UNLIMITED POWER

Modular Systems for Conveyor Plants in Fossil-Fired Power Plants
For example, coal is conveyed from the stockpile to the boiler. RUD systems ensure that bunkers are discharged and wagons unloaded without problems (page 27).

Ash is removed from beneath the boiler. RUD systems for dry de-asher plants ensure it is disposed of reliably (page 19).

Coal is conveyed to the coal mill. RUD Apron conveyors and cleaning-scraper conveyors ensure trouble-free operation (page 27).

Ash is removed from beneath the boiler. RUD systems for wet de-asher plants are renowned for reliable continuous operation. (page 5)
RUD round steel chains have been successfully used for decades for various tasks in fossil-fired power plants. In each case, our specialists select from RUD’s flexible modular components the optimum system for the particular conveying application. The result is long-lasting, low-maintenance conveyor systems, which are performing successfully around the world under conditions which place the highest demands on wear-resistance and mechanical strength. The illustrations are intended to show how and where this is done.
MODULAR RUD SYSTEMS FOR CONVEYOR PLANTS IN FOSSIL-FIRED POWER PLANTS
Two wet de-asher systems are currently in worldwide use:

1. Flushing chamber de-ashers and
2. Drag-chain wet de-ashers also known as submerged scraper conveyors (SSC)

Drag-chain wet de-ashers (submerged scraper conveyors) are the most frequently used systems, flushing chamber de-ashers are now rarely planned in new power plants. Drag-chain wet de-ashers (SSC) are preferred on account of their easier maintenance.
RUD Chains has been working very closely with well-known manufacturers of submerged scraper conveyors (SSC) since this technology was developed, and also maintains excellent contacts with end users. This of course has a positive effect on the success of further developments of our products for this field of application. A good example is our new two-part attachment (Duomount) which can be mounted in the taut chain strand. It is presented for the first time here in this brochure.

Conveying capacities of between 5 and 50 tonnes per hour (t/h) are achieved, depending on the angle of the inclined part of the conveyor. Throughputs of 50 t/h are achieved with a conveyor trough width of 2500mm. Whereas high ratio geared motor drives were mainly used in the past, nowadays variable speed electromechanical or hydraulic drives are generally preferred. The normal conveying speeds lie between 0.01 and 0.05 m/s; they very seldom exceed 0.07 m/s.

**RUD components** form the heart of the SSC: the conveyor chain, the chain connectors, the drive wheels, guide wheels, and the scrapers with their attachments. Toothed drive sprockets which locate internally on the chain are mainly used in submerged scraper conveyor (SSC). Occasionally, pocketed type sprockets are also used. We shall be pleased to assist you in selecting the optimum system for your conveying task.

**Benefits/advantages of RUD components:**
- Highly wear-resistant to give long service life.
- High-strength through optimal heat treatment (see max. operational forces, operational force table)
- Self-cleaning in comparison to other systems.
- Easy mounting and dismounting of the equipment and RUD components
- Low-maintenance
**RUD COMPONENTS FOR SUBMERGED SCRAPER CONVEYORS (SSC)**

**RUD chains** offers the following priority chain systems for submerged scraper conveyors.

1. **Conveyor chain system** for conveying capacities up to 50 t/h. Our **new** two-part, mountable **Duomount** attachment connects the scraper to multiple chain links.
   - Available in chain dimensions 19x75 to 38x144.
   - For scraper heights up to 2.5 x the external width of the chain link.
   - Bolts onto any scraper profile, and can be mounted in the taut chain strand.
   - Variable scraper spacings are possible.

2. **Conveyor chain system** for conveying capacities up to 25 t/h. Our **SSRF** attachment connects the scraper to multiple chain links.
   - Available in chain dimensions 19x75 to 38x144.
   - For scraper heights up to 2.5 x the external width of the chain link.
   - Can be welded onto any shape of scraper profile.
   - Variable scraper spacings are possible.

3. **Conveyor chain system** for conveying capacities up to 25 t/h. Our **FM** flange attachment connects the scraper to a single chain link.
   - Available in chain dimensions 19x75 to 30x120.
   - For scraper heights up to 1.8 x the external width of the chain link.
   - Can be bolted into the taut chain strand.
   - Variable scraper spacing possible.
RUD ATTACHMENTS FOR SUBMERGED SCRAPER CONVEYORS (SSC)

Duomount attachment,
For heavy-duty conditions.
Used in twin-chain conveyors.

Advantages / benefits:
- Robust and simple design
- Extremely wear-resistant
- Reversing operation possible
- Bolts onto any scraper profiles, and can be mounted in the taut chain strand

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>kg/item</th>
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</table>

Dimensions in mm

SSRF plug-in attachments,
self-locking reversible, flat
For heavy-duty conditions.
Used in twin-chain conveyors.

Advantages / benefits:
- Robust and simple
- Extremely wear-resistant
- Reversing operation possible

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
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<td>199</td>
<td>68</td>
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</tbody>
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Dimensions in mm

Welding guide:
Attachment material 16 MnCr 5.
Welding rod EN 440: G 4 Si 1
Electrode: EN 499: E 42 4 B 42 H 5
Comply with electrode drying instructions.
FM flange attachment, squared
For tough operational conditions
For use in single and multi-strand conveyors.

Advantages / benefits:
- Secure yet easily removed
- Can be used as sliding connection therefore supporting chain

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<th>C</th>
<th>E</th>
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<th>H</th>
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<td>160</td>
<td>25</td>
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</table>

Dimensions in mm

Other RUD attachments on request

RUD CHAINS FOR SSC

A comparison between the RUD modular system and the chain end and shackle system used under the same plant parameters yields the following result:

An SSC incorporating the RUD modular system can be operated with lower energy consumption, uniform low wear characteristics allow longer planned maintenance intervals. An SSC operating under comparable plant conditions with round steel chains according to DIN 22252 generally wears approximately three times faster than RUD special steel grade round steel chains. Multiple link mounting gives improved scraper bar stability.

RUD also offers the advantage of using attachments that do not have to transfer the tensile forces in the chain strand. This eliminates a disadvantageous double function.
**RUD-chains** have outstanding core toughness, which gives them high breaking strength and resistance to brittle fracture. Although the breaking strength of round steel chains generally decreases with increasing depth of case-hardening, **RUD chains** are characterized by a very high resistance to wear coupled with unusually high breaking strength and toughness. As the magnitude and ratio of the mechanical and tribological stresses on the chain is plant-specific, RUD offers special steel grade chains and components with diverse combinations of wear resistance and breaking strength.

All **RUD** special steel grade chains and components have **extraordinarily high resistance** to vibration, which makes a decisive contribution to preventing the occurrence of fatigue fractures during operation. The robustness of the chains and other components are matched to each other and to the operational stresses.

**Material**

High-grade constructional steels with a high degree of purity, fine grain and insusceptibility to aging, Cr, CrNi or CrNiMo alloyed.

**Heat treatment**

Carburizing with reproducible process parameters ensures the lowest possible variance of chain properties over a large number of production batches.

**Testing and documentation**

Chains and components are subjected to regular testing, and the following are documented:

- Breaking strength
- Resistance to vibration
- Hardness curve
- Resistance to wear

---

**Hardening curves across the surface zones in the chain links**
### RUD SPECIAL STEEL GRADE ROUND STEEL CHAINS

Highly wear-resistant for materials handling

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>Chain width bi (min) in mm</th>
<th>Chain width ba (max) in mm</th>
<th>Weight kg/m</th>
<th>Standard strand in mm</th>
<th>RUD 40c-G Tested breaking force kN</th>
<th>RUD Super 35 Tested breaking force kN</th>
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Dimensions in mm

<table>
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<tr>
<th>Quality class</th>
<th>Scope of application Nominal chain size</th>
<th>Production proof stress αₚ₋₁₀% N/mm²</th>
<th>Breaking stress Breaking elongation ca. 2% αₑ₋₅% N/mm²</th>
<th>Surface hardness in interlink HV 30 min. +8% / -3%</th>
<th>Carborizing depth in interlink after microetching HTₐ ±d± 0,01d</th>
<th>Depth of case-hardening in interlink according to DIN 50190, part 1 EHT 550 HV 3 ±d min.</th>
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</thead>
<tbody>
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<td>RUD 40c-G</td>
<td>19x75...26x100</td>
<td>240</td>
<td>400</td>
<td>820</td>
<td>0,09</td>
<td>0,05</td>
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<tr>
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<td>30x120...34x136</td>
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<td>400</td>
<td>820</td>
<td>0,085</td>
<td>0,045</td>
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<td>820</td>
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<td>350</td>
<td>820</td>
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<td>0,05</td>
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¹Measured in the surface layer

Dimensions in mm
**RUD Chain Connectors for Submerged Scraper Conveyors (SSC)**

**FL flat connector**
For use in single and multi-strand conveyors.
Runs over sprocket wheels, grooved wheels and flat guide wheels.

**Advantages / benefits**
- Overall dimensions approx. same as those of chain link
- Simple assembly with a hammer
- Extremely wear-resistant

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>kg/item</th>
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<td>133</td>
<td>45</td>
<td>5,8</td>
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</table>

Runs over sprocket wheels, grooved wheels and flat guide wheels.

**Advantages / benefits**
- Overall dimensions same as those of chain link

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<th>kg/item</th>
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</table>
VK chain connector, square-shape for heavy duty conditions. For use in single and multi-strand conveyors. Only runs over sprocket wheels and flat guide wheels.

**Advantages / benefits**
- Extremely robust
- Large wear volume

<table>
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<td>-</td>
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*Note:*
Make sure that the chain connectors are mounted with the correct orientation to the sprocket wheels.
RUD SPROCKET WHEELS FOR SUBMERGED SCRAPER CONVEYORS (SSC)

Sprocket wheels, multipart for drive and deflection

With exchangeable, extremely wear-resistant toothed wheel rims for heavy-duty conditions.

Bolt strength class 8.8, locking nuts V according to DIN 980-8. The positions of the bolts may differ from those shown in the drawings.

The toothed rim segments must be mounted so that, in each case, the same numbers (code numbers) are next to each other at the joints. 3-part hub wheels may only be used with clamping rings.

Max. wheel centre spacing tolerance for twin-chain conveyors ± 0.05 diam. of chain.

All non-listed numbers of teeth and dimensions available on request.

Dimensions in mm

<table>
<thead>
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<th>Chain dxt in mm</th>
<th>Z</th>
<th>Tk Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>Fraw</th>
<th>Fmax</th>
<th>Wt. cmpit. wheel kg</th>
<th>Wt. toothed rim kg</th>
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<td>180</td>
<td>210</td>
<td>140,0</td>
<td>41,5</td>
<td>3-part</td>
</tr>
<tr>
<td>30x120</td>
<td>8</td>
<td>614</td>
<td>98</td>
<td>320</td>
<td>90</td>
<td>180</td>
<td>170</td>
<td>220</td>
<td>140,0</td>
<td>39,0</td>
<td>With bolt-on teeth</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>690</td>
<td>98</td>
<td>320</td>
<td>90</td>
<td>180</td>
<td>170</td>
<td>230</td>
<td>170,0</td>
<td>44,0</td>
<td>With bolt-on teeth</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>766</td>
<td>98</td>
<td>320</td>
<td>90</td>
<td>180</td>
<td>170</td>
<td>200</td>
<td>200,0</td>
<td>48,0</td>
<td>With bolt-on teeth</td>
</tr>
<tr>
<td>34x136</td>
<td>8</td>
<td>697</td>
<td>107</td>
<td>320</td>
<td>110</td>
<td>220</td>
<td>170</td>
<td>200</td>
<td>210,0</td>
<td>50,0</td>
<td>With bolt-on teeth</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>869</td>
<td>107</td>
<td>320</td>
<td>110</td>
<td>220</td>
<td>170</td>
<td>320</td>
<td>300,0</td>
<td>62,0</td>
<td>With bolt-on teeth</td>
</tr>
</tbody>
</table>
RUD SCRAPER BARS FOR SUBMERGED SCRAPER CONVEYORS (SSC)

RUD Chains’ complete scraper bars
For the widest range of conditions and highest loads.
Our range covers all sizes up to chain dimensions of 38x144, and lengths up to 2.5m.

Standard wear bars are made of wear-optimized constructional steel.
Particular attention is given not only to the design of the drive wheels but also to that of the guide wheels, as their reliable working is an important factor in the service life of the chain equipment.

Two types of guide wheels are used in SSC de-ashers:

1. **Guide and tensioning wheels outside the water bath in the empty compartment as:**
   - Grooved wheels with a flange (type A) for use in the tensioning stations or as
   - Grooved wheels without flange (type B) for use in the empty compartment under the trough.
   - Flat flange wheels (type C) for both application cases, however this is only possible with the use of flange attachments and very short distances between scraper bars.

- Our guide wheels are optimally matched to the geometry of our conveyor chains and attachments, thus guaranteeing trouble-free operation.
- We produce guide wheels for every application, every chain size and every pitch circle diameter. We are always pleased to assist with their design and the creation of an optimal solution.

*Example of the use of a grooved wheel with SSRF attachments*
2. Underwater wheels in the trough, mounted on the trough wall

- Grooved wheels with flange for use in the upper conveying compartment

The only difference between standard guide wheels and underwater wheels lies in the design of the overhung shaft bearing, for which RUD has optimized the design for just this application. Countless references worldwide verify their high effectiveness.

Advantages / benefits
- Robust construction
- Optional electronic rotation control available
- Mounted on the outside wall of the trough
- Can be used when converting existing plants or in new plants
- Easy mounting
- Available in all guide wheel dimensions
- Two type variants available
  - With end shield or
  - Without end shield in fixed hub casing

The running surfaces of RUD guide wheels are inductive hardened

Type A + type B for Duromount® and SSRF attachments

Type C for FM attachments
The development of ash handling plants was widened to include dry de-ashing systems in the 1990s. The advantages of dry de-ashing are:

- No water required
- No water treatment required
- Low thermal energy losses
- Reduction of unburned fuel as a result of the afterburning effect
- Improved boiler efficiency
- Easier compliance with regulations
- Ash quality is advantageous for its further marketing
RUD has contributed to the development of "dry de-ashing" systems. It has developed an Apron Conveyor system which, in comparison to other systems, remains sealed not only on the straight but also on the curved conveyor sections. This system was developed on the basis of the tried and tested round steel chain and is designed specifically for it. In contrast to wet de-ashing, the ashes are not scraped along the floor of the trough but carried along by the plates (A) attached to the conveyor chains until they are discharged. The plates run on wheels or, if required, on rails (B). The conveyor chain is protected by baffle plates (C) projecting over the side walls of the plates. The conveyor chain is driven via externally toothed pocket wheels. These are more tolerant of longitudinal chain wear than internally toothed wheels.

Conveying capacities of between 5 and 70 tonnes per hour (t/h) are achieved, depending on the angle of the inclined part of the conveyor. Throughputs of 100 t/h have already been achieved. The conveyor is 2000mm wide.

Conventional conveying speeds lie between 0.01 and 0.07m/s. They seldom exceed 0.1m/s, and are achieved with regulated electromechanical or hydraulic drives.

This principle offers the following advantages:

- Lower coefficients of friction in the upper conveying compartment, which means that, in some cases, a smaller chain size can be used for a given conveyor capacity.
- As the conveyor chain does not run through the material being conveyed, it is subjected to less wear than in a comparable wet de-asher.
- Relatively insusceptible to large lumps of ash, which can sometimes fall off the boiler wall when soot blisters form.
- Even easier to maintain than the already low-maintenance chain equipment of the SSC de-asher.
- Dry de-ashers with a RUD Apron Conveyor can be built with a significantly lower profile than other designs.
RUD components form the heart of the Apron Conveyor: the conveyor chain, the chain connectors, the drive wheels, guide wheels and the drag chain together with its attachments.

The general advantages of the RUD components are:

- Highly wear-resistant to give long service life
- High-strength through optimal heat treatment (see operational forces, similar to those of wet deashing)
- Plates remain sealed, even in the curves, thanks to a patented attachment link
- The reinforced plates in the chain strand are optimally adapted to the conveying task, and supported by at least four chain links
- Simple mounting in and dismounting from the chains, and therefore
- Low-maintenance

RUD Apron Conveyors consist of the following components:
1. Conveyor chains, sizes 19x75....30x120
2. RS and FL chain connectors
3. Three-part pocket wheels on the drive-side, and one-piece pocket wheels on the deflection side
4. Special attachments based on the MEE-T
5. Robust plates optimally adapted to the conveying task which, in conjunction with the MEE-T attachments, form a stable multi-link connection
RUD chains should not be subjected to operational forces exceeding those shown in the table (see table on page 7). The following values and dimensions have proven themselves as design guidelines for RUD Apron Conveyors:

### RUD APRON CONVEYOR FOR DRY DE-ASHERS

<table>
<thead>
<tr>
<th>Chain size</th>
<th>d</th>
<th>t</th>
<th>Strand breaking force (kN)</th>
<th>Total operational force (kN)</th>
<th>Plate Pitch</th>
<th>No. of plates per 10m conveyor length</th>
<th>Pitch circle diam. (mm)</th>
<th>Plate width (mm)</th>
<th>Height of conveyor (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>19</td>
<td>75</td>
<td>227</td>
<td>60</td>
<td>4xt</td>
<td>71</td>
<td>384</td>
<td>600-800</td>
<td>400-450</td>
</tr>
<tr>
<td>22x86</td>
<td>22</td>
<td>86</td>
<td>304</td>
<td>80</td>
<td>4xt</td>
<td>62</td>
<td>440</td>
<td>1000-1200</td>
<td>500-560</td>
</tr>
<tr>
<td>26x100</td>
<td>26</td>
<td>100</td>
<td>425</td>
<td>106</td>
<td>4xt</td>
<td>54</td>
<td>512</td>
<td>1200-1400</td>
<td>585-655</td>
</tr>
<tr>
<td>30x120</td>
<td>30</td>
<td>120</td>
<td>566</td>
<td>140</td>
<td>4xt</td>
<td>46</td>
<td>614</td>
<td>1600-2000</td>
<td>700-780</td>
</tr>
<tr>
<td>38x144</td>
<td>38</td>
<td>144</td>
<td>910</td>
<td>230</td>
<td>4xt</td>
<td>39</td>
<td>737</td>
<td>1600-2000</td>
<td>840-940</td>
</tr>
</tbody>
</table>

Dimensions in mm

### RUD SPECIAL STEEL GRADE ROUND STEEL CHAINS highly wear-resistant for materials handling

<table>
<thead>
<tr>
<th>Chain size</th>
<th>d</th>
<th>t</th>
<th>Weight kg/m</th>
<th>Standard strand in mm</th>
<th>RUD 40c-G Tested breaking force kN</th>
<th>RUD Super 35 Tested breaking force kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>22</td>
<td>63</td>
<td>7,7</td>
<td>10725</td>
<td>135 227</td>
<td>117 198</td>
</tr>
<tr>
<td>22x86</td>
<td>26</td>
<td>74</td>
<td>9,7</td>
<td>10234</td>
<td>182 304</td>
<td>160 266</td>
</tr>
<tr>
<td>26x100</td>
<td>31</td>
<td>87</td>
<td>13,3</td>
<td>8300</td>
<td>255 425</td>
<td>222 370</td>
</tr>
<tr>
<td>30x120</td>
<td>36</td>
<td>102</td>
<td>17,5</td>
<td>5880</td>
<td>340 566</td>
<td>300 500</td>
</tr>
<tr>
<td>38x144</td>
<td>44</td>
<td>127</td>
<td>30,0</td>
<td>3312</td>
<td>530 910</td>
<td>480 800</td>
</tr>
</tbody>
</table>

Quality classes (see page 8)

Dimensions in mm
**FL flat connector**
For use in single and multi-strand conveyors.
Runs over sprocket wheels, grooved wheels and flat guide wheels.

Advantages / benefits:
- Overall dimensions approx. same as those of chain link
- Simple assembly with a hammer
- Extremely wear-resistant

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>kg/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>22x86</td>
<td>58</td>
<td>77</td>
<td>26</td>
<td>1,2</td>
</tr>
<tr>
<td>26x100</td>
<td>62</td>
<td>89</td>
<td>29</td>
<td>1,8</td>
</tr>
<tr>
<td>30x120</td>
<td>70</td>
<td>107</td>
<td>36</td>
<td>2,9</td>
</tr>
<tr>
<td>38x144</td>
<td>95</td>
<td>133</td>
<td>45</td>
<td>5,8</td>
</tr>
</tbody>
</table>

Dimensions in mm

**RS chain connector, space-saving**
For use in single and multi-strand conveyors.
Runs over sprocket wheels, grooved wheels and flat guide wheels.

Advantages / benefits:
- Overall dimensions same as those of chain link

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>kg/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>51</td>
<td>66,5</td>
<td>23</td>
<td>M 12</td>
<td>0,8</td>
</tr>
</tbody>
</table>

Dimensions in mm
Pocket chain wheels, multipart for drive and deflection
With exchangeable extremely wear-resistant pocket wheel rims for heavy-duty conditions.

The wheel hub is ready for mounting and drilled to fit. The teeth of the exchangeable, split pocket wheel rims are made of highly wear-resistant, case-hardened cast steel.

**Design: 3-part**
With hubs, pocket wheel rim (2x180° segments), clamping ring and bolts.

<table>
<thead>
<tr>
<th>Chain size</th>
<th>Z</th>
<th>Tk Ø pcd.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>Fraw</th>
<th>Fmax</th>
<th>Wt. cmpl. wheel kg</th>
<th>Pocket wheel rim kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>8</td>
<td>384</td>
<td>66,5</td>
<td>185</td>
<td>45</td>
<td>145</td>
<td>65</td>
<td>130</td>
<td>49,0</td>
<td>15,0</td>
</tr>
<tr>
<td>22x86</td>
<td>8</td>
<td>440</td>
<td>77</td>
<td>185</td>
<td>65</td>
<td>165</td>
<td>65</td>
<td>110</td>
<td>66,0</td>
<td>23,0</td>
</tr>
<tr>
<td>26x100</td>
<td>8</td>
<td>512</td>
<td>91</td>
<td>235</td>
<td>75</td>
<td>175</td>
<td>100</td>
<td>150</td>
<td>100,0</td>
<td>45,8</td>
</tr>
<tr>
<td>30x120</td>
<td>8</td>
<td>614</td>
<td>108</td>
<td>275</td>
<td>75</td>
<td>195</td>
<td>100</td>
<td>180</td>
<td>195,0</td>
<td>90,0</td>
</tr>
<tr>
<td>38x144</td>
<td>8</td>
<td>739</td>
<td>130</td>
<td>370</td>
<td>85</td>
<td>245</td>
<td>100</td>
<td>250</td>
<td>315,7</td>
<td>125,0</td>
</tr>
</tbody>
</table>

*Dimensions in mm*
Pocket chain wheels, one-piece, highly wear-resistant for deflection
The highly wear-resistant pocket teeth are made of case-hardened cast steel. The steel wheel body is of a welded design, and can be can be machined if requiredWith fully machined hub.

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>Teeth</th>
<th>Tk Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>(E)</th>
<th>Fmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>8</td>
<td>384</td>
<td>66.5</td>
<td>185</td>
<td>45</td>
<td>140</td>
<td>125</td>
</tr>
<tr>
<td>22x86</td>
<td>8</td>
<td>440</td>
<td>77</td>
<td>185</td>
<td>65</td>
<td>165</td>
<td>115</td>
</tr>
<tr>
<td>26x100</td>
<td>8</td>
<td>512</td>
<td>91</td>
<td>235</td>
<td>75</td>
<td>175</td>
<td>150</td>
</tr>
<tr>
<td>30x120</td>
<td>8</td>
<td>614</td>
<td>108</td>
<td>275</td>
<td>75</td>
<td>195</td>
<td>180</td>
</tr>
<tr>
<td>38x144</td>
<td>8</td>
<td>739</td>
<td>130</td>
<td>370</td>
<td>85</td>
<td>245</td>
<td>250</td>
</tr>
</tbody>
</table>

Dimensions in mm

TkØ = pitch circle diameter
H = enveloping circle
H < TkØ + 1.2 • ba
ba = outer chain width
MEE-T attachment with attachment bolt.
For heavy-duty conditions. Used in RUD Apron conveyors to attach the plates, runs over RUD pocket wheels.

Advantages / benefits:
- Robust and simple
- Wear-resistant
- Can be freely welded
- Secured with locking pins if required

Fitting:
- With chain slack, hook the chain links into the attachment.
- Secure with locking pins [optional]

Welding guide:
Attachment material 20 MnCr 5 DIN 17210.
Welding rod EN 440: G 4 Si 1
Electrode: EN 499: E 42 4 B 42 H 5
Comply with electrode drying instructions.

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>kg/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>19x75</td>
<td>65</td>
<td>80</td>
<td>35</td>
<td>50</td>
<td>1.0</td>
</tr>
<tr>
<td>22x86</td>
<td>75</td>
<td>95</td>
<td>40</td>
<td>60</td>
<td>1.6</td>
</tr>
<tr>
<td>26x100</td>
<td>90</td>
<td>111</td>
<td>45</td>
<td>70</td>
<td>2.5</td>
</tr>
<tr>
<td>30x120</td>
<td>105</td>
<td>128</td>
<td>55</td>
<td>81</td>
<td>4.6</td>
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<tr>
<td>38x144</td>
<td>128</td>
<td>160</td>
<td>65</td>
<td>101</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Dimensions in mm
RUD Chains’ conveying systems are optimally adapted for the various ways of conveying coal to the stockpile, and from there to the boilers in conventional power plants.

All conveyors are designed with the RUD pocket wheel system. The drive has multipart and the deflection one-piece pocket wheels. Alongside the standard MEE-T attachment there is also a special design with bolts for apron conveyors or as a one-piece MEE-TK scraper with, if required, welded-on scraper edges.

The width of the conveyor can range from 0.8 to 1.8 m. Conventional speeds lie between 0.1 and 0.3 m/s, or may be even faster when conveying non-abrasive materials.
1. Twin and multi-strand conveyors

for bunker discharge and unloading coal trains use chain sizes 18x64, 22x86, 26x100 und 30x120, together with MEE-T attachments with optimally designed, welded-on scrapers, or MEE-TK attachments. These conveyors are capable of shifting up to 1,000 tonnes of coal per hour. The coal is conveyed in the upper strand.

Bunker discharge conveyor

- Suitable for unloading coal from transport wagons
- Length = 30m; width = 2.5m
- Six 26 x 100 mm strands
- Matched chains for even load distribution
- Scrapers fixed without bolts

Scraper for multi-strand conveyors, bunker discharge conveyors MEE-TK, MEE-T

- Can be fixed to chains without securing pins with spacings of 6 to 8 links, securing pins are required for longer link spacings
- Deflection over flat wheels, one-piece pocket wheels are recommended
Example of an arrangement of MEE-TK four-strand conveyor

Mounting and dismounting can be done with the chain loops slack but still closed.

2. RUD Apron Conveyor in a coal handling plant, using chain sizes 22x86, 26x100 and 30x120, MEE-T special attachments, and optimally designed, sealed plates. Apron conveyors have a capacity of between 75 and 150 t/h. Apron conveyors are used for high-ash and, in particular, very wet, fine coals.

<table>
<thead>
<tr>
<th>Chain size</th>
<th>d</th>
<th>t</th>
<th>Strand breaking force (kN)</th>
<th>Total operational force (kN)</th>
<th>Plate pitch</th>
<th>No. of plates per 10m length of conveyor</th>
<th>No. of teeth [pocket wheel]</th>
<th>Attachment offset [mm]</th>
<th>Pitch circle diam. (mm) Tk</th>
<th>Plate width (mm) B</th>
<th>Height of conveyor (mm) C</th>
</tr>
</thead>
<tbody>
<tr>
<td>22x86</td>
<td>22</td>
<td>86</td>
<td>304</td>
<td>80</td>
<td>4xt</td>
<td>62</td>
<td>8</td>
<td>23</td>
<td>440</td>
<td>1000-1200</td>
<td>500-560</td>
</tr>
<tr>
<td>26x100</td>
<td>26</td>
<td>100</td>
<td>425</td>
<td>106</td>
<td>4xt</td>
<td>54</td>
<td>8</td>
<td>27</td>
<td>512</td>
<td>1200-1400</td>
<td>585-655</td>
</tr>
<tr>
<td>30x120</td>
<td>30</td>
<td>120</td>
<td>566</td>
<td>140</td>
<td>4xt</td>
<td>46</td>
<td>8</td>
<td>32</td>
<td>614</td>
<td>1400-1800</td>
<td>700-780</td>
</tr>
</tbody>
</table>

Components of the apron conveyor - see pages 20 to 24

Dimensions in mm
3. Twin-strand trough chain conveyor in a coal handling plant, using chain sizes 22x86 and 26x100, and MEE-T attachments with optimally designed, welded-on scrapers. These conveyors have capacities of between 75 and 150 t/h. Twin-strand trough chain conveyors are used for conveying low abrasion, easy flowing materials.

**Scraper for coal feeder conveyor with MEE-T attachments**

- Where long distances between the attachments occur the MEE-T should always be secured with a locking pin
- Deflection over one-piece pocket wheels

4. Cleaning scraper chain conveyor under the main coal handling system, using chain sizes 10x38 and 14x50, MEE-T attachments with optimally designed, welded-on scrapers. These twin-strand conveyors have capacities between 1 and 5 t/h.

**Scraper for coal feeder conveyor as cleaning scraper MEE-T**

- Where long distances between the attachments occur the MEE-T should always be secured with a locking pin
- Deflection over one-piece pocket wheels
The MEE-T attachment hooks in to the chain and utilizes, one-part pocket wheels
For heavy-duty conditions (scraper not higher than the width of a chain link). For use in twin and multi-strand conveyors.
Runs over RUD pocket wheels and flat guide wheels.

Advantages / benefits:
- Robust and simple
- Wear-resistant
- Can be freely welded
- Secured with locking pin if required

Fitting:
- With chain slack, hook the chain links into the attachment.
- Secure with locking pin (optional)

MEE-TK attachment, hook-in, one-piece, complete scraper
For heavy-duty conditions (scraper not higher than the width of a chain link).
For use in twin and multi-strand conveyors.
Runs over RUD pocket wheels and flat guide wheels.

Advantages / benefits:
- Robust and simple
- Wear-resistant
- Simple mounting and dismounting
- Finished scraper profiles, can be used without further machining

Fitting:
- Hook the slack chain into the attachment

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>kg/item</th>
</tr>
</thead>
<tbody>
<tr>
<td>10x38</td>
<td>35</td>
<td>43</td>
<td>16</td>
<td>27</td>
<td>0,15</td>
</tr>
<tr>
<td>14x50</td>
<td>50</td>
<td>60</td>
<td>20</td>
<td>38</td>
<td>0,35</td>
</tr>
<tr>
<td>18x63/64</td>
<td>62</td>
<td>78</td>
<td>25</td>
<td>49</td>
<td>0,6</td>
</tr>
<tr>
<td>22x86</td>
<td>75</td>
<td>95</td>
<td>40</td>
<td>60</td>
<td>1,6</td>
</tr>
<tr>
<td>26x100</td>
<td>90</td>
<td>111</td>
<td>45</td>
<td>70</td>
<td>2,5</td>
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<td>30x120</td>
<td>105</td>
<td>128</td>
<td>55</td>
<td>81</td>
<td>4,6</td>
</tr>
</tbody>
</table>

Dimensions in mm


Other dimensions available on request.

Dimensions in mm

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>M</th>
<th>X1</th>
<th>kg/item</th>
</tr>
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<td>35</td>
<td>43</td>
<td>16</td>
<td>27</td>
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<td>246</td>
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<td>20</td>
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<td>350</td>
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<tr>
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<td>78</td>
<td>25</td>
<td>49</td>
<td>450</td>
<td>352</td>
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<td>70</td>
<td>560</td>
<td>420</td>
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<td>55</td>
<td>81</td>
<td>580</td>
<td>418</td>
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</table>
RUD COMPONENTS FOR COAL HANDLING PLANTS

RUD ROUND STEEL CHAINS
in special quality
Highly wear-resistant for conveyors

<table>
<thead>
<tr>
<th>Chain dxt in mm</th>
<th>Chain width bi (min) in mm</th>
<th>Chain width ba (max) in mm</th>
<th>Weight kg/m</th>
<th>Standard strand in mm</th>
<th>RUD 40c-G Tested breaking force kN</th>
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<tbody>
<tr>
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<td>34</td>
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<tr>
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<td>60</td>
<td>6,9</td>
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<td>120 200</td>
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</table>

Quality classes (see page 8)
Dimensions in mm

RSP chain connector, space-saving
For use in single and multi-strand conveyors. Runs over pocket chain wheels, grooved wheels and flat guide wheels.

Advantages / benefits:
■ Overall dimensions same as those of chain link

Fitting:
■ Hook the U-brackets into the chains
■ Fit the connector shells from the sides and screw into place
■ Tighten the screws after bringing into operation

<table>
<thead>
<tr>
<th>Chains dxt in mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>kg/item</th>
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</thead>
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<td>0,1</td>
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<tr>
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<td>48</td>
<td>17</td>
<td>M 8</td>
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<td>43</td>
<td>56</td>
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<td>M 10</td>
<td>0,5</td>
</tr>
<tr>
<td>18x64</td>
<td>43</td>
<td>56</td>
<td>18,5</td>
<td>M 10</td>
<td>0,5</td>
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</tbody>
</table>

Dimensions in mm
Pocket chain wheels, multipart for drive and deflection
With exchangeable extremely wear-resistant pocket wheel rims for heavy-duty conditions.

Pocket chain wheels, one-piece, highly wear-resistant for heavy-duty operating conditions

<table>
<thead>
<tr>
<th>Chain size</th>
<th>Z</th>
<th>TkØ pcd.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>Fmax</th>
<th>Wt. cmplt. wheel kg</th>
<th>Pocket wheel rim kg</th>
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</thead>
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<td>49</td>
<td>120</td>
<td>40</td>
<td>105</td>
<td>80</td>
<td>17,5</td>
<td>5,5</td>
</tr>
<tr>
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<td>8</td>
<td>323</td>
<td>63,5</td>
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<td>45</td>
<td>125</td>
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<td>10,0</td>
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<td>22x86</td>
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<td>440</td>
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<td>185</td>
<td>65</td>
<td>165</td>
<td>110</td>
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<tr>
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<td>8</td>
<td>512</td>
<td>91</td>
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<td>75</td>
<td>175</td>
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<td>75</td>
<td>195</td>
<td>180</td>
<td>195,0</td>
<td>90,0</td>
</tr>
</tbody>
</table>

Dimensions in mm

TkØ = pitch circle diameter
H = enveloping circle
H < TkØ + 1.2 • ba
ba = outer chain width
**RUD MISSION**

- We are a dynamic, globally active, modern family business. Our objectives are continuous, profit-oriented growth, and clear leadership with our products and services in our market segments.

- With more than 130 years of experience, we develop future-oriented solutions for the most diverse fields of application. They are based on round steel chain systems and components in a very wide range of shapes and sizes.

- All our other products are also the result of our striving for perfection in our core competences of forming, welding, heat treatment and surface technology.

- We focus our activities on long-term partnerships with our customers, their satisfaction, and their trust in us. We guarantee innovative technology coupled with the highest, universal standards of quality and safety. This is a responsibility that we all share.

- Our actively practiced and trustful company culture coupled with continual training and further education makes our international company family a flexible, motivated, high-achieving and competent team.

---

**Conveying systems (FA)**

RUD conveying systems offer optimal solutions for the packaged goods and bulk materials industries, and mining, and use round steel chains as the traction mechanism. We design and manufacture bucket elevators for bulk materials, with round steel chains, sprocket chains and belts as the traction mechanisms.

**Hoisting chains (H)**

We are the original equipment manufacturer for the leading, worldwide hoisting gear brands. We supply highly wear-resistant round steel chains according to EN 818-7 for motor driven hoisting equipment and manual lifting tackle.

We manufacture not only the smallest sized chain at 3x9 mm, but also the world’s largest hoisting chain measuring 31.5x90 mm.

We develop system solutions for lifting devices, and manufacturer various associated components, such as pocket wheels, chain guides and guards.

**Mountable hitching equipment (MA)**

RUD hitching equipment guarantees safety when lifting and moving loads. Over 250 different, tested hitching points — welded or bolted — in conjunction with our VIP hitching chains meet the highest demands in all areas of application of innovative and future-oriented lashing and lifting equipment.

**Tyre protection chains (RS)**

RUD and Erlau tyre protection chains are dense, moveable chain meshes made of high quality alloy stainless steel. They protect the treads and side walls of the tyres of earth moving machines used in mining, slag-handling and recycling tasks.

**Anti-skid chains (GL):**

The RUD and Erlau snow, rotating and forestry chains in our anti-skid range guarantee the highest safety, and ensure maximum traction not only on snow and ice-covered roads but also on the roughest terrain. The breadth and depth of our well-balanced product range offers the optimal solution for every field of application and every vehicle. Our success has been built on three principles: innovation, quality and service.
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NETWORK