

Sample Lathe - Examination and Performance Test

Product Examination. Visually, manually and dimensionally examine the lathe to determine quality and workmanship. Visual examination shall include verification of completeness of manufacture and assembly, conformance to specified standards, adequacy of markings, proper cleaning, and freedom from identified defects. Manual examination shall include the operation of movable parts by hand to assure proper functioning. Dimensional examination shall include manufacturer's certification verification that the lathe meets all specifications and characteristics listed in Table I and Table II of Description for Purchase DFP-425B. The examination provisions may be applied at the earliest practical point in manufacture at which it is feasible to inspect for acceptance without risk of change in the characteristic by subsequent operations.

Headstock Lubrication System Inspection. Remove the headstock cover plate and visually inspect the lubricating oil, gears, bearings, spindle shaft, and headstock for metal particles and debris.

Round Turning Test. A bar of low carbon steel (1020) not less than 2 inches in diameter and not less than 6 inches long shall be mounted in the 3-jaw chuck supplied with the lathe. A rough cut shall be made at a tool depth of not less than 0.040 inches with a feed rate of not less than 0.010 inches per revolution and a spindle speed of not less than 700 revolutions per minute (rpm). The rough cut shall be made for a distance of not less than 3 inches along the length of the test bar. Upon completion of the rough cut, with the same cutting tool, a finish cut shall be made at a tool depth of not less than 0.020 inches with a feed rate of not less than 0.005 inches per revolution and a spindle speed of not less than 1000 revolutions per minute (rpm). The finish cut shall be made for a distance of not less than 3 inches along the length of the test bar. The finished turned diameter shall be round within 0.0005 inch.

Metal Removal Turning Test. A bar of low carbon steel (1020) approximately 5 inches in diameter and 15 inches long shall be held in the 4-jaw chuck supplied with the lathe, and supported by the tailstock center. A cut shall be made for a length of not less than 12 inches using a single point carbide tip turning tool. The metal removal rate shall be at least 1 cubic inch per minute per horsepower rating of the motor.

Cylindrical Turning Test. Using the same test bar as for the round turning test, the specimen shall be semi-finished to the configuration shown in Test P1 of ISO 1708. A finish cut shall be taken over the three collars in one pass using a single point carbide tip turning tool and a cutting speed of not less than 350 surface feet per minute. The turned diameters shall conform to the accuracy of P1, ISO 1708. Upon completion of the test, the specimen shall be prepared for turning between centers. A single cut shall be taken over the three collars, and the turned diameters of the three bands shall conform to the accuracy of test P1, ISO 1708 (see 3.8.2).

Collet and Drill Chuck Test. A length of 3/16 inch diameter low carbon steel (1020) shall be gripped by an appropriate collet furnished with the lathe. A #70 drill bit shall be inserted in the drill chuck furnished with the lathe, and the chuck inserted in the tailstock. Using the tailstock

hand wheel, drill a #70 hole 1/4 inch deep. Remove the collet and drill bit. Install another collet furnished with the lathe and grip a length of 3/4 inch round low carbon steel (1020). Insert a 1/2 inch drill bit in the drill chuck and drill a hole 1 inch deep in the steel. Using the hand wheel, back the drill out of the work until the drill chuck is ejected. Check for failure of the collets to prevent slippage of the work pieces, failure of the drill chuck to hold the bit securely, or failure of the chuck to eject when the tailstock was retracted.

Threading Test. Provide two 1/2 inch bars of low carbon steel (1020) of sufficient length so no less than 4 inches of threads can be cut. Set the lathe to cut 1/2-13UNC threads over a length of at least 4 inches. Repeat cutting 1/2-32UNF threads on the second bar. Examine finished screw threads for compliance with ASME B1.1, ASME B1.13M, and ASME B1.21.

Reliability Test. The lathe spindle and feed screws shall be operated continuously for a period of no less than eight (8) hours at a spindle speed of no less than 1500rpm. Examine for evidence of oil leaks, excessive gear and bearing noise, or vibration.

Headstock Inspection. Remove the headstock cover plate and visually examine the oil, gears, bearings and headstock for metal particles and debris.