Revision C (2024-05)

INSTRUCTION MANUAL

Turbo Woodworking Lathe

Model: T-40

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1. General Safety Rules

Please operate the lathe with awareness of the potential for injury. If you have any doubts about safety, please contact your local dealer before using.

Warning! Failure to follow the listed rules may result in serious personal injury.

TO ENSURE SAFE USE, READ THIS MANUAL BEFORE OPERATING THE TOOL.

- ALWAYS USE A FULL FACE SHIELD. A full face shield will protect your eyes and face.
- KEEP THE WORK AREA CLEAN and have good lighting.
- WEAR PROPER APPAREL. Do not wear loose fitting clothing, gloves, neckties, rings, bracelets or other jewelry, which may get caught in moving parts. Non-slip footwear is also recommended. Pulled back long hair.
- DISCONNECT THE MACHINE from the power supply before servicing and changing accessories.
- NEVER LEAVE THE MACHINE RUNNING UNATTENDED. Do not leave the lathe unless it is turned “OFF” and completely stopped.
- USE THE RIGHT TOOL. Do not use a tool or attachment to do a job for which it was not intended or designed.
- TIGHTEN ALL CLAMP HANDLES on the headstock, tailstock, and the tool rest before operating the lathe.
- Before turning a large wood piece, it is advisable to reduce the excess before mounting the stock to the lathe. When turning a large wood piece, the turner should not stand in line with the workpiece in order to avoid being struck by a wood piece ejected by an imbalance.
- Hold the tool handle firmly to avoid the rebound.

2. Introductions

Tools express thoughts, and serve as the extension of your hands. An ideal tool should perform readily as a connection between the hand and the mind; additionally, it ought to be pleasurable, enlightening and beautiful.

The Harvey team never stops pursuing excellence to enhance a user's optimal working experience. After developing the Harvey Turbo T-50/60 heavy duty woodworking lathes, the Harvey team then spent over two years working to develop a smaller lathe ideally sized to suit the demands of serious hobbyists and home workshops. Now we are glad to announce that our efforts have been achieved: the Turbo T-40 Lathe is the result.

In order to overcome long known issues of insufficient torque and "speed loss" on most small lathes on the market, for the first time in the industry, Harvey Industries has introduced the Industrial Servo Motor (ISM) system and integrated it in with the T-40 spindle drive.

The exterior and machined surfaces are engineered and crafted with our highest standards to enhance a user's experience. The Turbo T-40 lathe is crafted with premium grade cast iron and machined to the highest tolerances. The guideways are precision ground for smooth operation. The surface of the T-40 lathe is coated with a high gloss, stoved varnish.

The T-40 features a 360mm (14") maximum swing, and a 625mm (24") distance between centers. The spindle head can rotate 90° for larger faceplate turning. In addition, 80KG (178 lbs.) of deadweight makes the T-40 the heaviest lathe in its league. The Harvey engineering and manufacturing teams sincerely hope the new Turbo T-40 will make a greatly enjoyable tool for turners of all ages and skill levels.

3. Features

- Industrial Servo Motor drive system with 300% overload capacity
- Quick spindle stop (less than 1 second)
- Forward/Reverse spindle rotation
- Variable Speed, maximum 4300rpm
- Swivel headstock to 90°(can be positioned from 0-90 degrees) for faceplate turning
- Rigid structure with premium cast iron
- Precision machined and ground guide ways
- Forged and ground alloy steel spindle with 3 oversized bearings
- Cast steel tool rest with edge treated to guard against wear
- Oversized solid tool slide for smooth operation
- Built-in 24 position indexing spindle with quick adjusting mechanism
- High gloss baked enamel surface treatment

4. Feature Identification

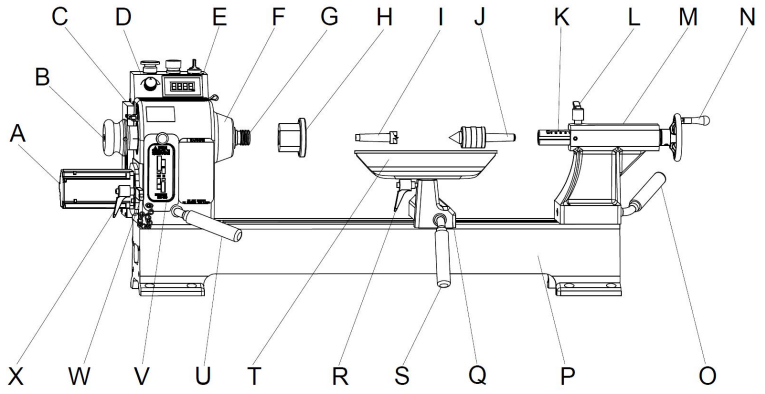


Figure 1

A	Servo Motor	**M**	Tail Stock
B	Spindle Hand Wheel	**N**	Tail Stock Hand Wheel
C	Driver	**O**	Tail Stock Locking Handle
D	Control Buttons	**P**	Bed
E	Speed Display	**Q**	Tool Slide
F	Head Stock	**R**	Tool Rest Locking Handle
G	Spindle	**S**	Tool Slide Locking Handle
H	3″Face Plate	**T**	Tool Rest
I	Spur Center	**U**	Head Stock Locking Handle
J	Live Center	**V**	Head Stock Guard
K	Tail Stock Quill	**W**	Motor Mount Handle
L	Tail Stock Quill Locking	**X**	Motor Locking Handle

5. Optional Accessories

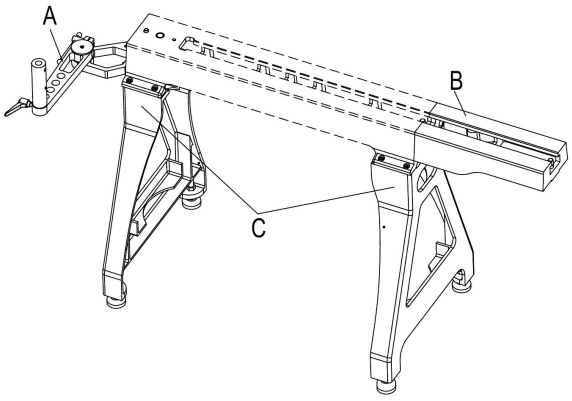


Figure 1-1

A	Extended Tool Rest Support
B	18” Extension Bed
C	Cast Iron Stand

6. Specifications

Market			North American	European	Asian
Basic Specification	Maximum Swing Over Bed		14″ (360mm)	360mm	360mm
	Distance Between Centers		24″ (610mm)	610mm	610mm
	Max. Swing Over Tool Slide		10″ (260mm)	260mm	260mm
	Spindle Speeds:	High Range	90-4300 rpm	90-4300 rpm	90-4300 rpm
		Low Range	60-2800 rpm	60-2800 rpm	60-2800 rpm
	Preset Head Stock Positions		0°- 22.5°- 45°- 90°	0°- 22.5°- 45°- 90°	0°- 22.5°- 45°- 90°
Spindle	Taper		MT#2	MT#2	MT#2
	Thread		1-1/4″×8 TPI UNS	M33x3.5mm	1-1/4″×8 TPI UNS
	Through Hole Dia.		1/2″ (12.7mm)	12.7mm	12.7mm
	Spindle Indexing		24 Positions	24 Positions	24 Positions
	Spindle Bearings		Front 2，Rear 1	Front 2，Rear 1	Front 2，Rear 1
Tail Stock	Tail Stock Quill Taper		MT#2	MT#2	MT#2
	Through Hole Dia.		3/8″ (10mm)	10mm	10mm
	Tail Stock Travel		4-1/4″ (105mm)	105mm	105mm
Accessories	Tool Rest Width		12″ (305mm)	305mm	305mm
	Face Plate Dia.		3″ (75mm)	75mm	75mm
	Spur Center Taper		MT#2	MT#2	MT#2
	Dead Center Taper		MT#2	MT#2	MT#2
Motor	Type		AC Servo Motor	AC Servo Motor	AC Servo Motor
	Power		1HP(0.75kW)	0.75kW	0.75kW
	Voltage		200-230VAC	200-230VAC	200-230VAC
	Phase		Single Phase	Single Phase	Single Phase
	Frequency		50/60Hz	50/60Hz	50/60Hz
Product Dimensions	Weight		176lbs(80kg)	80kg	80kg
	Length/Width/Height		55-1/8×15-3/4×19-3/8″ （1400×400×490mm）	1400×400×490mm	1400×400×490mm
	Footprint		40-5/8×9-1/2″ （1030×240mm）	1030×240mm	1030×240mm

7. Power Supply

Warning: For your own safety, have all electrical installations performed under the supervision of a qualified electrical engineer.

Careful: If the factory installed plug does not fit the outlet, before making any changes, please seek assistance from a qualified electrician to ensure that the electrical supply meets the local standards.

Notice: the power supply requires that the ground wire and positive wire must be separated and in accordance with TN-S Standard.

Voltage: 200-230VAC **Frequency:** 50/60Hz

Phase: Single Phase **Current:** 6.78A

8. Assembling and Adjustment

8.1. Base

The lathe must be placed on a flat, dry surface. The electricity components must not be exposed to direct sunlight. The area around the lathe must be large enough for normal operations.

8.2. Unpacking

If you find any damage to the unit, please contact your local dealer immediately.

Please verify that all parts listed are included. Please contact your local dealer if any item is missing.

Please read the user manual carefully before operating.

8.3. Packing List

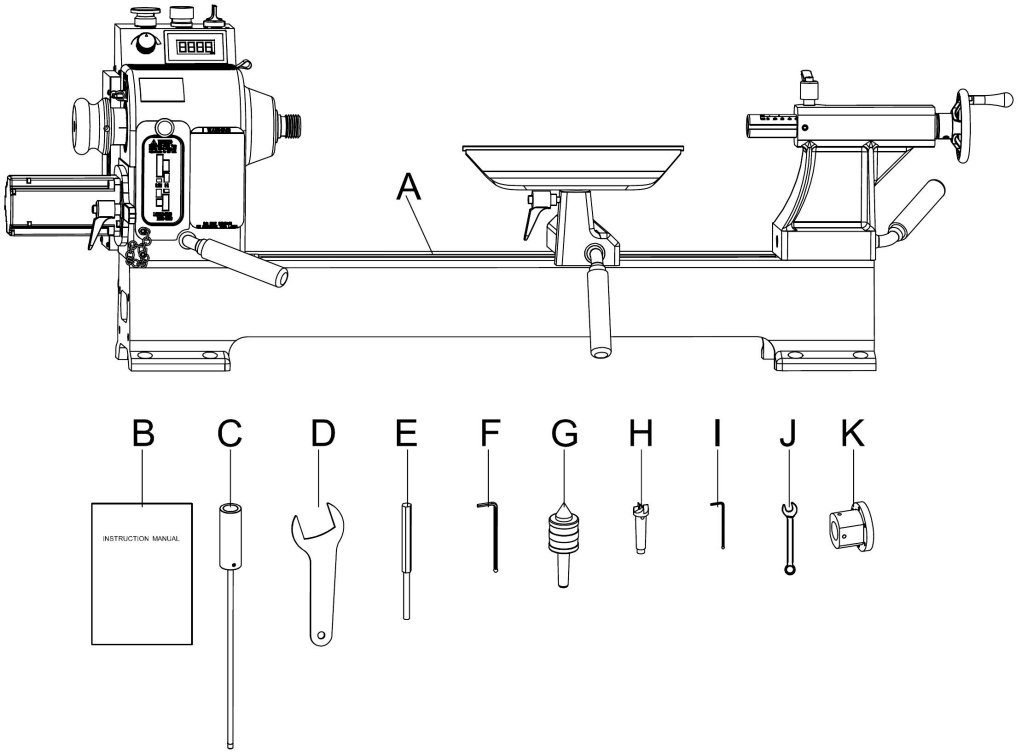


Figure 2

A	Main Body (Including: Bed, Head Stock, Tail Stock, Tool Slide and Tool Rest)
B	User Manual
C	Knockout Rod
D	50# Spanner
E	Locating Rod
F	4mm Hex Key
G	Live Center
H	Spur Center
I	3mm Hex Key
J	19# Spanner
K	3″Face Plate

9. Operating

Notice:

The lathe must be powered off during assembly, adjustment or maintenance.

Please start the lathe by using the lowest speed!

9.1. Control Panel

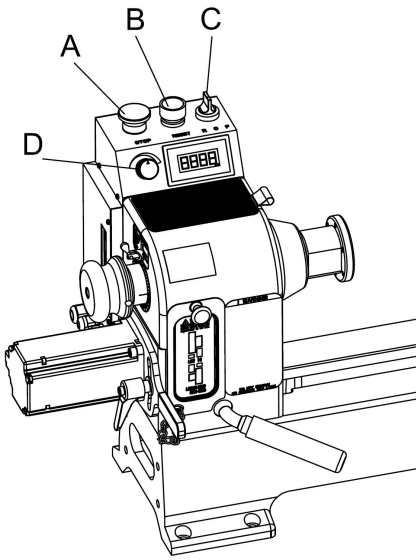


Figure 3

1. Emergency Stop Button—Red Button A:

If you stop the lathe by pressing the red button “A”, when restarting the lathe, you need to turn the switch “C” to the position “O” and then turn it to the position “F” or “R” position based on which direction you want the lathe to turn

2. Reset Button—Blue Button B:

When you received an overload alarm, please press “B” to clear the alarm. Turn the switch “C” to position “O” and restart the lathe.

3. Positions Switch---Gear Switch “C”：

“F”: forward; “R”: reverse; “O”: stop

To Start the lathe: turn the switch “C” to the position “R” or “F”

To Stop the lathe: turn the switch “C” to the position “O” or press the red button “A”. If the lathe has been stopped by pressing the red button “A”, please follow procedure 1 to restart.

4. Speed Adjustment Knob---D:

Change the spindle speed by turning this knob.

9.2. Speed Range Adjustment

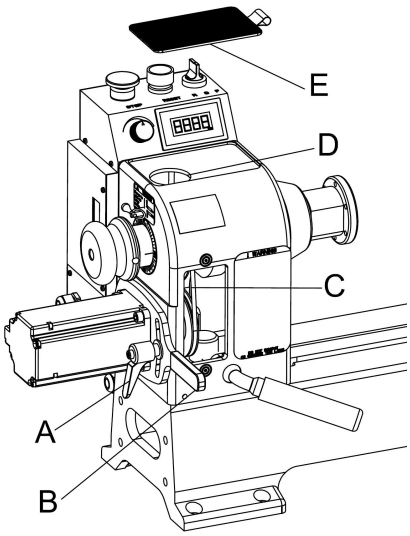


Figure 4

The lathe is designed having two speed ranges: Low Range: 60-2800rpm and High Range: 90-4300rpm
In each speed range, the Speed Adjustment Knob can change the spindle speed freely.

Follow the steps below to change the speed range:

1. Disconnect the lathe from the power supply;
2. Open the Head Stock Guard which is held by a strong magnetic pad;
3. Loosen the Motor Locking Handle “A”, pull up the Motor Mount Handle to release the belt tension;
4. Position the belt on the desired speed range pulleys;
5. Turn the spindle hand wheel by hand,ensuring the belt rotates smoothly and is engaged with both the motor pulley and the arbor pulley;
   Notice: You could remove the rubber pad “E” and use the hole “D” to assist in changing the belt.
6. Tighten the belt by pushing down the motor mount handle, then tighten the motor locking handle “A”. Close the Head Stock Guard.

9.3. Recommended Turning Speed Table

Notice: Please start the lathe by using the lowest speed!

Wood Piece Dia.		Rough Turning	Normal Turning	Sanding
Metric	Imperial			
＜50mm	＜2″	1600rpm	3500rpm	4300rpm
50-100mm	2-4″	800rpm	1600rpm	2500rpm
100-150mm	4-6″	500rpm	1100rpm	1700rpm
150-200mm	6-8″	400rpm	800rpm	1250rpm
200-250mm	8-10″	300rpm	700rpm	1000rpm
250-300mm	10-12″	250rpm	550rpm	900rpm
300-400mm	12-14″	200rpm	450rpm	680rpm
400-500mm	16-20″	150rpm	350rpm	550rpm
500-600mm	20-24″	100rpm	280rpm	400rpm
≥600mm	≥24″	80rpm	200rpm	300rpm

9.4. Tool Slide

The Tool Slide is designed with a camshaft locking system. It can be moved along the bed smoothly. Pull up the Tool Slide Locking Handle in order to move the Tool Slide to any position, then tighten by pressing down the Tool Slide Locking Handle.

9.5. Tool Rest

The 12” Tool Rest comes as a standard component. The height or angle can be adjusted by loosening the Tool Rest Handle. The Tool Rest Locking Handle can be mounted on the left or right side according to the user’s preference.
Notice: The Tool Rest Locking Handle must be tightened before operating.

9.6. Head Stock

Refer to Figure 5.
The Head Stock can be swiveled to preset positions at 0°, 22.5°,45° and 90°. It is also possible to position at any angle between 0°-90°.

Notice: the electrical supply must be disconnected before swiveling the Head Stock!

When repositioning the Head Stock back to 0°, use the bed as reference and turn the Head Stock anticlockwise firmly, and then tighten the Head Stock Locking Handle!

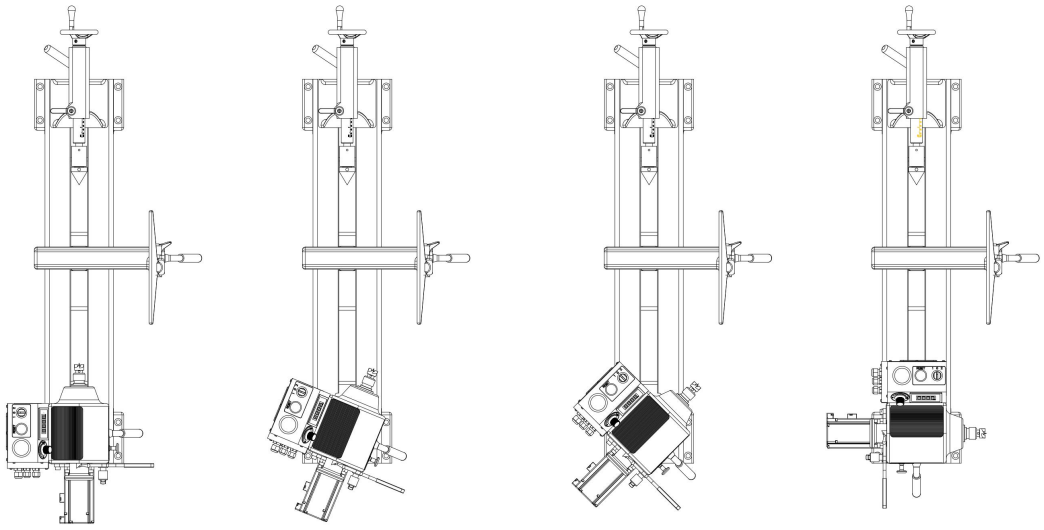


Figure 5

9.7. Tail Stock

The Tail Stock can move along the bed. Loosen the Tail Stock Locking Handle, move the Tail Stock to any position, then tighten the Tail Stock Locking Handle.

9.8. Using Tail Stock Quill

Loosen the Tail Stock Quill Locking Handle, rotate the Tail Stock Hand Wheel to the desired Tail Stock Quill position, and then tighten the Tail Stock Quill Lock Handle.

9.9. Using the Spur Center(Figure 6)

1. Make sure the lathe has been turned off.
2. Make sure the Spur Center taper and the Spindle hole are clean, then push the Spur Center into the Spindle hole.
3. To remove the spur center, place the Knockout Rod in the center of the Hand Wheel and strike the Spur Center until the Spur Center is disengaged.

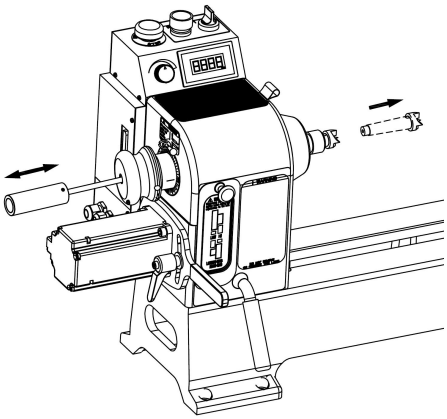


Figure 6

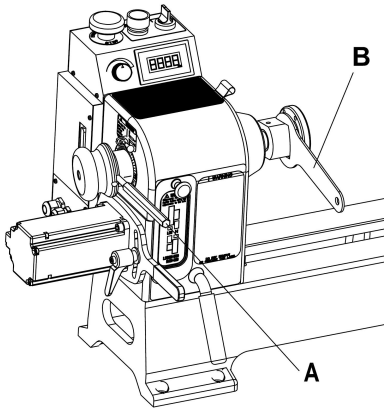


Figure 7

9.10. Using the Face Plate(Figure 7)

1. Make sure the lathe has been turned off.
2. Insert the Locating Rod “A” into the Spindle Hand Wheel hole. Put the 50# Spanner “B” on the Face Plate, push down on the Locating Rod with the left hand while pulling up on the 50#Spanner with the right hand to mount the Face Plate.
3. Tighten the locking insert on the Face Plate.
4. Reverse these directions to dismount the Face Plate.

9.11. Using the Live Center

1. Mounting the Live Center: Be sure the Live Center and Tail Stock Quill hole are clean, then push the Live Center into the Tail Stock Quill hole.
2. Dismounting the Live Center: Loosen the Tail Stock Quill Lock Handle, rotate the Tail Stock Hand Wheel anticlockwise until the Live Center is ejected from the Tail Stock Quill, pull out the Live Center by hand.

10. General Maintenance

Daily:
Wipe off the dust from the lathe with a soft bench brush.

Apply a coat of wax on the Spindle, Tail Stock Quill and bed.

Monthly:
Check the belt tension.

Check the belt for wear and tear and change the worn and torn belt.

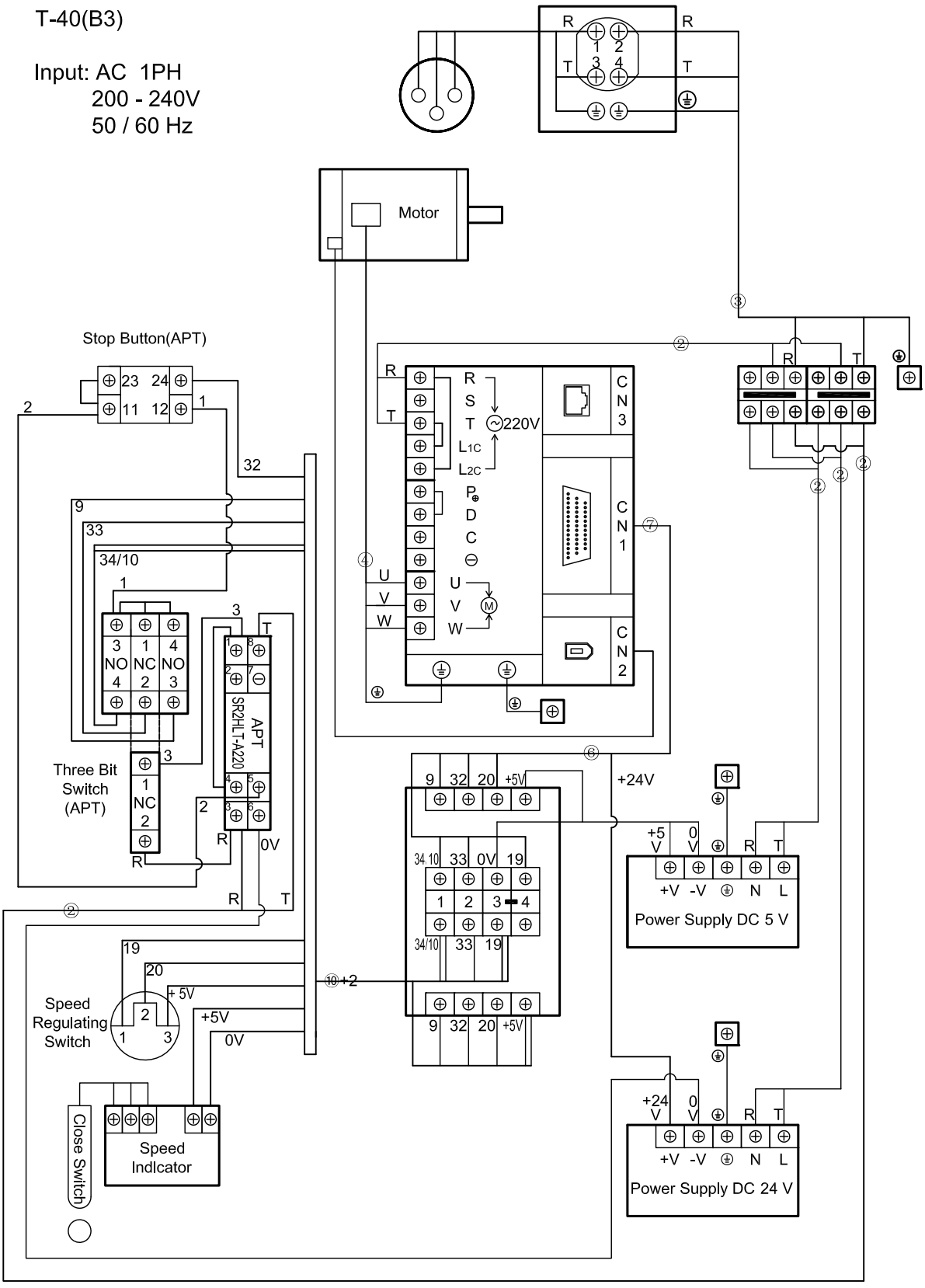
Clean the dust from the belt.

Check the stability of the lathe base.

11. Trouble Shooting

Trouble	Probable Cause	Remedy
Lathe won't start.	No incoming power.	Check power supply, lead connections
	Problem with driver.	Contact Harvey Technical Service.
Motor fails to develop full power.	Undersized wires in power supply system.	Increase supply wire size.
	Faulty driver.	Contact Harvey Technical Service.
	Worn motor.	Replace motor.
Motor or spindlestalls or will not start.	Excessive cut.	Reduce depth of cut.
	Improper belt adjustment, or worn or broken belt.	Adjust or replace belt as needed.
	Worn spindle bearings.	Replace bearings.
	Worn motor.	Replace motor.
Excessive vibration.	Workpiece warped, out of round, has major flaw, or was improperly prepared for turning.	Correct problem by planing or sawing workpiece, or discard entirely and use new workpiece.
	Worn spindle bearings.	Replace spindle bearings.
	Worn drive belt.	Replace drive belt.
	Motor mount lock handle is loose.	Tighten lock handle.
	Lathe on uneven surface.	Adjust leveling feet.
Lathe runs at one speed only.	Driver is not programmed properly, or is defective, or there is loose wiring.	Contact Harvey Technical Service to help identify problem.
Tools tend to grab or dig in.	Dull tools.	Keep tools sharp.
	Tool support set too low.	Reposition tool support height.
	Tool support set too far from workpiece.	Reposition tool support closer to workpiece.
	Improper tool being used.	Use correct tool for operation.
Tailstock moves when applying pressure.	Cam lock nut needs adjusting.	Tighten cam lock nut.
	Lathe bed and tailstock mating surfaces are greasy or oily.	Remove tailstock and clean surfaces with a cleaner/degreaser. Re-apply light coat of oil to Lathe bed surface.

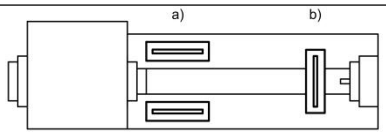
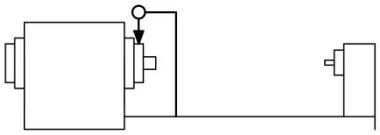
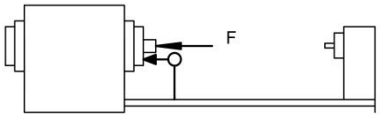
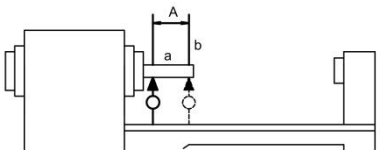
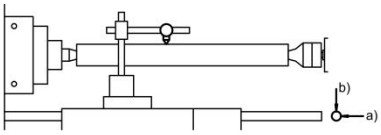
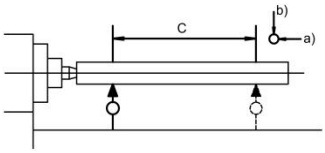
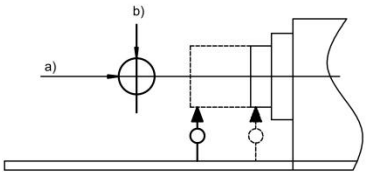
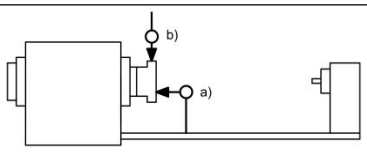
12. Wiring Diagram



13. INSPECTION STANDARDS

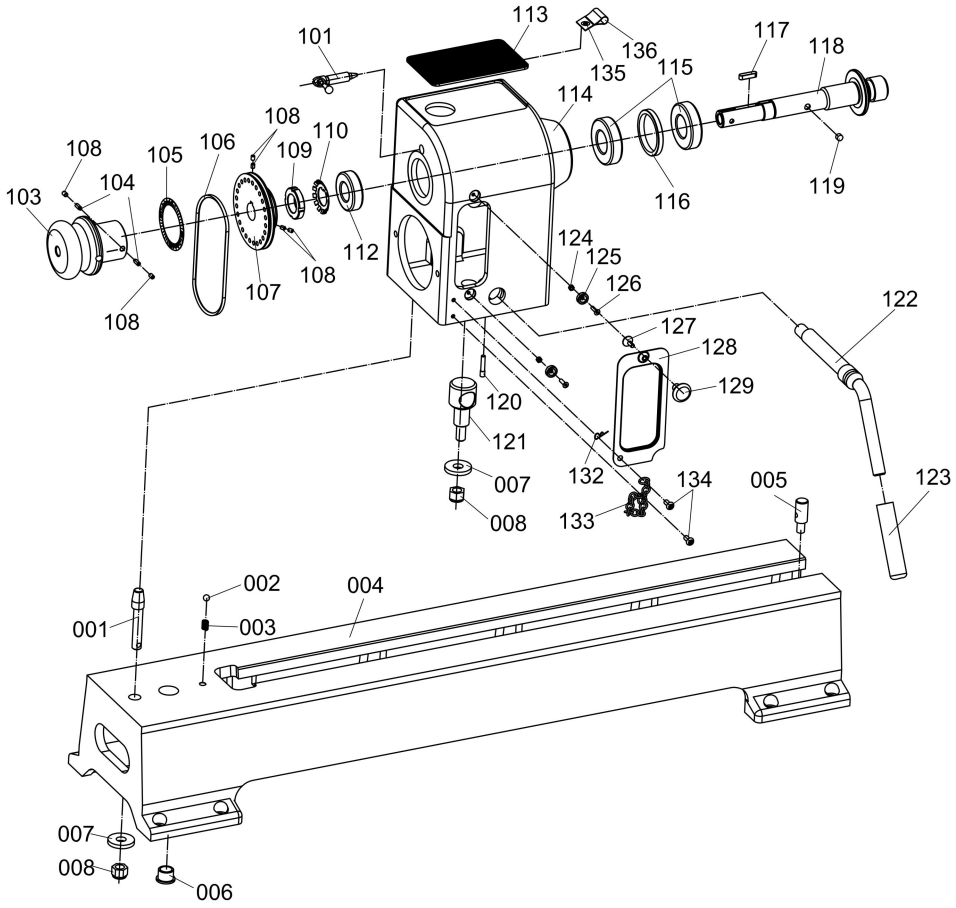
(Wood Lathe)

This machine is inspected in the factory andmeets the following precision standards.

Index	Diagram	Inspection Item	Standard（mm）
1		Bed a: Straightness b: Parallelism	0.08/800 0.02
2		Spindle radial runout.	0.01
		Spindle end-face runout.	0.01
		a: Spindle inner taper runout. b: Spindle near thread test rodrunout.. c: Spindle away from thread test rodrunout	0.01 0.015 0.03/150
3		a: Horizontal direction b: Vertical direction	0.10/400 0.10/400
4		a: Horizontal direction b: Vertical direction	0.03/150 0.06/150
5		a:Horizontal direction b:Vertical direction	0.03/100 0.04/100
6		Face plate a: End-face runout b: Radial runout	0.06 0.10

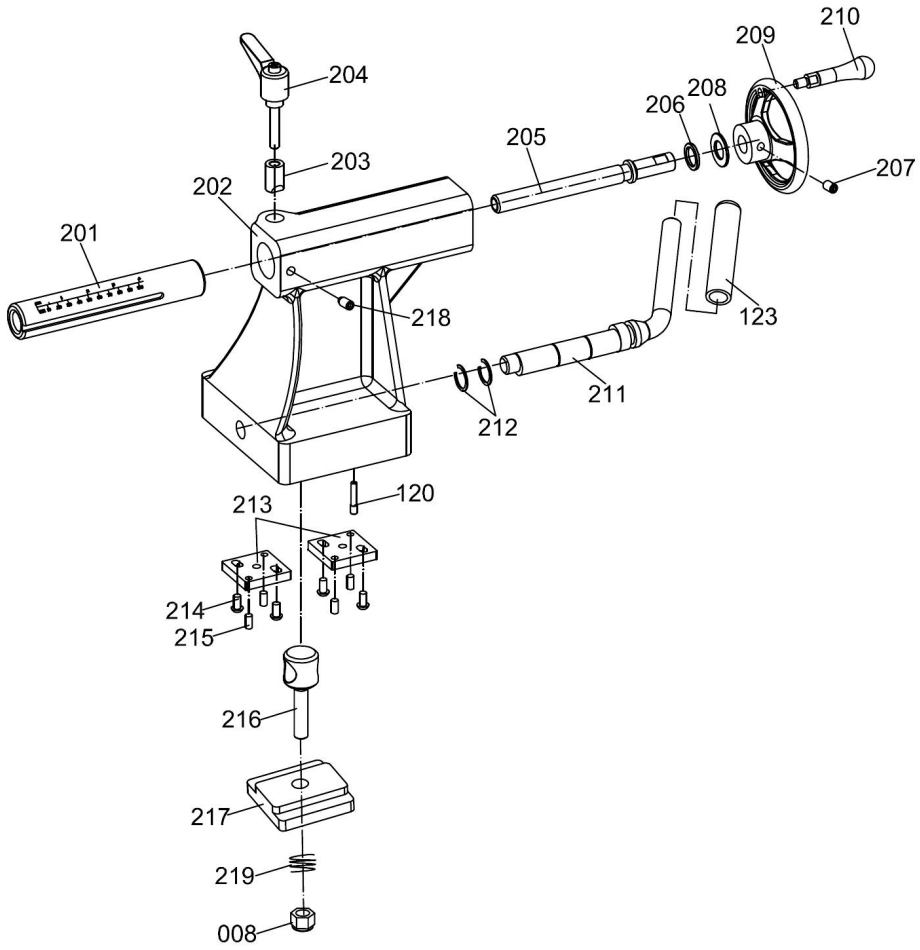
14. Exploded View and Parts List

Head Stock & Bed Assembly



REF#	DESCRIPTION	REF#	DESCRIPTION
001	Head Stock Adjusting	005	Stop Rod
002	Ball	006	Bronze Sleeve Bearing
003	Spring	007	Tension Washer
004	Bed	008	Hex Lock Nut M12
101	Index Pin	119	Strong Magnet
103	Spindle Hand Wheel	120	M6-Φ5 Position Pin
104	Set Screw M6×12	121	Head Stock Turning Spindle
105	Index Label	122	Head Stock Lock Handle
106	60°Belt	123	Rubber Grip
107	5M Arbor Pulley	124	Hex Lock Nut M4
108	Set Screw M6×6	125	Strong Magnet
109	Screw Nut M25×1.5	126	Cap ScrewM4×16
110	Teeth Skid Resistant Washer	127	Cap Screw M6×12
112	Bearing	128	Head Stock Guard
113	Rubber Pad	129	Guard Knob
114	14″Head Stock Case	132	Tooth Washer
115	Bearing	133	Chain
116	Space Loop	134	Cap Screw M6×12
117	Flat Key	135	Rivet
118	Spindle	136	Belt

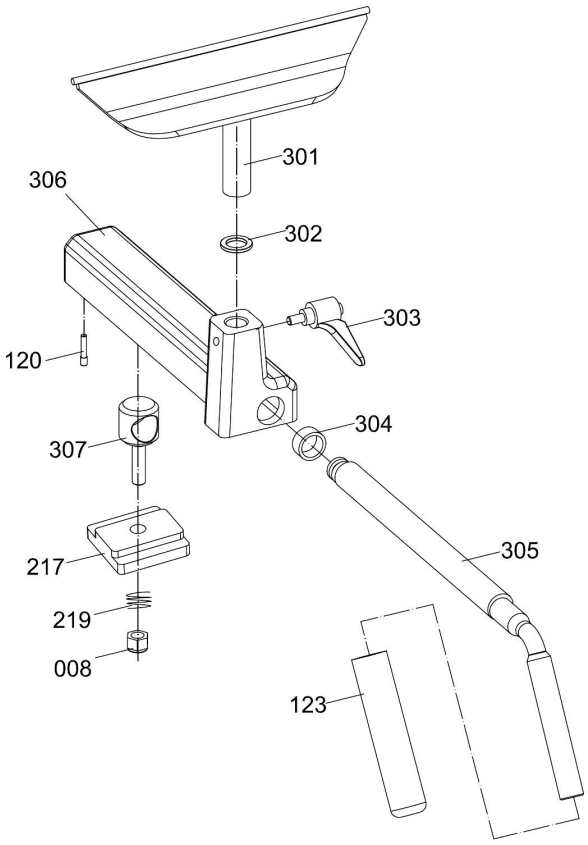
Tail Stock Assembly



REF#	DESCRIPTION
008	Hex Lock Nut M12
201	Tail Stock Quill
202	14″Tail Stock
203	Tail Stock Quill Sleeve
204	Adjustable Handle M8×40
205	Feed Screw
206	Feed Screw Ring
207	Set Screw M8×10
208	Feed Screw Washer
209	4″Tail Stock Hand Wheel
210	4″Tail Stock Handle

REF#	DESCRIPTION
211	Tail Stock Lock Handle
212	Jump Ring
213	Tail Stock Position Piece
214	Cap Screw M6×16
215	Cone Pin
216	Tail Stock Lock Bolt
217	Lock Piece
218	M8-Φ6 Locking Screw
219	Compression Spring
120	M6-Φ5 Position Pin
123	Rubber Grip

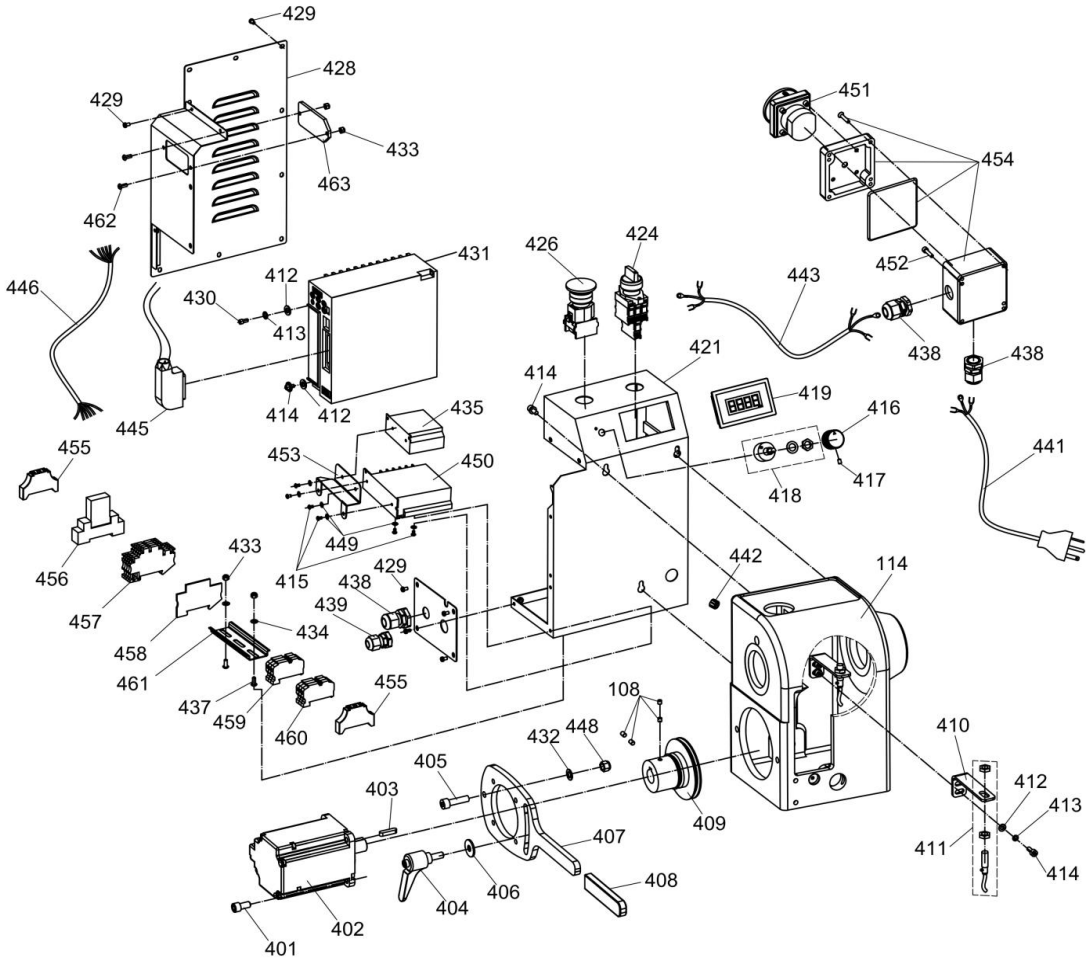
Tool Rest Assembly



REF#	DESCRIPTION
008	Hex Lock Nut M12
120	M6-Φ5 Position Pin
123	Rubber Grip
217	Lock Piece
219	Compression Spring
301	Tool Rest

REF#	DESCRIPTION
302	Tool Rest Copper Washer
303	Tools Rest Lock Handle
304	Tool Slide Copper Blot
305	Tool Slide Lock Handle
306	Tool Slide
307	Tool Slide Lock Bolt

Motor and Electric Assembly



REF#	Description	REF#	Description	REF#	Description
108	Set Screw M6×8	418	Position Bar	443	Power Cable Ⅱ
114	14″Head Stock Case	419	Speed Display	445	Servo Drive Control Cable
401	Cap Screw M6×12	421	Electricity Case	446	Switch Control Cable
402	B3 Servo Motor	424	Three-Position Switch	448	Hex Lock Nut M8
403	Flat Key (C)	426	Stop Button	449	Washer 3
404	Handle M8×25 R63	428	Electricity Back Case	450	24V Power
405	Cap Screw M8×30	429	Cap Screw M4×6	451	CAM switch
406	Large Washer 8	430	Cap Screw M5×10	452	Cap Screw M4×16
407	Motor Mount Plate	431	B3 Driver	453	Plate of 5V Power
408	Motor Mount Grip	432	Washer 8	454	Electrical box assembly
409	5M Motor Pulley	433	Hex Lock Nut M4	455	Fixator
410	Mounting Plate	434	Washer 4	456	Relay(A220)
411	Connection Switch	435	5V Power	457	Terminal
412	Washer 5	437	Cap Screw M4×8	458	Baffle
413	Spring Washer 5	438	Connection Nut	459	Terminal
414	Cap Screw M5×12 assembly	439	Connection Nut	460	Terminal
415	Cap Screw M3×5	440	Electricity Side Cover	461	Card Slot
416	Speed Adjust Knob	441	Power Cable with Plug	462	Cap Screw M4×10
417	Set Screw M4×5	442	Cable Protector	463	Window