CARPET MANUFACTURE

Woven Carpet Cross Sections

Gripper Axminster

Spool Axminster

Wilton
Gripper Axminster

The pile yarns are wound onto “bobbins” which are stored in a “creel” at the back of the loom. The yarns feed down to the front of the loom and pass through a “yarn carrier”.

The yarn carriers are raised and lowered independently by means of a “Jacquard” system which enables the “gripper” to select the required colour for weaving into the carpet.

Jacquard cards are a punched card system which determines which colours are selected for each row of tufts. Changing to a different set of cards enables the manufacturer to produce a different design carpet from the same set of colours. This allows the manufacturer considerable flexibility in producing smaller production runs.

In an average 4 metre wide carpet there will be around 1,100 yarn carriers - one for every row across the width of the carpet - and each one will hold up to 8 colours. This means that nearly 9,000 bobbins of yarn are stored in the creel.

Technical innovation in recent years means that computer controlled, electrically operated yarn carriers and grippers are now available. These high speed looms also dramatically reduce the time required to translate design information from the studio into actual carpet since jacquard cards are not required to be produced first.

Although there is no technical reason why Axminster carpets should not be plain, they often require extensive “shearing” to remove “gripper” marks which tend to create an unlevel surface.

Consequently, most Axminsters, including Spool Axminsters, are normally patterned.
Spool Axminster

A series of “spools” are presented in sequence to the loom. Pile yarns, which have previously been wound onto the spools in the correct colour order to produce the design, will be cut from the spool and used to create one row of tufts.

Consequently the pattern is determined by the “setting” of the spools. This is a time-consuming operation and does not allow the manufacturer the same flexibility as gripper Axminster. However, once the spools are set up correctly, this method is ideal for long production runs and offers enormous design capabilities.

Spool Gripper

With Spool Gripper a “gripper” is used to remove yarns from the spool and present them to the loom. Apart from that it is very similar to Spool Axminster.
Wilton Manufacture

With a Wilton all of the yarns used run continuously through the backing and are brought up to the surface as a pile only when needed. The yarns are wound onto bobbins which are stored in “frames” at the back of the loom. The maximum number of frames is normally five. This means that up to five colours will be available, in any one row, for use on the surface. However the technique of “planting” enables other colours to be introduced if required.

All those yarns in the backing means considerable strength is achieved but, since they are not on the surface, this does not necessarily mean that the carpet will be any more durable than others.

This obviously means a higher raw material cost compared to other woven products.

Wiltons are available plain or patterned and may have a cut pile or a loop pile. Additional effects can be achieved by varying the height of the “wires” which control the tuft length.

It is also possible to produce Wiltons on a “face-to-face” loom which, as the name implies, means two carpets are made simultaneously. This is effectively a “sandwich” comprising two backings (the bread!) joined together by a pile (the filling!). The sandwich is then sliced apart, creating the two separate carpets. This method does help to reduce production costs but if patterned carpets are made this way, one will be a “mirror image” of the other.