Pulley pitch range

Pulley pitch range - Overview

ATN-Series

- ATN 10
- ATN 12.7
- ATN 20

AT-Series

- AT 3
- AT 5
- AT 10
- AT(S) 15
- AT 20

ATP-Series

- ATP 10
- ATP 15

Standard Pulley ATL-Series

- ATL 5
- ATL 10
- ATL 20

T-Series

- T 2
- T 2.5
- T 5
- T 10
- T 20

Selftracking - Series

- TK5 K6
- TK10 K6
- TK10 K13
- TK20 K13
- ATK5 K6
- ATK10 K6
- ATK10 K13
- ATK20 K13
- ATN10 K6
- ATN12.7 K6
- L K13
- H K13

Selftracking SFAT-Series

- SFAT 10
- SFAT 15
- SFAT 20

HTD/STD-Series

- HTD 3M*)
- HTD 5M*)
- HTD 8M*)
- HTD 14M*)
- STD S3M*)
- STD S5M*)
- STD S8M*)

*) Conti C-toothform. Further profiles and types on request.

CTD-Series

- CTD - C8M
- CTD - C14M

Imperial-Series

- M / MXL / Mini-Pitch
- XL
- L
- H
- XH
- XXH

K-Series

- K 1
- K 1.5

High power profiles with curved-teeth - self-tracking

- BAT 10
- BATK 10
- BAT 15
- BATK 15

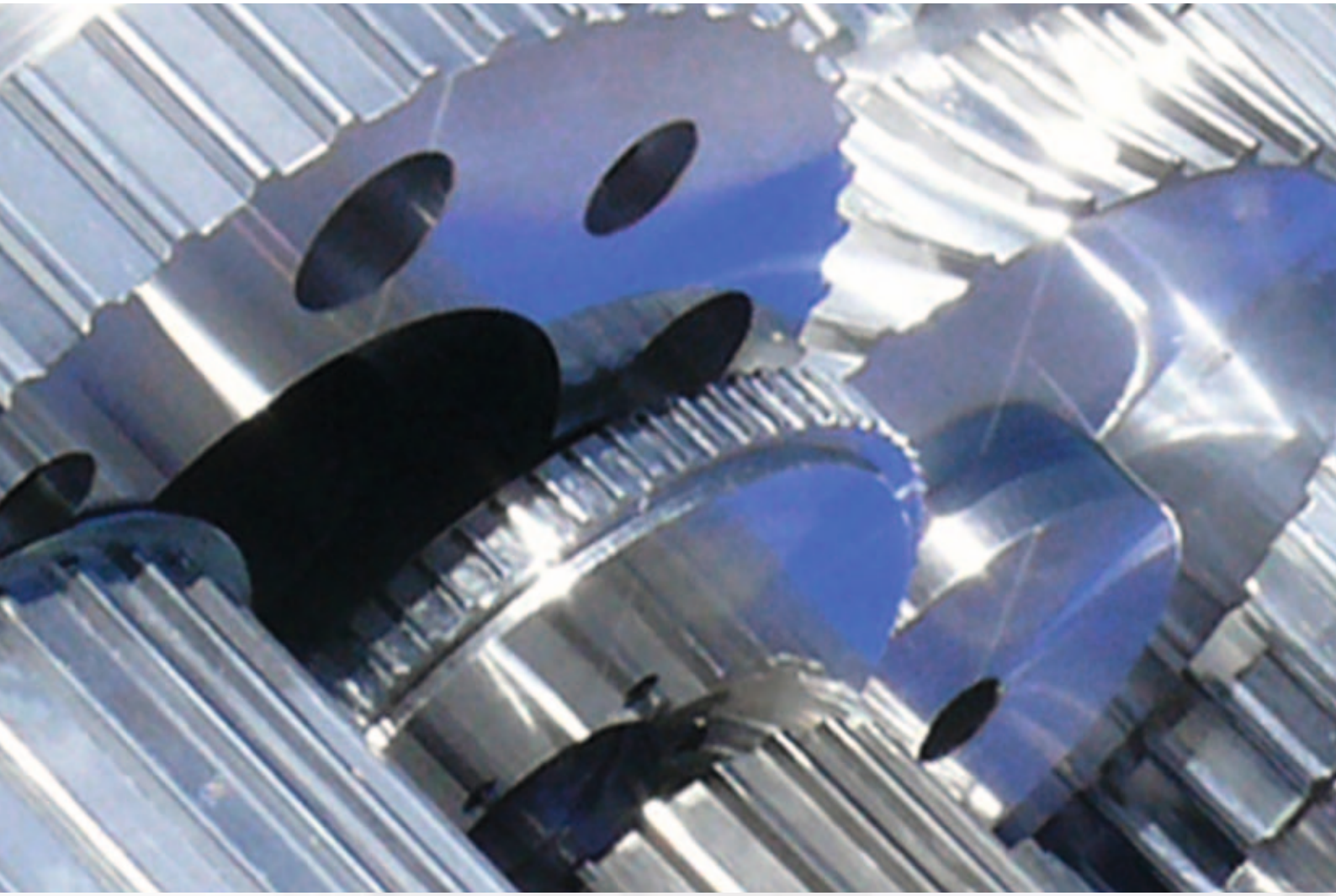
Special requirements upon request.

Pulleys ... Made-To-Order

- **Modern CNC-Technology**
- **Pulleys Made To Specification**

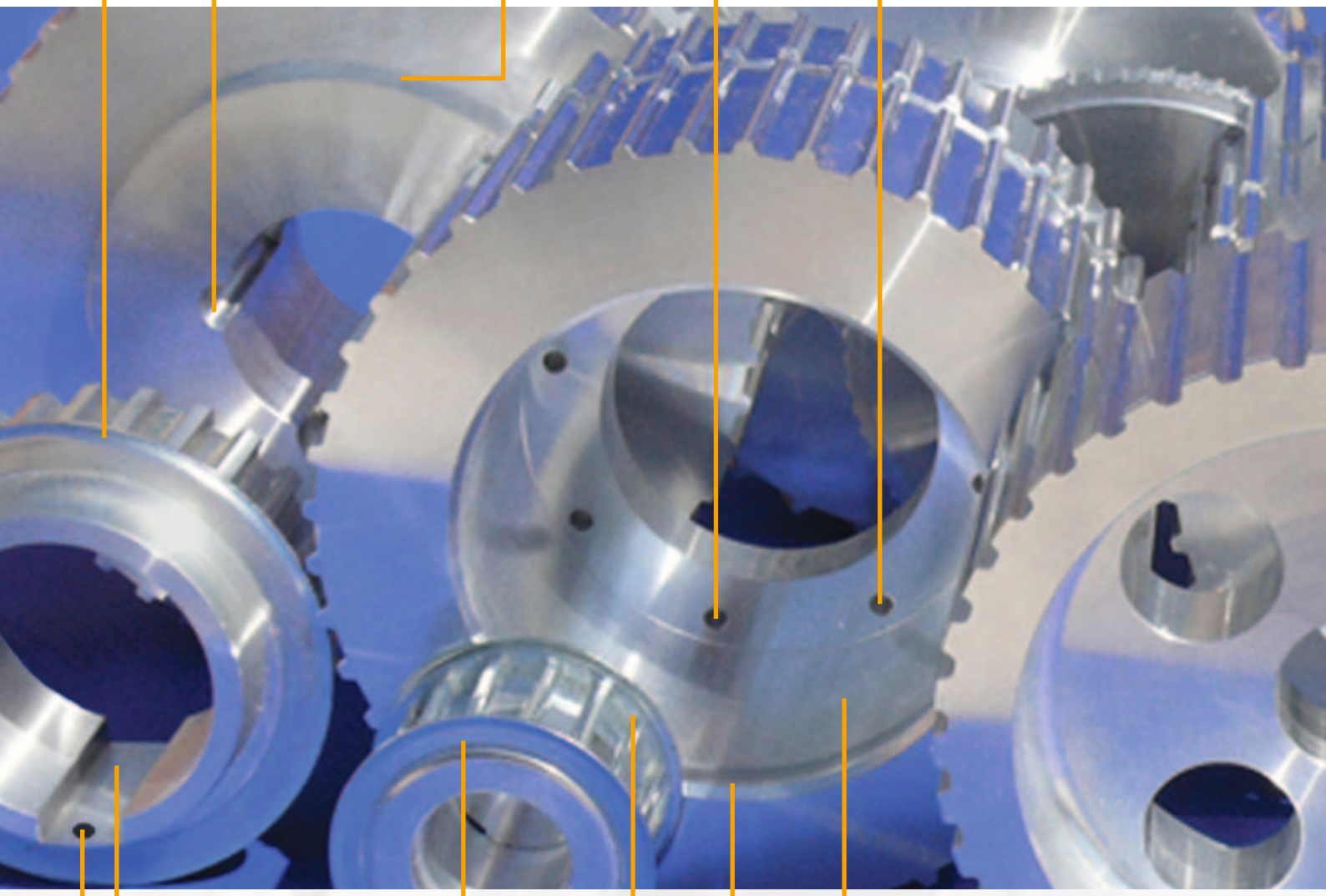
- **Superior Quality Manufacturing**
- **Outstanding Product Performance**

- **DIN EN ISO 9001 ff Certified**
- **Prototyping – Short Runs - Production**



- **Perfect Meshing of Pulley and Timing Belt**

Pulleys ... Made-To-Order



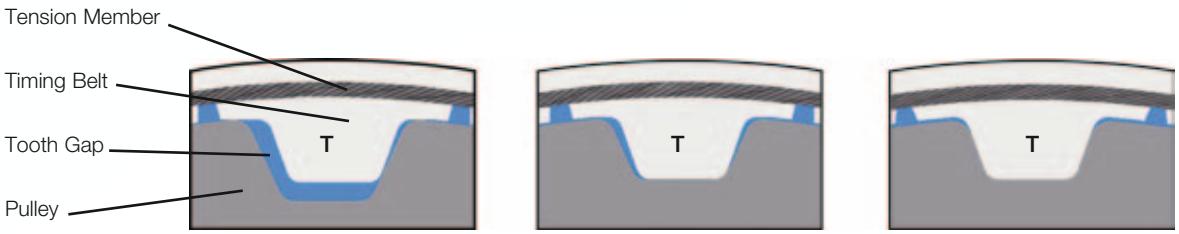
Set Screw Pulley Face
Mounting Holes
Screwed-on Flanges
Threaded and Through Holes for QD Bushing
Lightening Holes
Un-Flanged Pulley
Bolt Hole Circle
Self-Tracking Groove
Pilot Bore

Pulley Tooth Design – Overview

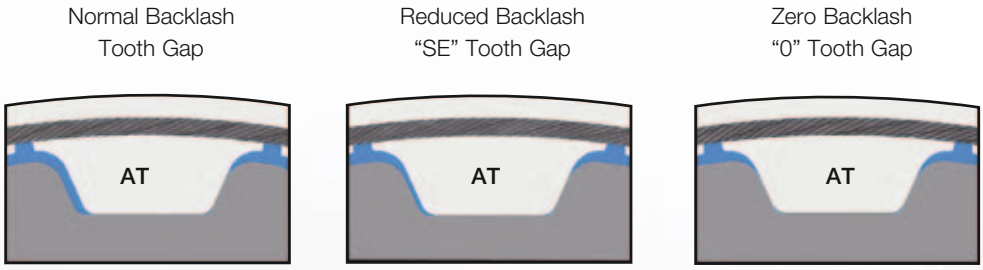
Pulley tooth design versions available

Selecting a special pulley tooth gap can increase the accuracy of the timing belt system by decreasing or eliminating "play" between the timing belt and the pulley. Linear drives and systems requiring precise positioning and high repeatability or fast settling times can benefit from reduced "play". The illustrations below show the meshing of the timing belt with the tooth gap designs available for metric pitches. For drive designs using "SE" or "0" – tooth gap pulleys, please consult your Mulco-Partner.

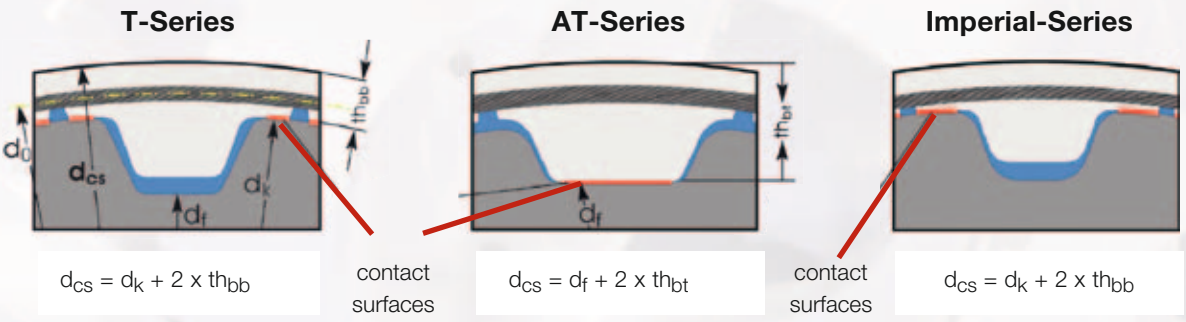
T-Profile



AT-Series



BELT ELEVATION AND CONTACT SURFACE COMPARISON



d_{cs} = belt diameter at carrying side
d_f = pulley root diameter
d_k = pulley outside diameter
th_{bb} = belt thickness without tooth
th_{bt} = belt thickness including tooth
d_0 = pitch diameter

Standard and optional Pulley Tooth Designs

We offer three pulley tooth designs for metric pitches as follows:

- Normal Backlash
- Reduced Backlash "SE"
- Zero Backlash "0"

Standard – Standard tooth design will be supplied if no options are specified when ordering.

Optional – Optional tooth design must be specified at the time of ordering, otherwise the standard tooth gap design will be provided.

The charts below show the standard and optional tooth designs based on the Number of Pulley Teeth.

Metric T-Series

Tooth Gap Designs	Pulley < 20 teeth	Pulley > 20 teeth
Normal Backlash	Optional	Standard
Reduced Backlash "SE"	Standard	Optional
Zero Backlash "0"	Optional	

AT-Series excluding AT20

Tooth Gap Designs	# of Pulley Teeth "All"
Normal Backlash	Standard
Reduced Backlash "SE"	Optional
Zero Backlash "0"	Optional

T-Series
Tooth Gap ordering examples

Normal Backlash
# of teeth < 20: AL 40 T10 – SE / 18 – 2
# of teeth > 20: AL 40 T10 / 24 – 2
For pulleys with < = 20 teeth Reduced Backlash "SE" is standard. Normal Backlash is only available for pulleys with > 20 teeth.

Reduced Backlash "SE"
# of teeth < 20: AL 40 T10 – SE / 18 – 2
# of teeth > 20: AL 40 T10 – SE / 24 – 2
Reduced Backlash "SE" is standard for pulleys < 20 teeth. For pulleys > 20 teeth Reduced Backlash "SE" must be specified.

Zero Backlash "0"
# of teeth < 20: AL 40 T10 – 0 / 18 – 2
# of teeth > 20: AL 40 T10 – 0 / 24 – 2
Zero Backlash "0" must be specified for all pulleys.

AT-Series
Tooth Gap ordering examples

Normal Backlash
# of teeth – All: AL 42 AT10 / 24 – 2
Normal Backlash is standard for all pulleys.

Reduced Backlash "SE"
# of teeth – All: AL 42 AT10 – SE / 24 -2
Reduced Backlash "SE" must be specified for all pulleys.

Zero Backlash "0"
# of teeth – All: AL 42 AT10 – 0 / 24 -2
Zero Backlash "0" must be specified for all pulleys.

Materials, Overview

Materials

Aluminum (AL)
- Suitable for moderate power transmission
- Low weight / reduced rotational inertia
- Average chemical and corrosion resistance
- RoHS-compliant standard material (for stock pulleys) AlCu4MgSi (A), EN AW-2017A and AlZn5Mg3Cu, EN AW-7022 (for ATP10, ATP15)

Further materials upon request.

Stainless steel (VA)
- Suitable for high power
- Durable / abrasion resistant
- Meets FDA regulations
- Excellent chemical and corrosion resistance

Steel (ST)
- Suitable for high power
- Durable / abrasion resistant
- Limited chemical and corrosion resistance
- Standard SMn30 material 11, material no. 1.0715 EN 10 277; ck45/c45e, material no. 1.1191 EN 10083

Delrin (POM)
- Limited power transmission
- Excellent chemical and corrosion resistance
- Non-Metallic
- Stainless steel flanges recommended

Surface treatments

Aluminum

Anodized
- Increased chemical and corrosion resistance
- Available in clear, black or colored
- Limited increase in surface hardness

Hard anodized
- Excellent chemical and corrosion resistance
- Increased surface hardness
- Resistant to abrasion

Other surface finishes upon request.

Steel

Black Oxide
- Increased chemical and corrosion resistance

Galvanized
- Enhanced corrosion resistance

Chrome-plated
- Increased chemical and corrosion resistance

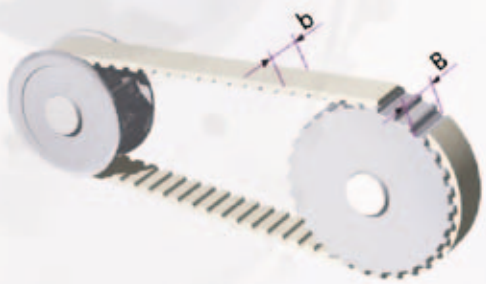
Nickel-plated
- Increased chemical and corrosion resistance
- Balancing according to DIN ISO 1940

Flanges

Zinc plated steel is used as the standard material. Special versions to user requirements.

Mounting is achieved by rolling, crimping or screwing depending on the tooth profile and number of teeth.

The belt width b is dependent on the pulley width B to guarantee sufficient width clearance. This clearance is not dimensioned separately.



Tolerances

The central pulley bore is produced to H7 tolerance unless otherwise requested. All untoleranced dimensions are manufactured to the tolerance class “medium” according to DIN 7168.

Minimum number of pulley teeth and tension roller diameters

Information on minimum number of teeth and minimum diameters are listed in the catalogues for BRECO®, BRECOFLEX®, CONTI SYNCHROFLEX® and CONTI SYNCHROCHAIN® polyurethane timing belts.

Belt widths relative to pulley tooth widths

Metric tooth profiles

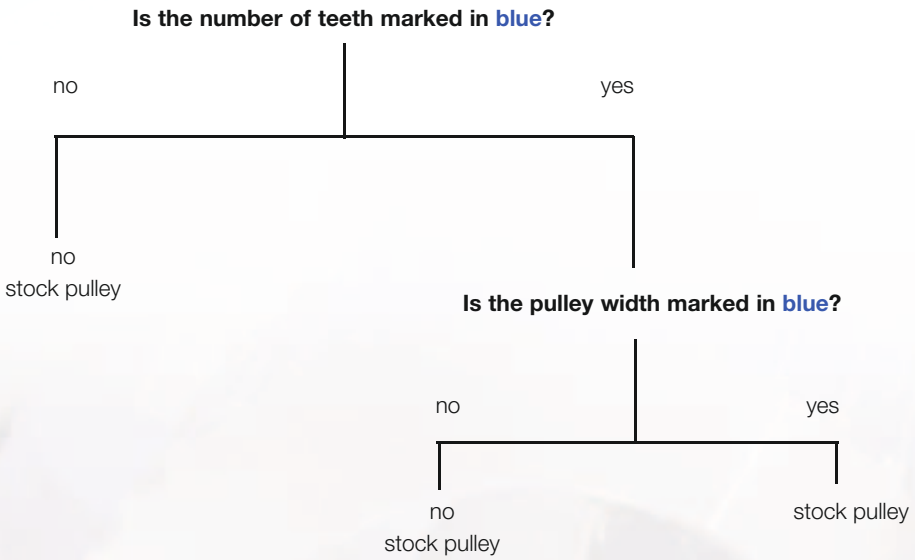
Belt width (mm)	**4**	**6**	**8**	**10**	**16**	**20**	**25**	**32**	**50**	**75**	**100**	**150**
Flanged/unflanged timing pulleys												
Pulley tooth width (mm)	**8**	**12**	**14**	**16**	**22**	**26**	**32**	**40**	**60**	**85**	**110**	**160**
Self-tracking timing pulleys												
Pulley tooth width (mm)	-	-	-	-	21	25	30	37	55	80	105	155

Ordering information

The production of timing pulleys is subject to a continuous quality control. Timing pulleys are generally hobbed. Optimum function is reached by precisely generating toothforms and achieving pitch uniformity.

The material and dimensions of the timing pulley such as number of teeth, pulley width, bore and flange arrangement are defined by the customer. Below, recommendations for the designer can be found.

How to find a stock pulley



Order example:

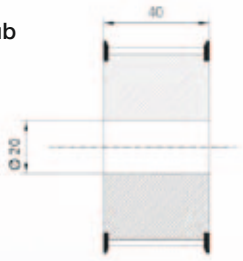
Pulley Al 70 AT10 / 25 - 2 hub Ø 60x10 d = 30 H7 with keyway

- Material
- Width B_N
- Type / Pitch
- Number of teeth
- Number of flanges
- Hub dimensions
- Bore
- Keyway according to DIN 6885

Even without supplying a drawing you are able to get a functional and quality product relating to our timing belt program by using our standard order text.

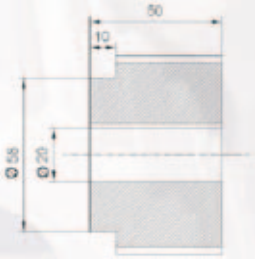
You will find sample order texts for various pulley versions linked to the following drawings.

without hub



Order text: Timing pulley
Al 40 AT 10/24-2
d = 20 H7

with hub

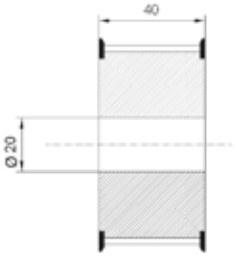


Order text: Timing pulley
Al 50 AT 10/24-0
Hub Ø 58 x 10
d = 20 H7 with keyway

Ordering information

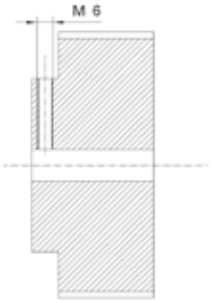
Position and number of flanges

Number of flanges: 2



Order text: Timing pulley
Al 40 AT 10/24-2
d = 20 H7

Bore fastening

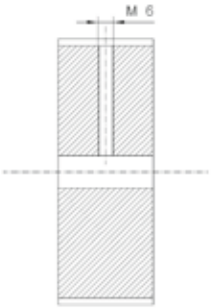


Order text for bore fastener:
Tapped hole M6, centre of hub

Number of flanges: 1

Order text for a flange
opposite the hub side: _____-1g

Bore fastening



Order text for bore fastener:
Tapped hole M6, centre of tooth gap

Number of flanges: 1

Order text for a flange
on the hub side: _____-1a

Further order codes:

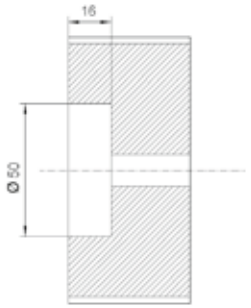
Tapped hole M4, centre through keyway
(or opposite keyway)

Tapped hole M4, centre through tooth gap
(or through tooth)

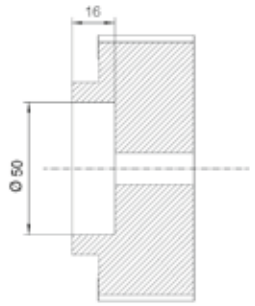
Tapped hole M4, centre of hub
90° offset to keyway

2 tapped holes M4, centre of hub
90° and 180° offset to keyway

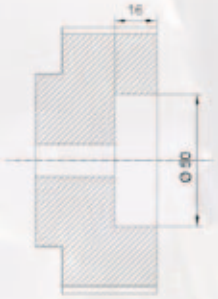
Position and dimensions of turned recesses



Order text for turned recess:
Turned recess 50 x 16 deep



Order text for turned recess:
Turned recess 50 x 16 deep hub side



Order text for turned recess:
Turned recess 50 x 16 deep opposite hub