CONTENTS

PRINT END

Spindle bearing units/
Spindle bottom parts for spinning and twisting spindles
Spindle lubricating apparatus with accessories

TEXParts
Spindle bearing units HF
Insert without bolster

Application

Spindle insert HF for spinning and twisting spindles operating with or without ring and traveller, with light to medium loads and high speeds.

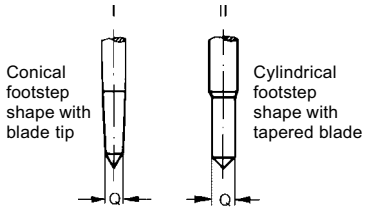
See also chapter 9 page 2.

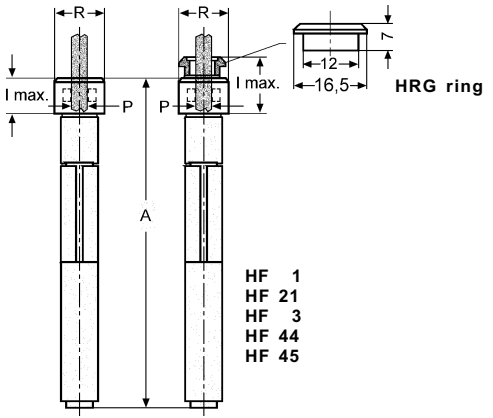
Spindle Bearing Units for special applications upon request.

Ring frames
Twisting frames

Cotton mills
Worsted mills
Doubling mills

Types Ref. no.	Dimensions in mm A	R	P	Q	l max.	Shape of footstep bearing	Weight kg	Locking ring HRG Ref. no.
HF 1-0025 144[4]	141,5	16,0	6,8	4,50	26,5	I	0,107	-
HF 21-1251 595[1)4)]	141,5	17,5	7,8	4,50	26,5	I	0,114	**HRG-1251 597**
HF 3-0952 502	158,0	21,7	8,8	5,50	15,5	I	0,147	-
HF 3-0952 503[2)]	158,0	21,7	8,8	5,50	15,5	I	0,147	-
HF 44-0952 757	173,5	23,8	10,0	6,45	16,5	II	0,214	-
HF 44-0952 760[2)]	173,5	23,8	10,0	6,45	16,5	II	0,190	-
HF 45-1258 940	173,5	23,8	10,0	7,95	16,5	II	0,214	-





[1)] Hookless locking version
[2)] Version with special damping spring for spinning and twisting with suppressed yarn balloon.
[3)] Version with bigger footstep bearing diameter, for application in Two-for-One spindles.
[4)] Delivery until using-up of stock

TEXParts
Spindle bearing units HZ
Insert with bolster

Application

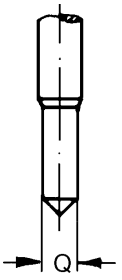
Spindle bolster HZ for spinning and twisting spindles to operate with or without ring and traveller with high speeds and all kinds of load from light to very heavy.

Spindle Bearing Units for special applications upon request.

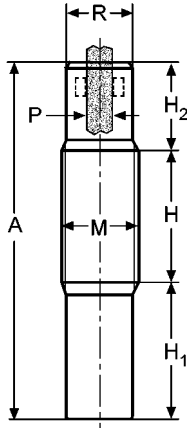
Ring frames
Twisting frames

Cotton mills
Worsted mills
Twisting mills

Types Ref.no	Dimensions in mm A	R	P	Q	H	H_1	H_2	M	Weight kg
HZ 33 -0019 871[1)]	146,0	21,7	8,8	5,45	55,0	37,0	54,0	M 25 x 1,5	0,313
HZ 35 -0018 299	163,5	21,7	8,8	8,45	55,0	54,5	54,0	M 25 x 1,5	0,342
HZ 440-0029 250	178,5	23,7	10,0	6,45	100,0	47,5	31,0	M 27 x 1,5	0,468
HZ 55 -0952 204	188,0	28,2	12,0	7,95	115,0	37,0	36,0	M 32 x 1,5	0,734
HZ 66 -0014 227	229,0	32,5	14,0	8,95	144,5	56,0	28,5	M 35 x 1,5	0,927
HZ 68 -0017 830	229,0	32,5	14,0	10,95	144,5	56,0	28,5	M 35 x 1,5	0,930
HZ 77 -0952 381	273,0	37,8	16,0	10,95	123,0	100,5	40,5	M 40 x 1,5	1,750



Cylindrical footstep shape with tapered blade



HZ 33
HZ 35
HZ 440
HZ 55
HZ 66
HZ 68
HZ 77

[1)] Version for application in Two-for-One spindles.

TEXParts
Spindle units CS1

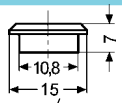
Application

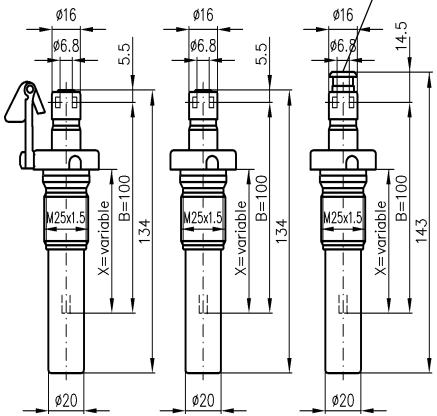
Spindle unit CS1
-compact spindle bearing unit- for spinning spindles in cotton and worsted ring frames with speeds up to 25 000 rpm.

See also chapter 9 page 2.

TEXParts supplies the CS1 with different flange versions, with and without hook and brake, ready to be installed, for all types of ring spinning machines.
CS1 versions without flange are also available.

CSRG ring

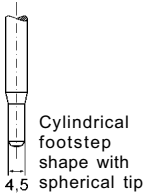




CS1-Version with hook

CS1-Version hookless

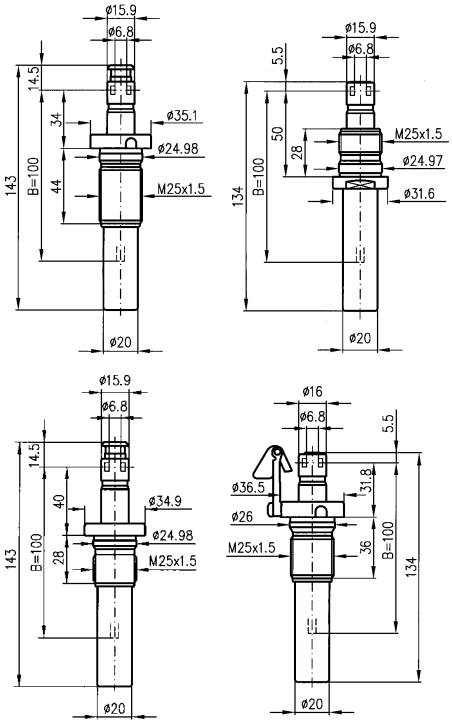
CS1-Version with inner locking hookless



Cylindrical footstep shape with spherical tip

The spare part Ref. no. of the **locking ring** for the spindle version with inner locking is 1257 888 (Standard Version) and 1258 576 (Rieter Version). An appropriate **unlocking lever** can be supplied upon request.

Examples for the possible design of CS1:



Remarks

The indicated types are examples for the possible design of CS1.

The relevant flange dimensions are adjusted to the relations of dimensions of each specific ring spinning machine.

Ring frames

Cotton mills
Worsted mills

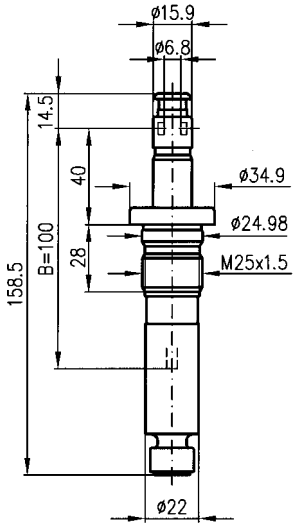
TEXParts
Spindle units CS1 S

Application

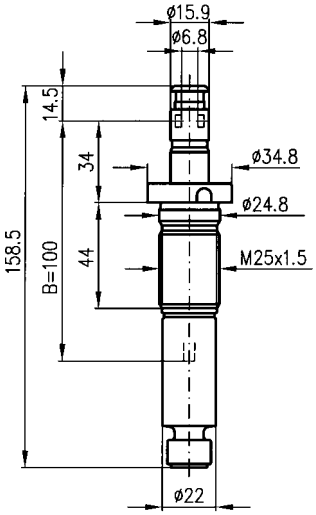
Spindle unit CS1 S
Versions with elastic suspension of the neck bearing for speeds up to 30 000 rpm. are available.

The indicated types are examples for the possible design of CS1 S. TEXParts supplies the CS1 S with different flange versions, with and without hook and brake, ready to be installed, for all types of ring spinning machines. The relevant flange dimensions are adjusted to the relations of dimensions of each specific ring spinning

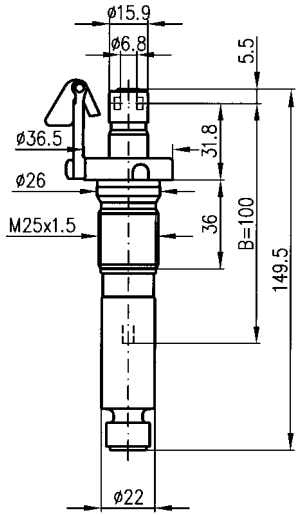
Examples for the possible design of CS1 S:



CS1 S -
Version hookless



CS1 S -
Version hookless



CS1 S -
Version with hook

Ring frames

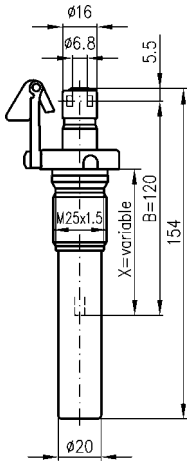
Cotton mills
Worsted mills

TEXParts
Spindle units CS1 12

Application

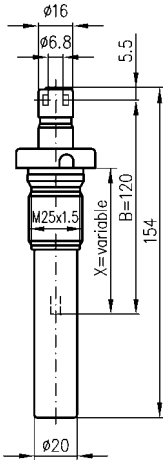
Spindle unit CS1 12
-compact spindle bearing unit - for spinning spindles in cotton and worsted ring
frames for coarse yarns as well as for spinning with suppressed yarn ballon and for spinning with big tube sizes.

See also chapter 9 page 2.

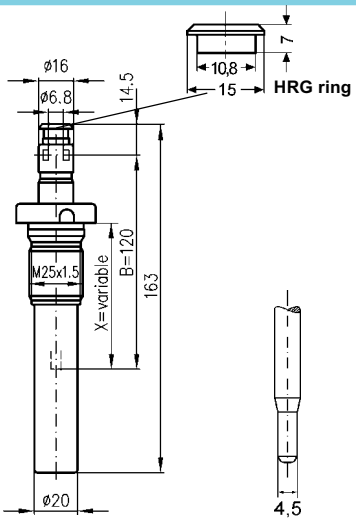


-
Version with hook

The CS1 12 differs from the standard spindle bearing unit of CS1 series by a bearing distance of 120 mm (dimension B). The indicated types are examples for the possible design of CS1 12. TEXParts supplies the CS1 12 with different flange versions, with and without hook and brake, ready to be installed, for all types of ring spinning machines. The relevant flange dimensions are adjusted to the relations of dimensions of each specific ring spinning machine.



CS1 12 -
Version hookless



CS1 12 -
Version with inner locking (hookless)

Cylindrical footstep shape with spherical tip

The spare part ref. no. of the **locking ring** for the spindle version with inner locking is 1257 888. An appropriate **unlocking lever** can be supplied upon request.

Ring frames

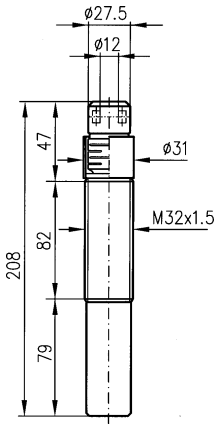
Cotton mills
Worsted mills

TEXParts
Spindle bearing units
BI-FLEX

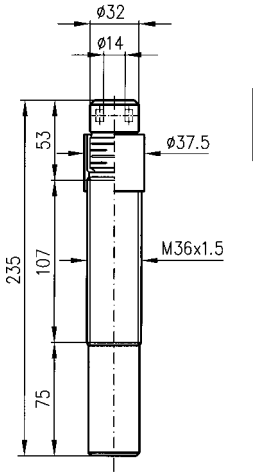
Application

Heavy spindle bearing unit in BI-FLEX design for high speed applications in draw twisting frames.

Types Ref. No	Weight kg
SMM 32-1280 013	0,664
SMM 42-1280 014	1,041



SMM 32-1280 013



SMM 42-1280 014

TEXParts
Complete spindles

Application

For spinning and twisting processes.

TEXParts offers a comprehensive range of complete spindles for various kinds of spinning and twisting processes:

- Cotton spindles with bare blades or with aluminium plugs
- Worsted or semi-worsted spindles with or without spinning crowns resp. spinning fingers
- Spindles for draw twisters, for small cop sizes
- Spindles for twisting frames

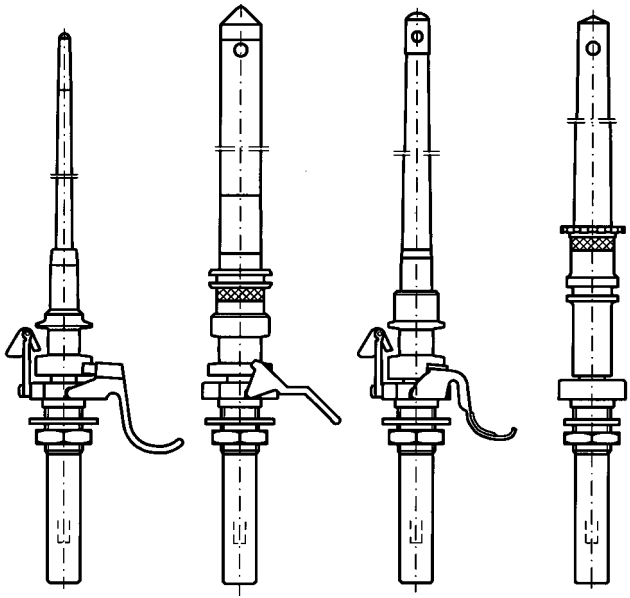
All spindles are being optimized considering
- the tubes to be used,
- the type of spindle drive,
- the minimum and maximum speed required and
- other customers' demands.

The spindles will be equipped with the most suitable spindle bearing unit. Furthermore, a wide-ranged variety of different flange-, brake- and locking types as well as other spindle accessories are available. Highest precision in manufacture as precondition for a steady and vibration-reduced operation as well as a long-lasting service life of the spindle are guaranteed.

Complete spindles supplied by TEXParts are high-tech products. The efficiency of each spindle speaks for itself:
- **reduction in energy requirements and running noise.**
- **high spindle speeds up to 30 000 rpm**
- **low-vibration running**
- **minimization of spindle oscillations**

Please ask for TEXParts questionnaire for complete spindle inquiries.

Some examples of light spinning and twisting spindles:



Cotton mills
Worsted mills
Twisting mills

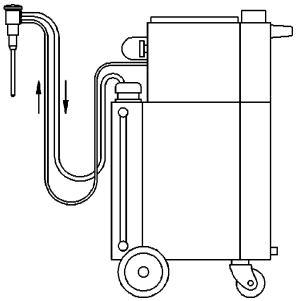
TEXParts
Spindle lubricating apparatus
1254 106

Application

Lubricating apparatus for servicing TEXParts and SKF spindle bearing units HF, HZ, SF and CS.

See also chapter 8 page 12.

Type Ref.no.	Product
1254 106	Lubricating apparatus with an electrically driven pump



1254 106

Dimensions in mm:
Length: 450; Width: 380; Height: 720
Weight: 29 kg net

Electric drive:
The TEXParts spindle lubrication apparatus is available with electric drive 1x220 V and 1x110 V. Please specify.

Note:
The standard supply of the spindle lubricating apparatus does not include any adapter. These have to be ordered as separate item. For Ref. No. of adapters see next page.

Ring frames
Twisting frames

Cotton mills
Worsted mills
Twisting mills

Chapter 1-16

TEXParts
Lubrication adapters and Accessories for spindle bearing units HF, HZ, SF and CS

Adapter Ref.no.	Suitable for spindle types	
1253 181	CS1[1]	CS1 S[1]
1253 182	CS1[2]	CS1 S[2]
1256 450	CS1 12[1]	CS1 S 12[1]
1256 451	CS1 12[2]	CS1 S 12[2]
0019 983	HF 1-0025 144[1] SF 100	HZ 1 -1247 317[1]
1260 233[3]	HF 21-0013 802[1] HF 21-1251 595[2]	HF 21-1249 016[1] SF 210
0994 252	HF 3-0952 502 HZ 30-1249 017	HF 3-0952 503
0017 392	HZ 33-0019 871	
0021 818	HF 35-0018 300	
0998 112	HF 44-0952 757 HF 45-0952 766	HF 44-0952 760 HZ 440-0029 250
0998 111	HZ 55-0952 204	
0994 253	HZ 66-0014 227	HZ 68-0017 830
0998 279	HZ 77-0952 381	

Application

Lubrication adapters for lubricating apparatus 1254 106 for servicing TEXParts and SKF spindle bearing units HF, HZ, SF and CS.

See also chapter 8 page 12.

.

[1] Standard version
[2] Version with inner locking (hookless)
[3] Replacement for adapters 0994 250, 0034 279 and 0992 952

Ring frames
Twisting frames

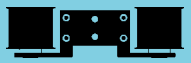
Cotton mills
Worsted mills
Twisting mills

Chapter 1-17

PRINT CONTENTS END

Contact roll assemblies for tangential belt drives
Tension pulleys with shells, bearing units, cam followers

TEXParts
Contact roll assemblies
AR 5047, AR 45



Application

For ring frames and twisting machines with tangential belt drives. Belt width up to approx. 40mm max.

For use in one-belt and two-belt arrangements. See also chapter 9 page 15.

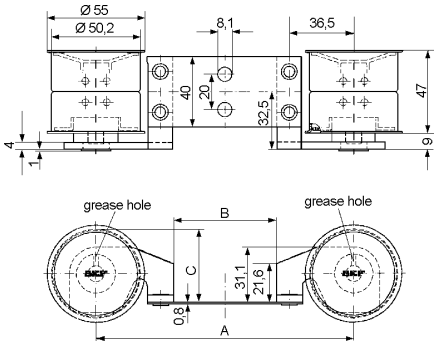
For tension pulley SR 28 for guidance of returning end of tangential belt in two-belt arrangements see chapter 2 page 12.

For lubrication see chapter 8 page 2.

Types Ref.no.	Spindle gauge mm	Dimensions in mm A	B	C	Weight kg	Remarks
AR 5047-1253 979	70	138	49,8	41,2	0,548	AR 5047 can be used as replacement for former types AR 28, AR 45, AR 15 and AR 13. If AR 5047 is mounted to replace AR 13 distance piece ADZ-0013 365 will be needed.
AR 5047-1253 935	75	147	58,8	41,2	0,552	
AR 5047-1253 980	82,5	162	73,8	41,2	0,556	

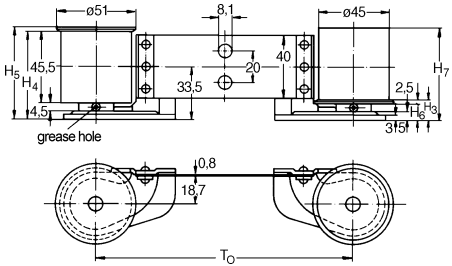
Previous type AR 45

Type Ref.no.	Spindle gauge mm	Dimensions in mm T_0	H_3	H_4	H_5	H_6	H_7	Weight kg mm	Max.belt width	Remarks
AR 45-0017 137[1]	90	176	12	55	57,5	9,5	57,5	0,900	38	AR 45 has been replaced by AR 5047



AR 5047-

[1] Delivery until using-up of stock.



AR 45-

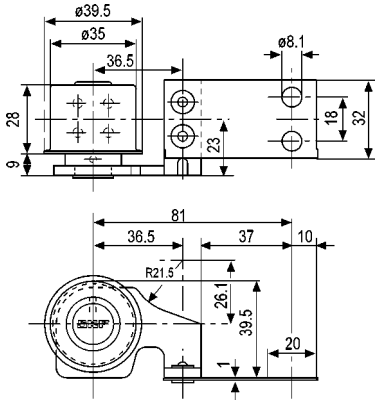
TEXParts
Contact roll assemblies
AR 3528

Application

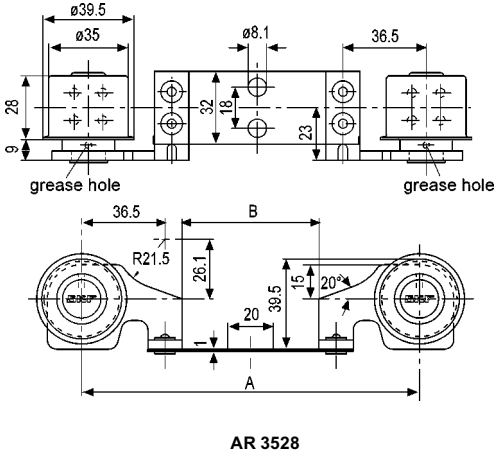
For ring frames with multi-motor single tangential belt drives. Belt width up to approx. 20mm max.

For lubrication see chapter 8 page 2.

Types Ref.no.	Spindle gauge mm	Dimensions in mm A	 B	Weight kg
AR 3528-1254 645	70	138	50	0,350
AR 3528-1254 646	75	148	60	0,353
AR 3528-1254 647	82,5	162	74	0,357
AR 3528-1254 633[1)]	82,5	-	-	0,176
AR 3528-1256 546	75	148	60	0,175
AR 3528-1256 547	82,5	167	79	0,175



AR 3528-1254 633



AR 3528

[1)]righthand half contact roll assembly

Ring frames

Cotton mills

TEXParts
Contact roll assemblies AR 5024

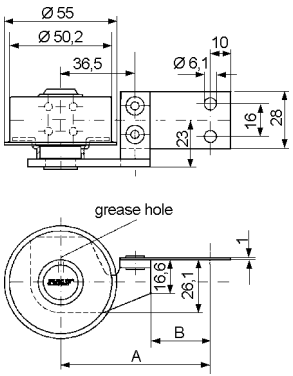
Application

For ring frames with sectional drive.
Belt width up to approx. 16mm max.

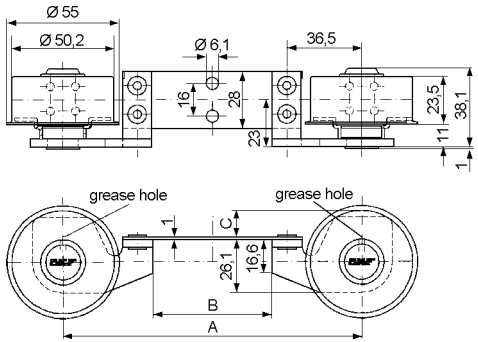
See also chapter 9 page 15.

For lubrication see chapter 8 page 2.

Types Ref.no.		Spindle gauge mm	Dimensions in mm A	B	C	Weight kg	AR 5024 to replace former types AR 50	
AR 5024-1253 978		70	142	53,8	14	0,371	-	
AR 5024-1253 990	**RE**[1]	70	71	26,9	14	0,187	-	
AR 5024-1253 986	**LI**[2]	70	71	26,9	14	0,187	-	
AR 5024-1253 936		75	148	59,8	14	0,373	AR 50-1246 555	AR 50-0028 249
AR 5024-1253 991	**RE**[1]	75	74	29,9	14	0,188	AR 50-1246 645 RE	AR 50-0030 027 RE
AR 5024-1253 987	**LI**[2]	75	74	29,9	14	0,188	AR 50-1246 647 LI	AR 50-0030 023 LI



AR 5024-1253 991 RE[1]



AR 5024-1253 936

[1] righthand half contact roll assembly
[2] lefthand half contact roll assembly

Ring frames

Cotton mills
Worsted mills

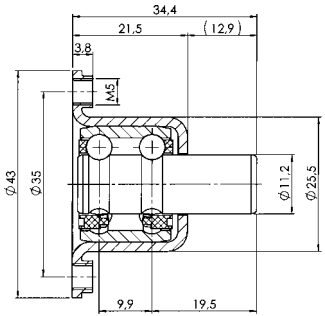
TEXParts
Bearing units ZB, ZL

Application

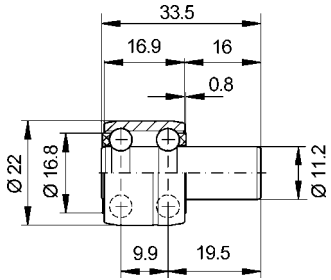
Tension pulleys for guiding and tensioning the tape or the belt in belt drives.

As guide or tension pulley in general engineering applications.

Types Ref.no.	Max. speed n min^{-1}	Load fig.in N C	 C_0	Weight kg
ZB 7- 0009 023	8000	3380	1220	0,080
ZL 7- 0009 941[2)]	10000	3380	1220	0,043



ZB 7-0009 023



ZL 7-0009 941[1)]

[1)] Delivery ex works ungreased and without cap.

Ring frames
Twisting frames

Textile machinery
General engineering applications

Application

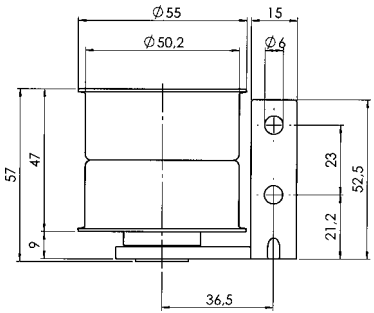
Tension pulley SR 5047 for guiding and tensioning the tape or the belt in belt drives.

As guide or tension pulley in general engineering applications.

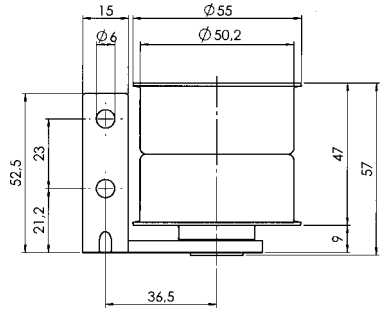
See also chapter 8 page 18.

Types Ref.no.	Max. speed n min^{-1}	Load fig.in N C	C_0	Weight kg	Max. belt width mm	Remarks
SR 5047-1255 698	12000	2700	1020	0,265	38	Tension pulley with angle (lefthand)
SR 5047-1255 699	12000	2700	1020	0,265	38	Tension pulley with angle (righthand)

Top view of angle see drawing of AR 5047 on chapter 2 page 2.



SR 5047-1255 698



SR 5047-1255 699

TEXParts
Tension pulley SR
Bearing unit CK

Application

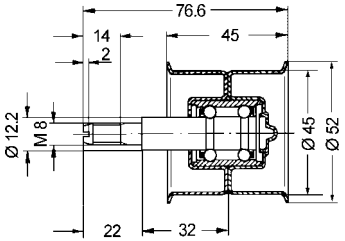
Tension pulley SR 28 for guiding the tangential belt return in two-belt arrangements.

Tension pulley SR 45 for guiding and tensioning the tape or the belt in belt drives.

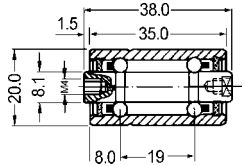
As guide or tension pulley in general engineering applications.

See also chapter 8 page 18 and chapter 9 page 15.

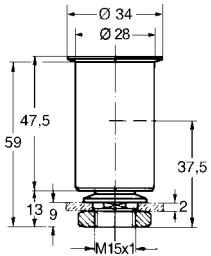
Types Ref.no.	Max. speed n min^{-1}	Load fig.in N C	C_0	Weight kg	Max. belt width mm	Nut SMT Ref. no.	Remarks
SR 28-0012 474	15000	3320	1180	0,179	38	**SMT-0012 478**	Nut SMT for tension pulleys SR 28 is not included in standard supply of tension pulley SR 28 and has to be ordered as separate item.
SR 28-0012 473	15000	3320	1180	0,184	38	**SMT-0012 478**	
SR 45-0028 044	16000	3900	1560	0,164	35		Tension pulley is balanced.
CK 11-0007 749	30000	2250	900	0,060	30		



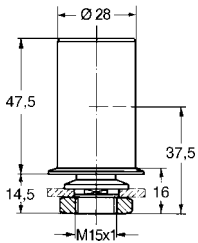
SR 45-0028 044



CK 11-0007 749



SR 28-0012 474
SMT -0012 478



SR 28-0012 473
SMT -0012 478

Ring frames
Twisting frames

Textile machinery
General engineering applications

TEXParts
Bearing units FR and SR

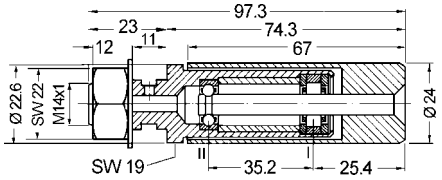
Application

Guide roller FR as bearing unit for gear mechanisms and pulleys, as guide roller for the belts in cone drives.

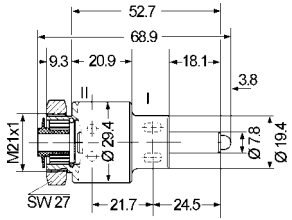
Bearing units SR 23 for tension pulleys, gear mechanisms and other pulleys.

Limits for stud diameter d: 0/-0,01 mm

Types Ref.no.	Max. speed n min^{-1}	Load fig. in N C dyn.	 C_0 stat.	Weight kg
FR 232-0964 351	15000	3800 I 1780 II	2900 I 630 II	0,246
SR 23-0020 650[1)2)]	20000	3800 I 1780 II	2900 I 630 II	0,150



FR 232-0964 351



SR 23-0020 650

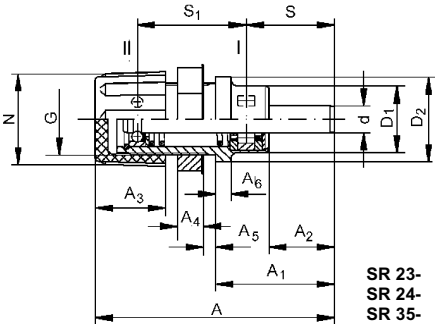
[1)] with anti-torque protection.
[2)] black finished version.

I = roller bearing; II = ball bearing

Application

Bearing units SR for tension pulleys, gear mechanisms and other pulleys.

Types Ref.no.	Dimensions in mm d	D_1	D_2	G	SW	N	A[3]	A_1	A_2	A_3	A_4	A_5	A_6	S	S_1	Max. speed n min^{-1}	Load fig. in N C dyn.	 C_0 stat.	Weight kg
SR 23-0028 528[1]	7,8	19,4	24,6	M21x1	27	26,5	84	34,6	19,3	20,5	7,5	9	4,5	25,7	31,6	20000	3800 I 1780 II	2900 I 630 II	0,095
SR 23-0953 801	7,8	19,4	24,6	M21x1	27	26,5	84	34,6	19,3	20,5	7,5	9	4,5	25,7	31,6	20000	3800 I 1780 II	2900 I 630 II	0,095
SR 23-0953 901[2]	7,8	19,4	24,6	M21x1	27	26,5	84	34,6	19,3	20,5	7,5	9	4,5	25,7	31,6	20000	3800 I 1780 II	2900 I 630 II	0,095
SR 24-0027 755[1]	7,8	19,4	24,6	M21x1	27	26,5	95	43,6	20,4	20,5	7,5	9	12,5	26,8	41,6	20000	3800 I 1780 II	2900 I 630 II	0,135
SR 24-0954 051	7,8	19,4	24,6	M21x1	27	26,5	95	43,6	20,4	20,5	7,5	9	12,5	26,8	41,6	20000	3800 I 1780 II	2900 I 630 II	0,135
SR 35-0027 671[1]	8,8	21,5	29,6	M25x1	32	30,5	114	57,2	22,6	22,0	8,5	11	23,0	29	55,8	20000	4400 I 2700 II	3400 I 1000 II	0,248
SR 35-0954 151	8,8	21,5	29,6	M25x1	32	30,5	114	57,2	22,6	22,0	8,5	11	23,0	29	55,8	20000	4400 I 2700 II	3400 I 1000 II	0,248



SR 23-
SR 24-
SR 35-

[1] black-finished version
[2] with double-edged wrench, size across flats = SW 22
[3] Dimension A = Total length of bearing (housing and shaft) plus length of plastic cap.

I = roller bearing; II = ball bearing
Limits for stud. dia. d: 0/-0,01 mm

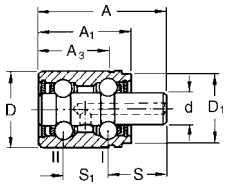
Textile machinery
General engineering applications

Application

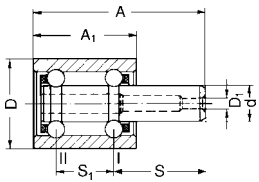
Bearing unit ZL for toothed wheels and other pulleys.

Bearing Unit CR 2 for textile machines and general engineering applications.

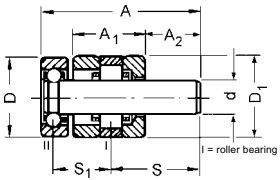
Types Ref.no.	Dimensions in mm d	D	D_1	D_2	A	A_1	A_2	A_3	G	J	S	S_1	Max. speed min^{-1}	Load fig. in N C	C_0
ZL -0028 553[2]	8,0	20,0	2,5	-	38,5	23,0	-	-	-	-	21,0	12,0	20000	2290	950
ZL 17-0016 949[3)4)]	7,5	18,0	16,3	-	30,0	22,0	-	16,3	-	-	14,0	10,5	5000	2080 I 2160 II	540 I 710 II
CR 2-0035 905[1)2)]	7,8	17,79	18,0	-	35,0	16,0	12,0	-	-	-	20,0	12,5	15000	3800 I 1780 II	2900 I 630 II



ZL 17-0016 949[3)4)]



ZL -0028 553[2)]



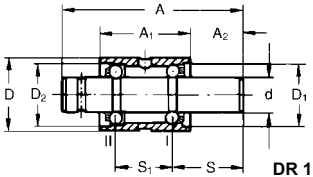
CR 2-0035 905[1)2)]

[1)] Delivery ex works ungreased.
[2)] Delivery ex works without cap.
[3)] Counter bearing for CR2-0035 905.
[4)] Former Ref.no. ZL 17-0013 040
Designation I/II = different raceway shapes
Limits of stud. dia. d: 0/-0,01 mm
Limits of outer ring dia. D: 0/-0,01 mm

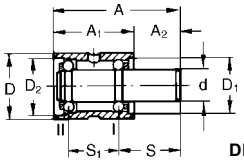
Application

For winders and for general engineering applications.

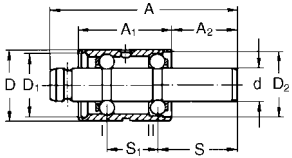
Types Ref.no.	Dimensions in mm d	D	D_1	D_2	A	A_1	A_2	S	S_1	Max. speed n min^{-1}	Load fig. in N C	C_0	Weight kg
DR 1620-0958 201[1]	7,5	16	14,0	14,0	40	20	12,0	15,8	12,5	10000	1370 I 1060 II	630 I 140 II	0,026
DR 1620-0958 251[1]	7,5	16	14,0	14,0	28	20	8,0	11,8	12,5	10000	1370 I 1060 II	630 I 140 II	0,024
DR 1625-0958 351[1]	7,5	16	13,6	13,5	50	25	17,0	20,5	15,0	10000	1370 I 1060 II	630 I 140 II	0,035
DR 1922-0012 761[1)2)]	9,0	19	17	17	34,0	22	12,0	16,3	13,5	10000	2080 I 1630 II	1000 I 232 II	0,031
DR 1922-0958 601[1]	9,0	19	17	17	34,0	22	12,0	16,3	13,5	10000	2080 I 1630 II	1000 I 232 II	0,035
DR 1922-0958 651[1]	9,0	19	17	17	42,0	22	20,0	24,3	13,5	10000	2080 I 1630 II	1000 I 232 II	0,041



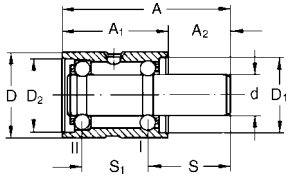
DR 1620-0958 201[1]



DR 1620-0958 251[1]



DR 1625-0958 351[1]



DR 1922-0012 761[1)2)]
DR 1922-0958 601[1]
DR 1922-0958 651[1]

[1] Delivery ex works greased and without end cover.
[2] DR 1922-0012 761 as DR 1922-0958 601 but lubricated with Klüber Isoflex LDS 18.

Limits for stud dia. d: 0/-0,01 mm
Limits for outer ring dia. D:0/-0,01mm

Designation I/II = different raceway shapes

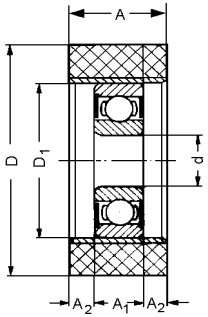
Textile machinery
General engineering applications

TEXParts
Draw-off rollers with cots
CK and ZL

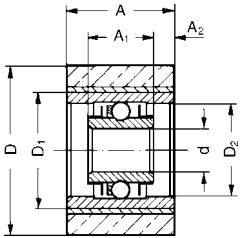
Application

Draw-off roller with cot for rotor spinning frames, winders and for general engineering application in textile machines.

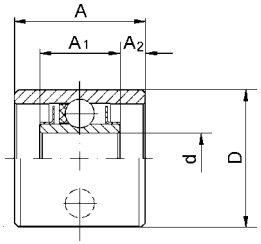
Types Ref.no.	Cot[1]	Dimensions in mm d	D	D_1	D_2	A	A_1	A_2	Load fig. in N C	C_0	Weight kg	Remarks
CK12-0030 848	J-490 A	7,0	28	19	15,2	18,3	11	3,6	2550	680	0,028	
CK12-1250 611	-	7,0	19	-	-	18,2	11	3,6	2550	680	0,020	basic bearing unit for CK 12-0030 848
CK12-1248 719	HA 80	7,0	28	19	16,1	18,3	11	3,6	2550	680	0,028	
ZL 20-1250 392	890 A-L	10,0	45	30	-	18,0	9,0	4,3	5070	2360	0,050	rubber seal running in contact with inner ring
ZL 20-1252 714	890 A-L	10,0	45	30	-	18,0	9,0	4,3	5070	2360	0,050	metal seal



ZL 20-1250 392
ZL 20-1252 714

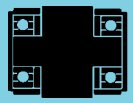


CK 12-0030 848
CK 12-1248 719



CK 12-1250 611

[1] Other cots available on request.

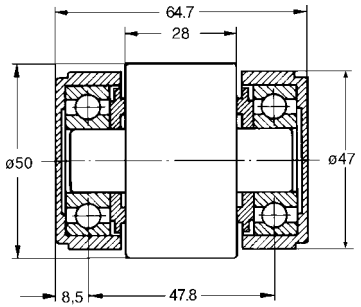


TEXParts
Cam follower ER

Application

As rolling-off roll for the lifting cam in cotton and worsted ring frames.

Types Ref.no.	Max. speed n min^{-1}	Load figures in N C	 C_0	Weight kg
ER 5028- 0964 251[1)2)]	2000	9560	4750	0,8



ER 5028-0964 251

[1)] Ball bearings not greased
[2)] Delivery until using-up of stock

Top rollers LP
Top roller lubricating equipment and accessories

TEXParts
Top rollers
series LP 1002

Application

Top roller for use as front and rear top roller.

Cotton ring frames with weighting arms PK 3000, PK 2025, PK 2035, PK 2055 and PK 2065.

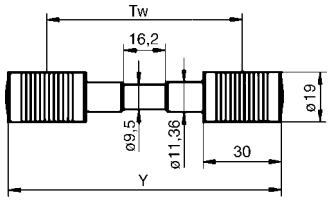
For cot dimensions see chapter 9 page 89.

LP 302 series has been replaced by LP 1002. (Ref. nos. for LP 1002 top rollers are the same as for LP 302.)

Top roller load: 25 daN

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	Colour of end cover
LP1002-1249 324[1)]	68.4	98.4	blue
LP1002-1248 379[1)]	75	105	blue
LP1002-1248 382[1)]	82.5	112,5	blue
LP1002-1256 898[1)]	90	120	blue

End cover (included in standard supply)
LPDE -1260 210 (blue)



[1)] All Top rollers mentioned in this chapter are top rollers without cot.

[1)] If requested, Top rollers can also be supplied as top apron roller with cot - depending on gauge and top apron cradle OH.

Ring frames

Cotton mills

TEXParts
Top rollers
series LP 1002

Application

Top roller for use as top apron roller with cot preferably.

Cotton ring frames with weighting arms PK 3000, PK 2025, PK 2035, PK 2055 and PK 2065.

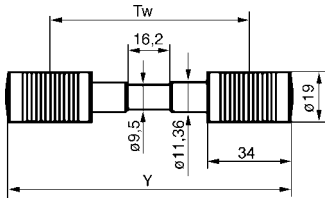
For cot dimensions see chapter 9 page 90.

LP 302 series has been replaced by LP 1002.

Top roller load: 25 daN

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	Colour of end cover
LP1002 -1248 601	75	109	blue
LP1002 -1256 896	82.5	116.5	blue

End cover (included in standard supply)
LPDE -1260 210 (blue)



Ring frames

Cotton mills

PRINT CONTENTS END

TEXParts
Top rollers
series LP 1003, LP 303

Application

LP 1003:
Top roller with special sleeves for use as top apron roller.
LP 1003 top rollers supersede series LP 303 top rollers.

LP 303:
Top roller with steel bosses for use as top apron roller.

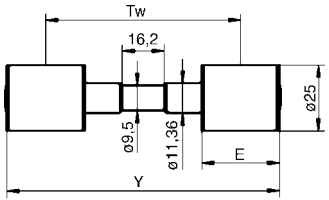
Cotton ring frames with weighting arms PK 3000, PK 2025, PK 2035, PK 2055 and PK 2065.

To be used without cots.

Top roller load:
25 daN

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	E	Colour of end cover
LP1003 -1256 596	68.4	98.4	30	blue
LP1003 -1256 597	75	105	30	blue
LP1003 -1256 598	82.5	112.5	30	blue
LP1003 -1256 599	90	120	30	blue
LP 303 -1249 325[1)]	68.4	100.4	32	blue
LP 303 -1248 378[1)]	75	107	32	blue
LP 303 -1248 381[1)]	82.5	114.5	32	blue

End cover (included in standard supply)
LPDE -1260 210 (blue)



[1)] Delivery until using-up of stock.

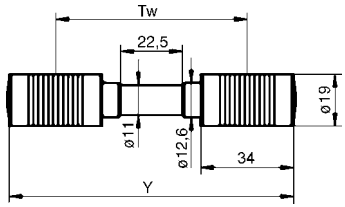
Ring frames

Cotton mills

TEXParts
Top rollers
series LP 314

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	Colour of end cover
LP 314-1253 740[1)2)]	75	109	blue
LP 314-1253 741[1)]	82,5	116,5	blue
LP 314-1253 742[1)]	90	124	blue
LP 314-0025 222[1)3)]	100	134	blue

End cover (included in standard supply)
LPDE -1260 210 (blue)



In worsted ring frames with PK 6000 weighting arm:
[1)] Top roller for use as front and rear top roller.
[2)] LP 314-1253 740 for use as top apron roller.
[3)] Delivery until using-up of stock.

Application

Top roller for use as front and rear top roller.

Worsted ring frames with weighting arms of series PK 1601, PK 1700, PK 6000

Cotton ring frames with PK 1500 series weighting arms.

For cot dimensions see chapter 9 page 89.

Top roller load:
35 daN

Ring frames

Worsted mills
Cotton mills

PRINT CONTENTS END

TEXParts
Top rollers
series LP 315

Application

Top roller for use as front and rear top roller.

Cotton ring frames with PK 5000, PK 1500 series weighting arms.

Cotton speed frames with PK 5000, PK 1500, PK 1600 weighting arms.

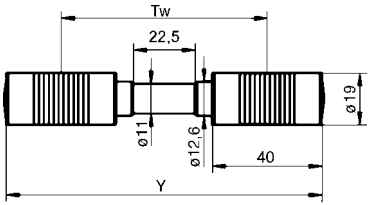
For cot dimensions see chapter 9 page 89.

Top roller load:
35 daN

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	Colour of end cover
LP 315-1253 744[1]	82,5	122.5	blue
LP 315-1253 745[1]	90	130	blue
LP 315-0025 227	100	140	blue
LP 315-0025 228	110	150	blue
LP 315-0025 229	130	170	blue

End cover (included in standard supply)

LPDE -1260 210 (blue)



In worsted ring frames with PK 6000 weighting arm:

[1] For use as top apron roller

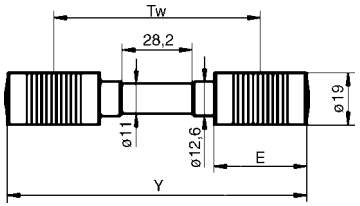
Ring frames
Cotton speed frames

Cotton mills
Worsted mills

TEXParts
Top rollers
series LP 316, 317

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y	E	Colour of end cover
LP 316-1256 711	75	109	34	blue
LP 317-1256 712	82.5	122.5	40	blue
LP 317-1256 713	90	130	40	blue
LP 317-0013 010	100	140	40	blue
LP 317-0013 011	110	150	40	blue
LP 317-0013 012	130	170	40	blue

End cover (included in standard supply)
LPDE -1260 210 (blue)



Application

Top roller for use as top apron roller.

Cotton speed frames and worsted ring frames with weighting arms series PK 5000, PK 1500, PK 1601.

For cot dimensions see chapter 9 pages 90 and 91.

Top roller load:
35 daN.

Ring frames
Cotton speed frames

Worsted mills
Cotton mills

PRINT CONTENTS END

TEXParts
Top rollers
series LP 302
with special shape of saddle

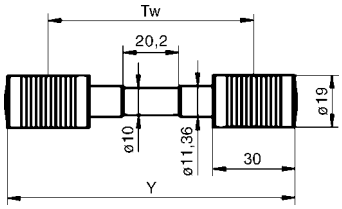
Application

Top roller for use as front and rear top roller for Rieter drafting systems in cotton ring frames.

Top roller load:
25 daN.

Types Ref.no.	Gauge Tw in mm	Dimension in mm Y
LP 302-0019 135	70	100
LP 302-0015 895	75	105
LP 302-0019 136	80	110
LP 302-0019 137	90	120

End cover (included in standard supply)
LPDE -1260 210 (blue)



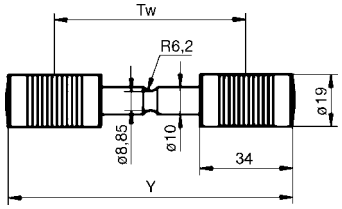
Ring frames

Cotton mills

TEXParts
Top rollers
series LP 302
with special shape of saddle

Types Ref.no.	Gauge w in mm	Dimension in mm Y
LP 302-0010 014	70	104
LP 302-0010 015	75	109
LP 302-0010 011	80	114
LP 302-0010 016	90	124

End cover (included in standard supply)
LPDE -1260 210 (blue)



Application

Top roller for use as front and rear top roller as well as top apron roller with cot for Rieter drafting systems in cotton ring frames.

Top roller load:
25 daN.

Ring frames

Cotton mills

PRINT CONTENTS END

TEXParts
Lubricating equipment and accessories
Grease guns

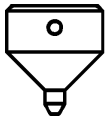
Application

For lubricating small numbers of top rollers.

As regards lubrication of bottom roller bearings see chapter 4 page 10.

Item	Types Ref.no.
Grease guns[1)]	
Size 1 Contents 80 cm^3	**0993 072**
Size 2 Contents 120 cm^3	**0993 073**
Size 3 Contents 340 cm^3	**0993 091**

For top roller types	Nozzle Ref.no.
LP 1002 LP 314, LP 315, LP 316, LP 317	**0968 903**



0968 903

[1)] For lubrication of top rollers from TEXParts, the nozzle 0968 903, which must be ordered separately, has to be screwed to the grease gun.

Bottom roller bearings

TEXParts
Bottom roller bearings UL with locating cap with side lugs

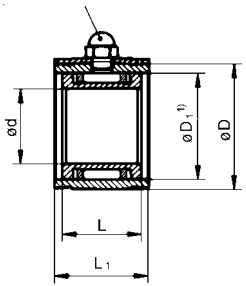
Application

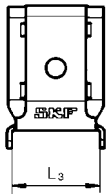
For bottom rollers of drafting systems of ring frames and speed frames.

See also chapter 9 page 92.

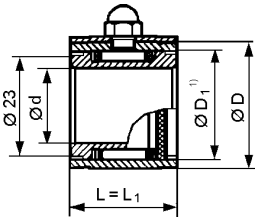
Types Ref.no.	for roller stand width in mm	Dimensions in mm d	D	D_1 [1]	L	L_1	L_3	Basic load daN dyn. C	Weight kg
UL 28-0021 164 [3]	24	16	28	23,90	13	23	24,2	720	0,055
UL 28-0000 416	20	16,5	28	23,90	19	23	20,2	865	0,060
UL 28-0000 417	22	16,5	28	23,90	19	23	22,2	865	0,060
UL 28-0000 418	24	16,5	28	23,90	19	23	24,2	865	0,060
UL 28-0010 047	26	16,5	28	23,90	19	23	26,2	865	0,058
UL 28-0010 080 [2)3)]	22	16,5	28	23,90	23	23	22,2	865	0,066
UL 28-0010 083 [2)3)]	24	16,5	28	23,90	23	23	24,2	865	0,066
UL 30-0021 106	26	17	30	25,40	19	22	26,2	830	0,072
UL 30-0018 195	26	18,5	30	25,40	19	22	26,2	830	0,065
UL 30-0002 610	22	18,5	30	25,40	19	22	22,2	830	0,065
UL 32-0000 421	22	19	32	26,90	20	24	22,2	1020	0,081
UL 32-0000 422	24	19	32	26,90	20	24	24,2	1020	0,081
UL 32-0000 423	25	19	32	26,90	20	24	25,2	1020	0,081
UL 32-0012 499	26	19	32	26,90	20	24	26,2	1020	0,081
UL 36-0000 424	22	19	36	29,90	22	26	22,2	1180	0,125
UL 36-0000 425	24	19	36	29,90	22	26	24,2	1180	0,125
UL 36-0000 426	25	19	36	29,90	22	26	25,2	1180	0,125
UL 36-0028 421	20	21	36	29,90	22	26	20,2	1180	0,112
UL 36-1248 201 [3]	24	21	36	29,90	22	26	24,2	1180	0,117
UL 40-0021 786	20	23	40	33,90	23,5	27	20,2	1430	0,148

Standard lubricating nipple





Locating cap



UL 28 - 0010 080 [2)]
UL 28 - 0010 083 [2)]

[1] D_1 = collar diameter of inner ring.
[2] Execution with extended inner ring.
[3] Delivery until using-up of stock.

Ring frames
Speed frames

Cotton mills
Worsted mills

TEXParts
Bottom roller bearings with locating cap with central nose

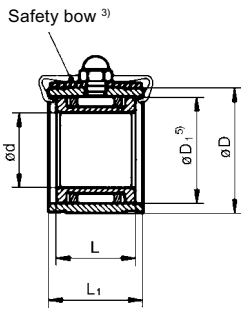
Application

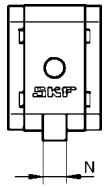
For bottom rollers of drafting systems of ring frames and speed frames.

See also chapter 9 page 92.

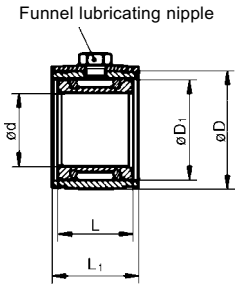
Types Ref.no.	Dimensions in mm d	D	K	D_1 [5]	L	L_1	N	Basic load daN dyn.C	Weight kg
UL 28-0003 590	16,5	28	-	23,90	19	23	5,9	865	0,059
UL 30-0007 871 [1]	18,5	30	-	25,40	19	22	5,9	830	0,065
UL 30-0003 665 [1]	18,5	30	-	25,40	19	22	5,9	830	0,065
UL 30-0028 276 [2]	18,5	30	-	25,40	19	22	5,9	830	0,064
UL 32-0013 400	19	32	-	26,90	20	24	5,9	1020	0,079
UL 32-0015 143 [3]	19	32	-	26,90	20	24	5,9	1020	0,079
UL 32-0016 548	21	32	-	27,85	19	23	5,9	935	0,068
UL 32-0019 169	18,5	32	-	27,85	19	22	5,9	935	0,100
UL 32-0023 114 [4]	16,295	32	32,5	26,90	17	20	5,9	850	0,100
UL 36-0014 782	18,5	36	-	29,90	19	22	5,9	1180	0,107
UL 36-0016 442	21	36	-	29,90	22	26	5,9	1180	0,125
UL 40-0025 408 [4]	23	40	40,5	32,85	21	24	5,9	1275	0,135

[1] Different tolerances of bore diameter. For more details see "Information for Spinners" No. 120-4
[2] Bearing with funnel lubricating nipple.
[3] This bearing is delivered ex works without lubricant. Bearing with safety bow.
[4] Bearing with special locating cap.
[5] D_1 = collar diameter of inner ring.

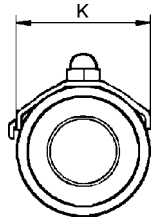




Locating cap



UL 30 - 0028 276 [2]



UL 32 -0023 114 [4]
UL 40 -0025 408 [4]

Ring frames
Speed frames

Cotton mills
Worsted mills

TEXParts
Bottom roller bearings UL with locating clip UCL with side lugs

Application

For bottom rollers of drafting systems of ring frames and speed frames.

See also chapter 9 page 92.

For the application of bottom roller bearings with side lugs, the standard types with locating cap (see chapter 4 page 2) should be used if bearing dimensions are identical.

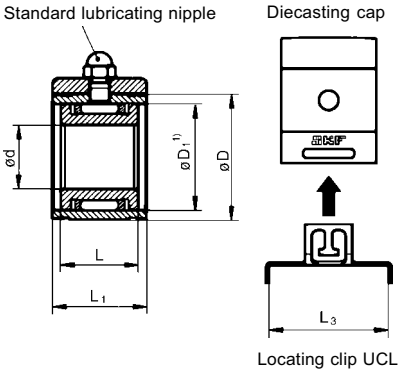
Types Ref.no.	Dimensions in mm d	D	D_1 [1]	L	L_1	K	Basic load daN dyn. C	Weight kg
UL 28-0959 274	14,2	28	23,90	16,6	23	-	720	0,073
UL 28-0959 263	16,5	28	23,90	19	23	-	865	0,063
UL 32-0959 261	16,2	32	26,90	19,7	24	-	1020	0,153
UL 32-0959 262	19	32	26,90	20	24	-	1020	0,095
UL 36-0959 265	19	36	29,90	22	26	-	1180	0,104
UL 45-0959 268	25	45	36,90	25	29	-	1760	0,239
UL 28-0959 273 [2)3)]	16,5	28	23,90	23	26	30	865	0,085

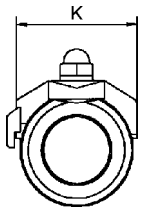
Locating clip Ref.no.	for roller stand width mm	L_3
UCL-0964 125	20	20,2
UCL-0964 126	22	22,2
UCL-0964 129	24	24,2
UCL-0964 127	25	25,2
UCL-0964 136	26	26,2
UCL-0964 128	30	30,2

Remarks

One locating clip to be used with each bottom roller bearing. Size L_3 of clip depends on width of roller stand. If bottom rollers are ordered, the locating clip according to the required stand width must be ordered separately.

For UL 28-0959 273 the locating clip UCL-0964 129 is supplied ready mounted.





UL 28-0959 273 [2)]

[1)] D_1=collar diameter of inner ring.
[2)] Bearing with special locating cap.
[3)] Delivery until using-up of stock.

Ring frames
Speed frames

Cotton mills
Worsted mills

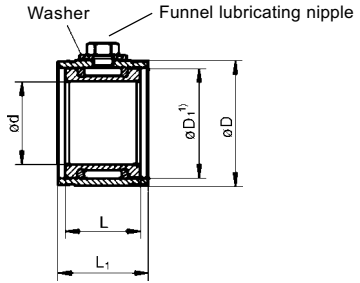
TEXParts
Bottom roller bearings UL
Special designs

Application

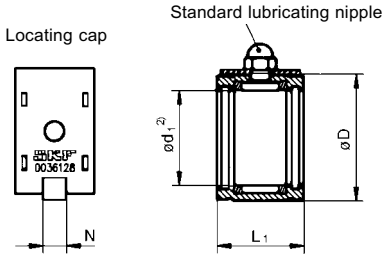
For bottom rollers of ring frames and draw frames.

See also chapter 9 page 92.

Types Ref.no.	Dimensions in mm d	D	D_1 [1]	d_1 [2]	L	L_1	N	Basic load daN dyn. C	Weight kg
UL 32-0017 390 [3]	21	32	27,85	-	19	23	-	935	0,060
UL 32-0036 128	-	32	-	24	-	22	5,9	935	0,053



UL 32-0017 390



UL 32-0036 128

[1] D_1 = collar diameter of inner ring.
[2] d_1 = Inside diameter of the needle complement.
[3] Delivery until using-up of stock.

TEXParts
Lubricating equipment and Accessories for bottom rollers, Contact roll assemblies and Tension pulleys

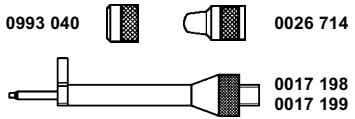
Application

For lubricating all types of TEXParts bottom roller bearings, for lubricating contact roll assemblies and tension pulleys.

As regards lubrication of top rollers see chapter 8 page 17.

All nozzles mentioned are **not** included in the standard supply of the grease guns and have to be ordered as separate item.

Item	Types Ref.no.	Nozzle Ref.no.
Grease guns		
Size 1 Contents 80 cm^3	**0993 072**	
Size 2 Contents 120 cm^3	**0993 073**	
Size 3 Contents 340 cm^3	**0993 091**	
For bottom roller bearings		
UL with TEXParts standard lubricating nozzle		**0993 040**
UL with funnel lubricating nozzle		**0026 714**
For contact roll assemblies		
AR 28		**0993 040**[1)]
AR 28		**1253 413**[2)]
AR 45		**0017 198**[2)]
AR 3528		**0017 198**[2)]
AR 5047		**0017 198**[2)]
AR 50		**0017 199**[2)]
AR 5024		**0017 199**[2)]
For tension pulleys		
SR 7		**0026 714**
SR 9		**0026 714**
SR 23		**0993 040**
SR 28		**0993 040**
SR 5047		**0017 198**[2)]



[1)] Lubrication from top
[2)] Lubrication from front

Weighting arms with drafting system data, bottom apron cradles, top apron cradles Condensers, distance clips and pins, setting tools and gauges

TEXParts
Weighting arms PK 3025, PK 3035
Pneumatic load principle

Application

Ring frame 3-roller-double apron drafting system PK 3025-1257 300.

With top apron cradle OH 2022 for cotton fibres, synthetics up to 45 mm, and corresponding blends.

With cradle OH 2042 for very long cotton fibres and synthetics of poor drafting properties up to 54 mm.

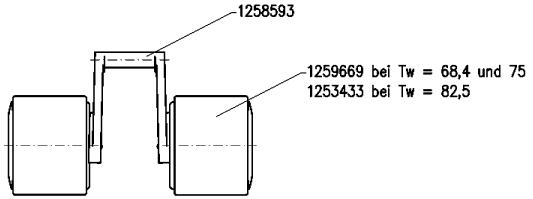
PK 3035-1259 710 as well as PK 3025-1257 300, specially for longer fibre ranges.

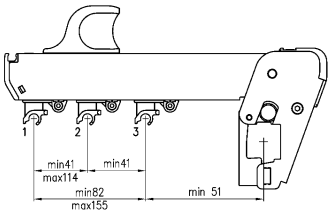
See as well chapter 9 page 18.

Types	**PK 3025-1257 300**[1]		
Ref.no.	**PK 3035-1259 710**[1][3]		
Operating pressure	Load on top roller (daN) Front 1	Middle 2	Rear 3
from 1,5 bar	12	10	12
up to 3,5 bar	23	18	23
Top roller for PK 3025 Ø mm[2]:	28	25	28
Top roller for PK 3035 Ø mm[2]:	35	25	35

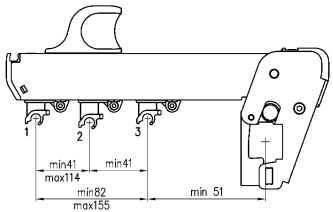
[1] Pneumatic loading; air pressure require.
[2] Dia. values refer to newly covered top rollers.
[3] In the case of PK 3035 the middle guide element is 3,5 mm longer than on the PK 3025 (middle guide element Ref.No 1259 709)

Front clearer roller holder	**Front clearer roller Ref.No.**	**Gauge TW in mm**
Ref.No. 1258 593	1259 669	68,4
	1259 669	75
	1253 433	82,5





PK 3025-1257 300



PK 3035-1259 710

Measurements are shown in mm

Weighting Arms PK 3025-1257 300 and PK 3035-1259 710

Gauge in mm:		Tw 68.4	Tw 75	Tw 82.5	Tw 90	Remarks
Top apron cradles and top aprons:	OH short	OH 2022-1247 888	OH2022-1247 887	OH2022-1247 889	-	[1] Ref. Nos. mentioned are for top rollers without cots.
	Aprons	PR 28 -0998 113	PR 28 -0998 113	PR 28 -0998 113	-	
	OH medium	OH 2042-1250 133	OH2042-1250 134	-	-	
	Aprons	PR 2813-1251 565	PR2813 -1251 565	-	-	[2] Diameters shown for bottom rollers are mere reference values
Top rollers:[1]	Front 1	LP 1002 -1249 324*	LP 1002-1248 379	LP 1002-1248 382	LP1002 -1256 898	[3] The "usual" distances VF are values gathered in practical use or the recommendation to select the maximum possible setting.
	Middle 2	LP 1003 -1256 596[4]*	LP 1003- 1256 597 [4]	LP 1003-1256 598[4]	LP1003 -1256 899[4]	
	Rear 3	LP 1002 -1249 324*	LP 1002-1248 379	LP 1002-1248 382	LP1002 -1256 898	[4] TEXParts standard version with plastic sleeve. Upon request LP 1002 with cot can be supplied as apron top roller alternately.

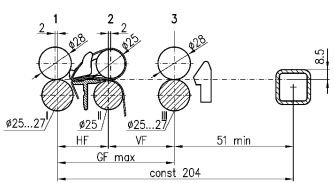
* Top roller gauge Tw = 70 mm

Bottom roller diameter in mm:[2]	**PK 3025**	Front I	25...27	**PK 3035**	Front I	27...30
		Middle II	25...27		Middle II	25...27
		Rear III	25...27		Rear III	27...30

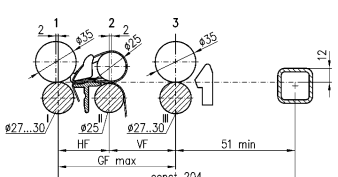
Clips

For OH 2022	OLC-0964 118 yellow	OLC-0017 705 lilac	OLC-0964 119 white
For OH 2042	OLC-0964 117 red	OLC-0964 118 yellow	OLC-0964 119 white

Drafting System Setting



PK 3025-1257 300



PK 3035-1259 710

Draft field settings and max. fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF min.	VF usual [3]	GF mm max.	Max. fibre length mm
PK 3025	**OH 2022**	44	41	50.. .65	153	45
	OH 2042	53		60...70		54
PK 3035	**OH 2022**	46	41	50.. .65	153	45
	OH 2042	55		60...75		54

TEXParts
Weighting arms PK 2025, PK 2035

Application

Ring frame 3-roller-double apron drafting system PK 2025-1251 331, With top apron cradle OH 2022/OH 62 for cotton fibres, synthetics up to 45 mm, and corresponding blends. With cradle OH 2042/ OH 132 for very long cotton fibres and synthetics of poor drafting properties up to 54 mm. Blends of those fibres. With the cradle OH 122 for synthetics up to approx. 60 mm. PK 2035-1251 784 as well as PK 2025-1251 331, specially for longer fibre ranges.

See as well chapter 9 page 28.

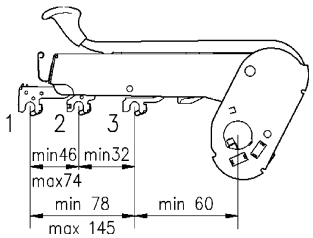
Types Ref.no.	Loads in daN					For top roller Ø mm[1]
PK 2025-1251 331	Front	1	6[2]	10	14 18	28
	Middle	2	10	14	- -	25
	Rear	3	12	16	- -	28
PK 2035-1251 784	Front	1	6[2]	10	14 18	35
	Middle	2	10	14	- -	25
	Rear	3	12	16	- -	35

Clearer roller holders face of arm Ref.no.

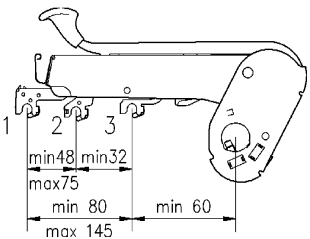
PFE-0908 212

PFE-0908 212

Front Clearer Roller[3] Ref. no.	Gauge Tw in mm
1252 741	68.4
1247 968	75
1247 967	82.5



PK 2025-1251 331



PK 2035-1251 784

Measurements are shown in mm.

[1] Diameter values refer to newly covered top rollers.
[2] Partial load reduction
[3] Colour of roller: blue with grey flocking

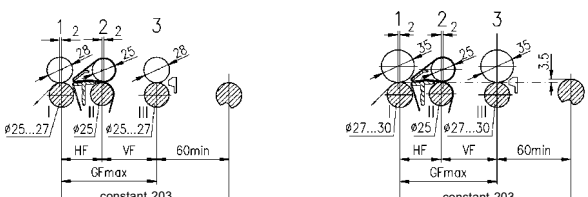
Weighting Arms PK 2025-1251 331, PK 2025- 1251 459 and PK 2035- 1251 784

Gauge in mm:		Tw 68.4	Tw 75	Tw 82.5	Tw 90
Top apron cradles and top aprons:	OH short Aprons	OH 2022-1247 888 PR 28 -0998 113	OH2022-1247 887 PR 28 -0998 113	OH2022-1247 889 PR 28 -0998 113	OH 62 -0962 841 PR 32 -0997 533
	OH medium Aprons	OH 2042-1250 133 PR 2813-1251 565	OH2042-1250 134 PR2813 -1251 565	OH 132-0963 671 PR 323-0998 232	OH132 -0963 673 PR323 -0998 232
	OH long 60 Aprons	OH 122 -0963 495 PR 028-0002 484	OH 122-0963 500 PR 032-0002 485	OH 122-0963 511 PR 032-0002 485	OH122 -0963 512 PR032 -0002 485
Top rollers:[1]	Front 1 Middle 2 Rear 3	LP 1002-1249 324* LP 1003-1256 596[4]* LP 1002-1249 324*	LP 1002-1248 379 LP 1003- 1256 597 [4] LP 1002-1248 379	LP 1002-1248 382 LP 1003-1256 598[4] LP 1002-1248 382	LP1002 -1256 898 LP1003 -1256 599[4] LP1002 -1256 898

* Top roller gauge Tw = 70 mm

Bottom roller diameter in mm:[2]	**PK 2025**	Front I	25...27	**PK 2035**	Front I	27...30
		Middle II	25...27		Middle II	25...27
		Rear III	25...27		Rear III	27...30

Drafting System Setting



PK 2025-1251 331 **PK 2035-1251 784**

Remarks

[1] Ref. Nos. mentioned are for top rollers without cots.

[2] Diameters shown for bottom rollers are mere reference values

[3] The "usual" distances VF are values gathered in practical use or the recommendation to select the maximum possible setting.

[4] TEXParts standard version with plastic sleeve.
Upon request LP 1002 with cot can be supplied as apron top roller alternately.

Clips

For OH 2022/OH 62	OLC-0964 118 yellow	OLC-0017 705 lilac	OLC-0964 119 white
For OH 2042/OH132	OLC-0964 117 red	OLC-0964 118 yellow	OLC-0964 119 white
For OH 122	OLC-0964 118 yellow	OLC-0964 119 white	OLC-0017 627 grey

Draft field settings and max. fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF min.	VF usual [3]	GF mm max.	Max. fibre length mm
PK 2025-1251 331	**OH 2022/OH 62**	44		50.. .65		45
	OH 2042/OH 132	53	34	60...70		54
	OH 122	68		max.		60
					143	
PK 2035-1251 784	**OH 2022/OH 62**	46		50... 65		45
	OH 2042/OH 132	55	34	60...75		54
	OH 122	70		max.		60

TEXParts
Weighting arms PK 2055, PK 2065

Application

Ring frame 3-roller double apron drafting system
PK 2055-1251785.

With top apron cradle OH 2022/OH 62 for cottons,synthetics up to approx. 45 mm.
Blends of both types.
With cradle OH 2042/ OH 132 for very long cotton fibres and synthetics of about 54 mm of poor drafting properties.
Blends of both types.
With cradle OH 122 for synthetics up to approx. 60 mm.

PK 2065-1251 786 as PK 2055-1251 785, specially for longer fibre range.

See as well chapter 9 page 28.

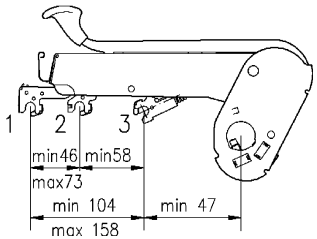
Ring frames

Cotton mills

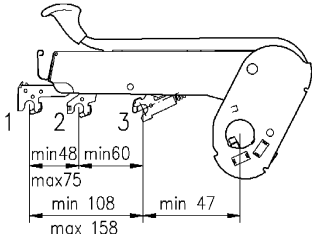
Chapter 5-10

Types Ref.no.	Loads in daN					For top roller Ø mm[1]	Clearer roller holders face of arm Ref.no.
PK 2055-1251 785	Front 1	6[2]	10	14	18	28	**PFE-0908 212**
	Middle 2	10	14	-	-	25	
	Rear 3	18	-	-	-	28	
PK 2065-1251 786	Front 1	6[2]	10	14	18	35	**PFE-0908 212**
	Middle 2	10	14	-	-	25	
	Rear 3	18	-	-	-	35	

Front Clearer Roller[3] Ref. no.	Gauge Tw in mm
1252 741	68.4
1247 968	75
1247 967	82.5



PK 2055-1251 785



PK 2065-1251 786

Measurements are shown in mm.

[1] Dia. values refer to newly covered top rollers.
[2] Partial Load reduction
[3] Colour of roller: blue with grey flocking

Cotton Ring Frame with Weighting Arms PK 2055-1251 785 and PK 2065-1251 786

Gauge in mm:		Tw 68.4	Tw 75	Tw 82,5	Tw 90	Remarks
Top apron cradles and top aprons	OH short Aprons	OH2022-1247 888 PR 28-0998 113	OH2022-1247 887 PR 28-0998 113	OH2022-1247 889 PR 28-0998 113	OH 62-0962 841 PR 32-0997533	[1]Ref. Nos. mentioned are for top rollers without cots.
	OH medium Aprons	OH2042-1250 133 PR2813-1251 565	OH2042-1250 134 PR2813-1251 565	OH 132-0963 671 PR 323-0998 232	OH 132-0963 673 PR 323-0998 232	[2]Diameters shown for bottom rollers are mere reference values.
	OH long 60 Aprons	OH 122-0963 495 PR 028-0002 484	OH 122-0963 500 PR 032-0002 485	OH 122-0963 511 PR 032-0002 485	OH 122-0963 512 PR 032-0002 485	[3]The "usual" distances VF are values gathered in practical use or the recommendation to select the maximum possible setting.
Top rollers:[1]	Front 1	LP 1002-1249 324*	LP 1002-1248 379	LP 1002-1248 382	LP 1002-1256 898	
	Middle 2	LP 1003-1256 596[4]*	LP 1003-1256 597[4]	LP 1003-1256 598[4]	LP 1003-1256 599[4]	
	Rear 3	LP 1002-1249 324*	LP 1002-1248 379	LP 1002-1248 382	LP 1002-1256 898	

* Top roller gauge Tw = 70 mm

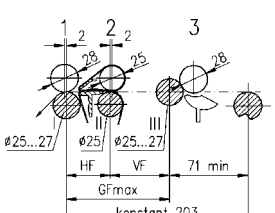
[4]TEXParts standard version with plastic sleeve. Upon request LP 1002 with cot can be supplied as apron top roller alternately.

Bottom roller diameter in mm:[2]							
	PK 2055	Front	I	25...27	**PK 2065**	Front	I 27...30
		Middle	II	25...27		Middle	II 25...27
		Rear	III	25...27		Rear	III 27...30

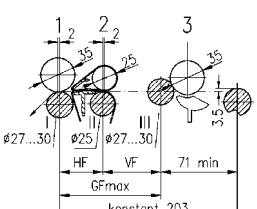
Clips

For OH 2022/OH 62	OLC-0964 118 yellow	OLC-0017 705 lilac	OLC-0964 119 white
For OH 2042/OH132	OLC-0964 117 red	OLC-0964 118 yellow	OLC-0964 119 white
For OH 122	OLC-0964 118 yellow	OLC-0964 119 white	OLC-0017 627 grey

Drafting System Setting



PK 2055-1251 785



PK 2065-1251 786

Draft field settings and max. fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF min.	VF usual [3]	GF mm max.	Max. fibre length mm
PK 2055- 1251 785	**OH 2022/OH 62**	44		40		45
	OH 2042/OH 132	53	36	50		54
	OH 122	68		60		60
					132	
PK 2065- 1251 786	**OH 2022/OH 62**	46		40		45
	OH 2042/OH 132	55	36	50		54
	OH 122	70		60		60

TEXParts
Weighting arms PK 5000

Application

3-roller- and 4-roller double apron drafting system for speed frames.

With top apron cradle OH 5022 for cotton and synthetic fibres up to approx. 40mm length.

With cradle OH 5042 for very long cotton fibres and synthetics of poor drafting properties up to 50 mm.

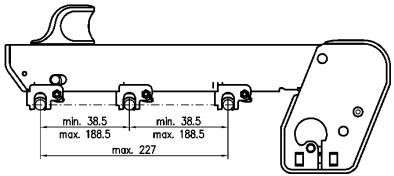
With cradle OH 5245 for synthetics up to approx. 60 mm fibre length.

See als well chapter 9 page 42.

Types **PK 5025-1259 471**[1)]
Ref.no. **PK 5035-1259 473**[1)]

Operating pressure	Load on top roller (daN) Front 1	Middle 2	Rear 3
from 1,5 bar	17	10	16
up to 4,0 bar	36	21	32
Top roller for PK 5025 Ø mm[2)]:	28	25	28
Top roller for PK 5035 Ø mm[2)]:	35	25	35

Application:
PK 5025-1259 471 as PK 5035-1259 473 , specially for longer fibres.



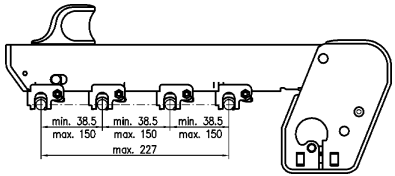
Measurements are given in mm.

[1)] Pneumatic loading; air pressure require.
[2)] Dia. values refer to newly covered top rollers.

Types **PK 5025-1259 472**[1)]
Ref.no.

Operating pressure	Load on top roller (daN) Front 1	Middle 1	Middle 2	Rear 3
from 1,5 bar	10	15	10	15
up to 4,0 bar	20	31	20	31
Top roller for PK 5025 Ø mm[2)]:	28	28	25	28

Application:
PK 5025-1259 472 , with top apron cradle OH 5022 for fibres up to approx. 50 mm.



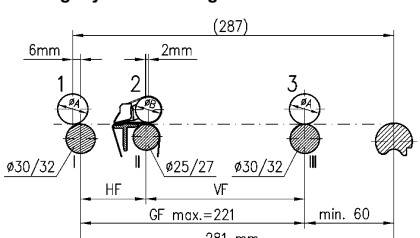
Measurements are given in mm.

[1)] Pneumatic loading; air pressure require.
[2)] Dia. values refer to newly covered top rollers.

Weighting arm PK 5025-1259 471 and PK 5035-1259 473
Gauge in mm **Tw 110**

Top apron cradles and top aprons	**OH short** for top roller Ø 25 mm	OH 5022-1259 297 PR 40- 0997 575
	OH medium Aprons for top roller Ø 25 mm	OH 5042-1259 506 PR 4010-0002 503
	OH long Aprons for top roller Ø 25 mm	OH 5245-1260 370 PR 4011-0002 504
Top rollers[2]	Front 1 Middle 2 or Middle 2[1] Rear 3	LP 315 -0025 228 LP 315 -0025 228 LP 317 -0013 011 LP 315 -0025 228
Bottom roller dia. in mm (mere reference values)	Front I 30/32 Middle II 25/27 Rear III 30/32	

Drafting System Setting[2]



Measurements are given in mm.

	Top roller Ø in mm	
	Ø A	Ø B
PK 5025	28	25
PK 5035	35	25

Clips
for OH 5022
for OH 5042 OLC-0964 104 white, OLC-0964 106 black, OLC-0964 108 green
for OH 5245

Weighting arms, draft field settings and max.fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF min.	VF usual[3]	GF mm max.	Max.fibre length mm
PK 5025-1259 471	OH 5022	49	38,5	60.. 80	221	45
	OH 5042	60		60...80		54
	OH 5245	76		70...90		60
PK 5035-1259 473	OH 5022	49		60...80		45
	OH 5042	60		60...80		54
	OH 5245	76		70...90		60

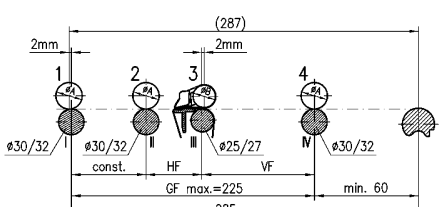
5

[1] only together with OH 5245-1259 478.
[2] Ref-Nos. are given for top rollers without cots.
[3] The „usual“ field distances VF are values gathered in practical use.

Weighting arm PK 5025-1259 472
Gauge in mm **Tw 110**

Top apron cradles and top aprons	**OH short** for top roller Ø 25 mm	OH 5022-1259 297 PR 40-0997 575
	OH medium Aprons for top roller Ø 25 mm	OH 5042-1259 506 PR 4010-0002 503
Top rollers[1]	Front 1	LP 315 -0025 228
	Middle 2	LP 315 -0025 228
	Middle 3	LP 315 -0025 228
	Rear 4	LP 315 -0025 228
Bottom roller dia. in mm (mere reference values)	Front I 30/32 Middle II 30/32 Middle III 25/27 Rear IV 30/32	

Drafting System Setting



	Top roller Ø in mm	
	Ø A	Ø B
PK 5025	28	25

Measurements are given in mm.

Clips
for OH 5022
for OH 5042 OLC-0964 104 white, OLC-0964 106 black, OLC-0964 108 green
for OH 5245

Weighting arms, draft field settings and max.fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	Con-stant[2]	VF min.	VF usual	GFmm max.	Fibre length mm
PK 5025-1259 472	**OH 5022**	48	36,5	45	46.. 50	225	50
PK 5025-1259 472	**OH 5042**	60	36,5	45	**	225	50

**** Extension of the usability range because of GF_{max} = 225 mm (PK1500; GF_{max} = 195 mm)**

[1] Ref-Nos. are given for top rollers without cots.
[2] The figure mentioned is the shortest possible distance of the bottom rollers depending on the PK-construction. Enlarged distances depend on the condensers and the field distance setting.

TEXParts
Weighting arms PK 1500

Application

3-roller- and 4-roller double apron drafting system for speed frames.

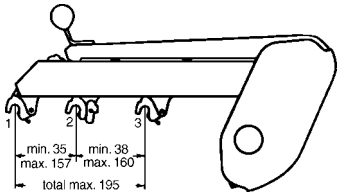
With top apron cradle OH 514 for cotton and synthetic fibres up to approx. 40mm length.

With cradle OH 534 for very long cotton fibres and synthetics of poor drafting properties up to 50 mm.

With cradle OH 524 for synthetics up to approx. 60 mm fibre length.

See as well chapter 9 page 55.

Types Ref.No.	Loads in daN				For top roller Ø mm
PK 1500-0962 604	Front 1	20	25	30	28 (35)
	Middle 2	10	15	20	25 (33)
	Rear 3	15	20	25	28 (35)
PK 1500-0962 602	Front 1	20	25	30	35
	Middle 2	10	15	20	25
	Rear 3	15	20	25	35
PK 1500-0001 938	Front 1	9	12	15	28
	Middle 2	15	20	25	28
	Middle 3	10	15	20	25
	Rear 4	10	15	20	28

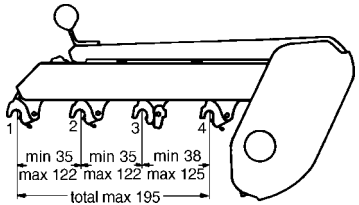


PK 1500-0962 604
PK 1500-0962 602

Measurements are given in mm.

Distances for top roller holders are shown in mm.

Clearer roller holders[1]		Application
Front of arm Ref.no.	lateral 2, 3, 4 Ref.no.	
PFE-0996 685	**PPH-0727 593**[2]	PK 1500-0962 602 as PK 1500-0962 604, specially for longer fibres.
PFE-0996 685	**PPH-0727 593**[2]	
PFE-0996 685	**PPH-0727 593**[2]	PK 1500-0001 938, with top apron cradles OH 514 for fibres up to approx. 50mm



PK 1500-0001 938

Measurements are given in mm.

[1] Clearer roller holders are delivered separately on special order.
[2] Can also be used as lateral 1.

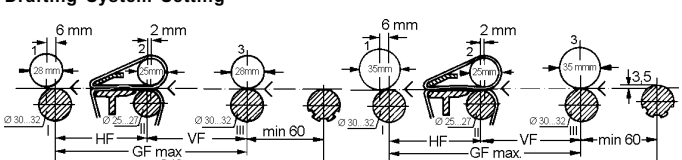
Weighting arm PK 1500-0962 604 and PK 1500-0962 602

Gauge in mm		Tw 82,5	Tw 100	Tw 110	Tw 130
Top apron cradles[3] and top aprons	**OH short** for top roller Ø 25 mm	OH 514-0962 744 PR 40-0997 575	OH 514-0962 745 PR 40-0997 575	OH 514-0962 746 PR 40-0997 575	OH 514-0962 747 PR 40-0997 575
	OH medium				
	Aprons for top roller Ø 25 mm	-	OH 534-0962 764 PR4010-0002 503	OH 534-0962 765 PR4010-0002 503	OH 534-0962 766 PR4010-0002 503
	Aprons for top roller Ø 33 mm	-	PR 407-0002 500	PR 407-0002 500	PR 407-0002 500
	OH long	OH 524-0962 753	-	OH 524-0962 755	-
	Aprons for top roller Ø 25 mm	PR 4011-0002 504	-	PR4011-0002 504	-
	Aprons for top roller Ø 33 mm	PR 408-0002 501	-	PR 408-0002 501	-
Top rollers[1]	Front 1	LP 315-0025 225	LP 315-0025 227	LP 315-0025 228	LP 315-0025 229
	Middle 2	LP 317-0013 008	LP 317-0013 010	LP 317-0013 011	LP 317-0013 012
	Rear 3	LP 315-0025 225	LP 315-0025 227	LP 315-0025 228	LP 315-0025 229

Bottom roller dia. in mm (mere reference values)	Front	I	30/32
	Middle	II	25/27
	Rear	III	30/32

Clips
for OH 514
for OH 534
for OH 524
OLC-0964 104 white, OLC-0964 106 black, OLC-0964 108 green

Drafting System Setting[2]



PK 1500-0962 604 **PK 1500-0962 602**

Weighting arms, draft field settings and max.fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF	VF min.	GF mm usual[4]	Max.fibre length max. mm
PK 1500-0962 604	**OH 514**	49	40	60.. 80	189	45
	OH 534	60		60...80		54
	OH 524	76		70...90		60
PK 1500-0962 602	**OH 514**	49		60...80		45
	OH 534	60		60...80		54
	OH 524	76		70...90		60

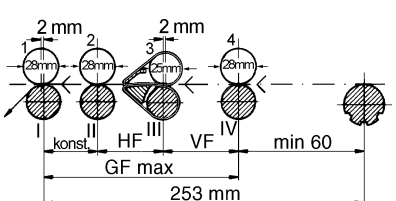
[1] Ref. Nos. given are for top rollers without cots.
[2] The mentioned drafting field distances take a front zone condenser into account. Without front zone condenser the front zone (HF) can be shortened.
[3] For top roller diameters 35-33-35 mm the OH 514 (short) is not used.
[4] The „usual" field distances VF are values gathered in practical use.

Weighting arm PK 1500-0001 938

Gauge (in mm)			Tw 82,5	Tw 100	Tw 110	Tw 130
Top apron cradles and top aprons	OH short		OH 514-0962 744	OH 514-0962 745	OH 514-0962 746	OH 514-0962 747
	Aprons		PR 40-0997 575	PR 40-0997 575	PR 40-0997 575	PR 40-0997 575
	OH middle		-	OH 534-0962 764	OH 534-0962 765	OH 534-0962 766
	Aprons		-	PR4010-0002 503	PR4010-0002 503	PR4010-0002 503
	OH long 60		OH 524-0962 753	-	OH 524-0962 755	-
	Aprons		PR 4011-0002 504	-	PR4011-0002 504	-
Top rollers[1]	Front 1	LP 315		LP 315-0025 227	LP 315-0025 228	LP 315-0025 229
	Middle 2	LP 315		LP 317-0013 010	LP 317-0013 011	LP 317-0013 012
	Middle 3	LP 317				
	Rear 4	LP 315				
Bottom roller dia. in mm (mere reference values)	Front I	28,5				
	Middle II	28,5				
	Middle III	28,5				
	Rear IV	28,5				

Clips
for OH 514
for OH 534
for OH 524
OLC-0964 104 white, OLC-0964 106 black, OLC-0964 108 green

Drafting System Setting



PK 1500-0001 938

Weighting arms, draft field settings and max. fibre length

Weighting arm PK	Top apron cradle OH	HF	Field distances in mm Con-stant[2]	VF min.	VF usual	GF mm max.	Fibre length mm
PK 1500-0001 938	**OH 514**	48	34	45	46...50	193	50

[1] Ref.nos. are for top rollers without cots.In case of 4-roller-type PK 1500-0001 938 top roller combination is 28-28-25-28 mm and top roller types LP 315 -LP 315 -LP 317 -LP 315. Normally the OH 514 is used.
[2] The figure mentioned is the shortest possible distance of the bottom rollers depending on the PK-construction. Enlarged distances depend on the condensers and the field distance setting.

TEXParts
Weighting arm PK 6000

Application

Ring frame 3-roller double apron drafting system PK 6000.

With top apron cradle OH 6022 for all kinds of wool and synthetic fibres up to 200 mm. Blends of these.

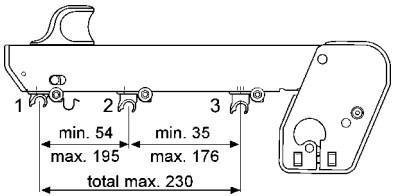
Preparation:
Classical worsted yarn assortment with finishing machine or worsted speed frame.

See also chapter 9 page 66.

Types
Ref.no.

PK 6000-1252 924[1]

Operating pressure	**Load on top roller (daN) Front 1**	**Middle 2**	**Rear 3**
from 1,5 bar	17	7,5	14
up to 4,0 bar	36	16,8	33
Top roller Ø mm[2]	50	33	50



PK 6000 - 1252 924

Measurements are given in mm.

[1] Pneumatic loading; air pressure required.
[2] Dia. values refer to newly covered top rollers.

Mono clearer roller holder Ref.no.

Remarks

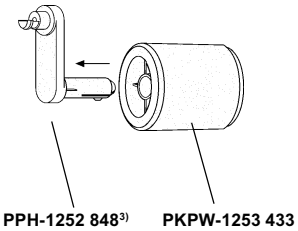
PKHA-1252 848[3]

2 pcs. front clearer roller holders are necessary for fixing the mono clearer rollers

Mono clearer roller Ref. no.

PKPW-1253 433

for gauges 75mm and 82,5mm
2 pcs. clearer rollers are needed for each weighting arm



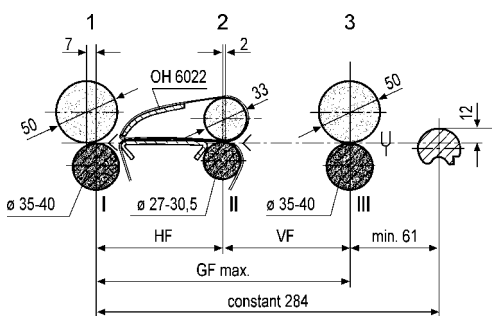
Distances for top roller holders are shown in mm.

[3] Clearer roller holder PKHA-1252 848 will be supplied on request as separate item.

Weighting arm PK 6000- 1252 924

Gauge (in mm)		**Tw 75**	**Tw 82,5**
Top apron cradles and top aprons	OH	OH 6022-1254 311	OH 6022-1254 312
	Aprons	PR -1253 678	PR -0022 858
Top rollers[1]	Front 1	LP 314 -1253 740	LP 314 -1253 741
	Middle 2	LP 314 -1253 740	LP 315 -1253 744
	Rear 3	LP 314- -1253 740	LP 314 -1253 741

Drafting System Setting



PK 6000- 1252 924

Clips
For normal bottom apron nose bar: OLC-0964 120 black, OLC-0004 587 beige, OLC-0004 588 green

Weighting arms, draft field distances and max. fibre length

Weighting arm PK	**Top apron cradle OH**	**Field distances in mm HF**	**VF min.**	**VF usual**[2]	**GF max.**	**K mm**	**Max. fibre length mm Slip draft**
with bottom apron nose bar:							
PK 6000-1252 924	**OH 6022**	105	47	>57	223	284	200

Measurements are given in mm.

[1] Ref.nos. are for rollers without cots.

[2] A distance greater than 57mm depends on the fibre length and the roving material.

TEXParts
Weighting arms PK 1601

Application

Ring frame 3-roller double apron drafting system PK 1601-0962 670.

Top apron roller as recessed roller.

With top apron cradle OH 2402 or OH 554: all kinds of wool and synthetic fibres up to 200 mm. Blends of these.

Preparation: Classical worsted yarn assortment with finishing machine or worsted speed frame.

See also chapter 9 page 75.

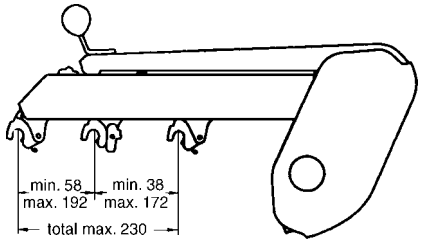
Types Ref.no.	Loads in daN				For top roller Ø mm[1]
PK1601-0962 670	Front 1	20	27	35	50
	Middle 2	9	12	15	48
	Rear 3	20	25	30	50

Front Clearer Roller Ref. no.	Gauge Tw in mm
1246 282	75
0024 868	82,5
0033 969	90

[1]Dia. values refer to newly covered top rollers.

Clearer roller holder[2]
Front of arm
Ref.no.

PFE-0996 685



PK 1601-0962 670

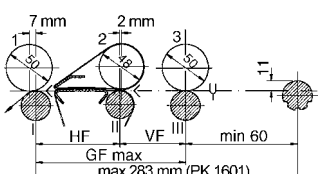
Measurements are given in mm.

[2] Clearer roller holders will be supplied on request as separate items. Condensers are shown on chapter 5 pages 66-73. Distances for top roller holders are shown in mm.

Weighting arms PK 1601-0962 670

Gauge (in mm)		Tw 75	Tw 82,5	Tw 90
Top apron cradles and top aprons	OH	OH 2402 -1253 436	OH 2402-1253 437	OH 554 -0962 769
	Aprons	PR 3217 -1252 275	PR 4017-1252 276	PR 405 -0997 462
		OH 554 -0962 767	OH 554-0962 768	-
		PR 325 -0998 141	PR 405-0997 462	-
Top rollers[1]	Front 1	LP 314 -1253 740	LP 314-1253 741	LP 314-1253 742
	Middle 2	LP 316 -1256 711	LP 317-1256 712	LP 317-1256 713
	Rear 3	LP 314 -1253 740	LP 314-1253 741	LP 314-1253 742

Drafting System Setting



PK 1601-0962 670

Clips
For normal bottom apron nose bar: OLC-0964 120 black, OLC-0004 587 beige, OLC-0004 588 green.

Weighting arms, draft field distances and max. fibre length

Weighting arm PK	Top apron cradle OH	Field distances in mm HF	VF min.	VF usual[2]	GF mm	max.K max.	Max. fibre lengthmm Slip draft
with bottom apron nose bar:							
PK 1601-0962 670	**OH 2402**	105	57	>57	223	283	200

[1] Ref.nos. are for rollers without cots.

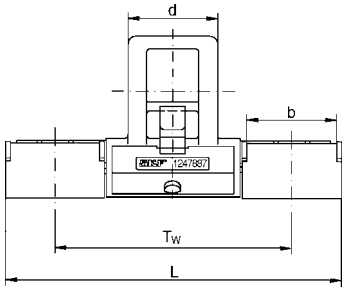
[2] A distance greater than 57mm depends on the fibre length and the roving material.

TEXParts
Top apron cradles OH 2022

Application

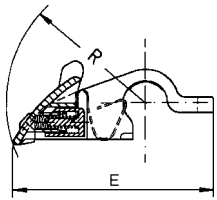
Cotton ring frame drafting systems with TEXParts weighting arms PK 3025, PK 3035 PK 2025, PK 2035, PK 2055 and PK 2065.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d
OH 2022- 1247 888	68,4	99,8	28,4	28,4
OH 2022- 1247 887	75	106,4	28,4	28,4
OH 2022- 1247 889	82,5	113,9	28,4	28,4



OH 2022

R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
35	51,4	**PR 28**	**OLC- 0964 118**	yellow
35	51,4	**PR 28**	**OLC- 0017 705**	lilac
35	51,4	**PR 28**	**OLC- 0964 119**	white



OH2022

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.
[2] Set of distance clips. Clips are not included in standard OH supply and have to be ordered separately.

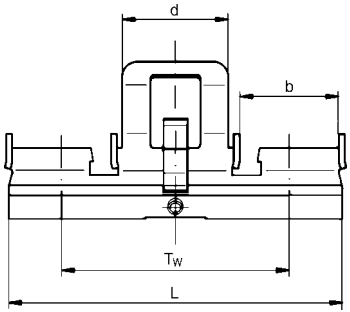
TEXParts
Top apron cradles OH 62

Application

Cotton ring frame drafting systems with TEXParts weighting arms PK 2025, PK 2035, PK 2055 and PK 2065.

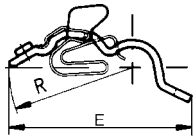
Also designated as short OH.

Cradle Types Ref.no.	Dimensions in mm Tw[1]	L	b	d
OH 62-0962 841	90	125	32,4	50



OH 62

R	E	Top aprons[2]	Basic equipment Distance clips[3] Ref.no.	Colour
35	53	**PR 32**	**OLC- 0964 118**	yellow
			OLC- 0017 705	lilac
			OLC- 0964 119	white



OH 62

[1] OH 62 cradles with gauges 68,4mm, 75mm and 82,5mm have been replaced by OH 2022 top apron cradles.

[2] Top apron for 25 mm diameter of top apron roller. Top aprons must be ordered as separate items.

[3] Set of distance clips for OH 62. Clips are **not** included in standard OH supply and have to be ordered separately.

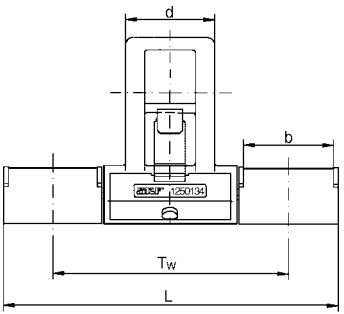
TEXParts
Top apron cradles OH 2042

Application

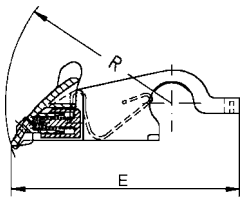
Cotton ring frame drafting systems with TEXParts weighting arms PK 3025, PK 3035, PK 2025, PK 2035, PK 2055, PK 2065.

Also designated as medium OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 2042 -1250 133	68,4	99,8	28,4	28,4	42,5	58,9	**PR 2813**	**OLC- 0964 117**	red
OH 2042 -1250 134	75	106,4	28,4	28,4	42,5	58,9	**PR 2813**	**OLC- 0964 118**	yellow
								OLC- 0964 119	white



OH 2042



OH 2042

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.

[2] Set of distance clips. Distance clips are **not** included in standard OH supply and have to be ordered separately.

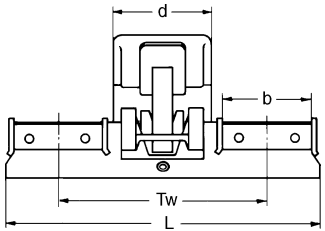
TEXParts
Top apron cradles OH 132

Application

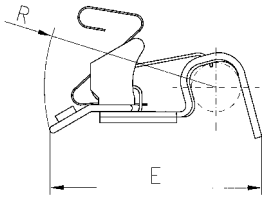
Cotton ring frame drafting systems with TEXParts weighting arms PK 2025, PK 2035, PK 2055 and PK 2065.

Also designated as medium OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d	R	E	Top aprons[2]	Basic equipment Distance clips[3] Ref.no.	Colour
OH 132- 0963 700[1]	68,4	103	28,4	30	42,5	52,5	**PR 283**	**OLC- 0964 117**	red
OH 132- 0963 660[1]	75	114	32,4	35	42,5	52,5	**PR 323**	**OLC- 0964 118**	yellow
OH 132- 0963 671	82,5	122	32,4	35	42,5	52,5	**PR 323**	**OLC- 0964 119**	white



OH 132



OH 132

[1] Delivery until using-up of stock.

[2] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.

[3] Set of distance clips. Clips are **not** included in standard OH supply and have to be ordered separately.

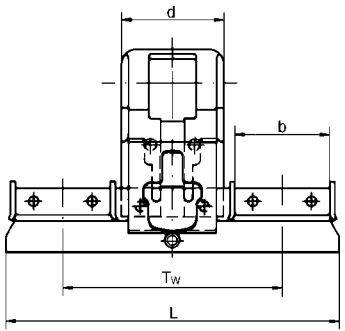
TEXParts
Top apron cradles OH 122

Application

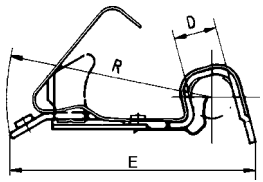
Cotton ring frame drafting systems with TEXParts weighting arms PK 2025, PK 2035, PK 2055 and PK 2065.

Also designated as long OH 60.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 122 -0963 495	68,4	103	28,4	35	58,3	69	**PR 028**	OLC- 0964 118	yellow
OH 122 -0963 500	75	114	32,4	35	58,3	69	**PR 032**	OLC- 0964 119	white
OH 122 -0963 511	82,5	122	32,4	35	58,3	69	**PR 032**	OLC- 0017 627	grey



OH 122



OH 122

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.
[2] Set of distance clips for OH 122. Clips are **not** included in standard OH supply and have to be ordered separately.

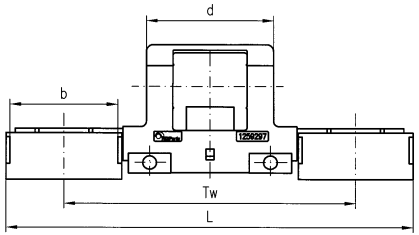
TEXParts
Top apron cradles OH 5022

Application

Cotton speed frame drafting systems with TEXParts weighting arms PK 5000.

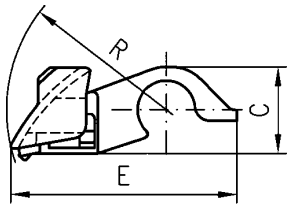
Also designated as short OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c
OH 5022-1259 297	110	173,0	40,4	18,5



OH 5022

d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
28,6	34,5	47	**PR 40**	**OLC- 0964 104**	white
				OLC- 0964 106	black
				OLC- 0964 108	green



OH 5022

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.
[2] Set of distance clips for OH 5022. Clips are **not** included in standard OH supply and have to be ordered separately.

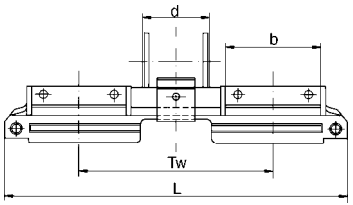
TEXParts
Top apron cradles OH 514

Application

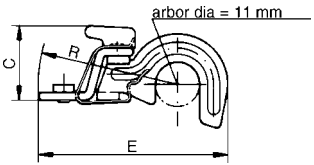
Cotton speed frame drafting systems with TEXParts weighting arms PK 1500, PK 1600

Also designated as short OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 514 -0962 744	82,5	145,5	40,4	18,5	28,6	34,5	47	**PR 40**	**OLC- 0964 104**	white
OH 514 -0962 745	100	163,0	40,4	18,5	28,6	34,5	47	**PR 40**	**OLC- 0964 106**	black
OH 514 -0962 746	110	173,0	40,4	18,5	28,6	34,5	47	**PR 40**	**OLC- 0964 108**	green
OH 514 -0962 747	130	193,0	40,4	18,5	28,6	34,5	47	**PR 40**		



OH 514



OH 514

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.

[2] Set of distance clips for OH 514. Clips are **not** included in standard OH supply and have to be ordered separately.

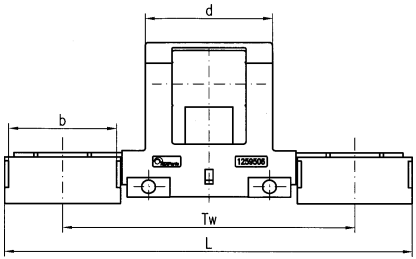
TEXParts
Top apron cradles OH 5042

Application

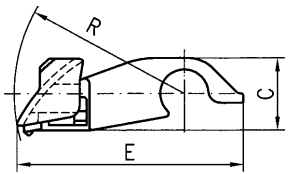
Cotton speed frame drafting systems with TEXParts weighting arms PK 5000.

Also designated as medium OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 5042-1259 506	110	173,0	40,4	17,8	28,6	45	57,5	**PR 4010**	**OLC- 0964 104**	**white**
									OLC- 0964 106	**black**
									OLC- 0964 108	**green**



OH 5042



OH 5042

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.

[2] Set of distance clips for OH 5042. Clips are **not** included in standard OH supply and have to be ordered separately.

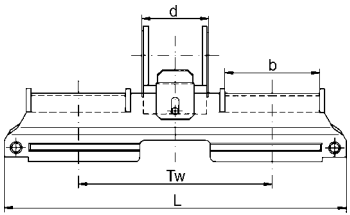
TEXParts
Top apron cradles OH 534

Application

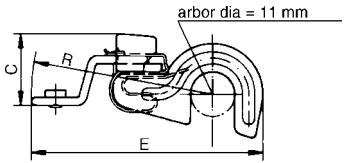
Cotton speed frame drafting systems with TEXParts weighting arms PK 1500, PK 1600.

Also designated as medium OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 534 -0962 764	100	163,0	40,4	17,8	28,6	45	57,5	**PR 4010**	OLC- 0964 104	white
OH 534 -0962 765	110	173,0	40,4	17,8	28,6	45	57,5	**PR 4010**	OLC- 0964 106	black
OH 534 -0962 766	130	193,0	40,4	17,8	28,6	45	57,5	**PR 4010**	OLC- 0964 108	green



OH 534



OH 534

[1] Top apron for 25 mm diameter of apron top roller.
For apron top roller with 33mm diameter PR 407 is applicable.
Top aprons must be ordered as separate items.

[2] Set of distance clips for OH 534. Clips are **not** included in standard OH supply and have to be ordered separately.

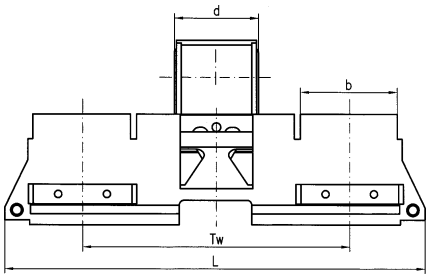
TEXParts
Top apron cradles OH 5245

Application

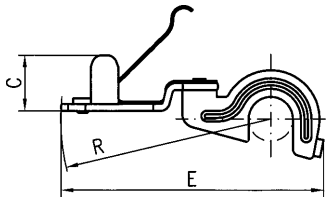
Cotton speed frame drafting systems with TEXParts weighting arms PK 5000.

Also designated as long OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 5245-1260 370	110	173,0	40,4	16	28,6	60,5	73	**PR 4011**	**OLC- 0964 104**	white
									OLC- 0964 106	black
									OLC- 0964 108	green



OH 5245



OH 5245

[1] Top apron for 25 mm diameter of apron top roller. Top aprons must be ordered as separate items.
[2] Set of distance clips for OH 5045. Clips are **not** included in standard OH supply and have to be ordered separately.

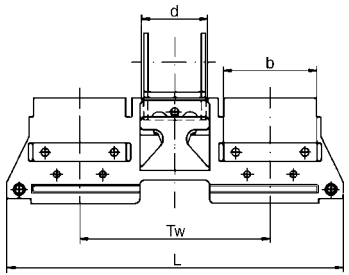
TEXParts
Top apron cradles OH 524

Application

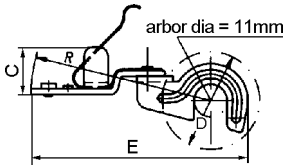
Cotton speed frame drafting systems with TEXParts weighting arms PK 1500, PK 1600.

Also designated as long OH.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	c	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 524 -0962 753	82,5	145,5	40,4	16	28,6	60,5	73	**PR 4011**	**OLC- 0964 104**	white
OH 524 -0962 755	110	173,0	40,4	16	28,6	60,5	73	**PR 4011**	**OLC- 0964 106**	black
									OLC- 0964 108	green



OH 524



OH 524

[1] Top apron for 25 mm diameter of apron top roller.
For apron top roller with 33 mm diameter PR 408 is applicable.
Top aprons must be ordered as separate items.

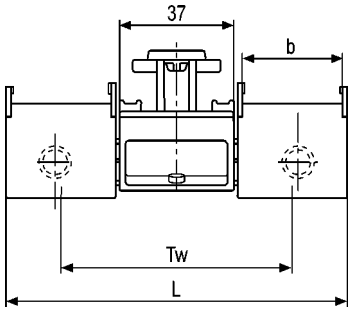
[2] Set of distance clips for OH 534. Clips are **not** included in standard OH supply and have to be ordered separately.

TEXParts
Top apron cradles OH 2402

Application

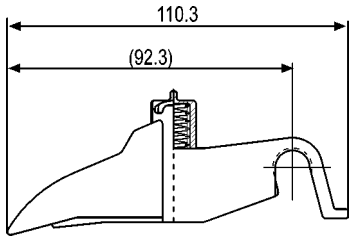
Worsted ring frame drafting systems with TEXParts weighting arms PK 1601.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b
OH 2402 -1253 436	75	110,5	32,5
OH 2402 -1253 437	82,5	126,5	40,5



OH2402

Apron top roller diameter	Top aprons	Basic equipment Distance clips[1] Ref.no.	Colour
48	**PR 3217**[2]	OLC-0964 120	black
48	**PR 4017**[2]	OLC-0004 587	beige
		OLC-0004 588	green



OH2402

[1] Set of distance clips for OH 2402. Clips are **not** included in standard OH supply and have to be ordered separately.

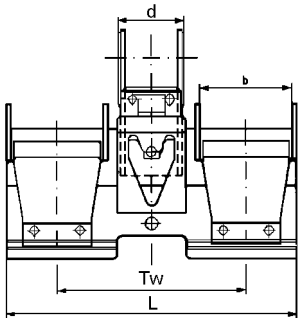
[2] PR 3217 and PR 4017 = recommended apron sizes. Detailed apron dimensions can be taken from the Technical Information sheet no. 442. Existing apron sizes with designation PR 32/5 (gauge 75) and PR 40/5 (gauge 82.5) respectively can be used further on with the OH 2402, if the rear overhang of the top apron roller can be adjusted to 3mm.

TEXParts
Top apron cradles OH 554

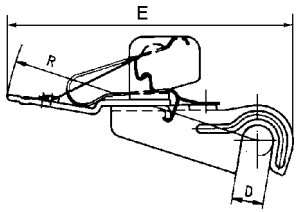
Application

Worsted ring frame drafting systems with TEXParts weighting arms PK 1601.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d	R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
OH 554 -0962 767	75	111	32,4	28,6	89,5	101	**PR 32/5**	OLC- 0964 120	black
OH 554 -0962 768	82,5	126,5	40,4	28,6	89,5	101	**PR 40/5**	OLC- 0004 587	beige
OH 554 -0962 769	90	134	40,4	28,6	89,5	101	**PR 40/5**	OLC- 0004 588	green



OH 554



OH 554

[1] Top apron for 48 mm diameter of apron top roller.
Top aprons must be ordered as separate items.

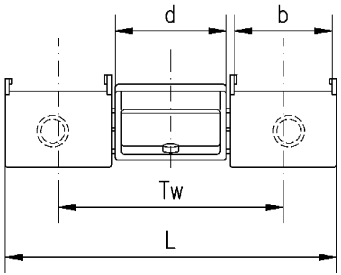
[2] Set of distance clips for OH 554. Clips are **not** included in standard OH supply and have to be ordered separately.

TEXParts
Top apron cradles OH 6022

Application

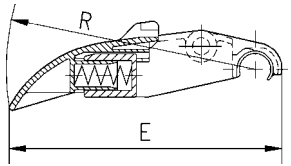
Worsted ring frame drafting systems with TEXParts weighting arms PK 6000.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d
OH 6022-1254 311	75	110,5	32,4	37
OH 6022-1254 312	82,5	126	40,4	37



OH 6022

R	E	Top aprons[1]	Basic equipment Distance clips[2] Ref.no.	Colour
88,8	98	**PR-1253 678**	OLC-0964 120	black
88,8	98	**PR-0022 858**	OLC-0004 587	beige
			OLC-0004 588	green



OH 6022

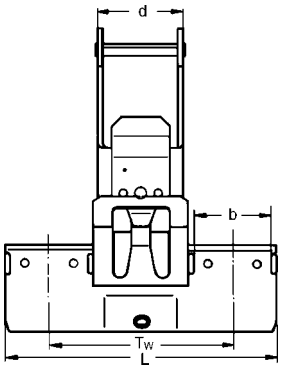
[1] Top apron for 33 mm diameter of apron top roller. Top aprons must be ordered as separate items.
[2] Set of distance clips for OH 6022. Clips are **not** included in standard OH supply and have to be ordered separately.

TEXParts
Top apron cradles OH 456[1)]

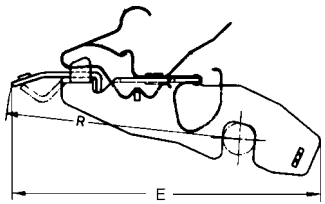
Application

Drafting on worsted and semi-worsted ring frames and worsted speed frames with TEXParts weighting arms PK 800.

Cradle Types Ref.no.	Dimensions in mm Tw	L	b	d	R	E	Top aprons[2)]	Basic equipment Distance clips[3)] Ref.no.	Colour
OH 456 -0962 730[1)]	110	174	60,4	34,5	94,7	125,5	**PR 60/5**	**OLC- 0964 120**	black
OH 456 -0962 731[1)]	120	184	60,4	34,5	94,7	125,5	**PR 60/5**	**OLC- 0004 587**	beige
								OLC- 0004 588	green



OH 456



OH 456

[1)] Delivery until using-up of stock.

[2)] Top apron for 43 mm diameter of apron top roller. Top aprons must be ordered as separate items.

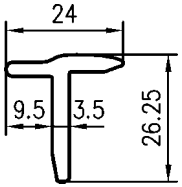
[3)] Clips are **not** included in standard OH supply and have to be ordered separately. Of OLS distance pins, one pair is required per cradle, while one piece per cradle is used for OLC distance pins.

TEXParts
Bottom apron nose bar

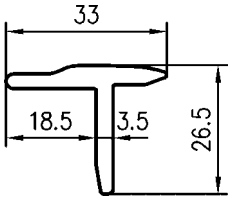
Application

Cotton ring frame drafting systems with TEXParts weighting arms PK 3025, PK 3035, PK 2025, PK 2035, PK 2055 and PK 2065.

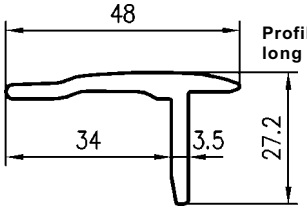
Cotton speed frame drafting systems with TEXParts weighting arms PK 5000, PK 1500.



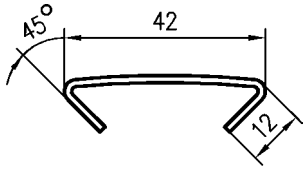
Profile P1
short version



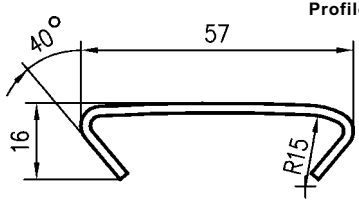
Profile P2
medium version



Profile P3
long version



Profile P4



Profile P5

Application

Profile P4
Cotton speed frame drafting systems with TEXParts weighting arms
PK 5000, PK 1500.

Profile P5
Worsted ring frame drafting systems with TEXParts weighting arms PK 6000 and PK 1601.

Ring frames
Speed frames

Cotton mills

PRINT CONTENTS

Speed frames
Ring frames

Cotton mills
Worsted mills

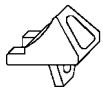
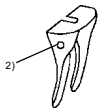
END

TEXParts
Roving guides, condensers

Application

Ring frame 3 roller double apron drafting systems.

Speed frame 3 roller double apron drafting systems.
Speed frame 4 roller drafting systems.

Types Ref.no.[1]	Roving guides/Condensers	Used in drafting systems	Symbol	Remarks
KL-0010 977	Rear roving guide	Cotton ring frames for PK 3025, PK 3035 PK 2025, PK 2035		suited for profile 10 x 4 mm
KL-0016 540	Rear roving guide	Cotton ring frames for PK 2055, PK 2065		suited for profile 12 x 4 mm
KL-0011 034	Rear roving guide	Cotton ring frames for PK 2055, PK 2065		suited for profile 12 x 4 mm
KL-0998 282* **KL-0998 283*** **KL-0998 284*** **KL-0998 285***	Front zone condenser	Speed frames PK 400, PK 500, PK 600, PK 700, PK 800, PK 1500, PK 1600	 2)	6 -yellow,delivery apert. 9 - uncoloured 12 - black 16 - green

[1] Products marked with * at Ref.no. are stamped with TEXParts characters for designation.

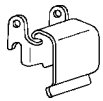
[2] Colour mark indicates size.

TEXParts
Roving guides, condensers

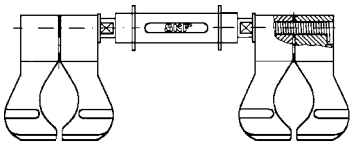
Application

Ring frames 3 roller double apron drafting systems

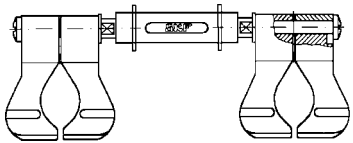
Types Ref.no.[1]	Gauge mm	Roving guides/ Condensers	Used in drafting systems	Swinging leg Ref.no.
KL-1246 243* **KL-1246 070*** **KL-1246 244***	68,4-75 82,5 90-100	Front zone condenser; swinging legs are spring-suspended	Worsted ring frame PK 600, PK 1601, PK 1700 and PK 6000 series	1246 071 (swinging leg right hand) 1246 072 (swinging leg left hand)
KL-1248 233* **KL-1248 234*** **KL-1248 235***	68,4-75 82,5 90-100	Front zone condenser; swinging legs are held by slotted cheese head screws	Worsted ring frame PK 600, PK 1601, PK 1700 and PK 6000 series	1246 071 (swinging leg right hand) 1246 072 (swinging leg left hand)
PFE-0997 405[2]		Spring		



PFE-0997 405[2]



KL -1246 243
KL -1246 070
KL -1246 244



KL- 1248 233
KL -1248 234
KL -1248 235

[1] Products marked with * at Ref.no. are stamped with TEXParts characters for designation.
[2] Retaining spring for all front zone condensers for PK 1600, PK 1700 series.

Application

Ring frames with 3 and more roller drafting systems.

Speed frames with 3 and more roller drafting systems.

Types Ref.no.	Roving guides/Condensers	Used in drafting systems	Symbol	Remarks
KL-0997 469	Rear zone condenser	Worsted ring frames PK 1601 and PK 6000 series		

TEXParts
Distance clips OLC

Application

For top apron cradles in drafting systems with weighting arms
PK 3025, Pk 3035
PK 2025, PK 2035,
PK 2055, PK 2065,
PK 700, PK 800,
PK 1700, PK 1600,
PK 6000.

For center-supported.

Types Ref.no.	Symbol	Colour
OLC -0964 117		red
OLC -0964 118		yellow
OLC -0017 705		lilac
OLC -0964 119		white
OLC -0017 627		grey
OLC -0964 120		black
OLC -0004 587		beige
OLC -0004 588		green
OLC -0004 589		pink
OLC -0964 123		blue
OLC -0964 124		brown

Ring frames
Speed frames

Cotton mills
Semi-worsted mills
Worsted mills

TEXParts
Distance clips OLC

Types Ref.no.	Symbol	Colour
OLC-0964 102		red
OLC-0964 103		yellow
OLC-0964 104		white
OLC-0964 105		grey
OLC-0964 106		black
OLC-0030 491		orange
OLC-0964 107		ivory
OLC-0964 108		green
OLC-0964 109		blue
OLC-0964 110		brown
OLC-0007 685 **OLC-0007 686** **OLC-0007 687** **OLC-0007 688**		black beige green pink

Application

For top apron cradles in drafting systems with weighting arms PK 1500, PK 1600 series.
OLC-0030 491 and OLC-0964 102 to OLC-0964 110 are for lateral support.

OLC-0007 685 to OLC-0007 688, used in short bottom apron systems with UH 54, for worsted drafting systems
with weighting arms type PK 1601 are
for mid-support.

Ring frames
Speed frames

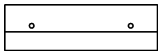
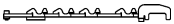
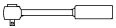
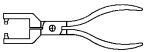
Cotton mills
Worsted mills

PRINT CONTENTS END

Application

For drafting systems with weighting arm PK 3025.

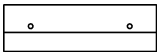
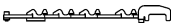
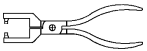
See also chapter 5 pages 2-5.

Setting tools	Types Ref.no.	Symbol
Tool bag - empty	**1255 219**	
Draft field gauge	**1259 593**	
Screwdriver SW 6	**1255 195**	
Ratchet 1/4" (handle reversible)	**0997 453**	
Pliers for cover	**1255 145**	
Hexagon screw-driver (key 4)	**0993 570**	
Hexagon screw-driver (key 3)	**1255 216**	
Ball-screwdriver	**1259 713**	
Height setting gauge	**1260 156**	

Ring frames

Cotton mills

TEXParts
Setting tools

Setting tools	Types Ref.no.	Symbol
Tool bag - empty	**1255 219**	
Draft field gauge	**1259 843**	
Screwdriver SW 6	**1255 195**	
Ratchet 1/4" (handle reversible)	**0997 453**	
Pliers for cover	**1255 145**	
Hexagon screw driver (key 4)	**0993 570**	
Hexagon screw driver (key 3)	**1255 216**	
Ball-screwdriver	**1259 713**	
Height setting gauge	**1260 156**	

Application

For drafting systems with weighting arm PK 3035.

See also chapter 5 pages 2-5.

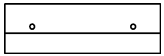
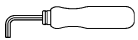
Ring frames

Cotton mills

Application

For drafting systems with weighting arms PK 2025, PK 2035, PK 2055 and PK 2065.

See also chapter 5 pages 6-13.

Setting tools	Types Ref.no.	Symbol
Tool set with bag	**1251 683**	
Draft field gauge[1]	**0997 440**	
Distance gauge[1]	**0011 687**	
Height gauge[1]	**0994 122**	
Setting wrench[1]	**0998 222**	
Screw-driver[1] (5 with handle)	**0997 491**	
Screw-driver (Key 4)[1]	**1249 383**	

[1] Tools are included in complete tool set.
[2] Tools are supplied on request as single items.

Ring frames

Cotton mills

TEXParts
Setting tools

Setting tools	Types Ref.no.	Symbol
Ratchet $^1/_4$"[2]	**0997 453**	
Screwdriver bit[2] SW 6	**0997 454**	
SW 5[2]	**0997 455**	
Slide calipers with prism jaws[2]	**0026 840**	

[2] Setting tools are supplied separately if required.

Application

For drafting systems with weighting arms PK 2025, PK 2035, PK 2055, PK 2065.

See also chapter 5 pages 6-13.

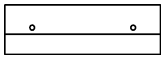
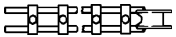
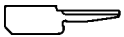
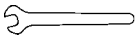
Ring frames

Cotton mills

Application

For drafting systems with weighting arms PK 1500, PK 1601.

See also chapter 5 pages 20-25 and 30-33.

Setting tools	Types Ref.no.	Symbol
Tool set with bag	**0994 131**	
Draft field gauge[1]	**0997 451**	
Height gauge[1]	**0997 450**	
Setting wrench[1]	**0998 222**	
Screw-driver[1]	**0993 551**	
Spanner[1]	**0993 580**	
Ratchet 1/4"[1]	**0997 453**	

[1] Tools are included in complete tool set.

Setting tools	Types Ref.no.	Symbol
Screw driver-bit[1] SW 6	**0997 454**	
Screw-driver-bit[2] SW 5	**0997 455**	
Screwdriver size 6[2]	**0997 445**	
Slide calipers with prism jaws[2]	**0026 840**	

[1] Tools are included in complete tool set.
[2] Tools are supplied on request as single items.

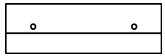
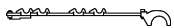
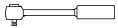
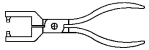
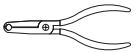
Application

For drafting systems with weighting arms PK 1500 and PK 1601,

Application

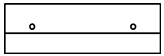
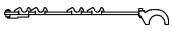
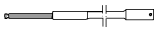
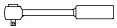
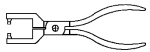
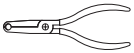
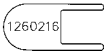
For drafting systems with weighting arms PK 6000.

See also chapter 5 pages 26-29.

Setting tools	Types Ref.no.	Symbol
Tool set with bag	**1253 714**	
Tool bag - empty	**1255 219**	
Draft field gauge	**1254 214**	
Screwdriver SW 6	**1255 195**	
Ratchet 1/4" (handle reversible)	**0997 453**	
Pliers for cover	**1255 145**	
Spanner (size 8)	**1255 215**	
Hexagon screw-driver (key 4)	**0993 570**	
Hexagon screw-driver (key 3)	**1255 216**	
Pliers for fitting of the connecting tube	**1256 207**	

Ring frames

Worsted mills

Setting tools	Types Ref.no.	Symbol
Tool set with bag	**1259 479**	
Draft field gauge	**1259 537**	
Screwdriver SW 6	**1255 195**	
Ratchet 1/4" (handle reversible)	**0997 453**	
Pliers for cover	**1255 145**	
Spanner (size 8)	**1255 215**	
Hexagon screw-driver (key 4)	**0993 570**	
Hexagon screw-driver (key 3)	**1255 216**	
Pliers for fitting of the connecting tube	**1256 207**	
Ball-screwdriver	**1259 713**	
Height setting gauge	**1260 216**	

Application

For drafting systems with weighting arms PK 5000.

See also chapter 5 pages 14-19.

Speed frames

Cotton mills

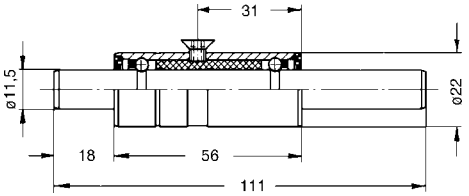
Rotor spindles, beater spindles, bearing units

TEXParts
Rotor spindles TL
Elastic bush EB

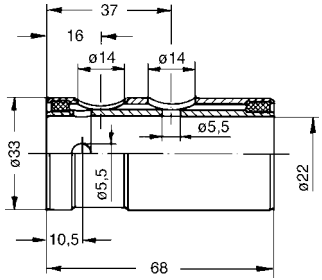
Application

Rotor spindles for rotor spinning frames Rieter M 1/1 and M 2/1.

Rotor spindle Ref.no.	Speed n max. min^{-1}
TL 226-1245 856[1)]	80 000
Elastic bush	**EB 226-0030 746**



TL 226-1245 856



EB 226-0030 746

[1)] spindle oil-lubricated

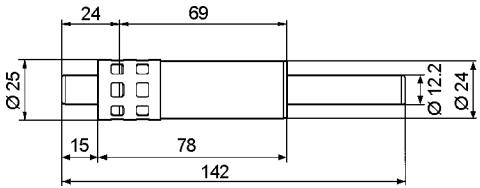
Rotor spinning frames

Cotton mills

Application

For rotor spinning frames Platt Saco Lowell types 883, 885 and 887.

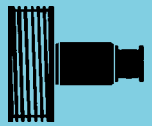
Rotor spindle Ref.no.	Spindle version Ref.no.	Speed n max min^{-1}	Weight kg
TL 240-0018 814[3]	B[1)2)]	75 000	0,230



TL 240-0018 814

[1)] Spindle version B: oil-lubricated
[2)] Only for machine type 883 and 887 „side feed conversion“.
[3)] Replacement for TL 240-0004 613

TEXParts
Beater spindle LE



Application

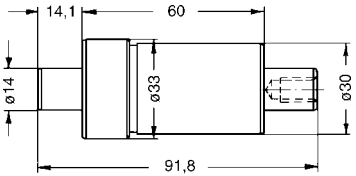
Beater spindle LE 222 for rotor spinning frames RU 11 and RU 14 of Messrs. Rieter Ingolstadt

Beater spindle
Ref.no.

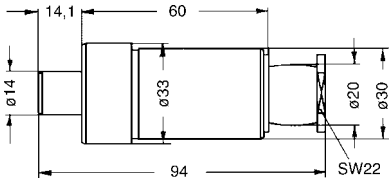
LE 222-0016 427

Beater spindle with wharve
Ref.no.

LE 222-0022 647



LE 222-0016 427



LE 222-0022 647

Rotor spinning frames

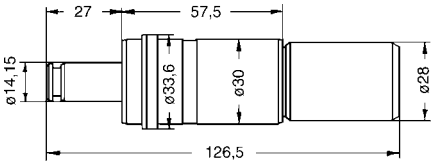
Cotton mills

TEXParts
Beater spindle LE

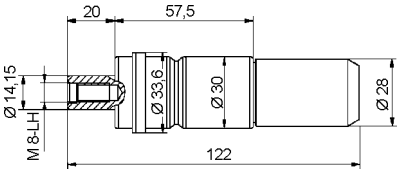
Application

Beater spindle for rotor spinning frames of Messrs. Schlafhorst.

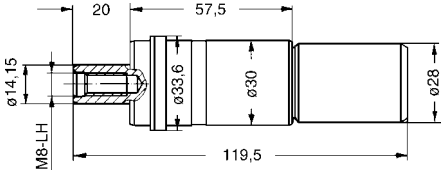
Beater spindle with wharve Ref.No.	suitable for spin box type
LE 222-0027 128	SE 8
LE 222-0035 965	SE 8
LE 222-1252 507	SE 9



LE 222-0027 128



LE 222-1252 507



LE 222-0035 965

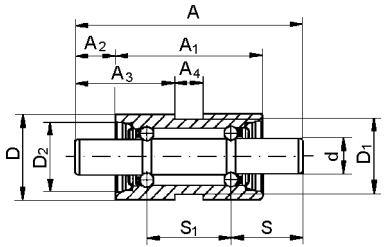
Rotor spinning frames

Cotton mills

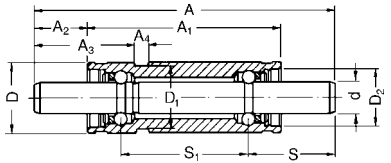
Application

Bearing units for support rolls in rotor spinning frames

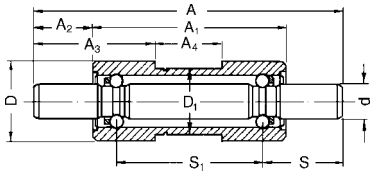
Types Ref.no.	Dimensions in mm d	D	D_1	D_2	A	A_1	A_2	A_3	A_4	S	S_1	Speed n max min^{-1}	Load fig. in N per row C	C_0	Weight kg
CK 13-1249 087	10	24	21	19,5	65	41,8	11,6	28,45	8,1	20,5	24	15.000	2860	1160	0,160
CK 13-0010 092	10	22	19	16	95	61	17	37,5	3,9	27,5	40	15 000	2650	1060	0,150
CK 13-0013 744	11	25	21	-	109	61	24	44	21	31,5	46	15 000	2810	1080	0,190
CK 13-0020 824	11	25	21	-	98	61	18,5	38,5	21	26	46	15 000	2810	1080	0,180
CK 13-0029 170	10	22,4	20,5	-	95	56	19,5	43,5	8	27,5	40	15 000	2860	1160	0,150
CK 14-0028 695	11	24,9	22,9	-	95	55	20	45,5	4,1	27,5	40	15 000	3900	1660	0,170



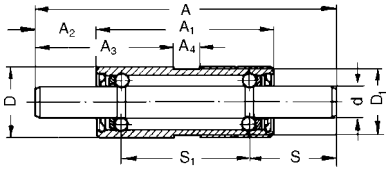
CK 13-1249 087



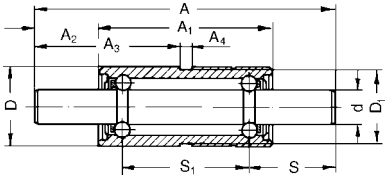
CK 13-0010 092



CK13-0013 744
CK13-0020 824



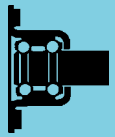
CK 13-0029 170



CK 14-0028 695

Rotor spinning frames

Cotton mills

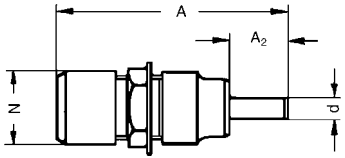


TEXParts
Bearing units SR and ZB

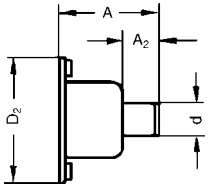
Application

For rotor spinning frame BD 200, types M, R, RC, RCE and S

Types Ref.no.	Dimensions in mm A	A_2	D_2	d	N	Weight kg
SR 23-0953 801[1]	84	19,7	-	7,8	26	0,111
SR 23-0953 901[2]	84	19,7	-	7,8	26	0,118
ZB 7-0009 023	34,4	13	43	11,2	-	0,080



SR 23-0953 801[1]
SR 23-0953 901[2]



ZB 7-0009 023

[1] without spanner surface.
[2] with spanner surface 22 mm.

See also chapter 2 page 16.

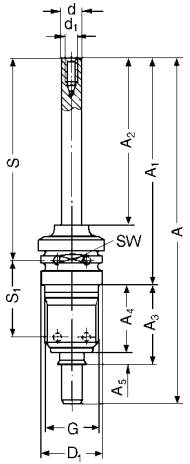
Bearing units for texturizing aggregates, counter rolls, separator rolls, lubricating equipment and accessories for separator rolls

TEXParts
False twist assemblies FL

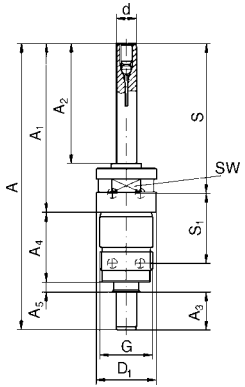
Application

Bearings for friction texturing assemblies.

Types Ref.no.	Dimensions in mm d	d_1	D_1	G	SW	A	A_1	A_2	A_3	A_4	A_5	S	S_1	Load fig. in N C	C_0	Weight kg
FL 66- 0013 055[1]	8,1	M5	24	M 21x1	22	125	77	53	31,5	27	4,5	67,5	30	1660	765	0,130
FL 11- 0011 056[1]	8,1	-	24	M 21x1	19	154,5	67,5	48	55	28	4	60	28	2340	965	0,140



FL 66-0013 055



FL 11-

[1] Delivery until using-up of stock.

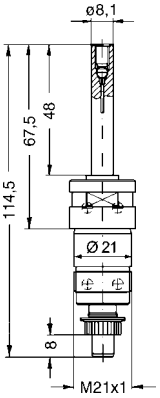
Texturizing machines

Filament processing mills

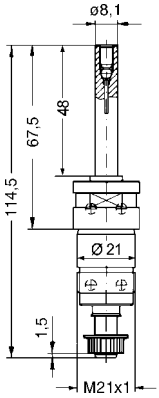
Application

Bearing units completed for friction texturing assemblies.

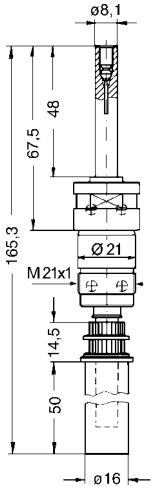
Types Ref.no.	Type of bearing	Toothed pulley	Number of teeth	Washer	Tooth clutch	Wharve	Weight kg
FL 11-0014 237[1)]	**FL 11-0011 062**	FZS-0014 191	20	-	-	-	0,125
FL 11-0014 238[1)]	**FL 11-0011 062**	FZS-0014 191	20	-	-	-	0,125
FL 11-0014 239[1)]	**FL 11-0011 056**	FZS-0014 191	20	FSE-0014 718	-	FWL-0002 106	0,158



FL 11-0014 237



FL 11-0014 238



FL 11-0014 239

[1)] Delivery until using-up of stock.

TEXParts
Counter rolls CK
with bearing units FL

Application

As counter roll in magnetic and friction assemblies.
Counter rolls serve to stabilize the tangential belt in texturizing machines.

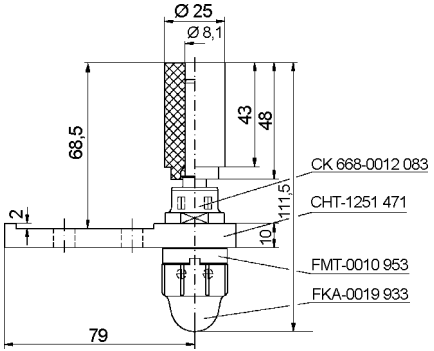
Key face 22 mm

Texturizing machines

Filament processing mills

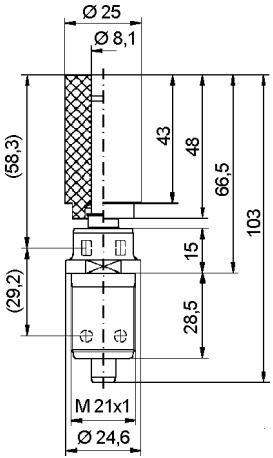
Chapter 7-6

Types Ref.no.	Weight kg	Remarks
CK 668-0017 992	0,178	Counter roll with bracket is composed of CK 668-0012 083, bracket CHT-1251 471, nut FMT-0010 953, and cap FKA-0019 933

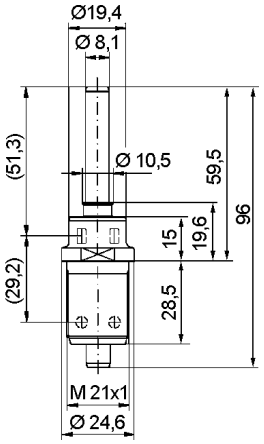


CK 668-0017 992

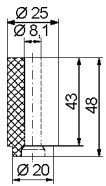
Types Ref.no.	Weight kg	Remarks
CK 668-0012 083	0,135	Counter roll with lap protection and wharve dia.25 mm, with wharve CWL-0012 117
FL 668-0012 085	0,108	Bearing for counter roll CK
CWL -0012 117	0,020	Wharve for CK 668-0012 083



CK 668-0012 083



FL 668-0012 085



CWL -0012 117

Chapter 7-7

TEXParts
Counter rolls CK
with bearing units FL

Application

As counter roll in friction assemblies.

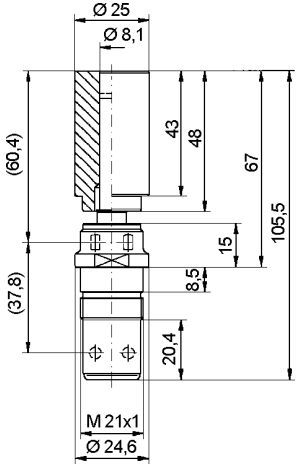
Key face 22 mm.

Texturizing machines

Filament processing mills

Chapter 7-8

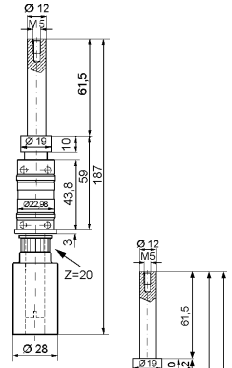
Types Ref.no.	Weight kg	Remarks
CK 668- 0018 773	0,135	Counter roll complete Bearing for counter roll is FL 668-0014 279.



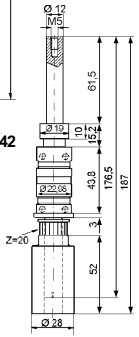
CK 668 -0018 773

TEXParts
False twist assemblies FL

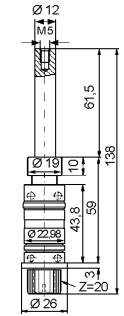
Types Ref.no.	Load fig. in N C	C_0	Weight kg
FL 15- 1252 742	3320	1340	0,420
FL 15- 1252 743	3320	1340	0,200
FL 15- 1254 440	3320	1340	0,420
FL 15- 1254 441	3320	1340	0,200



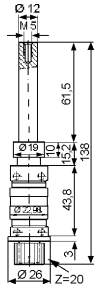
FL 15-1252 742



FL 15-1252 743



FL 15-1254 440



FL 15-1254 441

Application

Bearing Units for friction texturizing assemblies.

Texturizing machines

Filament processing mills

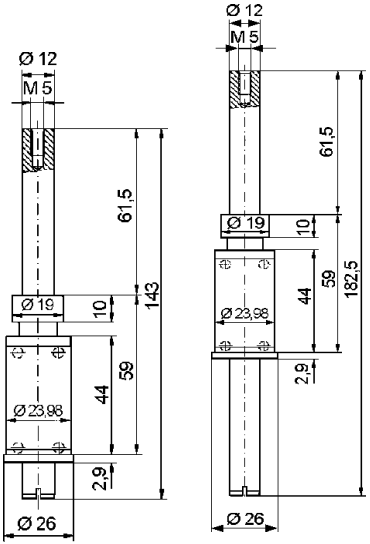
Chapter 7-9

TEXParts
False twist assemblies FL

Application

Bearing Units FL 15 for friction texturizing assemblies.

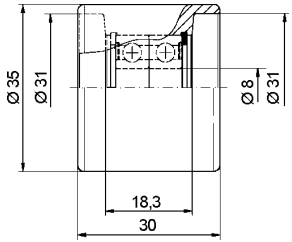
Types Ref.no.	Load fig. in N C	 C_0	Weight kg
FL 15- 0029 812	3320	1340	0,230
FL 15- 0033 442	3320	1340	0,255



FL 15- 0029 812 **FL 15- 0033 442**

TEXParts
Bearing unit CK 15

Types Ref.no.	Weight kg
CK 15- 1252 746	0,112



CK 15 - 1252 746

Application

Bearing Unit CK 15 as apron roller in friction texturizing assemblies.

TEXParts
Separator rolls VR

Application

Separator rolls for use in draw roll systems on draw twisters and draw winders.

Shell is non-detachable.

Lubricating and lubricating equipment for separator rolls see chapter 8 page 10 and chapter 8 page 20.

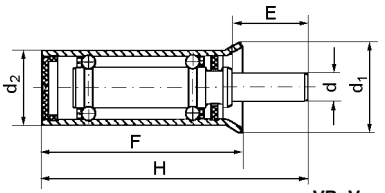
Draw twisters
Draw winders

Filament processing mills

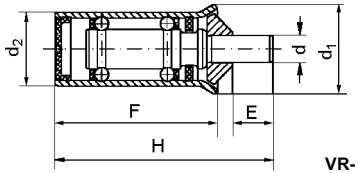
Types Ref.no.	Version	°C on roll surface[1]	Dimensions in mm d_2	d_1	d	H	E	F	Weight kg
VR 1-0964 428	A	... 70	21,2	26	8	76,5	22	58	0,091
VR 4-0964 445	A	... 70	21,2	26	8	95,8	22	77	0,123
VR 3-0964 435	B	... 70	21,2	26	8	63	12	47	0,082
VR 7-0964 447	B	... 70	21,2	26	8	76,5	14,5	58	0,100
VR 11-0964 434	B	... 70	21,2	26	8	95,8	14,5	77	0,132
VR 2-0964 430	C	... 70	21,2	26	M8	83	28	58	0,092
VR 6-0964 442	C	... 70	21,2	26	M8	103	28,5	77	0,124
VR 8-0964 426	D	... 70	21,2	-	8	59	19,5	43	0,070
VR 4-0964 438	A	70 ...130	21,2	26	8	95,8	22	77	0,122
VR 3-0964 429	B	70 ...130	21,2	26	8	63	12	47	0,082
VR 7-0964 441	B	70 ...130	21,2	26	8	76,5	14,5	58	0,100

Remarks

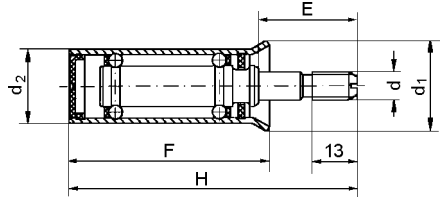
[1] Threads run on a hard-chrome plated outside surface; „orange-peel“ effect of surface provides optimum conditions of friction.



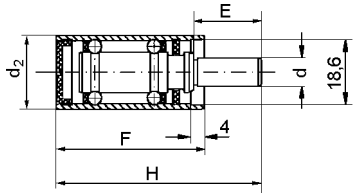
VR- Version A



VR- Version B



VR- Version C

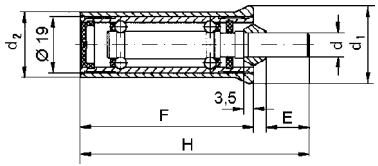


VR- Version D

Application

Separator roll for use in draw roll systems on draw twisters and draw winders.

Types Ref.no.	°C on roll surface	Dimensions in mm d_2	d_1	d	H	E	F	Weight kg	Remarks
VR 7-0000 320[1)]	… 70	22	26	8	76,5	14,5	58	0,124	Complete separator roll
CK 12-0000 319	-	-	-	8	76,5	14,5	58	0,077	Bearing for VR 7-0000 320



Separator roll VR 7-0000 320

Shell is detachable.

[1)] The plastic cover with reference number VDE 0000 887 must be used for the VR 7-0000 320 and the CK 12-0000 319.

TEXParts
Lubricating equipment and accessories for separator rolls VR

Application

For lubricating separator rolls VR.

For information on lubricating intervals and lubricants see chapter 8 page 10.

Item	Types Ref.no.	For VR types
Lubricating device without can	**1251 491**	VR 1 to VR 11 for temperatures up to 70° C on roll surface
Pin	**0994 231**	
Plastic cover[1)]	**VDE-0911 030**	
Oil can (empty) with lubricating nozzle	**1251 491**	VR 3, VR 4 and VR 7 for temperatures between 70° and 100° or 130° C resp.
Pin	**0994 231**	
Plastic cover[1)]	**VDE-0002 607**	
Pin	**0994 231**	VR 50

[1)] for spare orders.

Draw twisters
Draw winders

Filament processing mills

8

Lubrication and servicing, testing and measuring
Bearing units for textile machines

Lubrication of products for textile machines

Types	Lubri-cant	Quantity of Lubricant g/bearing min.	max.	Speed max. rpm.	Lubrication intervals Operating hrs. h	Years
Tape tension pulleys SR						
SR 7 - 0030 782	A/B	0.8	1.2	6 000	30 000	5
SR 9 - 0953 201	A/B	0.8	1.2	6 000	30 000	5
SR 23 -0954 031	A/B	0.8	1.2	10 000	18 000	3
SR 23 -0954 032	A/B	0.8	1.2	10 000	18 000	3
SR 23 -0954 034	A/B	0.8	1.2	5 000	18 000	3
SR 23 -0954 035	A/B	0.8	1.2	5 000	18 000	3
SR 28 -0012 473	M	0.6	1.0	15 000	12 000	2
SR 28 -0012 474	M	0.6	1.0	15 000	12 000	2
SR 28 -0015 799	M	0.6	1.0	20 000	12 000	2
SR 45 -0028 044	A/B	0.8	1.2	16 000	12 000	2
SR 45 -0008 937	A/B	0.8	1.2	16 000	12 000	2
SR 5047-1255 461	M	0.7	0.9	10.000	24.000	4
SR 5047-1255 699	M	0.7	0.9	10.000	24.000	4
Contact roll assemblies AR for ring frames with tangential belt drive						
AR 28	A/B	0.6	1.0	>15 000	6 000	1
				15 000	9 000	1,5
				12 000	12 000	2
AR 45	A/B	1.2	1.4	8.500	18 000	3
				12 000	12 000	2
AR 5047 (belt width ~40mm max.)	M	0.7	0.9	10 000	24 000	4
AR 3528 (belt width 20mm max.)	M	0.6	0.8	12 000	18.000	3
AR for ring frames with sectional drive or belt width up to 16mm max.						
AR 50-0027 195	A/B	1.2	1.4	8 500	18 000	3
				12 000	12 000	2
AR 50-0027 196	A/B	1.2	1.4	8 500	18 000	3
				12 000	12 000	2
AR 50-1246 555	A/B	0.8	1.2	12 000	12 000	2
AR 5024	M	0.7	0.9	10 000	24 000	4

Types	Lubri-cant	Quantity of Lubricant g/bearing min.	max.	Speed max. rpm.	Lubrication intervals Operating hrs. h	Years
Bearing units						
SR 23-0008 620	A/B	0.8	1.2	20 000	18 000	3
SR 23-0020 650	A/B	0.8	1.2	20 000	18 000	3
SR 23-0954 030	A/B	0.8	1.2	20 000	18 000	3
SR 23 - with black cap	A/B	cap[1]:		20 000	6 000	1
SR 24 - with black cap	A/B	full		20 000	6 000	1
SR 35 - with black cap	A/B	lubrication		20 000	6 000	1
FR-	A/B	0.8	1.2	15 000	18 000	3
ZB 7	A/B	0.8	1.2	8 000	18 000	3
ZL 7	A/B	0.8	1.2	8 000	18 000	3
ZL 17	E	0.5	-	8 000	6 000	1
DR-	A/B	0.6	1.0	8 000	12 000	2
DR 1922-0958 551	A/B	0.8	1.2	8 000	12 000	2

[1] Lubrication interval: every 6.000 operating hrs. 4 to 5 rotations at the cap.

Lubricant

A **TEXParts grease TG 2** - available in containers of 5 kg - Ref. No. **0026 877**

B **A high grade lithium base rolling bearing grease** having the following properties: Worked penetration: ~265 to 295 mm/10 at 25° C, Dropping point: ~190° C; Worked temperature range: -30° to +120° C

C **TEXParts grease TG 5** - available in containers of 5 kg - Ref. No. **0026 878**

D **A (Ba- or Ca-) complex soap grease** having the following properties: Worked penetration: ~220 to 300 mm/10 at 25° C; Dropping point: > 200° C; Worked temperature range: ~ -30° C to 150° C

E **Mystik JT-6**, produced by Messrs. Hermann Hölterhoff Chemisch-Technische Fabrik, P.O. Box 10 08 03, 42608 Solingen

M **Asonic GHY 72** produced by Klüber Lubrication München KG, Geisenhausener Straße 7 · 81379 München

Types	Lubri-cant	Quantity of Lubricant g/bearing	Speed max. rpm.	Lubrication intervals Operating time h	years
Top roller bearings for ring and speed frames					
Loose Boss Rollers LP					
LP 1002	C/D	full lubrication	< 500	50.000	8
LP 302 **LP 316, LP 317** **LP 314, LP 315**	C/D	full lubrication	< 500	30.000	5
LP 1003, LP 303	Lifetime lubricated, maintenance free				
Bottom roller bearings UL					
UL	C/D	full lubrication	< 500	3 000	0,5

Lubricant

C **TEXParts grease TG 5** - available in containers of 5kg - Ref. No. **0026 878**

D **Barium- or Calcium- complex soap grease** having the following properties:
Worked penetration: ~220 to 300 mm/10 at 25° C;
Dropping point: > 200° C; Worked temperature range: ~ -30° C to 150° C

Spindle bearing units

Types	Lubri-cant	Operation	Lubrication intervals Operating hrs. h	Viscosity class to ISO
CS1, CS1 S	G			VG 10
CS1 12	G	with ring and traveller		VG 46[1]
HF 1	G	spindle speed up to 18.000 min^{-1}	20 000	VG 10
HF 21	G	exceeding 18.000min^{-1}	12 000	VG 10
HF3	G	with ring and traveller	15 000	VG 10
HF3[2]		with suppressed balloon	10 000	VG 68
HF 44	G	with ring and traveller	15 000	VG 10
HZ 440	G	without ring and traveller	10 000	VG 10
HF 44[2][3]	G	with suppressed balloon	10 000	VG 68

The oil level should be checked on a random sample of spindles after half the number of operating hours shown.

The roller bearing should be thoroughly coated with oil before putting the spindle into service, and also at each relubrication operation!

[1] ISO VG 46 for all yarn counts (for finer yarn counts -higher than Nm 24- ISO VG 22 can also be used)
[2] Special execution of damping spiral

Lubricant

G **Solvent refined high-grade oil** - with good anti-wear properties and containing anti-oxidant and anti-corrossion additives as per DIN 51517 - CLP.

PRINT CONTENTS END

Spindle Bearing units Types	Lubri-cant	Lubric. interval after operating hrs. For axial load A[1] <3,5 daN h	>3,5 daN h	Viscosity class to ISO
HZ 33	G	10 000		VG 10, VG 22
HZ 35, HF 45	G		7 000	VG 22

Spindle Bearing units Types	Lubri-cant	Lubric. interval after operating hrs. For axial load A[1] <3,5 daN h	3,5-5daN h	5-8 daN h	>8 daN h	Viscosity class to ISO
		10 000	-	-	-	VG 10
HZ 55	G	-	7 000	-	-	VG 22
		-	-	5 000	-	VG 22
		10 000	-	-	-	VG 10
HZ 66, HZ 68	G	-	7 000	4 000	-	VG 22
		-	-	-	4 000[2]	VG 46
		10 000	-	-	-	VG 10
HZ 77	G	-	7 000	4 000	-	VG 22
		-	-	-	4 000[2]	VG 46

The oil level should be checked on a random sample of spindles after half the number of operating hours mentioned. The types HZ 33, HZ 35 and HF 45 are provided for application in double twist spindles.
With types HZ 55 to HZ 77, for spinning or twisting with suppressed yarn balloon (e.g. with spinner or twister head on the spindle) use oil with the viscositiy class ISO VG 100.

The roller bearing should be thoroughly coated with oil before putting the spindle into service, and also at each relubrication.

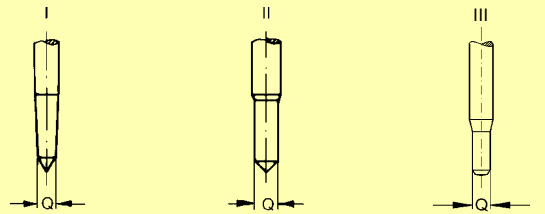
[1] Axial Load A = Weight of full bobbin plus spindle blade assembly.
[2] Carry out an initial oil change after spindles have been run in for 50 hours.

Lubricant

G **Solvent refined high-grade oil** - with good anti-wear properties and containing anti-oxidant and anti-corrosion additives as per DIN 51517 - CLP.

Identification of spindle bearing sizes and immersed depth of spindle blade

Spindle bearing unit sizes may be identified from the following dimensions:



Conical foot shape (I) with blade tip

Cylindrical foot shape (II) with tapered blade

Cylindrical foot shape (III) with spherical tip

„P" = shaft diameter at roller bearing height
„R" = external diameter of shell head
„Q" = diameter of shaft foot.

Spindle Type	Foot shape	P	R	Q	Oil filling Immersed depth of spindle blade in mm max.	min.
CS1, CS1 S	III	6.8	16.0	4.5	70	50
CS1 12	III	6,8	16,0	4.5	80	60
HF1	I	6.8	16.0	4.5	80	50
HF 21	I	7.8	17.5	4.5	80	50
HF 3	I	8.8	21.7	5.5	100	70
HZ 33	II	8.8	21.7	5.45	95	65
HZ 35	II	8.8	21.7	7.95	100	70
HF 44, HZ 440	II	10	23.8	6.45	110	70
HF 45	II	10	23.8	7.95	110	70
HZ 55	II	12	28.2	7.95	125	90
HZ 66	II	14	32.5	8.95	145	90
HZ 68	II	14	32.5	10.95	145	90
HZ 77	II	16	37.8	10.95	190	120

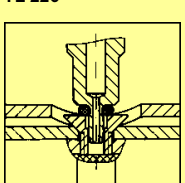
PRINT CONTENTS END

Types Rotor spindle TL	Lubri-cant	Lubrication intervals in operating hrs. h at rpm. 60 000	80 000	Quantity of Lubricant	Lubricating device Grease gun Ref. No.	Nozzle Ref. No.	Remarks
Oil-lubricated rotor spindle:							
TL 226-1245 856[1)]	L	2 000	1 500	0,25 cm^3	**1248 698**	**-**	Lubricating hole in locking screw. Grease gun includes nozzle.

[1)] Combine relubrication with cleaning of by-pass filter. The by-pass filter (filter cover) covers the opening above the relubricating bore of the rotor spindle housing.

Information on lubrication see „Information for Spinners“ - No. 144.

TL 226



Shape of lubricating hole

Lubricant

L **Oil Isoflex PDP 65**
- available in containers of 1 l - Ref. No. **0019 956**

Types VR	Lubricant	Speed min^{-1}	Lubrication intervals Operating hrs. h	°C on outside of shells[1] of VR/CK
Separator rolls VR and bearing unit CK 12 for temperatures up to 70° C				
VR 1-0964 428, VR 2-0964 430 **VR 3-0964 435, VR 4-0964 445** **VR 6-0964 442, VR 7-0000 320**[2] **VR 7-0964 447, VR 8-0964 426** **VR11-0964 434** **CK12-0000 319**	H	up to 10 000 up to 15 000 up to 20 000 up to 25 000 up to 30 000	12 000 10 000 7 000 5 000 4 000	up to 70° up to 70° up to 70° up to 70° up to 70°
Separator rolls VR for temperatures between 70 to 260° C				
VR 3-0964 429[3]**, VR 4-0964 438**[3] **VR 7-0964 441**[3]	J J	up to 15 000 up to 20 000 up to 10 000	2 000 1 500 700	70-100 70-100 100-130
VR 50-0964 450	J	up to 15 000 up to 15 000	2 000 700	100-200[4] 200-260[5]

[1] In the temperature range between 70° - 80°C on outside surface of the shell, the lubricating intervals have to be reduced to 2/3 of the indicated values.
[2] Speed range up to 20.000 min^{-1}
[3] These types are provided with a red plastic cap.
[4] Outer ring temperature <100° C.
[5] Outer ring temperature <130° C.

Lubricant

H **Isoflex Super LDS 18 Dispersion 25 S**
- available in containers of 1l - Ref. No. **0038 425**
Attention! Inflammable, dangerous material class A II. Please observe warning advice.

J **Unisilkon TK 44 N000** - produced by: Klüber Lubrication München KG; Geisenhausener Straße 7 · 81379 München

Viscosity classes

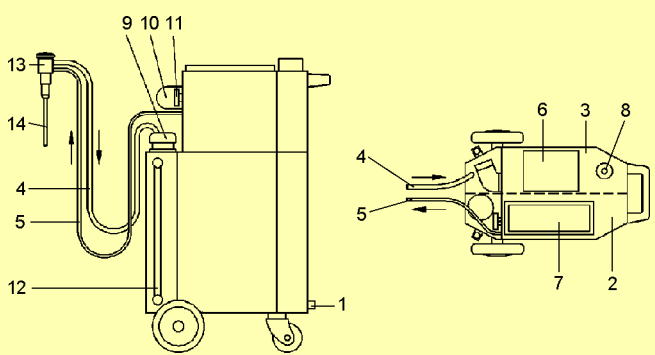
Viscosity classes according to ISO	Mean kinematic viscosity at 40.0° C mm^2/s (cSt)	Limits of kinematic viscosity at 40,0° C mm^2/s (cSt) min.	max.
VG 10	10	9.0	11.0
VG 22	22	19.8	24.2
VG 46	46	41.4	50.6
VG 68	68	61.2	74.8
VG 100	100	90.0	110.0

Under the international SI system, kinematic viscosity is expressed in m^2/s. The relationship between this unit and the figures given in Centistokes (cSt) is 10^{-6} m^2/s = 1 mm^2/s = 1 cSt.
Thus, the mm^2/s column in the table corresponds to the values Centistokes (cSt).

Lubricating apparatus 1254 106
for lubrication of TEXParts spindle bearing units

The lubricating apparatus 1254 106 is conceived for the original lubrication and the maintenance of TEXParts spindle bearing units CS, HF, and HZ. It is suitable for all spindle sizes. The lubricating pump is activated by an electric motor drive system.
For the description of the components please see the figure below.

1 Drainage screw for fresh oil
2 Fresh oil tank
3 Used oil tank
4 Return oil tube (thick)
5 Fresh oil tube (thin)
6 Control unit
7 Place to deposit top part of spindle
8 Receiver for nozzle
9 Filling tube for fresh oil
10 Connecting plug
11 Manometer
12 Oil level display
13 Lubricating nozzle
14 Lubricating adapter



Lubricating apparatus 1254 106

The operation principle of the spindle lubricating apparatus is based on the supply of clean oil and the suctioning of used oil at the same time. It is the same operation principle which already worked well with the former TEXParts spindle lubricating apparatus 0992 957.
The two tanks, one for new oil (2) and one for used oil, have a capacity of 20l each. Transparent tubes (4) and (5) are connecting each tank with the lubricating nozzle (13), which is provided with a lubricating adapter, matching the respective spindle type and size.
When the lubricating adapter is inserted into the spindle bearing unit, oil channels will open automatically and by activating the pump the spindle bearing unit can be filled up with new oil. During relubrication the new oil fed in will push the used oil out of the spindle bearing unit, due to its sealing system. The used oil will be returned to the used oil tank through the transparent tube. By this process a thorough rinsing of the spindle bearing unit can be assured as well as the coating of the roller bearing with new oil. In addition the required oil level will adjust automatically.
A precise description of the lubricating process can be found in the "Information for Spinners" No. 184.

Lubrication of spindle bearing units SMM BI-FLEX

Types:	Oil filling amount (ccm)
SMM- 32	28 ccm
SMM- 42	26 ccm

Viscosity and lubricating interval
All spindles with SMM BI-FLEX Spindle bearing units are developed and manufactured according to customer's demands.

For each application a special decision has to be made considering spindle speed and load, what kind of viscosity and lubrication interval is needed to achieve always the best possible spindle performance.

Lubricant
Lubrificant only with a solvent refined high-grade oil with good anti-wear properties and containing anti-oxidant and anti- corrosion additives.

The roller bearings should be thoroughly coated with oil at each relubrication.

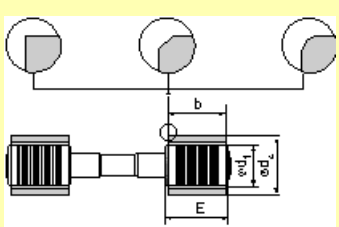
Further informations regarding the lubrication of SMM spindle bearing units BI-FLEX upon request.

Ordering top roller cots

Since there is a wide range of cot types and qualities to suit the many different mill requirements, no specifc cot quality can be recommended. The most influential factors in cot performance are the spinning room temperature and humidity, the load used on the top roller, and the material being processed. Instructions for the use of synthetic cots are provided by the suppliers.
Upon customer's request, TEXParts will supply top rollers with cot, ready ground, for immediate installation in the weighting arm. Cots from various manufacturers are available in a wide range of qualities or shore hardnesses. Different types can be supplied with bushes for press-fitting on the boss or without bushes to be fitted with adhesive.
When ordering TEXParts top rollers with cots, please state:

- Ref. No. of basic top roller type (without cot)
- Quality of cot or shore hardness
- Cots with or without bushes
- Cot diameter (ready ground)
- Cot width
- Type of edge (straight, bevelled or round bevelled)
  The edges of cots are shaped differently according to the manufacturers unless the customer explicitly requires a specific shape or dimension.
- In the case of recessed to,

Straight Bevelled Round bevelled



d_1 = diameter of bare boss in mm
d_2 = diameter of cot in mm
b = width of cot in mm
E = width of boss in mm

Hardness of the cots

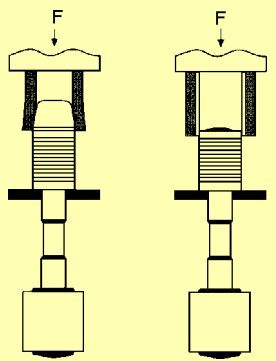
The most commonly used hardness range for cots is from 65° to 85° Shore. The customary type of Shore sclerometer (according to DIN 53 505) can be used for testing the Shore hardness of synthetic cots.

Fitting the cots

When fitting or removing the cots, make sure that no axial pressure is applied to the ball bearings of the top roller.

Cots with metal or plastic bushes
Fitting and removing these cots is done mechanically or pneumatically with commercially available fitting and removal press devices. For fitting the cots, the press devices recommended by the cot manufacturers should be used. In no case an expander cone should be used to press-fit the cots with metal bushes.

Cots fitted with adhesive
TEXParts bosses are specially grooved to guarantee particularly good adhesion of the cots on the bosses. The manufacturer's instructions for fitting and removing glued cots should always be observed.



Fitting cots

Removing used cots

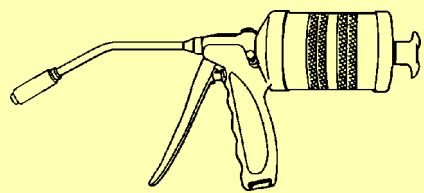
Cots with metal or plastic bushes
Used cots with metal or plastic bushes are removed with a pressing tool. No special cleaning is required after removing an old bush and prior to mounting the new bush.

Cots fitted with adhesive
Used cots that have been glued into place are generally cut open and removed. Adhesive remnants should be removed mechanically or with solvents.

Important: Please note that complete top rollers may never be placed or immersed in a solvent to remove remnants of adhesive. This would irreparably damage the bearing.

Lubrication of bottom roller bearings

TEXParts bottom roller bearings are normally supplied ready greased ex works. Types who are delivered without lubricant can be found in the "Information for Spinners No. 120" - latest edition. These bearings must be greased prior to being installed.
Relubrication of all types of TEXParts bottom roller bearings should be carried out with a grease gun by pressing the grease slowly into the bearing while the machine is running. Types and Ref. No. of TEXParts grease guns and nozzles can be seen on chapter 4 page 10.
For information on lubricants and lubricating intervals see chapter 8 page 4.



Grease gun

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Tension pulleys

TEXParts makes tension pulleys or contact roll assemblies with 2-line ball bearings or with ball/roller row for belt drives in various textile machines.
These tension pulleys can be used for comparable applications in other fields of machine and equipment engineering too.
For further information on the various types see the following pages in this almanac:

Type	Page	Used in
SR 45-	chapter 2 page 12	OE-rotor spinning frames
CK 11-	chapter 2 page 12	OE-rotor spinning frames
CK 668-	chapter 7 page 6	Filament processing
SR 23-	chapter 2 pages 14+16	General mechanical engineering
FR 232-	chapter 2 page 14	General mechanical engineering
SR 5047-	chapter 2 page 10	Spindle drives

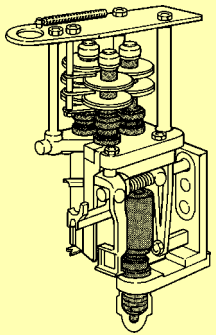
Bearing units for texturizing aggregates

Texturizing processes are applied to give synthetic filaments specific properties and one of them - the false twisting method - is used to produce such varieties as high- or low-elasticity yarns, bulked yarns, or low-twisted torque yarns.

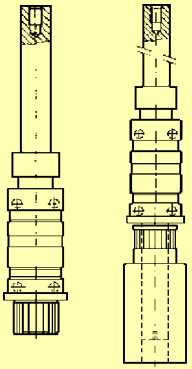
TEXParts supplies integrated bearing units for friction texturizing, and for counter rolls and support rolls. If required, these bearing units are fitted with drive elements such as wharves and toothed pulleys or made up into ready-to-install units. Apron rollers for apron units round off the product range of the bearing units for texturizing aggregates.
The integrated design of these bearing units with close bearing clearing tolerances allows low bearing pitch circle diameters for low bearing friction moment to be combined with high shaft and bearing stiffnesses for low-vibration operation. For the counter rolls, the combination of ball and roller bearing ensures long service life plus compact dimensions.

The following list shows how the various bearing models are used:

TEXParts bearing Model series	Bearing unit for	Page
FL 11, FL 66	Friction texturizing aggreg.	chapter 7 pages 2 - 5
FL 668, CK 668	Counter rolls	chapter 7 pages 6 - 8
CK 15	Apron roller	chapter 7 page 11



Friction texturizing unit with false twist bearing unit FL



False twist bearing unit FL

Separator rolls VR

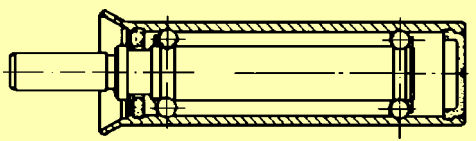
Polyamide and polyester filaments and similar synthetics are subjected to a drawing process on draw twisters or draw winders. The process may be either cold drawing or hot drawing and for both of these suitable separator rolls are supplied by TEXParts.

Design features:

The separator rolls are designed as bearing outer rings with low weight and high hardness for reducing slip between the filament and the roll, particularly during machine operation, and for preventing damage to the working surface when laps form.
The working surfaces of the separator rolls are hard-chrome-plated with a selective and orange-skin-like surface structure for ensuring optimum friction characteristics between the filament and the working surface. The ball bearings are designed for high speeds and have a dispersion lubrication system to obviate running-in characteristics with increased friction moment and persistent grease working resistance.

The cylindrical inner shape of the outer ring and even distribution of the lubricant permit full use of the lubricant supply for the two ball bearing rows and hence a long service life. A flexurally stiff axle assures very quiet running.

A complete list of the TEXParts's available range of VR separator rolls can be found on chapter 7 pages 12 - 16. See chapter 8 page 10 for information on lubrication.



Separator roll VR

Recommendations for optimized spinning with TEXParts spindles and TEXParts drafting equipment

TEXParts spindle bearing units for spinning and twisting spindles

TEXParts supplies suitable spindle bearing units for a wide range of applications of modern spinning and twisting machines.
These machines are equipped with TEXParts HF/HZ and BI-FLEX spindle bearing units known all over the world and proved under industrial conditions. Additionally, they are equipped with the high-performance spindle bearing units, CS1-series for cotton and worsted ring frames, which meet all requirements for modern spindles due to an innovative, function-orientated new bearing principle.

Advantages of TEXParts spindle bearing units

- **Outstanding running properties**

All TEXParts spindle bearing units are equipped with metal-elastic spring elements thus giving radial resilience to the bearing places. So, the top part of the spindle can rotate - together with the unbalanced bobbin - around the common axis through the centre of gravity, thus minimising bearing forces and spindle vibrations. In addition, the spring elements ensure that the top part of the spindle is always returned to the initial position centred on the spinning ring after being moved.
The damping system of the TEXParts spindle bearing units showing no wear during operation is a further feature. It has metal strip spirals filled with oil and in some cases grease gap dampers which are optimised for specific applications and which effectively suppress spindle vibrations over the whole speed range.

The carefully matched spring and damping qualities of TEXParts spindle bearings guarantee outstanding running properties in the spindles.

- **Top spindle speeds**

TEXParts offers two bearing principles for spinning and twisting spindles:

Single-elastic spindle bearings

In these bearing units, either the footstep bearing is kept radially movable by a metal spring (type TEXParts CS1, HF, HZ). Damping in the form of an oil-filled metal spiral forms an integral property of the spring system.
The single-elastic bearings are of robust design and set the standard for the majority of applications in spinning and twisting. They can be used in conjunction with high-quality upper parts and tubes as well as for high-speed applications.

Double-elastic spindle bearings

These bearings are additionally equipped with a second metal spring which affords radial resilience in the neck roller bearing (type TEXParts CS1 S and SMM BI-FLEX). This second spring also has a damping function being free of wear (oil/grease damper).
The double-elastic spindle bearing units allow the spindle upper part to shift the centre of the gravity axis even more exactly towards the rotation axis, thus achieving a major reduction in bearing forces and noise level.
The double-elastic spindle bearing units therefore are the ideal choice mainly for the high and maximum speed range. Their mechanical design permits speeds far above the limit imposed by the ring/traveller system.

- **Quiet running behaviour**

The high precision of the TEXParts spindle bearings and the system-inherent low bearing forces ensure low-noise spindle operation over the full speed range.
A further advantage in this respect results from the double-elastic spindle bearing systems, which generate lower acoustic pressure levels thanks to their lower bearing forces, and furthermore greatly reduce the transmission of structure-related vibration to the machine. For this reason, the use of double-elastic spindle bearing units is recommended whenever the noise level is a major criterion for the assessment of the machine.

- **Minimised energy requirement**

The oil-lubricated neck bearing and footstep bearing of TEXParts spindle bearings are precisely matched to the blade of the spindle upper part for good bearing performance, and ensure minimum bearing friction in all speed ranges. Furthermore, the low dynamic bearing forces mean that roller bearings and wharves can be made smaller, and in turn permit low belt speeds and tension roller speeds. This results in considerable energy saving of the machine.

The model CS1 has specially been designed for high-speed cotton spinning spindles. The small head diameter allows an extremely small wharve diameter up to 18.5 mm connected with still more energy consumption.

- **High centring precision**

The centring of the spindle inside the ring is a crucial factor for minimising breakage rates and maximising cop filling.

Here TEXParts spindle bearing units offer ideal conditions:

- the spring elements of the spindle bearing counteract every movement of the spindle upper part with sufficiently high resetting forces to restore it quickly to its initial centred position;

- the flange underside and the centring collar of the spindle bearings are made with high precision and fully aligned with the axis of the upper part.

• Long-life

Minimised bearing forces plus high manufacture precision of the TEXParts spindle bearing units are the basis for long-life. The robustly designed elements of the spindle bearings also ensure the bearings to withstand occurring stresses such as during deceleration and doffing.
Damping oil inside the spindle bearing serves for permanent lubrication with extremely long maintenance intervals.

Applications for TEXParts spindle bearing units

Spindle bearing types:

• CS1
Used in light cotton and worsted spindles with tube lengths of up to 260 mm and speeds of up to 22.000 rpm.

• CS1 12
Used in cotton and worsted spindles for the manufacture of coarse yarns (e.g. denim yarns) as well as for spinning with suppressed yarn balloon and for spinning with big tube sizes up to 280 mm length.

• CS1 S
Used in light cotton spindles with maximum speeds of up to 30.000 rpm, or for light spindles subject to special noise requirements.

• HF1, HF 21
Used in light cotton and worsted spindles and in light twisting spindles, for speeds of up to 20.000 rpm.

• HF 3
Used in light cotton and worsted spindles with large cop size, and in medium-sized twisting spindles, for tube lengths of up to 340 mm and speeds of up to 15.000 rpm.

• HF 44, HZ 440, HZ 55, HZ 66, HZ 68, HZ 77
Used in spinning and twisting spindles exposed to high stresses, corresponding to the following guideline values:

Axial loads	up to 3.5 daN,	tube lengths up to 360 mm	for HF 44, HZ 440
Axial loads	up to 5 daN,	tube lengths up to 450 mm	for HZ 55
Axial loads	up to 7 daN,	tube lengths up to 500 mm	for HZ 66
Axial loads	up to 13 daN,	tube lengths up to 500 mm	for HZ 68
Axial loads	up to 13 daN,	tube lengths up to 600 mm	for HZ 77

• BI-FLEX SMM-32/42
Used for high-speed applications, such as for draw twisting machines (load data on request).

The applications given above are rough guideline values. When selecting the right spindle bearing model, the TEXParts technical specifications must be taken as the basis.

Tubes and bobbins

The service-life of spinning and twisting spindles is mainly affected by unbalances of the rotating spindle elements (upper part and tube) or of the bobbin yarn package. Major unbalances cause high reaction forces in the spindle bearings. These forces increase disproportionately with raised spindle speed with unexpected wear of the bearings and spindle failure in particular unfavourable conditions.

Such major unbalances, moreover, lead to spindle vibrations with detrimental effects on yarn quality and ends down rates, thus raising energy consumption and noise emission.
Today spindle upper parts generally are produced at best quality, i.e. with extremely low out-of-true properties and suitable resistance to deformation whereas in many cases only less attention is given to the quality of tubes and bobbins. So for example tubes often show too much clearance or inaccuracies in shape or they are made of poor material respectively.
For these reasons and because of the applied top speed ranges high tube quality is a basic requirement. The following aspects should be taken into account here:

- **Tube clearance**

The clearance between tube and spindle upper part has to be kept as small as possible.
It, however, has to be reminded to the fact that the tube can easily be fitted and removed again and that contraction through yarn winding does not cause the tube to stick to the upper spindle part.

The following technical measures have proved to be successful:
- reduction of the tube/bobbin tolerances by improved manufacturing methods and use of high-quality materials.
- partial recesses in the upper part or in the tube/bobbin to provide more tolerance against deformation and contraction.
- use of dimensionally stable materials or metal fittings to avoid changes in tube diameter resulting from continued tube handling.

- **Tube curvature and wall thickness differences**

It's a fact that tubes/bobbins with curvatures or large differences in wall thickness increase unbalance. Here, too, the attempt should be made to reduce the tolerances by means of high-quality manufacturing as well as the use of high-quality materials. A suitable tolerance recommendation for tapered tubes has been adopted in ISO 368 standard.

- **Tube stiffness**

Especially in the high-speed range tubes can be bent by dynamic forces connected with an increase in unbalances acting on the spindles. This is mainly true when the tube is supported over its full length by the upper part, or if the tube projects above the spindle blade at its upper end.
For this case it is strongly recommended to use dimensionally stable tubes made of high-strength materials.

- **Wear on tubes and bobbin seats**

At yarn breakage very often the spindle upper parts are not stopped by brakes but rather manually. The coupling buttons run into the tube material: the tubes run inadequately and the remaining inner contour of the tube and the spindle blade are then subject to wear. As it is generally well known this makes the replacement of the tube and of the whole spindle respectively necessary within a short time.
This problem can be minimised by using low-wear materials for tubes and bobbins or embedding low-wear rings; it, however, is best to correctly use the brakes. For tubes and bobbins it is advised to use ring inserts resistant to wear driven by friction cones as this is the case with the so-called bare-blade spindles.

The reflections about tube quality presented above have been kept quite general. They are, however, suitable to demonstrate the importance of tube/bobbin quality and interrelated factors.
Practical ideas which generally have to make allowance to commercial considerations, too, must be matched to the respective application.
Corresponding proposals are made by machine manufacturers and authorised spindle producers.

The functions of ring and traveller[1)]

Ring and traveller form the main elements in ring spinning and twisting. They determine to a large extent performance and operating conditions of the machine.
The traveller accomplishes two main tasks while running on the ring at high speeds:

a) It gives the roving or double thread supplied by the feed rollers the necessary twist.
b) It assists in winding the yarn onto the bobbin in the form of a cop with „correct“ tension.

During this operation the ring guides the traveller, which is essential for the perfect positioning of the yarn and the formation of the cop.
The traveller is pressed against the ring track by centrifugal forces. The resulting frictional forces reduce traveller speed, which is dragged along by the passing-through yarn, and provide the yarn with the tensile forces necessary for assembling the individual fibres into the spun yarn as well as for limiting the yarn balloon.
Steel travellers are hardened to a certain degree and polished to a mirror finish. They can be adapted in shape, weight and surface finish to the ring, yarn type and yarn count.
Nylon travellers of standard quality (for HZ and J rings) are made of highly wear-resistant polyamide. Extremely aggressive yarns are processed with glass-fibre-reinforced „Super Nylon“-travellers.
Twisting and winding carried out by the traveller must be performed with appropriate yarn tension. The ratio between spindle speed and the speed at which the yarn is supplied determines yarn twist. Any change of this ratio is easily compensated by the traveller without having an influence on twisting, winding and tensioning.
On flange rings, the gliding speed of travellers having a suitable shape can be as rapid as 130 ft/s (88 MPH) or 40 m/s (140 km/h); on DIA-DUR coated rings the speed can to some extent reach 147 ft/s (100 MPH) or 45 m/s (160 km/h) . Having an average life span of 200-300 operating hours the traveller covers a distance of more than 18.000 miles (30.000 km) - a tremendous task for a small part of wire weighing only a few milligrams. These standards can even be surpassed by nylon travellers used on HZ rings, if operating conditions are favourable.
These high traveller speeds involve pressures of up to 35 N/mm^2. But even if high-quality materials with an optimum of hardness and resistance to wear are used, these standards can only be reached if

- in the case of flange rings, a film of lubricating fibres is produced continuously,
- in the case of HZ and J rings, a sufficient amount of lubricant is consistently provided.

[1)] With kind permission of Messrs. Reiners + Fürst, Ring- und Ringläuferfabrik, Mönchengladbach.

Preconditions for good operating results

The maximum ability of the ring/traveller system to withstand occuring stress situation during operation determines the performance limit of the ring spinning and twisting machine. Traveller wear does not only depend on traveller material; problems of heat dissipation are of crucial importance, too. The heat generated between ring and traveller must be reduced as quickly as possible to avoid local temperature in the traveller wear zones.
The ability of the traveller to resist to stress is determined by several factors. Investigations regarding improvements of rings and travellers aimed at a further increase of performance should above all make sure that all other conditions with a certain influence on the spinning process are optimal.
Therefore make sure that:

- the rings are correctly centered with regard to the spindles
- the yarn guide eyelet is well centered with regard to the spindle
- the spindle bearing is in good condition, thus preventing spindle vibrations
- the ratio between bobbin diameter and ring diameter (d:D) is correct
- relatively long bobbins are provided with one or several balloon control rings, thus preventing an excessive bulging of the yarn balloon
- the concentricity of the ballon control ring (BE-ring) with regard to the spindle is correct
- the fibre tufts which accumulate on flange travellers are removed by means of suitable traveller cleaners
- the climatic conditions (temperature and relative air humidity) are favourable for the spinning process
- the air in the mill is free from disturbing particles that influence efficient performance of the traveller

It has to be stressed that a smooth and well run-in track is of most importance.

1. Concentricity of spindle, ring, yarn guide and balloon control ring
Especially at high spindle speeds concentric positioning of ring, spindle, yarn eyelet and balloon control ring is required for keeping the ends down rate at low level.

Spindles and rings must be aligned and centered absolutely parallel. Ring rails or ring holders should, therefore, be installed absolutely horizontally compared to the vertically fitted spindles.

Spindles operating without vibrations contribute a great deal to a smooth operation of the traveller. Non-concentric spindles and spindles not running smoothly cause constant changes in yarn tension, because the traveller cannot run around the ring without being shaken.

2. Vibration-free movements of ring rail and ring holder

The ring rail should move smoothly without jerking. Vibrations and hard jolts at the reversing points of the ring rail disturb the operation of the traveller. Repeated changes in yarn tension cause the traveller to flutter. This results in increasing yarn breaks and in accelerated wear of ring and traveller.

3. Correct ratio between bobbin diameter, bobbin length, ring diameter and spindle gauge

Ratio bobbin length (H) : Inside ring diameter (D)

Thread tension increases with growing bobbin length. In view of the limited thread tension, the total bobbin length should not exceed 5 times the ring diameter. Only when using balloon control rings or similar devices this value can be exceeded.

H : D = 5 : 1

Ratio bobbin diameter (d) : Inside ring diameter (D)

The bobbin diameter d is equivalent to the mean outer bobbin diameter

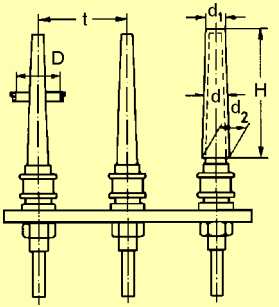
$$d = \frac{d_1 + d_2}{2}$$

The following values are recommended:

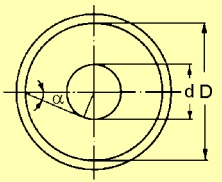
for spinning: d : D = 0.48 - 0.5 (α = 29°-30°), (minimum value α = 26°)

for twisting d : D = 0.44 - 0.5 (α = 27°-30°), (minimum value α = 22°)

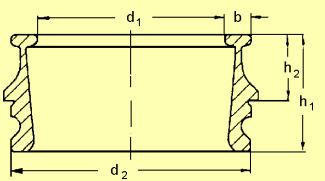
For light and heavy bobbins, the values for light bobbin types are decisive for calculating d : D. If the ratio d : D is reduced thread tension increases.



D = Inside ring diameter
d = Bobbin diameter
t = Spindle gauge
H = Bobbin length



d1	d2	
	flange 1	flange 2
36	43	-
38	45	-
40	47	47
42	49	49
45	52	52
48	55	55
50	57	57
51	58	58
52	59	59
54	61	61
55	62	62
57	64	64
60	67	67
63	70	70
65	73	73
70	78	78
75	83	83
80	-	88
85	-	93
90	-	98
95	-	103
100	-	109



Indications [mm]

d_1 = spinning ring diameter
d_2 = fitting diameter
h_1 = ring height
h_2 = ring height above ring rail

b = flange width
flange 1 = 3.2 mm
flange 2 = 4.1 mm

Ring diameters d_1 and d_2, ring heights h_1 and h_2 and flange width b according to ISO 96. Fitting diameter d_2: smaller or bigger fitting diameters d_2 than those indicated in the ISO standards may be required to conform to the ring fixing, ring rail bore, centerability and exchangeability.

Ratio inside ring diameter (D) : spindle gauge (t)

The following values are recommended: If the inside diameter (D) of rings does not exceed 85 mm, this inside diameter should at least be 25 mm smaller than the spindle gauge (t). If rings have an inside diameter of 90 mm or more, the ring inside diameter should be at least 30 mm smaller. This ensures the necessary free movement of traveller and balloon.

4. Balloon control rings and separators

The influence of balloon control rings is quite considerable, especially at long cops. A reduction of the yarn balloon is advantageous or may even be the prerequisite for optimum performance. If balloon control rings are mounted at correct distance (the yarn balloon should be restricted as long as possible during one lift of the ring rail) then a marked performance increase is possible. The balloon control rings are removed when sensitive materials are processed and sufficiently long separators are installed to avoid many yarn breaks and to prevent fibre fly from accumulating on the adjacent spindles.

5. Traveller cleaners

Traveller cleaners are an excellent method for removing all fibre fly that accumulates on the outer part of **C and EI travellers**. The traveller cleaner should have the right distance to the outside ring flange. A distance of about 0.5 mm between cleaner and traveller (in operating position) is recommended. When adjusting the distance between outside ring flange and cleaner, the size of the traveller should be taken into consideration.

6. Room climate

Constant temperature and air humidity have positive effects on the operation of the traveller. Changes of the room climate, such as raised air humidity will increase wear by friction.
Besides the regular exchange of air, the purity of the air is of great importance for the traveller. Any dust (also dust from unsuitable floors) or other impurities may impair traveller operation and lead to more ring/traveller wear.

7. Flange width and ring height

Optimal operating results are reached when the ideal flange width is chosen for flange rings and the ideal ring height is obtained for self-lubricating HZ and J rings, dependent on yarn count range, yarn quality and traveller type.

8. Ring profile and traveller shape

Determining the most favourable ring and traveller shapes is a precondition for obtaining the optimal individual performance. If ring profile and traveller shape match well, the traveller will adopt a stable position in the ring. It should have sufficient tolerance of movement, so that any obstacles which may occur especially when the machine is started are avoided. A satisfactory large yarn clearance counteracts yarn breaks and yarn damage.

On flange rings the contact between ring and traveller should be in accordance only with fig. 1. Any other contact between ring and traveller, e.g. with its foot at the inner or outer ring web (fig. 2) impairs the operation of the traveller. The consequences are more yarn breaks and increased ring/traveller wear.

On HZ and J rings the contact should only be in accordance with fig. 3. Any other contact of the traveller at the upper or lower ring rail or ring holder (fig. 4) impedes traveller operation. The ring should have a perfect fit in the ring rail or ring holder. Rings incorrectly fastened may turn in the bore or be lifted out of it. The traveller then will strike against the bottom part of the ring rail or ring holder. In doing so it may pinch off the lubricating wick and interrupt oil flow.

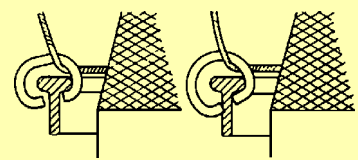


Fig. 1

Fig. 2

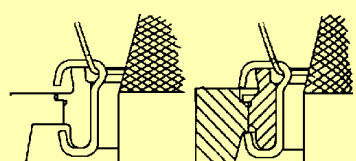


Fig. 3

Fig. 4

9. Correct surface smoothness, i.e. optimum peak-to-valley height and evenness of the ring track

The traveller contact surfaces must be smooth and even. Only then a smooth operation of the traveller will be possible. The contacted surfaces should be clean and preferably without traces of wear. In addition, they should be designed in such a way that they offer sufficient adherence for potential lubricants (e.g. fibres, oil, grease).
Once the sliding surfaces have lost their original quality, even the best ring traveller will not be able to run smoothly. For maintaining the surface of the running track in a good condition, it is very important - besides a certain degree of maintenance - to run the ring well in.

10. Steady formation of a lubricating film
Flange 1 and **flange 2** rings should **not** be lubricated with oil or grease, because these materials would not allow the continuous formation of a film generated by lubricating fibres on the running track of the traveller.

HZ and J rings should be provided with a lubricating system which suits the yarn count range, yarn quality, traveller style and operating speed. The lubricant should be supplied to and given off from the ring continuously and in even quantities.

Rings of steel should have wicks and felts in good state. Damaged or dirt -encrusted wicks and felts prevent the lubricant from even spreading on the ring track.

In the case of **sintered steel rings** the lubricating holes (pores) which are interconnected and go through the entire ring should not be clogged at the sliding surfaces which give off oil.

If the rings are re-lubricated at regular intervals with a special oil of optimum viscosity, rings and travellers may reach high speeds and long service-lives. Any change in lubrication will cause a variation of the frictional values and consequently of yarn tension.

11. Running-in of rings
Normally the running-in procedure is decisive for the future positive/negative behaviour of the ring and the length of its service life. Every ring requires a certain degree of running-in time if it is to maintain high traveller speeds with as little ring and traveller wear as possible. Running-in should, therefore, always be carried out by following the instructions made available for each ring type. During running-in the use of steel travellers without surface treatment is recommended. After the termination of the running-in process, steel travellers with surface treatment or nylon as well as bronze travellers can be used.

Attention!
The recommendations given above must be respected even more strictly for the ring spinning frames of the new generation, e.g. operating at spindle speeds of up to 20.000 rpm. Discrepancies in diameter coordination, centering, vibration-damping, traveller cleaner position etc, and especially in observing the ring/traveller recommendations, can result in significantly poorer running conditions and considerably increasing wear of ring and traveller.

Spindle drive in ring frames

The following types of drive system are commonly used for spindles in ring frames:

- **tangential belt drive**
- **sectional drive**

All these spindle drive types require either tapes or belts for power transmission from motor to spindle. With all of these drive systems, it is necessary to press the tape or belt with sufficient force against the spindle wharve. Deviations of the spindle out of its central position in relation to the spinning ring should be avoided here. The spindles must on the one hand reliably achieve the required spindle speed with as little slip as possible, not displaying any notable speed differences between the spinning points of a machine; and on the other hand, there is the technological requirement to accelerate the spindles up to their rated speed in the shortest possible time after repairing yarn breaks.

TEXParts supplies contact pressure assemblies of the finest design and quality, as are needed for all tape and belt drive types.

Tangential and sectional drive

Tension pulleys SR (see chapter 2 page 10)

SR 28 tension pulleys with flanges arranged at top or bottom are used in the tangential belt drive with 2 independent tangential belts for the left-hand and right-hand ring frame sides respectively for guiding the belt return movement.

Contact roll assemblies AR

There are a number of different standard series available depending on application:

- AR 5047 with 50 mm shell diameter for belts up to 40 mm width (see p. 100)
- AR 5024 with 50 mm shell diameter for belts up to 16 mm width (see p. 108)
- AR 3528 with 35 mm shell diameter for belts up to 20 mm width (see p. 102)

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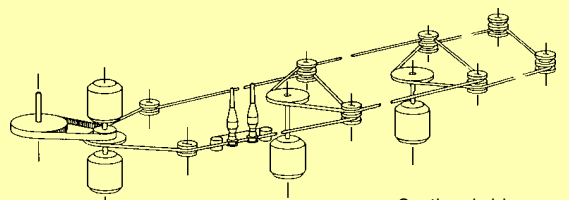
The contact roll assembly AR 5047 is used in ring frames with single-belt or double-belt tangential drive. Its design allows universal interchangeability with the previous standard variants AR 28, AR 45, AR 13/15. The shell diameter of 50 mm permits lower AR speeds, which in turn has a positive effect on service life, noise emission, re-lubrication intervals and the necessary energy requirement. For dependable belt guidance, the AR 5047 is fitted with two flanges.

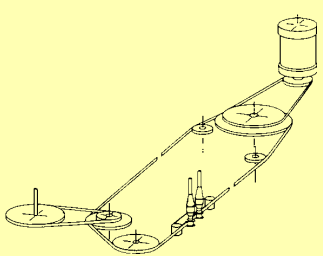
The contact roll assembly AR 5024 is used in ring frames with sectional drive. It is also universally interchangeable with the previous AR 50-1246 555. For ring frames with sectional drive, there are also versions available with only one pulley (arranged left or right of holding angle). See page 108.

The contact roll assembly AR 3528 is used in ring frames with multi-motor single tangential belt drives.

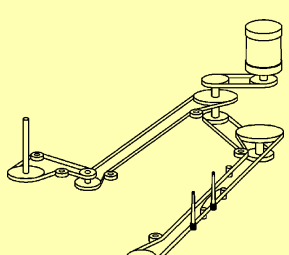
All AR variants comprise two contact roll pulleys mounted on a spring bracket in the holding angle of the spindle rail. The defined sag of the leaf spring of the spring bracket determines the contact pressure of the contact roll pulleys against the belt. The pulley spacing is double that of the spindles.



Sectional drive



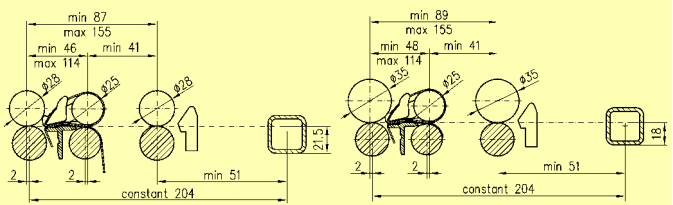
Tangential belt drive
1-belt-arrangement



Tangential belt drive
2-belt-arrangement

Drafting on cotton ring frames with weighting arms of the PK 3000-series Pneumatic load principle

The weighting arms of the PK 3000 series are designed for use in 3-line double apron drafting arrangements for spinning cotton, man-made fibres or blends thereof. Various sizes of top apron cradles (OH) are available to suit the different categories of fibre length. The size of the cradle used determines the front zone setting.
The different types of top apron cradles (OH) and the recommendations for widths of drafting and pre-drafting zones, as well as information on the maximum possible lengths of the fibres to be spun will be found in chapter 5, page 2-5.



PK 3025 -1257 300 **PK 3035 -1259 710**[1)]

Fig. A: Drafting arrangements for PK 3000 series

Draft sizes

Total draft
The amount of total draft to be applied is mainly dependent on the type and composition of the fibre material and quality of the roving. With weighting arm PK 3000 the normal total draft range for speed-frame roving is, in practice, as much as 50 (see fig. B, Total drafts).
The choice of draft range depends on the desired yarn qualities and operating conditions of the frame (ends down behaviour) In-house spinning trials should be carried out to determine the optimum draft range. Fig. B (Total drafts) shows common draft ranges arranged according to the respective fibre materials.

Rear draft
The purpose of rear zone drafting is to slightly tension the roving and feed the fibre material to the main drafting zone in a well-stretched condition. The usual rear draft for PK 3000 equipment ranges between 1.15 and 1.3.

1) In the case of PK 3035 the middle guide element is 3.5 mm longer than on the PK 3025 (middle guide element Ref. No. 1259 709)

Draft ranges for PK 3000

Rear drafts	Total drafts	
1.15 - 1.3	12-20	Extremely short carded cotton
	20-35	Carded cotton
	20-40	Combed cotton
	25-45	Blends of cotton and man-made fibres
	25-50	Pure man-made fibres

Fig B: Total drafts

In determining the optimum rear zone draft care should be taken for a controlled draft of the roving in the rear zone. A hard-twisted roving needs a higher rear zone draft whereas a too strong loosening effect on the roving indicates the necessity for reducing the rear draft. Standard values for the rear zone settings are given in table A (Summary of different weighting arm types).
A total draft zone width expanded by 10 mm to 155 mm permits additional and previously unfeasible drafting system variants (spinnable fibre length up to 45 mm; 4-roller drafting systems due to a possible additional weighting element).

Draft fields

Front zone setting
The front zone setting depends on the type of top apron cradle being used. The figures shown for front zone setting HF (front zone = centre of the bottom apron roller/front bottom roller) are based on the use of the diameters shown for these rollers in chapter 2, pages 2-5. Differences between bottom roller diameters and the values given in chapter 2 must be taken into account when the front zone is determined. The front overhang of the front top roller 1 in relation to the front bottom roller is 2 mm. (System dimension: support rod/front bottom roller).
The top apron roller 2 has a rear zone overhang of 2 mm in relation to the axis of the bottom roller II (see fig. C: Front and rear overhang of top roller). Basically, when adjusting the front zone setting, you should make sure that the operation of the individual drafting elements is not impaired (e.g. when front zone condensers are used).

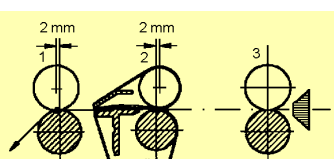


Fig. C: Front and rear overhang of top roller

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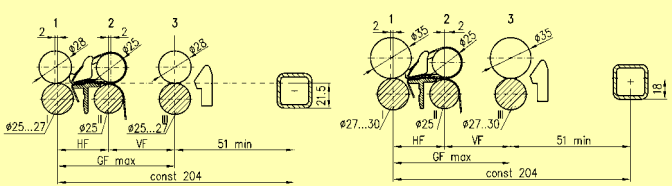
Weighting arms, zone settings and maximum fibre length

Weighting arm	Top apron cradle	Bottom roller diameter I	II	III	Draft field [mm] HF	VF min	VF usual[1]	draft field GFmm max.	Total length max.mm 3-nip-point
PK 3025									
	OH 2022	25/27	25/27	25/27	44		50...65		45
	OH 2042				53	41	60...70	153	54
PK 3035									
	OH 2022	25/27	25/27	25/27	46		50...65		45
	OH 2042				55	41	60...75	153	54

Table A: Summary of different weighting arm types for cotton drafting systems



PK 3025-1257 300 **PK 3035-1259 710**

Fig. D: Zone settings for PK3000 series weighting arms

[1] The „usual“ zone settings VF are values of practical application resp. recommendations to choose the max. settings.

Rear zone setting

The rear zone setting depends on the type of fibre to be spun, the length of fibre, and also on the roving twist. Standard values for the rear zone settings are listed in Table A. Rear zone settings greater than those in the Table A should be selected if the material to be processed is difficult to draft. This may be the case with hard-twisted roving or man-made fibres with strong inter-fibre bonding. In-house trials should be carried out to determine the optimum rear zone setting.

Roller loading

Types	**PK 3025-1257 300**		
Ref. No.	**PK 3035-1259 710**		
Operating pressure	Load on top roller [daN] Front 1	Middle 2	Rear 3
from 1.5 bar	12	10	12
up to 3.5 bar	23	18	23

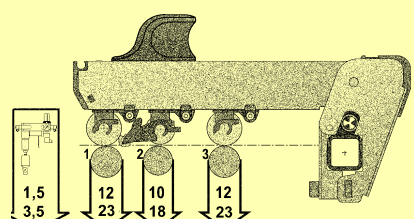


Fig. E: Roller loading PK 3000 series

The weighting pressure in the PK 3000 is generated pneumatically by a closed-circuit compressed air system (fig. F).
The air supply to the drafting system in the PK 3000 is completely integrated into the support rod.
The weighting pressure onto the top rollers can be set infinitely and centrally through the air pressure and thus, an optimum adjustment to the fibre material is possible.
Due to the pneumatic spring in the weighting arm the operating pressure is being transformed into the saddle load directly via the pressure plates of the individual weighting elements.
Pressure setting and system monitoring are performed centrally at the pneumatic unit installed in the headstock of the ring frame.

The roller loads on rear, apron and front top rollers (see fig. E) are interlinked at a fixed ratio. This ratio is determined by the pressure plate size of the weighting elements. When the working pressure is changed, this ratio remains constant.
The correlation between the set working pressure and the saddle load of all top rollers in the weighting arm is shown as a graph in fig. G.
In most applications (e.g. if cotton fibres are processed), a working pressure of 1.7 to 2.0 is sufficient to reach good spinning conditions. In the case of man-made fibre materials or blends, a weighting pressure of 2.2 to 2.5 bar can be of advantage.

There is no possibility of incorrect settings of the individual weighting arm because of the centralised and simple pressure setting.

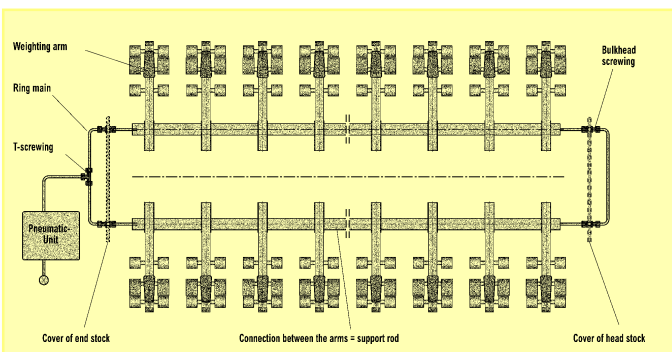


Fig. F: Air supply system for PK 3000 series

Partial load relief

The weighting arms PK 3000 offer the possiblity of practical and reliable central partial load relief in order to prevent the formation moiré effect. This is applied to the top rollers thanks to the inherent elasticity of the pneumatic spring. It automatically takes effect after a certain period of time when the ring frame is turned off by the main switch.
The partial load has been selected such that it reliably prevents intrusion of the yarn twist into the draft field, and even soft top roller cots are protected from permanent deformation (no moiré effect!). After the switch-on of the ring frame, the partial load relief builds up automatically.

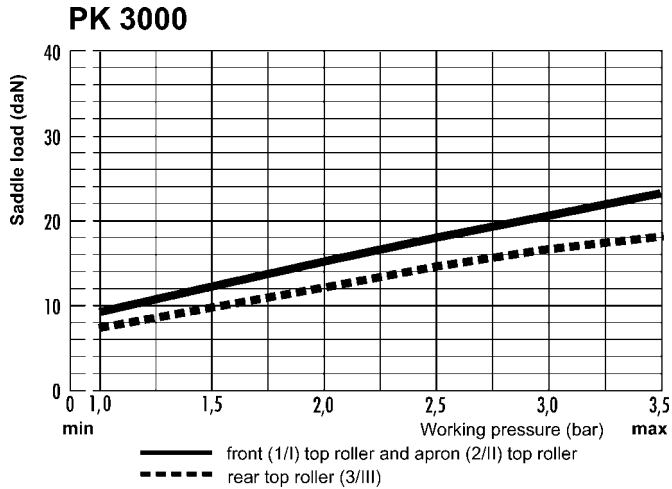


Fig. G: Correlation between saddle load and working pressure for PK 3000 series

Top apron cradles and top aprons

Depending on the application, the weighting arms of PK 3000 Series can be fitted with different top apron cradles:

a) **Short top apron cradles OH 2022**
for cotton and man-made fibres up to 45 mm length, and for blends thereof

b) **Medium top apron cradles OH 2042**
for cotton fibres over 40 mm length, man-made fibres and blends thereof up to cut lengths of 54 mm.

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The top apron cradles OH 2022/OH 2042 offer the following advantages:
- aprons can be exchanged without the apron unit being dismantled, i.e. with the OH aggregate still in place.
- individual apron tensioning by means of movable apron guide places, less strain on the fibres and gentle guidance during the drafting process.
- low-friction apron running ensures low drive torques and long apron working time.

The following table shows the top apron cradles for TEXParts weighting arms PK 3000 together with the associated top aprons, the apron inner diameter and the recommended standard range of distance clips.

Top apron cradles, top aprons and distance clips for PK 3000-series:

Top apron cradles OH Ref. No.	Gauge Tw [mm]	Top aprons general desig-nation	Inner dia-meter [mm]	Basic equipment Distance clips[2] Ref. No.	Colour
OH 2022-1247 888	68.4	PR 28	37.0	**OLC-0964 118**	yellow
OH 2022-1247 887	75	PR 28	37.0	**OLC-0017 705**	lilac
OH 2022-1247 889	82.5	PR 28	37.0	**OLC-0964 119**	white
OH 2042-1250 133	68.4	PR 28/13	42.1	**OLC-0964 117**	red
OH 2042-1250 134	75	PR 28/13	42.1	**OLC-0964 118**	yellow
				OLC-0964 119	white

Fig. H: Range of top apron cradles, top aprons and distance clips for PK 3000 weighting arms

[2] One clip per cradle is required for each type of OH. Clips are not included in standard OH supply and have to be ordered separately.

Opening X at apron release point

The vertical distance between the front edge of the top apron cradle, the type of apron and the bottom apron nose bar determine the intensity with which the fibre material is controlled and guided between top and bottom aprons (fig. I). To achieve optimum drafting conditions, the opening X can be adjusted using distance clips. Figs. J/K show which distance clips are to be used to provide the respective opening X for the various top apron cradles. As a basic rule of thumb: the smaller the opening, the more even the yarn.

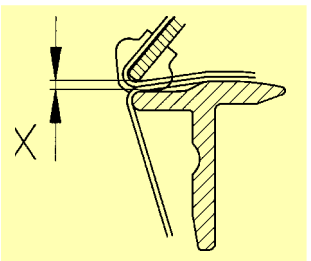

Fig. I: Opening X

Selection of the opening X is also dependent on the following parameters:
- type of fibre material
- fibre mass in the main drafting zone
- roving count
- type of apron and its dimensions, as well as
- type of bottom apron nose bar and its built-in position.

Taking these parameters into account, the selection of the opening X represents a kind of a compromise. Extremely narrow openings produce good yarn qualities, though frame operating conditions (ends down, undrafted portions etc.) may, under certain circumstances, be negatively influenced. The ideal opening for the fibre material to be processed in each case should thus be determined by mill trials.

Distance clip OLC Colour	Ref. No.	Top apron cradle OH OH 2022 (short)	OH 2042 (middle)
red	**0964 117**	-	1.6
yellow	**0964 118**	2.2	2.3
lilac	**0017 705**	2.5	2.6
white	**0964 119**	2.8	2.9
grey	**0017 627**	3.3	3.5
black	**0964 120**	3.8	3.9
beige	**0004 587**	4.8	5.1
green	**0004 588**	5.5	5.8

Fig. J: OLC Distance clips in combination with TEXParts top apron cradles

(The figures in the column give the values for the opening X in mm.)

The following information (see fig. K) is intended as a guide for the choice of distance clips for various yarn counts.

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 2022 opening "X" in mm			2,2*	2,5*	2,8*	3,3	3,8
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 2042 opening "X" in mm		1,6*	2,3*	2,6	2,9*	3,5	3,9
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

* Basic equipment of distance clips. Clips are not included in OH supply.

Fig. K: Choice of distance clips in combination with TEXParts top apron cradles

Top roller cots

Top rollers for PK 3000 weighting arms are supplied as top rollers without cots as standard. If desired, TEXParts will also supply top rollers with ready-ground cots. The cot quality can be determined by the customer.
Subsequent grinding of the cots may reduce the cot diameter of rear and front top rollers by a maximum of 3 mm. Within this range it is not necessary to readjust the height of the weighting arm.
With reference to the cot quality, rear and front top rollers are mutually interchangeable.
Determining the choice of cot mainly depends on the type of fibre material to be processed and its running properties.
Cots having a Shore hardness of 65° to 85° are used for rear and front top rollers today. In the case of soft cots, it is advisable to apply a low loading weight on the front top roller, if the frame is idle for longer periods. This will prevent moiré -formation caused by fluting.

The weighting arms of PK 3000 series are equipped with a partial load release of the front element.
TEXParts supplies the top apron roller LP 1003 with plastic sleeves as standard. If requested, the top apron roller LP 1002 with cots can also be supplied. Cots with a Shore hardness of 75° to 80° are suitable for this top apron roller.

Bottom aprons

The dimensions of the bottom aprons to be used depend on the design of the substructure of the drafting system. In practice, two types of substructure are most common:
1. Long bottom apron system
   Bottom aprons are guided and pre-tensioned by a tensioning link.
2. Short bottom apron system
   Bottom aprons are guided by specially designed bottom apron nose bars.

Drafting on cotton ring frames with weighting arms of the PK 2000-series

Various types of weighting arms are available for cotton ring frame drafting. The arms of the PK 2000-series are designed for use in 3-line double apron drafting arrangements for spinning cotton, man-made fibres and blends thereof. Various sizes of top apron cradle OH are available to suit the different categories of fibre length. The size of the respective cradle used determines the front zone setting. The different types of OH and the recommendations for widths of drafting and pre-drafting zones, as well as information on the maximum possible lengths of the fibres to be spun will be found in chapter 2, page 6-13.

Weighting arm
PK 2000 series
Ref. No.

PK 2025 - 1251 331
PK 2025 - 1251 459[1)]
PK 2035 - 1251 784
PK 2055 - 1251 785
PK 2065 - 1251 786

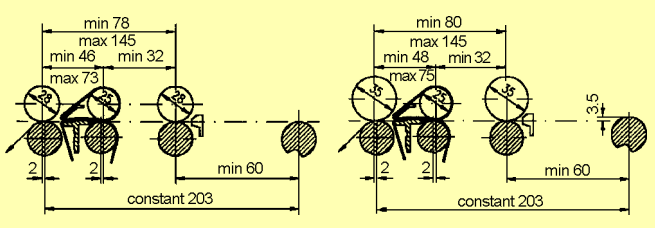

Fig. A: Drafting arrangements PK 2025 and 2035

Types PK 2035 and PK 2065 weighting arms are mainly used for spinning longer staple fibres. They are designed for this purpose for use with rear and front top rollers with a diameter of 35 mm. For spinning particularly fine yarns, materials that are difficult to draft and for spinning with high total drafts, we recommend the weighting arms PK 2055 and PK 2065.

[1)] Without clearer roller holder on face of arm
[2)] In the case of PK 2035 the middle guide element is 3.5 mm longer than on the PK 2025.

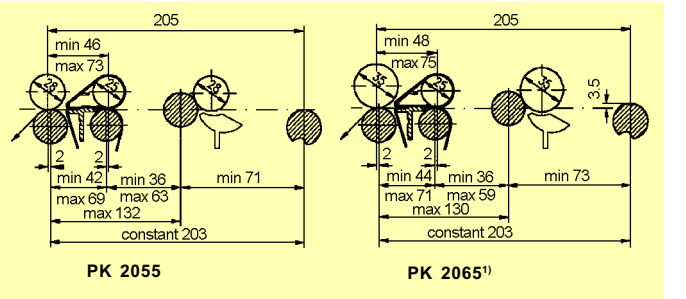

Fig.B: Drafting arrangements PK 2055 and PK 2065.

Draft sizes

Total draft

The amount of total draft to be applied is mainly depends on the type and composition of the fibre material and the quality of the roving. With weighting arms, types PK 2025 and PK 2035, the normal total draft range for speed-frame roving is, in practice, as much as 50 (see fig. C, Total drafts).
The choice of draft range depends on the desired yarn qualities and the operating conditions of the frame (ends down behaviour) In-house spinning trials should be carried out to determine the optimum draft range. Fig. C (Total drafts) shows common draft ranges arranged according to different fibre materials.

Rear draft

The purpose of rear zone drafting is to slightly tension the roving and to feed the fibre material to the main drafting zone in a well-stretched condition. The usual rear draft for PK 2025 and PK 2035 equipment ranges between 1.15 and 1.3. In special cases, rear drafts greater than 1.3 are possible with PK 2055 and PK 2065.

[1)] In the case of PK 2065 the middle guide element is 3.5 mm longer than on the PK 2055.

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Draft ranges for PK 2025 and PK 2035

Rear drafts	Total drafts	
1.15 - 1.3	12-20	Extremely short carded cotton
	20-35	Carded cotton
	20-40	Combed cotton
	25-45	Blends of cotton and man-made fibres
	25-50	Pure man-made fibres

Draft ranges for PK 2055 and PK 2065

Rear drafts	Total drafts	
1.15 - 1.3	up to 50	Cotton
1.3 - 1.6	50-70	Man-made fibres
1.6 - 1.8	over 70	Blends

Fig. C: Total drafts

In determining the optimum rear zone draft care should be taken for a controlled draft of the roving in the rear zone. A hard-twisted roving needs a higher rear zone draft whereas a too strong loosening effect on the roving indicates the necessity for reducing the rear draft. Standard values for the rear zone settings are given in table A (Summary of different weighting arm types).

Draft fields

Front zone setting

The front zone setting depends on the type of top apron cradle being used. The figures shown for front zone setting HF (front zone = centre of the bottom apron roller/front bottom roller) are based on the use of the diameters shown for these rollers in chapter 2, page 6-13. Differences between bottom roller diameters and the values given in chapter 2 must be taken into consideration when the front zone is determined. The front overhang of the front top roller I in relation to the front bottom roller is 2 mm. (System dimension: support rod/front bottom roller). The top apron roller 2 has a rear zone overhang of 2 mm in relation to the axis of the bottom roller II (see fig. D). Basically, when adjusting the front zone setting, you should make sure that the operation of the individual drafting elements is not impaired (e.g. when front zone condensers are used).

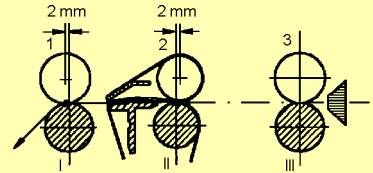


Fig. D: Front and rear overhang of top roller

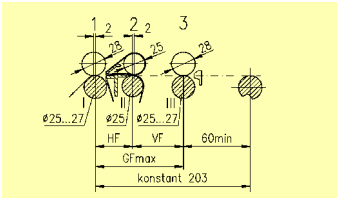
Weighting arms, zone settings and maximum fibre length

Weighting arm	Top apron cradle	Bottom roller diameter I	II	III	Draft field mm* HF	VF min	VF usual[1]	Total draft field GFmm max.	Fibre length max. mm
PK 2025	OH 62	25/27	25/27	25/27	44		50...65		45
	OH 2022				44		50...65		45
	OH 132				53	34	60...70	143	54
	OH 2042				53		60...70		54
	OH 122				68		max.		60
PK 2035	OH 62	27/30	25/27	27/30	46		50...65		45
	OH 2022				46		50...65		45
	OH 132				55	34	60...75	143	54
	OH 2042				55		60...75		54
	OH 122				70		max.		60
PK 2055	OH 62	25/27	25/27	25/27	44		40		45
	OH 2022				44		40		45
	OH 132				53	36	50	132	54
	OH 2042				53		50		54
	OH 122				68		60		60
PK 2065	OH 62	27/30	25/27	27/30	46		40		45
	OH 2022				46		40		45
	OH 132				55	36	50	132	54
	OH 2042				55		50		54
	OH 122				70		60		60

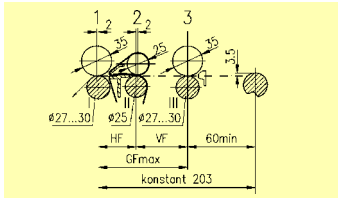
* see figure E.

Table A: Summary of the different weighting arm types for cotton drafting systems

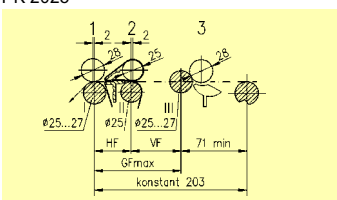
[1] The „usual“ zone settings VF are values of practical application resp. recommendations to choose the max. settings.



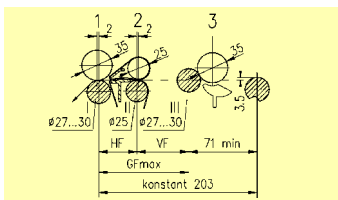
PK 2025



PK 2035



PK 2055



PK 2065

Fig. E: Zone settings for PK 2000 series weighting arms

Rear zone setting

The rear zone setting depends on the type of fibre to be spun, the length of fibre, and also the roving twist. For rear element geometry see fig. F. Standard values for the rear zone settings are listed in Table A. Rear zone settings greater than those in the table should be selected if the material to be processed is difficult to draft. This may be the case with hard-twisted roving or man-made fibres with strong inter-fibre bonding. In-house trials should be carried out to determine the optimum rear zone setting.

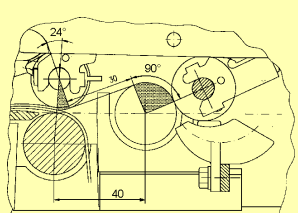


Fig. F: Roving guidance in the rear zone for PK 2055 / PK 2065

Roller loading

In the case of PK 2000 series weighting arms, 3 different loads can be set for the front top roller using the eccentric load selector on the front guide arm. The set load can easily be identified by the respective colour marking on the eccentric load selector (see figs. G / H).

Two different load stages can be set on the middle and rear element of weighting arms PK 2025, PK 2035 and on the middle element of weighting arms PK 2055/ PK 2065.

To achieve good yarn quality, it is advisable to use the 3rd load (14 daN; load selector, marked in green) for the front top roller when processing cotton and cotton blends. Pure man-made fibres, hard-twisted rovings, and the spinning of fine yarn counts may require the 4th load (18 daN; load selector, marked in red). For these cases, the load on the middle and rear element of PK 2025/PK 2035 pendulum arms can, if necessary, be increased to 14/16 daN and the load on the middle element of PK 2055/PK 2065 to 14 daN.

If the frame is idle for long periods and soft front top rollers are used, PK 2000 series weighting arms allow a supplementary partial load reduction on the front guide element (saddle load 6 daN; load selector marked in white) in order to prevent moiré effects.

If the OH 2042 (OH medium) is to process relatively long fibres or to spin fine yarn in drafting systems with PK 2000 weighting arms, the load stage (14 daN) should be used at the apron roller.

Weighting arm Ref. No.	Front top roller [daN]	Top apron roller [daN]	Rear top roller [daN]
PK 2000 Series			
PK 2025-1251 331	(6)[1]-10-14-18	10-14	12-16
PK 2025-1251 459	(6)[1]-10-14-18	10-14	12-16
PK 2035-1251 784	(6)[1]-10-14-18	10-14	12-16
PK 2055-1251 785	(6)[1]-10-14-18	10-14	18
PK 2065-1251 786	(6)[1]-10-14-18	10-14	18

[1] Partial load reduction

Fig.G: Weighting arms PK 2000 for cotton ring frame drafting and their roller loads

Adjusting the load on the front element

The load on the front guide element can be adjusted in three stages. Adjustment is effected by means of an eccentric load selector activated by the setting wrench 0998 222. The load set can be identified by the code colour on the eccentric load selector visible in the opening on the top guide arm.

The following load stages can be selected on the front element of PK 2000 series weighting arms:

Load setting	Colour code on load selector	Load [daN]
Basic load	black	10
Standard load	green	14
Maximum load	red	18

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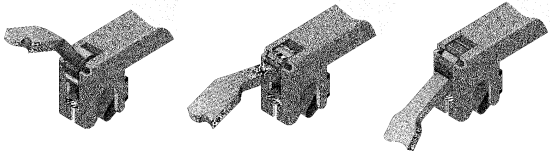


Fig. H: Load stages on front guide element of PK 2000 series weighting arms

Partial load relief
PK 2000 weighting arms additionally allow partial load relief on the front guide element. The partial load relief can be effected by setting the eccentric load selector to the colour code "white" using the setting wrench 0998 222. The partial load relief has a saddle load of 6 daN.

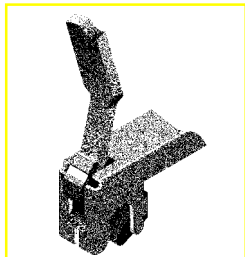


Fig. I: Partial load relief at the front element of PK 2000-series weighting arms

Adjusting the load on the rear and middle element

Two different loads are possible for the middle and rear element of the weighting arms PK 2025, PK 2035 and for the middle element of the weighting arms PK 2055, PK 2065. The load on the rear and middle element is adjusted by turning the eccentric load selector with the hexagon socket screwdriver 1249 383 (see fig. J).

The load set can be identified by the position of the eccentric load selector.

Basic load
The top edge of the eccentric load selector is level with the upper edge of the element.

Maximum load
The top edge of the eccentric load selector is lowered by the dimension A=2.5 mm (see fig. K).

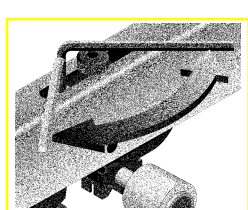
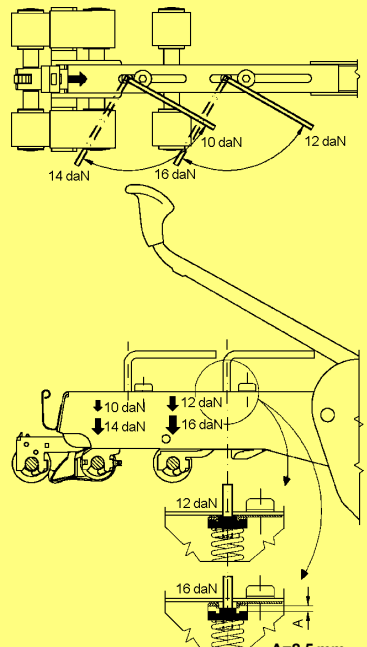


Fig J: Load setting with the hexagon socket screwdriver



Weighting arms PK 2025/PK 2035

Load	Middle element [daN]	Rear element [daN]
Basic load	10	12
Maximum load	14	16

Weighting arms PK 2055/PK 2065

Load	Middle element [daN]	Rear element [daN]
Basic load	10	18
Maximum load	14	

Fig. K: Load setting on the rear and middle element of PK 2000

Top apron cradles and top aprons

Depending on the application, the weighting arms of PK 2000-series can be fitted with different top apron cradles:

a) **Short top apron cradles OH 2022/OH 62**
for cotton and man-made fibres up to 45 mm length and blends thereof

b) **Medium top apron cradles OH 2042/OH 132**
for cotton fibres over 40 mm length, man-made fibres and blends thereof up to cut lengths of 54 mm.

c) **Long top apron cradles OH 122**
for man-made fibres of cut lengths up to approx. 60 mm.

The construction principle of the OH 62/OH 132/OH 122 cradles allows apron tolerances to be compensated with regard to apron guidance and stretching. Top apron cradles OH 2022/OH 2042 offer further additional advantages:

- aprons can be exchanged without the apron unit being dismantled, i.e. with the OH aggregate still in place.
- individual apron tensioning by means of movable apron guide places, less strain on the fibres and gentle guidance during the drafting process.
- low-friction apron running ensures low drive torques and long apron service-time.

The following table shows the top apron cradles for TEXParts weighting arms PK 2000 together with the associated top aprons, the apron inner diameter and the recommended standard range of distance clips.

Top apron cradles, top aprons and distance clips for PK 2000

Top apron cradles OH Ref. No.	Gauge Tw [mm]	Top aprons general designation	Inner diam. [mm]	Basic equipm. Dist. clips[1] Ref. No.	Colour
OH 2022-1247 888	68.4	PR 28	37.0	OLC-0964 118	yellow
OH 2022-1247 887	75	PR 28	37.0	OLC-0017 705	lilac
OH 2022-1247 889	82.5	PR 28	37.0	OLC-0964 119	white
OH 62 -0962 841	90	PR 32	37.0		
OH 2042-1250 133[2]	68.4	PR 28/13	42.1	OLC-0964 117	red
OH 2042-1250 134[2]	75	PR 28/13	42.1	OLC-0964 118	yellow
OH 132-0963 671	82.5	PR 32/3	41.5	OLC-0964 119	white
OH 132-0963 673	90	PR 32/3	41.5		
OH 122-0963 495	68.4	PR 028	51.3	OLC-0964 118	yellow
OH 122-0963 500	75	PR 028	51.3	OLC-0964 119	white
OH 122-0963 511	82.5	PR 032	51.3	OLC-0017 627	grey
OH 122-0963 512	90	PR 032	51.3		

Fig. L: Range of top apron cradles, top aprons and distance clips for PK 2000 weighting arms

[1] One clip per cradle is required for each type of OH. These clips are **not** included in standard OH supply and have to be ordered separately.

[2] For use in weighting arms of **PK 2000 series only** (high load setting (14 daN) at the middle element recommended).

Opening X at apron release point

The vertical distance between the front edges of the top apron cradle, the type of aprons and the bottom apron nose bar determine the intensity with which the fibre material is controlled and guided between top and bottom aprons (fig. M). To achieve optimum drafting conditions, the opening X can be adjusted using distance clips. figs. N/O show which distance clips are to be used to provide the respective opening X for the various top apron cradles. As a basic rule of thumb: the smaller the opening, the more even the yarn.

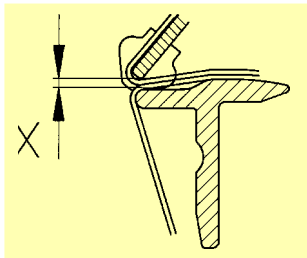


Fig. M: Opening X

Selection of the opening X is also dependent on the following parameters:

- type of fibre material
- fibre mass in the main drafting zone
- roving and yarn count
- type of apron and dimensions, as well as
- type of bottom apron nose bar and built-in position.

Taking these parameters into account, the selection of the opening X represents something of a compromise. Extremely narrow openings produce good yarn qualities, though frame operating conditions (ends down, undrafted portions etc.) may, under certain circumstances, be negatively be influenced. The ideal opening for the fibre material to be processed in each case should thus be determined by mill trials.

Distance clip OLC Colour	Ref. No.	Top apron cradle OH OH 2022 (short)	OH 62 (short)	OH 2042 (middle)	OH 132 (middle)	OH 122 (long)
red	**0964 117**	-	-	1.6	2.5	2.6
yellow	**0964 118**	2.2	2.2	2.3	3.3	3.4
lilac	**0017 705**	2.5	2.5	2.6	3.3	3.4
white	**0964 119**	2.8	2.9	2.9	3.6	3.7
grey	**0017 627**	3.3	3.5	3.5	4.1	4.2
black	**0964 120**	3.8	3.9	3.9	4.6	4.7
beige	**0004 587**	4.8	5.2	5.1	5.7	5.7
green	**0004 588**	5.5	5.8	5.8	6.1	6.2

Fig. N: OLC Distance clips in combination with TEXParts top apron cradles

(The figures in the column give the values for the opening X in mm.)

PRINT CONTENTS END

The following information (see fig. O) is intended as a guide for the choice of distance clips to be used for various yarn counts.

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 2022 opening "X" in mm			2,2*	2,5*	2,8*	3,3	3,8
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 62 opening "X" in mm			2,2*	2,5*	2,9*	3,5	3,9
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

* Basic equipment of distance clips. Clips are not included in OH supply.

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 2042 opening "X" in mm		1,6*	2,3*	2,6	2,9*	3,5	3,9
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 132 opening "X" in mm		2,5*	3,3*	3,3	3,6*	4,1	4,6
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

* Basic equipment of distance clips. Clips are not included in OH supply.

OLC No		red 0964 117	yellow 0964 118	lilac 0017 705	white 0964 119	gray 0017 627	black 0964 120
OH 122 opening "X" in mm		2,6*	3,4*	3,4	3,7*	4,2	4,7
Ne	Nm						
6	10						
10	17						
20	34						
30	51						
40	68						
>40	>68						

* Basic equipment of distance clips. Clips are not included in OH supply.

Fig. O: Choice of distance clips in combination with TEXParts top apron cradles

Top roller cots

Top rollers for PK 2000 weighting arms are supplied as top rollers without cots as standard. If desired, TEXParts will also supply top rollers with ready-ground cots. The cot quality can be determined by the customer.
Subsequent grinding of the cots may reduce the cot diameter of rear and front top rollers by a maximum of 3 mm. Within this range it is not necessary to readjust the height of the weighting arm. With reference to the cot quality, rear and front top rollers are mutually interchangeable.
Determining the choice of cot mainly depends on the type of fibre material to be processed and its running properties.
Cots having a Shore hardness of 65° to 85° are used for rear and front top rollers today. In the case of soft cots, it is advisable to apply a low loading weight on the front top roller if the frame is idle for longer periods. This will prevent moiré-formation caused by fluting. The weighting arms of PK 2000-series are equipped with partial load release of the front element. The partial load release has a saddle load of 6 daN.
TEXParts supplies the top apron roller LP 1003 with plastic sleeves as standard for apron top roller. If requested, LP 1002 with cots as top apron roller can also be supplied as apron top roller. Cots with a Shore hardness of 75° to 80° are suitable for this apron top roller.

Bottom Aprons

The dimensions of the bottom aprons to be used depend on the design of the substructure of the drafting system. In practice, two types of substructure are most common:

1. Long bottom apron system
   Bottom aprons are guided and pre-tensioned by a tensioning link.
2. Short bottom apron system
   Bottom aprons are guided by specially designed bottom apron nose bars.

Drafting on cotton speed frames with weighting arms PK 5000-series Pneumatic load principle

Series **PK 5000** weighting arms are intended for three-roller and four-roller double-apron drafting systems on cotton speed frames. They are suitable for spinning cotton, man-made fibres or blends thereof types up to approx. 60mm length.

The **PK 5000** weighting arm series comprises the types **PK 5025-1259 471** (28 mm Ø top rollers)) and **PK 5035-1259 473** (35 mm Ø top rollers) for three-roller double-apron drafting systems and type **PK 5025-1259 472** (28 mm Ø top rollers)), which is designed for four-roller double-apron drafting equipment.

The four-roller version differs from the three-roller version in having an additional condensing zone between the roller pairs I/1 and II/2 (see figs. A/B).

By deliberately condensing the fibre material in this zone, a reduction of the spinning delta is achieved, thus improving the incorporation of the fibres into the roving. This results in the following important advantages:

- reduced number of thread breakages (improved process reliability)
- increased efficiency
- greater package density at speed frame bobbin thanks to the more compact roving
- reduced fly generation.

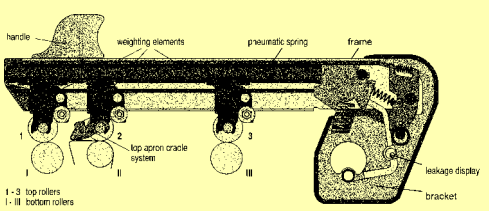


Fig. A: PK 5000-series for 3-roller-drafting systems

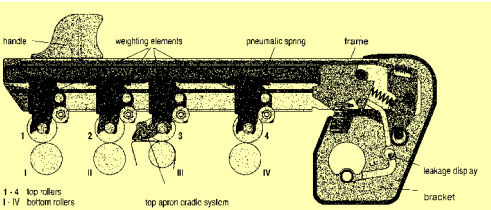


Fig. A: PK 5000-series for 4-roller drafting systems

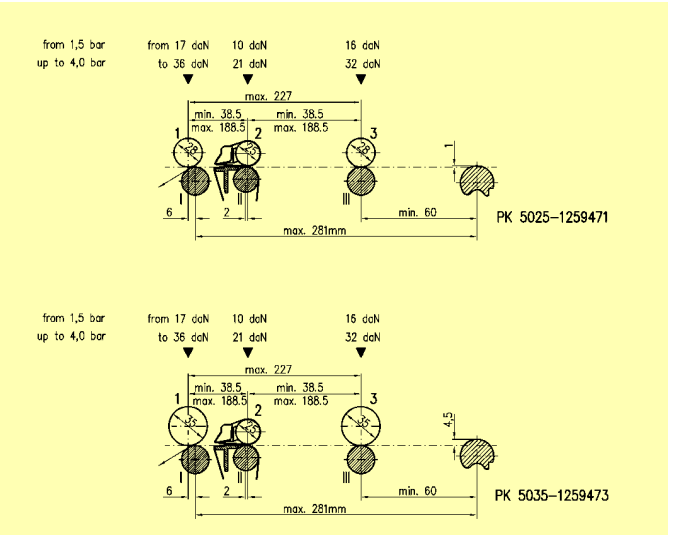


Fig. C: Drafting arrangements PK 5000 three-roller versions

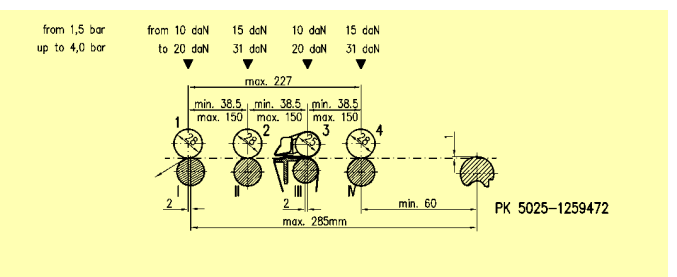


Fig. D: Drafting arrangement PK 5000 four-roller version

Sliver

The slivers counts normally used in mills practice are between approx. 3.4 and 4.6 ktex (Nm 0.30 - Nm 0.20). Sliver counts in this range guarantee ideal speed frame drafting. Processing slivers of 3 ktex or finer on speed frame drafting systems, is not recommended due to lacking fibre cohesion and the resultant risk of faulty drafting during sliver feed from can to drafting system. The maximum sliver count may not exceed 6 ktex (Nm 0.17).

Draft sizes

Total draft
The amount of total draft on a four- or three-roller double-apron drafting system is between 5 and 18 fold, a range of 5-12 fold providing the best results. Drafts greater than 12 fold are seldom employed as the total draft on a ring frame should be as high as possible, for reasons yarn quality.
Drafts lower than 5 fold should not be applied. For the four-roller double-apron drafting system a draft of approx. 1.05 is used as a support for condensation between the roller pair I/1 and II/2.

Rear draft
The task of the rear draft is to tension the fibre material in the rear zone and draw it parallel. Rear drafts of between 1.12 and 1.18 are normally used in practice.

Draft fields

Front zone
The front zone settings depend on the type of top apron cradle, the diameters of top and bottom rollers and the space required for the front zone condensers being used. The adjustment values will be found in the following figures E and F. A precondition for good spinning results is the correct adjustment of the individual drafting system elements. A greater fibre mass of the sliver leads to increased friction of the fibres and thus effective auto-control during the drafting process. Special attention must be given here to the selection of the correct width for opening X. Excessive control in the front zone may lead to faulty drafting or undrafted sections. Undrafted sections in the roving may, however, also be caused by selecting a freegauge distance that is too narrow.
Should such drafting faults occur, the freegauge can be regulated by adjusting the overhang of the front top roller or by regulating the bottom roller distance. If this is not enough even when high pressure is set on the front top roller, the front zone of the speed frame must be extended.

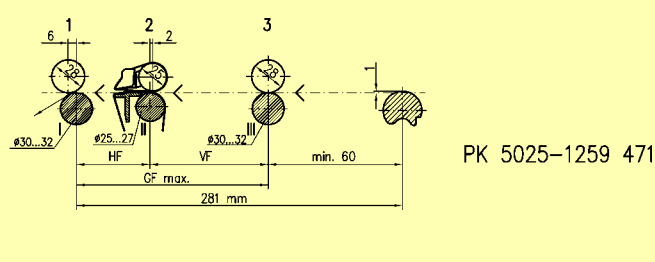
Rear zone
The rear zone setting depends on the fibre mass, the fibre length and the drafting qualities of the fibre material to be spun.

Zone settings and maximum fibre length for PK 5000

Weighting arm	Top apron cradle	Bottom roller diameter I	II	III	IV	Draft field mm HF	VF min	VF usual[1]	Total draft field GFmm max.	Fibre length max. mm
PK 5025-1259 472	OH 5022	30/32	30/32	25/27	30/32	48	45	46...50	225	45
	OH 5042	30/32	30/32	25/27	30/32	60	45	**	225	
PK 5025-1259 471	OH 5022	30/32	25/27	30/32	-	49	40	60...80	221	45
	OH 5042					60	40	60...80	221	54
	OH 5245					76	40	70...90	221	60
PK5035-1259 473	OH 5022	30/32	25/27	30/32	-	49	40	60...80	221	45
	OH 5042					60	40	60...80	221	54
	OH 5245					76	40	70...90	221	60

**Extension of the usability range because of GF_{max} = 229 mm
[1] Recommendations for the widest possible setting

Fig. E: Zone settings and maximum fibre length PK 5000



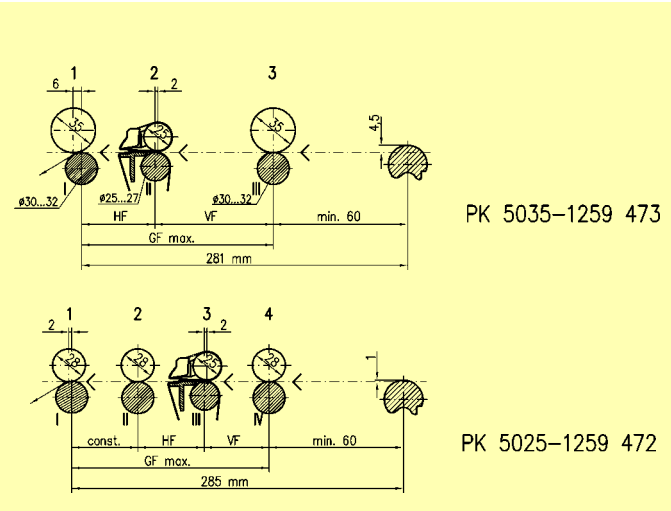


Fig. F: Zone settings PK 5000

Roller loading

Types	Load stages (daN) Front 1	Middle 2	Middle 3	Rear 3 Rear 4
PK 5025 -1259 472	10 up to 20	15 up to 31	10 up to 20	15 up to 31
PK 5025 -1259 471	17 up to 36	10 up to 21	--	16 up to 32
PK 5035 -1259 473	17 up to 36	10 up to 21	--	16 up to 32

The weighting arms are supplied with non-oiled compressed air via a central air supply system. This air supply system is installed on the speed frame in the form of a T-distributor (see fig. G).
The weighting pressure onto the top rollers can be set infinitely and centrally through the working pressure and thus, an optimum adjustment to the fibre material is possible.
Due to the pneumatic spring in the weighting arm the operating pressure is transformed into the saddle load directly via the pressure plates of the individual weighting elements.
The setting is made with a corresponding control device in the pneumatic unit which incorporate an appropriate indicator instrument for this purpose.
The roller loads on rear, apron and front top rollers are interlinked at a fixed ratio. This ratio is determined by the pressure plate size of the weighting elements. When the working pressure is changed, this ratio remains constant.
The correlation between the set working pressure and the saddle load of all top rollers in the weighting arm is shown as a graph in fig. H.
In most applications, a working pressure of 2.4 - 2,6 bar is sufficient. In the case of man-made fibres or blends, a weighting pressure of 3.4 to 3.5 bar can be of advantage.

Partial load relief

The weighting arm PK 5000 offers the possibility of central partial load relief. This is applied to the top rollers due to the inherent elasticity of the pneumatic spring. It takes effect automatically when the ring frame is turned off by the main switch.
The partial load has been selected in such away that it reliably prevents intrusion of the yarn twist into the draft field, and even soft top roller cots are protected from permanent deformation (no moiré-effect!). After switching on the ring frame, the pre-set weighting pressure builds up automatically. When this pressure has been reached, the weighting arms are ready for operation.

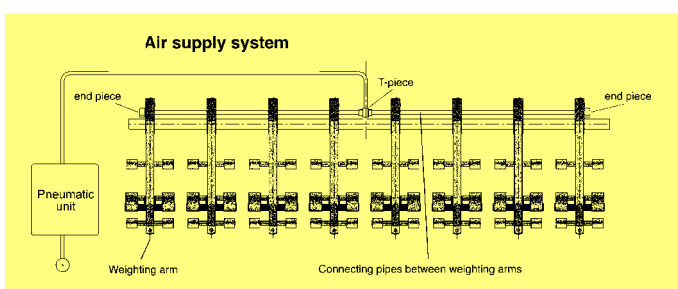


Fig. G: Air supply system for PK 5000 series

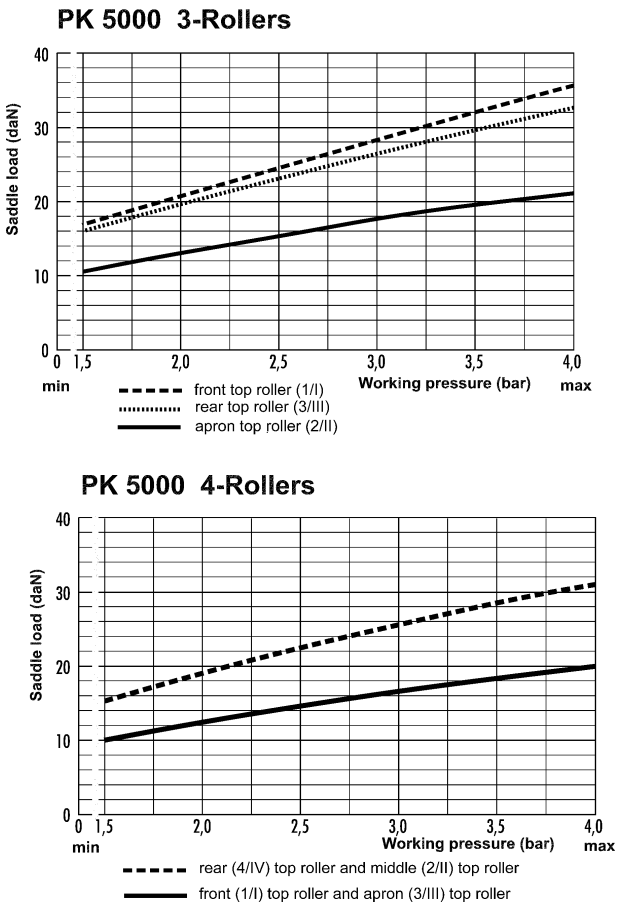


Fig. H: Correlation between saddle load and working pressure for PK 5000 series

Top apron cradle system

Weighting arms of PK 5000-series can be fitted with short staple cradle (OH 5022), medium staple cradle (OH 5042) or long staple cradle (OH 5245).

Top apron cradles OH for		Applications of the cradles
PK 5025-1259 471 **PK 5035-1259 473**	**PK 5025-1259 472**[1)]	
OH 5022 **short staple**	**OH 5022** **short staple**	Cotton and man-made fibres, pure / blends, of up to approx. 45 mm max. fibre length.
OH 5042 **medium staple**	**OH 5042** **medium staple**	Cotton and man-made fibres, pure / blends, of up to approx. 54 mm max. fibre length.
OH 5245 **long staple**	**-**	Man-made fibres of up to approx. 60 mm max. fibre length.

[1)] For fibre lengths up to about 50 mm

Opening X at apron release point

The opening between the guide edge of the top apron cradle and the bottom apron nose bar determines the intensity with which the fibre material is controlled and guided between top and bottom aprons. In order to be able to adapt drafting conditions to good fibre control and fibre guidance corresponding to the fibre mass present in the front zone, the so-called opening X can be regulated via the top apron distance clips.
The opening X is adjusted via special distance clips affixed to the guide edge of the top apron cradle. To distinguish them and to make the opening X simpler to check, the top apron distance clips have different colours (see fig. J).

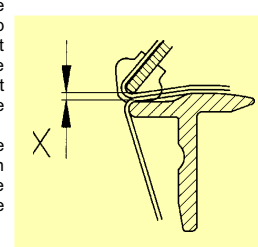


Fig. I: Opening X

Distance clips OLC	Top apron cradle for PK 5000		
	OH 5022 (short)	OH 5042 (medium)	OH 5245 (long)
	Apron roller 25 mm Ø	Apron roller 25 mm Ø	Apron roller 25 mm Ø
white 0964 104	3.4	3.5	3.6
grey 0964 105	3.8	3.9	4.1
black 0964 106	4.4	4.4	4.6
orange 0030 491	4.7	4.7	5.0
beige 0964 107	5.1	5.1	5.4
green 0964 108	5.9	5.9	6.4
blue 0964 109	8.9	8.9	8.9
brown 0964 110	11.1	11.1	11.1

Fig. J: Distance clips OLC in connection with TEXParts top apron cradle (opening X in mm)

Top aprons for PK 5000

The dimensions of top aprons have been standardised and are determined by the type of OH top apron cradle and the diameter of the top apron roller used (see fig. K).

Top apron cradles OH Ref. No.	Gauge Tw [mm]	Top aprons general desig-nation	Inner Ø [mm]	Top roller Type Ref. No.	Basic equipm.* Distance clips Ref. No.
OH 5022-1259 297	110	PR 40	37.0	**LP 315-0025 228**	**OLC-0964 104** **OLC-0964 106** **OLC-0964 108**
OH 5042-1259 506	110	PR 4010	43,5	**LP 317-0025 228**	**OLC-0964 104** **OLC-0964 106** **OLC-0964 108**
OH 5245-1259 478	110	PR 4011	52,7	**LP 317-0013 011**	**OLC-0964 104** **OLC-0964 106** **OLC-0964 108**

* Distance clips are not included in standard OH supply.

Fig. K: Range of top apron cradles, top aprons and distance clips for PK 5000 weighting arms

Top roller cots

When freshly covered and ground, the rear and front top rollers of the PK 5025-1259 471 have a diameter of 28 mm. Due to the bigger rear and front top roller diameters (35 mm), the PK 5035-1259 473 is mainly used for wider fibre ranges.
The use of a "travelling top clearer hose" is principally possible for all PK 5000-versions. If weighting arms PK 5035 are used with top roller diameters of 35-25-35 mm, lateral clearer roller holders should be employed.
Quality and type of fibre material to be spun and running properties are decisive for the choice of cot. For top roller cots (rear, front - LP 315), a Shore hardness of 83° in usual. As apron top roller, the LP 315 with cot (25 mm diameter) is used. TEXParts recommends cots with Shore hardness 80°.

Grinding
Cot grinding intervals depend on the following:
- cot quality
- type of fibre material
- finishing agents or other additives
- climatic conditions
- weighting pressure of the top roller
- top roller running time.

Grinding the spinning cots must not reduce the cot diameters by more than 3 mm. Within this diameter reduction range, no re-adjustment of the weighting arm height is necessary. The cot of the apron top roller LP 315 may not be ground, as the top apron dimensions are matched to apron top rollers of fixed diameters.

Bottom apron nose bar

The bottom apron nose bar supports the bottom apron as it passes through the front zone. The recessed shape of the nose bar provides good fibre guidance and control through the double-apron unit.
The three different top apron cradle sizes OH 5022, OH 5042 and OH 5245 are to be matched up with the corresponding bottom apron nose bars (see chapter 5, page 66-67).

Condensers

In speed frame drafting systems, the task of the condensers is to evenly fold flank fibres back into the fibre material. The condenser should be neither too narrow, nor too wide in order to avoid possible faults in the drafting process (see fig. M).
For reasons of process reliability, closed condensers are recommended for use on speed frames, with the exception of the front zone condenser. Favourable cross-section ratios for the delivery aperture of closed condensers (height x width) of 1:4 or 1:5 have proved their worth.

Rear roving guide
The rear roving guide 1 is to be positioned as close as possible to the rear pair of rollers (see figs. L/M). When selecting rear roving guide, take the position and type of the roving-guide rail into account. If the opening widths have been correctly chosen, any tangled sliver portions will be smoothed out and the fibre material will flow unchecked.

Rear zone condenser
The rear zone condenser 2 is positioned in front of the double-apron unit (see fig. L). The lower edge of the front aperture lies on the drafting plane. Its task is to lightly gather the fibre material before it enters the front zone or the double-apron unit and gently fold any flank fibres which may have spread outwards back into the sliver body. Make sure that the opening width of the rear zone condenser is not too small, otherwise faulty drafting may occur.
The simplest and most reliable method of checking whether the passage aperture of the rear zone condenser has been correctly selected is shown in fig. M.

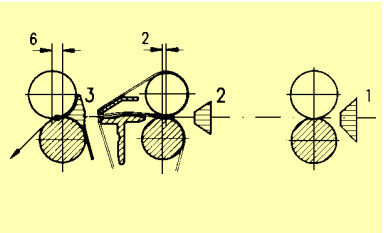


Fig. L: Rear and front overhang of top roller alignment of roving guides resp. condensers

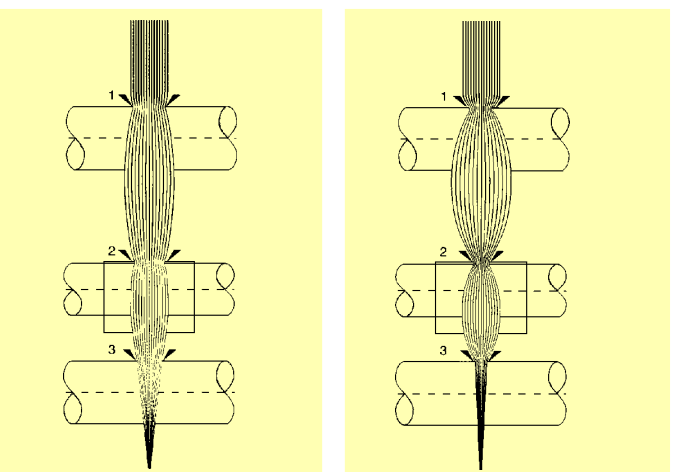


Fig. M: Correct opening width (left) and too narrow opening width (right) of condenser

Front zone condenser

The use of front zone condensers in speed frame drafting systems has become generally accepted. Condensers open at the bottom have proved particularly useful.

The front zone condenser 3 gathers outspread flank fibres and returns them to the sliver (see fig. M). Subsequently the spinning delta is made smaller and roving breakages, lapping and fly formation are reduced. Particular care should be taken to precisely match the opening widths of the condensers not only to the roving gauge but also to the fibre characteristics (see table below). In-house trials should be carried out to do this.

Drafting on cotton speed frames with weighting arms PK 1500-series

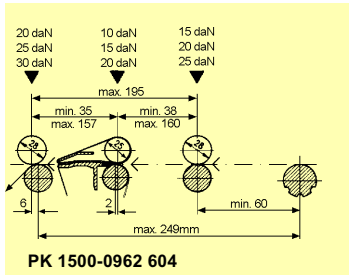
Series PK 1500 weighting arms are intended for three-roller and four-roller double -apron drafting systems on cotton speed frames. They are suitable for spinning cotton, man-made fibres or blends thereof types up to approx. 60 mm length.

The PK 1500 weighting arm series comprises types PK 1500-0962 604 (28 mm Ø top rollers) and PK 1500-0962 602 (35 mm Ø top rollers) for three-roller double apron drafting systems and type PK 1500-0001 938 (28 mm Ø top rollers), which is designed for four-roller double-apron drafting equipment.

The four-roller version differs from the three-roller version in having an additional condensing zone between the roller pairs I/1 and II/2 (see figs. A/B).

By deliberately condensing the fibre material in this zone, a reduction in the spinning delta is achieved, thus improving the incorporation of the fibres into the roving. This results in the following important advantages:

- reduced number of thread breakages (improved process reliability)
- increased efficiency
- greater package density at speed frame bobbin thanks to the more compact roving.
- reduced fly formation.



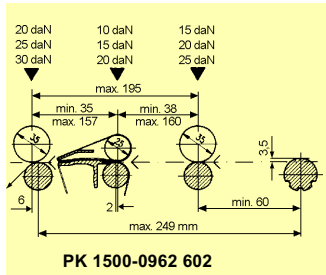


Fig. A: Drafting arrangements PK 1500, 3-roller version

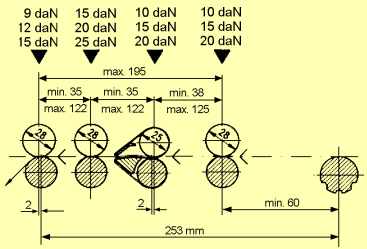


Fig. B: Drafting arrangement PK 1500, 4-roller version

Sliver

The sliver counts normally used in mills are between approx. 3.4 and 4.6 ktex (Nm 0.30 - Nm 0.22). Sliver counts in this range guarantee ideal speed frame drafting. It is not recommended to process slivers of 3 ktex or finer on speed frame drafting systems due to lacking fibre cohesion and the resultant risk of faulty drafting during sliver feed from can to drafting system.
The maximum sliver count may not exceed 6 ktex (Nm 0.17).

Draft sizes

Total draft
The amount of total draft on a four- or three-roller double-apron drafting system is between 5- and 18-fold, a range of 5-12-fold providing best results. Drafts greater than 12-fold are rarely used as the total draft on a ring frame should be as high as possible, because of yarn quality reasons.
Drafts lower than 5-fold should not be applied. For the four-roller double-apron drafting system a draft of approx. 1.05 is used as a support for condensation between the roller pair I/1 and II/2.

Rear draft
The task of the rear draft is to tension the fibre material in the rear zone and draw it parallel. Rear drafts of between 1.12 and 1.18 are normally used in practice.

Draft fields

Front zone
The front zone settings depend on the type of top apron cradle, the diameters of top and bottom rollers and the space required for the front zone condensers to being used. The adjustment values will be found in the following figures C and D. A precondition for good spinning results is the correct adjustment of the individual drafting system elements. A greater fibre mass of the sliver leads to increased friction of the fibres and thus to effective auto-control during the drafting process.
Special notice must be taken here to the selection of the correct width for opening X. Excessive control in the front zone may lead to faulty drafting or undrafted sections. Undrafted sections in the roving may, however, also be caused by selecting a freegauge distance that is too narrow.
Should such drafting faults occur, the freegauge can be regulated by adjusting the overhang of the front top roller or by regulating the bottom roller distance. If this is not enough even when high pressure is set on the front top roller, the front zone of the speed frame must be extended.

Rear zone
The rear zone setting depends on the fibre mass, fibre length and drafting qualities of the fibre material to be spun.

Zone settings and maximum fibre length for PK 1500

Weighting arm	Top apron cradle	Bottom roller diameter I	II	III	IV	Draft field HF	VF min	VF mm usual[1]	Total draft field GF max.	Fibre length mm max.
PK1500-0001 938	OH 514	28.5	28.5	28.5	28.5	48	45	46...50	193	45
PK1500-0962 604	OH 514	30/32	25/27	30/32	-	49	40	60...80	189	45
	OH 534					60	40	60...80	189	54
	OH 524					76	40	70...90	189	60
PK1500-0962 602	OH 514	30/32	25/27	30/32	-	49	40	60...80	189	45
	OH 534					60	40	60...80	189	54
	OH 524					76	40	70...90	189	60

[1] Recommendations for widest possible setting

Fig. C: Zone settings and maximum fibre length PK 1500

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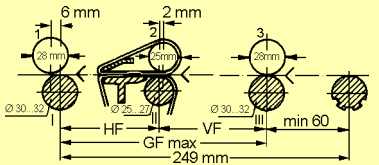
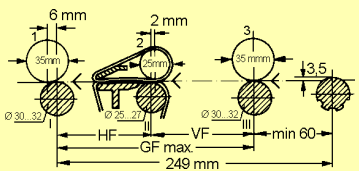
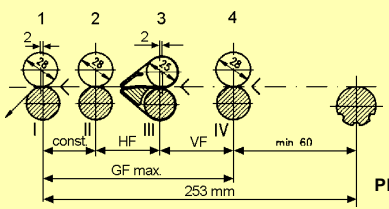


PK 1500-0962 604



PK 1500-0962 602



PK 1500-0001 938

Fig. D: Zone settings PK 1500

Roller loading

In speed frames, the pressure stage to be set on the weighting elements is determined by the type of fibre, the fibre mass in the drafting zone and the total draft that is issued. Basically, the greater the fibre mass is, the higher the loading pressure should be.
The various loads set on the weighting elements are matched to their respective positions (rear, apron and front rollers). The fact that the weighting elements of the PK 1500 are adjustable in three pressure stages (see fig. E) means that they can be adapted to all spinning conditions commonly found in practice.
As a basic setting on all weighting elements we recommend the middle pressure range "green". Depending on requirements, a different pressure stage can be set at the individual elements.
The processing of man-made fibres and blends generally requires higher loading pressures. Loading pressures that are too low may lead to faulty drafting resulting in pull-throughs and undrafted sections. By comparison with the three-roller drafting system, lower front roller pressures are used on four-roller drafting system as only a tensioning draft of 1.05 is employed in the condensing zone.

	Load stages [daN] Front1	Middle2	Middle 3	Rear 3(4)
Types				
PK 1500-0001 938	9-12-15	15-20-25	10-15-25	10-15-20
PK 1500-0962 604	20-25-30	10-15-20	--	15-20-25
PK 1500-0962 602	20-25-30	10-15-20	**--**	15-20-25
Colour [1)]	**b - g- r**	**b- g -r**	**b -g -r**	**b -g -r**

Fig. E: Load stages for PK 1500-series

[1)] colour on the eccentric load selector: b = black, g = green, r = red

Load adjustment

Load adjustment is effected by means of an eccentric load selector activated by a special wrench (fig. F). Three load stages can be set on each weighting element. The three different load settings can be identified by the code colour on the eccentric load selector on top of the guide arm.

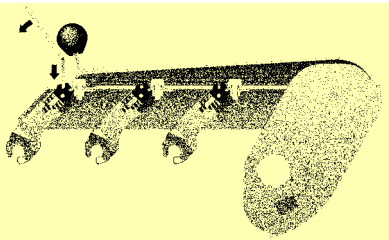


Fig. F: Load adjustment of weighting elements PK 1500

Top apron cradle system

Weighting arms of PK 1500 series can be fitted with short (OH 514), medium (OH 534) or long (OH 524) top apron cradles.

Top apron cradles OH for		Applications of the cradles
PK 1500-0962 604 PK 1500-0962 602	**PK 1500-0001 938[1)]**	
OH 514[2)] short	**OH 514 short**	Cotton and man-made fibres, pure / blends, of up to approx. 45 mm max. fibre length.
OH 534 medium	**-**	Cotton and man-made fibres, pure / blends, of up to approx. 54 mm max. fibre length.
OH 524 long	**-**	Man-made fibres of up to approx. 60 mm max. fibre length.

[1)] For fibre lengths up to about 50 mm
[2)] With diameters of the top rollers 35-33-35 mm OH 514 (short) is not to be used.

Opening X at apron release point

The opening between the guide edge of the top apron cradle and the bottom apron nose bar determines the intensity with which the fibre material is controlled and guided between top and bottom aprons. In order to be able to adapt drafting conditions to good fibre control and fibre guidance corresponding to the fibre mass present in the front zone, the so-called opening X can be regulated via the top apron distance clips.
The opening X is adjusted via special distance clips affixed to the guide edge of the top apron cradle. To distinguish them and to make the opening X simpler to check, the top apron distance clips have different colours (see fig. H).

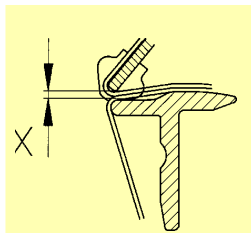


Fig. G: Opening X

Distance clips OLC	Top apron cradle for PK 1500				
	OH 514 (short)	OH 534 (medium)		OH 524 (long)	
	Apron roller 25 mm Ø	Apron roller 25 mm Ø	Apron roller 33 mm Ø	Apron roller 25 mm Ø	Apron roller 33 mm Ø
white 0964 104	3.5	3.6	3.3	3.6	3.3
grey 0964 105	4.0	4.1	3.8	4.1	3.8
black 0964 106	4.6	4.6	4.3	4.6	4.3
orange 0030 491	5.0	5.0	4.6	5.0	4.6
beige 0964 107	5.4	5.4	5.0	5.4	5.0
green 0964 108	6.5	6.5	6.1	6.4	6.1

Fig. H: Distance clips OLC in connection with TEXParts top apron cradle (opening X in mm)

Top aprons for PK 1500

The dimensions of top aprons have been standardised and are determined by the type of OH top apron cradle and the diameter of the top apron roller used (see fig. I).

Top apron cradles OH Ref. No.	Gauge Tw [mm]	Top aprons general desig-nation	Inner Ø [mm]	Top roller Type Ref. No.	Basic equipm.* Distance clips Ref. No.
OH 514-0962 744	82,5	PR 40	37,0	**LP 317-0013 008**	**OLC-0964 104**
OH 514-0962 745	100	PR 40	37.0	**LP 317-0013 010**	**OLC-0964 106**
OH 514-0962 746	110	PR 40	37.0	**LP 317-0013 011**	**OLC-0964 108**
OH 514-0962 747	130	PR 40	37,0	**LP 317-0013 012**	
OH 534-0962 762	82,5	PR 4010	43,5	**LP 317-0013 008**	**OLC-0964 104**
OH 534-0962 764	100	PR 4010	43,5	**LP 317-0013 010**	**OLC-0964 106**
OH 534-0962 765	110	PR 4010	43,5	**LP 317-0013 011**	**OLC-0964 108**
OH 534-0962 766	130	PR 4010	43,5	**LP 317-0013 012**	
OH 524-0962 753	82,5	PR 4011	52,7	**LP 317-0013 008**	**OLC-0964 104**
OH 524-0962 755	110	PR 4011	52,7	**LP 317-0013 011**	**OLC-0964 106**
OH 524-0962 756	130	PR 4011	52,7	**LP 317-0013 012**	**OLC-0964 108**

*Basic equipment of distance clips. Clips are not included in standard OH supply.

Fig. I: Range of top apron cradles, top aprons and distance clips for PK 1500 weighting arms

Top roller cots

When nowly covered and ground, the rear and front top rollers of the PK 1500-0962 604 have a diameter of 28 mm. Due to the bigger rear and front top roller diameters (35 mm), the PK1500-0962 602 is mainly used for longer fibre ranges (60 mm).
The use of a "travelling top clearer hose" is generelly possible for all PK 1500 versions. If weighting arms PK 1500-0962 602 are used with top roller diameters of 35-25-35 mm, lateral clearer roller holders should be employed.
Quality and type of fibre material to be spun and running properties are decisive for the choice of cot. For top roller cots (rear, front - LP 315), a Shore hardness of 83° in usual. As apron top roller, the LP 317 with cot is used. TEXParts recommends cots with Shore hardness 80°.

Grinding

Cot grinding intervals depend on the following points:
- cot quality
- the type of fibre material
- finishing agents or other additives
- climatic conditions
- weighting pressure of the top roller
- top roller running time.

Grinding the spinning cots must not reduce the cot diameters by more than 3 mm. Within this diameter reduction range, no re-adjustment of the weighting arm height position is necessary. The cot of the apron top roller LP 317 may not be ground, as the top apron dimensions are matched to apron top rollers of fixed diameters.

Bottom apron nose bar

The bottom apron nose bar supports the bottom apron as it passes through the front zone. The recessed shape of the nose bar provides good fibre guidance and control through the double-apron unit.
The three different top apron cradle sizes OH 5022 (OH 514), OH 5042 (OH 534) and OH 5245 (OH 524) are to be matched up with the corresponding bottom apron nose bars (see chapter 5, page 66-67).

Condensers

In speed frame drafting systems, the task of the condensers is to evenly fold flank fibres back into the fibre material. The condenser should be neither too narrow, nor too wide in order to avoid possible faults in the drafting process (see fig. K).
For reasons of process reliability, closed condensers are recommended for use on speed frames, with the exception of the front zone condenser. Favourable cross-section ratios for the delivery aperture of closed condensers (height x width) of 1:4 or 1:5 have proved their worth.

Rear roving guide

The rear roving guide 1 is to be positioned as close as possible to the rear pair of rollers (see fig. J). When selecting rear roving guide, take the position and type of the roving-guide rail into account. If the opening widths have been correctly chosen, any tangled sliver portions will be smoothed out and the fibre material will flow unchecked.

Rear zone condenser

The rear zone condenser 2 is positioned in front of the double-apron unit (see fig. J). The lower edge of the front aperture lies on the drafting plane. Its task is to lightly gather the fibre material before it enters the front zone or the double-apron unit and to gently fold any flank fibres which may have spread outwards back into the sliver body. Make sure that the opening width of the rear zone condenser is not too small, otherwise faulty drafting may occur.

The simplest and most reliable method of checking whether the passage aperture of the rear zone condenser has been correctly selected is shown in fig. K.

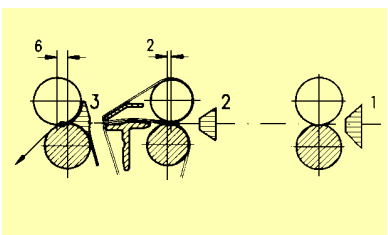


Fig. J: Rear and front overhang of top roller alignment of roving guides resp. condensers

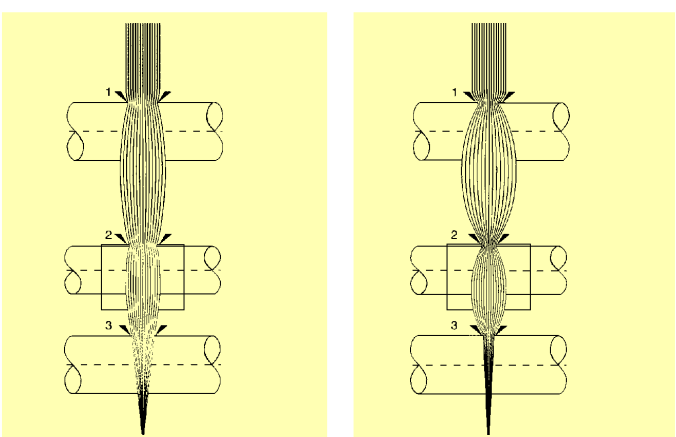


Fig. K: Correct opening width (left) and too narrow opening width (right) of condenser

Front zone condenser

The use of front zone condensers in speed frame drafting systems has become generally accepted. Condensers open at the bottom have proved particularly useful.

The front zone condenser 3 gathers outspread flank fibres and returns them to the sliver (see fig. K). Subsequently the spinning delta is made smaller and roving breakages, lapping and fly formation are reduced. Particular care should be taken to precisely match the opening widths of the condensers not only to the roving gauge but also to the fibre characteristics (see table below). In-house trials should be carried out to do this.

Front zone condenser Ref. No.	Roving gauge	Delivery aperture width and colour of front zone condenser
KL-0998 282	680 tex to 400 tex or Nm 1,5 to 2,5 (Ne 0,9 to 1,48)	6 mm (yellow)
KL-0998 283	1000 tex to 680 tex or Nm 1,0 to 1,5 (Ne 0,6 to 0,9)	9 mm (colourless)
KL-0998 284 **KL-0998 285**	over 1000 tex or Nm 1,0 (Ne 0,6)	12 mm (black) or 16 mm (green)
KL-0000 457	**complete set**	

Drafting on worsted ring frames with weighting arms PK 6000-series Pneumatic load principle

The PK 6000 weighting arm is suitable for spinning wool, man-made fibres and blends of these materials as well as dry-spun bast fibres up to a fibre length of about 200 mm. The 3-line double-apron drafting system works according to the slip-draft principle, with a recessed roller as the top apron roller. Depending on the type of preparation, twisted roving or French-type roving can be fed to the drafting system.
The weighting pressures on the top rollers are set infinitely and centrally using a non-oiled compressed air supply system. The latter is installed on the ring spinning frame in the form of a ring main in which the weighting arms are connected. The ring main is supplied with controlled air pressure via a pneumatic unit. The saddle load onto the top rollers depends on the pressure in the ring main and on the size of the pressure plates in the weighting elements. The PK 6000 weighting arm permits the central partial load relief when the compressed air system is switched off.

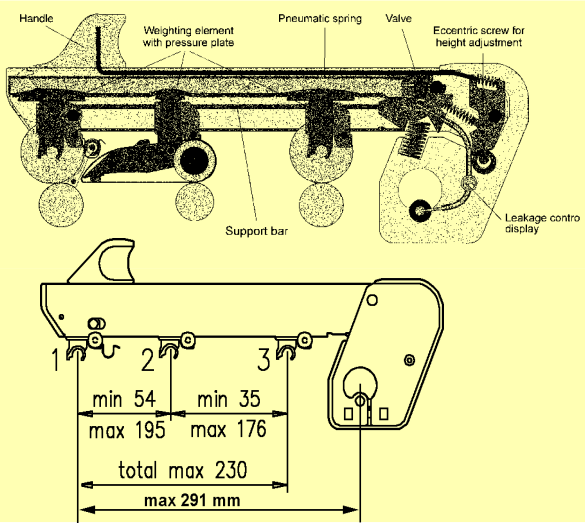


Fig. A: Weighting arm PK 6000

Draft sizes

Total draft
The amount of total draft depends on the type and composition of the fibre material to be spun. The usual total draft ranges shown in fig. B for the various types of material have proved practicable. Precisely-applicable draft sizes must be determined by in-house trials, taking account of responsible frame-operating conditions and ideal yarn quality.

Fibre material	Usual number of total drafts	Remarks
Wool	12-30	In contrast to French-type rovings, higher total drafts should be selected for twisted rovings.
Wool/man-made fibres	18-35	
Man-made fibres		In the case of blends, higher total drafts become possible as the proportion of man-made fibre increases
Cut staple	20-40	
Filament tow	30-60	

Fig. B: Total draft range

Rear draft
In three-roller double-apron drafting systems with controlled slip draft of the fibre (recessed roller) it is necessary to pre-tension the roving at the rear zone. The roving should be guided into the double-apron unit in a well-stretched condition. Rear drafts between 1.10 and 1.25 have showngood results.

Draft fields

Total draft field
In the PK 6000 the maximum total draft field GF_{max} = 223 mm. The total draft field can be defined as approximately:

GF = maximum fibre length + approx. 15 %

Rear zone setting

The rear zone setting (VF) is generally dependent on the maximum fibre length. To determine the rear zone setting, the standard dimension (main draft = 105 mm) must be deducted from the total draft field GF ascertained:

VF = GF (calculated) - 105 mm (standard dimension)

With higher-twisted yarn, it may be necessary to set a higher rear zone distance. In this connection, we recommend that in-house tests be carried out.

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Front zone setting

The front zone setting (HF) is determined by the top apron cradle system OH 6022 in the PK 6000. For the bottom roller diameters given in fig. C, the front zone setting always remains constant at 105 mm.
To improve the apron running properties, the top apron roller is set with a 2 mm rear overhang. When front zone condensers are used, the front top roller is set with 7 mm front overhang. Without front zone condenser, a smaller front overhang can also be selected.

Draft-field widths and maximum fibre length

Weighting arm	Top apron cradle	Bottom roller Ø I	II	III	Draft field mm HF min	VF min	Tot. draft field GF mm max.	Fibre length max. mm
PK 6000	**OH 6022**	35/40	27/30.5	35/40	105	57 [1)]	223	200

[1)] Without rear zone condenser the rear zone setting reduces to 45 mm at min.

A) With long bottom apron system

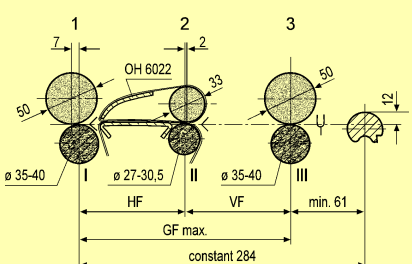


Fig. C: Draft field width and maximum fibre length

Roller loading

The weighting pressure onto the top rollers can be set infinitely and centrally through the working pressure and thus, an optimum adjustment to the fibre material is possible.
Due to the pneumatic spring in the weighting arm the operating pressure is transformed into the saddle load directly via the pressure plates of the individual weighting elements.
The roller loads on rear, apron and front top rollers are interlinked at a fixed ratio. This ratio is determined by the pressure plate size of the weighting elements. When the working pressure is changed, this ratio remains constant.
The correlation between the set working pressure and the saddle load of all top rollers in the weighting arm is shown as a graph in fig. D.
In most applications, a working pressure of 2.5 - 3.0 bars is sufficient. In the case of fibre materials with poor drafting properties, a weighting pressure of 3.0 to 4.0 bar can be of advantage.
In the case of fibre material with low fibre cashesion or pressure-sensitive fibres, a weighting pressure of 1.5 to 2.5 bars is recommended. The fibres are not gripped at the top apron roller designed as a recessed roller. As a result of the system design the weighting pressure for the top apron roller is therefore lower than for the rear and front top roller (see lower characteristic line in graph of fig. D).

Partial load relief

The weighting arms PK 6000 offer the possibility of central partial load relief. This is applied to the top rollers thanks to the inherent elasticity of the pneumatic spring. It takes effect automatically when the ring frame is turned off by the main switch.
This prevents the impression of milled surfaces on the front top roller, which could cause moiré-formation and consequent reductions in yarn quality.
The partial load has been selected in such a way that it reliably prevents intrusion of the yarn twist into the draft field, and even soft top roller cots are protected from permanent deformation (no moiré-effect!). After switching on the ring frame, the pre-set weighting pressure builds up automatically. When this pressure has been reached, the weighting arms are ready for operation.

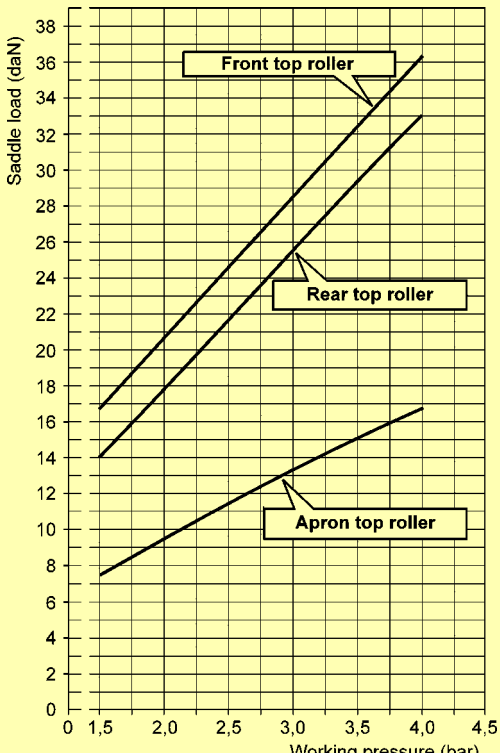


Fig. D: Correlation between saddle load and set working pressure

Top apron cradle system

The top apron cradle system OH 6022 is available for the weighting arm PK 6000. The design principle of the OH 6022 permits compensation of apron tolerances with its individualised apron tensioning.
The individualised apron tensioning results in low strain on the fibre and simultaneously in gentle fibre guidance during drafting.
The low-friction apron running ensures a low-drive torque and long apron service-life.
The top aprons can be changed quickly and easily without removal of the top apron cradle system, even while still installed in the ring frame.
The contact pressure on the distance clip OLC is introduced directly via the apron roller weighting element.
Fig. E shows the top apron cradle OH 6022 with distance clip selection, the appropriate top apron rollers and the appropriate top apron designations.

Top apron cradle types Ref. No.	Gauge Tw [mm]	Top apron roller	Top apron	Basic equipm.* Distance clips	Colour
OH 6022	75	LP 314-1253 740	PR-1253 678	OLC-0964 120	black
OH 6022	82.5	LP 315-1253 744	PR-0022 858	OLC-0004 587	beige
				OLC-0004 588	green

* Distance clips are not included in standard OH supply

Fig. E: Top apron cradles and distance clips for PK 6000

Opening X at apron release point

The opening between the guide edge of the top apron cradle and the bottom apron nose bar determines the intensity with which the fibre material is controlled and guided between top and bottom aprons (see fig. F).
The opening X is adjusted via special distance clips affixed to the guide edge of the top apron cradle. To distinguish them and to make the opening X simpler to check, the top apron distance clips have different colours (see fig. G). The opening depends on various factors, mainly on the fibre material fed in the drafting system and the count of the yarn to be spun.
If undrafted yarn sections should leave the drafting system when a new lot is started to be processed, the load on the top roller should be increased. If the drafting problems cannot be solved in this way, the opening X should be widened by inserting a larger distance clip.
Practice has shown that, in general, three distance clips are sufficient for the entire range of counts handled in worsted mills (OLC-0964 120, OLC-0004 587, OLC-0004 588). The OLC clips available and listed in the following fig. G.

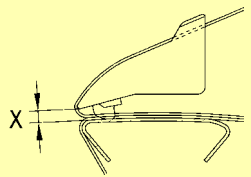


Fig. F: Opening X

Distance clip OLC Ref. No.		Opening X [mm] with top apron cradle OH 6022
0964 120	black	2.6
0004 587	beige	3.7
0004 588	green	4.1
0004 589	pink	5.6
0964 123	blue	8.0

Fig. G: Distance clips OLC and opening X

Top rollers and cots

In the PK 6000-weighting arm, the rear and front top rollers with newly fitted cots should have 50 mm cot diameters after first grinding. The cot diameter may be reduced by up to 3 mm by re-grinding. Within this permissible range the load on the top rollers of the PK 6000 remains almost constant and it is not necessary to readjust the height of the weighting arm. The **system diameter of the top apron roller is 33 mm** and must be kept precisely on account of the specified apron length.
The top rollers are supplied as standard as top rollers without cot. If required, however, TEXParts can also supply top rollers with cot fitted and ground. The cot quality can be specified by the customer. The cot diameters of top rollers with newly fitted cots are shown in fig. H.

The grinding cycles for the rear and front top rollers depend on:
- cot quality
- weighting pressure
- type of fibre to be processed
- production speed
- finishing agents or other additives
- climatic conditions
- top roller operating time.

In addition, in selecting the cot quality to suit the fibre, the cot should have a accurately shaped edge, true running and a good-grip surface. For rear and front top rollers, cots with a Shore hardness of 80° to 85° are recommended, and for apron top rollers 75° to 80°. Apron top rollers require, in view of differing roving yarn counts and differing fibre properties, different recess depths (T) (see fig. H).
Optimum values for the recess depths must be ascertained with due allowance for the feed material and the fibre properties by means of in-house tests performed by the spinning mills themselves.

Survey of dimensions of bosses and cots

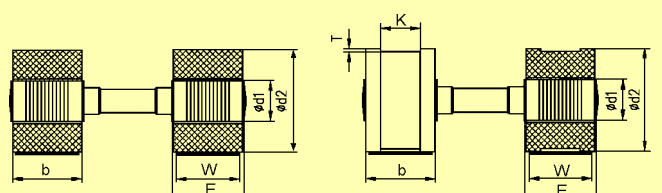
Rear and front top roller

Top roller	d_1	d_2	b	E
LP 314	19	50	30/32	34

Top apron roller as recessed roller

Top roller	d_1	d_2	W	b	K	T	Feed sliver count
						0.5	for French-type rovings of approx. 1000 tex (Nm 1.0) and finer
						1.0	for French-type rovings of approx. 1000 tex (Nm 1.0) and coarser, twisted roving
LP 315	19	33	40	40	20		
LP 314	19	33	32	34	18		approx. 1000 tex (Nm 1.0) and finer
						1.5	for twisted rovings of approx. 1000 tex (Nm 1.0) and coarser sizes, also for fibre materials with poor drafting properties

d_1 = boss diameter of version with cot [mm]
d_2 = diameter over cot [mm]
b = cot width [mm]
W = apron width [mm]
E = width of boss [mm]
T = recess depth [mm]



Boss and cot dimensions of rear and front top rollers

Boss and cot dimensions of top apron rollers

Fig. H: Top rollers with cot and boss dimensions for PK 6000

Recessed rollers

The recess depth of the top apron roller has a crucial effect on the intensity of fibre guidance and fibre control. It is an important instrument for achieving optimum yarn quality. Selected recess depths that are too low can impair both yarn quality and running properties. In practice, the recess depths listed in fig. J on the following page are used.
If high loads are applied, an adequate recess depth must be assured to compensate for the flattening of the cot of the top apron roller.

Mono-clearer roller system

For cleaning the front top roller and preventing laps, a mono-clearer roller system is available for the PK 6000 weighting arm (fig. I).
The mono-clearer roller system is guided by a swivelling, spring-loaded clearer roller holder and lightly pressed against the top roller. Its exact parallel guidance ensures an excellent cleaning effect. It can be detached from the clearer roller holder for quick and easy cleaning.

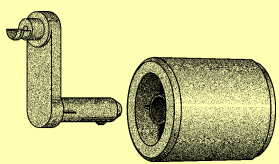


Fig. I: Mono-clearer roller system for PK 6000

Handling the PK 6000

The PK 6000 weighting arm can be fitted quickly and easily to the ring frame. The arm is fixed on the support rod from the front of the ring frame. It is easily accessible from the side for height adjustment at the bracket using an eccentric setting cam.

Opening the arm
The weighting arm PK 6000 can be opened at any time by lightly pressing the handle rearwards (see fig. J). When the arm is opened, it is bled and the pressure is taken off the weighting elements. The arm then opens by itself thanks to a built-in spring.

Closing the arm
The arm can be closed easily and without exerting force. Grip the arm by its handle and click it downwards with a short jerk onto the bottom rollers. At the same time, pull the handle forwards. The arm will then lock automatically (see fig. J).
The mark on the top of the arm is covered by the handle and is no longer visible when the arm has been closed properly. If the arm has been closed properly, air flows into the pneumatic spring and applies pressure to the weighting elements.

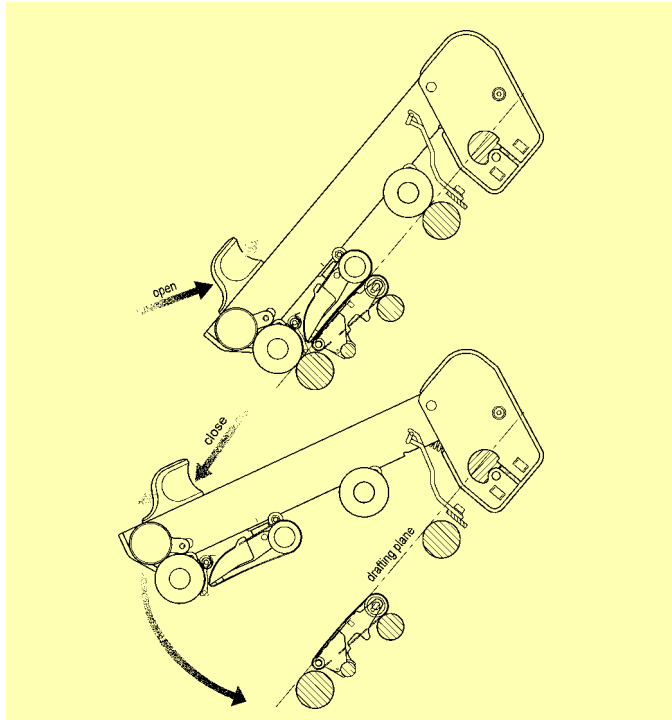


Fig. J: Use of the handle to open and close the PK 6000

Changing of top rollers and top apron cradle

Replacement of the top rollers and the top apron cradle and changing of the aprons can be performed easily and without major effort.
The **removal of the top rollers and of the top apron cradle** is achieved by a **simple lateral rotary movement downwards** (see fig. K).
The top roller/top apron cradle is installed in reverse order by light pressure from underneath until it clicks into the weighting element.

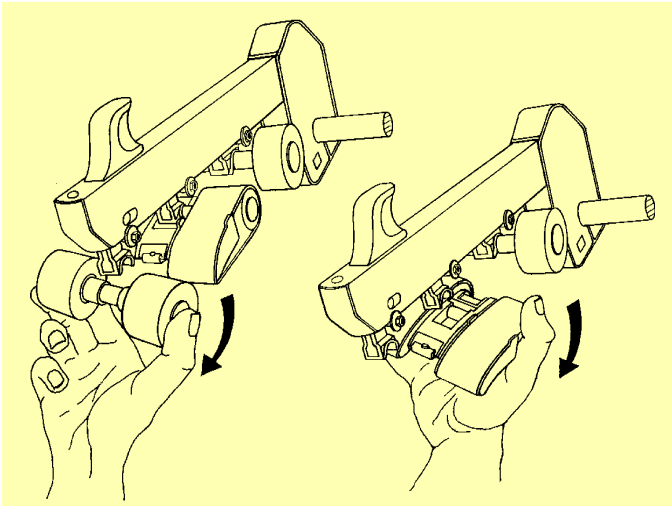


Fig. K: Removal of top rollers LP and top apron cradle system OH 6022

Bottom apron nose bar

Long bottom apron system

The bottom apron nose bar supports the bottom apron as it passes the front zone. The slightly convex shape of the nose bar provides good fibre guidance and control in the main drafting zone. The height of the nose bar generally is 2.5 mm above the drafting plane 1 (see fig. L). In special cases a higher nose bar position (with interchangeable washer 2) of up to approx. 4 mm may be selected. A lower nose bar position (bar on a level with drafting plane) may be more favourable in the case of fibres with high fibre adhesiveness.

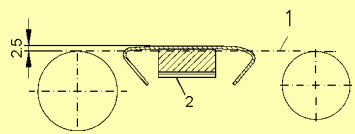


Fig. L: Drafting plane with long bottom apron system

Condensers for PK 6000

Front zone condenser

The front zone condenser A is fitted in the main drafting zone between the apron unit and the front pair of rollers (see fig. M). The task of the condenser is to selvedge the fibre material coming from the apron unit and prevent the flank fibres from spreading out. The front zone condenser is suspended from the guide head of the front weighting element by means of a special securing spring.
Care must be taken not to restrict the front zone condenser's range of play, as this may lead to a drop in quality.

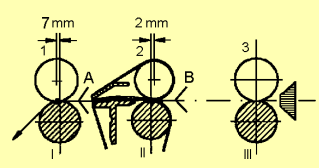


Fig. M: Front and rear overhang of top rollers and arrangement of condensers

Rear zone condenser
The rear zone condenser B is employed in the drafting system of worsted ring frames (see fig. N). We recommend version KL-0997 469. This condenser is positioned ahead of the apron unit. Its shape is selected in such a way that the roving is smoothed as it runs into the following double-apron unit. The rear zone condenser is coupled to the rear roving guide and copies the latter's traverse motion.
The task of the rear zone condenser is to ensure that the roving only passes through the apron roller pair within the recessed portion of the upper apron roller. The traverse motion must be adjusted in such a way that this condition can reliably be fulfilled.

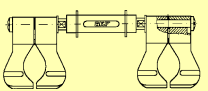
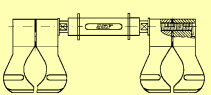
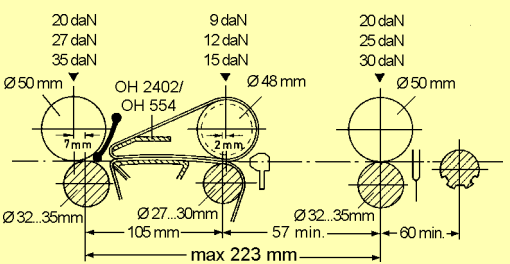
Front zone condenser Ref.No.	Gauge Tw in mm	Remarks	Symbol
KL-1248 233 **KL-1248 234**	75 82.5	Front zone condenser Pendulum secured by cheese-head screw	
KL-1246 243 **KL-1246 070**	75 82.5	Front zone condenser Pendulum with spring suspension	
Rear zone condenser Ref. No. KL-0997 469			

Fig. N: Condensers for PK 6000

Drafting on worsted ring frames with weighting arms PK 1601-series

TEXParts PK 1601-series weighting arm is mainly intended for three-roller double-apron drafting systems on worsted ring frames. **PK 1601 weighting arm** is suitable for spinning wool, man-made fibres or blends thereof types as well as dry-spun bast-fibres **up to approx. 200 mm length**.

A recessed roller is used as the apron roller. Thus the drafting system works according to the slip-draft method having a single draft-field. Depending on the respective preparation method, twisted or French type rovings can be processed on the drafting system.



PK 1601-0962 670

Fig. A: PK 1601 for worsted ring frames

Draft sizes

Total draft
The amount of total draft depends on the type and composition of the fibre material to be spun. The usual total draft ranges shown in fig. B for the various types of material have proved practicable. Precisely-applicable draft sizes must be determined by in-house trials, taking account of responsible frame-operating conditions and ideal yarn quality.

Fibre material	Usual number of total drafts	Remarks
Wool	12-30	In contrast to French-type rovings, higher total drafts should be selected for twisted rovings.
Wool/man-made fibres	18-35	
Man-made fibres		In the case of blends, higher total drafts become possible as the proportion of man-made fibre increases
Cut staple	20-40	
Filament tow	30-60	

Fig. B: Total draft range

Rear draft
In three-roller double-apron drafting systems with controlled slip draft of the fibre (recessed roller), it is necessary to pre-tension the roving at the rear zone. The roving should be guided into the double-apron unit in a well-stretched condition. Rear drafts between 1.10 and 1.25 have shown good results.

Draft fields

Total draft-field length
For the PK 1601 the maximum total draft-field length GF_{max} = 223 mm.
The total draft-field length can be approximately determined as follows:

GF = maximum fibre length + approx. 15 %

Front zone setting
In the case of PK 1601 weighting arm, the front zone setting (HF) is determined by the top apron cradle OH 2402 or OH 554. For the bottom roller diameters shown in fig. C, the front zone setting is always constant, amounting to 105 mm.
To support apron running properties, the apron top roller is set at a rear overhang of 2 mm. If front zone condensers are used, the front top roller is set at 7 mm front overhang (see fig. C). A smaller overhang may be selected, if no front zone condenser is employed.

Rear zone setting
The rear zone setting (VF) basically depends on the maximum fibre length. In order to determine the rear zone setting, the standard dimension of the front zone (105 mm) must be subtracted from the total draft-field length already determined.

VF = GF (calculated) **- 105 mm** (standard front zone length)

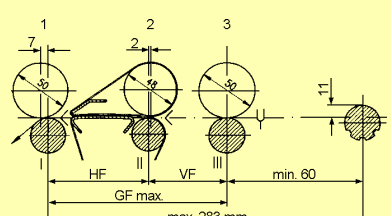
Weighting arm	max. rear zone setting	min. rear zone setting
PK 1601	118 mm	57 mm

In the case of yarns of more twist, longer rear zone settings may be required. Here we recommend in-house trials to be carried out.

Draft-field width and maximum fibre length

Weighting arm	Top apron cradle	Bottom roller Ø [1] I	II	III	Draft field mm HF	VF min	VF usual [2]	Tot. draft field GF mm max.	Fibre length max. mm
PK 1601	OH 2402 OH 554	32/35	25/32	32/35	105	57	>57	223	200

[1] The bottom roller dias. shown are recommended sizes.
[2] Recommendations for widest possible setting.



PK 1601-0962 670

Fig. C: Draft field width and max. fibre length

PRINT CONTENTS END

Roller loading

PK 1601 weighting arm is fitted with three load stages on each weighting element (see fig. D). These are set by turning the relevant eccentric load selector. Experiences have shown that, in the case of PK 1601 arm, setting the middle pressure range (green) at the rear or front top roller is adequate for most applications.
With fibre material that is difficult to draft - man-made fibres, for instance - it may be a good idea to increase pressure to stage 3 (red). Stage I (black) is to be used for fibre material with low fibre drag. If the yarn showsthick, undrafted portions at the exit side of the front pair of rollers, the next-higher load stage should be set on the front top roller.
It is a feature of the system that the fibres are not nipped by the recessed top apron roller. Select the load stage which guarantees even, reliable running of top and bottom aprons. Excessive loads on the apron roller pair may reduce the depth of the top apron roller recess.

Weighting pressures of individual elements

Colour marking of eccentric load selector	Front 1 PEL-0735 302	Middle 2 PEL-0735 303	Rear 3 PEL-0735 305
black	20 daN	9 daN	20 daN
green	27 daN	12 daN	25 daN
red	35 daN	15 daN	30 daN

Fig. D: Weighting pressures of individual elements

Fig. E: Load adjustment of weighting elements

Partial load relief

PK 1601 weighting arm is equipped with a partial load relief feature (see fig. F). Opening the lever to its first rest position activates the partial load relief. When frames are idle for longish periods, this feature allows the front top roller to be released to the extent of a partial load relief pressure of approx. 5 daN.
This prevents the impression of milled surfaces on the front top roller, which could cause moiré-formation and consequently reductions in yarn quality.

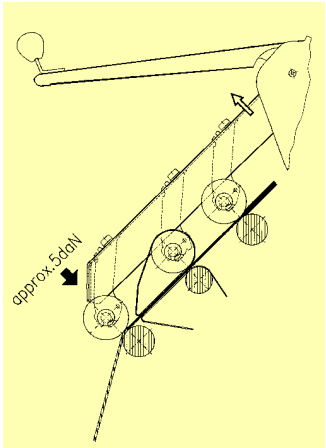


Fig. F: Partial load relief

Top apron cradles

TEXParts weighting arm PK 1601 can be fitted with OH 2402 or OH 554 top apron cradles. For description of top apron cradles see chapter 5, page 58-59.
The newly developed OH 2402 supersedes the previous cradle OH 554 and is **totally compatible** with regard to the latter one **concerning types of top rollers and colour of distance clip** (which indicates openings). Therefore, with the new cradle OH 2402 existing top rollers and distance clips from TEXParts can be used further on without any problems. For the top aprons we recommend to use PR 3217 (gauge 75 mm) and PR 4017 (gauge 82.5 mm). Existing apron sizes with designation PR 32/5 (gauge 75 mm) and PR 40/5 (gauge 82.5 mm) respectively can be used further on with the OH 2402, if the rear overhang of the top apron roller can be adjusted to 3 mm.
Fig. G on the next page shows the top apron cradles, the appropriate top apron designations, the corresponding apron widths as well as the prescribed diameters of the top apron rollers.

Top apron cradle types	Gauge Tw [mm]	Top roller	Top apron	Basic equipm.* Distance clip	Colour
OH 2402	75	LP 316-0013007	PR 3217	OLC-0964 120	black
OH 554	75	LP 316-0013007	PR 32/5	OLC-0004 587	beige
OH 2402	82.5	LP 317-0013008	PR 4017	OLC-0004 588	green
OH 554	82.5	LP 317-0013008	PR 40/5		
OH 554	90	LP 317-0013009	PR 40/5		
OH 554	100	LP 317-0013010	PR 40/5		

* Distance clips are not included in standard OH supply.

Fig. G: Top apron cradles and distance clips for PK 1601

Opening X at apron release point

The opening between the guide edge of the top apron cradle and the bottom apron nose bar determines the intensity with which the fibre material is controlled and guided between top and bottom aprons (see fig. H).
The opening X is adjusted via special distance clips affixed to the guide edge of the top apron cradle. To distinguish them and to make the opening X simpler to check, the top apron distance clips have different colours (see fig. J). The opening depends on various factors, mainly on the fibre material fed in the drafting system and the count of the yarn to be spun.
In case undrafted yarn sections should leave the drafting system when a new lot is started to be processed, the load on the top roller should be increased. If the drafting problems cannot be solved this way, the opening X should be widened by inserting a larger distance clip.
Practice has shown that, in general, three distance clips are adequate for the entire range of counts handled in worsted mills (OLC-0964 120, OLC-0004 587, OLC-0004 588). Available OLC-clips are listed in table I.

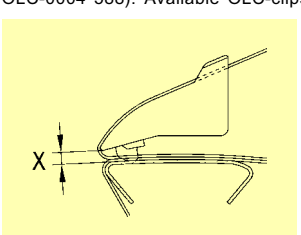


Fig. H: Opening X

Distance clip OLC Ref. No.		Opening X in [mm] with top apron cradle OH 2402
0964 120	black	2.4
0004 587	beige	3.5
0004 588	green	4.0
0004 589	pink	5.4
0964 123	blue	7.5

Fig. I: Distance clips OLC and opening X

Top roller cots

In PK 1601 weighting arm, the rear and front top rollers with newly fitted cots should have 50 mm cots diameters after first grinding. The cot diameter may be reduced by up to 3 mm by re-grinding. Within this permissible range the load on the top rollers remains almost constant and it is not necessary to readjust the height of the weighting arm. The system diameter of the top apron roller is 48 mm and must be kept precisely on account of the specified apron length.
The top rollers are supplied as standard as top rollers without cot. Upon request, TEXParts will also supply top rollers with ready-ground spinning cots. Customers may specify the cot quality. The cot diameters of newly covered top rollers will be found in fig. K on the following page.

Cot grinding intervals of rear and front top rollers depend on the following:
- cot quality
- type of fibrous material
- finishing agents or other additives
- climatic conditions
- weighting pressure of top roller
- top roller running time.

In addition, to selecting the cot quality to suit the fibre, the cot should have accurately shaped edges, true, concentric running behaviour and a good-grip surface.
For the rear and front top rollers we recommend cots with a Shore hardness of 80° to 85°, and for the top apron roller cots with a Shore hardness of 75° to 80°.
In the case of recessed apron top rollers, deviating fibre characteristics may require a variety of recess depths T. Ideal values must be determined by in-house spinning tests of the spinning mill, taking the fibre masses and fibre properties into account.

Recessed rollers

The recess depth of the top apron roller has a crucial effect on the intensity of fibre guidance and fibre control. It is an important instrument for achieving optimum yarn quality. Selected recess depths that are too low can impair both yarn quality and running properties. In practice, the recess depths listed in fig. J on the following page are used.
If high loads are applied, an adequate recess depth must be assured to compensate for the flattening of the cot of the top apron roller.

PRINT CONTENTS END

Survey of dimensions of bosses and cots

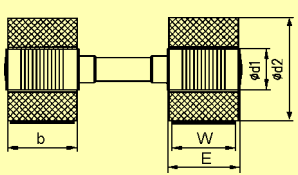
Rear and front top rollers

Top roller	d_1	d_2	b	E
LP 314	19	50	30/32	34

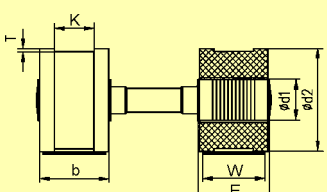
Top apron roller as recessed roller

Top roller	d_1	d_2	W	b	K	T	Feed sliver count
						0.5	for French-type rovings of approx. 1000 tex (Nm 1.0) and finer
LP 316	19	48	32	34	18	1.0	for French-type rovings of approx. 1000 tex (Nm 1.0) and coarser, twisted roving approx. 1000 tex (Nm 1.0) and finer
LP 317	19	48	40	40	20		
						1.5	for twisted rovings of approx. 1000 tex (Nm 1.0) and coarser sizes, also for fibre materials with poor drafting properties

d_1 = boss diameterof version with cot [mm]
d_2 = diameter over cot [mm]
b = cot width [mm]
W = apron width [mm]
E = width of boss [mm]
T = recess depth [mm]



Boss and cot dimensions of rear and front top rollers



Boss and cot dimensions of top apron rollers

Fig. J: Top rollers with cot and boss dimensions for PK 1601

Bottom apron nose bar

Long bottom apron system

The bottom apron nose bar supports the bottom apron as it passes the front zone. The slightly convex shape of the nose bar provides good fibre guidance and control in the main drafting zone. The height of the nose bar generally is 2.5 mm above the drafting plane 1 (see fig. K). In special cases a higher nose bar position (with interchangeable washer 2) of up to approx. 4 mm may be selected. A lower nose bar position (bar on a level with drafting plane) may be more favourable in the case of fibres with high fibre adhesiveness.

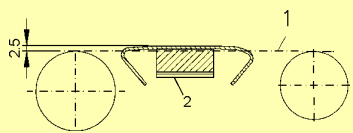


Fig. K: Drafting plane with long bottom apron system

Condensers for PK 1601

Front zone condenser

The front zone condenser A is fitted in the main drafting zone between the apron unit and the front pair of rollers (see fig. L). The task of the condenser is to selvedge the fibre material coming from the apron unit and prevent the flank fibres from spreading out. The front zone condenser is suspended from the guide head of the front weighting element by means of a special securing spring.

Care must be taken not to restrict the front zone condenser range of play, as this may lead to a drop in quality.

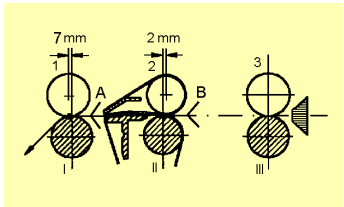


Fig. L: Front and rear overhang of top rollers and arrangement of condensers

Rear zone condenser

A rear zone condenser B is employed in the drafting system of worsted ring frames (see fig. L). We recommend version KL-0997 469. This condenser is positioned ahead of the apron unit. Its shape is selected in such a way that the roving is smoothed as it runs into the following double-apron unit. The rear zone condenser is coupled to the rear roving guide and copies the latter's traverse motion.

The task of the rear zone condenser is to ensure that the roving only passes through the apron roller pair within the recessed portion of the upper apron roller. The traverse motion must be adjusted in such a way that this condition can be reliably be fulfilled.

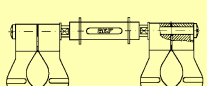
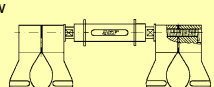
Front zone condenser Ref. No.	Gauge Tw in [mm]	Remarks	Symbol
KL-1248 233 **KL-1248 234** **KL-1248 235**	75 82.5 90-100	Front zone condenser Pendulum secured by cheese-head screw	
KL-1246 243 **KL-1246 070** **KL-1246 244**	75 82.5 90-100	Front zone condenser Pendulum with spring suspension	
Rear zone condenser Ref. No. **KL-0997 469**			

Fig. M: Condensers for PK 1601

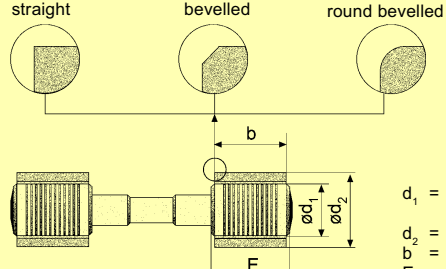
For all TEXParts drafting systems
Survey of boss and cot dimensions

Rear and front top rollers

Weighting arm	Top roller	d_1	d_2	b	E
Cotton ring frames					
PK 2025, PK 2055 **PK 3025**	LP1002[1)]	19	28	25/28	30
PK 2035, PK 2065 **PK 3035**	LP1002[1)]	19	35	25/28	30
Cotton speed frames					
PK 5000, PK 1500 **PK 1600**	LP315	19	28/35	40	40
Worsted ring frames					
PK 1601	LP 314	19	50	30/32	34
PK 6000	LP 314	19	50	30/32	34

[1)] LP 1002 series supersedes LP 302 series top rollers.

Cot edges

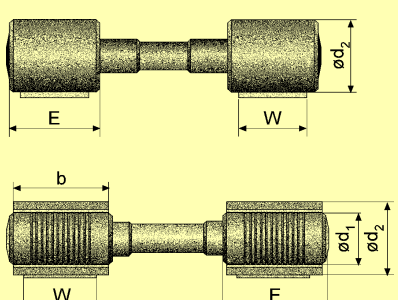


d_1 = diameter of bare boss [mm]
d_2 = diameter of cot [mm]
b = width of cot [mm]
E = width of boss [mm]

Top apron rollers

Weighting arm	Top roller	d_1	d_2	b	E	W
Cotton ring frames						
PK 3025, PK 3035	LP 1003[1]	-	25	-	30	28/32
PK 2025, PK 2035,	LP 303[2]	-	25	-	32	28/32
PK 2055, PK 2065	LP 1002	19	25	30/34	30/34	28/32
Cotton speed frames						
PK 5000, PK 1500 PK 1600	LP317	19	25/33	40	40	40
Worsted ring frames						
PK 6000, PK1601	LP 316	19	48	34	34	32
	LP 317	19	48	40	40	40

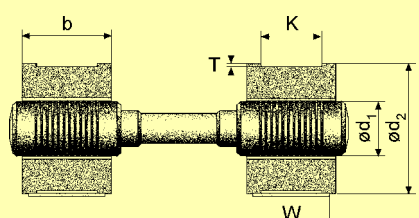
[1] TEXParts supplies the top apron roller LP 1003 with special sleeves as standard.
If requested LP 1002 with cots can also be supplied as top apron roller.
[2] Previous type with steel boss; replaced by LP 1003.



d_1 = diameter of bare boss [mm]
d_2 = diameter of bare boss, sleeve or cot [mm] (see illustr.)
b = width of cot [mm]
E = width of boss or sleeve [mm]
W = width of apron [mm]

Recessed top apron rollers

Weighting arm	Top roller	d_1	d_2	W	b	K	T	Feed material
Worsted ring frames								
PK 1601	LP 316	19	48	32	34	18	0.5	French-type roving approx. Nm 1.0 or finer
PK 6000	LP 314	19	33	32	34	18	1.0	approx. Nm 1.0 or coarser
PK 1601	LP 317	19	48	40	40	20	1.0	Twisted roving approx. Nm 1.0 or finer
PK 6000	LP 315	19	33	40	40	20	1.5	Nm 1.0 or coarser



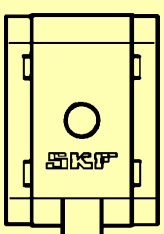
d_1 = diameter of bare boss [mm]
d_2 = diameter of cot [mm]
W = width of apron [mm]
b = width of cot [mm]
K = width of recess [mm]
T = depth of recess [mm]

Bottom roller bearings

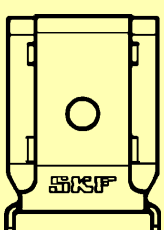
Application

TEXParts bottom roller bearings are being installed in ring spinning frames, draw frames and speed frames. These TEXParts bearing units are fitted with precision-made needle bearings with a high-load-bearing capacity. The two lateral flanges of the inner ring have a knurled surface and provide effective protection against the intrusion of fibers.
The parted glass-fiber reinforced synthetic cage with the cage ends connected by a fitting groove ensures running characteristics like those of a solid cage.

Fixing of the outer ring in the roller stand can be carried out as standard by means of a fixing cap with either center-guide or side lugs. TEXParts bottom roller bearings are being supplied ready-greased with TEXParts grease TG 5, or ungreased on customers' demand. Details for re-lubrication (see chapter 8, page 4).



Bottom roller bearing with central guidance



Bottom roller bearing with lateral guidance

CONVERSION*Plus*

CONVERSION*Plus* is the future-oriented TEXParts´ concept for the modernization of ring spinning frames. It comprises individual modules, which can be selected and combined to fulfill the various application requirements.
In principle CONVERSION*Plus* was conceived for the modernization of the spindle and drafting system areas.

The installation of a modern drafting system with higher drafts and a better drafting accuracy, combined with the utilization of highly efficient high speed spindles, will offer decisive advantages to the spinning mill:

- improvement of the yarn quality
- increase of spindle speed and production output
- reduction of energy consumption.

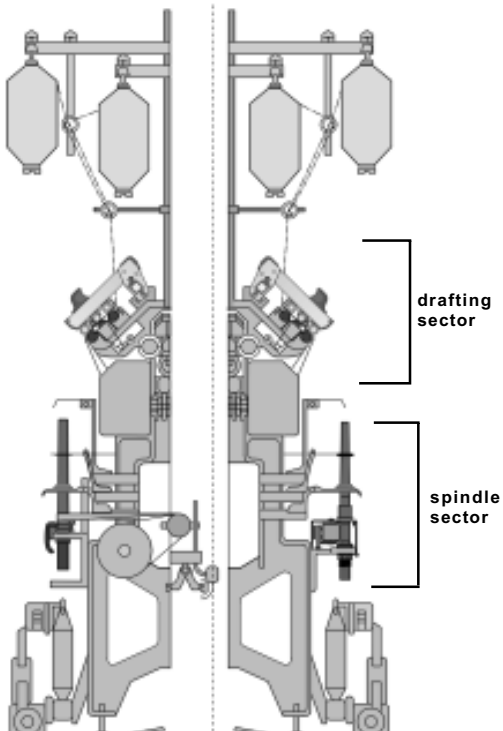
An additional advantage of the CONVERSION*Plus* principle is the fact that for the modernization of ring spinning frames no constructional changes of the existing building conditions on site are required. The machine inside of the spinning hall does not have to be moved during modernization.

With CONVERSION*Plus* machines are modernized successively, which means that there will be very little interference with the production running on other machines in the spinning hall.

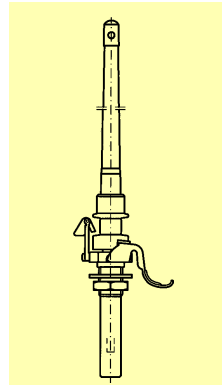
Modernization of ring frames

The modernization of ring frames consists of 2 individual building blocks:

1. the modernization of the spindle sector
2. the modernization of the drafting sector



1. The modernization of the spindle sector



The employment of flexibly tensioned and adjustable spindles with small wharve diameters makes higher spindle speeds possible without increasing the rotation speed of the frame's main drive shaft (thus saving energy). The low-vibration running and excellent damping properties of TEXParts spindles also have a positive influence on the ends down rate.
The installation of new, high-quality spinning rings enables the top speeds made possible by TEXParts spindles to be exploited to the full.
A considerable saving in maintenance can also be achieved by the fact that these rings can be centred on the spindle.

2. The modernization of the drafting sector

Renewing the drafting equipment within the framework of the modernization of a ring frame is of prime importance in improving yarn quality. The following options exist:

- fitting new parts to the weighting arms (i.e. exchanging top apron cradles, rear and front top rollers)
- installing new weighting arms
- renewing the fluted rollers (rear and front bottom rollers)
- replacing the knurled rollers (bottom apron rollers).

Depending on your requirements you may choose between a complete or partial modernization. For reasons of quality-improvement we recommend modernizing the entire drafting system.

The installation of a new TEXParts drafting system on double-apron basis guarantees optimal drafting conditions.

After modernization the system has an ideal draft distribution and guarantees individually adjustable loading for reliable fibre guidance and nip.
TEXParts drafting system ensure perfect fibre control and therefore excellent yarn quality in terms of eveness strength and count variation.
Another design feature of the TEXParts loading system is the precise parallel positioning of top rollers on top of the bottom rollers.
TEXParts weighting arms are characterized by constant loading and minimum tolerances, thus making costly and time-consuming readjustment work unnecessary .

10

Textile terms
General technical terms

tex System of Fineness Designation

The Tex unit (symbol: tex) expresses fineness in terms of mass per unit length.

$$1\ \text{tex} = \frac{1}{1\,000\,000}\ \frac{\text{kg}}{\text{m}} = \frac{1\ \text{g}}{1000\ \text{m}}$$

i.e., the tex fineness designation indicates the weight in grams of 1000 m of a yarn. The use of tex is not limited to yarns but includes fibres and intermediate products such as laps, slivers, tops, rovings, as well as plied yarn, strings, and braids. Where necessary the decimal multiples or sub-multiples of tex must be used. These are

$$1\ \text{millitex (mtex)} = \frac{1\ \text{mg}}{1000\ \text{m}}\ \text{or}$$

$$1\ \text{decitex (dtex)} = \frac{0.1\ \text{g}}{1000\ \text{m}} = \frac{1\ \text{g}}{10\,000\ \text{m}}\ \text{or}$$

$$1\ \text{kilotex (ktex)} = \frac{1\ \text{kg}}{1000\ \text{m}} = \frac{1\ \text{g}}{1\ \text{m}}$$

In cotton spinning (three- and four-roller spinning as well as vigogne and two-roller spinning), the coarseness (hank) of laps and slivers is expressed in kilotex (ktex) and the coarseness or fineness (count) of rovings and yarns is expressed in tex. Practical use of millitex (mtex), or decitex (dtex) respectively, is made for individual fibres only. Similar to the existing denier system, tex thus uses the **smaller** value to designate the **finer** thread (which has less weight per 1000 m), and the **bigger** value to designate the **coarser** thread (which has more weight per 1000 m).
Since "tex" is a symbol of a physical unit, it must **follow** the value indicating the fineness (count), e. g., 30 tex. This is likewise applicable to kilotex (ktex) and millitex (mtex), e. g., 5 ktex, 170 mtex.

Nm numbering system (old system of which no further use must be made).
The metric (Nm) count indicates the number of 1 km (1000 m) lengths per kg.

$$\text{Nm} = \frac{\text{length in km}}{\text{weight in kg}}\ \text{or} = \frac{\text{length in m}}{\text{weight in g}}$$

Fine counts are indicated by high numbers.

Formula for determining the fineness-related maximum tensile strength of staple fibre yarns (breaking length in kilometres[1]) according to DIN 53 815, edition 5/1989:

$$f_H = \frac{F_H\ (\text{cN})}{Tt_v\ (\text{tex})}$$

where:
f_H = fineness-related maximum tensile strength[2] in cN/tex

F_H = maximum tensile strength in cN

Tt_v = initial fineness in tex

Example: F_H = 177.2 cN

Tt_v = 24.6 tex

$$f_H = \frac{177.2}{24.6}$$

Fibre material: pure wool,
Fibre fineness: 21 µm,
Max. staple length approx. 145 mm

[1] The designation "breaking length" calculated in kilometres and once in common use may no longer be used. We would point out that this involves no changes, as the fineness-related maximum tensile strength f_H in cN/tex gives practically identical values to those provided by the term "tenacity" in kilometres formerly employed.
[2] The term "tenacity" may also be used for f_H.

PRINT CONTENTS END

Fineness designation of fibres, slivers and yarns formulae for calculations

	tex	dtex	ktex	Td
tex =	–	$\frac{\text{dtex}}{10}$	ktex · 1000	$\frac{\text{Td}}{9}$
dtex =	tex · 10	–	ktex · 10 000	$\frac{\text{Td}}{0.9}$
ktex =	$\frac{\text{tex}}{1000}$	$\frac{\text{dtex}}{10\,000}$	–	$\frac{\text{Td}}{9000}$
Td =	tex · 9	dtex · 0.9	ktex · 9000	–
Nm =	$\frac{1000}{\text{tex}}$	$\frac{10\,000}{\text{dtex}}$	$\frac{1}{\text{ktex}}$	$\frac{9000}{\text{Td}}$
Ne_B = *	$\frac{590}{\text{tex}}$	$\frac{5905}{\text{dtex}}$	$\frac{0.5905}{\text{ktex}}$	$\frac{5315}{\text{Td}}$
Nf =	$\frac{500}{\text{tex}}$	$\frac{5000}{\text{dtex}}$	$\frac{0.5}{\text{ktex}}$	$\frac{4500}{\text{Td}}$
Nc =	$\frac{566}{\text{tex}}$	$\frac{5660}{\text{dtex}}$	$\frac{0.566}{\text{ktex}}$	$\frac{5094}{\text{Td}}$

Example: Nm 34 converted into tex $\quad \text{tex} = \frac{1000}{\text{Nm}} = \frac{1000}{34} = 30$

Cotton $Ne_B = \frac{840\text{ yds}}{1\text{ lb}}$	Metric Conversion factor 1.69 resp. 0.59
Worsted $Ne_K = \frac{560\text{ yds}}{1\text{ lb}}$	Metric Conversion factor 1.13 resp. 0.89
Carded wool $Ne_W = \frac{256\text{ yds}}{1\text{ lb}}$	Metric Conversion factor 0.52 resp. 1.92
Conversion of roving slivers:	g/m · 14.11 = grains/yard grains/yard · 0.071 = g/m

Nm	Ne_B *	Nf	Nc	
$\frac{1000}{\text{Nm}}$	$\frac{590}{Ne_B}$	$\frac{500}{\text{Nf}}$	$\frac{566}{\text{Nc}}$	**= tex**
$\frac{10\,000}{\text{Nm}}$	$\frac{5905}{Ne_B}$	$\frac{5000}{\text{Nf}}$	$\frac{5660}{\text{Nc}}$	**= dtex**
$\frac{1}{\text{Nm}}$	$\frac{0.5905}{Ne_B}$	$\frac{0.5}{\text{Nf}}$	$\frac{0.566}{\text{Nc}}$	**= ktex**
$\frac{9000}{\text{Nm}}$	$\frac{5315}{Ne_B}$	$\frac{4500}{\text{Nf}}$	$\frac{5094}{\text{Nc}}$	**= Td**
–	$Ne_B \cdot 1.6934$	Nf · 2.0	$\frac{\text{Nc}}{0.566}$	**= Nm**
Nm · 0.5905	–	Nf · 1.181	$\frac{\text{Nc}}{0.9584}$	**= Ne_B**
Nm · 0.5	$Ne_B \cdot 0.8467$	–	$\frac{\text{Nc}}{1.132}$	**= Nf**
Nm · 0.566	$Ne_B \cdot 0.9584$	Nf · 1.132	–	**= Nc**

* Ne_B column includes some rounded-off values

Examples:

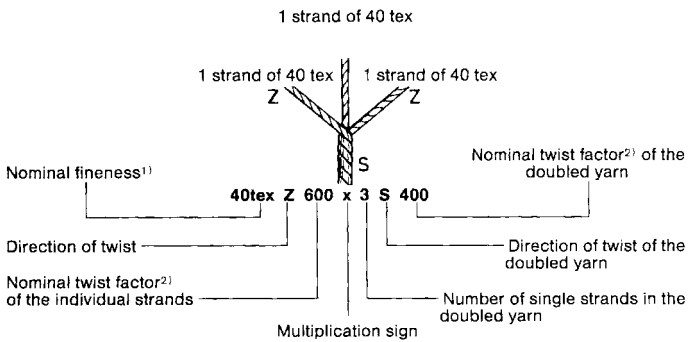
Ne_B 20 · 1.69 = Nm 34
Nm 34 · 0.59 = Ne_B 20

Ne_K 53 · 1.13 = Nm 60
Nm 60 · 0.89 = Ne_K 53

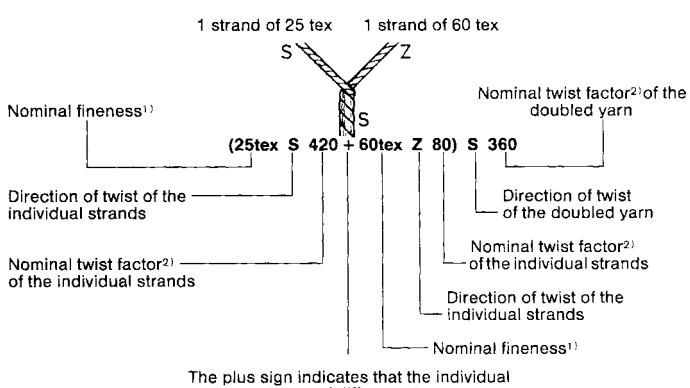
Ne_W 0.8 · 0.52 = Nm 0.4
Nm 0.4 · 1.92 = Ne_W 0.8

Fineness designations of ply-yarns

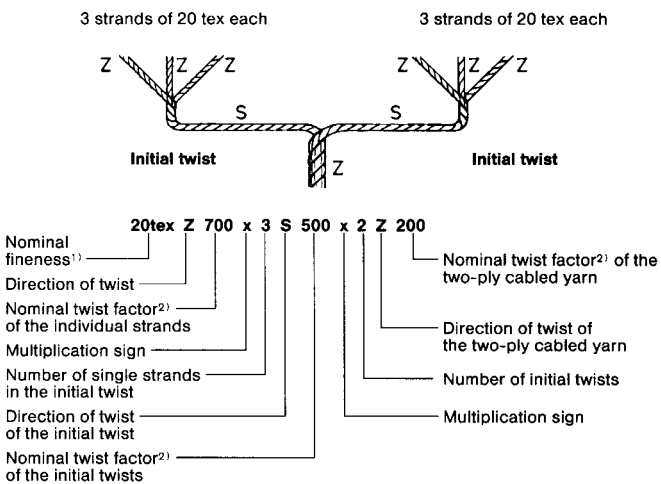
Doubled yarn with identical strands



Doubled yarn made of different threads



Cabled yarn composed of identical initial twists



1) Normal commercial designation of a yarn or twist.
2) Nominal twist factor = number of twists per metre prescribed for the manufacture of a yarn or twist.

Note: details of structure, twist factor and direction of twist may be omitted if not required.

Formulae[1] for mill machine calculations

Cards

Draft: Calculation as shown for speed frames
usual drafts: 80–100–110–120

Cardings:

$$\text{Cardings/cm} = \frac{nT}{Vsp} = \frac{\text{carding constant}}{Aw \cdot Nw}$$

where: nT = rev/min cylinder
Vsp = feed roller speed in cm/min
Aw = dia. doffer change gear
Nw = dia. draft change gear

Production:

$$Ppr = \frac{ktex \cdot L\ m/min \cdot 60}{1 \cdot 1000} \cdot \eta \qquad L\ m/min = \frac{\pi \cdot d \cdot n}{1000}$$

$$Ppr = \frac{60 \cdot \pi \cdot d \cdot n}{Nm \cdot 1000 \cdot 1000} \cdot \eta \qquad Ppr = \frac{LK \cdot AW}{Nm} \cdot \eta$$

where: Ppr = practical production in kg/hr/mach
L = delivery in m/min
d = dia. of coiler or calender rollers in mm
n = rev./min of coiler or calender rollers
η = efficiency
LK = delivery constant
AW = dia. doffer change gear
Nm = count (metric)

Draw frames

Draft: Calculation as shown for speed frames

Production:

$$Ppr = \frac{ktex \cdot L\ m/min \cdot 60}{1 \cdot 1000} \cdot \eta \qquad L\ m/min = \frac{\pi \cdot d \cdot n}{1000}$$

$$Ppr = \frac{60 \cdot \pi \cdot d \cdot n}{Nm \cdot 1000 \cdot 1000} \cdot \eta$$

[1] The formulae shown in squares are based on the tex unit of fineness.

where:
Ppr = practical production in kg/hr/delivery
L = delivery in m/min
d = dia. of front bottom roller in mm
n = rev/min of front bottom roller
η = efficiency

Calculating fineness in ktex:

$$ktex = \frac{ktex' \cdot d}{V} \cdot \left(\frac{100\text{-}p}{100}\right)$$

Calculating Nm yarn count:

$$Nm = Nm' \cdot \frac{V}{d} \cdot \left(\frac{100}{100\text{-}p}\right)$$

where:
ktex = fineness of material delivered
ktex' = fineness of feed material
Nm = count delivered
Nm' = count fed
V = draft
d = doublings
p = waste percentage

Speed frames

Draft:

$$\text{Draft} = \frac{\text{fineness of feed material}}{\text{fineness of delivered material}} = \frac{ktex'}{ktex}$$

$$Nw_1 = Nw \cdot \frac{ktex' \cdot ktex_1}{ktex \cdot ktex_1'}$$

$$\text{Draft} = \frac{\text{count delivered}}{\text{count fed}} = \frac{\text{draft constant}}{\text{dia. draft change gear}}$$

$$Nw_1 = Nw \cdot \frac{N \cdot N_1'}{N' \cdot N_1}$$

where:	present	new
change gear	Nw	Nw_1
delivered	ktex	$ktex_1$
fed	ktex'	$ktex_1'$
delivered	N	N_1
fed	N'	N_1'

Building motion:

$$S_1 = S \cdot \sqrt{\frac{ktex}{ktex_1}} \qquad S_1 = S \cdot \frac{\sqrt{N_1}}{\sqrt{N}}$$

where:	present	new
ratchet wheel	S	S_1
fineness	ktex	$ktex_1$
count	N	N_1

PRINT CONTENTS END

Twist:

$$T/m = \frac{\alpha ktex}{\sqrt{ktex}} = \frac{\text{twist constant}}{\text{twist change gear (driving)}} = \frac{nspi}{L}$$

$$Dw_1 = \frac{Dw \cdot \sqrt{\frac{ktex_1}{ktex}} \cdot \alpha}{\alpha_1}$$

$$T = \alpha \cdot \sqrt{Nm} = \frac{\text{twist constant}}{\text{twist change gear (driving)}} = \frac{nspi}{L}$$

$$Dw_1 = \frac{Dw \cdot \sqrt{N} \cdot \alpha}{\sqrt{N_1} \cdot \alpha_1}$$

where:	present	new
fineness	ktex	$ktex_1$
twist multiplier	α	α_1
twist change gear	Dw	Dw_1
nspi = rev/min of spindle		
L = delivery of front bottom roller in m/min		
count	N	N_1

Production:

$$Ppr = \frac{ktex \cdot L\ m/min \cdot 60}{1 \cdot 1000} \cdot \eta$$ or

$$Ppr = \frac{60 \cdot G}{x \cdot \frac{1000 \cdot G \cdot T}{ktex \cdot nspi} + ta} \cdot \eta$$

$$Ppr = \frac{nspi \cdot 60}{T \cdot N \cdot 1000} \cdot \eta$$

where:

Ppr = practical production in kg/hr/spindle
L = delivery in m/min
η = efficiency
N = metric count
T = turns per metre
nspi = rev/min of spindle
G = bobbin nett weight in grams
x = disturbance factor (1.05–1.2)
ta = minutes per doff

Ring frames

Draft:

$$Draft = \frac{tex'}{tex}$$

See also draft calculation for speed frames

Twist:

$$T/m = \frac{\alpha\ tex}{\sqrt{tex}} = \frac{nspi}{L}$$

Delivery:

$$L = \frac{nspi}{T/m}$$

where:

T/m = turns per metre
L = delivery in m/min
nspi = rev/min of spindle

See also twist calculation for speed frames

Building motion:

$$S_1 = S \cdot \frac{tex}{tex_1} \qquad S_1 = S \cdot \frac{N_1}{N}$$

where:	present	new
ratchet wheel	S	S_1
fineness	dtex	$dtex_1$
count	N	N_1

Production:

$$Ppr = \frac{tex \cdot L \cdot 60}{1000} \cdot \eta$$ or

$$Ppr = \frac{tex \cdot nspi \cdot 60}{T \cdot 1000} \cdot \eta$$

$$Ppr = \frac{nspi \cdot 60}{T \cdot N} \cdot \eta$$

where:

Ppr = practical production in g/hr/spindle
L = delivery in m/min
N = metric count
T = turns per metre
nspi = rev/min of spindle
η = efficiency (empiricial values for $\eta = 0.82–0.96$; good results are $\eta = 0.88$ with manual doff, and $\eta = 0.93$ with automatic doff)

Rotor spinning

Draft:

$$\text{Draft} = \frac{\text{tex'}}{\text{tex}} \qquad \text{Draft} = \frac{\text{feed fineness}}{\text{delivery fineness}}$$

$$\text{Draft} = \frac{\text{count delivered}}{\text{count fed}} = \frac{N}{N'}$$

tex' = feed fineness N = count delivered, e.g. Nm
tex = delivery fineness N' = count fed, e.g. Nm

Twist:

$$T/m = \frac{\alpha\,\text{tex}}{\sqrt{\text{tex}}} = \frac{nR}{L}$$

where:
T/m = turns per metre
L = delivery in m/min
nR = rev/min of rotor

Production:

$$Ppr = \frac{\text{tex} \cdot L \cdot 60}{1000} \cdot \eta \quad \text{or} \quad Ppr = \frac{\text{tex} \cdot nR \cdot 60}{T \cdot 1000} \cdot \eta$$

$$Ppr = \frac{nR \cdot 60}{T \cdot N} \cdot \eta$$

where :
Ppr = practical production in g/hr/spinning position
L = delivery in m/min
N = metric count
T = turns per metre
nR = rev/min of rotor
η = efficiency (empirical values for $\eta = 0.92–0.97$)

Additions of regain for fibres and filaments[1)]

Kind of fibre	Regain percentage
Wool and hair:	
combed fibre	18.25
carded fibre	17.00
Hair:	
combed fibre	18.25
carded fibre	17.00
Tail and mane hair:	
combed fibre	16.00
carded fibre	15.00
Silk	11.00
Cotton	8.50
mercerized fibre	10.50
Kapok	10.90
Flax or linen	12.00
Hemp	12.00
Jute	17.00
Manila	14.00
Alfa	14.00
Coir	13.00
Broom	14.00
Kenaf	17.00
Ramie (degreased fibre)	8.50
Sisal	14.00
Acetate	9.00
Alginate	20.00
Cupro	13.00
Modal	13.00
Regenerated protein-base fibre	17.00
Triacetate	7.00
Viscose	13.00
Polyacrylic	2.00
Polychloride	2.00

Kind of fibre	Regain percentage
Fluoric	0.00
Modacrylic	2.00
Polyamide (6.6):	
fibre	6.25
filament	5.75
Polyamide 6:	
fibre	6.25
filament	5.75
Polyester:	
fibre	1.00
filament	1.50
Polyethylene	1.50
Polypropylene	2.00
Polyurea	2.00
Polyurethane:	
fibre	3.50
filament	3.00
Vinyial	5.00
Trivinyl	3.00
Elastodien	1.00
Elasthane	1.50
Glass:	
(filament above 5 microns)	2.00
(filament of or below 5 microns)	3.00
Metal	2.00
Metallized fibre	2.00
Asbestos	2.00
Paper yarn	13.75

[1)] These are the regains specified in the EC Textile Identification Bill for calculating the fibre weights in textiles.

Draft:

$$\text{Draft } V = \frac{v_A}{v_Z}$$

v_A = speed of stripping roller in m/min or cm/min
v_Z = speed of feed roller in m/min or cm/min

Example: Calculate the draft between the stripping roller and the feed roller on a card

$$V = \frac{12.5 \text{ m/min}}{0.54 \text{ m/min}} = 23.1$$

v_A (stripping roller) = 12.5 m/min
v_S (feed roller) = 0.54 m/min

Total draft:

The total draft of a drafting system is the **product** of the partial drafts being used.

$$V_G = V_1 \cdot V_2 \ldots V_n$$

Example:
$V_G = 25 \cdot 1.5$
$V_G = 37.5$

V_1 = front zone draft = 25
V_2 = rear zone draft = 1.5

Yield percentage calculation:

$$p = \frac{b \cdot 100\ \%}{a}$$

p = yield percentage
b = yield in kg
a = initial quantity in kg

Example:
Initial quantity of cotton for opening is a = 1200 kg, final quantity of yarn is b = 1130 kg. Calculate yield percentage.

$$p = \frac{1130 \text{ kg} \cdot 100\ \%}{1200 \text{ kg}} = 94.2\ \% \text{ yield}$$

Unevenness index I according to Martindale:

$$I = \frac{Cv_{eff}}{Cv_{lim}}$$

Cv_{eff} = measured yarn evenness
Cv_{lim} = limit of unevenness

Limit of unevenness:

$$Cv_{lim} = \frac{100}{\sqrt{n}}$$

n = average number of fibres
T_t = Yarn titer

$$n = \frac{T_{tG}}{T_{tF}}$$

T_{tG} = Yarn count in tex
T_{tF} = Fibre count in tex

Average number of fibres:

$$n = \frac{Nm_F}{Nm_G}$$

Nm_F = fibre count
Nm_G = yarn count

Twist calculation according to DIN 53 832 – Part 2 (draft)

T = torsion (Latin) = twist
T/m = turns per metre
α = twist multiplier

Formula 1 (tex-System): $T/m = \alpha \cdot \sqrt{\frac{1000}{T_t}}$

Formula 2 (Nm-System): $T/m = \alpha \sqrt{Nm}$

Formula 3 (Ne_B-System): $T/" = \alpha e \cdot \sqrt{Ne_B}$

α = varies with the count spun even if similar materials are processed with the same degree of twist. As tenacity becomes less with greater yarn fineness, it is necessary for the twist multiplier to be increased in spinning finer counts.

Explanations:

α	= tex system and Nm-system twist multiplier
αe	= English twist multiplier
αm	= metric twist multiplier
T/"	= turns per inch
T/m	= turns per metre
tex	= tex designation of fineness
Ne_B	= English cotton count
Nm	= metric count

For conversion of the values:
αdtex = αm · 100
T/" = T/m · 0.0254
T/m = T/" · 39.37

wanted \ given	α	αe
α =	–	αe · 30,3
αe =	α · 0.033	–

Grades and Staple Length of Cottons from various Growths

USA	White	Light spotted	Spotted	Tinged	Yellow Stained
GOOD MIDDLING	11*	12	13		
STRICT MIDDLING	21*	22	23*	24	25
MIDDLING	31*	32	33*	34*	35
STRICT LOW MIDDLING	41*	42	43*	44*	
LOW MIDDLING	51*	52	53*	54*	
STRICT GOOD ORDINARY	61*	62	63*		
GOOD ORDINARY	71*				
BELOW GRADE	81	82	83	84	85

*physisal Standards, all others on description

Growing areas:

Southeast: Alabama, Florida, Georgia, North Carolina, South Carolina, Virginia
About 10% of the US crop, mainly for local consumption.
Average staple length 1.1/16 inch

Mid-South: Arkansas, Louisiana, Mississippi, Missouri, Tennessee
About 35% of total production, main share for local consumption. Average staple length over 1.1/16".

Southwest: Kansas, Oklahoma, Texas
About 30% of total production whereof ample 50% are exported. Average staple length below 1.1/16".

West: Arizona, Californla, New Mexico
About 25% of total production, mainly for export.
Average staple length over 1.1/8".

American Pima is grown in Arizona, California, New Mexico, Texas and Mississippi. Length: 1.3/8" - 1.1/2", Micronaire 3.5-4.9, strength 36-38 g/tex.

SUDAN

Extra Long Staple:	BARAKAT 1.3/8" - 1.9/16" Gezira and Tokar region
Medium to Long Staple:	SHAMBAT (B) 1.1/4" - 1.3/8" Gezira region
Medium Staple:	Acala 1.1/32" - 1.1/8" Gezira, Rahad, Girba and White Nile region
Short Staple:	Nuba Mountains 1" - 1.1/16"

Central Asia (Uzbekistan, Turkmenia, Azerbaijan, Kazakhstan, Kirghizstan)

Uzbekistan Standards:

BIRINCHI	(1st Sort.)	OLIY	YAKSHI	URTA	ODDIY	IFLOS
IKINCHI	(2nd Sort.)	OLIY	YAKSHI	URTA	ODDIY	IFLOS
UCHINCHI	(3rd Sort.)		YAKSHI	URTA	ODDIY	IFLOS
TURTINCHI	(4th Sort.)		YAKSHI	URTA	ODDIY	IFLOS
BESHINCHI	(5th Sort.)			URTA	ODDIY	IFLOS

The sorts are subdivided into classes according to trash content: (OLIY [highest] = lowest trash content, IFLOS [leafy] = highest trash content). Staple length for upland styles: 1.1/32" - 1.5/32"; Extra Long Staple upto 1.7/16".

TURKMENIA

Standards 1 to 6 comparable with old USSR standards (Pervyi, Vtoroi etc.). Staple length: 1.1/16" - 1.5/32" and Extra Long Staple up to 1.7/16".

EGYPT

Extra Long Staple Varieties:		Long Staple Varieties:	
GIZA 45	(1.13/32" - 1.7/16")	GIZA 75	(1.3/16" - 1.1/4")
GIZA 76	(1.3/8" - 1.7/16")	DANDARA	(1.5/32" - 1.7/32")
GIZA 70	(1.3/8" - 1.7/16")	GIZA 80	(1.3/16" - 1.1/4")
GIZA 77	(1.11/32" - 1.3/8"),	GIZA 85	(1.3/15" - 1.7/32")
GIZA 84		GIZA 83	(1.5/32" - 1.1/4")
		GIZA 81	

The above varieties are exported to practically the whole world, with the exception of GIZA 80, DANDARA, GIZA 85, and GIZA 83 which are reserved for local consumption. Egyptian cotton is sold on basis of private types and it is completely forbidden to sell on specification like other growths. Grades from EXTRA down to FAIR, standards deposited in Alexandria.

PARAGUAY

Grado 1 to Grado 7 grades comparable with US, partly slightly spotted.Staple length: 1.3/32" - 1.5/32".

PERU

Tanguis	staple 1.1/8" to 1.3/16"	Micronaire 5.2 - 5.8
PIMA	staple 1.1/2" to 1.5/ 8"	Micronaire 3.3 - 3.9
Del Cerro	staple 1.5/16" to 1.7/16"	Micronaire 3.3 - 3.8
Aspero	staple 1.1/32" to 1.3/32"	Micronaire 6.3 - 6.9

Ivory Coast

Traded on private types; grades comparable with US; colour: silky bloomy yellowish to light spotted. Staple length: 1.1/16" to 1.5/32".

Conversion Table of Staple lengths

Inch	mm (mathematical value)	mm (GOST specification)
7/ 8"	22.23	24/25
29/32"	23.02	25/26
15/16"	23.81	26/27
31/32"	24.61	27.28
1"	25.40	28/29
1 1/32"	26.19	30/31
1 1/16"	26.99	31/32
1 3/32"	27.78	32/33
1 1/ 8"	28.58	33/34
1 5/32"	29.37	34/35
1 3/16"	30.16	35/36
1 7/32"	30.96	36/37
1 1/ 4"	31.75	36/37
1 9/32"	32.54	37/38
1 5/16"	33.34	38/39
1 3/ 8"	34.93	39/40
1 7/16"	36.51	40/41
1 1/ 2"	38.10	41/42

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Cotton

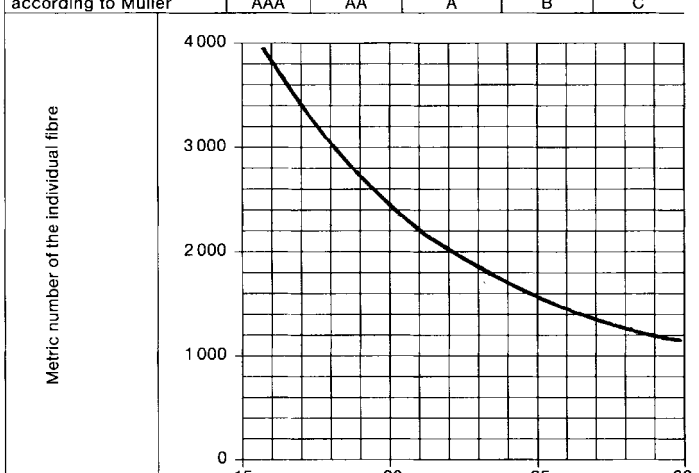
Staple length mm	Staple length Inches	Fibre fineness dtex	approx. spinning limit tex	Nm	Ne
< 28	< 1 1/8	2.56	40	25	15
		2.38	33	30	18
		2.22	29	35	21
		2.15	25	40	24
		2.10	22	45	27
		2.00	20	50	30
		1.88	17	60	35
		1.76	14	70	41
> 28	> 1 1/8	1.55	13	80	47
		1.50	11	90	53
		1.46	10	100	59
		1.36	7	150	89
		1.22	5	200	118

Wool	Fineness designation	Fibre-Ø in µm	Fibre Fineness dtex	Spinning limit tex (Nm)	Number of fibres q
Merinos	AAA	17.5	2.8	10 (96)	35.7
	AA	19.2	3.5	13 (78)	37.1
	A/AA	20.0	4.1	15 (64)	36.6
	A	21.0	4.6	19 (52)	41.3
	A/B	22.5	5.3	23 (44)	43.4
	B	23.5	5.5	25 (40)	45.5
Crossbreds	A/B	24.0	5.8	26 (38)	44.8
	B	25.0	6.3	28 (36)	44.4
	CI	26.5	7.2	32 (32)	44.4
	CII	28.5	8.3	36 (28)	43.4
	DI	31.0	9.9	42 (24)	41.8
	DII	32.0	10.5	46 (22)	42.4
	E	35.0	12.7	64 (16)	50.4
	EE	38.0	16.0	125 (8)	78.1

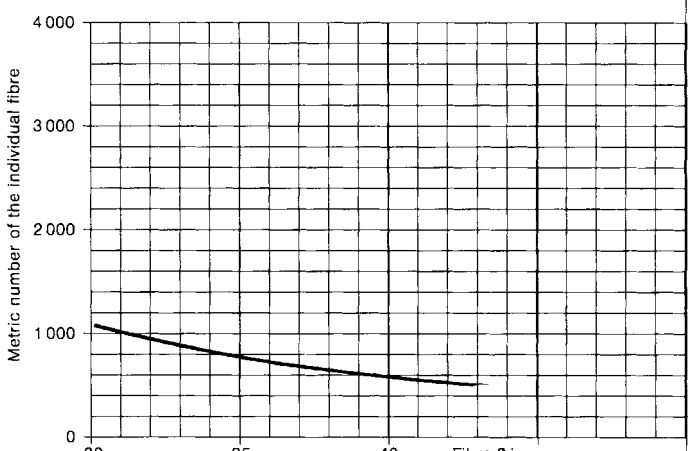
According to: International Wool Secretary

Classification system for wool

Display on Rapid lanometer in µ	10			15			20			25			30			
$\bar{X}$ individual fibre Ø in µ from N = 100 fibres	15				20				25							
Fineness according to Schneider	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
English classification	100's	90's	80's	70's	66's	64's	60's			58's		56's				50's
Australian classification			Combing			Clothing			Low Crossed			dito			Southdown Crossed	
American classification				Fine					½ Blood				⅜ Blood			
French classification	150	140	130	120	110	105						I			II	
	I	II	III	IV	V	VI		VII			VIII				IX	
German classification		AAAA		AAA	AA		A			B					C'	
Classification according to Müller	Sup. Elek AAA			Elekta AA			Prima A			Sekunda B					Tertia C	



	35			40			45			50			55			60
	30			35			40			45						
	18	19	20	21	22	23	24	25								
	48's		46's		44's		40's			36's						
						Romney Marsh										
	¼ Blood				Common							Braid				
	III		IV		V		VI									
	X		XI		XII		XIII									
		C^{II}		D^{I}		D^{II}		E		EE						
		Quarta D														



Traveller speeds in m/s

Ring-Ø		Spindle speeds in 1000 rpm																										Ring-Ø	
mm	inch	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	m	inch
	(ca.)	Traveller speeds m/s																													
36	1 7/16	21.7	22.6	23.6	24.5	25.5	26.4	27.3	28.3	29.2	30.2	31.1	32.0	33.0	33.9	34.9	35.8	36.8	37.7	38.6	39.6	40.5	41.5	42.4	43.4	44.3	45.2	46.2	47.1	36	1 7/16
38	1 1/2	22.9	23.9	24.9	25.9	26.9	27.9	28.9	29.9	30.8	31.8	32.8	33.8	34.8	35.8	36.8	37.8	38.8	39.8	40.8	41.8	42.8	43.8	44.8	45.8	46.8	47.8	48.8	49.7	38	1 1/2
40	1 9/16	24.1	25.1	26.2	27.2	28.3	29.3	30.4	31.4	32.5	33.5	34.6	35.6	36.7	37.7	38.8	39.8	40.8	41.9	42.9	44.0	45.0	46.1	47.1	48.2	49.2	50.3	51.3	52.4	40	1 9/16
42	1 5/8	25.3	26.4	27.5	28.6	29.7	30.8	31.9	33.0	34.1	35.2	36.3	37.4	38.5	39.6	40.7	41.8	42.9	44.0	45.1	46.2	47.3	48.4	49.5	50.6	51.7	52.8	53.9	55.0	42	1 5/8
45	1 3/4	27.1	28.3	29.5	30.6	31.8	33.0	34.7	35.3	36.5	37.7	38.9	40.1	41.2	42.4	43.6	44.8	46.0	47.1	48.3	49.5	50.7	51.8	53.0	54.2	55.4	56.6	57.7	58.9	45	1 3/4
48	1 7/8	28.9	30.2	31.4	32.7	33.9	35.2	36.4	37.7	39.0	40.2	41.5	42.7	44.0	45.2	46.5	47.8	49.0	50.3	51.5	52.8	54.0	55.3	56.6	57.8	59.1	22.0	23.1	24.2	42	1 5/8
50	2	30.1	31.4	32.7	34.0	35.3	36.7	38.0	39.3	40.6	41.9	43.2	44.5	45.8	47.1	48.4	49.7	51.1	52.4	53.7	16.5	17.7	18.9	20.0	21.2	22.4	23.6	24.7	25.9	45	1 3/4
52	2 1/16	31.3	32.7	34.0	35.4	36.8	38.1	39.5	40.8	42.2	43.6	44.9	46.3	47.7	49.0	50.4	51.7	53.1	15.1	16.3	17.6	18.9	20.1	21.4	22.6	23.9	25.1	26.4	27.6	48	1 7/8
55	2 1/8	33.1	34.6	36.0	37.4	38.9	40.3	41.8	43.2	44.6	46.1	47.5	49.0	50.4	51.8	53.3			15.7	17.0	18.3	19.7	20.9	22.3	23.5	24.9	26.2	27.5	28.8	50	2
57	2 1/4	34.3	35.8	37.3	38.8	40.3	41.8	43.3	44.8	46.3	47.8	49.3	50.7	52.2					16.3	17.7	19.1	20.4	21.8	23.1	24.5	25.9	27.2	28.6	30.0	52	2 1/16
60	2 3/8	36.1	37.7	39.3	40.8	42.4	44.0	45.6	47.1	48.7	50.3	51.8							17.3	18.7	20.2	21.6	23.0	24.5	25.9	27.4	28.8	30.2	31.7	55	2 1/8
63	2 1/2	37.9	39.6	41.2	42.9	44.5	46.2	47.8	49.5	51.1								16.4	17.9	19.4	20.9	22.4	23.9	25.4	26.9	28.4	29.8	31.3	32.8	57	2 1/4
65	2 9/16	39.1	40.8	42.5	44.2	46.0	47.7	49.4									15.7	17.3	18.9	20.4	22.0	23.6	25.1	26.7	28.3	29.8	31.4	33.0	34.6	60	2 3/8
70	2 3/4	42.2	44.0	45.8	47.7	49.5										14.8	16.5	18.1	19.8	21.4	23.1	24.7	26.4	28.0	29.7	31.3	33.0	34.6	36.3	63	2 1/2
75	3	45.2	47.1	49.1											13.6	15.3	17.0	18.7	20.4	22.1	23.8	25.5	27.2	28.9	30.6	32.3	34.0	35.7	37.4	65	2 9/16
80	3 1/8	48.2												12.8	14.7	16.5	18.3	20.2	22.0	23.8	25.7	27.5	29.3	31.2	33.0	34.8	36.7	38.5	40.3	70	2 3/4
75	3												11.8	13.7	15.7	17.7	19.6	21.6	23.6	25.5	27.5	29.5	31.4	33.4	35.3	37.3	39.3	41.2	43.2	75	3
80	3 1/8											11.7	12.6	14.7	16.8	18.9	20.9	23.0	25.1	27.2	29.3	31.4	33.5	35.6	37.7	39.8	41.9	44.0	46.1	80	3 1/8
90	3 1/2										12.3	13.2	14.1	16.5	18.9	21.2	23.6	25.9	28.3	30.6	33.0	35.3	37.7	40.1	42.4	44.8	47.1	49.5	51.8	90	3 1/2
100	4									12.6	13.6	14.7	15.7	18.3	20.9	23.6	26.2	28.8	31.4	34.0	36.7	39.3	41.9	44.5	47.1	49.7	52.4			100	4
115	4 1/2								13.2	14.5	15.7	16.9	18.1	21.1	24.1	27.1	30.1	33.1	36.1	39.1	42.2	45.2	48.2	51.2	54.2	57.2				115	4 1/2
120	4 3/4							12.6	13.8	15.1	16.3	17.6	18.9	22.0	25.1	28.3	31.4	34.6	37.7	40.8	44.0	47.1	50.3	53.4	56.6					120	4 3/4
140	5 1/2						13.2	14.7	16.1	17.6	19.1	20.5	22.0	25.7	29.3	33.0	36.7	40.3	44.0	47.7	51.3	55.0	58.7							140	5 1/2
160	6 1/4					13.4	15.1	16.8	18.4	20.1	21.8	23.5	25.1	29.3	33.5	37.7	41.9	46.1	50.3	54.5	58.7	62.8								160	6 1/4
180	7 1/8				13.2	15.1	17.0	18.9	20.7	22.6	24.5	26.4	28.3	33.0	37.7	42.4	47.1	51.8	56.6	61.3	66.0									180	7 1/8
200	7 7/8			12.6	14.7	16.8	18.9	20.9	23.0	25.1	27.2	29.3	31.4	36.7	41.9	47.1	52.4	57.6	62.8											200	7 7/8
225	8 7/8		11.8	14.1	16.5	18.9	21.2	23.6	25.9	28.3	30.6	33.0	35.3	41.2	47.1	53.0	58.9	64.8												225	8 7/8
250	9 7/8	10.5	13.1	15.7	18.3	20.9	23.6	26.2	28.8	31.4	34.0	36.7	39.3	45.8	52.4	58.9	65.5													250	9 7/8
275	10 7/8	11.5	14.4	17.3	20.2	23.0	25.9	28.8	31.7	34.6	37.4	40.3	43.2	50.4	57.6															275	10 7/8
300	11 7/8	12.6	15.7	18.9	22.0	25.1	28.3	31.4	34.6	37.7	40.8	44.0	47.1	55.0																300	11 7/8
350	14	14.7	18.3	22.0	25.7	29.3	33.0	36.7	40.3	44.0	47.7	51.3	55.0																	350	14
		0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0		
		Spindle speeds in 1000 rpm														Spindle speeds in 1000 rpm															

Shapes and types of ring travellers

To process the wide range of yarn qualities or to suit the various traveller speeds, a variety of traveller types are employed,e.g.

Traveller shape	Flange No.	Wire profile	Traveller type	No.	ISO No. (mg per pc.)	Surface treatment
EL	1	f		6/0	30	Super-Speed
EL	2	hr	H	1	60	Black-Speed
HEL	1	hd	EMT	4/0	35,5	DIA-DUR®
C	1	hr	TW	1/0	50	Super-Speed
C	2	f		25	400	Super-Polish
C	2	rf	MT	3	80	Super-Speed

Some traveller shapes are manufactured in the following wire profiles:

r (round) | hr (half-round) | hf (half-round-flat) | hd (half-round -wide) | f (flat) | rhr (round/half-round) | rf (round-flat)

The various shapes are required to achieve uniform yarn quality with every type of yarn, or to enable spinning to be done at maximum speeds. Travellers made of **round wire** (r) are preferred where long-staple and sensitive synthetic yarns require travellers that permit particulary smooth yarn travel. Travellers made of **half-round wire** (hr,hd, hf) are preferred for processing short-staple yarns at top speeds. **Flat wire travellers** (f) are used when yarns of minimum hairiness are required, e.g. in the case of combed cotton. **Round / flat wire travellers** (rf, rhr) have round wire at the point where the thread runs through the traveller and are flat on the ring-frame side. They are used for pure synthetics, particularly acrylic fibres. Traveller shapes deviating from the standard type of C or EL travellers are given descriptive additional designations such as:

T = low shape (e.g. C 2 hr Type -T-)
MT = medium low shape (e.g. C 2 f Type -MT-)
H = high shape (e.g. EL 2 hr Type -H-)
W = wide shape (e.g. EL 1 hd Type -W-)

Combinations of additional designations can occur, such as:
Type -HW- = high and wide shape (e.g. EL 1 hr Type -HW-)
Type -EMT- = narrow and medium-deep shape (e.g. C 1 hr Type -EMT-)

The most usual types of ring travellers for flange rings

Shape	Traveller Designation		Wire Profile							Ring Flange (to DIN ISO 96)			
	Shape	Type	f	hr	hd	hf	rhr	rf	r	No.	Width mm	No.	Width mm
	C-shaped travellers	(basic)	▬	▬					●	1	3.2	2	4.0
		W		▬								2	4.0
	deep-bow C-shaped travellers	T	▬	▬	▬			▬	●	1	3.2	2	4.0
		TM		▬	▬		▬					2	4.0
		TW		▬	▬					1	3.2		
		EM		▬						1	3.2		
		KM			▬					1	3.2		
		EMT		▬	▬			▬		1	3.2		
		MT	▬	▬	▬			▬		1	3.2	2	4.0
		KS			▬					1	3.2		
		MTW		▬								2	4.0
	Elliptical travellers	(basic)	▬	▬	▬	▬				1	3.2	2	4.0
		TW		▬	▬					1	3.2	2	4.0
		W	▬	▬	▬					1	3.2		
		EM			▬					1	3.2		
		H	▬	▬						1	3.2	2	4.0
		HW	▬	▬	▬					1	3.2	2	4.0
		HWW						▬		1	3.2		
	Half elliptical travellers	(basic)	▬	▬						1	3.2	2	4.0
		EMT		▬	▬					1	3.2		

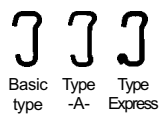
Wire Profile: r = round; rf = round/flat; rhr = round/half-round; hr = half-round; hd = half-round, wide; hf = half-round, special wide; f = flat

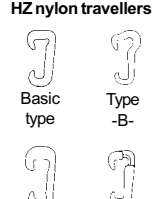
Section on ring travellers by kind permission and with the assistance of Messrs. Reiners & Fürst GmbH u. Co., P.O. Box 101340, 41013 Mönchengladbach/Germany

PRINT CONTENTS END

The most usual types of ring travellers for self-lubricating HZ rings

Shape	Ring height	Desig-nation	Types (Basic)	A	B	H	Expr.	Expr. A	Expr. ASK
			Material						
HZ steel travellers	6.35 mm (1/4“)	HZ 6.3	nylon	-	-	nylon	-	-	-
			sup.nyl.	-	-	-	-	-	-
	9.5 mm (3/8“)	HZ 9.5	steel	steel	-	-	steel	steel	-
			nylon	-	nylon	nylon	-	-	-
			sup.-nyl.	-	s.nyl.	s.nyl.	-	-	-
			nyl.-steel	-	-	-	-	-	-
	10.3 mm (13/32“)	HZ 10.3	steel	-	-	-	-	steel	steel
			nylon	-	-	-	-	-	-
			sup.-nyl.	-	-	-	-	-	-
			nyl.-steel	-	-	-	-	-	-
	11.1 mm (7/16“)	HZ 11.1	-	-	-	-	-	steel	steel
			nylon	-	-	-	-	-	-
			sup.-nyl.	-	-	-	-	-	-
			nyl.-steel	-	-	-	-	-	-
HZ nylon travellers	16.7 mm (21/32“)	HZ 16.7	steel	steel	-	-	steel	steel	-
			nylon	-	nylon	nylon	-	-	-
			sup.-nyl.	-	s.nyl.	s.nyl.	-	-	-
			nyl.-steel	-	-	-	-	-	-
	25.4 mm (1“)	HZ 25.4	steel	steel	-	-	-	-	-
			nylon	-	nylon	nylon	-	-	-
			sup.-nyl.	-	s.nyl.	s.nyl.	-	-	-
			nyl.-steel	-	-	-	-	-	-
	38.1 mm (1 1/2“)	HZ 38.1	-	steel	-	-	-	-	-
			nylon	-	-	-	-	-	-
			sup.-nyl.	-	-	-	-	-	-
			nyl.-steel	-	-	-	-	-	-



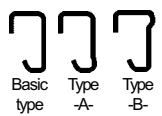


nylon-steel = nylon travellers with steel insert in the thread passage
super-nylon = glass-fibre reinforced nylon travellers

Examples: HZ 9.5 r type Express steel
HZ 16.7 super-nylon type -B-
HZ 25.4 nylon-steel

The most usual types of ring travellers for self-lubricating J rings

Shape	Ring height	Desig-nation	Types (Basic)	A	B	BB	Expr. A
			Material				
J steel travellers	9.1 mm (23/64“)	J 9.1	steel	steel	steel	-	-
			-	-	-	-	-
			super-nylon	-	-	-	-
			-	-	-	-	-
	11.1 mm (7/16“)	J 11.1	steel	steel	steel	steel	steel
			nylon	-	nylon	-	-
			super-nylon	-	super-nylon	-	-
			nylon-steel	-	-	-	-
J nylon travellers	17.4 mm (11/16“)	J 17.4	steel	steel	-	-	-
			nylon	-	nylon	-	-
			super-nylon	-	super-nylon	-	-
			-	-	-	-	-



nylon-steel = nylon travellers with steel insert in the thread passage
super-nylon = glass-fibre reinforced nylon travellers

Examples: J 9.1 r steel
J 11.1 super-nylon

Traveller numbers for cotton spinning

High-Speed Ring Frame						Standard Ring Frame			
Conventional Spinning		Compact Spinning				Cotton, Rayon Staple, Polyester, Blends		Acrylics	Core Yarns
Travellers made of									
flat wire profile f	half-round wire profile hr hf hd	half-round wire profile hr hf hd	Yarn Count			flat wire profile f	half-round wire profile hr hf hd	half-round wire profile hr rf rhr	half-round wire profile hr rf rhr
Probable Traveller Number			Ne_C	tex	Nm	Probable Traveller Number			
-	-	-	2.5	250	4	34 - 38	38 - 42		
-	-	-	3.5	170	6	26 - 30	30 - 34		
-	-	-	5	125	8	20 - 22	25 - 28		
-	-	-	6	100	10	16 - 18	18 - 20		
-	-	-	7	84	12	14 - 16	16 - 18		
-	-	-	8	72	14	12 - 14	13 - 15	18 - 20	
6 - 7	8 - 10	6 - 8	10	59	17	9 - 10	9 - 11	16 - 18	
4 - 5	6 - 7	5 - 6	12	50	20	6 - 7	8 - 10	13 - 15	
3 - 4	4 - 5	3 - 4	14	42	24	5 - 6	6 - 8	9 - 11	12 - 14
1 - 2	2 - 3	2 - 3	16	37	27	4 - 5	4 - 6	8 - 10	9 - 10
1/0 - 1	1 - 2	1/0 - 1	18	33.5	30	3 - 4	4 - 5	6 - 8	8 - 9
1/0 - 2/0	1/0 - 1	1/0 - 2/0	20	30	34	2 - 3	3 - 4	4 - 6	7 - 8
3/0 - 4/0	2/0 - 3/0	3/0 - 4/0	24	25	40	1/0 - 1	1 - 2	3 - 5	6 - 7
3/0 - 4/0	2/0 - 3/0	3/0 - 4/0	26	23	44	1/0 - 1	1 - 2	3 - 4	5 - 6
4/0 - 5/0	3/0 - 4/0	4/0 - 5/0	28	21	48	1/0 - 2/0	1/0 - 1	2 - 3	4 - 5
4/0 - 5/0	3/0 - 4/0	4/0 - 5/0	30	20	50	1/0 - 2/0	1/0 - 1	2 - 3	3 - 4
5/0 - 6/0	4/0 - 5/0	5/0 - 6/0	32	18.5	54	2/0 - 3/0	1/0 - 2/0	1 - 2	2 - 3
5/0 - 6/0	4/0 - 5/0	5/0 - 6/0	36	17	60	2/0 - 3/0	1/0 - 2/0		1 - 2
6/0 - 7/0	5/0 - 6/0	6/0 - 7/0	38	16	64	3/0 - 4/0	2/0 - 3/0		1 - 1/0
7/0 - 8/0	6/0 - 7/0	8/0 - 9/0	42	14	70	4/0 - 5/0	3/0 - 4/0		1/0 - 2/0
8/0 - 9/0	7/0 - 8/0	9/0 - 10/0	48	12.5	80	5/0 - 6/0	4/0 - 5/0		3/0 - 4/0
8/0 - 9/0	7/0 - 8/0	9/0 - 10/0	50	12	85	6/0 - 7/0	5/0 - 6/0		4/0 - 5/0
9/0 - 10/0	8/0 - 9/0	10/0 - 11/0	54	11	90	7/0 - 8/0	6/0 - 7/0		5/0 - 6/0
10/0 - 11/0	9/0 - 10/0	11/0 - 12/0	60	10	100	8/0 - 9/0	7/0 - 8/0		7/0 - 8/0
12/0 - 14/0	11/0 - 12/0	13/0 - 14/0	70	8.3	120	9/0 - 10/0	8/0 - 9/0		8/0 - 9/0
14/0 - 16/0	13/0 - 15/0	15/0 - 16/0	80	7.6	135	12/0 - 14/0	10/0 - 12/0		10/0 - 12/0
17/0 - 19/0	15/0 - 17/0	17/0 - 19/0	95	6.4	160	15/0 - 17/0	13/0 - 15/0		
18/0 - 20/0	16/0 - 18/0	18/0 - 20/0	100	6	170	16/0 - 18/0	14/0 - 16/0		
18/0 - 20/0	16/0 - 18/0	18/0 - 20/0	105	5.6	180	16/0 - 18/0	15/0 - 17/0		
20/0 - 22/0	18/0 - 20/0	22/0 - 24/0	120	5	200	18/0 - 20/0	16/0 - 18/0		

Humidity and Temperature

The correct relative humidity is a decisive factor wherever textile fibres are being processed.

Some important criteria are:

1. Absolute humidity content

The absolute are humidity is the momentary amount of water vapour – the water content – in the air. Humidity content is measured in g/kg of dry air.
The higher the temperature, the higher the amount of water vapour – water content – that can be assimilated by the air up to the saturation point.

2. Relative humidity content

The relative humidity of the air is the ratio between absolute air humidity actually present in the air (see 1. above) and the amount of water vapour that would be present in the air if maximum possible saturation of the air were archieved. This ratio is expressed in %. For example: at 7°C (44.6°F) 1 kg (2.2 lb) of dry air of maximum saturation contains 6.20 g (97 grains) of moisture. If the actual air momentarily present at 7°C (44.6°F) contains 4.72 g (73 grains) of water vapour, then:

$$\text{Relative humidity of the air} = \frac{100 \cdot 4.72\ \text{g}}{6.29\ \text{g}} = 75\ \%\ \text{relative humidity}$$

$$\text{Relative humidity of the air} = \frac{100 \cdot 73\ \text{grains}}{97\ \text{grains}} = 75\ \%\ \text{relative humidity}$$

Firms processing textile fibres must determine by experiment the ideal air humidity at the various processing stages for each type of fibre material.
The following values have produced good results and may be taken as guide:

Processing stage	Relative humidity
Separating	45–50 %
Carding and drafting	50–55 %
Combing and slubbing	50–60 %
Spinning	45–60 %
Spooling and doubling	50–55 %
Weaving	75–85 %

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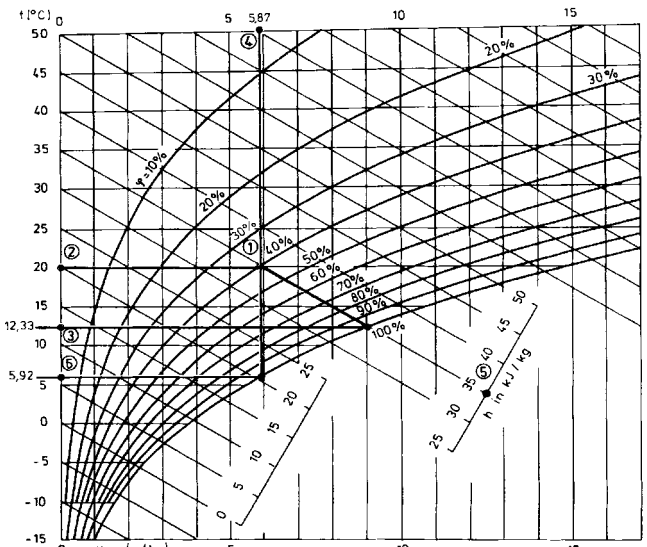
The h,x diagram for determining air conditioning factors



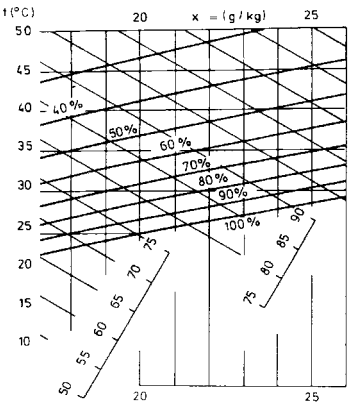
The h,x diagram for air humidity according to Mollier allows the air conditions and changes in these conditions to be read off and the respective values for temperature, heat content, relative humidity and absolute water content to be determined. It should, as a matter of principle, be remembered that all values given in the h,x diagram are based on 1 kg of dry air.

Explanation of the diagram:

Temperatures of the dry thermometer t° C

The line running from left to right is provided, on the left-hand side, with a temperature scale. Each point on this line corresponds to the temperature value recorded on the left.

Depiction of this h,x diagram by courtesy of Messrs. Wiessner GmbH, Bayreuth.



[2] see diagram for values ①–⑥

h,x diagram:

t = air temperature in °C (dry thermometer)

φ = relative humidity in %

i = heat content (enthalpy) in kJ per kilo of dry air

x = water content in grams per kilo of dry air

The h,x diagram is based on an air pressure of 1 bar = 10^5 Pa (Pascal)

Exemple of a reading[2]:

On the diagram 20.0 °C / 40 % rel. hum		①
Temperature of the dry thermometer:	t = 20.0 ° C	②
Temperature of the wet thermometer	t = 12.33 °C	③
Water content:	x = 5.87 g/kg	④
Heat content:	h = 35.1 kJ/kg of dry air	⑤
Relative humidity:	φ = 40 %	①
Dew-point temperature:	TP = 5.92 °C	⑥

Temperatures of the wet thermometer t °C

will be found at the intersection of the line h and the saturation line φ = 100 %. Read off against the temperature scale on the left.

Absolute moisture content x (g/kg) water content

designated by the vertical lines. Each point on one of these verticals indicates the identical absolute water content of the air.

Heat content h (kJ/kg)

runs from the saturation line = φ = 100 % upwards to the left.

Relative air humidity in the room in φ %

is represented by the individual lines from φ = 10 % to φ = 100 % (saturation line). At a relative humidity of 100 % the air is fully saturated and can no longer assimilate any more moisture. The advent of additional moisture shows as vapour.

Dew point TP

This is the designation for all air conditions lying on the saturation line φ = 100 %. The dew point temperature is read off on the left-hand temperature scale of the diagram.

British-metric units - conversion table

British-Metric			Metric-British		
Unit	**Symbol**		**Unit**	**Symbol**	
Length					
inch	in	1 in = 25.4 mm	Centimetre	cm	1 cm = 0.394 in
foot	ft	1 ft = 30.5 cm	metre	m	1 m = 3.28 ft
yard	yd	1 yd = 0.914 m	metre	m	1 m = 1.09 yd
furlong	fur	1 fur = 201 m	Kilometre	km	1 km = 4.97 fur
mile	mile	1 mile = 1.61 km	Kilometre	km	1 km = 0.621 mile
mile, naut	n mile	1 n mile = 1.852 km	Kilometre	km	1 km = 0.54 n mile
Weight					
grain	grain	1 grain = 0.0648 g	Gram	g	1 g = 15.432 grain
ounce	oz	1 oz = 28.3 g	Gram	g	1 g = 0.0353 oz
pound	lb	1 lb = 454 g	Kilogram	kg	1 kg = 2.20 lb
stone	stone	1 stone = 6.35 kg	Kilogram	kg	1 kg = 0.157 stone
Area					
square inch	in^2	1 in^2 = 6.45 cm^2	square Centimetre	cm^2	1 cm^2 = 0.155 in^2
square foot	ft^2	1 ft^2 = 929 cm^2	square metre	m^2	1 m^2 = 10.8 ft^2
square yard	yd^2	1 yd^2 = 0.836 m^2	square metre	m^2	1 m^2 = 1.20 yd^2
acre	ac	1 ac = 0.405 ha	Hectare	ha	1 ha = 2.47 ac
square mile		1 sq. mile = 2.59 km^2	square km	km^2	1 km^2 = 0.386 sq. mile
Volume					
cubic inch	in^3	1 in^3 = 16.4 cm^3	Cubic Centimetre	cm^3	1 cm^3 = 0.0610 in^3
cubic foot	ft^3	1 ft^3 = 0.0283 m^3	Cubic metre	m^3	1 m^3 = 35.3 ft^3
cubic yard	yd^3	1 yd^3 = 0.765 m^3	Cubic metre	m^3	1 m^3 = 1.31 yd^3
bushel	bus	1 bus = 0.0364 m^3	Cubik metre	m^3	1 m^3 = 27.5 bus
fluid ounce	fl oz	1 fl oz = 28.4 ml	Millilitre	ml	1 ml = 0.0352 fl oz
pint	pt	1 pt = 568 ml UK	Millilitre	ml	1 Liter = 1.76 pt UK
		1 pt = 473 ml US	or Litre	l	1 Liter = 2.11 pt US
gallon	gal	1 gal = 4.55 Liter UK	Litre or	l	1 m^3 = 220 gal UK
		1 gal = 3.79 Liter US	Cubic metre	m^3	1 m^3 = 264 gal US
Force					
pound-force	lbf	1 lbf = 4.45 N	Newton	N	1 N = 0.225 lbf
Temperature					
degree Fahrenheit °f		°C = 5/9 (°F-32)	degree Celsius	°C	°F = 9 x °C / 5 + 32
Power					
horsepower	hp	1 hp = 0.736 kW	Kilowatt	kW	1 kW = 1.36 hp

Millimeter into inches[1] and inches into millimetres Conversion table

mm	0.0 mm	0.1 mm	0.2 mm	0.3 mm	0.4 mm	mm
	inches	inches	inches	inches	inches	
0	–	0.00394	0.00787	0.0118	0.0157	**0**
1	0.0394	0.0433	0.0472	0.0512	0.0551	**1**
2	0.0787	0.0827	0.0866	0.0906	0.0945	**2**
3	0.1181	0.1220	0.1260	0.1299	0.1339	**3**
4	0.1575	0.1614	0.1654	0.1693	0.1732	**4**
5	0.1969	0.2008	0.2047	0.2087	0.2126	**5**
6	0.2362	0.2402	0.2441	0.2480	0.2520	**6**
7	0.2756	0.2795	0.2835	0.2874	0.2913	**7**
8	0.3150	0.3189	0.3228	0.3268	0.3307	**8**
9	0.3543	0.3583	0.3622	0.3661	0.3701	**9**
10	0.3937	0.3976	0.4016	0.4055	0.4094	**10**

Example: 3.8 mm = 0.1496″

Inches			Inches	mm	Inches		Inches	mm
–	–	–	–	–	1/4		**0.25**	6.350
		1/64	**0.015625**	0.397		17/64	**0.265625**	6.747
	1/32		**0.03125**	0.794		9/32	**0.28125**	7.144
		3/64	**0.046875**	1.191			19/64	**0.296875**	7.541
1/16			**0.0625**	1.588	5/16		**0.3125**	7.938
		5/64	**0.078125**	1.984			21/64	**0.328125**	8.334
	3/32		**0.09375**	2.381		11/32		**0.34375**	8.731
		7/64	**0.109375**	2.778			23/64	**0.359375**	9.128
1/8			**0.125**	3.175	3/8		**0.375**	9.525
		9/64	**0.140625**	3.572			25/64	**0.390625**	9.922
	5/32		**0.15625**	3.969		13/32		**0.40625**	10.319
		11/64	**0.171875**	4.366			27/64	**0.421875**	10.716
3/16			**0.1875**	4.763	7/16		**0.4375**	11.113
		13/64	**0.203125**	5.159			29/64	**0.453125**	11.509
	7/32		**0.21875**	5.556		15/32		**0.46875**	11.906
		15/64	**0.234375**	5.953			31/64	**0.484375**	12.303

[1] Also previously referred to in German usage as "Zoll"

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Millimeter into inches[1] and inches into millimetres Conversion table

mm	0.5 mm	0.6 mm	0.7 mm	0.8 mm	0.9 mm	mm
	inches	inches	inches	inches	inches	
0	0.0197	0.0236	0.0276	0.0315	0.0354	0
1	0.0591	0.0630	0.0669	0.0709	0.0748	1
2	0.0984	0.1024	0.1063	0.1102	0.1142	2
3	0.1378	0.1417	0.1457	0.1496	0.1535	3
4	0.1772	0.1811	0.1850	0.1890	0.1929	4
5	0.2165	0.2205	0.2244	0.2283	0.2323	5
6	0.2559	0.2598	0.2638	0.2677	0.2717	6
7	0.2953	0.2992	0.3031	0.3071	0.3110	7
8	0.3346	0.3386	0.3425	0.3465	0.3504	8
9	0.3740	0.3780	0.3819	0.3858	0.3898	9
10	0.4134	0.4173	0.4213	0.4252	0.4291	10

Inches	Inches	mm	Inches	Inches	mm
1/2	0.5	12.700	3/4	0.75	19.050
33/64	0.515625	13.097	49/64	0.765625	19.447
17/32	0.53125	13.494	25/32	0.78125	19.844
35/64	0.546875	13.891	51/64	0.796875	20.241
9/16	0.5625	14.288	13/16	0.8125	20.638
37/64	0.578125	14.684	53/64	0.828125	21.034
19/32	0.59375	15.081	27/32	0.84375	21.431
39/64	0.609375	15.478	55/64	0.859375	21.828
5/8	0.625	15.875	7/8	0.875	22.225
41/64	0.640625	16.272	57/64	0.890625	22.622
21/32	0.65625	16.669	29/32	0.90625	23.019
43/64	0.671875	17.066	59/64	0.921875	23.416
11/16	0.6875	17.463	15/16	0.9375	23.813
45/64	0.703125	17.859	61/64	0.953125	24.209
23/32	0.71875	18.256	31/32	0.96875	24.606
47/64	0.734375	18.653	63/64	0.984375	25.003

Example: 3 3/16″ = 76.20 + 4.763 = 80.963 mm

Inches into millimetres Conversion table

Inches	0.0″	0.1″	0.2″	0.3″	0.4″	Inches
	mm	mm	mm	mm	mm	
0″	0.00	2.540	5.080	7.620	10.16	0″
1″	25.40	27.94	30.48	33.02	35.56	1″
2″	50.80	53.34	55.88	58.42	60.96	2″
3″	76.20	78.74	81.20	83.82	86.36	3″
4″	101.60	104.14	106.68	109.22	111.76	4″
5″	127.00	129.54	132.08	134.62	137.16	5″
6″	152.40	154.94	157.48	160.02	162.56	6″
7″	177.80	180.34	182.88	185.42	187.96	7″
8″	203.20	205.74	208.28	210.82	213.36	8″
9″	228.60	231.14	233.68	236.22	238.76	9″
10″	254.00	256.54	259.09	261.62	264.16	10″

Inches	0.000″	0.001″	0.002″	0.003″	0.004″	Inches
	mm	mm	mm	mm	mm	
0.00″	0.000	0.0254	0.0508	0.0762	0.102	0.00″
0.01″	0.254	0.279	0.305	0.330	0.356	0.01″
0.02″	0.508	0.533	0.559	0.548	0.610	0.02″
0.03″	0.762	0.787	0.813	0.838	0.864	0.03″
0.04″	1.016	1.041	1.067	1.092	1.118	0.04″
0.05″	1.270	1.295	1.321	1.346	1.372	0.05″
0.06″	1.524	1.549	1.575	1.600	1.626	0.06″
01.07″	1.778	1.803	1.829	1.854	1.880	0.07″
0.08″	2.032	2.057	2.083	2.108	2.134	0.08″
0.09″	2.286	2.311	2.337	2.362	2.388	0.09″

Example: 7.182 = ? mm

from upper table	7.1″	= 180.34 mm
from lower table	0.082″	= 2.083 mm
	7.182″	= 182.423 mm

[1] Also previously referred to in German usage as "Zoll"

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Inches into millimetres
Conversion table

Inches	0.5″	0.6″	0.7″	0.8″	0.9″	Inches
	mm	mm	mm	mm	mm	
0″	12.70	15.24	17.78	20.32	22.86	0″
1″	38.10	40.64	43.18	45.72	48.26	1″
2″	63.50	66.04	68.58	71.12	73.66	2″
3″	88.90	91.44	93.98	96.52	99.06	3″
4″	114.30	116.84	119.38	121.92	124.46	4″
5″	139.70	142.24	144.78	147.32	149.86	5″
6″	165.10	167.64	170.18	172.72	175.26	6″
7″	190.50	193.04	195.58	198.12	200.66	7″
8″	215.90	218.44	220.98	223.52	226.06	8″
9″	241.30	243.84	246.38	248.92	251.46	9″
10″	266.70	269.24	271.78	274.32	276.86	10″

Inches	0.005″	0.006″	0.007″	0.008″	0.009″	Inches
	mm	mm	mm	mm	mm	
0.00″	0.127	0.152	0.178	0.203	0.229	0.00″
0.01″	0.381	0.406	0.432	0.457	0.483	0.01″
0.02″	0.635	0.660	0.686	0.711	0.737	0.02″
0.03″	0.889	0.914	0.940	0.965	0.991	0.03″
0.04″	1.143	1.168	1.194	1.219	1.245	0.04″
0.05″	1.397	1.422	1.448	1.473	1.499	0.05″
0.06″	1.651	1.676	1.702	1.727	1.753	0.06″
0.07″	1.905	1.930	1.956	1.981	2.007	0.07″
0.08″	2.159	2.184	2.210	2.235	2.261	0.08″
0.09″	2.413	2.438	2.464	2.489	2.515	0.09″

Introduction of international SI units

The SI system of units (Système internationale d'Unités) was created in order to simplify international co-operation.
The SI units have been adopted by legislation in the EC, the USA, the Soviet Union and the Comecon countries as obligatory units of measurement.
The SI units are frequently-used parameters in science and technology.

Units of pressure

	bar	Pa N/m²	MPa N/mm²
1 bar = 1 daN/cm²	1	10^5	0.1
1 Pa = 1 N/m²	10^{-5}	1	10^{-6}
1 MPa = 1 N/mm²	10	10^6	1

Units of energy

	J N m W s	daJ daN m	kW h
1 J = 1 N m = 1 W s	1	0.1	$0.278 \cdot 10^{-6}$
1 daJ = 1 daN m	10	1	$2.78 \cdot 10^{-6}$
1 kW h =	$3.6 \cdot 10^6$	360 000	1

Units of power

	W J/s N m/s	kW
1 W = 1 J/s = 1 N m/s =	1	0.001
1 kW =	1000	1

Units of force

	N	daN
1 N =	1	0.1
1 daN =	10	1

Conversion of units no longer to be used

The names and symbols for the units in the following list are no longer to be used. Their equivalents in the relevant SI units and/or alternative recommended units are given for conversion purposes.

Units no longer to be used		Conversion into relevant SI unit and/or alternative recommended unit	Notes
Name	Symbol		
For units of pressure			
Atmosphere, technical	at ata atu atü	1 at = 98.0665 kPa = 0.980 665 bar	The suffixes a, u, ü were used to designate absolute atmosphere, subatmospheric pressure and pressure above atmospheric, see DIN 1314.
Millimetres head of mercury, conventional	mmHg mmQS	1 mmHg = 1.333 22 mbar = 133.322 Pa	
Torr	Torr	1 Torr = 1.333 22 mbar	
For units of energy and power			
Horsepower	PS	1 PS = 735.498 75 W	
Kilocalorie	kcal Kal	1 kcal = 1 Kal = 4.1868 kJ	Formerly also referred to as the "large" or "great" calorie and often erroneously referred to in nutritional science simply as a "calorie" (Kal).
For units of pressure, energy and force			
Kilopond	kp	1 kp = 9.806 65 N	Formerly used as a unit of force.

General

As multiples or fractions of the units, only integral positive or negative powers of 10 are used. These are designated by symbols as follows:

Multiple of unit	Prefix	Prefix symbol	Fraction of unit	Prefix	Prefix symbol
10^{1}	Deca-	da	10^{-1}	Deci-	d
10^{2}	Hecto-	h	10^{-2}	Centi-	c
10^{3}	Kilo-	k	10^{-3}	Milli-	m
10^{6}	Mega-	M	10^{-6}	Micro-	µ
10^{9}	Giga-	G	10^{-9}	Nano-	n
10^{12}	Tera-	T	10^{-12}	Pico-	p
10^{15}	Peta-	P	10^{-15}	Femto-	f
10^{18}	Exa-	E	10^{-18}	Atto-	a

Worldwide representatives

Argentina
Armenia
Aserbaidshan
Australia
Austria
Bangladesh
Belarus
Belgium
Bolivia
Bosnia
Brazil
Bulgaria
Canada
Chile
China, P. R. of
Columbia
Costa Rica
Croatia
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Eritrea
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Herzegowina
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Indonesia (Head Quarter)
Indonesia
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Israel
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Kazakhstan
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Korea, Rep. of
Latvia
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Marocco
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