Verbindungen : B - E 210 948.00
Liaisons : B - E3 212 208.04
Connections :

Index	Datum	Name						

Oberflächen DIN ISO 1302

-0.5 -0.3 +0.8 +0.4

Kantenbedingungen DIN 6784

einsatzgehärtet. ... bis ... HRC
gehärtet. ... HRC
vergütet. ... N/mm²
geschwärzt
lackiert

Allgemeintoleranzen DIN ISO 2768-mK

Zeichnungsart DIN ISO 8015

Maßstab 1:20

	Datum	Name
Gezeichnet	29.01.07	Fis
Geprüft	.	.
Normgeprüft	.	.

Material ---

Rohteil-Nr. .

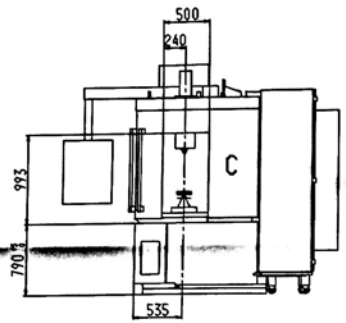
Benennung
RZ150/Hofmman/LA

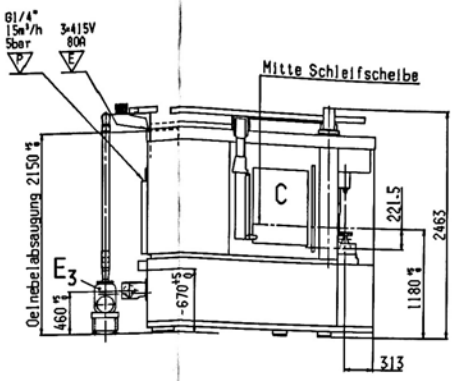
REISHAUER WALLISELLEN SCHWEIZ

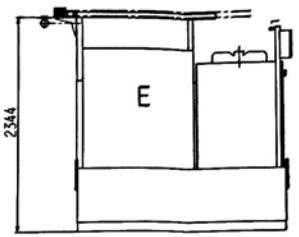
Änderungsdienst	Zeichnungsnummer	Index	Format	Blatt
.	210882 98	00	0	1 von 1

DIN
25
25
16
16

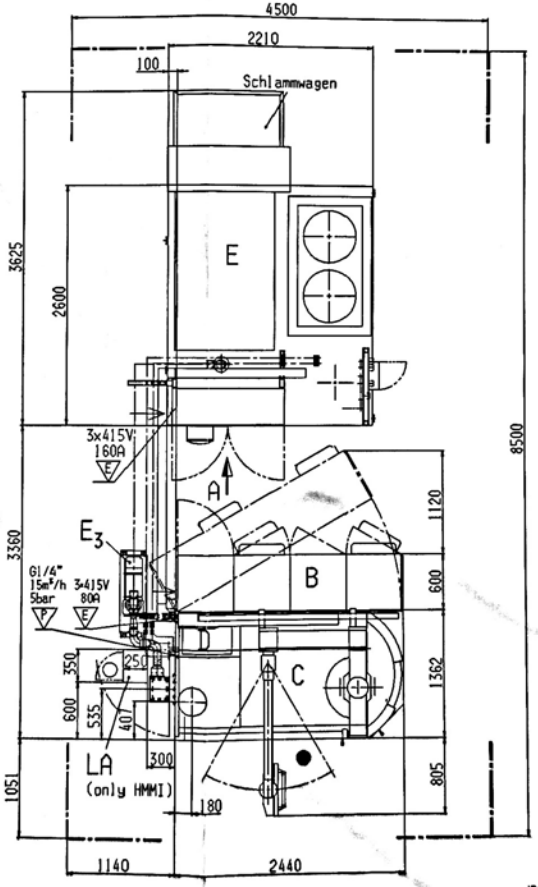
J K

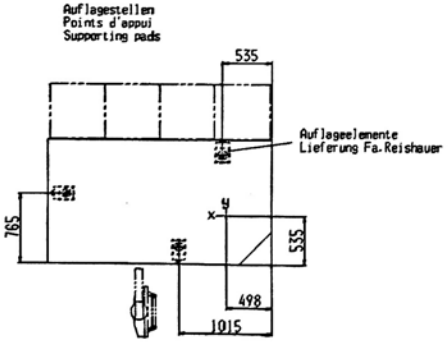






Ansicht A





B Elektroschrank
Armoire électrique RZ150
Electrical enclosure

C Maschine
Machine RZ150
Machine

D Hydraulikaggregat
Ensemble hydraulique
Hydraulic unit

E Filteranlage (Hoffmann)
Agrégat de filtration
Filtering unit

E_3 Rückführpumpe
Pompe de renvoi
Return feed pump

LA Feuerlöschanlage
Inst. d'extiction d'incendie
Fire extinguishing plant

Oelauffangwanne
Cuve collectrice d'huile
Oil collecting basin

Anschluss: elektrisch
Connexion: électrique
Connection: electric

Anschluss: Druckluft
Connexion: air comprimé
Connection: compressed air

Hauptschalter
Interrupteur principal
Main switch

Bedienungsseite beim Schleifen
Place de commande en rectifiant
Operators stand at grinding

Nebenbedienungsseite
Place de commande secondaire
Auxiliary operator's stand

Luftaustritt
Sortie d'air
Air exit

Platzbedarf
Encombrement
Space requirement

Verbindungen : B - E 210 948.00
Liaisons : B - E3 212 208.04
Connections :

HP-Schläuche für die Aufstellung
für Anschlüsse an
Rohrverschraubungen 24° Baureihe L
nach DIN 2353/ISO 8434-1)
(Parker Ermeto ED-2)

BMK	Schlauchlänge A	Pressarmatur (2x)	DN
SOHDV	SO2 071.00 L=1050	SO2 076.00	25
SOHFV	SO2 071.00 L=1100	SO2 076.00	25
			16
			16

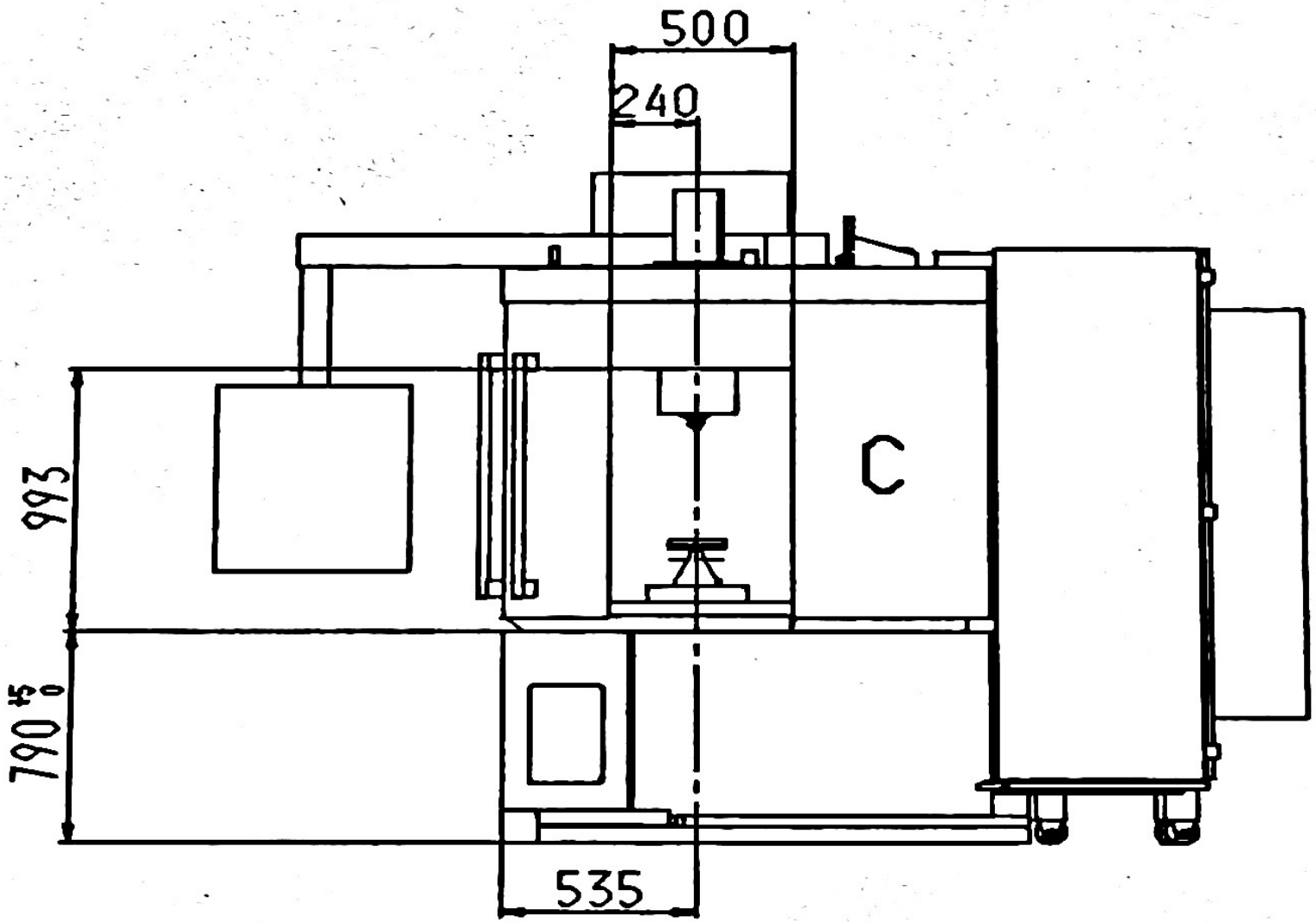
FÜR INFORMATION

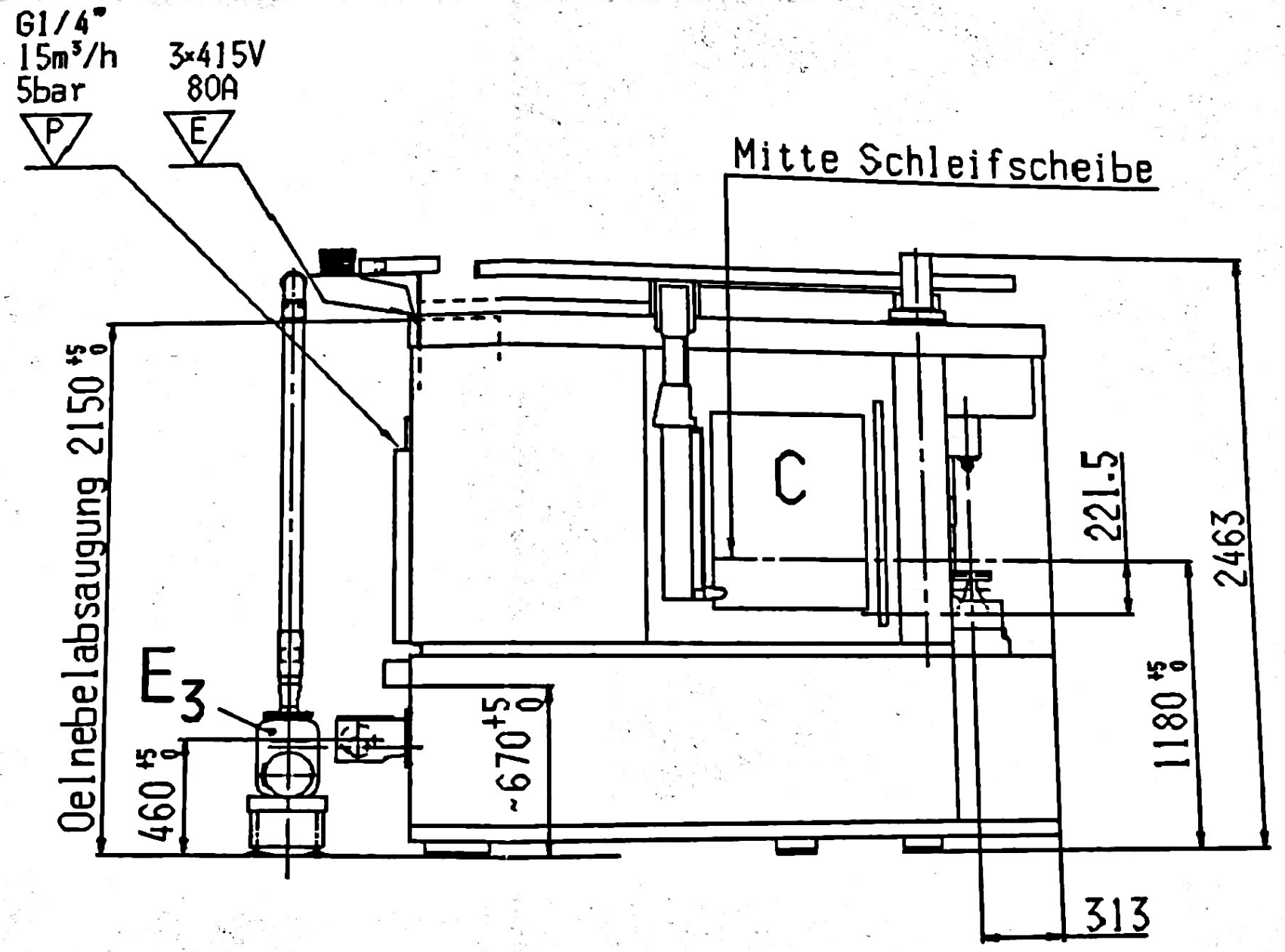
RESHAUER WILLHELM HOFMANN

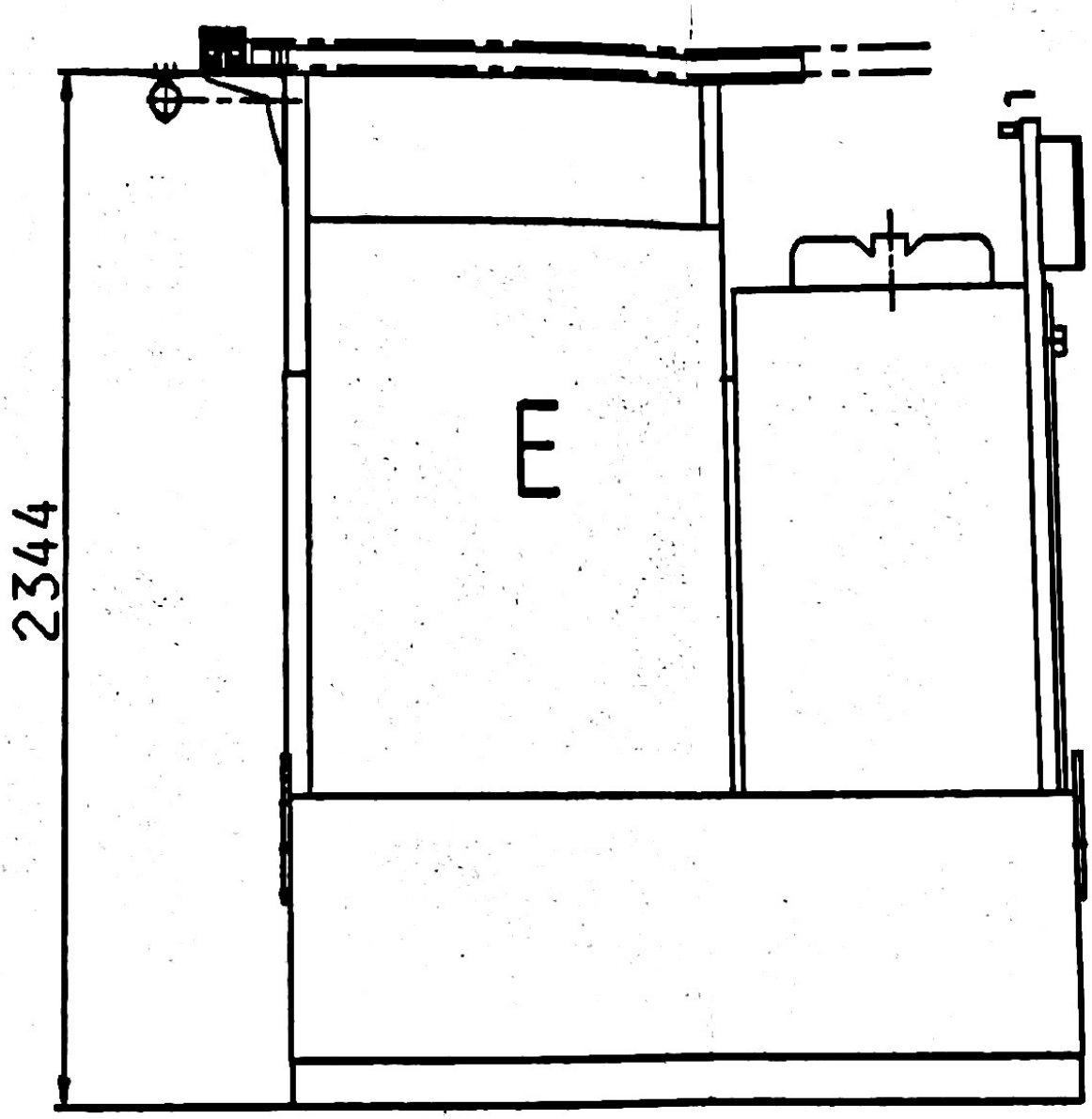
RZ150/Hofmman/LA

210882 98 00 0

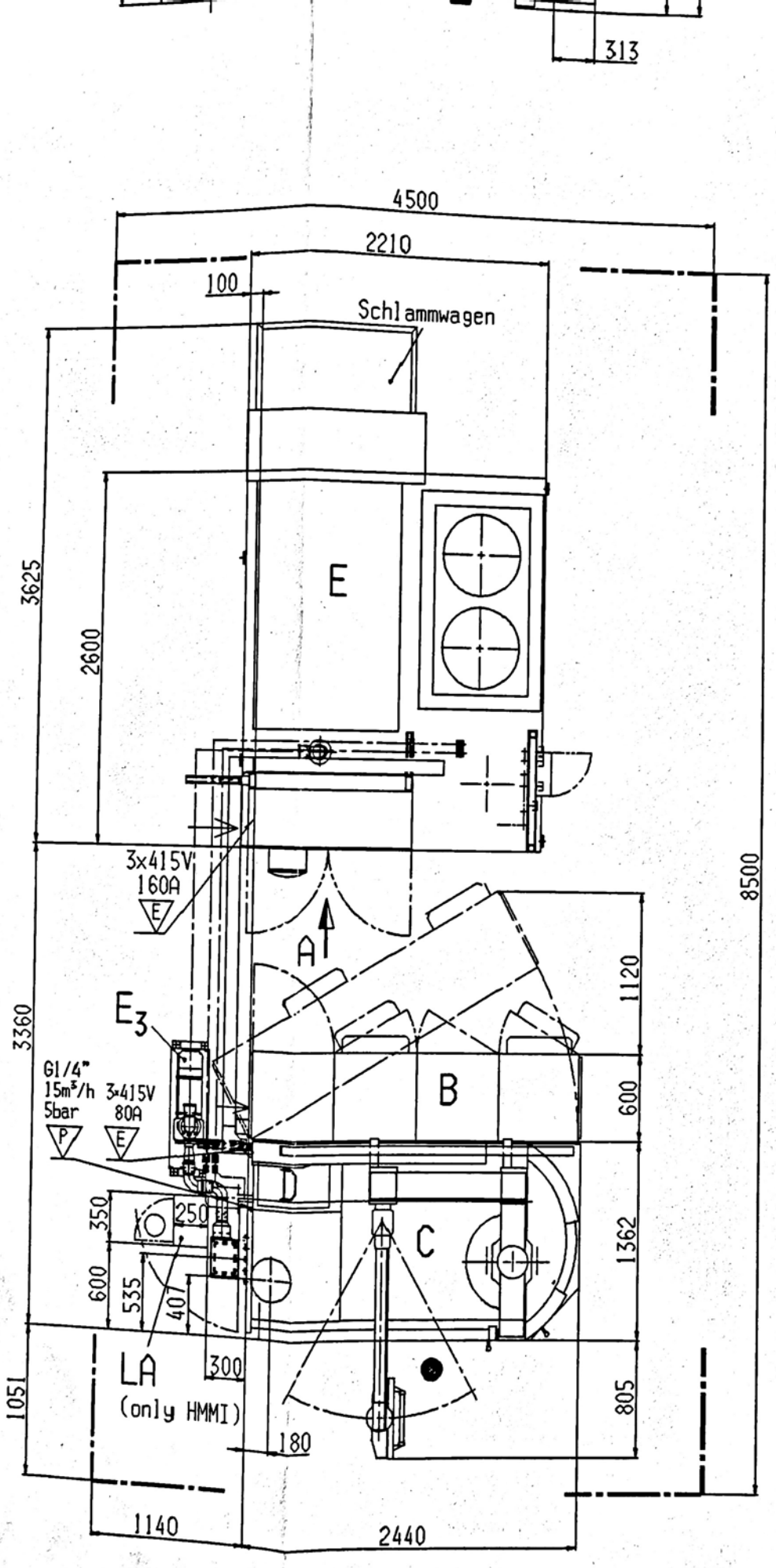
1:20 | 29.01.07 | Fis


500
240
C
993
790 +5 0
535


G1/4"
15m³/h
5bar
P
3×415V
80A
E
Mitte Schleifscheibe
C
Oelnebelabsaugung 2150 +5 0
460 +5 0
E3
~670 +5 0
221.5
2463
1180 +5 0
313



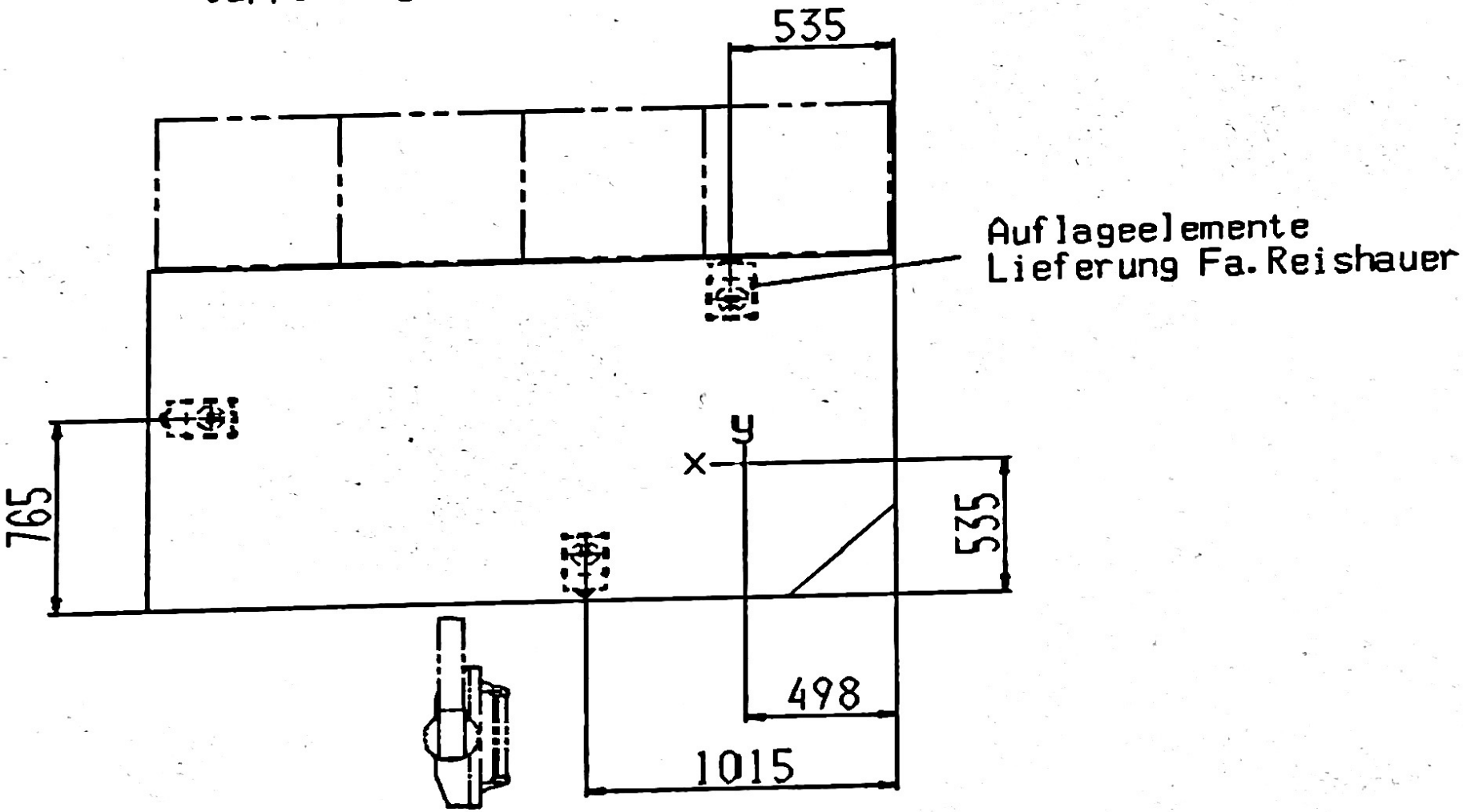
Ansicht A



HD-Schläuche für die Aufstellung
für Anschlüsse an
Rohrverschraubungen 24° Baureihe L
nach (DIN 2353/ISO 8434-1)
(Parker Ermeto E0-2)

BMK	Schlauchlänge A	Pressarmatur (2x
S0H3V	502 071.00 L=1050	502 078.00
S0H7V	502 071.00 L=1100	502 078.00

Auflagestellen
Points d'appui
Supporting pads



Reishauer AG

REISHAUER

Industriestr. 36, Postfach, CH-8304 Wallisellen / Schweiz
Tel. +41 (0)44-832 22 11, Fax +41 (0)44-832 22 33 / 44-832 23 90

EC DECLARATION OF CONFORMITY FOR MACHINERY

(Directive 98/37/EC, Annexe II, Sub. A)

Manufacturer : REISHAUER AG

Address : Industriestrasse 36, CH-8304 Wallisellen

Herewith declares that

THE CNC GEAR GRINDING MACHINE TYPE REISHAUER RZ 150, N° 76136

- is in conformity with the following EEC directives
  - Machinery Directive - 98/37/EEC
  - PVD – 97/23/EG
  - LVD - 73/23/EEC
  - EMC- 89/336/EEC

and furthermore declares that the following (parts/clauses of) standards and specifications have been applied

EN ISO 12100-1 und -2, EN 418, EN 953, EN 954-1, EN 982, EN 983, EN 1050, EN 13218
EN 60204-1, EN 61000-6-2, EN 61000-6-4

Wallisellen, 15 October 2007

REISHAUER AG

W. Niederer
Deputy manager

Axes Designation Machine RZ 150

The plus signs ("+") in the figure below indicate the positive direction of movement of the respective axes, according to the machine coordinate system (see lower right corner of the figure).

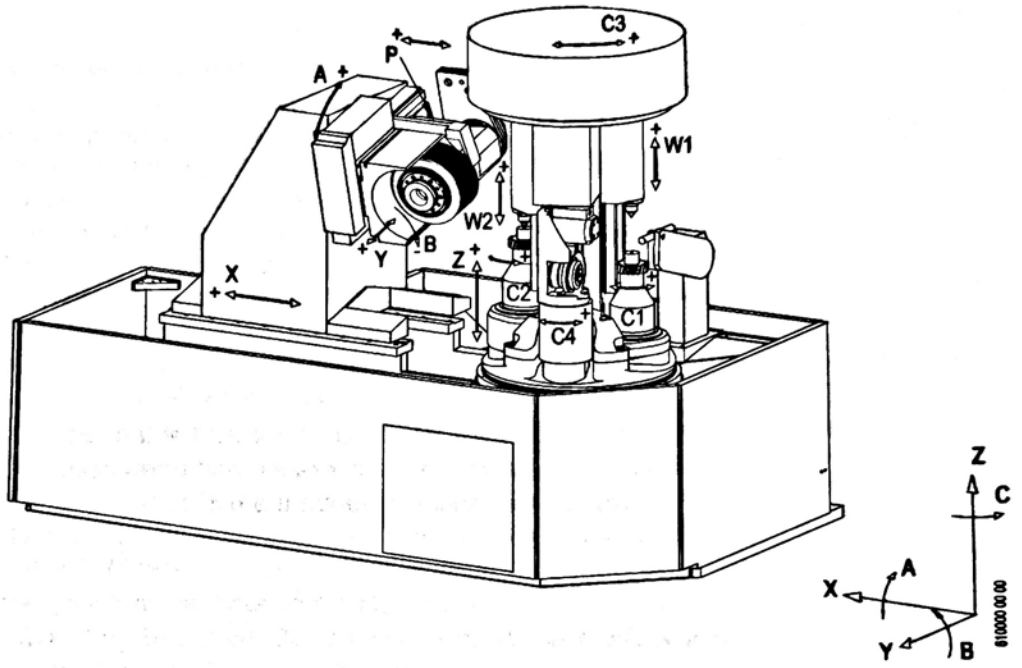


Fig. 15: Axes designation of RZ 150 machine

Axis	Designation	Measuring system
A	Grinding head (swivel)	rotative indirect
B	Grinding spindle	rotative direct
C1	Workpiece spindle 1	rotative direct
C2	Workpiece spindle 2	rotative direct
C3	Swivel turret	rotative indirect
C4	Swivel dressing device	rotative direct
P	Grinding oil nozzle (travel)	Stepping motor
W1	Tailstock 1 (travel)	rotative indirect
W2	Tailstock 2 (travel)	rotative indirect
X	X- slide	linear direct
Y	Shift slide	linear direct
Z	Workpiece sleeve stroke	linear direct

Working Range

Workpiece

The RZ 150 is capable of grinding gears within the working range as listed below. The fixture conditions need to be examined as required!

Note

Many parameters need be taken into consideration for clarification of the grindability of a gear, in particular around the borderline of the working range. Please contact Reishauer for clarification in regard to working range and grindability of gears in case of uncertain conditions.

Working range, workpiece data

Parameter	Symbol	Range
Outside diameter	d_a	10 .. 145 mm
Root diameter	d_f	ca. 10 .. 145 mm
Number of teeth	z	5 .. 150
Z-grinding stroke		max. 100 mm
Max. clamping length above theoretical grinding point. Max. clamping length below theoretical grinding point.		350 mm fixture specific (see figure clamping conditions)
Location of gear teeth		See figurer clamping conditions
Module range grindable	M_n	from 1 to 3
Pressure angle	α_n	14 to 30° (degree)
Helix angle	β	- 40° ...+ 40° (degree)
Max. weight of workpiece	M	2 kg

Workpiece Fixture

Designation	Technical data
Workpiece spindle nose	Face surface ø 120 mm with inner taper similar to DIN 69063 with nominal dia. of ø 75 mm.
Workpiece fixture	Customized design to suit the individual workpiece, inner- or outer chucking. Mounted to the workpiece spindle nose or by means of quick change fixtures.
Tailstock sleeve force (Option)	F_P 100 ... 800 N

Fixture Conditions

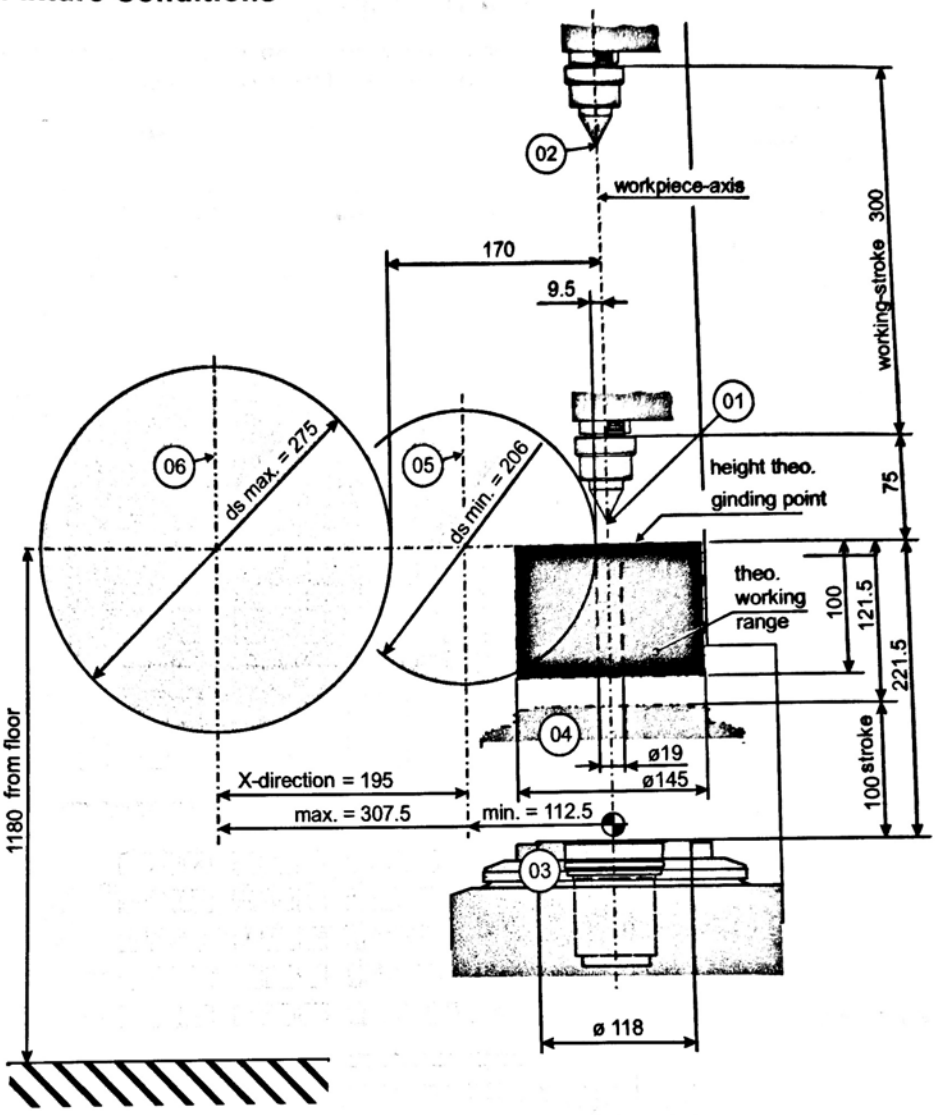


Fig. 16: Fixture conditions, workpiece length

01	Center of tailstock in lowest position	04	Workpiece spindle nose in top position
02	Center of tailstock in top position	05	Grinding spindle axis in most forward position
03	Workpiece spindle nose in lowest position	06	Grinding spindle axis in most backward position

The illustration of the fixture conditions shows, in which dimension range the workpieces can be clamped in the machine. The grinding spindle axis B is shown in the horizontal position.
For small workpiece diameters and large helix angles it must be made certain, that no collisions between the workpiece spindle and its mounted fixture and the grinding wheel occur. The required clamping fixtures are to be designed accordingly.

Initial Installation

Transport Instructions

Survey

Danger of accident when transporting the machine!

Improper transport of the machine and its units can cause grave bodily injury to transport crew members. Observe the following instructions strictly!

Note

- Country specific regulations must be strictly observed for transport, lifting devices, safety and accident prevention.
- It is the customer's responsibility to use approved lifting devices only (hoist, fork lift, ropes etc.).
  Reishauer AG accepts no liability for transport damage arising as a result of not following these instructions.
  The transport of the machine and its components may only be carried out under the supervision of a specialist authorized by Reishauer AG.
- The guidelines for the transportation of the machine and the guarantee of security are attached to the machine in a plastic folder. Transport instructions for non-Reishauer units can be found in the electrical cabinet of the respective units.

Prepare Machine for Transportation

What has to be transported?

Scope of delivery by Reishauer AG

The contract is the valid document for the scope of delivery.

Machine plus all units and parts specified in the contract are properly packed and delivered. The delivery takes place depending on the transport options.

Transport by Oversized Truck

To save on dismantling and assembly time the hydraulic unit, electrical enclosure and oil spray hood are not dismantled. The operating panel remains also on the machine, but mounted in a special transport position, during the transportation. The oil spray separator is dismantled and packed separately. The stack lights is dismantled and packed on top of the machine in the cable ducts. The machine, ready for dispatch, requires a suitable road profile and a special truck, which can transport the **220** cm wide machine.

- Machine with mounted hood, attached electrical enclosure / hydraulic unit, operating panel in transport position and assembled C3-Motor
  - Dimensions: L x W x H = 320 x 220 x 245 cm
  - Weight: G = 7'200 kg

Additional Units/Parts to be Transported with the Machine

The following units must be transported in addition to the above mentioned machine and electrical enclosure:

- Stack lights.
- Installation material (cable ductings, cables, pipes, hoses, fixing materials).
- Tools and various small parts.
- Transport suspension device with 1 strap (1030 mm), 2 chains (1280 mm and 1435 mm), on loan to customer.
- Oil recooling unit for separate spindle- and motor cooling.
- ELBARON oil mist extractor (optional).
- Grinding oil unit (optional).
- Machine loader (optional).

Transportation Suspension Frame (on loan)

The following materials are delivered on loan for unloading and internal transportation at the customer's site:

- Transport suspension frame with 1 strap (1030 mm), 2 chains (1280 mm and 1435 mm).
- 3x ¾" shackles, 4.75 t, with pin d = 22 mm.

The complete transport suspension frame is NOT property of the customer but the item is on loan for the purpose of unloading and internal transportation.

Note

The suspension frame plus additional supplementary means must be returned to Reishauer Company within one month after delivery. Otherwise these items will be invoiced to the customer.

Unloading and Internal Transportation at Customer's Site

For the precise description of transportation *see* SUB SECTION *Transport machine to installation location* in this SECTION.

Danger of accident by not using authorized loading equipment!

If loading equipment from another supplier is used, then the customer himself is responsible for assessing its capability for use and guaranteeing transport safety.

> Recommendation: Use only loading equipment approved by Reishauer AG.

Unloading at customer's site

For unloading with transport suspension frame you need:

(see figures on next page)

- Crane or pneumatic crane, load capacity of 7.5 t,
  minimum lifting height of crane = **4** m + loading height of transport vehicle.
- Transport suspension frame with 1 strap (1030 mm) + 2 chains (1280 mm + 1435 mm).
- 3 x ¾" shackles, 4.75 t with pin d = 22 mm.

Internal transportation at customer's site

If a 7.5 t crane is available at the installation site

- Possible extras according to situation: Low-loader, transport rollers or air cushion device with load carrying capacity of min. 7,500 kg.

If no crane is available at the installation site

- Transport with air cushion device or transport rollers with load bearing capacity of min. 7,500 kg weight.
  Lifting and lowering onto leveling pads with hydraulic jacks.
- Fork lift with load bearing capacity of 7.5 t and min. 1.8 m fork length.

Transportation with an air cushion

In the case of low headroom or lack of a crane at the installation site, there is the possibility of transporting the machine by means of an air cushion. The firm LKS, Althofstrasse 1, 5432 Neuenhof, Switzerland (www.lks.ch) offers appropriate solutions or services.

Supplier's recommendation

For transporting the machine Reishauer AG recommend standard loading equipment and resources of the firm:

- SpanSet AG

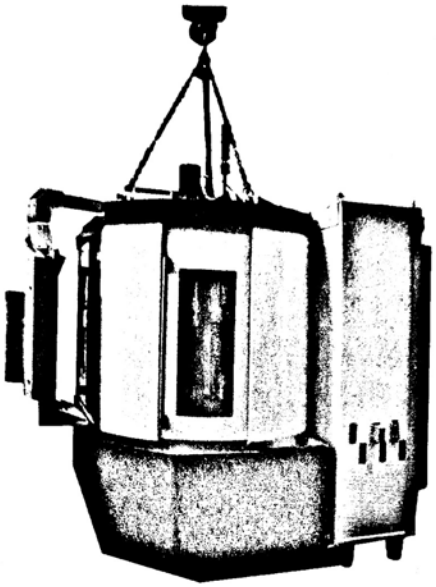


Fig. 13: Machine attached to hoist

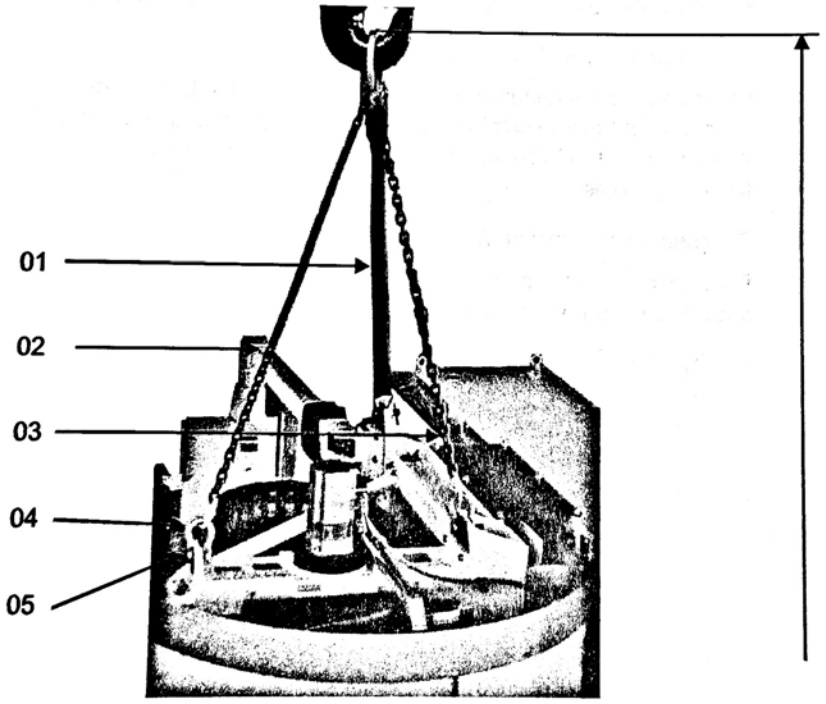


Fig. 14: Transport suspension frame on machine

01	Strap, length 1030 mm	02	Chain, length 1435 mm
03	Chain, length 1280 mm	04	Shackle ¾", 4.75 t with pin d = 22 mm
05	Screw for shackle		

Prepare Installation Location

Before locating the machine the installation location must be prepared.

Mark Position of Heavy Duty Levelling Pads

In the following description the heavy duty levelling pads will be abbreviated simply to levelling pads.

1. Position all 3 leveling pads at the location site according to the plan view.
2. Set levelling pads to the middle height of their adjustment range.

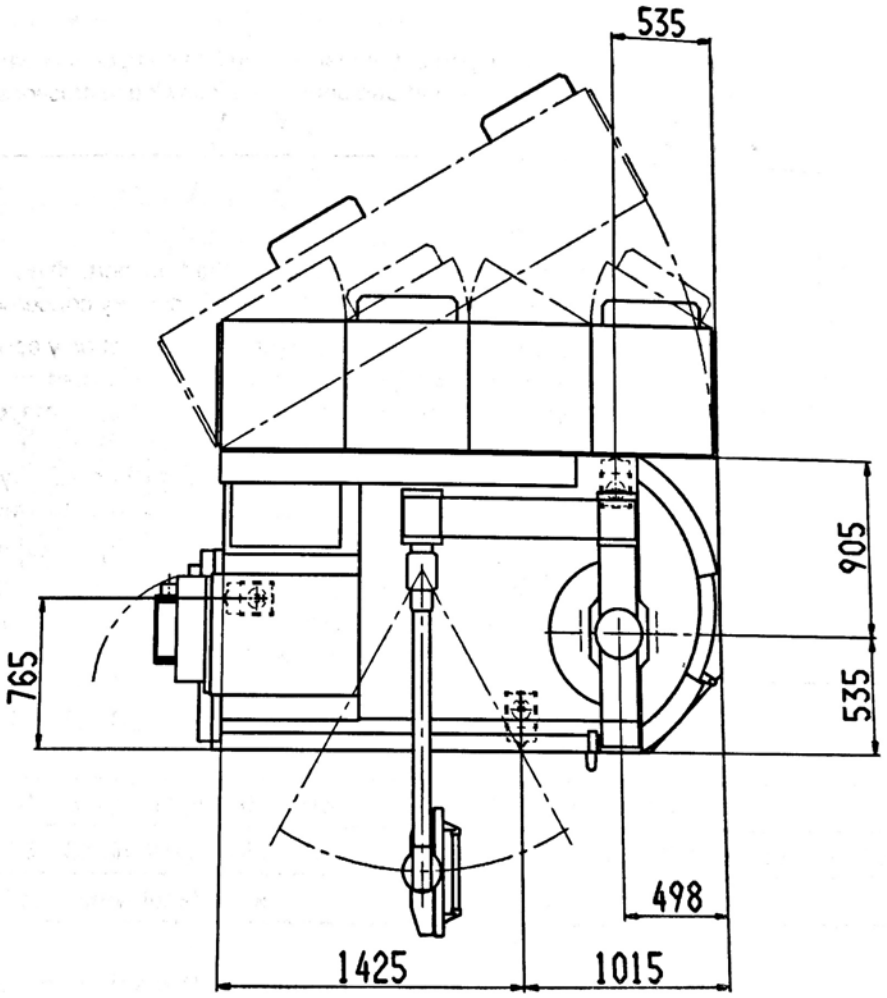


Fig. 15: Plan view – position of levelling pads

RESULT The location site is now ready for setting down the machine.

Transport Machine to Installation Location

First carry out the following activities:

1. Read SUB SECTION *Transport instructions.*
2. Carry out SUB SECTION *Prepare installation location.*

RESULT Transport can take place expertly and without loss of time.

Machine weight, approx. 7,200 kg

Risk of accident when transporting machine!

Improper transport of the machine and its components can lead to serious bodily injury to the transport personnel. The following instructions must therefore be strictly followed!

Note

- When the machine is transported the transport, lifting, safety and accident prevention regulations for the specific country concerned must be followed.
- The customer is responsible for ensuring that only approved and tested loading equipment (hoist, fork-lift truck, ropes etc.) is used.
  Reishauer AG accepts no liability for transport damage arising as a result of not following these instructions.
  The transport of the machine and its components may only be carried out under the supervision of a specialist authorized by Reishauer AG.
- The instructions for the transport of the machine and the guarantee of safety are suspended from the machine in a transparent package. The transport instructions for complete external systems are attached inside the respective electrical enclosures for these systems.

Transport Suspension Gear

As indicated in the SUB SECTION *Transport Instructions*, transport suspension gear is loaned to the customer as a loading device with the RZ 150.

To safeguard the horizontal position of the machine during transport the transport suspension gear must always be mounted as shown below, since the carrying strap and the two chains are of different lengths.

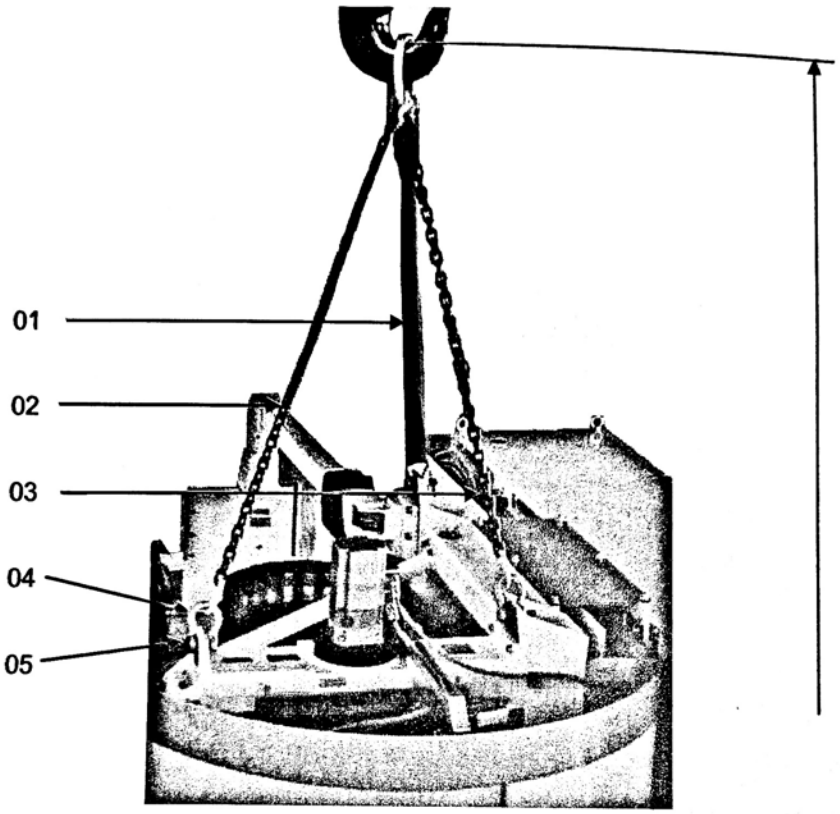


Fig. 16: Transport suspension gear on machine

01 Strap, length 1030 mm	02 Chain, length 1435 mm
03 Chain, length 1280 mm	04 Shackle ¾", 4.75 t with pin d = 22 mm
05 Screw for shackle	

Lift machine with suspension gear

1. Check transport suspension gear visually and check for completeness: 1 carrier ring, 3 shackles incl. screws, 1 strap and 2 chains.
2. Mount transport suspension gear on crane and machine.
3. Screw in all screws (05) to the stop on the shackles (04).
4. Make sure that no other people are in the machine's danger zone.
5. Carefully lift machine.
6. After lifting the machine it is essential to check that it is in a horizontal position.

As indicated in the SUB SECTION *Transport instructions*, transport suspension gear is loaned to the customer as a loading device with the RZ 150.

To safeguard the horizontal position of the machine during transport the transport suspension gear must always be mounted as shown below, since the carrying strap and the two chains are of different lengths.

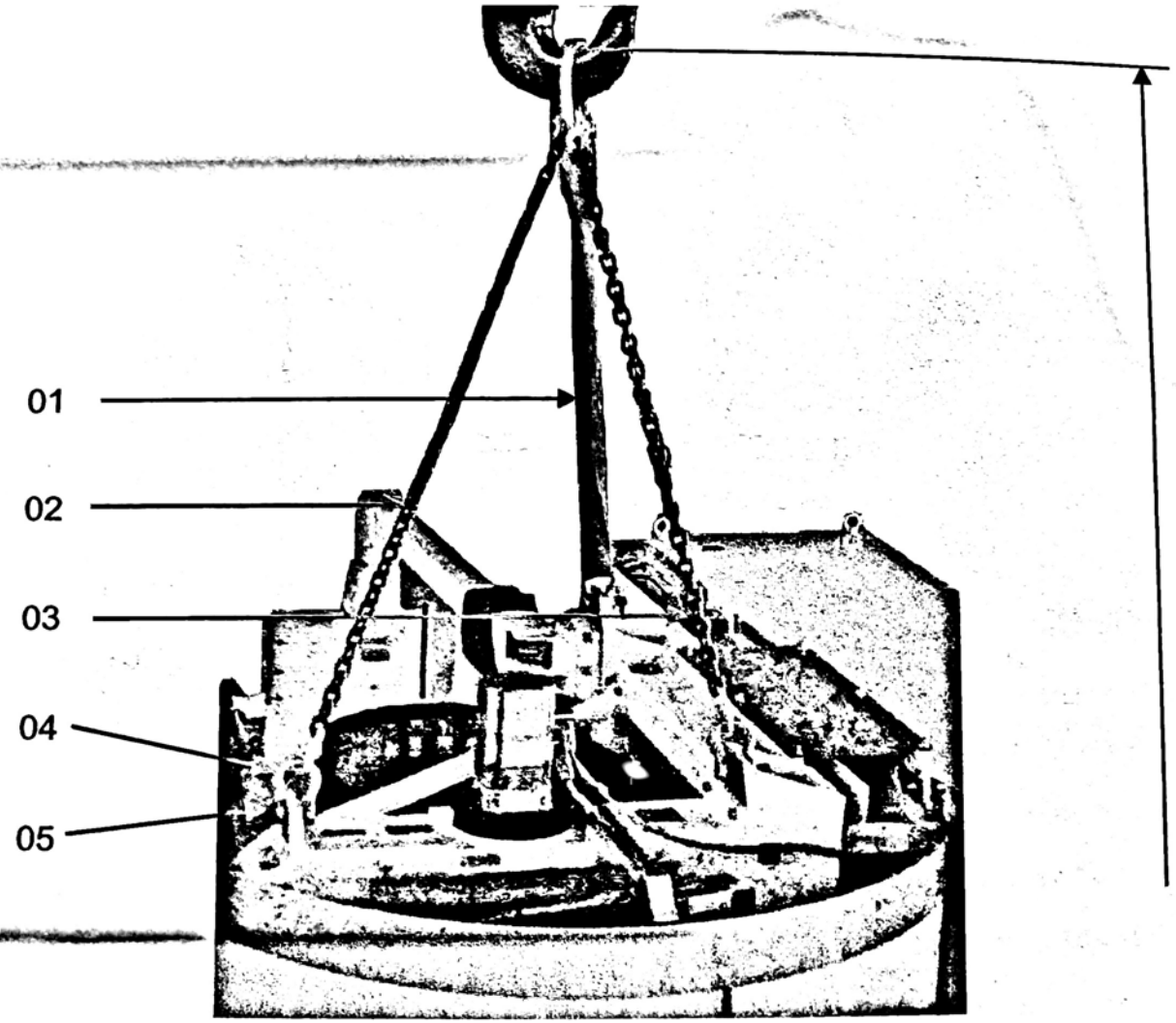


Fig. 16: Transport suspension gear on machine

01 Strap, length 1030 mm	02 Chain, length 1435 mm
03 Chain, length 1280 mm	04 Shackle ¾", 4.75 t with pin d = 22 mm
05 Screw for shackle	

Move machine to installation site and place down

1. Move machine to installation site.
2. Mount transport suspension gear on crane and machine.
   Before finally placing it down check whether the leveling pads are positioned as shown in SUB SECTION *Prepare installation location.*

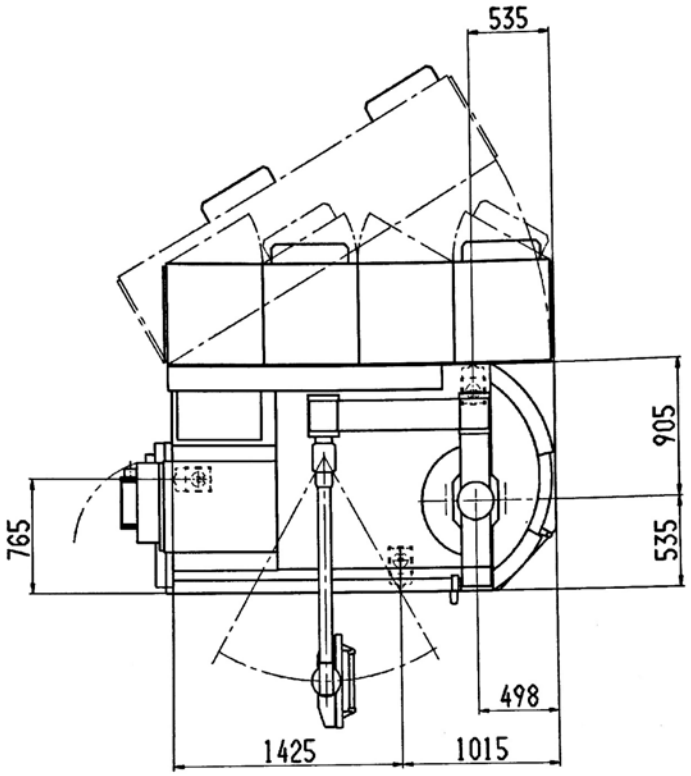


Fig. 17: Position of leveling pads before setting down

3. Place machine down on the 3 leveling pads.

EXPLANATION If the plant floor is sloping, the adjustment range of the leveling pads (8 mm) may not be sufficient. In such a situation distance shims must be placed between the leveling pads and the machine base.

4. Do not release machine yet from the suspension gear in case corrections have to be made.

RESULT The machine is located on the leveling pads.

Complete Transport

1. Once the machine has been placed on the three ready-prepared leveling pads (see SUB SECTION *Prepare installation location*), check that it is in exactly the right place and that the leveling pads are correctly placed in the area of the marks on the lower edge of the machine bed. If necessary correct the leveling pads to their exact position.

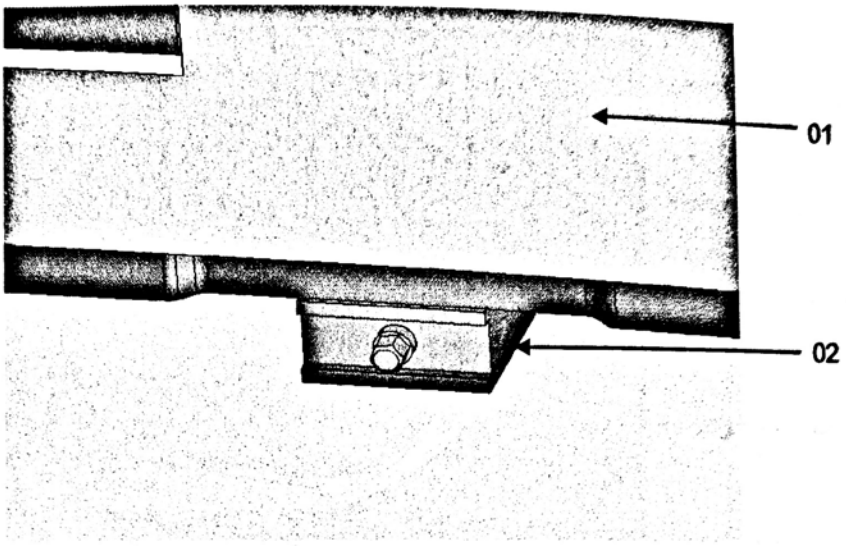


Fig. 18: Align leveling pads to the marks on the machine base

01 Machine base with markings	02 Leveling pads

2. Release machine from suspension gear and return transport suspension gear.
3. Release strap and chains from machine and lift them up carefully.
4. Return complete transport suspension gear to Reishauer.

RESULT The machine has been placed down on 3 leveling pads and can now be leveiled.

Levelling of Machine

Measurement set-up for levelling

Necessary tools

1 levelling device, which has been calibrated for transshipment, with min. scale value 0.05 mm/m

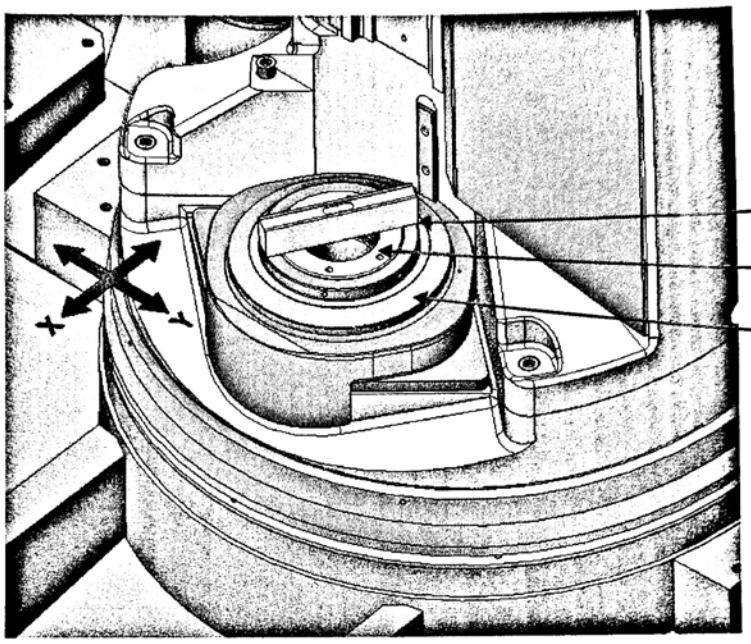


Fig. 19: Measuring position with testing device

01	Measuring position with testing device
02	Clamping surface on workpiece spindle
03	Workpiece spindle in grinding position

Locate measuring device and set direction

1. Place levelling device (01) on the face (02) of the workpiece spindle.
2. Locate levelling device by turning workpiece spindle (03) in the X direction as shown in above figure.

RESULT The measurement set-up is now ready for levelling the machine.

Level machine with levelling pads

Note

If a levelling pad is lowered it should initially be lowered more than necessary and then raised again to the correct height (adjusting spindle play).

Levelling of machine

1. Check machine inclination in the X direction and adjust the LH leveling pad by means of the setting screws until the measuring device displays a horizontal position.
2. Turn levelling device to the Y direction by rotating the workpiece spindle (01) through 90°.
3. Level machine in the Y direction by opposed adjustments of the setting screws on the rear or front leveling pad.
4. Repeat step 1.
5. Check the Y direction once more to see whether the setting has changed and readjust as necessary.

Tolerances for levelling the machine

Measuring direction	Permissible value
X-direction	0.1 mm/m
Y- direction	0.1 mm/m

RESULT The machine is now levelled within the tolerances.

Note

If the machine is installed the first time in this working location, then the levelling must be repeated after 1 to 3 days. Possible differences, due to the setteling of the machine, requieres the adjustment of the levelling pads.

Mount Operating Panel in Working Position

The following section describes the removal of the transport safety devices from the operating panel, suspending it from the crane and fixing it in place.

Note

The operating panel is in a special transport position so that a truck of standard width can be used.
(See also SUB-SECTION *Transport instructions* in this SECTION)

A crane is required to put the operating panel back into its working position.

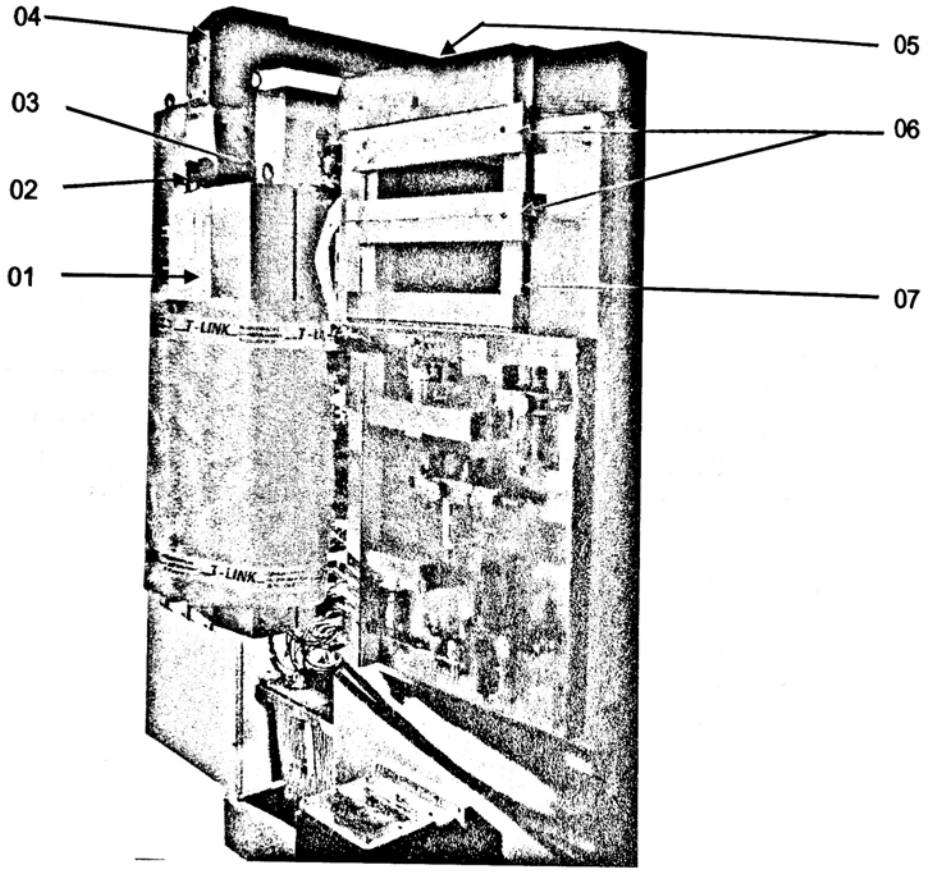


Fig. 20: Operating panel in transport position

01	Operating panel	02	Locking lever for operating panel
03	Lifting eyes for operating panel	04	Swivel arm for operating panel
05	Wooden block (not shown)	06	Woodscrews
07	Transport frame (wood)		

1. Remove 2 wooden blocks (05) (not shown) for fixation of the swiveling arm.
2. Remove 4 wood screws (06), dismantle wooden frame (07).

RESULT Operating panel can be swiveled again.

3. Attach customer's loading equipment (2 ropes) to the two M12 ring screws (03), which are screwed onto the top of the operating panel.
Suspend the operating panel thus prepared with the loading equipment from the crane.

Warning

Do not snatch the loading equipment with the crane when tightening the ropes.

This suspension step is to support the unit from falling down during the next step, the releasing of the operating panel swivel arm and the swiveling of the operating panel into the actual working position.

If this danger advice is not heeded and if too great a tensile force is exerted on the loading equipment when releasing the swivel arm personal injury and damage to the machine can occur.

Releasing / Rotating / Fixing the Operating Panel Swivel Arm

Warning

To avoid injuries two people should always carry out this work!

1. Make sure that the operating panel is suspended safely from the crane with the 2 M12 ring screws (03) according to the previous figure "*Operating panel in transport position*" using the loading equipment (2 ropes).

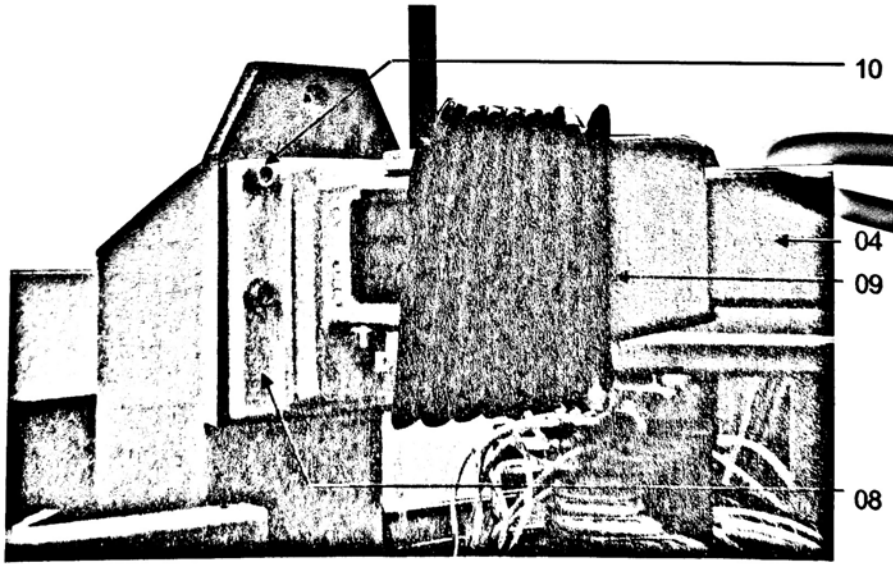


Fig. 21: Wall joint for operating panel swivel arm

04	Operating panel swivel arm	08	Wall joint
09	Rubber collar	10	Socket head cap screw, M12x45

2. Swivel the operating panel into the working position:
In order to be able to swivel the operating panel (01) around the left-hand front corner of the cover into its actual working position on the operator's side, the wall joint (08) for the horizontal swivel arm (04) must be dismantled.
   > Swivel the swivel arm (04) of the operating panel (01) to the right as far as the stop and pull rubber collar (09) forward over the wall joint (08) towards the operating panel.
   > Unscrew 4 M12x45 socket head cap screws (10) from wall joint (08).
   > Swivel operating panel (01) so that it is in front of the operator side of the machine with the crane.
   > Tighten up wall joint (08) again with the 4 M12x45 socket head cap screws (10).
   > Remove the loading equipment from the operating panel.

RESULT The operating panel swivel arm is again fixed securely.

Stop to Restrict the Swiveling Range of the Operating Panel

In order not to damage the cover when swiveling the operating panel to the left, a mechanical stop (11) must be mounted on the wall joint (08) as shown in the following figure *"Wall joint with stop"*.

> On the wall joint (08), the stop (11) as well as the 2 M12x20 socket head cap screws (12) are fixed in a plastic pocket with a cable binder to the wall joint (08).

> For mounting the stop (11), the operating panel (01) must be swiveled to the right from the viewpoint of the operator.

> Select the position for mounting the stop (11) so that the outside diameter of the stop protrudes slightly over the wall joint (08) as shown in the figure below. The stop (11) is then properly screwed into place if the 2 M12x20 socket head cap screws (12) are positioned as shown in the Figure: *Rear view of wall joint* when viewed from behind towards the wall joint.

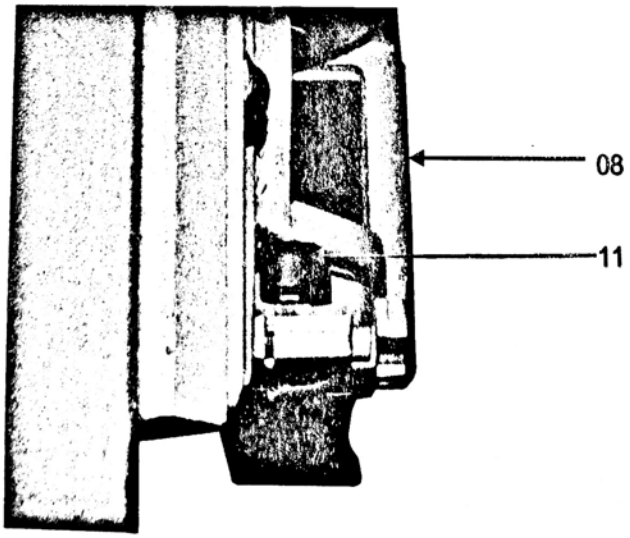


Fig. 22: Wall joint with stop

08	Wall joint	11	Stop RAG Art. no. 114803.00

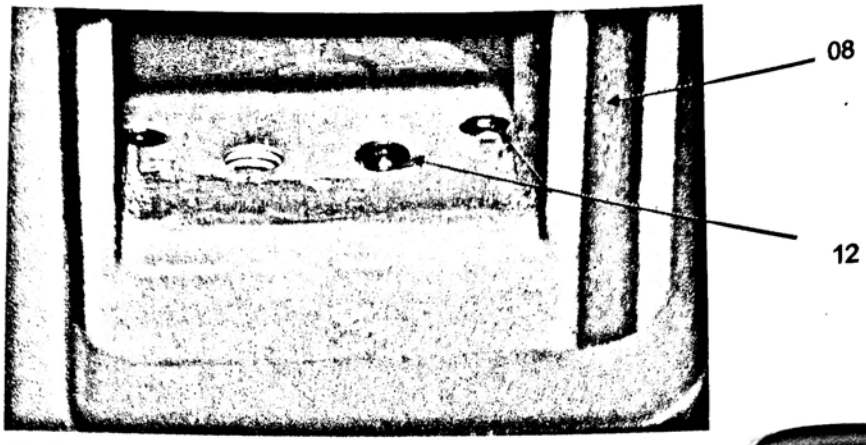


Fig. 23: Rear view of wall joint

08	Wall joint	12	Socket head cap screw, M12x20

> Push rubber collar over wall joint (08) again; see Figure *Wall joint for operating panel swivel arm*.

> Mount keyboard holder (not shown) at bottom of the operating panel.

RESULT The mounting of the operating panel is now complete.

Removing Transport Safety Devices

Note

It is the responsibilty of the customer to make sure, that after an initial installation all removed transportation locks are stored, assorted in groups, at a central location and this way traceable for further, possible internal or external transportations.

Danger

Before removing the transport safety devices it is essential that the machine is levelled according to SUB-SECTION *Levelling of machine*.

The sequence of the following steps for removing the transport safety devices must strictly be followed to avoid the electrical enclosure from falling over.

If this danger advice is not followed fatal injuries and expensive damage to the machine can occur.

Remove Transport Safety Devices from Electrical Enclosure

1. Mount the 3 supporting rollers on the electrical enclosure again and adjust in height. (The supporting rollers are located in the electrical enclosure).
2. Dismantle the plates (02) used as transport safety devices on the roof of the electrical enclosure:
   - > Undo 6 M12x25 socket head cap screws (01) on plate (02).
   - > Remove transport safety devices (02).
   - > Refit the 6 M12x25 socket head cap screws (01) in the yoke suspension (03) and electrical enclosure (04).

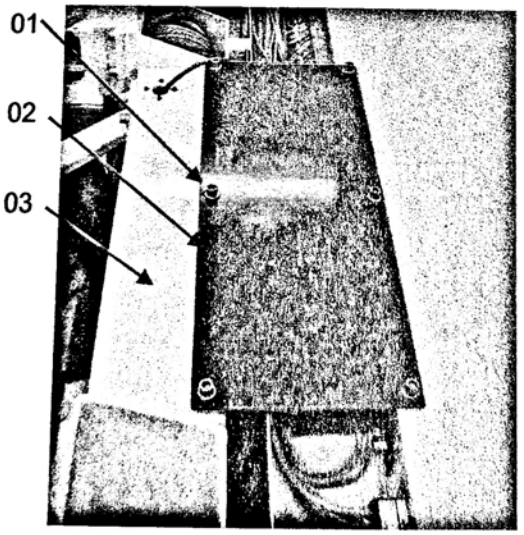


Fig. 24: Transport safety device, RAG Art. no.332222.00, for electrical enclosure

01	Socket head cap screw, M12x25	02	Safety plate
03	Yoke suspension	04	Roof of electrical enclosure

RESULT The electrical enclosure is supported on the floor and can be swivelled, if necessary.

Remove Transport Safety Device on X-axis

1. Undo 3 M10 hex nuts (01) on threaded rod (02).
2. Unscrew M10 threaded rod (02) from grinding slide (03).
3. Dismantle safety block (04).

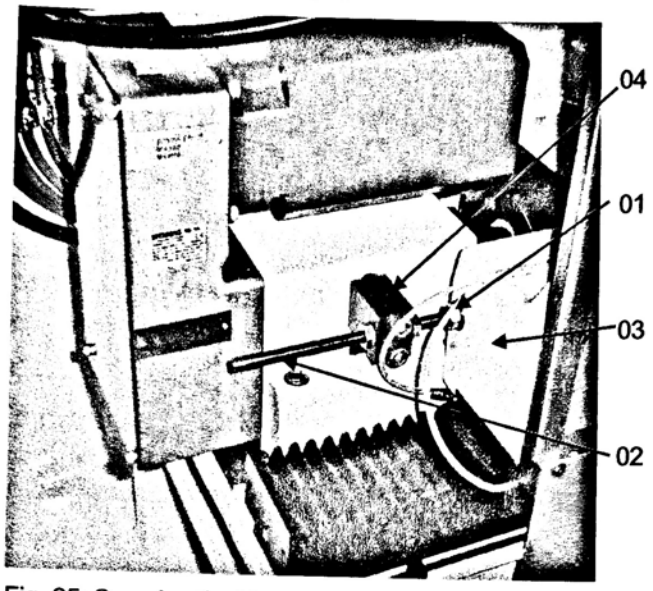


Fig. 25: Securing the X-axis (grinding slide drive)

01 Hex nut, M10	02 Threaded rod, M10
03 Grinding slide	04 Safety block
05 Cover	06 Socket head cap screw, M6x10

4. Fit cover (05) with 2 M6x10 socket head cap screws (06).

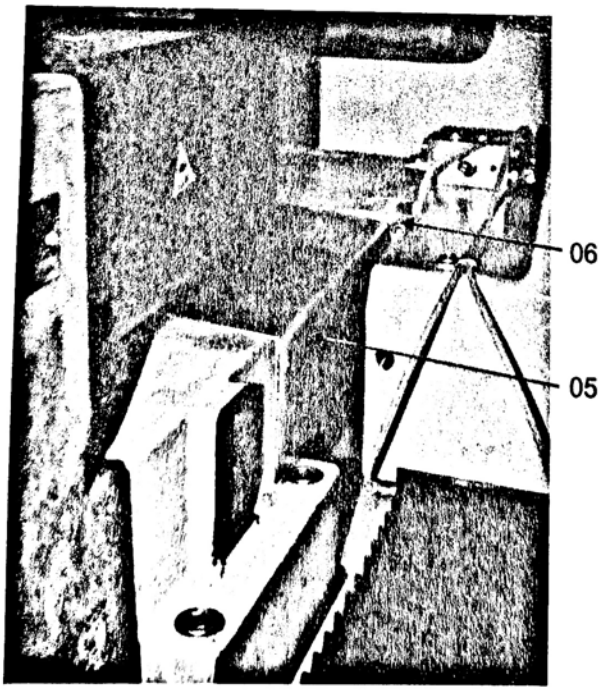


Fig. 26: Cover RAG Art. no. 332412.00 mounted above spindle of X-axis

RESULT X-axis is ready to operate

Remove Transport Safety Devices on Y-axis

1. Take out 1 M6x16 socket head cap screw (01) from the vertical leg of the red safety bracket (03).
2. Remove 3 socket head cap screws (02) from the horizontal leg of the red safety bracket (03).
3. Remove red safety bracket (03).
4. Screw in again the 3 M6x16 socket head cap screws (02).

RESULT Y-axis is ready to operate.

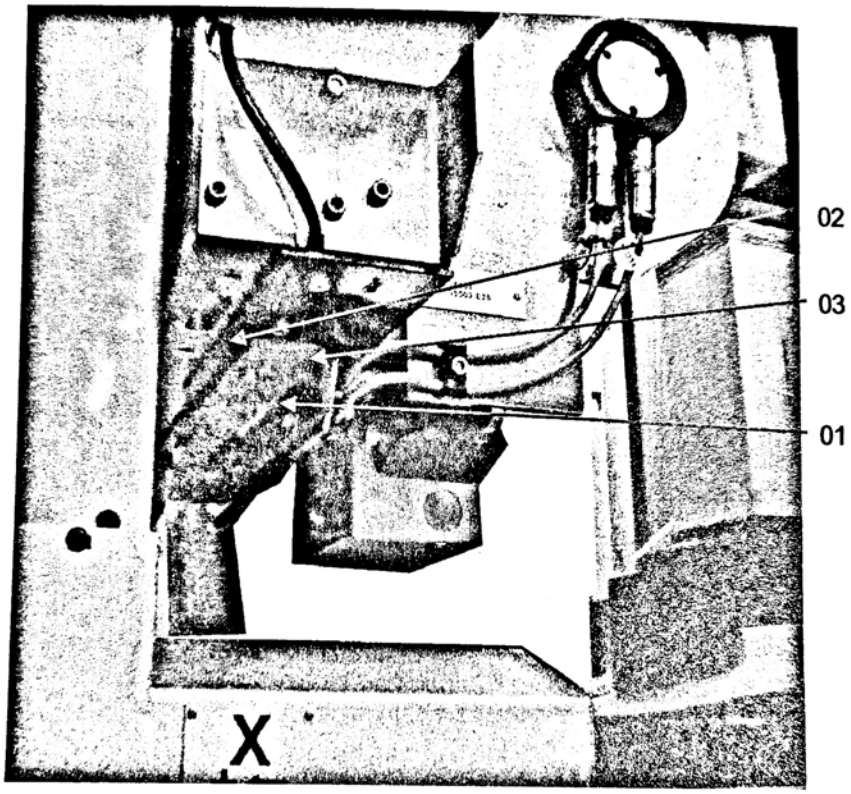


Fig. 27: Safety devices on the Y-axis (shift slide)

01	Socket head cap screw, M6x16	02	Socket head cap screw, M6x16
03	Safety bracket (colour red)		

Remove Transport Safety Devices on C3-axis (Workpiece Turret)

1. Loosen 2 M10x80 socket head cap screws (01) in rail (03), but do not screw right out.
2. Remove 2 M10x30 socket head cap screws (02) from rail (03).
3. Remove rail (03).

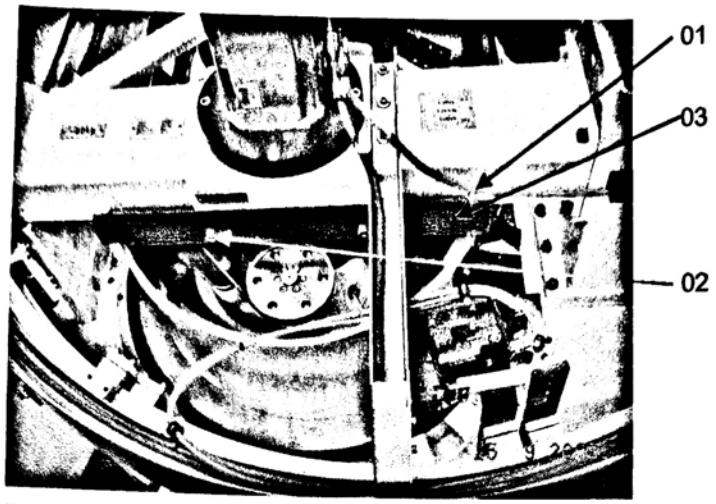


Fig. 28: Rail, RAG Art. no. 332626.00; Safety device for workpiece turret

01	Socket head cap screw, M10x80	02	Socket head cap screw, M10x30
03	Rail (colour red)	04	Cover RAG Art. no. 332160.00
05	Socket head cap screw, M6x10		

4. Tighten up cover (04) with 3 M6x10 socket head cap screws (05).

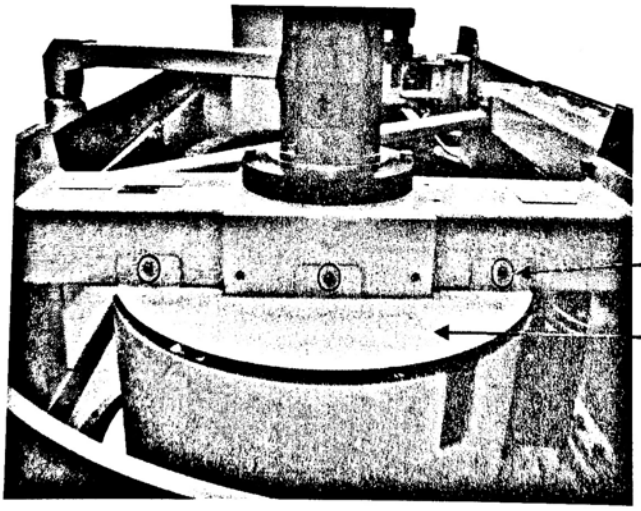


Fig. 29: Cover, RAG Art. no. 332160.00, mounted above workpiece turret

RESULT C3-axis is ready to operate

Remove Transport Safety Devices on W1/W2- Axes

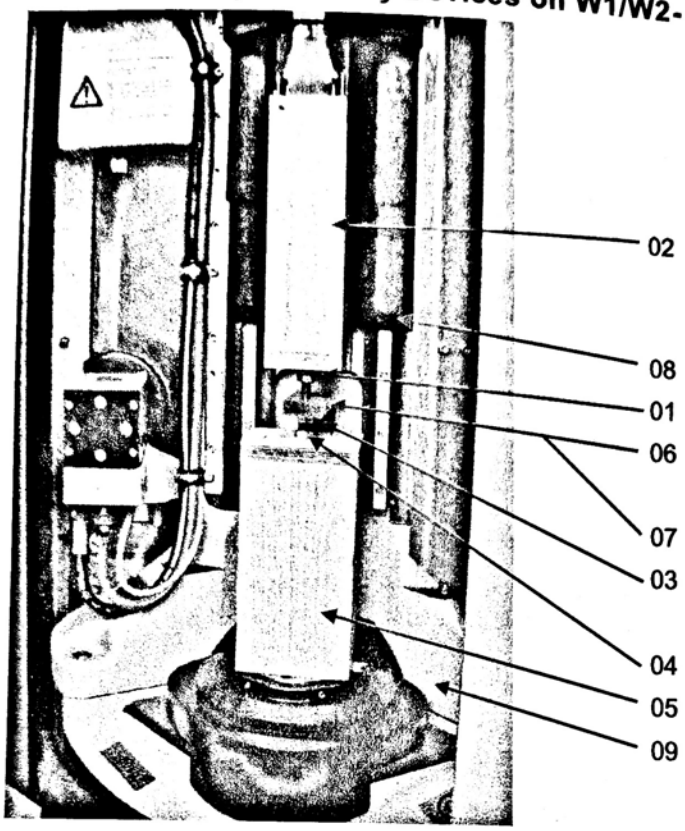


Fig. 30: Transport safety devices for tailstock and sleeve

01	Upper lock nut, M10	02	Wooden support for tailstock
03	Lower lock nut, M10	04	Hex screw, M10x80
05	Wooden support for sleeve	06	Transport bracket
07	Socket head cap screw, M6x25	08	Telescopic cover
09	Workpiece turret		

1. Loosen top 2 M10 lock nuts (01) and screw them downwards.
2. Dismantle upper "wooden support for tailstock" (02).
3. Loosen lower lock nut (03) and screw down towards the screw head of the M10x80 hex screw (04).
4. Screw upwards the M10x80 hex screw (04) and remove lower "wooden support for sleeve" (05).
5. Dismantle transport bracket (06) incl. 2 M6x25 socket head cap screws (07).
6. Pull down telescopic cover (08) and screw it onto the workpiece turret (09) with the 2 socket head cap screws (07).
7. Turn workpiece turret (09) through 180° and proceed as described above.

RESULT W1 / W2-axes ready to operate.

Transportation Grinding Oil Unit HOFFMANN

First perform the following activities:

1. Read SUB CHAPTER *Transportation Instruction.*

Nbr.	Denomination	Unit [kg]
1 pcs.	Filter HSF 100 SE	2440
1 pcs.	Return pump pump	105
2 pcs.	Sludge box	360
	Entire unit	2905

Dimensions [mm]	Length	Width	Height
Filter	ca. 3075	ca. 2250	ca. 2325

Note

The plant floor for the installation of the grinding oil unit must be rigid and even. No foundation is necessary.

Note

The grinding oil unit must be completely emptied before the transportation.

The transportation with cooling media can lead to accidents and can damage the grinding oil unit. Please note EU-safety regulation data sheet of your cooling media supplier.

Danger of accident

Attach the steel transportation ropes always to the lowest containers!
Never lift-up the entire unit via the upper filter components!

Check before the transportation the seats and locations for the transportation aids again.

During the transportation move slowly and smoothly, avoid jerky motions and hard lowering into place.

During the transportation never step underneath floating loads!

Required Material

- (4) steel transportation ropes.
- H-traverse (cross beam)
- Pads for the contact areas between ropes and grinding oil unit.
- Hoist / fork lift

Preparation for transportation

1. Pump out all containers within the oil reservoir.
2. Fasten the (4) steel transportation ropes to the cross beam on top.

3. Attach the cross beam to the hook of the hoist and place the cross beam over the grinding oil unit.
4. Fasten the (4) steel transportation ropes below with a shackle each to the oil container.
5. Use pads, if required for protection purposes, on the contact areas between ropes and grinding oil unit.
6. Lift up the grinding oil unit.
7. Grinding oil unit should float in a horizontal position.
8. Lower the grinding oil unit and place it to the designated location, unhook the cross beam and remove ropes etc..

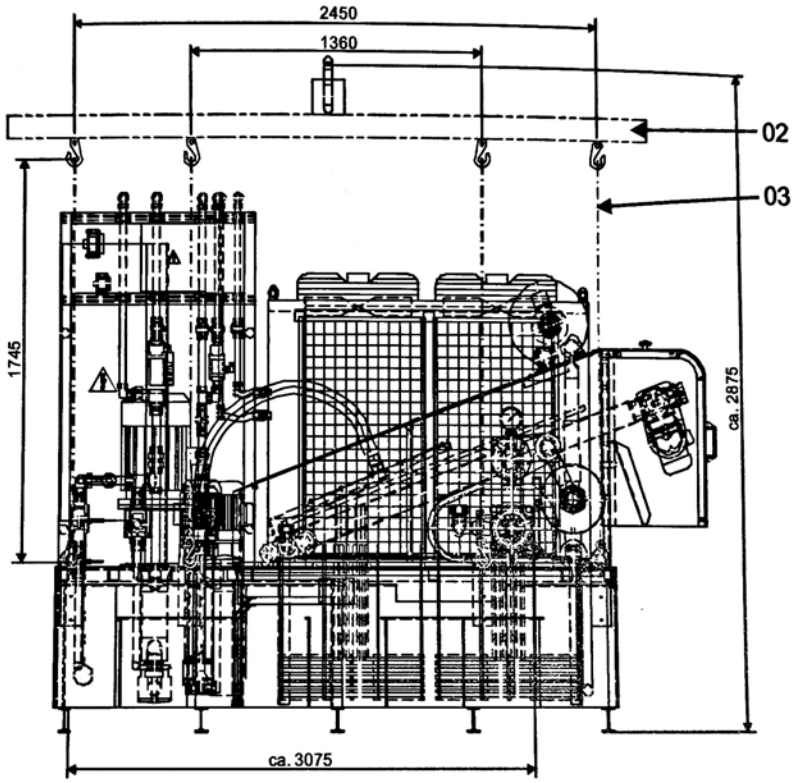


Fig. 31: Transport grinding oil unit HOFFMANN HSF 100 SE

01	Height of crane hook	02	H-traverse (cross beam) according to DIN 15003 e.g. company MEILI (www.meili.de) H-traverse M.1030 Minimum load capacity 5000 kg
03	4x rope d = 16 mm according to DIN 3060-3066 e.g. company MEILI (www.meili.de) Rope d = 16 mm Type S10LA0116 Minimum load capacity 2700 kg	04	4x Shackle $^{5}/_{8}$" according to DIN 82101 e.g. company MEILI (www.meili.de) Shackle $^{5}/_{8}$" LA0107 Minimum load capacity 3250 kg

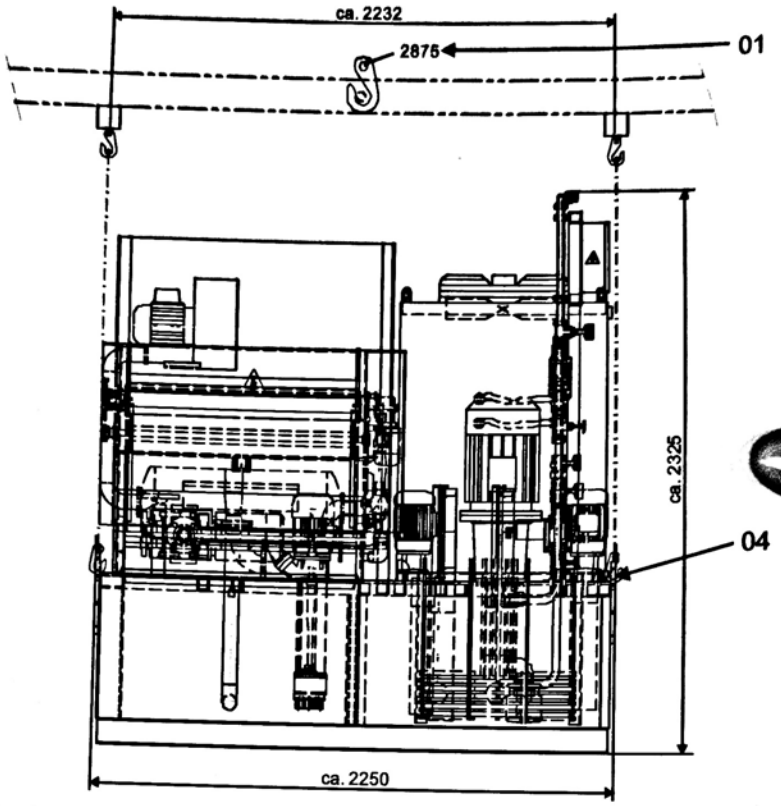


Fig. 32: Transport grinding oil unit HOFFMANN HSF 100 SE

Return-Pump Pump with Lower Frame

Weight of return-pump pump with lower frame, approx. 105 kg

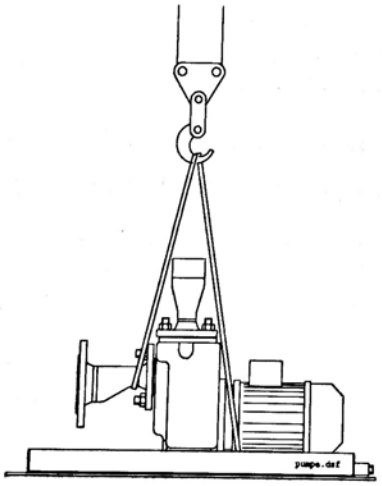


Fig. 33: Return-pump pump with lower frame

Lift up

1. Hook up one end of a belt on the horizontal pipe nipple and the other end of the belt at the motor near to the flange.
2. Hook up belt to hook of hoist.

3. Lift-up pump with lower frame.
4. Place pump at designated location and bolt it down to the floor.

Mud Cart

Weight of mud cart (empty weight), approx. 160 kg

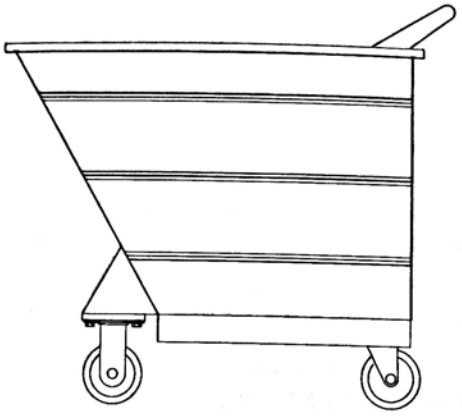


Fig. 34: Mud cart

Transportation

Pick-up with fork lift.