

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Fourth School Year

**CRANES AND CRANE TROLLEYS**

A **crane** is a type of **lifting** equipment for the horizontal and vertical **replacements** of **loads** in a limited space. It is one of the main types of equipment for transporting material in all **branches** of work. It is especially important for **handling** heavy **loads**.

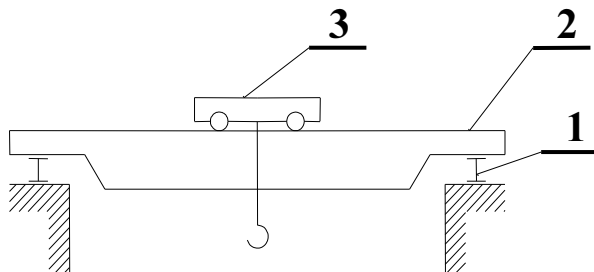
**Cranes are classified according to:**

- the shape of the carrying capacity structure (bridge, **fill-portal gantry**, **bracket**, **pillar**, **mobile**, **floating**)
- the kind of drive (manual, electrical, with a **combustion engine**, hydraulic, pneumatic)
- the kind of work and place of use (**assembly**, **workshop**, metallurgical, **storage**, **landfill**, construction, **railroad**, **port**, etc.)
- the loading state (light, medium, heavy, very heavy)

**Bridge crane**

The bridge **crane** is one of the most used **cranes**. The bridge has one drive – **crane travel**. Its **crane trolley** has two drives – **crane travel** along the bridge and **lifting** equipment. Note: The working field of the bridge **crane** is **rectangular**.

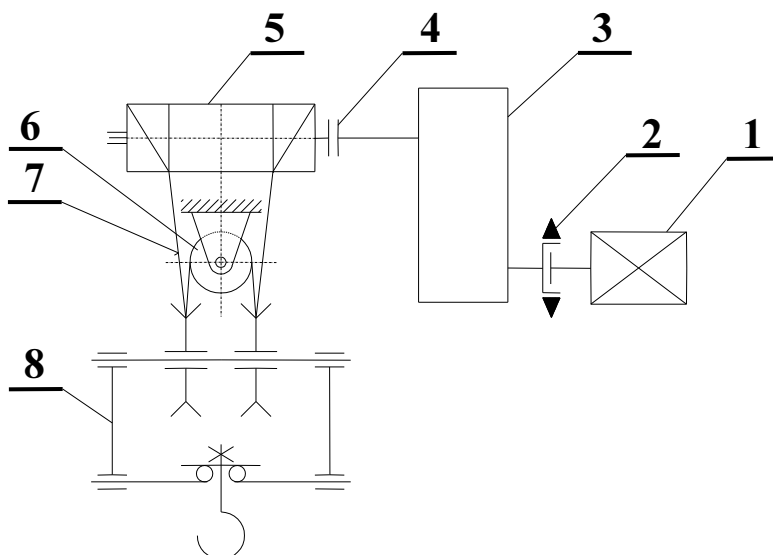
**Diagram and description of a bridge crane**



Position description:

- 1 **crane groove**
- 2 **bridge crane**
- 3 **crane truck - trolley**

**Diagram and description of the lifting mechanism of the crane trolley**



Position Description:

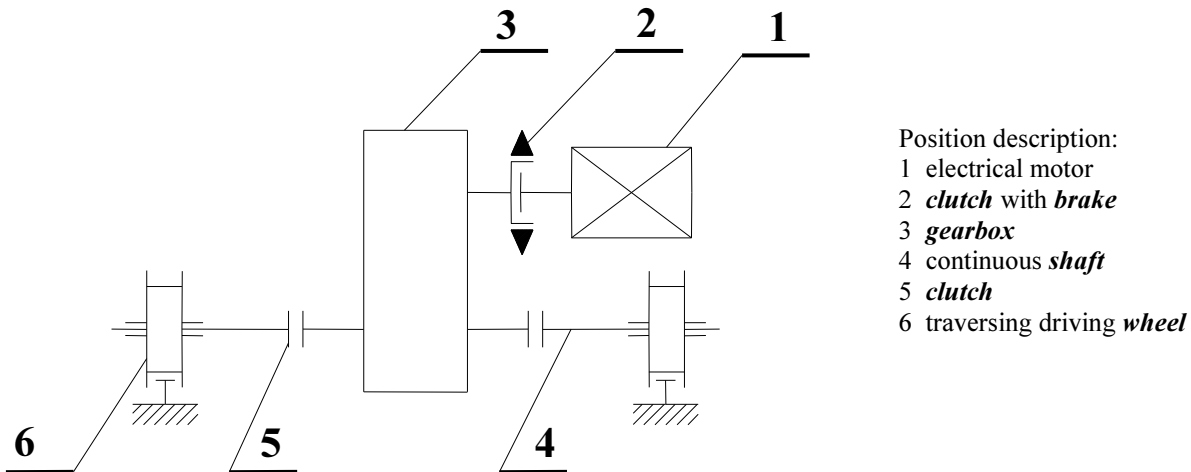
- 1 **electrical motor**
- 2 **clutch with brake**
- 3 **gearbox**
- 4 **claw clutch**
- 5 **cable drum**
- 6 **balance pulley**
- 7 **lifting cable**
- 8 **pulley block**

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### Description of the *lifting* mechanism

The *lifting* mechanism enables the *lifting* and *releasing* of *load*.

### Diagram and description of the *crane travel* mechanism of the *crane trolley*



### Description of the *traversing* mechanism

It is used for *cranes* with a traversing structure and for *crane trolleys*.

#### *Chain and cable use*

*Ropes* and *chains* are used as flexible means for *binding*, *lifting* and *drawing*.

*Chains* are more resistant against wear, heat and *inefficient handling*. *Welded* and *Gall chains* are used.

*Ropes* are lighter, safer, more flexible, not noisy and allow greater speed. *Ropes* are classified as *ropes* made of textile or steel. Steel *ropes* are produced from patented steel *wire* of high strength. According to the winding direction *ropes* are classified as right or left, regular-lay *rope* or lang – lay *rope*. For *cranes* regular-lay rope is used because they have a smaller *incline* to *ply apart* and make *loops*.

#### *Means for grasping loads*

They enable the fastening of transferred loads of various character to lifting mechanisms. These include *binders*, *hooks*, *crossarms*, *slings*, *pliers*, load electro-magnets, *vessels* and *grabs*.

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**VOCABULARY**

<b>assembly</b>	montážní	<b>inefficient</b>	nešetrný
<b>binder</b>	vazák	<b>landfill</b>	skládkový
<b>binding</b>	vázání	<b>lifting</b>	zdvihací
<b>bracket</b>	konzolový	<b>load</b>	zátěž, náklad
<b>brake</b>	brzda	<b>loop</b>	smyčka
<b>branch</b>	obor	<b>mobile</b>	vozidlový
<b>cable</b>	lano	<b>pillar</b>	sloupový
<b>cable drum</b>	lanový buben	<b>pliers</b>	kleště
<b>claw clutch</b>	zubová spojka	<b>ply apart</b>	rozplétat
<b>clutch</b>	spojka	<b>port</b>	přístavní
<b>combustion engine</b>	spalovací motor	<b>pulley</b>	kladka
<b>crane</b>	jeřáb	<b>pulley block</b>	kladnice
<b>crane groove</b>	jeřábová dráha	<b>railroad</b>	železniční
<b>crane travel</b>	pojezd jeřábu	<b>rectangular</b>	obdélníkový
<b>crane trolley</b>	jeřábová kočka	<b>releasing</b>	spouštění
<b>crossarm</b>	traverza	<b>replacement</b>	přemístování
<b>drawing</b>	tažení	<b>rope</b>	lano
<b>fill-portal gantry</b>	portálový	<b>shaft</b>	hřídel
<b>floating</b>	plovoucí	<b>sling</b>	závěs
<b>gearbox</b>	převodovka	<b>storage</b>	skladový
<b>grab</b>	drapák	<b>truck</b>	vozík
<b>grasping</b>	uchopení	<b>vessel</b>	nádoba
<b>handling</b>	manipulace	<b>welded</b>	svařovaný
<b>hook</b>	háček	<b>wheel</b>	kolo
<b>chain</b>	řetěz	<b>wire</b>	drát
<b>incline</b>	sklon	<b>workshop</b>	dílenský

**COMPREHENSION QUESTIONS**

1. What is a crane?
2. How do we classify cranes?
3. What do you remember about bridge cranes?
4. What is the difference between a chain and a rope?
5. What means for grasping loads do you know?

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**EXERCISES**

**1. Double puzzle - Unscramble each of the clue words.**

**Copy the letters in the numbered cells to other cells with the same number.**

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NCARE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 5
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PRSOWHOK	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 10
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REPO	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 7
OHKO	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
SETLE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 13 1
LEABEN	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 11
LSADO	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
CEILACTLRE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 3 9

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1 2 3 4 5 6	7 8 9 10 11 12 13

**2. Grammar corner – focus on Past Simple. Translate the sentences in English:**

- 1 Byl unavený.
- 2 Byly čtyři hodiny.
- 3 Měli hlad.
- 4 Byla zima.
- 5 Byla mi zima.
- 6 Měla problém.

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- 7 Měli jsme psa.
- 8 Měl zelené oči.
- 9 Měl jsem rýmu.
- 10 Měla dobrý nápad.
- 11 Řekla ahoj.
- 12 Udělal to bez nás.
- 13 Seděli jsme a čekali.
- 14 Všechno snědli.
- 15 Dala jim peníze.
- 16 Šel do hospody.
- 17 Napsal jim dlouhý dopis.
- 18 Řekli mi o své dovolené.
- 19 Vypila tři sklenice vína.
- 20 Někdo zavolal mé jméno.
- 21 Bydleli jsme v krásném hotelu.
- 22 Viděl jsem v knihovně tvou sestru.
- 23 Dala mu své telefonní číslo.
- 24 Na schůzi přišli všichni.
- 25 O víkendu jsem četl dobrou knihu.

### 3. Complete the verb or noun column. Then translate all the words into Czech:

	VERB	NOUN	
1	produce	_____	_____
2	transport	_____	_____
3	_____	assembly	_____
4	_____	storage	_____
5	construct	_____	_____
6	handle	_____	_____
7	_____	wear	_____
8	incline	_____	_____

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**EXERCISES – KEY FOR TEACHERS ONLY**

**1. Double puzzle**

Solution: **LIFTING EQUIPMENT**

WORDS: wheel, crane, bridge, clutch, workshop, construction, rope, hook, steel, enable, loads, electrical

**2. Grammar corner – focus on Past Simple**

- |    |                       |    |                                    |
|----|-----------------------|----|------------------------------------|
| 1  | He was tired.         | 14 | They ate everything.               |
| 2  | It was 4 o'clock.     | 15 | She gave them money.               |
| 3  | They were hungry.     | 16 | He went to the pub.                |
| 4  | It was cold.          | 17 | He wrote a long letter to them.    |
| 5  | I was cold.           | 18 | They told me about their holiday.  |
| 6  | She had a problem.    | 19 | She drank three glasses of wine.   |
| 7  | We had a dog.         | 20 | Somebody called my name.           |
| 8  | He had green eyes.    | 21 | We stayed at a beautiful hotel.    |
| 9  | I had a cold.         | 22 | I saw your sister in the library.  |
| 10 | She had a good idea.  | 23 | She gave him her telephone number. |
| 11 | She said hello.       | 24 | Everybody came to the meeting.     |
| 12 | He did it without us. | 25 | I read a good book at the weekend. |
| 13 | We sat and waited.    |    |                                    |

**3. Complete the verb or noun column. Then translate all the words into Czech:**

	VERB	NOUN	
1	produce	<i>production</i>	<i>vyrábět, výroba</i>
2	transport	<i>transportation/transport</i>	<i>přepravit, přeprava, dopravní prostředek</i>
3	<i>assemble</i>	assembly	<i>sestavit, montáž</i>
4	<i>store</i>	storage	<i>skladovat, skládka</i>
5	construct	<i>construction</i>	<i>vybudovat, stavět, stavba</i>
6	handle	<i>handle/handling</i>	<i>manipulovat, manipulace</i>
7	<i>wear</i>	wear	<i>nosit, opotřebovat, opotřebení</i>
8	incline	<i>incline</i>	<i>naklonit, sklon, náklon</i>