MATERIAL HANDLING

optibelt MCS

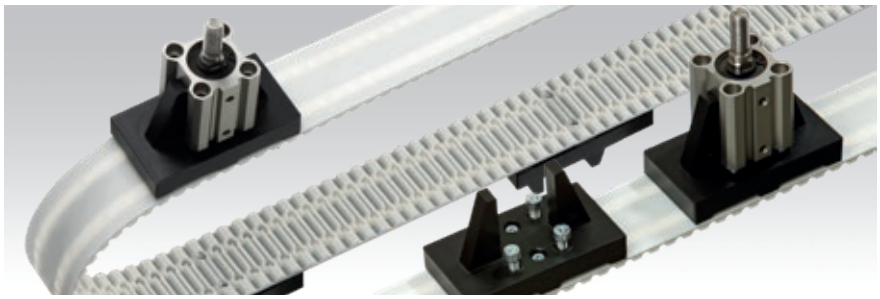
optibelt ALPHA MCS

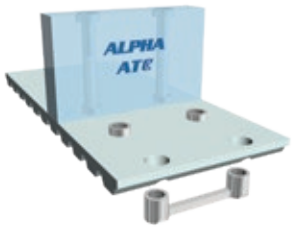
POLYURETHANE TIMING BELTS WITH FLEXIBLE CLEAT SYSTEM

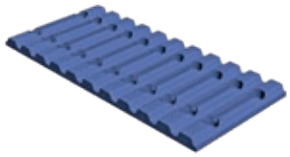
optibelt ALPHA MCS makes complex drive solutions possible in all areas of mechanical engineering under the most difficult conditions and extreme operational demands.

- **PATENTED SYSTEM SOLUTION**
- **QUICK AND EASY INSTALLATION**
- **FLEXIBLE CLEAT POSITIONING ON SITE**

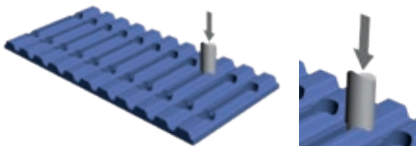
optibelt MCS
– FOR FLEXIBLE TRANSPORT APPLICATIONS



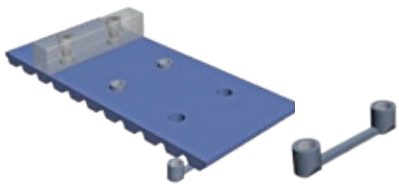




MCS profile with recesses for **MCS-IN** inserts in each tooth



Punching of a through-hole with **MCS-PT** punching tool



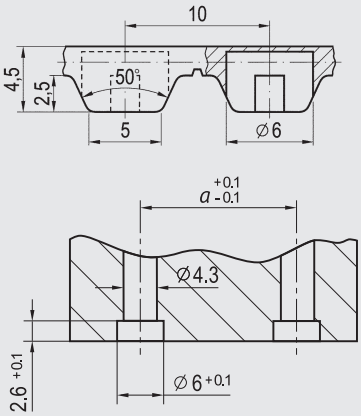
MCS profile with punched holes for **MCS-IN** inserts and installation of a screw-on cleat

The user of the **MCS** can fasten screw-on cleats quickly and easily to a freely selectable tooth, on the spot. The connection can be fastened and detached directly by the user. As a result, varying forms of transported goods can be adjusted on the same drive and base belt using different screw-on cleats. The costs for stock-keeping of wear and spare parts can be reduced by detachable cleat fastenings.

MCS-IN inserts also make it possible to screw parts on directly, such as highly precise metal workpiece carriers, without using welded-on, specially manufactured cleats with inserts. Furthermore, screw-on cleats can transmit higher forces in comparison to permanently connected cleats. In addition, a smaller minimum pulley diameter can be chosen for the same fastening strength. Screw-on cleats for the **MCS** are available on request.

With the **MCS**, an **MCS-IN** insert for screwing on the cleat is laid into the prepared recess in the tooth. In the **optibelt ALPHA V** timing belt, these recesses are consistently available in all teeth in profiles **ATC10** and **ATC20**.

PROFILE ATC10



Connecting dimensions of a screw-on cleat with a centre distance “a” depending on the **ATC-IN** insert

Cleats for belt widths 50 mm and 100 mm, which were designed for a fastening system available on the market using individual inserts, are compatible with the **MCS** for profile **ATC10**. Existing cleats can be used without the need for any additional measures.

ACCESSORIES

① **optibelt MCS-PT** punching tool

② **optibelt MCS-IN** insert
Material: stainless steel

③ Screw-on cleat

④ **MCS torque indicator**

optibelt ALPHA MCS

ASSIGNMENT AND PROPERTIES

MCS belt profile	MCS standard belt width [mm]	MCS-IN insert	Number of MCS-IN inserts/ blind holes or threads	Centre distance of blind holes or threads [mm]	Thread	Minimum length ALPHA V [mm]
ATC10	25 32 75	ATC-IN M4–14RF ATC-IN M4–14PH ATC-IN M4–14ZN	1/2 1/2 2/4	14	M4	850 850 1050
ATC10	50 100 150	ATC-IN M4–25RF ATC-IN M4–25PH ATC-IN M4–25ZN	1/2 2/4 3/6	25	M4	850 1050 1150
ATC20	50 100 150	ATC-IN M5–25RF	1/2 2/4 3/6	25	M5	1060 1160 1160
ATC10K6	25 32 75	ATC-IN M4–14RF ATC-IN M4–14PH ATC-IN M4–14ZN	1/2 1/2 2/4	14	M4	1000 1000 1050
ATC10K6	50 100	ATC-IN M4–25RF ATC-IN M4–25PH ATC-IN M4–25ZN	1/2 2/4	25	M4	1000 1050

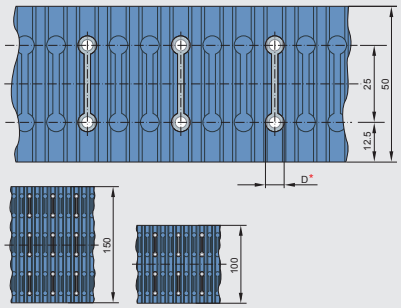
The belt top surface is smooth and does not initially contain any holes. Before the **MCS-IN** insert is inserted, the two pre-formed blind holes in the recess of the selected tooth must be punched out with the **optibelt MCS-PT** punching tool to produce through-holes. To facilitate punching or perforating, the **optibelt ALPHA V** timing belt with **ATC10** and **ATC20** profiles does not have tension cords in the area of the blind holes.

The **optibelt ALPHA MCS** with **ATC10** profile in the standard design is also available with polyamide fabric on the tooth side (PAZ). The **ATC10** profile is also available with stainless steel tension cords, for applications in the food and pharmaceutical industry.

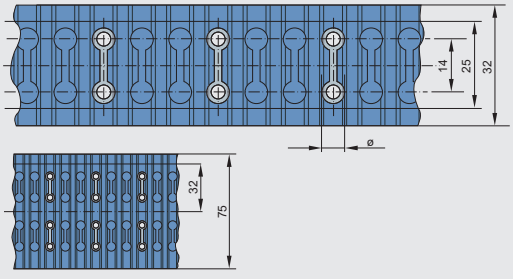
If the **optibelt MCS** is required as a version with integrated belt guide, the **ATC10K6** can be used for **ATC10** applications.

The **ATC10K6** is available in widths of 25, 32 and 50 mm with a central wedge, and in widths of 75 and 100 mm with an asymmetrical wedge arrangement.

Visual example:
left: 100 ATC10K6; right: 50 ATC10K6



Positions and recesses of profiles 50, 100 and 150
ATC10 and **ATC20** for the corresponding inserts



Positions and recesses of profiles 25, 32 and 75
ATC10 for the corresponding inserts

optibelt MCS-IN INSERTS

ASSIGNMENT TO BELT PROFILES AND PROPERTIES

The **MCS-IN** stainless steel [RF] / [PH] or zinc [ZN] insert consists of two sleeves which are interconnected through a stable web. On the tooth side, the **MCS-IN** insert is designed in such a way that it lies completely in the tooth contour and does not touch the tooth system of the timing belt pulley.

Profile	D*
ATC10	6
ATC20	7.5

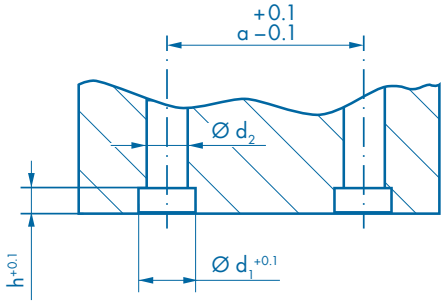
The two sleeves of the **MCS-IN** inserts have a continuous internal thread for fixing to the screw-on profiles. The sleeves, which protrude beyond the belt top surface, ensure that the profiles are centred.
The centring ensured by the two sleeves also provides anti-twist protection for the screw-on profiles.

The connecting dimensions of the screw-on profiles can be found in the accompanying table and drawing. The centre distance should be selected as for the **MCS-IN** insert.

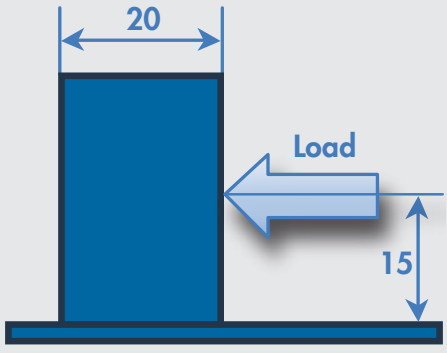
The thrust, tensile or bending loads acting via one or both sleeves on the installed screw-on cleat are absorbed by the whole **MCS-IN** insert. Due to the introduction of force into the base belt over a large area, very high stability and functional reliability of the screw-on cleat fastening can be achieved with the **MCS**.

With an acting load on the screw-on cleat with a width "b" and a force applied at a height of 15 mm, the following average breaking loads for the connection can be assumed for an **MCS-IN** insert:

MCS-IN insert	b [mm]	Average breaking load of an MCS connection
ATC-IN M4–25RF	50	5200 N
ATC-IN M4–25PH	50	4160 N
ATC-IN M4–25ZN	50	1400 N
ATC-IN M4–14RF	32	5200 N
ATC-IN M4–14PH	32	4160 N
ATC-IN M4–14ZN	32	2500 N



	$h^{+0.1}$	$d_1{}^{+0.1}$	d_2
ATC10	2.6	6	4.3
ATC20	3.1	7.5	5.3



Screw-on cleat with dimensions:
50 x 30 x 20 mm (w x h x d)

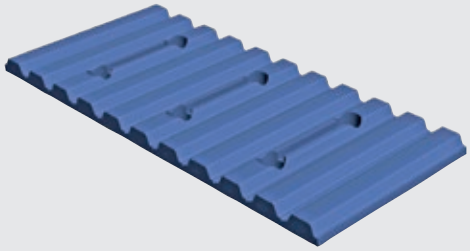
The values relate to a cleat with a load applied at a height of 15 mm. The values will vary for differently applied loads.

optibelt MCS-IN INSERTS

ASSIGNMENT TO BELT PROFILES AND PROPERTIES

Belt width [mm]	Belt profile	MCS-IN insert	Number of inserts	Centre distance thread [mm]	Thread	Minimum length for smallest belt width [mm] [1]	Note
25–150	AT10, T20	ATC-IN M4–14	freely selectable depending on belt width	14 or free between inserts	M4	700	ALPHA SPECIAL
40–150	AT10, T20	ATC-IN M4–25	freely selectable depending on belt width	25 or free between inserts	M4	700	ALPHA SPECIAL
45–150	AT20	ATC-IN M5–25	freely selectable depending on belt width	25 or free between inserts	M5	900	ALPHA SPECIAL

[1] Minimum length of larger widths on request; observe minimum lengths of base belts



optibelt ALPHA SPECIAL with AT profile with subsequently produced recesses including through-holes

For even smaller widths of **optibelt ALPHA SPECIAL** of 25 mm, we recommend using the second standard insert **optibelt MCS-IN** M4–14. This insert corresponds to the connecting dimensions of an **optibelt ATC-IN** M4–25 insert, but with a centre distance reduced from 25 mm to 14 mm.

optibelt MCS-IN inserts are available in batch sizes of 10/25/100 pieces.

optibelt MCS

MCS TORQUE INDICATOR

The **MCS torque indicator** is designed to provide a secure and reliable way to assemble **MCS-IN** inserts:

- **For reliable assembly of MCS-IN inserts**
- **Recommended for assembling zinc inserts**

Compatible with bits, **not included**, with ¼" external hexagon drive as per DIN ISO 1173 C 6.3 and E 6.3 and Wera connection series 1 and 4

This handy tool is available now from OPTIBELT MATERIAL HANDLING!

optibelt MCS

TIMING BELT JOINT ZSN

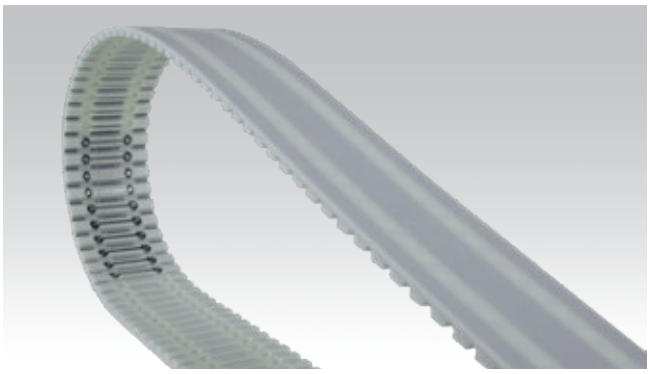
The patented system solution **optibelt MCS** offers outstanding flexibility when it comes to screw-on cleats.

Whether a quick replacement of individual cleats or a change of position of profiles on the belt is needed, or materials are used that cannot be securely attached to polyurethane by welding or gluing.

In addition to the **ZS** and **ZSi** variants, the **ZSN**, **ZSN2** and **PINJOIN** variants are now also available for the mechanical connection of the **optibelt MCS**.

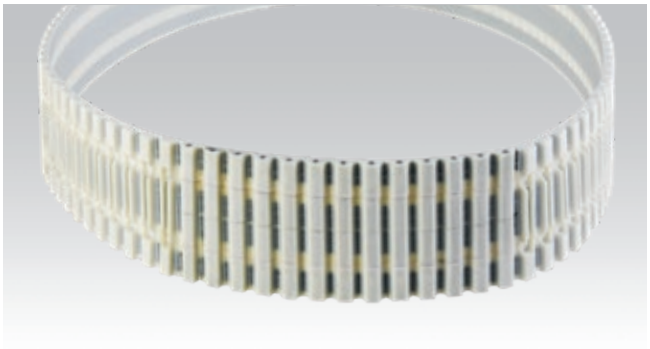
The **timing belt joints ZSN** and **ZSN2** were exclusively designed for the **optibelt MCS**, and use the **MCS** recesses for the connection of belt ends.

Lock components are included in the belt packaging shown and consist of:
screws, top plates and shortened optibelt ATC-IN inserts made of stainless steel.



In addition to a very short delivery time, **ANOTHER BENEFIT** of the **timing belt joint variants ZSN and ZSN2** is the possibility to integrate profiles in the area of the lock.
Standard **optibelt MCS-IN** inserts can be used to do this.

Please take into account that the contact width of the cleat must be limited to 10 or 20 mm (ATC10/ATC20).
Please note that the overall structure of the lock projects over the top surface of the belt.



If a timing belt system is difficult to access and a one-time installation is sufficient, then the **optibelt MCS** with the **PINJOIN timing belt joint** is a possible alternative. This timing belt joint, which is designed for permanent, one-time installation, saves a great deal of assembly work.

The length of the standard version is 13 teeth; shorter/longer or discontinuous (with screw-on profiles) joint lengths are available on request.

optibelt ONLINE

CLEAT SELECTOR

FINDING THE RIGHT CLEAT

With an online tool, Optibelt now enables quick and clear access to its comprehensive range of cleats. Using this cleat selector, customers can select their individual transport solution from a standard spectrum of more than 400 different cleat shapes, specifically for their application, or adjust them subsequently to their requirements. The selection mask of this online tool can be used to access the most important basic data regarding the shape, material and dimensions of the cleats. Each hit with the associated information can then be downloaded free of charge as a PDF or CAD file.

https://www.optibelt.com/de/material-handling/onlinetools/

3D PRINTING

WELD-ON OR SCREW-ON PROFILES

In addition to weld-on profiles made of TPE-U with a shore hardness of 92 A, screw-on profiles or parts made of PLA can also be manufactured using the 3D printing method.

This method allows more design freedom regarding the geometry, whereby even complex undercuts are possible.

Also, components can be manufactured cost-effectively overnight.

Other material specifications are available on request. Please consult our Product Management team if you have any questions.

NOTES

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