

First School Year

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

BELT DRIVES

 They are used for transferring rotation motion and the *torsional* moment. They transfer force from the *belt pulley* by a *belt*. This *belt* is a non-metallic *tractive* element. We can classify belt drives into two basic groups.

These groups are:

- a) using *force contact*
- b) using *form contact*

2. The advantages of *belt drives* are for example:

- quiet running
- impact reduction
- they don't need *lubrication*

3. The disadvantages of *belt drives* are for example:

- limited operational temperature
- limited resistance to chemicals and oils
- they mostly need *tightening* mechanisms

4. Belt tightening

It is mostly necessary because of the *release* of the *belt*, which is *prestressed*. In Picture 1a you can see *belt tightening* by motor *shifting*.





In Picture 1c you can see *belt tightening* by motor *tilting*.

c) tightening by motor tilting



5. Examples of kinds of *belts* are the following: 5.1 *Flat belts*

They are very flexible. They need greater *prestress* – see Picture 2.



Picture 2

5.2 Wedge belts

They have a *trapezoidal cross section*. They *achieve* great *friction* force - see Picture 3.



5.3 Indented belts

Force is transferred by *form contact*. It is the reason why there is no *slippage*. They have the advantages of *flat* and *wedge belts*. You can see an *indented belt* in Picture 4.















VOCABULARY

achieve	dosáhnout
belt	řemen, řemenový
belt drive	řemenový převod
belt pulley	řemenice
cross section	průřez
driving belt pulley	hnací řemenice
flat	plochý
force contact	silový styk
form contact	tvarový styk
friction	tření
impact	náraz, úder
indented belt	ozubený řemen
loosened	odlehčený
lubrication	mazání
prestress	předpětí

pulley reduction release shifting slippage strengthened swinging base tighten tightened tightening tilting torsional tractive trapezoidal wedge

kladka tlumení uvolnění, uvolnit posouvání skluz, prokluzování zesílený kyvné lóže napínat napnutý napínání naklánění kroutící tažný lichoběžníkový klínový

COMPREHENSION QUESTIONS

- 1. What can you remember about a belt drive and its principle?
- 2. How do we classify belt drives?
- 3. What are belt drives' advantages?
- 4. What are belt drives' disadvantages?
- 5. What kinds of belts do you know?



EXERCISES

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1. Complete the crossword and translate the vertical word:

- 1 Flat belts are very _____.
- 2 Wedge belts have a _____ cross section.
- 3 Belt is a non-metallic tractive _____.
- 4 Belt drives are used for transferring rotation _____.
- 5 The advantage of belt drives is impact _____
- 6 The disadvantage of belt drives is limited operational
- 7 Wedge belts achieve great ______ force.
- 8 Belt _____ don't need lubrication.
- 9 The disadvantage of belt drives is limited resistance to ______ and oils.



2. Change the present tense in past tense.

- 1 We classify belt drives into two basic groups.
- 2 Why doesn't a belt drive require the lubrication?
- 3 A belt drive has a quiet running and reduces impacts.
- 4 Wedge belts achieve great friction force.
- 5 It doesn't lead to slippage and the gear speed ratio is constant.
- 6 The belt is transferring the force from the belt pulley.



3. Name what you see in the pictures.













Exercises – key for teachers only

1. BELT DRIVE

- 1 Flat belts are very **flexible**.
- 2 Wedge belts have a **trapezoidal** cross section.
- 3 Belt is a non-metallic tractive **element**.
- 4 Belt drives are used for transferring rotation **motion**.
- 5 The advantage of belt drives is impact **reduction**.
- 6 The disadvantage of belt drives is limited operational **temperature**.
- 7 Wedge belts achieve great **friction** force.
- 8 Belt **drives** don't need lubrication.
- 9 The disadvantage of belt drives is limited resistance to **chemicals** and oils.

3.

1 belt 2 pulley 3 motor 4 plastics 5 oil