

PLE

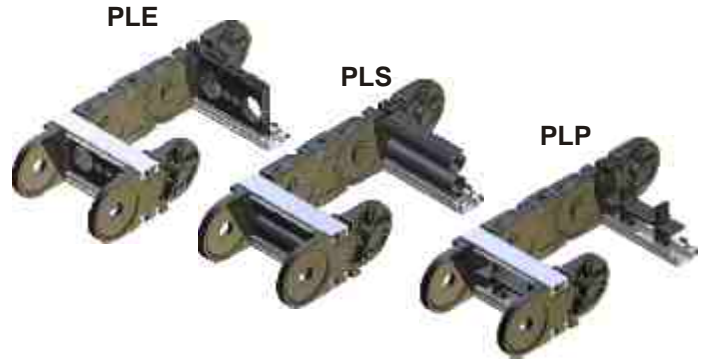
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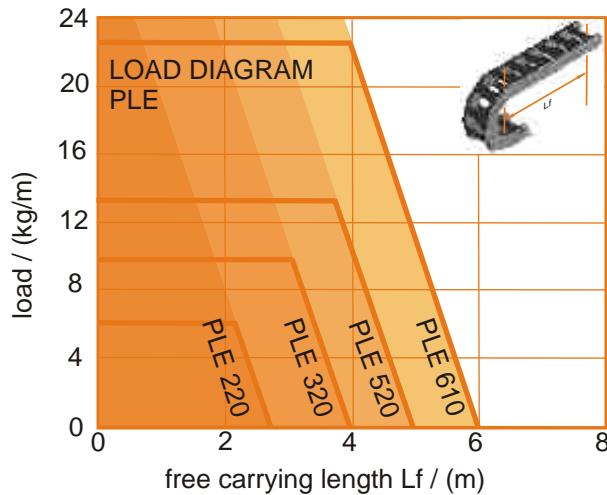
closed + open

PLE CHARACTERISTICS

The PLE with aluminum stays is available as **PLE** with plastic inserts or plastic slot profile, as **PLS** with foam slot profile or as **PLP** with plastic divider PZ.



- positive stay locking
- both inside and outside radius can be opened
- simple to shorten or lengthen
- stepless stay length up to 1000 mm



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

Travel

The maximum travel is determined by the arrangement and the additional weight (line weight). At normal arrangement the maximum travel is twice the free carrying length. Support rollers or similar constructive steps can increase this value.

In gliding arrangements travel distances up to 100 meters are possible.

Longer travel distances need further constructive steps, like SYSTEM MARATHON, which exceeds the travel distance nearly without limits.

Travel speed

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

Acceleration

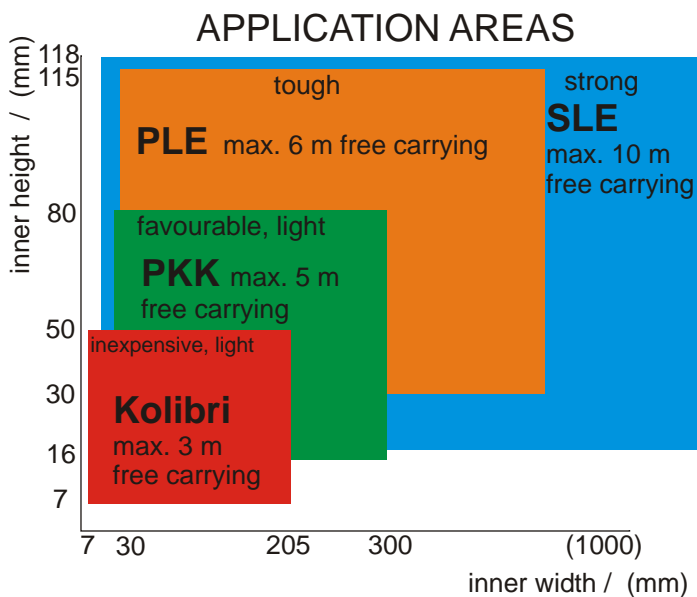
In principle there are no restrictions for the acceleration. Limits can only be achieved at high tension forces caused by high additional weights.

Temperature

The operating temperature is inbetween -20 °C and 100 °C.

Special versions

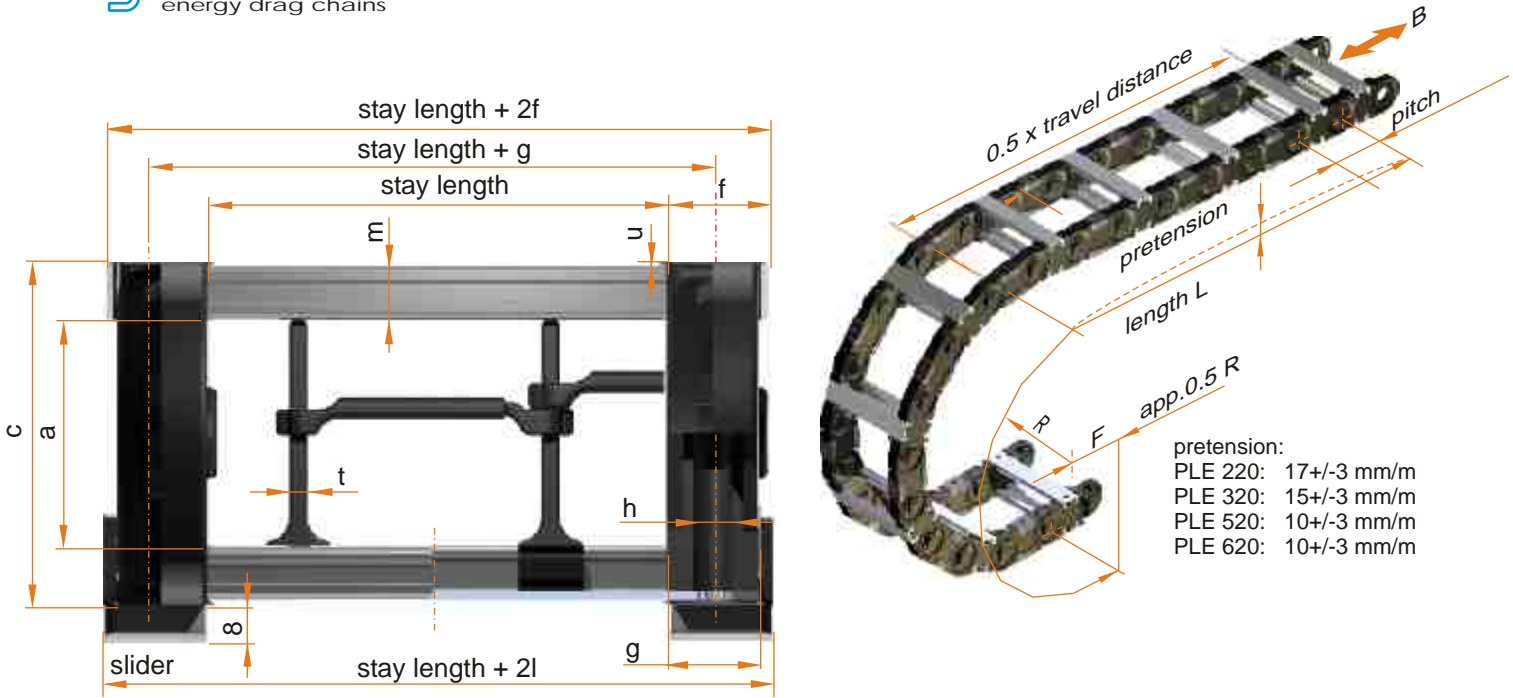
- | | |
|----------|------------------------|
| ALLROUND | ... all movements |
| ATEX | ... EX-protection |
| ESD | ... antistatic |
| V-0 | ... self extinguishing |





**Machine tools,
Handling technology,
Conveying and lifting equipment**





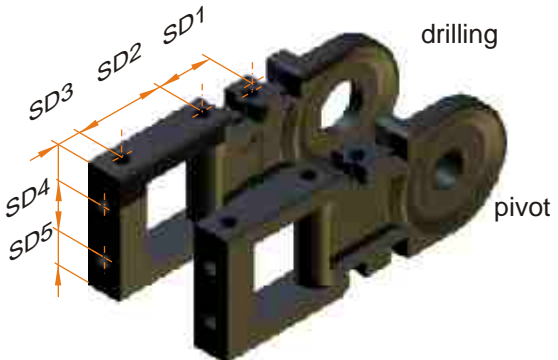
pretension:
 PLE 220: 17+/-3 mm/m
 PLE 320: 15+/-3 mm/m
 PLE 520: 10+/-3 mm/m
 PLE 620: 10+/-3 mm/m

The usable interior width is stay length - 2 mm

| PLE | bending radius R [mm] | pitch | a | c | f | g | h | l ¹⁾ | m | t | u | weight [kg/m] ³⁾ |
|----------------------------------|-------------------------|-------|------------------------|-----|----|----|-----|-----------------|----|---|---|-----------------------------|
| 220, 221 | 75 100 150 200 300 | 75 | 31 | 50 | 18 | 16 | ∅6 | - | 9 | 4 | 1 | 1.9 |
| 320, 321, 325, 328 ²⁾ | 150 200 250 300 400 | 100 | 49 | 75 | 22 | 20 | ∅8 | 23 | 12 | 4 | 1 | 3.4 (4.4) |
| 520, 521, 525, 528 ²⁾ | 200 250 300 400 500 | 125 | 68 | 100 | 26 | 24 | ∅8 | 27 | 15 | 4 | 1 | 4.8 (5.9) |
| 541, 548 ²⁾ | 200 250 300 400 500 | 125 | 80 | 100 | 26 | 24 | ∅8 | 27 | 9 | 4 | 1 | 4.60 |
| 610, 611, 615 | 219 250 315 410 500 700 | 150 | 120 ⁴⁾ | 140 | 20 | 20 | ∅10 | - | 9 | 8 | 1 | 6,5 (7,0) |
| 613 | 230 300 400 500 700 | 150 | Inner height available | | | | | | | | | 6,20 |

1) stay length + 2l is the outside width, including sliders 2) PLE 328 from R200, PLE 528, 548 from R250
 3) weight with stay length 100, values in brackets for closed version 4) 615 a = 110

| PLE | minimum stay length [mm] | maximum stay length [mm] | PLE inserts ∅ [mm] | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------------------|--------------------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|
| 220, 221 | 50 | 800 | 10 | 15 | 20 | 25 | 30 | | | | | | | | | | | | | | | |
| 320, 321, 325, 328 | 60 | 900 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | | | | | | | | | | |
| 520, 521, 525, 528 | 70 | 1000 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | | | | | | | |
| 541, 548 | 70 | 900 | | | | | | | | | | | | | | | | | | | | |
| 610, 611, 615 | 90 | 1000 | | | | | | | | | | | | | | | | | | | | |



The stay lengths are offered in steps of 1 mm.

| PLE SD- connector | SD1 | SD2 | SD3 | SD4 | SD5 |
|--------------------|------|------|-----|-----|-----|
| 220, 221, 225 | 22,5 | 37,5 | 8,5 | 22 | 7,5 |
| 320, 321, 325, 328 | 35 | 45 | 8,5 | 45 | 15 |
| 520, 521, 525, 528 | 35 | 45 | 8,5 | 66 | 17 |

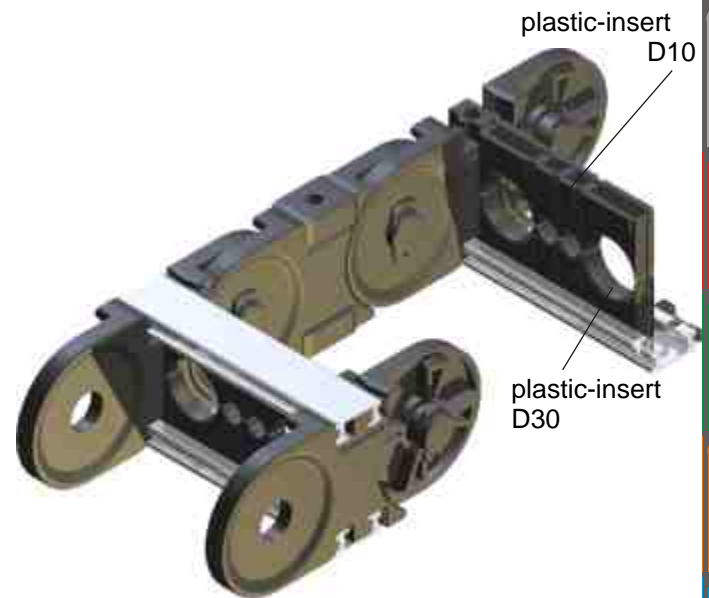
order example: travel distance 3 m, bending radius 200 mm, cable: 1x15 mm, 8x8 mm, 3x12 mm, 2x22 mm, chain arrangement is hanging

| | | | | | | |
|---------------|---|--------|-----------------|------------------|---------------|-------------------|
| PLE 320 / 200 | x | 2300 | / 200 | / SD 32, SD 32 / | h | / 5 PZ, 1 Pt55 |
| type / radius | x | length | / stay length / | connectors / | arrangement / | stay distribution |

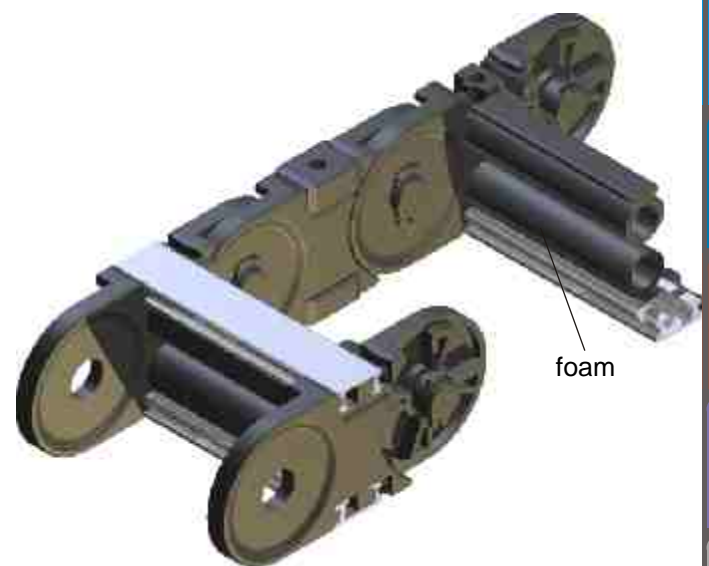
PLE energy chains are distinguished from standard plastic chains by their extreme stability and the rigid, continuously adjustable aluminum profile. Stay lengths up to 1000 mm can be accommodated.

The allocation of the interior offers variable opportunities and guarantees optimum line protection even at high acceleration and travel speed.

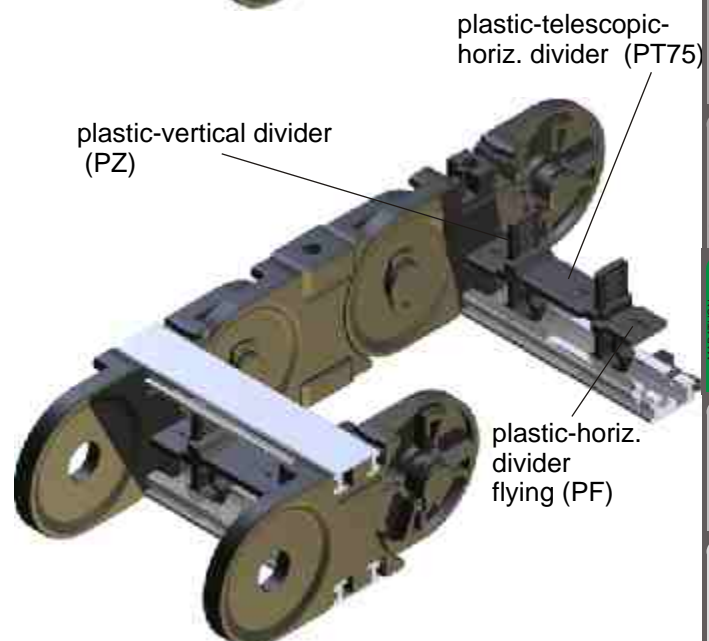
The **PLE** (PLE with plastic inserts or plastic insert-profile) ensures a perfect guide at high speeds. Errors during installation of the cables are nearly impossible, with this variation, the hole design of the stays meet exactly the requirements of the lines. Plastic inserts are available in 5 mm steps. The plastic insert-profile can be ordered according to drawing.



In case of limited installation space, the **PLS** (PLE with foam insert-profile) are used. Again, the optimal guiding of the lines at high speeds and acceleration is ensured. All lines are in the neutral axis (middle of chain height).



For space reasons the **PLP** (PLE with plastic dividers) may be chosen. This inexpensive design allows secure guiding of large amounts of cable. The highly variable stay distribution opportunities through the small steps (3mm) in height and the infinitely adjustable plastic telescopic dividers (PT) allow maximum space for all needs, even when changes in cable diameters are required.



PLE TYPES

PLE 220, 320, 520, 610

The standard type is build with stays in every second chain link. The **integrated connector** makes every link in the chain when needed to a connector (not 620) and therefore the separate ordering and storage of end connector brackets is not necessary.

order example:

| | | | |
|---------|--------|--------|-------------|
| PLE 220 | / 100 | x 3525 | / 100 |
| type | radius | length | stay length |

PLE 221, 321, 521, 541, 611

These designs are made with stays in each link. This increases the lateral stability and improves the guiding particularly of smaller diameter lines.

order example:

| | | | |
|---------|--------|--------|-------------|
| PLE 221 | / 100 | x 3525 | / 100 |
| type | radius | length | stay length |

PLE 325, 525, 615

The closed types with aluminum covers may also replace the standard version stay. The covers can be opened in the inner or outer radius.

order example:

| | | | |
|---------|--------|--------|-------------|
| PLE 325 | / 300 | x 3500 | / 100 |
| type | radius | length | stay length |

PLE 328, 528, 548

These types are suitable for long travel, the upper strand slides on the lower strand. For increased stability these energy chains are also build with stays in each link. The energy chains are fitted with sliders in the inner radius, which have a very low coefficient of friction ($\mu = 0.2$ to 0.25). After reaching the wear limit, the slider can be renewed and the energy chain will continue. Subsequent slider assembly is also possible. Then, the stays must be provided with drilled location holes.

order example:

| | | | |
|---------|--------|--------|-------------|
| PLE 328 | / 200 | x 3500 | / 100 |
| type | radius | length | stay length |

PLE 220

standard type

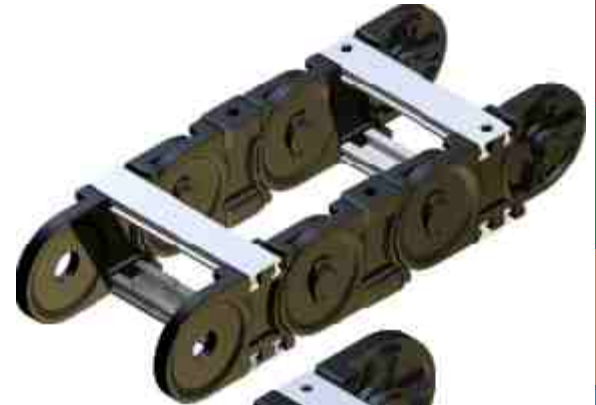
height: 50 width: 86 ... 836
inner height: 31 inner width: 50 ... 800



PLE 320

standard type

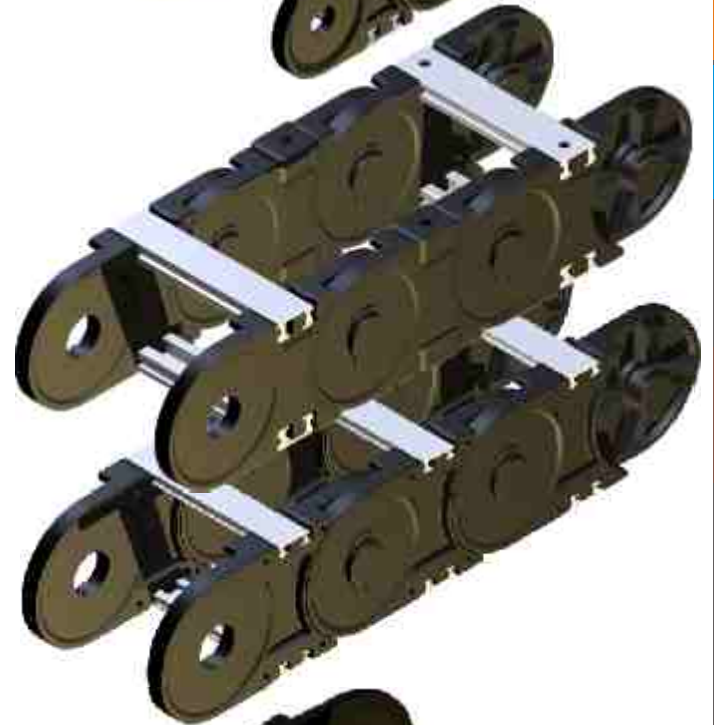
height: 75 width: 104 ... 944
inner height: 49 inner width: 60 ... 900



PLE 520

standard type

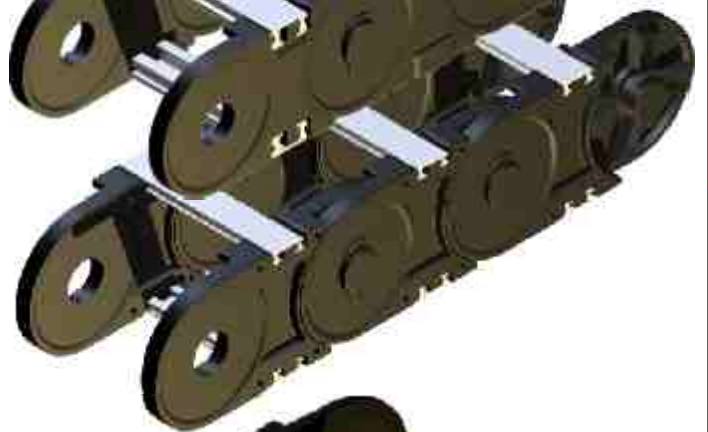
height: 100 width: 122 ... 1052
inner height: 68 inner width: 70 ... 1000



PLE 541

stay in each link

height: 100 width: 122 ... 1052
inner height: 80 inner width: 70 ... 1000

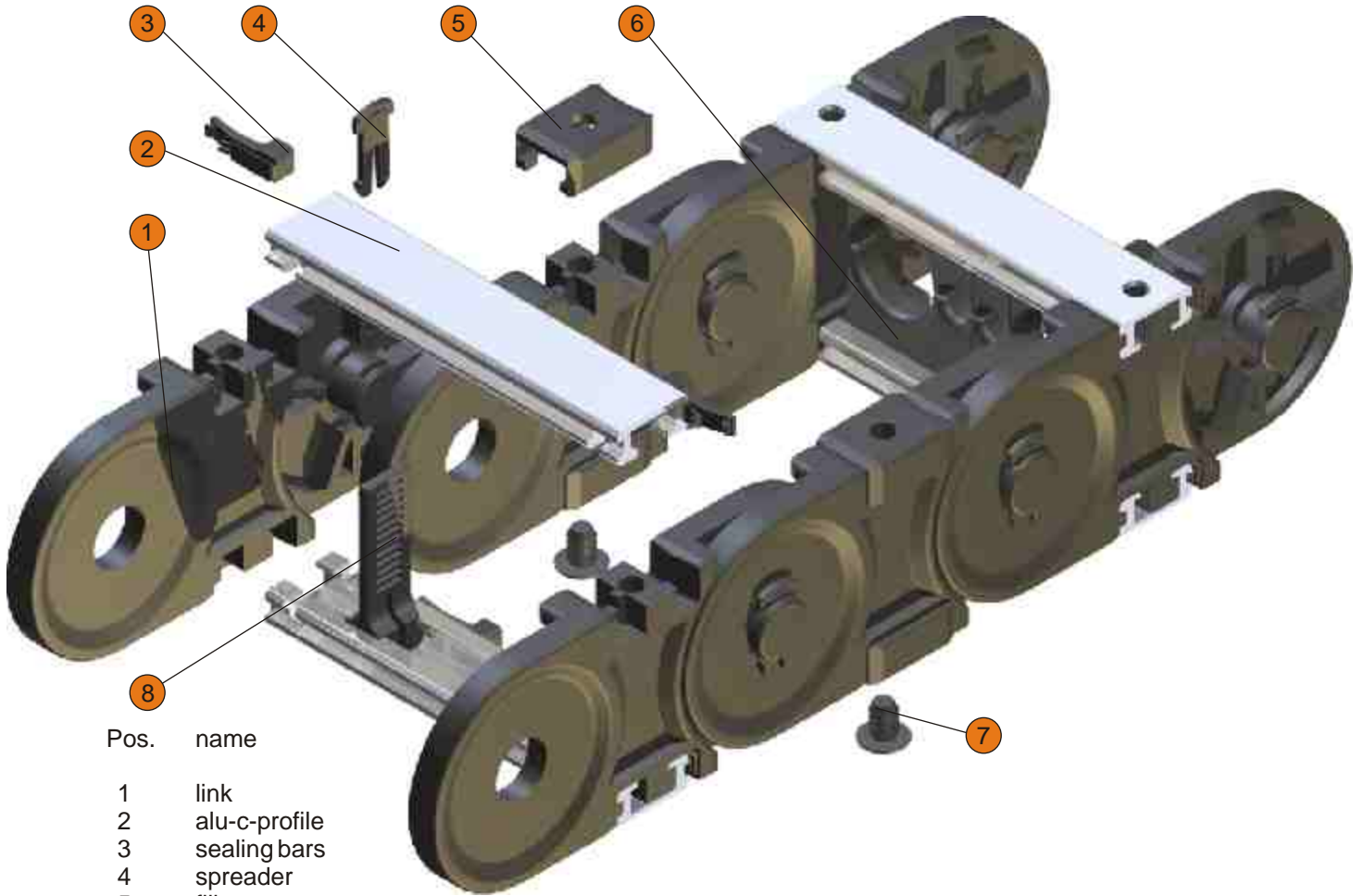


PLE 610

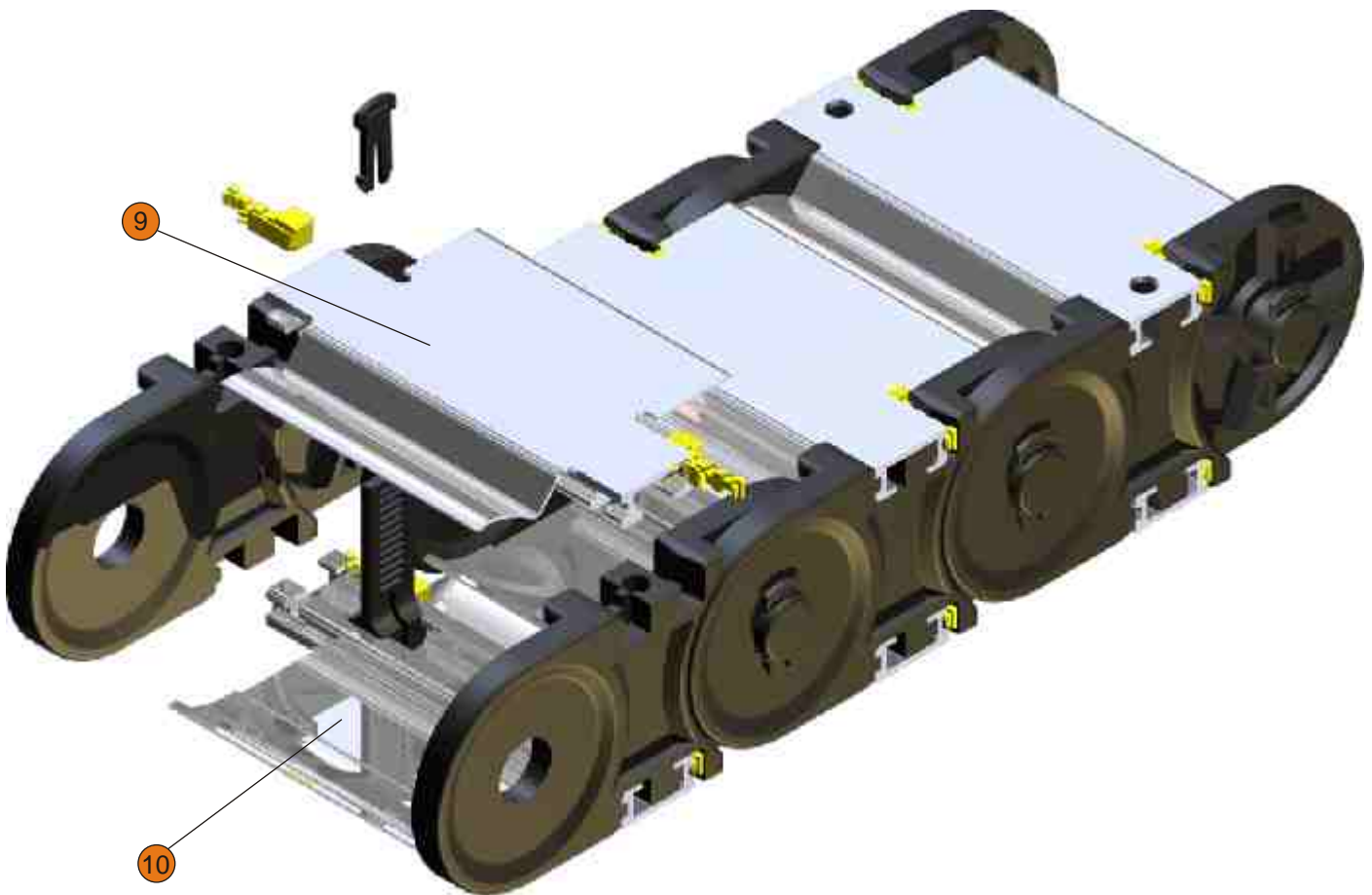
standard type

height: 140 width: 140 ... 1040
inner height: 120 inner width: 90 ... 1000





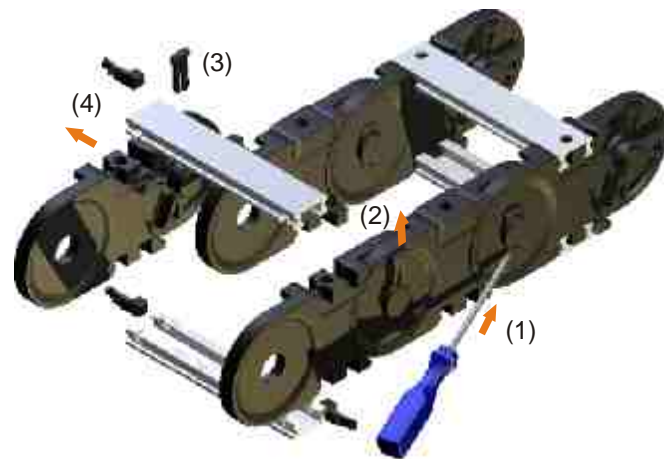
| Pos. | name |
|------|-------------------------------|
| 1 | link |
| 2 | alu-c-profile |
| 3 | sealing bars |
| 4 | spreader |
| 5 | filler |
| 6 | insert |
| 7 | damping element |
| 8 | plastic vertical divider (PZ) |
| 9 | inner cover |
| 10 | outer cover |



Lengthening or shortening, link bands

To shorten the spreaders are disengaged (1), taken from (2,3) and the corresponding piece of chain removed (4). Lengthening is done by adding links and inter-lock with the spreaders.

Alternatively, first part of strands assembled or dismantled. Then a stay assembly or disassembly is required.

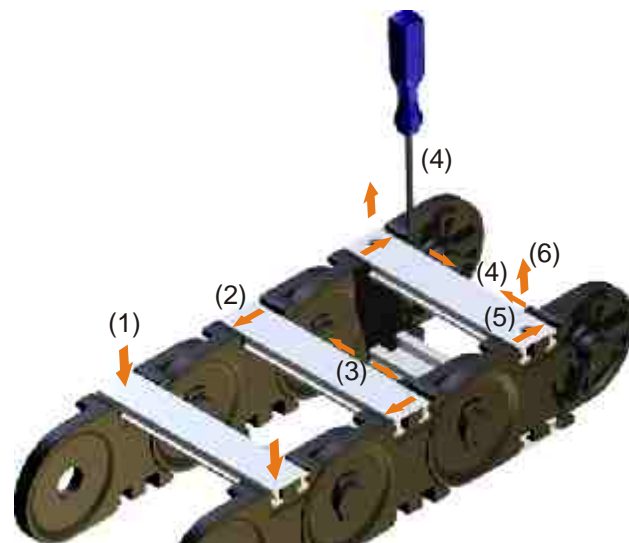


Stay assembly

Stays are installed (1) and locked by horizontal shifting into place (2). Then pushing the sealing bars outside until they lock the link.

Stay disassembly

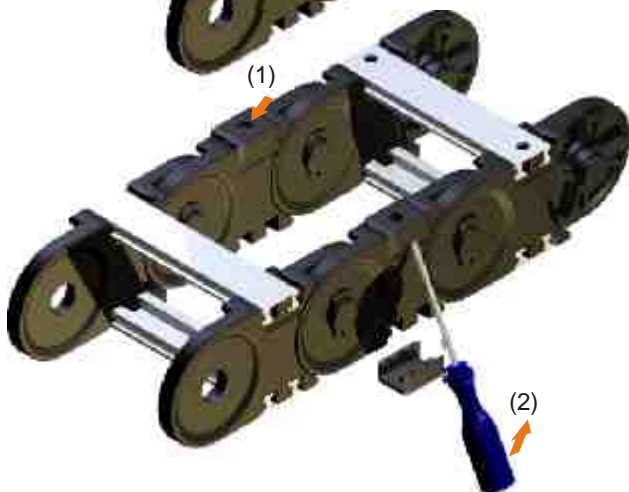
Push sealing bar to the inside (4), unlock stay (5) and remove them (6).



Filler

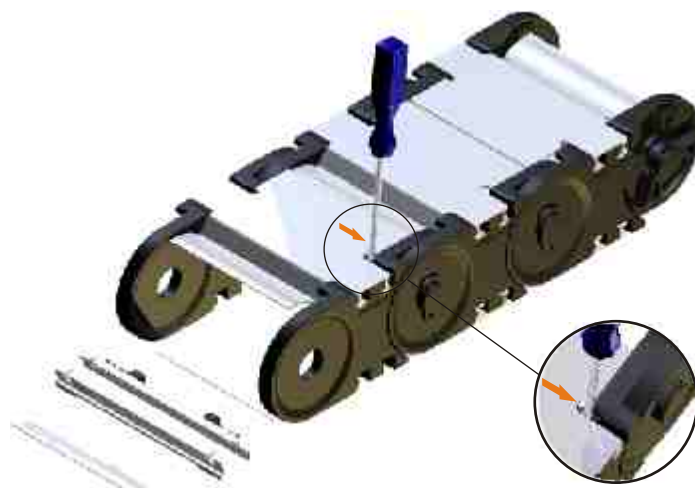
The fillers are mounted in the recess and (possibly with a light plastic hammer) pushed until locked (1).

The dismantling of the fillers is done with a screwdriver. The screwdriver blade ought to be small enough to start behind the filler. Then unhinge the filler (2).



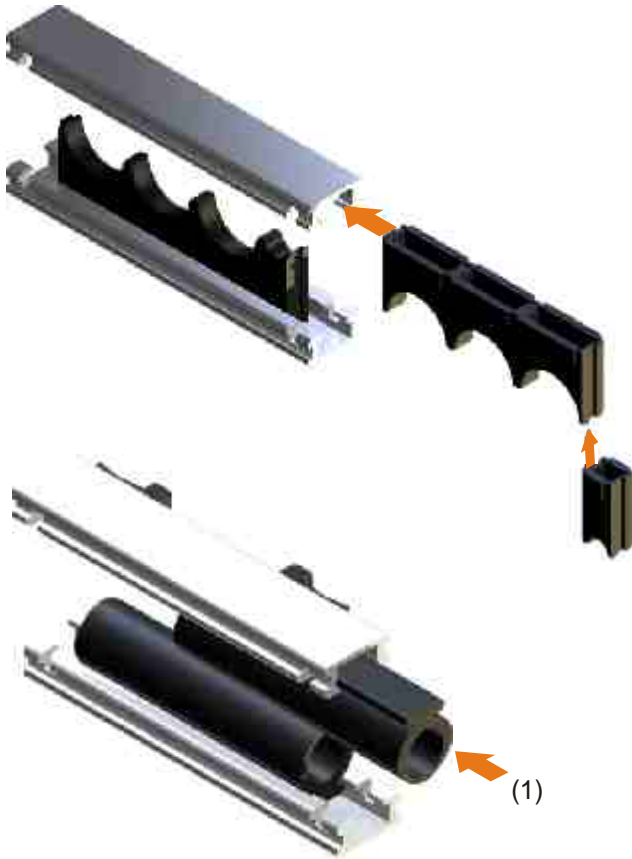
Covers

The assembly of the covers is the same as the assembly and disassembly of the stays. The sealing bar is positioned in the designated position with a screwdriver.



Plastic inserts

The inserts are assembled according to the required lateral position (1) and inserted into the stay (2).



Foam

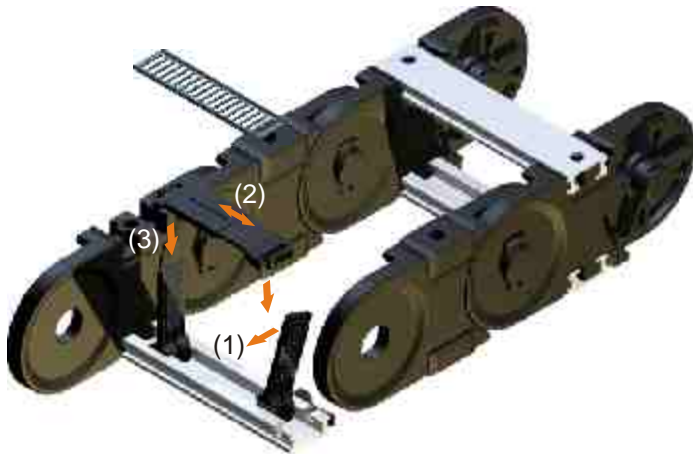
The foam insert is pushed laterally into the aluminum-profile (1), before they are assembled to the chain links.



Plastic divider PZ

The plastic dividers are hooked into the desired position with the long side of the foot in the aluminum bar and engaged with slight pressure (1).

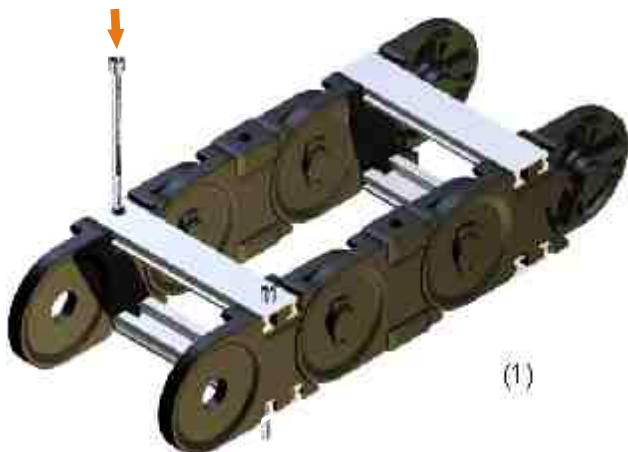
Corrections of the position by lateral displacement are possible. The dismantling of the PZ is done by pulling in the opposite direction or sideways push out from the stay.



Telescopic horizontal divider

The telescopic horizontal divider can be adjusted in length (2), vertically fitted on the PZ (3) and engaged in the designated height.

The dismantling is carried out with a screwdriver by unlocking and removal.



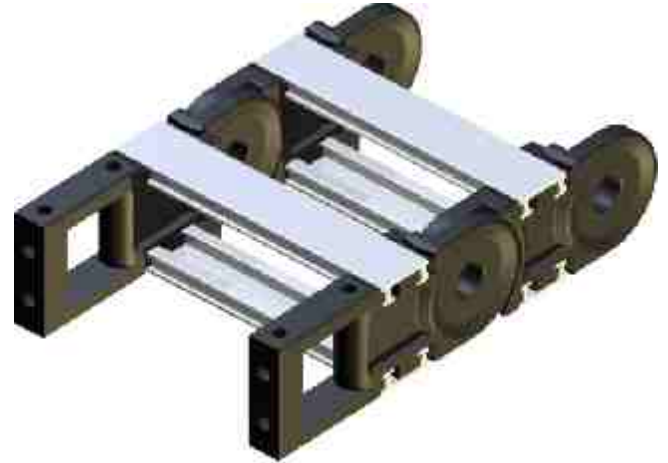
Mounting the energy chain

All ekd plastic energy chains are equipped with **integrated connectors**. They allow the mounting of the energy chain with any link.

In gliding energy chain applications or for a smooth optical effect, the mounting holes in the fixed connector can be countersunk.

Face mounting

The energy chain PLE can be optionally fitted with flange connectors. The flange connectors allow various mounting opportunities, mounted like chain links and secured with a stay.

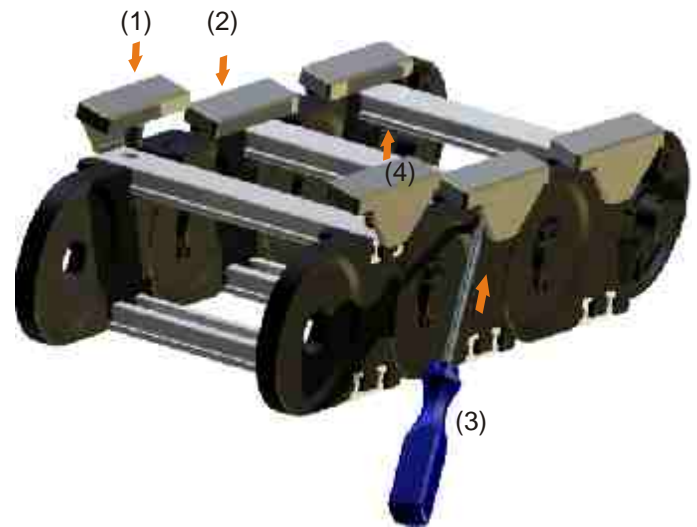


Sliders

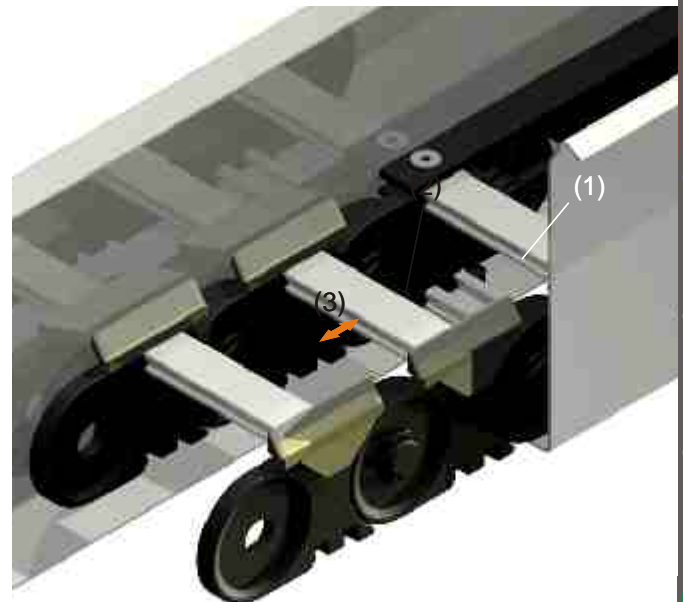
To avoid damage the slider must be conditioned (overnight storage in water at room temperature or 2 h at 80 °C).

The slider is positioned at the inner radius of the energy chain, with the pin in the bore of the stay (1) and pushed until the snap hook locks (2).

To dismantle unhinge the snap hook (3) and remove the slider to the top (4).



The implementation of an energy chain with sliders has to be done smoothly. In addition, the glide bars (1) should be fitted with contour at the end of the energy chain and counter sinking the connector screws (2). The distance between the glide bar to the first slider should be less than the slider length (3).



Maintenance of the energy chain

PLE energy chains are maintenance free. Like every mechanical system this will depend on the ambient conditions so wear will occur which must be observed.

In case of the energy chain has to be replaced.

For long travels or 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 wear depends on the application. The slider surfaces should be checked at regular intervals. With a thickness of 1-2 mm sliders have to be replaced.

PLE parts 72

special material parts like UI94 V-0, EX or other have to be named in the order



1

| PLE | link | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|-----------------|------|
| | R | 75 | 100 | 150 | 200 | 300 | | |
| 220 | m.V. | 0346 | 1190 | 1219 | 1191 | 1192 | | |
| | o.V. | 1193 | 1194 | 1218 | 1195 | 1196 | | |
| 221 | m.V. | 0346 | 1190 | 1219 | 1191 | 1192 | | |
| | o.V. | 1193 | 1194 | 1218 | 1195 | 1196 | | |
| | R | 150 | 200 | 250 | 300 | 400 | | |
| 320 | m.V. | 0351 | 1197 | 1198 | 1199 | 1200 | | |
| | o.V. | 1201 | 1202 | 1203 | 1204 | 1205 | | |
| 321 | m.V. | 0351 | 1197 | 1198 | 1199 | 1200 | | |
| | o.V. | 1201 | 1202 | 1203 | 1204 | 1205 | | |
| 325 | m.V. | 0351 | 1197 | 1198 | 1199 | 1200 | | |
| | o.V. | 1201 | 1202 | 1203 | 1204 | 1205 | | |
| 328 | m.V. | - | 1197 | 1198 | 1199 | 1200 | | |
| | o.V. | - | 1202 | 1203 | 1204 | 1205 | | |
| | R | 200 | 250 | 300 | 400 | 500 | | |
| 520 | m.V. | 0944 | 1206 | 1207 | 1208 | 1209 | | |
| | o.V. | 1211 | 1212 | 1213 | 1214 | 1215 | | |
| 521 | m.V. | 0944 | 1206 | 1207 | 1208 | 1209 | | |
| | o.V. | 1211 | 1212 | 1213 | 1214 | 1215 | | |
| 525 | m.V. | 0944 | 1206 | 1207 | 1208 | 1209 | | |
| | o.V. | 1211 | 1212 | 1213 | 1214 | 1215 | | |
| 528 | m.V. | - | 1206 | 1207 | 1208 | 1209 | | |
| | o.V. | - | 1212 | 1213 | 1214 | 1215 | | |
| | R | 200 | 250 | 300 | 400 | 500 | | |
| 541 | m.V. | 1611 | 1607 | 1608 | 1609 | 1610 | | |
| | o.V. | - | - | - | - | - | | |
| 548 | m.V. | 1611 | 1607 | 1608 | 1609 | 1610 | | |
| | o.V. | - | - | - | - | - | | |
| R | 219 | 250 | 315 | 410 | 500 | 700 | 315/1600 | |
| 610 | m.V. | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 |
| | o.V. | - | - | - | - | - | - | - |
| 611 | m.V. | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 |
| | o.V. | - | - | - | - | - | - | - |
| 615 | m.V. | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 |
| | o.V. | - | - | - | - | - | - | - |

PLE PART NUMBERS

4



5



7



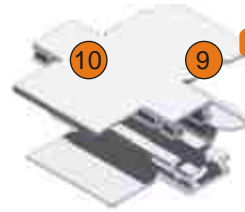
2



3



10



9



PLE parts

72

PLE

SR

PS

FK

C-profile

SRR/SRR5

ASA

ASI

foam

| | | | | | | | | | |
|-----|------|------|------|------|-----------|--|------|------|------|
| 220 | 0348 | 0345 | 1269 | 0976 | 0344 | | - | - | - |
| 221 | 0348 | - | 1269 | 0976 | 0344 | | - | - | - |
| 320 | 0353 | 0350 | 1317 | 0977 | 0349 | | - | - | 2365 |
| 321 | 0353 | - | 1317 | 0977 | 0349 | | - | - | 2365 |
| 325 | 0353 | - | 1317 | - | 1668 1669 | | 1640 | 1638 | 2365 |
| 328 | 0353 | - | 1317 | 0977 | 0349 | | - | - | 2365 |
| 520 | 0358 | 0943 | 1317 | 0978 | 0942 | | - | - | 2365 |
| 521 | 0358 | - | 1317 | 0978 | 0942 | | - | - | 2365 |
| 525 | 0358 | - | 1317 | - | 1656 1657 | | 1641 | 1639 | 2365 |
| 528 | 0358 | - | 1317 | 0978 | 0942 | | - | - | 2365 |
| 541 | 0358 | - | 1317 | 0976 | 1676 | | - | - | - |
| 548 | 0358 | - | 1317 | 0976 | 1676 | | - | - | - |
| 610 | 0358 | - | - | | | | | | |
| 611 | 0358 | - | - | | | | | | |
| 615 | 0358 | - | - | | 1961 | | | | |

PLE parts 72

8



| PLE | PZ | PTF | PT 55 | PT 75 | LL 25 | LL 50 | LS | GL | ZL | ZLA8 | ZLS10 | ZHS10 | SDA Drilling Pin | |
|-----|----|-----|-------|-------|-------|-------|----|----|----|------|-------|-------|---------------------|--|
|-----|----|-----|-------|-------|-------|-------|----|----|----|------|-------|-------|---------------------|--|

| | | | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|
| 220 | 0778 | 1519 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1273 | 1159 | 1160 | 1407 | 1439 | 1761 |
| 221 | 0778 | 1519 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1273 | 1159 | 1160 | 1407 | 1439 | 1761 |



| | | | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 320 | 0163 | 1678 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1273 | 1159 | 1160 | 1407 | 1773 | 1774 |
| 321 | 0163 | 1678 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1273 | 1159 | 1160 | 1407 | 1773 | 1774 |
| 325 | 0163 | 1678 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | 1450 | 1273 | 1159 | 1160 | 1407 | 1773 | 1774 |
| 328 | 0163 | 1678 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | 1450 | 1273 | 1159 | 1160 | 1407 | 1773 | 1774 |



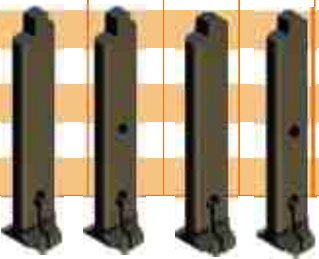
| | | | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 520 | 0719 | 1680 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1675 | 1159 | 1160 | 1407 | 1775 | 1776 |
| 521 | 0719 | 1680 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1675 | 1159 | 1160 | 1407 | 1775 | 1776 |
| 525 | 0719 | 1680 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | 1449 | 1675 | 1159 | 1160 | 1407 | 1775 | 1776 |
| 528 | 0719 | 1680 | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | 1449 | 1675 | 1159 | 1160 | 1407 | 1775 | 1776 |



| | | | | | | | | | | | | | | | |
|-----|------|--|------|------|------|------|------|------|------|------|------|------|------|--|--|
| 541 | 1613 | | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | - | 1675 | 1159 | 1160 | 1407 | | |
| 548 | 1613 | | 1927 | 0879 | 0880 | 1663 | 1664 | 1421 | 1449 | 1675 | 1159 | 1160 | 1407 | | |



| | | | | | | | | | | | | | | | |
|-----|------|------|---|---|---|---|---|---|---|------|------|------|------|--|--|
| 610 | 1110 | 1933 | - | - | - | - | - | - | - | 1612 | 1159 | 1160 | 1407 | | |
| 611 | 1110 | 1933 | - | - | - | - | - | - | - | 1612 | 1159 | 1160 | 1407 | | |



PLE PART NUMBERS

inserts

special material parts like UI94 V-0, EX or other have to be named in the order

6

diameter in mm



PLE 10 15 20 25 30 35 40 45 50 55 60 65 70



| | | | | | | | | | | | | | |
|-----|------|------|------|------|------|---|---|---|---|---|---|---|---|
| 220 | 0649 | 0650 | 0651 | 0652 | 0653 | - | - | - | - | - | - | - | - |
| 221 | 0649 | 0650 | 0651 | 0652 | 0653 | - | - | - | - | - | - | - | - |



| | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|---|---|---|---|
| 320 | 0654 | 0665 | 0656 | 0657 | 0658 | 0659 | 0660 | 0661 | 0662 | - | - | - | - |
| 321 | 0654 | 0665 | 0656 | 0657 | 0658 | 0659 | 0660 | 0661 | 0662 | - | - | - | - |
| 325 | 0654 | 0665 | 0656 | 0657 | 0658 | 0659 | 0660 | 0661 | 0662 | - | - | - | - |
| 328 | 0654 | 0665 | 0656 | 0657 | 0658 | 0659 | 0660 | 0661 | 0662 | - | - | - | - |



| | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 520 | 1628 | 0663 | 0664 | 0665 | 0666 | 0667 | 0668 | 0669 | 0670 | 0671 | 0672 | 0714 | 0715 |
| 521 | 1628 | 0663 | 0664 | 0665 | 0666 | 0667 | 0668 | 0669 | 0670 | 0671 | 0672 | 0714 | 0715 |
| 525 | 1628 | 0663 | 0664 | 0665 | 0666 | 0667 | 0668 | 0669 | 0670 | 0671 | 0672 | 0714 | 0715 |
| 528 | 1628 | 0663 | 0664 | 0665 | 0666 | 0667 | 0668 | 0669 | 0670 | 0671 | 0672 | 0714 | 0715 |

Design guidelines
Order infos
Kolbrit
PKK
PLP PLA
SLE SLP SLA
GKA
SFK
PFR
Troughs
Systems
Materials
Informations