CHAPTER 11

DESIGN ASPECTS OF THE HANDLE FORCE TESTER

11.1 INTRODUCTION

This chapter is concerned with the design features of the handle force tester which can be considered for the development in a Textile Laboratory of a Garment Factory.

11.2 APPARATUS

Two main types of devices have been constructed for the investigation of the handle force of fabrics by Behery and Monson (1982) and by Grover et al. (1993).

The apparatus described in this chapter is shown in Fig. 11.1. Instead of using stainless steel bush, a steel guide wire is used, and the specimen is extracted through it. The dimension of the wire is given in Fig. 11.2. The up and down motion to the guide wire is given by a suitable gear system. The handle force is shown by a mechanical spring system Fig. 11.3. The cord to pull the fabric specimen is attached to a holder (nut). The whole instrument is easily portable.

By a suitable system of gears, the stainless steel guide wire can be moved up and down and the maximum force that is required to extract the sample can be noted down.
Details of the guide wire, the main parts of the instrument, and their supports are shown in Figs. 11.2, 11.3 and 11.4.

Such a simple design of the instrument can be used for developing the handle force testing of fabrics. It should be also possible to subject the samples to a certain load, and to measure the displacement in the bush; this way of measuring handle can be especially carried out for heavier fabrics.
Figure 11.1 Extraction force tester.
Figure 11.2 Dimensions of Guide ring and holder.

1. FIXED TO SCALE
2. HOLDER NUT
3. THREADED
4. Ø 2mm /2.5mm

GUIDE RING

Fixed on the Brass guide nut
1. TOP SUPPORT (Aluminium plate, 8 mm thick),
2. BEARINGS, 3. SCALE, 4. HOLDER (NUT),
5. S.STEEL GUIDE WIRE, 6. GUIDE WIRE SUPPORT,
7. PIN, 8. SIDE SUPPORT (Aluminium flats; 12-15 x 30 mm x 2 nos. on each side), 9. FABRIC,
10. POLISHED STEEL GUIDE ROD ø 6 mm, 11. GUIDE NUT (BRASS), 12. BRASS GUIDE BUSH, 13. M.S. THREADED ROD; ø 12 mm (1.5-2.0 mm pitch), 14. GEAR DRIVING LEVER, 15. BOTTOM SUPPORT (two plates to house gear wheel assembly), 16. GEAR WHEELS (NYLON).

Figure 11.3 Description of extraction force tester.
Figure 11.4 Brass guide bush.