New Challenge for creation——NOK-GROUP

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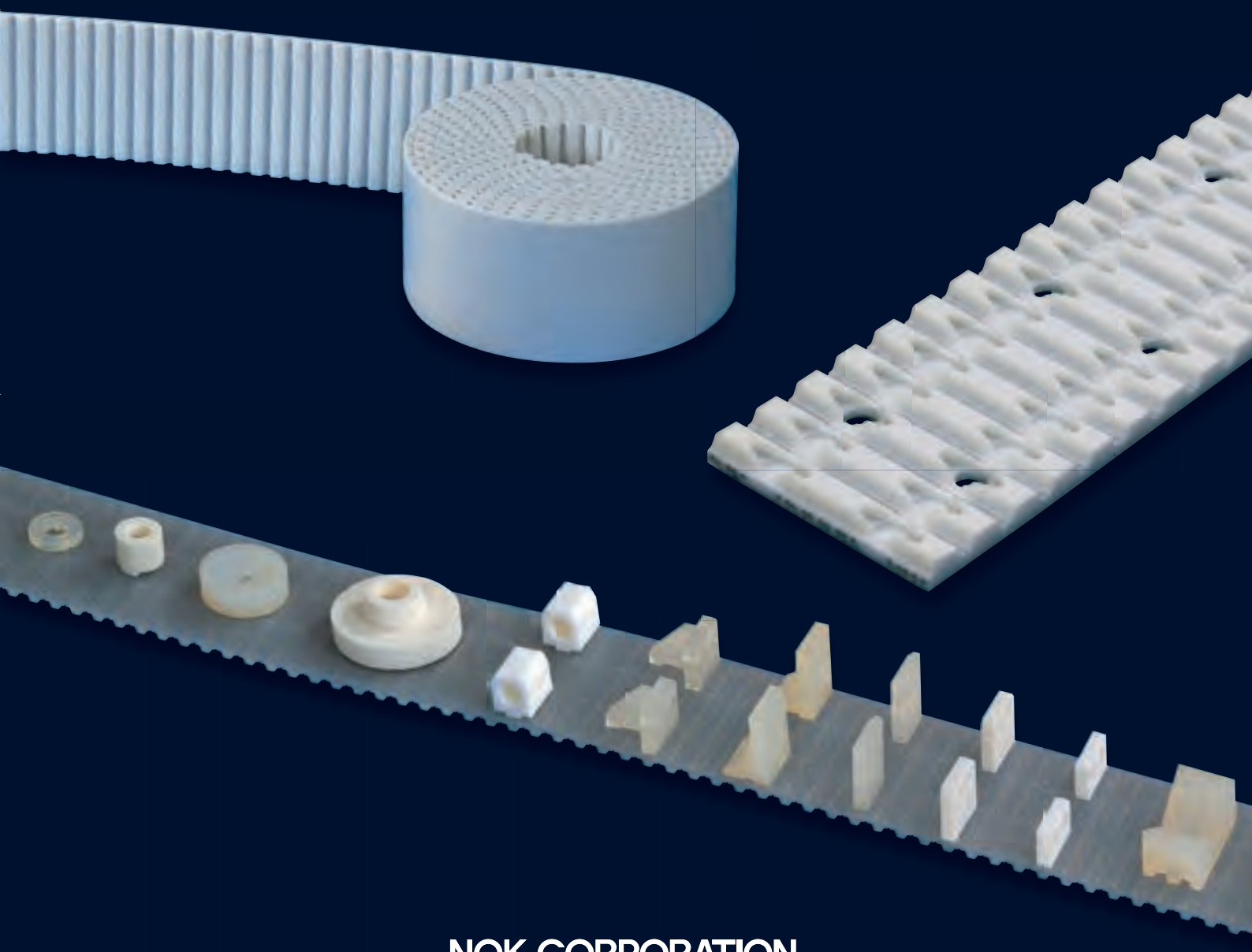
Cat. No. 190E·05-2022

IRON RUBBER BELT



NOK CORPORATION

Precautions before Using Iron Rubber Belt

⚠ Danger	Due to mishandling, there is a possibility of immediate danger of death of a user or serious injury to a user.
⚠ Warning	Due to mishandling, there is a possibility of death of user or serious injury to a user.
⚠ Caution	Due to mishandling, there is a possibility of danger of injury to a user or a possibility of property damage.

Precautions for storing

⚠**Caution** •Do not fold tightly.

⚠**Caution** •Do not store in stacked or in folded conditions to avoid bending tendency.

⚠**Caution** •When storing, keep it in a cool and dark place. (Avoid extremely high or low temperature, moisture, and direct sunlight.)

•Do not scratch the pulley when storing.

Precautions for installation

⚠**Danger** •Be sure to turn off the power and check that the machine is stopped, prior to perform installation.

⚠**Caution** •Install after shortening the distance between the shafts or loosening the tension pulley. Belt or pulley may be damaged or the belt life may be shortened if the pulley is squeezed in with a tool.

Precautions in operation

⚠**Danger** •Be sure to use a safety cover for a rotating part.

⚠**Warning** •When it is anticipated that static electricity from a belt conveyor may cause fire or malfunction of a control device, neutralization apparatus should be set on the machine side.

•Avoid involvement of foreign objects.

•Exchange a belt if abrasion, tooth bottom crack, or belt back crack is found.

•Exchange a pulley if abrasion and corrosion are found.

Precautions for spent belts

⚠**Caution** •Do not burn a spent belt. Toxic gas may be generated.

•When disposing a product, treat it as an industrial waste.

Other precautions

⚠**Danger** •Do not use the belts for purposes other than originally intended.

⚠**Danger** •Be sure to install an additional safety device, when it is anticipated that cutting of a belt may cause idle running, self-running, or stopping of the machine, which may result in an accident causing injury or death, or a serious accident.

⚠**Caution** •Do not use a belt as insulation.

•All compatibility data, application information, design & material information and technical data in this catalogue are compiled as a reference material to make a basic packing selection. A selected standard design from this catalogue may not comform to the actual use of an application, clue to unknown factors in the application.Please comfirm the actual compatibility of a selected product with your application before using it.

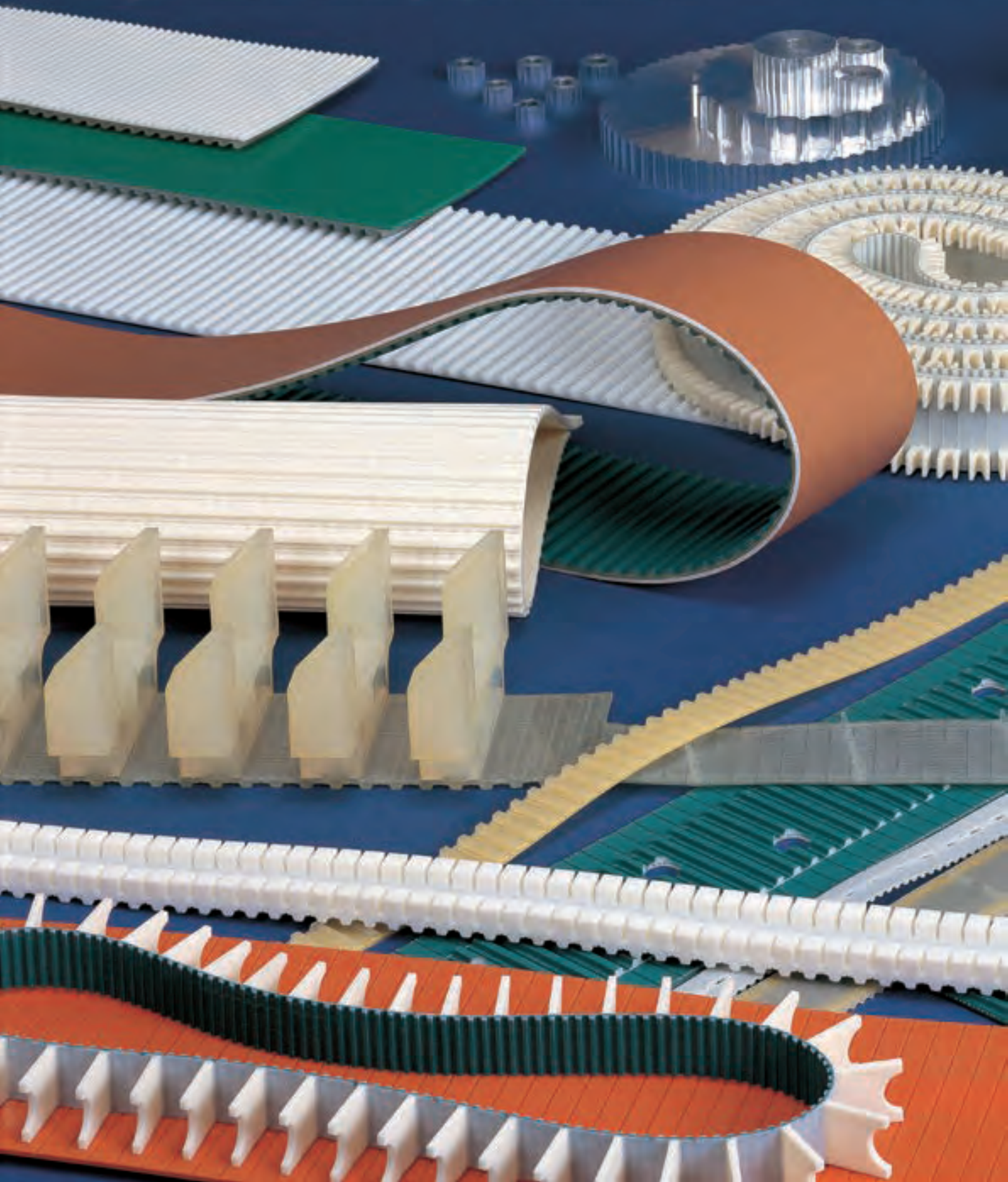
•The contents of this pamphlet may be changed without prior notice for product improvement.

The belts in this catalogue are neither designed nor manufactured to the use for medical application.
Please do not use the products in this catalogue for the application physically contacting body fluid or biosystem, or as a transplant material to human body.

INDEX

Pioneer in the multi-function

Iron Rubber of excellent mechanical strength and abrasion resistance, etc. Ensures excellent performance as a next-generation power transmission and conveyor belt for use in a variety of production lines



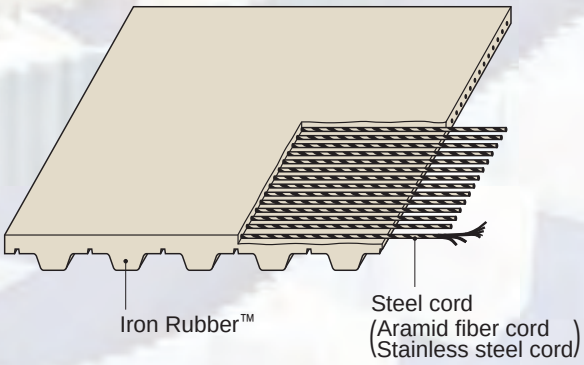
belt field!

Iron Rubber™ Belt Structure and Characteristics

The Iron Rubber Belt portfolio consists of standard belt, MA belt and AT belt. The standard belt is based on ISO standards. The MA belt provide smooth tracking and good positioning accuracy through the application of circular teeth. In addition, high-torque/high tensile AT belts with an enlarged tooth cross-section are also available.

Structure

Iron Rubber (urethane elastomer), which determines the longevity of the belt, is utilized as the belt covering itself and also the rubber of the teeth. One-piece molded belts incorporate high-tensile steel cord (or aramid fiber cord/stainless steel cord) as the tension members. Toothed belts can be fabricated and adapted to a more extensive range of lengths through the use of these two superior materials and our unique and innovative proprietary method of manufacturing them. (Iron Rubber is the NOK trade mark used for urethane elastomer.)



Characteristics

The material is Iron Rubber, therefore acknowledgeable attributes are:

- Superior abrasion resistance
- Superior mechanical strength
- Long track record of foodstuff applications
- Available with midewproof and antimicrobial features
- Superior ozone resistance

Superior workability

- Grinding
- Perforating
- Cutting

Belts can be customized in order to meet the most stringent parameters.

V-guide one-piece molded types are also available

- Pulley flanges are unnecessary.
- V-guide sections are highly accurate and reliable
- The application of pulleys with smaller diameters is also possible, because notches are established in the V-guide.

Profiles (attachments) can be affixed

- Profiles (attachments) to suit the parameters of transportation can be attached by welding them to the back side of the belts.

The surface can be augmented with a diverse range of features

- Slippage over the pulley or guide rail can be improved by one-piece molding of nylon facing into the tooth surface.
- Nylon facing can be one-piece molded into the back side and slippage of the transported article can be improved.
- Rough top/synthetic leather/polyurethane form pad/ etc. can be attached to the back side to protect the transported articles or give the belt cushioning.

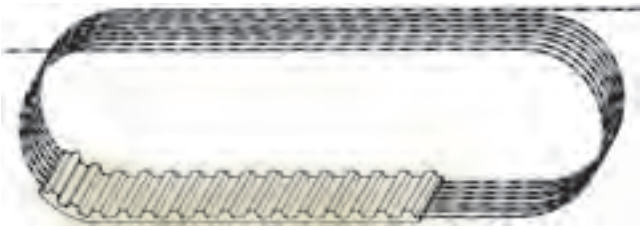
The scope of application, performance data and numerical values listed in this catalogue should only be used as a reference for selection. These technical specifications might not be applicable in certain cases of actual application due to unknown factors or depending on the circumstances (Parameters of desired task). Please confirm compatibility before employing any of our products.

Types

The Iron Rubber Belt portfolio consists of a comprehensive range of state-of-the-art belts such as toothed belts and flat belts. They are classified as flex-type, joint-type and linear-type depending on the method of manufacture.

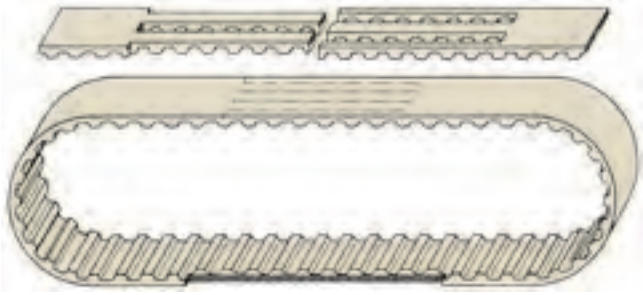
F Flex type

Endless toothed belts of one-piece molded Iron Rubber in which helically wound high tensile steel cord (or stainless steel cord) is deployed. A one-piece molded toothed belt with the desired number of teeth can be manufactured to match the axis spacing of the apparatus.

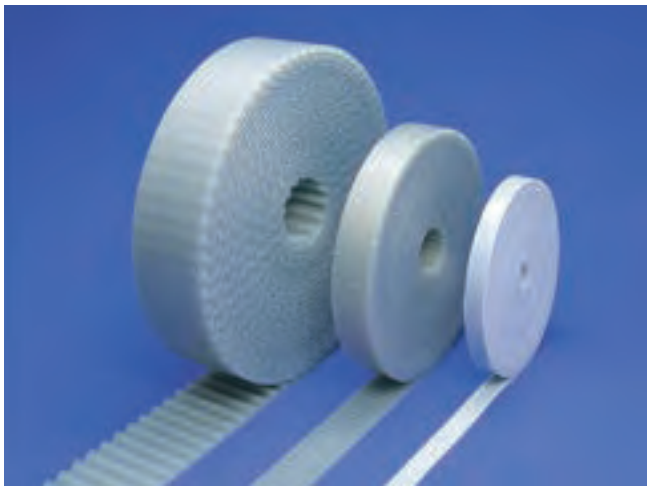


J Joint type

Toothed belts of one-piece molded Iron Rubber in which high tensile steel cord (or aramid fiber cord) is deployed in the parallel axis can be spliced into an endless toothed belt with the desired number of teeth.



L Linear type



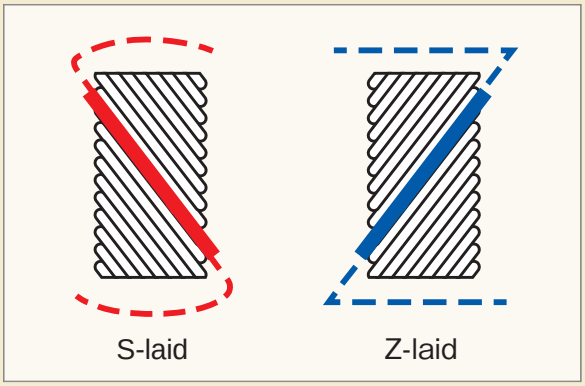
Open-ended toothed belts employing the joint type, as is. Stable synchronous transmission is facilitated by the tension members deployed in the parallel cords.

Introducing the new specifications

The flex type belt can be manufactured up to a maximum circumference of 30 m.
[Supports up to 1.3 times the circumference of conventional models (conventional maximum circumference of 24 m)]

SP specifications for flex belts (SP: Standard Plus)

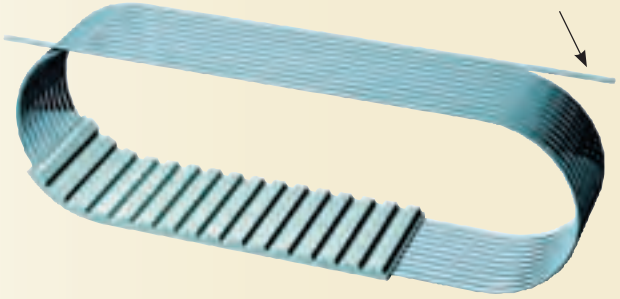
The performance of flex type Iron Rubber Belts has been further improved further while still maintaining their conventional characteristics

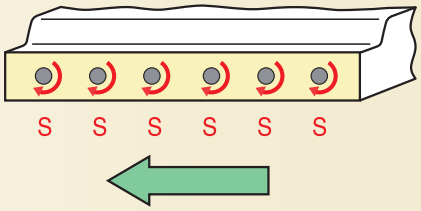


Double wrapped cords adopted

[Conventional specification]

Single wrapped S-laid cords

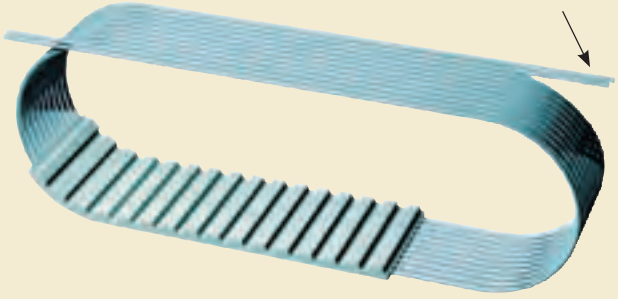


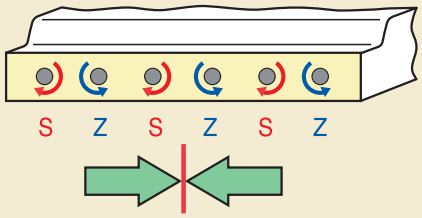


Easily leans to one side

[SP specification]

Double wrapped S-laid & Z-laid cords





Neutral

[Belt cross-section]
Conceptual diagram

The SP specification reduces the degree to which the belt will lean to one side due to the direction it was laid via the tension member being doubly wrapped in thereby increasing running stability.

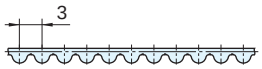
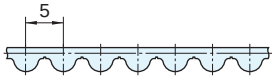
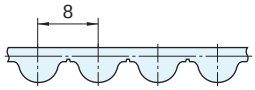
Note 1: The degree to which a belt will lean to one side is greatly affected by the pulley alignment, and hence adjustment of the alignment is necessary with the SP specification.

Note 2: The SP specification is applicable to all flex-type belts but it cannot be used with some specific specifications. Please contact us in any case of this.

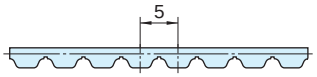
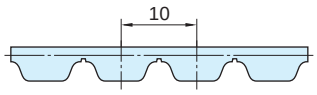
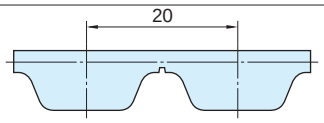
Note 3: The backside surface of the belt with a length of more than1350 mm is fully ground down. (flat belts are excluded.) The back of the belt with a length of less than 1350 mm is partially ground down. Please consult us if fully ground down is necessary.

Model and Type

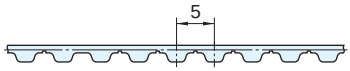
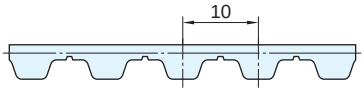
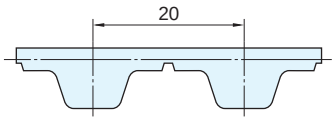
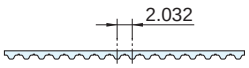
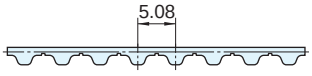
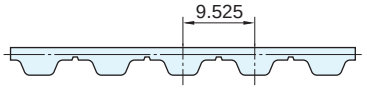
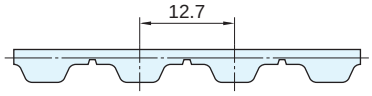
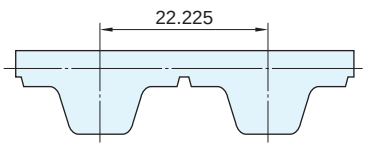
Circular teethed MA belt

Type of teeth	Model	Shape	Pitch of teeth (mm)	Type			Page
				Flex	Joint	Linear	
Circular teethed belt	**MA3**		3	○		○	24
	MA5		5	○		○	26
	MA8		8	○		○	28

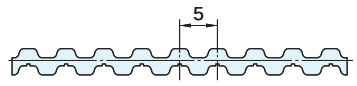
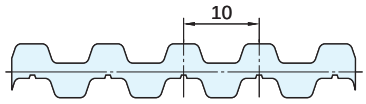
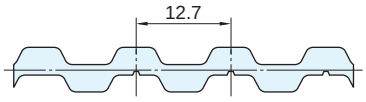
Special trapezium teethed AT belt

Special trapezium teethed belt	**AT5**		5	○	○	○	30
	AT10		10	○	○	○	32
	AT20		20	○		○	34

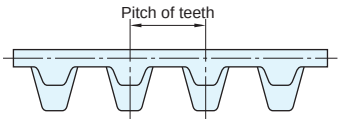
Standard trapezium teethed belt

Trapezium teeth (meters)	**T5**		5	○	○	○	36
	T10		10	○	○	○	38
	T20		20	○	○	○	40
Trapezium teeth (inches)	**MXL**		2.032 (0.08inch)			○	42
	XL		5.08 (0.2inch)	○	○	○	44
	L		9.525 (0.375inch)	○	○	○	46
	H		12.7 (0.5inch)	○	○	○	48
	XH		22.225 (0.875inch)	○	○	○	50

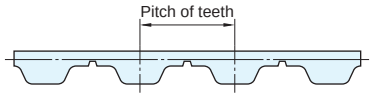
Double sided belt equipped with trapezium teeth on both sides

Type of teeth	Model	Shape	Pitch of teeth (mm)	Type			Page
				Flex	Joint	Linear	
Double sided teethed belt	**DT5**		5	○			52
	DT10		10	○			53
	DH		12.7 (0.5inch)	○			54

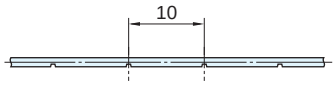
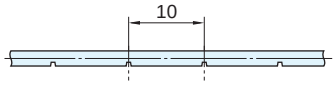
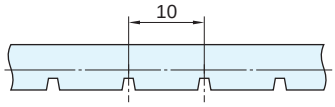
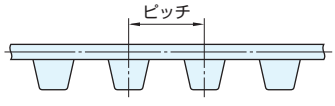
Self-tracking belt

Self-tracking belt	**MA5-V** **AT10-V** **T5-V** **T10-V** **L-V**	 *The figure in the picture depicts the **T10-V**.	5 10 5 10 9.525		○ Excluding **MA5-V**	○ Excluding **MA5-V**	55～59

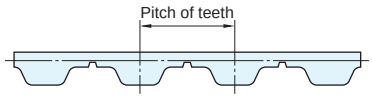
Wide teethed belt

Wide teethed belt	**Wide T10** **Wide H**	 *The figure in the picture depicts the **T10**.	10 12.7		○		60～61

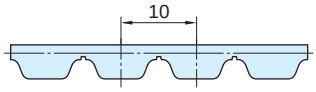
Flat belt

Flat belt	**F12**		—	○			62
	F20		—	○	○	○	63
	F60		—	○			64
Self-tracking flat belt	**F10-V** **F20-V**		—		○		65～66

Double width toothed belts

Double width teethed belts (Two belts heat-welded together side-by-side)	**AT10** **T10** **H**	 *The figure in the picture depicts the **T10**.	10 10 12.7	○	○		67～69

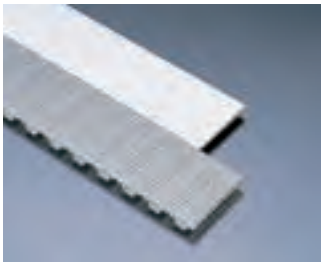
Free attachment belt

Free attachment belt	**FAT1**		10		○		70

Specifications

We can accommodate a wide range of applications with our full line-up of task-specific and customizable Iron Rubber belts which are changing trends in conveyance and power transmission.

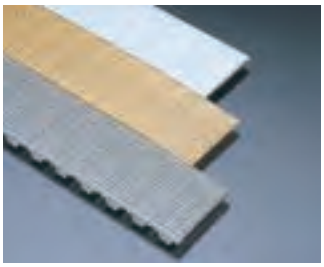
Rubber material



High-strength polyurethane rubber in translucent (A), white (E), and low-hardness translucent (D) is utilised as the rubber material.
Also available in mildewproof and antimicrobial finishes (G).

Please refer to pages 21 and 83 for more details.

Tension member



High-tensile steel cord, aramid fiber cord, and stainless steel cord are all available for use in the tension member.

Please refer to page 21 for more details.

Trapezium teethed belt

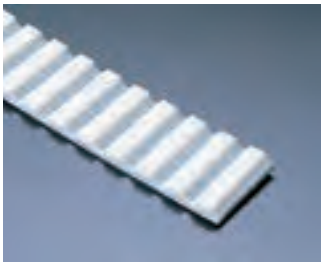
Standard belt is equipped with trapezium teeth based on ISO standards.

MA belt

MA belt is equipped with distinctive circular teeth. Circular teeth shape ensures smooth tracking. Superior positioning accuracy and almost zero backlash.

Please refer to pages 21 to 24 for more details.

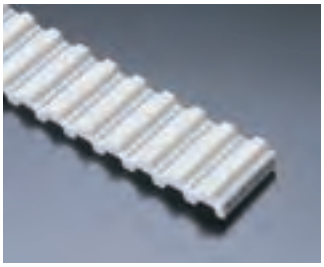
AT belt



High-torque and high-tensile type with enlarged tooth cross-section. Very little drop in performance and cord wear as the tips of the teeth of the belt engage the pulley. In combination with the backlash-less pulley improves the positioning accuracy.

Please refer to pages 25 to 27 for more details.

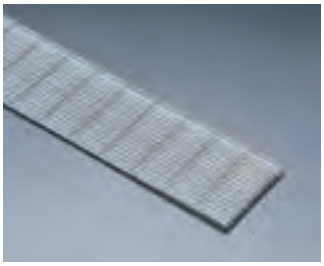
Double-sided teethed belts



Double sided teethed belts is multi-shaft transferable due to the teeth being mounted on both sides.

Please refer to pages 36 to 38 for more details.

Flat belt



Easily maintained flat belt with minimal elongation due to steel cord being used as tension members.

Please refer to pages 46 to 48 for more details.

Profiled belt

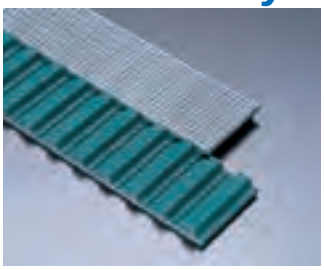
Weld-On profiles are thermally attached to the timing belt for an exceptionally strong bond. Profiles of varying standards are available.

Please refer to pages 56 to 74 for more details.

One-piece molded profile belt

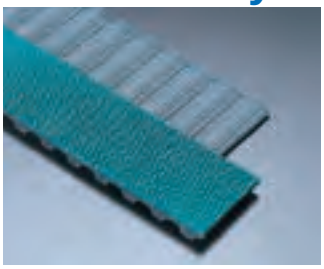
Highly accurate profile molded into the belt.
(Requires a dedicated mold.)

Tooth-side nylon faced belt



Toothed-side nylon faced belt has nylon integrated into the toothed face to reduce the coefficient of friction between the belt and the pulley. In addition the guide rail facilitates a decrease in noise and reduction in load.

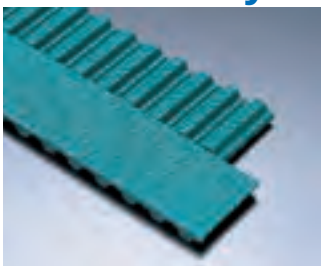
Back-side nylon faced belt



Backside nylon faced belt has nylon integrated into the backside to reduce the coefficient of friction between the belt and the transported article for accumulated transport.
(Belt with back-side surface grain from just the nylon pattern are also available)

Joint type and Linear type only

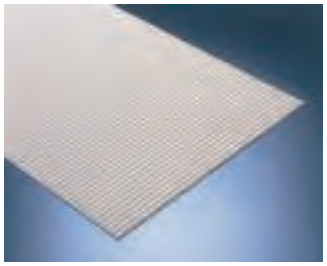
Both-side nylon faced belt



Both-side nylon faced belt has nylon integrated into both sides of the belt.

Joint type and Linear type only

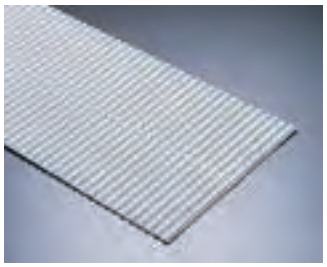
Wide belt



Wide belt is long & have widths of up to 400mm (T10).

Please refer to pages 44 to 45 for more details.

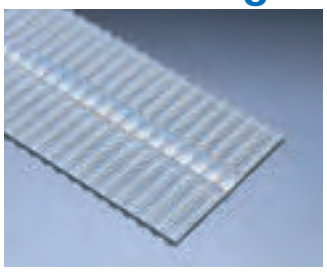
Double width belt



Double width belt has maximum widths of up to 800mm (T10). This is made possible though the heat-welding of two belts side-by-side.

Please refer to pages 51 to 53 for more details.

Self-tracking belt



Self-tracking belt have self-tracking V-guides molded into the toothed surface.
It is not necessary to attach a flange to the pulley.

Please refer to pages 39 to 43 for more details.

Self-tracking flat belt

Self-tracking flat belt have V-guides integrated into the belt.
It is suitable for light-weight conveyance of circuit boards etc. when used in a parallel configuration.

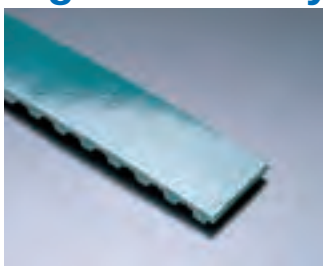
Please refer to pages 49 to 50 for more details.

Lining belts

Lining belts has high friction coefficient rough lining.
It is suitable for transporting on inclined angles due to slip prevention characteristics.
It is soft-touch artificial leather lining.
It is suitable for the transportation of easily damaged articles.
It is a superior polyurethane form pad lining.
It is suitable for sandwich belt conveyance and the protection of transported articles.

Please refer to page 75 for more details.

High-friction nylon faced belt



One-piece molded belt fabricated by coating the rear side of the belt with special urethane-impregnated fabric. Has a high friction coefficient and thus suits use with inclined angles. (Will become slippery if the belt gets contaminated with oil or dirt.)

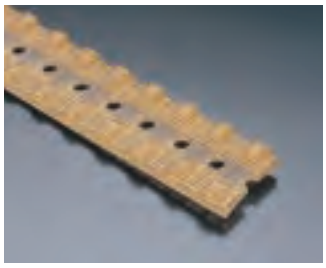
Please refer to page 21 for more details.

Machined belts

Machined belts can be machined according to requirements in order to position the transported article etc.
It is also possible to machine the toothed side as necessary to provide a guide function etc.

Please refer to page 75 for more details.

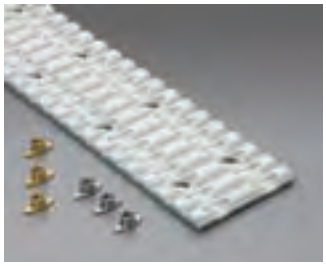
Perforated belts



Perforated belts have perforations which can be machined into the belts as necessary for vacuum transportation or the fitting of attachments etc.

Please refer to page 75 for more details.

FAT belt



Can be used with secondary attachments with special nuts. The belt is equipped with spot-faced holes for use with the special nuts. Secondary attachment can be mounted using the holes in the pertinent positions.

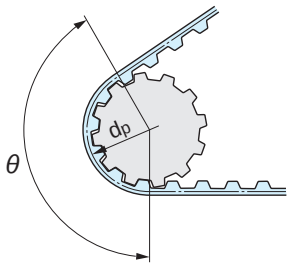
Please refer to pages 54 to 55 for more details.

Selection conditions and instructions

The belts (their design) can be selected according to calculations based on the power or transmission torque.
The model and width of the belt can be determined using calculations. Please consult us for advice on selecting any additional specifications.
The selection process does not take into consideration external factors such as the environment, and hence you will need to confirm their compliance before use.

1. Necessary conditions for making a selection

① Power: P_0 (kW); or transmission torque: Md_0 (Nm)
② Pully pitch circle diameter: dp (mm)
③ Pulley rotation: n (rpm)
④ Belt rolling angle: θ (°)
⑤ Number of idlers to the rear
⑥ Operating time per day
⑦ Number of starts/stops per day
⑧ Usage of the belt (power transmission or conveyor)



*Please select the smallest pulley int the layout.

2. Selection instructions

(1) Power and transmission torque

Use of the actual load of the power or transmission torque is the most ideal in making a selection; however, please use the maximum value of the motor in any calculation for the sake of safety.

(2) For power transmission

Please use a flex type belt with power transmission.

(3) Power transmission and linear drive (as described on page 86)

Please use a MA or AT belt.

* Please ensure to use a belt lined with fabric on the tooth-side if the operating environment and usage allows it.
(To reduce the friction coefficient between the belt and pulley)
Note that the belt needs to be at least 1.35 m long with flex type belts that are lined with fabric on the tooth-side.

	Pitch of teeth (mm)				
	3	5	8	10	20
MA belt	MA3	MA5	MA8	—	—
AT belt	—	AT5	—	AT10	AT20

(4) Multiple belt configurations

If the load gets evenly distributed over belts placed in parallel then please divide the load by the number of belts and use that value in any calculations.
Please ensure to use the maximum load applicable to a single belt in any calculations if the possibility of an uneven load distribution exists.

(5) Minimum number of pulley tooth

Please exercise caution as the minimum number of pulley tooth can vary depending on the belt model and speed of rotations.
Please refer to page 78 for the minimum number of pulley tooth.

(6) When using a backside idler

Please exercise caution as the minimum diameter of the backside idler can vary depending on the belt model.
Please refer to page 79 for the minimum diameter of the backside idler.
Please ensure to use a High-flex cord (flex type) with multi-shaft layouts such as roller conveyors.

(7) When using a servo motor

Please select the belt according to the torque when a servo motor is used.

Selection procedure

Step 1 Determining the design power and design torque

Multiply the power/transmission torque by a correction coefficient (safety factor) when determining the design power/design torque.

[How to determine the design power/design torque]

- Design power: $P = P_0 \times (1 + K_1 + K_2 + K_3 + K_4 + K_5)$
- Design torque: $Md = Md_0 \times (1 + K_1 + K_2 + K_3 + K_4 + K_5)$

P: Design power (kW)
P_0: Power (kW)
Md: Design torque (Nm)
Md_0: Transmission torque (Nm)

K_1: Correction coefficient for operating time
K_2: Correction coefficient for starts and stops
K_3: Correction coefficient for belt type
K_4: Correction coefficient for the backside idler
K_5: Correction coefficient for the cord specification

Correction coefficient for operating time (K1)

Operating time (time per day)	Correction coefficient
<8	0.0
8~16	0.2
16<	0.4

Correction coefficient for starts and stops (K2)

Number of starts and stops (times per day)	Correction coefficient
none	0.0
1~10	0.2
11~99	0.3
100~499	0.4
500≦	0.5

Correction coefficient for belt type (K3)

Belt type	Correction coefficient
Flex type	0.2
Liner type	0.5
Joint type	2.0

Correction coefficient for the backside idler (K4)

Number of backside idlers (pieces)	Correction coefficient
none	0.0
1	0.1
2	0.2
3	0.3
4	0.4
5 or more	0.5

*Please perform the correction using the number of pulleys on the back side with double sided teethed belts.

Correction coefficient for the cord specification (K5)

Tension member specification	Correction coefficient
Steel cord, High-flex steel cord	0.0
Stainless-steel cord, High-flex stainless cord	0.2
Aramid fiber cord	0.0

Step 2 Deciding the belt model

Make the decision on the belt model to be used according to the simplified selection diagram provided on pages 18 and 19.
To make a selection according to the power first decide the belt model according to the design power determined in Step 1 and the pulley rotations.
To make a selection according to the transmission torque first decide the belt model according to the design torque determined in Step 1 and the pulley rotations.

Step 3 Deciding the number of pulley teeth

Decide the number of pulley teeth (z) corresponding to the belt model according to the usage conditions (pulley diameter).
*Please pay attention to the minimum number of pulley tooth (see page 78).

z: Number of pulley tooth
Z_E: Number of teeth in mesh

Step 4 Determining the number of teeth in mesh: Z_E

Determine the number of teeth in mesh (Z_E) where the belt engages the pulley according to the number of pulleys (z) and the rolling angle (θ).

$$Z_E = z \times \frac{\theta}{360}$$ (Round down to a whole number.)

Note that the number of mating teeth can be **up to 12**.
If the Z_E determined using the above calculation is 13 teeth or more then please select the belt using “12 teeth”, which is the upper limit.

Step 5 Determining the belt width: bc

Determine the belt width using the most acceptable value provided on page 17.

To select using the design power (P):

$$bc = \frac{P \times 10^4}{Ps \times Z_E \times z} \times fw + fx$$

To select using the design torque (Md):

$$bc = \frac{Md \times 10^3}{Mds \times Z_E \times z} \times fw + fx$$

	fw	fx	Selected model
T5-V	1	6	T5-J(L)
T10-V	1.5	10	T10-J(L)
AT10-V	1	10	AT10-J(L)
MA5-V	1	7	MA5-L
L-V	1	15.4	L-J
150-T10-J	1.5	0	T10-J
400-T10-J	3.5	0	T10-J
600-H-J	1.5	0	H-J
FAT1-J	2.5	0	AT10-J
Other	1	0	—

bc: Belt width
Ps: Allowable power
Mds: Acceptable transmission torque
fw, fx: Coefficient of the width

Example of selection

Case1 To select using the power (kW)

Necessary conditions for selecting:

•Power:	P_0=10kW
•Driving pulley diameter:	d≒ø80
•Number of driving pulley rotations:	n_1=2000rpm (Deceleration rate of 1: 2)
•Belt rolling angle:	θ=175°
•Distance between shafts:	C=900mm
•With or without backside idler:	0 piece
•Operating time per day:	10 hours
•Number of starts and stops per day:	none
•Usage:	Power transmission

Step1 Determining the design power

Determine the design power according to the power and correction coefficient.
The usage is power transmission and hence the flex type (steel cord) is used and the calculation made as follows.

$$P = P_0 \times (1+K_1+K_2+K_3+K_4+K_5)$$
$$=10 \times (1+0.2+0.0+0.2+0.0+0.0) = 14\ kW$$

Step2 Deciding the belt model

The selection is made according to the power and hence the Belt selection diagram 1 should be used.
The decision is made to use the AT10 because the design power is 14 kW,
the pulley diameter approximately 80 mm, and the number of pulley rotations 2000 rpm.
(As the usage concerns power transmission ensure to select a MA and AT belt.)

Step3 Deciding the number of pulley teeth

The driving pulley diameter, d, is approximately ø80, and hence the decision is made to that the number of driving pulley teeth is 25.
(dp_1=79.58 do_1=77.70)
The deceleration rate is 1:2, and hence the decision is made that the number of driven pulley teeth is 50.
(dp_2=159.15 do_2=157.30)

Step4 Determining the number of teeth in mesh: Z_E

Determine the number of teeth in mesh in accordance with

$$Z_E = z_1 \times \frac{\theta}{360}$$

$$Z_E = z_1 \times \frac{\theta}{360} = 25 \times \frac{175}{360}$$
$$= 12.2$$

The upper limit of the mating teeth is 12 and hence the Z_E is 12.

Step5 Determining the belt width

Determine the belt width using a belt width calculation and according to

$$bc = \frac{P \times 10^4}{Ps \times Z_E \times z_1} \times fw + fx$$

$$bc = \frac{P \times 10^4}{Ps \times Z_E \times z_1} \times fw + fx = \frac{14 \times 10^4}{10.46 \times 12 \times 25} \times 1 + 0 = 44.6mm \rightarrow 50mm$$

(Pinpoint the Ps using the acceptable value on page 17.)

As described above the belt selected would be the

050-AT10-○○○○E-F

*Please ensure to use a belt lined with fabric on the teeth-side if the operating environment and usage allows it (**-F1**).

Case 2 To select using the torque (Nm)

Necessary conditions for selecting:

•Torque:	Md_0=400Nm
•Driving pulley diameter:	d≒ø160
•Number of driving pulley rotations:	n_1=200rpm
•Belt rolling angle:	θ=180°
•Distance between shafts:	C=800mm
•With or without backside idler:	none
•Operating time per day:	6 hours
•Number of starts and stops per day:	approximately 300 times
•Usage:	Power transmission (include the possibility of it getting wet)

Step 1 Determining the design torque

Determine the design torque using the torque and correction coefficient.
The usage is power transmission and the possibility of it getting wet exists and hence flex type (stainless-steel cord) should be used and the calculation made as follows.

$$Md = Md_0 \times (1+K_1+K_2+K_3+K_4+K_5)$$
$$= 400 \times (1+0.0+0.4+0.2+0.0+0.2) = 720\,Nm$$

Step 2 Deciding the belt model

The selection is made according to the torque and hence Belt selection diagram 2 is used.
The decision is made to use an AT20 because the design torque is 720 Nm, the pulley diameter approximately 160 mm, and the number of pulley rotations 200 rpm.
(The usage is power transmission and hence a MA or AT belt should be used.)

Step 3 Deciding the number of pulley teeth

The driving pulley diameter, d, is approximately ø160, and hence the decision is made to that the number of driving pulley teeth is 25.
(dp=159.15 do=156.30)

Step 4 Determining the number of teeth in mesh: Z_E

Determine the number of teeth in mesh in accordance with

$$Z_E = z \times \frac{\theta}{360}$$

$$Z_E = z \times \frac{\theta}{360} = 25 \times \frac{180}{360} = 12.5$$

The upper limit of the mating teeth is 12 and hence the Z_E is 12.

Step 5 Determining the belt width

Determine the belt width using a belt width calculation and according to

$$bc = \frac{Md \times 10^3}{Mds \times Z_E \times z} \times fw + fx$$

$$bc = \frac{Md \times 10^3}{Mds \times Z_E \times z} \times fw + fx = \frac{720 \times 10^3}{34.8 \times 12 \times 25} \times 1 + 0 = 69.0\,mm \rightarrow 75\,mm$$

(Pinpoint the Mds using the acceptable value on page 17.)

As described above the belt selected would be the

075-AT20-○○○○E-FS

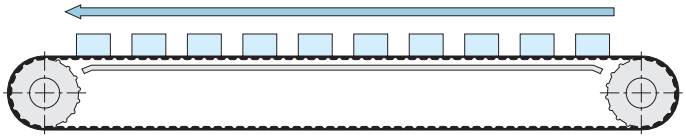
*Please ensure to use a belt lined with fabric on the teeth-side if the operating environment and usage allows it (**-FS1**).

Example of selection

Case3 To select using the weight of goods conveyed (Nm)

Necessary conditions for selecting:

- •Power/torque: Not yet clarified because the motor specification has not been decided
- •Driving pulley : d ≒ approximately ø95
- •Belt rolling angle: $\theta = 180°$
- •Belt speed: V = 0.3m/s
- •Distance between shafts: C = 5000mm
- •With or without backside idler: none
- •Operating time per day: 18 hours
- •Number of starts and stops: 1 time/3 s
- •Work: m = 18 kg/piece × 10 pieces
- •Guide rail material: SUS (to the belt: μ = 0.6)
- •Usage: conveyor



Step1 Determining the torque

(1) Determine the effective tension

(2) Determine the number of pulley rotations using the following formula.

$$n = \frac{19.1 \times 10^3 \times V}{dp}$$

(3) Convert the effective tension into torque using the following formula.

$$Md_0 = \frac{U \times dp}{2 \times 10^3}$$

(1) $U = \mu \times m \times g$

$= 0.6 \times (18 \times 10) \times 9.8 = 1058$ N

(2) $n = \frac{19.1 \times 10^3 \times V}{dp}$ (Tentative use of ø95 for the dp.)

$= \frac{19.1 \times 10^3 \times 0.3}{95} = 60$ rpm

(3) $Md_0 = \frac{U \times dp}{2 \times 10^3} = \frac{1058 \times 95}{2 \times 10^3} = 50.3$ Nm

Step2 Determining the design torque

Determine the design torque according to the torque determined in Step 1 and the correction coefficient.
The usage will be a conveyor and hence a joint type (steel cord) is used and the calculation made as follows.
(*Supports use of the flex type.)

$Md = Md_0 \times (1 + K_1 + K_2 + K_3 + K_4 + K_5)$

$= 50.3 \times (1 + 0.4 + 0.5 + 2.0 + 0.0 + 0.0) = 196$ Nm

Step3 Deciding the belt model

The selection is made according to the torque and hence Belt selection diagram 2 is used.
The decision is made to use an T10 because the design torque is 196 Nm,
the pulley diameter approximately 95 mm, and the number of pulley rotations 60 rpm. (AT10 or H both available.)

Step4 Deciding the number of pulley teeth

The driving pulley diameter, d, is approximately ø95, and hence the decision is made to that the number of driving pulley teeth is 30.
(dp = 95.49 do = 93.65)

Step5 Determining the number of teeth in mesh: Z_E

Determine the number of teeth in mesh in accordance with

$$Z_E = z \times \frac{\theta}{360}$$

$$Z_E = z \times \frac{\theta}{360} = 30 \times \frac{180}{360} = 15$$

= pulley teeth is 15 (The upper limit of the mating teeth is 12 and hence the ZE is 12.)

Step6 Determining the belt width

Determine the belt width using a belt width calculation and according to

$$bc = \frac{Md \times 10^3}{Mds \times Z_E \times z} \times fw + fx$$

$$bc = \frac{Md \times 10^3}{Mds \times Z_E \times z} \times fw + fx = \frac{196 \times 10^3}{8.14 \times 12 \times 30} \times 1 + 0 = 66.9\,\text{mm} \rightarrow 75\,\text{mm}$$

(Pinpoint the Mds using the acceptable value on page 17.)

As described above the belt selected would be the

075-T10-○○○○A-J

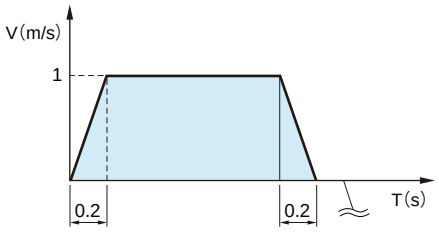
*The use of a belt lined with fabric on the teeth-side (**-J1**) is recommended in thereby reducing the friction coefficient between the belt and the guide.

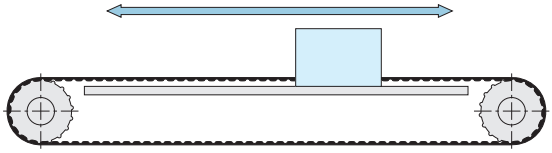
*After deciding the motor specifications please then reselect the belt.

Case4 Selection with operations that involve sudden acceleration or stops

Necessary conditions for selecting:

- •Power/torque: not yet clarified because the motor specification has not been decided
- •Driving pulley diameter: d ≒ ø200
- •Belt speed: V = 1m/s
- •Acceleration (deceleration) time: T = 0.2s
- •Distance between shafts: C = 5000mm
- •With or without backside idler: none
- •Operating time per day: 12 hours
- •Number of starts and stops per day: approximately 5000 times
- •Work: m = 200kg
- •Work instruction: linear guide (μ = 0.1)
- •Usage: reciprocation of the work via a linear drive (horizontal)





Step1 Determining the number of pulley rotations

Determine the number of pulley rotations according to

$$n = \frac{19.1\times10^3\times V}{dp}$$

$$n = \frac{19.1\times10^3\times V}{dp} = \frac{19.1\times10^3\times 1}{200} \fallingdotseq 96\,\text{rpm}$$

Step2 Determining the sliding torque

(1) Determine the sliding resistance.

$$F = \mu\times m\times g$$

(2) Convert the sliding resistance into torque using the following formula.

$$Md_A = \frac{F\times dp}{2\times10^3}$$

(1) $F = \mu\times m\times g = 0.1\times200\times9.8 = 196\,\text{N}$

(2) $Md_A = \frac{F\times dp}{2\times10^3} = \frac{196\times200}{2\times10^3} = 19.6\,\text{Nm}$

Step3 Determining the inertia moment

(1) Determine the inertia moment of the rotor (such as driven pulley) according to

$$J_1 = \frac{m\times D^2}{8\times10^6}$$

(2) Determine the inertia moment of the object moving horizontally according to

$$J_2 = \frac{m\times D^2}{4\times10^6}$$

(3) Determine the total of J.

(1) $J_1 = \frac{m\times D^2}{8\times10^6} = \frac{8.8\times200^2}{8\times10^6} = 44\times10^{-3}\,\text{kgm}^2$

(2) $J_2 = \frac{m\times D^2}{4\times10^6} = \frac{200\times200^2}{4\times10^6} = 2.00\,\text{kgm}^2$

(3) $\Sigma J = J_1 + J_2 = 44\times10^{-3} + 2.00 = 2.04\,\text{kgm}^2$

Calculate with the specific gravity 2.8 of the aluminum after assuming the pulley mass (d_0) to be 200 and W to be 100.

$$m = \frac{\left(\frac{d}{2}\right)^2\times\pi\times W}{10^6}\times\gamma$$

$$= \frac{\left(\frac{200}{2}\right)^2\times\pi\times100}{10^6}\times2.8 = 8.8\,\text{kg}$$

Step4 Determining the acceleration torque

Determine the acceleration torque according to

$$Md_B = \frac{J\times\Delta n}{9.55\times T}$$

$$Md_B = \frac{J\times\Delta n}{9.55\times T} = \frac{2.04\times(96-0)}{9.55\times0.2} = 103\,\text{Nm}$$

Step5 Determining the torque

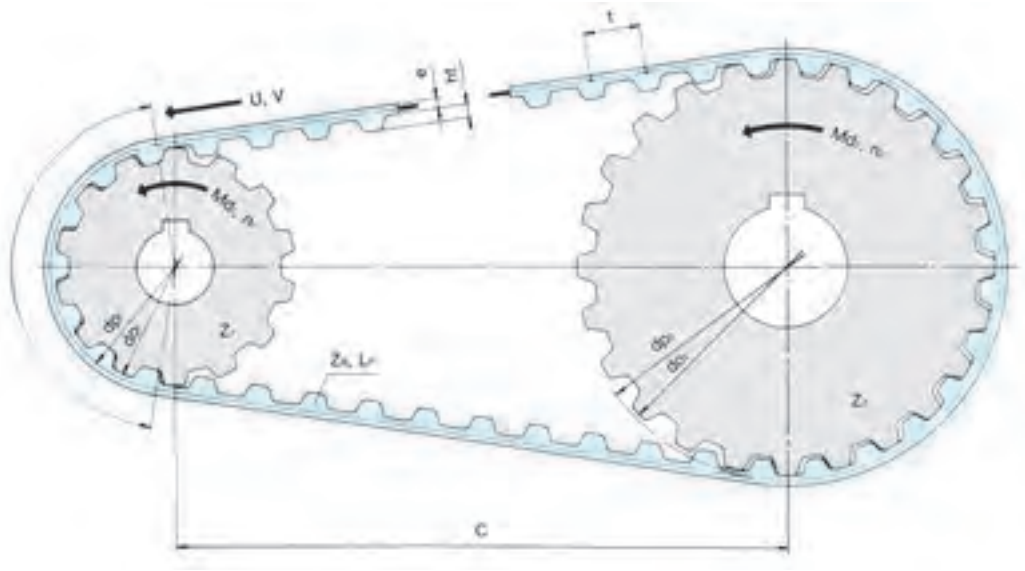
Calculate the total of sliding torque and acceleration torque to determine the torque (Md_0).

$$Md_0 = Md_A + Md_B = 19.6 + 103 = 123\,\text{Nm}$$

Continue the calculation after referring to Case 2 on page 13.

*After deciding the motor specifications please then reselect the belt.

List of formulas

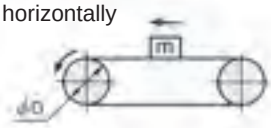


L_P: belt length (mm)
Z_B: number of belt teeth
t: belt tooth pitch (mm)
ht: belt tooth height (mm)
e: belt back thickness (mm)
b: belt width (mm)

Z_E: number of teeth in mesh
C: distance between shafts (mm)
z_1: number of pulley teeth
z_2: number of pulley teeth
dp_1: pulley pitch circle diameter (mm)
dp_2: pulley pitch circle diameter (mm)
i: Pulley teeth ratio (z_1/z_2)

do_1: pulley tooth tip circle diameter (mm)
do_2: pulley tooth tip circle diameter (mm)
n_1: number of pulley rotations (rpm)
n_2: number of pulley rotations (rpm)
P_0: power (kW)
Md_0: torque (Nm)

U: effective tension (N)
Md_B: acceleration torque (Nm)
T: acceleration time (s)
J: inertia moment (kgm^2)
V: speed (m/s)
ω: Angular speed (s^{-1})
m: mass (kg)

Belt length (of two shafts) L_P	$i \neq 1$ $L_P \fallingdotseq \frac{\pi}{2}(dp_1+dp_2)+2C+\frac{(dp_2-dp_1)^2}{4C}$	$i = 1$ $L_P = 2C + z \times t$	
Power P_0	$P_0 = \frac{Md \times n}{9.55\times10^3}$	$P_0 = \frac{U \times dp \times n}{19.1\times10^6}$	$P_0 = \frac{U \times V}{10^3}$
Torque Md_0	$Md_0 = \frac{U \times dp}{2\times10^3}$	$Md_0 = \frac{9.55\times10^3 \times P}{n}$	$Md_0 = \frac{P \times dp}{2 \times V}$
Effective tension U	$U = \frac{2\times10^3 \times Md}{dp}$	$U = \frac{19.1\times10^6 \times P}{n \times dp}$	$U = \frac{10^3 \times P}{V}$
Speed of rotations n	$n = \frac{19.1\times10^3 \times V}{dp}$		
Belt speed V	$V = \frac{dp \times n}{19.1\times10^3}$		
Angular speed ω	$\omega = \frac{\pi \times n}{30}$		
Inertia moment J øD, ød: mm m: kg	Solid cylinder $J = \frac{m \times D^2}{8\times10^6}$ 	Hollow cylinder $J = \frac{m \times (D^2+d^2)}{8\times10^6}$ 	
	Object moving horizontally $J = \frac{m \times D^2}{4\times10^6}$ 		
Acceleration torque Md_B	$Md_B = \frac{J \times \Delta P}{9.55 \times T}$		

Conversion (engineering unit ⇒ SI unit)

Force	1 kgf	= 9.807 N
Torque	1 kgf・m	= 9.807 Nm
Power	1 HP	= 0.746 kW
Inertia moment	1 kgf・m^2	= 4 kg・m^2

Specific gravity (for reference)

Aluminum	2.8
Steel	7.8
Stainless-steel	7.8

Acceptable value

Allowable power: Ps

Pulley rotations n1 (rpm)	MA3	MA5	MA8	AT5	AT10	AT20	T5	T10	T20	MXL	XL	L	H	XH
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0.026	0.052	0.181	0.052	0.226	0.954	0.043	0.181	0.734	0.007	0.044	0.129	0.206	1.021
40	0.050	0.101	0.351	0.101	0.439	1.847	0.084	0.351	1.421	0.014	0.085	0.250	0.401	1.975
60	0.074	0.147	0.511	0.147	0.639	2.68	0.123	0.511	2.06	0.020	0.124	0.364	0.583	2.86
80	0.096	0.192	0.661	0.192	0.826	3.45	0.160	0.661	2.66	0.026	0.161	0.471	0.753	3.69
100	0.116	0.233	0.800	0.233	1.000	4.17	0.194	0.800	3.21	0.032	0.196	0.572	0.910	4.45
200	0.211	0.422	1.423	0.422	1.779	7.29	0.351	1.423	5.61	0.058	0.354	1.019	1.616	7.78
300	0.296	0.592	1.984	0.592	2.48	10.03	0.494	1.980	7.71	0.082	0.498	1.419	2.25	10.50
400	0.376	0.753	2.496	0.753	3.12	12.50	0.627	2.49	9.62	0.104	0.632	1.789	2.83	13.32
500	0.452	0.905	2.976	0.905	3.72	14.80	0.754	2.98	11.38	0.126	0.760	2.14	3.37	15.75
600	0.525	1.050	3.432	1.050	4.29	16.94	0.875	3.43	13.03	0.147	0.881	2.47	3.88	18.02
700	0.593	1.187	3.864	1.187	4.83	18.95	0.989	3.87	14.58	0.168	0.999	2.78	4.37	20.2
800	0.662	1.324	4.280	1.324	5.35	20.9	1.104	4.28	16.05	0.188	1.113	3.08	4.83	22.2
900	0.728	1.456	4.664	1.456	5.83	22.7	1.213	4.68	17.44	0.208	1.223	3.37	5.28	24.1
1000	0.791	1.578	5.064	1.578	6.33	24.4	1.319	5.07	18.77	0.227	1.330	3.65	5.72	25.9
1100	0.854	1.708	5.440	1.708	6.80	26.1	1.423	5.44	20.0	0.247	1.434	3.92	6.13	27.7
1200	0.914	1.829	5.800	1.829	7.25	27.6	1.524	5.80	21.3	0.266	1.536	4.19	6.54	29.4
1300	0.974	1.947	6.152	1.947	7.69	29.2	1.623	6.15	22.4	0.285	1.636	4.44	6.93	31.0
1400	1.031	2.06	6.496	2.06	8.12	30.6	1.719	6.49	23.6	0.303	1.733	4.69	7.31	32.5
1500	1.088	2.18	6.824	2.18	8.53	32.0	1.814	6.83	24.6	0.322	1.829	4.93	7.68	34.0
1600	1.144	2.29	7.152	2.29	8.94	33.4	1.907	7.15	25.7	0.340	1.923	5.17	8.04	35.4
1700	1.199	2.40	7.464	2.40	9.33	34.7	1.998	7.46	26.7	0.358	2.01	5.40	8.39	36.8
1800	1.254	2.51	7.776	2.51	9.72	36.0	2.09	7.77	27.7	0.378	2.11	5.62	8.73	38.2
1900	1.308	2.61	8.072	2.61	10.09	37.2	2.18	8.07	28.6	0.394	2.19	5.84	9.06	39.5
2000	1.356	2.72	8.368	2.72	10.46	38.4	2.26	8.37	29.5	0.413	2.28	6.06	9.39	40.7
2200	1.458	2.92	8.936	2.92	11.17	40.7	2.43	8.94	31.3	0.448	2.45	6.48	10.02	43.1
2400	1.560	3.12	9.480	3.12	11.85	42.8	2.60	9.48	32.9	0.485	2.62	6.88	10.63	45.3
2600	1.656	3.31	10.008	3.31	12.51	44.8	2.76	10.01	34.5	0.520	2.78	7.27	11.21	47.4
2800	1.746	3.49	10.512	3.49	13.14	46.7	2.91	10.51	35.9	0.556	2.94	7.64	11.76	49.4
3000	1.838	3.68	11.000	3.68	13.75	48.5	3.06	11.00	37.3	0.590	3.09	8.00	12.30	51.3

Acceptable transmission torque: Mds

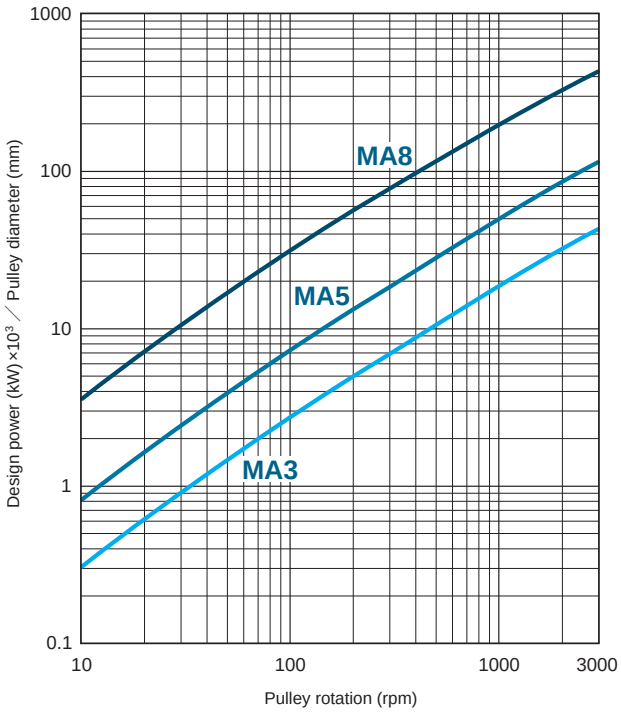
Pulley rotations n1 (rpm)	MA3	MA5	MA8	AT5	AT10	AT20	T5	T10	T20	MXL	XL	L	H	XH
0	1.26	2.52	8.888	2.52	11.11	47.0	2.10	8.89	36.1	0.344	2.13	6.31	10.15	50.3
20	1.23	2.46	8.640	2.46	10.80	45.5	2.05	8.64	35.0	0.339	2.08	6.14	9.86	48.7
40	1.20	2.40	8.392	2.40	10.49	44.0	2.00	8.39	33.9	0.328	2.03	5.97	9.56	47.2
60	1.173	2.35	8.136	2.35	10.17	42.7	1.955	8.14	32.8	0.319	1.976	5.80	9.27	45.6
80	1.144	2.29	7.888	2.29	9.86	41.2	1.906	7.89	31.7	0.311	1.923	5.63	8.98	44.0
100	1.114	2.23	7.640	2.23	9.55	39.8	1.857	7.64	30.6	0.303	1.871	5.46	8.69	42.4
200	1.006	2.01	6.800	2.01	8.50	34.8	1.677	6.80	26.8	0.276	1.690	4.86	7.72	37.1
300	0.943	1.887	6.304	1.887	7.88	31.9	1.572	6.30	24.6	0.260	1.584	4.52	7.15	34.0
400	0.898	1.797	5.952	1.797	7.44	29.9	1.497	5.95	23.0	0.249	1.509	4.27	6.74	31.8
500	0.864	1.728	5.680	1.728	7.10	28.3	1.440	5.68	21.7	0.241	1.451	4.08	6.43	30.1
600	0.836	1.671	5.456	1.671	6.82	27.0	1.393	5.46	20.7	0.234	1.403	3.92	6.18	28.7
700	0.811	1.623	5.272	1.623	6.59	25.9	1.352	5.27	19.89	0.229	1.363	3.79	5.96	27.5
800	0.791	1.581	5.112	1.581	6.39	24.9	1.318	5.11	19.15	0.225	1.328	3.68	5.77	26.5
900	0.772	1.545	4.968	1.545	6.21	24.1	1.287	4.97	18.50	0.221	1.298	3.58	5.61	25.6
1000	0.756	1.512	4.840	1.512	6.05	23.3	1.260	4.84	17.92	0.217	1.270	3.49	5.46	24.8
1100	0.741	1.482	4.720	1.482	5.90	22.6	1.235	4.72	17.40	0.214	1.245	3.41	5.32	24.0
1200	0.728	1.456	4.616	1.456	5.77	22.0	1.213	4.62	16.92	0.211	1.223	3.33	5.20	23.4
1300	0.715	1.430	4.520	1.430	5.65	21.4	1.192	4.52	16.48	0.209	1.202	3.26	5.09	22.7
1400	0.704	1.407	4.432	1.407	5.54	20.9	1.173	4.43	16.07	0.207	1.182	3.20	4.98	22.2
1500	0.693	1.386	4.344	1.386	5.43	20.4	1.155	4.35	15.69	0.205	1.164	3.14	4.89	21.6
1600	0.683	1.366	4.264	1.366	5.33	19.93	1.138	4.27	15.33	0.203	1.148	3.08	4.80	21.2
1700	0.673	1.347	4.192	1.347	5.24	19.50	1.122	4.19	15.00	0.201	1.132	3.03	4.71	20.7
1800	0.665	1.329	4.120	1.329	5.15	19.09	1.108	4.12	14.69	0.200	1.117	2.98	4.63	20.2
1900	0.656	1.312	4.056	1.312	5.07	18.70	1.094	4.06	14.39	0.198	1.103	2.94	4.56	19.83
2000	0.648	1.296	3.952	1.296	4.94	18.34	1.080	4.00	14.11	0.197	1.089	2.89	4.48	19.44
2200	0.634	1.267	3.880	1.267	4.85	17.65	1.056	3.88	13.58	0.195	1.065	2.81	4.35	18.70
2400	0.620	1.240	3.776	1.240	4.72	17.03	1.033	3.77	13.10	0.193	1.042	2.74	4.23	18.04
2600	0.607	1.215	3.672	1.215	4.59	16.64	1.012	3.68	12.66	0.191	1.021	2.67	4.12	17.42
2800	0.596	1.192	3.584	1.192	4.48	15.93	0.993	3.59	12.26	0.190	1.002	2.61	4.01	16.85
3000	0.585	1.170	3.504	1.170	4.38	15.43	0.975	3.50	11.87	0.188	0.984	2.55	3.91	16.32

Diagram of simple version of the belt

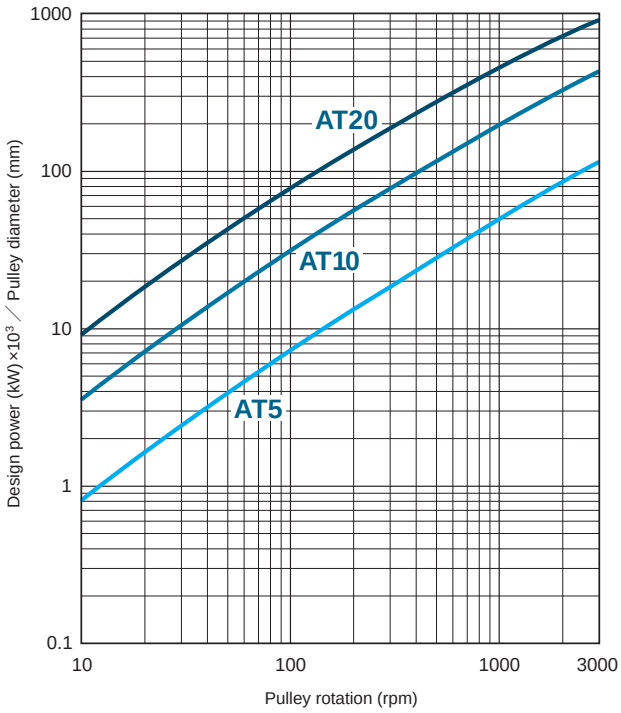
Selection diagram 1: Simple selection according to power

Select the belt model according to $\frac{\text{Design power (P)} \times 10^3}{\text{Pulley diameter (d)}}$ and the number of pulley rotations (n).

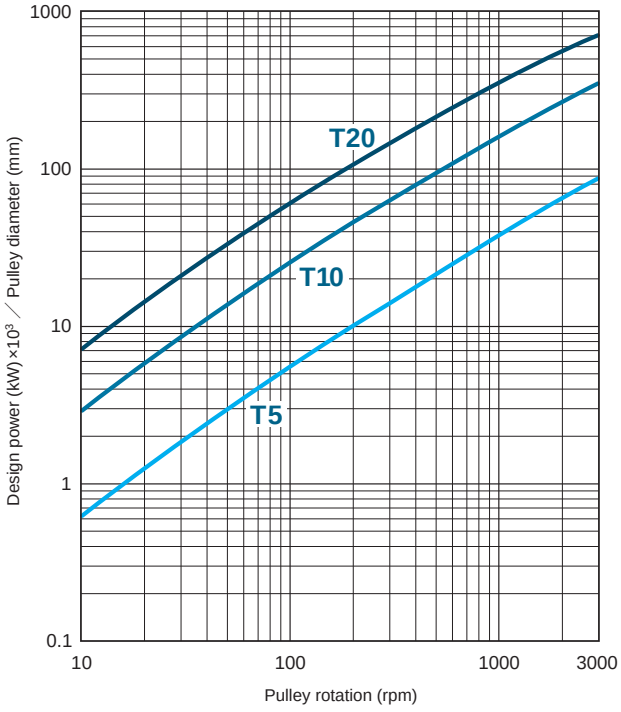
Selection diagram 1-1. MA belt



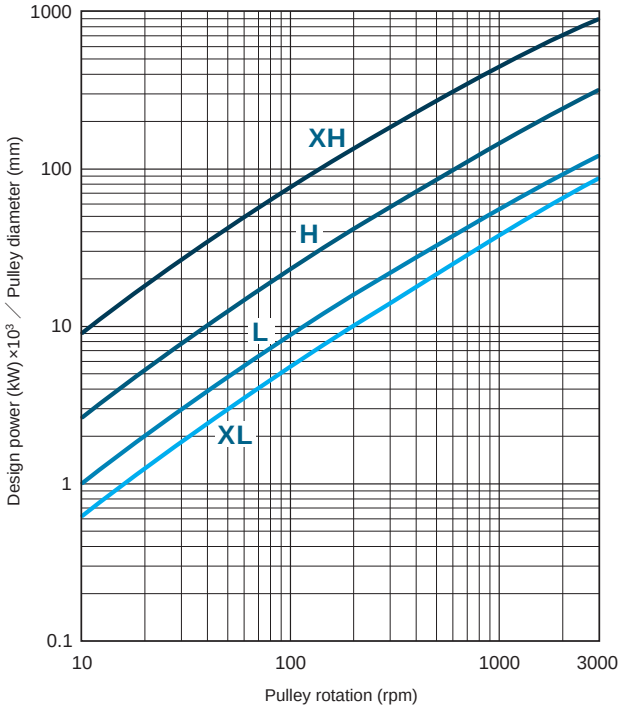
Selection diagram 1-2. AT belt



Selection diagram 1-3. In meters belt



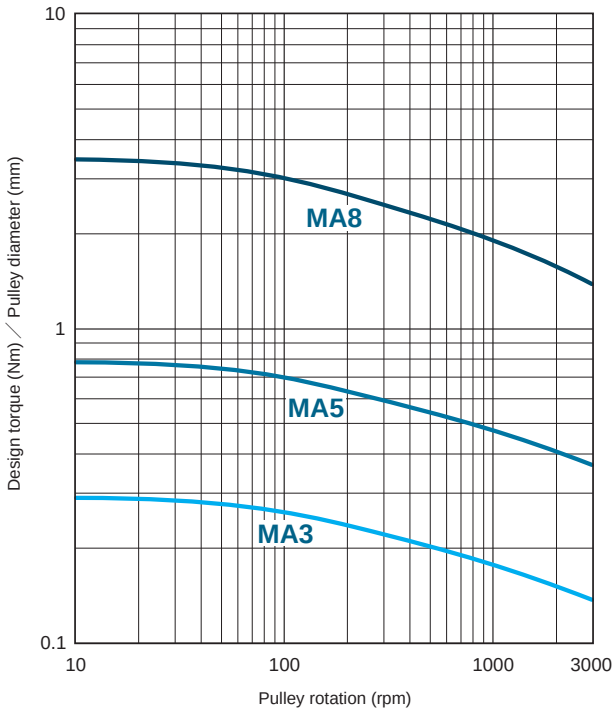
Selection diagram 1-4. In inches belt



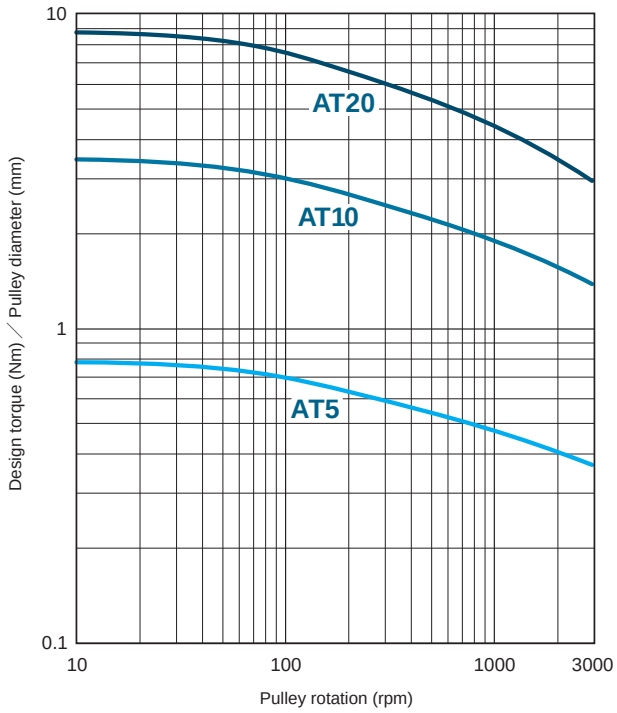
Selection diagram 2: Simple selection according to the torque

Select the belt model according to $\frac{\text{Design torque (Md)}}{\text{Pulley diameter (d)}}$ and the number of pulley rotations (n).

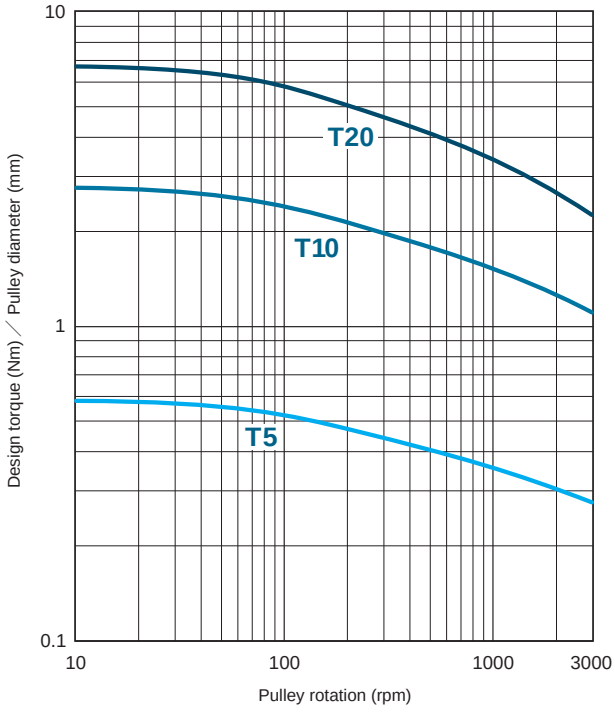
Selection diagram 2-1. MA belt



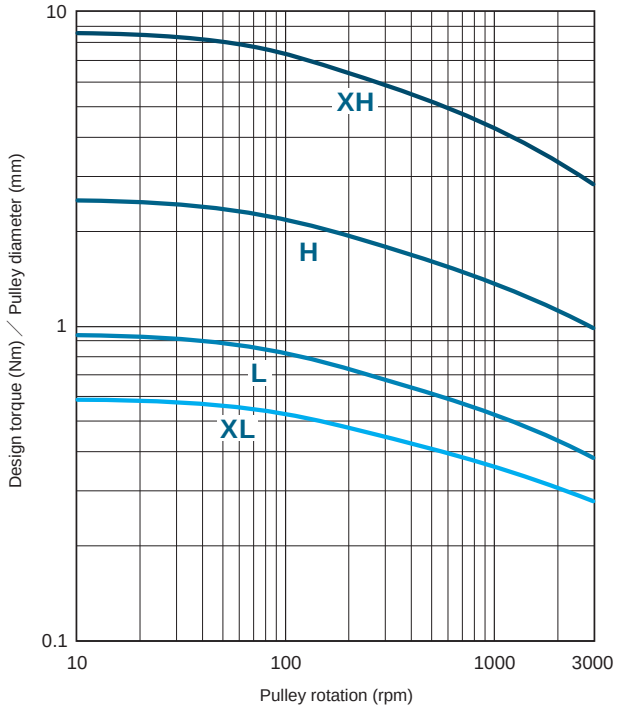
Selection diagram 2-2. AT belt



Selection diagram 2-3. In meters belt



Selection diagram 2-4. In inches belt



Method used to select the dimensions of Iron Rubber Belt models

Belt width (nominal width)
MA belt
AT belt
FAT belt
In meters
Flat belt
: mm
In inches: inch × 100

Belt models
MA3, AT5, T5
FAT1, XL, F12, etc.

Total number of belt teeth
Perimeter of flat belts only (mm)

Rubber material
U496 : **A**
U497 : **E**
U478 : **D**
UH01 : **G**

Type
Flex type : **F**
Joint type : **J**
Linear type : **L**

Tension member
Steel cord : not necessary
High-flex steel cord : **C**
Stainless-steel cord : **S**
High-flex stainless cord : **SC**
Aramid cord : **K**

Self-tracking
(not necessary if there is no V-guide)

Semi-standard additional specifications
(inapplicable if there are no such specifications)
Tooth-side nylon faced : **1**
Back-side nylon faced : **2**
Both-side nylon faced : **3**
Back-side low-hardness : **4**
High-friction nylon faced : **5**
Back-side surface grain : **6**
Back-side umbonate : **7**
Additional specifications other than above are **Y**.

With additional specifications : Y
(inapplicable if there are no such specifications)
Double width/Backside machined/Rough top coated
Please ensure to provide us with any instructions regarding additional specifications such as matched sets.
Please provide us with any instructions regarding the shape/dimensions of belts for processing goods.
Please refer to page 99 for matched sets.

Profiled (inapplicable if not needed)
Please provide us with any instructions regarding the shape/dimensions.

Example and specifications

025-T5-0369A-J3

Belt width : 25 mm
Belt model : T5 (pitch: 5 mm)
Number of belt teeth : 369 teeth (perimeter: 1845 mm)
Rubber material : A (U496)
Type : Joint type
Cord specification : Steel cord
V-guide : none
Semi-standard additional specifications : Both-side nylon faced
Additional specifications : none
Profiled : none

100-T10-0432A-J2Y

Belt width : 100 mm
Belt model : T10 (pitch: 10 mm)
Number of belt teeth : 432 teeth (perimeter: 4320 mm)
Rubber material : A (U496)
Type : Joint type
Cord specification : Steel cord
V-guide : none
Semi-standard additional specifications : Back-side nylon faced
Additional specifications : Toothed side machined
Profiled : none

050-AT10-0321E-FS1P

Belt width : 50 mm
Belt model : AT10 (pitch: 10 mm)
Number of belt teeth : 321 teeth (perimeter: 3210 mm)
Rubber material : E (U497)
Type : Flex type
Cord specification : Stainless-steel cord
V-guide : none
Semi-standard additional specifications : Tooth-side nylon faced
Additional specifications : none
Profiled : included

100-L-0100A-JVY

Belt width : 1 inch (25.4 mm)
Belt model : L (pitch: 9.525 mm)
Number of belt teeth : 100 teeth (perimeter: 952.5 mm)
Rubber material : A (U496)
Type : Joint type
Cord specification : Steel cord
V-guide : included
Semi-standard additional specifications : none
Additional specifications : Perforated
Profiled : none

050-MA8-5000E-L

Belt width : 50 mm
Belt model : MA8 (pitch: 8 mm)
Number of belt teeth : 5000 teeth (length: 40 m)
Rubber material : E (U497)
Type : Linear type
Cord specification : Steel cord
V-guide : none
Semi-standard additional specifications : none
Additional specifications : none
Profiled : none

050-FAT1-0150E-J3Y

Belt width : 50 mm
Belt model : FAT1 (pitch: 10 mm)
Number of belt teeth : 150 teeth (perimeter: 1500 mm)
Rubber material : E (U497)
Type : Joint type
Cord specification : Steel cord
V-guide : none
Semi-standard additional specifications : Both-side nylon faced
Additional specifications :
Please inform us of us the mounting pitch in the case that any perforations are needed to mount any supplied attachments perforated or with dedicated nut. (Please also inform us if perforations are not necessary.)
Please inform us of the necessary quantity of dedicated nuts. (If no instructions are received the quantity will be the same number as the number of perforations.)
Profiled : none

Dimensions and specifications

This table shows the combination of dimensions and specifications that are supported when manufacturing Iron Rubber belts.
Please contact us in regard to any additional specifications not described in the table.

How to read the table

Type
This is used to describe the type of belt.

Flex type : F
Joint type : J
Linear type : L

Belt width (Nominal width)
The width of the belt is described using the nominal width.

MA belt, AT belt, In meters
025=25 mm, 100=100 mm
In inches
100=1 inch (25.4 mm)

With this example
Belts lined with fabric on the teeth-side can only be manufactured with a width of at least 1350mm (135 teeth).

Example of T10 belt

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (E)	U497 (E)	U497 (E)	U497 (E)
F 	015 020 025 040 050	Minimum: 600 (60) Maximum: 30000 (3000)	Without any additional specifications	E-F	E-FC	E-FS	E-FSC
			Tooth-side nylon faced: 1 Minimum: 1350 (135)	E-F1	E-FC1	E-FS1	E-FSC1
	075 100	Minimum: 1350 (135) Maximum: 30000 (3000)	Without any additional specifications	E-F	E-FC	E-FS	E-FSC
			Tooth-side nylon faced: 1	E-F1	E-FC1	E-FS1	E-FSC1

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord		Aramid cord		
				Rubber material		Rubber material		
				U496 (A)	U497 (E)	U496 (A)	U497 (E)	UH01 (G)
J 	(010) 015 020 025 040 050 075 100	Minimum: 700 (70) Maximum: 50000 (5000)	Without any additional specifications	A-J A-L	E-J E-L	A-JK A-LK	E-JK E-LK	G-JK G-LK
L 			Tooth-side nylon faced: 1	A-J1 A-L1	—	A-JK1 A-LK1	—	—
			Back-side nylon faced: 2	A-J2 A-L2	—	A-JK2 A-LK2	—	—
			Both-side nylon faced: 3	A-J3 A-L3	—	—	—	—
			Back-side low-hardness: 4	A-J4 A-L4	—	—	—	—
			High-friction nylon faced: 5	A-J5 A-L5	—	—	—	—
			Back-side surface grain: 6	A-J6 A-L6	—	—	—	—

Maximum length of belts lined with fabric on the teeth-side, those lined with fabric on the rear, and those lined with nylon on both sides: 50,000 (10,000); and the maximum length of belts with a rear surface grain: 40,000 (4,000).
With backside low-hardness belts the thickness is 1mm and the total height 5.5mm (minimum number of pulley teeth: 28).
For high-friction nylon faced belts, the thickness is 0.5mm and the total height is 5.0mm (minimum number of pulley teeth: 20 teeth).
A width of 10mm is only supported by the Linear type. Linear type belts have no minimum length.

Length (number of teeth)
Provides the supported perimeter and number of the teeth of the belt.

With this example
Please use a length (number of the teeth) that is equal to or greater than the following values:
Perimeter: 700 mm
Number of teeth: 70

Additional specifications: Symbols
Provides additional belt specifications (fabric coating, etc.) with respect to one-piece molds.

A separate table should be used for specifications that require additional processing (double width, special backside, and machining).

Combining specifications
Describes whether or not any additional specifications and materials can be combined.

Provides symbols for supported combinations of model dimensions.

Please contact us for any combinations marked with a "—" as they require special consideration.

Materials

Rubber material

Complies with the 1959 notification No. 370 of the Ministry of Health, Labor, and Welfare (1986 revised notification No. 85 of the Ministry of Health, Labor, and Welfare) and regarding the Food Sanitation Act: Standards for Rubber Equipment (excluding baby bottles etc.) and Containers and Packaging.

Material symbol	Abbreviations	Color	Hardness	Remarks
U496	**A**	Semi-transparent	A91	
U497	**E**	White	A91	
U478	**D**	Semi-transparent	A88	Low-hardness level
UH01	**G**	White	A91	Includes mold-proof and antimicrobial features

*The numerical values in the table are actual measured values and are not necessarily standard values.

Tension member

Type	Material	Remarks
High-tensile steel cord	Steel (galvanized)	—
High-flex steel cord	Steel (galvanized)	**C**
Stainless-steel cord	SUS304	**S**
High-flex stainless cord	SUS304	**SC**
Fiber cord	Aramid fiber	**K**

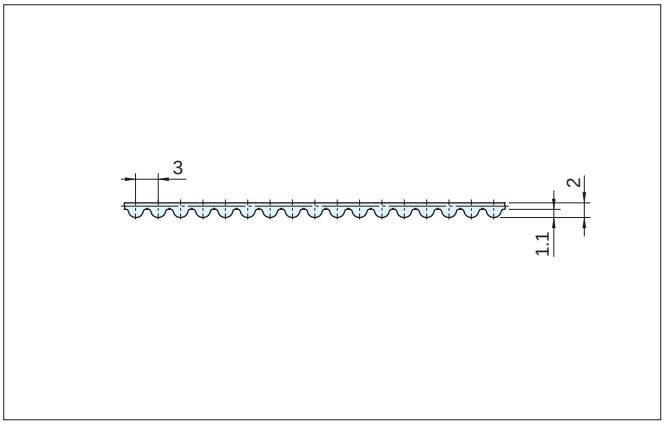
Fabric

Type	Material
Toothed surface fabric/backside fabric	Nylon 6-6
High-friction fabric	Nylon 6-6 + special urethane

Dimensions and specification of MA belt

MA3

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

015-MA3-1350E-FS1

- 015 — Belt width (nominal width)
- MA3 — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type : **F**; Linear type : **L**
- S — Tension member: Steel cord : not necessary; Stainless-steel cord : **S**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
F 	007 010 015 020 025 040 050	Minimum: 600 (200) Maximum: 10002 (3334)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1** Minimum : 1350 (450)	**E-F1**	**E-FS1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)
L 	007 010 015 020 025 040 050	Maximum: 60000 (20000)	Without any additional specifications	**E-L**
			Tooth-side nylon faced : **1**	**E-L1**

The maximum length of any belt lined with fabric on the teeth-side is 50001 (16667).

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Linear type **L**
7	180	160
10	270	250
15	400	360
20	560	490
25	690	620
40	1140	980
50	1430	1250

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

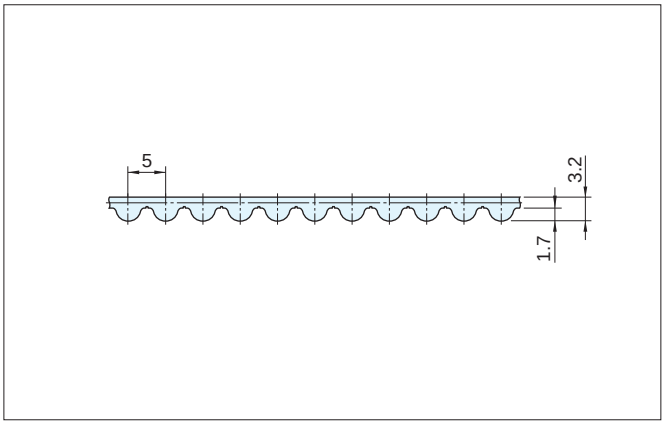
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
MA3	52	—	52	Width: 25mm, length: 1m

Dimensions and specification of MA belt

MA5

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

007-MA5-1350E-FS1

- 007: Belt width (nominal width)
- MA5: Belt models
- 1350: Total number of belt teeth
- E: Rubber material — U497: **E** only
- F: Type — Flex type : **F**; Linear type : **L**
- S: Tension member — Steel cord : not necessary; Stainless-steel cord : **S**
- 1: Semi-standard additional specifications (inapplicable if there are no such specifications) — Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
F 	007 010 015 020 025 040 050	Minimum: 600 (120) Maximum: 10000 (2000)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1** Minimum : 1350 (270)	**E-F1**	**E-FS1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)
L 	007 010 015 020 025 040 050	Maximum: 60000 (12000)	Without any additional specifications	**E-L**
			Tooth-side nylon faced : **1**	**E-L1**

The maximum length of any belt lined with fabric on the teeth-side is 50000 (10000).

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Linear type **L**
7	260	310
10	420	470
15	690	740
20	950	960
25	1220	1270
40	2010	2010
50	2540	2540

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

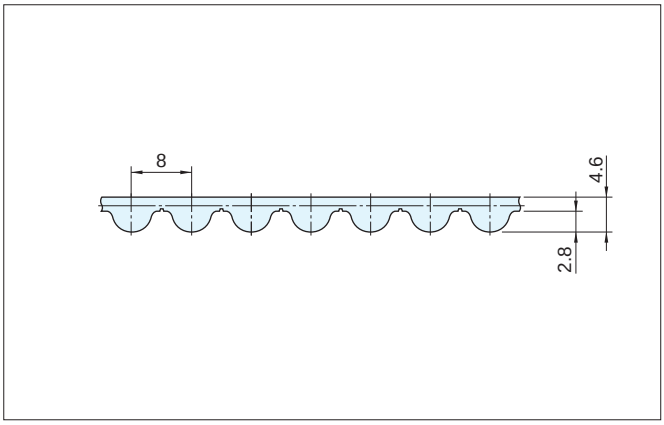
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
MA5	96	—	96	Width: 25mm, length: 1m

Dimensions and specification of MA belt

MA8

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

075-MA8-1360E-FS1

- 075 — Belt width (nominal width)
- MA8 — Belt models
- 1360 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type : **F**; Linear type : **L**
- S — Tension member: Steel cord : not necessary; Stainless-steel cord : **S**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
F 	015 020 025 040 050	Minimum: 600 (75) Maximum: 30000 (3750)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1** Minimum: 1352 (169)	**E-F1**	**E-FS1**
	075 100	Minimum: 1352 (169) Maximum: 30000 (3750)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1**	**E-F1**	**E-FS1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)
L 	015 020 025 040 050 075 100	Maximum: 40000 (5000)	Without any additional specifications	**E-L**
			Tooth-side nylon faced : **1**	**E-L1**

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Linear type **L**
15	1440	1620
20	2160	2160
25	2700	2700
40	4500	4320
50	5760	5400
75	8640	8100
100	11700	10800

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

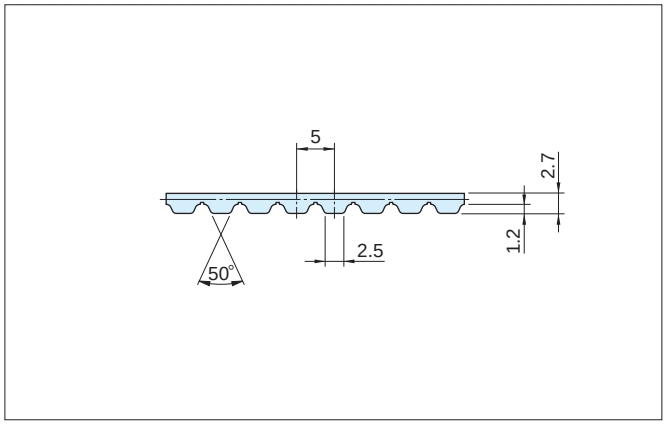
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
MA8	148	—	148	Width: 25mm, length: 1m

Dimensions and specification of AT belt

AT5

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

015-AT5-1350E-FC1

- 015 — Belt width (nominal width)
- AT5 — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material
  U497: **E** only
- F — Type
  Flex type : **F**
  Joint type : **J**
  Linear type : **L**
- C — Tension member
  Steel cord : not necessary
  High-flex steel cord : **C**
  Stainless-steel cord : **S**
  High-flex stainless cord : **SC**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications)
  Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	007 010 015 020 025 040 050	Minimum: 600 (120) Maximum: 10000 (2000)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1** Minimum: 1350 (270)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord
				Rubber material
				U497 (**E**)
J  **L** 	007 010 015 020 025 040 050	Minimum: 460 (92) Maximum: 60000 (12000)	Without any additional specifications	**E-J** **E-L**
			Tooth-side nylon faced : **1**	**E-J1** **E-L1**

The maximum length of any belt lined with fabric on the teeth-side is 50000 (10000).
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **F**	Linear type **L**
7	260	130	310
10	420	210	470
15	690	320	740
20	950	410	960
25	1220	620	1270
40	2010	920	2010
50	2540	1240	2540

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

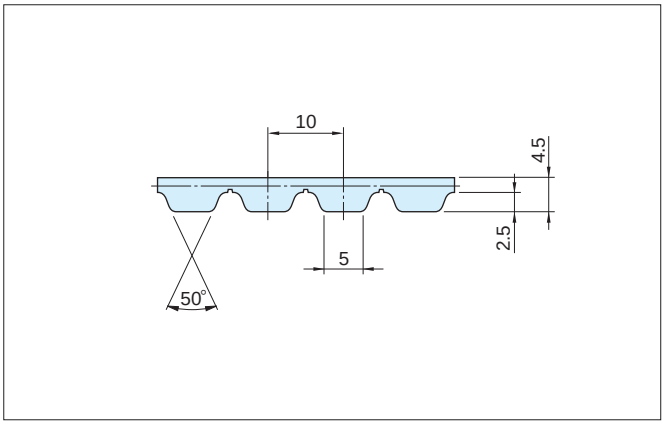
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
AT5	82	82		Width: 25mm, length: 1m

Dimensions and specification of AT belt

AT10

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

015-AT10-1350E-FC1

- 015 — Belt width (nominal width)
- AT10 — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- FC1 — Type: Flex type : **F**, Joint type : **J**, Linear type : **L**; Tension member: Steel cord : not necessary, High-flex steel cord : **C**, Stainless-steel cord : **S**, High-flex stainless cord : **SC**; Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	015 020 025 040 050	Minimum: 600 (60) Maximum: 30000 (3000)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1** Minimum: 1350 (135)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**
	075 100	Minimum: 1350 (135) Maximum: 30000 (3000)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1**	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord
				Rubber material
				U497 (**E**)
J 	015 020 025 040 050 075 100	Minimum: 700 (70) Maximum: 40000 (4000)	Without any additional specifications	**E-J** **E-L**
L 			Tooth-side nylon faced : **1**	**E-J1** **E-L1**

Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **F**	Linear type **L**
15	1440	710	1620
20	2160	890	2160
25	2700	1070	2700
40	4500	1960	4320
50	5760	2500	5400
75	8640	3650	8100
100	11700	5000	10800

Product mass (reference value)

Unit : g

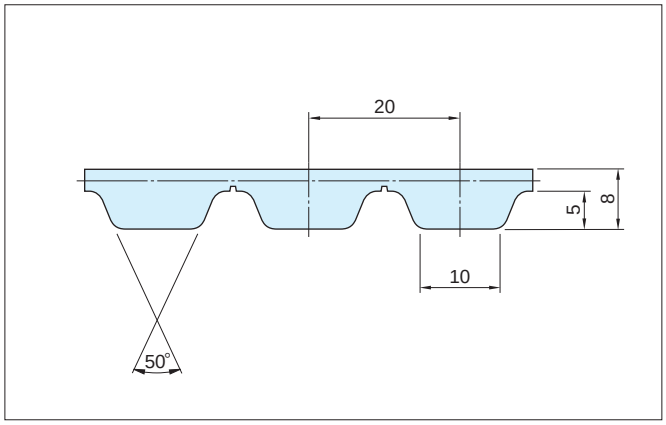
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
AT10	150	150		Width: 25mm, length: 1m

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Dimensions and specification of AT belt

AT20

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-AT20-0136E-FS1

- 025 — Belt width (nominal width)
- AT20 — Belt models
- 0136 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type : **F**; Linear type : **L**
- FS — Tension member: Steel cord : not necessary; Stainless-steel cord : **S**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
F 	025 040 050 075 100	Minimum: 1360 (68) Maximum: 30000 (1500)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1**	**E-F1**	**E-FS1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)
L 	025 040 050 075 100	Maximum: 25000 (1250)	Without any additional specifications	**E-L**
			Tooth-side nylon faced : **1**	**E-L1**

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Linear type **L**
25	4360	4700
40	7390	7720
50	9220	9740
75	14440	14440
100	19150	19480

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

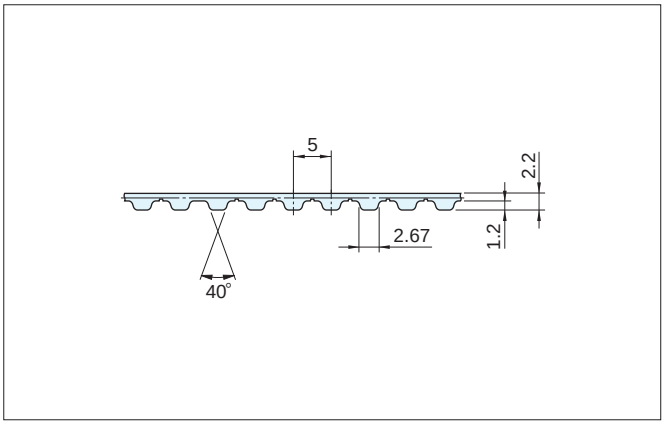
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
AT20	265	—	265	Width: 25mm, length: 1m

Dimensions and specifications of trapezium teethed belts (meters)

T5

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-T5-0350E-FS1

- 025 — Belt width (nominal width)
- T5 — Belt models
- 0350 — Total number of belt teeth
- E — Rubber material*
  - U496 : **A**
  - U497 : **E**
  - U478 : **D**
  - UH01 : **G**
- F — Type
  - Flex type : **F**
  - Joint type : **J**
  - Linear type : **L**
- S — Tension member*
  - Steel cord : not necessary
  - High-flex steel cord : **C**
  - Stainless-steel cord : **S**
  - High-flex stainless cord : **SC**
  - Aramid cord : **K**
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications)
  - Tooth-side nylon faced : **1**
  - Back-side nylon faced : **2**
  - Both-side nylon faced : **3**
  - Back-side surface grain : **6**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)
F 	007 010 015 020 025 040 050	Minimum: 600 (120) Maximum: 10000 (2000)

Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
	Rubber material	Rubber material	Rubber material	Rubber material
	U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
Tooth-side nylon faced : **1** Minimum : 1350 (270)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)
J 	007 010 015 020 025	Minimum: 250 (50) Maximum: 60000 (12000)
L 	040 050	Minimum: 455 (91) Maximum: 60000 (12000)

Additional specifications: symbol	Steel cord			Aramid cord		
	Rubber material			Rubber material		
	U496 (**A**)	U497 (**E**)	U478 (**D**)	U496 (**A**)	U497 (**E**)	UH01 (**G**)
Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**	**D-J** **D-L**	**A-JK** **A-LK**	**E-JK** **E-LK**	**G-JK** **G-LK**
Tooth-side nylon faced : **1**	**A-J1** **A-L1**	—	—	—	—	—
Back-side nylon faced : **2**	**A-J2** **A-L2**	—	—	—	—	—
Both-side nylon faced : **3**	**A-J3** **A-L3**	—	—	—	—	—
Back-side surface grain : **6**	**A-J6** **A-L6**	—	—	—	—	—

Maximum length of belts lined with fabric on the teeth-side, those lined with fabric on the rear, and those lined with nylon on both sides: 50,000 (10,000); and the maximum length of belts with a rear surface grain: 40,000 (8,000)
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**	Linear type **L**
7	180	75	160
10	270	110	250
15	400	160	360
20	560	210	490
25	690	310	620
40	1140	490	980
50	1430	630	1250

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

Unit : g

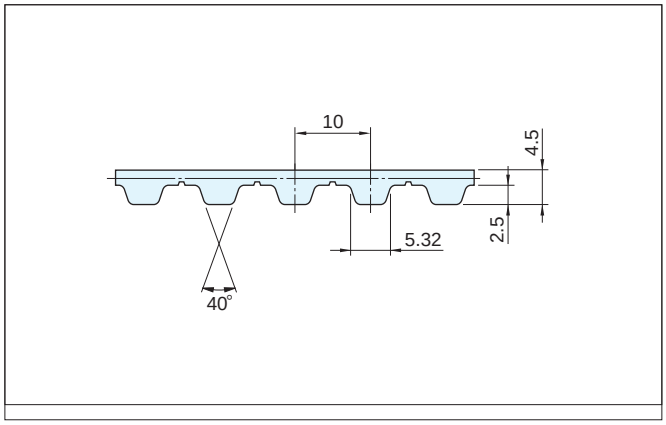
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T5	53	52 (48)		Width: 25mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of trapezium teethed belts (meters)

T10

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-T10-1500A-JK1

- 025: Belt width (nominal width)
- T10: Belt models
- 1500: Total number of belt teeth
- A: Rubber material*
  - U496 : A
  - U497 : E
  - UH01 : G
- J: Type
  - Flex type : F
  - Joint type : J
  - Linear type : L
- K: Tension member*
  - Steel cord : not necessary
  - High-flex steel cord : C
  - Stainless-steel cord : S
  - High-flex stainless cord : SC
  - Aramid cord : K
- 1: Semi-standard additional specifications* (inapplicable if there are no such specifications)
  - Tooth-side nylon faced : 1
  - Back-side nylon faced : 2
  - Both-side nylon faced : 3
  - Back-side low-hardness : 4
  - High-friction nylon faced : 5
  - Back-side surface grain : 6

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	015 020 025 040 050	Minimum: 600 (60) Maximum: 30000 (3000)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1** Minimum: 1350 (135)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**
	075 100	Minimum: 1350 (135) Maximum: 30000 (3000)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1**	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	Aramid cord		
				Rubber material	Rubber material		
				U496 (**A**)	U497 (**E**)	U496 (**A**)	U497 (**E**)	UH01 (**G**)
J  **L** 	(010) 015 020 025 040 050 075 100	Minimum: 700 (70) Maximum: 50000 (5000)	Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**	**A-JK** **A-LK**	**E-JK** **E-LK**	**G-JK** **G-LK**
			Tooth-side nylon faced : **1**	**A-J1** **A-L1**	—	**A-JK1** **A-LK1**	—	—
			Back-side nylon faced : **2**	**A-J2** **A-L2**	—	**A-JK2** **A-LK2**	—	—
			Both-side nylon faced : **3**	**A-J3** **A-L3**	—	—	—	—
			Back-side low-hardness : **4**	**A-J4** **A-L4**	—	—	—	—
			High-friction nylon faced : **5**	**A-J5** **A-L5**	—	—	—	—
			Back-side surface grain : **6**	**A-J6** **A-L6**	—	—	—	—

Maximum length of belts lined with fabric on the teeth-side, those lined with fabric on the rear, and those lined with nylon on both sides: 50,000 (5,000); and the maximum length of belts with a rear surface grain: 40,000 (4,000)
With backside low-hardness belts the thickness is 1mm and the total height 5.5mm (minimum number of pulley teeth: 28).
For high-friction nylon faced belts, the thickness is 0.5mm and the total height is 5.0mm (minimum number of pulley teeth: 20 teeth).
A width of 10mm is only supported by the Linear type. Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**	Linear type **L**
10	—	—	470
15	790	290	640
20	1100	400	880
25	1420	640	1280
40	2400	960	1920
50	3040	1280	2560
75	4560	1920	3840
100	6160	2560	5120

Product mass (reference value)

Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T10	110	110 (92)		Width: 25mm, length: 1m

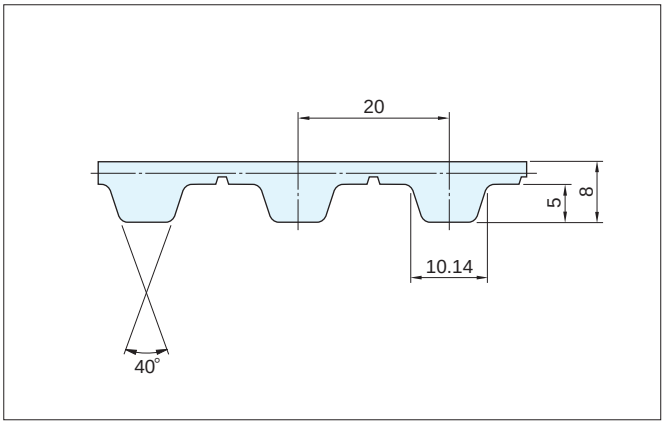
( ): aramid fiber cord products

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Dimensions and specifications of trapezium teethed belts (meters)

T20

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

075-T20-1200E-FS1

- 075 — Belt width (nominal width)
- T20 — Belt models
- 1200 — Total number of belt teeth
- E — Rubber material*: U496 : **A**, U497 : **E**
- F — Type: Flex type : **F**, Joint type : **J**, Linear type : **L**
- S — Tension member*: Steel cord : not necessary, High-flex steel cord : **C**, Stainless-steel cord : **S**, High-flex stainless cord : **SC**
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**, Back-side nylon faced : **2**, Both-side nylon faced : **3**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	025 040 050 075 100	Minimum: 1360 (68) Maximum: 30000 (1500)	Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
			Tooth-side nylon faced : **1**	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	
				Rubber material	
				U496 (**A**)	U497 (**E**)
J  **L** 	(020) 025 040 050 075 100	Minimum: 1000 (50) Maximum: 30000 (1500)	Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**
			Tooth-side nylon faced : **1**	**A-J1** **A-L1**	**E-J1** **E-L1**
			Back-side nylon faced : **2**	**A-J2** **A-L2**	—
			Both-side nylon faced : **3**	**A-J3** **A-L3**	—

A width of 20mm is only supported by the Linear type. Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**	Linear type **L**
20	—	—	1800
25	2700	800	2340
40	4320	1620	3960
50	5400	2500	5040
75	8280	3780	7560
100	11000	5040	10080

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

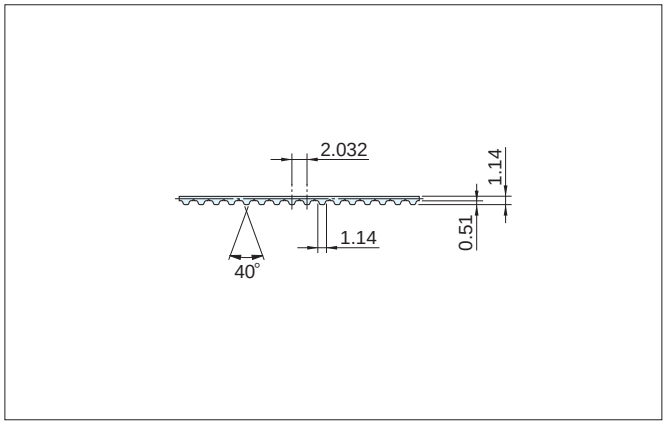
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T20	188	180		Width: 25mm, length: 1m

Dimensions and specifications of trapezium teethed belts (inches)

MXL

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

013 - MXL - 1000 D - LK

- 013: Belt width (nominal width: inch×100)
- MXL: Belt models
- 1000: Total number of belt teeth
- D: Rubber material* — U478 : **D** only
- L: Type — Linear type : **L** only
- K: Tension member — Aramid cord : **K** only

Type	Belt width (Nominal width)		Length in mm (Number of teeth)	Additional specifications: symbol	Aramid cord
		mm			Rubber material
					U478 (**D**)
L 	013	3.2	Maximum: 50000 (24607)	Without any additional specifications	**D-LK**
	019	4.8			
	025	6.4			
	031	7.9			
	037	9.5			
	050	12.7			
	075	19.1			
	100	25.4			

Allowable tension F

Unit : N

Belt width		Linear type **L**
Nominal width	mm	
013	3.2	45
019	4.8	65
025	6.4	90
031	7.9	120
037	9.5	140
050	12.7	175
075	19.1	260
100	25.4	350

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.

Product mass (reference value)

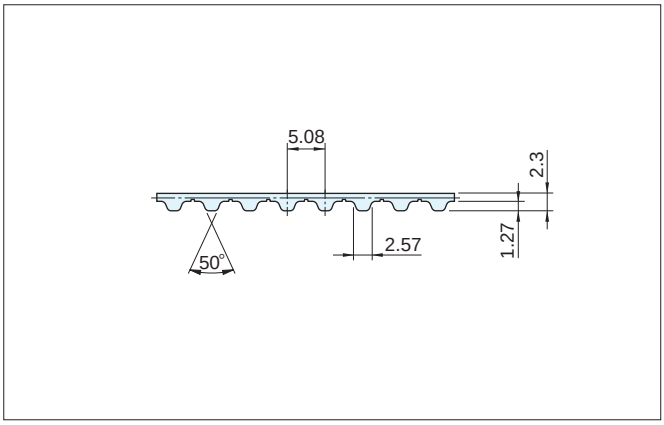
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
MXL	—	—	25	Width: 25mm, length: 1m

Dimensions and specifications of trapezium teethed belts (inches)

XL

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-XL-1250E-FS1

- 025 — Belt width (nominal width: inch×100)
- XL — Belt models
- 1250 — Total number of belt teeth
- E — Rubber material*: U496 : A; U497 : E; U478 : D
- F — Type: Flex type : F; Joint type : J; Linear type : L
- S — Tension member*: Steel cord : not necessary; High-flex steel cord : C; Stainless-steel cord : S; High-flex stainless cord : SC; Aramid cord : K
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : 1; Back-side nylon faced : 2; Both-side nylon faced : 3

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)
F 	025 6.4 031 7.9 037 9.5 050 12.7 075 19.1 100 25.4 150 38.1 200 50.8	Minimum: 609.6 (120) Maximum: 10007.6 (1970)

Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
	Rubber material	Rubber material	Rubber material	Rubber material
	U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
Tooth-side nylon faced : **1** Minimum: 1351.28 (266)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)
J 	025 6.4 031 7.9 037 9.5 050 12.7 075 19.1 100 25.4	Minimum: 254 (50) Maximum: 60000 (11812)
L 	150 38.1 200 50.8	Minimum: 457.2 (90) Maximum: 60000 (11812)

Additional specifications: symbol	Steel cord			Aramid cord	
	Rubber material			Rubber material	
	U496 (**A**)	U497 (**E**)	U478 (**D**)	U496 (**A**)	U497 (**E**)
Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**	**D-J** **D-L**	**A-JK** **A-LK**	**E-JK** **E-LK**
Tooth-side nylon faced : **1**	**A-J1** **A-L1**	—	—	—	—
Back-side nylon faced : **2**	**A-J2** **A-L2**	—	—	—	—
Both-side nylon faced : **3**	**A-J3** **A-L3**	—	—	—	—

Maximum length of belts lined with fabric on the teeth-side, those lined with fabric on the rear, and those lined with nylon on both sides: 50,000 (10,000)
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width Nominal width	Belt width mm	Flex type **F**	Joint type **J**	Linear type **L**
025	6.4	155	70	160
031	7.9	200	90	180
037	9.5	245	110	220
050	12.7	330	155	310
075	19.1	530	235	470
100	25.4	690	310	620
150	38.1	1050	470	940
200	50.8	1450	630	1250

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

Unit : g

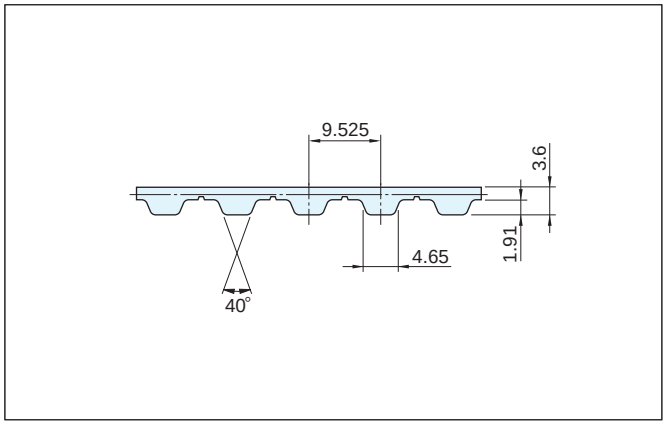
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
XL	57	56 (52)		Width: 25.4mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of trapezium teethed belts (inches)

L

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

200 - L - 0250 E - FC1

- 200 — Belt width (nominal width: inch×100)
- L — Belt models
- 0250 — Total number of belt teeth
- E — Rubber material*: U496 : A; U497 : E
- F — Type: Flex type : F; Joint type : J; Linear type : L
- C — Tension member*: Steel cord : not necessary; High-flex steel cord : C; Stainless-steel cord : S; High-flex stainless cord : SC; Aramid cord : K
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : 1; Back-side nylon faced : 2; Both-side nylon faced : 3; Back-side low-hardness : 4

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (E)	U497 (E)	U497 (E)	U497 (E)
F 	050 12.7 075 19.1 100 25.4 150 38.1 200 50.8	Minimum: 600.08 (63) Maximum: 10001.25 (1050)	Without any additional specifications	E-F	E-FC	E-FS	E-FSC
			Tooth-side nylon faced : 1 Minimum: 1352.55 (142)	E-F1	E-FC1	E-FS1	E-FSC1
	300 76.2 400 101.6	Minimum: 1352.55 (142) Maximum: 10001.25 (1050)	Without any additional specifications	E-F	E-FC	E-FS	E-FSC
			Tooth-side nylon faced : 1	E-F1	E-FC1	E-FS1	E-FSC1

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord		Aramid cord	
				Rubber material		Rubber material	
				U496 (A)	U497 (E)	U496 (A)	U497 (E)
J  L 	050 12.7 075 19.1 100 25.4 150 38.1 200 50.8	Minimum: 666.75 (70) Maximum: 59998 (6299)	Without any additional specifications	A-J A-L	E-J E-L	A-JK A-LK	E-JK E-LK
			Tooth-side nylon faced : 1	A-J1 A-L1	—	—	—
			Back-side nylon faced : 2	A-J2 A-L2	—	—	—
			Both-side nylon faced : 3	A-J3 A-L3	—	—	—
			Back-side low-hardness : 4	A-J4 A-L4	—	—	—

Maximum length of belts lined with fabric on the teeth-side, those lined with fabric on the rear, and those lined with nylon on both sides: 50,000 (5,250)
With backside low-hardness belts the thickness is 1mm and the total height 4.6mm (minimum number of pulley teeth: 18).
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width Nominal width	mm	Flex type F	Joint type J	Linear type L
050	12.7	530	320	640
075	19.1	900	480	960
100	25.4	1280	640	1280
150	38.1	1900	950	1900
200	50.8	2600	1270	2540
300	76.2	3820	—	—
400	101.6	5250	—	—

Product mass (reference value)

Unit : g

Model	Flex type F	Joint type J	Linear type L	Remarks
L	92	92 (84)		Width: 25.4mm, length: 1m

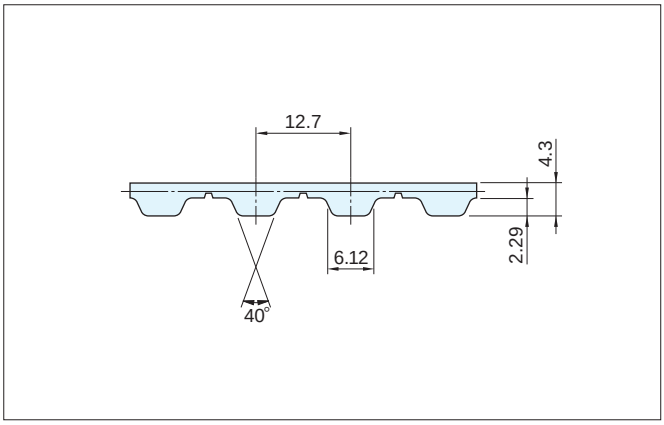
( ): aramid fiber cord products

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Dimensions and specifications of trapezium teethed belts (inches)

H

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

075-H-0250E-FC1

- 075 — Belt width (nominal width: inch×100)
- H — Belt models
- 0250 — Total number of belt teeth
- E — Rubber material*: U496 : A; U497 : E
- FC — Type: Flex type : F; Joint type : J; Linear type : L
- 1 — Tension member*: Steel cord : not necessary; High-flex steel cord : C; Stainless-steel cord : S; High-flex stainless cord : SC; Aramid cord : K
- Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : 1; Back-side nylon faced : 2; Both-side nylon faced : 3; Back-side low-hardness : 4

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)		Length in mm (Number of teeth)
		mm	
F 	075	19.1	Minimum: 609.6 (48)
	100	25.4	
	150	38.1	Maximum: 30010 (2363)
	200	50.8	
	300	76.2	Minimum: 1358.9 (107)
	400	101.6	Maximum: 30010 (2363)

Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
	Rubber material	Rubber material	Rubber material	Rubber material
	U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
Tooth-side nylon faced : **1** Minimum: 1358.9 (107)	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**
Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
Tooth-side nylon faced : **1**	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width)		Length in mm (Number of teeth)
		mm	
J  L 	075	19.1	Minimum: 711.2 (56)
	100	25.4	
	150	38.1	Maximum: 50000 (3938)
	200	50.8	
	300	76.2	
	400	101.6	

Additional specifications: symbol	Steel cord		Aramid cord	
	Rubber material		Rubber material	
	U496 (**A**)	U497 (**E**)	U496 (**A**)	U497 (**E**)
Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**	**A-JK** **A-LK**	**E-JK** **E-LK**
Tooth-side nylon faced : **1**	**A-J1** **A-L1**	—	**A-JK1** **A-LK1**	—
Back-side nylon faced : **2**	**A-J2** **A-L2**	—	—	—
Both-side nylon faced : **3**	**A-J3** **A-L3**	—	—	—
Back-side low-hardness : **4**	**A-J4** **A-L4**	—	—	—

With backside low-hardness belts the thickness is 1mm and the total height 5.3mm (minimum number of pulley teeth: 25).
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width		Flex type **F**	Joint type **J**	Linear type **L**
Nominal width	mm			
075	19.1	1040	380	960
100	25.4	1440	640	1280
150	38.1	2240	960	1920
200	50.8	3040	1280	2560
300	76.2	4640	1920	3840
400	101.6	6320	2560	5120

Product mass (reference value)

Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
H	113	113 (95)		Width: 25.4mm, length: 1m

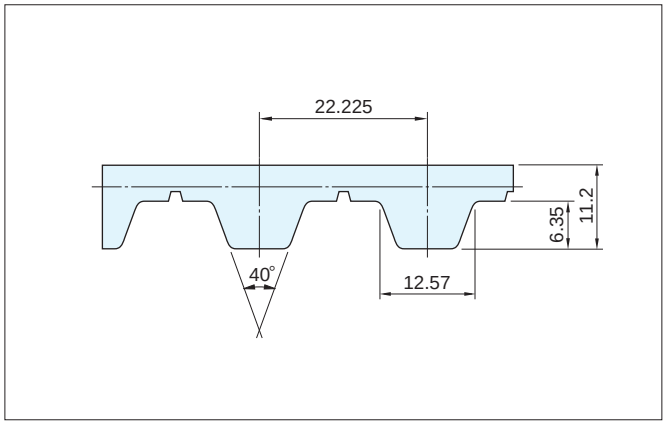
( ): aramid fiber cord products

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Dimensions and specifications of trapezium teethed belts (inches)

XH

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

200 - XH - 0250 E - FC1

- **200** — Belt width (nominal width: inch×100)
- **XH** — Belt models
- **0250** — Total number of belt teeth
- **E** — Rubber material*: U496 : **A**, U497 : **E**
- **FC** — Type: Flex type : **F**, Joint type : **J**, Linear type : **L**
- **C** — Tension member*: Steel cord : not necessary, High-flex steel cord : **C**, Stainless-steel cord : **S**, High-flex stainless cord : **SC**
- **1** — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**, Back-side nylon faced : **2**, Both-side nylon faced : **3**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)
F 	100 25.4 150 38.1 200 50.8 300 76.2 400 101.6	Minimum: 1355.73 (61) Maximum: 30003 (1350)

Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
	Rubber material	Rubber material	Rubber material	Rubber material
	U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
Without any additional specifications	**E-F**	**E-FC**	**E-FS**	**E-FSC**
Tooth-side nylon faced : **1**	**E-F1**	**E-FC1**	**E-FS1**	**E-FSC1**

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)
J  **L** 	100 25.4 150 38.1 200 50.8 300 76.2 400 101.6	Minimum: 1000.13 (45) Maximum: 25000 (1125)

Additional specifications: symbol	Steel cord	
	Rubber material	
	U496 (**A**)	U497 (**E**)
Without any additional specifications	**A-J** **A-L**	**E-J** **E-L**
Tooth-side nylon faced : **1**	**A-J1** **A-L1**	—
Back-side nylon faced : **2**	**A-J2** **A-L2**	—
Both-side nylon faced : **3**	**A-J3** **A-L3**	—

Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width Nominal width	mm	Flex type **F**	Joint type **J**	Linear type **L**
100	25.4	2700	900	2340
150	38.1	4140	1800	3600
200	50.8	5400	2340	5040
300	76.2	8280	3780	7560
400	101.6	11200	4680	10080

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

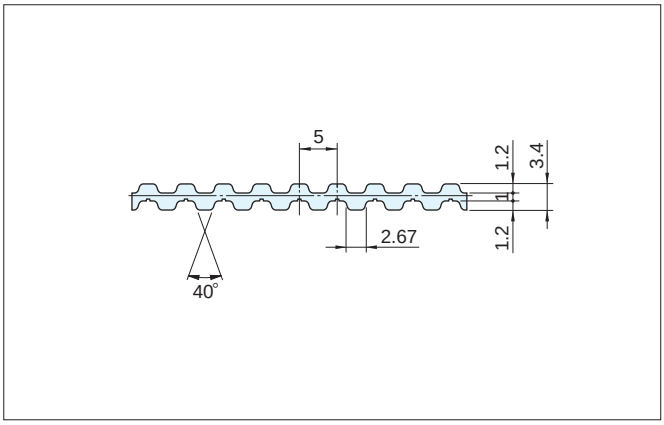
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
XH	268	260		Width: 25.4mm, length: 1m

Dimensions and specifications of double sided teethed belts

DT5

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

010-DT5-0270E-FS1

- 010 — Belt width (nominal width)
- DT5 — Belt models
- 0270 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type : **F** only
- S — Tension member: Steel cord : not necessary; Stainless-steel cord : **S**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
F 	007 010 015 020 025 040 050	Minimum: 1350 (270) Maximum: 10000 (2000)	Without any additional specifications	**E-F**	**E-FS**
			Tooth-side nylon faced : **1** (per side only)	**E-F1**	**E-FS1**

Allowable tension F

Unit : N

Belt width mm	Flex type **F**
7	155
10	250
15	400
20	530
25	690
40	1140
50	1430

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

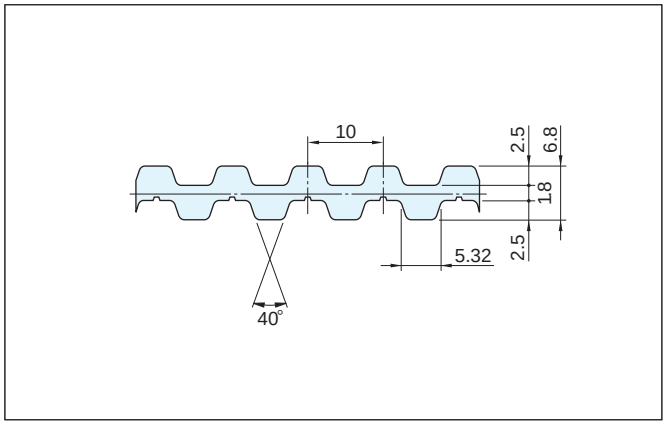
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
DT5	79	—	—	Width: 25mm, length: 1m

Dimensions and specifications of double sided teethed belts

DT10

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

050 - DT10 - 1500 E - FS1

- 050: Belt width (nominal width)
- DT10: Belt models
- 1500: Total number of belt teeth
- E: Rubber material — U497: **E** only
- F: Type — Flex type: **F** only
- S: Tension member — Steel cord: not necessary; Stainless-steel cord: **S**
- 1: Semi-standard additional specifications (inapplicable if there are no such specifications) — Tooth-side nylon faced: **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)
F 	015 020 025 040 050 075 100	Minimum: 1350 (135) Maximum: 30000 (3000)

Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)
Without any additional specifications	**E-F**	**E-FS**
Tooth-side nylon faced: **1** (per side only)	**E-F1**	**E-FS1**

Allowable tension F

Unit: N

Belt width mm	Flex type **F**
10	—
15	790
20	1100
25	1420
40	2400
50	3040
75	4560
100	6160

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

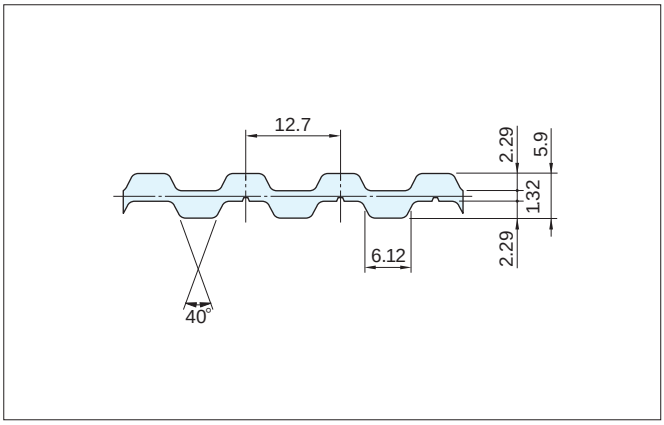
Unit: g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
DT10	157	—	—	Width: 25mm, length: 1m

Dimensions and specifications of double sided teethed belts (inches)

DH

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

075-DH-0250E-FS1

- 075 — Belt width (nominal width: inch×100)
- DH — Belt models
- 0250 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type: **F** only
- S — Tension member: Steel cord: not necessary; Stainless-steel cord: **S**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced: **1**

Type	Belt width (Nominal width)		Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	Stainless-steel cord
		mm			Rubber material	Rubber material
					U497 (**E**)	U497 (**E**)
F 	075	19.1	Minimum: 1358.9 (107)	Without any additional specifications	**E-F**	**E-FS**
	100	25.4				
	150	38.1				
	200	50.8	Maximum: 30010 (2363)	Tooth-side nylon faced: **1** (per side only)	**E-F1**	**E-FS1**
	300	76.2				
	400	101.6				

Allowable tension F

Unit: N

Belt width		Flex type **F**
Nominal width	mm	
075	19.1	1040
100	25.4	1440
150	38.1	2240
200	50.8	3040
300	76.2	4640
400	101.6	6320

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

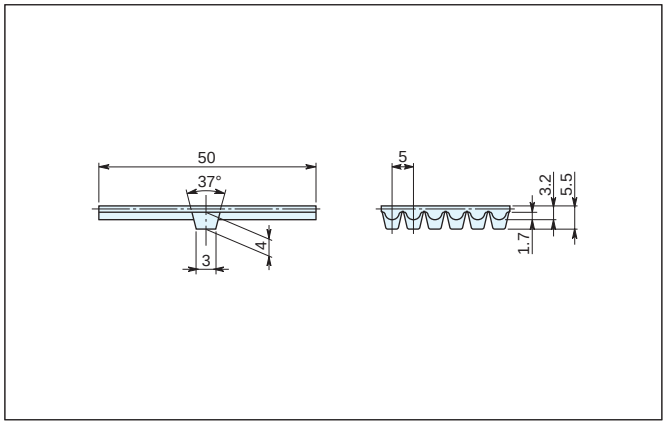
Unit: g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
DH	134	—	—	Width: 25.4mm, length: 1m

Dimensions and specifications of self-tracking belts

MA5-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

050 - MA5 - 2000 E - LV 1

- 050 — Belt width (nominal width)
- MA5 — Belt models
- 2000 — Total number of belt teeth
- E — Rubber material: U497 : **E** only
- LV — Type: Linear type : **L** only
- V — Self-tracking : **V**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U497 (**E**)
L 	025 040 050	Maximum: 60000 (12000)	Without any additional specifications	**E-LV**
			Tooth-side nylon faced : **1**	**E-LV1**

Maximum length of belts lined with fabric on the teeth-side is 40,000 (8,000).
White fabric is used for any belts lined with fabric on the teeth-side.

Allowable tension F

Unit : N

Belt width mm	Linear type **L**
25	1270
40	2010
50	2540

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.

Product mass (reference value)

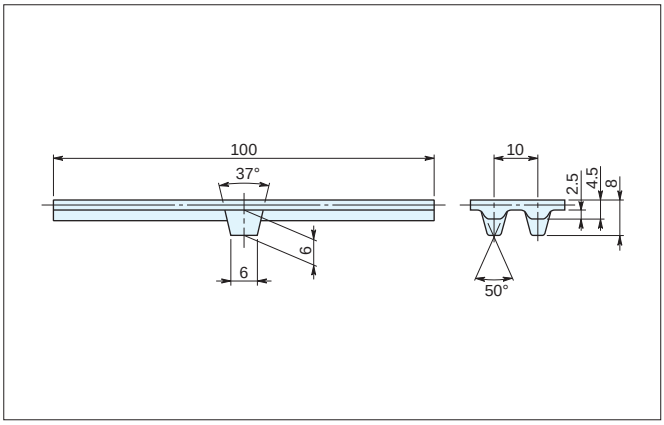
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
MA5-V	—	—	95	Width: 25mm, length: 1m

Dimensions and specifications of self-tracking belts

AT10-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-AT10-1000E-JV1

- 025 — Belt width (nominal width)
- AT10 — Belt models
- 1000 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- JV1 — Type: Joint type: **J**, Linear type: **L**; Self-tracking: **V**; Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced: **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U497 (**E**)
J  **L** 	025 040 050 075 100	Minimum: 930 (93) Maximum: 40000 (4000)	Without any additional specifications	**E-JV, E-LV**
			Tooth-side nylon faced: **1**	**E-JV1, E-LV1**

Linear type belts have no minimum length.
Minimum number of pulley teeth is 20.
White fabric is used for any belts lined with fabric on the teeth-side.

Allowable tension F

Unit: N

Belt width mm	Joint type **J**	Linear type **L**
25	1000	2700
40	1800	4300
50	2100	5400
75	3600	8100
100	4600	10800

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.

Product mass (reference value)

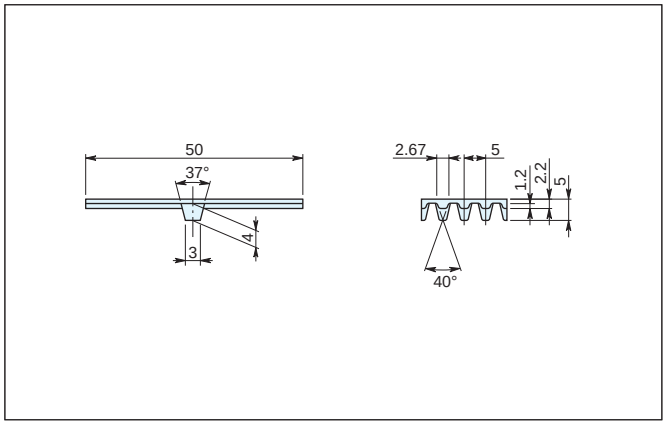
Unit: g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
AT10-V	—	160		Width: 25mm, length: 1m

Dimensions and specifications of self-tracking belts

T5-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

030 - T5 - 1000 A - JV1

- 030 — Belt width (nominal width)
- T5 — Belt models
- 1000 — Total number of belt teeth
- A — Rubber material: U496 : **A** only
- J — Type: Joint type : **J**; Linear type : **L**
- V — Self-tracking : **V**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U496 (**A**)
J  **L** 	030 040 050	Minimum: 465 (93) Maximum: 30000 (6000)	Without any additional specifications	**A-JV, A-LV**
			Tooth-side nylon faced : **1**	**A-JV1, A-LV1**

Linear type belts have no minimum length.
Minimum number of pulley teeth is 18.
White fabric is used for any belts lined with fabric on the teeth-side.

Allowable tension F

Unit : N

Belt width mm	Joint type **J**	Linear type **L**
30	310	670
40	440	980
50	580	1250

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.

Product mass (reference value)

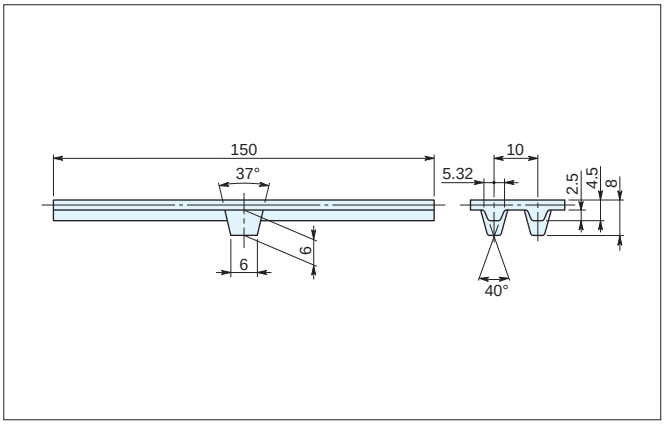
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T5-V	—	50		Width: 25mm, length: 1m

Dimensions and specifications of self-tracking belts

T10-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

150-T10-1000A-JKV1

- 150 — Belt width (nominal width)
- T10 — Belt models
- 1000 — Total number of belt teeth
- A — Rubber material: U496 : **A** only
- J — Type: Joint type : **J**; Linear type : **L**
- K — Tension member*: Steel cord : not necessary; Aramid cord : **K**
- V — Self-tracking : **V**
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

*Please refer to the table below for the supported combinations of tension member and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)
J  **L** 	050 075 100 125 150	Minimum: 730 (73) Maximum: 40000 (4000)

Additional specifications: symbol	Steel cord Rubber material U496 (**A**)	Aramid cord Rubber material U496 (**A**)
Without any additional specifications	**A-JV** **A-LV**	**A-JKV** **A-LKV**
Tooth-side nylon faced : **1**	**A-JV1** **A-LV1**	—

Linear type belts have no minimum length.
Minimum number of pulley teeth is 20.
White fabric is used for any belts lined with fabric on the teeth-side.

Allowable tension F

Unit : N

Belt width mm	Joint type **J**	Linear type **L**
50	640	1600
75	1100	2400
100	1600	3300
125	1900	4100
150	2400	5120

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.

Product mass (reference value)

Unit : g

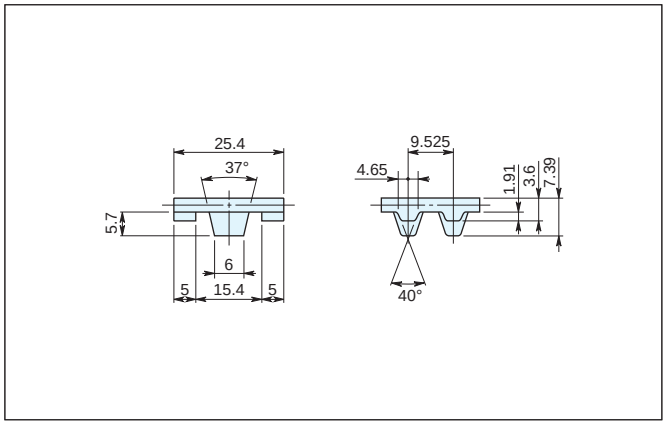
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T10-V	—	118 (106)		Width: 25mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of self-tracking belts (inches)

L-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

100 - L - 2000 A - JV

- 100: Belt width (nominal width: inch×100)
- L: Belt models
- 2000: Total number of belt teeth
- A: Rubber material — U496 : **A** only
- JV: Type — Joint type : **J** only; Self-tracking : **V**

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U496 (**A**)
J 	100 (25.4)	Minimum: 895.35 (94) Maximum: 40005 (4200)	Without any additional specifications	**A-JV**

Please contact us, when a linear type is required.
Minimum number of pulley teeth is 15.

Allowable tension F

Unit : N

Belt width Nominal width	Belt width mm	Joint type **J**
100	25.4	320

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.

Product mass (reference value)

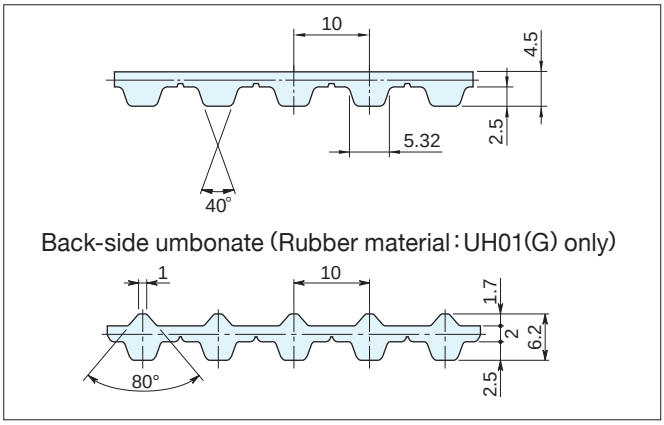
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
L-V	—	91	—	Width: 25.4mm, length: 1m

Dimensions and specifications of wide teethed belts

Wide T10

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

300 - T10 - 0250 E - JK5

- 300 — Belt width (nominal width)
- T10 — Belt models
- 0250 — Total number of belt teeth
- E — Rubber material*
  - U496 : **A**
  - U497 : **E**
  - UH01 : **G**
- JK — Type
  - Joint type : **J** only
- 5 — Semi-standard additional specifications* (inapplicable if there are no such specifications)
  - Tooth-side nylon faced : **1**
  - High-friction nylon faced : **5**
  - Back-side surface grain : **6**
  - Back-side umbonate : **7**
- Tension member*
  - Steel cord : not necessary
  - Aramid cord : **K**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord		Aramid cord		
				Rubber material		Rubber material		
				U496 (**A**)	U497 (**E**)	U496 (**A**)	U497 (**E**)	UH01 (**G**)
J 	150	Minimum: 700 (70) Maximum: 50000 (5000)	Without any additional specifications	**A-J**	—	**A-JK**	**E-JK**	**G-JK**
			Tooth-side nylon faced : **1**	**A-J1**	—	—	—	—
			High-friction nylon faced : **5**	**A-J5**	—	—	—	—
			Back-side surface grain : **6**	**A-J6**	—	**A-JK6**	—	—
	200 250 300 350 400	Minimum: 1000 (100) (Back-side umbonate only) Minimum: 790 (79) Maximum: 50000 (5000)	Without any additional specifications	—	—	—	**E-JK**	**G-JK**
			High-friction nylon faced : **5**	—	—	—	**E-JK5**	—
			Back-side surface grain : **6**	—	—	—	**E-JK6**	—
			Back-side umbonate : **7**	—	—	—	—	**G-JK7**

Please contact us, when a linear type is required.
For high-friction nylon faced belts, the thickness is 0.5mm and the total height is 5.0mm (minimum number of pulley teeth: 20 teeth).
Maximum length of belts with a rear surface grain: 40,000 (4,000)

Allowable tension F

Unit : N

Belt width mm	Joint type **J**
150	2400
200	1100
250	1370
300	1650
350	1920
400	2200

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.

Product mass (reference value)

Unit : g

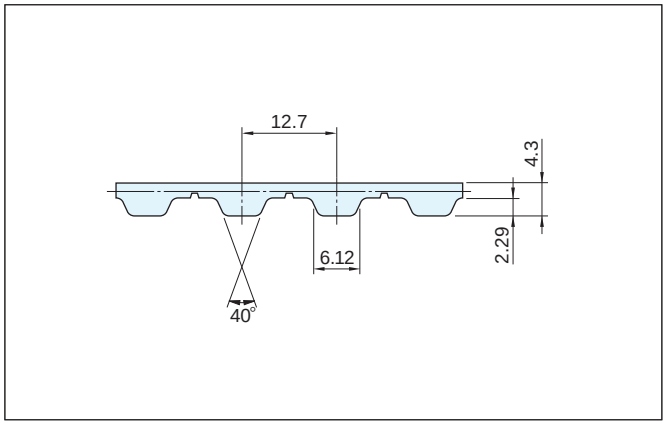
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T10	—	102 (92)	—	Width: 25mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of wide teethed belts (inches)

Wide H

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

500-H-0250A-JK1

- **500** — Belt width (nominal width: inch×100)
- **H** — Belt models
- **0250** — Total number of belt teeth
- **A** — Rubber material*: U496 : **A**, U497 : **E**
- **J** — Type: Joint type : **J** only
- **K** — Tension member*: Steel cord : not necessary, Aramid cord : **K**
- **1** — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**

Type	Belt width (Nominal width)		Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord		Aramid cord	
		mm			Rubber material		Rubber material	
					U496 (**A**)	U497 (**E**)	U496 (**A**)	U497 (**E**)
J 	500	127.0	Minimum: 850.9 (67)	Without any additional specifications	**A-J**	**E-J**	**A-JK**	—
	600	152.4	Maximum: 40005 (3150)	Tooth-side nylon faced : **1**	**A-J1**	—	**A-JK1**	—

Please contact us, when a linear type is required.

Allowable tension F

Unit : N

Belt width		Joint type **J**
Nominal width	mm	
500	127.0	2030
600	152.4	2560

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.

Product mass (reference value)

Unit : g

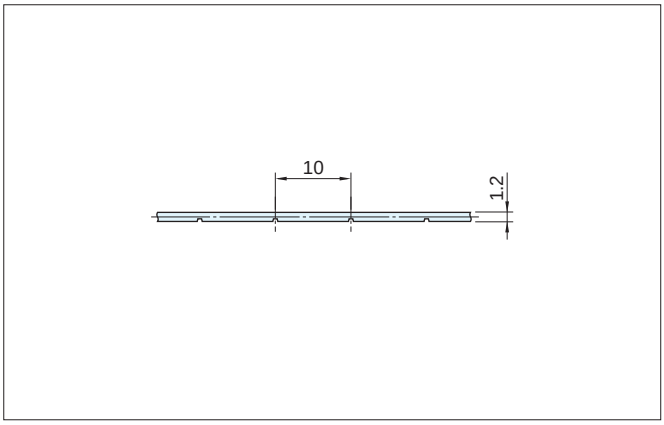
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
H	—	111 (95)	—	Width: 25.4mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of flat belts

F12

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-F12-2500A-FS

- 025: Belt width (nominal width)
- F12: Belt models
- 2500: Total number of belt teeth
- A: Rubber material — U496 : **A** only
- FS: Tension member — Steel cord : not necessary; High-flex steel cord : **C**; Stainless-steel cord : **S**; High-flex stainless cord : **SC**
- Type — Flex type : **F** only

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U496 (**A**)	U496 (**A**)	U496 (**A**)	U496 (**A**)
F 	010 015 020 025 040 050	Minimum: 1500 Maximum: 10000	Without any additional specifications	**A-F**	**A-FC**	**A-FS**	**A-FSC**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 10mm.
The minimum pulley diameter is ø20.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**
10	250
15	400
20	530
25	690
40	1140
50	1430

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

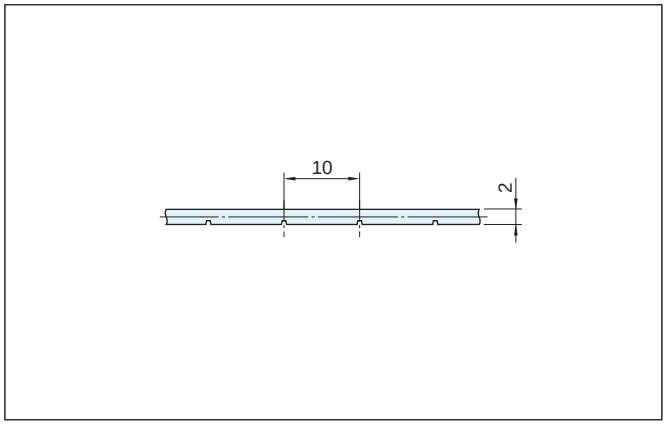
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
F12	44	—	—	Width: 25mm, length: 1m

Dimensions and specifications of flat belts

F20

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-F20-2500A-FS

- 025: Belt width (nominal width)
- F20: Belt models
- 2500: Total number of belt teeth
- A: Rubber material — U496 : **A** only
- FS: Tension member / Type
  - Tension member
    - Steel cord : not necessary
    - High-flex steel cord : **C**
    - Stainless-steel cord : **S**
    - High-flex stainless cord : **SC**
  - Type
    - Flex type : **F**
    - Joint type : **J**
    - Linear type : **L**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U496 (**A**)	U496 (**A**)	U496 (**A**)	U496 (**A**)
F 	015 020 025 040 050 075 100	Minimum: 1500 Maximum: 24000	Without any additional specifications	**A-F**	**A-FC**	**A-FS**	**A-FSC**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 10mm.
The minimum pulley diameter is ø50.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord
				Rubber material
				U496 (**A**)
J  **L** 	015 020 025 040 050 075 100	Minimum: 800 Maximum: 50000	Without any additional specifications	**A-J** **A-L**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 10mm.
The minimum pulley diameter is ø50.
Linear type belts have no minimum length.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**	Linear type **L**
10	—	—	470
15	790	190	640
20	1100	250	880
25	1420	510	1280
40	2400	760	1920
50	3040	1020	2560
75	4560	1530	3840
100	6160	2050	5120

Product mass (reference value)

Unit : g

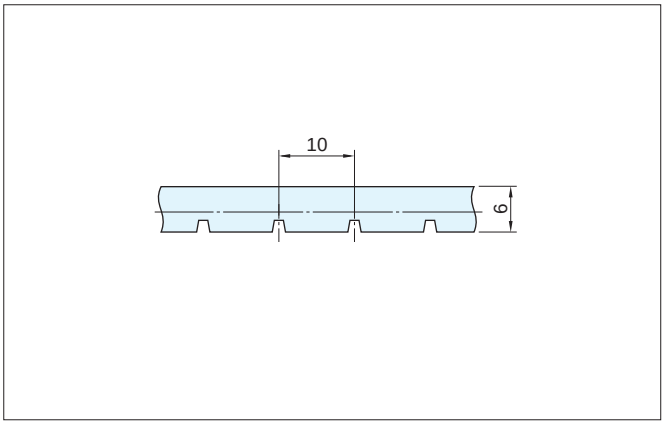
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
F20	77	75		Width: 25mm, length: 1m

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Dimensions and specifications of flat belts

F60

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

025-F60-2500D-FS

- 025: Belt width (nominal width)
- F60: Belt models
- 2500: Total number of belt teeth
- D: Rubber material — U478 : **D** only
- FS: Tension member — Steel cord : not necessary; High-flex steel cord : **C**; Stainless-steel cord : **S**; High-flex stainless cord : **SC**
- FS: Type — Flex type : **F** only

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U478 (**D**)	U478 (**D**)	U478 (**D**)	U478 (**D**)
F 	015 020 025 040 050 075 100	Minimum: 1500 Maximum: 24000	Without any additional specifications	**D-F**	**D-FC**	**D-FS**	**D-FSC**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 10mm.
The minimum pulley diameter is ø100.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**
15	790
20	1100
25	1420
40	2400
50	3040
75	4560
100	6160

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

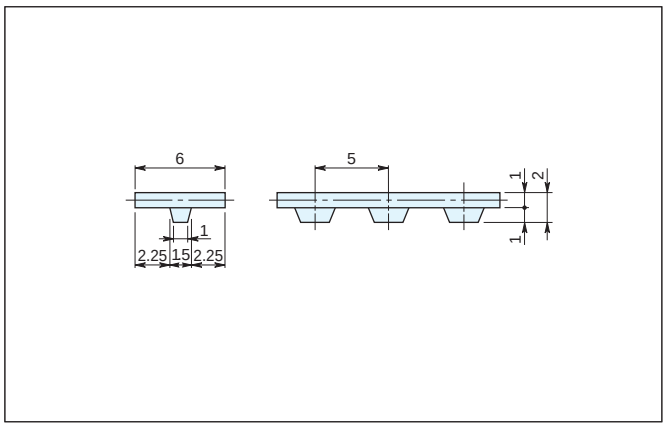
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
F60	198	—	—	Width: 25mm, length: 1m

Dimensions and specifications of self-tracking flat belts

F10-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

006 - F10 - 1000 E - J V

- 006: Belt width (nominal width)
- F10: Belt models
- 1000: Total number of belt teeth
- E: Rubber material — U497 : **E** only
- J: Type — Joint type : **J** only
- V: Self-tracking : **V**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U497 (**E**)
J 	006	Minimum: 850 Maximum: 60000	Without any additional specifications	**E-JV**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 5mm.
The minimum pulley diameter is ø15.

Allowable tension F

Unit : N

Belt width mm	Joint type **J**
6	40

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.

Product mass (reference value)

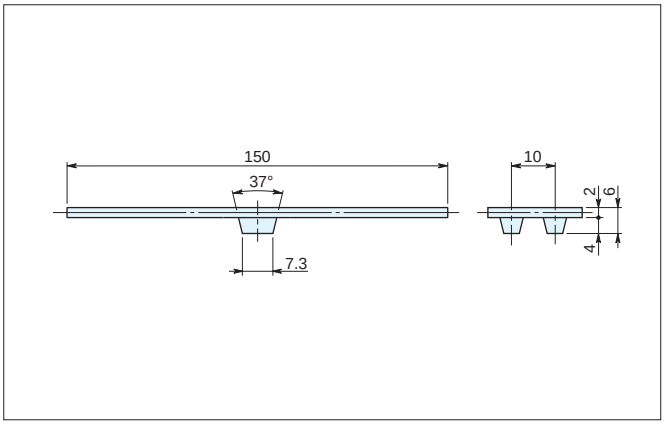
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
F10-V	—	9	—	Width: 6mm, length: 1m

Dimensions and specifications of self-tracking flat belts

F20-V

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.



Example of model dimension indication

040 - F20 - 1000 A - JV

- 040 — Belt width (nominal width)
- F20 — Belt models
- 1000 — Total number of belt teeth
- A — Rubber material: U496 : **A** only
- JV — Type: Joint type : **J** only
- JV — Self-tracking : **V**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U496 (**A**)
J 	040 050 075 100 125 150	Minimum: 900 Maximum: 50000	Without any additional specifications	**A-JV**

Please ensure to specify a belt length that is equal to or longer than the minimum length and in multiples of 10mm.
The minimum pulley diameter is ø50.

Allowable tension F

Unit : N

Belt width mm	Joint type **J**
40	540
50	680
75	1020
100	1350
125	1700
150	2050

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.

Product mass (reference value)

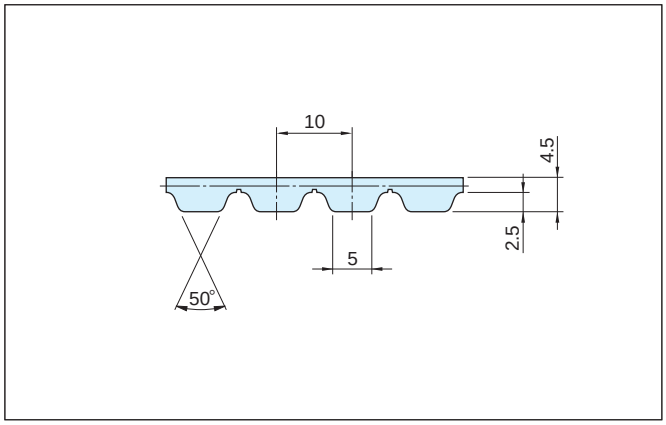
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
F20-V	—	78	—	Width: 25mm, length: 1m

Dimensions and specifications of double width teethed belts

AT10

Please note that grooves in the pulleys and guide rails will be needed as burrs get generated with heat-welds on the backsides and teeth side.



Example of model dimension indication

200-AT10-1350E-FC1Y

- 200 — Belt width (nominal width)
- AT10 — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material: U497: **E** only
- F — Type: Flex type : **F**; Joint type : **J**
- C — Tension member: Steel cord : not necessary; High-flex steel cord : **C**; Stainless-steel cord : **S**; High-flex stainless cord : **SC**
- 1 — Semi-standard additional specifications (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**
- Y — Double width : **Y**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	200	Minimum: 2500 (250) Maximum: 30000 (3000)	Double width: **Y**	**E-FY**	**E-FCY**	**E-FSY**	**E-FSCY**
			Tooth-side nylon faced: **1** + Double width: **Y**	**E-F1Y**	**E-FC1Y**	**E-FS1Y**	**E-FSC1Y**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord
				Rubber material
				U497 (**E**)
J 	200	Minimum: 2500 (250) Maximum: 40000 (4000)	Double width: **Y**	**E-JY**

Attention: Ensure not to use backlash-less pulleys.

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**
200	23400	10000

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Provides numerical values for steel cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

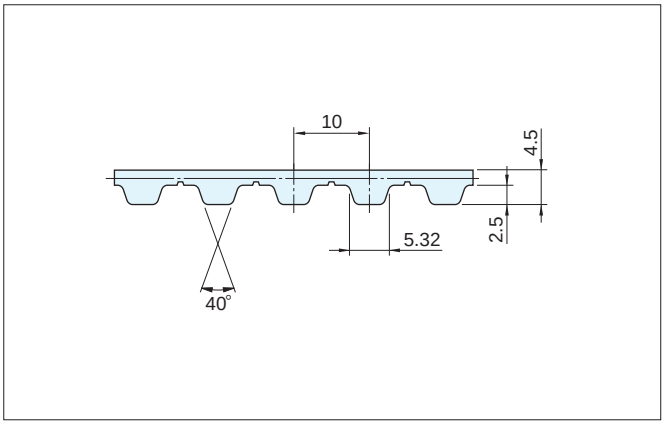
Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
AT10	150	150	—	Width: 25mm, length: 1m

Dimensions and specifications of double width teethed belts

T10

Please note that grooves in the pulleys and guide rails will be needed as burrs get generated with heat-welds on the backsides and teeth side.



Example of model dimension indication

200 - T10 - 1350 E - FC1 Y

- 200 — Belt width (nominal width)
- T10 — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material*: U496 : **A**, U497 : **E**
- F — Type: Flex type : **F**, Joint type : **J**
- C — Tension member*: Steel cord : not necessary, High-flex steel cord : **C**, Stainless-steel cord : **S**, High-flex stainless cord : **SC**, Aramid cord : **K**
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**
- Y — Double width : **Y**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord	High-flex steel cord	Stainless-steel cord	High-flex stainless cord
				Rubber material	Rubber material	Rubber material	Rubber material
				U497 (**E**)	U497 (**E**)	U497 (**E**)	U497 (**E**)
F 	200	Minimum: 2500 (250) Maximum: 30000 (3000)	Double width : **Y**	**E-FY**	**E-FCY**	**E-FSY**	**E-FSCY**
			Tooth-side nylon faced : **1** + Double width : **Y**	**E-F1Y**	**E-FC1Y**	**E-FS1Y**	**E-FSC1Y**

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord		Aramid cord	
				Rubber material		Rubber material	
				U496 (**A**)	U497 (**E**)	U496 (**A**)	U497 (**E**)
J 	200	Minimum: 2500 (250) Maximum: 50000 (5000)	Double width : **Y**	**A-JY**	**E-JY**	**A-JKY**	**E-JKY**
	300		Double width : **Y**	**A-JY**	—	**A-JKY**	**E-JKY**
	500 600 700 800		Double width : **Y**	—	—	—	**E-JKY**

Allowable tension F

Unit : N

Belt width mm	Flex type **F**	Joint type **J**
200	12320	5120
300	—	4800
500	—	2740
600	—	3300
700	—	3840
800	—	4400

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria. Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords. Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

Unit : g

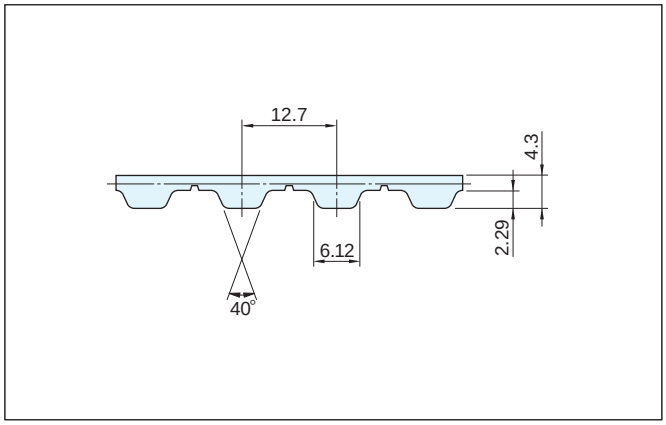
Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
T10	110	102 (92)	—	Width: 25mm, length: 1m

( ): aramid fiber cord products

Dimensions and specifications of double width teethed belts (inches)

H

Please note that grooves in the pulleys and guide rails will be needed as burrs get generated with heat-welds on the backsides and teeth side.



Example of model dimension indication

800 - H - 1350 E - FC 1 Y

- 800 — Belt width (nominal width: inch×100)
- H — Belt models
- 1350 — Total number of belt teeth
- E — Rubber material*: U496 : **A**; U497 : **E**
- FC — Type: Flex type : **F**; Joint type : **J**
- 1 — Semi-standard additional specifications* (inapplicable if there are no such specifications): Tooth-side nylon faced : **1**
- Y — Double width : **Y**

Tension member*: Steel cord : not necessary; High-flex steel cord : **C**; Stainless-steel cord : **S**; High-flex stainless cord : **SC**; Aramid cord : **K**

*Please refer to the table below for the supported combinations of rubber material, tension member, and additional specifications.

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U497 (**E**)	High-flex steel cord Rubber material U497 (**E**)	Stainless-steel cord Rubber material U497 (**E**)	High-flex stainless cord Rubber material U497 (**E**)
F 	800 / 203.2	Minimum: 2540 (200) Maximum: 30010 (2363)	Double width : **Y**	**E-FY**	**E-FCY**	**E-FSY**	**E-FSCY**
			Tooth-side nylon faced : **1** + Double width : **Y**	**E-F1Y**	**E-FC1Y**	**E-FS1Y**	**E-FSC1Y**

Type	Belt width (Nominal width) mm	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord Rubber material U496 (**A**)	Steel cord Rubber material U497 (**E**)	Aramid cord Rubber material U496 (**A**)	Aramid cord Rubber material U497 (**E**)
J 	800 / 203.2	Minimum: 2540 (200) Maximum: 40005 (3150)	Double width : **Y**	**A-JY**	**E-JY**	**A-JKY**	**E-JKY**
	1000 / 254.0 1200 / 304.8		Double width : **Y**	**A-JY**	**E-JY**	**A-JKY**	—

Allowable tension F

Unit : N

Belt width Nominal width	Belt width mm	Flex type **F**	Joint type **J**
800	203.2	12640	5120
1000	254.0	—	4060
1200	304.8	—	5120

The allowable tension only pertains to the tensile load and should not be used as part of the selection criteria.
Please calculate the initial tension setting using the procedure provided on page 76.
Provides numerical values for steel cords and aramid cords.
Set the allowable tension for stainless-steel cords at 80% of the value provided in the table.

Product mass (reference value)

Unit : g

Model	Flex type **F**	Joint type **J**	Linear type **L**	Remarks
H	113	111 (95)	—	Width: 25.4mm, length: 1m

( ): aramid fiber cord products

Free Attachment belts

FAT belt

This table provides the supported combinations of dimensions and specification with respect to Iron Rubber belts.
Please contact us regarding any specifications not described in the table.

Characteristics of the product

Spot-faced holes for nuts require one-piece molds.

•Any attachments that are supported by the conveyor can be mounted in any position.

Utilizes the implant system for the nuts.

•Ensures the secure mounting of attachments.
•The belt teeth shape is the same as that of the AT10 and the standard AT10 pulley can be used.

Utilizes the bolt system.

•Simplifies the mounting of attachments.

Note) Please note that the bolts and attachments are not provided. The dedicated nuts supplied with the product are required when mounting anything.

Iron Rubber teethed belts include the following features.

•Synchronous conveyor,
•Superior abrasion resistance,
•Superior mechanical strength, and
•Superior ozone resistance

Joint types include the following features.

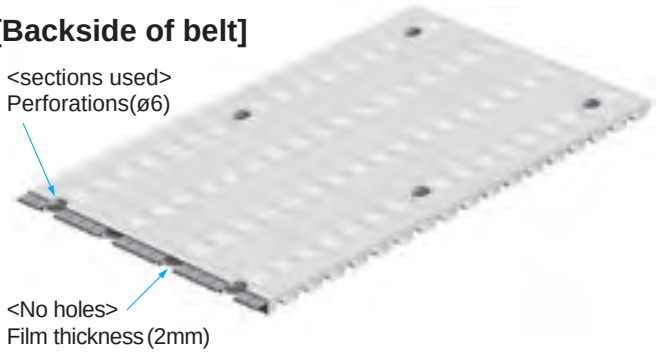
•High-tensile steel cords get implanted in parallel and in a one-piece Iron Rubber mold process.
•The molding process is used with any endless teethed belts 960mm or longer.

Fabric-faced belts provide the following features.

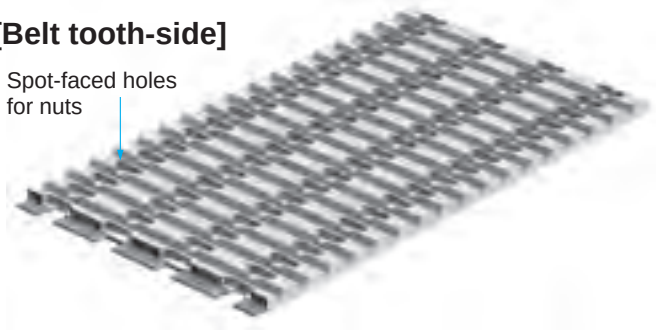
•Reduced conveyor load.
•Reduced conveyance noise.

Product shape

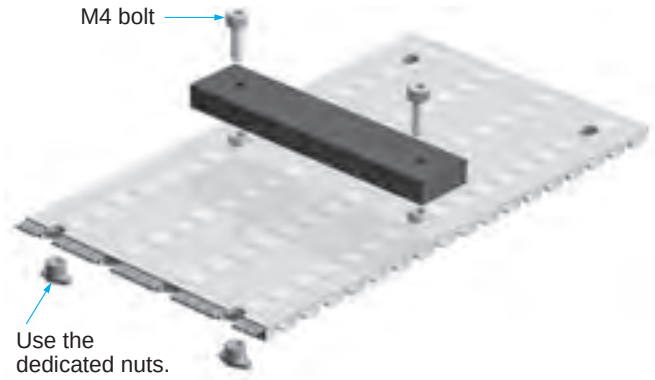
[Backside of belt]



[Belt tooth-side]

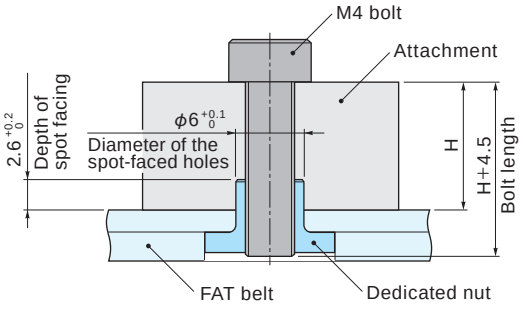


How to mount the attachment



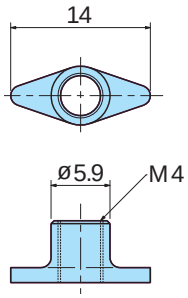
Dimensions of spot-faced holes for use with attachments/Bolt length

Bolt lengths can be roughly calculated using the thickness of the attachment + 4.5mm.



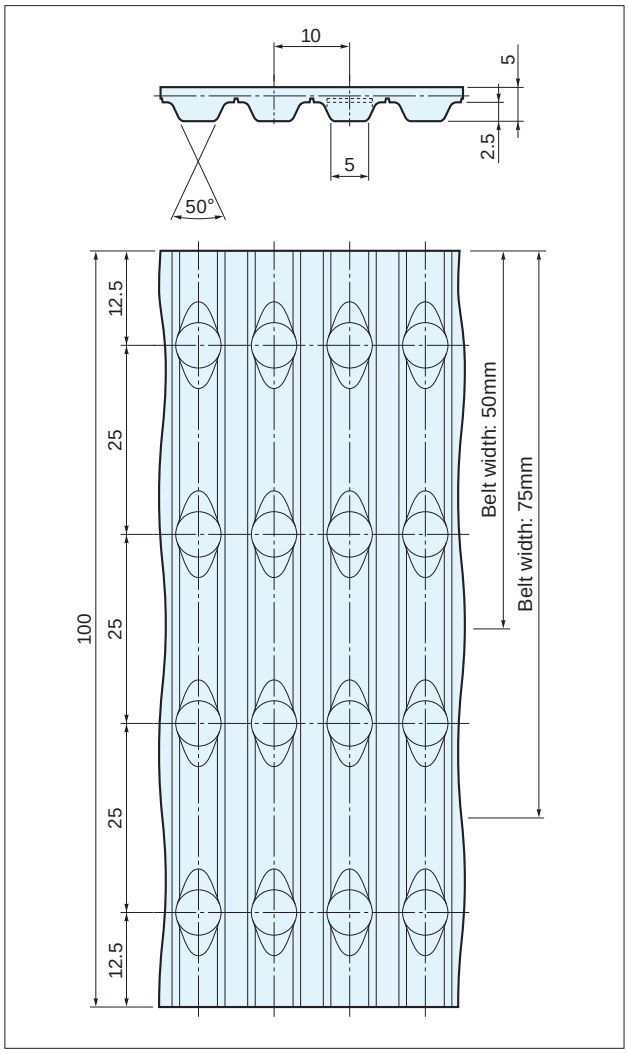
•Ensure to avoid any excessive tightening of the bolts. (Reference torque value: 0.2 ~ 0.5Nm)
Any excessive tightening of the bolts could warp the belt, loosen the nuts, or lead to other problems.
•If the bolts do loosen please ensure to use a preventative agent.
•Please appropriately adjust in preventing the edges of the bolts from protruding from the belt.

Dedicated nut



•Brass used as the standard material.
(Brass is utilized unless specified Unless specified, the material is brass)
•We can also provide stainless-steel nuts.

FAT



Example of model dimension indication

050 - FAT1 - 2000 E - J 3Y

- 050 — Belt width (nominal width)
- FAT1 — Belt models
- 2000 — Total number of belt teeth
- E — Rubber material
  U497 : **E** only
- J — Type
  Joint type : **J** only
- 3 — Semi-standard additional specifications
  (inapplicable if there are no such specifications)
  Tooth-side nylon faced : **1**
  Both-side nylon faced : **3**
- Y — Additional specifications
  Included perforations/Dedicated nuts : **Y**

Additional specifications : Y
Included perforations/Dedicated nuts

Please ensure to inform us of the pitch if any perforations are needed to mount any attachments. (Please also inform us if no perforations are needed.)
Please ensure to inform us of the necessary quantity of dedicated nuts. (If no specific instructions are received then the quantity will be the same number as the number of perforations.)

Type	Belt width (Nominal width)	Length in mm (Number of teeth)	Additional specifications: symbol	Steel cord / Rubber material / U497 (**E**)
J 	050 075 100	Minimum: 960 (96) Maximum: 40000 (4000)	Without any additional specifications	**E-JY**
			Tooth-side nylon faced : **1**	**E-J1Y**
			Both-side nylon faced : **3**	**E-J3Y**

White fabric is used for any belts lined with fabric on the teeth-side.

Allowable tension F

Unit : N

Belt width mm	Joint type **J**
50	1000
75	1500
100	2000

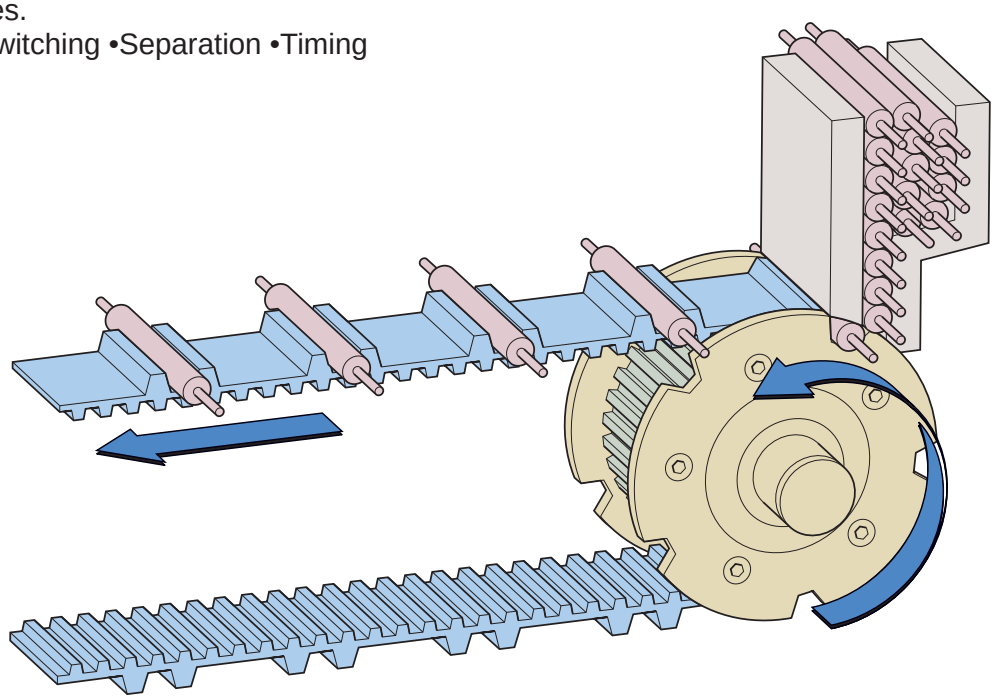
Pulley

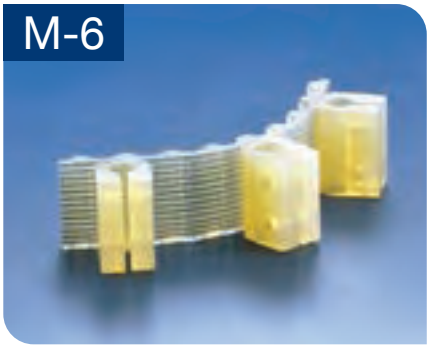
The minimum pulley diameter is 25.

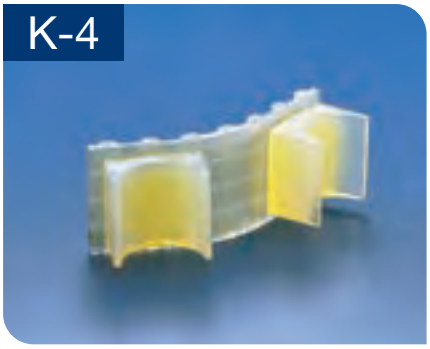
•Utilizes the same pulley as the AT10.

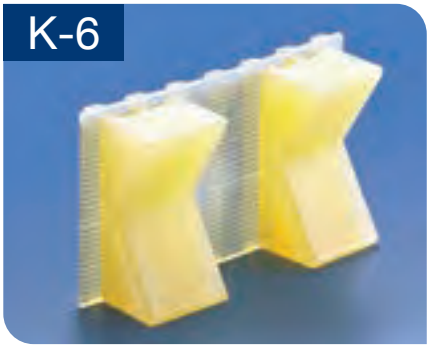
Profile

Individual profiles (attachments) can be provided to Iron Rubber toothed belts via heat-molding in thus fulfilling multiple functionality in the fields of conveyance and operating devices and the following usages.
•Positioning •Switching •Separation •Timing



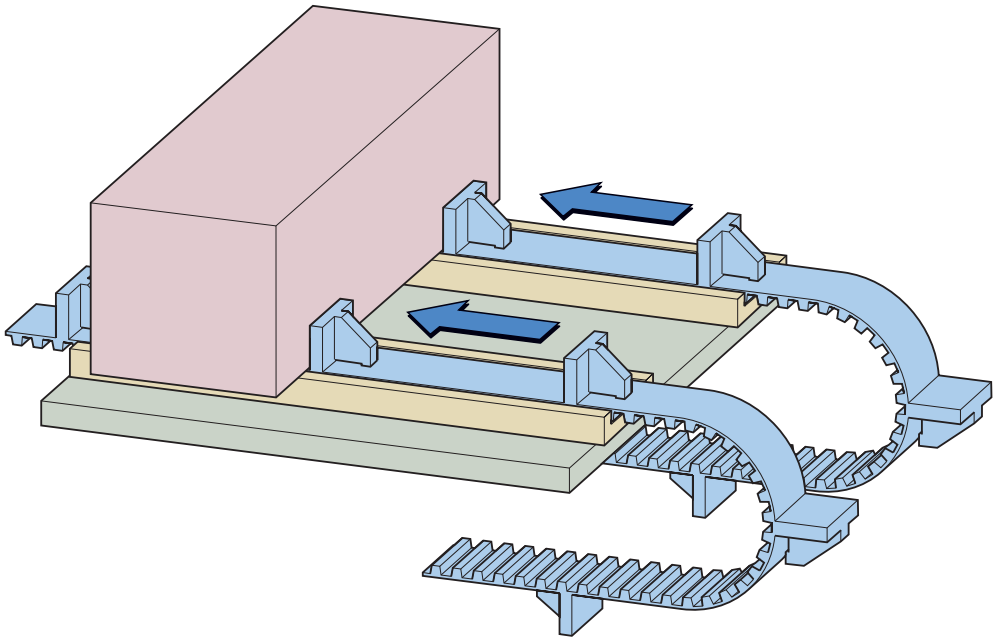


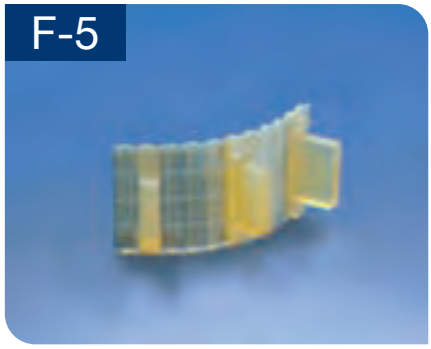


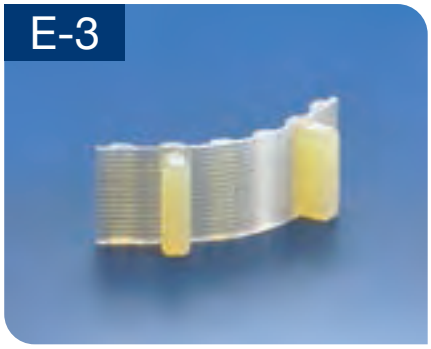


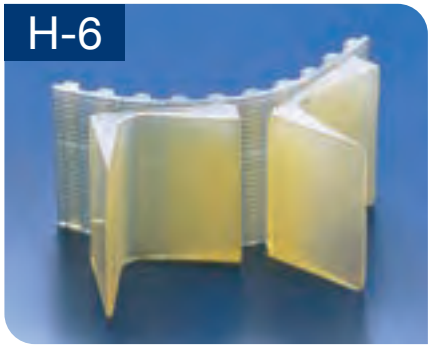
Please refer to pages 60 to 74 for more details on profile dimensions.

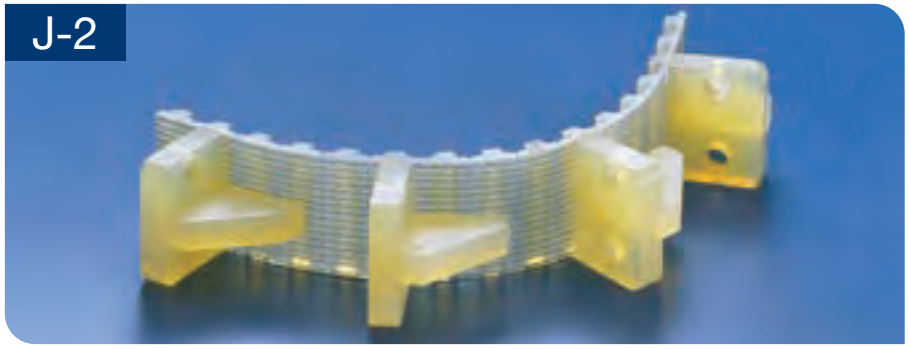
Various profiles supported. Please refer to the profile dimensions table for the different shapes and dimensions available.
Please contact us in any case where a standard product will not meet the conditions of use as we can machine or manufacture profiles using dedicated molds.











Profile belt design instructions

Mold width and number of pulley teeth

Please ensure that any profile to the rear of the belt teeth (Figure A) utilizes multiples of the belt pitch. If there is no other choice, however, the profile can be included in the back of the bottom of the teeth (Figure B). Thick objects (Figure C) being included in the rear of the bottom of the teeth in this way can however influence the belt rolling onto the pulleys and result in damage, thus making it necessary that the width of the mold (S1) be decreased (Figure D). Please refer to the below table as the width of the mold can vary depending on the number of pulley teeth.

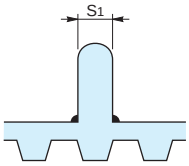


Figure A

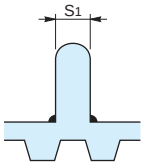


Figure B

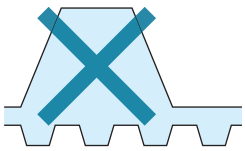


Figure C

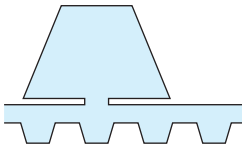


Figure D

Maximum dimensions of profile mold width (S_1) (mm)

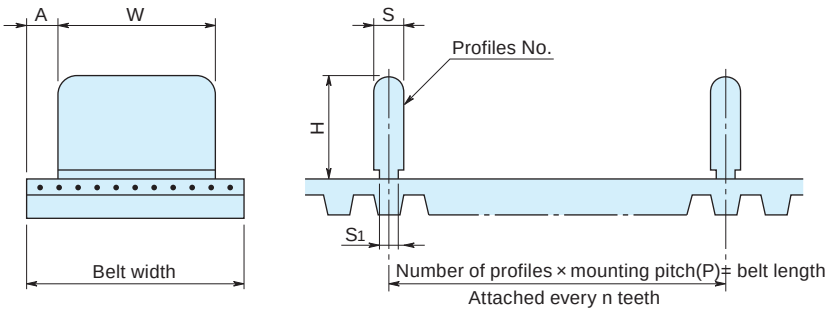
Belt model \ Pulley teeth		14	15	16,17	18,19	20~24	25~29	30~39	40~49	50~59	60 or more
MA3	Figure A	—	—	—	—	—	2	3	3	4	4
	Figure B	—	—	—	—	—	—	—	—	—	—
MA5	Figure A	—	2	2	3	3	4	4	5	6	7
	Figure B	—	—	—	—	—	—	—	2	4	5
MA8	Figure A	—	—	—	—	4	5	6	7	9	10
	Figure B	—	—	—	—	—	—	2	2	4	6
AT5	Figure A	—	2	2	3	3	4	4	5	6	7
	Figure B	—	—	—	—	—	—	—	2	4	5
AT10	Figure A	—	4	4	5	5	6	7	9	10	11
	Figure B	—	—	—	—	—	2	2	4	6	9
AT20	Figure A	—	—	—	8	9	9	11	13	15	17
	Figure B	—	—	—	2	3	3	4	6	9	15
T5	Figure A	2	2	2	3	3	4	4	5	6	7
	Figure B	—	—	—	—	—	—	—	2	4	5
T10	Figure A	4	4	4	5	5	6	7	9	10	11
	Figure B	—	—	—	—	—	2	2	4	6	9
T20	Figure A	—	—	—	8	9	9	11	13	15	17
	Figure B	—	—	—	2	3	3	4	6	9	15
XL	Figure A	2	2	2	3	3	4	4	5	6	7
	Figure B	—	—	—	—	—	—	—	2	4	5
L	Figure A	3	3	3	4	4	4	5	7	9	9
	Figure B	—	—	—	—	—	—	2	3	4	7
H	Figure A	4	4	4	5	5	6	7	9	10	11
	Figure B	—	2	2	2	2	3	4	5	7	9
XH	Figure A	—	—	—	5	5	6	7	9	10	11
	Figure B	—	—	—	2	2	3	4	5	7	9

[Example]
When a T10 Iron Rubber belt and 30 tooth pulleys are used according to the table in the left section of this page
•Just above the teeth
•Just above the bottom of the teeth (as described in Figure B above)

Display method

Note that the belt length direction and belt width direction dimensions are needed in any schematic diagram, as shown in the figure in the right section of this page.

Please set the dimension A to be at least 0.5mm.



Profile tolerance before molding

Dimensions S, S_1, W, H_0	Torelance
up to 4	± 0.2
Over 4 up to 16	± 0.3
Over 16 up to 31	± 0.4
Over 31 up to 63	± 0.5

Profile mold tolerance

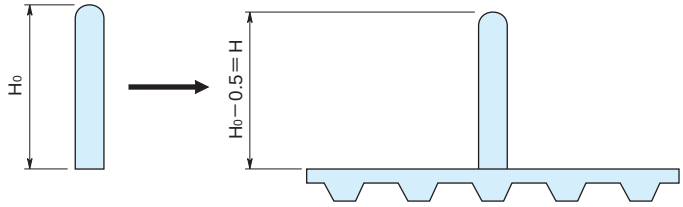
Dimensions A, H	Torelance
16	± 0.5
Over 16 up to 31	± 0.7
Over 31 up to 63	± 1.0

Dimensions P	Torelance	
	MA3,MA5,MA8,AT5,AT10,T5,T10,XL,L,H	AT20,T20,XH
up to 63	± 0.4	± 0.6
Over 63 up to 125	± 0.5	± 0.8
Over 125 up to 250	± 0.6	± 1.0
Over 250 up to 500	± 0.9	± 1.5

•If the profile is to be included just above the teeth or to the rear just above the bottom of the teeth

Height of the profile

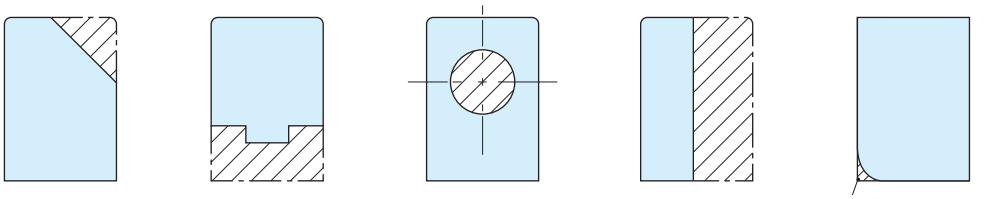
The dimensions of the profile height will decrease by approximately 0.5mm because of the space needed for the mold, although only if molded with the belt.



Before the molding process　　After the molding process

Additional profile processing

Additional profiles to those provided in the Profile dimensions table are supported but ensure to contact us and specify the details (please include a schematic illustration).
Ensure to contact us as the supported dimensions are limited.

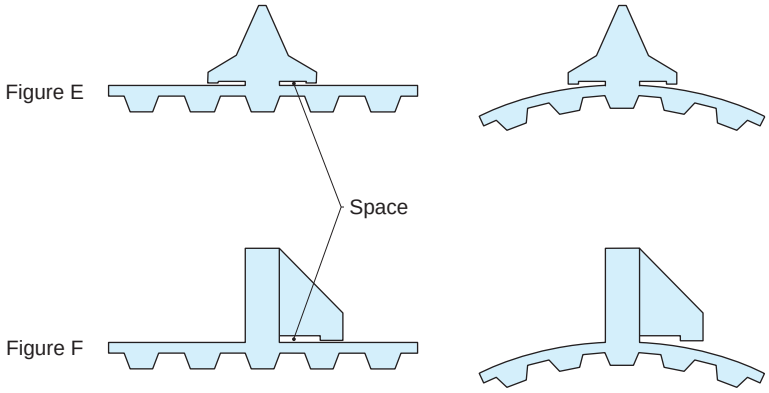


ø2 or smaller: unavailable

R processing: unavailable

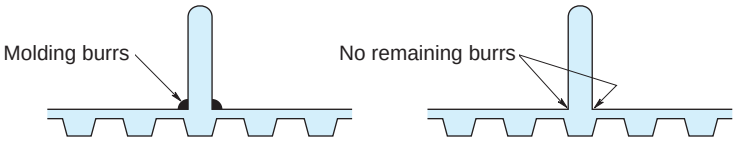
Special profile molds

With any special shape profiles attention should be paid to the mold section and profile shape in maintaining the tracking between the pulleys and the belt.
In the case provided in Figure E the flexibility of the belt can be ensured by molding the center part only and spacing the left and right sides apart. In the case provided in Figure F the flexibility can be ensured by molding the left side only and spacing the right side apart.



Burring of molded parts

Burring of the molded parts can occur from the molding process.
If any burring could affect functionality then they will need to be removed. In this case please specify “No remaining burrs” on the schematic illustration you provide.

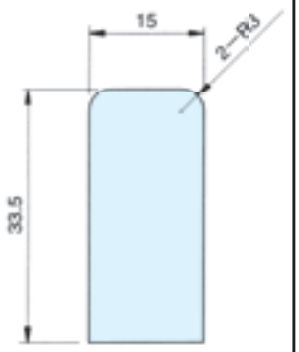


[Note]
That any burrs within the space shown in Figure E and Figure F cannot be removed.

- Repair and remolding of profiles not supported.
- Please ensure compatibility before use when mounting any other attachments onto a profile, or in the case that vibrations or sudden load will affect the profile due to intermittent feeds and other procedures.
- Please contact us regarding the molding of any profiles onto belts of a width of 150mm or over.

Profile dimensions table

A-1



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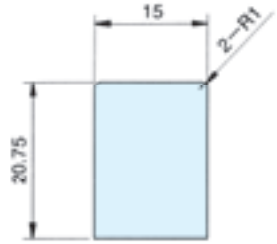

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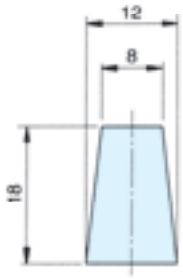

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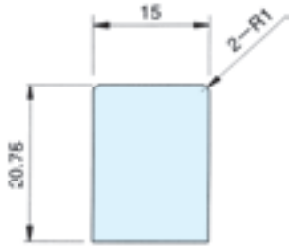

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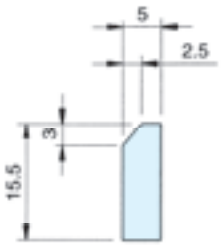

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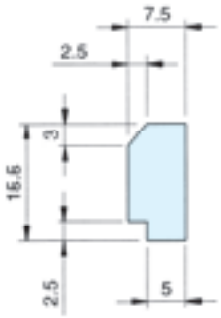

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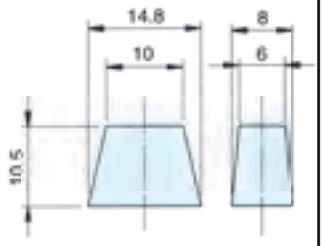

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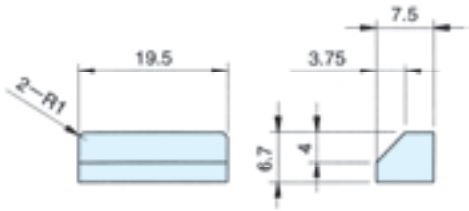

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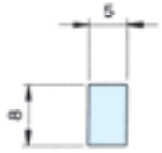

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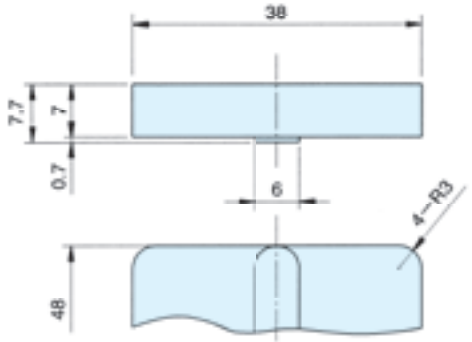

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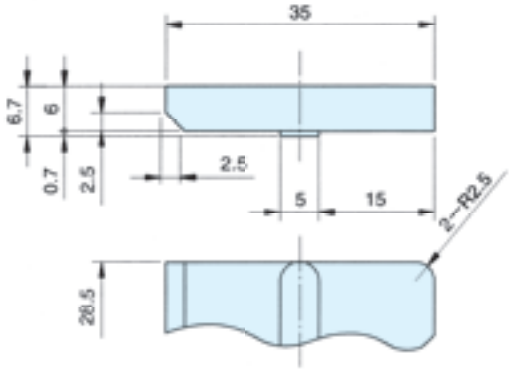

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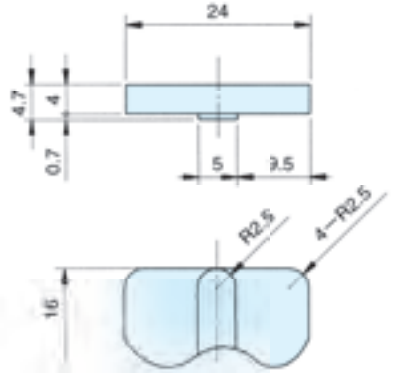

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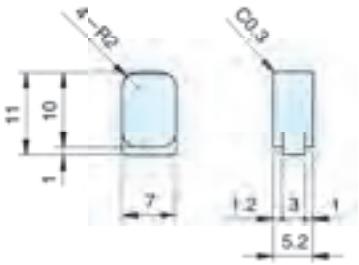

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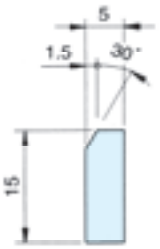

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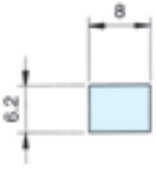

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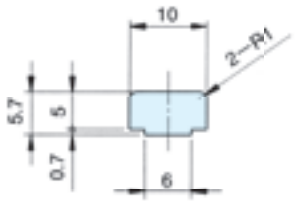

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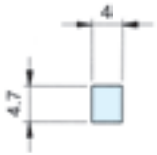

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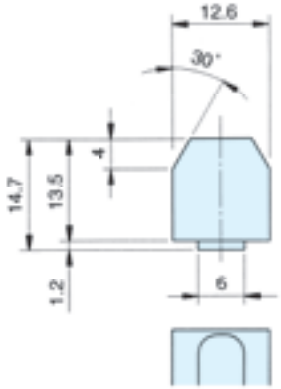

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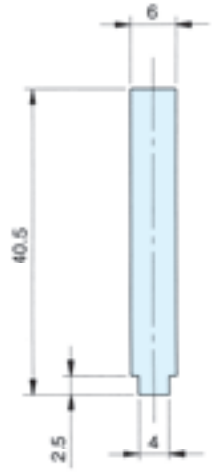

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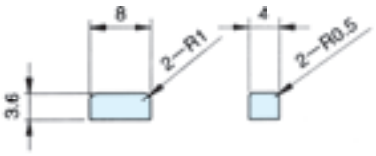

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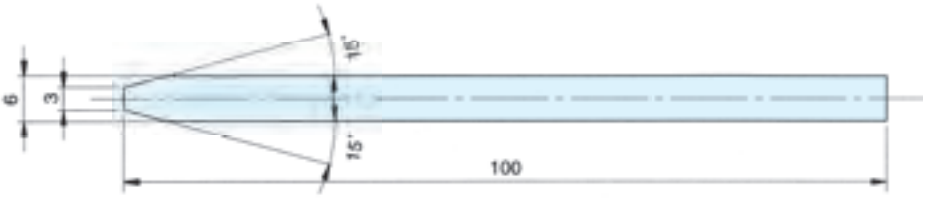

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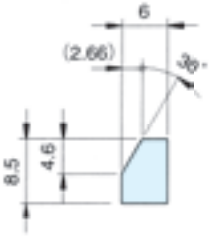
B-8



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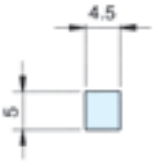

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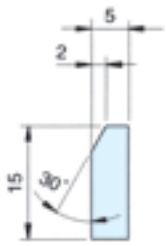

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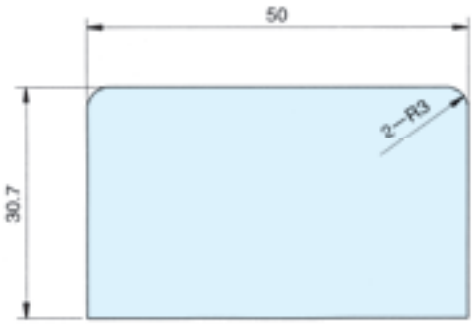

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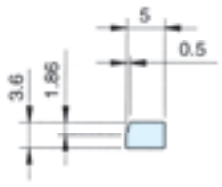

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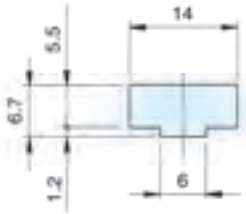

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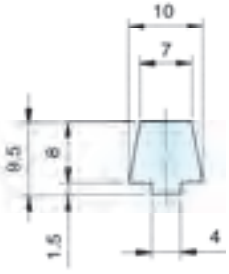

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Profile

Profile dimensions table

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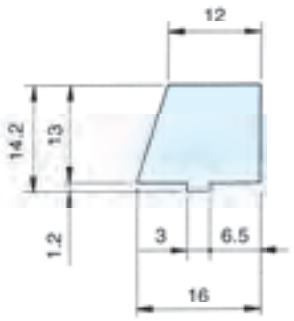

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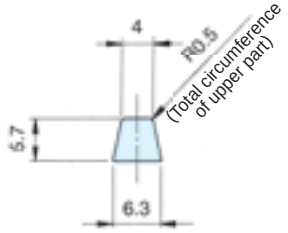

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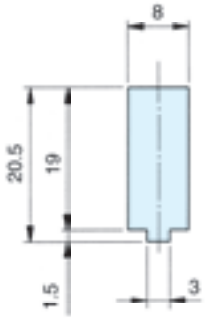

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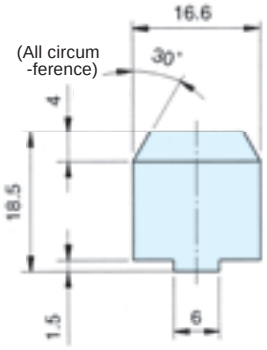

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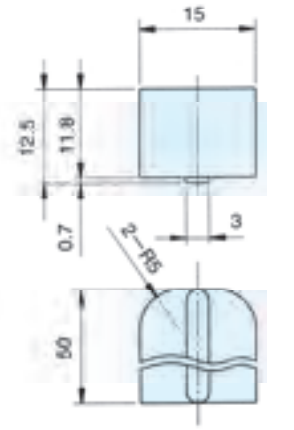

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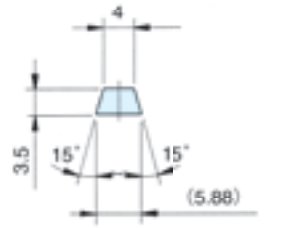

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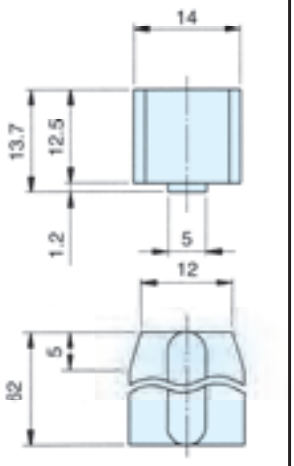

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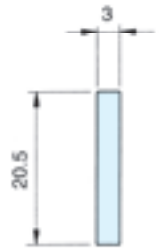

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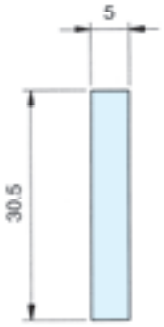
C-9

L=70

C-10



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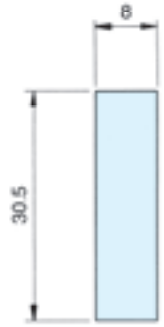

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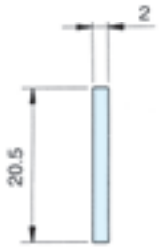

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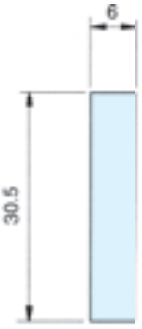

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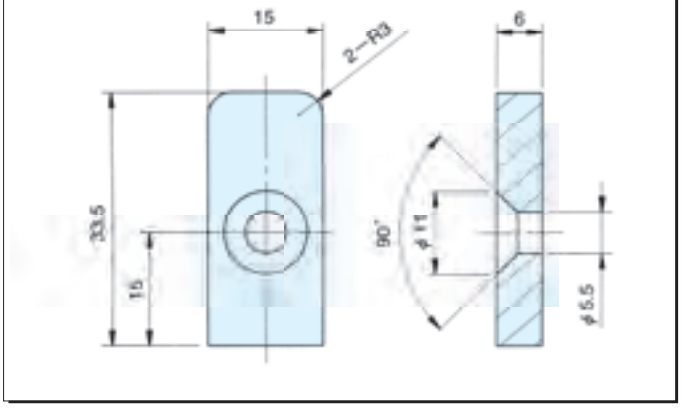

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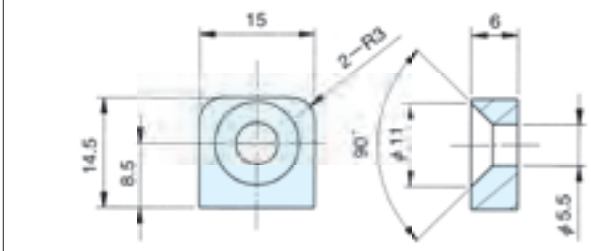

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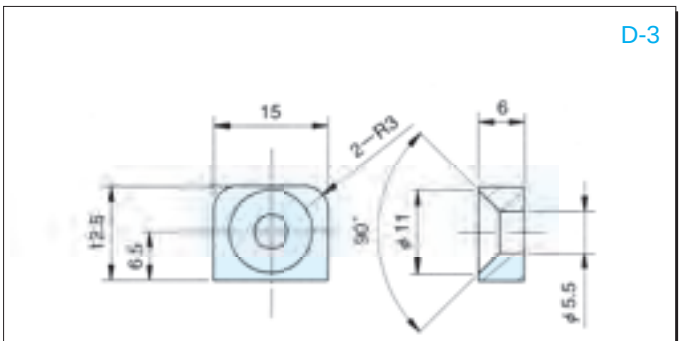

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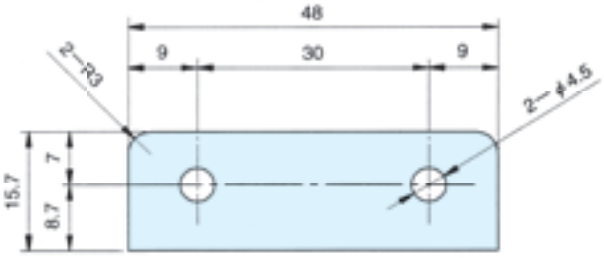

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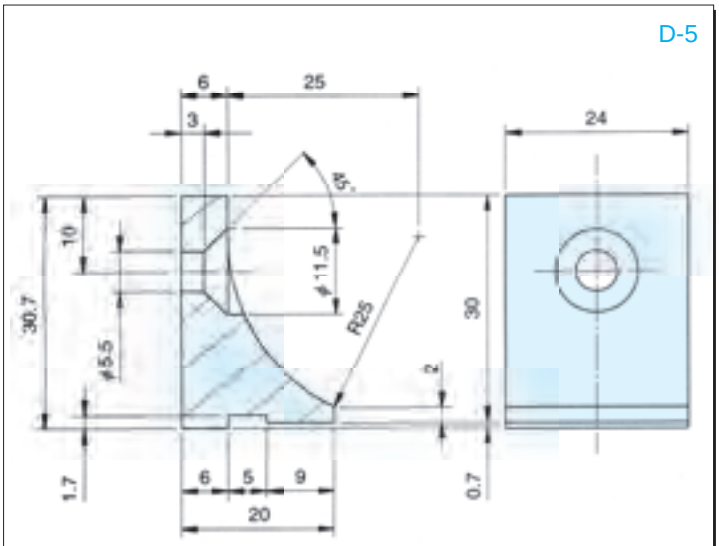

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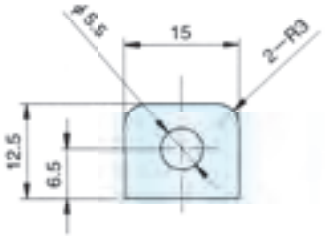

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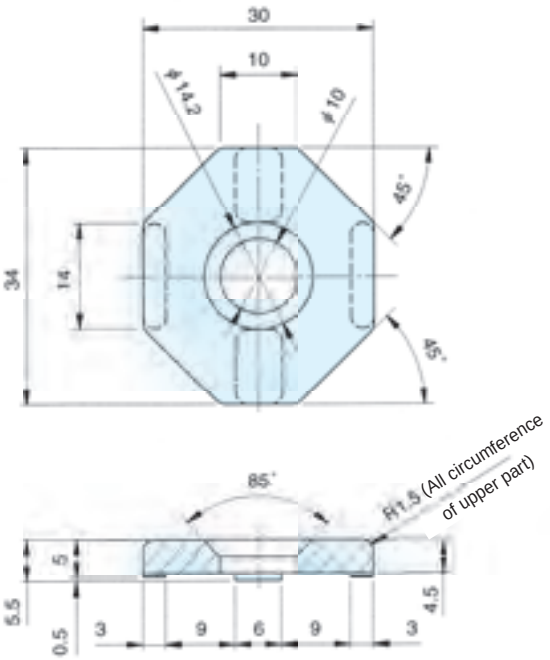

Profile dimensions table

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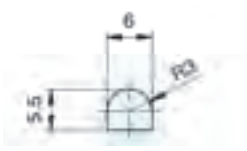

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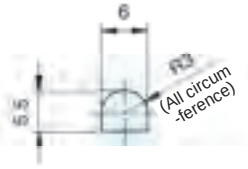

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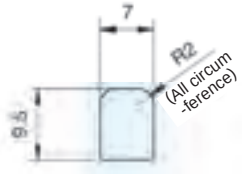

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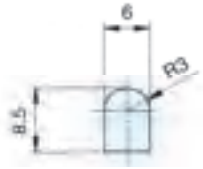

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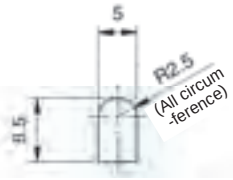

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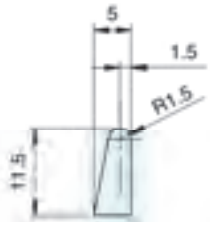

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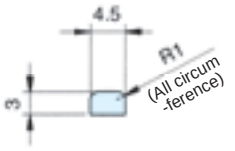

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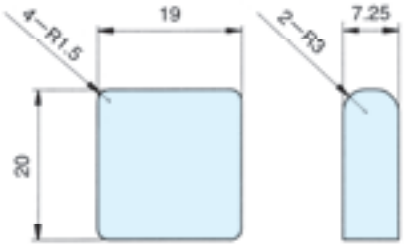

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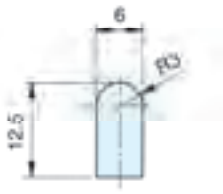

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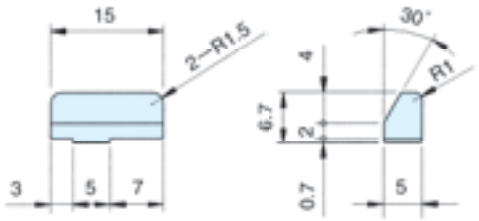

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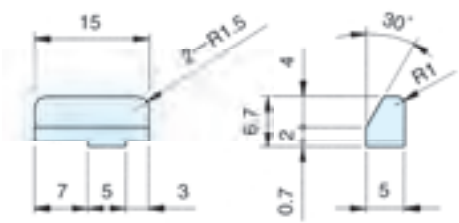

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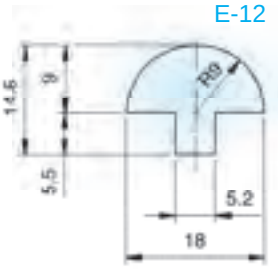

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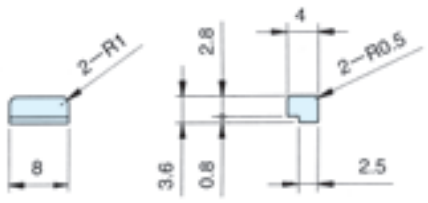

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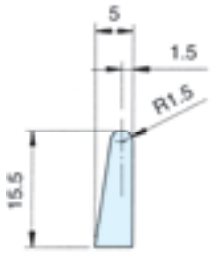

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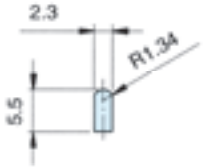

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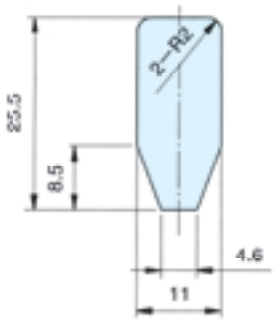

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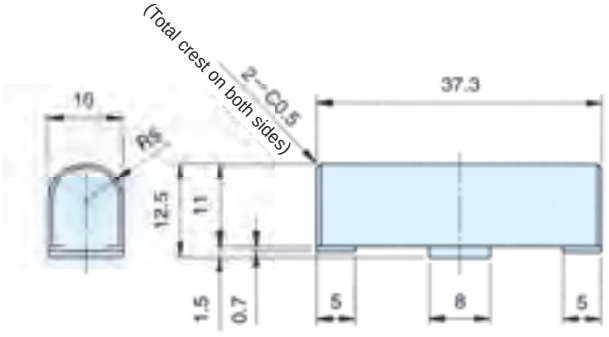

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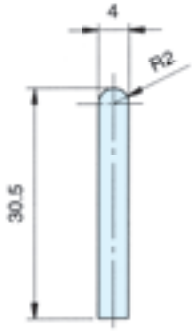

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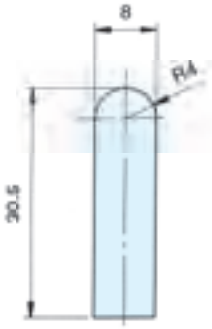

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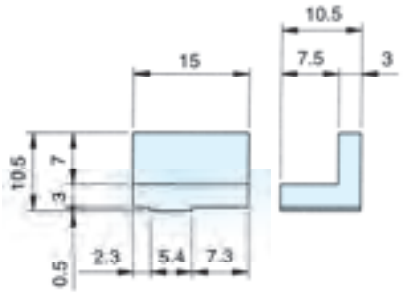

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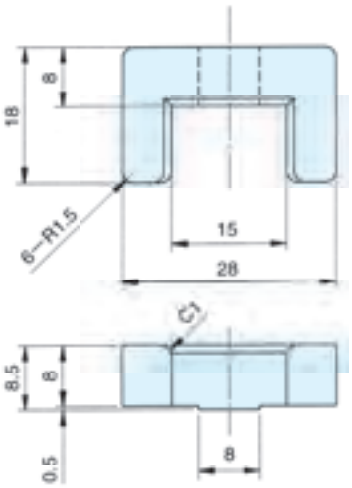

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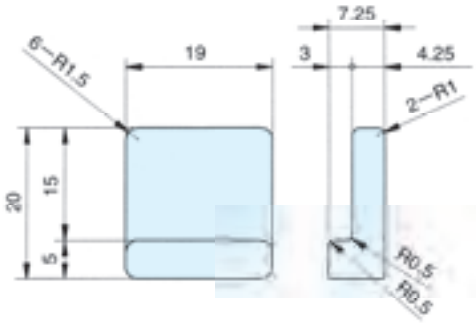

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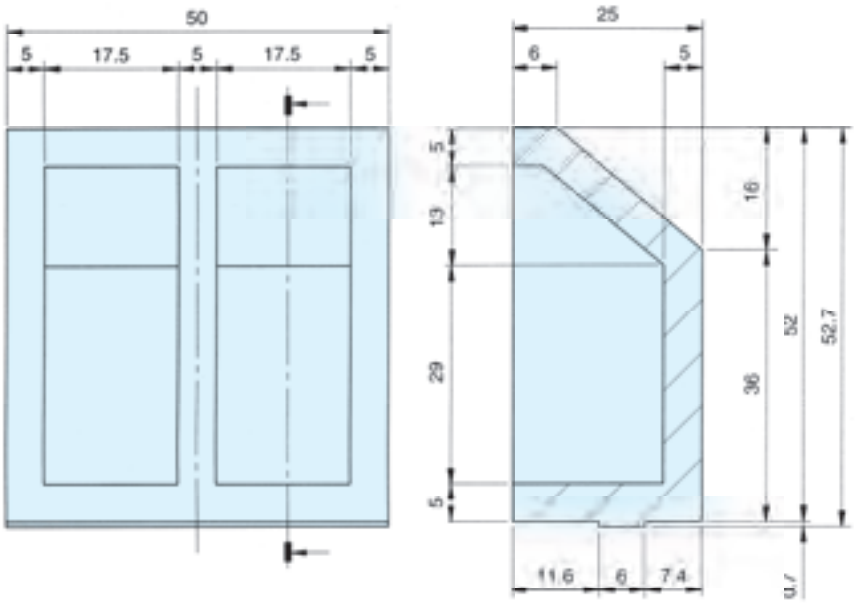

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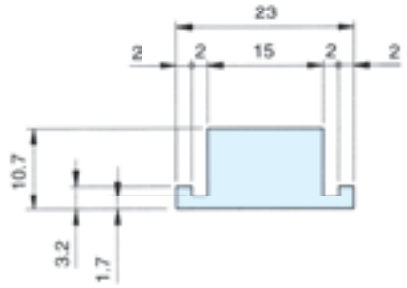

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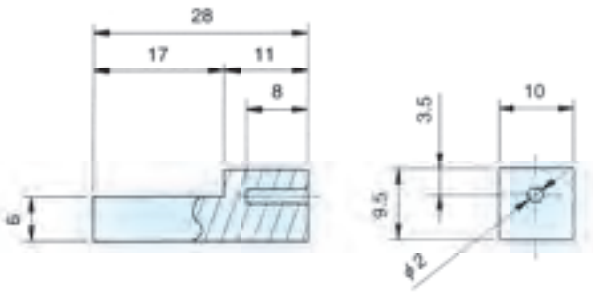

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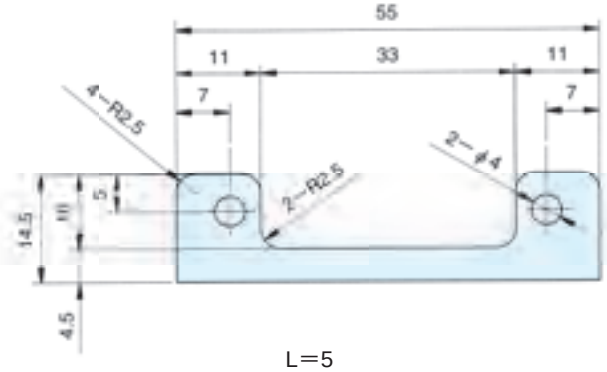

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Profile

Profile dimensions table

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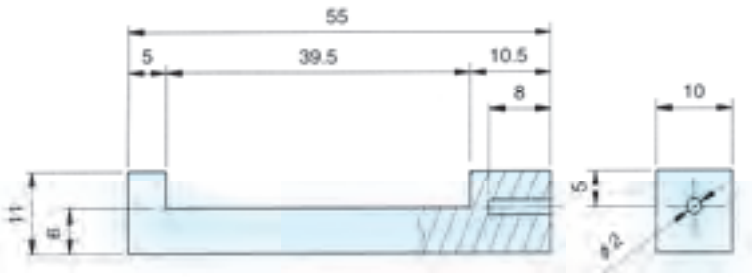

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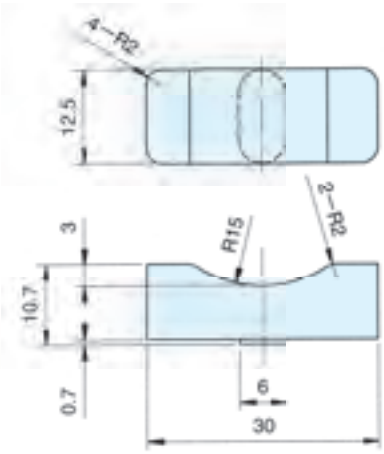

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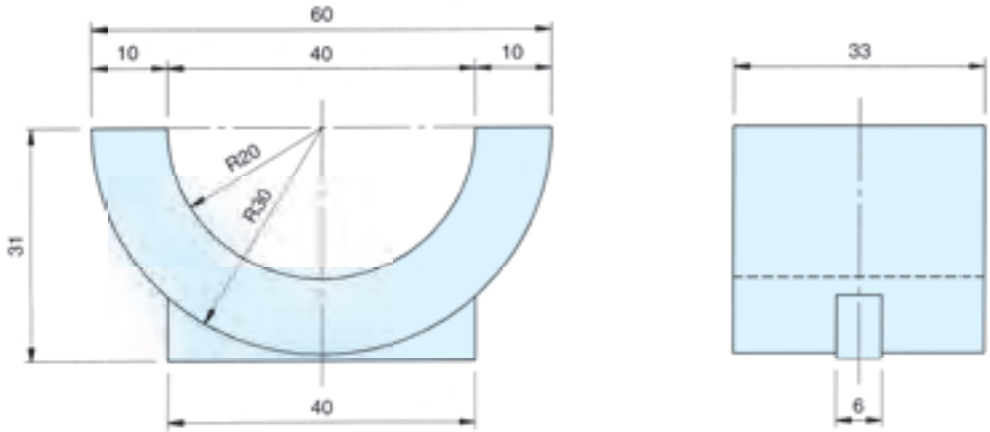

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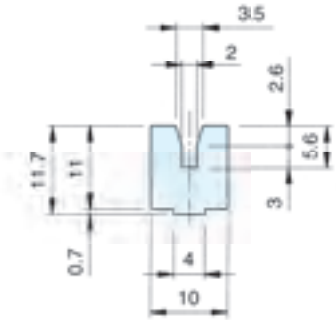

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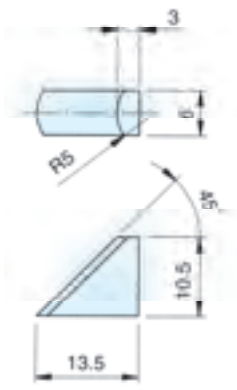

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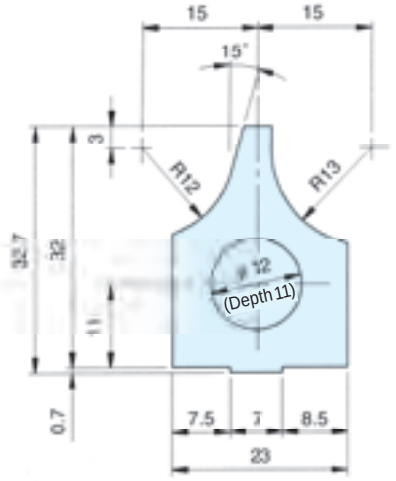

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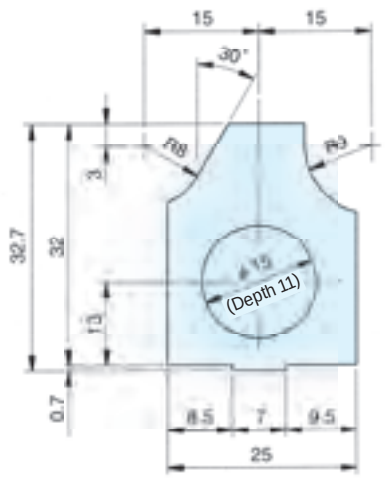

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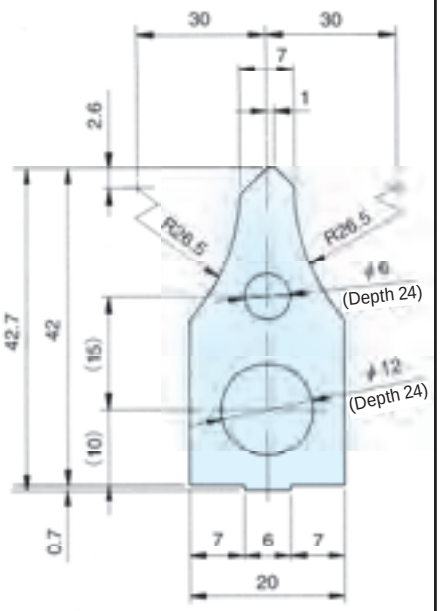

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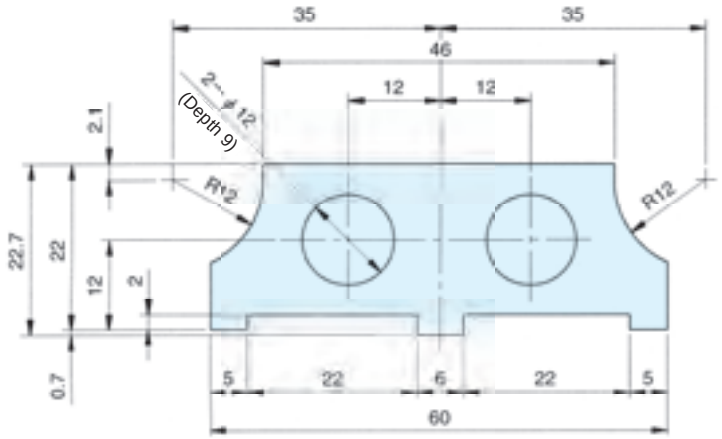

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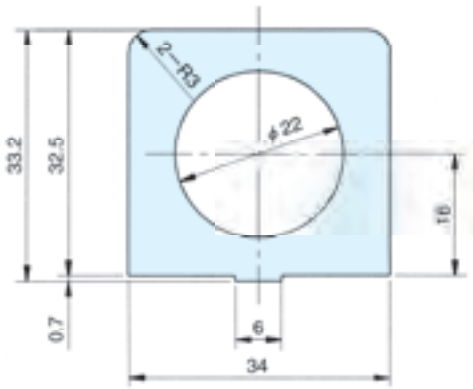

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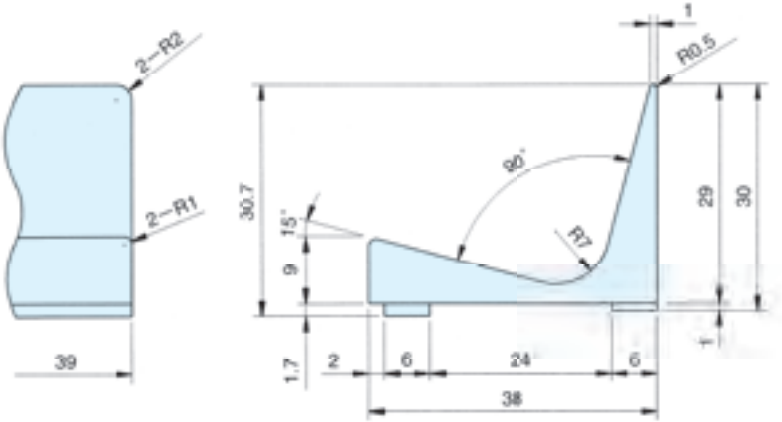

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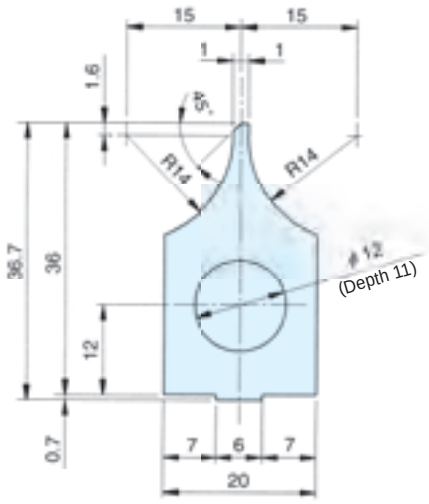

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Profile dimensions table

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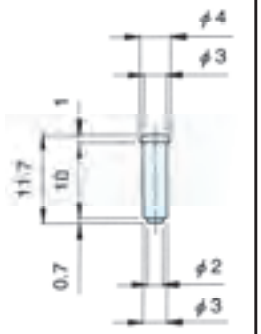

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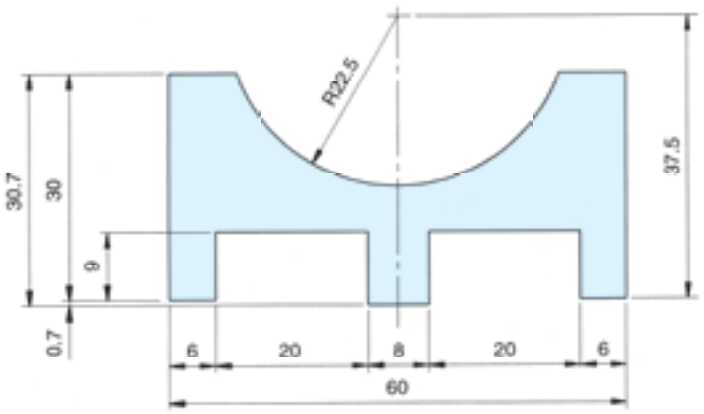

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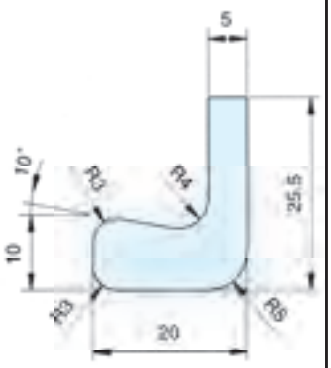

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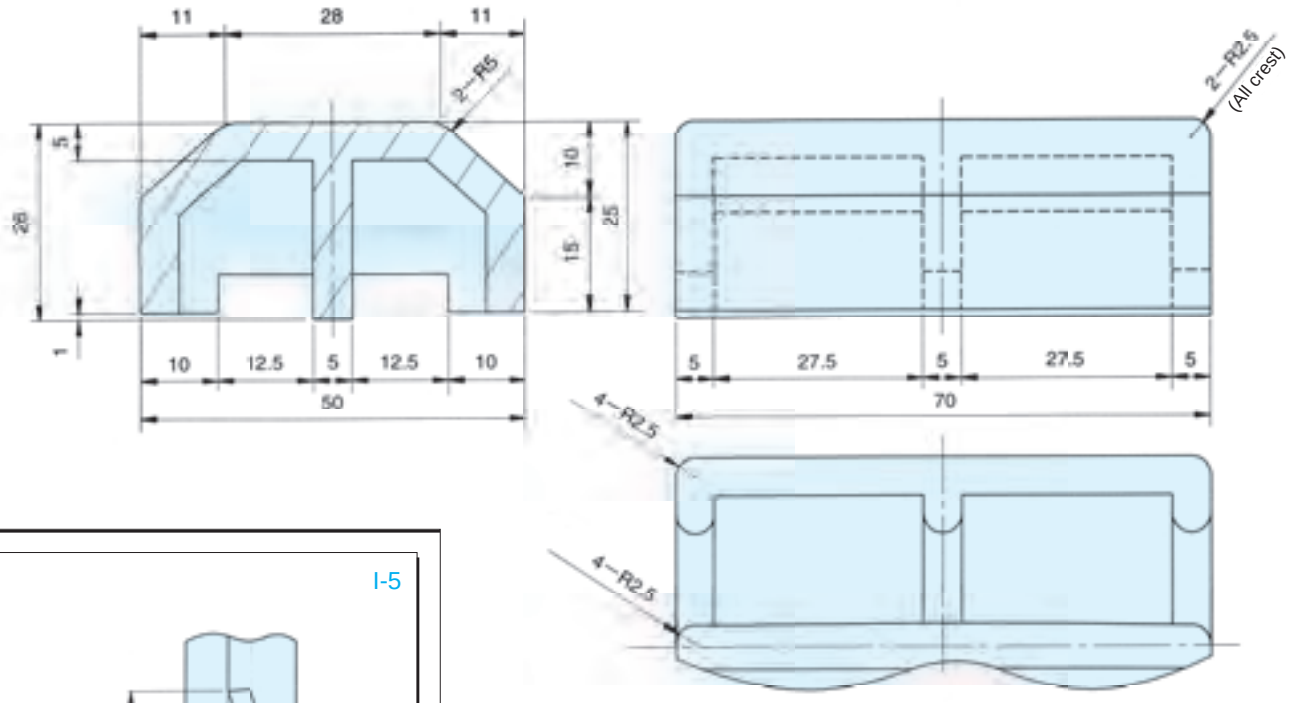

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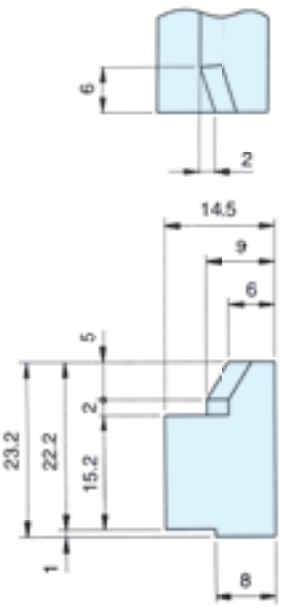

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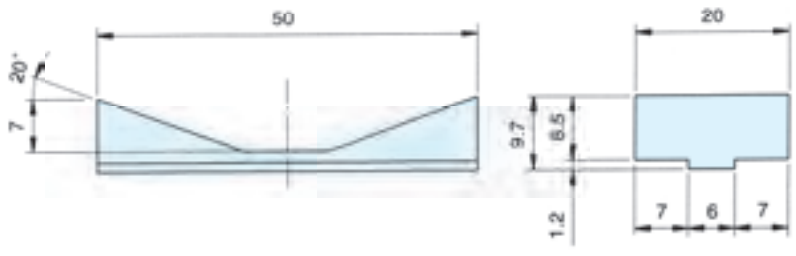

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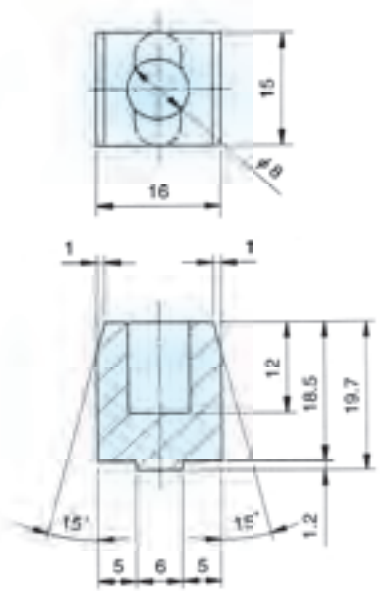

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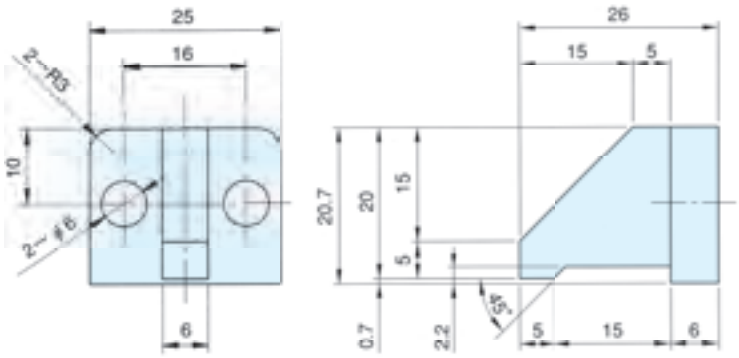

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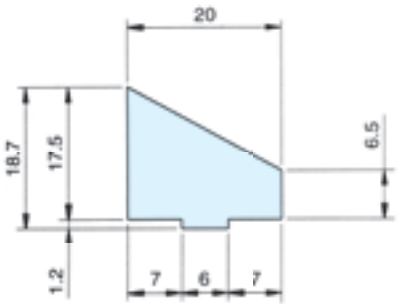

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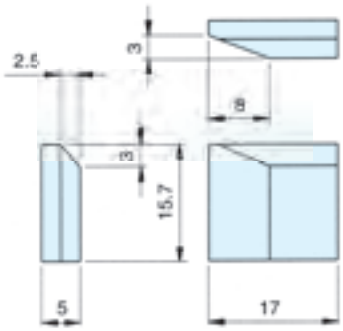

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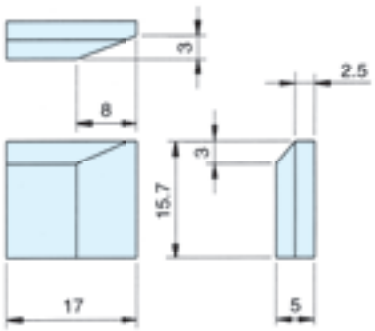

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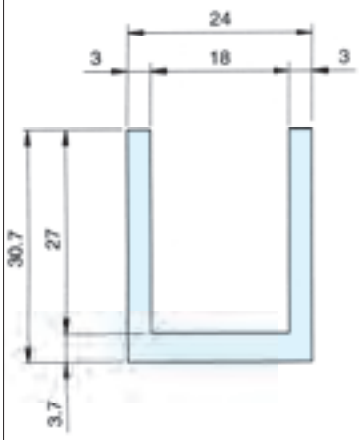

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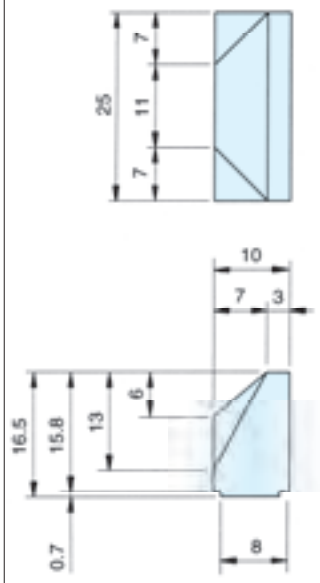

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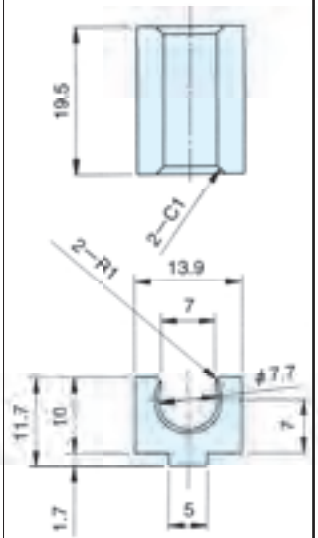

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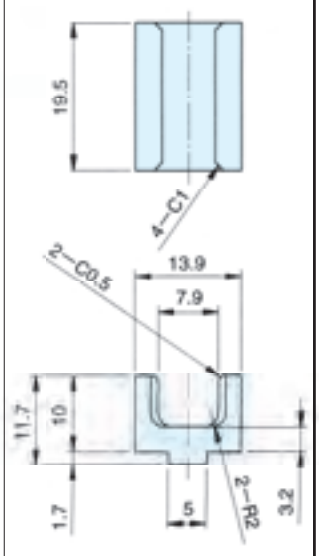

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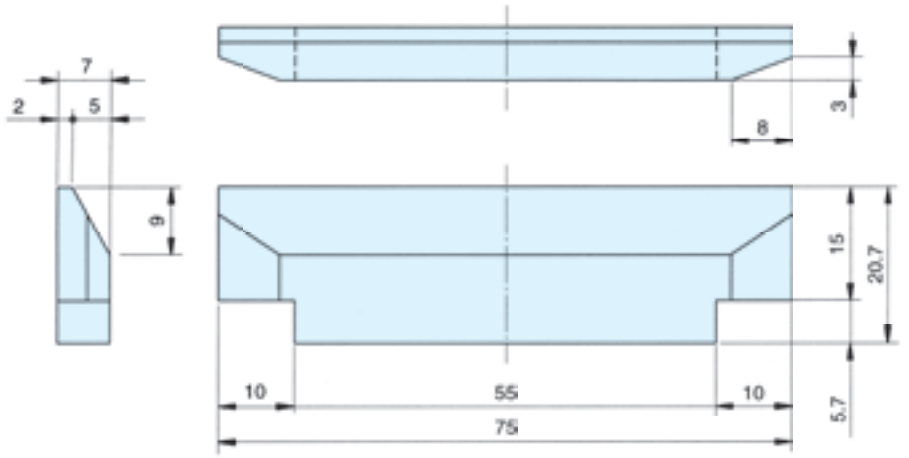

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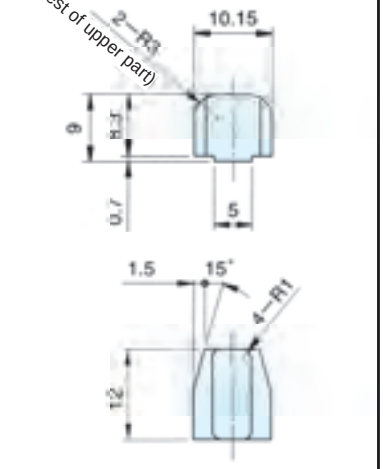

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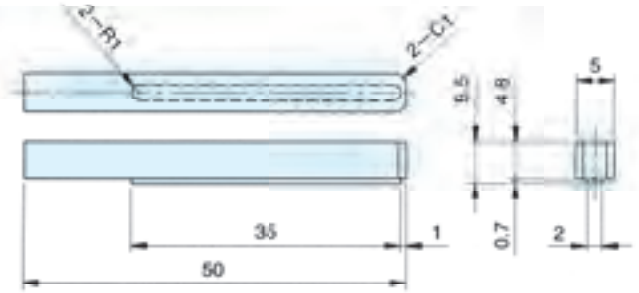

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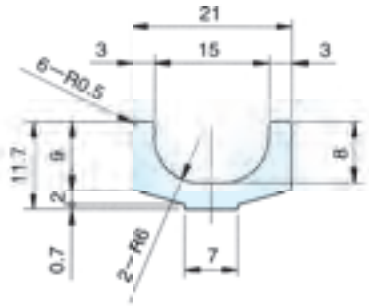

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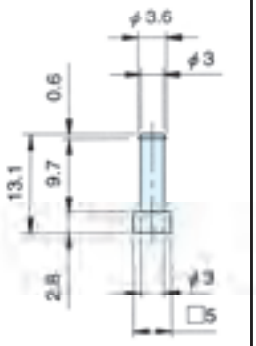

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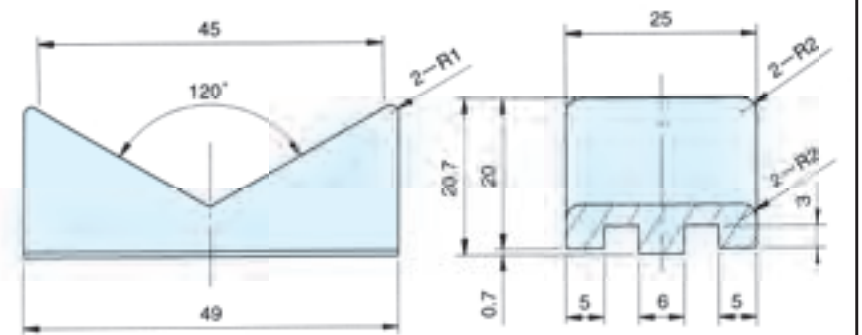

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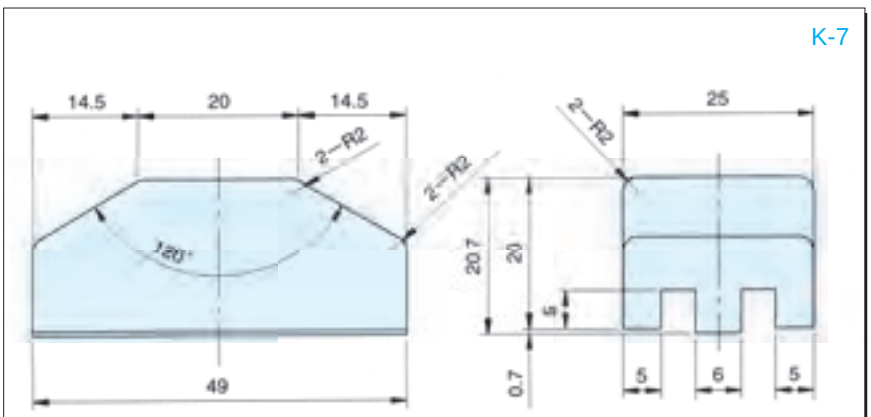

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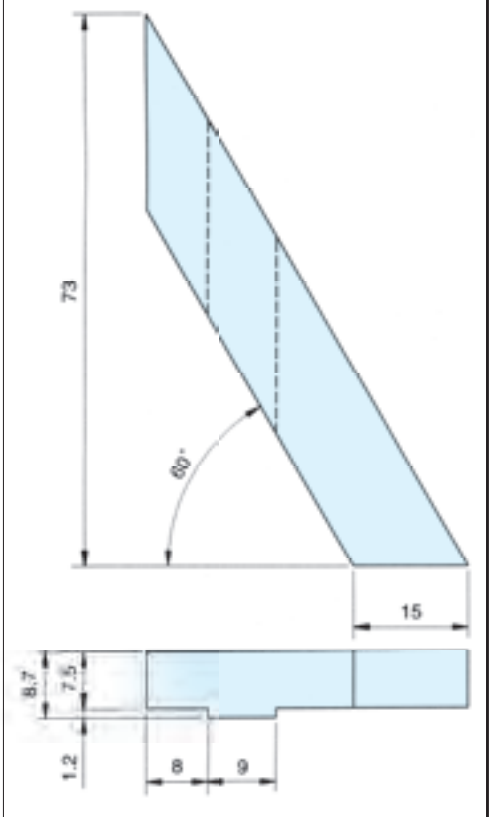

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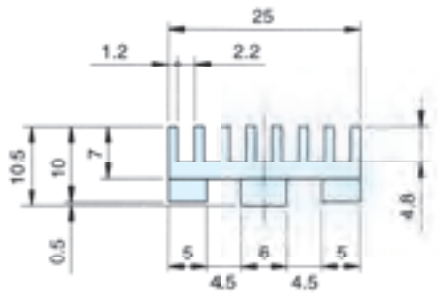

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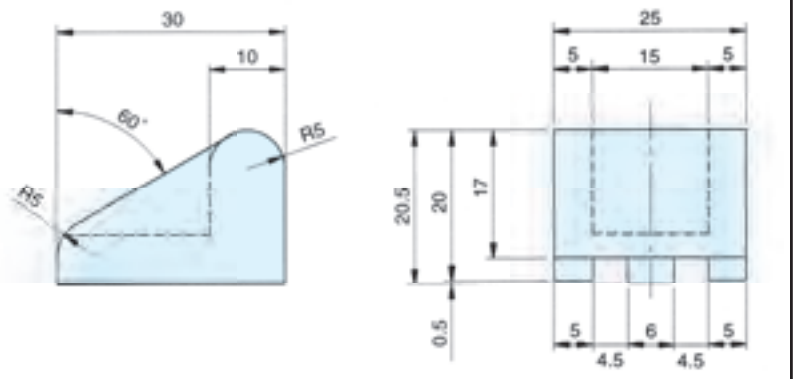

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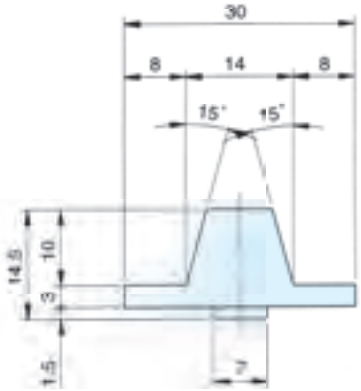

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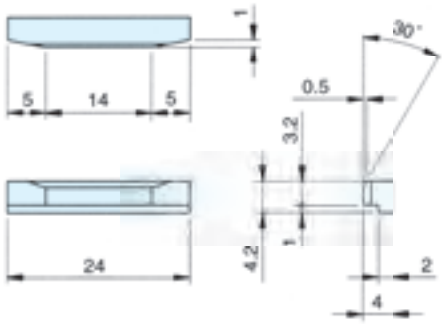

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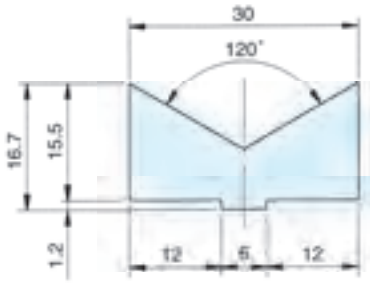

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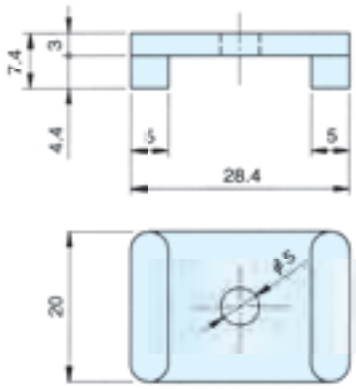

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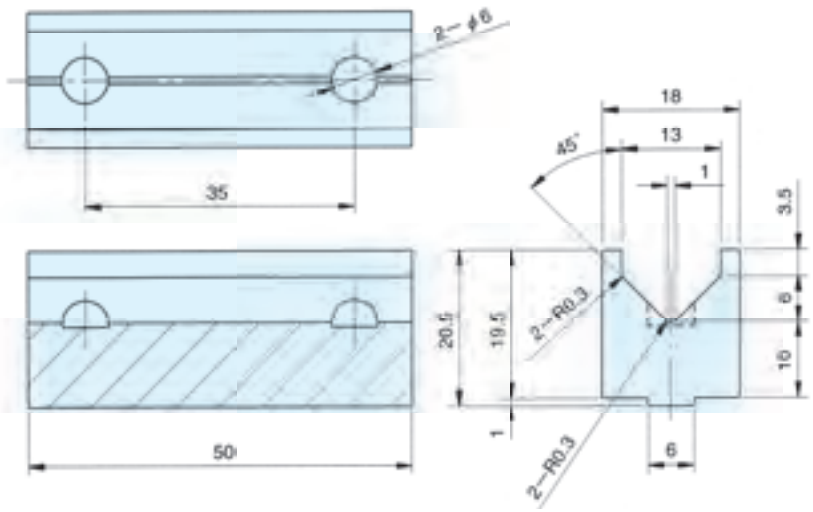

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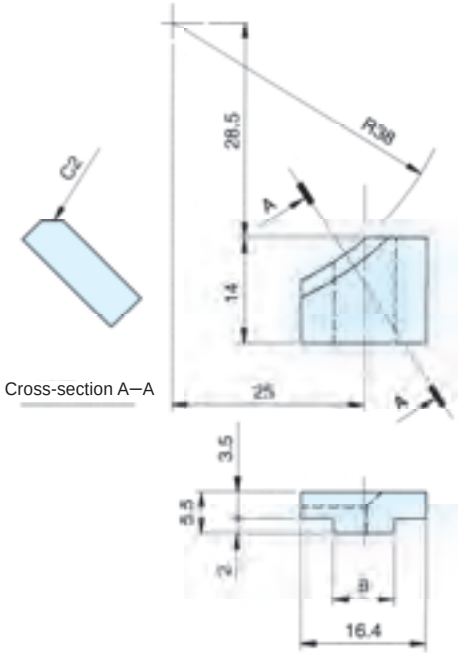
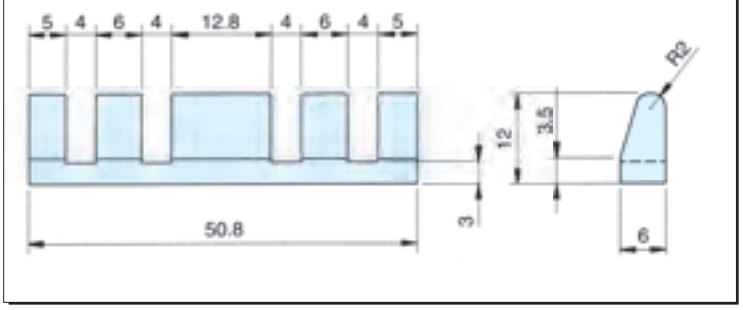


Cross-section A—A

Profile dimensions table

M-1



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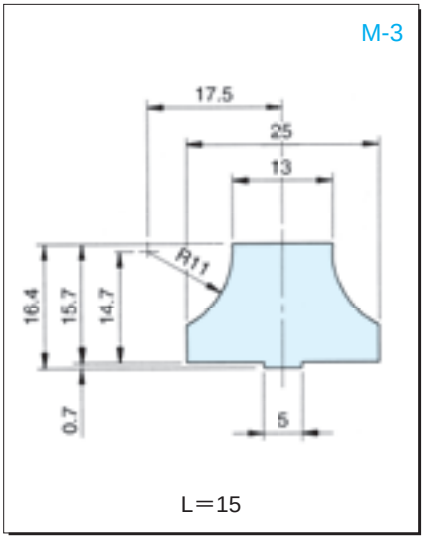
M-3



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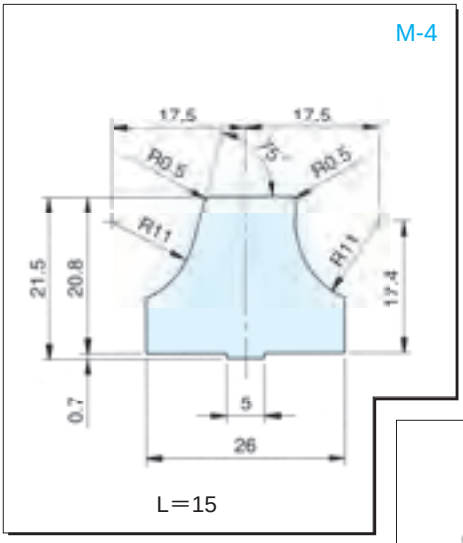

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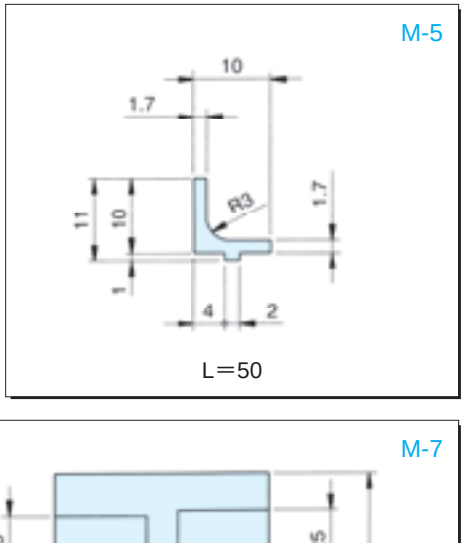

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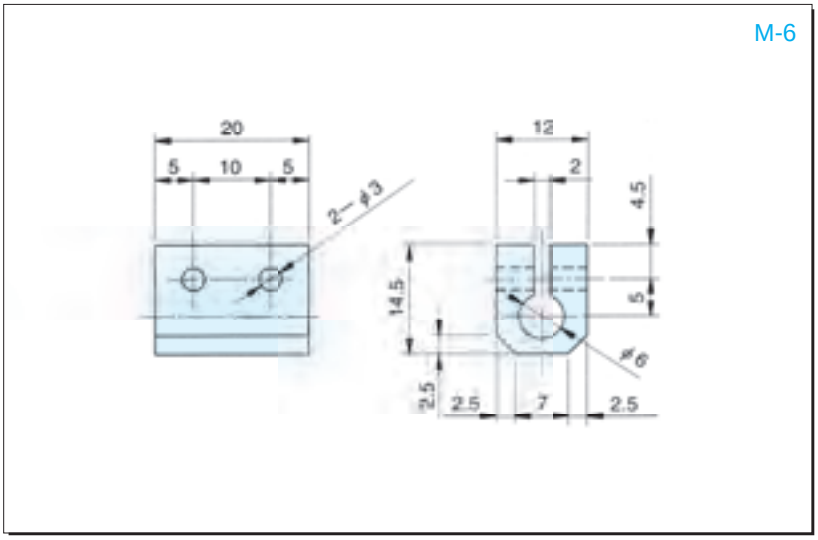

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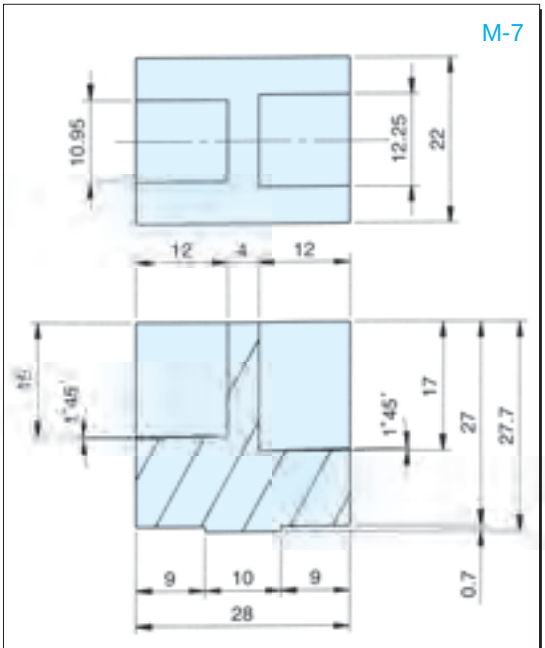

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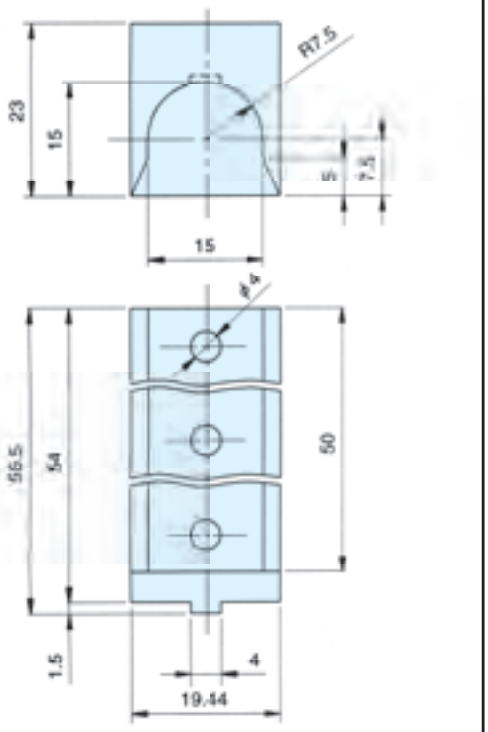

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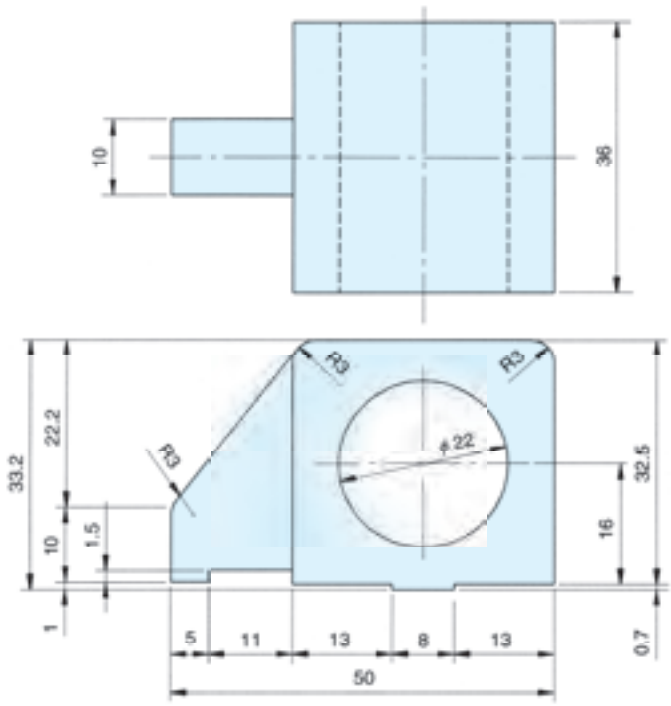

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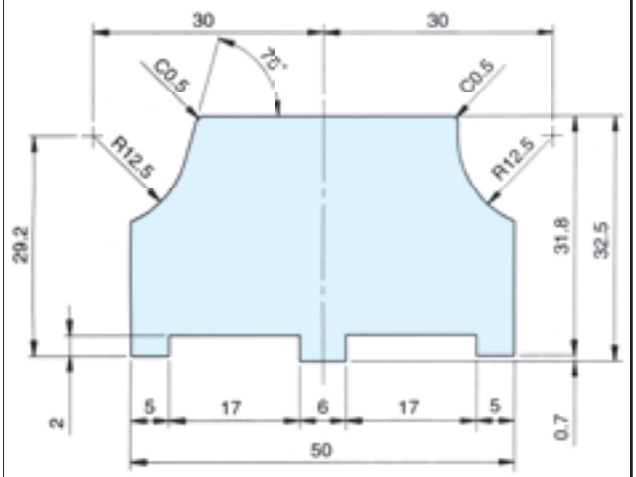

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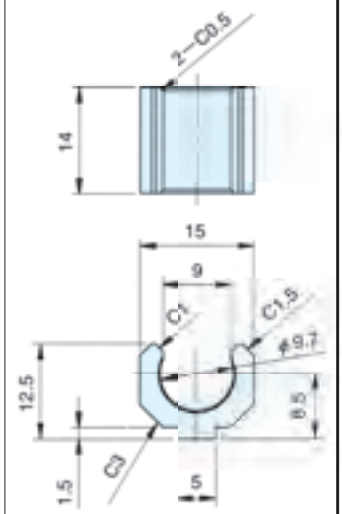

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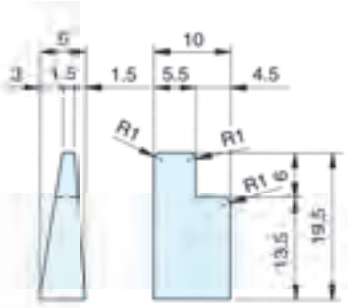

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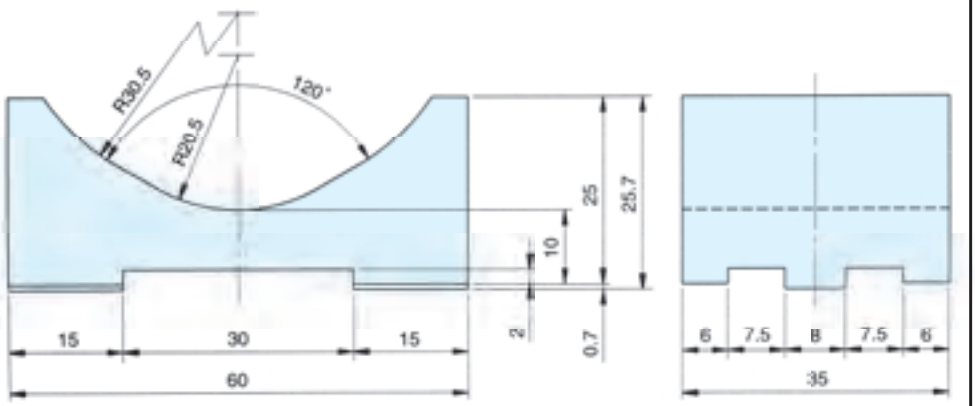

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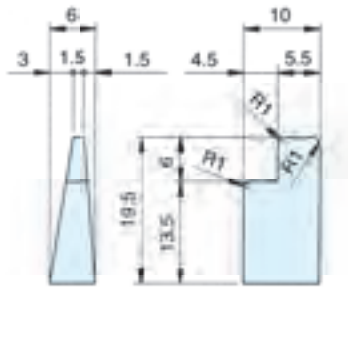
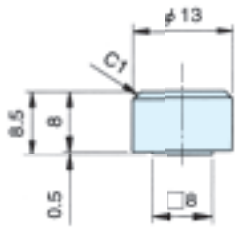


Profile

Profile dimensions table

O-1



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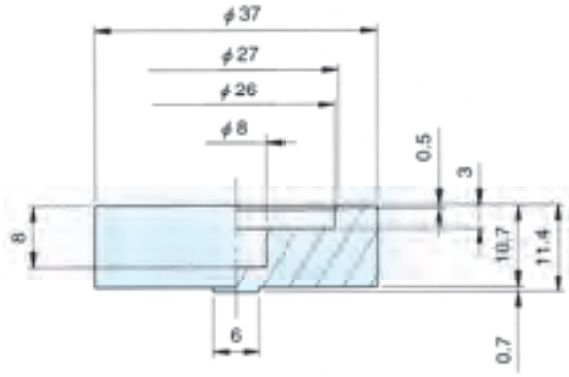

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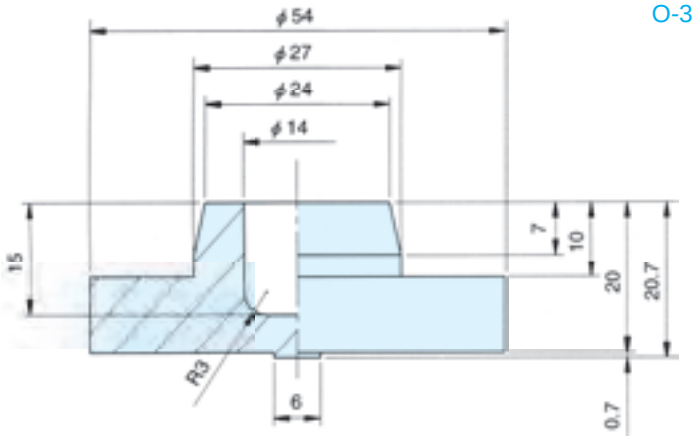

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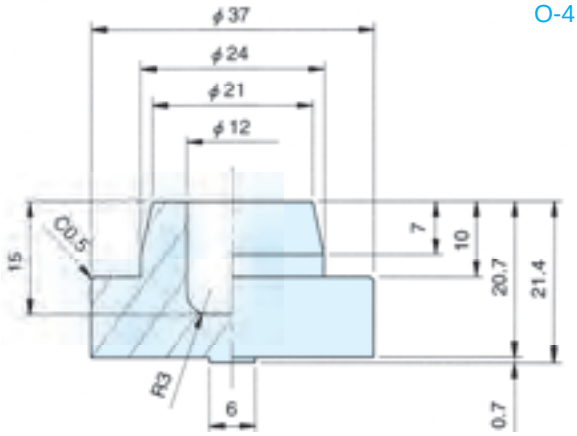
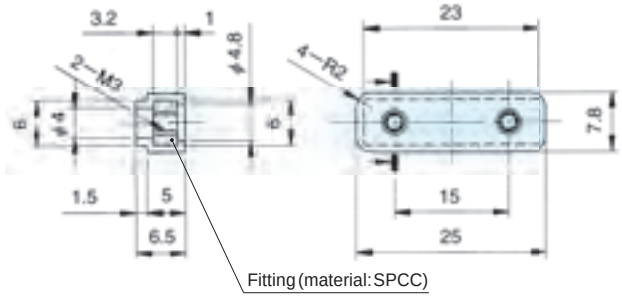


P-1



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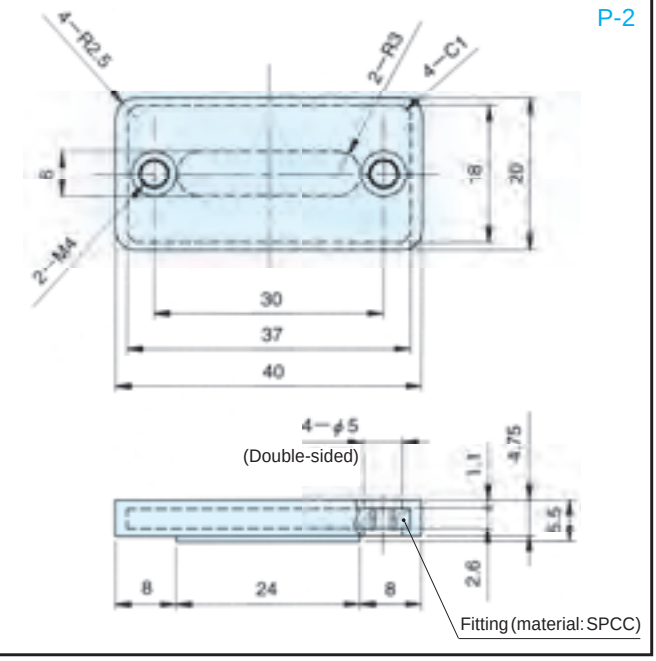

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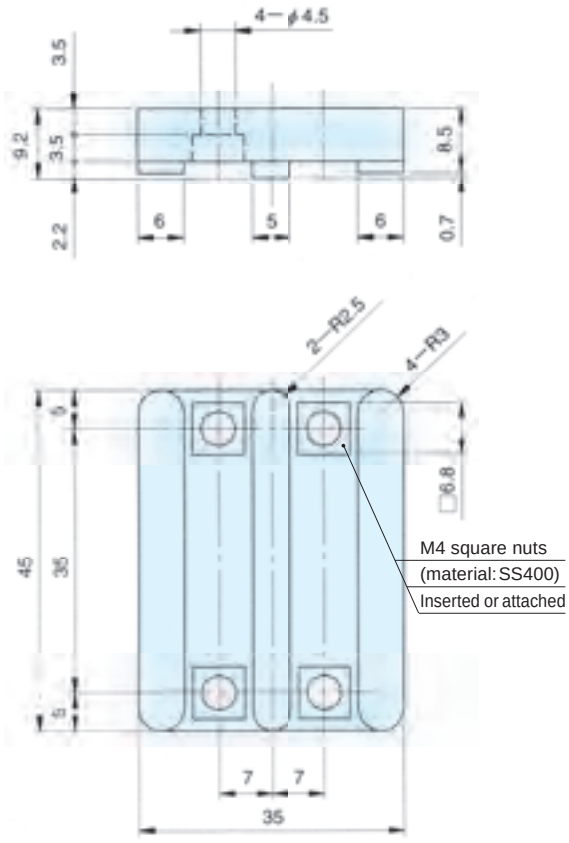


Please inform us if you require any of the SUS fittings/nuts detailed on P-1, P-2, and P-3.
If we do not receive any instructions then the material used will be as shown in the diagram.

Special back/Machining

Dimensions and specification of lining belts

Type	Backside Material	Thickness (mm)	Color	Minimum pulley diameter (mm)	Features
Attaching of coarse top	PVC	Approximately 5.2	Green	60	Suits conveyance due to use of PVC with a high friction coefficient and anti-slip shape.
Synthetic leather coating	Synthetic leather	2	Gray	50	Suits use with easily damaged parts as the surface of the synthetic leather is quite soft.
polyurethane form coating	Polyurethane [Hardness (JIS A) 20,30,40,55 4 types available]	5, 10	Green,White	Hardness / Thickness / diameter: 20 / 5 / 60; 20 / 10 / 120; 30 / 5 / 30; 30 / 10 / 60; 40 / 5 / 35; 40 / 10 / 70; 55 / 5 / 40; 55 / 10 / 80	Features excellent cushioning performance and thus suits protection during tractor transportation and items to be conveyed.

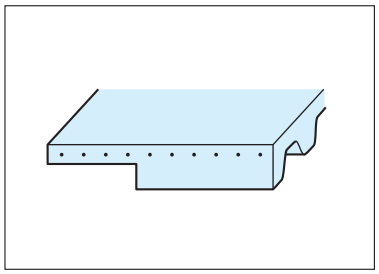
Please consult us regarding other types of coatings (synthetic rubber).

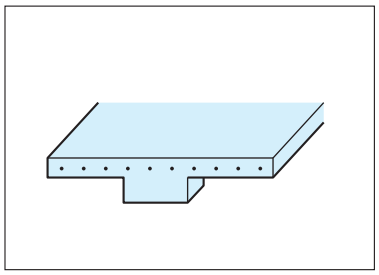
Belt processing (machined and perfoated tooth / rear sides)

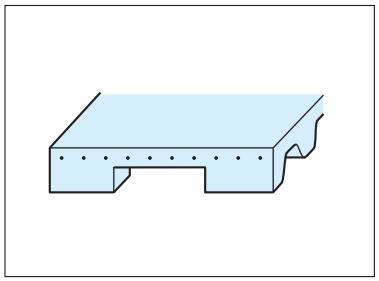
Please consult us regarding the range we can manufacture and specify the processing details.

Example of processing

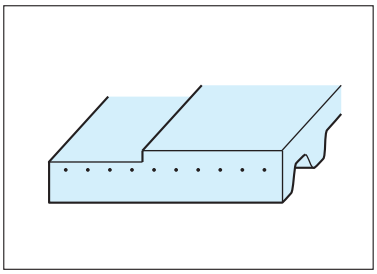
Tooth-side machining

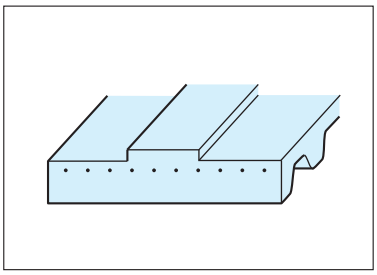


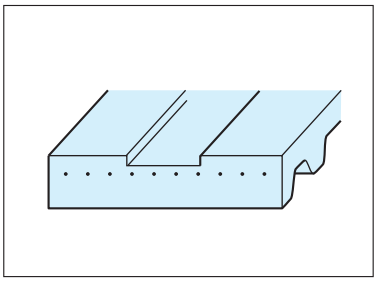




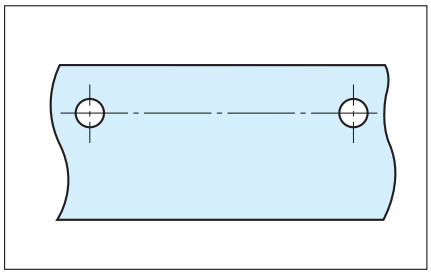
Backside machining

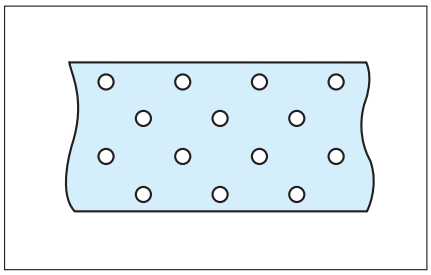






Perforations





Design instructions

Initial tension (mounting tension)

Please decide the initial tension according to the maximum effective tension generated during conveyance.
The initial tension should be distributed across the entire circumference of the belt while stopped or idling.
When belts are being used they have a tense side and a loose side, with the tension gap between both those sides being referred to as the effective tension.
The tension gap can be used to generate torque or conveyance capability via pulleys.
Please ensure to provide the initial tension in thus preventing the belt from being too loose on the loose side when using a teethed belt.
Too much looseness on the loose side is generally caused by the initial tension being too low.

1. Determining the effective tension

Please use the actual load (actual torque and actual power) in determining the effective tension using the following formula.

$$U = \frac{2 \times 10^3 \times Mdj}{dp} \quad \text{or} \quad U = \frac{19.1 \times 10^6 \times Pj}{n \times dp}$$

U : Effective tension (N)
Mdj : Actual torque (Nm)
Pj : Actual power (kW)
dp : Pulley diameter (mm)
n : Pulley rotation (rpm)

2. Reference values for use in the initial tension setting range

The initial tension setting range utilizes reference values only and hence compatibility should be ensured before use.

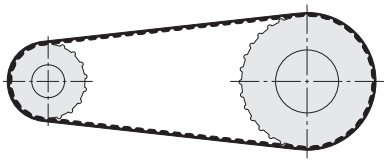
Fv : Initial tension (N)
F : Allowable tension (N)

a. For power transmission

Please set the initial tension (Fv) for power transmission with reference to the following range.

$$0.5U < Fv < 0.5U + 0.2F$$

If 0.5U + 0.2F exceeds 0.5F then the value should be a maximum of [0.5F].

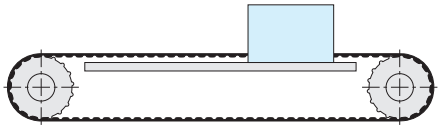


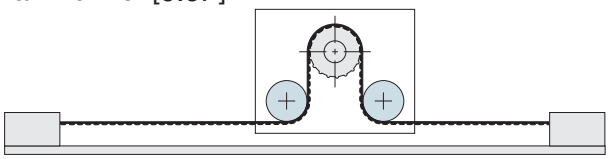
b. For linear drives

Please set the initial tension (Fv) for a linear drive (see page 86) with reference to the following range.

$$U < Fv < U + 0.2F$$

If U + 0.2F exceeds 0.5F then the value should be a maximum of [0.5F].



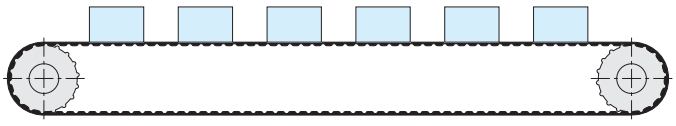


c. For conveyance

Please set the initial tension (Fv) for conveyance with reference to the following range.

$$0.5U < Fv < 0.5U + 0.2F$$

If 0.5U + 0.2F exceeds 0.5F then the value should be a maximum of [0.5F].



3. Verifying the initial tension

The tension can be verified using the following three methods.

a. Verification via the number of belt vibrations

Slapping (tapping) a tense belt results in vibrations.
Please determine the belt tension according to the number of vibrations and the following formula.

$$Fv = 4 \times f^2 \times m \times L^2$$

f : Number of vibrations (Hz)
m : Belt weight per meter (kg/m)
L : Span length (m)

*Reference values for m are described on pages 22 to 53 but actual measurements should be made.

b. Verification via the force of the push and amount of deflection (simplified method)

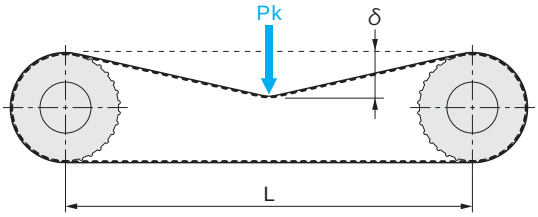
Please determine the force that pushes the belt (or pulls the belt) using the following formula.

$$Pk = Fv / 16$$

Pk : Pushing force (N)
Fv : Desired tension (N)
δ : Amount of deflection (mm)
L : Span length (m)

Please set the amount of deflection to be the following value while the belt is being pushed with the above determined force.

$$\delta = L \times 1000 / 64$$



c. Verification via the elongation of the belt (simplified method)

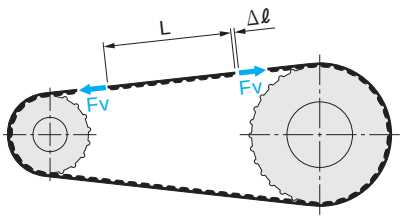
Load on the belt results in elongation (elastic deformation) of it.
The tension can then be easily verified using this characteristic.
The elongation rates to use in ensuring allowable tension F of each individual belt are as shown below.

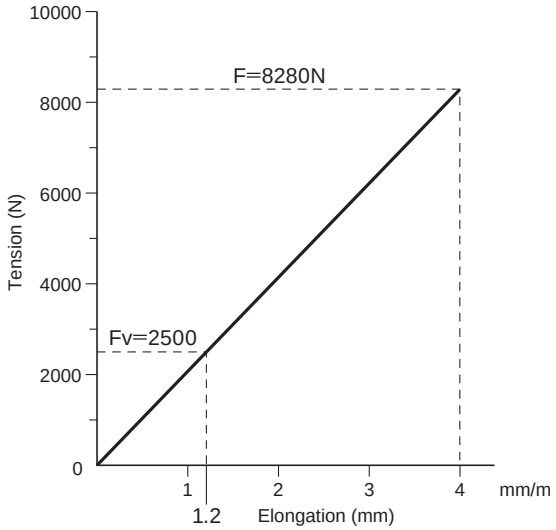
Flex type : approximately 0.4% -> approximately 4mm/m
Linear type : approximately 0.4% -> approximately 4mm/m

[Example of determining elongation rate]

The elongation rate with 2500N and the T20 Flex type can be determined using the following formula.
If the allowable tension is set to be 8280N,

$$\text{Elongation rate}: \Delta\ell = \frac{4\text{mm/m} \times 2500\text{N}}{8280\text{N}} = \text{approximately } 1.2\,\text{mm/m}$$





Design instructions

Instructions when using teethed pulleys

⚠Caution •Please ensure to implement the following when using pulleys that have been additionally processed.
·Removal of all burrs and sharp edges from the processed parts
·The dimensional accuracy verified after processing
·The pulley strength verified after processing

⚠Caution •When mounting a flange on a pulley please confirm that there are no foreign objects on the section that fits between the main body and the flange. Please also ensure to fix the flanges in place using swages in thereby preventing any backlash.

⚠Caution •If screws are used to fix flanges in place the screws may then loosen due to vibration etc. and with some types of usage. Please therefore ensure to conduct periodic inspections and retighten them when necessary.

•The teethed belts can lean to one side while being operated due to any deviation in the tracks of the pulley shafts (pulley alignment), characteristics of the belt, and other factors, and hence please ensure to install any instruments in a way that prevents them from dropping off the flanges or other parts.

•Minimum number of pulleys
Please refer to the following table regarding use of pulleys as the minimum number of them can vary depending on the speed of rotations.

<table>
<tr><th>Speed of rotations (rpm)</th><th>MA3</th><th>MA5</th><th>MA8</th><th>AT5</th><th>AT10</th><th>AT20</th><th>T5
DT5</th><th>T10
DT10</th><th>T20</th><th>MXL</th><th>XL</th><th>L</th><th>H
DH</th><th>XH</th></tr>
<tr><td>Up to 600</td><td rowspan="3">18</td><td rowspan="2">15</td><td>20</td><td rowspan="3">15</td><td rowspan="2">15</td><td>18</td><td rowspan="3">12</td><td rowspan="2">14</td><td>18</td><td rowspan="3">12</td><td rowspan="3">10</td><td>10</td><td rowspan="2">14</td><td>18</td></tr>
<tr><td>Up to 720</td><td>20</td><td>20</td><td>20</td><td rowspan="2">12</td><td>20</td></tr>
<tr><td>Up to 900</td><td>22</td><td>22</td><td>22</td><td>22</td></tr>
<tr><td>Up to 1200</td><td>16</td><td>24</td><td>18</td><td rowspan="2">24</td><td>16</td><td rowspan="2">24</td><td>16</td><td rowspan="2">24</td></tr>
<tr><td>Up to 1800</td><td>20</td><td>20</td><td>26</td><td>16</td><td>20</td><td>14</td><td>18</td><td>14</td><td rowspan="2">12</td><td>14</td><td>18</td></tr>
<tr><td>Up to 3000</td><td>22</td><td>24</td><td>28</td><td>18</td><td>22</td><td>26</td><td>16</td><td>20</td><td>26</td><td>16</td><td>16</td><td>20</td><td>26</td></tr>
</table>

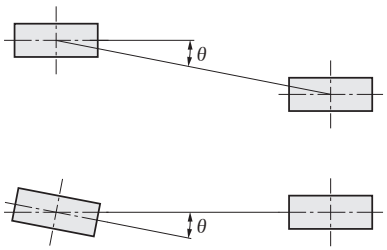
⚠Caution •Please set the appropriate amount of tension for the belt in accordance to page 76.
Inappropriate tension can result in early damage to the belt and shaft.

⚠Caution •All the belts should be replaced at the same time when multiple belts are used.
Failure to observe this could result in early damage.

⚠Caution •Any deviation of the pulley alignment could result in early damage to the belt or it dropping off the flanges.
Please ensure to use the pulleys within the range shown in the table below. (Quoted from JIS K 6373)

Belt width (mm)	Up to 25.4	25.4 to 75	Over 75
tan θ	Up to $\frac{6}{1000}$	Up to $\frac{4.5}{1000}$	Up to $\frac{3}{1000}$

*Merely reference values for use in making adjustments and do not guarantee that belt will not drop off.



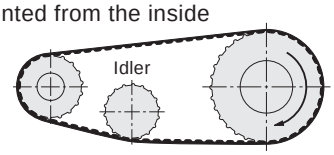
•Idler

•In the case that there is no other choice but to use an idler then please ensure to install it on the loose side.

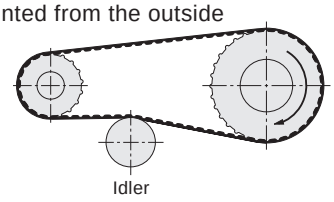
•Please install the idler inside the belt if at all possible.
Ensure at least the minimum number of pulley teeth is met when installing inside.
When installing one outside please use crown-less flat pulleys with a diameter that is at least the equivalent of those shown in the table below.

Belt models	Minimum idler diameter (mm)
MA3	30
MA5, AT5	40
MA8, AT10	80
AT20	180
T5	30
T10	70
T20	180
MXL	15
XL	30
L	50
H	90
XH	180

Mounted from the inside



Mounted from the outside

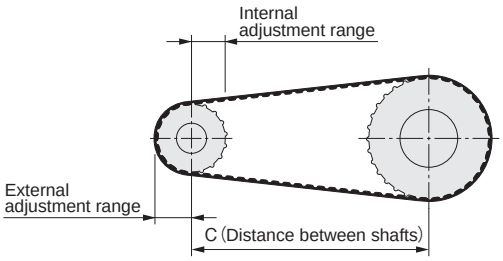


•Minimum adjustment range for the distance between shafts

After taking into consideration the clearance between the mount and pulling shafts please refer to the table below for the minimum adjustable range for the distance between the shafts.

Distance between shafts (mm)	External adjustment range (mm)
Up to 600	5
Over 600 to 1000	10
Over 1000 to 1500	15
Over 1500 to 2000	20
Over 2000 to 2500	25
Over 2500 to 3000	30
Over 3000	Distance between shafts × 0.01

Belt models	Internal adjustment range (mm)
MA3, T5, XL, MXL	5
MA5, AT5, L	10
MA8, AT10, T10, H, T5-V, FAT1	15
AT20, T20, XH, T10-V, AT10-V	40



Please ensure to take into consideration the external diameter of the flange with flanged pulleys and utilize a slightly wider range.

Other instructions

⚠Warning •UH01 (Material symbol: G) includes mold-proof and antimicrobial features; note however, that periodic cleaning is still necessary.
Confirmation tests took place based on ASTMG-21-70. (Please refer to page 84 for more details.)

⚠Caution •Please ensure to select all belts according to their conditions of use and verify their compatibility before using them.

•Please ensure to verify compatibility before use in the case that stringent forward/reverse and acceleration/deceleration conditions are required.

•Profile belts

•Please ensure to verify the required molding width and number of pulley teeth.

•Please ensure to verify compatibility before use in the case that other attachments are mounted on the profile or in any case where the profile will be exposed to vibrations or impact load from intermittent feeds etc.

•Aramid fiber for use with the Linear type and stainless-steel cords for the Flex type are available if the belt will get wet. Please ensure to verify compatibility before use.

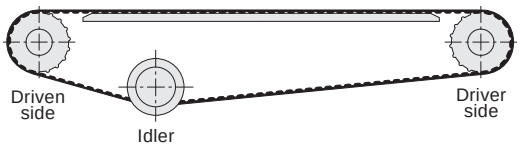
•Please ensure to use non-metal aramid fiber for any food machinery.

•With use of multiple belts

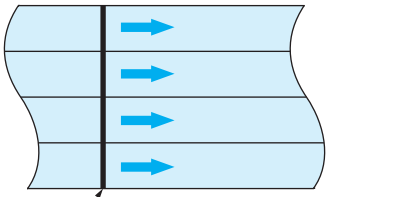
•Please ensure to use matched-set belts.

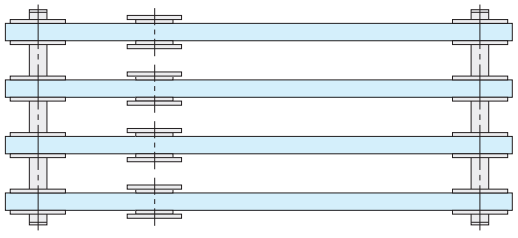
•Please ensure to configure the belt tension and pulley alignment so that they can be adjusted per individual belt.

•Please refer to page 20 for the method used to identify the dimensions of the different models.



Example utilization of matched-set





Damage to belts, causes, and countermeasures

Damage	Causes	Countermeasures
Cuts in the belt	1. Overloading	Change the design (increase the size of the belt).
	2. Overloading due to an accident with a machine	Prevent recurrence of the accident.
	3. Excessive sudden load	Change the design or eliminate any sudden load, and install a torque limiter.
	4. Too small a pulley diameter	Change the design (increase the pulley diameter).
	5. Bending of the belt	Pay more attention to the handling.
	6. Running on the flange	Readjust the alignment and review the flange shape.
	7. Presence of a foreign object	Improve the environment or install a protective cover.
	8. Reduced strength due to corrosion of the tension member (steel cord)	Improve the environment or replace with stainless-steel cord or aramid cord.
Abrasion on the sides of the belt	1. Pulley alignment failure	Readjust the alignment.
	2. Pulley alignment failure due to a lack of stiffness in the shaft and bearings	Change the specifications after taking the shaft load into consideration.
	3. Bending of the pulley flange and a defective shape	Correct any bending of the pulley flange. Replace with a new flange. *1
	4. Rough or scratched surface of the pulley flange	Replace with a more appropriate flange.
	5. High friction coefficient of the pulley flange	Replace with a more appropriate flange.
	6. Interference with the guide rail or other parts	Eliminate any interference with the guiderail or other parts.
Abrasion of the belt teeth (all teeth)	1. Overloading	Change the design (increase the size of the belt).
	2. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	3. Exposure to an abrasive powder and dust filled environment	Improve the environment or install a protective cover.
	4. Excessively loose belt (failed to engage with the pulley)	Set a more appropriate tension.
	5. Friction from the guiderail	Reduce the friction (replace with a belt lined with fabric on the teeth-side etc.) *2
	6. High-temperature environment or too much heat from the pulleys	Decrease the environmental temperature or control the heat generated by the pulleys.
	7. Abnormal external diameter of the pulleys	Replace with a normal pulley.
	8. Defective pulley teeth shape	Replace with a normal pulley.
	9. Scratches on the pulley and corrosion	Replace with a new pulley.
	10. Defective pulley surface roughness	Replace with a normal pulley.
Abrasion on the bottom of the belt teeth	1. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	2. Abnormal external diameter of the pulley	Replace with a normal pulley.
	3. Defective pulley tooth shape	Replace with a normal pulley.
	4. Defective pulley surface roughness	Replace with a normal pulley.
Abrasion on the tips of the belt teeth	1. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	2. Rough or scratched surface of the guide rail, etc. or high friction coefficient	Replace with a more appropriate guide rail, etc.
	3. Interference from the guide rail, etc.	Eliminate any interference from the guide rail or other parts.
	4. Defective pulley surface roughness	Replace with a normal pulley.
Cracking to the belt teeth root rubber	1. Overloading	Change the design (increase the size of the belt).
	2. Excessive sudden load (including accidentally)	Change the design or eliminate any sudden load.
	3. Shortage of number of teeth in mesh	Increase the number of pulley teeth or increase the number of teeth in mesh via use of an idler.
	4. Excessive tension	Set a more appropriate tension.
	5. Small idler on the backside	Change the design (increase the diameter of the backside idler).
Partial cutting of the tension member	1. Presence of foreign objects	Improve the environment or install a protective cover.
	2. Excessive force when installing the belt from a wrench or other tool	Pay more attention to the handling during installation.
	3. Partial bending of the belt	Pay more attention to the handling (avoid any forced bending during handling and storing).
	4. Fatigue from the side due to pulley alignment failure	Readjust the alignment.
	5. Small pulley diameter	Change the design (increase the pulley diameter).
	6. Reduced strength due to corrosion on the tension member	Change the tension member material, improve the environment, and install a protective cover.
Skipping of the belt teeth	1. Overloading (overloading with sudden load)	Change the design (increase the size of the belt).
	2. Overloading due to an accident with a machine	Prevent the recurrence of accidents.
	3. Excessive sudden load	Change the design or eliminate any sudden load.
	4. Shortage of number of teeth in mesh	Increase the number of pulley teeth or increase the number of teeth in mesh via use of an idler.
	5. Lack of tension	Set a more appropriate tension.
	6. Pulley alignment failure due to a lack in stiffness of the shaft and bearings	Change the design after taking the shaft load into consideration.
	7. Small pulley diameter	Change the design (increase the pulley diameter).
	8. Lack of consideration to the inertia force when starting and stopping	Change the design.
	9. Abnormal external pulley diameter	Replace with a normal pulley.
	10. Defective pulley tooth shape	Replace with a normal pulley.
	11. Defective pulley surface roughness	Replace with a normal pulley.

Damage	Causes	Countermeasures
Vertical tearing of the belt	1. Running of the belt outside the pulley	Readjust the alignment.
	2. Running on to the pulley flange	Readjust the alignment and review the flange shape.
	3. Forced insertion of the belt when installing the belt (forcibly running the belt over the flange, etc.)	Pay attention to the handling during installation.
	4. Inappropriate (excessive) flange alignment	Change to a more appropriate flange alignment.
Abrasion of the belt backside rubber	1. Misalignment of the pulley and contacting the backside rubber	Readjust the alignment.
	2. Contact with the machinery frame or other objects	Remove anything it can come in contact with.
Cracking to the belt backside rubber	1. Small pulley diameter	Change the design (increase the pulley diameter).
	2. Too low a temperature environment	Increase the environmental temperature.
	3. Contact with the machinery frame or other objects	Eliminate any objects it can come in contact with.
	4. Degradation of the rubber due to attached objects or the environment	Improve the environment and install a protective cover.
Elongation of the belt	1. Overloading	Change the design (increase the size of the belt).
	2. Excessive sudden load (including accidentally)	Change the design or eliminate any sudden load.
	3. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	4. Running on to the flange	As described in the left *1
	5. Oil etc. contaminating the rubber part of the main body.	Change the oil and change the belt specifications.
Seemingly elongated belt	1. Too short a distance between shafts	Change the shaft distance to a more appropriate value.
	2. Too loose a tension pulley	Ensure a better installation.
	3. Abrasion of the pulley external diameter	Improve the environment and implement countermeasures against any abrasion.
	4. Abrasion of the belt	As described in the left *2
	5. Too loose a shaft	Tighten and strengthen the shaft fixture.
Abrasion of the pulley teeth	1. Overloading	Change the design (increase the size of the belt).
	2. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	3. Inappropriate pulley material (too soft)	Change to use of a harder material and perform surface hardening treatment.
	4. Exposed to abrasive powder and dust	Improve the environment or install a protective cover.
Abnormal noise	1. Overloading	Change the design (increase the size of the belt).
	2. Excessive pulling of the belt (excessive tension)	Set a more appropriate tension.
	3. Pulley alignment failure	Readjust the alignment.
	4. Abnormal pulley external diameter	Replace with a normal pulley.
	5. Defective pulley tooth shape	Replace with a normal pulley.
	6. Belt width wider than the pulley width	Change the design.
	7. Originating from the pulley hitting the belt	Replace with a belt lined with fabric on the teeth-side.
	8. Interference from the pulley flange	As described in the left *1
	9. Presence of foreign objects or dirt	Improve the environment or install a protective cover.
	10.Significant friction between the belt and the pulley	Set a more appropriate tension, replace with a belt lined with fabric on the teeth-side and apply lubricant.
	11.Too high a belt speed	Decrease the belt speed, replace with a belt lined with fabric on the teeth-side and apply lubricant.
	12.Co-vibration	Change the tension and speed.
Detaching of the profile and damage	1. Too thick a profile	Change to a thinner profile or increase the number of pulley teeth.
	2. Repeated load applied to the profile	Change the design and review the structure.
	3. Contact with the machinery frame or external objects (interference)	Remove any contacting objects.
	4. Pulleys exposed to too much vibration	Review the usage conditions and method.
	5. Too low a temperature environment	Increase the environmental temperature.
	6. Excessive load on the insert fitting	Mitigate any excessive stress and review the profile shape.

Belt dimension tolerance

Standard tolerance values for the belt width and thickness are as provided in the table below.

Belt width tolerance

•MA belt, AT belt (including Flex, Joint, and Linear)

(mm)

Standard nominal width (belt width)	MA3 MA5 AT5 MA5-V	MA8 AT10 AT10-V FAT1	AT20
007 010	+0.5 −0.7	—	—
015 020	+0.8 −1.0	+0.8 −1.2	—
025 040 050	±1.0	±1.2	±1.5
075 100	—	±1.5	+1.5 −2.0

•Trapezium teethed belt: belt in meters, belt in inches (including Flex, Joint, and Linear)

(mm)

Standard nominal width (belt width)		T5 MXL XL T5-V DT5	T10 L H T10-V L-V F20-V F12 F20	T20 XH DT10 DH F60
Meter	Inches			
007 010	013 019 025 031 037	+0.7 −0.6	+0.7 −0.6	—
015 020 025 030 040 050	050 075 100 150 200	+0.7 −1.0	+0.7 −1.0	+0.7 −1.2
075	300	—	+1.0 −1.5	+1.0 −1.8
100	400	—	+1.0 −2.0	+1.0 −2.0
150	500 600	—		—

Belt thickness tolerance

•Flex type

(mm)

Model	Thickness tolerance
T5, XL	+0.4 −0.1
MA3, MA5, AT5, DT5 F12, F20	±0.3
MA8, AT10, T10, DT10 L, H, DH, F60	±0.4
AT20, T20, XH	±0.45

•Flex type, Linear type

(mm)

Model	Thickness tolerance
MA3, MA5, AT5, T5 MXL, XL, L, F20	±0.3
MA8, AT10, AT20 T10, T20, H, XH MA5-V, T5-V AT10-V, T10-V F20-V, FAT1	±0.4
150-T10, 400-T10 600-H	±0.5

*Please note that ±0.1 should be added to the above tolerances provided for back-side low-hardness belts, high-friction nylon faced belts, and belts with a bac-kside surface grain.

Rubber Material

Material characteristics

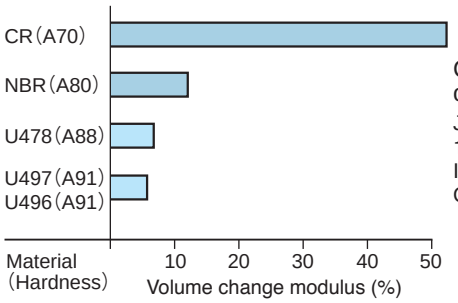
The material complies with the 1959 notification No. 370 of the Ministry of Health, Labor, and Welfare (1986 revised notification No. 85 of the Ministry of Health, Labor, and Welfare) regarding the Food Sanitation Act: Standards for Rubber Equipment (excluding baby bottles etc.) and Containers and Packaging.

Item \ Material name(code)		U496 (A)	U497 (E)	U478 (D)	UH01 (G)	(Reference) Chloroprene rubber
Mechanical properties	Hardness [JIS K 6253]	A91	A91	A87	A92	A80
	Tensile strength (MPa) [JIS K 6251]	45.3	45.3	41.6	40.4	15.7
	100% modulus (MPa) [JIS K 6251]	8.5	8.5	6.1	9.2	8.8
	Elongation at break (%) [JIS K 6251]	530	530	590	510	190
	Tearing strength (N/mm) [JIS K 6252]	110	110	100	110	39
Other properties	Ozone resistance [JIS K 6259] (20% extension, 50pphm 40°C×168hrs)	No cracking	No cracking	No cracking	No cracking	Cracking
	Food Sanitation Act (Japan)	Compliant	Compliant	Compliant	Compliant	Noncompliant
	Color	Translucent natural color	White	Translucent natural color	White	Black

*The values in the table are actual measurements and are not standard values.

Oil resistance

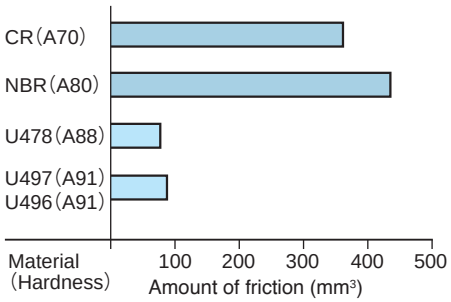
A comparison with conventional synthetic rubber (CR and NBR) is shown in the figure.



Comparison of oil resistance
JIS K 6258
100°C×70hrs
Immersion test
Oil: Lubricant oil No.3

Abrasion resistance

Iron Rubber has better abrasion properties than other types of synthetic rubber. The figure provides a comparison of the abrasion properties with other types of synthetic rubber.



Comparison of abrasion
JIS K 6264
Taber abrasion test
Grinding stone: H-18
Load: 9.8N
Number of tests: 1000 revolutions

Iron Rubber features antistatic specifications.

Belts made from high-polymer materials can generate static electricity from friction during use that can then result in anything from the conveyor being rejected due to dust having attached to it and broken insulation; however, U496, U497, U478 and UH01 feature antistatic specifications.

Surface electricity resistance (sample: test piece)

Material name	Surface electricity resistance(Ω/□)
U496	10^{10}
U497	10^{10}
Common urethane	10^{13}

*This is merely an example of test results and in no way guarantees the performance.

Mildewproof & antimicrobial specifications (UH01)

- This product is used in environments prone to the outbreak of molds, such as food and transportation lines and places high in humidity.

Foodstuff etc. can be directly loaded onto the belt as it complies with the Food Sanitation Act (Japan).

Antimicrobial properties

Viable cell count after cultivation (24 hours at 30°C) through actual contact trial examination

Viable cell count (cells/ml)

Bacterial species	Escherichia coli (E. coli) (1×10^6)	S. aureus (3.6×10^5)
U497	9.2×10^6	5.5×10^6
UH01	Less than 10^2	Less than 10^2

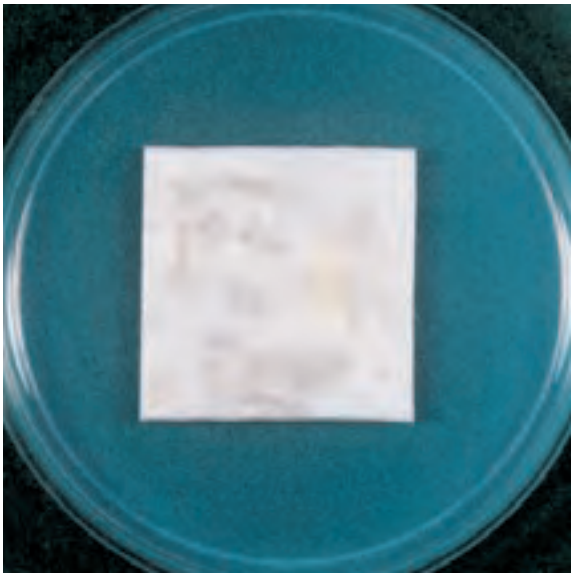
*This is an example of a test result and is not a guarantee of performance.

Mildewproof properties

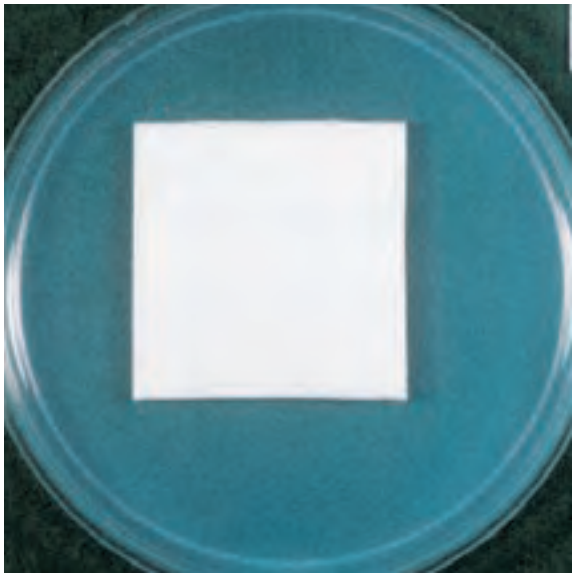
Condition after a 28-day ASTM method test (test conforming to ASTMG-21-70)

[Test results]

U497 Mold outbreak in 60% or more of the sample area



UH01 No mold outbreak



Molds prevented

Fusarium graminearum
Neurospora crassa
Phoma
Aspergillus niger
Penicillium citrinum (penicillium)
Cladosporium cladosporioides
Aureobasidium pullulans
Chaetomium globosum

Please consult with us in advance if you have plans to use the devices with the mildewproof/antimicrobial belt outside of Japan.

Chemical resistance

•The levels of influence on Iron Rubber of chemicals and oil are shown below.
The levels of influence are merely reference values and hence more testing is necessary for actual use.
•Please confirm compatibility before using it in a belt.

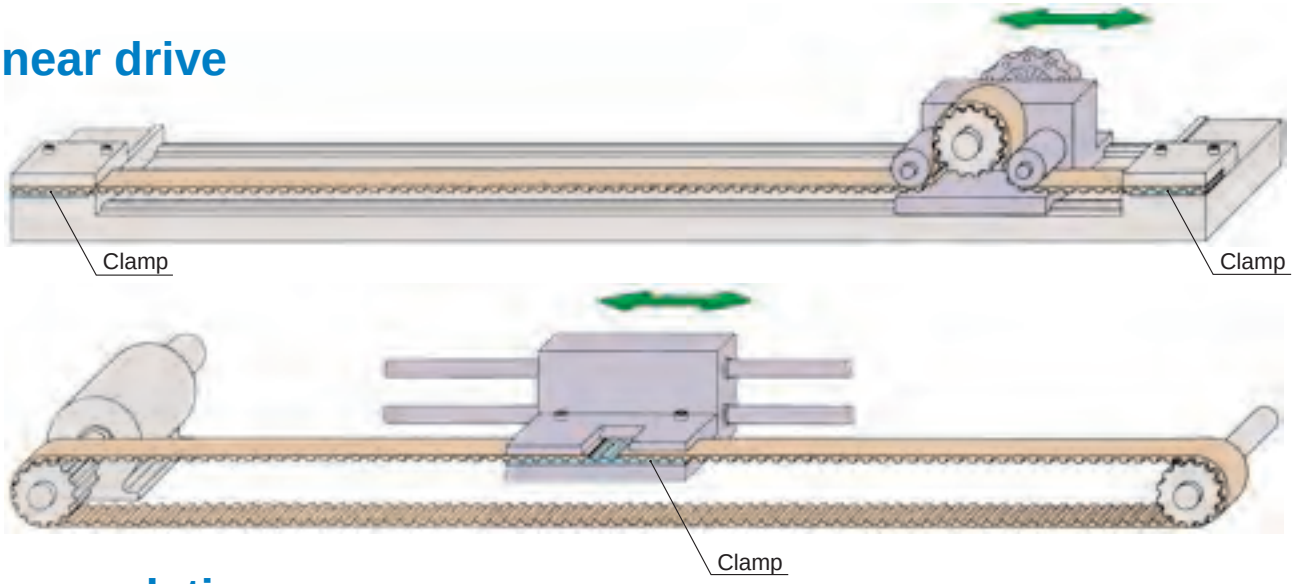
Evaluation symbol	Evaluation level
◎	No influence
○	A slight amount of influence but no usage limitations
△	Usage limitations
×	Serious influence

Chemicals	Evaluation	Chemicals	Evaluation	Chemicals	Evaluation
Acetic acid 5%	×	Aqueous sodium hydroxide 5%	×	n-hexane	○
Glacial acetic acid (38 °C)	×	Aqueous sodium hydroxide 10%	×	Hydrazine	△
Acetic acid anhydride	△	Potassium hydroxide solution 5%	×	N-methylpyrrolidone	×
Hydrochloric acid 5%	×	Sodium bichromate 20%	○	Isooctane	○
Nitric acid 10%	△	Sea water	○	Isopropyl alcohol	○
Sulfuric acid 20%	×	Acetone	×	Kerosene	○
Fuming sulfuric acid 20%	×	Methyl ethyl ketone	×	Gasoline	○
Sulfurous acid	△	Ethyl alcohol	△	Jet fuel	○
Formic acid	×	Methyl alcohol	△	Linseed oil	◎
Hydro cyanic acid	△	Acetic ether	×	Ricinus	◎
Hydrofluoric acid 10%	×	Carbon tetrachloride	×	Naphthalene	○
Hydrogen sulfide	△	Benzene	×	Soy bean oil	◎
Chlorine gas	×	Carbon disulfide	△	Beer	◎
Aqueous solution of trisodium phosphate	◎	Dioctyl phthalate	◎	Phenol	△
Aqueous solution of citric acid	◎	Ethyl chloride	△	Ethylene tetrachloride	×
Anhydrous bromine (solution)	×	Ethylene glycol	○	Xylene	×
Aqueous solution of acidum boricum	◎	Ethylene oxide	○	Fuel oil A	○
Aqueous solution of ammonium chloride	○	Fluosilicate	○	Fuel oil B	△
Aqueous solution of calcium chloride	◎	Formaldehyde 40%	△	Fuel oil C	△
Aqueous solution of calcium hypochlorite	◎	Chlorobenzene	×	Dimethylformamide	×
Aqueous solution of sodium chloride	◎	Cyclohexane	○	Tetrahydrofuran	×
Aqueous solution of ammonium nitrate	○	Dibutyl phthalate	◎	Toluene	×
Aqueous solution of ammonium hydroxide	△	Glycerin	◎	Hydrogen peroxide water	△

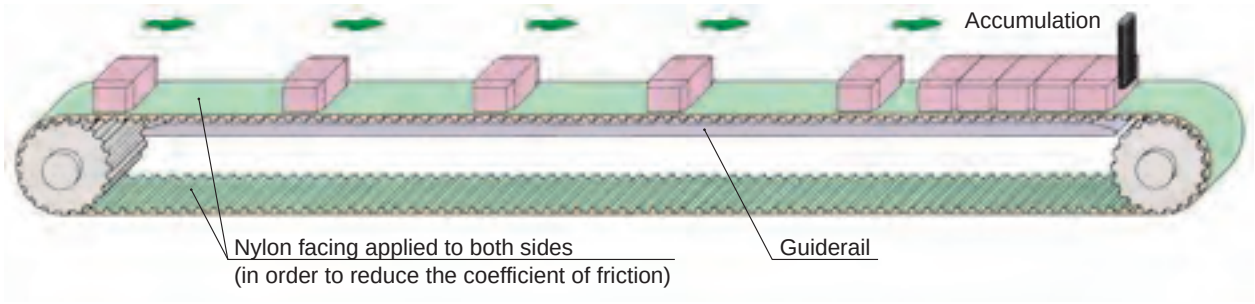
Applications

We construct (manufacture/custom-fabricate) optimized belt lines to match the requisite parameters & dimensions of any task.
• Iron Rubber belts further expand the scope of your system design.

Linear drive

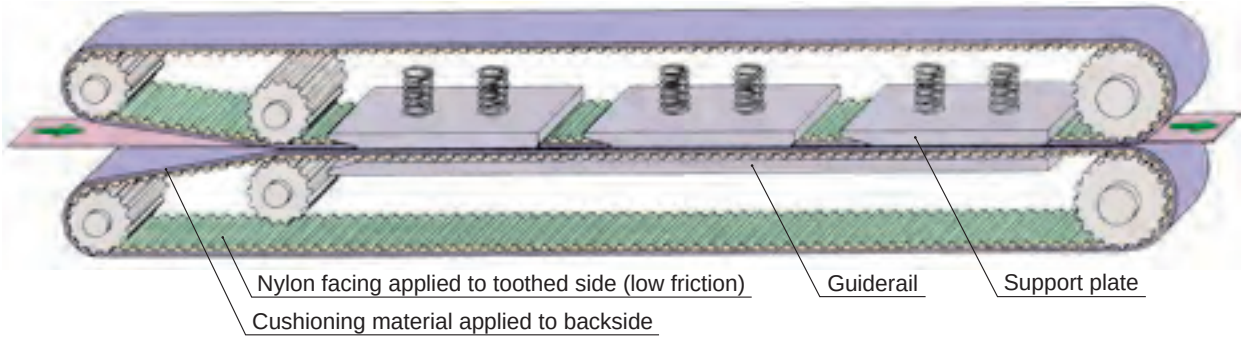


Accumulation conveyor



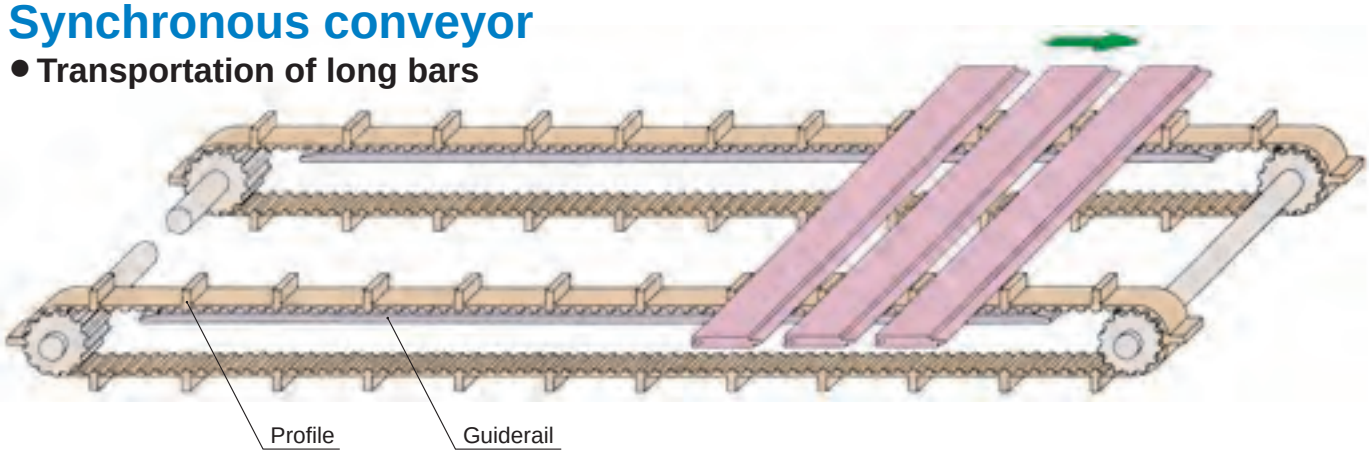
Sandwich conveyor

● **Transportation of thin sheet material**

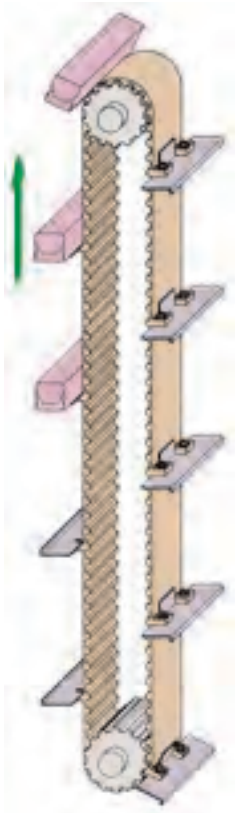


Synchronous conveyor

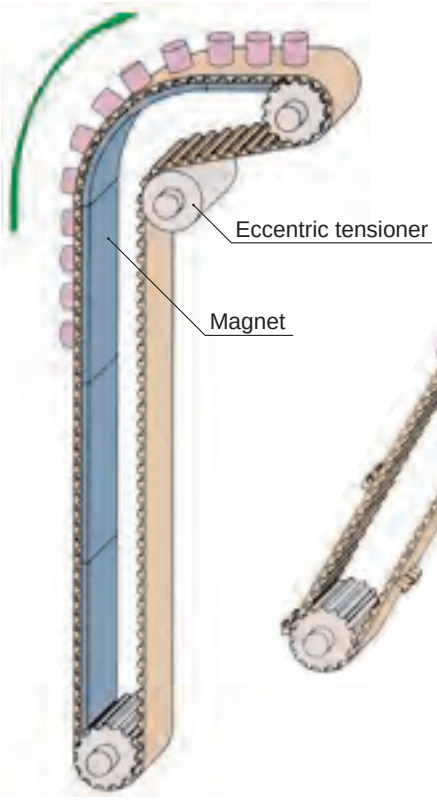
● **Transportation of long bars**



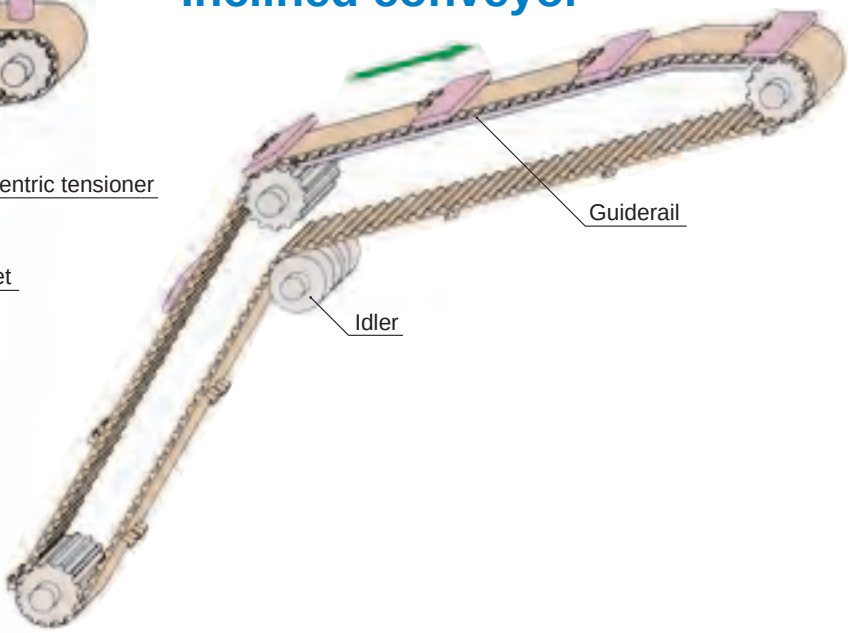
Vertical conveyor



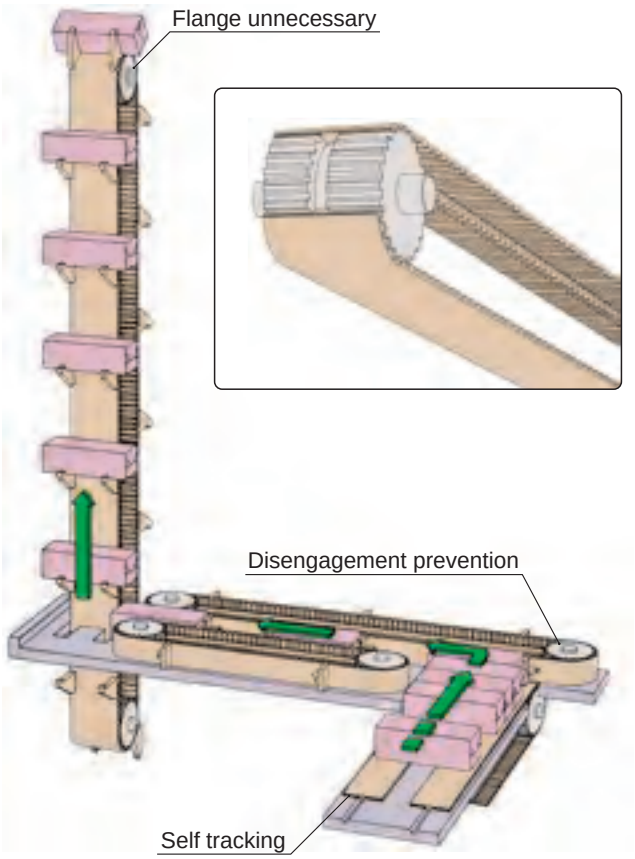
Magnetic conveyor



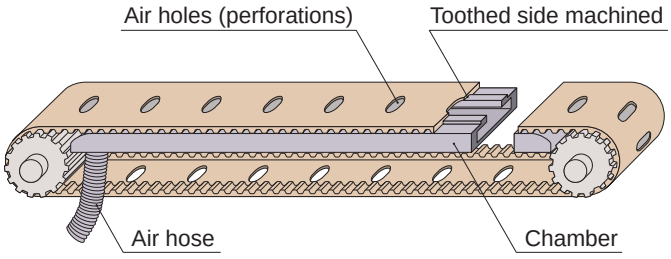
Inclined conveyor



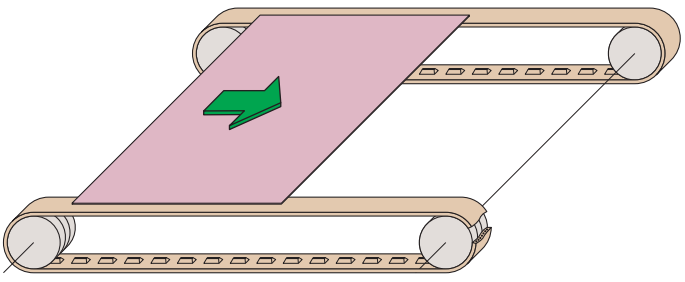
Example of combination at self-tracking belt



Vacuum conveyor



Conveyance of circuit boards



 Printed in Japan

Overseas Sales & Marketing Department Sales & Marketing Division
1-12-15 Shiba Daimon Minato-ku, Tokyo, Japan. Zipcord 105-8585.

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