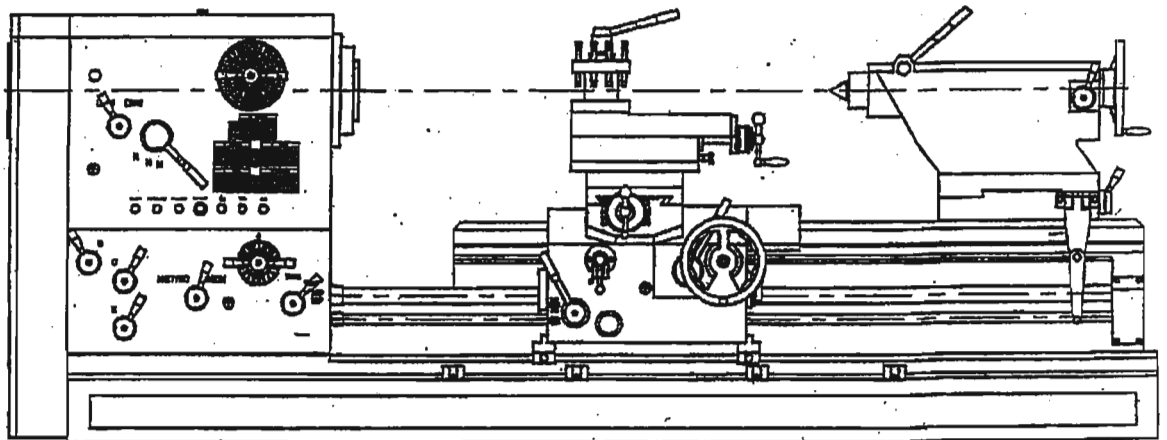


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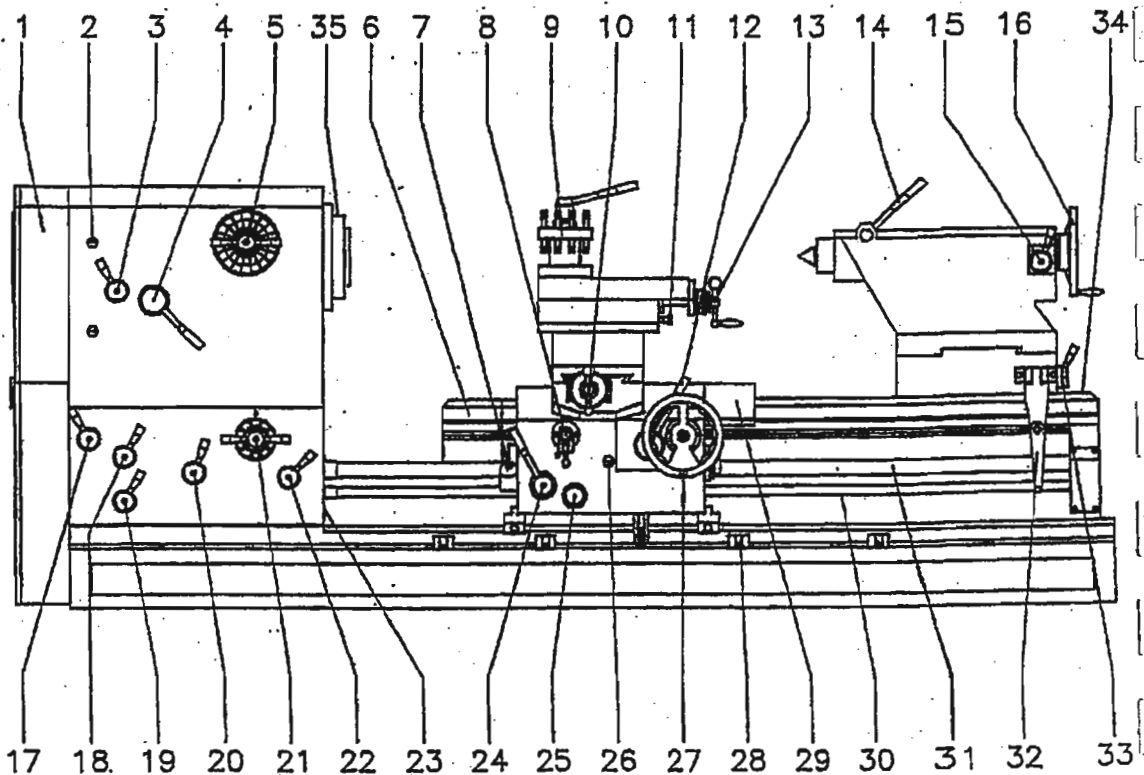
# OUTLINE

# HEAVY DUTY GAP LATHE



NOTE: SWIVEL PEDANT CONTROL ON REQUEST

- |   |                                       |
|---|---------------------------------------|
| 1. Rear cover   | 17. Feed rate change lever            |
| 2. Headstock oil window   | 18. Feed rate change lever            |
| 3. Direction lever  | 19. Feed rate change lever            |
| 4. H,M,N,L changing lever   | 20. Imperial & metric change lever    |
| 5. Spindle speed changing knob  | 21. Feed rate 10 steps lever          |
| 6. Gap Plate  | 22. Threading or feeding select lever |
| 7. Threading chasing dial   | 23. Gearbox oil window                |
| 8. Up position for longitudinal<br>Middle position for cross<br>Low position for toolpost | 24. Haft nut lever                    |
| 9. Tool post  | 25. Oil pump                          |
| 10. Cross feed handle   | 26. Apron oil window                  |
| 11. Manual & auto selector  | 27. Apron handwheel                   |
| 12. Forward & reverse lever<br>neutral position for rapid                                 | 28. Stop plate                        |
| 13. Compound handle   | 29. CONTROL PANEL                     |
| 14. Quill clamping lever  | 30. Feed shaft                        |
| 15. 2-speeds selector   | 31. Leadscrew                         |
| 16. Tailstock hand wheel  | 32. Tailstock travel lever            |
|   | 33. Tailstock stop lever              |
|   | 34. Bed                               |
|   | 35. Spindle                           |



# PREPARATION FOR OPERATION

## PREPARATION FOR USE

### SELECTING MACHINE INSTALLATION LOCATION

BEST RESULTS ARE ACHIEVED WHEN THE AREA IS FREE FROM VIBRATION FROM NEARBY MACHINES, PROTECTED FROM ANY POLLUTANTS GENERATED BY NEARBY MACHINES, IS WELL LIGHTED & WITH GOOD AIR FLOW. ....

ADEQUATE SPACE SHOULD BE ALLOWED FOR SAFE OPERATION & FOR CLEAR ACCESS FOR MAINTENANCE & SERVICE. IT IS RECOMMENDED THAT A CLEAR SPACE OF 36" TO 40" BE PROVIDED AT EACH END & AT THE REAR OF THE MACHINE. A MINIMUM CLEAR SPACE OF 40" SHOULD BE ALLOWED AT THE FRONT FOR THE OPERATORS SAFETY & NECESSARY OPERATING MOVEMENTS. . .

### FOUNDATION REQUIREMENTS

A SPECIAL FOUNDATION IS NOT ESSENTIAL, HOWEVER IT IS DESIRABLE TO PLACE IT ON A SUBSTANTIAL CONCRETE BASE IF POSSIBLE. SHOULD IT BE NECESSARY TO PLACE IT ON A WOODEN FLOOR, IT MUST BE ADEQUATELY SUPPORTED & FREE FROM VIBRATION. IF IT IS TO BE PLACED ON AN UPPER FLOOR, IT SHOULD BE POSITIONED OVER A SUPPORTING BEAM OR GIRDER TO BE FREE FROM VIBRATION FROM NEARBY MACHINES. . .

### UNCRATING THE MACHINE

UPON ARRIVAL, IT IS BEST TO PLACE THE UNIT AS CLOSE AS POSSIBLE TO ITS CHOSEN INSTALLATION POSITION, TO MINIMIZE THE DISTANCE NEEDED TO MOVE IT FOR FINAL INSTALLATION. . .

CAREFULLY REMOVE THE UPPER CRATING BUT... DO NOT REMOVE SKIDS... UNTIL IT IS READY FOR MOVEMENT TO ITS FINAL INSTALLATION LOCATION. . .

# CLEANING THE MACHINE

DO NOT MOVE THE CARRIAGE OR TAILSTOCK ALONG THE BEDWAYS, UNTIL THE WAYS HAVE BEEN THOROUGHLY CLEANED & PROPERLY OILED...

USE A GOOD QUALITY, CLEAN, GREASE SOLVENT TO REMOVE THE COATING APPLIED FOR PROTECTION DURING SHIPPING & ALL DUST & GRIT THAT MAY HAVE SETTLED ON THE MACHINE DURING TRANSPORTATION...

USE RAGS RATHER THAN WASTE TO AVOID LEAVING LINT... DO NOT USE AN AIR HOSE, TO AVOID FORCING DIRT OR GRIT UNDER MOVING UNITS

USE A STIFF BRISTLE BRUSH TO CLEAN TIGHT CORNERS & TO THOROUGHLY CLEAN THE LEADSCREW...

WHEN THE MACHINE HAS BEEN SATISFACTORILY CLEANED, RUB CLEAN MACHINE OIL OVER ALL WAYS & MAKE CERTAIN NO GRIT REMAINS.

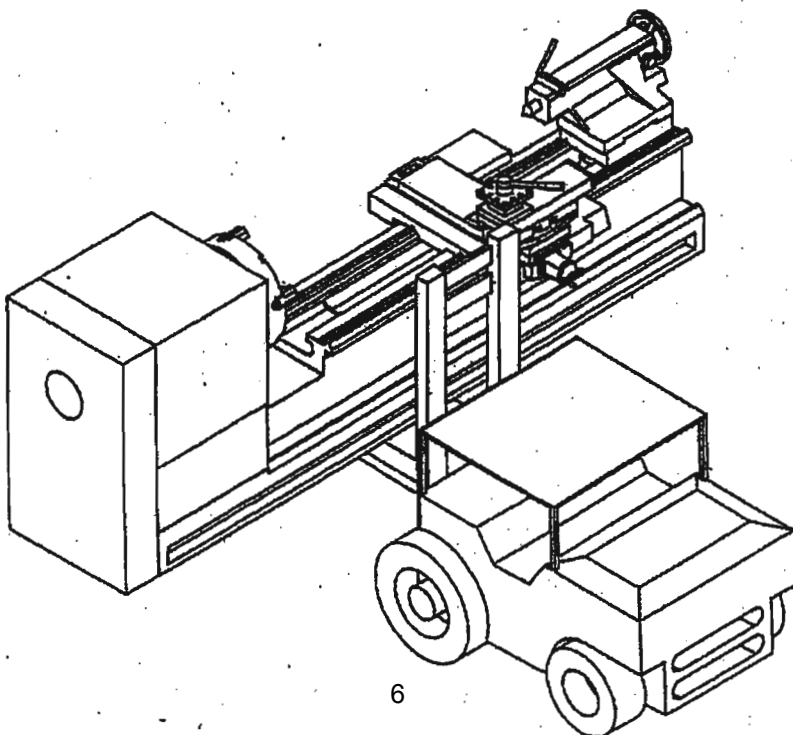
BEFORE MOVING THE CARRIAGE, CHECK ALL LUBRICATION RESERVES ARE CORRECTLY FILLED WITH THE SPECIFIED LUBRICANTS LISTED IN THE LUBRICATION CHART...

OIL CARRIAGE WAYS, THEN PROCEED TO MOVE THE CARRIAGE & TAILSTOCK, TO BALANCE THE MACHINE, READY FOR MOVING TO THE CHOSEN INSTALLATION POSITION...

# LIFTING THE MACHINE

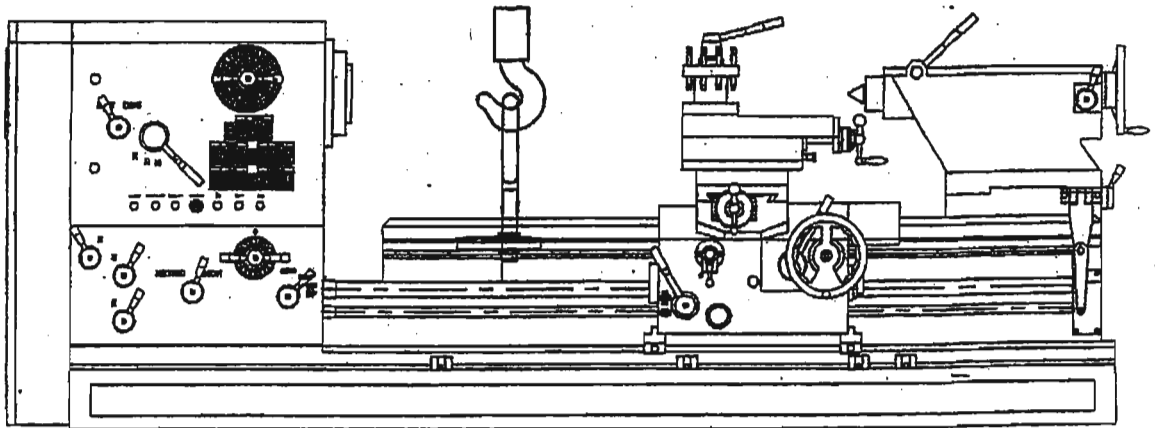
RE CHECK ALL DIRT & GRIT HAVE BEEN CLEANED OFF & THE WAYS ARE CORRECTLY OILED, THEN, OBTAIN THE CORRECT BALANCE, MOVE THE TAILSTOCK & CARRIAGE TO THE FAR RIGHT HAND END OF THE BED & CLAMP THEM SECURELY TO AVOID ANY MOVEMENT WHILE LIFTING...

## LIFTING



IF A CRANE IS USED TO MOVE THE MACHINE, BEFORE BEGINNING TO GENTLY LIFT TO CHECK THE BALANCE... BE SURE THE SLING DOES NOT TOUCH THE LEADSCREW, OR CONTROLS... & CANNOT RUB OR PRESS AGAINST THE WAYS OR OTHER ESSENTIAL AREAS OF THE MACHINE... IT SHOULD BE CAREFULLY CHECKED THAT THE SLING CHOSEN FOR THE LIFT, HAS NOT BEEN DAMAGED & IS CAPABLE OF SUSTAINING THE TOTAL WEIGHT BEING HOISTED...

## LIFTING



## NOTE

MAKE CERTAIN THE LOAD IS ON BALANCE AND THAT THE SLING DOES NOT TOUCH THE LEADSCREW OR CONTROL ROD BEFORE LIFTING.



## POSITIONING THE MACHINE

IF THE MACHINE IS NOT TO BE FASTENED TO THE FLOOR, THEN IT IS ONLY NECESSARY TO CHECK THAT THE SCREW PADS ARE CORRECTLY POSITIONED, BEFORE PROCEEDING WITH THE LEVELING PROCEDURE ADVISED BELOW...

IF THE MACHINE IS TO BE BOLTED TO A CONCRETE FLOOR, ANCHOR BOLTS NEED TO BE USED. IF IT IS TO BE SECURED TO A WOODEN FLOOR, THEN LAG SCREWS NEED TO BE USED... TO DETERMINE THE POSITIONS FOR THESE BOLT OR SCREWS, THE PROCEDURE IS... DIMENSIONS SHOWN IN FOUNDATION DRAWINGS PROVIDED, ARE AS ACCURATE AS POSSIBLE, HOWEVER CASTINGS CAN VARY SLIGHTLY, SO FOR EXACT ACCURACY, THE DISTANCE BETWEEN BOLT HOLES SHOULD BE TAKEN FROM THE ACTUAL MACHINE... THIS CAN BE DONE BY POSITIONING THE MACHINE ON THE FLOOR & MARKING THE HOLE POSITIONS THROUGH THE HOLES, THEN LIFT THE MACHINE TO ONE SIDE & FOR A CONCRETE FLOOR, PROCEED AS FOLLOWS...

CHIP OR DRILL THE HOLES FOR THE ANCHOR BOLTS, APPROXIMATELY 6" 150mm, DIAMETER, APPROXIMATELY 10" 250mm, DEEP... AS INDICATED IN THE ATTACHED DRAWING... THE HOLE WALLS SHOULD BE AS ROUGH AS POSSIBLE, TO GIVE A GOOD GRIPPING SURFACE FOR THE NEW CEMENT...

LIFT THE MACHINE APPROXIMATELY 10" ABOVE THE FLOOR, PLACE A 4" SQUARE PLATES & ADJUSTABLE SCREW SEATS, ON THE ANCHOR BOLTS... SECURE THEM INTO A TIGHT SET WITH A WIRE OR CORD TIE THAT CAN LATER BE CUT TO RELEASE THEM FOR FINAL LEVELING ADJUSTMENT...

LOWER THE MACHINE TILL THE BOTTOM OF THE PLATES ARE AT FLOOR LEVEL BUT KEEP THE WEIGHT SUSPENDED & POUR IN THE QUICK DRYING CEMENT TO FILL THE HOLES AROUND THE HOOK BOLTS... THE CEMENT SHOULD BE SUFFICIENTLY FLUID IN TEXTURE, TO FILL THE HOLES COMPLETELY AROUND THE HOOK BOLTS...

AFTER THE CONCRETE HAS SET, RELEASE THE MACHINE WEIGHT TO THE FLOOR...

THE MACHINE CAN NOW BE CAREFULLY LEVELED AS PER THE FOLLOWING PROCEDURE... FINAL LOCKING DOWN WILL BE DONE AFTER THE MACHINE HAS BEEN LEVELED...

## LEVELLING PROCEDURE...

LEVELLING A LATHE & REGULAR CHECKS & ADJUSTMENTS TO KEEP IT LEVEL IS ONE OF THE PRIME ESSENTIALS IN CORRECT LATHE OPERATION...

IF THE MACHINE IS NOT TO BE FASTENED DOWN, AS DESCRIBED ABOVE, IT IS ONLY NECESSARY TO SEE THE ADJUSTING SCREWS ARE CORRECTLY PLACED & ARE OVER THE FLOOR PLATES, THEN PROCEED AS BELOW...

USE A PRECISION LEVEL THAT IS GRADUATED TO AT LEAST 0.001", 0.025mm, PER FOOT...

A CARPENTERS LEVEL OR THE LEVEL IN A MACHINISTS SQUARE, IS NOT ACCURATE ENOUGH...

LEVELLING IS ACCOMPLISHED IN TWO PHASES...

PRELIMINARY LEVELING IS TO REMOVE ANY PRONOUNCED TWIST IN THE BED & SHOULD BE DONE WITH THE LEVELS REMAINING IN ONE POSITION...

ADJUST THE SCREWS UNDER THE HEADSTOCK UNTIL THE READING IS ZERO... THEN MOVE THE LEVEL TO THE TAILSTOCK END & ADJUST THE SCREWS UNTIL THE READING IS ZERO...

THEN RE-CHECK & MAKE MINOR ADJUSTMENTS WITH THE LEVEL AT EACH OF THE ABOVE MENTIONED POSITIONS:

THIS WILL COMPLETE THE PRELIMINARY LEVELING...

FOR FINAL LEVELING... PLACE THE LEVEL LENGTHWAYS ON THE FRONT FLAT WAY, CLOSE TO THE HEADSTOCK END & ADJUST SCREWS UNDER THE HEADSTOCK UNTIL THE READING IS ZERO... & WHILE THERE, WITH THE LEVEL ACROSS THE BED, RE-CHECK THAT THESE ADJUSTMENTS DID NOT CAUSE ANY TWIST IN THE BED...

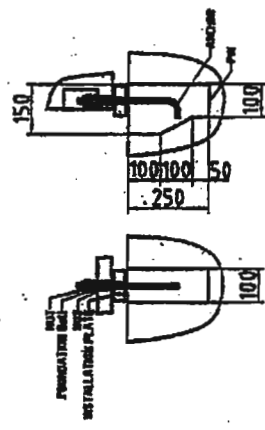
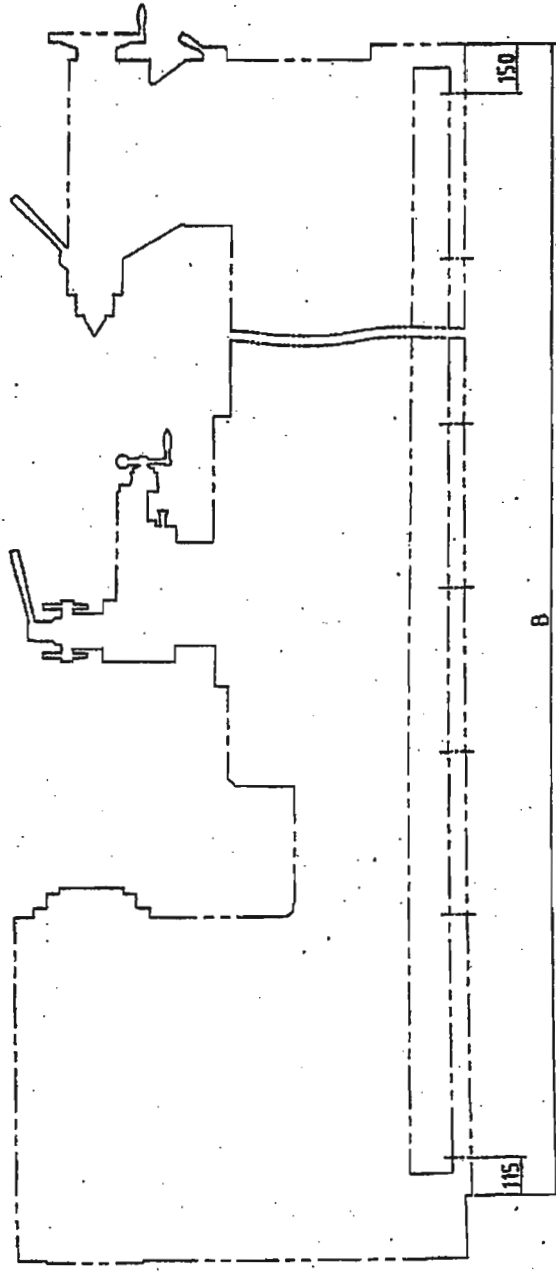
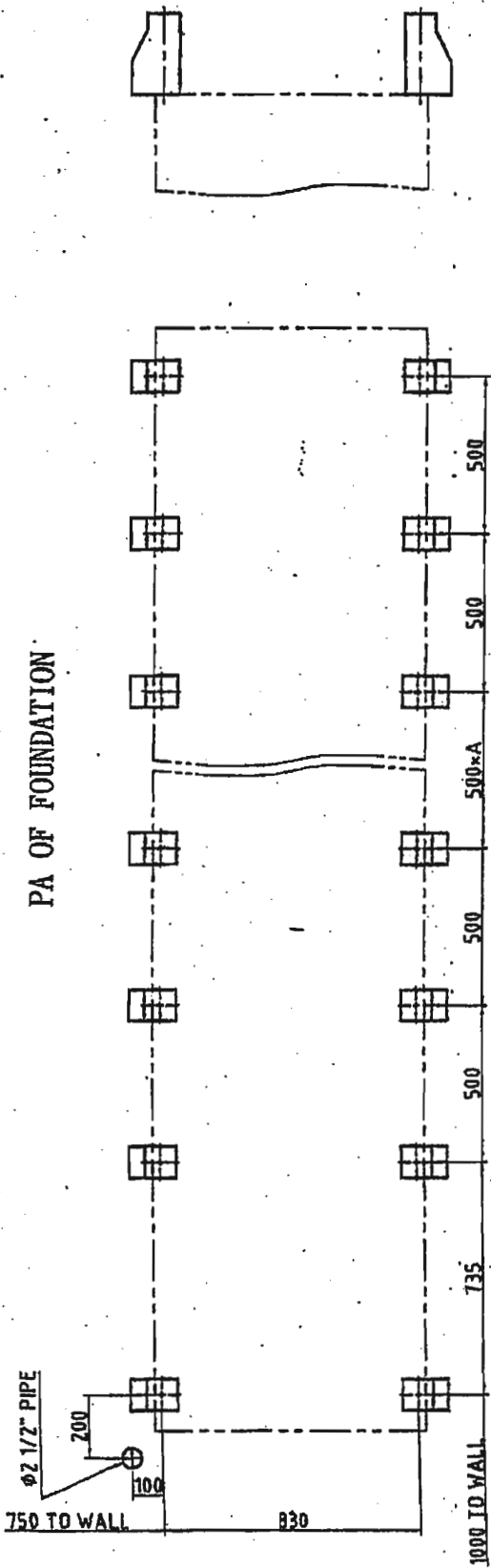
NOW PLACE THE LEVEL LENGTHWAY ON THE FRONT FLAT WAY, CLOSE TO THE TAILSTOCK END & REPEAT THE OPERATION DESCRIBED ABOVE... & AGAIN, WHILE THERE RE-CHECK THAT ANY ADJUSTMENTS MADE, DID NOT PUT A TWIST IN THE BED...

REPEAT THESE OPERATIONS & MAKE WHATEVER MINOR ADJUSTMENT NECESSARY...

THE NEXT OPERATION IS TO LEVEL THE LATHE CROSSWAYS BY PLACING THE LEVEL ACROSS THE CARRIAGE WINGS & MOVING THE CARRIAGE FROM ONE END OF THE BED, TO THE OTHER WITHOUT DISTURBING THE POSITION OF THE LEVEL... IF THE LEVEL SHOWS ANY VARIATION DURING ITS TRAVEL, THE SCREWS NEAREST THE POINT WHERE THE VARIATION OCCURRED, SHOULD BE RAISED, OR LOWERED, TO BRING THE LEVEL BACK TO ZERO...

ANY ADJUSTMENT MADE TO BRING THE LATHE LEVEL IN ONE DIRECTION MAY AFFECT THE LEVEL IN ANOTHER DIRECTION... IT IS ONLY A COMBINATION OF ADJUSTMENTS THAT WILL BRING THE LATHE INTO PROPER LEVEL... DURING THE FIRST WEEK OF OPERATION, OR UNTIL THE MACHINE HAS, "SETTLED" ON ITS FOUNDATION, THE LEVEL SHOULD BE FREQUENTLY CHECKED... PERIODIC CHECKS SHOULD BE DONE AT LEAST EVERY SIX MONTHS...

PA OF FOUNDATION



B	3500	4000	4500	5000	5500	6000	7000	8000	9000	10000	11000	12000	13000	14000
A	1	2	3	4	5	6	8	10	12	14	16	18	20	22
HOLE NO.	14	16	18	20	22	24	28	32	36	40	44	48	52	56
CENTER DISTANCE	1500	2000	2500	3000	3500	4000	5000	6000	7000	8000	9000	10000	11000	12000

UNITS-mm

## ELECTRICAL EQUIPMENT...

ELECTRICAL CABINET IS PROVIDED AT THE REAR OF THE HEADSTOCK... INSIDE, HOUSED ON SEPARATE SUB PANELS. ARE ALL OF THE ELECTRICAL COMPONENTS, TRANSFORMERS, FUSES, ETC., REQUIRED...

ALL LATHES CONTAIN A CONTROL TRANSFORMER WITH 24V OR 110V COILS FOR USE WITH ALL AC CIRCUITS...

AN INDEPENDENT SELECTOR SWITCH FOR THE COOLANT PUMP IS MOUNTED ON THE FRONT...

# LUBRICATION

# LUBRICATION

THE IMPORTANCE OF CORRECT LUBRICATION CAN NOT BE OVER-EMPHASIZED. UNDER NO CIRCUMSTANCES SHOULD THE LATHE BE OPERATED WITHOUT FIRST SEEING THAT IT HAS BEEN THOROUGHLY LUBRICATED.

THE SUCCESSFULL AND SATISFACTORY OPERATION OF THE LATHE, AS WELL AS ITS USEFUL SERVICE LIFE, DEPEND UPON THE CARE WITH WHICH THE LUBRICATION INSTRUCTIONS GIVEN BELOW AS FOLLOW.

SINCE ALL OIL WAS DRAINED FROM THE MACHINE BEFORE SHIPMENT, IT IS NECESSARY AT THE ONSET TO FILL THE RESERVOIRS IN THE HEADSTOCK, QUICK CHANGE BOX AND APRON TO THE LEVELS INDICATED ON THE SIGHT GAGES WITH WHICH EACH UNIT IS PROVIDED. ALL THE OTHER POINTS INDICATED ON THE DIAGRAMS AND REFERRED IN THE INSTRUCTIONS SHOULD BE THOROUGHLY OILED.

## NOTE

LUBRICATE ELECTRIC MOTOR ACCORDING TO MOTOR MANUFACTURER'S RECOMMENDATIONS. DO NOT OVER-LUBRICATE.

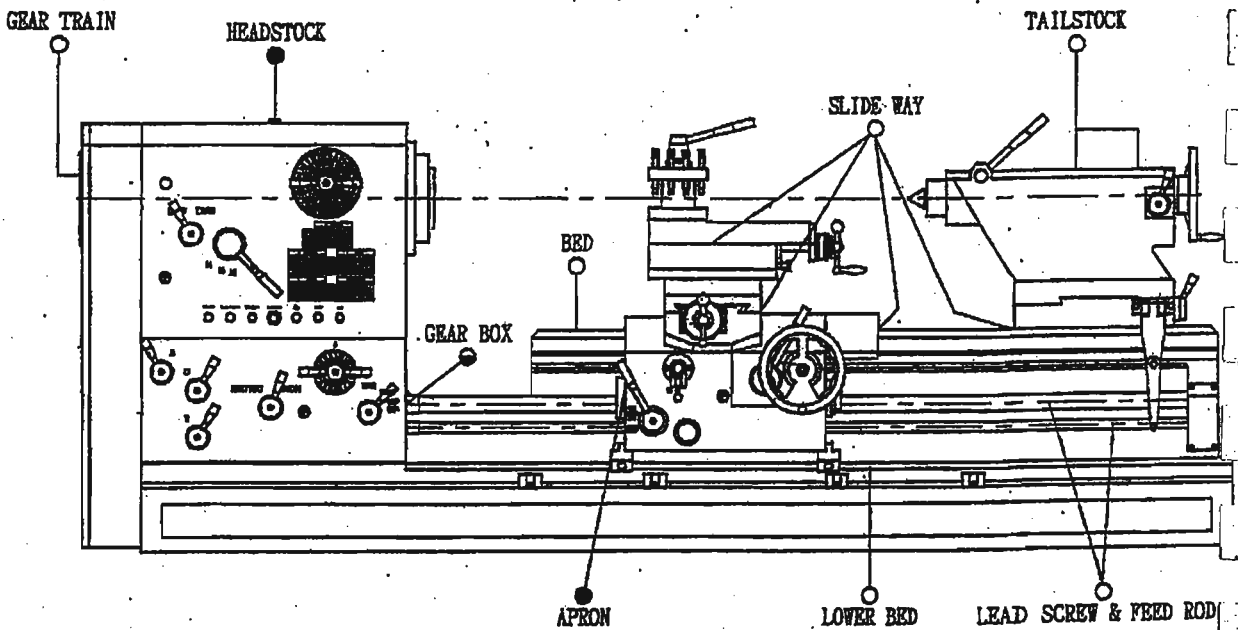
BE CERTAIN THAT THE LATHE IS PROPERLY LUBRICATED AT ALL TIMES AND THAT OIL RESERVOIRS ARE FILLED TO CORRECT LEVELS IN ACCORDANCE WITH LUBRICATING INSTRUCTIONS.

# RECOMMENDATION OIL TABLE

LOCATION	METHOD	FREQUENCY	QUANTITY	OIL RECOMMENDED	REMARKS
Headstock	Fill, Remove head cover fill to "sight glass Full Mark" Drain: Remove plug (lower-center outboard end headstock)	1st change: After approx. 200 hours Thereafter: Every 6 months	120 1 liters (30 Gal.)	Shell Tellus #68	Oil is distributed by automatic pressure system
Feed Gear (Quick change) Box	Add/Fill, Remove top cover fill to sight glass "Full Mark" Drain: Remove drain plug directly beneath large numbered feed selector dial-front of box	Add. As needed to sight glass "Full Mark" Drain/Change: Six (6) month intervals	Approx. 4 liters (1 Gal.)	Shell Tellus #68	Reservoir Oil bath (Dip)
Apron	Add/Fill, Remove knurled "oil plug" -right side apron, add to sight glass "Full Mark" Drain: Remove plug bottom left side of "bottom plate" (cover)	Add. As needed to sight glass "Full Mark" Drain/Change: Six (6) month intervals	Approx. 5 liters (1-1/3 Gal.)	Shell Tellus #68	Reservoir oil Bath dip
Ways, (Bed) Saddle & Cross Slide	"One shot" Pump, left side of apron plus automatic system when feeds are engaged	3 times a day (normal operation)	1-3 shots normal	Provided from apron reservoir #68	3 position Distributor valve on front right side saddle wing
Compound & Cross Slide Screw	Oil fittings - top surface both cross & compound slides Pump type oil can provided	Daily/as needed	2-3 drops (one squirt of pump-oil can)	Shell Tellus #68	
Tailstock	7 fittings - lube with pump type oil can provided	Daily/as need when in use	2-3 drops (one squirt of pump oil can)	Shell Tellus #68	
Outboard End Gears & Shafts	Apply grease to gear teeth. *shaft (oil fitting in end)	Inspect weekly and grease as required *Oil daily	Light Coating Gears must not be run dry *2-3 drops	Use good clinging type gear grease *Shell Tellus #68	*Important! This shaft must be oiled
Lead Screw (a) & Feed Rod (b)	Lubricate surface with brush or cloth Oil fitting in end support block	Daily/as needed	Lead screw must be cleaned & threads lightly oiled	Shell Tellus #68	

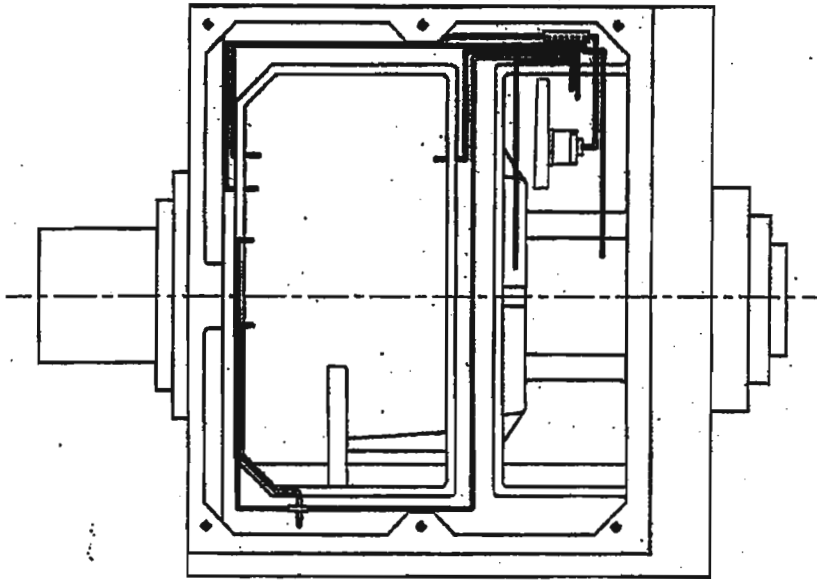
# LUBRICATION CHART

				
SERVICE	DAILY	WHEN REQUIRED	OIL LEVEL	POINTS

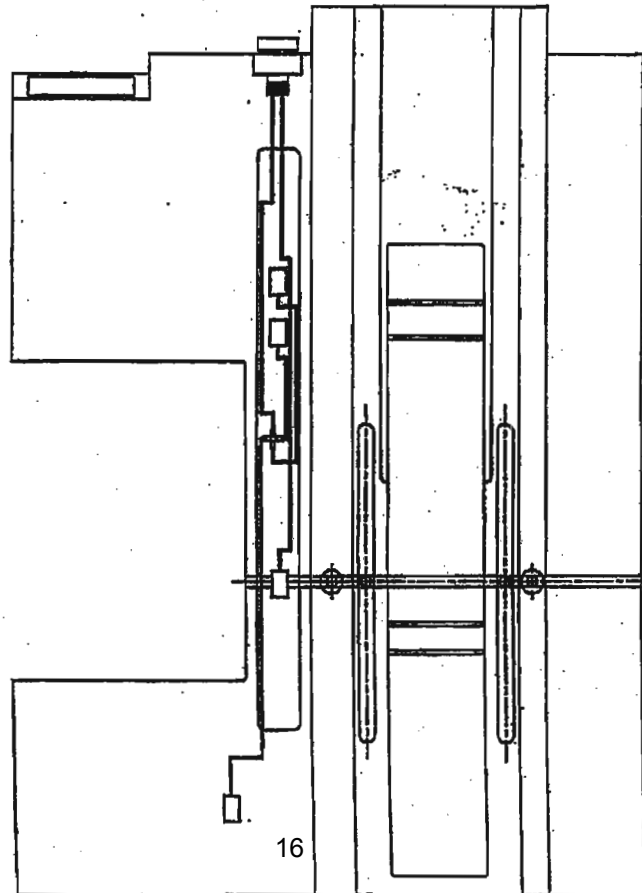




# LUBRICATION SYSTEM FOR HEADSTOCK



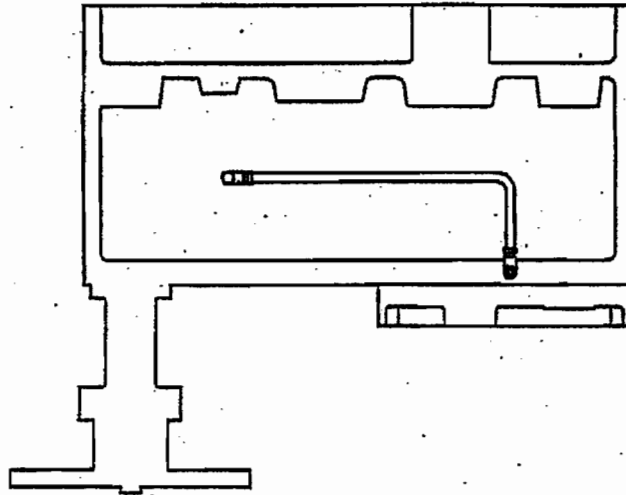
WHEN PUSH "JOG" OR INTERVAL TIME BY "TIMER", OIL  
WILL BE SUPPLIED TO SADDLE AND BED WAYS AUTOMATICALLY.



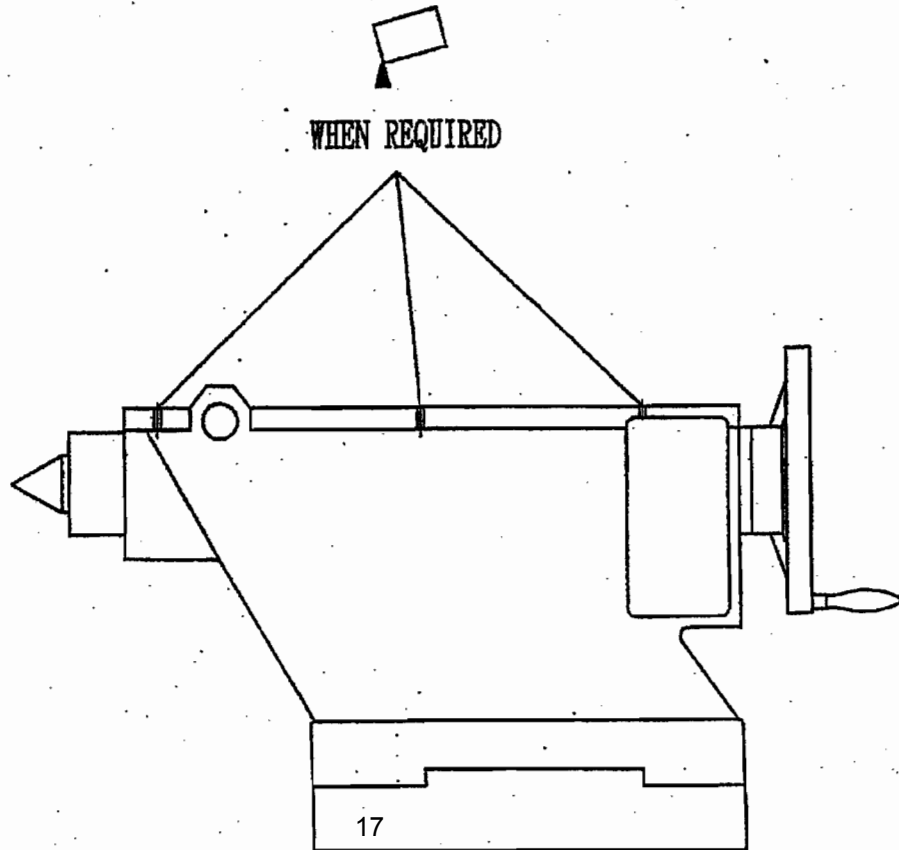
# LUBRICATION SYSTEM FOR APRON

The lower part of the apron properly forms an oil tank. The oil inlet is at the right side of the apron, the oil gage(oil window) is at the front of the apron, by it we can check the oil quantity in apron.

Supply oil into oil inlet should up to the redline of oil window.



## LEVRICATION POINT



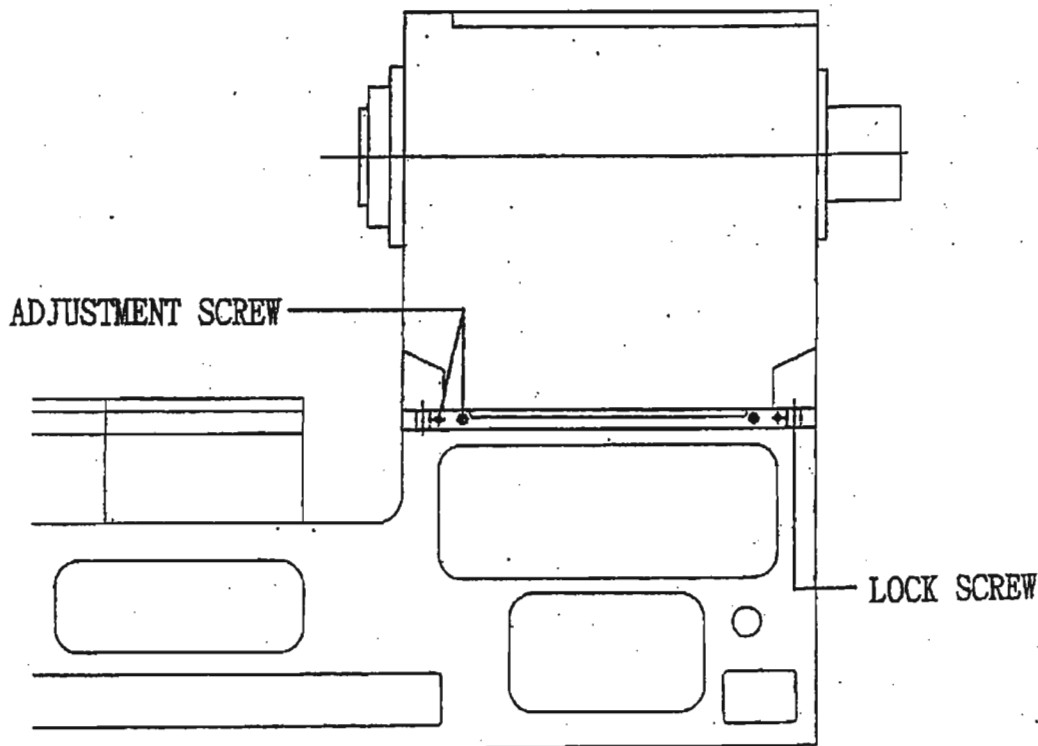
# ADJUSTMENT

## GENERAL MAINTENANCE FOR LEVEL

TO INSURE PROLONGED ACCURACY OF THE MACHINE, LEVEL THE BED AT INSTALLATION, RECHECK IN ONE MONTH, AGAIN AT TWO MONTHS, AND AT LEAST EVERY SIX MONTHS THEREAFTER.

## CENTERING THE HEADSTOCK

CENTERING IS ACHIVED BY MEANS OF ADJUSTING FOUR 12MM ADJUSTING BOLTS WHICH WILL SHIFT THE HEADSTOCK ABOUT IS CNETER LINE. PRIOR TO ADJUSTING, LOOSEN ALL SCREWS WHICH SECURE THE HEADSTOCK TO THE BED OF THE MACHINE. AS THE ADJUSTMENT PROCEDURE IS COMPLETED. RETIGHTEN ALL BOLTS WHICH SECURE HEADSTOCK TO BED.



## QUICK CHANGE GEAR BOX

IT IS A TOTALLY ENCLOSED DESIGN AND ALLOWS A WIDE RANGE OF FEEDS AND THREADS WITHOUT HAVING TO CHANGE ANY GEARS OF GEAR CHAIN.

ALL THE GEARS AND DRIVING SHAFTS ARE MANUFACTURED FROM ALLOY STEEL. LUBRICATION IS OIL BATHED.

# HEADSTOCK

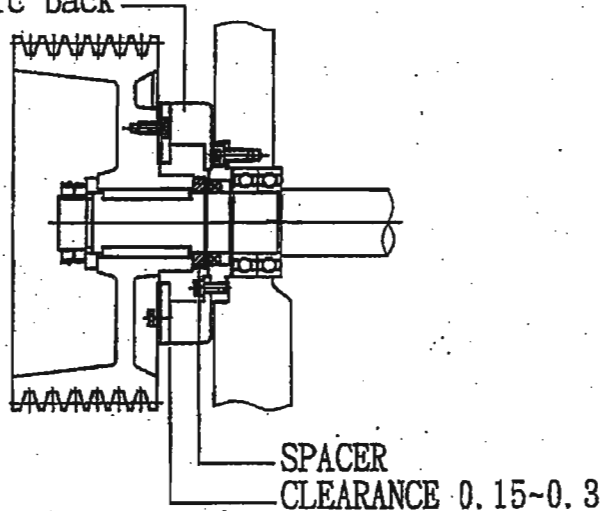
THE HEADSTOCK IS MADE OF PERLITIC CASTING. IT HAS BEEN DESIGNED AND CAST WITH THICK WALLS TO PROVIDE ABSOLUTE RIGIDITY. ALL THE GEARS AND SPLINE SHAFTS ARE MANUFACTURED FROM CHROME, NICKEL, STEEL, CASE HARDEND AND GROUND. THE GEARS ARE ALL GROUND.

THE SPINDLE IS LARGELY DIMENSIONED IN ORDER TO ABSORB THE STRESSES IT MIGHT BE SUBJECTED. IT IS SUPPORTED ON ORIGINAL SKF OR FAG BEARINGS A PRECISION OF P5 CLASS. THE SPINDLE IS VERY ACCURATELY GROUND IN ORDER TO PROVIDE MAXIMUM PRECISION EVEN UNDER THE HEAVIEST LOADS.

# ELECTROMAGNETIC BRAKE

Electromagnetic clutch is used whenever you wish to stop main spindle, please push the "main spindle stop" button on the operator's panel the main spindle will be stopped at once.

Electromagnetic back



NOTE : MACHINING THE SPACER, TO MAKE CLEARANCE BETWEEN 0.15-0.3MM

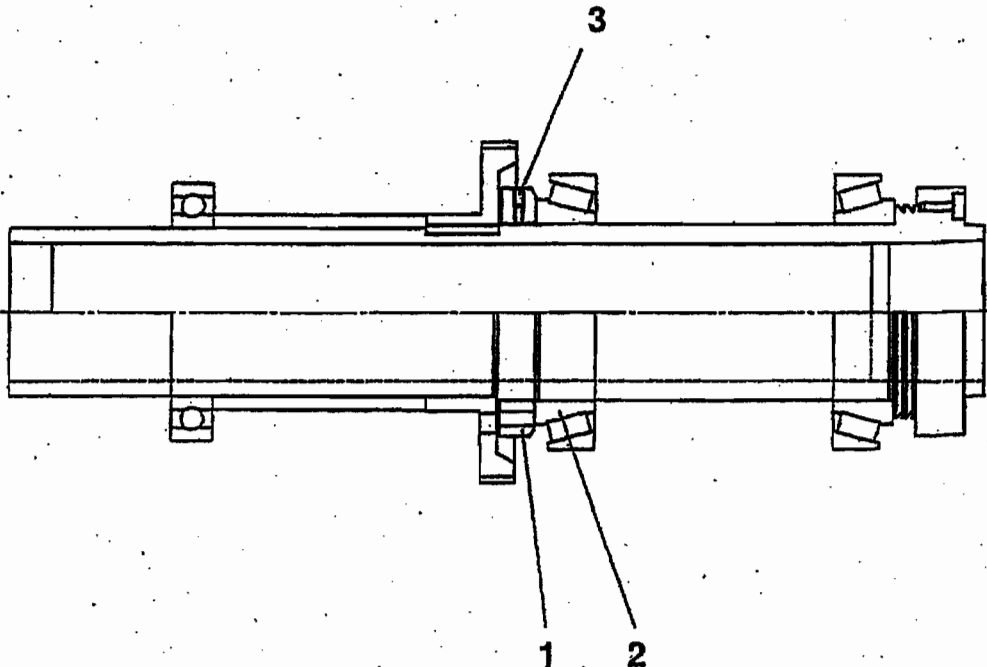
# IMPORTANT

FOR STOPPING OR RAPIDLY REVERSING THE MAIN SHAFT, USE OF THE SPINDLE ELECTRO-MAGNETIC BRAKE. (EXCEPT FOR HEAVY WEIGHTS IN WHICH CASE WE DO NOT RECOMMEND TO USE THE BRAKE, AS THE PART MAY BE JARRED OUT OF THE CHUCK AND CAUSE PERSONAL INJURY.)

## ADJUSTING THE HEADSTOCK SPINDLE BEARINGS.

- RUN THE HEADSTOCK ABOUT ONE HOUR OR UNTIL THE BEARINGS ARE WARM.
- REMOVE THE TOP COVER OF THE HEADSTOCK UNIT AND REAR COVER OF SPINDLE.
- MOVE MAIN LEVER TO NEUTRAL.
- LOOSE LOCK BOLT 3 WHICH ENABLE YOU TO LOOSE, OR TIGHTEN NUT 1.
- BY ADJUSTING NUT 1 TO LOOSEN 2 TAPER ROLLER BEARING OR MAKE IT TIGHT.
- REPLACE COVER, RUN SPINDLE AND CHECK THAT EXCESSIVE SPINDLE TEMPERATURES ARE NOT REACHED.

## SPINDLE ADJUSTMENT

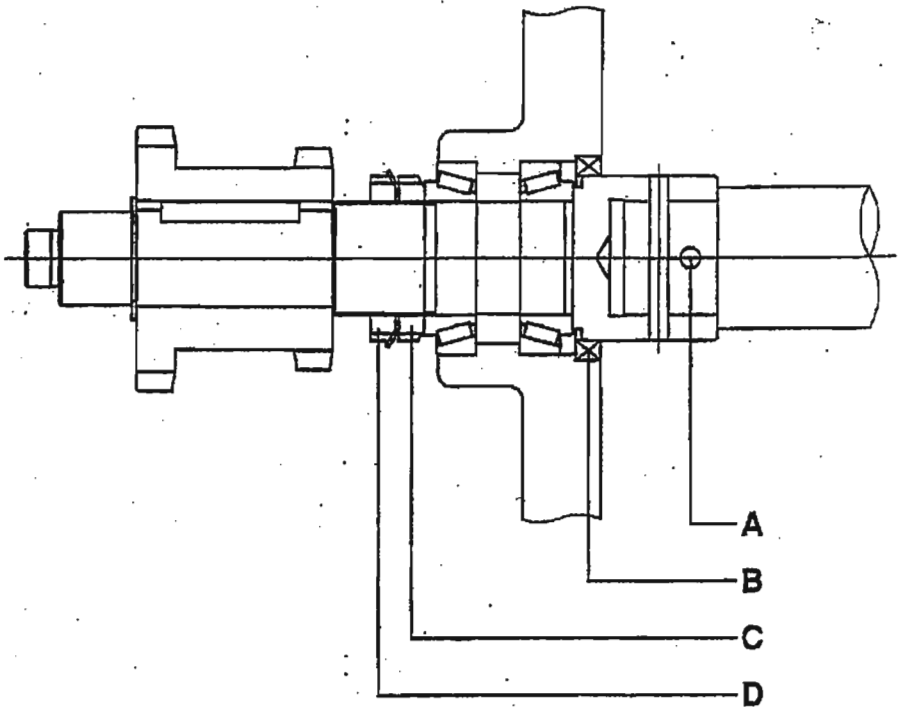
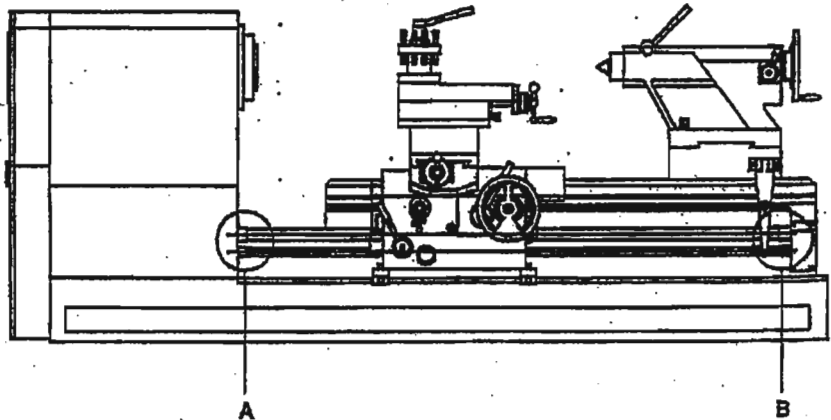


## WARNING

THIS IS VERY IMPORTANT THAT THE SPINDLE TO BE ADJUSTED BY EXPERIENCED ENGINEER. THIS IS A HEAVY DUTY LATHE WHICH IS DIFFERENT TO ANY OTHER SMALLER HING SPEED LATHE.

## TAKING LEADSCREW APART

- 1) Pull the taper pin showing "A" area out.
- 2) Take the bolts showing "B" area off.
- 3) You will be able to pull leadscrew & feedshaft & feed rod out.



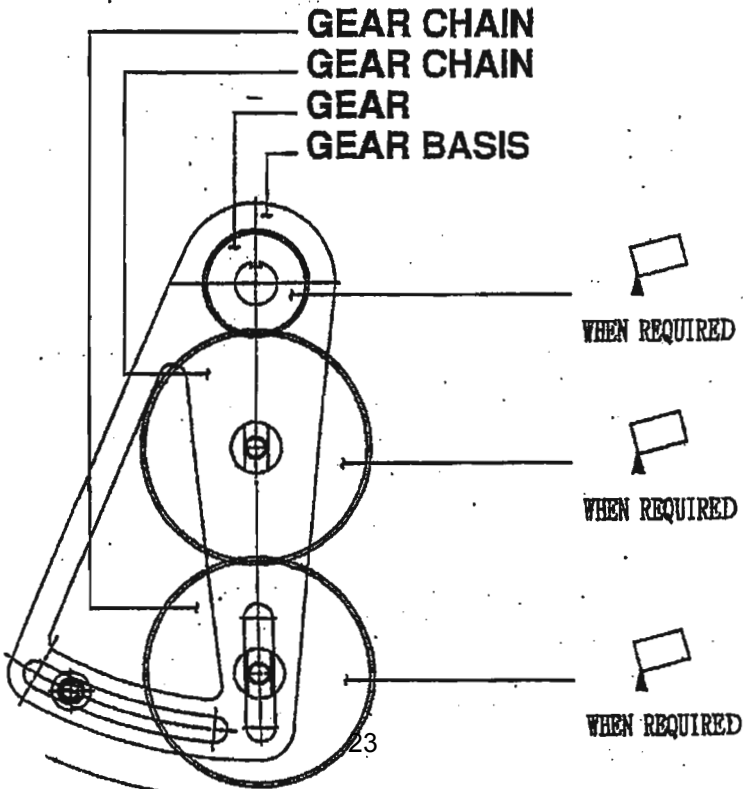
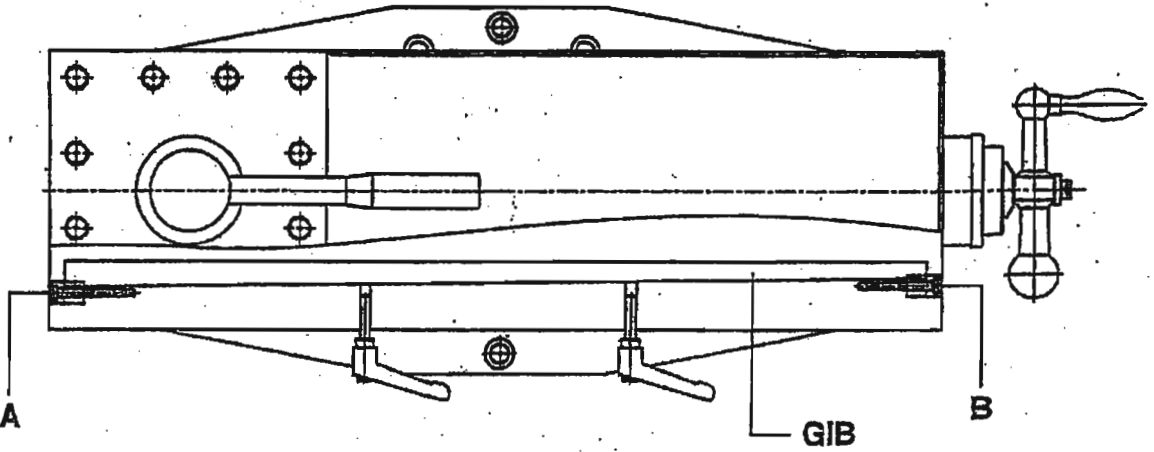
- A. PIN
- B. OIL SEAL
- C. NUT
- D. NUT

## ADJUSTING LEAD SCREW

1. PIN A & OIL SEAL B.
2. TIGHTEN NUT C & NUT D.
3. TEST SPINDLE RUNNING AGAIN.

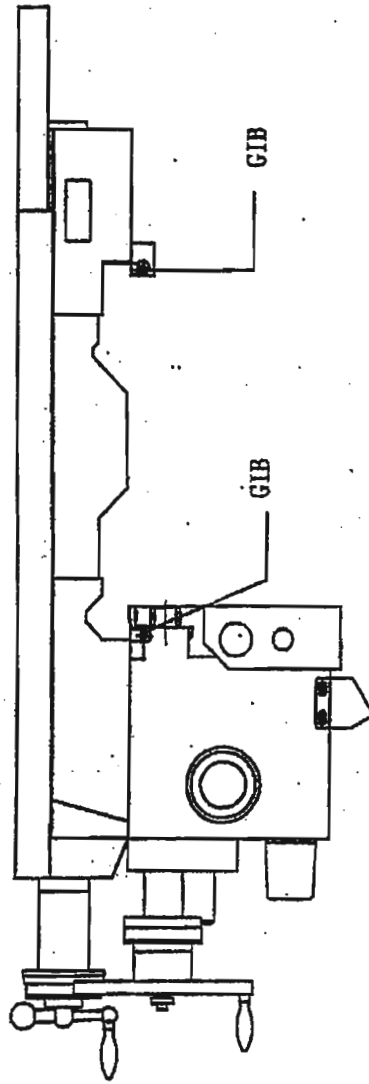
# COMPOUND TOOLPOST GIB ADJUSTMANT

First, loose the fixing screw "B" in the rear side, and after, fasten the adjusting screw "A", then the gib will be pushed forward to proper position that the clearance between saddle and cross slide or compound tool rest slide and cover are adequate. how much the shifting distance of gib is related to the size of clearance. last, fasten the fixing screw again.

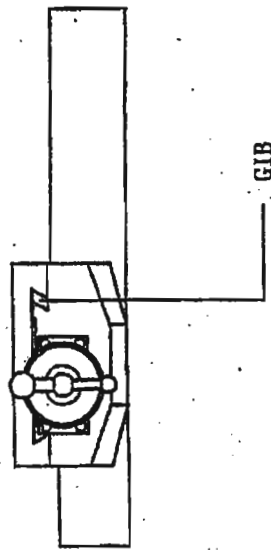




# CARRIAGE



# CROSS SLIDE



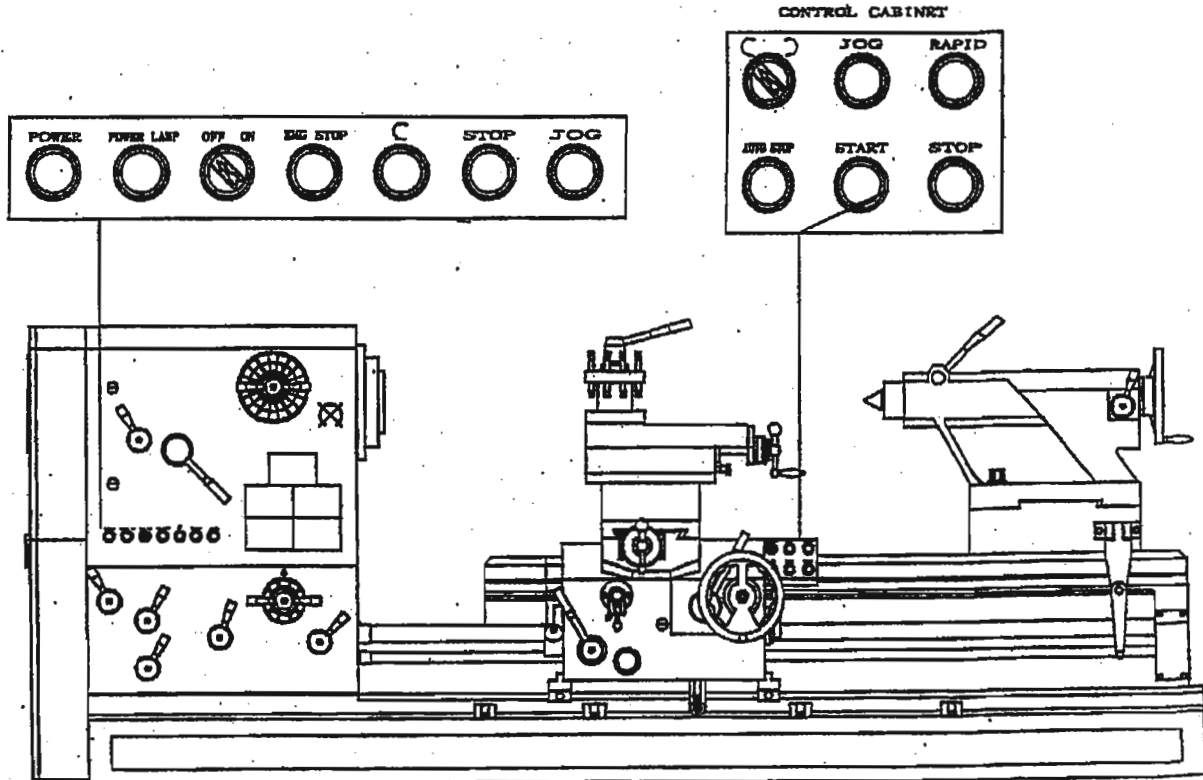
# OPERATION

# OPERATION

STUDY THE FUNCTIONAL DIAGRAM AND BECOME FAMILIAR WITH THE OPERATION UNIT AND CONTROL LEVERS.

THEN PUSH DOWN THE "POWER" PUSH BUTTON. (MAKE SURE THAT PILOT "POWER LAMP" IS ON), BY USING PUSH BUTTON "G" TO START MAIN MOTOR, OR "STOP" BUTTON TO STOP THE MAIN MOTOR.

SELECT FORWARD "C" OR REVERSE "G" OF SPINDLE SWITCH TO RUN THE SPINDLE. OR BY PUSHING "JOG" IS FOR JOG. AS YOU FACE TO THE SPINDLE FROM THE TAILSTOCK, THE SPINDLE SHOULD TURN COUNTER-CLOCKWISE DIRECTION WHEN PUSHING JOG SWITCH, IF IT DOES NOT, IT IS NECESSARY TO REVERSE THE ROTATION OF THE MOTOR BEFORE ATTEMPTING TO FURTHER OPERATE THE LATHE. TO REVERSE THE ROTATION OF THE MOTOR, CHANGE ANY 2 OF THE 3 INCOMING PHASE OF POWER WIRE.



# SPINDLE SPEED SELECTION

SPINDLE SPEEDS ARE CHANGED BY ROTATION HEADSTOCK LEVERS LOCATED ON THE FRONT FACE OF THE HEADSTOCK. TO ENGAGE THE SPINDLE, ONCE THE PROPER SPINDLE SPEED IS SELECTED, USING THE SWITCHS AS PER ABOVE PARAGRAPH MENTIONED: IN ANY CASE, BY PUSHING ANY EMERGENCY STOP TO STOP THE MACHINE.

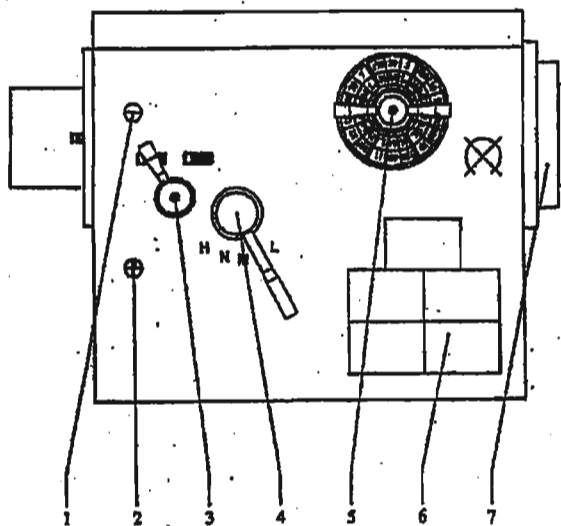
WHEN USING AUTO FEED(LONGITUDINAL)MAKE SURE TO START SWITCH "AUTO STOP" WHICH WILL CUT OFF THE POWER WHEN AUTO FEED IS USED.

## NOTE:

NEVER, UNDER AND CIRCUMSTANCES, ATTEMPT TO SHIFT SPINDLE SPEEDS WHILE THE SPINDLE RUNNING. STOP THE MACHINE AND JOG SPINDLE, IF NECESSARY TO FACILITATE GEARS ENGAGEMNT. IF IT IS NECESSARY TO USE A MALLET OR HAMMER, BE SURE THE BLOWS ARE MUFFLED BY LEAD, WOOD, RAWHID, RUBBER OR BRASS-PREFEABLE BY USING MALLETS OR HAMMERS MADE OF SUCH MATERIALS.

## 18 STEPS SPINDLE SPEED

1. OIL WINDOW
2. OIL QUANTITY WINDOW
3. FORWARD & REVERSE FEED/THREADING LEVER
4. H, M, N, L CHANGE LEVER
5. CAM TYPE CHANGING LEVER
6. THREAD CUTTING CHART
7. MAIN SPINDLE



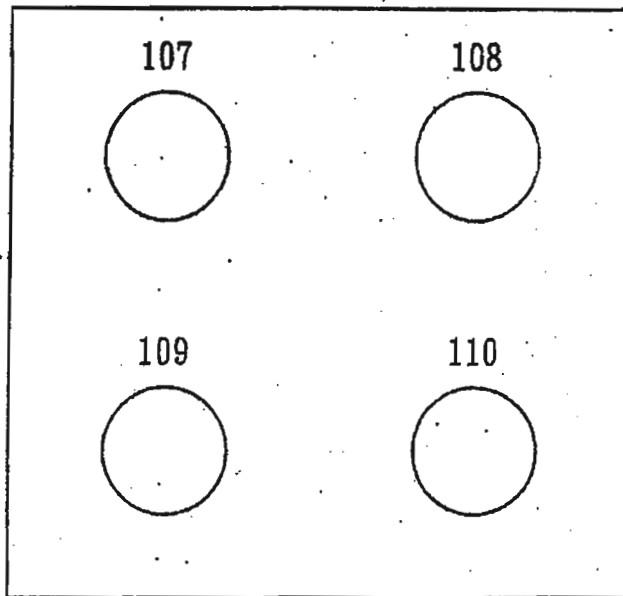
## CAUTION

STOP THE HEADSTOCK SPINDLE, BEFORE ATTEMPTING TO MAKE ANY SPINDLE SPEED CHANGES. DO NOT CHANGE SPEEDS WHILE THE SPINDLE IS RUNNING. ROTATE THE SPINDLE BY HAND OR JOG IT IF PEOPER ENGAGEMENT OF SLIDING GEARS IS NOT OBTAINABLE WHEN CHANGING SPEEDS.

## 4STEPS VARIABLE SPINDLE SPEED (OPT.)

IF THE MACHINE IS ORDERED AS A 4 STEPS INFINITIVE VARIABLE SPEED, AN ADDITIONAL CABINET WILL BE FITTED, KNOB 107 IS FOR INFINITIVE VARIABLE SPEED ADJUSTMENT. 108 SWITCH IS A 4 STEPS SELECTOR, THEN PUSH 110 SWITCH TILL IT IS LIGHT ON, WHICH IS TO TELL THAT THE SPEED IS SELECTED PROPERLY. (OR THE EXPECTED GEARS IS ENGAGED PROPERLY)

## 4STEPS VARIABLE SPINDLE SPEED (OPTIONAL)



107: INFINITIVE VARIABLE SPEED KNOB

108: 4-STEPS CHANGE SWITCH

109: SPINDLE STOP

110: SPEED SELECT/START

## CARRIAGE

THE CARRIAGE IS ALSO MADE OF A PERLITIC GREY CASTING AND PROVIDES THE LONGITUDINAL AND CROSS MOVEMENTS AND IS EQUIPPED WITH A COMPOUND WHICH SWIVEL 360 DEGREES. A LARGE BEARINGS SURFACE ASSURES PERFECT STABILTY EVEN UNDER THE HEAVIEST STRESSES. VERY ACCURATE ADJUSTMENT OF THE SLIDING CLEARANCE IS OBTAINED BY MEANS OF TAPER GIBS OF EACH.

# APRON

THE APRON IS OF A VERY MODERN DESIGN. THE FRONT CARRIES THE DIFFERENT LEVERS FOR ENGAGING OF THE LONGITUDINAL AND CROSSFEED. RAPID FEED MOTOR IS LOCATED AT LEFT HAND SIDE OF APRON. ALL DRIVING ELEMENTS ARE LUBRICATED IN AN OIL BATH.

# COMPOUND

THE COMPOUND IS MANUALLY POSITIONED BY ROTATING LEVER #17. IF THE COMPOUND LOCKING DEVICE IS UNCLAMPED, TO CLAMP OR UNCLAMP THE COMPOUND LIFT UP THE TAB AND ROTATE THE UNIT.

THE COMPOUND CAN ALSO SWIVEL BY LOOSENING THE 4 COMPOUND BOLTS AND MANUALLY ROTATING THE COMPOUND. BE SURE TO SECURE AND TIGHTEN THE BOLTS BEFORE TURNING.

# WAY LUBRICATION

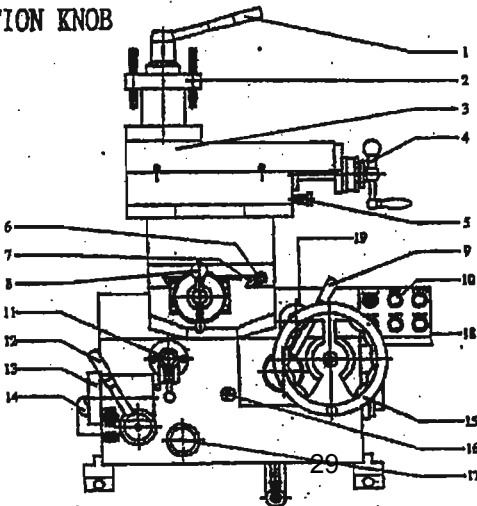
USE SELECTING WAY LUBRICATION KNOB TO OIL EACH WAY "S. A. B.", S IS FOR CROSS WAY & B IS FOR CARRIAGE WAY. WHEN YOU SELECT A, THEN NO OIL PUMPING TO ANY OF THESE TWO AREAS.

PROPER OIL IS ACCORDING TO ISO CODE G68, FOR EXAMPLE:

MOBIL VACTRA OIL NO. 2  
SHELL TONNA OIL T68/TX68  
ESSO FEBIS K68  
CHEVRON VISTAC OIL 68X

# APRON & TOPS LIDE

1. TOOLPOST CLAMPER
2. TOOLPOST
3. TOPSLIDE
4. MANUAL FEED HANDLE
5. MANUAL / RAPID SELECTOR
6. CROSS SLIDE GIB ADJUST KNOB
7. CROSS SLIDE GIB
8. CROSS SLIDE HANDLE
9. NEUTRAL POSITION (FORWARD & REVERSE HANDLE)
10. CONTROL PANEL
11. FEED & RAPID SELECTOR (TOP: LONGITUDINAL, CENTRAL : CROSS, BOTTOM : TOP SLIDE)
12. HALF NUT LEVER
13. RAPID FEED MOTOR
14. THREAD DIAL
15. HAND WHEEL FOR CARRIAGE
16. OIL WINDOW
17. OIL PUMP
18. CARRIAGE
19. WAY LUBRICATION KNOB



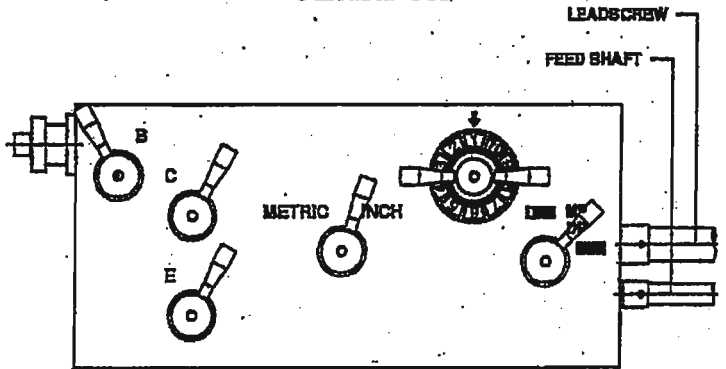
# BED

THE BED IS ALSO MADE OF A PERLITIC CASTING. THE CARRIAGE WAYS ARE INDUCTION HARDENED AND GROUND. THE BED IS MASSIVE IN DIMENSION AND HEAVY IN ORDER TO PREVENT ANY DEFORMATION AND VIBRATIONS EVEN UNDER THE HEAVIEST LOADS. THE GUIDWAYS ARE PRECISION GROUND.


# THREADS AND FEEDS



FOR THE SELECTION OF THE DIFFERENT THREADS/FEEDS INDICATED IN THE CHART, THE UNIVERSAL GAER BOX HAS A CENTRAL CONTROL WITH A NUMERIC SCALE FROM 1 TO 10 AND FOUR MORE LEVERS. WITH THESE CONTROLS AND WITHOUT THE CHANGE OF TRANSPOSING GEARS, THE ENTIRE RANGE OF THREADS IS OBTAINED.



# GEARBOX



# FEEDS AND THREADS CHART

	IN 									
	1	2	3	4	5	6	7	8	9	10
A D E	16	18	19	20	22	23	24	26	27	28
B D E	8	9	9 1/2	10	11	11 1/2	12	13	13 1/2	14
A C E	4	4 1/2	4 3/4	5	5 1/2	5 3/4	6	6 1/2	6 3/4	7
B C E	2	2 1/2	2 3/4	2 1/2	2 3/4	2 7/8	3	3 1/4	3 3/4	3 1/2
A C F	1	1 1/4	1 3/8	1 1/2	1 5/8	1 7/8	1 1/2	1 5/8	1 11/8	1 3/4
B C F	1/2	5/8	3/4	5/8	11/8	3/4	7/8	1	11/8	7/8

MM 										DP 											
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10		
1			1.25			1.5			1.75	A D E	64	72	76	80	88	92	96	104	108	112	
2	2.25		2.5	2.75		3	3.25	3.5		B D E	32	36	38	40	44	46	48	52	54	56	
4	4.5	4.75	5	5.5	5.75	6	6.5	6.75	7	A C E	16	18	19	20	22	23	24	26	27	28	
8	8	8.5	10	11	11.5	12	13	13.5	14	B C E	8	9	9 1/2	10	11	11 1/2	12	13	13 1/2	14	
16	16	18	19	20	22	23	24	26	27	28	A C F	4	4 1/4	4 1/2	5	5 1/4	5 1/2	6	6 1/4	6 1/2	7
32	32	36	38	40	44	46	48	52	54	56	B C F	2	2 1/2	2 3/4	2 1/2	2 3/4	2 7/8	3	3 1/4	3 3/4	3 1/2

MP 										IN 											
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10		
0.25						0.75				A D E	0.275	0.305	0.335	0.365	0.395	0.425	0.455	0.485	0.515	0.545	
0.5			0.5			0.75			0.75	B D E	0.15	0.165	0.18	0.195	0.21	0.225	0.24	0.255	0.27	0.285	
1	1.25		1.25	1.5		1.5	1.75		1.75	A C E	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	
2	2.25	2.5	2.5	2.75	3	3.25	3.25	3.5		B C E	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	
4	4.5	4.75	5	5.5	5.75	6	6.5	6.75	7	A C F	1.2	1.25	1.3	1.35	1.4	1.45	1.5	1.55	1.6	1.65	
8	8	9	9.5	10	11	11.5	12	13	13.5	14	B C F	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3

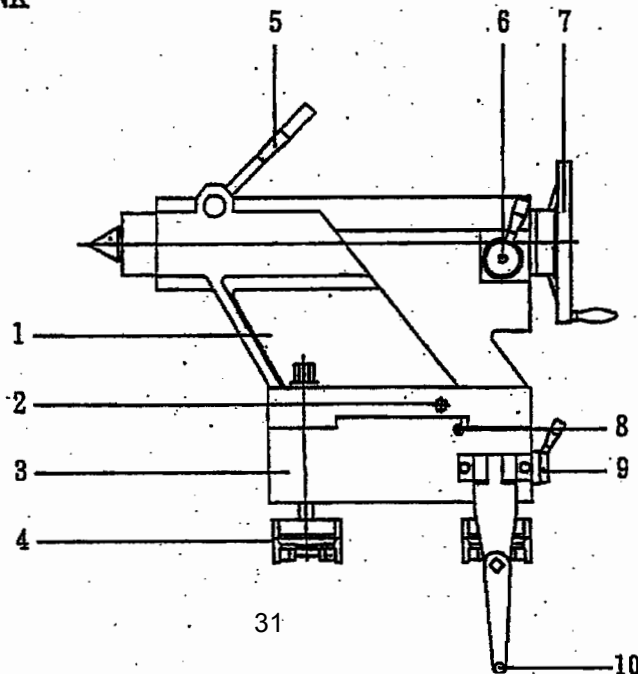
# TAILSTOCK CENTERING AND LOCKING

THE TAILSTOCK IS MASSIVE AND IS LARGELY DIMENSIONED. THE QUILL IS MADE OF CHROME, NICKEL, STEEL HARDENED AND PRECISION GROUND. IT IS EQUIPPED WITH A TANG. THE TAILSTOCK BODY IS LOCKED BY TWO LOCK NUTS AND CLAMPING SHOE.

TAILSTOCK CENTERING ADJUSTMENT IS SIMILAR OF THAT OF THE HEADSTOCK. TWO OPPOSING ADJUSTING STUDS RE MOVING COUNTER TO EACH OTHER TO SWIVEL ABOUT CENTERLINE OF SPINDLE. OF COURSE, TAILSTOCK MUST BE LOOSENED FROM BEDWAYS PRIOR TO ADJUSTING. AFTER FINAL POSITIONING HAS BEEN ACHIEVED, TAILSTOCK SHOULD BE FIRMLY SECURED TO BED. THE LOCKING MECHANISM OF THE TAILSTOCK BODY CONSISTS OF BOLTS WHICH ACT ON A CLMAPING SHOE.

## TAILSTOCK

1. TAILSTOCK BODY
2. ADJUST SCREW
3. BASE CASTING
4. TAILSTOCK CLAMP SHOE
5. QUILL LOCKING LEVER
6. 2-SPEED SELECTOR
7. QUILL FOR-BACKWARD HANDWHEEL
8. SETTING SCREW
9. POSITIONED LEVER
10. MOVING CRANK





# TAPER TURNING ATTACHMENT (TELESCOPIC)

THE TAPER ATTACHMENT IS FURNISHED AS AN OPTION AND IS SUPPLIED ONLY WHEN ORDERED. IT INCORPORATES THE USE OF THE TELESCOPIC CROSS SLIDE SCREW WHICH DOES NOT HAVE TO BE DISENGAGED FOR TAPER WORK. THIS FEATURE ELIMINATES THE NEED OF DISCONNECTING THE CROSSFEED NUT. IT PERMITS NORMAL USE OF CROSSFEED ADJUSTMENT AND GREATLY SIMPLIFIES THE TRANSITION FROM STRAIGHT TO TAPER TURNING.

## COOLANT SYSTEM

THE COOLANT PUMP IS TURNED ON/OFF FROM SELECTOR.

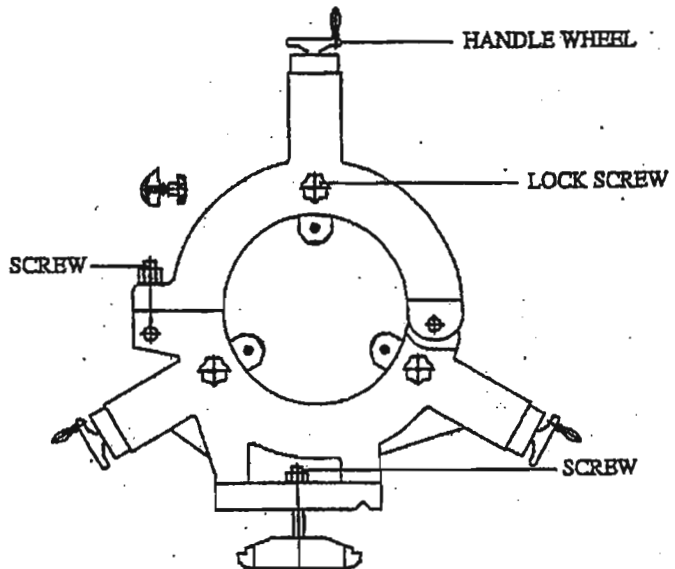
### EMERGENCY STOP PUSHBUTTONS

TWO RED MUSHROOM TYPE EMERGENCY STOP PUSHBUTTONS (ON THE HEADSTOCK COVER) AND (ON THE CARRIAGE PANEL) ARE PROVIDED. TO STOP THE LATHE IN CASE OF EMERGENCY WHICH WILL ALSO ENGAGE THE SPINDLE BRAKE (THE BRAKE WILL AUTOMATICALLY COME ON. TO RELEASE EITHER OF THESE 2 PUSHBUTTONS TWIST THE RED MUSHROOM TOP.

## TAILSTOCK

THE TAILSTOCK IS CLAMPED ON THE BEDWAYS BY MEANS OF BOLTS AND CLAMPING SHOE. ALWAYS ENSURE THE TAILSTOCK IS SECURELY CLAMPED BEFORE USING IT. IT CAN BE POSITIONED ALONG THE BED USING ITEM "T9". AND CRANK WHICH IS SUPPLIED. ITEM "T9" CAN ALSO BE SWING UP TO APPROACH CLOSER TO THE BED. THE QUILL IS CLAMPED BY MEANS OF LEVER "T5". THE QUILL CAN BE POSITIONED FAST OR SLOW BY MOVING LEVER "T7" INTO THE RELEVANT POSITION AND THEN CLAMPING THE QUILL BY LEVER "T5". SELECT MANUAL OR AUTO KNOB 18 BEFORE RUNNING THE MACHINE.

## STEADY REST



# PARTS    LISTS

## BED ASSY.

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Item	No. Part No.	Description	Remark
1	PA1002	GAP	
2	PA1001	BED	
3	PA1009	SHORT RACK GEAR	
4	PA1010	LONG RACK GEAR	
5	PA1024	NUT	
6	PA1023	STOP PLATE	
7		HEX. SOC. HD. SCREW	
8		SPRING PIN	
9		HEX. SOC. HD. SCREW	
10		HEX. SOC. HD. SCREW	
11		HEX. SOC. HD. SCREW	
12	PA7010	COVER	
13		SNAP RING	
14		DEEP GROOVE BALL BEARING	
15		DEEP GROOVE BALL BEARING	
16		OIL SEAL	
17	PA1013	BRACKET	
18	PA1011M	LEADSCREW	METRIC
18	PA1011I	LEADSCREW	INCH
19	PA1012	FEED ROD	
20		SET SCREW	
21		HEX. SOC. HD. SCREW	
22		OIL SEAL	
23		DEEP GROOVE BALL BEARING	
24		DEEP GROOVE BALL BEARING	
25		SNAP RING	
26	PA5035	COVER	
27	PA1026-A	FOUNDATION SCREW	
28	PA1026-1	NUT	
29	PA1027-1	WASHER	
30		MOTOR	
31		KEY	
32	PA1008	MOTOR PULLEY	
33		NUT	
34	PA1007	WASHER	
35	PA1004	MOTOR BASE	
36		SET SCREW	
37	PA1003	BRACKET	
38	PA1006	ADJUST SCREW	
39	PA1005	ROD	

## BED ASSY.

ITEM:1000

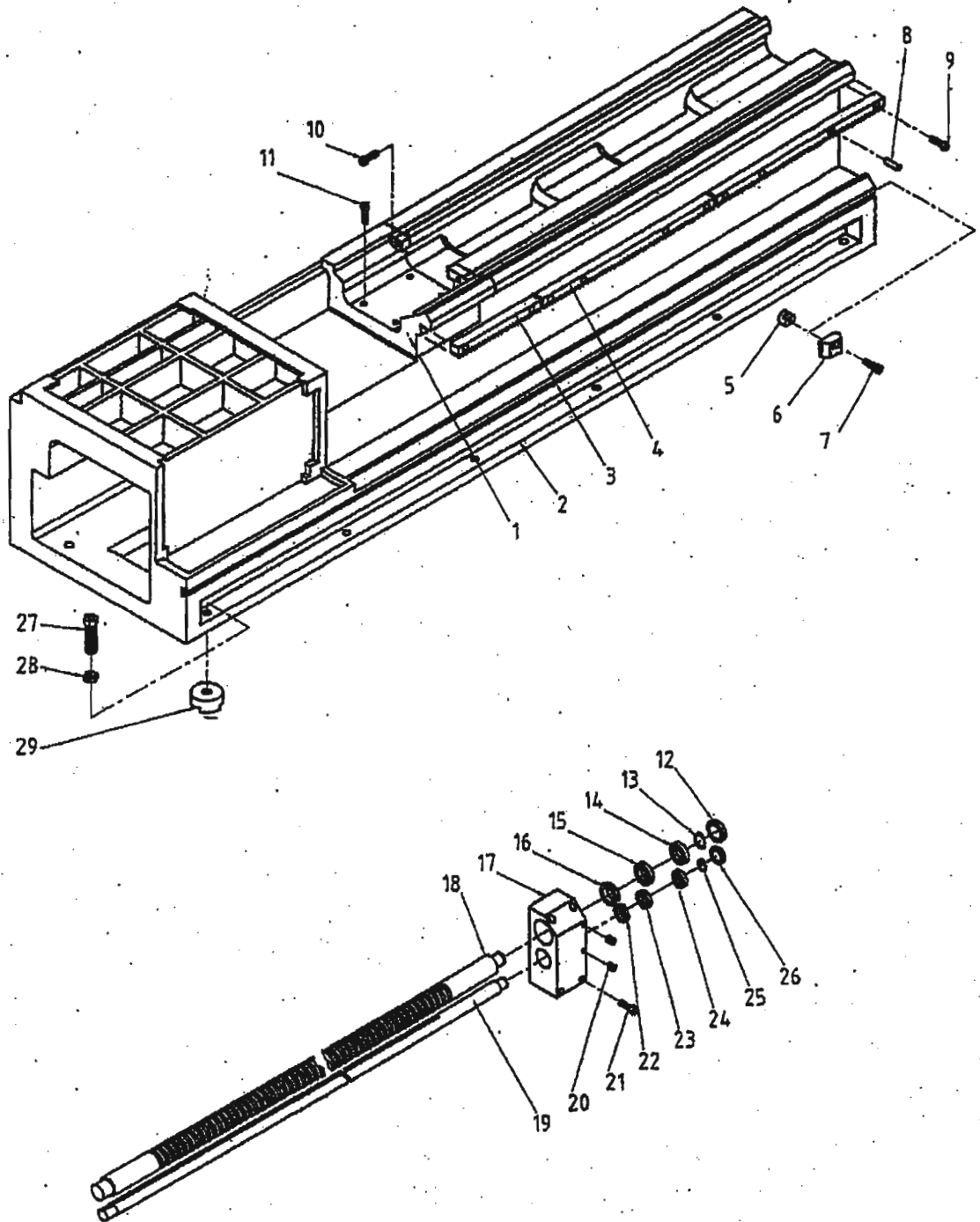
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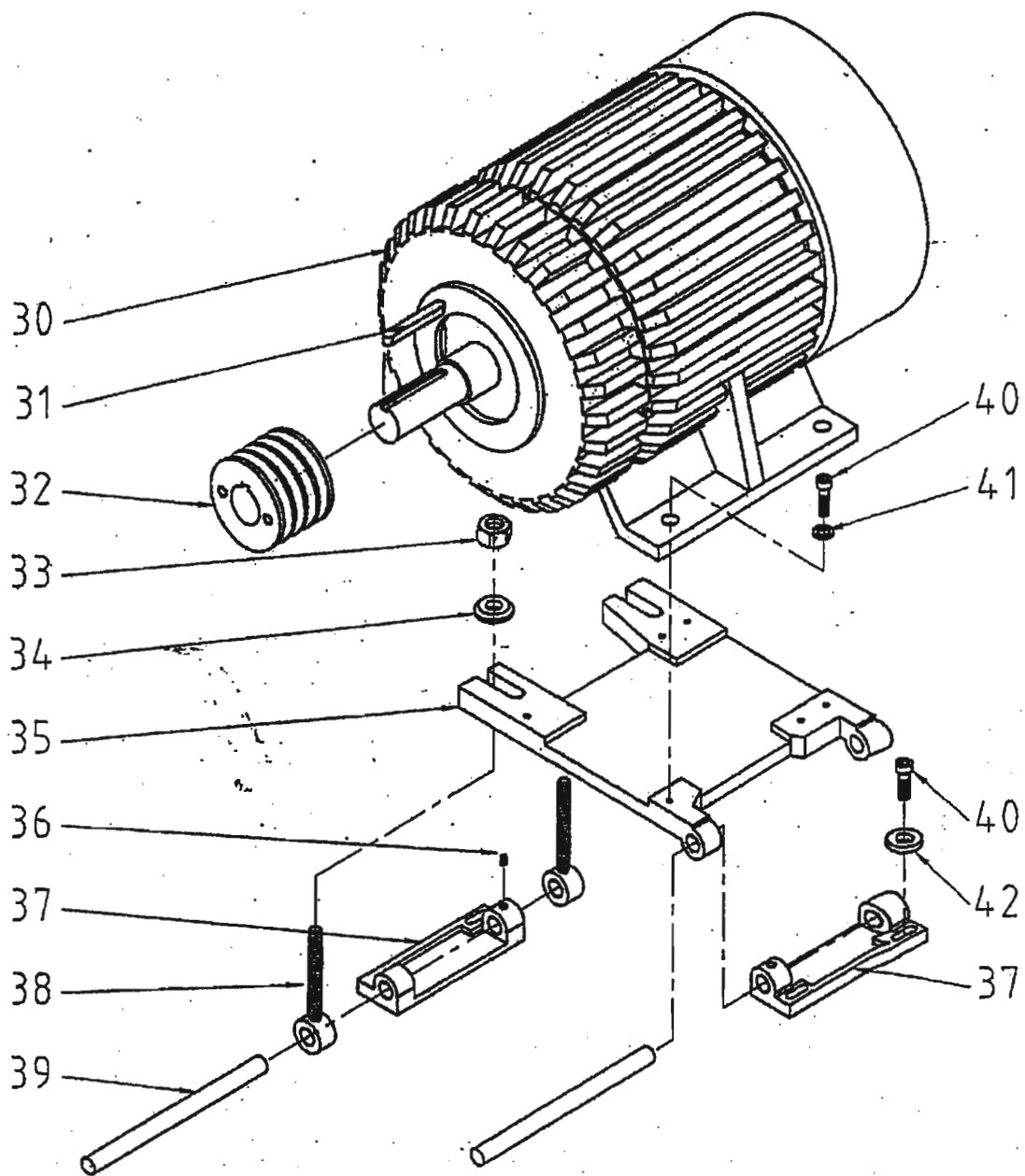
Item	No Part No.	Description	Remark
40		HEX. SOC. HD. SCREW	
41		SPRING WASHER	
42		WASHER	
43		HEX. SOC. HD. SCREW	
44		ELECTRIC CABINET	
45	PA1043	COVER	
46		HEX. SOC. RD. SCREW	
47	PA1042-A	COVER	
48		HEX. SOC. RD. SCREW	
49	PA0005A	COVER	
50	PA1025-1	REAR COVER	
51		HEX. SOC. RD. SCREW	
52		HEX. SOC. HD. SCREW	
53		NUT	
54		WASHER	
55	PA0008-A	BRACKET	
56		HEX. SOC. HD. SCREW	
57		HEX. SOC. HD. SCREW	
58		HEX. SOC. RD. SCREW	
59	PA1044	COVER	
60		SET SCREW	
61		HEX. SOC. HD. SCREW	
62		V-BELT	
63		HEX. SOC. HD. SCREW	
64	PA1026	WASHER	
65		HEX. SOC. HD. SCREW	
66	PA1026	WASHER	
67		SNAP RING	
68		DEEP GROOVE BALL BEARING	
69		SNAP RING	
70		DEEP GROOVE BALL BEARING	
71	PA1019	SCREW	
72		SPUR GEAR	
73	PA1015	SPUR GEAR	
74	PA1014A	BRACKET	PA35
74	PA1014B	BRACKET	PA40
74	PA1014C	BRACKET	PA45
74	PA1014D	BRACKET	PA50
75	PA1020	NUT	
76	PA1021	SPACER	

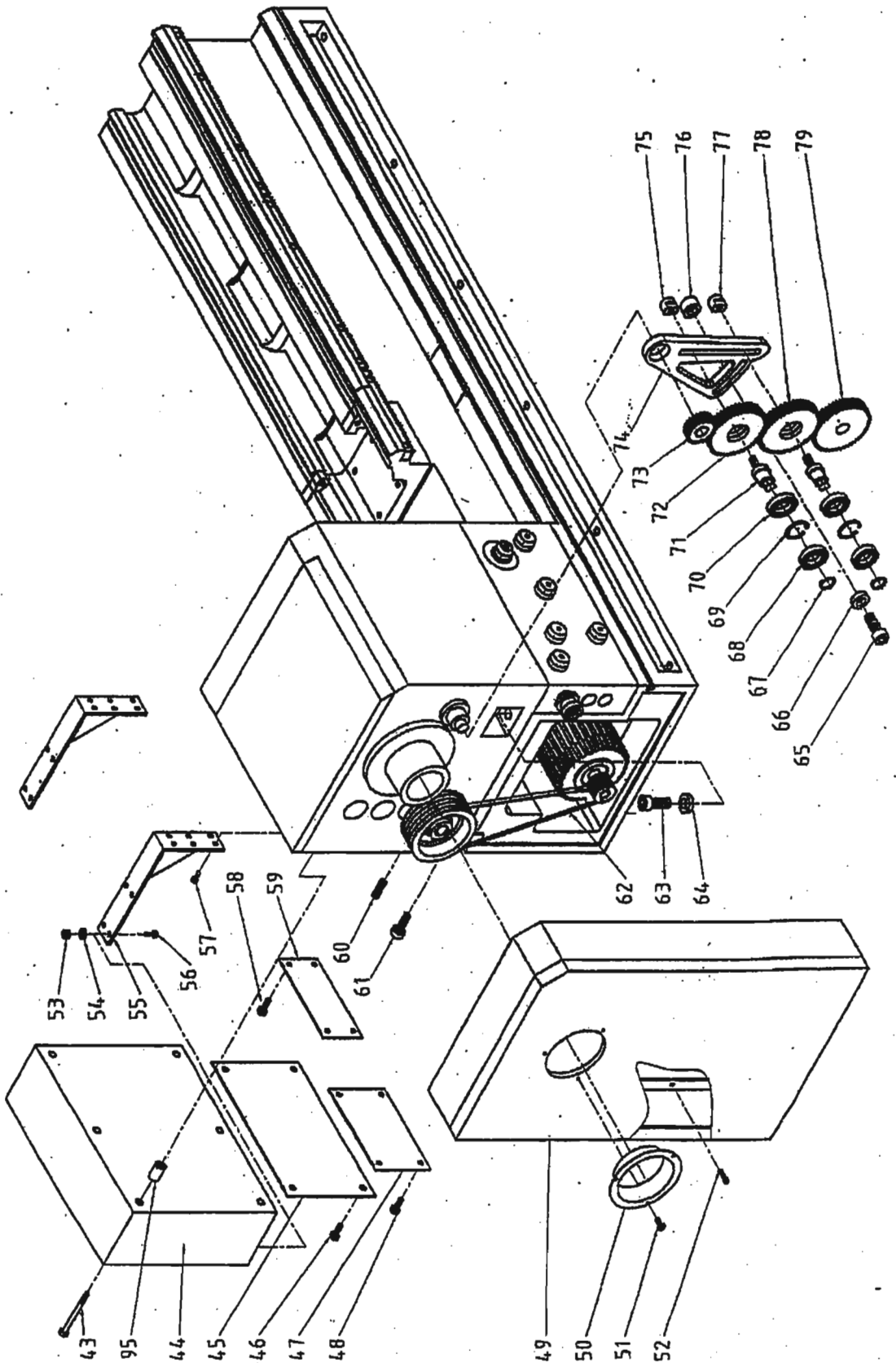
## BED ASSY.

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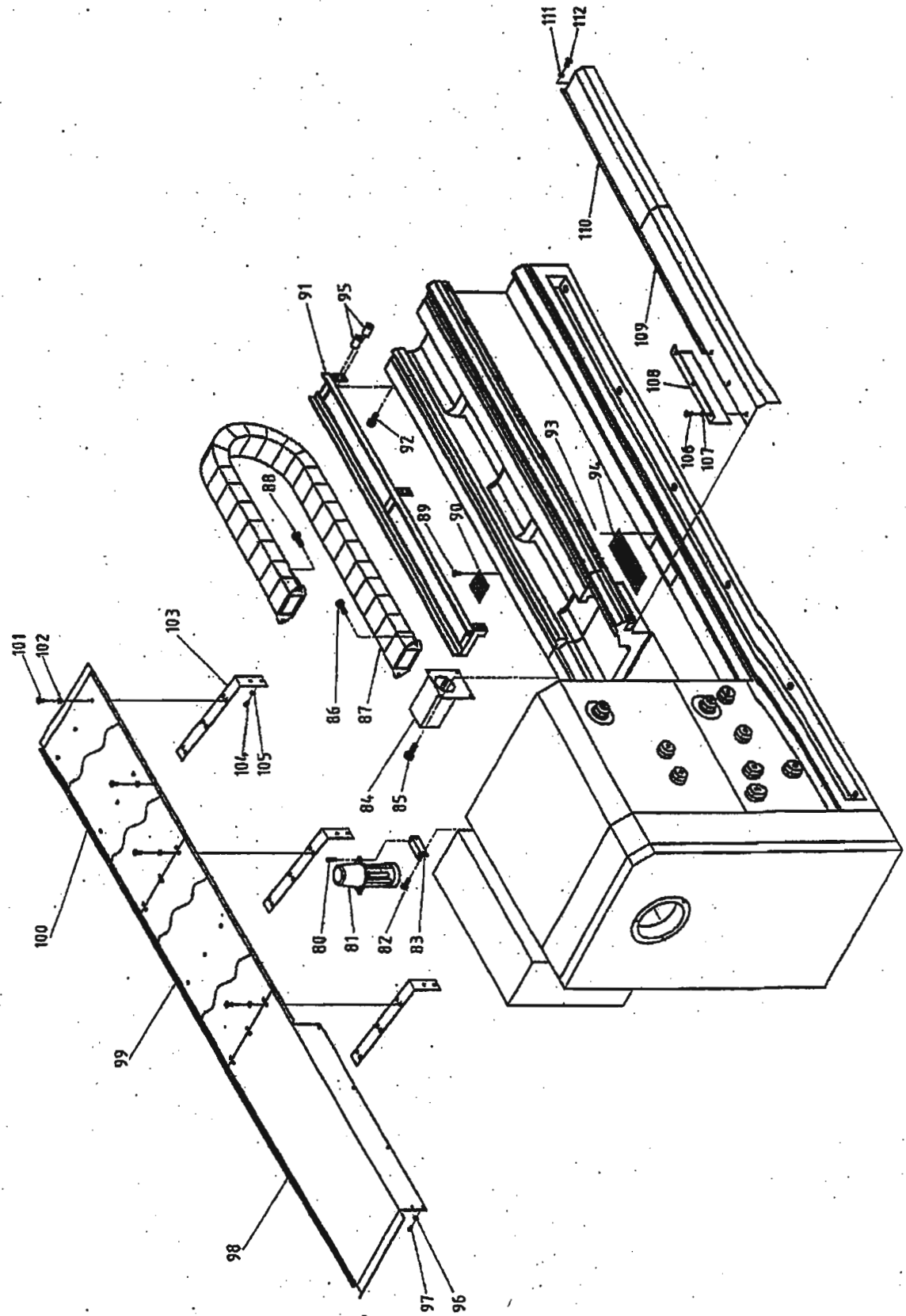
Item	No Part No.	Description	Remark
77	PA1020	NUT	
78		SPUR GEAR	
79	PA1016	SPUR GEAR	
80		HEX. SOC. HD. SCREW	
81		WATER PUMP	
82		HEX. SOC. HD. SCREW	
83	PA1040	BRACKET	
84	PA0006	COVER	
85		HEX. SOC. HD. SCREW	
86		HEX. SOC. HD. SCREW	
87		WIRE PROTECTION	
88		HEX. SOC. HD. SCREW	
89		HEX. SOC. RD. SCREW	
90	PA1035	COVER	
91	PA1049	BRACKET	
92		HEX. SOC. HD. SCREW	
93		HEX. SOC. RD. SCREW	
94	PA1034	COVER	
95	PA1036	SPACER	
96		WASHER	
97		HEX. SOC. RD. SCREW	
98	PA0012A-A	WATER COLLECT PLATE	
98	PA0012A-B	WATER COLLECT PLATE	
99	PA0013A	WATER COLLECT PLATE	
100	PA0014A	WATER COLLECT PLATE	
101		HEX. SOC. RD. SCREW	
102		WASHER	
103	PA0015A	STAND	
104		HEX. SOC. RD. SCREW	
105		WASHER	
106		HEX. SOC. RD. SCREW	
107		WASHER	
108	PA1047-1	LEAD SCREN REAR COVER	
109	PA1047A	LEAD SCREN COVER	
109	PA1047B	LEAD SCREN COVER	
110	PA1047C	LEAD SCREN COVER	
111		WASHER	
112		HEX. SOC. RD. SCREW	





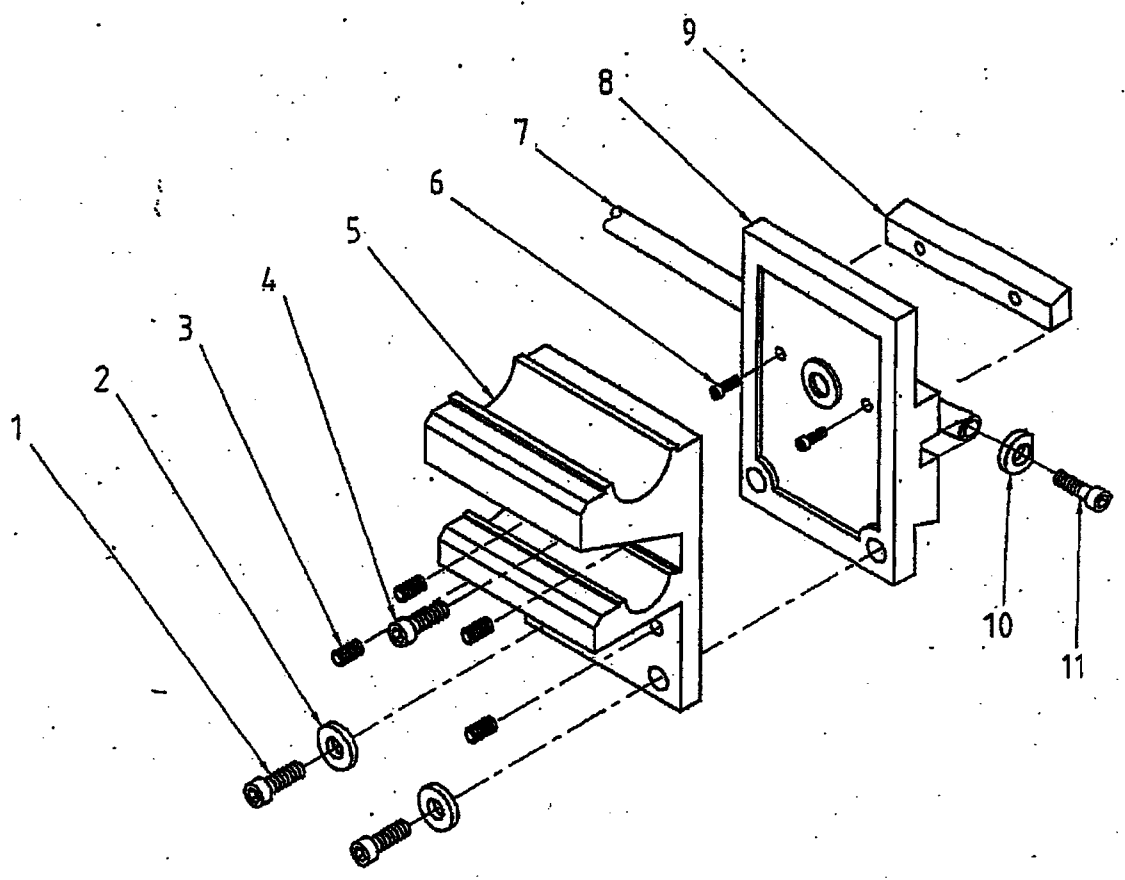








CENTER DISTANCE BETWEEN CENTERS LONGER THAN AND THREE METER



## HEADSTOCK ASSY. (18-STEPS)

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Item	No Part No.	Description	Remark
1	PA2088	PLUG	
2	PA2002	TOP COVER	
3		HEX. SOC. HD. SCREW	
4		PLUG	
5		SET SCREW	
6		SPRING	
7		STEEL BALL	
8	PA2078	NAME PLATE	
9		OIL GLASS	
10		OIL LEVEL GLASS	
11		HEX. SOC. RD. SCREW	
12	PA2001A	HOUSING	
13		PLUG	
14	PA2018	STOP PLATE	
15		HEX. SOC. HD. SCREW	
16		SET SCREW	
17		LOCK NUT	
18		LOCK WASHER	
19	PA2009	SPACER	
20	PA2010-3	V-PULLEY	
21		HEX. SOC. HD. SCREW	
22		BRAKE	
23		HEX. SOC. HD. SCREW	
24		HEX. SOC. HD. SCREW	
25		O RING	
26	PA2008-A	COVER	
27		OIL SEAL	
28		SNAP RING	
29	PA2009	SPACER	
30	PA2005	SPUR GEAR A2	
31	PA2004	SPUR GEAR A1	
32		KEY	
33	PA2003-1	SHAFT A	
34		KEY	
35		DEEP GROOVE BALL BEARING	
36		BWW 6210	
37	PA2006	SPUR GEAR A3	
38		DEEP GROOVE BALL BEARING	
39	PA2007	PUMP BASE	
40		OIL PUMP	

## HEADSTOCK ASSY. (18-STEPS)

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Item	No Part No.	Description	Remark
41		HEX. SOC. HD. SCREW	
42	PA2017	COVER	
43		O RING	
44		BWW 6208	
45		DEEP GROOVE BALL BEARING	
46	PA2011	SPLING SHAFT	
47		KEY	
48	PA2015	SPUR GEAR B4	
49	PA2016	SPUR GEAR B5	
50		SNAP RING	
51		SNAP RING	
52	PA2014	SPUR GEAR B3	
53	PA2013	SPUR GEAR B2	
54		KEY	
55	PA2012	SPUR GEAR B1	
56		DEEP GROOVE BALL BEARING	
57	PA2017-B	COVER	
58		O RING	
59		BWW 6209	
60		DEEP GROOVE BALL BEARING	
61	PA2019-B	SHAFT C	
62		KEY	
63	PA2020-B	SPUR GEAR C1	
64	PA2021-B	SPUR GEAR C2	
65		SNAP RING	
66	PA2319	SPUR GEAR	
67		SNAP RING	
68		DEEP GROOVE BALL BEARING	
69	PA2017-B	COVER	
70		O RING	
71		BWW 6209	
72		DEEP GROOVE BALL BEARING	
73	PA2011-B	SPLINE SHAFT	
74	PA2024-A	SPUR GEAR D3	
75		SNAP RING	
76	PA2023-B	SPUR GEAR D2	
77		KEY	
78	PA2022-B	SPUR GEAR D1	
79		DEEP GROOVE BALL BEARING	
80	PA2021	FRAC COVER	

## HEADSTOCK ASSY. (18-STEPS)

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Item	No Part No.	Description	Remark
81		DEEP GROOVE BALL BEARING	
82	PA2030	SPACER	
83	PA2029	SPUR GEAR E1	
84	PA2028	SPUR GEAR E2	
85		NUT	
86		HEX. SOC. HD. SCREW	
87		HEX. SOC. HD. SCREW	
88		SET SCREW	
89		BRASS	
90		TAPER ROLLER BEARING	
91		TAPER ROLLER BEARING	
92	PA2026	FRONUT COVER	
93	PA2027	LOCK NUT	
94		KEY	
95	PA2025	SPINDLE	
96		HEX. SOC. HD. SCREW	
97		O RING	
98	PA2032	SHAFT	
99		DEEP GROOVE BALL BEARING	
100	PA2033	SPUR GEAR	
101		DEEP GROOVE BALL BEARING	
102		SNAP RING	
103		HEX. SOC. HD. SCREW	
104	PA1041-1	WASHER	
105		OIL SEAL	
106		DEEP GROOVE BALL BEARING	
107		HEX. SOC. HD. SCREW	
108	PA2036	BUSHING	
109		O RING	
110		BWW 6208	
111		DEEP GROOVE BALL BEARING	
112		KEY	
113	PA2034	SHAFT G	
114		SNAP RING	
115	PA2035	SPUR GEAR	
116		SNAP RING	
117		DEEP GROOVE BALL BEARING	
118	PA2017	COVER	
119		O RING	
120	PA2031	BWW 6208	

## HEADSTOCK ASSY. (18-STEPS)

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Item	No Part No.	Description	Remark
121		DEEP GROOVE BALL BEARING	
122	PA2048	SHAFT M	
123		KEY	
124	PA2049	CAM M1	
125		SET SCREW	
126	PA2050	CAM M2	
127		SET SCREW	
128	PA2051	BEVEL GEAR	
129		SNAP RING	
130		HEX. SOC. HD. SCREW	
131		HEX. SOC. HD. SCREW	
132	PA2047	STOP PLATE	
133	PA2081	COVER	
134		O RING	
135	PA2044	SHAFT L	
136	PA2045	SHIFT FORK	
137	PA2046	PIN	
138	PA2045	SHIFT FORK	
139	PA2046	PIN	
140	PA2060	BEVE GEAR	
141		SET SCREW	
142		SNAP RING	
143	PA2057	SPUR GEAR	
144	PA2059	SPUR GEAR	
145		KEY	
146		SPRING PIN	
147		PLUG	
148	PA2058	SHAFT	
149		SNAP RING	
150	PA2057	SPUR GEAR	
151	PA2056	SPUR GEAR	
152		SET SCREW	
153	PA2054	ROATING SHAFT	
154	PA2079	SPEED CHART	
154	PA2917	SPEED CHART	9", 10" SPINDLE BORI
155		KEY	
156	PA2055	SHAFT	
157	PA2053	STEM	
158		HEX. SOC. HD. SCREW	
159	PA2052	LEVER	

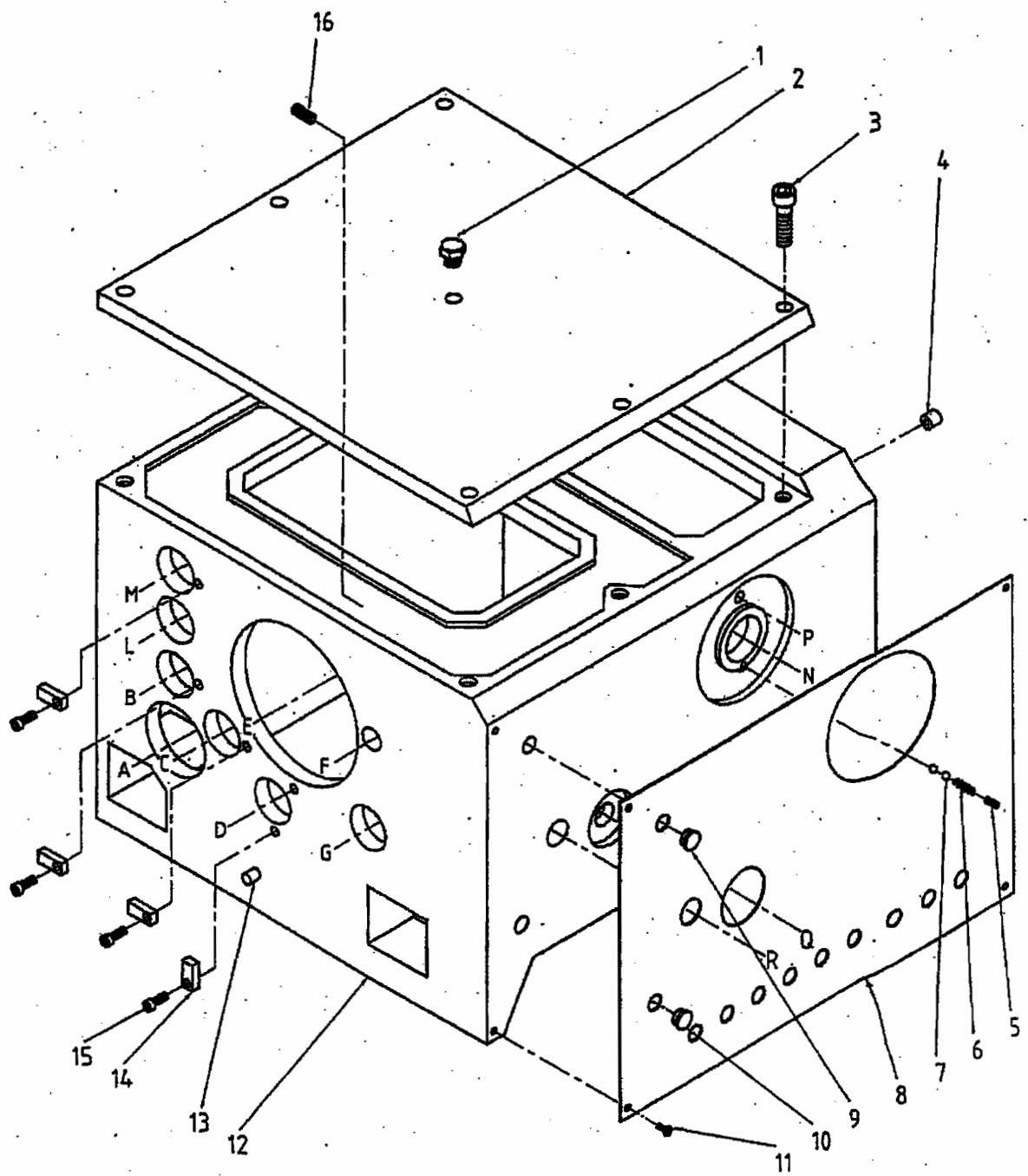
## HEADSTOCK ASSY. (18-STEPS)

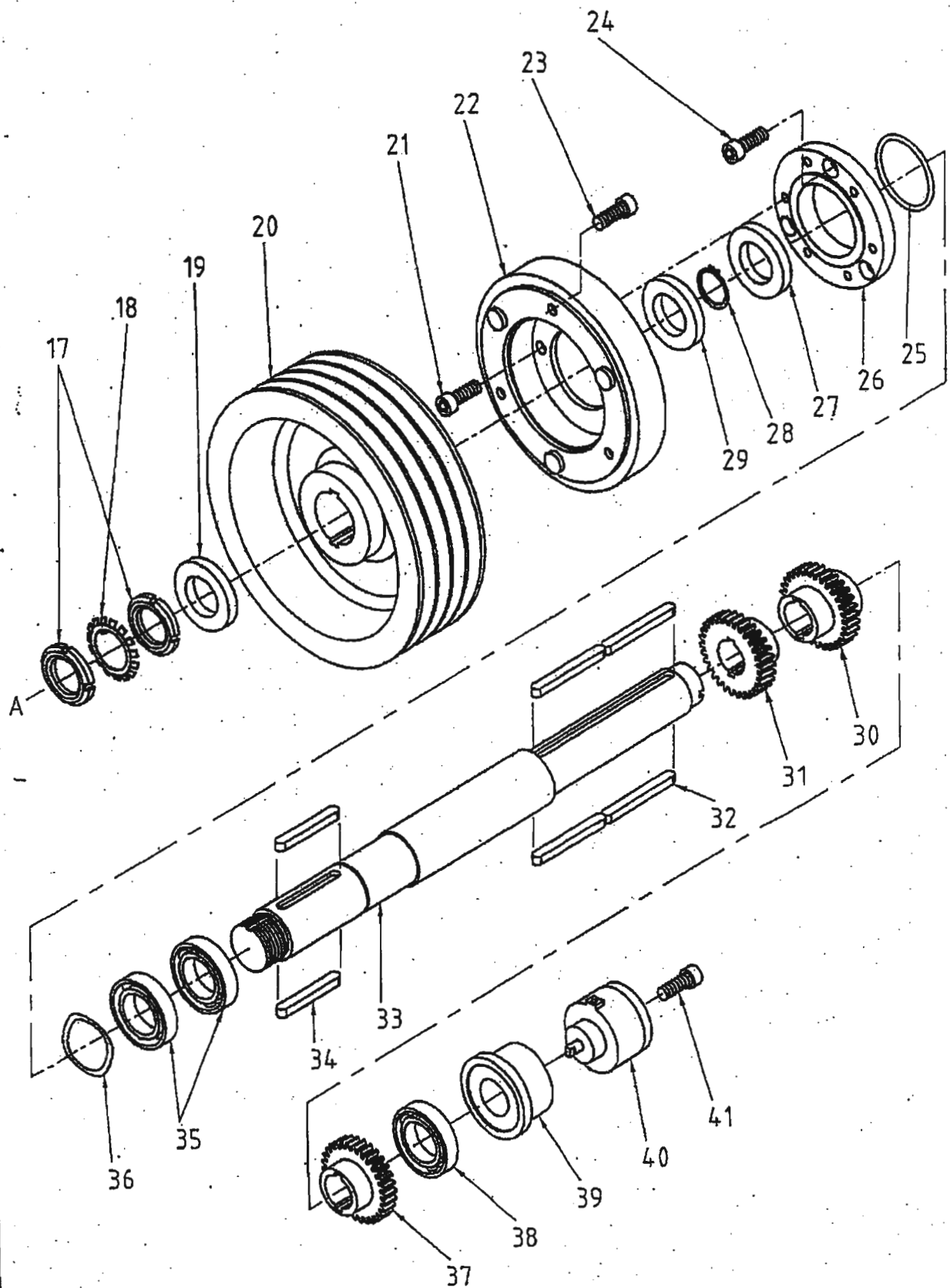
ITEM: 2000 PAGE: 5/21

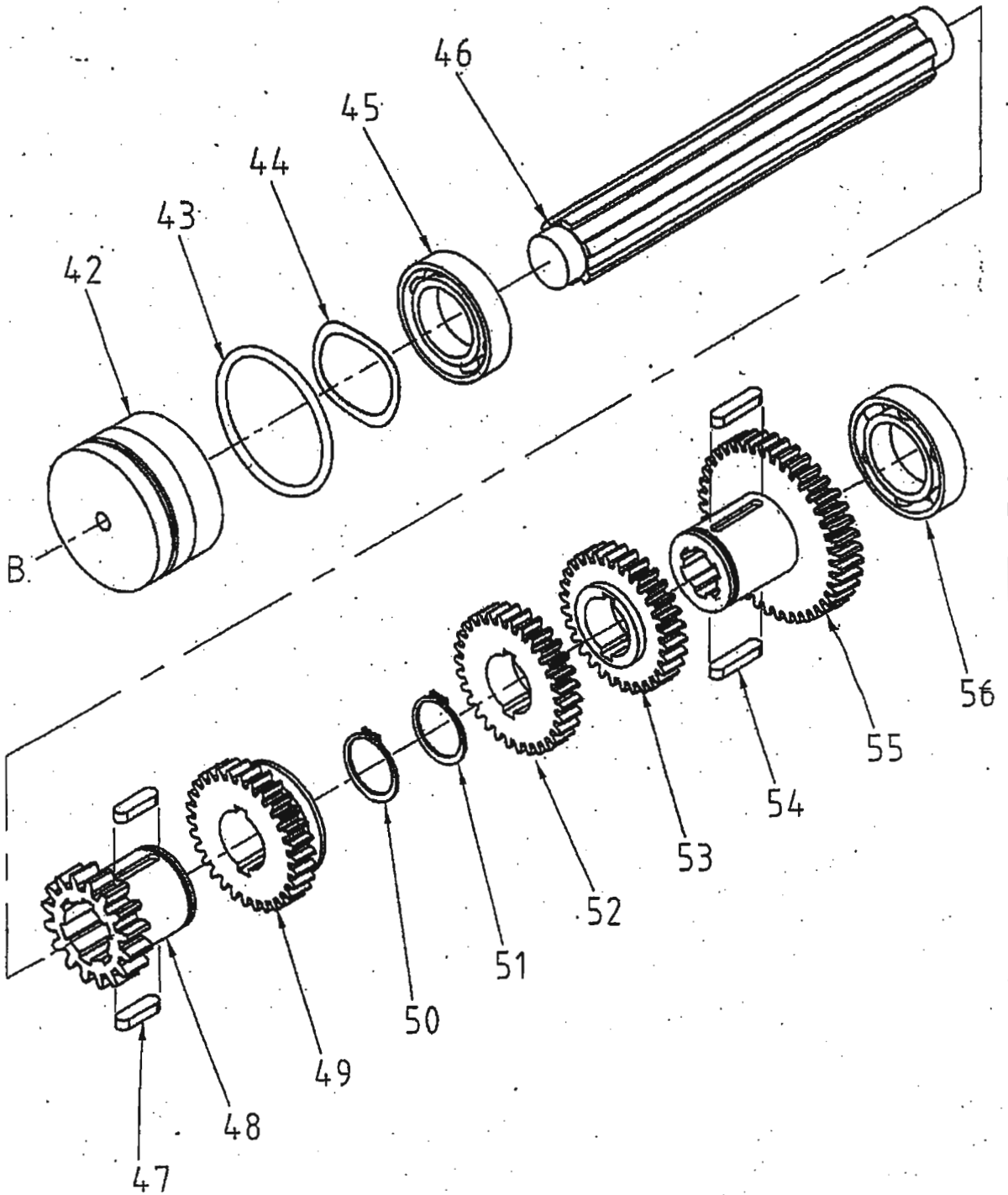
Item	No Part No.	Description	Remark
160		SET SCREW	
161		HEX. SOC. HD. SCREW	
162		TAPER PIN	
163	PA2064	SHAFT	
163	PA2925	SHAFT	9", 10" SPINDLE BORE
164		SET SCREW	
165	PA5073	COLLAR	
166		OIL SEAL	
167	PA2063	FIXED PLATE	
168		HEX. SOC. HD. SCREW	
169		STEEL BALL	
170		SPRING	
171		PIN	
172		SET SCREW	
173	PA2067	FORK	
174	PA2066	ARM	
175		SNAP RING	
176		SPRING PIN	
177	PA2062	STEM	
178	PA2061-A	LEVER	
179	PA2071	FORK	
180	PA2070	ROCK ARM	
180	PA2926	ROCK ARM	9", 10" SPINDLE BORE
181		SNAP RING	
182		O RING	
183	PA2069	BUSHING	
184		OIL SEAL	
185		HEX. SOC. HD. SCREW	
186		SET SCREW	
187	PA2068	STEM	
188	PA2052	LEVER	
189		STEEL BALL	
190		SPRING	
191		SET SCREW	
192		HEX. SOC. HD. SCREW	
193	PA2901A	HOUSING	9", 10" SPINDLE BORE
194	PA2916A	NAME PLATE	9", 10" SPINDLE BORE
195		HEX. SOC. HD. SCREW	
196	PA2908	REAR COVER	9", 10" SPINDLE BORE
197	PA2907	LOCK NUT	9", 10" SPINDLE BORE

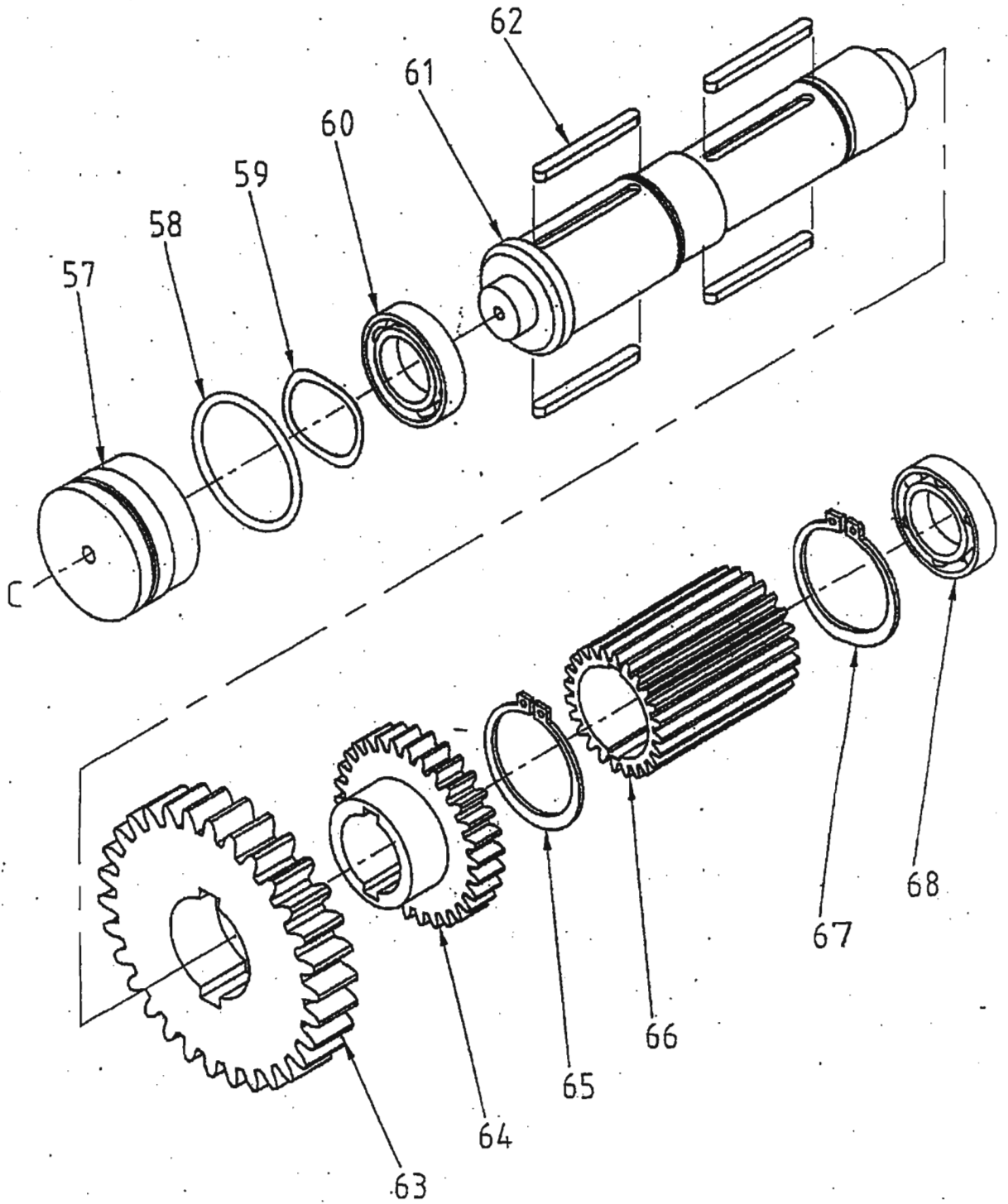


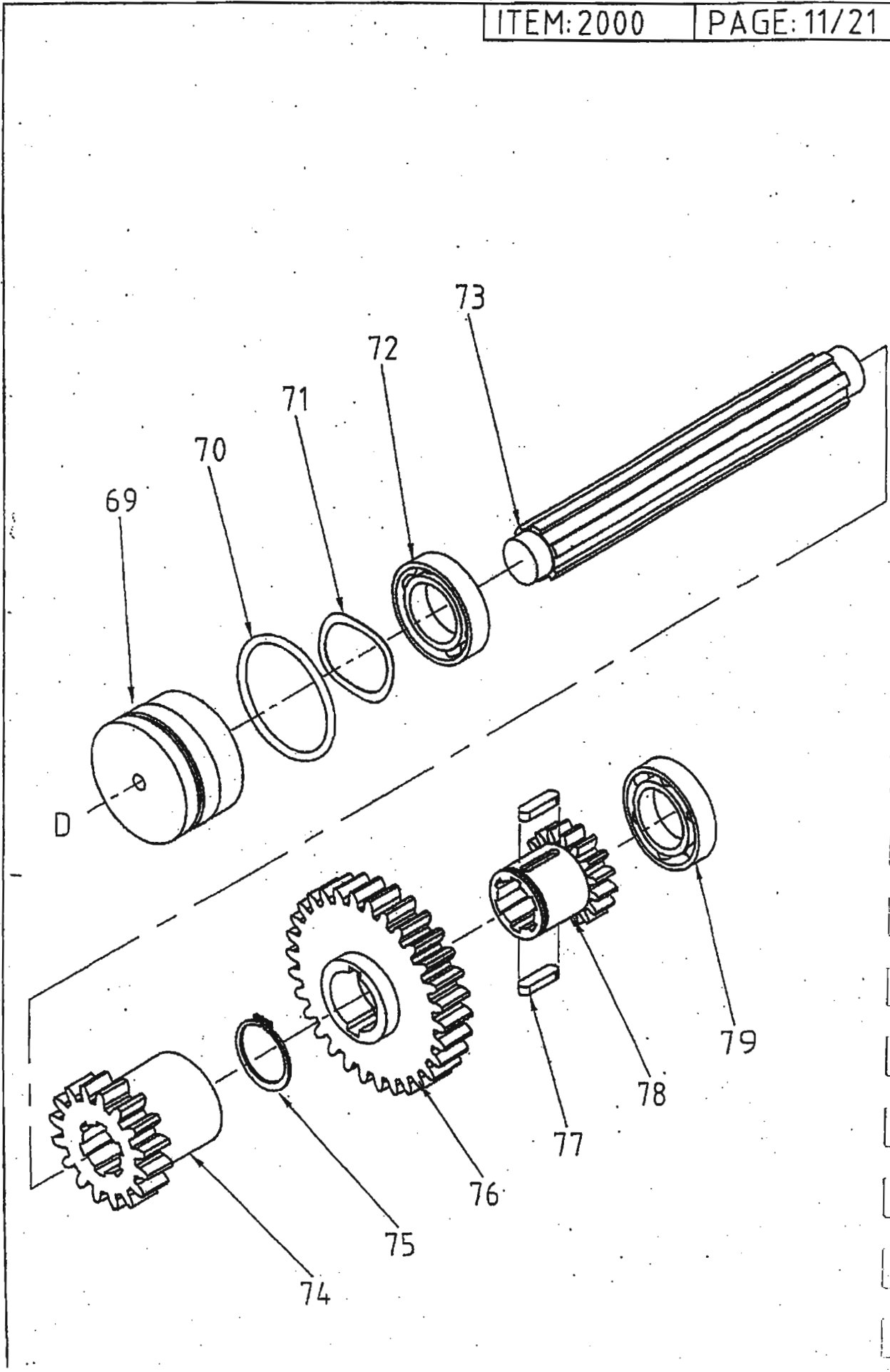


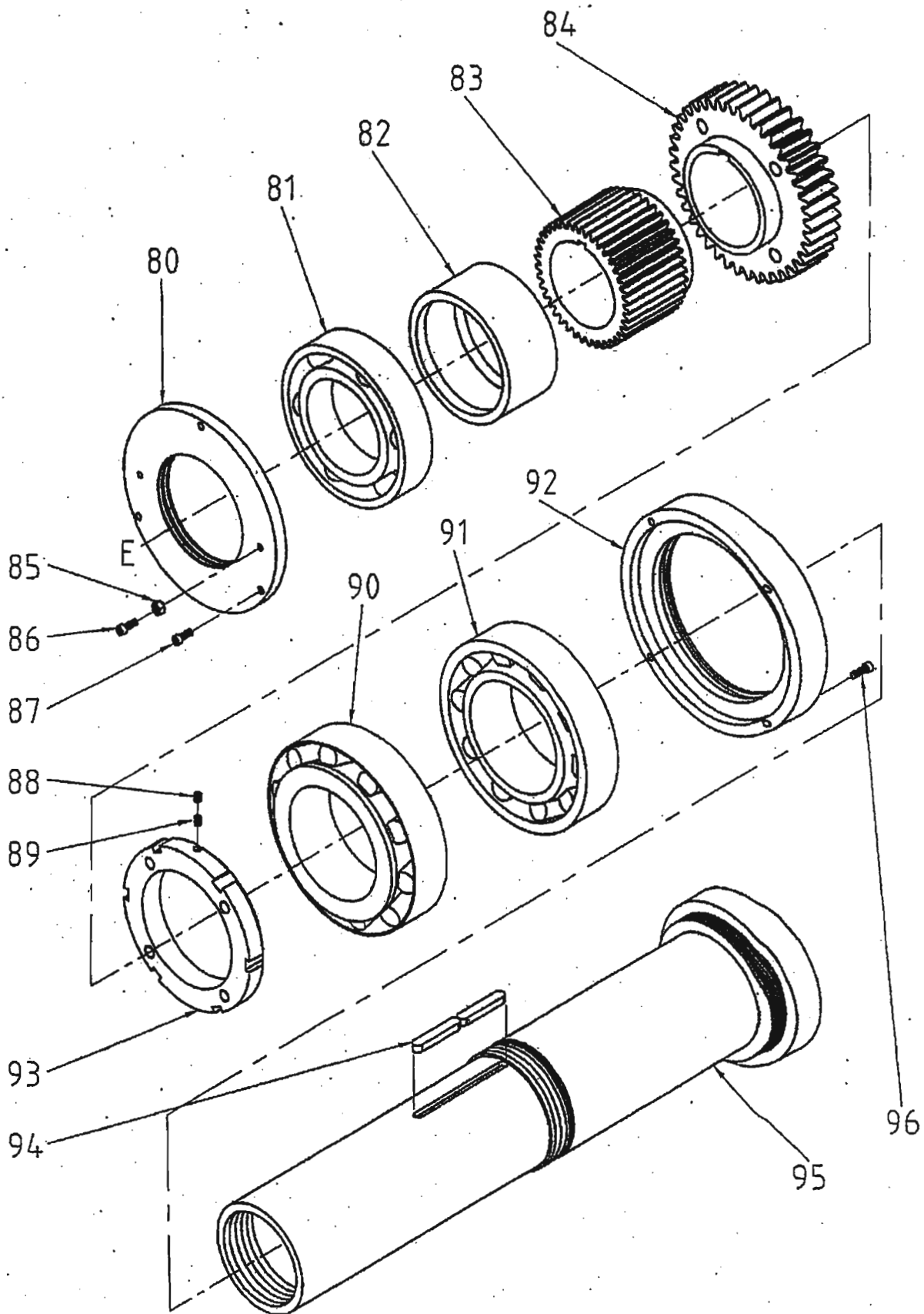


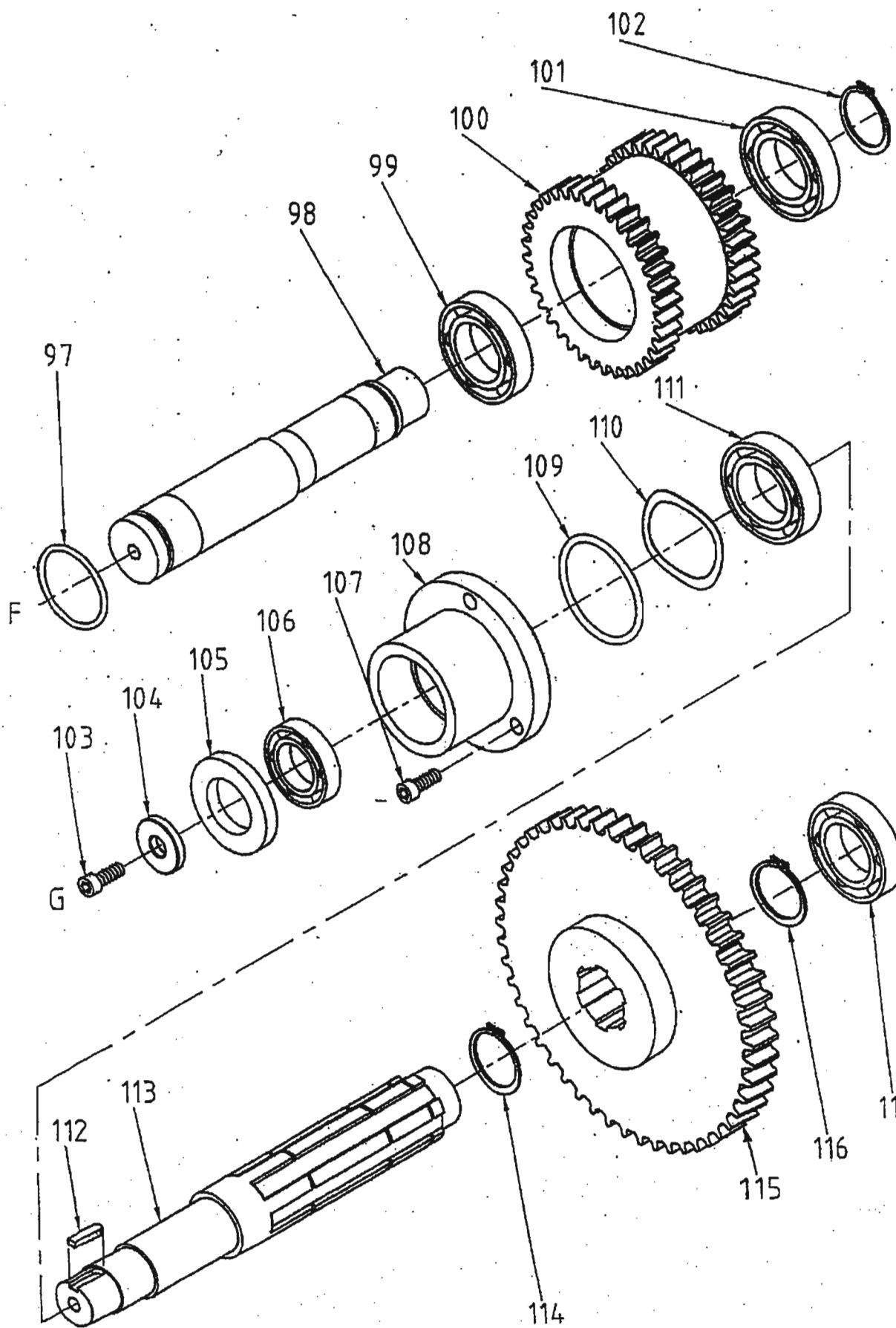




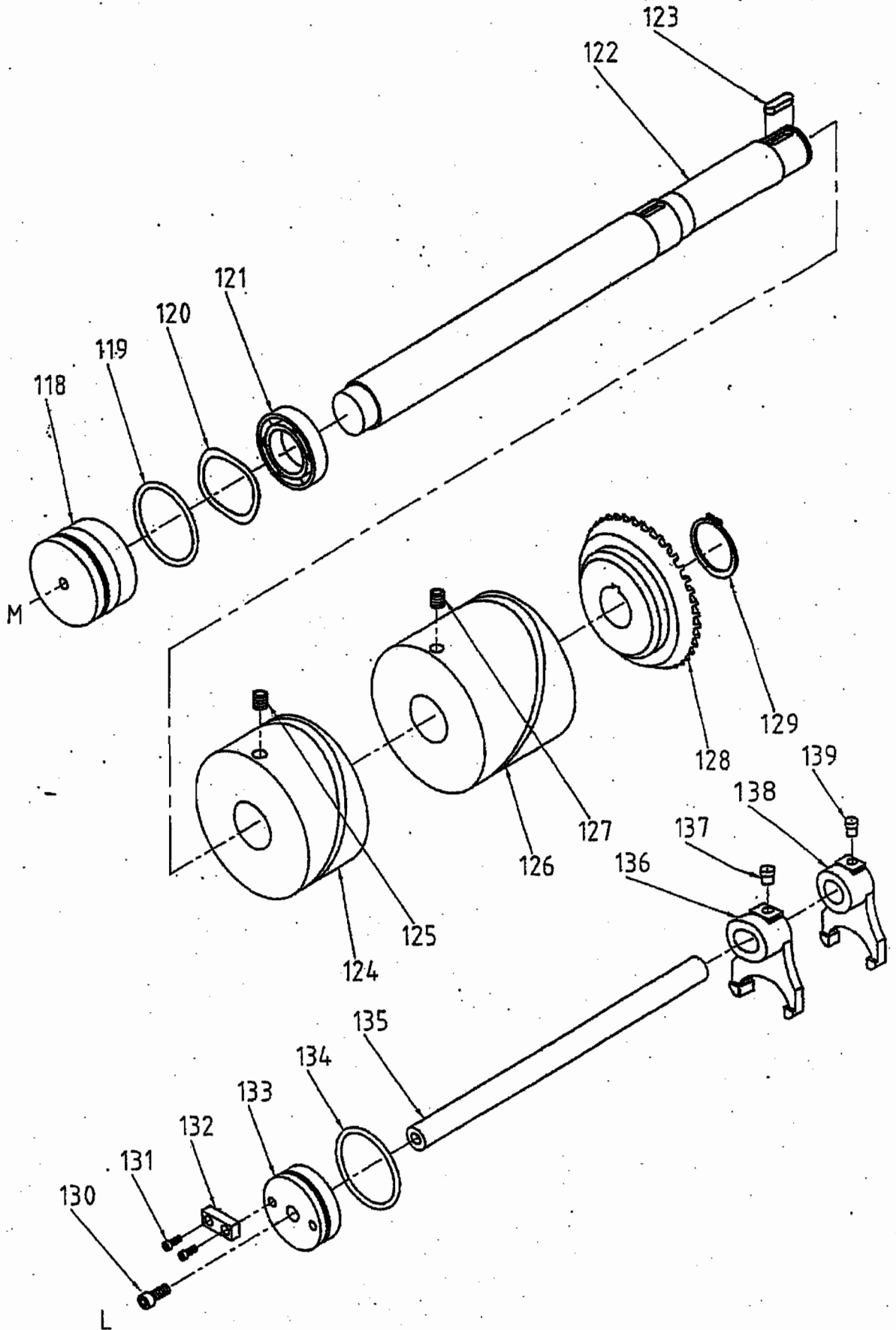


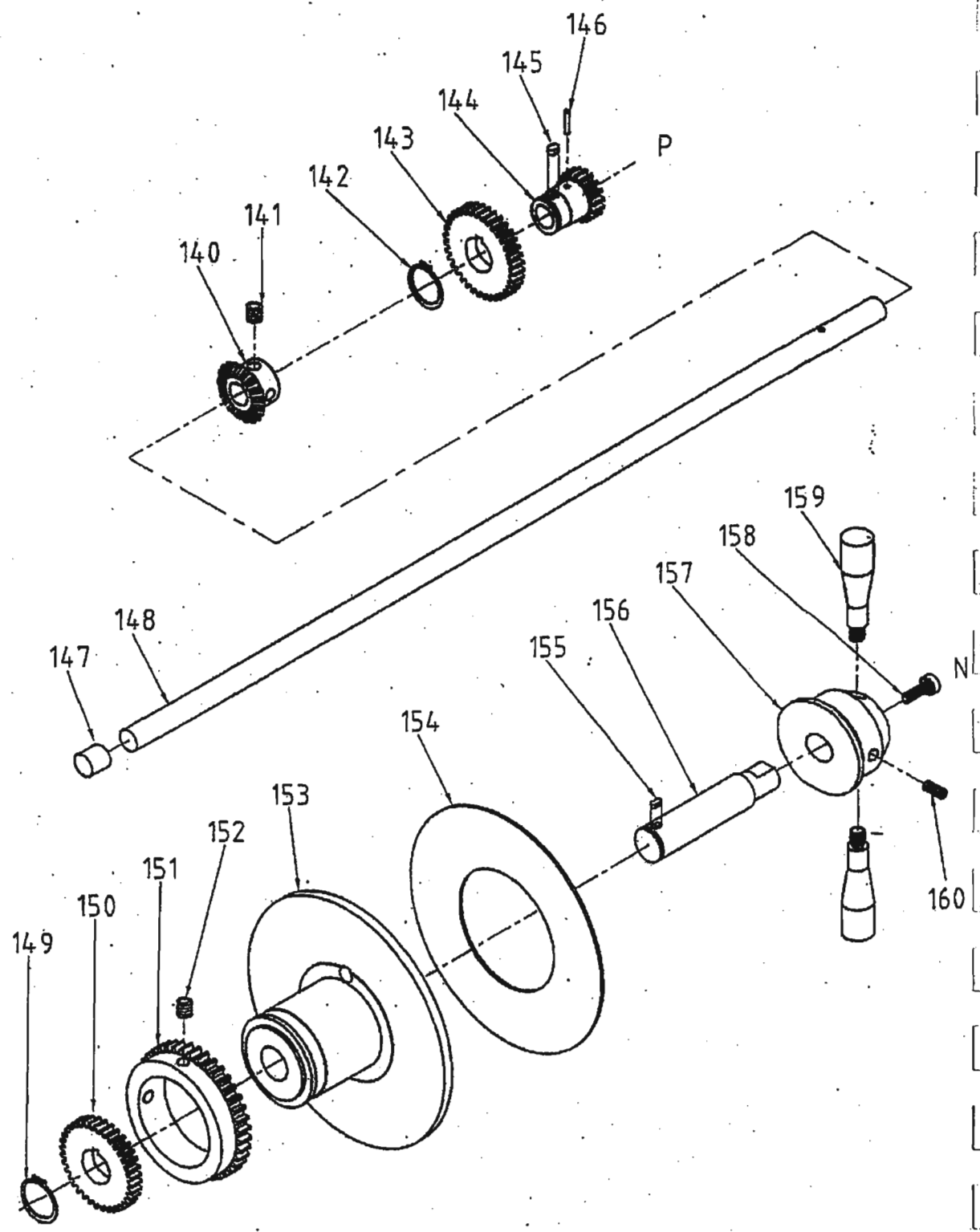


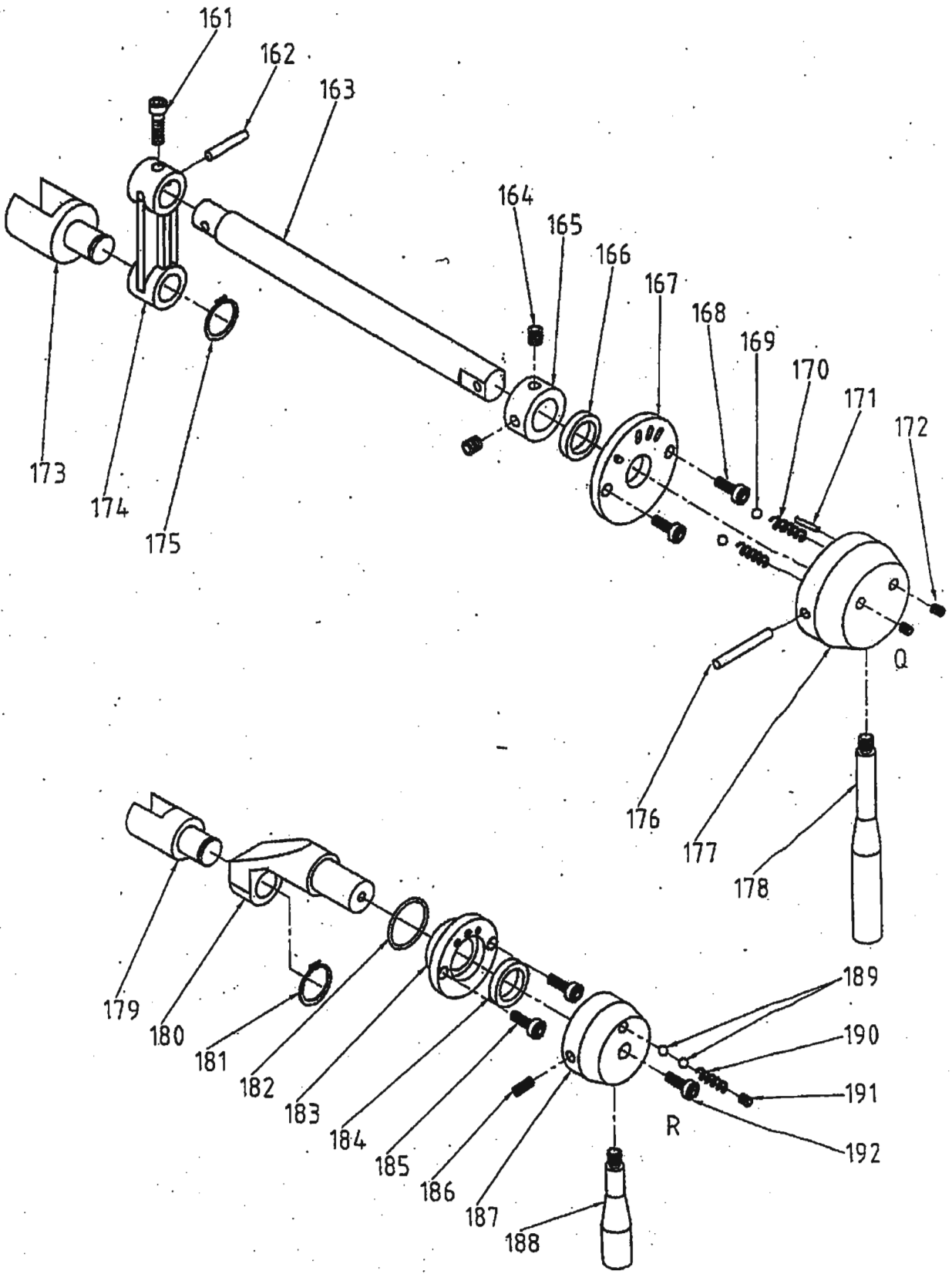


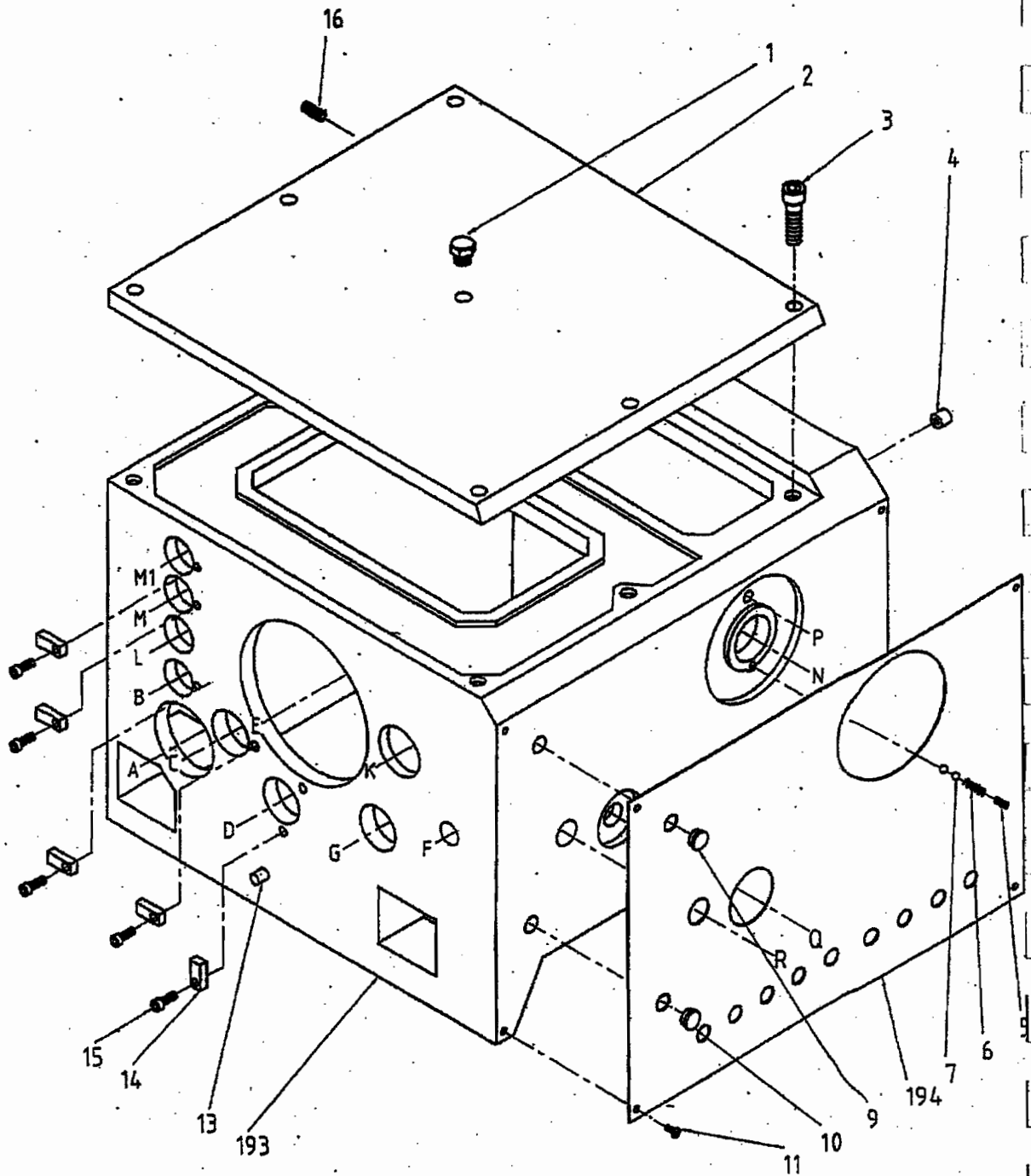


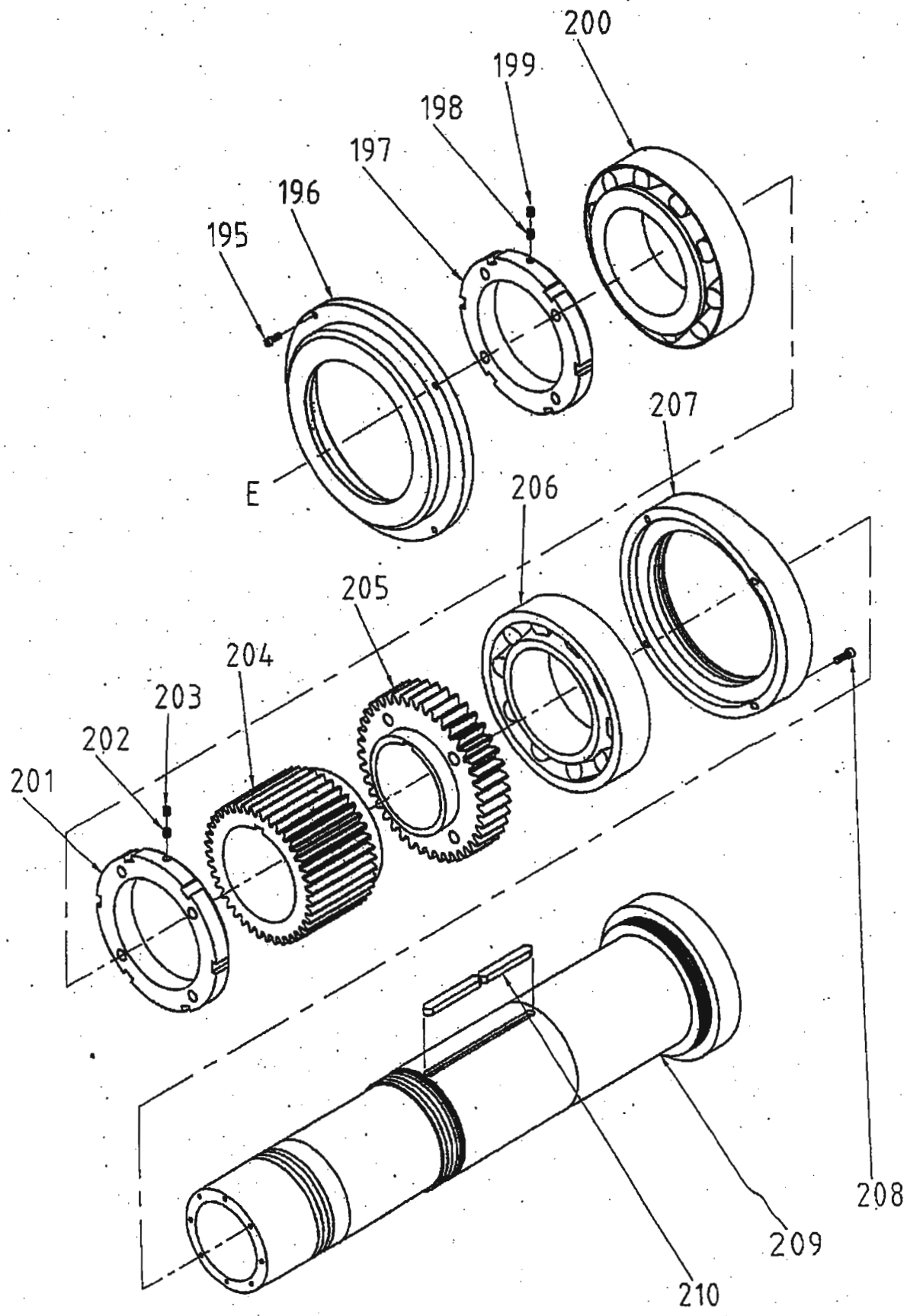


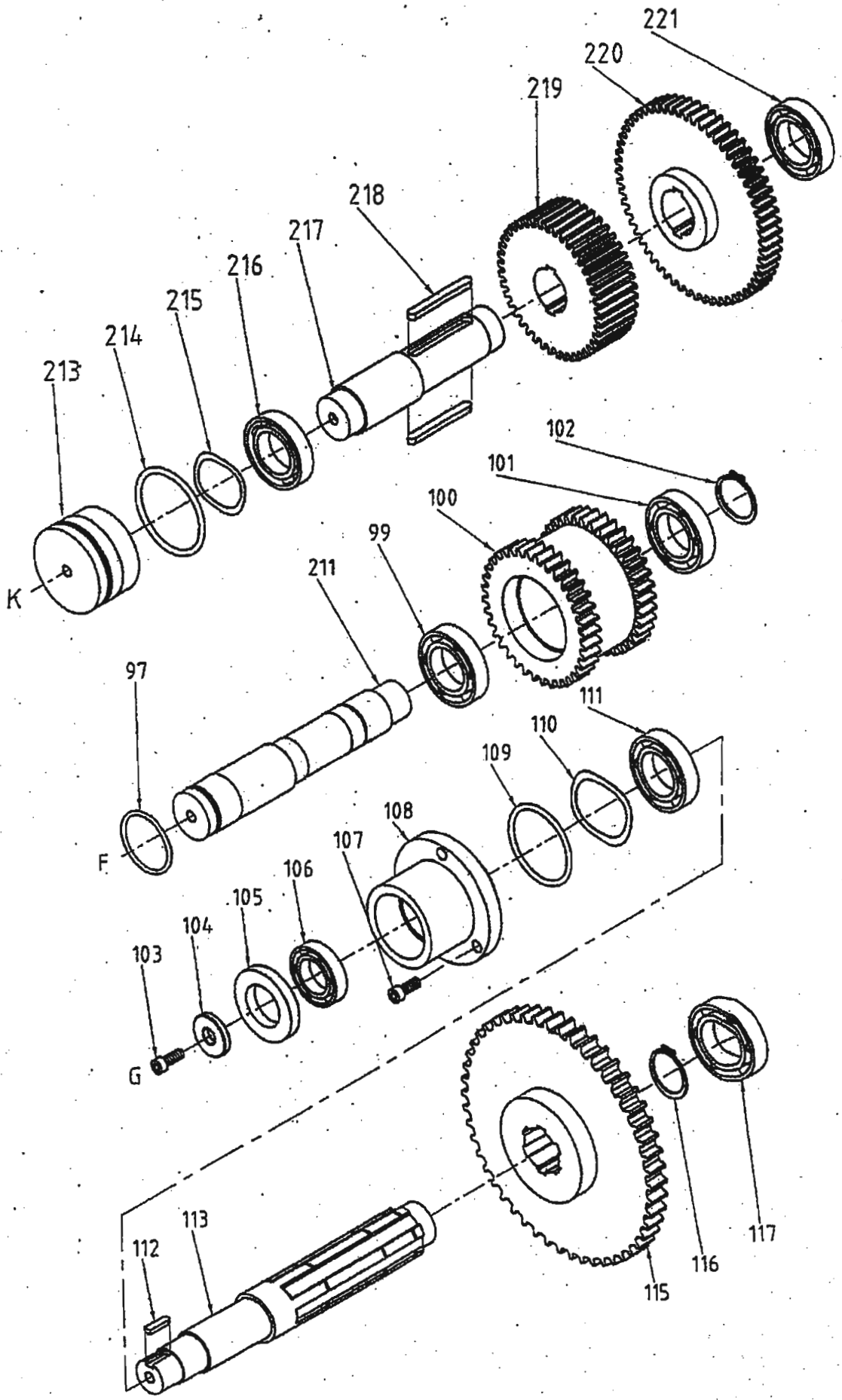


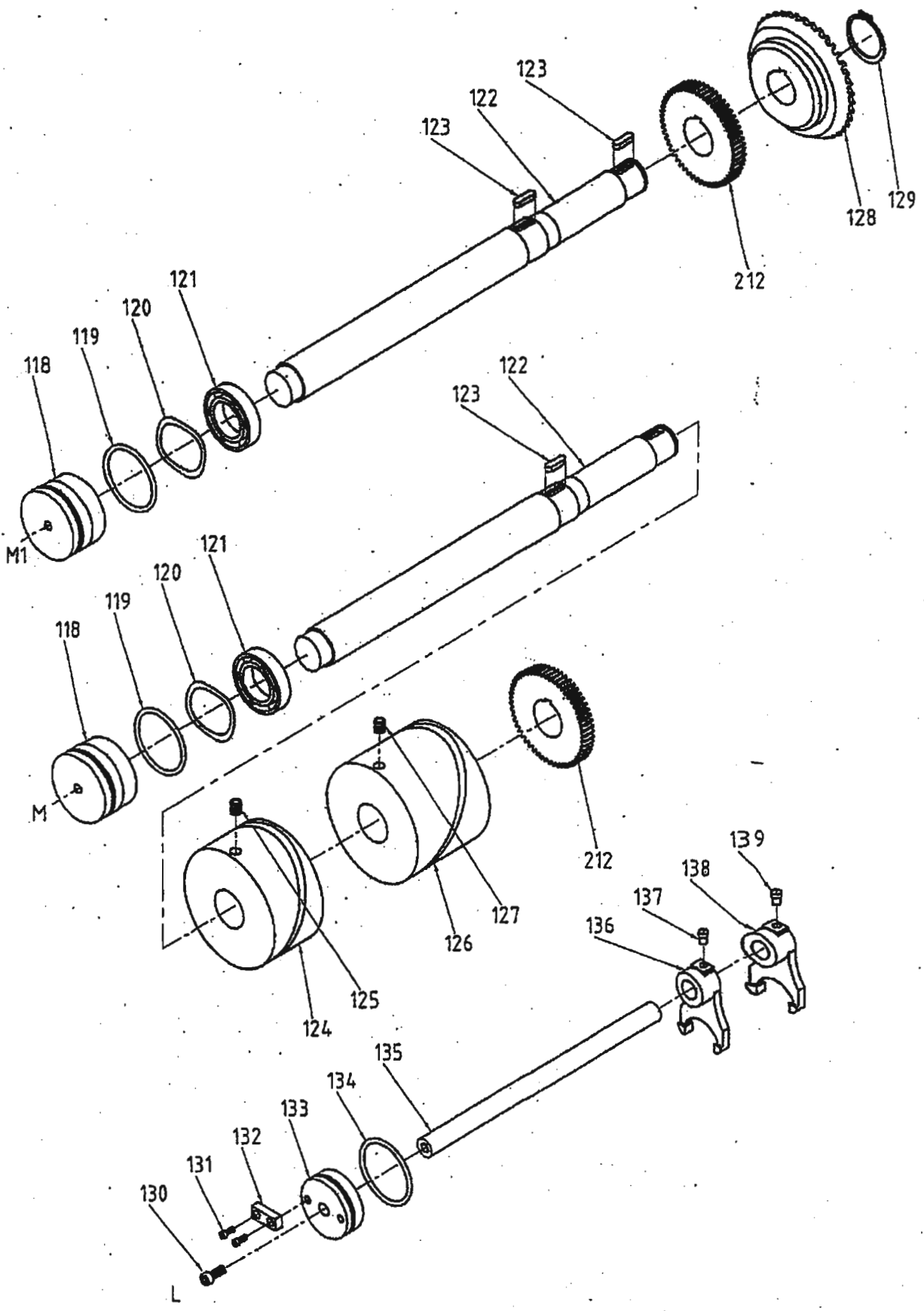


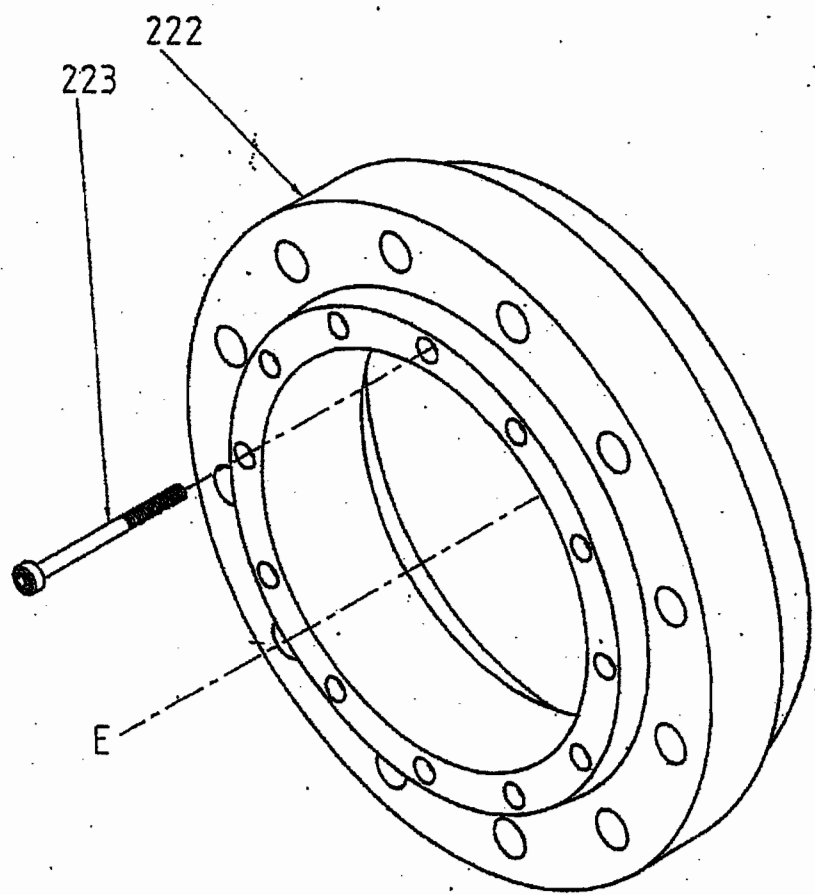














## HEADSTOCK ASSY. (INVERTER)

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Item	No Part No.	Description	Remark
1	PA2088	PLUG	
2	PA2002	TOP COVER	
3		HEX. SOC. HD. SCREW	
4		PLUG	
5	PA206078	NAME PLATE	6" SPINDLE BORE
5	PA209078	NAME PLATE	9", 10" SPINDLE BORE
5	PA212078	NAME PLATE	12" SPINDLE BORE
5	PA214078	NAME PLATE	14" SPINDLE BORE
5	PA216078	NAME PLATE	16" SPINDLE BORE
6		OIL GLASS	
7		OIL LEVEL GLASS	
8		HEX. SOC. RD. SCREW	
9	PA206001A	HOUSING	6" SPINDLE BORE
9	PA209001A	HOUSING	9", 10" SPINDLE BORE
9	PA212001A	HOUSING	12" SPINDLE BORE
9	PA214001A	HOUSING	14" SPINDLE BORE
9	PA216001A	HOUSING	16" SPINDLE BORE
10	PA2088	PLUG	
11		LOCK NUT AN09	
12		LOCK WASHER AW09	
13	PA2009	SPACER	
14	PA2010-4	V-PULLEY	
15	PA2009	SPACER	
16		SNAP RING	
17		OIL SEAL	
18		HEX. SOC. HD. SCREW	
19	PA2009-A	COVER	
20		O RING	
21		BWW 6210	
22		DEEP GROOVE BALL BEARING	
23		KEY	
24	PA2003-A-1	SHAFT	
25		KEY	
26	PA2015	SPUR GEAR	
27	PA2016	SPUR GEAR	
28		SNAP RING	
29		DEEP GROOVE BALL BEARING	
30		HEX. SOC. HD. SCREW	
31	PA2018	STOP PLATE	
32	PA2017-B	COVER	

## HEADSTOCK ASSY. (INVERTER)

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Item	No Part No.	Description	Remark
33		O RING	
34		BWW 6208	
35		DEEP GROOVE BALL BEARING	
36	PA2019-B	SHAFT	
37		KEY	
38		KEY	
39	PA2020-B	SPUR GEAR	
40	PA2021-B	SPUR GEAR	
41		SNAP RING	
42	PA2319	SPUR GEAR	
43		SNAP RING	
44		DEEP GROOVE BALL BEARING	
45	PA2011-B	SPLING SHAPE	
46	PA2024-A	SPUR GEAR	
47		SNAP RING	
48	PA2023-B	SPUR GEAR	
49		KEY	
50	PA2022-C	BUSHING	
51		SNAP RING	
52	PA2084	SPUR GEAR	
53	PA2085	SPACER	6" SPINDLE BORE ON
54		DEEP GROOVE BALL BEARING	
55		HEX. SOC. HD. SCREW	6" SPINDLE BORE ONLY
56		NUT	6" SPINDLE BORE ON
57		HEX. SOC. HD. SCREW	6" SPINDLE BORE ONLY
58	PA2031	REAG COVER	6" SPINDLE BORE ON
59		DEEP GROOVE BALL BEARING	6" SPINDLE BORE ONLY
60	PA2030	SPACER	6" SPINDLE BORE ON
61	PA2028-A	SPUR GEAR	6" SPINDLE BORE ONLY
62	PA2027	FRONUT COVER	6" SPINDLE BORE ON
63		BRASS	6" SPINDLE BORE ON
64		SET SCREW	6" SPINDLE BORE ON
65		TAPER ROLLER BEARING	6" SPINDLE BORE ON
66		TAPER ROLLER BEARING	6" SPINDLE BORE ON
67	PA2026-A	FRONUT COVER	6" SPINDLE BORE ON
68		HEX. SOC. HD. SCREW	6" SPINDLE BORE ON
69	PA2025-D	SPINDLE	6" SPINDLE BORE ON
70		KEY	6" SPINDLE BORE ON
71		HEX. SOC. HD. SCREW	9" ~ 16" SPINDLE BO
72	PA2908	REAR COVER	0" 10" SPINDLE BORE

## HEADSTOCK ASSY. (INVERTER)

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Item	No Part No.	Description	Remark
72	PA2308-2	REAR COVER	12" SPINDLE BORE
72	PA214008-A	REAR COVER	14" SPINDLE BORE
72	PA216009-A	REAR COVER	16" SPINDLE BORE
73	PA2907-A	LOCK NUT	9", 10" SPINDLE BORE
73	PA212007-A	LOCK NUT	12" SPINDLE BORE
73	PA214007-A	LOCK NUT	14" SPINDLE BORE
73	PA216007-A	LOCK NUT	16" SPINDLE BORE
74		BRASS	9"~16" SPINDLE BORE
75		SET SCREW	9"~16" SPINDLE BORE
76		TAPER ROLLER BEARING	9"~16" SPINDLE BORE
77	PA2906	KOCK NUT	9", 10" SPINDLE BORE
77	PA212006	KOCK NUT	12" SPINDLE BORE
77	PA214006	KOCK NUT	14" SPINDLE BORE
77	PA216006	KOCK NUT	16" SPINDLE BORE
78		BRASS	9"~16" SPINDLE BORE
79		SET SCREW	9"~16" SPINDLE BORE
80	PA2904-A	SPUR GEAR	9", 10" SPINDLE BORE
80	PA212004-A	SPUR GEAR	12" SPINDLE BORE
80	PA214005-A	SPUR GEAR	14" SPINDLE BORE
80	PA216005-A	SPUR GEAR	16" SPINDLE BORE
81		TAPER ROLLER BEARING	9"~16" SPINDLE BORE
82	PA2903-A	FRONUT COVER	9", 10" SPINDLE BORE
82	PA2303-A	FRONUT COVER	12" SPINDLE BORE
82	PA214004-A	FRONUT COVER	14" SPINDLE BORE
82	PA216008	FRONUT COVER	16" SPINDLE BORE
83		HEX. SOC. HD. SCREW	9"~16" SPINDLE BORE
84	PA2902-D	SPINDEL	9" SPINDLE BORE
84	PA210002-D	SPINDEL	10" SPINDLE BORE
84	PA212002-B	SPINDEL	12" SPINDLE BORE
84	PA214002-B	SPINDEL	14" SPINDLE BORE
84	PA216002-A	SPINDEL	16" SPINDLE BORE
85		KEY	
86		HEX. SOC. HD. SCREW	
87	PA2018	STOP PLATE	
88	PA2017-B	COVER	
89		O RING	
90		BWW 6208	
91		DEEP GROOVE BALL BEARING	
92	PA221012	SHAFT	
93		KEY	

## HEADSTOCK ASSY. (INVERTER)

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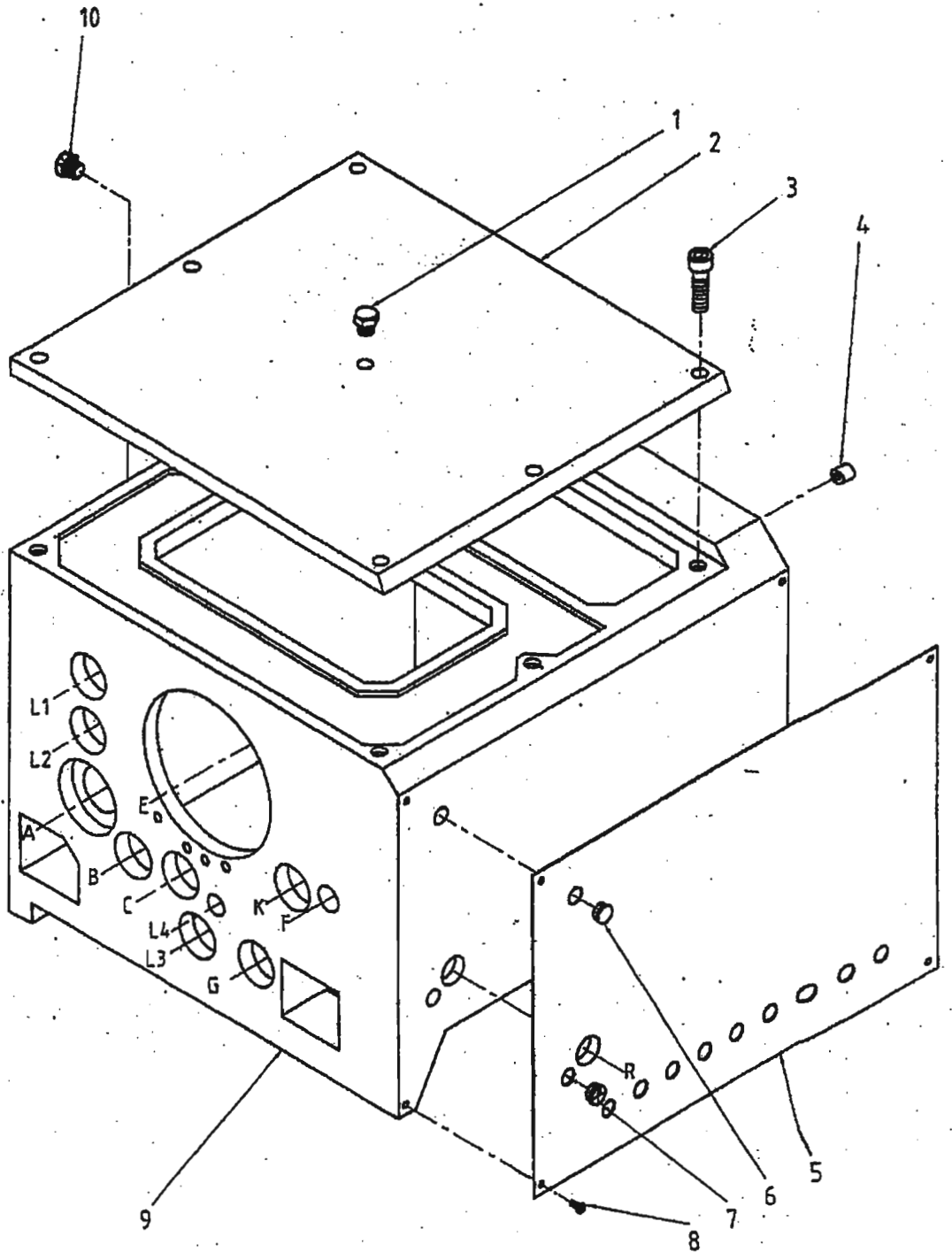
Item	No Part No.	Description	Remark
94		KEY	
95	PA221013	SPUR GEAR	
96		SNAP RING	
97	PA2086	SPUR GEAR	6" SPINDLE BORE
97	PA2921	SPUR GEAR	9", 10" SPINDLE BORE
97	PA212020	SPUR GEAR	12" SPINDLE BORE
97	PA214020	SPUR GEAR	14" SPINDLE BORE
97	PA2020	SPUR GEAR	16" SPINDLE BORE
98		KEY	
99	PA216014	BUSHING	
100		DEEP GROOVE BALL BEARING	
101		O RING	
102	PA2909	SHAFT	
103		DEEP GROOVE BALL BEARING	
104	PA2033	SPUR GEAR	
105		DEEP GROOVE BALL BEARING	
106		SNAP RING	
107		HEX. SOC. HD. SCREW	
108	PA1041-1	WASHER	
109		OIL SEAL	
110		DEEP GROOVE BALL BEARING	
111		HEX. SOC. HD. SCREW	
112	PA2036	BUSHING	
113		O RING	
114		BWW6208	
115		DEEP GROOVE BALL BEARING	
116		KEY	
117	PA2034	SHAFT	
118	PA2035	SPUR GEAR	
119		SNAP RING	
120		DEEP GROOVE BALL BEARING	
121		HEX. SOC. HD. SCREW	
122	PA2082	CYLINDER	
123		LOCK NUT AN05	
124		LOCK WASHER AW05	
125	PA2045-B	FORK	
126		HEX. SOC. HD. SCREW	
127		HEX. SOC. HD. SCREW	
128	PA2047	STOP PLATE	
129	PA2081	COVER	

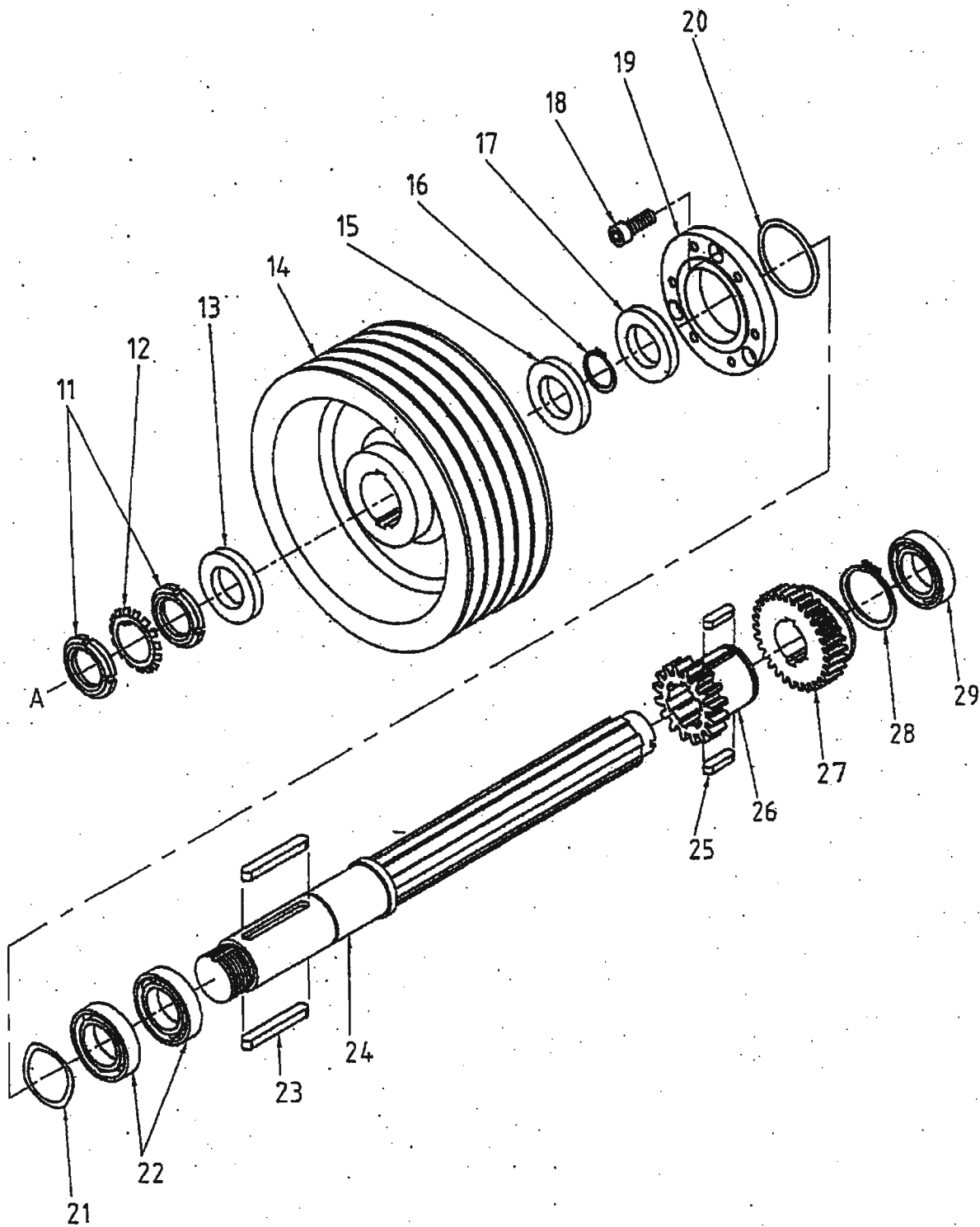
## HEADSTOCK ASSY. (INVERTER)

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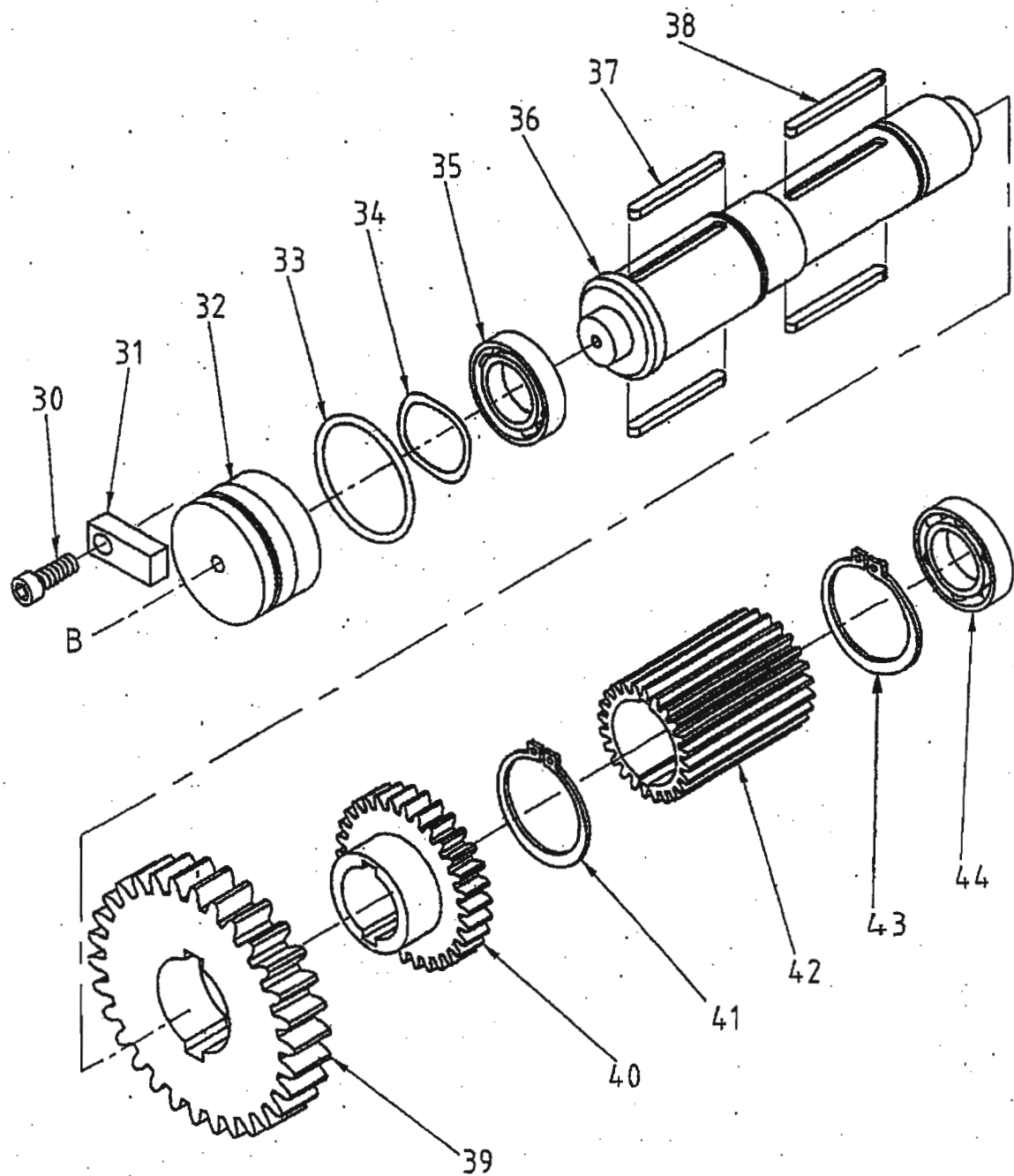
Item	No. Part No.	Description	Remark
130		O RING	
131	PA2044	SHAFT	
132		HEX. SOC. HD. SCREW	
133		PLUG	
134	PA2044	SHAFT	
135		LOCK NUT AN05	
136		LOCK WASHER AW05	
137	PA2067-A	FORK	
138		HEX. SOC. HD. SCREW	
139	PA2083-A	CYLINDER	
140	PA2071	FORK	
141	PA2070	ROCK ARM	
142		SNAP RING	
143		O RING	
144	PA2069	BUSHING	
145		OIL SEAL	
146		HEX. SOC. HD. SCREW	
147		SET SCREW	
148	PA2068	STEM	
149	PA2052	LEVER	
150		STEEL BALL	
151		SPRING	
152		SET SCREW	
153		HEX. SOC. HD. SCREW	
154	PA2071	FORK	
155		TAPER PIN	
156	PA212023	SWIFT ARM	
157	PA212021	SHAFT	
158	PA212022	COVER	
159		HEX. SOC. HD. SCREW	
160		SNAP RING	
161		HEX. SOC. HD. SCREW	
162	PA2902-1A	CONNECT SLAB	9" SPINDLE BORE
162	PA210002-1A	CONNECT SLAB	10" SPINDLE BORE
162	PA212003	CONNECT SLAB	12" SPINDLE BORE
162	PA214003	CONNECT SLAB	14" SPINDLE BORE
162	PA216003	CONNECT SLAB	16" SPINDLE BORE
163	PA2902-2	TEST EQUIPMENT	9", 10" SPINDLE BORE
163	PA2302-2	TEST EQUIPMENT	12" SPINDLE BORE
163	PA214002-2	TEST EQUIPMENT	14" SPINDLE BORE

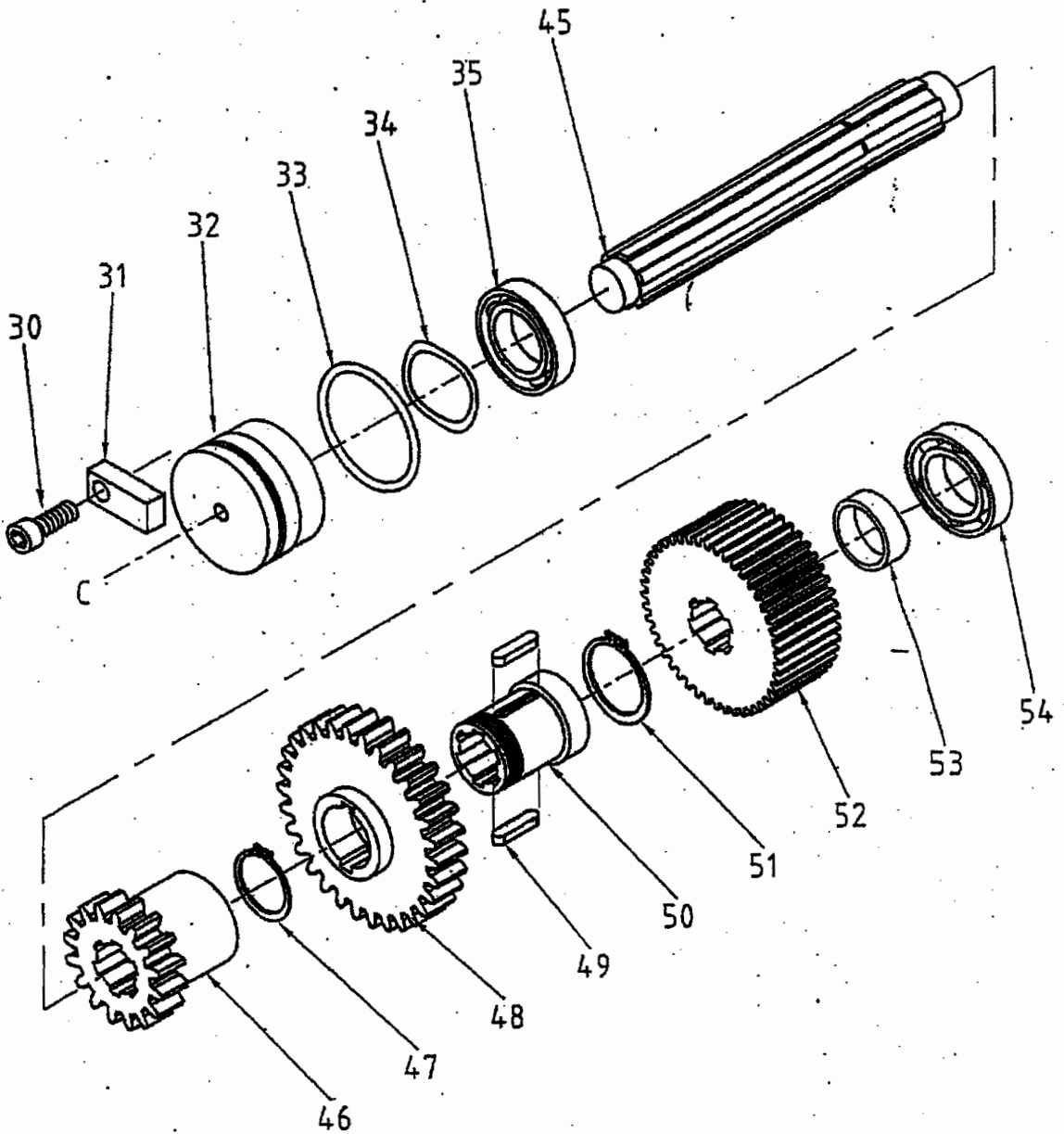


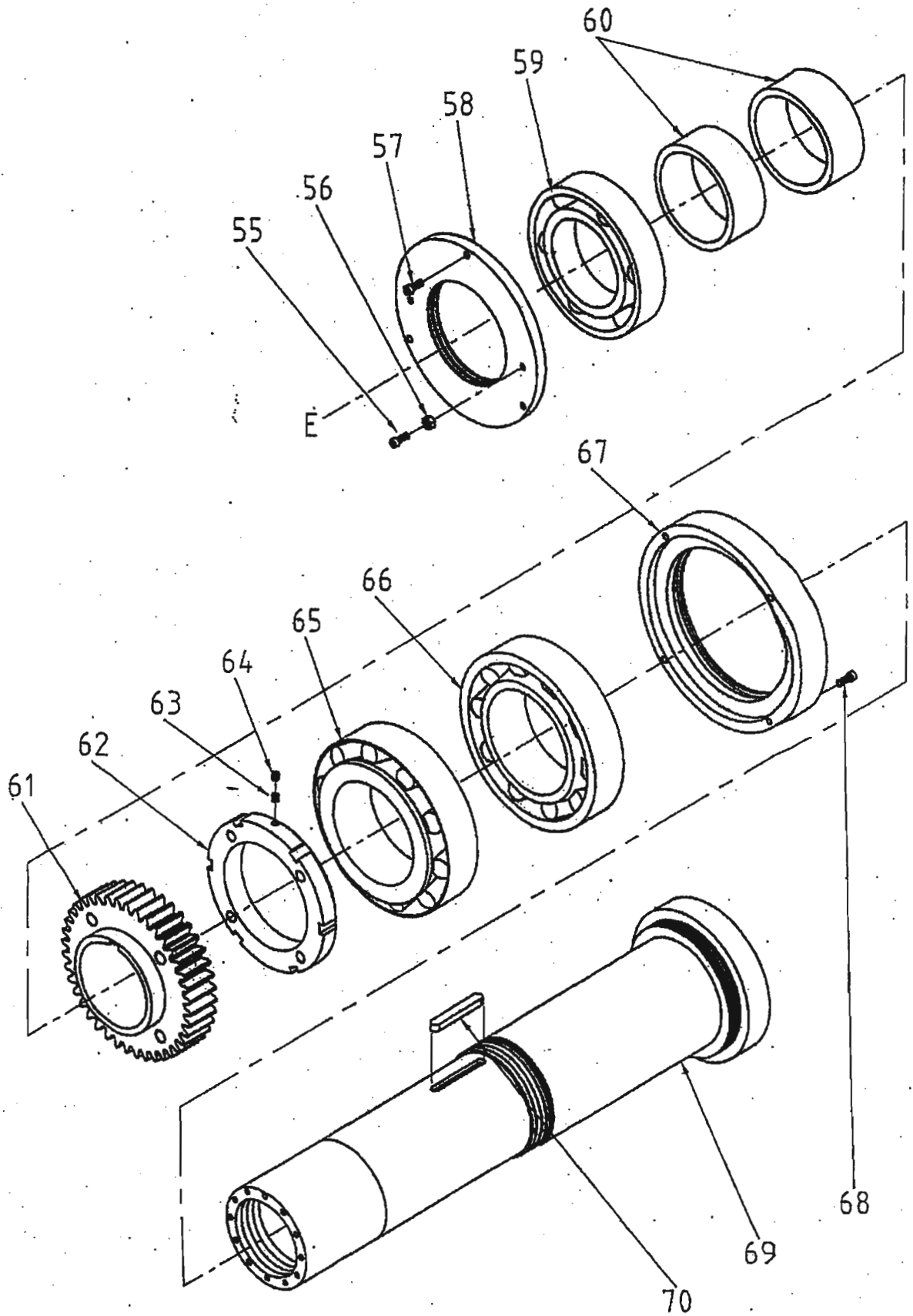


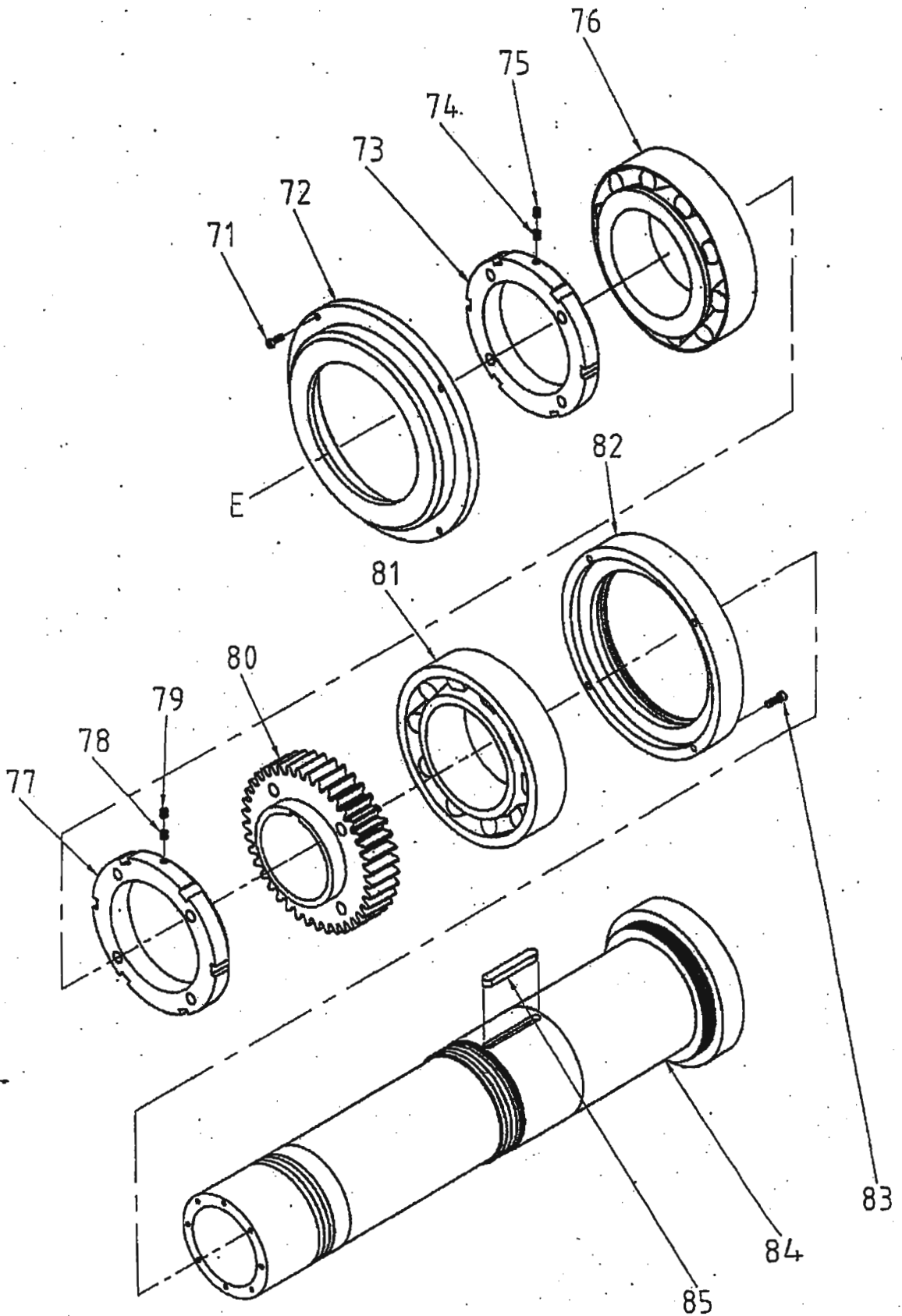


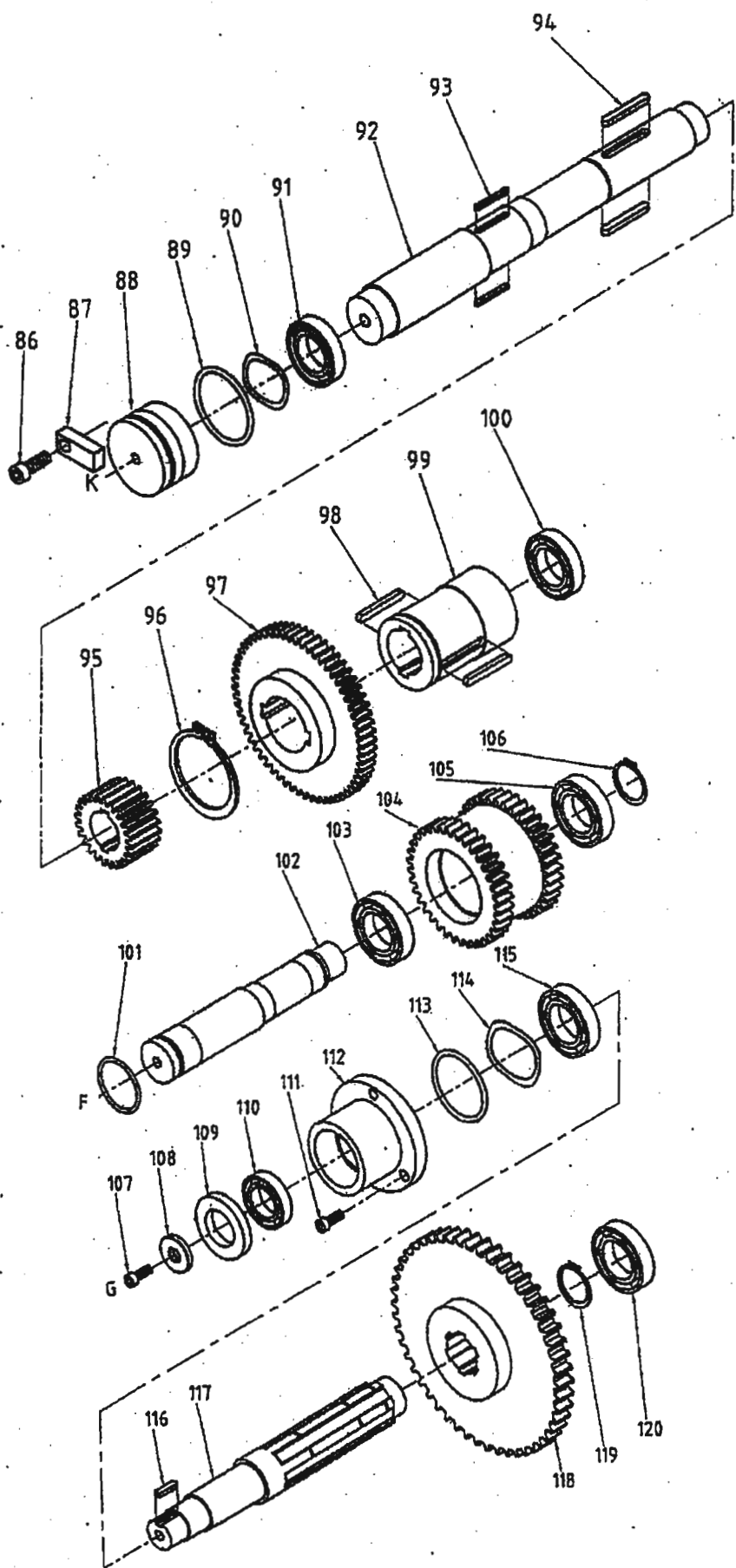


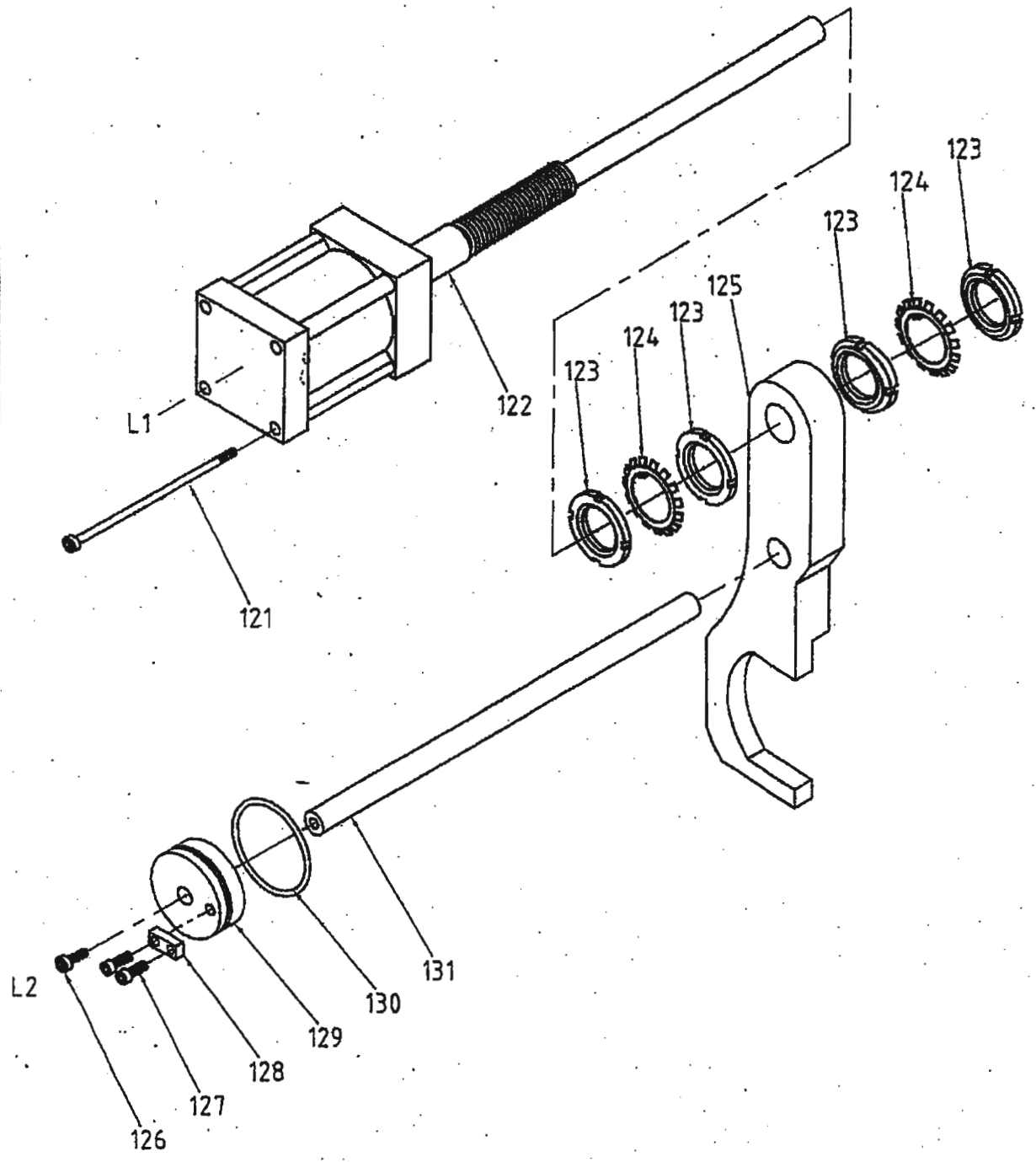


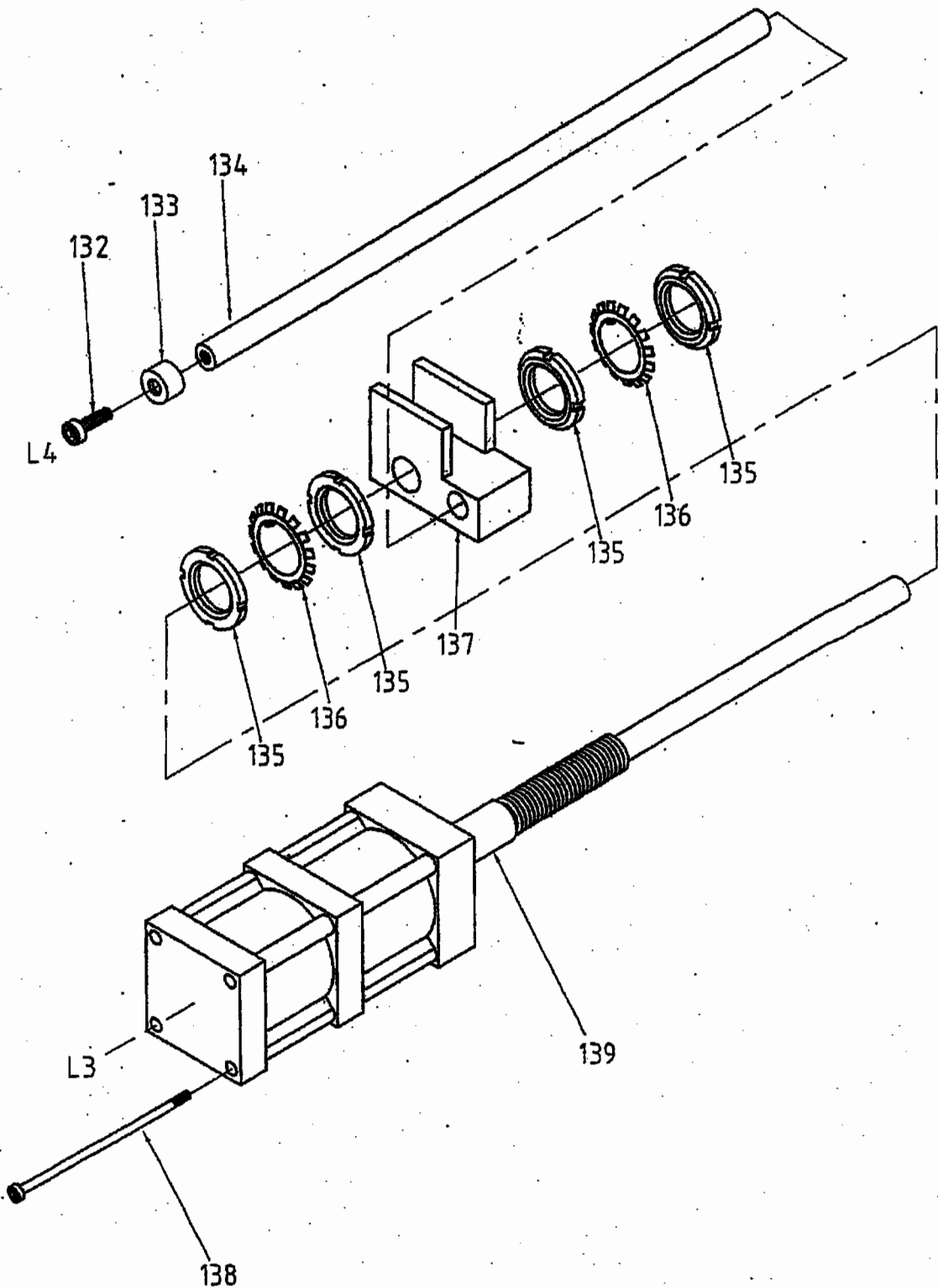


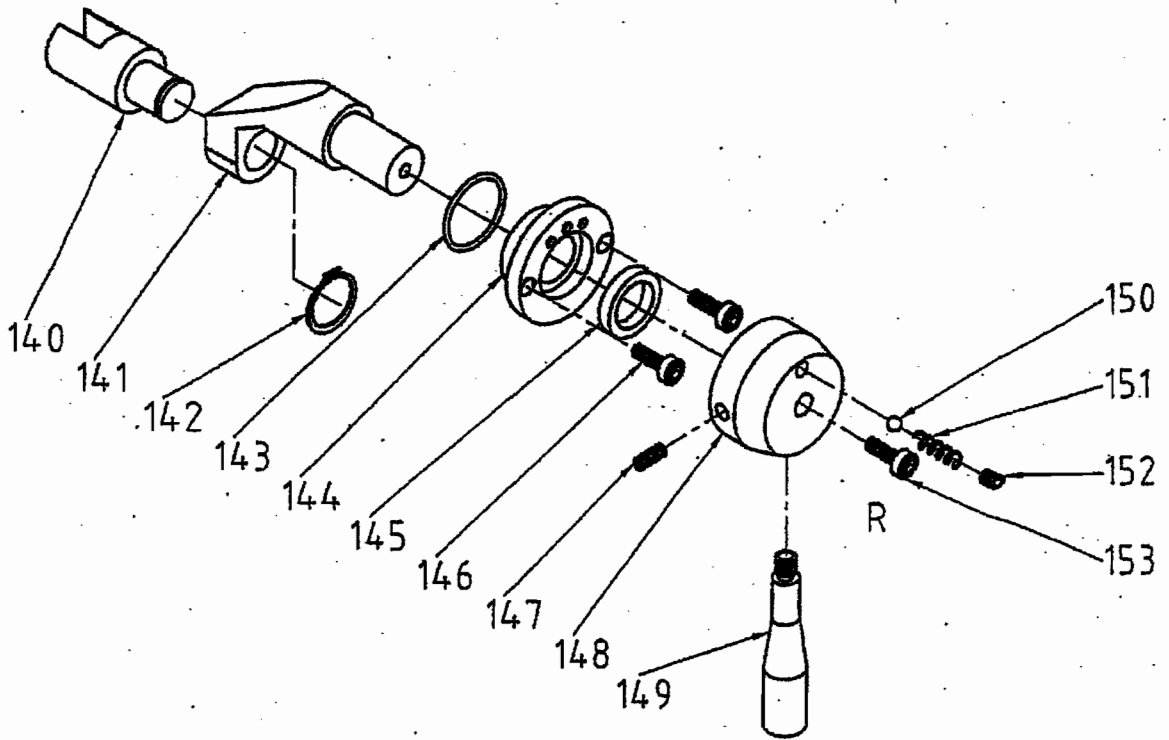




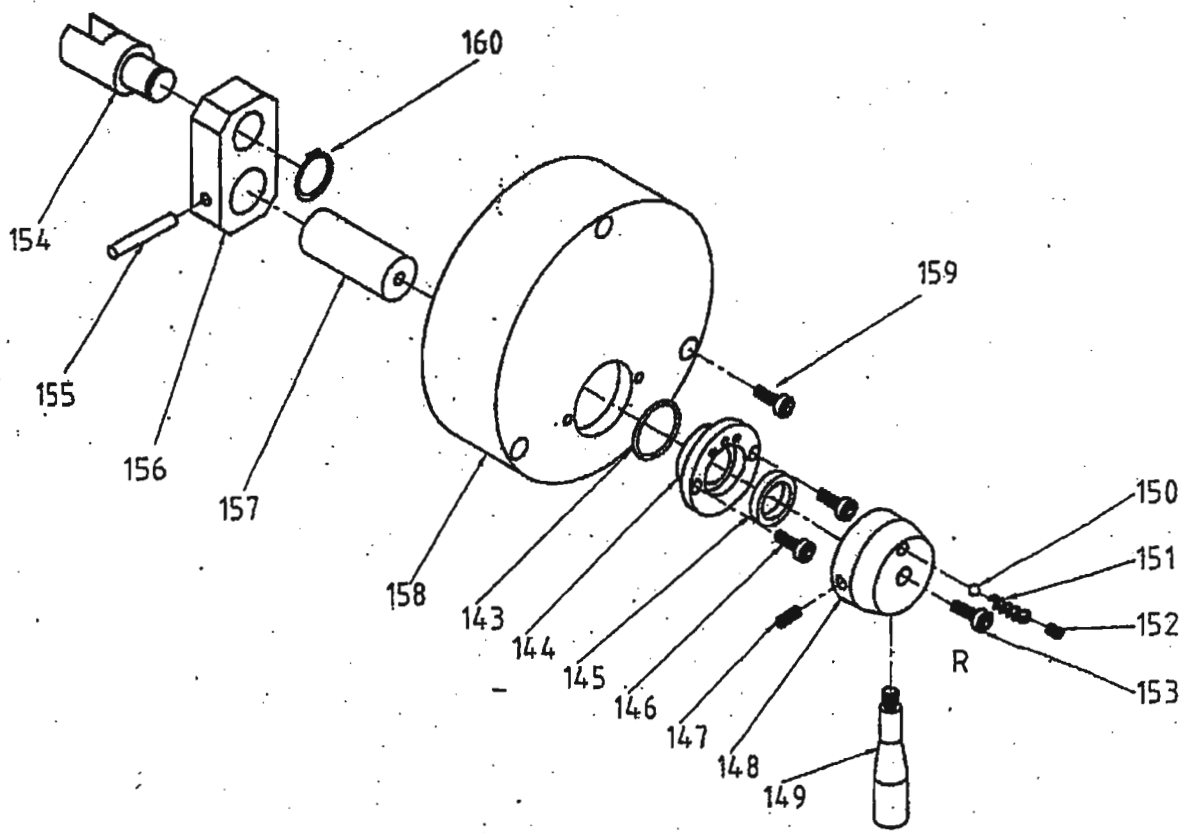


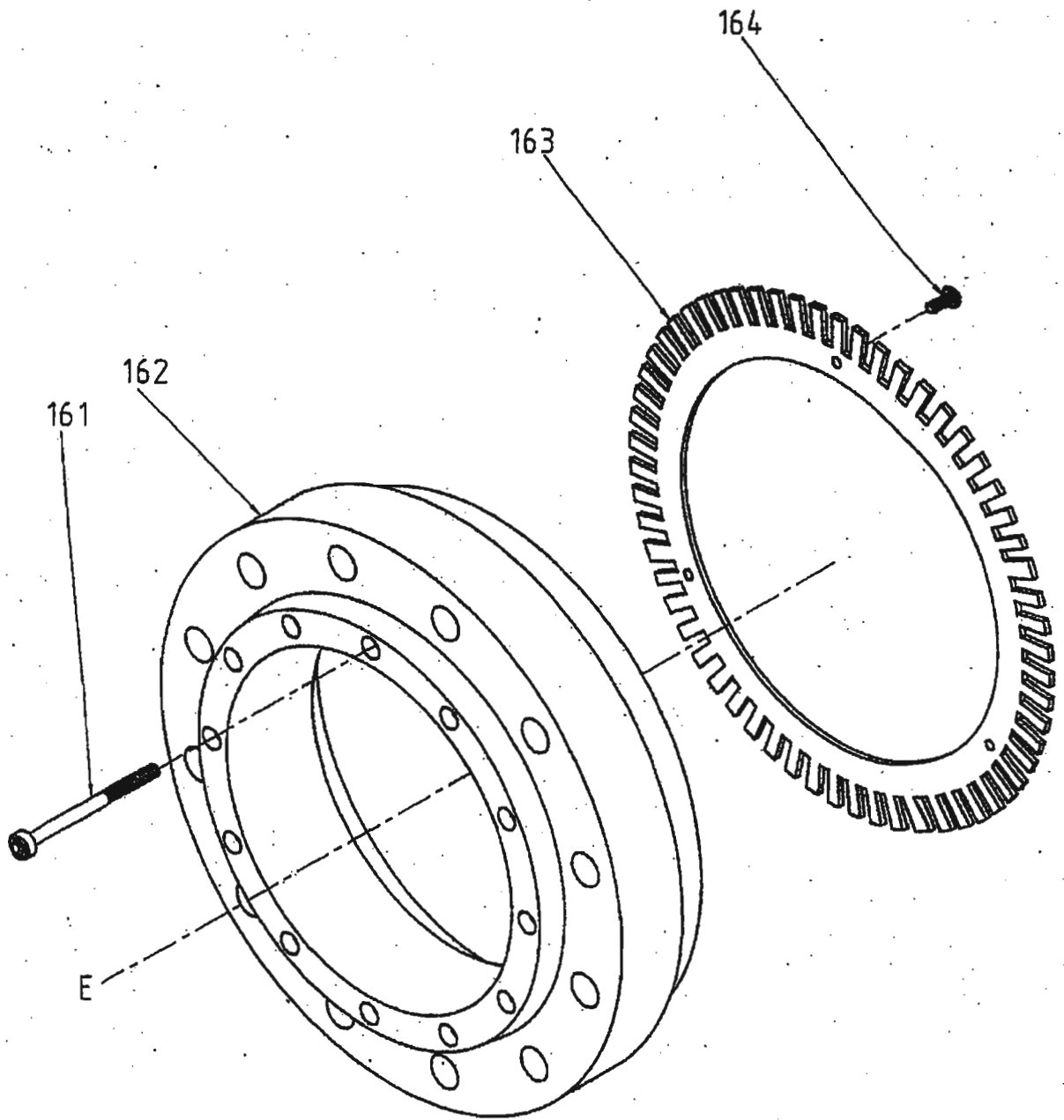












## CARRIAGE ASSY.

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Item	No Part No.	Description	Remark
1	PA3200	TOOL POST ASSEMBLY	
2		HEX. SOC. HD. SCREW	
3	PA3026	NUT	
4		HEX. SOC. HD. SCREW	
5	PA3003-A	INDEX	PA35
5	PA3003-B	INDEX	PA40
5	PA3003-C	INDEX	PA45
5	PA3003-D	INDEX	PA50
6		HEX. SOC. RD. SCREW	
7	PA3036	WIPER	
8		HEX. SOC. HD. SCREW	
9		BUSHING	
10	PA3002	CROSS SLIDE	
11		SET SCREW	
12		HEX. SOC. HD. SCREW	
13		HEX. SOC. RD. SCREW	
14	PA3031	COVER	
15	PA3034	REAR COVER	
16		HEX. SOC. HD. SCREW	
17		BUSHING	
18		HEX. SOC. RD. SCREW	
19	PA3037	WIPER	
20	PA3004	GIP	
21		HEX. SOC. RD. SCREW	
22		HINGE	
23		WASHER	
24		NUT	
25	PA3030	COVER	
26	PA3038	WIPER	
27		HEX. SOC. RD. SCREW	
28		HEX. SOC. HD. SCREW	
29	PA3001	CARRIAGE	
30		HEX. SOC. HD. SCREW	
31		OIL DISTRIBUTOR	
32	PA3043	NAME PLATE	
33		HEX. SOC. RD. SCREW	
34	PA3027	LOCK PLATE	
35		HEX. SOC. HD. SCREW	
36	PA3039	WIPER	
37		HEX. SOC. RD. SCREW	

## CARRIAGE ASSY.

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Item	No Part No.	Description	Remark
38		WASHER	
39		HEX. SOC. HD. SCREW	
40	PA3028	PLATE	
41		HEX. SOC. HD. SCREW	
42		BUSHING	
43		HEX. SOC. HD. SCREW	
44	PA3029	GIB	
45	PA3041	WIPER	
46		HEX. SOC. RD. SCREW	
47		HEX. SOC. RD. SCREW	
48	PA3055	COVER	
49	PA3032	COVER	
50		HEX. SOC. RD. SCREW	
51	PA3040	WIPER	
52		HEX. SOC. RD. SCREW	
53		DEEP GROOVE BALL BEARING	
54		SNAP RING	
55		KEY	
56	PA3024-B	SHAFT	PA40
56	PA3024-C	SHAFT	PA45
56	PA3024-D	SHAFT	PA50
57		KEY	
58		SNAP RING	
59		SNAP RING	
60		DEEP GROOVE BALL BEARING	
61		HEX. SOC. HD. SCREW	
62	PA3023	BUSHING	
63		DEEP GROOVE BALL BEARING	
64	PA3025	BEVEL GEAR	
65	PA3018	BASE	
66		HEX. SOC. HD. SCREW	
67		WASHER	
68		DEEP GROOVE BALL BEARING	
69		SNAP RING	
70		DEEP GROOVE BALL BEARING	
71		RETAINING RING	
72		DEEP GROOVE BALL BEARING	
73	PA3022	SPUR GEAR	
74		SNAP RING	
75	PA3021	SPUR GEAR	

## CARRIAGE ASSY.

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Item	No Part No.	Description	Remark
76		DEEP GROOVE BALL BEARING	
77		KEY	
78	PA3019	SHAFT	
79		KEY	
80	PA3020	BEVEL GEAR	
81		HEX. SOC. HD. SCREW	
82		HEX. SOC. HD. SCREW	
83	PA3023	HOUSING	
84		DEEP GROOVE BALL BEARING	
85	PA3125	BEVEL GEAR	
86		HEX. SOC. HD. SCREW.	
87		WASHER	
88	PA3035	LEVER	
89	PA3006-1	BUSHING	
90	PA3007	GRADUATION	
91		STEEL BALL	
92		SPRING	
93		SET SCREW	
94		LOCK NUT	
95		THRUST BALL BEARING	
96		HEX. SOC. HD. SCREW	
97	PA3005	BUSHING	
98		THRUST BALL BEARING	
99		SNAP RING	
100	PA3009	SPUR GEAR	
101		SNAP RING	
102		KEY	
103		KEY	
104	PA3008	LEAD SCREW	
105		KEY	
106		BWW6204	
107		DEEP GROOVE BALL BEARING	
108	PA3013	SHAFT	
109		SNAP RING	
110	PA3009	SPUR GEAR	
111		SNAP RING	
112		OIL SEAL	
113		NEEDLE ROOLER BEARING	
114	PA3014	CNNECTOR	
115		SNAP RING	

## CARRIAGE ASSY.

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Item	No Part No.	Description	Remark
116	PA3015	SHAFT	
117		HEX. SOC. HD. SCREW	
118	PA3011	NUT	
119	PA3012	NUT	
120		HEX. SOC. HD. SCREW	
121		DEEP GROOVE BALL BEARING	
122		OIL SEAL	
123		NEEDLE ROLLER BEARING	
124	PA3016	GEAR	
125		NEEDLE ROLLER BEARING	
126	PA3010	BUSHING	
127		NEEDLE ROLLER BEARING	
128		SNAP RING	
129		DEEP GROOVE BALL BEARING	
130	PA3017	COVER	
131		HEX. SOC. HD. SCREW	
132		ENCODER	
133	PA3060	BASE	
134	PA3059	COVER	
135		HEX. SOC. HD. SCREW	
136		HEX. SOC. HD. SCREW	
137		SET SCREW	
138	PA3057	GEAR	
139		HEX. SOC. HD. SCREW	
140	PA3058	GEAR	
141		SET SCREW	
142		KEY	
143	PA3008A	SHAFT	
144		KEY	
145	PA3008C	LEAD SCREW	
146	PA3063	BUSHING	
147	PA9000A	TAPER TURNING ATTACHMENT	
148		WASHER	
149		HEX. SOC. HD. SCREW	
150	PA3063	BUSHING	
151		THRUST BALL BEARING	
152		NEEDLE ROLLER BEARING	
153	PA3065I	NUT	
154		HEX. SOC. HD. SCREW	
155	PA3066T	NUT	

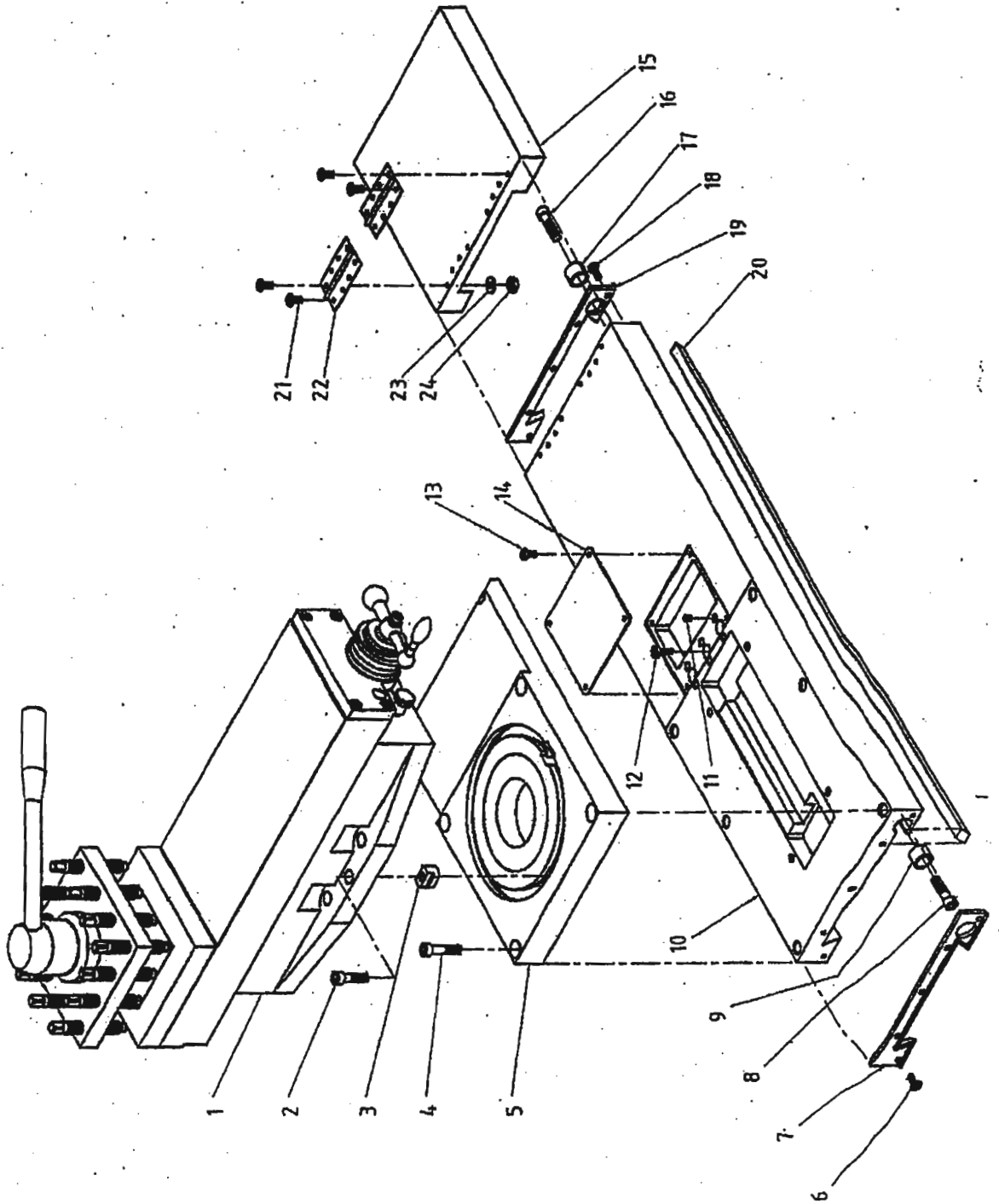
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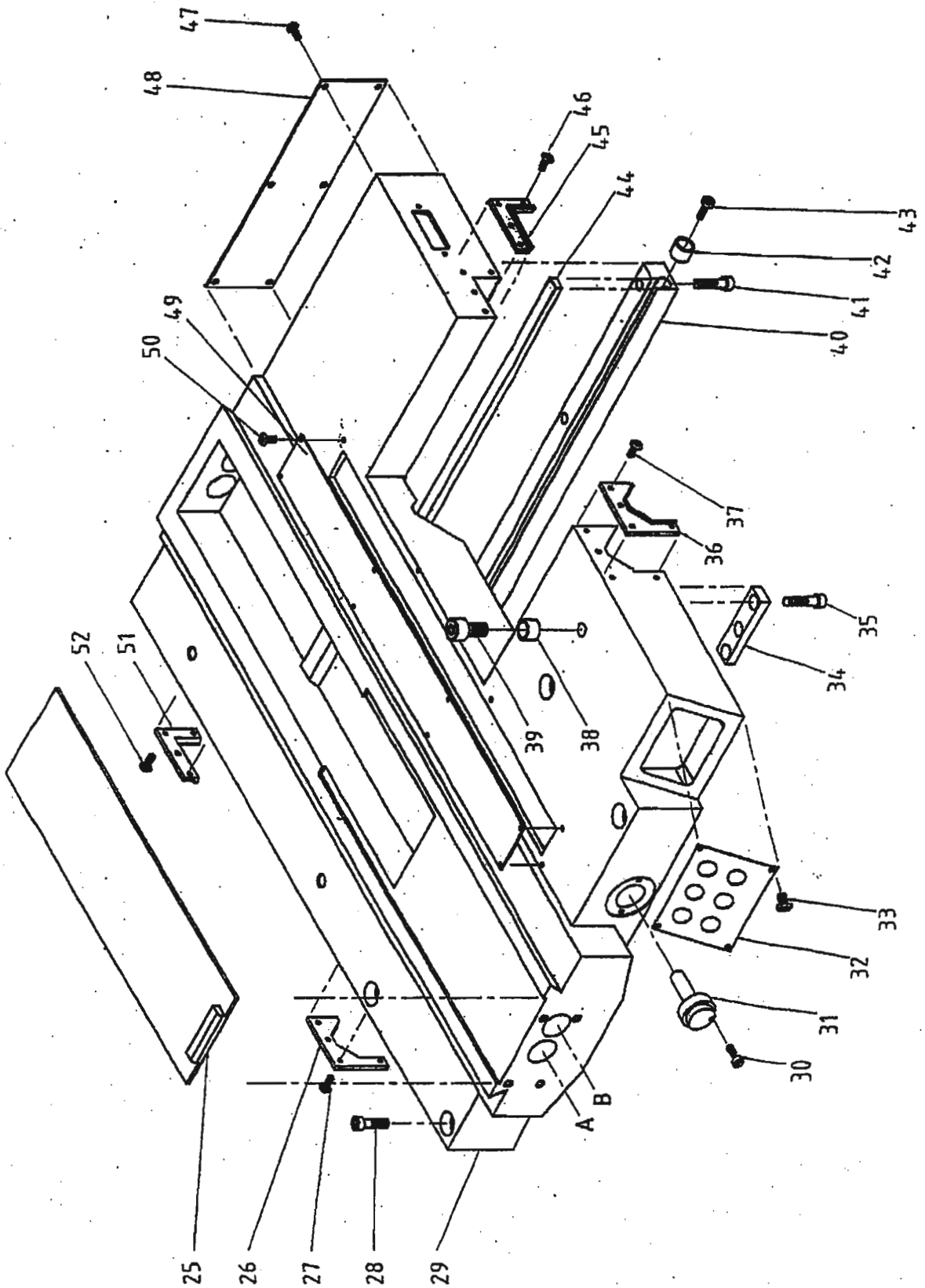
ITEM:3000 PAGE:5/14

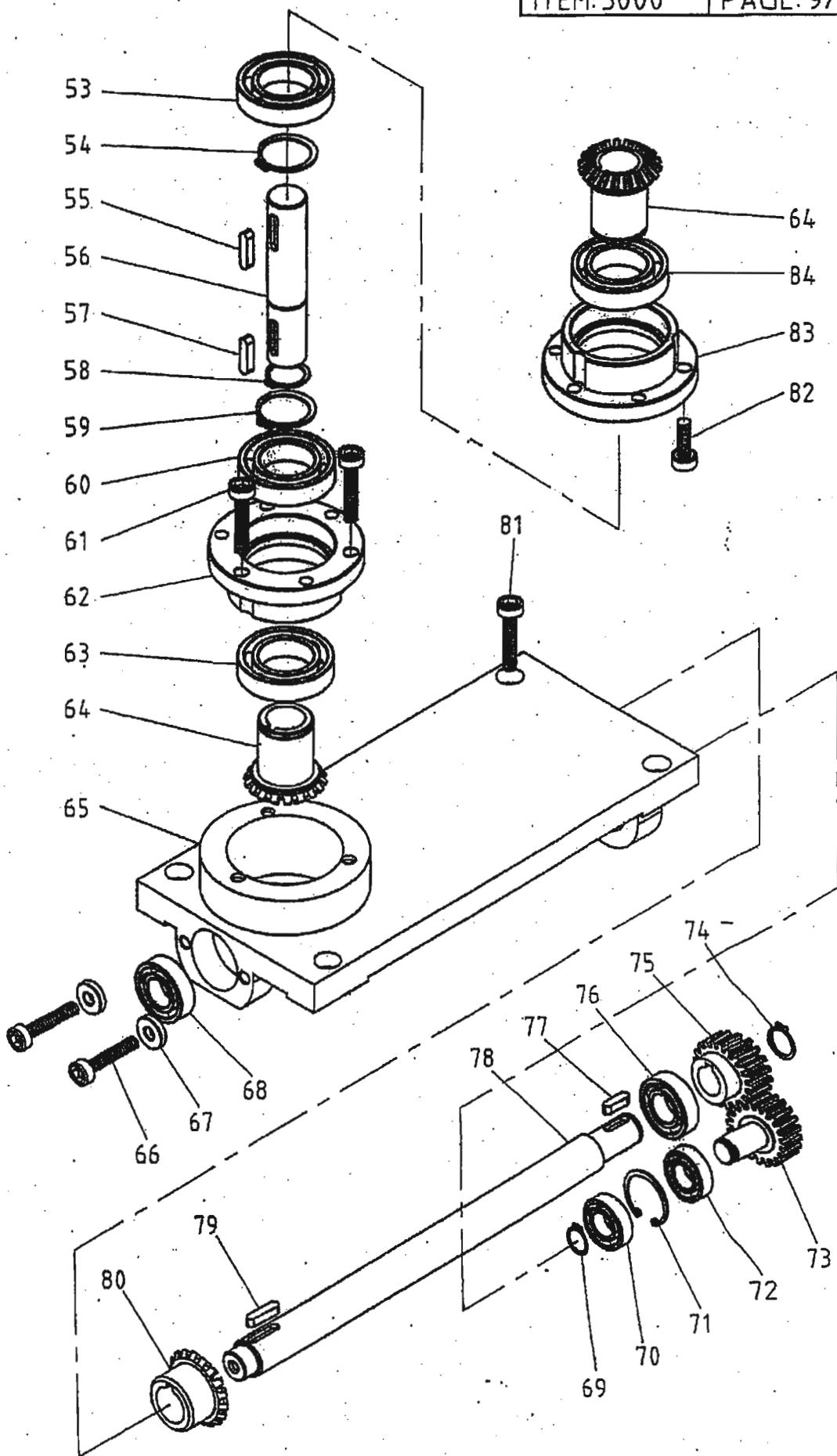
Item	No Part No.	Description	Remark
156	PA3050	COVER	
157		HEX. SOC. HD. SCREW	
158	PA3064I	LEAD SCREW	
159		NEEDLE ROLLER BEARING	
160		THRUST BALL BEARING	
161		LOCK NUT	
162	PA3017B	BASE	
163		HEX. SOC. HD. SCREW	
164	PA3017B-1	BUSHING	
165		HEX. SOC. HD. SCREW	
166	PA3067	RACK GEAR	
167		NUT	
168	PA1036-A	SHAFT	
169		CYLINDER	
170		HEX. SOC. HD. SCREW	
171		THRUST BALL BEARING	
172	PA3017A-1	BASE	
173		HEX. SOC. HD. SCREW	
174		THRUST BALL BEARING	
175		LOCK NUT	
176		NUT	
177		NUT	
178	PA3301-B	SLIDE GUIDE	
179		BUSHING	
180		HEX. SOC. HD. SCREW	
181	PA3304-B	SLIDE PLATE	
182		HEX. SOC. HD. SCREW	
183		HORIZONTAL AUTOMATIC COPYING ALIGNER	
184		HEX. SOC. HD. SCREW	
185	PA3305-B	HYDRAULIC CYLINDER	
186		O-RING	
187	PA3308-A	FIXING SEAT	
188		SPECIMEN FIXTURE RACK	
189		HEX. SOC. HD. SCREW	
190		STOP PLATE	
191	PA3312	SLIDER OF SAMPLE STAND	
192		HEX. SOC. HD. SCREW	
193		STOP PLATE	
194	PA3310	TRIPOD OF SAMPLE STAND	
195	PA1020	NUT	

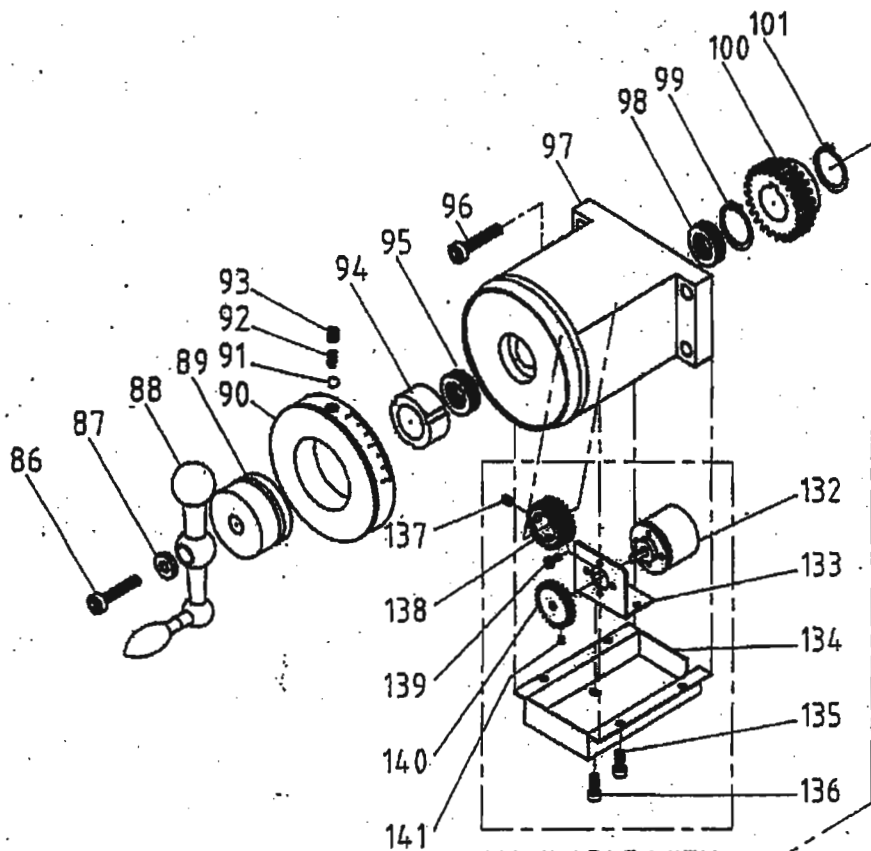




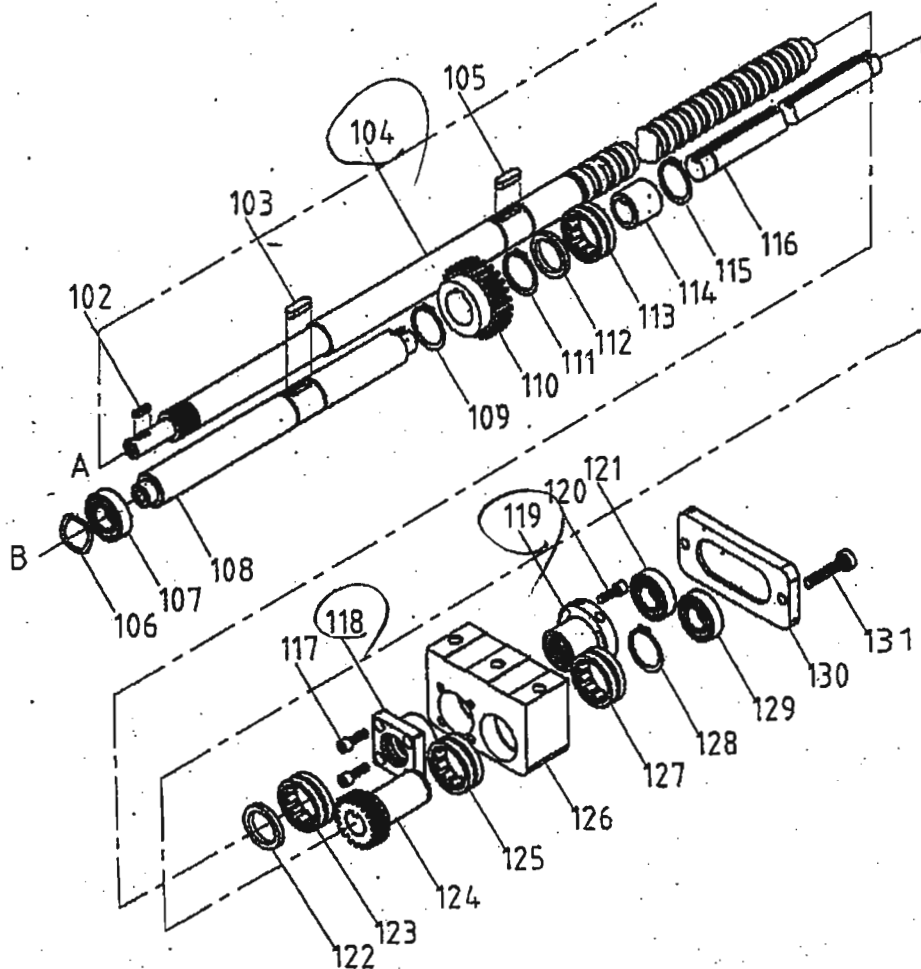


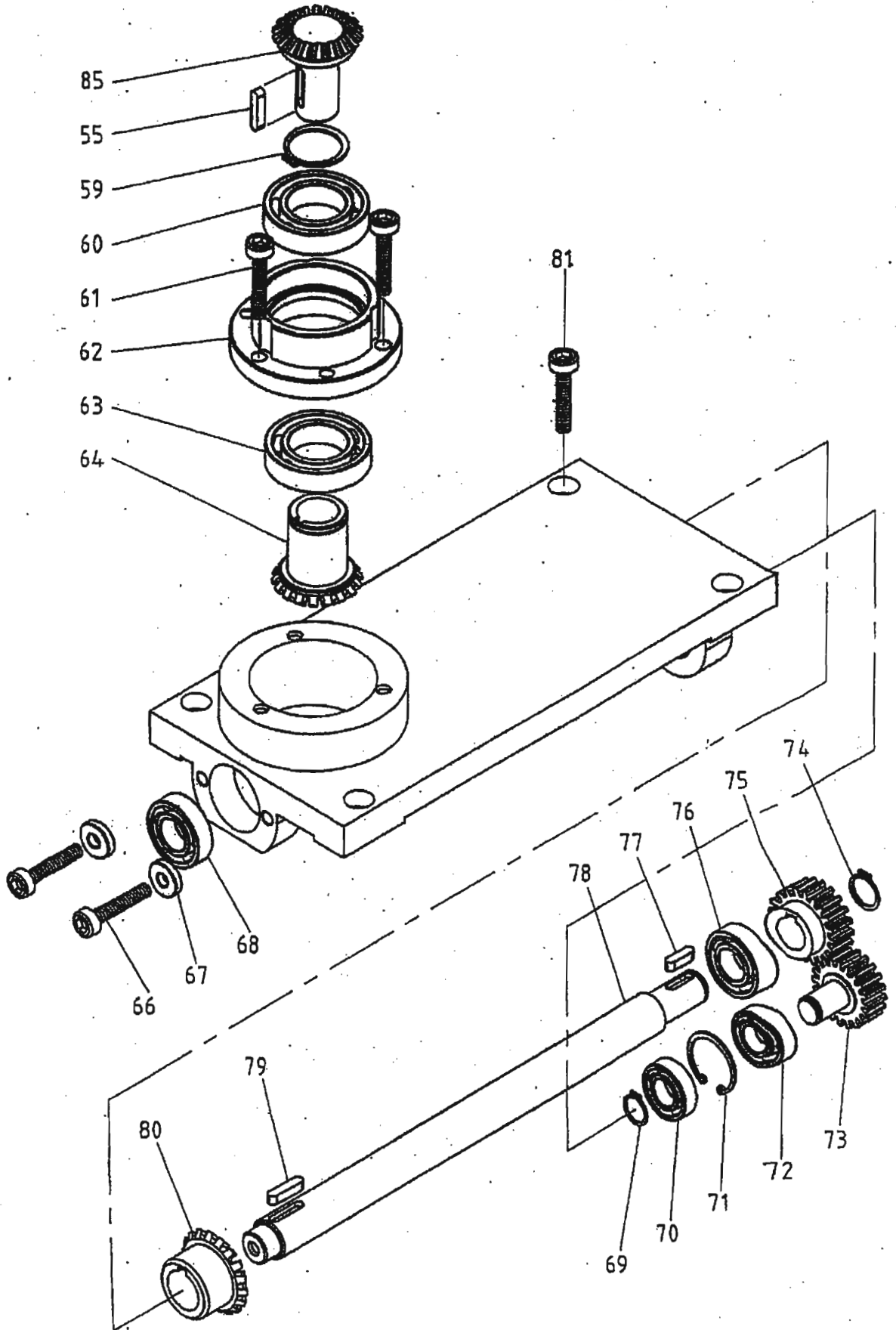




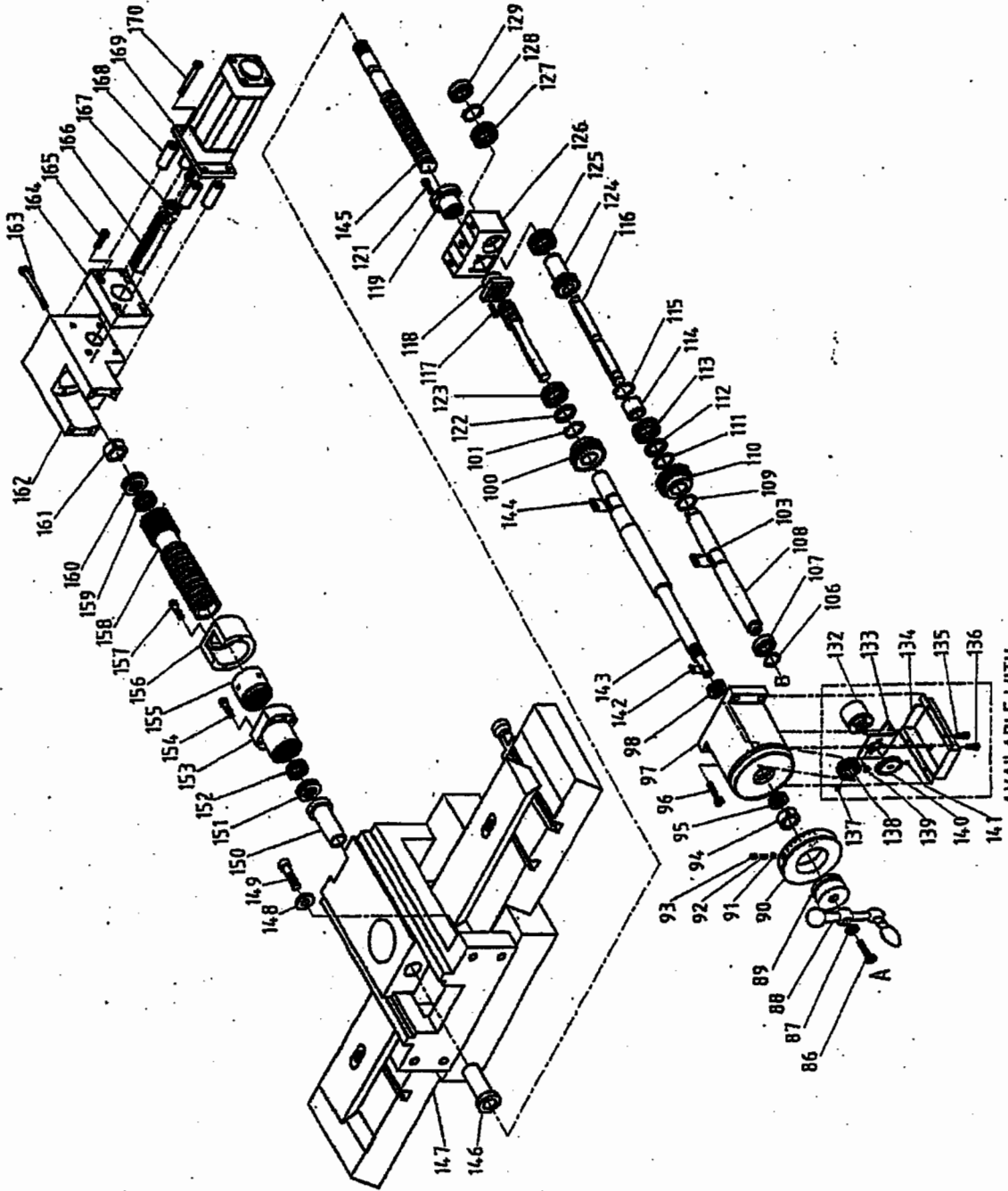


AVAILABLE WITH  
INVERTER CONTROL ONLY



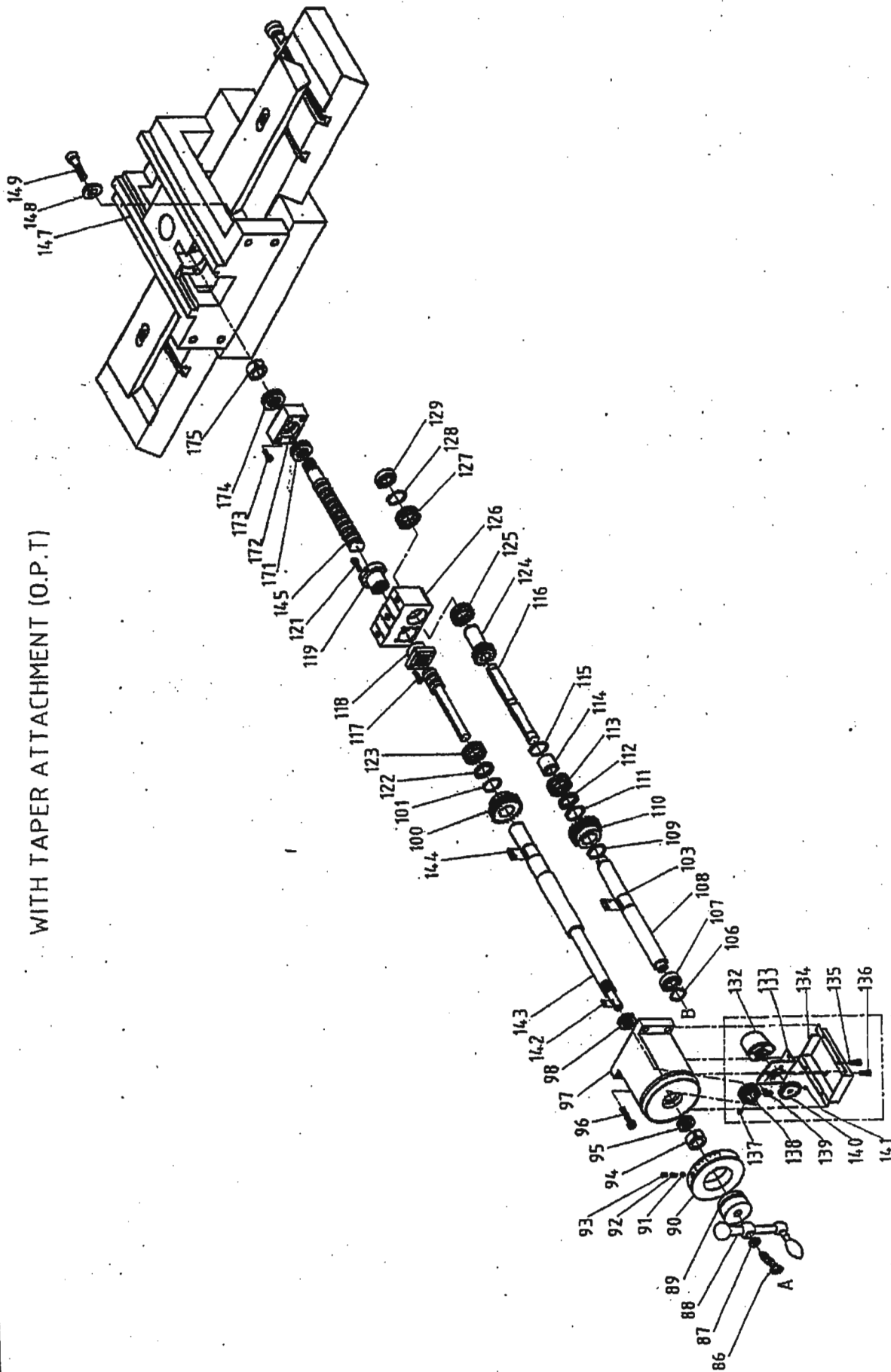


SEMI-AUTOMATIC CYCLETURNING AND THREADING

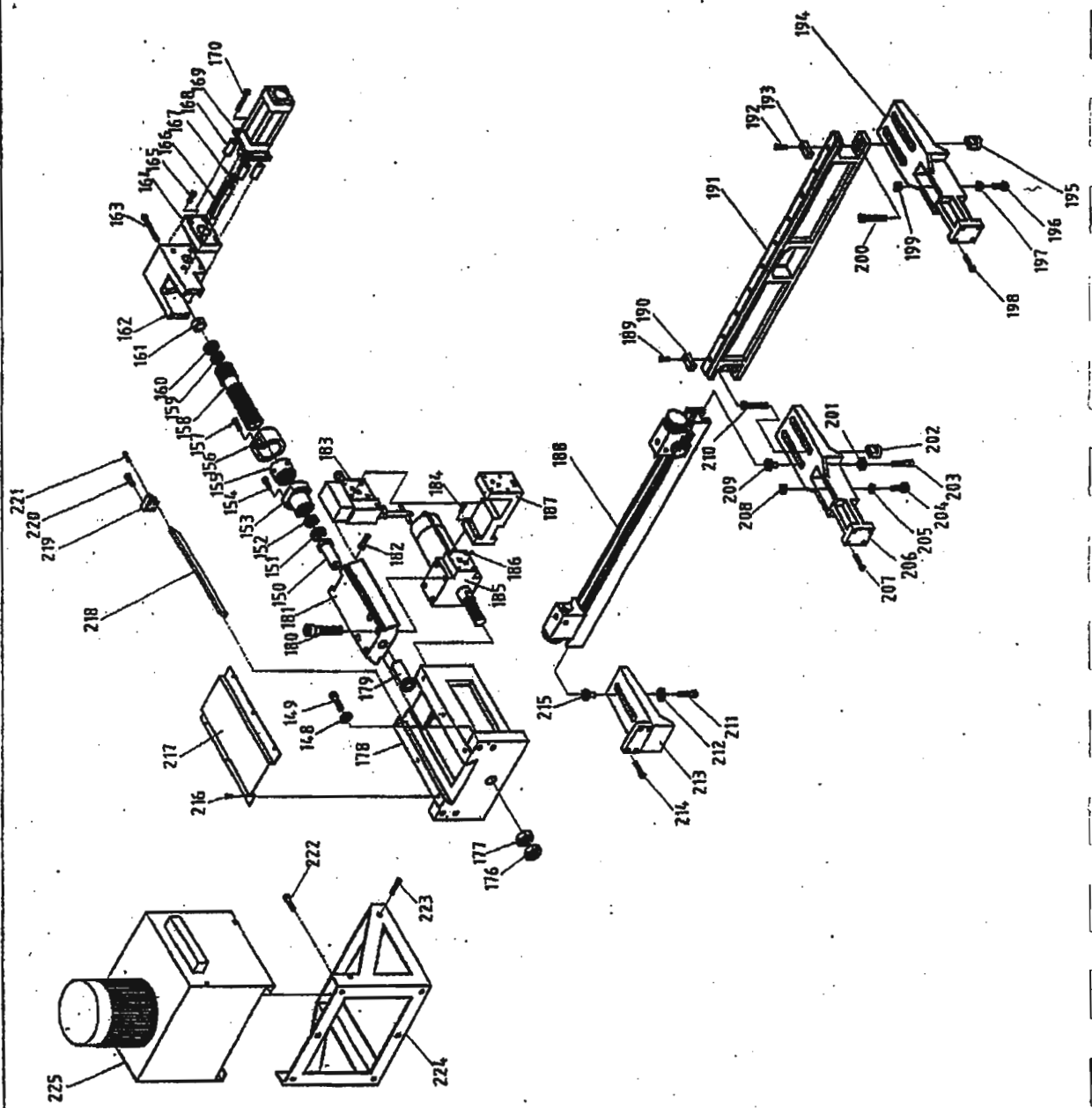


AVAILABLE WITH  
INVERTER CONTROL ONLY

WITH TAPER ATTACHMENT (O.P.T)



AVAILABLE WITH  
INVERTER CONTROL ONLY





## COMPOUND POST ASSY.

ITEM: 3200 PAGE: 1/7

Item	No Part No.	Description	Remark
1	PA2061	LEVER	
2	PA3221	STEM	
3		THRUST BALL BEARING	
4	PA3220	BUSHING	
5	PA3224	SCREW	
6	PA3203	TOLL CARRIER	
6	PA3203-A	TOLL CARRIER	12-POSITIONING
7	PA3202	CARRIAGE	
7	PA3202-A	CARRIAGE	T-SLOT
7	PA3202-B	CARRIAGE	12-POSITIONING
8		SCREW	
9		BUSHING	
10		HEX. SOC. HD. SCREW	
11		SET SCREW	
12	PA3219	SHAFT	
12	PA3219-A	SHAFT	T-SLOT
13	PA3204	GIB	
14	PA3222	WIPER	
15	PA3223	PLATE	
16		HEX. SOC. RD. SCREW	
17	PA3217	SPACER	
18		SPRING	
19	PA3218	POSITIONER PIN	
20	PA3201	CARRIAGE	
21		HEX. SOC. HD. SCREW	
22	PA7042	WASHER	
23		LEVER	
24	PA3207	NUT	
25		WASHER	
26	PA3208M	DIAL	METRIC
26	PA3208I	DIAL	INCH
27	PA3206	SCREW	
28		HEX. SOC. HD. SCREW	
29		THRUST BALL BEARING	
30	PA3205	BUSHING	
31		THRUST BALL BEARING	
32		KEY	
33	PA3209M	LEAD SCREW	METRIC
33	PA3209I	LEAD SCREW	INCH
34		HEX. SOC. HD. SCREW	

COMPOUND POST ASSY.

ITEM: 3200

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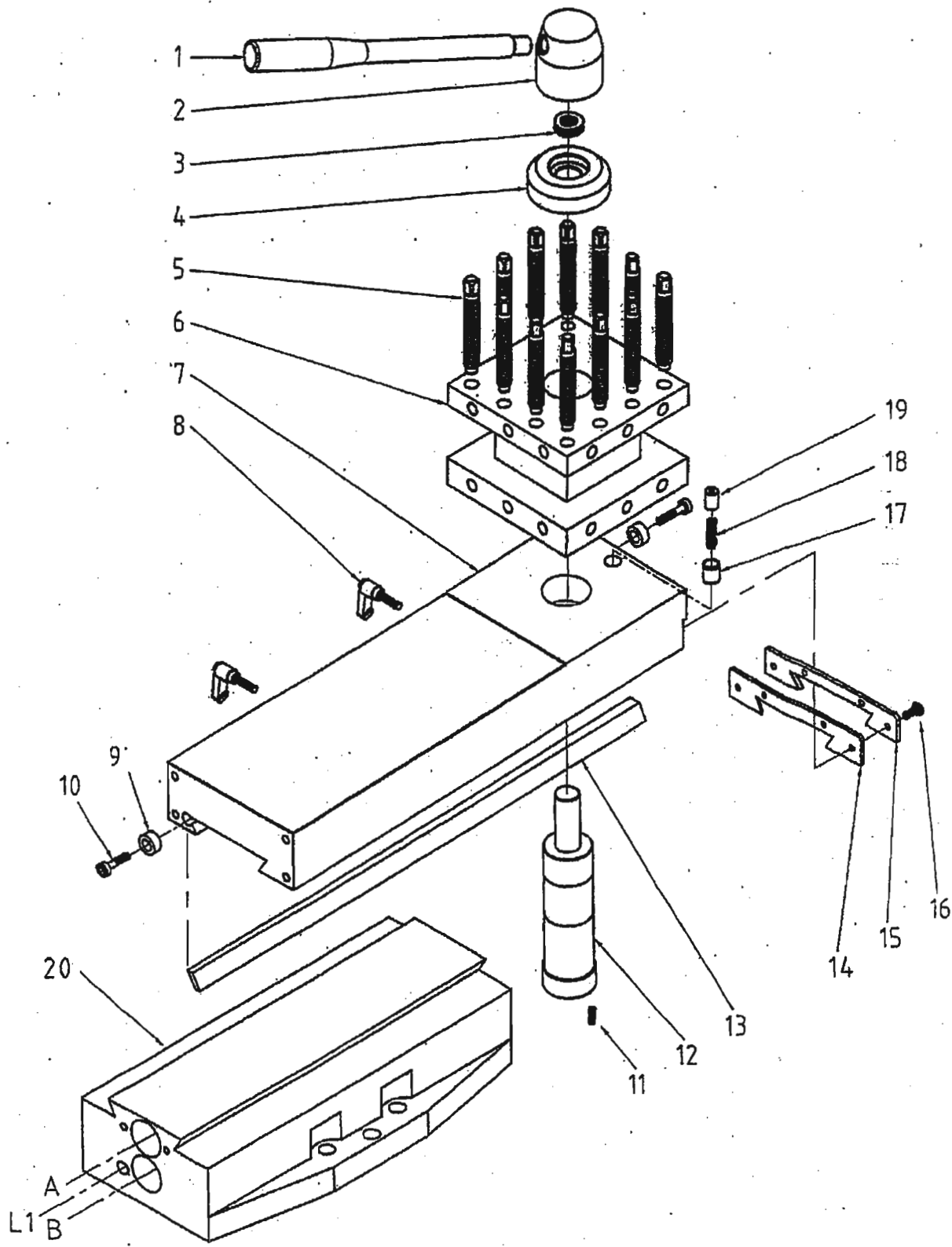
Item	No. Part No.	Description	Remark
35	PA3212M	NUT	METRIC
35	PA3212I	NUT	INCH
36		SET SCREW	
37		LOCK NUT	
38		HEX. SOC. HD. SCREW	
39	PA3211M	NUT	METRIC
39	PA3211I	NUT	INCH
40		NEEDLE ROLLER BEARING	
41	PA3210	SPUR GEAR	
42		NEEDLE ROLLER BEARING	
43	PA3215	PULL ROD	
44		SET SCREW	
45		SPRING	
46		STEEL BALL	
47	PA3216	FORK	
48		HEX. SOC. HD. SCREW	
49	PA5035	COVER	
50		DEEP GROOVE BALL BEARING	
51		SNAP RING	
52	PA3214	SPUR GEAR	
53		KEY	
54	PA3213	SHAFT	
55		SNAP RING	
56		DEEP GROOVE BALL BWARING	
57	PA3020	BEVEL GEAR	
58		WASHER	
59		HEX. SOC. HD. SCREW	

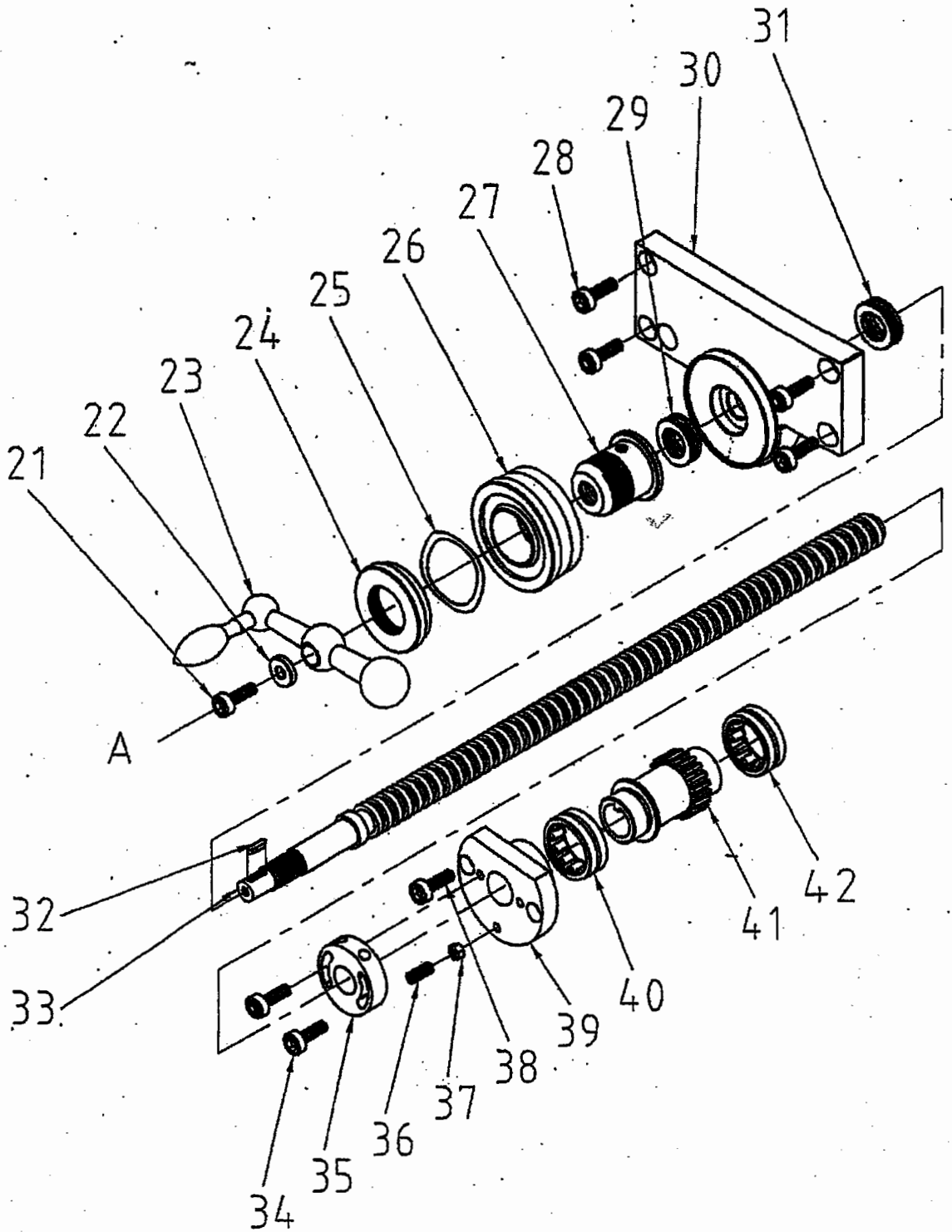
COMPOUND POST WITH T SLOT

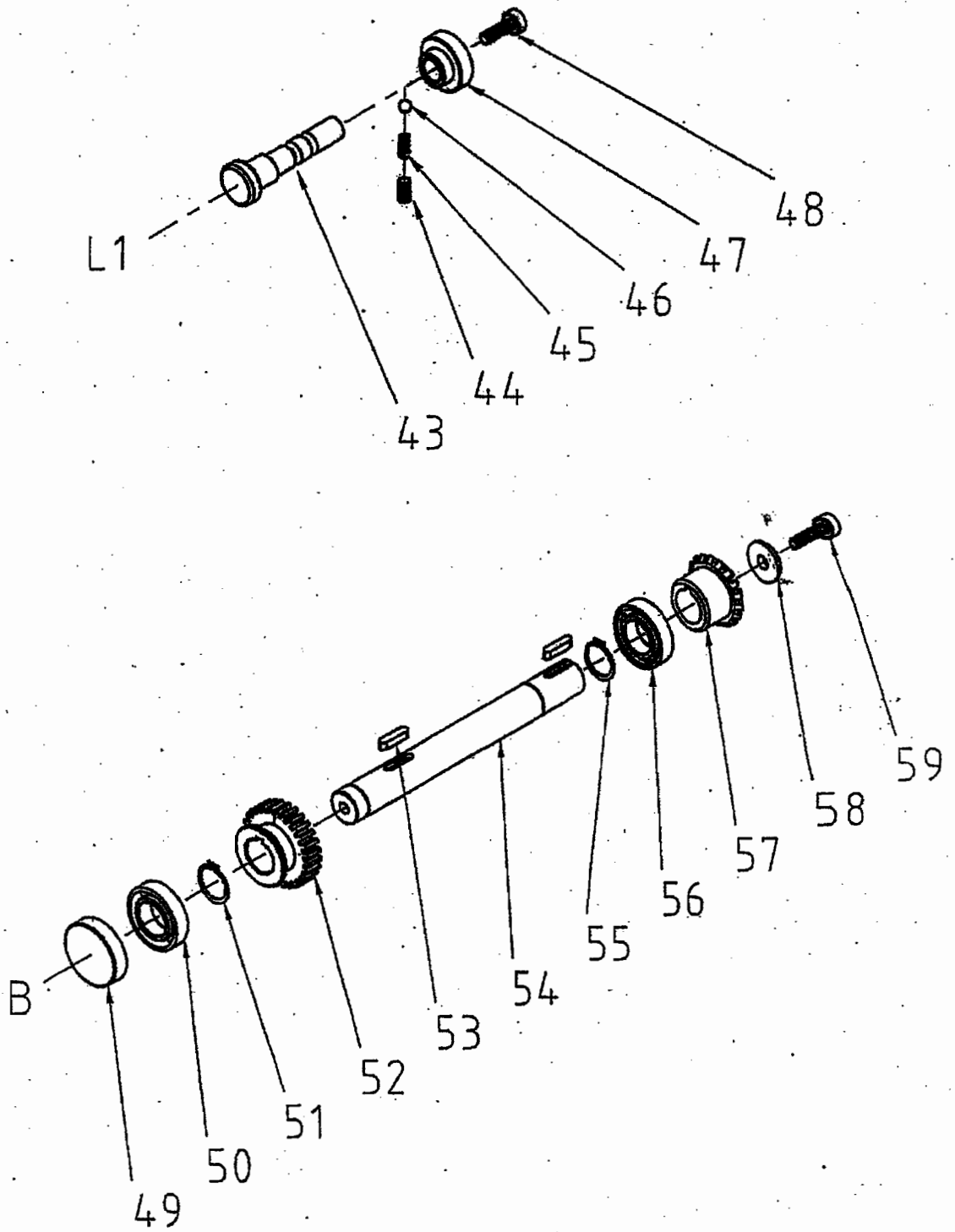
60		SET SCREW (T SLOT)	
61	PA3202-A-1	T TEMPLATE (T SLOT)	

12-POSITIONING

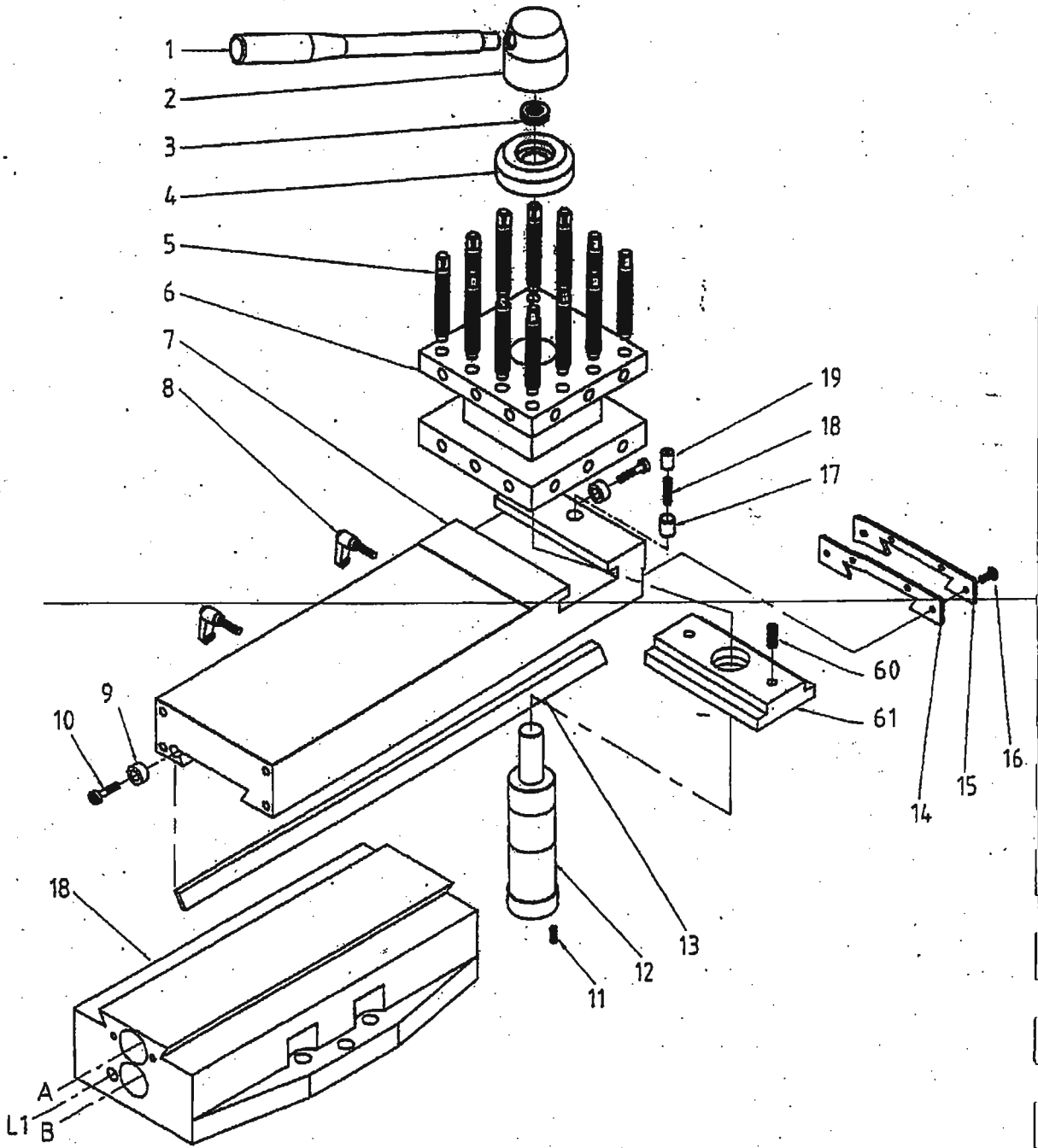
62	PA3217	SPACER	
63		LEVER	
64	PA3226	SPUR GEAR	
65		HEX. SOC. HD. SCREW	
66		SET SCREW	
67	PA3227	BUSHING	
68	PAR3224	LOCK PIN	

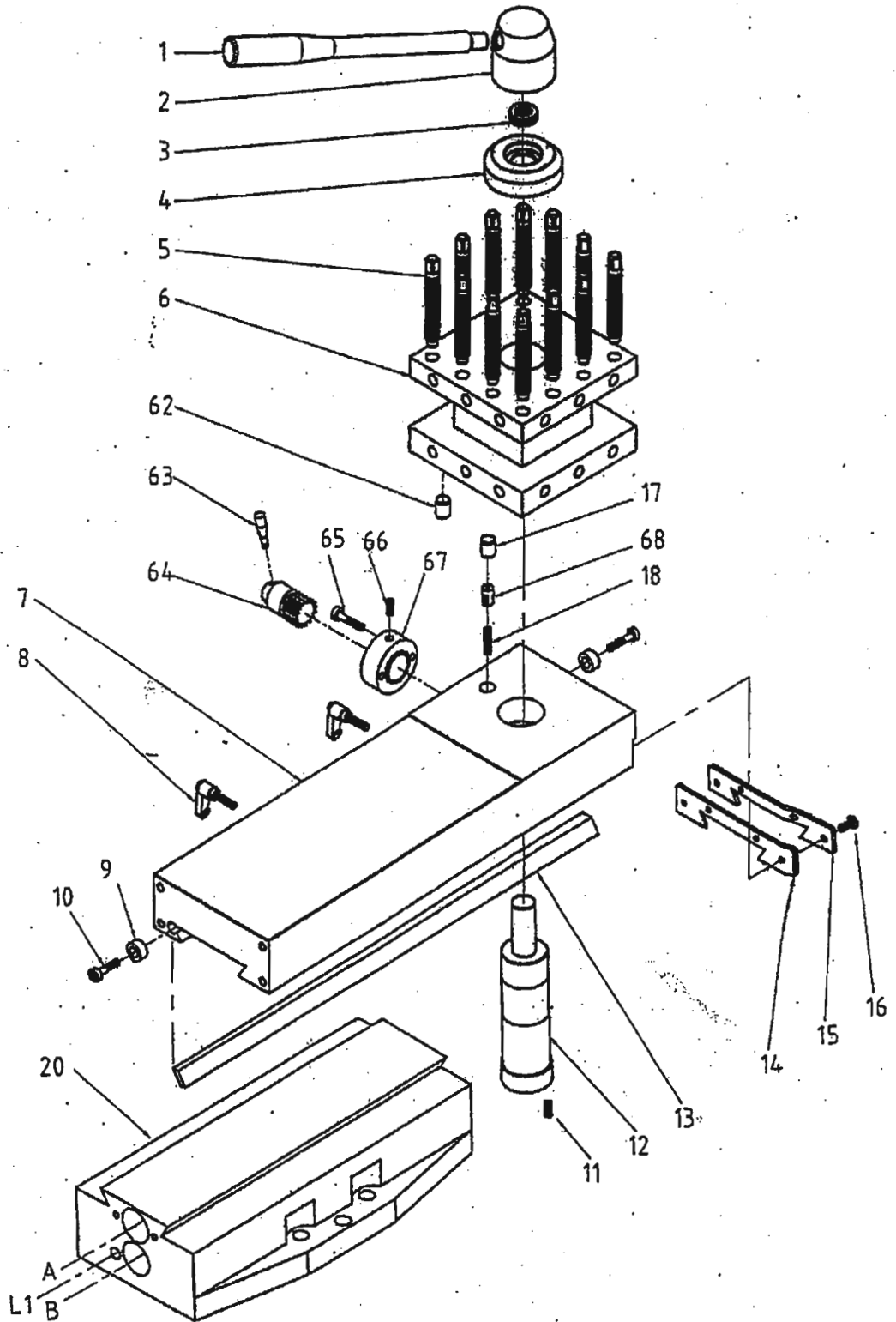






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## TAILSTOCK ASSY.

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Item	No Part No.	Description	Remark
1		CENTER	
2		OIL SEAL	
3	PA4004-A	QUILL	MT5
3	PA4004-B	QUILL	MT6
4	PA4005M	NUT	METRIC
4	PA4005I	NUT	INCH
5		WASHER	
6		HEX. SOC. HD. SCREW	
7		HEX. SOC. HD. SCREW	
8		NUT	
9	PA4006M	SHAFT	METRIC
9	PA4006I	SHAFT	INCH
10		KEY	
11		THRUST BALL BEARING	
12		WASHER	
13	PA4016	SCREW	
14	PA4015-1	NUT	
15	PA4018	STOPPER	
16	PA2061	LEVER	
17		PLUG	
18	PA4001	TAILSTOCK BODY	
19	PA4015-1	NUT	
20		SET SCREW	
21	PA4014	STOP PIN	
22		HEX. SOC. RD. SCREW	
23	PA4029	COVER	
24	PA7043	ROCK ARM	
25	PA2052	LEVER	
26		HEX. SOC. HD. SCREW	
27		SET SCREW	
28		SPRING	
29		STEEL BALL	
30	PA2068	STEM	
31		SET SCREW	
32		THRUST BALL BEARING	
33		LOCK NUT	
34	PA4007	SPUR GEAR	
35	PA4009	SPUR GEAR	
36		KEY	
37	PA4008	SHAFT	

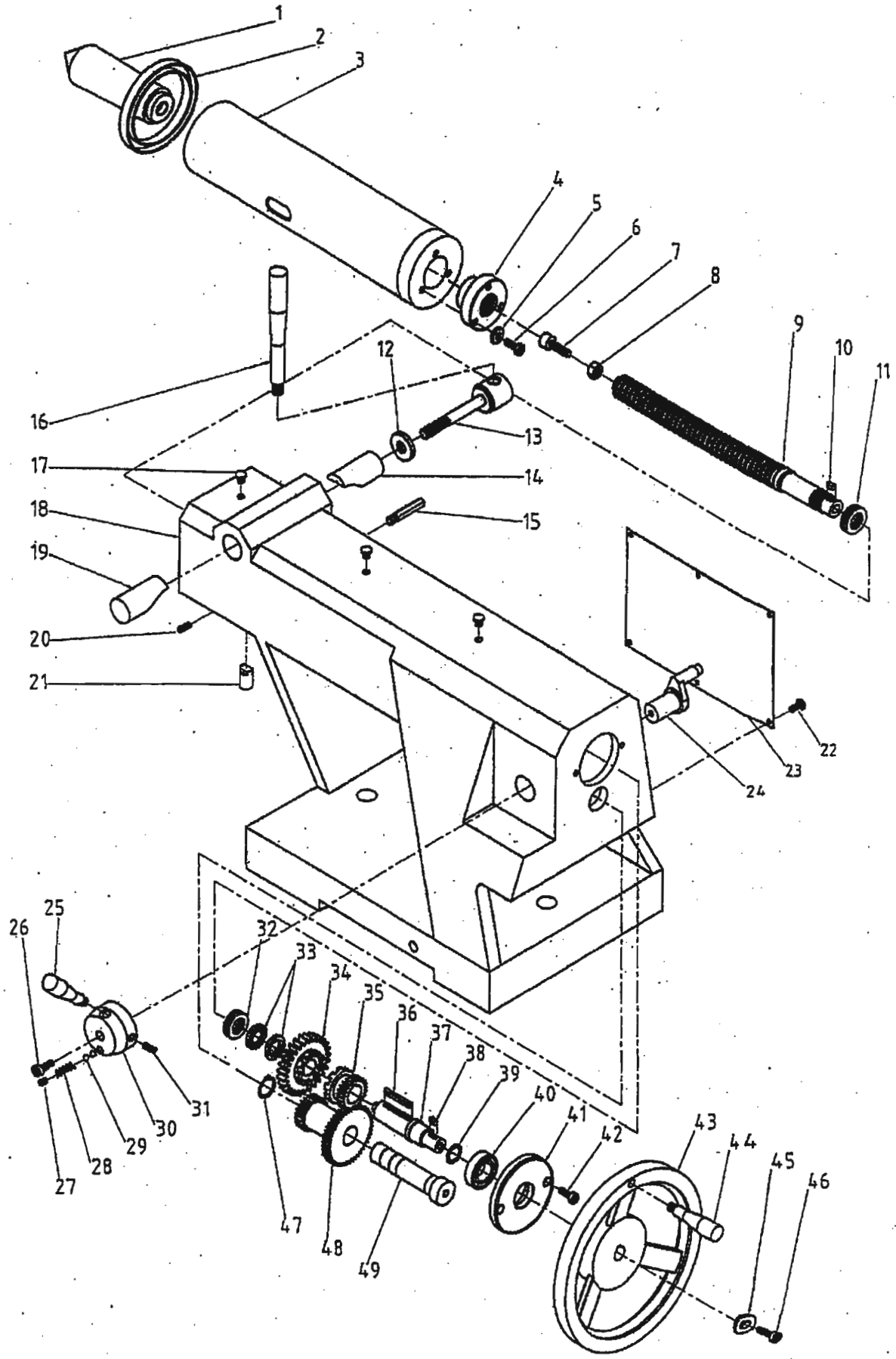


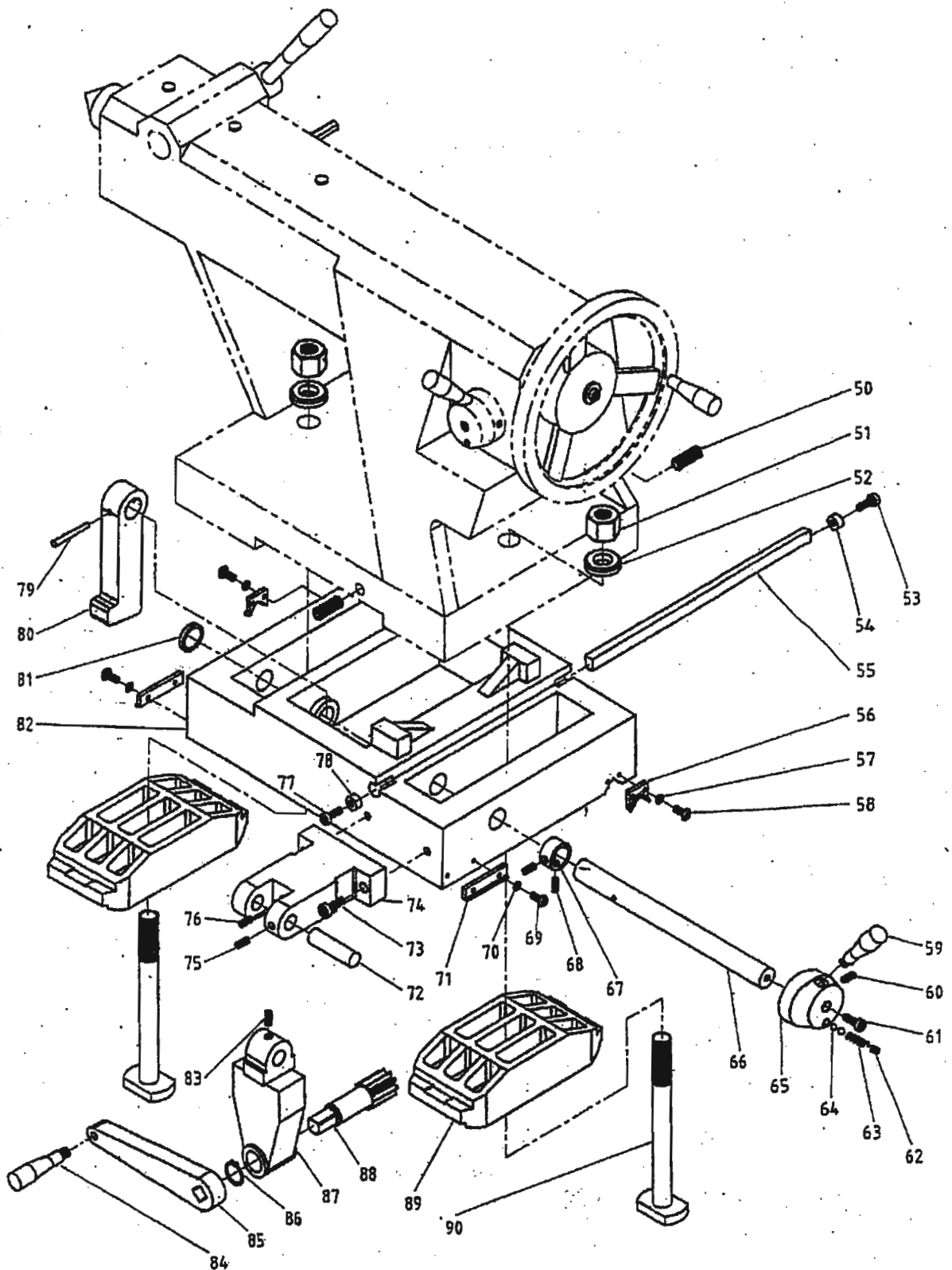
## TAILSTOCK ASSY.

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Item	No Part No.	Description	Remark
38		KEY	
39		WASHER	
40		DEEP GROOVE BALL BEARUNG	
41	PA4010	BUSHING	
42		HEX. SOC. HD. SCREW	
43	PA4011M	HANDLE WHEEL	METRIC
43	PA4011I	HANDLE WHEEL	INCH
44	PA2052	LEVER	
45	PA1038	WASHER	
46		HEX. SOC. HD. SCREW	
47		SNAP RING	
48	PA4013	SPUR GEAR	
49	PA4012	SHAFT	
50		SET SCREW	
51		NUT	
52		WASHER	
53		HEX. SOC. HD. SCREW	
54		BUSH	
55	PAB4003	GIB	
56	PA4031	WIPER	
57		WASHER	
58		HEX. SOC. RD. SCREW	
59	PA2052	LEVER	
60		SET SCREW	
61		HEX. SOC. HD. SCREW	
62		SET SCREW	
63		SPRING	
64		STEEL BALL	
65	PA2068	SET SCREW	
66	PA4028	SHAFT	
67	PA5073	COLLAR	
68		SET SCREW	
69		HEX. SOC. RD. SCREW	
70		WASHER	
71	PA4030	WIPER	
72	PA4025	SHAFT	
73		HEX. SOC. HD. SCREW	
74	PA4022	BRACKET	
75		SET SCREW	
76		SET SCREW	







## APRON ASSY.

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Item	No Part No.	Description	Remark
1	PA5171R	NAME PLATE	
2		HEX. SOC. RD. SCREW	
3	PA5065	SHAFT	
4		DEEP GROOVE BALL BEARING	
5		DEEP GROOVE BALL BEARING	
6	PA5066	COLLAR	
7	PA4030	WIPER	
8		HEX. SOC. RD. SCREW	
9		HEX. SOC. HD. SCREW	
10	PA5064	HOUSING	
11		SET SCREW	
12		HEX. SOC. HD. SCREW	
13	PA5044	LOCK KEY	
14		PLUC	
15		HEX. SOC. HD. SCREW	
16		HEX. SOC. HD. SCREW	
17		OIL PUMP	
18		OIL GUAGE	
19	PA5101	APRON	
20	PA2088	PLUG	
21		NUT	
22		SET SCREW	
23	PA3029	GIB	
24		BUSHING	
25		HEX. SOC. HD. SCREW	
26	PA5079	COVER	
27		HEX. SOC. RD. SCREW	
28		WASHER	
29		HEX. SOC. HD. SCREW	
30		COVER	
31		RETAINING RING	
32		DEEP GROOVE BALL BEARING	
33		CLUTCH	
34	PA5110	SPACER	
35		HEX. SOC. HD. SCREW	
36		CLUTCH	
37		HEX. SOC. HD. SCREW	
38	PA5009	WORM WHEEL	
39		DEEP GROOVE BALL BEARING	
40	PA5108	CLUTCH	

## APRON ASSY.

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Item	No Part No.	Description	Remark
41		DEEP GROOVE BALL BEARING	
42		KEY	
43	PA5105	SHAFT	
44	PA5007	SPUR GEAR	
45		DEEP GROOVE BALL BEARING	
46	PA5006	SPUR GEAR	
47		RETAINING RING	
48		DEEP GROOVE BALL BEARING	
49		SNAP RING	
50		DEEP GROOVE BALL BEARING	
51	PA5111	COVER	
52		SNAP RING	
53	PA5004	SPUR GEAR	
54		DEEP GROOVE BALL BEARING	
55		DEEP GROOVE BALL BEARING	
56		KEY	
57	PA5003	SPUR GEAR	
58		OIL SEAL	
59	PA5013	COLLAR	
60		DEEP GROOVE BALL BEARING	
61	PA5012	SPUR GEAR	
62		DEEP GROOVE BALL BEARING	
63		OIL SEAL	
64		PLUG	
65	PA5014-A	SHAFT	
66		RETAINING RING	
67		DEEP GROOVE BALL BEARING	
68	PA5115	SPUR GEAR	
69		SNAP RING	
70		DEEP GROOVE BALL BEARING	
71	PA5016	SPUR GEAR	
72		DEEP GROOVE BALL BEARING	
73		SNAP RING	
74	PA5017	SPUR GEAR	
75		HEX. SOC. HD. SCREW	
76		MOTOR	
77		KEY	
78		OIL SEAL	
79		DEEP GROOVE BALL BEARING	
80	PA5018-A	WORM	

## APRON ASSY.

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Item.	No Part No.	Description	Remark
81		KEY	
82	PA5020	SPUR GEAR	
83		DEEP GROOVE BALL BEARING	
84		THRUST BALL BEARING	
85		O RING	
86	PA5025	BUSHING	
87		HEX. SOC. HD. SCREW	
88		THRUST BALL BEARING	
89		LOCK NUT	
90		LOCK WASHER	
91		LOCK NUT	
92		O RING	
93	PA5026	COVER	
94		HEX. SOC. HD. SCREW	
95		HEX. SOC. RD. SCREW	
96	PA5072R	NAME PLATE	
97		HEX. SOC. HD. SCREW	
98		SET SCREW	
99	PA5037-A	OUTTER STEM	
100	PA2061-A	LEVER	
101		NUT	
102		HEX. SOC. HD. SCREW	
103		HEX. SOC. HD. SCREW	
104		SET SCREW	
105		NUT	
106	PA5027	COVER	
107		NAME PLATE	
108		PIN	
109	PA5039-1	LOWER CAM	
110	PA5040	LOWER CAM	
111		SNAP RING	
112		HEX. SOC. HD. SCREW	
113		WASHER	
114	PA2052	LEVER	
115	PA5028	HAND WHEEL	
116	PA5029	CLUTCH	
117		HEX. SOC. HD. SCREW	
118	PA5031	GRADUATION	
119		SNAP RING	
120	PA5030	CLUTCH	

## APRON ASSY.

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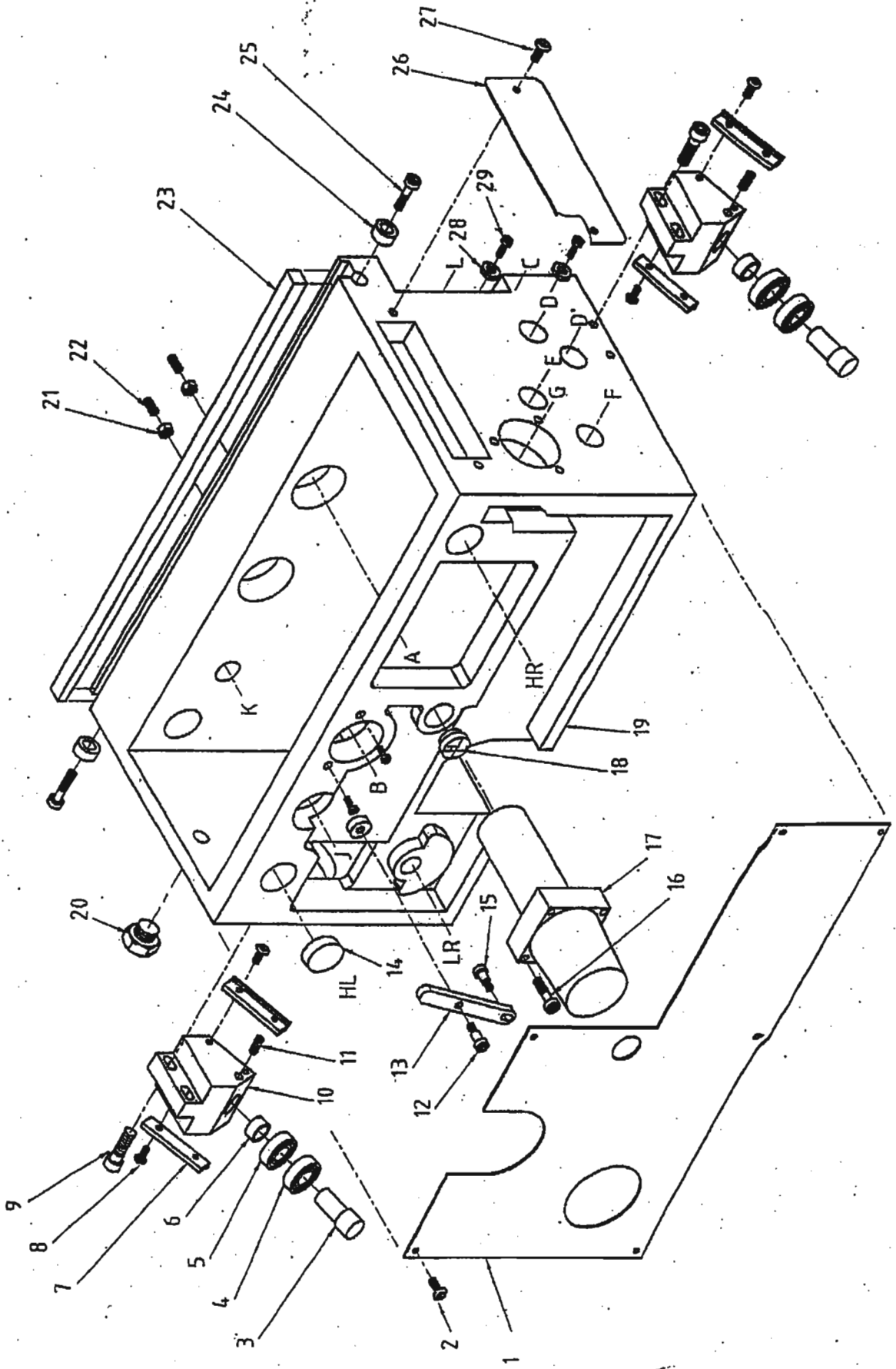
Item	No Part No.	Description	Remark
121		DEEP GROOVE BALL BEARING	
122		OIL SEAL	
123		SET SCREW	
124		SPRING	
125		STEEL BALL	
126		DEEP GROOVE BALL BEARING	
127		KEY	
128	PA5033	SHAFT	
129		KEY	
130	PA5034	SPUR GEAR	
131		DEEP GROOVE BALL BEARING	
132	PA5035	COVER	
133		SPRING	
134		SET SCREW	
135	PA5047	PIN	
136		SPRING	
137		SET SCREW	
138		KEY	
139		HEX. SOC. HD. SCREW	
140		SET SCREW	
141		SPRING	
142		STEEL BALL	
143	PA5052R	STEM	
144		SET SCREW	
145	PA5053-A	SHAFT	
146		HEX. SOC. HD. SCREW	
147	PA5158	RACK GEAR	
148	PA5055	HOUSING	
149	PA5056M	NUT	METRIC
149	PA5056I	NUT	INCH
150		SPRING PIN	
151	PA2061	LEVER	
152		HEX. SOC. HD. SCREW	
153	PA5157	RACK GEAR	
154	PA5059	GIB	
155		HEX. SOC. HD. SCREW	
156		COVER	
157		HEX. SOC. HD. SCREW	
158		SET SCREW	
159		SPRING	

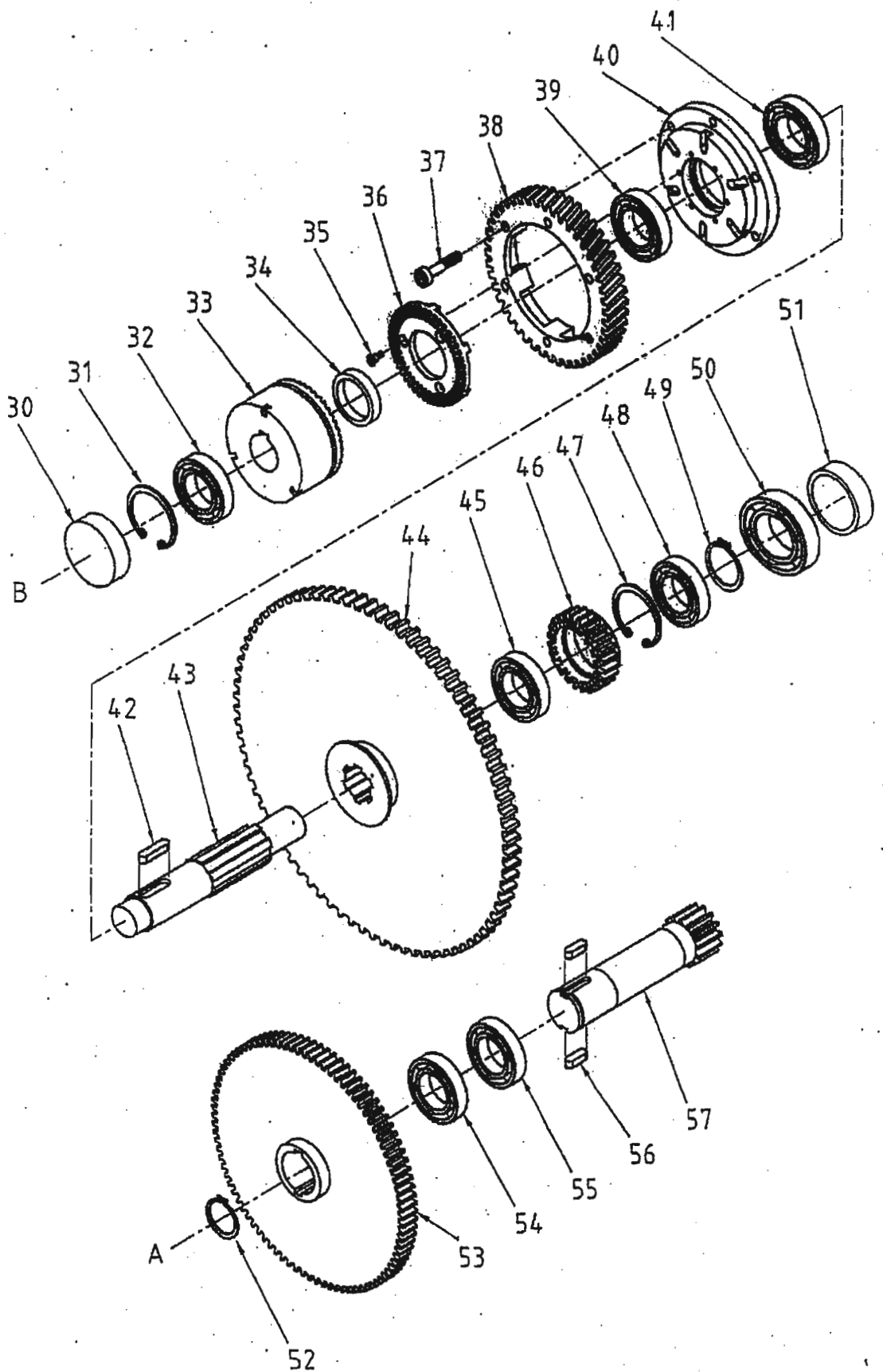


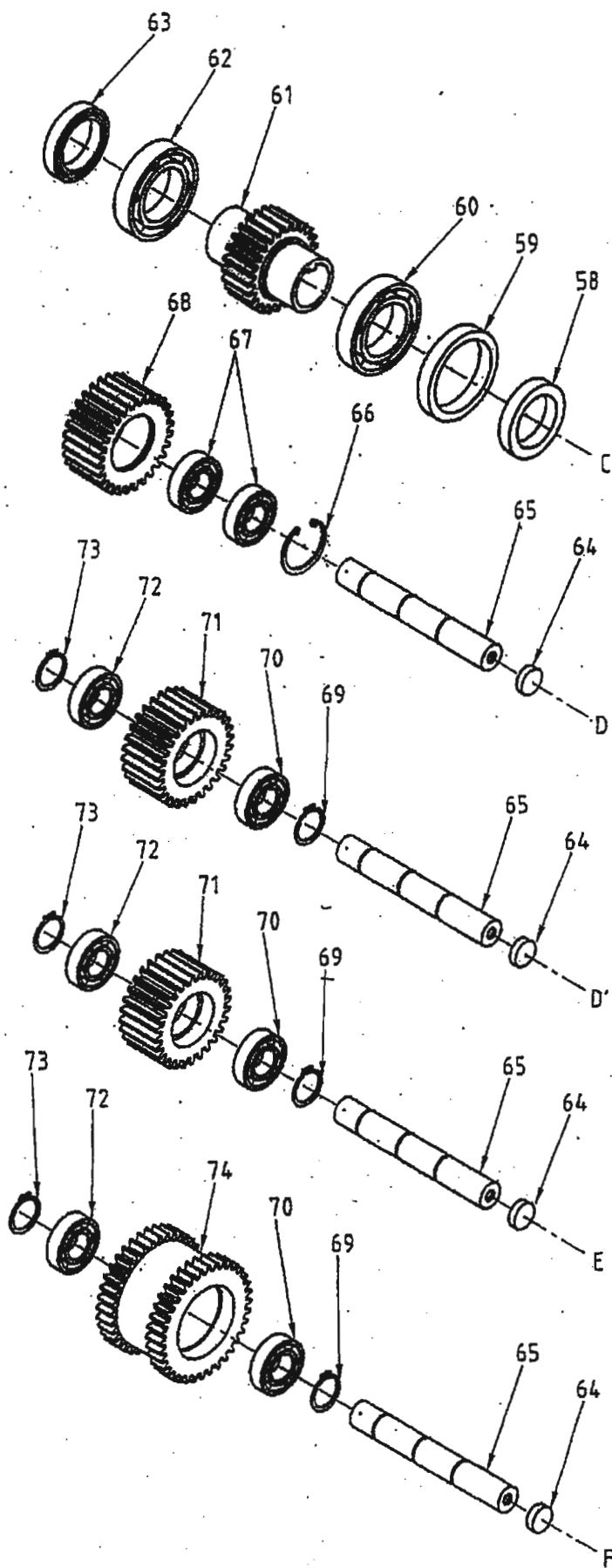
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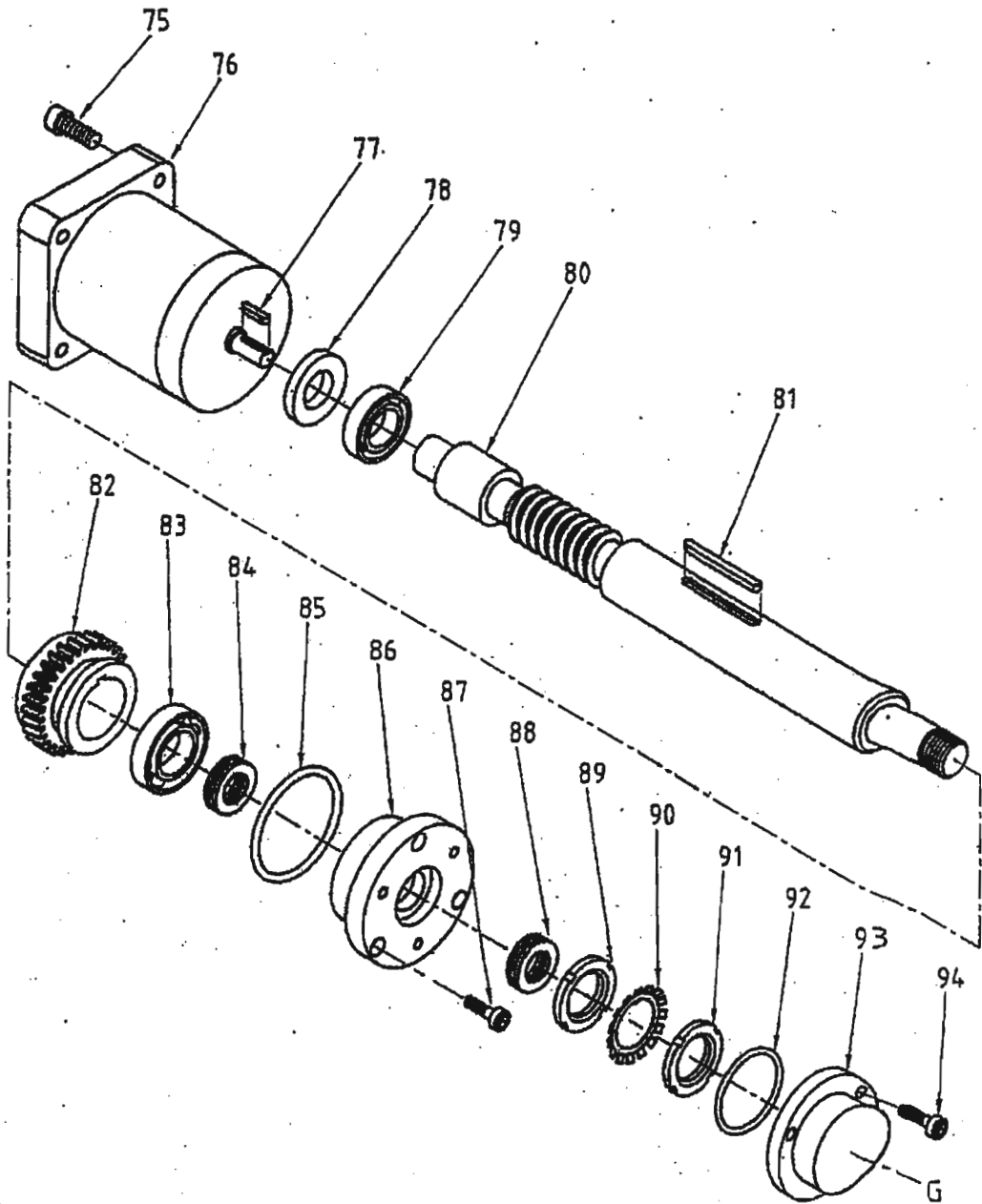
ITEM: 5000 PAGE: 5/17

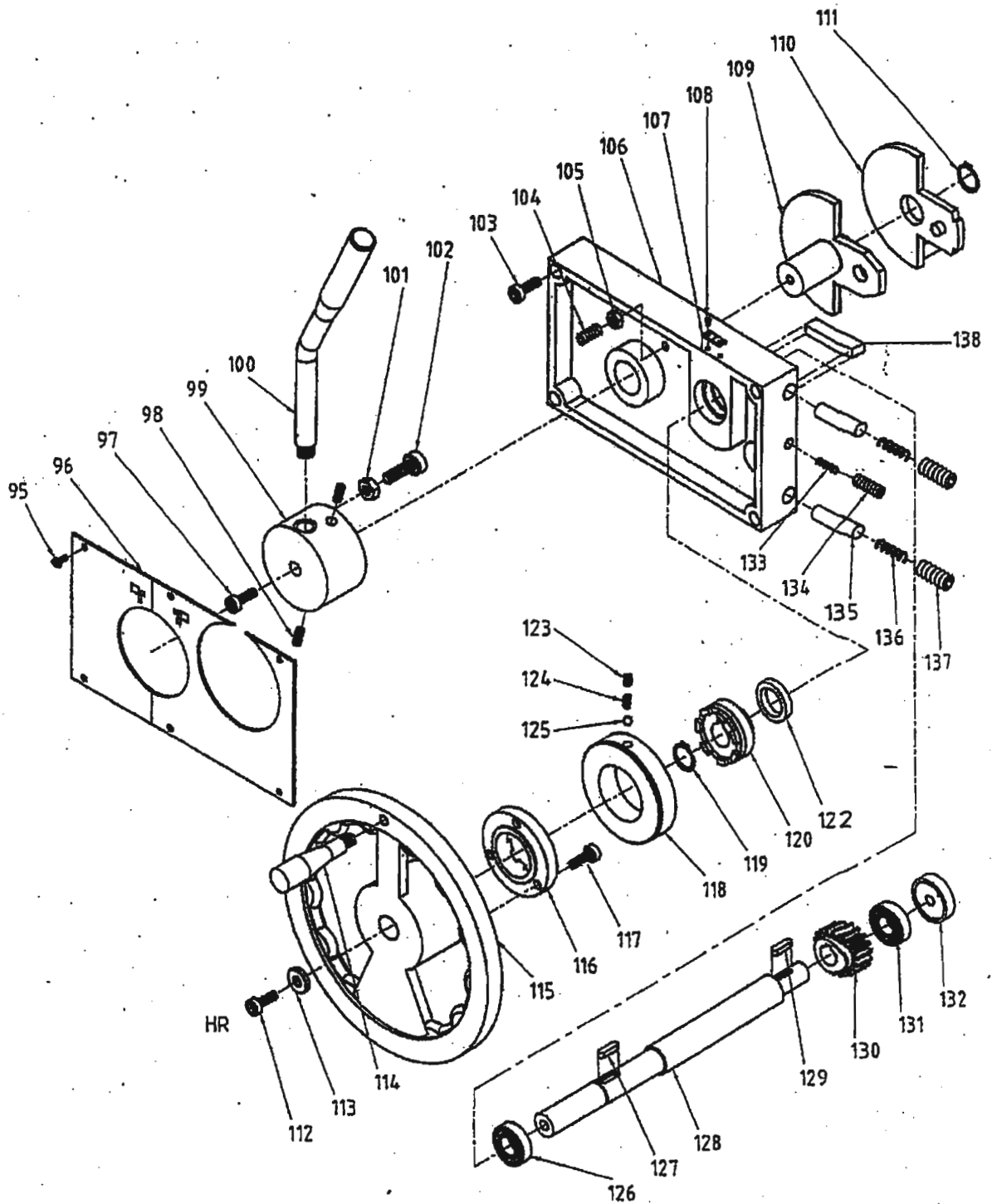
Item	No Part No.	Description	Remark
160		STEEL BALL	
161		HEX. SOC. HD. SCREW	
162		SET SCREW	
163	PA5051	SHIFT FORK	
164	PA5048R	LEVER	
165		HEX. SOC. HD. SCREW	
166	PA5049	BUSHING	
167		SPRING PIN	
168	PA5050	SHAFT	
169	PA5082	SHAFT	
170	PA5085	SHAFT	
171	PA5052L	STEM	
172	PA5037-B	STEM	
173		PIN	
174		HEX. SOC. HD. SCREW	
175		HEX. SOC. RD. SCREW	
176	PA5077	COVER	
177	PA5075	BUSHING	
178		HEX. SOC. HD. SCREW	
179	PA5076A	SAFETY ROD	
180	PA5090	LINK ROD	
181		HEX. SOC. HD. SCREW	
182		PNEUMATIC CYLINDER	
183		HEX. SOC. HD. SCREW	
184	PA5083	PLATE	
185		NUT	
186		HEX. SOC. HD. SCREW	
187		SUPPORT PLATE	
188	PA5071L	NAME PLATE	
189	PA5101	APRON	
190		PLUC	
191		HEX. SOC. HD. SCREW	
192	PA5032L	BUSHING	
193		SNAP RING	
194	PA5068	SHAFT	
195		DEEP GROOVE BALL BEARING	
196	PA5069	SPUR GEAR	
197		DEEP GROOVE BALL BEARING	
198		PLUC	

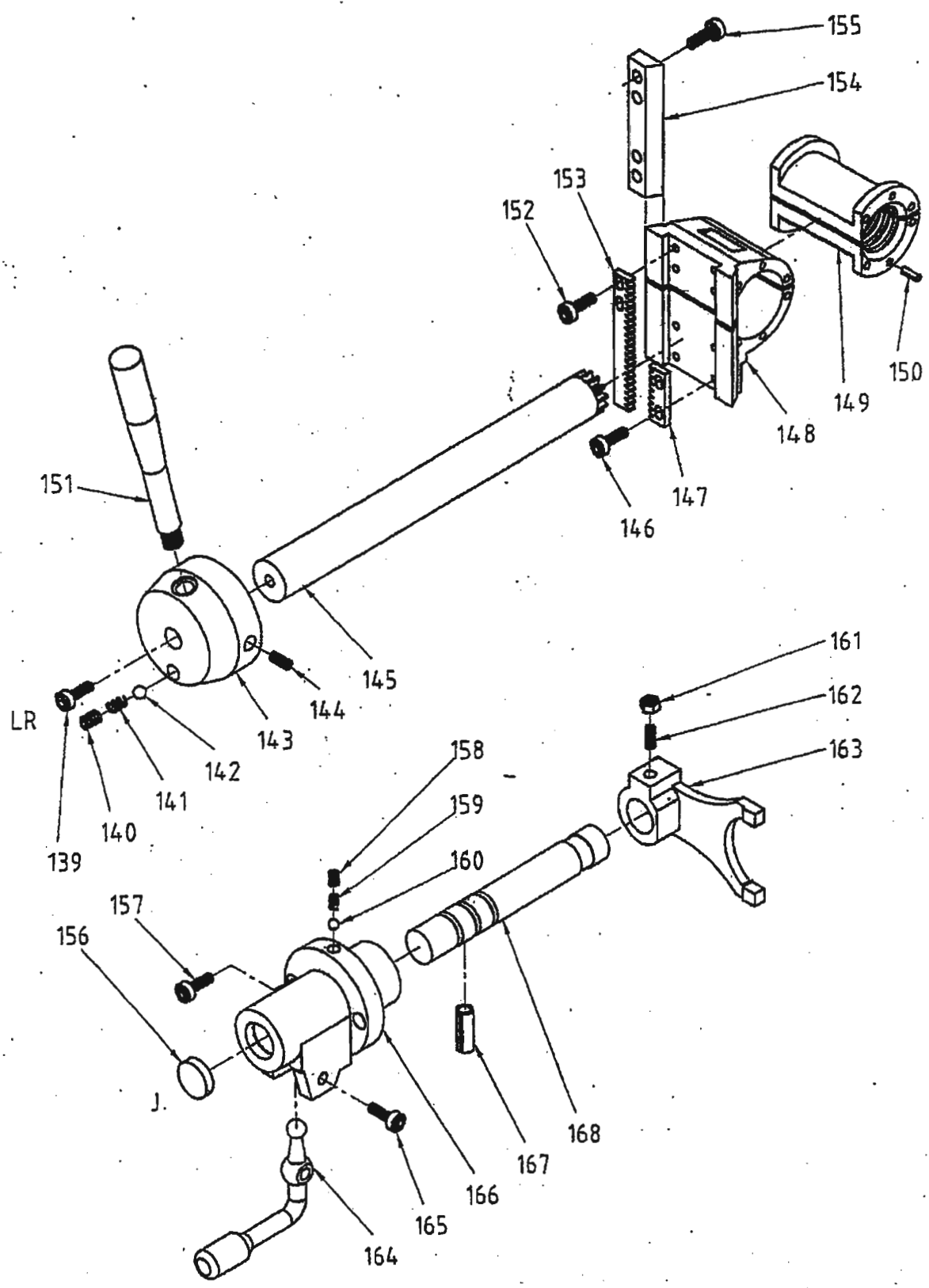




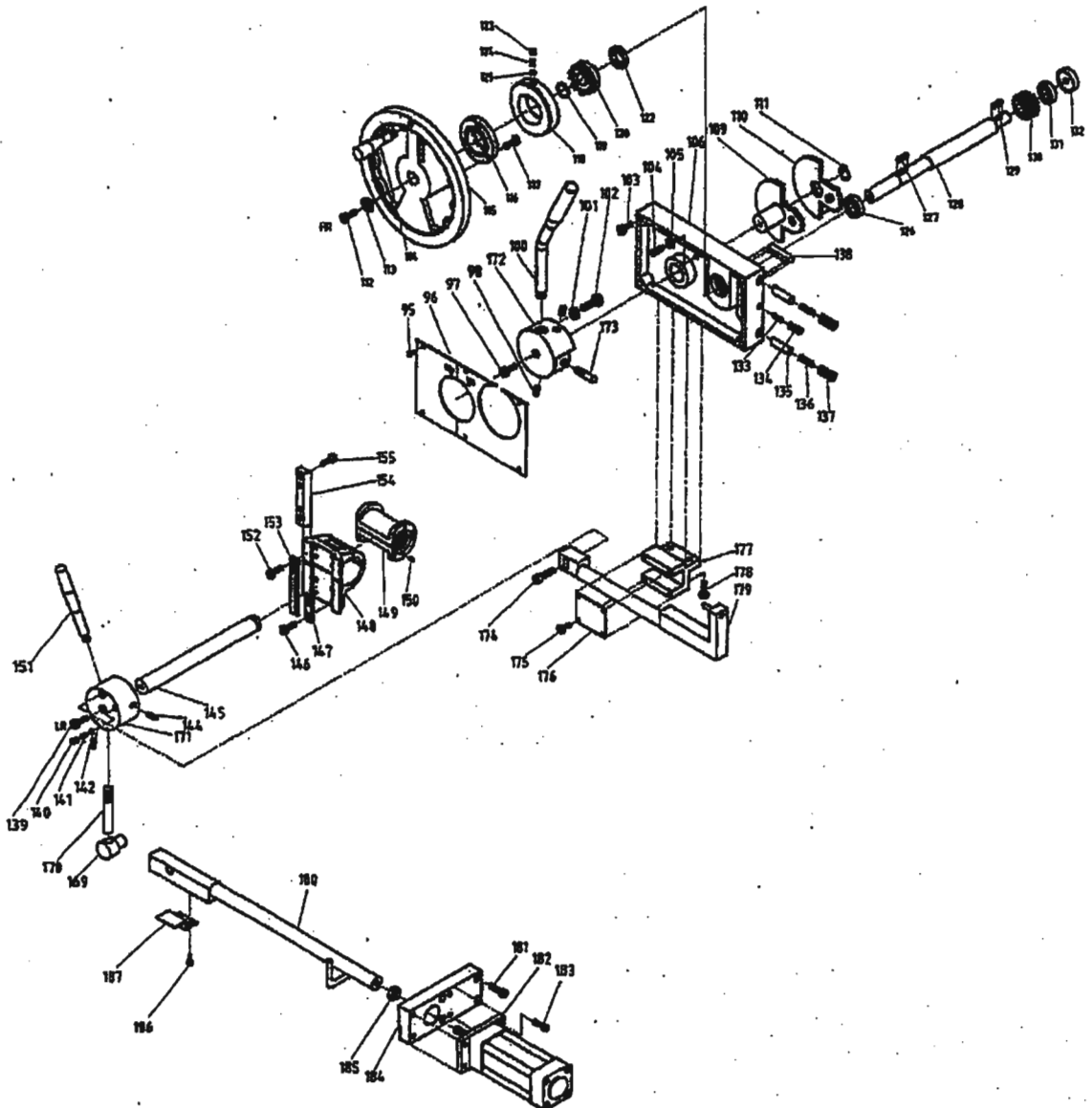






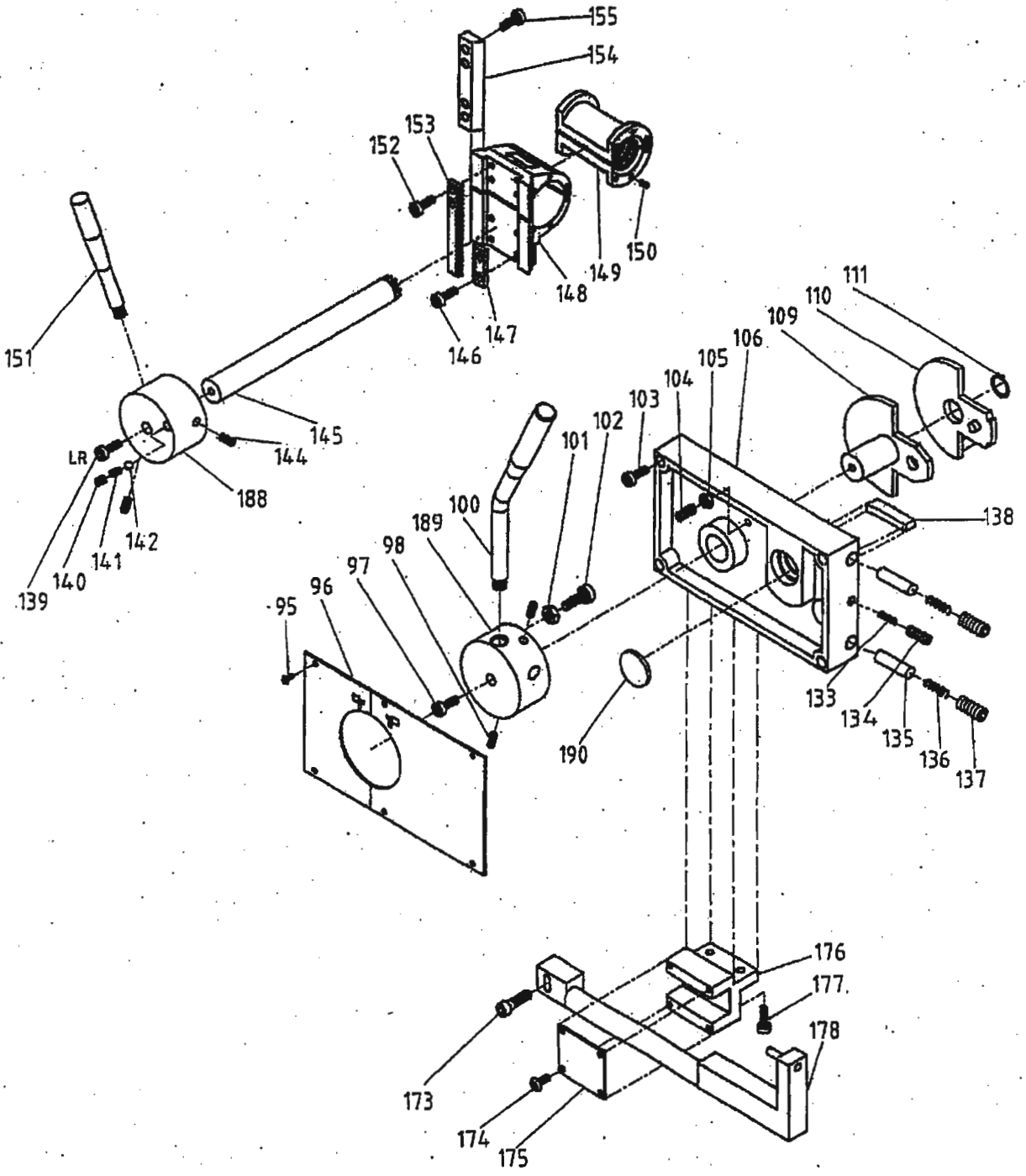


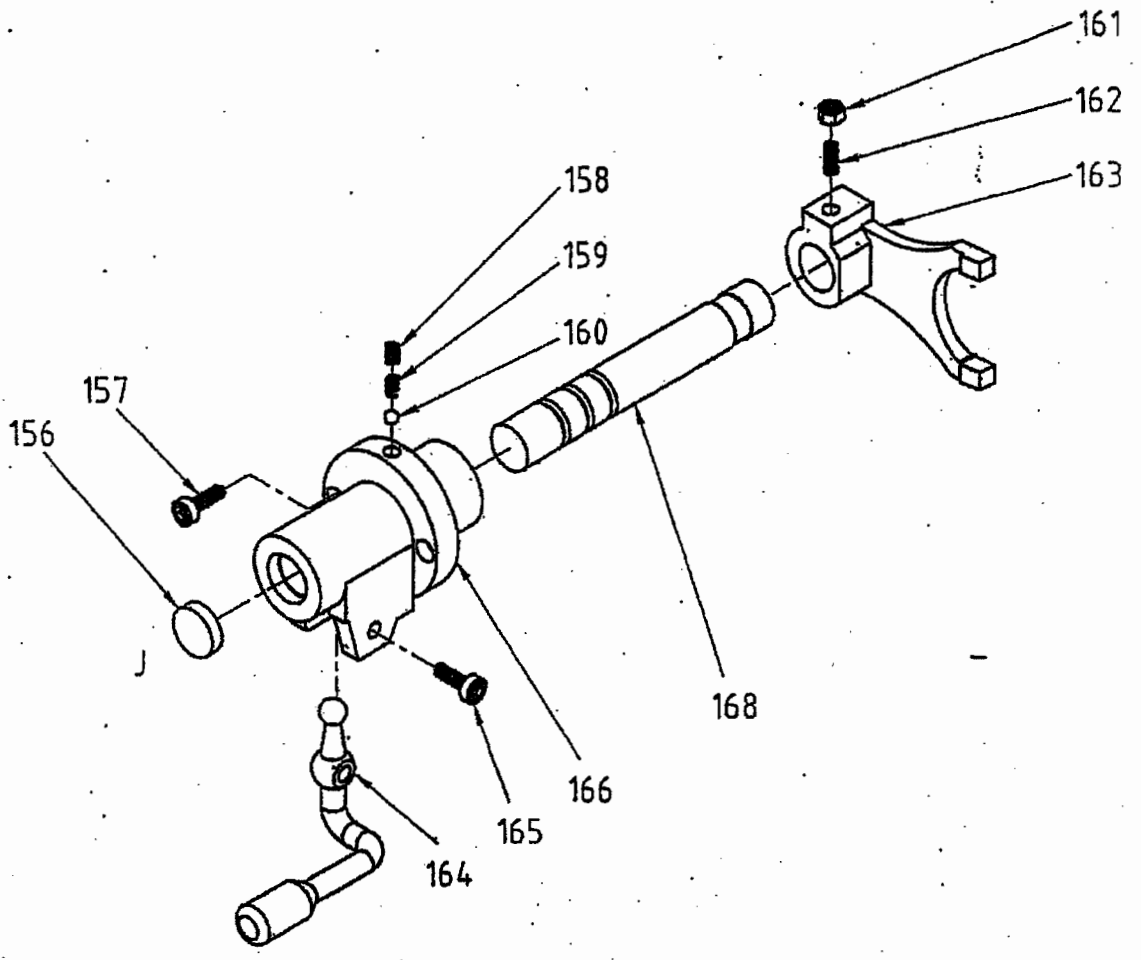
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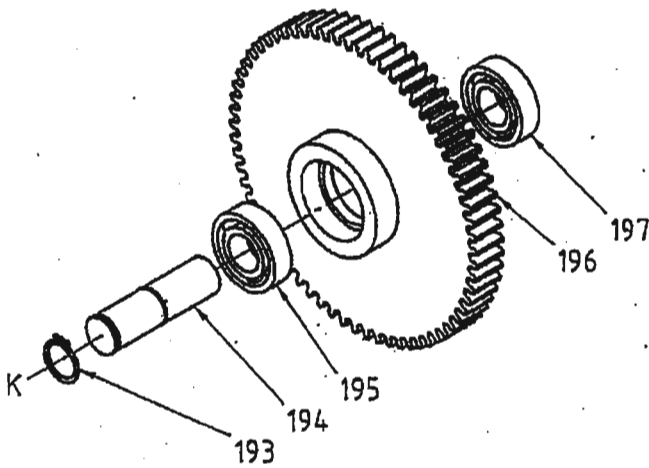
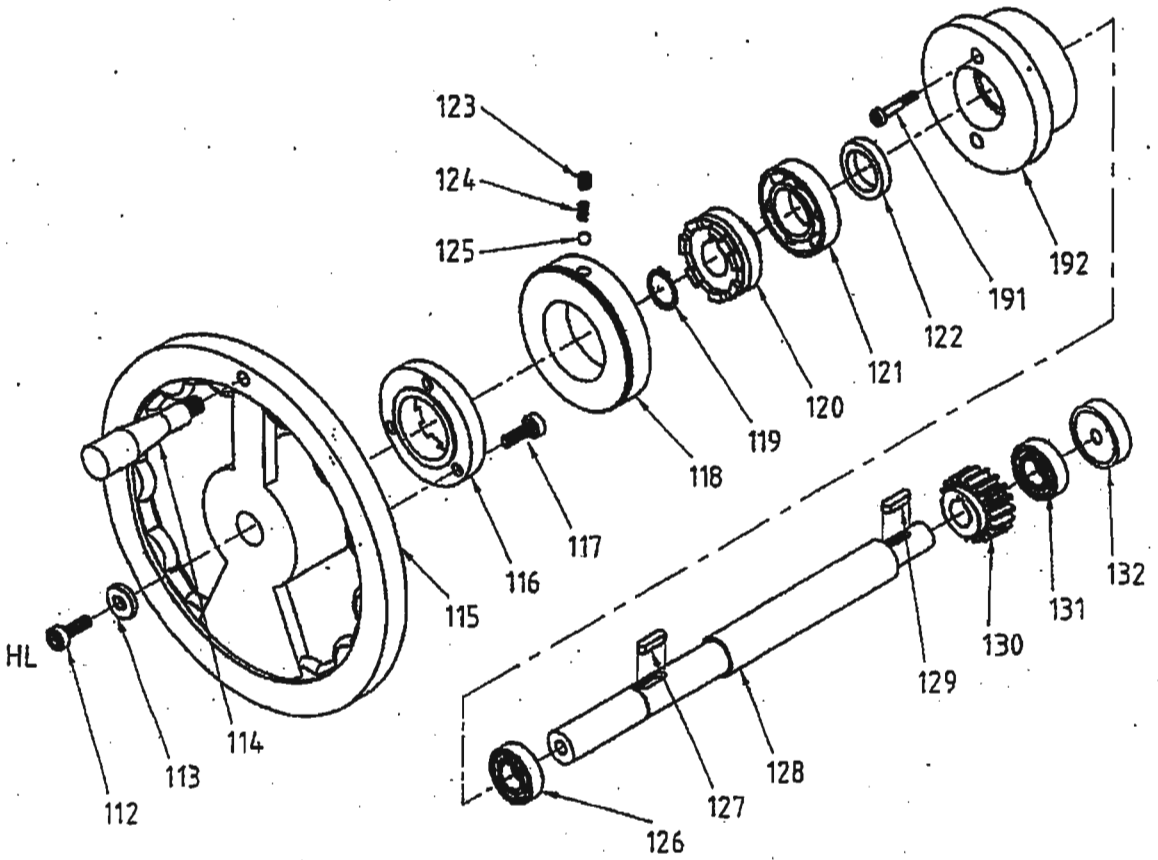




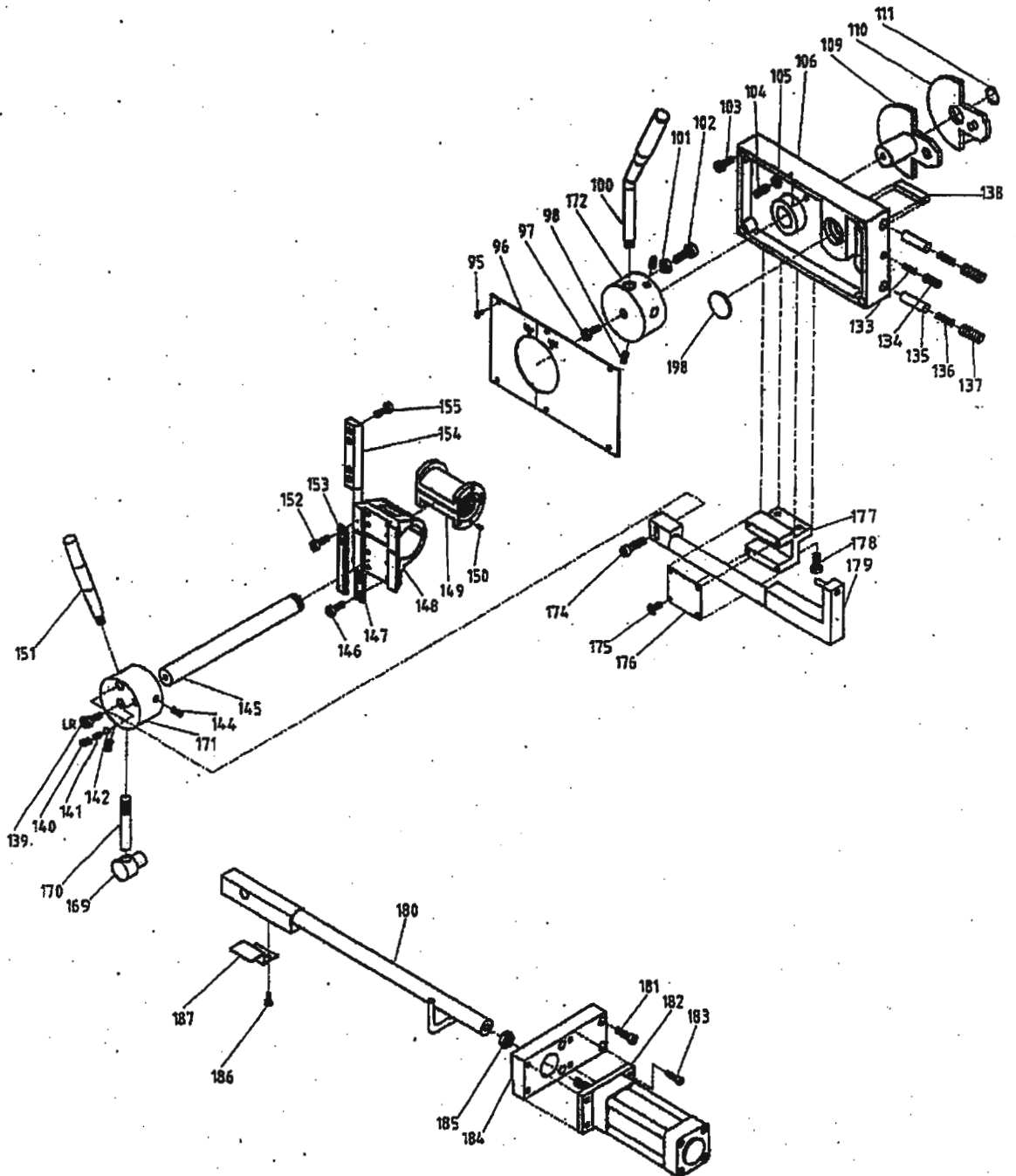




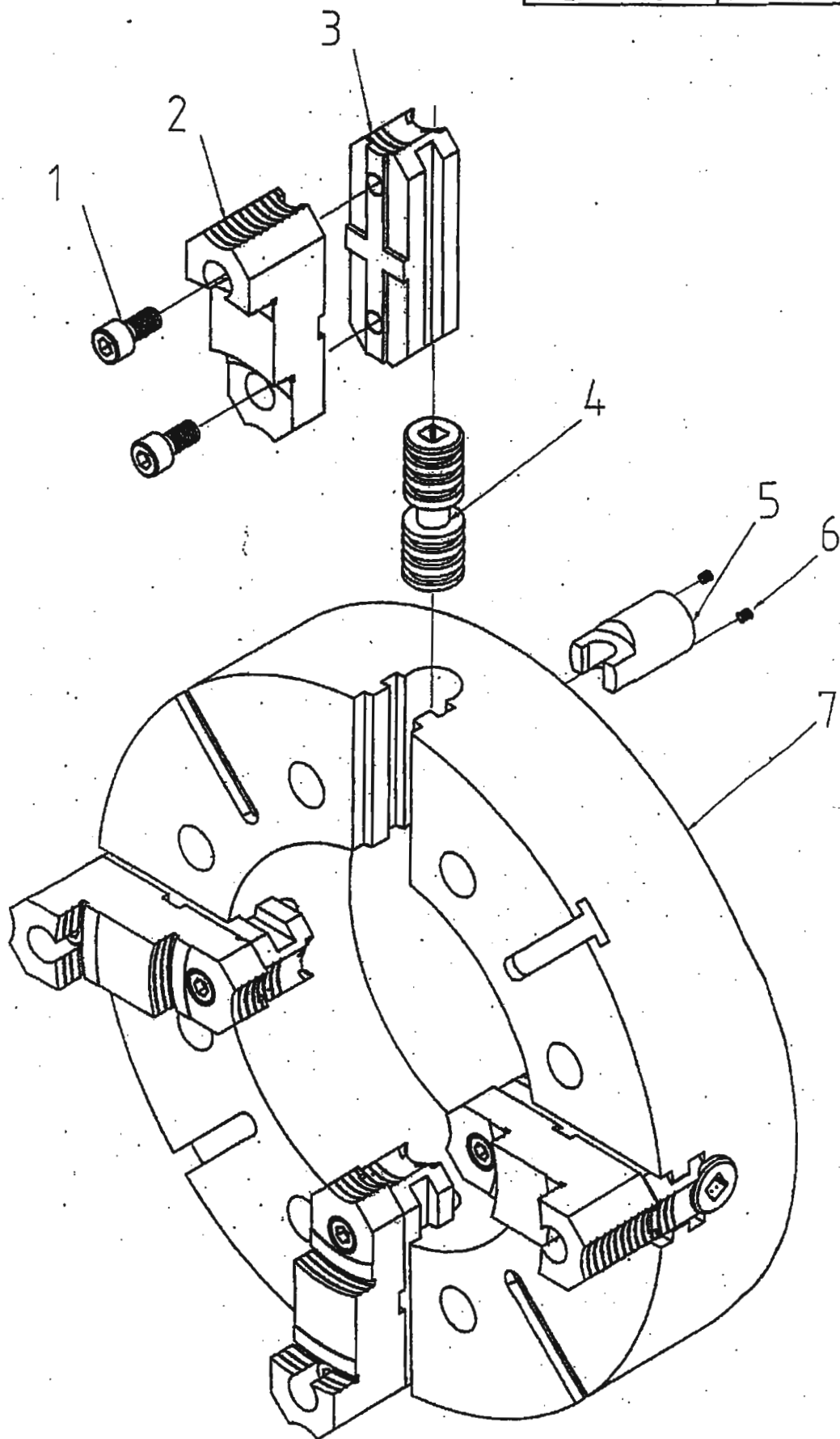


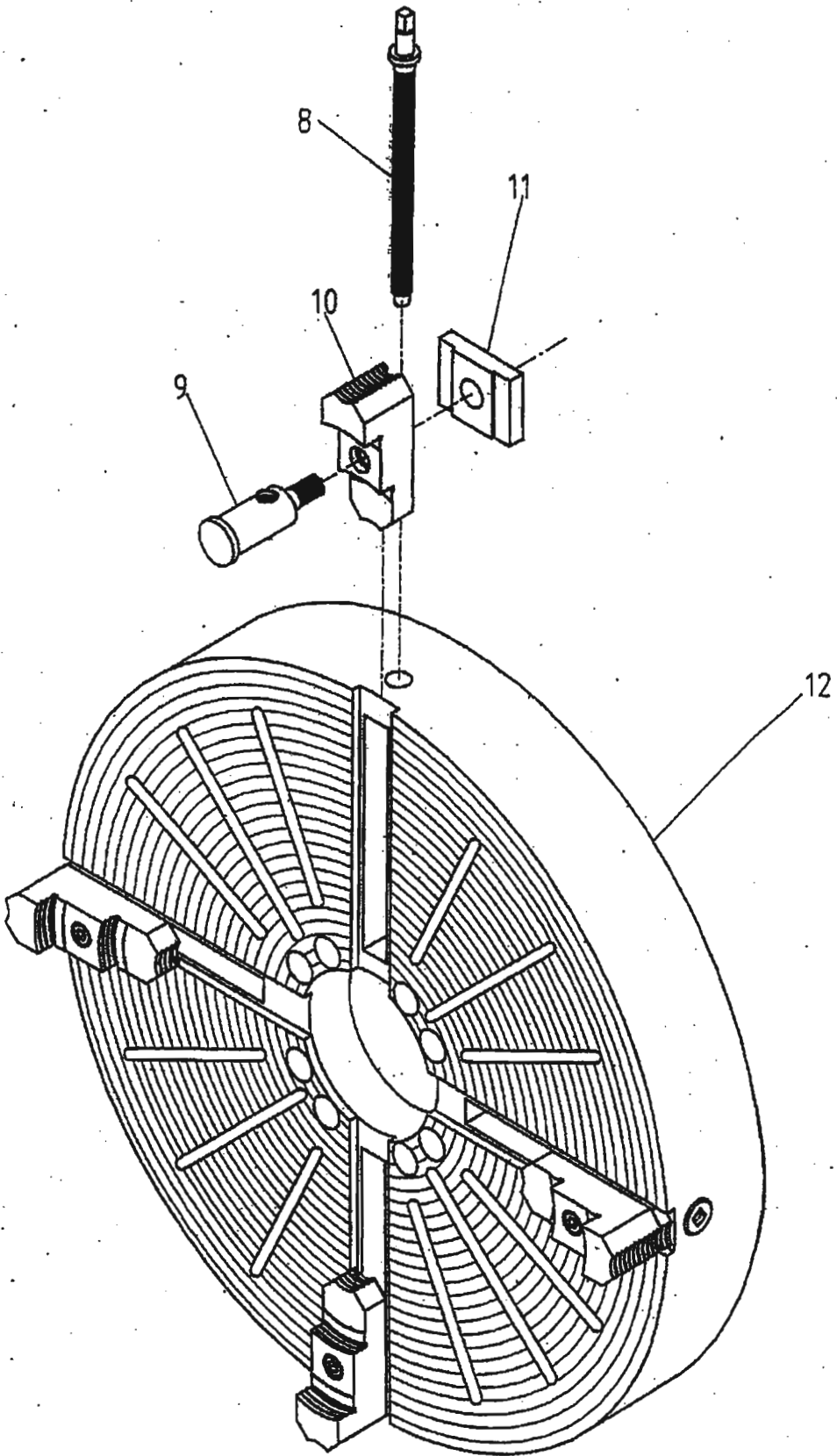


# SEMI-AUTOMATIC CYCLETURNING AND THREADING











## GEAR BOX ASSY.

ITEM:7000

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Item	No Part No.	Description	Remark
1		HEX. SOC. RD. SCREW	
2	PA7002	COVER	
3	PA7001	HOUSING	
4		HEX. SOC. HD. SCREW	
5		PLUG	
6	PA7043	ROCK ARM L1, L2, L3	
7		O RING	
8	PA2069	BUSHING	
9		OIL SEAL	
10		HEX. SOC. HD. SCREW	
11	PA2068	STEM	
12	PA2052	LEVER	
13		HEX. SOC. HD. SCREW	
14	PA7052	NAME PLATE	
15		HEX. SOC. RD. SCREW	
16		SET SCREW	
17		SPRING	
18		STEEL BALL	
19		SET SCREW	
20	PA7044	ROCK ARM L4	
21	PA7048	WORM GEAR L6	
22	PA7045	ROCK ARM L5	
23		OIL GUAGE	
24		SNAP RING	
25	PA7047	SPUR GEAR L6	
26		KEY	
27	PA7046	ROTATING SHAFT	
28	PA7053	SPEED CHARD	
29	PA2053	STEM	
30		SET SCREW	
31		HEX. SOC. HD. SCREW	
32		DRAIN PLUG	
33		POUR PLUG	
34		PLUG	
35		HEX. SOC. HD. SCREW	
36		WASHER	
37	PA7050	SPUR GEAR L7	
38	PA7049	SHAFT L7	
39		HEX. SOC. HD. SCREW	
40		WASHER	

## GEAR BOX ASSY.

ITEM: 7000 | PAGE: 2/9

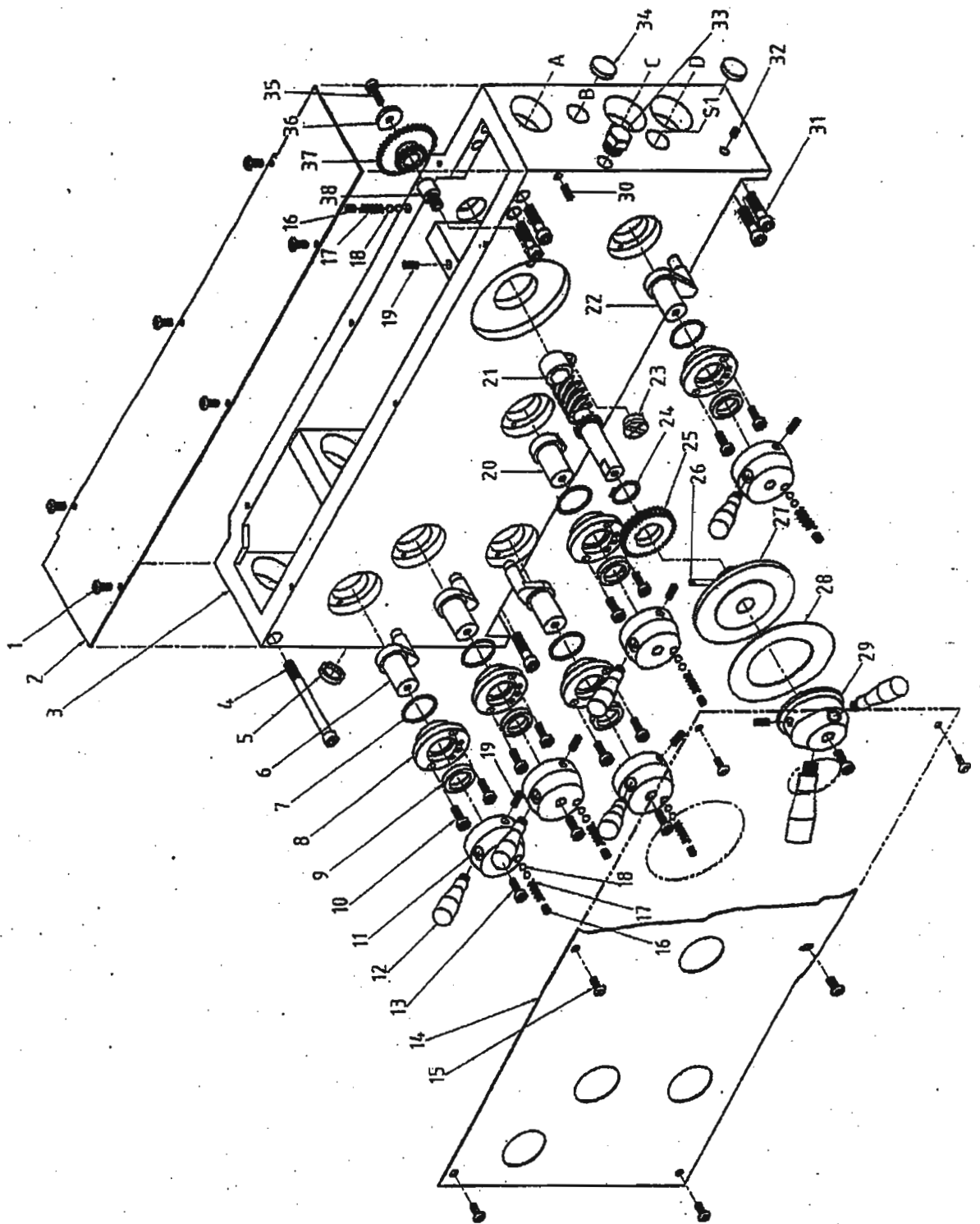
Item	No Part No.	Description	Remark
41		DEEP GROOVE BALL BEARING	
42	PA7003	BUSHING	
43		HEX. SOC. HD. SCREW	
44		DEEP GROOVE BALL BEARING	
45		KEY	
46		KEY	
47	PA7004	SHAFT A1	
48	PA7005	SPUR GEAR A1, C1	
49	PA7006	SPUR GEAR A2	
50		SNAP RING	
51		DEEP GROOVE BALL BEARING	
52		RETAINING RING	
53		DEEP GROOVE BALL BEARING	
54		SNAP RING	
55	PA7008	CAM	
56		SET SCREW	
57	PA7007	SHAFT A2	
58		SET SCREW	
59	PA7009	WORM GEAR	
60		SNAP RING	
61		DEEP GROOVE BALL BEARING	
62		BWW 6206	
63	PA7010	COVER A, B, C, D	
64	PA2018	STOP PLATE	
65		HEX. SOC. HD. SCREW	
66	PA7010	COVER A, B, C, D	
67		BWW 6206	
68		DEEP GROOVE BALL BEARING	
69	PA7011	SPLINE SHAFT B1	
70	PA7012	SPUR GEAR B1	
71		SNAP RING	
72	PA7013	SPUR GEAR B2, D1	
73		DEEP GROOVE BALL BEARING	
74	PA7014	SHAFT B2	
75	PA2046	PIN	
76	PA7015	SHAFT FORK B	
77		KEY	
78	PA7016	SHAFT C1	
79	PA7005	SPUR GEAR A1, C1	
80		SNAP RING	

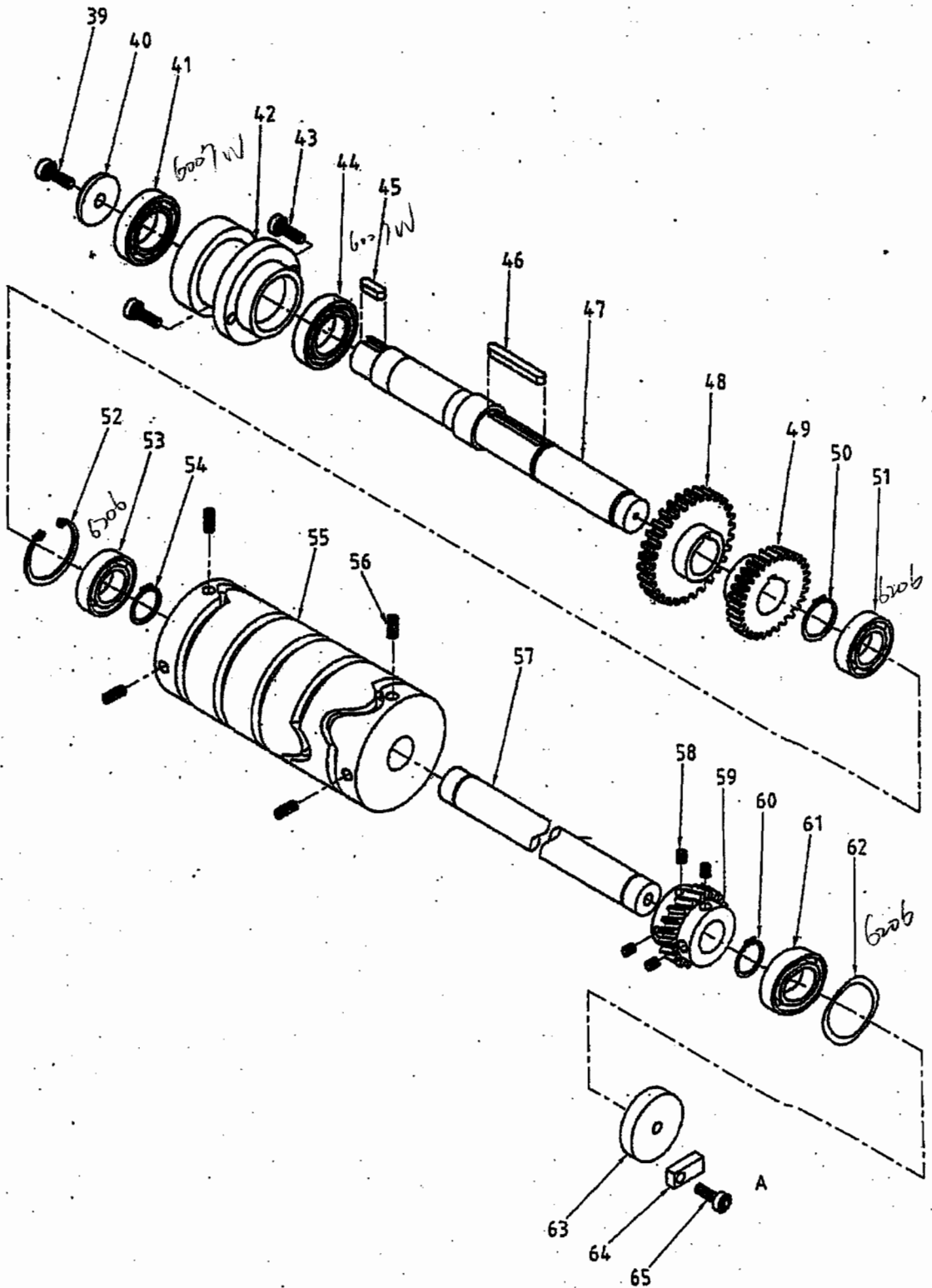
## GEAR BOX ASSY.

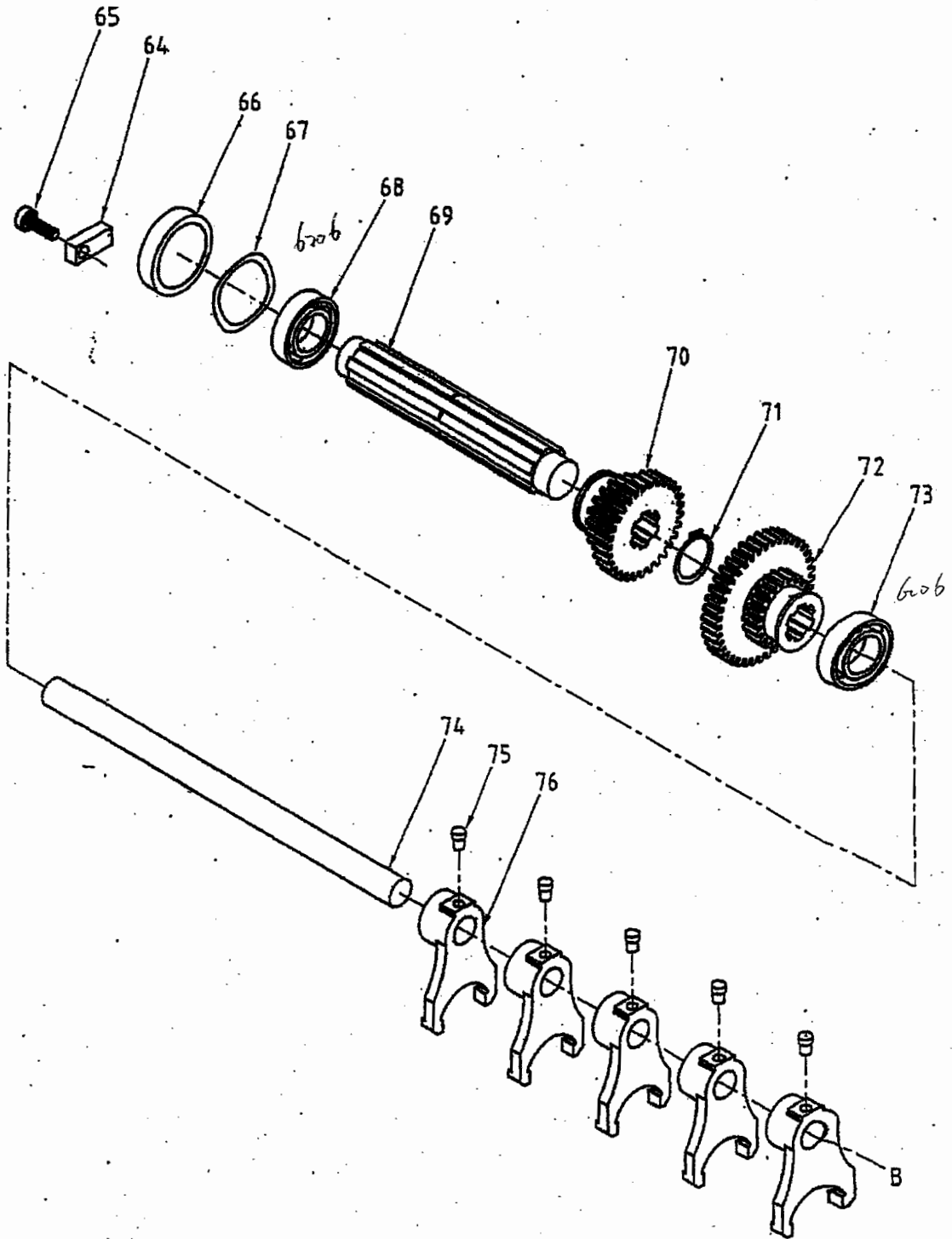
ITEM:7000 PAGE:3/9

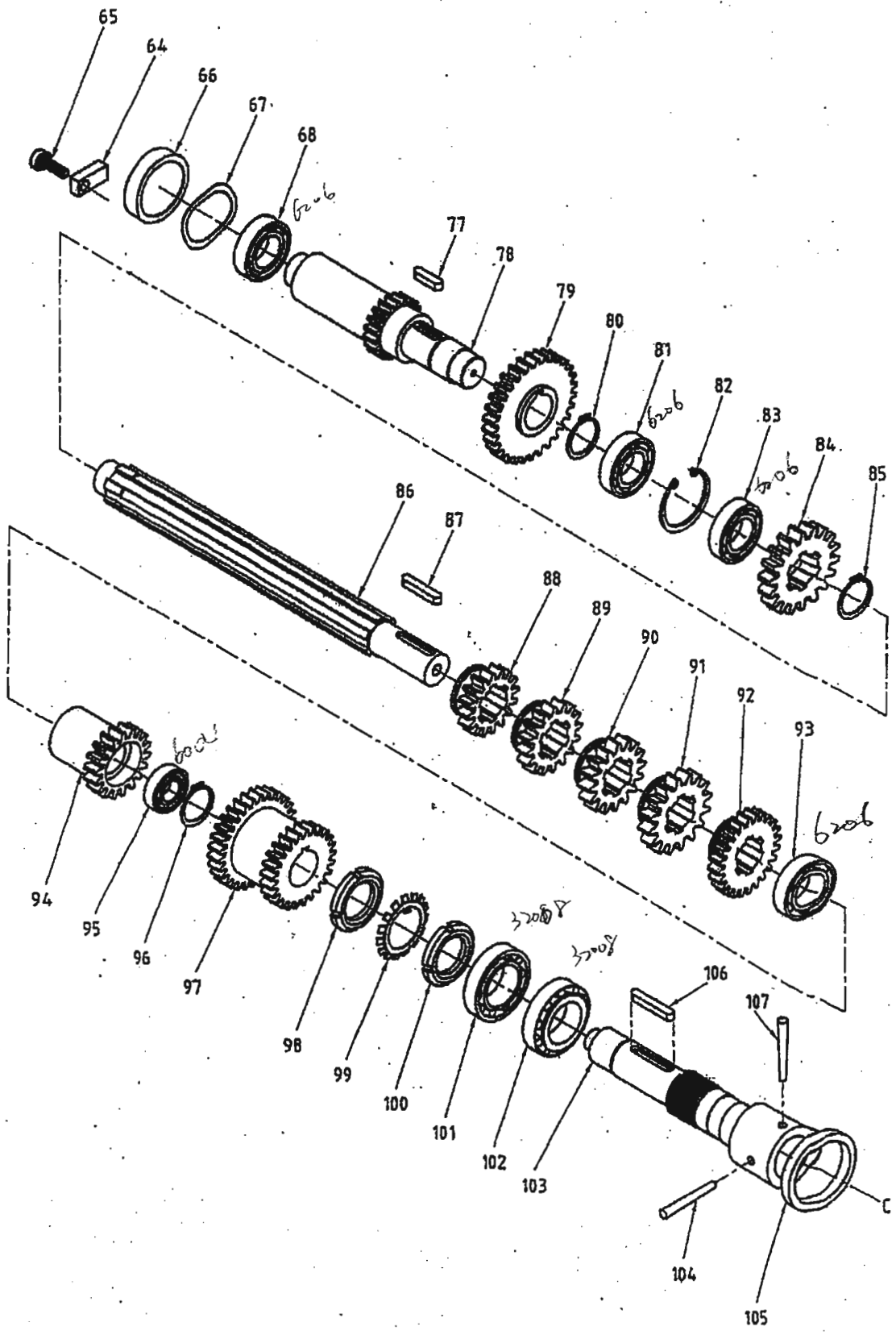
Item	No Part No.	Description	Remark
81		DEEP GROOVE BALL BEARING	
82		RETAINING RING	
83		DEEP GROOVE BALL BEARING	
84	PA7018M	SPUR GEAR C3	METRIC
84	PA7018I	SPUR GEAR C3	INCH
85		SNAP RING	
86	PA7017	SPLINE SHAFT C2	
87		KEY	
88	PA7019	SPUR GEAR C4	
89	PA7020	SPUR GEAR C5	
90	PA7021	SPUR GEAR C6	
91	PA7022	SPUR GEAR C7	
92	PA7023	SPUR GEAR C8	
93		DEEP GROOVE BALL BEARING	
94	PA7024M	SPUR GEAR C9	METRIC
94	PA7024I	SPUR GEAR C9	INCH
95		DEEP GROOVE BALL BEARING	
96		SNAP RING	
97	PA7026	SPUR GEAR C10	
98		LOCKNUT AN08	
99		LOCK WASHER AW08	
100		LOCKNUT AN08	
101		TAPER ROLLER BEARING	
102		TAPER ROLLER BEARING	
103	PA7025	SHAFT C3	
104		TAPER PIN	
105		OIL SEAL	
106		KEY	
107		TAPER PIN	
108	PA7027	SPLINE D1	
109	PA7013	SPUR GEAR B2, D1	
110	PA7028	SPUR GEAR D2	
111		DEEP GROOVE BALL BEARING	
112	PA7030	CLUTCH	
113		NEEDLE ROLLER BEARING	
114		KEY	
115		KEY	
116	PA7029	SHAFT D2	
117	PA7031	SPUR GEAR D3	
118	PA7032	SPUR GEAR D4	



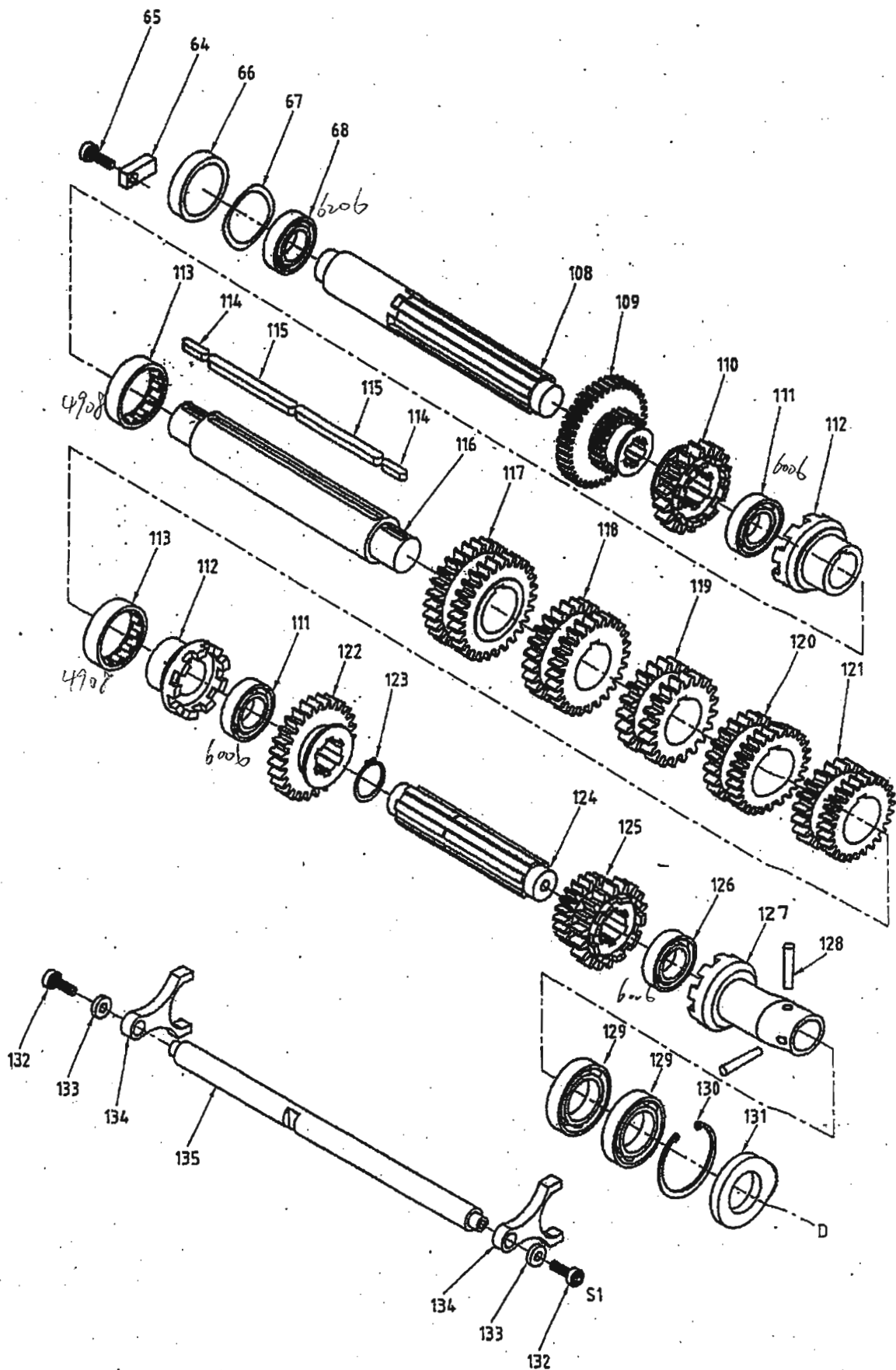










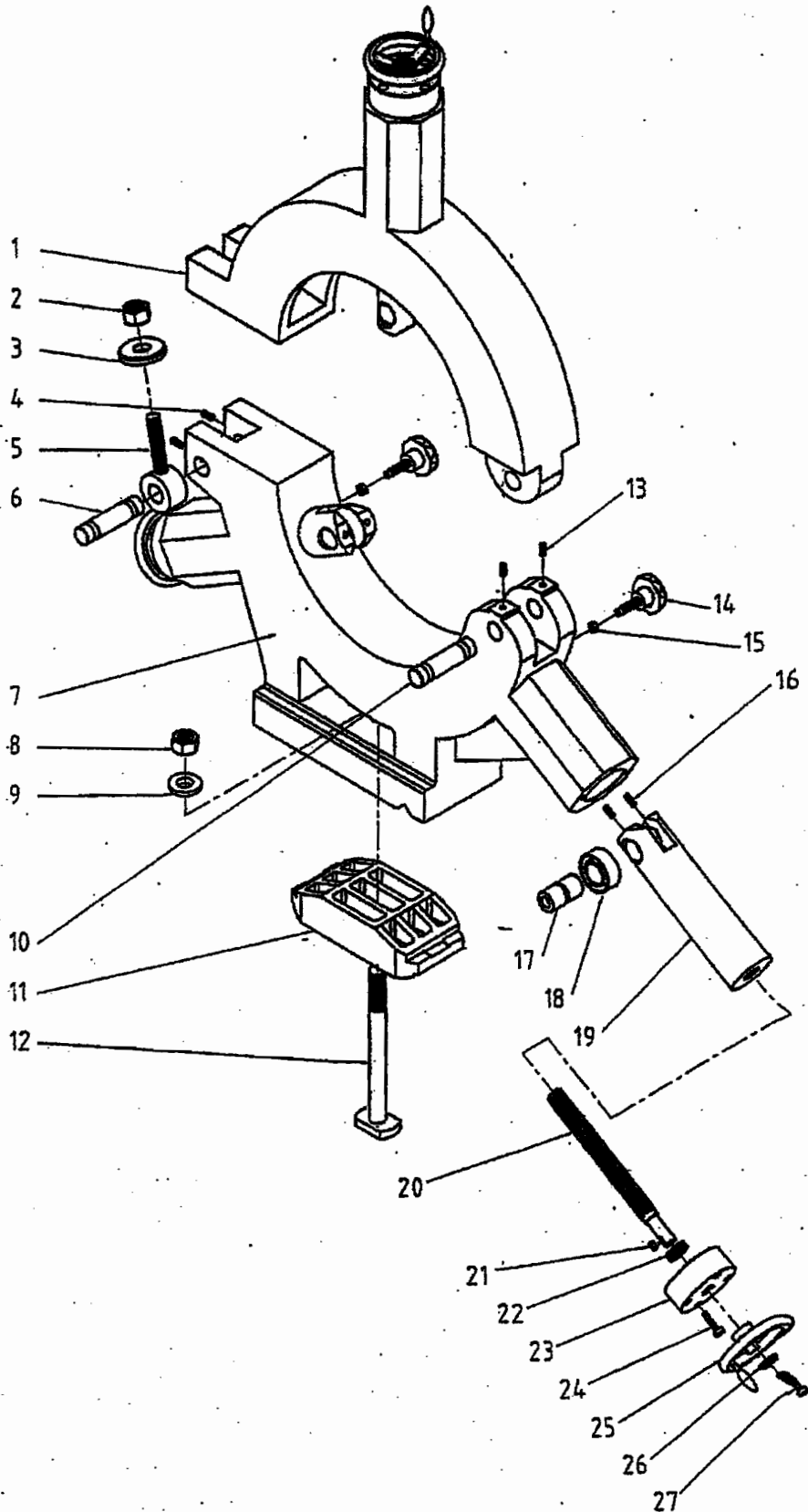


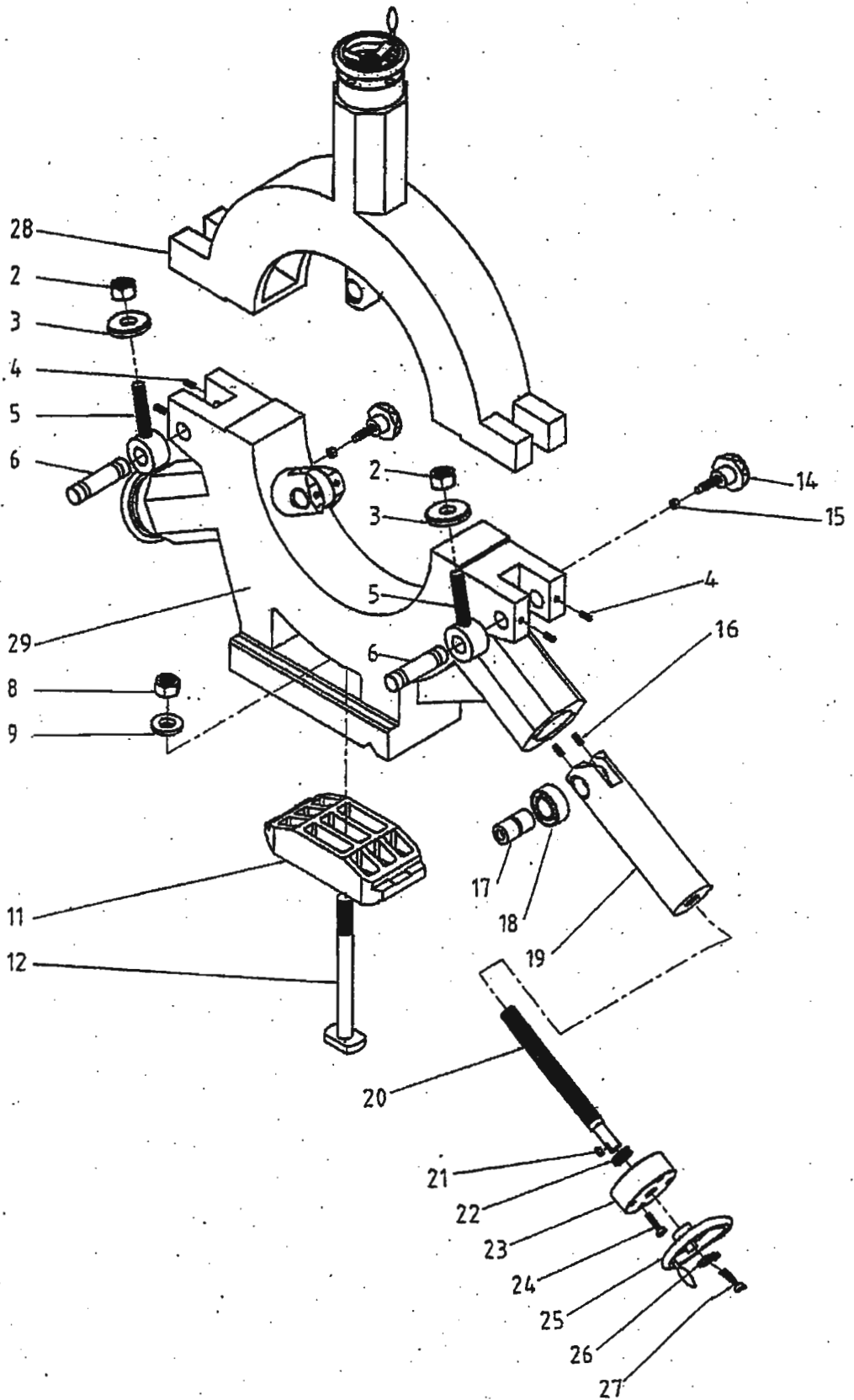
## STEADYREST ASSY.

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Item	No Part No.	Description	Remark
1	PA8002	STEADY BODY	φ30mm~φ400mm
1	PA8002A	STEADY BODY	φ350mm~φ700mm
2	PA4021	NUT	
3	PA8012	WASHER	
4		SET SCREW	
5	PA8008	SCREW	
6	PA8010	SHAFT	
7	PA8001-A	STEADY BASE	φ30mm~φ400mm(PA35)
7	PA8001-B	STEADY BASE	φ30mm~φ400mm(PA40)
7	PA8001-C	STEADY BASE	φ30mm~φ400mm(PA45)
7	PA8001-D	STEADY BASE	φ30mm~φ400mm(PA50)
7	PA8001A-A	STEADY BASE	φ350mm~φ700mm(PA35)
7	PA8001A-B	STEADY BASE	φ350mm~φ700mm(PA40)
7	PA8001A-C	STEADY BASE	φ350mm~φ700mm(PA45)
7	PA8001A-D	STEADY BASE	φ350mm~φ700mm(PA50)
8	PA4021	NUT	
9	PA1022	WASHER	
10	PA8010	SHAFT	
11	PA4019	CLAMPING LUMP	
12	PA8009	SCREW	
13		SET SCREW	
14	PA8011	SCREW	
15		NUT	
16		SET SCREW	
17	PA8005	SHAFT	
18		DEEP GROOVE BALL BEARING	
19	PA8003	SHAFT	
20	PA8004	SCREW	
21		KEY	
22		THRUST BALL BEARING	
23	PA8006	COVER	
24		HEX. SOC. HD. SCREW	
25	PA8007	HANDLE	
26		WASHER	
27		HEX. SOC. HD. SCREW	
28	PA8002B	STEADY BODY	φ30mm~φ400mm
28	PA8002C	STEADY BODY	φ350mm~φ700mm
29	PA8001B-A	STEADY BASE	φ30mm~φ400mm(PA35)
29	PA8001B-B	STEADY BASE	φ30mm~φ400mm(PA40)
29	PA8001B-C	STEADY BASE	φ30mm~φ400mm(PA45)





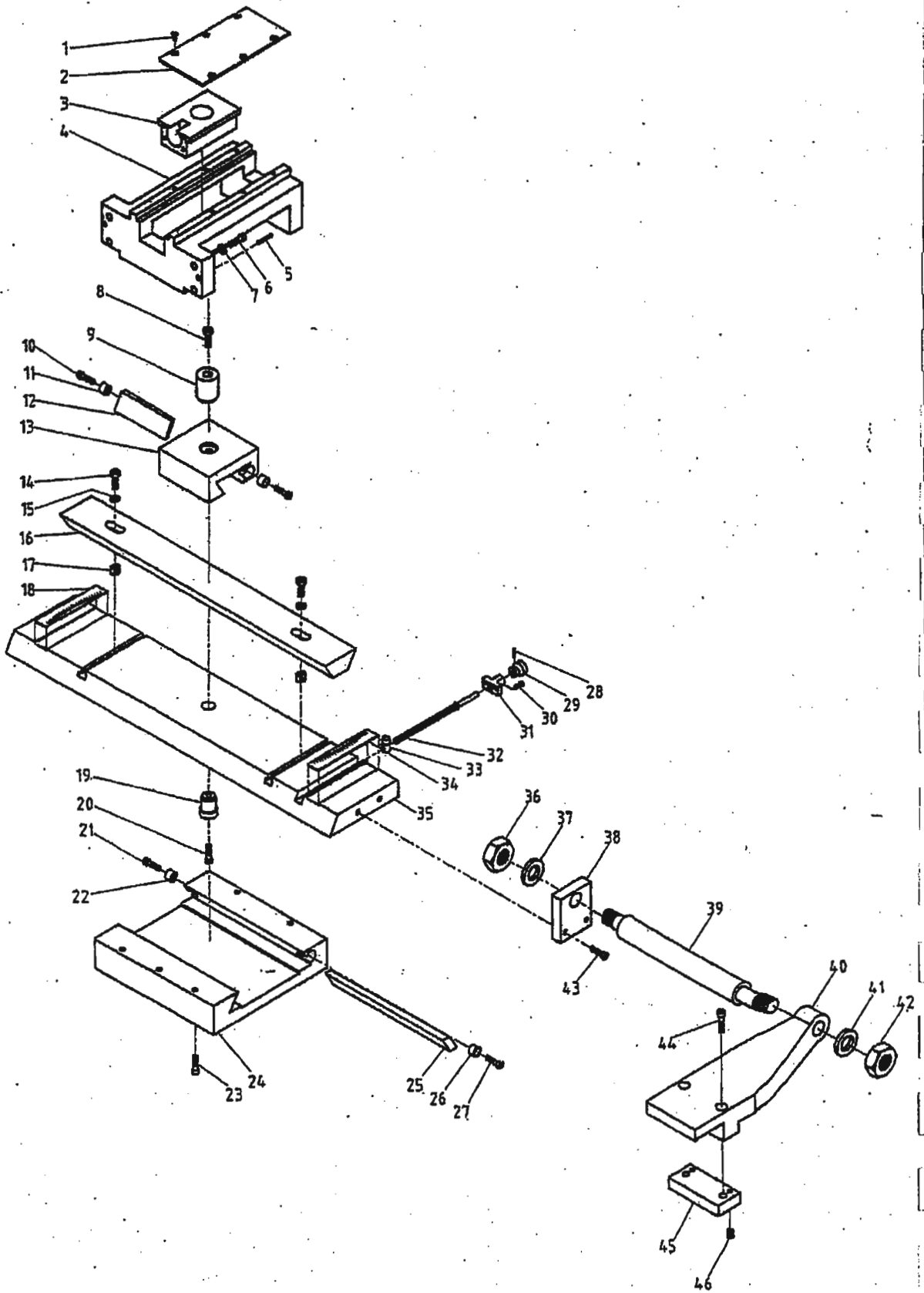


## TAPER TURNING ATTACHMENT ASSY.

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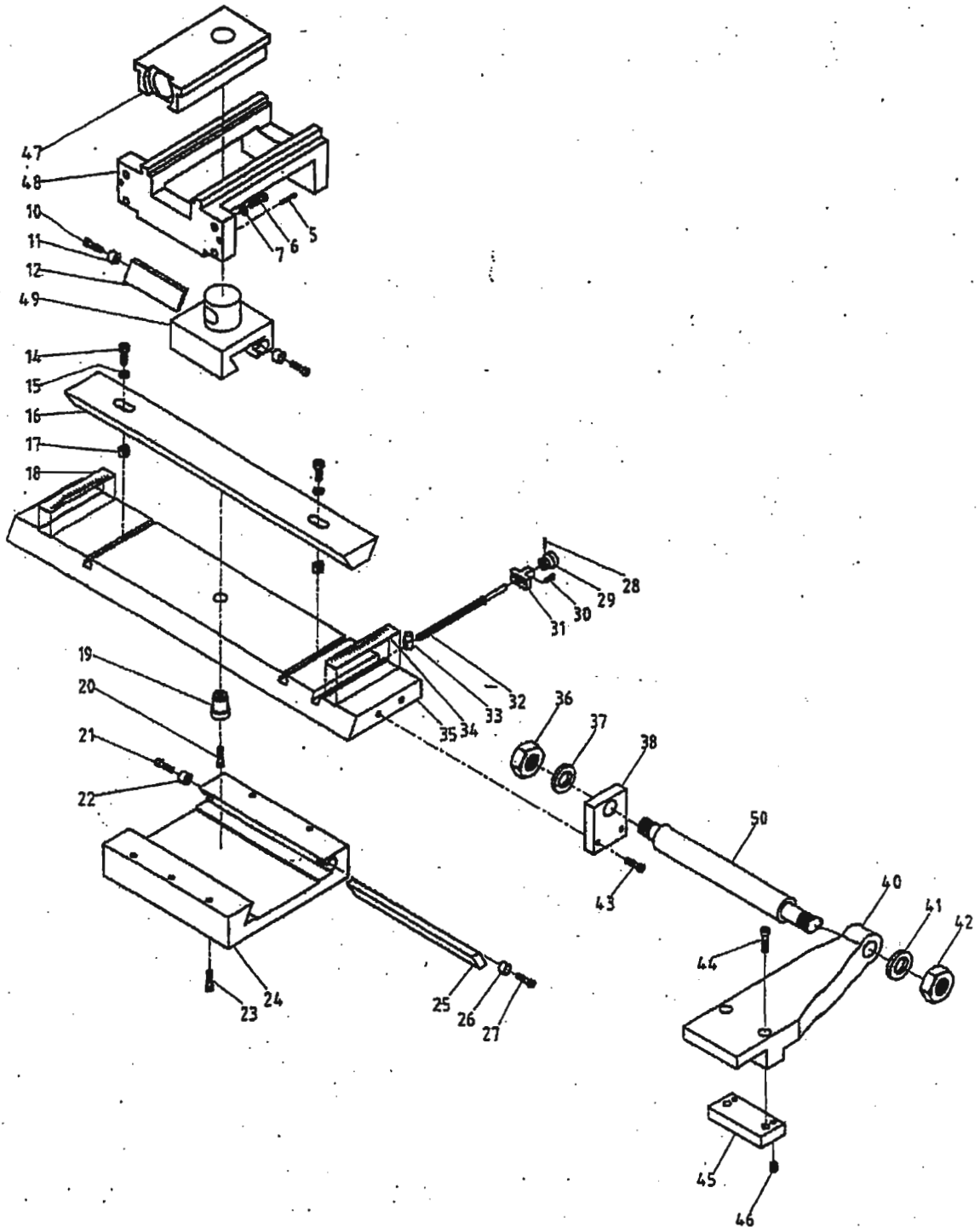
Item	No Part No.	Description	Remark
1		HEX. SOC. FHD. SCREW	
2	PA9016	COVER	
3	PA9007	SLIDE PLATE	
4	PA9001	SLIDE GUIDE	
5		PIN	
6		HEX. SOC. HD. SCREW	
7		WASHER	
8		HEX. SOC. HD. SCREW	
9	PA9010	SHAFT	
10		HEX. SOC. HD. SCREW	
11		BUSHING	
12		GIB	
13	PA9005	LOCK PLATE	
14		HEX. SOC. HD. SCREW	
15		WASHER	
16	PA9004	UPPER GUIDE	
17	PA9015	NUT	
18	PA9018	NAME PLATE	
19	PA9010	SHAFT	
20		HEX. SOC. HD. SCREW	
21		HEX. SOC. HD. SCREW	
22		BUSHING	
23		HEX. SOC. HD. SCREW	
24	PA9002	BASE	
25	PA9006	GIB	
26		BUSHING	
27		HEX. SOC. HD. SCREW	
28		PIN	
29	PA9011	HANDLE	
30		HEX. SOC. HD. SCREW	
31	PA9012	BUSHING	
32	PA9013	LEAD SCREW	
33	PA9014	NUT	
34	PA9017	NAME PLATE	
35	PA9003	LOWER GUIDE	
36		NUT	
37	PA1022	WASHER	
38	PA9021	PLATE	
39	PA9020	SHAFT	
40	PA9019	CLAMP ARM	

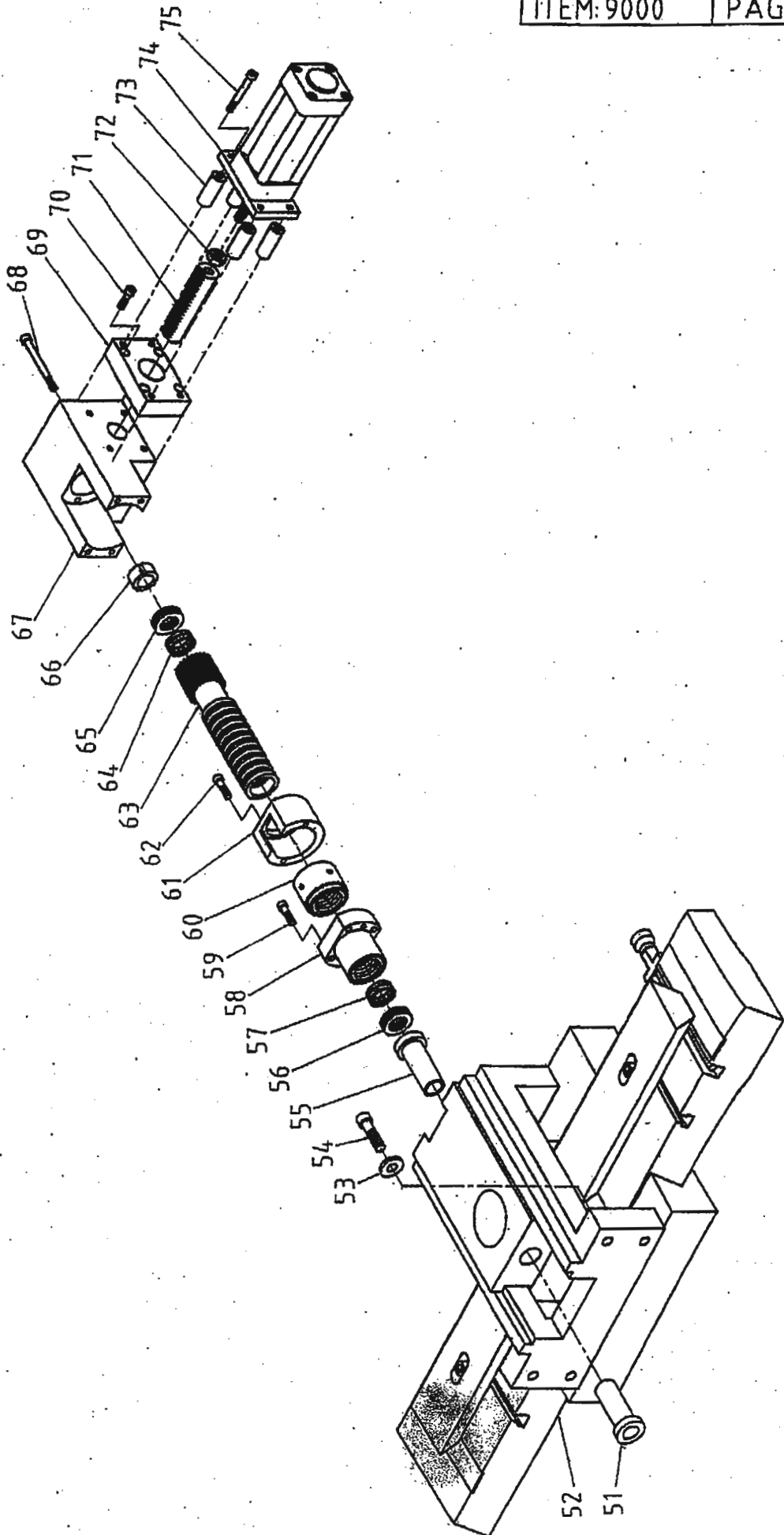
Item	No Part No.	Description	Remark
41	PA1022	WASHER	
42		NUT	
43		HEX. SOC. HD. SCREW	
44		HEX. SOC. HD. SCREW	
45	PA9022	CLAMP PLATE	
46		SET SCREW	
SEMI AUTOMATIC CYCLE			
47	PA9007-A	SLIDE PLATE	
48	PA9001-A	SLIDE GUIDE	
49	PA9005-A	LOCK PLATE	
50	PA9020-A	SHAFT	
51	PA3036	BUSHING	
52	PA9000A	TAPER TURNING ATTACHMENT	
53	PA1007	WASHER	
54		HEX. SOC. HD. SCREW	
55	PA3036	BUSHING	
56		THRUST BALL BEARING	
57		NEEDLE ROLLER BEARING	
58	PA3065I	NUT	
59		HEX. SOC. HD. SCREW	
60	PA3066I	NUT	
61	PA3050	COVER	
62		HEX. SOC. HD. SCREW	
63	PA3064I	LEAD SCREW	
64		NEEDLE ROLLER BEARING	
65		THRUST BALL BEARING	
66		LOCK NUT	
67	PA3017B	BASE	
68		HEX. SOC. HD. SCREW	
69	PA3017B-1	BUSHING	
70		HEX. SOC. HD. SCREW	
71	PA3067	RACK GEAR	
72		NUT	
73	PA1036-A	SHAFT	
74		CYLINDER	
75		HEX. SOC. HD. SCREW	



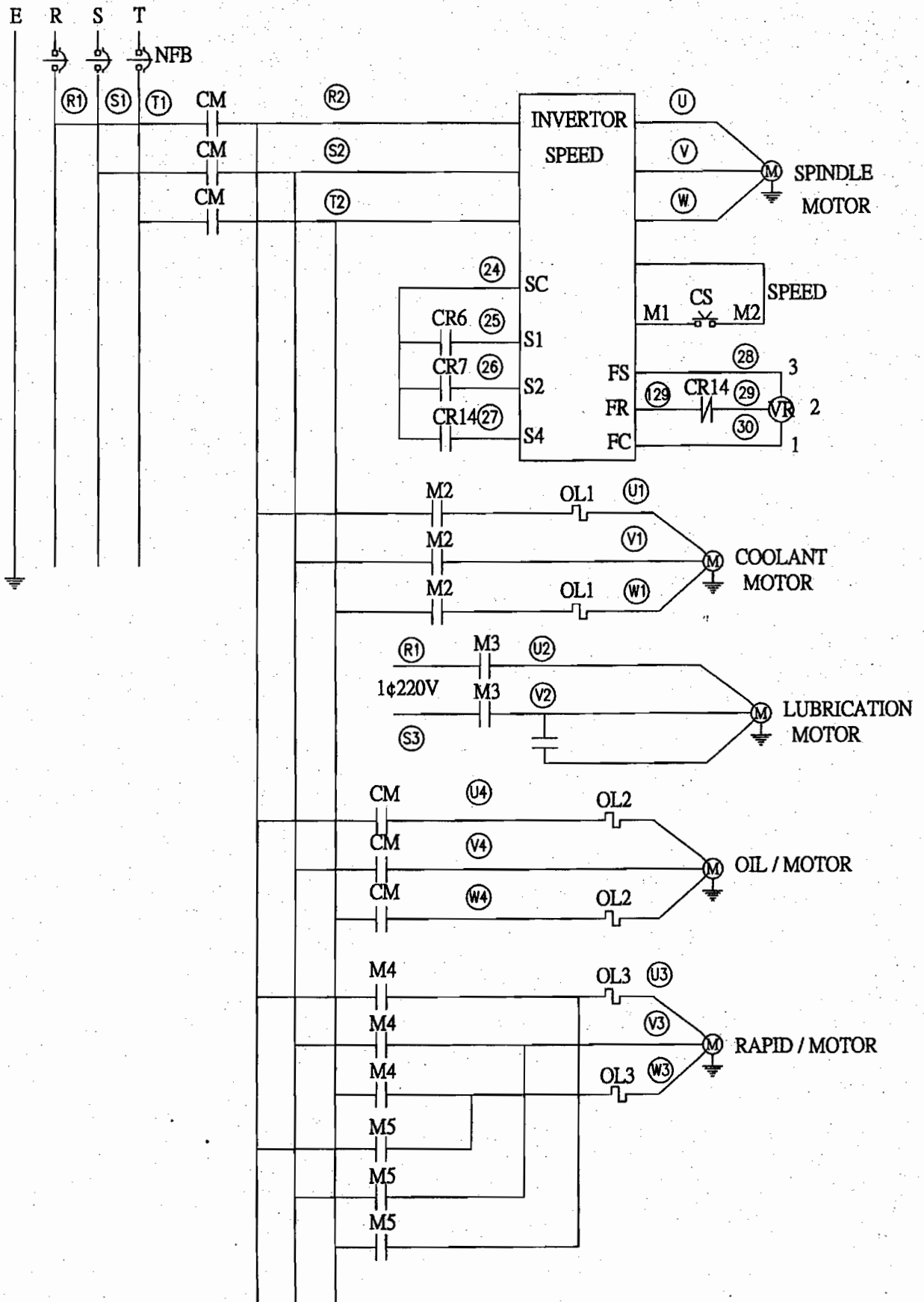


AVAILABLE WITH SEMI-AUTOMATIC CYCLETURNING AND THREADING ONLY

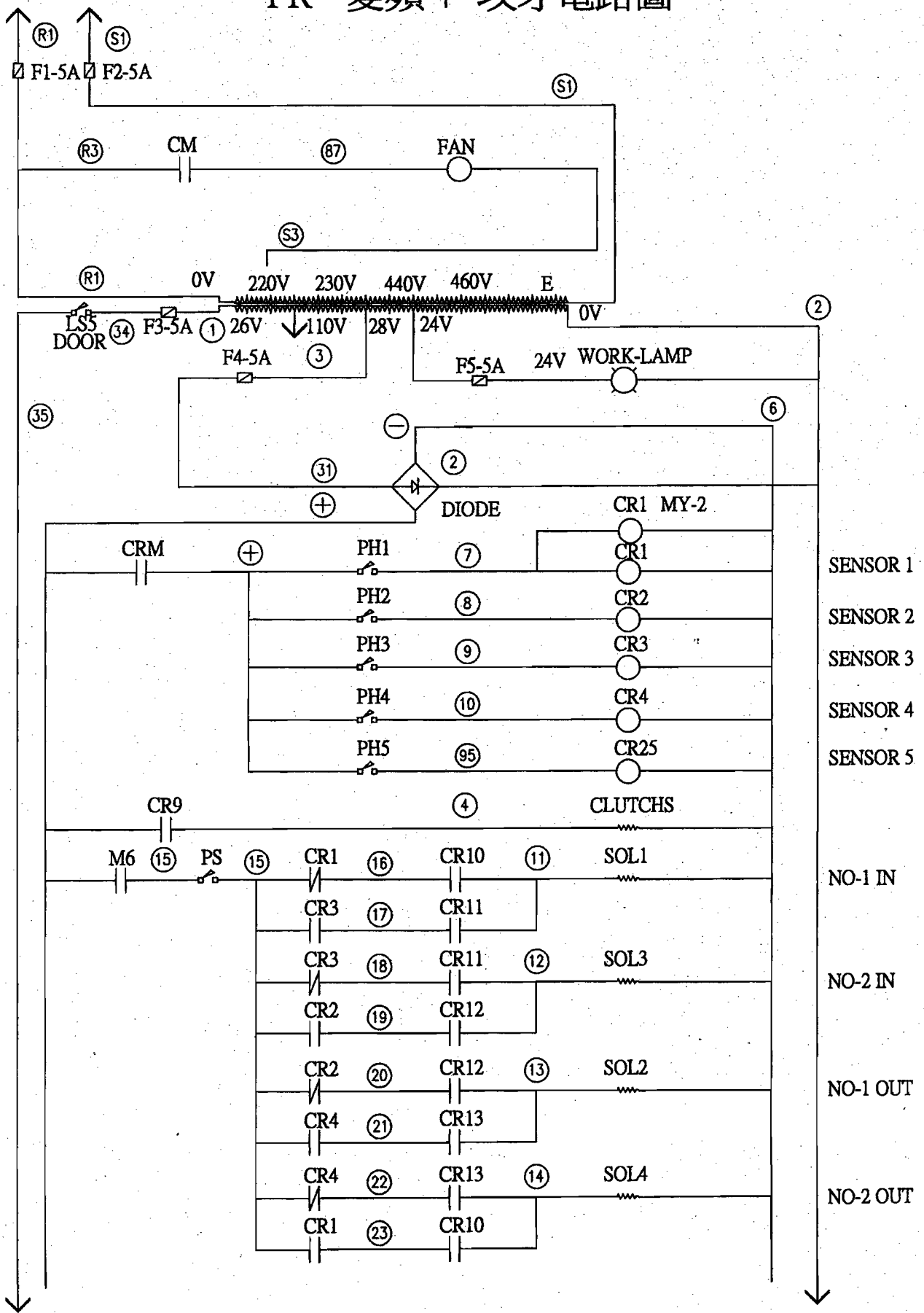




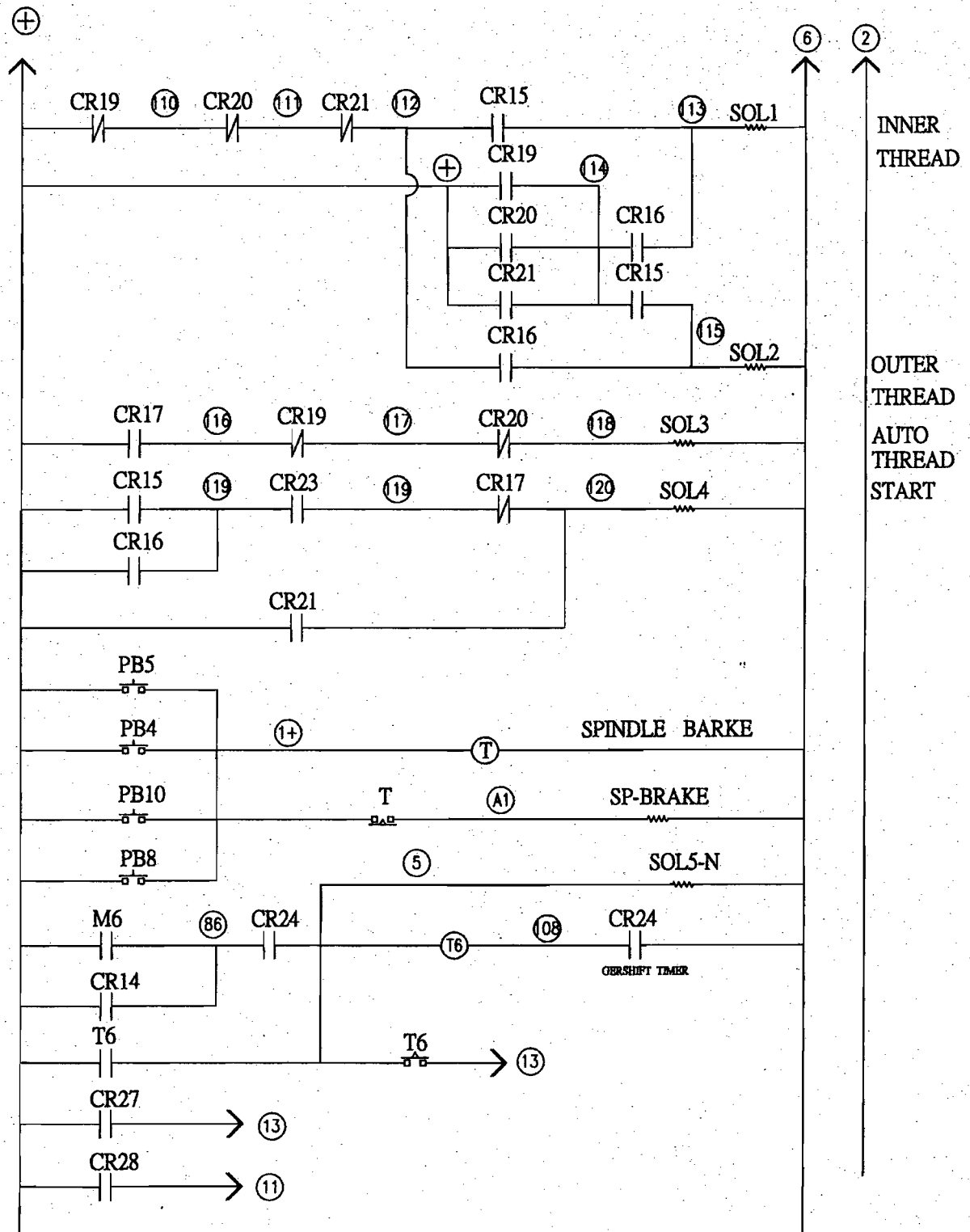
# PR-變頻+攻牙電路圖



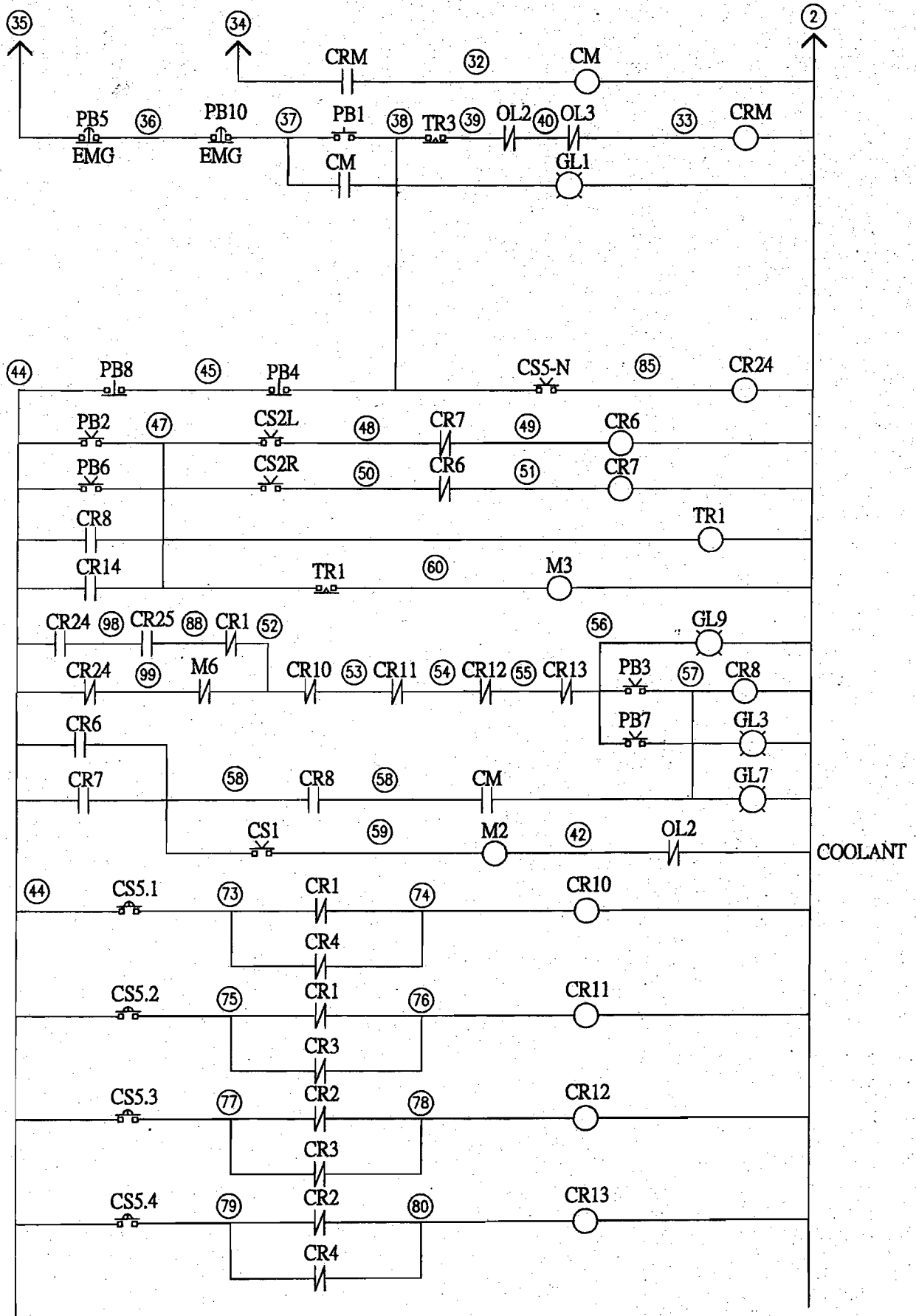
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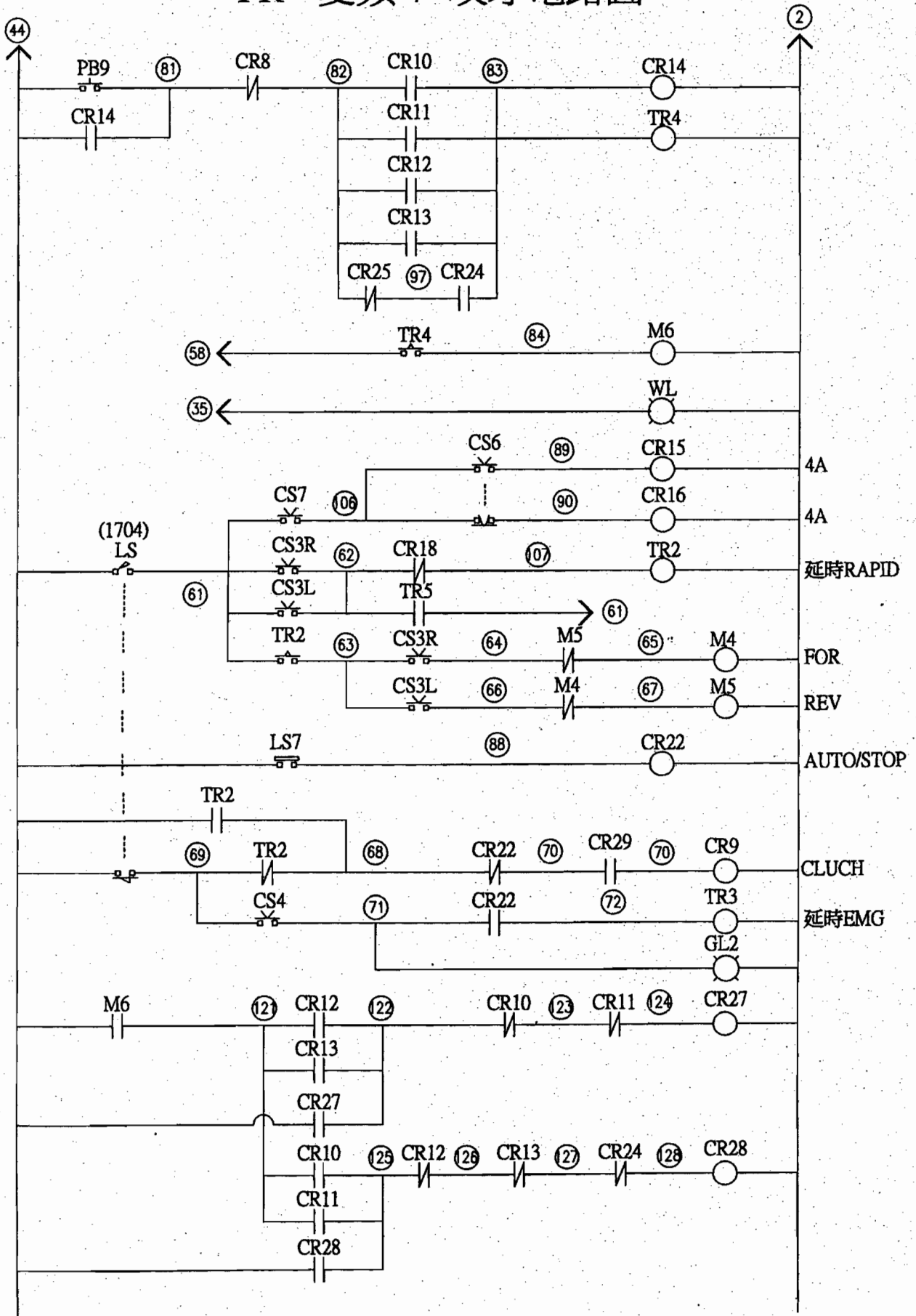
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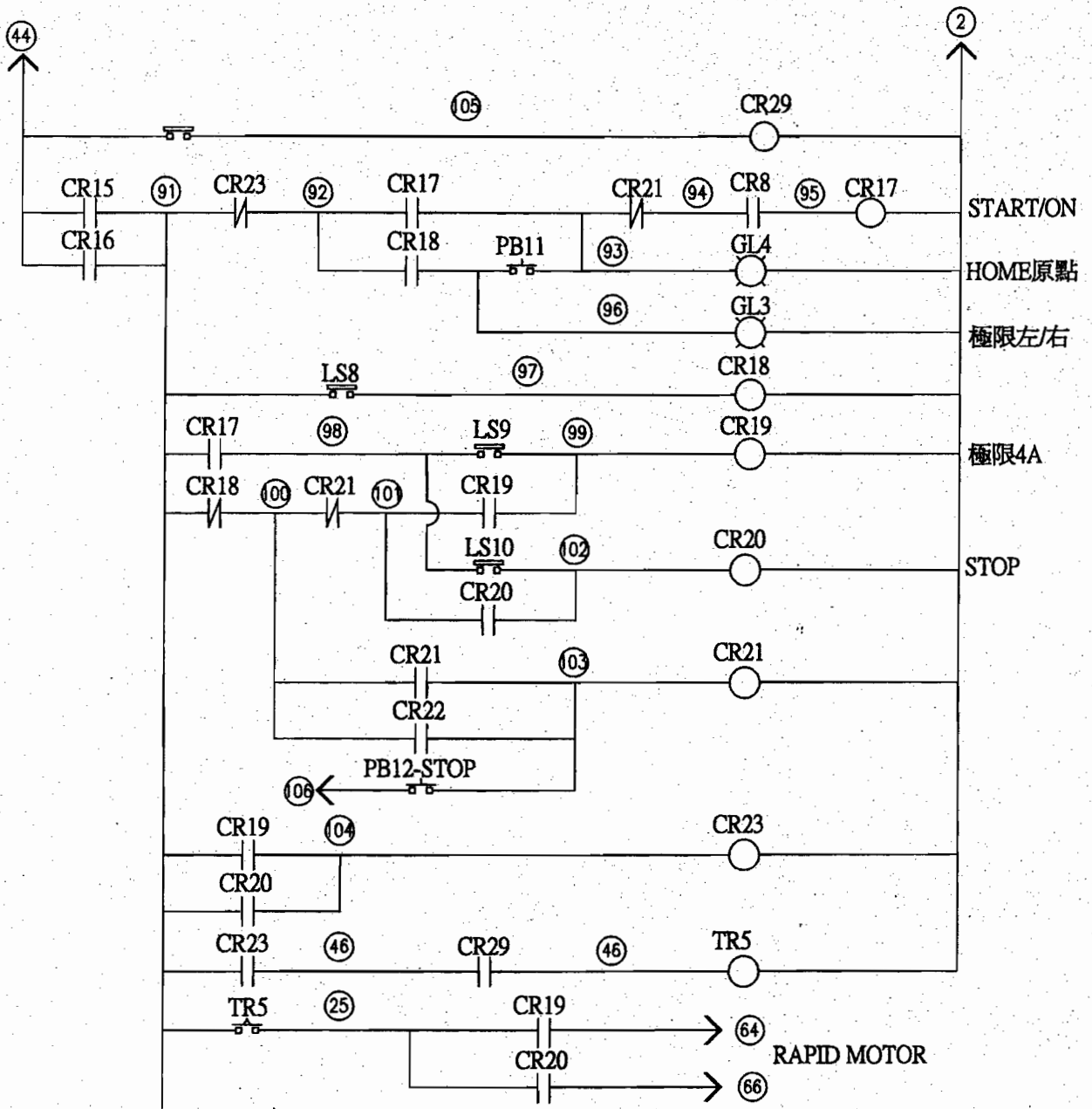
# PR - 變頻 + 攻牙電路圖



# PR - 變頻 + 攻牙電路圖



# PR - 變頻 + 攻牙電路圖





# PR - 變頻 + 攻牙電路圖

