Textiles – Yarn Production

siegling
belting

Siegling – total belting solutions

Forbo
MOVEMENT SYSTEMS

Ensure quality, boost productivity

In close cooperation with producers and textile-machine manufacturers, Forbo Siegling develops power transmission belts and conveyor belts for yarn and textile production. As a leading manufacturer, we make a significant contribution towards more productive and more flexible machine designs and production processes worldwide with our products and services.

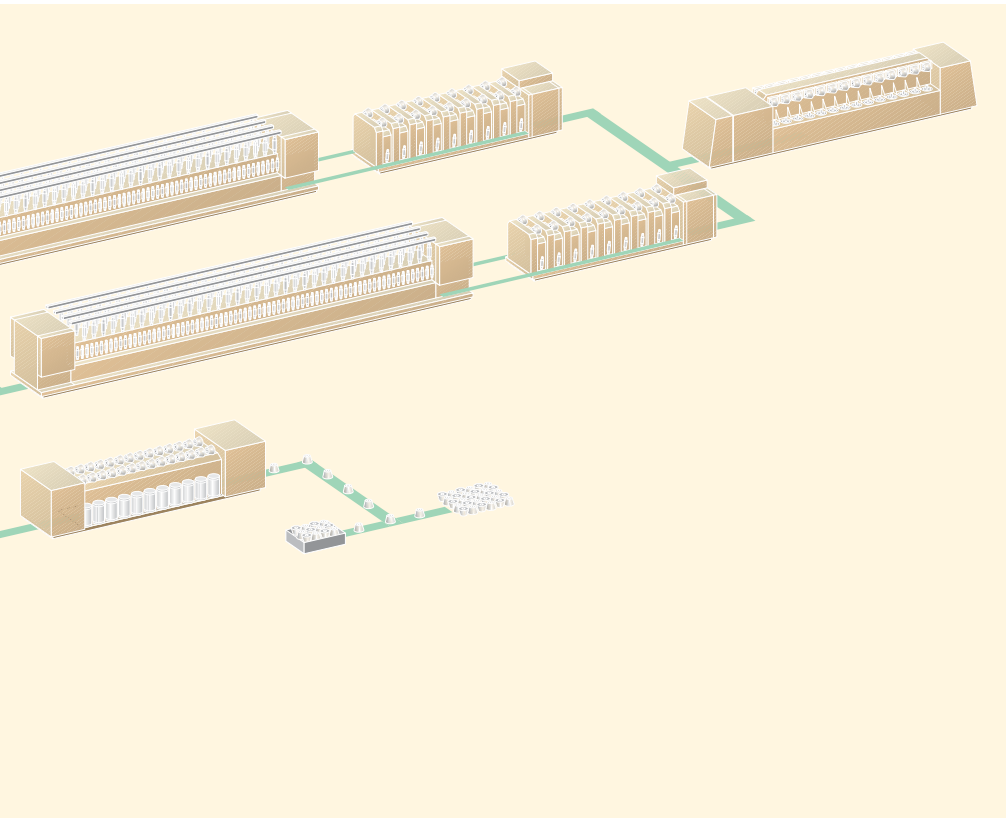
The Siegling Extremultus A + E lines with thermoplastic aramide or polyester tension members are convincing examples. Thanks to their outstanding physical characteristics, they stand out from conventional belt designs with polyamide tension members:

- up to 60 % greater power transmission
- up to 40 % faster belt speeds
- up to 50 % less belt slip and power consumption.

Our products and application technology expertise stand for:

- advanced power transmission solutions to increase performance and quality with Siegling Extremultus spindle and flat belts
- flexible solutions with Siegling Transilon conveyor and processing belt for efficient material flow from the bales to the packaging of the cross-wound bobbins.

Contents



Forbo
MOVEMENT SYSTEMS

Power transmission and tangential belts – a comparison of the types

Auflegedehnung/
Wellenbelastung [%]

❶ Top layer

❷ Tension member

❸ Friction layer

Characteristics of the tension member

Elongation at fitting

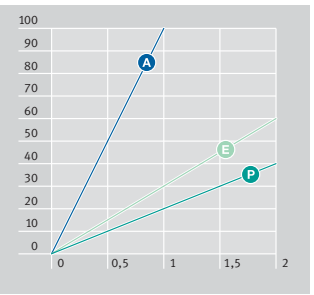
Flexibility

Damping properties

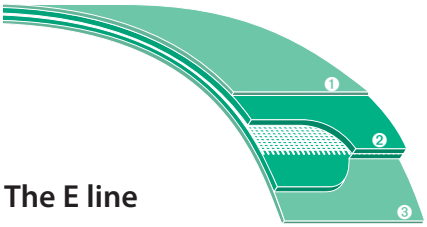
Splice type

Other

Elongation at fitting/shaft load in comparison



siegling extremultus
flat belts



The E line

Highly wear-resistant friction coating made of elastomer G (green) or polyester blended fabric T (spindle belt)

Thermoplastic tension member with polyester fabric in warp and weft

Highly wear-resistant elastomer G (green) or highly wear-resistant urethane (green)

Transmission of high pull with little elongation

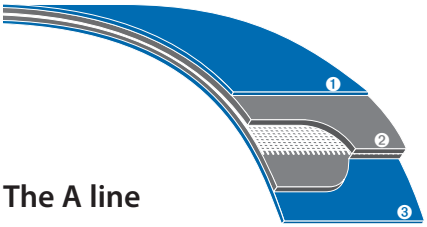
1.0 % – 2.0 %

High flexibility

Very good

Z-splice 70 x 11.5 mm or 35 x 11.5 mm without adhesives

Power transmission belts with tension members made of polyester fabric are able to transmit high specific pull and provide very good performance at an affordable price. They are an optimal solution for virtually any application.



The A line

Highly wear-resistant elastomer G (blue)

Thermoplastic tension member with highly modular blended fabric und aramid warp

Highly wear-resistant elastomer G (blue)

Transmission of very high pull with little elongation

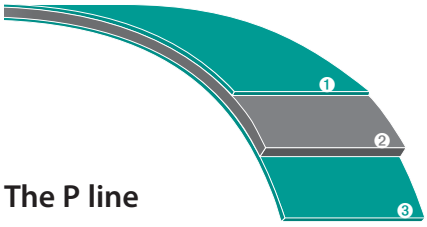
0.3 % – 0.8 %

High flexibility

Low

Z-splice 110 x 11.5 mm without adhesives

Power transmission belts with tension members made of aramide fabric are designed for high specific pull (≤ 70 N/mm). Careful handling is an important prerequisite for smooth-running operation in the A line.



The P line

Chrome leather, highly wear-resistant elastomer G (dark green) or polyamide fabric

Highly orientated polyamide sheet

Chrome leather or highly wear-resistant elastomer G (dark green)

Transmission of high pull

1.5 % – 3.0 %

Little flexibility

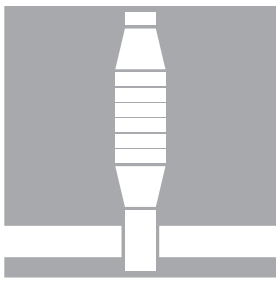
Very good

Ground wedge splice with adhesive

Power transmission with tension members made of polyamide sheets are very stiff laterally and have good damping properties.

The properties	The advantages
higher module of elasticity with good damping properties	maximum consistency of speed, short take-up ranges
greater power transmission efficiency of belt cross sections	greater transmission of power, space-saving machinery designs
very flexible	low power consumption, small drum diameters
highly wear-resistant friction coatings with constant, grip properties	consistent yarn quality, long service life
not sensitive to ambient conditions and not susceptible to breakage	improved belt tracking, maintenance-free, increased operating reliability
precise Z-splice, homogeneous welded splice	spindle bearings are treated gently, less noise

The right type of belt for every application

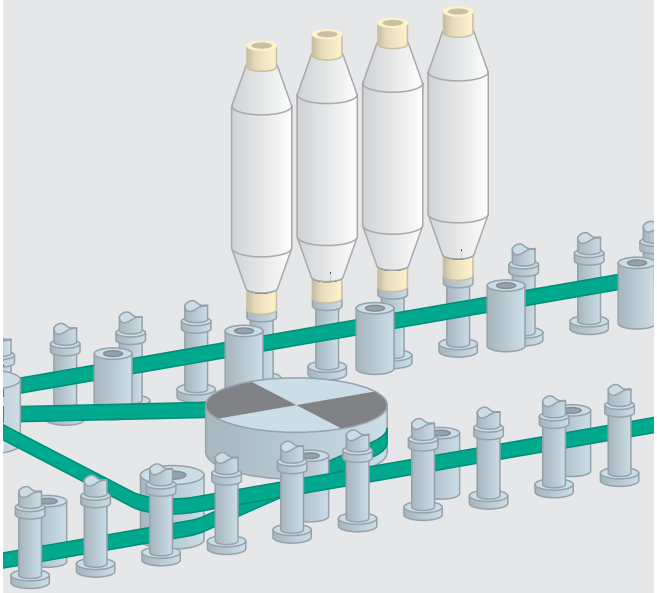


Sectional tangential belt drives

The properties of the A+E line are ideal for this application.

The highly modular, flexible belt design saves energy and minimizes RPM variations in the spindle section.

The precise Z-splice ensures that the belt tracks with little oscillation, treating the machinery gently, which improves yarn quality and the service life of the drive components, while decreasing energy and maintenance costs.

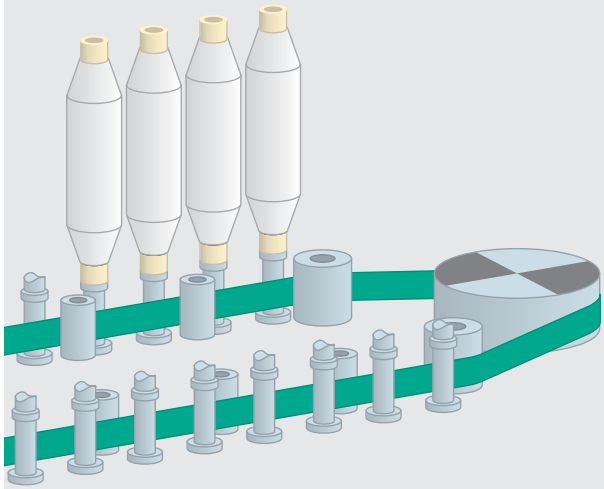


Conventional tangential belt drives

In addition to the tried-and-tested, attractively priced tangential belts in the P line, highly modular, flexible and energy-saving tangential belts are also becoming increasingly popular.

The A+E line offers a real alternative to allow affordably priced yet powerful designs.

The Z-splice method ensures quick, secure splicing in the machine with low fluctuations in thickness in the splice.
As a result, the belt runs smoothly and there is little wear-and-tear on the material.

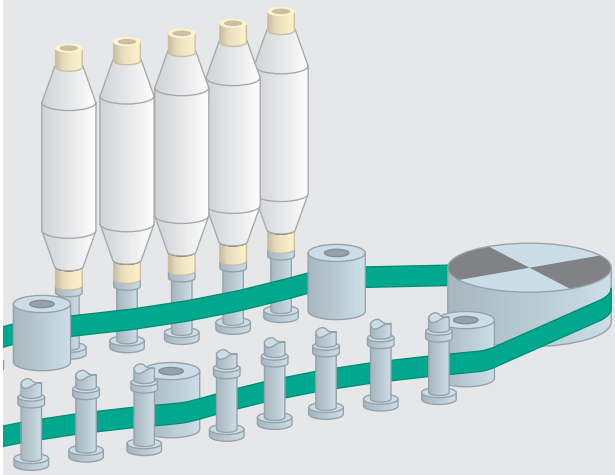


Tangential belt drives with concave/convex drive geometry

This type operates without pressure rollers.

A highly modular tension member, not affected by changes in ambient conditions, is ideal for small pulley diameters, short take-up ranges and fluctuations in ambiant conditions.

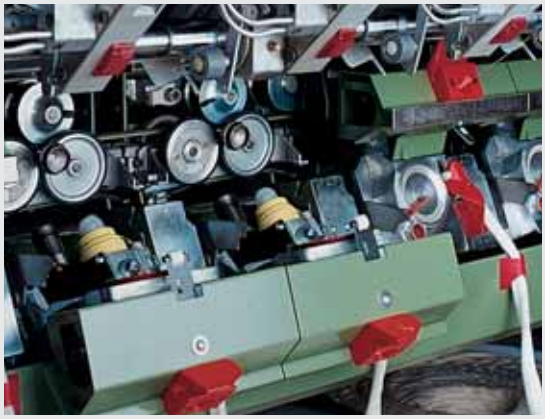
In this case, the E line offers the greatest possible benefits for the application technology – also in terms of operating and maintenance costs.

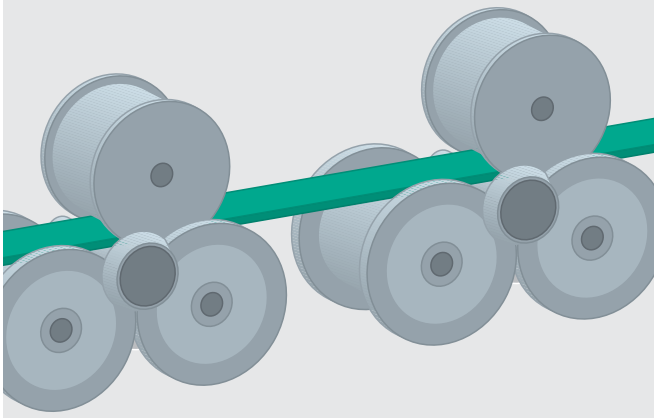


Rotor power transmission belts for OE machines

Under the trade name of GG 20N-HP black SV, Forbo Siegling has achieved milestones in the development of rotor power transmission technology:

- with the extremely wear-resistant black OE coating
- with the highly precise, endless SV splice
- with the precise HP ground texture.





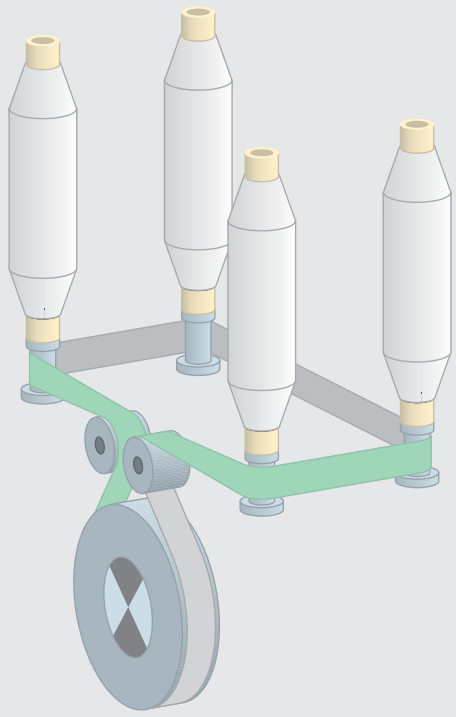
The right type of belt for every application

Spindle belts

Siegling Extremultus spindle belts are designed for ring spinning frames and double twisters with two, four or eight spindle drive. They are equipped with:

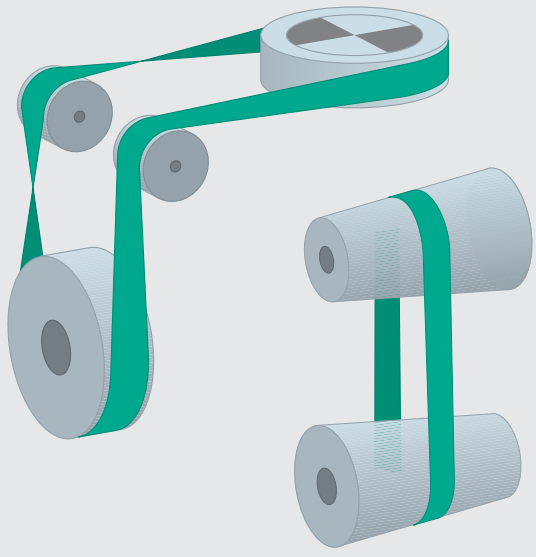
- permanently antistatic properties
- a coating on the pulley face made of wear-resistant polyurethane
- impregnated, wear-resistant fabric construction of the wharve side

Thanks to the Z-splice, they can be made endless quickly and easily. Adhesives are not required. UT 8E requires neither adhesives nor additional splicing film.



High-efficiency flat belts

Siegling Extremultus flat belts are characterized by their long service life, high efficiency of > 98 % and good damping properties. Several shafts can be drive simultaneously in the same and opposite directions. In addition, these belts can be turned at an angle to the axis in the running direction (mule drive) and also used on conical pulleys (taper-cone drive).



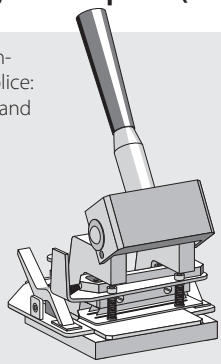
Perfect splice technology

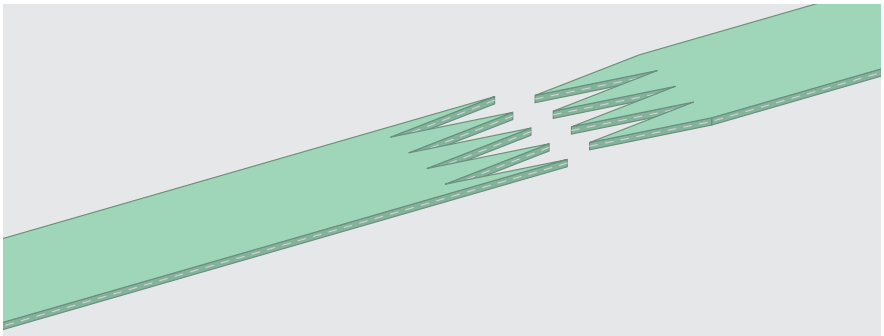
Thanks to our splice methods and tools, Siegling Extremultus flat belts can be made endless quickly and easily – and the A+E line does not even require any adhesives. Detailed splice instructions are available on request.

The GS-certified Siegling Extremultus SM-HC 50/40 and SM-HC 50/60 heat presses are also available with complete accessories as sets in a practical case.

Preparing the Z-splice (A+E line)

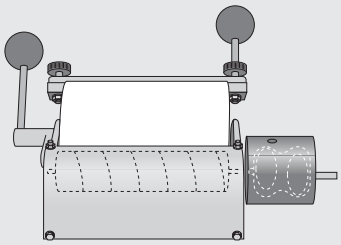
Manual punch-cutter for Z-splice: PP-ZP-V/40/3 and PP-ZP-V/40/6

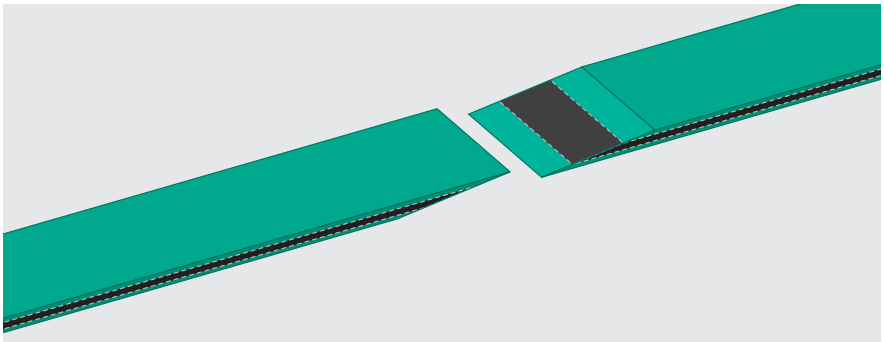




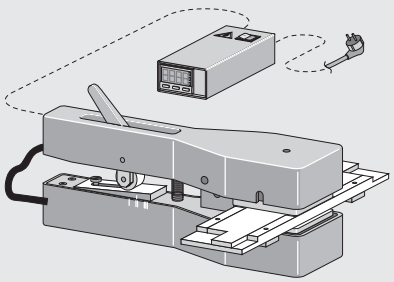
Preparing the wedge splice (P line)

PG-GM-V/130 grinder for the ground wedge splice

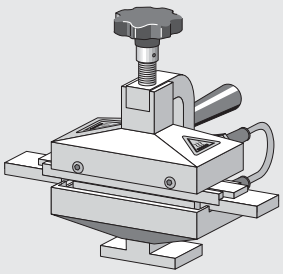




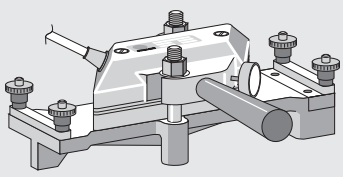
Heating tools



SM-HC-50/40 and SM-HC-50/60 heating clamp for the E line (Z-splice)



SMX-HC-130/40 heating device for the A+E line (Z-splice)



SB-HP-120/50 heating device for the P line (wedge splice)

Selection from product range

	Technical data								Splice		
	Belt thickness, approx. [mm]	d_{min} [mm] [1]	Nominal effective pull, approx. [N/mm width] [2]	Nominal working elongation [% of belt length]	Max. transmittable effective pull [N/mm belt width]	Elongation at fitting [% of belt length]	Weight, approx. [kg/m²]	Permissible operating temperatures [°C] (long-term temperature)	Z-Splice splice length [mm]	Ground wedge splice	Splicing instructions ref. no.
A line											
GG 25A-20 blue	2.0	40	25	0.5	32.0	0.3 – 0.8	2.3	-20°/+70°	110		406/407
GG 25A-25 blue	2.5	60	25	0.5	32.0	0.3 – 0.8	2.7	-20°/+70°	110		406/407
GG 40A-32 blue	3.2	90	40	0.5	50.0	0.3 – 0.8	3.5	-20°/+70°	110		406/407
E line											
GG 15E-18 green [4]	1.8	25	15	2.0	15.0	1.0 – 2.0	2.0	-20°/+70°	35/70		406/407/410
GG 20E-20 green [4]	2.0	30	20	2.0	20.0	1.0 – 2.0	2.3	-20°/+70°	35/70		406/407/410
GG 25E-25 green [4]	2.5	40	25	2.0	25.0	1.0 – 2.0	2.7	-20°/+70°	35/70		406/407
GG 30E-32 green	3.2	60	30	2.0	30.0	1.0 – 2.0	3.4	-20°/+70°	70		406/407
GG 30E-40 green	4.0	60	30	2.0	30.0	1.0 – 2.0	4.3	-20°/+70°	70		406/407
LT 14E [6]	2.7	40	14	1.0	17.5	0.5 – 1.5	2.1	-20°/+70°	helically-wound endless		
LT 20E [6]	3.0	60	20	1.0	25.0	0.5 – 1.5	2.4	-20°/+70°	belt design with		
LT 28E [6]	3.6	90	28	1.0	35.0	0.5 – 1.5	3.0	-20°/+70°	polyester cord threads		
P line											
GG 10P green	1.9	30	10	2.0	12.5	1.5 – 3.0	1.9	-20°/+80°		●	400
GG 14P green	2.1	50	14	2.0	17.5	1.5 – 3.0	2.1	-20°/+80°		●	400
GG 20P green	2.6	70	20	2.0	25.0	1.5 – 3.0	2.9	-20°/+80°		●	400
GG 20P-TEX green	2.9	70	20	2.0	25.0	1.5 – 3.0	3.2	-20°/+80°		●	400
GG 20N-HP black SV [5]	2.6	90	20	2.0	25.0	1.5 – 3.5	3.3	-20°/+80°		SV	–
GG 28P green	3.2	120	28	2.0	35.0	1.5 – 3.0	3.6	-20°/+80°		●	400
GG 34P green	3.4	140	34	2.0	42.5	1.5 – 3.0	3.9	-20°/+80°		●	400
GG 34P-TEX green	4.0	140	34	2.0	42.5	1.5 – 3.0	4.5	-20°/+80°		●	400
GT 6P green/black	1.3	25	6	2.0	9.0	1.5 – 3.0	1.3	-20°/+80°		●	400
GT 10P green/black	1.6	30	10	2.0	12.5	1.5 – 3.0	1.6	-20°/+80°		●	400
GT 14P green/black	1.8	50	14	2.0	17.5	1.5 – 3.0	1.8	-20°/+80°		●	400
GT 20P green/black	2.5	70	20	2.0	25.0	1.5 – 3.0	2.7	-20°/+80°		●	400
GT 28P green/black	3.0	120	28	2.0	35.0	1.5 – 3.0	3.3	-20°/+80°		●	400
LL 10P	3.5	40	10	2.0	12.5	1.5 – 3.0	3.1	-40°/+80°		●	400
LL 14P	3.8	60	14	2.0	17.5	1.5 – 3.0	3.6	-40°/+80°		●	400
LL 20P	4.3	90	20	2.0	25.0	1.5 – 3.0	4.2	-40°/+80°		●	400
LT 10P	2.4	40	10	2.0	12.5	1.5 – 3.0	2.5	-40°/+80°		●	400
LT 14P	2.8	60	14	2.0	17.5	1.5 – 3.0	2.6	-40°/+80°		●	400
LT 20P	3.0	90	20	2.0	25.0	1.5 – 3.0	2.9	-40°/+80°		●	400
Spindle tapes											
UT 5P green	0.7	15	5	2.0	–	0.5 – 2.0	0.5	-20°/+80°	35	●	410
UT 8E green	0.7	15	8	2.0	–	0.5 – 2.0	0.6	-20°/+80°	35		410

Legend

GG types are symmetrical with a standard pattern friction coating on both sides.

[1] Minimum drum diameter was determined at room temperature. Lower temperatures require larger drum diameters. For the P line, this also applies in the case of low humidity.

Recommended dmin for power transmission:
A line: 2.5 x type number
E line: 2 x type number
P line: 5 x type number
(7 x type number at relative humidity < 40 %)

[2] Nominal effective pull specifies the power transmission in N per mm belt width possible for the belt type (standard operating environment)

[3] Maximum permissible operating temperature may be exceeded short term by 20 °C/26 °F

[4] 35 mm Z-splice possible for certain applications

[5] HP precision ground texture on both sides available only as endless belt (SV special splice)

[6] Helically-wound endless design available only endless

● yes/suitable ❑ please inquire

A = Aramide
E = Polyester
G = Elastomer G
P = Polyamide
T = Blended or polyamide fabric
U = Polyurethane
HP = Precise ground texture
TEX = Normal textured pattern on both sides, exceptionally low noise

siegling extremultus

flat belts

Applications	Tangential belts				Power transmission belts						Spindle tapes		
	Conventional spindle drives	Sectional drive with linear spindle arrangement	Sectional drive with concave/convex spindle arrangement	High-efficiency rotor belts for OE spinning frames	Simple, 2-pulley drives	Transmission of power from one face	Multiple pulley drives	Drives where oils or greases are a major factor	Mule drive / torsional drive	Taper-cone drive	Conventional ring spinning frame drives	Spindle drives for middle-heavy cops for synthetic and wollen yarns	Heavy spindle drives with belt alleviation when spindles stop
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Chemical resistance

Siegling Extremultus is permanently antistatic, to a large extent maintenance-free, has good chemical resistance to:

Oil mist, petrol, machine oils and greases, moisture, white spirit, household cleaning agents and numerous solvents, and limited resistance to: alcohols.

Direct contact with acetone, chlorinated hydrocarbons and concentrated acids should be avoided.

Can be supplied as:

– Roll material for independent belt fabrication (standard lengths for spindle tape: 150 m).

– Endless belts*.

– Belts prepared for hot-pressing on site*.

– Customized belts with perforations or profiles welded on – please inquire

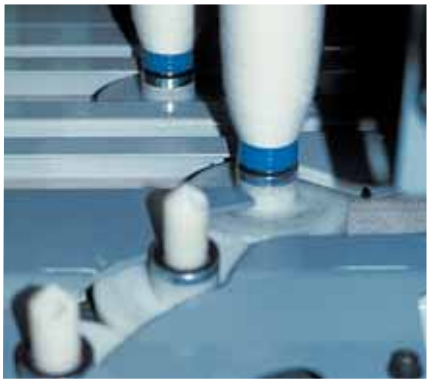
* Please specify the desired type of splice. For belt lengths < 500 mm and > 125 m please inquire.

Type code

Friction coating
Top coating/friction coating
Type number/F_W value* or F_U' value*
Tension member
Thickness, approx. [mm/10]/special construction

* The F_W value/F_U' value indicates the effective pull / elongation properties measured in N/mm belt width.

Applications for conveyor and processing belts



Siegling Transilon conveyor and processing belts optimize the economical, automated flow of material and also make a significant contribution to quality control and flexibility in production processes, thanks to:

- little wear and tear on the material in the delivery of the bale, in the blending and cleaning the flock, in conveying the fibres to the cards and drawing frames or in feeding the fibre to the ring spinning frame
- the reliable removal of waste and debris and cross-wound bobbins in OE spinning frames
- increased productivity in the material flow of empty bobbins, cops or cop trays in fully automatic, linked systems, on winders and twisters right up to the intermediate storage and packaging of cross-wound bobbins.

Siegling Transilon often crosses the line between simple conveyor functions and the active participation in the production process. Used as printing blankets on rotary and silk-screen printing machines or as cross-lapper belts for the lapping of fine, light layers of web are excellent examples of the performance ability and versatility of this product range.

The table on the following pages includes an overview, sorted according to industry, of types available for yarn production.

Please do not hesitate to contact us if you would like information on our complete range of products and special processing belt applications.

Depending on the belt type and coating, Siegling Transilon is

- antistatic
- conductive on the top face in compliance with ISO/DIN
- low-noise
- resistant to oil mist and other chemical effects
- adhesive or with low drag
- smooth or patterned
- wear-resistant
- kind to materials
- resistant to soiling

The properties	The advantages
extensive range of types	ideal solutions for efficient material flow
low elongation	short take-up ranges, easy to adjust, no re-tensioning required
dimensionally stable and low-noise	reliable tracking even in changes in ambiant conditions, reduced noise
antistatic and with cleanly cut edges	long service life and minimal cleaning should fluff accumulate
light and flexible	easy to fit, low energy consumption
wide range of practical accessories	belts easy for customers to make endless themselves

Excerpt from the product range

	Technical Data							Splice			
	Top face coating	Permanently antistatic	Total thickness, approx. [mm]	Weight approx. [kg/m²]	Effective pull at 1% elongation ($k_{1\%}$ relaxed) [N/mm width]*	d_{min} approx. [mm] **	Permissible operating temperature [°C][3)]	Z-splice Instructions ref. no.	Stepped Z-splice Instructions ref. no.	Overlap splice Instructions ref. no.	Mechanical fastener, type
Tension member of polyester fabric											
E 3/2 U0/U0 transparent FDA[1)]	Urethane impregnated	●	1.2	1.1	5.0	6	-30/+100	361		303	HS-02
E 3/2 U0/U2 HACCP white FDA[1)]	0.2 mm Urethane	●	1.4	1.6	5.0	6	-30/+100	361	421	303	HS-01
E 4/1 P2/P2 MT/MT-HC black	0.2 mm Polyamide	HC	0.7	0.8	4.0	60	-30/+100	361		303	HS-02
E 4/1 U0/V5H MT green	0.5 mm Hard PVC	●	1.1	1.2	4.0	30	-10/+70	363		310	HS-01
E 4/1 V4H/V4H MT/STR green	0.5 mm PVC hart	●	1.4	1.7	4.0	30	-10/+70	363		310	HS-02
E 4/2 U0/P2 MT-HC black	0.2 mm Polyamid	HC	0.9	1.0	4.0	60	-30/+100	361		303	HS-01
E 5/2 0/V5H MT black[2)]	0.5 mm PVC hart	●	1.9	2.2	4.5	40	-10/+70	363	421	310	HS-13
E 10/1 U1/Z30-Q transparent	3.0 mm Polyester felt	●	4.0	1.7	15.0	40	-30/+100	361		303	HS-11
E 8/2 U0/V/U2H MT green	0.2 mm Urethane hart	●	1.6	1.8	8.0	40/60	-10/+70	363		310	HS-02
E 8/2 U0/U2 green[3)]	0.2 mm Urethane	●	1.4	1.6	7.5	25	-30/+100	361	421	303	HS-02
E 8/2 0/U10 S/LG green[4)]	1.0 mm Urethane	●	2.2	2.2	8.0	40	-30/+100	361	421	303	HS-14
E 8/2 Y0/V4 GSTR black	0.4 mm PVC	●	2.1	2.2	6.0	40	-10/+70	363	421	310	HS-13
E 8/2 U0/V5 green[3)]	0.5 mm PVC	●	2.2	2.5	8.0	40	-10/+70	363	421	310	HS-13
E 8/2 U0/V5H MT black	0.5 mm PVC hart	●	2.2	2.5	8.0	50	-10/+70	363	421	310	HS-13
E 8/2 U0/V5 STR green	0.5 mm PVC	●	2.4	2.7	8.0	60	-10/+70	363	421	310	HS-13
E 8/2 U0/V10 SG green[4)]	1.0 mm PVC	●	2.6	2.8	8.0	60	-10/+70	363	421	310	HS-13
E 8/2 U0/V15 LG green[4)]	1.5 mm PVC	●	3.1	3.4	8.0	60	-10/+70	363	421	310	HS-05
E 8/2 U0/V20 AR green[4)]	2.0 mm PVC	●	4.9	4.0	8.0	40	-10/+70	363	421	310	HS-05
E 8/2 V1/V1 blue FDA	0.1 mm PVC	●	2.0	2.4	6.5	50	-10/+70	363	421	310	HS-14
E 8/2 V5/V5 STR/GL green	0.5 mm PVC	●	2.6	3.2	8.0	40	-10/+70	363	421	310	HS-11
E 12/2 U0/UH green FDA	0.1 mm Urethane hart	●	1.4	1.5	13.0	40	-30/+100	361			HS-02
E 12/2 U0/U2-C green FDA	0.2 mm Urethane	●	1.8	2.0	13.0	60	-30/+100	361		303	HS-02
E 12/2 U0/V/U0 transparent	Urethane impregnated	●	1.5	1.5	13.0	60	-10/+70	311	421	310	HS-03
E 12/2 U0/V3 MT-C black[2)]	0.3 mm PVC	●	2.3	2.7	6.5	60	-10/+70	363	421	310	HS-13
E 12/2 U0/V7 green	0.7 mm PVC	●	2.8	3.4	11.0	60	-10/+70	363	421	310	HS-05
E 12/2 V5/V10 STR/GL green	1.0 mm PVC	●	3.2	3.9	14.0	60	-10/+70	363	421	310	HS-05
Tension member of polyamide sheet											
P 27/3 black FDA	homogeneous Polyamide	●	3.1	3.5	27.0	250	-40/+80			400	

Legend

* Established in line with ISO 21181:2005

** Minimum drum diameters were determined at room temperature and do not apply to conveyor belts with mechanical fasteners. Lower temperatures require larger drum diameters. Belts with profiles or sidewalls may require larger drum diameters. Please see brochure ref. no. 318, Siegling Transilon Technical Information 2.

*** Maximum permissible operating temperature may be exceeded short term by 20 °C/36 °F

[1)] Suitable for knife edge applications

[2)] Also available in green

[3)] Also available in white FDA

[4)] Also available in black

● Yes/suitable

❑ Please inquire

E = Polyester
P = Polyamide
U = Urethane
UH = Hard urethane
V = PVC
VH = Hard PVC
0 = Uncoated
U0 = Urethane impregnated

AR = Anti-skid pattern
GSTR = Coarse textured pattern
GL = Smooth surface
LG = Longitudinal groove
MT = Matt surface
SG = Lattice pattern
STR = Normal textured pattern

C = Laterally flexible, suitable for curved belts
FDA = FDA-compliant
HACCP = Supports the concept HACCP

HC = Highly-conductive
M = Particularly Stiff laterally
Q = Laterally soft tension member, not for curved belts

Supplied as

- Endless belts*
- Belts prepared for hot or cold-pressing on site*
- Roll material for customer to fabricate belt
- Belts with mechanical fasteners
- Belts with sealed edges
- Belts with profiles welded on (longitudinal, lateral, diagonal, half-round)
- Belts with sidewall profiles
- Belts with perforations or eyelets
- Belts with special coatings

* Z-splice is standard
Please specify if other splice is desired.

Applications

Troughable	Suitable for accumulation conveying	Available with profiles	Available with edge-sealing	Bale opening systems (Covering belts)	Blending opener	Conveying of web and sliver	Conveying of cops and empty bobbins	Conveying of trays in winding frames	Trash conveying belts	Conveying of cross-wound bobbins	Packaging lines
	❑	❑				●	●	●			●
	❑	●	●			●	●			●	●
						●					
●	❑	❑	●			●			●		
		❑	●			●			●	●	
						●					
❑	❑	●	●				●			●	●
									●		
	●		●			●	●	●			●
	❑	●	●			●	●	●			●
							●	●			●
❑		●	●		●		●				●
		●	●		●	●	●			●	●
	❑	●	●		●	●	●	●		●	●
		●	●		●		●			●	●
		●			●	●					●
		●					●				●
❑	❑				●		●	●		●	●
		●	●		●						●
	●					●	●				●
●	❑	❑	●				●			●	●
	●	❑	●		●		●	●		●	●
●	❑	●	●				●			●	
		●	●		●						●
		●			●						●
				●							

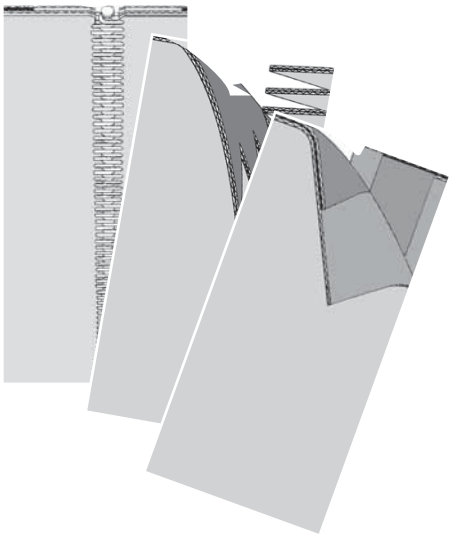
siegling transilon

conveyor and processing belts

Chemical resistance

Siegling Transilon can be spliced quickly and easily, is maintenance-free and chemically resistant to: oil mist, machine oils and greases, white spirit, household cleaning agents and numerous solvents.

Detailed information about chemical resistance of each coating material available on request.



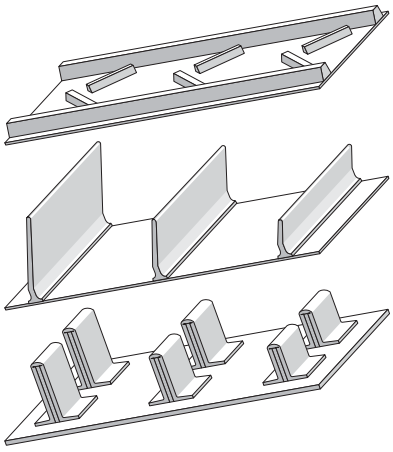
Type code

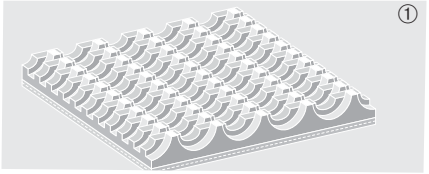
- Fabric material
- Type class
- Number of plies or multy-ply fabric (M)
- Underside coating [mm/10]
- Top face coating [mm/10]
- Pattern/special type

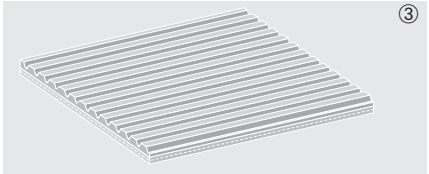
E 8/2 U0/V5
E 12/2 U0/V3 MT-C

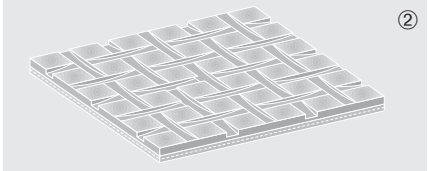
Splicing instructions available on request.

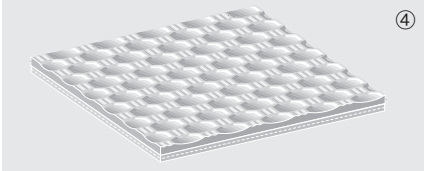
For information about profiles and fabrication options, please see brochure "Technical Information 2", ref. no. 318.









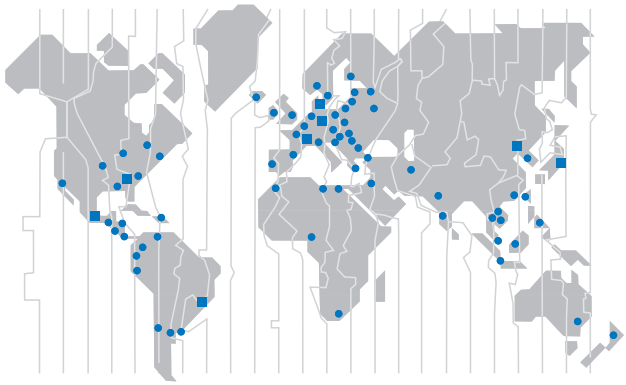


① Anti-skid pattern (AR)
② Lattice pattern (SG)
③ Longitudinal groove (LG)
④ Normal textured pattern (STR)

Siegling – total belting solutions

Committed staff, quality-orientated organisation and production processes ensure the constantly high standards of our products and services. The Forbo Siegling Quality Management System is certified in accordance with DIN EN ISO 9001:2000.

In addition to product quality, environmental protection is an important corporate goal. Early on we also introduced an environmental management system, certified in accordance with ISO 14001.



Forbo Siegling Service – anytime, anywhere

In the company group, Forbo Siegling employs more than 1900 people worldwide. Our production facilities are located in eight countries; you can find companies and agencies with stock and workshops in more than 50 countries. Forbo Siegling service centres provide qualified assistance at more than 300 locations throughout the world.

Forbo Siegling GmbH
Lilienthalstrasse 6/8, D-30179 Hannover
Telefon +49 511 6704 0, Fax +49 511 6704 305
www.forbo-siegling.com, siegling@forbo.com

MOVEMENT SYSTEMS

Forbo Movement Systems is part of the Forbo Group, a global leader in flooring, bonding and movement systems.

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