

PKK

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closed + open

PKK CHARACTERISTICS

A development from many years of experience, which combines all the advantages of plastic energy chains to one system:

- positive locking stays
- fast stay assembly and disassembly
- easy to shorten and lengthen
- the three-dimensional chain

All ekd plastic energy chains are equipped with the integrated plastic connector. Additional components for attaching the energy chain are not required.

Dimensions

bending radii:	40	to	500 mm
inner height:	16	to	80 mm
inner width:	30	to	300 mm
energy chain weight:	0.6	to	3.4 kg / m
(see dimensions)			

Travel

The maximum range of travel is determined by the arrangement and the additional weight (line weight). At normal arrangement the maximum travel is double free carrying length. Support rollers or similar constructive steps can increase this value. Travel distances up to 100 meters are possible (see chapter on design guidelines).

Travel speed

There are no limits for the travel speed in general. But at gliding arrangements application specific influences have to be taken into account.

Acceleration

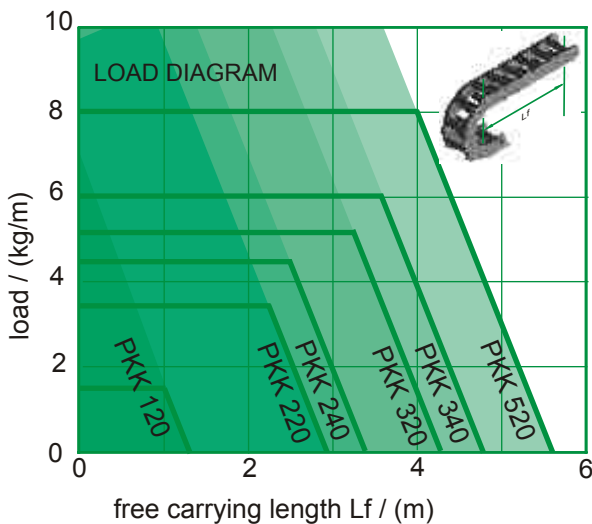
The acceleration is not subject to any restriction. Boundaries can only be achieved at high line tension forces encountered by the weights.

Temperature

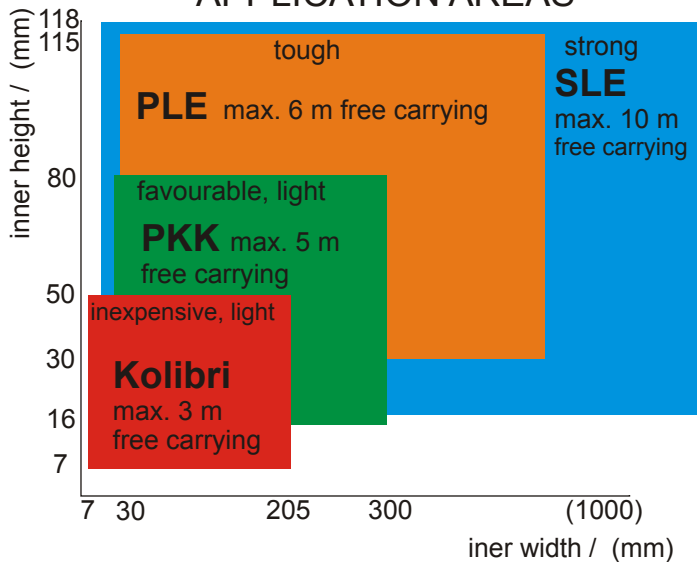
Long term temperature limits are inbetween -20°C and 100°C.

Special versions

- | | |
|----------|------------------------|
| ELTOLA | ... silent running |
| ALLROUND | ... all movements |
| ATEX | ... EX-protection |
| ESD | ... antistatic |
| V-0 | ... self extinguishing |



APPLICATION AREAS

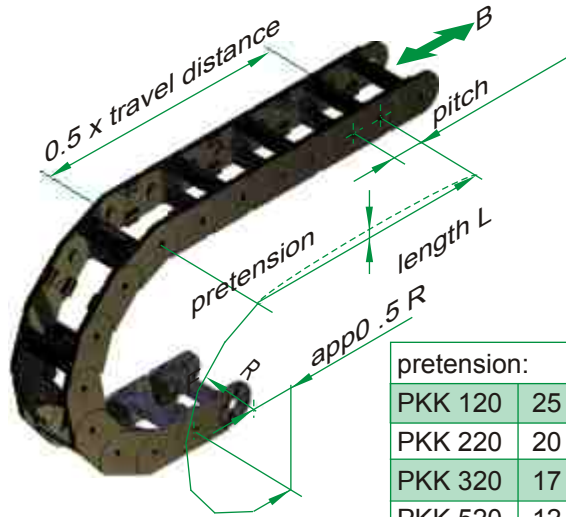
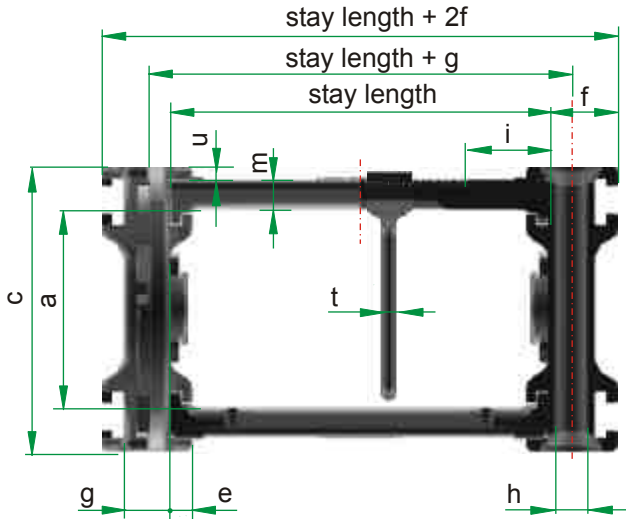




robotics, handling equipment,
machine tools,
textile machinery



PKK DIMENSIONS



pretension:	
PKK 120	25 +/- 4 mm/m
PKK 220	20 +/- 4 mm/m
PKK 320	17 +/- 4 mm/m
PKK 520	12 +/- 4 mm/m

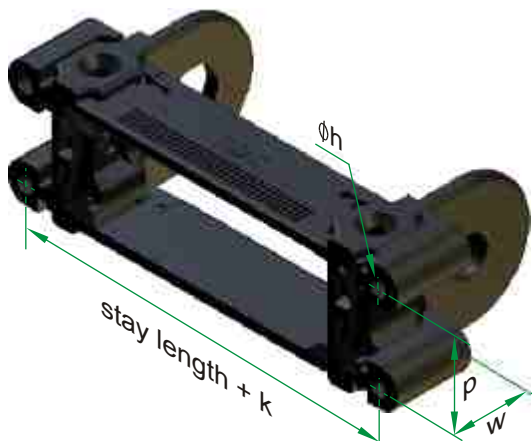


additional stay		v	r	s
PKK 213,223,243	short	19.5	14.5	-
		39	-	34
PKK 313,323	short	29.5	21.5	-
		59	-	51



slider	(see p.64) part no.	H	l	radius
PKK 128	0365	3	12	50 60 75
PKK 225	1740	5	18	100 150 200 300
PKK 228	0402	5	18	100 150
PKK 228	1742	8	18	200 250 300
PKK 325	1741	5	21	150 200 250 300 400
PKK 328	0432	5	21	150 200 250 300 400
PKK 328	0430	5	21	300 400
PKK 328	1632	8	21	300 400
PKK 528	1800	8	23	200 250 300 400 500
PKK 528	1801	8	23	300 400 500

friction coefficient: 0.2 to 0.25



flange connector	k	p	w
PKK 120	28.5	15.5	16.5
PKK 220	40	34.5	30
PKK 320	46	55.5	40
PKK 520	50	85.5	40

PKK	Tlg.												Gewicht		
	a	c	e ¹⁾	f	g	h	i ²⁾	m ³⁾	t	u			kg/m		
120 , 121, 125, 128	35	16	25	3	11	8	Ø4	15	3	2	1.5			0.60	
110, 111, 115	35	16	25	3	8	8	Ø4	15	3	2	1.5			0.60	
220 , 221, 223, 225, 228	65	34	50	5	15	10	Ø6	15	5	4	3			1.50	
210, 211, 213, 215	65	34	50	5	10	10	Ø6	15	5	4	3			1.40	
240, 241, 243, 245	65	44	60	5	10	10	Ø6	15	5	4	3			1.70	
320 , 321, 323, 325, 328	90	51	75	6	18	12	Ø8	20	8	4	4			2.50	
310, 311, 313, 315	90	51	75	6	12	12	Ø8	20	8	4	4			2.50	
340, 341, 345	90	60	85	6	15	15	Ø8	20	8	4	4.5			2.70	
520 , 521, 523, 525, 528	115	80	104	6	20	14	Ø8	20	8	4	3.5			3.40	
510, 511, 513, 515	115	80	104	6	14	14	Ø8	20	8	4	3.5			3.20	
bending radius R [mm]															
120 , 121, 125 ⁴⁾ , 128 ⁶⁾	40	50	60	75											
110, 111, 115 ⁴⁾	40	50	60	75											
220 , 221, 223, 225 ⁴⁾ , 228 ⁶⁾				75	100		150		200	250	300				
210, 211, 213, 215 ⁴⁾			65	75	100	125	150		200	250	300				
240, 241, 243, 245 ⁴⁾				75	100		150		200	250	300				
320 , 321, 323, 325 ⁴⁾ , 328 ⁶⁾					100		150		200	250	300	400			
310, 311, 313, 315 ⁴⁾					100	130	150		200		300	400			
340, 341, 345 ⁴⁾					100		150		200	250	300	400			
520 , 521, 523, 525 ⁴⁾ , 528 ⁶⁾							150		200	250	300	400	500		
510, 511, 513, 515 ⁴⁾							150		200	250	300	400	500		
stay length [mm] ¹⁾															
120 , 110, 111, 121, 128	30	50	60	70	80	90	100	110	120						
115, 125	50						100								
220 , 210, 211, 213, 221, 223, 228	50	60	70	80	90	100	110	120	130	150	170		200	220	
215, 225 ⁵⁾	50					100				150			200		
240, 241, 243	50	60	70	80	90	100	110	120	130	150	170		200	220	
245 ⁵⁾	50					100				150			200		
320 , 310, 311, 313, 321, 323, 328	50	60	70	80	90	100		120	130	150	170	180	200		230 250 300
315, 325 ⁵⁾						100				150			200		
340, 341	50	60	70	80	90	100		120	130	150	170	180	200		230 250 300
345 ⁵⁾						100				150			200		300
520 , 510, 511, 513, 521, 523, 528	50	60	70	80	90	100		120	130	150	170		200		250 300

1) The usable interior width is stay length - 2e minus the width of the used PZ
 2) First latching the PZ (latching all 2mm)
 3) Dimension does not apply to the closed type
 4) PKK 115 and 125 from R50, 215 and 225 from R100, 245, 315 and 325 from R150, 345, 525 and 515 from R200
 5) The inner radius covers (ASI) of length 200 mm of the PKK 215, 225, 245 and 300 mm of the PKK 315, 325, 345 are designed with a pivot on one side.
 6) PKK 128 from R 50, PKK 228 from R100, PKK 328 from R150, PKK 528 from R200

PKK TYPES

PKK 120, 220, 320, 520

The standard version has a stay in every second link. With additional link bands and stays the chains can be extended as multibandchains. The **integrated connector** makes each link in the chain to a mounting link.

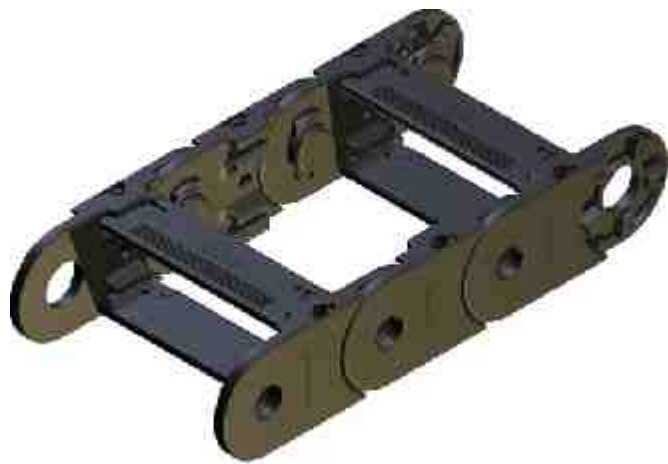


order example

PKK 220	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 110, 210, 240, 310, 340, 510

The smooth designed PKK corresponds to the standard version, but has no exterior T-slot. These types provide a very good visual effect and a smaller width through the flat outside surfaces (also see PKK 215, PKK 245). The PKK 240 and 340 offer larger cross sections due to the increased link height.

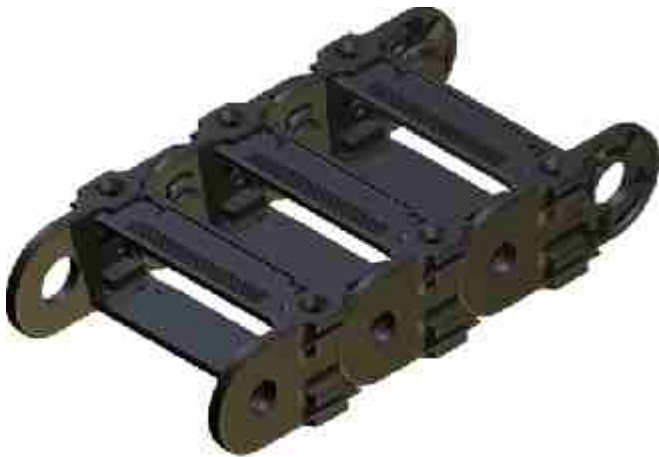


order example

PKK 240	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 121, 221, 321, 521

The types PKK -21 are manufactured with a stay in each link. The additional stays increase the lateral stability and optimize guiding of particularly smaller cable diameter.

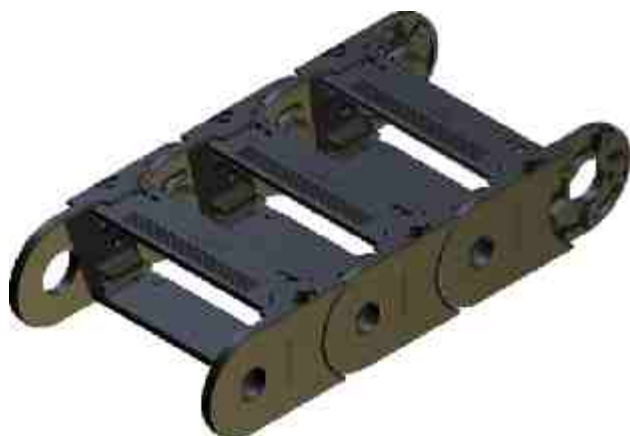


order example

PKK 221	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 111, 211, 241, 311, 341, 511

These are the smooth designs with a stay in each link to increase lateral stability and optimize guiding of particularly small cables. PKK 241 and PKK 341 have a higher capacity due to their increased link height.



order example

PKK 241	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 213, 223, 243, 313, 323, 513, 523

The PKK with extension stays in the inner radius. Suitable for low speeds these stays create additional space. The extension stays can be arranged in the outer radius or in other combinations as per optional drawing. The extension stays are available in two lengths.

order example

PKK 223	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 125, 225, 325, 515, 525

The closed designs offer optimum protection of the lines against chips or against UV radiation. The covers can be opened in the inner or outer radius. The closed types may also be subsequently created from the standard version.

PKK 115, 215, 245, 315, 345

Without T-slot on the outside, the closed types achieve a good visual effect with their flat sides and a smaller width.

order example

PKK 215	/ 100	x 3510	/ 100
type	radius	length	stay length

PKK 128, 228, 328, 528

The PKK 128, 228 and 328 with sliders are designed for gliding arrangements (long travel distances) and are fitted with stays in each link. The sliders are mounted in the inner radius of the energy chain and have a very low coefficient of friction ($\mu = 0.2$ to 0.25).

The sliders can also be installed afterwards. At low stroke rates and low speeds (<1m / s) sliders are not necessary. The smallest radius of each dimension of the PKK is not suitable for sliders.

order example

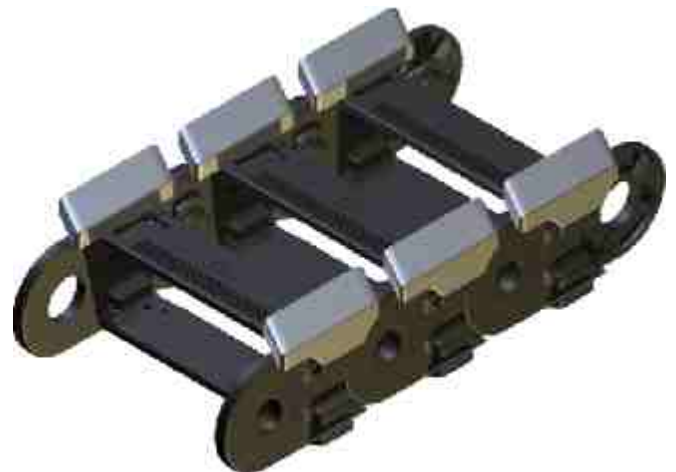
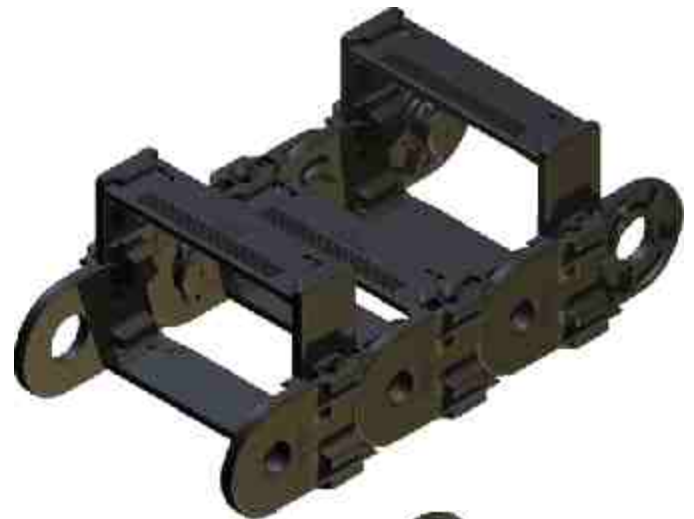
PKK 228	/ 100	x 3510	/ 100
type	radius	length	stay length

Multiband energy chains

Multiband energy chains can be created by attaching additional link bands. These are assembled through stays at standard energy chains (see assembly, except PKK with smooth exteriors).

order example

PKK 220	/ 100	x 3510	/ 100 / 100
type	radius	length	stay length / stay length



PKK SIZES

PKK120

height:	25	width:	64 ... 97
inner height:	16	inner width:	30 ... 110

PKK 220

height:	50	width:	80 ... 330
inner height:	34	inner width:	50 ... 200

PKK 240

height:	60	width:	70 ... 320
inner height:	44	inner width:	50 ... 200

PKK 320

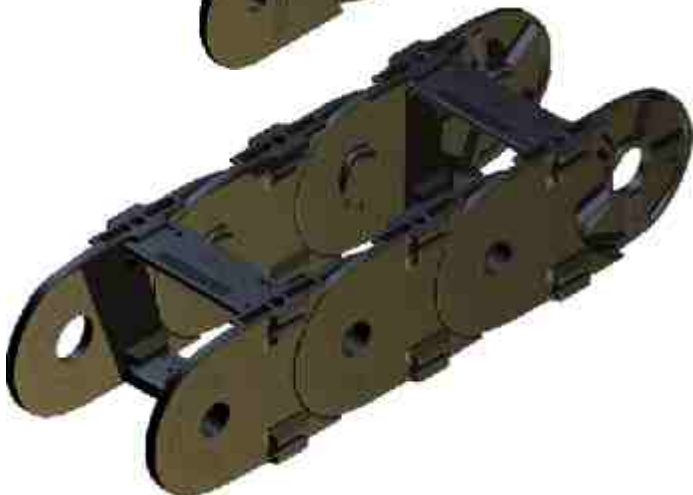
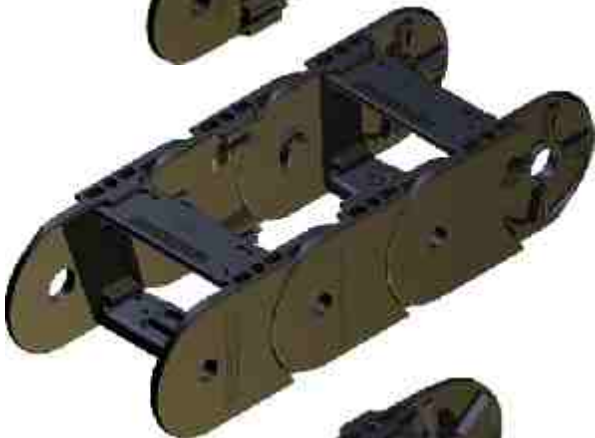
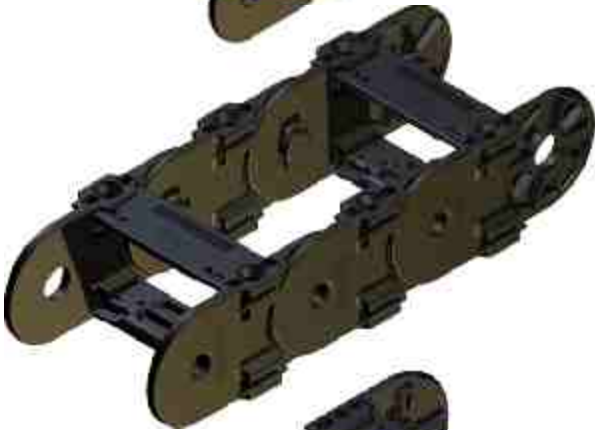
height:	75	width:	86 ... 336
inner height:	51	inner width:	50 ... 300

PKK 340

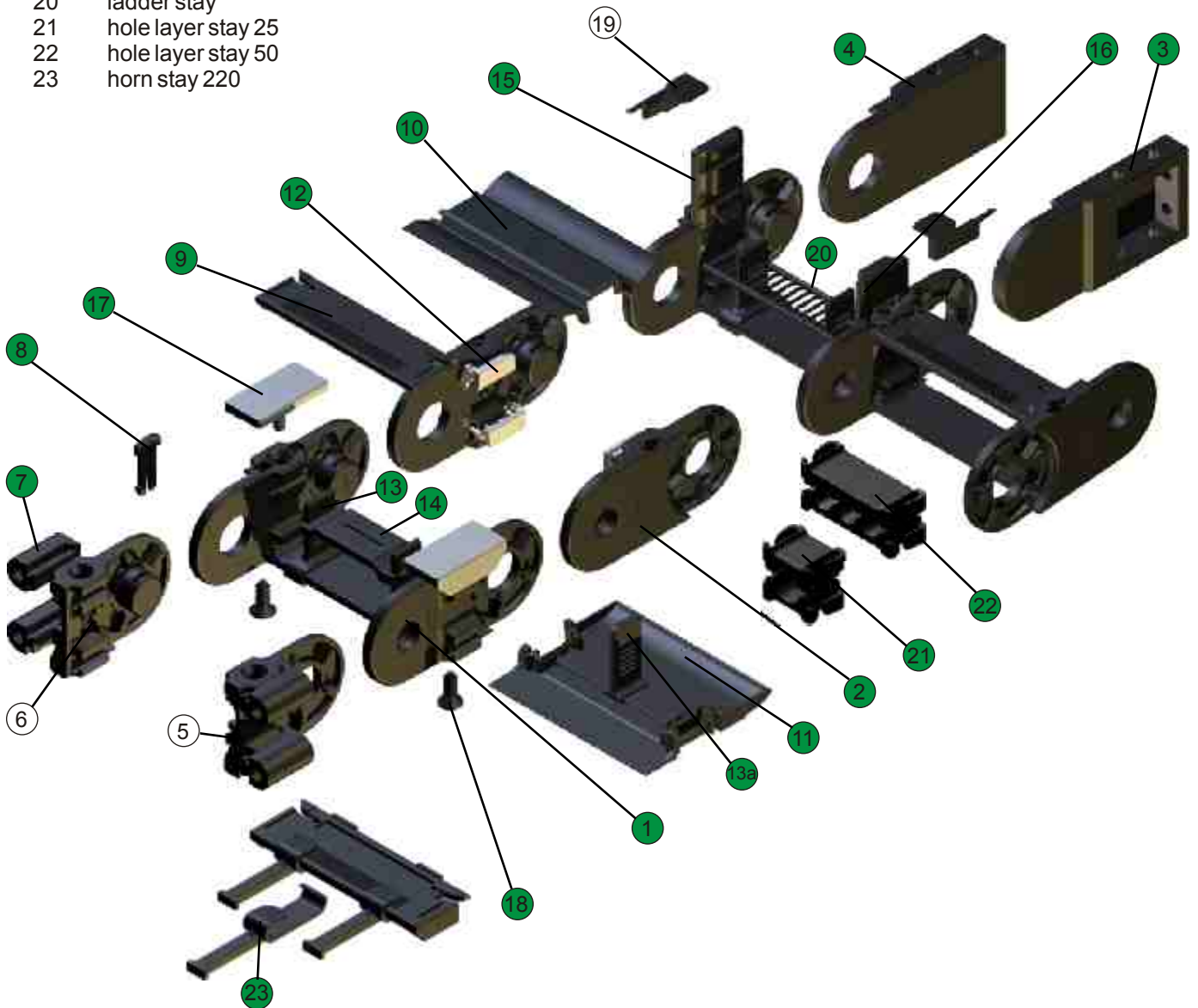
height:	85	width:	80 ... 330
inner height:	60	inner width:	50 ... 300

PKK 520

height:	104	width:	90 ... 340
inner height:	80	inner width:	50 ... 300



- | pos. | name |
|--------|---|
| 1 | PKK 220 link |
| 2 | PKK 210 link |
| 3 | UFA / Z (universal flange connector pivot) |
| 4 | UFA/B (universal flange connector drilling) |
| 5 | PKK 220 connector link short (drilling) |
| 6 | PKK 220 connector link short (pivot) |
| 7 | head side flange |
| 8 | spreader |
| 9 | 22 stay 100 |
| 10 | 22ASI 100 (inner cover) |
| 11 | 22ASA 100 (outer cover) |
| 12 | cover holder |
| 13,13a | PZ (plastic divider) |
| 14 | PT 55/PT 75 (telescopic horizontal divider) |
| 15 | extension stay long |
| 16 | extension stay short |
| 17 | slider R100 |
| 18 | damping element |
| 19 | band holder |
| 20 | ladder stay |
| 21 | hole layer stay 25 |
| 22 | hole layer stay 50 |
| 23 | horn stay 220 |



Packaging

ekd energy chains are supplied in transport friendly packaging. When removing the packaging and during removal of the energy chain or parts of it, ensure that the energy chains are free of torsion and tension, to avoid mechanical damage.

Lengthening or shortening, linkbands

Lengthening of the energy chain is done by fitting of energy chain pieces or links (1) and lock with spreader (2). To shorten the spreader is disengaged and removed, then the piece of chain removed.

Alternatively first link strands may be mounted and then stays assembled.

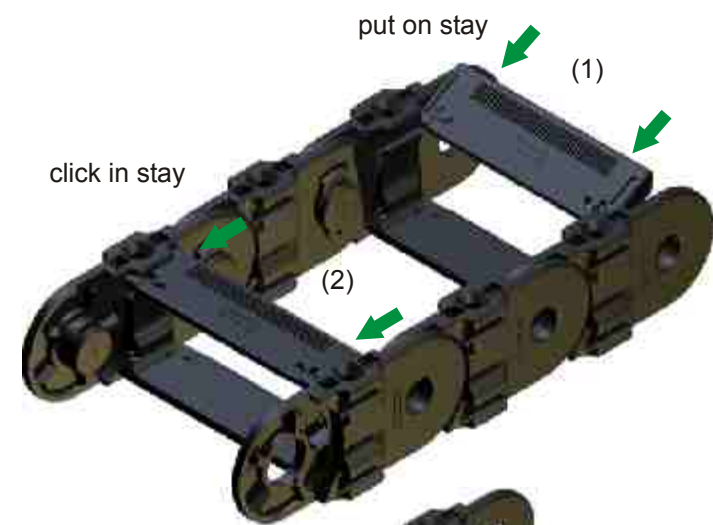
For the PKK the opposite link strands are rotated by 180 ° and arranged with the pivot on the inner chain.



Stay assembly

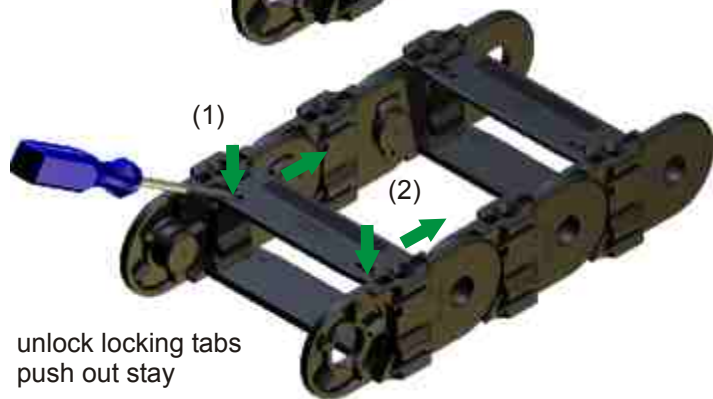
The stays with the locking tabs are put in the T-guide of the link (1) and push until it clicks into the guides (2).

The stays can be positioned initially in the T-guide and will be engaged in one swoop (plastic hammer or similar) in the final position.



Stay disassembly

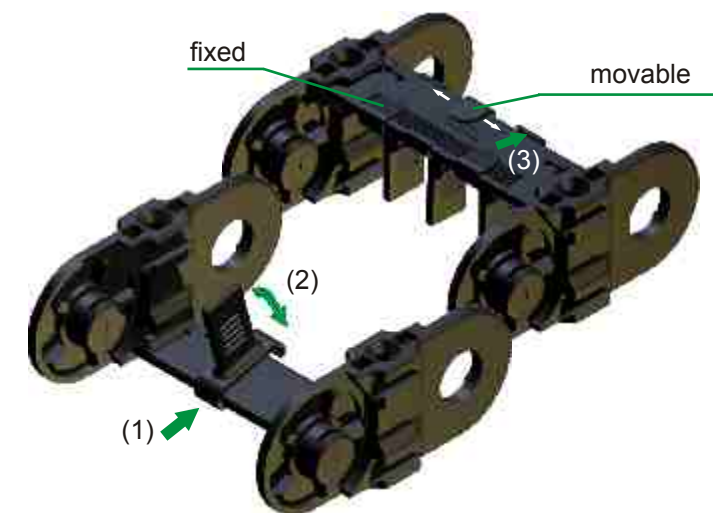
The lock tongue of the stays are unlock with a screwdriver (1) and the stays pushed out with light pressure to the front of the T-slot (2). For medium and larger series (from PKK220) the stays can be unlocked with a light hit on the lock tongue (plastic hammer or similar) and then ejected.



Plastic divider PZ (vertical)

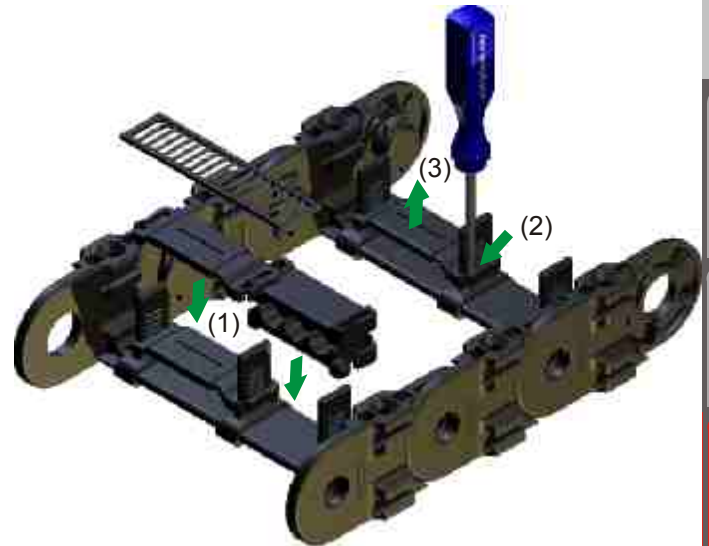
The PZ will be placed in the designated position on the stay (1) and engaged (2). The PZ can be mounted fixed or movable.

The dismantling is done by unlocking (3) and removal of the PZ.



Telescopic divider and ladder divider

The telescopic horizontal divider and ladder stay horizontally pushed onto the plastic divider (PZ) and engaged in the designated height (1). The disassembly is done with a screwdriver through pull (2) and removal (3).

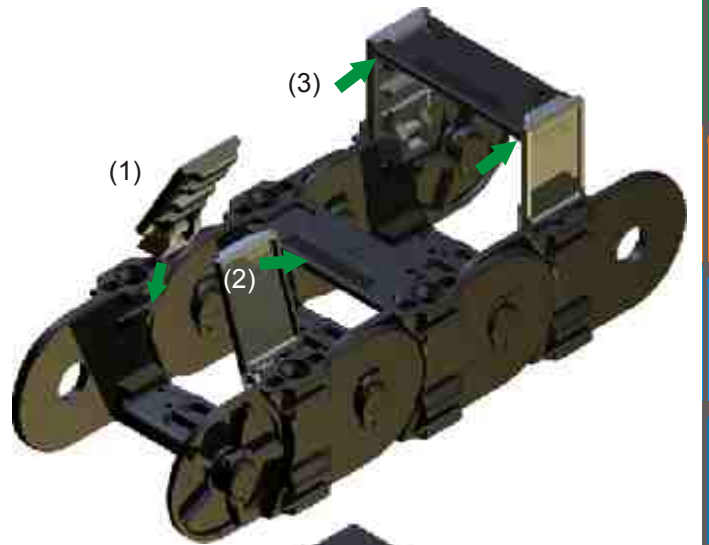


Hole layer stay

The mounting of hole layer stay is the same as the assembly of the telescopic horizontal divider and the ladder stay. Before assembling the second component the lines should be inserted. The disassembly is done with a screwdriver by unlocking and removal.

Extension stays

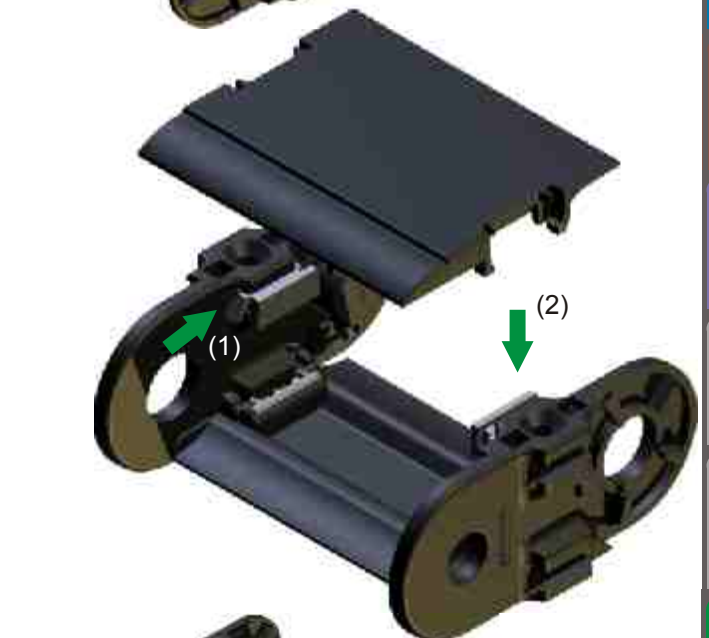
The extension stays are pushed onto the link guides (1) and pivoted until it clicks (1). Then the stays are pushed into the guides until it clicks (3).



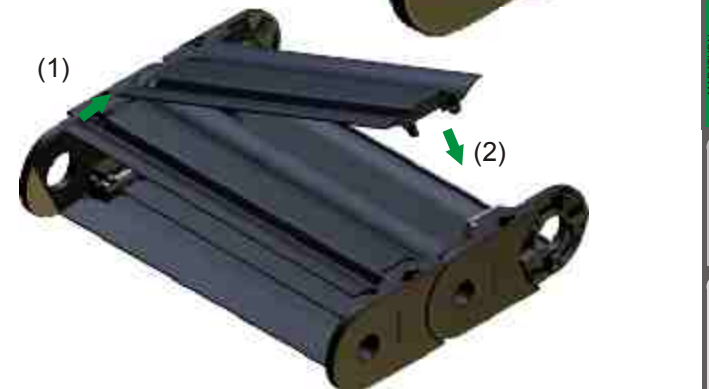
Covers

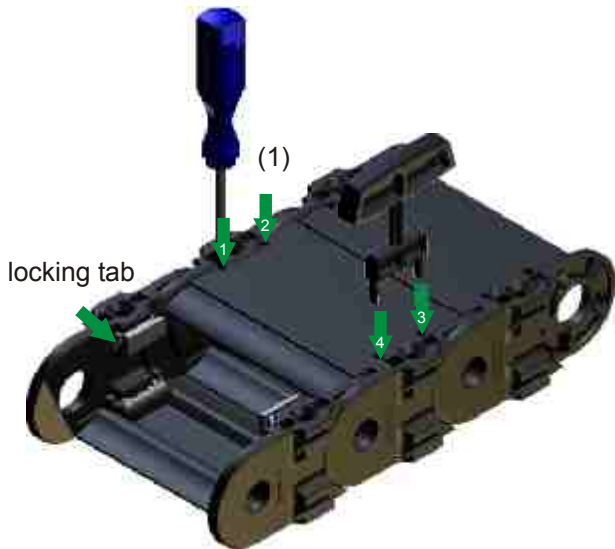
Before installing covers (ASA/ASI) first segment holder have to be pushed in the T-slot of the links (1). Then the covers can be plugged in (2). Covers and segment holder snap in the end position.

The covers are marked with arrows, to avoid wrong assembly direction. Covers for the outer radius are equipped with holders for divider (PZ). During assembly, ensure the correct overlap of the covers and that the covers are engaged on all four locking points.



The inner radius covers (ASI) of length 200 mm of the PKK 215, 225, 245 and 300 mm of the PKK 315, 325, 345 are designed with a pivot on one side. The cover has to be pushed into the T-slot of the link on its pivot side (1) and can swing to close or open (2). For that the cover holder has to be unlocked (see disassembly).





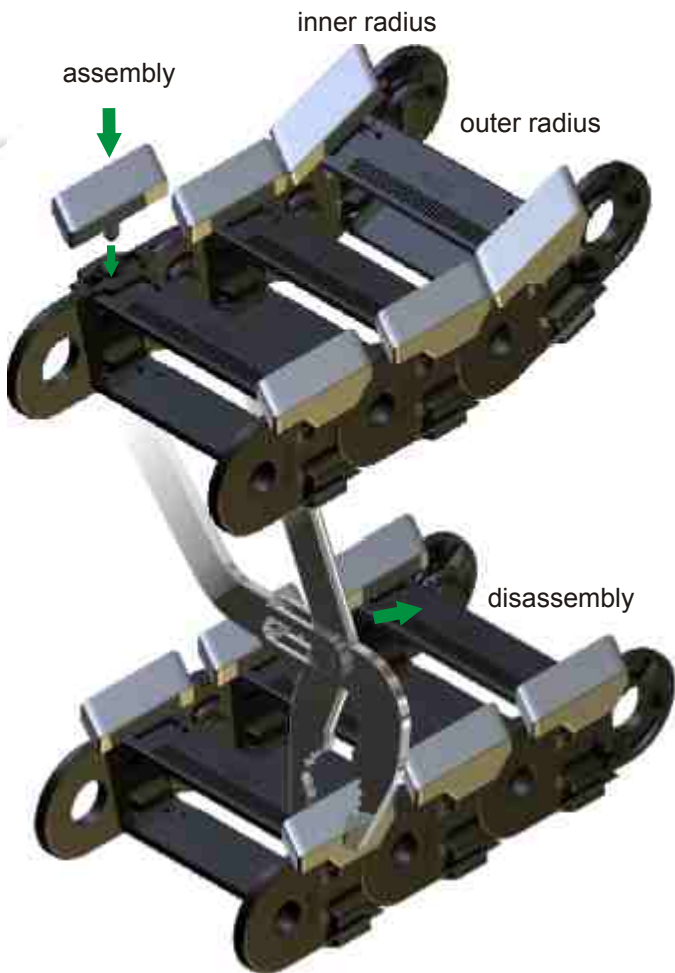
The dismantling of the covers is done by unlocking and lifting out. These are done one by one at a time with the 4 locking tongues on the segment holders using a screwdriver (1), then the cover is easy to raise.

With two release tools all four locking tongues can be done at once and the cover removed.

Attention:
The release tools can only be resolved if covers are dismantled (by lateral withdrawal)



Covers with lengths 200 mm and 300 mm of the PKK 225 and 325 are equipped with a pivot on one side. These covers opening mechanism is deactivated on one side. The covers can be swiveled.



Sliders

The sliders are mounted in the inner radius of the energy chain. The minimum bend radius in each PKK size can not be fitted with sliders.

During assembly of the sliders be aware of the following:

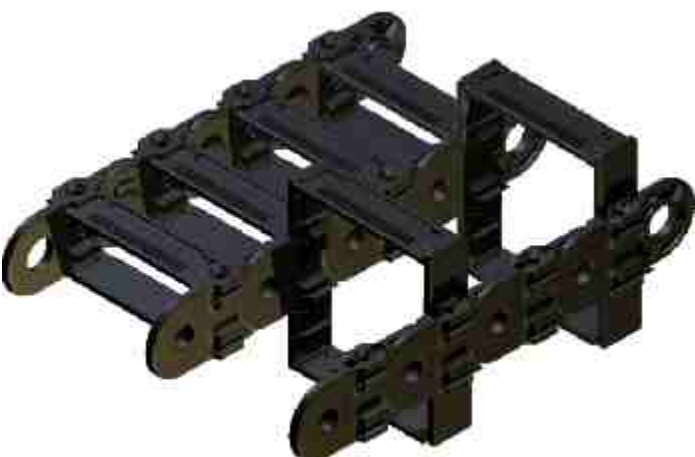
The sliders must be conditioned (water content min. 1%, overnight storage in water at room temperature or 2 h at 80 ° C).

Heat the slider just before mounting in a water bath. Avoid impact load.

The dismantling is carried out channel lock pliers as shown and unlock slider by turning it to the outer side.

Multiband energy chains

Multiband energy chains can be created by attaching additional link strands. These are attached to existing energy chains by additional stays (see stay assembly). By combining with extension stays large hoses or other additional components may be carried.



Mounting the energy chain

All ekd plastic energy chains are equipped with the **integrated connector** (1). When using integrated strain relief, no additional components are needed. Provision for the combined strain relief, the anchor profile has to be screwed with the first link in the chain. Separate strain relief can be subsequently mounted.

Headside mounting

Optionally, the attachment can be made with flange connectors or universal connectors. The flange connectors are mounted in the T-slots of short connectors links until locking (1). The energy chains can be attached through four flange connectors (2).

The universal flange connectors are mounted like the links with the spreader (3) and provide universal connection options.

Strain Reliefs

With long travel distances and high speeds the lines at one end of the cable carrier, preferably on the moved driver, are attached to strain reliefs. The distance of strain relief to the bending area depends on the particulars of the line manufacturer.

Integrated strain relief

In this space-saving type strain reliefs are directly mounted on the vertical divider (PZ) of the first link of the energy chain.

The mounting direction of the PZ must be chosen so that tension directed on the chain can not unlock the divider.

In order to avoid premature line wear caused by dynamic loads a small extra chain length is recommended.

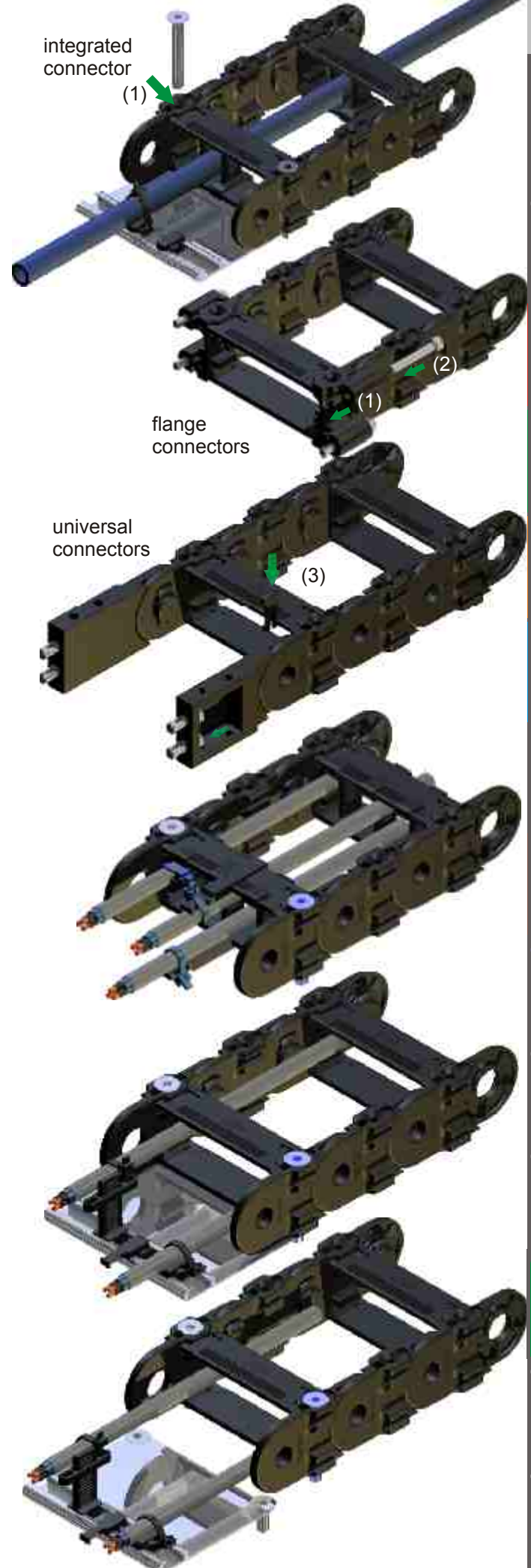
Combined strain relief

The combined strain relief combines the advantage of sufficient distance from the strain relief to the bending line areas provided by a simple and space-saving installation of the integrated strain relief.

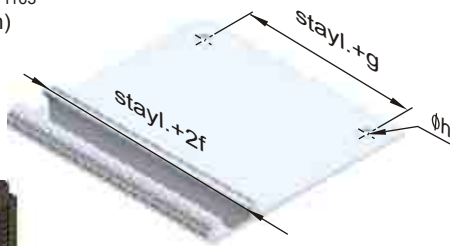
The anchor profile is fitted to the drilling dimensions of the energy chain (integrated connectors) and attached to this. The lateral insertion and extraction of strain relief elements is possible at any time.

Separate strain relief

The separate strain relief is recommended for high dynamic loads and large line diameters. A sufficient distance from the strain relief to the chain is easy to implement.



ZLP XX part no. 1163
(xx = chain width)



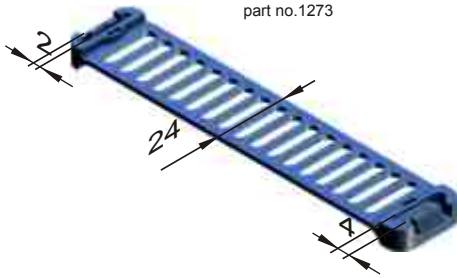
ZL 100
part no. 1612

ZL 80
part no. 1675

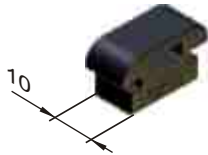
ZL 50
part no. 1273

$\text{Ø}7 < D < \text{Ø}35$

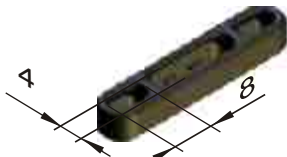
ZLB24
part no. 1142



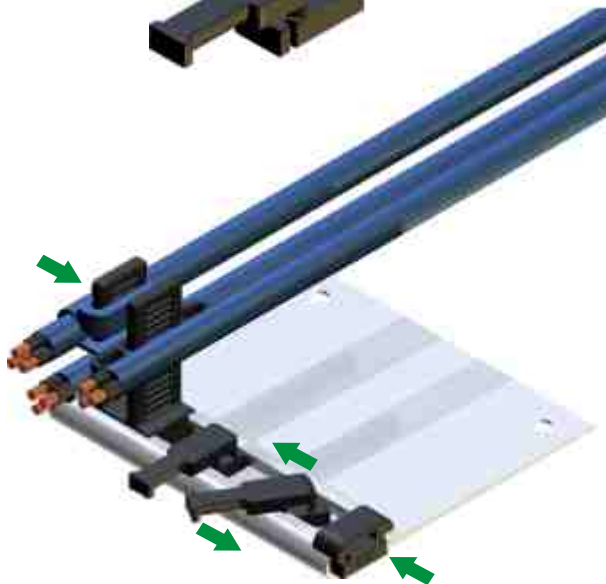
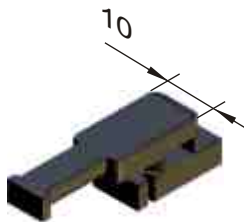
ZLS10
part no. 1160



ZLA8
part no. 1159



ZHS10
part no. 1407



PKK ASSEMBLY

ANCHOR PROFILE ZLP

The aluminum anchor profile is used to mount various of strain relief elements. Both the distance to the energy chain as well as the positioning of the strain relief elements can be designed.

STRAIN RELIEF STAY PZL

The design of this strain relief stay is closely based on the plastic vertical divider (PZ). It is laterally inserted into the anchor profile or a c-profile and can accommodate multiple strain relief elements.

BLUE RIBBON ZLB 24

The Blue Ribbon is a special ekd developed cable tie with a 24 mm wide fixing area for cable diameters of 7 mm to 35 mm. The Blue Ribbon can be locked on the strain relief stay. The lines may be fixed single or multiple (s-shaped) with the Blue Ribbon.

PUSH ANCHOR ZLS 10

The push anchor is laterally inserted into the anchor profile or a c-profile. The lines are fixed with standard cable ties on the push anchor.

CABLE ANCHOR ZLA 8

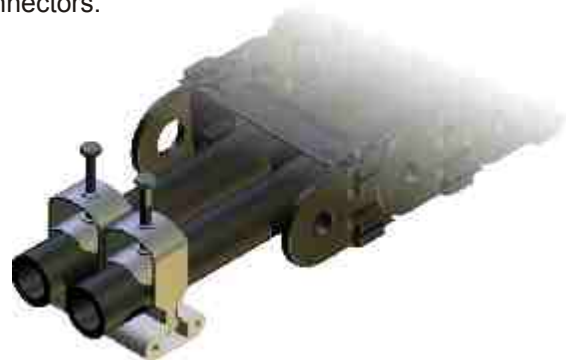
The cable anchor is pushed onto the strain relief stay and can be fixed by the latching at different altitudes. The line is connected with commercially available cable ties on the cable anchor (single or double).

HORN STAY ZHS 10

The horn stay ZHS10 is transversely inserted into the anchor profile and locked by a 90° rotation. The line is fixed with cable ties at the horn.

YOKE CLAMPS

Commercially yoke clamps can be used as a separate strain relief (see below) and can be mounted with the aluminum c-profile of the SLE 520, SLE 320 in front of the energy chain connectors.



Maintenance of the energy chain

PKK energy chains are maintenance free. Like every mechanical system there will - depending on the ambient conditions - wear must be observed.

In case of this the energy chain has to be replaced.

For long travels or even in a circular motion, the energy chains are often equipped with sliding elements. These allow sliding of the upper part of the chain on a suitable surface (eg, slider-slider, slider-steel, glide bar).

The sliders show wear according to the application due to abrasion. The slider surfaces should be checked at regular intervals on their condition. With a thickness of 1-2 mm sliders have to be replaced.



link



PKK

PKK

	R	40	50	60	75
110,111	m.V.	1598	1599	1600	1601
	o.V.	1605	1604	1603	1602
113	m.V.	1598	1599	1600	1601
	o.V.	1605	1604	1603	1602
115	m.V.	1598	1599	1600	1601
	o.V.	1605	1604	1603	1602

	R	40	50	60	75
120, 121	m.V.	0380	0379	0378	0377
	o.V.	1717	1716	1715	1714
123	m.V.	0380	0379	0378	0377
	o.V.	1717	1716	1715	1714
125	m.V.	0380	0379	0378	0377
	o.V.	1717	1716	1715	1714
128	m.V.	0380	0379	0378	0377
	o.V.	1717	1716	1715	1714

	R	65	75	100	125	150	200	250	300
210, 211	m.V.	1454	1299	1300	1635	1301	1302	1571	1303
	o.V.								
213	m.V.	1454	1299	1300	1635	1301	1302	1571	1303
	o.V.								
215	m.V.	1454	1299	1300	1635	1301	1302	1571	1303
	o.V.								

	R	75	100	150	200	250	300
220, 221	m.V.	394	1295	1296	1297	1596	1298
	o.V.						
223	m.V.	394	1295	1296	1297	1596	1298
	o.V.						
225	m.V.	394	1295	1296	1297	1596	1298
	o.V.						
228	m.V.	394	1295	1296	1297	1596	1298
	o.V.						

	R	75	100	150	200	250	300
240, 241	m.V.		1455	1456	1457	1458	1459
	o.V.						
243	m.V.		1455	1456	1457	1458	1459
	o.V.						
245	m.V.		1455	1456	1457	1458	1459
	o.V.						

	R	100	150	200	250	300	400
320, 321	m.V.	0421	1305	1306	1570	1307	1308
	o.V.		420	419	1569	418	417
323	m.V.	0421	1305	1306	1570	1307	1308
	o.V.		420	419	1569	418	417
325	m.V.	0421	1305	1306	1570	1307	1308
	o.V.		420	419	1569	418	417
328	m.V.	0421	1305	1306	1570	1307	1308
	o.V.		420	419	1569	418	417

	R	100	130	150	200	300	400
310, 311	m.V.		1309	1310	1311	1312	1313
	o.V.						
313	m.V.		1309	1310	1311	1312	1313
	o.V.						
315	m.V.		1309	1310	1311	1312	1313
	o.V.						

	R	100	150	200	250	300	400
340, 341	m.V.		1544	1545	1546	1547	1548
	o.V.			1543	1542	1541	1540
345	m.V.		1544	1545	1546	1547	1548
	o.V.			1543	1542	1541	1540

	R	150	200	250	300	400	500
510, 511	m.V.						
	o.V.						
513	m.V.						
	o.V.						
515	m.V.						
	o.V.						

	R	150	200	250	300	400	500
520, 521	m.V.	1094	1095	1437	109	1097	1098
	o.V.						
523	m.V.	1094	1095	1437	1096	1097	1098
	o.V.						
525	m.V.	1094	1095	1437	1096	1097	1098
	O.V.						
528	m.V.	1094	1095	1437	1096	1097	1098
	o.V.						

	R	150	200	250	300	400	500
510, 511	m.V.						
	o.V.						
513	m.V.						
	o.V.						
515	m.V.						
	o.V.						

	R	150	200	250	300	400	500
520, 521	m.V.	1094	1095	1437	109	1097	1098
	o.V.						
523	m.V.	1094	1095	1437	1096	1097	1098
	o.V.						
525	m.V.	1094	1095	1437	1096	1097	1098
	O.V.						
528	m.V.	1094	1095	1437	1096	1097	1098
	o.V.						



PKK 30 50 60 70 80 90 100 110 120 130 150 170 180 200 220 230 250 300

110	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
111	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
113	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
121	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
123	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
128	373	374	375	372	371	370	369	1815	1864	-	-	-	-	-	-	-	-	-
210	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
211	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
213	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
221	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
223	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
228	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
240	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
241	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
243	-	390	389	388	387	386	385	1517	384	1436	383	382	-	381	1887	-	-	-
245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
311	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
313	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
321	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
323	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
328	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
340	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
341	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
510	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
511	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
513	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
515	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
520	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
521	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
523	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407
525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
528	-	416	1564	1565	1164	1566	411	-	1009	1567	410	1392	1888	409	-	1889	408	407

PKK parts 55

11

10

12

8

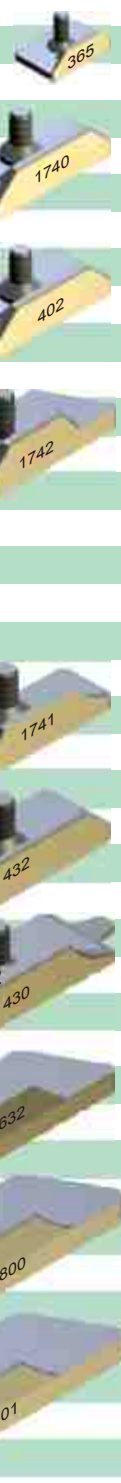
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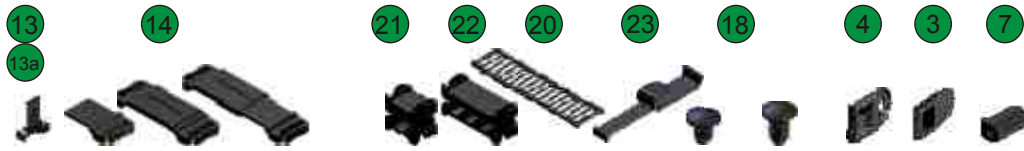
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PKK	ASA 50	ASI 50	ASA 100	ASI 100	ASA 150	ASI 150	ASA 200	ASI 200	ASA 300	ASI 300	SH	SZR	ASK	ASL	GL
110	-	-	-	-	-	-	-	-	-	-	-	367	-	-	-
111	-	-	-	-	-	-	-	-	-	-	-	367	-	-	-
113	-	-	-	-	-	-	-	-	-	-	-	367	366	-	-
115	364	362	363	361	-	-	-	-	-	-	360	367	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-	367	-	-	-
121	-	-	-	-	-	-	-	-	-	-	-	367	-	-	-
123	-	-	-	-	-	-	-	-	-	-	-	367	366	-	-
125	364	362	363	361	-	-	-	-	-	-	360	367	-	-	-
128	-	-	-	-	-	-	-	-	-	-	-	367	-	-	365
210	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
211	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
213	-	-	-	-	-	-	-	-	-	-	-	404	1597	403	-
215	401	399	400	398	487	485	888	887	-	-	397	404	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
221	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
223	-	-	-	-	-	-	-	-	-	-	-	404	1597	403	-
225	401	399	400	398	487	485	888	887	-	-	397	404	-	-	1740
228	-	-	-	-	-	-	-	-	-	-	-	404	-	-	402,1742
240	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
241	-	-	-	-	-	-	-	-	-	-	-	404	-	-	-
243	-	-	-	-	-	-	-	-	-	-	-	404	1597	403	-
245	401	399	400	398	487	485	888	887	-	-	397	404	-	-	-
310	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
311	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
313	-	-	-	-	-	-	-	-	-	-	-	434	1622	433	-
315	-	-	428	426	427	425	491	489	492	490	424	434	-	-	-
320	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
321	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
323	-	-	-	-	-	-	-	-	-	-	-	434	1622	433	-
325	-	-	428	426	427	425	491	489	492	490	424	434	-	-	1741
328	-	-	-	-	-	-	-	-	-	-	-	434	-	-	430,432,1632
340	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
341	-	-	-	-	-	-	-	-	-	-	-	434	-	-	-
345	-	-	428	426	427	425	491	489	492	490	424	434	-	-	-
510	-	-	-	-	-	-	-	-	-	-	-	1474	-	-	-
511	-	-	-	-	-	-	-	-	-	-	-	1474	-	-	-
513	-	-	-	-	-	-	-	-	-	-	-	1474	-	-	-
515	-	-	-	-	1399	1400	1401	1402	-	-	1478	1474	-	-	-
520	-	-	-	-	-	-	-	-	-	-	-	1474	-	-	-
521	-	-	-	-	-	-	-	-	-	-	-	1474	-	-	-
523	-	-	-	-	-	-	-	-	-	-	-	1474	1622	433	-
525	-	-	-	-	1399	1400	1401	1402	-	-	1478	1474	-	-	-
528	-	-	-	-	1399	1400	1401	1402	-	-	1478	1474	-	-	1800, 1801





PKK PZ PTF PT55 PT75 LL25 LL50 LS HS FK SK UFA B / Z SFA

110	368	-	-	-	-	-	-	-	-	-	-	-	-	-
111	368	-	-	-	-	-	-	-	-	-	-	-	-	-
113	368	-	-	-	-	-	-	-	-	-	-	-	-	-
115	359	-	-	-	-	-	-	-	-	-	-	-	-	-
120	368	-	-	-	-	-	-	-	-	-	-	-	-	1435
121	368	-	-	-	-	-	-	-	-	-	-	-	-	1435
123	368	-	-	-	-	-	-	-	-	-	-	-	-	1435
125	359	-	-	-	-	-	-	-	-	-	-	-	-	1435
128	368	-	-	-	-	-	-	-	-	-	-	-	-	1435
210	405	879	879	880	-	1663	1664	1665	1847	1269	-	1467	1667	-
211	405	879	879	880	-	1663	1664	1665	1847	1269	-	1467	1667	-
213	405	879	879	880	-	1663	1664	1665	1847	1269	-	1467	1667	-
215	396	879	879	880	-	1663	1664	1665	-	1269	-	1467	1667	-
220	405	879	879	880	-	1663	1664	1665	1847	-	1366	1467	1667	1433
221	405	879	879	880	-	1663	1664	1665	1847	-	1366	1467	1667	1433
223	405	879	879	880	-	1663	1664	1665	1847	-	1366	1467	1667	1433
225	396	879	879	880	-	1663	1664	1665	-	-	1366	1467	1667	1433
228	405	879	879	880	-	1663	1664	1665	1847	-	1366	1467	1667	1433
240	1461	879	879	880	-	1663	1664	1665	1847	1269	-	-	-	-
241	1461	879	879	880	-	1663	1664	1665	1847	1269	-	-	-	-
243	1461	879	879	880	-	1663	1664	1665	1847	1269	-	-	-	-
245	1463	879	879	880	-	1663	1664	1665	-	1269	-	-	-	-
310	423	879	879	880	-	1663	1664	1665	1848	1317	-	1468	1666	-
311	423	879	879	880	-	1663	1664	1665	1848	1317	-	1468	1666	-
313	423	879	879	880	-	1663	1664	1665	1848	1317	-	1468	1666	-
315	422	879	879	880	-	1663	1664	1665	-	1317	-	1468	1666	-
320	423	879	879	880	-	1663	1664	1665	1848	-	1365	1468	1666	1434
321	423	879	879	880	-	1663	1664	1665	1848	-	1365	1468	1666	1434
323	423	879	879	880	-	1663	1664	1665	1848	-	1365	1468	1666	1434
325	423	879	879	880	-	1663	1664	1665	-	-	1365	1468	1666	1434
328	423	879	879	880	-	1663	1664	1665	1848	-	1365	1468	1666	1434
340	1549	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	-
341	1549	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	-
345	1654	879	879	880	-	1663	1664	1665	-	1317	-	-	-	-
510	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	-
511	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	-
513	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	-
515	1477	879	879	880	-	1663	1664	1665	-	1317	-	-	-	-
520	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	1434
521	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	1434
523	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	1434
525	1477	879	879	880	-	1663	1664	1665	-	1317	-	-	-	1434
528	1067	879	879	880	-	1663	1664	1665	1848	1317	-	-	-	1434