TAKISAWA®
Operator’s Manual
TSL 550D, 800D, 1000D
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<th>TSL-800D</th>
<th>TSL-1000D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing over bed</td>
<td>360mm</td>
<td>360mm</td>
<td>360mm</td>
</tr>
<tr>
<td></td>
<td>14 1/8&quot;</td>
<td>14 1/8&quot;</td>
<td>14 1/8&quot;</td>
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<tr>
<td>Height of center</td>
<td>180mm</td>
<td>180mm</td>
<td>180mm</td>
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<tr>
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<td>7&quot;</td>
<td>7&quot;</td>
<td>7&quot;</td>
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<tr>
<td>Swing over cross slide</td>
<td>210mm</td>
<td>210mm</td>
<td>210mm</td>
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<td>8 1/4&quot;</td>
<td>8 1/4&quot;</td>
<td>8 1/4&quot;</td>
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<td>Swing over bed (from face plate to 100mm)</td>
<td>400mm</td>
<td>400mm</td>
<td>400mm</td>
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<td></td>
<td>16&quot;</td>
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<tr>
<td>Distance between center</td>
<td>550mm</td>
<td>600mm</td>
<td>1000mm</td>
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<tr>
<td></td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>40&quot;</td>
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<td>Length of bed</td>
<td>1260mm</td>
<td>1610mm</td>
<td>1610mm</td>
</tr>
<tr>
<td></td>
<td>53&quot;</td>
<td>63&quot;</td>
<td>71&quot;</td>
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<tr>
<td>Width of bed</td>
<td>275mm</td>
<td>275mm</td>
<td>275mm</td>
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<tr>
<td></td>
<td>10 13/16&quot;</td>
<td>10 13/16&quot;</td>
<td>10 13/16&quot;</td>
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<tr>
<td>Floor to work center</td>
<td>980mm</td>
<td>1055mm</td>
<td>1055mm</td>
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<td></td>
<td>38 1/2&quot;</td>
<td>41 1/2&quot;</td>
<td>38 1/2&quot;</td>
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<tr>
<td>Hole thru spindle</td>
<td>35mm</td>
<td>35mm</td>
<td>35mm</td>
</tr>
<tr>
<td></td>
<td>1 3/8&quot;</td>
<td>1 3/8&quot;</td>
<td>1 3/8&quot;</td>
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<tr>
<td>Center taper</td>
<td>MT NO. 3</td>
<td>MT NO. 3</td>
<td>MT NO. 3</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>MT NO. 5</td>
<td>MT NO. 5</td>
<td>MT NO. 5</td>
</tr>
<tr>
<td>Spindle nose</td>
<td>ASA A1-5&quot;</td>
<td>ASA A1-5&quot;</td>
<td>ASA A1-5&quot;</td>
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<tr>
<td>Tailstock spindle taper</td>
<td>MT NO. 3</td>
<td>MT NO. 3</td>
<td>MT NO. 3</td>
</tr>
<tr>
<td>Spindle speeds</td>
<td>Number</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>83-1800RPM</td>
<td>83-1800RPM</td>
</tr>
<tr>
<td>Taper roller bearing at front</td>
<td>#32214</td>
<td>#32214</td>
<td>#32214</td>
</tr>
<tr>
<td>Taper roller bearing at rear</td>
<td>#30211</td>
<td>#30211</td>
<td>#30211</td>
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<tr>
<td>Feeds...</td>
<td>Number</td>
<td>36</td>
<td>36</td>
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<tr>
<td>Longitudinal feeds</td>
<td>Range</td>
<td>0.05-3.60 mm</td>
<td>0.0020&quot;-0.1417&quot;</td>
</tr>
<tr>
<td></td>
<td>M.</td>
<td>0.05-3.60 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inch</td>
<td>0.0020&quot;-0.1417&quot;</td>
<td></td>
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<tr>
<td></td>
<td>Cross feeds</td>
<td>3/4 of long.</td>
<td>3/4 of long.</td>
</tr>
<tr>
<td>Inch threads</td>
<td>Number</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>2-56 tpi</td>
<td>2-56 tpi</td>
</tr>
<tr>
<td>Metric threads</td>
<td>Number</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>0.5-9mm</td>
<td>0.5-9mm</td>
</tr>
<tr>
<td></td>
<td>0.5-9mm</td>
<td>0.5-9mm</td>
<td>0.5-9mm</td>
</tr>
<tr>
<td>Motor</td>
<td>2.2kW 3hp</td>
<td>2.2kW 3hp</td>
<td>2.2kW 3hp</td>
</tr>
<tr>
<td></td>
<td>3.7kW 5hp</td>
<td>3.7kW 5hp</td>
<td>3.7kW 5hp</td>
</tr>
<tr>
<td>Overall length</td>
<td>1682mm 64&quot;</td>
<td>1872mm 74&quot;</td>
<td>2072mm 82&quot;</td>
</tr>
<tr>
<td>Overall width</td>
<td>725mm 28 1/2&quot;</td>
<td>725mm 28 1/2&quot;</td>
<td>725mm 28 1/2&quot;</td>
</tr>
<tr>
<td>Weight (Approx.)</td>
<td>1000kgs</td>
<td>1100kgs</td>
<td>1200kgs</td>
</tr>
</tbody>
</table>
STANDARD EQUIPMENT

Driving plate (6") ..................................................1 set
Change gear ..........................................................1 set
Screw driver ..........................................................2 pieces
Double ended wrench ..............................................2 "
T-socket wrench .....................................................1 piece
Hex wrench ...........................................................10 pieces
Sleeve MT No.5 x No.3 ..............................................1 piece
Center MT No.3 .......................................................2 pieces
Foundation bolt ...................................................1 set
Tool box ...............................................................1 set
7" 3-jaw universal chuck ........................................1 set
Automatic longitudinal feed stop bar ......................1 set

EXTRA EQUIPMENT

Coolant equipment
Tracer unit
Rear tool post
4-jaw chuck
Chip guard
Live center
Taper attachment
Steady rest
Follow rest
Face plate
INSTALLATION

Foundation

Construct the foundation with foundation iron plates in standard accessories.

For TSL, insert two steel bars (30"x 1m) into the lifting hole, and raise the machine slightly to assure proper balance before continuing using 15mm dia. wire rope. Make sure the machine does not touch with the wire rope. The carriage may be moved to help balance the lathe for moving by crane. Do not jerk as damage could occur.
Leveling

Your TAKISAWA lathe was aligned and accurately checked with lathe in perfect level. As the level of the machine exercise a great influence upon the accuracy and machine life, please take notice of the adjustment. Place steel plates on the foundation holes and set the lathe in position little by little. Insert the foundation bolts through the foundation holes and lock the washers and nuts properly. Then level the lathe with wedges roughly. Pour mortar into the foundation holes. After the mortar was solidified, remove the wedges and adjust the adjusting bolts. Straightness of bed slideways (longitudinal direction) should be 0.04mm per 1m. (See attached Accuracy Test Chart) In leveling, tighten the nuts for adjusting bolts and for foundation bolts. Please prevent from leaving the machine for long time in packing or unproper condition.

Electric wiring

Connect a source of electricity by checking the motor rotation. When checking the rotating direction after connecting, turn the switch ① after placing the starting lever ⑩ to the stop position. Next, move the lever ⑩ to the left side, so the spindle begins to rotate. In this case, if the spindle rotates anti-clockwisely, the motor's rotation is forward.
TH-RY: Thermo Relay
MS1: Forward Rotation Magnetic Contactor
MS2: Reverse Rotation Magnetic Contactor
H.L: High And Low Speed Magnetic Contactor
CR1: Main Control Magnetic Contactor
P.L: Pilot Lamp
P: Pump Magnetic Contactor
SS1: Main Control Switch
SS2: Pump Control Switch
SS3: High And Low Speed Control Switch
L.S: Brake Limit Switch
L.S1: Start Lever Limit Switch
**LUBRICATION**

<table>
<thead>
<tr>
<th>Station</th>
<th>Amount</th>
<th>Recommended lubricant</th>
<th>Oil change interval &amp; time of supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Headstock</td>
<td>2.5</td>
<td>Mobil Velocite No.6</td>
<td>3 months after installation and then every 6 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shell Tellus No.13</td>
<td></td>
</tr>
<tr>
<td>17 Apron</td>
<td>0.5</td>
<td>Mobil Vactra No.2</td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shell Tonna 33</td>
<td></td>
</tr>
<tr>
<td>2 Gear box</td>
<td>Properly</td>
<td>Mobil Velocite No.6</td>
<td>Each day before starting lathe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shell Tellus No.13</td>
<td></td>
</tr>
<tr>
<td>14 Lead screw,</td>
<td>&quot;</td>
<td>Mobil Vactra No.2</td>
<td>&quot;</td>
</tr>
<tr>
<td>Feed screw,</td>
<td></td>
<td>Shell Tonna 33</td>
<td></td>
</tr>
<tr>
<td>Bracket</td>
<td></td>
<td>Tonna 33</td>
<td></td>
</tr>
<tr>
<td>12 Tailstock</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>5 Female screw</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>for cross slide</td>
<td></td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>9 Female screw</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>for tool slide</td>
<td></td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>15 Bed ways and</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>carriage surface</td>
<td></td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>6 Bearing for tool post</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Active shaft</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
</tbody>
</table>
LUBRICATING POINTS

Fig. 3

1. Drain plug
2. Gear box
3. Oil gauge
4. Drain plug
5. Female screw for cross slide
6. Bearing for tool post
7. Female screw for tool slide
8. Female screw for tool slide
9. Female screw for tool slide
10. Apron
11. Oil gauge
12. Tailstock
13. Tailstock lock lever
14. Bracket
15. Plunger pump
16. Headstock cover
Lubrication to headstock

Remove the head cover 16 and fill oil to level on oil sight gage 3. Lubrication to headstock is lubricated by oil distributors from oil reservoir and supply to all bearings and gears in the headstock. Oil change interval is about 3 months after installation and then every 6 months.

When replacing the lubricant, remove the oil drain plug 1 at the rear side of the headstock. Every oil refreshment, clean the pipe and oil tank.

Lubrication to the gear box

Fill oil cup 2 on top side of the gear box. Oil in oil tray supplied to gears, bearings through oil distributor.

Lubrication to carriage, apron and bedways

Fill oil reservoir weekly to level on oil sight gage 11. When lubricating the carriage and apron, push and pull until oil appears in tell-tale hole at right hand shear wiper, this oils carriage, bedways and cross slide.

Please exchange oil in apron every 6 months.

When replacing the lubricant, remove the oil drain plug 4 at the bottom of the apron.
CONSTRUCTION

Headstock

Ribbed housing construction. Hardened and ground gears in headstock. Heat treated and ground spindle supported by two precision taper roller bearings. 35mm (1 1/8") hole through spindle. ASA A-1-5" short taper spindle nose.

Hardness of spindle is about 70 HS at nose, 65 HS bearing and taper parts. Safety device built in the spindle operation lever.

6 spindle speeds from 83 to 1800 rpm.

Oil bath lubrication.

<table>
<thead>
<tr>
<th>6 Spindle Speeds</th>
<th>83</th>
<th>155</th>
<th>270</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>560</td>
<td>1030</td>
<td>1800</td>
</tr>
</tbody>
</table>

Bed

Wide and fully ribbed with hardened and ground bedways.

Carriage

Wide H-shaped cast saddle, in order to withstand heavy cutting.

Plunger for one-shot lubrication of bed and saddle ways.

The micrometer collar of cross feed handle provides 5mm of feed per revolution and 0.02 mm per graduation.
Apron

Apron contains teeth clutch so that power feed operation is very easy. The feed change knob 13 and the half nut lever 12 are interlocked to prevent simultaneous engagement. Automatic longitudinal feed stop is mounted with standard equipment for TSL-D type.

Gear box

Norton type (for TSL-D type)
Simple feed and thread selection by Norton type gear box.
31 inch threads from 2 to 56.
18 metric threads from 0.5 to 9.
36 power feed. The leadscrew is available to fit 6 tpi.
6 mm pitch and 4 mm pitch.

Tailstock

Rigid and robust tailstock is clamped in any position firmly by the lever 22.
Heat treated and ground spindle is in position to the headstock in size.
OPERATION

Preparation for operation

Adjust the V-belt tension after opening the rear cover. Before starting the machine, consult the section on "Lubrication" for the proper lubrication points and the fillers for the reservoirs. Make sure the machine is properly lubricated before starting in order to avoid damaging any bearing surfaces.

<table>
<thead>
<tr>
<th>Spindle speed range</th>
<th>Cycle</th>
<th>Motor pulley</th>
<th>Length of V-belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>83-1800</td>
<td>60</td>
<td>78.6mm $\phi$ (3 3/32&quot;)</td>
<td>66&quot; A-type</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>94 mm $\phi$ (3 11/16&quot;)</td>
<td>67&quot; A-type</td>
</tr>
</tbody>
</table>

1. V-belt (A-type, 3 pcs.)
2. Tension pulley
3. Ventilator
Starting and stopping headstock spindle

Please operate the machine along next order.
1. Make sure the position of the lever 10
2. Turn the command switch to the right, pilot lamp 2 will light. This shows that the machine is ready for operation.
3. Turn the lever 10 to the left for forward rotation.
   Turn the lever 10 to the right for reverse rotation.
4. Step the brake pedal 9 and could stop spindle.
5. Place the lever 10 to "STOP" position.
   Pilot lamp 2 will light and the machine will be ready for operation again. (See fig 5)

Changing spindle speeds

The speeds are easily selected two levers 5 and 8 giving speeds of 83 to 1800 rpm. Spindle speeds should be changed only after the machine is stopped.
(Note: Don't operate the lever during running.)
Cutting speed and cutting time are as follows.

CUTTING SPEED TABLE

![CUTTING SPEED TABLE Diagram]
Power feed of carriage

1. Open the rear cover 24 and assemble change gears according to the index plate.
2. Set the command switch 1.
3. Turn the forward and reverse knob 4 to the right (in case forward rotation) or the left (in case reverse rotation).
4. Place the feed change lever 3, 29 on the desired position according to the plate.
5. Place the feed thread change lever 6 to the "FEED SIDE".
6. Operate the starting lever 10.
7. Turn the change knob for longitudinal and cross feed 13.
8. Pull up the feed on lever 13.

Manual feed of carriage

Longitudinal feed is done with the handwheel 19 for the carriage. Cross feed is with the cross feed operating handle 14. Feed of tool slide is with the tool slide handle 18.
Operation of thread cutting

1. Assemble the change gears according to the index plate.
2. Place the feed change lever ③, ⑨ on the desired position according to the index plate.
3. Place the feed thread change lever ⑥ to the "THREAD" side.
4. Mesh the chasing gear ⑪ with the leadscrew.
5. Turn the forward and reverse knob ④ to the left.
6. Place the starting lever ⑩ to the left.
7. Push down the half nut lever ⑫.

(Note) The feed change knob ⑬ and the half nut lever ⑫ are interlocked to prevent simultaneous engagement.

The chasing dial ⑪ permits the operator to take a thread cutting, however, you can not use it in case of metric thread cutting with inch size leadscrew.

Automatic longitudinal feed stop bar

1. Fix the tool bit on the tool post.
2. Move the tool at the required position by the handwheel ⑯.
3. Place the lever ⑭ to starting position.
4. Contact with the bolt ⑫ to the plate ⑭.
5. Move the block ⑲ until the lever ⑭ will drop.
6. After that, tighten the clamp bolt ⑳.

Make sure that the plate ⑭ will not contact with the block ⑲ when not in use.
Tailstock

When moving the tailstock, loosen the tailstock bodylocking lever 22 and after moving it, lock it tightly.
Movement of the tailstock spindle is operated by tailstock spindle feed handle 23. One turn clockwise of the handle moves the spindle 4mm. After feeding the spindle, lock the lever again.
Tailstock center taper is MT No.3 and 120mm long.
(See fig 5)

Mounting of chuck and face plate

Before mounting them, clean their taper parts.
Mount the back plate for the chuck tightly and then mount the chuck with bolts.
When you tighten bolts, never tighten only one bolt tightly.
Chuck and face plate are pre-balanced not to run-off at high speed rotation.
THREAD CHASING DIAL

The thread chasing dial is mounted on the upper right side of apron.

IN CASE OF 1 INCH LEADSCREW ( 6 TPI)

The structure of chasing dial for cutting threads is as following diagram.
ADJUSTMENT

Parts are adjusted before we ship this machine, so you have no need of readjustment except in case of trouble. But if it needs adjustment as follows.

Leveling of the bed slide ways

The accuracy depends on leveling of the bed slide ways, so take care installing the machine. Also after installing the machine, examine the level of the bed slide ways regularly. Don't use your lathe in bad accuracy because it will occur to the twist of the bed.

Adjustment of the headstock

When adjusting the level of the spindle center, take off the rear cover, properly loosen the headstock clamping bolts and adjust the headstock adjusting bolts as the following figure shows. It is rarely necessary to do this kind of adjustment.
Adjustment of the spindle bearing

The spindle is supported by a two point mounting system of the taper roller bearing #30211 and #32214. Both of them are properly adjusted before we ship this machine, so you have no need of readjustment except in case of trouble. However if either looseness or slackening should happen to them due to an unexpected condition or the wear of the machine, remove the rear cover of the headstock and adjust the ring nut. Be careful not to lock the nut too tight, otherwise the spindle will be overheated or damaged in high speed revolution due to overcharge of the preload.

Adjustment of the apron teeth clutch

When adjusting the apron teeth clutch, remove the cover of the feed on lever 15 and clamp the nut little by little.
Adjustment of the gib:

The cross slide and the tool rest contain the taper gib which were adjusted but if it has slackened after many years of use, adjusting bolts must be tightened.

Adjustment of the female screw of the cross slide

The cross slide has a device to eliminate backlash of the feed screw and the female screw. If the backlash becomes greater, loosen the bolt \( A \) slightly. Then screw the bolt \( B \). After eliminating the backlash, the bolt \( A \) must be tightened.

Centering and adjustment of the tailstock

Centering of the tailstock and simple taper cutting is done by adjusting bolts. But in the case of regular taper turning, a taper attachment must be used. The tailstock is designed to pull up the clamp plate by means of the eccentricity of its axis. In case the locking power is weakened, adjust the nut \( A \) after loosening the socket screw \( B \) and then tighten the socket screw \( B \) again.
adjustment of the brake

Your machine is equipped with foot brake. Brake band is composed of a lining and lining holder. If the lining is worn out, loosen the nut(1) and tighten the bolt(2) to a suitable position.

After adjustment, retighten the nut(1).

(Note) Make sure the position of the bolt(3) if it is in touch with the roller of the limit switch. After adjusting them, tighten the nut(4).

adjustment of the microswitch

In case the cam of holding down the microswitch are in bad condition, adjust them after removing the cover as follows.
Adjustment of the square turret tool post

1. Remove the top lever holder and washer.
2. Loosen three flat screws.
3. Screw the three set screws equally.
4. Tighten the flat screw.

(Note) Don't screw the set screws too much because the rotation of tool post will become hard.
<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not start</td>
<td>A. Thermal relay operates for heavy cutting</td>
<td>Push the button for thermal relay</td>
</tr>
<tr>
<td></td>
<td>B. Motor is burnt out</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>C. Bad contact point</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>D. Fuse is out</td>
<td>Replace</td>
</tr>
<tr>
<td>2. Motor overheat</td>
<td>A. Over-tight of belt</td>
<td>Adjust the belt tension</td>
</tr>
<tr>
<td></td>
<td>B. Overload</td>
<td>Adjust the load</td>
</tr>
<tr>
<td>3. Starting lever is bad</td>
<td>A. Cam for micro switch</td>
<td>Adjust the cam</td>
</tr>
<tr>
<td></td>
<td>B. Micro switch is damaged</td>
<td>Replace</td>
</tr>
<tr>
<td>4. Unsuitable spindle rotation</td>
<td>A. Over-tight or over-loose  of the belt</td>
<td>Adjust the belt</td>
</tr>
<tr>
<td></td>
<td>B. Motor over-heat</td>
<td>Exchange the coil or replace</td>
</tr>
<tr>
<td>5. Headstock over-heat</td>
<td>A. Bearing</td>
<td>Adjust</td>
</tr>
<tr>
<td></td>
<td>B. high speed operation</td>
<td>Low speed operation</td>
</tr>
<tr>
<td></td>
<td>C. Lubricant shortage or dirty lubricant</td>
<td>Replace the lubricant</td>
</tr>
<tr>
<td>6. Chatter, gear noise</td>
<td>A. Bad gear mesh</td>
<td>Adjust or replace gear</td>
</tr>
<tr>
<td></td>
<td>B. Bearing</td>
<td>Adjust bearing</td>
</tr>
<tr>
<td></td>
<td>C. Taper gib</td>
<td>Adjust</td>
</tr>
<tr>
<td></td>
<td>D. Chucking is bad</td>
<td>Chuck the workpiece tightly</td>
</tr>
<tr>
<td></td>
<td>F. Bad tools</td>
<td>Replace or adjust</td>
</tr>
<tr>
<td>7. Unaccuracy or workpiece</td>
<td>A. Headstock movement</td>
<td>Adjust the headstock</td>
</tr>
<tr>
<td></td>
<td>B. Tailstock</td>
<td>Adjust the tailstock</td>
</tr>
<tr>
<td></td>
<td>C. Chucking is bad</td>
<td>Chuck tightly</td>
</tr>
<tr>
<td></td>
<td>D. Bad tools</td>
<td>Replace or adjust</td>
</tr>
<tr>
<td>Trouble</td>
<td>Probable cause</td>
<td>Correction</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>8. Irregular feed</td>
<td>A. Teeth clutch for feed start lever</td>
<td>Adjust</td>
</tr>
<tr>
<td></td>
<td>B. Feed rod</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C. Pinion gear</td>
<td>Adjust the gear or replace</td>
</tr>
<tr>
<td>9. Tailstock loose</td>
<td>A. Clamp power weak</td>
<td>Adjust clamp power</td>
</tr>
<tr>
<td>10. Brake power weak</td>
<td>A. Brake lining is worn out</td>
<td>Replace the lining</td>
</tr>
<tr>
<td></td>
<td>B. Limit switch is damaged</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>C. Water or oil</td>
<td>Clean</td>
</tr>
<tr>
<td>11. Cross slide movement does not coincide with dial movement</td>
<td>A. Backlash of female screw is large</td>
<td>Adjust the female screw</td>
</tr>
</tbody>
</table>
NOTES IN GENERAL

In addition to the above as to handling and operation of your lathe, the following applies:

1. Avoid strong sunlight keep machine off a heater or stove, otherwise it will be strained and affect precision.
2. Don't use impure oil for the machine.
3. Never fail to clean or lubricate the main parts of the machine each day. Please place the carriage close to the tailstock when not use.
4. When work is in the headstock, do not give it a strong blow with a hammer. This will affect spindle accuracy.
5. Be careful not to leave the sliding parts of the carriage and bed with grinding dust or sand. Particularly be most careful not to damage any part of the machine with dropping of tools. Any small mark or crack will affect the movement of the carriage on the ways.
6. In damp weather cover the machine with a vinyl cover or grease to prevent it from water, dripping and rusting.
7. Be sure to turn off the pilot lamp when not in use.