optibelt

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Technical Information

TIMING BELTS

Polyurethane ALPHA

optibelt

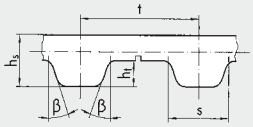
Power Transmission

Drive solutions with Optibelt

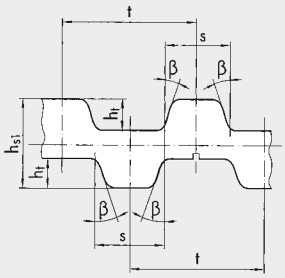
optibelt *ALPHA Power*
for drive performance

Optibelt ALPHA Power timing belts are manufactured in moulds and consist of high tensile strength, flexible tension cord and abrasion-resistant polyurethane – also available as double section belts. The moulding process offers the following advantages:

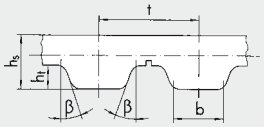
- High pitch accuracy and low tolerances
- Excellent bonding of the polyurethane to the tension cord
- Belt lengths of up to 2350 mm
- Nominal sleeve widths up to 380 mm



Sections: T2.5; T5; T10; T20

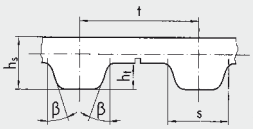


Sections: T5D; T10D; T20D



Sections: AT5; AT10; AT20

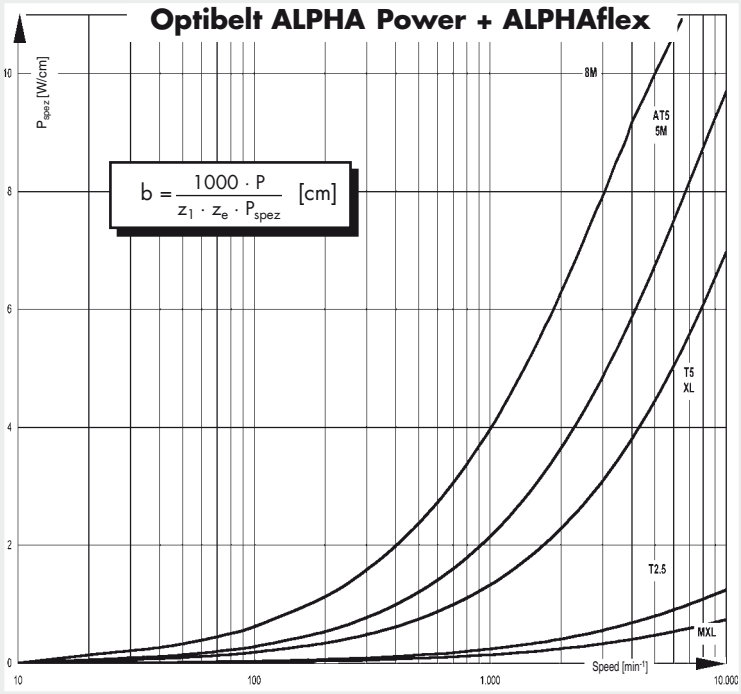
optibelt *ALPHA* (inch)



Sections: MXL; XL; L

Available versions:

- Teeth on one side (standard); teeth on both sides (sections T2.5; T5; T10; T20)
- Coloured, antistatic, equipped with cams or lugs (SRP)
- Special tension cords: E tension cord – highly flexible; high grade stainless steel; aramid; polyester



Section	Pitch t [mm]	Belt height h_s [mm]	Tooth height h_t [mm]	Max. belt speed v_{max}
T2.5**	2.5	1.3	0.7	80 m/s
T5	5	2.2	1.2	60 m/s
T5D		3.4		
T10	10	4.5	2.5	40 m/s
T10D		7.0		
T20	20	8.0	5.0	30 m/s
T20D		13.0		
AT5	5	2.7	1.2	60 m/s
AT10	10	5.0	2.5	40 m/s
AT20	20	9.0	5.0	30 m/s
5M*	5	3.7	2.2	60 m/s
8M*	8	5.6	3.38	40 m/s
14M*	14	10.0	6.1	35 m/s
MXL**	2.032	1.14	0.51	80 m/s
XL**	5.08	2.3	1.27	60m/s
L**	9.525	3.6	1.91	40 m/s

*Only available as Optibelt ALPHAflex
**Only available as Optibelt ALPHA

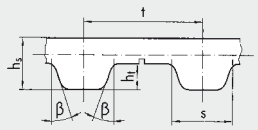
optibelt *ALPHAflex*
for drive performance

Optibelt ALPHAflex timing belts are manufactured endless from thermoplastic polyurethane – with no breaks in the tension cord – by means of an extrusion process. The advantages are as follows:

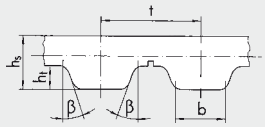
- Length range of approx. 1500-24 000 mm
- Length ranges can be produced in any multiple of the tooth pitch
- Double sections are available
- Fabric facing on the teeth or the belt top surface can be supplied
- Identical in performance to Optibelt ALPHA moulded belts
- Speeds of up to 10 000 min^{-1}

Tensile strength b = 100 mm***	Breaking strength b = 100 mm***	Applications
403 N	1600 N	Home entertainment electronics; light engineering drives; controller and variable speed drives
3380 N	15300 N	Office equipment; food processors; controller and variable speed drives
6700 N	31500 N	Machine tools; main and auxiliary drives; textile machines
13500 N	48000 N	Heavy construction equipment; paper machines; pumps; compressors
7000 N	23600 N	Machine tools; pumps; textile machines
16000 N	60000 N	Construction machinery; compressors; textile machines
25200 N	65000 N	Heavy duty drives; machine tools; printing machines
7000 N	23600 N	Machine tools; pumps; textile machines
13500 N	60000 N	Construction machinery; compressors; textile machines
22900 N	65000 N	Heavy duty drives; machine tools; printing machines
403 N	1600 N	Home entertainment electronics; light engineering drives; controller and variable speed drives
3380 N	15300 N	Office equipment; food processors; controller and variable speed drives
7000 N	29400 N	Main and auxiliary drives; textile machines; printing machines

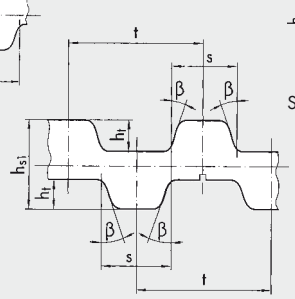
***Belt width for T2.5 and MXL = 32 mm



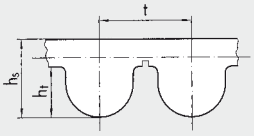
Sections: T5; T10; T20



Sections: AT5; AT10; AT20



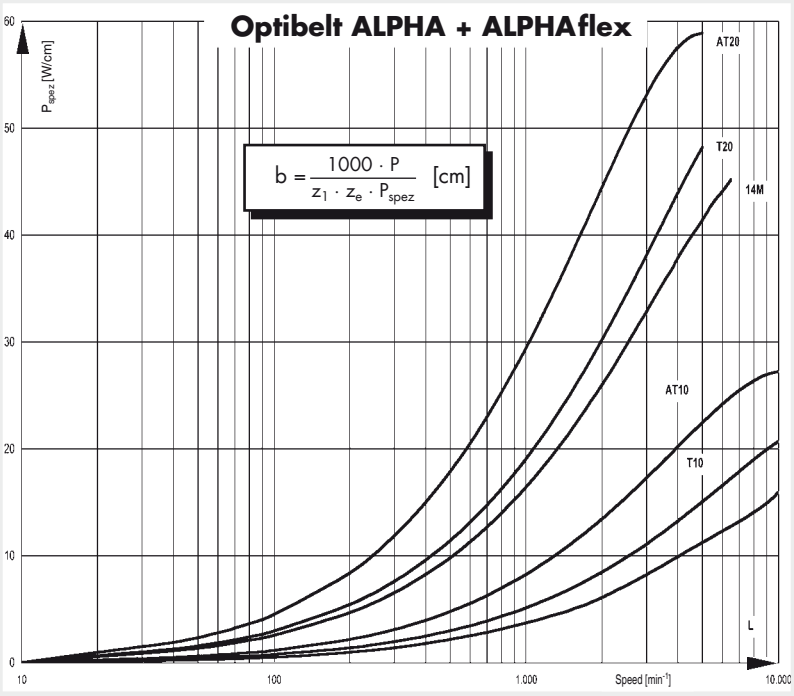
Sections: T5D; T10D; T20D



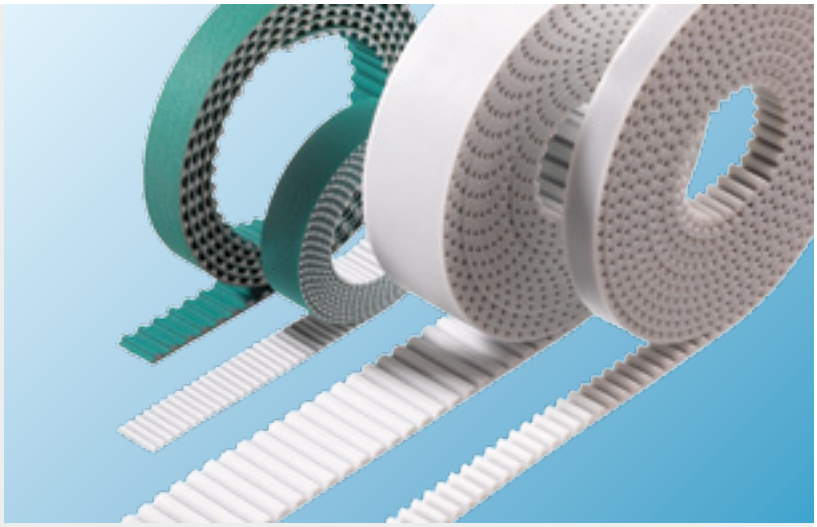
Sections: 5M; 8M; 14M

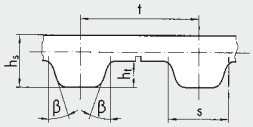
Available versions:

- Teeth one side (standard); teeth on both sides (sections T5; T10; T20)
- Equipped with cams or lugs
- Special tension cords: highly flexible tension cord; aramid; high grade stainless steel (sections AT10/AT20)

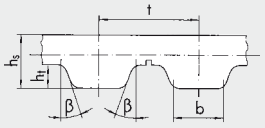


optibelt *ALPHA linear*
for linear drives

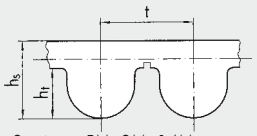




Sections: L; H; XH; T5; T10; T20

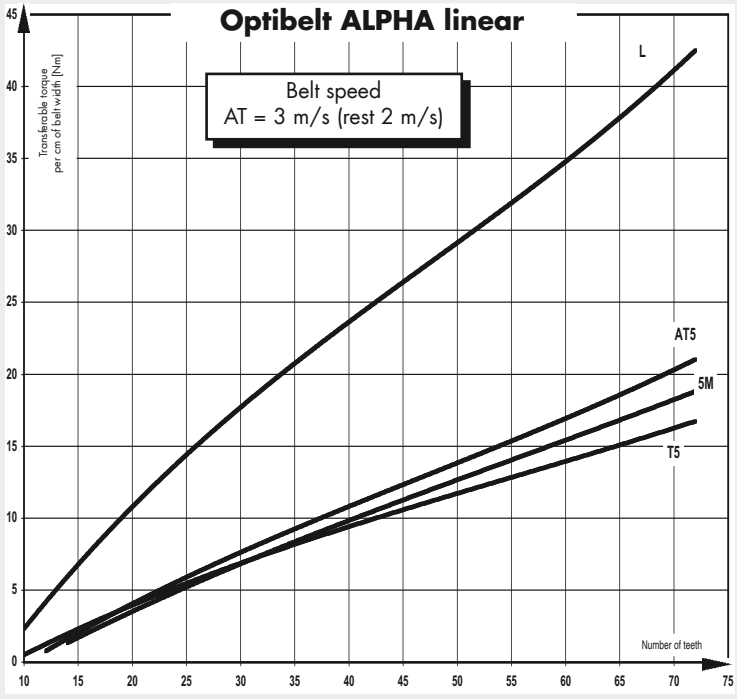


Sections: AT5; AT10; AT10L; AT20



Sections: 5M; 8M; 14M

Available versions:
- Mechanically finished
- With cleats and coatings
- Fabric on tooth face and/or belt top surface
- Special tension cords: highly flexible tension cords; aramid; high grade stainless steel
- Coloured



Optibelt ALPHA linear is extruded, open-ended timing belting with tension cords parallel to the belt edges.
It is primarily used in linear and conveying drives.

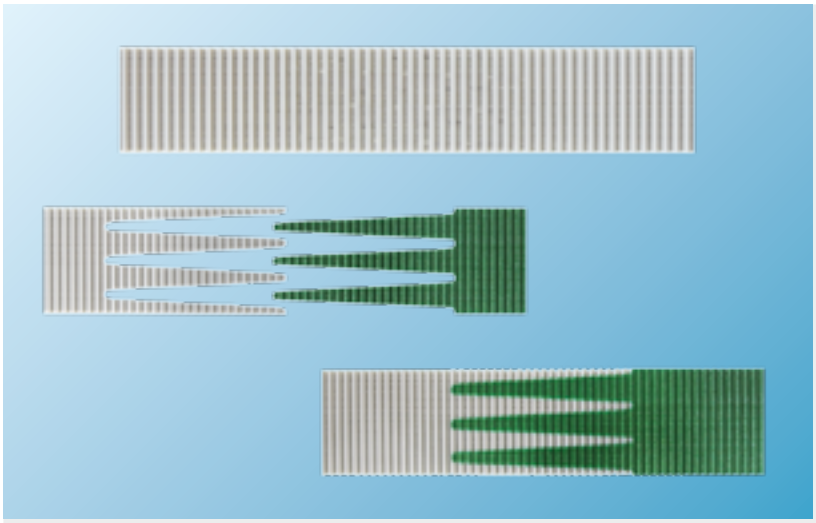
- High tensile strength permits heavy loads to be transmitted
- Available in roll lengths of up to 100 metres
- Fabric coating on tooth face and/or belt back possible
- Versions with additional reinforcement are available for linear drives
- Low maintenance
- High positioning accuracy

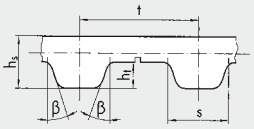
Section	Pitch t [mm]	Belt height h_s	Tooth height h_t	Standard tension cord Ø [mm]
T5*	5	2.2	1.2	0.3
T10	10	4.5	2.5	0.6
T20	20	8.0	5.0	0.9
AT5*	5	2.7	1.2	0.51
AT10	10	5.0	2.5	0.9
AT10L				1.21
AT20	20	9.0	5.0	1.21
L	9.525	3.6	1.9	0.6
H	12.7	4.36	2.29	0.6
XH	22.225	11.20	6.35	0.9
5M*	5	3.7	2.2	0.51
8M*	8	5.6	3.38	0.9
14M	14	10.0	6.1	1.21

optibelt *ALPHA V*
for flexible drive solutions

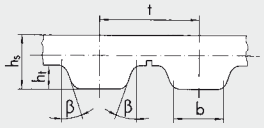
Optibelt ALPHA V are joined endless timing belts manufactured from Optibelt ALPHA linear belting. The belt join means that the tension cord is not endless. They are primarily used in transport/conveyor drives but they can also be used for normal drives provided a reduction in power transmission capability is accepted.

The advantages are:
- Any length can be made in multiples of the belt tooth pitch
- Cost effective with a short delivery time
- Large range of different versions (also with fabric coating)
- Approx. 50% of the power transmission capability of endlessly manufactured timing belts in spite of the join in the tension cord
- Ideal for conveyor systems
- Special tension cords available

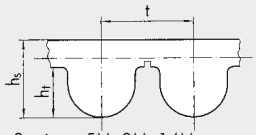




Sections: L; H; XH; T5; T10; T20

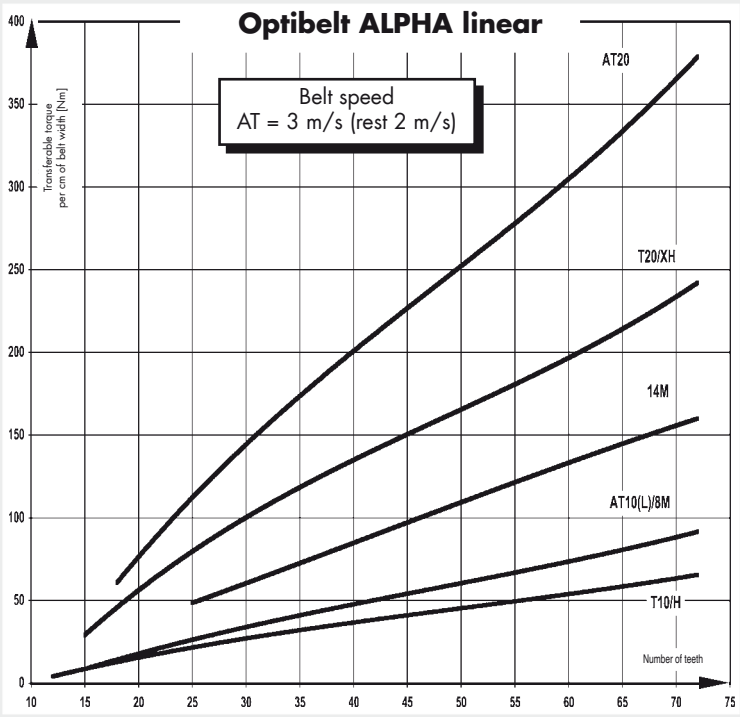


Sections: AT5; AT10; AT10L; AT20



Sections: 5M; 8M; 14M

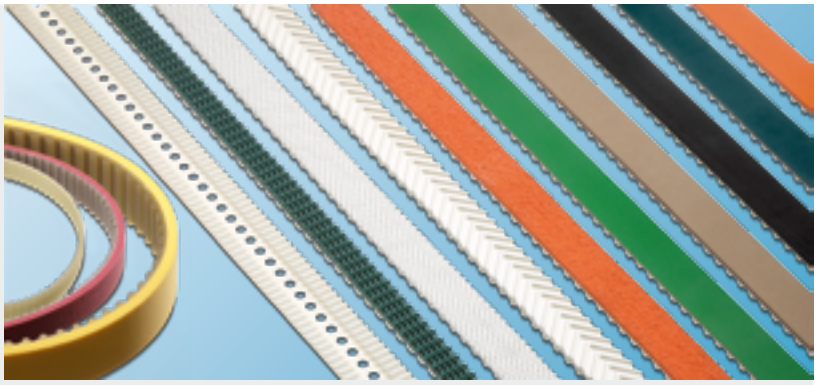
Available versions:
- Mechanically finished
- With cleats and coatings
- Fabric on tooth face and/or belt top surface
- Special tension cord: E tension cord – highly flexible; aramid; high grade stainless steel
- Coloured



Tensile strength b = 100 mm*	Breaking strength b = 100 mm*	Minimum number of teeth of the pulley	Minimum pulley diameter [mm]
1690 N	7650 N	10	15.05
7100 N	32130 N	12	36.35
13500 N	48000 N	15	92.65
3500 N	11800 N	12	17.85
16000 N	60000 N	15	45.90
22100 N	65000 N	25	77.70
25200 N	65000 N	18	111.75
7000 N	29400 N	10	29.59
6500 N	30600 N	14	55.25
13250 N	47250 N	18	124.53
3500 N	11800 N	14	21.14
7000 N	30000 N	18	44.47
22900 N	65000 N	25	108.70

*Belt width for T5, AT5, 5M, 8M = 50 mm

optibelt ALPHA Special / ALPHA SRP
special timing belts for conveying requirements

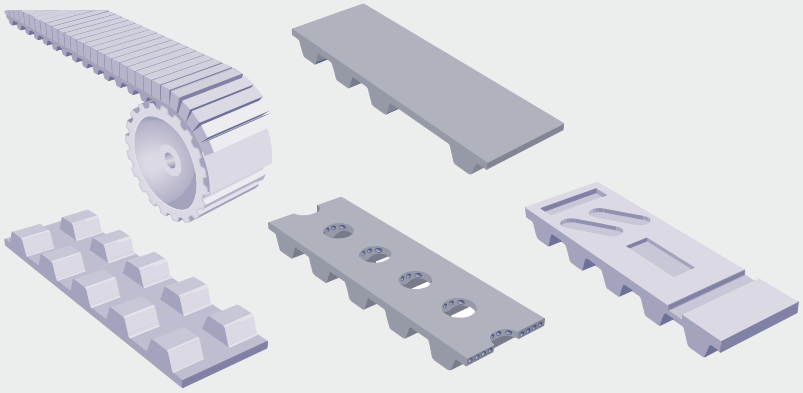


Coatings

Optibelt special timing belts may be made with special top surfaces, cleats, lugs or fins using either a moulding process (as Optibelt ALPHA SRP belts) or using Optibelt ALPHAflex or Optibelt ALPHA linear/ALPHA V as the base belt with the top surfaces added mechanically.
Due to the huge variety of coatings and finishing possibilities plus the properties of the timing belt or belting, innovative solutions can be developed in the field of conveying technology.
The table provides an overview of the available coatings.

Designation	Material	Colour	Hardness [Sh A] Density [RG]	Material thickness [mm]	Minimum pulley diameter	Properties
Chrome leather	Natural leather	Grey	no info	ca. 3	80 mm	High friction, good abrasion behaviour
Novo fleece	Polyester fibre	Anthracite	no info	ca. 1.5/2.5	120 mm	Temperature resistant
Polyamide fabric	Polyamide	Green	no info	ca. 0.5	re: belt	Low friction value
Celloflex	Polyurethane	Beige	RG400	2.0-10.0	40 mm	Highly flexible, good attenuation
Sylomer-G		Yellow	RG160	12.0	80 mm	Good abrasion resistance
Sylomer-R		Blue	RG220	6.0/12.0	80 mm	Good abrasion resistance
Sylomer-L		Green	RG300	6.0/12.0	80 mm	Good abrasion resistance
Sylomer-M		Brown	RG400	6.0/12.0	80 mm	Good abrasion resistance
Sylomer-P		Red	RG500	12.0	80 mm	Good abrasion resistance
HV sheet		Transparent	85° Sh A	1.0-4.0	60 mm	Smooth surface, abrasion resistant
PU sheet		Transparent	60° Sh A	2.0	80 mm	Wear resistant, high friction value
PU longitudinal groove		Transparent	60° Sh A	2.0	80 mm	Wear resistant, high friction value
PU-06 yellow		Yellow	55° Sh A	2.0-10.0	60 mm	Very good machinability, abrasion resistant
PU grey		Grey	55° Sh A	2.0/3.0	60 mm	Very good machinability, abrasion resistant
Polythane		Natural	70° Sh A	2.0-5.0	60 mm	Wear resistant
PVC blue	Polyvinyl chloride	Blue	40° Sh A	1.0/1.7/3.0	30 mm	High friction value
PVC white		White	65° Sh A	ca. 1.5	30 mm	FDA approved
Knobs white		White	65° Sh A	ca. 1.8	60 mm	FDA approved
Herringbone section		White	65° Sh A	ca. 3.0	80 mm	FDA approved
Saw tooth section		White	65° Sh A	ca. 3.0	80 mm	FDA approved
Supergrip green		Green	40° Sh A	ca. 3.5	60 mm	Wear resistant, high friction value
Supergrip white		White	50° Sh A	ca. 3.5	60 mm	Wear resistant, high friction value
Supergrip petrol		Petrol	40° Sh A	ca. 3.5	60 mm	Wear resistant, high friction value
Supergrip black	Rubber	Black	70° Sh A	ca. 3.5	80 mm	
Porol		Black	RG165	2.0-15.0	30 mm	Soft, high friction value
EPDM		Black	70° Sh A	2.0-10.0	80 mm	
Rubber white		White	50° Sh A	2.0-10.0	60 mm	
Elastomer green		Green	60° Sh A	1.0/2.0	80 mm	
Sponge rubber		Orange	RG250	10.0/15.0	80 mm	Soft, high friction value
Correx	Natural rubber	Beige	40° Sh A	4.0-10.0	80 mm	Abrasion resistant, high friction value
Linatex		Red	40° Sh A	1.6-12.0	40 mm	High friction value, limitedly abrasion resistant, flexible
Linatrile	Polymer NBR	Orange	50° Sh A	2.4-5.0	60 mm	Abrasion resistant, ageing resistant
Teflon	PTFE	Grey	no info	0.3	80 mm	Very low friction value, non-stick
PU/Silicone[1]	Silicone	White	60/50° Sh A	2.4	60 mm	Non-stick

[1]Further compound coatings available on request.



Mechanical finishing

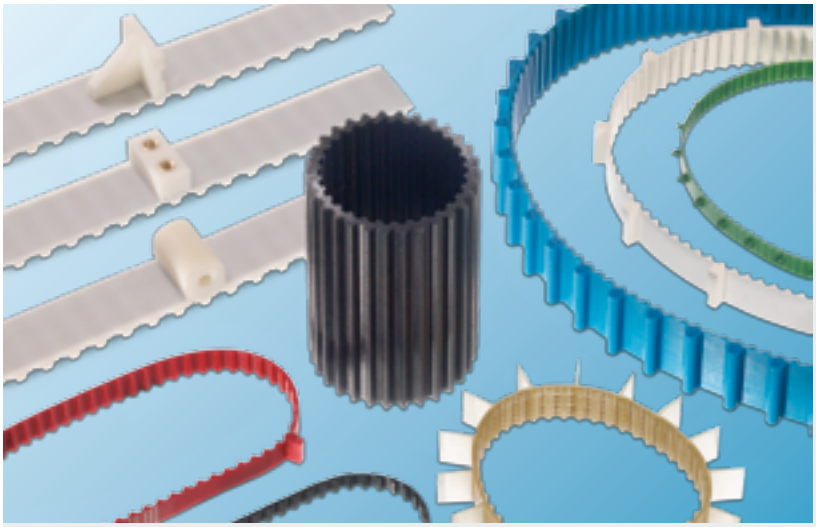
In order to make the Optibelt ALPHA Special timing belts most suitable for the required task, the following additional processing steps are available:

- Ground belt top surface
- Ground belt width
- Machined grooves longitudinally in the belt top surface
- Machined grooves longitudinally in the tooth side
- Remove individual teeth
- Pierce toothed belts
- Separate coatings
- Milled grooves in the belt top surface/coating

optibelt *ALPHA Special / ALPHA SRP*
special timing belts for conveying requirements

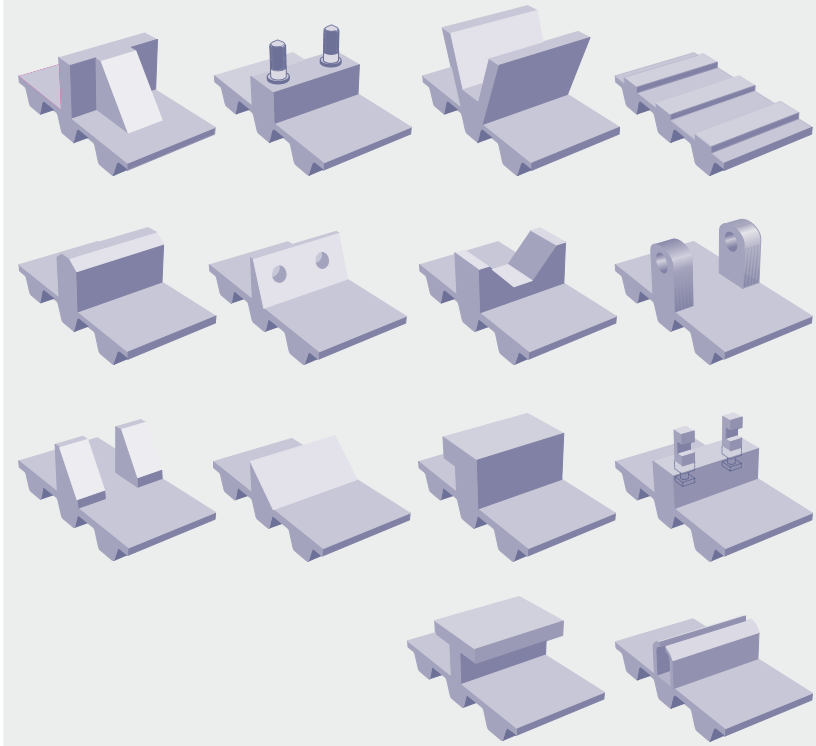
Cleats

Optibelt ALPHA V Special / ALPHAflex Special timing belts have cleats or lugs added separately to the base belt Optibelt ALPHA V or Optibelt ALPHAflex. Optibelt ALPHA SRP belts are moulded endless belts where the cleats, lugs or fins are a part of the design of the outer part of the mould. Should the present product range not provide a shape or pitch of the cleat or lug appropriate to your requirements, it can be cost effectively manufactured/adjusted according to your specifications. On this page, you will see an extract from our standard product range. We would be delighted to support you to help solve your conveying problems.

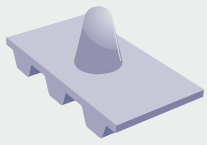


Procedure of manufacturing the cleated belt

- Determination of the surrounding construction
  Selection of the timing belt (type, length) as well as the corresponding pulleys. When the belt has to run over support rails, we recommend the use of polyamide fabric on the tooth face.
- Selection of the cleat
  Selection and design of the conveying cleat is determined by the application. The most favourable option is to use an available standard cleat from our wide product range. These cleats can be adjusted by mechanical rework, if necessary. Special designs for individual solutions from injection moulds are possible. (Note that tooling costs may be applicable!)
- Welding
  If possible, the cleat should be welded opposite the belt tooth in order to maintain the flexibility of the timing belt. Welding produces a fillet of approx. 0.5-1.0 mm. This can be removed, if required. When fixing the cleat using adhesive, no welding fillet is produced.
- Tolerances
  The cleat position should be a multiple of the belt tooth pitch, thus there is no accumulated error. The tolerance of the cleat to the set position is ± 0.5 mm. The tolerance of the cleat height is – 0.5 mm.



The weld width of the cleats should be as small as possible as this may affect the flexibility of the timing belt.



Recommended welding width [mm] of the cleat related to the number of teeth

Section	Number of teeth of the pulley						
	20	25	30	40	50	60	100
T5/AT5	5 (2)	6 (2)	6 (3)	8 (4)	9 (6)	10 (8)	12 (10)
T10/AT10	8 (3)	9 (4)	10 (4)	12 (6)	14 (9)	15 (12)	20 (20)
T20/AT20	12 (5)	13 (5)	15 (6)	18 (6)	20 (12)	23 (20)	30 (30)
XL	5 (2)	6 (2)	6 (3)	8 (4)	9 (6)	10 (8)	12 (10)
L	6 (3)	7 (3)	8 (4)	10 (5)	12 (7)	13 (10)	16 (16)
H	8 (4)	9 (5)	10 (6)	12 (7)	14 (10)	15 (12)	20 (20)
XH	13 (5)	14 (5)	15 (6)	18 (8)	20 (12)	23 (20)	30 (30)

Welding position opposite to the spaces between the teeth

Welding position opposite to the teeth

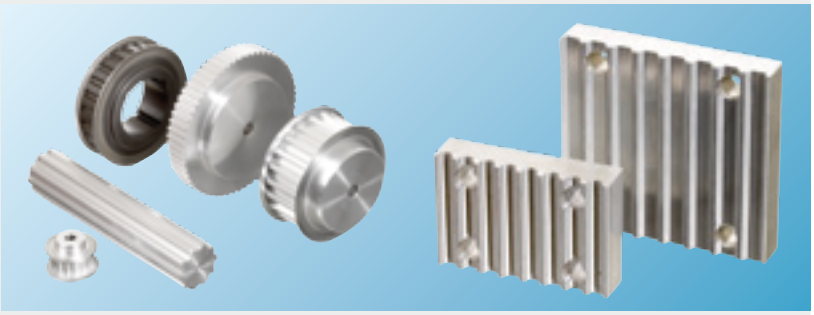
optibelt *ZRS*
timing belt pulleys and accessories

Only components and technical accessories which are best suited to match with the timing belts used will guarantee flawless functioning and the required operational efficiency of the drive.

You will find a large number of standard items in our product range to solve your drive problems.

Should our standard product range be insufficient, we will gladly supply you with special items according to your specifications.

optibelt *ZRS* Timing pulleys



optibelt *CP* Clamping plates

are used in linear technology to clamp the timing belt to the frame or mechanism. Standard widths are available from stock.

optibelt *CE* Clamping bushes

connect timing pulleys to shafts.

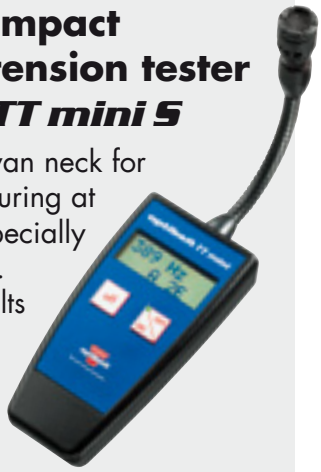
Advantages:

- Self centreing
- Re-usable as often as required
- Not self-locking after removal
- Adjustable radially and axially

The frequency tension tester optibelt *TT 3*

uses vibration frequency as a means of measuring belt tension accurately. The display is directly in Hertz [Hz]. Upon entering the belt parameters, the belt tension is displayed in Newton [N].

The new compact frequency tension tester optibelt *TT mini S*



with a flexible swan neck for trouble-free measuring at spots that are especially difficult to access. V-belts, ribbed belts and timing belts can be simply and quickly reached in order to check their tension values.

Optibelt GmbH
P.O. Box 10 01 32 • 37669 Höxter/Germany
Tel. +49 (0) 52 71 - 6 21 • Fax +49 (0) 52 71 - 976 2 00
info@optibelt.com • www.optibelt.com
A member of the Arntz Optibelt Group