

OPERATOR'S HANDBOOK 40-BSF HEAVY DUTY PEDESTAL DRILL



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NOTE

The information contained in this handbook is intended as a guide to the operation of these machines and does not form part of any contract. The data it contains has been obtained from the machine manufacturer and from other sources. Whilst every effort has been made to ensure the accuracy of these transcriptions it would be impracticable to verify each and every item. Furthermore, development of the machine may mean that the equipment supplied may differ in detail from the descriptions herein. The responsibility therefore lies with the user to satisfy himself that the equipment or process described is suitable for the purpose intended.

LIMITED WARRANTY

Warren Machine Tools Ltd. Makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follow: 1 YEAR LIMITED WARRANTY ON ALL PRODUCTS UNLESS SPECIFIED OTHERWISE. This Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and tear, repair or alterations outside our facilities, or to a lack of maintenance.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, the product or part must be returned to us for examination, postage prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will either repair or replace the product, or refund the purchases price if we cannot readily and quickly provide a repair or replacement, if you are willing to accept a refund. We will return repaired product or replacement at WARCO'S expense, but if it is determined there in no defect, or that the defect resulted from causes not within the scope of WARCO'S warranty, then the user must bear the cost of storing and returning the product.

The manufacturers reserve the right to change specifications at any time as they continually strive to achieve better quality equipment.

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WARNING!

Read and understand the entire instruction manual before attempting set-up or operation of this drilling machine!

- This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper safe use of mill/drills, do not use this machine until proper Training and knowledge has been obtained.
- 2. **Keep guards in place.** Safety guards must be kept in place and in working order.
- Remover adjusting keys and wrenches. Before turning on machine, check to see that any adjusting wrenches are removed from the tool.
- Reduce the risk of unintentional starting.
 Make sure switch is in the OFF position before plugging in the tool.
- 5. **Do not force tools.** Always use a tool at the rate for which it was designed.
- Use the right tool. Do not force a tool or attachment do a job for which it was not designed.
- Maintain tools with care. Keep tools sharp and clean for best and safest performance. Follow instructions for lubrication and changing accessories.
- Always disconnect the tools from the power Source before adjusting or servicing.
- Check for damaged parts. Check for alignment of moving parts, breakage of parts, mounting, and any Other condition that may affect the tools operation.
- Turn power off. Never leave a tool unattended.
 Do not leave a tool until it comes to a complete stop.
- Keep work area clean. Cluttered areas and bench Invite accidents.
- Do not use in a dangerous environment. Do not Use power tools in damp or wet locations, or expose Them to rain. Keep work area well lighted.

- Keep children and visitors away. All visitors should be kept a safe distance from the work area
- 14 Make the workshop child proof. Use padlocks, master switches and remove starter keys.
- 15. Wear proper apparel. Loose clothing, gloves, neckties, rings, bracelets, or other jewelry may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Do not wear any glove.
- 16. Always use safety glasses. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses. accessories may be hazardous.
- 17 Do not overreach. Keep proper footing and balance at all times.
- 18. Do not place hands near the cutter head while the machine is operating.
- 19. Do not perform any set-up work while machine is operating.
- Read and understand all warnings posted on the machine.
- 21 This manual is intended to familiarize you with the technical aspects of this mill/drill. It is not, nor was it intended to be, a training manual.
- 22. Failure to comply with all of theses warnings may result in serious injury.
- 23. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm.
- 24. Your risk from those exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well ventilated are, and work with approved safety equipment

MAIN TECHNICAL SPECIFICATION

Specifications: 40-BSF DRILL **Drilling Capacity** 30mm 1-1/5" 28" Max. Distance Spindle to Table Max. Distance Spindle to Base 1f80mm 47"MT4 Spindle Taper MT4 Spindle Stroke 4-3/5" 115mm Head Swivel Around Column..... 360° 360° Head Tilt ±90° ±90° Column Diameter 115mm 4-3/5" Number of Spindle Speeds6 6 Ranger of Spindle Speeds 75~1600 RPM Step of Speed Feeds 3 Range of Speed Feeds 0.004,0.008,0.012 '/r 0.1.0.2.0.3mm/r Working Surface of Table 21-1/5"X18-1/2" 540x470mm Working Surface of Base..... 26"X18" 650x450mm Max. Head Travel 200mm 8" Max. Table Travel 620mm 24-4/5" 1/2" 1.5HP Overall Dimensions 740 x 720 x 1830mm 29X28X72" **660LBS** 770LBS

The specifications in this manual are given as general information and are not binding. WARCO reserves the right to effect, at any time and without prior notice, changes or alterations to parts, fitting and accessory equipment deemed necessary for any reason whatsoever.

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⚠ WARNING

Read and understand the entire contents of this Manual before attempting set-up or operation!

Failure to comply may cause serious injure!

CONTENTS OF SHIPPING CONTAINER

- 1 Drilling Machine (Fig. 01)
- 1 Spindle Cover
- 1 Test Record
- 1 Operator manual
- 1 Toolbox & Tools

Toolbox Contents

- 1 1/2" Drill Chuck /Chuck Key
- 1 Tilted wedge
- 1 24 Spanner
- 2 Crank Handle
- 1 Oil Gun
- 4 M12x50 Bolts
- 4 M12 Washer
- 4 M12 Nuts
- 1 MT3 Arbor



Fig. 01

Unpacking and Clean-up

- 1. Finish removing the wooden crate from around the Drilling Machine.
- Unbolt the drilling machine from the crate bottom.
- 3. Sling drilling machine with the proper tools.
- Clean all rust protected surfaces using a mild commercial solvent, kerosene or diesel fuel. Do not use paint thinner, gasoline, or lacquer thinner. These will damage painted surfaces. Cover all cleaned surfaces with a light film of machine oil.

Assembly

- Table elevating lever Put the crank handle (A, Fig. 02) onto worm shaft and tighten it with screw.
 Screw handle shaft (B, Fig 02) into the crank handle and tighten with flat screwdriver.
- Head elevating lever Put the crank handle (C, Fig. 03) onto worm shaft and tighten it with screw.
 Screw handle shaft (D, Fig03) into the crank handle and tighten with flat screwdriver.

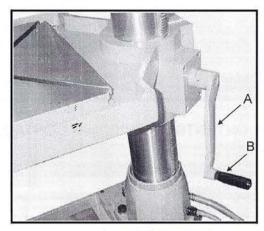


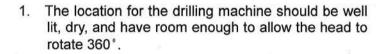
Fig. 02

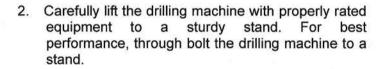
Installation

⚠ WARNING

Machine is heavy! Use an appropriate lifting device and use extreme caution when moving the machine to its final location.

Failure to comply may cause serious injury!





- Before bolting the drilling machine to a bench or stand, the unit must be level in both directions.
 Place a level on the table in both directions.
- If the table is not level, shim under the low corners until level. Tighten the fastening bolts. Check for level again. Adjust as necessary until the drilling machine is level after the fastening hardware has been tightened.

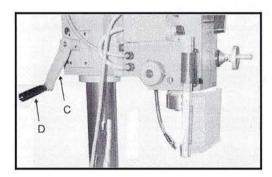


Fig. 03

Lubrication

↑ WARNING

Drilling machine be serviced at all lubrication points and all reservoirs filled to operating level before the machine is placed into service!

Failure to comply may cause serious damage to the machine!

- Geared Head Oil must be up to indicator mark in oil sight glasses (A, Fig. 04). Drain oil completely by removing the plug what is on the bottom of the headstock and refill after six months. Then change oil in the headstock every year.
- Power Feed Device Lubricate one oil cup (B, Fig. 04) with 20W machine oil once daily.
- Spindle Return Spring Lubricate it with grease once six months. Remove the cover (C, Fig. 05) and apply grease.
- Column and Quill Lubricate the column and quill with 20W machine oil once daily. It will reduce wear and ensure easy operation.

Electrical Connections

⚠ WARNING

A qualified electrician must make all electrical connections.

Failure to comply may cause serious injury!

Before making any electrical connections, make sure the power source available is compatible with the machine. Also, press the "Off" button on the front of the machine before connecting to the power source.

Make sure the drilling machine is properly grounded.

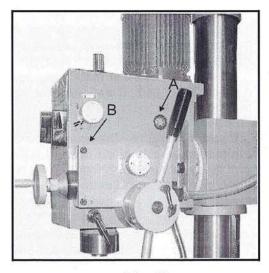


Fig. 04

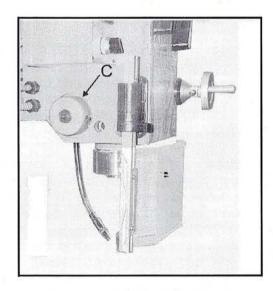


Fig. 05

GENERAL DESCRIPTION

- Geared Head the geared head (A, Fig. 06) is made
 of cast iron with high rigidity. The head houses the
 spindle with bearing arrangement and the drive unit.
 The spindle bore is precision boring and honing. The
 spindle transmits the main movement during drilling
 process by gears. It also holds the tools by drill chuck
 or other tools.
- Power Feed Box the power feed box (B, Fig. 06) is mounted on side of the head. It provides three steps of feeds for spindle. Spindle height adjustment device mounted on side of the power feed box.
- 3. **Main Motor** the main motor (C, Fig. 06) is mounted on top of the head. It drives the spindle and power feed box via gears in the head.
- Column the column (D, Fig. 06) is made of cast iron with high rigidity. It is high precision ground. Head is raised or lowered by the rack on the column.
- 5. Table the table (E, Fig. 07) is made of cast iron with high rigidity and high precision ground. It is mounted on the column and raised or lowered by the rack on the column. It holds the workpieces by clamping device. Cooling water returns through the groove in the table.
- 6. Base the base (F, Fig. 08) is made of cast iron with high rigidity and high precision ground. The column is mounted on it. It also holds the workpieces by clamping device. Usually it is special for large workpieces. Cooling water returns through the groove in the base. The cooling water box is founded in the base.
- Coolant Pump Motor the motor (H, Fig. 08) is mounted on the base. It supplies the energy for cooling system.

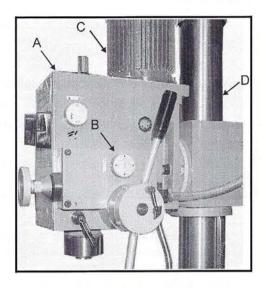


Fig. 06

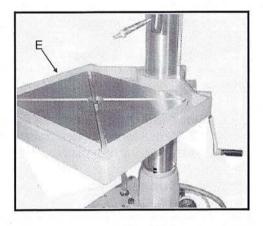


Fig. 07

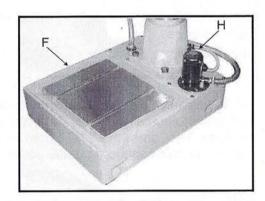


Fig. 08

A CAUTION

Don't change the spindle while the machine is running!

Failure to comply may cause damage to the machine!

 Spindle Speed Change Levers (A, B, Fig.09) – the levers located on front of headstock. You can select six kinds of spindle speeds by moving levers right or left. The speed table is as follow:

Levers	L1	L2	L3	H1	H2	НЗ
Speeds (RPM)	75	170	280	540	960	1600

- 2. **Magnetic Switch** (C, Fig. 09) it has the function of emergency stopping. Green push button is to start the motor, Red push button to switch the motor off.
- R/L Switch (D, Fig. 09) it controls the revolution direction of motor. R means forward rotation, L reverse rotation. Make sure the spindle is stopped, before operating this switch!
- Coolant Pump Switch (E, Fig. 09) it turns power on and off to the coolant pump motor. "I" is on and "o" off.
- Safety Protection Guard (F, Fig. 09) it is mounted on left side of the head. The machine will be stopped when you open the guard.
- 6. Power Feed Engage/Disengage Knob (G, Fig. 10) turns "on" is engage and off "disengage" to the power feed. Be sure shift the knob while machine stopped!
- Selector Knob For Power Feed Range (H, Fig. 10) – it provides three steps of feeds to select.
- Depth Stop Device turn the collar (I, Fig. 10) to set the depth for the desired depth and tighten the handle (J, Fig. 10). Loose it to disengage depth stop device.
- Power Feed Control Start the machine and pull one of two handles (K, Fig. 10) away from the column to start the power feed. Once the power feed has reached the depth stop the trip will

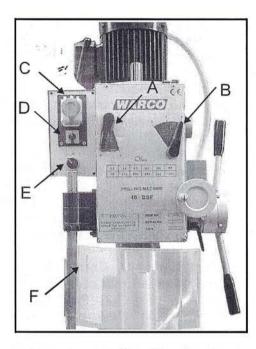


Fig. 09

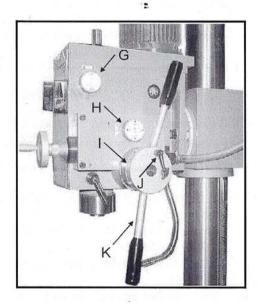


Fig. 10

release and the spindle will retract. Press one of the two handles toward the column to stop the power feed. Tighten the handle (L, Fig. 11) in order to prevent wrong operation if you manually feed the spindle.

- 10. Fine Feed Handwheel (M, Fig. 10) Located on the front of head. To activate, pull one of two handles (K, Fig. 10) away from the column.
- Quill Lock Handle (N, Fig. 11) Located at right of head. Turn clockwise to lock the quill in the desired position. Turn counter- clockwise to release.
- 12. Head Rotation Loosen the lock nuts (P, Fig. 11) on either side of the head. Rotate the head to its desired position, using the reference guides provided on the right side of the machine. Once in place, retighten the locking nuts.
- 13. Head Elevating Crank Handle (R, Fig. 12) Located at left rear of head casting. Loosen head pivot (S, Fig. 12) lock nuts and turn handle clockwise to raise head on the column and counter-clockwise to lower head. Be sure the two nuts are tightened while operating.
- 14. Table Elevating Crank Handle (T, Fig. 13) Located at right rear of table casting. Loosen table lock handles (V, Fig. 13) and turn crank handle clockwise to raise table on the column and counter-clockwise to lower table. Be sure the two handles are tightened while operating.

A WARNING

Read and understand the rules before operation! Failure to comply may cause serious injury!

- Be sure drill bit or cutting tool is securely locked in the chuck.
- Be sure chuck key is removed from the chuck before turning on power.
- Adjust the table or depth stop to avoid drilling into the table.
- Shut off the power, remove the drill bit or cutting tool, and clean the table before leaving the machine.
- When practical, use clamps or a vise to keep the workpiece from rotating with the drill bit or cutting tool.

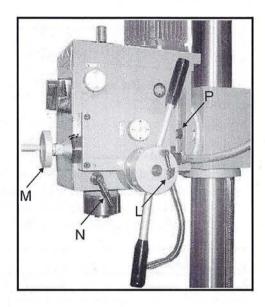


Fig. 11

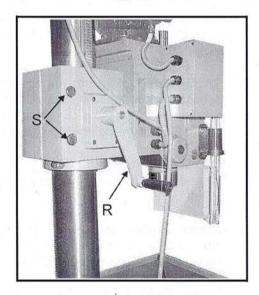
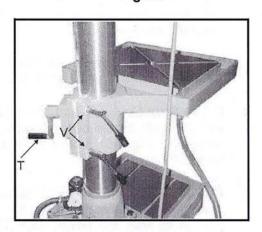


Fig. 12



DRILLING TOOLS REPLACEMENT

↑ WARNING

Disconnect machine from the power source, unplug.

Failure to comply may cause serious injury!

- 1. Open the safety guard and lower the spindle to expose the slots (A, Fig.14) in quill and spindle.
- Inset the wedge into the slot and tap the end of wedge with a rubber mallet to dismount the tools. Be sure the slots in quill and spindle on same line when you tap the wedge.
- Wipe down the new tools with a clean dry rag and place the tools into the spindle. Lightly tap the end of tools with a rubber mallet in order to tighten the tools.

Adjusting the Spindle Return Spring

The spindle return comes pre-set from the factory and should not need any adjustment.

- You do not want to remove the spring cap (B, Fig. 15).
- 2. Loosen the screw (C, Fig. 15) just enough to rotate spring cap past the notch (D, Fig. 15).
- Rotate the spring cap clockwise to decrease spring tension. Rotate the spring cap counter-clockwise to increase spring tension.

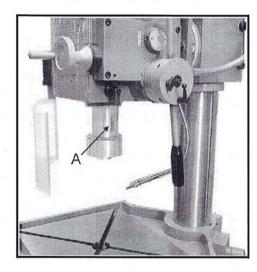


Fig. 14

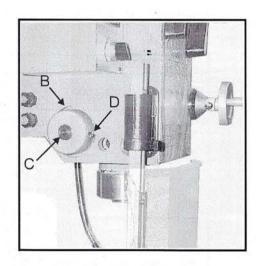


Fig. 15

MAINTENANCE

Keep the maintenance of the drilling machine during the operation to guarantee the accuracy and service life of the machine.

- 1. In order to retain the machine's precision and functionality, it is essential to treat it with care, keep it clean and grease and lubricate it regularly. Only through good care, you can be sure that the working quality of the machine will remain constant. Disconnect the machine plug from the mains supply whenever you carry out cleaning, maintenance of repair work!
- 2. Lubrication all place what is requirement lightly before every use.
- 3. During the operation, the chips what falls onto the work surface should be cleaned timely. Asphalt felt should be cleaned at certain time. Do not remove the chips with your bare hands. There is a risk of cuts due to sharp-edged chips.
- **4.** After the operation every day, eliminate all the chips and clean different part of the machine and apply machine tool oil to prevent rusting.
- **5.** In order to maintain the machining accuracy, take care of the tools, the surface of the machine for the chuck and the guide way and avoid mechanical damage and the wear due to improper guide.
- 6. If the damage is found, the maintenance should be done immediately.

TROUBLE SOLUTION

TROUBLE	POSSIBLE CASE	SOLUTION WAY	
Excessive vibration	Motor out of balance	Balance or replace motor	
Excessive vibration	2. Bad motor	2. Replace motor	
	Over feeding	Reduce feed rate	
Motor stalls	2. Dull drill kits	3. Resharpen or replace	
	3. Bad motor	3. Replace motor	
	Improper quill adjustment	Readjusted quill	
Noisy operation	2. Noisy spline	2. Lubricate spline	
	3. Noisy motor	3. Check motor bearing or fan	
	Excessive speed	1. Reduce speed	
	2. Chips not clearing	2. Clear chips	
Drill or workpiece too heat	3. Dull drill kits	3. Resharpen or replace	
	4. Feed too slow	4. Increase feed	
	5. Failure to use oil or coolant	5. Use oil or coolant	
	1. No drill spot	Center drill workpiece	
Drill leads off	2. Cutting lips on drill off center	2. Regrind drill	
	3. Quill loose in head	3. Tighten quill	
	4. Bearing play	4. Reseat or replace bearing	
Excessive drill runout	1. Bend drill	1. Replace drill	
	2. Bearing play	2. Replace or reseat bearing	
	3. Drill not seated properly in chuck	3. Reseat and tighten chuck	



PARTS LISTS 40-BSF HEAVY DUTY PEDESTAL DRILL

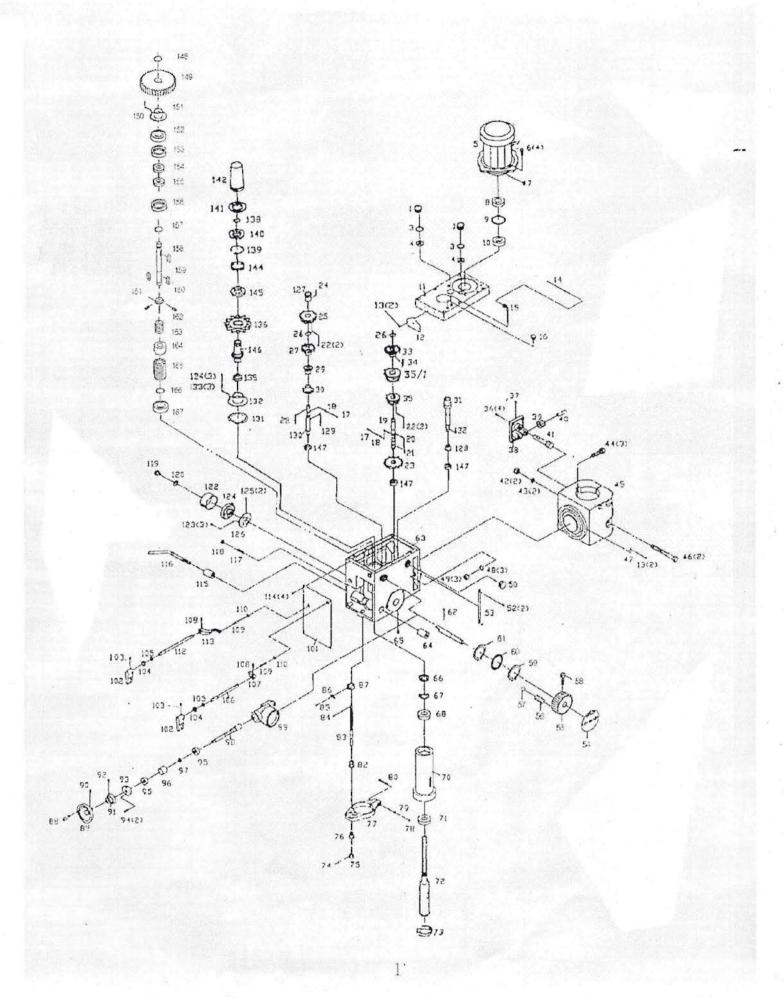


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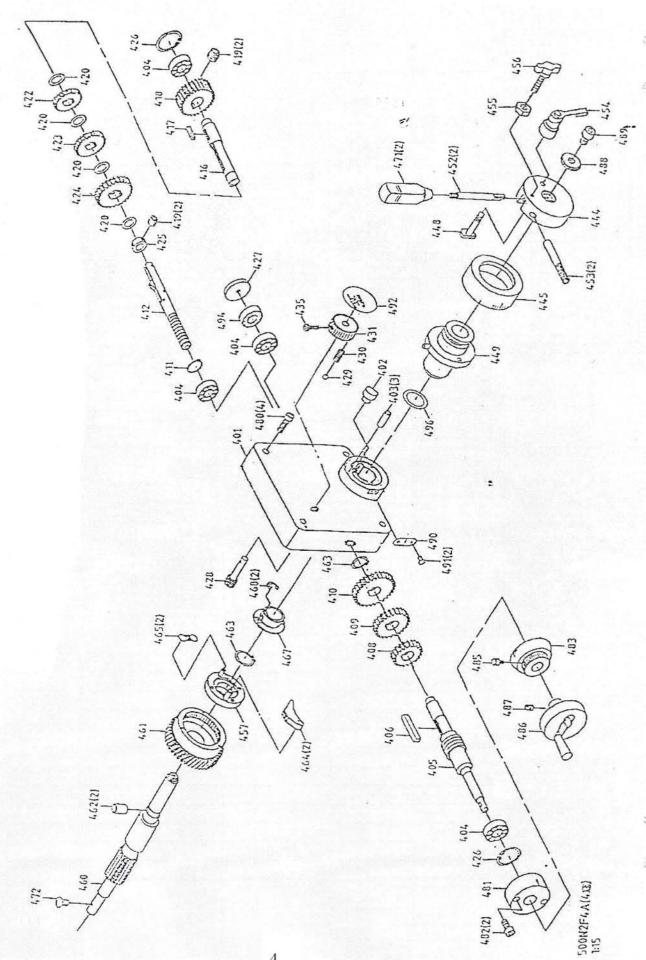
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40-BSF PARTS LIST

PARTS NO.		QTY	PARTS NO.	DESCRIPTION	QTY
99	Feed Cover	1	151	Airtight Base	1
101	Name Plate	1	152	Bearing	1
102	Speed Change Lever	1	153	Washer	1
103	Pin	1	154	Oil Seal	1
104	Oil Seal	1	155	Oil Seal	1
105	Spring Ring	1	156	Washer:	1
106	Lever Shaft	1	157	Spring Ring	1
107	Speed Change Lever	1	158	Key	1
108	Screw	1	159	Clutch Worm	1
109	Pin	1	160	Key	1
110	Lever Braket	1	161	Lock Shaft Sleeve	1
112	Lever Shaft	1	162	Screw	1
113	Lever	1	163	Spring	1
114	Screw	4	164	Reverse Clutch	1
115	Lock Bush	1	165	Worm Shaft	1
116	Lock Handle	1	166	Spring Ring	1
117	Screw	1	167	Bearing	1
118	Nut	1			
119	Screw	1			
120	Washer	1			
122	Spring Cap	1			
123	Screw	3			
124	Spring Plate	1		A	
125	Pin	2			
126	Spring Base	1			
127	Gear	1		220	1
128	Gear	1			
129	Key	1	W Committee		
130	Shaft	1			
131	Airtight Ring	1			
132	Airtight Base	1			
133	Washer	2			
134	Screw	2			
135	Oil Seal	1			
136	Gear	1			
138	Spring Ring	1			
139	Spring Ring	1			
140	Ball Bearing	1			
141	Cover Base	1			
142	Arbor Cover	1			
144	Separating Ring	1			
145	Ball Bearing	1			
146	Splined Sleeve	1			
147	Ball Bearing	1			
148	Spring Ring	1			
149	Gear	1	-		
150	Screw	1 1			-



40-BSF PARTS LIST

PARTS NO.	DESCRIPTION	QTY	PARTS NO.	DESCRIPTION	QTY
401	Power Feed Box	1	462	Key	2
402	Release Block	1	463	Spring Ring	1
403	Pin	2	464	Clutch Key	2
404	Bearing	1	465	Spring **	2
405	Worm Shaft	1	467	Clutch Screw Set	1
406	Key	1	468	Spring Ring	2
408	Gear	1	471	Knob	2
409	Gear	1	472	Screw	1
410	Gear	1	480	Screw	4
411	Spring Ring	1	481 .	Worm Cover	1
412	Change Gear Lever Set	1	482	Screw	2
416	Shaft	1	483	Indicator Dial	1
417	Key	1	485	Screw	1
418	Worm Gear	1	486	Handwheel	1
419	Screw	2	487	Screw	1
420	Bush	1	488	Washer	1
422	Gear	1	489	Screw	1
423	Gear	1	490	Zero Indication Label	1
424	Gear	1	491	Rivet	2
425	Bush Bracket	1	492	Feed Label	1
426	Spring Ring	1			
427	Cover	1			
428	Gear Shaft	1		12	
429	Ball	1		N.	
430	Spring	1			
431	Feed Selector Knob	1			
432	Worm Shaft	1			5.
444	Handle Base	1			
445	Indicator Dial	1			
448	Depth Set Screw	1			
449	Clutch Support	1		-	
452	Handle	2			
453	Pin	2		1	
454	Handle	1			
455	Nut	1		,	
456	Handle	1			
457	Clutch Key Base Set	1			
460	Pinion Shaft	2			
461	Worm Gear	1			