

TeraSpin

Product Overview

November 2024



Presentation at a glance

Introduction:

- A.T.E. at a glance
- TeraSpin – an introduction

Product families:

- Spindles with HF insert
- Weighting arms
- Top rollers
- Cradles
- Drafting up-gradation kit
- Top roller grease (TRG 5)

New developments:

- Smart cradles
- Smart yarn catchers
- Premium ES spindles
- Flexi weighting arms
- HF S series spindles

Introduction

A.T.E. at a glance



A.T.E. is an **expert partner for textile machinery, and an impactful innovator in clean technology.**

We help our customers **create great products, save water and energy, reduce waste, and enhance the safety and well-being** of their teams.

A.T.E. at a glance

A.T.E. is an expert partner for textile machinery, and an impactful innovator in clean technology.



Textile Engineering



Precision Components



Wastewater Treatment



Intelligence of Things for Industry

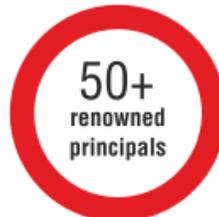


Cooling



Safety, Health, and Environment for Packaging, Textiles, etc.

We help our customers create great products, save water and energy, reduce waste, and enhance the safety and well-being of their teams.



SOCIAL WELFARE



TeraSpin – introduction

Year of establishment 2012

Number of employees: 250

Location: Sari, Ahmedabad, India

Certifications: ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, LEED Gold

State-of-the-art manufacturing: Total area is 21,000 m² and 10,000 m² built-up factory area

LEED Gold certification for green buildings and site

TeraSpin products – at a glance

- | | |
|---|--|
| <ul style="list-style-type: none">▪ Spindles – for any make & model of ring frame▪ Weighting arms for roving and ring frames▪ Customised up-gradation kits for drafting▪ Spindle bearing units (inserts) for ring frame spindles | <ul style="list-style-type: none">▪ Top rollers▪ Cradles▪ Distance clips |
|---|--|



TeraSpin – processes



- Implemented some of the best practices & tools like DMAIC, SPC, MSA, Kaizen, TPM, FMEA & DOE
- TeraSpin team has been working continuously to ‘fail safe’ all processes with a common goal to get ‘right the first time’
- Focusing more on product innovation with significant investment in R & D
- As part of environment, health & safety initiatives, TeraSpin is striving for zero pollution, zero waste, zero liquid discharge & zero injuries

TeraSpin – processes



-  Proven and consistent quality
-  High precision
-  Competitive pricing
-  Technical expertise
-  Reliable supplier

TeraSpin – spinning mill customers

Spinning mills in India:

- Arvind Group
- Nahar Group
- Vardhman Group
- Sutej Group
- Trident Group
- KPR Group
- Premier Group
- Ramco Group
- Shanmugavel Group
- RSWM Group
- ... and many more

Spinning mills abroad:

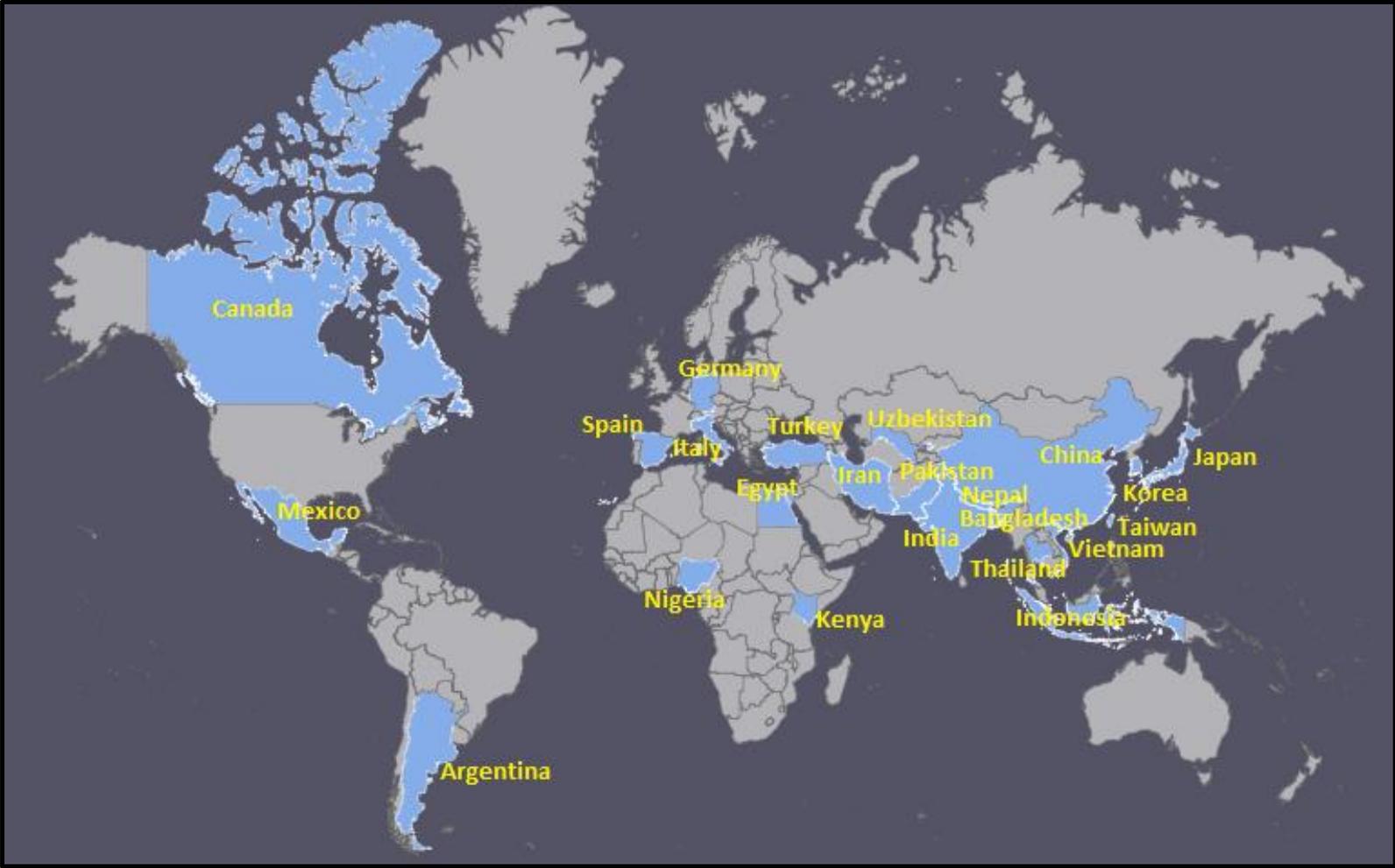
- Triveni, Nepal
- Jamuna Group, Bangladesh
- MSA Group, Bangladesh
- Saiham Group, Bangladesh
- Lucky Spinning, Thailand
- PT Lotus, Indonesia
- Indigo Textile, Egypt
- Phu Group, Vietnam
- Tainan Spinning, Taiwan
- Supratex, Nigeria
- Cotton Road, Uzbekistan
- ... and many more

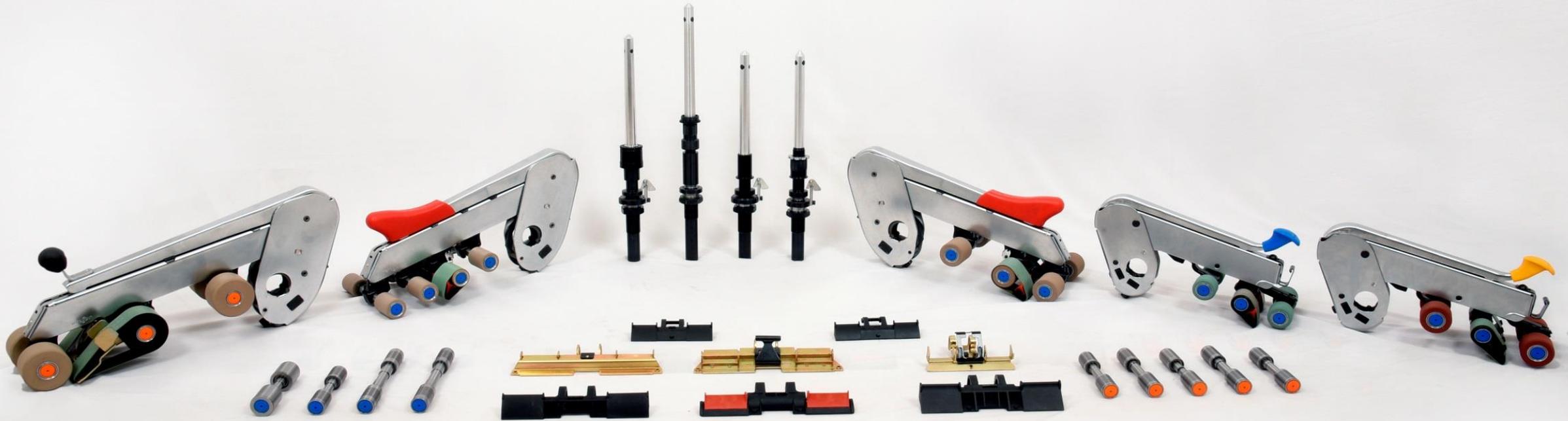
TeraSpin – OEM customers

OEMs:

- LMW, India
- KTTM, India
- Electro-Jet, Spain
- Marzoli, Italy
- Saurer, Germany
- Shanxi Best Machinery, China
- Takahashi, Japan
- Khadi Village Industries Commission, India
- Partzsch, Germany
- ... and many more

TeraSpin – customers around the globe





TERASPIN

Product families

Spindles with HF inserts



Configurations				
Insert	HF 100	HF 1	HF 21	HF 21C
Maximum design speed (rpm)	25,000	22,000	20,000	18,000
Tube length (mm)	Up to 190	Up to 210	Up to 270	Up to 300
Min. wharve Ø (mm)	18/18.5*		20.2	22.2

- *Regular spindles: min. wharve dia. of 18.5 mm
- *Premium Energy Saving spindles: min. wharve dia. of 18 mm

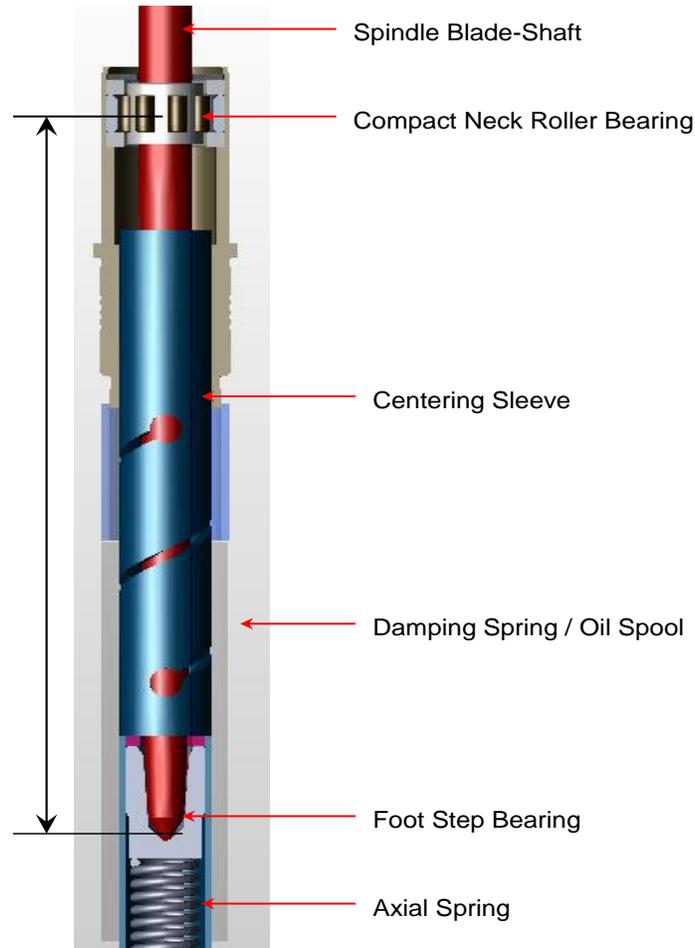
Spindles with HF inserts



Design combination of spindles:

- Spindles for manual doffing ring frames
- Spindles for auto-doffing ring frames:
 - with TeraSpin Smart Yarn Catchers (SYC)
 - with knurling and cutter (K&C)
- Suitable for 4-spindles tape drives or tangential belt drives
- With self-locking inserts or external locking hooks
- Aluminium plug type spindles
- With spring type buttons or centrifugal type buttons

Spindles with HF inserts - insert construction

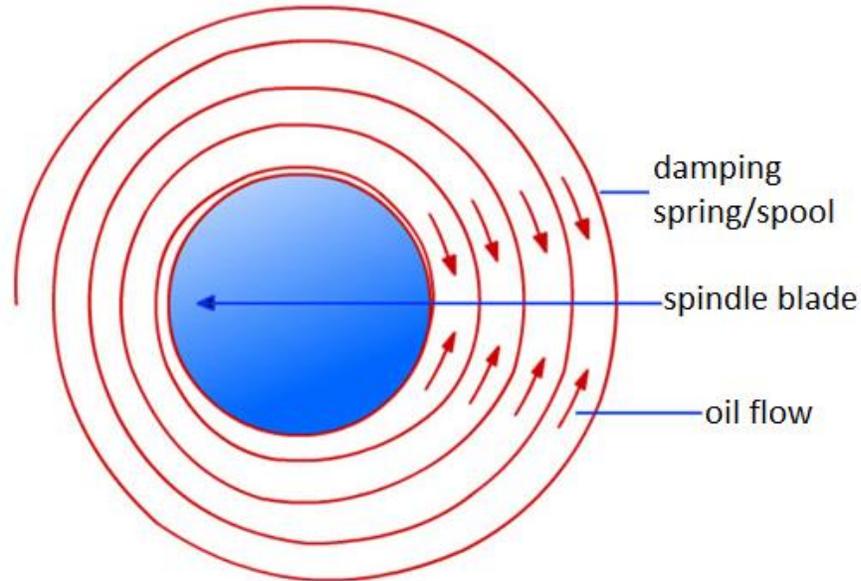


- Well proven conical foot-step
- Axial buffer spring below the foot-step bearing
- Precision wound spiral coils of oil spool
- Compact neck roller bearing
- Steel bolster for better strength and heat dissipation

For HF-100 spindle inserts

- Shorter spindle blade length
- Reduced spindle oil content (by 20%)

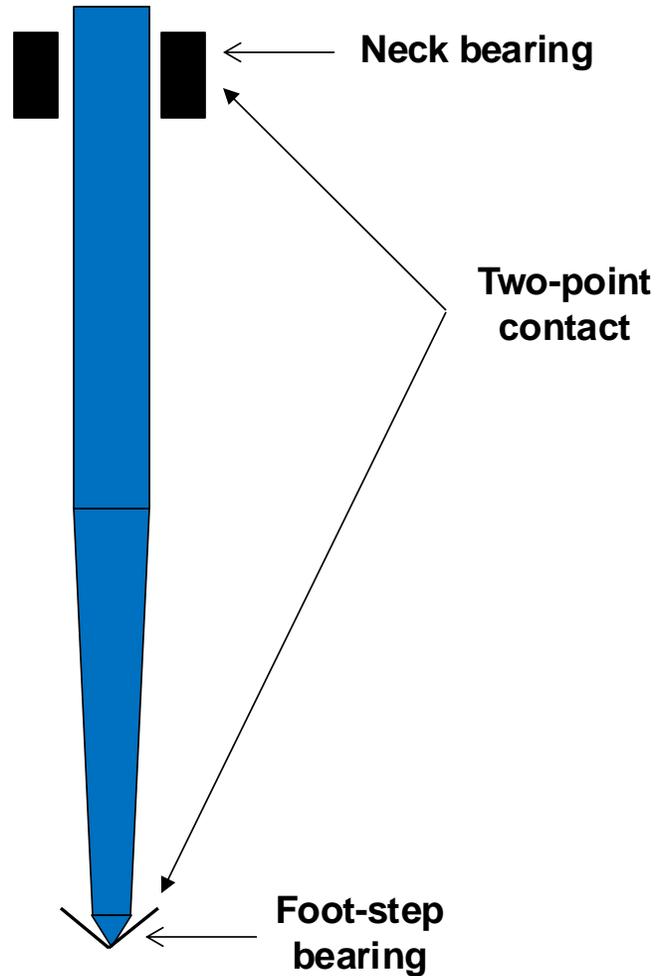
Spindles with HF inserts - damping effect



- Precision wound spiral coils of oil spool, surround the flexible centering sleeve and perform a dual task:
 - Dampens vibrations all the way till the axial spring below the foot-step bearing
 - Facilitates uniform and continuous lubrication of axial spring and foot-step bearing to neck bearing

The spindle is free to spin, but its lateral movement is damped

Spindles with HF inserts – two-point contact



- Point contact between spindle blade tip and footstep bearing ensures extremely low co-efficient of friction and hence, lowest energy consumption
- Freely floating foot-step ensures continuous alignment of spindle top part axis with spindle insert axis with two-point contact

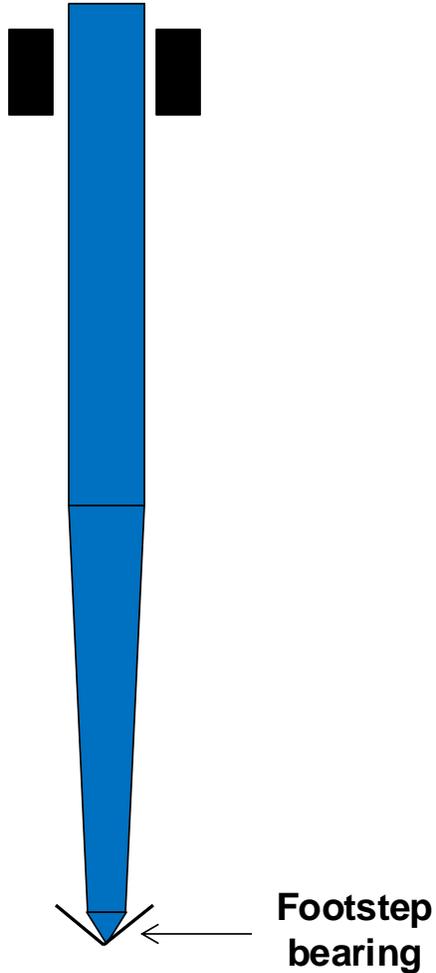
Spindles with HF inserts



Axial spring below foot-step bearing

- Calibrated axial compression spring below the foot-step bearing absorbs load on the spindle tip that may arise during ring rail motion, doffing and donning operations
- This unique feature of the HF series inserts avoids accidental damage the tip due to impact

Spindles with HF inserts – lubrication of foot-step bearing



- Design of the centering sleeve whirls up the oil up to the neck bearing unit at higher speeds and keeps it lubricated
- The difference in the cone angle of the foot-step bearing and the spindle blade tip allows a very good hydro-dynamic lubrication condition
- Thin oil film i.e. hydrodynamic film created between spindle blade tip and foot-step bearing cone keeps the blade tip virtually contactless with the foot-step

[Watch how oil flows and circulates in the bolster cavity when a spindle starts](#)

TeraSpin vs competitor

- [Oil temperature inside the bolster was found less in TeraSpin spindles by 1°C](#)
- [Vibration level at the spindle beam as well as at the bottom of the bolster was found same in TeraSpin as well as in competitor's spindles](#)
- [Stable running behaviour even at lower spindle speed](#)

Weighting arms PK



Weighting arm range			
Type	PK 2000 series	PK 1500 series & PK 1600-40	PK 1601-01
Application	Ring spinning	Roving frame	Worsted spinning
Fibers	Cotton, man-made fibers and their blends		Wool and wool blends
Top roller loading	Pre-compressed coil spring		
Nipping force	Individually set for each roller position		
Finish	Yellow/Silver passivation		

Weighting arms – ring spinning



PK 2025



PK 20235



PK 2025-22R



PK 2035-22R

	PK 2025 PK 2025-22R	PK 2035 PK 2035-22R
Top roller dia. (mm)	28/25/28	35/25/35
Cradle type	Short	Medium/long

	Top roller load (daN)	
	PK 2025 PK 2035	PK 2025-22R PK 2035-22R
Front	6/10/14/18	10/14/18/22
Middle	10/14	
Rear	12/16	

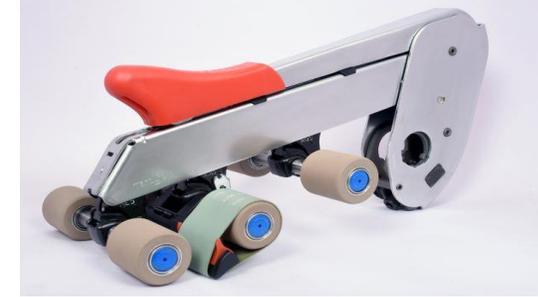
Weighting arms – roving frame: 3-rollers drafting



PK 1500-0962604 YB



PK 1500-0962604 SB



PK 1500-0962604 SR



PK 1500-0962602 YB



PK 1500-0962602 SB



PK 1500-0962602 SR

	PK 1500-0962604		PK 1500-0962602
Cradle	Short	Medium/Long	Short/Medium/Long
Top roller dia. (mm)	6/10/14/18	10/14/18/22	35/25/35

Weighting arms – roving frame: 4-rollers drafting



PK 1500-0001938 YB



PK 1500-0001938 SB



PK 1500-0001938 SR



PK 1600-40 YB



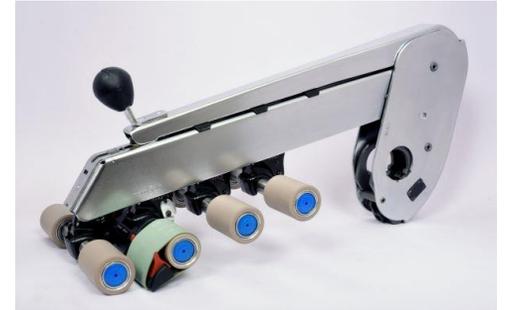
PK 1500-0001940 YB



PK 1500-0001940 SB



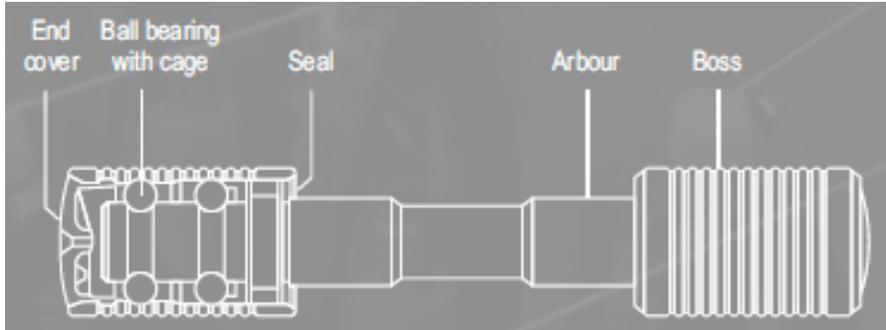
PK 1500-0001940 SR



PK 1600-40 SB

	PK 1500-0001938	PK 1500-0001940	PK 1600-40
Cradle position	3rd roller	2nd roller	2nd roller

Top rollers



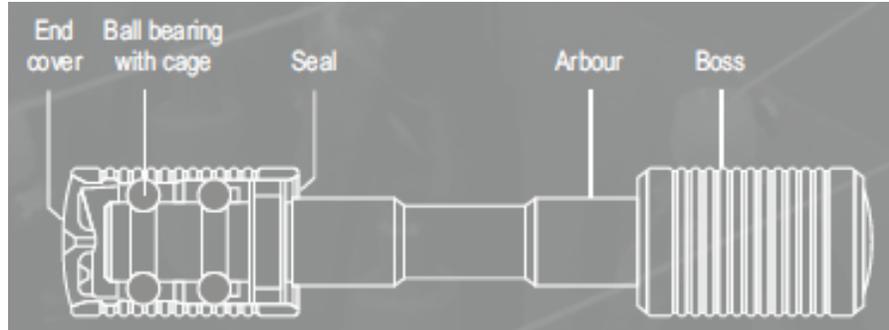
Features:

- Each roller assembly is made with the most appropriately sized balls, matching the ID of shell with OD of axle
- Automatic selection of ball size in steps of 0.002 mm
- Through hardening of axle and outer shells
- Proven & effective U-type sealing
- Lubricated with special TRG 5 grease

Benefits:

- Higher load carrying capacity
- Smoother rolling of top rollers resulting in better & consistent yarn quality
- Smoother rotation leading to longer service life
- No ingress of contamination
- Reduced maintenance – extended re-lubrication intervals due to TRG 5 grease

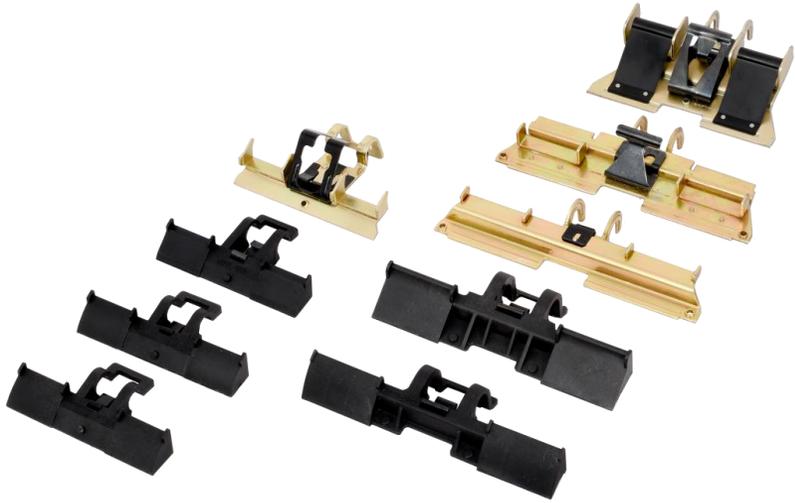
Top rollers



Can offer top rollers for:

- TeraSpin/SKF drafting for short staple ring frames
- TeraSpin/SKF drafting for worsted ring frames
- TeraSpin/SKF drafting for roving frames
- Texparts drafting for short staple ring frames, roving frames & worsted ring frames
- LMW/Rieter P 3-1 drafting

Cradles



Features:

- Metal and FRP cradles
- Rigid and stable structure for use under mill conditions
- Design ensures gentle nipping and effective fibre control
- FRP cradles are lighter in weights compared to sheet metal cradles
- Clean surface for smooth rotation of top aprons
- FRP cradles can easily replace existing metal cradles

Benefits:

- No deformation with FRP cradles ensuring high quality of roving/yarn
- Common spacers for both FRP and metal cradles
- Consistent roving/yarn quality
- Maintenance-free

Also suitable for TEXParts weighting arms of PK 1500/1600 series and PK 2000 series.

Drafting up-gradation kits



Customised drafting up-gradation kits for roving frames as well as ring frames to replace any make & model of existing drafting.

Benefits:

- Increased spindle speed and productivity
- Reduced energy consumption
- Improved and consistent quality of output
- Extended machine life
- Improved price/performance ratio

An economical option over investment in new machines.

Top roller grease: TRG 5



Features:

- Barium based grease, especially suited for spinning mill environment (high temperature and humidity)
- High load carrying capacity
- Good metal affinity
- Excellent water-resistant properties
- Wider range of working temperature (-30°C to $+140^{\circ}\text{C}$)

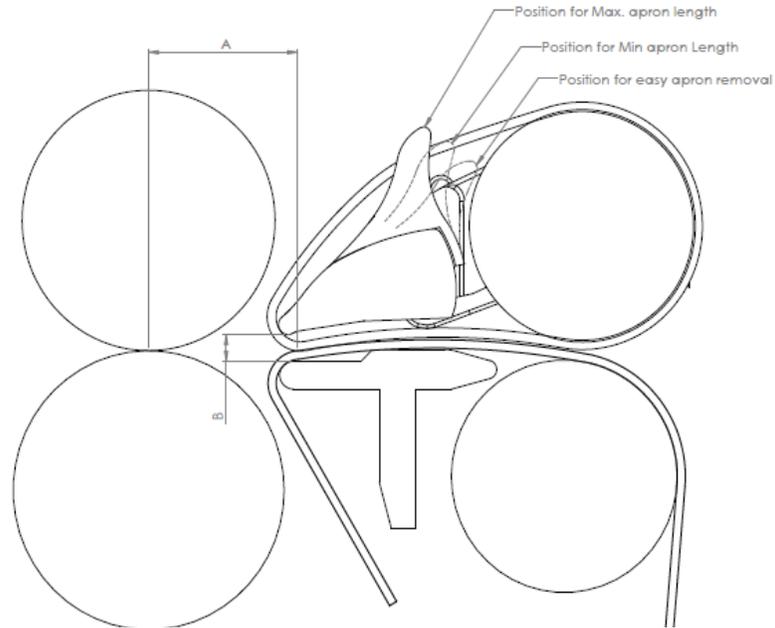
Benefits:

- High load bearing capacity
- Extended re-lubrication intervals reduce maintenance
- Smooth trouble-free operation under mill conditions
- Consistent quality output
- Unique packing of grease in the bucket reduces wastage



New developments

Smart cradles for ring frames & roving frames



Features:

- Minimum contact area minimises friction during apron rotation
- Unique design ensures a fixed radius and hence a uniform distance between apron nip and front roller nip
- Accommodates variations in apron length and maintains uniform apron tension

Benefits:

- Reduced yarn imperfections
- Longer apron working life
- Easy apron removal and mounting during maintenance

[Success story](#)

Smart yarn catcher (SYC)



SYC addresses the drawbacks of a conventional yarn catcher/cutters viz.

- Accumulation of residual yarn on spindle at the end of every doff
- Hard waste on spindles creating imbalances and increased power consumption
- Involves manual cleaning, entailing many man-hours
- Loss of production

Smart yarn catcher (SYC)



Features:

- Automatic opening and closing of clamping faces with change in spindle speed
 - Clamping faces open at about 12500 rpm (+/-500 rpm)
 - Clamping faces close at about 6000 rpm (+/-500 rpm)
- Firm grip of yarn between upper and lower clamping faces
- Special cutter for reliable yarn cutting

Benefits:

- Minimum yarn used for clamping <1 turn
- No accumulation of residual yarn
- No cleaning of residual yarn – less labour hours
- Reduced start-up breaks resulting in improved ring frame productivity
- Very long service life

[How it works...](#)

[Performance of SYC spindles at AGT Mills](#)

Premium ES spindles



Features:

- Minimum wharve diameter: 18 mm (with HF-1 and HF-100)
- Suitable for manual doffing and auto-doffing
- Higher level of manufacturing precision for all spindle components
- Compact neck bearing manufactured with higher precision
- Optimised damping of spindle vibrations with improved design and German components
- Axial spring support against any accidental axial impact

Benefits:

- Significantly lower energy consumption
- Low vibrations and low noise level
- Long life

Performance at customers' place:

[Ne 18 CH against HF-100](#)

[Ne 38 Dyed Pol against HLLD](#) [Ne 61 CW against CS 1](#)

Flexi weighting arms



Suitable for hexagonal arm bars



Easy installation and height setting

Features:

- Fits on the existing hexagonal tube of a pneumatic drafting system
- Accommodates the existing front/back top rollers
- Adaptable to existing compact yarn systems
- Consistent reliable loading through helical coil springs
- Options of 5 different loads on each top roller
- Easily replaceable individual weighting elements
- Easy height (pressure) setting
- Adjustable front top roller off-set up to 6.5 mm

Benefits:

- No compressed air for loading of weighting arms
- Consistent loads delivering consistent yarn quality
- Ease of installation & retention of existing components
- Ease in maintenance – no pressure checking/losses due to compressor & change of cot diameters
- Flexibility to handle wide variety of fibers/yarn counts to suit today's fashion industry demand
- Attractive price:performance ratio
- Longer reliable service life
- Contributes to your initiative of sustainable solutions in the textile industry

Matrix of flexi weighting arms

Model	Arm bar	Cradle	Top roller position (front – middle – rear)
PK S 3220	Hexagonal	Short	LMW – TeraSpin – LMW
PK S 3225	Hexagonal	Medium/long	LMW – TeraSpin – LMW
PK S 3224	Hexagonal	Short	H-Fang compact – TeraSpin – LMW
PK S 3226	Hexagonal	Short	LMW Spinpact – TeraSpin – LMW

Improvement in yarn quality under controlled trials.

- [Ne 30s PC](#)
- [Ne 40s 100% Cotton](#)
- [Ne 46s K](#)
- [Ne 50s 100% Dyed Pol](#)
- [Ne 90s Recycled Pol](#)

HF S series spindles – HF S 681



Features:

- Maximum mechanical speed up to 30,000 rpm
- Min. wharve diameter:
 - 18 mm for ES (Energy Saving) spindle
 - 18.5 mm for other spindles
- Sphero point foot-step design
- Two radial bearings for higher radial loads
- Shorter blade length
- Suitable for various makes and models for ring spinning frames

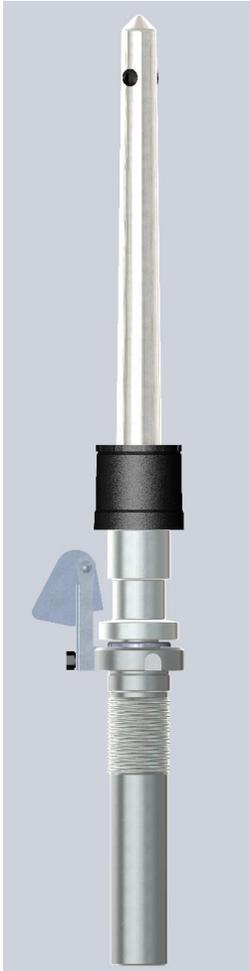
- Supplied with multiple options:

- External hook or internal locking (SL) system
- Smart yarn catcher or knurling and cutter
- Spring-loaded or centrifugal buttons

Benefits:

- Stable running at high loads
- Energy efficient
- Excellent price:performance ratio

HF S series spindles – HF S 682



Features:

- Maximum mechanical speed up to 30,000 rpm
- Min. wharve diameter:
 - 18 mm for ES (Energy Saving) spindles
 - 18.5 mm for other spindles
- Sphero point foot-step design
- Two radial bearings for higher radial loads
- Dual damping system
- Double elastic bolster construction with grease between the two housings for additional damping
- Suitable various makes and models of ring spinning frames

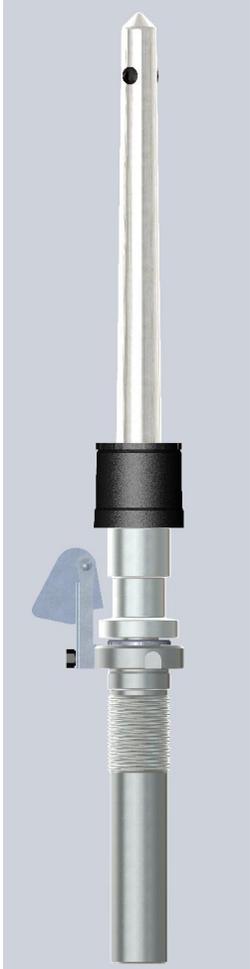
Supplied with multiple options:

- External hook or internal locking (SL) system
- Smart yarn catcher or knurling and cutter
- Spring-loaded or centrifugal buttons

Benefits:

- Very high spindle speed
- Energy efficient
- Very low noise
- Very low vibration

HF S series spindles – HF S 562



Features:

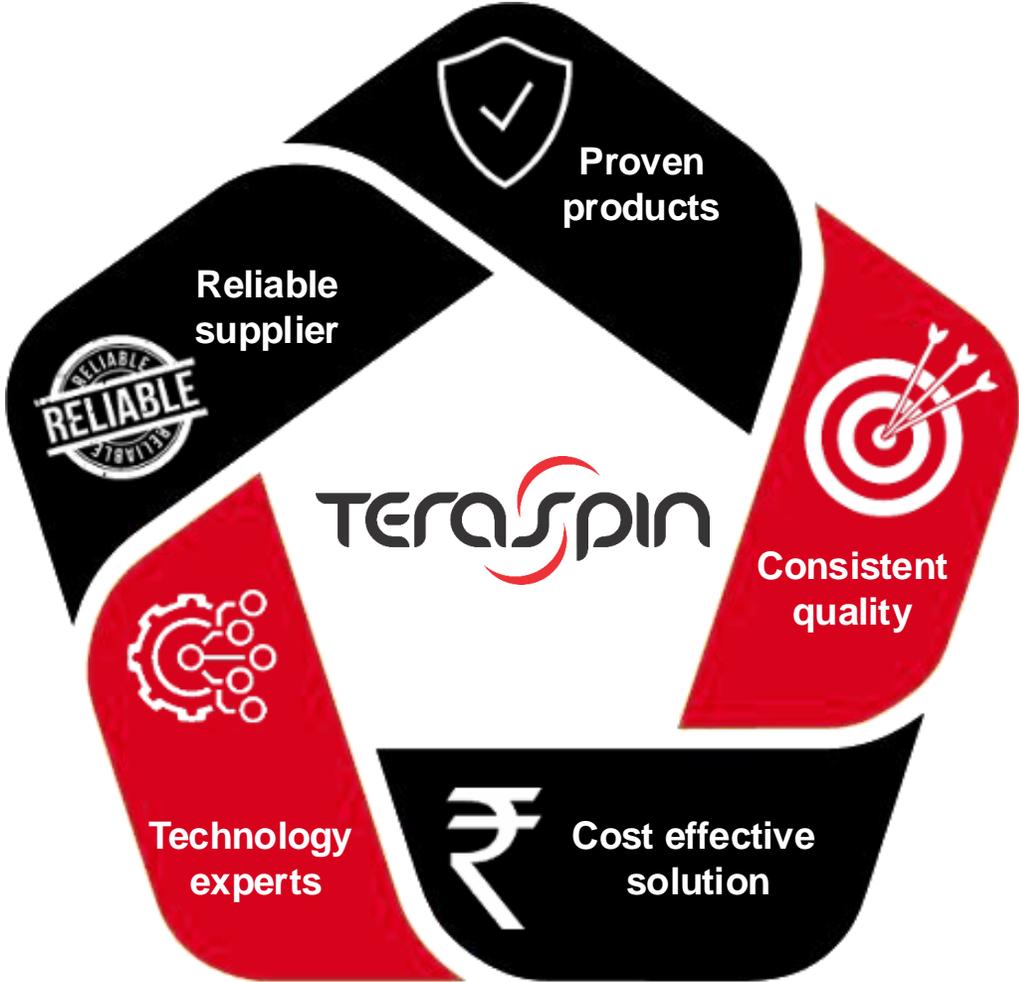
- Maximum mechanical speed up to 30,000 rpm
- Min. wharve diameter:
 - 17 mm for SES (Super Energy Saving) spindles
 - 17.5 mm for ES (Energy Saving) spindles
- Sphero point foot-step design
- Two radial bearings for higher radial loads
- Dual damping system
- Double elastic bolster construction with grease between the two housings for additional damping
- Suitable various makes and models of ring spinning frames

- Suitable for yarn count Ne 30 & above
- Supplied with multiple options:
 - External hook or internal locking (SL) system
 - Smart yarn catcher or knurling and cutter
 - Spring-loaded or centrifugal buttons

Benefits:

- Very high spindle speed
- Very low energy consumption
- Very low noise
- Very low vibration

TeraSpin – the smart choice



Thank You



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