ME251 Engineering Design and Graphics - Laboratory Exercise 6 Friday, September 5, 2016

The parts of a milling machine tail stock are shown in the following figure (drawings are not to scale). The body shown in Fig. 1 and the hand wheel shown in Fig. 4 are made of cast iron. The center shown in Fig. 2 is made of case hardened alloy steel. The screw shown in Fig. 3 is made of mild steel. Assembly is as follows. The center is interred into 30 mm diameter hole in the body and the screw after passing through the 15 mm diameter hole in the center engages with the threaded hole (M15) in the body. After this the hand wheel is assembled to the screw using a key (length 35 mm, thickness and width 5 mm and a reducing taper of 1 in 100). Finally a nut is tightened at the right end of the screw so that the hand wheel does not loosen up. A locking screw (M12) is used to lock the center after it is adjusted to the required position. This screw is shown in Fig. 5. The screws, nuts and washer are made of mild steel. Generate the bill of material. Assume all fillets to be 6 mm in radius. The washer is 2 mm thick and has an outer diameter of 32 mm. In the front view only the body is sectioned. Draw the assembly such that the screw is engaging only half of the length of the threaded portion in the body. Also draw the two extreme positions of the center tip (when the screw is fully engaged and when it is barely engaged using the appropriate line type). Caution: Some dimension(s) in some parts are wrong and you have to detect them during the assembly drawing process. Use scale of 1:1.



