Contents

I	General aspects of narrow fabric weaving	7
1	Weft insertion methods	7
1.1	Shuttle method	7
1.2	Needle method	7
II	Loom systems	9
1	General aspects of narrow fabric needle looms	9
2	Feeding of non-elastic warp threads	10
3	Feeding of elastic warp threads	14
3.1	Transporting covered elastic threads	15
3.2	Transport for bare elastic threads	16
4	Warp let-off mechanism	17
5	Shedding motions	19
5.1	Shed designations	20
5.2	Shed settings	24
5.3	Heald frame control	28
5.3.1	Treadle motion combined with Jacquard machine	43
5.4	Jacquard machine	44
5.4.1	Harness	52
5.5	Leno mechanism	53
6	Weaving device	55
6.1	Weaving systems with one weft needle	56
6.2	Z-weaving systems with two weft needles	59
6.3	3N weaving systems with three weft needles	64
6.4	Weft colour control	65
6.5	Weft and reed drives	69
6.6	Latch needle drive	76
6.7	Binder thread tucking device	82
6.8	Weft transport	85
6.8.1	Continuous weft transports	86
6.8.2	Discontinuous weft transports	88
6.9	Binder thread feed	90
6.10	Thread monitoring systems	91
6.11	Storage of weft and binder thread cones	94
7	Fabric take-off	95
7.1	Continuous fabric take-off	96
7.2	Discontinuous fabric take-off	98
7.3	Take-off for non-elastic velvet fabric	99
7.4	Take-off for elastic velvet fabric	99
7.5	Take-off for corded fabric	100
8	Machine control	100
9	Programming systems	102
10	Production data acquisition	104
11	Production control	107
12	Setting up a loom	107
12.1	Preparing the loom mechanically	107
12.2	Laying the style	109
13	Special equipment and accessories	121
13.1	Picot weaving styles	121
13.2	Aircleaner	123
13.3	Thermosetting	124
13.4	Winding devices	125
13.5	Ribbon transport	126
13.6	Warping/change creels	126
13.7	Cone creel	129
13.8	Brake drum creel for weaving from cones	131
13.9	Warp let-off mechanisms	132

13.10	Warp bobbins, jumbo bobbins	133
13.11	Cams	135
13.12	Pattern chain	136
13.13	Weft needles	138
13.14	Knitting needles	138
13.15	Reeds	141
13.16	Back reeds	143
13.17	Healds	144
13.18	Drop wires	146
III	Textile calculations	147
1	Introduction	147
1.1	Mass numbering	147
1.1.1	Titre tex system (tex, dtex)	147
1.1.2	Titre denier system (den)	148
1.2	Length numbering	148
1.2.1	Metric numbering (Nm)	148
1.2.2	English count (Ne)	149
1.5	Conversion of yarn counts	149
1.4	Numbering and calculating ply yarns	150
1.4.1	Mass numbering of ply yarns	153
1.4.2	Length numbering of ply yarns	153
1.5	Calculating yarn loss	154
1.6	Calculating the weave-in	155
1.7	Numbering and computation of rubber threads	156
1.8	Calculations for non-elastic, monofil threads	160
1.9	Calculating loom output	160
1.10	Calculation of raw-yarn weight for 100 metres of ribbon	161
IV	Woven Structures	163
1	Introduction	163
1.1	Pattern draft	164
2	Ground weaves, their derivatives and rearrangements	171
2.1	Plain weave, weave notation: $L^{\frac{1}{1}}$	171
2.1.1	Derived weaves based on the plain weave	171
2.2	Twill weave	178
2.3	Rearrangements of twill weaves	184
2.4	Satin weave	192
2.5	Derived weaves based on satin weave	196
2.6	Colour effects	198
2.7	Weaves for single-pick tubular, double and multiphase woven fabrics	199
2.8	Weaves for heavy fabrics	218
2.9	Double fabric connected by warp or weft threads	224
2.10	Double fabric connected by layer interchange	225
2.11	Double-warp technique (2 warps, 1 weft)	227
2.12	Triple-warp technique (3 warps and 1 weft)	229
2.13	Double-weft system (2 weft colours, 1 warp)	230
2.14	Double-weft insertion (Z-weft)	232
2.15	Velvet	235
2.16	Elastic ribbon, 1-wefts	238
2.17	Elastic ribbon, 2-wefts	253
2.18	Elastic ribbon applications, 1- and 2-wefts	256
2.19	Weaves for heavyweight braces	259
2.20	One-sided weft-figured, heavyweight braces	261
2.21	Picots, scallops, loops	263
2.22	Figured ribbons	268
2.23	Weaves for pulling in (entering)	285
2.24	Ruche weaves	287
2.25	Leno weave	287
2.26	Mock leno weaves	291
	Technical term listing	293