INTERNATIONAL STANDARD

ISO 8122

Second edition
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Textile machinery — Knitting machines — Number of needles for circular knitting machines of large nominal diameter

Matériel pour l'industrie textile — Machines à tricoter — Nombre d'aiguilles pour les machines à tricoter circulaires de grand diamètre nominal

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 8122 was prepared by Technical Committee ISO/TC 72, *Textile machinery and machinery for dry-cleaning and industrial laundering*, Subcommittee SC 3, *Machinery for fabric manufacturing including preparatory machinery and accessories*.

This second edition cancels and replaces the first edition (ISO 8122:1988), which has been technically revised.

Textile machinery — Knitting machines — Number of needles for circular knitting machines of large nominal diameter

1 Scope

This International Standard specifies the usual number of needles for single-face, double-face and “links-links” circular knitting machines of large nominal diameter, in terms of the needle pitch or gauge E and the machine nominal diameter, and is able to be used as a basis for the comparison of fabrics knitted on these machines. It is not applicable to circular knitting machines with a selection of single needles.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8117, *Textile machinery — Knitting machines — Nominal diameters of circular machines*

ISO 8188, *Textile machinery and accessories — Pitches of knitting machine needles*

ISO 7839, *Textile machinery and accessories — Knitting machines — Classification and vocabulary*

3 Terms, definitions and classification

For the purposes of this document, the terms, definitions and classification given in ISO 7839 apply.

4 Number of needles

4.1 General

The numerical designations of the nominal diameters of circular knitting machines and the needle pitches shall be in accordance with ISO 8117 and ISO 8188.

To determine the usual number, N_u (rounded number), of needles for circular knitting machines of large nominal diameter from the theoretical number, N_t, of needles, take, as the divisor,

a) 12, for machines with nominal diameters $\leqslant$ 508 mm, and

b) 24, for machines with nominal diameters $>$ 508 mm.

The deviation from the theoretical number of needles shall not exceed $^{+3}_{-9}$ in the case of a) and $^{+6}_{-18}$ for b).

NOTE 1 The usual number (rounded) of needles is therefore a multiple of 12 or 24 that occurs in the fixed tolerance interval for the theoretical number of needles, i.e. $^{+3}_{-9}$ or $^{+6}_{-18}$.

NOTE 2 Larger deviations from the theoretical number of needles can occur in the case of machines with a selection of single needles.

4.2 Calculation

The theoretical number of needles, N_t, of a needle carrier is obtained using the following formula:

$$N_t = d_c \pi E$$

where

π = 3,141 592 7;

d_c is the designation for the nominal diameter of the knitting machine;

E is the gauge.

The usual number, N_u, of needles (see Table 1) is the rounded number according to 4.1.

EXAMPLE The theoretical number of needles for a knitting machine with a numerical designation d_c = 18 and a gauge of E = 24 is

$$N_t = 18 \times 3{,}141\ 592\ 7 \times 24 = 1\ 357{,}168$$

The usual number of needles is therefore in the range of 1 348,168 to 1 360,168 (i.e. 1 357,168 $^{+3}_{-9}$) and, in this example (using 12 as the divisor), is 1 356.

Table 1 — Usual number of needles, N_u

Needle pitch	Gauge	Nominal diameter, mm (designation d_c, in)																			
t mm	E	177,8 (7)	190,5 (7,5)	203,2 (8)	228,6 (9)	254 (10)	279,4 (11)	304,8 (12)	330,2 (13)	355,6 (14)	381 (15)	406,4 (16)	431,8 (17)	457,2 (18)	482,6 (19)	508 (20)	533,4 (21)	558,8 (22)	584,2 (23)	609,6 (24)
0,508	50	1092	1176	1248	1416	1572	1728	1884	2040	2196	2352	2508	2664	2820	2988	3144	3288	3456	3600	3768
0,529	48	1056	1128	1200	1356	1500	1656	1812	1956	2112	2256	2412	2556	2712	2868	3012	3168	3312	3456	3624
0,552	46	1008	1080	1152	1296	1440	1584	1728	1872	2016	2160	2304	2460	2604	2748	2892	3024	3168	3312	3456
0,577	44	960	1032	1104	1236	1380	1524	1656	1800	1932	2076	2208	2352	2484	2628	2760	2904	3024	3168	3312
0,605	42	924	984	1056	1188	1320	1452	1584	1716	1848	1980	2112	2244	2376	2508	2640	2760	2904	3024	3168
0,635	40	876	936	1008	1128	1260	1380	1500	1632	1752	1884	2004	2136	2256	2388	2508	2640	2760	2880	3000
0,668	38	828	888	948	1068	1188	1308	1428	1548	1668	1788	1908	2028	2148	2268	2388	2496	2616	2736	2856
0,706	36	792	840	900	1020	1128	1236	1356	1464	1584	1692	1812	1920	2028	2148	2256	2376	2472	2592	2712
0,747	34	744	804	852	960	1068	1176	1284	1392	1488	1596	1704	1812	1920	2028	2136	2232	2352	2448	2568
0,794	32	696	756	804	900	1008	1104	1200	1308	1404	1500	1608	1704	1812	1908	2004	2112	2208	2304	2400
0,847	30	660	708	756	840	936	1032	1128	1224	1320	1416	1500	1596	1692	1788	1884	1968	2064	2160	2256
0,907	28	612	660	696	792	876	960	1056	1140	1224	1320	1404	1488	1584	1668	1752	1848	1920	2016	2112
0,977	26	564	612	648	732	816	900	972	1056	1140	1224	1308	1392	1464	1548	1632	1704	1788	1872	1944
1,058	24	528	564	600	672	756	828	900	972	1056	1128	1200	1284	1356	1428	1500	1584	1656	1728	1800
1,154	22	480	516	552	624	684	756	828	900	960	1032	1104	1176	1236	1308	1380	1440	1512	1584	1656
1,210	21	456	492	528	588	660	720	792	852	924	984	1056	1116	1188	1248	1320	1368	1440	1512	1584
1,270	20	432	468	504	564	624	684	756	816	876	936	1008	1068	1128	1188	1260	1320	1368	1440	1512
1,337	19	420	444	480	540	600	660	708	768	828	888	948	1008	1068	1128	1188	1248	1296	1368	1416
1,411	18	396	420	444	504	564	624	672	732	792	840	900	960	1020	1068	1128	1176	1248	1296	1344
1,494	17	372	396	420	480	528	588	636	696	744	804	852	900	960	1008	1068	1104	1176	1224	1272
1,588	16	348	372	396	444	504	552	600	648	696	756	804	852	900	948	1008	1056	1104	1152	1200
1,693	15	324	348	372	420	468	516	564	612	660	708	756	804	840	888	936	984	1032	1080	1128
1,814	14	300	324	348	396	432	480	528	564	612	660	696	744	792	828	876	912	960	1008	1056
1,954	13	288	300	324	360	408	444	492	528	564	612	648	696	732	768	816	852	888	936	984

Table 1 (*continued*)

Needle pitch	Gauge	Nominal diameter, mm (designation d_C, in)																			
t mm	E	177,8 (7)	190,5 (7,5)	203,2 (8)	228,6 (9)	254 (10)	279,4 (11)	304,8 (12)	330,2 (13)	355,6 (14)	381 (15)	406,4 (16)	431,8 (17)	457,2 (18)	482,6 (19)	508 (20)	533,4 (21)	558,8 (22)	584,2 (23)	609,6 (24)
2,117	12	264	276	300	336	372	408	444	492	528	564	600	636	672	708	756	792	816	864	888
2,309	11	240	252	276	312	348	372	408	444	480	516	552	588	624	660	684	720	744	792	816
2,540	10	216	228	252	276	312	348	372	408	432	468	504	528	564	600	624	648	696	720	744
2,822	9	192	204	228	252	276	312	336	360	396	420	444	480	504	540	564	600	624	648	672
3,175	8	168	180	204	228	252	276	300	324	348	372	396	420	444	480	504	528	552	576	600
3,629	7	156	156	168	192	216	240	264	288	300	324	348	372	396	420	456	456	480	504	528
4,233	6	132	144	144	168	180	204	228	240	264	276	300	312	336	360	372	384	408	432	456
5,080	5	108	120	120	144	156	168	180	204	216	228	252	264	276	300	312	336	336	360	360
5,644	4,5	96	108	108	120	144	156	168	180	192	204	228	240	252	264	276	288	312	312	336
6,350	4	84	96	96	108	120	132	144	156	168	180	204	216	228	240	252	264	264	288	288
7,257	3,5	72	84	84	96	108	120	132	144	156	168	168	180	192	204	216	216	240	240	264
8,467	3	60	72	72	84	96	96	108	120	132	144	144	156	168	180	180	192	192	216	216
10,160	2,5	48	60	60	72	72	84	96	96	108	120	120	132	144	144	156	168	168	168	192
12,700	2	36	48	48	60	60	72	72	84	84	96	96	108	108	120	120	120	144	144	144

Table 1 (*continued*)

Needle pitch	Gauge	Nominal diameter, mm (designation d_C, in)																				
t mm	E	635 (25)	660,4 (26)	711,2 (28)	762 (30)	787,4 (31)	812,8 (32)	838,2 (33)	863,6 (34)	911,4 (36)	965,2 (38)	1016 (40)	1066,8 (42)	1117,6 (44)	1168,4 (46)	1219,2 (48)	1270 (50)	1320,8 (52)	1371,6 (54)	1422,4 (56)	1473,2 (58)	1524 (60)
0,508	50	3912	4080	4392	4704	4872	5016	5184	5328	5640	5952	6288	6600	6912	7224	7536	7848	8160	8472	8784	9096	9408
0,529	48	3768	3912	4224	4512	4680	4824	4968	5112	5424	5736	6024	6336	6624	6936	7224	7536	7824	8136	8448	8736	9048
0,552	46	3600	3744	4032	4320	4464	4608	4752	4896	5208	5496	5784	6072	6360	6648	6936	7224	7512	7800	8088	8376	8664
0,577	44	3456	3576	3864	4152	4272	4416	4560	4704	4968	5256	5520	5808	6072	6360	6624	6912	7176	7464	7728	8016	8280
0,605	42	3288	3432	3696	3960	4080	4224	4344	4488	4752	5016	5280	5544	5808	6072	6336	6600	6864	7128	7392	7656	7920
0,635	40	3144	3264	3504	3768	3888	4008	4152	4272	4512	4776	5016	5280	5520	5784	6024	6288	6528	6768	7032	7272	7536
0,668	38	2976	3096	3336	3576	3696	3816	3936	4056	4296	4536	4776	5016	5256	5496	5736	5952	6192	6432	6672	6912	7152
0,706	36	2832	2928	3168	3384	3504	3624	3720	3840	4056	4296	4512	4752	4968	5208	5424	5640	5880	6096	6336	6552	6768
0,747	34	2664	2760	2976	3192	3312	3408	3528	3624	3840	4056	4272	4488	4704	4896	5112	5328	5544	5760	5976	6192	6408
0,794	32	2496	2616	2808	3000	3120	3216	3312	3408	3624	3816	4008	4224	4416	4608	4824	5016	5232	5424	5616	5832	6024
0,847	30	2352	2448	2640	2832	2928	3000	3096	3192	3384	3576	3768	3960	4152	4320	4512	4704	4896	5088	5280	5472	5640
0,907	28	2184	2280	2448	2640	2712	2808	2904	2976	3168	3336	3504	3696	3864	4032	4224	4392	4560	4752	4920	5088	5280
0,977	26	2040	2112	2280	2448	2520	2616	2688	2760	2928	3096	3264	3432	3576	3744	3912	4080	4248	4416	4560	4728	4896
1,058	24	1872	1944	2112	2256	2328	2400	2472	2568	2712	2856	3000	3168	3312	3456	3624	3768	3912	4056	4224	4368	4512
1,154	22	1728	1800	1920	2064	2136	2208	2280	2352	2472	2616	2760	2904	3024	3168	3312	3456	3576	3720	3864	4008	4152
1,210	21	1632	1704	1848	1968	2040	2112	2160	2232	2376	2496	2640	2760	2904	3024	3168	3288	3432	3552	3696	3816	3960
1,270	20	1560	1632	1752	1872	1944	2016	2064	2136	2256	2376	2496	2640	2760	2880	3000	3144	3264	3384	3504	3648	3768
1,337	19	1488	1536	1656	1776	1848	1896	1968	2016	2136	2256	2376	2496	2616	2736	2856	2976	3096	3216	3336	3456	3576
1,411	18	1416	1464	1584	1680	1752	1800	1872	1920	2040	2136	2256	2376	2472	2592	2712	2832	2928	3048	3168	3264	3384
1,494	17	1320	1392	1488	1608	1656	1704	1752	1800	1920	2016	2136	2232	2352	2448	2568	2664	2760	2880	2976	3096	3192
1,588	16	1248	1296	1392	1512	1560	1608	1656	1704	1800	1896	2016	2112	2208	2304	2400	2496	2616	2712	2808	2904	3000
1,693	15	1176	1224	1320	1416	1464	1512	1560	1608	1680	1776	1872	1968	2064	2160	2256	2352	2448	2544	2640	2736	2832
1,814	14	1104	1128	1224	1320	1368	1392	1440	1488	1584	1656	1752	1848	1920	2016	2112	2184	2280	2376	2448	2544	2640
1,954	13	1008	1056	1128	1224	1272	1296	1344	1392	1464	1536	1632	1704	1800	1872	1944	2040	2112	2208	2280	2352	2448