BELTINGTOOLS
CONVEYOR TECHNIQUE
SPECIALMACHINES
COMPONENTS

engineering
fabrication
servicing

by

MÜSSEL
Maschinenbau GmbH

Smooth delivery of material to be conveyed by using

ROLLING KNIFE EDGE

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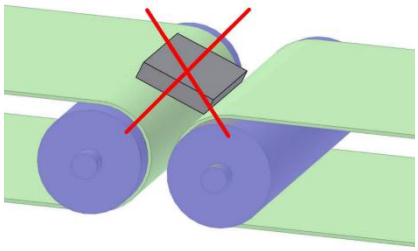
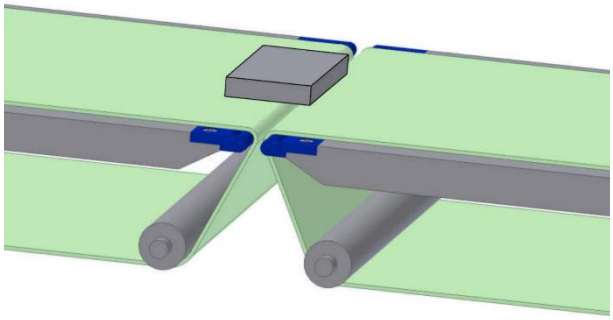
In many cases the conveyed material, such as small parts, chocolate candies, wood fiberboard, plastic parts etc. have to be safely delivered on to the subsequent belt. Rollers of usual diameter (e. g. ø 70 mm) would damage the transported material and cause trouble to the conveyor unit in contrast by using stationary knife edges the conveyor belt and the transfer are strongly strained.



We recommend to use our

„Rolling Knife Edge"



Your advantages:

- **Reduction** of **driving power.**
- **Less warming** of belt material.
- **Prolongation** of **service intervals.**
- **Increase** of **life time.**

Nomenclature

e. g.

RMK	12	M	100	ST	N
Type	Roll ø	Module	Element width	Material	Execution

Explanation:

Type	RMK	Rolling knife edge
Roll ø	08, 12, 16, 20 and (25)	mm
Module	M	Center element
Element width	50, 60, (75) and 100	mm
Material	ST	Steel
Material	VA	Stainless steel
Execution	N	Standard
Execution	Q	Transverse force execution

Technical data

Belt width
Belts of any width can be pieced together with the elements.

Belt speed
max. 1500 mm/s

Belt running direction
Any direction, reversing direction is admissible

Sealed bearings
In series of executions ø 12, 16, 20 and 25.
NOT deliverable for execution ø 8.

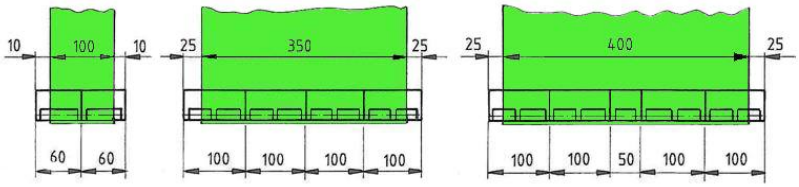
Executions
Bearings with washer disks (N), in special executions for taking up the transverse force (Q)

Temperature range
from -40°C up to +100°C

Lubrication
Lifetime lubricated

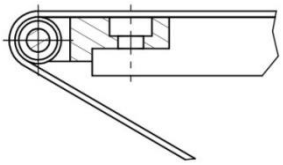
Examples of mounting

The belt edge should run on a roll.

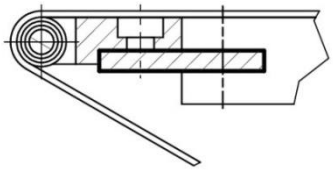


Methods of fixation

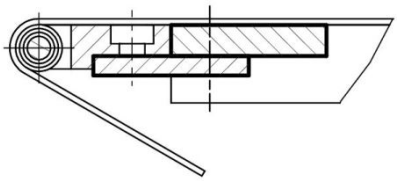
Direct mounting



… on fixing rail

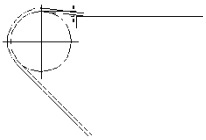


… on fixing rail and additional rail

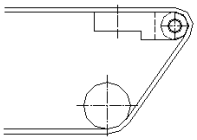


General information

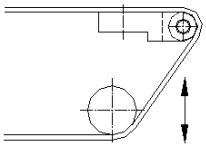
The deviating roll or drive roll must be over the table with sliding surface.

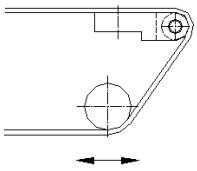


The control roll should be convex conical-cylindrical-conical.



The control roll can be alternatively, vertically or horizontally adjusted.





Avoid bending:

- Downward due to the own weight of the elements and of a fixing rail.
- Backward due to the belt tension force.

Caution:
Unilateral strain or overstraining can cause noise emission and grease discharge!
Special strain can be produced by the positioning (e.g. belt speed, belt tension, belt transverse forces…) and by environmental conditions (such as temperature, pollution…).
The rolling knife edges are only suitable for the application of flat band material and belts!

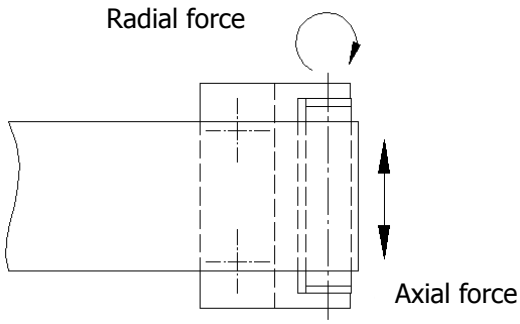
Indication of mounting

for standard elements type RMK... ... N

- Do not transmit belt transverse force (axial).
- Vertical mounting to the belt running direction.
- Do not use it as control roll.

Caution:

- Provide a non-adjustable fixation.
- Do not laterally displace the goods to be conveyed.
- Tangential deviation is not admissible!



for transverse force elements type RMK ... - ... Q

- Belt transverse force (axial) can be transmitted.
- Tangential deviation is permitted!
- Vertical placing to the belt running direction.

Caution:

- Provide a non-adjustable fixation.
- The goods to be conveyed can be laterally displaced.

Cleaning and maintenance work

Maintenance:

We recommend you to check the rolling knife edges after 600 hours of operation. This means a period of four weeks with three shift operation.

Higher pollution, higher temperature, higher air humidity, further inexact belt runs, high belt speed, influence of solvents, treatments with acids and caustic sodas require the correspondent reduced maintenance intervals.

Please check at regular intervals the smooth running of the rolls.
Please remove immediately the deposits and the dirt.
Rough-running elements are exchangeable and can be sent to us for overhauling!

Cleaning:

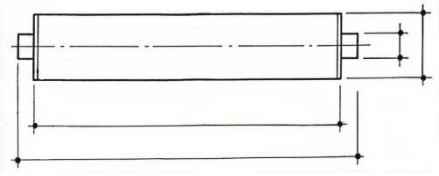
Do not clean the knife edge elements with a high pressure cleaner or a steam cleaner.

There is a risk of washing out the lubricant.

Spare parts

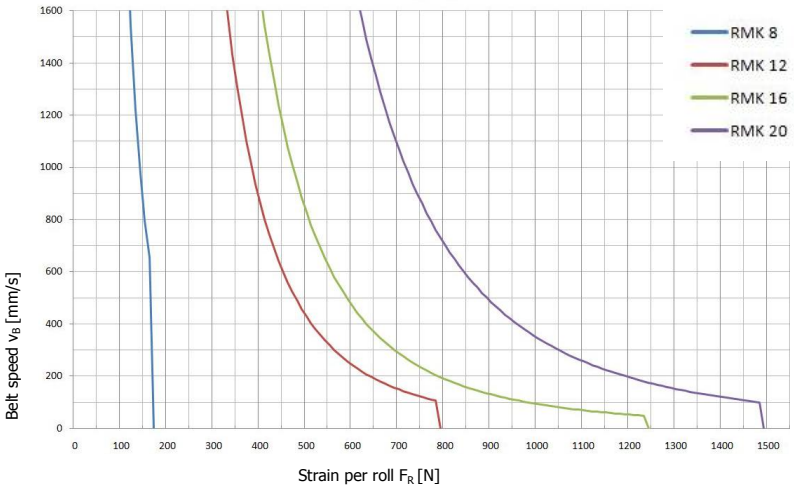
Set of rollers:
It consists of a roll with stop disk, bearing and shaft.
Material: Steel (ST) or stainless steel (VA).
For widths of: 50, 60, 75 and 100 mm.
One roll on one shaft.

RMK8 and RMK12 of 100 mm width are equipped with two rolls on one shaft.



Charge diagram

- The admissible strain is varying per roll and according to the belt speed
- The strain per roll and the belt speed do essentially influence the life time of the RMK
- The required roll diameter can be selected in referring to the adjoining diagram



Instruction:

The reading of the maximum belt speed:

→ Calculate the strain per roll

→ Inscribe it in the X-axis

→ The vertical intersection point with curve for roll diameter indicates the maximum belt speed.

The reading of the maximum strain per roll:

→ Calculate the belt speed

→ Inscribe it in the Y-axis

→ The horizontal intersection point with curve for the roll diameter indicates the maximum strain per roll.

Model calculation:

- Fixing the maximum belt speed for RMK ø 12 mm
- Present belt tension force F_B

  $F_B = SD_B \cdot b_B$
- SD-value
  This is the expansion behavior (for an expansion rate of 1%) during the continuous operation indicated by the belt manufacturer (in this case we took 3).
- Belt width b_B
  In this case 300 mm were taken
- The result is:

  $F_B = 3\ {}^{N}/_{mm} \cdot 300\ mm = 900\ N$
- Determinate the number of rolls n_R from geometry
- For belt width b_B
  (refer to examples of mounting)

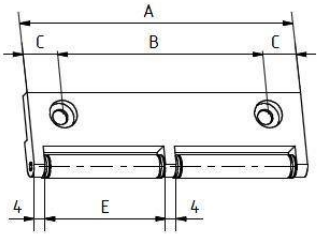
  $b_B = 300\ mm \triangleq n_R = 7$
- Load per roll F_R

  $F_R = \frac{F_B}{n_R} = 128\ N$

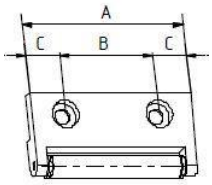
→ In this case the max. belt speed is higher than the max. admissible limit of 1500 mm/s.

Standard elements RMK8, RMK12, RMK16 and RMK20

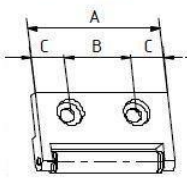
Center element 100

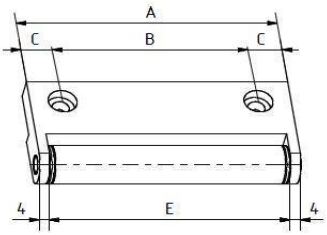


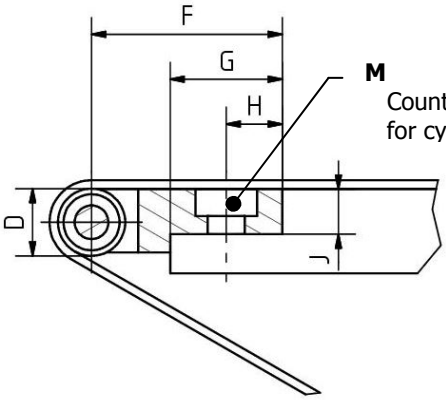
Center element 60



Center element 50







M
Counterbore shape J DIN 74
for cyl. screw DIN 6912

Dimension element width 100: Weight Z [gr]

Type	A	B	C	D	E	F	G	H	J	M	Z
RMK8	100	75	12,5	8	44	26	16	8	5	M5	115
RMK12	100	75	12,5	12	44	34	20	10	8	M6	250
RMK16	100	75	12,5	16	92	37	20	10	10	M6	365
RMK20	100	75	12,5	20	92	40	20	10	12	M8	510

Dimension element width 60: Weight Z [gr]

Type	A	B	C	D	E	F	G	H	J	M	Z
RMK8	60	35	12,5	8	52	26	16	8	5	M5	65
RMK12	60	35	12,5	12	52	34	20	10	8	M6	145
RMK16	60	35	12,5	16	52	37	20	10	10	M6	220
RMK20	60	35	12,5	20	52	40	20	10	12	M8	300

Dimension element width 50: Weight Z [gr]

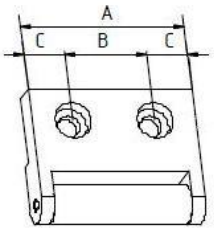
Type	A	B	C	D	E	F	G	H	J	M	Z
RMK8	50	25	12,5	8	42	26	16	8	5	M5	55
RMK12	50	25	12,5	12	42	34	20	10	8	M6	120
RMK16	50	25	12,5	16	42	37	20	10	10	M6	180
RMK20	50	25	12,5	20	42	40	20	10	12	M8	250

We do develop and create special technological concepts according to your wishes!
You can even find the appropriate solution for the complex operating conditions (e. g. wood industry)!

We would be pleased to accept your challenge!

Transverse force elements RMK16Q, 20Q and 25Q

Center element



Dimension element width 50: Weight Z [gr]

Type	A	B	C	D	E	F	G	H	J	M	Z
RMK16Q	50	25	12,5	16	42	37	20	10	10	M6	180
RMK20Q	50	25	12,5	20	42	40	20	10	12	M8	240

Dimension element width 60: Weight Z [gr]

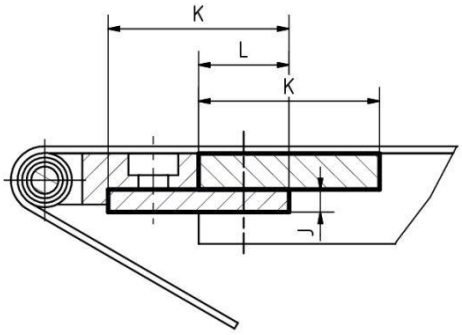
Type	A	B	C	D	E	F	G	H	J	M	Z
RMK16Q	60	35	12,5	16	52	37	20	10	10	M6	225
RMK20Q	60	35	12,5	20	52	40	20	10	12	M8	310

Dimension element width 75: Weight Z [gr]

Type	A	B	C	D	E	F	G	H	J	M	Z
RMK25Q	75	50	12,5	25	67	45	20	10	17	18	550

Fixing rail

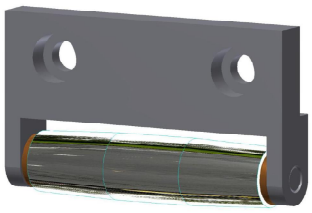
Example			
Type	**J**	**K**	**L**
RMK8	5	30	14
RMK12	5	40	20
RMK16	10	40	20
RMK16 Q	10	40	20
RMK20	12	40	20
RMK20 Q	12	40	20
RMK25 Q	17	40	20



Examples of special executions

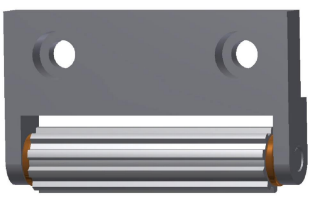
RMK15M070STNK (conical-cylindrical-conical)

To be used on a separate belt with simultaneous improvement of the straight run-out of the belt.



RMKT5Z10M070STN (Timing belt disc)

Usage of the RMK for the smallest possible direction of the timing belt.



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