Weld-on Profiles
Design Considerations and Examples
Weld-on Profiles
Design Considerations

Weld-on-Position “Opposite Tooth”

The flexibility of a timing belt is primarily achieved in the area of the tooth gap. In order to not impede the flexibility of the timing belt necessary to grant a smooth running performance, even with small pulley sizes, the weld-on position of profiles opposite the tooth is preferred. In this case, the belt tooth also supports the profile.

Profile Thickness ‘s’

The flexibility of a timing belt may be reduced by the weld-on profiles. As a general rule, the profile thickness should be selected as small as possible. In the table below, the recommended maximum profile thickness is given in millimeters. The recommended profile thickness is in direct relation to the number of teeth on the pulley. See the chart below.

Example: To determine the profile thickness ‘s’ for BRECOflex H pitch timing belt in conjunction with a 20 tooth pulley:
- For weld-on position "opposite tooth" the maximum profile thickness should be less than or equal to 8mm.
- For weld-on position "opposite tooth gap" the maximum profile thickness should be less than or equal to 3mm.

### Max. profile thickness “opposite tooth” / Max. profile thickness “opposite tooth gap”

<table>
<thead>
<tr>
<th>Pitch</th>
<th>20 Tooth Pulley</th>
<th>25 Tooth Pulley</th>
<th>30 Tooth Pulley</th>
<th>40 Tooth Pulley</th>
<th>50 Tooth Pulley</th>
<th>60 Tooth Pulley</th>
<th>100 Tooth Pulley</th>
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<tr>
<td>T5</td>
<td>5mm / 2mm</td>
<td>6mm / 2mm</td>
<td>6mm / 3mm</td>
<td>8mm / 4mm</td>
<td>9mm / 6mm</td>
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<td>12mm / 10mm</td>
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<tr>
<td>T10</td>
<td>8mm / 3mm</td>
<td>9mm / 4mm</td>
<td>10mm / 4mm</td>
<td>12mm / 6mm</td>
<td>14mm / 9mm</td>
<td>15mm / 12mm</td>
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<td>15mm / 6mm</td>
<td>18mm / 8mm</td>
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<td>20mm / 12mm</td>
<td>23mm / 20mm</td>
<td>30mm / 30mm</td>
</tr>
</tbody>
</table>

**NOTE:** For in-between pulley sizes (i.e. 22 teeth) we recommend selecting the next lower maximum profile thickness.
**Weld-on Profiles**

**Design Considerations**

**Welding Beads**

A bead develops between the profile and the belt back due to the welding process. The polyurethane bead may reach a radius of 0.5 to 1.0mm (0.020 to 0.040). Should the bead impede your operation, please specify weld bead removed.

**Profiles with Relief**

When using wide profiles it is helpful to choose or design a profile with relief. Two examples are shown above. The first show relief at the base of the profile, known as weld feet. The second provides relief through its angled and hollow design which helps retain the flexibility of the timing belt.

As with regular profiles, the preferred welding position for the best support is opposite the tooth, though a weld opposite the tooth gap is acceptable if necessary.

**Profile Pairs**

Profile pairs (profile pockets or brackets) are used in conveying applications primarily for positioning of parts and for feeder insert operations. The manufacturing tolerance for the clear measurement between a profile pair +/-0.5mm (+/-0.02in), as reduced tolerance of +/-0.2mm (+/-0.01in) is possible but may require additional set-up or tooling. Please consult Applications Engineering.
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Application Examples

**Synchronous Conveyor for Wide Products**

- Common Shaft
- Matched Profile Pairs
- Slider Beds

**Product Driving Line**

- Hopper
- Profile Pairs for positioning
- Removable Flanges
- Flange Reliefs
Cylindrical Product Conveying

- Slider Bed
- Self-Tracking Guide
- Cored Profile
- Profile pairs for positioning
- Profile support legs
- Discharge Station
- Accumulating Output station

Feeder Line for Juice Processing

- Slider Bed
- Beveled Profiles
- Nylon Facing - PAR
  Low friction for side loading
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Application Examples

Profiled Timing Belt as Test Tube Carrier

Pick and Place Linear Drive
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Application Examples

Sorting Station with Bar Code Reader

- ARC-POWER® Timing Belts
- ESBAND® Truly Endless Woven Flat Belt
- Bar Code Reader
- Pusher Profiles