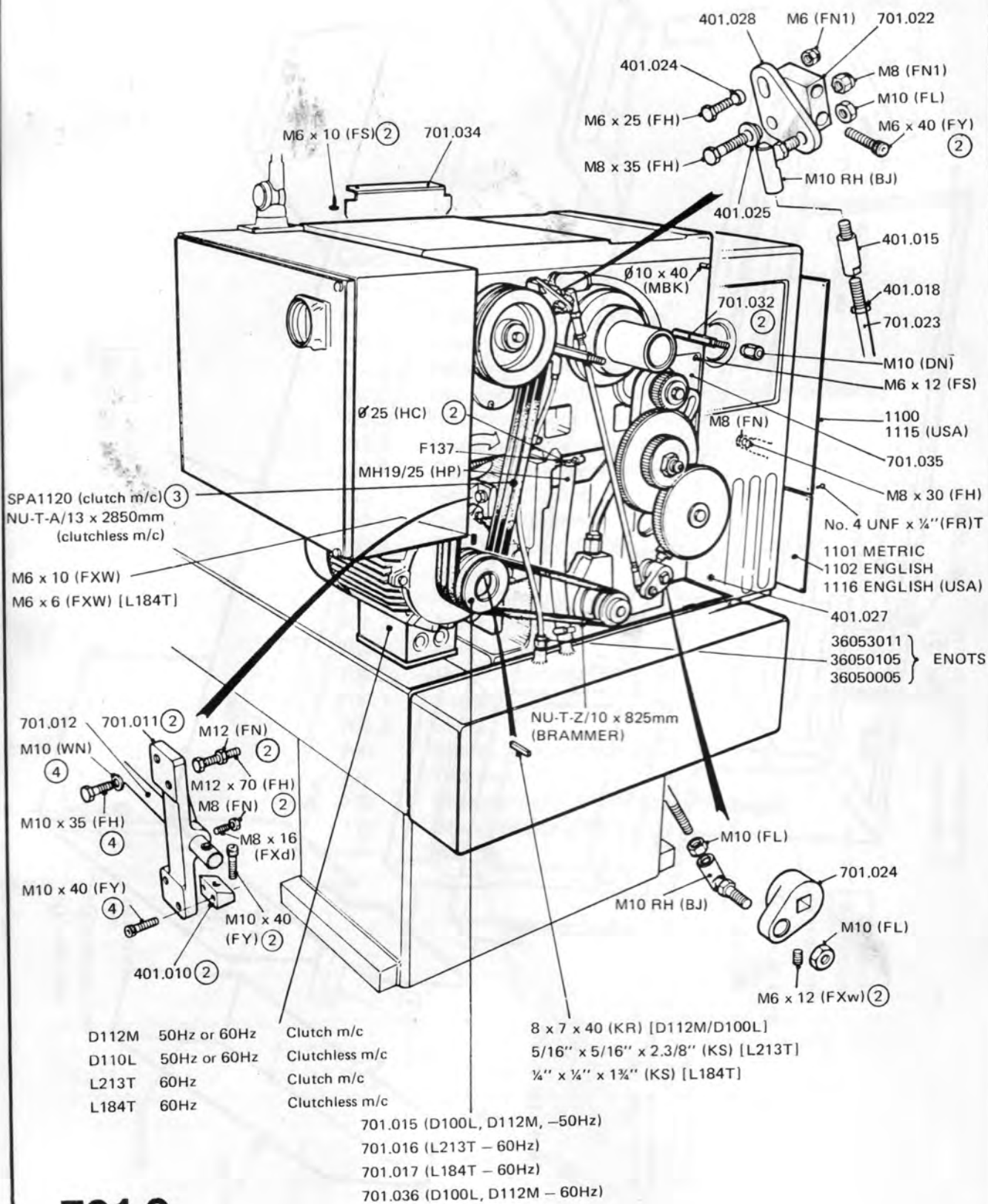
Parts Section

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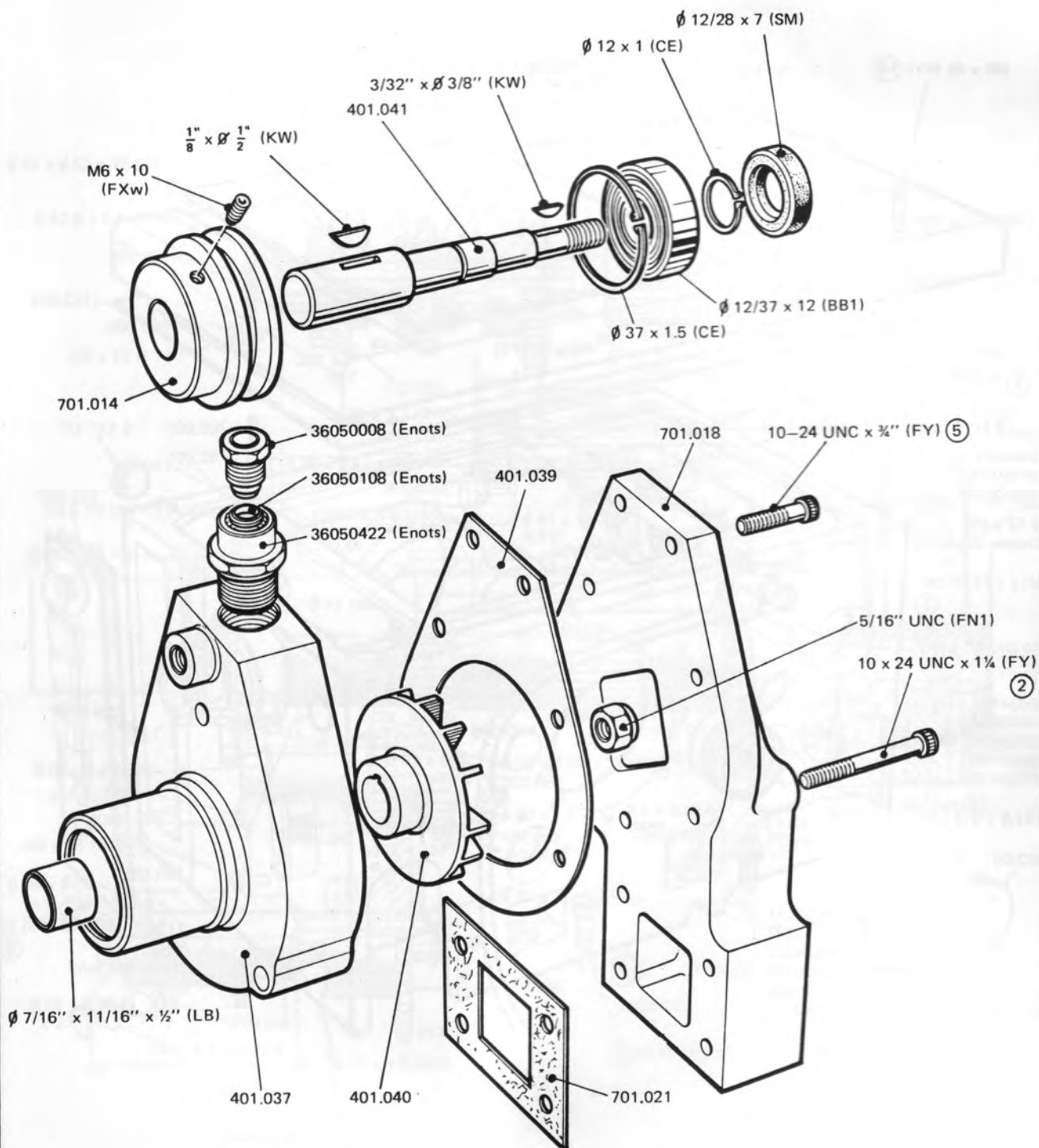
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701.2	Brake and Clutch Linkage
701.3	Lubrication Pump
702.1	Headstock Main Casting
702.2	Headstock Spindle and Gearing (common shafts)
702.3	Headstock Clutch and Gearing
702.4	Headstock Gearing (without clutch)
702.5	Gear Shifting Mechanism
703.1	Gear Box Casting
703.2	Gear Box Gearing
703.3	Gear Box Gear Shifting
704.1	Apron
704.2	Apron Gearing
704.3	Apron Gears
704.4	Apron — Pump
704.5	Thread Indicator Dial
705.1	Saddle
705.2	Slides
706	Shafts, rack and bracket
707	Tailstock
708	Chargewheels — Swing Frame
710	Standard Equipment



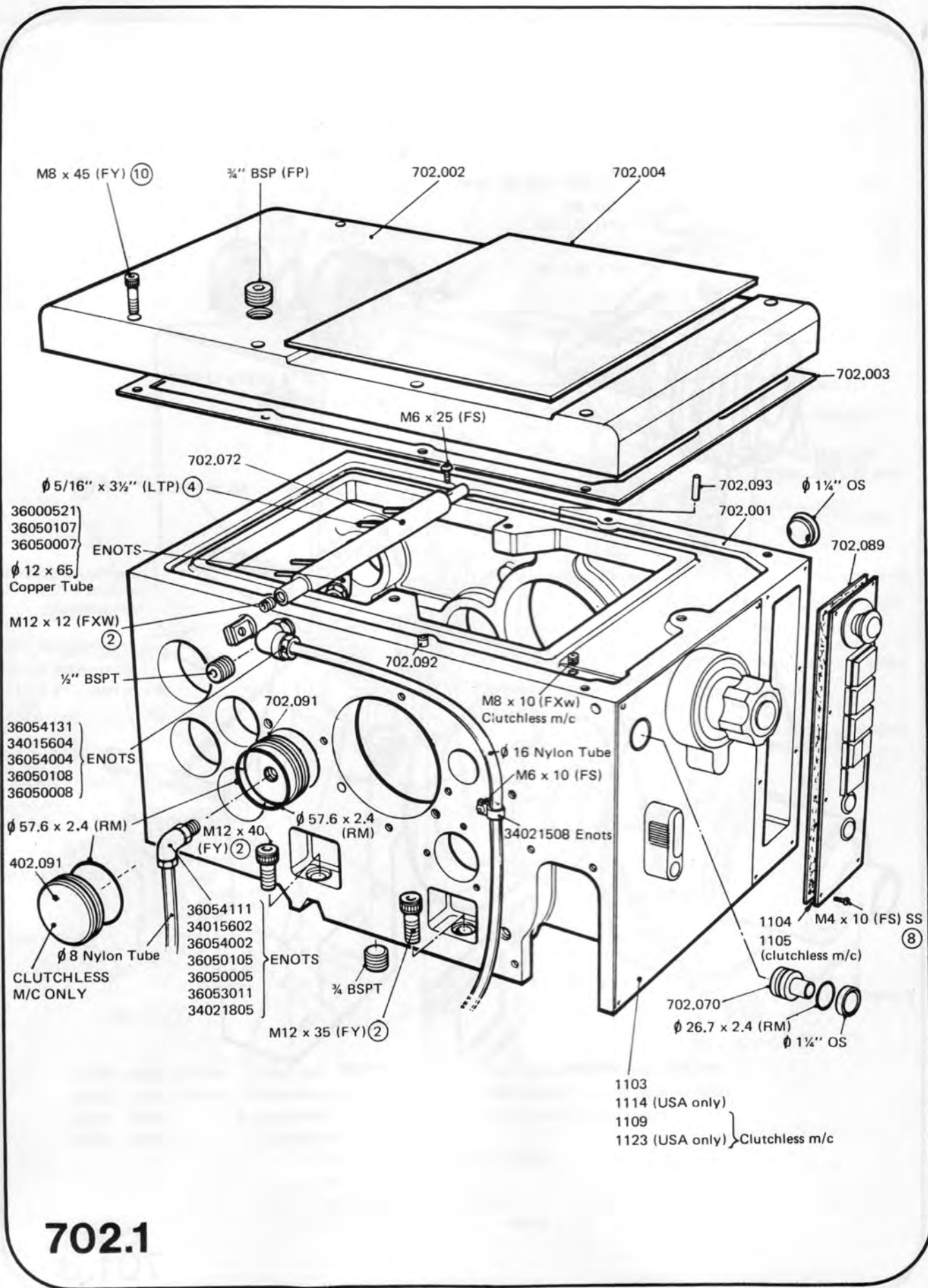
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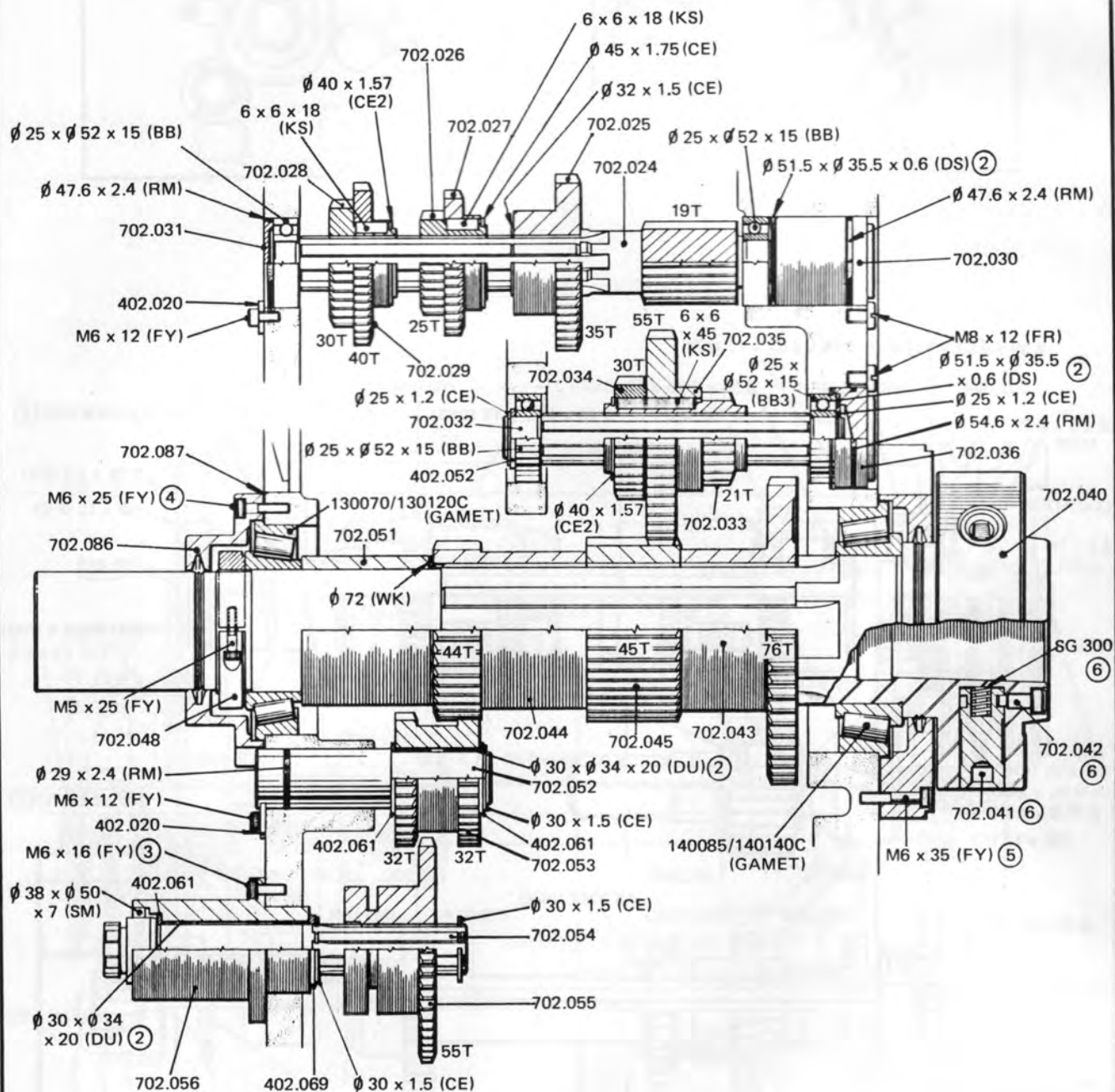


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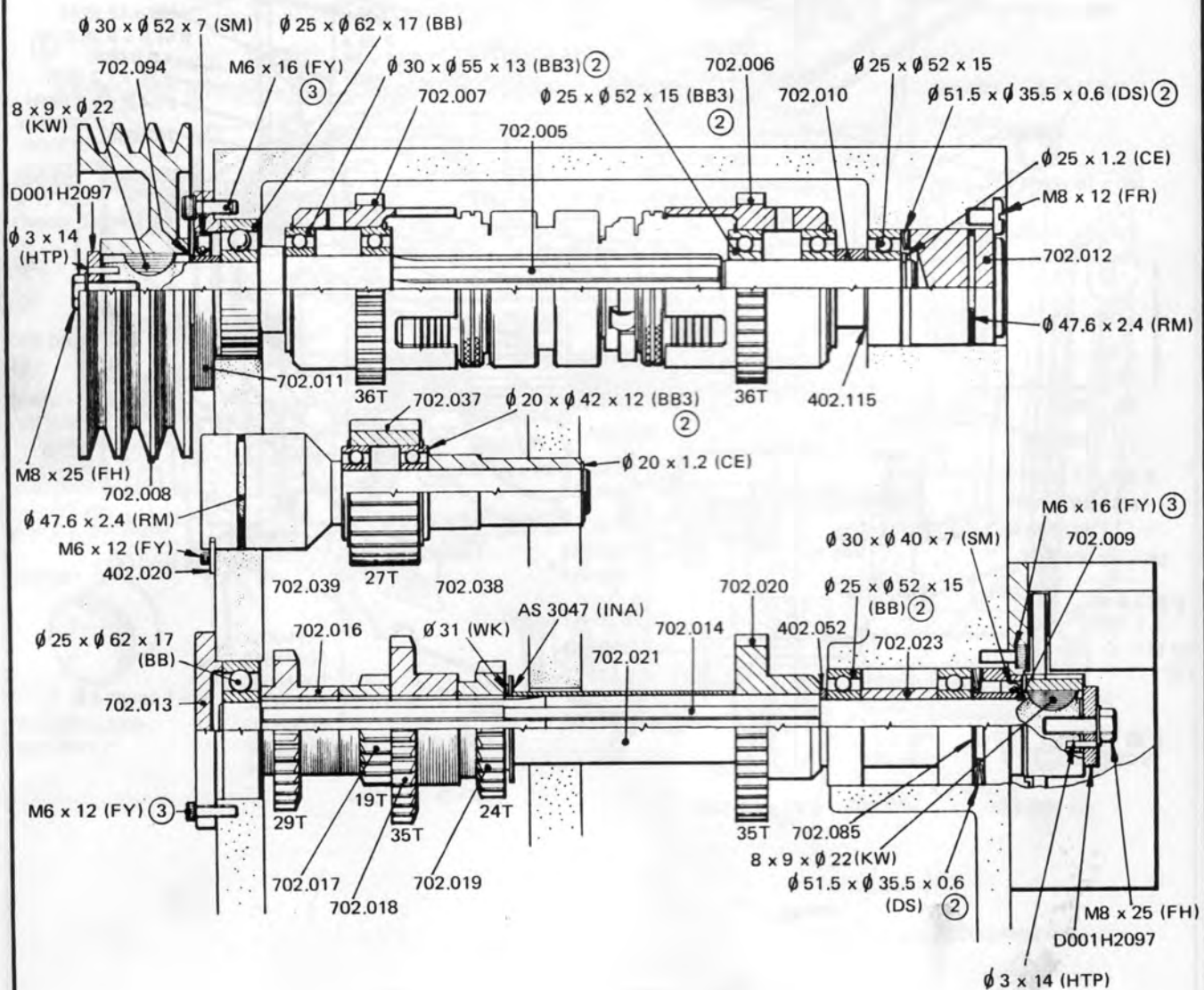
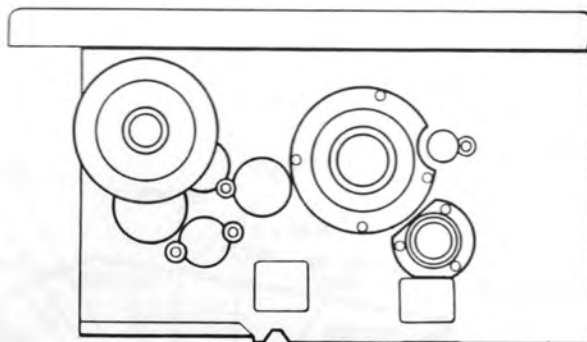


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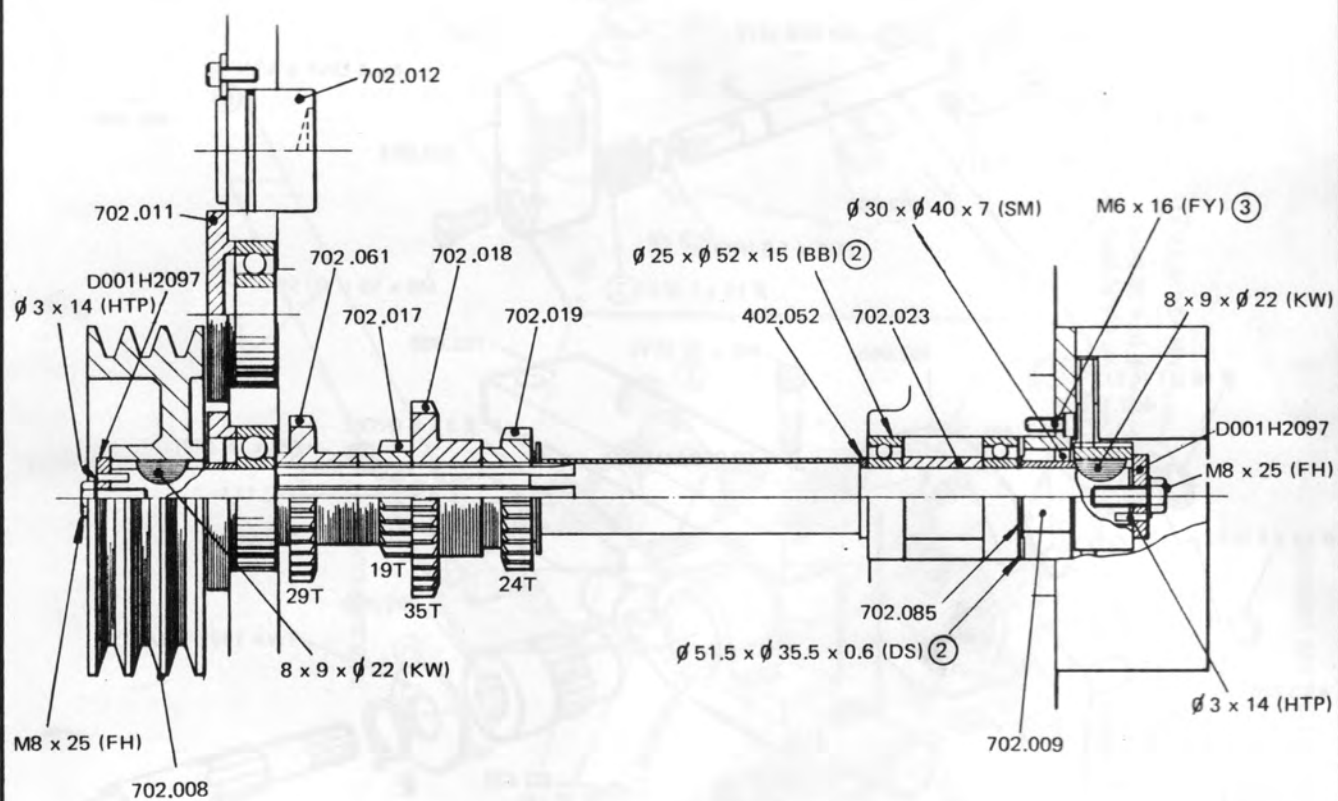
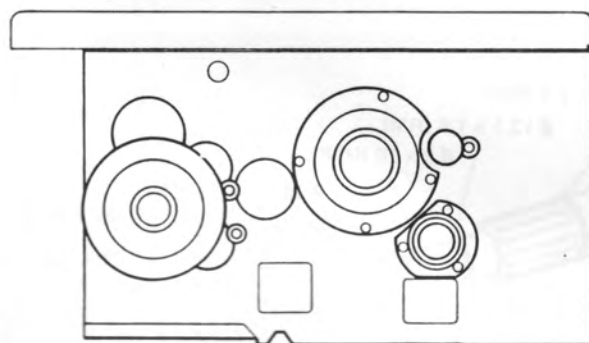




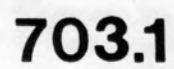
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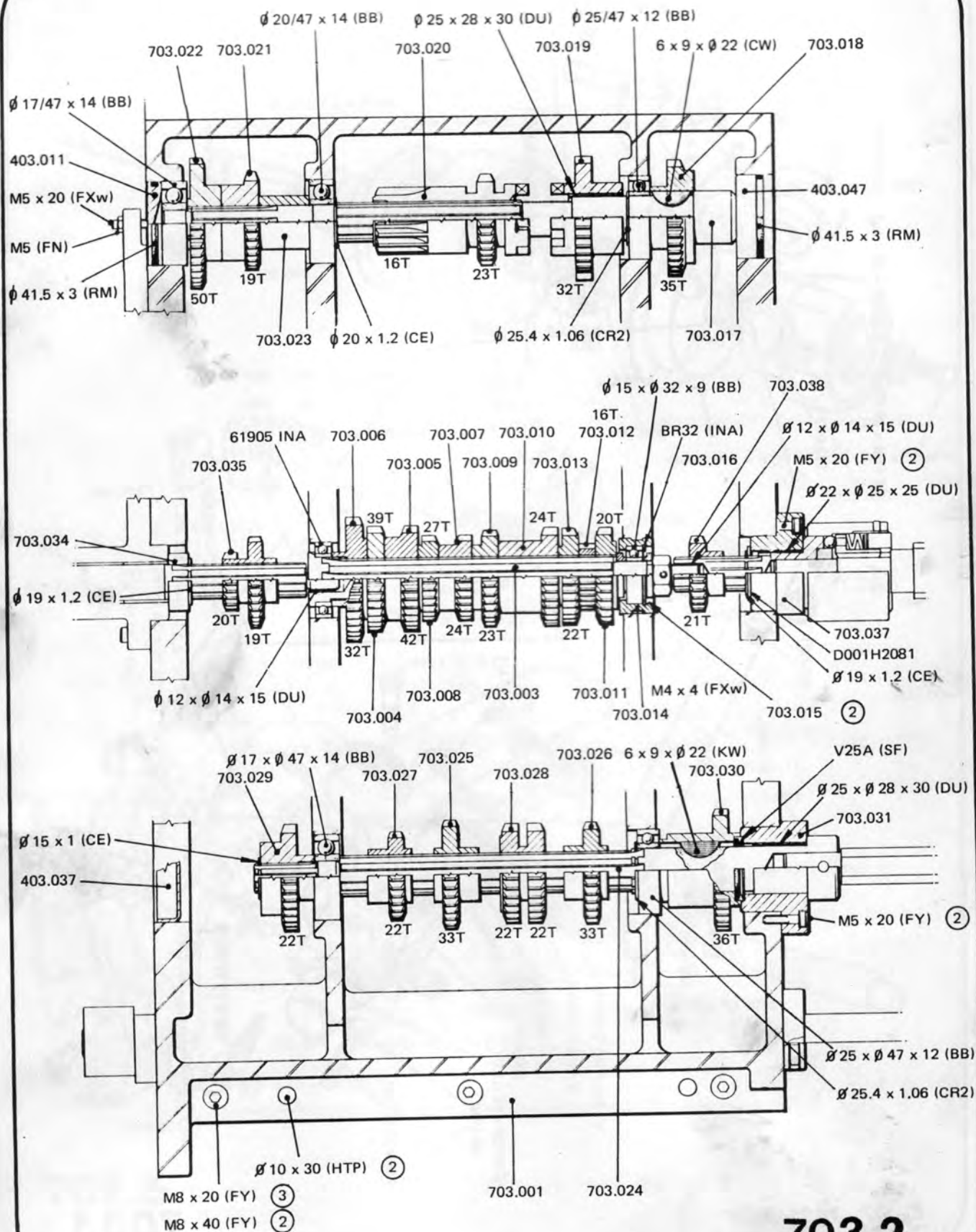
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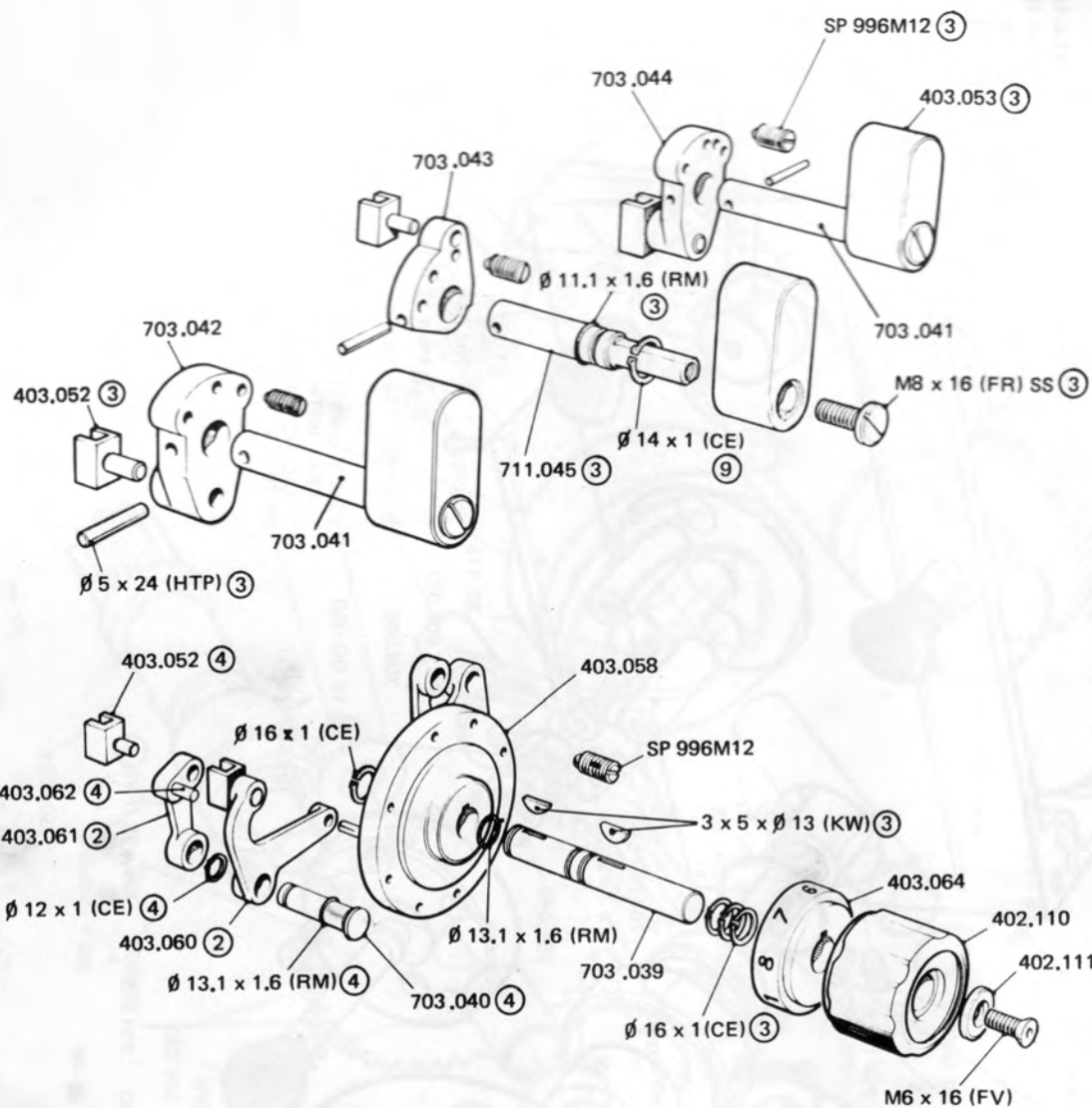
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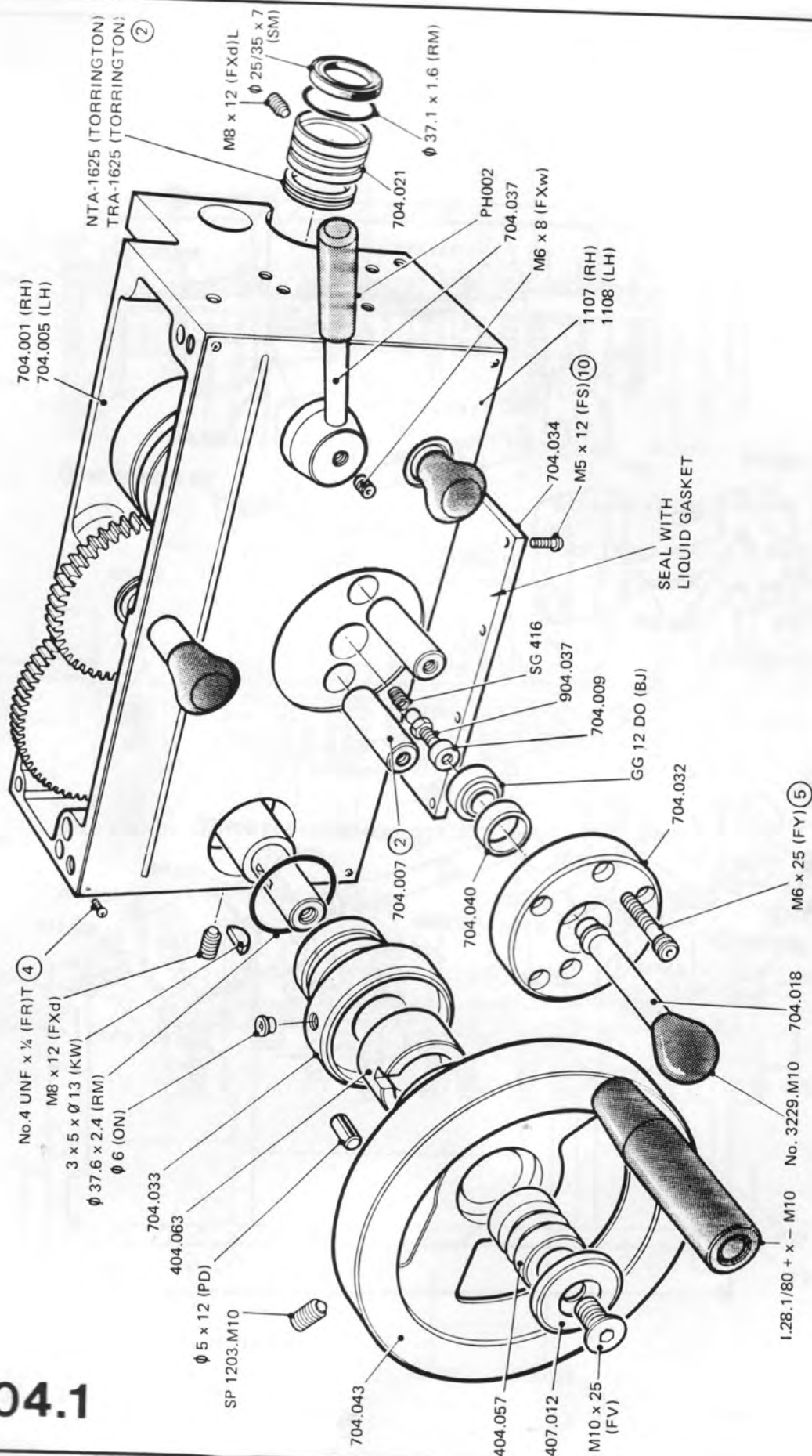


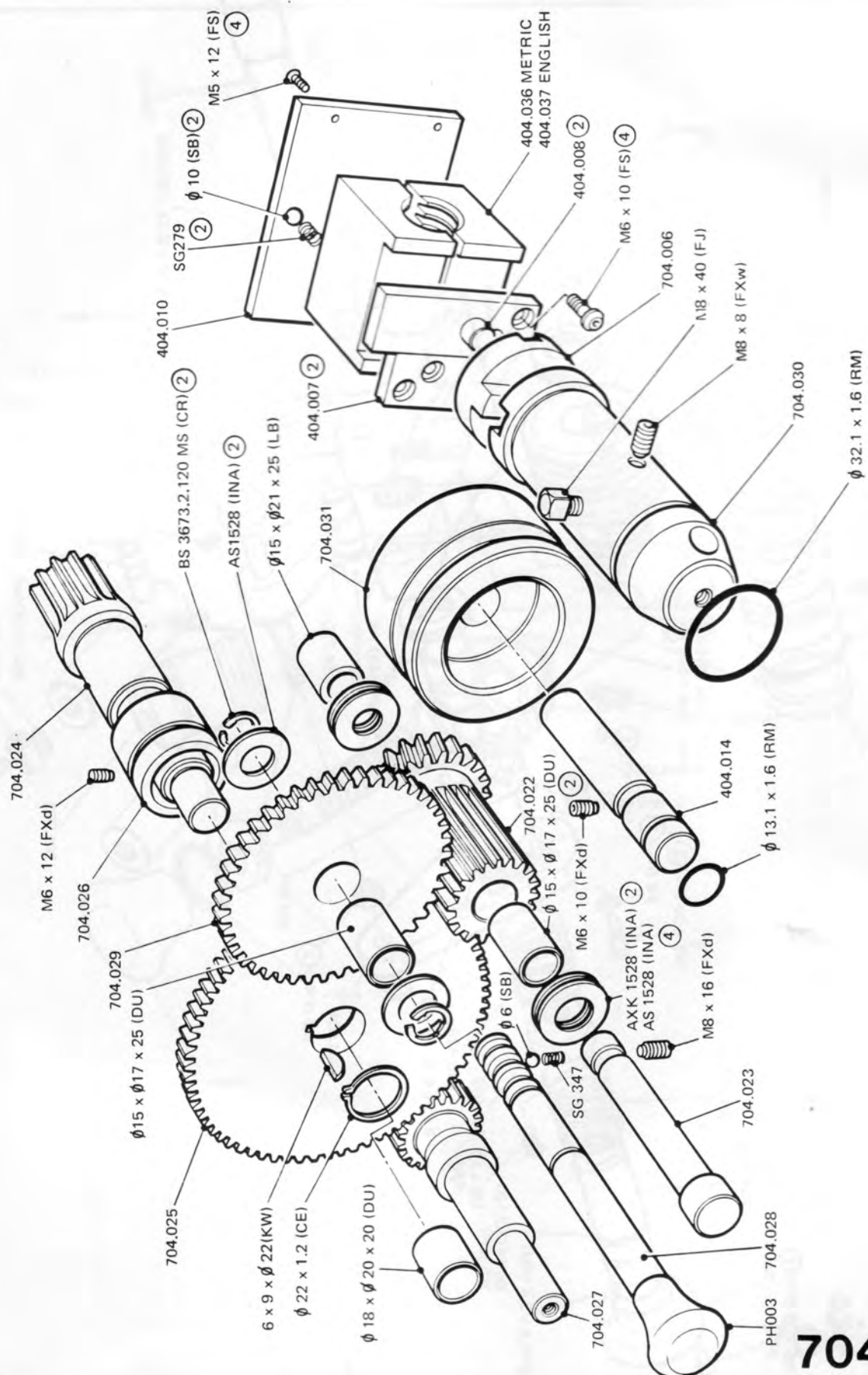
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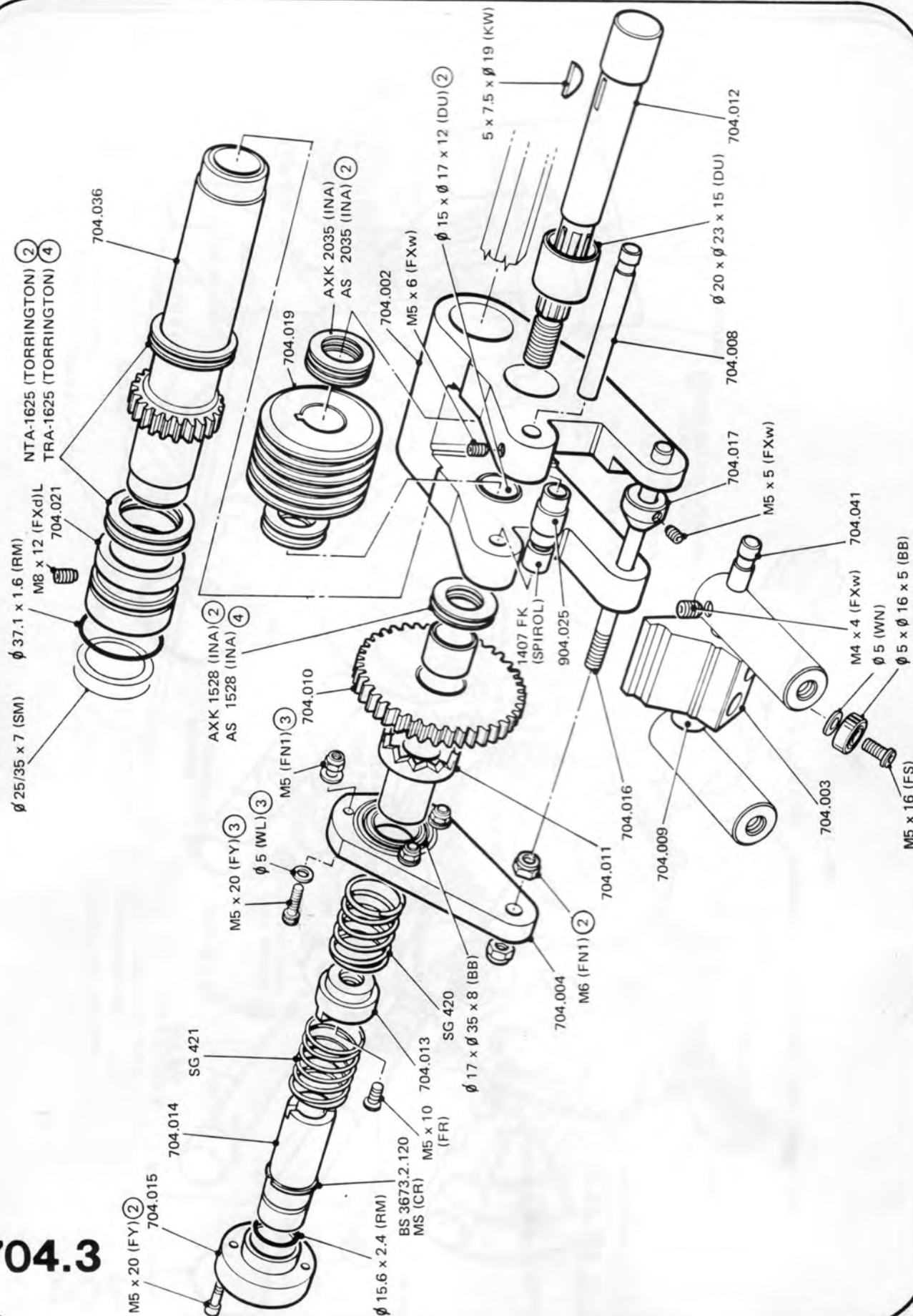
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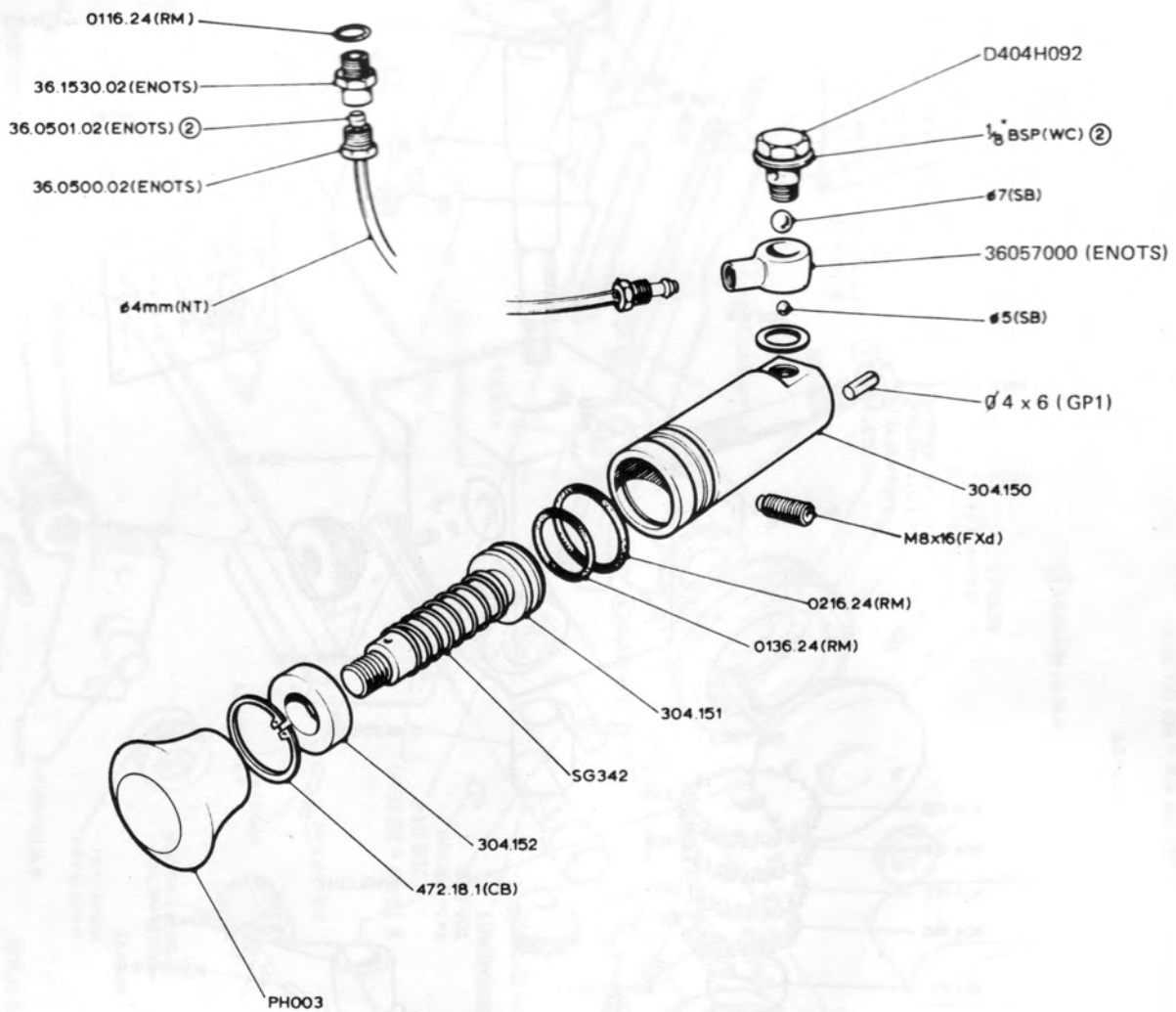




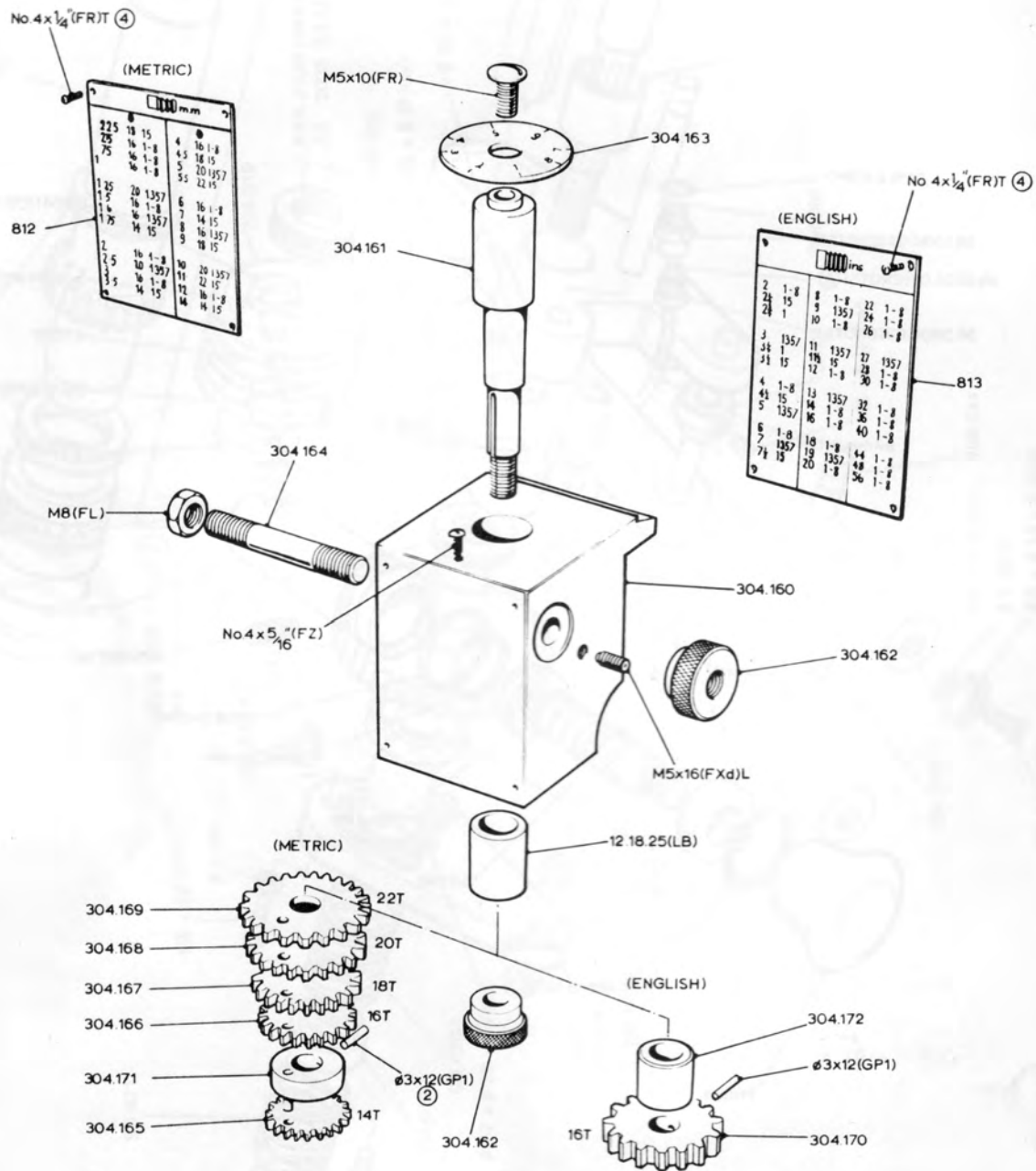
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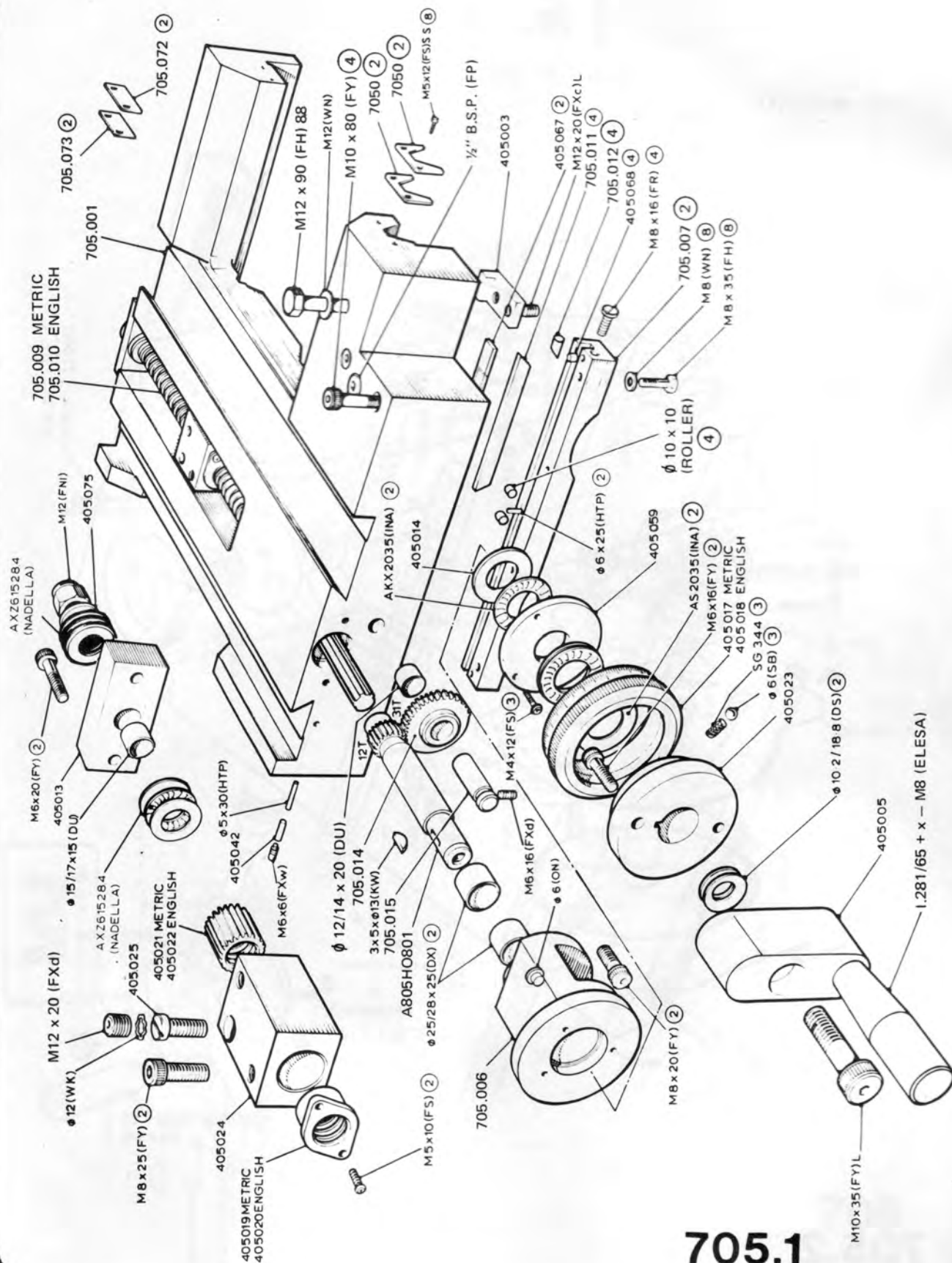




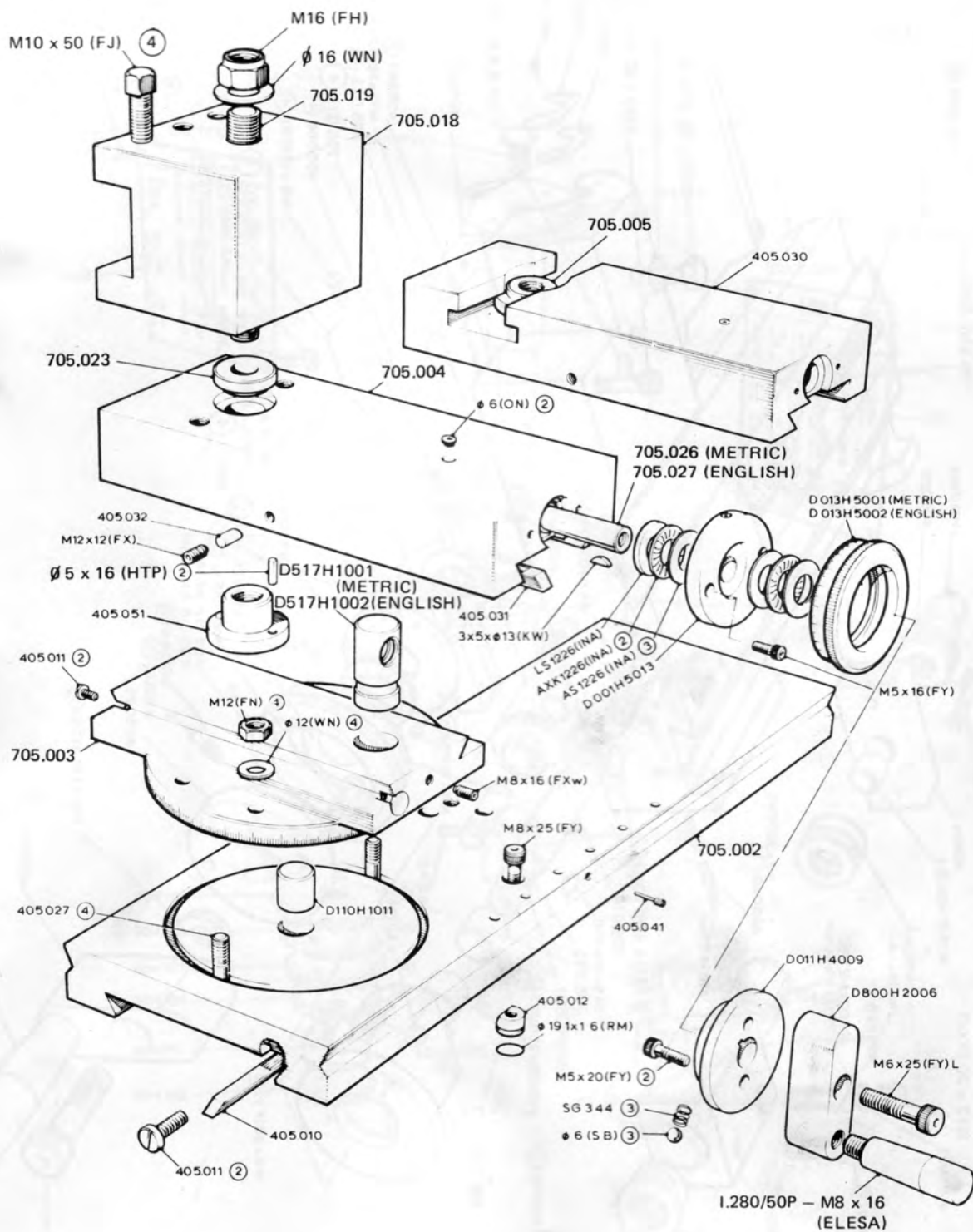
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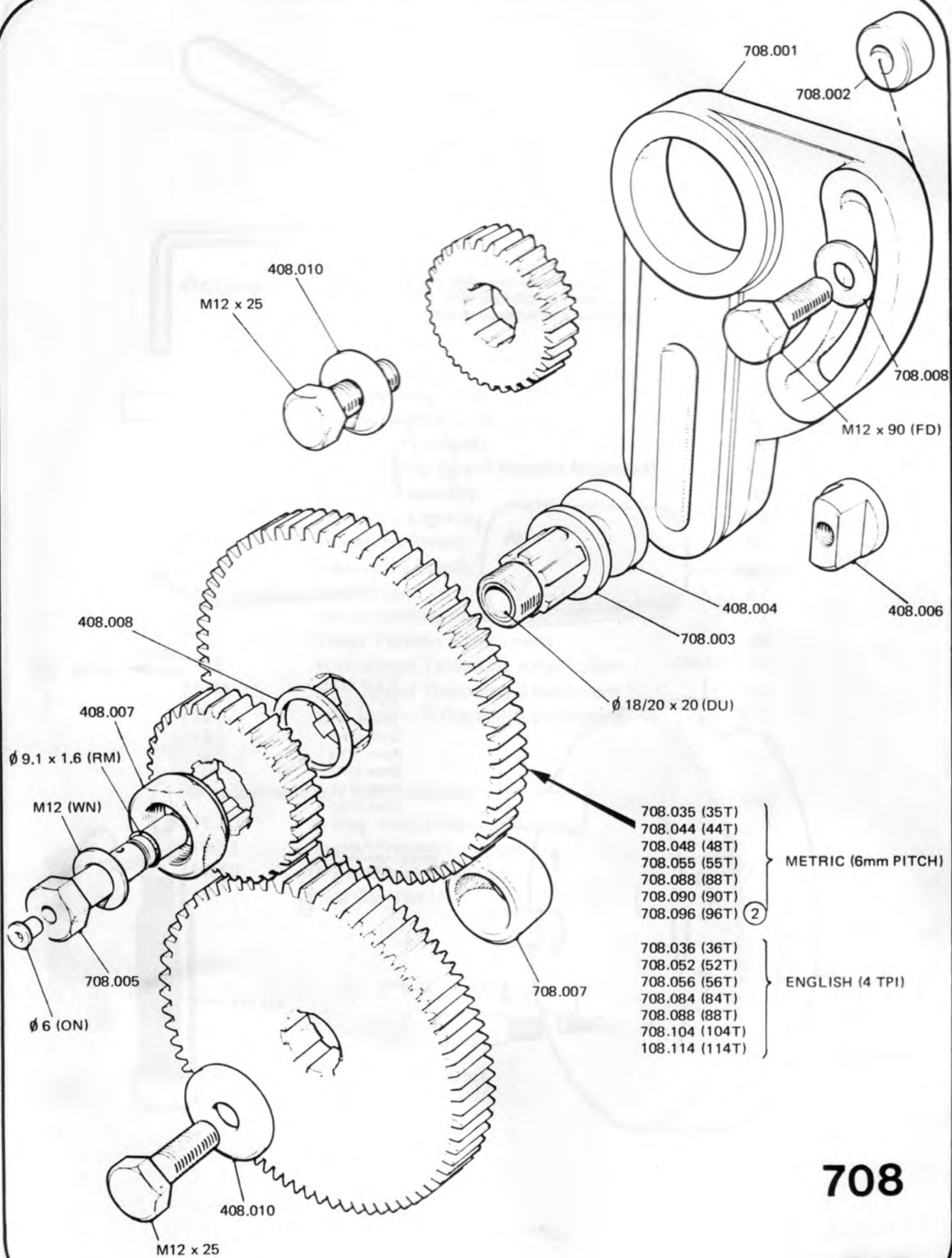


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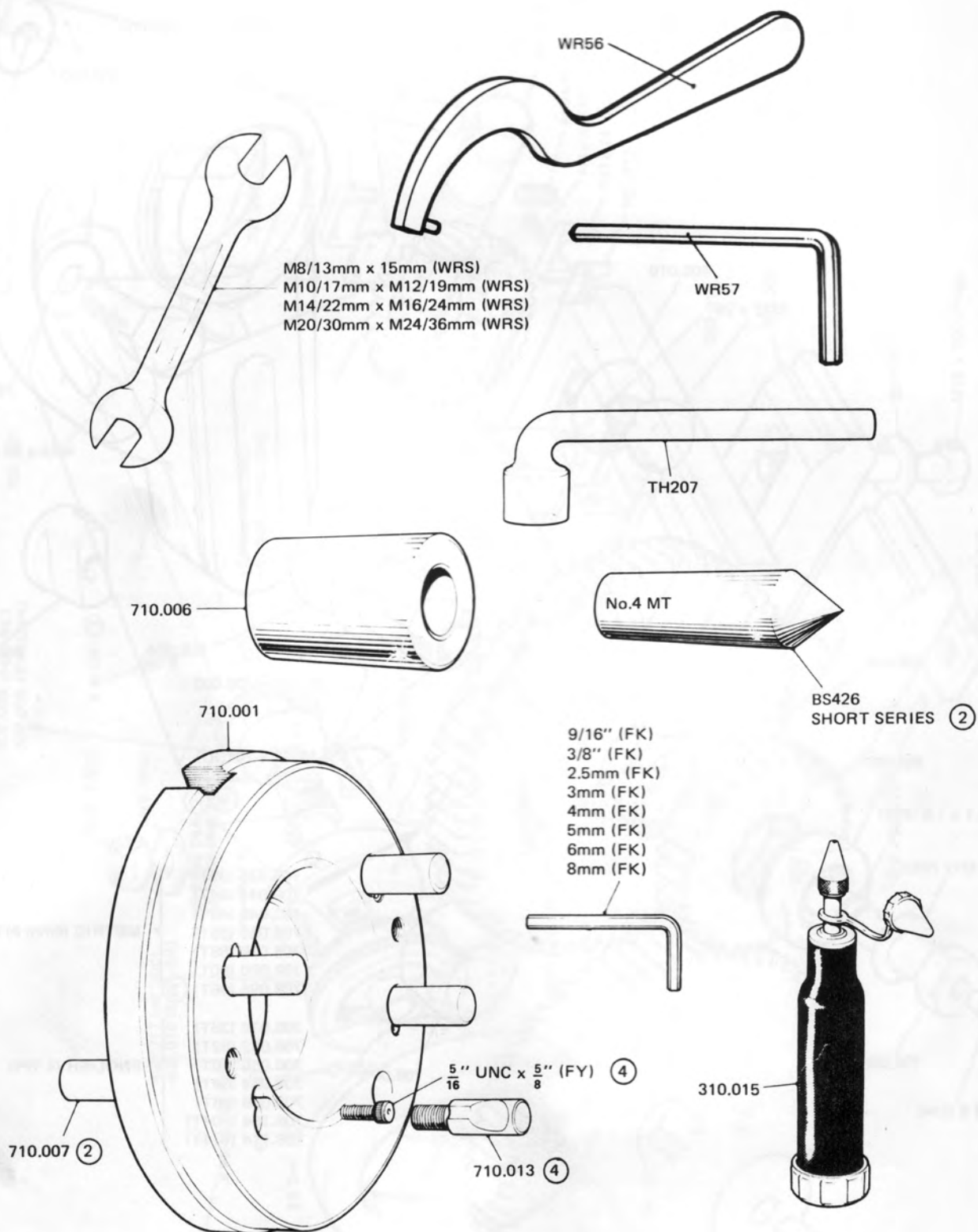


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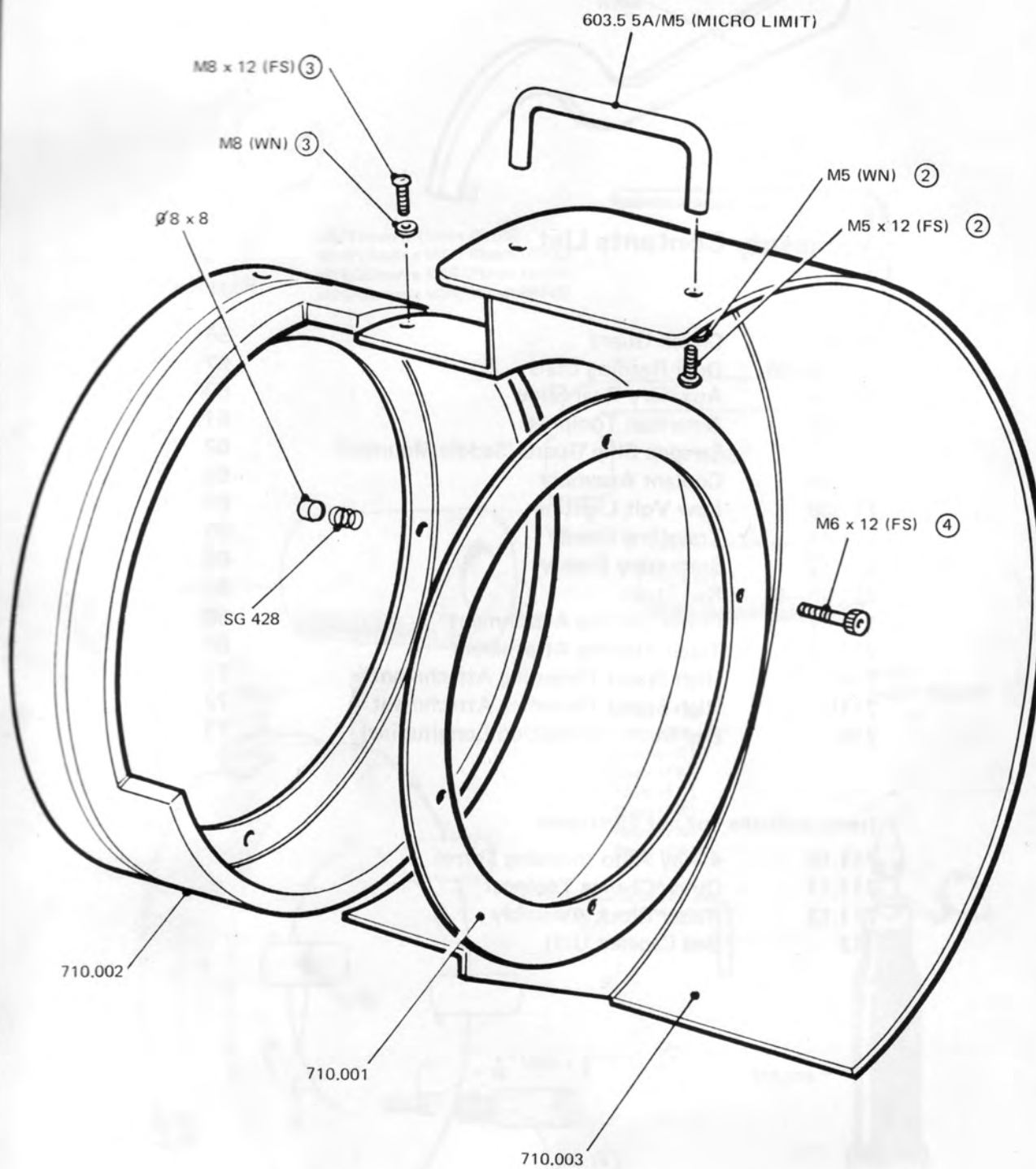


Accessory Contents List

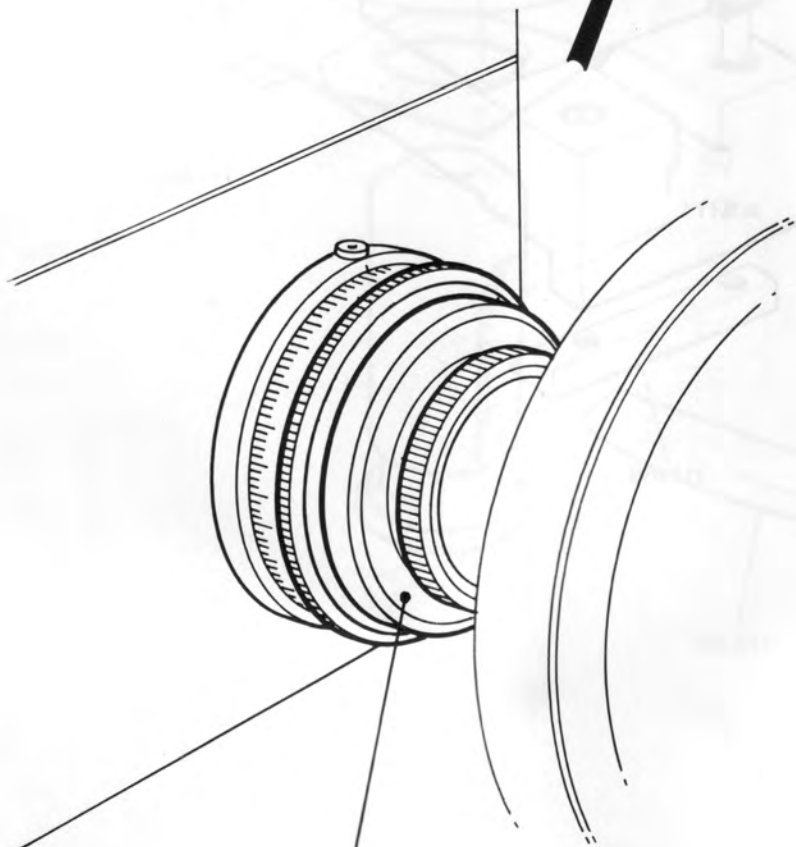
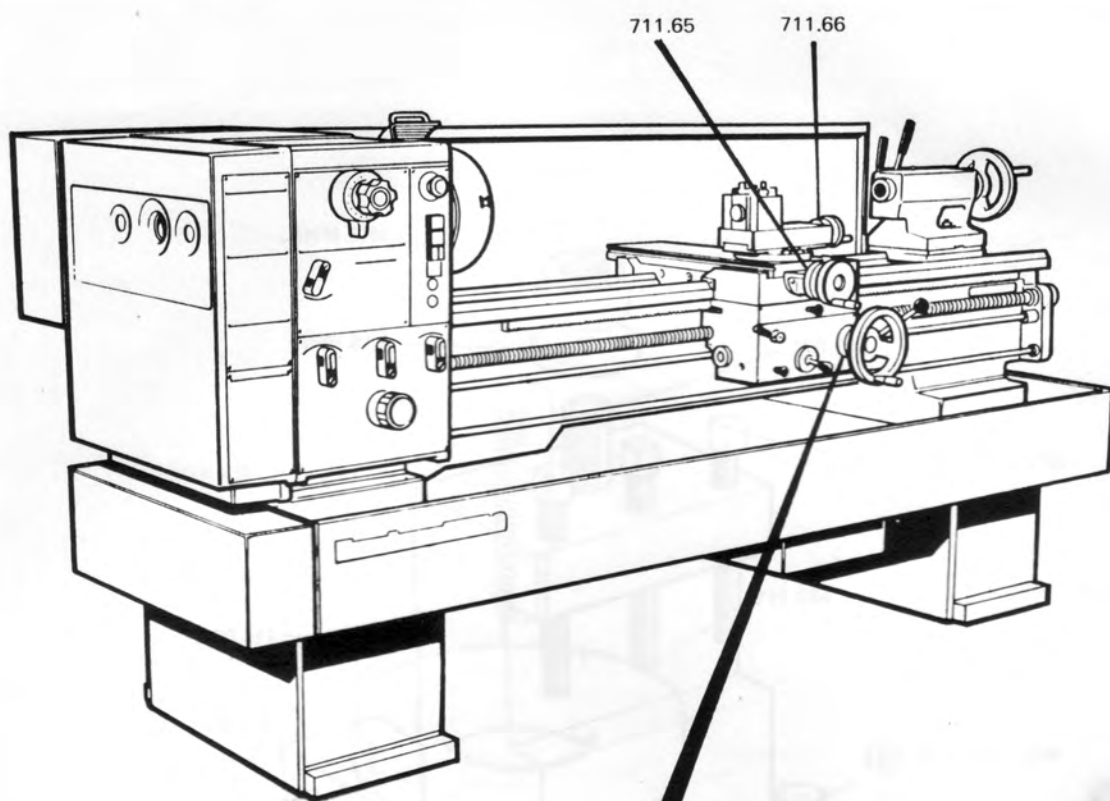
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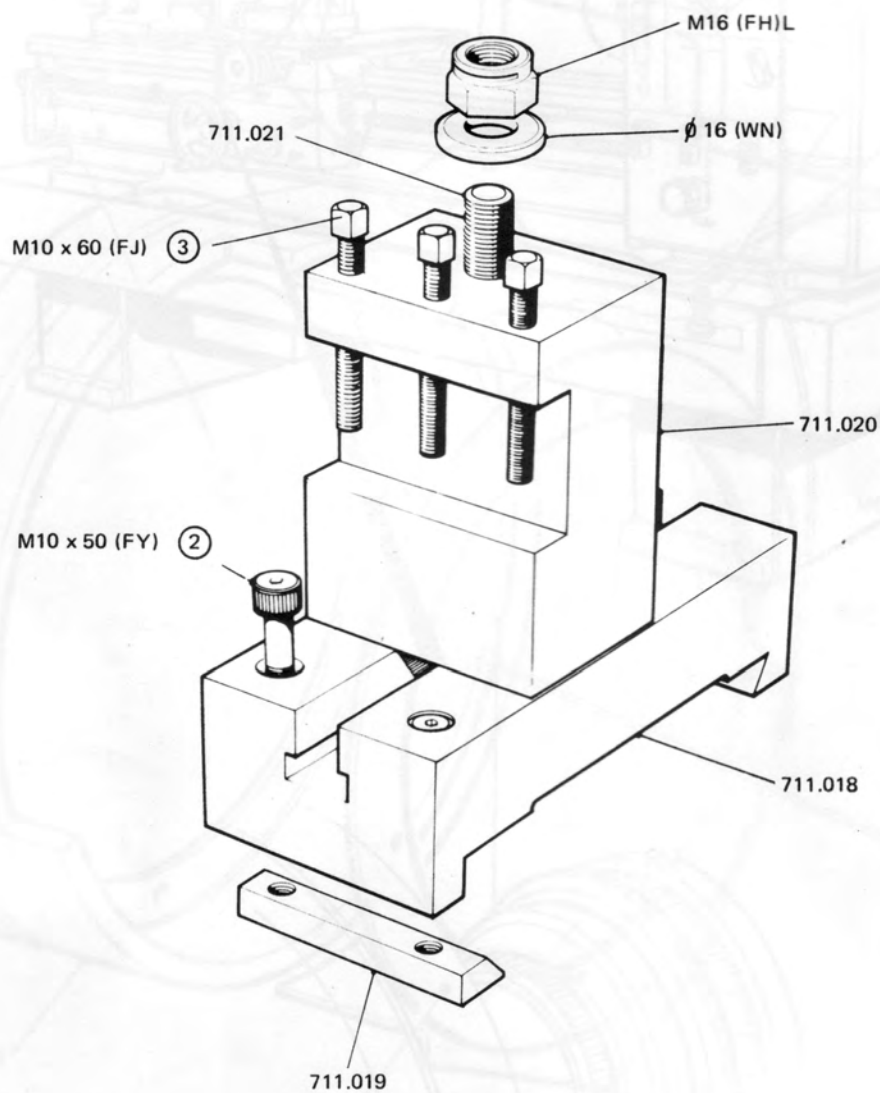
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711.11	Quick Change Toolpost
711.13	Raiser Block Assembly
713	Bed Capstan Unit



710.2



711.50-66



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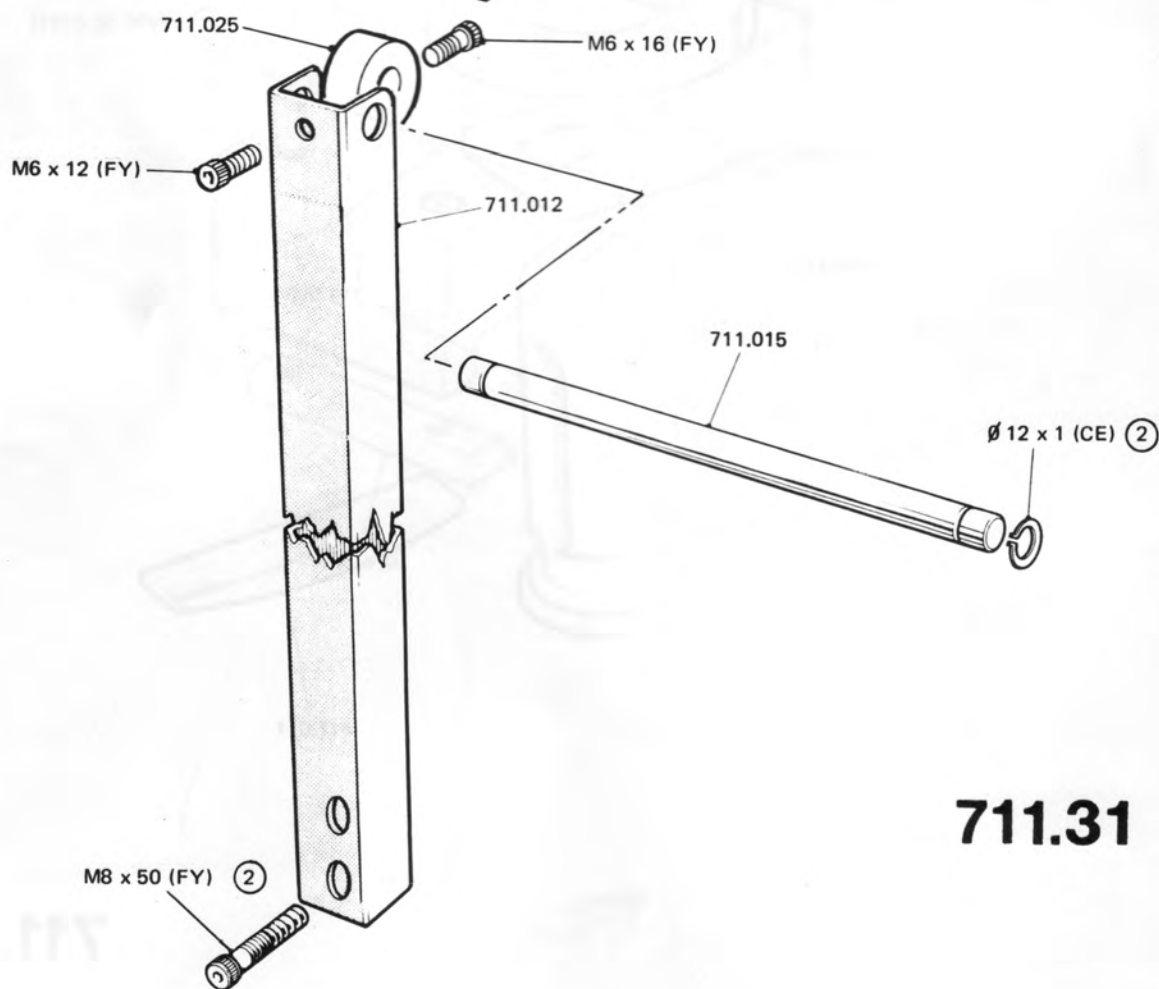
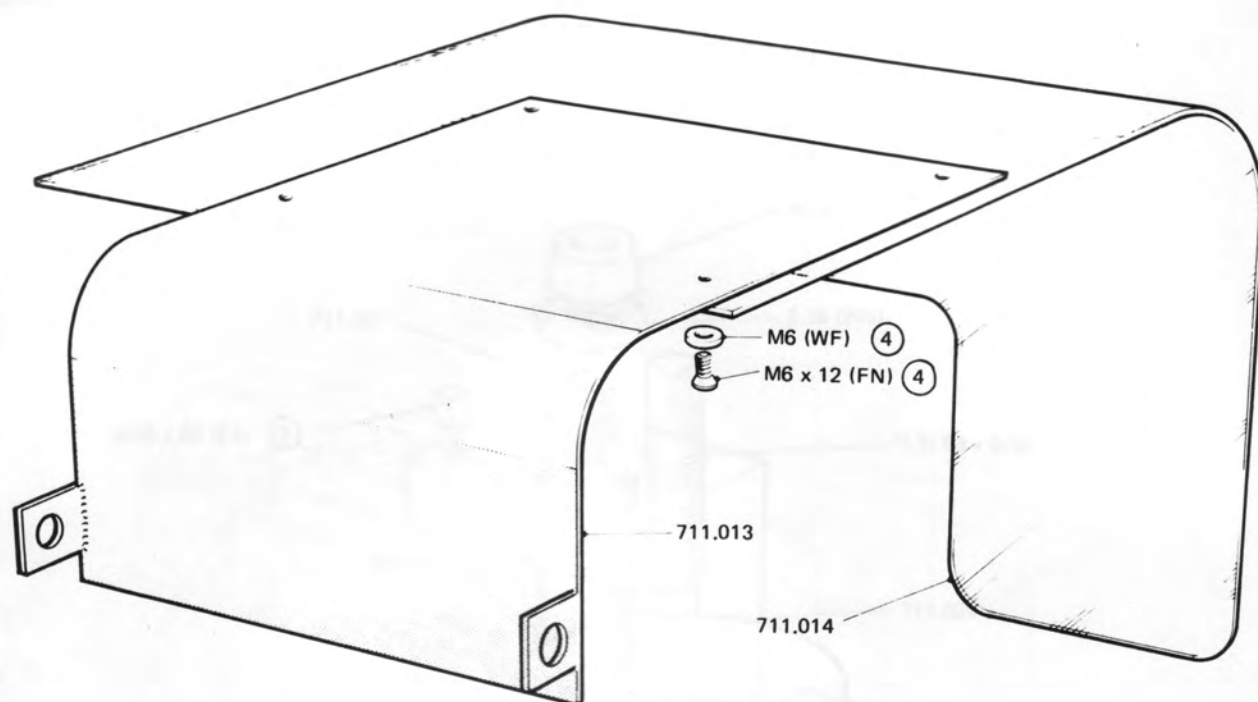
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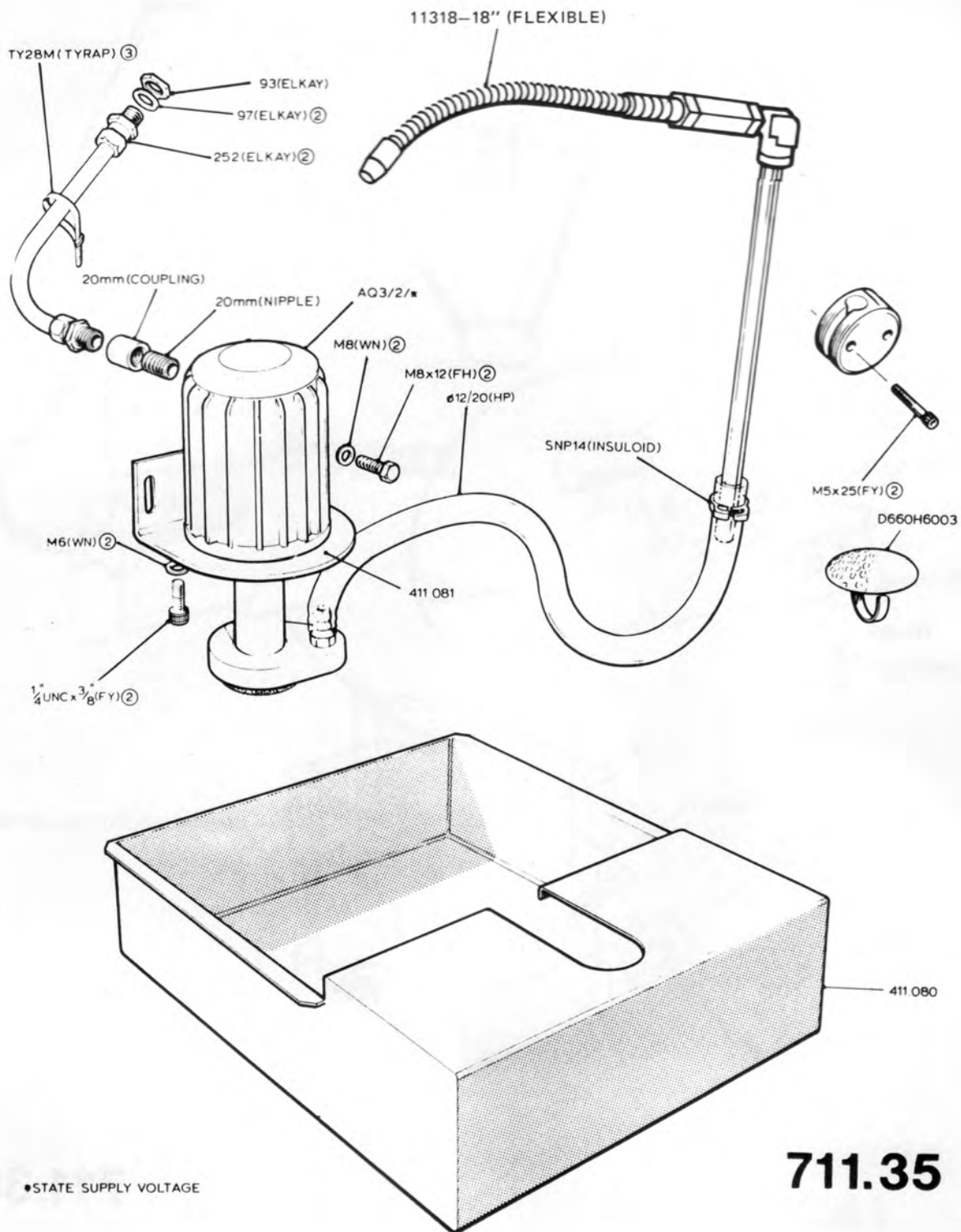
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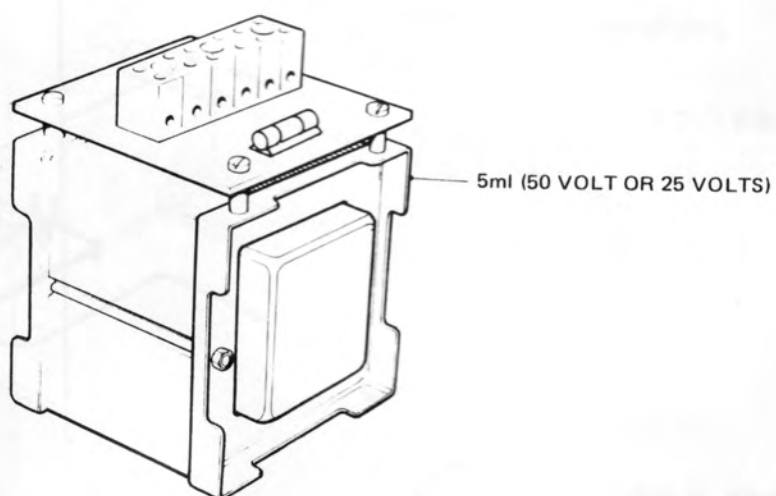
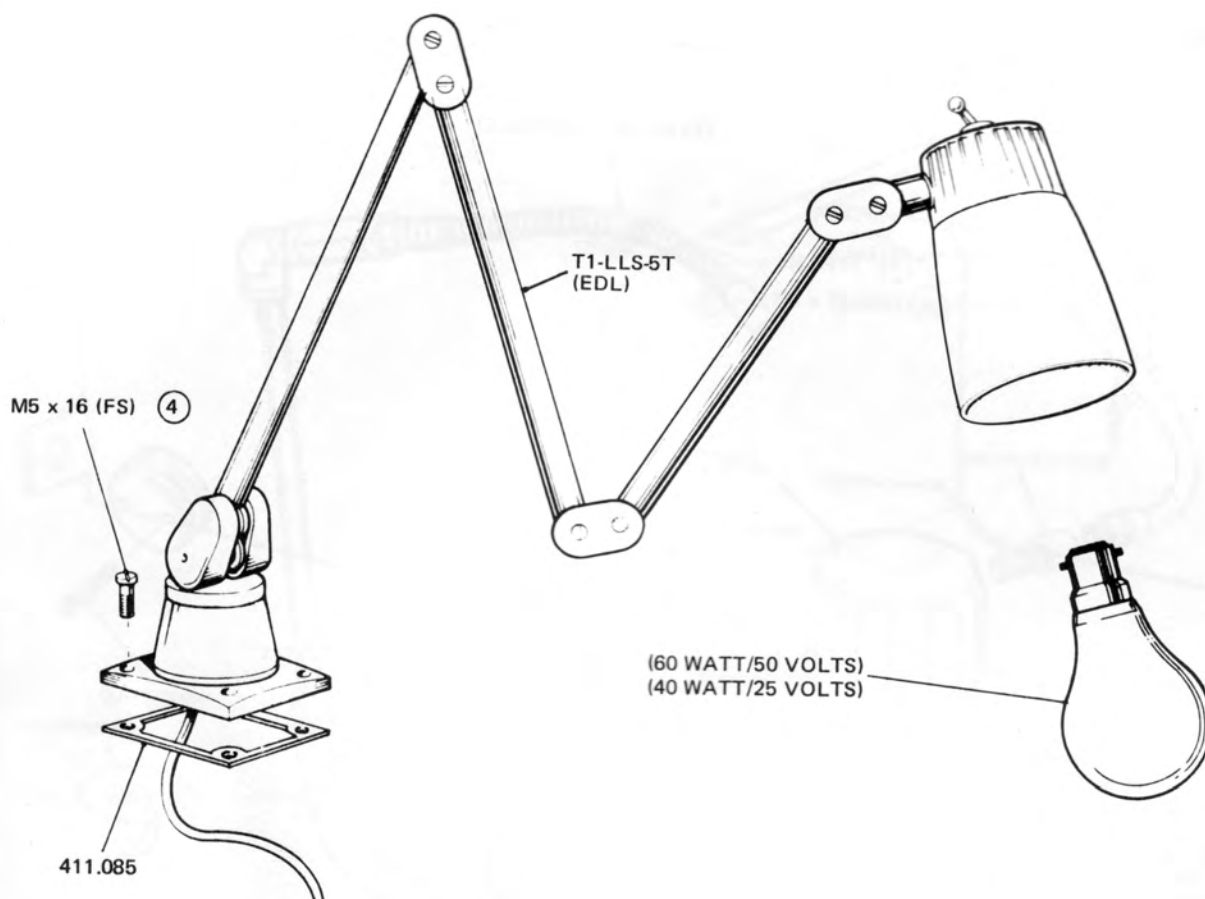


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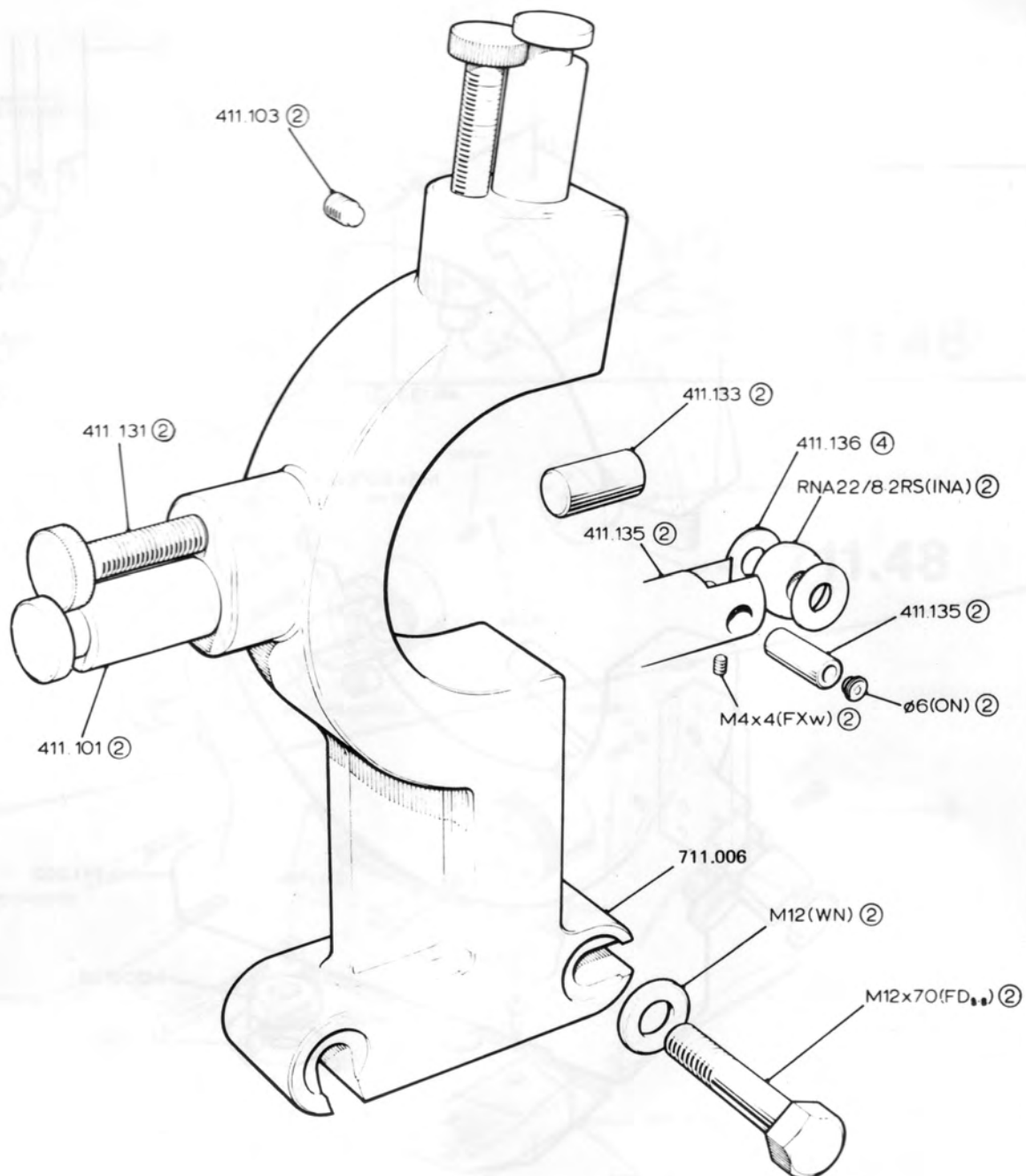


•STATE SUPPLY VOLTAGE

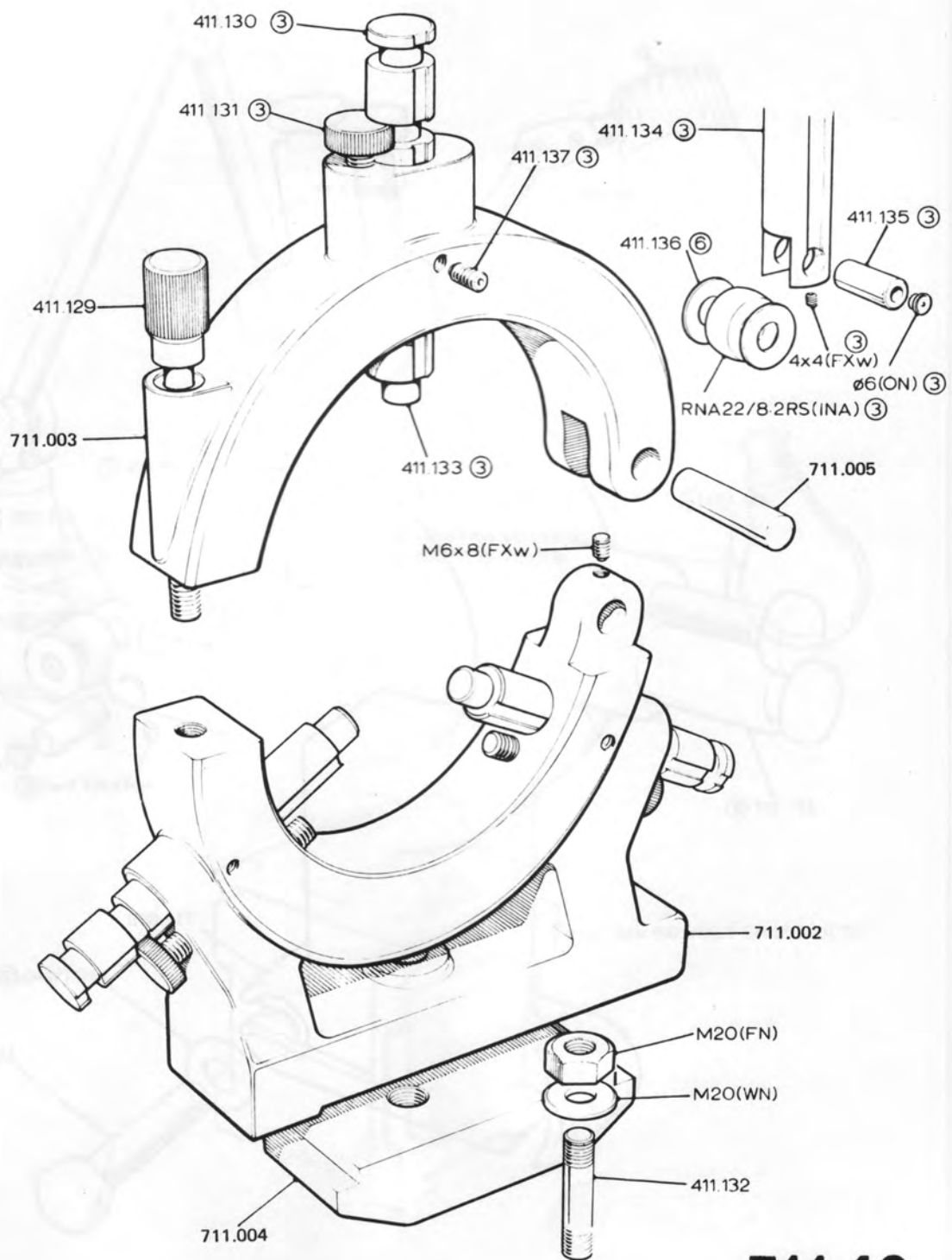
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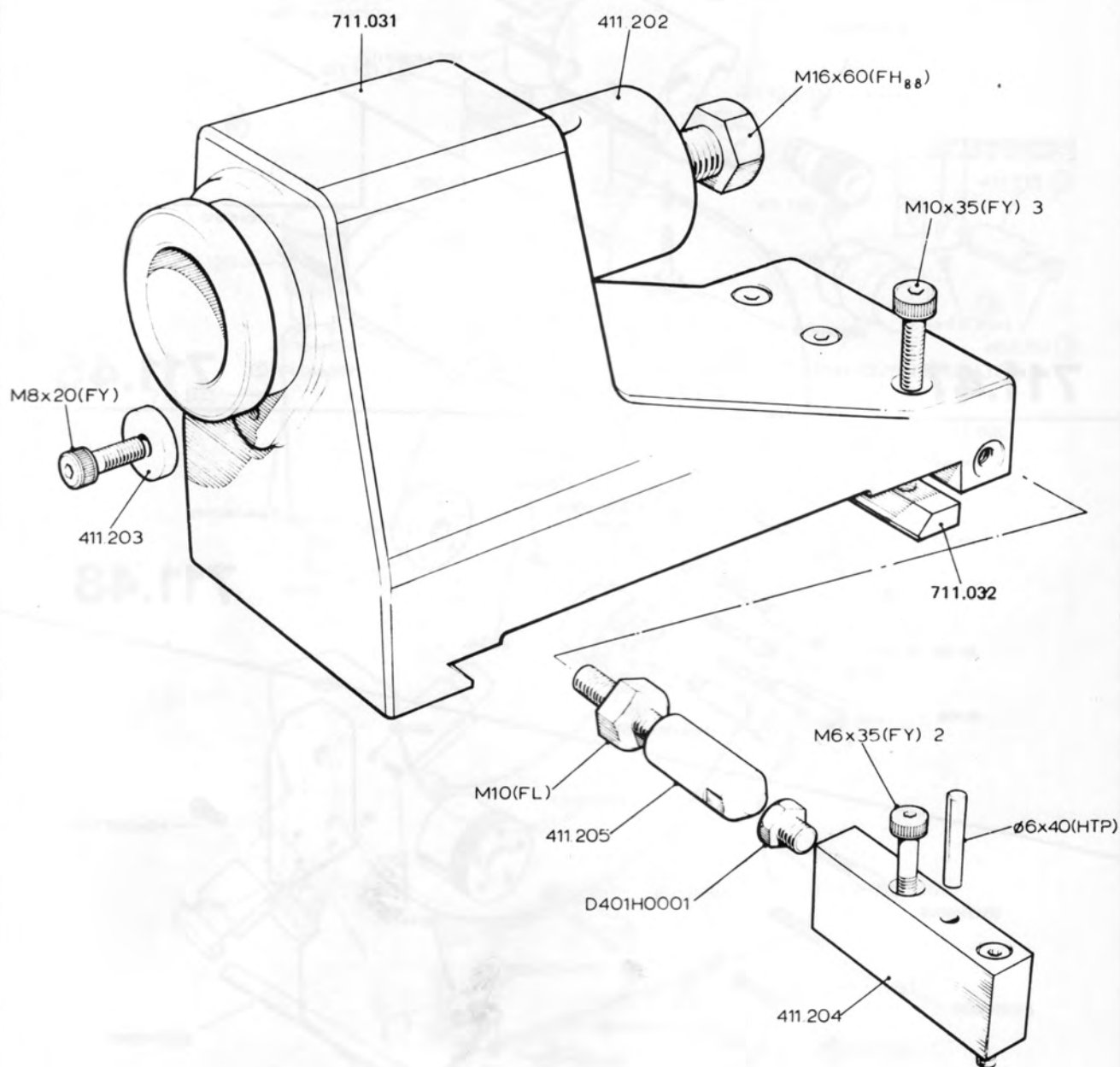
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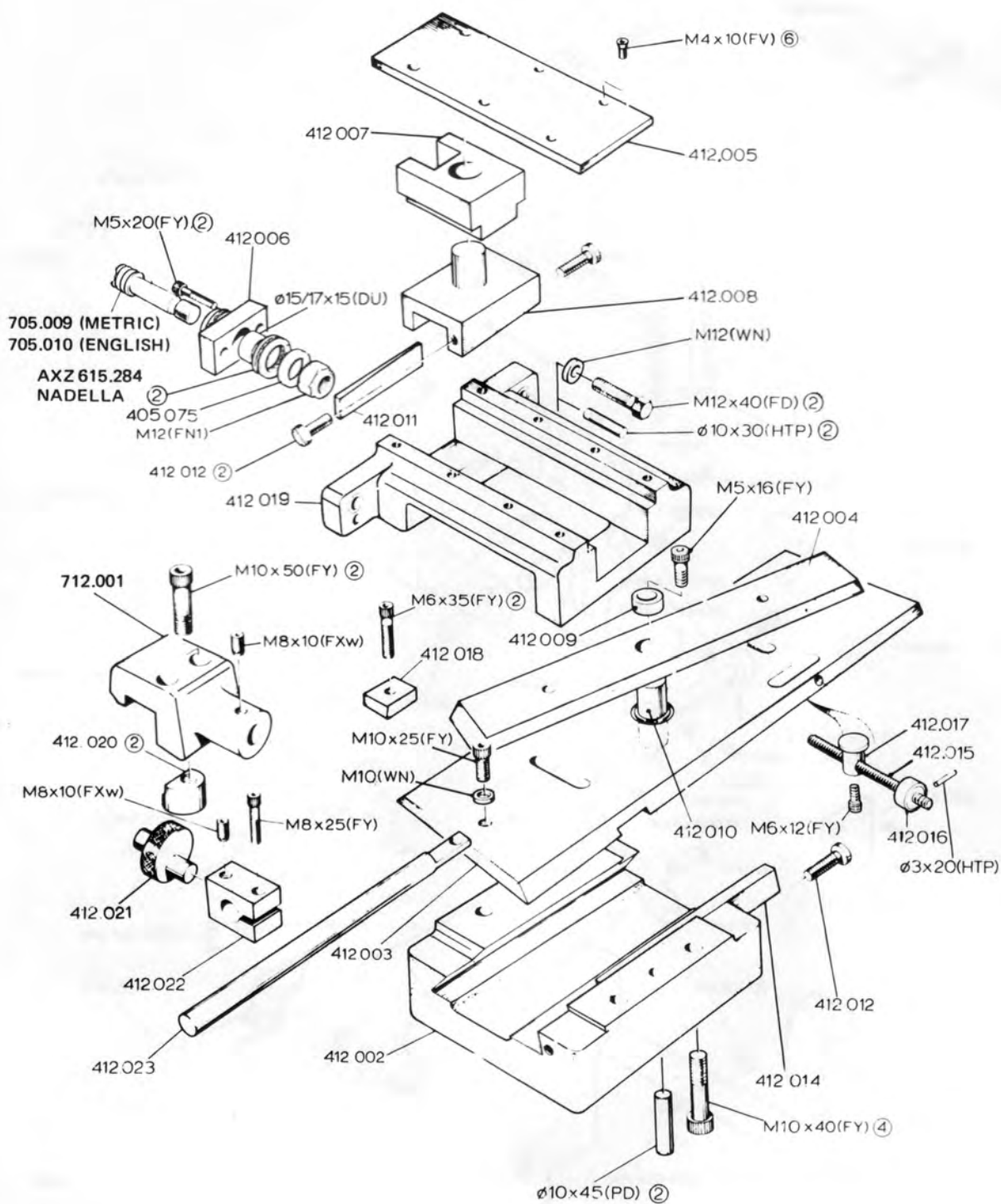
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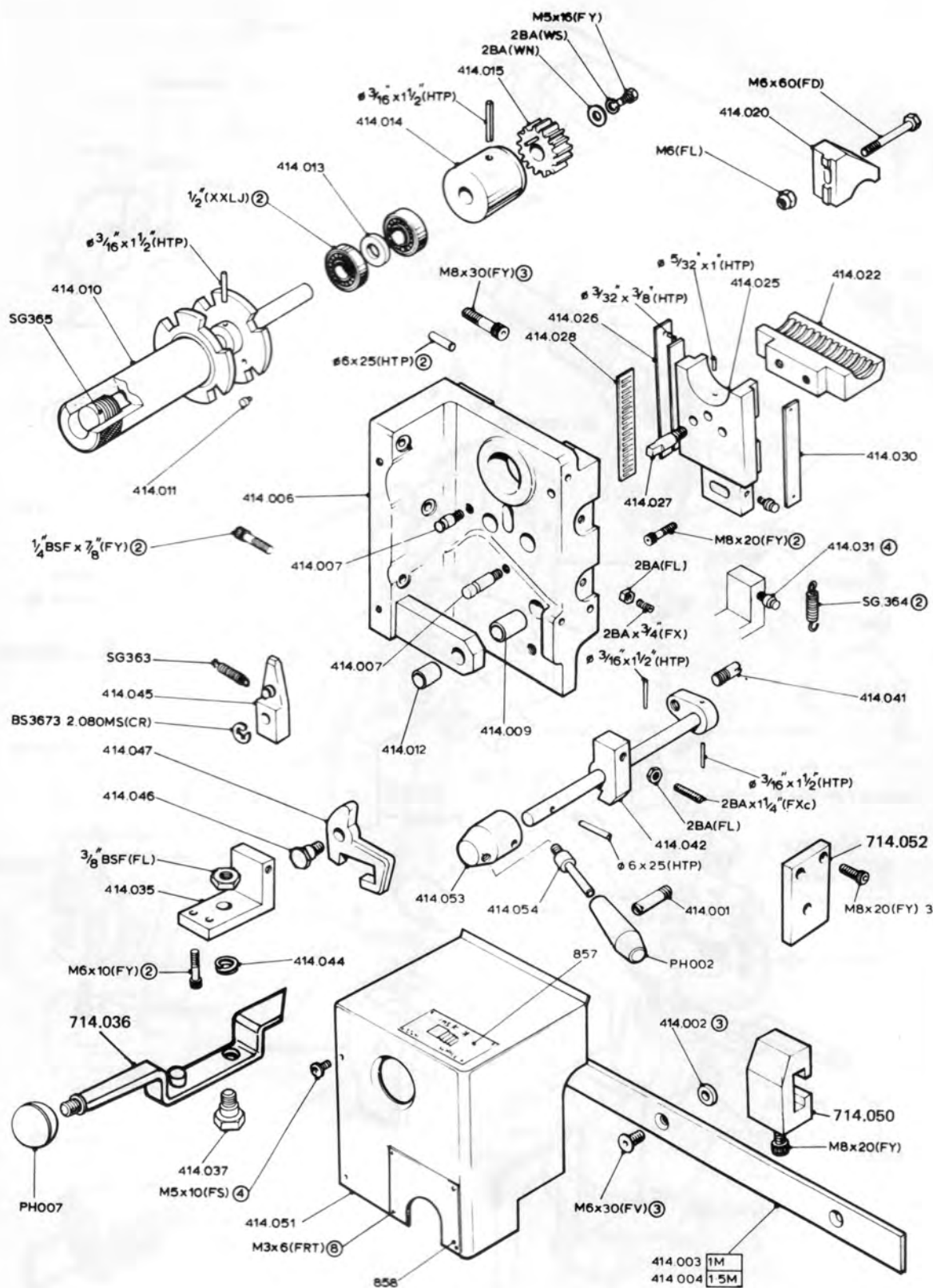
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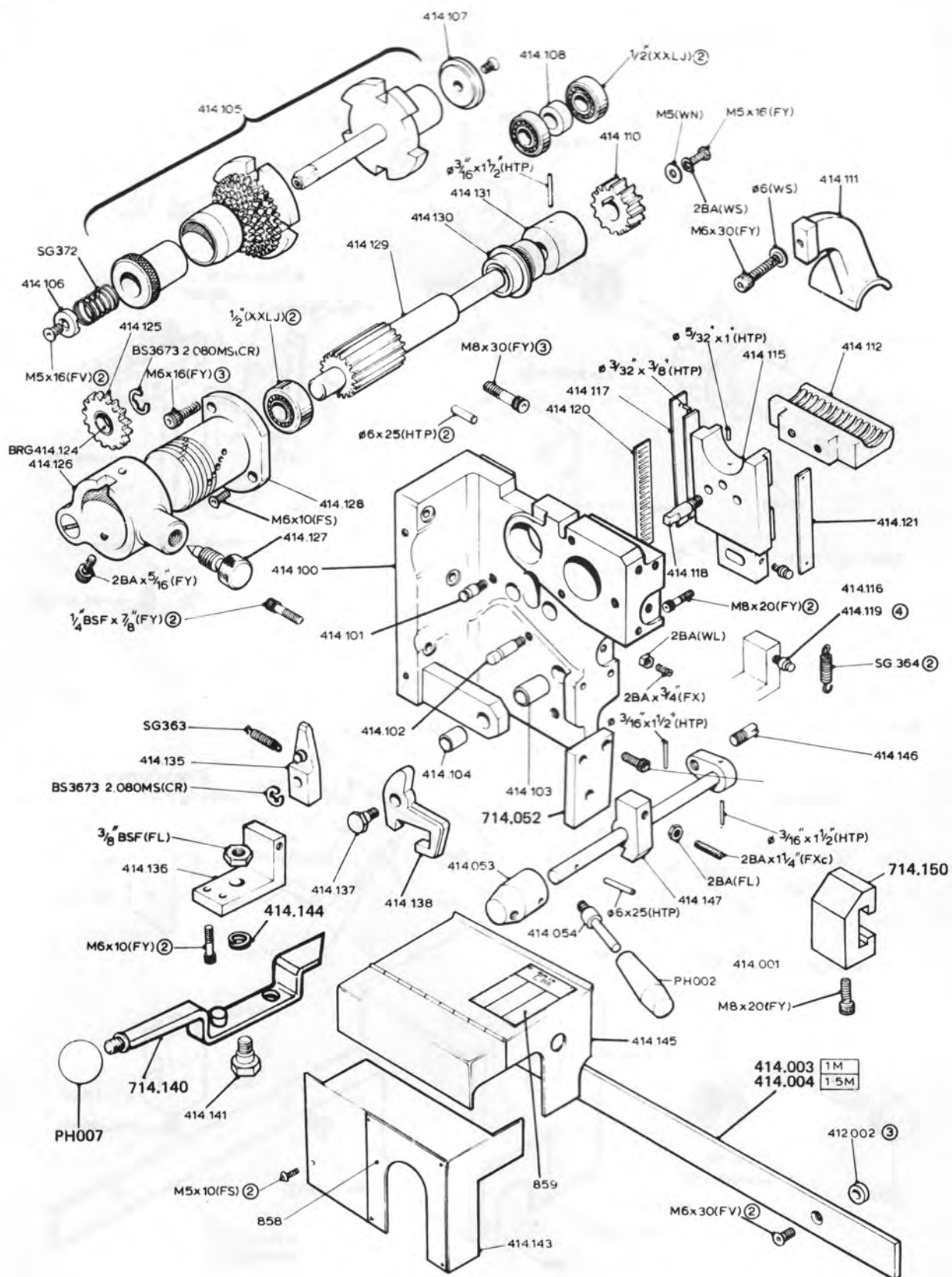


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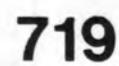


712





714M



Standard/Proprietary Parts

Letter Codes

Conventional Description Given

'Bracketed'

Letter Code Component

Screws and Nuts

FX	Socket Set (Grub) Screw: Flat Point
FXd	" " " " Dog Point (Normal)
FXd1	" " " " Dog Point (Long)
FXc	" " " " Cone Point
FXw	" " " " Cup, knurled or 'W' Point
FY	Socket Head Cap Screw
FY1	Socket Head Cap Screw (Threaded to Head)
FV	Socket Countersunk Screw
FS	Socket Button Head Screw
FU	Socket Shoulder Screw
FP	Socket Pressure Plug
FPS	Press Plug (Square Head)
FO	Slotted Set (Grub) Screw
FT	Slotted or Pozidriv Screw: Countersunk Head
FI	" " " " Raised C/sunk Head
FR	" " " " Pan Head
FE	" " " " Cheese Head " "
	Suffix 'B' for Thread Forming Type
	Suffix 'T' for Thread Cutting Type
	Suffix 'SS' for Stainless Steel
FJ	Square Head (Toolpost) Screw
FH	hexagon Head Screw
FD	" " Bolt
FN	Standard Hexagon Nut
FL	" " " Locknut
	Suffix '8.8' for High Tensile Types
	Suffix 'L' for 'Self-Locking' versions of the above
FZ	Hammer Drive Screw
FW	Wing Nut
DN	Domed Nut
CN	Castle of Slotted Type Nut
FN1	Nylon Ring Locking Nut

Thread X O/all Length
" " " "
" " " "
" " " "
" " " "
Thread X Length under head
" " " "
" " " "
" " " "
Thread X Ø Shank X Shank length
Thread and Form
" "
Thread X O/all Length
Thread X length under head
" " " "
" " " "
Thread X Length under head
Thread X Length under head
" " " "
" " " "
" " " "
Nom Ø X Length under head
Thread details
Thread details
" "
" "

Thread Inserts

TI1	Press in Type Thread Insert
TI2	Coil Type Thread Insert

Thread details
" "

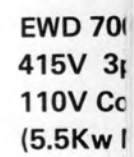
Washers

WN	Bright Washer: Normal Diameter
WL	" " Large Diameter
WK	Crinkle (Wavy) Washer
WS	Spring Washer: Single Coil
WSs	" " Double Coil
WC	Folded Copper Sealing Washer
WF	Felt Washer
DS	Disc Spring (Belleville Washer)

Nominal Hole Ø
" "
" "
" "
" "
" "
" "
" "
Nom. Hole Ø X O.D.X thickness

'Bracketed' Letter Code Component		Conventional Description Given
Pins and Dowels		
GP1	Grooved Pin: Full length groove — Tight at one end	Nom. \emptyset X O/all length
GP2	" " Half length groove — Tight on end	" " "
GP3	" " Full length groove — Parallel	" " "
GP4	" " Half length groove — Tight at centre	" " "
GP5	" " Centre groove	" " "
PD	Dowel Pin	Nom \emptyset X O/all length
PB	Brass Pin or Pad	" " "
PT	Taper Pin	Nom \emptyset (small end) X O/all length
PS	Split Pin	Nom \emptyset X O/all length
LTP	Tension Pin: Light Duty	Nom \emptyset X O/all length
HTP	" " Heavy Duty	" " "
Keys		
KS	Square Parallel Key	Width X Thickness X Length
KR	Rectangular Parallel Key	" " " "
KW	Woodruff Key	Width X Height X Diameter
Circlips		
CE	External Circlip: DIN 471	DIN. Ref. Nom Shaft \emptyset and Thickness
CE1	Round Section Circlip	Nom. Shaft \emptyset , Wire \emptyset
CE2	Inverted Retainer (Truarc)	" " "
CB	Internal Circlip: DIN 472	DIN. Ref. Nom Bore and Thickness
CR	Radial Fitting Circlip. DIN 6799	DIN Ref. Nom \emptyset and Thickness
CR1	Radial Retaining Clip (Spring fix)	Nom shaft \emptyset
CR2	Radial Fitting Circlip BS3673/3	" "
Plain Bearings		
DU	Composite Bearing Bush 'Glacier'	Nom Bore. O.D. and Length
DX	" " " " "	" " " "
LB	Sintered Bronze Bush	Nom Bore O.D. and Length
Ball & Roller Bearings		
BB	Std. Ball Bearing	Nom Bore Outside \emptyset and Length
BB1	Std. Ball Bearing with Shield or Seal one side	" " " " "
BB2	Std. Ball Bearing with Shield or Seal both sides	" " " " "
BB3	Std. Ball Bearing with Snap Ring	" " " " "
BBT	Angular Contact Ball Bearing	" " " " "
RB	Cylindrical Roller Bearing	" " " " "
For Needle Roller Brgs, Needle Thrust Races Ball Thrust Brgs. and Taper Roller Bearings — Manufacturers Name is Quoted as Letter Code — vis.		
(INA.)	(TORRINGTON)	Manufacturers Part No. Quoted
(SKF)	or (GAMET)	

'Bracketed' Letter Code	Component	Conventional Description Given
Seals		
SM	Standard Oil Seal	Nom Shaft Ø O.D. and Width
SF	V Ring Seal (FORSHEDA)	Manufacturers Part No.
RM	Standard 'O' Ring Seal	Internal Ø of Ring, and Section Ø
RM1	'Nu-Lip Ring' (Pioneer)	Manufacturers Part No.
Lubrication Equipment		
ON	Concave Oil Nipple: Drive in Type	Nom Hole Ø
ONI	" " " Threaded Type	Thread details
OS	Oil Sight Glass	Nom Outside Ø
OS1	Oil Level Glass	" "
OW	Oil Wick	Nom Ø X Length
For Compression and other Pipe Fitting — Manufacturers Name is quoted as Letter Code vis. (ENOTS.) or (TECALEMIT)		Manufacturers Part Number Quoted
Miscellaneous Items		
BJ	Ball Joint	Thread Details
SB	Steel Ball	Nom Ø
FK	Hexagon Wrench Key	Nom width across flats
HP	P.V.C. Hose	Nom Bore and O.D.
HC	Hose Clip	Max. Hose Ø
PP	Plastic Plug	Manufacturers Part Number
WRS	Standard Spanner	Std. Bolt size and width across flats
EB	Eye Bolt	Thread details
OW	Oil wick	Nom Ø X Length
CT	Copper tube	Nom outside Ø
NT1	Nylon Tube Natural	Nom Bore
NT2	Nylon Tube Blue	" "
NT3	Nylon Tube Green	" "
NT4	Nylon Tube Red	" "



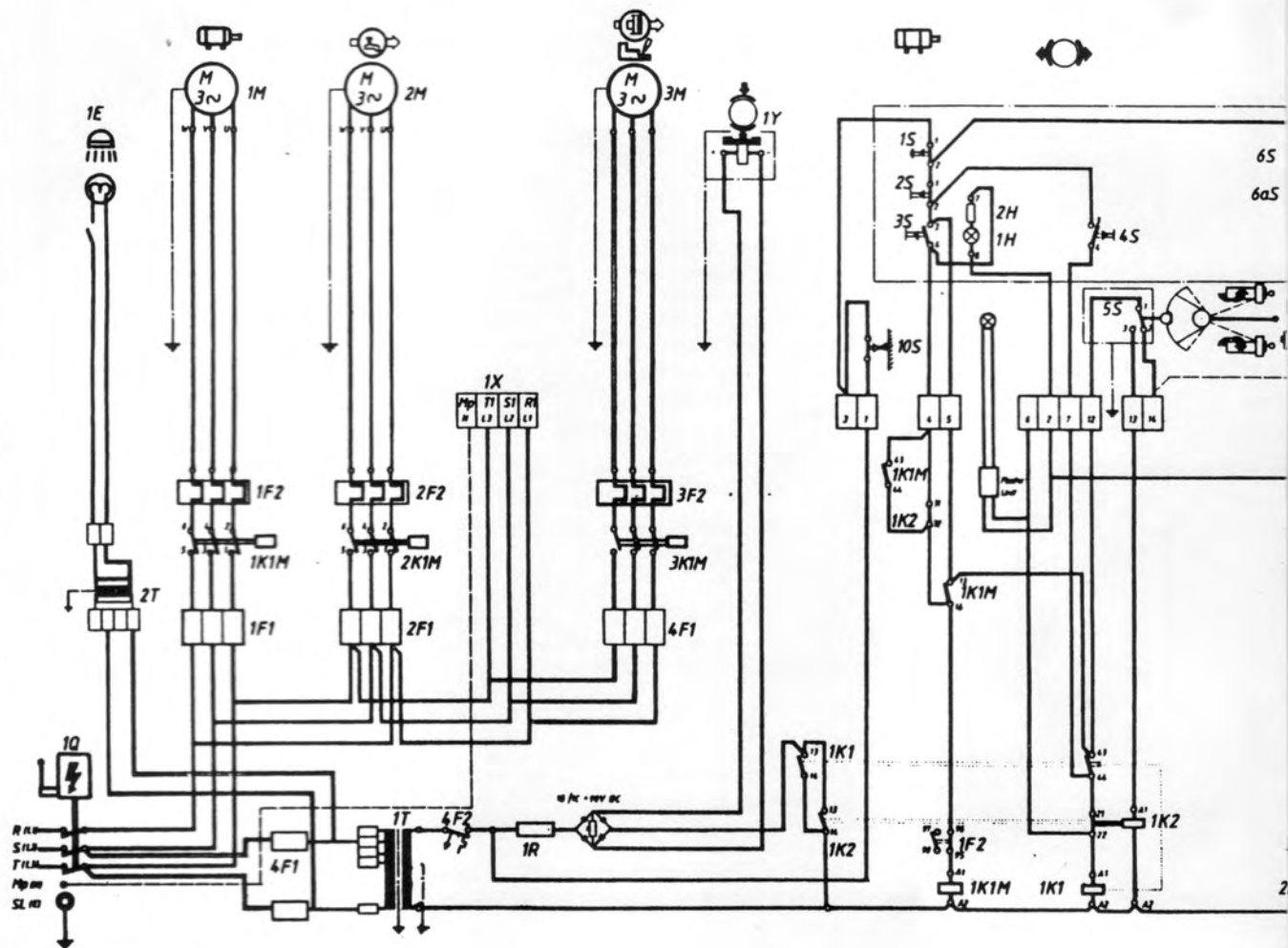
EWD 700
415V 3p
110V Co
(5.5Kw I

KEY AND COMPONENT LIST

REF	ITEM	MANUFACTURER	TYPE
PANEL COMPONENTS			
1Q	Mains Disconnect Switch (Isolator)	Kraus & Naimer	P1-25
1K1M	Main Contactor	Yaskawa	HEA-24
1F2	Overload Relay (Main motor)	Yaskawa	RH18-10M
1F1	Fuse Carrier & base (Main motor)		HRC Type
	Fuse link (25 Amp)		25 Amp
1T	Control Circuit Transformer		415V Primary with 110V Secondary at 110VA
4F1	Fuse Carrier/Base & Fuse link (Transformer primary)		HRC Type 2 amp
1R	Resistor Block	Farnells	WH50-100R
4F2	Single Pole Circuit Breaker unit	Klockner Moeller	FAZG-1A
1G&1C	Rectifier/Capacitor assy		B120 4 CAP
1K1 & 1K2	Control Relay Brake	Yaskawa	HE-A10 2a 2b
2K1M	Coolant Pump Contactor	Yaskawa	HE-A10 1a
2F2	Overload Relay (coolant pump)	Yaskawa	RH12/0.16
2F1	Fuse Carrier & Base (Coolant pump)		HRC Type
	Fuse Link 2 Amp		2 Amp
1X	Equipment Terminal Block	Klippon	MK6/4
2X	Control Terminal Block	Klippon	2 Off MK3/12
	Flasher Unit (Brake Button)		
* 3T	Machine Lighting Transformer		415V Primary with Secondary voltages 50V at 60VA or 20V at 40VA
* 3K1M	Copying Pump Contactor	Yaskawa	HEA-10-1a
* 3F2	Overload Relay (copying pump)	Yaskawa	RH12-1.2M
* 3F1	Fuse Carrier & Base (copying pump)		HRC Type
	Fuse Link		4 Amp
MACHINE MOUNTED COMPONENTS			
1M	Main Motor	G.E.C.	D112M 5.5KW (7.5 HP) 1500 RPM
1Y	Brake Unit	Matrix	1EB45-12
1S	Emergency Stop Pushbutton	Yoshida	SMB PROI
2S	Stop Pushbutton (main motor)	Yoshida	SBB DROI
3S&1H	Start Pushbutton (main motor)	Yoshida	SFB-DIDG10
4S&2H	Brake Release Pushbutton	Yoshida	SFB-DODW 10/F
5S	Clutch Micro Switch	Telemecanique	ACM-A1022
6S & 6aS	Double Pushbutton (coolant pump)	Yoshida	SFB-DGR11
10S	Guard Interlock Switch	Burgess	V3Q1
* 1E	Machine Light Unit	EDL	T1-LLS-5T
	Bulb 50V-60W or 25V-40W		
	Bayonet Cap Fitting		
* 3M	Copying Pump Motor	Brook	VMF 5341F 0.37KW 1500 RPM
* 2M	Coolant Pump Motor	MG Electrics	AQ3/2
* 7S & 7aS	Double Pushbutton	Yoshida	SFB-DGR11
* 8S	Power Chuck Pushbutton (open)	Yoshida	SBB-DB11
* 9S	Power Chuck Pushbutton	Yoshida	SBB-DB11
* 6(A)	Power Chuck Power Pack Unit	See Wiring Diagram	

* When fitted

Wiring Diagram



KEY AND COMPONENT LIST

REF	ITEM	MANUFACTURER	TYPE
PANEL COMPONENTS			
1Q	Mains Disconnect Switch (Isolator)	Kraus & Naimer	P1-25
1K1M	Main Contactor	Yaskawa	HEA-24 (110V)
1F2	Overload Relay - 380V	Yaskawa	RH18-10M
	Overload Relay - 220V	Yaskawa	RH18-20M
1F1	Fuses - 380V	Klockner Moeller	S27 Form 'p' 25A
	Fuses - 220V	Klockner Moeller	S33 Form 'p' 35A
1T	Control Circuit Transformer		220/380V primary with 110V secondary @ 110VA
4F1	Fuses (Transformer Primary)	Klockner Moeller	S27-1 Form 'p' 2A
4F2	Single Pole Circuit Breaker Unit	Klockner Moeller	FAZG-1A
1G&1C	Rectifier/capacitor Assy		B120-4CAP
1R	Resistor Block	Farnells	WH50-100R
1K1/1K2	Control Relay (Brake)	Yaskawa	HE-A10 2a2b
2K1M	Contactor (coolant pump)	Yaskawa	HE-A10 1a
2F2	Overload Relay - 380V	Yaskawa	RH12 - 0.16
	Overload Relay - 220V	Yaskawa	RH12 - 0.26
2F1	Fuses (coolant pump)	Klockner Moeller	S27-1 Form 'p' 2A
1X	Equipment Terminal Block	Klippon	MK6/4
2X	Control Terminal Block Flasher Unit	Klippon	2 off MK3/12
* 3T	M/C Light Transformer		220/380V primary with secondary voltages of 50V @ 60VA & 25V @ 40VA
* 3K1M	Contactor (copying pump)	Yaskawa	HEA-10-1a
* 3F2	Overload Relay - 380V	Yaskawa	RH12/1.2M
	Overload Relay - 220V	Yaskawa	RH12/2.2M
* 3F1	Fuses - 380V	Klockner Moeller	S27-1 Form 'p' 4A
	Fuses - 220V	Klockner Moeller	S27-1 Form 'p' 6A
MACHINE MOUNTED COMPONENTS			
1M	Main Motor	GEC	D112M 5.5KW (7.4HP) 1500 RPM
1Y	Brake Unit	Matrix	IEB45-12
1S	Emergency Stop (P/Button)	Yoshida	SMB-PRO1
2S	Stop Pushbutton (Main Motor)	Yoshida	SBB-DRO1
3S/1H	Start Pushbutton (Main Motor)	Yoshida	SFB-D1DG10
4S/2H	Brake Release P/Button	Yoshida	SFB-DODW 10/F
5S	Clutch Micro Switch	Telemecanique	ACM-A1022
6S/6aS	Double Pushbutton (coolant pump)	Yoshida	SFB-DGR11
10S	Guard Interlock Switch	Burgess	V3Q1
* 1E	Machine Light Unit	E.D.L.	T1-LLS-5T
BULB	Bayonet Cap Fitting		50V-60W or 25V-40W VM5341F 0.37KW
* 3M	Copying Pump Motor	Brook	1500 RPM
* 2M	Coolant Pump Motor	M.G. Electrics	AQ3/2
* 7S/7aS	Double Pushbutton (copying pump)	Yoshida	SFB-DGR11
* 8S	Power Chuck P/Button (open)	Yoshida	SBB-DB11
* 9S	Power Chuck P/Button (closed)	Yoshida	SBB-DB11
* 6S	Power Chuck Power Pack Unit	See Wiring Diagram EWD	

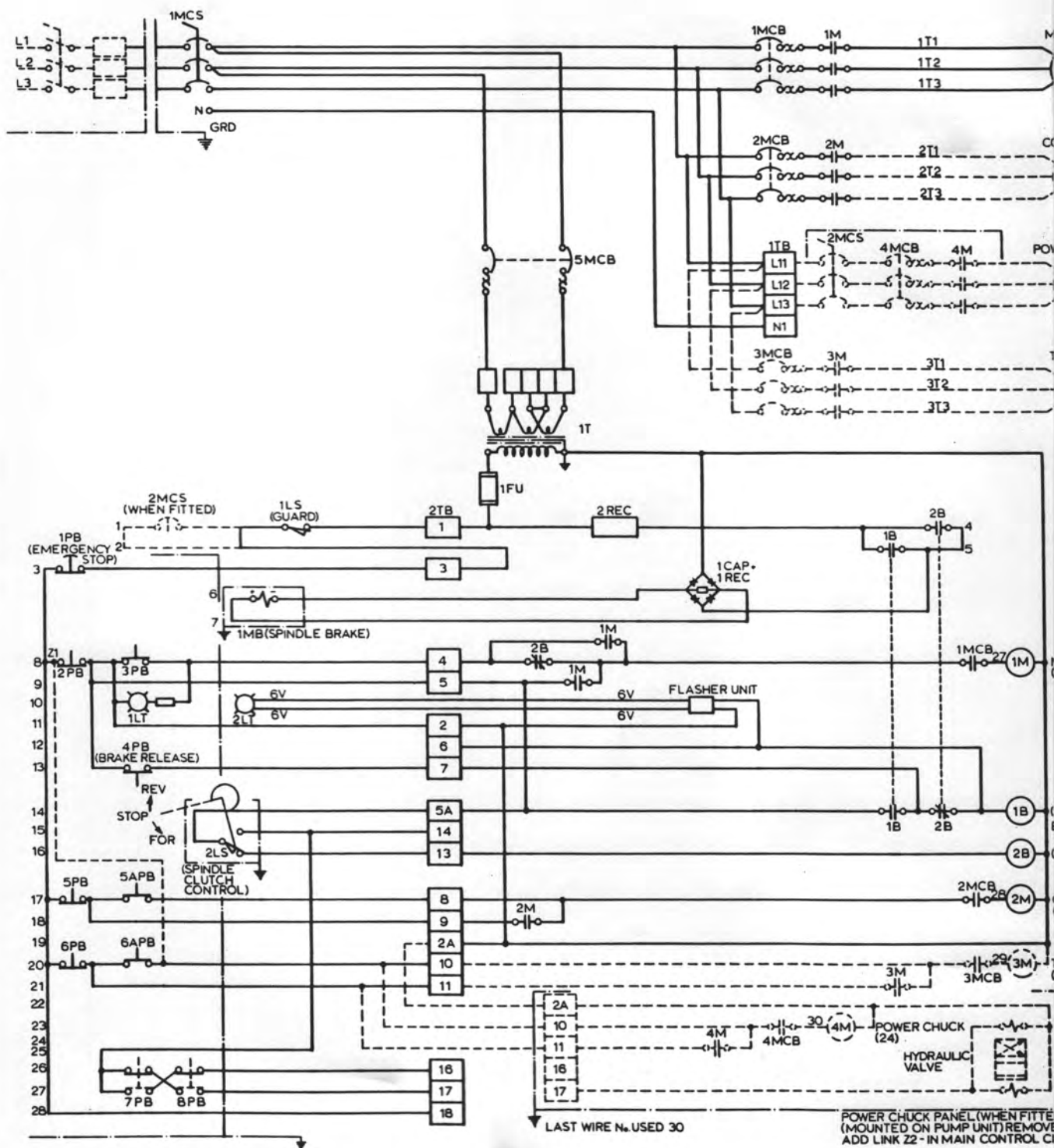
* When fitted

EWD 702.1 EUROPEAN MARKET

220/380 VOLT, 3 PHASE, 50HZ SUPPLY (110V CONTROL)

(5.5KW MOTOR M/C WITH CLUTCH)

Wiring Diagram



KEY & COMPONENT LIST

REF	ITEM	MANUFACTURER	TYPE
PANEL MOUNTED COMPONENTS			
1MCS	Mains Disconnect Switch (with door interlock)	Klockner Moeller	T2-V/SVB-NA
1M	Contactor (main motor)	Klockner Moeller	D1LOA-M/22 NA (115V)
1MCB	Circuit Breaker 230V 460V	Klockner Moeller	PKZM3-25/U-NA+Hill PKZM3-16/U-NA+Hill
1T	Control Circuit Transformer (with fuse)	Klockner Moeller	230/460 Volt Primary 115V Secondary at 100VA
1FU	Fuse (control circuit)	Bussman	
5MCB	Circuit Breaker (Transformer) (Primary)	Klockner Moeller	PKZM1-1.6 Form USA
1 CAP	Capacitor/Rectifier	Pratt	B120-4 CAP
1 REC	Assy		
2 REC	Resistor Block	Farnells	WH50-100R
1B&2B	Brake Relay	Klockner Moeller	D1LR-22NA (115V)
2M	Contactor (coolant pump)	Klockner Moeller	D1L00M-10NA(115V)
2MCB	Circuit Breaker 230V (Coolant pump) 460V	Klockner Moeller	PKZM1-0.4 Form USA + NH1 10 PKZM1-0.16 Form USA + NH1 10
1TB	Terminal Block	Klippon	MK6/4
2TB	Terminal Block (control)	Klippon	MK3/12 & MK3/6
3M	Contactor (copying pump)	Klockner Moeller	D1L00M-10NA (115V)
* 3MCB	Circuit Breaker 230V (Copying pump) 460V	Klockner Moeller	PKZM1-2.4 Form USA + NH1 10 PKZM1-1.6 Form USA + NH1 10
	Flasher Unit (brake button)		
MACHINE MOUNTED COMPONENTS			
1MTR	Main Motor	Brook	L213T/7½HP/1800RPM
1MB	Brake Unit	Matrix	IEB45-12
1PB	Emergency Stop Pushbutton	Yoshida	SMB-PRO1
2PB	Stop Pushbutton (main motor)	Yoshida	SBB-DRO1
3PB	Start Pushbutton (main motor)	Yoshida	SFB-DIDG10
4PB	Brake Release Pushbutton	Yoshida	SFB-DODW 10/F
5&5APB	Double Pushbutton (Coolant pump)	Yoshida	SFB-DGR11
1&2LT	Bulb (pushbutton)	Yoshida	6.3V, 0.15A
2LS	Clutch Limit Switch	Telemecanique	ACM-A1022
1LS	Limit Switch (guard)	Burgess	V3Q1
* 6&6APB	Double Pushbutton (Copying pump)	Yoshida	SFB-DGR11
* 2MTR	Coolant Pump	MG Electrics	AQ3/2
* 3MTR	Copying Pump Motor		
* 4MTR	Power Chuck Pump Motor		
* 7&8PB	Pushbutton (power chuck)	Yoshida	SBB-DB11
* 4M	Contactor (power chuck)	Klockner Moeller	
* 4MCB	Circuit Breaker 230V (Power chuck) 460V	Klockner Moeller	
* 2MCS	Disconnect Switch (Power chuck)	Klockner Moeller	

*When fitted

EWD 710.1 USA MARKET
230/460 VOLT 3PH 60HZ SUPPLY
(115V CONTROL)
7½ HP MOTOR M/C WITH CLUTCH

Wiring Diagram



T.S. Harrison & Sons Ltd.

Union Street, Heckmondwike, Yorkshire, England, WF16 0HN

Telephone: 0924-403751/6 Telegrams: Harrison, Heckmondwike Telex: 55217

0924-409391/6

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