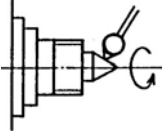
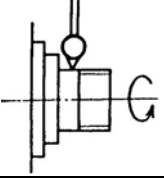
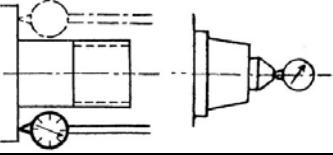
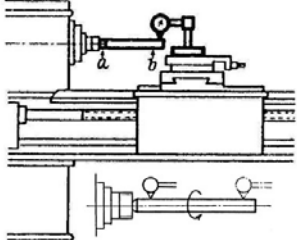
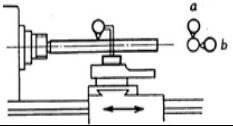
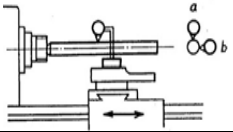
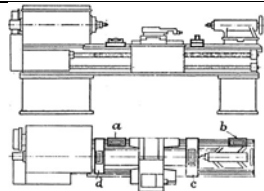
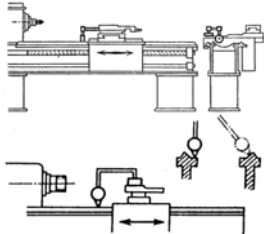
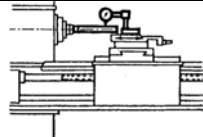
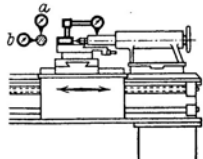
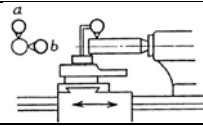
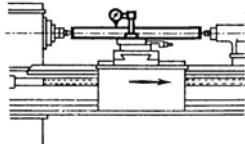
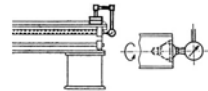
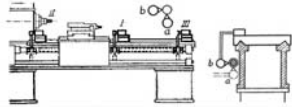
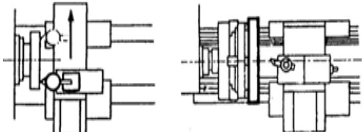


Location	Description	Permissible Error	Actual	Diagram	
Main Spindle	Center point for true running	0.015			
	For testing this error, the feeler of the dial indicator is pressed perpendicular to the taper surface of the centre and the spindle is rotated. The deviation indicated by the dial gauge gives the trueness of the center.				
	Nose Runout	0.01			
	The dial indicator is fixed to the carriage (or any other fixed member) and the feeler of the indicator touches the locating surface. The surface is then rotated on its axis and indicator should not show any movement of needle.				
	Spindle axial slip, measured at two points, displaced by 180 degrees	0.015			
	To test this install a dial gauge holder to the bed of the lathe, with the feeler resting on the face of the locating spindle shoulder. The locating cylinder is then rotated and the change in reading is noted. The readings are taken at two diametrically opposite points.				
	Taper of spindle runs true	Nearest spindle nose 0.01			
		At 300 mm: 0.02			
	To test, a test bar is fitted into the tapered hole and readings at two extremes of the bar are taken by means of a dial indicator.				
	Spindle parallel with bed in vertical plane - vertically along test bar (a)	0.01 per 300 mm			
Spindle parallel with bed in horizontal plane - along test bar (b)	0.01 per 300 mm				
The test bar is located in the spindle taper, the dial gauge is mounted on the saddle, the plunger touching the test bar. The saddle is moved along the mandrel by an amount equal to the reference length and the indication of the dial gauge noted. Measurements have to be repeated in the vertical plane (a) and the horizontal plane (b). The spindle must have been running for about half an hour before the measurement is taken so that the main bearing is at its working temperature.					

Location	Description	Permissible Error	Actual	Diagram
Bed	Bed straightness in longitudinal direction	0.04 per 1000 mm		
	Bed level in transverse direction	0.04 per 1000 mm		
	<p>The level of the machine bed in longitudinal and transverse directions is generally tested by a sensitive spirit level. The saddle is kept approximately in the centre of the bed support feet. The spirit level is then placed at (a) to ensure the bed is level in the longitudinal direction. It is then traversed along the length of bed and readings at various places noted down. For test in transverse direction the level is placed on a bridge piece to span the front and rear guideways and then reading is noted.</p>			
	Tailstock guideways parallel with movement of carriage	0.02 per 1000 mm		
Carriage	Parallelism of compound slide movement with test bar in vertical plane (hand feed)	0.01 per 150 mm		
<p>A mandrel is fitted in the spindle. A dial indicator is fixed in the tool post, and the arm is positioned in the vertical plane while the upper slide is moved longitudinally.</p>				
Tailstock	Tailstock sleeve parallel with bed in vertical plane (a)	0.02 per 150 mm		
	Tailstock sleeve parallel with bed in horizontal plane (b)	0.01 per 150 mm		
	<p>The test is carried out by fixing the dial indicator on the tool post and pressing the plunger against the sleeves first in vertical and then in horizontal plane. The carriage is moved along the full length of the sleeve and deviations as indicated by dial indicator are noted down.</p>			
	Parallelism of tailstock spindle to saddle movement in vertical plane (a)	0.02 per 300 mm		
	Parallelism of tailstock spindle to saddle movement in horizontal plane (b)	0.02 per 300 mm		
	<p>A test bar is put in the tailstock spindle. The dial gauge is fixed on the tool post and plunger is pressed against the test bar and the saddle is moved from one side to the other. This test is carried out in both the horizontal and vertical planes.</p>			
Vertical alignment of head and tailstock centers	0.04			
<p>A test bar is fitted between the two centers and a dial gauge is mounted to the carriage. The feeler of the dial gauge is pressed against the test bar in the vertical plane and the carriage is moved back and forth.</p>				

Location	Description	Permissible Error	Actual	Diagram
Leadscrew	Lead screw axial displacement	0.01		
	For testing the lead screw axial slip, a ball is fitted in the end of the lead screw and the feeler of the dial gauge is pressed against the ball. The lead screw is rotated and deviation, if any, in any direction is noted.			
	Lead screw alignment in vertical plane (positions II and III) (a)	0.1		
	Lead screw alignment in horizontal plane (positions II and III) (b)	0.1		
	Lead screw alignment with half nut closed in vertical plane (a)	0.15		
	Lead screw alignment with half nut closed in horizontal plane (b)	0.15		
For measuring the alignment of the lead-screw, the saddle is moved to the middle of the bed and the nut closed. The dial-gauge plunger touches the outside diameter of the lead-screw. The carriage is moved to the right (I to III) and to the left (I to II), and the procedure repeated both in the horizontal 'a' and the vertical 'b' plane. The lead-screw is also tested for true running (tolerance 0.1 millimeter).				
Working Accuracy	Squareness of cross slide movement	0.02 per 300 mm		
	Pitch error of lead screw	0.03 per 300 mm		