Instruction sheet
Cable trolley system

Content

1. Intended use

The cable trolley system is designed for the purpose described below: Cable trolley systems and their components are used exclusively for setting up and operating a power supply for mobile loads, such as cranes in industrial applications.

2. Technical specifications

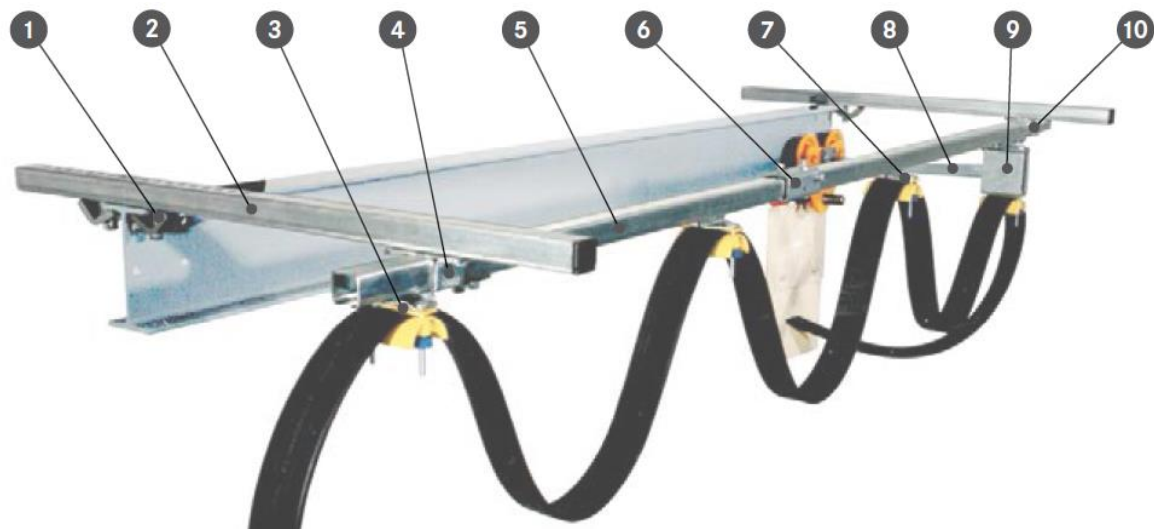| Cable trolley system	For C-rails	For steel wire	For I-beam
Picture			
Max. load capacity	Limited by the max. load of all cable trolleys	500 kg	Limited by the max. load of all cable trolleys
Max. cable weight / cable trolley	C30 system: 20 kg C40 system: 32 kg	6 kg	20 kg
Max. travelling speed	80 m/min	50 m / min	60 m/min
Max. length	100 m	15 m	>100m on request
Further specifications			Max. dimensions I-Beam: On request

3. Overview of the components

1 Girder clips: Attach the support arm to the beam construction
2 Support arm: Is mounted on the I-beam
3 End clamp: Fix installed cable clamp
4 Support bracket flexible mounting: Mounts the C-rail to the beam construction
5 C-rail: Rail for the cable trolleys
6 Track coupler: Connects two C-rails to each other
7 Cable trolley: Moving trolley hooked into the trail
8 Towing arm: Couples the towing trolley to a mobile load
9 Towing trolley: Pulls or pushed the other cable trolleys
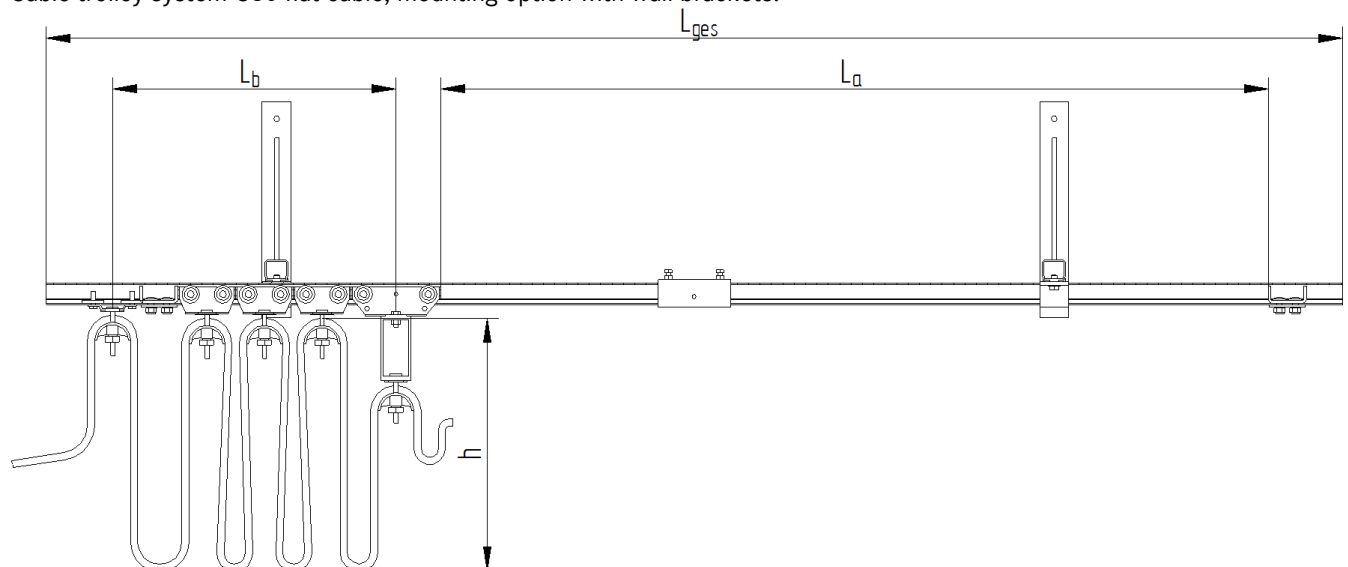10 Stopper: Limits the traveling length of the trolleys

For diagrams, dimensions and further details of the individual components, see separate data sheets.

4. Dimensioning cable trolley system

4.1. Layout

Cable trolley system C30 flat cable, mounting option with wall brackets:

l_a = Travelling length
l_b = Parking space
l_{ges} = Total length
h = Cable slack

4.2. Setting of the parameters
- Travelling length, travelling speed
- Cable package, type, diameter, weight, bending radius
- Mounting (wall mounting, T-beam, …)
- Surroundings

4.3. Selection of the cable trolley system
Depending on the cable weight, cable type, dimensioning, bending radius, traveling speed and surrounding, select the appropriate system (C-rail, T-beam or steel wire).

4.4. Calculation of the total cable length
Flat cable	Travelling length < 20m	Travelling length x 1.25 = Cable length
	Travelling length 20 up to 50m	Travelling length x 1.20 = Cable length
	Travelling length > 50m	Travelling length x 1.50 = Cable length
Round cable		Travelling length x 1.5 = Cable length

4.5. Selection and amount of cable trolleys + clamps
- For the flat cable trolley system, the cable clamps are already mounted on the cable trolley. Select the cable trolley according to the flat cable dimensions (height x width) and the bending radius.
- For the round cable trolley system, chose the corresponding round cable clamps depending on the cable diameter in addition to the cable trolleys.
- $\frac{Cable\ length}{2\ x\ Cable\ slack}$ = Amount of cable trolleys (incl. towing trolley)
- Recommended cable slack is 0.75m
- Observe max. cable weigh per cable trolley ⚠️

4.6. Parking space
- Cable trolley length x amount of cable trolleys + length towing trolley = parking space

4.7. Amount of rails and track couplers
- Travelling length + parking space = Total rail length
- Amount of track couplers = amount of C-rails (6m) -1
- Not applicable to steel wire and I-beam system

4.8. Amount of mounting elements
- Max. 2m distance between selected mounting elements (flexible support brackets, wall brackets, etc.)
- Not applicable to steel wire and I-beam system

### 4.9. Further components / accessories
- 2 x stopper (not applicable to steel wire and I-beam system)
- 1 x end clamp
- 1 x towing trolley
- Optional towing arm
- Additional installation surcharge for the cable (2-6m)

5. Mounting of the cable trolley system

5.1. Preparation of the cables
- Only use cables intended for a cable trolley application.
- Round and flat cables should not be combined with each other or side by side, due to the different twist properties of the cables.
- Several flat cables can be used in one flat cable clamp. Arrange cables with the largest copper cross-section in the center of the clamp and symmetrically.
- Pay attention to the moment equilibrium of the cable packages.

Good   **Bad**

In moment equilibrium

Not in moment equilibrium
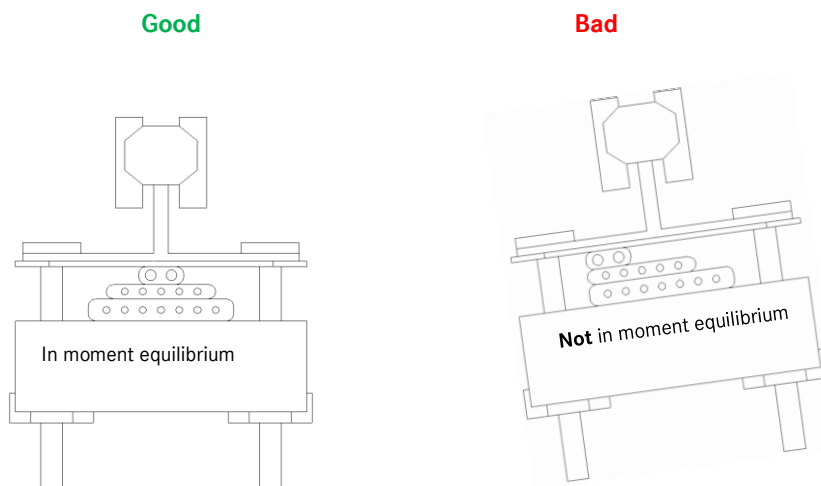
- Use a separate round cable clamp per round cable. It is recommended not to mount more than 3 round cable clamps to each other.
- Put cables with the largest copper cross-section into the upper round cable clamp. The twist of the cables mounted one below the other must be the same. Lay the round cables lengthwise for at least 48h, so that the twist of the cables, which is due to the manufacturing process, is reduced.

5.2. C-rail
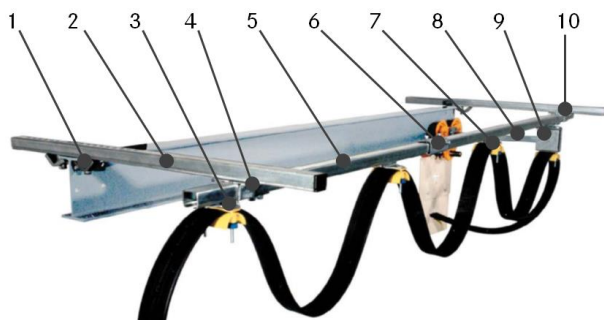
1. Girder clips
2. Support arm
3. End clamp
4. Support bracket flexible mounting
5. C-rail
6. Track coupler
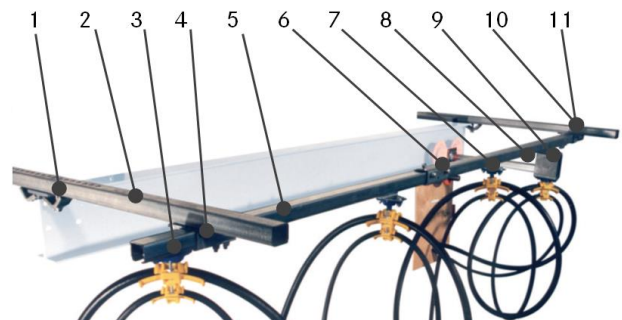
7. Cable trolley
8. Towing arm
9. Towing trolley
10. Stopper
11. Cable clamp round

5.2.1. Mounting of the C-rails

i. Cut the C-rails to the desired length and then use a track coupler for each rail joint.

ii. Put each half side of the track coupler onto the rails and fasten it. The butt joint can be controlled by means of the lateral bore.

iii. C-rails can be fixed on ceiling and wall construction or I-beams, with the appropriate brackets. For this purpose, the support brackets can either be first fixed to the rail and then attached to the mounting structure. Or the support bracket is first attached to the mounting structure and then the rails are inserted and fixed.

Option A: Mounting directly on the wall by means of wall brackets
Attach a wall bracket with screws every 2 meters.
Mount the C-rail to the wall bracket with a flexible support bracket.

Wall bracket

Support brackets flex

Option B: Mounting on I-beams by means of extension arms
Attach a support arm every 2 meters to the I-beam using 2 girder clips each.
The C-rail can then be fixed to the bottom of the support arm by means of the flexible support brackets.

Support arm 800mm

Support brackets flex

Girder clips (2x)

Option C: Mounting on ceiling construction using support brackets
Attach the C-rail every 2 meters with a flexible support bracket directly on the ceiling, on a beam or similar.

Support brackets flex.

Option D: Mounting on wall construction using support brackets wall
Attach the C-rail every 2 meters with a support bracket wall directly on the wall, on a beam or similar.

Support brackets wall

5.2.2. Stopper and end clamp

    i.   Insert stopper as traveling limiter of the cable trolley into the C-rail and fix it.
    ii.   Insert the end clamp behind the stopper and fix it.

5.2.3. Mounting cable trolleys and cables

Flat cable

Option 1:
    i.   Insert the cable trolleys and the towing trolley into the rail.
    ii.   Insert the cables into the cable trolleys and the towing trolley.
    iii.   Fix the cable in the towing trolley.
    iv.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
        The cable slack should be the same for all loops!

Option 2:
    i.   Lay the cables straight on the ground.
    ii.   Measure where the cable trolleys should be, insert the cables trolleys and the towing trolley and fix them.
        The distance between the cable trolleys should be the same!
    iii.   Insert the pre-assembled cable and the cable trolleys into the C-rail. Start with the towing trolley!

Round cable

Option 1:
    i.   Insert the cable trolleys and the towing trolley into the rail.
    ii.   Insert the cables into the round cable clamps.
    iii.   Fix the round cable clamps in the cable trolleys.
    iv.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
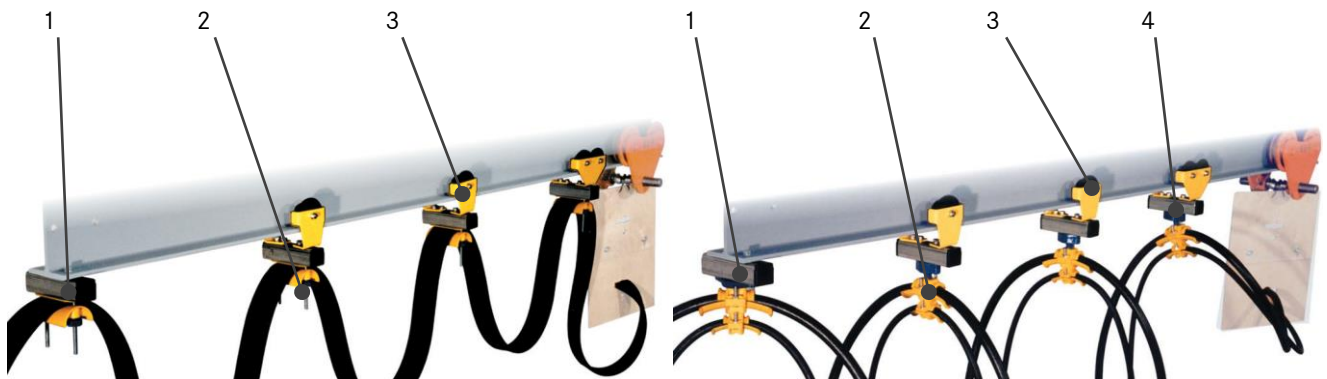   The cable slack should be always the same!

Option 2:
    i.   Lay the cables straight on the ground.
        Measure where the cable trolleys should be, insert the round cable clamps and fix them. The cable slack should be always the same!
    ii.   Insert the pre-assembled cable and the cable clamps first into the cable trolleys and then into the C-rail. Start with the towing trolley!

5.3. I-beam

1. End clamp
2. Cable clamp
3. Cable trolley
4. Ball joint

5.3.1. Adjust cable trolleys
i. Adjust roll width min. and max. to the I-Beam dimensions. 2-3mm slack so the wheels can move slightly sideways. Do not tighten the wheels to hard to the I-Beam.

5.3.2. End clamp
i. Fix end clamp to the I-beam.

5.3.3. Mounting cable trolleys and cables
Flat cable

Option 1:
i.   Insert the cable trolley onto the I-beam at the front.
ii.   Tighten the cable clamps to the cable trolleys.
iii. Insert the cables into the cable clamps.
iv.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
      The cable slack should be the same for all loops!

Option 2:
i.   Lay the cables straight on the ground.
ii.   Tighten the cable clamps to the cable trolleys.
iii. Measure where the cable trolleys should be, insert the cables trolleys and fix them. The distance between the cable trolleys should be the same!
iv.   Insert the pre-assembled cables and cable trolleys onto the I-beam at the front.

Round cable

Option 1:
i.   Insert the cable trolley onto the I-beam at the front.
ii.   Fix the cable clamps to the cable trolleys using a ball joint.
iii. Insert the cables into the cable clamps.
iv.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
      The cable slack should be always the same!

Option 2:
i.   Lay the cables straight on the ground.
ii.   Fix the cable clamps to the cable trolleys using a ball joint.
iii. Measure and fix the cable slack between the cable trolleys regarding your calculation.
      The cable slack should be always the same!
iv.   Insert the pre-assembled cables and cable trolleys onto the I-beam at the front.
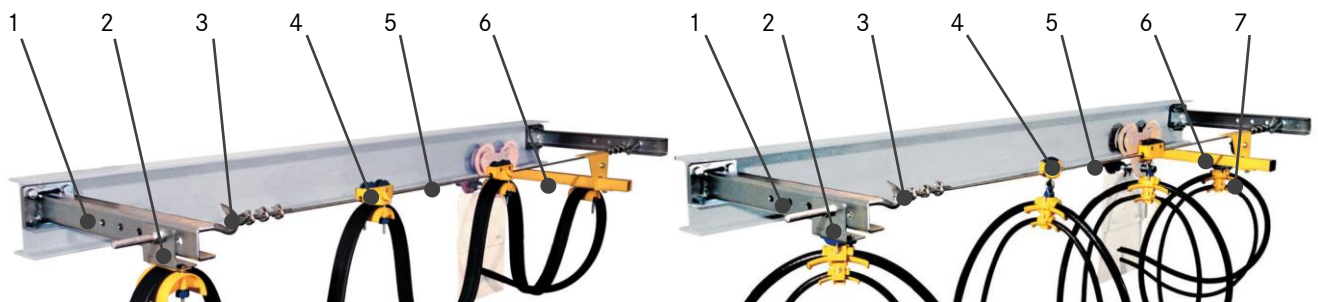
5.4. Steel wire

1. Tension bracket
2. Mounting plate end clamp
3. Tension screw
4. Cable trolley
5. Steel wire
6. Towing trolley
7. Cable clamp round

5.4.1. Mounting the steel wire
   i.   Screw the two tension brackets to the existing construction.
   ii.   Cut the steel wire to the desired length and insert one side into the tension screw and fix it.
   iii.   Secure the tension screw to the tension bracket.
   iv.   Insert the cable trolleys and the towing trolley onto the steel wire and fix the towing trolley.
   v.   Fix the open end of the steel wire with the other tension screw and fasten it on the other tension bracket.
          Thigthen the wire before assembly, so it is straight with as little slack as possible.
   vi.   After mounting the cables tighten the screws a little bit more so there is almost no slack left.

5.4.2. End clamp
   i.   Fix the mounting plate of the end clamp to the tension bracket.

5.4.3. Mounting cable trolleys and cables
   Flat cable
   i.   Insert the cables into the cable clamps.
   ii.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
          The cable slack should be the same for all loops!
   Round cable
   i.   Fix the cable clamps to the cable trolleys using a ball joint.
   ii.   Insert the cables into the cable clamps.
   iii.   Measure and fix the cable slack between the cable trolleys regarding your calculation.
          The cable slack should be the same for all loops!

6. Testing initial operation

1. Travelling length
2. Parking space
3. Thread locking
4. Screw locking
5. Positioning towing arm / towing trolley
6. Laying the cables
7. Loop length (±50mm tolerance)
8. Cables: swirl-free and without damage
9. Moment equilibrium

7. Safety

The valid safety, accident prevention and environmental protection regulations apply to the area of application of the cable trolley systems. Installation and commissioning must be carried out by trained specialist personnel. In order to minimize the risk of injury, wearing personal protective equipment (hard hat, protective gloves, protective clothing, and safety shoes) is recommended.

General information on possible dangers due to improper installation:

Caution, beware of moving parts

Caution, risk of injury due to electric shock

Caution, danger of crushing

Caution, being caught by something

Caution, barriers in head area