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Provided chip reducer with vertical chip feed

<table>
<thead>
<tr>
<th>Properties</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable for different types of chips</td>
<td>Many application possibilities</td>
</tr>
<tr>
<td>Wide, insensitive cutter</td>
<td>Great durability</td>
</tr>
<tr>
<td>Intake behavior regardless of the chip form</td>
<td>Many application possibilities</td>
</tr>
<tr>
<td>Flexible, changeable toolbox system</td>
<td>Easy modification</td>
</tr>
<tr>
<td>Easy, robust, and service-friendly layout</td>
<td>Easy maintenance</td>
</tr>
<tr>
<td>Intelligent control</td>
<td>Great process reliability</td>
</tr>
<tr>
<td>Multiple sealing of the bearing units</td>
<td>Great stability</td>
</tr>
<tr>
<td>Low energy requirement</td>
<td>Low energy costs</td>
</tr>
</tbody>
</table>

Areas of application

KNOLL chip reducers ZV, ZVD and ZVDD are machines for reducing metal and plastic chips. The chip feed is done vertically from above.

- Decentralized use on processing machines (retrofittable)
- Central use thanks to provision at collection points
- For volume reduction for improved bearing and transport properties of wool and winding chips
- For pre-treatment of the chips as pre-requisite for centrifuging, briquetting, melting, pumping, suction, etc.

Description

**Main functions**
1. Feeding of the chips in the feed hopper
2. Pulling in of the chips between the rotating cutter shaft and the angled infeed slide or fixed cutter
3. Crushing of the chips between the rotating and fixed cutter
4. Limitation of the chip lengths with screen insert with different hole sizes or without screen insert

**Variants**
- Double-faced blades (-J): for large quantities of chips and high reducing quality
- Two-headed blades (-Z): with occurrence of problem parts and different types of chips
- Single shaft: for small bunches of chips and low to medium throughput
- Double shaft: for large or compressed bunches of chips and high throughput

**Combination possibilities**
For other requirements, on request we can combine the chip reducers with
- Chip conveyors for feeding and removing the chips
- Frames for holding chip wagons
- Return pumping stations of chips and coolant lubricants to the central plant
- Extraction stations for transport of chips to the central plant
- Centrifuges and briquetting systems for further treatment of the chips
- Lift-tip devices for feeding the chips to central collection points
Chip reducer
ZV-J
Single shaft with double-faced blades

1. Rotating knife (double-faced blades)
2. Screen insert
3. Fixed cutter
4. Feed hopper
5. Angled infeed slide

Technical data

Equipment

- 1 shaft
- Double-faced blades (J): 3-teeth
- Fixed cutter
- Drive 4.0 kW
- Drive 5.5 kW
- Screen insert with round holes Ø 8-20

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L1</th>
<th>Length L2</th>
<th>Height H 4 kW / 5.5 kW</th>
<th>Max. throughput steel/aluminum [kg/h]</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZV 400-J</td>
<td>436</td>
<td>1176</td>
<td>770/820</td>
<td>100/50</td>
<td>250</td>
</tr>
<tr>
<td>ZV 600-J</td>
<td>636</td>
<td>1376</td>
<td>770/820</td>
<td>140/70</td>
<td>250</td>
</tr>
</tbody>
</table>

Dimensions without specification of units in mm | Rough reference values for machines with sieve insert ø 14 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.
Chip reducer 
ZV-Z
Single shaft with two-headed blades

Technical data

1. Rotating knife (two-headed blades)
2. Screen insert
3. Fixed cutter
4. Feed hopper
5. Angled infeed slide

Equipment

1. shaft
2. Two-headed blades (-Z)
3. Fixed cutter
4. Screen insert with round holes Ø 8-25
5. Drive 2.2 kW
6. Drive 4.0 kW

- Standard equipment
○ Option

<table>
<thead>
<tr>
<th>Type</th>
<th>Width B</th>
<th>Height H</th>
<th>Max. throughput steel/aluminum [kg/h]¹</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZV 470-Z</td>
<td>476</td>
<td>555/635</td>
<td>60/30</td>
<td>300</td>
</tr>
<tr>
<td>ZV 600-Z</td>
<td>588</td>
<td>555/635</td>
<td>80/40</td>
<td>300</td>
</tr>
</tbody>
</table>

Dimensions without specification of units in mm | ¹ Rough reference values for machines with sieve insert ø 14 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.
Chip reducer ZVD-J and ZVDD-J
Double shaft with double-faced blades

Technical data

Dimensions without specification of units in mm | 1 Rough reference values for machines with sieve insert ø 14 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.

Equipment

ZVD-J
2 shafts, 1 drive
Double-faced blades (-J): 10-, 7- or 5-teeth
Fixed cutter
Drive 4.0 kW
Drive 5.5 kW
Screen insert with round holes Ø 8-20
Filler piece (without fixed cutter)

ZVDD-J
2 shafts, 2 drives
Double-faced blades (-J): 10-, 7- or 5-teeth
Fixed cutter
Drive 4.0 kW (2x)
Drive 5.5 kW (2x)
Screen insert with round holes Ø 8-20
Filler piece (without fixed cutter)

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L1</th>
<th>Length L2</th>
<th>Height H 4 kW / 5.5 kW</th>
<th>Max. throughput steel/aluminum [kg/h]¹</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZVD 400-J</td>
<td>436</td>
<td>1176</td>
<td>770/820</td>
<td>120/60</td>
<td>350</td>
</tr>
<tr>
<td>ZVD 600-J</td>
<td>636</td>
<td>1376</td>
<td>770/820</td>
<td>160/80</td>
<td>350</td>
</tr>
<tr>
<td>ZVDD 600-J</td>
<td>636</td>
<td>1912</td>
<td>770/820</td>
<td>250/125</td>
<td>350</td>
</tr>
</tbody>
</table>

¹ Standard equipment
○ Option
Chip reducer
ZVDD-Z
Double shaft with
two-headed blades

ZVDD 1000-Z

Technical data

Equipment

- Rotating knife (two-headed blades)
- Screen insert
- Fixed cutter with integrated angled infeed slide
- Feed hopper
- Shell mould

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L1</th>
<th>Max. throughput steel/aluminum [kg/h]</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZVDD 600-Z-G</td>
<td>588</td>
<td>300/150</td>
<td>500</td>
</tr>
<tr>
<td>ZVDD 600-Z-F</td>
<td>588</td>
<td>600/300</td>
<td>500</td>
</tr>
<tr>
<td>ZVDD 1000-Z-G</td>
<td>1036</td>
<td>600/300</td>
<td>500</td>
</tr>
<tr>
<td>ZVDD 1000-Z-F</td>
<td>1036</td>
<td>1200/600</td>
<td>500</td>
</tr>
</tbody>
</table>

Dimensions without specification of units in mm | 1 Rough reference values for machines with sieve insert ø 16 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.
Integrated chip reducer with horizontal chip feed

<table>
<thead>
<tr>
<th>Properties</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable for different types of chips</td>
<td>Many application possibilities</td>
</tr>
<tr>
<td>Robust cutter</td>
<td>Great durability</td>
</tr>
<tr>
<td>Intake behavior regardless of the chip form</td>
<td>Many application possibilities</td>
</tr>
<tr>
<td>Can be integrated compactly into return pumping stations</td>
<td>Space-saving</td>
</tr>
<tr>
<td>Easy, robust, and service-friendly layout</td>
<td>Easy maintenance</td>
</tr>
<tr>
<td>Intelligent control</td>
<td>Great process reliability</td>
</tr>
<tr>
<td>Multiple sealing of the bearing units</td>
<td>Great stability</td>
</tr>
<tr>
<td>Low energy requirement</td>
<td>Low energy costs</td>
</tr>
</tbody>
</table>

Areas of application

KNOLL chip reducers ZH-J and ZHV-J are machines for the reduction of metal and plastic chips. Chip feed is done horizontally.

- Especially as integrated component of the return pump station RIK
- Decentralized use on processing machines with close-to-floor chip feed via screw conveyor
- For volume reduction for improved bearing and transport properties of wool and winding chips
- For pre-treatment of the chips as pre-requisite for centrifuging, briquetting, melting, pumping, suction, etc.

Description

Main functions
1. Feed of the chips horizontally via screw conveyor
2. Pulling in of the chips by the rotating cutter shaft
3. Crushing between the chips between the rotating and fixed cutter
4. Limitation of the chip lengths by the perforated plate with different hole sizes and the chip holding back classifier disk

Combination possibilities
For other requirements, on request we can combine the chip reducers with

- Return pumping station RIK for transport of chips to the central plant
- Screw conveyor for feeding of the chips
- Chip conveyor for removing the chips
Chip reducer ZH-J
Double shaft horizontal with double-faced blades

Technical data

ZH-J
1. Rotating knife (double-faced blades)
2. Screen insert
3. Fixed cutter
4. Angled infeed slide
5. Feeding via screw (not integrated)

Equipment

1 horizontal shaft
Double-faced blades (-J): 3-teeth
Fixed cutter
Drive 4.0 kW
Screen insert with round holes Ø 8, 10, 12 or 16

- Standard equipment
○ Option

<table>
<thead>
<tr>
<th>Type</th>
<th>Max. throughput steel/aluminum [kg/h]¹</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZH 600-J</td>
<td>120/60</td>
<td>200</td>
</tr>
</tbody>
</table>

Dimensions without specification of units in mm | ¹ Rough reference values for machines with sieve insert ø 10 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.
Chip reducer ZHV-J
Single shaft vertical with double-faced blades

ZHV-J
1. Rotating knife (double-faced blades)
2. Perforated plate
3. Fixed cutter
4. Separator disc
5. Feeding via screw (not integrated)

Technical data

Equipment

- Double-faced blades (-J): 3-teeth
- Fixed cutter
- Drive 3.0 kW
- Perforated plate with long holes 10 x 14, 12.5 x 20 or 17 x 32

Dimensions without specification of units in mm

<table>
<thead>
<tr>
<th>Type</th>
<th>Max. throughput steel/ aluminum [kg/h]</th>
<th>Max. bunch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZHV 350-J</td>
<td>60 / 30</td>
<td>200</td>
</tr>
</tbody>
</table>

Dimensions without specification of units in mm

Rough reference values for machines with perforated plate 12.5 x 20 mm for steel chips. The throughputs depend largely on the base material. We will be glad to perform cutting experiments.
Design examples

Chip reducer ZVD 400-J on a frame for volume reduction

Chip reducer ZH 600-J in a return pumping station RIK

Chip reducer ZVD 600-J in a chip treatment system with briquetting system

Chip reducer ZV 470-Z in a return pumping station RKR